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TEST AND MEASUREMENT REPORT

For

iMetrikus, Inc. DBA Numera Inc.

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FCC ID: RLU-NL-100
IC: 10629A-NL100

Report Type:	**Product Type:**
Original Report	Personal Emergency Response Device

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Report Number: R1212041-2224

Report Date: 2013-05-06

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	R1212041-2224	Original Report	2013-05-06

1 GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

This test and measurement report was prepared on behalf of *iMetrikus, Inc. DBA Numera Inc*, and their product model: *Libris with FCC ID: RLU-NL-100 and IC: 10629A-NL100*, or the "EUT" (Equipment Under Testing) as referred to in this report. The EUT is a personal emergency response device with WWAN and Bluetooth functionalities; however, the Bluetooth functionality will not be used in this device.

This device contains a certified module with FCC ID: J9CIEMHSDPA.

Description	Specification
Frequency Band	Cellular Band: 824-849 MHz (TX) 869-894 MHz (RX) PCS Band: 1850-1910 MHz (TX) 1930-1990 MHz (RX)
Modulation	GPRS, EDGE, WCDMA, HSDPA

1.2 Mechanical Description

The EUT measures approximately 77 mm (L) x 43 mm (W) x 18 mm (H). Weight: 50 g

The test data gathered is from production sample with serial number: 358859040012244 which was assigned by the manufacturer

1.3 Objective

This type approval report is prepared on behalf of *iMetrikus, Inc. DBA Numera Inc.* in accordance with Part 2, Subpart J, Part 22 Subpart H, and Part 24 Subpart E of the Federal Communication Commissions rules. RSS-132 Cellular Telephones Systems Operating in the Bands 824-849 MHz and 869-894 MHz and RSS-133, 2 GHz Personal Communications Services of IC rules

The objective is to determine compliance with FCC rules for RF output power, modulation characteristic, occupied bandwidth, spurious emissions at antenna terminal, field strength of spurious radiation, frequency stability, band edge, and conducted and radiated margin.

1.4 Related Submittal(s)/Grant(s)

N/A

1.5 Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2, Sub-part J as well as the following parts:

Part 22 Subpart H – Cellular Radiotelephone Service
Part 24 Subpart E – PCS
RSS-132 - Cellular Telephones Systems Operating in the Bands 824-849 MHz and 869-894 MHz
RSS-133 - 2 GHz Personal Communications Services

Applicable Standards: TIA/EIA-603-C, ANSI C63.4-2009.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratory, Corp. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

1.6 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR16-4-2:2003, The Treatment of Uncertainty in EMC Measurements, the values ranging from $\pm$2.0 dB for Conducted Emissions tests and $\pm$4.0 dB for Radiated Emissions tests are the most accurate estimates pertaining to uncertainty of EMC measurements at BACL Corp.

1.7 Test Facility

The test site used by BACL Corp. to collect radiated and conducted emissions measurement data is located at its facility in Sunnyvale, California, USA.

The test site at BACL Corp. has been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997, and Article 8 of the VCCI regulations on December 25, 1997. The test site also complies with the test methods and procedures set forth in CISPR 22:2008 §10.4 for measurements below 1 GHz and §10.6 for measurements above 1 GHz as well as ANSI C63.4-2009, ANSI C63.4-2009, TIA/EIA-603 & CISPR 24:2010.

The Federal Communications Commission and Voluntary Control Council for Interference have the reports on file and they are listed under FCC registration number: 90464 and VCCI Registration No.: A-0027. The test site has been approved by the FCC and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, BACL Corp. is an American Association for Laboratory Accreditation (A2LA) accredited laboratory (Lab Code 3297-02). The current scope of accreditations can be found at

http://www.a2la.org/scopepdf/3297-02.pdf?CFID=1132286&CFTOKEN=e42a3240dac3f6ba-6DE17DCB-1851-9E57-477422F667031258&jsessionid=8430d44f1f47cf2996124343c704b367816b

2 SYSTEM TEST CONFIGURATION

2.1 Justification

The EUT was configured for testing according to TIA/EIA 603-C.

The final qualification test was performed with the EUT operating at normal mode.

2.2 EUT Exercise Software

Agilent 8960 (HP E5155C) Wireless Communication test set was used to activate the EUT.

2.3 Special Accessories

N/A

2.4 Equipment Modifications

No modifications were made to the EUT

2.5 Local Support Equipment

Manufacturer	Description	Model No.	Serial No.
Agilent	Communication Analyzer	E5515C	GB44051221

2.6 Power Supply and Line Filters

N/A

2.7 Interface Ports and Cabling

N/A

2.8 Internal Parts List and Details

Manufacturers	Descriptions	Models	Serial Numbers
Numera	LIBRI BRIDGE PCB	48.UWCBC.SGE	2012115
Numera	Main PCB	48.UWCBM.SGD	2012116
Battery	JM Tech	WNC-GPS463443	92
Emerson	Power Adaptor	DCH-050US	J525L2404001L

3 SUMMARY OF TEST RESULTS

FCC/IC Rules	Description of Test	Result
FCC §2.1046, §22.913; §24.232 IC RSS-132 §5.4, RSS-133 §6.4	RF Output Power (Conducted)	Note[1]
FCC §2.1046, §22.913(a); §24.232(c) IC RSS-132 §5.4, RSS-133 §6.4	RF Output Power (Radiated)	Compliant
FCC §2.1047 IC RSS-132 §5.2, RSS-133 §6.2	Modulation Characteristics	Note[2]
FCC §2.1049, §22.917; §24.238 IC RSS-132 §5.5, RSS-133 §6.5	Occupied Bandwidth	Note [1]
FCC §2.1051, §22.917(a); §24.238(a) IC RSS-132 §5.5, RSS-133 §6.5	Spurious Emissions at Antenna Terminals	Note [1]
FCC §2.1053, §22.917(a); §24.238(a) IC RSS-132 §5.5, RSS-133 §6.5	Field Strength of Spurious Radiation	Compliant
FCC §22.917(a); §24.238(a) IC RSS-132 §5.5, RSS-133 §6.5	Out of Band Emissions, Band Edge	Note [1]
FCC §2.1055; §22.355; §24.235 IC RSS-132 §5.3, RSS-133 §6.3	Frequency stability vs. temperature Frequency stability vs. voltage	Note [1]
IC RSS-132 §5.6, RSS-133 §6.6	Receiver Spurious Emissions	Compliant
FCC §2.1093 IC RSS-102	RF Exposure Information	Compliant

Note: [1] refer to Qualcomm module report (FCC ID: J9CIEMHSDPA)
[2] there is no specific requirement for digital modulation; therefore modulation characteristic is not presented.

4 FCC §2.1046, §22.913(a), §24.232 (c) & IC RSS-132 §5.4, RSS-133 §6.4 – RF OUTPUT POWER

4.1 Applicable Standard

According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to FCC §2.1046 and §24.232 (c), Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limited power to the minimum necessary for successful communications.

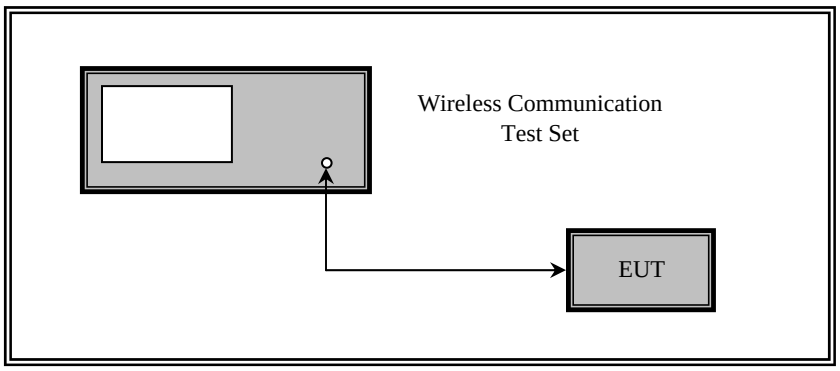
According to RSS-132 §5.4, the maximum EIRP shall be 11.5 watts for mobile equipments.

According to RSS-133 §6.4 and SPS-510, Mobile stations and hand-held portables are limited to 2 watts maximum e.i.r.p.

4.2 Test Procedure

Conducted:

The RF output of the transmitter was connected to the simulator and the spectrum analyzer through sufficient attenuation.



ERP/EIRP:

TIA-603-C, Section 2.2.17

4.3 Test Equipment List and Details

Manufacturers	Descriptions	Models	Serial Number	Calibration Dates	Calibration Cycle
Sunol Science Corp	System Controller	SC99V	122303-1	N/R	1 Year
Sunol Science Corp	Combination Antenna	JB3	A020106-2	2012-08-15	1 Year
Hewlett Packard	Pre-amplifier	8447D	2944A06639	2012-06-09	1 Year
Mini-Circuits	Pre-amplifier	ZVA-183-S	570400946	2012-05-09	1 Year
Agilent	Spectrum Analyzer	E4440A	US42221851	2013-03-05	1 Year
EMCO	Horn Antenna	3315	9511-4627	2012-10-17	1 Year
Com-Power	Dipole Antenna	AD-100	2228	2012-07-23	1 Year
A.R.A.	Horn Antenna	DRG-118/A	1132	2013-01-19	1 Year
HP	Generator, Signal	83650B	3614A00276	2012-07-13	2 Years

Statement of Traceability: BACL Corp. *attests that all calibrations have been performed per the A2LA requirements, traceable to the NIST*

4.4 Test Environmental Conditions

Temperature:	20 °C ~ 23 °C
Relative Humidity:	40 % ~ 45 %
ATM Pressure:	101kPa ~ 102kPa

Testing was performed by Wei Sun on 2013-04-15 in 5 meters chamber 3.

4.5 Test Results

Conducted Output Power:

Please refer to FCC IC: J9CEMHSDPA

ERP & EIRP:

GSM 850 MHz (Worst Case: Middle Channel)

Indicated		Azimuth (Degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	Amplitude (dBuV)		Height (cm)	Polar. (H/V)	Frequency (MHz)	Level (dBm)	Ant. Gain Cord. (dB)	Cable Loss (dB)			
836.6	96.11	28	150	V	836.6	30.74	0	0.86	29.88	38.45	-8.57
836.6	90.8	275	150	H	836.6	25.43	0	0.86	24.57	38.45	-13.88

EDGE 850 MHz (Worst Case: High Channel)

Indicated		Azimuth (Degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	Amplitude (dBuV)		Height (cm)	Polar. (H/V)	Frequency (MHz)	Level (dBm)	Ant. Gain Cord. (dB)	Cable Loss (dB)			
848.8	94.71	39	150	V	848.8	29.56	0	0.86	28.7	38.45	-9.75
848.8	90.22	277	150	H	848.8	25.07	0	0.86	24.21	38.45	-14.24

WCDMA 850 MHz (Worst Case: High Channel)

Indicated		Azimuth (Degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	Amplitude (dBuV)		Height (cm)	Polar. (H/V)	Frequency (MHz)	Level (dBm)	Ant. Gain Cord. (dB)	Cable Loss (dB)			
846.6	90.77	61	150	V	846.6	25.76	0	0.86	24.9	38.45	-13.55
846.6	86.91	314	150	H	846.6	21.9	0	0.86	21.04	38.45	-17.41

HSDPA 850 MHz (Worst Case: High Channel)

Indicated		Azimuth (Degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	Amplitude (dBuV)		Height (cm)	Polar. (H/V)	Frequency (MHz)	Level (dBm)	Ant. Gain Cord. (dB)	Cable Loss (dB)			
846.6	91.39	61	150	V	846.6	26.38	0	0.86	25.52	38.45	-12.93
846.6	87.51	314	150	H	846.6	22.5	0	0.86	21.64	38.45	-16.81

GSM 1900 MHz (Worst Case: Low Channel)

Indicated		Azimuth (Degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	Amplitude (dBuV)		Height (cm)	Polar. (H/V)	Frequency (MHz)	Level (dBm)	Ant. Gain Cord. (dBi)	Cable Loss (dB)			
1850.2	92.14	14	150	V	1850.2	21.43	8.24	1.36	28.31	33	-4.69
1850.2	85.06	163	150	H	1850.2	14.35	8.24	1.36	21.23	33	-11.77

EDGE 1900 MHz (Worst Case: Low Channel)

Indicated		Azimuth (Degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	Amplitude (dBuV)		Height (cm)	Polar. (H/V)	Frequency (MHz)	Level (dBm)	Ant. Gain Cord. (dBi)	Cable Loss (dB)			
1850.2	91.77	19	150	V	1850.2	21.06	8.24	1.36	27.94	33	-5.06
1850.2	85.58	166	150	H	1850.2	14.87	8.24	1.36	21.75	33	-11.25

WCDMA 1900 MHz (Worst Case: Middle Channel)

Indicated		Azimuth (Degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	Amplitude (dBuV)		Height (cm)	Polar. (H/V)	Frequency (MHz)	Level (dBm)	Ant. Gain Cord. (dBi)	Cable Loss (dB)			
1880	89.33	57	150	V	1880	19.27	8.42	1.37	26.32	33	-6.68
1880	85.14	324	150	H	1880	15.08	8.42	1.37	22.13	33	-10.87

HSDPA 1900 MHz (Worst Case: Middle Channel)

Indicated		Azimuth (Degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	Amplitude (dBuV)		Height (cm)	Polar. (H/V)	Frequency (MHz)	Level (dBm)	Ant. Gain Cord. (dBi)	Cable Loss (dB)			
1880	89.26	57	150	V	1880	19.2	8.42	1.37	26.25	33	-6.75
1880	86.51	328	150	H	1880	16.45	8.42	1.37	23.5	33	-9.5

Note: Part 22H Limit = 7 Watts = 38.45 dBm ERP, Part 24E Limit =2 Watts = 33 dBm EIRP

5 FCC §2.1053, §22.917 (a), §24.238(a) & IC RSS-132 §5.5, RSS-133 §6.5 - RADIATED SPURIOUS EMISSIONS

5.1 Applicable Standard

As per FCC §22.917 (a), the power of any emissions 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.

As per FCC §24.238 (a), the power of any emissions 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.

As per RSS 132 §5.5, Mobile and base station equipment shall comply with the limits in (i) and (ii) below.

i) In the first 1 MHz band immediately outside and adjacent to each of the sub-bands specified in section 5.1, the power of emissions per any 1% of the occupied bandwith shall be attenuated (in dB) below the transmitter output power P(dBW) by at least 43+10log(P) (watts)

ii) After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any 100 kHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43+10log(P) (watts). If the measurement is performed using 1% of the occupied bandwidth, power integration over 100 kHz is required.

As per RSS 132 §6.5.1, equipment shall comply with the limits in (i) and (ii) below

i) In the first 1 MHz band immediately outside and adjacent to each of the sub-bands specified in section 5.1, the power of emissions per any 1% of the occupied bandwith shall be attenuated (in dB) below the transmitter output power P(dBW) by at least 43+10log(P) (watts)

ii) After the first 1.0 Mhz, the emission power in any 1 MHz bandwith shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43+10log(P) (watts). If the measurement is performed using 1% of the emission bandwidth, power integration over 1.0 MHz is required.

5.2 Test Procedure

The transmitter was placed on foam on top or a non-conductive table on a turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB = 10 log (TX Power in Watts/0.001) – the absolute level

Spurious attenuation limit in dB = 43 + 10 Log_{10} (power out in Watts)

5.3 Test Equipment List and Details

Manufacturers	Descriptions	Models	Serial Number	Calibration Dates	Calibration Cycle
Sunol Science Corp	System Controller	SC99V	122303-1	N/R	1 Year
Sunol Science Corp	Combination Antenna	JB3	A020106-2	2012-08-15	1 Year
Hewlett Packard	Pre-amplifier	8447D	2944A06639	2012-06-09	1 Year
Mini-Circuits	Pre-amplifier	ZVA-183-S	570400946	2012-05-09	1 Year
Agilent	Spectrum Analyzer	E4440A	US42221851	2013-03-05	1 Year
EMCO	Horn Antenna	3115	9511-4627	2012-10-17	1 Year
HP	Generator, Signal	83650B	3614A00276	2012-07-13	2 Years

Statement of Traceability: BACL Corp. *attests that all calibrations have been performed per the A2LA requirements, traceable to the NIST*

5.4 Test Environmental Conditions

Temperature:	20 °C ~ 23 °C
Relative Humidity:	40 % ~ 45 %
ATM Pressure:	101kPa ~ 102kPa

Testing was performed by Wei Sun on 2013-04-15 in 5 meters chamber 3.

5.5 Test Results

GSM 850 MHz (Worst Case: Middle Channel)

Indicated		Azimuth (Degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	Amplitude (dBuV)		Height (cm)	Polar. (H/V)	Frequency (MHz)	Level (dBm)	Ant. Gain Cord. (dB)	Cable Loss (dB)			
323.42	20	0	150	V	323.42	-86.71	0	0.38	-87.09	-13	-74.09
323.42	28.97	79	155	H	323.42	-77.32	0	0.38	-77.7	-13	-64.7
1673	44.14	116	173	V	1673	-60.03	8.4	0.97	-52.6	-13	-39.6
1673	49.82	54	161	H	1673	-54.35	8.4	0.97	-46.92	-13	-33.92

EDGE 850 MHz (Worst Case: High Channel)

Indicated		Azimuth (Degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	Amplitude (dBuV)		Height (cm)	Polar. (H/V)	Frequency (MHz)	Level (dBm)	Ant. Gain Cord. (dB)	Cable Loss (dB)			
323.42	20	0	150	V	323.42	-86.71	0	0.38	-87.09	-13	-74.09
323.42	28.2	77	155	H	323.42	-78.09	0	0.38	-78.47	-13	-65.47
1697.6	44.88	116	164	V	1697.6	-59.29	8.4	0.97	-51.86	-13	-38.86
1697.6	49.34	50	158	H	1697.6	-54.83	8.4	0.97	-47.4	-13	-34.4

WCDMA 850 MHz (Worst Case: High Channel)

Indicated		Azimuth (Degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	Amplitude (dBuV)		Height (cm)	Polar. (H/V)	Frequency (MHz)	Level (dBm)	Ant. Gain Cord. (dB)	Cable Loss (dB)			
323.42	20	0	150	V	323.42	-86.71	0	0.38	-87.09	-13	-74.09
323.42	27.61	79	155	H	323.42	-78.68	0	0.38	-79.06	-13	-66.06
1697.2	43.27	116	162	V	1697.2	-60.9	8.4	0.97	-53.47	-13	-40.47
1697.2	50.07	50	150	H	1697.2	-54.1	8.4	0.97	-46.67	-13	-33.67

HSDPA 850 MHz (Worst Case: High Channel)

Indicated		Azimuth (Degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	Amplitude (dBuV)		Height (cm)	Polar. (H/V)	Frequency (MHz)	Level (dBm)	Ant. Gain Cord. (dB)	Cable Loss (dB)			
323.42	20	0	150	V	323.42	-86.71	0	0.38	-87.09	-13	-74.09
323.42	28.88	71	159	H	323.42	-77.41	0	0.38	-77.79	-13	-64.79
1693	43.66	119	155	V	1693	-60.51	8.4	0.97	-53.08	-13	-40.08
1693	48.58	58	1555	H	1693	-55.59	8.4	0.97	-48.16	-13	-35.16

GSM 1900 MHz (Worst Case: Low Channel)

Indicated		Azimuth (Degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	Amplitude (dBuV)		Height (cm)	Polar. (H/V)	Frequency (MHz)	Level (dBm)	Ant. Gain Cord. (dBi)	Cable Loss (dB)			
323.42	20	0	150	V	323.42	-86.71	0	0.38	-87.09	-13	-74.09
323.42	27.58	75	150	H	323.42	-78.71	0	0.38	-79.09	-13	-66.09
1848	49.88	206	169	V	1848	-44.63	8.24	1.36	-37.75	-13	-24.75
1848	46.02	311	150	H	1848	-48.05	8.24	1.36	-41.17	-13	-28.17

EDGE 1900 MHz (Worst Case: Low Channel)

Indicated		Azimuth (Degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	Amplitude (dBuV)		Height (cm)	Polar. (H/V)	Frequency (MHz)	Level (dBm)	Ant. Gain Cord. (dBi)	Cable Loss (dB)			
323.42	20	0	150	V	323.42	-86.71	0	0.38	-87.09	-13	-74.09
323.42	28.16	74	150	H	323.42	-78.13	0	0.38	-78.51	-13	-65.51
1848	48.71	208	171	V	1848	-45.8	8.24	1.36	-38.92	-13	-25.92
1848	45.66	312	155	H	1848	-48.41	8.24	1.36	-41.53	-13	-28.53

WCDMA 1900 MHz (Worst Case: Middle Channel)

Indicated		Azimuth (Degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	Amplitude (dBuV)		Height (cm)	Polar. (H/V)	Frequency (MHz)	Level (dBm)	Ant. Gain Cord. (dBi)	Cable Loss (dB)			
323.42	20	0	150	V	323.42	-86.71	0	0.38	-87.09	-13	-74.09
323.42	29.4	68	156	H	323.42	-76.89	0	0.38	-77.27	-13	-64.27
1848	49.22	217	159	V	1848	-45.29	8.24	1.36	-38.41	-13	-25.41
1848	45.21	311	155	H	1848	-48.86	8.24	1.36	-41.98	-13	-28.98

HSDPA 1900 MHz (Worst Case: Middle Channel)

Indicated		Azimuth (Degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	Amplitude (dBuV)		Height (cm)	Polar. (H/V)	Frequency (MHz)	Level (dBm)	Antenna Gain Cord. (dBi)	Cable Loss (dB)			
323.42	20	0	150	V	323.42	-86.71	0	0.38	-87.09	-13	-74.09
323.42	28.17	70	155	H	323.42	-78.12	0	0.38	-78.5	-13	-65.5
1848	50.05	200	161	V	1848	-44.46	8.24	1.36	-37.58	-13	-24.58
1848	47.17	307	155	H	1848	-46.9	8.24	1.36	-40.02	-13	-27.02

6 IC RSS-Gen §6, RSS-132 §5.6 & RSS-133 §6.6 - RECEIVER RADIATED SPURIOUS EMISSIONS

6.1 Applicable Standards

According to IC RSS-Gen §6.1, spurious emissions from receivers shall not exceed the radiated limits shown in the table below.

Table 2: General Field Strength Limits for Transmitters and Receivers at Frequencies above 30 MHz

Frequency (MHz)	Field Strength Microvolts/m at 3 meters Receivers
30-88	100
88-216	150
216-960	200
Above 960	500

6.2 EUT Setup

The radiated emissions tests were performed in the 3 meter chamber, using the setup in accordance with ANSI C63.4-2009.

6.3 Test Procedure

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations.

All data were recorded in the peak detection mode. Quasi-peak readings was performed only when an emissions was found to be marginal (within -4 dB of specification limits), and are distinguished with a "**QP**" in the data table.

6.4 Corrected Amplitude & Margin Calculation

The Corrected Amplitude (CA) is calculated by adding the Antenna Factor (AF), the Cable Loss (CL), the Attenuator Factor (Atten) and subtracting the Amplifier Gain (Ga) to the indicated Amplitude (Ai) reading. The basic equation is as follows:

CA = Ai + AF + CL + Atten – Ga

For example, the Corrected Amplitude (CA) of 40.3 dBuV/m = indicated Amplitude reading (Ai) 32.5 dBuV + Antenna Factor (AF) 23.5dB + Cable Loss (CL) 3.7 dB + Attenuator (Atten) 10 dB - Amplifier Gain (Ga) 29.4 dB

The "**Margin**" column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the maximum limit The equation for margin calculation is as follows:

Margin (dB) = Corrected Amplitude (dBuV/m) - Limit (dBuV/m)

6.5 Test Equipment List and Details

Manufacturers	Descriptions	Models	Serial Number	Calibration Dates	Calibration Cycle
Sunol Science Corp	System Controller	SC99V	122303-1	N/R	1 Year
Sunol Science Corp	Combination Antenna	JB3	A020106-2	2012-08-15	1 Year
Hewlett Packard	Pre-amplifier	8447D	2944A06639	2012-06-09	1 Year
Mini-Circuits	Pre-amplifier	ZVA-183-S	570400946	2012-05-09	1 Year
Agilent	Spectrum Analyzer	E4440A	US42221851	2013-03-05	1 Year
EMCO	Horn Antenna	3315	9511-4627	2012-10-17	1 Year
Rohde & Schwarz	Receiver, EMI Test	ESCI 1166.5950K03	100337	2013-03-28	1 Year
HP	Generator, Signal	83650B	3614A00276	2012-07-13	2 Years

Statement of Traceability: BACL Corp. *attests that all calibrations have been performed per the A2LA requirements, traceable to the NIST*

6.6 Test Environmental Conditions

Temperature:	20 °C ~ 23 °C
Relative Humidity:	40 % ~ 45 %
ATM Pressure:	101kPa ~ 102kPa

Testing was performed by Wei Sun from 2013-04-15 in 5 meters chamber 3.

6.7 Summary of Test Results

According to the test data,, the EUT complied with IC RSS-Gen, with a worst case margin of:

850 MHz

Mode: Receiving			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Mode Range (MHz)**
-24.20	323	Horizontal	30 MHz to 25000 MHz

1900 MHz

Mode: Receiving			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Mode Range (MHz)**
-24.37	323	Horizontal	30 MHz to 25000 MHz

Please refer to the following table and plots for specific test result details

6.8 Test Results

1) 30 MHz -1 GHz, measured at 3 meters

850 MHz band Middle Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
323	26.71	16	155	V	14.6	0.95	27.43	14.83	46	-31.17	QP
323	33.68	33	155	H	14.6	0.95	27.43	21.8	46	-24.2	QP

1900 MHz band Middle Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
323	27.05	16	157	V	14.6	0.95	27.43	15.17	46	-30.83	QP
323	33.51	31	155	H	14.6	0.95	27.43	21.63	46	-24.37	QP

2) 1 – 25 GHz, measured at 3 meters

850 MHz band Middle Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
-*	-*	-*	-*	-*	-*	-*	-*	-*	-*	-*	-*
-*	-*	-*	-*	-*	-*	-*	-*	-*	-*	-*	-*

1900 MHz band Middle Channel

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
-*	-*	-*	-*	-*	-*	-*	-*	-*	-*	-*	-*
-*	-*	-*	-*	-*	-*	-*	-*	-*	-*	-*	-*

** Note: all the emissions were 20 dB below the limit or under the level of noise floor.*

7 FCC §2.1093 & IC RSS-102 - RF EXPOSURE INFORMATION

7.1 Applicable Standards

FCC §2.1093 and IC RSS-102

7.2 Test Result

Please refer to SAR report with report number “Libris FCC Rev A_s”.