STSLAB-Radio Test Report

FCC RADIO TEST REPORT

FCC ID: 2ADAW-AT01

Of

Product Name:	**Bluetooth anti-lost tag**
Brand Name:	**iTreasure**
Model No.:	**AT01**
Series Model:	**N/A**
Test Report Number:	**STS1409051F01**

Issued for

Shenzhen LanXinQiao Technology Co.,Ltd
Room B221,Headquarters Office Building, Launch Science Park North,Longgang Area, Shenzhen, China

Issued by

Shenzhen STS Test Services Co., Ltd.
1/F, Building 2, Zhuoke Science Park, Chongqing Road, Fuyong, Baoan District, Shenzhen, China
TEL: +86-755 6119 6328
FAX: +86-755 6119 6328
E-mail:sts@stsapp.com

TEST RESULT CERTIFICATION

Applicant's name	:	Shenzhen LanXinQiao Technology Co.,Ltd
Address	:	Room B2211,Headquarters Office Building, Launch Science Park North, Longgang Area,Shenzhen, China
Manufacture's Name	:	Shenzhen LanXinQiao Technology Co.,Ltd
Address	:	Room B2211,Headquarters Office Building, Launch Science Park North, Longgang Area,Shenzhen, China

Product description

Product name	:	Bluetooth anti-lost tag
Band name	:	iTreasure
Model and/or type reference	:	AT01
Serial Model	:	N/A
Standards	:	FCC Part15.247
Test procedure		ANSI C63.10-2009

This device described above has been tested by STS, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test	:	
Date (s) of performance of tests	:	September 13, 2014 ~ September 28, 2014
Date of Issue	:	September 29, 2014
Test Result	:	**Pass**

Testing Engineer **:** (Tony Liu)

Technical Manager **:** (Vita Li)

Authorized Signatory **:** (Bovey Yang)

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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.247) , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.247 (a)(2)	6dB Bandwidth	PASS	
15.247 (b)	Peak Output Power	PASS	
15.247 (c)	Radiated Spurious Emission	PASS	
15.247 (d)	Conducted Spurious Emission	PASS	
15.247 (e)	Power Spectral Density	PASS	
15.205	Band Edge Emission	PASS	
15.203	Antenna Requirement	PASS	

NOTE:

(1)” N/A” denotes test is not applicable in this Test Report

1.1 TEST FACILITY

Shenzhen STS Test Services Co., Ltd.
Add. : 1/F, Building 2, Zhuoke Science Park, Chongqing Road, Fuyong,
Baoan District, Shenzhen, China
FCC Registration No.: 842334

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y** ± **U**，where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**，providing a level of confidence of approximately **95** %。

No.	Item	Uncertainty
1	Conducted Emission Test	±1.38dB
2	RF power,conducted	±0.16dB
3	Spurious emissions,conducted	±0.21dB
4	All emissions,radiated(<1G)	±4.68dB
5	All emissions,radiated(>1G)	±4.89dB
6	Temperature	±0.5°C
7	Humidity	±2%

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Bluetooth anti-lost tag
Trade Name	iTreasure
Model Name	AT01
Serial Model	N/A
Model Difference	N/A
Product Description	The EUT is a Bluetooth anti-lost tag Operation Frequency: 2402~2480 MHz Modulation Type: GFSK Radio Technology Bluetooth 4.0 Number Of Channel 40 CH Antenna Designation: Please see Note 3. Antenna Gain (dBi) 0.5 dbi Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.
Channel List	Please refer to the Note 2.
Ratings	DC 3.7V from battery
Power	Power by battery 3.7V
Hardware version number	V02
Software versioning number	V01
Connecting I/O Port(s)	Please refer to the User's Manual

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
2.

Channel List							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	10	2422	20	2442	30	2462
01	2404	11	2424	21	2444	31	2464
02	2406	12	2426	22	2446	32	2466
03	2408	13	2428	23	2448	33	2468
04	2410	14	2430	24	2450	34	2470
05	2412	15	2432	25	2452	35	2472
06	2414	16	2434	26	2454	36	2474
07	2416	17	2436	27	2456	37	2476
08	2418	18	2438	28	2458	38	2478
09	2420	19	2440	29	2460	39	2480

3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
A	N/A	N/A	Rod Antenna	NA	0.5	BT Antenna

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	TX CH0/CH19/CH39
Mode 2	Link Mode

For Conducted Emission	
Final Test Mode	Description
Mode 1	Link Mode

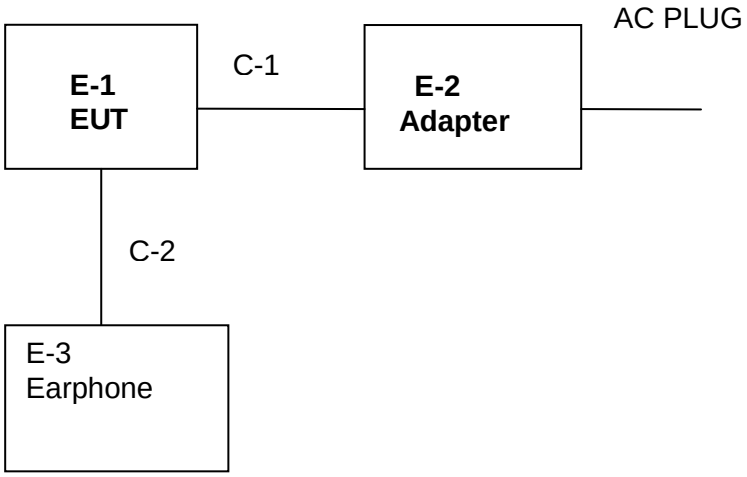
For Radiated Emission	
Final Test Mode	Description
Mode 1	TX CH00/CH19/CH39
Mode 2	Link Mode

Note:

(1) The measurements are performed at the highest, middle, lowest available channels.

(2) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Model No.	Series Model	ID or Specification	Note
E-1	Bluetooth anti-lost tag	AT01	N/A	2ADAW-AT01	EUT

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	YES	1.5m	
C-2	NO	NO	1.2m	

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Spectrum Analyzer	Agilent	E4407B	MY45108040	2014.07.06	2015.07.05	1 year
2	Test Receiver	R&S	ESPI	101318	2014.06.07	2015.06.06	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2014.07.06	2015.07.05	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2014.06.07	2015.06.06	1 year
5	Spectrum Analyzer	ADVANTEST	R3132	150900201	2014.06.07	2015.06.06	1 year
6	Horn Antenna	EM	EM-AH-10180	2011071402	2014.07.06	2015.07.05	1 year
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2014.07.06	2015.07.05	1 year
8	Amplifier	EM	EM-30180	060538	2013.12.22	2014.12.21	1 year
9	Loop Antenna	ARA	PLA-1030/B	1029	2014.06.08	2015.06.07	1 year
10	Power Meter	R&S	NRVS	100696	2014.07.06	2015.07.05	1 year
11	Power Sensor	R&S	URV5-Z4	0395.1619.05	2014.07.06	2015.07.05	1 year

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Test Receiver	R&S	ESCI	101160	2014.06.06	2015.06.05	1 year
2	LISN	R&S	ENV216	101313	2014.08.24	2015.08.23	1 year
3	LISN	EMCO	3816/2	00042990	2014.08.24	2015.08.23	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2014.06.07	2015.06.06	1 year
5	Passive Voltage Probe	R&S	ESH2-Z3	100196	2014.06.07	2015.06.06	1 year
6	Absorbing clamp	R&S	MOS-21	100423	2014.06.08	2015.06.07	1 year

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION Limits

(FREQUENCY RANGE 150KHZ-30MHZ)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	73.00	60.00	56.00	46.00	CISPR
5.0 -30.0	73.00	60.00	60.00	50.00	CISPR

0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	60.00	50.00	FCC

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

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

3.1.2 TEST RESULTS

The EUT is not applicable case mode.

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 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

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class A (dBuV/m) (at 3M)		Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80	60	74	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

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

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / *10Hz* for Average

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

3.2.2 TEST PROCEDURE

a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

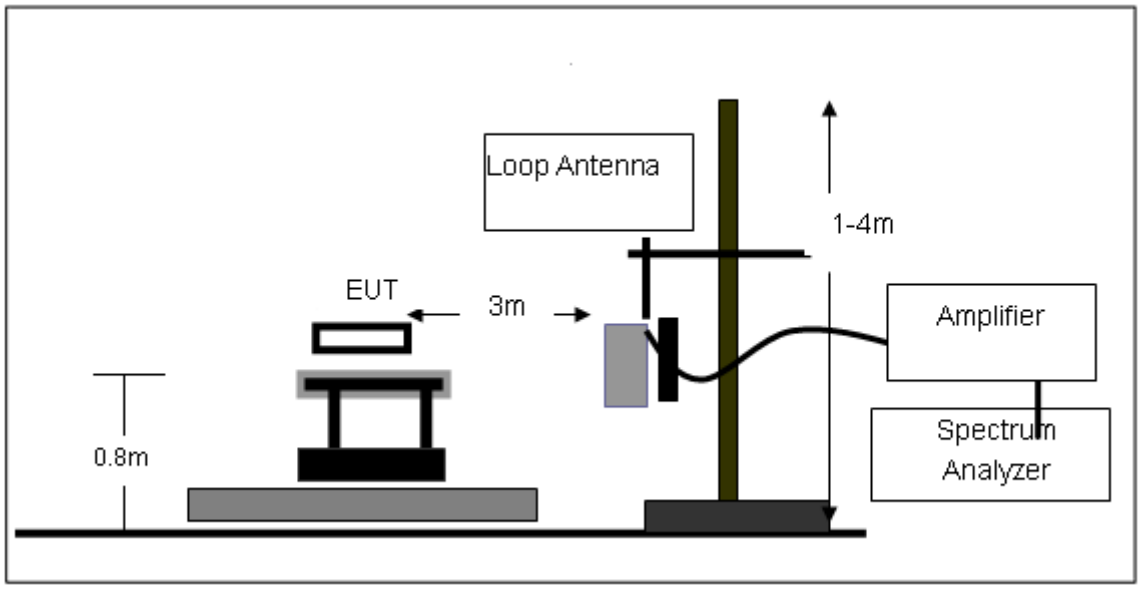
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

3.2.3 DEVIATION FROM TEST STANDARD

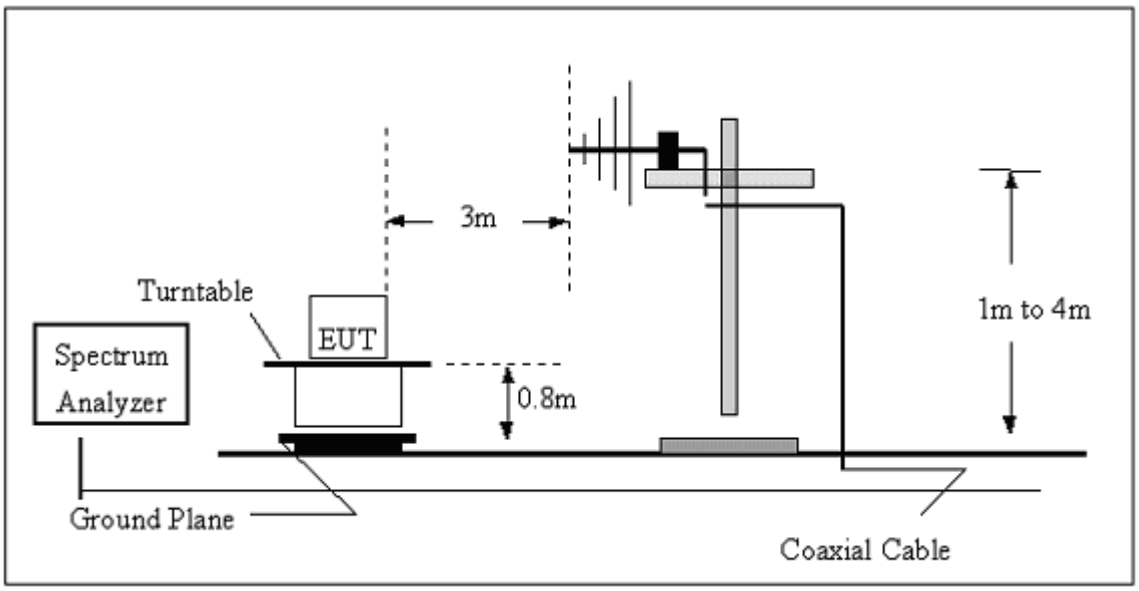
No deviation

3.2.4 TEST SETUP

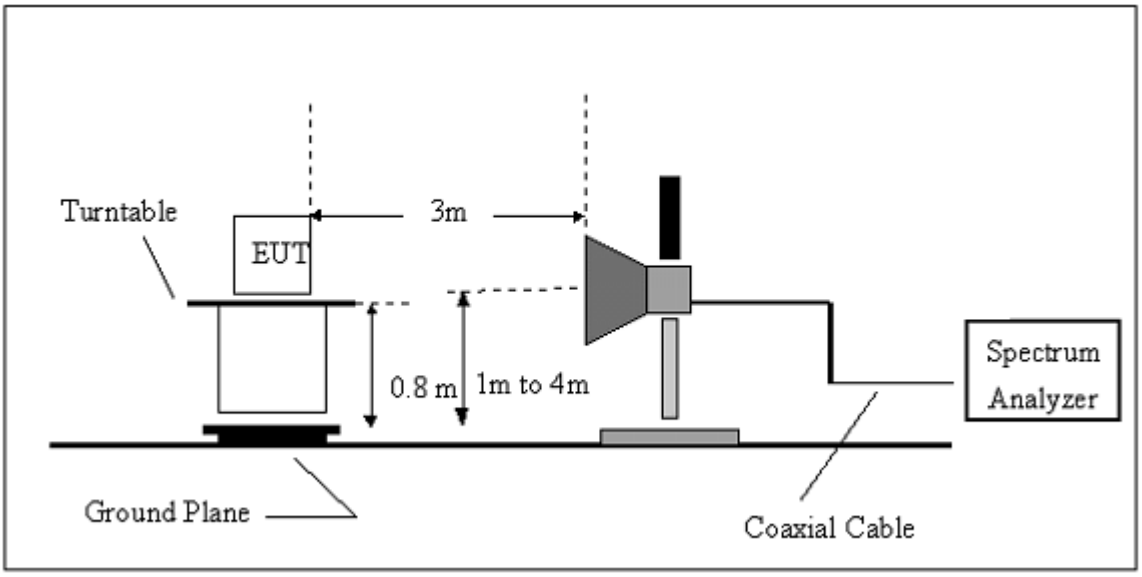
（A）Radiated Emission Test-Up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



（C）Radiated Emission Test-Up Frequency Above 1GHz



3.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)

EUT：	Bluetooth anti-lost tag	Model Name. ：	AT01
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V from Adapter with AC 120V/60Hz
Test Mode ：	Link mode	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

NOTE:

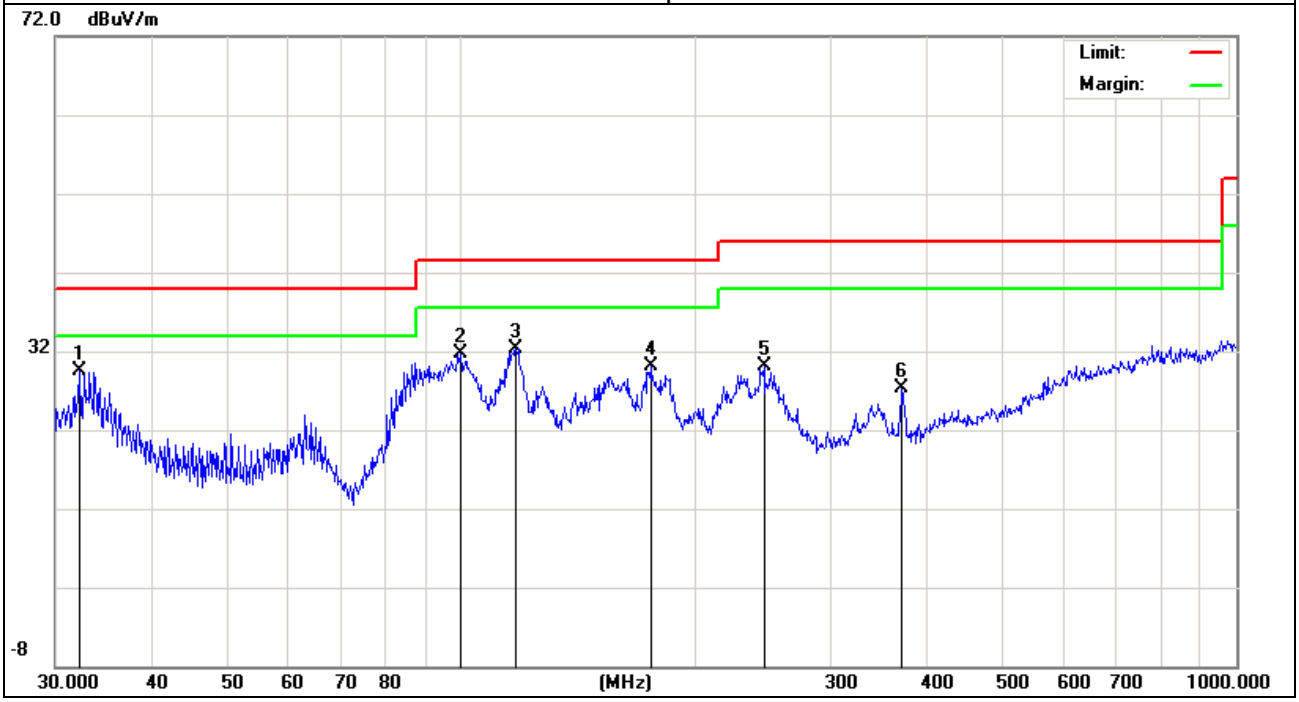
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Distance extrapolation factor =40 log (specific distance/test distance)(dB);
Limit line = specific limits(dBuv) + distance extrapolation factor.

3.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)

EUT：	Bluetooth anti-lost tag	Model Name. ：	AT01
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V from Adapter with AC 120V/60Hz
Test Mode ：	Link mode	Polarization :	Horizontal

Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height
MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
32.1794	12.2	17.35	29.55	40	-10.45	QP
99.8777	20.03	11.68	31.71	43.5	-11.79	QP
117.7724	19.16	13.16	32.32	43.5	-11.18	QP
175.6516	18	12.03	30.03	43.5	-13.47	QP
245.9508	17.19	12.82	30.01	46	-15.99	QP
370.7022	12.06	15.22	27.28	46	-18.72	QP

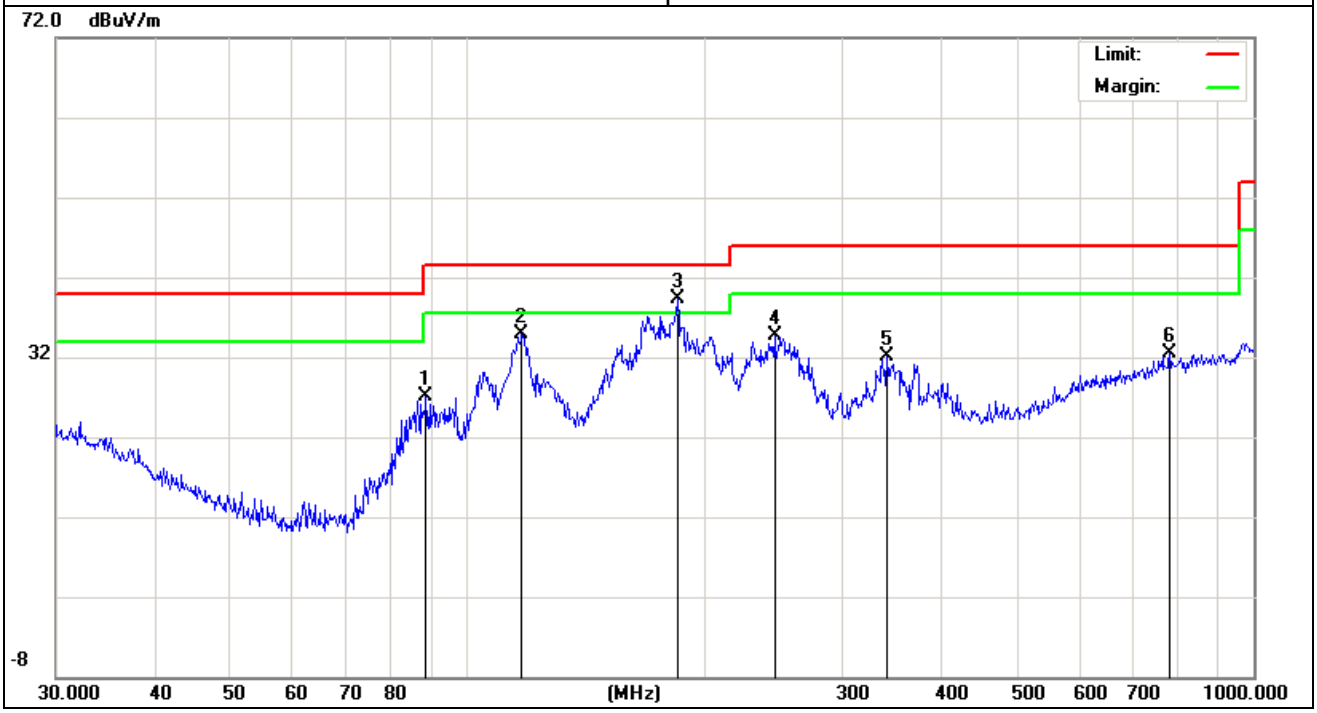
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	Bluetooth anti-lost tag	Model Name. ：	AT01
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V from Adapter with AC 120V/60Hz
Test Mode ：	Link mode	Polarization :	Vertical

Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height
MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
88.6524	16.86	10.16	27.02	43.5	-16.48	QP
117.3602	21.79	13.11	34.9	43.5	-8.6	QP
185.1379	27.38	11.85	39.23	43.5	-4.27	QP
245.9507	21.9	12.82	34.72	46	-11.28	QP
341.9786	16.64	15.46	32.1	46	-13.9	QP
782.3451	7.51	24.99	32.5	46	-13.5	QP

Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



3.2.8 TEST RESULTS (ABOVE 1000 MHZ)

EUT：	Bluetooth anti-lost tag	Model Name. ：	AT01
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V from Adapter with AC 120V/60Hz
Test Mode ：	CH00/2402MHz	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4824.061	47.43	10.44	57.87	74	-16.13	peak
4824.061	32.96	10.44	43.4	54	-10.6	AVG
7236.142	48.42	12.39	60.81	74	-13.19	peak
7236.142	33.25	12.39	45.64	54	-8.36	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	Bluetooth anti-lost tag	Model Name. ：	AT01
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V from Adapter with AC 120V/60Hz
Test Mode ：	CH00 /2402MHz	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4874.060	49.31	10.4	59.71	74	-14.29	peak
4874.060	33.32	10.4	43.72	54	-10.28	AVG
7311.068	51.35	12.75	64.1	74	-9.9	peak
7311.068	35.48	12.75	48.23	54	-5.77	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	Bluetooth anti-lost tag	Model Name. ：	AT01
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V from Adapter with AC 120V/60Hz
Test Mode ：	CH19 /2440 MHz	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4874.136	52.53	10.4	62.93	74	-11.07	peak
4874.136	36.26	10.4	46.66	54	-7.34	AVG
7311.049	53.46	12.75	66.21	74	-7.79	peak
7311.049	37.36	12.75	50.11	54	-3.89	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	Bluetooth anti-lost tag	Model Name. ：	AT01
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V from Adapter with AC 120V/60Hz
Test Mode ：	CH19 /2440MHz	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4924.051	47.46	10.39	57.85	74	-16.15	peak
4924.051	34.52	10.44	44.96	54	-9.04	AVG
7386.082	46.31	12.68	58.99	74	-15.01	peak
7386.082	33.59	12.68	46.27	54	-7.73	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						
No emission detected above 18GHz						

EUT：	Bluetooth anti-lost tag	Model Name. ：	AT01
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V from Adapter with AC 120V/60Hz
Test Mode ：	CH39/2480MHz	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4924.101	48.34	10.39	58.73	74	-15.27	peak
4924.101	33.21	10.39	43.6	54	-10.4	AVG
7386.131	45.23	12.68	57.91	74	-16.09	peak
7386.131	27.34	12.68	40.02	54	-13.98	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. No emission detected above 18GHz

EUT：	Bluetooth anti-lost tag	Model Name. ：	AT01
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V from Adapter with AC 120V/60Hz
Test Mode ：	CH39/2480MHz	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4924.031	48.12	10.39	58.51	74	-15.49	peak
4924.031	35.34	10.39	45.73	54	-8.27	AVG
7386.101	47.25	12.68	59.93	74	-14.07	peak
7386.101	32.13	12.68	44.81	54	-9.19	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

3.2.9 TEST RESULTS (BAND EDGE)

EUT：	Bluetooth anti-lost tag	Model Name. ：	AT01
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V FROM ADAPTER WITH AC 120V/60HZ
Test Mode ：	CH00 /2402MHz	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2399.9	66.31	-13	53.31	74	-20.69	peak
2399.9	51.47	-13	38.47	54	-15.53	AVG
2400	67.42	-12.99	54.43	74	-19.57	peak
2400	52.34	-12.99	39.35	54	-14.65	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	Bluetooth anti-lost tag	Model Name. ：	AT01
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V FROM ADAPTER WITH AC 120V/60HZ
Test Mode ：	CH00 /2402MHz	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2399.9	65.35	-13	52.35	74	-21.65	peak
2399.9	54.83	-13	41.83	54	-12.17	AVG
2400	63.46	-12.99	50.47	74	-23.53	peak
2400	56.53	-12.99	43.54	54	-10.46	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	Bluetooth anti-lost tag	Model Name. ：	AT01
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V FROM ADAPTER WITH AC 120V/60HZ
Test Mode ：	CH19 /2440MHz	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2483.5	62.38	-12.78	49.6	74	-24.4	peak
2483.5	51.83	-12.78	39.05	54	-14.95	AVG
2483.6	63.41	-12.77	50.64	74	-23.36	peak
2483.6	52.06	-12.78	39.28	54	-14.72	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	Bluetooth anti-lost tag	Model Name. ：	AT01
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V FROM ADAPTER WITH AC 120V/60HZ
Test Mode ：	CH19 /2440MHz	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2483.5	67.54	-12.78	54.76	74	-19.24	peak
2483.5	52.32	-12.78	39.54	54	-14.46	AVG
2483.6	68.54	-12.77	55.77	74	-18.23	peak
2483.6	53.45	-12.77	40.68	54	-13.32	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	Bluetooth anti-lost tag	Model Name. ：	AT01
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V FROM ADAPTER WITH AC 120V/60HZ
Test Mode ：	CH39 /2480MHz	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2399.9	66.21	-13	53.21	74	-20.79	peak
2399.9	53.43	-13	40.43	54	-13.57	AVG
2400	68.15	-12.99	55.16	74	-18.84	peak
2400	53.16	-12.99	40.17	54	-13.83	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

EUT：	Bluetooth anti-lost tag	Model Name. ：	AT01
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V FROM ADAPTER WITH AC 120V/60HZ
Test Mode ：	CH39 /2480MHz	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2399.9	68.23	-13	55.23	74	-18.77	peak
2399.9	54.21	-13	41.21	54	-12.79	AVG
2400	68.25	-12.99	55.26	74	-18.74	peak
2400	53.87	-12.99	40.88	54	-13.12	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

4. CONDUCTED SPURIOUS EMISSIONS

4.1 APPLIED PROCEDURES / LIMIT

In any 100 kHz 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 20 dB below that in the 100 kHz 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 the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

4.1.1 TEST PROCEDURE

Spectrum Parameter	Setting
Detector	Peak
Start Frequency	30 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	100 KHz/300 KHz
Trace-Mode:	Max hold

.

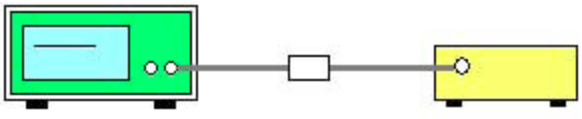
For Band edge

Spectrum Parameter	Setting
Attenuation	Auto
Start/Stop Frequency	Lower Band Edge: 2300 – 2430 MHz Upper Band Edge: 2450 – 2500 MHz
RB / VB (emission in restricted band)	100 KHz/300 KHz
Trace-Mode:	Max hold

4.1.2 DEVIATION FROM STANDARD

No deviation.

4.1.3 TEST SETUP



The EUT which is powered by the Battery, is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW.

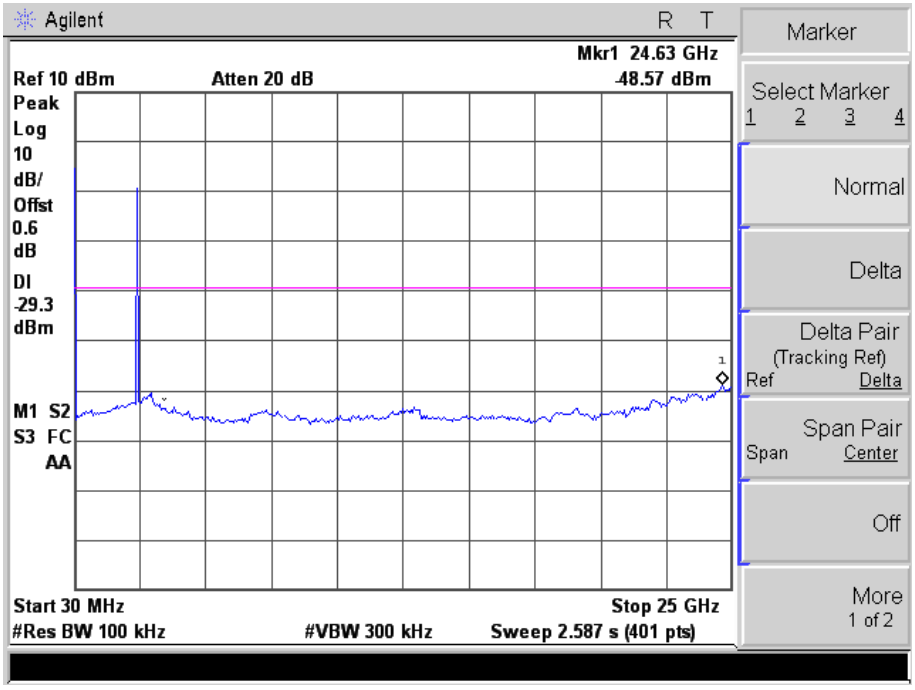
4.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

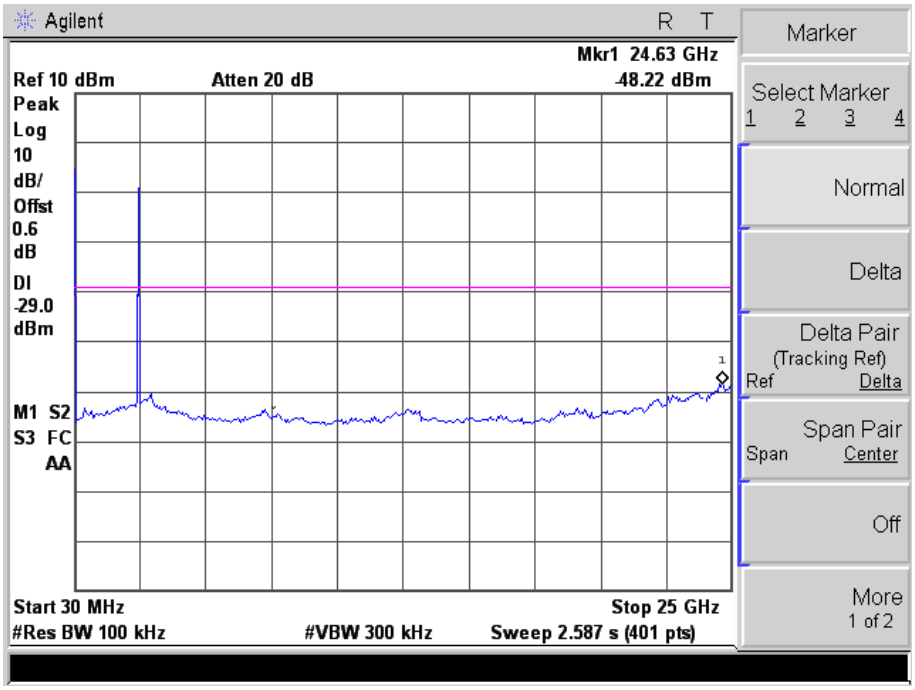
4.1.5 TEST RESULTS

EUT：	Bluetooth anti-lost tag	Model Name. ：	AT01
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1015 hPa	Test Voltage ：	DC 5V from Adapter with AC 120V/60Hz
Test Mode ：	CH00, CH19, CH39		

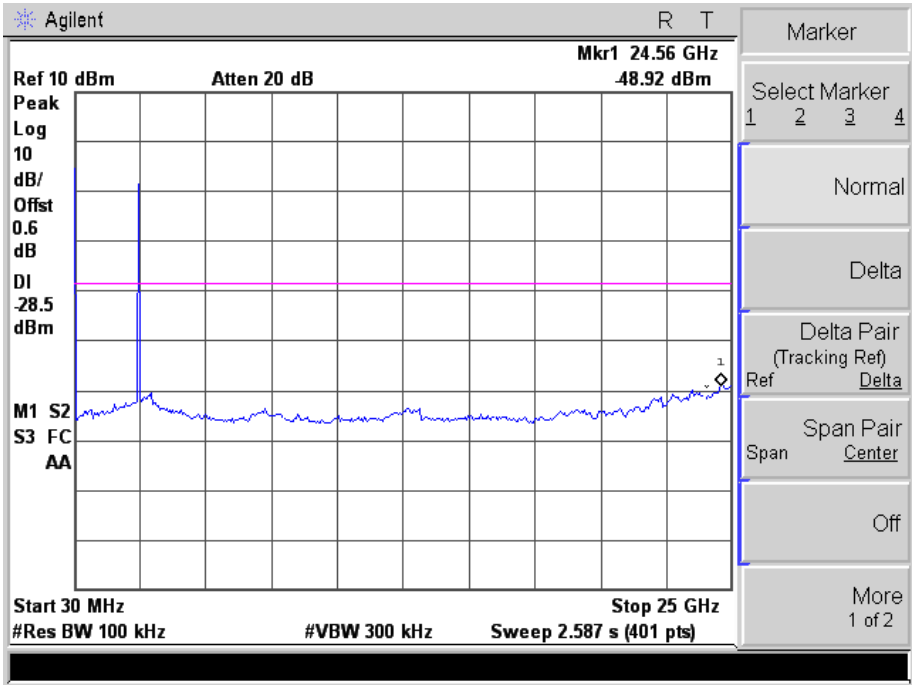
CH 00



CH 19

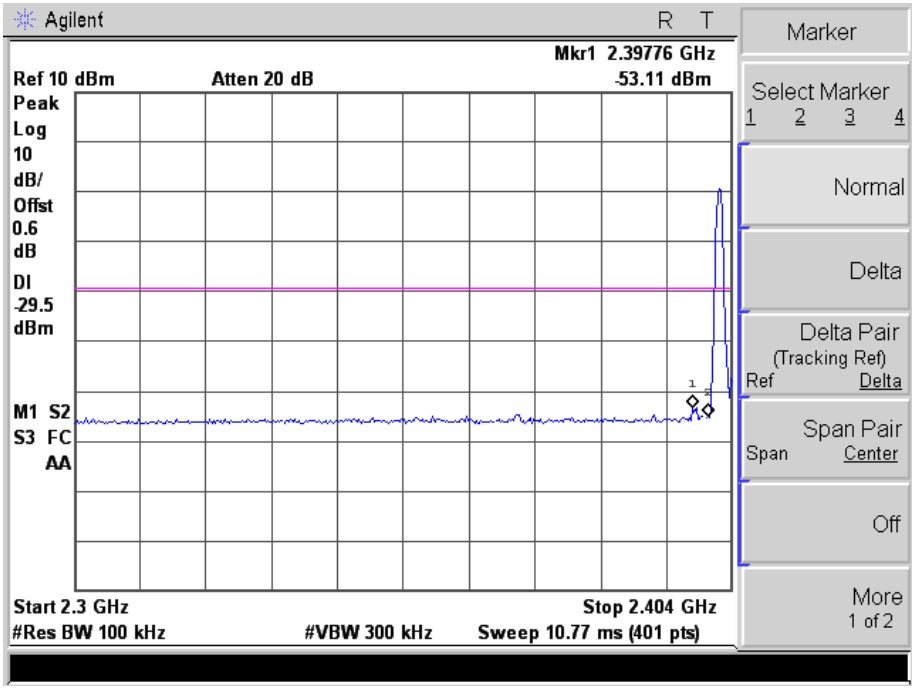


CH 39

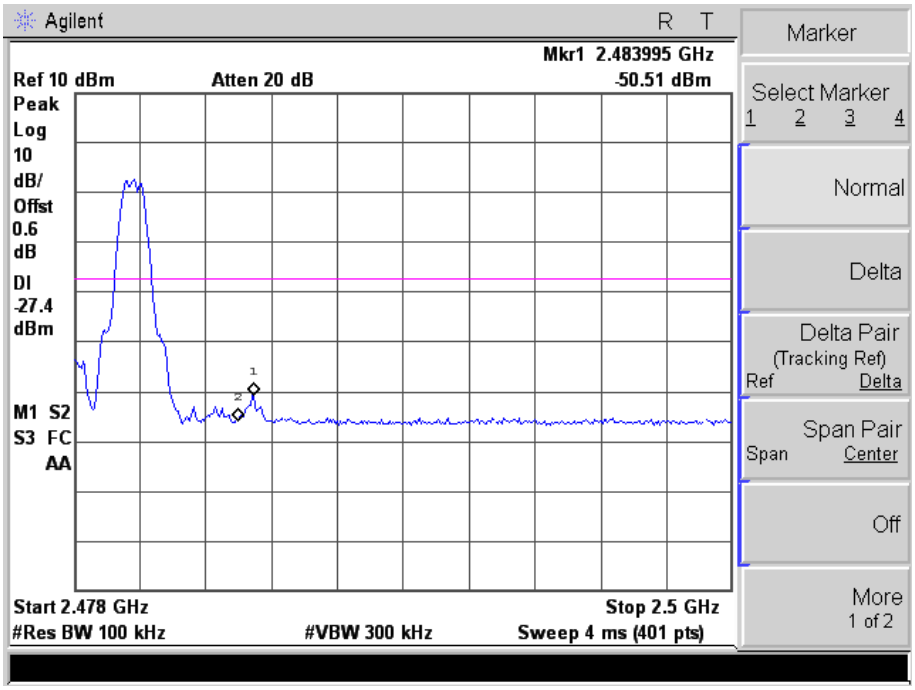


Band edge

CH 00



CH 39


Agilent
R T
Mkr1 2.483995 GHz
Ref 10 dBm
Atten 20 dB
-50.51 dBm
Peak
Log
10
dB/
Offst
0.6
dB
Dl
-27.4
dBm
M1 S2
S3 FC
AA
Start 2.478 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.5 GHz
Sweep 4 ms (401 pts)
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2

5. POWER SPECTRAL DENSITY TEST

5.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS

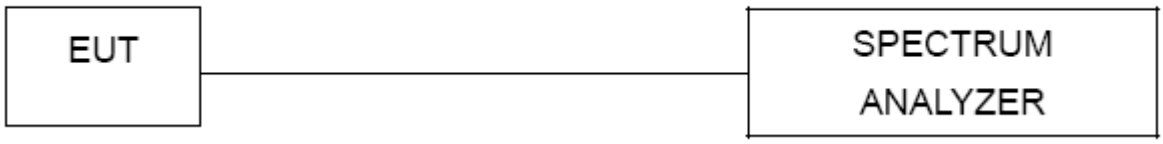
5.1.1 TEST PROCEDURE

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. Set the RBW ≥ 3 kHz.
4. Set the VBW ≥ 3 x RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

5.1.2 DEVIATION FROM STANDARD

No deviation.

5.1.3 TEST SETUP



5.1.4 EUT OPERATION CONDITIONS

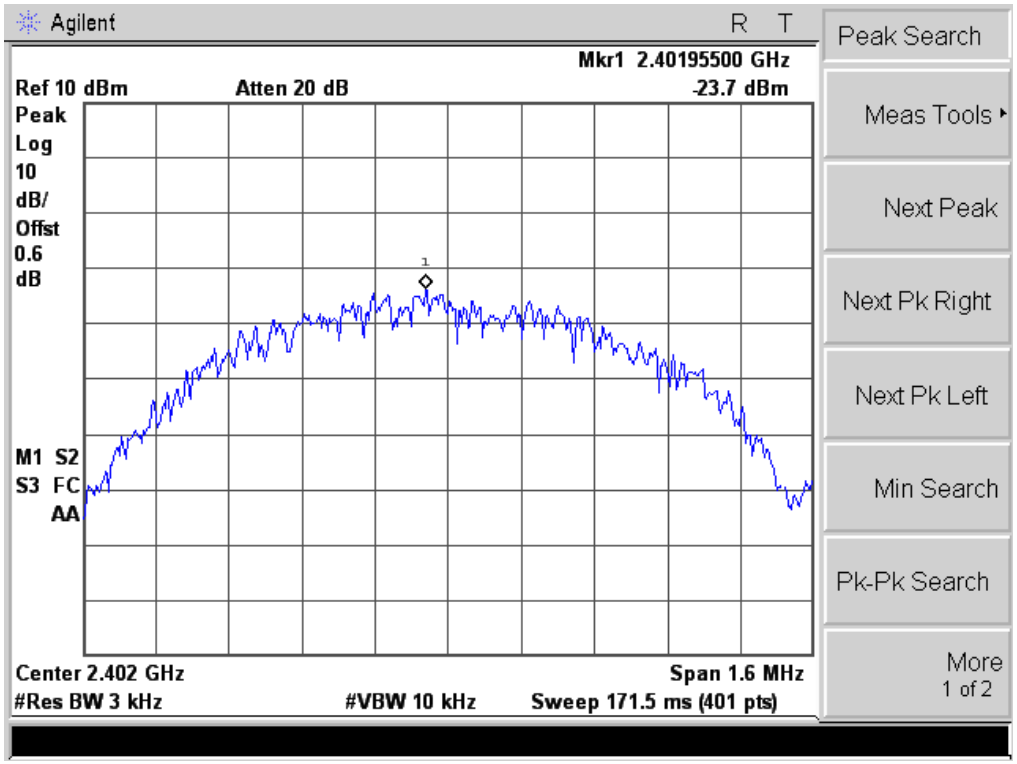
The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

5.1.5 TEST RESULTS

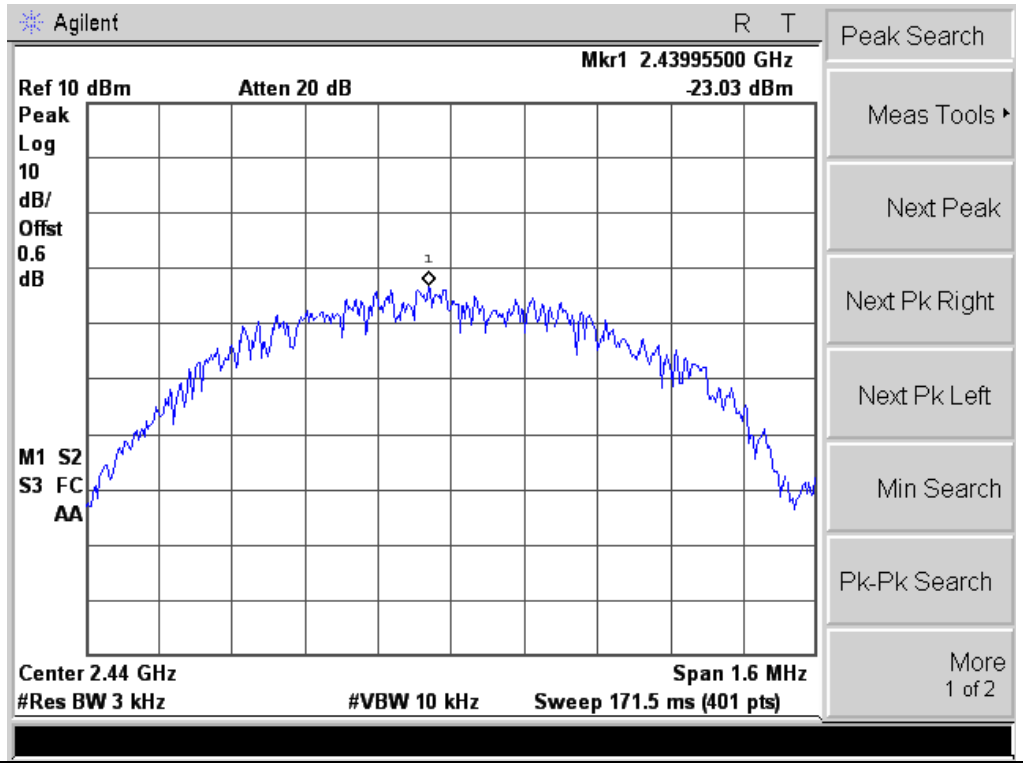
EUT：	Bluetooth anti-lost tag	Model Name. ：	AT01
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1015 hPa	Test Voltage ：	DC 5V from Adapter with AC 120V/60Hz
Test Mode ：	CH00, CH19, CH39		

Frequency	Power Density (dBm)	Limit (dBm)	Result
2402 MHz	-23.7	8	**PASS**
2440 MHz	-23.03	8	**PASS**
2480 MHz	-21.58	8	**PASS**

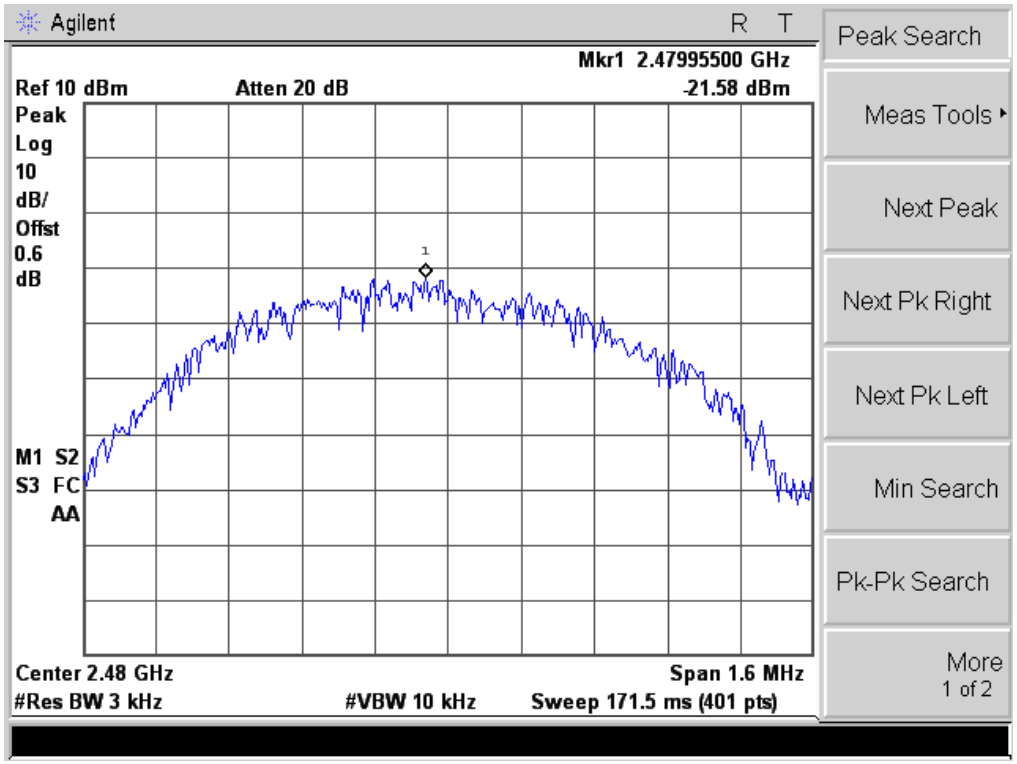
TX CH00



TX CH19



TX CH39



6. BANDWIDTH TEST

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	>= 500KHz (6dB bandwidth)	2400-2483.5	PASS

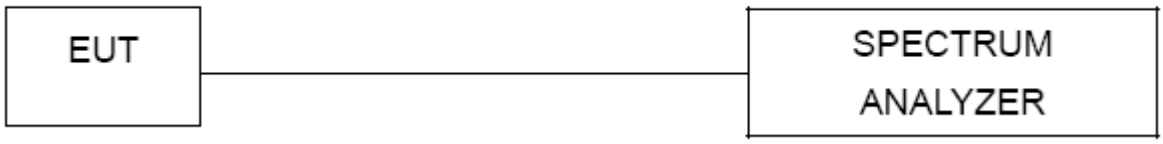
6.1.1 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 ´ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7.Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 d B relative to the maximum level measured in the fundamental emission.

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP



6.1.4 EUT OPERATION CONDITIONS

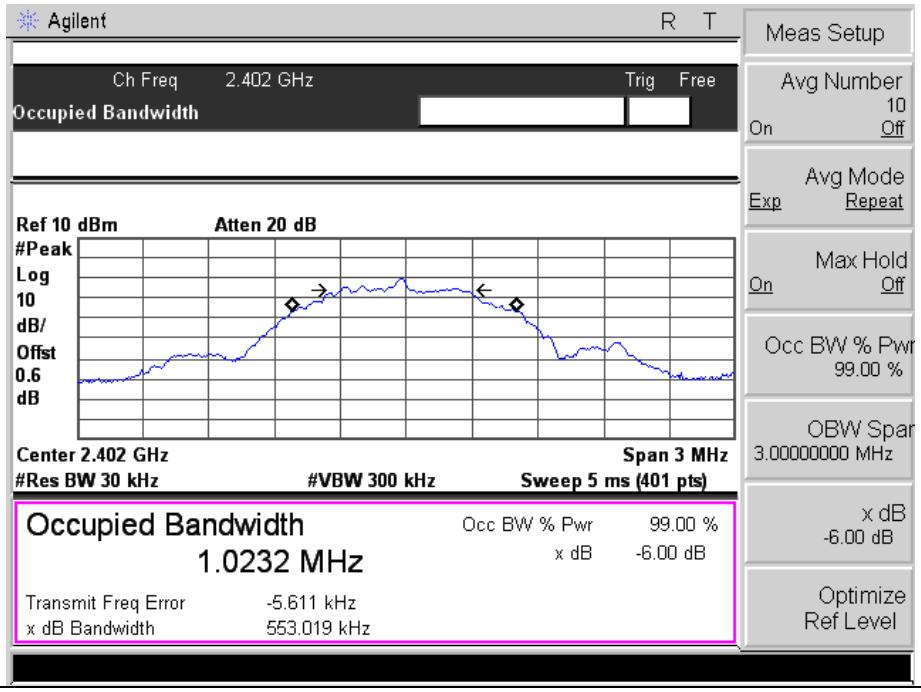
The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

6.1.5 TEST RESULTS

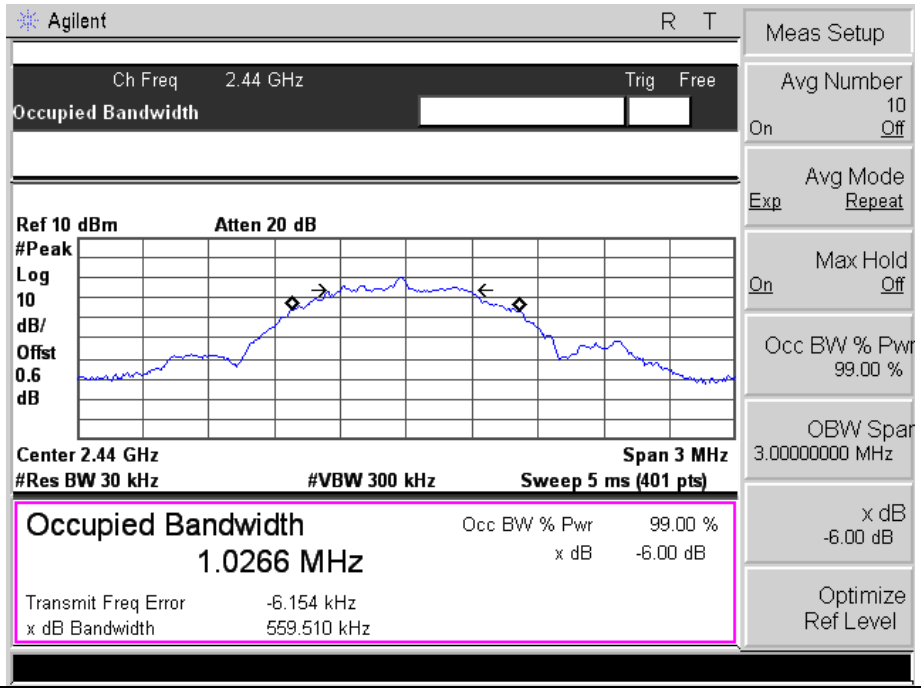
EUT：	Bluetooth anti-lost tag	Model Name. ：	AT01
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC 5V from Adapter with AC 120V/60Hz
Test Mode ：	CH00, CH19, CH39		

Frequency	99% Bandwidth (MHz)	6dB Bandwidth (MHz)	6dB Channel Separation (MHz)	Result
2402 MHz	1.023	0.553	>=500KHz	**PASS**
2440 MHz	1.026	0.560	>=500KHz	**PASS**
2480 MHz	1.017	0.598	>=500KHz	**PASS**

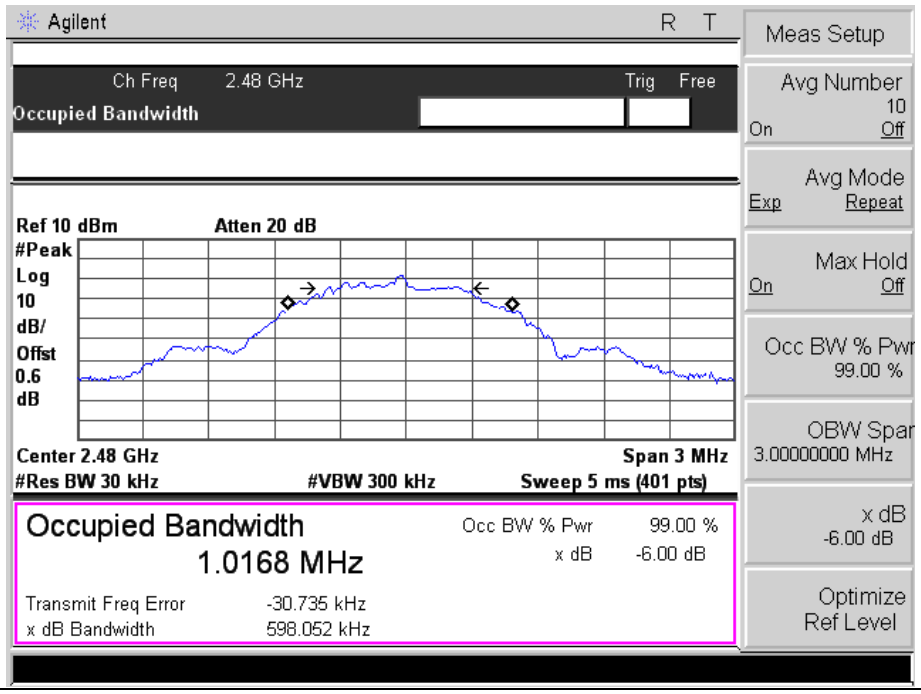
TX CH 00



TX CH 19



TX CH 39



7. PEAK OUTPUT POWER TEST

7.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

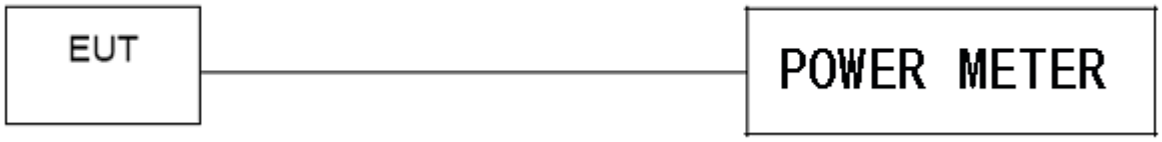
7.1.1 TEST PROCEDURE

a. The EUT was directly connected to the Power meter

7.1.2 DEVIATION FROM STANDARD

No deviation.

7.1.3 TEST SETUP



7.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

7.1.5 TEST RESULTS

EUT：	WCDMA Smart Phone	Model Name.：	T703b
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC 5V from Adapter with AC 120V/60Hz
Test Mode ：	TX b/g/n(20M,40M) Mode /CH01, CH06, CH11		

TX 802.11b Mode			
Test Channe	Frequency	Peak Conducted Output Power	LIMIT
	(MHz)	(dBm)	dBm
CH01	2412	-9.122	30
CH06	2437	-8.365	30
CH11	2462	-6.908	30

8. ANTENNA REQUIREMENT

8.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 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.

8.2 EUT ANTENNA

The EUT antenna is PIFA Antenna. It comply with the standard requirement.

EUT TEST PHOTO

Radiated Measurement Photos