FCC PART 15.247 TEST REPORT

Prepared For	ShenZhen SenZe Electronics Co., Ltd
Product Name:	PS3 blueteeth wireless dual shock 6-axis gamepad
Report No.:	PTS20120208-1F
Trade Name:	SENZE
Model Name :	SZ-906, SZ-903,SZ-902,SZ-904
FCC ID:	AWFSZ-906
Prepared By	DongGuan Precise Testing Service Co.,Ltd.
	F616A Room, 6th Floor, Meixin Business Center, Dongcheng Middle Road, Dongguan, Guangdong, China
Test Date:	Feb.08, 2012 ~ Feb.11, 2012
Date of Report :	Feb.12, 2012

VERIFICATION OF COMPLIANCE

Applicant:	ShenZhen SenZe Electronics Co.,Ltd.
Address	4F,Block B,2nd industrial Zone,San Wei,XiXiang,BaoAn, ShenZhen,China
Manufacturer Name:	ShenZhen SenZe Electronics Co.,Ltd.
Address:	4F,Block B,2nd industrial Zone,San Wei,XiXiang,BaoAn, ShenZhen,China
Product Description:	PS3 blueteeth wireless dual shock 6-axis gamepad
Brand Name:	SENZE
Model Name:	SZ-906, SZ-903,SZ-902,SZ-904
Model difference	Different models named for different colors, other are same
Test procedure	ANSI C63.4 : 2003

Prepared by : Assistant

Reviewer : Supervisor

Approved & Authorized Signer : Jacky Ou / Manager

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1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

The EUT is a PS3 blueteeth wireless dual shock 6-axis gamepad; It is short range, lower power. And it is designed by way of utilizing the FHSS technology to achieve the system operation.

A major technical description of EUT is described as following:

Operation Frequency	2.402 GHz to 2.480GHz
Output Power	6.32dBm
Modulation	GFSK(without EDR or Hs function)
Number of channels	79
Antenna Designation	Integrated Antenna
Antenna Gain	0dBi
Power Supply	DC 3.7V by battery

1.2 TABLE OF CARRIER FREQUENCYS

Frequency Band	Channel Number	Frequency
2400~2483.5MHZ	0	2402MHZ
	1	2403MHZ
	:	:
	38	2440 MHZ
	39	2441 MHZ
	40	2442 MHZ
	:	:
	77	2479 MHZ
	78	2480 MHZ

1.3 RECEIVER INPUT BANDWIDTH AND BEHAVIOUR FOR REPEATED SINGLE OR MULTIPLE PACKETS

The input bandwidth of the receiver is 1MHz,In every connection one Bluetooth device is the master and the other one is slave.The master determines the hopping sequence.The slave follows this sequence. Both devices shift between RX and TX time slot according to the clock of the master.
Additionally the type of connection(e.g. single of multislot packet) is set up at the beginning of the connection.The master adapts its hopping frequency and its TX/RX timing according to the packet type of the connection.Also the slave of the connection will use these settings.
Repeating of a packet has no influence on the hopping sequence.The hopping sequence generated by the master of the connection will be followed in any case.That means,a repeated packet will not be send on the same frequency,it is send on the next frequency of the hopping sequence.

1.4 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for FCC ID: AWFSZ-906 filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

1.5 TEST METHODOLOGY

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (2003). Radiated testing was performed at an antenna to EUT distance 3 meters.

1.6 TEST FACILITY

All measurement facilities used to collect the measurement data are located at

World Standardization Certification&TestingCO.,LTD

Building A, Baoshi Road, Baoshi Science & Technology Park, Bao'an District, Shenzhen, Guangdong,

China.
The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2003.
FCC register No.: 131628

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with preselectors and quasi-peak detectors are used to perform radiated measurements

1.7 SPECIAL ACCESSORIES

Not available for this EUT intended for grant.

1.8 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

1.9 EXAMPLE OF A HOPPING SEQUENCY IN DATA MODE

Example of a 79 hopping sequence in data mode:
40,21,44,23,42,53,46,55,48,33,52,35,50,65,54,67
56,37,60,39,58,69,62,71,64,25,68,27,66,57,70,59
72,29,76,31,74,61,78,63,01,41,05,43,03,73,07,75
09,45,13,47,11,77,15,00,64,49,66,53,68,02,70,06
01,51,03,55,05,04

1.10 EQUALLY AVERAGE USE OF FREQUENCIES AND BEHAVIOUR

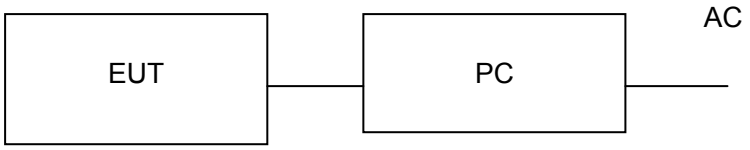
The generation of the hopping sequence in connection mode depends essentially on two input values:
1 LAP/UAP of the master of the connection
2 Internal master clock
The LAP(lower address part) are the 24 LSB's of the 48 BD_ADDRESS.
The BD_ADDRESS is an unambiguous number of every Bluetooth unit. The UAP (upper address part) are the 24MSB's of the 48BD_ADDRESS The internal clock of a Bluetooth unit is derived from a free running clock which is never adjusted and Is never turned off. For synchronisation with other units only offset are used. It has no relation to the tim Of the day.Its resolution is at least half the RX/TX slot length of 312.5us.The clock has a cycle of about
One day(23h30).In most case it is implemented as 28 bit counter. For the deriving of the hopping sequence the entire.LAP(24 bits),4LSB's(4bits)(Input 1) and the 27MSB's of the clock(Input 2) are used. With this input values different mathematical procedures (permutations, additions, XOR-operations)are performed to generate the Sequence. This will be done at the beginning of every new transmission.
Regarding short transmissions the Bluetooth system has the following behaviour:
The first connection between the two devices is established, a hopping sequence was generated. For Transmitting the wanted data the complete hopping sequence was not used. The connection ended.
The second connection will be established. A new hopping sequence is generated. Due to the fact the Bluetooth clock has a different value, because the period between the two transmission is longer(and it Cannot be shorter)than the minimum resolution of the clock(312.5us).The hopping sequence will always Differ from the first one.

2. SYSTEM TEST CONFIGURATION

2.1 CONFIGURATION OF TESTED SYSTEM

Radiated Emission:

Conduction Emission:



2.2 EQUIPMENT USED IN TESTED SYSTEM

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID
1	PS3 blueteeth wireless dual shock 6-axis	SENZE	SZ-906	AWFSZ-906
2	PC	IBM	2366	--

2.3 LIST OF TEST EQUIPMENTS

Description	Manufacturer	Model No.	Calibration Date	Calibration Due.
Test Receiver	ROHDE&SCHWARZ	ESCS30	05/29/2011	05/29/2012
Wideband Ant	Sunol Sciences Corp.	JB3	05/29/2011	05/29/2012
H&T Chamber	EXPERY	TN-400	05/29/2011	05/29/2012
Antenna	R&S	VULB9163	05/29/2011	05/29/2012
Regulated DC Power Supply	LONGWEI	50V30A	05/29/2011	05/29/2012
Universal Radio Communication Tester	R&S	CMU200	05/29/2011	05/29/2012
Horn Antenna	ETS	3117	05/29/2011	05/29/2012
Loop Antenna	R&S	HM525	05/29/2011	05/29/2012
Spectrum Analyzer	Agilent	E4407B	05/29/2011	05/29/2012
LISN	Rohde & Schwarz	ESH2-Z5	05/29/2011	05/29/2012
LISN	Rohde & Schwarz	ESH2-Z5	05/29/2011	05/29/2012
50Ω Coaxial Switch	Anritsu	MP59B	05/29/2011	05/29/2012

3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.207	Conduction Emission	Compliant
§15.209	Radiated Emission	Compliant
§15.247	Maximum Output Power	Compliant
§15.247	20 dB Bandwidth	Compliant
§15.247	Band Edges	Compliant
§15.247	Spurious Emission	Compliant
§15.247	Frequency Separation	Compliant
§15.247	Number of Hopping Frequency	Compliant
§15.247	Time of Occupancy	Compliant
§15.203	Antenna Requirement	Compliant

4. DESCRIPTION OF TEST MODES

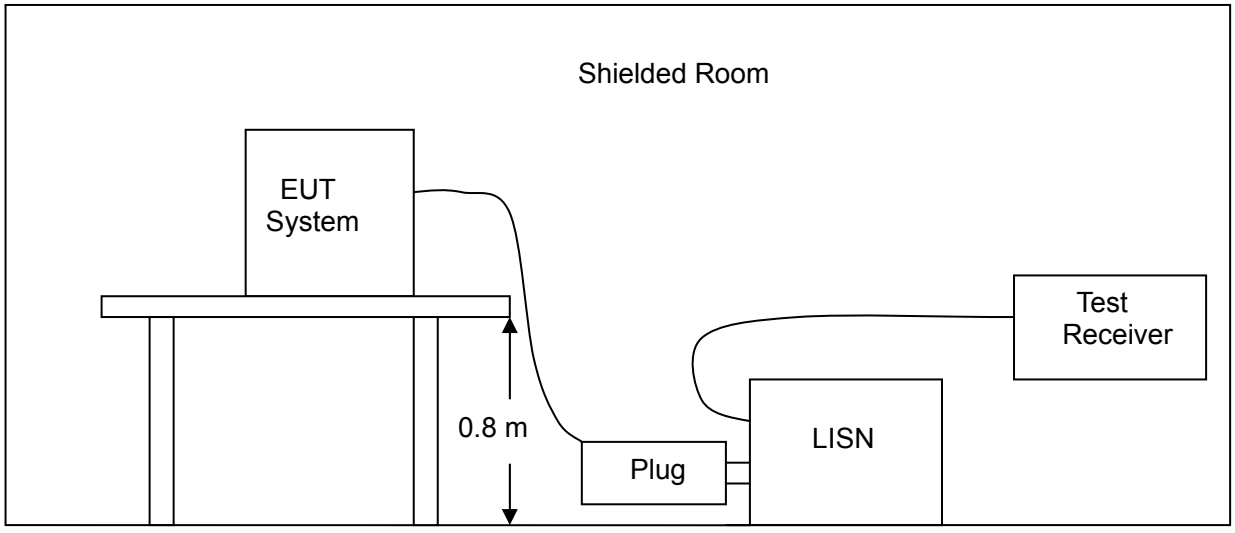
1. The EUT has been set to operate continuously on the lowest, the middle and the highest operation frequency individually.
2. The EUT stays in continuous transmitting mode on the operation frequency being set.
3. This EUT belongs to a portable device, both horizontal and vertical antenna polarities were tested, and performed pretest to three orthogonal(X,Y,Z) axis. The worst case emissions were reported.

5. CONDUCTION EMISSIONS

5.1 MEASUREMENT PROCEDURE:

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system; a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4.
2. Support equipment, if needed, was placed as per ANSI C63.4.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
4. The EUT received DC3.7V through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5. All support equipments received AC power from a second LISN, if any.
6. The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.

5.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



5.3 LIMITS AND MEASUREMENT RESULT:

LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage	
	Q.P.(dBuV)	Average(dBuV)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Note: 1. The lower limit shall apply at the transition frequency.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz

MEASURING INSTRUMENT AND SETTING

The following table is the setting of receiver.

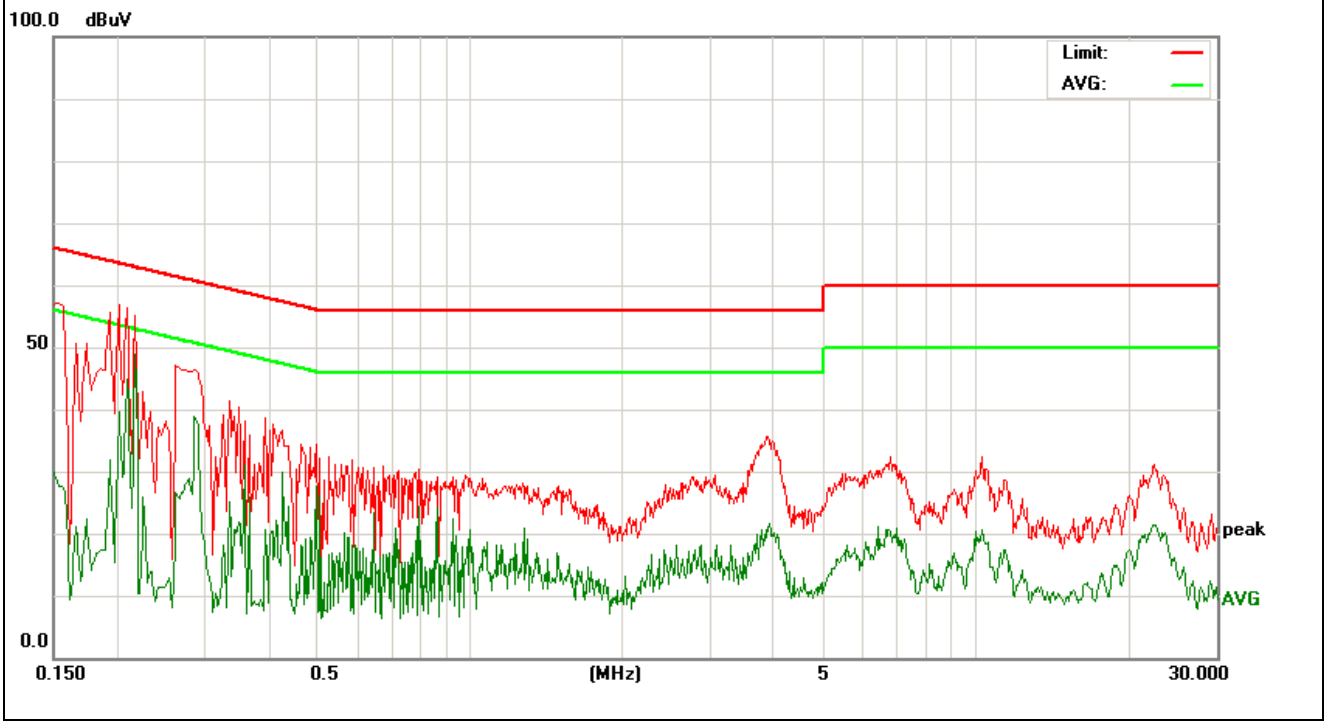
Receiver Parameter	Setting
Attenuation	10dB
Start Frequency	0.15MHz
Stop Frequency	30MHz
6dB bandwidth	9KHz for QP
IF bandwidth	9KHz for AV

TEST RESULT:

LINE CONCUTED EMISSION TEST LINE 1-L

Frequency	Factor	Meter Reading (dBμV)		Emission Level (dBμV)		Limits (dBμV)		Margin (dB)	
(MHz)	(dB)	Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average
0.206	11.09	46.54	40.3	57.63	51.39	63.36	53.36	-5.73	-2
0.2779	10.8	36.03	27.51	46.83	38.31	60.88	50.88	-14.05	-12.57
0.546	10.32	22.96	15.01	33.28	25.33	56	46	-22.72	-20.67
3.778	10.17	19.77	11.28	29.94	21.45	56	46	-26.06	-24.55
10.2459	10.29	21.6	12.61	31.89	22.9	60	50	-28.11	-27.1
22.578	10.52	20.22	11.77	30.74	22.29	60	50	-29.26	-27.71

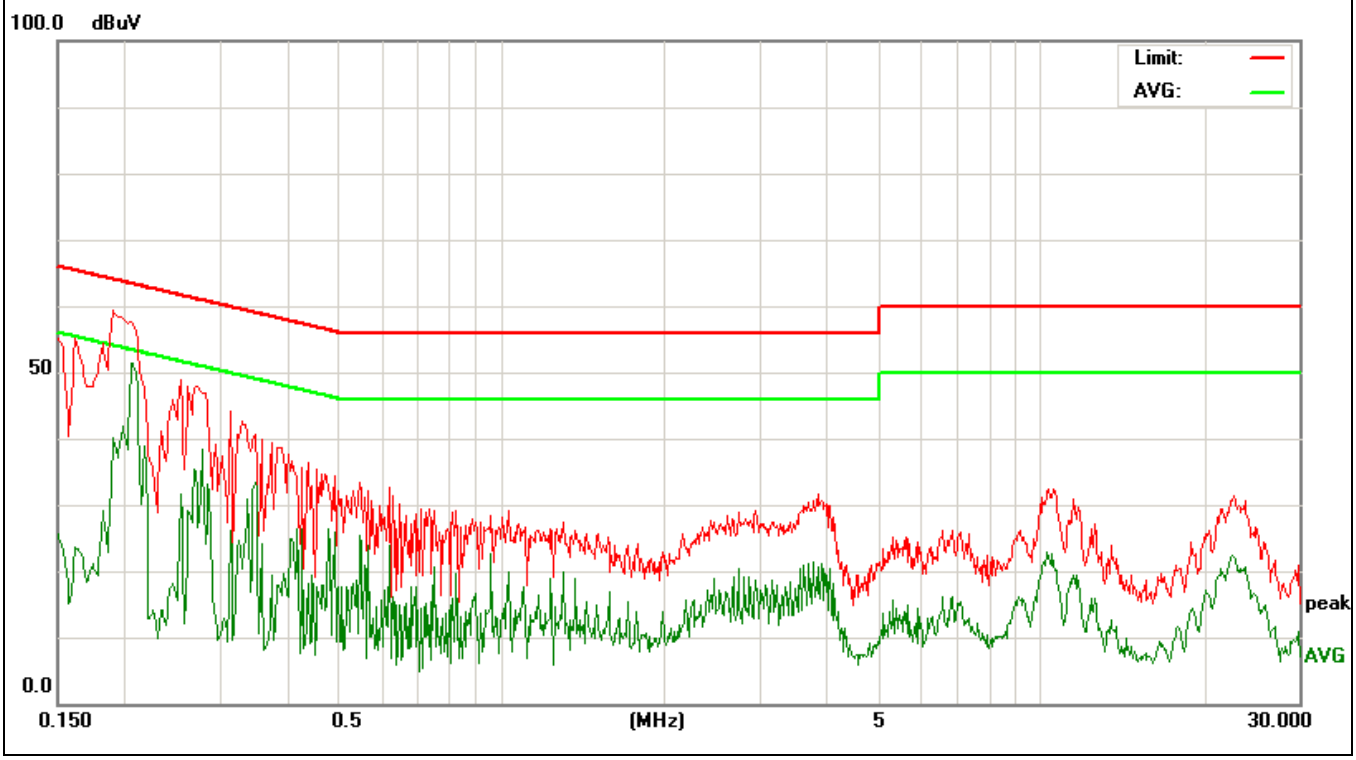
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



LINE CONCUTED EMISSION TEST LINE 1-N

Frequency	Factor	Meter Reading (dBμV)		Emission Level (dBμV)		Limits (dBμV)		Margin (dB)	
(MHz)	(dB)	Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average
0.206	11.09	46.54	38	57.63	49	63.36	53.36	-5.73	-4.36
0.2779	10.8	36.03	28.01	46.83	38.78	60.88	50.88	-14.05	-12.1
0.546	10.32	22.96	17.15	33.28	27.5	56	46	-22.72	-18.5
3.778	10.17	19.77	11.52	29.94	21.69	56	46	-26.06	-24.31
10.2459	10.29	21.6	10.27	31.89	20.56	60	50	-28.11	-29.44
22.578	10.52	20.22	10.94	30.74	21.46	60	50	-29.26	-28.54

Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



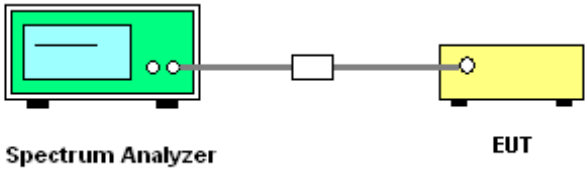
6. MAXIMUM OUTPUT POWER

6.1 MEASUREMENT PROCEDURE:

CONDUCTED METHOD
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
4. Set Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel
RBW > the 20 dB bandwidth of the emission being measured
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold

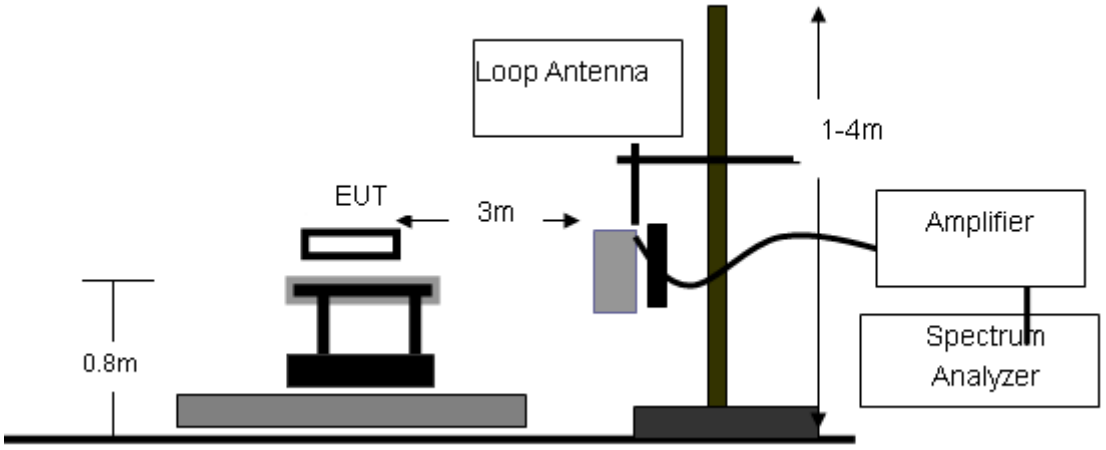
6.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

CONDUCTED METHOD

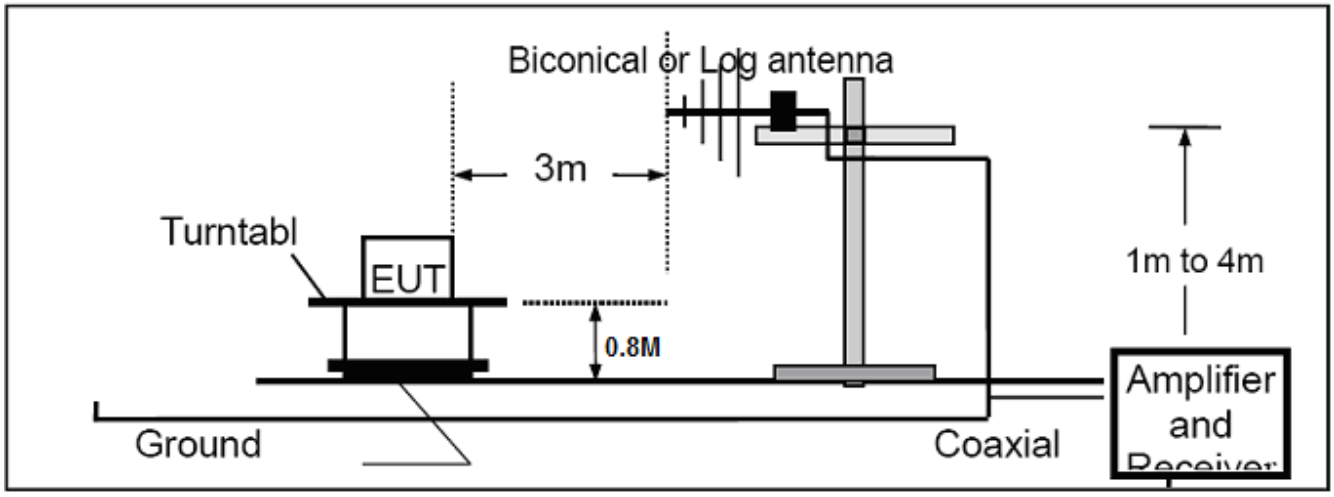


RADIATED EMISSION TEST SETUP

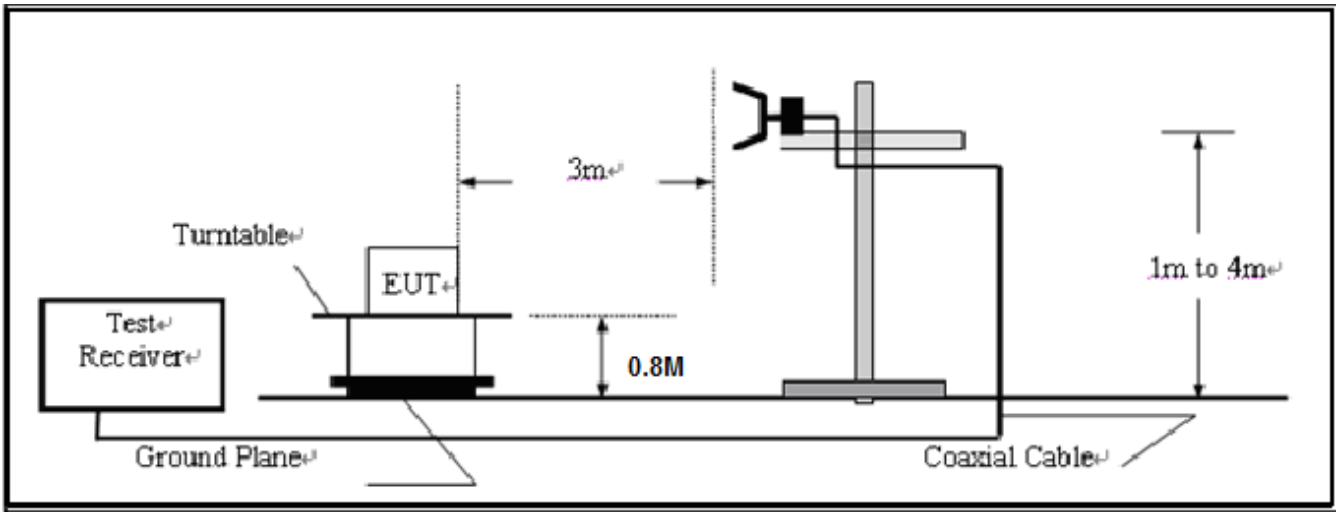
RADIATED MISSION TEST SETUP BELOW 30MHz



RADIATED MISSION TEST SETUP 30MHz-1000MHz



RADIATED MISSION TEST SETUP ABOVE 1000MHz

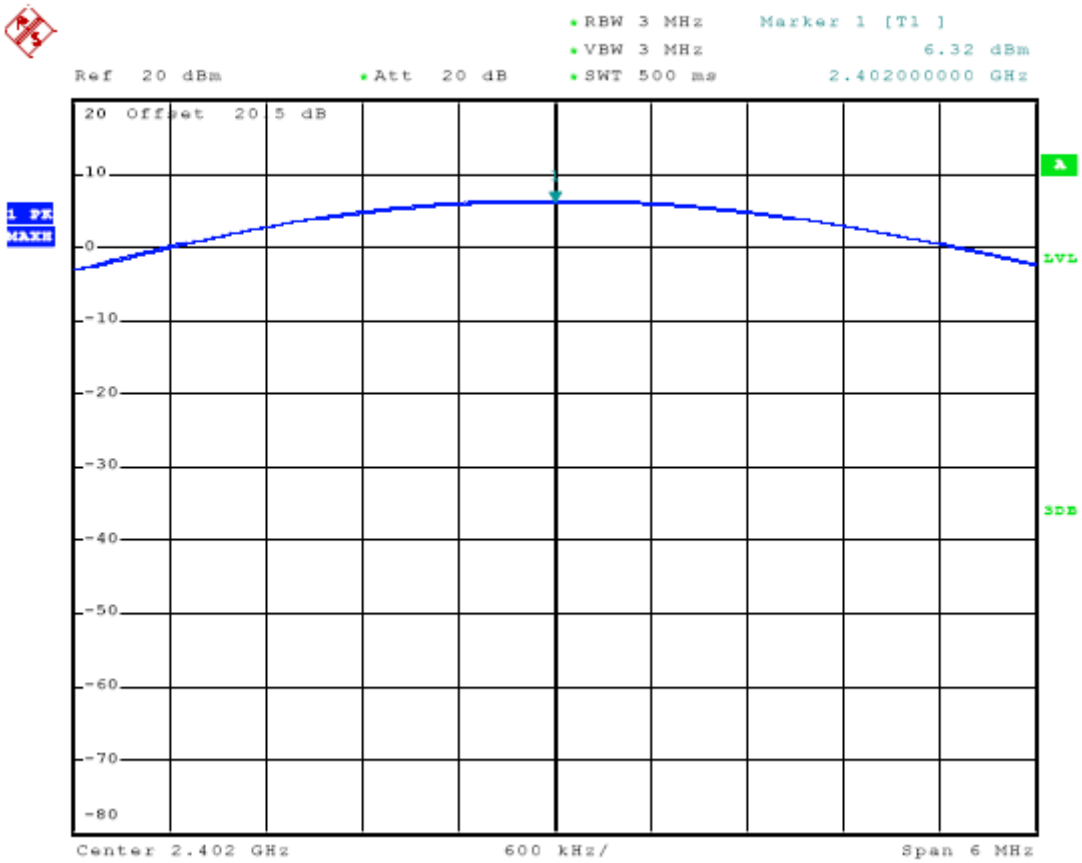


6.3 LIMITS AND MEASUREMENT RESULT:

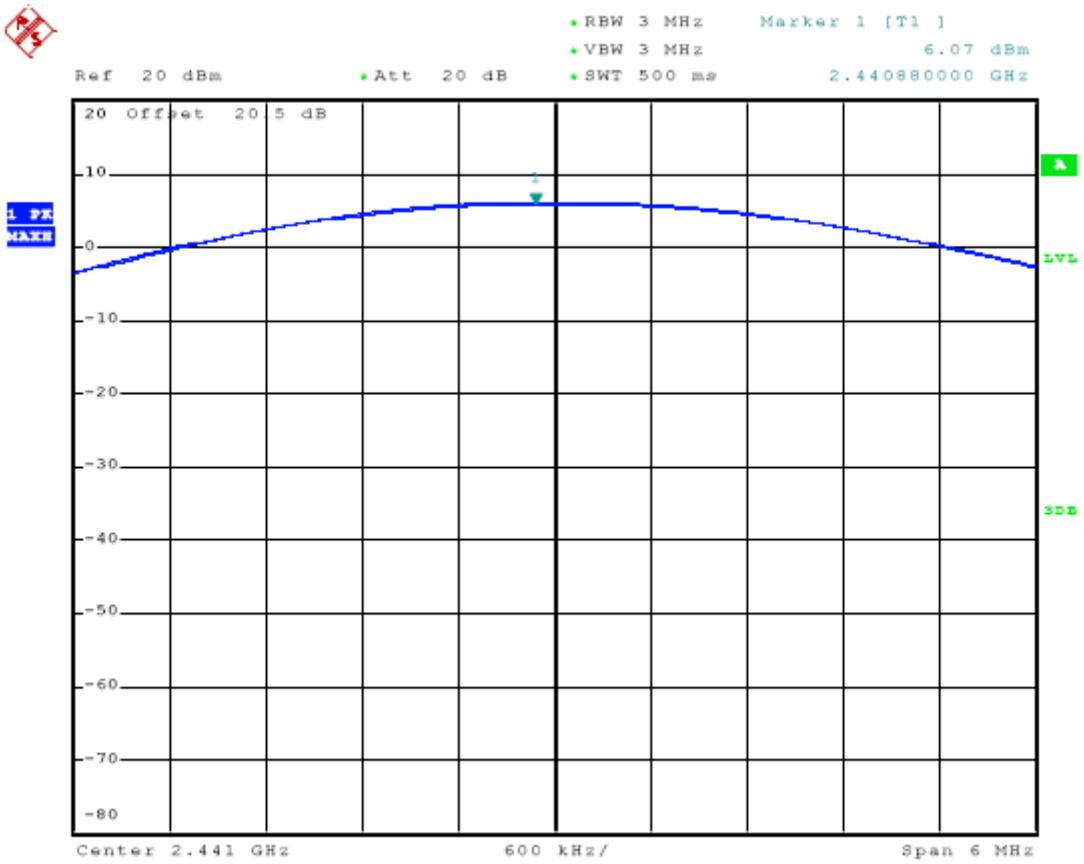
Operation Mode:	RF MODE（CONDUCTED）	Test Date:	Feb.09, 2012
Temperature:	25°C	Tested by:	Jones Song
Humidity:	55 % RH		

Channel	Frequency (MHZ)	GFSK 1Mbps	Limit (dBm)	Result
0	2402	**6.32dBm**	20.97	Pass
39	2441	6.07dBm	20.97	Pass
78	2480	6.19dbm	20.97	Pass

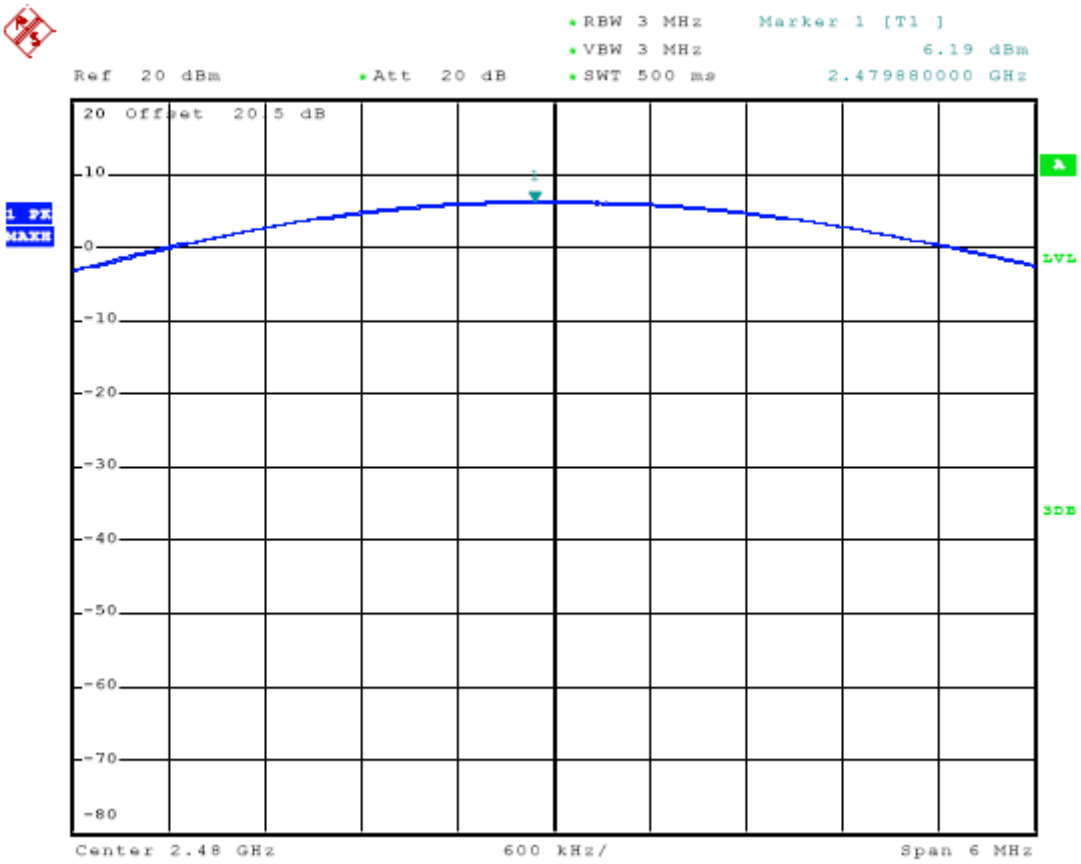
CH0



CH39


RBW 3 MHz
VBW 3 MHz
SWT 500 ms
Marker 1 [T1]
6.07 dBm
2.440880000 GHz
Ref 20 dBm
Att 20 dB
Offset 20.5 dB
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1 PK
MAXH
LVL
SDB
Center 2.441 GHz
600 kHz/
Span 6 MHz

CH78

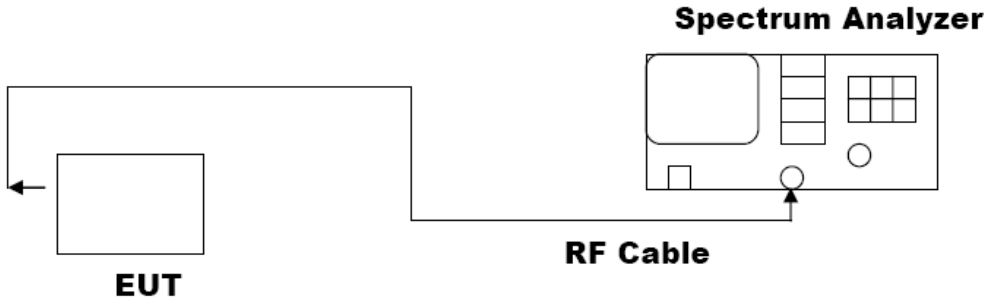

RBW 3 MHz
VBW 3 MHz
SWT 500 ms
Marker 1 [T1]
6.19 dBm
2.479880000 GHz
Ref 20 dBm
Att 20 dB
Offset 20.5 dB
10
0
-10
-20
-30
-40
-50
-60
-70
-80
LVL
3DB
Center 2.48 GHz
600 kHz/
Span 6 MHz

7. 20 DB BANDWIDTH

7.1 MEASUREMENT PROCEDURE

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
4. Set Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel
   RBW ≥ 1% of the 20 dB bandwidth
   VBW ≥ RBW
   Sweep = auto
   Detector function = peak
   Trace = max hold

7.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

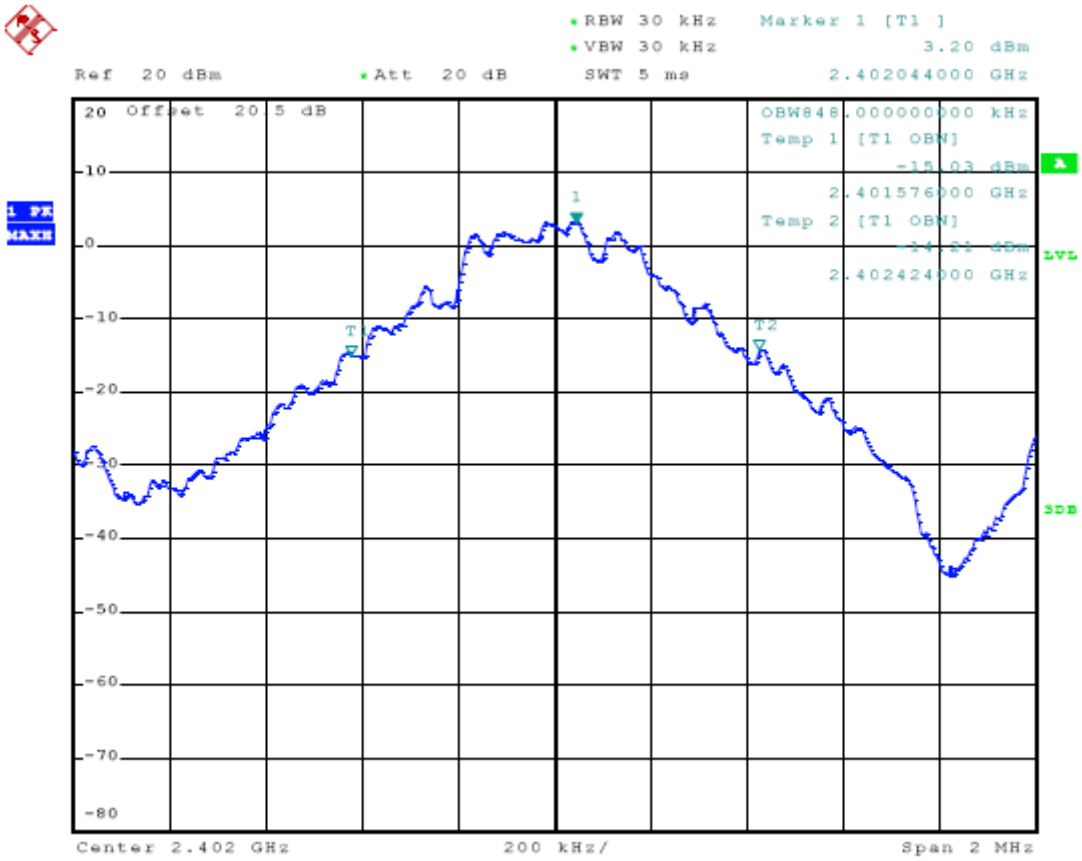


7.3 LIMITS AND MEASUREMENT RESULTS:

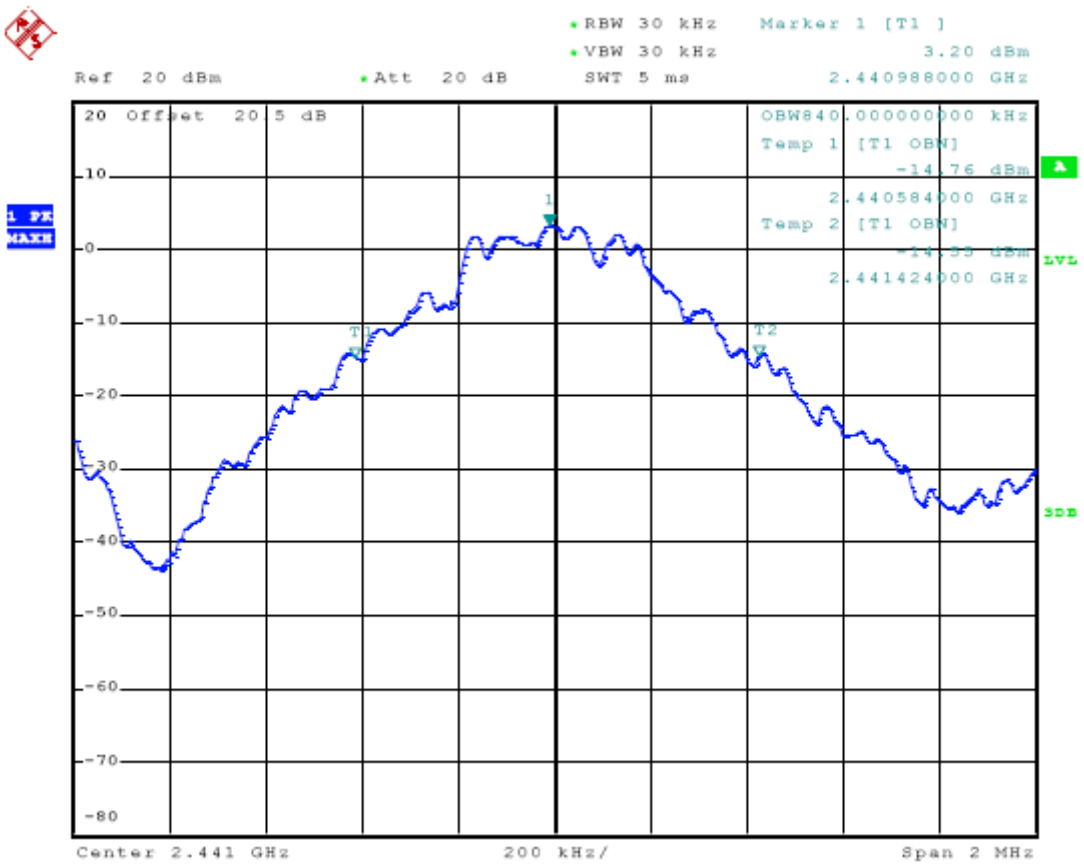
Operation Mode:	RF MODE	Test Date:	Feb.09, 2012
Temperature:	25°C	Tested by:	Jones Song
Humidity:	55 % RH		

Channel	Frequency (MHZ)	20 dB BANDWIDTH
0	2402	0.848MHz
39	2441	0.840 MHz
78	2480	0.844 MHz

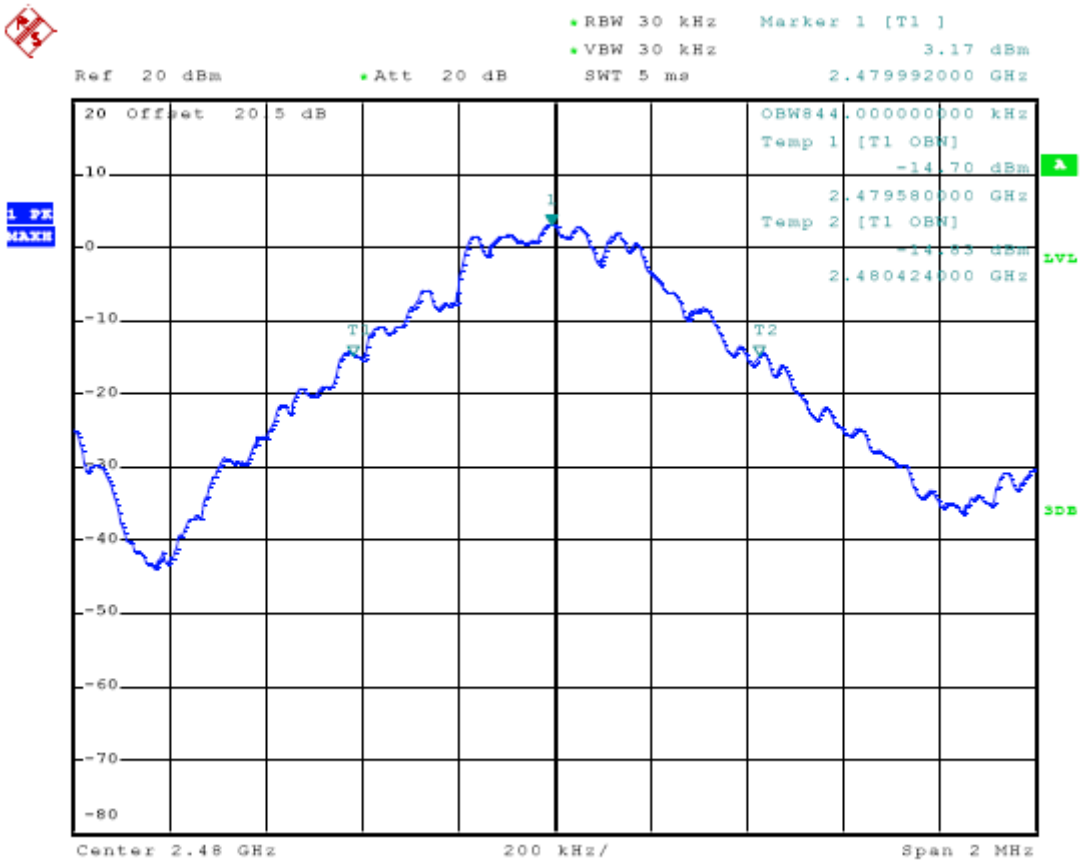
TEST PLOT OF BANDWIDTH FOR BOTTOM CHANNEL



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



TEST PLOT OF BANDWIDTH FOR TOP CHANNEL

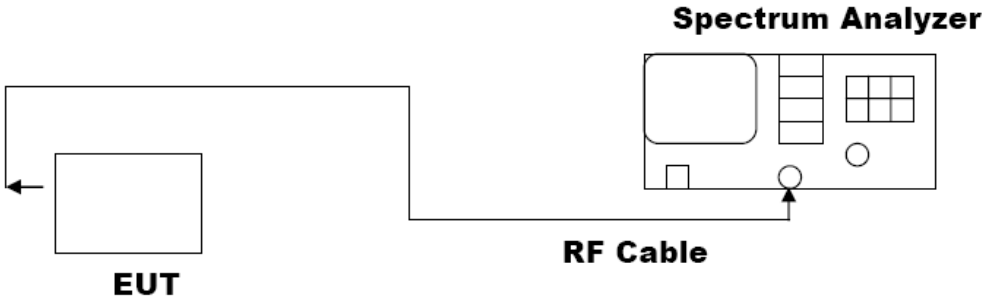


8. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY (N/A)

8.1 MEASUREMENT PROCEDURE:

(1). The EUT was placed on a turn table which is 0.8m above ground plane.
(2). Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
(3), Set the EUT Work on the top, the middle and the bottom operation frequency individually.
(4). Set SPA Centre Frequency = Operation Frequency, RBW= 3 KHz,
VBW= 10 KHz., Sweep time= Auto
(5). Set SPA Trace 1 Max hold, then View.

8.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



8.3 LIMITS AND MEASUREMENT RESULT:

N/A

9. OUT OF BAND EMISSION

9.1 MEASUREMENT PROCEDURE:

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
4. Set SPA Centre Frequency = Operation Frequency, RBW ≥ 1% of the span
   VBW ≥ RBW
   Sweep = auto
   Detector function = peak
   Trace = max hold

9.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The Same as described in section 6.2

1. Conducted test setup
2. Radiated Emission test Setup

9.3 MEASUREMENT EQUIPMENT USED:

The Same as described in section 2.4

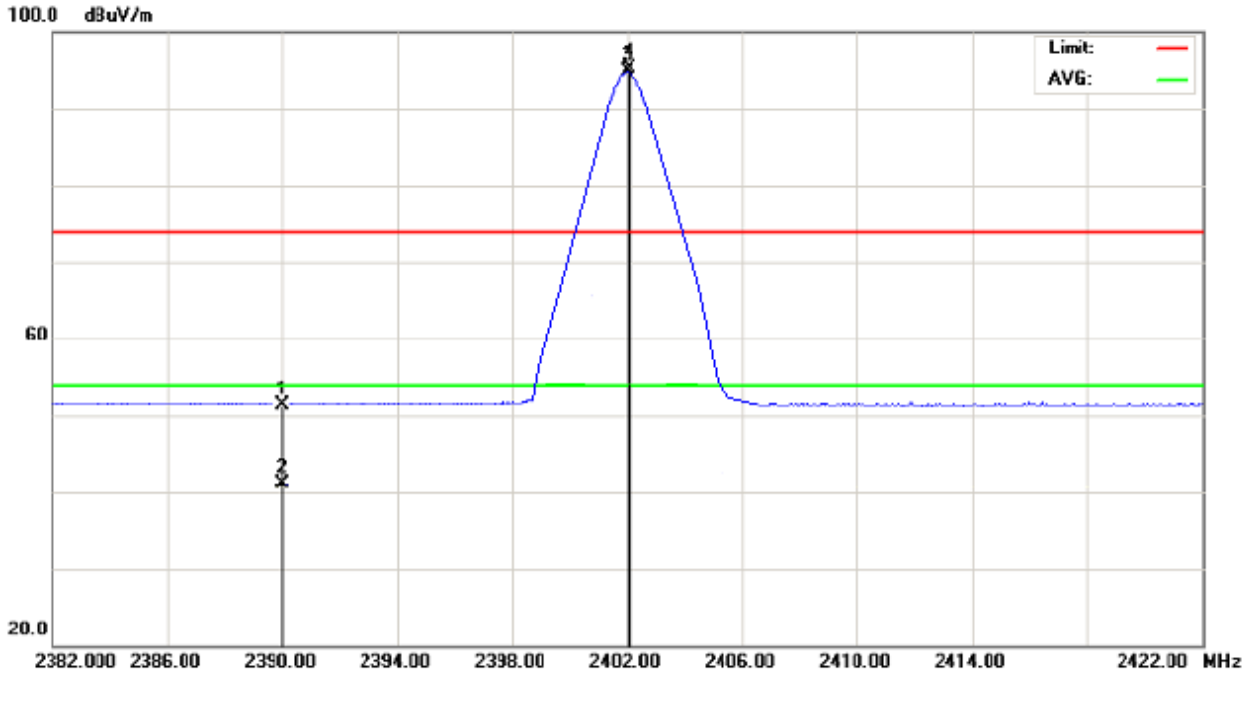
9.4 LIMITS AND MEASUREMENT RESULT:

LIMITS AND MEASUREMENT RESULT		
Applicable Limits	Measurement Result	
	Test Data	Criteria
In any 100 KHz Bandwidth Outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator shall be at least 20 dB below that in 100KHz bandwidth within the band that contains the highest level of the desired power.	At least -20dBc than the limit Specified on the BOTTOM Channel	PASS
In addition, radiation emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in§15.209(a))	At least -20dBc than the limit Specified on the TOP Channel	PASS

Operation Mode:	RF	Test Date:	Feb.09, 2012
Temperature:	25°C	Tested by:	Jones Song
Humidity:	55 % RH	Polarization :	Horizontal
Remark	TX 2402MHz		

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2390.00	47.76	5.0	52.76	74	-21.24	peak
2390.00	37.19	5.0	42.19	54	-11.81	AVG

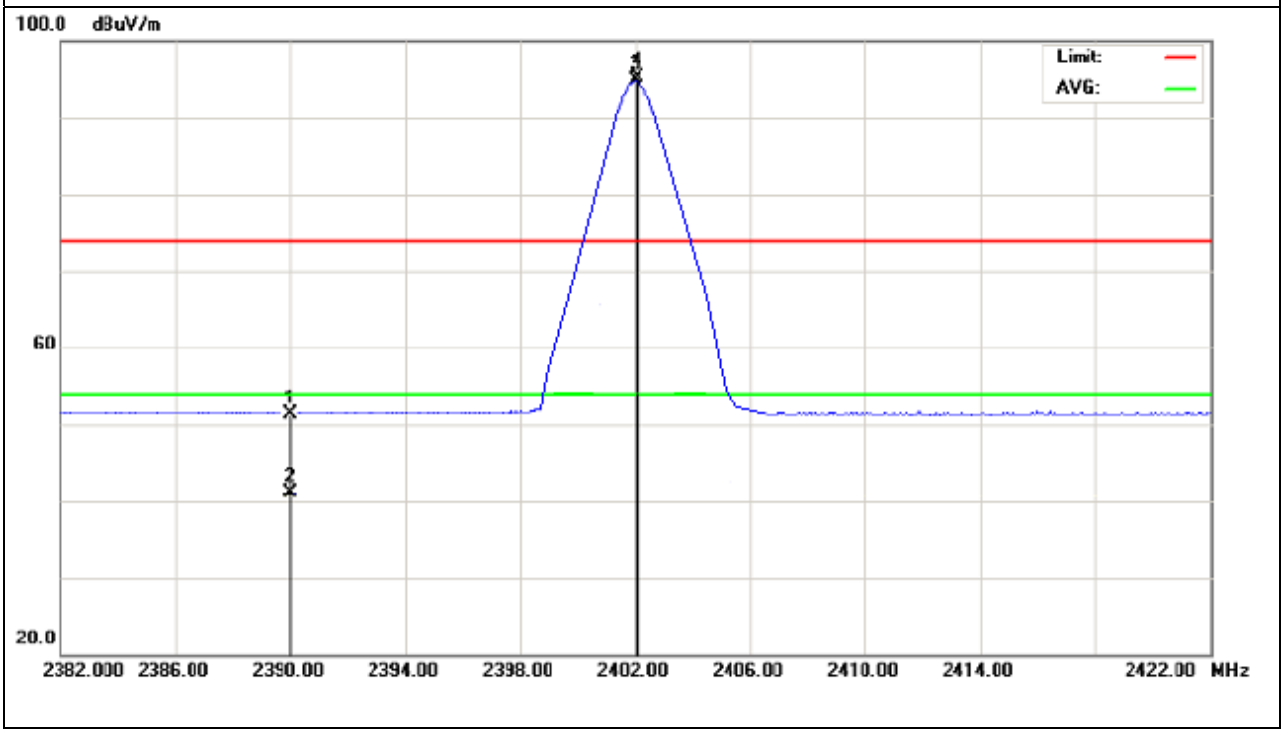
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode:	RF	Test Date:	Feb.09, 2012
Temperature:	25°C	Tested by:	Jones Song
Humidity:	55 % RH	Polarization :	Vertical
Remark	TX 2402MHz		

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2390.00	47.70	5.0	52.70	74	-21.30	peak
2390.00	36.21	5.0	41.21	54	-12.79	AVG

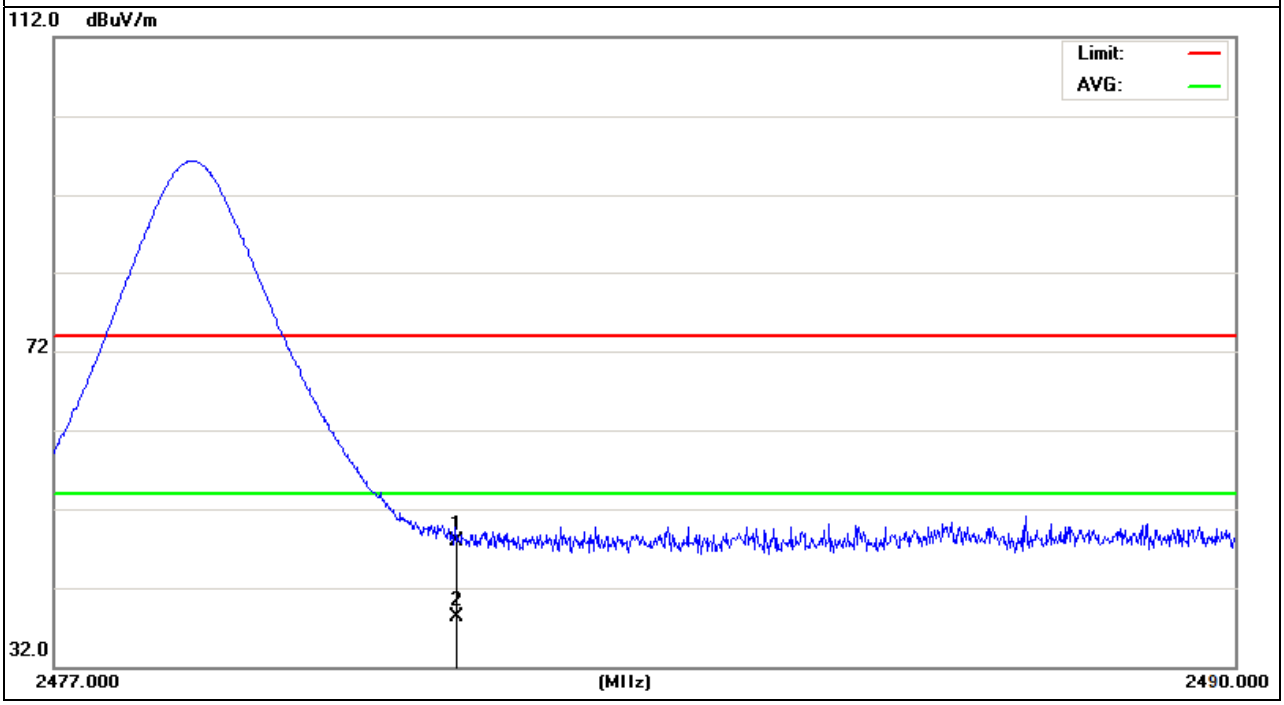
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode:	RF	Test Date:	Feb.09, 2012
Temperature:	25°C	Tested by:	Jones Song
Humidity:	55 % RH	Polarization :	Horizontal
Remark	TX 2480MHz		

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2483.5	42.14	5.5	47.89	74	-26.11	peak
2483.5	32.55	5.5	38.3	54	-15.7	AVG

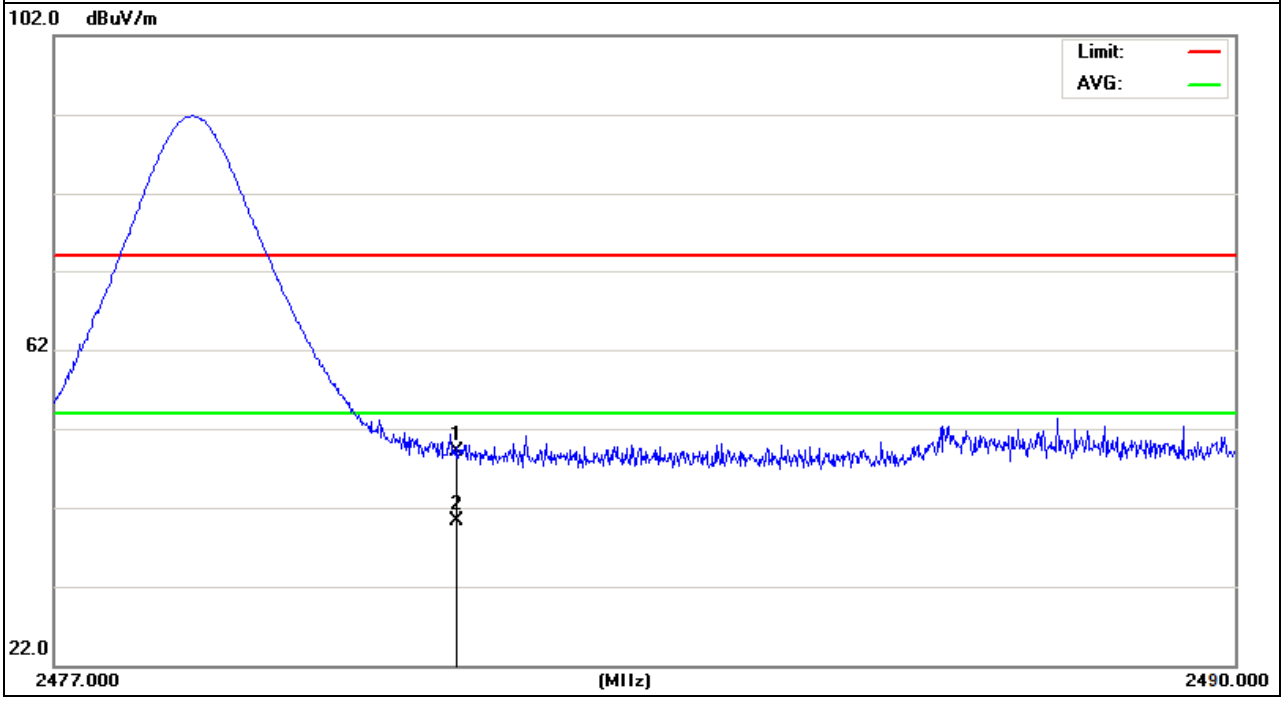
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode:	RF	Test Date:	Feb.09, 2012
Temperature:	25°C	Tested by:	Jones Song
Humidity:	55 % RH	Polarization :	Vertical
Remark	TX 2480MHz		

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2483.5	43.36	5.5	49.11	74	-24.89	peak
2483.5	34.56	5.5	40.31	54	-13.69	AVG

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



RADIATED EMISSSION

MEASUREMENT 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

The following table is the setting of spectrum analyzer and receiver.'

Spectrum Parameter	Setting
Start Frequency	1GHz
Stop Frequency	26.5GHz
RB/VB(Emission in restricted band)	1MHz/1MHz for Peark, 1MHz/10Hz for Average
RB/VB(Emission in non-restricted band)	1MHz/1MHz for Peak

Receiver Parameter	Setting
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

TEST SET-UP

The Same as described in section 6.2

TEST RESULT OF RADIATED EMISSION TEST (9KHz ~30MHz)

Humidity:	55 % RH	Test Date:	Feb.09, 2012
Temperature:	25°C	Tested by:	Jones Song
Test Method	GFSK		

Operation Mode: RF Mode

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

NOTE:

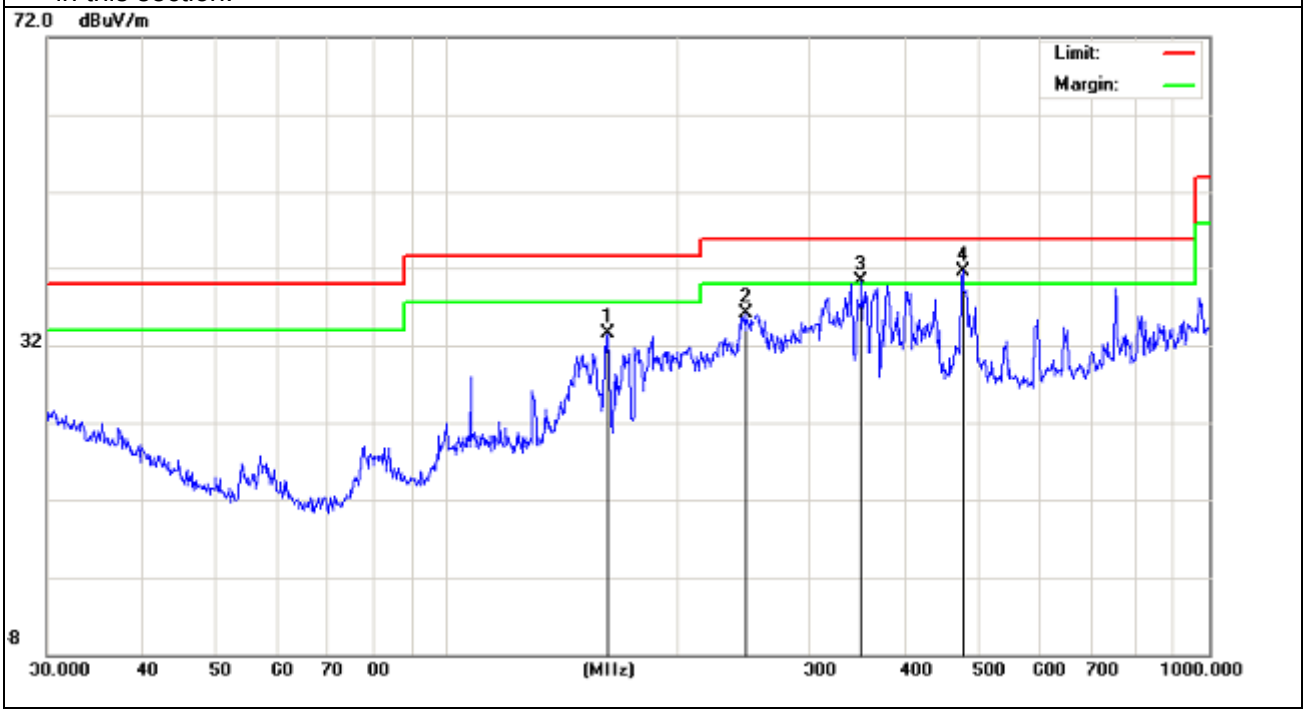
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Distance extrapolation factor =20 log (specific distance/test distance)(dB);
Limit line = specific limits(dBuv) + distance extrapolation factor.

TEST RESULT OF RADIATED EMISSION TEST (30MHZ-1GHZ)

Operation Mode:	RF	Test Date:	Feb.09, 2012
Temperature:	25°C	Tested by:	Jones Song
Humidity:	55 % RH	Polarization :	Horizontal
Remark	TX		

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
162.6106	22.98	10.54	33.52	43.5	-9.98	Quasi-Peak
246.8146	23.53	12.57	36.1	46	-9.9	Quasi-Peak
350.4768	25.02	15.38	40.4	46	-5.6	Quasi-Peak
475.499	22.97	18.63	41.6	46	-4.4	Quasi-Peak

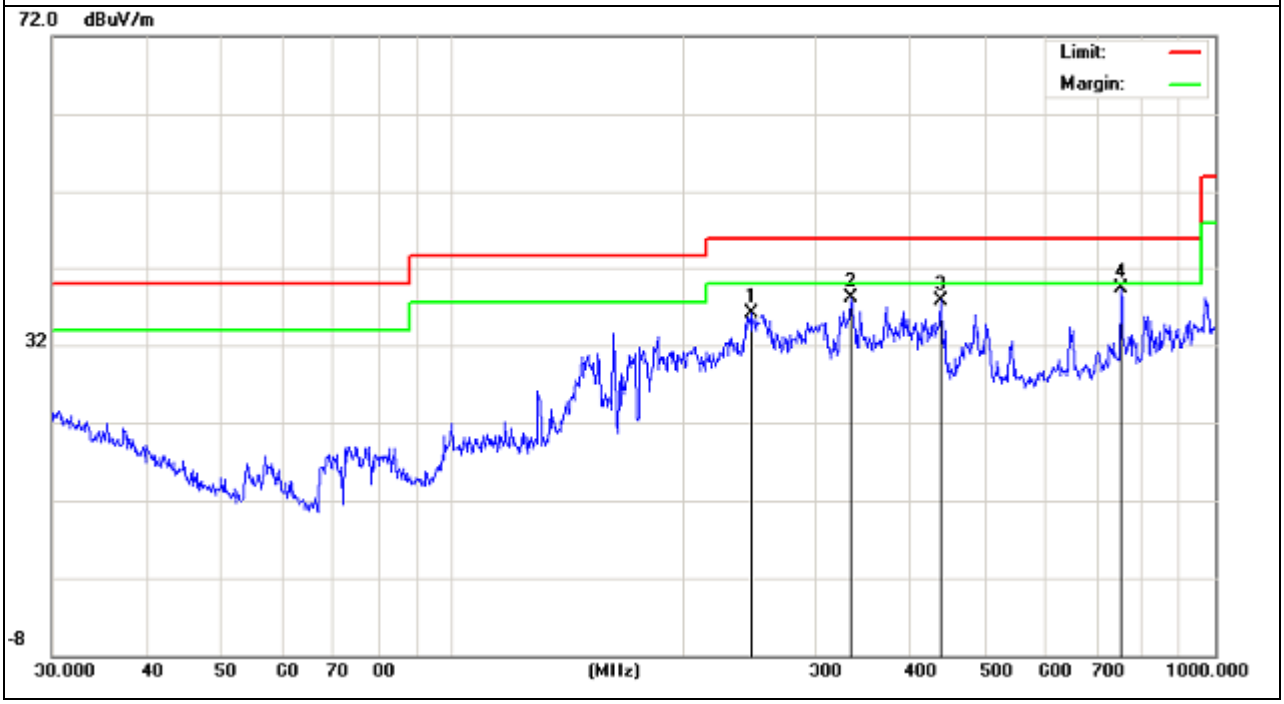
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. For the initial investigation on 2402MHz, 2441MHz, 2480MHz, no significant differences in radiated emissions were observed between these 3 modes. So test data for 2402MHz, 2480MHz was omitted in this section.



Operation Mode:	RF	Test Date:	Feb.09, 2012
Temperature:	25°C	Tested by:	Jones Song
Humidity:	55 % RH	Polarization :	Vertical
Remark	TX		

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
246.8146	23.53	12.57	36.1	46	-9.9	Quasi-Peak
333.6865	23.1	15	38.1	46	-7.9	Quasi-Peak
438.6553	19.94	17.86	37.8	46	-8.2	Quasi-Peak
752.7432	14.92	24.3	39.22	46	-6.78	Quasi-Peak

Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. For the initial investigation on 2402MHz, 2441MHz, 2480MHz, no significant differences in radiated emissions were observed between these 3 modes. So test data for 2402MHz, 2480MHz was omitted in this section.

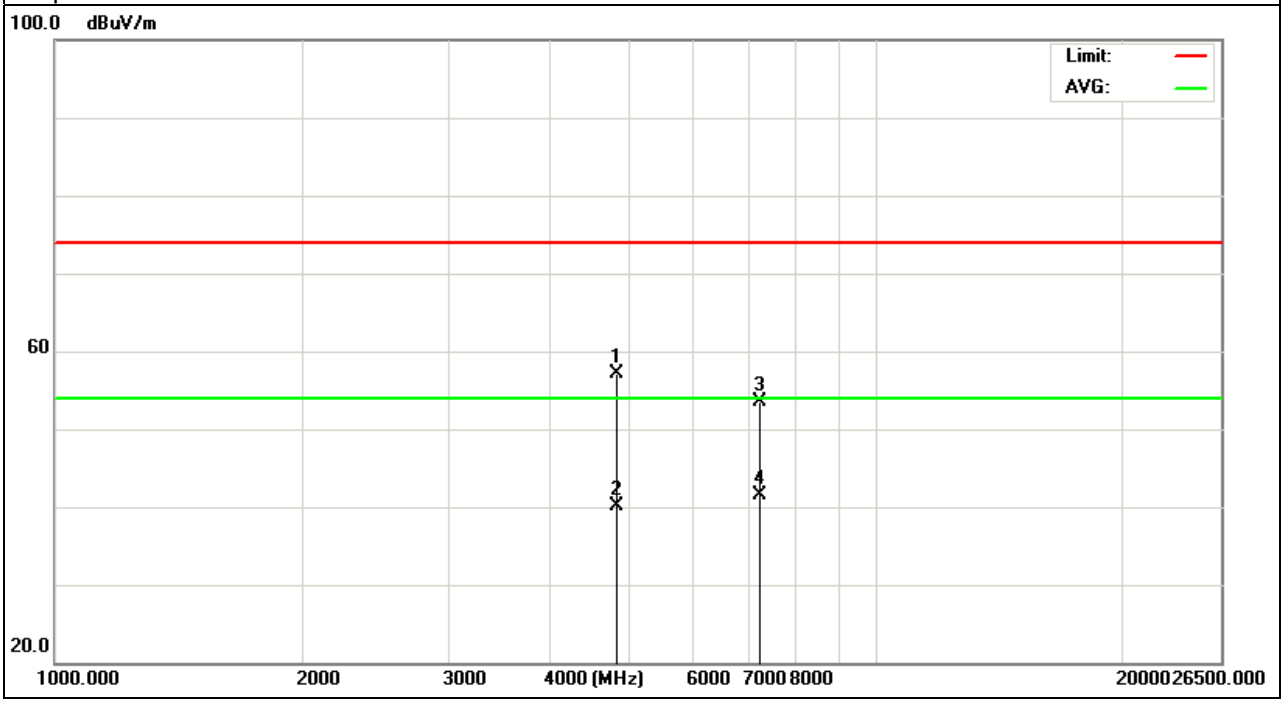


TEST RESULT OF RADIATED EMISSION TEST (ABOVE 1GHZ)

Operation Mode:	RF	Test Date:	Feb.09, 2012
Temperature:	25°C	Tested by:	Jones Song
Humidity:	55 % RH	Polarization :	Horizontal
Remark	TX 2402MHz		

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
**4804	65.31	-8.12	57.19	74	-16.81	peak
4804	48.21	-8.12	40.09	54	-13.91	AVG
7206	61.02	-7.47	53.55	74	-20.45	peak
7206	48.99	-7.47	41.52	54	-12.48	AVG

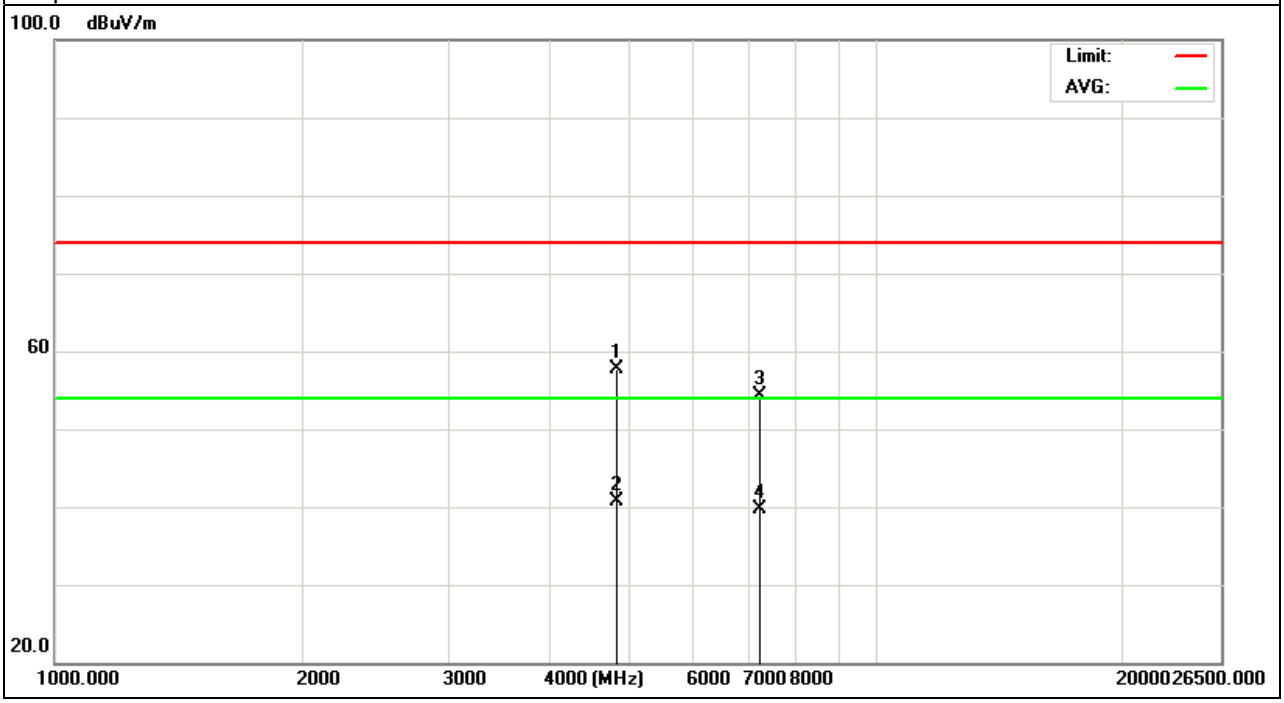
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
**represents the worst data.



Operation Mode:	RF	Test Date:	Feb.09, 2012
Temperature:	25°C	Tested by:	Jones Song
Humidity:	55 % RH	Polarization :	Vertical
Remark	TX 2402MHz		

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
**4804	65.74	-8.12	57.62	74	-16.38	peak
4804	48.89	-8.12	40.77	54	-13.23	AVG
7206	61.79	-7.47	54.32	74	-19.68	peak
7206	47.1	-7.47	39.63	54	-14.37	AVG

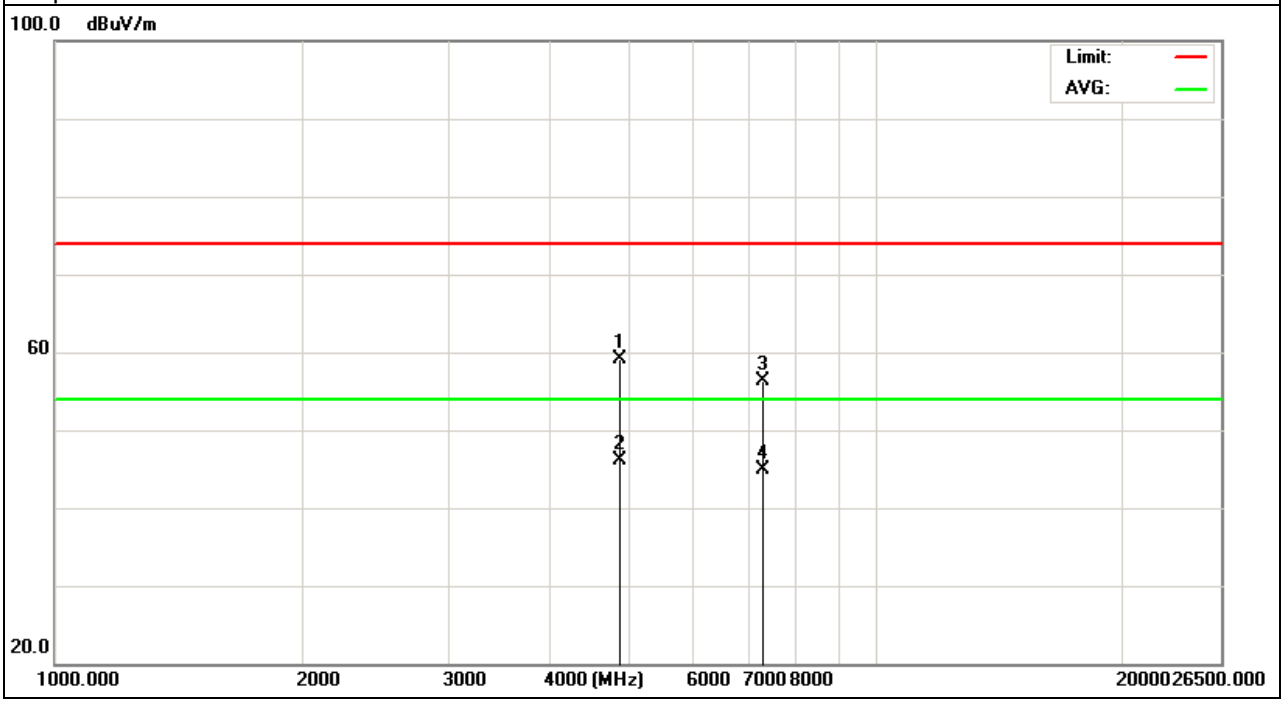
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
**represents the worst data.



Operation Mode:	RF	Test Date:	Feb.09, 2012
Temperature:	25°C	Tested by:	Jones Song
Humidity:	55 % RH	Polarization :	Horizontal
Remark	TX 2441MHz		

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
**4882	67.22	-8.19	59.03	74	-14.97	peak
4882	54.31	-8.19	46.12	54	-7.88	AVG
7323	63.44	-7.21	56.23	74	-17.77	peak
7323	52.11	-7.21	44.9	54	-9.1	AVG

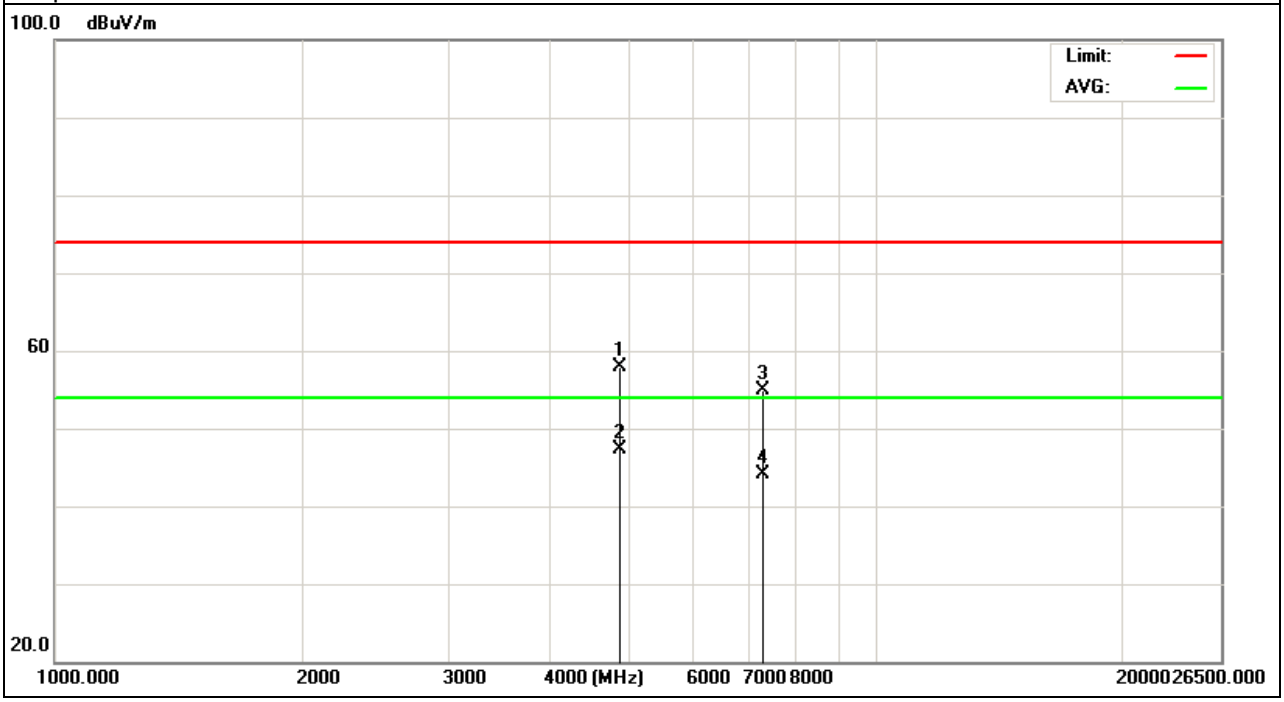
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
**represents the worst data.



Operation Mode:	RF	Test Date:	Feb.09, 2012
Temperature:	25°C	Tested by:	Jones Song
Humidity:	55 % RH	Polarization :	Vertical
Remark	TX 2441MHz		

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
**4882	66.01	-8.19	57.82	74	-16.18	peak
4882	55.51	-8.19	47.32	54	-6.68	AVG
7323	62.12	-7.21	54.91	74	-19.09	peak
7323	51.29	-7.21	44.08	54	-9.92	AVG

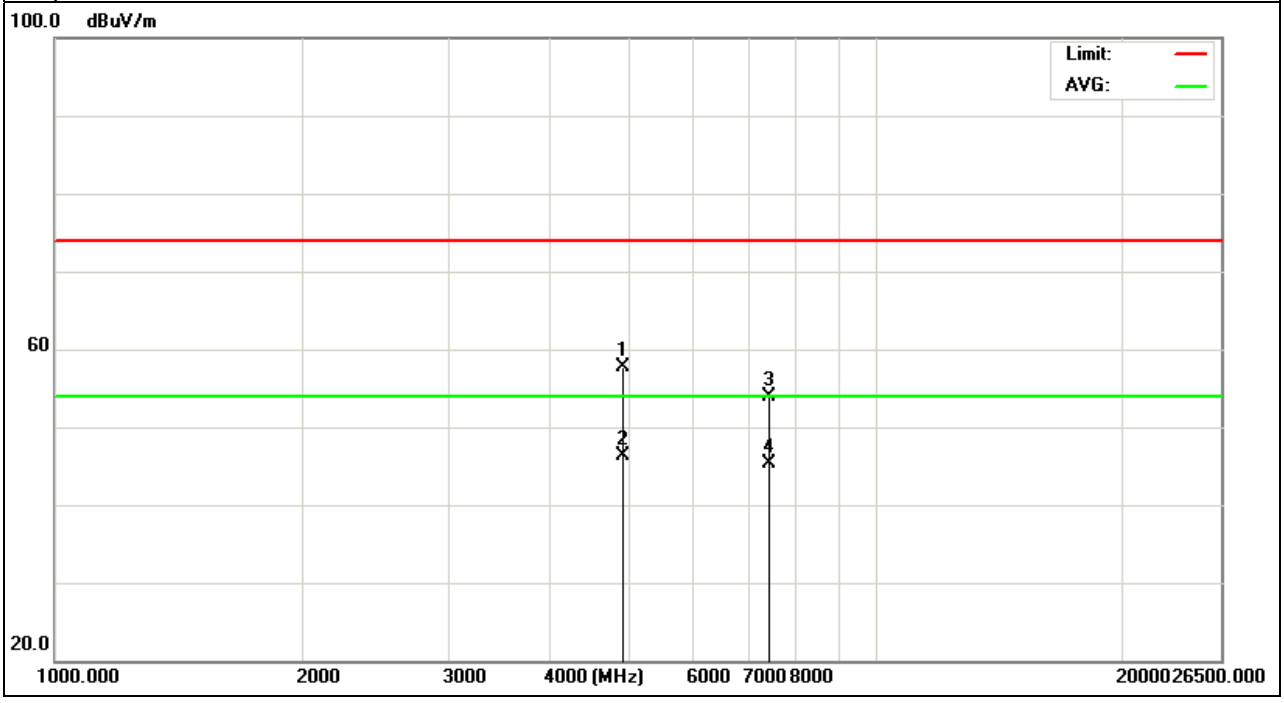
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifie
**represents the worst data.



Operation Mode:	RF	Test Date:	Feb.09, 2012
Temperature:	25°C	Tested by:	Jones Song
Humidity:	55 % RH	Polarization :	Horizontal
Remark	TX 2480MHz		

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
**4960	65.9	-8.22	57.68	74	-16.32	peak
4960	54.48	-8.22	46.26	54	-7.74	AVG
7440	61.39	-7.39	54	74	-20	peak
7440	52.69	-7.39	45.3	54	-8.7	AVG

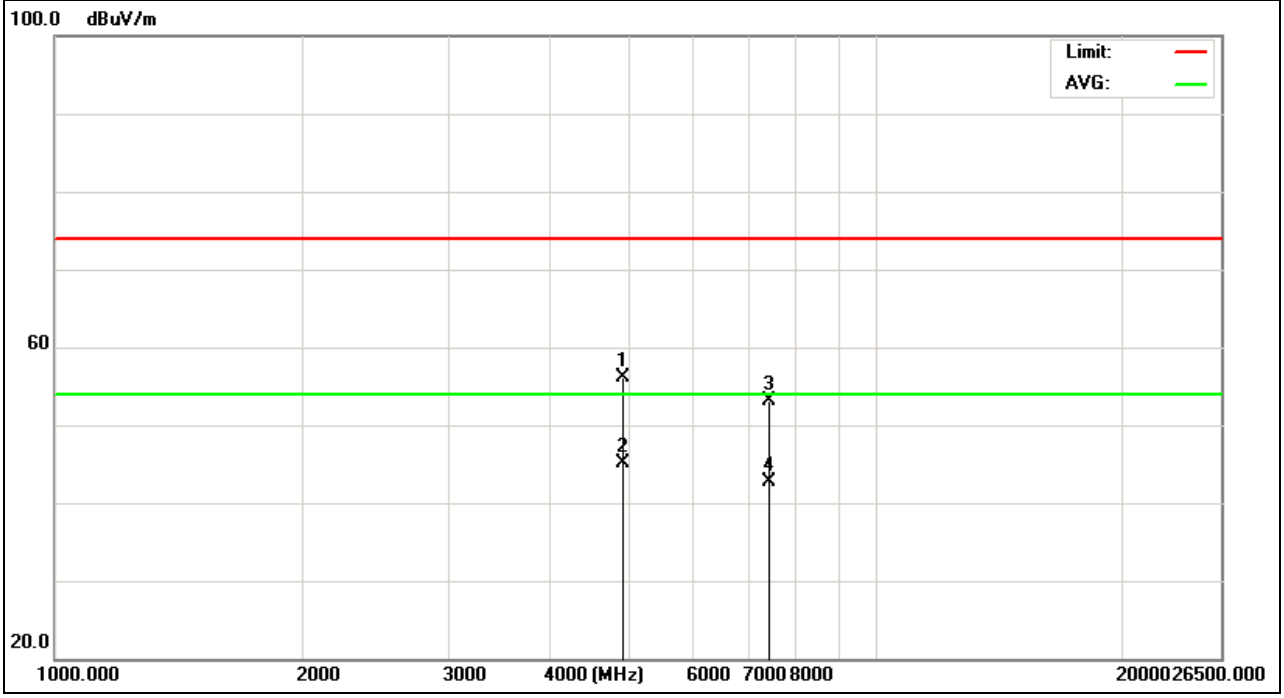
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
**represents the worst data.



Operation Mode:	RF	Test Date:	Feb.09, 2012
Temperature:	25°C	Tested by:	Jones Song
Humidity:	55 % RH	Polarization :	Vertical
Remark	TX 2480MHz		

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
**4960	64.33	-8.22	56.11	74	-17.89	peak
4960	53.31	-8.22	45.09	54	-8.91	AVG
7440	60.51	-7.39	53.12	74	-20.88	peak
7440	50.11	-7.39	42.72	54	-11.28	AVG

Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
**represents the worst data.



10. NUMBER OF HOPPING FREQUENCY

10.1 MEASUREMENT PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum analyzer.
3. Set Span = the frequency band of operation
   RBW ≥ 1% of the span
   VBW ≥ RBW
   Sweep = auto
   Detector function = peak
   Trace = max hold

10.2 TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)

Same as described in section 6.2
1. Conducted Method.

10.3 MEASUREMENT EQUIPMENT USED

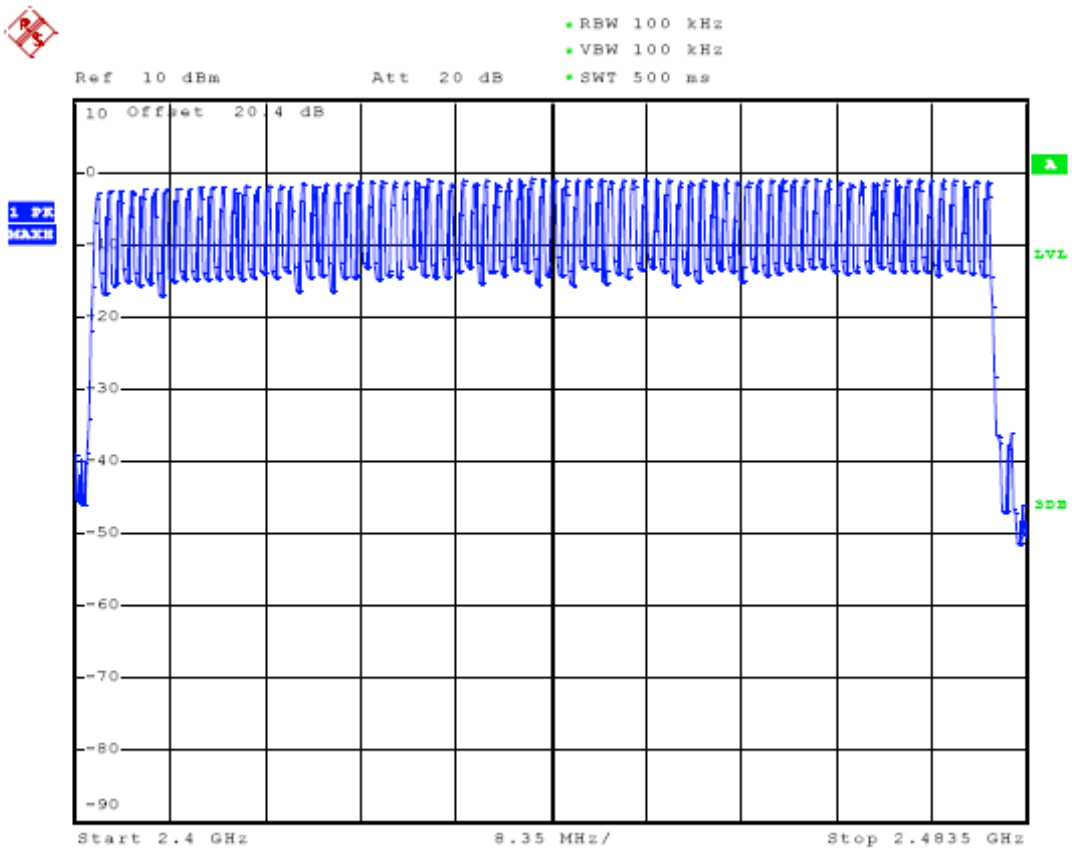
The Same as described in section 6.3

10.4 LIMITS AND MEASUREMENT RESULT:

TOTAL NO. OF HOPPING CHANNEL	LIMIT (NO. OF CH)	MEASUREMENT (NO. OF CH)	RESULT
	>=15	79	PASS

Humidity:	55 % RH	Test Date:	Feb.09, 2012
Temperature:	25°C	Tested by:	Jones Song

NUMBER OF HOPPING CHANNEL PLOT ON CHANNEL 0~78



11. TIME OF OCCUPANCY (DWELL TIME)

11.1 MEASUREMENT PROCEDURE

1. Place the EUT on the table and set it in transmitting mode
2. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum analyzer
3. Set center frequency of spectrum analyzer = Operating frequency
4. Set the spectrum analyzer as RBW, VBW=1MHz, Span = 0 Hz,

11.2 TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)

Same as described in section 6.2
Conducted Method

11.3 MEASUREMENT EQUIPMENT USED

The same as described in section 2.4

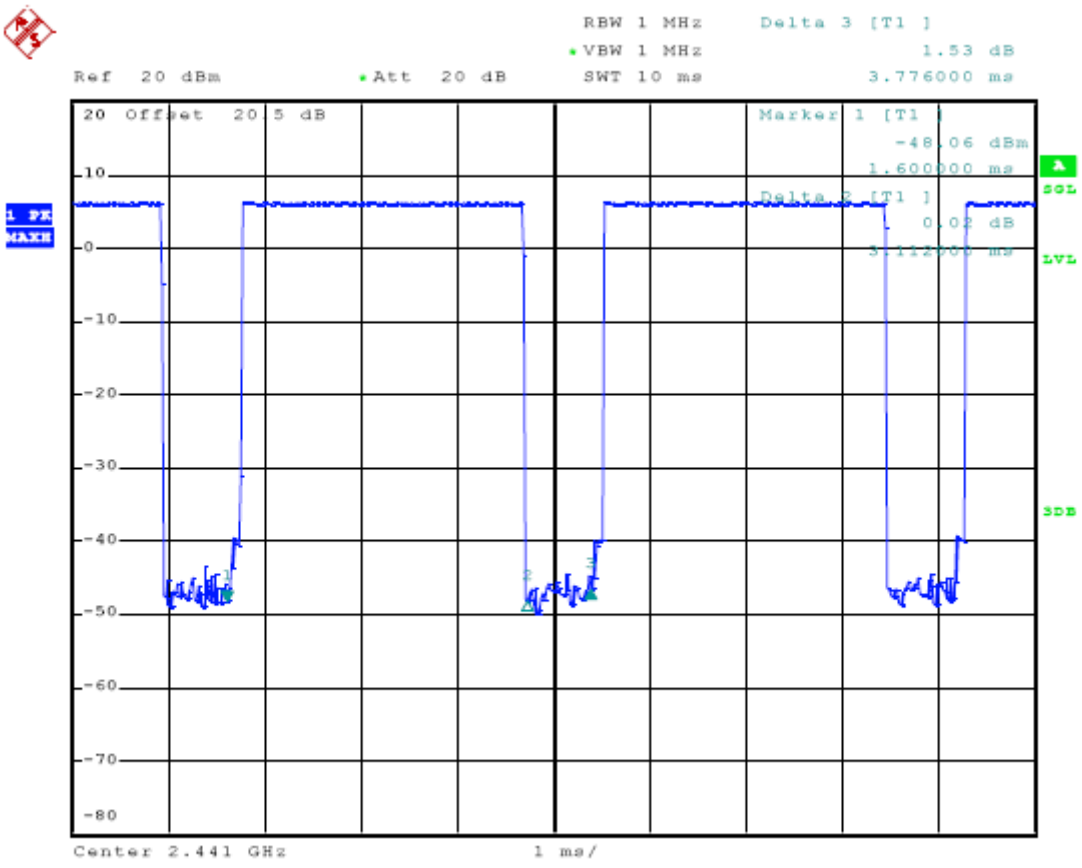
11.4 LIMITS AND MEASUREMENT RESULT

Mode	Spectrum Reading	Test Result	Limit	Pass / Fail
	(uS)	(mS)	(mS)	
DH5	3112	331	400	Pass

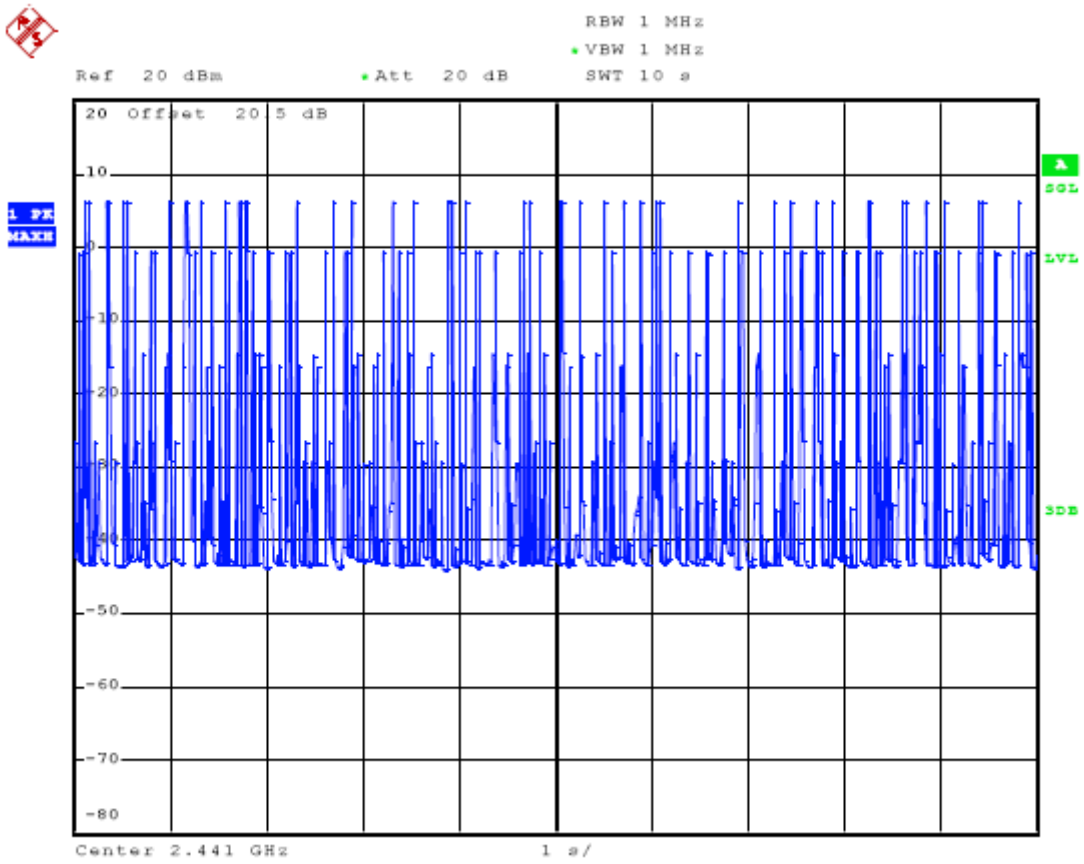
Remark:
A Period Time = 79*0.4=31.6 S
DH1 Time Slot: Reading * (1600/2)*31.6/79
DH3 Time Slot: Reading * (1600/4)*31.6/79
DH5 Time Slot: Reading * (1600/6)*31.6/79
The dwell time is showed the maximum data of all data (DH1, DH3, DH5), DH5 of mode have the maximum dwell time.

Humidity:	55 % RH	Test Date:	Feb.09, 2012
Temperature:	25°C	Tested by:	Jones Song
Configurations	DH5		

DH5 Dwell Time (One Pulse) Plot on Channel 39



DH5 Dwell Time (Count Pulses) Plot on Channel 39



12. FREQUENCY SEPARATION

12.1 MEASUREMENT PROCEDURE

1. Place the EUT on the table and set it in transmitting mode
2. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum analyzer
3. Set Span = wide enough to capture the peaks of two adjacent channels
   Resolution (or IF) Bandwidth (RBW) ≥ 1% of the span
   Video (or Average) Bandwidth (VBW) ≥ RBW
   Sweep = auto
   Detector function = peak
   Trace = max hold

12.2 TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)

Same as described in section 6.2

12.3 MEASUREMENT EQUIPMENT USED

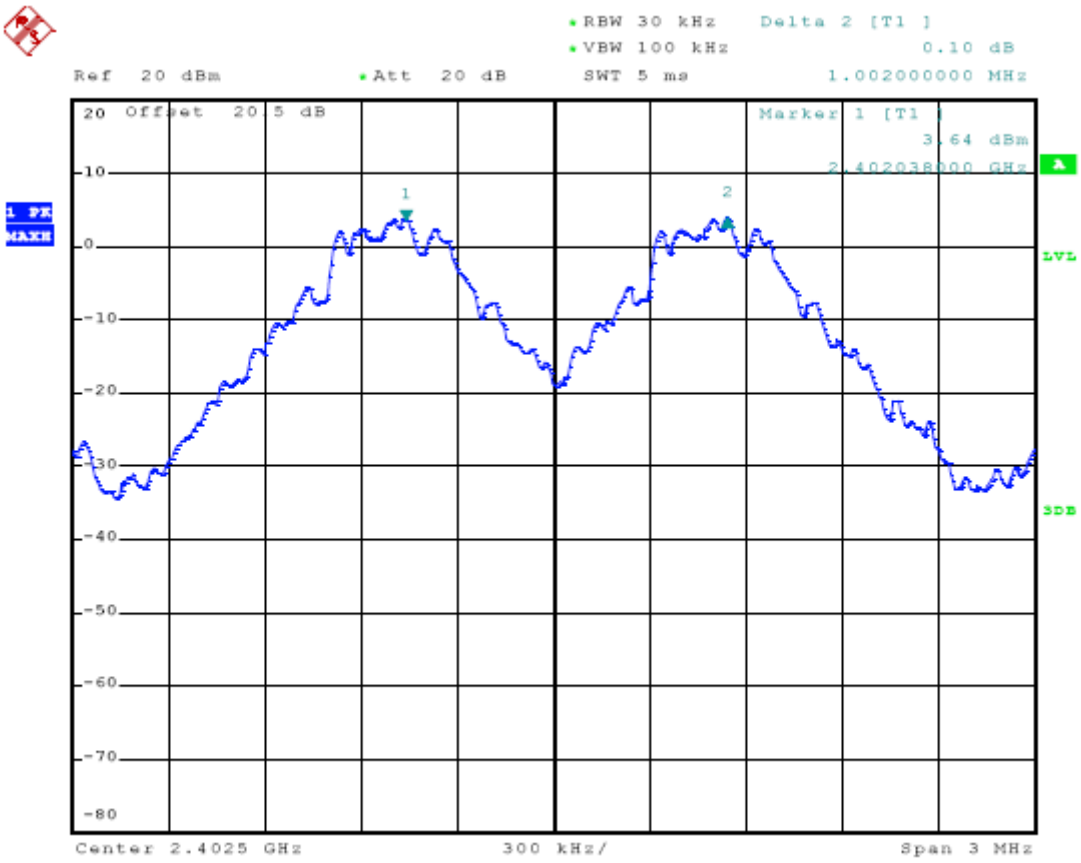
The same as described in section 2.4

12.4 LIMITS AND MEASUREMENT RESULT

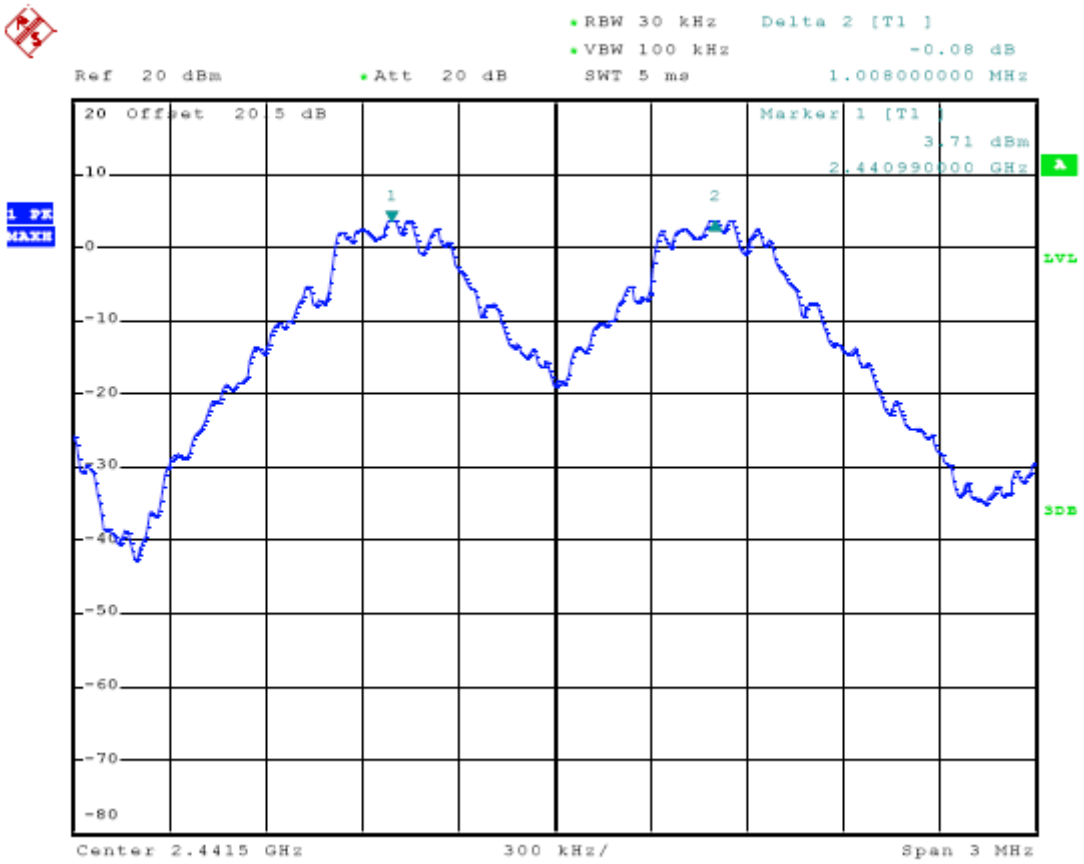
CHANNEL	Channel separation
CH00-CH01	1002KHz
CH39-CH40	1008KHz
CH77-CH78	1002KHz
LIMIT	>=25 KHz or 2/3 20 dB BW
RESULT	Pass

Humidity:	55 % RH	Test Date:	Feb.09, 2012
Temperature:	25°C	Tested by:	Jones Song
Configurations	Channel 0-1, channel39-40, channel78-79		

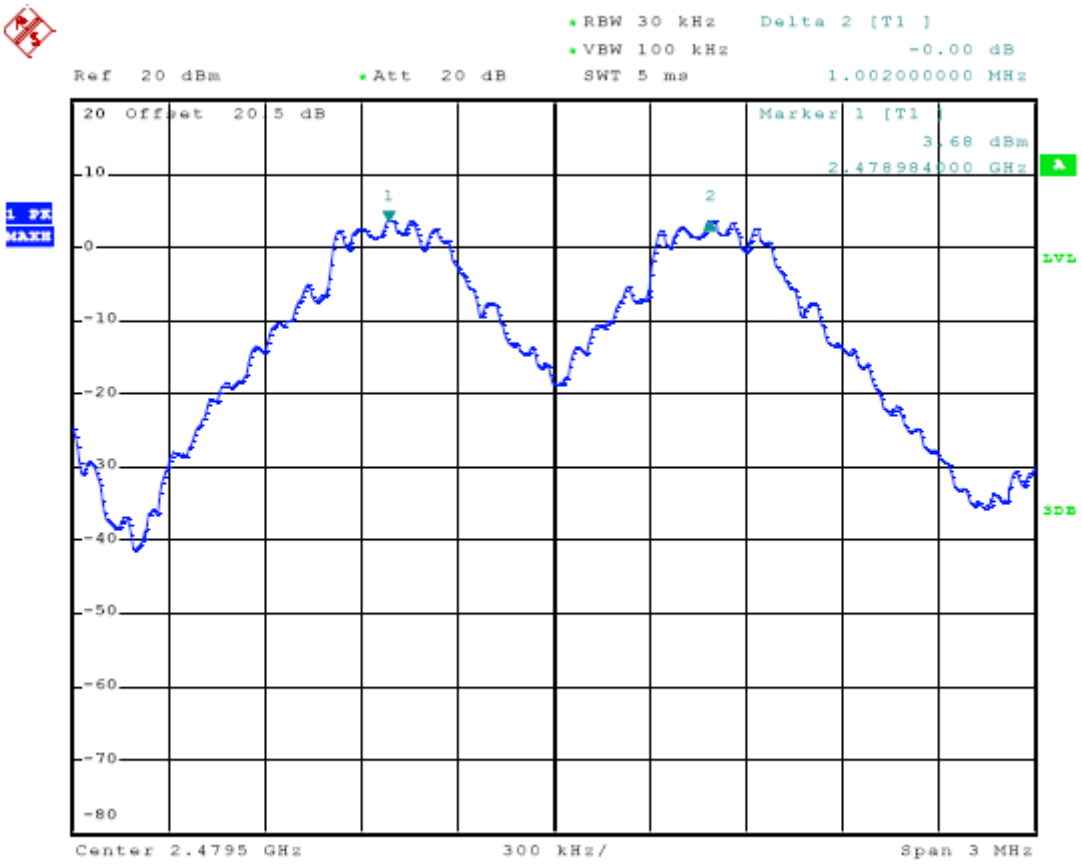
TEST PLOT FOR FREQUENCY SEPARATION –CHANNEL0-1



TEST PLOT FOR FREQUENCY SEPARATION –CHANNEL39-40



TEST PLOT FOR FREQUENCY SEPARATION -CHANNEL



13 ANTENNA REQUIREMENT

13.1 STANDARD REQUIREMENT

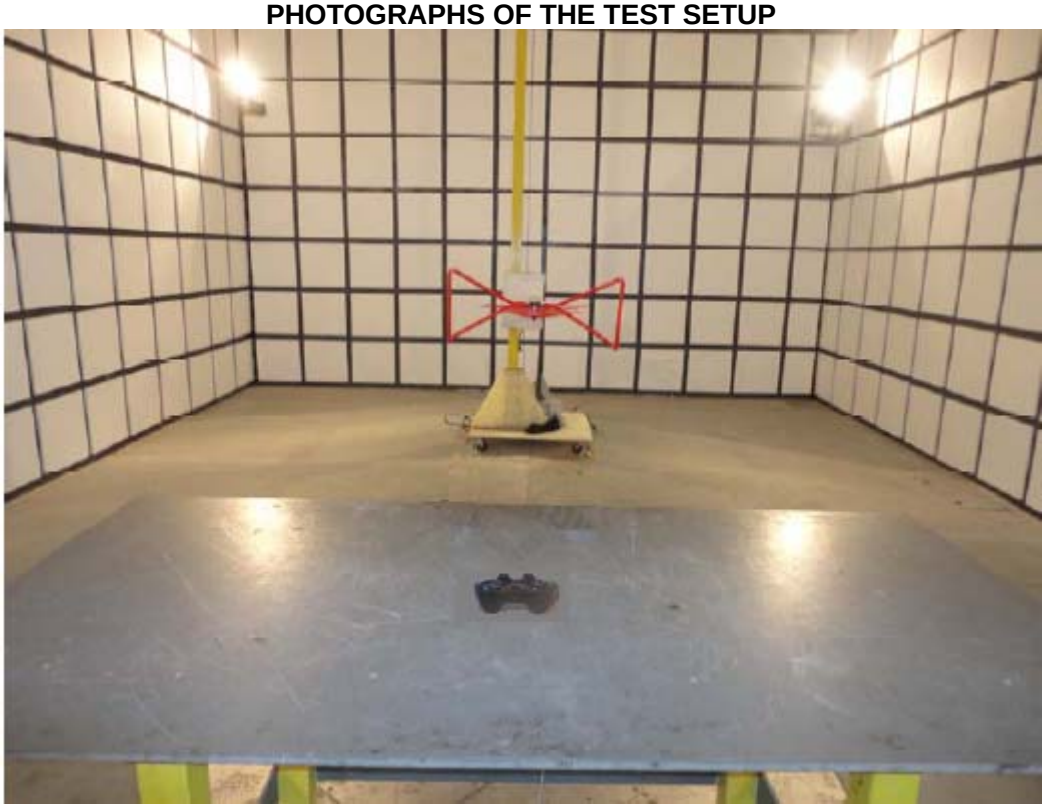
15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

13.2 EUT ANTENNA

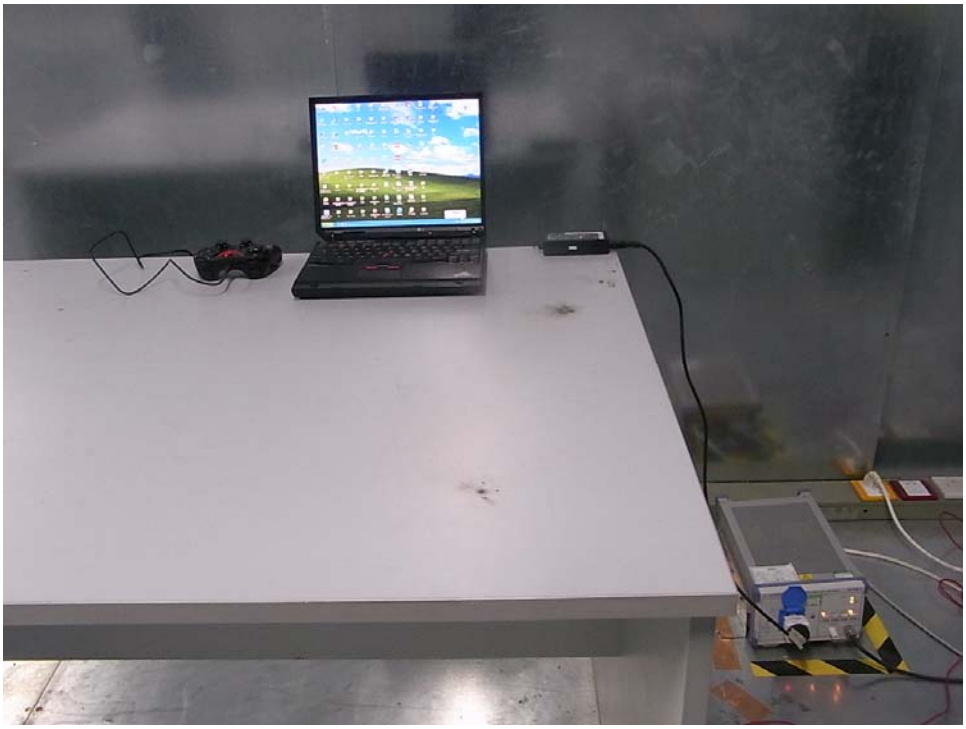
The EUT antenna is integral Antenna. It comply with the standard requirement.

PPENDIX 1

PHOTOGRAPHS OF THE TEST SETUP



PHOTOGRAPHS OF THE TEST SETUP (>1GHZ)



---- **END OF REPORT** ----