FCC Radio Test Report

FCC ID: RWO-RZ040291

This report concerns: Original Grant

Project No.	:	1903C142
Equipment	:	Gaming Headset
Test Model	:	RZ04-0291
Series Model	:	RZ04-0291XXXX-XXXX (X: Can be 0-9, A-Z)
Applicant	:	Razer Inc.
Address	:	201 3rd Street, Suite 900, San Francisco, CA 94103 USA
Date of Receipt	:	Apr. 12, 2019
Date of Test	:	Apr. 13, 2019 ~ Jun. 26, 2019
Issued Date	:	Jul. 19, 2019
Tested by	:	BTL Inc.

Testing Engineer : Welly Zhou
(Welly Zhou)

Technical Manager : Steven Lu
(Steven Lu)

Authorized Signatory : Ethan Ma
(Ethan Ma)

BTL INC.

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Certificate #5123.02

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 standards traceable to international standard(s) and/or national standard(s).

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.

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

BTL is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

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.
Please note that the measurement uncertainty is provided for informational purpose only and are not use in determining the Pass/Fail results.

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REPORT ISSUED HISTORY

Report Version	Description	Issued Date
R00	Original Issue.	Jul. 19, 2019

1. GENERAL SUMMARY

Equipment	:	Gaming Headset
Brand Name	:	RAZER
Test Model	:	RZ04-0291
Series Model	:	RZ04-0291XXXX-XXXX (X: Can be 0-9, A-Z)
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	:	Apr. 13, 2019 ~ Jun. 26, 2019
Test Sample	:	Engineering Sample No.: D190403813 for conducted, D190403814 for radiated.
Standard(s)	:	FCC Part15, Subpart C (15.247) ANSI C63.10-2013 FCC KDB 558074 D01 DTS Meas Guidance v05r02

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-1-1903C142) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of A2LA according to the ISO/IEC 17025 quality assessment standard and technical standard(s).

Test results included in this report are only for the WLAN 2.4GHz part.

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC Part15, Subpart C (15.247)				
Standard(s) Section	**Test Item**	**Test Result**	**Judgment**	**Remark**
15.207	AC Power Line Conducted Emissions	APPENDIX A	PASS	------
15.247(d) 15.205(a) 15.209(a)	Radiated Emissions	APPENDIX B APPENDIX C APPENDIX D	PASS	------
15.247(a)(2)	Bandwidth	APPENDIX E	PASS	------
15.247(b)(3)	Maximum Average Output Power & Peak Output Power	APPENDIX F	PASS	------
15.247(d)	Conducted Spurious Emissions	APPENDIX G	PASS	------
15.247(e)	Power Spectral Density	APPENDIX H	PASS	------
15.203	Antenna Requirement	------	PASS	Note(2)

Note:

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

(2) The device what use a permanently attached antenna were considered sufficient to comply with the provisions of 15.203.

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 Registration Number for FCC: 357015
BTL's Designation Number for FCC: CN1240

2.2 MEASUREMENT UNCERTAINTY

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))
The BTL measurement uncertainty as below table:

A. AC power line conducted emissions test:

Test Site	Method	Measurement Frequency Range	U, (dB)
DG-C02	CISPR	150 kHz ~ 30 MHz	2.32

B. Radiated emissions test:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U, (dB)
DG-CB03	CISPR	9 KHz~30 MHz	V	3.79
		9 KHz~30 MHz	H	3.57
		30 MHz~200 MHz	V	3.82
		30 MHz~200 MHz	H	3.78
		200 MHz~1,000 MHz	V	4.10
		200 MHz~1,000 MHz	H	4.06
		1 GHz~18 GHz	V	3.12
		1 GHz~18 GHz	H	3.68
		18 GHz~40 GHz	V	4.15
		18 GHz~40 GHz	H	4.14

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	Gaming Headset
Brand Name	RAZER
Test Model	RZ04-0291
Series Model	RZ04-0291XXXX-XXXX (X: Can be 0-9, A-Z)
Model Difference(s)	It is the same as the basic model and X is used to define which country it is for under the same family series.
Hardware Version	DVT
Software Version	V1.0.11.99
Power Source	1# Supplied from USB port. 2# Supplied from battery. Brand / Model: Grand-Pro / PL503450-3.7V-1200mAh 1S1P
Power Rating	1# DC 5V 500mA 2# DC 3.7V 1200mA
Operation Frequency	2412 MHz ~ 2462 MHz
Modulation Type	IEEE 802.11b: DSSS IEEE 802.11g: OFDM IEEE 802.11n: OFDM
Bit Rate of Transmitter	IEEE 802.11b: 11/5.5/2/1 Mbps IEEE 802.11g: 54/48/36/24/18/12/9/6 Mbps IEEE 802.11n: up to 65 Mbps
Maximum Peak Output Power	IEEE 802.11b: 5.53 dBm (0.0036 W) IEEE 802.11g: 13.96 dBm (0.0249 W) IEEE 802.11n (HT20): 14.04 dBm (0.0254 W)
Maximum Average Output Power	IEEE 802.11b: 3.24 dBm (0.0021 W) IEEE 802.11g: 3.53 dBm (0.0023 W) IEEE 802.11n (HT20): 3.58 dBm (0.0023 W)

Note:

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

2. Channel List:

CH01 - CH11 for IEEE 802.11b, IEEE 802.11g, IEEE 802.11n (HT20)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	04	2427	07	2442	10	2457
02	2417	05	2432	08	2447	11	2462
03	2422	06	2437	09	2452		

3. Antenna Specification:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	Printed	N/A	3.40

3.2 DESCRIPTION OF TEST MODES

The test system was pre-tested based on the consideration of all possible combinations of EUT operation mode.

Pretest Mode	Description
Mode 1	TX B Mode Channel 01/06/11
Mode 2	TX G Mode Channel 01/06/11
Mode 3	TX N-20 MHz Mode Channel 01/06/11
Mode 4	TX N-20 MHz Mode Channel 11

Following mode(s) as (were) found to be the worst case(s) and selected for the final test.

AC power line conducted emissions test	
Final Test Mode	Description
Mode 4	TX N-20 MHz Mode Channel 11

Radiated emissions test - Below 1GHz	
Final Test Mode	Description
Mode 4	TX N-20 MHz Mode Channel 11

Radiated emissions test - Above 1GHz	
Final Test Mode	Description
Mode 1	TX B Mode Channel 01/06/11
Mode 2	TX G Mode Channel 01/06/11
Mode 3	TX N-20 MHz Mode Channel 01/06/11

Conducted test	
Final Test Mode:	Description
Mode 1	TX B Mode Channel 01/06/11
Mode 2	TX G Mode Channel 01/06/11
Mode 3	TX N-20 MHz Mode Channel 01/06/11

Note:

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

(2) 802.11b mode: CCK (1 Mbps)
802.11g mode: OFDM (6 Mbps)
802.11n HT20 mode : BPSK (6.5 Mbps)
For all tests, the highest output powers were set for final test.

(3) For radiated emission below 1 GHz test, the IEEE 802.11n20 channel 11 is found to be the worst case and recorded.

(4) For radiated emission above 1 GHz test, 1GHz~26.5GHz have been pre-tested and in this report only recorded the worst case. The remaining spurious points are all below the limit value of 20dB.

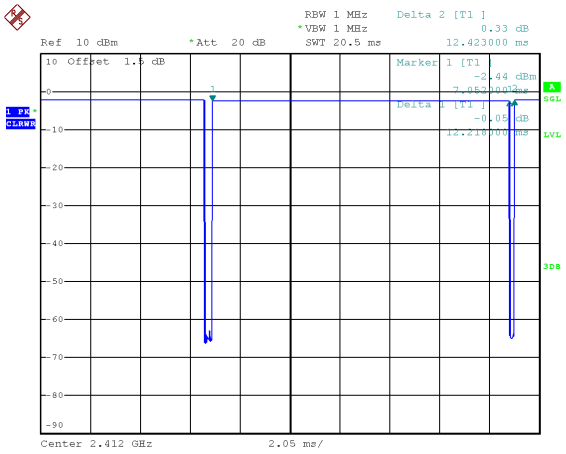
3.3 PARAMETERS OF TEST SOFTWARE

Test Software	artgui		
Frequency (MHz)	2412	2437	2462
IEEE 802.11b	8dBm	8dBm	8dBm
IEEE 802.11g	8dBm	8dBm	8dBm
IEEE 802.11n (HT20)	8dBm	8dBm	8dBm

3.4 DUTY CYCLE

If duty cycle is ≥ 98 %, duty factor is not required.
If duty cycle is < 98 %, duty factor shall be considered.

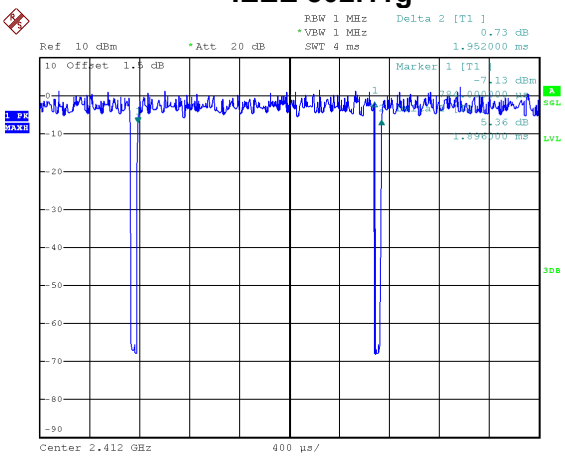
IEEE 802.11b



Date: 24.JUN.2019 15:58:55

Duty cycle = 12.218 ms / 12.423 ms = 98.350%
Duty Factor = 10 log(1/Duty cycle) = 0.00

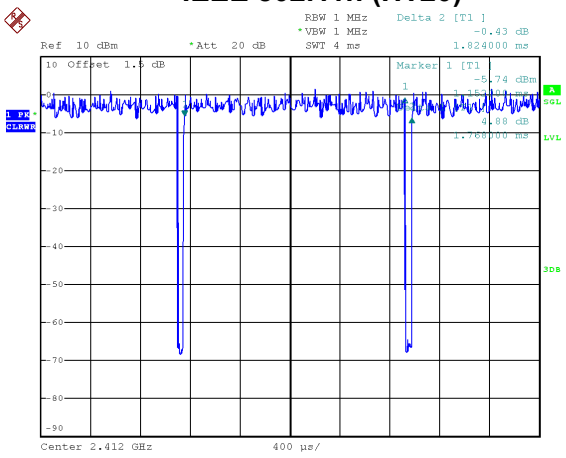
IEEE 802.11g



Date: 25.JUN.2019 13:54:36

Duty cycle = 1.896 ms / 1.952 ms = 97.131%
Duty Factor = 10 log(1/Duty cycle) = 0.13

IEEE 802.11n (HT20)

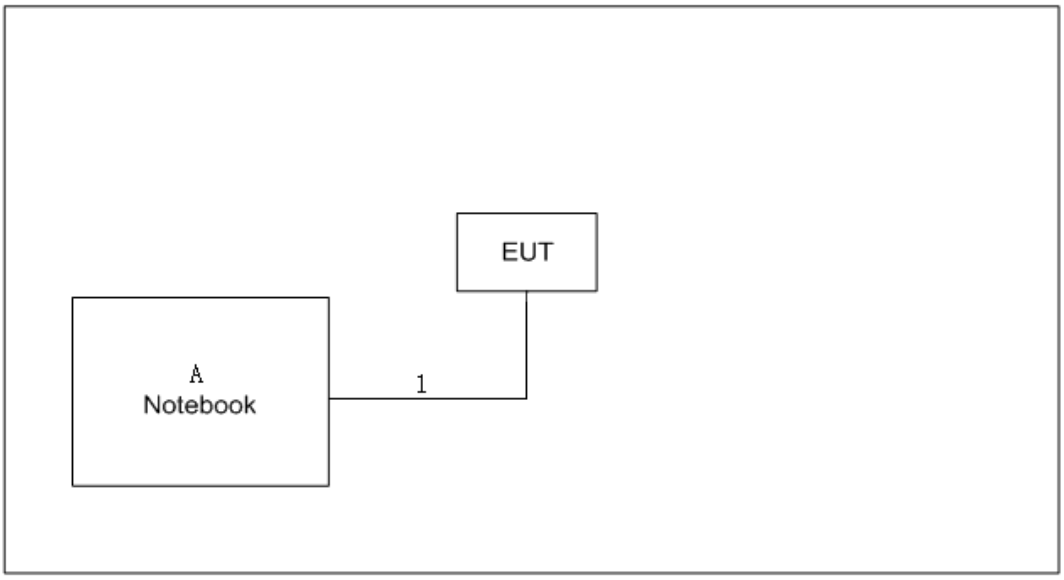


Date: 25.JUN.2019 13:55:05

Duty cycle = 1.768 ms / 1.824 ms = 96.930%
Duty Factor = 10 log(1/Duty cycle) = 0.14

NOTE:
For IEEE 802.11g and IEEE 802.11n (HT20):
For radiated emissions frequency above 1 GHz, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 1 kHz (Duty cycle < 98%).

3.5 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



3.6 SUPPORT UNITS

Item	Equipment	Brand	Model No.	Series No.
A	Notebook	Lenovo	G410	N/A

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	USB Cable	NO	NO	1.5m

4. AC POWER LINE CONDUCTED EMISSIONS TEST

4.1 LIMIT

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

NOTE:
(1) The tighter limit applies at the band edges.
(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

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

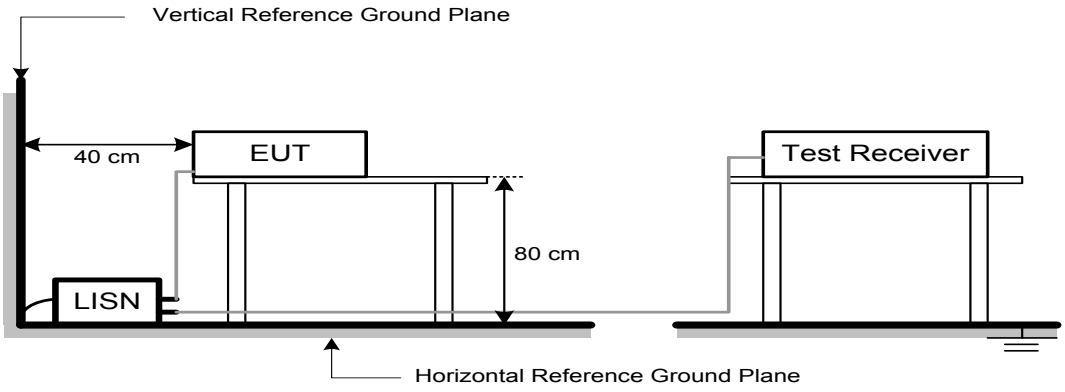
4.2 TEST PROCEDURE

a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment 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.

4.3 DEVIATION FROM TEST STANDARD

No deviation

4.4 TEST SETUP



4.5 EUT OPERATION CONDITIONS

EUT was programmed to be in continuously transmitting mode.

4.6 EUT TEST CONDITIONS

Temperature: 25°C Relative Humidity: 53% Test Voltage: AC 120V/60Hz

4.7 TEST RESULTS

Please refer to the APPENDIX A.

5. RADIATED EMISSIONS TEST

5.1 LIMIT

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.

LIMITS OF RADIATED EMISSION MEASUREMENT (9 kHz-1000 MHz)

Frequency (MHz)	Field Strength (microvolts/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 1000 MHz)

Frequency (MHz)	(dBuV/m at 3 m)	
	Peak	Average
Above 1000	74	54

NOTE:

(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).

(4) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use)
Margin Level = Measurement Value - Limit Value

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW (Emission in restricted band)	1 MHz / 3 MHz for Peak, 1 MHz / 1/T for Average

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

5.2 TEST PROCEDURE

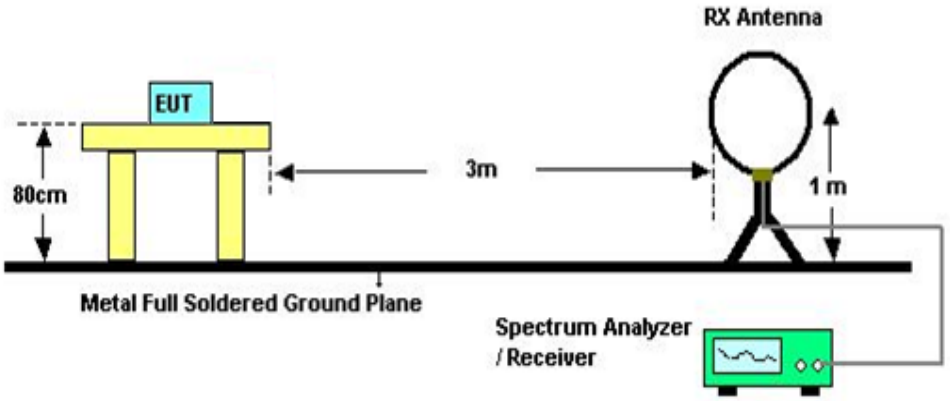
a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1 GHz)
b. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 1.5 meter 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 1 GHz)
c. The height of the equipment or of the substitution antenna shall be 0.8m or 1.5m; 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. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
e. The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.
f. The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
g. 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. (below 1 GHz)
h. All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn‘t perform. (above 1 GHz)
i. For the actual test configuration, please refer to the related Item -EUT Test Photos.

5.3 DEVIATION FROM TEST STANDARD

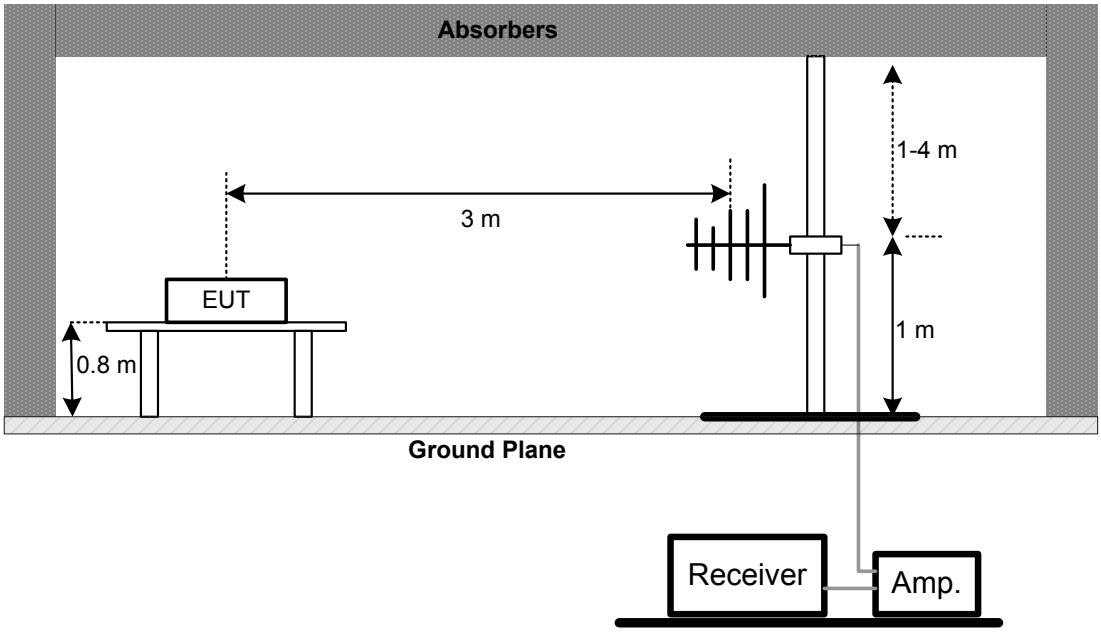
No deviation

5.4 TEST SETUP

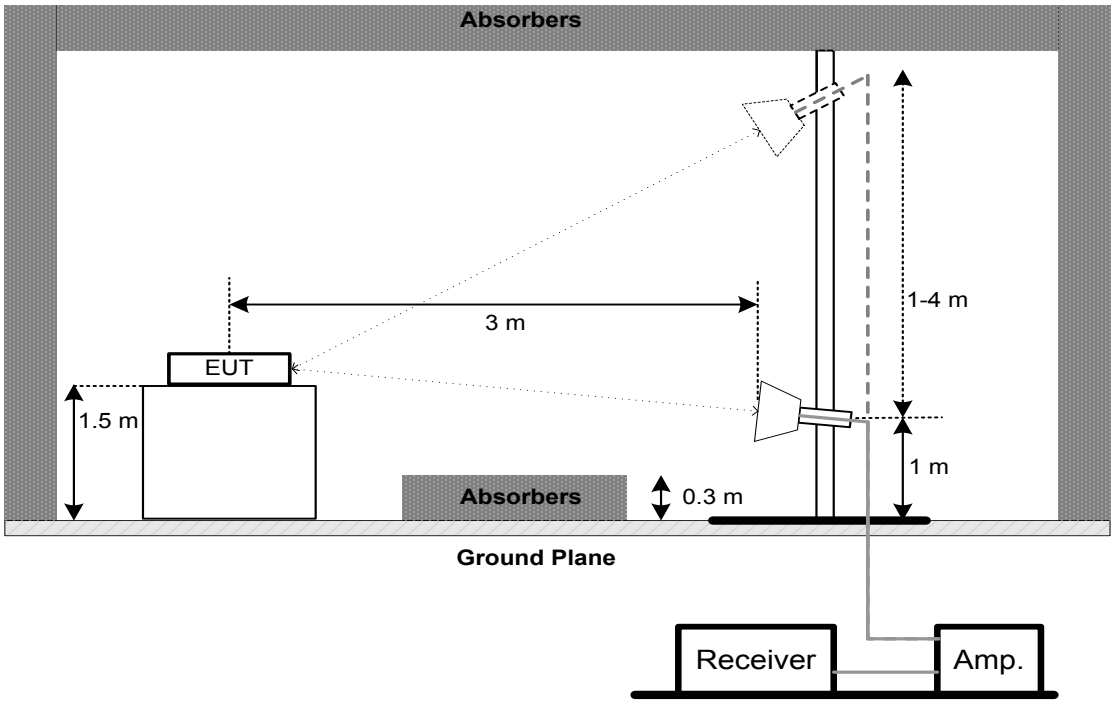
9 kHz-30 MHz



30 MHz to 1 GHz



Above 1 GHz



5.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

5.6 EUT TEST CONDITIONS

Temperature: 24°C Relative Humidity: 68% Test Voltage: DC 5V

5.7 TEST RESULTS - 9 KHZ TO 30 MHZ

Please refer to the APPENDIX B

Remark:

(1) Distance extrapolation factor = 40 log (specific distance / test distance) (dB).
(2) Limit line = specific limits (dBuV) + distance extrapolation factor.

5.8 TEST RESULTS - 30 MHZ TO 1000 MHZ

Please refer to the APPENDIX C.

5.9 TEST RESULTS - ABOVE 1000 MHZ

Please refer to the APPENDIX D.

Remark:

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

6. BANDWIDTH TEST

6.1 LIMIT

FCC Part15, Subpart C (15.247)		
Section	Test Item	Limit
15.247(a)(2)	6 dB Bandwidth	Minimum 500 kHz
	99% Emission Bandwidth	-

6.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
b. For 6dB Bandwidth Spectrum setting: RBW= 100KHz, VBW=300KHz, Sweep time = 2.5 ms.
For 99% OBW Spectrum Setting: For B,G,N20 mode: RBW= 300KHz, VBW=1MHz.
c. The bandwidth was performed in accordance with method 11.8.1 of ANSI C63.10-2013.

6.3 DEVIATION FROM STANDARD

No deviation.

6.4 TEST SETUP

6.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

6.6 EUT TEST CONDITIONS

Temperature: 26°C Relative Humidity: 60% Test Voltage: DC 5V

6.7 TEST RESULTS

Please refer to the APPENDIX E.

7. MAXIMUM AVERAGE OUTPUT POWER & PEAK OUTPUT POWER TEST

7.1 LIMIT

FCC Part15, Subpart C (15.247)		
Section	Test Item	Limit
15.247(b)(3)	Maximum Average Output Power & Peak Output Power	1 Watt or 30dBm

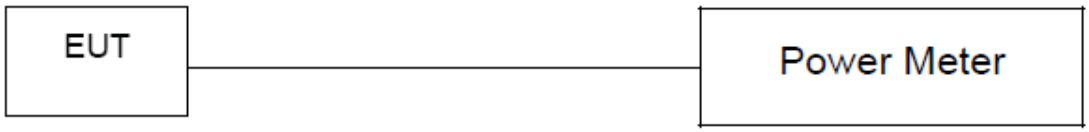
7.2 TEST PROCEDURE

a. The EUT was directly connected to the power meter and antenna output port as show in the block diagram below.
b. The maximum conducted output power was performed in accordance with method 11.9.1.3 (for peak power) or 11.9.2.3.1 (for average power) of ANSI C63.10-2013.

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



7.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

7.6 EUT TEST CONDITIONS

Temperature: 26°C Relative Humidity: 60% Test Voltage: DC 5V

7.7 TEST RESULTS

Please refer to the APPENDIX F.

8. CONDUCTED SPURIOUS EMISSIONS TEST

8.1 LIMIT

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak Output Power limits. If the transmitter complies with the Output Power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required.

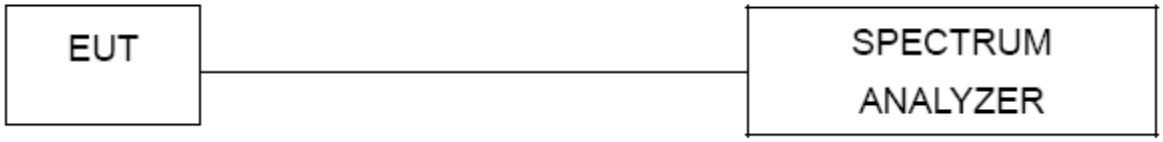
8.2 TEST PROCEDURE

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= 100 kHz, VBW=300 kHz, Sweep time = Auto.

8.3 DEVIATION FROM STANDARD

No deviation.

8.4 TEST SETUP



8.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

8.6 EUT TEST CONDITIONS

Temperature: 26°C Relative Humidity: 60% Test Voltage: DC 5V

8.7 TEST RESULTS

Please refer to the APPENDIX G.

9. POWER SPECTRAL DENSITY TEST

9.1 LIMIT

FCC Part15, Subpart C (15.247)		
Section	Test Item	Limit
15.247(e)	Power Spectral Density	8 dBm (in any 3 kHz)

9.2 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=3 kHz, VBW=10 kHz, Sweep time = Auto.
c. The Power Spectral Density was performed in accordance with method 11.10.2 of ANSI C63.10-2013.

9.3 DEVIATION FROM STANDARD

No deviation.

9.4 TEST SETUP

9.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

9.6 EUT TEST CONDITIONS

Temperature: 26°C Relative Humidity: 60% Test Voltage: DC 5V

9.7 TEST RESULTS

Please refer to the APPENDIX H.

10. MEASUREMENT INSTRUMENTS LIST

AC Power Line Conducted Emissions					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	50Ω Terminator	SHX	TF2-3G-A	8122901	Mar. 10, 2020
2	TWO-LINE V-NETWORK	R&S	ENV216	100526	Mar. 10, 2020
3	EMI Test Receiver	R&S	ESR3	101862	Aug. 11, 2019
4	Artificial-Mains Network	SCHWARZBECK	NSLK 8127	8127685	Mar. 10, 2020
5	TRANSIENT LIMITER	EM	EM-7600	772	Mar. 10, 2020
6	Cable	N/A	N/A(6m)	N/A	Mar. 12, 2020
7	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

Radiated Emissions - 9 kHz to 30 MHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Loop Antenna	EM	EM-6876-1	230	Jan. 15, 2020
2	Cable	N/A	RG 213/U	C-102	May 31, 2020
3	EMI Test Receiver	R&S	ESCI	100895	Mar. 10, 2020
4	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

Radiated Emissions - 30 MHz to 1 GHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	Schwarzbeck	VULB9160	9160-3232	Mar. 09, 2020
2	Amplifier	HP	8447D	2944A09673	Aug. 11, 2019
3	Receiver	Agilent	N9038A	MY52130039	Aug. 11, 2019
4	Cable	emci	LMR-400(30MHz-1GHz)(8m+5m)	N/A	May 24, 2020
5	Controller	CT	SC100	N/A	N/A
6	Controller	MF	MF-7802	MF780208416	N/A
7	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

Radiated Emissions - Above 1 GHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Double Ridged Guide Antenna	ETS	3115	75789	Mar. 09, 2020
2	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Jun. 30, 2019
3	Amplifier	Agilent	8449B	3008A02333	Mar. 10, 2020
4	Microwave Preamplifier With Adaptor	EMC INSTRUMENT	EMC2654045	980039 & HA01	Mar. 10, 2020
5	Receiver	Agilent	N9038A	MY52130039	Aug. 11, 2019
6	Controller	CT	SC100	N/A	N/A
7	Controller	MF	MF-7802	MF780208416	N/A
8	Cable	mitron	B10-01-01-12M	18072744	Jul. 30, 2019
9	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

Bandwidth & Antenna Conducted Spurious Emissions & Power Spectral Density					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP40	100185	Aug. 11, 2019

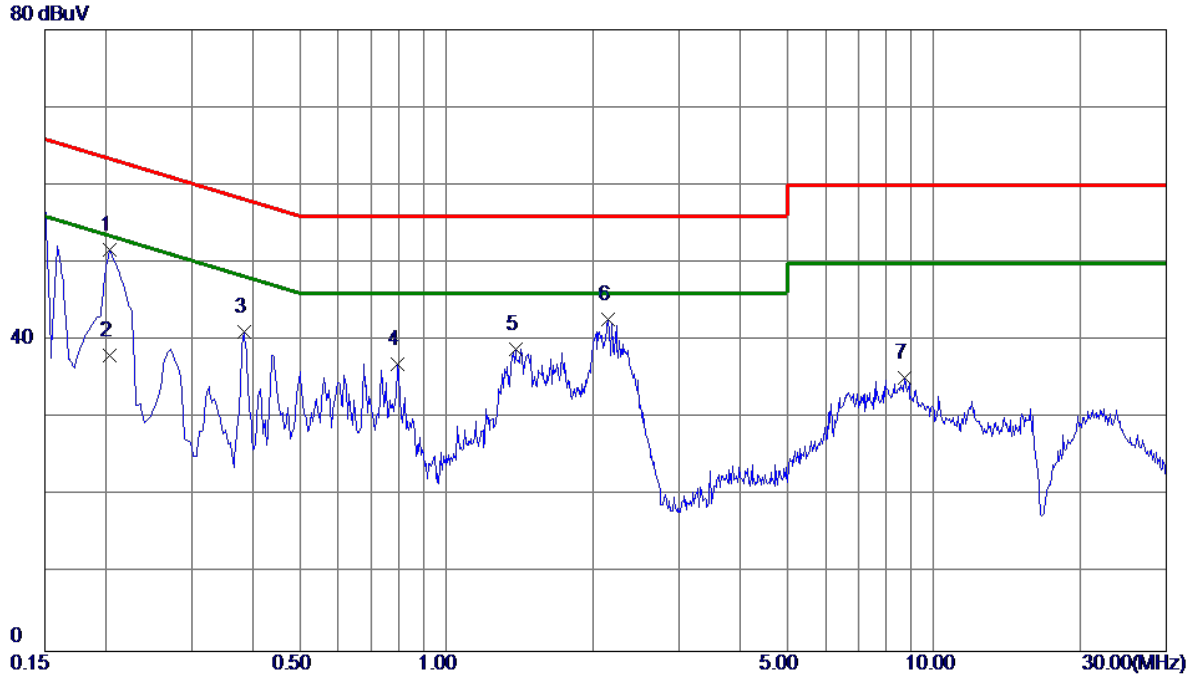
Maximum Average Output Power & Peak Output Power					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	P-series power meter	Agilent	N1911A	MY45100473	Aug. 11, 2019
2	wideband power sensor	Agilent	N1921A	MY51100041	Aug. 11, 2019

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

APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS

Test Mode:	TX N-20 MHz Mode Channel 11

Line

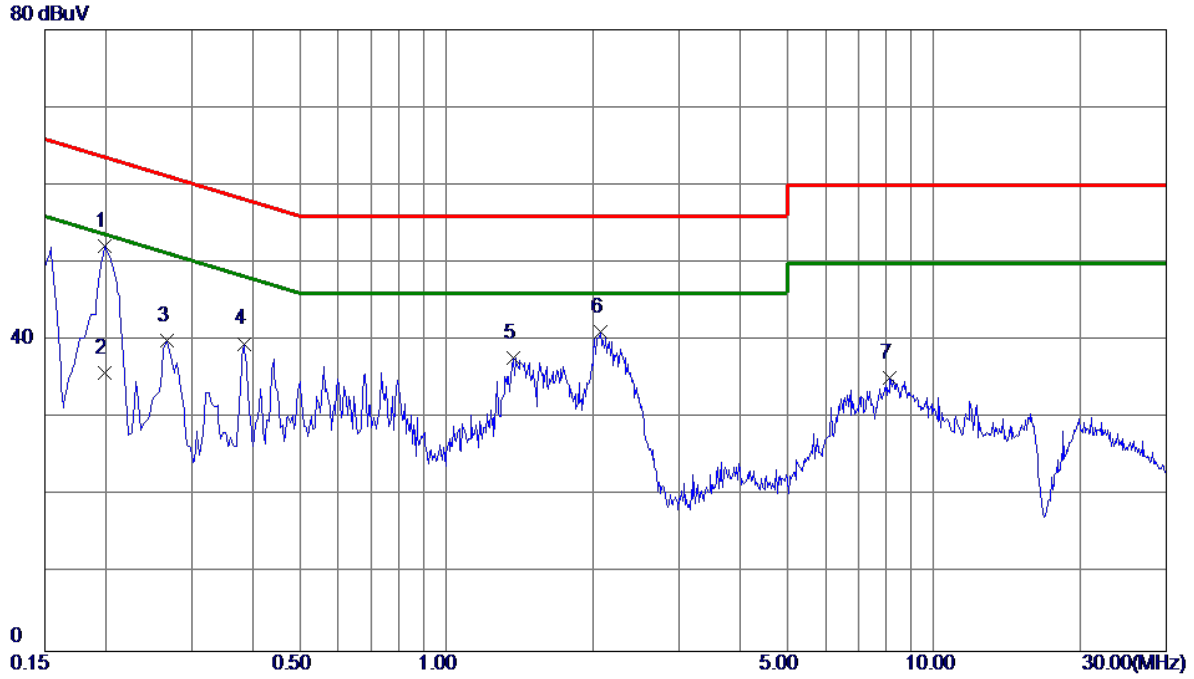


No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1 *	0.2040	41.14	10.48	51.62	63.45	-11.83	Peak	
2	0.2040	27.60	10.48	38.08	53.45	-15.37	AVG	
3	0.3840	30.69	10.49	41.18	58.19	-17.01	Peak	
4	0.7935	26.47	10.53	37.00	56.00	-19.00	Peak	
5	1.3875	28.30	10.59	38.89	56.00	-17.11	Peak	
6	2.1480	32.09	10.65	42.74	56.00	-13.26	Peak	
7	8.7180	24.34	10.90	35.24	60.00	-24.76	Peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX N-20 MHz Mode Channel 11

Neutral



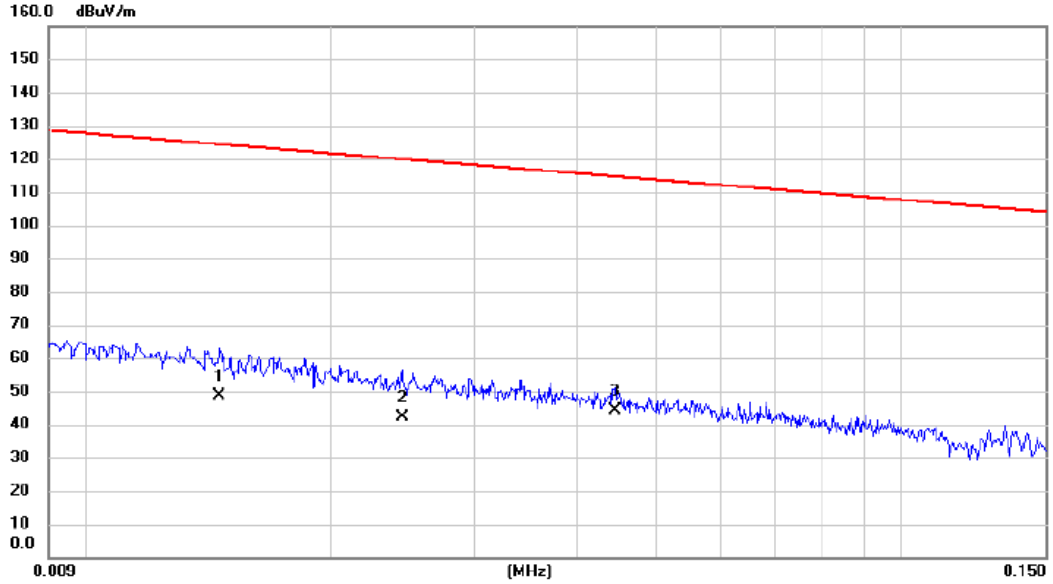
No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1 *	0.1995	41.75	10.45	52.20	63.63	-11.43	Peak	
2	0.1995	25.40	10.45	35.85	53.63	-17.78	AVG	
3	0.2670	29.58	10.46	40.04	61.21	-21.17	Peak	
4	0.3840	29.14	10.46	39.60	58.19	-18.59	Peak	
5	1.3695	27.29	10.54	37.83	56.00	-18.17	Peak	
6	2.0715	30.55	10.60	41.15	56.00	-14.85	Peak	
7	8.1375	24.30	10.84	35.14	60.00	-24.86	Peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

APPENDIX B - RADIATED EMISSION - 9 KHZ TO 30 MHZ

Test Mode:	TX N-20 MHz Mode Channel 11

Ant 0°

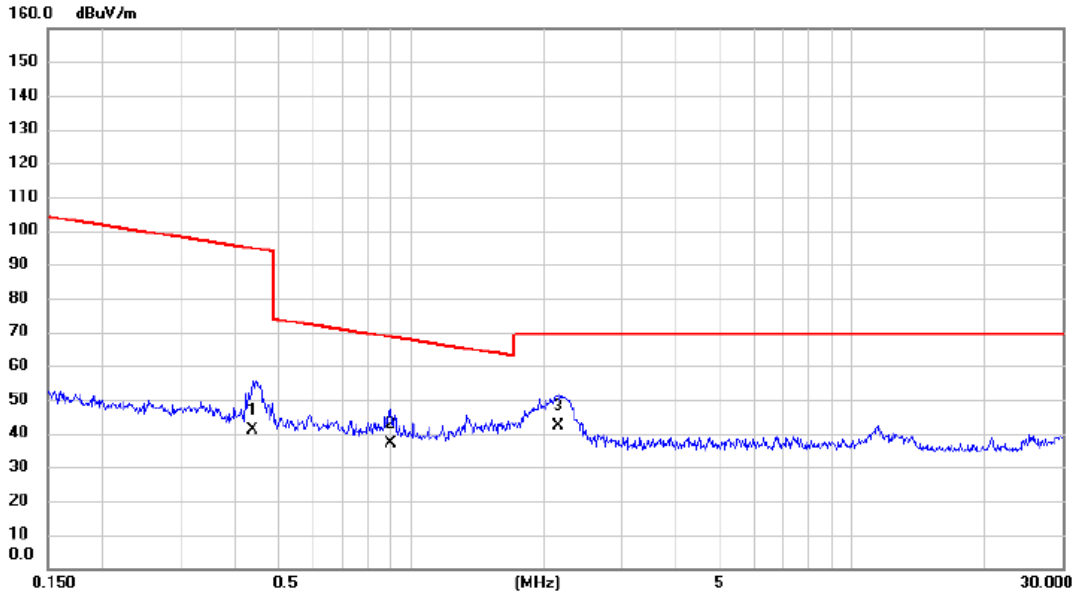


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.015	33.20	15.44	48.64	124.32	-75.68	AVG	
2		0.025	28.50	13.84	42.34	119.82	-77.48	AVG	
3	*	0.045	30.10	13.91	44.01	114.62	-70.61	AVG	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX N-20 MHz Mode Channel 11

Ant 0°

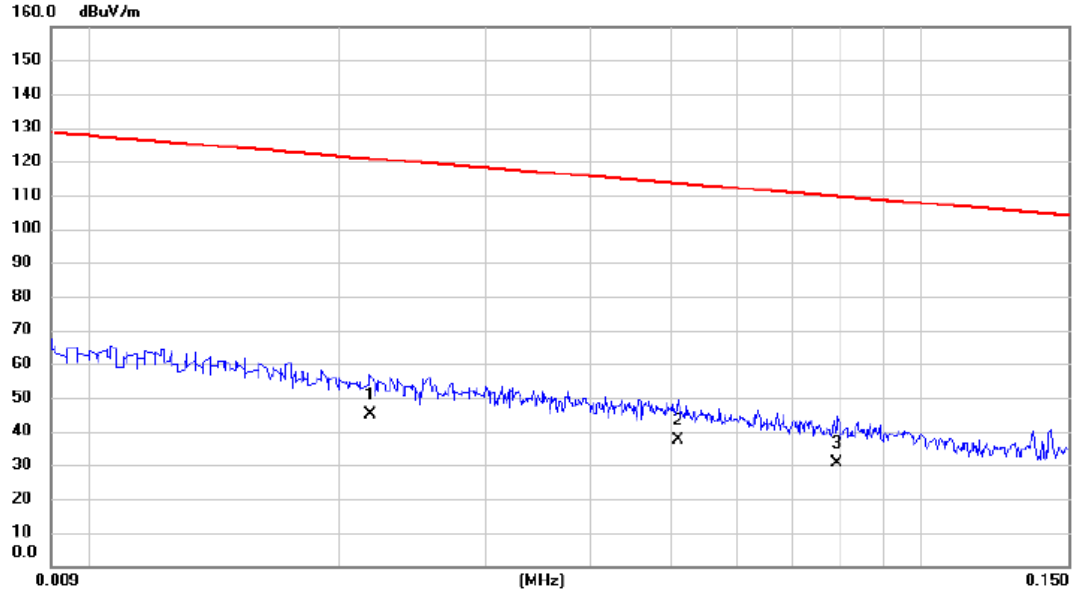


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.437	27.80	13.21	41.01	94.79	-53.78	AVG	
2		0.899	24.30	12.53	36.83	68.53	-31.70	QP	
3	*	2.155	30.60	11.73	42.33	69.54	-27.21	QP	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX N-20 MHz Mode Channel 11

Ant 90°

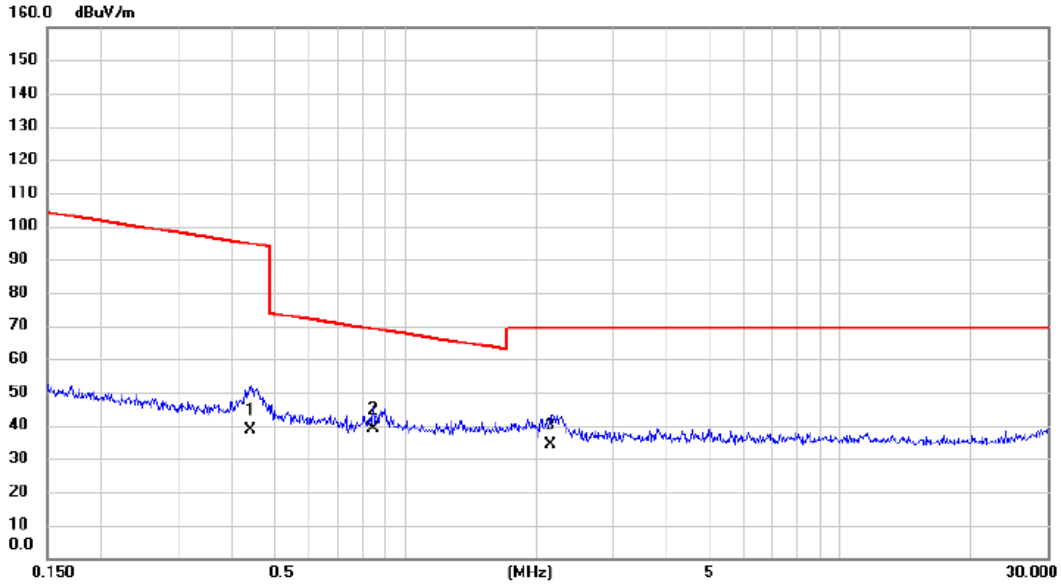


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.022	31.10	13.83	44.93	120.84	-75.91	AVG	
2		0.051	23.30	13.91	37.21	113.45	-76.24	AVG	
3		0.079	16.90	13.54	30.44	109.63	-79.19	AVG	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX N-20 MHz Mode Channel 11

Ant 90°



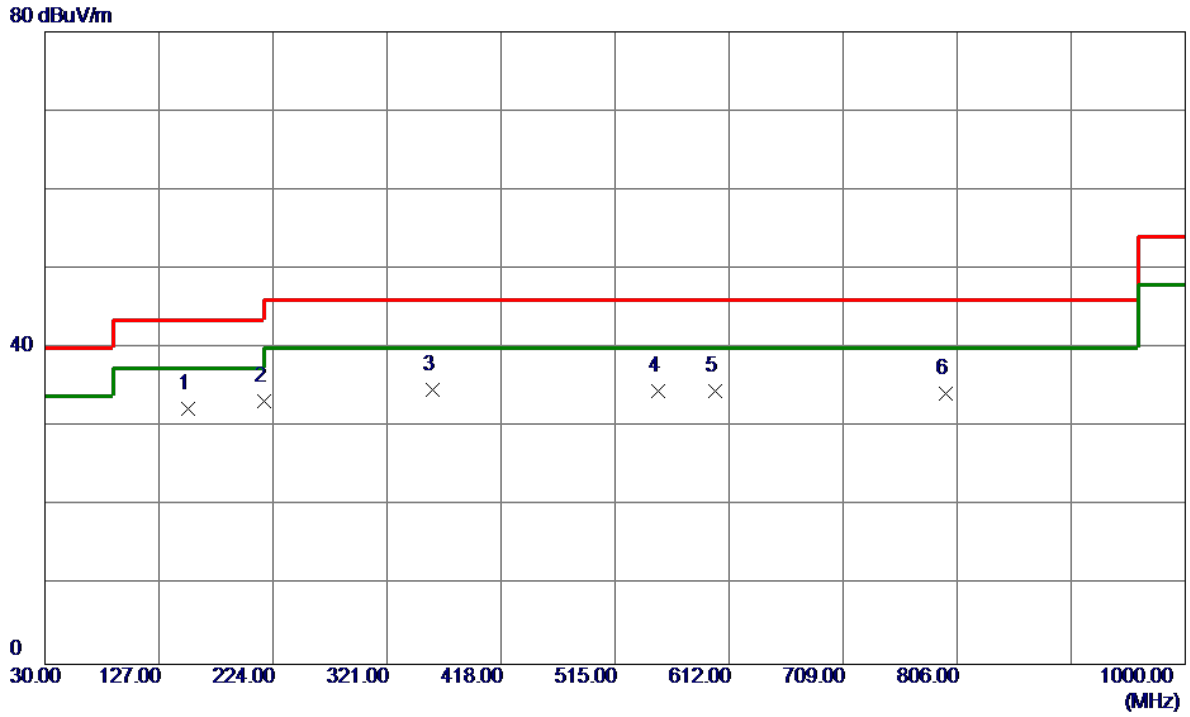
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.440	25.30	13.20	38.50	94.74	-56.24	AVG	
2	*	0.844	26.50	12.55	39.05	69.08	-30.03	QP	
3		2.155	22.40	11.73	34.13	69.54	-35.41	QP	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

APPENDIX C - RADIATED EMISSION - 30 MHZ TO 1000 MHZ

Test Mode:	TX N-20 MHz Mode Channel 11

Vertical

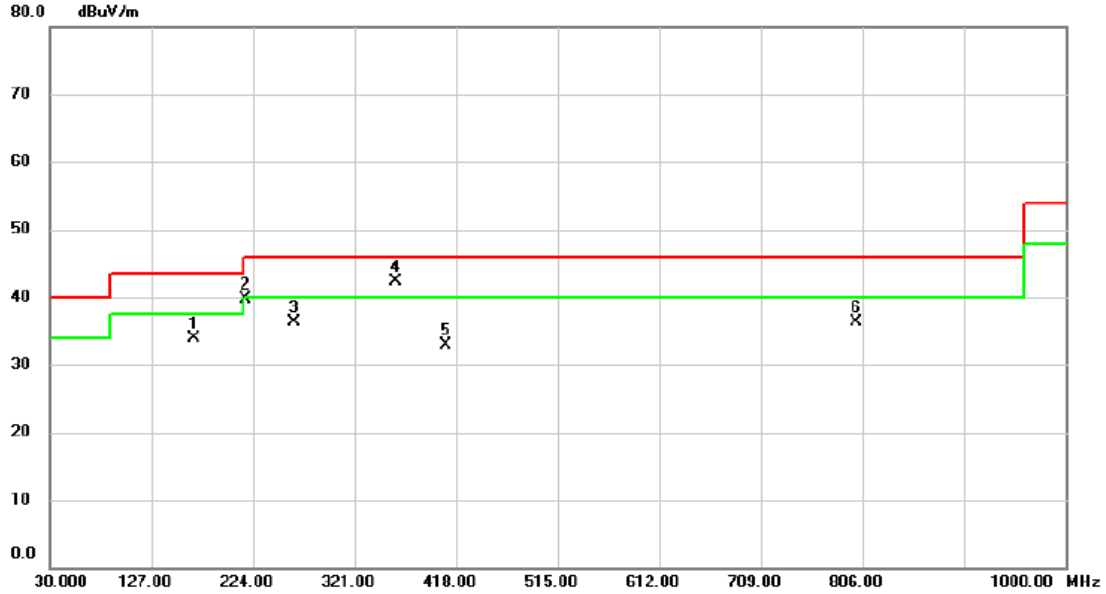


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	151.7350	44.31	-12.06	32.25	43.50	-11.25	Peak	
2	216.2400	48.26	-15.00	33.26	46.00	-12.74	Peak	
3	359.8000	45.16	-10.42	34.74	46.00	-11.26	Peak	
4	551.8600	41.72	-7.15	34.57	46.00	-11.43	Peak	
5	599.8750	40.27	-5.74	34.53	46.00	-11.47	Peak	
6	796.3000	37.35	-3.05	34.30	46.00	-11.70	Peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX N-20 MHz Mode Channel 11

Horizontal



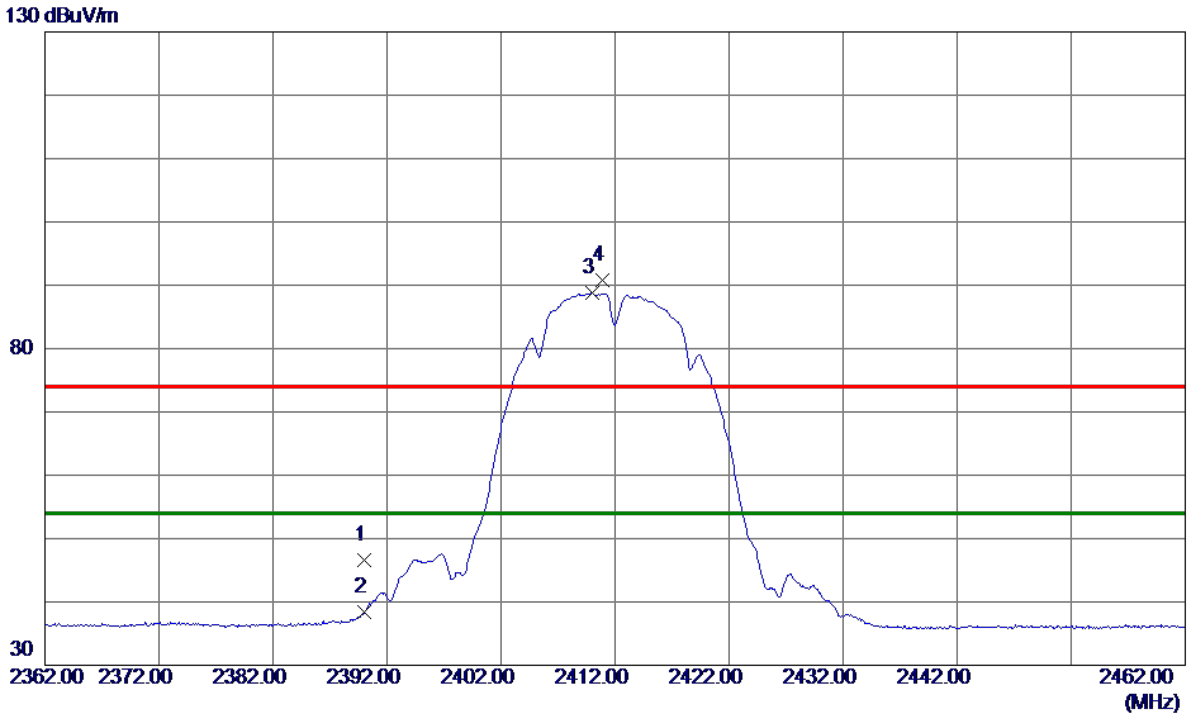
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		168.225	45.98	-12.17	33.81	43.50	-9.69	peak	
2		216.240	54.63	-15.01	39.62	46.00	-6.38	peak	
3		263.770	49.07	-12.81	36.26	46.00	-9.74	peak	
4	*	359.800	52.75	-10.42	42.33	46.00	-3.67	peak	
5		407.815	42.11	-9.24	32.87	46.00	-13.13	peak	
6		800.665	39.25	-2.99	36.26	46.00	-9.74	peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

APPENDIX D - RADIATED EMISSION- ABOVE 1000 MHZ

Test Mode:	TX B Mode 2412 MHz

Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.0000	40.16	6.53	46.69	74.00	-27.31	Peak	
2	2390.0000	31.86	6.53	38.39	54.00	-15.61	AVG	
3 *	2410.0000	82.35	6.51	88.86	54.00	34.86	AVG	No Limit
4	2410.8500	84.34	6.51	90.85	74.00	16.85	Peak	No Limit

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX B Mode 2412 MHz

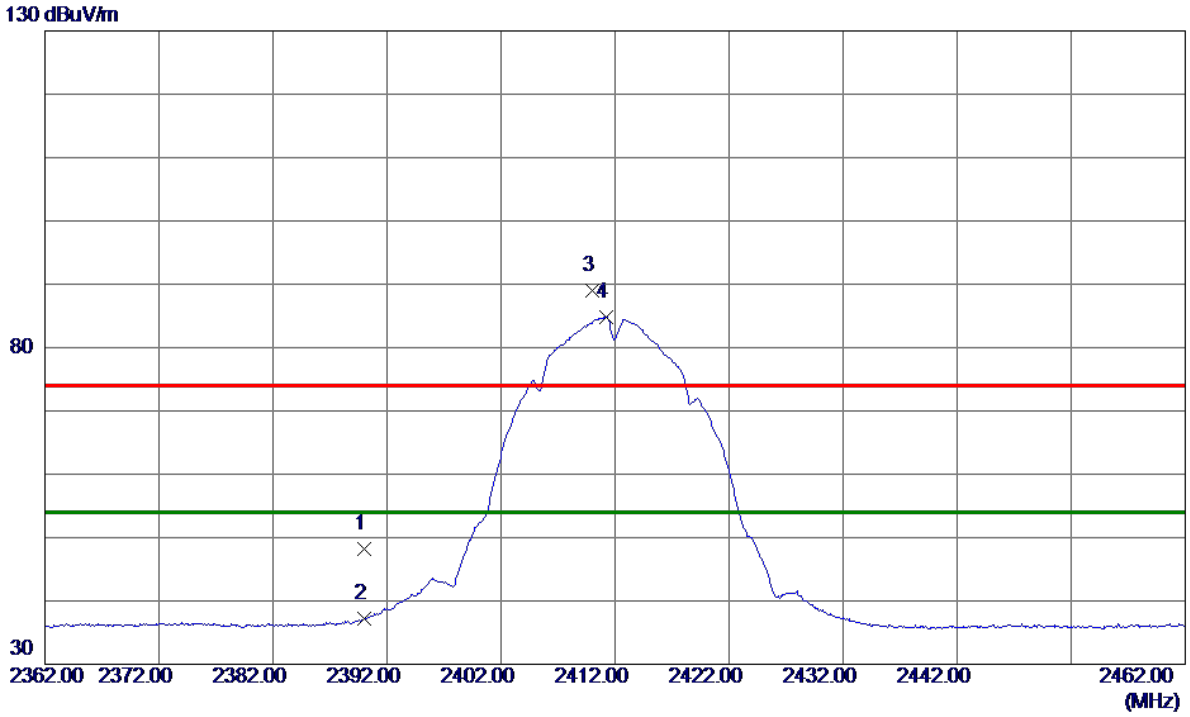
Vertical

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	3215.9180	32.02	-0.06	31.96	54.00	-22.04	AVG	
2	3216.0970	40.90	-0.06	40.84	74.00	-33.16	Peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX B Mode 2412 MHz

Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.0000	41.66	6.53	48.19	74.00	-25.81	Peak	
2	2390.0000	30.64	6.53	37.17	54.00	-16.83	AVG	
3	2410.0000	82.47	6.51	88.98	74.00	14.98	Peak	No Limit
4 *	2411.2000	78.26	6.51	84.77	54.00	30.77	AVG	No Limit

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX B Mode 2412 MHz

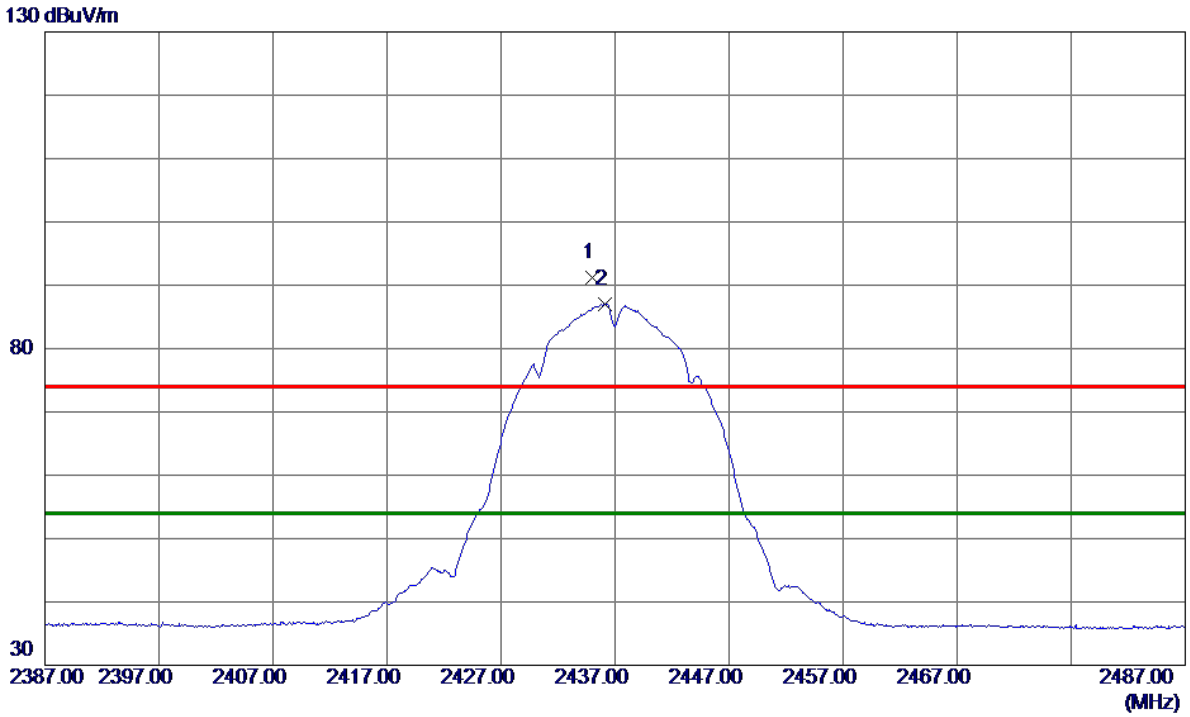
Horizontal

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	3215.8470	41.73	-0.06	41.67	74.00	-32.33	Peak	
2 *	3215.9630	32.94	-0.06	32.88	54.00	-21.12	AVG	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX B Mode 2437 MHz

Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2434.9500	84.81	6.48	91.29	74.00	17.29	Peak	No Limit
2 *	2436.1500	80.58	6.48	87.06	54.00	33.06	AVG	No Limit

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX B Mode 2437 MHz

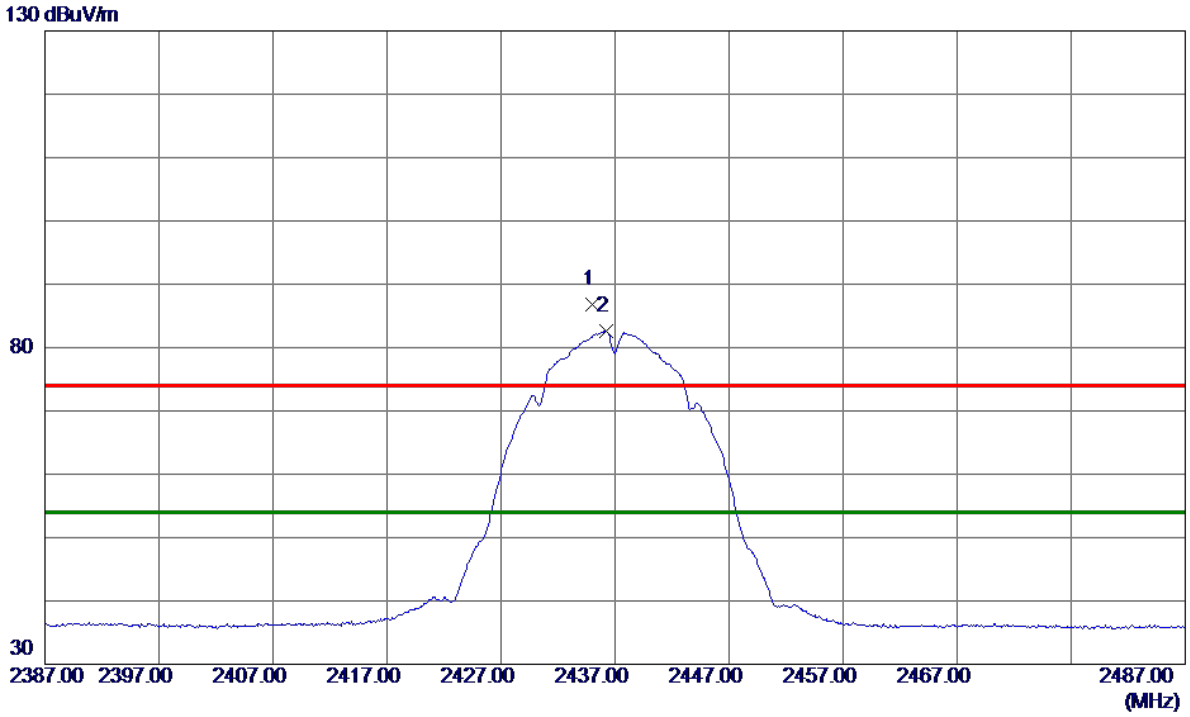
Vertical

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	3249.0400	40.63	0.07	40.70	74.00	-33.30	Peak	
2 *	3249.3650	30.88	0.07	30.95	54.00	-23.05	AVG	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX B Mode 2437 MHz

Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2435.0000	80.28	6.48	86.76	74.00	12.76	Peak	No Limit
2 *	2436.2000	76.11	6.48	82.59	54.00	28.59	AVG	No Limit

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX B Mode 2437 MHz

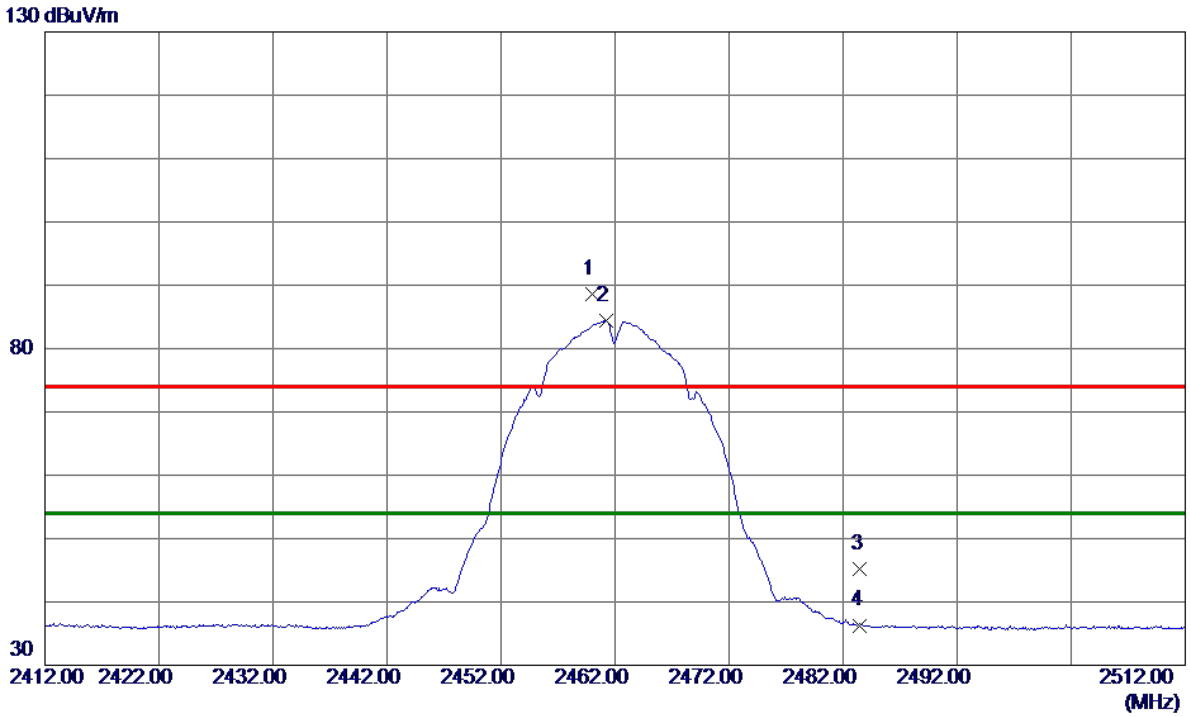
Horizontal

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	3249.3050	32.90	0.07	32.97	54.00	-21.03	AVG	
2	3249.4550	41.09	0.08	41.17	74.00	-32.83	Peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX B Mode 2462 MHz

Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2460.0000	82.10	6.45	88.55	74.00	14.55	Peak	No Limit
2 *	2461.2000	77.99	6.45	84.44	54.00	30.44	AVG	No Limit
3	2483.5000	38.70	6.42	45.12	74.00	-28.88	Peak	
4	2483.5000	29.88	6.42	36.30	54.00	-17.70	AVG	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX B Mode 2462 MHz

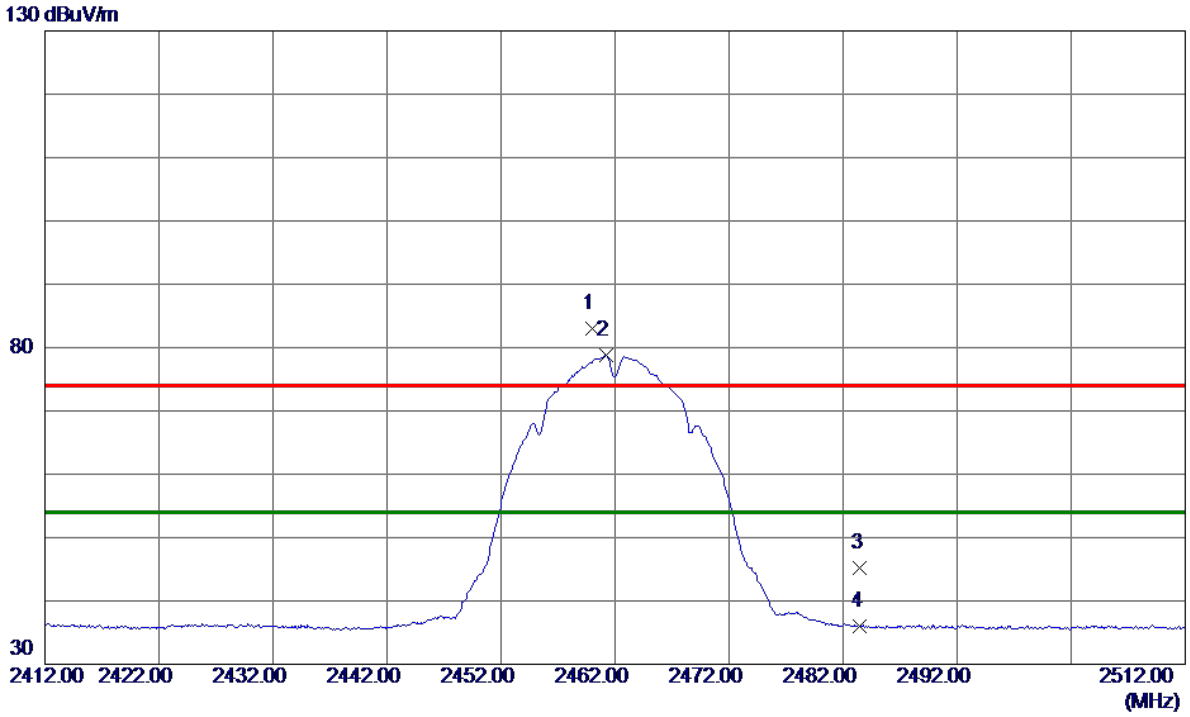
Vertical

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	3282.7150	31.60	0.21	31.81	54.00	-22.19	AVG	
2	3283.0630	40.30	0.21	40.51	74.00	-33.49	Peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX B Mode 2462 MHz

Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2460.0000	76.48	6.45	82.93	74.00	8.93	Peak	No Limit
2 *	2461.2000	72.30	6.45	78.75	54.00	24.75	AVG	No Limit
3	2483.5000	38.80	6.42	45.22	74.00	-28.78	Peak	
4	2483.5000	29.54	6.42	35.96	54.00	-18.04	AVG	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX B Mode 2462 MHz

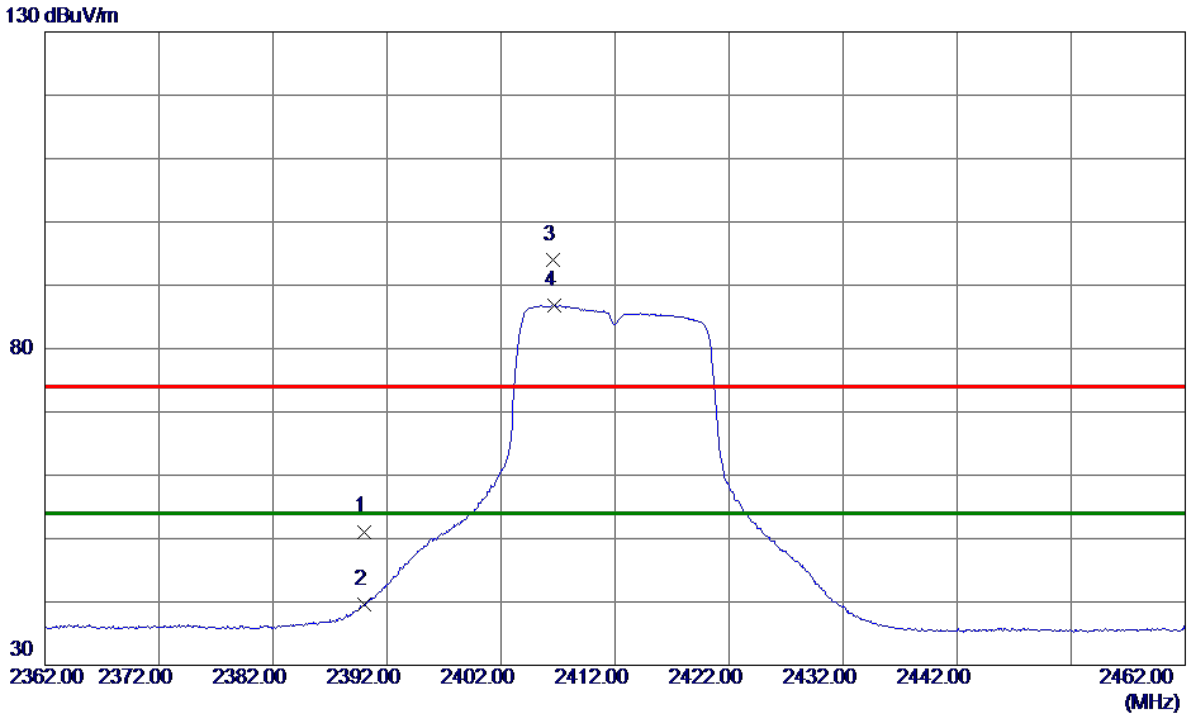
Horizontal

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	3282.6330	33.02	0.21	33.23	54.00	-20.77	AVG	
2	3282.8380	41.15	0.21	41.36	74.00	-32.64	Peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX G Mode 2412 MHz

Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.0000	44.57	6.53	51.10	74.00	-22.90	Peak	
2	2390.0000	33.00	6.53	39.53	54.00	-14.47	AVG	
3	2406.6000	87.57	6.51	94.08	74.00	20.08	Peak	No Limit
4 *	2406.7000	80.37	6.51	86.88	54.00	32.88	AVG	No Limit

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX G Mode 2412 MHz

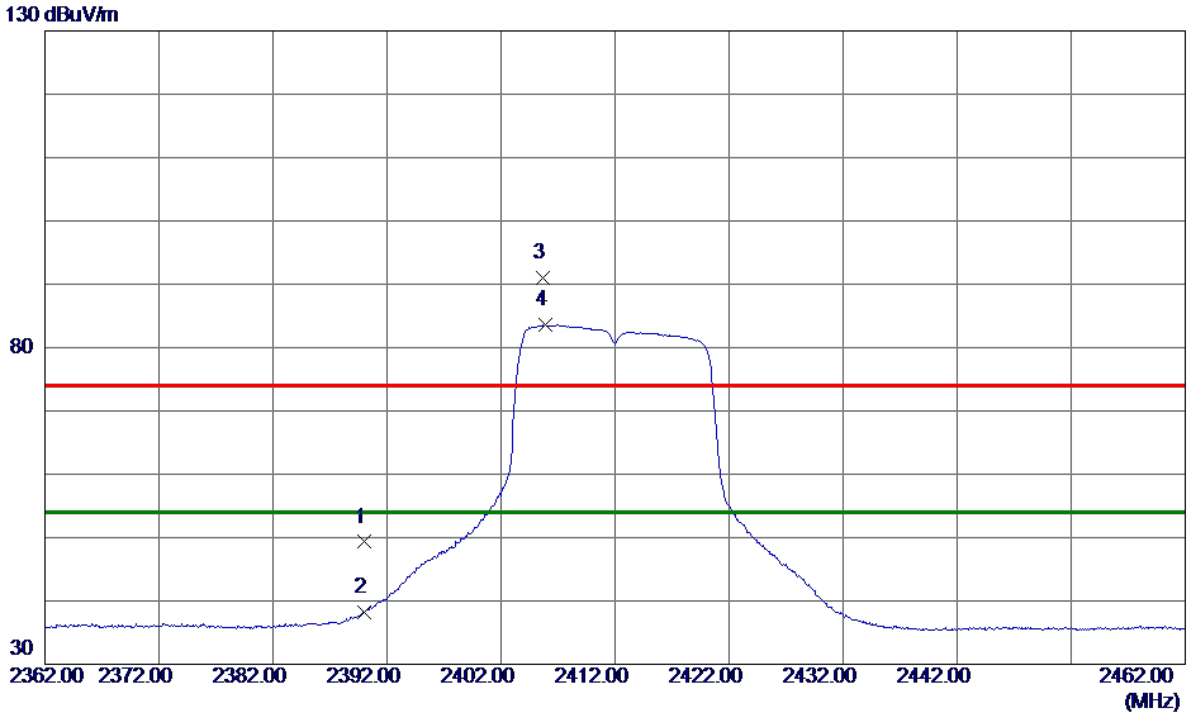
Vertical

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	3215.7400	40.53	-0.06	40.47	74.00	-33.53	Peak	
2 *	3215.9720	31.39	-0.06	31.33	54.00	-22.67	AVG	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX G Mode 2412 MHz

Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.0000	42.77	6.53	49.30	74.00	-24.70	Peak	
2	2390.0000	31.76	6.53	38.29	54.00	-15.71	AVG	
3	2405.6500	84.47	6.51	90.98	74.00	16.98	Peak	No Limit
4 *	2405.9000	77.11	6.51	83.62	54.00	29.62	AVG	No Limit

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX G Mode 2412 MHz

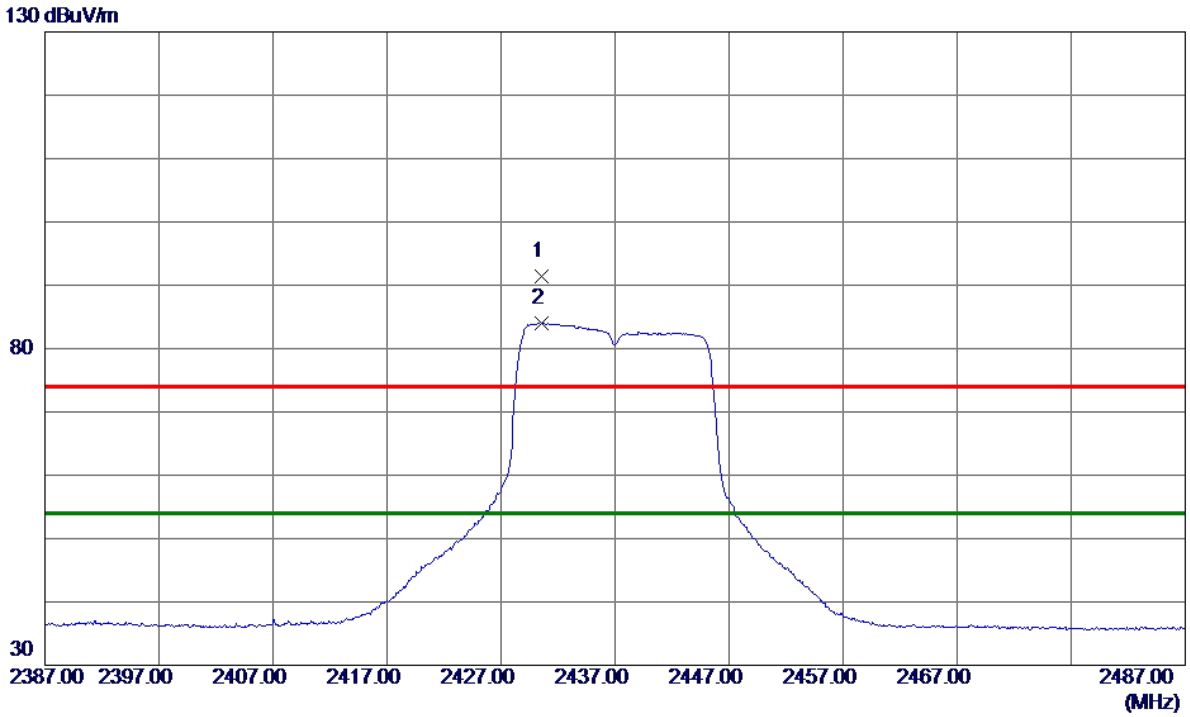
Horizontal

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	3215.9270	33.19	-0.06	33.13	54.00	-20.87	AVG	
2	3216.0250	41.43	-0.06	41.37	74.00	-32.63	Peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX G Mode 2437 MHz

Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2430.6000	84.94	6.48	91.42	74.00	17.42	Peak	No Limit
2 *	2430.6000	77.57	6.48	84.05	54.00	30.05	AVG	No Limit

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX G Mode 2437 MHz

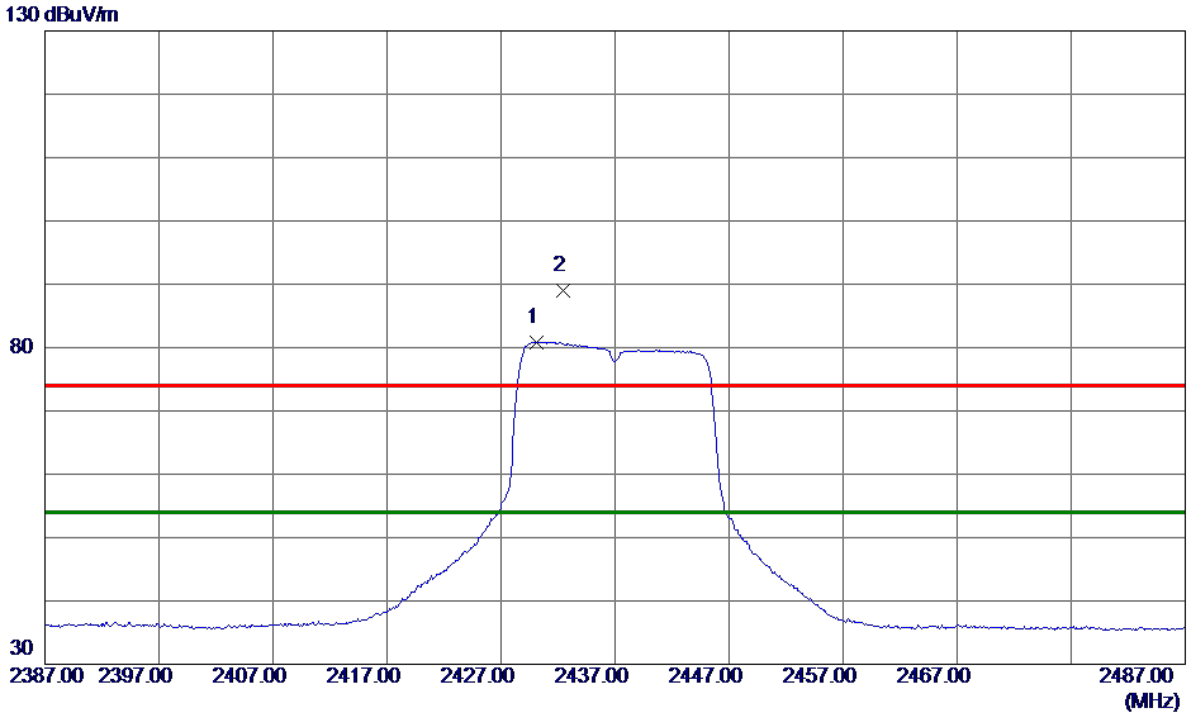
Vertical

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	3249.2549	31.94	0.07	32.01	54.00	-21.99	AVG	
2	3249.2800	40.55	0.07	40.62	74.00	-33.38	Peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX G Mode 2437 MHz

Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	2430.1500	74.40	6.49	80.89	54.00	26.89	AVG	No Limit
2	2432.4000	82.61	6.48	89.09	74.00	15.09	Peak	No Limit

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX G Mode 2437 MHz

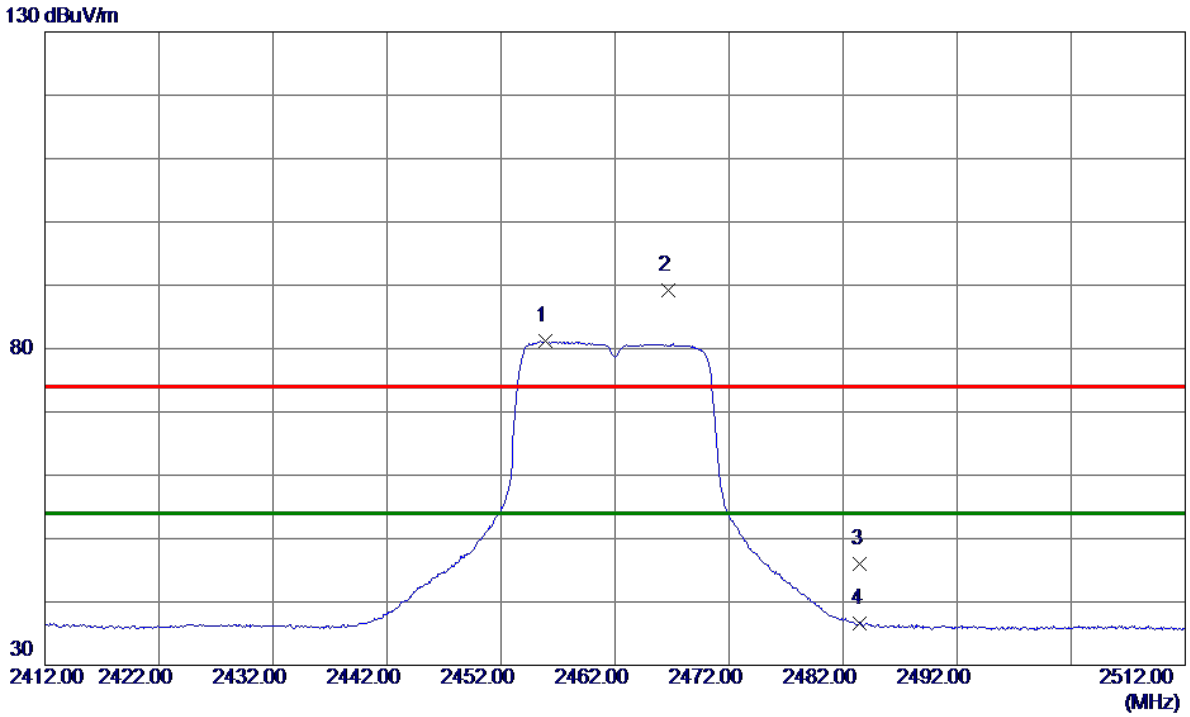
Horizontal

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	3249.3350	41.12	0.07	41.19	74.00	-32.81	Peak	
2 *	3249.3450	32.94	0.07	33.01	54.00	-20.99	AVG	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX G Mode 2462 MHz

Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	2455.9000	74.79	6.46	81.25	54.00	27.25	AVG	No Limit
2	2466.6500	82.73	6.44	89.17	74.00	15.17	Peak	No Limit
3	2483.5000	39.54	6.42	45.96	74.00	-28.04	Peak	
4	2483.5000	30.26	6.42	36.68	54.00	-17.32	AVG	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX G Mode 2462 MHz

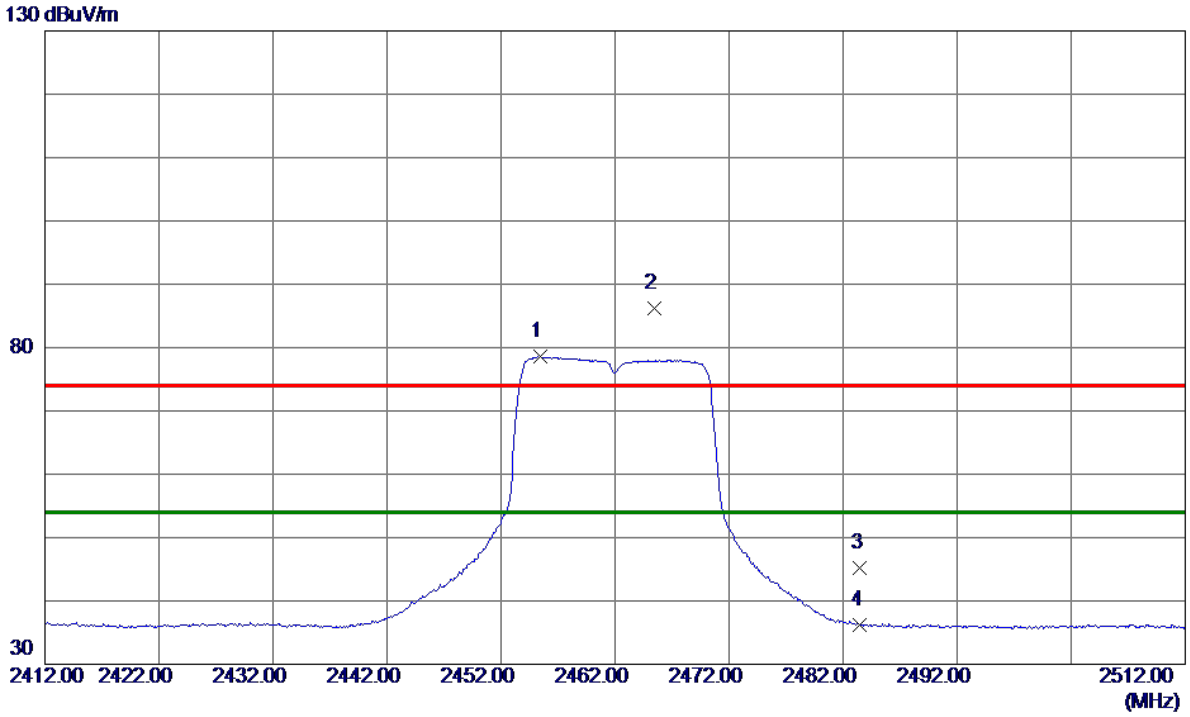
Vertical

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	3282.5850	31.64	0.21	31.85	54.00	-22.15	AVG	
2	3282.6570	40.60	0.21	40.81	74.00	-33.19	Peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX G Mode 2462 MHz

Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	2455.4000	72.09	6.46	78.55	54.00	24.55	AVG	No Limit
2	2465.4000	79.83	6.44	86.27	74.00	12.27	Peak	No Limit
3	2483.5000	38.83	6.42	45.25	74.00	-28.75	Peak	
4	2483.5000	29.78	6.42	36.20	54.00	-17.80	AVG	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX G Mode 2462 MHz

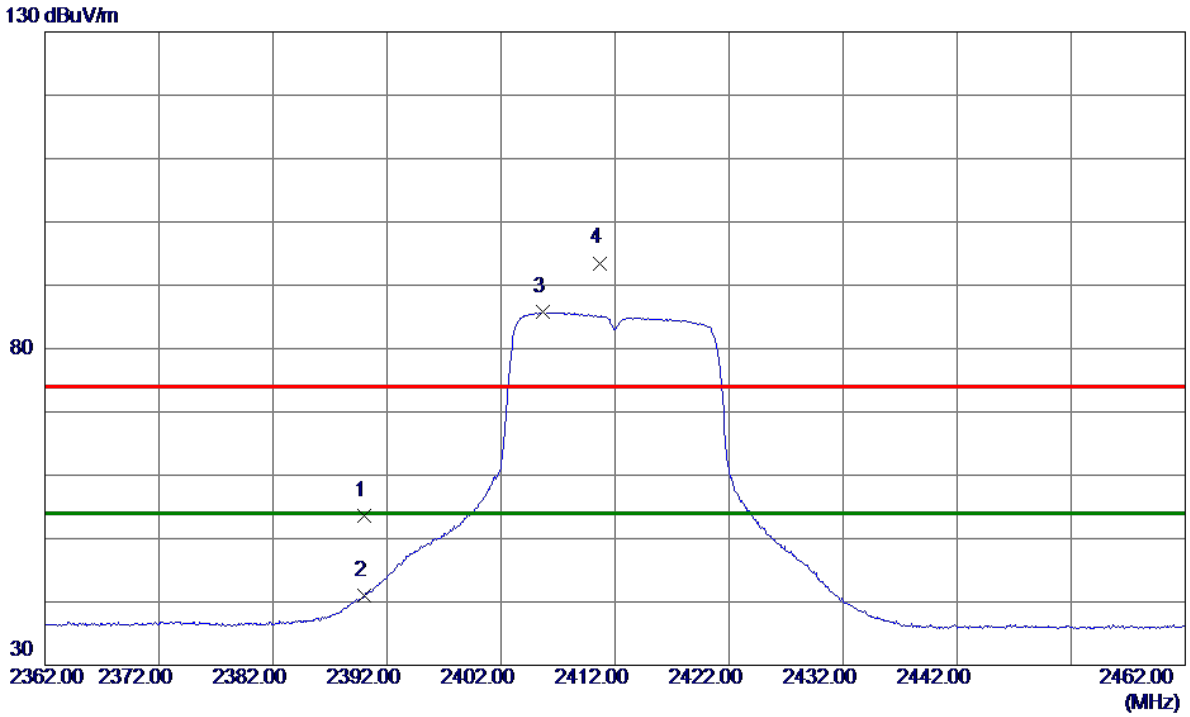
Horizontal

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	3282.5880	32.66	0.21	32.87	54.00	-21.13	AVG	
2	3282.9700	40.84	0.21	41.05	74.00	-32.95	Peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX N-20M Mode 2412 MHz

Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.0000	47.01	6.53	53.54	74.00	-20.46	Peak	
2	2390.0000	34.56	6.53	41.09	54.00	-12.91	AVG	
3 *	2405.6500	79.22	6.51	85.73	54.00	31.73	AVG	No Limit
4	2410.7000	86.99	6.51	93.50	74.00	19.50	Peak	No Limit

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX N-20M Mode 2412 MHz

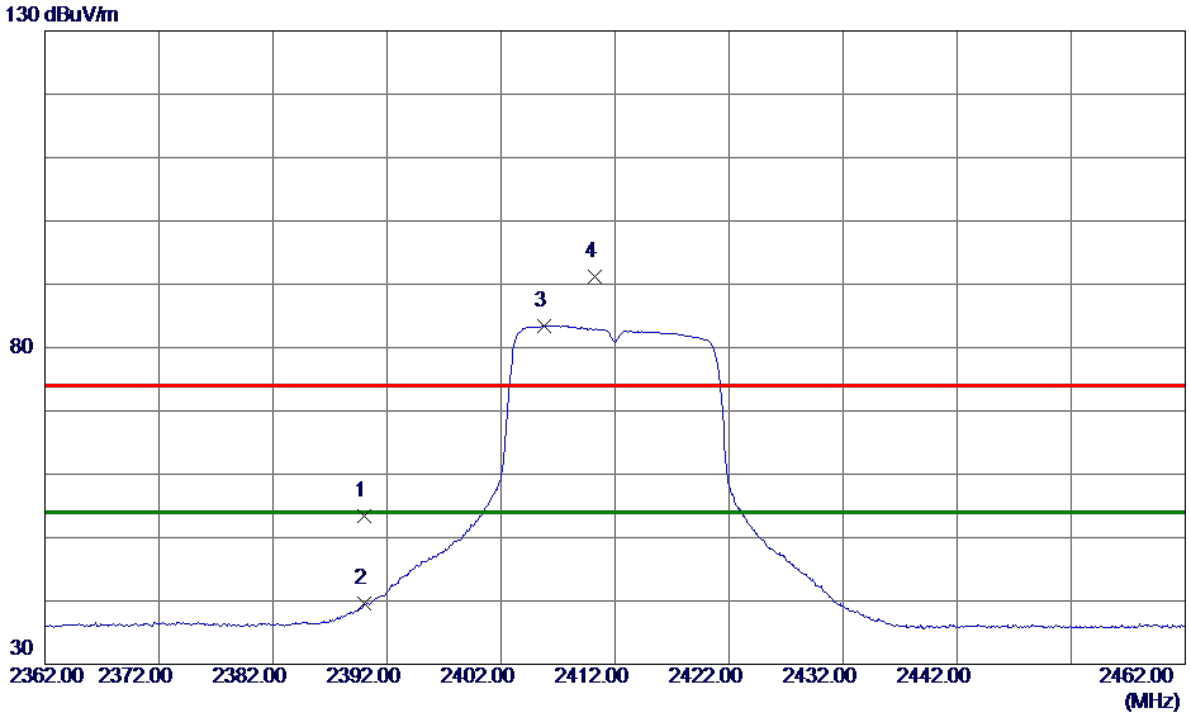
Vertical

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	3215.9520	31.86	-0.06	31.80	54.00	-22.20	AVG	
2	3216.1800	41.20	-0.06	41.14	74.00	-32.86	Peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX N-20M Mode 2412 MHz

Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.0000	46.81	6.53	53.34	74.00	-20.66	Peak	
2	2390.0000	33.00	6.53	39.53	54.00	-14.47	AVG	
3 *	2405.7500	76.98	6.51	83.49	54.00	29.49	AVG	No Limit
4	2410.2000	84.77	6.51	91.28	74.00	17.28	Peak	No Limit

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX N-20M Mode 2412 MHz

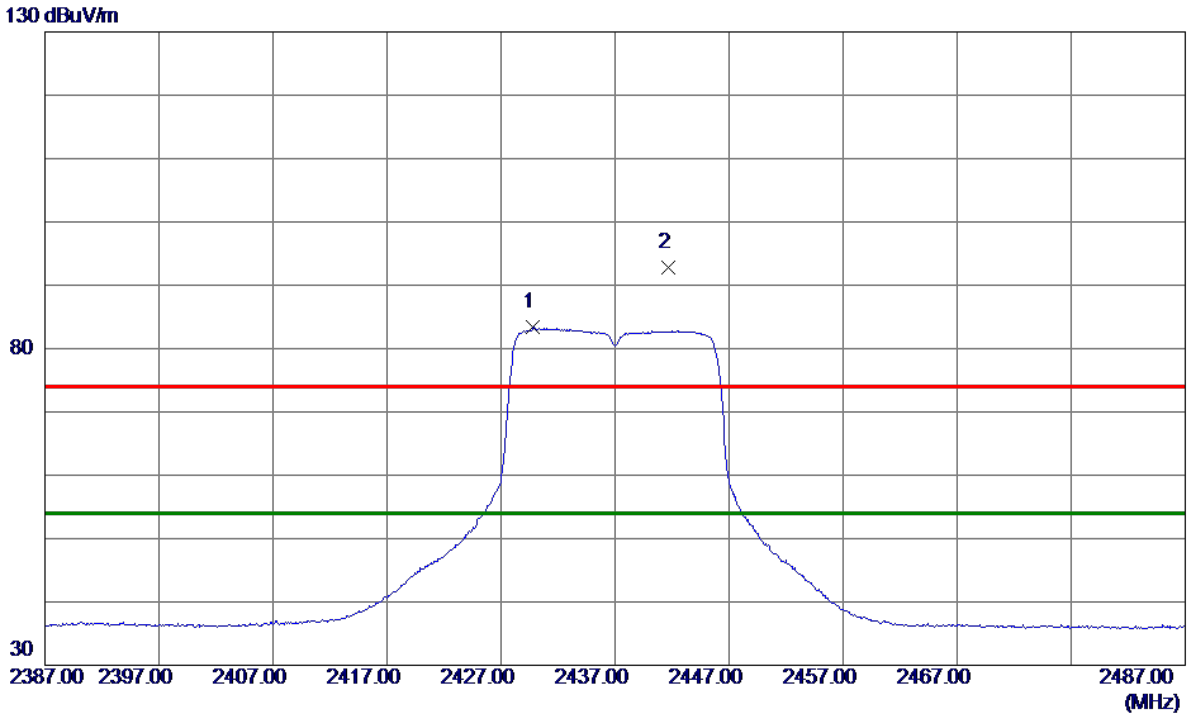
Horizontal

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	3215.8300	40.99	-0.06	40.93	74.00	-33.07	Peak	
2 *	3215.9720	32.75	-0.06	32.69	54.00	-21.31	AVG	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX N-20M Mode 2437 MHz

Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	2429.8000	76.82	6.49	83.31	54.00	29.31	AVG	No Limit
2	2441.7000	86.25	6.47	92.72	74.00	18.72	Peak	No Limit

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX N-20M Mode 2437 MHz

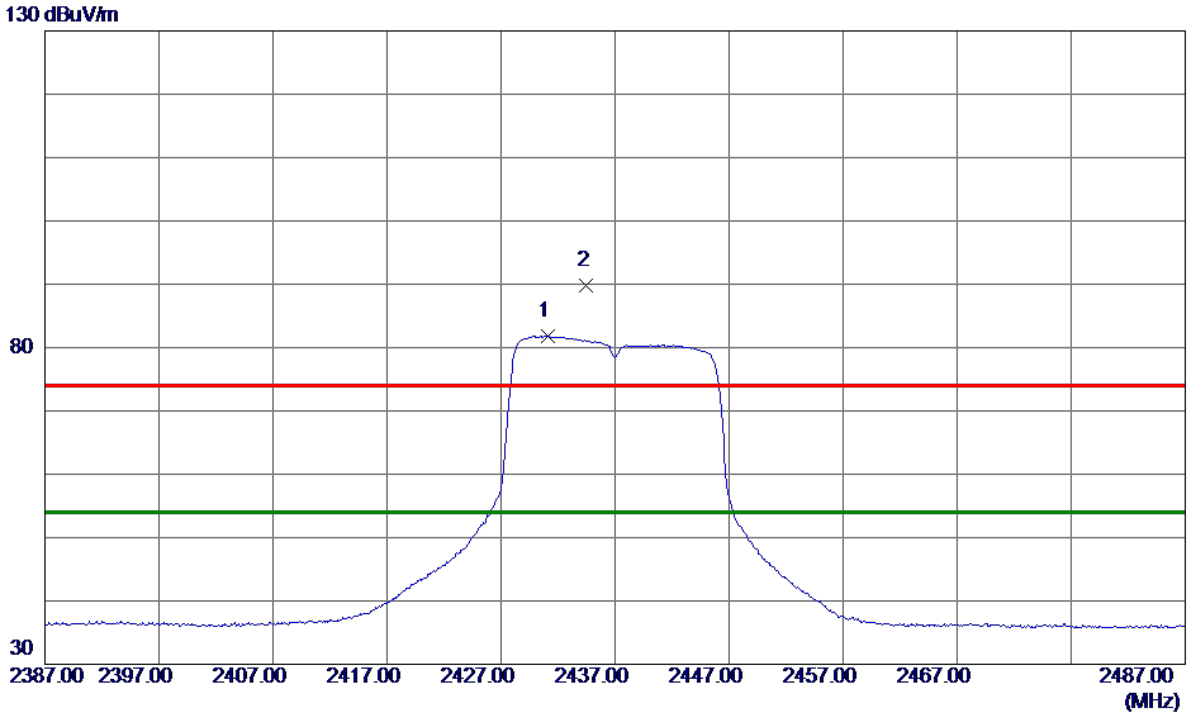
Vertical

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	3249.3650	31.22	0.07	31.29	54.00	-22.71	AVG	
2	3249.4230	40.46	0.08	40.54	74.00	-33.46	Peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX N-20M Mode 2437 MHz

Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	2431.1500	75.30	6.48	81.78	54.00	27.78	AVG	No Limit
2	2434.5000	83.38	6.48	89.86	74.00	15.86	Peak	No Limit

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX N-20M Mode 2437 MHz

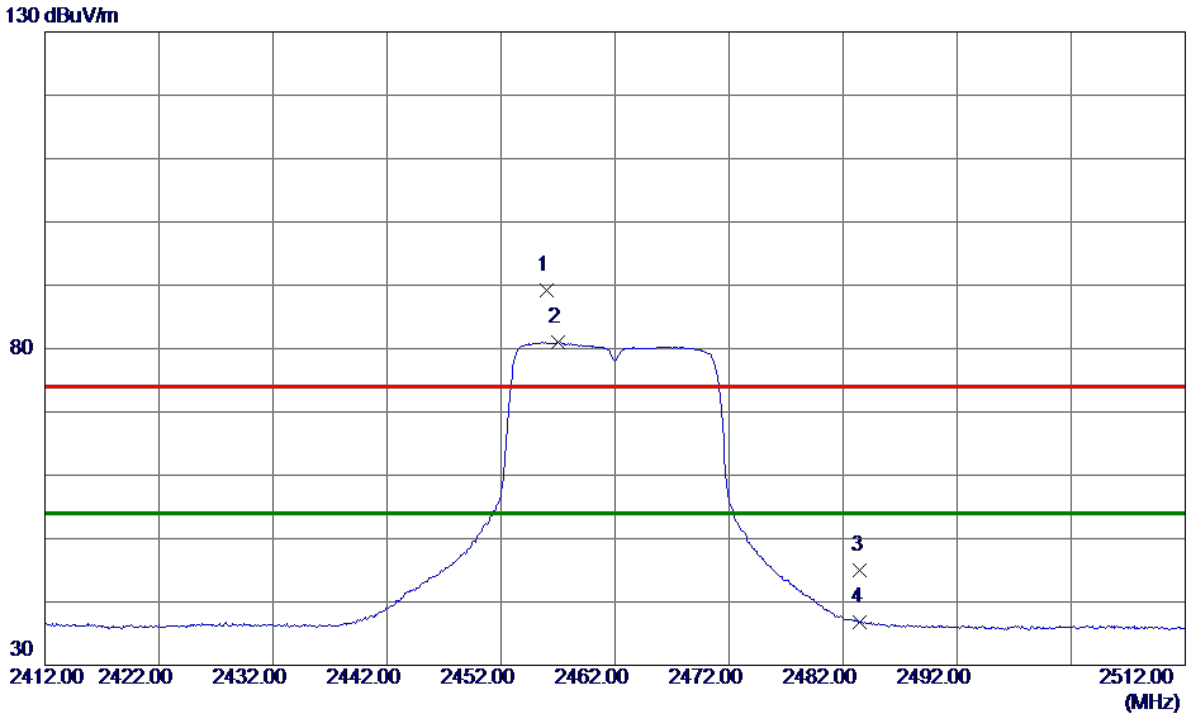
Horizontal

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	3249.2020	40.94	0.07	41.01	74.00	-32.99	Peak	
2 *	3249.3270	32.42	0.07	32.49	54.00	-21.51	AVG	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX N-20M Mode 2462 MHz

Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2456.0500	82.72	6.46	89.18	74.00	15.18	Peak	No Limit
2 *	2457.0500	74.55	6.45	81.00	54.00	27.00	AVG	No Limit
3	2483.5000	38.58	6.42	45.00	74.00	-29.00	Peak	
4	2483.5000	30.41	6.42	36.83	54.00	-17.17	AVG	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX N-20M Mode 2462 MHz

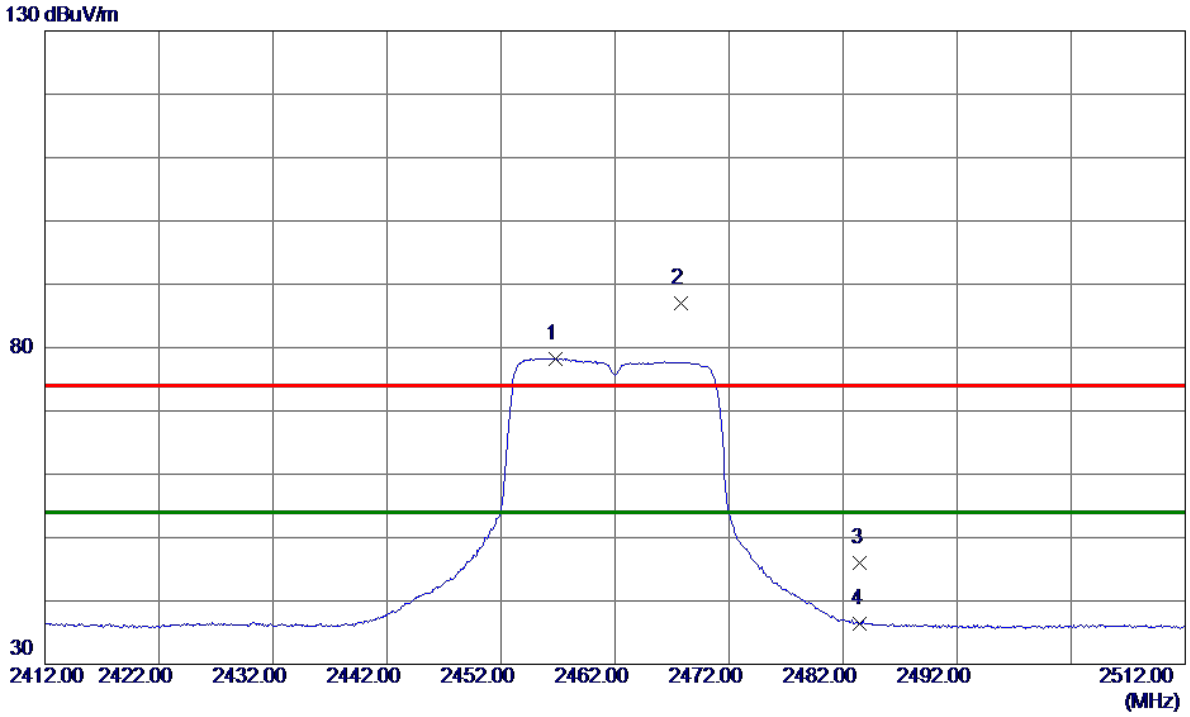
Vertical

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	3282.6050	32.06	0.21	32.27	54.00	-21.73	AVG	
2	3282.8670	40.56	0.21	40.77	74.00	-33.23	Peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX N-20M Mode 2462 MHz

Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	2456.7500	71.82	6.45	78.27	54.00	24.27	AVG	No Limit
2	2467.8000	80.66	6.44	87.10	74.00	13.10	Peak	No Limit
3	2483.5000	39.53	6.42	45.95	74.00	-28.05	Peak	
4	2483.5000	29.91	6.42	36.33	54.00	-17.67	AVG	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX N-20M Mode 2462 MHz

Horizontal

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	3282.4700	41.63	0.21	41.84	74.00	-32.16	Peak	
2 *	3282.5800	32.89	0.21	33.10	54.00	-20.90	AVG	

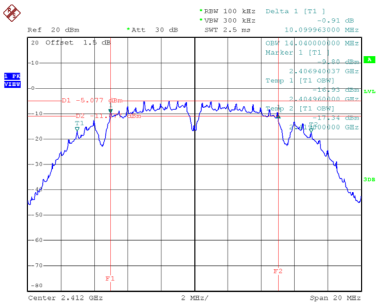
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

APPENDIX E - BANDWIDTH

Test Mode	TX B Mode

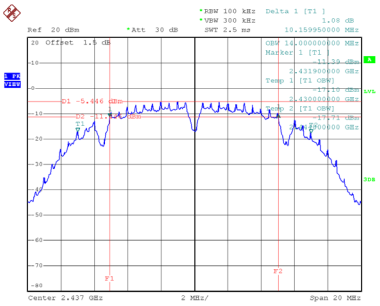
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	6 dB Bandwidth Min. Limit (kHz)	Result
01	2412	10.10	500	Complies
06	2437	10.16	500	Complies
11	2462	10.10	500	Complies

CH01



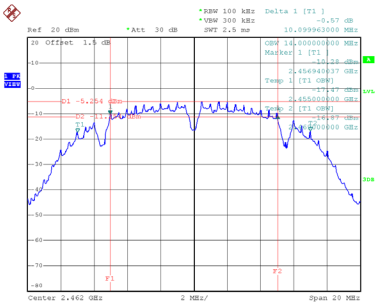
Date: 13.MAY.2019 16:32:24

CH06



Date: 13.MAY.2019 16:35:47

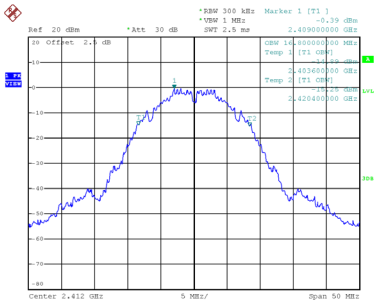
CH11



Date: 13.MAY.2019 16:37:31

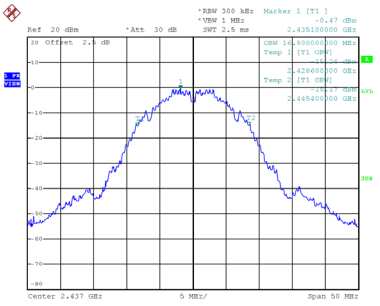
Channel	Frequency (MHz)	99 % Emission Bandwidth (MHz)	Result
01	2412	16.8	Complies
06	2437	16.8	Complies
11	2462	16.7	Complies

CH01



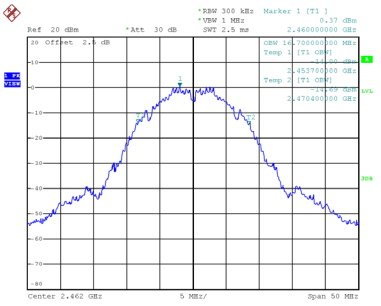
Date: 24.JUN.2019 15:04:55

CH06



Date: 24.JUN.2019 15:06:16

CH11

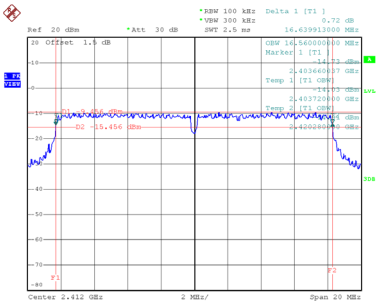


Date: 24.JUN.2019 15:08:06

Test Mode	TX G Mode

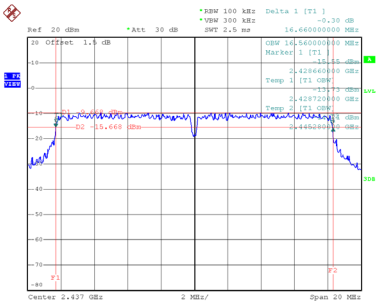
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	6 dB Bandwidth Min. Limit (kHz)	Result
01	2412	16.64	500	Complies
06	2437	16.66	500	Complies
11	2462	16.64	500	Complies

CH01



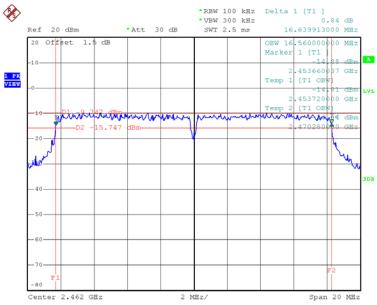
Date: 13.MAY.2019 16:39:50

CH06



Date: 13.MAY.2019 16:41:37

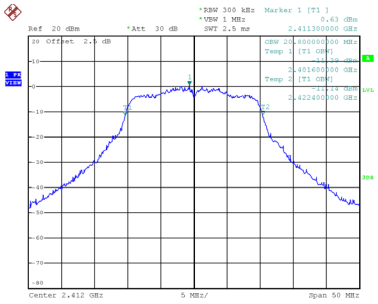
CH11



Date: 13.MAY.2019 16:43:18

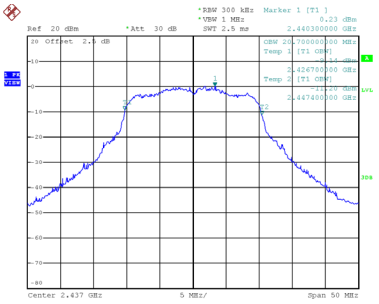
Channel	Frequency (MHz)	99 % Emission Bandwidth (MHz)	Result
01	2412	20.80	Complies
06	2437	20.70	Complies
11	2462	20.60	Complies

CH01



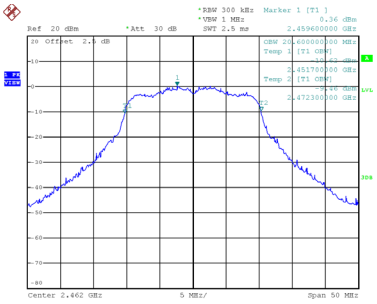
Date: 24.JUN.2019 15:10:25

CH06



Date: 24.JUN.2019 15:12:10

CH11

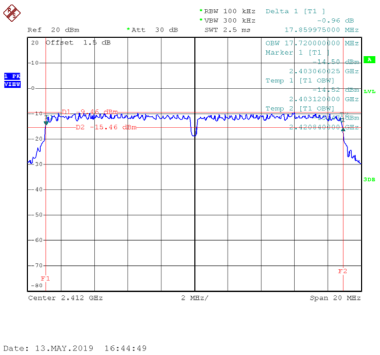


Date: 24.JUN.2019 15:13:57

Test Mode	TX N-20M Mode

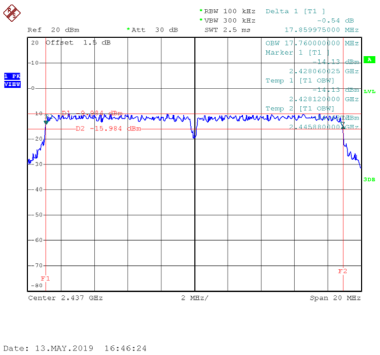
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	6 dB Bandwidth Min. Limit (kHz)	Result
01	2412	17.86	500	Complies
06	2437	17.86	500	Complies
11	2462	17.88	500	Complies

CH01



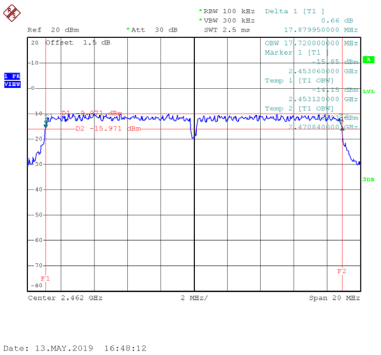
Date: 13.MAY.2019 16:44:49

CH06



Date: 13.MAY.2019 16:46:24

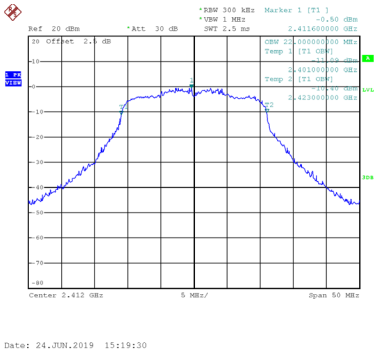
CH11



Date: 13.MAY.2019 16:48:12

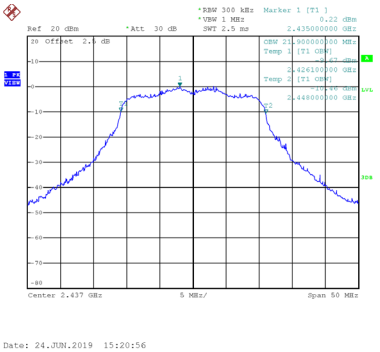
Channel	Frequency (MHz)	99 % Emission Bandwidth (MHz)	Result
01	2412	22.00	Complies
06	2437	21.90	Complies
11	2462	21.90	Complies

CH01



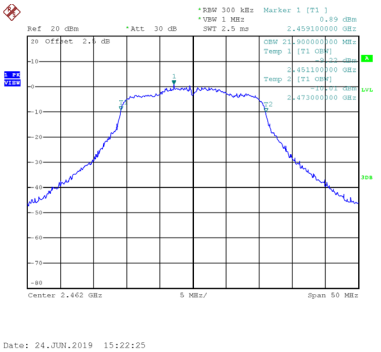
Date: 24.JUN.2019 15:19:30

CH06



Date: 24.JUN.2019 15:20:56

CH11



Date: 24.JUN.2019 15:22:25

APPENDIX F - MAXIMUM AVERAGE OUTPUT POWER & PEAK OUTPUT POWER

Test Mode	TX B Mode

Channel	Frequency (MHz)	Peak Output Power (dBm)	Peak Output Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	5.21	0.0033	30.00	1.0000	Complies
06	2437	5.38	0.0035	30.00	1.0000	Complies
11	2462	5.53	0.0036	30.00	1.0000	Complies

Test Mode	TX G Mode

Channel	Frequency (MHz)	Peak Output Power (dBm)	Peak Output Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	13.36	0.0217	30.00	1.0000	Complies
06	2437	13.96	0.0249	30.00	1.0000	Complies
11	2462	13.89	0.0245	30.00	1.0000	Complies

Test Mode	TX N-20M Mode

Channel	Frequency (MHz)	Peak Output Power (dBm)	Peak Output Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	13.73	0.0236	30.00	1.0000	Complies
06	2437	13.65	0.0232	30.00	1.0000	Complies
11	2462	14.04	0.0254	30.00	1.0000	Complies

Test Mode	TX B Mode

Channel	Frequency (MHz)	Acerage Output Power (dBm)	Duty Factor	Average Output Power + Duty Factor (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	2.85	0.00	2.85	30.00	1.0000	Complies
06	2437	3.06	0.00	3.06	30.00	1.0000	Complies
11	2462	3.24	0.00	3.24	30.00	1.0000	Complies

Test Mode	TX G Mode

Channel	Frequency (MHz)	Acerage Output Power (dBm)	Duty Factor	Average Output Power + Duty Factor (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	3.05	0.13	3.18	30.00	1.0000	Complies
06	2437	3.25	0.13	3.38	30.00	1.0000	Complies
11	2462	3.40	0.13	3.53	30.00	1.0000	Complies

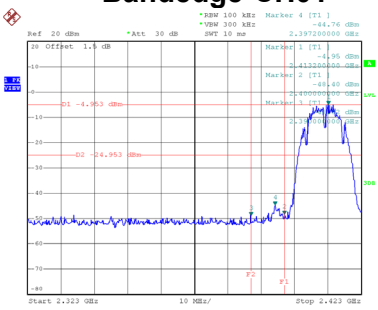
Test Mode	TX N-20M Mode

Channel	Frequency (MHz)	Acerage Output Power (dBm)	Duty Factor	Average Output Power + Duty Factor (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	3.09	0.14	3.23	30.00	1.0000	Complies
06	2437	3.24	0.14	3.38	30.00	1.0000	Complies
11	2462	3.44	0.14	3.58	30.00	1.0000	Complies

APPENDIX G - CONDUCTED SPURIOUS EMISSIONS

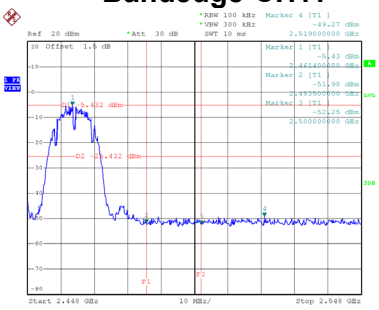
Test Mode	TX B Mode

Bandedge-CH01



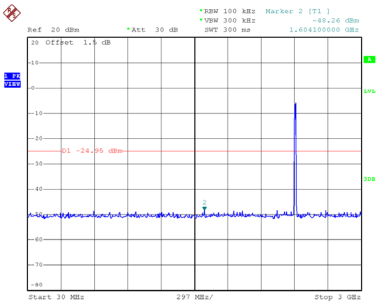
Date: 13.MAY.2019 16:32:32

Bandedge-CH11

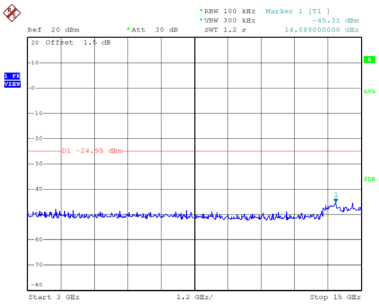


Date: 13.MAY.2019 16:37:40

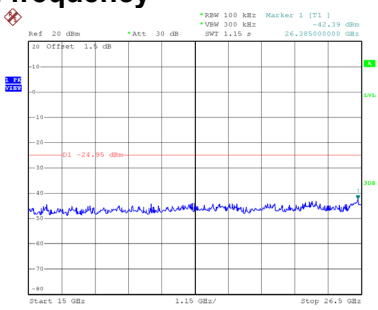
CH01 – 10th Harmonic of the fundamental frequency



Date: 13.MAY.2019 16:32:46

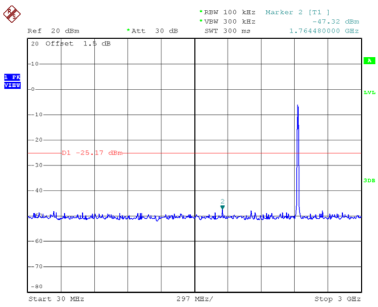


Date: 13.MAY.2019 16:32:54

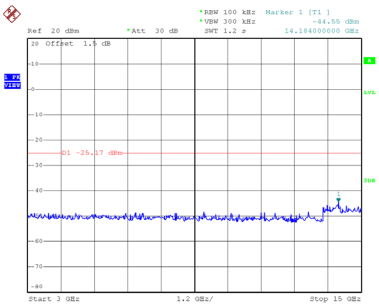


Date: 13.MAY.2019 16:33:02

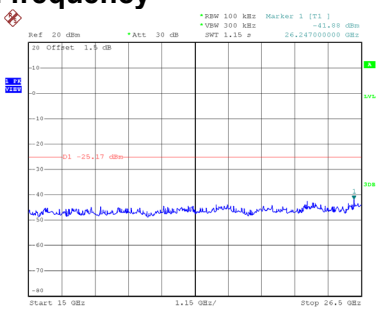
CH06 – 10th Harmonic of the fundamental frequency



Date: 13.MAY.2019 16:36:09

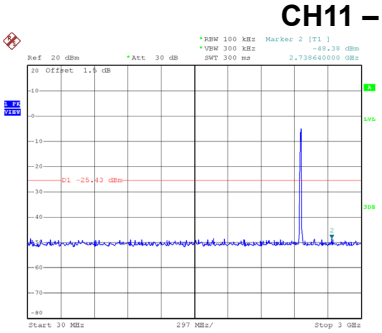


Date: 13.MAY.2019 16:36:17

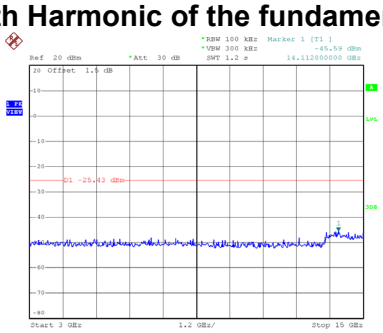


Date: 13.MAY.2019 16:36:25

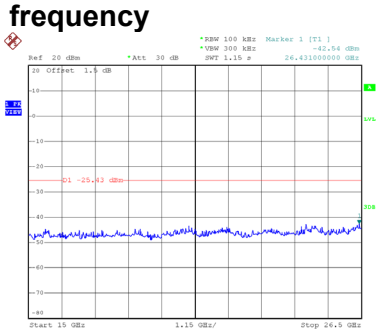
CH11 – 10th Harmonic of the fundamental frequency



Date: 13.MAY.2019 16:37:53



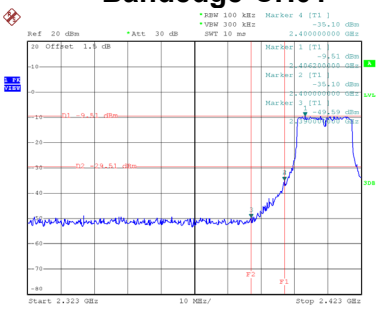
Date: 13.MAY.2019 16:38:01



Date: 13.MAY.2019 16:38:10

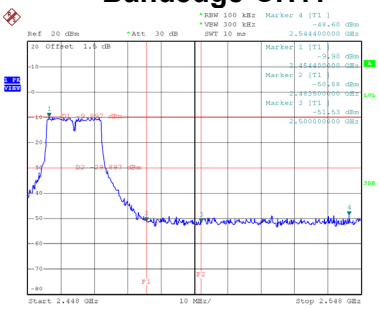
Test Mode	TX G Mode

Bandedge-CH01



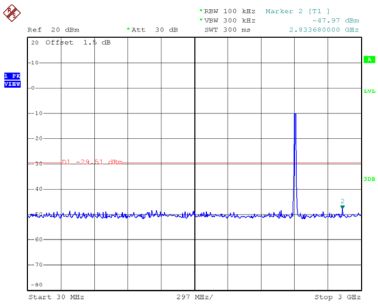
Date: 13.MAY.2019 16:39:58

Bandedge-CH11

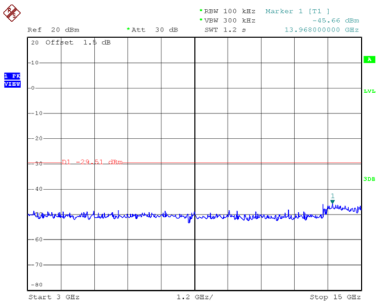


Date: 13.MAY.2019 16:43:26

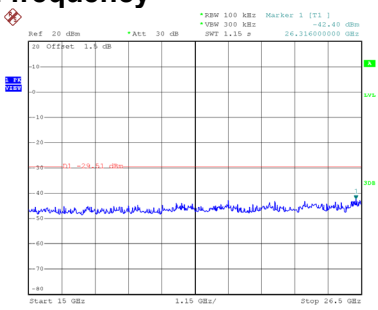
CH01 – 10th Harmonic of the fundamental frequency



Date: 13.MAY.2019 16:40:12

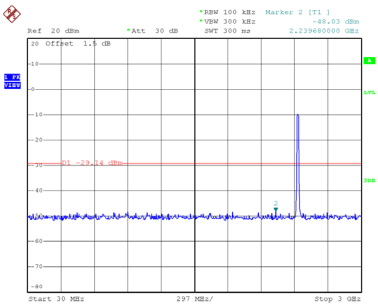


Date: 13.MAY.2019 16:40:20

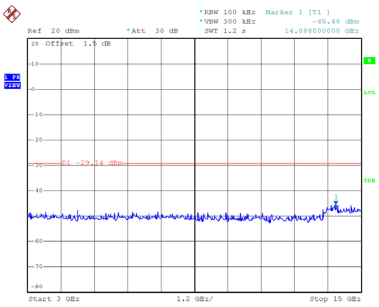


Date: 13.MAY.2019 16:40:28

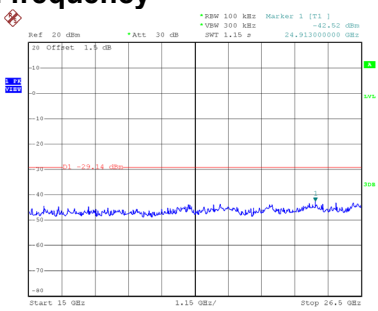
CH06 – 10th Harmonic of the fundamental frequency



Date: 13.MAY.2019 16:41:59

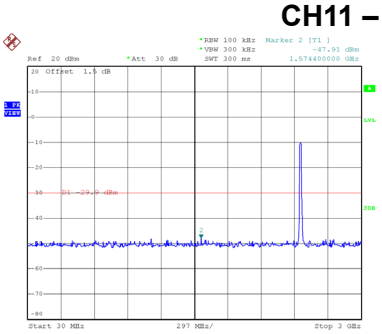


Date: 13.MAY.2019 16:42:07

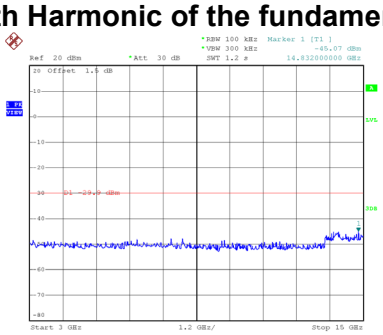


Date: 13.MAY.2019 16:42:15

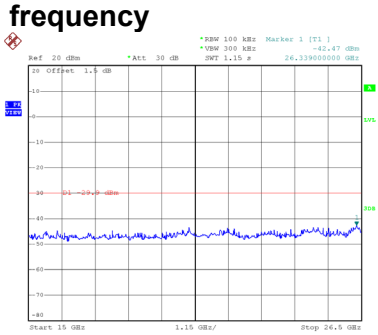
CH11 – 10th Harmonic of the fundamental frequency



Date: 13.MAY.2019 16:43:40



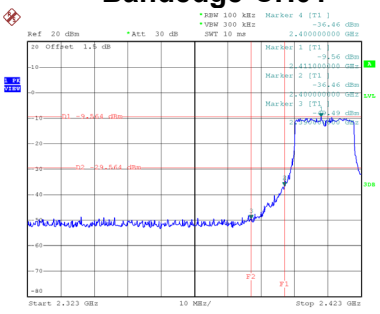
Date: 13.MAY.2019 16:43:48



Date: 13.MAY.2019 16:43:56

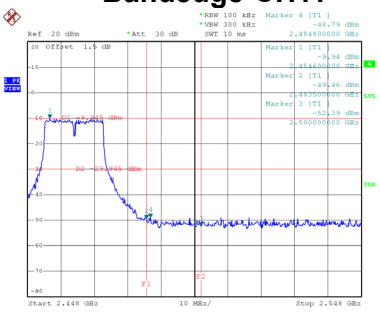
Test Mode	TX N-20M Mode

Bandedge-CH01



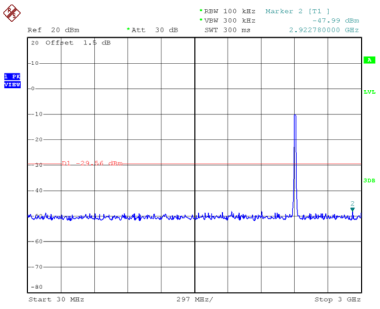
Date: 13.MAY.2019 16:44:57

Bandedge-CH11

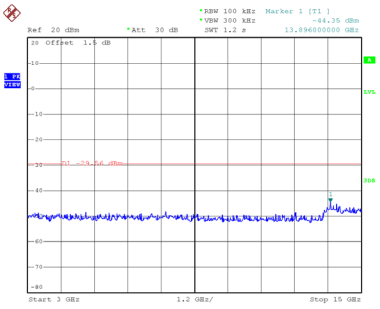


Date: 13.MAY.2019 16:48:20

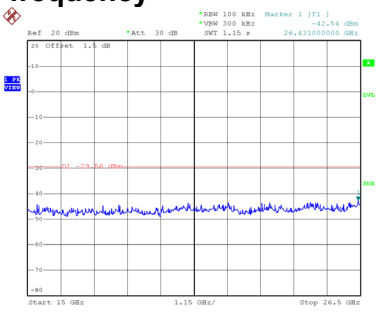
CH01 – 10th Harmonic of the fundamental frequency



Date: 13.MAY.2019 16:45:11

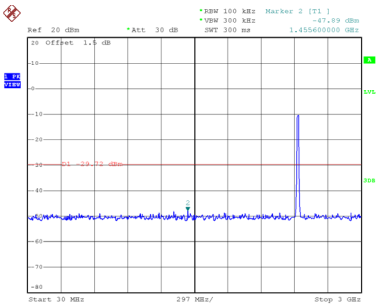


Date: 13.MAY.2019 16:45:19

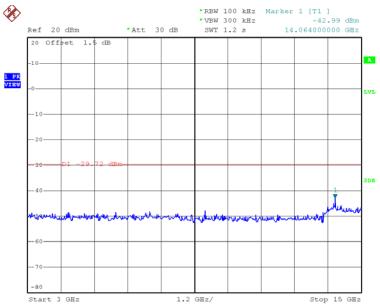


Date: 13.MAY.2019 16:45:27

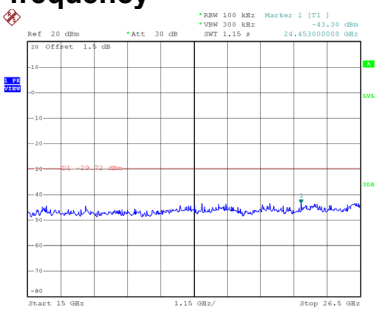
CH06 – 10th Harmonic of the fundamental frequency



Date: 13.MAY.2019 16:46:46

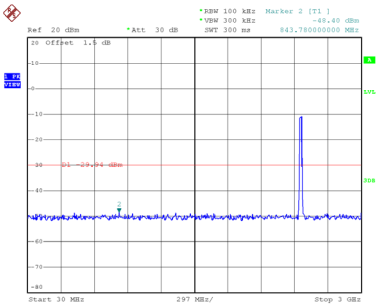


Date: 13.MAY.2019 16:46:54

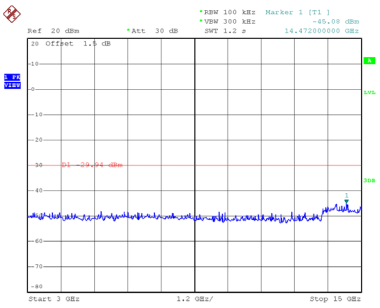


Date: 13.MAY.2019 16:47:02

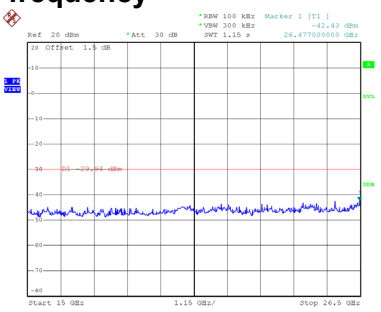
CH11 – 10th Harmonic of the fundamental frequency



Date: 13.MAY.2019 16:48:34



Date: 13.MAY.2019 16:48:42



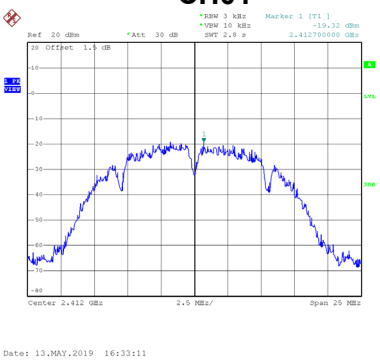
Date: 13.MAY.2019 16:48:50

APPENDIX H - POWER SPECTRAL DENSITY

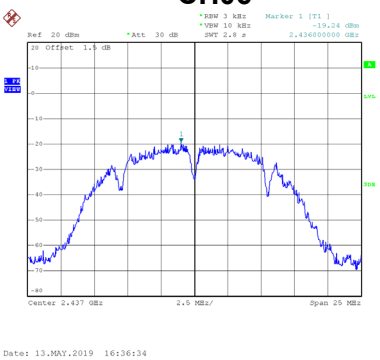
Test Mode	TX B Mode

Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
01	2412	-19.32	8	Complies
06	2437	-19.24	8	Complies
11	2462	-19.14	8	Complies

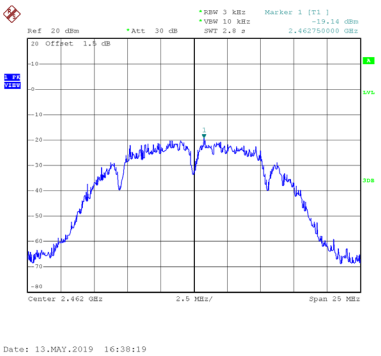
CH01



CH06



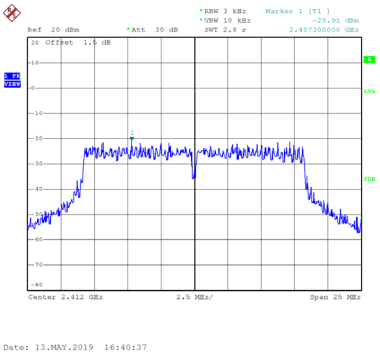
CH11



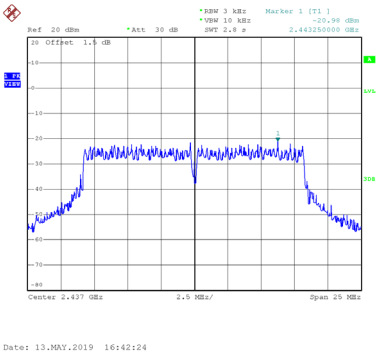
Test Mode	TX G Mode

Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
01	2412	-20.91	8	Complies
06	2437	-20.98	8	Complies
11	2462	-21.47	8	Complies

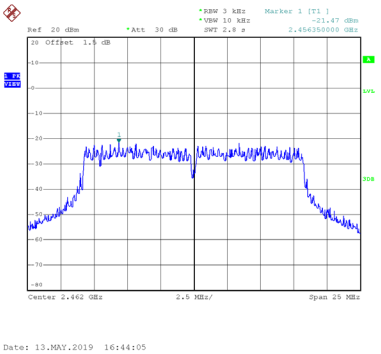
CH01



CH06



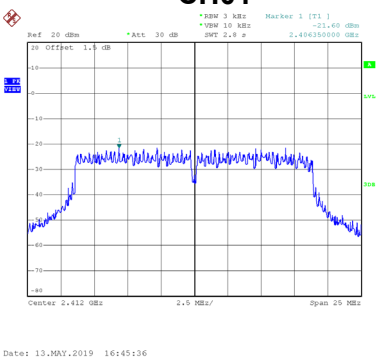
CH11



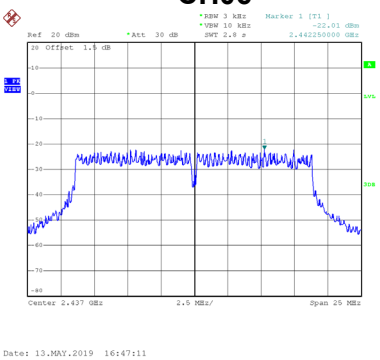
Test Mode	TX N-20M Mode

Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
01	2412	-21.60	8	Complies
06	2437	-22.01	8	Complies
11	2462	-21.38	8	Complies

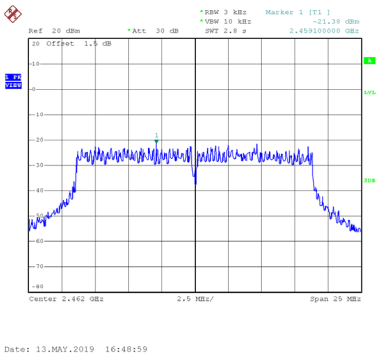
CH01



CH06



CH11



End of Test Report