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FCC RADIO TEST REPORT

Applicant's company	**J-MEX Inc.**
Applicant Address	B2, 3F, No. 1, Li-Hsin 1st Road, SBIP Hsin Chu, 300 Taiwan
FCC ID	**XXAMOTIWEARABLE**
Manufacturer's company	**J-MEX Inc.**
Manufacturer Address	B2, 3F, No. 1, Li-Hsin 1st Road, SBIP Hsin Chu, 300 Taiwan

Product Name	MOTi Gym Wearable
Brand Name	MOTi
Model Name	MOTi Gym Wearable
Test Rule Part(s)	47 CFR FCC Part 15 Subpart C § 15.249
Test Freq. Range	2402 ~ 2480MHz
Received Date	Sep. 30, 2015
Final Test Date	Nov. 13, 2015
Submission Type	Original Equipment

Statement

The test result in this report refers exclusively to the presented test model / sample.
Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.
The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in **ANSI C63.10-2013** and **47 CFR FCC Part 15 Subpart C**.
The test equipment used to perform the test is calibrated and traceable to NML/ROC.

Testing Laboratory
1190

Table of Contents

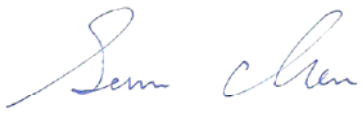
History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR593034	Rev. 01	Initial issue of report	Nov. 13, 2015

1. VERIFICATION OF COMPLIANCE

Product Name	:	**MOTi Gym Wearable**
Brand Name	:	**MOTi**
Model Name	:	**MOTi Gym Wearable**
Applicant	:	**J-MEX Inc.**
Test Rule Part(s)	:	**47 CFR FCC Part 15 Subpart C § 15.249**

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Sep. 30, 2015 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.



Reviewed By:
Sam Chen
SPORTON INTERNATIONAL INC.

2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart C				
Part	**Rule Section**	**Description of Test**	**Result**	**Under Limit**
4.1	15.207	AC Power Line Conducted Emissions	Complies	19.87 dB
4.2	15.249(a)	Field Strength of Fundamental Emissions	Complies	8.20 dB
4.3	15.215(c)	20dB Spectrum Bandwidth	Complies	-
4.4	15.249(a)/(d)	Radiated Emissions	Complies	2.79 dB
4.5	15.249(d)	Band Edge Emissions	Complies	10.29 dB
4.6	15.203	Antenna Requirements	Complies	-

3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Power Type	From host system
Modulation	DSSS
Data Rate (Mbps)	GFSK: 1
Frequency Range	2400 ~ 2483.5MHz
Operation Frequency Range	2402 ~ 2480MHz
Channel Number	40 (37 hopping + 3 advertising channel)
Channel Space	2 MHz Bandwidth
Channel Band Width (99%)	2.808 MHz
Max. Field Strength	85.80 dBuV/m at 3m (Average)
Carrier Frequencies	Please refer to section 3.3
Antenna	Please refer to section 3.4

3.2. Accessories

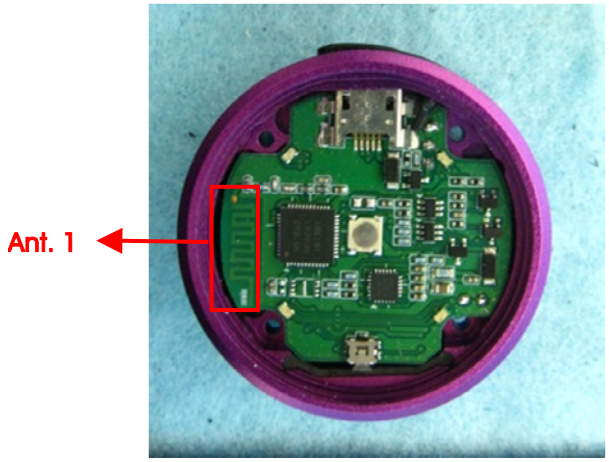
Description
USB cable*1: Shielded, 0.2m
Pedestal*1
Belt*2

3.3. Table for Carrier Frequencies

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
2400 ~ 2483.5MHz	0	2402 MHz	20	2442 MHz
	1	2404 MHz	:	:
	2	2406 MHz	37	2476 MHz
	:	:	38	2478 MHz
	18	2438 MHz	39	2480 MHz
	19	2440 MHz	-	-

3.4. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	-	-	Printed Antenna	N/A	-11.48



3.5. 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.

Test Items	Mode	Channel	Antenna
AC Power Line Conducted Emissions	Normal Link	-	-
Field Strength of Fundamental Emissions 20dB Spectrum Bandwidth	CTX	0/20/39	1
Radiated Emissions 30MHz ~ 1GHz	Normal Link	-	-
Radiated Emissions 1GHz~10th Harmonic	CTX	0/20/39	1
Band Edge Emissions	CTX	0/20/39	1

Note: CTX=continuously transmitting

The following test modes were performed for all tests:

For Conducted Emission test:

Mode 1. Normal Link + charge

For Radiated Emission test (Below 1GHz):

After evaluating the CTX mode (placing the EUT in the middle of the table) and Normal mode (placing the EUT on the edge of the table), Normal mode was the worst case and it's recorded in the test report and photos.

Mode 1. Normal Link + charge in X axis

Mode 2. Normal Link + charge in Y axis

Mode 3. Normal Link + charge in Z axis

Mode 1 is the worst case, so it was selected to record in this test report

For Radiated Emission test (Above 1GHz):

The EUT was performed at X axis, Y axis and Z axis position for Radiated emission above 1GHz test, and the

worst case was found at X axis. So the measurement will follow this same test configuration.

Mode 1. CTX - X axis

3.6. Table for Testing Locations

Test Site Location					
Address:	No.8, Lane 724, Bo-ai St., Jhubei City, Hsinchu County 302, Taiwan, R.O.C.				
TEL:	886-3-656-9065				
FAX:	886-3-656-9085				
Test Site No.	**Site Category**	**Location**	**FCC Reg. No.**	**IC File No.**	**VCCI Reg. No**
03CH01-CB	SAC	Hsin Chu	262045	IC 4086D	-
CO01-CB	Conduction	Hsin Chu	262045	IC 4086D	-
TH01-CB	OVEN Room	Hsin Chu	-	-	-

Open Area Test Site (OATS); Semi Anechoic Chamber (SAC); Fully Anechoic Chamber (FAC).

3.7. Table for Supporting Units

For Test Site No: CO01-CB

Support Unit	Brand	Model	FCC ID
iPad	Apple	A1430	DoC
NB	DELL	E6430	DoC
Earphone	e-Power	S90W	N/A
Mouse	Logitech	M-U0026	DoC

For Test Site No: 03CH01-CB (Below 1GHz)

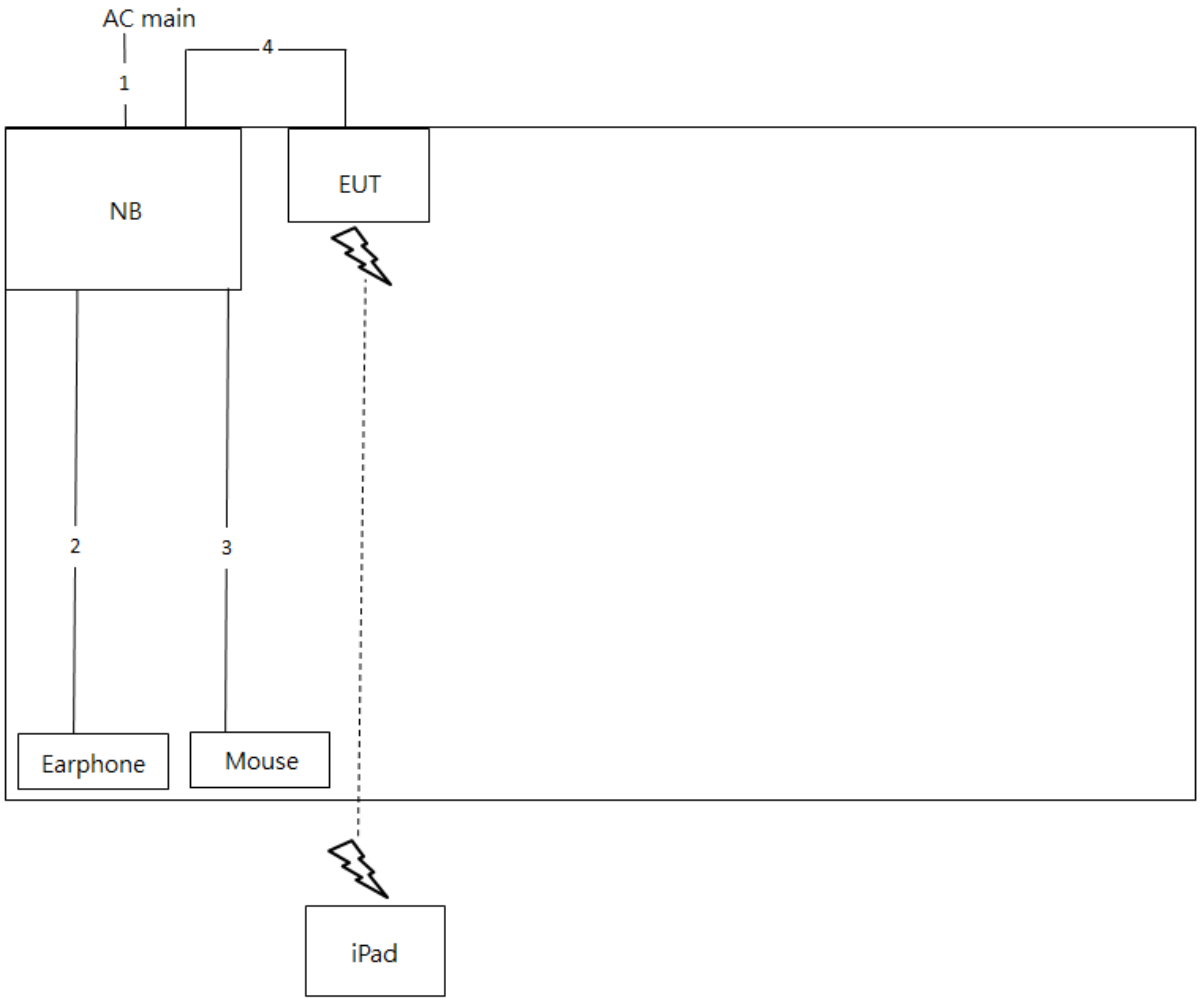
Support Unit	Brand	Model	FCC ID
iPad	Apple	A1430	DoC
NB	DELL	E4300	DoC
Earphone	e-Power	S90W	N/A
Mouse	Logitech	M-U0026	DoC

3.8. Duty Cycle

On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
2.138	2.225	96.10	0.17	0.47

3.9. Test Configurations

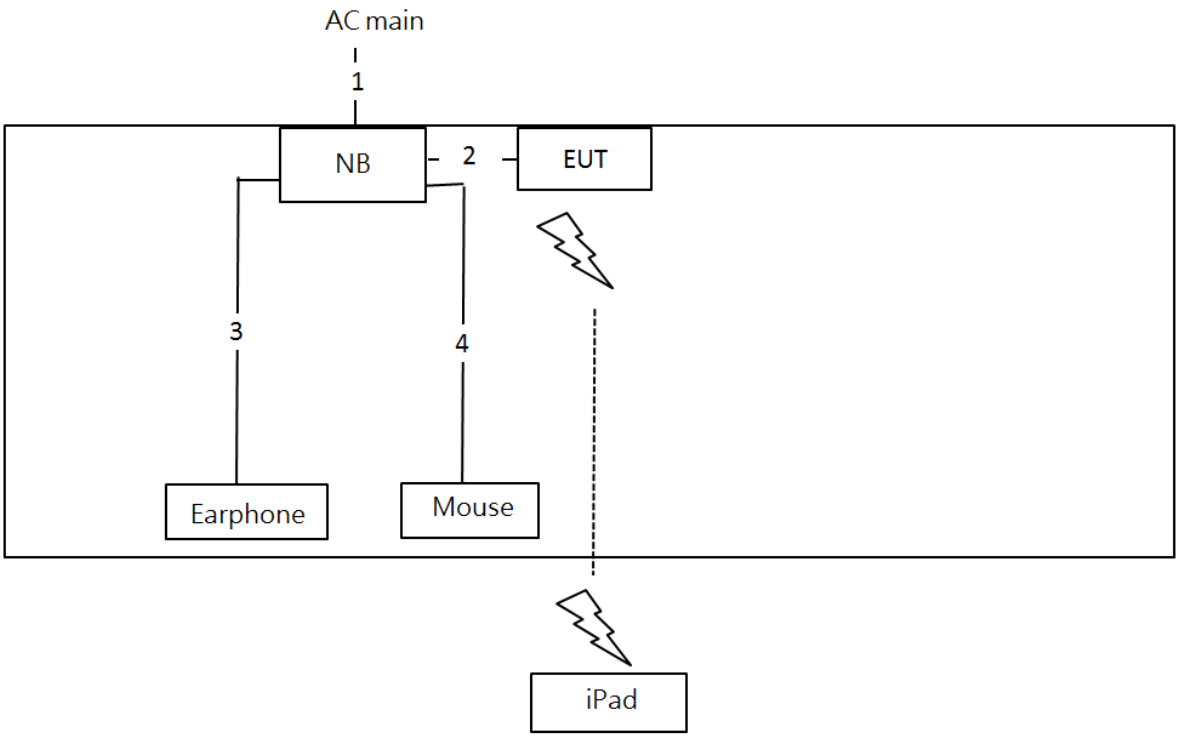
3.9.1. AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shielded	Length
1	Power cable	No	2.6m
2	Audio cable	No	1.4m
3	USB cable	Yes	1.8m
4	USB cable	Yes	0.2m

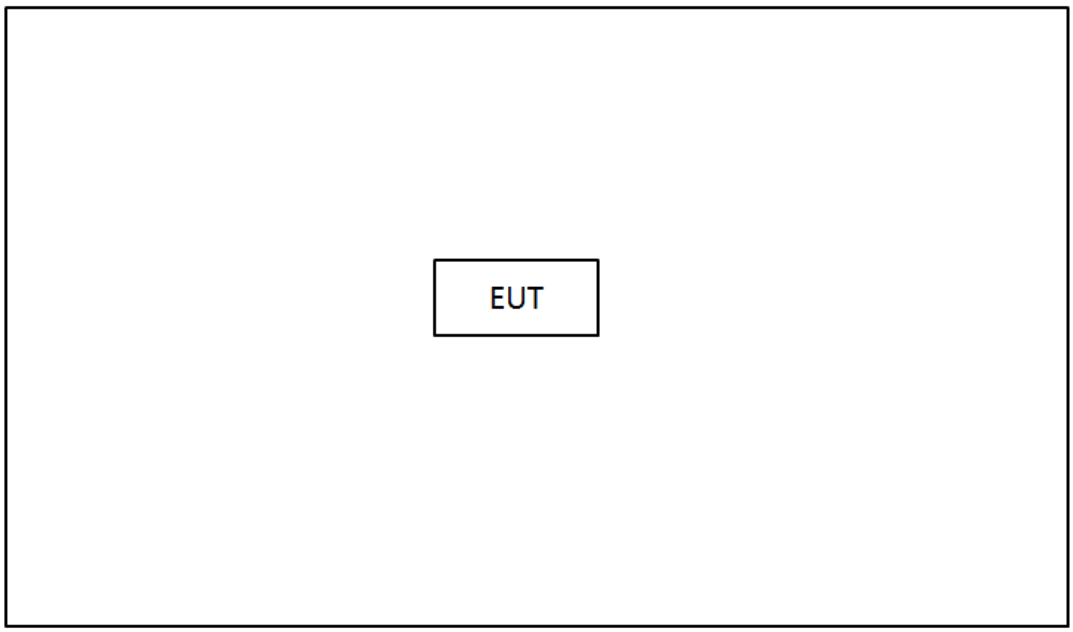
3.9.2. Radiation Emissions Test Configuration

Test Configuration: 30MHz~1GHz



Item	Connection	Shielded	Length
1	Power cable	No	2.6m
2	USB cable	Yes	0.2m
3	Audio cable	No	1.4m
4	USB cable	Yes	1.8m

Test Configuration: Above 1GHz



4. TEST RESULT

4.1. AC Power Line Conducted Emissions Measurement

4.1.1. Limit

For this product 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 (dBuV)	AV Limit (dBuV)
0.15~0.5	66~56	56~46
0.5~5	56	46
5~30	60	50

4.1.2. Measuring Instruments and Setting

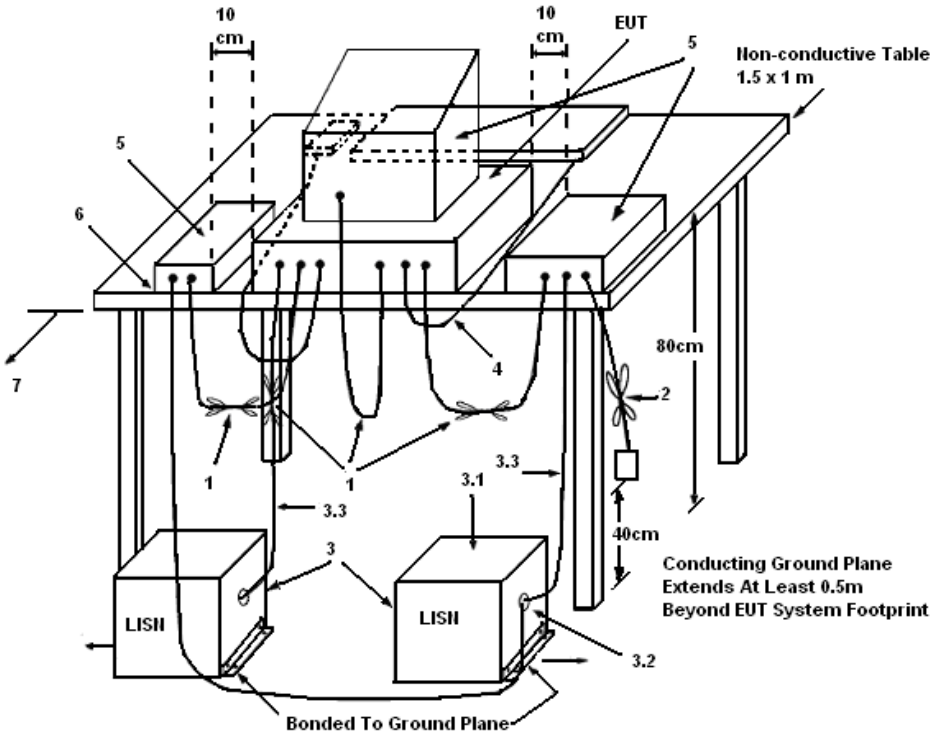
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

4.1.3. Test Procedures

1. Configure the EUT according to ANSI C63.10. 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 with Maximum Hold Mode.
6. The measurement has to be done between each power line and ground at the power terminal.

4.1.4. 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.

4.1.5. Test Deviation

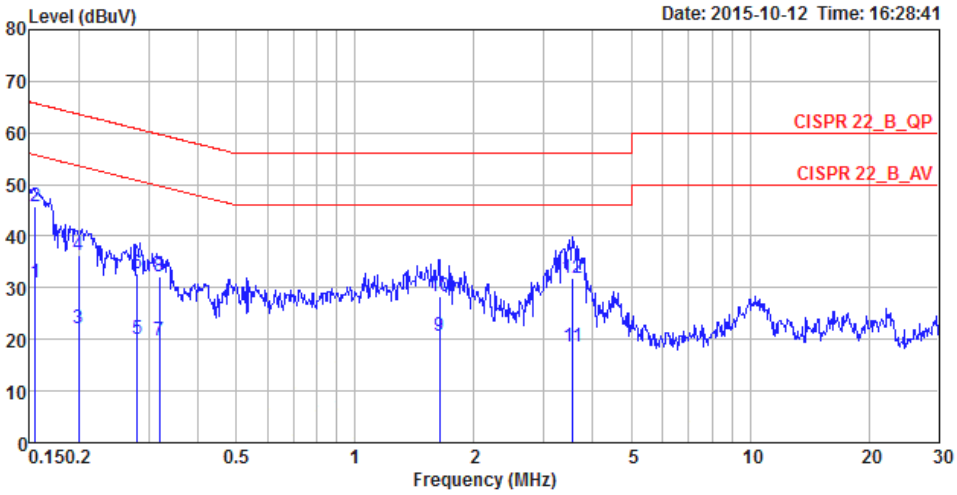
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

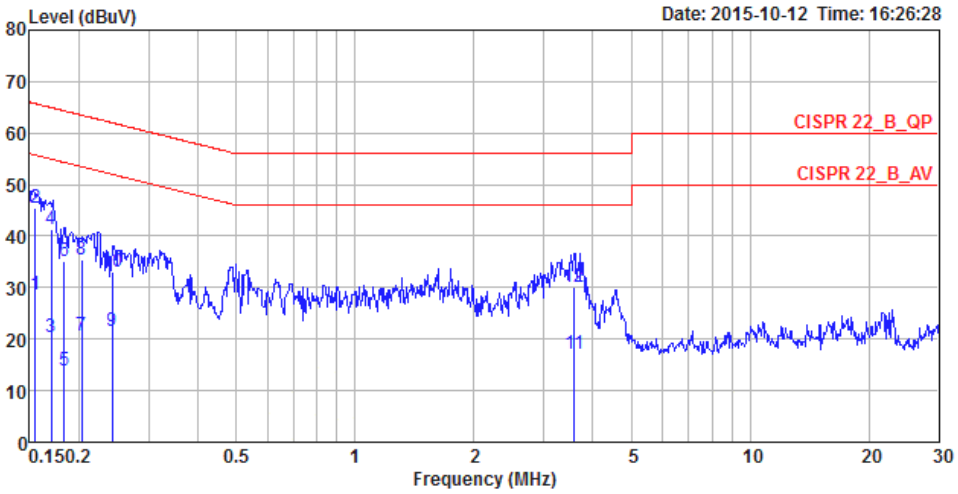
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	23°C	Humidity	60%
Test Engineer	Kane Liu	Phase	Line
Configuration	Normal Link		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1548	30.93	-24.81	55.74	20.98	9.93	0.02	LINE	Average
2	0.1548	45.87	-19.87	65.74	35.92	9.93	0.02	LINE	QP
3	0.1997	22.23	-31.39	53.62	12.28	9.93	0.02	LINE	Average
4	0.1997	36.39	-27.23	63.62	26.44	9.93	0.02	LINE	QP
5	0.2803	20.04	-30.77	50.81	10.07	9.93	0.04	LINE	Average
6	0.2803	32.67	-28.14	60.81	22.70	9.93	0.04	LINE	QP
7	0.3200	19.68	-30.03	49.71	9.71	9.93	0.04	LINE	Average
8	0.3200	32.11	-27.60	59.71	22.14	9.93	0.04	LINE	QP
9	1.6363	20.75	-25.25	46.00	10.71	9.98	0.06	LINE	Average
10	1.6363	28.22	-27.78	56.00	18.18	9.98	0.06	LINE	QP
11	3.5654	18.66	-27.34	46.00	8.59	10.01	0.06	LINE	Average
12	3.5654	31.86	-24.14	56.00	21.79	10.01	0.06	LINE	QP

Temperature	23°C	Humidity	60%
Test Engineer	Kane Liu	Phase	Neutral
Configuration	Normal Link		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1548	28.56	-27.18	55.74	18.76	9.78	0.02	NEUTRAL	Average
2	0.1548	45.40	-20.34	65.74	35.60	9.78	0.02	NEUTRAL	QP
3	0.1703	20.42	-34.52	54.94	10.62	9.78	0.02	NEUTRAL	Average
4	0.1703	41.28	-23.66	64.94	31.48	9.78	0.02	NEUTRAL	QP
5	0.1835	13.77	-40.56	54.33	3.96	9.79	0.02	NEUTRAL	Average
6	0.1835	35.11	-29.22	64.33	25.30	9.79	0.02	NEUTRAL	QP
7	0.2029	20.52	-32.97	53.49	10.71	9.79	0.02	NEUTRAL	Average
8	0.2029	35.43	-28.06	63.49	25.62	9.79	0.02	NEUTRAL	QP
9	0.2429	21.60	-30.40	52.00	11.78	9.79	0.03	NEUTRAL	Average
10	0.2429	33.06	-28.94	62.00	23.24	9.79	0.03	NEUTRAL	QP
11	3.5843	17.16	-28.84	46.00	7.23	9.87	0.06	NEUTRAL	Average
12	3.5843	30.13	-25.87	56.00	20.20	9.87	0.06	NEUTRAL	QP

Note:

Level = Read Level + LISN Factor + Cable Loss

4.2. Field Strength of Fundamental Emissions Measurement

4.2.1. Limit

The field strength of fundamental emissions within these bands specified at a distance of 3 meters (measurement instrumentation employing an average detector) shall comply with the following table.

Frequency Band (MHz)	Fundamental Emissions Limit (dBuV/m) at 3m
2400-2483.5	94 (Average)
	114 (Peak)

4.2.2. Measuring Instruments and Setting

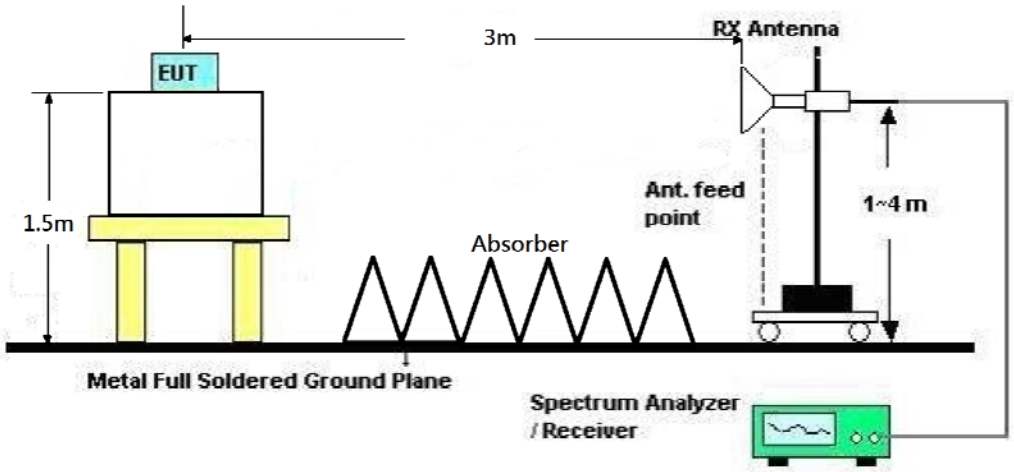
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Power Meter Parameter	Setting
RBW	1 MHz Peak / 3MHz Peak
VBW	1 MHz Peak / 1/T Average
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.2.3. Test Procedures

1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. For Fundamental emissions, use 1MHz VBW and 3MHz RBW for peak reading. Then 1MHz RBW and 1/T VBW for average reading in spectrum analyzer.
6. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.

4.2.4. Test Setup Layout



4.2.5. Test Deviation

There is no deviation with the original standard.

4.2.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.2.7. Test Result of Field Strength of Fundamental Emissions

Temperature	26°C	Humidity	59%
Test Engineer	Peter Wu / Stim Sung	Configurations	Channel 0, 20, 39
Test Date	Oct. 09, 2015		

Channel 0

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2402.00	85.69	94.00	-8.31	54.66	3.88	27.15	0.00	160	353	Peak	VERTICAL
2	2402.20	84.79	114.00	-29.21	53.76	3.88	27.15	0.00	160	353	Average	VERTICAL

Channel 20

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2442.00	85.36	94.00	-8.64	54.20	3.91	27.25	0.00	144	10	Average	VERTICAL
2	2442.00	86.30	114.00	-27.70	55.14	3.91	27.25	0.00	144	10	Peak	VERTICAL

Channel 39

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2480.00	85.80	94.00	-8.20	54.51	3.94	27.35	0.00	151	352	Average	VERTICAL
2	2480.40	86.65	114.00	-27.35	55.36	3.94	27.35	0.00	151	352	Peak	VERTICAL

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

4.3. 20dB Spectrum Bandwidth Measurement

4.3.1. Limit

Intentional radiators must be designed to ensure that the 20 dB bandwidth of the emissions in the specific band (2402 ~ 2480MHz).

4.3.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> 20dB Bandwidth
RBW	100 kHz
VBW	100 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.3.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
2. The resolution bandwidth of 100 kHz and the video bandwidth of 100 kHz were used.
3. Measured the spectrum width with power higher than 6dB below carrier.

4.3.4. Test Setup Layout

4.3.5. Test Deviation

There is no deviation with the original standard.

4.3.6. EUT Operation during Test

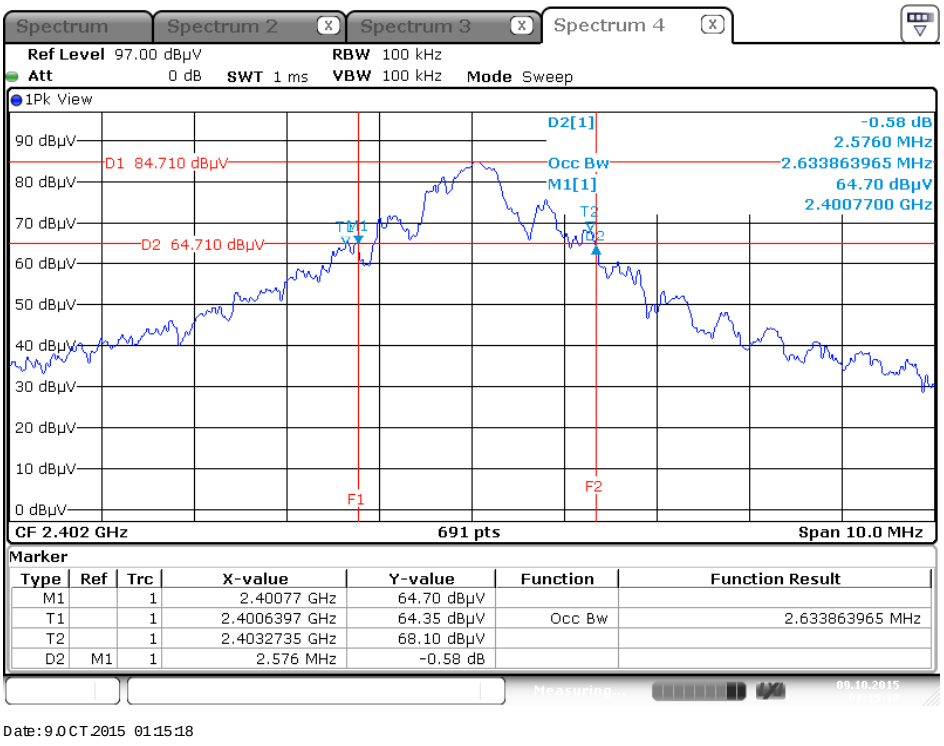
The EUT was programmed to be in continuously transmitting mode.

4.3.7. Test Result of 20dB Spectrum Bandwidth

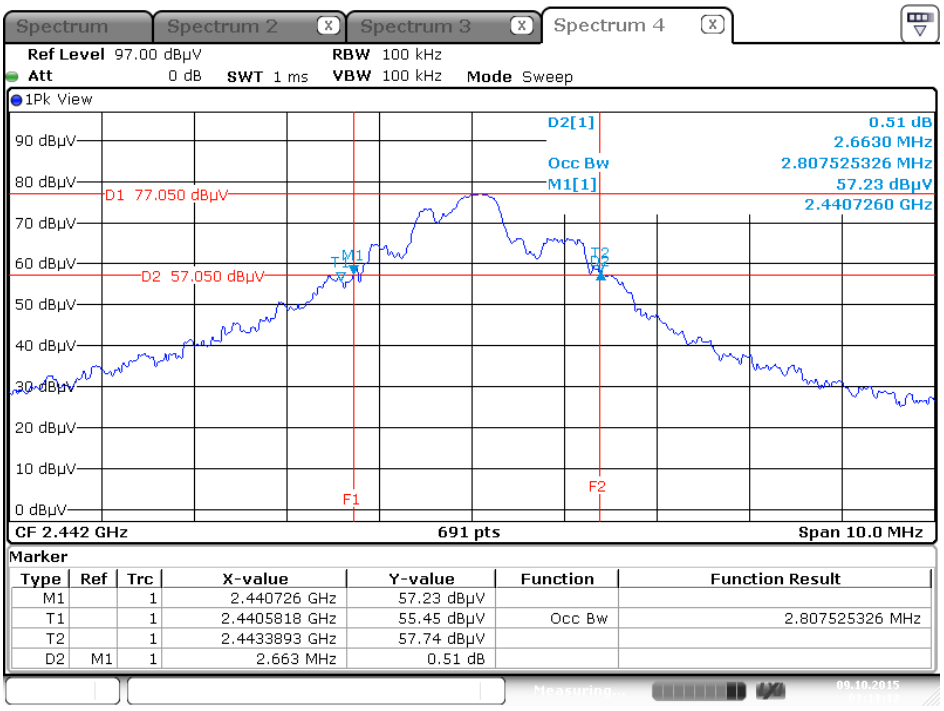
Temperature	25℃	Humidity	45%
Test Engineer	Lucas Huang	Configurations	Channel 0/20/39

Frequency	20dB BW (MHz)	99% OBW (MHz)	Frequency range (MHz) f_L > 2400MHz	Frequency range (MHz) f_H < 2483.5MHz	Test Result
2402 MHz	2.576	2.634	2400.770	-	Complies
2442 MHz	2.663	2.808	-	-	Complies
2480 MHz	2.489	2.359	-	2481.389	Complies

20 dB/99% Bandwidth Plot on 2402 MHz



20 dB/99% Bandwidth Plot on 2442 MHz



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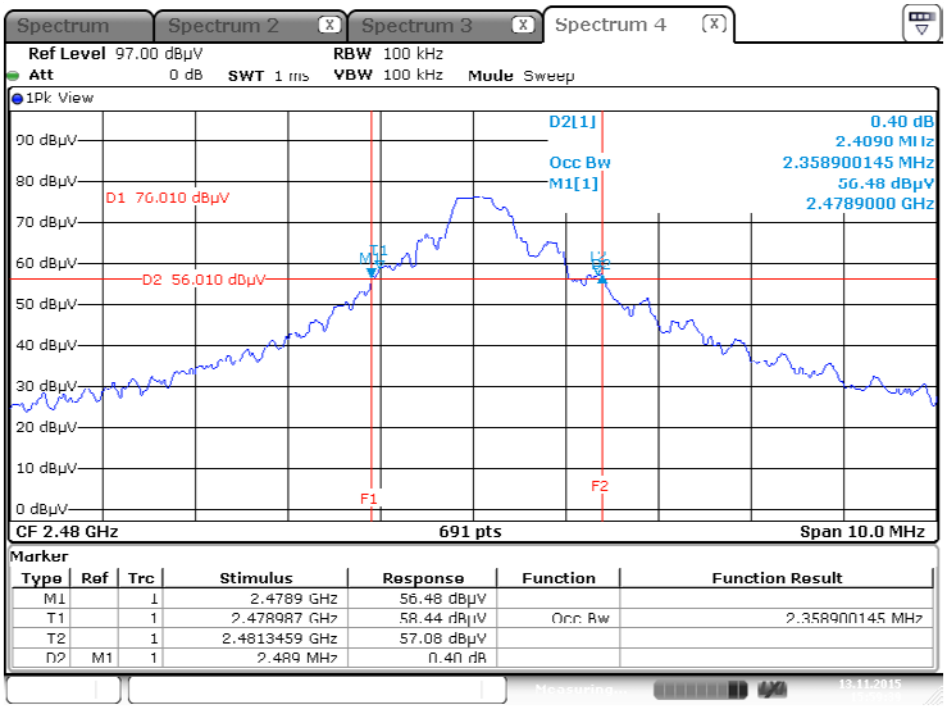
20 dB/99% Bandwidth Plot on 2480 MHz



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4.4. Radiated Emissions Measurement

4.4.1. Limit

Harmonic emissions limits comply with below 54 dBuV/m at 3m. Other 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 comply with the radiated emissions limits specified in section 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/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

4.4.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1 MHz / 1/T for Average
RBW / VBW (Emission in non-restricted band)	100kHz/300kHz for Peak

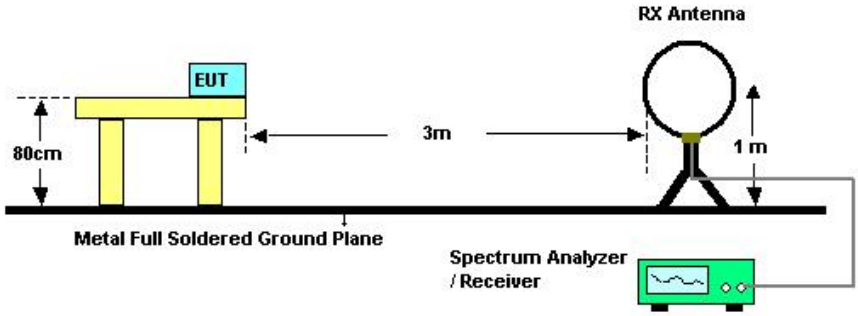
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RBW 120kHz for QP

4.4.3. Test Procedures

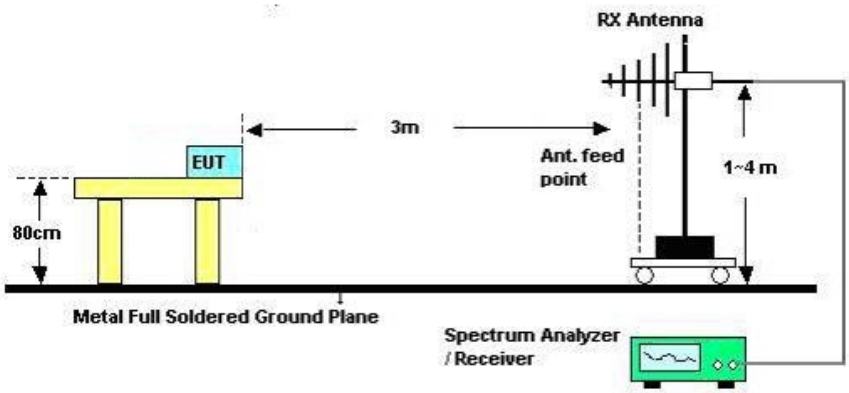
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and 3MHz RBW for peak reading. Then 1MHz RBW and 1/T VBW for average reading in spectrum analyzer.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average 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 for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions 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.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

4.4.4. Test Setup Layout

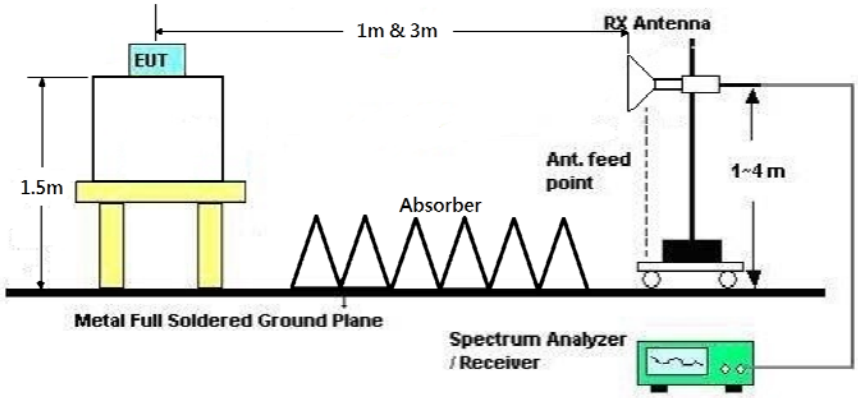
For Radiated Emissions: 9kHz ~30MHz



For Radiated Emissions: 30MHz~1GHz



For Radiated Emissions: Above 1GHz



4.4.5. Test Deviation

There is no deviation with the original standard.

4.4.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.4.7. Results of Radiated Emissions (9kHz~30MHz)

Temperature	26°C	Humidity	59%
Test Engineer	Peter Wu / Stim Sung	Configurations	Normal Link
Test Date	Oct. 08, 2015	Test Mode	Mode 1

Freq. (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

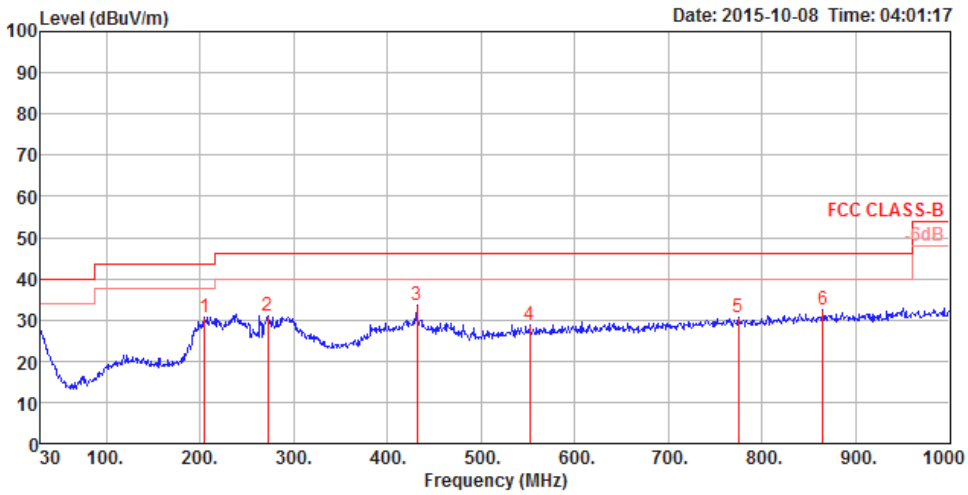
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

4.4.8. Results of Radiated Emissions (30MHz~1GHz)

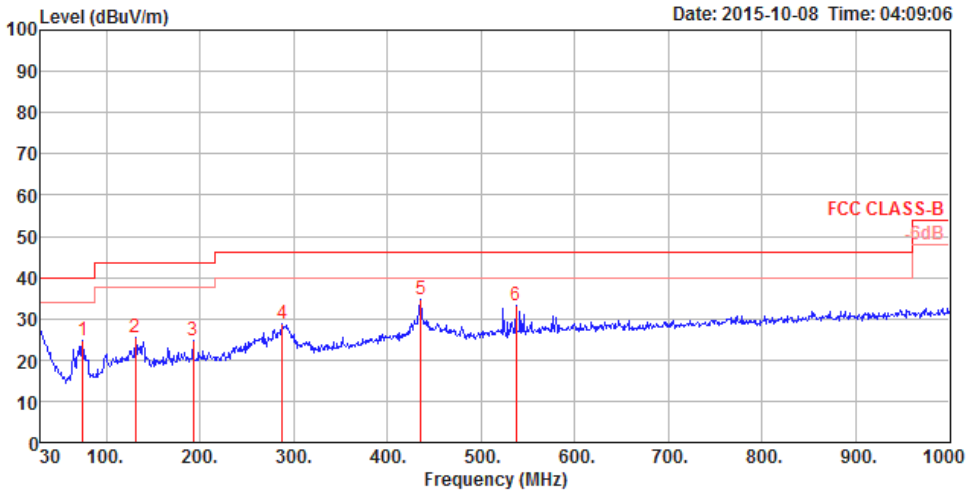
Temperature	26°C	Humidity	59%
Test Engineer	Peter Wu / Stim Sung	Configurations	Normal Link
Test Mode	Mode 1		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	204.60	30.69	43.50	-12.81	51.15	1.27	10.60	32.33	150	187	Peak	HORIZONTAL
2	272.50	31.11	46.00	-14.89	48.39	1.43	13.58	32.29	100	197	Peak	HORIZONTAL
3	431.58	33.52	46.00	-12.48	47.19	1.79	16.88	32.34	100	276	Peak	HORIZONTAL
4	551.86	28.66	46.00	-17.34	40.35	1.99	18.70	32.38	100	348	Peak	HORIZONTAL
5	774.96	30.61	46.00	-15.39	40.02	2.26	20.60	32.27	150	196	Peak	HORIZONTAL
6	865.17	32.37	46.00	-13.63	40.46	2.39	21.42	31.90	100	214	Peak	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	74.62	24.77	40.00	-15.23	49.16	0.83	7.18	32.40	100	161	Peak	VERTICAL
2	130.88	25.56	43.50	-17.94	44.24	1.05	12.64	32.37	100	359	Peak	VERTICAL
3	192.96	24.69	43.50	-18.81	45.91	1.24	9.87	32.33	100	2	Peak	VERTICAL
4	288.02	28.88	46.00	-17.12	46.04	1.47	13.66	32.29	200	358	Peak	VERTICAL
5	435.46	34.64	46.00	-11.36	48.25	1.79	16.94	32.34	100	197	Peak	VERTICAL
6	537.31	33.13	46.00	-12.87	45.06	1.96	18.48	32.37	100	189	Peak	VERTICAL

Note:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

4.4.9. Results for Radiated Emissions (1GHz~10th Harmonic)

Temperature	26°C	Humidity	59%
Test Engineer	Peter Wu / Stim Sung	Configurations	Channel 0
Test Date	Oct. 08, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4804.32	35.66	54.00	-18.34	32.16	5.37	32.52	34.39	100	33	HORIZONTAL	Average
2	4806.06	47.58	74.00	-26.42	44.08	5.37	32.52	34.39	100	33	HORIZONTAL	Peak
3	12011.42	42.46	54.00	-11.54	29.05	9.03	39.00	34.62	104	185	HORIZONTAL	Average
4	12011.90	55.56	74.00	-18.44	42.15	9.03	39.00	34.62	104	185	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4804.19	37.98	54.00	-16.02	34.48	5.37	32.52	34.39	100	325	VERTICAL	Average
2	4804.48	48.17	74.00	-25.83	44.67	5.37	32.52	34.39	100	325	VERTICAL	Peak
3	12009.57	55.22	74.00	-18.78	41.79	9.03	39.00	34.60	182	320	VERTICAL	Peak
4	12011.30	42.18	54.00	-11.82	28.77	9.03	39.00	34.62	182	320	VERTICAL	Average

Temperature	26℃	Humidity	59%
Test Engineer	Peter Wu / Stim Sung	Configurations	Channel 20
Test Date	Oct. 08, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4884.11	34.88	54.00	-19.12	31.18	5.40	32.68	34.38	110	43	HORIZONTAL	Average
2	4884.14	46.90	74.00	-27.10	43.20	5.40	32.68	34.38	110	43	HORIZONTAL	Peak
3	7326.18	49.98	54.00	-4.02	40.71	7.05	37.17	34.95	102	354	HORIZONTAL	Average
4	7326.78	57.54	74.00	-16.46	48.27	7.05	37.17	34.95	102	354	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4884.16	38.73	54.00	-15.27	35.03	5.40	32.68	34.38	100	328	VERTICAL	Average
2	4884.39	48.22	74.00	-25.78	44.52	5.40	32.68	34.38	100	328	VERTICAL	Peak
3	7325.71	57.92	74.00	-16.08	48.65	7.05	37.17	34.95	100	358	VERTICAL	Peak
4	7326.18	50.42	54.00	-3.58	41.15	7.05	37.17	34.95	100	358	VERTICAL	Average

Temperature	26℃	Humidity	59%
Test Engineer	Peter Wu / Stim Sung	Configurations	Channel 39
Test Date	Oct. 08, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4960.20	33.81	54.00	-20.19	29.92	5.44	32.82	34.37	100	321	HORIZONTAL	Average
2	4965.04	46.38	74.00	-27.62	42.49	5.44	32.82	34.37	100	321	HORIZONTAL	Peak
3	7439.66	57.11	74.00	-16.89	47.66	7.14	37.31	35.00	102	20	HORIZONTAL	Peak
4	7440.32	48.96	54.00	-5.04	39.51	7.14	37.31	35.00	102	20	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4960.13	38.02	54.00	-15.98	34.13	5.44	32.82	34.37	100	308	VERTICAL	Average
2	4960.42	48.08	74.00	-25.92	44.19	5.44	32.82	34.37	100	308	VERTICAL	Peak
3	7439.62	58.83	74.00	-15.17	49.38	7.14	37.31	35.00	100	352	VERTICAL	Peak
4	7440.16	51.21	54.00	-2.79	41.76	7.14	37.31	35.00	100	352	VERTICAL	Average

Note:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

4.5. Band Edge Emissions Measurement

4.5.1. Limit

Band edge emissions radiated outside of the specified frequency bands shall be attenuated by at least 50 dB below the level of the fundamental or comply with the radiated emissions limits specified in section 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/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

4.5.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1 MHz / 1/T for Average
RBW / VBW (Emission in non-restricted band)	100kHz/300kHz for Peak

4.5.3. Test Procedures

1. The test procedure is the same as section 4.4.3.

4.5.4. Test Setup Layout

This test setup layout is the same as that shown in section 4.4.4.

4.5.5. Test Deviation

There is no deviation with the original standard.

4.5.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.5.7. Test Result of Band Edge and Fundamental Emissions

Temperature	26°C	Humidity	59%
Test Engineer	Peter Wu / Stim Sung	Configurations	Channel 0, 20, 39
Test Date	Oct. 09, 2015		

Channel 0

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2390.00	43.47	54.00	-10.53	12.50	3.86	27.11	0.00	160	353	Average	VERTICAL
2	2390.00	53.46	74.00	-20.54	22.49	3.86	27.11	0.00	160	353	Peak	VERTICAL
3	2402.00	84.72			53.69	3.88	27.15	0.00	160	353	Average	VERTICAL
4	2402.40	85.62			54.59	3.88	27.15	0.00	160	353	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 2402 MHz.

Channel 20

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2390.00	43.30	54.00	-10.70	12.33	3.86	27.11	0.00	123	354	Average	HORIZONTAL
2	2390.00	53.17	74.00	-20.83	22.20	3.86	27.11	0.00	123	354	Peak	HORIZONTAL
3	2442.00	82.14			50.98	3.91	27.25	0.00	123	354	Average	HORIZONTAL
4	2442.00	85.12			53.96	3.91	27.25	0.00	123	354	Peak	HORIZONTAL
5	2483.50	43.64	54.00	-10.36	12.33	3.95	27.36	0.00	123	354	Average	HORIZONTAL
6	2483.50	53.60	74.00	-20.40	22.29	3.95	27.36	0.00	123	354	Peak	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2442MHz.

Channel 39

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2480.00	89.29			58.00	3.94	27.35	0.00	103	9	Average	HORIZONTAL
2	2480.00	89.29			58.00	3.94	27.35	0.00	103	9	Peak	HORIZONTAL
3	2483.50	43.71	54.00	-10.29	12.40	3.95	27.36	0.00	103	9	Average	HORIZONTAL
4	2483.50	53.03	74.00	-20.97	21.72	3.95	27.36	0.00	103	9	Peak	HORIZONTAL

Item 1, 2 are the fundamental frequency at 2480 MHz.

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

4.6. Antenna Requirements

4.6.1. 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. Further, this requirement does not apply to intentional radiators that must be professionally installed.

4.6.2. Antenna Connector Construction

Please refer to section 3.1 in this test report, antenna connector complied with the requirements.

5. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMI Test Receiver	R&S	ESCS 30	100355	9kHz ~ 2.75GHz	Apr. 22, 2015	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 02, 2014	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Dec. 02, 2014	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	Dec. 03, 2014	Conduction (CO01-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	Conduction (CO01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	May 06, 2015	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 12, 2015*	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Oct. 28, 2014	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 21, 2015	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Feb. 24, 2015	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 12, 2015	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Nov. 25, 2014	Radiation (03CH01-CB)
EMI Receiver	Agilent	N9038A	MY52260123	9kHz ~ 8.4GHz	Jan. 21, 2015	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Nov. 06, 2014	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz ~ 1 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-1	N/A	1 GHz ~ 40 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-2	N/A	1 GHz ~ 40 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSP40	100979	9kHz~40GHz	Dec. 12, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-7	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-8	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-9	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-6	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 03, 2014	Conducted (TH01-CB)

Note: Calibration Interval of instruments listed above is one year.

"*" Calibration Interval of instruments listed above is two years.

N.C.R. means Non-Calibration required.

6. MEASUREMENT UNCERTAINTY

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.2 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.7 dB	Confidence levels of 95%