



FCC RF TEST REPORT

47 CFR FCC Part 15 Subpart C § 15.249

EQUIPMENT : BLE module
BRAND NAME : HST
MODEL NUMBER : M52832QFAA
FCC ID : LP4-M52832

We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.



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1. SUMMARY OF THE TEST RESULT

Applied Standard:				
Part	FCC Rule	Description of Test	Result	Under Limit
3.1	15.207	AC Power Line Conducted Emissions	Complies	Under limit 12.40 dB at 0.158 MHz
3.2	2.1049	20dB & 99% Occupied Bandwidth	Complies	-
3.3	15.249(a)	Field Strength of Fundamental Emissions	Complies	2.36 dB at 2403.000MHz
3.3	15.249(a)(d)	Radiated Spurious Emissions	Complies	Under limit 0.58 dB at 7440.000 MHz
3.4	15.203	Antenna Requirements	Complies	-

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.7
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.6
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.9
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.2
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2. GENERAL INFORMATION

2.1 Applicant

HARDWARE & SOFTWARE TECHNOLOGY CO., LTD.

No.5F-1, No.128, Jilin Rd., Luchu, Taoyuan, 33850, Taiwan

2.2 Manufacturer

Rayson Technology co., Ltd.

No. 1, Tongfu 1st Road, The 2nd Industrial Zone, Loucun, Gongming, Guangming New District, Shenzhen, China.

2.3 Product Feature of Equipment Under Test

2.4GHz Proprietary, Bluetooth, and NFC

Product Specification subjective to this standard	
Antenna Type	Bluetooth: PCB Antenna 2.4GHz Proprietary: PCB Antenna NFC: PCB Meander Antenna

2.4 Modification of EUT

No modifications are made to the EUT during all test items.



2.5 Table for Test Modes

Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report. For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X plane) were recorded in this report.

Test Items	Mode
AC Power Line Conducted Emissions	CTX
Field Strength of Fundamental Emissions	CTX
Bandwidth	CTX
Radiated Emissions	CTX

Note:

1. CTX=continuously transmitting.
2. The programmed RF utility, "QRCT Tool" installed in the notebook to make the EUT get into the engineering modes to continuously transmit.

2.6 Table for Testing Locations

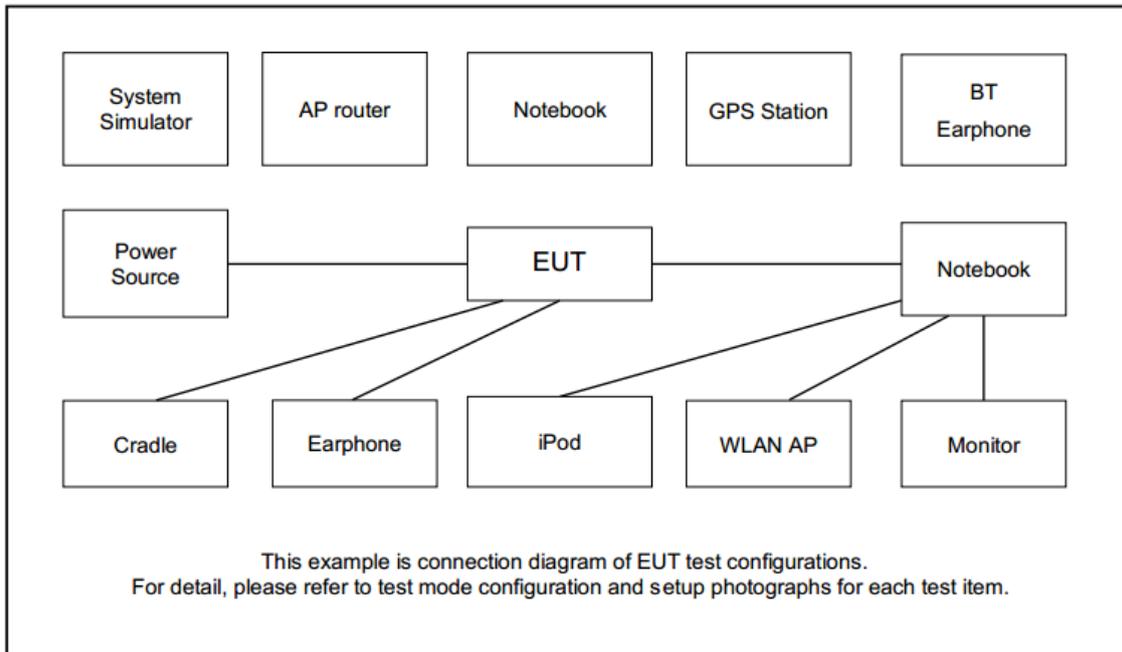
Test Site	SPORTON INTERNATIONAL INC.	
Test Site ocation	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	Sporton Site No.	
	TH05-HY	CO05-HY

Note: The test site complies with ANSI C63.4 2014 requirement.

Test Site	SPORTON INTERNATIONAL INC.	
Test Site ocation	No.58, Aly. 75, Ln. 564, Wenhua 3rd Rd. Guishan Dist, Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855	
Test Site No.	Sporton Site No.	
	03CH10-HY	

Note: The test site complies with ANSI C63.4 2014 requirement.

2.7 Connection Diagram of Test System





3. TEST RESULT

3.1 AC Power Line Conducted Emissions Measurement

3.1.1 Limit

For a Low-power Radio-frequency device which is designed to be connected to the 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 below limits table.

Frequency (MHz)	QP Limit (dB μ V)	AV Limit (dB μ V)
0.15~0.5	66~56	56~46
0.5~5	56	46
5~30	60	50

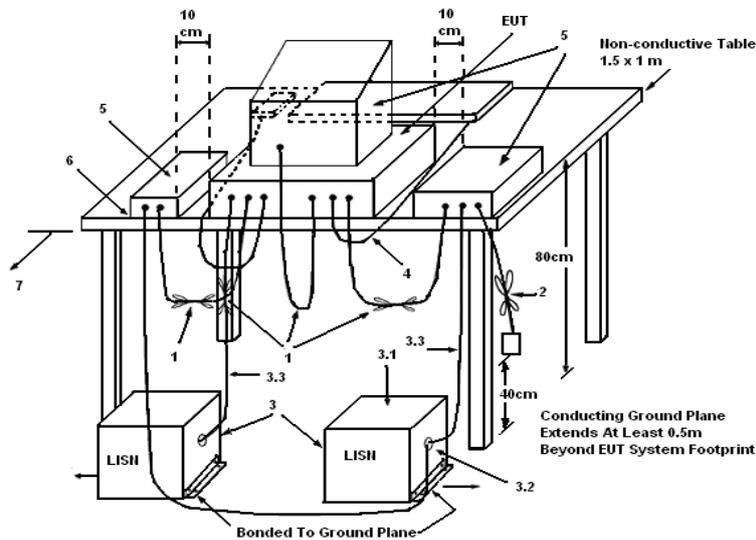
3.1.2 Measuring Instruments

Please refer to section 4 of equipment list in this report.

3.1.3 Test Procedures

1. Configure the EUT according to ANSI C63.4. The EUT or host of EUT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT or host of EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connected to the other LISNs. The LISN should provide 50uH/50ohms coupling impedance.
4. The frequency range from 150 kHz to 30 MHz was searched.
5. Set the test-receiver system to Peak Detect Function and Specified Bandwidth (IF bandwidth = 9kHz) with Maximum Hold Mode.
6. The measurement has to be done between each power line and ground at the power terminal.

3.1.4 Test Setup Layout



LEGEND:

- (1) Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- (2) I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- (3) EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω. LISN can be placed on top of, or immediately beneath, reference ground plane.
 - (3.1) All other equipment powered from additional LISN(s).
 - (3.2) Multiple outlet strip can be used for multiple power cords of non-EUT equipment.
 - (3.3) LISN at least 80 cm from nearest part of EUT chassis.
- (4) Cables of hand-operated devices, such as keyboards, mice, etc., shall be placed as for normal use.
- (5) Non-EUT components of EUT system being tested.
- (6) Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop.
- (7) Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.



3.1.5 Test Deviation

There is no deviation with the original standard.

3.1.6 EUT Operation during Test

The EUT was placed on the test table and programmed in transmitting function.

3.1.7 Results of AC Power Line Conducted Emissions Measurement

Please refer to Appendix A

3.2 20dB and & 99% Occupied Bandwidth

3.2.1 Limit

Intentional radiators must be designed to ensure that the 20 dB bandwidth of the emissions in the specific band.

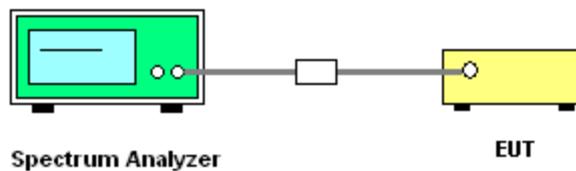
3.2.2 Measuring Instruments

Please refer to section 4 of equipment list in this report.

3.2.3 Test Procedures

1. The transmitter output port was connected to the spectrum analyzer.
2. Measured the spectrum width with highest power setting.

3.2.4 Test Setup Layout



3.2.5 Test Deviation

There is no deviation with the original standard.

3.2.6 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

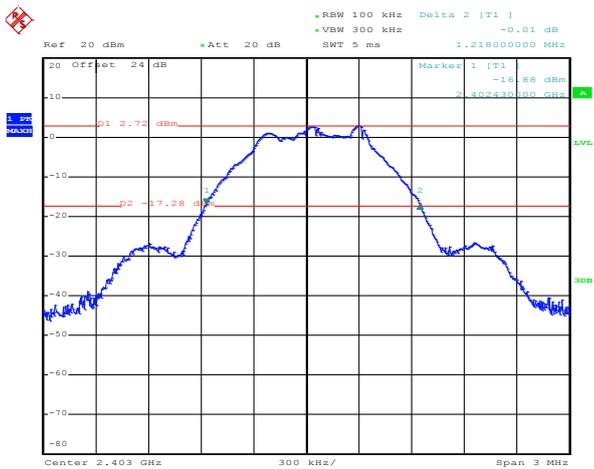


3.2.7 Test Result of 20dB Spectrum Bandwidth

Final Test Date	Mar. 17, 2017 ~ Mar. 31, 2017	Test Site No.	TH05-HY
Temperature	21~25°C	Humidity	51~54%
Test Engineer	Derek Hsu		

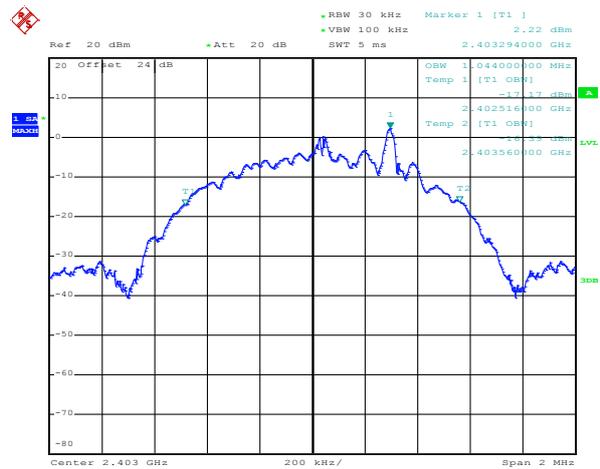
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20 dB Bandwidth Plot on 2403MHz



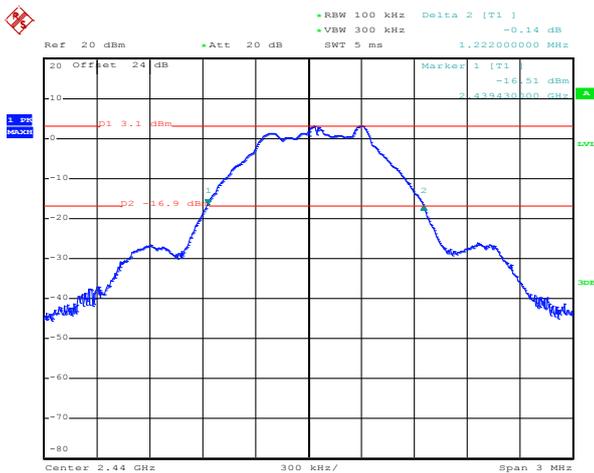
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99% Bandwidth Plot on 2403MHz



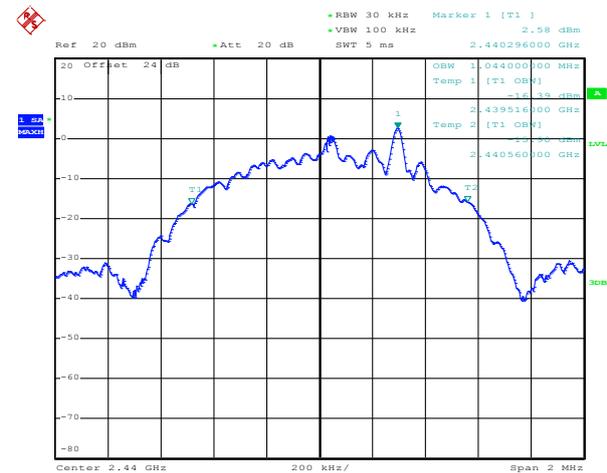
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20 dB Bandwidth Plot on 2440MHz



Date: 31.MAR.2017 17:13:41

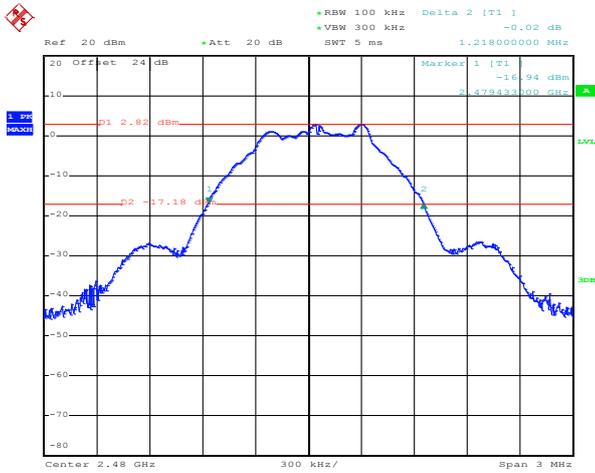
99% Bandwidth Plot on 2440MHz



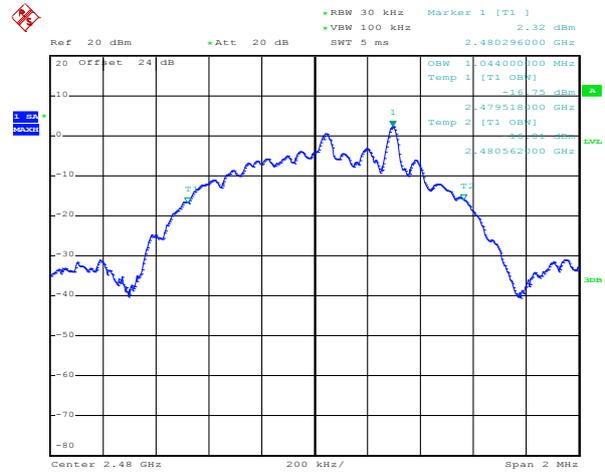
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20 dB Bandwidth Plot on 2480MHz



99% Bandwidth Plot on 2480MHz



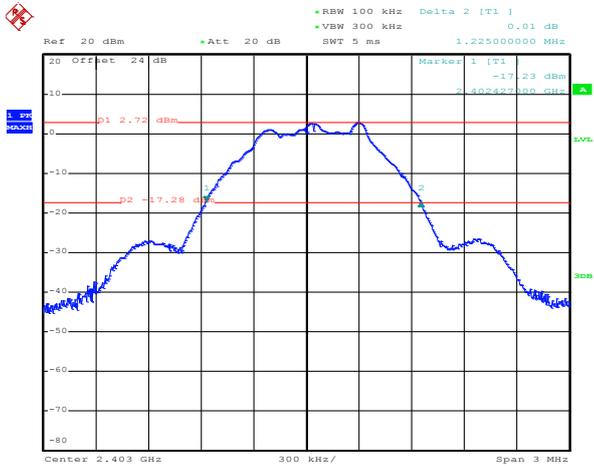
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Date: 31.MAR.2017 17:17:49



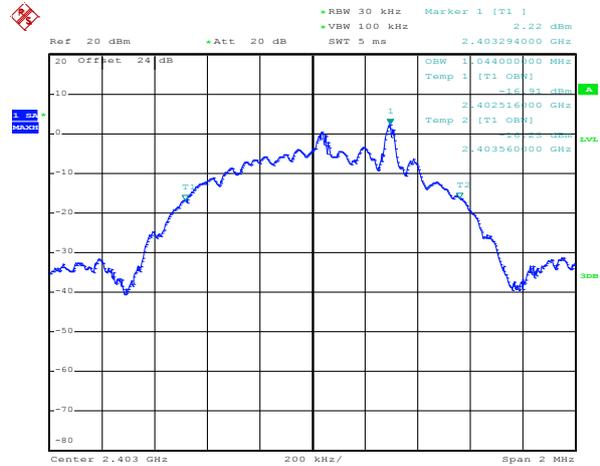
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20 dB Bandwidth Plot on 2403MHz



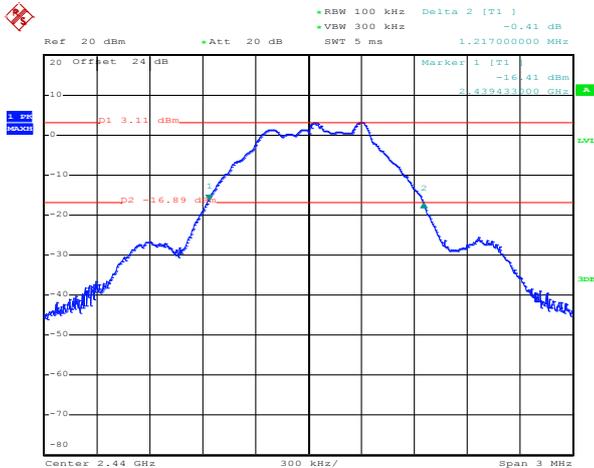
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99% Bandwidth Plot on 2403MHz



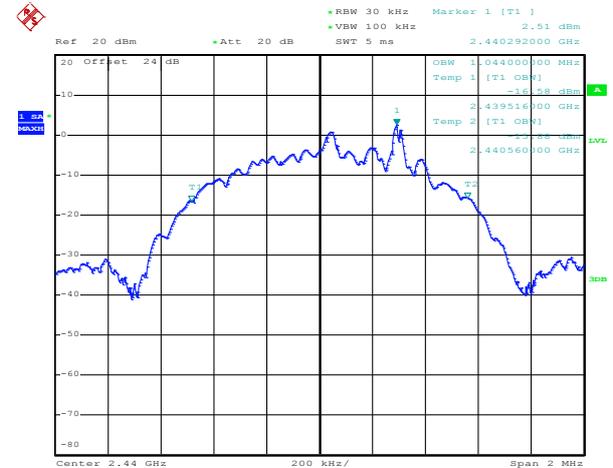
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20 dB Bandwidth Plot on 2440MHz



Date: 31.MAR.2017 17:36:41

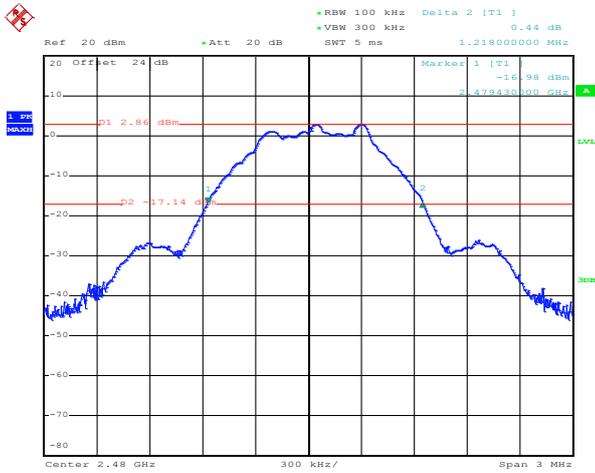
99% Bandwidth Plot on 2440MHz



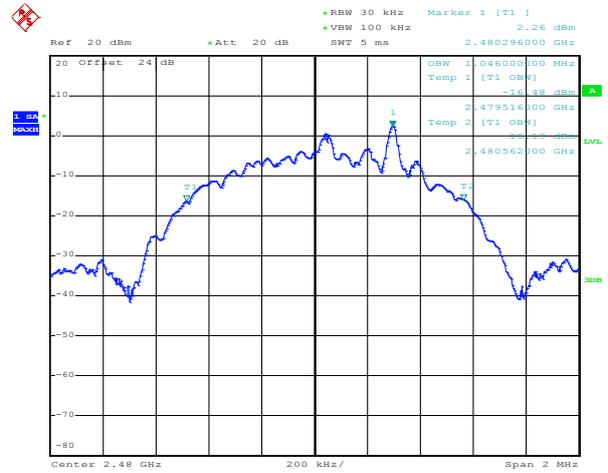
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20 dB Bandwidth Plot on 2480MHz



99% Bandwidth Plot on 2480MHz



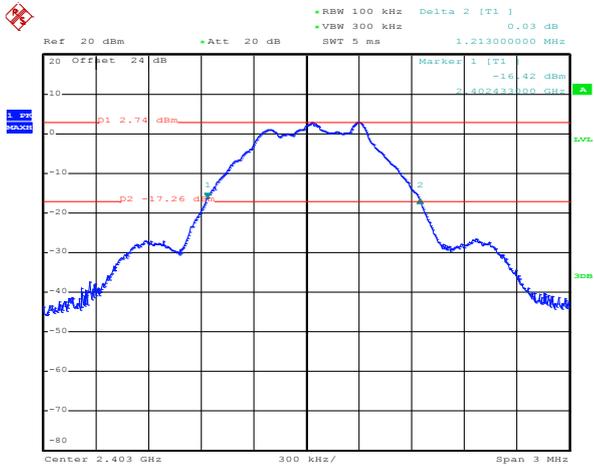
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Date: 31.MAR.2017 17:39:32



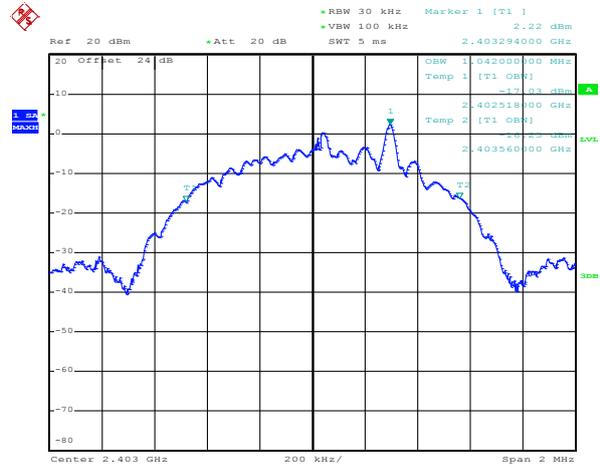
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20 dB Bandwidth Plot on 2403MHz



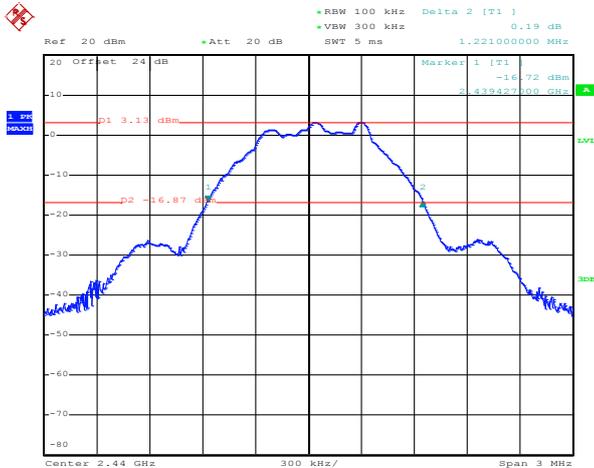
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99% Bandwidth Plot on 2403MHz



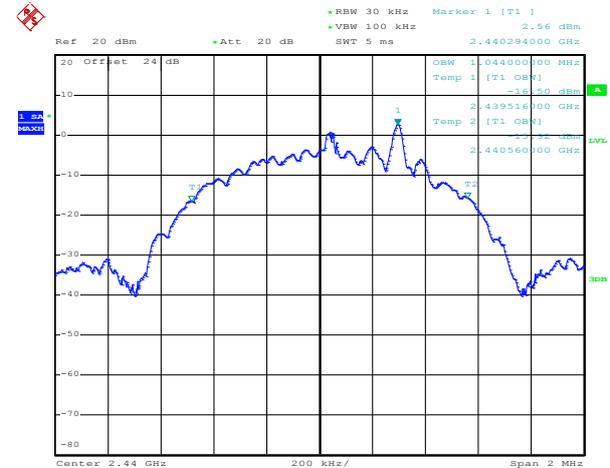
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20 dB Bandwidth Plot on 2440MHz



Date: 31.MAR.2017 17:54:37

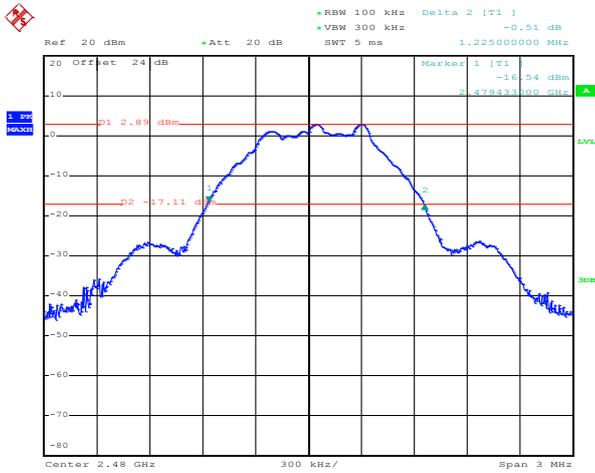
99% Bandwidth Plot on 2440MHz



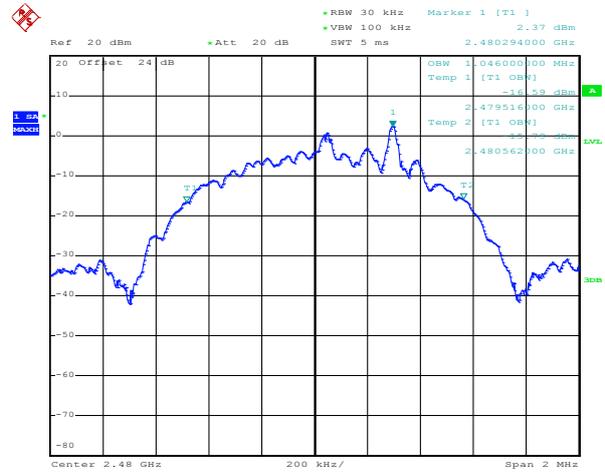
Date: 31.MAR.2017 17:55:02



20 dB Bandwidth Plot on 2480MHz



99% Bandwidth Plot on 2480MHz



Date: 31.MAR.2017 17:56:53

Date: 31.MAR.2017 17:57:14



3.3 Field Strength of Fundamental Emissions and Radiated Spurious Emissions

3.3.1 Limit

The field strength measured at 3 meters shall not exceed the limits in the following table:

Fundamental Frequencies(MHz)	Field Strength(millivolts/m)	
	Fundamental	Harmonics
902~928	50	0.5
2400~2483.5	50	0.5
5725~5875	50	0.5

Note: The limits shown in the above table are based on measurements using an average detector, except for the fundamental emission in the frequency band 902-928 MHz, which is based on measurements using a CISPR quasi-peak detector.

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general field strength limits listed in 15.209 as below, whichever is less stringent.

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3



3.3.2 Measuring Instruments

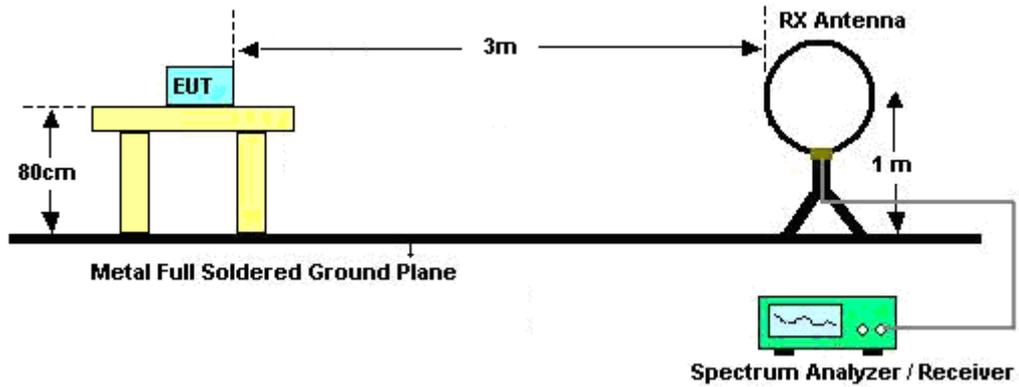
Please refer to section 4 of equipment list in this report.

3.3.3 Test Procedures

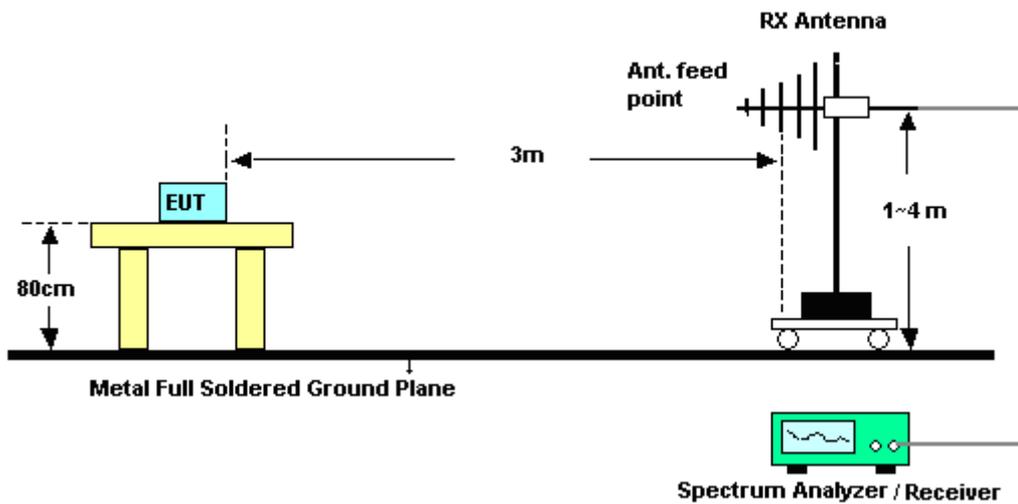
1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
4. Set to the maximum power setting and enable the EUT transmit continuously.

3.3.4 Test Setup Layout

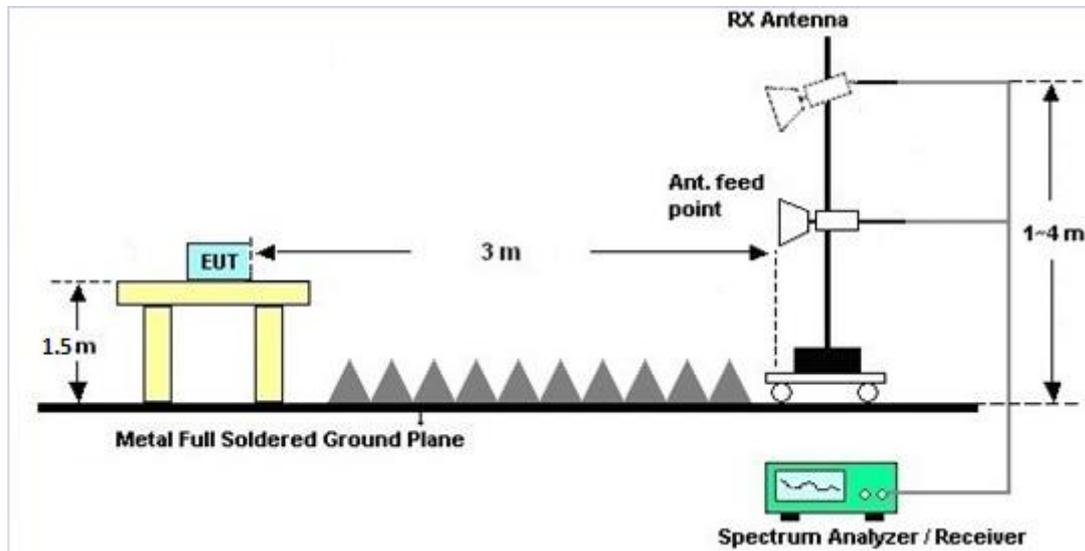
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.3.5 Test Deviation

There is no deviation with the original standard.

3.3.6 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

3.3.7 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

3.3.8 Duty cycle correction factor for average measurement

Please refer to Appendix D.

3.3.9 Test Result of Field Strength of Fundamental Emissions and Spurious Emissions

Please refer to Appendix B and C.



3.4 Antenna Requirements

3.4.1 Limit

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited.

3.4.2 Antenna Connector Construction

Embedded in Antenna.



4. LIST OF MEASURING EQUIPMENT

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Power Meter	Agilent	E4416A	GB412923 44	300MHz~40GHz	Dec. 26, 2016	Mar. 17, 2017 ~ Mar. 31, 2017	Dec. 25, 2017	Conducted (TH05-HY)
Power Sensor	Agilent	E9327A	US404415 48	300MHz~40GHz	Dec. 26, 2016	Mar. 17, 2017 ~ Mar. 31, 2017	Dec. 25, 2017	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz-40GHz	Jul. 17, 2016	Mar. 17, 2017 ~ Mar. 31, 2017	Jul. 16, 2017	Conducted (TH05-HY)
Amplifier	SONOMA	310N	187311	9kHz~1GHz	Oct. 26, 2016	Mar. 30, 2017 ~ Mar. 31, 2017	Oct. 25, 2017	Radiation (03CH10-HY)
Bilog Antenna	TESEQ	CBL 6111D&00800 N1D01N-06	35413&02	30MHz~1GHz	Jan. 07, 2017	Mar. 30, 2017 ~ Mar. 31, 2017	Jan. 06, 2018	Radiation (03CH10-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-132 5	1GHz ~ 18GHz	Sep. 30, 2016	Mar. 30, 2017 ~ Mar. 31, 2017	Sep. 29, 2017	Radiation (03CH10-HY)
Preamplifier	Keysight	83017A	MY532700 78	1GHz~26.5GHz	Oct. 26, 2016	Mar. 30, 2017 ~ Mar. 31, 2017	Oct. 25, 2017	Radiation (03CH10-HY)
Spectrum Analyzer	Keysight	N9010A	MY542004 85	10Hz ~ 44GHz	Oct. 17, 2016	Mar. 30, 2017 ~ Mar. 31, 2017	Oct. 16, 2017	Radiation (03CH10-HY)
Antenna Mast	EMEC	AM-BS-4500- B	N/A	1~4m	N/A	Mar. 30, 2017 ~ Mar. 31, 2017	N/A	Radiation (03CH10-HY)
Turn Table	EMEC	TT 2200	N/A	0~360 Degree	N/A	Mar. 30, 2017 ~ Mar. 31, 2017	N/A	Radiation (03CH10-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Oct. 20, 2016	Mar. 30, 2017 ~ Mar. 31, 2017	Oct. 19, 2018	Radiation (03CH10-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	2025787	1GHz~18GHz	Fab. 13, 2017	Mar. 30, 2017 ~ Mar. 31, 2017	Feb. 12, 2018	Radiation (03CH10-HY)
EMI Test Receiver	Keysight	N9038A (MXE)	MY554201 70	N/A	Mar. 03, 2017	Mar. 30, 2017 ~ Mar. 31, 2017	Mar. 02, 2018	Radiation (03CH10-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA9170 576	18GHz ~ 40GHz	Apr. 15, 2016	Mar. 30, 2017 ~ Mar. 31, 2017	Apr. 14, 2017	Radiation (03CH10-HY)
Preamplifier	MITEQ	JS44-180040 00-33-8P	1840917	18GHz ~ 40GHz	Jun. 14, 2016	Mar. 30, 2017 ~ Mar. 31, 2017	Jun. 13, 2017	Radiation (03CH10-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Apr. 20, 2017	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Aug. 30, 2016	Apr. 20, 2017	Aug. 29, 2017	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Nov. 29, 2016	Apr. 20, 2017	Nov. 28, 2017	Conduction (CO05-HY)



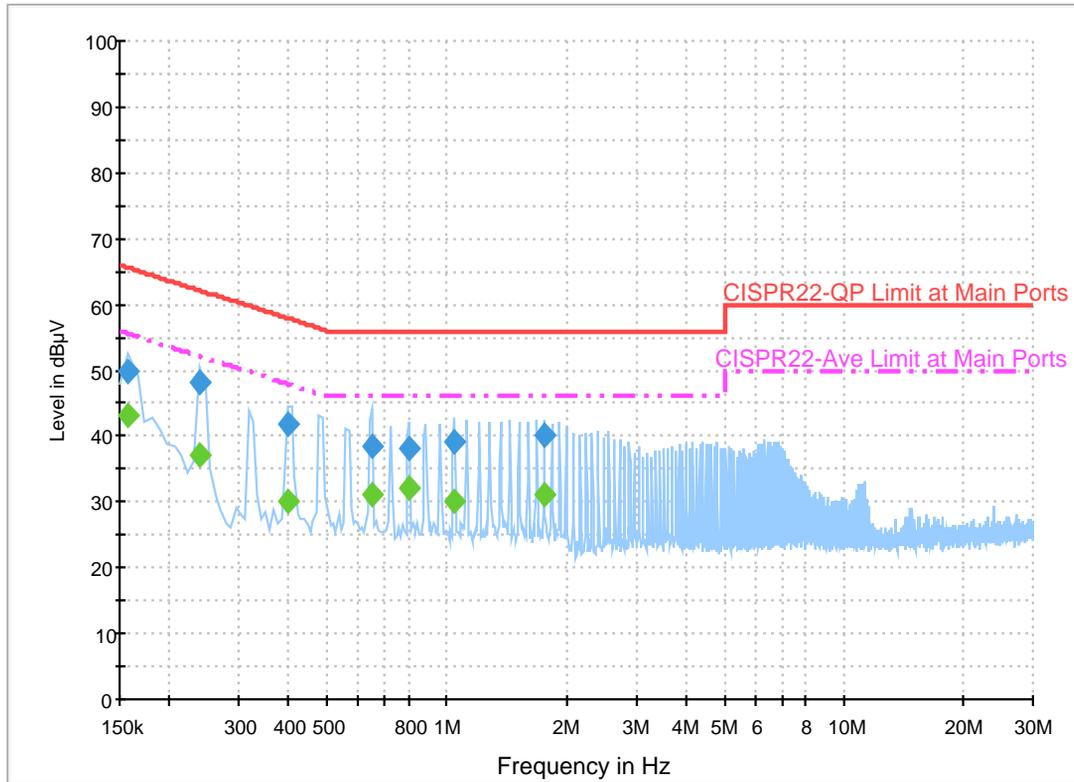
Appendix A. AC Conducted Emission Test Results

Test Engineer :	Eric Jeng	Temperature :	22~24°C
		Relative Humidity :	50~52%
AC Conducted Emission	Mode 1: 2.4GHz Tx Mode 2: Bluetooth Tx		
Remark: The worst case of conducted emission is mode 1; only the test data of it was reported.			

EUT Information

Report NO : 6N3004
 Test Mode : Mode 1
 Test Voltage : 120Vac/60Hz
 Phase : Line

ENV216 Auto Test FCC Power Bar - L



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.158000	49.9	Off	L1	19.6	15.7	65.6
0.238000	48.1	Off	L1	19.6	14.1	62.2
0.398000	41.9	Off	L1	19.6	16.0	57.9
0.646000	38.3	Off	L1	19.6	17.7	56.0
0.806000	38.2	Off	L1	19.6	17.8	56.0
1.046000	39.0	Off	L1	19.6	17.0	56.0
1.766000	40.2	Off	L1	19.6	15.8	56.0

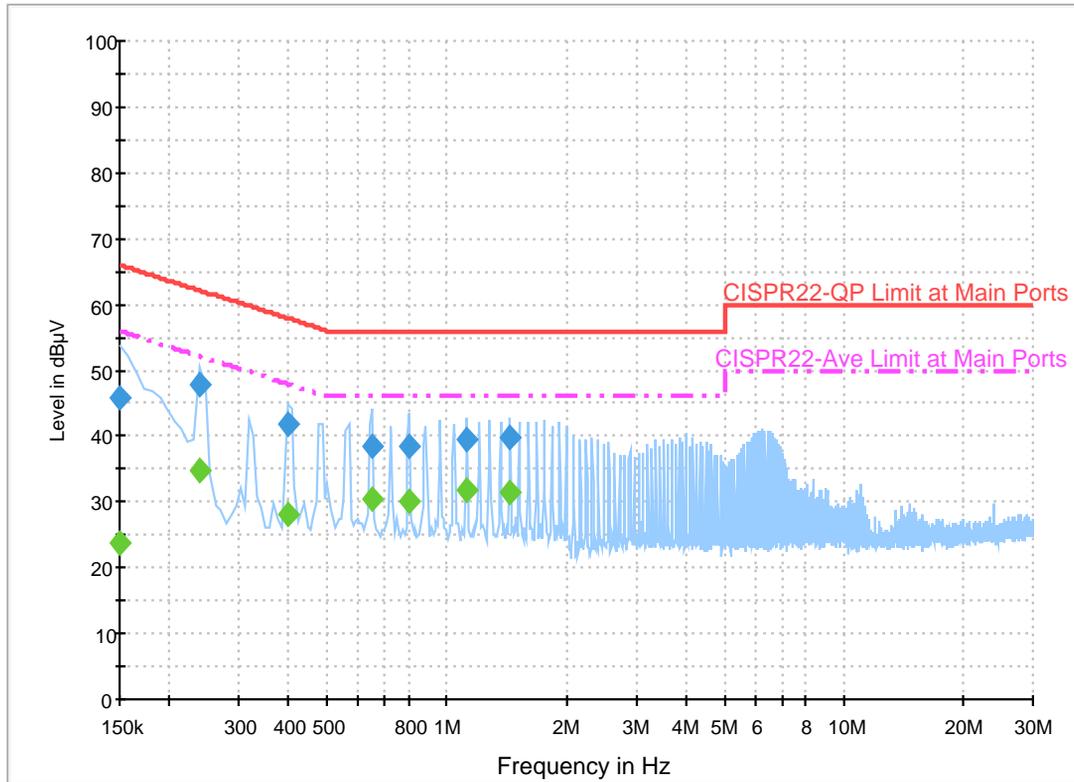
Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.158000	43.2	Off	L1	19.6	12.4	55.6
0.238000	37.1	Off	L1	19.6	15.1	52.2
0.398000	30.1	Off	L1	19.6	17.8	47.9
0.646000	31.0	Off	L1	19.6	15.0	46.0
0.806000	32.1	Off	L1	19.6	13.9	46.0
1.046000	30.2	Off	L1	19.6	15.8	46.0
1.766000	31.2	Off	L1	19.6	14.8	46.0

EUT Information

Report NO : 6N3004
 Test Mode : Mode 1
 Test Voltage : 120Vac/60Hz
 Phase : Neutral

ENV216 Auto Test FCC Power Bar - N



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	45.8	Off	N	19.5	20.2	66.0
0.238000	47.9	Off	N	19.5	14.3	62.2
0.398000	41.7	Off	N	19.5	16.2	57.9
0.646000	38.4	Off	N	19.5	17.6	56.0
0.806000	38.5	Off	N	19.6	17.5	56.0
1.126000	39.3	Off	N	19.6	16.7	56.0
1.446000	39.8	Off	N	19.6	16.2	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	23.7	Off	N	19.5	32.3	56.0
0.238000	34.9	Off	N	19.5	17.3	52.2
0.398000	28.0	Off	N	19.5	19.9	47.9
0.646000	30.4	Off	N	19.5	15.6	46.0
0.806000	30.2	Off	N	19.6	15.8	46.0
1.126000	31.6	Off	N	19.6	14.4	46.0
1.446000	31.3	Off	N	19.6	14.7	46.0



Appendix B. Radiated Spurious Emission

Test Engineer :	Tsung Lee and Stan Hsieh	Temperature :	22~24°C
		Relative Humidity :	45~47%

2.4GHz 2400~2483.5MHz

2.4G wireless (Band Edge @ 3m)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4G wireless (0.25M) 2403MHz		2399.68	56.55	-17.45	74	57.14	27.23	5.39	33.21	124	146	P	H
		2403	92.19	-21.81	114	92.73	27.28	5.39	33.21	124	146	P	H
		2499.16	46.19	-27.81	74	46.39	27.5	5.46	33.16	124	146	P	H
		2400	36.18	-17.82	54	36.77	27.23	5.39	33.21	124	146	A	H
		2403.04	91.59	-2.41	94	92.13	27.28	5.39	33.21	124	146	A	H
		2495.8	40.23	-13.77	54	40.43	27.5	5.46	33.16	124	146	A	H
		2398.48	52.09	-21.91	74	52.68	27.23	5.39	33.21	336	185	P	V
		2403	89.45	-24.55	114	89.99	27.28	5.39	33.21	336	185	P	V
		2495.92	44.67	-29.33	74	44.87	27.5	5.46	33.16	336	185	P	V
		2387.08	34.89	-19.11	54	35.49	27.23	5.39	33.22	336	185	A	V
		2403	88.84	-5.16	94	89.38	27.28	5.39	33.21	336	185	A	V
		2495.8	36.87	-17.13	54	37.07	27.5	5.46	33.16	336	185	A	V
2.4G wireless (0.25M) 2440MHz		2392.24	46.07	-27.93	74	46.66	27.23	5.39	33.21	100	142	P	H
		2440	91.07	-22.93	114	91.47	27.37	5.42	33.19	100	142	P	H
		2488.36	44.47	-29.53	74	44.68	27.5	5.46	33.17	100	142	P	H
		2392	40.39	-13.61	54	40.98	27.23	5.39	33.21	100	142	A	H
		2440	90.5	-3.5	94	90.9	27.37	5.42	33.19	100	142	A	H
		2488	38.17	-15.83	54	38.38	27.5	5.46	33.17	100	142	A	H
		2392.12	45.42	-28.58	74	46.01	27.23	5.39	33.21	368	178	P	V
		2440	88.96	-25.04	114	89.36	27.37	5.42	33.19	368	178	P	V
		2488.24	44.18	-29.82	74	44.39	27.5	5.46	33.17	368	178	P	V
		2392.12	39.15	-14.85	54	39.74	27.23	5.39	33.21	368	178	A	V
		2440	88.35	-5.65	94	88.75	27.37	5.42	33.19	368	178	A	V
		2488	36.12	-17.88	54	36.33	27.5	5.46	33.17	368	178	A	V



2.4G wireless (0.25M) 2480MHz		2387.08	46.97	-27.03	74	47.57	27.23	5.39	33.22	175	215	P	H
		2480	90.47	-23.53	114	90.74	27.46	5.44	33.17	175	215	P	H
		2483.92	54.09	-19.91	74	54.34	27.46	5.46	33.17	175	215	P	H
		2384.08	42.03	-11.97	54	42.67	27.19	5.39	33.22	175	215	A	H
		2480	89.9	-4.1	94	90.17	27.46	5.44	33.17	175	215	A	H
		2483.56	36.7	-17.3	54	36.95	27.46	5.46	33.17	175	215	A	H
		2384.08	45.84	-28.16	74	46.48	27.19	5.39	33.22	351	180	P	V
		2480	87.05	-26.95	114	87.32	27.46	5.44	33.17	351	180	P	V
		2485	48.78	-25.22	74	49.03	27.46	5.46	33.17	351	180	P	V
		2384.08	40.3	-13.7	54	40.94	27.19	5.39	33.22	351	180	A	V
		2480	86.46	-7.54	94	86.73	27.46	5.44	33.17	351	180	A	V
		2483.56	35.02	-18.98	54	35.27	27.46	5.46	33.17	351	180	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

2.4G wireless (Harmonic @ 3m)

BLE	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
2.4G wireless (0.25M) 2403MHz		4806	47.9	-26.1	74	74.12	31.42	7.11	64.75	100	0	P	H
		7209	52.99	-21.01	74	72.91	35.96	8.9	64.78	100	86	P	H
		7209	46.32	-7.68	54	66.24	35.96	8.9	64.78	100	86	A	H
		12015	55.54	-18.46	74	69.93	39.08	11.73	65.2	100	298	P	H
		12015	48.34	-5.66	54	62.73	39.08	11.73	65.2	100	298	A	H
		4806	56.74	-17.26	74	83.73	31.42	6.34	64.75	100	0	P	V
		4806	48.53	-5.47	54	75.52	31.42	6.34	64.75	100	0	A	V
		7209	53.69	-20.31	74	74.64	35.96	7.87	64.78	348	113	P	V
		7209	47.72	-6.28	54	68.67	35.96	7.87	64.78	348	113	A	V
		12015	47.76	-26.24	74	63.57	39.08	10.31	65.2	100	0	P	V
2.4G wireless (0.25M) 2440MHz		4880	49.72	-24.28	74	75.66	31.56	7.2	64.7	100	0	P	H
		7320	54.33	-19.67	74	73.94	36.22	9	64.83	100	106	P	H
		7320	48.77	-5.23	54	68.38	36.22	9	64.83	100	106	A	H
		12200	55.97	-18.03	74	70.49	38.89	11.83	65.24	100	269	P	H
		12200	49.7	-4.3	54	64.22	38.89	11.83	65.24	100	269	A	H
		4880	49.67	-24.33	74	76.4	31.56	6.41	64.7	100	0	P	V
		7320	56.56	-17.44	74	77.19	36.22	7.98	64.83	100	179	P	V
		7320	51.55	-2.45	54	72.18	36.22	7.98	64.83	100	179	A	V
		12200	46.82	-27.18	74	62.76	38.89	10.41	65.24	100	0	P	V
													V



2.4G wireless (0.25M) 2480MHz		4960	49.58	-24.42	74	75.19	31.73	7.29	64.63	100	0	P	H
		7440	58.06	-15.94	74	77.38	36.49	9.07	64.88	100	61	P	H
		7440	53.21	-0.79	54	72.53	36.49	9.07	64.88	100	61	A	H
		12400	54.93	-19.07	74	69.57	38.69	11.95	65.28	100	294	P	H
		12400	46.83	-7.17	54	61.47	38.69	11.95	65.28	100	294	A	H
		4962	49.8	-24.2	74	76.23	31.73	6.47	64.63	100	0	P	V
		7440	55.18	-18.82	74	75.52	36.49	8.05	64.88	146	186	P	V
		7440	48.8	-5.2	54	69.14	36.49	8.05	64.88	146	186	A	V
		12400	46.85	-27.15	74	62.92	38.69	10.52	65.28	100	0	P	V
Remark	<ol style="list-style-type: none"> 1. No other spurious found. 2. All results are PASS against Peak and Average limit line. 												



2.4GHz 2400~2483.5MHz

2.4G wireless (Band Edge @ 3m)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4G wireless (1M) 2403MHz		2399.32	54.35	-19.65	74	54.94	27.23	5.39	33.21	146	148	P	H
		2403	92.09	-21.91	114	92.63	27.28	5.39	33.21	146	148	P	H
		2496.28	46.49	-27.51	74	46.69	27.5	5.46	33.16	146	148	P	H
		2400	36.21	-17.79	54	36.8	27.23	5.39	33.21	146	148	A	H
		2403	91.52	-2.48	94	92.06	27.28	5.39	33.21	146	148	A	H
		2499.04	40.14	-13.86	54	40.34	27.5	5.46	33.16	146	148	A	H
		2399.92	54.93	-19.07	74	55.52	27.23	5.39	33.21	338	185	P	V
		2403	89.71	-24.29	114	90.25	27.28	5.39	33.21	338	185	P	V
		2495.68	45.16	-28.84	74	45.36	27.5	5.46	33.16	338	185	P	V
		2387.08	35.17	-18.83	54	35.77	27.23	5.39	33.22	338	185	A	V
		2403	89.11	-4.89	94	89.65	27.28	5.39	33.21	338	185	A	V
		2495.92	37.05	-16.95	54	37.25	27.5	5.46	33.16	338	185	A	V
2.4G wireless (1M) 2440MHz		2389.12	45.76	-28.24	74	46.36	27.23	5.39	33.22	100	146	P	H
		2440	91.11	-22.89	114	91.51	27.37	5.42	33.19	100	146	P	H
		2491.12	44.61	-29.39	74	44.82	27.5	5.46	33.17	100	146	P	H
		2392	40.47	-13.53	54	41.06	27.23	5.39	33.21	100	146	A	H
		2440	90.55	-3.45	94	90.95	27.37	5.42	33.19	100	146	A	H
		2488.12	38.18	-15.82	54	38.39	27.5	5.46	33.17	100	146	A	H
		2392.12	45.55	-28.45	74	46.14	27.23	5.39	33.21	368	180	P	V
		2440	89.09	-24.91	114	89.49	27.37	5.42	33.19	368	180	P	V
		2488.36	44.28	-29.72	74	44.49	27.5	5.46	33.17	368	180	P	V
		2392	39.43	-14.57	54	40.02	27.23	5.39	33.21	368	180	A	V
		2440	88.49	-5.51	94	88.89	27.37	5.42	33.19	368	180	A	V
		2488	36.07	-17.93	54	36.28	27.5	5.46	33.17	368	180	A	V



2.4G wireless (1M) 2480MHz		2384.2	47.54	-26.46	74	48.18	27.19	5.39	33.22	177	214	P	H
		2480	90.39	-23.61	114	90.66	27.46	5.44	33.17	177	214	P	H
		2488.48	48.23	-25.77	74	48.44	27.5	5.46	33.17	177	214	P	H
		2384.08	42.19	-11.81	54	42.83	27.19	5.39	33.22	177	214	A	H
		2480	89.82	-4.18	94	90.09	27.46	5.44	33.17	177	214	A	H
		2483.68	36.01	-17.99	54	36.26	27.46	5.46	33.17	177	214	A	H
		2387.2	45.73	-28.27	74	46.33	27.23	5.39	33.22	349	174	P	V
		2480	87.16	-26.84	114	87.43	27.46	5.44	33.17	349	174	P	V
		2483.8	51.13	-22.87	74	51.38	27.46	5.46	33.17	349	174	P	V
		2387.32	40.26	-13.74	54	40.86	27.23	5.39	33.22	349	174	A	V
		2480	86.56	-7.44	94	86.83	27.46	5.44	33.17	349	174	A	V
	2483.56	35.02	-18.98	54	35.27	27.46	5.46	33.17	349	174	A	V	
Remark	3. No other spurious found. 4. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

BLE	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
2.4G wireless (1M) 2403MHz		4806	48.75	-25.25	74	74.97	31.42	7.11	64.75	100	0	P	H
		7209	52.96	-21.04	74	72.88	35.96	8.9	64.78	100	87	P	H
		7209	46.7	-7.3	54	66.62	35.96	8.9	64.78	100	87	A	H
		12015	55.53	-18.47	74	69.92	39.08	11.73	65.2	100	295	P	H
		12015	48.07	-5.93	54	62.46	39.08	11.73	65.2	100	295	A	H
		4806	55.6	-18.4	74	82.59	31.42	6.34	64.75	100	0	P	V
		4806	48.16	-5.84	54	75.15	31.42	6.34	64.75	100	0	A	V
		7209	54	-20	74	74.95	35.96	7.87	64.78	358	112	P	V
		7209	48.2	-5.8	54	69.15	35.96	7.87	64.78	358	112	A	V
		12015	47.57	-26.43	74	63.38	39.08	10.31	65.2	100	0	P	V
2.4G wireless (1M) 2440MHz		4880	49.72	-24.28	74	75.66	31.56	7.2	64.7	100	0	P	H
		7320	53.84	-20.16	74	73.45	36.22	9	64.83	100	118	P	H
		7320	47.84	-6.16	54	67.45	36.22	9	64.83	100	118	A	H
		12200	55.83	-18.17	74	70.35	38.89	11.83	65.24	100	294	P	H
		12200	48.55	-5.45	54	63.07	38.89	11.83	65.24	100	294	A	H
		4880	49.34	-24.66	74	76.07	31.56	6.41	64.7	100	0	P	V
		7320	55.15	-18.85	74	75.78	36.22	7.98	64.83	100	188	P	V
		7320	49.67	-4.33	54	70.3	36.22	7.98	64.83	100	188	A	V
		12200	46.44	-27.56	74	62.38	38.89	10.41	65.24	100	0	P	V



2.4G wireless (1M) 2480MHz		4960	49.25	-24.75	74	74.86	31.73	7.29	64.63	100	0	P	H
		7440	58.31	-15.69	74	77.63	36.49	9.07	64.88	100	61	P	H
		7440	53.42	-0.58	54	72.74	36.49	9.07	64.88	100	61	A	H
		12400	55.78	-18.22	74	70.42	38.69	11.95	65.28	100	265	P	H
		12400	47.97	-6.03	54	62.61	38.69	11.95	65.28	100	265	A	H
		4960	49.95	-24.05	74	76.38	31.73	6.47	64.63	100	0	P	V
		7440	54.21	-19.79	74	74.55	36.49	8.05	64.88	125	185	P	V
		7440	48.62	-5.38	54	68.96	36.49	8.05	64.88	125	185	A	V
		12400	47.18	-26.82	74	63.25	38.69	10.52	65.28	100	0	P	V
Remark	3. No other spurious found. 4. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

2.4G wireless (Band Edge @ 3m)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4G wireless (2M) 2403MHz		2399.92	56.9	-17.1	74	57.49	27.23	5.39	33.21	124	145	P	H
		2403	92.23	-21.77	114	92.77	27.28	5.39	33.21	124	145	P	H
		2496.04	46	-28	74	46.2	27.5	5.46	33.16	124	145	P	H
		2400	36.16	-17.84	54	36.75	27.23	5.39	33.21	124	145	A	H
		2403	91.64	-2.36	94	92.18	27.28	5.39	33.21	124	145	A	H
		2495.92	40.19	-13.81	54	40.39	27.5	5.46	33.16	124	145	A	H
		2399.92	55.54	-18.46	74	56.13	27.23	5.39	33.21	378	177	P	V
		2403	90	-24	114	90.54	27.28	5.39	33.21	378	177	P	V
		2499.52	44.22	-29.78	74	44.42	27.5	5.46	33.16	378	177	P	V
		2387.08	35.05	-18.95	54	35.65	27.23	5.39	33.22	378	177	A	V
		2403	89.44	-4.56	94	89.98	27.28	5.39	33.21	378	177	A	V
		2495.92	37.36	-16.64	54	37.56	27.5	5.46	33.16	378	177	A	V



2.4G wireless (2M) 2440MHz		2392.12	46.24	-27.76	74	46.83	27.23	5.39	33.21	100	146	P	H
		2440	91.25	-22.75	114	91.65	27.37	5.42	33.19	100	146	P	H
		2491.12	44.6	-29.4	74	44.81	27.5	5.46	33.17	100	146	P	H
		2392	40.55	-13.45	54	41.14	27.23	5.39	33.21	100	146	A	H
		2440	90.69	-3.31	94	91.09	27.37	5.42	33.19	100	146	A	H
		2488.12	38.28	-15.72	54	38.49	27.5	5.46	33.17	100	146	A	H
		2392	45.86	-28.14	74	46.45	27.23	5.39	33.21	366	177	P	V
		2440	89.18	-24.82	114	89.58	27.37	5.42	33.19	366	177	P	V
		2488.48	43.98	-30.02	74	44.19	27.5	5.46	33.17	366	177	P	V
		2392	39.38	-14.62	54	39.97	27.23	5.39	33.21	366	177	A	V
		2440	88.58	-5.42	94	88.98	27.37	5.42	33.19	366	177	A	V
		2488.12	36.28	-17.72	54	36.49	27.5	5.46	33.17	366	177	A	V



2.4G wireless (2M) 2480MHz		2384.08	46.97	-27.03	74	47.61	27.19	5.39	33.22	176	214	P	H
		2480	90.6	-23.4	114	90.87	27.46	5.44	33.17	176	214	P	H
		2484.28	54.39	-19.61	74	54.64	27.46	5.46	33.17	176	214	P	H
		2384.08	42.3	-11.7	54	42.94	27.19	5.39	33.22	176	214	A	H
		2480.08	90.03	-3.97	94	90.3	27.46	5.44	33.17	176	214	A	H
		2483.56	36.82	-17.18	54	37.07	27.46	5.46	33.17	176	214	A	H
		2387.32	45.67	-28.33	74	46.27	27.23	5.39	33.22	400	178	P	V
		2480	87.72	-26.28	114	87.99	27.46	5.44	33.17	400	178	P	V
		2484.16	51.66	-22.34	74	51.91	27.46	5.46	33.17	400	178	P	V
		2384.08	40.18	-13.82	54	40.82	27.19	5.39	33.22	400	178	A	V
		2480	87.16	-6.84	94	87.43	27.46	5.44	33.17	400	178	A	V
		2483.56	35.26	-18.74	54	35.51	27.46	5.46	33.17	400	178	A	V
Remark	5. No other spurious found. 6. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

2.4G wireless (Harmonic @ 3m)

BLE	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
2.4G wireless (2M) 2403MHz		4806	47.94	-26.06	74	74.16	31.42	7.11	64.75	100	0	P	H
		7209	53.48	-20.52	74	73.4	35.96	8.9	64.78	103	90	P	H
		7209	46.93	-7.07	54	66.85	35.96	8.9	64.78	103	90	A	H
		12015	55.49	-18.51	74	69.88	39.08	11.73	65.2	100	297	P	H
		12015	48.34	-5.66	54	62.73	39.08	11.73	65.2	100	297	A	H
		4806	55.57	-18.43	74	82.56	31.42	6.34	64.75	100	1	P	V
		4806	47.97	-6.03	54	74.96	31.42	6.34	64.75	100	1	A	V
		7209	53.93	-20.07	74	74.88	35.96	7.87	64.78	346	116	P	V
		7209	48.23	-5.77	54	69.18	35.96	7.87	64.78	346	116	A	V
		12015	45.96	-28.04	74	61.77	39.08	10.31	65.2	100	0	P	V
2.4G wireless (2M) 2440MHz		4880	49.82	-24.18	74	75.76	31.56	7.2	64.7	100	0	P	H
		7320	53.54	-20.46	74	73.15	36.22	9	64.83	100	102	P	H
		7320	48.01	-5.99	54	67.62	36.22	9	64.83	100	102	A	H
		12200	55.89	-18.11	74	70.41	38.89	11.83	65.24	100	277	P	H
		12200	48.46	-5.54	54	62.98	38.89	11.83	65.24	100	277	A	H
		4880	49.84	-24.16	74	76.57	31.56	6.41	64.7	100	0	P	V
		7320	56.47	-17.53	74	77.1	36.22	7.98	64.83	100	178	P	V
		7320	51.5	-2.5	54	72.13	36.22	7.98	64.83	100	178	A	V
		12200	46.59	-27.41	74	62.53	38.89	10.41	65.24	100	0	P	V
													V



2.4G wireless (2M) 2480MHz		4960	49.14	-24.86	74	74.75	31.73	7.29	64.63	100	0	P	H
		7440	58.1	-15.9	74	77.42	36.49	9.07	64.88	100	63	P	H
		7440	53.11	-0.89	54	72.43	36.49	9.07	64.88	100	63	A	H
		12400	55.74	-18.26	74	70.38	38.69	11.95	65.28	100	269	P	H
		12400	49.11	-4.89	54	63.75	38.69	11.95	65.28	100	269	A	H
		4960	49.82	-24.18	74	76.25	31.73	6.47	64.63	100	0	P	V
		7440	55.37	-18.63	74	75.71	36.49	8.05	64.88	121	183	P	V
		7440	50.34	-3.66	54	70.68	36.49	8.05	64.88	121	183	A	V
		12400	48.19	-25.81	74	64.26	38.69	10.52	65.28	100	0	P	V
Remark	5. No other spurious found. 6. All results are PASS against Peak and Average limit line.												



Emission below 1GHz

2.4GHz wireless (LF)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)	
2.4GHz wireless LF		30	25.83	-14.17	40	31.96	26.1	0.53	32.76	100	0	P	H	
		33.51	24.73	-15.27	40	33.09	23.86	0.53	32.75	-	-	P	H	
		98.31	18.57	-24.93	43.5	34.23	16.14	0.97	32.77	-	-	P	H	
		370.7	21.89	-24.11	46	31.14	21.69	1.81	32.75	-	-	P	H	
		826.4	29.21	-16.79	46	31	28.32	2.63	32.74	-	-	P	H	
		958.7	31.15	-14.85	46	30.01	30	2.79	31.65	-	-	P	H	
														H
														H
														H
														H
														H
														H
			30	34.01	-5.99	40	40.14	26.1	0.53	32.76	-	-	P	V
			36.75	34.46	-5.54	40	44.5	22.18	0.53	32.75	100	0	P	V
			98.31	24.38	-19.12	43.5	40.04	16.14	0.97	32.77	-	-	P	V
			427.4	22.75	-23.25	46	30.76	22.85	1.93	32.79	-	-	P	V
			667.5	26.97	-19.03	46	31.51	26.1	2.35	32.99	-	-	P	V
			884.5	30.61	-15.39	46	31.56	28.7	2.74	32.39	-	-	P	V
														V
														V
													V	
													V	
													V	
Remark	1. No other spurious found. 2. All results are PASS against limit line.													



Note symbol

*	Fundamental Frequency which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is over limit line.
P/A	Peak or Average
H/V	Horizontal or Vertical



A calculation example for radiated spurious emission is shown as below:

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

- 1. Level(dBμV/m) =
Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
- 2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

- 1. Level(dBμV/m)
= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)
= 55.45 (dBμV/m)
- 2. Over Limit(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 55.45(dBμV/m) – 74(dBμV/m)
= -18.55(dB)

For Average Limit @ 2390MHz:

- 1. Level(dBμV/m)
= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)
= 43.54 (dBμV/m)
- 2. Over Limit(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 43.54(dBμV/m) – 54(dBμV/m)
= -10.46(dB)

Both peak and average measured complies with the limit line, so test result is “PASS”.



Appendix C. Radiated Spurious Emission Plots

Test Engineer :	Tsung Lee and Stan Hsieh	Temperature :	22~24°C
		Relative Humidity :	45~47%

Note symbol

-L	Low channel location
-R	High channel location



2.4GHz 2400~2483.5MHz

2.4G wireless(0.25M) (Band Edge @ 3m)

		2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	2.4G wireless 2403MHz		
1	Horizontal	Fundamental	
Peak		<p>Site : 03CH0-11Y Condition : 15.245 3m HORN 91200-1HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 1</p>	
Avg.		<p>Site : 03CH0-11Y Condition : 15.249(AVG) 3m HORN 91200-1HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 1</p>	



		2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	2.4G wireless 2403MHz		
1	Vertical	Fundamental	
Peak		<p>Site : 03CH10-11Y Condition : 15.249 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 1</p>	
Avg		<p>Site : 03CH10-11Y Condition : 15.249(AVG) 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 1</p>	



		2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	2.4G wireless 2440MHz		
1	Horizontal	Fundamental	
Peak		<p>Site : 03CH10-FY Condition : 15.249 3m HORN 91200-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 2</p>	
Avg.		<p>Site : 03CH10-FY Condition : 15.249(AVG) 3m HORN 91200-HF HORIZONTAL RBW:1000.000KHz VBW:5.010KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 2</p>	



		2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	2.4G wireless 2440MHz		
1	Vertical	Fundamental	
Peak		<p>Site : 03CH10-11Y Condition : 15.249 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : Z</p>	
Avg.		<p>Site : 03CH10-11Y Condition : 15.249(AVG) 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : Z</p>	



		2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	2.4G wireless 2480MHz		
1	Horizontal	Fundamental	
Peak		<p>Site : 03CH10-11Y Condition : 15.249 3m HORN 91200-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 3</p>	
Avg.		<p>Site : 03CH10-11Y Condition : 15.249(AVG) 3m HORN 91200-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 3</p>	



		2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	2.4G wireless 2480MHz		
1	Vertical	Fundamental	
Peak		<p>Site : 03CH10-11Y Condition : 15.249 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 3</p>	
Avg.		<p>Site : 03CH10-11Y Condition : 15.249(AVG) 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 3</p>	



2.4GHz 2400~2483.5MHz

2.4G wireless (0.25M) (Harmonic @ 3m)

		2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	2.4G wireless 2403MHz		
1	Horizontal	Vertical	
<p>Peak</p> <p>Avg.</p>	<p>Site : 03CH10-11Y Condition : 15.249 3m HORN_9170_40G_0584 HORIZONTAL Detector : Peak Project : 6N3004 Mode : 1</p>	<p>Site : 03CH10-11Y Condition : 15.249 3m HORN_9170_40G_0584 VERTICAL Detector : Peak Project : 6N3004 Mode : 1</p>	



		2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	2.4G wireless 2440MHz		
1	Horizontal	Vertical	
<p>Peak</p> <p>Avg.</p>	<p>Site : 03CH0-11Y Condition : 15.249 3m HORN_9170_40G_0584 HORIZONTAL Detector : Peak Project : 6N3004 Mode : Z</p>	<p>Site : 03CH0-11Y Condition : 15.249 3m HORN_9170_40G_0584 VERTICAL Detector : Peak Project : 6N3004 Mode : Z</p>	



		2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	2.4G wireless 2480MHz		
1	Horizontal	Vertical	
Peak	<p>Site : 03CH10-11Y Condition : 15.249 3m HORN_9170_40G_0584 HORIZONTAL Detector : Peak Project : 6N3004 Mode : 3</p>	<p>Site : 03CH10-11Y Condition : 15.249 3m HORN_9170_40G_0584 VERTICAL Detector : Peak Project : 6N3004 Mode : 3</p>	



2.4GHz 2400~2483.5MHz

2.4G wireless (1M) (Band Edge @ 3m)

		2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	2.4G wireless 2403MHz		
1	Horizontal	Fundamental	
Peak		<p>Site : 03CH10-11Y Condition : 15.249 3m HORN 9120D-1HF HORIZONTAL Detector : Peak Project : 6N3004 Mode : 4</p>	
Avg.		<p>Site : 03CH10-11Y Condition : 15.249(AVG) 3m HORN 9120D-1HF HORIZONTAL Detector : Peak Project : 6N3004 Mode : 4</p>	



		2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	2.4G wireless 2403MHz		
1	Vertical	Fundamental	
Peak		<p>Site : 03CH0-IHY Condition : 15.249 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 4</p>	
Avg		<p>Site : 03CH0-IHY Condition : 15.249(AVG) 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 4</p>	



		2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	2.4G wireless 2440MHz		
1	Horizontal	Fundamental	
Peak		<p> Site : 03CH10-FY Condition : 15.249 3m HORN 91200-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 5 </p>	
Avg.		<p> Site : 03CH10-FY Condition : 15.249(AVG) 3m HORN 91200-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 5 </p>	



		2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	2.4G wireless 2440MHz		
1	Vertical	Fundamental	
Peak		<p>Site : 03CH10-11Y Condition : 15.249 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 5</p>	
Avg.		<p>Site : 03CH10-11Y Condition : 15.249(AVG) 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 5</p>	



		2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	2.4G wireless 2480MHz		
1	Horizontal	Fundamental	
Peak		<p> Site : 03CH10-11Y Condition : 15.249 3m HORN 91200-11F HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 6 </p>	
Avg.		<p> Site : 03CH10-11Y Condition : 15.249(AVG) 3m HORN 91200-11F HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 6 </p>	



		2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	2.4G wireless 2480MHz		
1	Vertical	Fundamental	
Peak		<p>Site : 03CH10-11Y Condition : 15.249 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 6</p>	
Avg.		<p>Site : 03CH10-11Y Condition : 15.249(AVG) 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 6</p>	



2.4GHz 2400~2483.5MHz

2.4G wireless (1M) (Harmonic @ 3m)

		2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	2.4G wireless 2403MHz		
1	Horizontal	Vertical	
<p>Peak</p> <p>Avg.</p>	<p>Site : 03CH10-11Y Condition : 15.249 3m HORN_9170_40G_0584 HORIZONTAL Detector : Peak Project : 6N3004 Mode : -4</p>	<p>Site : 03CH10-11Y Condition : 15.249 3m HORN_9170_40G_0584 VERTICAL Detector : Peak Project : 6N3004 Mode : -4</p>	



		2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	2.4G wireless 2440MHz		
1	Horizontal	Vertical	
<p>Peak</p> <p>Avg.</p>	<p>Site : 03CH0-11Y Condition : 15249 3m HORN_9170_40G_0584 HORIZONTAL Detector : Peak Project : 6N3004 Mode : 5</p>	<p>Site : 03CH0-11Y Condition : 15249 3m HORN_9170_40G_0584 VERTICAL Detector : Peak Project : 6N3004 Mode : 5</p>	



		2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	2.4G wireless 2480MHz		
1	Horizontal	Vertical	
Peak	<p>Site : 03CH10-11Y Condition : 15.249 3m HORN_9170_40G_0584 HORIZONTAL Detector : Peak Project : 6N3004 Mode : -6</p>	<p>Site : 03CH10-11Y Condition : 15.249 3m HORN_9170_40G_0584 VERTICAL Detector : Peak Project : 6N3004 Mode : -6</p>	



2.4GHz 2400~2483.5MHz

2.4G wireless (2M) (Band Edge @ 3m)

		2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	2.4G wireless 2403MHz		
1	Horizontal	Fundamental	
Peak		<p> Site : 03CH0-1#Y Condition : 15.249 3m HORN 91200-1#F HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 7 </p>	
Avg.		<p> Site : 03CH0-1#Y Condition : 15.249(AVG) 3m HORN 91200-1#F HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 7 </p>	



		2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	2.4G wireless 2403MHz		
1	Vertical	Fundamental	
Peak		<p>Site : 03CH10-11Y Condition : 15.249 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 7</p>	
Avg		<p>Site : 03CH10-11Y Condition : 15.249(AVG) 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 7</p>	



		2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	2.4G wireless 2440MHz		
1	Horizontal	Fundamental	
Peak		<p>Site : 03CH10-FY Condition : 15.249 3m HORN 91200-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 8</p>	
Avg.		<p>Site : 03CH10-FY Condition : 15.249(AVG) 3m HORN 91200-HF HORIZONTAL RBW:1000.000KHz VBW:5.010KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 8</p>	



		2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	2.4G wireless 2440MHz		
1	Vertical	Fundamental	
Peak		<p>Site : 03CH10-11Y Condition : 15.249 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : B</p>	
Avg.		<p>Site : 03CH10-11Y Condition : 15.249(AVG) 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : B</p>	



		2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	2.4G wireless 2480MHz		
1	Horizontal	Fundamental	
Peak		<p>Site : 03CH10-11Y Condition : 15.249 3m HORN 91200-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 9</p>	
Avg.		<p>Site : 03CH10-11Y Condition : 15.249(AVG) 3m HORN 91200-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 9</p>	



		2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	2.4G wireless 2480MHz		
1	Vertical	Fundamental	
Peak		<p>Site : 03CH10-11Y Condition : 15.249 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 9</p>	
Avg.		<p>Site : 03CH10-11Y Condition : 15.249(AVG) 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6N3004 Mode : 9</p>	



2.4GHz 2400~2483.5MHz

2.4G wireless (2M) (Harmonic @ 3m)

2.4GHz 2400~2483.5MHz Harmonic @ 3m		
ANT	2.4G wireless 2403MHz	
1	Horizontal Vertical	
Peak Avg.	<p>Site : 03CH10-11Y Condition : 15.249 3m HORN_9170_40G_0584 HORIZONTAL Detector : Peak Project : 6N3004 Mode : 7</p>	<p>Site : 03CH10-11Y Condition : 15.249 3m HORN_9170_40G_0584 VERTICAL Detector : Peak Project : 6N3004 Mode : 7</p>



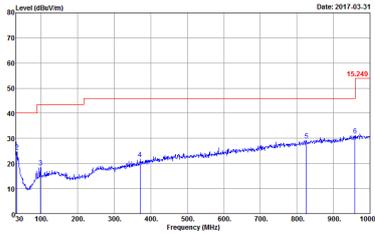
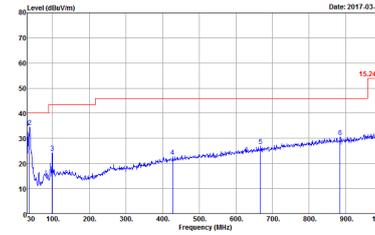
		2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	2.4G wireless 2440MHz		
1	Horizontal	Vertical	
Peak Avg.	<p>Site : 03CH10-11Y Condition : 15.249 3m HORN_9170_40G_0584 HORIZONTAL Detector : Peak Project : 6N3004 Mode : S</p>	<p>Site : 03CH10-11Y Condition : 15.249 3m HORN_9170_40G_0584 VERTICAL Detector : Peak Project : 6N3004 Mode : S</p>	



		2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	2.4G wireless 2480MHz		
1	Horizontal	Vertical	
Peak	<p>Site : 03CH10-111 Condition : 15249 3m HORN_9170_40G_0584 HORIZONTAL Detector : Peak Project : 6N3004 Mode : 9</p>	<p>Site : 03CH10-111 Condition : 15249 3m HORN_9170_40G_0584 VERTICAL Detector : Peak Project : 6N3004 Mode : 9</p>	



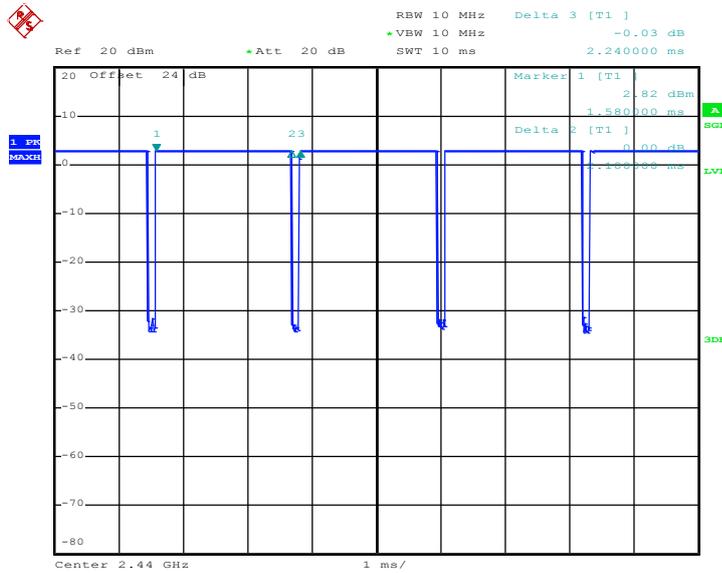
Emission below 1GHz
2.4GHz wireless (LF)

		2.4GHz 2400~2483.5MHz	
ANT	2.4G wireless LF		
1	Horizontal	Vertical	
QP / Peak	 <p>Site : 03CH10-11Y Condition : 15.249 3m BE LOG 6111D-LF HORIZONTAL Detector : Peak Project : 6N3004 Mode : 13</p>	 <p>Site : 03CH10-11Y Condition : 15.249 3m BE LOG 6111D-LF VERTICAL Detector : Peak Project : 6N3004 Mode : 13</p>	

Appendix D. Duty Cycle Plots

Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
2.4GHz wireless (0.25M)	93.75	2100	0.48	1kHz

2.4GHz wireless (0.25M)

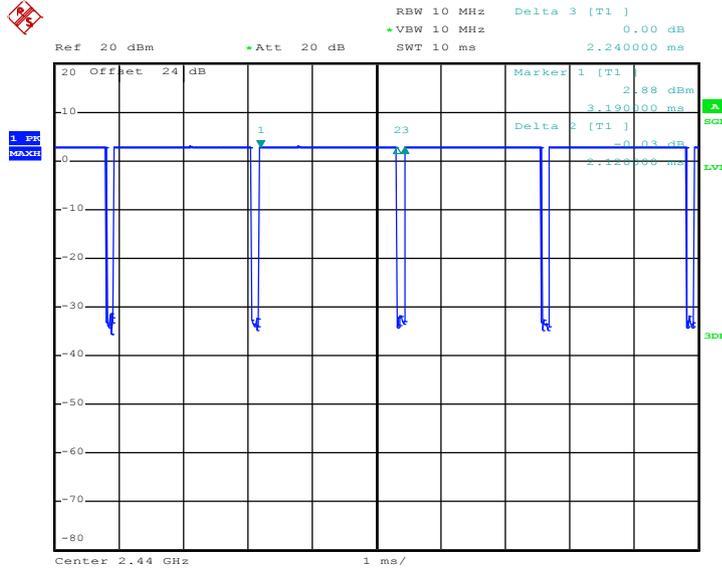


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Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
2.4GHz wireless (1M)	94.64	2120	0.47	1kHz

2.4GHz wireless (1M)

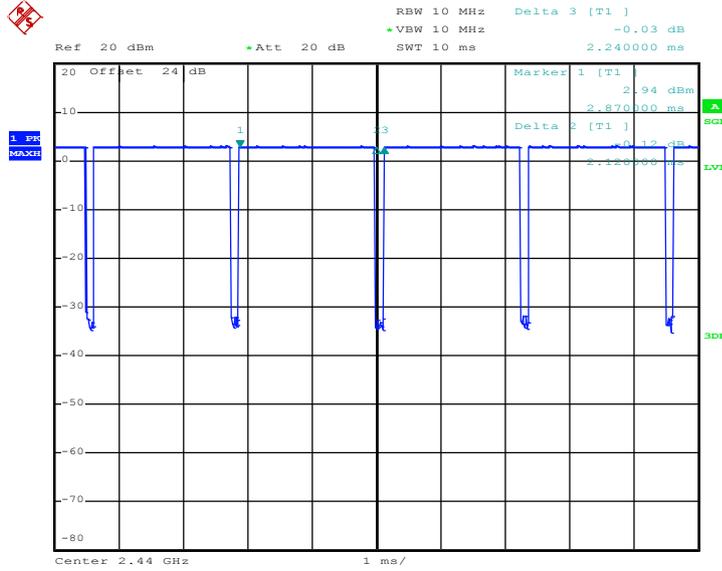


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Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
2.4GHz wireless (2M)	94.64	2120	0.47	1kHz

2.4GHz wireless (2M)



Date: 31.MAR.2017 17:52:33