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Cosmic evolution of submillimeter galaxies and their contribution to stellar mass assembly[⋆]

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ABSTRACT

The nature of galaxies selected at submillimeter wavelengths (SMGs, $S_{850} \gtrsim 3$ mJy), some of the bolometrically most luminous objects at high redshifts, is still elusive. In particular their star formation histories and source of emission are not accurately constrained. In this paper we introduce a new approach to analyse the SMG data. Namely, we present the first self-consistent UV-to-radio spectral energy distribution fits of 76 SMGs with spectroscopic redshifts using all photometric datapoints from ultraviolet to radio simultaneously. We find that they are highly star-forming (median star formation rate 713 $M_\odot$ yr^{-1} for SMGs at $z > 0.5$), moderately dust-obscured (median $A_V \sim 2$ mag), hosting significant stellar populations (median stellar mass 3.7×10^{11} $M_\odot$) of which only a minor part has been formed in the ongoing starburst episode. This implies that in the past, SMGs experienced either another starburst episode or merger with several galaxies. The properties of SMGs suggest that they are progenitors of present-day elliptical galaxies. We find that these bright SMGs contribute significantly to the cosmic star formation rate density (∼20%) and stellar mass density (∼30–50%) at redshifts 2–4. Using number counts at low fluxes we find that as much as 80% of the cosmic star formation at these redshifts took place in SMGs brighter than 0.1 mJy. We find evidence that a linear infrared-radio correlation holds for SMGs in an unchanged form up to redshift of 3.6, though its normalization is offset from the local relation by a factor of ∼2.1 towards higher radio luminosities. We present a compilation of photometry data of SMGs and determinations of cosmic SFR and stellar mass densities.

Key words. galaxies: active – galaxies: evolution – galaxies: high-redshift – galaxies: ISM – galaxies: starburst – submillimeter: galaxies

1. Introduction

Submillimeter galaxies (SMGs; see Blain et al. 2002) were discovered at 850 μm ($S_{850} \gtrsim 3$ mJy) by the Submillimetre Common-User Bolometer Array (SCUBA; Holland et al. 1999) mounted on the James Clerk Maxwell Telescope (JCMT). Due to the coarse resolution of SCUBA, localizations derived from high-resolution radio maps had to be used to measure their spectroscopic redshifts (Chapman et al. 2005). Lots of studies have addressed the issue of characterizing the nature of SMGs (Egami et al. 2004; Greve et al. 2004, 2005; Smail et al. 2004; Swinbank et al. 2004, 2006, 2008; Takagi et al. 2004; Alexander et al. 2005; Borys et al. 2005; Kovács et al. 2006; Laurent et al. 2006; Pope et al. 2006; Tacconi et al. 2006, 2008; Takata et al. 2006; Younger et al. 2007, 2008, 2009a; Clements et al. 2008; Coppin et al. 2008; Dye et al. 2008, 2009; Hainline 2008; Hainline et al. 2009; Perera et al. 2008; Scott et al. 2008; Austermann et al. 2009; Devlin et al. 2009; Eales et al. 2009; Murphy et al. 2009; Murphy 2009; Tamura et al. 2009; Weiß et al. 2009b; Aravena et al. 2010, some of these works were based on surveys with sensitivity worse than 3 mJy quoted above). However they were usually based on limited samples ($\lesssim$20 sources), limited wavelength coverage or photometric redshifts. These limitations have made it difficult to solve several issues, including the characterization of the star formation histories of SMGs and their dominant source of emission.

An important open question concerns the contribution of SMGs to cosmic stellar mass assembly. This is important, because in order to understand galaxy evolution, the build-up of stellar mass must be mapped out to high redshifts. It is usually parametrized by the total star formation rate (SFR) density per unit comoving volume, ($\rho_{\rm SFR}$; see e.g. Hopkins 2004; Hopkins & Beacom 2006). At high redshifts it is difficult to disentangle the contribution to $\rho_{\rm SFR}$ from galaxy populations of different masses due to incompleteness at low luminosities.

Another approach to study stellar mass assembly is to consider directly the stellar mass density per unit comoving volume, ρ_*, which is equivalent to the integrated $\rho_{\rm SFR}$ over the age of the Universe. It is established that ρ_* grows with cosmic time (stellar mass is accumulating; Drory et al. 2005; Fontana et al. 2006; Elsner et al. 2008; Pérez-González et al. 2008; Marchesini et al. 2009), but the contribution from different galaxy populations is not well-determined. *Spitzer* observations of SMGs (Egami et al. 2004; Frayer et al. 2004; Ivison et al. 2004; Borys et al. 2005; Ashby et al. 2006; Laurent et al. 2006; Pope et al. 2006; Dye et al. 2008; Hainline 2008; Hainline et al. 2009) have enabled studies of the rest-frame near-infrared (near-IR) part of the spectrum, where old stellar populations are dominant – an important step forward in getting full spectral energy distributions and accurate estimates of stellar masses of SMGs. The results indicate that SMGs are among the most massive galaxies in the Universe.

The dominant source of emission from SMGs is dust reprocessed emission either from young stars or active galactic nuclei

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[⋆] Appendix is only available in electronic form at
`http://www.aanda.org`

(AGNs). One way to test it is to compare the infrared (IR) and radio luminosities of SMGs, because, at least locally, star-forming galaxies follow a remarkably tight correlation between IR and radio luminosities (Helou et al. 1985; Condon 1992). The correlation is believed to result from the fact that both IR and radio emissions are related to short-lived massive stars: the former originates from dust heated by ultraviolet (UV) light from blue, massive stars and the latter from synchrotron emission of electrons produced in supernova remnants. Therefore, a relation consistent with the local one is an indication of star formation dominating both the IR and radio emissions. There is growing evidence that the correlation holds at redshifts $z \lesssim 1$ (Garrett 2002; Gruppioni et al. 2003; Appleton et al. 2004; Boyle et al. 2007; Marleau et al. 2007; Vlahakis et al. 2007; Yang et al. 2007). At higher redshifts sample sizes are small making it difficult to draw robust conclusions (Appleton et al. 2004; Kovács et al. 2006; Beswick et al. 2008; Ibar et al. 2008; Sajina et al. 2008; Garn et al. 2009; Murphy et al. 2009; Murphy 2009; Rieke et al. 2009; Seymour et al. 2009; Younger et al. 2009b; Sargent et al. 2010). The only sign of evolution was reported by Ivison et al. (2010) based on stacking analysis of the 24 μm-selected galaxies, though possibly interpreted as a selection effect.

The objective of this paper is to model for the first time the entire UV-to-radio spectral energy distributions of a statistically significant sample of SMGs in a self-consistent way. Using these models we i) consistently derive the properties of SMGs using all available data to characterize their nature and determine the dominant emission mechanism; ii) estimate the contribution of SMGs to the cosmic SFR and stellar mass densities; iii) investigate whether the local IR-radio correlation holds at high redshifts in an unchanged form. In Sect. 2 our SMG sample is presented. Our methodology is outlined in Sect. 3. We derive the properties of SMGs in Sect. 4 and discuss the implications in Sect. 5. Section 6 closes with our conclusions. We use a cosmological model with $H_0 = 70$ km s^{-1} Mpc^{-1}, $\Omega_\Lambda = 0.7$ and $\Omega_m = 0.3$.

2. Sample

We base our analysis on 76 SMGs ($S_{850} \gtrsim 3$ mJy) from the sample of Chapman et al. (2005), all with spectroscopically measured redshifts spanning a range of 0.080–3.623.

The way the sample is selected involves complex biases, which are difficult to fully quantify and account for. The parent sample of Chapman et al. (2005) consists of 150 SMGs out of which 104 have radio identifications. The sample discussed here (76 galaxies) consists of the SMGs for which redshifts have been measured (spectroscopic completeness ~75%). All this implies that the sample is biased against: i) faint submillimeter emitters (low dust content and/or hot dust, influence mostly the low-z portion of the sample); ii) faint radio emitters (high-z and cold dust, see Fig. 3 of Chapman et al. 2005); iii) faint optical emitters (difficult to obtain spectra); *iv*) $z \sim 1.2$–1.8 ("redshift desert" where no emission lines enter the observable wavelengths). At low redshifts ($z < 1$) the sample may also be incomplete due to a limited sky area (and therefore – volume) coverage making it difficult to detect rare strong submillimeter emitters (for details on the SMG selection effects see also Fig. 2 of Blain et al. 2004 and discussion in Sect. 4.4 of Michałowski et al. 2008).

It is important to estimate what the influence of these selection effects on our results is. In total we analyse ~50% (76/150) of the parent sample. Additionally, 25 radio-detected SMGs without spectroscopic redshifts have similar long-wavelength properties compared to the redshift sample (see Fig. 1 of Chapman et al. 2005), so their absence from the sample probably does not significantly bias our results. The same is true for the SMGs in the "redshift desert", since they are missed not due to their inherent properties. The remaining 46 radio-nondetected SMGs (~30%) could in principle have very different properties than our sample resulting in a potential limitation in our analysis.

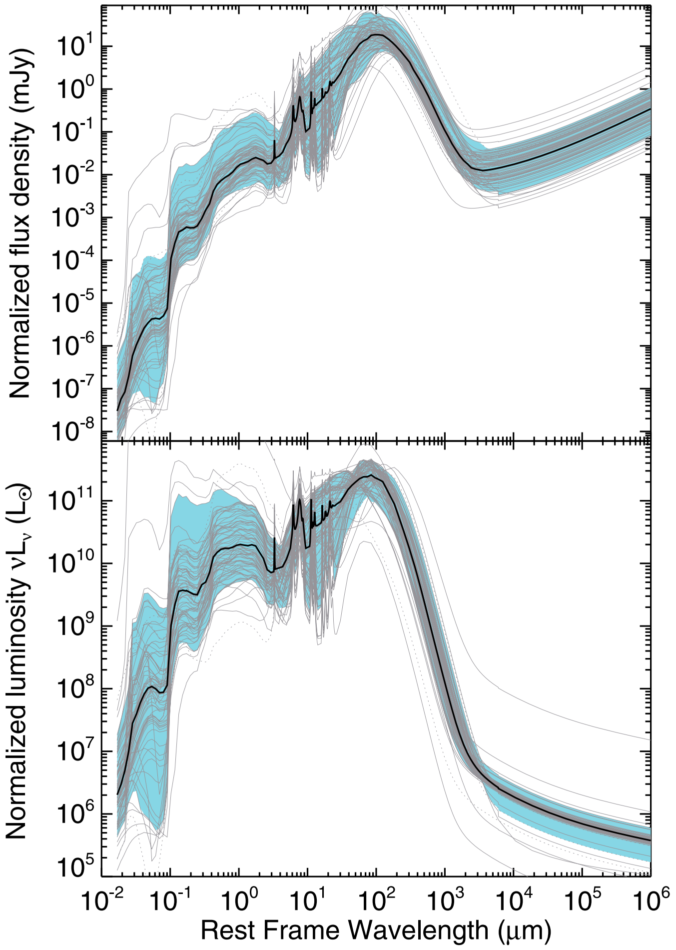

Fig. 1. Median spectral energy distribution (SED) of SMGs (*thick lines*) and SEDs of individual SMGs (*thin lines*). *Dotted lines* indicate $z < 0.5$ objects. *Shaded areas* enclose 90% of the SEDs. *Top*: all SEDs were divided by the corresponding 850 μm datapoint and scaled, so that the median SED has a flux of 5 mJy at the rest-frame 283 μm (observed 850 μm at $z = 2$). *Bottom*: SEDs were normalized to an infrared star formation rate of 100 $M_\odot$ yr^{-1}.

Even if most of the SMGs without spectroscopic redshifts are similar to those in our sample, the incompleteness at $z < 1.8$ implies that the estimates of SMG densities (Sects. 5.3.1, 5.3.2 and 5.2.3) in the three low-redshift bins (see Sect. 3.2) are strict lower limits.

Due to the negative K-correction at submillimeter wavelengths, SMGs at $z \gtrsim 0.5$ form a sample with homogenous IR luminosity (Blain & Longair 1996; Blain 1997). However, SCUBA sources at $z \lesssim 0.5$ belong to a different population of objects and are intrinsically fainter. The limited volume coverage at these low redshifts makes the sample of these objects small and incomplete. This prevents a separate study of their properties. We did not take into account these sources when we computed median values of the properties of SMGs.

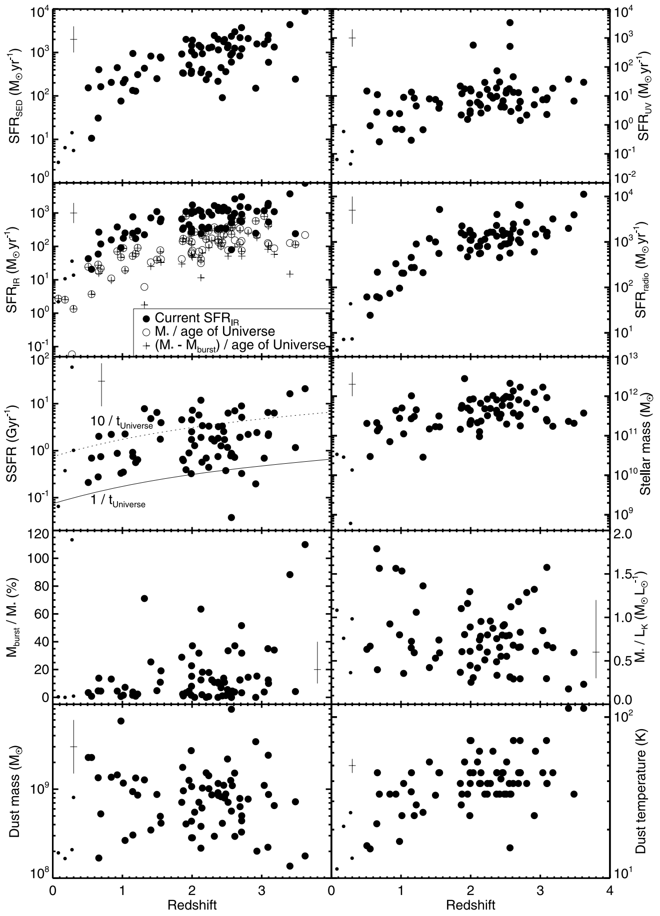

Fig. 2. Redshift evolution of the properties (*full circles*, see Table A.3 in Appendix) of the sample of 76 SMGs with spectroscopic redshifts (Chapman et al. 2005). *Small symbols* indicate $z < 0.5$ objects. Typical errors (Sect. 4) are shown as *crosses*. *From top-left to bottom-right*: star formation rate (SFR) derived from spectral energy distribution modeling, ultraviolet, infrared and radio emission, SFR per unit stellar mass ($\equiv \mathrm{SFR}_{\mathrm{IR}}/M_*$), stellar mass, fraction of stellar population formed during the ongoing starburst, stellar mass-to-light ratio, dust mass and temperature. In the $\mathrm{SFR}_{\mathrm{IR}}$ panel, we also show the minimum average SFRs (see Sect. 5.2.1) required to build up the total stellar mass within the age of the Universe at a given redshift (*empty circles*) and to build up the fraction of stellar population that was not formed during the ongoing starburst (*plus signs*). The location of plus signs indicates that SMGs must have been highly star-forming even before the onset of the ongoing starburst. When empty circles and plus signs overlap, the contribution of the ongoing starburst to the total stellar mass of a galaxy is negligible (i.e. $M_{\mathrm{burst}}/M_* \sim 0$).

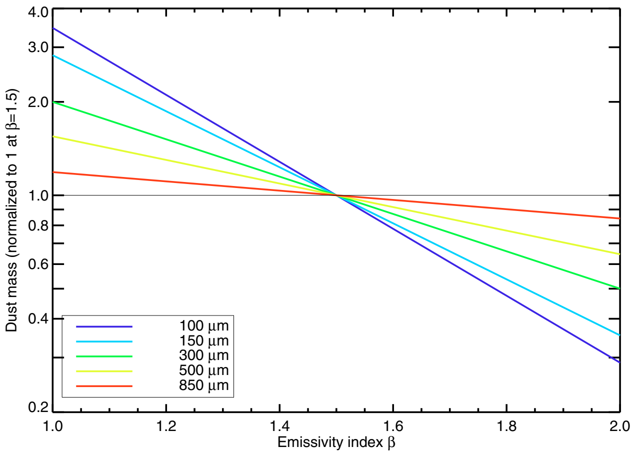

Fig. 3. Derived dust mass of a mock galaxy with dust temperature T_{d} = 40 K and a flux density of 5 mJy at several infrared rest-wavelengths as a function of the assumed emissivity index β. For each wavelength the dust masses were normalized to 1 at β = 1.5. The spread of the derived dust masses shows that the uncertainty of the dust mass resulting from unknown β is a factor of a few.

The photometric datapoints (Tables A.1 and A.2 in Appendix[1]) were collected from the literature: Ivison et al. (2002, *IK*, radio), Ivison et al. (2005, *R*, 1.2 mm), Chapman et al. (2003b, *VI*), Chapman et al. (2005, *BR*, 850 μm, radio), Capak et al. (2004, *UBVRIzHK*), Clements et al. (2004, *UBVIK*), Egami et al. (2004, 24 μm), Greve et al. (2004, 1.2 mm), Smail et al. (2004, *IJK*), Fomalont et al. (2006, *Rz*), Kovács et al. (2006, 350 μm, 1.2 mm), Laurent et al. (2006, 350 μm, 1.1 mm), Tacconi et al. (2006, 1.3 mm), Pope et al. (2006, *R*, 24 μm), Huynh et al. (2007, 160 μm), Hainline (2008, 3.6, 4.8, 5.6, 8.0, 24, 70 μm). We have not used the existing mid-IR spectra (Valiante et al. 2007; Pope et al. 2008; Menéndez-Delmestre et al. 2007; Menéndez-Delmestre et al. 2009), but for completeness we have indicated in Table A.1 those SMGs for which *Spitzer*/IRS spectra exist.

3. Methodology

3.1. SED modeling

In order to model the spectral energy distributions (SEDs) of SMGs, we use all the photometric datapoints simultaneously. This has the advantage that all the galaxy properties are derived consistently regardless of the wavelength regime in which those properties shape the SEDs (for example, recent star formation governs the UV and far-IR parts of a spectrum of a galaxy, whereas accumulated stellar mass is responsible for near-IR emission). Moreover in the full SED modeling no single datapoint drives the fit alone.

We utilized the set of 35 000 models from Iglesias-Páramo et al. (2007) developed in GRASIL (Silva et al. 1998)[2] based on numerical calculations of radiative transfer within a galaxy. They cover a broad range of galaxy properties from quiescent to starburst. Their star formation histories are assumed to be a smooth Schmidt-type law (SFR proportional to the gas mass to some power, see Silva et al. 1998, for details) with a starburst (if any) on top of that starting 50 Myr before the time of the evolution of a galaxy at which the SED is computed. Additionally we fitted templates based on nearby galaxies (Silva et al. 1998) and gamma-ray burst host galaxies (Michałowski et al. 2008). We simultaneously used all the photometric datapoints from UV to radio (Tables A.1 and A.2). In cases where the data given by different authors were contradictory, we disregarded the obvious outliers. We scaled the SEDs to match the data and chose the one with the lowest χ^2.

Based on the best fits we derived the properties of the galaxies as explained in Michałowski et al. (2008, 2009). In particular, SFRs, stellar (M_*) and starburst (M_{burst}) masses were given as output from GRASIL, rest-frame UV and K (L_K) monochromatic luminosities were interpolated from the best-fitting SEDs, whereas IR luminosities (L_{IR}) were integrated in

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[1] For convenience we make the compilation available in electronic form. We suggest that the original data source be consulted and referred to appropriately.

[2] `http://adlibitum.oat.ts.astro.it/silva/default.html`

Table 1. Mean values for SMGs in redshift bins.

z (1)	Volume (10^6 Mpc^3) (2)	$\log \rho_{\rm IR}$ ($L_\odot$ Mpc^{-3}) (3)	$\rho_{\rm SFR}$ ($M_\odot$ yr^{-1} Mpc^{-3}) (4)	% (5)	$\log \rho_*$ ($M_\odot$ Mpc^{-3}) (6)	% (7)	q (8)	$\log \rho_{\rm dust}$ ($M_\odot$ Mpc^{-3}) (9)
0.080–0.500	0.12	$7.03^{+0.11}_{-0.14}$	0.0018 ± 0.0005	5^{+3}_{-2}	$6.35^{+0.21}_{-0.16}$	$1^{+0.4}_{-0.2}$	2.54 ± 0.12	$4.06^{+0.05}_{-0.06}$
0.510–1.316	1.03	$7.81^{+0.06}_{-0.07}$	0.0111 ± 0.0016	9^{+2}_{-2}	$7.16^{+0.13}_{-0.08}$	5^{+2}_{-1}	2.52 ± 0.06	$4.32^{+0.04}_{-0.05}$
1.408–2.142	1.63	$8.12^{+0.05}_{-0.05}$	0.0228 ± 0.0027	11^{+3}_{-3}	$7.18^{+0.16}_{-0.11}$	11^{+6}_{-3}	2.29 ± 0.08	$3.84^{+0.04}_{-0.04}$
2.148–2.565	0.89	$8.45^{+0.05}_{-0.05}$	0.0486 ± 0.0054	18^{+7}_{-5}	$7.61^{+0.12}_{-0.08}$	51^{+20}_{-11}	2.27 ± 0.09	$4.35^{+0.04}_{-0.04}$
2.578–3.623	2.17	$8.30^{+0.05}_{-0.05}$	0.0341 ± 0.0040	20^{+5}_{-4}	$7.28^{+0.12}_{-0.07}$	31^{+14}_{-7}	2.25 ± 0.08	$3.86^{+0.03}_{-0.03}$

Notes. Column (1): redshift range of the bins. Column (2): comoving volume of these bins (calculated in Sect. 3.2). Column (3): IR luminosty density of SMGs. Column (4): Resulting IR SFR density of SMGs (Sect. 5.3.1). Column (5): contribution of SMGs to the cosmic SFR density (calculated in Sect. 3.2). Column (6): stellar mass density of SMGs (Sect. 5.3.2). Column (7): contribution of SMGs to the cosmic M_* density (calculated in Sect. 3.2). Column (8): mean (and error of the mean) IR-radio correlation parameter for SMGs (Sect. 5.4.1). Column (9): dust mass density of SMGs (Sect. 5.2.3). Columns (3–7) and (9) have been corrected for incompleteness by a factor of 3.5 (Sect. 3.2).

a range 8–1000 μm, UV and IR SFRs (SFR$_{\rm IR}$ was adopted for all subsequent calculations, because SFR$_{\rm UV}$ is on average two orders of magnitude lower) were calculated using Kennicutt (1998), dust masses ($M_{\rm d}$) were calculated from the 850 μm detections using Eq. (5) of Michałowski et al. (2009) and radio SFRs were calculated from the 20 cm detections using the empirical formula of Bell (2003) (see Sect. 4.2 of Michałowski et al. 2009). Dust temperatures ($T_{\rm d}$) were estimated by identifying the peak of the dust emission and assuming an emissivity index $\beta = 1.3$. The average extinction in the rest-frame V-band was calculated from the unextinguished starlight given in GRASIL: $A_V = 2.5\log$(unextinguished V-band starlight / observed V-band starlight). IR-radio correlation parameters were calculated according to the formula $q = \log(L_{\rm IR}[L_\odot]/3.75\times10^{12}/L_{\nu\,1.4\,{\rm GHz}}[L_\odot\ {\rm Hz}^{-1}])$, where $L_{\nu\,1.4\,{\rm GHz}}$ is a rest-frame 1.4 GHz luminosity density computed from the observed 1.4 GHz flux assuming a spectral slope of -0.75.

3.2. Volume densities

In order to calculate the SFR density, the stellar density and the dust mass densities per unit comoving volume, $\rho_{\rm SFR}$, ρ_* and $\rho_{\rm dust}$, we used the following angular areas for the submillimeter surveys (Table 1 of Chapman et al. 2005): CFRS-03: 60 arcmin^2 and CFRS-14: 48 arcmin^2 (Webb et al. 2003b), Lockman Hole: 122 arcmin^2 and ELAIS-N2: 102 arcmin^2 (Scott et al. 2002), HDF-N: 100 arcmin^2 (Chapman et al. 2001), SSA-13 and SSA-22: 100 arcmin^2 each (Chapman et al. 2003a), totaling 632 arcmin^2.

We divided our sample into four high-redshift bins (Table 1) with approximately the same number of SMGs plus an additional bin for $z < 0.5$ sources (see Sect. 2). The densities in each bin were calculated as a sum of SFR$_{\rm IR}$ (or M_*, or $M_{\rm d}$) of all SMGs in this bin divided by its comoving volume (a similar approach to calculate the SFR and number volume densities of SMGs was taken by Coppin et al. 2009; Daddi et al. 2009b; Younger et al. 2009a; Wang et al. 2009). The volumes (Col. 2) were found using the total area from the previous paragraph.

We removed the contribution of ten SMGs[3], which were observed by SCUBA in the photometry mode (as opposed to the blank-field mapping mode) targeting optically-faint radio galaxies (Chapman et al. 2005). These objects fall outside the fields discussed here.

The method is therefore to analyse the fraction of the sky observed by SCUBA and estimate the number of SMGs and their volume densities. However, the true number of SMGs in our fields could be higher. On the other hand, regardless of the selection effects, the true number of SMGs in our fields cannot be lower than the number of SMGs in our sample. In turn, the true values of SFR and M_* densities cannot be lower than the values we derive. Therefore our results on volume densities should be regarded as robust lower limits.

Having this in mind we note that the parent sample of Chapman et al. (2005) includes only 29% of all the SMGs detected in the used survey fields (compare with Scott et al. 2002; Webb et al. 2003b,a). Therefore even if we analysed the full parent sample the estimated densities would be conservative lower limits. We attempt to correct for this incompleteness by assuming that the parent sample of Chapman et al. (2005) is a fair representation of the total population. In this case our numbers should be multiplied by 3.5 (∼1/29%). This correction should in principle be derived separately for each redshift bin, but the missing redshift information for the majority of the SMGs in the used survey fields makes such calculation impossible. We note that this correction does not remove the bias against SMGs that are faint at radio and optical wavelengths, as discussed in Sect. 2.

We have not applied a volume density correction for the AGN contribution, because it is at most minor. Even though a fraction of SMGs host AGNs and a few individual SMGs have been shown to exhibit a significant AGN contribution to their emission, it is established that on average AGN activity is responsible for at most ∼10–20% of the bolometric infrared emission of SMGs (Alexander et al. 2005, 2008; Menéndez-Delmestre et al. 2007; Menéndez-Delmestre et al. 2009; Valiante et al. 2007; Pope et al. 2008; Hainline et al. 2009; Murphy et al. 2009; Watabe et al. 2009). Therefore a potential error associated with the AGN contribution in our analysis of a statistically significant sample is smaller than the systematic uncertainty (e.g. 30% error of luminosity-SFR conversion; Kennicutt 1998).

The percentage contribution of SMGs to the SFR and M_* densities (Cols. 5 and 7 of Table 1) was calculated as $\rho_{\rm SMG}/(\rho_{\rm SMG} + \rho_{\rm other})$, where $\rho_{\rm SMG}$ is the density of SMGs at each redshift bin (Cols. 4 and 6) and $\rho_{\rm other}$ is the density of other galaxies assumed to be an average of determinations (excluding lower limits) reported by other authors (Fig. 4; Tables A.4 and A.5 in appendix), for which the redshift ranges overlap with

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[3] SMMJ123553.26+621337.7, SMMJ123555.14+620901.7, SMMJ123600.10+620253.5, SMMJ123600.15+621047.2, SMMJ123606.85+621021.4, SMMJ123716.01+620323.3, SMMJ163706.51+405313.8, SMMJ221804.42+002154.4, SMMJ221806.77+001245.7

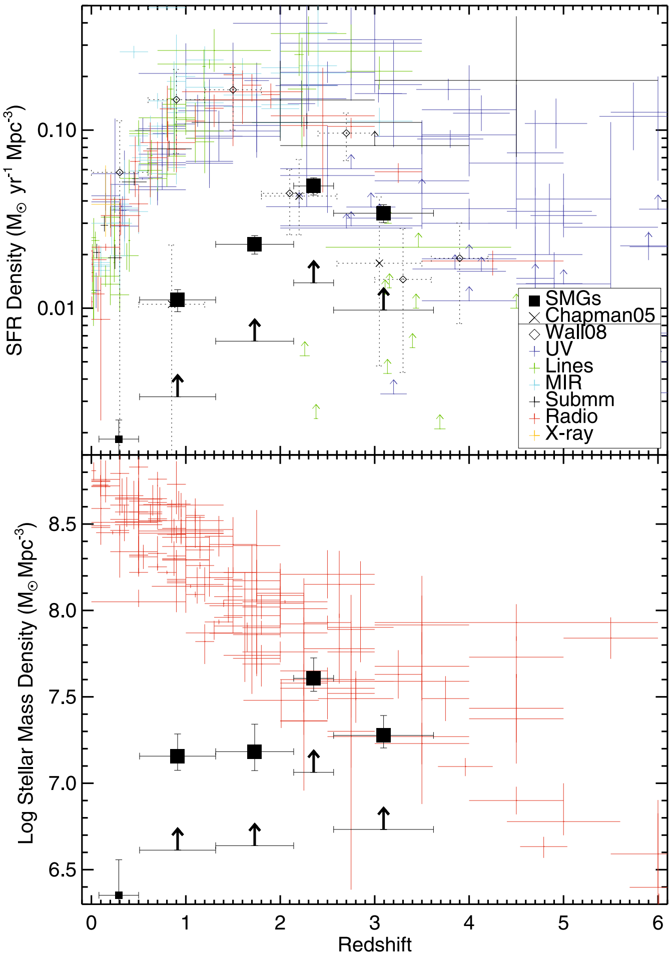

Fig. 4. *Top*: cosmic star formation density. The SMGs' contribution rises with redshift from ~9% to ~20% (Sect. 5.3.1 and Table 1). *Filled Squares*: data for SMGs at $z > 0.5$ in four bins (Table 1 and Sect. 3.2). *Small Squares*: data for SMGs at $z < 0.5$. *Thick black arrows*: the SMG data without incompleteness correction (factor of 3.5, Sect. 3.2). *Black crosses* and *diamonds*: star formation density of SMGs determined by Chapman et al. (2005) and Wall et al. (2008), respectively. *Colored points with error bars*: determination of the cosmic value based on different estimates – ultraviolet (*violet*), emission lines: [O II], [O III], Hα, Hβ (*green*), mid-IR (*light blue*), submillimeter (*black*), radio (*red*), X-ray (*yellow*). Extinction correction and, in many cases, incompleteness correction have been applied by the authors. *Arrows*: lower limits. *Bottom*: cosmic stellar mass density. The SMGs' contribution rises with redshift from ~5% to ~50% (Sect. 5.3.2 and Table 1). *Red points with error bars*: determination of the cosmic value from literature. The data and the references are listed in Tables A.4 and A.5 in Appendix.

our bins. This way of calculating the contribution is justified if SMGs do not enter the "other" samples of galaxies. This is usually the case because SMGs are faint in the optical. However, if this was not fulfilled, the real percentage contribution of SMGs would be even higher.

4. Results

The best fits[4] are shown in Fig. A.1 and the median SEDs (in flux and luminosity domains) are shown in Fig. 1.

The resulting properties of the galaxies are listed in Table A.3 and shown in Fig. 2 as a function of redshift. We notice similar trends to Hainline (2008) that lower-z SMGs are less luminous and colder (see her Figs. 4.7 and 4.9).

In two cases we obtained much better fits using the templates of Silva et al. (1998) instead of those of Iglesias-Páramo et al. (2007), namely, an HR 10 template for SMMJ105151.69+572636.0 and a spiral Sc template for SMMJ221733.12+001120.2. In 9 cases[5] where our fits strongly underpredict the 850 μm datapoint we adopted the $L_{\rm IR}$ and $T_{\rm d}$ estimates of Chapman et al. (2005).

The determination of the IR luminosity suffers from systematic uncertainties depending on the choice of the SED template. Our approach of using all the optical, submillimeter and radio data to constrain the shape of the SED results in a moderate systematic error in the IR luminosity (less than a factor of ~2; Bell et al. 2007). The choice of a Salpeter (1955) IMF with cutoffs of 0.15 and 120 $M_\odot$ introduces a maximum systematic error of a factor of ~2 in the determination of the stellar masses and SFRs (Erb et al. 2006). Bell et al. (2007) have also found that random errors in stellar mass are less than a factor of ~2. Estimates of dust temperatures have uncertainties of ~5–10 K dominated by the unknown value of the emissivity index, β. The SFR determination based on radio observations is accurate up to 30% since it agrees with the detailed spectrophotometric SED fitting (Michałowski & Hjorth 2007). The uncertainties in q (defined in Sect. 3.1) are ~0.3 (see also Kovács et al. 2006), dominated by the error in $L_{\rm IR}$.

In order to assess the influence of the choice of emissivity index $\beta = 1.3$ on the dust mass estimates, we recalculated the dust temperatures and masses in a range of β of 1–2. The resulting error was less than a factor of 3.5.

This is illustrated in Fig. 3 where we present a more systematic analysis of this problem. We calculated the dust mass of a mock galaxy with $T_{\rm d} = 40$ K (this choice does not influence the results) using β in the range 1–2 assuming a flux density of 5 mJy at a variety of infrared rest-wavelengths probed by observations. Then we normalized dust masses to 1 at $\beta = 1.5$. We conclude that as long as the observations probe wavelengths longer than ~150 μm ($z \lesssim 4.7$ for observed wavelength of 850 μm), then the error on the dust mass resulting from unknown β is less than a factor of ~5.

None of these errors significantly affects our conclusions, because the inferred nature of SMGs would not be different even in the worst case scenario when all systematic errors work in one direction (increasing or decreasing the obtained values). Moreover, we analyse a statistically significant sample of 76 galaxies, so random errors of a factor of 2 are reduced to <20% when an error of a mean is considered.

Table 1 contains the volume densities and mean IR-radio correlation parameter divided into five redshift bins (see Sect. 3.2). The uncertainties quoted on $\rho_{\rm SFR}$ and ρ_* include the systematic 30% uncertainty of the $L_{\rm IR}$ to SFR conversion (Kennicutt 1998) and a factor of ~2 systematic uncertainty in the stellar mass (Michałowski et al. 2008). The systematic error resulting from our incompleteness correction (Sect. 3.2) is likely a factor of a few.

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[4] The SED fits can be downloaded from `http://archive.dark-cosmology.dk`

[5] SMMJ030226.17+000624.5, SMMJ030231.81+001031.3, SMMJ030236.15+000817.1, SMMJ030238.62+001106.3, SMMJ123636.75+621156.1, SMMJ123651.76+621221.3, SMMJ123721.87+621035.3, SMMJ163639.01+405635.9, SMMJ221724.69+001242.1

5. Discussion

5.1. Spectral energy distributions of SMGs

We have presented the first successful attempt to fit the entire UV-to-radio SEDs of SMGs in a self-consistent way taking into account all the available data simultaneously. Our study provides evidence that GRASIL models can reproduce the SMG data. Namely, we found good fits for all SMGs in our sample with the best IR/submillimeter wavelength coverage[6] except of SMMJ105238.30+572435.8.

As is evident from Fig. 1, regardless of whether SEDs were normalized to the same observed 850 μm datapoint or $\mathrm{SFR_{IR}}$, the scatter at optical and near-IR wavelengths is significant, showing that SMGs exhibit a wide range of stellar population properties (as also noted by Ivison et al. 2002). This implies the need for an SED template library in SMG studies, as opposed to single-template fitting.

Having constrained the SEDs of SMGs we now turn to a discussion of what we can learn about these galaxies using the best-fitting models.

5.2. Properties of SMGs

5.2.1. Star formation rates

The very high (current) SFRs of SMGs (median 713 $M_\odot$ yr^{-1}, Col. 5 of Table A.3 and Fig. 2) place them among the most powerful starburst galaxies in the Universe. Such extreme SFRs likely result from major mergers (e.g. Chapman et al. 2004; Swinbank et al. 2004; Greve et al. 2005; Tacconi et al. 2006, 2008; Younger et al. 2007, 2008; Berciano Alba et al. 2010; Narayanan et al. 2009, 2010) and cannot be sustained for a long period (after a few hundred Myr at most the gas reservoir should be depleted; see Greve et al. 2005; Hainline et al. 2006).

On the other hand, their extinction-uncorrected UV SFRs are two orders of magnitude lower (median $\sim$7 $M_\odot$ yr^{-1}, Col. 4). This implies that the majority of star formation in SMGs is hidden by dust. Therefore, optical observations alone are not sufficient to investigate their nature and contribution to cosmic star formation.

Using stellar masses of SMGs we placed lower limits on the time-averaged SFRs required to build their stellar masses within the age of the Universe ($\equiv$ M_*/age of the Universe at given redshift), shown as empty circles in Fig. 2. Their median value of $\sim$130 $M_\odot$ yr^{-1} indicates that SMGs had to be relatively highly star-forming throughout the age of the Universe to build up their stellar populations at a constant rate. Even if our estimates of stellar masses were underestimated by a factor of a few due to systematic uncertainties (Sect. 4), the SMGs would have had to be luminous infrared galaxies (LIRGs with SFR $\gtrsim 20$ $M_\odot$ yr^{-1}) during their evolution.

Having constrained the mass of stars formed during the ongoing starburst episode, M_burst, we can further constrain the minimum average SFR of SMGs *before* the onset of this starburst, $\equiv (M_* - M_\mathrm{burst})$/age of the Universe (plus signs in Fig. 2). The median is still high, $\sim$100 $M_\odot$ yr^{-1}, so SMGs must have been highly star-forming in the past too. At redshifts 2–3 the age of the Universe is $\sim$3–2 Gyr and it is unlikely that a galaxy can sustain this high SFR over such a long period. *Therefore we conclude that either the stellar masses of SMGs have been formed in at least two strong (>100 $M_\odot$ yr^{-1}) starburst episodes or continuously over the period of 2–3 Gyr but in several smaller galaxies that eventually merged.* In order to build up the stellar mass of one SMG, five such galaxies would need to form stars continuously at a rate of 20 $M_\odot$ yr^{-1}, a value more likely to be sustainable over several Gyr. The latter scenario is consistent with the results of Dye et al. (2008) based on observed optical to mid-IR data of 51 SMGs with photometric redshifts. They found that approximately half the stellar mass in SMGs has been formed over a long ($\sim$1–2 Gyr) period of approximately constant star formation activity. The possibility that a significant part of stellar mass in SMGs was formed before the ongoing starburst has also been suggested by Hainline (2008), who compared the build-up timescale of stellar mass and the duration of the SMG phase.

The median value of the SFR per unit stellar mass ($\mathrm{SSFR} \equiv \mathrm{SFR_{IR}}/M_*$, Col. 7 of Table A.3) of $\sim$1.8 Gyr^{-1} is within the range for other high-z star-forming samples (compare with Figs. 2 and 4 of Castro Cerón et al. 2006, 2009, respectively). This indicates that SMGs are forming stars intensely.

SSFRs are compared with (the inverse of) the age of the Universe in Fig. 2. The SMGs close to the solid line could have formed their stellar populations at the present rate within the age of the Universe. However, the SMGs close to, or above the dashed line could have formed their stars at the present rate within less than 10% of the age of the Universe, i.e., within $\lesssim$300 Myr at $z = 2$. These galaxies are experiencing a powerful starburst episode.

At the extreme there are three high-z SMGs[7] with very high SSFRs > 10 Gyr^{-1} (Col. 7 of Table A.3). They are all hot ($T_\mathrm{d} > 60$ K, Col. 13) and formed the majority of their stellar populations during the ongoing starburst ($M_\mathrm{burst}/M_* > 60\%$, Col. 9). Therefore they are likely the most powerful cases of SMGs formed in major mergers of galaxies with huge gas reservoirs that were subsequently converted into stars.

Our median SSFR at $z > 1.7$ (1.83 Gyr^{-1}) is a factor of $\sim$2 lower than that of Dunne et al. (2009, 3–4.5 Gyr^{-1}; see their Fig. 12b) for $10^{11} < M_* < 10^{12}$ $M_\odot$ galaxies at these redshifts. This difference can be explained if the radio luminosities (used by Dunne et al. 2009, to estimate SFRs) are boosted by AGN activity more than the IR luminosities used here. Indeed, if we use $\mathrm{SFR_{radio}}$ instead of $\mathrm{SFR_{IR}}$ to calculate SSFRs the median for the SMGs at $z > 1.7$ increases to 3.20 Gyr^{-1} (see Sect. 5.4.2 for discussion of AGN contamination in our sample).

In order to assess the accuracy of SFR estimates based on radio emission (independent of SED modeling) we compared the ratio of $\mathrm{SFR_{radio}}/\mathrm{SFR_{IR}}$. Its median value is equal to $\sim$1.3. Hence, assuming that IR emission is a good proxy for SFR, then radio estimates suffer from a $\sim$30% systematic error. This is illustrated in Fig. 5 where the dashed line denotes the relation between IR and radio luminosities required to make $\mathrm{SFR_{IR}} = \mathrm{SFR_{radio}}$. Indeed the radio luminosity gives systematically higher SFRs for SMGs (most of the points are above the line). This can be caused by a significant AGN contamination boosting radio flux (see Sect. 5.4.2), or a strong bias favouring radio-bright galaxies, because those non-detected at radio do not enter our sample (Sect. 2). Alternatively, it could be that for luminous galaxies either the IR conversion of Kennicutt (1998) should be scaled up by a factor of 1.3, or the radio conversion of Bell (2003) scaled down.

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[6] SMMJ105201.25+572445.7, SMMJ105230.73+572209.5, SMMJ163650.43+405734.5, SMMJ163658.19+410523.8, SMMJ163706.51+405313.8

[7] SMMJ131201.17+424208.1, SMMJ141802.87+523011.1, SMMJ221806.77+001245.7 plus a low-mass, low-z case, SMMJ030238.62+001106.3

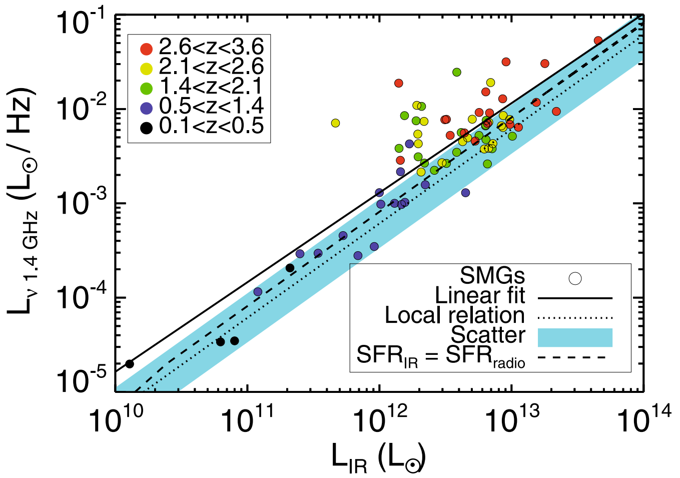

Fig. 5. Radio luminosity density as a function of infrared (8–1000 μm) luminosity of SMGs showing a linear relation, though with a normalization offset from the local relation by a factor of ~2.1 towards higher radio luminosities (Sect. 5.4.1). *Circles*: values for individual SMGs color–coded by redshift. *Solid line*: linear fit to the data (Eq. (1)). *Dotted line*: the mean local relation (Bell 2003). *Shaded area*: its scatter. *Dashed line*: the track where $\mathrm{SFR}_{\mathrm{IR}}$ (Kennicutt 1998) is equal to $\mathrm{SFR}_{\mathrm{radio}}$ (Bell 2003). The strong outliers (above the line) at high-luminosity end are probably caused by AGN activity increasing radio luminosities.

5.2.2. Stellar masses

SMGs having stellar masses of $\sim 10^{11}$–10^{12} $M_\odot$ (Col. 8 of Table A.3 and Fig. 2) are among the most massive galaxies in the Universe, regardless of redshift (compare with Figs. 2 and 4 of Castro Cerón et al. 2006, 2009, respectively). This property makes them natural candidates for the progenitors of the present-day ellipticals.

The relatively tight range of stellar masses is likely not a result of sensitivity limits at optical and near-IR. This is because i) galaxies with stellar mass as low as $\sim 10^9$ $M_\odot$ would have been detected in deep *Spitzer* imaging at redshifts $z \sim 2$ (e.g. Reddy et al. 2006); ii) our sample accounts for 50% of the parent Chapman et al. (2005) sample (and only 30% of the parent sample may have different properties than our sample, see Sect. 2), so it is unlikely that we miss only the low-mass objects. Therefore, high M_* seems to be an intrinsic property of submillimeter-selected galaxies. Mergers of less massive galaxies could not result in a powerful starburst giving rise to detectable submillimeter emission (see also Davé et al. 2010).

Only a minor part (median ~8%, Col. 9 of Table A.3 and Fig. 2) *of the stellar populations present in SMGs has been formed during the ongoing starburst episodes*. Hence, even though SMGs probably evolve into ellipticals, the majority of the stellar mass in such ellipticals had been created before the submillimeter-bright phase.

This could mean that the current SFRs and stellar masses of SMGs are only loosely connected and indeed this manifests itself in a very high spread (around two orders of magnitude) in SSFRs in our sample even though the stellar mass range is relatively tight: $\sim 10^{11}$–10^{12} $M_\odot$ (Fig. 2). This behaviour is unusual compared to other galaxies (see Castro Cerón et al. 2006, 2009).

However we note that the low stellar masses created in the ongoing starburst may partially be an effect of the assumed starburst ages of 50 Myr. If a starburst duration of 100–200 Myr were adopted (Smail et al. 2004; Borys et al. 2005; Hainline 2008; Tacconi et al. 2008) the resulting M_{burst} could be higher by a factor of ~2–4.

The mass-to-light ratios, M_*/L_K, of SMGs (Col. 10 of Table A.3 and Fig. 2) are typical for massive galaxies. Specifically, the median ($0.68\,M_\odot\,L_\odot^{-1}$) is similar to the values for $M_* > 10^{11}$ $M_\odot$ galaxies (Drory et al. 2004, their Table 1) and to simulated massive galaxies at $z \sim 1$ (Courty et al. 2007, their Fig. 4).

5.2.3. Dust properties

Our fits suggest that SMGs are moderately dust-obscured with a median $A_V \sim 2$ mag (Col. 14 of Table A.3). Our estimates are consistent within 1–2σ with the mean/median values obtained by Smail et al. (2004, 1.70–2.44), Swinbank et al. (2004, 3.0 ± 1.0), Borys et al. (2005, 1.7 ± 0.2) and Hainline (2008, 1.7 ± 0.1) based on near-IR data. For individual SMGs we obtained systematically larger extinction (median difference of ~0.3 mag) than Hainline (2008). The difference may be accounted for if there is significant extinction even in *Spitzer* IRAC data.

The dust density of SMGs at $z < 0.5$ (Col. 9 of Table 1) is approximately 3% of the total local ($0.013 < z < 0.18$) dust budget of $\log \rho_{\mathrm{dust}} = 5.57^{+0.12}_{-0.17}$ $M_\odot\,\mathrm{Mpc}^{-3}$ given by Driver et al. (2007) based on an assumed dust-to-light ratio. Therefore SMGs contribute very little to the dust budget at low redshifts.

In our sample of SMGs ρ_{dust} does not change significantly from $z \sim 3.6$ to $z \sim 0.5$. We do not detect any evolution of dust mass in SMGs across the entire redshift range (Fig. 2). A constant dust mass density across redshifts 0–3.5 was also found by Pascale et al. (2009) based on a stacking analysis at submillimeter wavelengths of galaxies selected at 24 μm.

The question is what happened to the dust produced in SMGs. If they evolve into dust-poor ellipticals, then the dust is not simply stored in their end-products (as is probably the case for stellar masses). It is therefore plausible that dust is either blown away (by stellar and/or AGN winds) or absorbed in star formation, or destroyed during subsequent evolution after the SMG event.

5.2.4. Comparison with GRB hosts

In Michałowski et al. (2008) we presented a hypothesis that gamma-ray burst (GRB) host galaxies may constitute a subsample of hotter/less luminous counterparts of SMGs. Indeed, the UV-to-IR SEDs of three $z \sim 2$–3 SMGs[8] are consistent with $z \sim 1$ submillimeter/radio bright GRB hosts (dashed lines in Fig. A.1 from Michałowski et al. 2008), but 1.2–3.9 times more luminous. These three SMGs are similar to GRB hosts with respect to their hot dust temperatures (~40–60 K), high SSFRs ($\gtrsim 2$ Gyr^{-1}, high fraction of stellar mass formed in the ongoing starburst (>10%) and blue optical colors.

If larger samples of GRB hosts shows a similar tendency that their brightest members overlap with the hotter subsample of SMGs, then GRB events will provide an effective way of selecting hot SMGs, otherwise difficult to localize.

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[8] SMMJ141750.50+523101.0, SMMJ141802.87+523011.1, SMMJ163627.94+405811.2

5.3. *Contribution to stellar mass assembly*

5.3.1. Star formation rate volume density

SFR densities of SMGs were calculated as described in Sect. 3.2. In order to assess the accuracy of our simplified method of dividing the sum of the SFRs of the detected SMGs by the total survey volume, we compare our estimates with those resulting from detailed calculation of the volume contribution of individual SMGs done by Chapman et al. (2005, based on the same sample as we analyse) and Wall et al. (2008, based on 35 SMGs in GOODS-N field of which 17 have spectroscopic redshifts). The comparison is shown in Fig. 4. Our results in two high-redshift bins ($z > 2$) corrected for incompleteness (Sect. 3.2) are consistent with that of Chapman et al. (2005) and Wall et al. (2008). At lower redshifts we find values similar to Chapman et al. (2005), but an order of magnitude lower than Wall et al. (2008). Therefore we conclude that i) our method to calculate volumes is accurate, since it gives consistent results with other estimates; and ii) our sample is incomplete in the three low-redshift bins as anticipated in Sect. 2.

From Fig. 4 (and Cols. 4 and 5 of Table 1) it is apparent that a $\rho_{\rm SFR}$ of SMGs starts to decline (with cosmic time) earlier (about $z \sim 2$) than that of other galaxies ($z \sim 1$). More quantitatively, SMGs harbour ~20% of the cosmic $\rho_{\rm SFR}$ at $z \sim 2$–3.6 (Col. 5), but their contribution drops to ~9% at $0.5 < z < 1.4$. It is likely that at lower redshifts, due to the decreased rate of mergers (e.g. Rawat et al. 2008; de Ravel et al. 2009), there are fewer galaxies left that can still sustain high SFRs to be detected at submillimeter wavelengths. However, part of the decrease of SMG $\rho_{\rm SFR}$ can be explained by the "redshift desert", which makes it difficult to measure redshifts of $z \sim 1.2$–1.8 SMGs (see Sect. 2).

A high value of $\rho_{\rm SFR}$ of SMGs at $z \sim 2$–3 and the subsequent decline are consistent with the hypothesis that the SMG population is a manifestation of powerful starburst episodes evolving into the present-day ellipticals (as discussed in Sect. 5.2.2). In this scenario galaxies detected in the submillimeter at high-z do not enter the sample of SMGs at low-z because they have already evolved into passive galaxies. It has indeed been found that ellipticals contain old stars formed at $z \sim 1.5$–4 (Daddi et al. 2000; van Dokkum & Franx 2001; van de Ven et al. 2003). The evolution of SMGs into ellipticals has also been claimed by several authors based on their luminosity function (Smail et al. 2004), huge luminosities (Eales et al. 1999) and gas reservoirs (Smail et al. 2002; Greve et al. 2005), strong clustering (Ivison et al. 2000; Almaini et al. 2003), space density and morphology (Barger et al. 1999; Lilly et al. 1999; Trentham et al. 1999; Swinbank et al. 2006) and evolutionary SED models (Takagi et al. 2004).

Knudsen et al. (2008b) analysed number counts of SMGs fainter than the SCUBA confusion limit, using those behind clusters of galaxies magnified by lensing. They concluded that the integrated light produced by the SMGs brighter than 0.1 mJy (i.e. LIRGs and ULIRGs with roughly $L_{\rm IR} > 8 \times 10^{10}\,L_\odot$ and SFR $> 15\,M_\odot\,{\rm yr}^{-1}$) is comparable to the extragalactic background light (EBL) at 850 μm (see also Blain et al. 1999; Cowie et al. 2002). This means that these galaxies host the majority of the cosmic *obscured* star formation. Knudsen et al. (2008b) also found that sources brighter than 2.5 mJy (roughly the limit of the survey considered here) contribute ~25% to the to EBL at 850 μm (see also Hughes et al. 1998; Barger et al. 1999; Wang et al. 2004; Coppin et al. 2006). Together with our results this implies that as much as ~80% ($4 \times 20\%$) of the cosmic star formation at $z \sim 2$–3.6 reside in SMGs brighter than 0.1 mJy. This is only true if the faint (<2 mJy) SMGs have similar dust temperatures to the brighter ones. If they are colder (hotter) their submillimeter fluxes corresponds to lower (higher) SFRs (because it is calibrated to total IR emission) and therefore the total SMG population contribute less (more) than 80% to the cosmic $\rho_{\rm SFR}$. This picture is however complicated, because based on stacking analysis it has been claimed that the distribution of the faint SMGs peaks at lower redshifts ($z < 1.5$; Wang et al. 2006; Serjeant et al. 2008).

Our overall conclusion is that the SMG population plays a significant role at redshifts $z \sim 2$–4, namely sources brighter than ~3 (0.1) mJy at 850 μm *host* 20% (80%) *of cosmic star formation*. Their contribution can however be lower in reality if very small (but numerous) galaxies are missed in all high-z flux-limited galaxy surveys. In such a case the total SFR density (color points in Fig. 4) would be underestimated. To solve this issue much deeper surveys at high-z are necessary, either blank-field or for well-selected dwarf galaxy samples (e.g., GRB hosts or Lyα emitters).

Zheng et al. (2007) estimated $\rho_{\rm SFR}$ at $z \sim 0.9$ for massive galaxies ($M_* > 10^{11}\,M_\odot$) down to $R < 24$ mag (only ~40% of SMGs satisfy the latter criterion) equal to $0.0052^{+0.0020}_{-0.0021}\,M_\odot\,{\rm yr}^{-1}\,{\rm Mpc}^{-3}$. This value is only a factor of 2 lower than our estimate for the SMGs at $0.5 < z < 1.4$ (Table 1). Therefore, although SMGs do not host a major fraction of the cosmic SFR at these redshifts, they contribute significantly ($0.0102/(0.0052 \times 0.6 + 0.0102) \sim 66\%$) to the SFR budget of massive galaxies.

5.3.2. Stellar mass volume density

Stellar mass densities of SMGs were calculated as described in Sect. 3.2. Figure 4 and Table 1 (Cols. 6 and 7) show that *at $z \sim 2$–3.6 a significant part (~30–50%) of the cosmic stellar mass had been formed in the progenitors of SMGs*. At lower redshifts ρ_* of SMGs (and hence their contribution to the cosmic ρ_*) drops, likely because the majority of SMGs at higher redshifts had already evolved into passive galaxies at $z \sim 1.5$, and so dropped out of our submillimeter-selected sample. Moreover the sample is incomplete at $z \sim 1.2$–1.8 due to the "redshift desert" (see Sect. 2). This brings down the densities of SMGs in the low-z bins.

Since most of the stellar mass of SMGs has not been formed in the ongoing starburst (Sect. 5.2.2), their ρ_* reflects the integrated contribution of SMGs to the cosmic $\rho_{\rm SFR}$. Therefore the relatively high contribution of SMGs to the cosmic ρ_* in the last redshift bin (~31%, Col. 7 of Table 1) means that SMGs play a non-negligible role in the cosmic stellar assembly even at $z > 3.6$. This can be tested by analysis of a sample of $z \gtrsim 4$ SMGs in a defined survey sky area (e.g. Michałowski et al. 2010; Younger et al. 2009a, note that these results are likely affected by cosmic variance). It has been confirmed that such distant SMGs exist (Capak et al. 2008; Knudsen et al. 2008a, 2010; Schinnerer et al. 2008; Coppin et al. 2009; Daddi et al. 2009b,a).

5.4. *Source of emission*

5.4.1. IR-radio correlation

With our full SED modelling of 76 SMGs we confirm the results of Hainline (2008) on the correlation between IR and radio luminosities. Figure 5 shows that SMGs follow a linear IR-radio correlation. The two outliers (with $q \sim 1.3$, see Sect. 5.4.2) are probably caused by AGN activity contributing significantly to radio luminosities. A linear fit gives:

$$\log\left(L_{\nu\,1.4\,\mathrm{GHz}}/L_\odot\ \mathrm{Hz}^{-1}\right) = (0.95\pm0.07)\log(L_{\mathrm{IR}}/L_\odot) - (14.3\pm0.8). \tag{1}$$

The slope is consistent (within errors) with unity, suggestive of the linear relation between $L_{\nu\,1.4\,\mathrm{GHz}}$ and L_{IR} at the high-end ($L_{\mathrm{IR}} \gtrsim 10^{11}\ L_\odot$) of the galaxy luminosity function (a similar value of 1.064 ± 0.025 was found by Hainline 2008).

The IR-radio correlation is usually quantified by the ratio of IR and radio luminosities, q (see Sect. 3.1). The mean q for SMGs (2.32 ± 0.04, scatter: 0.34) is significantly lower than that of local star-forming galaxies (2.64 with a scatter of 0.26; Bell 2003). Similar offsets were reported by Kovács et al. (2006), Murphy et al. (2009) and Murphy (2009) based on smaller samples of SMGs. *We conclude that at $z > 1.4$ SMGs have radio luminosities on average a factor of ~2.1 larger ($\Delta q \sim -0.32$) than what would result from the local relation.* The difference is significant at the level of 4–5σ and can be explained in three ways.

Radio-loud AGNs have on average low q values (see e.g. Miller & Owen 2001; Yun et al. 2001; Yang et al. 2007). If $\gtrsim$50% of the radio emission of SMGs is powered by AGNs, then the radio luminosities of SMGs higher by a factor of ~2.1 can be accounted for. However, there are indications that SMGs are starburst-dominated (see Sect. 5.4.2), so we deem this explanation less likely.

Another explanation is that the radio excess is a result of the bias against radio-faint sources in our sample (see Sect. 2). This can be tested when a sample of SMGs with localizations (and hence redshifts) independent of radio detections is available (e.g. Daddi et al. 2009b,a; Knudsen et al. 2010; Weiß et al. 2009a).

The third possibility is that some properties influencing the IR or radio emission are intrinsically different for SMGs and local galaxies. The sample of Bell (2003) includes local normal, star-forming spiral and irregular galaxies, blue compact dwarfs, starburst galaxies and ULIRGs. Therefore the difference in the properties between this sample and such extreme galaxies as SMGs is expected. Such explanation was offered by Lacki et al. (2009) and Lacki & Thompson (2009). Their numerical modelling showed that cosmic-ray electrons in "puffy starbursts" (vertically and radially extended galaxies with vertical scale heights ~1 kpc) experience weaker bremsstrahlung and ionization losses resulting in stronger radio emission. Indeed, there are indications that SMGs are extended on vertical scales of ~1 kpc (Lacki & Thompson 2009; Tacconi et al. 2006, 2008; Genzel et al. 2008; Younger et al. 2008; Law et al. 2009), so we find this explanation probable.

The systematic uncertainties in the determination of L_{IR} (factor of $\lesssim$2, Sect. 4) may in principle also explain the offset. However, we find this unlikely because similar offsets were found by other authors using different fitting methods (Kovács et al. 2006; Murphy et al. 2009; Murphy 2009).

The q values for SMGs are shown in Fig. 6 as a function of redshift. We do not detect any significant evolution across the redshift range 1.4–3.6. The only sign of evolution is that the mean q in the low-redshift bin ($0.5 < z < 1.4$) is above the value found at higher redshifts (~4σ). This can be explained either by the contribution of reprocessed emission from low-mass stars (cirrus emission, e.g. Yun et al. 2001, and references therein) to the IR, or by the fact that at low redshifts SMGs are more similar to other local galaxies and do not exhibit large vertical scale heights characteristic for "puffy starbursts" (see above).

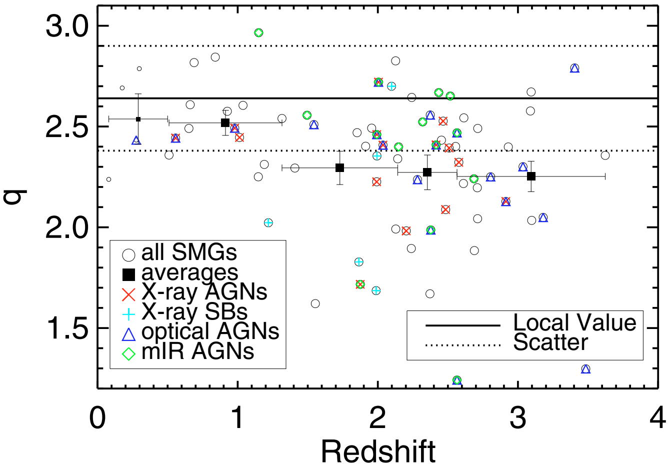

Fig. 6. The ratio of the infrared (8–1000 μm) and radio luminosities q (defined in Sect. 3.1) as a function of redshift of SMGs. It provides evidence that a linear IR-radio correlation holds for SMGs up to $z \sim 3.6$, though with a normalization offset from the local relation by a factor of ~2.1 ($\Delta q \sim -0.32$) towards higher radio luminosities (Sect. 5.4.1). *Circles*: values for individual SMGs. *Squares*: the mean values (and errors on the mean) in five redshift bins containing equal number of galaxies (Table 1 and Sect. 3.2). *Small symbols* indicate $z < 0.5$ objects. *Red crosses*: SMGs classified as AGNs based on X-ray emission (Alexander et al. 2005). *Light blue plus signs*: SMGs classified as starbursts based on X-ray emission (Alexander et al. 2005). *Violet triangles*: SMGs classified as AGNs based on optical spectra (Chapman et al. 2005). *Green diamonds*: SMGs classified as AGNs based on a mid-IR power-law (Sect. 5.4.2). The mean local $q = 2.64$ (Bell 2003) is shown as a *solid line* with 0.26 scatter (*dotted lines*). The q values for majority of AGN-classified SMGs do not differ from the rest of the SMG population (see Sect. 5.4.2).

It is important to note that the derived linear IR-radio correlation for SMGs is not a consequence of the use of the SED templates (which were tuned to fulfill this correlation locally), because the radio luminosities used here were derived based on the observational data only, independent of the SED modeling.

5.4.2. AGN activity

As discussed in Sect. 5.4.1, AGN activity could explain low q values of SMGs. This is at least true for the two SMGs with lowest q[9], spectroscopically classified as AGN (Chapman et al. 2005).

In the SEDs of SMGs there are clear signs that some of them host AGNs (though, not necessarily a bolometrically dominant ones). Radio datapoints are higher than model predictions by more than 3σ in 36% (27/76) of SMGs, whereas they are lower than models only for 8% (6/76). This may hint at an AGN contribution in these galaxies. However, 4 out of 5 X-ray identified starbursts (Col. 16 of Table A.3) also exhibit radio excess, so we find other explanations of radio excess presented in Sect. 5.4.1 more reliable.

Another indication of an AGN contribution is that 18% (14/76) of SMGs show a mid-IR power-law AGN feature incompatible with our starburst models (see Fig. A.1 and Col. 16 of Table A.3). However, rest-frame 2–5 μm excess was also interpreted as a tracer of recent star formation (Mentuch et al. 2009).

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[9] SMMJ131215.27+423900.9, SMMJ141813.54+522923.4

Finally, three SMGs[10] have exceptionally high $\mathrm{SFR_{UV}}$ ($>500\,M_{\odot}$ yr^{-1}, Col. 4 of Table A.3). Strikingly, all of them were fitted with non-starburst models ($M_{\mathrm{burst}} = 0$, Col. 9), so modeling is consistent with these high SFRs being continuous (the same is true for three other non-starburst SMGs with high $\mathrm{SFR_{IR}}$). Such a scenario is unlikely, so this hints at an AGN contribution to the UV/IR emission.

However, the fact that we obtained reasonable SED fits for most of the SMGs using purely star-forming models (Fig. A.1) hints at the conclusion that AGN activity is not dominant in our sample.

We investigated the issue of AGN activity further by analysing the average q values of the following subsamples (see also Fig. 6): X-ray identified (Alexander et al. 2005) AGNs: 2.32 ± 0.06 and starbursts: 2.12 ± 0.18; optically identified AGNs (Chapman et al. 2005): 2.27 ± 0.09; and mid-IR identified AGNs (see above): 2.36 ± 0.12. All subsamples are consistent with the value derived for the entire sample (2.32) Hence, we confirm the finding of Hainline (2008) that even the AGN-classified SMGs follow a linear IR-radio correlation. This means that even if an AGN is present it does not contribute to the emission of an SMG significantly (with the exception of the two $q \sim 1.3$ sources).

This is in line with i) the X-ray studies of SMGs indicating that the contribution of AGN activity to their IR emission is only ~8% on average (Alexander et al. 2005); ii) mid-IR colors of SMGs indicating that AGNs dominate the emission at these wavelengths only in 13–19% cases (Hainline et al. 2009); iii) mid-IR spectroscopy of SMGs revealing only weak AGN-like continua (Valiante et al. 2007; Pope et al. 2008; Menéndez-Delmestre et al. 2007; Menéndez-Delmestre et al. 2009; Murphy et al. 2009; Watabe et al. 2009); *iv*) near-IR spectroscopy revealing that starbursts dominate the emission of SMGs (Swinbank et al. 2004). Moreover, de Vries et al. (2007) found that star formation processes (if present) account for at least 75% of the radio luminosities of optically-selected AGNs.

Therefore we conclude that AGNs are present in a significant fraction of SMGs, but their contribution to the IR emission is at most minor.

5.5. Comparison of our results with the literature

For the sample of SMGs discussed in this paper there are previous estimates of some of their properties. In this section we compare them with our results.

Chapman et al. (2005) derived L_{IR} and T_{d} based only on the 850 μm and 1.4 GHz data. There is no systematic difference between the determinations of T_{d} (our median of 38.7 K, theirs: 38.3 K). The mean difference between individual datapoints is 4 K (~10%). However, our values for L_{IR} are systematically lower than theirs (the median ratio of individual datapoints is 1.7). We find our values more reliable since they are based on data spanning a wider wavelength range. Overestimation of L_{IR} when using only 850 μm and 1.4 GHz was also noticed by Kovács et al. (2006) and Pope et al. (2006).

Kovács et al. (2006) investigated a subsample observed at 350 μm. Their median dust mass (9.04 log $M_{\odot}$) and q value (2.20) are consistent with our estimates (9.01 and 2.35, respectively). The median difference between individual datapoints is ~30% for dust masses and ~13% for q.

The median stellar mass for a subsample of 13 SMGs investigated by Borys et al. (2005, 11.51 log $M_{\odot}$) is close to our value (11.70). However, estimates of Hainline (2008, median 10.82 log $M_{\odot}$) for 64 SMGs are a factor of ~5.6 smaller than our values (11.57). Hainline (2008) postulated that the discrepancy between her results and those of Borys et al. (2005) arose from a combination of systematic differences between the applied SED models and a higher AGN contribution in the K-band (used by Borys et al. 2005) with respect to the H-band. Our estimates are based on all the available photometric data, and so we find the former explanation more likely. In particular, the differences in the applied stellar population models and their ages may explain the discrepancy.

6. Conclusions

We have investigated the UV-to-radio SEDs of 76 SMGs ($S_{850} \gtrsim 3$ mJy) with spectroscopic redshifts (0.080–3.623). For the first time the properties of such a significant sample has been derived consistently using all available data. The resulting SFRs (median 713 $M_{\odot}$ yr^{-1}) and stellar masses (11.57 log $M_{\odot}$) are among the highest in the Universe.

Such high stellar masses, already present at redshifts ~2–3, require that SMGs experienced either at least two starburst episodes, or a merger of several smaller galaxies. Our modeling suggests that only a minor fraction (8%) of their stellar populations was formed during the ongoing starburst episodes. This is supported by the fact that the SFRs and M_* of SMGs are basically disconnected, i.e. we observe two orders of magnitude spread in SSFRs whereas the range of M_* is relatively narrow: 10^{11}–10^{12} $M_{\odot}$. We concluded that dust is blown away or destroyed during the evolution of SMGs, since it is not stored in the likely end-products of SMGs, elliptical galaxies.

Indeed, the high stellar masses and the evolution of the SFR and stellar mass densities of SMGs are consistent with a scenario in which SMGs are progenitors of present-day ellipticals.

We found that SMGs contribute significantly to the cosmic SFR, ρ_{SFR} (~20%) and stellar mass, ρ_* (30–50%) densities at $z \sim 2$–4. If we consider submillimeter sources down to 0.1 mJy the contribution to ρ_{SFR} rises to ~80%.

Our analysis suggests that a linear IR-radio correlation holds for SMGs at least up to a redshift of 3.6, but they are ~2.1 times brighter at radio wavelengths than what would result from the local correlation.

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References

Ajiki, M., Taniguchi, Y., Fujita, S., et al. 2003, AJ, 126, 2091
Alexander, D. M., Bauer, F. E., Chapman, S. C., et al. 2005, ApJ, 632, 736
Alexander, D. M., Brandt, W. N., Smail, I., et al. 2008, AJ, 135, 1968
Almaini, O., Scott, S. E., Dunlop, J. S., et al. 2003, MNRAS, 338, 303
Appleton, P. N., Fadda, D. T., Marleau, F. R., et al. 2004, ApJS, 154, 147
Aravena, M., Bertoldi, F., Carilli, C., et al. 2010, ApJ, 708, L36
Arnouts, S., Walcher, C. J., Le Fèvre, O., et al. 2007, A&A, 476, 137
Ashby, M. L. N., Dye, S., Huang, J.-S., et al. 2006, ApJ, 644, 778
Austermann, J. E., Aretxaga, I., Hughes, D. H., et al. 2009, MNRAS, 393, 1573

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[10] SMMJ123716.01+620323.3, SMMJ131215.27+423900.9, SMMJ131222.35+423814.1

Barger, A. J., Cowie, L. L., & Sanders, D. B. 1999, ApJ, 518, L5
Barger, A. J., Cowie, L. L., & Richards, E. A. 2000, AJ, 119, 2092
Bell, E. F. 2003, ApJ, 586, 794
Bell, E. F., McIntosh, D. H., Katz, N., et al. 2003, ApJS, 149, 289
Bell, E. F., Zheng, X. Z., Papovich, C., et al. 2007, ApJ, 663, 834
Berciano Alba, A., Koopmans, L. V. E., Garrett, M. A., Wucknitz, O., & Limousin, M. 2010, A&A, 509, A54
Beswick, R. J., Muxlow, T. W. B., Thrall, H., Richards, A. M. S., & Garrington, S. T. 2008, MNRAS, 385, 1143
Blain, A. W. 1997, MNRAS, 290, 553
Blain, A. W., & Longair, M. S. 1996, MNRAS, 279, 847
Blain, A. W., Kneib, J., Ivison, R. J., et al. 1999, ApJ, 512, L87
Blain, A. W., Smail, I., Ivison, R. J., Kneib, J. P., & Frayer, D. T. 2002, Phys. Rep., 369, 111
Blain, A. W., Chapman, S. C., Smail, I., et al. 2004, ApJ, 611, 52
Borch, A., Meisenheimer, K., Bell, E. F., et al. 2006, A&A, 453, 869
Borys, C., Smail, I., Chapman, S. C., et al. 2005, ApJ, 635, 853
Bouwens, R., Broadhurst, T., & Illingworth, G. 2003a, ApJ, 593, 640
Bouwens, R. J., Illingworth, G. D., Rosati, P., et al. 2003b, ApJ, 595, 589
Bouwens, R. J., Illingworth, G. D., Thompson, R. I., et al. 2004, ApJ, 606, L25
Bouwens, R. J., Illingworth, G. D., Blakeslee, J. P., et al. 2006, ApJ, 653, 53
Bouwens, R. J., Illingworth, G. D., Franx, M., et al. 2007, ApJ, 670, 928
Boyle, B. J., Cornwell, T. J., Middelberg, E., et al. 2007, MNRAS, 376, 1182
Brinchmann, J., & Ellis, R. S. 2000, ApJ, 536, L77
Brinchmann, J., Charlot, S., White, S. D. M., et al. 2004, MNRAS, 351, 1151
Bundy, K., Ellis, R. S., Conselice, C. J., et al. 2006, ApJ, 651, 120
Bunker, A. J., Stanway, E. R., Ellis, R. S., et al. 2004, MNRAS, 355, 374
Capak, P., Cowie, L. L., Hu, E. M., et al. 2004, AJ, 127, 180
Capak, P., Carilli, C. L., Lee, N., et al. 2008, ApJ, 681, L53
Caputi, K. I., McLure, R. J., Dunlop, J. S., Cirasuolo, M., & Schael, A. M. 2006, MNRAS, 366, 609
Caputi, K. I., Lagache, G., Yan, Lin, et al. 2007, ApJ, 660, 97
Castro Cerón, J. M., Michałowski, M., Hjorth, J., et al. 2006, ApJ, 653, L85
Castro Cerón, J. M., Michałowski, M. J., Hjorth, J., et al. 2009, ApJ, submitted, [arXiv:0803.2235v1]
Chapman, S. C., Richards, E. A., Lewis, G. F., Wilson, G., & Barger, A. J. 2001, ApJ, 548, L147
Chapman, S. C., Barger, A. J., Cowie, L. L., et al. 2003a, ApJ, 585, 57
Chapman, S. C., Windhorst, R., Odewahn, S., Yan, H., & Conselice, C. 2003b, ApJ, 599, 92
Chapman, S. C., Smail, I., Windhorst, R., Muxlow, T., & Ivison, R. J. 2004, ApJ, 611, 732
Chapman, S. C., Blain, A. W., Smail, I., et al. 2005, ApJ, 622, 772
Clements, D., Eales, S., Wojciechowski, K., et al. 2004, MNRAS, 351, 447
Clements, D. L., Vaccari, M., Babbedge, T., et al. 2008, MNRAS, 387, 247
Cohen, J. G. 2002, ApJ, 567, 672
Cole, S., Norberg, P., Baugh, C. M., et al. 2001, MNRAS, 326, 255
Condon, J. J. 1989, ApJ, 338, 13
Condon, J. J. 1992, ARA&A, 30, 575
Condon, J. J., Cotton, W. D., & Broderick, J. J. 2002, AJ, 124, 675
Connolly, A. J., Szalay, A. S., Dickinson, M., Subbarao, M. U., & Brunner, R. J. 1997, ApJ, 486, L11
Conselice, C. J., Blackburne, J. A., & Papovich, C. 2005, ApJ, 620, 564
Coppin, K., Chapin, E. L., Mortier, A. M. J., et al. 2006, MNRAS, 372, 1621
Coppin K., Halpern, M., & Scott, D. 2008, MNRAS, 384, 1597
Coppin, K. E. K., Smail, I., Alexander, D. M., et al. 2009, MNRAS, 395, 1905
Courty, S., Björnsson, G., & Gudmundsson, E. H. 2007, MNRAS, 376, 1375
Cowie, L. L., & Hu, E. M. 1998, AJ, 115, 1319
Cowie, L. L., Songaila, A., Hu, E. M., et al. 1996, AJ, 112, 839
Cowie, L. L., Songaila, A., & Barger, A. J. 1999, AJ, 118, 603
Cowie, L. L., Barger, A. J., & Kneib, J. 2002, AJ, 123, 2197
Daddi, E., Cimatti, A., & Renzini, A. 2000, A&A, 362, L45
Daddi, E., Dannerbauer, H., Krips, M., et al. 2009a, ApJ, 695, L176
Daddi, E., Dannerbauer, H., Stern, D., et al. 2009b, ApJ, 694, 1517
Dahlen, T., Mobasher, B., Dickinson, M., et al. 2007, ApJ, 654, 172
Davé, R., Finlator, K., Oppenheimer, B. D., et al. 2010, MNRAS, 404, 1355
de Ravel, L., Le Fèvre, O., Tresse, L., et al. 2009, A&A, 498, 379
de Vries, W. H., Hodge, J. A., Becker, R. H., White, R. L., & Helfand, D. J. 2007, AJ, 134, 457
Devlin, M. J., Ade, P. A. R., Aretxaga, I., et al. 2009, Nature, 458, 737
Dickinson, M., Papovich, C., Ferguson, H. C., et al. 2003, ApJ, 587, 25
Driver, S. P., Allen, P. D., Graham, A. W., et al. 2006, MNRAS, 368, 414
Driver, S. P., Popescu, C. C., Tuffs, R. J., et al. 2007, MNRAS, 379, 1022
Drory, N., Bender, R., Feulner, G., et al. 2004, ApJ, 608, 742
Drory, N., Salvato, M., Gabasch, A., et al. 2005, ApJ, 619, L131
Dunne, L., Ivison, R. J., Maddox, S., et al. 2009, MNRAS, 394, 3
Dye, S., Eales, S. A., Aretxaga, I., et al. 2008, MNRAS, 386, 1107
Dye, S., Ade, P. A. R., Bock, J. J., et al. 2009, ApJ, 703, 285
Eales, S., Lilly, S., Gear, W., et al. 1999, ApJ, 515, 518
Eales, S., Chapin, E. L., Devlin, M. J., et al. 2009, ApJ, 707, 1779
Egami, E., Dole, H., & Huang, J.-S. 2004, ApJS, 154, 130
Elsner, F., Feulner, G., & Hopp, U. 2008, A&A, 477, 503
Erb, D. K., Steidel, C. C., Shapley, A. E., et al. 2006, ApJ, 646, 107
Eyles, L. P., Bunker, A. J., Ellis, R. S., et al. 2007, MNRAS, 374, 910
Flores, H., Hammer, F., Thuan, T. X., et al. 1999, ApJ, 517, 148
Fomalont, E. B., Kellermann, K. I., Cowie, L. L., et al. 2006, ApJS, 167, 103
Fontana, A., Donnarumma, I., Vanzella, E., et al. 2003, ApJ, 594, L9
Fontana, A., Pozzetti, L., Donnarumma, I., et al. 2004, A&A, 424, 23
Fontana, A., Salimbeni, S., Grazian, A., et al. 2006, A&A, 459, 745
Franceschini, A., Rodighiero, G., Cassata, P., et al. 2006, A&A, 453, 397
Frayer, D. T., Chapman, S. C., Yan, L., et al. 2004, ApJS, 154, 137
Fujita, S. S., Ajiki, M., Shioya, Y., et al. 2003a, AJ, 125, 13
Fujita, S. S., Ajiki, M., Shioya, Y., et al. 2003b, ApJ, 586, L115
Gallego, J., Zamorano, J., Aragon-Salamanca, A., et al. 1995, ApJ, 455, L1
Gallego, J., García-Dabó, C. E., Zamorano, J., Aragón-Salamanca, A., & Rego, M. 2002, ApJ, 570, L1
Garn, T., Green, D. A., Riley, J. M., et al. 2009, MNRAS, 397, 1101
Garrett, M. A. 2002, A&A, 384, L19
Geach, J. E., Smail, I., Best, P. N., et al. 2008, MNRAS, 388, 1473
Genzel, R., Burkert, A., Bouché, N., et al. 2008, ApJ, 687, 59
Georgakakis, A., Hopkins, A. M., Sullivan, M., et al. 2003, MNRAS, 345, 939
Giavalisco, M., Dickinson, M., Ferguson, H. C., et al. 2004, ApJ, 600, L103
Glazebrook, K., Blake, C., Economou, F., Lilly, S., & Colless, M. 1999, MNRAS, 306, 843
Glazebrook, K., Abraham, R. G., McCarthy, P. J., et al. 2004, Nature, 430, 181
Greve, T. R., Ivison, R. J., Bertoldi, F., et al. 2004, MNRAS, 354, 779
Greve, T. R., Bertoldi, F., Smail, I., et al. 2005, MNRAS, 359, 1165
Gronwall, C. 1999, AIPC, 470, 335
Gronwall, C., Ciardullo, R., Hickey, Th., et al. 2007, ApJ, 667, 79
Gruppioni, C., Pozzi, F., Zamorani, G., et al. 2003, MNRAS, 341, L1
Gwyn, S. D. J., & Hartwick, F. D. A. 2005, AJ, 130, 1337
Haarsma, D. B., Partridge, R. B., Windhorst, R. A., et al. 2000, ApJ, 544, 641
Hainline, L. J. 2008, Multi-Wavelength Properties of Submillimeter-Selected Galaxies, Ph.D. Thesis, California Institute of Technology
Hainline, L. J., Blain, A. W., Greve, T. R., et al. 2006, ApJ, 650, 614
Hainline, L. J., Blain, A. W., Smail, I., et al. 2009, ApJ, 699, 1610
Hammer, F., Flores, H., Lilly, S. J., et al. 1997, ApJ, 481, 49
Hanish, D. J., Meurer, G. R., Ferguson, H. C., et al. 2006, ApJ, 649, 150
Helou, G., Soifer, B. T., & Rowan-Robinson, M. 1985, ApJ, 298, L7
Hippelein, H., Maier, C., Meisenheimer, K., et al. 2003, A&A, 402, 65
Hogg, D. W., Cohen, J. G., Blandford, R., et al. 1998, ApJ, 504, 622
Holland, W. S., Robson, E. I., Gear, W. K., et al. 1999, MNRAS, 303, 659
Hopkins, A. M. 2004, ApJ, 615, 209
Hopkins, A. M., & Beacom, J. F. 2006, ApJ, 651, 142
Hopkins, A. M., Connolly, A. J., & Szalay, A. S. 2000, AJ, 120, 2843
Hu, E. M., Cowie, L. L., & McMahon, R. G. 1998, ApJ, 502, L99
Hughes, D. H., Serjeant, S., Dunlop, J., et al. 1998, Nature, 394, 241
Huynh, M. T., Pope, A., Frayer, D. T., et al. 2007, ApJ, 659, 305
Ibar, E., Cirasuolo, M., Ivison, R., et al. 2008, MNRAS, 386, 953
Iglesias-Páramo, J., Buat, V., Hernández-FernÃąndez, J., et al. 2007, ApJ, 670, 279
Ilbert, O., Salvato, M., Le Floc'h, E., et al. 2010, ApJ, 709, 644
Ivison, R. J., Dunlop, J. S., Smail, I., et al. 2000, ApJ, 542, 27
Ivison, R. J., Greve, T. R., Smail, I., et al. 2002, MNRAS, 337, 1
Ivison, R. J., Greve, T. R., Serjeant, S., et al. 2004, ApJS, 154, 124
Ivison, R. J., Smail, I., Dunlop, J. S., et al. 2005, MNRAS, 364, 1025
Ivison, R. J., Alexander, D. M., Biggs, A. D., et al. 2010, MNRAS, 402, 245
Iwata, I., Ohta, K., Tamura, N., et al. 2003, PASJ, 55, 415
Iwata, I., Ohta, K., Tamura, N., et al. 2007, MNRAS, 376, 1557
Kennicutt, R. C. 1998, ARA&A, 36, 189
Knudsen, K. K., Kneib, J. P., & Egami, E. 2008a, in Infrared Diagnostics of Galaxy Evolution, ed. R. R Chary, H. I. Teplitz, & K. Sheth, ASP Conf. Ser., 381, 372
Knudsen, K. K., van der Werf, P. P., & Kneib, J. P. 2008b, MNRAS, 384, 1611
Knudsen, K. K., Kneib, J., Richard, J., Petitpas, G., & Egami, E. 2010, ApJ, 709, 210
Kochanek, C. S., Pahre, M. A., Falco, E. E., et al. 2001, ApJ, 560, 566
Kodaira, K., Taniguchi, Y., Kashikawa, N., et al. 2003, PASJ, 55, L17
Kovács, A., Chapman, S. C., Dowell, C. D., et al. 2006, ApJ, 650, 592
Kudritzki, R.-P., Méndez, R. H., Feldmeier, J. J., et al. 2000, ApJ, 536, 19
Lacki, B. C., & Thompson, T. A. 2009, ApJ, submitted [arXiv:0910.0478]
Lacki, B. C., Thompson, T. A., & Quataert, E. 2009, ApJ, submitted, [arXiv:0907.4161]
Laurent, G. T., Glenn, J., Egami, E., et al. 2006, ApJ, 643, 38
Law, D. R., Steidel, C. C., Erb, D. K., et al. 2009, ApJ, 697, 2057
Lilly, S. J., Le Fevre, O., Hammer, F., et al. 1996, ApJ, 460, L1

Lilly, S. J., Eales, S. A., Gear, W. K. P., et al. 1999, ApJ, 518, 641
Ly, C., Malkan, M. A., Treu, T., et al. 2009, ApJ, 697, 1410
Machalski, J., & Godlowski, W. 2000, A&A, 360, 463
Madau, P., Ferguson, H. C., Dickinson, M. E., et al. 1996, MNRAS, 283, 1388
Madau, P., Pozzetti, L., & Dickinson, M. 1998, ApJ, 498, 106
Malhotra, S., & Rhoads, J. E. 2004, ApJ, 617, L5
Mann, R. G., Oliver, S., Carballo, R., et al. 2002, MNRAS, 332, 549
Marchesini, D., van Dokkum, P. G., Förster Schreiber, N. M., et al. 2009, ApJ, 701, 1765
Marleau, F. R., Fadda, D., Appleton, P. N., et al. 2007, ApJ, 663, 218
Massarotti, M., Iovino, A., & Buzzoni, A. 2001, ApJ, 559, L105
Mauch, T., & Sadler, E. M. 2007, MNRAS, 375, 931
Menéndez-Delmestre, K., Blain, A. W., Alexander, D. M., et al. 2007, ApJ, 655, L65
Menéndez-Delmestre, K., Blain, A. W., Smail, I., et al. 2009, ApJ, 699, 667
Mentuch, E., Abraham, R. G., Glazebrook, K., et al. 2009, ApJ, 706, 1020
Michałowski, M. J., & Hjorth, J. 2007, in The Multicolored Landscape of Compact Objects and Their Explosive Origins, ed. L. A. Antonelli, et al. (Melville, NY: AIP), AIP Conf. Ser., 924, 143
Michałowski, M. J., Hjorth, J., Castro Cerón, J. M., et al. 2008, ApJ, 672, 817
Michałowski, M. J., Hjorth, J., Malesani, D., et al. 2009, ApJ, 693, 347
Michałowski, M. J., Watson, D., & Hjorth, J. 2010, ApJ, 712, 942
Miller, N. A., & Owen, F. N. 2001, AJ, 121, 1903
Mobasher, B., Dahlen, T., Hopkins, A., et al. 2009, ApJ, 690, 1074
Moorwood, A. F. M., van der Werf, P. P., Cuby, J. G., et al. 2000, A&A, 362, 9
Murayama, T., Taniguchi, Y., Scoville, N. Z., et al. 2007, ApJS, 172, 523
Murphy, E. J. 2009, ApJ, 706, 482
Murphy, E. J., Chary, R. R., Alexander, D. M., et al. 2009, ApJ, 698, 1380
Narayanan, D., Cox, T. J., Hayward, C. C., et al. 2009, MNRAS, 400, 1919
Narayanan, D., Hayward, C. C., Cox, T. J., et al. 2010, MNRAS, 401, 1613
Nilsson, K. K., Møller, P., Möller, O., et al. 2007, A&A, 471, 71
Nilsson, K. K., Tapken, C., Møller, P., et al. 2009, A&A, 498, 13
Ouchi, M., Shimasaku, K., Furusawa, H., et al. 2003, ApJ, 582, 60
Ouchi, M., Shimasaku, K., Okamura, S., et al. 2004, ApJ, 611, 660
Ouchi, M., Shimasaku, K., Akiyama, M., et al. 2008, ApJS, 176, 301
Paltani, S., Le Fèvre, O., Ilbert, O., et al. 2007, A&A, 463, 873
Palunas, P., Teplitz, H. I., Francis, P. J., Williger, G. M., & Woodgate, B. E. 2004, ApJ, 602, 545
Pascale, E., Ade, P. A. R., Bock, J. J., et al. 2009, ApJ, 707, 1740
Pascarelle, S. M., Lanzetta, K. M., & Fernández-Soto, A. 1998, ApJ, 508, L1
Perera, T. A., Chapin, E. L., Austermann, J. E., et al. 2008, MNRAS, 391, 1227
Pérez-González, P. G., Zamorano, J., Gallego, J., Aragón-Salamanca, A., & Gil de Paz, A. 2003, ApJ, 591, 827
Pérez-González, P. G., Rieke, G. H., Egami, E., et al. 2005, ApJ, 630, 82
Pérez-González, P. G., Rieke, G. H., Villar, V., et al. 2008, ApJ, 675, 234
Pettini, M., Kellogg, M., Steidel, C. C., et al. 1998, ApJ, 508, 539
Pope, A., Scott, D., Dickinson, M., et al. 2006, MNRAS, 370, 1185
Pope, A., Chary, R.-R., Alexander, D. M., et al. 2008, ApJ, 675, 1171
Pozzetti, L., Bolzonella, M., Lamareille, F., et al. 2007, A&A, 474, 443
Pozzi, F., Gruppioni, C., Oliver, S., et al. 2004, ApJ, 609, 122
Rawat, A., Hammer, F., Kembhavi, A. K., et al. 2008, ApJ, 681, 1089
Reddy, N. A., Steidel, C. C., Fadda, D., et al. 2006, ApJ, 644, 792
Reddy, N. A., Steidel, C. C., Pettini, M., et al. 2008, ApJS, 175, 48
Rhoads, J. E., Dey, A., Malhotra, S., et al. 2003, AJ, 125, 1006
Rieke, G. H., Alonso-Herrero, A., Weiner, B. J., et al. 2009, ApJ, 692, 556
Rudnick, G., Rix, H.-W., Franx, M., et al. 2003, ApJ, 599, 847
Rudnick, G., Labbé, I., Förster, S., et al. 2006, ApJ, 650, 624
Sadler, E. M., Jackson, C. A., Cannon, R. D., et al. 2002, MNRAS, 329, 227
Sajina, A., Yan, L., Lutz, D., et al. 2008, ApJ, 683, 659
Salpeter, E. E. 1955, ApJ, 121, 161
Salucci, P., & Persic, M. 1999, MNRAS, 309, 923
Sargent, M. T., Schinnerer, E., Murphy, E., et al. 2010, ApJS, 186, 341
Santini, P., Fontana, A., Grazian, A., et al. 2009, A&A, 504, 751
Sawicki, M., & Thompson, D. 2006a, ApJ, 642, 653
Sawicki, M., & Thompson, D. 2006b, ApJ, 648, 299
Sawicki, M. J., Lin, H., & Yee, H. K. C. 1997, AJ, 113, 1
Schinnerer, E., Carilli, C. L., Capak, P., et al. 2008, ApJ, 689, L5
Scott, K. S., Austermann, J. E., Perera, T. A., et al. 2008, MNRAS, 385, 2225
Scott, S. E., Fox, M. J., Dunlop, J. S., et al. 2002, MNRAS, 331, 817
Serjeant, S., Gruppioni, C., & Oliver, S. 2002, MNRAS, 330, 621
Serjeant, S., Dye, S., Mortier, A., et al. 2008, MNRAS, 386, 1907
Seymour, N., Dwelly, T., Moss, D., et al. 2008, MNRAS, 386, 1695
Seymour, N., Huynh, M., Dwelly, T., et al. 2009, MNRAS, 398, 1573
Shim, H., Im, M., Choi, P., Yan L., & Storrie-Lombardi, L. 2007, ApJ, 669, 749
Shimasaku, K., Ouchi, M., Furusawa, H., et al. 2005, PASJ, 57, 447
Shimasaku, K., Kashikawa, N., Doi, M., et al. 2006, PASJ, 58, 313
Shioya, Y., Taniguchi, Y., Sasaki, S. S., et al. 2008, ApJS, 175, 128
Silva, L., Granato, G. L., Bressan, A., et al. 1998, ApJ, 509, 103
Smail, I., Ivison, R. J., Blain, A. W., et al. 2002, MNRAS, 331, 495
Smail, I., Chapman, S. C., Blain, A. W., et al. 2004, ApJ, 616, 71
Sobral, D., Best, P. N., Geach, J. E., et al. 2009, MNRAS, 398, 75
Somerville, R. S., Primack, J. R., & Faber, S. M. 2001, MNRAS, 320, 504
Stanway, E. R., Bunker, A. J., & McMahon, R. G. 2003, MNRAS, 342, 439
Stark, D. P., Bunker, A. J., Ellis, R. S., Eyles, L. P., & Lacy, M. 2007, ApJ, 659, 84
Stark, D. P., Ellis, R. S., Bunker, A., et al. 2009, ApJ, 697, 1493
Steidel, C. C., Adelberger, K. L., Giavalisco, M., Dickinson M., & Pettini, M. 1999, ApJ, 519, 1
Sullivan, M., Treyer, M. A., Ellis, R. S., et al. 2000, MNRAS, 312, 442
Swinbank, A. M., Smail, I., Chapman, S. C., et al. 2004, ApJ, 617, 64
Swinbank, A. M., Chapman, S. C., Smail, I., et al. 2006, MNRAS, 371, 465
Swinbank, A. M., Lacey, C. G., Smail, I., et al. 2008, MNRAS, 391, 420
Tacconi, L. J., Neri, R., Chapman, S. C., et al. 2006, ApJ, 640, 228
Tacconi, L. J., Genzel, R., Smail, I., et al. 2008, ApJ, 680, 246
Takagi, T., Hanami, H., & Arimoto, N. 2004, MNRAS, 355, 424
Takata, T., Sekiguchi, K., Smail, I., et al. 2006, ApJ, 651, 713
Tamura, Y., Kohno, K., Nakanishi, K., et al. 2009, Nature, 459, 61
Taniguchi, Y., Ajiki, M., Nagao, T., et al. 2005, PASJ, 57, 165
Teplitz, H. I., Collins, N. R., Gardner, J. P., Hill, R. S., & Rhodes, J. 2003, ApJ, 589, 704
Thompson, R. I., Eisenstein, D., Fan, X., et al. 2006, ApJ, 647, 787
Trentham, N., Blain, A. W., & Goldader, J. 1999, MNRAS, 305, 61
Tresse, L., & Maddox, S. J. 1998, ApJ, 495, 691
Tresse, L., Maddox, S. J., Le Fèvre, O., et al. 2002, MNRAS, 337, 369
Treyer, M. A., Ellis, R. S., Milliard, B., Donas, J., & Bridges, T. J. 1998, MNRAS, 300, 303
Valiante, E., Lutz, D., Sturm, E., et al. 2007, ApJ, 660, 1060
van Breukelen, C., Jarvis, M. J., & Venemans, B. P. 2005, MNRAS, 359, 895
van de Ven, G., van Dokkum, P. G., & Franx, M. 2003, MNRAS, 344, 924
van Dokkum, P. G., & Franx, M. 2001, ApJ, 553, 90
Villar, V., Gallego, J., Pérez-González, P. G., et al. 2008, ApJ, 677, 169
Vlahakis, C., Eales, S., & Dunne, L. 2007, MNRAS, 379, 1042
Wadadekar, Y., Casertano, S., & de Mello, D. 2006, AJ, 132, 1023
Wall, J. V., Pope, A., & Scott, D. 2008, MNRAS, 383, 435
Wang, W., Cowie, L. L., & Barger, A. J. 2006, ApJ, 647, 74
Wang, W. H., Cowie, L. L., & Barger, A. J. 2004, ApJ, 613, 655
Wang, W. H., Barger, A. J., & Cowie, L. L. 2009, ApJ, 690, 319
Watabe, Y., Risaliti, G., Salvati, M., et al. 2009, MNRAS, 396, L1
Webb, T. M., Eales, S. A., Lilly, S. J., et al. 2003a, ApJ, 587, 41
Webb, T. M. A., Lilly, S. J., Clements, D. L., et al. 2003b, ApJ, 597, 680
Weiß, A., Ivison, R. J., Downes, D., et al. 2009a, ApJ, 705, L45
Weiß A., Kovács, A., Coppin, K., et al. 2009b, ApJ, 707, 1201
Wilson, G., Cowie, L. L., Barger, A. J., et al. 2002, AJ, 124, 1258
Wyder, T. K., Treyer, M. A., Milliard, B., et al. 2005, ApJ, 619, L15
Yan, L., McCarthy, P. J., Freudling, W., et al. 1999, ApJ, 519, L47
Yan, H., Dickinson, M., Giavalisco, M., et al. 2006, ApJ, 651, 24
Yang, M., Greve, T. R., Dowell, C. D., et al. 2007, ApJ, 660, 1198
Yoshida, M., Shimasaku, K., Kashikawa, N., et al. 2006, ApJ, 653, 988
Younger, J. D., Fazio, G. G., Huang, J.-S., et al. 2007, ApJ, 671, 1531
Younger, J. D., Fazio, G. G., Wilner, D. J., et al. 2008, ApJ, 688, 59
Younger, J. D., Fazio, G. G., & Huang, J.-S. 2009a, ApJ, 704, 803
Younger, J. D., Omont, A., Fiolet, N., et al. 2009b, MNRAS, 394, 1685
Yun, M. S., Reddy, N. A., & Condon, J. J. 2001, ApJ, 554, 803
Zheng, X. Z., Bell, E. F., Papovich, C., et al. 2007, ApJ, 661, L41

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Appendix A: Long tables and figures.

Table A.1. Photometry detections of SMGs.

SMG	z	λ_{obs} (μm)	Flux (μJy)	Error (μJy)	Reference
SMMJ030226.17+000624.5	0.080	0.365	33.419	0.306	Clements et al. (2004)
SMMJ030226.17+000624.5	0.080	0.428	83.176	7.319	Chapman et al. (2005)
SMMJ030226.17+000624.5	0.080	0.440	83.946	0.232	Clements et al. (2004)
SMMJ030226.17+000624.5	0.080	0.550	181.970	0.335	Clements et al. (2004)
SMMJ030226.17+000624.5	0.080	0.656	275.423	24.234	Chapman et al. (2005)
SMMJ030226.17+000624.5	0.080	0.767	424.619	0.391	Clements et al. (2004)
SMMJ030226.17+000624.5	0.080	2.170	937.562	2.587	Clements et al. (2004)
SMMJ030226.17+000624.5	0.080	3.600	746.900	75.000	Hainline (2008)
SMMJ030226.17+000624.5	0.080	4.500	502.100	50.300	Hainline (2008)
SMMJ030226.17+000624.5	0.080	5.800	452.300	45.900	Hainline (2008)
SMMJ030226.17+000624.5	0.080	8.000	2220.600	224.100	Hainline (2008)
SMMJ030226.17+000624.5	0.080	24.000	2224.500	114.200	Hainline (2008)
SMMJ030226.17+000624.5	0.080	70.000	30100.000	7500.000	Hainline (2008)
SMMJ030226.17+000624.5	0.080	850.000	7900.000	1600.000	Chapman et al. (2005)
SMMJ030226.17+000624.5	0.080	214000.000	481.500	9.000	Chapman et al. (2005)
SMMJ030227.73+000653.5	1.408	0.365	0.637	0.040	Clements et al. (2004); Menéndez-Delmestre et al. (2009)
SMMJ030227.73+000653.5	1.408	0.428	1.096	0.096	Chapman et al. (2005)
SMMJ030227.73+000653.5	1.408	0.440	1.148	0.021	Clements et al. (2004)
SMMJ030227.73+000653.5	1.408	0.550	1.722	0.047	Clements et al. (2004)
SMMJ030227.73+000653.5	1.408	0.656	2.512	0.221	Chapman et al. (2005)
SMMJ030227.73+000653.5	1.408	0.767	7.416	0.334	Smail et al. (2004)
SMMJ030227.73+000653.5	1.408	0.767	6.310	0.058	Clements et al. (2004)
SMMJ030227.73+000653.5	1.408	1.250	21.782	0.788	Smail et al. (2004)
SMMJ030227.73+000653.5	1.408	2.170	14.494	0.395	Smail et al. (2004)
SMMJ030227.73+000653.5	1.408	2.170	29.107	0.531	Clements et al. (2004)
SMMJ030227.73+000653.5	1.408	3.600	73.800	7.400	Hainline (2008)
SMMJ030227.73+000653.5	1.408	4.500	79.300	7.900	Hainline (2008)
SMMJ030227.73+000653.5	1.408	5.800	59.800	6.300	Hainline (2008)
SMMJ030227.73+000653.5	1.408	8.000	61.600	6.600	Hainline (2008)
SMMJ030227.73+000653.5	1.408	24.000	498.900	33.100	Hainline (2008)
SMMJ030227.73+000653.5	1.408	350.000	42200.000	9800.001	Kovács et al. (2006)
SMMJ030227.73+000653.5	1.408	850.000	4400.000	1300.000	Chapman et al. (2005)
SMMJ030227.73+000653.5	1.408	214000.000	217.000	9.000	Chapman et al. (2005)
SMMJ030231.81+001031.3	1.316	0.550	0.093	0.029	Clements et al. (2004); Menéndez-Delmestre et al. (2009)
SMMJ030231.81+001031.3	1.316	4.500	1.600	0.300	Hainline (2008)
SMMJ030231.81+001031.3	1.316	850.000	5000.000	1500.000	Chapman et al. (2005)
SMMJ030231.81+001031.3	1.316	214000.000	45.100	9.000	Chapman et al. (2005)
SMMJ030236.15+000817.1	2.435	0.550	0.093	0.029	Clements et al. (2004)
SMMJ030236.15+000817.1	2.435	0.656	0.132	0.012	Chapman et al. (2005)
SMMJ030236.15+000817.1	2.435	2.170	29.107	0.531	Clements et al. (2004)
SMMJ030236.15+000817.1	2.435	3.600	7.700	0.800	Hainline (2008)
SMMJ030236.15+000817.1	2.435	4.500	9.700	1.000	Hainline (2008)
SMMJ030236.15+000817.1	2.435	5.800	14.900	2.000	Hainline (2008)
SMMJ030236.15+000817.1	2.435	850.000	3400.000	600.000	Chapman et al. (2005)
SMMJ030236.15+000817.1	2.435	214000.000	42.100	9.100	Chapman et al. (2005)
SMMJ030238.62+001106.3	0.276	0.365	0.278	0.034	Clements et al. (2004)
SMMJ030238.62+001106.3	0.276	0.428	0.209	0.018	Chapman et al. (2005)
SMMJ030238.62+001106.3	0.276	0.440	0.205	0.036	Clements et al. (2004)
SMMJ030238.62+001106.3	0.276	0.550	0.470	0.033	Clements et al. (2004)
SMMJ030238.62+001106.3	0.276	0.656	0.759	0.067	Chapman et al. (2005)
SMMJ030238.62+001106.3	0.276	0.767	1.350	0.196	Smail et al. (2004)
SMMJ030238.62+001106.3	0.276	0.767	1.076	0.029	Clements et al. (2004)
SMMJ030238.62+001106.3	0.276	2.170	4.066	0.589	Smail et al. (2004)
SMMJ030238.62+001106.3	0.276	2.170	3.733	0.541	Clements et al. (2004)
SMMJ030238.62+001106.3	0.276	3.600	16.600	1.700	Hainline (2008)
SMMJ030238.62+001106.3	0.276	4.500	19.800	2.000	Hainline (2008)
SMMJ030238.62+001106.3	0.276	850.000	4100.000	1400.000	Chapman et al. (2005)
SMMJ030238.62+001106.3	0.276	214000.000	347.300	9.000	Chapman et al. (2005)
SMMJ030244.82+000632.3	0.176	0.428	22.909	2.016	Chapman et al. (2005)
SMMJ030244.82+000632.3	0.176	0.656	83.176	7.319	Chapman et al. (2005)
SMMJ030244.82+000632.3	0.176	1.250	147.941	2.700	Smail et al. (2004)
SMMJ030244.82+000632.3	0.176	2.170	227.612	2.087	Smail et al. (2004)
SMMJ030244.82+000632.3	0.176	850.000	4900.000	1100.000	Chapman et al. (2005)

Table A.1. continued

SMG	z	$\lambda_{\rm obs}$ (μm)	Flux (μJy)	Error (μJy)	Reference
SMMJ105151.69+572636.0	1.147	0.656	0.302	0.027	Chapman et al. (2005); Menéndez-Delmestre et al. (2009)
SMMJ105151.69+572636.0	1.147	0.656	0.340	0.021	Ivison et al. (2005)
SMMJ105151.69+572636.0	1.147	0.767	2.302	0.203	Ivison et al. (2002)
SMMJ105151.69+572636.0	1.147	2.170	44.177	2.375	Ivison et al. (2002)
SMMJ105151.69+572636.0	1.147	3.600	78.100	7.800	Hainline (2008)
SMMJ105151.69+572636.0	1.147	4.500	89.200	8.900	Hainline (2008)
SMMJ105151.69+572636.0	1.147	5.800	64.700	6.900	Hainline (2008)
SMMJ105151.69+572636.0	1.147	8.000	63.300	6.600	Hainline (2008)
SMMJ105151.69+572636.0	1.147	24.000	342.400	24.000	Hainline (2008)
SMMJ105151.69+572636.0	1.147	850.000	6700.000	1700.000	Chapman et al. (2005)
SMMJ105151.69+572636.0	1.147	1200.000	1600.000	600.000	Ivison et al. (2005)
SMMJ105151.69+572636.0	1.147	214000.000	134.400	13.000	Chapman et al. (2005)
SMMJ105155.47+572312.7	2.686	0.428	1.096	0.096	Chapman et al. (2005); Valiante et al. (2007)
SMMJ105155.47+572312.7	2.686	0.656	1.905	0.168	Chapman et al. (2005)
SMMJ105155.47+572312.7	2.686	0.656	0.603	0.016	Ivison et al. (2005)
SMMJ105155.47+572312.7	2.686	3.600	5.100	0.500	Hainline (2008)
SMMJ105155.47+572312.7	2.686	4.500	7.600	0.800	Hainline (2008)
SMMJ105155.47+572312.7	2.686	5.800	13.100	2.100	Hainline (2008)
SMMJ105155.47+572312.7	2.686	8.000	18.500	2.000	Hainline (2008)
SMMJ105155.47+572312.7	2.686	24.000	99.000	15.900	Hainline (2008)
SMMJ105155.47+572312.7	2.686	850.000	5700.000	1400.000	Chapman et al. (2005)
SMMJ105155.47+572312.7	2.686	1200.000	3300.000	800.000	Greve et al. (2004)
SMMJ105155.47+572312.7	2.686	61182.000	38.000	19.000	Ivison et al. (2002)
SMMJ105155.47+572312.7	2.686	214000.000	46.300	10.200	Chapman et al. (2005)
SMMJ105158.02+571800.2	2.239	0.656	0.832	0.073	Chapman et al. (2005); Menéndez-Delmestre et al. (2009)
SMMJ105158.02+571800.2	2.239	0.656	1.047	0.029	Ivison et al. (2005)
SMMJ105158.02+571800.2	2.239	0.767	1.231	0.159	Ivison et al. (2002)
SMMJ105158.02+571800.2	2.239	2.170	18.758	1.492	Ivison et al. (2002)
SMMJ105158.02+571800.2	2.239	3.600	53.300	5.300	Hainline (2008)
SMMJ105158.02+571800.2	2.239	4.500	55.500	5.600	Hainline (2008)
SMMJ105158.02+571800.2	2.239	5.800	43.900	5.100	Hainline (2008)
SMMJ105158.02+571800.2	2.239	8.000	53.000	5.800	Hainline (2008)
SMMJ105158.02+571800.2	2.239	24.000	241.100	21.100	Hainline (2008)
SMMJ105158.02+571800.2	2.239	850.000	7700.000	1700.000	Chapman et al. (2005)
SMMJ105158.02+571800.2	2.239	1200.000	2900.000	700.000	Greve et al. (2004)
SMMJ105158.02+571800.2	2.239	61182.000	109.000	26.000	Ivison et al. (2002)
SMMJ105158.02+571800.2	2.239	214000.000	98.100	11.600	Chapman et al. (2005)
SMMJ105200.22+572420.2	0.689	0.656	5.248	0.462	Chapman et al. (2005); Menéndez-Delmestre et al. (2009)
SMMJ105200.22+572420.2	0.689	0.656	1.871	0.034	Ivison et al. (2005)
SMMJ105200.22+572420.2	0.689	0.767	5.626	0.153	Ivison et al. (2002)
SMMJ105200.22+572420.2	0.689	2.170	19.462	1.548	Ivison et al. (2002)
SMMJ105200.22+572420.2	0.689	3.600	22.500	2.300	Hainline (2008)
SMMJ105200.22+572420.2	0.689	4.500	25.900	2.600	Hainline (2008)
SMMJ105200.22+572420.2	0.689	5.800	40.800	4.400	Hainline (2008)
SMMJ105200.22+572420.2	0.689	8.000	96.500	9.700	Hainline (2008)
SMMJ105200.22+572420.2	0.689	24.000	282.000	59.000	Egami et al. (2004)
SMMJ105200.22+572420.2	0.689	70.000	6200.000	1300.000	Hainline (2008)
SMMJ105200.22+572420.2	0.689	350.000	15500.000	5500.000	Laurent et al. (2006)
SMMJ105200.22+572420.2	0.689	850.000	5100.000	1300.000	Chapman et al. (2005)
SMMJ105200.22+572420.2	0.689	1100.000	4000.000	1300.000	Laurent et al. (2006)
SMMJ105200.22+572420.2	0.689	1200.000	2400.000	600.000	Greve et al. (2004)
SMMJ105200.22+572420.2	0.689	61182.000	57.000	32.000	Ivison et al. (2002)
SMMJ105200.22+572420.2	0.689	214000.000	57.400	13.200	Chapman et al. (2005)
SMMJ105201.25+572445.7	2.148	0.656	0.191	0.017	Chapman et al. (2005)
SMMJ105201.25+572445.7	2.148	0.656	0.150	0.018	Ivison et al. (2005)
SMMJ105201.25+572445.7	2.148	2.170	7.892	1.328	Ivison et al. (2002)
SMMJ105201.25+572445.7	2.148	3.600	5.500	0.600	Hainline (2008)
SMMJ105201.25+572445.7	2.148	4.500	8.700	0.900	Hainline (2008)
SMMJ105201.25+572445.7	2.148	5.800	11.900	2.200	Hainline (2008)
SMMJ105201.25+572445.7	2.148	8.000	14.800	1.900	Hainline (2008)
SMMJ105201.25+572445.7	2.148	24.000	172.500	16.300	Hainline (2008)
SMMJ105201.25+572445.7	2.148	350.000	24100.000	5500.000	Laurent et al. (2006)
SMMJ105201.25+572445.7	2.148	850.000	9900.000	2200.000	Chapman et al. (2005)

Table A.1. continued

SMG	z	$\lambda_{\rm obs}$ (μm)	Flux (μJy)	Error (μJy)	Reference
SMMJ105201.25+572445.7	2.148	1100.000	4400.000	1300.000	Laurent et al. (2006)
SMMJ105201.25+572445.7	2.148	1200.000	3400.000	600.000	Greve et al. (2004)
SMMJ105201.25+572445.7	2.148	61182.000	56.000	37.000	Ivison et al. (2002)
SMMJ105201.25+572445.7	2.148	214000.000	72.100	10.200	Chapman et al. (2005)
SMMJ105207.49+571904.0	2.689	0.656	0.145	0.013	Chapman et al. (2005); Valiante et al. (2007)
SMMJ105207.49+571904.0	2.689	0.767	2.010	0.149	Ivison et al. (2002)
SMMJ105207.49+571904.0	2.689	0.767	0.352	0.108	Smail et al. (2004)
SMMJ105207.49+571904.0	2.689	3.600	10.100	1.000	Hainline (2008)
SMMJ105207.49+571904.0	2.689	4.500	12.900	1.300	Hainline (2008)
SMMJ105207.49+571904.0	2.689	24.000	190.900	14.800	Hainline (2008)
SMMJ105207.49+571904.0	2.689	350.000	38000.000	7200.000	Kovács et al. (2006)
SMMJ105207.49+571904.0	2.689	850.000	6200.000	1600.000	Chapman et al. (2005)
SMMJ105207.49+571904.0	2.689	61182.000	380.000	28.000	Ivison et al. (2002)
SMMJ105207.49+571904.0	2.689	214000.000	277.900	11.900	Chapman et al. (2005)
SMMJ105225.79+571906.4	2.372	0.656	0.479	0.042	Chapman et al. (2005)
SMMJ105225.79+571906.4	2.372	0.767	4.766	0.130	Smail et al. (2004)
SMMJ105225.79+571906.4	2.372	2.170	19.462	1.875	Smail et al. (2004)
SMMJ105225.79+571906.4	2.372	3.600	28.400	2.900	Hainline (2008)
SMMJ105225.79+571906.4	2.372	4.500	22.300	2.300	Hainline (2008)
SMMJ105225.79+571906.4	2.372	5.800	25.900	3.700	Hainline (2008)
SMMJ105225.79+571906.4	2.372	8.000	37.300	5.000	Hainline (2008)
SMMJ105225.79+571906.4	2.372	24.000	178.600	14.400	Hainline (2008)
SMMJ105225.79+571906.4	2.372	850.000	4900.000	1500.000	Chapman et al. (2005)
SMMJ105225.79+571906.4	2.372	214000.000	127.400	5.100	Chapman et al. (2005)
SMMJ105227.58+572512.4	2.142	0.656	0.363	0.032	Chapman et al. (2005); Menéndez-Delmestre et al. (2009)
SMMJ105227.58+572512.4	2.142	0.656	0.310	0.017	Ivison et al. (2005)
SMMJ105227.58+572512.4	2.142	0.767	0.646	0.142	Ivison et al. (2002)
SMMJ105227.58+572512.4	2.142	2.170	11.945	0.538	Ivison et al. (2002)
SMMJ105227.58+572512.4	2.142	3.600	19.600	2.000	Hainline (2008)
SMMJ105227.58+572512.4	2.142	4.500	25.600	2.600	Hainline (2008)
SMMJ105227.58+572512.4	2.142	5.800	41.400	4.900	Hainline (2008)
SMMJ105227.58+572512.4	2.142	8.000	28.500	3.000	Hainline (2008)
SMMJ105227.58+572512.4	2.142	24.000	226.300	17.400	Hainline (2008)
SMMJ105227.58+572512.4	2.142	350.000	44000.000	16000.000	Laurent et al. (2006)
SMMJ105227.58+572512.4	2.142	850.000	4500.000	1300.000	Chapman et al. (2005)
SMMJ105227.58+572512.4	2.142	1100.000	4100.000	1300.000	Laurent et al. (2006)
SMMJ105227.58+572512.4	2.142	1200.000	2800.000	500.000	Greve et al. (2004)
SMMJ105227.58+572512.4	2.142	61182.000	32.000	22.000	Ivison et al. (2002)
SMMJ105227.58+572512.4	2.142	214000.000	39.200	11.400	Chapman et al. (2005)
SMMJ105227.77+572218.2	1.956	0.656	0.145	0.013	Chapman et al. (2005)
SMMJ105227.77+572218.2	1.956	850.000	7000.000	2100.000	Chapman et al. (2005)
SMMJ105227.77+572218.2	1.956	1100.000	5100.000	1300.000	Laurent et al. (2006)
SMMJ105227.77+572218.2	1.956	1200.000	3100.000	700.000	Greve et al. (2004)
SMMJ105227.77+572218.2	1.956	214000.000	40.400	9.400	Chapman et al. (2005)
SMMJ105230.73+572209.5	2.611	0.656	1.738	0.153	Chapman et al. (2005)
SMMJ105230.73+572209.5	2.611	0.656	2.399	0.044	Ivison et al. (2005)
SMMJ105230.73+572209.5	2.611	0.767	2.005	0.125	Smail et al. (2004)
SMMJ105230.73+572209.5	2.611	2.170	13.465	1.845	Smail et al. (2004)
SMMJ105230.73+572209.5	2.611	3.600	33.400	3.400	Hainline (2008)
SMMJ105230.73+572209.5	2.611	4.500	39.500	4.000	Hainline (2008)
SMMJ105230.73+572209.5	2.611	5.800	56.500	6.500	Hainline (2008)
SMMJ105230.73+572209.5	2.611	8.000	46.600	4.700	Hainline (2008)
SMMJ105230.73+572209.5	2.611	24.000	184.200	17.900	Hainline (2008)
SMMJ105230.73+572209.5	2.611	350.000	41000.000	6800.000	Kovács et al. (2006)
SMMJ105230.73+572209.5	2.611	850.000	11000.000	2600.000	Chapman et al. (2005)
SMMJ105230.73+572209.5	2.611	1100.000	5100.000	1300.000	Laurent et al. (2006)
SMMJ105230.73+572209.5	2.611	1200.000	2900.000	700.000	Greve et al. (2004)
SMMJ105230.73+572209.5	2.611	61182.000	60.000	35.000	Ivison et al. (2002)
SMMJ105230.73+572209.5	2.611	214000.000	54.000	14.000	Ivison et al. (2002)
SMMJ105230.73+572209.5	2.611	214000.000	86.300	15.400	Chapman et al. (2005)
SMMJ105238.19+571651.1	1.852	0.656	3.020	0.266	Chapman et al. (2005); Menéndez-Delmestre et al. (2009)
SMMJ105238.19+571651.1	1.852	0.767	2.010	0.113	Smail et al. (2004)
SMMJ105238.19+571651.1	1.852	3.600	17.400	1.800	Hainline (2008)

Table A.1. continued

SMG	z	$\lambda_{\rm obs}$ (μm)	Flux (μJy)	Error (μJy)	Reference
SMMJ105238.19+571651.1	1.852	4.500	18.800	2.000	Hainline (2008)
SMMJ105238.19+571651.1	1.852	5.800	31.100	4.300	Hainline (2008)
SMMJ105238.19+571651.1	1.852	24.000	498.300	29.600	Hainline (2008)
SMMJ105238.19+571651.1	1.852	850.000	5300.000	1600.000	Chapman et al. (2005)
SMMJ105238.19+571651.1	1.852	214000.000	71.100	12.600	Chapman et al. (2005)
SMMJ105238.30+572435.8	3.036	0.656	0.525	0.046	Chapman et al. (2005); Menéndez-Delmestre et al. (2009)
SMMJ105238.30+572435.8	3.036	0.656	0.167	0.012	Ivison et al. (2005)
SMMJ105238.30+572435.8	3.036	0.767	1.208	0.166	Ivison et al. (2002)
SMMJ105238.30+572435.8	3.036	2.170	4.889	0.970	Ivison et al. (2002)
SMMJ105238.30+572435.8	3.036	3.600	28.900	2.900	Hainline (2008)
SMMJ105238.30+572435.8	3.036	4.500	32.700	3.300	Hainline (2008)
SMMJ105238.30+572435.8	3.036	5.800	29.800	4.600	Hainline (2008)
SMMJ105238.30+572435.8	3.036	24.000	335.600	19.400	Hainline (2008)
SMMJ105238.30+572435.8	3.036	350.000	40500.000	6500.000	Kovács et al. (2006)
SMMJ105238.30+572435.8	3.036	850.000	10900.000	2400.000	Chapman et al. (2005)
SMMJ105238.30+572435.8	3.036	1100.000	4800.000	1300.000	Laurent et al. (2006)
SMMJ105238.30+572435.8	3.036	1200.000	4800.000	600.000	Greve et al. (2004)
SMMJ105238.30+572435.8	3.036	214000.000	29.000	11.000	Ivison et al. (2002)
SMMJ105238.30+572435.8	3.036	214000.000	61.000	22.000	Chapman et al. (2005)
SMMJ123549.44+621536.8	2.203	0.365	0.518	0.046	Capak et al. (2004); Menéndez-Delmestre et al. (2009)
SMMJ123549.44+621536.8	2.203	0.428	0.759	0.067	Chapman et al. (2005)
SMMJ123549.44+621536.8	2.203	0.443	0.975	0.062	Capak et al. (2004)
SMMJ123549.44+621536.8	2.203	0.547	1.369	0.045	Capak et al. (2004)
SMMJ123549.44+621536.8	2.203	0.653	1.790	0.043	Capak et al. (2004)
SMMJ123549.44+621536.8	2.203	0.656	1.202	0.106	Chapman et al. (2005)
SMMJ123549.44+621536.8	2.203	0.767	2.324	0.042	Smail et al. (2004)
SMMJ123549.44+621536.8	2.203	0.798	2.273	0.090	Capak et al. (2004)
SMMJ123549.44+621536.8	2.203	0.907	2.656	0.125	Capak et al. (2004)
SMMJ123549.44+621536.8	2.203	1.250	7.483	0.402	Smail et al. (2004)
SMMJ123549.44+621536.8	2.203	1.895	9.213	1.507	Capak et al. (2004)
SMMJ123549.44+621536.8	2.203	24.000	178.700	31.400	Hainline (2008)
SMMJ123549.44+621536.8	2.203	850.000	8300.001	2500.000	Chapman et al. (2005)
SMMJ123549.44+621536.8	2.203	1300.000	2000.000	600.000	Tacconi et al. (2006)
SMMJ123549.44+621536.8	2.203	214000.000	74.600	9.500	Chapman et al. (2005)
SMMJ123553.26+621337.7	2.098	0.365	0.654	0.049	Capak et al. (2004); Menéndez-Delmestre et al. (2009)
SMMJ123553.26+621337.7	2.098	0.428	0.437	0.038	Chapman et al. (2005)
SMMJ123553.26+621337.7	2.098	0.443	0.633	0.046	Capak et al. (2004)
SMMJ123553.26+621337.7	2.098	0.547	0.560	0.033	Capak et al. (2004)
SMMJ123553.26+621337.7	2.098	0.573	0.233	0.021	Chapman et al. (2003b)
SMMJ123553.26+621337.7	2.098	0.653	0.659	0.032	Capak et al. (2004)
SMMJ123553.26+621337.7	2.098	0.656	0.479	0.042	Chapman et al. (2005)
SMMJ123553.26+621337.7	2.098	0.767	0.282	0.025	Chapman et al. (2003b)
SMMJ123553.26+621337.7	2.098	0.767	0.676	0.042	Smail et al. (2004)
SMMJ123553.26+621337.7	2.098	0.798	0.658	0.063	Capak et al. (2004)
SMMJ123553.26+621337.7	2.098	0.907	0.900	0.092	Capak et al. (2004)
SMMJ123553.26+621337.7	2.098	1.250	1.915	0.422	Smail et al. (2004)
SMMJ123553.26+621337.7	2.098	2.170	2.973	0.676	Smail et al. (2004)
SMMJ123553.26+621337.7	2.098	3.600	9.200	1.300	Hainline (2008)
SMMJ123553.26+621337.7	2.098	4.500	14.600	1.700	Hainline (2008)
SMMJ123553.26+621337.7	2.098	5.800	18.100	1.900	Hainline (2008)
SMMJ123553.26+621337.7	2.098	8.000	24.700	2.700	Hainline (2008)
SMMJ123553.26+621337.7	2.098	850.000	8800.001	2100.000	Chapman et al. (2005)
SMMJ123553.26+621337.7	2.098	214000.000	58.400	9.000	Chapman et al. (2005)
SMMJ123555.14+620901.7	1.875	0.365	0.640	0.054	Capak et al. (2004); Pope et al. (2008)
SMMJ123555.14+620901.7	1.875	0.428	0.575	0.051	Chapman et al. (2005)
SMMJ123555.14+620901.7	1.875	0.443	0.728	0.051	Capak et al. (2004)
SMMJ123555.14+620901.7	1.875	0.547	0.818	0.038	Capak et al. (2004)
SMMJ123555.14+620901.7	1.875	0.653	1.093	0.037	Capak et al. (2004)
SMMJ123555.14+620901.7	1.875	0.656	0.759	0.067	Chapman et al. (2005)
SMMJ123555.14+620901.7	1.875	0.767	1.915	0.035	Smail et al. (2004)
SMMJ123555.14+620901.7	1.875	0.798	1.520	0.084	Capak et al. (2004)
SMMJ123555.14+620901.7	1.875	0.907	1.983	0.113	Capak et al. (2004)
SMMJ123555.14+620901.7	1.875	1.250	7.622	0.606	Smail et al. (2004)
SMMJ123555.14+620901.7	1.875	2.170	17.426	1.088	Smail et al. (2004)
SMMJ123555.14+620901.7	1.875	3.600	42.500	4.900	Hainline (2008)

Table A.1. continued

SMG	z	$\lambda_{\rm obs}$ (μm)	Flux (μJy)	Error (μJy)	Reference
SMMJ123555.14+620901.7	1.875	4.500	61.500	7.000	Hainline (2008)
SMMJ123555.14+620901.7	1.875	5.800	79.500	8.300	Hainline (2008)
SMMJ123555.14+620901.7	1.875	8.000	93.800	10.200	Hainline (2008)
SMMJ123555.14+620901.7	1.875	24.000	333.500	22.200	Hainline (2008)
SMMJ123555.14+620901.7	1.875	850.000	5400.000	1900.000	Chapman et al. (2005)
SMMJ123555.14+620901.7	1.875	214000.000	212.000	13.700	Chapman et al. (2005)
SMMJ123600.10+620253.5	2.710	0.365	0.105	0.025	Capak et al. (2004)
SMMJ123600.10+620253.5	2.710	0.428	0.191	0.017	Chapman et al. (2005)
SMMJ123600.10+620253.5	2.710	0.443	0.272	0.031	Capak et al. (2004)
SMMJ123600.10+620253.5	2.710	0.547	0.314	0.029	Capak et al. (2004)
SMMJ123600.10+620253.5	2.710	0.573	0.139	0.012	Chapman et al. (2003b)
SMMJ123600.10+620253.5	2.710	0.653	0.435	0.028	Capak et al. (2004)
SMMJ123600.10+620253.5	2.710	0.656	0.251	0.022	Chapman et al. (2005)
SMMJ123600.10+620253.5	2.710	0.767	0.330	0.029	Chapman et al. (2003b)
SMMJ123600.10+620253.5	2.710	0.767	0.415	0.033	Smail et al. (2004)
SMMJ123600.10+620253.5	2.710	0.798	0.354	0.058	Capak et al. (2004)
SMMJ123600.10+620253.5	2.710	0.907	0.435	0.076	Capak et al. (2004)
SMMJ123600.10+620253.5	2.710	850.000	6900.000	2000.000	Chapman et al. (2005)
SMMJ123600.10+620253.5	2.710	214000.000	262.000	17.100	Chapman et al. (2005)
SMMJ123600.15+621047.2	1.994	0.365	0.075	0.024	Capak et al. (2004); Pope et al. (2008)
SMMJ123600.15+621047.2	1.994	0.428	0.251	0.022	Chapman et al. (2005)
SMMJ123600.15+621047.2	1.994	0.653	0.061	0.016	Capak et al. (2004)
SMMJ123600.15+621047.2	1.994	0.656	0.331	0.029	Chapman et al. (2005)
SMMJ123600.15+621047.2	1.994	0.767	1.426	0.039	Smail et al. (2004)
SMMJ123600.15+621047.2	1.994	0.798	0.106	0.034	Capak et al. (2004)
SMMJ123600.15+621047.2	1.994	1.250	5.421	0.477	Smail et al. (2004)
SMMJ123600.15+621047.2	1.994	2.170	6.445	0.832	Smail et al. (2004)
SMMJ123600.15+621047.2	1.994	3.600	12.600	1.500	Hainline (2008)
SMMJ123600.15+621047.2	1.994	4.500	14.800	1.700	Hainline (2008)
SMMJ123600.15+621047.2	1.994	5.800	27.000	2.800	Hainline (2008)
SMMJ123600.15+621047.2	1.994	8.000	61.900	6.400	Hainline (2008)
SMMJ123600.15+621047.2	1.994	24.000	1270.800	64.000	Hainline (2008)
SMMJ123600.15+621047.2	1.994	350.000	22300.000	6300.000	Kovács et al. (2006)
SMMJ123600.15+621047.2	1.994	850.000	7900.000	2400.000	Chapman et al. (2005)
SMMJ123600.15+621047.2	1.994	214000.000	131.000	10.600	Chapman et al. (2005)
SMMJ123606.72+621550.7	2.416	0.365	1.144	0.065	Capak et al. (2004)
SMMJ123606.72+621550.7	2.416	0.428	1.445	0.127	Chapman et al. (2005)
SMMJ123606.72+621550.7	2.416	0.443	1.701	0.090	Capak et al. (2004)
SMMJ123606.72+621550.7	2.416	0.547	1.827	0.054	Capak et al. (2004)
SMMJ123606.72+621550.7	2.416	0.653	1.800	0.044	Capak et al. (2004)
SMMJ123606.72+621550.7	2.416	0.656	1.318	0.116	Chapman et al. (2005)
SMMJ123606.72+621550.7	2.416	0.775	1.738	0.153	Pope et al. (2006)
SMMJ123606.72+621550.7	2.416	0.798	2.099	0.095	Capak et al. (2004)
SMMJ123606.72+621550.7	2.416	0.907	2.169	0.124	Capak et al. (2004)
SMMJ123606.72+621550.7	2.416	3.600	9.600	1.400	Hainline (2008)
SMMJ123606.72+621550.7	2.416	4.500	13.200	1.600	Hainline (2008)
SMMJ123606.72+621550.7	2.416	5.800	19.400	2.100	Hainline (2008)
SMMJ123606.72+621550.7	2.416	8.000	26.300	2.900	Hainline (2008)
SMMJ123606.72+621550.7	2.416	24.000	124.000	8.600	Hainline (2008)
SMMJ123606.72+621550.7	2.416	850.000	4400.000	1400.000	Chapman et al. (2005)
SMMJ123606.72+621550.7	2.416	214000.000	24.000	5.900	Chapman et al. (2005)
SMMJ123606.85+621021.4	2.509	0.365	0.123	0.030	Capak et al. (2004)
SMMJ123606.85+621021.4	2.509	0.428	0.209	0.018	Chapman et al. (2005)
SMMJ123606.85+621021.4	2.509	0.443	0.288	0.036	Capak et al. (2004)
SMMJ123606.85+621021.4	2.509	0.547	0.328	0.031	Capak et al. (2004)
SMMJ123606.85+621021.4	2.509	0.653	0.623	0.032	Capak et al. (2004)
SMMJ123606.85+621021.4	2.509	0.656	0.302	0.027	Chapman et al. (2005)
SMMJ123606.85+621021.4	2.509	0.767	1.426	0.039	Smail et al. (2004)
SMMJ123606.85+621021.4	2.509	0.775	0.525	0.046	Pope et al. (2006)
SMMJ123606.85+621021.4	2.509	0.798	0.749	0.069	Capak et al. (2004)
SMMJ123606.85+621021.4	2.509	0.907	0.972	0.093	Capak et al. (2004)
SMMJ123606.85+621021.4	2.509	1.250	4.000	0.484	Smail et al. (2004)
SMMJ123606.85+621021.4	2.509	1.895	8.136	2.231	Capak et al. (2004)
SMMJ123606.85+621021.4	2.509	2.170	16.338	0.878	Smail et al. (2004)

Table A.1. continued

SMG	z	$\lambda_{\rm obs}$ (μm)	Flux (μJy)	Error (μJy)	Reference
SMMJ123606.85+621021.4	2.509	3.600	27.800	3.000	Hainline (2008)
SMMJ123606.85+621021.4	2.509	4.500	31.000	3.300	Hainline (2008)
SMMJ123606.85+621021.4	2.509	5.800	35.500	3.700	Hainline (2008)
SMMJ123606.85+621021.4	2.509	8.000	28.100	3.100	Hainline (2008)
SMMJ123606.85+621021.4	2.509	24.000	70.100	5.200	Pope et al. (2006)
SMMJ123606.85+621021.4	2.509	350.000	35100.000	6900.000	Kovács et al. (2006)
SMMJ123606.85+621021.4	2.509	850.000	11600.000	3500.000	Chapman et al. (2005)
SMMJ123606.85+621021.4	2.509	214000.000	74.400	4.100	Chapman et al. (2005)
SMMJ123616.15+621513.7	2.578	0.428	0.069	0.006	Chapman et al. (2005); Pope et al. (2008)
SMMJ123616.15+621513.7	2.578	0.443	0.084	0.019	Capak et al. (2004)
SMMJ123616.15+621513.7	2.578	0.547	0.134	0.027	Capak et al. (2004)
SMMJ123616.15+621513.7	2.578	0.653	0.260	0.025	Capak et al. (2004)
SMMJ123616.15+621513.7	2.578	0.573	0.076	0.007	Chapman et al. (2003b)
SMMJ123616.15+621513.7	2.578	0.656	0.191	0.017	Chapman et al. (2005)
SMMJ123616.15+621513.7	2.578	0.767	0.400	0.035	Chapman et al. (2003b)
SMMJ123616.15+621513.7	2.578	0.767	0.333	0.035	Smail et al. (2004)
SMMJ123616.15+621513.7	2.578	0.775	0.120	0.011	Pope et al. (2006)
SMMJ123616.15+621513.7	2.578	0.798	0.352	0.059	Capak et al. (2004)
SMMJ123616.15+621513.7	2.578	0.907	0.364	0.076	Capak et al. (2004)
SMMJ123616.15+621513.7	2.578	1.250	1.683	0.383	Smail et al. (2004)
SMMJ123616.15+621513.7	2.578	2.170	2.973	0.779	Smail et al. (2004)
SMMJ123616.15+621513.7	2.578	3.600	20.000	2.300	Hainline (2008)
SMMJ123616.15+621513.7	2.578	4.500	15.000	1.700	Hainline (2008)
SMMJ123616.15+621513.7	2.578	5.800	39.800	4.100	Hainline (2008)
SMMJ123616.15+621513.7	2.578	8.000	46.800	4.900	Hainline (2008)
SMMJ123616.15+621513.7	2.578	24.000	319.100	17.800	Hainline (2008)
SMMJ123616.15+621513.7	2.578	850.000	5800.000	1100.000	Chapman et al. (2005)
SMMJ123616.15+621513.7	2.578	214000.000	53.900	8.400	Chapman et al. (2005)
SMMJ123618.33+621550.5	1.865	0.365	0.223	0.032	Capak et al. (2004); Pope et al. (2008)
SMMJ123618.33+621550.5	1.865	0.428	0.145	0.013	Chapman et al. (2005)
SMMJ123618.33+621550.5	1.865	0.443	0.263	0.029	Capak et al. (2004)
SMMJ123618.33+621550.5	1.865	0.547	0.258	0.031	Capak et al. (2004)
SMMJ123618.33+621550.5	1.865	0.653	0.314	0.027	Capak et al. (2004)
SMMJ123618.33+621550.5	1.865	0.656	0.158	0.014	Chapman et al. (2005)
SMMJ123618.33+621550.5	1.865	0.767	0.248	0.022	Chapman et al. (2003b)
SMMJ123618.33+621550.5	1.865	0.767	0.345	0.042	Smail et al. (2004)
SMMJ123618.33+621550.5	1.865	0.798	0.444	0.065	Capak et al. (2004)
SMMJ123618.33+621550.5	1.865	0.907	0.559	0.086	Capak et al. (2004)
SMMJ123618.33+621550.5	1.865	1.250	2.061	0.424	Smail et al. (2004)
SMMJ123618.33+621550.5	1.865	2.170	3.992	0.879	Smail et al. (2004)
SMMJ123618.33+621550.5	1.865	3.600	15.000	1.900	Hainline (2008)
SMMJ123618.33+621550.5	1.865	4.500	19.900	2.200	Hainline (2008)
SMMJ123618.33+621550.5	1.865	5.800	27.300	2.800	Hainline (2008)
SMMJ123618.33+621550.5	1.865	8.000	20.000	2.200	Hainline (2008)
SMMJ123618.33+621550.5	1.865	24.000	343.800	18.800	Hainline (2008)
SMMJ123618.33+621550.5	1.865	850.000	7300.000	1100.000	Chapman et al. (2005)
SMMJ123618.33+621550.5	1.865	214000.000	151.000	11.000	Chapman et al. (2005)
SMMJ123621.27+621708.4	1.988	0.365	0.333	0.038	Capak et al. (2004); Pope et al. (2008)
SMMJ123621.27+621708.4	1.988	0.428	0.331	0.029	Chapman et al. (2005)
SMMJ123621.27+621708.4	1.988	0.443	0.472	0.044	Capak et al. (2004)
SMMJ123621.27+621708.4	1.988	0.547	0.522	0.036	Capak et al. (2004)
SMMJ123621.27+621708.4	1.988	0.653	0.622	0.033	Capak et al. (2004)
SMMJ123621.27+621708.4	1.988	0.656	0.398	0.035	Chapman et al. (2005)
SMMJ123621.27+621708.4	1.988	0.767	1.043	0.092	Chapman et al. (2003b)
SMMJ123621.27+621708.4	1.998	0.767	0.262	0.034	Smail et al. (2004)
SMMJ123621.27+621708.4	1.988	0.798	0.870	0.074	Capak et al. (2004)
SMMJ123621.27+621708.4	1.988	0.907	0.950	0.098	Capak et al. (2004)
SMMJ123621.27+621708.4	1.988	1.895	6.011	0.919	Capak et al. (2004)
SMMJ123621.27+621708.4	1.998	2.170	3.351	0.878	Smail et al. (2004)
SMMJ123621.27+621708.4	1.988	3.600	20.400	2.300	Hainline (2008)
SMMJ123621.27+621708.4	1.988	4.500	27.300	2.900	Hainline (2008)
SMMJ123621.27+621708.4	1.988	5.800	34.400	3.500	Hainline (2008)
SMMJ123621.27+621708.4	1.988	8.000	24.500	2.600	Hainline (2008)
SMMJ123621.27+621708.4	1.988	24.000	346.500	20.600	Hainline (2008)
SMMJ123621.27+621708.4	1.988	850.000	7800.000	1900.000	Chapman et al. (2005)

Table A.1. continued

SMG	z	$\lambda_{\rm obs}$ (μm)	Flux (μJy)	Error (μJy)	Reference
SMMJ123621.27+621708.4	1.988	214000.000	148.000	11.000	Chapman et al. (2005)
SMMJ123622.65+621629.7	2.466	0.365	0.206	0.032	Capak et al. (2004); Pope et al. (2008)
SMMJ123622.65+621629.7	2.466	0.428	0.209	0.018	Chapman et al. (2005)
SMMJ123622.65+621629.7	2.466	0.443	0.310	0.039	Capak et al. (2004)
SMMJ123622.65+621629.7	2.466	0.547	0.348	0.034	Capak et al. (2004)
SMMJ123622.65+621629.7	2.466	0.573	0.283	0.025	Chapman et al. (2003b)
SMMJ123622.65+621629.7	2.466	0.653	0.416	0.029	Capak et al. (2004)
SMMJ123622.65+621629.7	2.466	0.656	0.251	0.022	Chapman et al. (2005)
SMMJ123622.65+621629.7	2.466	0.767	0.455	0.040	Chapman et al. (2003b)
SMMJ123622.65+621629.7	2.466	0.767	0.477	0.042	Smail et al. (2004)
SMMJ123622.65+621629.7	2.466	2.170	5.072	0.930	Smail et al. (2004)
SMMJ123622.65+621629.7	2.466	3.600	19.800	2.200	Hainline (2008)
SMMJ123622.65+621629.7	2.466	4.500	27.600	2.900	Hainline (2008)
SMMJ123622.65+621629.7	2.466	5.800	35.300	3.600	Hainline (2008)
SMMJ123622.65+621629.7	2.466	8.000	26.400	2.800	Hainline (2008)
SMMJ123622.65+621629.7	2.466	24.000	368.500	20.700	Hainline (2008)
SMMJ123622.65+621629.7	2.466	850.000	7700.000	1300.000	Chapman et al. (2005)
SMMJ123622.65+621629.7	2.466	214000.000	70.900	8.700	Chapman et al. (2005)
SMMJ123629.13+621045.8	1.013	0.365	0.130	0.030	Capak et al. (2004)
SMMJ123629.13+621045.8	1.013	0.428	0.132	0.012	Chapman et al. (2005)
SMMJ123629.13+621045.8	1.013	0.443	0.191	0.027	Capak et al. (2004)
SMMJ123629.13+621045.8	1.013	0.547	0.386	0.033	Capak et al. (2004)
SMMJ123629.13+621045.8	1.013	0.653	0.872	0.034	Capak et al. (2004)
SMMJ123629.13+621045.8	1.013	0.656	0.525	0.046	Chapman et al. (2005)
SMMJ123629.13+621045.8	1.013	0.767	2.794	0.026	Smail et al. (2004)
SMMJ123629.13+621045.8	1.013	0.775	2.754	0.242	Pope et al. (2006)
SMMJ123629.13+621045.8	1.013	0.798	2.533	0.103	Capak et al. (2004)
SMMJ123629.13+621045.8	1.013	0.907	4.144	0.150	Capak et al. (2004)
SMMJ123629.13+621045.8	1.013	1.250	11.222	0.505	Smail et al. (2004)
SMMJ123629.13+621045.8	1.013	1.895	23.795	1.529	Capak et al. (2004)
SMMJ123629.13+621045.8	1.013	2.170	40.290	0.735	Smail et al. (2004)
SMMJ123629.13+621045.8	1.013	3.600	93.100	9.600	Hainline (2008)
SMMJ123629.13+621045.8	1.013	4.500	87.000	9.000	Hainline (2008)
SMMJ123629.13+621045.8	1.013	5.800	75.800	7.700	Hainline (2008)
SMMJ123629.13+621045.8	1.013	8.000	72.000	7.400	Hainline (2008)
SMMJ123629.13+621045.8	1.013	24.000	664.800	34.200	Hainline (2008)
SMMJ123629.13+621045.8	1.013	850.000	5000.000	1300.000	Chapman et al. (2005)
SMMJ123629.13+621045.8	1.013	214000.000	81.400	8.700	Chapman et al. (2005)
SMMJ123632.61+620800.1	1.993	0.365	1.791	0.084	Capak et al. (2004)
SMMJ123632.61+620800.1	1.993	0.428	1.096	0.096	Chapman et al. (2005)
SMMJ123632.61+620800.1	1.993	0.443	1.078	0.059	Capak et al. (2004)
SMMJ123632.61+620800.1	1.993	0.547	0.990	0.044	Capak et al. (2004)
SMMJ123632.61+620800.1	1.993	0.653	1.158	0.039	Capak et al. (2004)
SMMJ123632.61+620800.1	1.993	0.656	1.318	0.116	Chapman et al. (2005)
SMMJ123632.61+620800.1	1.993	0.767	2.179	0.059	Smail et al. (2004)
SMMJ123632.61+620800.1	1.993	0.798	2.001	0.103	Capak et al. (2004)
SMMJ123632.61+620800.1	1.993	0.907	2.398	0.140	Capak et al. (2004)
SMMJ123632.61+620800.1	1.993	1.250	5.625	0.859	Smail et al. (2004)
SMMJ123632.61+620800.1	1.993	1.895	6.511	1.837	Capak et al. (2004)
SMMJ123632.61+620800.1	1.993	2.170	5.665	0.865	Smail et al. (2004)
SMMJ123632.61+620800.1	1.993	3.600	21.200	2.500	Hainline (2008)
SMMJ123632.61+620800.1	1.993	4.500	27.800	3.000	Hainline (2008)
SMMJ123632.61+620800.1	1.993	5.800	50.700	5.200	Hainline (2008)
SMMJ123632.61+620800.1	1.993	8.000	114.300	11.700	Hainline (2008)
SMMJ123632.61+620800.1	1.993	24.000	849.000	43.300	Hainline (2008)
SMMJ123632.61+620800.1	1.993	850.000	5500.000	1300.000	Chapman et al. (2005)
SMMJ123632.61+620800.1	1.993	214000.000	90.600	9.300	Chapman et al. (2005)
SMMJ123634.51+621241.0	1.219	0.365	0.671	0.052	Capak et al. (2004)
SMMJ123634.51+621241.0	1.219	0.428	0.631	0.056	Chapman et al. (2005); Pope et al. (2008)
SMMJ123634.51+621241.0	1.219	0.443	0.830	0.056	Capak et al. (2004)
SMMJ123634.51+621241.0	1.219	0.547	0.960	0.043	Capak et al. (2004)
SMMJ123634.51+621241.0	1.219	0.653	1.538	0.042	Capak et al. (2004)
SMMJ123634.51+621241.0	1.219	0.656	1.000	0.088	Chapman et al. (2005)
SMMJ123634.51+621241.0	1.219	0.767	3.149	0.057	Smail et al. (2004)

Table A.1. continued

SMG	z	$\lambda_{\rm obs}$ (μm)	Flux (μJy)	Error (μJy)	Reference
SMMJ123634.51+621241.0	1.219	0.775	3.020	0.266	Pope et al. (2006)
SMMJ123634.51+621241.0	1.219	0.798	2.914	0.109	Capak et al. (2004)
SMMJ123634.51+621241.0	1.219	0.907	4.834	0.164	Capak et al. (2004)
SMMJ123634.51+621241.0	1.219	1.250	8.914	0.322	Smail et al. (2004)
SMMJ123634.51+621241.0	1.219	1.895	17.259	1.030	Capak et al. (2004)
SMMJ123634.51+621241.0	1.219	2.170	25.894	0.706	Smail et al. (2004)
SMMJ123634.51+621241.0	1.219	3.600	64.400	6.700	Hainline (2008)
SMMJ123634.51+621241.0	1.219	4.500	72.500	7.400	Hainline (2008)
SMMJ123634.51+621241.0	1.219	5.800	59.200	6.000	Hainline (2008)
SMMJ123634.51+621241.0	1.219	8.000	73.600	7.500	Hainline (2008)
SMMJ123634.51+621241.0	1.219	24.000	464.600	23.800	Hainline (2008)
SMMJ123634.51+621241.0	1.219	70.000	13900.000	2100.000	Hainline (2008)
SMMJ123634.51+621241.0	1.219	160.000	110000.000	27000.000	Huynh et al. (2007)
SMMJ123634.51+621241.0	1.219	850.000	4300.000	1400.000	Chapman et al. (2005)
SMMJ123634.51+621241.0	1.219	214000.000	230.000	13.800	Chapman et al. (2005)
SMMJ123635.59+621424.1	2.005	0.365	0.965	0.061	Capak et al. (2004)
SMMJ123635.59+621424.1	2.005	0.428	0.759	0.067	Chapman et al. (2005)
SMMJ123635.59+621424.1	2.005	0.443	0.861	0.056	Capak et al. (2004)
SMMJ123635.59+621424.1	2.005	0.547	0.950	0.046	Capak et al. (2004)
SMMJ123635.59+621424.1	2.005	0.653	1.107	0.036	Capak et al. (2004)
SMMJ123635.59+621424.1	2.005	0.656	0.759	0.067	Chapman et al. (2005)
SMMJ123635.59+621424.1	2.005	0.767	1.637	0.045	Smail et al. (2004)
SMMJ123635.59+621424.1	2.005	0.798	1.643	0.092	Capak et al. (2004)
SMMJ123635.59+621424.1	2.005	0.907	2.065	0.120	Capak et al. (2004)
SMMJ123635.59+621424.1	2.005	1.250	5.421	0.338	Smail et al. (2004)
SMMJ123635.59+621424.1	2.005	1.895	13.777	0.725	Capak et al. (2004)
SMMJ123635.59+621424.1	2.005	2.170	19.107	0.691	Smail et al. (2004)
SMMJ123635.59+621424.1	2.005	3.600	65.000	6.700	Hainline (2008)
SMMJ123635.59+621424.1	2.005	4.500	100.000	10.100	Hainline (2008)
SMMJ123635.59+621424.1	2.005	5.800	175.800	17.600	Hainline (2008)
SMMJ123635.59+621424.1	2.005	8.000	300.500	30.200	Hainline (2008)
SMMJ123635.59+621424.1	2.005	24.000	1445.100	72.800	Hainline (2008)
SMMJ123635.59+621424.1	2.005	850.000	5500.000	1400.000	Chapman et al. (2005)
SMMJ123635.59+621424.1	2.005	214000.000	87.800	8.800	Chapman et al. (2005)
SMMJ123636.75+621156.1	0.557	0.365	0.707	0.052	Capak et al. (2004)
SMMJ123636.75+621156.1	0.557	0.428	6.310	0.555	Chapman et al. (2005)
SMMJ123636.75+621156.1	0.557	0.443	1.539	0.075	Capak et al. (2004)
SMMJ123636.75+621156.1	0.557	0.547	2.183	0.061	Capak et al. (2004)
SMMJ123636.75+621156.1	0.557	0.653	4.021	0.059	Capak et al. (2004)
SMMJ123636.75+621156.1	0.557	0.656	8.318	0.732	Chapman et al. (2005)
SMMJ123636.75+621156.1	0.557	0.767	6.519	0.060	Smail et al. (2004)
SMMJ123636.75+621156.1	0.557	0.798	6.661	0.152	Capak et al. (2004)
SMMJ123636.75+621156.1	0.557	0.907	8.273	0.199	Capak et al. (2004)
SMMJ123636.75+621156.1	0.557	1.250	12.885	0.466	Smail et al. (2004)
SMMJ123636.75+621156.1	0.557	1.895	17.872	0.773	Capak et al. (2004)
SMMJ123636.75+621156.1	0.557	2.170	23.184	0.632	Smail et al. (2004)
SMMJ123636.75+621156.1	0.557	3.600	22.600	2.500	Hainline (2008)
SMMJ123636.75+621156.1	0.557	4.500	16.200	1.800	Hainline (2008)
SMMJ123636.75+621156.1	0.557	5.800	14.400	1.500	Hainline (2008)
SMMJ123636.75+621156.1	0.557	8.000	13.400	1.600	Hainline (2008)
SMMJ123636.75+621156.1	0.557	850.000	7000.000	2100.000	Chapman et al. (2005)
SMMJ123636.75+621156.1	0.557	214000.000	39.000	8.000	Chapman et al. (2005)
SMMJ123651.76+621221.3	0.298	0.365	0.786	0.055	Capak et al. (2004)
SMMJ123651.76+621221.3	0.298	0.428	8.318	0.732	Chapman et al. (2005)
SMMJ123651.76+621221.3	0.298	0.443	1.427	0.077	Capak et al. (2004)
SMMJ123651.76+621221.3	0.298	0.547	3.485	0.073	Capak et al. (2004)
SMMJ123651.76+621221.3	0.298	0.653	5.615	0.071	Capak et al. (2004)
SMMJ123651.76+621221.3	0.298	0.656	10.000	0.880	Chapman et al. (2005)
SMMJ123651.76+621221.3	0.298	0.798	8.325	0.166	Capak et al. (2004)
SMMJ123651.76+621221.3	0.298	0.907	9.895	0.220	Capak et al. (2004)
SMMJ123651.76+621221.3	0.298	1.895	20.758	0.893	Capak et al. (2004)
SMMJ123651.76+621221.3	0.298	3.600	21.100	2.300	Hainline (2008)
SMMJ123651.76+621221.3	0.298	4.500	21.100	2.200	Hainline (2008)
SMMJ123651.76+621221.3	0.298	5.800	17.700	1.800	Hainline (2008)
SMMJ123651.76+621221.3	0.298	8.000	46.900	4.800	Hainline (2008)

Table A.1. continued

SMG	z	$\lambda_{\rm obs}$ (μm)	Flux (μJy)	Error (μJy)	Reference
SMMJ123651.76+621221.3	0.298	24.000	107.000	9.900	Hainline (2008)
SMMJ123651.76+621221.3	0.298	850.000	4600.000	800.000	Chapman et al. (2005)
SMMJ123651.76+621221.3	0.298	214000.000	49.300	7.900	Chapman et al. (2005)
SMMJ123707.21+621408.1	2.484	0.428	0.063	0.006	Chapman et al. (2005); Pope et al. (2008)
SMMJ123707.21+621408.1	2.484	0.443	0.071	0.018	Capak et al. (2004)
SMMJ123707.21+621408.1	2.484	0.547	0.108	0.029	Capak et al. (2004)
SMMJ123707.21+621408.1	2.484	0.653	0.203	0.027	Capak et al. (2004)
SMMJ123707.21+621408.1	2.484	0.656	0.145	0.013	Chapman et al. (2005)
SMMJ123707.21+621408.1	2.484	0.767	0.368	0.035	Smail et al. (2004)
SMMJ123707.21+621408.1	2.484	0.775	0.251	0.022	Pope et al. (2006)
SMMJ123707.21+621408.1	2.484	0.798	0.228	0.062	Capak et al. (2004)
SMMJ123707.21+621408.1	2.484	0.907	0.484	0.086	Capak et al. (2004)
SMMJ123707.21+621408.1	2.484	1.250	1.593	0.407	Smail et al. (2004)
SMMJ123707.21+621408.1	2.484	1.895	4.146	1.065	Capak et al. (2004)
SMMJ123707.21+621408.1	2.484	2.170	6.269	0.604	Smail et al. (2004)
SMMJ123707.21+621408.1	2.484	3.600	19.400	2.100	Hainline (2008)
SMMJ123707.21+621408.1	2.484	4.500	26.300	2.800	Hainline (2008)
SMMJ123707.21+621408.1	2.484	5.800	36.000	3.700	Hainline (2008)
SMMJ123707.21+621408.1	2.484	8.000	28.200	2.900	Hainline (2008)
SMMJ123707.21+621408.1	2.484	24.000	232.800	15.100	Hainline (2008)
SMMJ123707.21+621408.1	2.484	850.000	4700.000	1500.000	Chapman et al. (2005)
SMMJ123707.21+621408.1	2.484	214000.000	45.000	7.900	Chapman et al. (2005)
SMMJ123711.98+621325.7	1.992	0.365	0.130	0.031	Capak et al. (2004); Pope et al. (2008)
SMMJ123711.98+621325.7	1.992	0.428	0.145	0.013	Chapman et al. (2005)
SMMJ123711.98+621325.7	1.992	0.443	0.181	0.024	Capak et al. (2004)
SMMJ123711.98+621325.7	1.992	0.547	0.195	0.028	Capak et al. (2004)
SMMJ123711.98+621325.7	1.992	0.653	0.199	0.025	Capak et al. (2004)
SMMJ123711.98+621325.7	1.992	0.656	0.174	0.015	Chapman et al. (2005)
SMMJ123711.98+621325.7	1.992	0.767	0.372	0.036	Smail et al. (2004)
SMMJ123711.98+621325.7	1.992	0.798	0.365	0.061	Capak et al. (2004)
SMMJ123711.98+621325.7	1.992	0.907	0.344	0.076	Capak et al. (2004)
SMMJ123711.98+621325.7	1.992	2.170	2.194	0.575	Smail et al. (2004)
SMMJ123711.98+621325.7	1.992	3.600	9.300	1.100	Hainline (2008)
SMMJ123711.98+621325.7	1.992	4.500	11.500	1.300	Hainline (2008)
SMMJ123711.98+621325.7	1.992	5.800	15.700	1.600	Hainline (2008)
SMMJ123711.98+621325.7	1.992	8.000	12.100	1.300	Hainline (2008)
SMMJ123711.98+621325.7	1.992	24.000	250.700	15.200	Hainline (2008)
SMMJ123711.98+621325.7	1.992	850.000	4200.000	1400.000	Chapman et al. (2005)
SMMJ123711.98+621325.7	1.992	214000.000	53.900	8.100	Chapman et al. (2005)
SMMJ123712.05+621212.3	2.914	0.428	0.058	0.005	Chapman et al. (2005)
SMMJ123712.05+621212.3	2.914	0.443	0.112	0.021	Capak et al. (2004)
SMMJ123712.05+621212.3	2.914	0.547	0.098	0.027	Capak et al. (2004)
SMMJ123712.05+621212.3	2.914	0.653	0.135	0.025	Capak et al. (2004)
SMMJ123712.05+621212.3	2.914	0.656	0.229	0.020	Chapman et al. (2005)
SMMJ123712.05+621212.3	2.914	0.767	0.127	0.033	Smail et al. (2004)
SMMJ123712.05+621212.3	2.914	2.170	3.260	0.832	Smail et al. (2004)
SMMJ123712.05+621212.3	2.914	5.800	20.800	2.100	Hainline (2008)
SMMJ123712.05+621212.3	2.914	8.000	23.000	2.400	Hainline (2008)
SMMJ123712.05+621212.3	2.914	24.000	31.000	8.200	Hainline (2008)
SMMJ123712.05+621212.3	2.914	850.000	8000.000	1800.000	Chapman et al. (2005)
SMMJ123712.05+621212.3	2.914	214000.000	21.000	4.000	Chapman et al. (2005)
SMMJ123716.01+620323.3	2.037	0.365	41.166	0.396	Capak et al. (2004)
SMMJ123716.01+620323.3	2.037	0.428	27.542	2.423	Chapman et al. (2005)
SMMJ123716.01+620323.3	2.037	0.443	32.085	0.293	Capak et al. (2004)
SMMJ123716.01+620323.3	2.037	0.547	38.408	0.166	Capak et al. (2004)
SMMJ123716.01+620323.3	2.037	0.653	40.187	0.171	Capak et al. (2004)
SMMJ123716.01+620323.3	2.037	0.656	30.199	2.657	Chapman et al. (2005)
SMMJ123716.01+620323.3	2.037	0.767	54.724	0.502	Smail et al. (2004)
SMMJ123716.01+620323.3	2.037	0.798	58.598	0.555	Capak et al. (2004)
SMMJ123716.01+620323.3	2.037	0.907	66.554	0.586	Capak et al. (2004)
SMMJ123716.01+620323.3	2.037	1.895	93.546	1.694	Capak et al. (2004)
SMMJ123716.01+620323.3	2.037	2.170	377.742	33.237	Smail et al. (2004)
SMMJ123716.01+620323.3	2.037	850.000	5300.000	1700.000	Chapman et al. (2005)

Table A.1. continued

SMG	z	$\lambda_{\rm obs}$ (μm)	Flux (μJy)	Error (μJy)	Reference
SMMJ123716.01+620323.3	2.037	214000.000	109.000	11.400	Chapman et al. (2005)
SMMJ123721.87+621035.3	0.979	0.365	0.768	0.058	Capak et al. (2004); Menéndez-Delmestre et al. (2009)
SMMJ123721.87+621035.3	0.979	0.428	0.692	0.061	Chapman et al. (2005)
SMMJ123721.87+621035.3	0.979	0.443	0.911	0.057	Capak et al. (2004)
SMMJ123721.87+621035.3	0.979	0.547	1.476	0.060	Capak et al. (2004)
SMMJ123721.87+621035.3	0.979	0.653	2.734	0.051	Capak et al. (2004)
SMMJ123721.87+621035.3	0.979	0.656	1.738	0.153	Chapman et al. (2005)
SMMJ123721.87+621035.3	0.979	0.767	7.017	0.064	Smail et al. (2004)
SMMJ123721.87+621035.3	0.979	0.798	6.688	0.171	Capak et al. (2004)
SMMJ123721.87+621035.3	0.979	0.907	10.484	0.234	Capak et al. (2004)
SMMJ123721.87+621035.3	0.979	1.895	35.627	1.992	Capak et al. (2004)
SMMJ123721.87+621035.3	0.979	2.170	45.415	1.238	Smail et al. (2004)
SMMJ123721.87+621035.3	0.979	3.600	70.900	7.300	Hainline (2008)
SMMJ123721.87+621035.3	0.979	4.500	53.900	5.600	Hainline (2008)
SMMJ123721.87+621035.3	0.979	5.800	43.800	4.400	Hainline (2008)
SMMJ123721.87+621035.3	0.979	8.000	44.300	4.600	Hainline (2008)
SMMJ123721.87+621035.3	0.979	24.000	245.600	15.900	Hainline (2008)
SMMJ123721.87+621035.3	0.979	850.000	12000.000	3900.000	Chapman et al. (2005)
SMMJ123721.87+621035.3	0.979	214000.000	41.000	9.000	Chapman et al. (2005)
SMMJ131201.17+424208.1	3.405	0.428	0.302	0.027	Chapman et al. (2005)
SMMJ131201.17+424208.1	3.405	0.630	0.649	0.057	Fomalont et al. (2006)
SMMJ131201.17+424208.1	3.405	0.656	0.912	0.080	Chapman et al. (2005)
SMMJ131201.17+424208.1	3.405	0.767	1.400	0.075	Smail et al. (2004)
SMMJ131201.17+424208.1	3.405	0.920	1.535	0.135	Fomalont et al. (2006)
SMMJ131201.17+424208.1	3.405	1.250	2.138	0.455	Smail et al. (2004)
SMMJ131201.17+424208.1	3.405	2.170	4.258	0.749	Smail et al. (2004)
SMMJ131201.17+424208.1	3.405	3.600	10.600	1.100	Hainline (2008)
SMMJ131201.17+424208.1	3.405	4.500	15.100	1.600	Hainline (2008)
SMMJ131201.17+424208.1	3.405	5.800	24.100	3.700	Hainline (2008)
SMMJ131201.17+424208.1	3.405	8.000	29.300	4.100	Hainline (2008)
SMMJ131201.17+424208.1	3.405	350.000	21100.000	7700.000	Kovács et al. (2006)
SMMJ131201.17+424208.1	3.405	850.000	6200.000	1200.000	Chapman et al. (2005)
SMMJ131201.17+424208.1	3.405	214000.000	49.100	6.000	Chapman et al. (2005)
SMMJ131208.82+424129.1	1.544	0.428	0.191	0.017	Chapman et al. (2005)
SMMJ131208.82+424129.1	1.544	0.630	0.409	0.036	Fomalont et al. (2006)
SMMJ131208.82+424129.1	1.544	0.656	1.000	0.088	Chapman et al. (2005)
SMMJ131208.82+424129.1	1.544	0.767	1.337	0.012	Smail et al. (2004)
SMMJ131208.82+424129.1	1.544	0.920	1.165	0.102	Fomalont et al. (2006)
SMMJ131208.82+424129.1	1.544	1.250	5.371	0.693	Smail et al. (2004)
SMMJ131208.82+424129.1	1.544	2.170	11.620	1.022	Smail et al. (2004)
SMMJ131208.82+424129.1	1.544	3.600	27.300	2.800	Hainline (2008)
SMMJ131208.82+424129.1	1.544	4.500	37.300	3.800	Hainline (2008)
SMMJ131208.82+424129.1	1.544	5.800	33.400	4.400	Hainline (2008)
SMMJ131208.82+424129.1	1.544	8.000	26.900	4.000	Hainline (2008)
SMMJ131208.82+424129.1	1.544	850.000	4900.000	1500.000	Chapman et al. (2005)
SMMJ131208.82+424129.1	1.544	214000.000	82.400	4.800	Chapman et al. (2005)
SMMJ131212.69+424422.5	2.805	0.656	0.076	0.007	Chapman et al. (2005)
SMMJ131212.69+424422.5	2.805	2.170	5.026	0.959	Smail et al. (2004)
SMMJ131212.69+424422.5	2.805	3.600	4.600	0.600	Hainline (2008)
SMMJ131212.69+424422.5	2.805	4.500	7.200	1.000	Hainline (2008)
SMMJ131212.69+424422.5	2.805	850.000	5600.000	1900.000	Chapman et al. (2005)
SMMJ131212.69+424422.5	2.805	214000.000	102.600	7.400	Chapman et al. (2005)
SMMJ131215.27+423900.9	2.565	0.428	131.826	11.599	Chapman et al. (2005)
SMMJ131215.27+423900.9	2.565	0.630	135.521	11.925	Fomalont et al. (2006)
SMMJ131215.27+423900.9	2.565	0.656	173.780	15.291	Chapman et al. (2005)
SMMJ131215.27+423900.9	2.565	0.767	157.826	1.447	Smail et al. (2004)
SMMJ131215.27+423900.9	2.565	0.920	140.016	12.320	Fomalont et al. (2006)
SMMJ131215.27+423900.9	2.565	1.250	215.818	1.978	Smail et al. (2004)
SMMJ131215.27+423900.9	2.565	2.170	211.444	1.939	Smail et al. (2004)
SMMJ131215.27+423900.9	2.565	3.600	249.900	25.100	Hainline (2008)
SMMJ131215.27+423900.9	2.565	4.500	296.500	29.700	Hainline (2008)
SMMJ131215.27+423900.9	2.565	5.800	481.100	53.500	Hainline (2008)

Table A.1. continued

SMG	z	$\lambda_{\rm obs}$ (μm)	Flux (μJy)	Error (μJy)	Reference
SMMJ131215.27+423900.9	2.565	8.000	831.400	85.100	Hainline (2008)
SMMJ131215.27+423900.9	2.565	850.000	4400.000	1000.000	Chapman et al. (2005)
SMMJ131215.27+423900.9	2.565	214000.000	69.300	4.000	Chapman et al. (2005)
SMMJ131222.35+423814.1	2.565	0.428	6.918	0.609	Chapman et al. (2005)
SMMJ131222.35+423814.1	2.565	0.630	12.360	1.088	Fomalont et al. (2006)
SMMJ131222.35+423814.1	2.565	0.656	30.199	2.657	Chapman et al. (2005)
SMMJ131222.35+423814.1	2.565	0.767	27.937	0.256	Smail et al. (2004)
SMMJ131222.35+423814.1	2.565	0.920	24.332	2.141	Fomalont et al. (2006)
SMMJ131222.35+423814.1	2.565	1.250	39.636	1.080	Smail et al. (2004)
SMMJ131222.35+423814.1	2.565	2.170	41.419	1.864	Smail et al. (2004)
SMMJ131222.35+423814.1	2.565	3.600	63.200	6.300	Hainline (2008)
SMMJ131222.35+423814.1	2.565	4.500	80.100	8.000	Hainline (2008)
SMMJ131222.35+423814.1	2.565	5.800	148.200	16.200	Hainline (2008)
SMMJ131222.35+423814.1	2.565	8.000	267.200	27.400	Hainline (2008)
SMMJ131222.35+423814.1	2.565	850.000	3000.000	900.000	Chapman et al. (2005)
SMMJ131222.35+423814.1	2.565	214000.000	26.300	3.900	Chapman et al. (2005)
SMMJ131225.20+424344.5	1.038	0.428	1.738	0.153	Chapman et al. (2005)
SMMJ131225.20+424344.5	1.038	0.630	1.787	0.157	Fomalont et al. (2006)
SMMJ131225.20+424344.5	1.038	0.656	5.248	0.462	Chapman et al. (2005)
SMMJ131225.20+424344.5	1.038	0.767	8.057	0.074	Smail et al. (2004)
SMMJ131225.20+424344.5	1.038	0.920	7.348	0.647	Fomalont et al. (2006)
SMMJ131225.20+424344.5	1.038	1.250	14.128	0.760	Smail et al. (2004)
SMMJ131225.20+424344.5	1.038	2.170	31.419	1.136	Smail et al. (2004)
SMMJ131225.20+424344.5	1.038	3.600	60.700	6.100	Hainline (2008)
SMMJ131225.20+424344.5	1.038	4.500	48.300	4.900	Hainline (2008)
SMMJ131225.20+424344.5	1.038	5.800	35.300	4.600	Hainline (2008)
SMMJ131225.20+424344.5	1.038	8.000	53.100	6.100	Hainline (2008)
SMMJ131225.20+424344.5	1.038	850.000	2400.000	800.000	Chapman et al. (2005)
SMMJ131225.20+424344.5	1.038	214000.000	76.400	6.800	Chapman et al. (2005)
SMMJ131225.73+423941.4	1.554	0.428	0.631	0.056	Chapman et al. (2005)
SMMJ131225.73+423941.4	1.554	0.630	0.179	0.016	Fomalont et al. (2006)
SMMJ131225.73+423941.4	1.554	0.656	0.759	0.067	Chapman et al. (2005)
SMMJ131225.73+423941.4	1.554	0.920	0.735	0.065	Fomalont et al. (2006)
SMMJ131225.73+423941.4	1.554	3.600	21.100	2.100	Hainline (2008)
SMMJ131225.73+423941.4	1.554	4.500	20.200	2.100	Hainline (2008)
SMMJ131225.73+423941.4	1.554	850.000	4100.000	1300.000	Chapman et al. (2005)
SMMJ131225.73+423941.4	1.554	214000.000	752.500	4.200	Chapman et al. (2005)
SMMJ131228.30+424454.8	2.931	0.428	0.158	0.014	Chapman et al. (2005)
SMMJ131228.30+424454.8	2.931	0.630	0.310	0.027	Fomalont et al. (2006)
SMMJ131228.30+424454.8	2.931	0.656	0.479	0.042	Chapman et al. (2005)
SMMJ131228.30+424454.8	2.931	0.767	0.721	0.070	Smail et al. (2004)
SMMJ131228.30+424454.8	2.931	0.920	0.611	0.054	Fomalont et al. (2006)
SMMJ131228.30+424454.8	2.931	1.250	2.302	0.523	Smail et al. (2004)
SMMJ131228.30+424454.8	2.931	3.600	11.300	1.200	Hainline (2008)
SMMJ131228.30+424454.8	2.931	4.500	13.900	1.400	Hainline (2008)
SMMJ131228.30+424454.8	2.931	5.800	21.700	3.300	Hainline (2008)
SMMJ131228.30+424454.8	2.931	8.000	26.500	3.500	Hainline (2008)
SMMJ131228.30+424454.8	2.931	850.000	3400.000	900.000	Chapman et al. (2005)
SMMJ131228.30+424454.8	2.931	214000.000	50.900	8.100	Chapman et al. (2005)
SMMJ131231.07+424609.0	2.713	0.656	0.063	0.006	Chapman et al. (2005)
SMMJ131231.07+424609.0	2.713	0.767	0.295	0.067	Smail et al. (2004)
SMMJ131231.07+424609.0	2.713	850.000	4900.000	1600.000	Chapman et al. (2005)
SMMJ131231.07+424609.0	2.713	214000.000	39.400	8.500	Chapman et al. (2005)
SMMJ131232.31+423949.5	2.320	0.428	0.191	0.017	Chapman et al. (2005)
SMMJ131232.31+423949.5	2.320	0.630	0.409	0.036	Fomalont et al. (2006)
SMMJ131232.31+423949.5	2.320	0.656	0.525	0.046	Chapman et al. (2005)
SMMJ131232.31+423949.5	2.320	0.767	0.987	0.078	Smail et al. (2004)
SMMJ131232.31+423949.5	2.320	0.920	0.557	0.049	Fomalont et al. (2006)
SMMJ131232.31+423949.5	2.320	1.250	3.178	0.607	Smail et al. (2004)
SMMJ131232.31+423949.5	2.320	2.170	9.401	0.984	Smail et al. (2004)
SMMJ131232.31+423949.5	2.320	3.600	26.900	2.700	Hainline (2008)
SMMJ131232.31+423949.5	2.320	4.500	42.600	4.300	Hainline (2008)
SMMJ131232.31+423949.5	2.320	5.800	76.300	8.900	Hainline (2008)
SMMJ131232.31+423949.5	2.320	8.000	191.400	19.800	Hainline (2008)
SMMJ131232.31+423949.5	2.320	850.000	4700.000	1100.000	Chapman et al. (2005)

Table A.1. continued

SMG	z	$\lambda_{\rm obs}$ (μm)	Flux (μJy)	Error (μJy)	Reference
SMMJ131232.31+423949.5	2.320	214000.000	94.800	4.300	Chapman et al. (2005)
SMMJ131239.14+424155.7	2.242	0.428	0.145	0.013	Chapman et al. (2005)
SMMJ131239.14+424155.7	2.242	0.630	0.163	0.014	Fomalont et al. (2006)
SMMJ131239.14+424155.7	2.242	0.656	0.191	0.017	Chapman et al. (2005)
SMMJ131239.14+424155.7	2.242	0.767	0.784	0.062	Smail et al. (2004)
SMMJ131239.14+424155.7	2.242	0.920	0.352	0.031	Fomalont et al. (2006)
SMMJ131239.14+424155.7	2.242	2.170	10.500	1.522	Smail et al. (2004)
SMMJ131239.14+424155.7	2.242	3.600	9.300	1.000	Hainline (2008)
SMMJ131239.14+424155.7	2.242	4.500	10.300	1.100	Hainline (2008)
SMMJ131239.14+424155.7	2.242	8.000	15.900	3.600	Hainline (2008)
SMMJ131239.14+424155.7	2.242	850.000	7400.000	1900.000	Chapman et al. (2005)
SMMJ131239.14+424155.7	2.242	214000.000	49.800	6.600	Chapman et al. (2005)
SMMJ141741.81+522823.0	1.150	0.428	2.291	0.202	Chapman et al. (2005)
SMMJ141741.81+522823.0	1.150	0.656	9.120	0.802	Chapman et al. (2005)
SMMJ141741.81+522823.0	1.150	0.767	19.328	4.666	Smail et al. (2004)
SMMJ141741.81+522823.0	1.150	1.250	59.441	1.085	Smail et al. (2004)
SMMJ141741.81+522823.0	1.150	2.170	172.661	15.192	Smail et al. (2004)
SMMJ141741.81+522823.0	1.150	3.600	518.700	51.900	Hainline (2008)
SMMJ141741.81+522823.0	1.150	4.500	851.500	85.200	Hainline (2008)
SMMJ141741.81+522823.0	1.150	5.800	1313.400	134.200	Hainline (2008)
SMMJ141741.81+522823.0	1.150	8.000	1961.900	197.100	Hainline (2008)
SMMJ141741.81+522823.0	1.150	24.000	5741.600	288.500	Hainline (2008)
SMMJ141741.81+522823.0	1.150	70.000	18700.000	3500.000	Hainline (2008)
SMMJ141741.81+522823.0	1.150	850.000	3300.000	1000.000	Chapman et al. (2005)
SMMJ141741.81+522823.0	1.150	214000.000	80.000	16.000	Chapman et al. (2005)
SMMJ141742.04+523025.7	0.661	0.428	47.863	4.211	Chapman et al. (2005)
SMMJ141742.04+523025.7	0.661	0.656	63.096	5.552	Chapman et al. (2005)
SMMJ141742.04+523025.7	0.661	0.767	16.076	2.705	Smail et al. (2004)
SMMJ141742.04+523025.7	0.661	1.250	46.783	0.854	Smail et al. (2004)
SMMJ141742.04+523025.7	0.661	2.170	143.614	12.636	Smail et al. (2004)
SMMJ141742.04+523025.7	0.661	3.600	153.200	15.300	Hainline (2008)
SMMJ141742.04+523025.7	0.661	4.500	126.100	12.600	Hainline (2008)
SMMJ141742.04+523025.7	0.661	5.800	140.400	14.100	Hainline (2008)
SMMJ141742.04+523025.7	0.661	8.000	152.600	15.300	Hainline (2008)
SMMJ141742.04+523025.7	0.661	24.000	1090.100	56.800	Hainline (2008)
SMMJ141742.04+523025.7	0.661	70.000	16900.000	4000.000	Hainline (2008)
SMMJ141742.04+523025.7	0.661	850.000	2600.000	900.000	Chapman et al. (2005)
SMMJ141742.04+523025.7	0.661	214000.000	232.000	23.000	Chapman et al. (2005)
SMMJ141750.50+523101.0	2.128	0.428	0.331	0.029	Chapman et al. (2005)
SMMJ141750.50+523101.0	2.128	0.656	0.363	0.032	Chapman et al. (2005)
SMMJ141750.50+523101.0	2.128	2.170	2.076	0.183	Smail et al. (2004)
SMMJ141750.50+523101.0	2.128	850.000	2800.000	900.000	Chapman et al. (2005)
SMMJ141750.50+523101.0	2.128	214000.000	57.000	14.000	Chapman et al. (2005)
SMMJ141800.40+512820.3	1.913	0.428	0.832	0.073	Chapman et al. (2005)
SMMJ141800.40+512820.3	1.913	0.656	1.738	0.153	Chapman et al. (2005)
SMMJ141800.40+512820.3	1.913	850.000	5000.000	1000.000	Chapman et al. (2005)
SMMJ141800.40+512820.3	1.913	214000.000	128.000	19.000	Chapman et al. (2005)
SMMJ141802.87+523011.1	2.127	0.428	0.631	0.056	Chapman et al. (2005)
SMMJ141802.87+523011.1	2.127	0.656	0.759	0.067	Chapman et al. (2005)
SMMJ141802.87+523011.1	2.127	1.250	2.524	0.662	Smail et al. (2004)
SMMJ141802.87+523011.1	2.127	2.170	4.755	0.418	Smail et al. (2004)
SMMJ141802.87+523011.1	2.127	3.600	5.000	0.500	Hainline (2008)
SMMJ141802.87+523011.1	2.127	4.500	5.400	0.600	Hainline (2008)
SMMJ141802.87+523011.1	2.127	5.800	5.700	0.700	Hainline (2008)
SMMJ141802.87+523011.1	2.127	850.000	3400.000	900.000	Chapman et al. (2005)
SMMJ141802.87+523011.1	2.127	214000.000	39.000	14.000	Chapman et al. (2005)
SMMJ141809.00+522803.8	2.712	0.428	0.174	0.015	Chapman et al. (2005)
SMMJ141809.00+522803.8	2.712	0.656	0.191	0.017	Chapman et al. (2005)
SMMJ141809.00+522803.8	2.712	1.250	2.925	0.686	Smail et al. (2004)
SMMJ141809.00+522803.8	2.712	2.170	15.747	1.386	Smail et al. (2004)
SMMJ141809.00+522803.8	2.712	3.600	43.700	4.400	Hainline (2008)
SMMJ141809.00+522803.8	2.712	4.500	56.700	5.700	Hainline (2008)

Table A.1. continued

SMG	z	$\lambda_{\rm obs}$ (μm)	Flux (μJy)	Error (μJy)	Reference
SMMJ141809.00+522803.8	2.712	5.800	60.800	6.400	Hainline (2008)
SMMJ141809.00+522803.8	2.712	8.000	40.800	5.300	Hainline (2008)
SMMJ141809.00+522803.8	2.712	850.000	4300.000	1000.000	Chapman et al. (2005)
SMMJ141809.00+522803.8	2.712	214000.000	67.000	15.000	Chapman et al. (2005)
SMMJ141813.54+522923.4	3.484	0.428	0.040	0.004	Chapman et al. (2005)
SMMJ141813.54+522923.4	3.484	0.656	0.158	0.014	Chapman et al. (2005)
SMMJ141813.54+522923.4	3.484	0.767	0.222	0.054	Smail et al. (2004)
SMMJ141813.54+522923.4	3.484	2.170	1.982	0.174	Smail et al. (2004)
SMMJ141813.54+522923.4	3.484	850.000	3600.000	1100.000	Chapman et al. (2005)
SMMJ141813.54+522923.4	3.484	214000.000	93.000	16.000	Chapman et al. (2005)
SMMJ163627.94+405811.2	3.180	0.428	0.302	0.027	Chapman et al. (2005)
SMMJ163627.94+405811.2	3.180	0.656	0.398	0.035	Chapman et al. (2005)
SMMJ163627.94+405811.2	3.180	0.767	0.996	0.071	Smail et al. (2004)
SMMJ163627.94+405811.2	3.180	3.600	3.700	0.400	Hainline (2008)
SMMJ163627.94+405811.2	3.180	4.500	5.100	0.600	Hainline (2008)
SMMJ163627.94+405811.2	3.180	850.000	6500.000	2100.000	Chapman et al. (2005)
SMMJ163627.94+405811.2	3.180	214000.000	92.000	23.000	Chapman et al. (2005)
SMMJ163631.47+405546.9	2.283	0.428	0.398	0.035	Chapman et al. (2005)
SMMJ163631.47+405546.9	2.283	0.656	0.832	0.073	Chapman et al. (2005)
SMMJ163631.47+405546.9	2.283	2.170	2.613	1.164	Ivison et al. (2002)
SMMJ163631.47+405546.9	2.283	3.600	9.500	1.000	Hainline (2008)
SMMJ163631.47+405546.9	2.283	4.500	17.000	1.800	Hainline (2008)
SMMJ163631.47+405546.9	2.283	5.800	23.500	3.000	Hainline (2008)
SMMJ163631.47+405546.9	2.283	8.000	19.500	2.600	Hainline (2008)
SMMJ163631.47+405546.9	2.283	24.000	240.200	41.500	Hainline (2008)
SMMJ163631.47+405546.9	2.283	350.000	38300.000	5500.000	Kovács et al. (2006)
SMMJ163631.47+405546.9	2.283	850.000	6300.000	1900.000	Chapman et al. (2005)
SMMJ163631.47+405546.9	2.283	214000.000	99.000	23.000	Chapman et al. (2005)
SMMJ163639.01+405635.9	1.495	0.428	0.525	0.046	Chapman et al. (2005); Menéndez-Delmestre et al. (2009)
SMMJ163639.01+405635.9	1.495	0.550	1.245	0.067	Ivison et al. (2002)
SMMJ163639.01+405635.9	1.495	0.656	1.282	0.035	Ivison et al. (2002)
SMMJ163639.01+405635.9	1.495	0.656	1.096	0.096	Chapman et al. (2005)
SMMJ163639.01+405635.9	1.495	0.767	2.571	0.070	Ivison et al. (2002)
SMMJ163639.01+405635.9	1.495	2.170	10.028	0.539	Ivison et al. (2002)
SMMJ163639.01+405635.9	1.495	3.600	23.000	2.300	Hainline (2008)
SMMJ163639.01+405635.9	1.495	4.500	29.300	2.900	Hainline (2008)
SMMJ163639.01+405635.9	1.495	5.800	33.500	3.600	Hainline (2008)
SMMJ163639.01+405635.9	1.495	8.000	40.000	4.200	Hainline (2008)
SMMJ163639.01+405635.9	1.495	24.000	321.400	38.600	Hainline (2008)
SMMJ163639.01+405635.9	1.495	850.000	5100.000	1400.000	Chapman et al. (2005)
SMMJ163639.01+405635.9	1.495	1200.000	3400.000	700.000	Greve et al. (2004)
SMMJ163639.01+405635.9	1.495	214000.000	159.000	27.000	Chapman et al. (2005)
SMMJ163650.43+405734.5	2.378	0.428	1.738	0.153	Chapman et al. (2005); Menéndez-Delmestre et al. (2009)
SMMJ163650.43+405734.5	2.378	0.550	4.047	0.110	Ivison et al. (2002)
SMMJ163650.43+405734.5	2.378	0.656	3.802	0.035	Ivison et al. (2002)
SMMJ163650.43+405734.5	2.378	0.656	3.631	0.319	Chapman et al. (2005)
SMMJ163650.43+405734.5	2.378	0.767	4.510	0.082	Ivison et al. (2002)
SMMJ163650.43+405734.5	2.378	2.170	27.874	0.509	Ivison et al. (2002)
SMMJ163650.43+405734.5	2.378	3.600	31.000	3.100	Hainline (2008)
SMMJ163650.43+405734.5	2.378	4.500	36.900	3.700	Hainline (2008)
SMMJ163650.43+405734.5	2.378	5.800	50.500	5.200	Hainline (2008)
SMMJ163650.43+405734.5	2.378	8.000	65.000	6.600	Hainline (2008)
SMMJ163650.43+405734.5	2.378	24.000	886.500	58.800	Hainline (2008)
SMMJ163650.43+405734.5	2.378	350.000	33000.000	5600.000	Kovács et al. (2006)
SMMJ163650.43+405734.5	2.378	850.000	8200.000	1700.000	Chapman et al. (2005)
SMMJ163650.43+405734.5	2.378	1200.000	3100.000	700.000	Greve et al. (2004)
SMMJ163650.43+405734.5	2.378	1300.000	2600.000	500.000	Tacconi et al. (2006)
SMMJ163650.43+405734.5	2.378	214000.000	221.000	16.000	Chapman et al. (2005)
SMMJ163658.19+410523.8	2.454	0.428	0.145	0.013	Chapman et al. (2005)
SMMJ163658.19+410523.8	2.454	0.656	0.211	0.069	Ivison et al. (2002)
SMMJ163658.19+410523.8	2.454	0.656	0.174	0.015	Chapman et al. (2005)
SMMJ163658.19+410523.8	2.454	0.767	0.393	0.066	Ivison et al. (2002)
SMMJ163658.19+410523.8	2.454	2.170	8.113	0.436	Ivison et al. (2002)
SMMJ163658.19+410523.8	2.454	3.600	14.900	1.500	Hainline (2008)

Table A.1. continued

SMG	z	$\lambda_{\rm obs}$ (μm)	Flux (μJy)	Error (μJy)	Reference
SMMJ163658.19+410523.8	2.454	4.500	21.200	2.100	Hainline (2008)
SMMJ163658.19+410523.8	2.454	5.800	28.100	3.100	Hainline (2008)
SMMJ163658.19+410523.8	2.454	8.000	29.000	3.500	Hainline (2008)
SMMJ163658.19+410523.8	2.454	24.000	343.500	46.800	Hainline (2008)
SMMJ163658.19+410523.8	2.454	350.000	45200.000	5300.000	Kovács et al. (2006)
SMMJ163658.19+410523.8	2.454	850.000	10700.000	2000.000	Chapman et al. (2005)
SMMJ163658.19+410523.8	2.454	1200.000	3400.000	1100.000	Greve et al. (2004)
SMMJ163658.19+410523.8	2.454	1300.000	1500.000	500.000	Tacconi et al. (2006)
SMMJ163658.19+410523.8	2.454	214000.000	92.000	16.000	Chapman et al. (2005)
SMMJ163658.78+405728.1	1.190	0.428	1.000	0.088	Chapman et al. (2005); Valiante et al. (2007)
SMMJ163658.78+405728.1	1.190	0.550	2.825	0.077	Ivison et al. (2002)
SMMJ163658.78+405728.1	1.190	0.656	3.133	0.057	Ivison et al. (2002)
SMMJ163658.78+405728.1	1.190	0.656	3.020	0.266	Chapman et al. (2005)
SMMJ163658.78+405728.1	1.190	0.767	5.837	0.107	Ivison et al. (2002)
SMMJ163658.78+405728.1	1.190	2.170	36.074	2.870	Ivison et al. (2002)
SMMJ163658.78+405728.1	1.190	3.600	67.500	6.800	Hainline (2008)
SMMJ163658.78+405728.1	1.190	4.500	66.600	6.700	Hainline (2008)
SMMJ163658.78+405728.1	1.190	5.800	48.800	5.200	Hainline (2008)
SMMJ163658.78+405728.1	1.190	8.000	61.700	6.300	Hainline (2008)
SMMJ163658.78+405728.1	1.190	24.000	463.000	42.000	Hainline (2008)
SMMJ163658.78+405728.1	1.190	850.000	5100.000	1400.000	Chapman et al. (2005)
SMMJ163658.78+405728.1	1.190	214000.000	74.000	29.000	Chapman et al. (2005)
SMMJ163704.34+410530.3	0.840	0.428	0.759	0.067	Chapman et al. (2005)
SMMJ163704.34+410530.3	0.840	0.550	1.955	0.053	Ivison et al. (2002)
SMMJ163704.34+410530.3	0.840	0.656	2.089	0.038	Ivison et al. (2002)
SMMJ163704.34+410530.3	0.840	0.656	2.089	0.184	Chapman et al. (2005)
SMMJ163704.34+410530.3	0.840	0.767	3.892	0.106	Ivison et al. (2002)
SMMJ163704.34+410530.3	0.840	2.170	10.597	2.102	Ivison et al. (2002)
SMMJ163704.34+410530.3	0.840	4.500	12.500	1.300	Hainline (2008)
SMMJ163704.34+410530.3	0.840	350.000	21000.000	4700.000	Kovács et al. (2006)
SMMJ163704.34+410530.3	0.840	850.000	11200.000	1600.000	Chapman et al. (2005)
SMMJ163704.34+410530.3	0.840	214000.000	45.000	16.000	Chapman et al. (2005)
SMMJ163706.51+405313.8	2.374	0.656	0.525	0.046	Chapman et al. (2005); Valiante et al. (2007)
SMMJ163706.51+405313.8	2.374	0.767	1.301	0.147	Smail et al. (2004)
SMMJ163706.51+405313.8	2.374	2.170	14.230	0.765	Smail et al. (2004)
SMMJ163706.51+405313.8	2.374	4.500	31.500	3.200	Hainline (2008)
SMMJ163706.51+405313.8	2.374	8.000	62.000	6.300	Hainline (2008)
SMMJ163706.51+405313.8	2.374	24.000	390.300	50.700	Hainline (2008)
SMMJ163706.51+405313.8	2.374	350.000	36100.000	7700.000	Kovács et al. (2006)
SMMJ163706.51+405313.8	2.374	850.000	11200.000	2900.000	Chapman et al. (2005)
SMMJ163706.51+405313.8	2.374	1200.000	4200.000	1100.000	Greve et al. (2004)
SMMJ163706.51+405313.8	2.374	214000.000	74.000	23.000	Chapman et al. (2005)
SMMJ221724.69+001242.1	0.510	0.428	25.119	2.210	Chapman et al. (2005)
SMMJ221724.69+001242.1	0.510	0.656	36.308	3.195	Chapman et al. (2005)
SMMJ221724.69+001242.1	0.510	3.600	188.000	18.800	Hainline (2008)
SMMJ221724.69+001242.1	0.510	4.500	146.400	14.600	Hainline (2008)
SMMJ221724.69+001242.1	0.510	5.800	131.800	13.400	Hainline (2008)
SMMJ221724.69+001242.1	0.510	8.000	128.000	12.900	Hainline (2008)
SMMJ221724.69+001242.1	0.510	24.000	618.100	45.000	Hainline (2008)
SMMJ221724.69+001242.1	0.510	850.000	8600.001	1900.000	Chapman et al. (2005)
SMMJ221724.69+001242.1	0.510	214000.000	121.100	10.700	Chapman et al. (2005)
SMMJ221725.97+001238.9	3.094	0.573	0.068	0.006	Chapman et al. (2003b)
SMMJ221725.97+001238.9	3.094	0.656	0.052	0.005	Chapman et al. (2005)
SMMJ221725.97+001238.9	3.094	0.767	0.088	0.008	Chapman et al. (2003b)
SMMJ221725.97+001238.9	3.094	0.767	1.165	0.073	Smail et al. (2004)
SMMJ221725.97+001238.9	3.094	3.600	5.900	0.600	Hainline (2008)
SMMJ221725.97+001238.9	3.094	4.500	7.600	0.800	Hainline (2008)
SMMJ221725.97+001238.9	3.094	5.800	9.000	1.200	Hainline (2008)
SMMJ221725.97+001238.9	3.094	8.000	14.600	1.700	Hainline (2008)
SMMJ221725.97+001238.9	3.094	850.000	17400.000	2900.000	Chapman et al. (2005)
SMMJ221725.97+001238.9	3.094	214000.000	41.200	9.300	Chapman et al. (2005)
SMMJ221733.02+000906.0	0.926	0.428	0.575	0.051	Chapman et al. (2005); Menéndez-Delmestre et al. (2009)

Table A.1. continued

SMG	z	$\lambda_{\rm obs}$ (μm)	Flux (μJy)	Error (μJy)	Reference
SMMJ221733.02+000906.0	0.926	0.656	1.096	0.096	Chapman et al. (2005)
SMMJ221733.02+000906.0	0.926	0.767	0.267	0.023	Smail et al. (2004)
SMMJ221733.02+000906.0	0.926	1.250	20.801	0.936	Smail et al. (2004)
SMMJ221733.02+000906.0	0.926	2.170	54.600	1.488	Smail et al. (2004)
SMMJ221733.02+000906.0	0.926	850.000	11100.000	3400.000	Chapman et al. (2005)
SMMJ221733.02+000906.0	0.926	214000.000	161.700	16.300	Chapman et al. (2005)
SMMJ221733.12+001120.2	0.652	0.428	2.754	0.242	Chapman et al. (2005); Menéndez-Delmestre et al. (2009)
SMMJ221733.12+001120.2	0.652	0.656	10.000	0.880	Chapman et al. (2005)
SMMJ221733.12+001120.2	0.652	0.767	19.687	0.180	Smail et al. (2004)
SMMJ221733.12+001120.2	0.652	1.250	35.163	0.642	Smail et al. (2004)
SMMJ221733.12+001120.2	0.652	2.170	113.030	2.063	Smail et al. (2004)
SMMJ221733.12+001120.2	0.652	3.600	87.900	8.800	Hainline (2008)
SMMJ221733.12+001120.2	0.652	4.500	66.500	6.700	Hainline (2008)
SMMJ221733.12+001120.2	0.652	5.800	78.800	8.100	Hainline (2008)
SMMJ221733.12+001120.2	0.652	8.000	66.100	6.700	Hainline (2008)
SMMJ221733.12+001120.2	0.652	24.000	516.900	45.600	Hainline (2008)
SMMJ221733.12+001120.2	0.652	850.000	6900.000	2100.000	Chapman et al. (2005)
SMMJ221733.12+001120.2	0.652	214000.000	69.200	10.300	Chapman et al. (2005)
SMMJ221733.91+001352.1	2.555	0.428	0.437	0.038	Chapman et al. (2005); Menéndez-Delmestre et al. (2009)
SMMJ221733.91+001352.1	2.555	0.656	0.832	0.073	Chapman et al. (2005)
SMMJ221733.91+001352.1	2.555	0.767	0.951	0.068	Smail et al. (2004)
SMMJ221733.91+001352.1	2.555	1.250	2.643	0.544	Smail et al. (2004)
SMMJ221733.91+001352.1	2.555	3.600	21.100	2.100	Hainline (2008)
SMMJ221733.91+001352.1	2.555	4.500	26.600	2.700	Hainline (2008)
SMMJ221733.91+001352.1	2.555	5.800	28.600	3.000	Hainline (2008)
SMMJ221733.91+001352.1	2.555	8.000	38.900	4.000	Hainline (2008)
SMMJ221733.91+001352.1	2.555	850.000	9100.000	1100.000	Chapman et al. (2005)
SMMJ221733.91+001352.1	2.555	214000.000	44.500	13.400	Chapman et al. (2005)
SMMJ221735.15+001537.2	3.098	0.428	0.132	0.012	Chapman et al. (2005); Menéndez-Delmestre et al. (2009)
SMMJ221735.15+001537.2	3.098	0.656	0.191	0.017	Chapman et al. (2005)
SMMJ221735.15+001537.2	3.098	0.767	0.900	0.064	Smail et al. (2004)
SMMJ221735.15+001537.2	3.098	1.250	2.410	0.368	Smail et al. (2004)
SMMJ221735.15+001537.2	3.098	2.170	5.072	0.614	Smail et al. (2004)
SMMJ221735.15+001537.2	3.098	3.600	4.200	0.400	Hainline (2008)
SMMJ221735.15+001537.2	3.098	4.500	6.100	0.600	Hainline (2008)
SMMJ221735.15+001537.2	3.098	8.000	8.600	1.300	Hainline (2008)
SMMJ221735.15+001537.2	3.098	850.000	6300.000	1300.000	Chapman et al. (2005)
SMMJ221735.15+001537.2	3.098	214000.000	49.400	13.300	Chapman et al. (2005)
SMMJ221735.84+001558.9	3.089	0.428	0.083	0.007	Chapman et al. (2005); Menéndez-Delmestre et al. (2009)
SMMJ221735.84+001558.9	3.089	0.656	0.229	0.020	Chapman et al. (2005)
SMMJ221735.84+001558.9	3.089	0.767	0.362	0.061	Smail et al. (2004)
SMMJ221735.84+001558.9	3.089	1.250	1.265	0.305	Smail et al. (2004)
SMMJ221735.84+001558.9	3.089	2.170	2.662	0.528	Smail et al. (2004)
SMMJ221735.84+001558.9	3.089	3.600	6.900	0.700	Hainline (2008)
SMMJ221735.84+001558.9	3.089	4.500	11.100	1.100	Hainline (2008)
SMMJ221735.84+001558.9	3.089	5.800	12.600	1.500	Hainline (2008)
SMMJ221735.84+001558.9	3.089	8.000	17.700	2.000	Hainline (2008)
SMMJ221735.84+001558.9	3.089	850.000	4900.000	1300.000	Chapman et al. (2005)
SMMJ221735.84+001558.9	3.089	214000.000	44.300	12.800	Chapman et al. (2005)
SMMJ221737.39+001025.1	2.614	0.428	0.331	0.029	Chapman et al. (2005); Menéndez-Delmestre et al. (2009)
SMMJ221737.39+001025.1	2.614	0.656	0.525	0.046	Chapman et al. (2005)
SMMJ221737.39+001025.1	2.614	0.767	0.813	0.065	Smail et al. (2004)
SMMJ221737.39+001025.1	2.614	1.250	2.219	0.390	Smail et al. (2004)
SMMJ221737.39+001025.1	2.614	2.170	9.401	0.906	Smail et al. (2004)
SMMJ221737.39+001025.1	2.614	850.000	6100.000	2000.000	Chapman et al. (2005)
SMMJ221737.39+001025.1	2.614	214000.000	110.100	14.000	Chapman et al. (2005)
SMMJ221804.42+002154.4	2.517	0.428	0.302	0.027	Chapman et al. (2005); Menéndez-Delmestre et al. (2009)
SMMJ221804.42+002154.4	2.517	0.656	0.479	0.042	Chapman et al. (2005)
SMMJ221804.42+002154.4	2.517	0.767	1.439	0.065	Smail et al. (2004)
SMMJ221804.42+002154.4	2.517	2.170	4.418	0.941	Smail et al. (2004)
SMMJ221804.42+002154.4	2.517	3.600	9.100	0.900	Hainline (2008)
SMMJ221804.42+002154.4	2.517	4.500	13.400	1.400	Hainline (2008)
SMMJ221804.42+002154.4	2.517	5.800	19.500	2.300	Hainline (2008)
SMMJ221804.42+002154.4	2.517	24.000	346.700	38.800	Hainline (2008)
SMMJ221804.42+002154.4	2.517	850.000	9000.001	2300.000	Chapman et al. (2005)

Table A.1. continued

SMG	z	$\lambda_{\rm obs}$ (μm)	Flux (μJy)	Error (μJy)	Reference
SMMJ221804.42+002154.4	2.517	214000.000	43.800	10.400	Chapman et al. (2005)
SMMJ221806.77+001245.7	3.623	0.428	0.174	0.015	Chapman et al. (2005); Menéndez-Delmestre et al. (2009)
SMMJ221806.77+001245.7	3.623	0.656	0.692	0.061	Chapman et al. (2005)
SMMJ221806.77+001245.7	3.623	0.767	1.102	0.069	Smail et al. (2004)
SMMJ221806.77+001245.7	3.623	2.170	8.654	2.089	Smail et al. (2004)
SMMJ221806.77+001245.7	3.623	3.600	19.800	2.000	Hainline (2008)
SMMJ221806.77+001245.7	3.623	4.500	25.800	2.600	Hainline (2008)
SMMJ221806.77+001245.7	3.623	5.800	10.100	3.100	Hainline (2008)
SMMJ221806.77+001245.7	3.623	8.000	36.300	4.100	Hainline (2008)
SMMJ221806.77+001245.7	3.623	24.000	475.200	44.000	Hainline (2008)
SMMJ221806.77+001245.7	3.623	850.000	8400.000	2300.000	Chapman et al. (2005)
SMMJ221806.77+001245.7	3.623	214000.000	241.500	11.200	Chapman et al. (2005)

Notes. The second reference in the first entry for each SMG indicates that there exists a mid-IR Spitzer/IRS spectrum of this object (Valiante et al. 2007; Pope et al. 2008; Menéndez-Delmestre et al. 2007; Menéndez-Delmestre et al. 2009).

References. Ivison et al. (2002, 2005); Chapman et al. (2003b, 2005); Capak et al. (2004); Clements et al. (2004); Egami et al. (2004); Greve et al. (2004); Smail et al. (2004); Fomalont et al. (2006); Kovács et al. (2006); Laurent et al. (2006); Tacconi et al. (2006); Pope et al. (2006); Huynh et al. (2007); Hainline (2008).

Table A.2. Photometry upper limits of SMGs.

SMG	z	λ_{obs} (μm)	Flux (μJy)	Error (μJy)	Reference
SMMJ030227.73+000653.5	1.408	70.000	13600.000	0.000	Hainline (2008)
SMMJ030231.81+001031.3	1.316	0.365	0.059	0.000	Clements et al. (2004)
SMMJ030231.81+001031.3	1.316	0.428	0.100	0.000	Chapman et al. (2005)
SMMJ030231.81+001031.3	1.316	0.440	0.102	0.000	Clements et al. (2004)
SMMJ030231.81+001031.3	1.316	0.656	0.331	0.000	Chapman et al. (2005)
SMMJ030231.81+001031.3	1.316	0.767	0.806	0.000	Smail et al. (2004)
SMMJ030231.81+001031.3	1.316	0.767	0.205	0.000	Clements et al. (2004)
SMMJ030231.81+001031.3	1.316	2.170	2.865	0.000	Smail et al. (2004)
SMMJ030231.81+001031.3	1.316	2.170	2.655	0.000	Clements et al. (2004)
SMMJ030231.81+001031.3	1.316	3.600	0.700	0.000	Hainline (2008)
SMMJ030231.81+001031.3	1.316	5.800	5.500	0.000	Hainline (2008)
SMMJ030231.81+001031.3	1.316	8.000	3.500	0.000	Hainline (2008)
SMMJ030231.81+001031.3	1.316	24.000	110.700	0.000	Hainline (2008)
SMMJ030231.81+001031.3	1.316	70.000	14800.000	0.000	Hainline (2008)
SMMJ030236.15+000817.1	2.435	0.365	0.059	0.000	Clements et al. (2004)
SMMJ030236.15+000817.1	2.435	0.428	0.100	0.000	Chapman et al. (2005)
SMMJ030236.15+000817.1	2.435	0.440	0.102	0.000	Clements et al. (2004)
SMMJ030236.15+000817.1	2.435	0.767	0.205	0.000	Clements et al. (2004)
SMMJ030236.15+000817.1	2.435	0.767	0.806	0.000	Smail et al. (2004)
SMMJ030236.15+000817.1	2.435	1.250	4.809	0.000	Smail et al. (2004)
SMMJ030236.15+000817.1	2.435	2.170	2.865	0.000	Smail et al. (2004)
SMMJ030236.15+000817.1	2.435	8.000	3.500	0.000	Hainline (2008)
SMMJ030236.15+000817.1	2.435	24.000	78.200	0.000	Hainline (2008)
SMMJ030236.15+000817.1	2.435	70.000	10000.000	0.000	Hainline (2008)
SMMJ030238.62+001106.3	0.276	5.800	5.100	0.000	Hainline (2008)
SMMJ030238.62+001106.3	0.276	8.000	3.800	0.000	Hainline (2008)
SMMJ030238.62+001106.3	0.276	24.000	107.500	0.000	Hainline (2008)
SMMJ030238.62+001106.3	0.276	70.000	12700.000	0.000	Hainline (2008)
SMMJ030244.82+000632.3	0.176	5.800	2.600	0.000	Hainline (2008)
SMMJ030244.82+000632.3	0.176	24.000	83.700	0.000	Hainline (2008)
SMMJ030244.82+000632.3	0.176	70.000	10400.000	0.000	Hainline (2008)
SMMJ105151.69+572636.0	1.147	70.000	4200.000	0.000	Hainline (2008)
SMMJ105151.69+572636.0	1.147	61182.000	60.000	0.000	Ivison et al. (2002)
SMMJ105155.47+572312.7	2.686	70.000	3600.000	0.000	Hainline (2008)
SMMJ105158.02+571800.2	2.239	70.000	4100.000	0.000	Hainline (2008)
SMMJ105200.22+572420.2	0.689	24.000	65.100	0.000	Hainline (2008)
SMMJ105201.25+572445.7	2.148	0.767	0.243	0.000	Ivison et al. (2002)
SMMJ105201.25+572445.7	2.148	70.000	3700.000	0.000	Hainline (2008)
SMMJ105207.49+571904.0	2.689	2.170	3.777	0.000	Ivison et al. (2002)
SMMJ105207.49+571904.0	2.689	2.170	4.541	0.000	Smail et al. (2004)
SMMJ105207.49+571904.0	2.689	5.800	4.800	0.000	Hainline (2008)
SMMJ105207.49+571904.0	2.689	8.000	5.600	0.000	Hainline (2008)
SMMJ105207.49+571904.0	2.689	70.000	3200.000	0.000	Hainline (2008)
SMMJ105207.49+571904.0	2.689	1200.000	400.000	800.000	Kovács et al. (2006)
SMMJ105225.79+571906.4	2.372	70.000	3200.000	0.000	Hainline (2008)
SMMJ105227.58+572512.4	2.142	70.000	4500.000	0.000	Hainline (2008)
SMMJ105227.77+572218.2	1.956	0.656	0.034	0.000	Ivison et al. (2005)
SMMJ105227.77+572218.2	1.956	0.767	0.243	0.000	Smail et al. (2004)
SMMJ105227.77+572218.2	1.956	2.170	4.142	0.000	Smail et al. (2004)
SMMJ105227.77+572218.2	1.956	3.600	0.500	0.000	Hainline (2008)
SMMJ105227.77+572218.2	1.956	4.500	0.300	0.000	Hainline (2008)
SMMJ105227.77+572218.2	1.956	5.800	4.900	0.000	Hainline (2008)
SMMJ105227.77+572218.2	1.956	8.000	1.800	0.000	Hainline (2008)
SMMJ105227.77+572218.2	1.956	24.000	63.900	0.000	Hainline (2008)
SMMJ105227.77+572218.2	1.956	70.000	4100.000	0.000	Hainline (2008)
SMMJ105227.77+572218.2	1.956	350.000	11300.000	6700.000	Kovács et al. (2006)
SMMJ105230.73+572209.5	2.611	70.000	4100.000	0.000	Hainline (2008)
SMMJ105238.19+571651.1	1.852	8.000	7.600	0.000	Hainline (2008)
SMMJ105238.19+571651.1	1.852	70.000	3900.000	0.000	Hainline (2008)

Table A.2. continued.

SMG	z	$\lambda_{\rm obs}$ (μm)	Flux (μJy)	Error (μJy)	Reference
SMMJ105238.30+572435.8	3.036	8.000	57.200	0.000	Hainline (2008)
SMMJ105238.30+572435.8	3.036	70.000	6400.000	0.000	Hainline (2008)
SMMJ105238.30+572435.8	3.036	61182.000	226.000	0.000	Ivison et al. (2002)
SMMJ123549.44+621536.8	2.203	4.500	0.200	0.000	Hainline (2008)
SMMJ123549.44+621536.8	2.203	8.000	1.500	0.000	Hainline (2008)
SMMJ123549.44+621536.8	2.203	70.000	4100.000	0.000	Hainline (2008)
SMMJ123553.26+621337.7	2.098	1.895	–0.244	1.228	Capak et al. (2004)
SMMJ123553.26+621337.7	2.098	24.000	70.900	0.000	Hainline (2008)
SMMJ123553.26+621337.7	2.098	70.000	2100.000	0.000	Hainline (2008)
SMMJ123555.14+620901.7	1.875	70.000	2000.000	0.000	**?**
SMMJ123600.10+620253.5	2.710	70.000	5500.000	0.000	Hainline (2008)
SMMJ123600.15+621047.2	1.994	0.443	0.043	0.021	Capak et al. (2004)
SMMJ123600.15+621047.2	1.994	0.547	0.030	0.016	Capak et al. (2004)
SMMJ123600.15+621047.2	1.994	0.907	0.030	0.046	Capak et al. (2004)
SMMJ123600.15+621047.2	1.994	1.895	–2.029	0.928	Capak et al. (2004)
SMMJ123600.15+621047.2	1.994	70.000	3800.000	0.000	Hainline (2008)
SMMJ123606.72+621550.7	2.416	0.767	0.128	0.000	Smail et al. (2004)
SMMJ123606.72+621550.7	2.416	1.250	1.593	0.000	Smail et al. (2004)
SMMJ123606.72+621550.7	2.416	1.895	7.125	3.028	Capak et al. (2004)
SMMJ123606.72+621550.7	2.416	70.000	3200.000	0.000	Hainline (2008)
SMMJ123606.85+621021.4	2.509	24.000	113.500	0.000	Hainline (2008)
SMMJ123606.85+621021.4	2.509	70.000	3900.000	0.000	Hainline (2008)
SMMJ123616.15+621513.7	2.578	0.365	0.028	0.023	Capak et al. (2004)
SMMJ123616.15+621513.7	2.578	1.895	1.741	0.995	Capak et al. (2004)
SMMJ123616.15+621513.7	2.578	70.000	2000.000	0.000	Hainline (2008)
SMMJ123618.33+621550.5	1.865	1.895	2.811	0.990	Capak et al. (2004)
SMMJ123618.33+621550.5	1.865	70.000	3600.000	0.000	Hainline (2008)
SMMJ123621.27+621708.4	1.998	1.250	1.593	0.000	Smail et al. (2004)
SMMJ123621.27+621708.4	1.988	70.000	2200.000	0.000	Hainline (2008)
SMMJ123622.65+621629.7	2.466	0.775	0.023	0.000	Pope et al. (2006)
SMMJ123622.65+621629.7	2.466	1.250	1.593	0.000	Smail et al. (2004)
SMMJ123622.65+621629.7	2.466	1.895	2.170	0.832	Capak et al. (2004)
SMMJ123622.65+621629.7	2.466	70.000	2700.000	0.000	Hainline (2008)
SMMJ123629.13+621045.8	1.013	70.000	1800.000	0.000	Hainline (2008)
SMMJ123632.61+620800.1	1.993	70.000	2400.000	0.000	Hainline (2008)
SMMJ123634.51+621241.0	1.219	1.0000000e+10	1.0000000e+13	0.000	??
SMMJ123635.59+621424.1	2.005	70.000	2800.000	0.000	Hainline (2008)
SMMJ123636.75+621156.1	0.557	24.000	127.800	0.000	Hainline (2008)
SMMJ123636.75+621156.1	0.557	70.000	5300.000	0.000	Hainline (2008)
SMMJ123651.76+621221.3	0.298	70.000	1600.000	0.000	Hainline (2008)
SMMJ123707.21+621408.1	2.484	0.365	0.035	0.023	Capak et al. (2004)
SMMJ123707.21+621408.1	2.484	70.000	1600.000	0.000	Hainline (2008)
SMMJ123707.21+621408.1	2.484	1300.000	1400.000	0.000	Tacconi et al. (2006)
SMMJ123711.98+621325.7	1.992	1.250	1.593	0.000	Smail et al. (2004)
SMMJ123711.98+621325.7	1.992	1.895	2.498	1.119	Capak et al. (2004)
SMMJ123711.98+621325.7	1.992	70.000	1500.000	0.000	Hainline (2008)
SMMJ123712.05+621212.3	2.914	0.365	0.050	0.027	Capak et al. (2004)
SMMJ123712.05+621212.3	2.914	0.798	0.131	0.056	Capak et al. (2004)
SMMJ123712.05+621212.3	2.914	0.907	0.128	0.070	Capak et al. (2004)
SMMJ123712.05+621212.3	2.914	1.250	1.593	0.000	Smail et al. (2004)
SMMJ123712.05+621212.3	2.914	1.895	–0.846	0.977	Capak et al. (2004)
SMMJ123712.05+621212.3	2.914	70.000	1500.000	0.000	Hainline (2008)
SMMJ123716.01+620323.3	2.037	70.000	6000.000	0.000	Hainline (2008)
SMMJ123721.87+621035.3	0.979	70.000	3000.000	0.000	Hainline (2008)
SMMJ131201.17+424208.1	3.405	1.0000000e+10	1.0000000e+13	0.000	??
SMMJ131208.82+424129.1	1.544	1.0000000e+10	1.0000000e+13	0.000	??
SMMJ131212.69+424422.5	2.805	0.428	0.058	0.000	Chapman et al. (2005)
SMMJ131212.69+424422.5	2.805	0.630	0.078	0.000	Fomalont et al. (2006)
SMMJ131212.69+424422.5	2.805	0.767	0.243	0.000	Smail et al. (2004)
SMMJ131212.69+424422.5	2.805	0.920	0.140	0.000	Fomalont et al. (2006)

Table A.2. continued.

SMG	z	λ_{obs} (μm)	Flux (μJy)	Error (μJy)	Reference
SMMJ131212.69+424422.5	2.805	1.250	2.524	0.000	Smail et al. (2004)
SMMJ131212.69+424422.5	2.805	5.800	8.200	0.000	Hainline (2008)
SMMJ131212.69+424422.5	2.805	8.000	10.200	0.000	Hainline (2008)
SMMJ131212.69+424422.5	2.805	350.000	3700.000	4400.000	Kovács et al. (2006)
SMMJ131215.27+423900.9	2.565	1.0000000e+10	1.0000000e+13	0.000	??
SMMJ131222.35+423814.1	2.565	1.0000000e+10	1.0000000e+13	0.000	??
SMMJ131225.20+424344.5	1.038	1.0000000e+10	1.0000000e+13	0.000	??
SMMJ131225.73+423941.4	1.554	5.800	4.900	0.000	Hainline (2008)
SMMJ131225.73+423941.4	1.554	8.000	5.700	0.000	Hainline (2008)
SMMJ131225.73+423941.4	1.554	350.000	14700.000	7400.000	Kovács et al. (2006)
SMMJ131228.30+424454.8	2.931	2.170	3.445	0.000	Smail et al. (2004)
SMMJ131231.07+424609.0	2.713	0.428	0.058	0.000	Chapman et al. (2005)
SMMJ131231.07+424609.0	2.713	1.250	2.524	0.000	Smail et al. (2004)
SMMJ131231.07+424609.0	2.713	2.170	3.445	0.000	Smail et al. (2004)
SMMJ131231.07+424609.0	2.713	3.600	0.600	0.000	Hainline (2008)
SMMJ131231.07+424609.0	2.713	4.500	1.000	0.000	Hainline (2008)
SMMJ131231.07+424609.0	2.713	5.800	5.100	0.000	Hainline (2008)
SMMJ131231.07+424609.0	2.713	8.000	6.300	0.000	Hainline (2008)
SMMJ131232.31+423949.5	2.320	1.0000000e+10	1.0000000e+13	0.000	??
SMMJ131239.14+424155.7	2.242	1.250	0.481	0.000	Smail et al. (2004)
SMMJ131239.14+424155.7	2.242	5.800	7.700	0.000	Hainline (2008)
SMMJ141741.81+522823.0	1.150	1.0000000e+10	1.0000000e+13	0.000	??
SMMJ141742.04+523025.7	0.661	1.0000000e+10	1.0000000e+13	0.000	??
SMMJ141750.50+523101.0	2.128	0.767	0.423	0.000	Smail et al. (2004)
SMMJ141750.50+523101.0	2.128	1.250	2.302	0.000	Smail et al. (2004)
SMMJ141750.50+523101.0	2.128	3.600	0.300	0.000	Hainline (2008)
SMMJ141750.50+523101.0	2.128	4.500	0.300	0.000	Hainline (2008)
SMMJ141750.50+523101.0	2.128	5.800	1.300	0.000	Hainline (2008)
SMMJ141750.50+523101.0	2.128	8.000	1.800	0.000	Hainline (2008)
SMMJ141750.50+523101.0	2.128	24.000	88.800	0.000	Hainline (2008)
SMMJ141750.50+523101.0	2.128	70.000	6700.000	0.000	Hainline (2008)
SMMJ141800.40+512820.3	1.913	1.0000000e+10	1.0000000e+13	0.000	??
SMMJ141802.87+523011.1	2.127	0.767	0.423	0.000	Smail et al. (2004)
SMMJ141802.87+523011.1	2.127	8.000	2.000	0.000	Hainline (2008)
SMMJ141802.87+523011.1	2.127	24.000	93.200	0.000	Hainline (2008)
SMMJ141802.87+523011.1	2.127	70.000	6900.000	0.000	Hainline (2008)
SMMJ141809.00+522803.8	2.712	0.767	0.423	0.000	Smail et al. (2004)
SMMJ141809.00+522803.8	2.712	24.000	142.000	0.000	Hainline (2008)
SMMJ141809.00+522803.8	2.712	70.000	13400.000	0.000	Hainline (2008)
SMMJ141813.54+522923.4	3.484	1.250	2.302	0.000	Smail et al. (2004)
SMMJ141813.54+522923.4	3.484	3.600	0.200	0.000	Hainline (2008)
SMMJ141813.54+522923.4	3.484	4.500	0.500	0.000	Hainline (2008)
SMMJ141813.54+522923.4	3.484	5.800	2.100	0.000	Hainline (2008)
SMMJ141813.54+522923.4	3.484	8.000	3.800	0.000	Hainline (2008)
SMMJ141813.54+522923.4	3.484	24.000	169.000	0.000	Hainline (2008)
SMMJ141813.54+522923.4	3.484	70.000	9000.001	0.000	Hainline (2008)
SMMJ163627.94+405811.2	3.180	5.800	3.800	0.000	Hainline (2008)
SMMJ163627.94+405811.2	3.180	8.000	4.100	0.000	Hainline (2008)
SMMJ163627.94+405811.2	3.180	24.000	123.800	0.000	Hainline (2008)
SMMJ163627.94+405811.2	3.180	70.000	6700.000	0.000	Hainline (2008)
SMMJ163631.47+405546.9	2.283	0.550	0.161	0.000	Ivison et al. (2002)
SMMJ163631.47+405546.9	2.283	0.656	0.124	0.000	Ivison et al. (2002)
SMMJ163631.47+405546.9	2.283	0.767	0.243	0.000	Ivison et al. (2002)
SMMJ163631.47+405546.9	2.283	0.767	0.106	0.000	Smail et al. (2004)
SMMJ163631.47+405546.9	2.283	2.170	4.142	0.000	Smail et al. (2004)
SMMJ163631.47+405546.9	2.283	70.000	9400.000	0.000	Hainline (2008)
SMMJ163631.47+405546.9	2.283	1200.000	1100.000	700.000	Kovács et al. (2006)
SMMJ163639.01+405635.9	1.495	70.000	7800.000	0.000	Hainline (2008)
SMMJ163650.43+405734.5	2.378	70.000	9100.000	0.000	Hainline (2008)
SMMJ163658.19+410523.8	2.454	0.550	0.161	0.000	Ivison et al. (2002)

Table A.2. continued.

SMG	z	$\lambda_{\rm obs}$ (μm)	Flux (μJy)	Error (μJy)	Reference
SMMJ163658.19+410523.8	2.454	70.000	7900.000	0.000	Hainline (2008)
SMMJ163658.78+405728.1	1.190	70.000	6000.000	0.000	Hainline (2008)
SMMJ163704.34+410530.3	0.840	5.800	5.700	0.000	Hainline (2008)
SMMJ163704.34+410530.3	0.840	8.000	5.500	0.000	Hainline (2008)
SMMJ163704.34+410530.3	0.840	24.000	174.700	0.000	Hainline (2008)
SMMJ163704.34+410530.3	0.840	70.000	11600.000	0.000	Hainline (2008)
SMMJ163704.34+410530.3	0.840	1200.000	800.000	1100.000	Kovács et al. (2006)
SMMJ163706.51+405313.8	2.374	70.000	9500.001	0.000	Hainline (2008)
SMMJ221724.69+001242.1	0.510	1.0000000e+10	1.0000000e+13	0.000	??
SMMJ221725.97+001238.9	3.094	0.428	0.058	0.000	Chapman et al. (2005)
SMMJ221725.97+001238.9	3.094	1.250	1.593	0.000	Smail et al. (2004)
SMMJ221725.97+001238.9	3.094	2.170	1.982	0.000	Smail et al. (2004)
SMMJ221725.97+001238.9	3.094	24.000	113.900	0.000	Hainline (2008)
SMMJ221725.97+001238.9	3.094	70.000	6300.000	0.000	Hainline (2008)
SMMJ221733.02+000906.0	0.926	1.0000000e+10	1.0000000e+13	0.000	??
SMMJ221733.12+001120.2	0.652	70.000	10900.000	0.000	Hainline (2008)
SMMJ221733.91+001352.1	2.555	2.170	1.982	0.000	Smail et al. (2004)
SMMJ221733.91+001352.1	2.555	24.000	98.100	0.000	Hainline (2008)
SMMJ221733.91+001352.1	2.555	70.000	6200.000	0.000	Hainline (2008)
SMMJ221735.15+001537.2	3.098	5.800	1.900	0.000	Hainline (2008)
SMMJ221735.15+001537.2	3.098	24.000	112.100	0.000	Hainline (2008)
SMMJ221735.84+001558.9	3.089	24.000	132.800	0.000	Hainline (2008)
SMMJ221737.39+001025.1	2.614	24.000	176.700	0.000	Hainline (2008)
SMMJ221737.39+001025.1	2.614	70.000	12100.000	0.000	Hainline (2008)
SMMJ221804.42+002154.4	2.517	1.250	2.099	0.000	Smail et al. (2004)
SMMJ221804.42+002154.4	2.517	8.000	6.500	0.000	Hainline (2008)
SMMJ221804.42+002154.4	2.517	70.000	23800.000	0.000	Hainline (2008)
SMMJ221806.77+001245.7	3.623	1.250	6.340	0.000	Smail et al. (2004)
SMMJ221806.77+001245.7	3.623	70.000	18500.000	0.000	Hainline (2008)

Notes. When the error is equal to zero, the flux column denotes 3σ upper limit. Otherwise – formal flux at the position of an SMG. "??" in the reference column means that there are no upper limits for this SMG. This line is added in order to preserve the same number of objects in all tables.

References. Ivison et al. (2002, 2005); Chapman et al. (2003b, 2005); Capak et al. (2004); Clements et al. (2004); Egami et al. (2004); Greve et al. (2004); Smail et al. (2004); Fomalont et al. (2006); Kovács et al. (2006); Laurent et al. (2006); Tacconi et al. (2006); Pope et al. (2006); Huynh et al. (2007); Hainline (2008).

Table A.3. Properties of SMGs derived from the SED modeling.

SMG (1)	z (2)	SFR ($M_\odot$ yr^{-1}) SED (3)	UV (4)	IR (5)	Radio (6)	SSFR (Gyr^{-1}) (7)	log M_* ($M_\odot$) (8)	$M_{\rm burst}/M_*$ (%) (9)	M_*/L_K ($M_\odot/L_\odot$) (10)	log $M_{\rm d}$ ($M_\odot$) (11)	log $L_{\rm IR}$ ($L_\odot$) (12)	$T_{\rm d}$ (K) (13)	A_V (mag) (14)	q (15)	AGN? (16)
SMMJ030227.73+000653.5	1.408	825	7.91	713	1190	4.81	11.17	25.5	0.42	8.54	12.62	52.6	1.81	2.29	rad
SMMJ030231.81+001031.3	1.316	433	0.68	224	211	7.81	10.46	71.1	1.36	9.10	12.11	25.6	4.38	2.54	. . .
SMMJ030236.15+000817.1	2.435	91	4.18	1152	810	3.33	11.54	1.1	0.55	8.62	12.83	41.3	0.27	2.67	mIR,rad
SMMJ105151.69+572636.0	1.147	134	0.30	248	457	0.92	11.43	1.5	0.65	8.97	12.16	34.4	4.00	2.25	rad
SMMJ105155.47+572312.7	2.686	837	12.95	589	1110	1.91	11.49	12.5	0.66	8.90	12.54	38.7	2.29	2.24	mIR
SMMJ105158.02+571800.2	2.239	314	16.77	373	1561	0.44	11.93	0.6	0.60	9.15	12.34	33.2	1.12	1.89	rad
SMMJ105200.22+572420.2	0.689	163	0.26	118	59	0.74	11.20	4.5	1.56	8.72	11.84	33.2	2.58	2.82	. . .
SMMJ105201.25+572445.7	2.148	935	2.58	798	1044	3.40	11.37	18.1	0.95	9.01	12.67	45.1	2.91	2.40	mIR
SMMJ105207.49+571904.0	2.689	2195	3.81	1559	6679	1.93	11.91	12.5	1.18	8.80	12.96	45.1	2.85	1.88	rad
SMMJ105225.79+571906.4	2.372	217	18.89	329	2310	0.75	11.64	0.0	0.49	8.96	12.28	33.2	1.16	1.67	rad
SMMJ105227.58+572512.4	2.142	410	4.73	376	564	0.57	11.82	1.9	0.78	8.79	12.34	38.7	1.71	2.34	. . .
SMMJ105227.77+572218.2	1.956	515	1.55	447	473	0.89	11.70	4.5	1.16	9.01	12.42	33.2	2.17	2.49	. . .
SMMJ105230.73+572209.5	2.611	1255	45.92	975	1942	0.72	12.13	3.8	0.68	9.18	12.75	38.7	1.51	2.22	. . .
SMMJ105238.19+571651.1	1.852	919	21.87	659	734	4.54	11.16	28.8	0.37	8.85	12.58	38.7	2.13	2.47	. . .
SMMJ105238.30+572435.8	3.036	1558	7.40	1169	1921	0.69	12.23	3.9	0.85	9.04	12.83	45.1	1.86	2.30	spec
SMMJ123549.44+621536.8	2.203	237	29.23	335	1144	0.70	11.68	0.0	0.51	9.18	12.29	33.2	1.11	1.98	X,rad
SMMJ123553.26+621337.7	2.098	1460	6.05	1223	802	5.73	11.33	31.8	0.42	8.85	12.85	52.6	2.99	2.70	SB
SMMJ123555.14+620901.7	1.875	332	11.94	358	2252	0.61	11.76	1.0	0.61	8.98	12.32	33.2	1.41	1.72	X,mIR,rad
SMMJ123600.10+620253.5	2.710	3733	6.49	3066	6407	8.92	11.54	51.6	0.29	8.52	13.25	71.5	3.64	2.20	rad
SMMJ123600.15+621047.2	1.994	1449	3.04	1102	1602	2.53	11.64	15.2	0.89	9.03	12.81	38.7	2.80	2.35	SB,rad
SMMJ123606.72+621550.7	2.416	448	30.23	354	454	1.27	11.45	6.9	0.65	8.92	12.32	33.2	1.15	2.41	X,spec,mIR
SMMJ123606.85+621021.4	2.509	1291	12.59	1153	1531	1.17	11.99	5.6	0.79	9.34	12.83	33.2	1.58	2.39	X,rad
SMMJ123616.15+621513.7	2.578	968	2.91	754	1179	0.80	11.97	4.5	1.12	9.04	12.64	33.2	2.17	2.32	X
SMMJ123618.33+621550.5	1.865	339	2.20	325	1585	0.66	11.70	2.4	1.10	9.25	12.28	28.5	2.33	1.83	SB,rad
SMMJ123621.27+621708.4	1.988	330	5.65	266	1797	0.32	11.91	1.5	1.30	9.43	12.19	24.4	1.92	1.69	SB,rad
SMMJ123622.65+621629.7	2.466	1981	6.78	1438	1403	1.72	11.92	10.8	0.90	8.90	12.92	45.1	2.40	2.53	X
SMMJ123629.13+621045.8	1.013	202	0.69	176	207	0.35	11.70	1.5	1.53	9.07	12.01	24.4	2.13	2.45	X
SMMJ123632.61+620800.1	1.993	1067	17.30	973	1107	4.52	11.33	22.7	0.45	8.45	12.75	71.5	1.70	2.46	X,spec,mIR,rad
SMMJ123634.51+621241.0	1.219	309	4.49	289	901	0.64	11.66	2.4	1.06	8.93	12.23	28.5	2.16	2.02	SB,rad
SMMJ123635.59+621424.1	2.005	1921	14.81	1740	1087	7.23	11.38	37.1	0.25	8.45	13.01	71.5	2.31	2.72	X,spec,mIR
SMMJ123636.75+621156.1	0.557	11	0.94	21	24	0.69	10.47	0.8	0.67	9.36	11.08	15.2	1.04	2.44	X,spec
SMMJ123707.21+621408.1	2.484	361	4.01	338	905	0.38	11.95	1.3	0.92	8.95	12.29	33.2	1.65	2.09	X,rad
SMMJ123711.98+621325.7	1.992	371	2.50	337	658	1.72	11.29	8.0	0.61	8.64	12.29	45.1	2.30	2.23	X,rad
SMMJ123712.05+621212.3	2.914	150	4.96	247	604	0.20	12.10	0.0	1.32	9.53	12.16	24.4	1.91	2.13	X,spec,rad
SMMJ123716.01+620323.3	2.037	879	567.07	1091	1399	1.28	11.93	0.0	0.31	8.74	12.80	45.1	0.18	2.41	X,spec
SMMJ123721.87+621035.3	0.979	76	2.44	91	96	0.33	11.44	0.6	0.80	9.77	11.72	16.9	1.12	2.49	X,spec
SMMJ131201.17+424208.1	3.405	4375	37.82	3748	1992	16.26	11.36	88.3	0.18	8.14	13.34	113.3	3.08	2.79	spec
SMMJ131208.82+424129.1	1.544	787	3.75	551	560	1.75	11.50	10.9	0.74	8.70	12.51	45.1	1.99	2.51	spec
SMMJ131212.69+424422.5	2.805	2095	2.18	1470	2710	2.22	11.82	14.4	1.29	8.89	12.93	38.7	3.44	2.25	spec,rad
SMMJ131215.27+423900.9	2.565	2361	3387.93	80	1498	0.04	12.32	0.0	0.32	9.90	11.67	15.4	0.00	1.24	spec,mIR
SMMJ131222.35+423814.1	2.565	600	512.57	510	569	0.88	11.76	0.0	0.31	8.75	12.47	33.2	0.10	2.47	spec,mIR
SMMJ131225.20+424344.5	1.038	238	8.94	252	205	2.26	11.05	7.2	0.36	8.42	12.17	38.7	1.46	2.60	. . .
SMMJ131225.73+423941.4	1.554	742	5.47	661	5188	3.94	11.22	19.1	0.59	8.62	12.59	45.1	2.14	1.62	rad
SMMJ131228.30+424454.8	2.931	1572	16.32	1131	1482	2.43	11.67	15.3	0.61	8.30	12.82	61.3	1.75	2.40	. . .
SMMJ131231.07+424609.0	2.713	1212	1.42	910	966	5.13	11.25	31.8	0.66	8.70	12.72	45.1	3.95	2.49	. . .
SMMJ131232.31+423949.5	2.320	2457	8.41	1660	1635	1.60	12.02	10.8	0.87	8.47	12.99	61.3	2.40	2.52	mIR
SMMJ131239.14+424155.7	2.242	1271	3.75	1068	795	3.32	11.51	17.9	0.80	9.01	12.79	38.7	2.87	2.64	. . .
SMMJ141741.81+522823.0	1.150	948	13.50	770	274	0.75	12.01	3.8	0.72	8.48	12.65	45.1	1.28	2.97	mIR
SMMJ141742.04+523025.7	0.661	403	11.08	267	216	2.02	11.12	13.8	0.40	8.23	12.19	45.1	1.74	2.61	. . .
SMMJ141750.50+523101.0	2.128	343	5.31	241	808	1.91	11.10	12.5	0.66	8.58	12.15	38.7	2.29	1.99	. . .
SMMJ141800.40+512820.3	1.913	1999	17.45	1095	1424	0.39	12.44	3.3	0.80	8.61	12.80	52.6	0.89	2.40	. . .
SMMJ141802.87+523011.1	2.127	1325	10.95	1127	552	11.82	10.98	63.5	0.74	8.34	12.82	61.3	2.87	2.83	. . .
SMMJ141809.00+522803.8	2.712	1213	6.24	551	1641	0.33	12.23	3.3	0.83	8.64	12.51	45.1	1.09	2.04	. . .
SMMJ141813.54+522923.4	3.484	243	6.65	240	3967	1.16	11.31	4.2	0.60	8.86	12.15	33.2	1.35	1.30	spec,rad
SMMJ163627.94+405811.2	3.180	1332	18.32	1095	3210	6.32	11.24	34.0	0.65	8.82	12.80	45.1	2.41	2.05	spec
SMMJ163631.47+405546.9	2.283	1325	10.28	865	1646	1.77	11.69	12.5	0.96	8.94	12.70	38.7	2.62	2.24	spec
SMMJ163639.01+405635.9	1.495	250	7.51	1101	1002	6.49	11.23	4.8	0.53	8.94	12.81	32.7	1.46	2.56	mIR,rad
SMMJ163650.43+405734.5	2.378	1147	73.43	1191	4030	3.24	11.57	10.1	0.33	8.93	12.84	45.1	1.12	1.99	spec,mIR,rad
SMMJ163658.19+410523.8	2.454	1769	4.97	1485	1801	2.55	11.77	13.8	0.80	9.04	12.94	45.1	2.45	2.43	. . .

Table A.3. Properties of SMGs derived from the SED modeling.

		SFR ($M_\odot$ yr^{-1})				SSFR	log M_*	$M_{\rm burst}/M_*$	M_*/L_K	log $M_{\rm d}$	log $L_{\rm IR}$	$T_{\rm d}$	A_V		
SMG (1)	z (2)	SED (3)	UV (4)	IR (5)	radio (6)	(Gyr^{-1}) (7)	($M_\odot$) (8)	(%) (9)	($M_\odot/L_\odot$) (10)	($M_\odot$) (11)	($L_\odot$) (12)	(K) (13)	(mag) (14)	q (15)	AGN? (16)
SMMJ163658.78+405728.1	1.190	129	8.41	171	274	0.56	11.49	0.9	0.59	9.13	11.10	24.4	1.14	2.31	…
SMMJ163704.34+410530.3	0.840	205	2.50	157	74	2.22	10.85	13.1	0.92	9.13	11.96	33.2	2.43	2.84	…
SMMJ163706.51+405313.8	2.374	2020	9.63	1478	1344	1.83	11.91	10.9	0.76	9.06	12.94	45.1	1.99	2.56	spec
SMMJ221724.69+001242.1	0.510	154	14.71	43	62	0.21	11.31	3.4	0.63	9.36	11.40	15.9	0.69	2.36	…
SMMJ221725.97+001238.9	3.094	2499	2.29	1935	1353	2.10	11.96	12.5	1.58	9.38	13.05	38.7	3.27	2.67	…
SMMJ221733.02+000906.0	0.926	447	0.72	381	333	0.88	11.64	4.5	1.56	9.16	12.35	33.2	2.58	2.58	…
SMMJ221733.12+001120.2	0.652	31	2.77	59	62	0.28	11.33	4.7	1.79	9.13	11.54	21.8	1.27	2.49	rad
SMMJ221733.91+001352.1	2.555	875	17.73	731	954	0.78	11.97	3.8	0.79	9.01	12.63	38.7	1.69	2.40	…
SMMJ221735.15+001537.2	3.098	594	8.51	536	1627	2.28	11.37	10.0	0.68	8.94	12.49	38.7	1.93	2.03	…
SMMJ221735.84+001558.9	3.089	1969	7.43	1668	1450	6.49	11.41	35.0	0.30	8.35	12.99	71.5	2.98	2.58	…
SMMJ221737.39+001025.1	2.614	2991	13.32	2641	2484	7.05	11.57	37.1	0.29	8.47	13.19	71.5	2.70	2.54	…
SMMJ221804.42+002154.4	2.517	1474	15.50	1239	908	6.30	11.29	33.5	0.55	8.85	12.86	52.6	2.11	2.65	mIR
SMMJ221806.77+001245.7	3.623	8825	29.59	7774	11225	20.81	11.57	109.9	0.23	8.25	13.66	113.3	3.76	2.36	rad
SMMJ030226.17+000624.5	0.080	3	0.06	2	4	0.07	10.53	0.4	1.08	8.28	10.11	11.4	0.33	2.24	rad
SMMJ030238.62+001106.3	0.276	14	0.04	36	44	59.74	8.78	113.3	0.36	8.32	11.32	25.5	4.22	2.43	spec,rad
SMMJ030244.82+000632.3	0.176	6	0.59	11	7	0.37	10.46	0.0	0.76	8.22	10.80	20.1	1.44	2.69	…
SMMJ123651.76+621221.3	0.298	6	0.12	14	7	1.02	10.13	0.9	0.98	8.91	10.90	13.3	1.93	2.79	…
mean	2.002	1065	68.35	873	1429	3.51	11.71	15.6	0.75	9.02	12.71	40.1	2.03	2.34	…
median	2.148	825	6.78	659	1087	1.72	11.54	7.2	0.68	8.91	12.58	38.7	1.99	2.40	…
std dev	0.851	1271	395.38	1066	1731	7.44	0.55	23.2	0.36	0.36	0.60	18.3	0.95	0.34	…
min	0.080	3	0.04	2	4	0.04	8.78	0.0	0.18	8.14	10.11	11.4	0.00	1.24	…
max	3.623	8825	3387.93	7774	11225	59.74	12.44	113.3	1.79	9.90	13.66	113.3	4.38	2.97	…

Notes. Column (1): SMG name. Column (2): redshift (Chapman et al. 2005). Column (3): total star formation rate (SFR) for 0.15–120 $M_\odot$ stars averaged over the last 50 Myr derived from the SED model. Column (4): SFR from UV emission interpolated from the SED template (using Kennicutt 1998). Column (5): SFR from IR emission (Column 12) used in all analysis throughout the paper (using Kennicutt 1998). Column (6): SFR from radio emission derived directly from the radio data (using Bell 2003). Column (7): specific SFR $\equiv$ SFR$_{\rm IR}/M_*$. Column (8): stellar mass. Column (9): Ratio of the mass of gas converted to star during the recent starburst episode to the total stellar mass. There are values greater than 100%, because the starburst episode is ongoing; 0% means that non-starburst template was adopted. Column (10): stellar mass to light ratio (luminosity at rest-frame K was intepolated using the best SED model). Column (11): dust mass. Column (12): total 8–1000 μm infrared luminosity. Column (13): dust temperature. Column (14): Average extinction $A_V = 2.5\log(V\text{-band starlight unextinguished} / V\text{-band starlight observed})$. Column (15): IR-radio correlation parameter (Sect. 5.4.1). Column (16): AGN flag – X: X-ray identified AGN; SB: X-ray identified starburst (Alexander et al. 2005); spec: spectroscopically identified AGN or QSO (Chapman et al. 2005); mIR: mid-IR identified AGN (Sect. 5.4.2); rad: radio datapoint is more than 3σ above the starburst model (Sect. 5.4.2). The horizontal line divides the $z > 0.5$ and $z < 0.5$ samples.

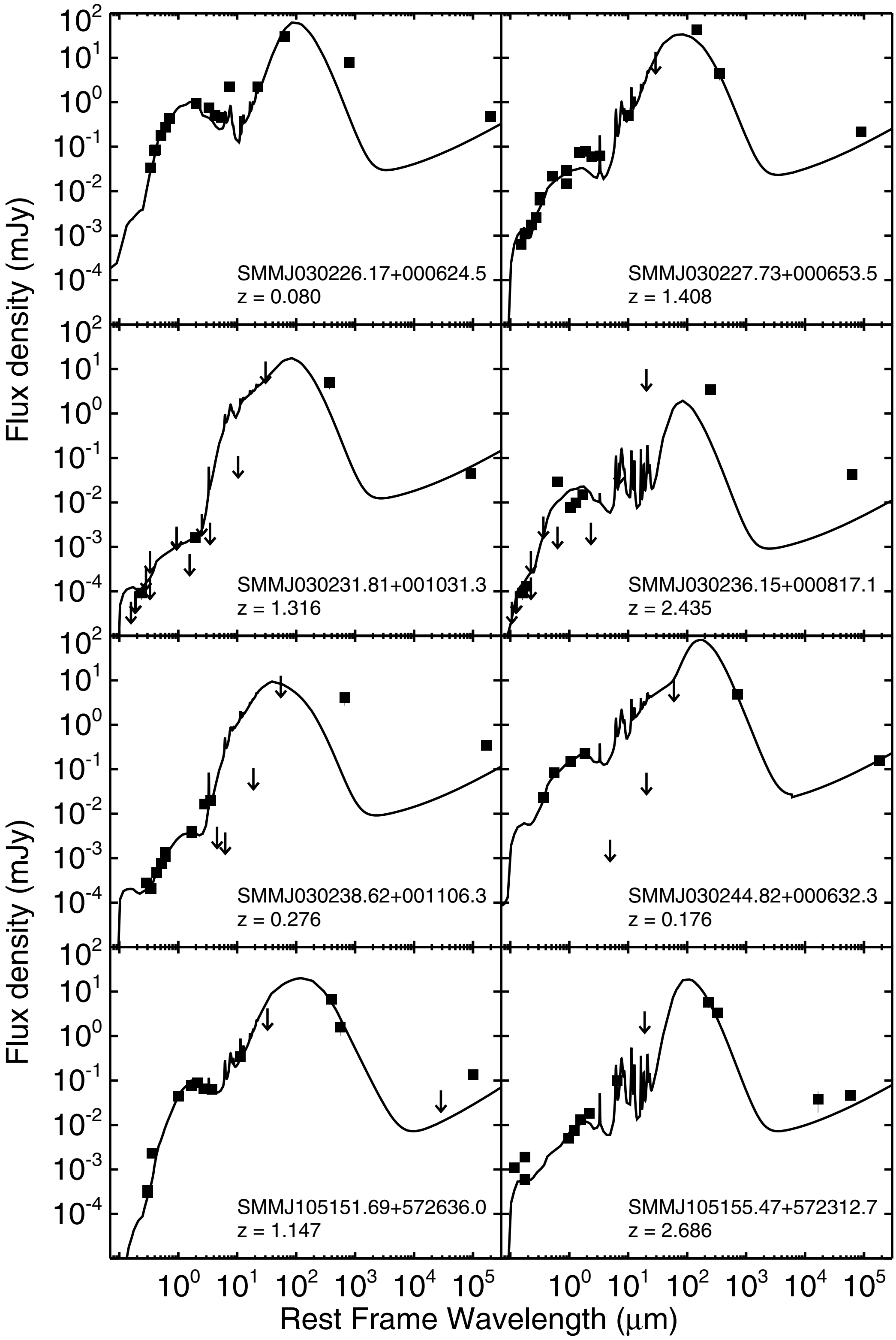

Fig. A.1. Spectral energy distributions (SEDs) of SMGs. *Solid lines*: the best GRASIL fits. *Dashed lines*: SEDs of GRB hosts (Michałowski et al. 2008) shown for comparison. *Squares*: detections with errors, in most cases, smaller than the size of the symbols. *Arrows*: 3σ upper limit (values marked at the base). In the cases where our fits strongly underpredict the observed data at 850 μm, we adopted $L_{\rm IR}$ and $T_{\rm d}$ of Chapman et al. (2005).

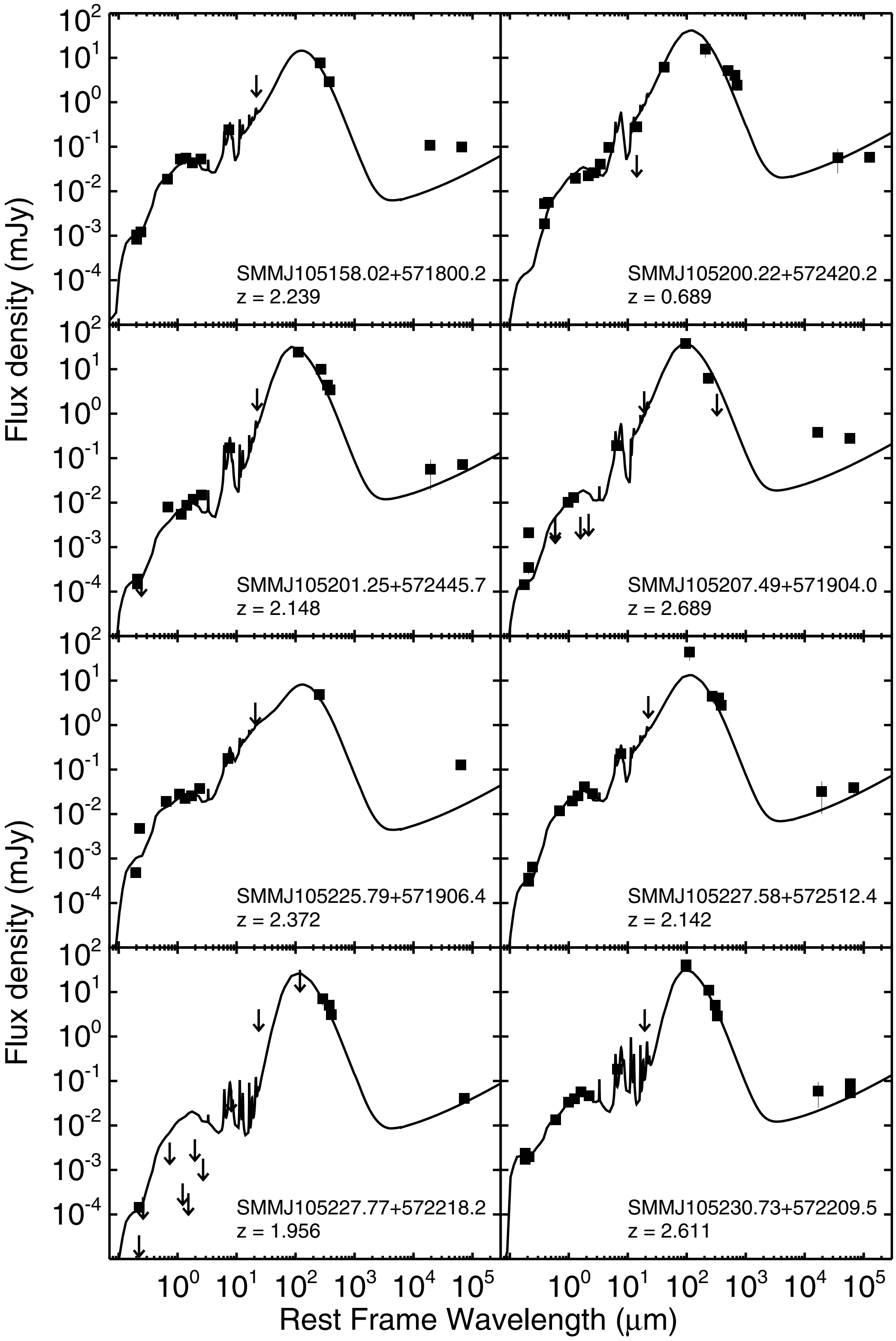

Fig. A.1. (continued).

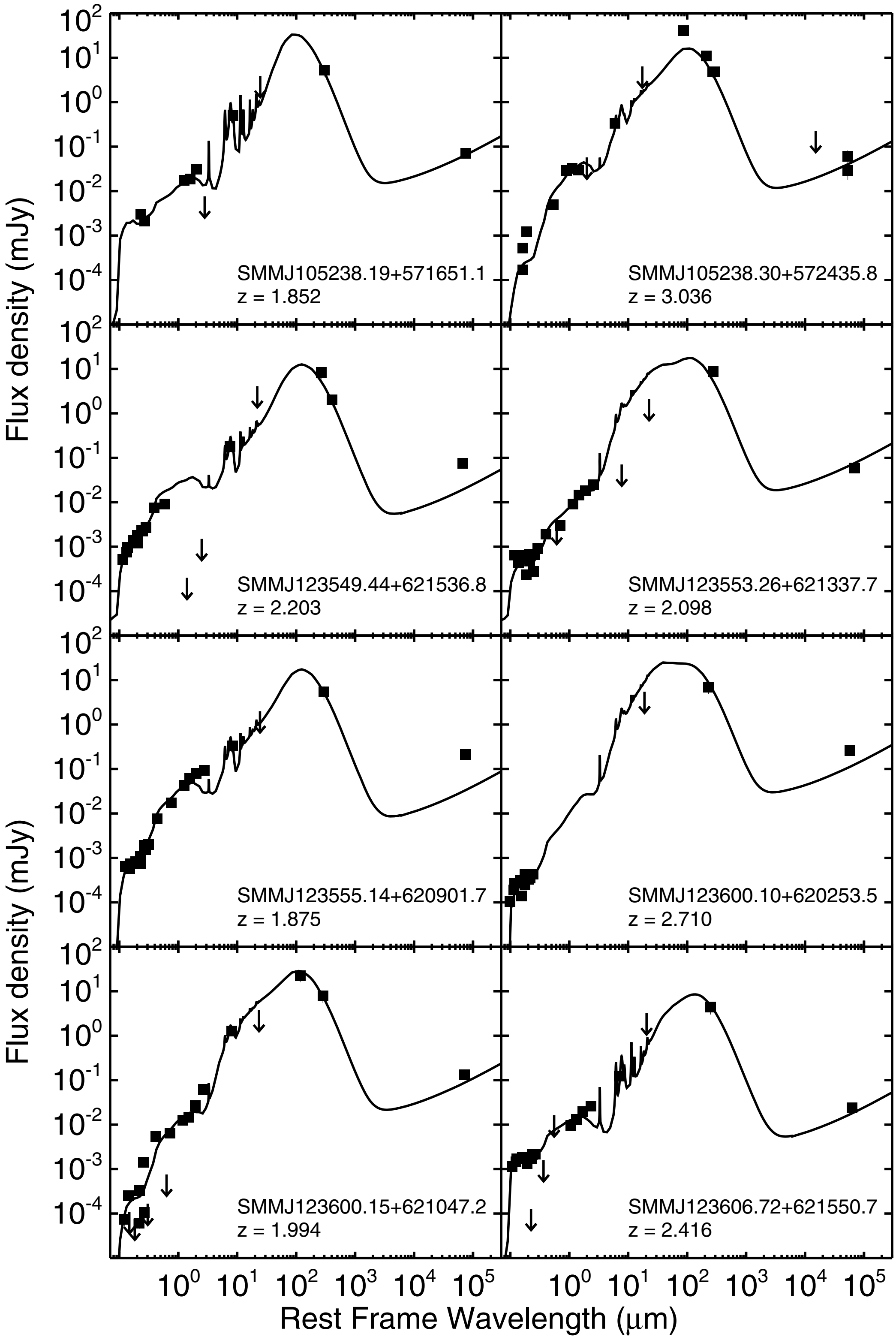

Fig. A.1. (continued).

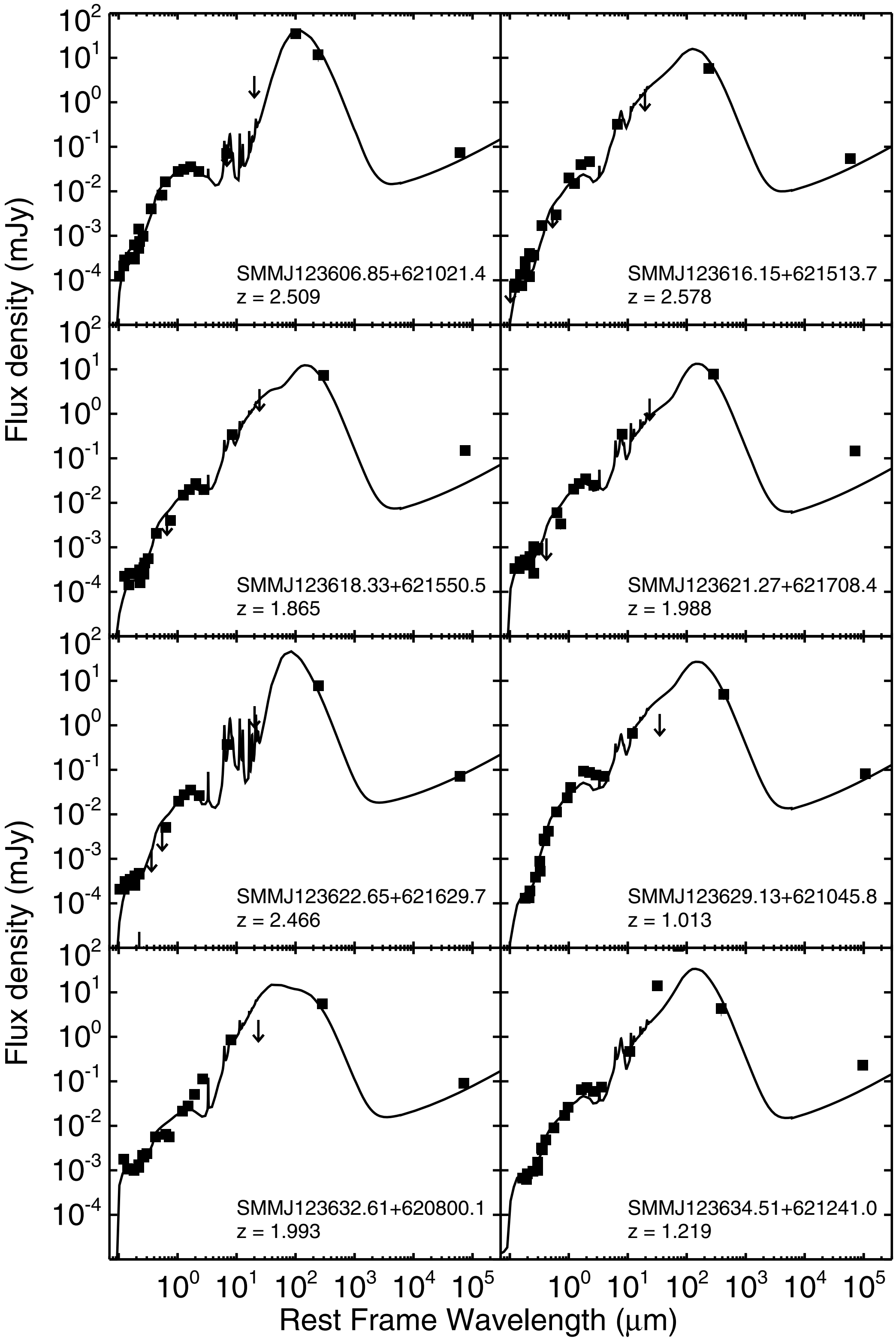

Fig. A.1. (continued).

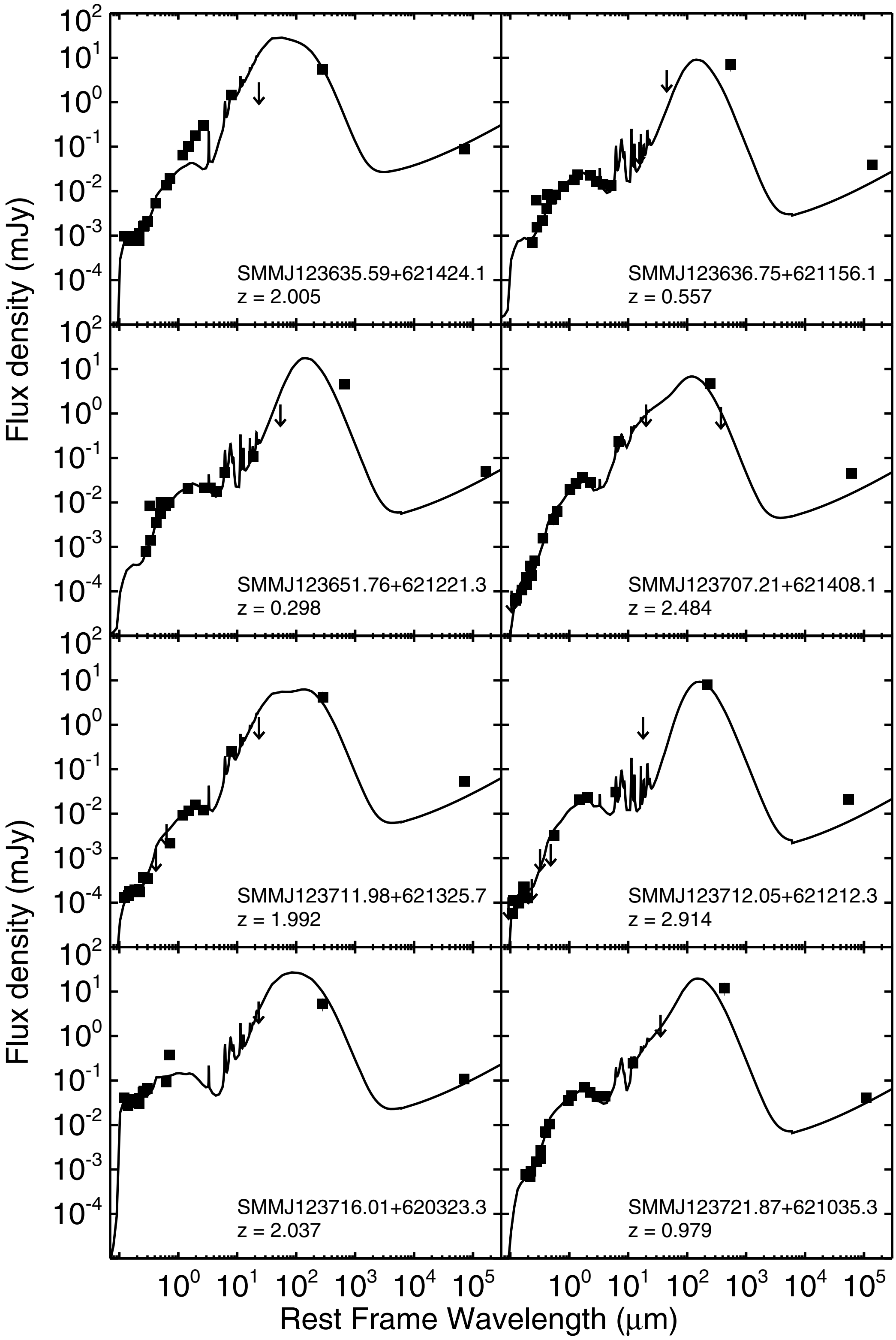

Fig. A.1. (continued).

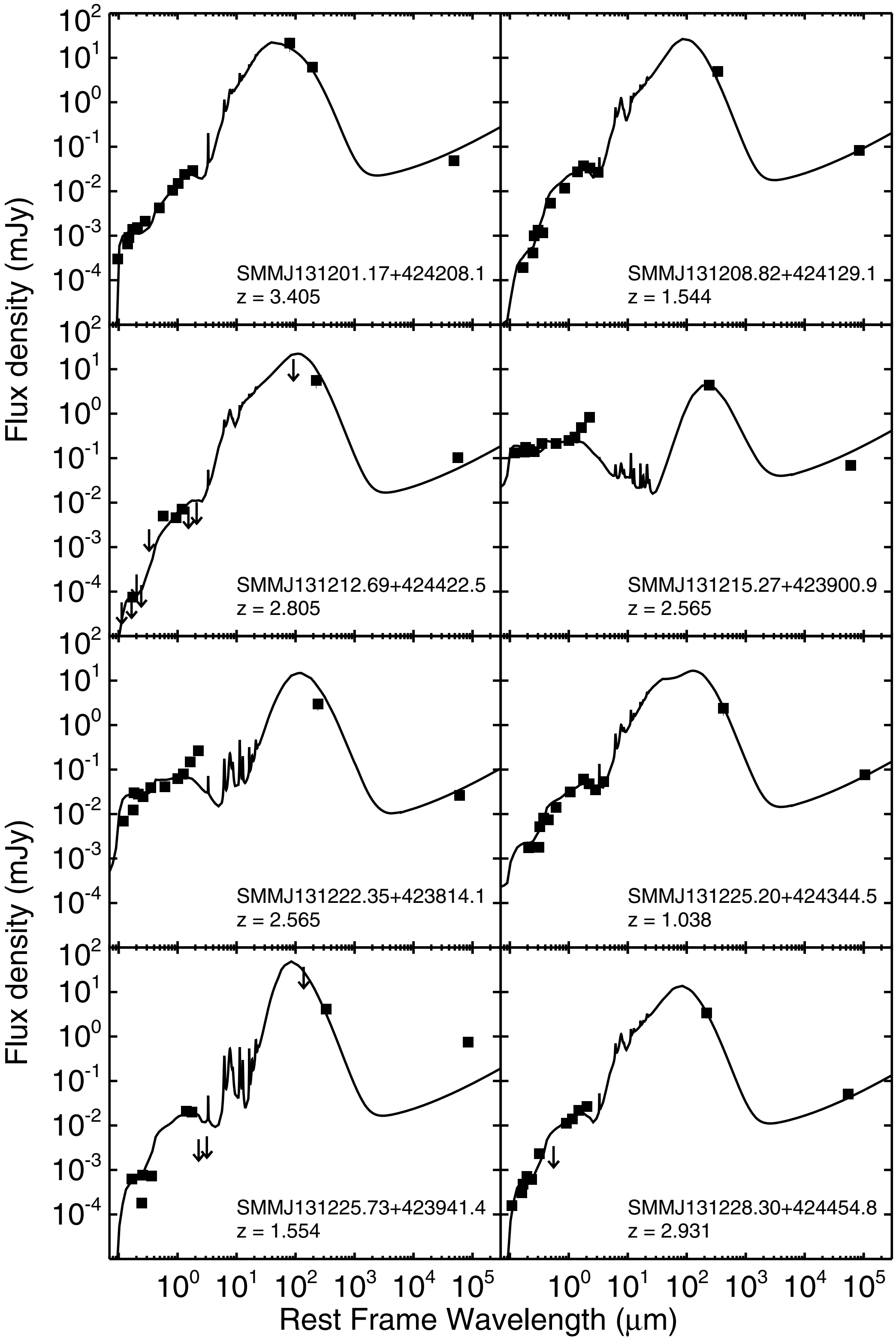

Fig. A.1. (continued).

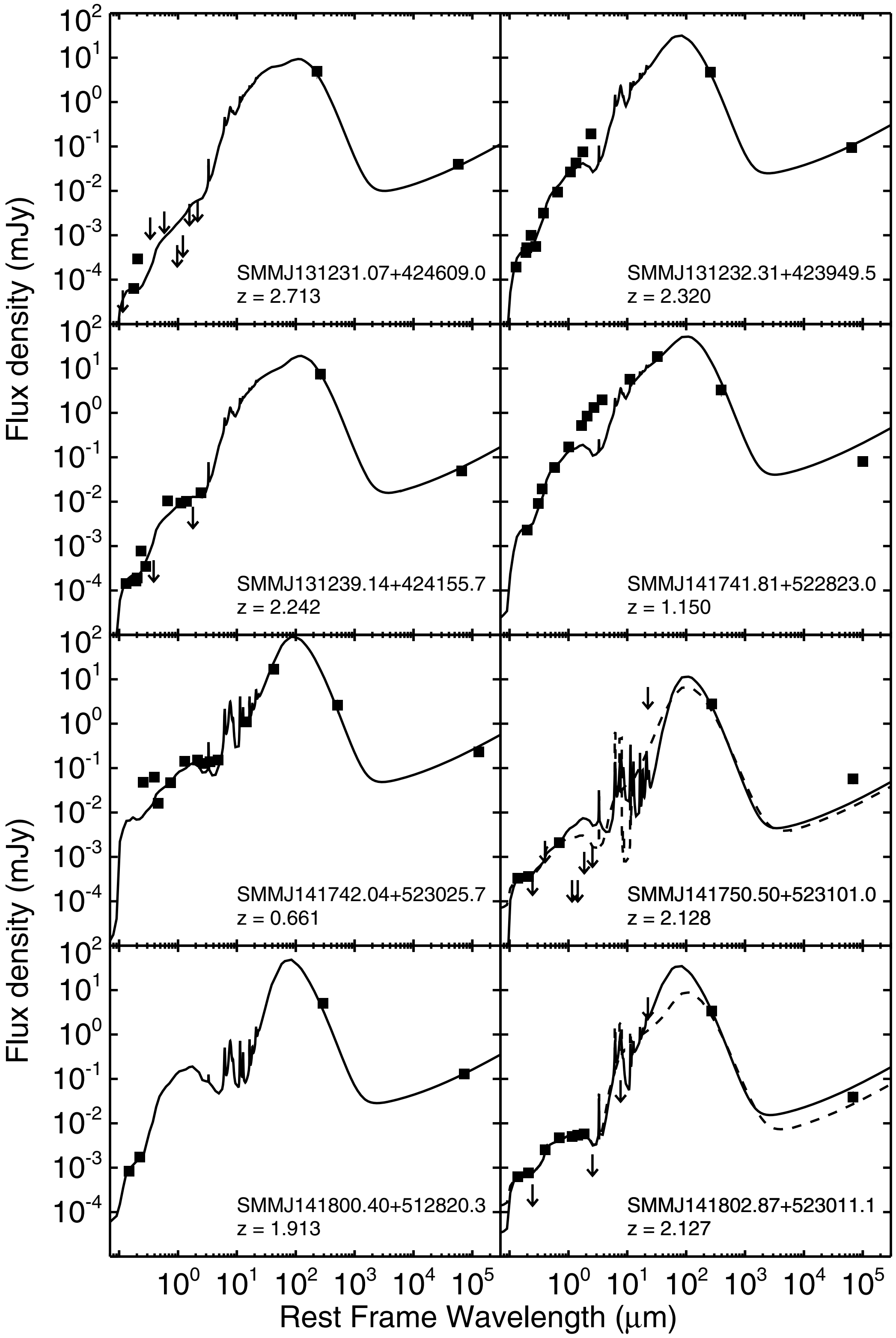

Fig. A.1. (continued).

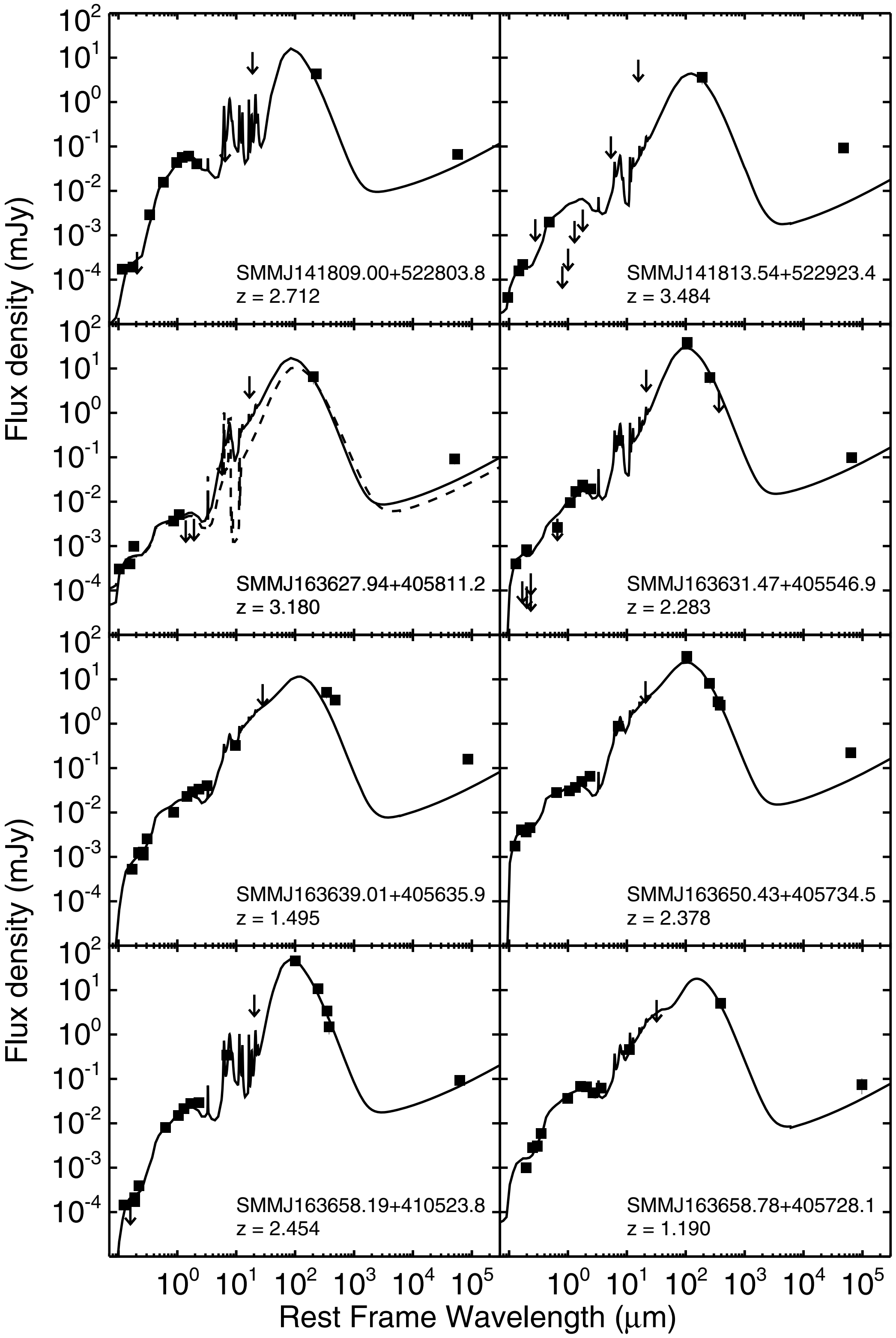

Fig. A.1. (continued).

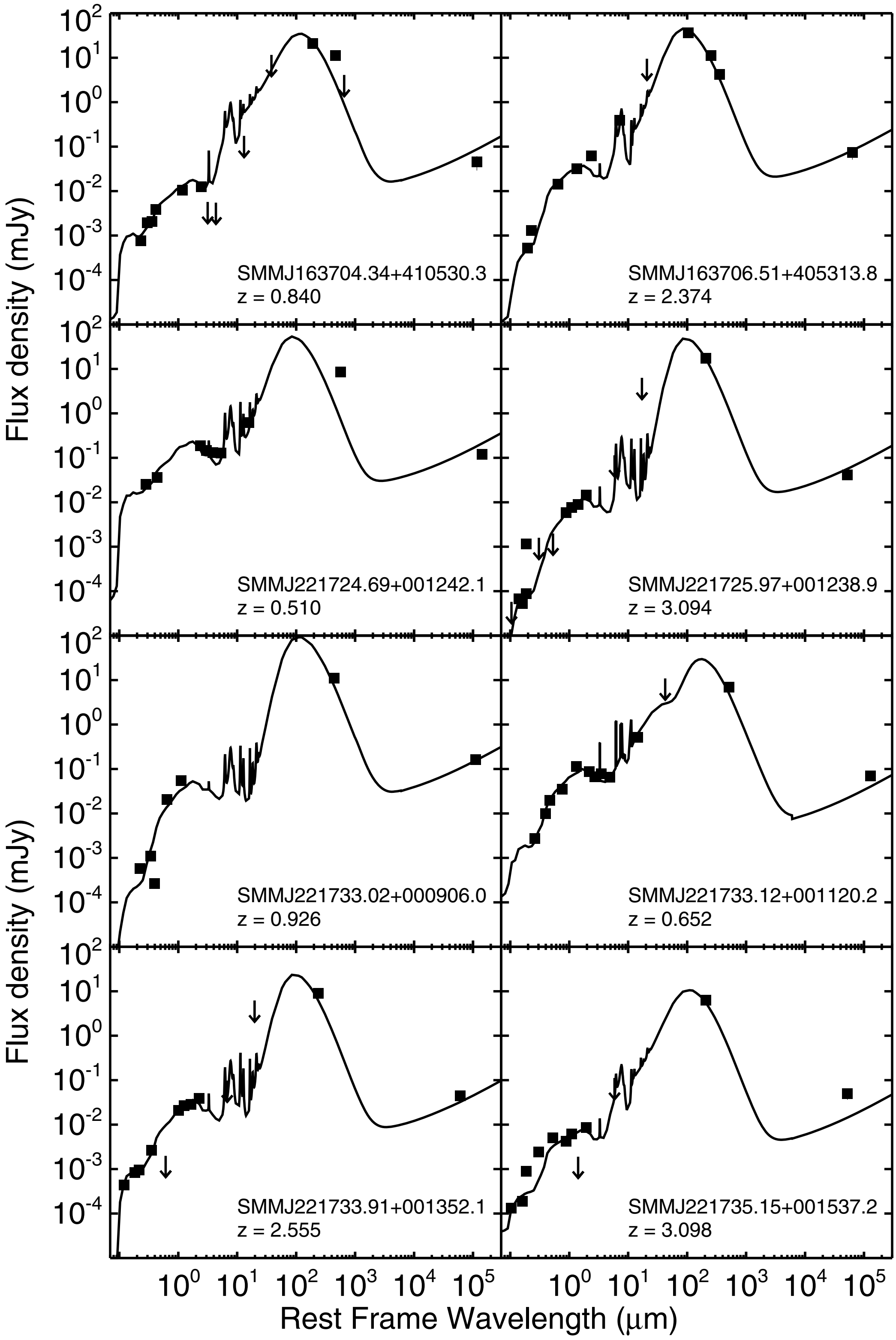

Fig. A.1. (continued).

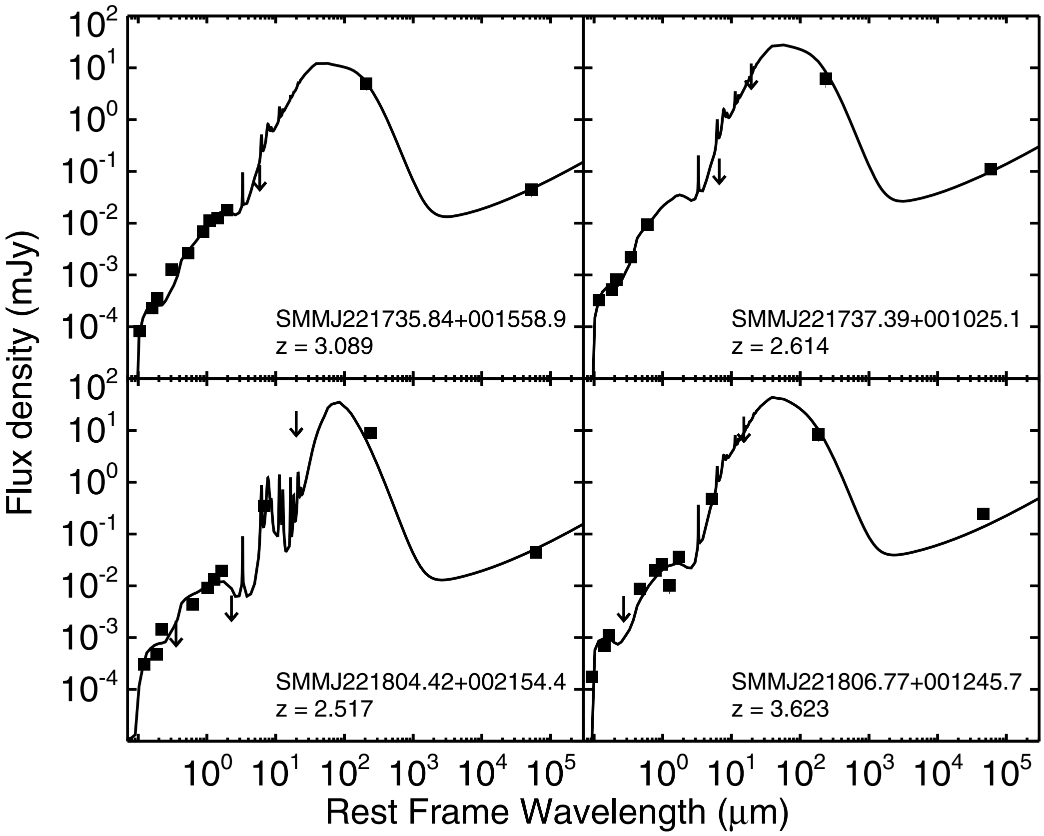

Fig. A.1. (continued).

Table A.4. Compilation of star formation rate density determinations in $M_\odot\ \mathrm{yr}^{-1}\ \mathrm{Mpc}^{-3}$.

z	Δz	ρ_{SFR}	$-\Delta\rho_{\mathrm{SFR}}$	$+\Delta\rho_{\mathrm{SFR}}$	Estimator	Reference
3.780	0.340	0.1690	0.0218	0.0250	UV	Giavalisco et al. (2004); Hopkins (2004)
4.920	0.330	0.1089	0.0300	0.0414	UV	Giavalisco et al. (2004); Hopkins (2004)
5.740	0.360	0.1194	0.0423	0.0655	UV	Giavalisco et al. (2004); Hopkins (2004)
0.350	0.150	0.0356	0.0058	0.0070	UV	Wilson et al. (2002); Hopkins (2004)
0.800	0.200	0.0656	0.0110	0.0133	UV	Wilson et al. (2002); Hopkins (2004)
1.350	0.250	0.0925	0.0259	0.0361	UV	Wilson et al. (2002); Hopkins (2004)
1.500	0.500	0.1954	0.0721	0.1143	UV	Massarotti et al. (2001); Hopkins (2004)
2.750	0.750	0.3076	0.1135	0.1799	UV	Massarotti et al. (2001); Hopkins (2004)
4.000	0.500	0.1300	0.0569	0.1012	UV	Massarotti et al. (2001); Hopkins (2004)
0.150	0.150	0.0395	0.0043	0.0048	UV	Sullivan et al. (2000); Hopkins (2004)
3.040	0.250	0.1603	0.0174	0.0196	UV	Steidel et al. (1999); Hopkins (2004)
4.130	0.300	0.1245	0.0256	0.0322	UV	Steidel et al. (1999); Hopkins (2004)
0.700	0.200	0.0481	0.0102	0.0130	UV	Cowie et al. (1999); Hopkins (2004)
1.250	0.250	0.0652	0.0154	0.0201	UV	Cowie et al. (1999); Hopkins (2004)
0.150	0.150	0.0428	0.0125	0.0176	UV	Treyer et al. (1998); Hopkins (2004)
0.750	0.250	0.1019	0.0297	0.0420	UV	Connolly et al. (1997); Hopkins (2004)
1.250	0.250	0.1368	0.0399	0.0564	UV	Connolly et al. (1997); Hopkins (2004)
1.750	0.250	0.1062	0.0310	0.0438	UV	Connolly et al. (1997); Hopkins (2004)
0.350	0.150	0.0289	0.0043	0.0051	UV	Lilly et al. (1996); Hopkins (2004)
0.625	0.125	0.0542	0.0091	0.0110	UV	Lilly et al. (1996); Hopkins (2004)
0.875	0.125	0.1050	0.0307	0.0433	UV	Lilly et al. (1996); Hopkins (2004)
4.850	0.450	0.0350	0.0150	0.0150	UV	Iwata et al. (2003); van Breukelen et al. (2005)
0.700	0.300	0.0462	0.0060	0.0068	UV	Cowie et al. (1996); Somerville et al. (2001)
1.250	0.250	0.0668	0.0195	0.0276	UV	Cowie et al. (1996); Somerville et al. (2001)
0.350	0.150	0.0495	0.0258	0.0272	UV	Sawicki et al. (1997); Somerville et al. (2001)
0.750	0.250	0.0733	0.0109	0.0089	UV	Sawicki et al. (1997); Somerville et al. (2001)
1.500	0.500	0.0988	0.0087	0.0095	UV	Sawicki et al. (1997); Somerville et al. (2001)
2.500	0.500	0.2113	0.0273	0.0313	UV	Sawicki et al. (1997); Somerville et al. (2001)
3.500	0.500	0.0922	0.0190	0.0187	UV	Sawicki et al. (1997); Somerville et al. (2001)
0.250	0.250	0.0569	0.0226	0.0592	UV	Pascarelle et al. (1998); Somerville et al. (2001)
0.750	0.250	0.0638	0.0176	0.0446	UV	Pascarelle et al. (1998); Somerville et al. (2001)
1.250	0.250	0.0901	0.0218	0.0665	UV	Pascarelle et al. (1998); Somerville et al. (2001)
1.750	0.250	0.0922	0.0223	0.0681	UV	Pascarelle et al. (1998); Somerville et al. (2001)
2.500	0.500	0.0556	0.0213	0.0503	UV	Pascarelle et al. (1998); Somerville et al. (2001)
3.500	0.500	0.0519	0.0240	0.0616	UV	Pascarelle et al. (1998); Somerville et al. (2001)
4.500	0.500	0.0653	0.0374	0.1145	UV	Pascarelle et al. (1998); Somerville et al. (2001)
5.500	0.500	0.0285	0.0166	0.0824	UV	Pascarelle et al. (1998); Somerville et al. (2001)
0.315	0.115	0.0373	0.0005	0.0005	UV	Mobasher et al. (2009)
0.540	0.110	0.0533	0.0005	0.0006	UV	Mobasher et al. (2009)
0.765	0.115	0.0957	0.0006	0.0006	UV	Mobasher et al. (2009)
0.990	0.110	0.1082	0.0006	0.0006	UV	Mobasher et al. (2009)
3.800	0.350	0.0891	0.0097	0.0109	UV	Bouwens et al. (2007)
5.000	0.350	0.0331	0.0043	0.0049	UV	Bouwens et al. (2007)
5.900	0.300	0.0224	0.0038	0.0045	UV	Bouwens et al. (2007)
4.000	0.500	0.0362	0.0050	0.0050	UV	Ouchi et al. (2004)
4.700	0.500	0.0300	0.0175	0.0175	UV	Ouchi et al. (2004)
4.900	0.300	0.0138	0.0069	0.0069	UV	Ouchi et al. (2004)
4.000	0.500	0.0300	0.0025	0.0025	UV	Ouchi et al. (2004)
4.700	0.500	0.0200	0.0088	0.0088	UV	Ouchi et al. (2004)
4.900	0.300	0.0088	0.0044	0.0044	UV	Ouchi et al. (2004)
5.850	0.250	0.0034	0.0014	0.0014	UV	Stanway et al. (2003)
1.000	0.500	0.2080	0.0990	0.0990	UV	Thompson et al. (2006)
2.000	0.500	0.3980	0.1800	0.1800	UV	Thompson et al. (2006)
3.000	0.500	0.3220	0.1600	0.1600	UV	Thompson et al. (2006)
4.000	0.500	0.0940	0.0390	0.0390	UV	Thompson et al. (2006)
5.000	0.500	0.0410	0.0160	0.0160	UV	Thompson et al. (2006)
6.000	0.500	0.1260	0.0740	0.0740	UV	Thompson et al. (2006)
2.280	0.330	0.1778	0.1407	0.6733	UV	Ly et al. (2009)
4.000	0.300	0.1301	0.0194	0.0227	UV	Yoshida et al. (2006); Ly et al. (2009)
4.700	0.300	0.0745	0.0316	0.0550	UV	Yoshida et al. (2006); Ly et al. (2009)
2.300	0.400	0.1500	0.0223	0.0262	UV	Reddy et al. (2008); Ly et al. (2009)
0.050	0.050	0.0126	0.0026	0.0033	UV	Wyder et al. (2005)
3.200	0.140	0.1600	0.0798	0.1592	UV	Shim et al. (2007)
0.330	0.040	0.0353	0.0059	0.0071	UV	Dahlen et al. (2007)
0.545	0.085	0.0996	0.0148	0.0174	UV	Dahlen et al. (2007)

Table A.4. continued.

z	Δz	$\rho_{\rm SFR}$	$-\Delta\rho_{\rm SFR}$	$+\Delta\rho_{\rm SFR}$	Estimator	Reference
1.125	0.205	0.1283	0.0240	0.0295	UV	Dahlen et al. (2007)
1.750	0.130	0.1898	0.0390	0.0491	UV	Dahlen et al. (2007)
2.225	0.145	0.1407	0.0364	0.0491	UV	Dahlen et al. (2007)
2.750	0.750	0.1800	0.0337	0.0414	UV	Wadadekar et al. (2006)
0.900	0.500	0.0989	0.0221	0.0285	[O 2]	Teplitz et al. (2003); Hopkins (2004)
0.025	0.025	0.0122	0.0036	0.0050	[O 2]	Gallego et al. (2002); Hopkins (2004)
0.200	0.100	0.0136	0.0032	0.0062	[O 2]	Hogg et al. (1998); Hopkins (2004)
0.300	0.100	0.0119	0.0023	0.0031	[O 2]	Hogg et al. (1998); Hopkins (2004)
0.400	0.100	0.0536	0.0095	0.0147	[O 2]	Hogg et al. (1998); Hopkins (2004)
0.500	0.100	0.0955	0.0137	0.0180	[O 2]	Hogg et al. (1998); Hopkins (2004)
0.600	0.100	0.0649	0.0086	0.0117	[O 2]	Hogg et al. (1998); Hopkins (2004)
0.700	0.100	0.0535	0.0083	0.0120	[O 2]	Hogg et al. (1998); Hopkins (2004)
0.800	0.100	0.0566	0.0085	0.0116	[O 2]	Hogg et al. (1998); Hopkins (2004)
0.900	0.100	0.0714	0.0112	0.0165	[O 2]	Hogg et al. (1998); Hopkins (2004)
1.000	0.100	0.1146	0.0208	0.0320	[O 2]	Hogg et al. (1998); Hopkins (2004)
1.100	0.100	0.0899	0.0242	0.0523	[O 2]	Hogg et al. (1998); Hopkins (2004)
1.200	0.100	0.0859	0.0286	0.0859	[O 2]	Hogg et al. (1998); Hopkins (2004)
0.375	0.125	0.0197	0.0033	0.0034	[O 2]	Hammer et al. (1997); Hopkins (2004)
0.625	0.125	0.0594	0.0174	0.0171	[O 2]	Hammer et al. (1997); Hopkins (2004)
0.875	0.125	0.1396	0.0814	0.0817	[O 2]	Hammer et al. (1997); Hopkins (2004)
0.401	0.011	0.0240	0.0080	0.0080	[O 3]	Hippelein et al. (2003)
0.636	0.010	0.0720	0.0160	0.0160	[O 3]	Hippelein et al. (2003)
0.881	0.014	0.1070	0.0350	0.0350	[O 2]	Hippelein et al. (2003)
1.193	0.018	0.2280	0.0550	0.0550	[O 2]	Hippelein et al. (2003)
2.750	0.750	0.2773	0.0810	0.1144	Hβ	Pettini et al. (1998); Hopkins (2004)
0.025	0.025	0.0249	0.0056	0.0072	Hα	Pérez-González et al. (2003); Hopkins (2004)
0.800	0.300	0.1172	0.0262	0.0338	Hα	Tresse et al. (2002); Hopkins (2004)
2.200	0.050	0.2655	0.0641	0.0845	Hα	Moorwood et al. (2000); Hopkins (2004)
1.250	0.550	0.2350	0.0137	0.0145	Hα	Hopkins et al. (2000); Hopkins (2004)
0.150	0.150	0.0151	0.0020	0.0022	Hα	Sullivan et al. (2000); Hopkins (2004)
0.900	0.100	0.1067	0.0294	0.0440	Hα	Glazebrook et al. (1999); Hopkins (2004)
1.300	0.600	0.2799	0.0676	0.0891	Hα	Yan et al. (1999); Hopkins (2004)
0.200	0.100	0.0324	0.0042	0.0048	Hα	Tresse & Maddox (1998); Hopkins (2004)
0.022	0.022	0.0126	0.0046	0.0074	Hα	Gallego et al. (1995); Hopkins (2004)
0.043	0.043	0.0240	0.0026	0.0029	Hα	Gronwall (1999); Somerville et al. (2001)
0.243	0.009	0.0360	0.0120	0.0060	Hα	Fujita et al. (2003b)
0.245	0.007	0.0240	0.0060	0.0060	Hα	Hippelein et al. (2003)
0.100	0.100	0.0192	0.0042	0.0014	Hα	Brinchmann et al. (2004)
0.010	0.010	0.0158	0.0033	0.0071	Hα	Hanish et al. (2006)
0.840	0.030	0.1500	0.0200	0.0200	Hα	Sobral et al. (2009)
2.230	0.150	0.1700	0.0900	0.1600	Hα	Geach et al. (2008)
0.242	0.009	0.0180	0.0040	0.0070	Hα	Shioya et al. (2008)
0.840	0.030	0.1700	0.0300	0.0300	Hα	Villar et al. (2008)
2.300	0.400	0.3484	0.0869	0.0869	Hα	Reddy et al. (2008)
3.050	0.350	0.2141	0.0450	0.0450	Hα	Reddy et al. (2008)
0.350	0.150	0.0365	0.0169	0.0314	mid-IR	Flores et al. (1999); Hopkins (2004)
0.625	0.125	0.0678	0.0297	0.0527	mid-IR	Flores et al. (1999); Hopkins (2004)
0.875	0.125	0.1337	0.0602	0.1096	mid-IR	Flores et al. (1999); Hopkins (2004)
0.215	0.215	0.0300	0.0100	0.0200	mid-IR	Mann et al. (2002)
0.515	0.085	0.0700	0.0100	0.0200	mid-IR	Mann et al. (2002)
0.100	0.100	0.0175	0.0049	0.0049	mid-IR	Pozzi et al. (2004)
0.300	0.100	0.0301	0.0140	0.0140	mid-IR	Pozzi et al. (2004)
0.300	0.100	0.0197	0.0067	0.0066	mid-IR	Zheng et al. (2007)
0.500	0.100	0.0349	0.0088	0.0088	mid-IR	Zheng et al. (2007)
0.700	0.100	0.0570	0.0096	0.0101	mid-IR	Zheng et al. (2007)
0.900	0.100	0.0616	0.0120	0.0121	mid-IR	Zheng et al. (2007)
2.300	0.400	0.2091	0.0357	0.0357	mid-IR	Reddy et al. (2008)
3.050	0.350	0.1124	0.0211	0.0211	mid-IR	Reddy et al. (2008)
1.000	0.100	0.2000	0.0300	0.0300	mid-IR	Caputi et al. (2007)
2.000	0.300	0.1100	0.0200	0.0200	mid-IR	Caputi et al. (2007)
0.450	0.150	0.2750	0.0220	0.0220	mid-IR	Santini et al. (2009)
0.800	0.200	0.4870	0.0170	0.0170	mid-IR	Santini et al. (2009)
1.250	0.250	0.7550	0.0290	0.0290	mid-IR	Santini et al. (2009)
2.000	0.500	1.6590	0.0580	0.0580	mid-IR	Santini et al. (2009)

Table A.4. continued.

z	Δz	$\rho_{\rm SFR}$	$-\Delta\rho_{\rm SFR}$	$+\Delta\rho_{\rm SFR}$	Estimator	Reference
0.100	0.100	0.0180	0.0025	0.0029	mid-IR	Pérez-González et al. (2005)
0.100	0.100	0.0163	0.0023	0.0027	mid-IR	Pérez-González et al. (2005)
0.100	0.100	0.0171	0.0024	0.0028	mid-IR	Pérez-González et al. (2005)
0.300	0.100	0.0384	0.0019	0.0020	mid-IR	Pérez-González et al. (2005)
0.300	0.100	0.0356	0.0017	0.0018	mid-IR	Pérez-González et al. (2005)
0.300	0.100	0.0330	0.0016	0.0017	mid-IR	Pérez-González et al. (2005)
0.500	0.100	0.0818	0.0060	0.0064	mid-IR	Pérez-González et al. (2005)
0.500	0.100	0.0927	0.0089	0.0098	mid-IR	Pérez-González et al. (2005)
0.500	0.100	0.0589	0.0043	0.0046	mid-IR	Pérez-González et al. (2005)
0.700	0.100	0.1052	0.0052	0.0054	mid-IR	Pérez-González et al. (2005)
0.700	0.100	0.1459	0.0140	0.0155	mid-IR	Pérez-González et al. (2005)
0.700	0.100	0.0951	0.0047	0.0049	mid-IR	Pérez-González et al. (2005)
0.900	0.100	0.1319	0.0580	0.1036	mid-IR	Pérez-González et al. (2005)
0.900	0.100	0.1877	0.0852	0.1559	mid-IR	Pérez-González et al. (2005)
0.900	0.100	0.1255	0.0552	0.0985	mid-IR	Pérez-González et al. (2005)
1.200	0.200	0.1741	0.0127	0.0137	mid-IR	Pérez-González et al. (2005)
1.200	0.200	0.2477	0.0400	0.0478	mid-IR	Pérez-González et al. (2005)
1.200	0.200	0.1423	0.0136	0.0151	mid-IR	Pérez-González et al. (2005)
1.600	0.200	0.1574	0.0151	0.0167	mid-IR	Pérez-González et al. (2005)
1.600	0.200	0.2076	0.0379	0.0464	mid-IR	Pérez-González et al. (2005)
1.600	0.200	0.1353	0.0130	0.0143	mid-IR	Pérez-González et al. (2005)
2.000	0.200	0.1319	0.0344	0.0466	mid-IR	Pérez-González et al. (2005)
2.000	0.200	0.2239	0.0705	0.1028	mid-IR	Pérez-González et al. (2005)
2.000	0.200	0.1388	0.0362	0.0490	mid-IR	Pérez-González et al. (2005)
2.400	0.200	0.1785	0.0432	0.0570	mid-IR	Pérez-González et al. (2005)
2.400	0.200	0.3524	0.1109	0.1618	mid-IR	Pérez-González et al. (2005)
2.400	0.200	0.2296	0.0556	0.0733	mid-IR	Pérez-González et al. (2005)
0.698	0.618	0.0102	0.0014	0.0014	submm	This work
1.775	0.367	0.0228	0.0027	0.0027	submm	This work
2.357	0.209	0.0486	0.0054	0.0054	submm	This work
3.101	0.522	0.0341	0.0040	0.0040	submm	This work
2.000	1.000	0.1476	0.0607	0.0973	submm	Barger et al. (2000); Hopkins (2004)
4.500	1.500	0.1901	0.1195	0.2454	submm	Barger et al. (2000); Hopkins (2004)
0.057	0.041	0.0206	0.0016	0.0024	submm	Pascale et al. (2009)
0.138	0.040	0.0292	0.0022	0.0040	submm	Pascale et al. (2009)
0.250	0.073	0.0192	0.0026	0.0036	submm	Pascale et al. (2009)
0.454	0.132	0.0511	0.0022	0.0067	submm	Pascale et al. (2009)
0.824	0.239	0.0785	0.0073	0.0086	submm	Pascale et al. (2009)
2.281	1.219	0.1104	0.0092	0.0140	submm	Pascale et al. (2009)
0.005	0.005	0.0109	0.0007	0.0008	radio	Condon et al. (2002); Hopkins (2004)
0.080	0.080	0.0187	0.0035	0.0038	radio	Sadler et al. (2002); Hopkins (2004)
0.010	0.010	0.0177	0.0036	0.0036	radio	Serjeant et al. (2002); Hopkins (2004)
0.070	0.070	0.0120	0.0025	0.0031	radio	Machalski & Godlowski (2000); Hopkins (2004)
0.206	0.196	0.0408	0.0157	0.0155	radio	Haarsma et al. (2000); Hopkins (2004)
0.464	0.054	0.0667	0.0246	0.0254	radio	Haarsma et al. (2000); Hopkins (2004)
0.623	0.075	0.0764	0.0344	0.0340	radio	Haarsma et al. (2000); Hopkins (2004)
0.804	0.080	0.1315	0.0446	0.0459	radio	Haarsma et al. (2000); Hopkins (2004)
1.600	0.640	0.1641	0.0557	0.0522	radio	Haarsma et al. (2000); Hopkins (2004)
0.005	0.005	0.0209	0.0000	0.0000	radio	Condon (1989); Hopkins (2004)
0.152	0.149	0.0220	0.0010	0.0010	radio	Mauch & Sadler (2007)
0.310	0.210	0.0331	0.0074	0.0076	radio	Seymour et al. (2008)
0.810	0.290	0.0851	0.0262	0.0271	radio	Seymour et al. (2008)
1.500	0.400	0.1479	0.0666	0.0812	radio	Seymour et al. (2008)
2.450	0.550	0.1202	0.0756	0.1036	radio	Seymour et al. (2008)
0.100	0.100	0.0087	0.0063	0.0062	radio	Dunne et al. (2009)
0.300	0.100	0.0292	0.0107	0.0106	radio	Dunne et al. (2009)
0.500	0.100	0.0385	0.0118	0.0106	radio	Dunne et al. (2009)
0.700	0.100	0.0700	0.0175	0.0164	radio	Dunne et al. (2009)
0.900	0.100	0.0781	0.0202	0.0172	radio	Dunne et al. (2009)
1.100	0.100	0.1124	0.0262	0.0249	radio	Dunne et al. (2009)
1.300	0.100	0.1327	0.0287	0.0257	radio	Dunne et al. (2009)
1.500	0.100	0.2043	0.0369	0.0343	radio	Dunne et al. (2009)
1.700	0.100	0.1788	0.0339	0.0277	radio	Dunne et al. (2009)
1.900	0.100	0.1582	0.0256	0.0245	radio	Dunne et al. (2009)
2.250	0.250	0.1061	0.0141	0.0125	radio	Dunne et al. (2009)
2.750	0.250	0.1049	0.0150	0.0123	radio	Dunne et al. (2009)

Table A.4. continued.

z	Δz	$\rho_{\rm SFR}$	$-\Delta\rho_{\rm SFR}$	$+\Delta\rho_{\rm SFR}$	Estimator	Reference
3.250	0.250	0.0583	0.0078	0.0069	radio	Dunne et al. (2009)
4.250	0.750	0.0184	0.0032	0.0026	radio	Dunne et al. (2009)
0.150	0.150	0.0383	0.0131	0.0251	X-ray	Georgakakis et al. (2003); Hopkins (2004)
2.750	0.750	>0.0607			UV	Madau et al. (1996); Hopkins (2004)
4.000	0.500	>0.0189			UV	Madau et al. (1996); Hopkins (2004)
2.750	0.750	>0.0290			UV	Madau et al. (1998); van Breukelen et al. (2005)
4.000	0.500	>0.0110			UV	Madau et al. (1998); van Breukelen et al. (2005)
3.200	0.140	>0.0033			UV	Shim et al. (2007)
2.200	0.350	>0.0372			UV	Sawicki & Thompson (2006a,b); Ly et al. (2009)
2.960	0.260	>0.0370			UV	Sawicki & Thompson (2006a,b); Ly et al. (2009)
4.130	0.260	>0.0161			UV	Sawicki & Thompson (2006a,b); Ly et al. (2009)
3.500	0.500	>0.0442			UV	Paltani et al. (2007); Ly et al. (2009)
2.700	0.700	>0.0282			UV	Bouwens et al. (2003a)
3.850	0.450	>0.0166			UV	Bouwens et al. (2003a)
4.700	0.200	>0.0147			UV	Bouwens et al. (2003a)
6.000	0.200	>0.0360			UV	Bouwens et al. (2003b)
5.900	0.200	>0.0070			UV	Bouwens et al. (2004)
5.900	0.200	>0.0073			UV	Bouwens et al. (2006)
5.900	0.200	>0.0221			UV	Bouwens et al. (2006)
6.000	0.400	>0.0050			UV	Bunker et al. (2004)
3.050	0.350	>0.0321			UV	Reddy et al. (2008)
5.000	0.500	>0.0137			UV	Iwata et al. (2007)
5.900	0.300	>0.0003			UV	Shimasaku et al. (2005)
5.850	0.250	>0.0034			UV	Stanway et al. (2003)
2.259	0.053	>0.0054			Lyα	Nilsson et al. (2009)
2.379	0.023	>0.0024			Lyα	Palunas et al. (2004)
3.110	0.020	>0.0120			Lyα	Gronwall et al. (2007)
3.156	0.025	>0.0130			Lyα	Nilsson et al. (2007)
3.135	0.045	>0.0043			Lyα	Ouchi et al. (2008)
3.140	0.040	>0.0300			Lyα	Kudritzki et al. (2000)
3.400	0.030	>0.0060			Lyα	Hu et al. (1998)
3.438	0.033	>0.0100			Lyα	Cowie & Hu (1998)
3.463	0.982	>0.0220			Lyα	van Breukelen et al. (2005)
3.690	0.060	>0.0021			Lyα	Ouchi et al. (2008)
3.700	0.220	>0.0004			Lyα	Fujita et al. (2003a); van Breukelen et al. (2005)
4.500	0.064	>0.0100			Lyα	Hu et al. (1998)
4.860	0.030	>0.0063			Lyα	Ouchi et al. (2003); van Breukelen et al. (2005)
5.690	0.090	>0.0032			Lyα	Ouchi et al. (2008)
5.700	0.100	>0.0012			Lyα	Ajiki et al. (2003)
5.700	0.050	>0.0018			Lyα	Malhotra & Rhoads (2004)
5.700	0.050	>0.0023			Lyα	Shimasaku et al. (2006)
5.700	0.050	>0.0007			Lyα	Murayama et al. (2007)
5.735	0.062	>0.0005			Lyα	Rhoads et al. (2003)
6.500	0.050	>0.0036			Lyα	Malhotra & Rhoads (2004)
6.550	0.050	>0.0006			Lyα	Taniguchi et al. (2005)
6.578	0.002	>0.0005			Lyα	Kodaira et al. (2003)
3.000	1.000	>0.0818			submm	Hughes et al. (1998); Hopkins (2004)

Notes. Lower limits indicate value not corrected for extinction. The data with double reference were taken directly form the compilation given in the second reference. .

Table A.5. Compilation of stellar mass density determinations in log $M_\odot$ Mpc^{-3}.

z	Δz	ρ_*	$-\Delta\rho_*$	$+\Delta\rho_*$	Reference
0.698	0.618	7.12	0.08	0.13	This work
1.775	0.367	7.18	0.11	0.16	This work
2.357	0.209	7.61	0.08	0.12	This work
3.101	0.522	7.28	0.07	0.12	This work
0.100	0.100	8.48	0.10	0.10	Borch et al. (2006)
0.300	0.100	8.34	0.15	0.15	Borch et al. (2006)
0.500	0.100	8.32	0.11	0.11	Borch et al. (2006)
0.700	0.100	8.33	0.10	0.10	Borch et al. (2006)
0.900	0.100	8.17	0.18	0.18	Borch et al. (2006)
0.100	0.100	8.49	0.05	0.04	Rudnick et al. (2003)
1.120	0.480	8.14	0.10	0.11	Rudnick et al. (2003)
2.010	0.400	7.48	0.16	0.12	Rudnick et al. (2003)
2.800	0.400	7.49	0.14	0.12	Rudnick et al. (2003)
0.950	0.450	8.46	0.07	0.07	Dickinson et al. (2003)
1.700	0.300	8.06	0.13	0.17	Dickinson et al. (2003)
2.250	0.250	7.58	0.07	0.11	Dickinson et al. (2003)
2.750	0.250	7.52	0.14	0.23	Dickinson et al. (2003)
0.950	0.450	8.61	0.07	0.07	Dickinson et al. (2003)
1.700	0.300	8.22	0.12	0.16	Dickinson et al. (2003)
2.250	0.250	8.01	0.08	0.09	Dickinson et al. (2003)
2.750	0.250	7.89	0.15	0.20	Dickinson et al. (2003)
0.950	0.450	8.52	0.08	0.07	Dickinson et al. (2003)
1.700	0.300	7.97	0.17	0.17	Dickinson et al. (2003)
2.250	0.250	7.36	0.08	0.11	Dickinson et al. (2003)
2.750	0.250	7.27	0.18	0.27	Dickinson et al. (2003)
0.375	0.125	8.65	0.17	0.12	Cohen (2002)
0.650	0.150	8.65	0.01	0.08	Cohen (2002)
0.925	0.125	8.62	0.09	0.08	Cohen (2002)
0.500	0.100	8.83	0.04	0.04	Drory et al. (2004, 2005)
0.700	0.100	8.76	0.04	0.04	Drory et al. (2004, 2005)
0.900	0.100	8.60	0.04	0.04	Drory et al. (2004, 2005)
1.100	0.100	8.55	0.04	0.04	Drory et al. (2004, 2005)
0.500	0.250	8.50	0.27	0.27	Drory et al. (2004, 2005)
0.500	0.250	8.51	0.17	0.17	Drory et al. (2004, 2005)
1.000	0.250	8.42	0.12	0.12	Drory et al. (2004, 2005)
1.000	0.250	8.29	0.19	0.19	Drory et al. (2004, 2005)
1.500	0.250	8.38	0.16	0.16	Drory et al. (2004, 2005)
1.500	0.250	8.03	0.16	0.16	Drory et al. (2004, 2005)
2.000	0.250	8.09	0.19	0.19	Drory et al. (2004, 2005)
2.000	0.250	8.04	0.20	0.20	Drory et al. (2004, 2005)
2.625	0.375	8.15	0.19	0.19	Drory et al. (2004, 2005)
2.625	0.375	7.78	0.20	0.20	Drory et al. (2004, 2005)
3.500	0.500	7.92	0.17	0.17	Drory et al. (2004, 2005)
3.500	0.500	7.68	0.20	0.20	Drory et al. (2004, 2005)
4.500	0.500	7.37	0.26	0.26	Drory et al. (2004, 2005)
4.500	0.500	7.43	0.20	0.20	Drory et al. (2004, 2005)
0.900	0.100	8.18	0.13	0.10	Glazebrook et al. (2004)
1.200	0.100	7.82	0.13	0.01	Glazebrook et al. (2004)
1.450	0.150	8.08	0.09	0.08	Glazebrook et al. (2004)
1.800	0.200	7.69	0.13	0.11	Glazebrook et al. (2004)
0.500	0.100	8.32	0.03	0.03	Fontana et al. (2003, 2004, 2006)
0.700	0.100	8.53	0.02	0.02	Fontana et al. (2003, 2004, 2006)
0.900	0.100	8.16	0.03	0.03	Fontana et al. (2003, 2004, 2006)
1.150	0.150	8.26	0.02	0.02	Fontana et al. (2003, 2004, 2006)
1.450	0.150	7.96	0.03	0.03	Fontana et al. (2003, 2004, 2006)
1.800	0.200	7.90	0.04	0.04	Fontana et al. (2003, 2004, 2006)
2.500	0.500	7.60	0.04	0.04	Fontana et al. (2003, 2004, 2006)
3.500	0.500	7.23	0.12	0.12	Fontana et al. (2003, 2004, 2006)
4.500	0.500	7.73	0.12	0.12	Fontana et al. (2003, 2004, 2006)
5.500	0.500	7.84	0.12	0.12	Fontana et al. (2003, 2004, 2006)
0.450	0.250	8.51	0.04	0.24	Fontana et al. (2003, 2004, 2006)
0.850	0.150	8.44	0.05	0.20	Fontana et al. (2003, 2004, 2006)
1.250	0.250	8.19	0.11	0.13	Fontana et al. (2003, 2004, 2006)
1.750	0.250	7.86	0.24	0.24	Fontana et al. (2003, 2004, 2006)
2.250	0.250	7.65	0.24	0.24	Fontana et al. (2003, 2004, 2006)
0.500	0.250	8.64	0.17	0.24	Fontana et al. (2003, 2004, 2006)

Table A.5. Compilation of stellar mass density determinations in log $M_\odot$ Mpc^{-3}.

z	Δz	ρ_*	$-\Delta\rho_*$	$+\Delta\rho_*$	Reference
1.000	0.250	8.29	0.31	0.35	Fontana et al. (2003, 2004, 2006)
1.625	0.375	7.87	0.28	0.35	Fontana et al. (2003, 2004, 2006)
2.250	0.250	7.92	0.42	0.26	Fontana et al. (2003, 2004, 2006)
2.850	0.350	7.90	0.20	0.38	Fontana et al. (2003, 2004, 2006)
0.100	0.100	8.75	0.07	0.06	Cole et al. (2001)
0.350	0.150	8.53	0.13	0.09	Brinchmann & Ellis (2000)
0.625	0.125	8.56	0.05	0.06	Brinchmann & Ellis (2000)
0.875	0.125	8.48	0.04	0.06	Brinchmann & Ellis (2000)
0.100	0.100	8.75	0.12	0.12	Pérez-González et al. (2008)
0.300	0.100	8.61	0.06	0.06	Pérez-González et al. (2008)
0.500	0.100	8.57	0.04	0.04	Pérez-González et al. (2008)
0.700	0.100	8.52	0.05	0.05	Pérez-González et al. (2008)
0.900	0.100	8.44	0.05	0.05	Pérez-González et al. (2008)
1.150	0.150	8.35	0.05	0.05	Pérez-González et al. (2008)
1.450	0.150	8.18	0.07	0.07	Pérez-González et al. (2008)
1.800	0.200	8.02	0.07	0.07	Pérez-González et al. (2008)
2.250	0.250	7.87	0.09	0.09	Pérez-González et al. (2008)
2.750	0.250	7.76	0.18	0.18	Pérez-González et al. (2008)
3.250	0.250	7.63	0.14	0.14	Pérez-González et al. (2008)
3.750	0.250	7.49	0.13	0.13	Pérez-González et al. (2008)
0.150	0.150	8.76	0.13	0.11	Salucci & Persic (1999)
0.097	0.084	8.73	0.07	0.06	Driver et al. (2007)
0.150	0.150	8.72	0.01	0.01	Bell et al. (2003)
0.950	0.450	8.45	0.07	0.06	Conselice et al. (2005)
1.700	0.300	7.74	0.22	0.15	Conselice et al. (2005)
2.250	0.250	7.36	0.40	0.21	Conselice et al. (2005)
2.750	0.250	7.30	0.92	0.27	Conselice et al. (2005)
0.500	0.250	8.57	0.03	0.03	Elsner et al. (2008)
1.000	0.250	8.37	0.02	0.02	Elsner et al. (2008)
1.500	0.250	8.22	0.03	0.03	Elsner et al. (2008)
2.000	0.250	8.10	0.04	0.04	Elsner et al. (2008)
2.500	0.250	7.93	0.04	0.04	Elsner et al. (2008)
3.500	0.500	7.59	0.05	0.05	Elsner et al. (2008)
4.500	0.500	6.90	0.08	0.08	Elsner et al. (2008)
3.960	0.290	7.01	0.06	0.05	Stark et al. (2009)
4.790	0.250	6.63	0.07	0.06	Stark et al. (2009)
6.010	0.250	6.29	0.09	0.07	Stark et al. (2009)
5.000	0.600	6.78	0.08	0.22	Stark et al. (2007)
6.000	0.300	6.40	0.00	0.51	Eyles et al. (2007)
6.000	0.500	6.59	0.55	0.24	Yan et al. (2006)
0.100	0.100	8.59	0.04	0.04	Rudnick et al. (2006)
0.500	0.500	8.05	0.03	0.07	Rudnick et al. (2006)
1.300	0.300	7.87	0.04	0.07	Rudnick et al. (2006)
2.000	0.400	7.76	0.06	0.06	Rudnick et al. (2006)
2.800	0.400	7.59	0.11	0.06	Rudnick et al. (2006)
0.100	0.100	8.51	0.07	0.07	Marchesini et al. (2009)
1.650	0.350	7.91	0.15	0.02	Marchesini et al. (2009)
2.500	0.500	7.55	0.18	0.12	Marchesini et al. (2009)
3.500	0.500	7.27	0.39	0.93	Marchesini et al. (2009)
0.550	0.150	8.31	0.07	0.07	Bundy et al. (2006)
0.875	0.125	8.30	0.10	0.10	Bundy et al. (2006)
1.200	0.200	8.15	0.10	0.10	Bundy et al. (2006)
0.300	0.100	8.46	0.03	0.03	Ilbert et al. (2010)
0.500	0.100	8.22	0.02	0.02	Ilbert et al. (2010)
0.700	0.100	8.25	0.02	0.02	Ilbert et al. (2010)
0.900	0.100	8.32	0.01	0.01	Ilbert et al. (2010)
1.100	0.100	8.09	0.02	0.02	Ilbert et al. (2010)
1.350	0.150	7.93	0.01	0.01	Ilbert et al. (2010)
1.750	0.250	7.72	0.09	0.14	Ilbert et al. (2010)
0.300	0.100	8.79	0.17	0.15	Arnouts et al. (2007)
0.500	0.100	8.63	0.11	0.12	Arnouts et al. (2007)

Table A.5. continued.

z	Δz	ρ_*	$-\Delta\rho_*$	$+\Delta\rho_*$	Reference
0.700	0.100	8.63	0.10	0.10	Arnouts et al. (2007)
0.900	0.100	8.73	0.13	0.13	Arnouts et al. (2007)
1.100	0.100	8.54	0.11	0.11	Arnouts et al. (2007)
1.350	0.150	8.43	0.12	0.12	Arnouts et al. (2007)
1.750	0.250	8.17	0.12	0.12	Arnouts et al. (2007)
0.325	0.225	8.66	0.10	0.10	Franceschini et al. (2006)
0.725	0.175	8.61	0.10	0.10	Franceschini et al. (2006)
1.150	0.250	8.45	0.10	0.10	Franceschini et al. (2006)
0.225	0.175	8.45	0.01	0.01	Pozzetti et al. (2007)
0.550	0.150	8.34	0.02	0.02	Pozzetti et al. (2007)
0.800	0.100	8.22	0.01	0.01	Pozzetti et al. (2007)
1.050	0.150	8.14	0.01	0.01	Pozzetti et al. (2007)
1.400	0.200	8.04	0.02	0.02	Pozzetti et al. (2007)
2.050	0.450	8.05	0.01	0.01	Pozzetti et al. (2007)
0.025	0.025	8.81	0.05	0.05	Kochanek et al. (2001)
0.100	0.100	8.72	0.03	0.03	Driver et al. (2006)
1.100	0.400	8.47	0.11	0.11	Gwyn & Hartwick (2005)
1.750	0.250	8.38	0.21	0.21	Gwyn & Hartwick (2005)
2.500	0.500	8.21	0.14	0.14	Gwyn & Hartwick (2005)
4.500	1.500	7.93	0.11	0.11	Gwyn & Hartwick (2005)
1.250	0.250	8.37	0.07	0.06	Caputi et al. (2006)
1.750	0.250	8.12	0.07	0.06	Caputi et al. (2006)