

FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

CHANNEL ENTERPRISES(HK) LTD.

Retractable Bluetooth Headset

Model: UA-06XB

Trade Name: i.Xchange

Report No.: ST1106003F

Prepared for

CHANNEL ENTERPRISES(HK) LTD.

Room 2006.20/F., Lucida Industrial Building, 43-47 Wang Lung Street,
Tsuen Wan, N.T. HONG KONG

Prepared by

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TABLE OF CONTENTS

1. T	EST RESULT CERTIFICATION	3
2. E	UT DESCRIPTION	4
3. T	EST METHODOLOGY	5
3.1 3.2	EUT CONFIGURATION	
3.3	GENERAL TEST PROCEDURES	5
3.4	FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS	6
3.5	DESCRIPTION OF TEST MODES	6
4. IN	NSTRUMENT CALIBRATION	7
5. F.	ACILITIES AND ACCREDITATIONS	8
5.1	FACILITIES	8
5.2	EQUIPMENT	
5.3	LABORATORY ACCREDITATIONS AND LISTING	8
6. Sl	ETUP OF EQUIPMENT UNDER TEST	9
6.1	SETUP CONFIGURATION OF EUT	9
6.2	SUPPORT EQUIPMENT	9
7. F	CC PART 15.249 REQUIREMENTS	10
7.1	BAND EDGES MEASUREMENT	10
7.2	RADIATED EMISSIONS	13
7.3	POWER LINE CONDUCTED EMISSIONS	20
8. A	PPENDIX 1 PHOTOGRPHS OF TEST SETUP	23



1. TEST RESULT CERTIFICATION

Applicant: Channel Enterprises(HK) Ltd.

Room 2006, 20/F., Lucida Industrial Building, 43-47 Wang Lung

Street, Tsuen Wan, N.T.Hong Kong

Equipment Under Test: Retractable Bluetooth Headset

i.Xchange **Trade Name:** UA-06XB Model:

Date of Test: Jun 13-20, 2011 Report No.: ST01106003F FCC ID: WD31516

APPLICABLE STANDARDS			
STANDARD TEST RESULT			
FCC Part 15 Subpart C	No non-compliance noted		

Summary of Measurement			
Test Item	Test Requirement	Standard Paragraph	Result
Antenna Requirement	FCC PART15	15. 203	Compliance
Conducted Emission	FCC PART15	15. 207	Not applicable
Radiation Emission	FCC PART15	15. 209&15. 249	Compliance
Band edge Requirement	FCC PART15	15. 249	Compliance

We hereby certify that:

The above equipment was tested by SINTEK LABORATORY CO., LTD.

The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2009 and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.249.

The test results of this report relate only to the tested sample identified in this report.

Approved by:	Reviewed by:
Approved by:	Reviewed b

Salon



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2. EUT DESCRIPTION

Product	Retractable Bluetooth Headset
Trade Name	i.Xchange
Model Number	UA-06XB
Model Discrepancy	N/A
Power Supply	DC 5.0V
Frequency Range	2402 ~ 2480.0 MHz
Antenna Specification	The EUT'S antenna is integrated on the main PCB
Number of Channels	79 Channels
Antenna Requirement	Requirement(s): 47 CFR § 15.203 An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. Antenna requirement must meet at least one of the following: a) Antenna must be permanently attached to the device. b) Antenna must use a unique type of connector to attach to the device. c) Device must be professionally installed. Installer shall be responsible for ensuring that the correct antenna is employed with the device. The EUT'S antenna is fixed on the main PCB / Gain: 0.21dBi

Note: This submittal(s) (test report) is intended for FCC ID: WD31516filing to comply with Section 15.249 of the FCC Part 15, Subpart C Rules.



3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, and 15.249.

3.1EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2EUT EXERCISE

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.249 under the FCC Rules Part 15 Subpart C.

3.3GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4: 2009, Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max emission, the relative positions of this hand-held transmitter (EUT) were rotated through three orthogonal axes according to the requirements in Section 13.1.4.1 of ANSI C63.4: 2009.



3.4FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293 12.51975 - 12.52025 12.57675 - 12.57725 13.36 - 13.41	167.72 - 173.2 240 - 285 322 - 335.4	3332 - 3339 3345.8 - 3358 3600 - 4400	31.2 - 31.8 36.43 - 36.5 (²)

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

3.5DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition.

Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

Channel low (2402MHz), Ch mid (2440MHz), Ch high (2480MHz), with highest data rate (worst case) are chosen for full testing.

² Above 38.6



4. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.



5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at No. 7,Xinshidai industrial, Guantian Village, Shiyan Town, Baoan District Shenzhen, China.

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

5.2EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

5.3LABORATORY ACCREDITATIONS AND LISTING

Site on file with the FCC: The certificate registration number is 963441 for 3&10M OATS

Site listed with the VCCI: The certificate registration number is R-2023 and c-2178 for 3&10M OATS



6. SETUP OF EQUIPMENT UNDER TEST

6.1SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

6.2SUPPORT EQUIPMENT

No.	Equipment	Model#	Serial#	Trade Name	Data Cable	Power Cord
1.						
2.						

Notes:

All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.



7. FCC PART 15.249 REQUIREMENTS

7.1BAND EDGES MEASUREMENT

LIMIT

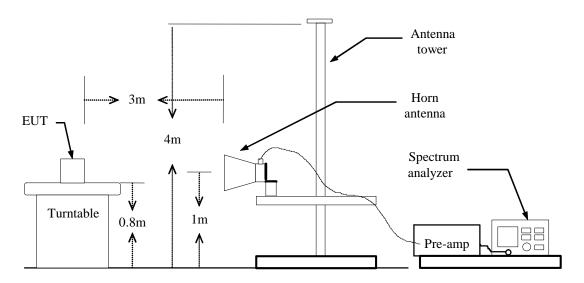
According to §15.249(d), Emissions radiated outside of the specified frequency band, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in section15.209, whichever is the lesser attenuation.

MEASUREMENT EQUIPMENT USED

Name of Equipment	Manufacturer	Model	Serial Number	LAST CAL.	Calibration Due
Spectrum Analyzer	ADVANTEST	R3132	140301570	06/12/2011	06/12/2012
Turn Table	SINTEK	N/A	N/A	N.C.R	N.C.R
Antenna Tower	SINTEK	N/A	N/A	N.C.R	N.C.R
Controller	SINTEK	N/A	N/A	N.C.R	N.C.R
Horn antenna	EMCO	3115	9602-4659	06/12/2011	06/12/2012
Pre-Amplifier	НР	8449B	3008B00965	06/12/2011	06/12/2012

Remark: Each piece of equipment is scheduled for calibration once a year.

Test Configuration





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TEST PROCEDURE

- 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal form an external generator.
- 2. The EUT is placed on a turntable, which is 0.8m above the ground plane.
- 3. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 4. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
- 5. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
- 6. PEAK: RBW/VBW=1MHz / Sweep=AUTO/SPAN=3MHz; AVERAGE: RBW=1MHz/VBW=10Hz/Sweep=AUTO/SPAN=3MHz
- 7. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured. with highest data rate (worst case) are chosen for full testing.

TEST RESULTS

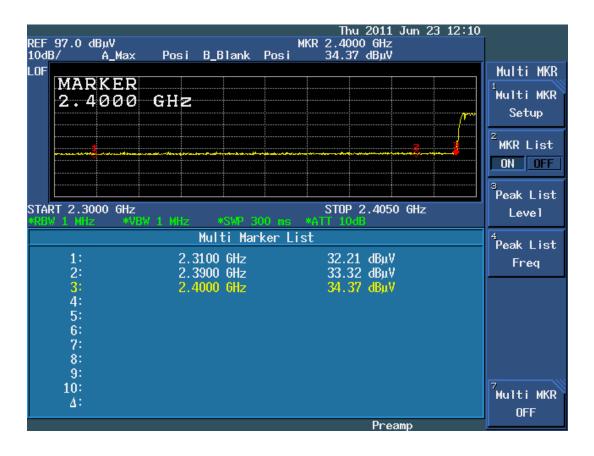
BAND EDGES		BAND EDGES MEASUREMENT					
		Frequency (GHz)	Actu PK (dBuV/m)	AVG (dBuV/m)	PK Limit (dBuV/m)	AVG Limit (dBuV/m)	Test results
Low band edge	VER	2.400000	34.37		74	54	PASS
High band edge	VER	2.483500	35.75		74	54	PASS

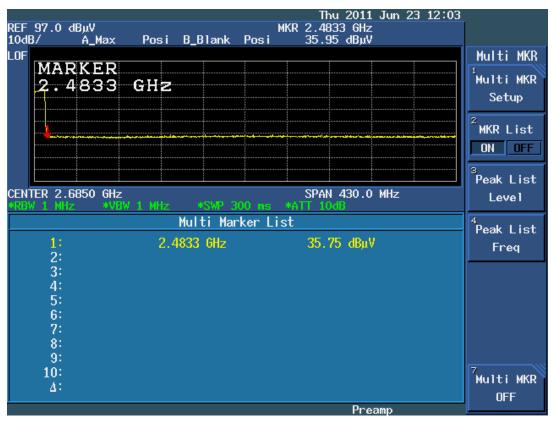
Refer to attach spectrum analyzer data chart





Band Edges (Detector mode: Peak)







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7.2RADIATED EMISSIONS

LIMIT

Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

FCC PART 15 subpart C section 15.209:

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

FCC PART 15 subpart C section 15.249:

Frequency (MHz)	Field St	rength	Measurement Distance (m
requency (Wille)	Fundamental(mV/m)	Harmonies(μV/m)	ivicasarement Distance (m)
2400-2483.5	50	500	3

Note: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

In the above emission table, the tighter limit applies at the band edges.

Frequency (Hz)	Field Strength (μV/m at 3-meter)	Field Strength (dBμV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54



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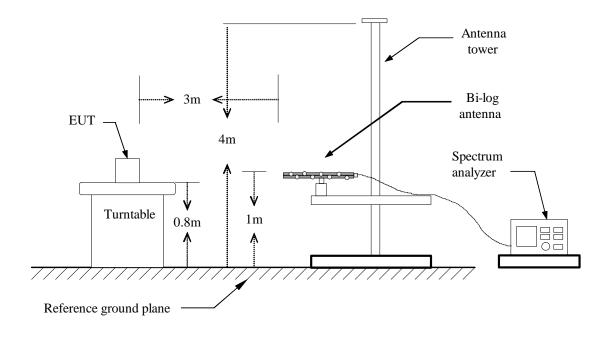
MEASUREMENT EQUIPMENT USED

Open Area Test Site									
Name of Equipment	Manufacturer	Model	Serial Number	LAST CAL.	Calibration Due				
Spectrum Analyzer	ADVANTEST	R3271A	85060231	06/12/2011	06/12/2012				
Spectrum Analyzer	ADVANTEST	R3132	140301570	06/12/2011	06/12/2012				
EMI Test Receiver	SCHAFFNER	SCR3501	464	06/12/2011	06/12/2012				
Pre-Amplifier	COM-POWER	PA-103	161062	06/12/2011	06/12/2012				
Bilog Antenna	SCHAFFNER	CBL6111C	2775	06/12/2011	06/12/2012				
Turn Table	SINTEK	N/A	N/A	N.C.R	N.C.R				
Antenna Tower	SINTEK	N/A	N/A	N.C.R	N.C.R				
Controller	SINTEK	N/A	N/A	N.C.R	N.C.R				
RF Switch	ANRITSU	MP59B	M53867	N.C.R	N.C.R				
Horn antenna	EMCO	3115	9602-4659	06/12/2011	06/12/2012				
Pre-Amplifier	НР	8449B	3008B00965	06/12/2011	06/12/2012				

Remark: Each piece of equipment is scheduled for calibration once a year.

Test Configuration

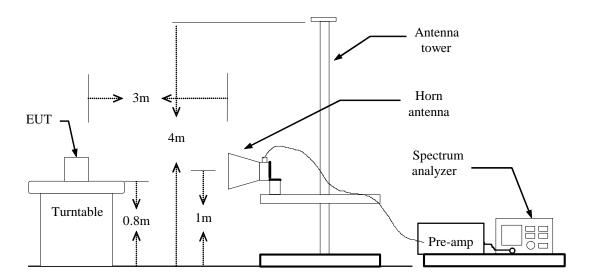
Below 1 GHz





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Above 1 GHz



TEST PROCEDURE

The EUT is placed on a turntable, which is 0.8m above ground plane.

The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.

EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.

Maximum procedure was performed on the six highest emissions to ensure EUT compliance.

And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

Repeat above procedures until the measurements for all frequencies are complete.



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TEST RESULTS

Below 1 GHz

Operation Mode: Normal Test Date: Jun 21, 2011

Temperature: 20°C **Tested by:** Laura

Humidity: 70 % RH **Polarity:** Ver. / Hor.

Freq. (MHz)	Ant. H/V	Reading (RA) (dBuV)	Corr.Factor (CF) (dB)	Measured (FS) (dBuV/m)	Limits (QP) (dBuV/m)	Safe Margins (dBuV/m)	Detector Mode (PK/QP)
65.89	V	24.00	11.58	35. 58	40.00	-4.42	Р
310. 33	V	22.00	17.37	39. 37	46.00	-6 . 63	Р
380. 17	V	18.00	19. 13	37. 13	46.00	-8.87	Р
427.70	V	18.50	21.73	40. 23	46.00	-5.77	Р
610.06	V	14.00	23. 22	37. 22	46.00	-8.78	Р
671. 17	V	13.50	25. 34	38. 84	46.00	-7. 16	Р
64. 92	Н	25.50	11.70	37. 20	40.00	-2.80	P
220. 12	Н	6.00	16. 49	22.49	46.00	-23.51	Р
304. 51	Н	15.60	15. 28	30.88	46.00	-15.12	Р
376. 29	Н	10.90	16.83	27.73	46.00	-18.27	Р
465. 53	Н	6.00	21.04	27.04	46.00	-18.96	Р
602.30	Н	10.00	24. 20	34. 20	46.00	-11.80	Р

Notes:

- 1. Measuring frequencies from 30 MHz to the 1GHz.
- 2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak detector mode.
- 3. Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4. The IF bandwidth of SPA between 30MHz to 1GHz was 100kHz.



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Above 1 GHz

Operation Mode: Ch low (2402MHz) Test Date: Jun 21, 2011

Temperature: 20°C **Tested by:** Laura

Humidity: 70 % RH **Polarity:** Ver. / Hor.

Euoa	Ant. Pol	Peak	AV	Ant. / CL	Actu	al Fs	Peak	AV	Mangin	
Freq. (MHz)	H/V	Reading (dBuV)	Reading (dBuV)	CF (dB)	Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2402.00	V	32.07		33.11	65.18		114.00	94.00	-28.82	Peak
4804.10	V	0.18		35.26	35.44		74.00	54.00	-18.56	Peak
9608.33	V	2.14		39.81	41.95		74.00	54.00	-12.05	Peak
N/A										
N/A										
N/A										
N/A										
	ı	I .					l	Į.		
2402.00	Н	36.12		33.11	69.23		114.00	94.00	-24.77	Peak
4804.10	Н	0.31		34.75	35.06		74.00	54.00	-18.94	Peak
9608.33	Н	2.31		35.86	38.17		74.00	54.00	-15.83	Peak
N/A										
N/A										
N/A										
N/A										

Notes:

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4. Spectrum setting:
 - a. Peak Setting 1GHz 26GHz, RBW = 1MHz, VBW = 1MHz, Sweep time = 200 ms.
- b. AV Setting 1GH z- 26GHz, RBW = 1MHz, VBW = 10Hz, Sweep time = 200 ms.



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Above 1 GHz

Operation Mode: Ch mid (2440MHz) Test Date: Jun 21, 2011

Temperature: 20°C **Tested by:** Laura

Humidity: 70 % RH Polarity: Ver. / Hor.

Euro	Ant. Pol	Peak	AV	Ant. / CL	Actu	al Fs	Peak	AV	Mangin	
Freq. (MHz)	H/V	Reading (dBuV)	Reading (dBuV)	CF (dB)	Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2440.03	V	38.61		33.45	72.06		114.00	94.00	-21.94	Peak
4880.06	V	4.18		35.30	39.48		74.00	54.00	-14.52	Peak
9760.12	V	5.31		39.83	45.14		74.00	54.00	-8.86	Peak
N/A										
N/A										
N/A										
N/A										
	u.					l	l			u.
2440.06	Н	36.27		33.49	69.76		114.00	94.00	-24.24	Peak
4880.12	Н	6.31		34.75	41.06		74.00	54.00	-12.94	Peak
9760.24	Н	3.24		35.86	39.1		74.00	54.00	-14.9	Peak
N/A										
N/A										
N/A										
N/A										

Notes:

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4. Spectrum setting:
 - a. Peak Setting 1GHz 26GHz, RBW = 1MHz, VBW = 1MHz, Sweep time = 200 ms.
- b. AV Setting 1GH z- 26GHz, RBW = 1MHz, VBW = 10Hz, Sweep time = 200 ms.



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Above 1 GHz

Operation Mode: Ch high (2480MHz) Test Date: Jun 21, 2011

Temperature: 20°C **Tested by:** Laura

Humidity: 70 % RH **Polarity:** Ver. / Hor.

Euro	Ant. Pol	Peak	AV	Ant. / CL	Actu	al Fs	Peak	AV	Margin	
Freq. (MHz)	H/V	Reading (dBuV)	Reading (dBuV)	CF (dB)	Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)	(dB)	Remark
2480.15	V	38.34		33.51	71.85		114.00	94.00	-22.15	Peak
4960.30	V	4.15		35.5	39.65		74.00	54.00	-14.35	Peak
9920.60	V	3.57		39.83	43.40		74.00	54.00	-10.60	Peak
N/A										
N/A										
N/A										
N/A										
2480.12	Н	37.62		33.51	71.13		114.00	94.00	-22.87	Peak
4960.24	Н	2.57		34.75	37.32		74.00	54.00	-16.68	Peak
9920.48	Н	3.27		35.86	39.13		74.00	54.00	-14.87	Peak
N/A										
N/A									·	
N/A										
N/A										

Notes:

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4. Spectrum setting:

a. Peak Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 1MHz, Sweep time = 200 ms.

b. AV Setting 1GH z- 26GHz, RBW = 1MHz, VBW = 10Hz, Sweep time = 200 ms.



7.3 POWER LINE CONDUCTED EMISSIONS

LIMIT

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

Frequency Range (MHz)	Limits (dBμV)					
Frequency Range (WITIZ)	Quasi-peak	Average				
0.15 to 0.50	66 to 56	56 to 46				
0.50 to 5	56	46				
5 to 30	60	50				

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

MEASUREMENT EQUIPMENT USED

Name of Equipment	Manufacturer	Model	Serial Number	LAST CAL.	Calibration Due
EMI Test Receiver	SCHAFFNER	SCR3501	464	06/12/2011	06/12/2012
Spectrum Analyzer	ADVANTEST	R3132	140301570	06/12/2011	06/12/2012
LISN	COM-POWER	LI115	2027	06/12/2011	06/12/2012
LISN	COM-POWER	LI115	2029	06/12/2011	06/12/2012

Remark: Each piece of equipment is scheduled for calibration once a year.



Test Configuration

The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.4: 2009

The spacing between the peripherals was 10 centimeters.

External I/O cables were draped along the edge of the test table and bundle when necessary.

The EUT is set to transmit in a continuous mode.

TEST PROCEDURE

The EUT was placed on a table, which is 0.8m above ground plane.

Maximum procedure was performed on the six highest emissions to ensure EUT compliance.

Repeat above procedures until all frequency measured were complete.



TEST RESULTS

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

Test Data

N/A: DC 5V BY BATTERY





8. APPENDIX 1 PHOTOGRPHS OF TEST SETUP

Radiated Emission Set up Photos



