FCC Radio Test Report

FCC ID: RGR40PXIBT502

This report concerns (check one): ☐ **Original Grant** ■ **Class II Change**

Issued Date	:	Mar. 11, 2014
Project No.	:	1302C061C
Equipment	:	Amplified Controller for BlueTooth Devices
Model Name	:	40PXiBT50.2
Applicant	:	Stillwater Designs and Audio Inc.
Address	:	3100 N Husband Street, Stillwater, OK, 74075, USA.

Tested by: Neutron Engineering Inc. EMC Laboratory
Date of Receipt: Feb. 28, 2014
Date of Test: Feb. 28, 2014 ~ Mar. 10, 2014

Testing Engineer : David Mao
(David Mao)

Technical Manager : Leo Hung
(Leo Hung)

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(Steven Lu)

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Declaration

Neutron represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with the standards traceable to National Measurement Laboratory (**NML**) of **R.O.C**, or National Institute of Standards and Technology (**NIST**) of **U.S.A.**

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For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

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REPORT ISSUED HISTORY

Revised Version No.	Description	Issued Date
NEI-FCCP-2-1302C061	Original Report.	Mar. 15, 2013
NEI-FCCP-2-1302C061C	Original Issue. Compared with the previous report (NEI-FCCP-2-1302C061), differences as below: 1. Appearance: the right side is widened, changed from iron to plastic. 2. Antenna type: changed from printed to chip. 3. Model and brand name are changed.	Mar. 11, 2014

1. CERTIFICATION

Equipment	:	Amplified Controller for BlueTooth Devices
Brand Name	:	Kicker
Model Name	:	40PXiBT50.2
Applicant	:	Stillwater Designs and Audio Inc.
Manufacturer	:	Hangzhou Newsources Electronics Co., Ltd
Address	:	No.7 Houyang Rd, Anxi Industrial Zone, Liangzhu, Hangzhou
Factory	:	Hangzhou Newsources Electronics Co., Ltd
Address	:	No.7 Houyang Rd, Anxi Industrial Zone, Liangzhu, Hangzhou
Date of Test	:	Feb. 28, 2014 ~ Mar. 10, 2014
Test Item	:	ENGINEERING SAMPLE
Standard(s)	:	FCC Part15, Subpart C(15.247) / ANSI C63.4-2009

The above equipment has been tested and found compliance with the requirement of the relative standards by Neutron Engineering Inc. EMC Laboratory.
The test data, data evaluation, and equipment configuration contained in our test report (Ref No. NEI-FCCP-2-1302C061C) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO-17025 quality assessment standard and technical standard(s).

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC Part15 (15.247) , Subpart C			
Standard(s) Section	Test Item	Judgment	Remark
15.207	Conducted Emission	-	N/A
15.247(d)	Antenna conducted Spurious Emission	PASS	
15.247(a)(2)	6dB Bandwidth	PASS	
15.247(b)(3)	Peak Output Power	PASS	
15.209/15.205	Radiated Spurious Emission	PASS	
15.247(e)	Power Spectral Density	PASS	
15.203	Antenna Requirement	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this test report.

(2) The test follows FCC KDB Publication No. 558074 D01 DTS Meas Guidance v03r01 (Measurement Guidelines of DTS)

2.1 TEST FACILITY

The test facilities used to collect the test data in this report is **DG-CB03** at the location of No.3,Jinshagang 1st Road, ShiXia, Dalang Town, Dong Guan, China.523792
Neutron's test firm number is 319330

2.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

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 %。

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U，(dB)	NOTE
DG-C02	CISPR	150 KHz ~ 30MHz	1.94	

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V	U，(dB)	NOTE
DG-CB03	CISPR	9KHz~30MHz	V	3.79	
		9KHz~30MHz	H	3.57	
		30MHz ~ 200MHz	V	3.82	
		30MHz ~ 200MHz	H	3.60	
		200MHz ~ 1,000MHz	V	3.86	
		200MHz ~ 1,000MHz	H	3.94	
		1GHz~18GHz	V	3.12	
		1GHz~18GHz	H	3.68	
		18GHz~40GHz	V	4.15	
		18GHz~40GHz	H	4.14	

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	Amplified Controller for BlueTooth Devices	
Brand Name	Kicker	
Model Name	40PXiBT50.2	
Model Difference	N/A	
Product Description	Operation Frequency	2402~2480 MHz
	Modulation Technology and Bit Rate of Transmitter	GFSK(1Mbps)
	Output Power	3.75 dBm (1Mbps)
Power Source	DC voltage supplied from storage battery.	
Power Rating	DC 12V	

Note:

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

3.

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

3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Note
1	N/A	SLDA92-2R660G-SITF	Chip	N/A	0	

3.2 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 Mode **NOTE (1)**

The EUT system operated these modes were found to be the worst case during the pre-scanning test as following:

For Conducted Test	
Final Test Mode	Description
-	” N/A” denotes test is not applicable in this test report.

For Radiated Test	
Final Test Mode	Description
Mode 1	TX Mode **NOTE (1)**

Note:
(1) The measurements are performed at the high, middle, low available channels.

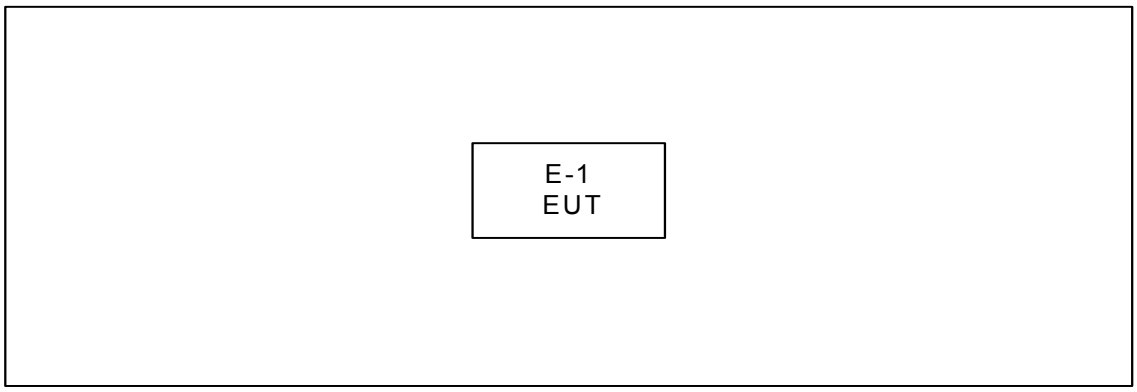
3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of WLAN

Test software version	Bluetooth		
Frequency	**2402MHz**	**2440 MHz**	**2480MHz**
GFSK-1Mbps	1	1	1

3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated:



3.5 DESCRIPTION OF SUPPORT UNITS

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.

	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
E-1	Amplified Controller for BlueTooth Devices	Kicker	40PXiBT50.2	RGR40PXIBT502	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note
-	-	-	-	

Note:

(1) For detachable type I/O cable should be specified the length in m in 『Length』 column.

4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 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.

4.1.2 MEASUREMENT INSTRUMENTS LIST AND SETTING

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Until
1	LISN	EMCO	3816/2	00052765	Apr. 25, 2014
2	LISN	R&S	ENV216	100087	Nov. 11, 2014
3	Test Cable	N/A	C_17	N/A	Mar. 15, 2014
4	EMI TEST RECEIVER	R&S	ESCS30	833364/017	Nov. 11, 2014
5	50Ω Terminator	SHX	TF2-3G-A	08122902	Apr. 25, 2014

Remark: “N/A” denotes no model name, serial no. or calibration specified.
All calibration period of Equipment List is One Year.

The following table is the setting of the receiver

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

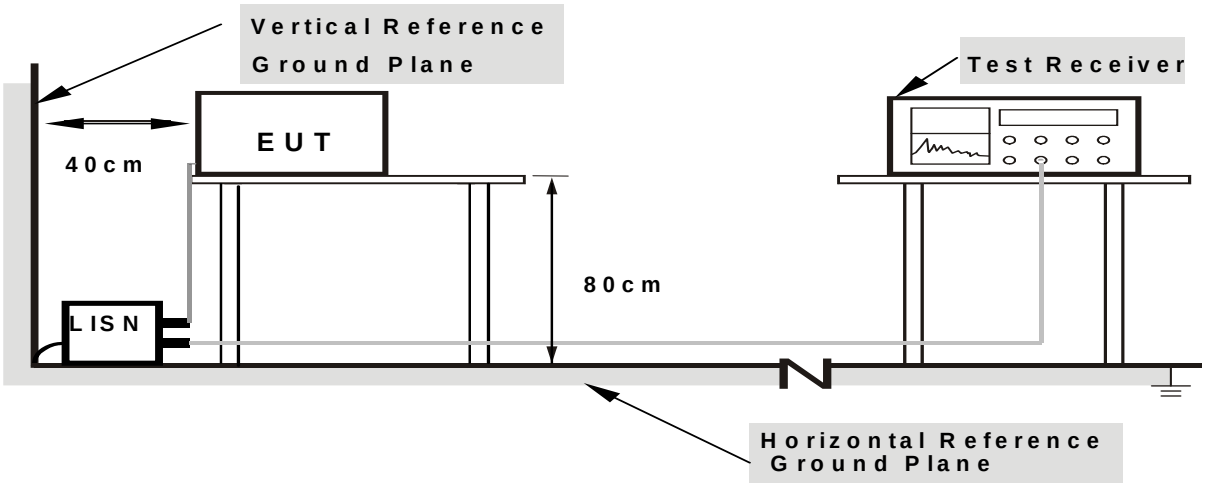
4.1.3 TEST PROCEDURE

a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

4.1.6 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.
The EUT was programmed to be in continuously transmitting mode.

4.1.7 TEST RESULTS

EUT:	Amplified Controller for BlueTooth Devices	Model Name :	40PXiBT50.2
Temperature:	-	Relative Humidity:	-
Test Power:	-	Phase:	-
Test Mode:	N/A		

Remark

(1) All readings are QP Mode value unless otherwise stated AVG in column of『Note』. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform.In this case, a " * " marked in AVG Mode column of Interference Voltage Measured.

(2) Measuring frequency range from 150KHz to 30MHz.

(3) " N/A" denotes test is not applicable in this test report.

4.2 RADIATED EMISSION MEASUREMENT

4.2.1 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
960~1000	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	(dBuV/m) (at 3m)	
	PEAK	AVERAGE
Above 1000	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).

FREQUENCY RANGE OF RADIATED MEASUREMENT (For unintentional radiators)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5^{th} harmonic of the highest frequency or 40 GHz, whichever is lower

4.2.2 MEASUREMENT INSTRUMENTS LIST ANS SETTING

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Until
1	Antenna	Schwarbeck	VULB9160	9160-3232	Apr. 25, 2014
2	Amplifier	HP	8447D	2944A09673	Apr. 25, 2014
3	Test Receiver	R&S	ESCI	100382	Apr. 25, 2014
4	Test Cable	N/A	C-01_CB03	N/A	Jul. 02, 2014
5	Antenna	ETS	3115	00075789	Apr. 25, 2014
6	Amplifier	Agilent	8449B	3008A02274	Apr. 25, 2014
7	Spectrum	Agilent	E4408B	US39240143	Nov. 11, 2014
8	Test Cable	HUBER+SUHNER	C-45	N/A	Apr. 30, 2014
9	Controller	CT	SC100	N/A	N/A
10	Horn Antenna	EMCO	3115	9605-4803	Apr. 25, 2014
11	Active Loop Antenna	R&S	HFH2-Z2	830749/020	Apr. 25, 2014
12	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Oct. 22, 2014

Remark: “N/A” denotes no model name, serial no. or calibration specified.
All calibration period of Equipment List is One Year.

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

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~90kHz for PK/AVG detector
Start ~ Stop Frequency	90kHz~110kHz for QP detector
Start ~ Stop Frequency	110kHz~490kHz for PK/AVG detector
Start ~ Stop Frequency	490kHz~30MHz for QP detector
Start ~ Stop Frequency	30MHz~1000MHz for QP detector

4.2.3 TEST PROCEDURE

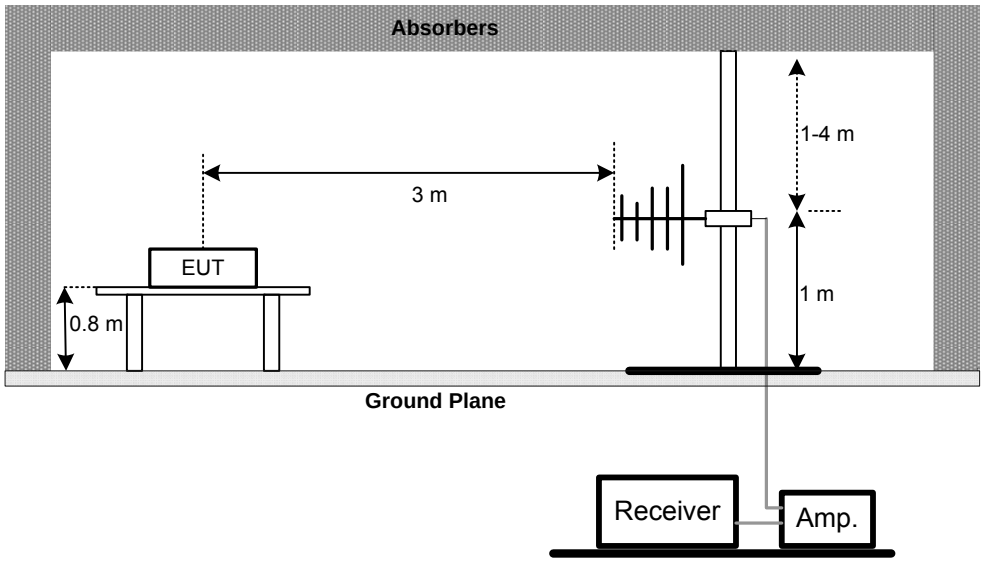
a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(above 1GHz)
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.

4.2.4 DEVIATION FROM TEST STANDARD

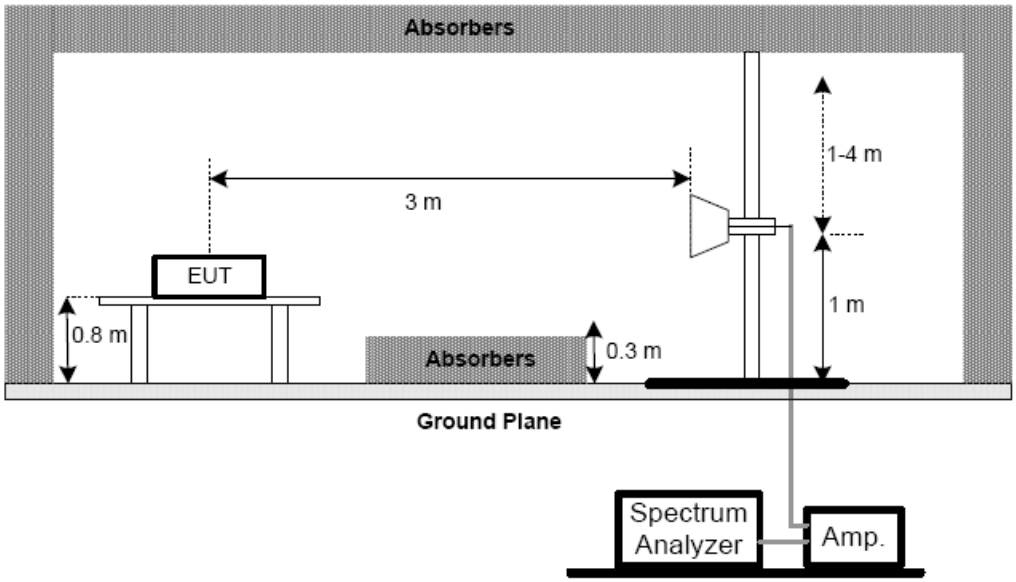
No deviation

4.2.5 TEST SETUP

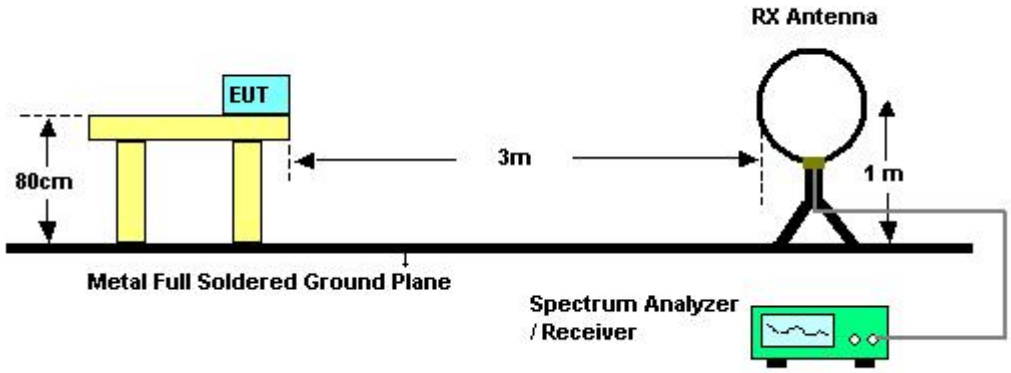
(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



(B) Radiated Emission Test Set-Up Frequency Above 1 GHz



(C) For radiated emissions below 30MHz



4.2.6 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **4.1.6** Unless otherwise a special operating condition is specified in the follows during the testing.

4.2.7 TEST RESULTS (BELOW 30MHZ)

EUT：	Amplified Controller for BlueTooth Devices	Model Name :	40PXiBT50.2
Temperature：	24° C	Relative Humidity :	56 %
Test Voltage :	DC 12V		
Test Mode ：	TX 2402MHz –CH00-1Mbps		

Freq. (MHz)	Ant. 0°/90°	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
0.0094	0°	17.53	24.30	41.83	128.12	-86.29	AVG
0.0095	0°	19.72	24.30	44.02	148.12	-104.10	PK
0.0134	0°	18.15	24.30	42.45	125.06	-82.61	AVG
0.0137	0°	20.40	24.30	44.70	145.06	-100.36	PK
0.0242	0°	17.46	24.03	41.49	119.93	-78.43	AVG
0.0245	0°	20.08	24.03	44.11	139.93	-95.81	PK
0.0325	0°	18.13	23.51	41.64	117.37	-75.73	AVG
0.0328	0°	20.55	23.51	44.06	137.37	-93.31	PK
0.4240	0°	18.72	19.98	38.70	95.06	-56.35	AVG
0.4260	0°	21.15	19.98	41.13	115.06	-73.92	PK
1.5260	0°	18.95	19.55	38.50	63.93	-25.44	QP

Freq. (MHz)	Ant. 0°/90°	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
0.0093	90°	18.51	24.30	42.81	128.20	-85.39	AVG
0.0094	90°	20.23	24.30	44.53	148.20	-103.67	PK
0.0235	90°	17.55	24.08	41.63	120.18	-78.55	AVG
0.0237	90°	20.33	24.08	44.41	140.18	-95.77	PK
0.0316	90°	18.43	23.57	42.00	117.61	-75.62	AVG
0.0318	90°	20.67	23.57	44.24	137.61	-93.38	PK
0.0427	90°	17.85	22.86	40.71	115.00	-74.28	AVG
0.0429	90°	20.39	22.86	43.25	135.00	-91.74	PK
0.2360	90°	17.45	20.43	37.88	100.15	-62.27	AVG
0.2390	90°	20.72	20.43	41.15	120.15	-79.00	PK
1.6750	90°	18.63	19.53	38.16	63.12	-24.96	QP

Remark：

(1) The amplitude of spurious emissions which are attenuated by more than 20 dB belc the permissible value has no need to be reported ◦

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

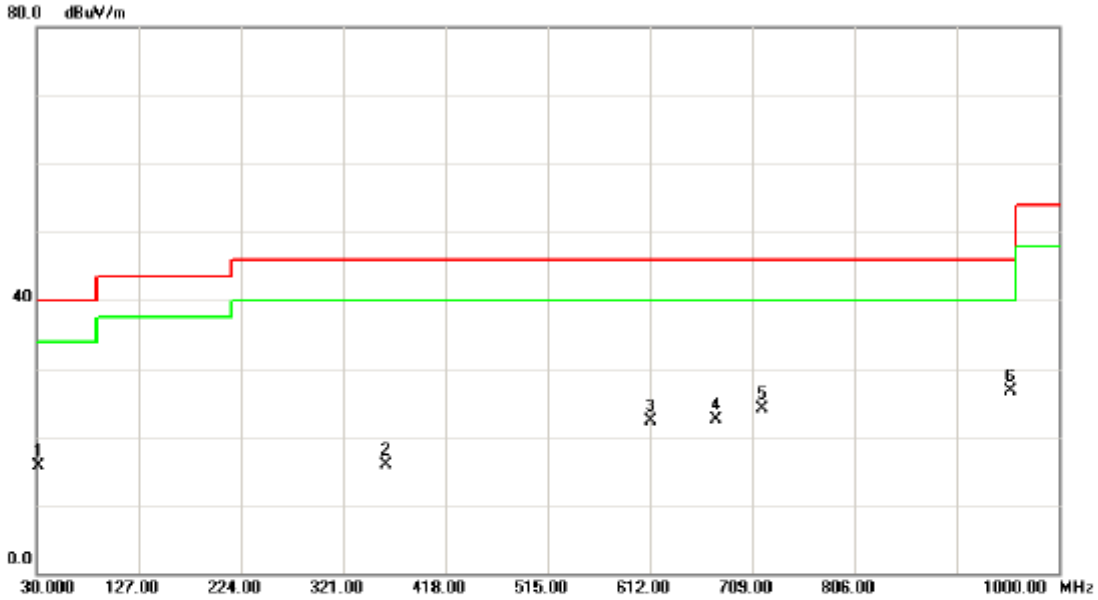
(3) Limit line = specific limits (dBuV) + distance extrapolation factor. ◦

4.2.8 TEST RESULTS-BETWEEN 30MHZ AND 1000MHZ

Remark：

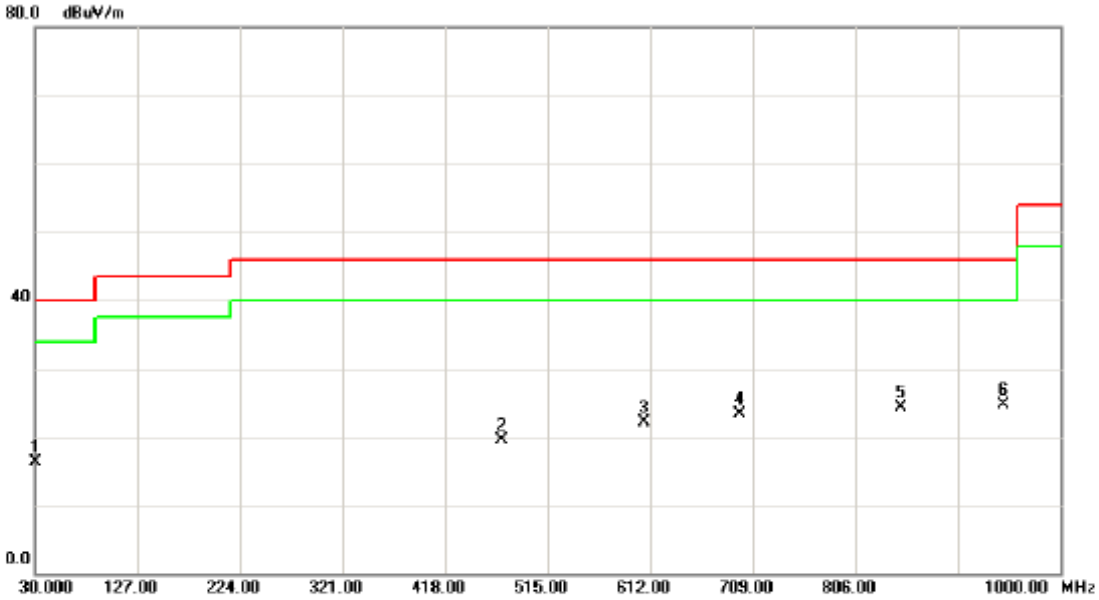
(1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz；SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz.
(2) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn‘t perform.
(3) Measuring frequency range from 30MHz to 1000MHz.
(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table.

EUT:	Amplified Controller for BlueTooth Devices	Model Name:	40PXiBT50.2
Temperature:	24 ℃	Relative Humidity:	56 %
Test Power:	DC 12V	Phase:	Vertical
Test Mode:	TX 2402MHz –CH00-1Mbps		



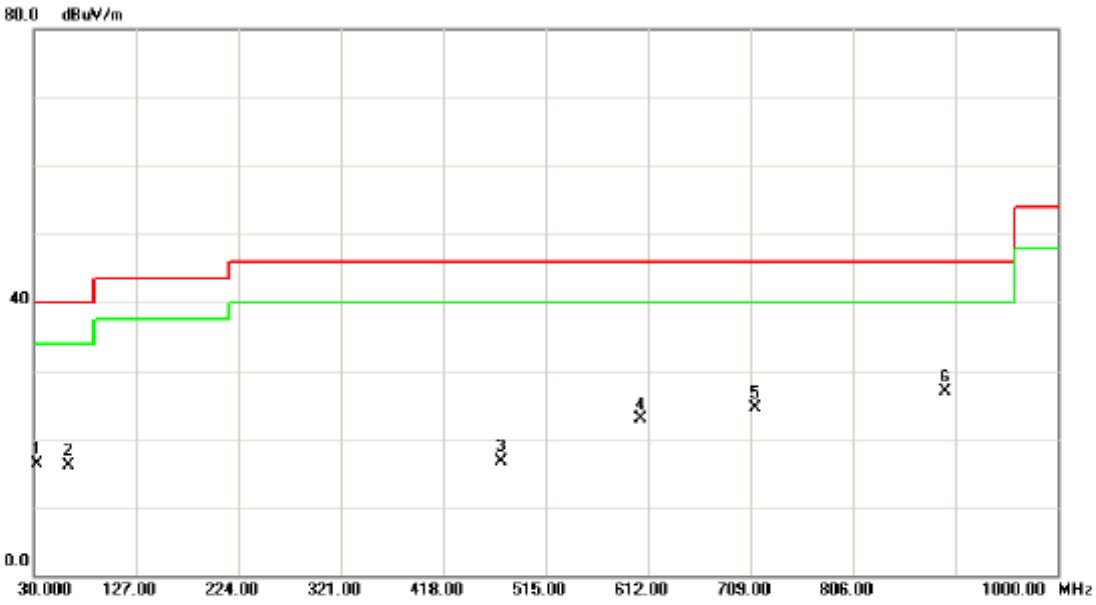
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		31.9400	29.36	-13.61	15.75	40.00	-24.25	peak	
2		361.7400	29.38	-13.48	15.90	46.00	-30.10	peak	
3		612.0000	30.20	-7.98	22.22	46.00	-23.78	peak	
4		674.0800	29.90	-7.42	22.48	46.00	-23.52	peak	
5		718.7000	30.57	-6.47	24.10	46.00	-21.90	peak	
6	*	954.4100	30.11	-3.50	26.61	46.00	-19.39	peak	

EUT:	Amplified Controller for BlueTooth Devices	Model Name:	40PXiBT50.2
Temperature:	24 ℃	Relative Humidity:	56 %
Test Power:	DC 12V	Phase:	Horizontal
Test Mode:	TX 2402MHz –CH00-1Mbps		



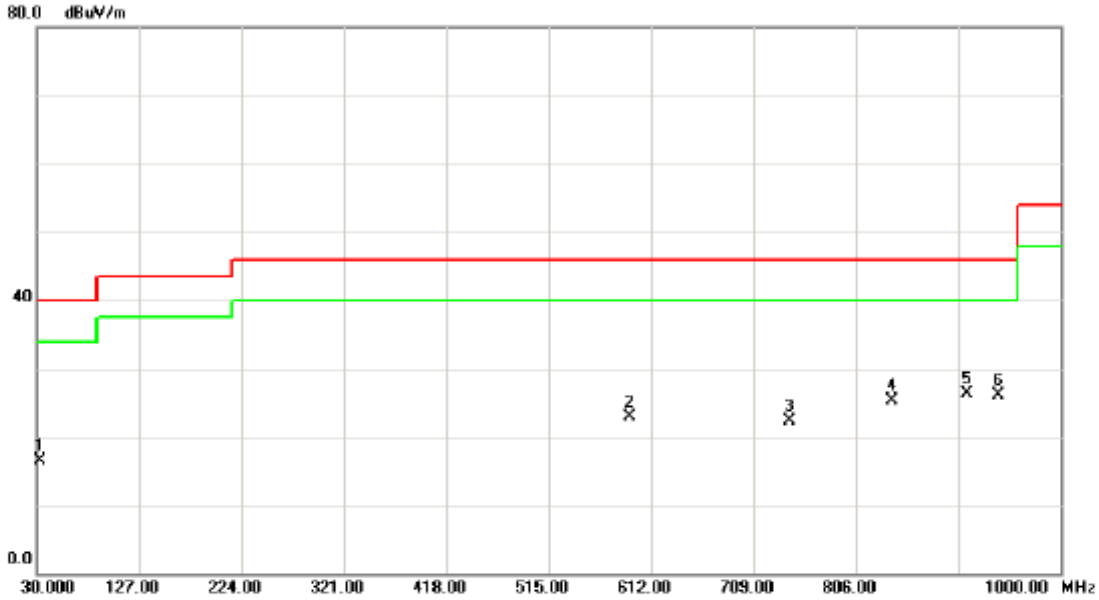
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		30.0000	28.85	-12.55	16.30	40.00	-23.70	peak	
2		471.3500	31.79	-12.22	19.57	46.00	-26.43	peak	
3		606.1800	29.97	-7.89	22.08	46.00	-23.92	peak	
4		696.3900	29.62	-6.37	23.25	46.00	-22.75	peak	
5		848.6800	29.05	-4.78	24.27	46.00	-21.73	peak	
6	*	946.6500	28.27	-3.55	24.72	46.00	-21.28	peak	

EUT:	Amplified Controller for BlueTooth Devices	Model Name:	40PXiBT50.2
Temperature:	24 ℃	Relative Humidity:	56 %
Test Power:	DC 12V	Phase:	Vertical
Test Mode:	TX 2440MHz –CH19-1Mbps		



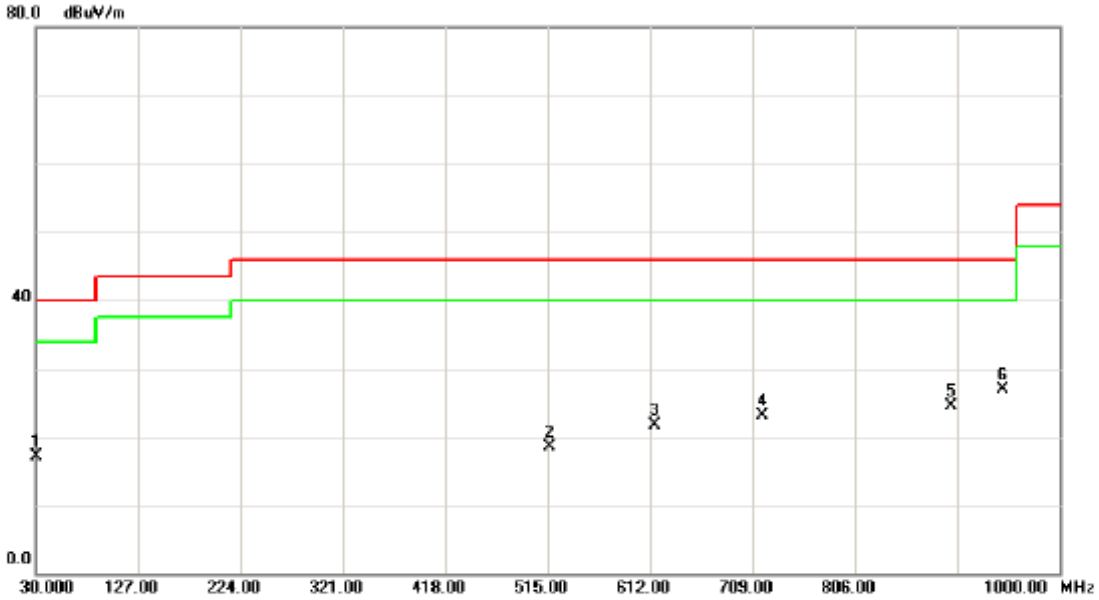
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		32.9100	30.64	-14.27	16.37	40.00	-23.63	peak	
2		62.9800	39.90	-23.89	16.01	40.00	-23.99	peak	
3		472.3200	28.84	-12.18	16.66	46.00	-29.34	peak	
4		605.2100	30.83	-7.87	22.96	46.00	-23.04	peak	
5		712.8800	30.83	-6.39	24.44	46.00	-21.56	peak	
6	*	893.3000	32.56	-5.67	26.89	46.00	-19.11	peak	

EUT:	Amplified Controller for BlueTooth Devices	Model Name:	40PXiBT50.2
Temperature:	24 ℃	Relative Humidity:	56 %
Test Power:	DC 12V	Phase:	Horizontal
Test Mode:	TX 2440MHz –CH19-1Mbps		



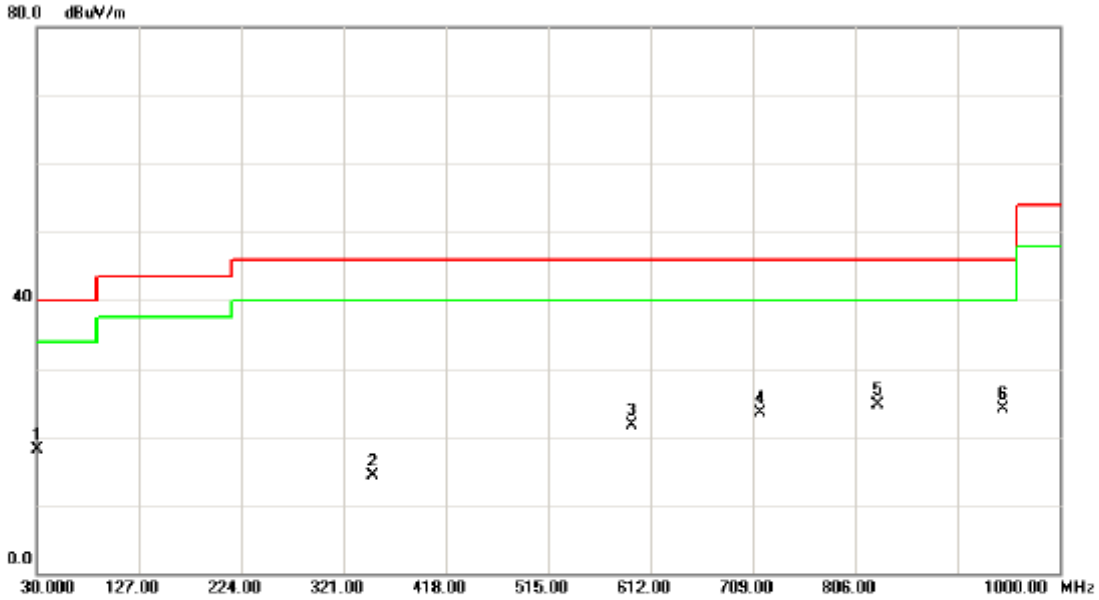
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		32.9100	30.70	-14.27	16.43	40.00	-23.57	peak	
2		591.6300	31.18	-8.30	22.88	46.00	-23.12	peak	
3		742.9500	29.22	-6.83	22.39	46.00	-23.61	peak	
4		839.9500	30.49	-5.11	25.38	46.00	-20.62	peak	
5	*	911.7300	31.62	-5.24	26.38	46.00	-19.62	peak	
6		940.8300	29.93	-3.84	26.09	46.00	-19.91	peak	

EUT:	Amplified Controller for BlueTooth Devices	Model Name:	40PXiBT50.2
Temperature:	24 ℃	Relative Humidity:	56 %
Test Power:	DC 12V	Phase:	Vertical
Test Mode:	TX 2480MHz –CH39-1Mbps		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		30.0000	29.75	-12.55	17.20	40.00	-22.80	peak	
2		516.9400	29.44	-10.95	18.49	46.00	-27.51	peak	
3		616.8500	29.74	-8.05	21.69	46.00	-24.31	peak	
4		718.7000	29.67	-6.47	23.20	46.00	-22.80	peak	
5		897.1800	30.23	-5.75	24.48	46.00	-21.52	peak	
6	*	946.6500	30.42	-3.55	26.87	46.00	-19.13	peak	

EUT:	Amplified Controller for BlueTooth Devices	Model Name:	40PXiBT50.2
Temperature:	24 ℃	Relative Humidity:	56 %
Test Power:	DC 12V	Phase:	Horizontal
Test Mode:	TX 2480MHz –CH39-1Mbps		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		30.0000	30.71	-12.55	18.16	40.00	-21.84	peak	
2		348.1600	28.85	-14.46	14.39	46.00	-31.61	peak	
3		594.5400	29.82	-8.12	21.70	46.00	-24.30	peak	
4		715.7900	30.04	-6.44	23.60	46.00	-22.40	peak	
5	*	827.3400	30.22	-5.60	24.62	46.00	-21.38	peak	
6		945.6800	27.70	-3.60	24.10	46.00	-21.90	peak	

4.2.8 TEST RESULTS (ABOVE 1000 MHZ)

EUT：	Amplified Controller for BlueTooth Devices	Model Name ：	40PXiBT50.2
Temperature：	23 ℃	Relative Humidity：	51 %
Pressure：	1010 hPa	Test Voltage ：	DC 12V
Test Mode ：	TX 2402MHz – CH 00-1Mbps		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2390.00	V	22.15	13.32	34.09	56.24	47.41	74.00	54.00	X/E
2402.10	**V**	**61.96**	**50.76**	**34.12**	**96.08**	**84.88**			**X/F**
4804.27	V	47.75	36.28	6.38	54.13	42.66	74.00	54.00	X/H

Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

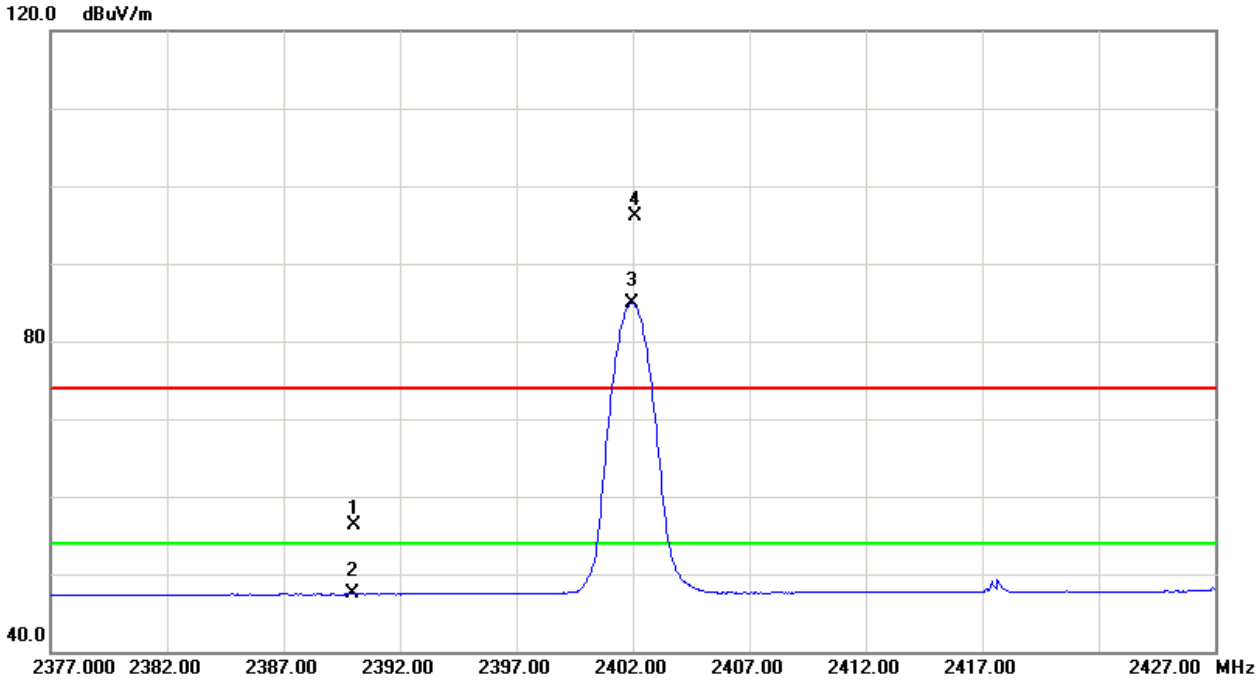
(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

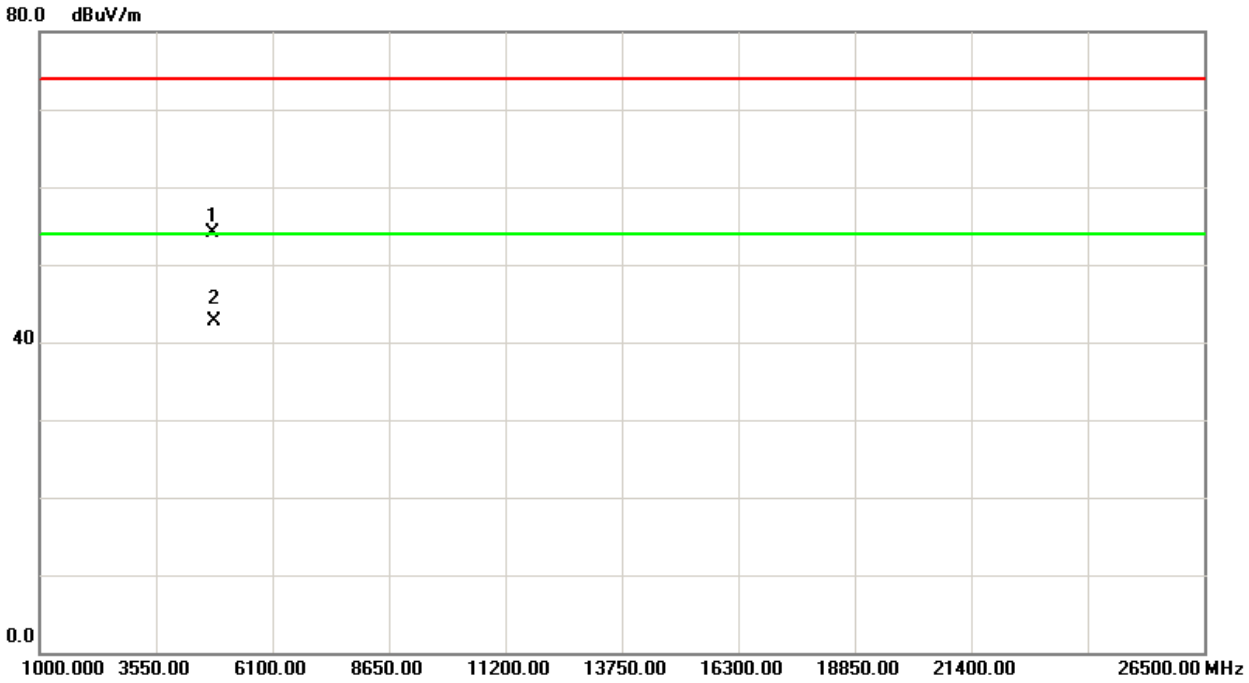
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(6) EUT Orthogonal Axis：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna

TX CH00 (Above 1000 MHz, Vertical)





EUT：	Amplified Controller for BlueTooth Devices	Model Name ：	40PXiBT50.2
Temperature：	23 ℃	Relative Humidity：	51 %
Pressure：	1010 hPa	Test Voltage ：	DC 12V
Test Mode ：	TX 2402MHz – CH 00-1Mbps		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2390.00	H	23.42	13.32	34.09	57.51	47.41	74.00	54.00	X/E
2402.10	**H**	**61.06**	**49.82**	**34.12**	**95.18**	**83.94**			**X/F**
4804.57	H	44.15	32.27	6.38	50.53	38.65	74.00	54.00	X/H

Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

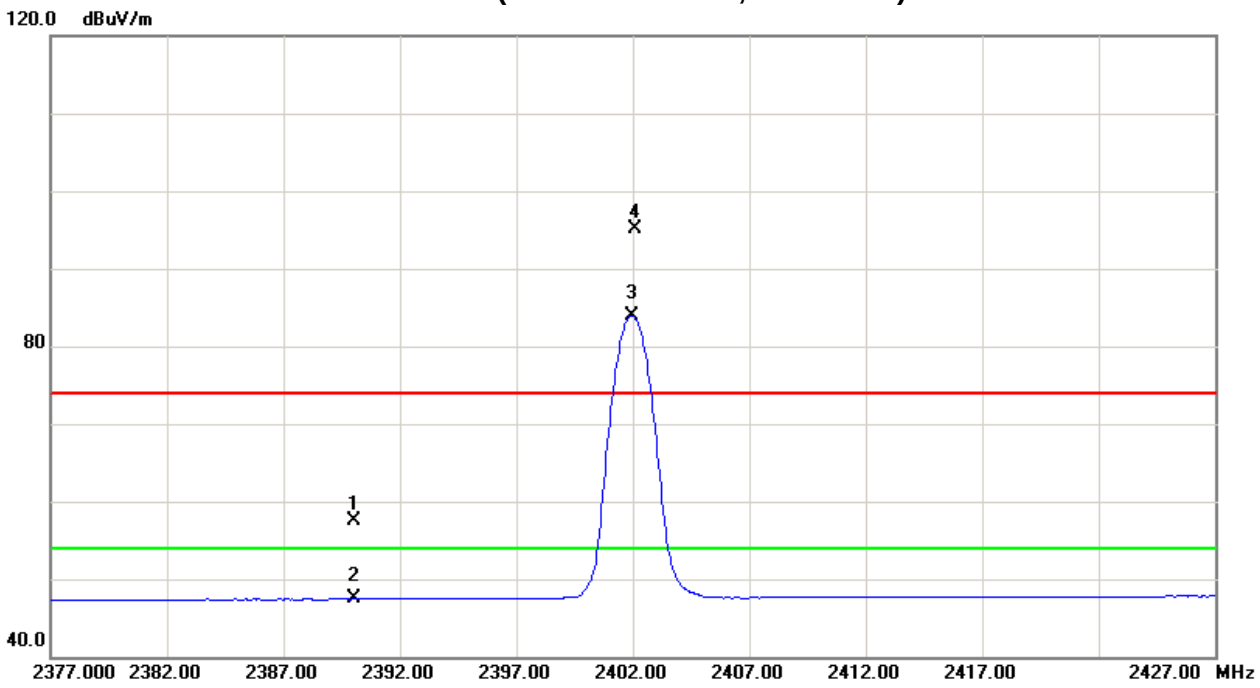
(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

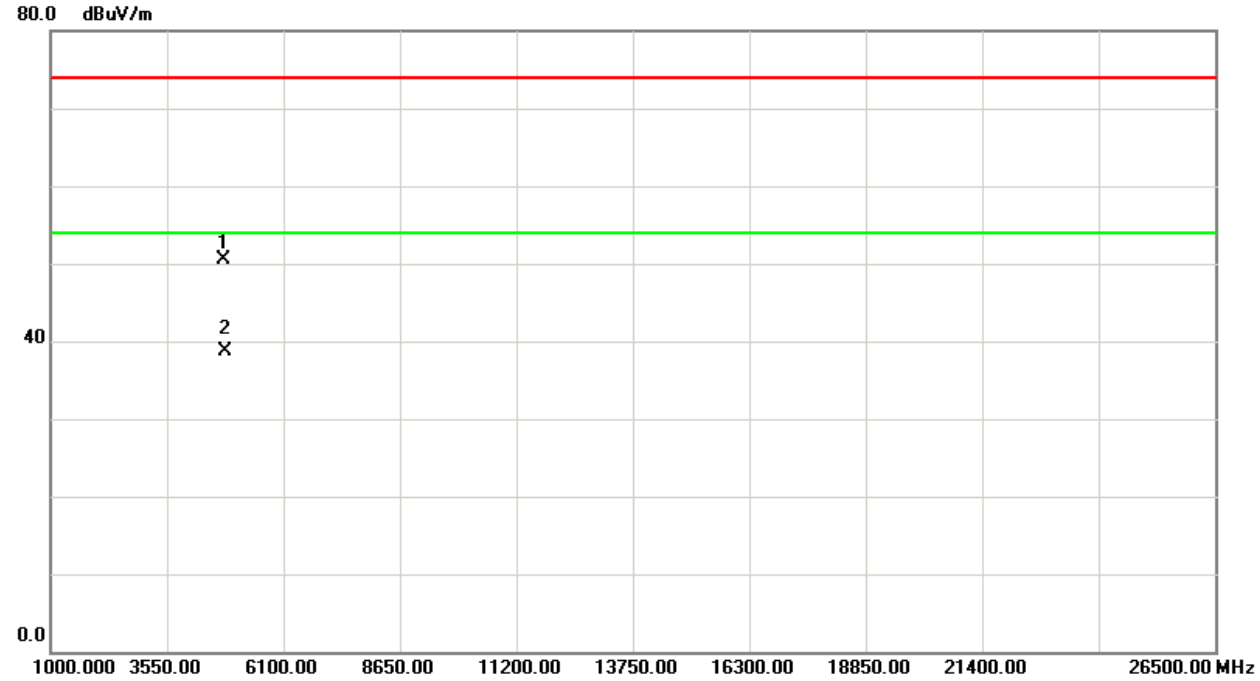
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(6) EUT Orthogonal Axis：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna

TX CH00 (Above 1000 MHz, Horizontal)





EUT：	Amplified Controller for BlueTooth Devices	Model Name ：	40PXiBT50.2
Temperature：	23 ℃	Relative Humidity：	51 %
Pressure：	1010 hPa	Test Voltage ：	DC 12V
Test Mode ：	TX 2440MHz –CH19-1Mbps		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2439.70	**V**	**61.55**	**56.71**	**34.24**	**95.79**	**90.95**			**X/F**
4880.36	V	46.92	35.95	6.61	53.53	42.56	74.00	54.00	X/H

Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

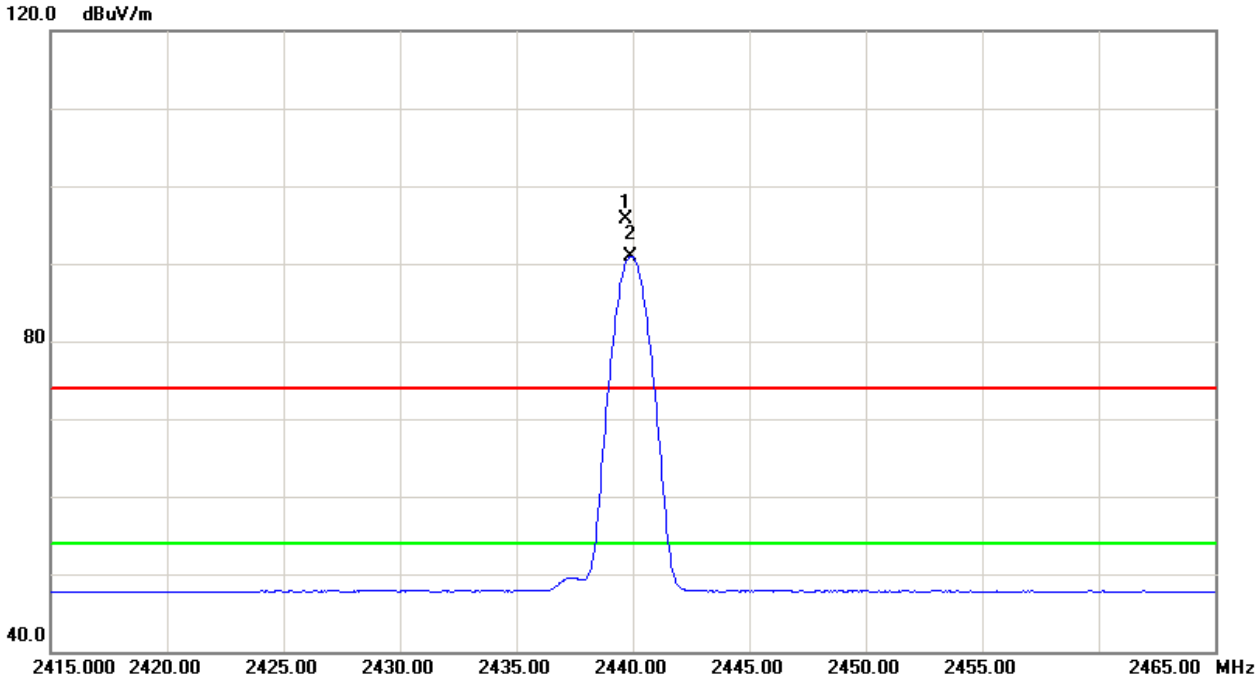
(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

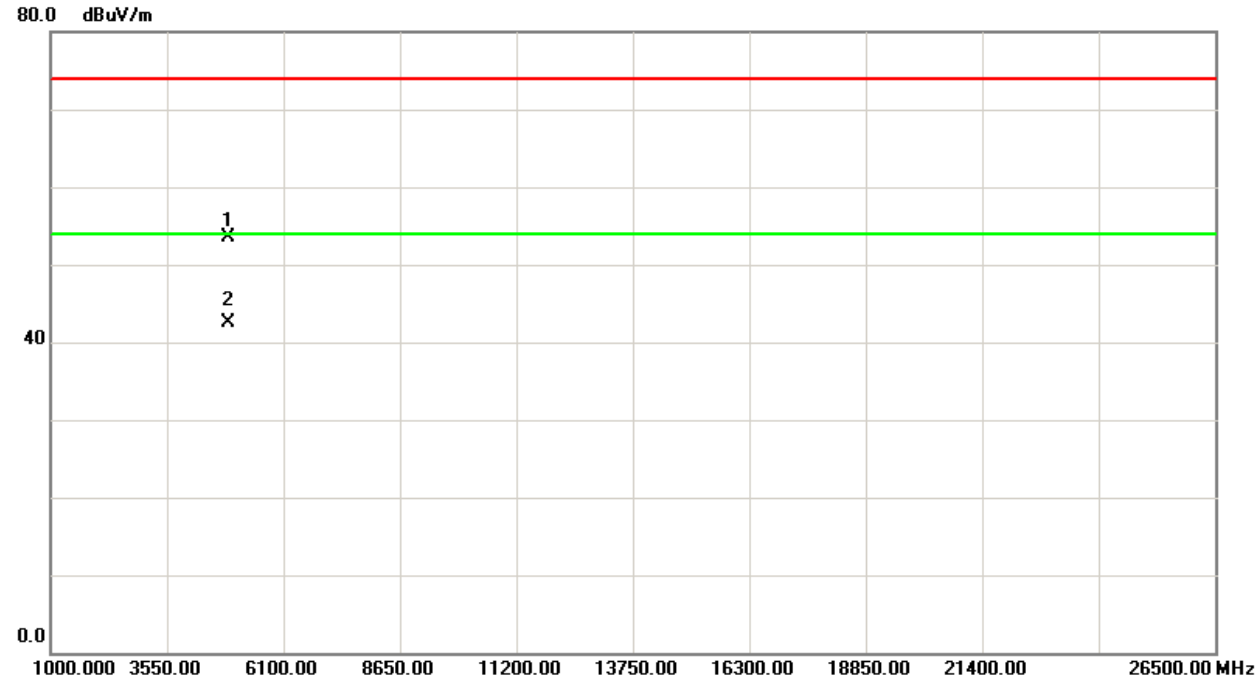
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(6) EUT Orthogonal Axis：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna

TX CH19 (Above 1000 MHz, Vertical)





EUT：	Amplified Controller for BlueTooth Devices	Model Name ：	40PXiBT50.2
Temperature：	23 ℃	Relative Humidity：	51 %
Pressure：	1010 hPa	Test Voltage ：	DC 12V
Test Mode ：	TX 2440MHz –CH19-1Mbps		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2439.70	**H**	**59.85**	**55.01**	**34.24**	**94.09**	**89.25**			**X/F**
4880.17	H	44.32	32.44	6.61	50.93	39.05	74.00	54.00	X/H

Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

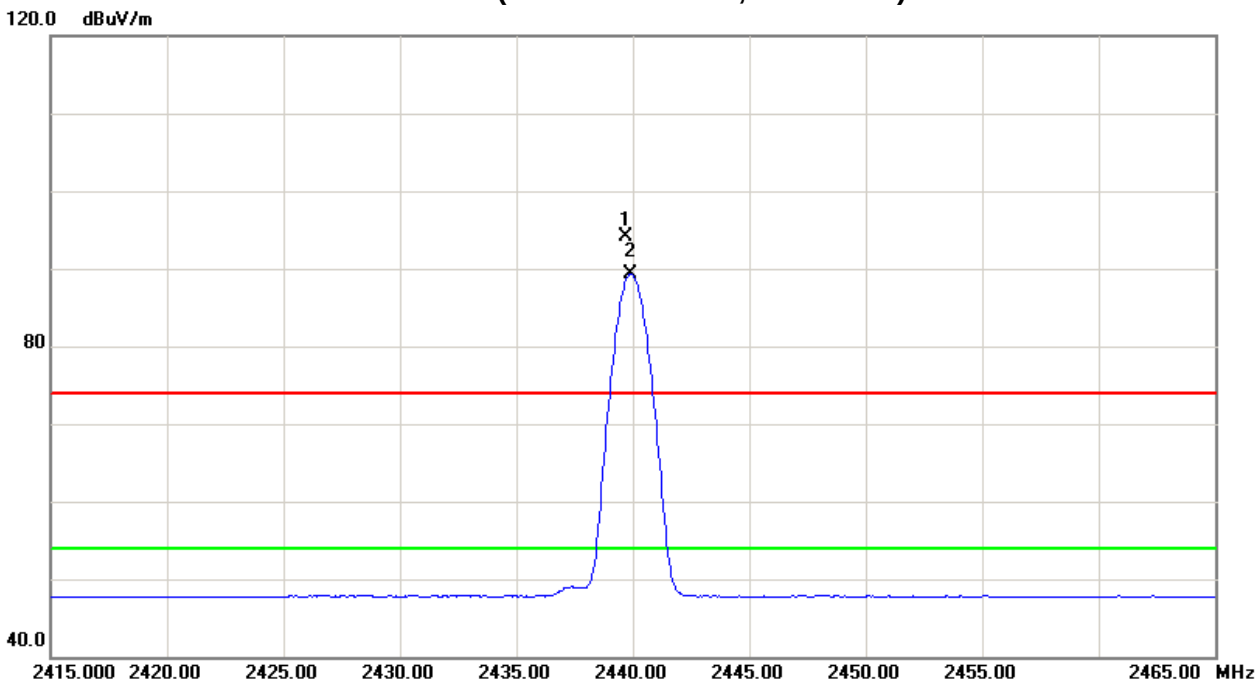
(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

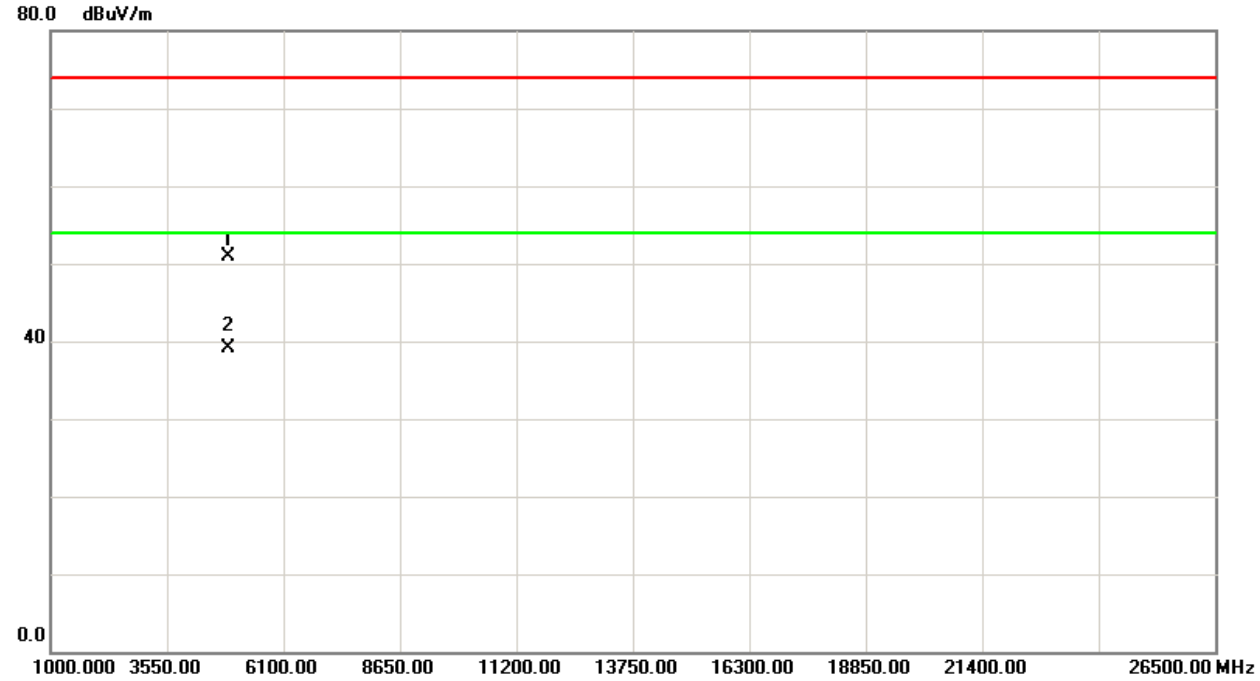
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(6) EUT Orthogonal Axis：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna

TX CH19 (Above 1000 MHz, Horizontal)





EUT：	Amplified Controller for BlueTooth Devices	Model Name ：	40PXiBT50.2
Temperature：	23 ℃	Relative Humidity：	51 %
Pressure：	1010 hPa	Test Voltage ：	DC 12V
Test Mode ：	TX 2480MHz –CH39-1Mbps		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2479.65	**V**	**59.69**	**54.78**	**34.36**	**94.05**	**89.14**			**X/F**
2483.50	V	23.33	13.34	34.37	57.70	47.71	74.00	54.00	X/E
4960.52	V	47.03	36.33	6.83	53.86	43.16	74.00	54.00	X/H

Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

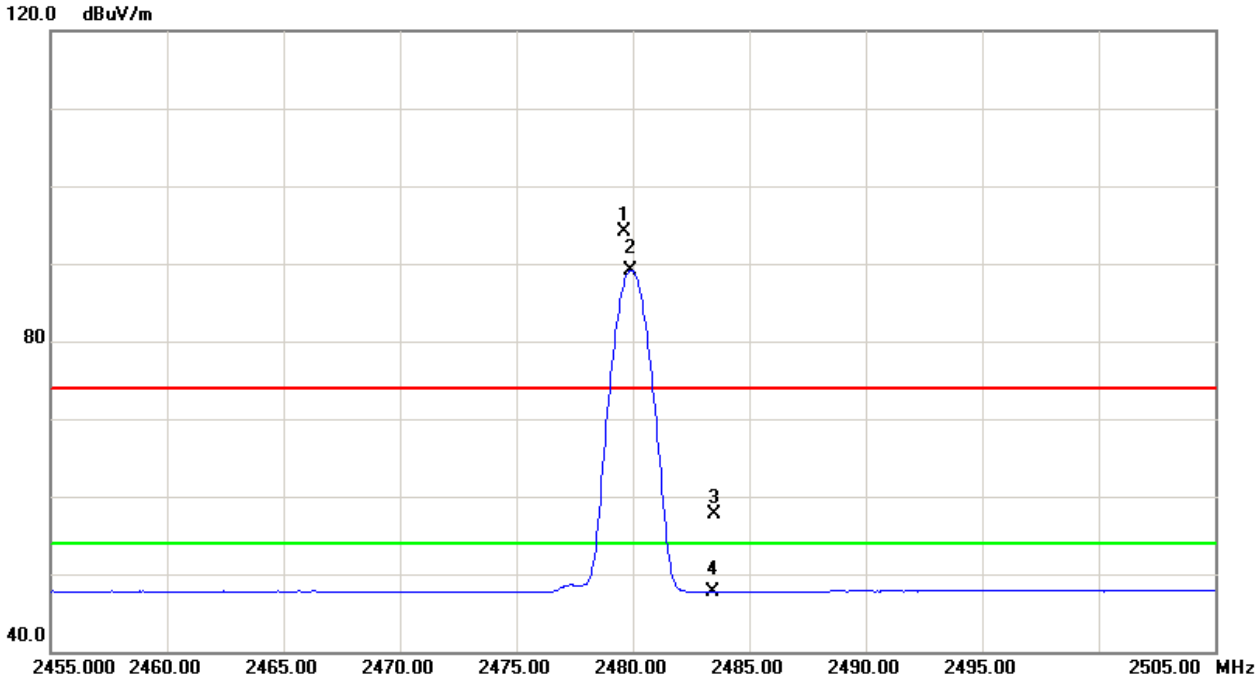
(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

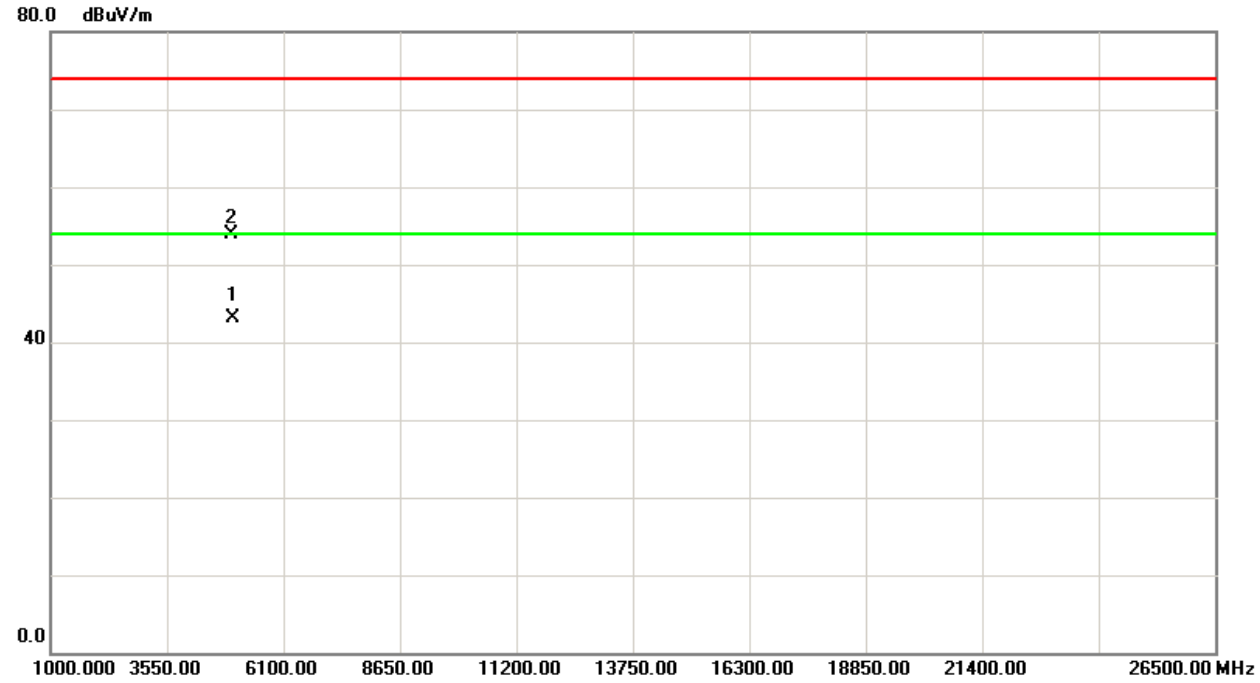
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(6) EUT Orthogonal Axis：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna

TX CH39 (Above 1000 MHz, Vertical)





EUT：	Amplified Controller for BlueTooth Devices	Model Name ：	40PXiBT50.2
Temperature：	23 ℃	Relative Humidity：	51 %
Pressure：	1010 hPa	Test Voltage ：	DC 12V
Test Mode ：	TX 2480MHz –CH39-1Mbps		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2479.65	**H**	**56.59**	**51.69**	**34.36**	**90.95**	**86.05**			**X/F**
2483.50	H	23.43	13.31	34.37	57.80	47.68	74.00	54.00	X/E
4960.37	H	45.20	34.72	6.83	52.03	41.55	74.00	54.00	X/H

Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

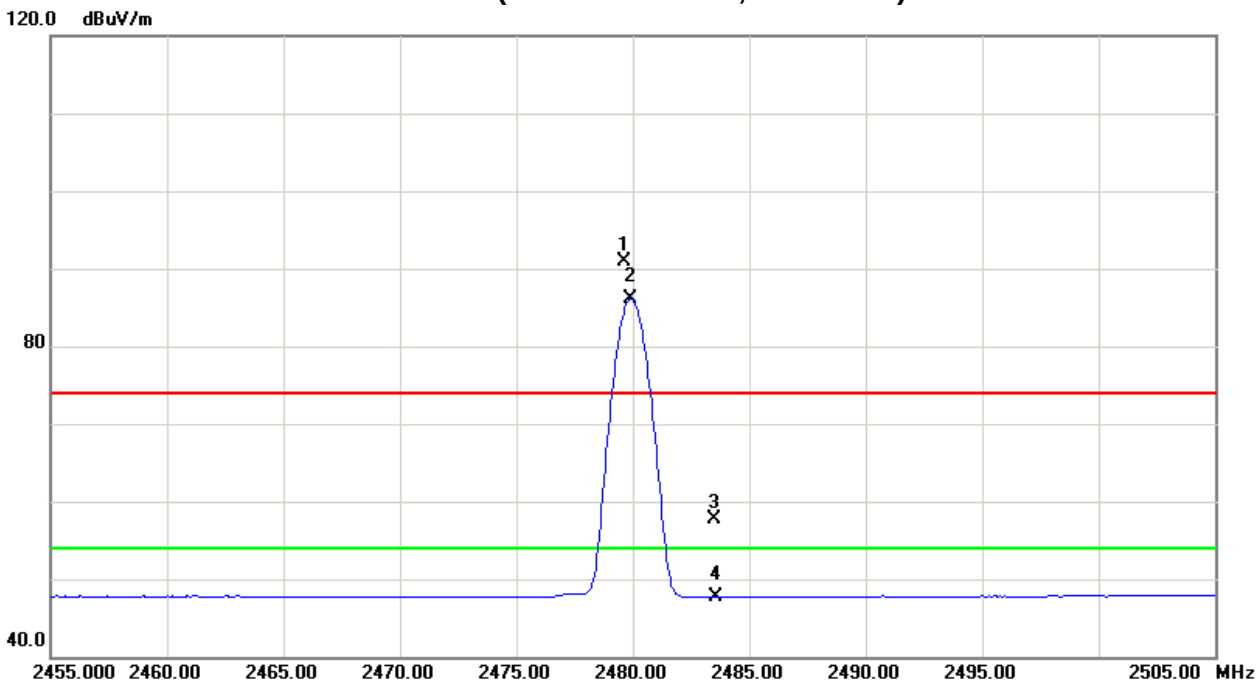
(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

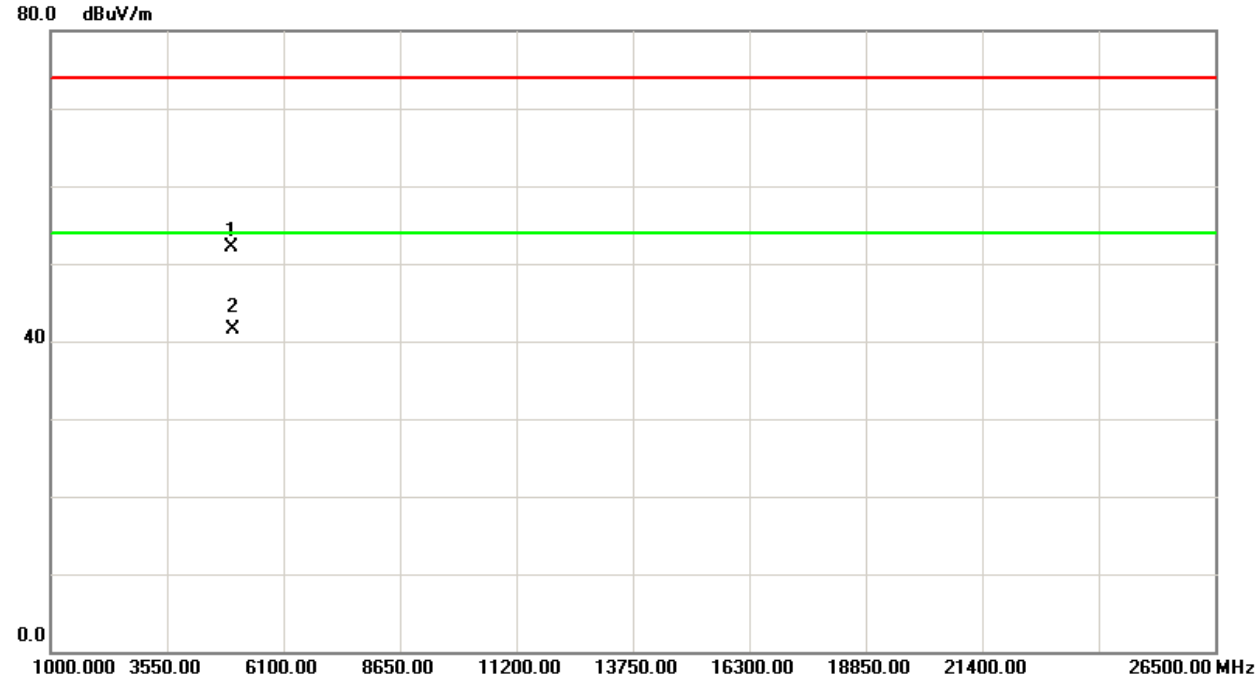
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(6) EUT Orthogonal Axis：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna

TX CH39 (Above 1000 MHz, Horizontal)





5. BANDWIDTH TEST

5.1 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

5.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Until
1	Spectrum Analyzer	R&S	FSP_40	100185	Nov. 11, 2014

Remark: “N/A” denotes no model name, serial no. or calibration specified.
All calibration period of Equipment List is One Year.

5.1.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. Spectrum Setting: RBW= 100KHz, VBW=300KHz, Sweep time = 2.5 ms.

5.1.3 DEVIATION FROM STANDARD

No deviation.

5.1.4 TEST SETUP

5.1.5 EUT OPERATION CONDITIONS

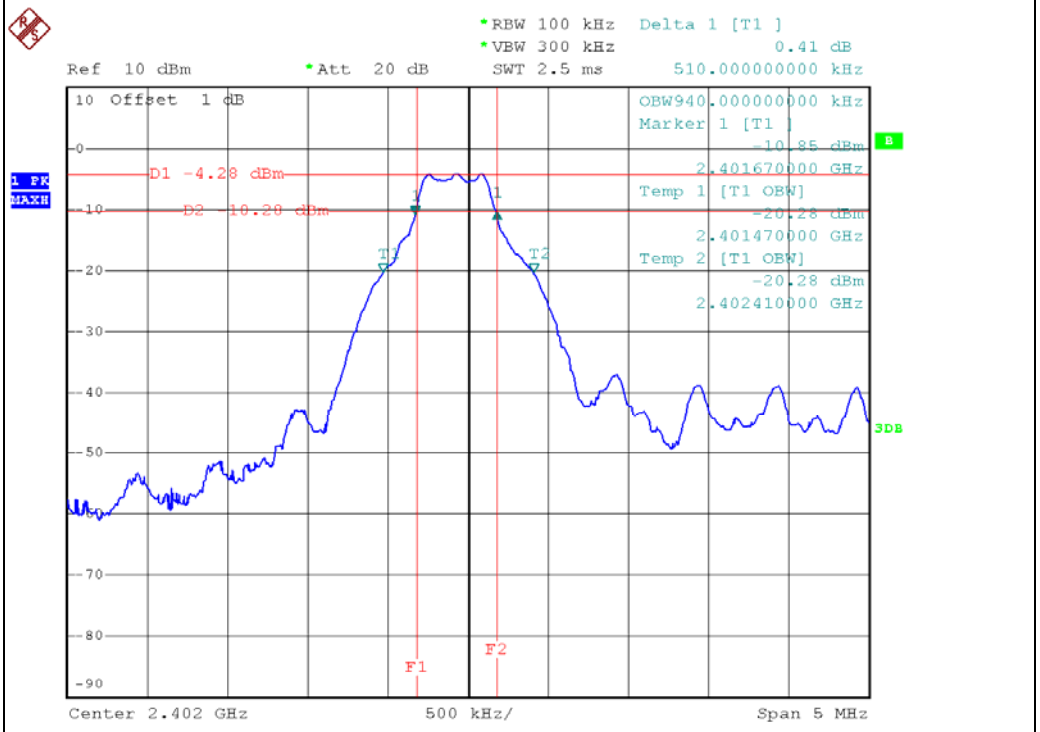
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

5.1.6 TEST RESULTS

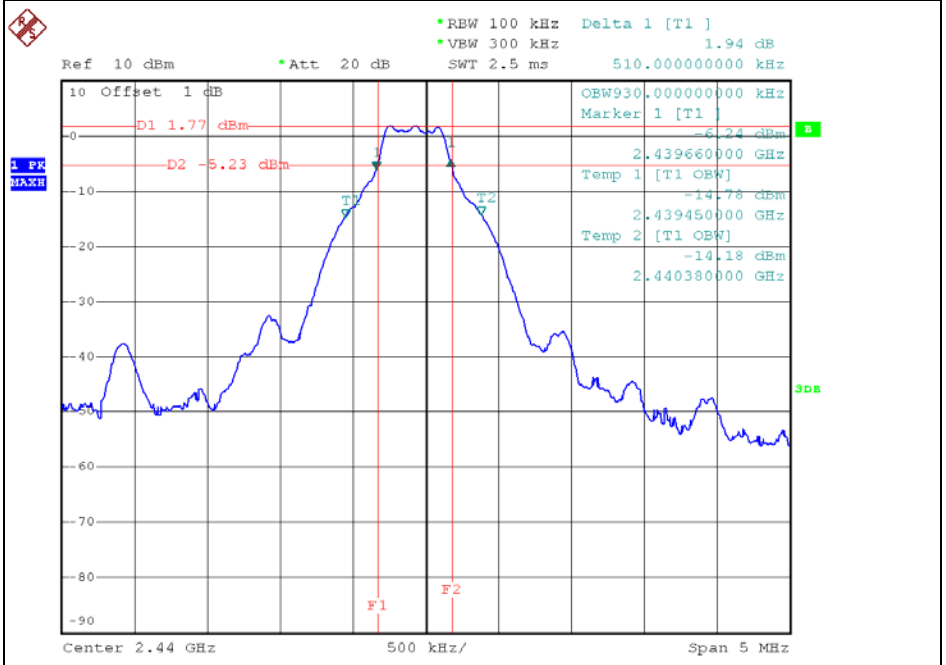
EUT：	Amplified Controller for BlueTooth Devices	Model Name. ：	40PXiBT50.2
Temperature：	24 ℃	Relative Humidity：	60 %
Pressure：	1016 hPa	Test Voltage ：	DC 12V
Test Mode ：	CH00, CH19, CH39 - 1Mbps		

Test Channel	Frequency (MHz)	Bandwidth (MHz)	LIMIT (MHz)
CH00	2402MHz	0.51	>=500KHz
CH19	2440MHz	0.51	>=500KHz
CH39	2480MHz	0.51	>=500KHz

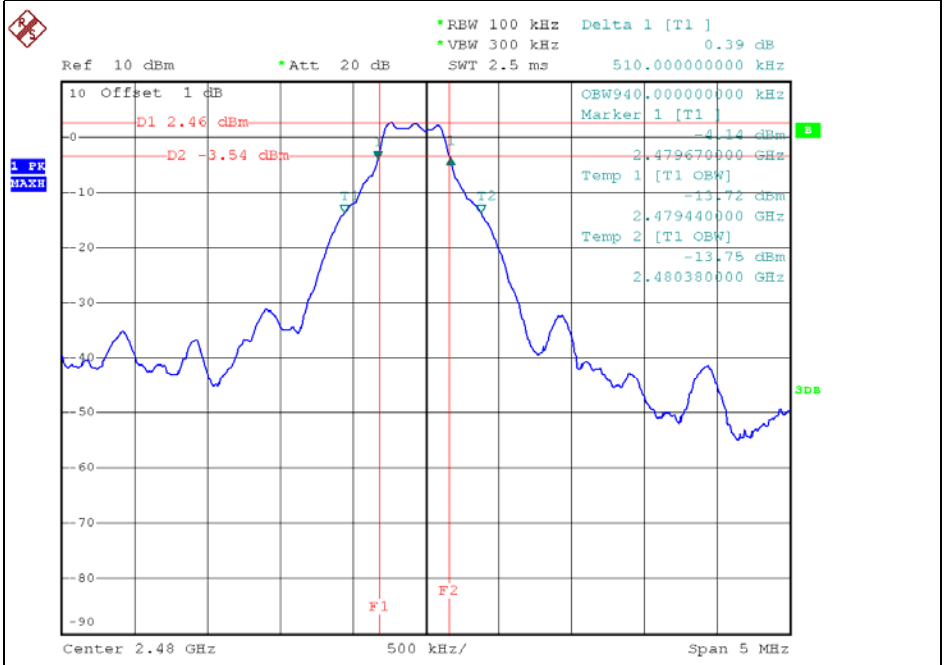
TX CH00



TX CH19



TX CH39



6. MAXIMUM OUTPUT POWER TEST

6.1 Applied procedures / limit

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

6.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Until
1	Power Meter	ANRITSU	ML2495A	1128009	Apr. 25, 2014
2	Pulse Power Sensor	ANRITSU	MA 2411B	1027500	Apr. 25, 2014

Remark: “N/A” denotes no model name, serial no. or calibration specified.
All calibration period of Equipment List is One Year.

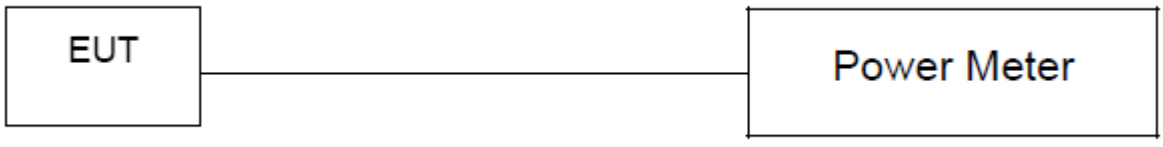
6.1.2 TEST PROCEDURE

a. The EUT was directly connected to the power meter and antenna output port as show in the block diagram below,
b. The maximum peak conducted output power was performed in accordance with method 9.1.3 of FCC KDB 558074

6.1.3 DEVIATION FROM STANDARD

No deviation.

6.1.4 TEST SETUP



6.1.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.
Transmit output power was measured while the host equipment supply voltage was varied from 85 % to 115 % of the nominal rated supply voltage. No change in transmit output power was observed.

6.1.6 TEST RESULTS

EUT：	Amplified Controller for BlueTooth Devices	Model Name ：	40PXiBT50.2
Temperature：	24 ℃	Relative Humidity：	60 %
Pressure：	1016 hPa	Test Voltage ：	DC 12V
Test Mode ：	CH00, CH19, CH39 - 1Mbps		

Test Channel	Frequency (MHz)	Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH00	2402MHz	-4.26	30	1
CH19	2440MHz	2.46	30	1
CH39	2480MHz	3.75	30	1

7. ANTENNA CONDUCTED SPURIOUS EMISSION

7.1 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 measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

7.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Until
1	Spectrum Analyzer	R&S	FSP_40	100185	Nov. 11, 2014

Remark: “N/A” denotes no model name, serial no. or calibration specified.
All calibration period of Equipment List is One Year.

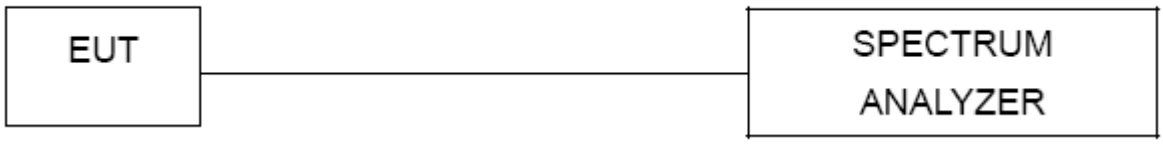
7.1.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. Spectrum Setting : RBW= 100KHz, VBW=300KHz, Sweep time = 10 ms.

7.1.3 DEVIATION FROM STANDARD

No deviation.

7.1.4 TEST SETUP



7.1.5 EUT OPERATION CONDITIONS

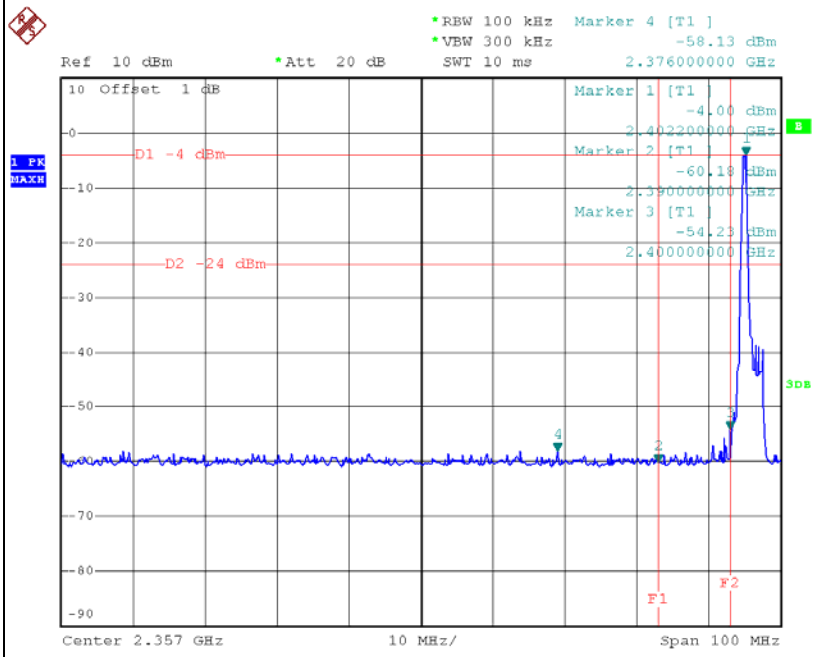
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

7.1.6 TEST RESULTS

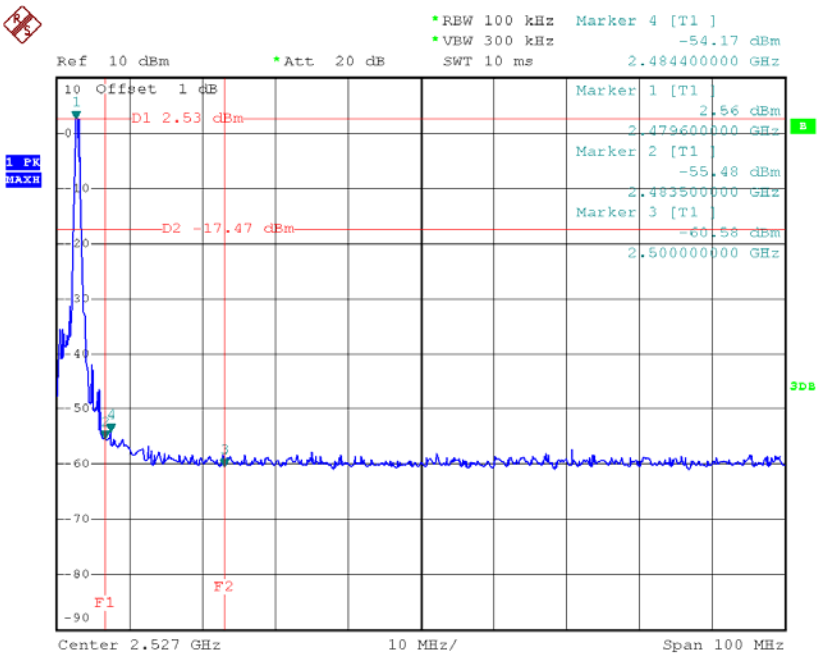
EUT：	Amplified Controller for BlueTooth Devices	Model Name ：	40PXiBT50.2
Temperature：	24 ℃	Relative Humidity：	60 %
Pressure：	1016 hPa	Test Voltage ：	DC 12V
Test Mode ：	CH00, CH19 , CH39 - 1Mbps		

Channel of Worst Data: CH39			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth outside the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
2400.00	-54.23	2484.40	-54.17
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest lever of the desired power.			

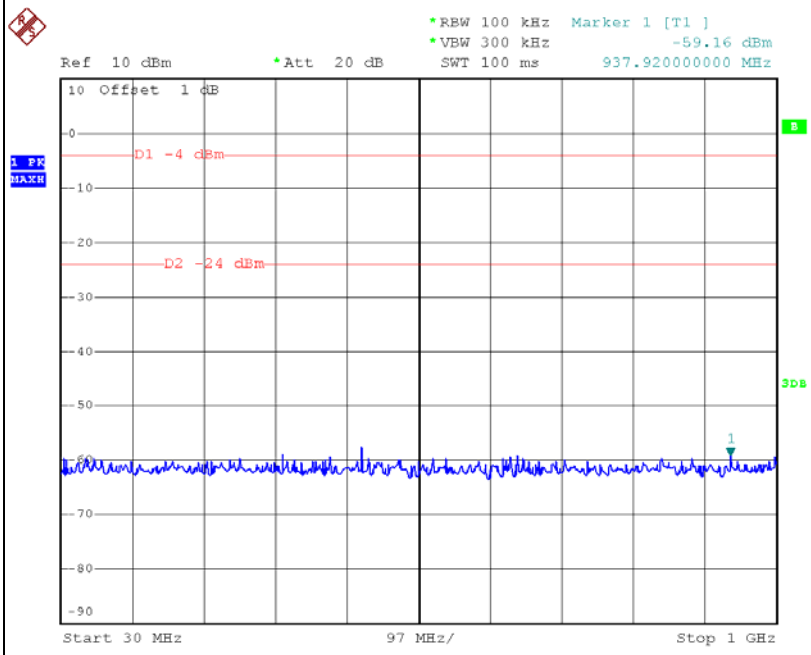
CH00 (Lower) - 1Mbps



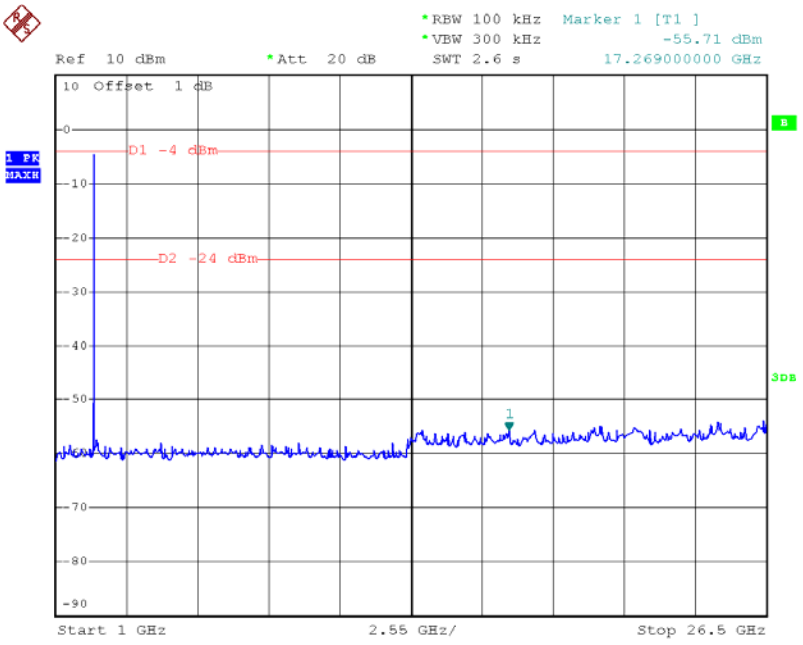
CH39 (upper) - 1Mbps



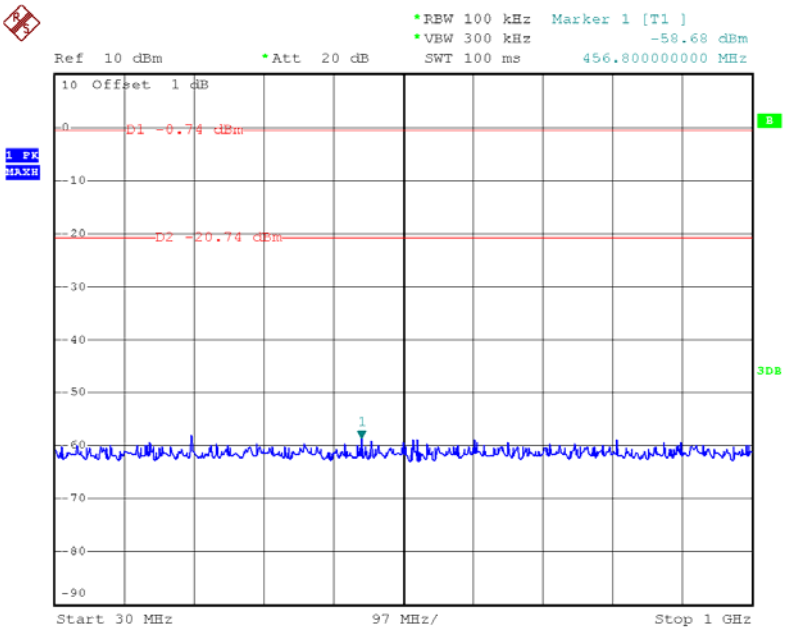
CH00 (30M~1GHz)



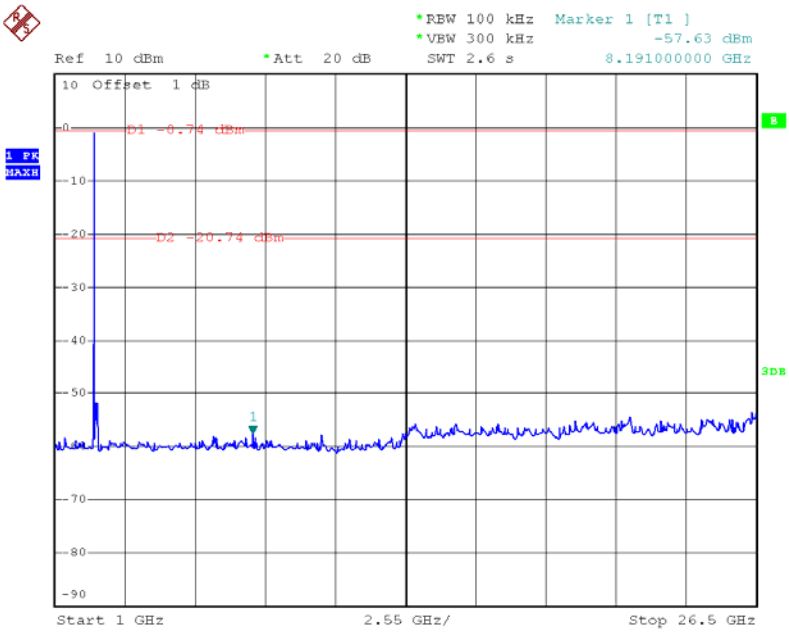
CH00 (1GHz~10th Harmonic)



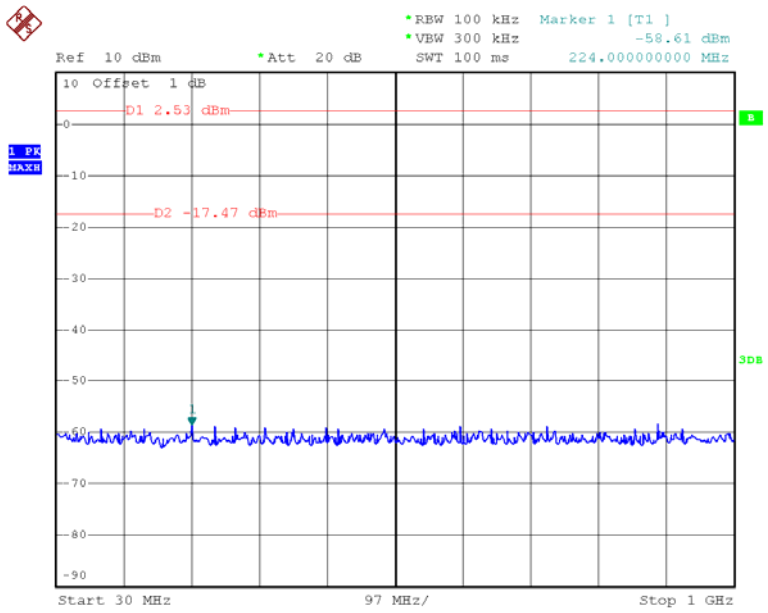
CH19 (30M~1GHz)



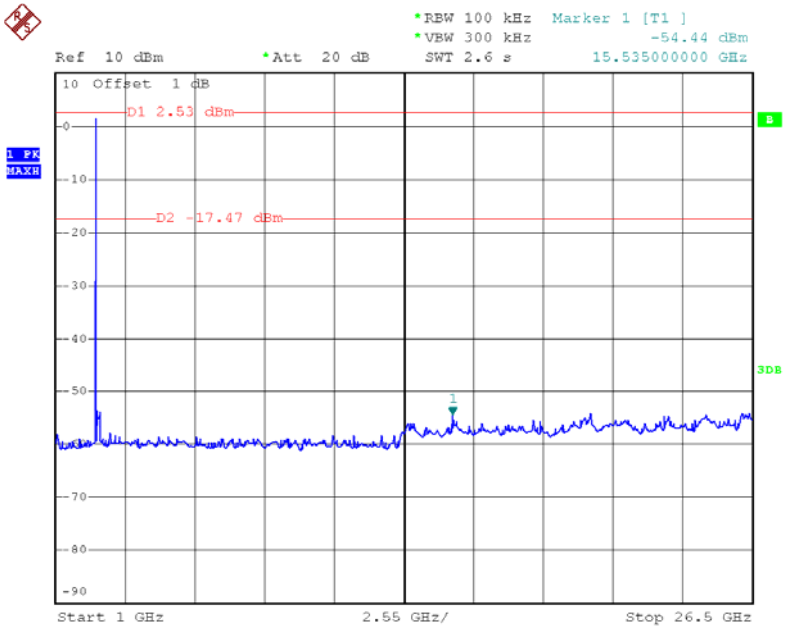
CH19 (1GHz~10th Harmonic)



CH39 (30M~1GHz)



CH39 (1GHz~10th Harmonic)



8. POWER SPECTRAL DENSITY TEST

8.1 Applied procedures / limit

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

8.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Until
1	Spectrum Analyzer	R&S	FSP_40	100185	Nov. 11, 2014

Remark: “N/A” denotes no model name, serial no. or calibration specified.
All calibration period of Equipment List is One Year.

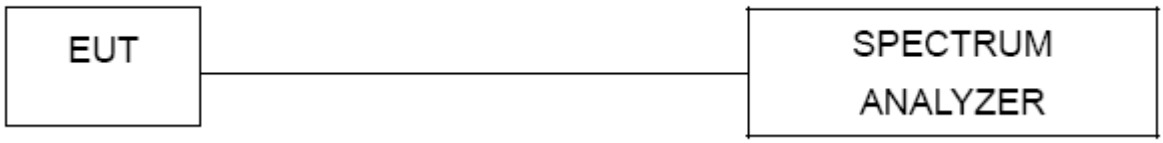
8.1.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. Spectrum Setting : RBW=3KHz, VBW=10 KHz, Sweep time = auto.

8.1.3 DEVIATION FROM STANDARD

No deviation.

8.1.4 TEST SETUP



8.1.5 EUT OPERATION CONDITIONS

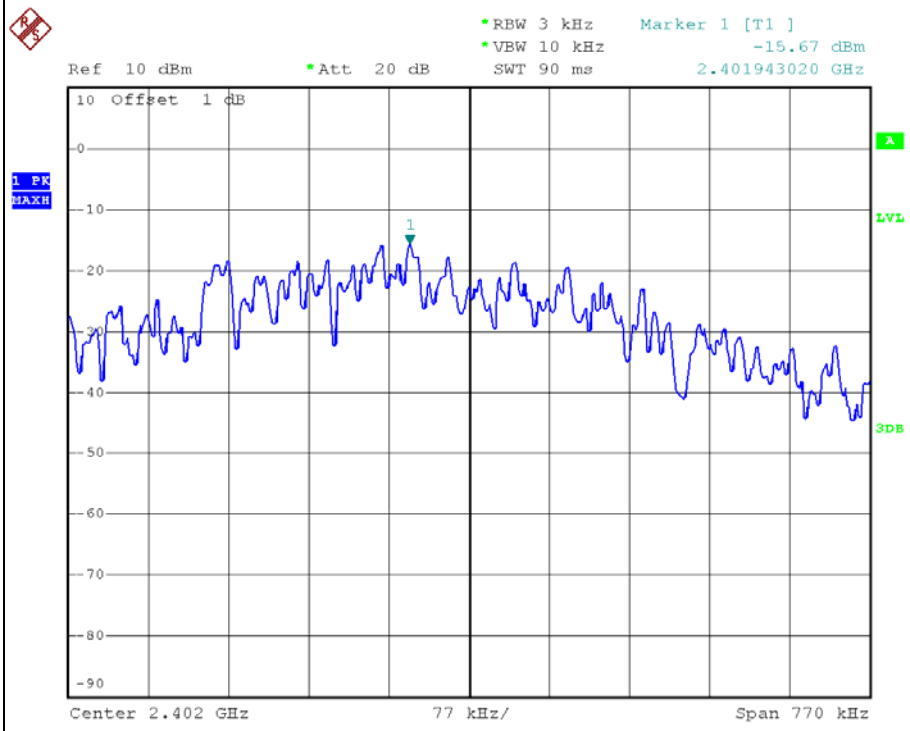
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

8.1.6 TEST RESULTS

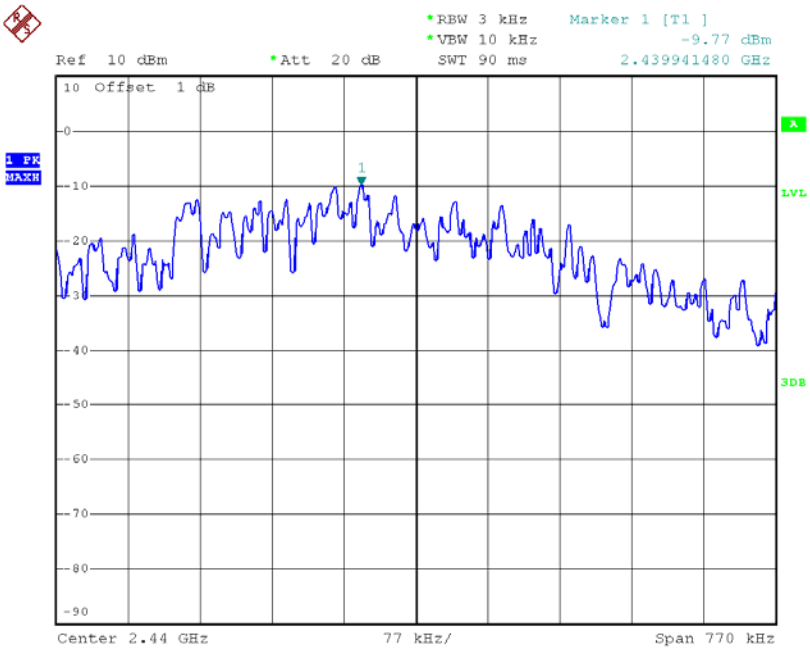
EUT：	Amplified Controller for BlueTooth Devices	Model Name ：	40PXiBT50.2
Temperature：	24 ℃	Relative Humidity：	60 %
Pressure：	1016 hPa	Test Voltage ：	DC 12V
Test Mode ：	CH00, CH19, CH39 -1Mbps		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH00	2402MHz	-15.67	8
CH19	2440MHz	-9.77	8
CH39	2480MHz	-9.10	8

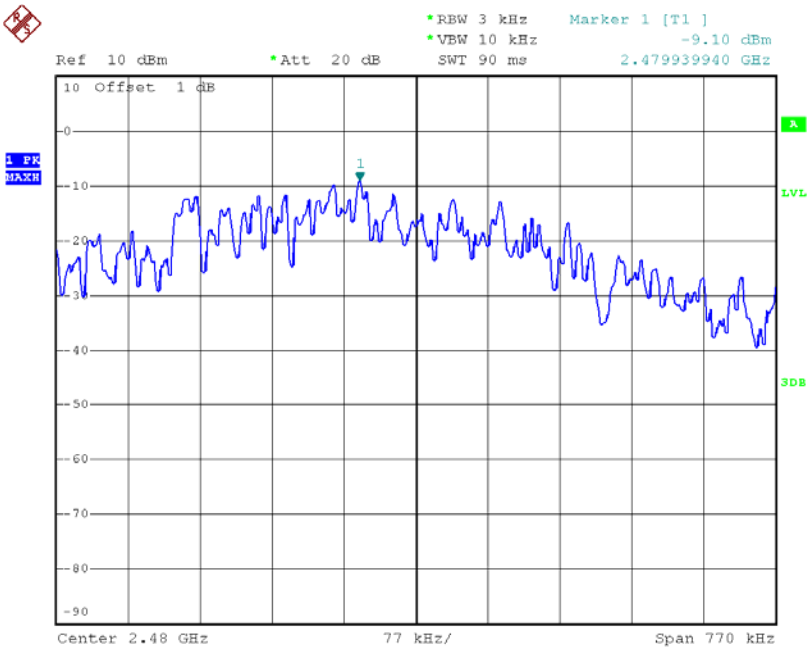
TX CH00



TX CH19

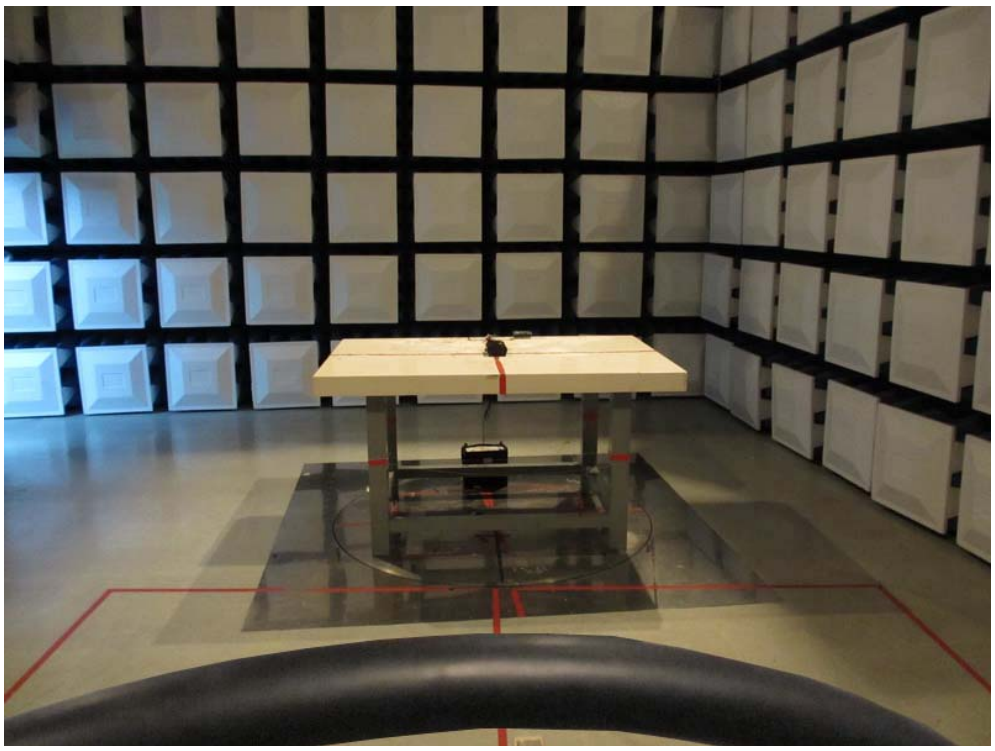


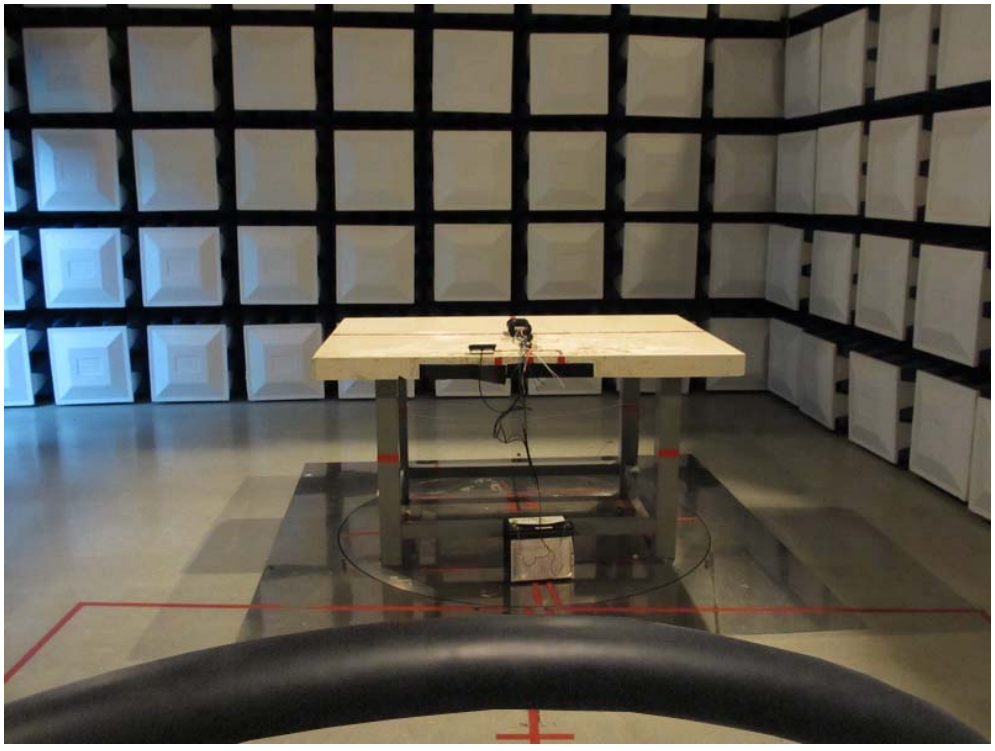
TX CH39



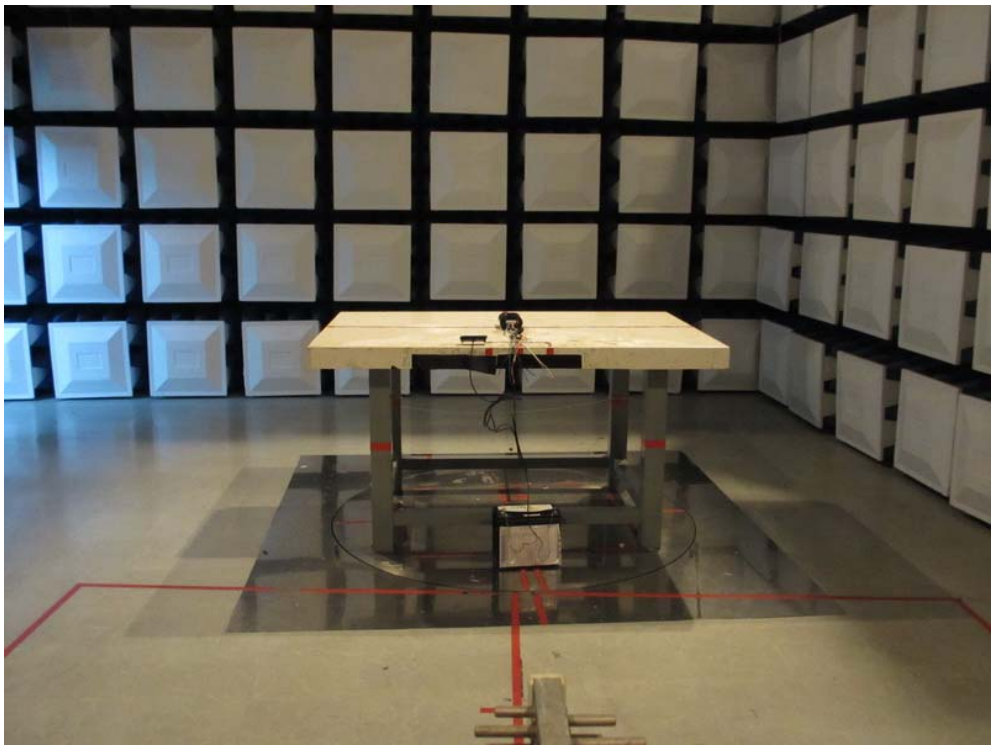
9. EUT TEST PHOTO

Radiated Measurement Photos
9K~30MHz





Radiated Measurement Photos
30M~1000MHz



Radiated Measurement Photos
Above 1000MHz