

## Bill of Materials

Vendor Part Numbers Revised January 30, 2014

Item #	QTY	RefDes	Description	Manufacturer	Part Number
1 <sup>1</sup>	2	AT3-AT4	ANTENNA, CERAMIC CHIP DIELECTRIC, 3.2X1.6X0.5MM, 2.45GHZ	Johanson Technology	2450AT18B100E
2	5	C1,C14,C16,C20,C37	CAPACITOR, CERAMIC, 10NF, +/-10%, 25V, X7R, 0402 (1005 METRIC)	MURATA	GRM155R71E103KA01D
3 <sup>2</sup>	1	C10	CAPACITOR, CERAMIC, 22PF, +/-5%, 50V, -55C TO 125C, 0402 (1005 METRIC)	MURATA	GRM1555C1H220JA01D
4	2	C11-C12	CAPACITOR, CERAMIC, 22PF, +/-5%, 50V, -55C TO 125C, 0402 (1005 METRIC)	MURATA	GRM1555C1H220JA01D
5	3	C13,C15,C27	CAPACITOR, CERAMIC, 8PF, +/-0.5PF, 50V, COG, NP0, 0402	MURATA	GRM1555C1H8R0DA01D
6	1	C2	CAPACITOR, CERAMIC, 0.47UF, +/-10%, 10V, -55C TO 85C, 0402 (1005 METRIC)	MURATA	GRM155R61A474KE15D
7	4	C3-C5,C7	CAPACITOR, CERAMIC, 100NF, +/-10%, 16V, -55C TO 125C, 0402 (1005 METRIC)	MURATA	GRM155R71C104KA88D
8	4	C6,C24-C25,C30	CAPACITOR, CERAMIC, 1.0UF, +/-10%, 6.3V, X5R, 0402 (1005 METRIC)	MURATA	GRM155R60J105KE19D
9	1	C8	CAPACITOR, 2.2UF, +/-10%, 16V, X5R, 0603	MURATA	GRM188R61C225KE15D
10 <sup>2</sup>	1	C9	CAPACITOR, CERAMIC, 33PF, +/-5%, 50V, -55C TO 125C, COG, NP0, 0402 (1005 METRIC)	MURATA	GRM1555C1H330JA01D
11 <sup>3</sup>	1	DS1	LED, 0402, RED, 2.0V, 20MA	ROHM	SML-P12UTT86
12 <sup>3</sup>	1	DS2	LED, 0402, YELLOW, 2.1V, 20MA	ROHM	SML-P12YTT86
13 <sup>4</sup>	1	J1	CONNECTOR, HEADER, SHROUDED, 10 POSITION, DUAL ROW, VERTICAL, 0.050"	SAMTEC	FTSH-105-01-L-DV-K
14 <sup>1</sup>	2	J12-J13	CONNECTOR, RF, SWITCHED, SMD	MURATA	MM8130-2600RA2
15 <sup>5</sup>	1	J2	CONNECTOR, RECEPTACLE, BD075-19, SURFACE MOUNT VERTICAL	Global Connector Technology	BD075-19-A-1-L-C
16 <sup>5</sup>	1	J3	CONNECTOR, RECEPTACLE, BD075-14, SURFACE MOUNT VERTICAL	Global Connector Technology	BD075-14-A-1-L-C
17 <sup>1</sup>	2	L21-L22	INDUCTOR, METAL FILM, 2.0NH, +/-0.1NH, 220MA, -40C TO 85C, 0402 (1005 METRIC)	MURATA	LQP15MN2N0B02D
18 <sup>1</sup>	2	L24-L25	INDUCTOR, METAL FILM, 1.5NH, +/-0.1NH, 280MA, -40C TO 85C, 0402 (1005 METRIC)	MURATA	LQP15MN1N5B02D
19	2	L6,L10	INDUCTOR, METAL FILM, 3NH, +/-0.1NH, 190MA, 0402	MURATA	LQP15MN3N0B02D
20	1	L7	INDUCTOR, METAL FILM, 1.8NH, +/-0.1NH, 280MA, 0402	MURATA	LQP15MN1N8B02D
21	1	L8	INDUCTOR, METAL FILM, 6.2NH, +/-0.1NH, 130MA, 0402	MURATA	LQP15MN6N2B02D
22	1	L9	INDUCTOR, METAL FILM, 3.6NH, +/-0.1NH, 170MA, 0402	MURATA	LQP15MN3N6B02D
23	1	PCB2	MECHANICAL, PCB, EM35X/RF6525 4 LAYER REFERENCE DESIGN		
24	1	Q3	MOSFET, N-CHANNEL LOGIC LEVEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR, 1.7A, 460MW, 30V, SOT-23	FAIRCHILD	NDS355N
25	1	R1	RESISTOR, 10 OHM, 5%, 1/16W, 0402	PANASONIC	ERJ-2GEJ100X
26	2	R11,R14	RESISTOR, THICK FILM, 0 OHM, JUMPER, 1/10W, 0402 (1005 METRIC)	PANASONIC	ERJ-2GE0R00X
27	2	R19,R36	RESISTOR, THICK FILM, 100K, +/-5%, 0.1W, 1/10W, 0402 (1005 METRIC)	PANASONIC	ERJ-2GEJ104X
28	1	R2	RESISTOR, THICK FILM, 1 OHM, +/-5%, 0.1W, 1/10W, 0402 (1005 METRIC)	PANASONIC	ERJ-2GEJ1R0X
29	1	R5	RESISTOR, DNI, 0402		
30 <sup>2</sup>	2	R12-R13	RESISTOR, DNI, 0402		
31 <sup>3</sup>	2	R7-R8	RESISTOR, 510 OHM, 5%, 1/16W, 0402	PANASONIC	ERJ-2GEJ511X
32	1	U1	IC, COMMUNICATIONS, EM357, ZIGBEE/802.15.4 RF TRANSCEIVER, ARM CORTEX-M3, 12K RAM, 192K FLASH, -40C TO 85C, 48-QFN	Silicon Laboratories	EM357-RTR
33	1	U2	IC, RF6525 3.0V TO 4.2V, 2.4GHZ FRONT END MODULE, 3.3V, 22DBM, -40C TO 85C, 20-QFN	RFMD	RF6525TR13
34	1	U3	IC - PROGRAMMABLE MEMORY - BLANK, SERIAL FLASH, 2M (1024 PAGES X 264 BYTES), 2.7 V - 3.6 V, -40C TO 85C, 8-SOIC (0.154", 3.90MM WIDTH)	ATMEL	AT45DB021E-SSHN-T
35	1	Y1	CRYSTAL, 24.000MHZ, +/-10PPM TOLERANCE, +/-25PPM STABILITY, 18PF, -40 TO +85C	Abracorn Corporation ILSI America Oscilent Corporation	ABM3B-24.000MHZ-D-R60-1-W-T ILSI-C-1753 290-24.0M-18-10W-TR
36 <sup>2</sup>	1	Y2	OSCILLATOR, CRYSTAL, 32.768KHZ, 12.5PF, +/-20PPM, -40C TO 85C, 2-SMD	Abracorn Corporation Fox Crystals ILSI America	ABS07-32.768KHz-T FX135A-327 IL3X-HX5-12.5-32.768KHz

## Notes:

Parts highlighted are not required for the Reference Design. Substitutions of non-highlighted parts can be made for cost or availability reasons, but should be avoided as they may impact functionality and RF performance.

<sup>1</sup> The antenna port components AT3, AT4, J12, J13, L21, L22, L24 and L25, can be replaced with a preferred 50 ohm RF solution.<sup>2</sup> C9, C10, R12, R13 and Y2 can be omitted when using the internal 10 KHz RC oscillator for a sleep timer<sup>3</sup> DS1, DS2, R7 and R8 are debug indicators and can be omitted on most designs and production modules<sup>4</sup> The J1 Packet Trace Port interface is required to make use of Ember Desktop software tools and enables a direct connection to an Ember Debug Adapter (ISA3). This part can be made 'Do Not Install' in production.<sup>5</sup> The J2 and J3 connector interface is intended for use with the EM35x Development Kit and can be replaced with a different board to board interface arrangement, or removed entirely to facilitate a merger into an already existing PCB layout design.