FCC Radio Test Report

FCC ID: RWO-RZ030133

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

Project No.	:	1503C157
Equipment	:	Gaming Lapboard
Model Name	:	RZ03-0133
Applicant	:	Razer Inc.
Address	:	9 Pasteur, Suite 100 Irvine, California 92618, United States

Date of Receipt	:	Mar. 19, 2015
Date of Test	:	Mar. 19, 2015 ~ Apr. 13, 2015
Issued Date	:	Apr. 14, 2015
Tested by	:	BTL Inc.

Testing Engineer : David Mao
(David Mao)

Technical Manager : Leo Hung
(Leo Hung)

Authorized Signatory : Steven Lu
(Steven Lu)

BTL INC.

No.3,Jinshagang 1st Road, Shixia,Dalang Town, Dongguan, Guangdong, China.
TEL: +86-769-8318-3000FAX: +86-769-8319-6000

Declaration

BTL 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.**

BTL'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. **BTL** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

BTL'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 **BTL-self**, extracts from the test report shall not be reproduced except in full with **BTL**'s authorized written approval.

BTL's laboratory quality assurance procedures are in compliance with the **ISO Guide17025** 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**

REPORT ISSUED HISTORY

Issued No.	Description	Issued Date
BTL-FCCP-2-1503C157	Original Issue.	Apr. 14, 2015

1. CERTIFICATION

Equipment	:	Gaming Lapboard
Brand Name	:	RAZER
Model Name	:	RZ03-0133
Applicant	:	Razer Inc.
Manufacturer	:	Razer (Asia-Pacific) Pte Ltd
Address	:	514 Chai Chee Lane #07-01 ~ 06 Singapore 469029
Factory	:	RAZER TECHNOLOGY AND DEVELOPMENT (SHENZHEN) CO., LTD
Address	:	East Wing, 3rd Floor, Block 2, Phase 1 of Vision Shenzhen Business Park Keji South Road, Hi-Tech Industrial Park, Shenzhen 518057, China
Date of Test	:	Mar. 19, 2015 ~ Apr. 13, 2015
Test Sample	:	Engineering Sample
Standard(s)	:	FCC Part15, Subpart C :2014 (15.249)/ ANSI C63.4-2009

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc..
The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCCP-2-1503C157) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO-17025 quality assessment standard and technical standard(s).

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC Part15, Subpart C (15.249)			
StandardSection FCC	Test Item	Judgment	Remark
15.207(a)	Conducted Emission	PASS	
15.205	Restricted Band of Operation	PASS	
15.209 15.249(a)	Radiated Emissions	PASS	
15.215(c)	20dB Bandwidth Test	PASS	

NOTE:

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

2.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No.3,Jinshagang 1st Road, Shixia,Dalang Town, Dongguan, Guangdong, China.
BTL's test firm number for FCC: 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 astandard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

A. Conducted Measurement :

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

B. Radiated Measurement :

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

3.GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	Gaming Lapboard	
Brand Name	RAZER	
Model Name	RZ03-0133	
Model Difference	N/A	
Product Description	Operation Frequency	2402~2480 MHz
	Modulation Technology	GFSK(2Mbps)
	Data rate	
	Field Strength	91.10dBuV/m(AV Max) 97.88dBuV/m(Peak Max)
PowerSource	#1 DC Voltage supplied from AC/DC adapter. (For Dock charger) Brand / Model: / KSA29A0500250D5 #2 Supplied from Dock charger.(For Keyboard) Model: RC30-0133 #3 Supplied from battery(For Keyboard) Model: PL325385	
Power Rating	#1 I/P 100-240V~ 50/60Hz 0.5A O/P: DC 5.0V 2.5A(For Dock charger) #2 DC 5V 1000mA (For Keyboard) #3 DC 3.7V 1500mAh (For Keyboard)	

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)
01	2402	21	2442
02	2404	22	2444
03	2406	23	2446
04	2408	24	2448
05	2410	25	2450
06	2412	26	2452
07	2414	27	2454
08	2416	28	2456
09	2418	29	2458
10	2420	30	2460
11	2422	31	2462
12	2424	32	2464
13	2426	33	2466
14	2428	34	2468
15	2430	35	2470
16	2432	36	2472
17	2434	37	2474
18	2436	38	2476
19	2438	39	2478
20	2440	40	2480

3 Table for Filed Antenna:

Ant.	Brand	P/N	Antenna Type	Connector	Gain (dBi)
1	PSA	RFANT8010080A3T	Chip	N/A	3.03

3.2 DESCRIPTION OF TEST MODES

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

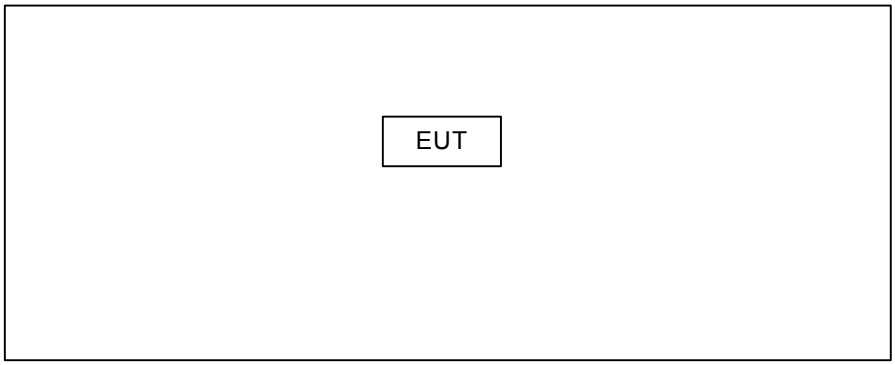
Pretest Mode	Description
Mode 1	TX Mode (Note (1))

For Conducted Test	
Final Test Mode	Description
Mode 1	TX Mode

For Radiated Test	
Final Test Mode	Description
Mode 1	TX Mode (Note (1))

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

3.3 BLOCKDIAGRAMSHOWINGTHECONFIGURATIONOFSYSTEMTESTED



3.4 DESCRIPTION OF SUPPORT UNITS

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

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
-	-	-	-	-	-	-

Item	Shielded Type	Ferrite Core	Length	Note
-	-	-	-	-

4.EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 POWER LINE CONDUCTED EMISSION (FREQUENCY RANGE 150KHZ-30MHZ)

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15 -0.5	66 to 56*	56 to 46*
0.50 -5.0	56	46
5.0 -30.0	60	50

Note:

(1) The limit of " * " decreases with the logarithm of the frequency

(2) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor(if use)
Margin Level = Measurement Value - Limit Value

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

4.1.2 TESTPROCEDURE

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 equipmentspowered 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 groundplane 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.

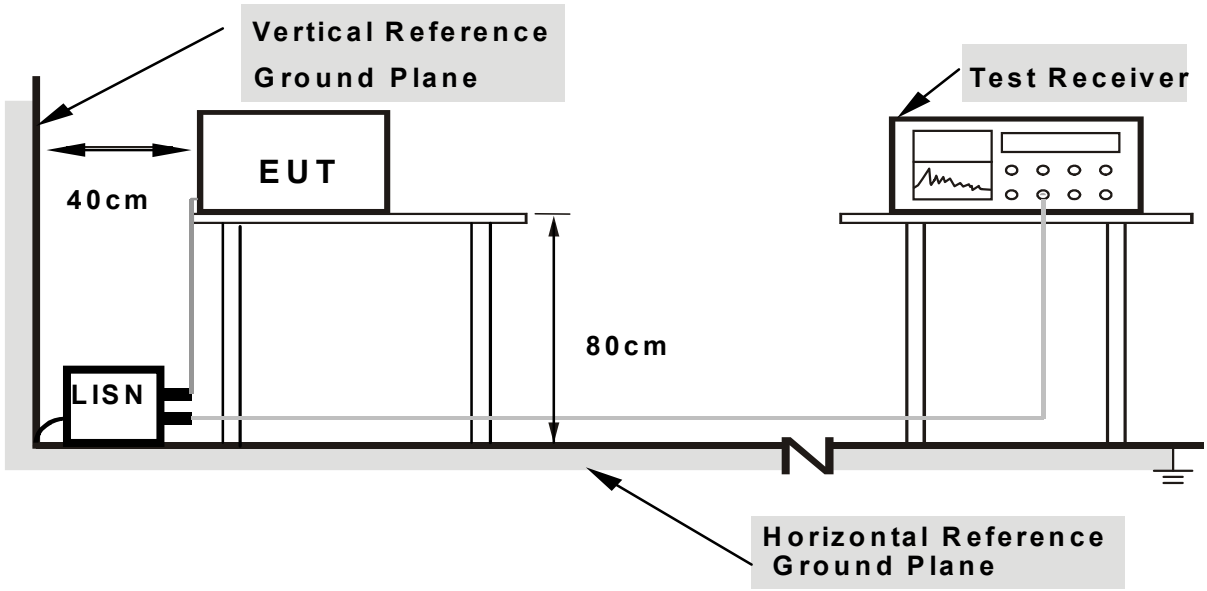
d. LISN at least 80 cm from nearest part of EUT chassis.

e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.3 DEVIATIONFROMTESTSTANDARD

No deviation

4.1.4 TESTSETUP



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

4.1.5 EUT OPERATING CONDITIONS

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

4.1.6 EUT TEST CONDITIONS

Temperature: 25°C
Relative Humidity: 55%
Test Voltage: AC 120V/60Hz

4.1.7 TEST RESULTS

Please refer to the Attachment A.

Remark:

(1) All readings are QP Mode value unless otherwise stated AVG in column of『Note』. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits,the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform in this case, a "*" marked in AVG Mode column of Interference Voltage Measured.
(2) Measuring frequency range from 150KHz to 30MHz.

4.2 RADIATED EMISSION MEASUREMENT

4.2.1 RADIATED EMISSION LIMITS (FCC 15.209)

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
960~1000	500	3

Harmonic emissions limits comply with below 54 dBuV/m at 3m. Other emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or comply with the radiated emissions limits specified in section15.209(a) limit in the table below has to be followed.

Note:

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

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

LIMITS OF RADIATED EMISSION MEASUREMENT (FCC 15.209)

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).

LIMITS OF RADIATED EMISSION MEASUREMENT (FCC Part 15.249)

FCC Part15 (15.249) , Subpart C	
Limit	Frequency Range(MHz)
Field strength of fundamental 50000 μV/m (94 dBμV/m) @ 3 m	2400-2483.5
Field strength of harmonics 500 μV/m (54 dBμV/m) @ 3 m	Above 2483.5

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic

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

4.2.2 TESTPROCEDURE

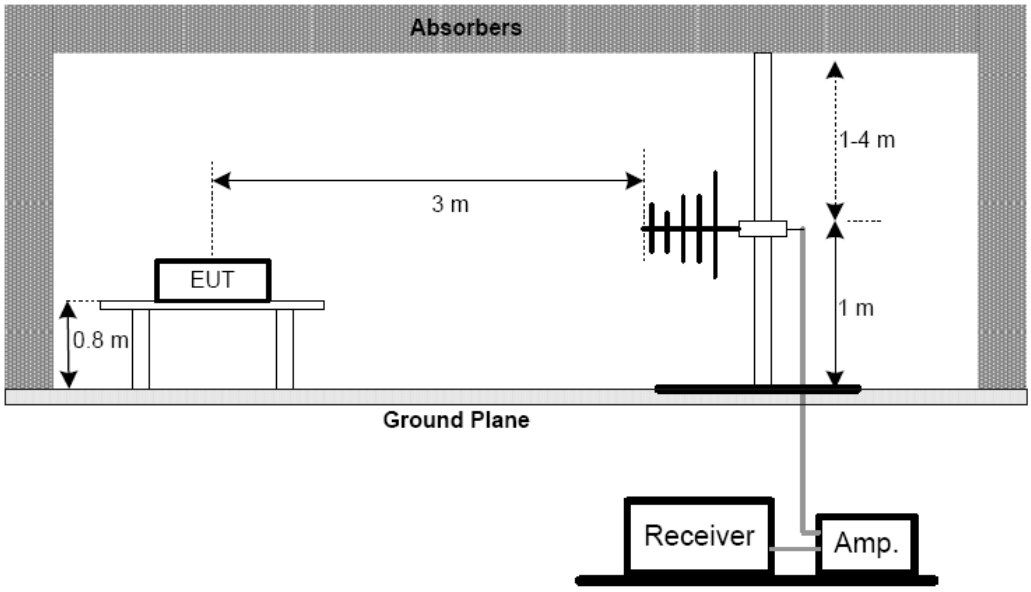
a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(above 1GHz)
c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then AV 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.

4.2.3DEVIATIONFROMTESTSTANDARD

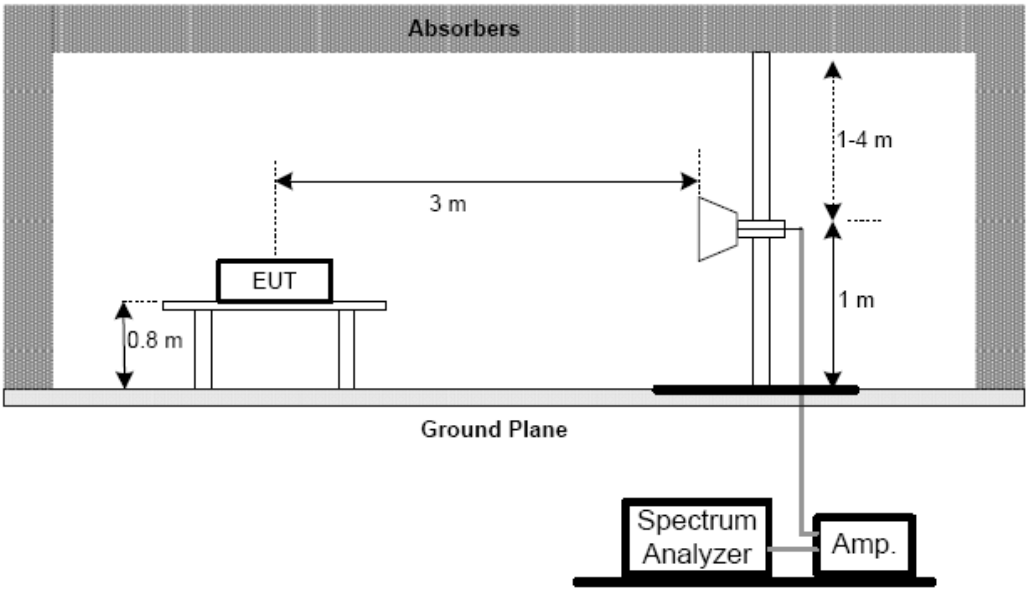
No deviation

4.2.4 TESTSETUP

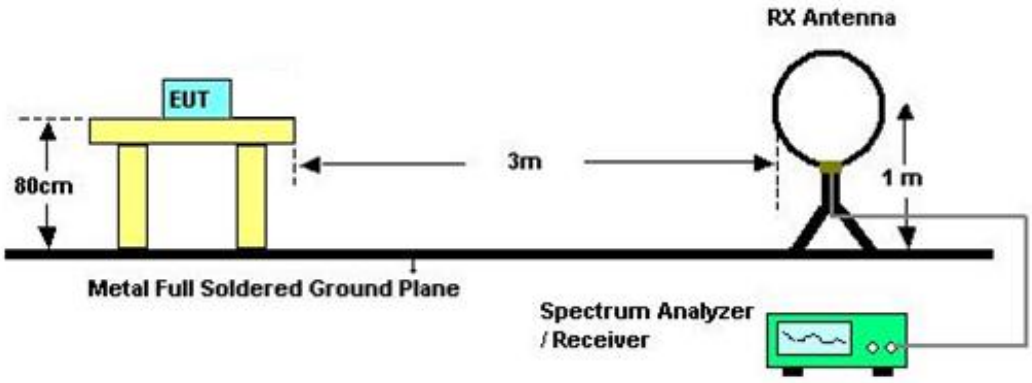
(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



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



(C) For radiated emissions below 30MHz



4.2.5 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.

4.2.6 EUT TEST CONDITIONS

Temperature: 25°C
Relative Humidity: 55%
Test Voltage: DC 3.7V

4.2.7 TEST RESULTS (BELOW 30MHz)

Please refer to the Attachment B.

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..

4.2.8 TEST RESULTS (30 to 1000 MHz)

Please refer to the Attachment C

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.
(3) Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Peak detector mode or QP detector mode of the emission .

4.2.9 TEST RESULTS(ABOVE1000 MHz)

Please refer to the Attachment D

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

(3) 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.

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

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

(6) 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

(7) No limit:This is fundamental signal, the judgment is not applicable.
For fundamental signal judgment was referred to Peak output test.

5. BANDWIDTH TEST

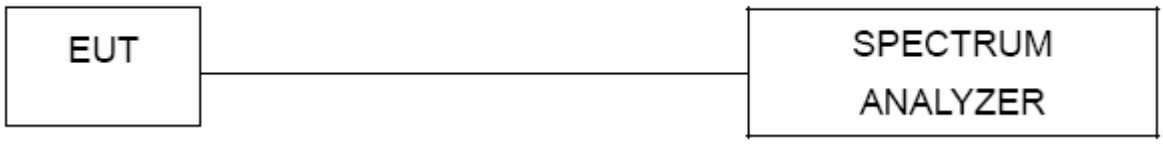
5.1 TEST PROCEDURE

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.

5.2 DEVIATION FROM STANDARD

No deviation.

5.3 TEST SETUP



5.4 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.

5.5 EUT TEST CONDITIONS

Temperature: 25°C
Relative Humidity: 55%
Test Voltage: DC 3.7V

5.6 TEST RESULTS

Please refer to the Attachment E

6. MEASUREMENT INSTRUMENTS LIST AND SETTING

Conducted Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	LISN	EMCO	3816/2	00052765	Mar. 28, 2016
2	LISN	R&S	ENV216	101447	Mar. 28, 2016
3	Test Cable	N/A	C_17	N/A	Mar.13, 2016
4	EMI TEST RECEIVER	R&S	ESCS30	833364/017	Mar. 28, 2016
5	50Ω Terminator	SHX	TF2-3G-A	08122902	Mar. 28, 2016
6	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

Radiated Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	Schwarbeck	VULB9160	9160-3232	Mar. 28, 2016
2	Amplifier	HP	8447D	2944A09673	Nov. 17, 2015
3	Receiver	AGILENT	N9038A	MY52130039	Sep. 30, 2015
4	Test Cable	N/A	C-01_CB03	N/A	Jul. 01, 2015
5	Controller	CT	SC100	N/A	N/A
6	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
7	Antenna	ETS	3115	00075789	Mar. 28, 2016
8	Amplifier	Agilent	8449B	3008A02274	Nov. 02, 2015
9	Receiver	AGILENT	N9038A	MY52130039	Sep. 30, 2015
10	Test Cable	HUBER+SUHNER	C-48	N/A	Apr. 30, 2015
11	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Mar. 28, 2016
12	Microwave Preamplifier With Adaptor	EMC INSTRUMENT	EMC2654045	980039 & HA01	Mar. 28, 2016
13	Active Loop Antenna	R&S	HFH2-Z2	830749/020	Aug. 16, 2015

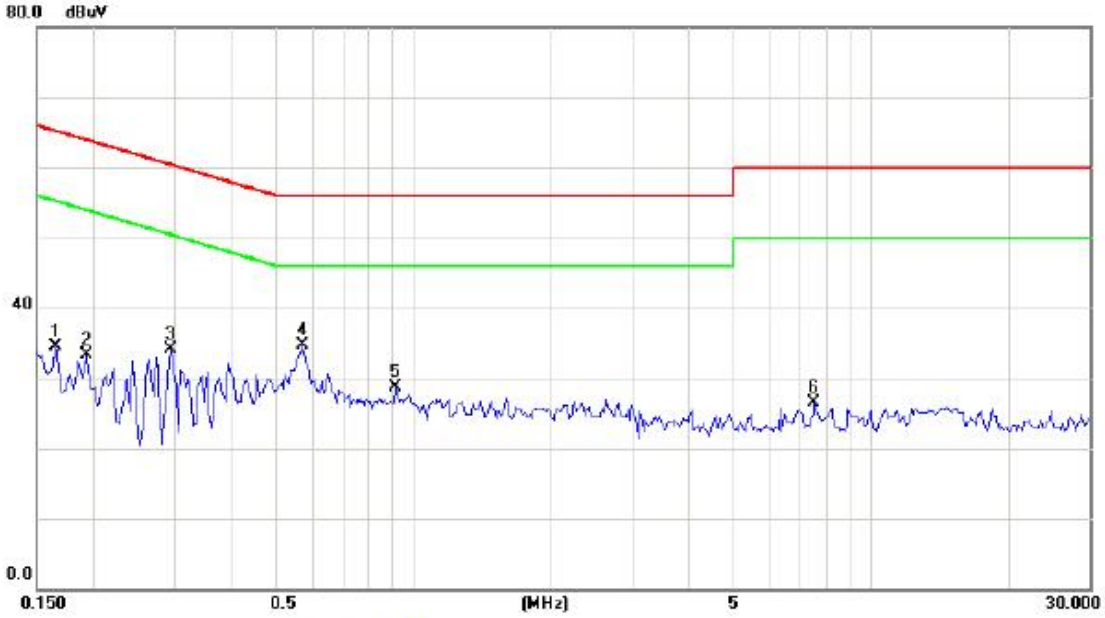
Bandwidth					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov. 02, 2015

Remark: "N/A" denotes no model name, serial no. or calibration specified.
All calibration period of equipment list is one year.

ATTACHMENT A - CONDUCTED EMISSION

Test Mode:	TX Mode

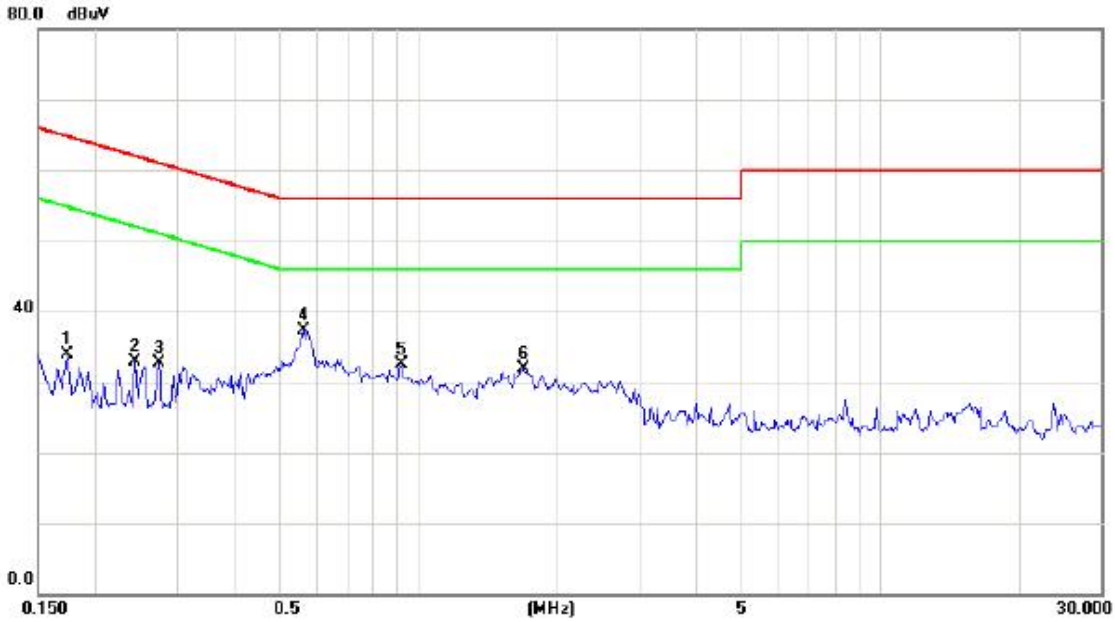
Line



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1655	25.13	9.46	34.59	65.18	-30.59	peak	
2		0.1930	23.76	9.47	33.23	63.91	-30.68	peak	
3		0.2943	24.61	9.51	34.12	60.40	-26.28	peak	
4	*	0.5716	25.12	9.56	34.68	56.00	-21.32	peak	
5		0.9115	19.14	9.55	28.69	56.00	-27.31	peak	
6		7.4881	16.84	9.58	26.42	60.00	-33.58	peak	

Test Mode:	TX Mode

Neutral



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1733	24.38	9.55	33.93	64.80	-30.87	peak	
2		0.2442	23.31	9.54	32.85	61.95	-29.10	peak	
3		0.2750	23.13	9.54	32.67	60.97	-28.30	peak	
4	*	0.5640	27.67	9.54	37.21	56.00	-18.79	peak	
5		0.9155	23.06	9.54	32.60	56.00	-23.40	peak	
6		1.6851	22.42	9.54	31.96	56.00	-24.04	peak	

ATTACHMENT B -RADIATED EMISSION (9KHZ to 30MHZ)

Test Mode:	TX Mode

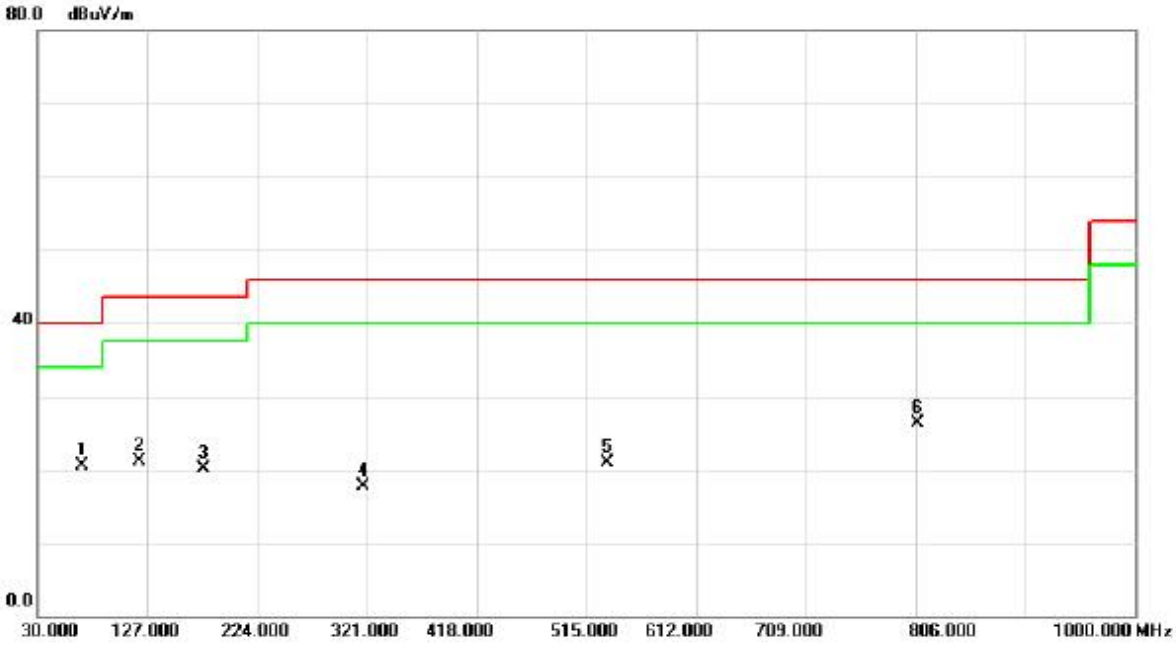
Frequency (MHz)	Ant 0°/90°	Read level dBuV/m	Factor (dB)	Measured(FS) (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Note
0.0154	0°	2.91	24.30	27.21	123.85	-96.64	AVG
0.0154	0°	6.24	24.30	30.54	143.85	-113.31	PEAK
0.0169	0°	3.74	24.30	28.04	123.05	-95.01	AVG
0.0169	0°	7.38	24.30	31.68	143.05	-111.37	PEAK
0.0277	0°	5.22	23.81	29.03	118.75	-89.72	AVG
0.0277	0°	7.43	23.81	31.24	138.75	-107.51	PEAK
0.3396	0°	1.65	20.18	21.83	96.98	-75.15	AVG
0.3396	0°	6.98	20.18	27.16	116.98	-89.82	PEAK
2.0947	0°	20.15	19.44	39.59	69.54	-29.95	QP
3.4656	0°	22.36	18.95	41.31	69.54	-28.23	QP

Frequency (MHz)	Ant 0°/90°	Read level dBuV/m	Factor (dB)	Measured(FS) (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Note
0.0123	90°	3.56	24.30	27.86	125.81	-97.95	AVG
0.0123	90°	5.36	24.30	29.66	145.81	-116.15	PEAK
0.0174	90°	2.22	24.30	26.52	122.79	-96.27	AVG
0.0174	90°	4.65	24.30	28.95	142.79	-113.84	PEAK
0.0268	90°	4.52	23.87	28.39	119.04	-90.65	AVG
0.0268	90°	7.13	23.87	31.00	139.04	-108.04	PEAK
0.0375	90°	3.45	23.19	26.64	116.12	-89.48	AVG
0.0375	90°	6.85	23.19	30.04	136.12	-106.08	PEAK
1.6867	90°	22.44	19.53	41.97	63.06	-21.09	QP
2.1772	90°	23.54	19.39	42.93	69.54	-26.61	QP

ATTACHMENT C -RADIATED EMISSION (30MHZ TO 1000MHZ)

Test Mode:	TX Low Channel

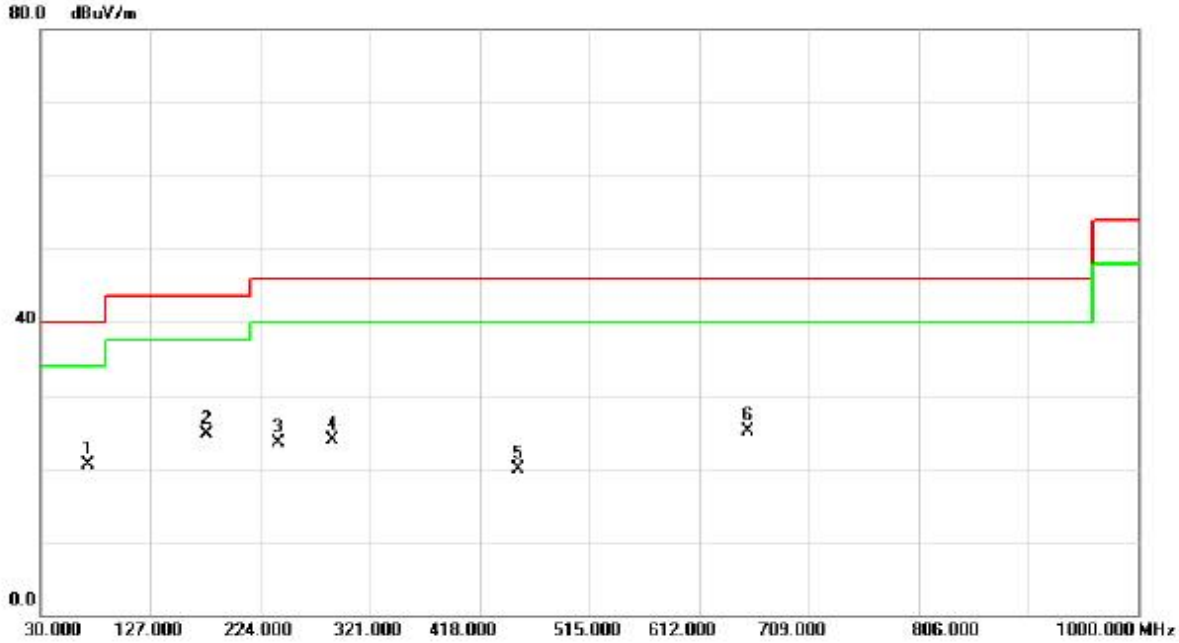
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	68.8000	36.51	-16.08	20.43	40.00	-19.57	peak	
2		119.2400	35.39	-14.28	21.11	43.50	-22.39	peak	
3		176.4700	33.09	-12.90	20.19	43.50	-23.31	peak	
4		318.0900	28.93	-11.27	17.66	46.00	-28.34	peak	
5		533.4300	29.80	-8.80	21.00	46.00	-25.00	peak	
6		807.9400	29.18	-2.94	26.24	46.00	-19.76	peak	

Test Mode:	TXLow Channel

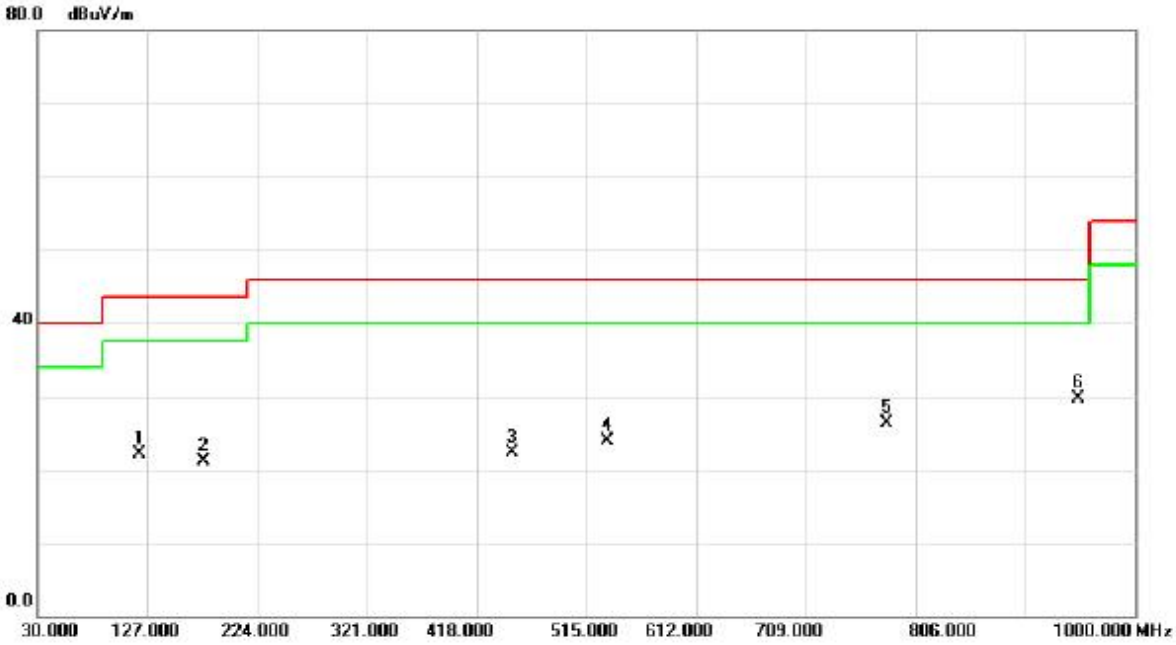
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		71.7100	36.79	-16.38	20.41	40.00	-19.59	peak	
2	*	176.4700	37.69	-12.90	24.79	43.50	-18.71	peak	
3		239.5200	37.55	-14.05	23.50	46.00	-22.50	peak	
4		288.0200	35.29	-11.40	23.89	46.00	-22.11	peak	
5		451.9500	28.66	-8.70	19.96	46.00	-26.04	peak	
6		655.6500	30.22	-5.13	25.09	46.00	-20.91	peak	

Test Mode:	TX Middle Channel

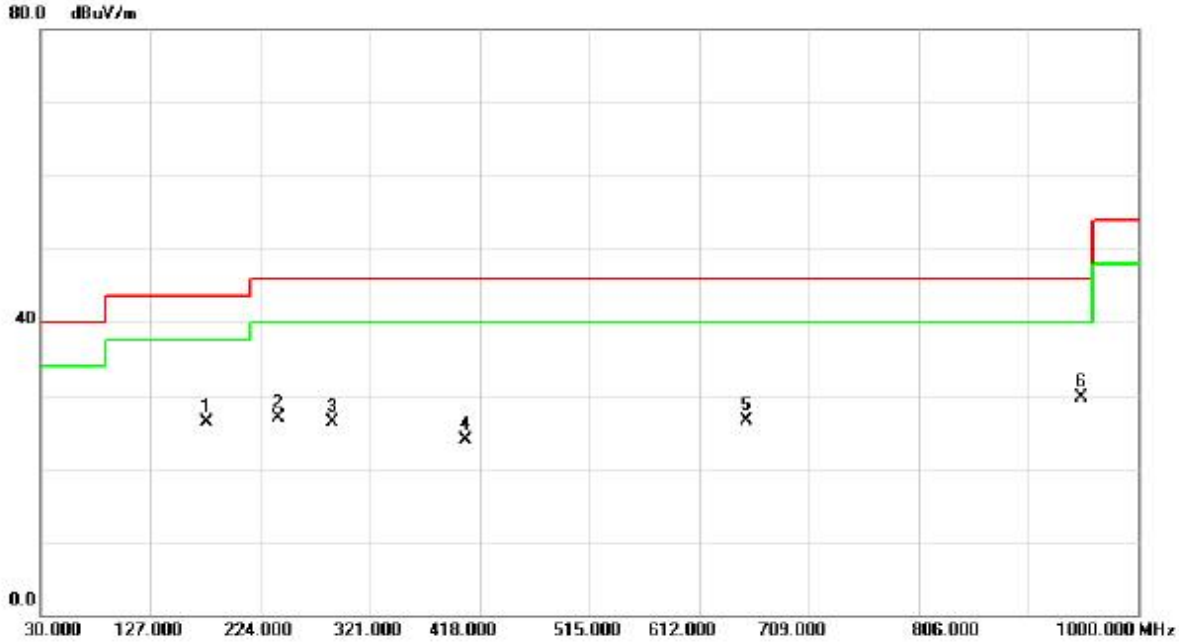
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		119.2400	36.39	-14.28	22.11	43.50	-21.39	peak	
2		176.4700	34.09	-12.90	21.19	43.50	-22.31	peak	
3		449.0400	30.95	-8.63	22.32	46.00	-23.68	peak	
4		533.4300	32.80	-8.80	24.00	46.00	-22.00	peak	
5		780.7800	29.89	-3.57	26.32	46.00	-19.68	peak	
6	*	950.5300	29.88	-0.21	29.67	46.00	-16.33	peak	

Test Mode:	TX Middle Channel

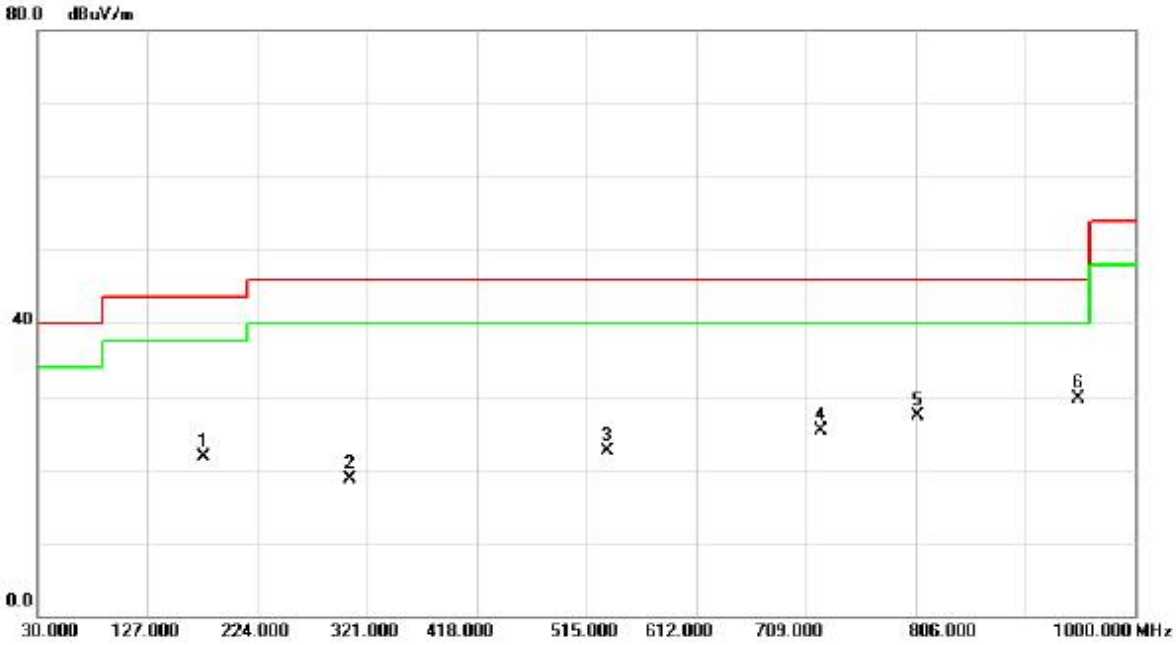
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		176.4700	39.19	-12.90	26.29	43.50	-17.21	peak	
2		239.5200	41.05	-14.05	27.00	46.00	-19.00	peak	
3		288.0200	37.79	-11.40	26.39	46.00	-19.61	peak	
4		405.3900	33.39	-9.43	23.96	46.00	-22.04	peak	
5		653.7100	31.68	-5.13	26.55	46.00	-19.45	peak	
6	*	950.5300	29.96	-0.21	29.75	46.00	-16.25	peak	

Test Mode:	TX High Channel

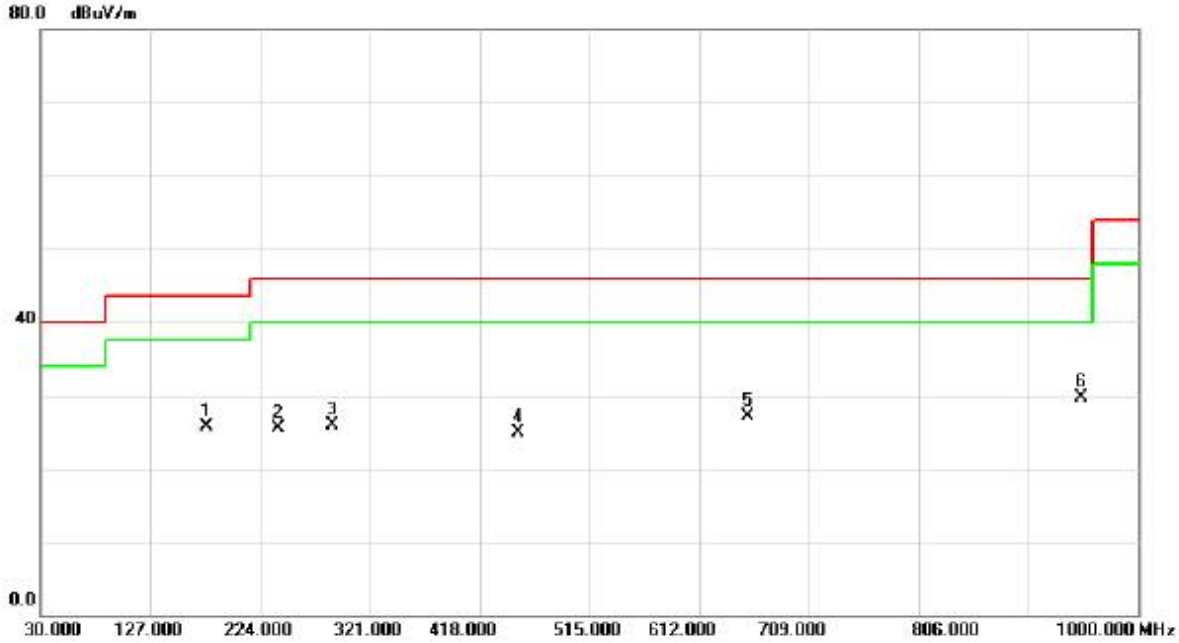
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		176.4700	34.59	-12.90	21.69	43.50	-21.81	peak	
2		305.4800	29.84	-11.07	18.77	46.00	-27.23	peak	
3		533.4300	31.30	-8.80	22.50	46.00	-23.50	peak	
4		722.5800	30.17	-4.78	25.39	46.00	-20.61	peak	
5		807.9400	30.18	-2.94	27.24	46.00	-18.76	peak	
6	*	950.5300	29.88	-0.21	29.67	46.00	-16.33	peak	

Test Mode:	TX High Channel

Horizontal

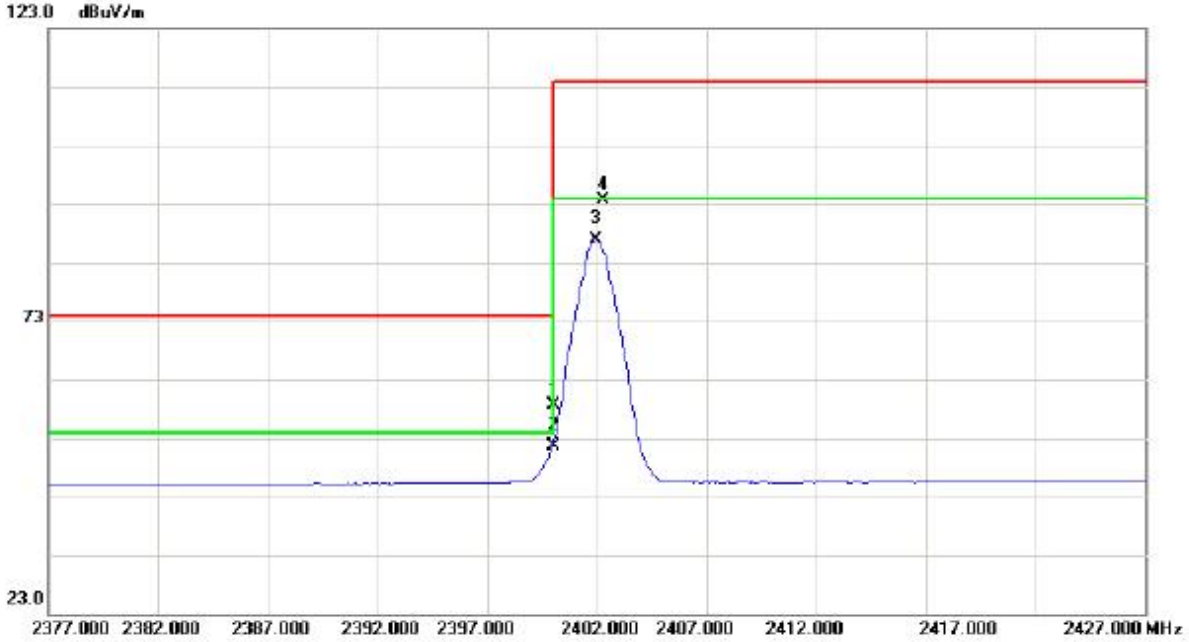


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		176.4700	38.69	-12.90	25.79	43.50	-17.71	peak	
2		239.5200	39.55	-14.05	25.50	46.00	-20.50	peak	
3		288.0200	37.29	-11.40	25.89	46.00	-20.11	peak	
4		451.9500	33.66	-8.70	24.96	46.00	-21.04	peak	
5		655.6500	32.22	-5.13	27.09	46.00	-18.91	peak	
6	*	950.5300	29.96	-0.21	29.75	46.00	-16.25	peak	

ATTACHMENT D -RADIATED EMISSION (ABOVE 1000MHZ)

Orthogonal Axis :	X
Test Mode :	TX Low Channel

Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2400.000	26.78	31.89	58.67	74.00	-15.33	peak	
2	*	2400.000	19.81	31.89	51.70	54.00	-2.30	AVG	
3		2401.950	54.93	31.89	86.82	94.00	-7.18	AVG	
4		2402.300	61.83	31.89	93.72	114.00	-20.28	peak	

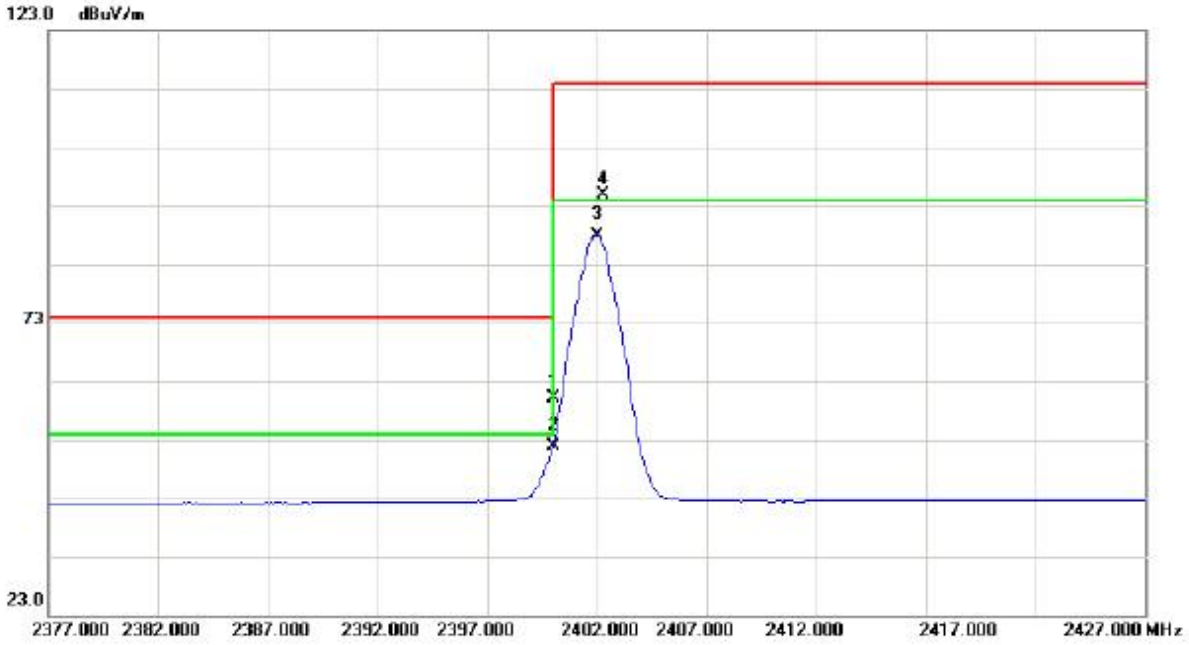
Orthogonal Axis :	X
Test Mode :	TX Low Channel

Vertical

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4803.960	42.45	3.58	46.03	74.00	-27.97	peak	
2	*	4803.960	33.96	3.58	37.54	54.00	-16.46	AVG	

Orthogonal Axis :	X
Test Mode :	TX Low Channel

Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2400.000	28.35	31.89	60.24	74.00	-13.76	peak	
2	*	2400.000	19.96	31.89	51.85	54.00	-2.15	AVG	
3		2402.000	56.08	31.89	87.97	94.00	-6.03	AVG	
4		2402.300	62.94	31.89	94.83	114.00	-19.17	peak	

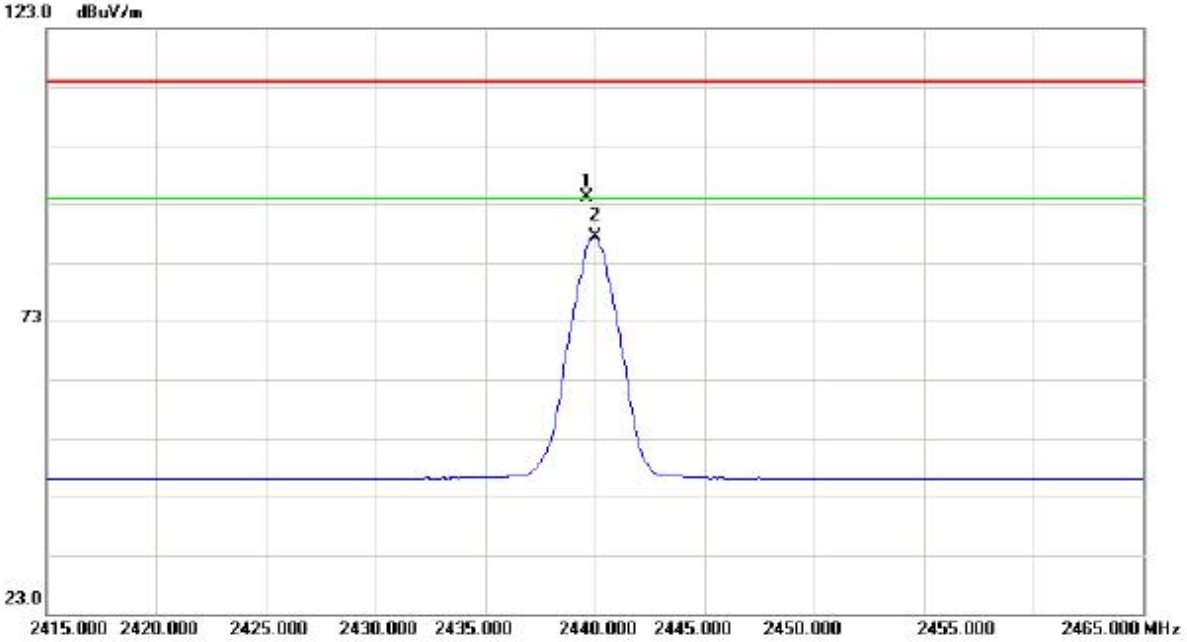
Orthogonal Axis :	X
Test Mode :	TX Low Channel

Horizontal

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4803.880	43.23	3.58	46.81	74.00	-27.19	peak	
2	*	4803.940	36.35	3.58	39.93	54.00	-14.07	AVG	

Orthogonal Axis :	X
Test Mode :	TX Middle Channel

Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2439.650	62.25	31.94	94.19	114.00	-19.81	peak	
2	*	2440.000	55.36	31.95	87.31	94.00	-6.69	AVG	

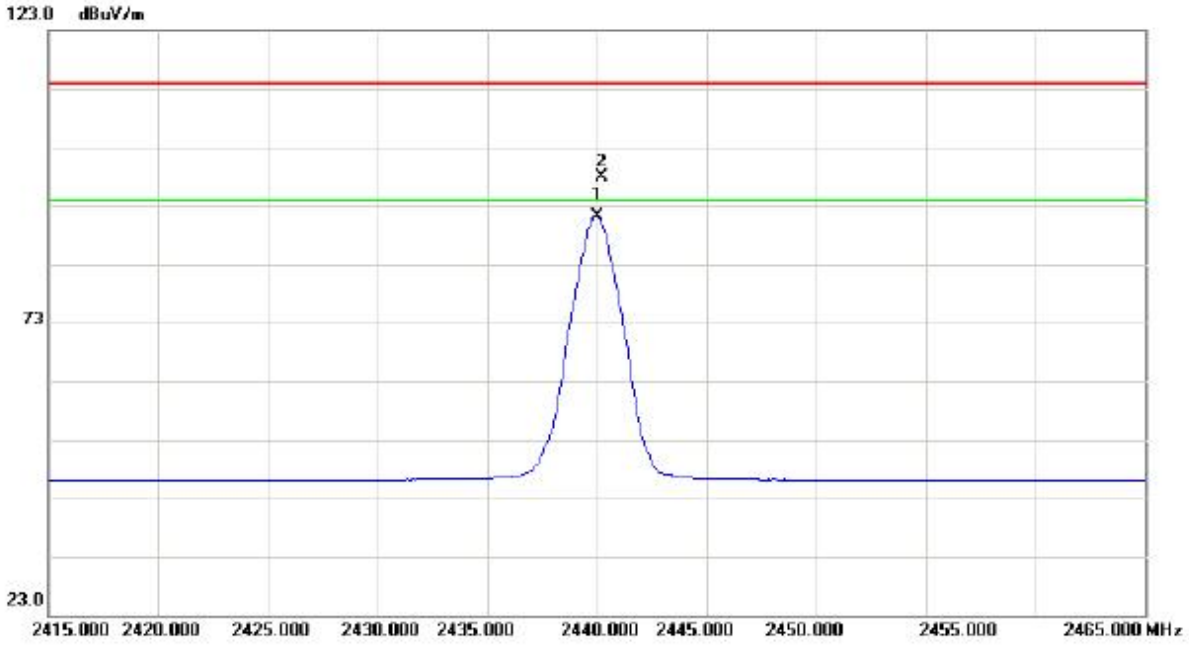
Orthogonal Axis :	X
Test Mode :	TX Middle Channel

Vertical

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	4879.960	34.81	3.73	38.54	54.00	-15.46	AVG	
2		4880.010	43.48	3.73	47.21	74.00	-26.79	peak	

Orthogonal Axis :	X
Test Mode :	TX Middle Channel

Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	2440.000	59.15	31.95	91.10	94.00	-2.90	AVG	
2		2440.250	65.93	31.95	97.88	114.00	-16.12	peak	

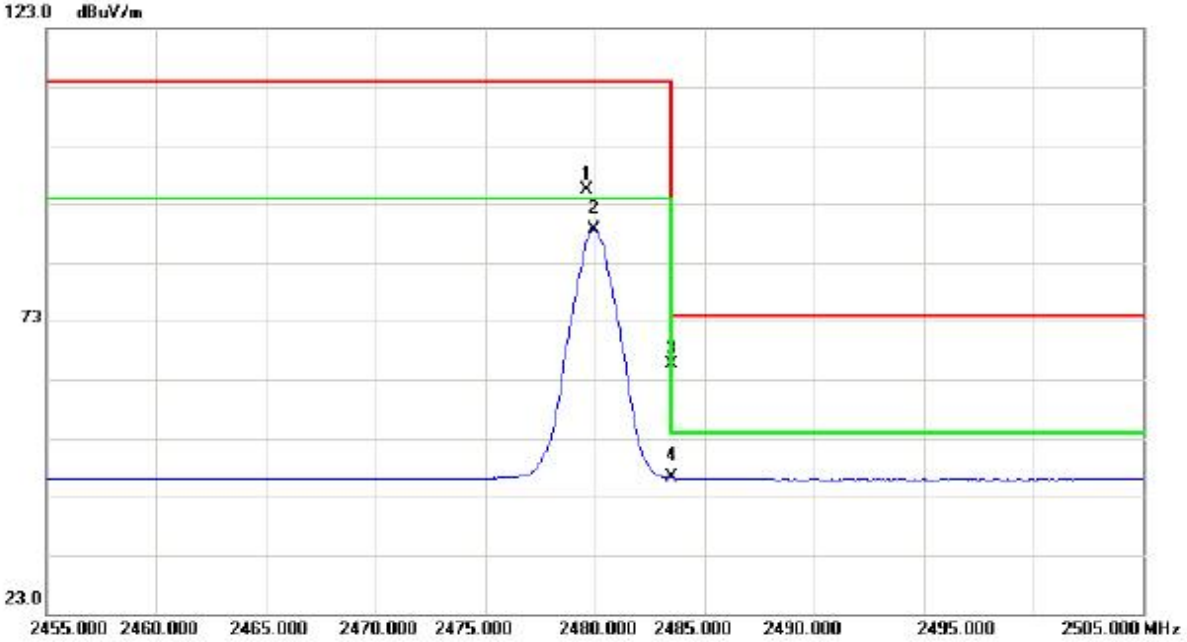
Orthogonal Axis :	X
Test Mode :	TX Middle Channel

Horizontal

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4880.030	42.13	3.73	45.86	74.00	-28.14	peak	
2	*	4880.100	32.28	3.73	36.01	54.00	-17.99	AVG	

Orthogonal Axis :	X
Test Mode :	TX High Channel

Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2479.650	63.32	32.00	95.32	114.00	-18.68	peak	
2	*	2479.950	56.62	32.00	88.62	94.00	-5.38	AVG	
3		2483.500	33.56	32.01	65.57	74.00	-8.43	peak	
4		2483.500	14.29	32.01	46.30	54.00	-7.70	AVG	

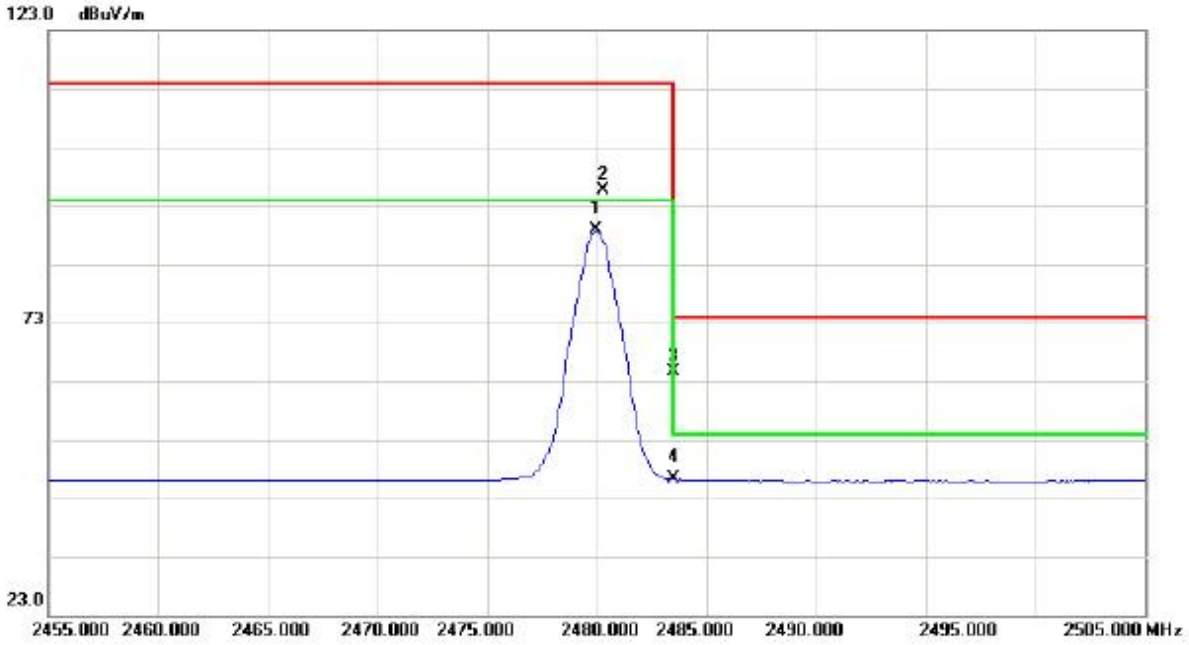
Orthogonal Axis :	X
Test Mode :	TX High Channel

Vertical

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4960.030	41.83	3.88	45.71	74.00	-28.29	peak	
2	*	4960.050	32.96	3.88	36.84	54.00	-17.16	AVG	

Orthogonal Axis :	X
Test Mode :	TX High Channel

Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	2479.950	56.80	32.00	88.80	94.00	-5.20	AVG	
2		2480.300	63.55	32.00	95.55	114.00	-18.45	peak	
3		2483.500	32.67	32.01	64.68	74.00	-9.32	peak	
4		2483.500	14.29	32.01	46.30	54.00	-7.70	AVG	

Orthogonal Axis :	X
Test Mode :	TX High Channel

Horizontal

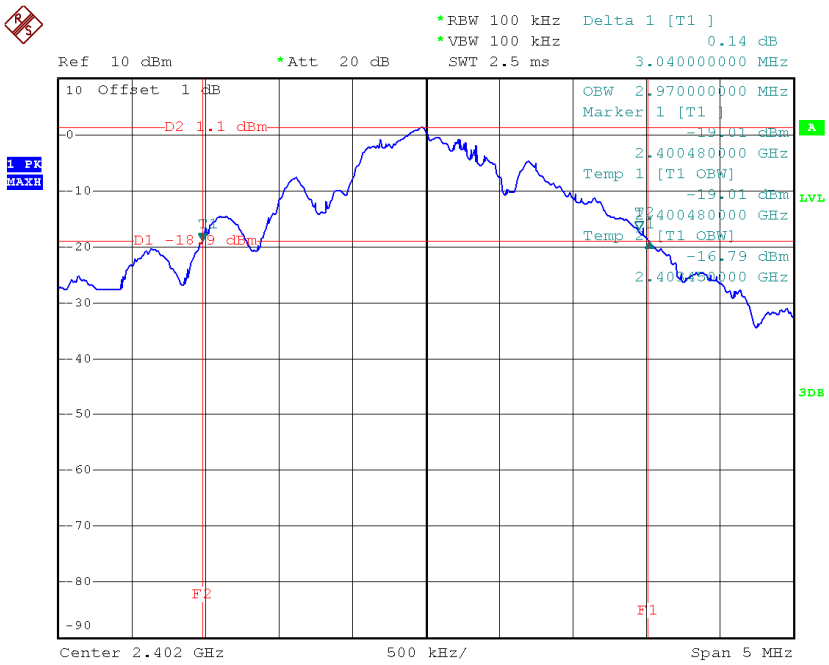
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4960.000	44.84	3.88	48.72	74.00	-25.28	peak	
2	*	4960.020	35.51	3.88	39.39	54.00	-14.61	AVG	

ATTACHMENT E - BANDWIDTH

Test Mode:	TX Mode

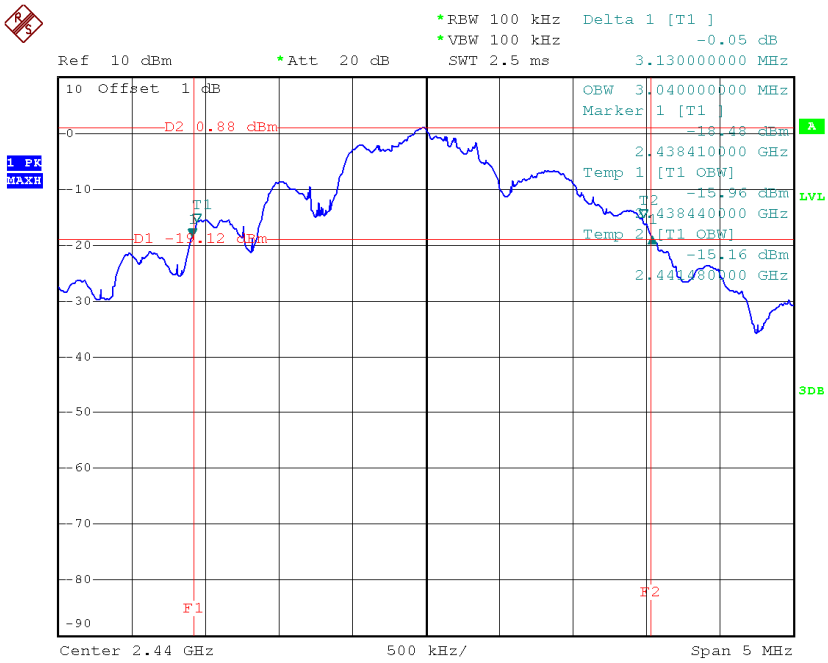
Frequency (MHz)	20dB Bandwidth (MHz)	99% Occupied BW
2402.0	3.04	2.97
2441.0	3.13	3.04
2480.0	2.10	2.17

TX Low Channel



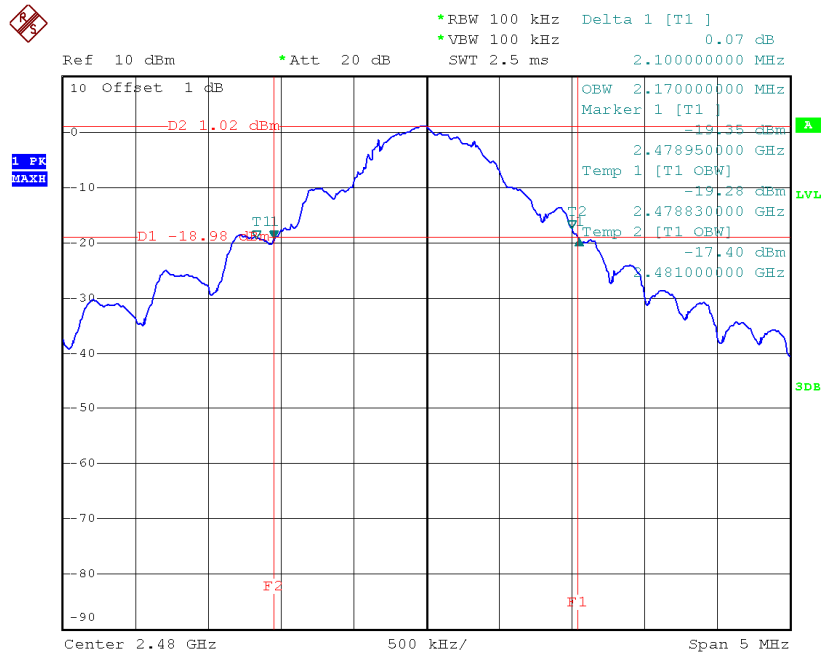
Date: 26.MAR.2015 23:56:06

TX Middle Channel



Date: 26.MAR.2015 23:58:04

TX High Channel



Date: 26.MAR.2015 23:53:58