

TEST REPORT

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Project Number: G103017087

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Product Name: Wireless Base Station

FCC Standards: FCC Part 22H, 24E, and 27
ISED Standards: RSS-132 Issue 3, RSS-133 Issue 6, RSS-139 Issue 3

Tested by:
Intertek Testing Services NA, Inc.
731 Enterprise Drive
Lexington, KY 40510

Client:
Alcohol Monitoring Systems Inc.
1241 W Mineral Ave
Littleton, CO 80120

Report prepared by



Brian Lackey, Project Engineer

Report reviewed by



Bryan Taylor, Team Leader



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1 Introduction and Conclusion

The tests indicated in section 2 were performed on the product constructed as described in section 3. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test method, a list of the actual test equipment used, documentation photos, results and raw data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested complied with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested.

The INTERTEK-Lexington is located at 731 Enterprise Drive, Lexington Kentucky, 40510. The radiated emission test site is a 10-meter semi-anechoic chamber. The chamber meets the characteristics of CISPR 16-1 and ANSI C63.4. For measurements, a remotely controlled flush-mount metal-top turntable is used to rotate the EUT a full 360 degrees. A remote controlled non-conductive antenna mast is used to scan the antenna height from one to four meters. The test site is listed with the FCC under registration number 485103. The test site is listed with Industry Canada under site number IC 2042M-1.

2 Test Summary

Page	Test full name	FCC Reference	ISED Reference	Result
–	Output Power	§2.1046 §24.232(d)	RSS-132 (5.4), RSS-133 (6.1)	Note ¹
–	Occupied Bandwidth	§2.1049, §22.917(b)(d), and §24.238(a)	RSS-Gen (4.6.1)	Note ¹
–	Conducted Spurious Emissions / Band Edge	§2.1049, §2.1051, §22.917(a)(b), and § 24.238(a)(b)	RSS-132 (5.5), RSS-133 (6.5.1)	Note ¹
–	Radiated Output Power	§ 22.913(a) and § 24.232(c)	RSS-132 (5.4), RSS-133 (6.4)	Note ¹
6	Radiated Spurious Emissions (Transmitter)	§2.1053, §22.917(a)(b), §24.238(a)(b), and §27.53(h)	RSS-132 (5.5), RSS-133 (6.5.1) RSS-139 (6.6)	Pass
–	Frequency Stability	§2.1055, §22.355, and §24.235	RSS-132 (5.3), RSS-133 (6.3)	Note ¹

¹ See Module FCC report (FCCID RI7HE910GL; ISED certification number 5131A-HE910GL)

3 Description of Equipment Under Test

Equipment Under Test	
Manufacturer	Alcohol Monitoring Systems Inc.
Model Number	BS-400
Serial Number	WB1002W
Receive Date	5/31/2017
Test Start Date	5/31/2017
Test End Date	6/2/2017
Device Received Condition	Good
Test Sample Type	Production
Frequency Band	WCDMA Bands I, II, IV, V, VI, VIII GSM 850, 900, 1800, 1900
Modulation Type	CDMA
Transmission Control	Base Station Simulator
Maximum Output Power (Conducted)	33 dBm ²
Test Channels	9612, 9750, 9888 (WCDMA Band I) 9262, 9400, 9538 (WCDMA Band II) 1312, 1427, 1513 (WCDMA Band IV) 4132, 4182, 4233 (WCDMA Band V) 4162, 4175, 4188 (WCDMA Band VI) 2712, 2787, 2863 (WCDMA Band VIII) 128, 189, 251 (GSM 850) 975, 37, 124 (GSM 900) 512, 698, 885 (GSM 1800) 512, 661, 810 (GSM 1900)
Antenna Type	Internal
Operating Voltage	120V, 60Hz

Description of Equipment Under Test

The SCRAM CAM bracelet, SCRAM Base Station, and SCRAM Wireless Base Station are part of an alcohol monitoring system and transfers data to a computerized monitoring network. This equipment is intended for use on individuals being monitored by a trained supervising authority.

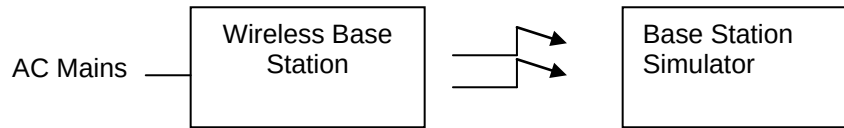
Operating modes of the EUT:

No.	Descriptions of EUT Exercising
1	Transmitting a CDMA/GSM signal at maximum power
2	Receive / idle mode

² See Module FCC report (FCCID RI7HE910GL)

4 System setup including cable interconnection details, support equipment and simplified block diagram

4.1 EUT Block Diagram:



4.2 Cables:

Cables					
Description	Length	Shielding	Ferrites	Connection	
				From	To
Power Cable	1m	No	No	EUT	AC Mains

4.3 Support Equipment:

Support Equipment			
Description	Manufacturer	Model Number	Serial Number
Laptop	HP	EliteBook 8440p	CND046136B

5 Radiated Spurious Emissions (Transmitter)

5.1 Test Limits

§ 2.1053

- (a) Measurements shall be made to detect spurious emissions that may be radiated directly from the cabinet, control circuits, power leads, or intermediate circuit elements under normal conditions of installation and operation. Curves or equivalent data shall be supplied showing the magnitude of each harmonic and other spurious emission. For this test, single sideband, independent sideband, and controlled carrier transmitters shall be modulated under the conditions specified in paragraph (c) of §2.1049, as appropriate. For equipment operating on frequencies below 890 MHz, an open field test is normally required, with the measuring instrument antenna located in the far-field at all test frequencies. In the event it is either impractical or impossible to make open field measurements (e.g. a broadcast transmitter installed in a building) measurements will be accepted of the equipment as installed. Such measurements must be accompanied by a description of the site where the measurements were made showing the location of any possible source of reflections which might distort the field strength measurements. Information submitted shall include the relative radiated power of each spurious emission with reference to the rated power output of the transmitter, assuming all emissions are radiated from halfwave dipole antennas.

§ 22.917

- (a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.
- (b) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

§ 24.238

- (a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.
- (b) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

§ 27.53(h)

- (1) General protection levels. Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.
- (3) Measurement procedure. (i) Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

5.2 Test Procedure

The EUT was placed on a non-conductive turntable. The measurement antenna was placed at a distance of 3 meters from the EUT. The EUT was forced to transmit at its maximum output power setting. During the tests, the antenna height and EUT azimuth were varied in order to identify the maximum level of emissions from the EUT.

The frequency range up to tenth harmonic was investigated in order to identify the spurious emission. Once the spurious emissions were identified, the power of the emission was determined using the substitution method described in TIA-603-C. The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and at the spurious emissions frequency.

5.3 Test Equipment Used:

Description	Serial Number	Manufacturer	Model	Cal. Date	Cal. Due
EMI Test Receiver	10887490.26	Rohde & Schwarz	ESI26	9/20/2016	9/20/2017
Preamplifier	122005	Rohde&Schwarz	TS-PR18	11/17/2016	11/17/2017
Horn Antenna	154521	ETS	3117	11/14/2016	11/14/2017
Signal Generator	3915	Rohde&Schwarz	SMB100A	9/20/2016	9/20/2017
Bilog Antenna	51864	ETS	3142C	4/6/2017	4/6/2018
Substitution Biconnical Antenna (80MHz - 3GHz)	5028	Schwarzbeck	SBA 9113 B-191	3/31/2017	3/31/2018
Substitution Biconnical Antenna (3 - 18GHz)	5027	Schwarzbeck	SBA 9112-242	3/24/2017	3/24/2018
System Controller	121701-1	Sunol Sciences	SC99V	Verify at Time of Use	Verify at Time of Use
High Pass Filter	1	Wainwright	WHKX12-2533.85-2710-1800-40SS	11/17/2016	11/17/2017
High Pass Filter	1	Wainwright	WHKX12-1028.5-1100-1500-40SS	11/17/2016	11/17/2017
Base Station Simulator	3956	Rohde&Schwarz	CMU200	9/25/2016	9/25/2017
3m Cable Antenna→Preamp	3074			11/17/2016	11/17/2017
3m Cable Preamp→Chamber	2588			11/17/2016	11/17/2017
3m Cable Chamber→Control Room	2593			11/17/2016	11/17/2017
3m Cable Control Room→Receiver	2592			11/17/2016	11/17/2017

5.4 Results:

The device was tested in its normal operating position. All radiated spurious emissions were attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB which is equivalent to -13dBm. Emissions not shown were below the measurement noise floor.

Worst Case Spurious Measurements WCDMA Band I

Radiated Spurious Emissions Measurement								
Test Engineer: Brian Daffin			Start Date: 5/31/2017			End Date: 5/31/2017		
Temperature: 23.3C			Humidity: 45.80%			Pressure: 985.4mbar		
RBW: 1MHz			VBW: 3MHz					
Notes:								
			A	B	C	D	E	F
Band/Channel	Spurious Frequency (MHz)	Polarity	Device Reading (dBm)	Signal Generator Level (dBm)	Cable Loss (dB)	Tx Antenna Gain (dBd)	Limit (dBm)	Radiated Spurious Emission Level (dBm)
WCDMA Band I Low Ch 9612 (1922.4 MHz)	3844.8	H	-72.19	-23.56	11.02	-1.20	-13	-35.78
	3844.8	V	-72.14	-23.11	11.02	-1.48	-13	-35.62
	5767.2	H	-72.7	-16.44	13.96	-2.86	-13	-33.26
	5767.2	V	-71.99	-15.54	13.96	-2.69	-13	-32.20
	7689.6	H	-72.74	-10.58	17.46	-3.21	-13	-31.25
	7689.6	V	-72.74	-10	17.46	-3.14	-13	-30.60
	9612.0	H	-75.34	-10.03	21.22	-0.86	-13	-32.11
	9612.0	V	-74.74	-9.73	21.22	-0.89	-13	-31.84
	11534.4	H	-75.5	-6.26	23.95	-0.36	-13	-30.57
11534.4	V	-75.49	-4.83	23.95	0.16	-13	-28.62	
WCDMA Band I Mid Ch 9750 (1950 MHz)	3900.0	H	-71.61	-20.64	11.38	-1.73	-13	-33.75
	3900.0	V	-71.54	-20.49	11.38	-1.06	-13	-32.93
	5850.0	H	-72.23	-13.99	14.50	-3.29	-13	-31.78
	5850.0	V	-71.42	-11.01	14.50	-2.99	-13	-28.51
	7800.0	H	-72.77	-11.62	17.76	-3.26	-13	-32.64
	7800.0	V	-72.86	-11.49	17.76	-3.03	-13	-32.28
	9750.0	H	-75.46	-8.07	21.99	-1.52	-13	-31.58
	9750.0	V	-74.73	-8.39	21.99	-1.28	-13	-31.65
	11700.0	H	-74.4	-3.53	25.17	0.28	-13	-28.42
11700.0	V	-74.53	-4.27	25.17	0.65	-13	-28.79	
WCDMA Band I High Ch 9888 (1977.6 MHz)	3955.2	H	-71.47	-22.17	11.18	-0.76	-13	-34.10
	3955.2	V	-72.1	-23.49	11.18	-0.55	-13	-35.22
	5932.8	H	-71.93	-15.03	14.86	-3.18	-13	-33.07
	5932.8	V	-71.49	-13.63	14.86	-2.94	-13	-31.43
	7910.4	H	-71.77	-9.65	17.93	-3.12	-13	-30.70
	7910.4	V	-73.59	-11.57	17.93	-3.10	-13	-32.60
	9888.0	H	-74.84	-8.6	22.32	-1.86	-13	-32.78
	9888.0	V	-74.58	-7.43	22.32	-1.55	-13	-31.30
	11865.6	H	-74.57	-1.56	25.22	0.85	-13	-25.93
11865.6	V	-75.12	-2.45	25.22	0.94	-13	-26.72	

Worst Case Spurious Measurements WCDMA Band II

Radiated Spurious Emissions Measurement								
Test Engineer: Brian Lackey			Start Date: 5/31/2017			End Date: 5/31/2017		
Temperature: 23.3C			Humidity: 45.80%			Pressure: 985.4mbar		
RBW: 1MHz			VBW: 3MHz					
Notes:								
			A	B	C	D	E	F
Band/Channel	Spurious Frequency (MHz)	Polarity	Device Reading (dBm)	Signal Generator Level (dBm)	Cable Loss (dB)	Tx Antenna Gain (dBd)	Limit (dBm)	Radiated Spurious Emission Level (dBm)
WCDMA Band II Low Ch 9262 (1852.4 MHz)	3704.8	H	-71.8	-17.68	10.85	-2.68	-13	-31.21
	3704.8	V	-70.78	-16.93	10.85	-2.21	-13	-29.98
	5557.2	H	-73.77	-16.54	13.54	-2.64	-13	-32.72
	5557.2	V	-73.89	-16.73	13.54	-2.47	-13	-32.74
	7409.6	H	-73.83	-13.68	17.30	-3.43	-13	-34.41
	7409.6	V	-74.2	-13.03	17.30	-3.07	-13	-33.40
	9262.0	H	-74.77	-10.35	20.83	-1.66	-13	-32.84
	9262.0	V	-74.83	-10.83	20.83	-1.81	-13	-33.47
	11114.4	H	-74.21	-5.37	24.22	-0.81	-13	-30.39
	11114.4	V	-74.55	-6.05	24.22	-0.58	-13	-30.84
WCDMA Band II Mid Ch 9400 (1880 MHz)	3760.0	H	-71.99	-23.35	10.86	-1.72	-13	-35.93
	3760.0	V	-71.89	-22.9	10.86	-1.62	-13	-35.38
	5640.0	H	-73.43	-17.29	13.44	-2.79	-13	-33.52
	5640.0	V	-73.36	-17.47	13.44	-2.72	-13	-33.63
	7520.0	H	-75.23	-14.01	17.40	-3.08	-13	-34.48
	7520.0	V	-75.48	-13.85	17.40	-3.17	-13	-34.41
	9400.0	H	-75.46	-10.14	21.41	-1.06	-13	-32.61
	9400.0	V	-76.02	-11.05	21.41	-1.26	-13	-33.73
	11280.0	H	-74.64	-2.59	24.26	0.09	-13	-26.77
	11280.0	V	-74.47	-1.94	24.26	0.15	-13	-26.05
WCDMA Band II High Ch 9538 (1907.6 MHz)	3815.2	H	-71.27	-23.71	11.05	-1.20	-13	-35.96
	3815.2	V	-71.96	-22.94	11.05	-1.48	-13	-35.48
	5722.8	H	-73.27	-17.84	13.84	-2.99	-13	-34.67
	5722.8	V	-72.67	-15.32	13.84	-2.78	-13	-31.94
	7630.4	H	-74.21	-10.75	17.17	-3.11	-13	-31.03
	7630.4	V	-74.69	-9.93	17.17	-3.15	-13	-30.24
	9538.0	H	-74.04	-6.01	21.42	-1.77	-13	-29.20
	9538.0	V	-75.91	-8.2	21.42	-1.86	-13	-31.48
	11445.6	H	-75.03	-3.3	23.80	0.67	-13	-26.43
	11445.6	V	-75.08	-2.53	23.80	0.78	-13	-25.55

Worst Case Spurious Measurements WCDMA Band IV

Radiated Spurious Emissions Measurement								
Test Engineer: Brian Lackey			Start Date: 6/1/2017			End Date: 6/1/2017		
Temperature: 23.3C			Humidity: 45.80%			Pressure: 985.4mbar		
RBW: 1MHz			VBW: 3MHz					
Notes:								
			A	B	C	D	E	F
Band/Channel	Spurious Frequency (MHz)	Polarity	Device Reading (dBm)	Signal Generator Level (dBm)	Cable Loss (dB)	Tx Antenna Gain (dBd)	Limit (dBm)	Radiated Spurious Emission Level (dBm)
WCDMA Band IV Low Ch 1312 (1712.4 MHz)	3424.8	H	-52.49	0.24	11.12	-5.98	-13	-16.86
	3424.8	V	-57.99	-5.4	11.12	-5.61	-13	-22.13
	5137.2	H	-72.41	-18.63	12.97	-2.10	-13	-33.71
	5137.2	V	-73.23	-19.09	12.97	-1.99	-13	-34.05
	6849.6	H	-72.83	-12.17	15.78	-3.38	-13	-31.33
	6849.6	V	-73.71	-13.21	15.78	-3.18	-13	-32.17
	8562.0	H	-74.03	-10.39	19.14	-2.68	-13	-32.21
	8562.0	V	-74.14	-10.71	19.14	-2.77	-13	-32.62
	10274.4	H	-75.11	-9	24.21	-1.51	-13	-34.72
10274.4	V	-74.18	-8.04	24.21	-1.58	-13	-33.83	
WCDMA Band IV Mid Ch 1427 (1735.4 MHz)	3470.8	H	-51.99	-0.39	10.76	-5.48	-13	-16.63
	3470.8	V	-57.61	-5.97	10.76	-4.87	-13	-21.59
	5206.2	H	-73.25	-19.67	13.01	-2.26	-13	-34.94
	5206.2	V	-72.98	-17.53	13.01	-2.04	-13	-32.58
	6941.6	H	-72.74	-10.72	16.01	-3.28	-13	-30.01
	6941.6	V	-72.37	-9.65	16.01	-3.50	-13	-29.15
	8677.0	H	-74.01	-10.3	19.48	-2.15	-13	-31.93
	8677.0	V	-73.85	-10.91	19.48	-2.60	-13	-32.99
	10412.4	H	-74.97	-8.46	24.28	-0.63	-13	-33.37
10412.4	V	-74.72	-7.66	24.28	-0.62	-13	-32.56	
WCDMA Band IV High Ch 1513 (1752.6 MHz)	3505.2	H	-53.51	-2.25	10.71	-4.52	-13	-17.48
	3505.2	V	-58.38	-6.8	10.71	-4.52	-13	-22.03
	5257.8	H	-71	-14.84	13.27	-2.53	-13	-30.64
	5257.8	V	-72.41	-16.74	13.27	-2.46	-13	-32.47
	7010.4	H	-72.55	-13.33	16.52	-3.28	-13	-33.13
	7010.4	V	-72.67	-13.41	16.52	-3.27	-13	-33.20
	8763.0	H	-74.17	-9.84	19.66	-2.77	-13	-32.27
	8763.0	V	-74.35	-9.79	19.66	-2.33	-13	-31.78
	10515.6	H	-75.24	-6.23	24.45	-1.55	-13	-32.23
10515.6	V	-75.37	-5.4	24.45	-1.23	-13	-31.09	

Worst Case Spurious Measurements WCDMA Band V

Radiated Spurious Emissions Measurement								
Test Engineer: Brian Lackey			Start Date: 5/31/2017			End Date: 5/31/2017		
Temperature: 23.3C			Humidity: 45.80%			Pressure: 985.4mbar		
RBW: 1MHz			VBW: 3MHz					
Notes:								
			A	B	C	D	E	F
Band/Channel	Spurious Frequency (MHz)	Polarity	Device Reading (dBm)	Signal Generator Level (dBm)	Cable Loss (dB)	Tx Antenna Gain (dBd)	Limit (dBm)	Radiated Spurious Emission Level (dBm)
WCDMA Band V Low Ch 4132 (826.4 MHz)	1652.8	H	-68.68	-50	7.37	-16.50	-13	-73.87
	1652.8	V	-70.05	-41.3	7.37	-16.20	-13	-64.87
	2479.2	H	-70.9	-41.7	8.96	-16.50	-13	-67.16
	2479.2	V	-70.18	-40.2	8.96	-16.20	-13	-65.36
	3305.6	H	-71.48	-17.95	10.86	-6.77	-13	-35.57
	3305.6	V	-71.27	-18.47	10.86	-6.84	-13	-36.17
	4132.0	H	-73.04	-25.69	11.52	-0.71	-13	-37.92
	4132.0	V	-72.51	-24.71	11.52	-0.25	-13	-36.48
	4958.4	H	-73.24	-15.74	13.04	-1.72	-13	-30.50
	4958.4	V	-73	-16.25	13.04	-1.76	-13	-31.05
WCDMA Band V Mid Ch 4182 (836.5 MHz)	1672.8	H	-70.37	-46.6	7.52	-16.50	-13	-70.62
	1672.8	V	-70.67	-45.9	7.52	-16.20	-13	-69.62
	2509.2	H	-67.27	-37.6	9.04	-16.50	-13	-63.14
	2509.2	V	-71.35	-41.3	9.04	-16.20	-13	-66.54
	3345.6	H	-71.24	-17.61	11.12	-6.77	-13	-35.49
	3345.6	V	-71.27	-16.82	11.12	-6.84	-13	-34.78
	4182.0	H	-72.54	-22.69	11.43	-0.24	-13	-34.36
	4182.0	V	-72.32	-24.15	11.43	0.12	-13	-35.46
	5018.4	H	-72.42	-21.52	12.76	-2.41	-13	-36.69
	5018.4	V	-72.93	-19.29	12.76	-1.79	-13	-33.83
WCDMA Band V High Ch 4233 (846.6 MHz)	1693.2	H	-68.91	-44.9	7.61	-16.50	-13	-69.01
	1693.2	V	-70.31	-45.5	7.61	-16.20	-13	-69.31
	2539.8	H	-70.41	-40.3	9.11	-16.50	-13	-65.91
	2539.8	V	-71.04	-40.7	9.11	-16.20	-13	-66.01
	3386.4	H	-70.59	-15.83	11.07	-6.13	-13	-33.04
	3386.4	V	-71.74	-18.13	11.07	-6.37	-13	-35.57
	4233.0	H	-72.06	-23.78	11.67	-0.06	-13	-35.51
	4233.0	V	-71.61	-22.93	11.67	-0.11	-13	-34.71
	5079.6	H	-73.23	-17.84	12.79	-2.21	-13	-32.84
	5079.6	V	-73.16	-18.34	12.79	-1.91	-13	-33.04

Worst Case Spurious Measurements WCDMA Band VI

Radiated Spurious Emissions Measurement								
Test Engineer: Brian Lackey			Start Date: 6/1/2017			End Date: 6/1/2017		
Temperature: 23.3C			Humidity: 45.80%			Pressure: 985.4mbar		
RBW: 1MHz			VBW: 3MHz					
Notes:								
			A	B	C	D	E	F
Band/Channel	Spurious Frequency (MHz)	Polarity	Device Reading (dBm)	Signal Generator Level (dBm)	Cable Loss (dB)	Tx Antenna Gain (dBd)	Limit (dBm)	Radiated Spurious Emission Level (dBm)
WCDMA Band VI Low Ch 4162 (832.4 MHz)	1664.8	H	-65.86	-41.4	7.42	-16.50	-13	-65.32
	1664.8	V	-69.02	-44.5	7.42	-16.20	-13	-68.12
	2497.2	H	-65.64	-32.8	9.03	-16.50	-13	-58.33
	2497.2	V	-68.19	-34.4	9.03	-16.20	-13	-59.63
	3329.6	H	-71.34	-17.88	10.98	-6.77	-13	-35.63
	3329.6	V	-71.54	-17.03	10.98	-6.84	-13	-34.86
	4162.0	H	-72.26	-23.14	11.46	-0.24	-13	-34.84
	4162.0	V	-72.07	-24.16	11.46	0.12	-13	-35.50
	4994.4	H	-72.67	-21.31	13.09	-1.72	-13	-36.12
4994.4	V	-72.74	-19.45	13.09	-1.76	-13	-34.30	
WCDMA Band VI Mid Ch 4175 (835 MHz)	1670.0	H	-67.7	-44.2	7.52	-16.50	-13	-68.22
	1670.0	V	-68.87	-44.3	7.52	-16.20	-13	-68.02
	2505.0	H	-67.03	-36.7	9.04	-16.50	-13	-62.24
	2505.0	V	-67.17	-35.6	9.04	-16.20	-13	-60.84
	3340.0	H	-70.86	-18.68	11.12	-6.77	-13	-36.56
	3340.0	V	-71.49	-18.58	11.12	-6.84	-13	-36.54
	4175.0	H	-72.1	-22.66	11.25	-0.24	-13	-34.15
	4175.0	V	-70.7	-22.28	11.25	0.12	-13	-33.41
	5010.0	H	-71.69	-20.14	12.76	-2.41	-13	-35.31
5010.0	V	-72.19	-17.65	12.76	-1.79	-13	-32.19	
WCDMA Band VI High Ch 4188 (837.6 MHz)	1675.2	H	-66.81	-38.2	7.52	-16.50	-13	-62.22
	1675.2	V	-68.94	-39.8	7.52	-16.20	-13	-63.52
	2512.8	H	-67.08	-34.8	9.02	-16.50	-13	-60.32
	2512.8	V	-69.82	-37.3	9.02	-16.20	-13	-62.52
	3350.4	H	-71.22	-19.72	10.91	-6.13	-13	-36.77
	3350.4	V	-70.86	-18.25	10.91	-6.37	-13	-35.53
	4188.0	H	-71.99	-23.03	11.43	-0.24	-13	-34.70
	4188.0	V	-72.47	-24.76	11.43	0.12	-13	-36.07
	5025.6	H	-72.04	-21.18	12.89	-2.41	-13	-36.49
5025.6	V	-72.12	-18.74	12.89	-1.79	-13	-33.42	

Worst Case Spurious Measurements WCDMA Band VIII

Radiated Spurious Emissions Measurement								
Test Engineer: Brian Lackey			Start Date: 6/1/2017			End Date: 6/1/2017		
Temperature: 23.3C			Humidity: 45.80%			Pressure: 985.4mbar		
RBW: 1MHz			VBW: 3MHz					
Notes:								
			A	B	C	D	E	F
Band/Channel	Spurious Frequency (MHz)	Polarity	Device Reading (dBm)	Signal Generator Level (dBm)	Cable Loss (dB)	Tx Antenna Gain (dBd)	Limit (dBm)	Radiated Spurious Emission Level (dBm)
WCDMA Band VIII Low Ch 2712 (882.4 MHz)	1764.8	H	-62.07	-30.8	8.15	-16.50	-13	-55.45
	1764.8	V	-65.47	-35.8	8.15	-16.20	-13	-60.15
	2647.2	H	-70.67	-36.7	9.34	-16.50	-13	-62.54
	2647.2	V	-71.37	-37.9	9.34	-16.20	-13	-63.44
	3529.6	H	-71.6	-21.8	10.58	-4.52	-13	-36.90
	3529.6	V	-71.55	-19.76	10.58	-4.52	-13	-34.86
	4412.0	H	-73.19	-21.65	12.02	-0.01	-13	-33.68
	4412.0	V	-72.51	-20.91	12.02	-0.35	-13	-33.28
	5294.4	H	-73.37	-19.93	12.89	-2.53	-13	-35.35
5294.4	V	-72.9	-17.24	12.89	-2.46	-13	-32.59	
WCDMA Band VIII Mid Ch 2787 (897.4 MHz)	1794.8	H	-64.35	-36.9	8.60	-16.50	-13	-62.00
	1794.8	V	-66.02	-40.7	8.60	-16.20	-13	-65.50
	2692.2	H	-70.74	-36.9	9.31	-16.50	-13	-62.71
	2692.2	V	-70.76	-37.5	9.31	-16.20	-13	-63.01
	3589.6	H	-71.41	-18.75	10.65	-3.43	-13	-32.84
	3589.6	V	-71.68	-18.71	10.65	-3.62	-13	-32.98
	4487.0	H	-72.03	-22	12.13	-0.42	-13	-34.55
	4487.0	V	-74.06	-24.51	12.13	-0.46	-13	-37.09
	5384.4	H	-73.27	-16.8	12.97	-2.50	-13	-32.27
5384.4	V	-74.62	-18.84	12.97	-2.26	-13	-34.07	
WCDMA Band VIII High Ch 2863 (912.6 MHz)	1825.2	H	-65.54	-34	9.01	-16.50	-13	-59.51
	1825.2	V	-65.81	-36.3	9.01	-16.20	-13	-61.51
	2737.8	H	-70.55	-39.6	9.44	-16.50	-13	-65.54
	2737.8	V	-70.19	-38.3	9.44	-16.20	-13	-63.94
	3650.4	H	-72.34	-21.48	10.73	-3.48	-13	-35.69
	3650.4	V	-71.12	-21.6	10.73	-3.01	-13	-35.34
	4563.0	H	-73.34	-21.99	12.19	-0.83	-13	-35.01
	4563.0	V	-72.67	-21.91	12.19	-0.75	-13	-34.85
	5475.6	H	-74.24	-16.31	13.60	-2.81	-13	-32.72
5475.6	V	-73.51	-15.11	13.60	-2.75	-13	-31.47	

Worst Case Spurious Measurements GSM 850

Radiated Spurious Emissions Measurement								
Test Engineer: Brian Lackey			Start Date: 6/1/2017			End Date: 6/1/2017		
Temperature: 23.3C			Humidity: 45.80%			Pressure: 985.4mbar		
RBW: 1MHz			VBW: 3MHz					
Notes:								
			A	B	C	D	E	F
Band/Channel	Spurious Frequency (MHz)	Polarity	Device Reading (dBm)	Signal Generator Level (dBm)	Cable Loss (dB)	Tx Antenna Gain (dBd)	Limit (dBm)	Radiated Spurious Emission Level (dBm)
GSM 850 Low Ch 128 (824.2 MHz)	1648.4	H	-57.81	-34	7.30	-16.50	-13	-57.80
	1648.4	V	-59.61	-35.5	7.30	-16.20	-13	-59.00
	2472.6	H	-48.42	-18.5	8.96	-16.50	-13	-43.96
	2472.6	V	-49.91	-19	8.96	-16.20	-13	-44.16
	3296.8	H	-71.41	-18.86	11.03	-7.80	-13	-37.68
	3296.8	V	-71.06	-19.07	11.03	-7.60	-13	-37.70
	4121.0	H	-72.59	-24.67	11.55	-0.71	-13	-36.93
	4121.0	V	-73.2	-24.58	11.55	-0.25	-13	-36.38
	4945.2	H	-73.4	-19.9	13.14	-1.76	-13	-34.80
4945.2	V	-72.46	-19.39	13.14	-1.76	-13	-34.29	
GSM 850 Mid Ch 189 (836.4 MHz)	1672.8	H	-56.11	-31.8	7.52	-16.50	-13	-55.82
	1672.8	V	-60.44	-35.3	7.52	-16.20	-13	-59.02
	2509.2	H	-51.03	-21.2	9.04	-16.50	-13	-46.74
	2509.2	V	-50.42	-20	9.04	-16.20	-13	-45.24
	3345.6	H	-71.18	-17.56	11.12	-6.77	-13	-35.44
	3345.6	V	-71.14	-16.7	11.12	-6.84	-13	-34.66
	4182.0	H	-72.15	-22.31	11.43	-0.24	-13	-33.98
	4182.0	V	-72.64	-24.5	11.43	0.12	-13	-35.81
	5018.4	H	-72.54	-21.55	12.76	-2.41	-13	-36.72
5018.4	V	-72.14	-18.59	12.76	-1.79	-13	-33.13	
GSM 850 High Ch 251 (848.8 MHz)	1697.6	H	-55.91	-32.6	7.61	-16.50	-13	-56.71
	1697.6	V	-62.32	-32.1	7.61	-16.20	-13	-55.91
	2546.4	H	-53.87	-25	9.03	-16.50	-13	-50.53
	2546.4	V	-52.96	-23.9	9.03	-16.20	-13	-49.13
	3395.2	H	-70.66	-16.94	11.00	-6.13	-13	-34.07
	3395.2	V	-70.49	-16.75	11.00	-6.37	-13	-34.12
	4244.0	H	-73.36	-23.87	11.75	-0.06	-13	-35.68
	4244.0	V	-72.5	-22.78	11.75	-0.11	-13	-34.64
	5092.8	H	-72.56	-17.71	12.82	-2.21	-13	-32.74
5092.8	V	-72.37	-17.99	12.82	-1.91	-13	-32.72	

Worst Case Spurious Measurements GSM 900

Radiated Spurious Emissions Measurement								
Test Engineer: Brian Lackey			Start Date: 6/1/2017			End Date: 6/1/2017		
Temperature: 23.3C			Humidity: 45.80%			Pressure: 985.4mbar		
RBW: 1MHz			VBW: 3MHz					
Notes:								
			A	B	C	D	E	F
Band/Channel	Spurious Frequency (MHz)	Polarity	Device Reading (dBm)	Signal Generator Level (dBm)	Cable Loss (dB)	Tx Antenna Gain (dBd)	Limit (dBm)	Radiated Spurious Emission Level (dBm)
GSM 900 Low Ch 975 (880 MHz)	1760.0	H	-56.14	-31.1	8.15	-16.50	-13	-55.75
	1760.0	V	-56.41	-31.9	8.15	-16.20	-13	-56.25
	2640.0	H	-53.45	-20.4	9.34	-16.50	-13	-46.24
	2640.0	V	-50.02	-17.4	9.34	-16.20	-13	-42.94
	3520.0	H	-65.92	-15.23	10.58	-4.52	-13	-30.33
	3520.0	V	-64.95	-13.5	10.58	-4.52	-13	-28.60
	4400.0	H	-72.28	-21.97	12.11	-0.01	-13	-34.09
	4400.0	V	-73.58	-22.46	12.11	-0.35	-13	-34.92
	5280.0	H	-72.84	-18.04	13.06	-2.53	-13	-33.63
5280.0	V	-73.56	-17.28	13.06	-2.46	-13	-32.79	
GSM 900 Mid Ch 37 (897.4 MHz)	1794.8	H	-54.78	-27.2	8.60	-16.50	-13	-52.30
	1794.8	V	-54.04	-28.6	8.60	-16.20	-13	-53.40
	2692.2	H	-54.9	-20.4	9.31	-16.50	-13	-46.21
	2692.2	V	-52.39	-18.4	9.31	-16.20	-13	-43.91
	3589.6	H	-67.27	-14.62	10.65	-3.43	-13	-28.71
	3589.6	V	-65.99	-13.04	10.65	-3.62	-13	-27.31
	4487.0	H	-72.98	-22.96	12.13	-0.42	-13	-35.51
	4487.0	V	-73.54	-23.99	12.13	-0.46	-13	-36.57
	5384.4	H	-72.12	-15.72	12.97	-2.50	-13	-31.19
5384.4	V	-70.54	-14.78	12.97	-2.26	-13	-30.01	
GSM 900 High Ch 124 (915 MHz)	1830.0	H	-53.19	-24.2	8.80	-16.50	-13	-49.50
	1830.0	V	-48.76	-21.1	8.80	-16.20	-13	-46.10
	2745.0	H	-53.43	-24.5	9.47	-16.50	-13	-50.47
	2745.0	V	-52.34	-22.5	9.47	-16.20	-13	-48.17
	3660.0	H	-68.28	-17.64	10.69	-3.48	-13	-31.82
	3660.0	V	-67.22	-17.54	10.69	-3.01	-13	-31.24
	4575.0	H	-73.25	-21.74	12.62	-0.83	-13	-35.18
	4575.0	V	-72.48	-21.92	12.62	-0.75	-13	-35.29
	5490.0	H	-73.69	-15.82	13.19	-2.81	-13	-31.81
5490.0	V	-74.43	-15.4	13.19	-2.75	-13	-31.34	

Worst Case Spurious Measurements GSM 1800

Radiated Spurious Emissions Measurement								
Test Engineer: Brian Lackey			Start Date: 6/1/2017			End Date: 6/1/2017		
Temperature: 23.3C			Humidity: 45.80%			Pressure: 985.4mbar		
RBW: 1MHz			VBW: 3MHz					
Notes:								
			A	B	C	D	E	F
Band/Channel	Spurious Frequency (MHz)	Polarity	Device Reading (dBm)	Signal Generator Level (dBm)	Cable Loss (dB)	Tx Antenna Gain (dBd)	Limit (dBm)	Radiated Spurious Emission Level (dBm)
GSM 1800 Low Ch 512 (1710.2 MHz)	3420.4	H	-71.2	-18.59	11.12	-5.98	-13	-35.69
	3420.4	V	-71.37	-18.69	11.12	-5.61	-13	-35.42
	5130.6	H	-72.11	-14.42	12.97	-2.10	-13	-29.50
	5130.6	V	-71.06	-13.06	12.97	-1.99	-13	-28.02
	6840.8	H	-73.57	-12.05	15.78	-3.38	-13	-31.21
	6840.8	V	-73.64	-13.44	15.78	-3.18	-13	-32.40
	8551.0	H	-70.81	-7.34	19.21	-2.68	-13	-29.23
	8551.0	V	-72.68	-9.26	19.21	-2.77	-13	-31.23
	10261.2	H	-75.49	-10.64	23.91	-1.51	-13	-36.06
10261.2	V	-75.08	-8.95	23.91	-1.58	-13	-34.44	
GSM 1800 Mid Ch 698 (1747.4 MHz)	3494.8	H	-71.36	-19.8	10.68	-5.48	-13	-35.97
	3494.8	V	-71.6	-20.51	10.68	-4.87	-13	-36.06
	5242.2	H	-71.68	-16.36	12.95	-2.26	-13	-31.57
	5242.2	V	-72.61	-17	12.95	-2.04	-13	-31.99
	6989.6	H	-72.85	-12.24	16.27	-3.26	-13	-31.78
	6989.6	V	-72.92	-12.16	16.27	-3.09	-13	-31.52
	8737.0	H	-74.89	-11.75	19.70	-2.53	-13	-33.98
	8737.0	V	-74.74	-12.26	19.70	-2.74	-13	-34.70
	10484.4	H	-75.3	-6.36	24.27	-0.81	-13	-31.44
10484.4	V	-75.58	-7.33	24.27	-0.91	-13	-32.52	
GSM 1800 High Ch 885 (1784.8 MHz)	3569.6	H	-70.89	-21.63	10.81	-3.43	-13	-35.88
	3569.6	V	-68.42	-17.37	10.81	-3.62	-13	-31.80
	5354.4	H	-73.46	-19.05	12.77	-2.50	-13	-34.31
	5354.4	V	-72.72	-19.13	12.77	-2.26	-13	-34.16
	7139.2	H	-73.19	-12.19	16.86	-3.45	-13	-32.51
	7139.2	V	-72.4	-11.75	16.86	-3.27	-13	-31.88
	8924.0	H	-74.23	-9.86	20.53	-2.37	-13	-32.75
	8924.0	V	-73.92	-10.35	20.53	-2.50	-13	-33.38
	10708.8	H	-75.09	-6.31	24.57	-1.02	-13	-31.90
10708.8	V	-75.82	-6.45	24.57	-1.17	-13	-32.18	

Worst Case Spurious Measurements GSM 1900

Radiated Spurious Emissions Measurement								
Test Engineer: Brian Lackey			Start Date: 6/1/2017			End Date: 6/1/2017		
Temperature: 23.3C			Humidity: 45.80%			Pressure: 985.4mbar		
RBW: 1MHz			VBW: 3MHz					
Notes:								
			A	B	C	D	E	F
Band/Channel	Spurious Frequency (MHz)	Polarity	Device Reading (dBm)	Signal Generator Level (dBm)	Cable Loss (dB)	Tx Antenna Gain (dBd)	Limit (dBm)	Radiated Spurious Emission Level (dBm)
GSM 1900 Low Ch 512 (1850.2 MHz)	3700.4	H	-72.42	-21.29	10.85	-2.68	-13	-34.82
	3700.4	V	-72.21	-21.76	10.85	-2.21	-13	-34.81
	5550.6	H	-72.57	-15.63	13.54	-2.64	-13	-31.81
	5550.6	V	-74.04	-16.61	13.54	-2.47	-13	-32.62
	7400.8	H	-73.83	-13.68	17.30	-3.43	-13	-34.41
	7400.8	V	-74.18	-13.38	17.30	-3.07	-13	-33.75
	9251.0	H	-75.36	-11.12	20.86	-1.66	-13	-33.64
	9251.0	V	-75.83	-11.3	20.86	-1.81	-13	-33.98
	11101.2	H	-75.23	-5.82	24.30	-0.81	-13	-30.93
	11101.2	V	-75.41	-6.39	24.30	-0.58	-13	-31.27
GSM 1900 Mid Ch 661 (1880 MHz)	3760.0	H	-72.38	-23.77	10.86	-1.72	-13	-36.35
	3760.0	V	-73.97	-25.04	10.86	-1.62	-13	-37.52
	5640.0	H	-72.35	-16.23	13.44	-2.79	-13	-32.46
	5640.0	V	-72.23	-16.24	13.44	-2.72	-13	-32.40
	7520.0	H	-74.89	-13.52	17.40	-3.08	-13	-33.99
	7520.0	V	-73.65	-12.29	17.40	-3.17	-13	-32.85
	9400.0	H	-75.02	-9.87	21.41	-1.06	-13	-32.34
	9400.0	V	-75.08	-10.16	21.41	-1.26	-13	-32.84
	11280.0	H	-75.5	-3.33	24.26	0.09	-13	-27.51
	11280.0	V	-74.45	-1.65	24.26	0.15	-13	-25.76
GSM 1900 High Ch 810 (1909.8 MHz)	3819.6	H	-67.19	-18.36	11.05	-1.20	-13	-30.61
	3819.6	V	-69.78	-19.45	11.05	-1.48	-13	-31.99
	5729.4	H	-72.8	-18.09	13.84	-2.99	-13	-34.92
	5729.4	V	-74.1	-17.5	13.84	-2.78	-13	-34.12
	7639.2	H	-73.07	-11.4	17.17	-3.11	-13	-31.68
	7639.2	V	-74.39	-12.65	17.17	-3.15	-13	-32.96
	9549.0	H	-75.15	-10.21	21.38	-1.77	-13	-33.36
	9549.0	V	-77.19	-12.36	21.38	-1.86	-13	-35.60
	11458.8	H	-76.17	-4.21	23.81	0.35	-13	-27.67
	11458.8	V	-77.22	-5.04	23.81	0.45	-13	-28.40

6 Measurement Uncertainty

The measured value related to the corresponding limit will be used to decide whether the equipment meets the requirements.

The measurement uncertainty figures were calculated and correspond to a coverage factor of $k = 2$, providing a confidence level of respectively 95.45 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian).

Measurement uncertainty Table

Parameter	Uncertainty	Notes
Radiated emissions, 30 to 1000 MHz	+3.9dB	
Radiated emissions, 1 to 18 GHz	+4.2dB	
Radiated emissions, 18 to 40 GHz	+4.3dB	
Power Port Conducted emissions, 150kHz to 30 MHz	± 2.8 dB	

7 Revision History

Revision Level	Date	Report Number	Notes
0	6/16/2017	103017087LEX-002	Original Issue
1	09/12/2017	103017087LEX-002.1	Added FCC Part 27 and RSS-139 compliance information.