FCC Radio Test Report

FCC ID: WIZKT-19

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

Issued Date	:	Jan. 18, 2012
Project No.	:	1111C197A
Equipment	:	TRANSMITTER
Model Name	:	KT-19
Applicant	:	KYOSHO CORPORATION OF AMERICA
Address	:	20332 Valencia Circle,Lake Forest,United States
Manufacturer	:	BSD RACING TECHNOLOGIES CO.,LTD.
Address	:	4TH FL, 5TH BLDG,CHANGXING HIGH TECH IND ZONE, WAN'AN RD, SHAJING, BAO'AN DIST, SHENZHEN, CHINA 518104

Tested by:
Neutron Engineering Inc. EMC Laboratory

Date of Receipt: Nov. 23, 2011

Date of Test:
Nov. 23, 2011 ~ Jan. 17, 2012

Testing Engineer : David Mao
(David Mao)

Technical Manager : Leo Hung
(Leo Hung)

Authorized Signatory : Steven Lu
(Steven Lu)

NEUTRON ENGINEERING INC.

No.3,Jinshagang 1st Road, ShiXia, Dalang Town,
Dong Guan, China.523792
TEL : +86-769-8318-3000 FAX : +86-769-8319-6000

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.**

Neutron's reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **Neutron** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **Neutron** issued reports.

Neutron's reports must not be used by the client to claim product endorsement by the authorities or any agency of the Government.

This report is the confidential property of the client. As a mutual protection to the clients, the public and **Neutron-self**, extracts from the test report shall not be reproduced except in full with **Neutron**'s authorized written approval.

Neutron's laboratory quality assurance procedures are in compliance with the **ISO Guide 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

Limitation

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.

Table of Contents Page

Table of Contents Page

Table of Contents **Page**

1. CERTIFICATION

Equipment:	TRANSMITTER
Trade Name	KYOSHO ;PERFEX
Model Name.	KT-19
Applicant:	KYOSHO CORPORATION OF AMERICA
Date of Test:	Nov. 23, 2011 ~ Jan. 17, 2012
Test Item:	ENGINEERING SAMPLE
Standards:	FCC Part15, Subpart C(15.247) / ANSI C63.4 : 2003

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-1-1111C197A) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of NVLAP and TAF according to the ISO-17025 quality assessment standard and technical standard(s).

2. 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	N/A	
15.247(d)	Antenna conducted Spurious Emission	PASS	
15.247 (a)(1)	Hopping Channel Separation	PASS	
15.247 (b)(1)	Peak Output Power	PASS	
15.247(d)/15/209	Radiated Spurious Emission	PASS	
15.247 (a)(1)(iii)	Number of Hopping Frequency	PASS	
15.247 (a)(1)(iii)	Dwell Time	PASS	
15.205	Restricted Bands	PASS	
15.203	Antenna Requirement	PASS	

NOTE:

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

(2) The EUT is charged with new battery.

(3) The test report according to DA 00-705.

2.1 TEST FACILITY

The test facilities used to collect the test data in this report is **DG-C02/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	30MHz ~ 200MHz	V	3.82	
		30MHz ~ 200MHz	H	3.60	
		200MHz ~ 1,000MHz	V	3.86	
		200MHz ~ 1,000MHz	H	3.94	
		1GHz~26.5GHz	V	3.12	
		1GHz~26.5GHz	H	3.68	

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	TRANSMITTER
Trade Name	KYOSHO ;PERFEX
Model Name	KT-19
OEM Brand/Model Name	N/A
Model Difference	N/A
Product Description	The EUT is a TRANSMITTER Operation Frequency: 2405.5~2475MHz Modulation Type: GFSK Number Of Channel 140 Channels, see Note:2 Antenna Designation: Please see Note 4. Antenna Gain(Peak) Please see Note 4. Output Power: 0.60 dBm More details of EUT technical specification, please refer to the User's Manual.
Channel List	Please refer to the Note 2.
Power Source	DC Voltage supplied from battery.
Power Rating	Battery: DC 6.0V
Connecting I/O Port(s)	Please refer to the User's Manual; The USB port of TX sample Remote Control is just to charge the battery of RX sample Motor.
Products Covered	N/A
EUT Modification(s)	N/A

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)
01	**2405.5**	36	2423	71	2440.5	106	2458
02	2406	37	2423.5	72	2441	107	2458.5
03	2406.5	38	2424	73	2441.5	108	2459
04	2407	39	2424.5	74	2442	109	2459.5
05	2407.5	40	2425	**75**	**2442.5**	110	2460
06	2408	41	2425.5	76	2443	111	2460.5
07	2408.5	42	2426	77	2443.5	112	2461
08	2409	43	2426.5	78	2444	113	2461.5
09	2409.5	44	2427	79	2444.5	114	2462
10	2410	45	2427.5	80	2445	115	2462.5
11	2410.5	46	2428	81	2445.5	116	2463
12	2411	47	2428.5	82	2446	117	2463.5
13	2411.5	48	2429	83	2446.5	118	2464
14	2412	49	2429.5	84	2447	119	2464.5
15	2412.5	50	2430	85	2447.5	120	2465
16	2413	51	2430.5	86	2448	121	2465.5
17	2413.5	52	2431	87	2448.5	122	2466
18	2414	53	2431.5	88	2449	123	2466.5
19	2414.5	54	2432	89	2449.5	124	2467
20	2415	55	2432.5	90	2450	125	2467.5
21	2415.5	56	2433	91	2450.5	126	2468
22	2416	57	2433.5	92	2451	127	2468.5
23	2416.5	58	2434	93	2451.5	128	2469
24	2417	59	2434.5	94	2452	129	2469.5
25	2417.5	60	2435	95	2452.5	130	2470
26	2418	61	2435.5	96	2453	131	2470.5
27	2418.5	62	2436	97	2453.5	132	2471
28	2419	63	2436.5	98	2454	133	2471.5
29	2419.5	64	2437	99	2454.5	134	2472
30	2420	65	2437.5	100	2455	135	2472.5
31	2420.5	66	2438	101	2455.5	136	2473
32	2421	67	2438.5	102	2456	137	2473.5
33	2421.5	68	2439	103	2456.5	138	2474
34	2422	69	2439.5	104	2457	139	2474.5
35	2422.5	70	2440	105	2457.5	**140**	**2475**

Group 1	Group 2	Group 3	Group 4	Group 5
2410	2409.5	2409	2480.5	2408
2415	2414.5	2414	2413.5	2413
2420	2419.5	2419	2418.5	2418
2425	2424.5	2420.5	2420	2419.5
2430	2429.5	2424	2423.5	2423
2432	2431.5	2429	2428.5	2428
2435	2434.5	2434	2433.5	2433
2440	2439.5	2439	2438.5	2438
2445	2444.5	2444	2443.5	2443
2450	2449.5	2449	2448.5	2448
2455	2454.5	2454	2453.5	2453
2460	2459.5	2459	2458.5	2458
2465	2464.5	2464	2463.5	2463
2470	2469.5	2469	2468.5	2468
2472.5	2470.5	2470.5	2473.5	2473
2475	2474.5	2474	2475	2474.5

Group 6	Group 7	Group 8	Group 9	Group 10
2407.5	2407	2406.5	2406	**2405.5**
2412.5	2412	2411.5	2411	2410.5
2417.5	2417	2416.5	2416	2415.5
2419	2418.5	2418	2417.5	2417
2422.5	2422	2421.5	2421	2420.5
2427.5	2427	2426.5	2426	2425.5
2432.5	2432	2431.5	2431	2430.5
2437.5	2437	2436.5	2436	2435.5
2442.5	2442	2441.5	2441	2440.5
2447.5	2447	2446.5	2446	2445.5
2452.5	2452	2451.5	2451	2450.5
2457.5	2457	2456.5	2456	2455.5
2462.5	2462	2461.5	2461	2460.5
2467.5	2467	2466.5	2466	2465.5
2472.5	2472	2471.5	2471	2470.5
2474	2473.5	2473	2472.5	2472

Note: The EUT 16 channels of each sequence, total 10 sequences are used.

3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	Integral	N/A	-3.68

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	CH01
Mode 2	CH75
Mode 3	CH140

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

For Radiated Emission	
Final Test Mode	Description
Mode 1	CH01
Mode 2	CH75
Mode 3	CH140

Note:

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

(2) The EUT use new battery.

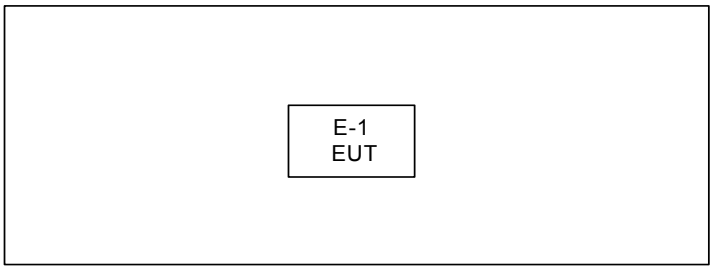
(3) The EUT is considered a portable unit; it was pre-tested on the positioned of each 3 axis. The worst case was found positioned on X-plane. Therefore only the test data of this X-plane was used for radiated emission measurement test.

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 FHSS

Test software Version	Test program: Hardware Control		
Frequency	2405.5 MHz	2442.5 MHz	2475 MHz
Parameters(1Mbps)	0	0	0

3.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



3.5 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	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
E-1	TRANSMITTER	KYOSHO ;PERFEX	KT-19	WIZKT-19	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note

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.

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	May.26.2012
2	LISN	R&S	ENV216	100087	May.26.2012
3	Test Cable	N/A	C_17	N/A	Mar.30.2012
4	EMI TEST RECEIVER	R&S	ESCS30	826547/022	May.26.2012
5	50Ω Terminator	SHX	TF2-3G-A	08122902	May.26.2012

Remark: ” N/A” denotes No Model No. , Serial No. or No Calibration specified.

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

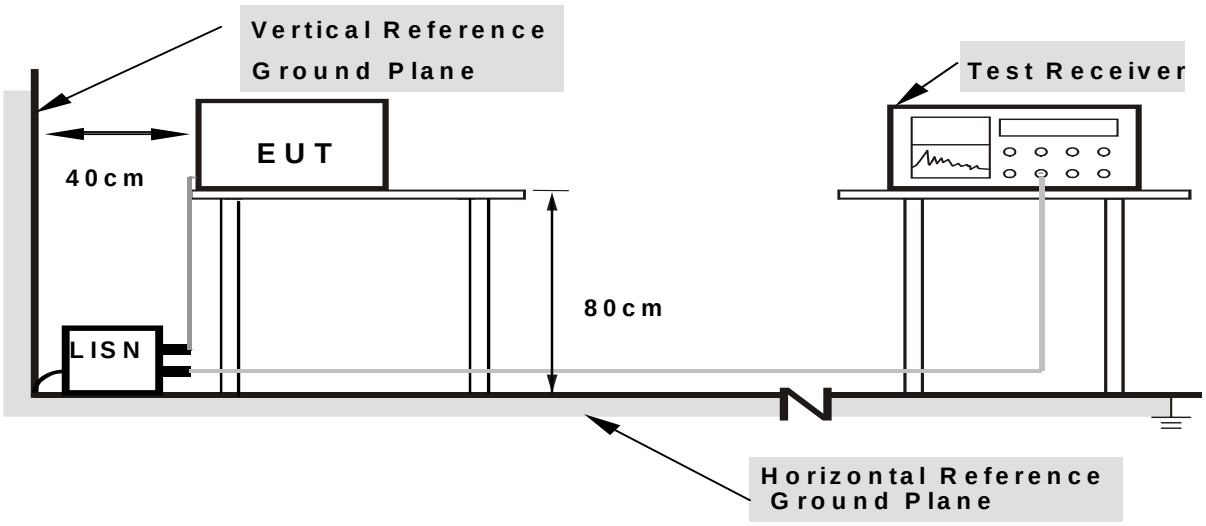
4.1.3 TEST PROCEDURE

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 / Hopping on mode.

4.1.7 TEST RESULTS

EUT：	TRANSMITTER	Model Name ：	KT-19
Temperature：	--	Relative Humidity：	--
Pressure：	--	Test Voltage :	--
Test Mode ：	N/A		

Note:
" N/A" denotes test is not applicable in this Test Report.

Remark

(1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9KHz；SPA setting in RBW=10KHz,VBW =10KHz, Swp. Time = 0.3 sec./MHz。Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=10KHz,VBW=10KHz, Swp. Time =0.3 sec./MHz。

(2) 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。

(3) Measuring frequency range from 150KHz to 30MHz。

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
Above 960	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	5th 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	Jun.03.2013
2	Amplifier	HP	8447D	2944A09673	May.26.2012
3	Test Receiver	R&S	ESCI	100382	May.26.2012
4	Test Cable	N/A	C-01_CB03	N/A	Dec.29.2012
5	Controller	CT	SC100	N/A	N/A
6	Antenna	ETS	3115	00075789	May.26.2012
7	Amplifier	Agilent	8449B	3008A02274	May.26.2012
8	Spectrum	Agilent	E4408B	US39240143	Nov.25.2012
9	Test Cable	HUBER+SUHNER	C-45	N/A	May.04.2012
10	Controller	CT	SC100	N/A	N/A
11	Active Loop Antenna	R&S	HFH2-Z2	830749/020	May.26.2012
12	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Oct.13.2012

Remark: ” N/A” denotes No Model Name / Serial No. and No Calibration specified.

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, Average=PK-dycty cycle

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

DUTY CYCLE : TX 2405.5MHz

Dwell time=ON/ON+OFF

ON:0.59msec

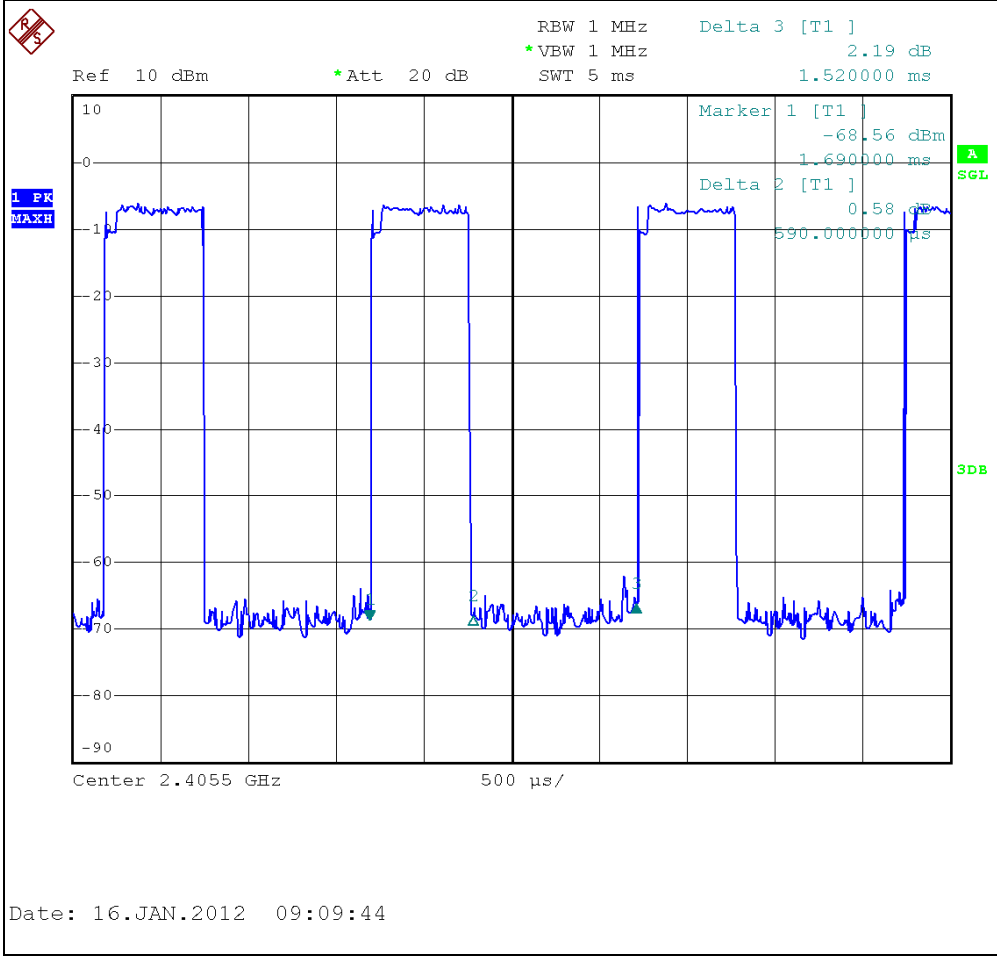
ON+OFF:(total time):1.52msec

Dwell time: 38.8%

AV=PK+20 log(Dwell time)

AV=PK-8.22

Total time(ON+OFF)= 1.52 msec ； ON= 0.59 msec



4.2.3 TEST PROCEDURE

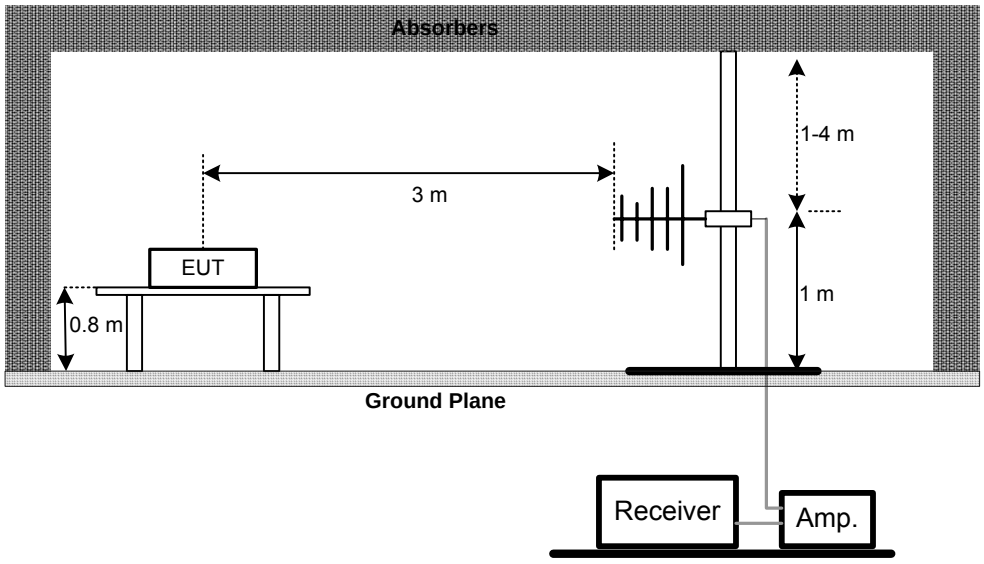
a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 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.

4.2.4 DEVIATION FROM TEST STANDARD

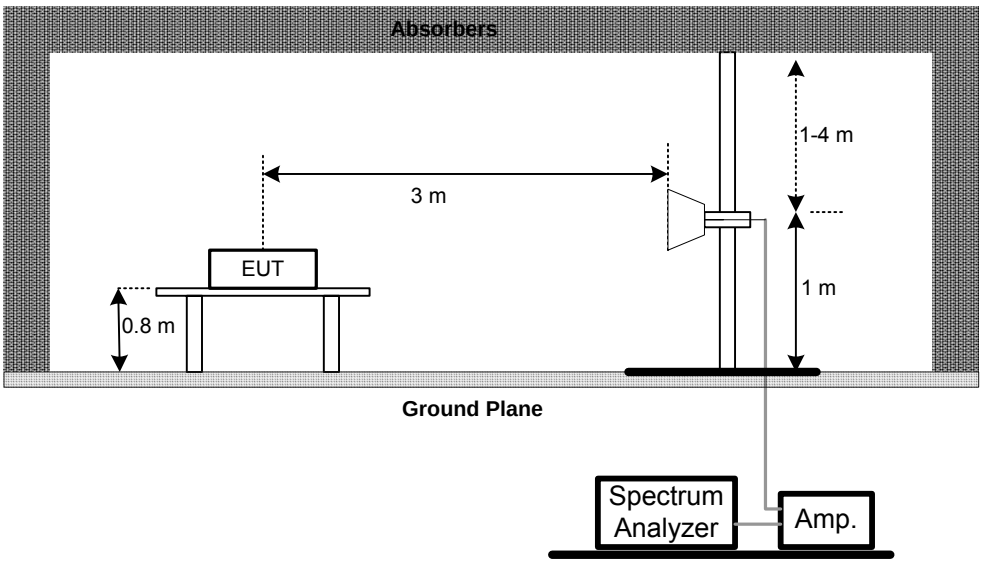
No deviation

4.2.5 TEST SETUP

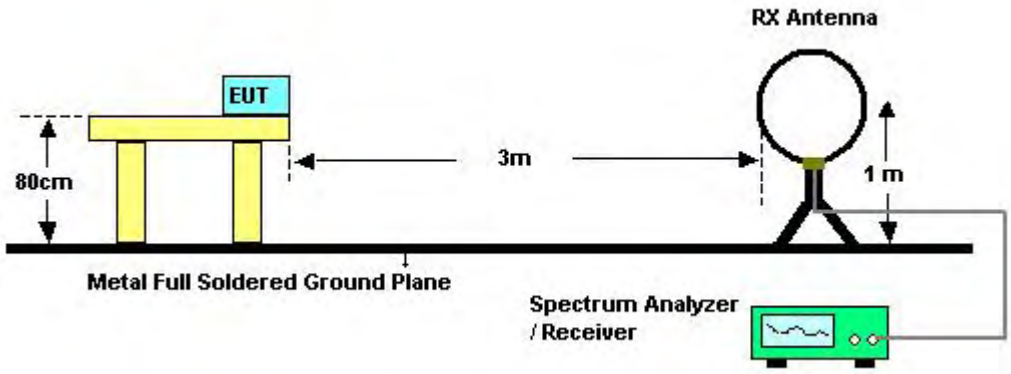
(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



(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：	TRANSMITTER	Model Name ：	KT-19
Temperature：	23 ℃	Relative Humidity：	51 %
Pressure：	1010 hPa	Test Voltage ：	DC 6.0V
Test Mode ：	TX Mode		

Freq. (MHz)	Ant. 0°/90°	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
0.05	0°	50.13	22.71	72.84	114.52	-41.68	PK
0.49	0°	28.15	19.83	47.98	93.87	-45.89	PK
1.53	0°	28.22	19.55	47.77	63.90	-16.14	PK
4.76	0°	21.33	18.39	39.72	69.54	-29.82	PK
10.57	0°	34.27	17.83	52.10	69.54	-17.44	PK
15.46	0°	39.46	18.04	57.50	69.54	-12.04	PK

Freq. (MHz)	Ant. 0°/90°	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
0.32	90°	52.04	20.23	72.27	97.47	-25.20	PK
0.88	90°	37.17	20.08	57.25	68.71	-11.46	PK
1.54	90°	24.23	19.55	43.78	63.85	-20.08	PK
7.24	90°	27.28	18.02	45.30	69.54	-24.24	PK
12.12	90°	33.54	17.93	51.47	69.54	-18.07	PK
18.25	90°	39.57	17.65	57.22	69.54	-12.33	PK

Remark：

(1) The amplitude of spurious emissions which are attenuated by more than 20 dB below 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) In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

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

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

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

4.2.8 TEST RESULTS (BETWEEN30 – 1000 MHZ)

EUT：	TRANSMITTER	Model Name ：	KT-19
Temperature：	23 ℃	Relative Humidity：	47 %
Pressure：	1010 hPa	Test Voltage ：	DC 6.0V
Test Mode ：	TX Mode 2405.5MHz		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
51.83	V	48.55	-17.51	31.04	40.00	- 8.96	
107.60	V	48.25	-18.36	29.89	43.50	- 13.61	
151.25	V	46.42	-17.57	28.85	43.50	- 14.65	
250.68	V	43.08	-14.51	28.57	46.00	- 17.43	
432.55	V	39.34	-8.43	30.91	46.00	- 15.09	
604.73	V	32.64	-4.18	28.46	46.00	- 17.54	

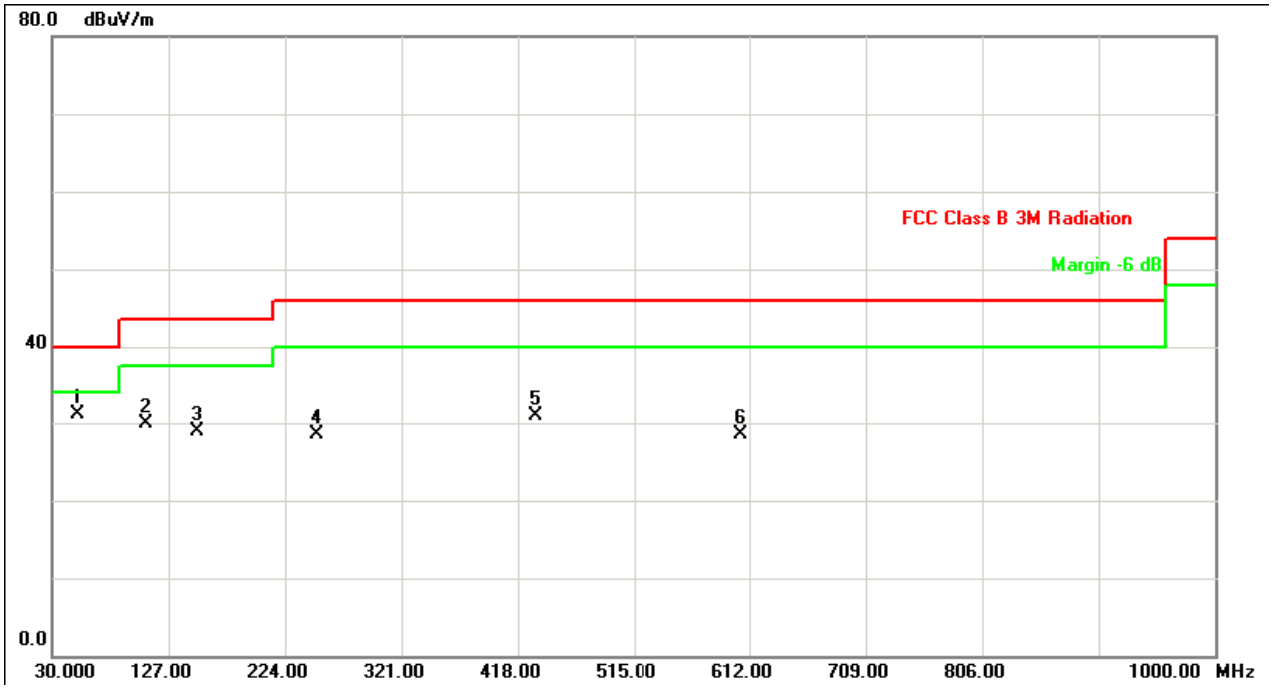
Remark：

(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：	TRANSMITTER	Model Name ：	KT-19
Temperature：	23 ℃	Relative Humidity：	47 %
Pressure：	1010 hPa	Test Voltage ：	DC 6.0V
Test Mode ：	TX Mode 2405.5MHz		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
107.60	H	45.96	-18.36	27.60	43.50	- 15.90	
151.25	H	44.49	-17.57	26.92	43.50	- 16.58	
262.80	H	43.68	-13.69	29.99	46.00	- 16.01	
410.73	H	38.61	-8.83	29.78	46.00	- 16.22	
434.98	H	37.90	-8.39	29.51	46.00	- 16.49	
624.13	H	36.06	-3.82	32.24	46.00	- 13.76	

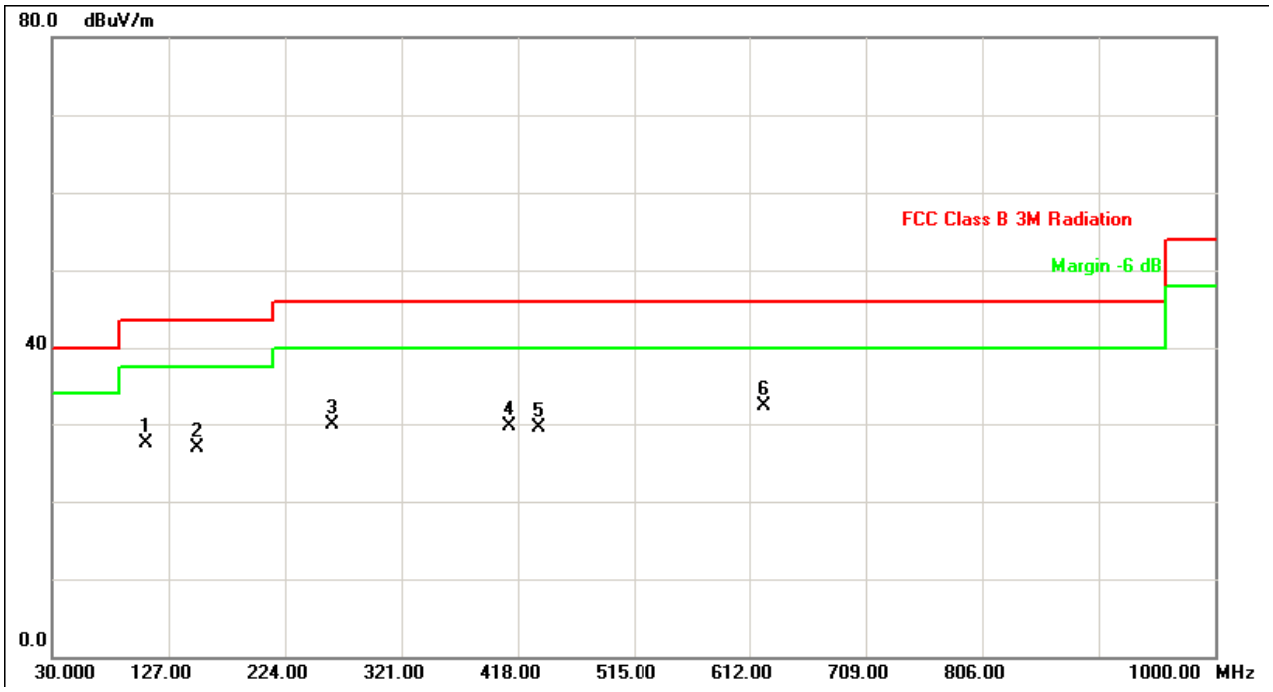
Remark：

(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：	TRANSMITTER	Model Name ：	KT-19
Temperature：	23 ℃	Relative Humidity：	47 %
Pressure：	1010 hPa	Test Voltage ：	DC 6.0V
Test Mode ：	TX Mode 2442.5MHz		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
51.83	V	47.05	-17.51	29.54	40.00	- 10.46	
151.25	V	49.42	-17.57	31.85	43.50	- 11.65	
193.48	V	47.86	-16.69	31.17	43.50	- 12.33	
250.68	V	44.58	-14.51	30.07	46.00	- 15.93	
432.55	V	39.34	-8.43	30.91	46.00	- 15.09	
624.13	V	34.63	-3.82	30.81	46.00	- 15.19	

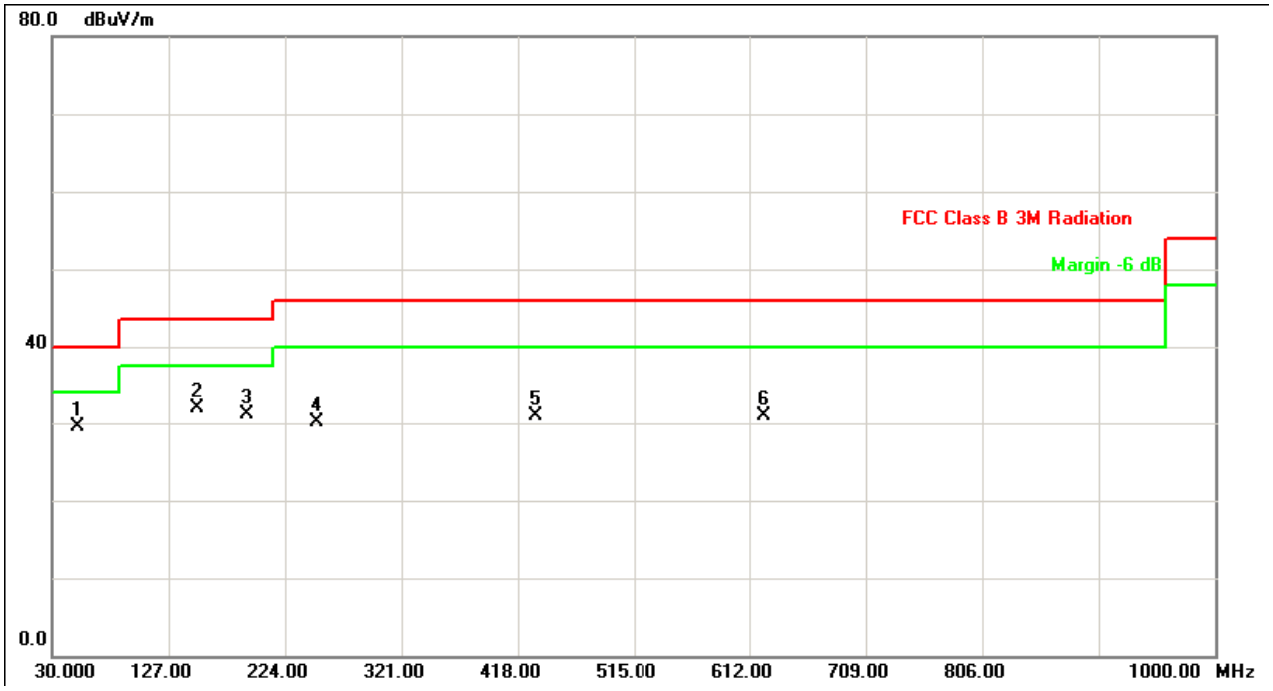
Remark：

(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：	TRANSMITTER	Model Name ：	KT-19
Temperature：	23 ℃	Relative Humidity：	47 %
Pressure：	1010 hPa	Test Voltage ：	DC 6.0V
Test Mode ：	TX Mode 2442.5MHz		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
51.83	H	48.03	-17.51	30.52	40.00	- 9.48	
107.60	H	48.96	-18.36	30.60	43.50	- 12.90	
151.25	H	46.99	-17.57	29.42	43.50	- 14.08	
262.80	H	46.18	-13.69	32.49	46.00	- 13.51	
410.73	H	43.11	-8.83	34.28	46.00	- 11.72	
624.13	H	37.06	-3.82	33.24	46.00	- 12.76	

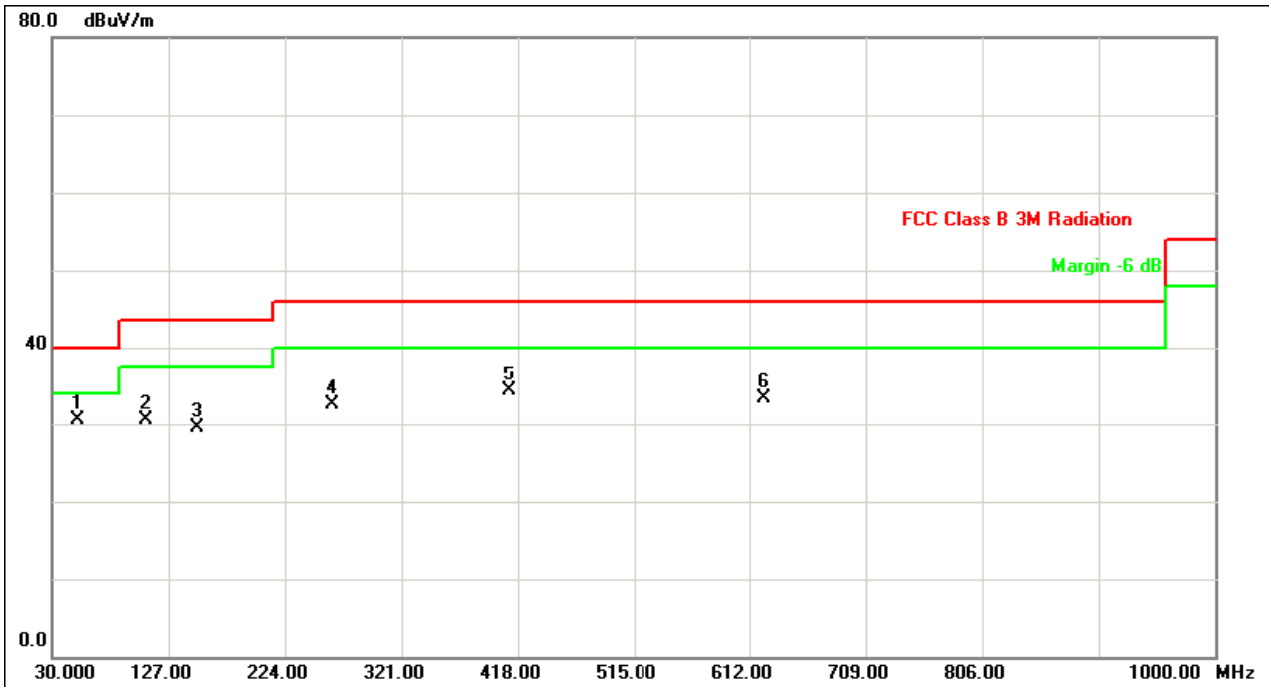
Remark：

(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：	TRANSMITTER	Model Name ：	KT-19
Temperature：	23 ℃	Relative Humidity：	47 %
Pressure：	1010 hPa	Test Voltage ：	DC 6.0V
Test Mode ：	TX Mode 2475MHz		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
51.83	V	49.05	-17.51	31.54	40.00	- 8.46	
80.93	V	49.75	-19.07	30.68	40.00	- 9.32	
192.48	V	43.36	-16.69	26.67	43.50	- 16.83	
289.48	V	38.76	-12.08	26.68	46.00	- 19.32	
432.55	V	36.34	-8.43	27.91	46.00	- 18.09	
604.73	V	30.64	-4.18	26.46	46.00	- 19.54	

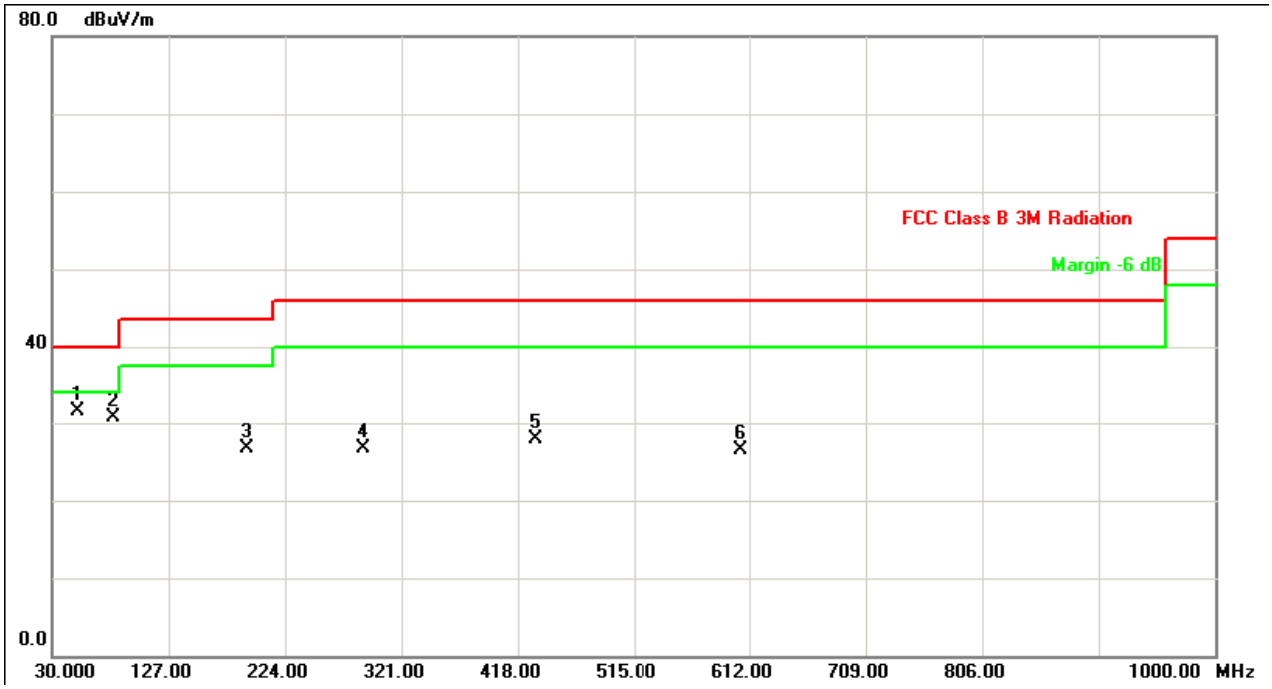
Remark：

(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：	TRANSMITTER	Model Name ：	KT-19
Temperature：	23 ℃	Relative Humidity：	47 %
Pressure：	1010 hPa	Test Voltage ：	DC 6.0V
Test Mode ：	TX Mode 2475MHz		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
80.93	H	51.35	-19.07	32.28	40.00	- 7.72	
107.60	H	50.96	-18.36	32.60	43.50	- 10.90	
151.25	H	47.99	-17.57	30.42	43.50	- 13.08	
262.80	H	47.68	-13.69	33.99	46.00	- 12.01	
434.98	H	41.90	-8.39	33.51	46.00	- 12.49	
599.88	H	36.62	-4.27	32.35	46.00	- 13.65	

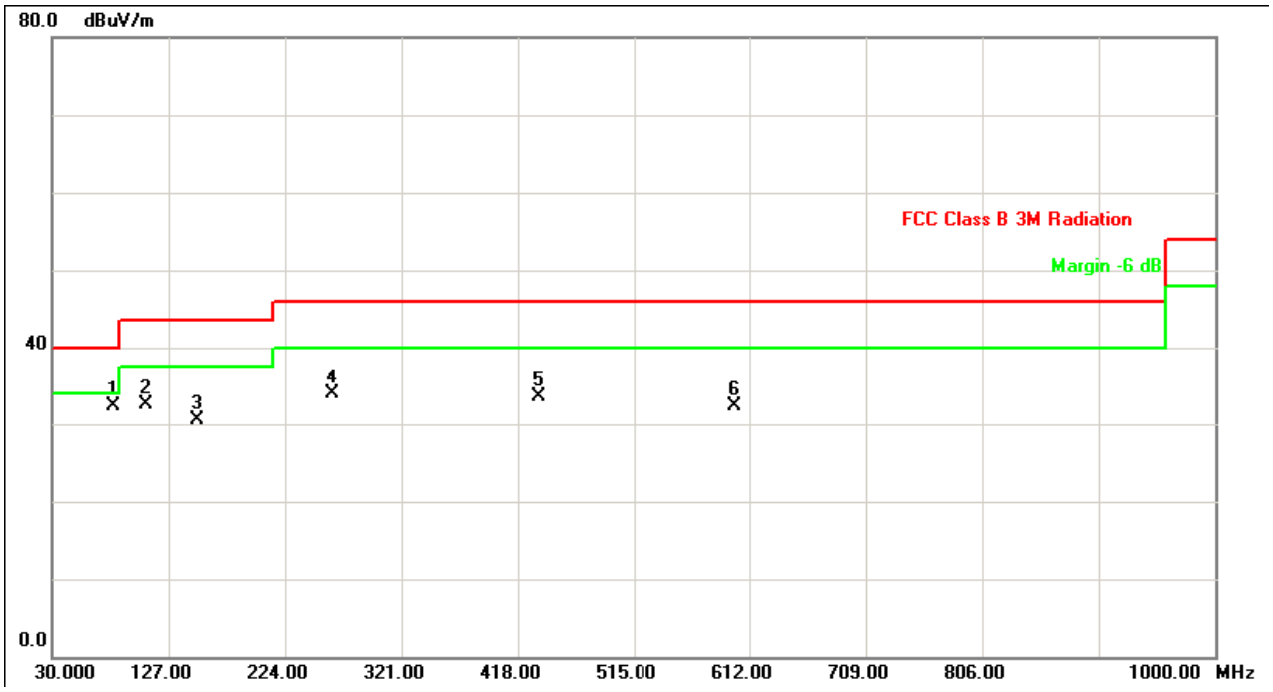
Remark：

(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。



4.2.9 TEST RESULTS (ABOVE 1000 MHZ)

EUT：	TRANSMITTER	Model Name ：	KT-19
Temperature：	23 ℃	Relative Humidity：	51 %
Pressure：	1010 hPa	Test Voltage ：	DC 6.0V
Test Mode ：	TX 2405.5MHz		

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	27.74	19.52	31.91	59.65	51.43	74.00	54.00	X/E
2400.00	V	24.87	26.65	31.90	66.77	58.55	74.00	54.00	X/E
2405.63	**V**	**63.56**	**55.34**	**31.90**	**95.46**	**87.24**			**X/F**
4811.95	V	52.35	44.13	5.24	57.59	49.37	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.

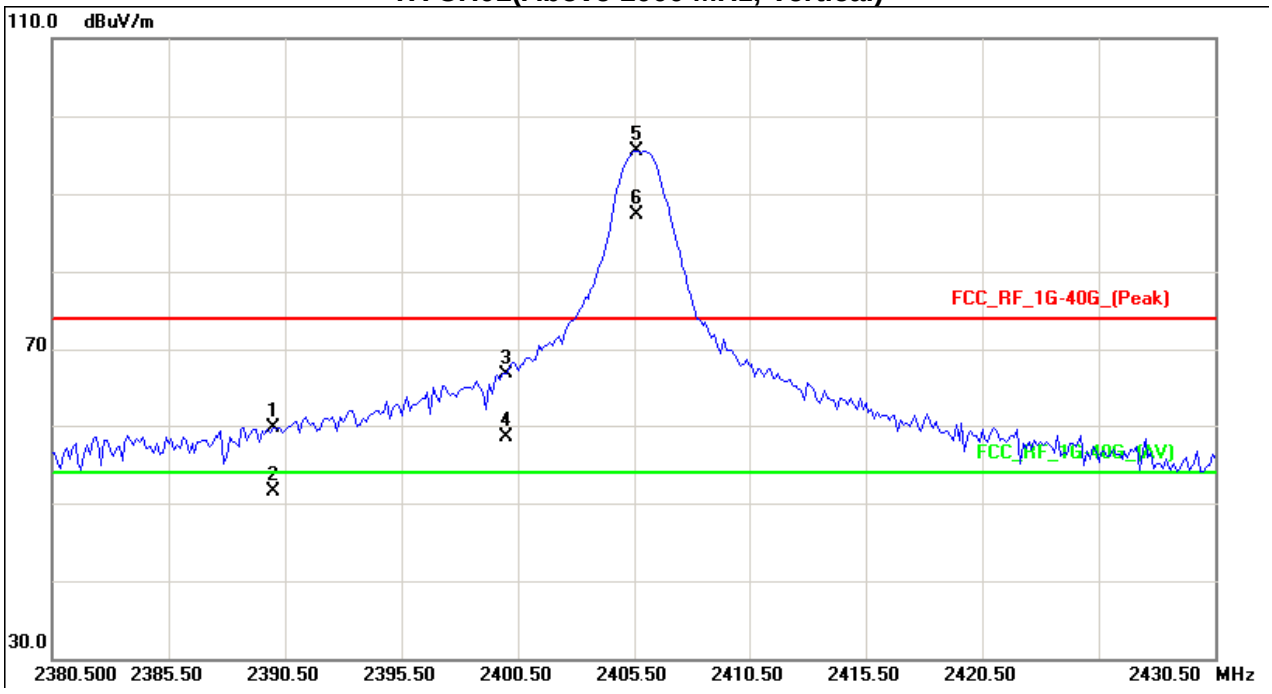
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

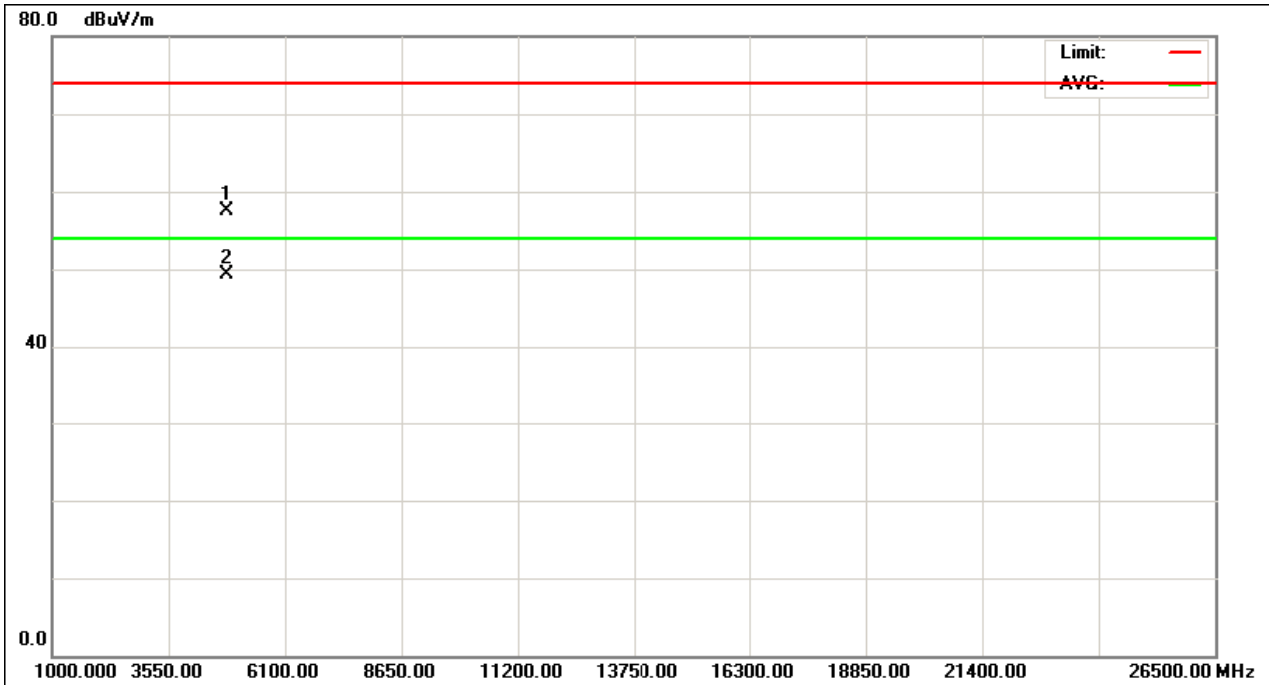
(6) EUT Orthogonal Axis：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(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

(8) The average value of fundamental frequency is:
Average = Peak value + 20log(Duty cycle) ，Final AV=PK-8.22

TX CH01(Above 1000 MHz, Vertical)





EUT：	TRANSMITTER	Model Name ：	KT-19
Temperature：	23 ℃	Relative Humidity：	51 %
Pressure：	1010hPa	Test Voltage ：	DC 6.0V
Test Mode ：	TX 2405.5MHz		

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	27.92	19.70	31.91	83.00	51.61	74.00	54.00	X/E
2400.00	H	33.67	25.45	31.90	65.57	57.35	74.00	54.00	X/E
2404.63	**H**	**62.67**	**4.45**	**31.90**	**94.57**	**86.35**			**X/F**
4811.50	H	49.35	41.13	5.24	54.59	46.37	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.

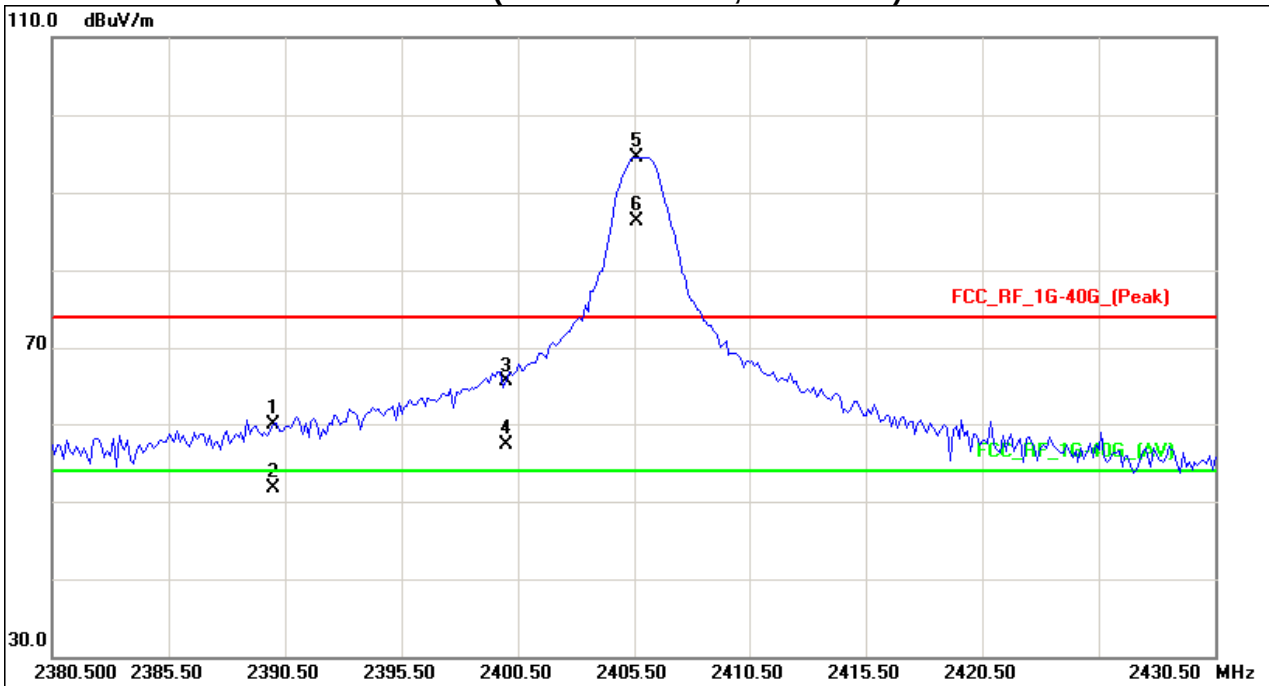
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

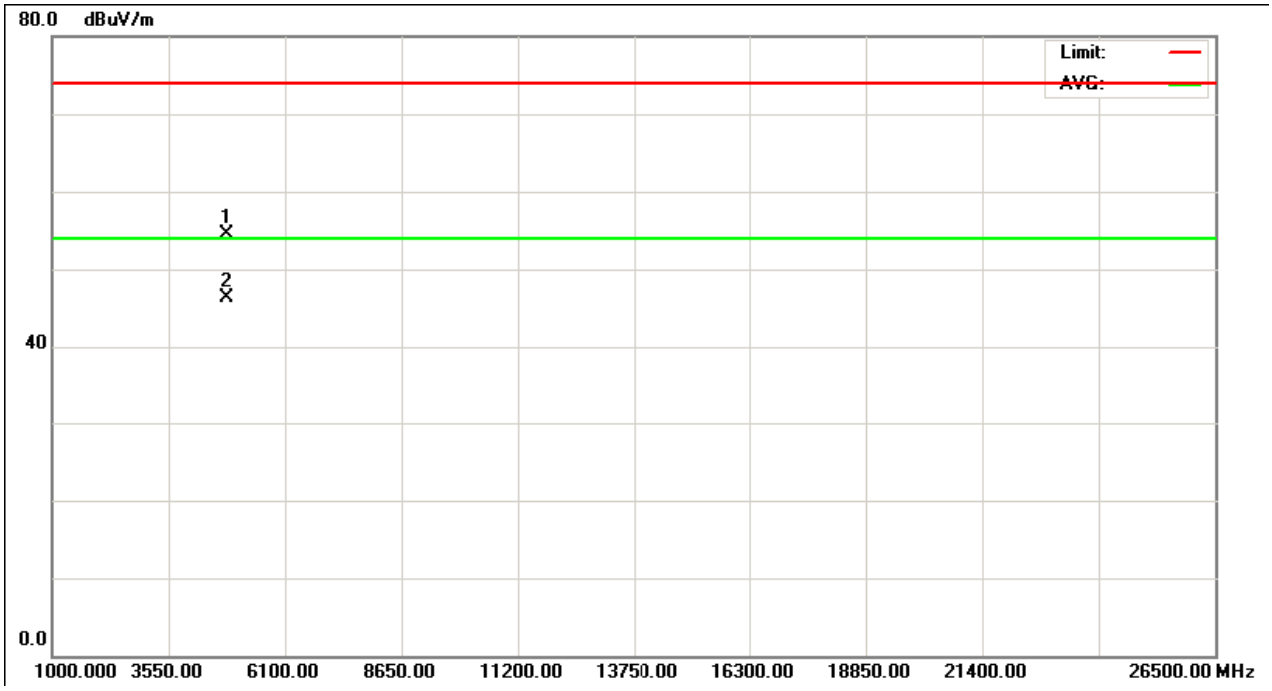
(6) EUT Orthogonal Axis：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(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

(8) The average value of fundamental frequency is:
Average = Peak value + 20log(Duty cycle) ，Final AV=PK-8.22

TX CH01(Above 1000 MHz, Horizontal)





EUT：	TRANSMITTER	Model Name ：	KT-19
Temperature：	23 ℃	Relative Humidity：	51 %
Pressure：	1010 hPa	Test Voltage ：	DC 6.0V
Test Mode ：	TX 2442.5MHz		

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)	
2443.00	**V**	**60.04**	**51.82**	**31.85**	**91.89**	**83.67**			**X/F**
4885.10	V	52.93	44.71	5.51	58.44	50.22	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.

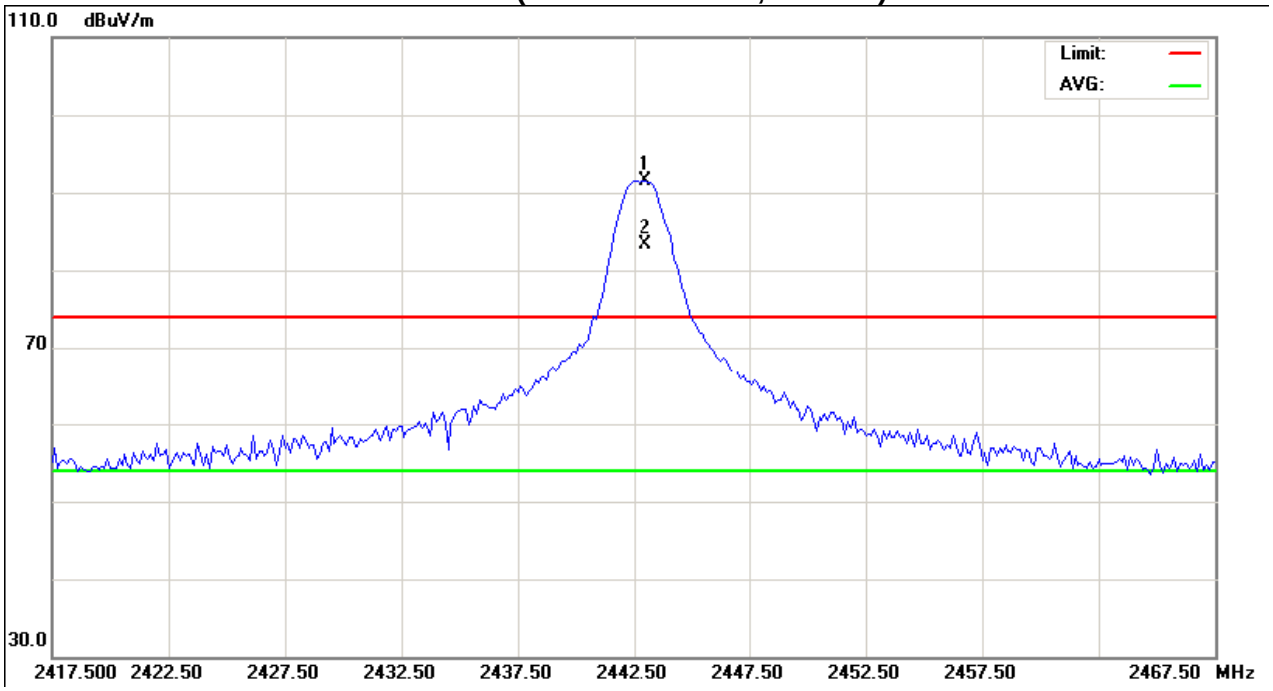
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

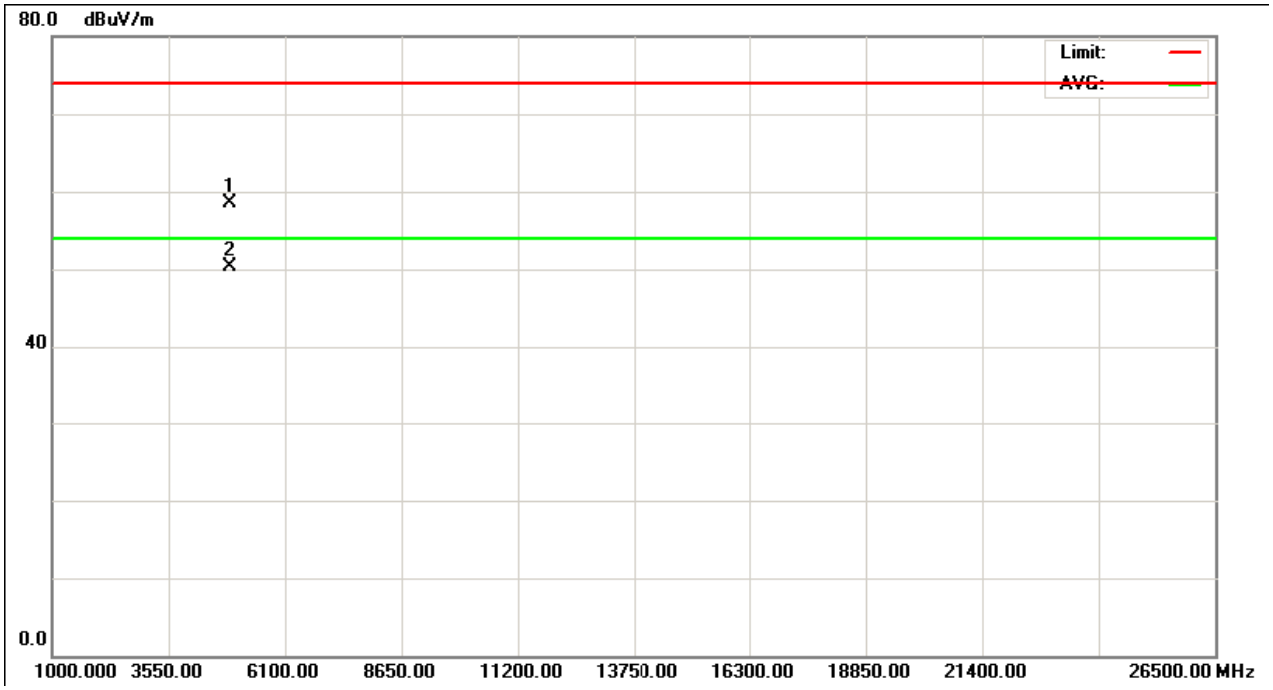
(6) EUT Orthogonal Axis：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(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

(8) The average value of fundamental frequency is:
Average = Peak value + 20log(Duty cycle) ，Final AV=PK-8.22

TX CH75 (Above 1000 MHz, Vertical)





EUT：	TRANSMITTER	Model Name ：	KT-19
Temperature：	23 ℃	Relative Humidity：	51 %
Pressure：	1010 hPa	Test Voltage ：	DC 6.0V
Test Mode ：	TX 2442.5MHz		

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)	
2443.00	**H**	**59.63**	**51.41**	**31.85**	**91.48**	**83.26**			**X/F**
4885.85	H	48.72	40.50	0.52	54.24	46.02	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.

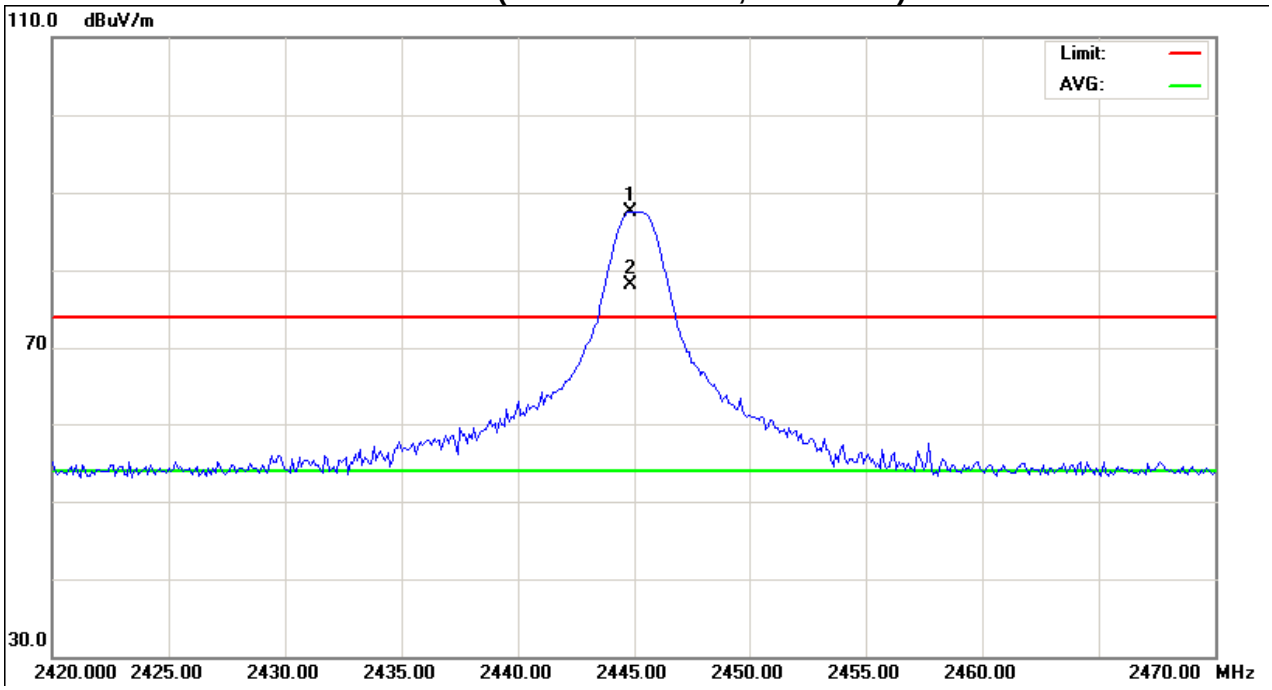
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

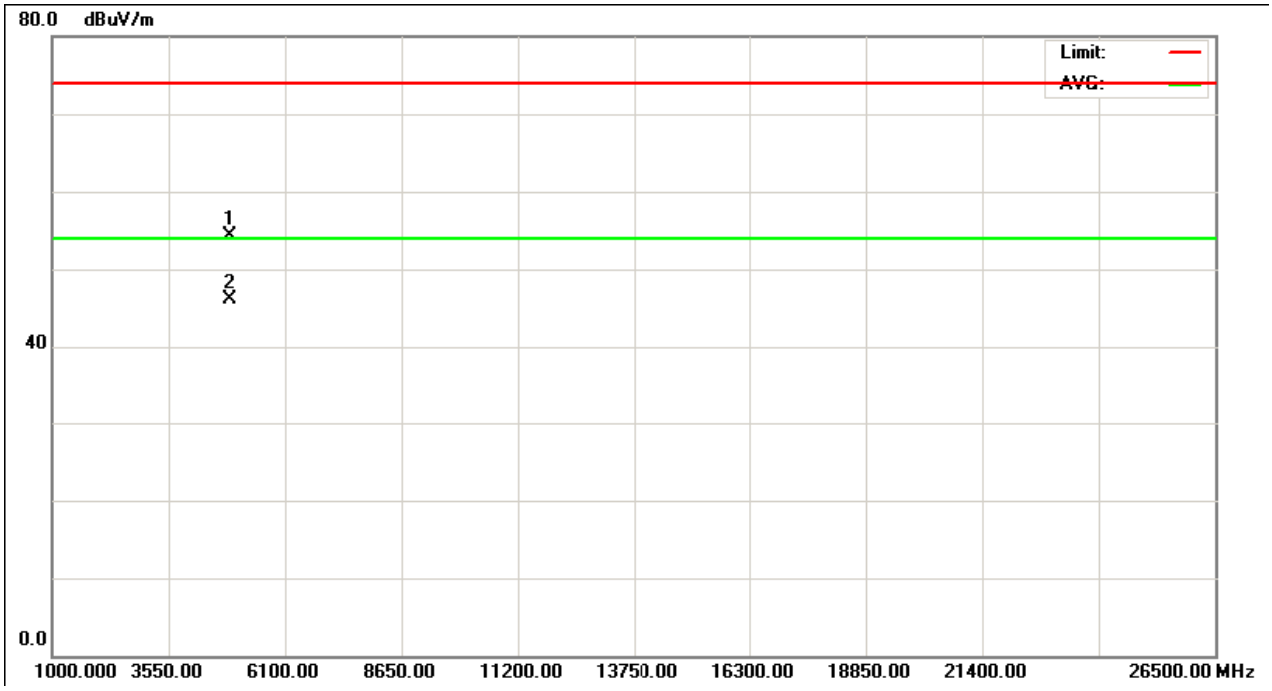
(6) EUT Orthogonal Axis：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(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

(8) The average value of fundamental frequency is:
Average = Peak value + 20log(Duty cycle) ，Final AV=PK-8.22

TX CH75 (Above 1000 MHz, Horizontal)





EUT：	TRANSMITTER	Model Name ：	KT-19
Temperature：	23 ℃	Relative Humidity：	51 %
Pressure：	1010hPa	Test Voltage ：	DC 6.0V
Test Mode ：	TX 2475MHz		

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)	
2475.13	**V**	**60.40**	**52.18**	**31.81**	**92.21**	**83.99**			**X/F**
2483.50	V	28.20	19.98	31.80	60.00	51.78	74.00	54.00	X/E
4950.00	V	50.70	42.48	5.75	56.45	48.23	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.

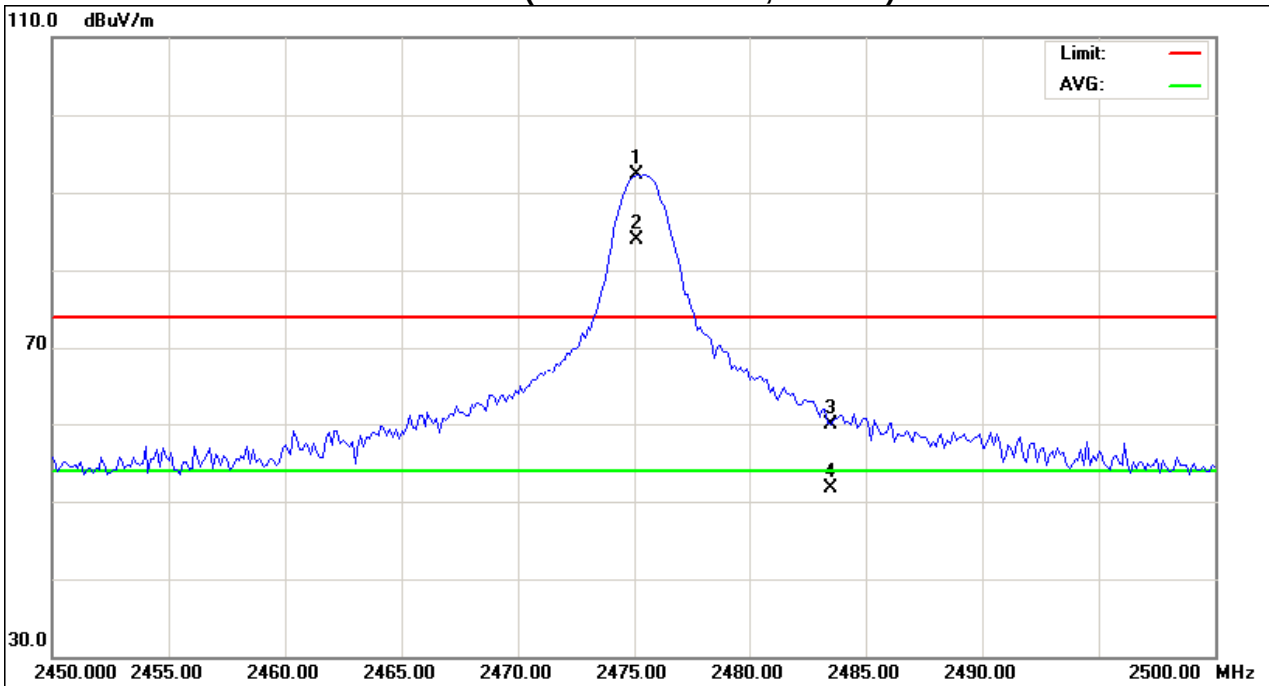
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

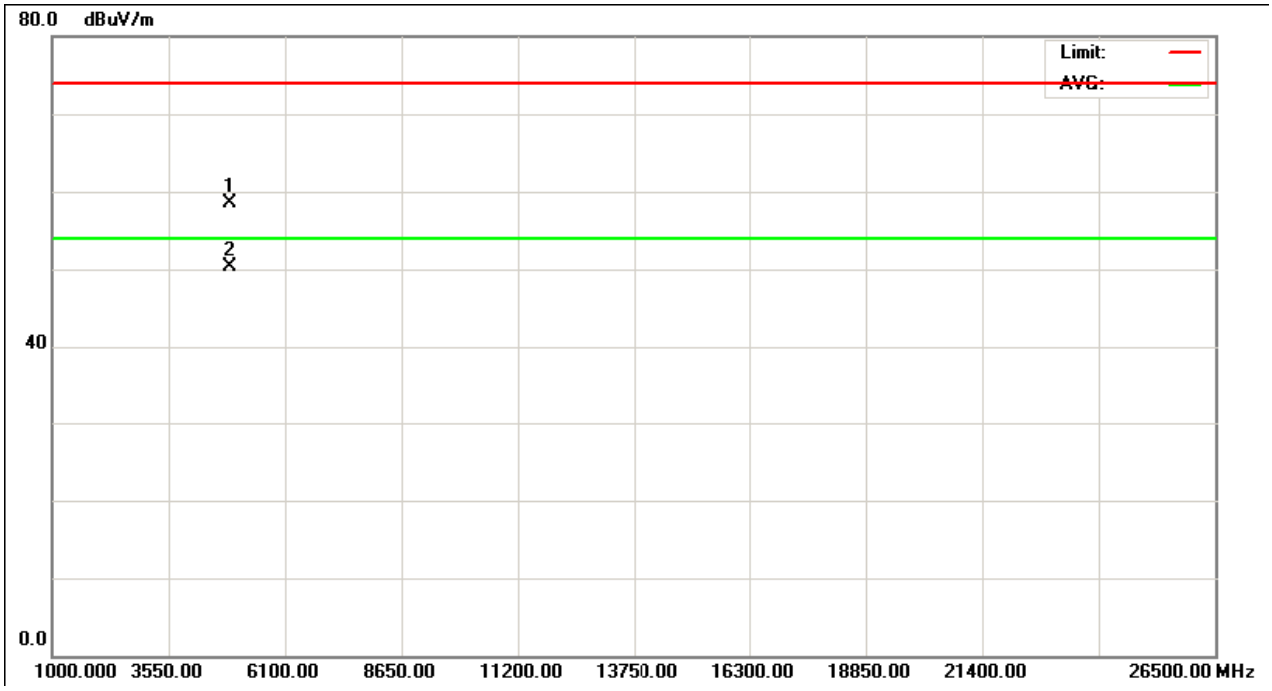
(6) EUT Orthogonal Axis：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(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

(8) The average value of fundamental frequency is:
Average = Peak value + 20log(Duty cycle) ，Final AV=PK-8.22

TX CH140 (Above 1000 MHz, Vertical)





EUT：	TRANSMITTER	Model Name ：	KT-19
Temperature：	23 ℃	Relative Humidity：	51 %
Pressure：	1010 hPa	Test Voltage ：	DC 6.0V
Test Mode ：	TX 2475MHz		

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)	
2475.50	**H**	**58.75**	**50.53**	**31.81**	**90.56**	**82.34**			**X/F**
2483.50	H	27.25	19.03	31.80	59.05	50.83	74.00	54.00	X/E
4949.95	H	48.38	41.16	5.75	54.13	46.91	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.

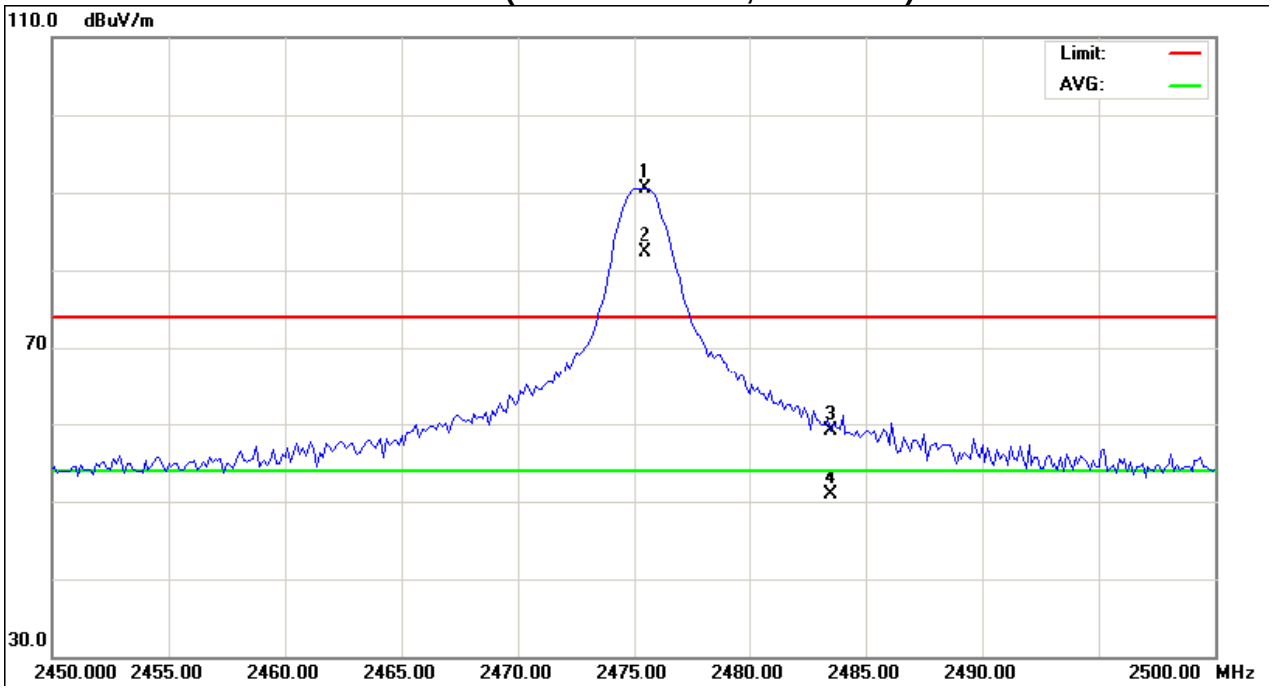
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

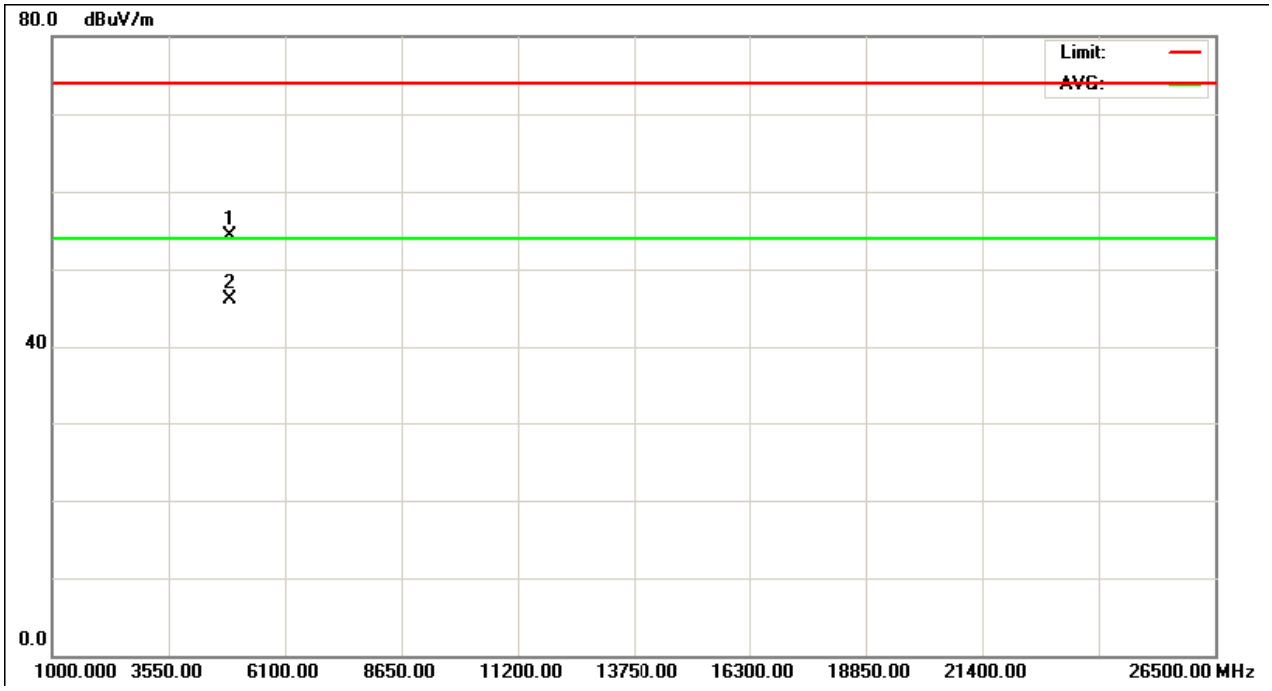
(6) EUT Orthogonal Axis：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(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

(8) The average value of fundamental frequency is:
Average = Peak value + 20log(Duty cycle) ，Final AV=PK-8.22

TX CH140 (Above 1000 MHz, Horizontal)





5. NUMBER OF HOPPING CHANNEL

5.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C			
Section	Test Item	Frequency Range (MHz)	Result
15.247 (a)(1)(iii)	Number of Hopping Channel	2400-2483.5	PASS

5.1.1 MEASUREMENT INSTRUMENTS LIST AND SETTING

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov.25.2012

Remark: ” N/A” denotes No Model Name , Serial No. or No Calibration specified.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> Operating Frequency Range
RB	100 kHz
VB	100 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

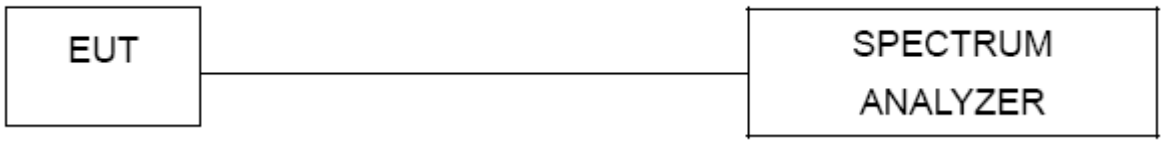
5.1.2 TEST PROCEDURE

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=100KHz, Sweep time = Auto.

5.1.3 DEVIATION FROM STANDARD

No deviation.

5.1.4 TEST SETUP



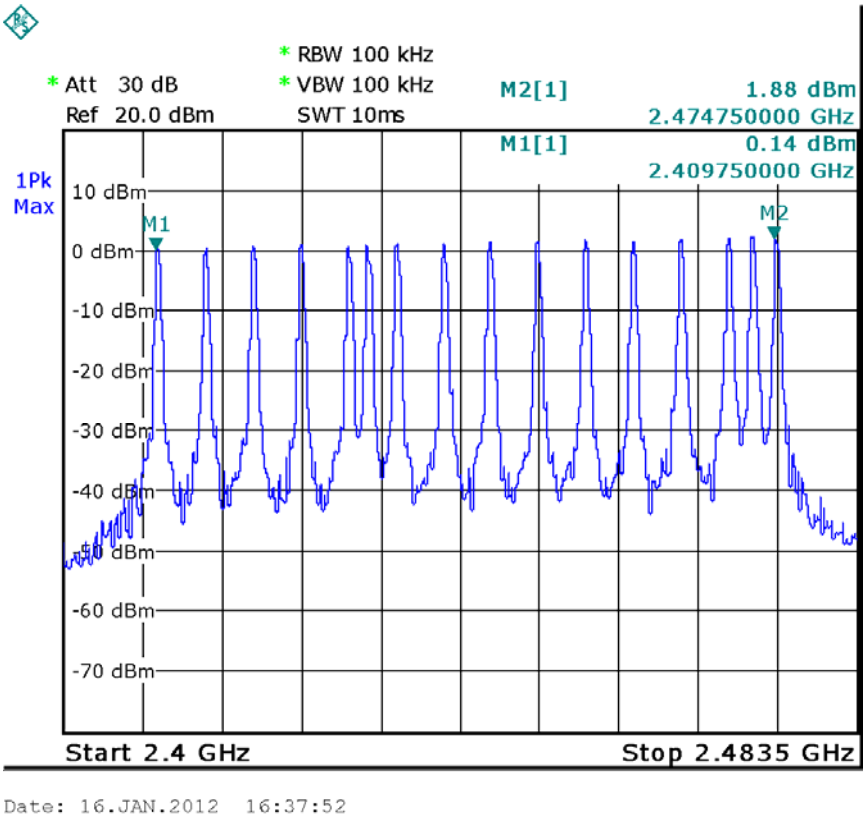
5.1.5 EUT OPERATION CONDITIONS

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：	TRANSMITTER	Model Name ：	KT-19
Temperature：	23 ℃	Relative Humidity：	51 %
Pressure：	1010 hPa	Test Voltage ：	DC 6.0V
Test Mode ：	Hopping Mode –Group 5		

Number of Hopping Channel	16



6. AVERAGE TIME OF OCCUPANCY

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247 (a)(1)(iii)	Average Time of Occupancy	0.4sec	2400-2483.5	PASS

6.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov.25.2012

Remark: ” N/A” denotes No Model Name , Serial No. or No Calibration specified.

6.1.2. TEST PROCEDURES

a. The transmitter output (antenna port) was connected to the spectrum analyzer
b. Set RBW of spectrum analyzer to 1MHz and VBW to 1MHz.
c. Use a video trigger with the trigger level set to enable triggering only on full pulses.
d. Sweep Time is more than once pulse time.
e. Set the center frequency on any frequency would be measure and set the frequency span to zero span.
f. Measure the maximum time duration of one single pulse.
g. Set the EUT for packet transmitting.
h. Measure the maximum time duration of one single pulse.
i. Dwell time = [spreading rate/16] x duty-cycle x 0.4 seconds

6.1.3. TEST SETUP LAYOUT

6.1.4. TEST DEVIATION

There is no deviation with the original standard.

6.1.5. EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting/Hopping mode.

6.1.6. TEST RESULTS

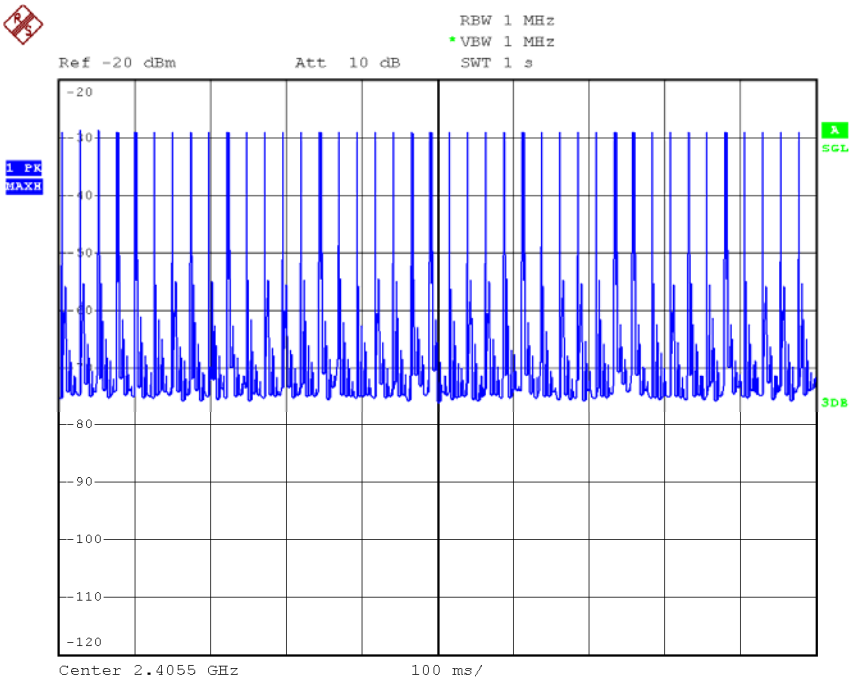
EUT：	TRANSMITTER	Model Name ：	KT-19
Temperature：	23 ℃	Relative Humidity：	51 %
Pressure：	1015 hPa	Test Voltage ：	DC 6.0V
Test Mode ：	Hopping Mode		

Mode	Number of transmission in a 5.6(14Hopping*0.4)	Length of transmission time (msec)	Result (msec)	Limit (msec)
2405.5 MHz	(41/1) *6.4=262.4 times **Note1**	0.58	152.192	400

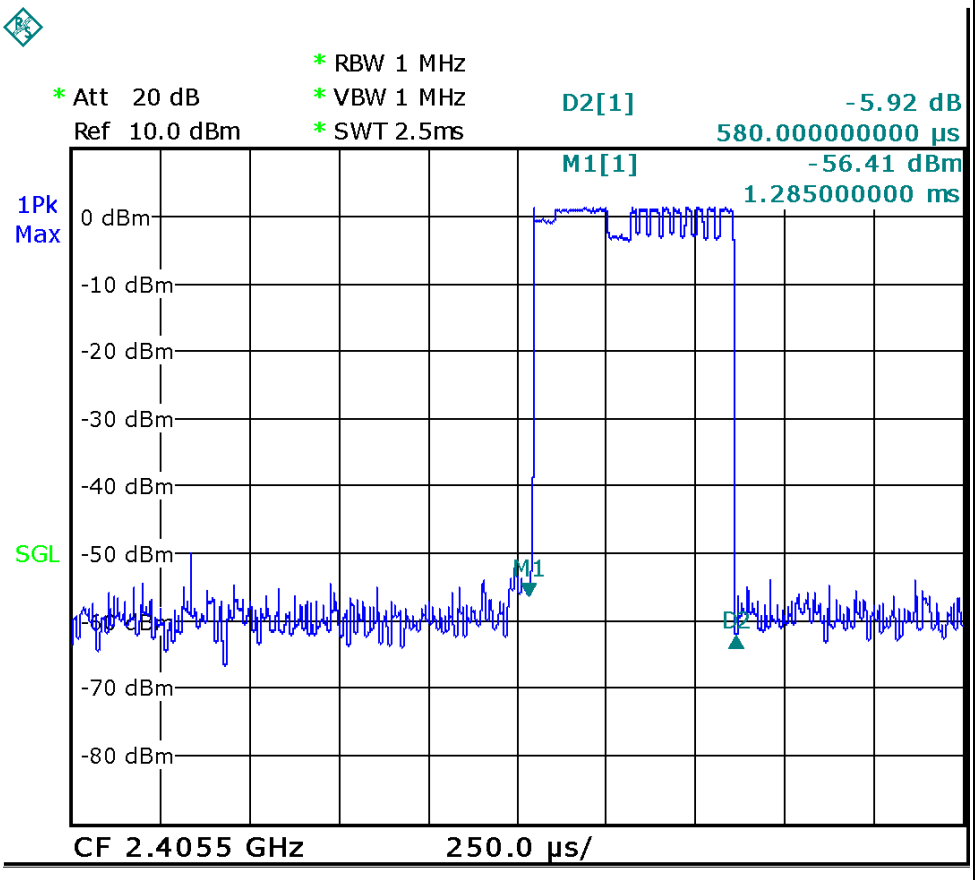
Note1: 41 times of occupied channels per 1 second

	Results
Measured cycle (sec)	16 CH*0.4=6.4
The total number of frequency-hopping per second	((41/1)*6.4)= 262.4
The number of occupied channels per second	262.4/6.4=41(number/sec)
occupied time for each channel(1)	0.58ms
The total number of channels occupied within one cycle (2)	(41/1) *6.4=262.4 times
The average time of occupancy within one cycle(1)*(2)	152.192msec
LIMIT (msec)	400msec

Hopping Mode : 41(times/1sec)



Date: 9.JAN.2012 12:55:38



Date: 16.JAN.2012 09:12:48

7. HOPPING CHANNEL SEPARATION MEASUREMENT

7.1 APPLIED PROCEDURES / LIMIT

Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

7.1.1 MEASUREMENT INSTRUMENTS LIST AND SETTING

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov.25.2012

Remark: ” N/A” denotes No Model Name , Serial No. or No Calibration specified.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RB	30 kHz (20dB Bandwidth) / 30 kHz (Channel Separation)
VB	100 kHz (20dB Bandwidth) / 100 kHz (Channel Separation)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

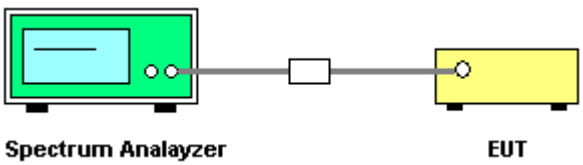
7.1.2 TEST PROCEDURE

a. The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
b. The resolution bandwidth of 30 kHz and the video bandwidth of 100 kHz were utilised for 20 dB bandwidth measurement.
c. The resolution bandwidth of 30 kHz and the video bandwidth of 100 kHz were utilised for channel separation measurement.

7.1.3 DEVIATION FROM STANDARD

No deviation.

7.1.4 TEST SETUP



7.1.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in Hopping on mode.

7.1.6 TEST RESULTS

EUT：	TRANSMITTER	Model Name ：	KT-19
Temperature：	23 ℃	Relative Humidity：	51 %
Pressure：	1010 hPa	Test Voltage ：	DC 6.0V
Test Mode ：	Hopping on CH140		

Frequency	Ch. Separation (MHz)	20dB Bandwidth (MHz)	Result
2475 MHz	2.510	1.060	**Complies**

Ch. Separation Limits: >20dB bandwidth or >2/3 of 20dB bandwidth

CH75

8. BANDWIDTH TEST

8.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247 (a)(1)	Bandwidth	None	2400-2483.5	PASS

8.1.1 MEASUREMENT INSTRUMENTS LIST AND SETTING

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov.25.2012

Remark: ” N/A” denotes No Model Name , Serial No. or No Calibration specified.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RB	30 kHz (20dB Bandwidth) / 30 kHz (Channel Separation)
VB	100 kHz (20dB Bandwidth) / 100 kHz (Channel Separation)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

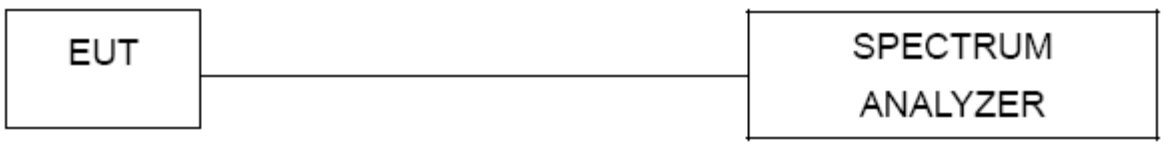
8.1.2 TEST PROCEDURE

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= 30KHz, VBW=100KHz, Sweep time = Auto.

8.1.3 DEVIATION FROM STANDARD

No deviation.

8.1.4 TEST SETUP



8.1.5 EUT OPERATION CONDITIONS

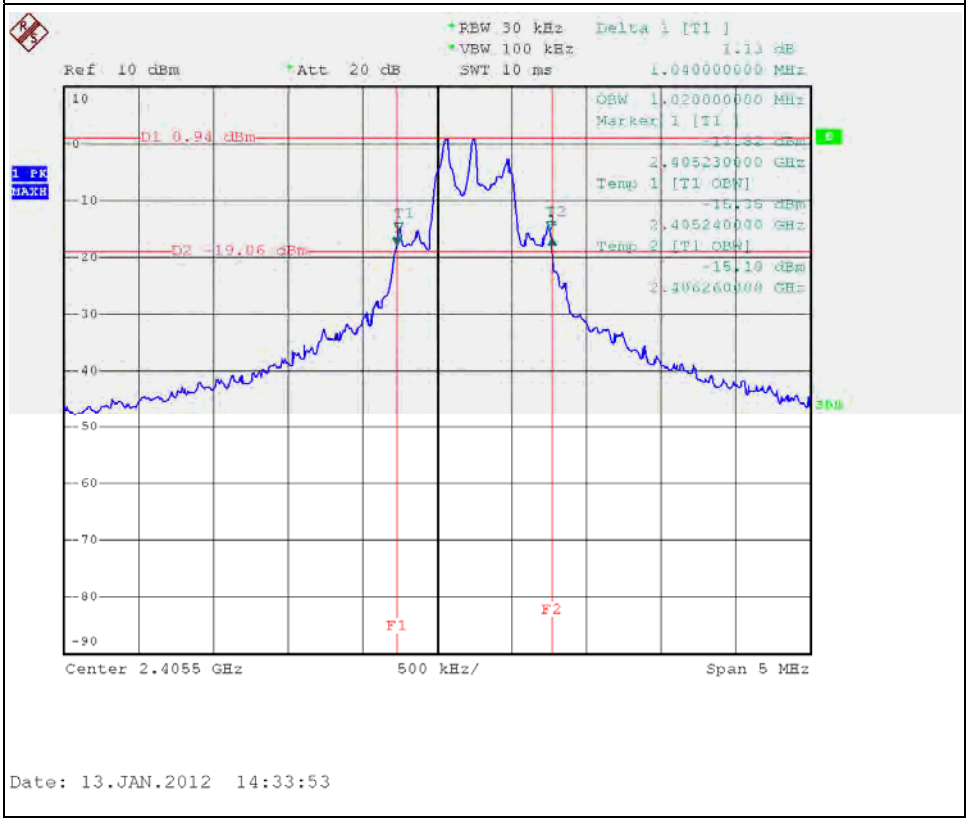
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

8.1.6 TEST RESULTS

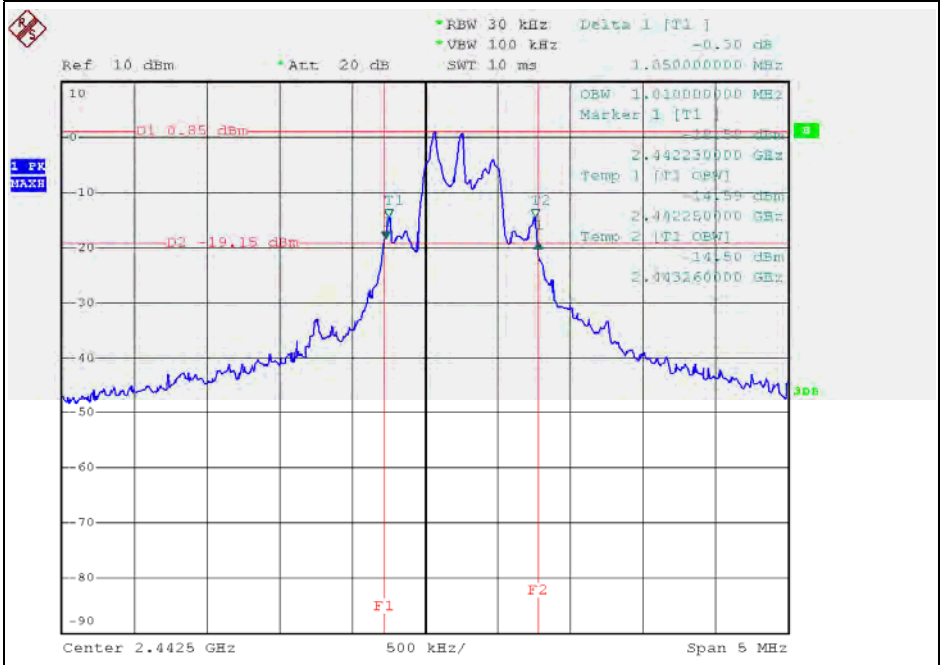
EUT：	TRANSMITTER	Model Name ：	KT-19
Temperature：	23 ℃	Relative Humidity：	51 %
Pressure：	1010 hPa	Test Voltage ：	DC 6.0V
Test Mode ：	CH01 / CH75/ CH140		

Frequency	20dB Bandwidth (MHz)	Channel Separation (MHz)	Result
2405.5 MHz	1.040	<= 2.51MHz	**PASS**
2442.5 MHz	1.050	<= 2.51MHz	**PASS**
2475 MHz	1.060	<= 2.51MHz	**PASS**

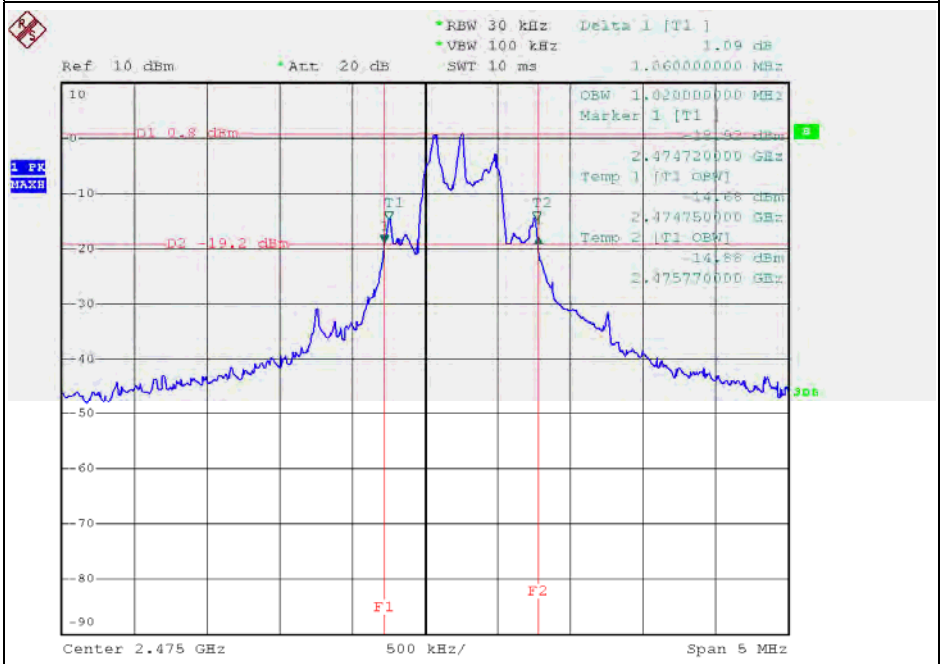
CH01



CH75


RBW 30 kHz
VBW 100 kHz
SWT 10 ms
Delta 1 [T1]
-0.50 dB
1.050000000 MHz
Ref 10 dBm
Att 20 dB
OBW 1.010000000 MHz
Marker 1 [T1]
2.442230000 GHz
Temp 1 [T1 OBW]
-14.59 dBm
2.442250000 GHz
Temp 2 [T1 OBW]
-14.50 dBm
2.443260000 GHz
D1 0.85 dBm
D2 -19.15 dBm
T1
T2
F1
F2
Center 2.4425 GHz
500 kHz/
Span 5 MHz
Date: 13.JAN.2012 14:35:19

CH140


RBW 30 kHz
VBW 100 kHz
SWT 10 ms
Delta 1 [T1]
1.09 dB
1.060000000 MHz
Ref 10 dBm
Att 20 dB
OBW 1.020000000 MHz
Marker 1 [T1]
2.474720000 GHz
Temp 1 [T1 OBW]
-14.68 dBm
2.474750000 GHz
Temp 2 [T1 OBW]
-14.86 dBm
2.475770000 GHz
D1 0.8 dBm
D2 -19.2 dBm
T1
T2
F1
F2
Center 2.475 GHz
500 kHz/
Span 5 MHz
Date: 13.JAN.2012 14:36:31

9. PEAK OUTPUT POWER TEST

9.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247 (b)(1)	Peak Output Power	0.125 watt or 21dBm	2400-2483.5	PASS

9.1.1 MEASUREMENT INSTRUMENTS LIST AND SETTING

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov.25.2012

Remark: ” N/A” denotes No Model Name , Serial No. or No Calibration specified.

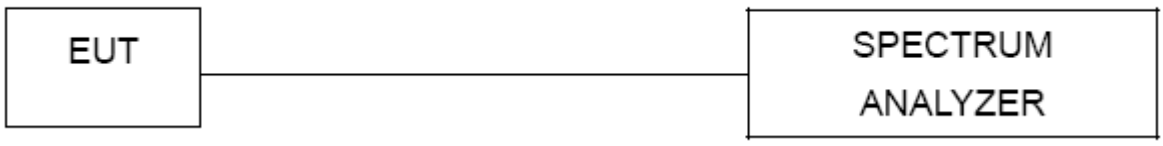
9.1.2 TEST PROCEDURE

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= 1MHz, VBW= 1MHz, Sweep time = Auto.

9.1.3 DEVIATION FROM STANDARD

No deviation.

9.1.4 TEST SETUP



9.1.5 EUT OPERATION CONDITIONS

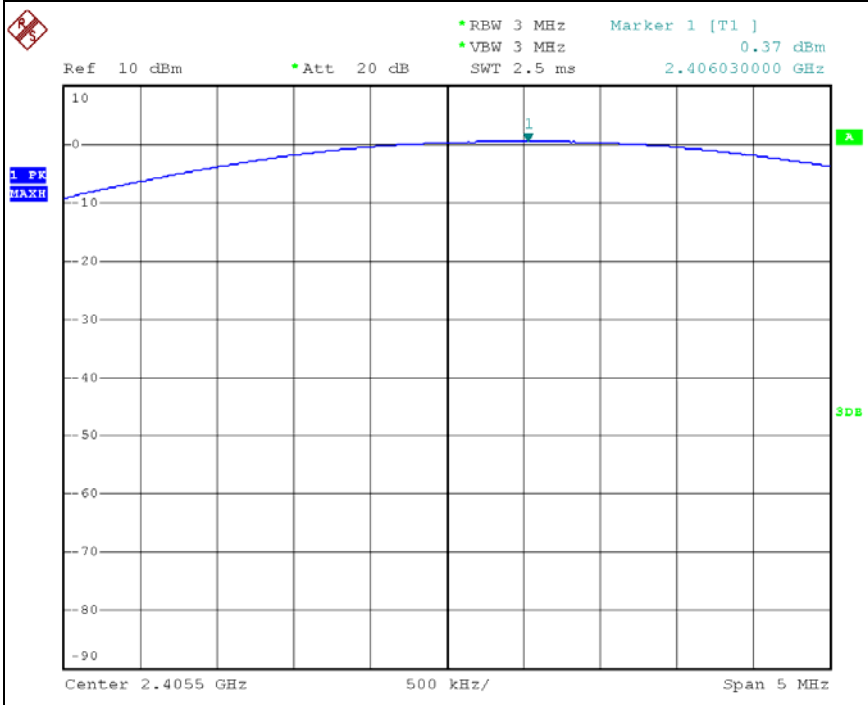
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

9.1.6 TEST RESULTS

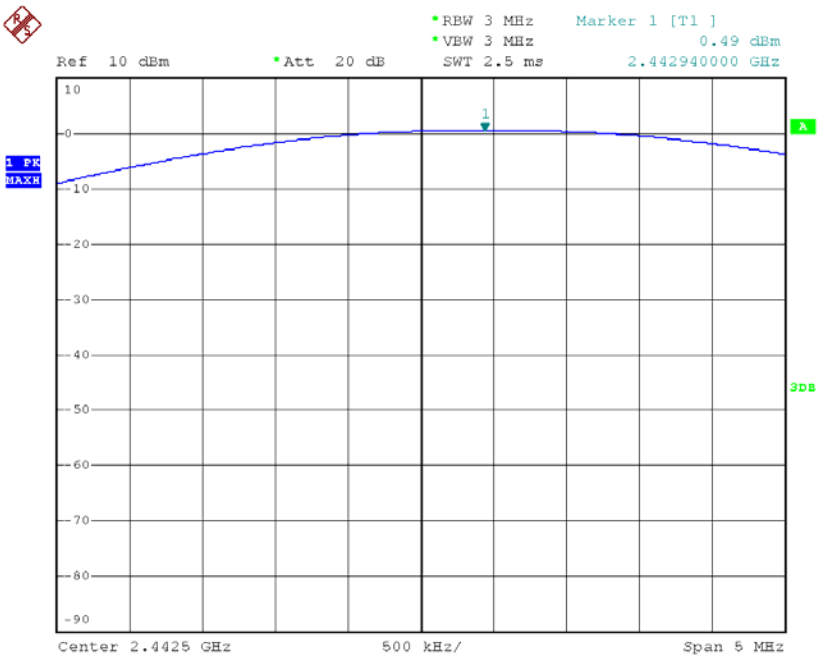
EUT：	TRANSMITTER	Model Name ：	KT-19
Temperature：	23 ℃	Relative Humidity：	51 %
Pressure：	1010 hPa	Test Voltage ：	DC 6.0V
Test Mode ：	CH01 / CH75/ CH140		

Test Channel	Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH01	2405.5 MHz	0.37	21	0.125
CH75	2442.5 MHz	0.49	21	0.125
CH140	2475 MHz	0.60	21	0.125

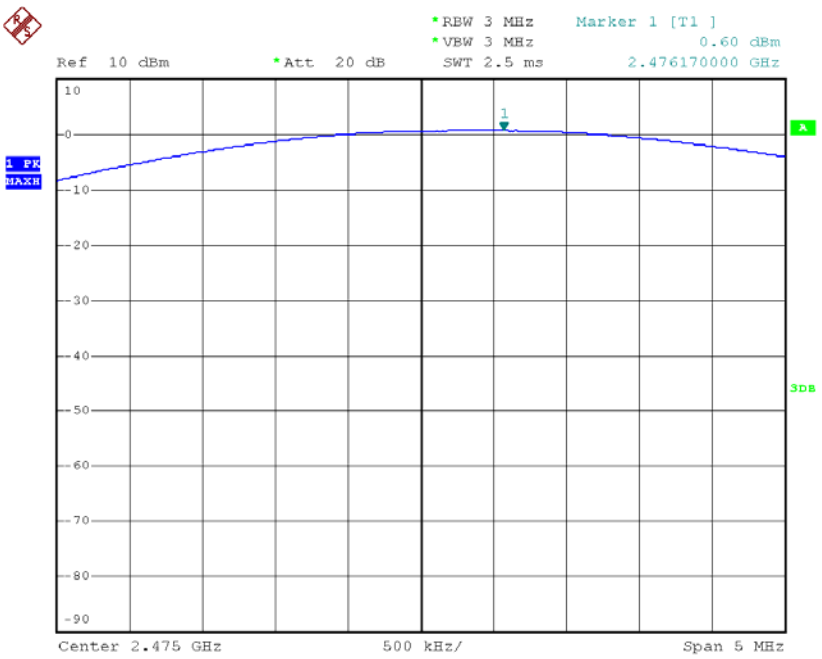
CH01



CH75


RBW 3 MHz
VBW 3 MHz
SWT 2.5 ms
Marker 1 [T1]
0.49 dBm
2.442940000 GHz
Ref 10 dBm
Att 20 dB
1 PK
MAXH
3DB
Center 2.4425 GHz
500 kHz/
Span 5 MHz

CH140


RBW 3 MHz
VBW 3 MHz
SWT 2.5 ms
Marker 1 [T1]
0.60 dBm
2.476170000 GHz
Ref 10 dBm
Att 20 dB
1 PK
MAXH
3DB
Center 2.475 GHz
500 kHz/
Span 5 MHz

10. ANTENNA CONDUCTED SPURIOUS EMISSION

10.1 APPLIED PROCEDURES / LIMIT

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

10.1.1 MEASUREMENT INSTRUMENTS LIST AND SETTING

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov.25.2012

Remark: ” N/A” denotes No Model Name , Serial No. or No Calibration specified.

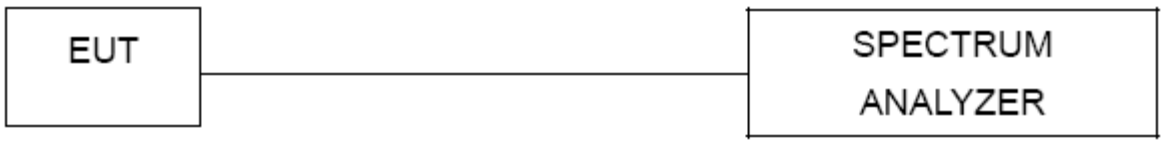
10.1.2 TEST PROCEDURE

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=100KHz, Sweep time = Auto.

10.1.3 DEVIATION FROM STANDARD

No deviation.

10.1.4 TEST SETUP



10.1.5 EUT OPERATION CONDITIONS

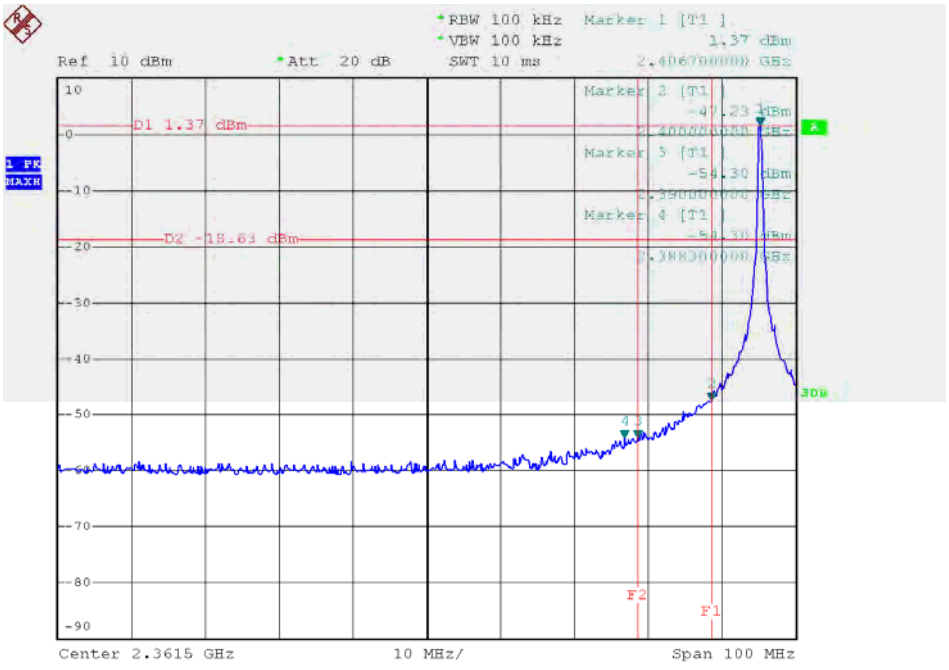
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

10.1.6 TEST RESULTS

EUT：	TRANSMITTER	Model Name ：	KT-19
Temperature：	23 ℃	Relative Humidity：	51 %
Pressure：	1010 hPa	Test Voltage ：	DC 6.0V
Test Mode ：	CH01 / CH75 / CH140 & Hopping on mode		

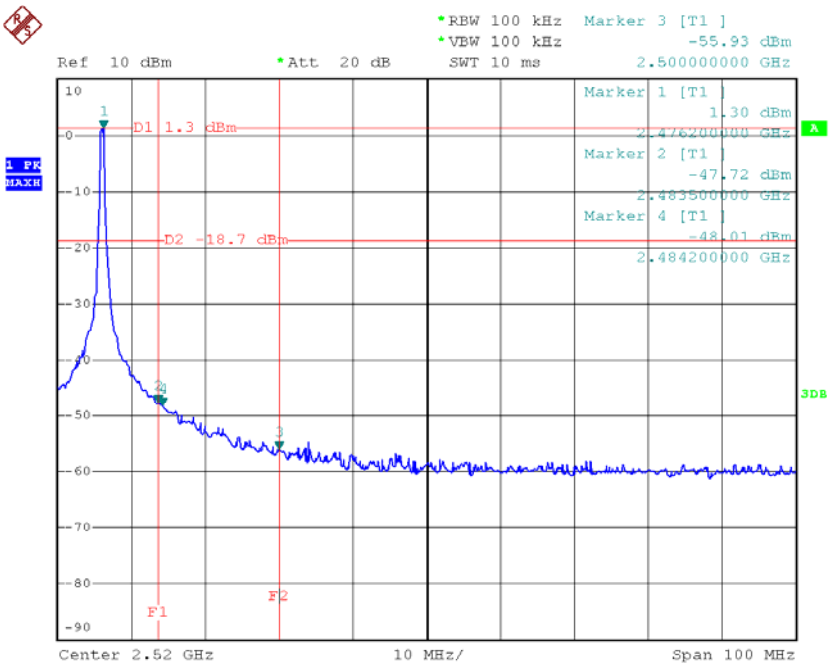
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
2400.00	-47.23	2483.5	-47.72
Result			
In any 100kHz bandwidth outside the frequency 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.			

Lower -TX CH01



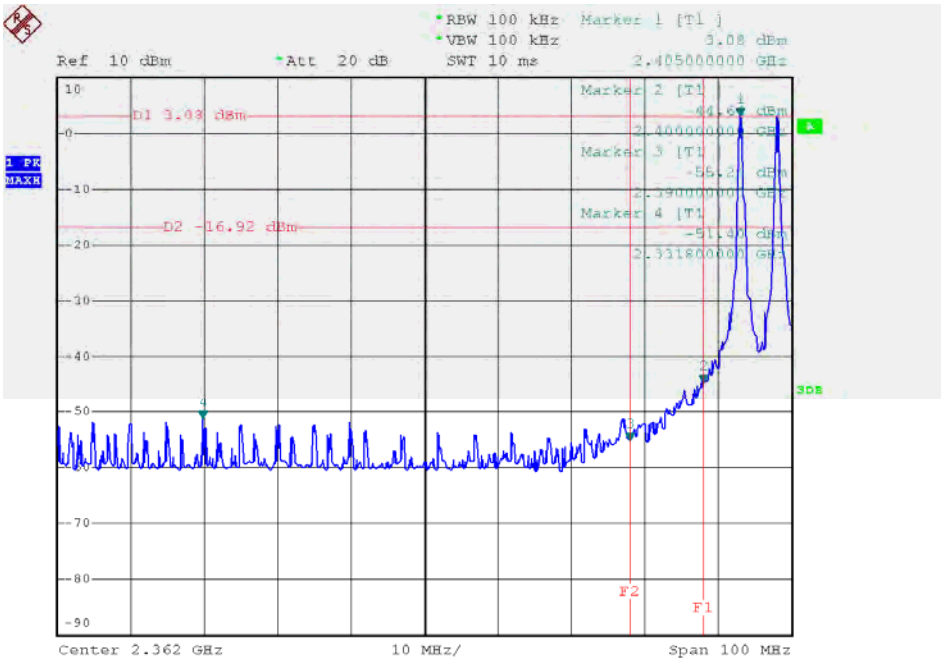
Date: 16.JAN.2012 08:50:17

Upper -TX CH140



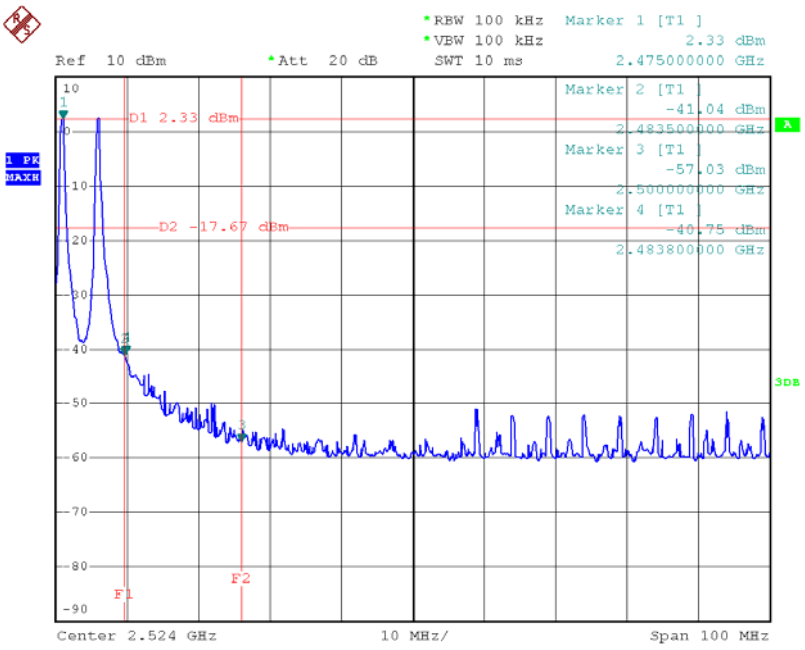
Date: 16.JAN.2012 08:54:30

Hopping on mode (Lower)



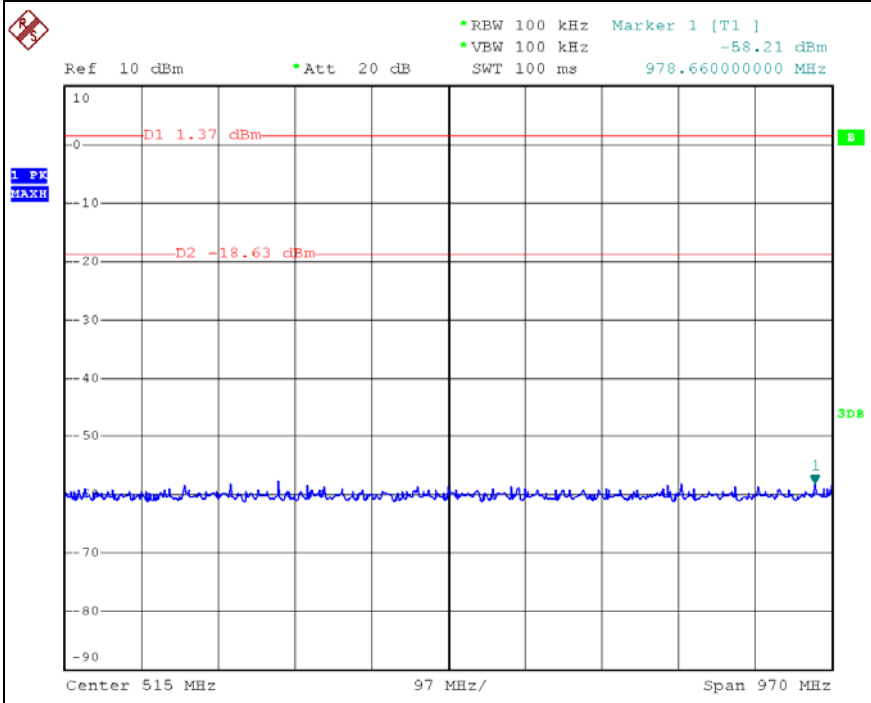
Date: 16.JAN.2012 09:01:05

Hopping on mode (upper)



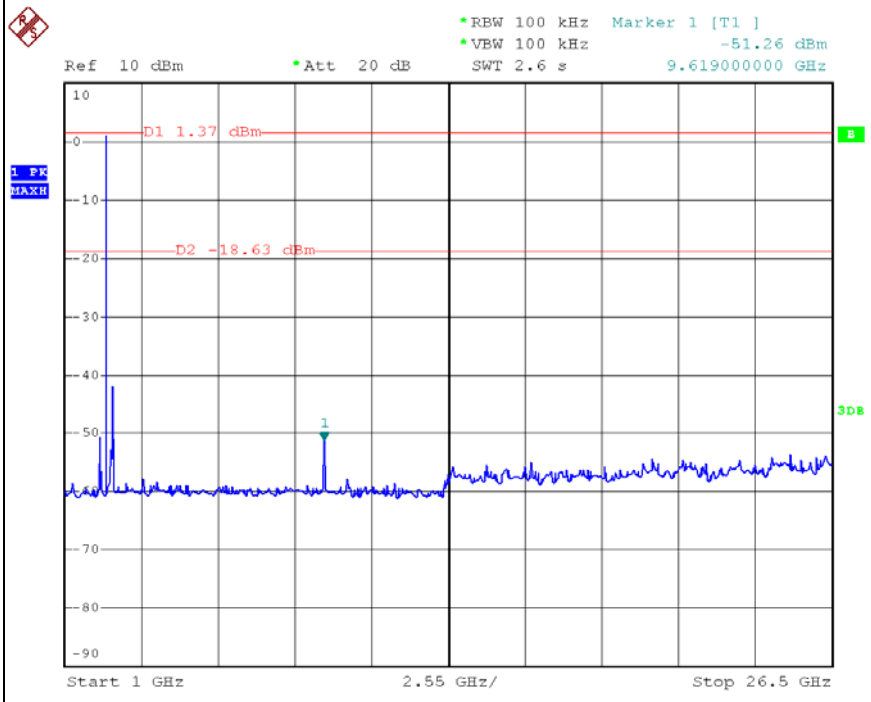
Date: 16.JAN.2012 09:03:50

CH01 (30MHz~1GHz)



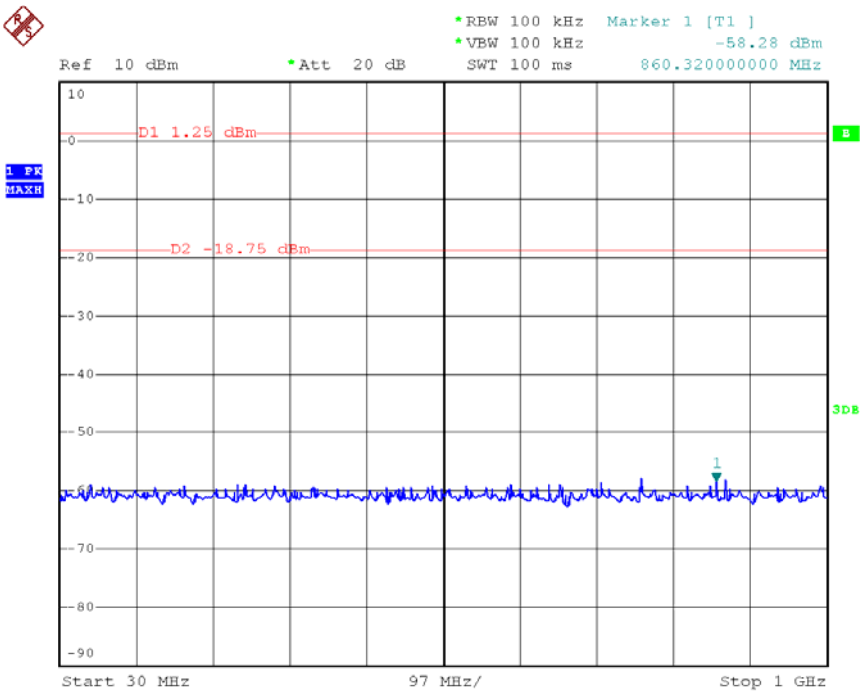
Date: 16.JAN.2012 08:51:26

CH01 (1GHz～10th Harmonic)



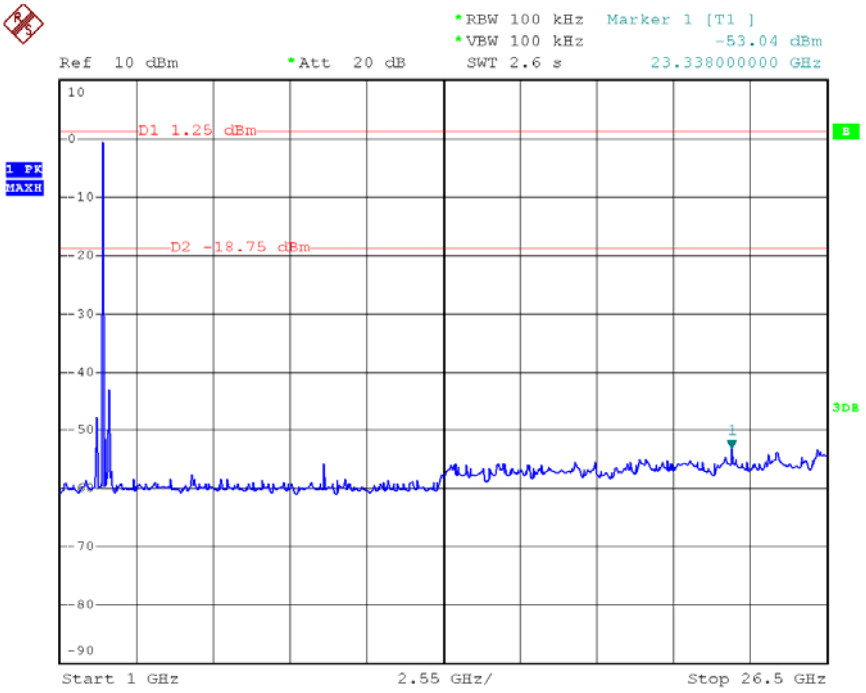
Date: 16.JAN.2012 08:51:49

CH75 (30MHz~1GHz)



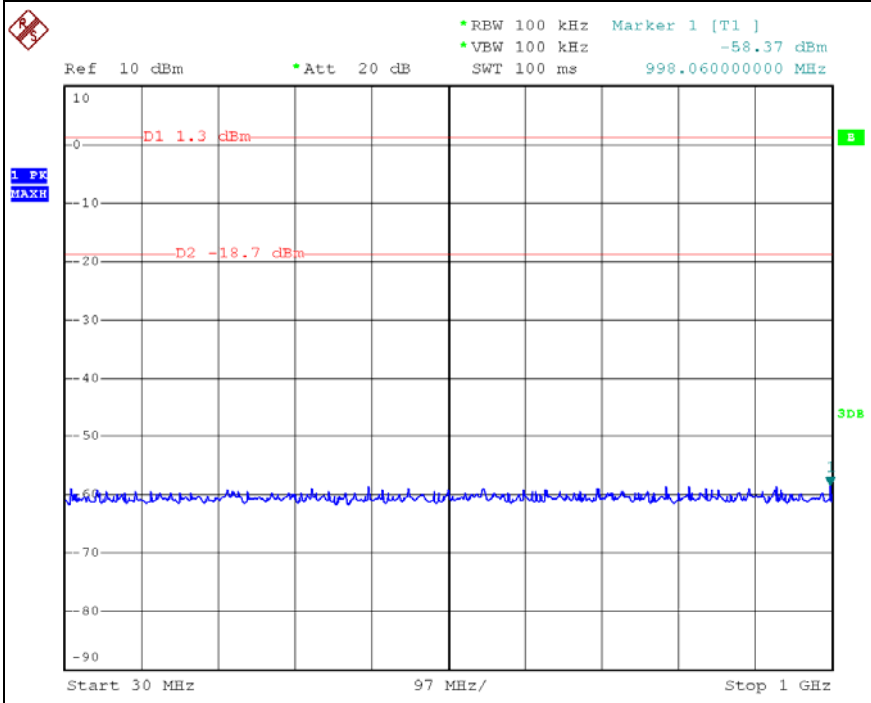
Date: 16.JAN.2012 08:53:00

CH75 (1GHz～10th Harmonic)



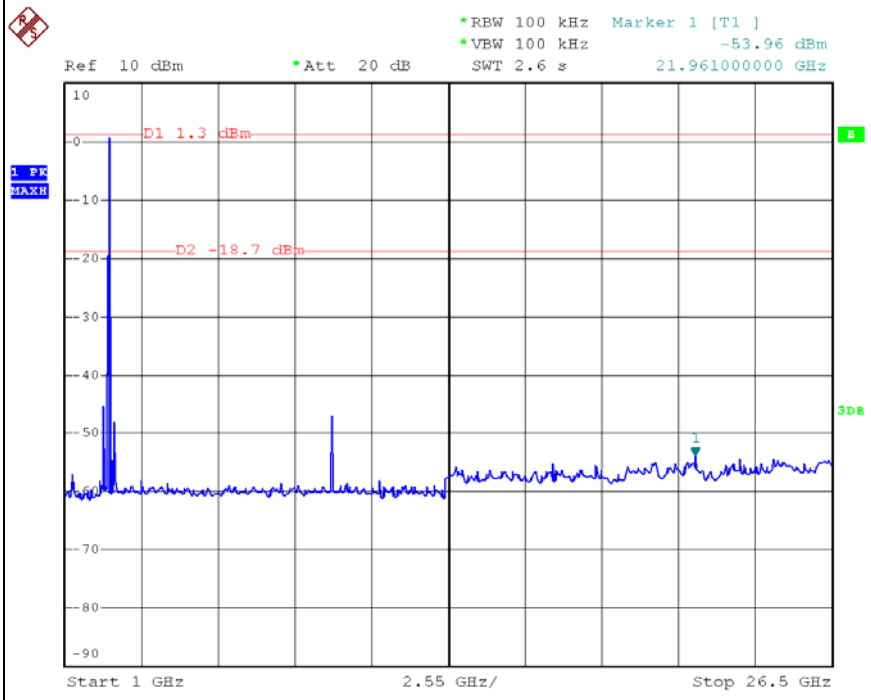
Date: 16.JAN.2012 08:52:43

CH140 (30MHz~1GHz)



Date: 16.JAN.2012 08:55:04

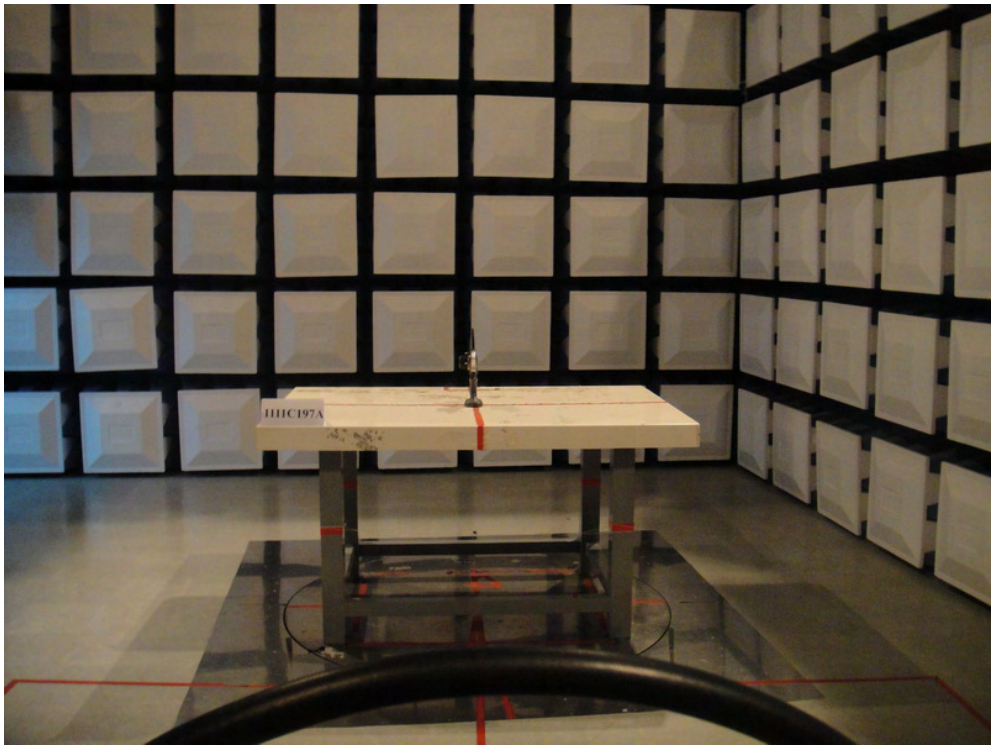
CH140 (1GHz～10th Harmonic)

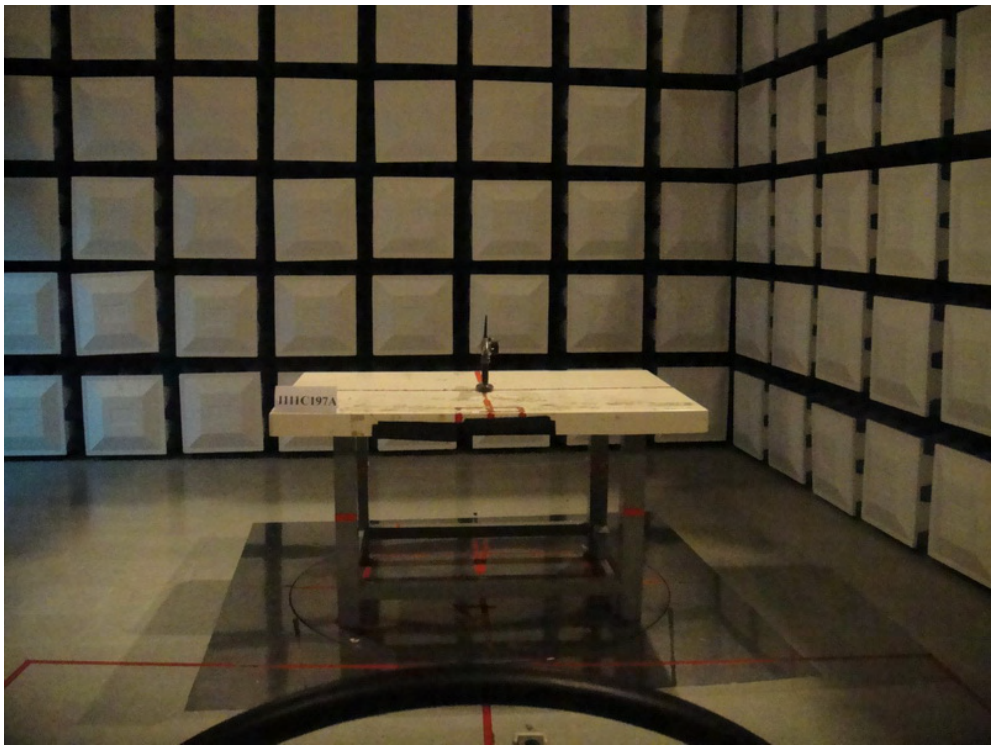


Date: 16.JAN.2012 08:55:28

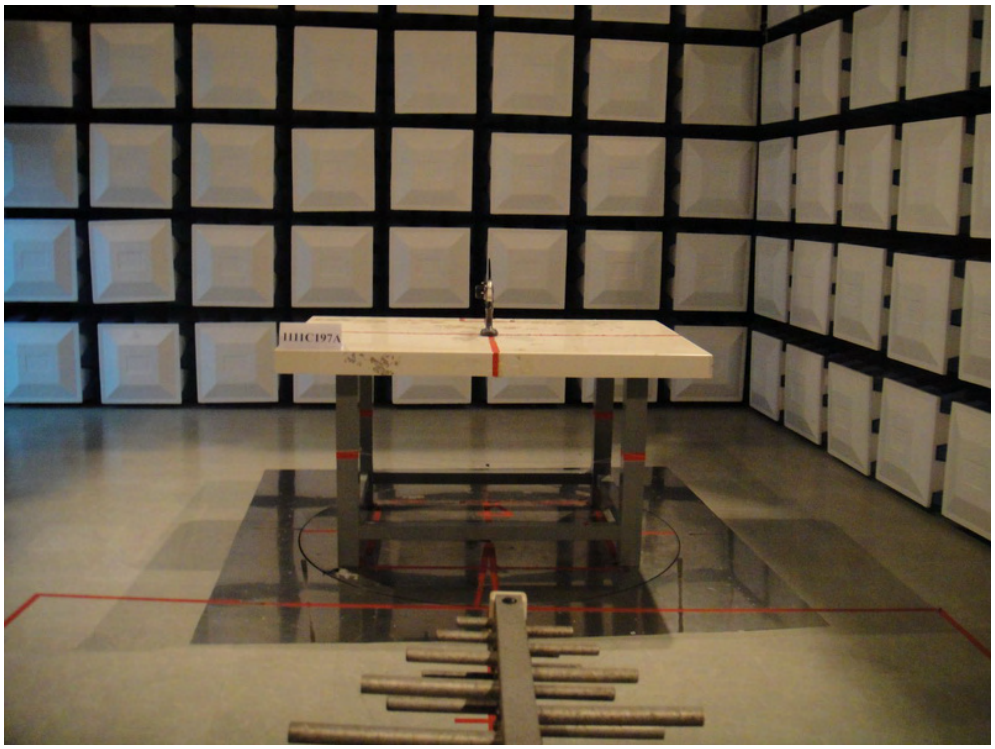
11. EUT TEST PHOTO

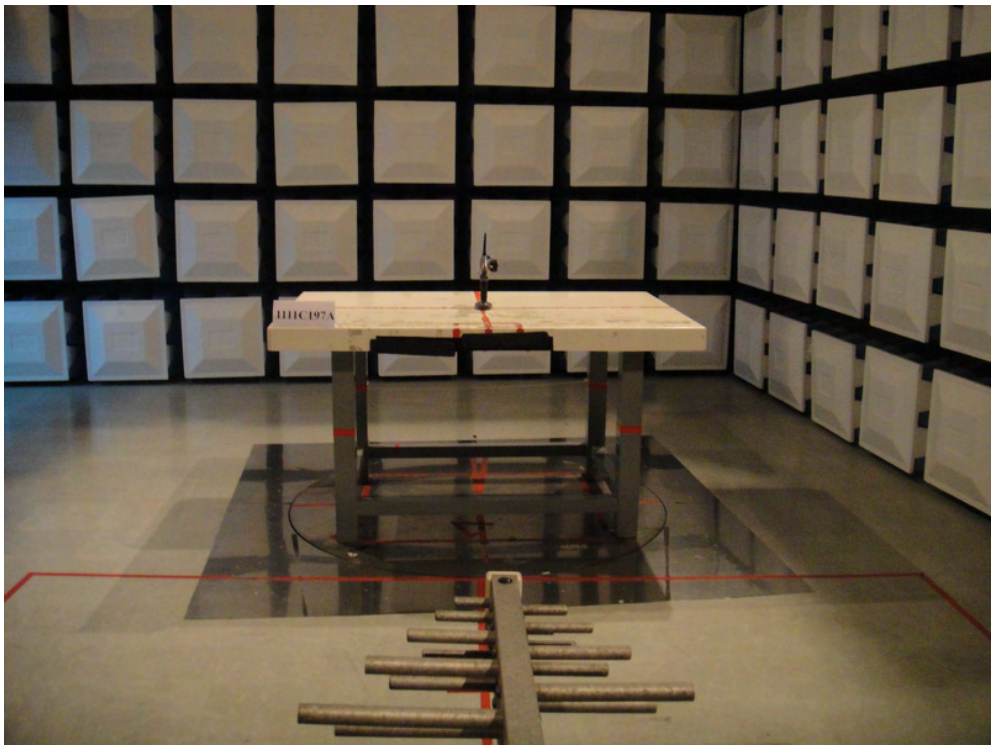
Radiated Measurement Photos





Radiated Measurement Photos





Radiated Measurement Photos