

APPLICATION FOR CERTIFICATION

On Behalf of

Merry Electronics Co., Ltd.

Wireless Microphone

Model No. : ME-700T

FCC ID : I55-ME-700T

Brand: MERRY

Prepared for : Merry Electronics Co., Ltd.
No. 22, 23rd. road, Taichung Industrial Park,
Taichung, Taiwan

Prepared by : AUDIX Technology Corporation
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Date of Test : 2014. 10. 01 ~ 06
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TEST REPORT CERTIFICATION

Applicant : Merry Electronics Co., Ltd.
Manufacturer : Merry Electronics Co., Ltd.
EUT Description : Wireless Microphone
FCC ID : **I55-ME-700T**
(A) Model No. : ME-700T
(B) Serial No. : N/A
(C) Brand : MERRY
(D) Power Supply : DC 3.1 ~ 4.2V
(E) Test Voltage : (1) AC 120V, 60Hz
(Via Switching Power Supply)
(2) DC 3.7V (Battery)

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C, Oct 2013
(FCC 47 CFR Part 15C, §15.205 and §15.207 and §15.209 and §15.247)
And ANSI C63.4:2003

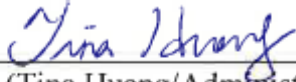
The device described above was tested by AUDIX Technology Corporation to determine the maximum emission levels emanating from the device. The maximum emission levels were compared to the FCC Part 15 subpart C limits.

The measurement results are contained in this test report and AUDIX Technology Corporation is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the requirements of FCC standard.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of AUDIX Technology Corporation.

Date of Test: 2014. 10. 01 ~ 06

Date of Report: 2014. 10. 06

Producer: 
(Tina Huang/Administrator)

Signatory: 
(Ben Cheng/Manager)

1. DESCRIPTION OF REVISION HISTORY

Edition No.	Date of Revision	Revision Summary	Report Number
0	2014. 10. 06	Original Report.	EM-F140592

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

Product	Wireless Microphone
Model Number	ME-700T
Serial Number	N/A
Brand Name	MERRY
Applicant	Merry Electronics Co., Ltd. No. 22, 23rd. road, Taichung Industrial Park, Taichung, Taiwan
Manufacturer	Merry Electronics Co., Ltd. No. 22, 23rd. road, Taichung Industrial Park, Taichung, Taiwan
FCC ID	I55-ME-700T
Fundamental Range	2402MHz ~ 2480MHz
Frequency Channel	40 channels
Radio Technology	GFSK
Data Transfer Rate	1Mbps
Antenna Gain	Multi-layers Chip Antenna, 2.44dBi
Switching Power Supply	Sunny, M/N: SYS1460-0805 Input: 100-240V~, 1.0A, 50-60Hz, Output: DC 5V, 1.6A USB Y Cable : Shielded, Detachable, 0.75m
USB Cable	Shielded, Detachable, 0.3m
Audio (RCA) Cable	Non-Shielded, Detachable, 0.15m
Audio cable	Non-Shielded, Detachable, 1.5m
Date of Receipt of Sample	2014. 09. 24
Date of Test	2014. 10. 01 ~ 06

2.2. Tested Supporting System Details

2.2.1. Support Peripheral Unit

No.	Product	Brand	Model No.	Serial No.	FCC ID
1.	Power Socket	N/A	N/A	N/A	N/A
2.	Notebook PC	DELL	P20G	P20G001	By DoC

2.2.2. Cable Lists

Cable Description Of The Above Support Units	
1.	AC Power Code: Non-Shielded, Detachable, 1.8m
2.	AC Adapter ACBEL, M/N AA90PM111 Power Cord : I/P: Non-Shielded, Detachable, 1.8m O/P: Shielded, Undetachable, 1.8m, Bonded a ferrite core

2.3. Description of Test Facility

Name of Firm : **AUDIX Technology Corporation**
EMC Department
 No. 53-11, Dingfu, Linkou Dist.,
 New Taipei City 244, Taiwan

Test Location & Facility (C7/AC) : **No. 7 Shielded Room**
Semi-Anechoic Chamber
 No. 53-11, Dingfu, Linkou Dist.,
 New Taipei City 244, Taiwan
 May 11, 2012 File on
 Federal Communication Commission
 Registration Number: 90993

NVLAP Lab. Code : 200077-0

TAF Accreditation No : 1724

2.4. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty
Conduction Test	150kHz~30MHz	$\pm 3.43\text{dB}$
Radiation Test (Distance: 3m)	30MHz~300MHz	$\pm 2.91\text{dB}$
	300MHz~1000MHz	$\pm 2.74\text{dB}$
	Above 1GHz	$\pm 5.02\text{dB}$

Remark : Uncertainty = $k_{uc}(y)$

Test Item	Uncertainty
6dB Bandwidth	$\pm 0.05\text{kHz}$
Maximum peak output power	$\pm 0.33\text{dBm}$
Emission Limitations	$\pm 0.13\text{dB}$
Band edges	$\pm 0.13\text{dB}$
Power spectral density	$\pm 0.13\text{dB}$

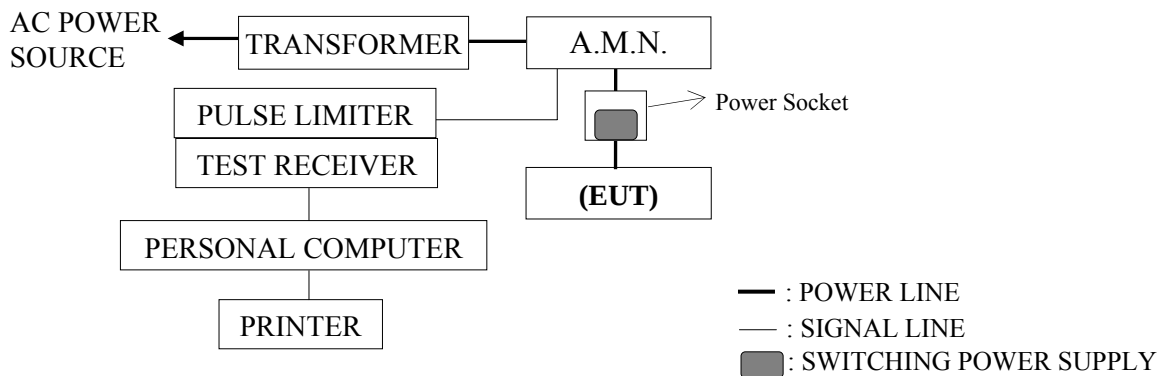
3. CONDUCTED EMISSION MEASUREMENT

3.1. Test Equipment

The following test equipment was used during the conducted emission measurement : (No. 7 Shielded Room)

Item	Equipment	Manufacturer	Model	Serial Number	Cal. Date	Cal. Interval
1.	Test Receiver	R&S	ESCI	101276	2014. 04. 14	1 Year
2.	A.M.N.	R&S	ENV4200	100169	2014. 05. 06	1 Year
3.	Pulse Limiter	R&S	ESH3-Z2	101495	2014. 01. 18	1 Year

3.2. Block Diagram of Test Setup



EUT: WIRELESS MICROPHONE

3.3. Powerline Conducted Emission Limit (§15.207)

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level	Average Level
150kHz ~ 500kHz	66 ~ 56 dB μ V	56 ~ 46 dB μ V
500kHz ~ 5MHz	56 dB μ V	46 dB μ V
5MHz ~ 30MHz	60 dB μ V	50 dB μ V

Remark 1.: If the average limit is met when using a Quasi-Peak detector, the EUT shall be deemed to meet both limits and measurement with the average detector is unnecessary.

2.: The lower limit applies at the band edges.

3.4. Operating Condition of EUT

- 3.4.1. Setup the EUT and simulator as shown on 3.2.
- 3.4.2. Turn on the power of all equipment.
- 3.4.3. Set to EUT (Wireless Microphone) on Charging during all testing.

3.5. Test Procedure

The EUT link to Switching Power Supply was placed on the table which was above the ground by 80cm and Switching Power Supply's power cord connected to the AC mains through an Artificial Mains Network (A.M.N.). This provided a 50 ohm coupling impedance for the measuring equip. Both sides of A.C. line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions simulators of the interface cables should be manipulated according to ANSI C63.4-2003 regulation during conducted measurement.

The bandwidth of the R&S Test Receiver ESCI was set at 9kHz.

The frequency range from 150kHz to 30MHz was checked.

All the final readings from Test Receiver were measured with the Quasi-Peak detector and Average detector. Remark: If the Average limit is met when using a Quasi-Peak detector, the Average detector is unnecessary)

3.6. Conducted Emission Measurement Results

PASSED.

(All the emissions not reported below are too low against the prescribed limits.)

EUT was performed during this section testing and all the test results are attached in next pages.

EUT : Wireless Microphone M/N : ME-700T

Test Date : 2014. 10. 06 Temperature : 25°C Humidity : 52%

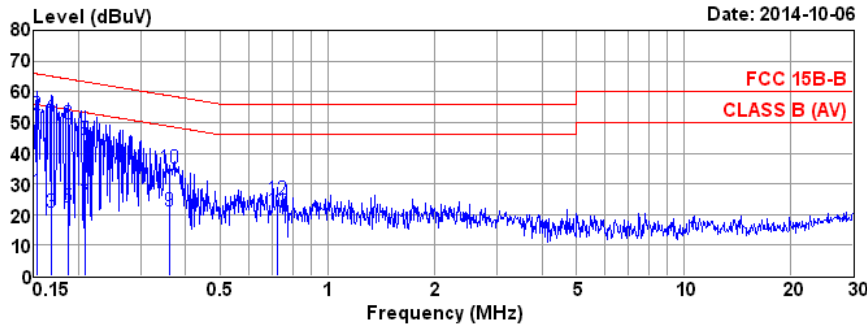
The details are as follows :

Mode	Reference Test Data	
	Neutral	Line
1.	# 4	# 3



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Email: emc@audixtech.com

Data: 4 File: D:\test data\REPORT\2014\IC1M1409XXX\IC1M1409254-C-D(rf).EM6 (4)



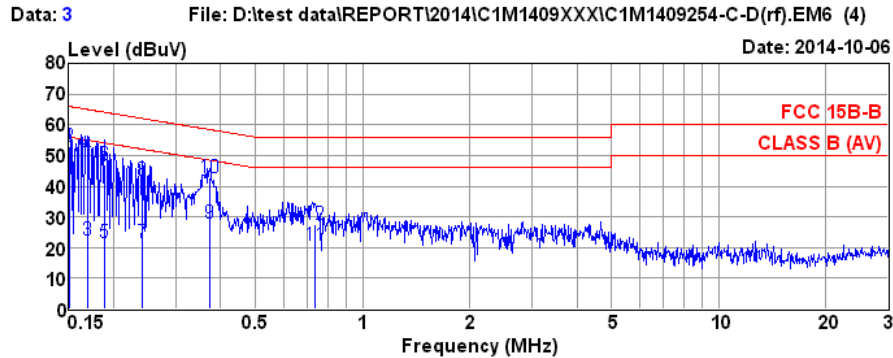
Site no. : No.7 Shielded Room Data no. : 4
Condition : ENV4200 100169 LISN Phase : NEUTRAL
Limit : FCC 15B-B
Env. / Ins. : 25°C / 52% ESCI (1276) Engineer : John
EUT : ME-700T
Power Rating : 120Vac/60Hz
Test Mode : CHARGE

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.153	10.66	0.02	9.85	6.98	27.51	55.82	28.31	Average
2	0.153	10.66	0.02	9.85	31.94	52.47	65.82	13.35	QP
3	0.168	10.64	0.02	9.85	0.35	20.86	55.08	34.22	Average
4	0.168	10.64	0.02	9.85	31.65	52.16	65.08	12.92	QP
5	0.186	10.61	0.03	9.85	2.08	22.57	54.20	31.63	Average
6	0.186	10.61	0.03	9.85	28.86	49.35	64.20	14.85	QP
7	0.209	10.58	0.03	9.85	3.09	23.55	53.23	29.68	Average
8	0.209	10.58	0.03	9.85	23.87	44.33	63.23	18.90	QP
9	0.360	10.49	0.03	9.86	0.91	21.29	48.74	27.45	Average
10	0.360	10.49	0.03	9.86	14.78	35.16	58.74	23.58	QP
11	0.724	10.46	0.04	9.85	0.71	21.06	46.00	24.94	Average
12	0.724	10.46	0.04	9.85	4.64	24.99	56.00	31.01	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.
2. If the average limit is met when using a quasi-peak detector,
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.



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Site no. : No.7 Shielded Room Data no. : 3
 Condition : ENV4200 100169 LISN Phase : LINE
 Limit : FCC 15B-B
 Env. / Ins. : 25°C / 52% ESCI (1276) Engineer : John
 EUT : ME-700T
 Power Rating : 120Vac/60Hz
 Test Mode : CHARGE

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.151	10.66	0.02	9.85	9.57	30.10	55.96	25.86	Average
2	0.151	10.66	0.02	9.85	32.28	52.81	65.96	13.15	QP
3	0.169	10.64	0.02	9.85	1.87	22.38	55.03	32.65	Average
4	0.169	10.64	0.02	9.85	29.44	49.95	65.03	15.08	QP
5	0.188	10.61	0.03	9.85	1.31	21.80	54.11	32.31	Average
6	0.188	10.61	0.03	9.85	26.62	47.11	64.11	17.00	QP
7	0.242	10.57	0.03	9.85	1.12	21.57	52.04	30.47	Average
8	0.242	10.57	0.03	9.85	21.67	42.12	62.04	19.92	QP
9	0.373	10.49	0.03	9.86	7.75	28.13	48.43	20.30	Average
10	0.373	10.49	0.03	9.86	22.40	42.78	58.43	15.65	QP
11	0.735	10.47	0.04	9.85	0.47	20.83	46.00	25.17	Average
12	0.735	10.47	0.04	9.85	7.36	27.72	56.00	28.28	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.
 2. If the average limit is met when using a quasi-peak detector,
 the EUT shall be deemed to meet both limits and measurement
 with average detector is unnecessary.

4. RADIATED EMISSION MEASUREMENT

4.1. Test Equipment

The following test equipment was used during the radiated emission measurement:

4.1.1. For Frequency Range 30MHz~1000MHz (at Semi-Anechoic Chamber)

Item	Equipment	Manufacturer	Model	Serial Number	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Agilent	N9010A-526	MY53400071	2014. 09. 15	1 Year
2.	Test Receiver	R & S	ESCS30	100338	2014. 06. 24	1 Year
3.	Amplifier	HP	8447D	2944A06305	2014. 02. 18	1 Year
4.	Bilog Antenna	CHASE	CBL6112D	33821	2014. 08. 02	1 Year

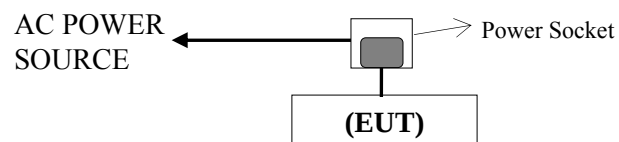
4.1.2. For Frequency Above 1GHz (at Semi-Anechoic Chamber)

Item	Equipment	Manufacturer	Model	Serial Number	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Agilent	N9010A-526	MY53400071	2014. 09. 15	1 Year
2.	Test Receiver	R & S	ESCS30	100338	2014. 06. 24	1 Year
3.	Amplifier	HP	8447D	2944A06305	2014. 02. 18	1 Year
4.	2.4GHz Notch Filter	K&L	7NSL10-2441.5E130.5-00	1	2014. 06. 12	1 Year
5.	3G High Pass Filter	Microwave Circuits	H3G018G1	484796	2014. 06. 12	1 Year
6.	Horn Antenna	EMCO	3115	9609-4927	2014. 06. 16	1 Year
7.	Horn Antenna	EMCO	3116	2653	2014. 10. 10	1 Year

4.2. Test Setup

4.2.1. Block Diagram of connection between EUT and simulators

[Charge Mode]



 : SWITCHING POWER SUPPLY

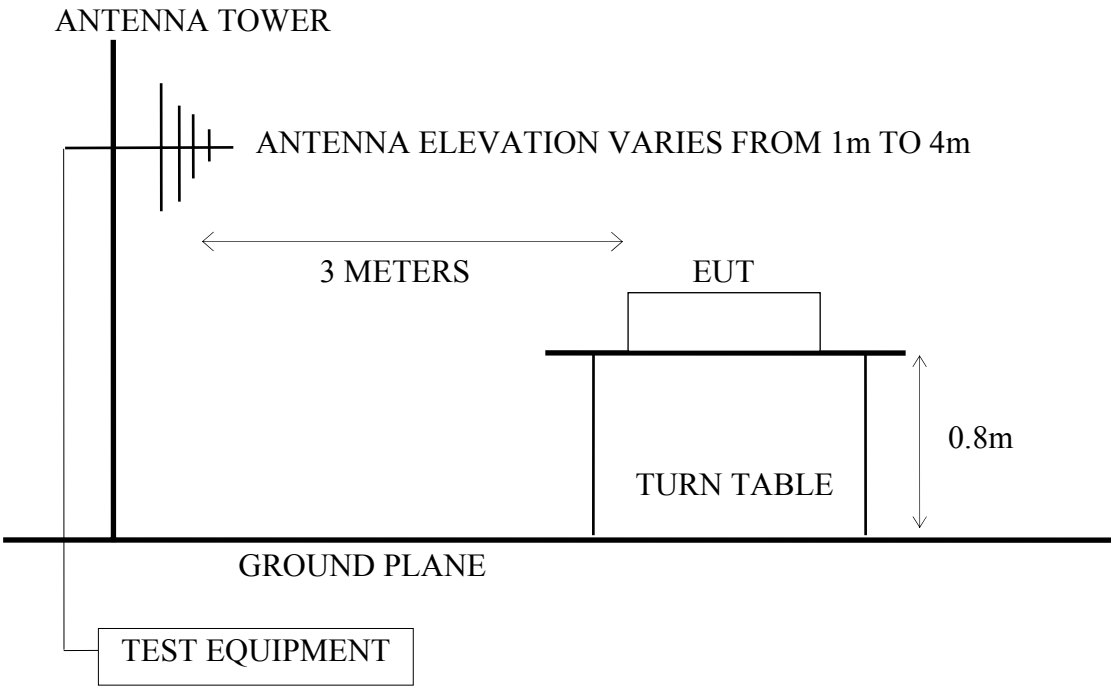
EUT: WIRELESS MICROPHONE

[Stand-Alone Transmit Mode]

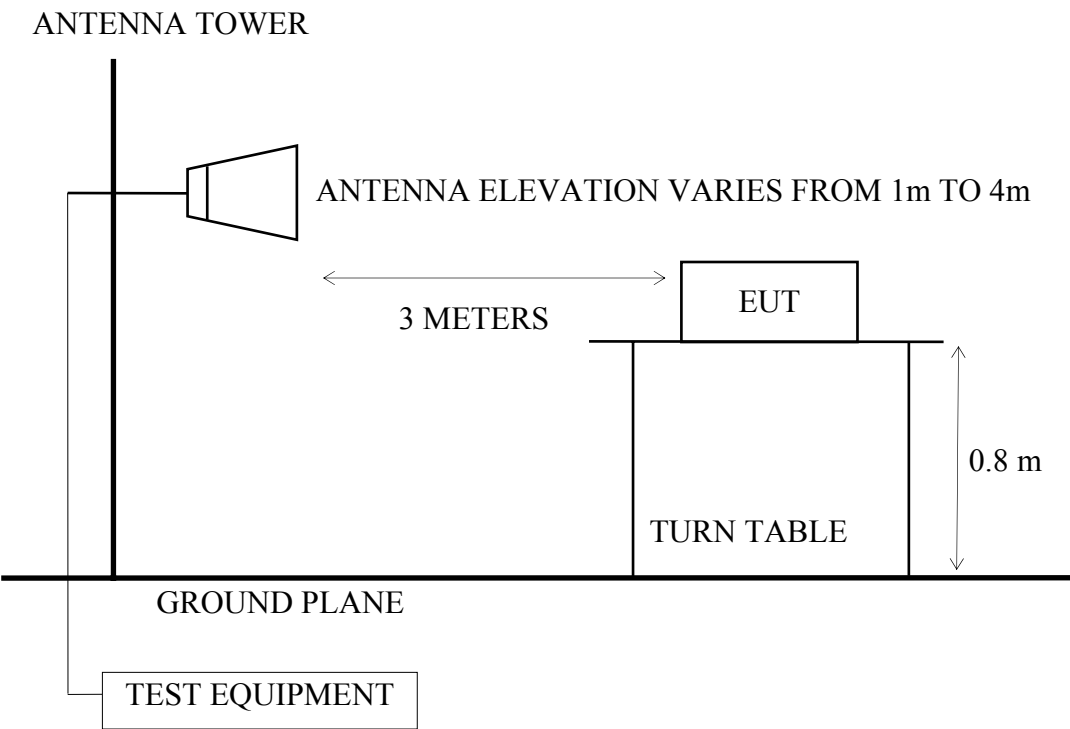


EUT: WIRELESS MICROPHONE

4.2.2. Semi-Anechoic Chamber (3m) Setup Diagram for 30-1000MHz



4.2.3. Semi-Anechoic Chamber (3m) Setup Diagram for above 1GHz



4.3. Radiated Emission Limits (§15.209)

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMITS	
		$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0
Above 1000	3	74.0 $\text{dB}\mu\text{V/m}$ (Peak) 54.0 $\text{dB}\mu\text{V/m}$ (Average)	

- Remark :
- (1) Emission level ($\text{dB}\mu\text{V/m}$) = 20 log Emission level ($\mu\text{V/m}$)
 - (2) The tighter limit applies at the edge between two frequency bands.
 - (3) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
 - (4) The limits in this table are based on CFR 47 Part 15.205(a)(b) and Part 15.209 (a).
 - (5) The over 1GHz limit, FCC limit is used based on CFR 47 Part 15.35(b) and Part 15.205(b) & Part 15.209(e) and Part 15.207(c).

4.4. Operating Condition of EUT

- 4.4.1. Set up the EUT (**Wireless Microphone**) as shown on 4.2.
- 4.4.2. To turn on the power of all equipment.
- 4.4.3. Charge mode: The Wireless Microphone (EUT) charging with Switching Power Supply via the USB cable.
- 4.4.4. TX Mode: The test program “Blue Test” was used to enable the EUT to transmit data at different channel frequency individually.
- 4.4.5. The EUT set to continuously transmit signals at 2402MHz, 2440MHz and 2480MHz during all test time.

4.5. Test Procedure

The EUT and its simulators were placed on a turn table which was 0.8 meter above the ground. The turn table rotated 360 degrees to determine the position of the maximum emission level. EUT was set 3 meters away from the receiving antenna which was mounted on an antenna tower. The antenna moved up and down between 1 to 4 meters to find out the maximum emission level. Broadband antenna such as calibrated biconical and log-periodical antenna or horn antenna were used as a receiving antenna. Both horizontal and vertical polarization of the antenna were set on measurement. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4-2003 regulation.

The bandwidth of the R&S Test Receiver ESCS30 was set at 120kHz. (For 30MHz to 1000MHz)

The resolution bandwidth and video bandwidth of test spectrum analyzer is 1MHz for peak detection (PK) at frequency above 1GHz.

The resolution bandwidth of test spectrum analyzer is 1MHz and the video bandwidth is 10Hz for average detection (AV) at frequency above 1GHz.

The frequency range from 30MHz to 25GHz (Up to 10th harmonics from fundamental frequency) was checked. 30MHz to 1000MHz was measured with Quasi-Peak detector.

Pursuant to ANSI 63.4: 4.2, peak detector is an alternate option for frequency from 30MHz to 1000MHz.

Above 1GHz was measured with peak and average detector. For frequency from 1000Hz to 25000Hz, we checked it in 1 meter distance and with a shorter cable 2 meter instead of original's. There is no signal exist.

Pursuant to ANSI C63.4 8.3.1.2, when peak value complies with the average limit, we didn't perform measurement in average detector.

4.6. Test Results

PASSED.

(All emissions not reported below are too low against the prescribed limits.)

EUT: Wireless Microphone

M/N: ME-700T

Test Date: 2014. 10. 01 Temperature: 26°C Humidity: 43%

For Frequency Range 30MHz~1000MHz:

The EUT emitted the fundamental frequency with data code at the stand, side and lying conditions.

The EUT select **worst position “stand”** and with following test modes was performed during this section testing and all the test results are listed in section 4.6.1.

No	Test Mode	Channel	Frequency	Test Mode	Reference Test Data No.	
					Horizontal	Vertical
1.	---	---	---	Charge	# 5	# 10
2.	BLE	CH 0	2402MHz	Transmit	# 1	# 6
3.	BLE	CH 19	2440MHz		# 2	# 7
4.	BLE	CH 39	2480MHz		# 3	# 8

* Above all final readings were measured with Peak detector.

Frequency above 1GHz:

The emissions (up to 25GHz) not reported are too low to be measured.

For Restricted Bands:

The EUT select **worst position “stand ”** and with following test modes was performed during this section testing and all the test results are listed in section 4.6.2.

No	Test Mode	Channel	Frequency	Test Mode	Reference Test Data No.	
					Horizontal	Vertical
1.	BLE	CH 0	2402MHz	Transmit	# 1, # 2	# 3, # 4
2.	BLE	CH 39	2480MHz		# 5, # 6	# 7, # 8

4.6.1.1. For 30-1000MHz Frequency Range Measurement Results

Charge Mode

Site no. : Audix NO.1 Chamber
 Dis. / Ant. : 3m CBL6112D 33821
 Limit : 30M-1G
 Env. / Ins. : 26°C / 43% N9010A
 EUT : ME-700T
 Power Rating : DC 5V
 Test Mode : Charge

Data no. : 5
 Ant. pol. : HORIZONTAL
 Engineer : Jerome_Chang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	304.51	13.25	4.71	12.73	30.69	46.00	15.31	Peak
2	395.69	15.47	5.62	10.31	31.40	46.00	14.60	Peak
3	487.84	16.80	6.35	7.05	30.20	46.00	15.80	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : Audix NO.1 Chamber
 Dis. / Ant. : 3m CBL6112D 33821
 Limit : 30M-1G
 Env. / Ins. : 26°C / 43% N9010A
 EUT : ME-700T
 Power Rating : DC 5V
 Test Mode : Charge

Data no. : 10
 Ant. pol. : VERTICAL
 Engineer : Jerome_Chang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	31.94	17.52	2.37	8.54	28.43	40.00	11.57	Peak
2	263.77	12.61	4.43	13.58	30.62	46.00	15.38	Peak
3	480.08	16.71	6.30	11.25	34.26	46.00	11.74	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.

BLE, Transmit, Frequency: 2402MHz

Site no. : Audix NO.1 Chamber
 Dis. / Ant. : 3m CBL6112D 33821
 Limit : 30M-1G
 Env. / Ins. : 26°C / 43% N9010A
 EUT : ME-700T
 Power Rating : DC 3.7V
 Test Mode : TX 2402MHz_BLE

Data no. : 1
 Ant. pol. : HORIZONTAL
 Engineer : Jerome_Chang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	115.36	12.00	3.34	16.37	31.71	43.50	11.79	Peak
2	276.38	12.79	4.51	15.60	32.90	46.00	13.10	Peak
3	329.73	13.93	4.99	15.18	34.10	46.00	11.90	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : Audix NO.1 Chamber
 Dis. / Ant. : 3m CBL6112D 33821
 Limit : 30M-1G
 Env. / Ins. : 26°C / 43% N9010A
 EUT : ME-700T
 Power Rating : DC 3.7V
 Test Mode : TX 2402MHz_BLE

Data no. : 6
 Ant. pol. : VERTICAL
 Engineer : Jerome_Chang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	31.94	17.52	2.37	8.50	28.39	40.00	11.61	Peak
2	282.20	12.88	4.55	11.93	29.36	46.00	16.64	Peak
3	487.84	16.80	6.35	11.12	34.27	46.00	11.73	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.

BLE, Transmit, Frequency: 2440MHz

Site no. : Audix NO.1 Chamber
 Dis. / Ant. : 3m CBL6112D 33821
 Limit : 30M-1G
 Env. / Ins. : 26°C / 43% N9010A
 EUT : ME-700T
 Power Rating : DC 3.7V
 Test Mode : TX 2440MHz_BLE

Data no. : 2
 Ant. pol. : HORIZONTAL
 Engineer : Jerome_Chang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	220.12	10.59	4.13	12.99	27.71	46.00	18.29	Peak
2	312.27	13.46	4.79	11.43	29.68	46.00	16.32	Peak
3	487.84	16.80	6.35	6.36	29.51	46.00	16.49	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : Audix NO.1 Chamber
 Dis. / Ant. : 3m CBL6112D 33821
 Limit : 30M-1G
 Env. / Ins. : 26°C / 43% N9010A
 EUT : ME-700T
 Power Rating : DC 3.7V
 Test Mode : TX 2440MHz_BLE

Data no. : 7
 Ant. pol. : VERTICAL
 Engineer : Jerome_Chang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	31.94	17.52	2.37	8.92	28.81	40.00	11.19	Peak
2	282.20	12.88	4.55	11.80	29.23	46.00	16.77	Peak
3	480.08	16.71	6.30	12.03	35.04	46.00	10.96	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.

BLE, Transmit, Frequency: 2480MHz

Site no. : Audix NO.1 Chamber
 Dis. / Ant. : 3m CBL6112D 33821
 Limit : 30M-1G
 Env. / Ins. : 26°C / 43% N9010A
 EUT : ME-700T
 Power Rating : DC 3.7V
 Test Mode : TX 2480MHz_BLE

Data no. : 3
 Ant. pol. : HORIZONTAL
 Engineer : Jerome_Chang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	301.60	13.16	4.67	11.88	29.71	46.00	16.29	Peak
2	395.69	15.47	5.62	9.06	30.15	46.00	15.85	Peak
3	476.20	16.64	6.27	7.70	30.61	46.00	15.39	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : Audix NO.1 Chamber
 Dis. / Ant. : 3m CBL6112D 33821
 Limit : 30M-1G
 Env. / Ins. : 26°C / 43% N9010A
 EUT : ME-700T
 Power Rating : DC 3.7V
 Test Mode : TX 2480MHz_BLE

Data no. : 8
 Ant. pol. : VERTICAL
 Engineer : Jerome_Chang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	176.47	9.26	3.80	17.47	30.53	43.50	12.97	Peak
2	280.26	12.85	4.53	21.06	38.44	46.00	7.56	Peak
3	487.84	16.80	6.35	10.74	33.89	46.00	12.11	Peak

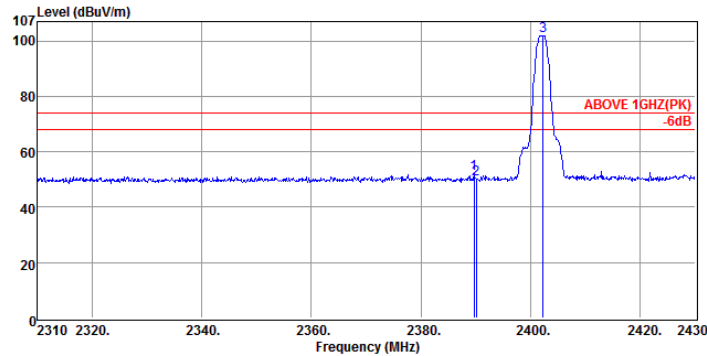
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.

4.6.1.2. Restricted Bands Measurement Results

Date of Test : 2014. 10. 01 Temperature : 26°C

EUT : Wireless Microphone Humidity : 43%

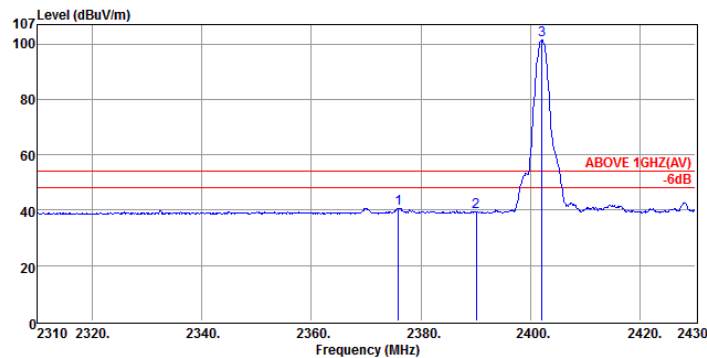
Test Mode : BLE, Transmit, Channel 0, Frequency: 2402MHz



Site no. : Audix NO.1 Chamber Data no. : 1
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : ABOVE 1GHZ(PK)
 Env. / Ins. : 26°C / 43% N9010A Engineer : Jerome_Chang
 EUT : ME-700T
 Power Rating : DC3.7V
 Test Mode : TX 2402MHz_BLE

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	2389.68	28.20	5.24	18.67	52.11	74.00	21.89	Peak
2	2390.04	28.20	5.24	18.63	50.07	74.00	23.93	Peak
3	2402.28	28.21	5.26	68.43	101.90	74.00	-27.90	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : Audix NO.1 Chamber Data no. : 2
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : ABOVE 1GHZ(AV)
 Env. / Ins. : 26°C / 43% N9010A Engineer : Jerome_Chang
 EUT : ME-700T
 Power Rating : DC3.7V
 Test Mode : TX 2402MHz_BLE

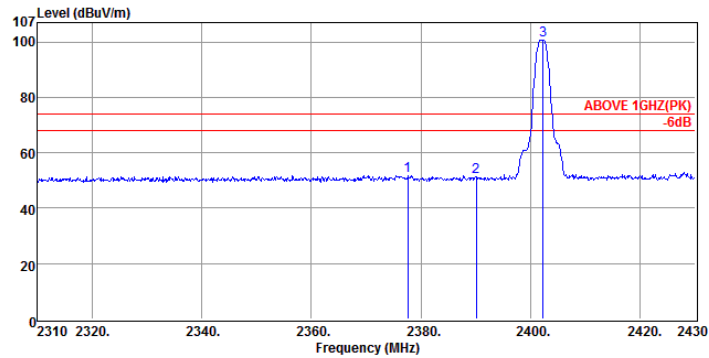
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	2375.88	28.18	5.22	7.36	40.76	54.00	13.24	Average
2	2390.04	28.20	5.24	5.90	39.34	54.00	14.66	Average
3	2402.04	28.21	5.26	67.84	101.31	54.00	-47.31	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : 2014. 10. 01 Temperature : 26°C

EUT : Wireless Microphone Humidity : 43%

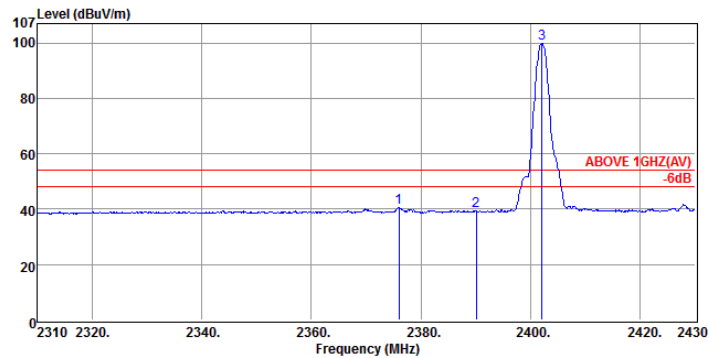
Test Mode : BLE, Transmit, Channel 0, Frequency: 2402MHz



Site no. : Audix NO.1 Chamber Data no. : 3
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : ABOVE 1GHZ(PK)
 Env. / Ins. : 26°C / 43% N9010A Engineer : Jerome_Chang
 EUT : ME-700T
 Power Rating : DC3.7V
 Test Mode : TX 2402MHz_BLE

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	2377.56	28.19	5.22	18.46	51.87	74.00	22.13	Peak
2	2390.04	28.20	5.24	17.83	51.27	74.00	22.73	Peak
3	2402.28	28.21	5.26	67.19	100.66	74.00	-26.66	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : Audix NO.1 Chamber Data no. : 4
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : ABOVE 1GHZ(AV)
 Env. / Ins. : 26°C / 43% N9010A Engineer : Jerome_Chang
 EUT : ME-700T
 Power Rating : DC3.7V
 Test Mode : TX 2402MHz_BLE

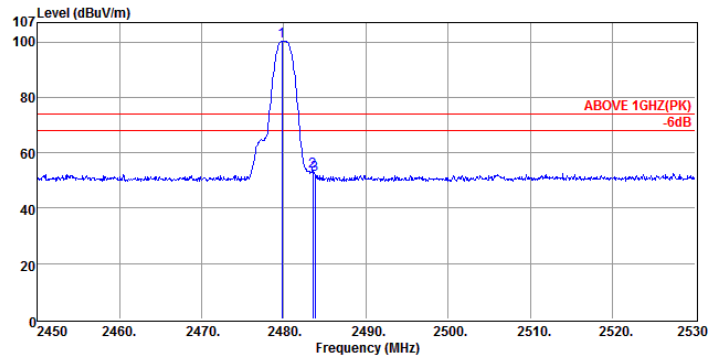
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	2376.00	28.18	5.22	7.18	40.58	54.00	13.42	Average
2	2390.04	28.20	5.24	5.82	39.26	54.00	14.74	Average
3	2402.04	28.21	5.26	66.35	99.82	54.00	-45.82	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : 2014. 10. 01 Temperature : 26°C

EUT : Wireless Microphone Humidity : 43%

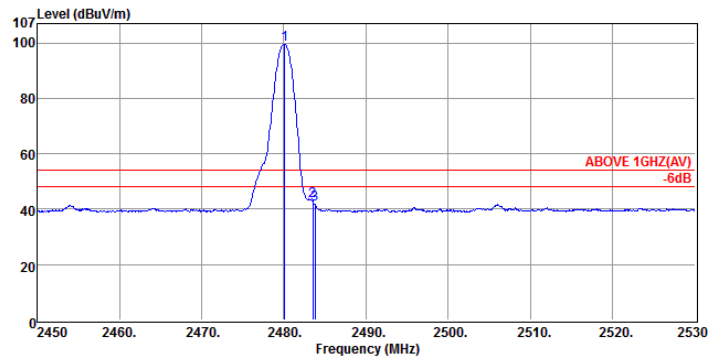
Test Mode : BLE, Transmit, Channel 39, Frequency: 2480MHz



Site no. : Audix NO.1 Chamber Data no. : 5
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : ABOVE 1GHZ(PK)
 Env. / Ins. : 26°C / 43% N9010A Engineer : Jerome_Chang
 EUT : ME-700T
 Power Rating : DC3.7V
 Test Mode : TX 2480MHz_BLE

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	2479.76	28.28	5.36	66.66	100.30	74.00	-26.30	Peak
2	2483.52	28.29	5.37	19.72	53.38	74.00	20.62	Peak
3	2483.76	28.29	5.37	18.60	52.26	74.00	21.74	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : Audix NO.1 Chamber Data no. : 6
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : ABOVE 1GHZ(AV)
 Env. / Ins. : 26°C / 43% N9010A Engineer : Jerome_Chang
 EUT : ME-700T
 Power Rating : DC3.7V
 Test Mode : TX 2480MHz_BLE

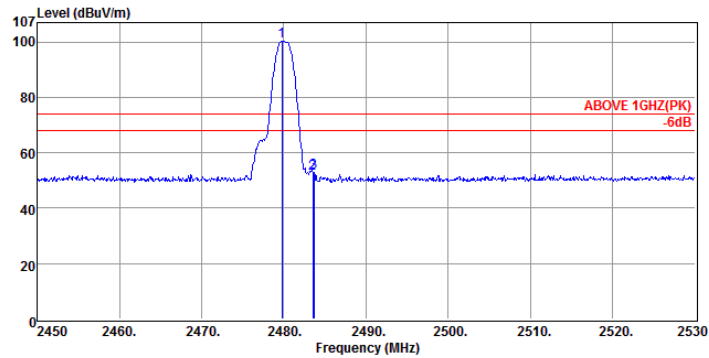
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	2480.08	28.28	5.36	65.97	99.61	54.00	-45.61	Average
2	2483.52	28.29	5.37	9.13	42.79	54.00	11.21	Average
3	2483.76	28.29	5.37	8.00	41.66	54.00	12.34	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : 2014. 10. 01 Temperature : 26°C

EUT : Wireless Microphone Humidity : 43%

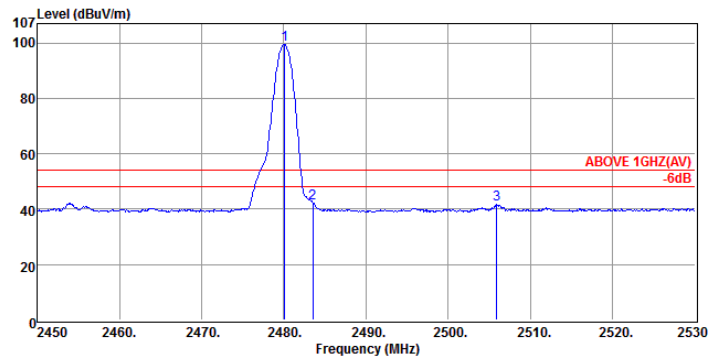
Test Mode : BLE, Transmit, Channel 39, Frequency: 2480MHz



Site no. : Audix NO.1 Chamber Data no. : 7
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : ABOVE 1GHZ(PK)
 Env. / Ins. : 26°C / 43% N9010A Engineer : Jerome_Chang
 EUT : ME-700T
 Power Rating : DC3.7V
 Test Mode : TX 2480MHz_BLE

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	2479.76	28.28	5.36	66.62	100.26	74.00	-26.26	Peak
2	2483.52	28.29	5.37	19.01	52.67	74.00	21.33	Peak
3	2483.68	28.29	5.37	19.33	52.99	74.00	21.01	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : Audix NO.1 Chamber Data no. : 8
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : ABOVE 1GHZ(AV)
 Env. / Ins. : 26°C / 43% N9010A Engineer : Jerome_Chang
 EUT : ME-700T
 Power Rating : DC3.7V
 Test Mode : TX 2480MHz_BLE

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	2480.08	28.28	5.36	65.82	99.46	54.00	-45.46	Average
2	2483.52	28.29	5.37	8.58	42.24	54.00	11.76	Average
3	2505.84	28.33	5.41	8.13	41.87	54.00	12.13	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.

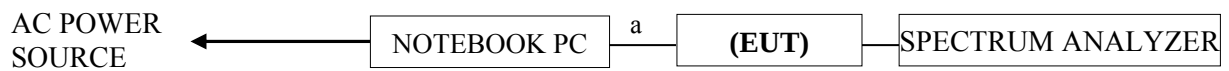
5. 6dB BANDWIDTH MEASUREMENT

5.1. Test Equipment

The following test equipment was used during the Emission Bandwidth measurement:

Item	Equipment	Manufacturer	Model	Serial Number	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Agilent	N9030A-544	US51350140	2014. 07. 24	1 Year

5.2. Block Diagram of Test Setup



a: USB CABLE

EUT: WIRELESS MICROPHONE

5.3. Specification Limits [§15.247(a)(2)]

The minimum 6dB bandwidth shall be at least 500kHz.

5.4. Operating Condition of EUT

The test program “Blue tool” was used to enable the EUT to transmit data at different channel frequency individually.

5.5. Test Procedure

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measure by spectrum analyzer with 1.5% EBW, $VBW \geq 3 \times RBW$. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

The measurement guideline was according to KDB 558074 D01 DTS Meas Guidance is v03r02.

5.6. Test Results

PASSED. All the test results are attached in next pages.

Test Date : 2014. 10. 06 Temperature : 24°C Humidity : 60%

No	Test Mode	Channel	Frequency	6dB Bandwidth(MHz)
1	BLE	CH 0	2402MHz	0.705
2		CH 19	2440MHz	0.705
3		CH 39	2480MHz	0.700

[Limit: least 500kHz]

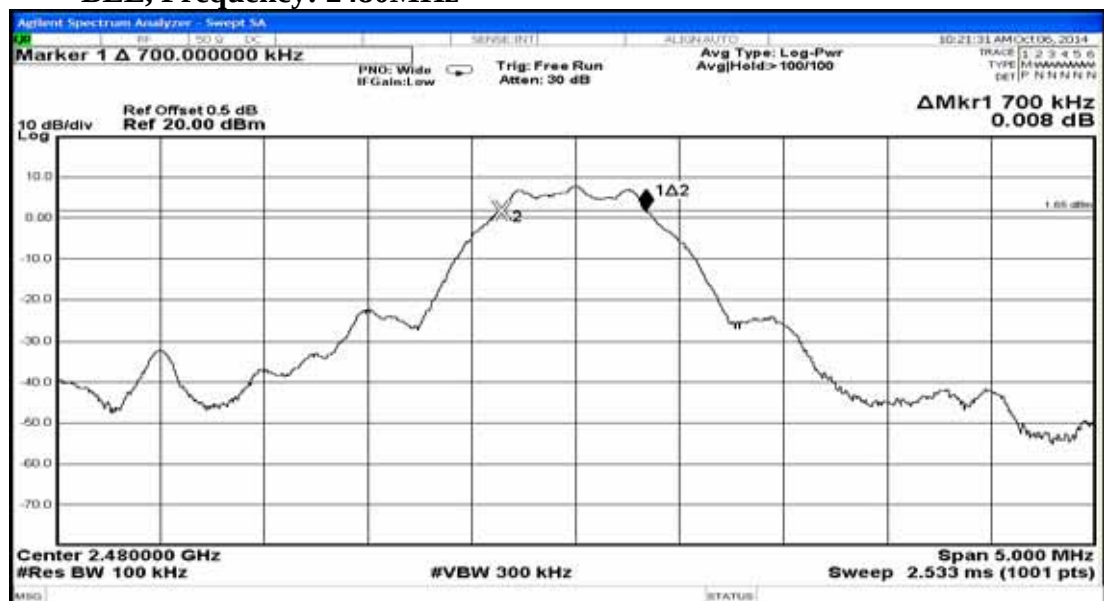
BLE, Frequency: 2402MHz



BLE, Frequency: 2440MHz



BLE, Frequency: 2480MHz



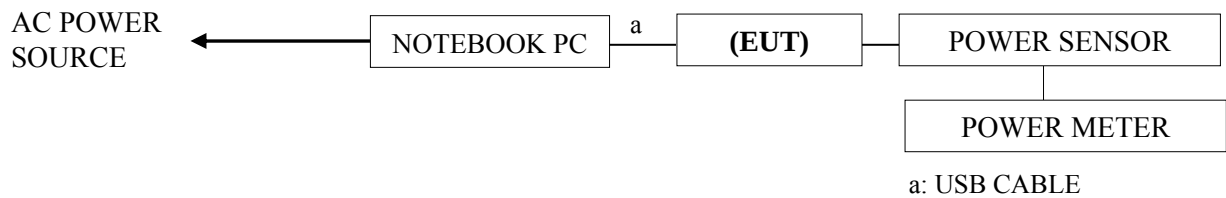
6. MAXIMUM PEAK OUTPUT POWER MEASUREMENT

6.1. Test Equipment

The following test equipment was used during the maximum peak output power measurement:

Item	Equipment	Manufacturer	Model	Serial Number	Cal. Date	Cal. Interval
1.	Power Meter	Anritsu	ML2495A	1145008	2013. 10. 23	1 Year
2.	Power Sensor	Anritsu	MA2411B	1126096	2013. 10. 23	1 Year

6.2. Block Diagram of Test Setup



EUT: WIRELESS MICROPHONE

6.3. Specification Limits (§15.247(b)-(3))

The Limits of maximum Peak Output Power for digital modulation in 2400-2483.5MHz is: 1Watt. (30dBm)

6.4. Operating Condition of EUT

The test program “Blue tool” was used to enable the EUT to transmit data at different channel frequency individually.

6.5. Test Procedure

The transmitter output was connected to the power sensor and record the reading of power meter.

The measurement guideline was according to KDB 558074 D01 DTS Meas Guidance is v03r02.

6.6. Test Results

PASSED. All the test results are listed below.

Test Date: 2014. 10. 06 Temperature: 24°C Humidity: 60%

No	Test Mode	Channel	Frequency	Peak Output Power (dBm)
1	BLE	CH 0	2402MHz	7.39
2		CH 19	2440MHz	7.61
3		CH 39	2480MHz	7.63

[Limit: 1Watt. (30dBm)]

7. EMISSION LIMITATIONS MEASUREMENT

7.1. Test Equipment

The following test equipment was used during the emission limitations test :

Item	Equipment	Manufacturer	Model	Serial Number	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Agilent	N9030A-544	US51350140	2014. 07. 24	1 Year

7.2. Block Diagram of Test Setup

The same as section.5.2

7.3. Specification Limits [§15.247(c)]

7.3.1. In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (See Section 15.205(c)). (※ This test result attaching to §4.6.1.2 and §4.6.2.2)

7.3.2. The reference level for determining limit of emission limitations is according to the value measured indicated in plots at section 9.6.

7.4. Operating Condition of EUT

Test program RF Test is used for enabling the EUT transmitting continuing.

7.5. Test Procedure

The RF output of EUT was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measure by spectrum analyzer with 100kHz RBW and 300kHz VBW.

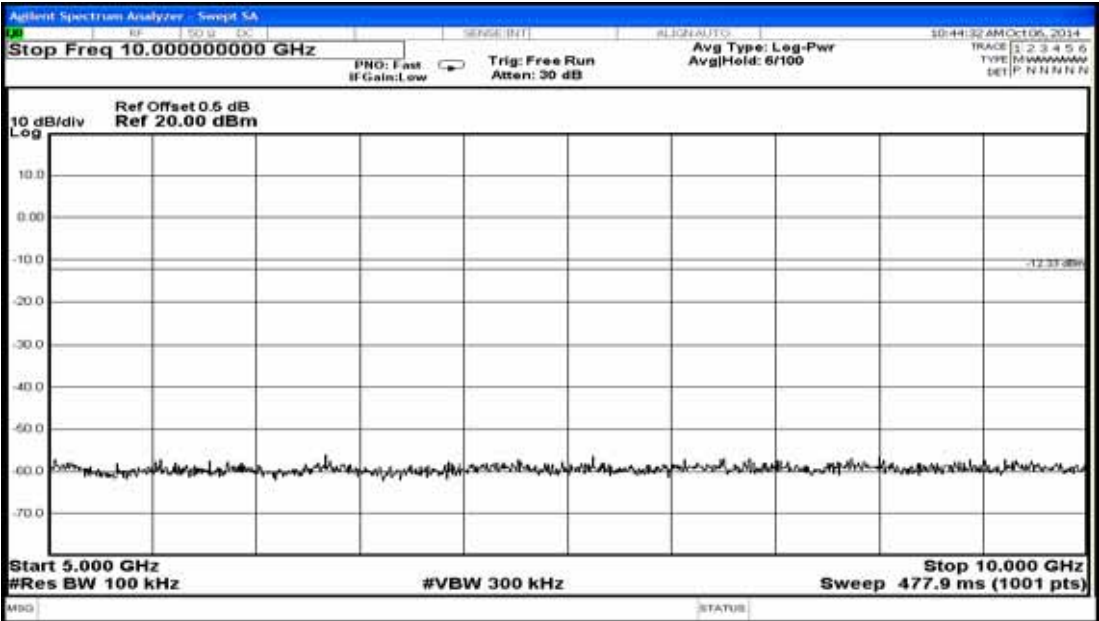
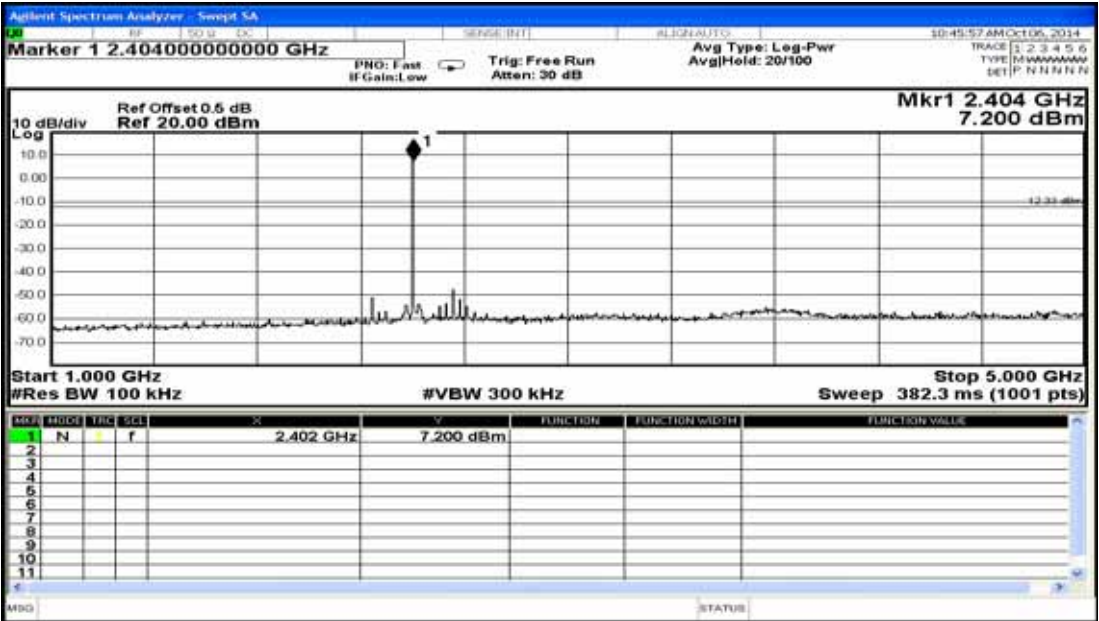
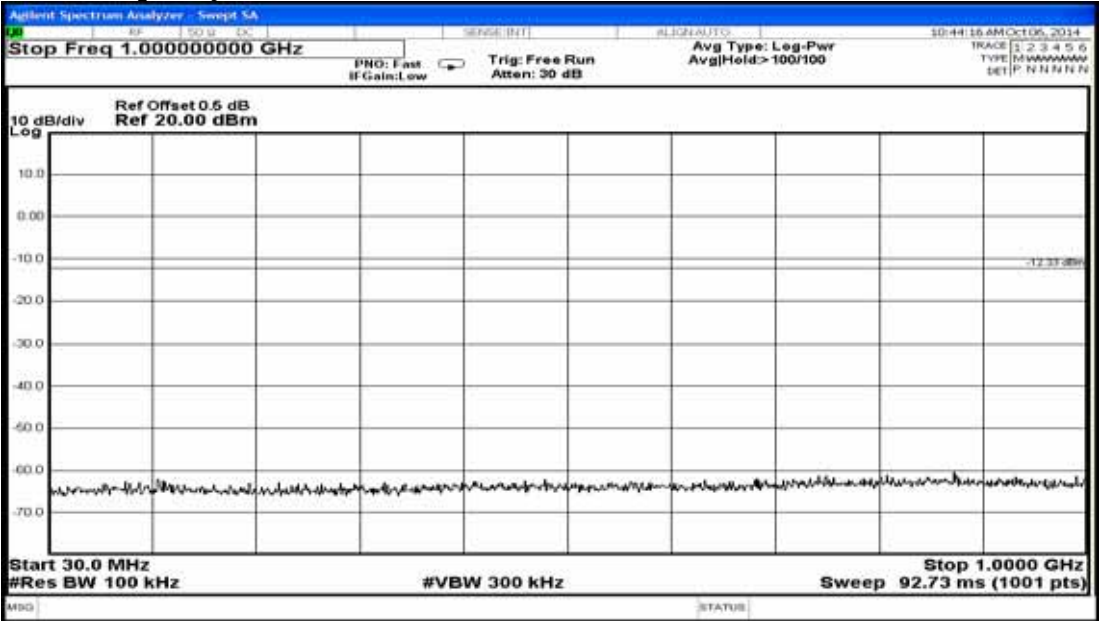
The measurement guideline was according to KDB 558074 D01 DTS Meas Guidance is v03r02.

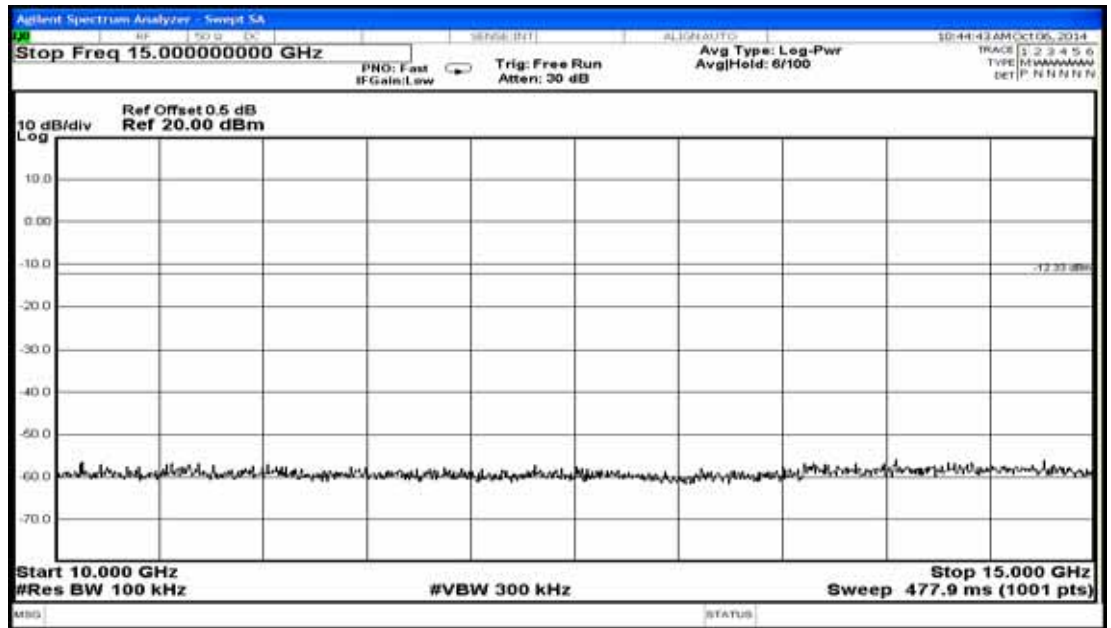
7.6. Test Results

PASSED. The testing data was attached in the next pages.

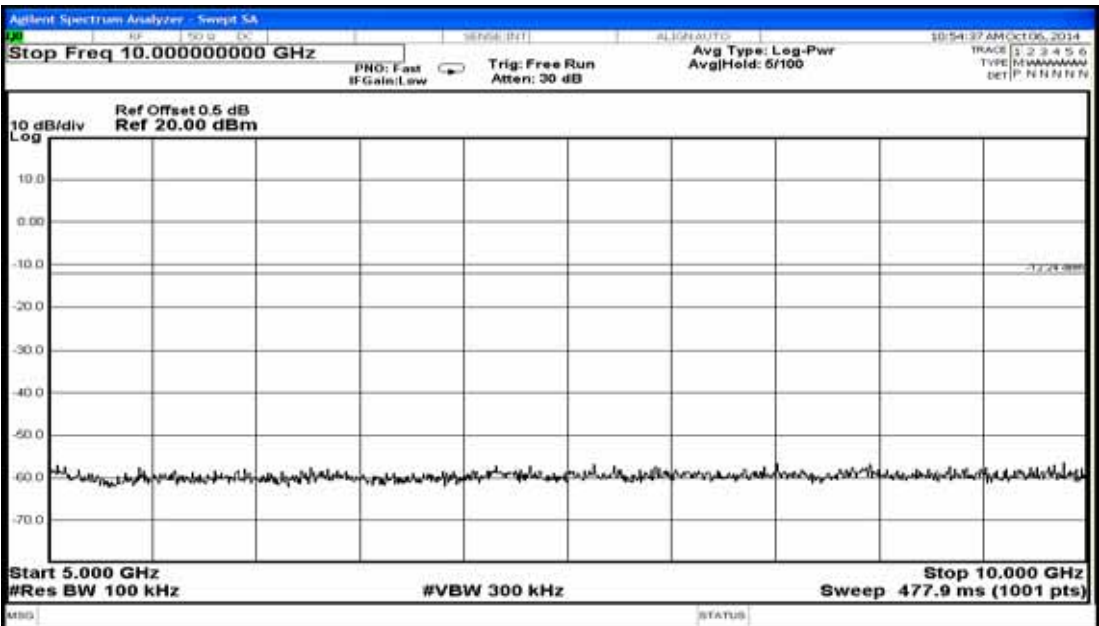
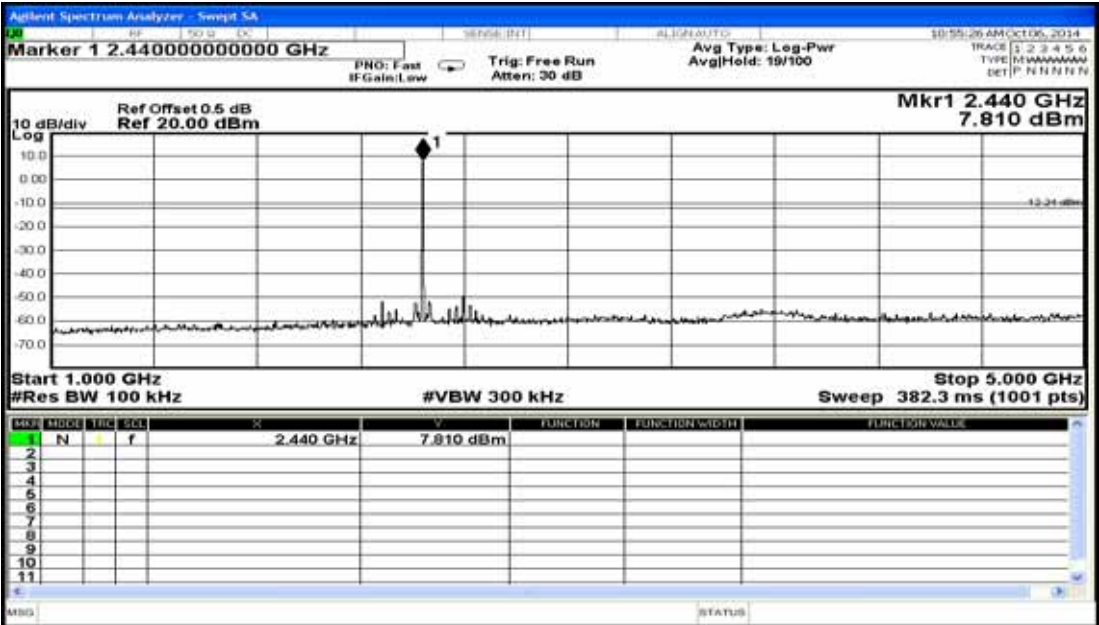
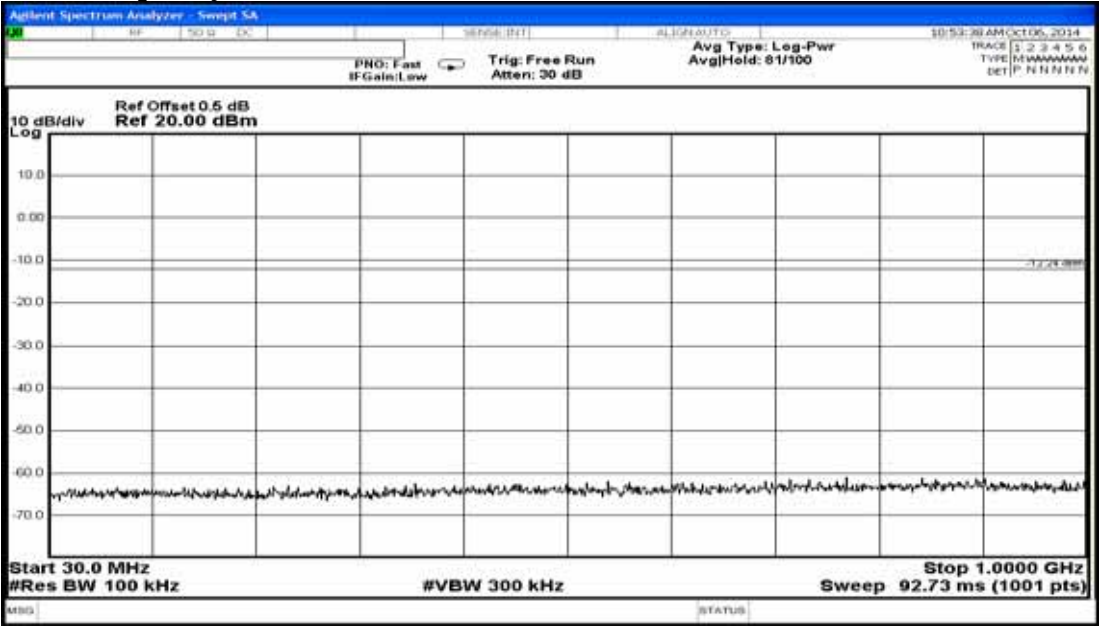
Test Date : 2014. 10. 06 Temperature : 24°C Humidity : 60%

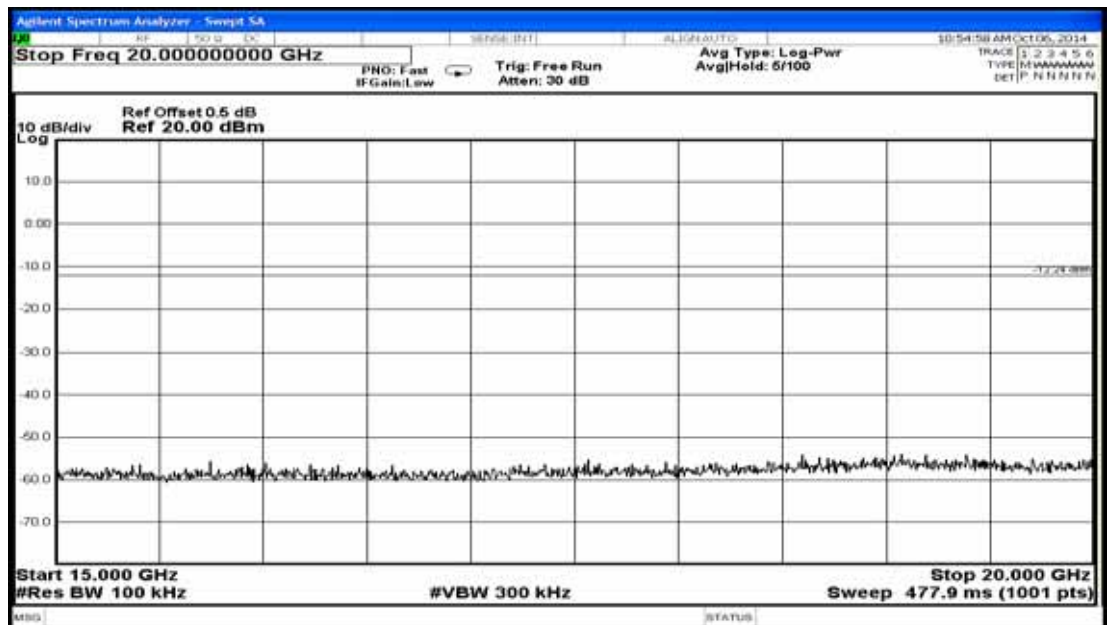
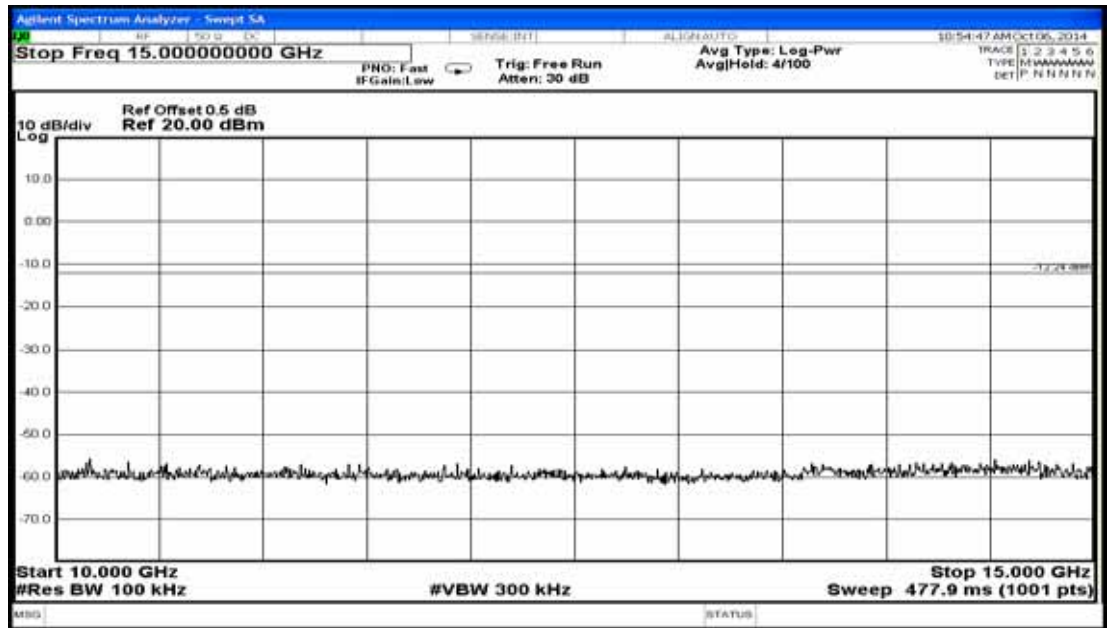
BLE, Frequency: 2402MHz



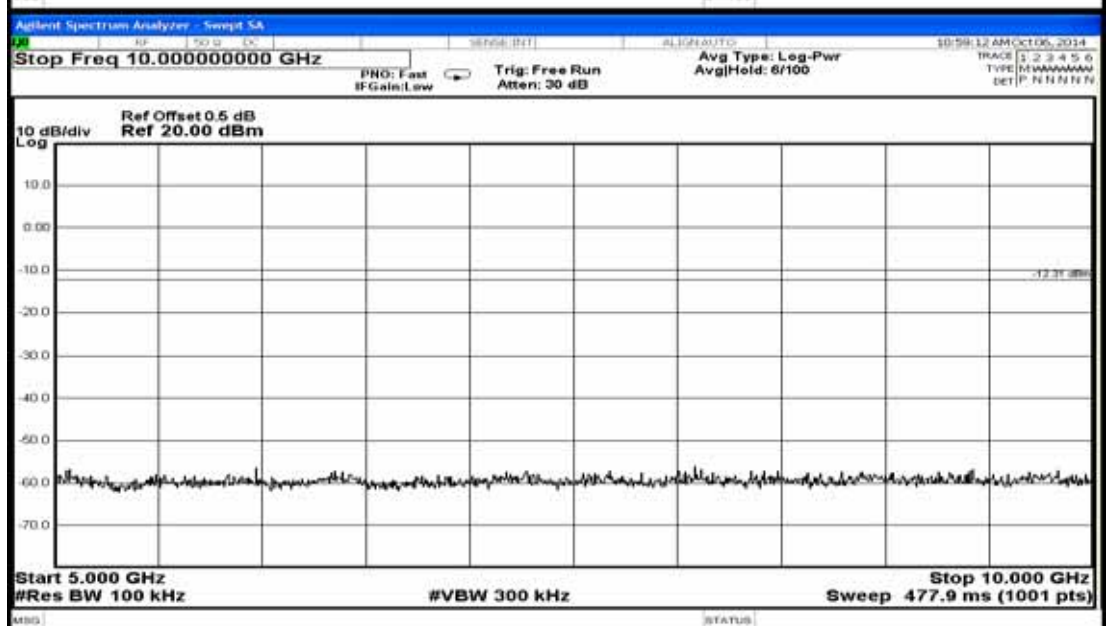
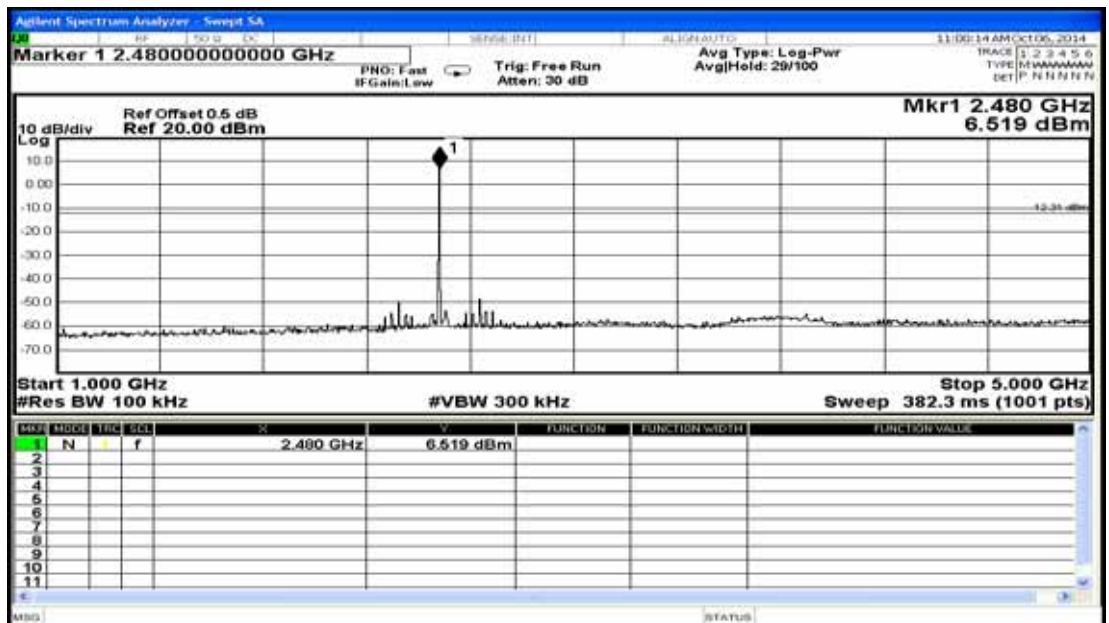
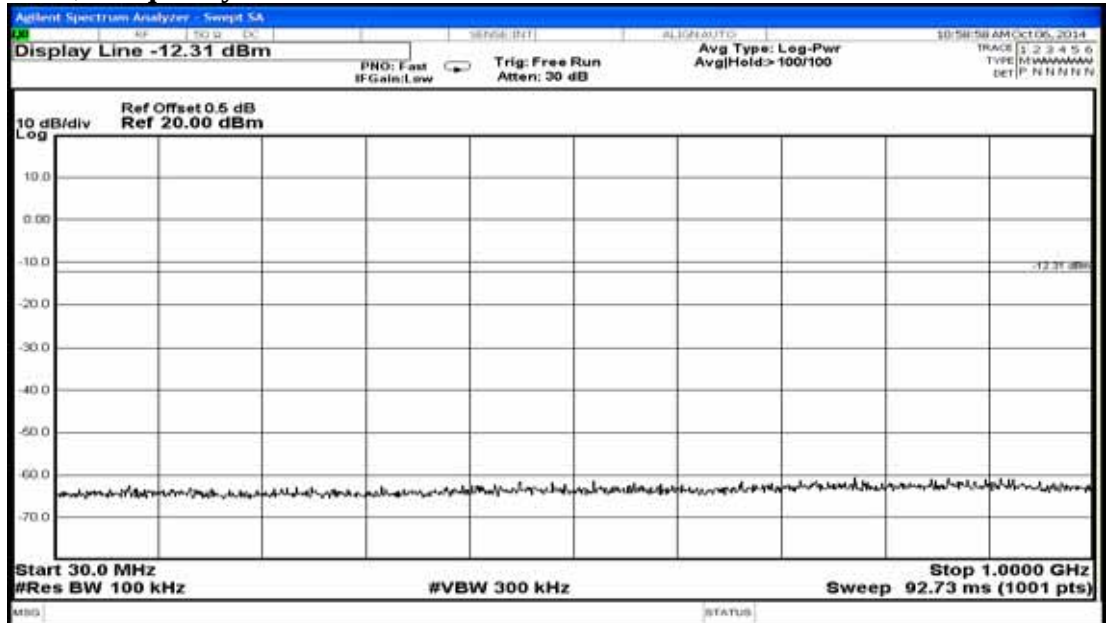


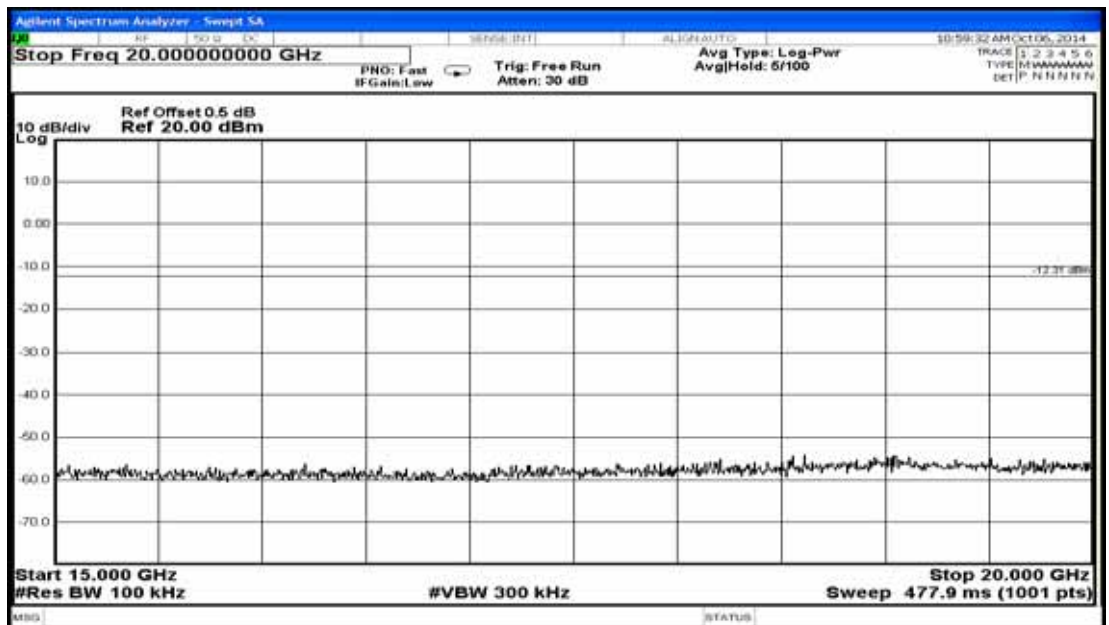
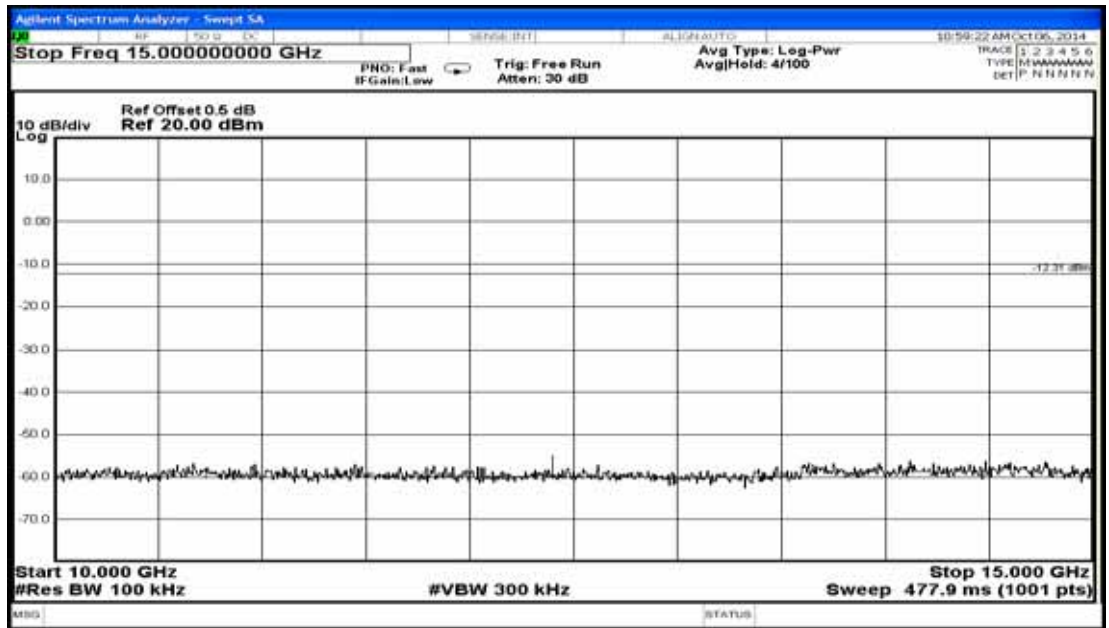
BLE, Frequency: 2440MHz





BLE, Frequency: 2480MHz





8. BAND EDGES MEASUREMENT

8.1. Test Equipment

The following test equipment was used during the band edges measurement:

Item	Equipment	Manufacturer	Model	Serial Number	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Agilent	N9030A-544	US51350140	2014. 07. 24	1 Year

8.2. Block Diagram of Test Setup

The same as section.5.2.

8.3. Specification Limits [§15.247(c)]

The highest level should be at least 20 dB below reference level as measured in section 9.6.

8.4. Operating Condition of EUT

The test program “Blue tool” was used to enable the EUT to transmit data at different channel frequency individually.

8.5. Test Procedure

The transmitter output was connected to the spectrum analyzer. Set both RBW=100 kHz and VBW to 300kHz with suitable frequency span including 100kHz bandwidth from band edge.

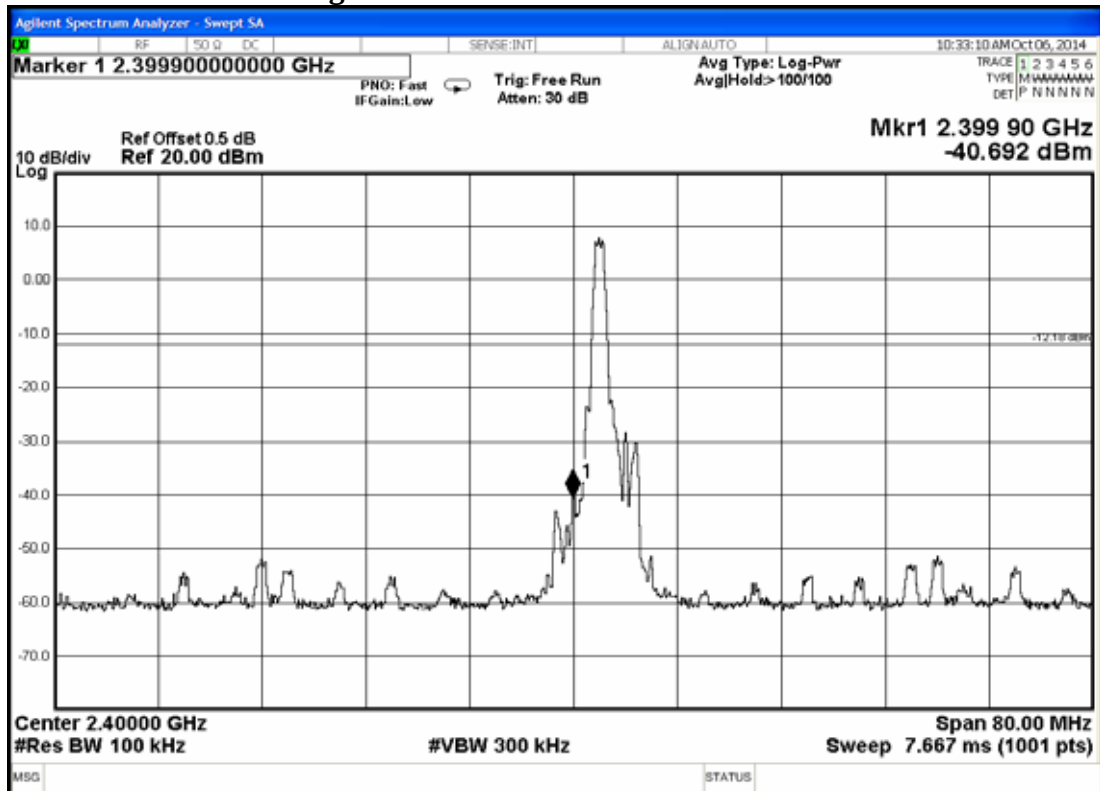
The measurement guideline was according to KDB 558074 D01 DTS Meas Guidance is v03r02.

8.6. Test Results

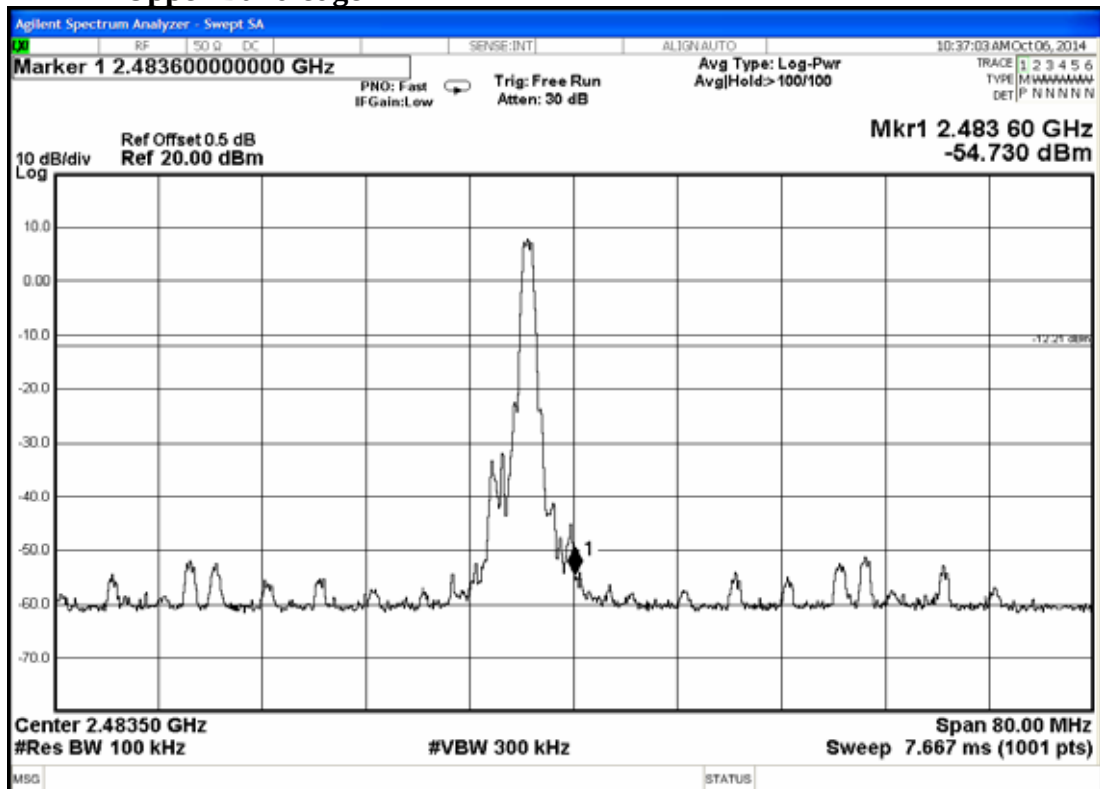
PASSED. All the test results are attached in next pages.

Test Date : 2014. 10. 06 Temperature : 24°C Humidity : 60%

Below Band edge



Upper Band edge



9. POWER SPECTRAL DENSITY MEASUREMENT

9.1. Test Equipment

The following test equipment was used during the power spectral density measurement:

Item	Equipment	Manufacturer	Model	Serial Number	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Agilent	N9030A-544	US51350140	2014. 07. 24	1 Year

9.2. Block Diagram of Test Setup

The same as section.5.2.

9.3. Specification Limits [§15.247(d)]

The peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band.

9.4. Operating Condition of EUT

The test program “Blue tool” was used to enable the EUT to transmit data at different channel frequency individually.

9.5. Test Procedure

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measured with the spectrum analyzer using 100kHz RBW and ≥ 300 kHz VBW, set sweep time = Auto. The measurement guideline was according to KDB 558074 D01 DTS Meas Guidance is v03r02.

9.6. Test Results

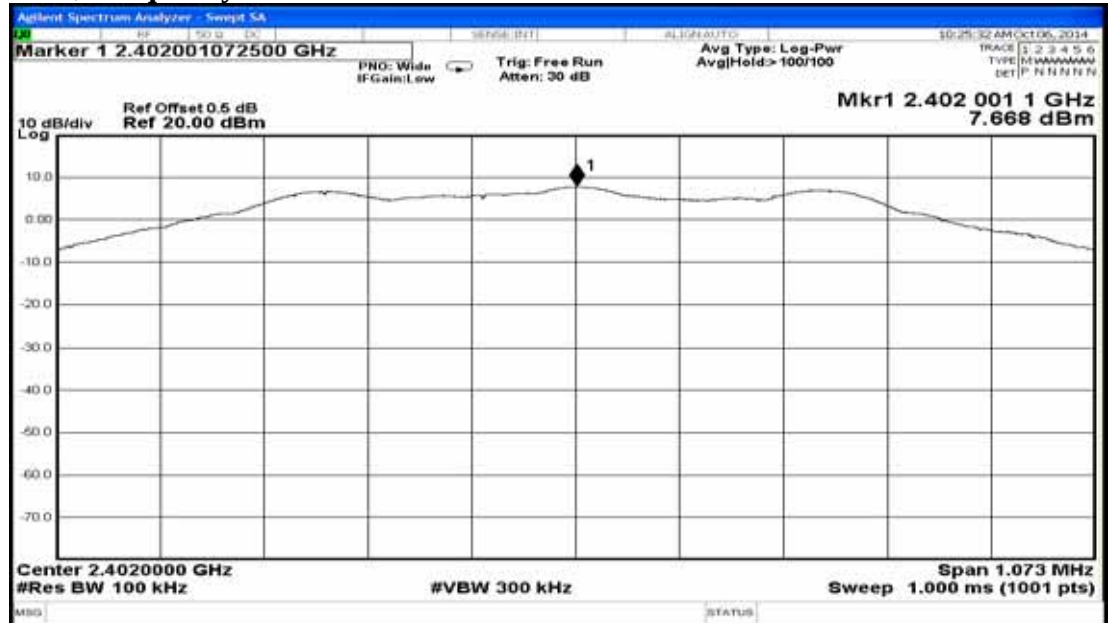
PASSED. All the test results are attached in next pages.

Test Date : 2014. 10. 06 Temperature : 24°C Humidity : 60%

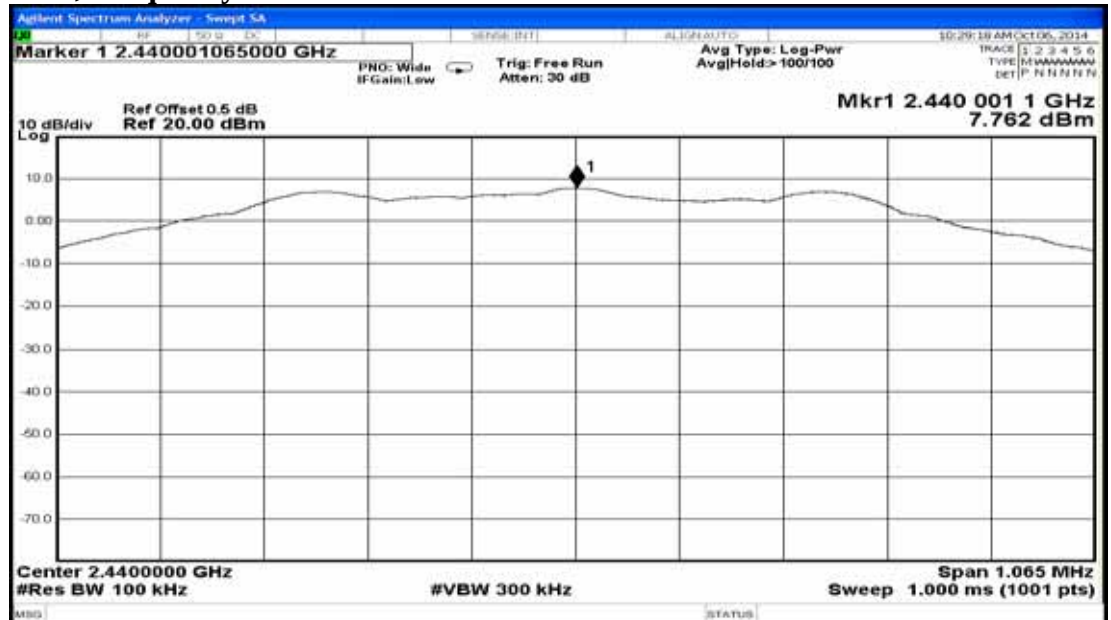
No	Test Mode	Channel	Frequency	Power Spectral Density (dBm)
1	BLE	CH 0	2402MHz	7.668
2		CH 19	2440MHz	7.762
3		CH 39	2480MHz	7.694

[Limit: 8dBm]

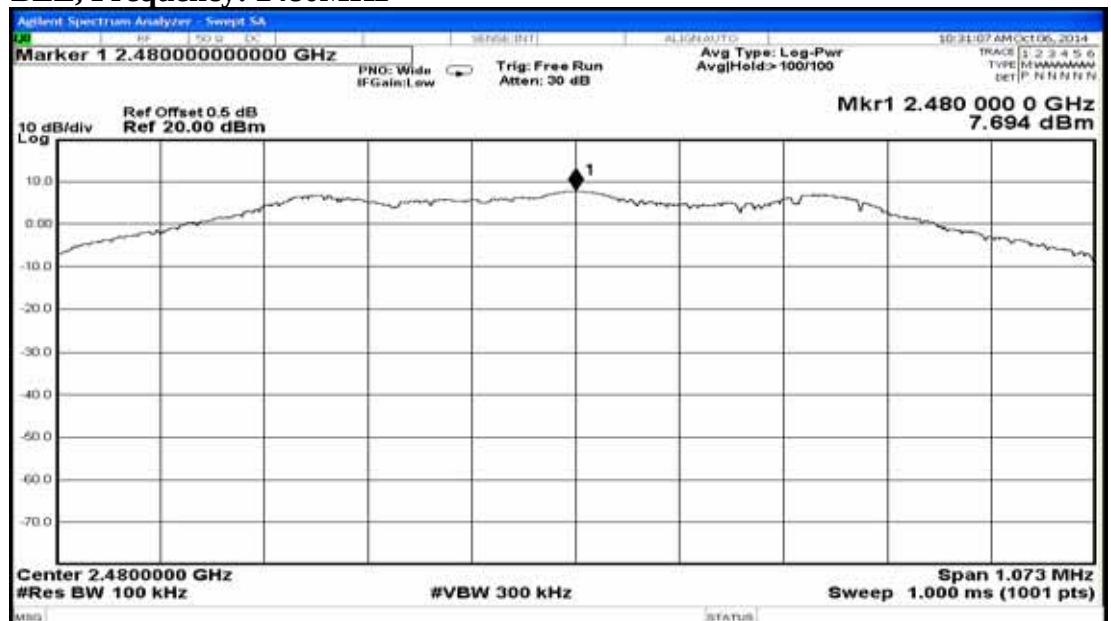
BLE, Frequency: 2402MHz



BLE, Frequency: 2440MHz



BLE, Frequency: 2480MHz



10.DEVIATION TO TEST SPECIFICATIONS

【NONE】

11. PHOTOGRAPHS

11.1. Photos of Conducted Disturbance Measurement



FRONT VIEW OF CONDUCTED MEASUREMENT



BACK VIEW OF CONDUCTED MEASUREMENT

[Photo of Zoom Test]



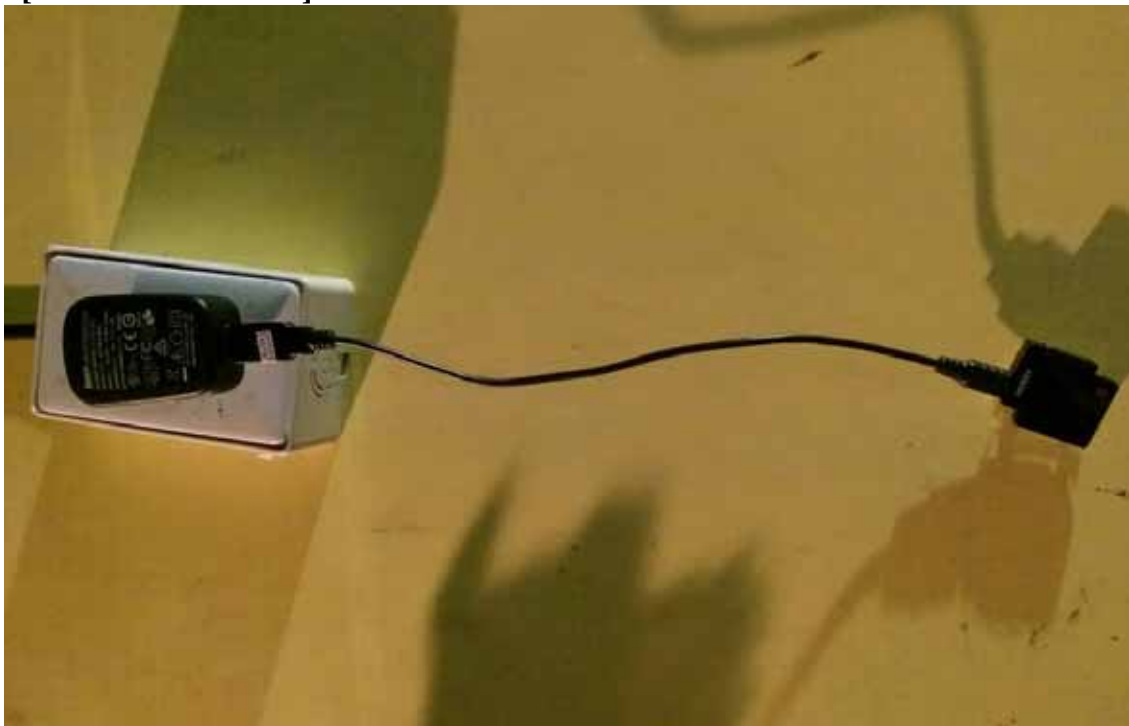
11.2.Photos of Radiated Measurement at Semi-Anechoic Chamber

11.2.1. Frequency Range 30MHz-1GHz

[Charge Mode]



[Photo of Zoom Test]



[Stand-Alone Transmit Mode] (Position: Side)



[Stand-Alone Transmit Mode] Battery Mode (Position: Lie)



[Stand-Alone Transmit Mode] (Position: Stand)



11.2.2.Frequency Above 1GHz

[Stand-Alone Transmit Mode] (Position: Side)



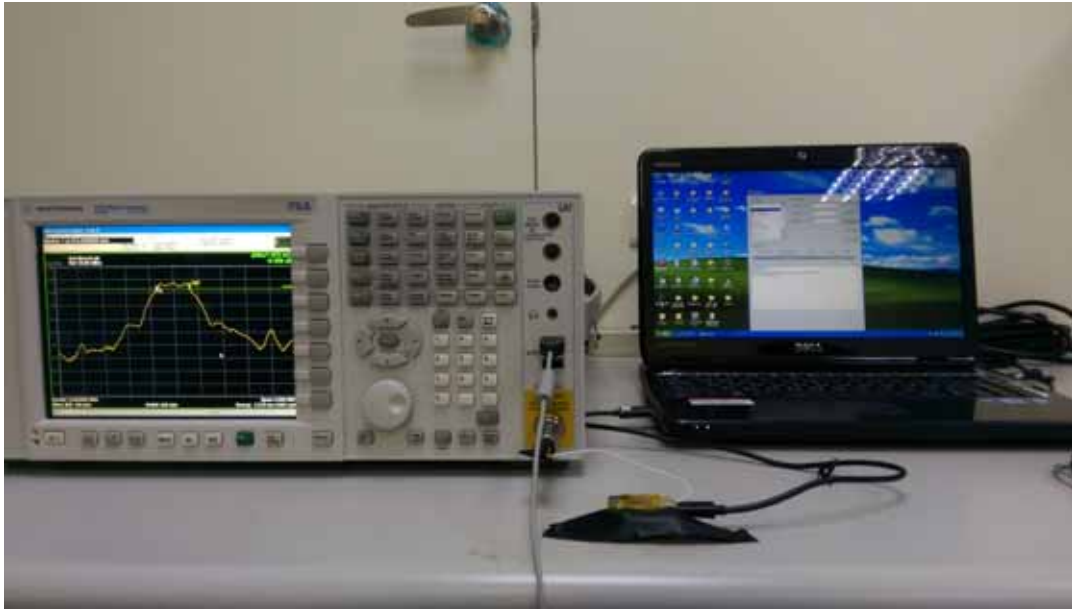
[Stand-Alone Transmit Mode] Battery Mode (Position: Lie)



[Stand-Alone Transmit Mode] (Position: Stand)



11.3.Photo of Section RF Conducted Measurement



11.4.Photo of Maximum Peak Output Power Measurement

