FCC TEST REPORT

according to

FCC Rules and Regulations Part 15 Subpart C

Applicant	: REL ACOUSTICS Ltd.
Address	: North Road, Bridgend Industrial, Estate Bridgend CF313TP U.K.
Equipment	: Amplifier
Model No.	: S/3 Wireless Sub Bass System, S/5 Wireless Sub Bass System
Trademark	: REL
FCC ID	: 2AATQS3-S5SUB

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History of this test report

■ ORIGINAL

☐ Additional attachment as following record:

Attachment No.	Issue Date	Description

CERTIFICATE OF COMPLIANCE

according to

FCC Rules and Regulations Part 15 Subpart C

Applicant	:	REL ACOUSTICS Ltd.
Address	:	North Road, Bridgend Industrial, Estate Bridgend CF313TP U.K.
Manufacturer	:	Dong Guan Lightion Electronics Co., LTD.
Address	:	Meilin District, Dalingshan, Dongguan City, Guangdong Province, China
Equipment	:	Amplifier
Model No.	:	S/3 Wireless Sub Bass System, S/5 Wireless Sub Bass System
Trademark	:	REL
FCC ID	:	2AATQS3-S5SUB

I **HEREBY** CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4** The equipment was ***passed*** the test performed according to **FCC Rules and Regulations Part 15 Subpart C (2010).**

The test was carried out on Nov.11~24, 2014 at ***Cerpass Technology (Suzhou) Co., Ltd.***

Signature

Miro Chueh/ Technical director

1. Report of Measurements and Examinations

1.1 List of Measurements and Examinations

FCC Rule	. Description of Test	Result
15.203	. Antenna Requirement	Pass
15.207	. Conducted Emission	Pass
15.209	. Radiated Emission	Pass
15.215	. 20dB Bandwidth Measurement	Pass
15.249	. Band Edges Measurement Data	Pass

2. Test Configuration of Equipment under Test

2.1 Feature of Equipment under Test

Equipment	Amplifier
Model No.	S/3 Wireless Sub Bass System, S/5 Wireless Sub Bass System
Power Ratings	AC 220V~50Hz,FUSE:T5AL 250Vac; AC 120V~60Hz,FUSE:T10AL 250Vac; 400W for S/3 Wireless Sub Bass System
	AC 220V~50Hz,FUSE:T5AL 250Vac; AC 120V~60Hz,FUSE:T10AL 250Vac; 550W for S/5 Wireless Sub Bass System
Frequency	2403MHz -2479MHz
Antenna type	Dipole Antenna with 2.0dBi
Modulation technology	GFSK
Temperature Range	0-60℃
Remark	**S/5 Wireless Sub Bass System** was selected as the test model and its data have been recorded in this report. All models are identical to each other except for specifications of some components.

2.2 Test Mode & Test Software

a. During testing, the interface cables and equipment positions were varied according to ANSI C63.4

b. The complete test system included EUT for RF test.

c. The EUT was executed to keep transmitting.

d. The following test mode was performed for conduction and radiation test:

- CH low : 2403MHz, CH Mid: 2441MHz, CH High: 2479MHz.

2.3 Description of Test System

Device	Manufacturer	Model No.	Description
Remote workstation			
Notebook	SONY	PCG-71811P	R33021
Use Cable			
Audio Cable	1	1m Non shielding	Audio Cable

2.4 General Information of Test

Test Site:	Cerpass Technology (Suzhou) Co., Ltd.
Performand Location :	No.66,Tangzhuang Road, Suzhou Industrial Park, Jiangsu 215006, China
NVLAP LAB Code :	200814-0
FCC Registration Number :	916572, 331395
IC Registration Number :	7290A-1, 7290A-2
VCCI Registration Number :	T-343 for Telecommunication Test C-2919 for Conducted emission test R-2670 for Radiated emission test below 1GHz G-227 for Radiated emission test above 1GHz

2.5 Measurement Uncertainty

Measurement Item	Measurement Frequency	Polarization	Uncertainty
Conducted Emission	9 kHz ~ 30 MHz	LINE/NEUTRAL	±2.71 dB
Radiated Emission	30 MHz ~ 25GHz	Vertical	±4.11 dB
		Horizontal	±4.10 dB
Occupied Bandwidth	---	---	±7500 Hz
Maximum Peak Output Power	---	---	±1.4 dB
Band Edges	---	---	±2.2 dB
Power Spectral Density	---	---	±2.2 dB

3. Antenna Requirements

3.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 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.

And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

3.2 Antenna Construction and Directional Gain

Antenna type: Dipole Antenna

Antenna Gain: 2.0 dBi

4. Test of Conducted Emission

4.1 Test Limit

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz on the 120 VAC power and return leads of the EUT according to the methods defined in ANSI C63.4-2009 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 2.2. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

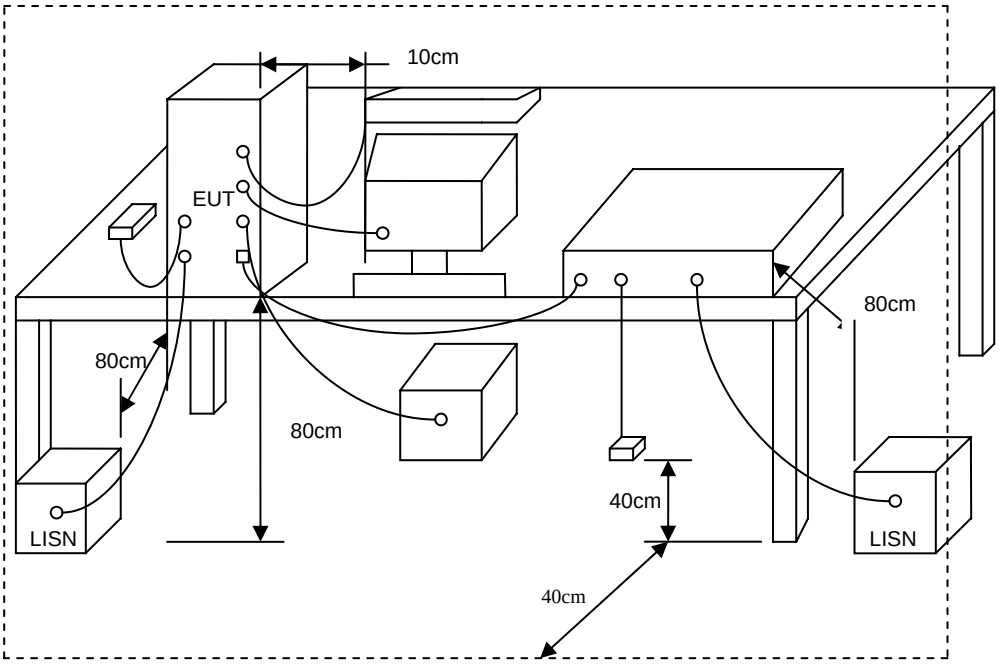
Frequency (MHz)	Quasi Peak (dB μ V)	Average (dB μ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

*Decreases with the logarithm of the frequency.

4.2 Test Procedures

a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
c. All the support units are connecting to the other LISN.
d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
e. The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
f. Both sides of AC line were checked for maximum conducted interference.
g. The frequency range from 150 kHz to 30 MHz was searched.
h. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

4.3 Typical Test Setup

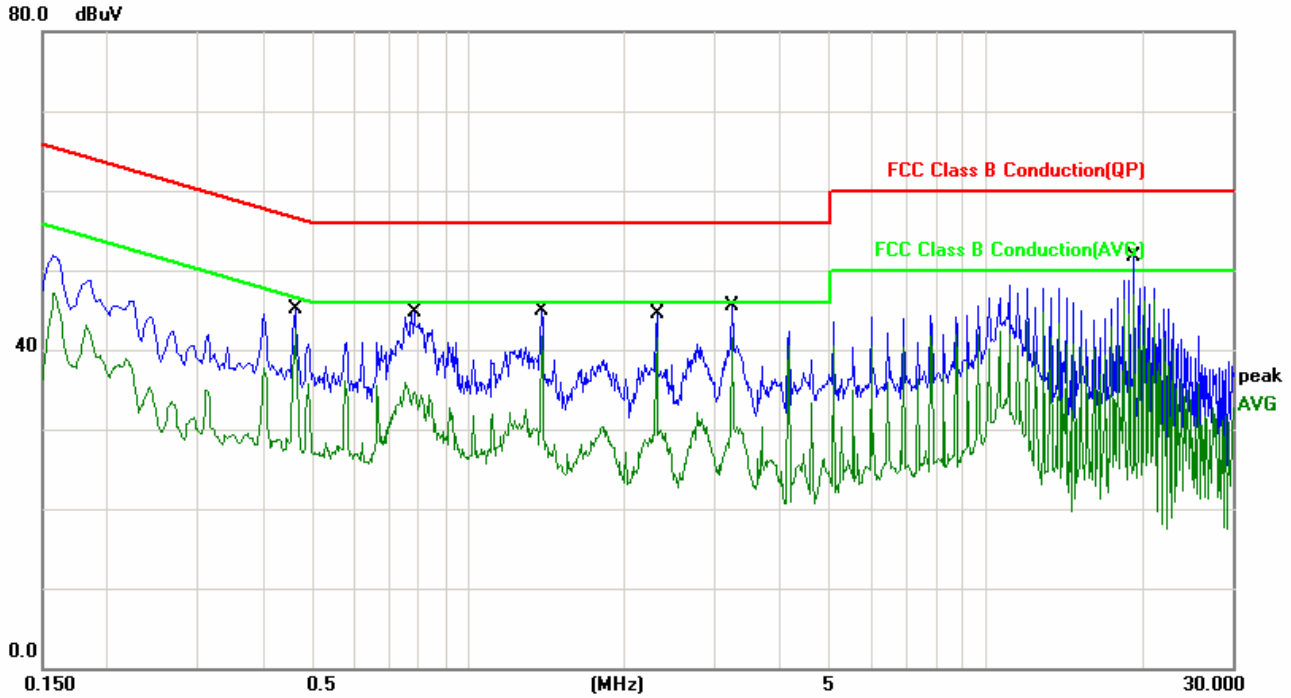


4.4 Measurement equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
Test Receiver	R&S	ESCI	100564	2015.02.25	2016.02.24
LISN	SCHWARZBECK	NSLK 8127	8127748	2014.10.13	2015.10.12
LISN	SCHWARZBECK	NSLK 8127	8127749	2014.10.13	2015.10.12
Pulse Limiter with 10dB Attenuation	SCHWARZBECK	VTSD 9561-F	9561-F106	2014.10.13	2015.10.12
Temperature/ Humidity Meter	mingle	ETH529	N/A	2015.02.25	2016. 02.24

4.5 Test Result and Data

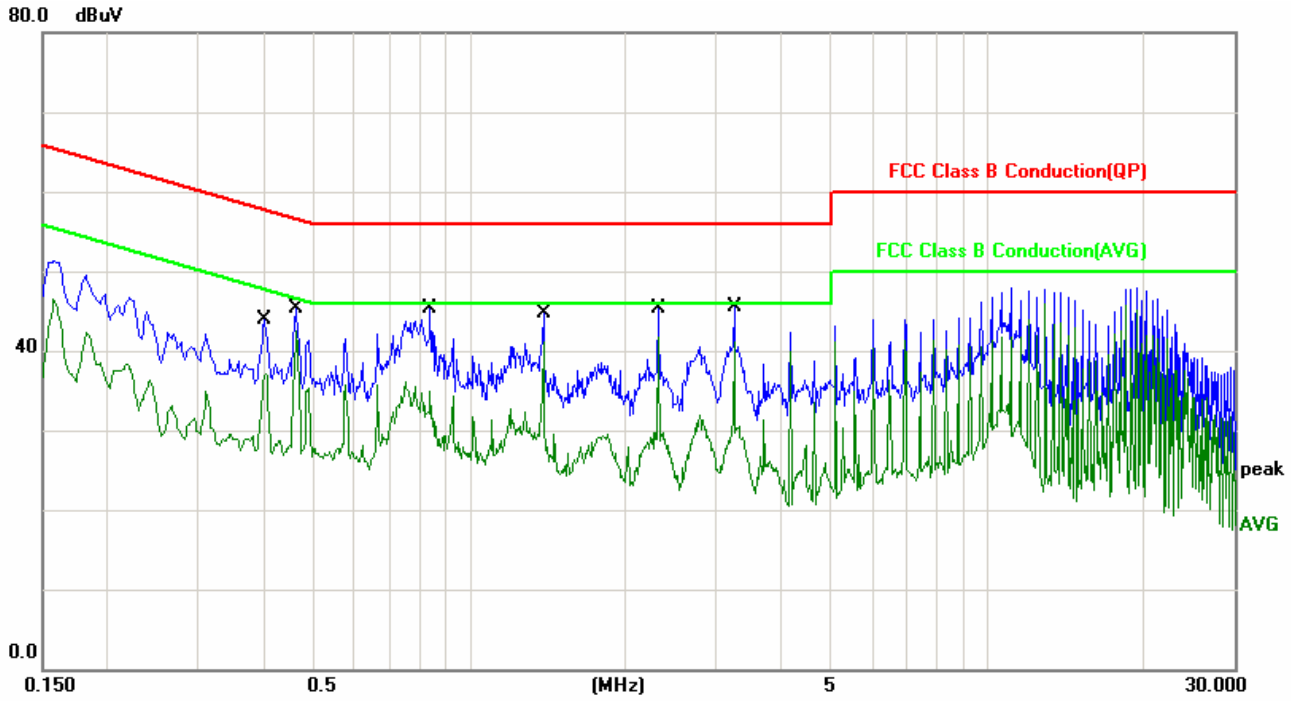
Power	:	AC 120V/60Hz	Pol/Phase	:	LINE
Test Mode	:	Normal link	Temperature	:	25 °C
Memo	:		Humidity	:	60 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.4620	9.66	33.82	43.48	56.66	-13.18	QP
2	0.4620	9.66	32.84	42.50	46.66	-4.16	AVG
3	0.7860	9.66	31.55	41.21	56.00	-14.79	QP
4	0.7860	9.66	25.67	35.33	46.00	-10.67	AVG
5	1.3860	9.66	32.96	42.62	56.00	-13.38	QP
6	1.3860	9.66	31.48	41.14	46.00	-4.86	AVG
7	2.3100	9.68	31.46	41.14	56.00	-14.86	QP
8	2.3100	9.68	29.59	39.27	46.00	-6.73	AVG
9	3.2340	9.70	30.24	39.94	56.00	-16.06	QP
10	3.2340	9.70	26.77	36.47	46.00	-9.53	AVG
11	19.3900	10.14	17.64	27.78	60.00	-32.22	QP
12	19.3900	10.14	12.55	22.69	50.00	-27.31	AVG

Note: Measurement Level = Reading Level + Correct Factor+ Attenuator

Power	:	AC 120V/60Hz	Pol/Phase	:	NEUTRAL
Test Mode	:	Normal link	Temperature	:	25 °C
Memo	:		Humidity	:	60 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.3997	9.67	30.55	40.22	57.86	-17.64	QP
2	0.3997	9.67	27.07	36.74	47.86	-11.12	AVG
3	0.4620	9.66	33.98	43.64	56.66	-13.02	QP
4	0.4620	9.66	33.06	42.72	46.66	-3.94	AVG
5	0.8420	9.66	29.97	39.63	56.00	-16.37	QP
6	0.8420	9.66	24.37	34.03	46.00	-11.97	AVG
7	1.3900	9.66	30.84	40.50	56.00	-15.50	QP
8	1.3900	9.66	29.29	38.95	46.00	-7.05	AVG
9	2.3179	9.68	24.99	34.67	56.00	-21.33	QP
10	2.3179	9.68	21.63	31.31	46.00	-14.69	AVG
11	3.2460	9.70	27.45	37.15	56.00	-18.85	QP
12	3.2460	9.70	20.05	29.75	46.00	-16.25	AVG

Note: Measurement Level = Reading Level + Correct Factor+ Attenuator

5. Test of Radiated Emission

5.1 Test Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

A. FCC Part 15 Subpart C Paragraph 15.249(a) Limit

Frequency (MHz)	Field strength of Fundamental	Field strength of Harmonics	Distance (m)
902~928	50mV/m (94dBμV/m)	500μV/m (54dBμV/m)	3
2400~2483.5	50mV/m (94dBμV/m)	500μV/m (54dBμV/m)	3
5725~5875	50mV/m (94dBμV/m)	500μV/m (54dBμV/m)	3

Note: 1. RF Field Strength (dBuV) = 20 log RF Voltage (uV)

2.Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

3. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.

B. Frequencies in restricted band are complied to limit on Paragraph 15.209.

Frequency range (MHz)	Field Strength		Field Strength Limitation at 3m Measurement Dist	
	μV/m	Dist	(uV/m)	(dBuV/m)
0.009 - 0.490	2400/F(KHz)	300m	10000* 2400/F(KHz)	20log 2400/F(KHz) + 80
0.490 - 1.705	2400/F(KHz)	30m	100* 2400/F(KHz)	20log 2400/F(KHz) + 40
1.705 - 30.00	30	30m	100*30	20log 30 + 40
30.0 - 88.0	100	3m	100	20log 100
88.0 - 216.0	150	3m	150	20log 150
216.0 - 960.0	200	3m	200	20log 200
Above 960.0	500	3m	500	20log 500

Note: 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

2. In the Above Table, the tighter limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT

4. All scanning using PK detector. And the final emission level was get using QP detector for frequency range from 30-1000MHz.As to 1G-40G, the final emission level got using PK and AV detector.

5. Alternative switch power supply board provided to the EUT. After pre-scan, the worse case was recorded.

5.2 Test Procedures

a. The EUT was placed on a rotatable table top 0.8 meter above ground.

b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.

c. The table was rotated 360 degrees to determine the position of the highest radiation.

d. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.

e. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.

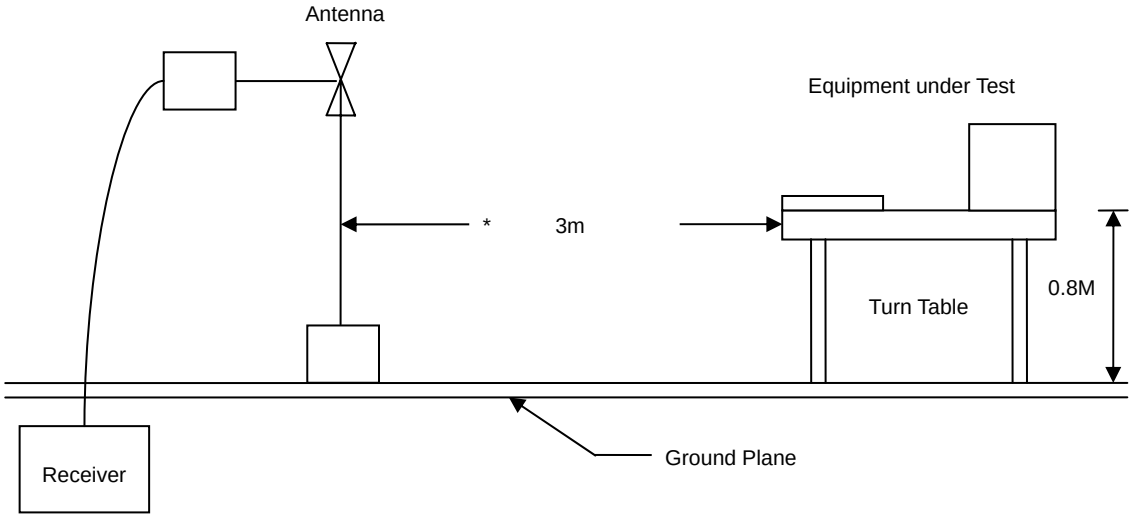
f. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.

g. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.

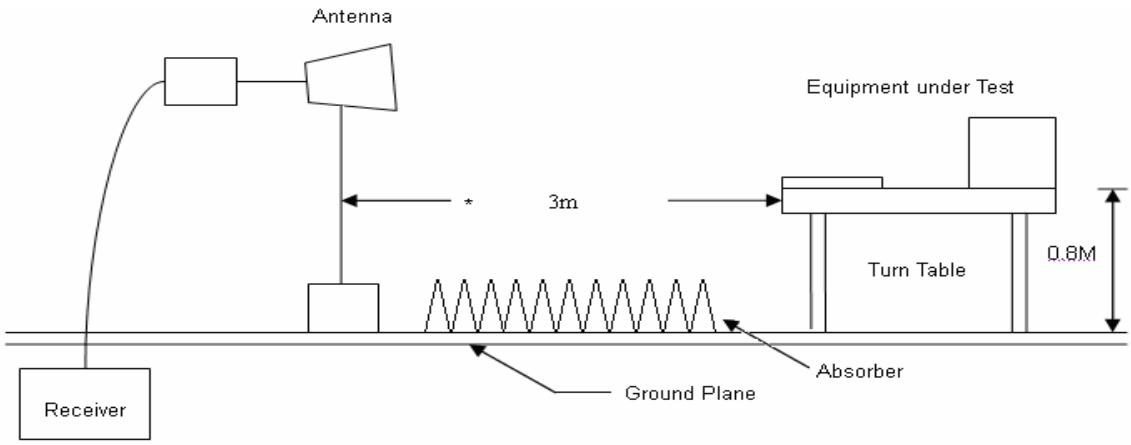
h. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

5.3 Typical Test Setup

Below 1GHz Test Setup



Above 1GHz Test Setup



5.4 Measurement equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
EMI Test Receiver	R&S	ESCI	100853	2015.02.25	2016. 02.24
Preamplifier	HP	8447F	3113A05915	2015.02.25	2016. 02.24
Preamplifier	FIELD	AFS44-00101800 -25-10P-44	1579008	2014.10.14	2015.10.13
Ultra Broadband Antenna	SCHAFFNER	CBL6112D	22241	2015.02.25	2016. 02.24
Broad-Band Horn Antenna	Sunol	DRH-118	A072913	2014.10.14	2015.10.13
Spectrum Analyzer	Agilent	E4407B	MY45118947	2014.07.16	2015.07.15
Temperature/ Humidity Meter	mingle	ETH529	N/A	2015.02.25	2016. 02.24

5.5 Test Result and Data

5.5.1 Fundamental & Harmonics Radiated Emission Data

Fundamental Frequency: 2403 MHz

VERTICAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2403.000	2.020	95.158	97.178	-16.822	114.000	PEAK
2	2403.000	2.020	81.132	83.152	-10.848	94.000	AVG

HORIZONTAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2403.000	1.811	91.251	93.062	-20.938	114.000	PEAK
2	2403.000	1.811	76.214	78.025	-15.975	94.000	AVG

Fundamental Frequency: 2441 MHz

VERTICAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2441.000	1.955	94.235	96.190	-17.810	114.000	PEAK
2	2441.000	1.955	78.535	80.490	-13.510	94.000	AVG

HORIZONTAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2441.000	1.903	88.318	90.221	-23.779	114.000	PEAK
2	2441.000	1.903	72.657	74.560	-19.440	94.000	AVG

Fundamental Frequency: 2479 MHz

VERTICAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2479.000	1.884	93.258	95.142	-18.858	114.000	PEAK
2	2479.000	1.884	76.657	78.541	-15.459	94.000	AVG

HORIZONTAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2479.000	2.030	90.255	92.285	-21.715	114.000	PEAK
2	2479.000	2.030	75.958	77.988	-16.012	94.000	AVG

5.5.2 General Radiated Emission Data

Under 1GHz

Site : EMC Lab AC 102	**Time : 2014-8-15**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Test mode: TX	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	

VERTICAL

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)
1	98.8700	-9.77	46.35	36.58	43.50	-6.92	QP	200	79
2	111.4800	-8.43	46.38	37.95	43.50	-5.55	QP	200	65
3	122.1500	-8.25	44.23	35.98	43.50	-7.52	QP	300	98
4	187.1399	-10.59	49.86	39.27	43.50	-4.23	QP	100	41
5	198.7800	-9.70	49.88	40.18	43.50	-3.32	QP	200	0
6	209.4499	-9.50	48.39	38.89	43.50	-4.61	QP	200	0

HORIZONTAL

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)
1	51.3400	-14.25	48.60	34.35	40.00	-5.65	QP	100	185
2	68.8000	-15.48	49.80	34.32	40.00	-5.68	QP	100	49
3	111.4800	-8.43	43.27	34.84	43.50	-8.66	QP	100	0
4	197.8100	-9.77	45.03	35.26	43.50	-8.24	QP	100	166
5	371.4400	-4.76	38.96	34.20	46.00	-11.80	QP	200	168
6	385.0200	-5.32	39.24	33.92	46.00	-12.08	QP	100	171

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

Above 1GHz

Site : EMC Lab AC 102	**Time : 2014-11-16**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Test mode: Transmit 2403MHz	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	

VERTICAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	1170.000	-10.62	70.29	59.67	74.00	-14.33	peak
2	1170.000	-10.62	57.50	46.88	54.00	-7.12	AVG
3	1467.500	-7.91	62.65	54.74	74.00	-19.26	peak
4	1467.500	-7.91	50.24	42.33	54.00	-11.67	AVG
5	2912.500	0.18	52.54	52.72	74.00	-21.28	peak
6	2912.500	0.18	40.03	40.21	54.00	-13.79	AVG

HORIZONTAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	1170.000	-10.62	70.21	59.59	74.00	-14.41	peak
2	1170.000	-10.62	57.50	46.88	54.00	-7.12	AVG
3	1467.500	-7.91	62.52	54.61	74.00	-19.39	peak
4	1467.500	-7.91	49.18	41.27	54.00	-12.73	AVG
5	2062.500	-4.46	56.12	51.66	74.00	-22.34	peak
6	2062.500	-4.46	43.41	38.95	54.00	-15.05	AVG

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

Site : EMC Lab AC 102	**Time : 2014-11-16**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Test mode: Transmit 2441MHz	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	

VERTICAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	1170.000	-10.62	70.99	60.37	74.00	-13.63	peak
2	1170.000	-10.62	58.45	47.83	54.00	-6.17	AVG
3	1467.500	-7.91	62.21	54.30	74.00	-19.70	peak
4	1467.500	-7.91	50.24	42.33	54.00	-11.67	AVG
5	2912.500	0.18	55.26	55.44	74.00	-18.56	peak
6	2912.500	0.18	41.80	41.98	54.00	-12.02	AVG

HORIZONTAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	1170.000	-10.62	69.92	59.30	74.00	-14.70	peak
2	1170.000	-10.62	56.97	46.35	54.00	-7.65	AVG
3	1467.500	-7.91	62.43	54.52	74.00	-19.48	peak
4	1467.500	-7.91	49.80	41.89	54.00	-12.11	AVG
5	2062.500	-4.46	56.34	51.88	74.00	-22.12	peak
6	2062.500	-4.46	43.97	39.51	54.00	-14.49	AVG

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

Site : EMC Lab AC 102	**Time : 2014-11-16**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Test mode: Transmit 2479MHz	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	

VERTICAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	1170.000	-10.62	68.62	58.00	74.00	-16.00	peak
2	1170.000	-10.62	55.57	44.95	54.00	-9.05	AVG
3	2062.500	-4.46	55.26	50.80	74.00	-23.20	peak
4	2062.500	-4.46	41.33	36.87	54.00	-17.13	AVG
5	2912.500	0.18	50.86	51.04	74.00	-22.96	peak
6	2912.500	0.18	39.44	39.62	54.00	-14.38	AVG

HORIZONTAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	1170.000	-10.62	69.55	58.93	74.00	-15.07	peak
2	1170.000	-10.62	55.51	44.89	54.00	-9.11	AVG
3	1467.500	-7.91	62.95	55.04	74.00	-18.96	peak
4	1467.500	-7.91	49.59	41.68	54.00	-12.32	AVG
5	2062.500	-4.46	56.58	52.12	74.00	-21.88	peak
6	2062.500	-4.46	44.13	39.67	54.00	-14.33	AVG

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

6. 20dB Bandwidth Measurement Data

6.1 Test Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than125 mW.

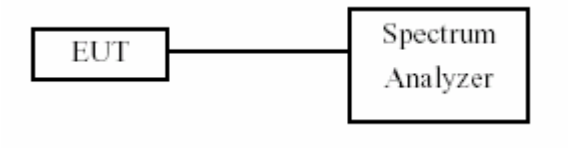
6.2 Test Procedures

a. The transmitter output was connected to the spectrum analyzer.

b. Set RBW of spectrum analyzer to 100 KHz and VBW to 300 KHz.

c. The 20 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20 dB.

6.3 Test Setup Layout



6.4 Measurement equipment

Instrument/Ancillary	Model No.	Manufacturer	Serial No.	Calibration Date	Valid Date
Spectrum Analyzer	Agilent	E4407B	MY45118947	2014.07.16	2015.07.15

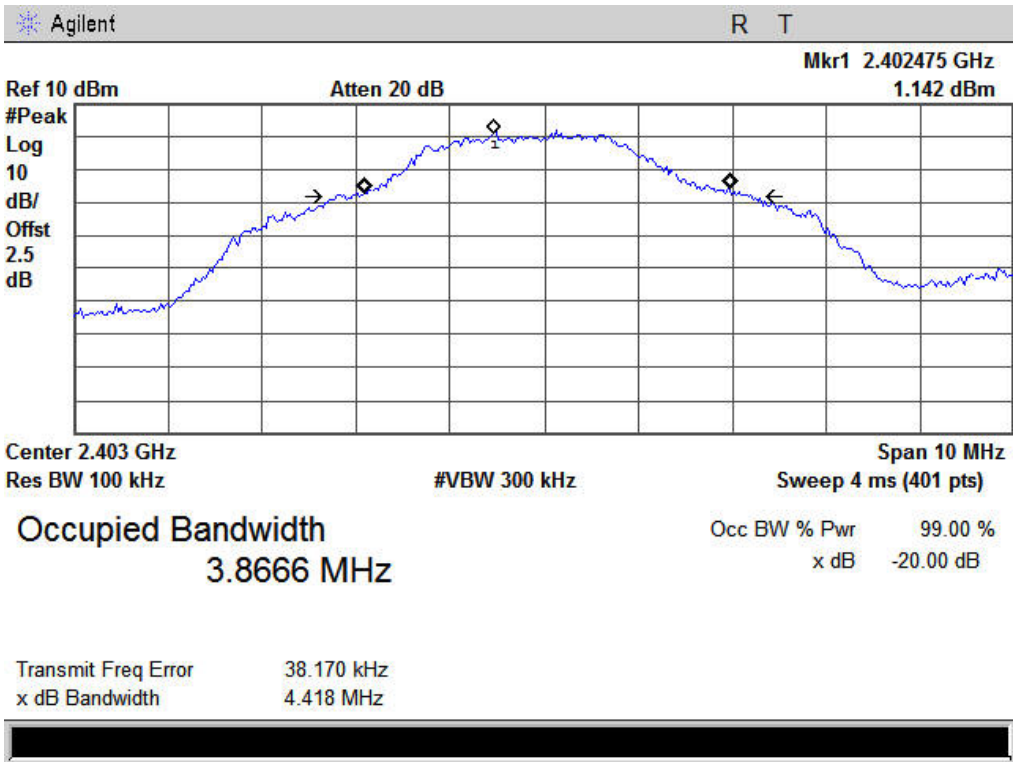
6.5 Test Result and Data

Test Date: 2014-11-16 Temperature: 25℃

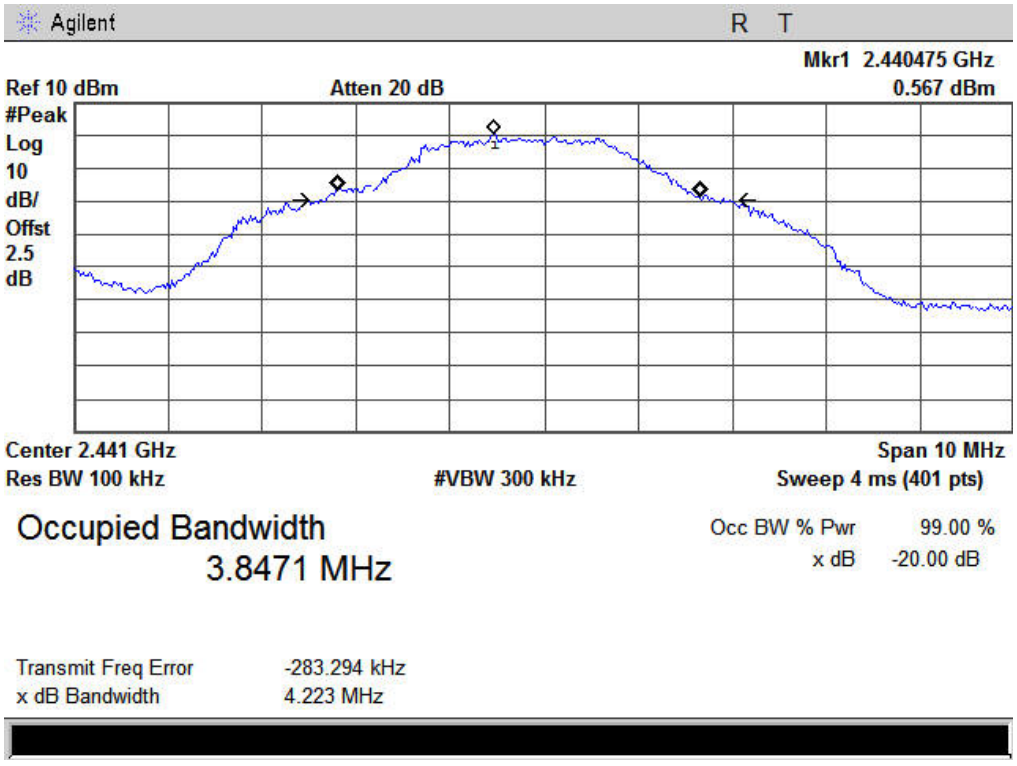
Atmospheric pressure: 1020 hPa Humidity: 55%

Channel	Frequency (MHz)	20dB Bandwidth (KHz)
Low	2403	4418.00
Mid	2441	4223.00
High	2479	4311.00

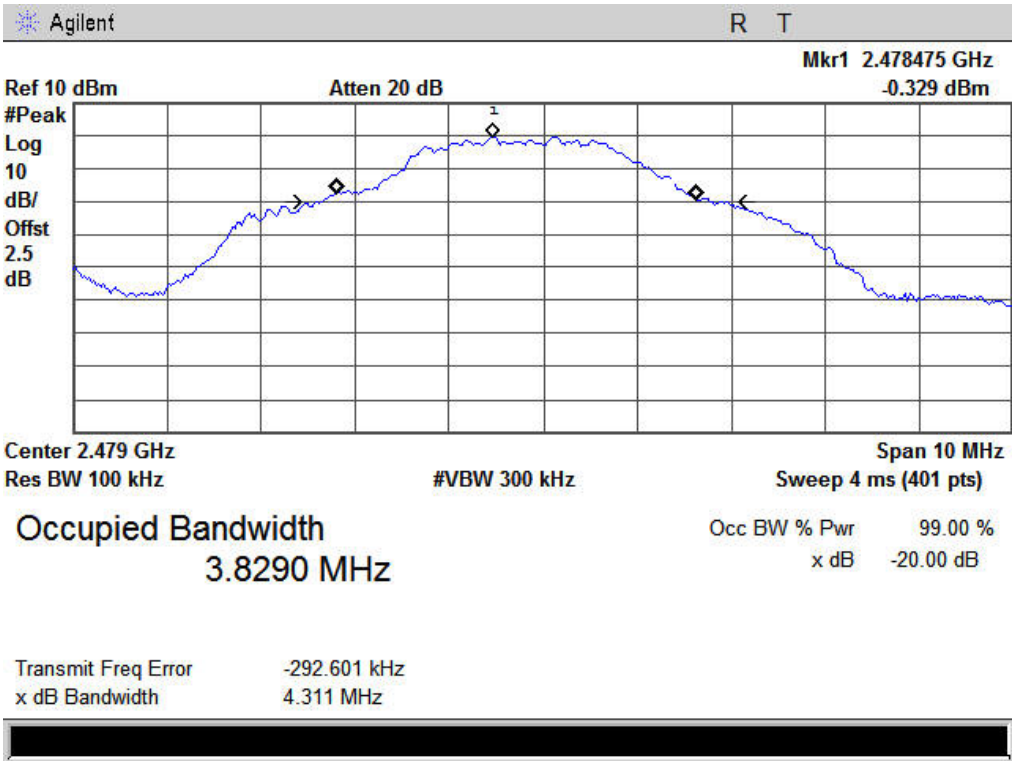
Channel: Low



Channel: Mid



Channel: High



7. Band Edges Measurement

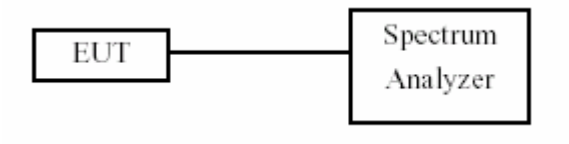
7.1 Test Limit

Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

7.2 Test Procedure

a. The transmitter output was connected to the spectrum analyzer via a low lose cable.
b. Set both RBW and VBW of spectrum analyzer to 100 KHz with convenient frequency span including 100 KHz bandwidth from band edge.
c. The band edges was measured and recorded.

7.3 Test Setup Layout



7.4 List of Measuring Equipment Used

Instrument/Ancillary	Model No.	Manufacturer	Serial No.	Calibration Date	Valid Date
Spectrum Analyzer	Agilent	E4407B	MY45118947	2014.07.16	2015.07.15

7.5 Restrict band emission Measurement Data

Test Date	:	2013-9-29
Temperature	:	23℃
Humidity	:	65%
Atmospheric Pressure	:	1020 hPa

Channel Low Fundamental Frequency: 2403 MHz

VERTICAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2390.000	-3.05	50.94	47.89	74.00	-26.11	peak
2	2390.000	-3.05	41.66	38.61	54.00	-15.39	AVG

HORIZONTAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2390.000	-3.05	54.46	51.41	74.00	-22.59	peak
2	2390.000	-3.05	44.64	41.59	54.00	-12.41	AVG

Channel High Fundamental Frequency: 2479 MHz

VERTICAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2483.500	-2.65	64.31	61.66	74.00	-12.34	peak
2	2483.500	-2.65	54.02	51.37	54.00	-2.63	AVG

HORIZONTAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2483.500	-2.65	56.57	53.92	74.00	-20.08	peak
2	2483.500	-2.65	46.51	43.86	54.00	-10.14	AVG

Notes:

1. Result = Meter Reading + Factor
2. Factor = Antenna Factor + Cable Loss – Amplifier
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3 MHz for Peak detection at frequency above 1GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average detection at frequency above 1GHz

8. Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.09000 – 0.11000	16.42000 – 16.42300	399.9 – 410.0	4.500 – 5.250
0.49500 – 0.505**	16.69475 – 16.69525	608.0 – 614.0	5.350 – 5.460
2.17350 – 2.19050	16.80425 – 16.80475	960.0 – 1240.0	7.250 – 7.750
4.12500 – 4.12800	25.50000 – 25.67000	1300.0 – 1427.0	8.025 – 8.500
4.17725 – 4.17775	37.50000 – 38.25000	1435.0 – 1626.5	9.000 – 9.200
4.20725 – 4.20775	73.00000 – 74.60000	1645.5 – 1646.5	9.300 – 9.500
6.21500 – 6.21800	74.80000 – 75.20000	1660.0 – 1710.0	10.600 – 12.700
6.26775 – 6.26825	108.00000 – 121.94000	1718.8 – 1722.2	13.250 – 13.400
6.31175 – 6.31225	123.00000 – 138.00000	2200.0 – 2300.0	14.470 – 14.500
8.29100 – 8.29400	149.90000 – 150.05000	2310.0 – 2390.0	15.350 – 16.200
8.36200 – 8.36600	156.52475 – 156.52525	2483.5 – 2500.0	17.700 – 21.400
8.37625 – 8.38675	156.70000 – 156.90000	2655.0 – 2900.0	22.010 – 23.120
8.41425 – 8.41475	162.01250 – 167.17000	3260.0 – 3267.0	23.600 – 24.000
12.29000 – 12.29300	167.72000 – 173.20000	3332.0 – 3339.0	31.200 – 31.800
12.51975 – 12.52025	240.00000 – 285.00000	3345.8 – 3358.0	36.430 – 36.500
12.57675 – 12.57725	322.00000 – 335.40000	3600.0 – 4400.0	Above 38.6
13.36000 – 13.41000			

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

8.1 Labeling Requirement

The device shall bear the following statement in a conspicuous location on the device:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.