



### FCC PART 15 SUBPART C TEST REPORT

### FCC PART 15.249

**Report Reference No.:** CTL1506121599-WF

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**Product Name**.....: Digital Broadcasting Device (iBeacon)

**Model/Type reference**.....: C3

**List Model(s)**.....: /

**Trade Mark**.....: MINEW

**FCC ID**.....: 2ABU6-C3

**Applicant's name**.....: **Shenzhen Minew Technologies Co.,Ltd.**

**Address of applicant**.....: 6 Floor, H Building, Gangzhilong Science Park, Qinglong Road, Longhua District, Shenzhen City, China

**Test Firm**.....: **Shenzhen CTL Testing Technology Co., Ltd.**

**Address of Test Firm**.....: Floor 1-A, Baisha Technology Park, No.3011, Shahehexi Road, Nanshan District, Shenzhen, China 518055

**Test specification**.....:

**Standard**.....: **FCC Part 15.249:**Operation within the bands 920-928 MHz, 2400-2483.5 MHz, 5725-5850 MHz and 24.0 - 24.25 GHz.

**TRF Originator**.....: Shenzhen CTL Testing Technology Co., Ltd.

**Master TRF**.....: Dated 2011-01

**Date of Receipt**.....: Jun. 07, 2015

**Date of Test Date**.....: Jun. 11, 2015 - Jun. 16, 2015

**Data of Issue**.....: Jun. 18, 2015

**Result**.....: Positive

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**TEST REPORT**

<b>Test Report No. :</b>	<b>CTL1506121599-WF</b>	Jun. 18, 2015
		Date of issue

Equipment under Test : Digital Broadcasting Device (iBeacon)

Model /Type : C3

Listed Models : /

**Applicant** : **Shenzhen Minew Technologies Co.,Ltd.**

Address : 6 Floor, H Building, Gangzhihong Science Park, Qinglong Road, Longhua District, Shenzhen City, China

**Manufacturer** : **Shenzhen Minew Technologies Co.,Ltd.**

Address : 6 Floor, H Building, Gangzhihong Science Park, Qinglong Road, Longhua District, Shenzhen City, China

<b>Test result</b>	<b>Pass *</b>
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\* In the configuration tested, the EUT complied with the standards specified page 4.

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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# 1 SUMMARY

## 1.1 TEST STANDARDS

The tests were performed according to following standards:

[FCC Rules Part 15.249](#): Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz, 5725 - 5875 MHz, and 24.0 - 24.25 GHz.

[ANSI C63.4-2009](#): American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40GHz

## 1.2 Test Description

FCC PART 15.249		
FCC Part 15.249(a)	Field Strength of Fundamental	PASS
FCC Part 15.209	Spurious Emission	PASS
FCC Part 15.209	Band edge	PASS
FCC Part 15.215(c)	20dB bandwidth	PASS
FCC Part 15.207	Conducted Emission	PASS
FCC Part 15.203	Antenna Requirement	PASS

## 1.3 Test Facility

### 1.3.1 Address of the test laboratory

Shenzhen CTL Testing Technology Co., Ltd.  
Floor 1-A, Baisha Technology Park, No. 3011, Shaheji Road, Nanshan, Shenzhen 518055 China

There is one 3m semi-anechoic chamber and two line conducted labs for final test. The Test Sites meet the requirements in documents ANSI C63.4 and CISPR 22/EN 55022 requirements.

### 1.3.2 Laboratory accreditation

The test facility is recognized, certified, or accredited by the following organizations:

#### IC Registration No.: 9618B

The 3m alternate test site of Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration No.: 9618B on November 13, 2013.

#### FCC-Registration No.: 970318

Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 970318, December 19, 2013.

## 1.4 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen CTL Testing Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for CTL laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.10dB	(1)
Radiated Emission	Above 1GHz	4.32dB	(1)
Conducted Disturbance	0.15~30MHz	3.20dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

## 2 GENERAL INFORMATION

### 2.1 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature:	25°C
Relative Humidity:	55 %
Air Pressure:	101 kPa

### 2.2 General Description of EUT

Product Name:	Digital Broadcasting Device (iBeacon)
Model/Type reference:	C3
Power supply:	DC 5V from PC
<b>Bluetooth</b>	
Version:	Version 4.0 for low Energy
Modulation:	GFSK
Operation frequency:	2402MHz~2480MHz
Channel number:	40
Channel separation:	2MHz
Antenna type:	PCB Antenna
Antenna gain:	1.0dBi

Note: For more details, please refer to the user's manual of the EUT.

### 2.3 Description of Test Modes and Test Frequency

The Applicant provides communication tools software to control the EUT for staying in continuous transmitting (Duty Cycle more than 98%) and receiving mode for testing .There are 40 channels provided to the EUT and Channel 00/19/39 were selected to test.

#### Operation Frequency:

Channel	Frequency (MHz)
<b>00</b>	<b>2402</b>
01	2404
02	2406
⋮	⋮
<b>19</b>	<b>2440</b>
⋮	⋮
37	2476
38	2478
<b>39</b>	<b>2480</b>

## 2.4 Equipments Used during the Test

Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
Bilog Antenna	Sunol Sciences Corp.	JB1	A061713	2014/07/12	2015/07/11
EMI Test Receiver	R&S	ESCI	103710	2014/07/10	2015/07/09
Spectrum Analyzer	Agilent	E4407B	MY45108355	2014/07/06	2015/07/05
Controller	EM Electronics	Controller EM 1000	N/A	2014/07/06	2015/07/05
Horn Antenna	Sunol Sciences Corp.	DRH-118	A062013	2014/07/12	2015/07/11
Horn Antenna	SCHWARZBECK	BBHA9170	1562	2014/07/12	2015/07/11
Active Loop Antenna	SCHWARZBECK	FMZB1519	1519-037	2014/07/12	2015/07/11
LISN	R&S	ENV216	101316	2014/07/10	2015/07/09
LISN	SCHWARZBECK	NSLK8127	8127687	2014/07/10	2015/07/09
Microwave Preamplifier	HP	8349B	3155A00882	2014/07/10	2015/07/09
Amplifier	HP	8447D	3113A07663	2014/07/10	2015/07/09
Transient Limiter	Com-Power	LIT-153	532226	2014/07/10	2015/07/09
Temperature/Humidity Meter	zhicheng	ZC1-2	22522	2014/07/10	2015/07/09

The calibration interval was one year

## 2.5 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID:2ABU6-C3 filing to comply with Section 15.249 of the FCC Part 15, Subpart C Rules.

## 2.6 Modifications

No modifications were implemented to meet testing criteria.

### **3 TEST CONDITIONS AND RESULTS**

#### **3.1 Conducted Emissions Test**

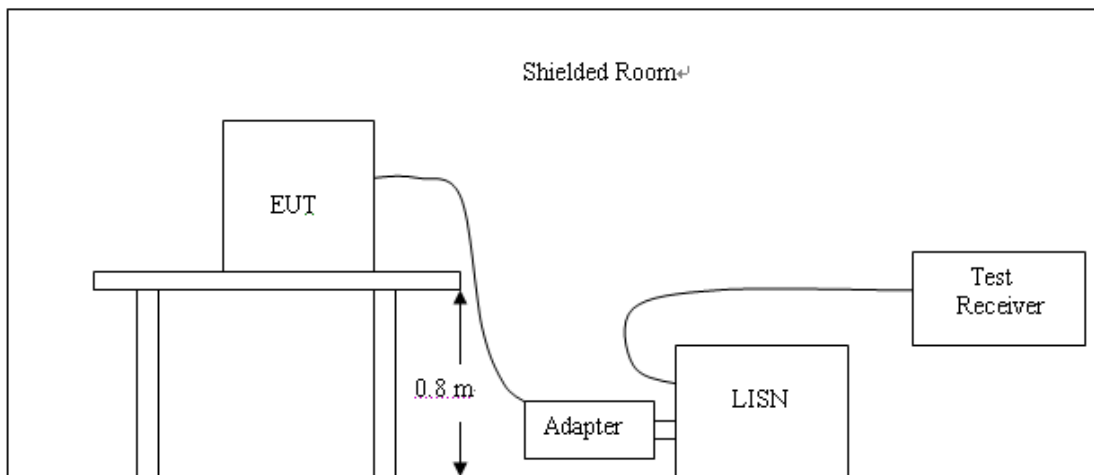
##### **LIMIT**

FCC CFR Title 47 Part 15 Subpart C Section 15.207

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

\* Decreases with the logarithm of the frequency.

##### **TEST CONFIGURATION**



##### **TEST PROCEDURE**

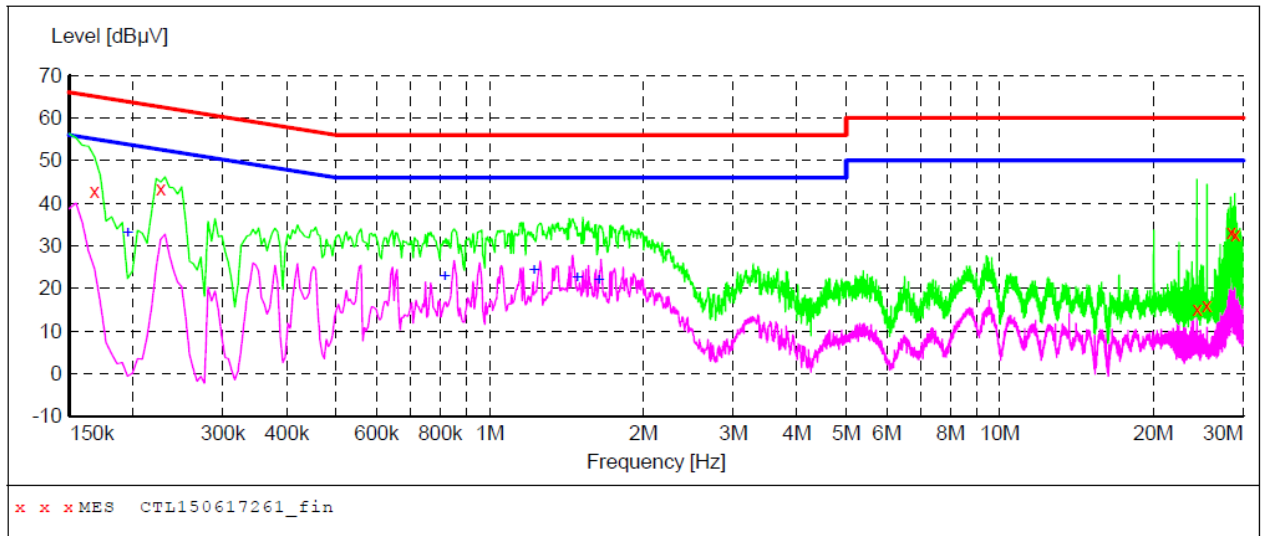
1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system; a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4.
2. Support equipment, if needed, was placed as per ANSI C63.4.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
4. If a EUT received DC power from the USB Port of Notebook PC, the PC's adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5. All support equipments received AC power from a second LISN, if any.
6. The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.



**TEST RESULTS**

**SCAN TABLE: "Voltage (9K-30M) FIN"**

Short Description: 150K-30M Voltage



**MEASUREMENT RESULT: "CTL150617261\_fin"**

6/17/2015 2:17PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.168000	42.90	10.2	65	22.2	QP	L1	GND
0.226500	43.30	10.2	63	19.3	QP	L1	GND
24.364500	15.20	11.1	60	44.8	QP	L1	GND
25.444500	16.10	11.1	60	43.9	QP	L1	GND
28.392000	33.20	11.2	60	26.8	QP	L1	GND
28.936500	32.60	11.2	60	27.4	QP	L1	GND

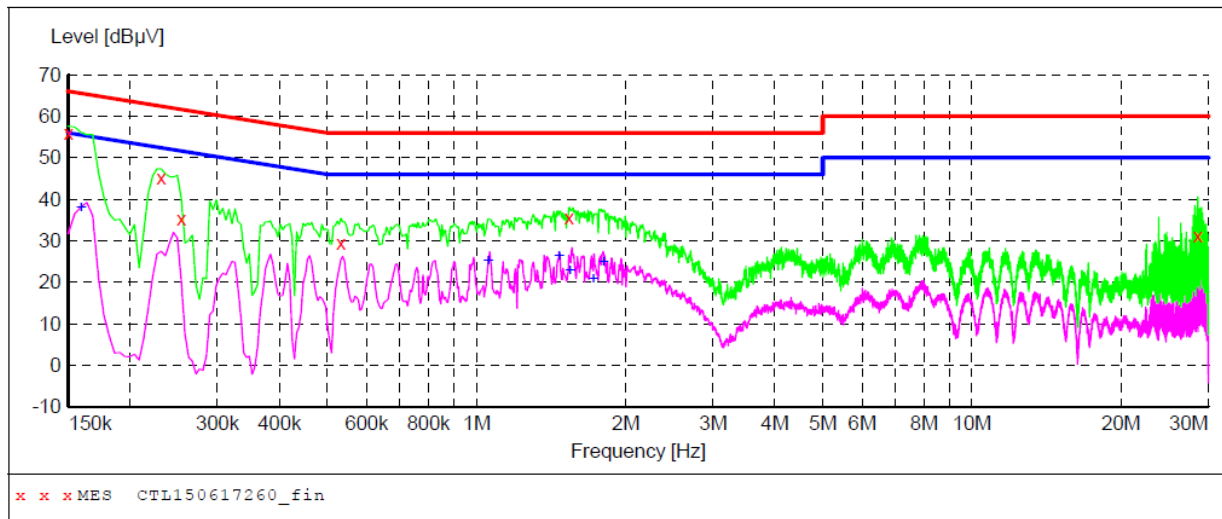
**MEASUREMENT RESULT: "CTL150617261\_fin2"**

6/17/2015 2:17PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.195000	32.80	10.2	54	21.0	AV	L1	GND
0.816000	22.60	10.2	46	23.4	AV	L1	GND
1.221000	24.20	10.3	46	21.8	AV	L1	GND
1.482000	22.30	10.3	46	23.7	AV	L1	GND
1.635000	21.70	10.3	46	24.3	AV	L1	GND

**SCAN TABLE: "Voltage (9K-30M) FIN"**

Short Description: 150K-30M Voltage



**MEASUREMENT RESULT: "CTL150617260\_fin"**

6/17/2015 2:13PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	56.00	10.2	66	10.0	QP	N	GND
0.231000	45.10	10.2	62	17.3	QP	N	GND
0.253500	35.20	10.2	62	26.4	QP	N	GND
0.532500	29.30	10.2	56	26.7	QP	N	GND
1.536000	35.60	10.3	56	20.4	QP	N	GND
28.576500	31.20	11.2	60	28.8	QP	N	GND

**MEASUREMENT RESULT: "CTL150617260\_fin2"**

6/17/2015 2:13PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.159000	38.00	10.2	56	17.5	AV	N	GND
1.054500	25.00	10.3	46	21.0	AV	N	GND
1.468500	26.10	10.3	46	19.9	AV	N	GND
1.545000	22.60	10.3	46	23.4	AV	N	GND
1.720500	20.70	10.3	46	25.3	AV	N	GND
1.801500	24.70	10.3	46	21.3	AV	N	GND

### 3.2 Radiated Emissions and Band Edge

#### Limit

According to 15.249, the field strength of emissions from intentional radiators operated within 2400MHz-2483.5MHz shall not exceed 94dBµV/m(50mV/m):

FCC PART 15.249(d) 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 radiated emission limits in §15.209, whichever is the lesser attenuation.

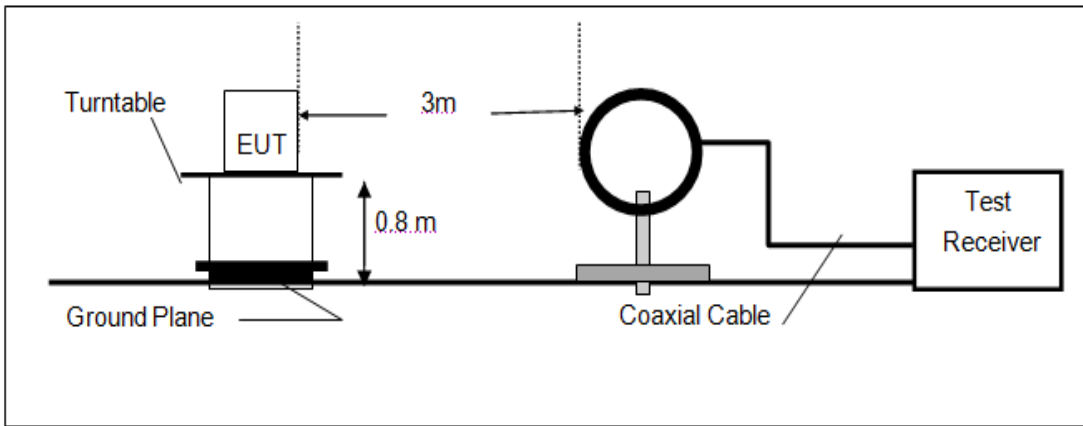
In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a)

Radiated emission limits

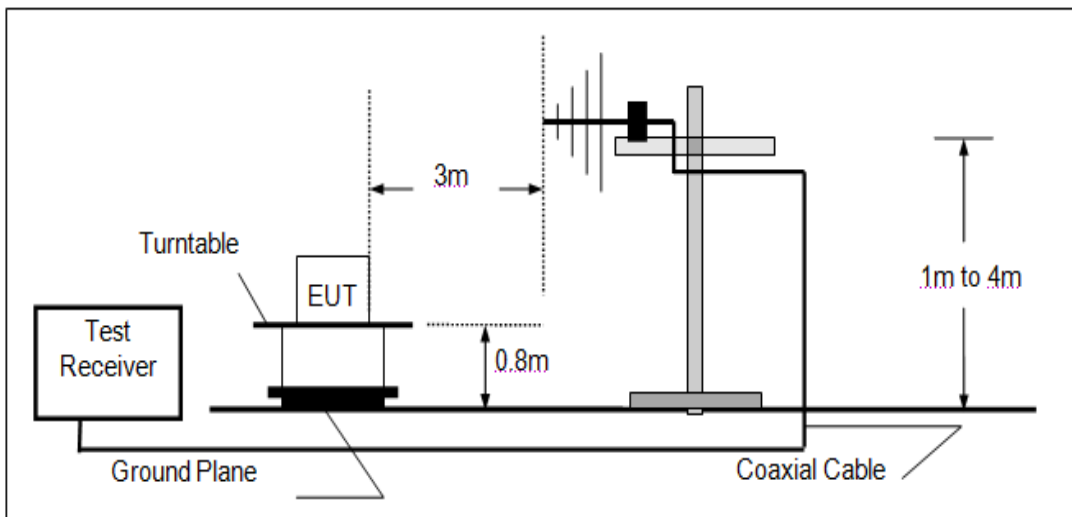
Frequency (MHz)	Distance (Meters)	Radiated (dBµV/m)	Radiated (µV/m)
0.009-0.49	3	$20\log(2400/F(KHz))+40\log(300/3)$	2400/F(KHz)
0.49-1.705	3	$20\log(24000/F(KHz))+ 40\log(30/3)$	24000/F(KHz)
1.705-30	3	$20\log(30)+ 40\log(30/3)$	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

#### TEST CONFIGURATION

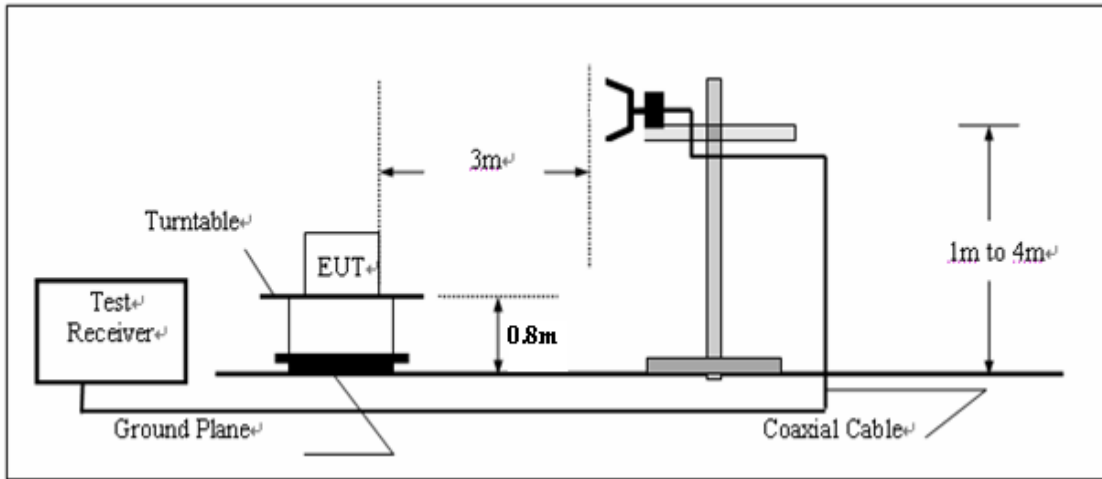
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



**Test Procedure**

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0° to 360° to acquire the highest emissions from EUT
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.

**Field Strength Calculation**

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

For example

Frequency (MHz)	FS (dBμV/m)	RA (dBμV/m)	AF (dB)	CL (dB)	AG (dB)	Transd (dB)
150.00	40	58.1	12.2	1.6	31.90	-18.1

$$Transd = AF + CL - AG$$

**TEST RESULTS**

For 9 KHz-30MHz

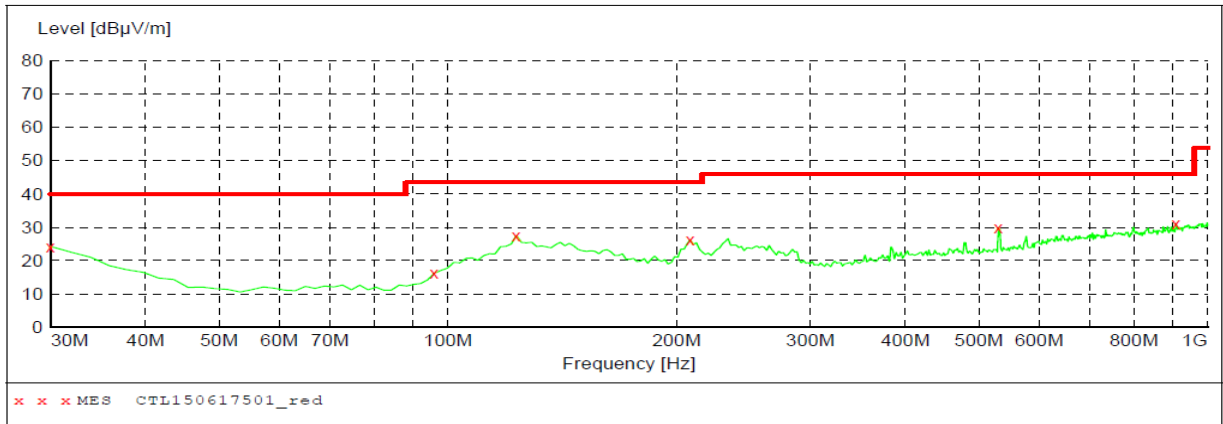
Frequency (MHz)	Corrected Reading (dBuV/m)@3m	FCC Limit (dBuV/m) @3m	Margin (dB)	Detector	Result
0.25	47.24	99.65	52.41	QP	PASS
1.54	53.47	63.85	10.38	QP	PASS
16.87	57.47	69.54	12.07	QP	PASS
20.46	48.47	69.54	21.07	QP	PASS

For 30MHz-1GHz

Horizontal

**SWEEP TABLE: "test (30M-1G)"**

Short Description:		Field Strength				Transducer
Start	Stop	Detector	Meas. Time	IF Bandw.		
30.0 MHz	1.0 GHz	MaxPeak	300.0 ms	120 kHz	JB1	



**MEASUREMENT RESULT: "CTL150617501\_red"**

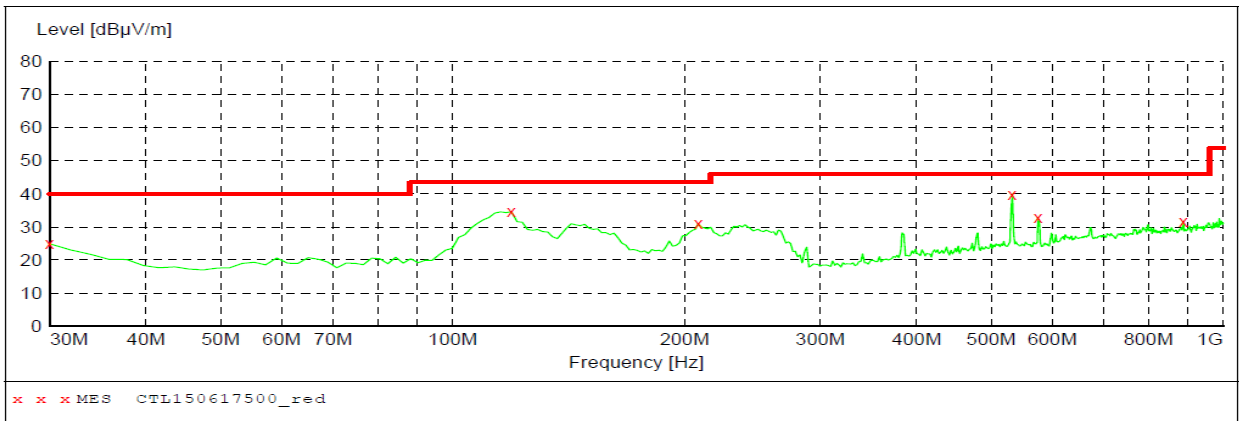
6/17/2015 10:13AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
30.000000	24.20	21.1	40.0	15.8	---	0.0	0.00	HORIZONTAL
95.960000	16.20	10.6	43.5	27.3	---	0.0	0.00	HORIZONTAL
123.120000	27.50	15.1	43.5	16.0	---	0.0	0.00	HORIZONTAL
208.480000	26.30	14.3	43.5	17.2	---	0.0	0.00	HORIZONTAL
530.520000	29.90	20.5	46.0	16.1	---	0.0	0.00	HORIZONTAL
908.820000	31.00	26.2	46.0	15.0	---	0.0	0.00	HORIZONTAL

Vertical

**SWEEP TABLE: "test (30M-1G)"**

Short Description:		Field Strength				Transducer
Start	Stop	Detector	Meas. Time	IF Bandw.		
30.0 MHz	1.0 GHz	MaxPeak	300.0 ms	120 kHz	JB1	



**MEASUREMENT RESULT: "CTL150617500\_red"**

6/17/2015 10:11AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
30.000000	24.90	21.1	40.0	15.1	---	0.0	0.00	VERTICAL
119.240000	34.60	15.2	43.5	8.9	---	0.0	0.00	VERTICAL
208.480000	31.00	14.3	43.5	12.5	---	0.0	0.00	VERTICAL
532.460000	40.00	20.6	46.0	6.0	---	0.0	0.00	VERTICAL
575.140000	32.80	21.4	46.0	13.2	---	0.0	0.00	VERTICAL
887.480000	31.80	25.8	46.0	14.2	---	0.0	0.00	VERTICAL

## For 1GHz to 25GHz

## GFSK Mode (above 1GHz)

Frequency(MHz):				2402		Polarity:			HORIZONTAL	
No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
1	2402.00	95.65	PK	114.00	18.35	97.62	28.78	4.61	35.36	-1.97
1	2402.00	88.54	AV	94.00	5.46	90.51	28.78	4.61	35.36	-1.97
2	2390.00	34.65	PK	74.00	39.35	37.62	27.78	4.61	35.36	-2.97
2	2390.00	--	AV	--	--	--	--	--	--	--
3	4510.25	56.45	PK	74.00	17.55	56.49	29.38	5.23	34.65	-0.04
3	4510.25	42.41	AV	54.00	11.59	42.45	29.38	5.23	34.65	-0.04
4	4804.00	63.54	PK	74.00	10.46	57.49	33.48	6.91	34.34	6.05
4	4804.00	49.98	AV	54.00	4.02	43.93	33.48	6.91	34.34	6.05
5	5325.25	56.26	PK	74.00	17.74	49.54	34.35	7.22	34.85	6.72
5	5325.25	43.51	AV	54.00	10.49	36.79	34.35	7.22	34.85	6.72
6	7206.00	48.66	PK	74.00	25.34	37.59	36.92	9.18	35.03	11.07
6	7206.00	--	AV	--	--	--	--	--	--	--

Frequency(MHz):				2402		Polarity:			VERTICAL	
No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
1	2402.00	96.54	PK	114.00	17.46	98.51	28.78	4.61	35.36	-1.97
1	2402.00	89.68	AV	94.00	4.32	91.65	28.78	4.61	35.36	-1.97
2	2390.00	33.25	PK	74.00	40.75	36.22	27.78	4.61	35.36	-2.97
2	2390.00	--	AV	--	--	--	--	--	--	--
3	4515.14	55.54	PK	74.00	18.46	55.58	29.36	5.25	34.65	-0.04
3	4515.14	41.45	AV	54.00	12.55	41.49	29.36	5.25	34.65	-0.04
4	4804.00	65.45	PK	74.00	8.55	59.40	33.48	6.91	34.34	6.05
4	4804.00	50.26	AV	54.00	3.74	44.21	33.48	6.91	34.34	6.05
5	5325.25	56.30	PK	74.00	17.7	49.58	34.35	7.22	34.85	6.72
5	5325.25	43.42	AV	54.00	10.58	36.70	34.35	7.22	34.85	6.72
6	7206.00	49.67	PK	74.00	24.33	38.60	36.92	9.18	35.03	11.07
6	7206.00	--	AV	--	--	--	--	--	--	--

## REMARKS:

1. Emission level (dBuV/m) =Raw Value (dBuV)+Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
3. Margin value = Limit value- Emission level.
4. -- Mean the PK detector measured value is below average limit.
5. The other emission levels were very low against the limit.

Frequency(MHz):				2440		Polarity:			HORIZONTAL	
No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
1	2440.00	98.57	PK	114.00	15.43	99.41	28.87	4.66	34.37	-0.84
1	2440.00	88.69	AV	94.00	5.31	89.53	28.87	4.66	34.37	-0.84
2	4510.24	55.36	PK	74.00	18.64	55.44	29.34	5.23	34.65	-0.08
2	4510.24	41.54	AV	54.00	12.46	41.62	29.34	5.23	34.65	-0.08
3	4880.00	61.54	PK	74.00	12.46	55.29	33.60	6.95	34.30	6.25
3	4880.00	45.32	AV	54.00	8.68	39.07	33.60	6.95	34.30	6.25
4	5330.26	56.26	PK	74.00	17.74	49.58	34.34	7.24	34.85	6.73
4	5330.26	43.51	AV	54.00	10.49	36.83	34.34	7.24	34.85	6.73
5	7320.00	49.48	PK	74.00	24.52	37.79	37.46	9.23	35.00	11.69
5	7320.00	--	AV	--	--	--	--	--	--	--

Frequency(MHz):				2440		Polarity:			VERTICAL	
No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
1	2440.00	98.65	PK	114.00	15.35	99.49	28.87	4.66	34.37	-0.84
1	2440.00	90.24	AV	94.00	3.76	91.08	28.87	4.66	34.37	-0.84
2	4525.45	56.25	PK	74.00	17.75	56.29	29.36	5.25	34.65	-0.04
2	4525.45	42.41	AV	54.00	11.59	42.45	29.36	5.25	34.65	-0.04
3	4880.00	62.69	PK	74.00	11.31	56.44	33.60	6.95	34.30	6.25
3	4880.00	49.68	AV	54.00	4.32	43.43	33.60	6.95	34.30	6.25
4	5330.14	56.54	PK	74.00	17.46	49.81	34.34	7.24	34.85	6.73
4	5330.14	43.36	AV	54.00	10.64	36.63	34.34	7.24	34.85	6.73
5	7320.00	50.74	PK	74.00	23.26	39.05	37.46	9.23	35.00	11.69
5	7320.00	--	AV	--	--	--	--	--	--	--

## REMARKS:

6. Emission level (dBuV/m) =Raw Value (dBuV)+Correction Factor (dB/m)
7. Correction Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
8. Margin value = Limit value- Emission level.
9. -- Mean the PK detector measured value is below average limit.
10. The other emission levels were very low against the limit.

Frequency(MHz):				2480		Polarity:			HORIZONTAL	
No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
1	2480.00	97.68	PK	114.00	16.32	98.43	29.93	4.70	35.38	-0.75
1	2480.00	88.97	AV	94.00	5.03	89.72	29.93	4.70	35.38	-0.75
2	2483.50	56.59	PK	74.00	17.41	58.34	28.93	4.70	35.38	-1.75
2	2483.50	39.54	AV	54.00	14.46	41.29	28.93	4.70	35.38	-1.75
3	4510.10	56.36	PK	74.00	17.64	56.44	29.34	5.23	34.65	-0.08
3	4510.10	42.48	AV	54.00	11.52	42.56	29.34	5.23	34.65	-0.08
4	4960.00	59.89	PK	74.00	14.11	53.27	33.86	7.01	34.25	6.62
4	4960.00	46.36	AV	54.00	7.64	39.74	33.86	7.01	34.25	6.62
5	5350.50	56.41	PK	74.00	17.59	49.69	34.35	7.22	34.85	6.72
5	5350.50	43.54	AV	54.00	10.46	36.82	34.35	7.22	34.85	6.72
6	7440.00	49.74	PK	74.00	24.26	37.79	37.64	9.28	34.97	11.95
6	7440.00	--	AV	--	--	--	--	--	--	--

Frequency(MHz):				2480		Polarity:			VERTICAL	
No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
1	2480.00	97.85	PK	114.00	16.15	98.60	29.93	4.70	35.38	-0.75
1	2480.00	89.86	AV	94.00	4.14	90.61	29.93	4.70	35.38	-0.75
2	2483.50	58.69	PK	74.00	15.31	60.44	28.93	4.70	35.38	-1.75
2	2483.50	42.74	AV	54.00	11.26	44.49	28.93	4.70	35.38	-1.75
3	4515.15	55.41	PK	74.00	18.59	55.50	29.34	5.22	34.65	-0.09
3	4515.15	42.40	AV	54.00	11.6	42.49	29.34	5.22	34.65	-0.09
4	4960.00	60.88	PK	74.00	13.12	54.26	33.86	7.01	34.25	6.62
4	4960.00	48.75	AV	54.00	5.25	42.13	33.86	7.01	34.25	6.62
5	5340.25	57.51	PK	74.00	16.49	50.82	34.33	7.21	34.85	6.69
5	5340.25	43.43	AV	54.00	10.57	36.74	34.33	7.21	34.85	6.69
6	7340.00	48.45	PK	74.00	25.55	36.50	37.64	9.28	34.97	11.95
6	7340.00	--	AV	--	--	--	--	--	--	--

## REMARKS:

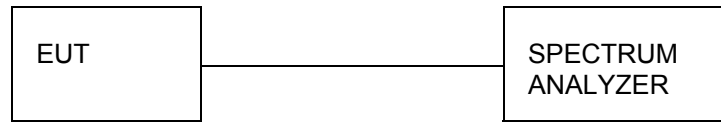
1. Emission level (dBuV/m) =Raw Value (dBuV)+Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
3. Margin value = Limit value- Emission level.
4. -- Mean the PK detector measured value is below average limit.
5. The other emission levels were very low against the limit.



### 3.3 Occupied Bandwidth Measurement

**Limit**

N/A

**Test Configuration****Test Procedure**

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 30 KHz RBW and 100 KHz VBW.

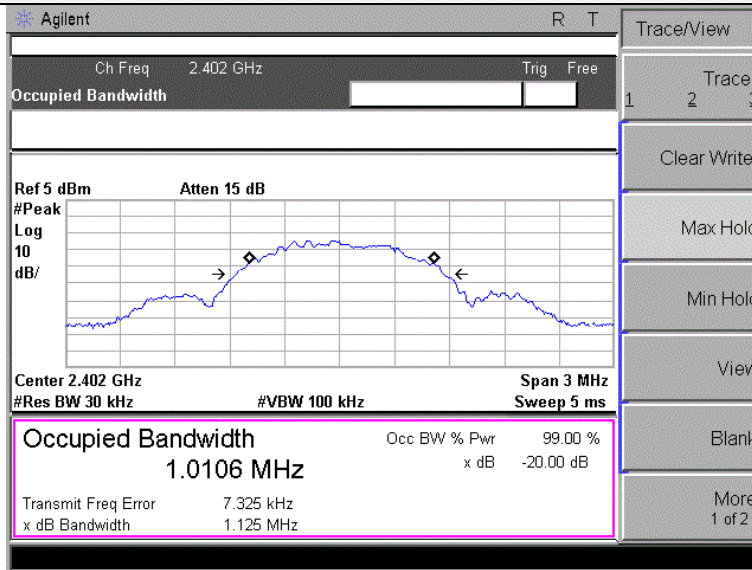
The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

**Test Results**

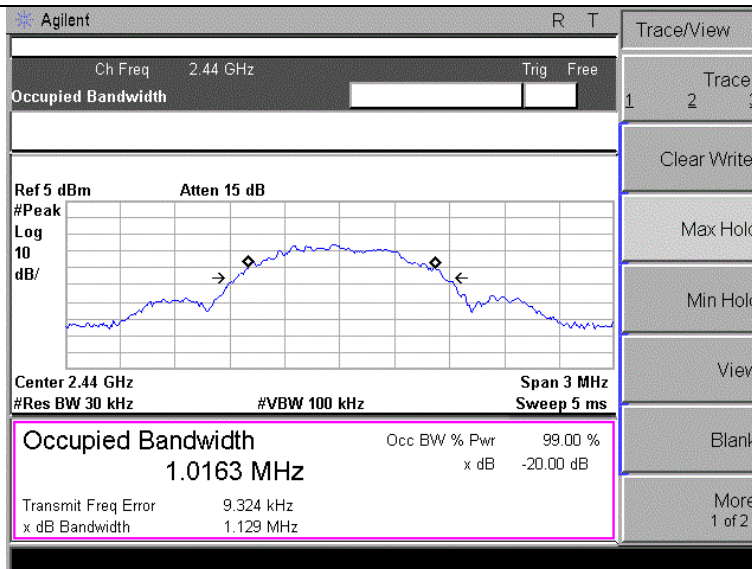
Modulation	Channel	99% OBW (MHz)	20dB bandwidth (MHz)	Result
GFSK	CH00	1.011	1.125	Pass
	CH19	1.016	1.129	
	CH39	1.015	1.129	

**Test plot as follows:**

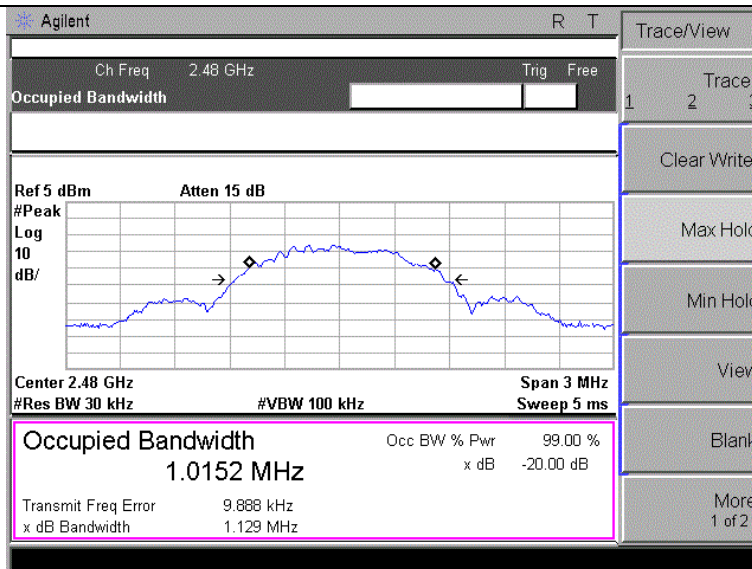
### GFSK Modulation



### CH00



### CH19



### CH39

### 3.4 Antenna Requirement

#### Standard Applicable

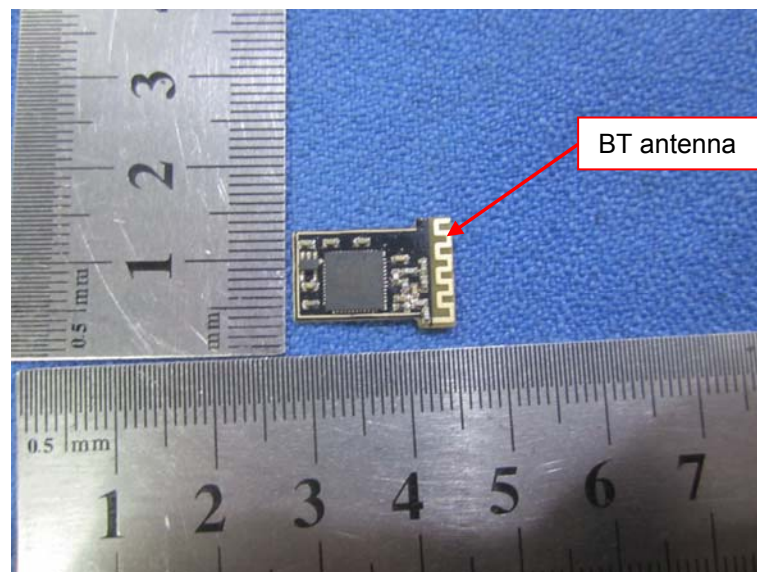
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

#### **Refer to statement below for compliance.**

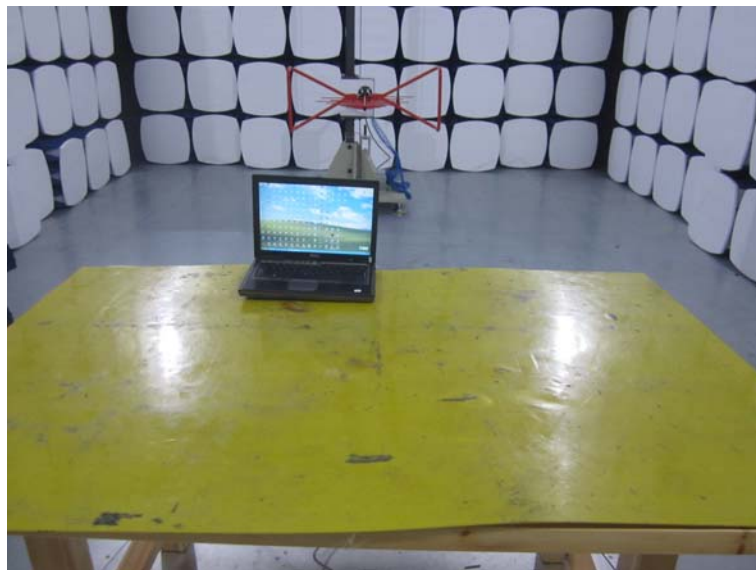
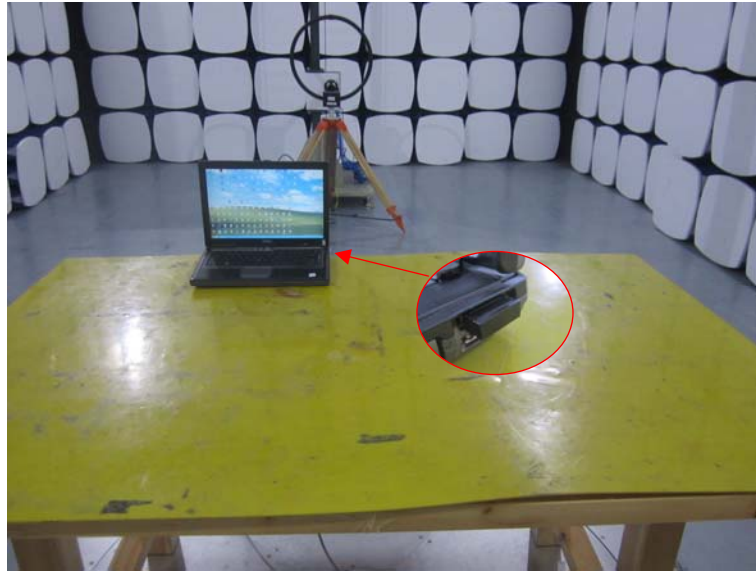
The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

#### Antenna Connected Construction

The antenna used in this product is an internal Antenna, The directional gains of antenna used for transmitting is 1 dBi.



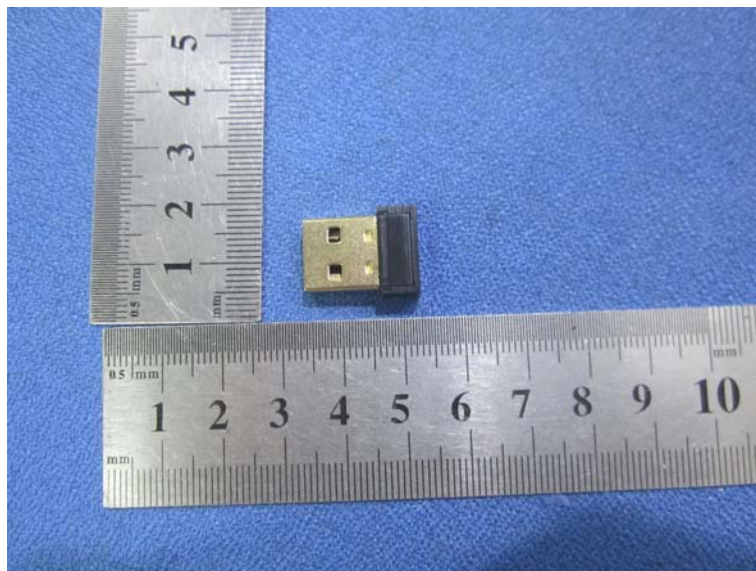
#### 4 Test Setup Photos of the EUT



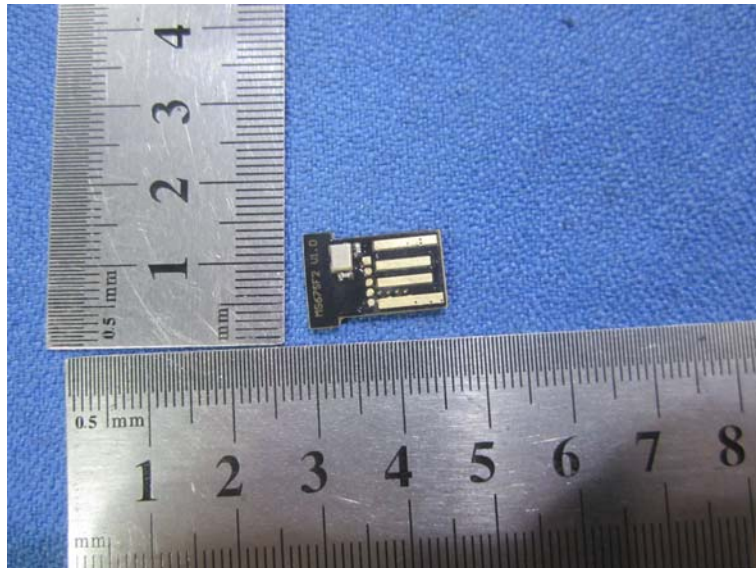
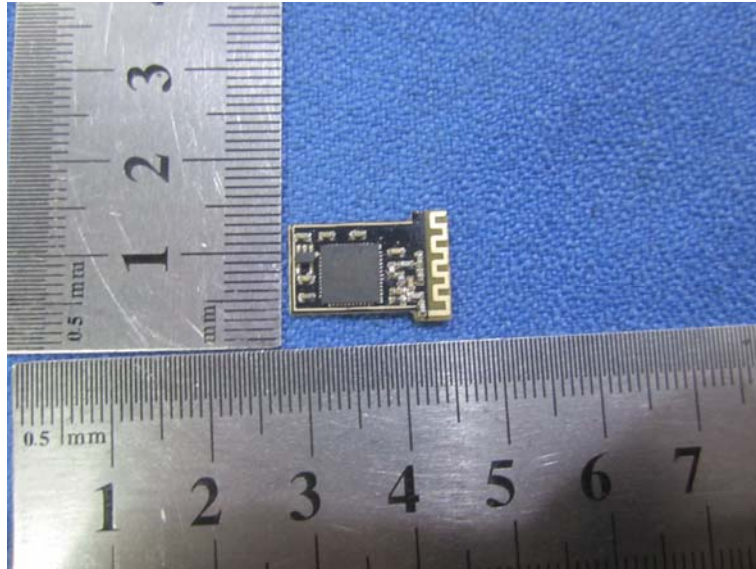


## 5 External and Internal Photos of the EUT

### External Photos of EUT



Internal Photos of EUT



\*\*\*\*\* End of Report \*\*\*\*\*