

FCC Part 15C Test Report

FCC ID: PAZ3089

Product Name:	Bluetooth Digital Clock Radio
Trademark:	KT TECH
Model Name :	KT-3089BTU
Prepared For :	KAN TSANG TECHNOLOGY LIMITED
Address :	Flat C5 ,11/F., Wing Hing Industrial Bldg. , 14 Hing Yip Street, Kwun Tong. , Kowloon, Hong Kong
Prepared By :	DongGuan Precise Testing Service Co.,Ltd.
Address :	Building D, Baoding Technology Park, Guangming Road 2, Guangming Community, Dongcheng District, Dongguan, Guangdong, China
Test Date:	September 14 - September 29, 2015
Date of Report :	September 29, 2015
Report No.:	PT1509028007F



VERIFICATION OF COMPLIANCE

Applicant's name : KAN TSANG TECHNOLOGY LIMITED
Address : Flat C5 ,11/F., Wing Hing Industrial Bldg., 14 Hing Yip Street,
Kwun Tong., Kowloon, Hong Kong
Manufacturer's Name : Dong Guan Kan Tsang Industrial Co.,Ltd.
Address : No.5, LuYiYi Road,TangXia Town,Dong Guan City,(Keyuan Town
A3)China

Product description

Product name : Bluetooth Digital Clock Radio
Trademark: KT TECH
Model Name: KT-3089BTU
Test procedure FCC Part 15.249
Standards ANSI C63.4-2003

This device described above has been tested by PTS, 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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Test Result..... : **Pass**

Testing Engineer : 

(Juan Zeng)

Technical Manager : 

(Tom Zhang)

Authorized Signatory : 

(Chris Du)



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11. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Rules	Description of Test	Result
Section 15.207	Conducted Emission	Compliant
Section 15.249(a)	The fundamental field strength and the harmonics	Compliant
Section 15.209 Section 15.249(d)	Radiated Emission	Compliant
Section 15.249(d)	Band Edge	Compliant
Section 15.203	Antenna Requirement	Compliant
Section 15.249	20dB Bandwidth	Compliant



21.1 TEST FACILITY

Dongguan Precise Testing Service Co., Ltd.

Add.: Building D, Baoding Technology Park, Guangming Road2, Dongcheng District, Dongguan, Guangdong, China
FCC Registration No.: 371540

3 1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, 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	$\pm 1.38\text{dB}$
2	RF power,conducted	$\pm 0.16\text{dB}$
3	Spurious emissions,conducted	$\pm 0.21\text{dB}$
4	All emissions,radiated(<1G)	$\pm 4.68\text{dB}$
5	All emissions,radiated(>1G)	$\pm 4.89\text{dB}$
6	Temperature	$\pm 0.5^\circ\text{C}$
7	Humidity	$\pm 2\%$



21. GENERAL INFORMATION

1.1 2.1GENERAL DESCRIPTION OF EUT

Equipment	Bluetooth Digital Clock Radio											
Trade Name	KT TECH											
Model Name	KT-3089BTU											
Serial Model	N/A											
Model Difference	N/A											
Product Description	<p>The EUT is a BLUETOOTH DIGITAL CLOCK RADIO</p> <table border="1"> <tr> <td>Operation Frequency:</td> <td>2402~2480 MHz</td> </tr> <tr> <td>Modulation Type:</td> <td>BT(1Mbps); GFSK software not supported EDR (disabled by software)</td> </tr> <tr> <td>Bit Rate of Transmitter</td> <td>1Mbps</td> </tr> <tr> <td>Number Of Channel</td> <td>79 CH</td> </tr> <tr> <td>Antenna Designation:</td> <td>Please see Note 3.</td> </tr> </table> <p>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.</p>		Operation Frequency:	2402~2480 MHz	Modulation Type:	BT(1Mbps); GFSK software not supported EDR (disabled by software)	Bit Rate of Transmitter	1Mbps	Number Of Channel	79 CH	Antenna Designation:	Please see Note 3.
Operation Frequency:	2402~2480 MHz											
Modulation Type:	BT(1Mbps); GFSK software not supported EDR (disabled by software)											
Bit Rate of Transmitter	1Mbps											
Number Of Channel	79 CH											
Antenna Designation:	Please see Note 3.											
Channel List	Please refer to the Note 2.											
Adapter	Adapter 1: Input:100-240V/60Hz 0.5A output: 5V 2A Adapter 2: Input:100-240V/60Hz 0.35A output: 5V 2A											
Battery	3V---(2XLR6)											
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)
00	2402	27	2429	54	2456
01	2403	28	2430	55	2457
02	2404	29	2431	56	2458
03	2405	30	2432	57	2459
04	2406	31	2433	58	2460
05	2407	32	2434	59	2461
06	2408	33	2435	60	2462



07	2409	34	2436	61	2463
08	2410	35	2437	62	2464
09	2411	36	2438	63	2465
10	2412	37	2439	64	2466
11	2413	38	2440	65	2467
12	2414	39	2441	66	2468
13	2415	40	2442	67	2469
14	2416	41	2443	68	2470
15	2417	42	2444	69	2471
16	2418	43	2445	70	2472
17	2419	44	2446	71	2473
18	2420	45	2447	72	2474
19	2421	46	2448	73	2475
20	2422	47	2449	74	2476
21	2423	48	2450	75	2477
22	2424	49	2451	76	2478
23	2425	50	2452	77	2479
24	2426	51	2453	78	2480
25	2427	52	2454		
26	2428	53	2455		

3.

Table for Filed Antenna

Ant .	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	N/A	PCB Antenna	N/A	0	BT Antenna



1.2 2.2 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 FHSS.

Test software Version	Test program: BK8000L		
Frequency	2402 MHz	2440MHz	2480 MHz
Parameters(1Mbps)	DEF	DEF	DEF

1.3 2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted Emission Test



Radiated Spurious Emission Test



**1.42.4 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.	Series No.	Note
Adapter 1	BI	BI10-050200-AdV	N/A	
Adapter 2	JF	JF012WR-0500200UH	N/A	
Bluetooth Digital Clock Radio	KT TECH	KT-3089BTU	N/A	

Shielded Type	Ferrite Core	Length	Note
No	No	40 cm	DC cable (Adapter to EUT)
No	No	40 cm	DC cable (Adapter to EUT)

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.
- (3) "YES" is means "shielded" "with core"; "No" is means "unshielded" "without core".

2.5 DESCRIPTION OF TEST MODES

The special RF test software was used to control EUT work in Continuous Bluetooth TX mode, and select test channel, wireless mode.

Test modes	Frequency (MHz)
Low channel: CH00	2402
Middle channel: CH38	2440
High channel: CH78	2480
BT link mode	

After the preliminary test, we found to emit the worst emissions and therefore had been tested under operating condition.

1. CONDUCTED EMISSION MEASUREMENT:

2402MHz Transmitting (Worst case mode)

Test voltage: AC 120V/60Hz (Adapter 1, Adapter 2)

2. Fundamental Radiated Emissions Data:

EUT was tested with 2402MHz, 2440MHz and 2480MHz.

Test voltage: AC 120V/60Hz (Adapter 1, Worst case Adapter)

3. Radiated Spurious Emission (Below 1GHz)

EUT was tested with 2402MHz (Worst case mode)

Test voltage: AC 120V/60Hz (Adapter 1, Worst case Adapter)

4. Radiated Spurious Emission (1th to 10th harmonics)

EUT was tested with TX 2402MHz, 2440MHz and 2480MHz.

Test voltage: AC 120V/60Hz (Adapter 1, Worst case Adapter)

5. Radiated band edge:

EUT was tested with TX mode 2402MHz, 2480MHz and Hopping mode.

Test voltage: AC 120V/60Hz (Adapter 1, Worst case Adapter)

6. BANDWIDTH TEST:

EUT was tested with 2402MHz, 2440MHz and 2480MHz.

**1.5 2.6 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	2015.07.06	2016.07.05	1 year
2	Test Receiver	R&S	ESPI	101318	2015.06.07	2016.06.06	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2015.07.06	2016.07.05	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2015.06.07	2016.06.06	1 year
5	Spectrum Analyzer	ADVANTEST	R3132	150900201	2015.06.07	2016.06.06	1 year
6	Horn Antenna	EM	EM-AH-10180	2011071402	2015.07.06	2016.07.05	1 year
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2015.07.06	2016.07.05	1 year
8	Amplifier	EM	EM-30180	060538	2015.12.22	2016.12.21	1 year
9	Loop Antenna	ARA	PLA-1030/B	1029	2015.06.08	2016.06.07	1 year
10	Power Meter	R&S	NRVS	100696	2015.07.06	2016.07.05	1 year
11	Power Sensor	R&S	URV5-Z4	0395.1619.05	2015.07.06	2016.07.05	1 year
12	RF cables	R&S	R203	R20X	2015.07.06	2016.07.05	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	2015.06.06	2016.06.05	1 year
2	LISN	R&S	ENV216	101313	2015.08.24	2016.08.23	1 year
3	LISN	EMCO	3816/2	00042990	2015.08.24	2016.08.23	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2015.06.07	2016.06.06	1 year
5	Passive Voltage Probe	R&S	ESH2-Z3	100196	2015.06.07	2016.06.06	1 year
6	Absorbing clamp	R&S	MOS-21	100423	2015.06.08	2016.06.07	1 year
7	RF cables	R&S	R204	R20X	2015.07.06	2016.07.05	1 year



32. EMC EMISSION TEST

2.1 3.1.CONDUCTED EMISSION MEASUREMENT

2.1.1 3.1.1POWER LINE CONDUCTED EMISSION (Frequency Range 150KHz-30MHz) Limits

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

0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	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

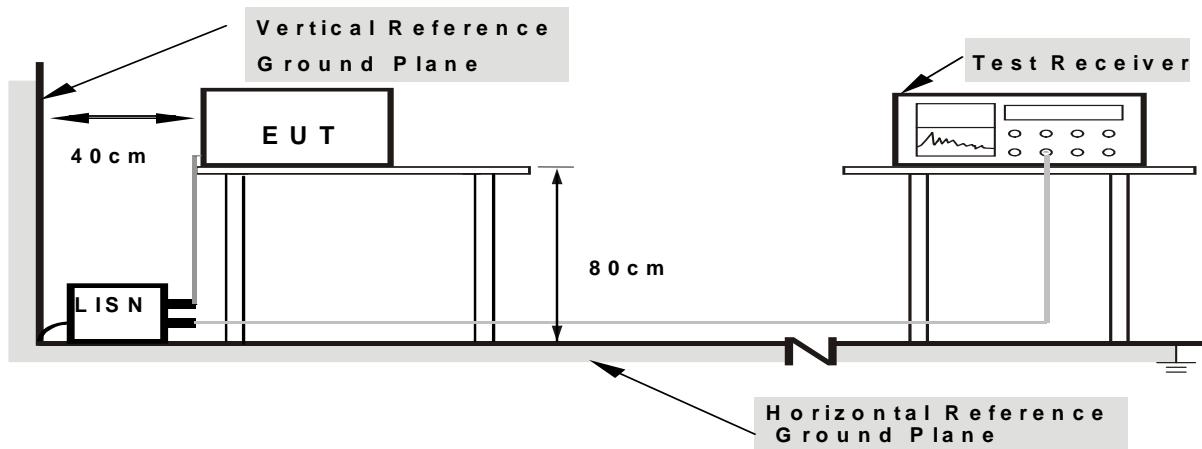
2.1.2 3.1.2 TEST PROCEDURE

- 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.

2.1.3 3.1.3 DEVIATION FROM TEST STANDARD

No deviation

2.1.4 3.1.4 TEST SETUP



2.1.5 3.1.5 EUT OPERATING CONDITIONS

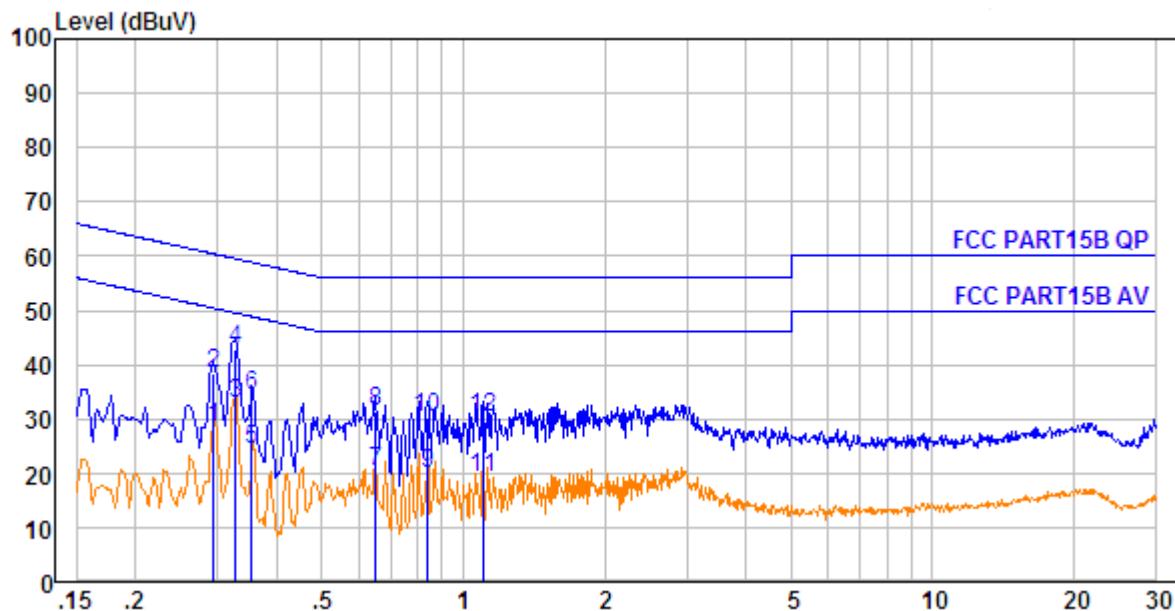
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

We pretest AC 120V and AC 240V, the worst voltage was AC 120V and the data recording in the report.

**2.1.6 3.1.6 TEST RESULTS****Pass**

EUT :	BLUETOOTH DIGITAL CLOCK RADIO	Model Name :	KT-3089BTU
Temperature :	25 °C	Relative Humidity :	54%
Pressure :	1010 hPa		
Test Voltage :	AC 120V/60Hz (Adapter 1)		
Test Mode :	TX 2402MHz		

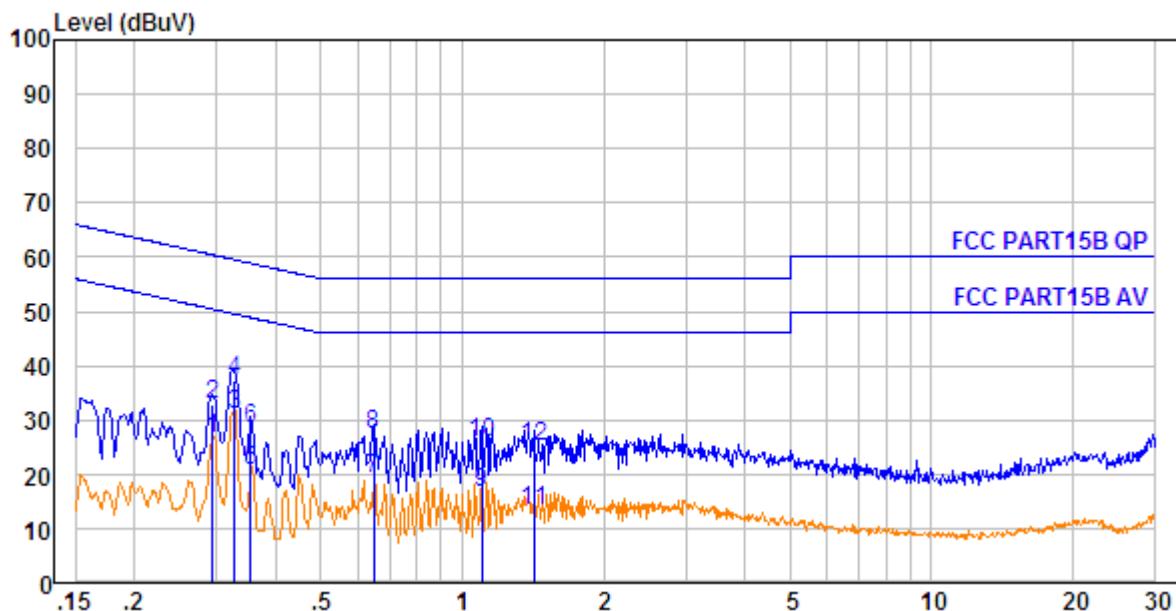
Line:



No.	Freq MHz	Cable Loss dB	AMN Factor dB	Receiver Reading dBuV	Emission Level dBuV	Limit dBuV	Over Limit dB	Remark
1.	0.294	10.63	0.60	17.20	28.43	50.41	-21.98	Average
2.	0.294	10.63	0.60	27.20	38.43	60.41	-21.98	QP
3.	0.327	10.63	0.60	21.67	32.90	49.53	-16.63	Average
4.	0.327	10.63	0.60	31.67	42.90	59.53	-16.63	QP
5.	0.354	10.63	0.60	12.99	24.22	48.87	-24.65	Average
6.	0.354	10.63	0.60	22.99	34.22	58.87	-24.65	QP
7.	0.651	10.66	0.60	8.92	20.18	46.00	-25.82	Average
8.	0.651	10.66	0.60	19.92	31.18	56.00	-24.82	QP
9.	0.839	10.67	0.60	8.81	20.08	46.00	-25.92	Average
10.	0.839	10.67	0.60	18.81	30.08	56.00	-25.92	QP
11.	1.100	10.68	0.60	7.95	19.23	46.00	-26.77	Average
12.	1.100	10.68	0.60	18.95	30.23	56.00	-25.77	QP



Neutral:

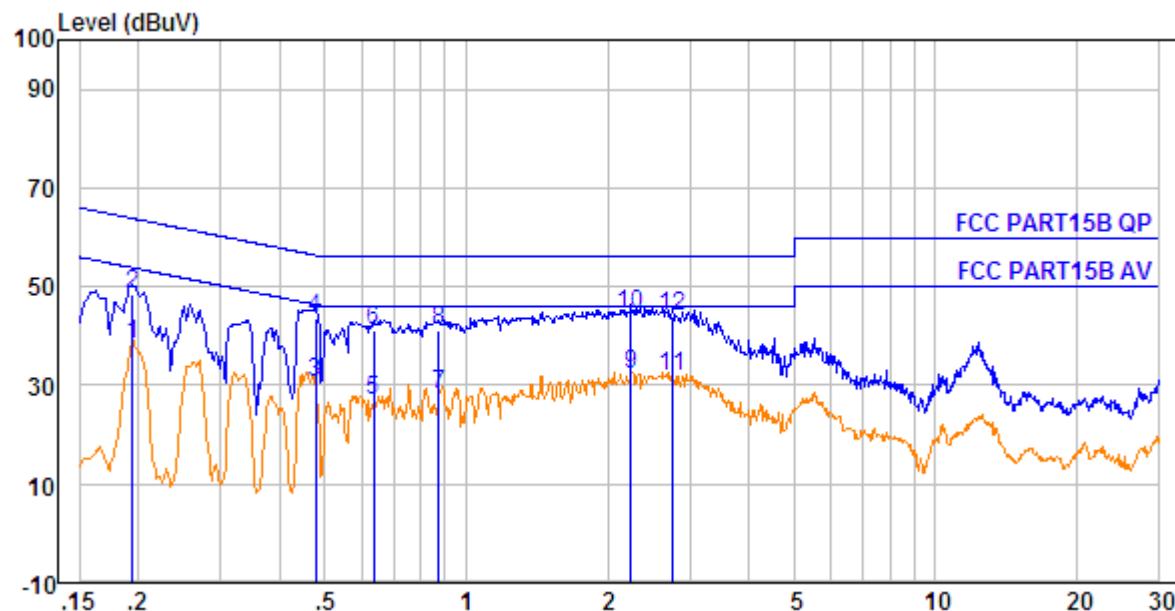


No.	Freq MHz	Cable Loss dB	AMN Factor dB	Receiver Reading dBuV	Emission Level dBuV	Limit dBuV	Over Limit dB	Remark
1.	0.294	10.63	0.60	15.46	26.69	50.41	-23.72	Average
2.	0.294	10.63	0.60	21.46	32.69	60.41	-27.72	QP
3.	0.327	10.63	0.60	19.95	31.18	49.53	-18.35	Average
4.	0.327	10.63	0.60	25.95	37.18	59.53	-22.35	QP
5.	0.354	10.63	0.60	9.30	20.53	48.87	-28.34	Average
6.	0.354	10.63	0.60	17.30	28.53	58.87	-30.34	QP
7.	0.647	10.66	0.60	7.99	19.25	46.00	-26.75	Average
8.	0.647	10.66	0.60	15.99	27.25	56.00	-28.75	QP
9.	1.100	10.68	0.60	5.46	16.74	46.00	-29.26	Average
10.	1.100	10.68	0.60	14.46	25.74	56.00	-30.26	QP
11.	1.418	10.68	0.60	1.91	13.19	46.00	-32.81	Average
12.	1.418	10.68	0.60	13.91	25.19	56.00	-30.81	QP



EUT :	BLUETOOTH DIGITAL CLOCK RADIO	Model Name :	KT-3089BTU
Temperature :	25 °C	Relative Humidity :	54%
Pressure :	1010 hPa		
Test Voltage :	AC 120V/60Hz (Adapter 2)		
Test Mode :	TX 2402MHz		

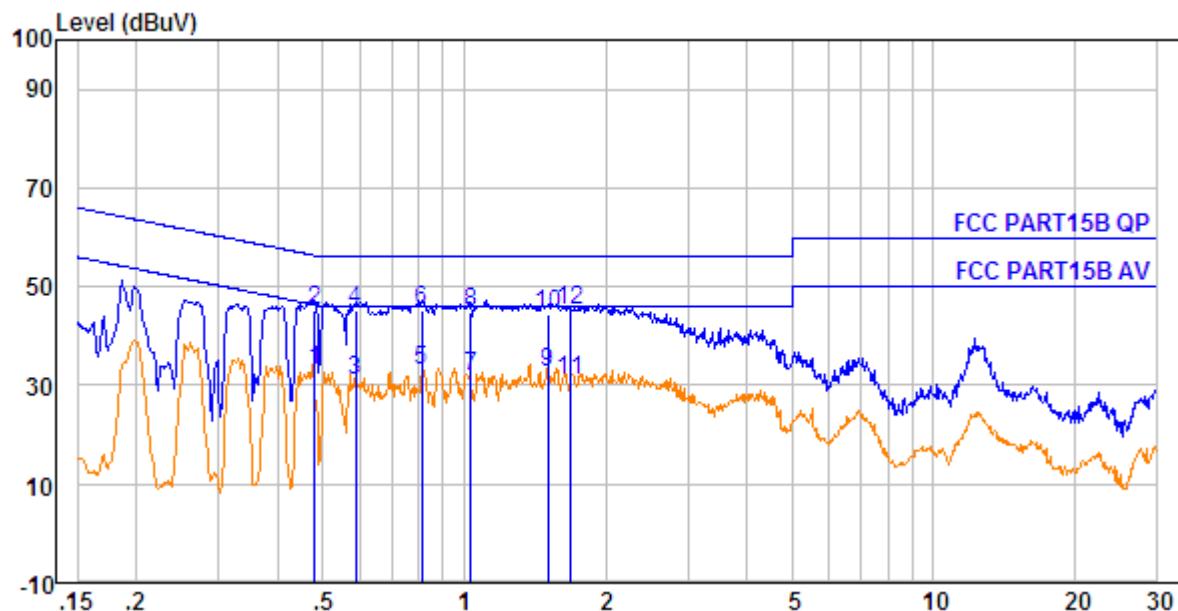
Line:



No.	Freq MHz	Cable Loss dB	AMN Factor dB	Receiver Reading dBuV	Emission Level dBuV	Limit dBuV	Over Limit dB	Remark
1.	0.194	10.61	0.60	27.23	38.44	53.84	-15.40	Average
2.	0.194	10.61	0.60	37.23	48.44	63.84	-15.40	QP
3.	0.479	10.64	0.60	19.41	30.65	46.36	-15.71	Average
4.	0.479	10.64	0.60	32.41	43.65	56.36	-12.71	QP
5.	0.634	10.66	0.60	15.75	27.01	46.00	-18.99	Average
6.	0.634	10.66	0.60	29.75	41.01	56.00	-14.99	QP
7.	0.876	10.67	0.60	16.81	28.08	46.00	-17.92	Average
8.	0.876	10.67	0.60	29.81	41.08	56.00	-14.92	QP
9.	2.249	10.70	0.60	20.98	32.28	46.00	-13.72	Average
10.	2.249	10.70	0.60	32.98	44.28	56.00	-11.72	QP
11.	2.765	10.71	0.60	20.67	31.98	46.00	-14.02	Average
12.	2.765	10.71	0.60	32.67	43.98	56.00	-12.02	QP



Neutral:



No.	Freq MHz	Cable Loss dB	AMN Factor dB	Receiver Reading dBuV	Emission Level dBuV	Limit dBuV	Over Limit dB	Remark
1.	0.481	10.64	0.60	21.94	33.18	46.32	-13.14	Average
2.	0.481	10.64	0.60	33.94	45.18	56.32	-11.14	QP
3.	0.589	10.66	0.60	19.76	31.02	46.00	-14.98	Average
4.	0.589	10.66	0.60	33.76	45.02	56.00	-10.98	QP
5.	0.813	10.66	0.60	21.82	33.08	46.00	-12.92	Average
6.	0.813	10.66	0.60	33.82	45.08	56.00	-10.92	QP
7.	1.032	10.67	0.60	20.68	31.95	46.00	-14.05	Average
8.	1.032	10.67	0.60	33.68	44.95	56.00	-11.05	QP
9.	1.511	10.69	0.60	21.15	32.44	46.00	-13.56	Average
10.	1.511	10.69	0.60	33.15	44.44	56.00	-11.56	QP
11.	1.689	10.69	0.60	19.81	31.10	46.00	-14.90	Average
12.	1.689	10.69	0.60	33.81	45.10	56.00	-10.90	QP



2.2 3.2 RADIATED EMISSION MEASUREMENT

2.2.1 3.2.1 RADIATED EMISSION (Frequency Range 9kHz-1000MHz)

LIMITS

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

3.2.2 LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class B (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).

3.2.3 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



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

2.2.2 3.2.4 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:

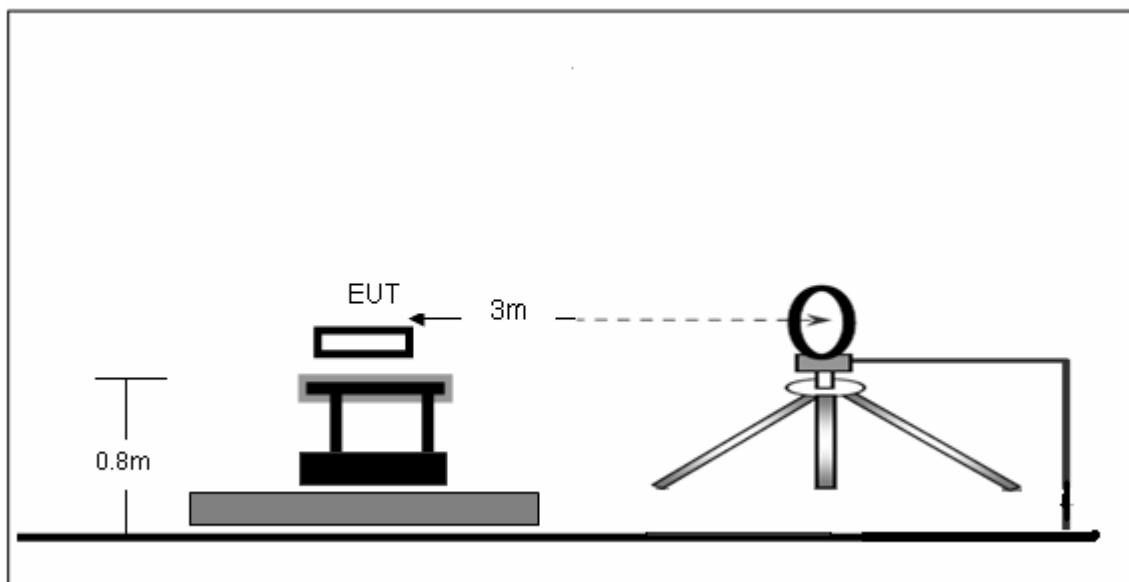
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

2.2.3 3.2.5 DEVIATION FROM TEST STANDARD

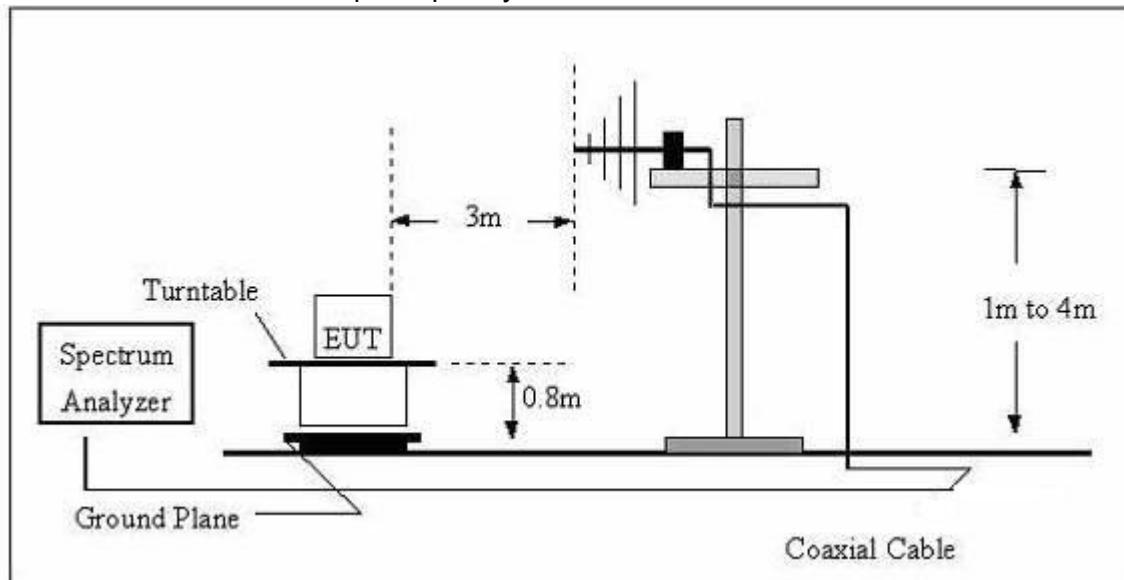
No deviation

2.2.4 3.2.6 TEST SETUP

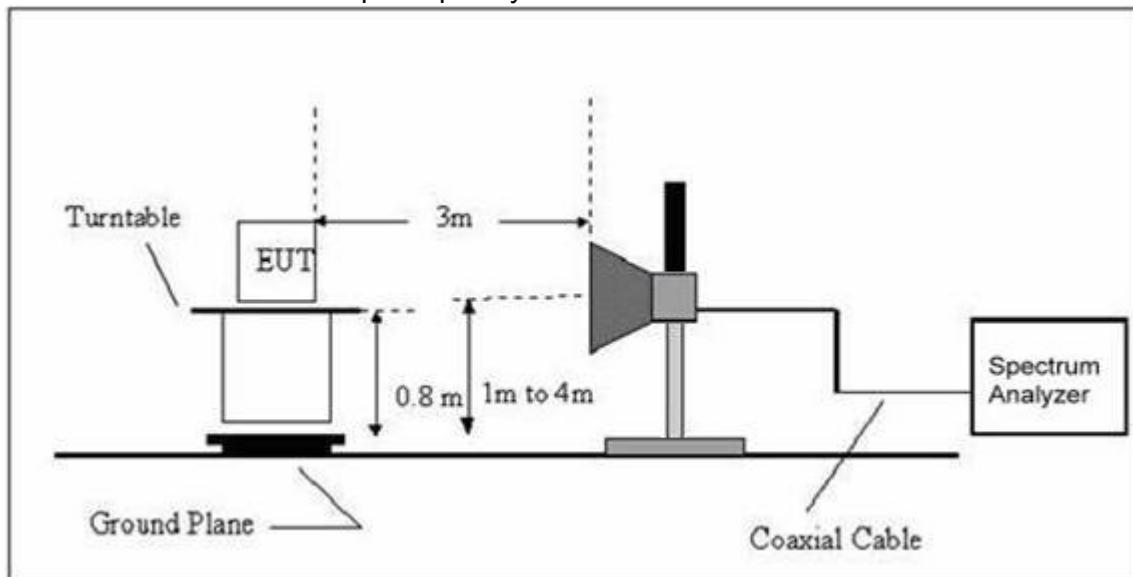
(A) Radiated Emission Test-Up Frequency Below 30MHz



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



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

**3.2.7 2.2.5 EUT OPERATING CONDITIONS**

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.



2.2.6 3.2.8 TEST RESULTS

Pass

A. Fundamental Radiated Emissions Data

CH Low

Freq. (MHz)	Read Level (dBuV) AV/PK	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission (dBuV/m) AV/PK	HORIZ/ VERT	Limits (dBuV/m) AV/PK	Margin (dB)
2402	75.73/85.46	27.47	5.42	30.17	78.45/88.18	VERT	94/114	-15.55/-25.82
2402	77.84/87.35	27.47	5.42	30.17	80.56/90.07	HORIZ	94/114	-13.44/-23.93

CH Middle

Freq. (MHz)	Read Level (dBuV) AV/PK	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission (dBuV/m) AV/PK	HORIZ/ VERT	Limits (dBuV/m) AV/PK	Margin (dB)
2440	76.89/85.96	27.40	5.40	30.15	79.54/88.61	VERT	94/114	-14.46/-25.39
2440	78.07/87.57	27.40	5.40	30.15	80.72/90.22	HORIZ	94/114	-13.28/-23.78

CH High

Freq. (MHz)	Read Level (dBuV) AV/PK	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission (dBuV/m) AV/PK	HORIZ/ VERT	Limits (dBuV/m) AV/PK	Margin (dB)
2480	75.59/84.69	27.50	5.46	29.98	78.57/87.67	VERT	94/114	-15.43/-26.33
2480	77.53/86.64	27.50	5.46	29.98	80.51/89.62	HORIZ	94/114	-13.49/-24.38

Remark:

Final Emission = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor



4 Radiated Spurious Emission (Below 30MHz)

EUT :	BLUETOOTH DIGITAL CLOCK RADIO	Model Name :	KT-3089BTU
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Polarization :	---
Test Voltage :	AC 120V/60Hz (Adapter 1, Worst case Adapter)		
Test Mode :	TX 2402MHz (Worst case mode)		

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

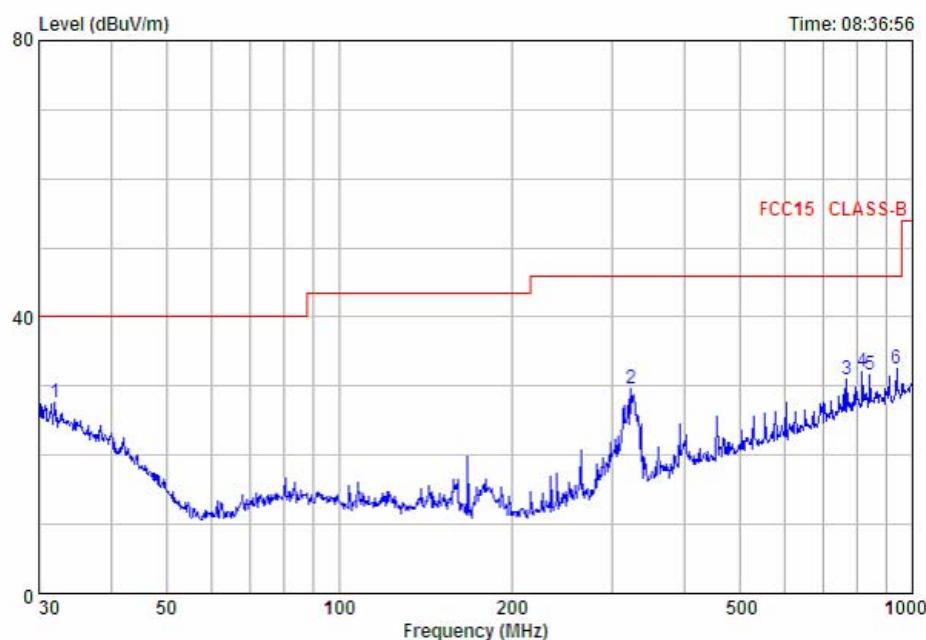
NOTE:

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 = $40 \log(\text{specific distance}/\text{test distance})$ (dB);
Limit line = specific limits(dBuV) + distance extrapolation factor.

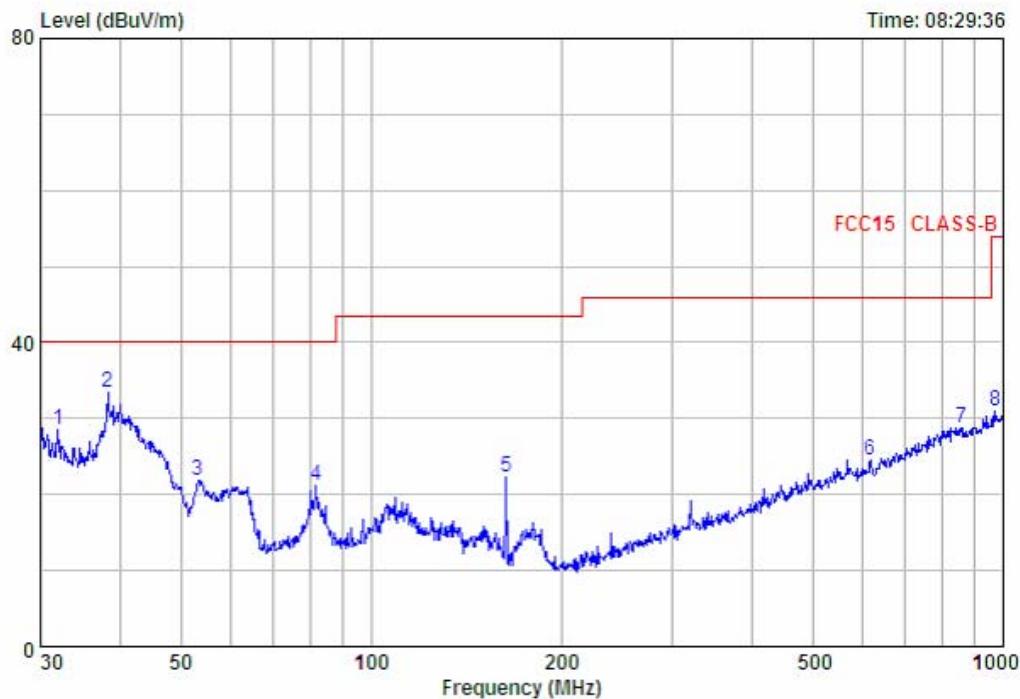
4.1 Radiated Spurious Emission (Between 30MHz – 1GHz)

EUT :	BLUETOOTH DIGITAL CLOCK RADIO	Model Name :	KT-3089BTU
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Horizontal
Test Voltage :	AC 120V/60Hz (Adapter 1, Worst case Adapter)		
Test Mode :	TX 2402MHz (Worst case mode)		



Condition	FCC15 CLASS-B 3m HORIZONTAL					
	: RBW:120.000KHz VBW:300.000KHz SWT:Auto					
Freq	Limit		Over			Pol/Phase
	Line	Level	Limit	Remark		
	MHz	dBuV/m	dBuV/m	dB		
1 max	31.955	40.0	27.7	-12.3	QP	HORIZONTAL
2	323.320	46.0	29.6	-16.4	QP	HORIZONTAL
3	768.748	46.0	31.1	-14.9	QP	HORIZONTAL
4	815.968	46.0	32.1	-13.9	QP	HORIZONTAL
5	842.130	46.0	31.7	-14.3	QP	HORIZONTAL
6	938.833	46.0	32.4	-13.6	QP	HORIZONTAL

EUT :	BLUETOOTH DIGITAL CLOCK RADIO	Model Name :	KT-3089BTU
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Vertical
Test Voltage :	AC 120V/60Hz (Adapter 1, Worst case Adapter)		
Test Mode :	TX 2402MHz (Worst case mode)		



Condition : FCC15 CLASS-B 3m VERTICAL
 : RBW:120.000KHz VBW:300.000KHz SWT:Auto

Freq	Limit		Over	Limit	Remark	Pol/Phase
	Line	Level				
MHz	dBuV/m	dBuV/m	dB			
1	31.955	40.0	28.5	-11.5	QP	VERTICAL
2 max	38.346	40.0	33.4	-6.6	QP	VERTICAL
3	53.318	40.0	21.9	-18.1	QP	VERTICAL
4	81.783	40.0	21.1	-18.9	QP	VERTICAL
5	163.755	43.5	22.4	-21.1	QP	VERTICAL
6	616.372	46.0	24.6	-21.4	QP	VERTICAL
7	857.025	46.0	28.8	-17.2	QP	VERTICAL
8	972.337	54.0	30.9	-23.1	QP	VERTICAL

Radiated Spurious Emission (1th to 10th harmonics)

Freq. (MHz)	S.A. Reading (dB μ V/m)	Detector PK/QP/AV	Direction Degree	Antenna			Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dB μ V/m)	FCC Part 15.247/209		
				Height (m)	Polar (H/V)	Factor (dB/m)				Limit (dB μ V/m)	Margin (dB)	Remarks
Low Channel (2402 MHz)												
2149.1	43.69	AV	360	1.30	V	29.8	6.48	32.2	47.77	54	6.23	spurious
4804.0	32.84	AV	240	1.02	H	36.3	8.41	31.81	45.74	54	8.26	harmonic
2149.1	40.91	AV	44	1.40	H	29.7	6.48	32.2	44.89	54	9.11	spurious
4804.0	33.06	AV	180	1.05	V	35.0	8.41	31.81	44.66	54	9.34	harmonic
4804.0	44.67	PK	240	1.02	H	36.3	8.41	31.81	57.57	74	16.43	harmonic
4804.0	45.12	PK	180	1.05	V	35.0	8.41	31.81	56.72	74	17.28	harmonic
2149.1	49.54	PK	360	1.30	V	29.8	6.48	32.20	53.62	74	20.38	spurious
2149.1	47.83	PK	44	1.40	H	29.7	6.48	32.20	51.81	74	22.19	spurious
Middle Channel (2440 MHz)												
2149.1	43.78	AV	130	1.07	V	29.8	6.48	32.2	47.86	54	6.14	spurious
4880	32.56	AV	250	1	H	36.3	8.41	31.81	45.46	54	8.54	harmonic
2149.1	40.86	AV	175	1.37	H	29.7	6.48	32.2	44.84	54	9.16	spurious
4880	33.04	AV	283	1.13	V	35.0	8.41	31.81	44.64	54	9.36	harmonic
4880	45.16	PK	250	1	H	36.3	8.41	31.81	58.06	74	15.94	harmonic
4880	45.36	PK	283	113	V	35.0	8.41	31.81	56.96	74	17.04	harmonic
2149.1	49.09	PK	360	1.07	V	29.8	6.48	32.2	53.17	74	20.83	spurious
2149.1	47.69	PK	175	1.37	H	29.7	6.48	32.2	51.67	74	22.33	spurious
High Channel (2480 MHz)												
4960	32.77	AV	35	1.1	H	36.4	9.44	32.16	46.45	54	7.55	harmonic
4960	32.84	AV	355	1.1	V	35.2	9.44	32.16	45.32	54	8.68	harmonic
2149.1	43.89	AV	280	1.2	V	25.8	6.48	32.2	43.97	54	10.03	spurious
2149.1	41.23	AV	150	115	H	26.7	6.48	32.2	42.21	54	11.79	spurious
4960	45.36	PK	35	1.1	H	36.4	9.44	32.16	59.04	74	14.96	harmonic
4960	45.89	PK	355	1.1	V	35.2	9.44	32.16	58.37	74	15.63	harmonic
2149.1	49.88	PK	280	1.2	V	25.8	6.48	32.2	49.96	74	24.04	spurious
2149.1	48.01	PK	150	1.15	H	26.7	6.48	32.2	48.99	74	25.01	spurious

Note:

1. The average measurement was not performed when the peak measured data under the limit of average detection.
2. Emissions attenuated more than 20 dB below the permissible value are not reported.

**4.2 Radiated band edge:**

TX mode with 2402MHz, 2480 MHz and Hopping mode.

Pass

ALL of the restriction bands were tested, and only the data of worst case was exhibited.

Indicated		Detector (PK/Ave.)	Table Angle Degree	Antenna		Correction Factor			FCC Part 15.249			
Frequency (MHz)	S.A. Reading (dB μ V)			Height (m)	Polar (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Comment
Low Channel (2402 MHz)												
2390	32.28	Ave.	0	1.0	V	30.6	2.98	26.83	39.03	54	14.97	PASS
2400	29.1	Ave.	75	1.0	H	30.6	2.98	26.83	35.85	54	18.15	PASS
2390	45.9	PK	0	1.0	V	30.6	2.98	26.83	52.65	74	21.35	PASS
2400	43.24	PK	75	1.0	H	30.6	2.98	26.83	49.99	74	24.01	PASS
High Channel (2480 MHz)												
2500	39.31	Ave.	0	1.0	V	30.6	3.11	26.88	46.14	54	7.86	PASS
2483.5	29.41	Ave.	75	1.0	H	30.6	3.11	26.88	36.24	54	17.76	PASS
2500	49.02	PK	0	1.0	V	30.6	3.11	26.88	55.85	74	18.15	PASS
2483.5	42.39	PK	75	1.0	H	30.6	3.11	26.88	49.22	74	24.78	PASS

Hopping mode

Indicated		Detector (PK/Ave.)	Table Angle Degree	Antenna		Correction Factor			FCC Part 15.249			
Frequency (MHz)	S.A. Reading (dB μ V)			Height (m)	Polar (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Comment
Hopping mode												
2390	33.17	Ave.	0	1.0	V	30.6	2.98	26.83	39.92	54	14.08	PASS
2400	29.99	Ave.	75	1.0	H	30.6	2.98	26.83	36.74	54	17.26	PASS
2390	46.79	PK	0	1.0	V	30.6	2.98	26.83	53.54	74	20.46	PASS
2400	44.13	PK	75	1.0	H	30.6	2.98	26.83	50.88	74	23.12	PASS
Hopping mode												
2500	40.2	Ave.	0	1.0	V	30.6	3.11	26.88	47.03	54	6.97	PASS
2483.5	30.3	Ave.	75	1.0	H	30.6	3.11	26.88	37.13	54	16.87	PASS
2500	49.91	PK	0	1.0	V	30.6	3.11	26.88	56.74	74	17.26	PASS
2483.5	43.28	PK	75	1.0	H	30.6	3.11	26.88	50.11	74	23.89	PASS

Remark:

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



53. BANDWIDTH TEST

5.13.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.249) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.249 (a)(1)	Bandwidth	(20dB bandwidth)	2400-2483.5	PASS

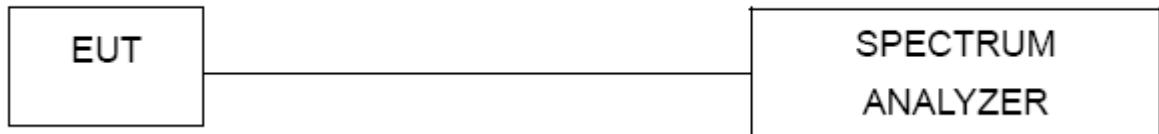
3.1.1 5.2 TEST PROCEDURE

1. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set center frequency of spectrum analyzer = operating frequency.
3. The spectrum analyzer as RBW=100 KHz, VBW=300 KHz, Sweep=500ms.
4. Mark the peak frequency and -20dB (upper and lower) frequency.

3.1.2 5.3 DEVIATION FROM STANDARD

No deviation.

3.1.3 5.3 TEST SETUP



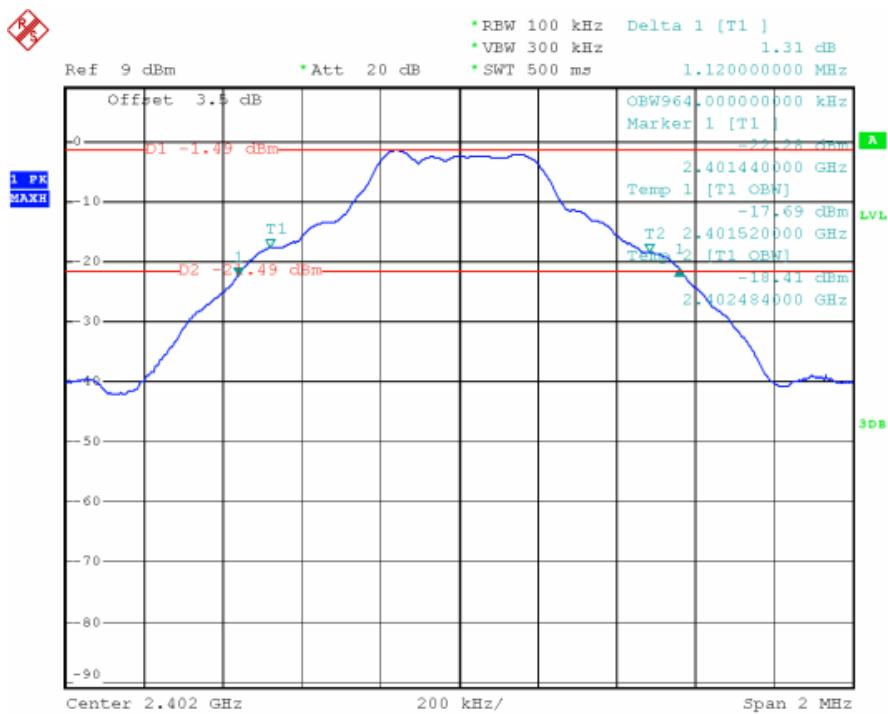
3.1.4 5.5 EUT OPERATION CONDITIONS

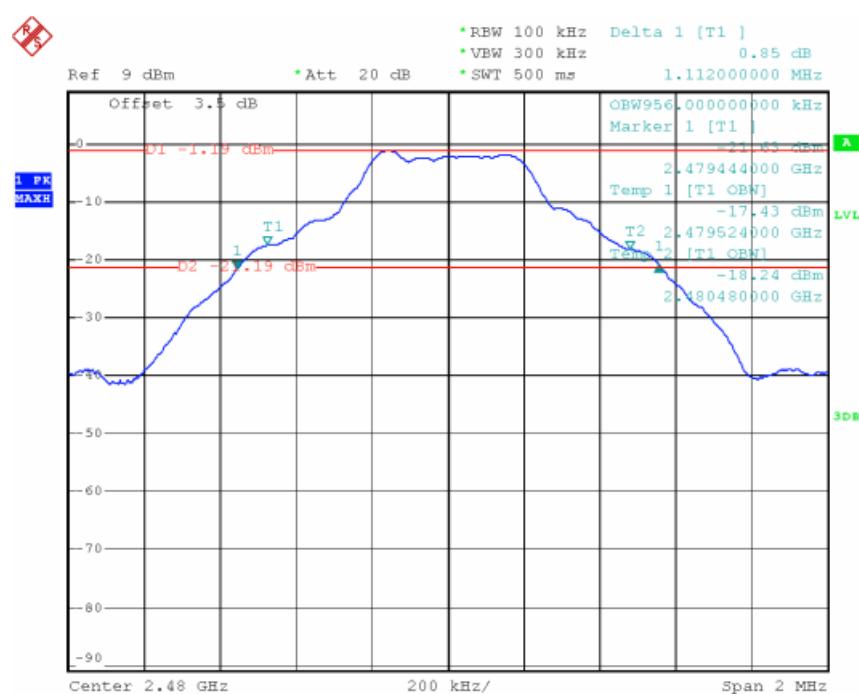
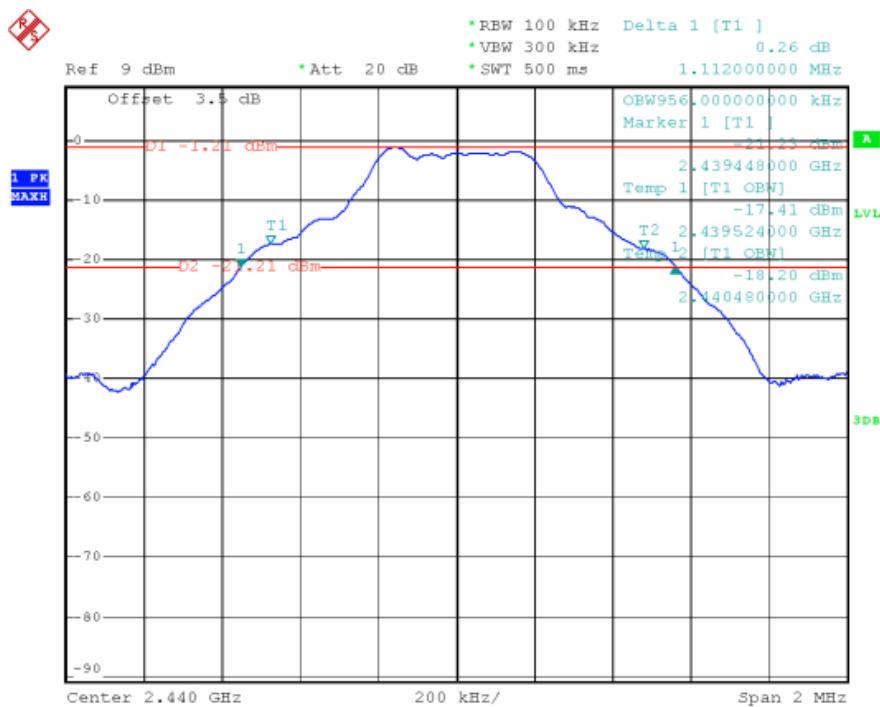
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

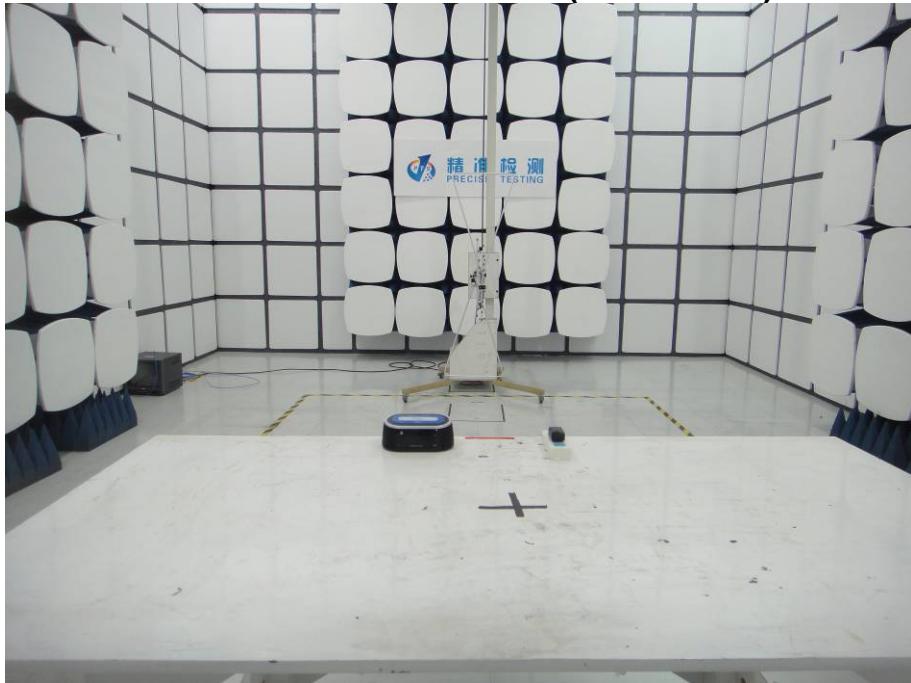
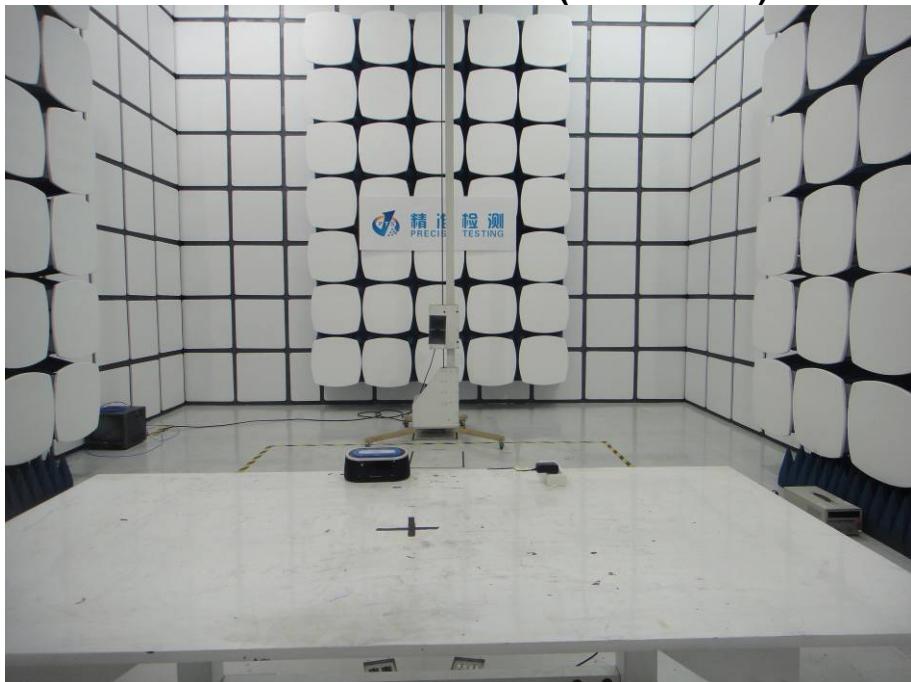
3.1.5 5.6 TEST RESULTS

TX: 2402,2440 and 2480MHz

Limit	Channel Frequency (MHz)	20dB Bandwidth (MHz)
/	2402	1.12
/	2440	1.11
/	2480	1.11





Radiated Measurement Photos (Below 1GHz)**Radiated Measurement Photos(Above 1GHz)**

CONDUCTED EMISSION Photos