

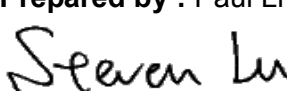
FCC Radio Test Report

FCC ID: R9C-CPH1941

This report concerns: Original Grant

Project No. : 1909C106
Equipment : Mobile Phone
Brand Name : OPPO
Test Model : CPH1941
Series Model : N/A
Applicant : Guangdong Oppo Mobile Telecommunications Corp., Ltd.
Address : NO. 18 HaiBin Road, WuSha village, Chang An Town, DongGuan City, Guangdong, China.
Manufacturer : Guangdong Oppo Mobile Telecommunications Corp., Ltd.
Address : NO. 18 HaiBin Road, WuSha village, Chang An Town, DongGuan City, Guangdong, China.
Factory : Guangdong Oppo Mobile Telecommunications Corp., Ltd.
Address : NO. 18 HaiBin Road, WuSha village, Chang An Town, DongGuan City, Guangdong, China.
Date of Receipt : Sep. 19, 2019
Date of Test : Sep. 19, 2019 ~ Oct. 08, 2019
Issued Date : Oct. 24, 2019
Report Version : R00
Test Sample : Engineering Sample No.: DG20190920152 for radiated, DG2019091939 for conducted.
Standard(s) : FCC Part15, Subpart C (15.247)
 ANSI C63.10-2013
 KDB 558074 D01 15.247 Meas Guidance v05r02

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.


 Prepared by : Paul Li

 Approved by : Steven Lu



Certificate #5123.02

Add: No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, China.
 Tel: +86-769-8318-3000
 Web: www.newbtl.com

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.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, A2LA, or any agency of the U.S. Government.

This report is the confidential property of the client. As a mutual protection to the clients, the public and ourselves, the test report shall not be reproduced, except in full, without our written approval.

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.

Table of Contents	Page
REPORT ISSUED HISTORY	5
1 . SUMMARY OF TEST RESULTS	6
1.1 TEST FACILITY	7
1.2 MEASUREMENT UNCERTAINTY	7
1.3 TEST ENVIRONMENT CONDITIONS	7
2 . GENERAL INFORMATION	8
2.1 GENERAL DESCRIPTION OF EUT	8
2.2 DESCRIPTION OF TEST MODES	9
2.3 PARAMETERS OF TEST SOFTWARE	10
2.4 DUTY CYCLE	11
2.5 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	12
2.6 SUPPORT UNITS	12
3 . AC POWER LINE CONDUCTED EMISSIONS TEST	13
3.1 LIMIT	13
3.2 TEST PROCEDURE	13
3.3 DEVIATION FROM TEST STANDARD	13
3.4 TEST SETUP	14
3.5 EUT OPERATION CONDITIONS	14
3.6 TEST RESULTS	14
4 . RADIATED EMISSIONS TEST	15
4.1 LIMIT	15
4.2 TEST PROCEDURE	16
4.3 DEVIATION FROM TEST STANDARD	16
4.4 TEST SETUP	17
4.5 EUT OPERATION CONDITIONS	18
4.6 TEST RESULTS - 9 KHZ TO 30 MHZ	18
4.7 TEST RESULTS - 30 MHZ TO 1000 MHZ	18
4.8 TEST RESULTS - ABOVE 1000 MHZ	18
5 . BANDWIDTH TEST	19
5.1 LIMIT	19
5.2 TEST PROCEDURE	19
5.3 DEVIATION FROM STANDARD	19
5.4 TEST SETUP	19

Table of Contents	Page
5.5 EUT OPERATION CONDITIONS	19
5.6 TEST RESULTS	19
6 . MAXIMUM OUTPUT POWER TEST	20
6.1 LIMIT	20
6.2 TEST PROCEDURE	20
6.3 DEVIATION FROM STANDARD	20
6.4 TEST SETUP	20
6.5 EUT OPERATION CONDITIONS	20
6.6 TEST RESULTS	20
7 . CONDUCTED SPURIOUS EMISSIONS	21
7.1 LIMIT	21
7.2 TEST PROCEDURE	21
7.3 DEVIATION FROM STANDARD	21
7.4 TEST SETUP	21
7.5 EUT OPERATION CONDITIONS	21
7.6 TEST RESULTS	21
8 . POWER SPECTRAL DENSITY TEST	22
8.1 LIMIT	22
8.2 TEST PROCEDURE	22
8.3 DEVIATION FROM STANDARD	22
8.4 TEST SETUP	22
8.5 EUT OPERATION CONDITIONS	22
8.6 TEST RESULTS	22
9 . MEASUREMENT INSTRUMENTS LIST	23
APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS	25
APPENDIX B - RADIATED EMISSION - 9 KHZ TO 30 MHZ	28
APPENDIX C - RADIATED EMISSION - 30 MHZ TO 1000 MHZ	33
APPENDIX D - RADIATED EMISSION- ABOVE 1000 MHZ	36
APPENDIX E - BANDWIDTH	73
APPENDIX F - MAXIMUM OUTPUT POWER	77
APPENDIX G - CONDUCTED SPURIOUS EMISSIONS	79
APPENDIX H - POWER SPECTRAL DENSITY	83

REPORT ISSUED HISTORY

Report Version	Description	Issued Date
R00	Original Issue.	Oct. 24, 2019

1. 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 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.

1.1 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

1.2 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	9kHz ~ 30MHz	V	3.79
		9kHz ~ 30MHz	H	3.57
		30MHz ~ 200MHz	V	4.88
		30MHz ~ 200MHz	H	4.14
		200MHz ~ 1,000MHz	V	4.62
		200MHz ~ 1,000MHz	H	4.80
		1GHz ~ 6GHz	-	4.58
		6GHz ~ 18GHz	-	5.18
		18GHz ~ 26.5GHz	-	3.80
		26.5GHz ~ 40GHz	-	4.30

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

1.3 TEST ENVIRONMENT CONDITIONS

Test Item	Temperature	Humidity	Test Voltage	Tested By
AC Power Line Conducted Emissions	25°C	53%	AC 120V/60Hz	Damon Deng
Radiated Emissions-9K-30MHz	25°C	60%	AC 120V/60Hz	Damon Deng
Radiated Emissions-30 MHz to 1GHz	24°C	68%	AC 120V/60Hz	Berton Luo
Radiated Emissions-Above 1000 MHz	24°C	68%	AC 120V/60Hz	Berton Luo
Bandwidth	25.3°C	44.8%	DC 3.87V	Jonas Chen
Maximum output power	25.3°C	44.8%	DC 3.87V	Jonas Chen
Conducted Spurious Emissions	25.3°C	44.8%	DC 3.87V	Jonas Chen
Power Spectral Density	25.3°C	44.8%	DC 3.87V	Jonas Chen

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Mobile Phone
Brand Name	OPPO
Test Model	CPH1941
Series Model	N/A
Model Difference(s)	N/A
Hardware Version	11
Software Version	ColorOS V6.0.1
Firmware Version	TBD
Power Source	1. DC Voltage supplied from AC/DC adapter. 1# Model: OP52KAUH 2# Model: OP52JAUH 3# Model: OP52YAUH 2. Supplied from Li-ion Polymer battery. 1# Factory / Model: NVT / BLP727 (NA-P727-92) 2# Factory / Model: Desay / BLP727 (DA-P727-923) 3# Factory / Model: Sunwoda / BLP727 (XA-P727-922) 4# Factory / Model: Desay / BLP727 (DD-P727-918) 5# Factory / Model: Desay / BLP727 (DA-P727-931) 3. Supplied from USB port.
Power Rating	1. I/P:100-240V~ 50/60Hz 0.4A O/P:5V---2A 2. 3.87Vdc, 5000mAh/19.35Wh 3. DC 5V
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 144.4 Mbps
Maximum Output Power	IEEE 802.11b: 21.02 dBm (0.1265 W) IEEE 802.11g: 21.94 dBm (0.1563 W) IEEE 802.11n (HT20): 21.88 dBm (0.1542 W)

Note:

- 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	Internal	N/A	-3

2.2 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 G 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 G Mode Channel 11

Radiated emissions test - Below 1GHz	
Final Test Mode	Description
Mode 4	TX G 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:

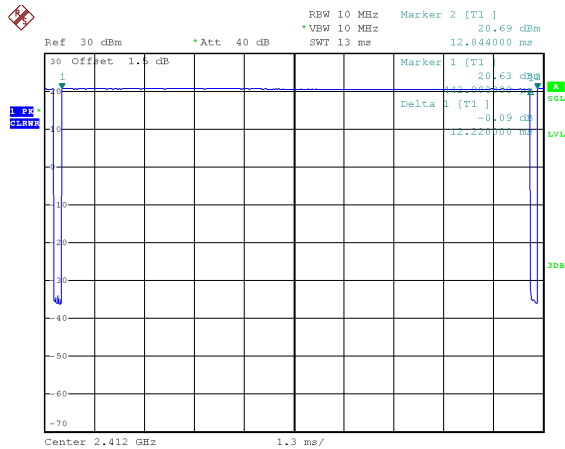
- (1) The measurements are performed at the high, middle, low available channels.
- (2) 802.11b mode: CCK (1 Mbps)
802.11g mode: OFDM (6 Mbps)
802.11n HT20 mode : BPSK (6.5 Mbps)
For all tests, the highest output powers were set for final test.
- (3) For radiated emission below 1 GHz test, the IEEE 802.11g 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.
- (5) For radiated emissions below 1GHz, all adapters had been pre-tested and in this report only recorded the worst case.

2.3 PARAMETERS OF TEST SOFTWARE

Test Software	QDART_WIN_4_8_Installer_00052_1		
Frequency (MHz)	2412	2437	2462
IEEE 802.11b	18	18	18
IEEE 802.11g	17	17	17
IEEE 802.11n (HT20)	17	17	17

2.4 DUTY CYCLE

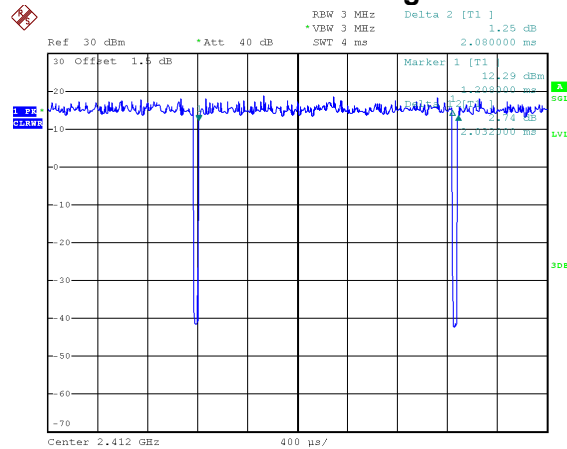
IEEE 802.11b



Date: 23.SEP.2019 12:33:58

Duty cycle = 12.220 ms / 12.844 ms = 95.14%
 Duty Factor = 10 log(1 / Duty cycle) = 0.22

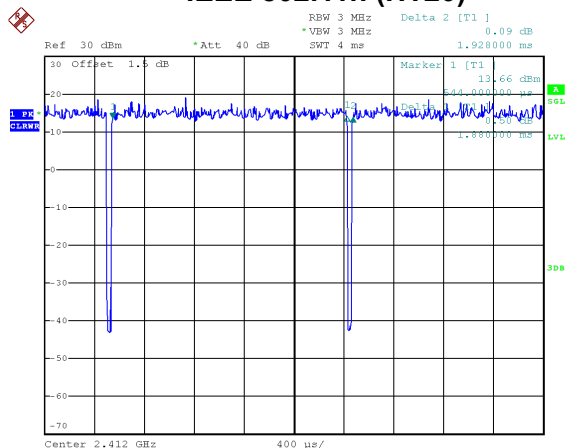
IEEE 802.11g



Date: 23.SEP.2019 14:55:28

Duty cycle = 2.032 ms / 2.080 ms = 97.69%
 Duty Factor = 10 log(1 / Duty cycle) = 0.10

IEEE 802.11n (HT20)



Date: 23.SEP.2019 15:04:22

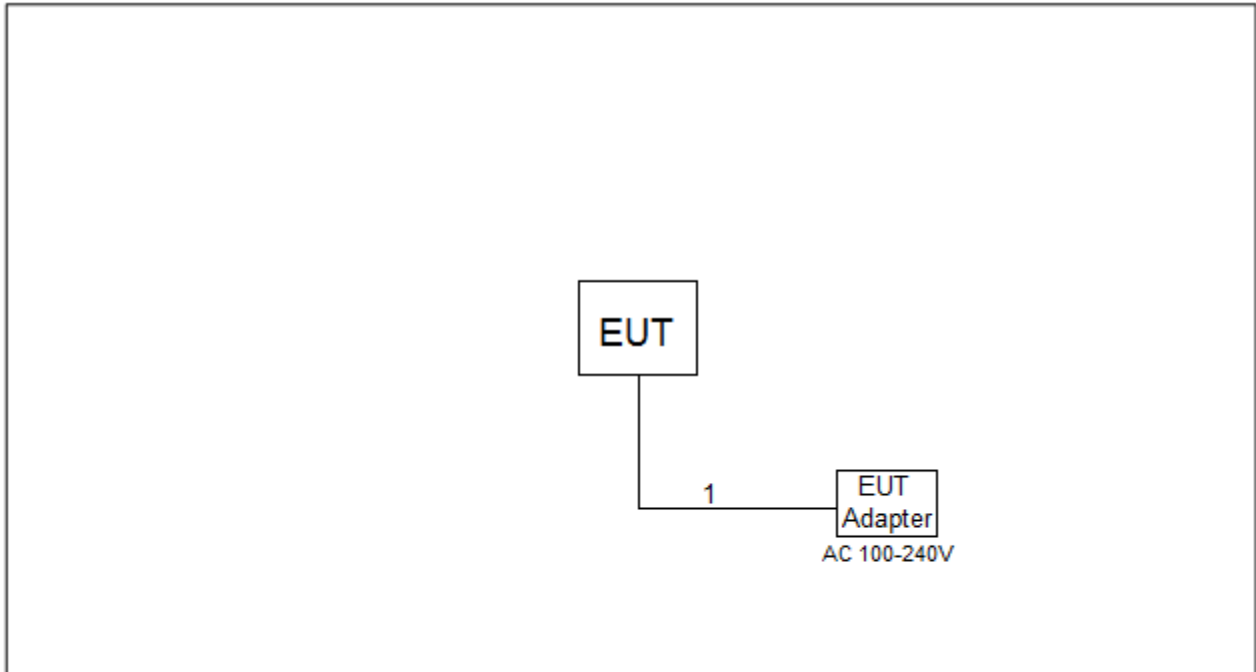
Duty cycle = 1.880 ms / 1.928 ms = 97.51%
 Duty Factor = 10 log(1 / Duty cycle) = 0.11

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%).

2.5 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



2.6 SUPPORT UNITS

Item	Equipment	Brand	Model No.	Series No.
-	-	-	-	-

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	DC Cable	NO	NO	1m

3. AC POWER LINE CONDUCTED EMISSIONS TEST

3.1 LIMIT

Frequency of Emission (MHz)	Limit (dB μ V)	
	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

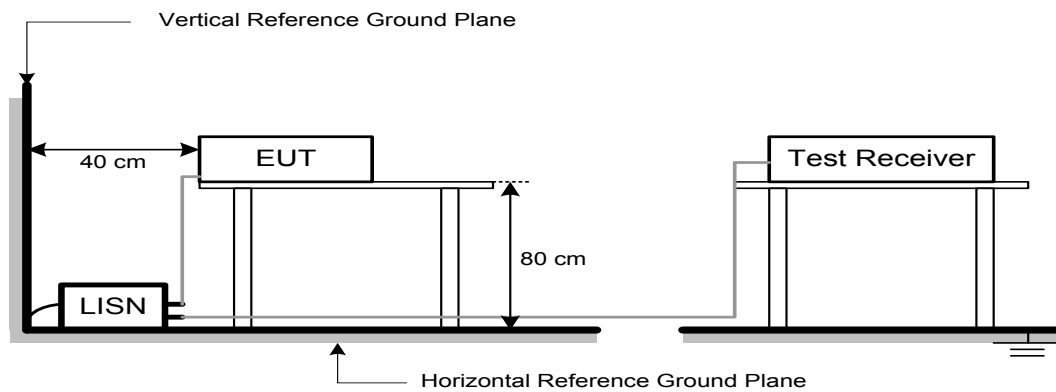
3.2 TEST PROCEDURE

- 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.

3.3 DEVIATION FROM TEST STANDARD

No deviation

3.4 TEST SETUP



3.5 EUT OPERATION CONDITIONS

EUT was programmed to be in continuously transmitting mode.

3.6 TEST RESULTS

Please refer to the APPENDIX A.

4. RADIATED EMISSIONS TEST

4.1 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).

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

4.2 TEST PROCEDURE

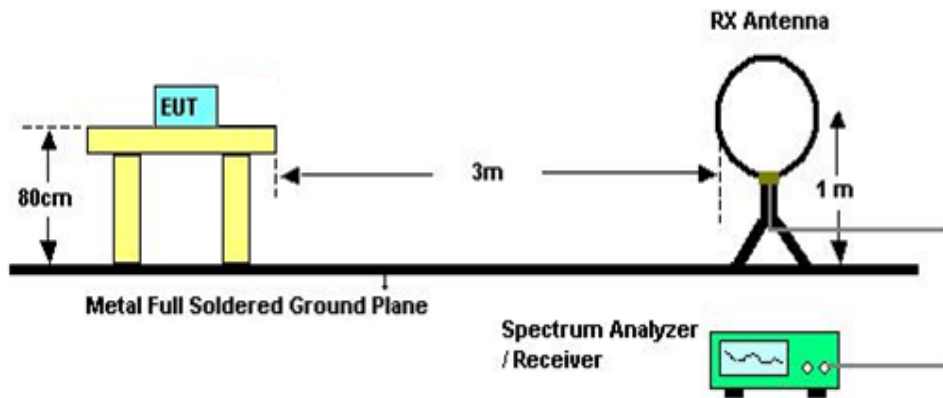
- The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1 GHz)
- The measuring distance 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)
- 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.
- 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).
- 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.
- 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.
- 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)
- 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)
- For the actual test configuration, please refer to the related Item -EUT Test Photos.

4.3 DEVIATION FROM TEST STANDARD

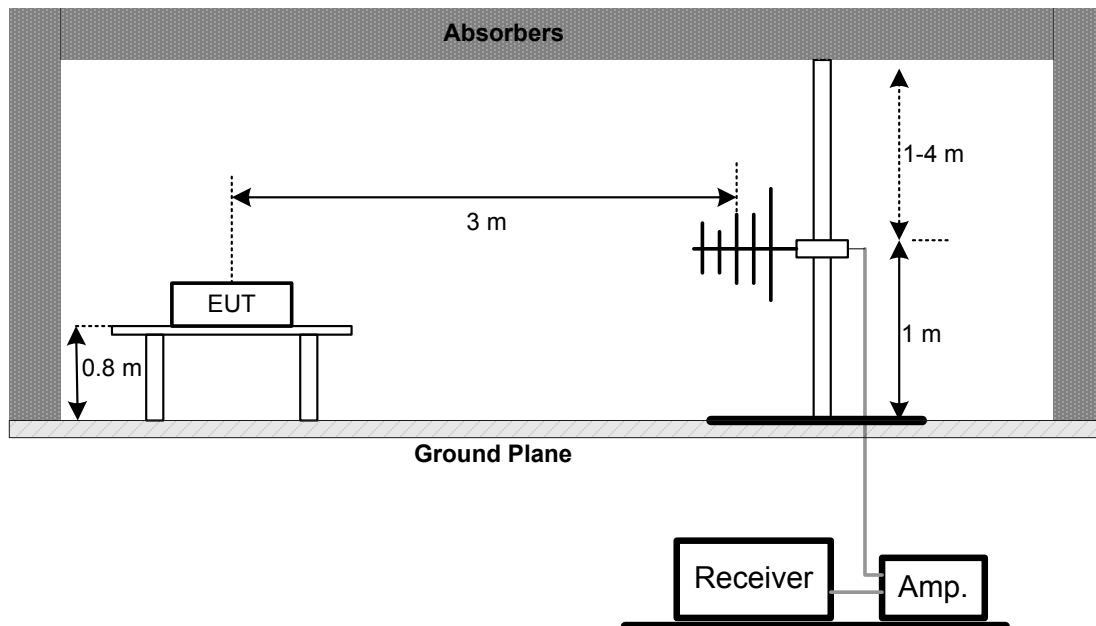
No deviation

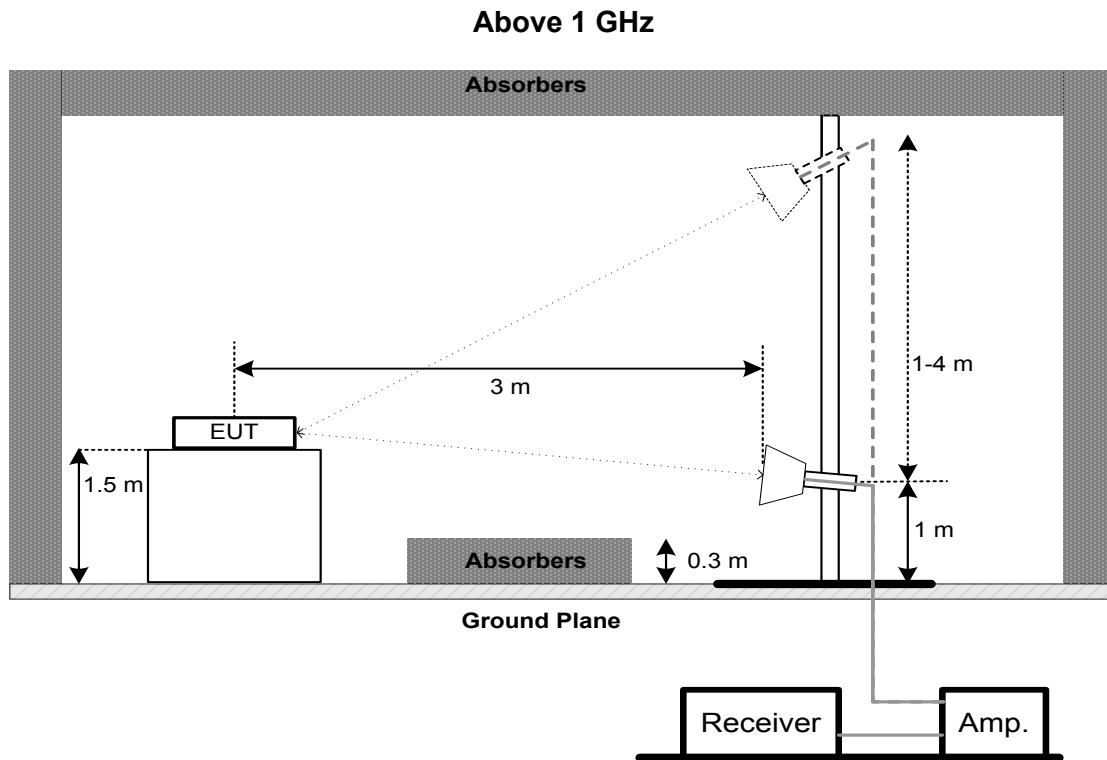
4.4 TEST SETUP

9 kHz-30 MHz



30 MHz to 1 GHz





4.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

4.6 TEST RESULTS - 9 KHZ TO 30 MHZ

Please refer to the APPENDIX B

Remark:

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

4.7 TEST RESULTS - 30 MHZ TO 1000 MHZ

Please refer to the APPENDIX C.

4.8 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.

5. BANDWIDTH TEST

5.1 LIMIT

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

5.2 TEST PROCEDURE

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

5.3 DEVIATION FROM STANDARD

No deviation.

5.4 TEST SETUP



5.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

5.6 TEST RESULTS

Please refer to the APPENDIX E.

6. MAXIMUM OUTPUT POWER TEST

6.1 LIMIT

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

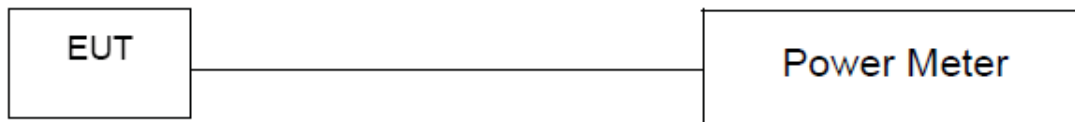
6.2 TEST PROCEDURE

- The EUT was directly connected to the power meter and antenna output port as show in the block diagram below.
- The maximum conducted output power was performed in accordance with method 11.9.1.3 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 TEST RESULTS

Please refer to the APPENDIX F.

7. CONDUCTED SPURIOUS EMISSIONS

7.1 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.

7.2 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.

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 TEST RESULTS

Please refer to the APPENDIX G.

8. POWER SPECTRAL DENSITY TEST

8.1 LIMIT

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

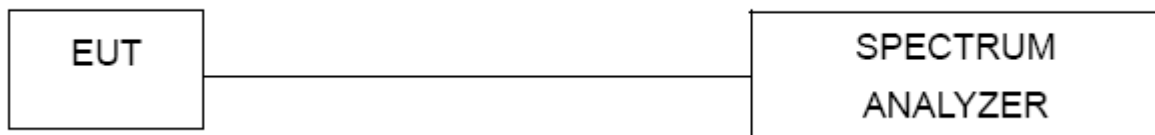
8.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- Spectrum Setting: RBW=3 kHz, VBW=10 kHz, Sweep time = Auto.
- The Power Spectral Density was performed in accordance with method 11.10.2 of ANSI C63.10-2013.

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 TEST RESULTS

Please refer to the APPENDIX H.

9. MEASUREMENT INSTRUMENTS LIST

AC Power Line Conducted Emissions					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	EMI Test Receiver	R&S	ESCI	100382	Mar. 10, 2020
2	LISN	EMCO	3816/2	52765	Mar. 10, 2020
3	TWO-LINE V-NETWORK	R&S	ENV216	101447	May. 19, 2020
4	50Ω Terminator	SHX	TF5-3	15041305	Mar. 10, 2020
5	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
6	Cable	N/A	RG223	12m	Mar. 12, 2020

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, 2021
3	Receiver	Agilent	N9038A	MY52130039	Aug. 03, 2020
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. 23, 2020
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. 03, 2020
6	Controller	CT	SC100	N/A	N/A
7	Controller	MF	MF-7802	MF780208416	N/A
8	Cable	mitron	B10-01-01-12M	18072744	Jun. 29, 2020
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. 03, 2020

Maximum Output Power

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Peak Power Analyzer	Keysight	8990B	MY51000506	Aug. 03, 2020
2	Wideband power sensor	Keysight	N1923A	MY58310004	Aug. 03, 2020

Remark: "N/A" denotes no model name, serial no. or calibration specified.

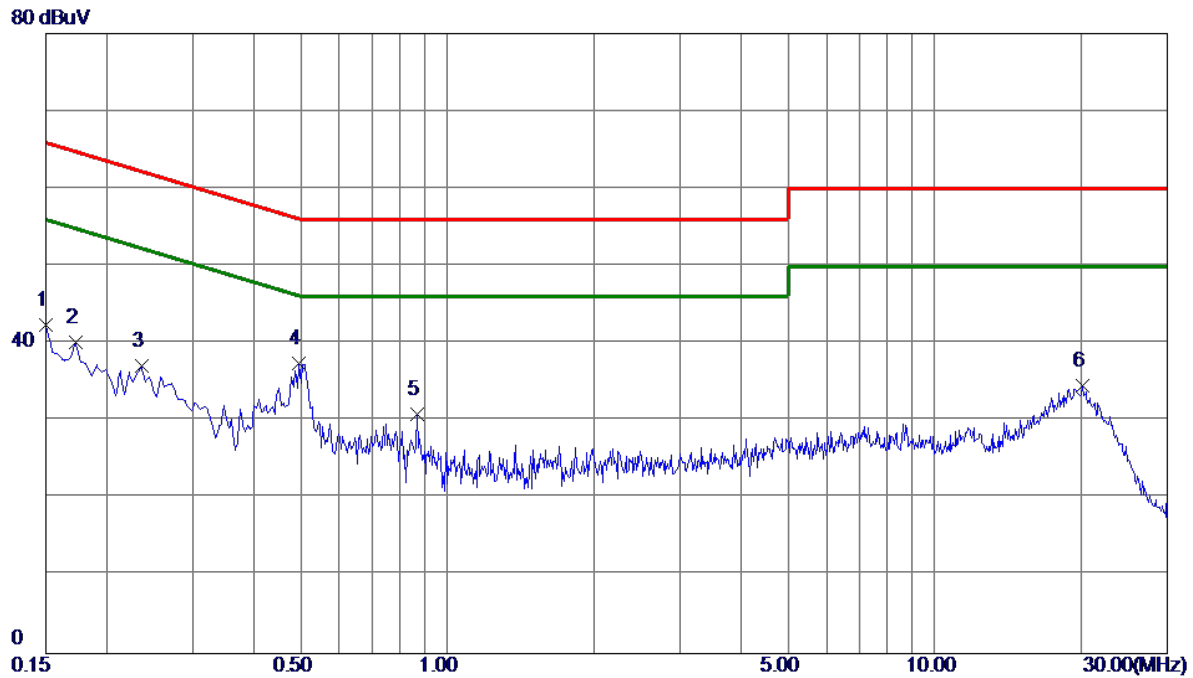
"*" calibration period of equipment list is three year.

Except * item, all calibration period of equipment list is one year.

APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS

Test Mode: TX G Mode Channel 11

Line



No.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	0.1500	32.52	9.82	42.34	66.00	-23.66	Peak	
2	0.1725	30.35	9.82	40.17	64.84	-24.67	Peak	
3	0.2355	27.35	9.82	37.17	62.25	-25.08	Peak	
4 *	0.4965	27.52	9.88	37.40	56.06	-18.66	Peak	
5	0.8655	21.02	9.91	30.93	56.00	-25.07	Peak	
6	20.1075	23.32	11.19	34.51	60.00	-25.49	Peak	

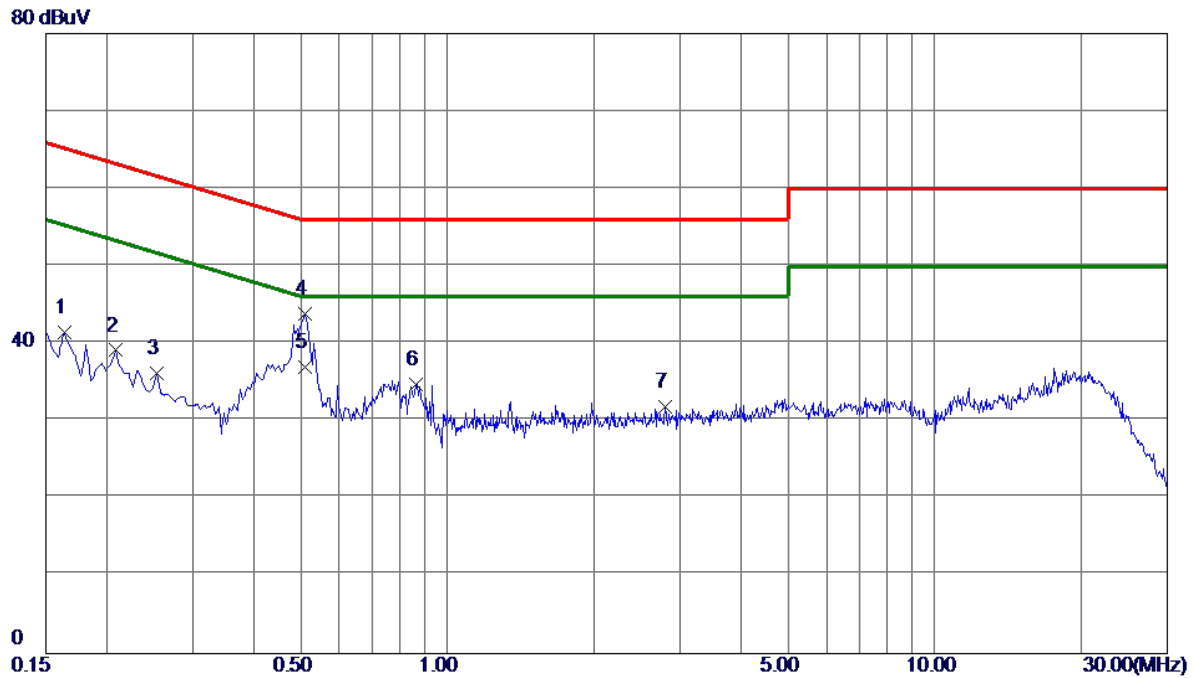
REMARKS:

(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode: TX G Mode Channel 11

Neutral



No.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	0.1635	31.56	9.91	41.47	65.28	-23.81	Peak	
2	0.2085	29.22	9.90	39.12	63.26	-24.14	Peak	
3	0.2535	26.16	9.93	36.09	61.64	-25.55	Peak	
4	0.5100	33.86	10.03	43.89	56.00	-12.11	Peak	
5 *	0.5100	26.86	10.03	36.89	46.00	-9.11	AVG	
6	0.8610	24.66	10.09	34.75	56.00	-21.25	Peak	
7	2.8005	21.63	10.24	31.87	56.00	-24.13	Peak	

REMARKS:

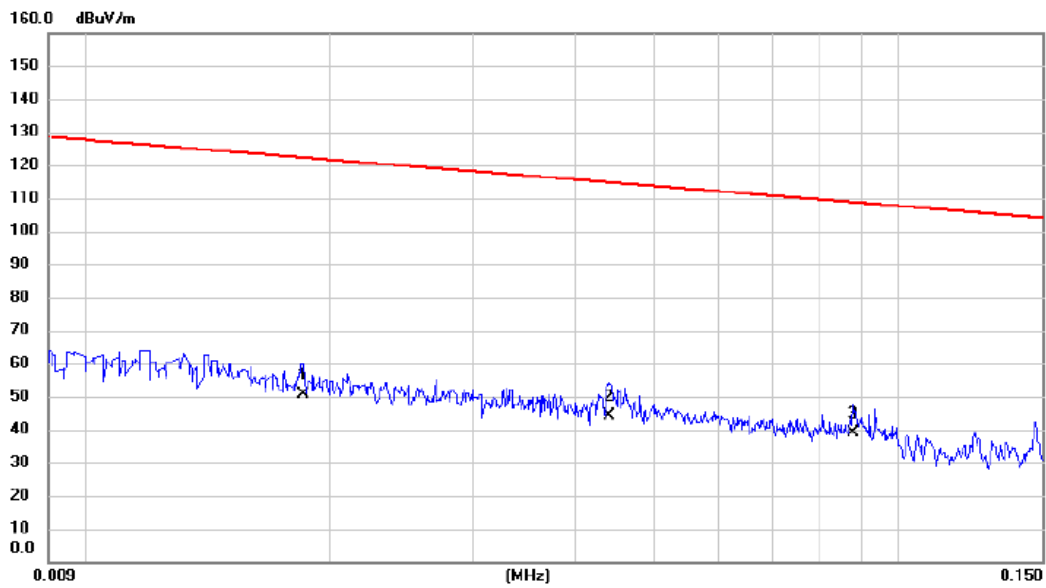
(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

APPENDIX B - RADIATED EMISSION - 9 KHZ TO 30 MHZ

Test Mode: TX G Mode Channel 11

Ant 0°

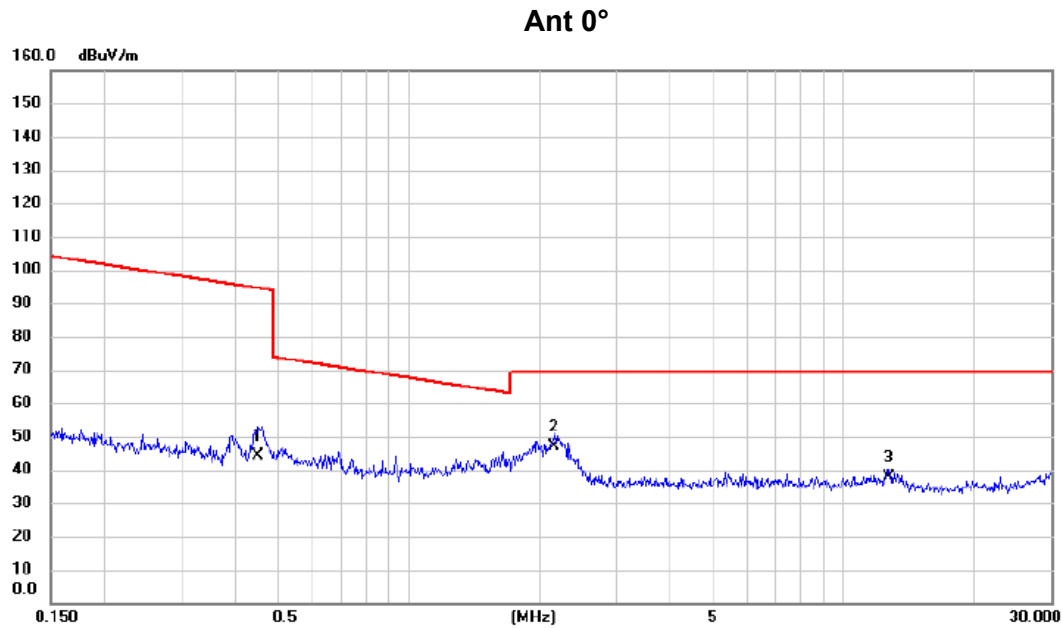


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.018	36.20	14.27	50.47	122.26	-71.79	AVG	
2		0.044	30.30	13.91	44.21	114.74	-70.53	AVG	
3	*	0.088	25.30	13.54	38.84	108.73	-69.89	AVG	

REMARKS:

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

Test Mode: TX G Mode Channel 11



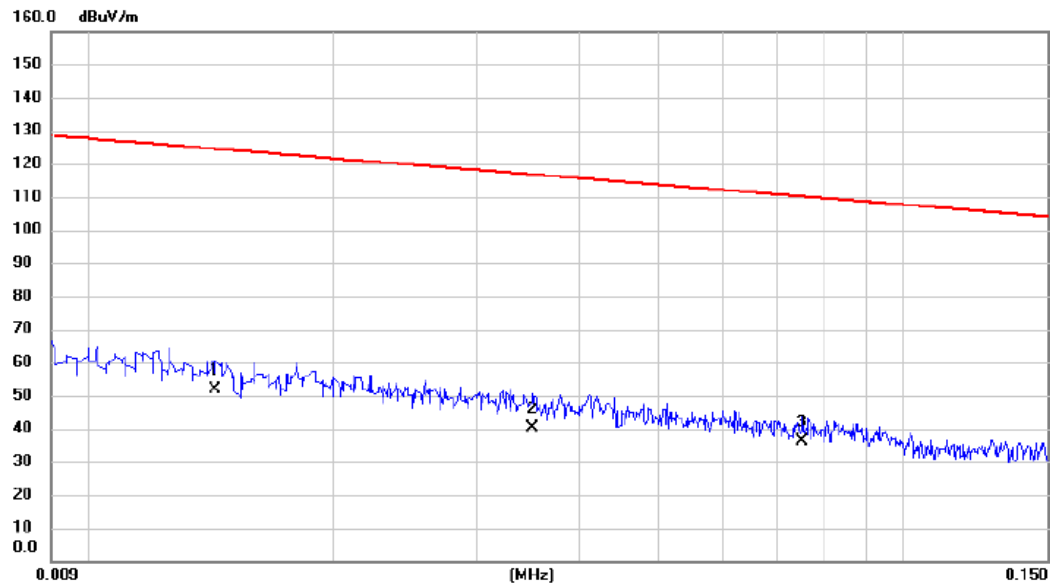
No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	0.452	31.20	13.18	44.38	94.51	-50.13	AVG	
2 *	2.167	35.20	11.72	46.92	69.54	-22.62	QP	
3	12.716	26.10	11.60	37.70	69.54	-31.84	QP	

REMARKS:

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

Test Mode: TX G Mode Channel 11

Ant 90°



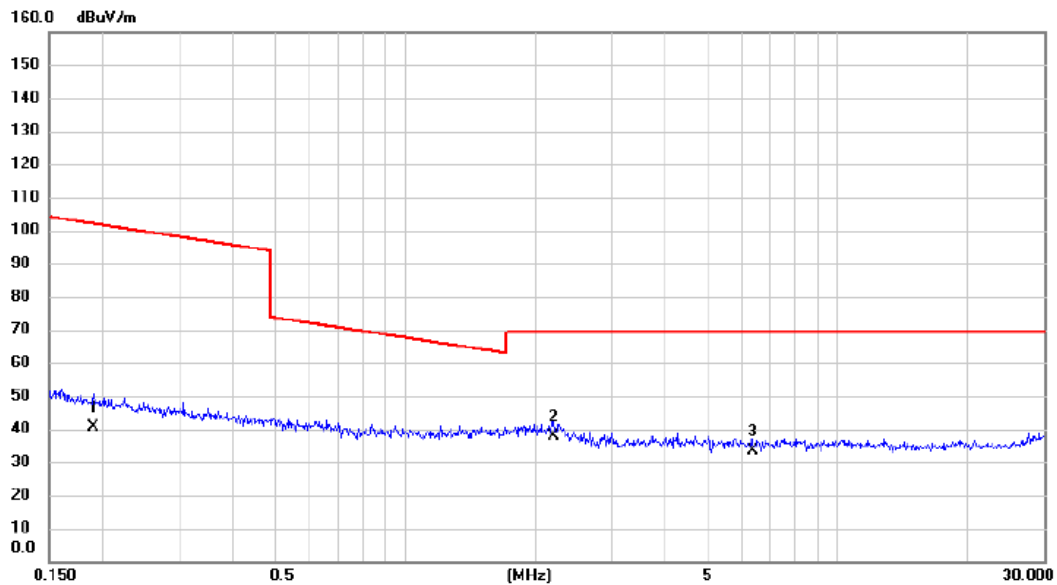
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.014	36.30	15.53	51.83	124.50	-72.67	AVG	
2		0.035	26.20	13.88	40.08	116.72	-76.64	AVG	
3		0.075	22.50	13.53	36.03	110.08	-74.05	AVG	

REMARKS:

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

Test Mode: TX G Mode Channel 11

Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector Comment
1		0.190	27.10	13.60	40.70	102.03	-61.33	AVG
2	*	2.213	26.30	11.69	37.99	69.54	-31.55	QP
3		6.352	22.20	11.07	33.27	69.54	-36.27	QP

REMARKS:

(1) Measurement Value = Reading Level + Correct Factor.

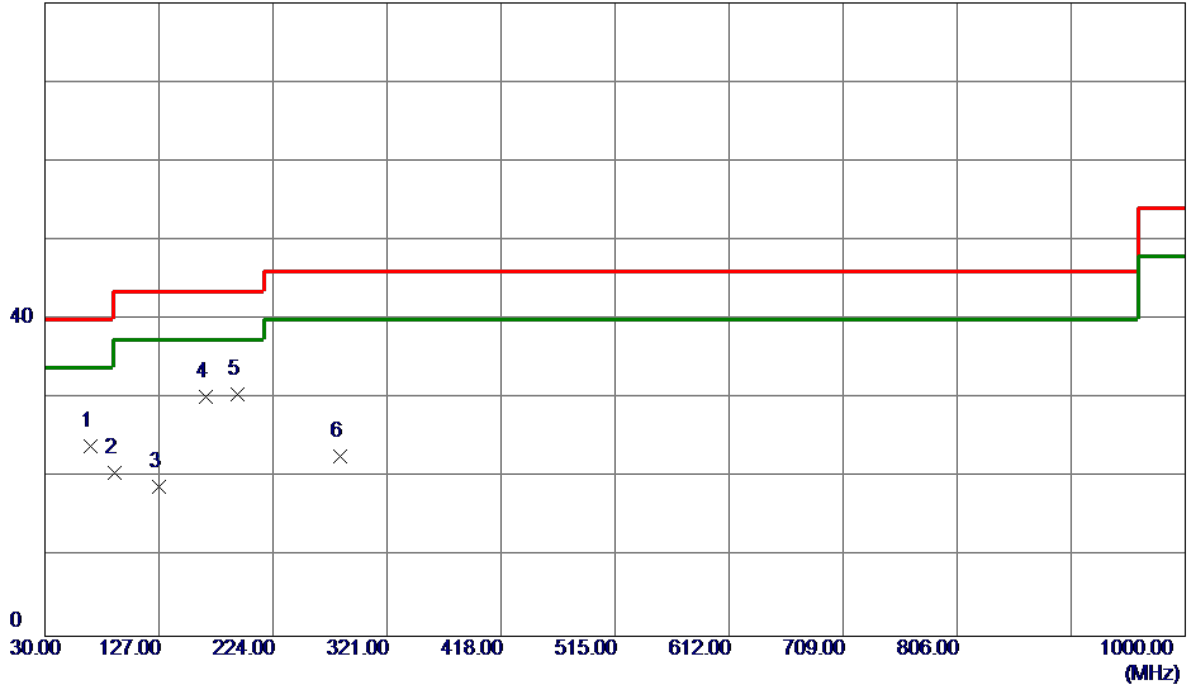
(2) Margin Level = Measurement Value - Limit Value.

APPENDIX C - RADIATED EMISSION - 30 MHZ TO 1000 MHZ

Test Mode: TX G Mode Channel 11

Vertical

80 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	68.8000	39.96	-15.96	24.00	40.00	-16.00	Peak	
2	89.6550	36.70	-16.09	20.61	43.50	-22.89	Peak	
3	127.4850	31.92	-13.05	18.87	43.50	-24.63	Peak	
4	167.2550	42.25	-12.03	30.22	43.50	-13.28	Peak	
5 *	193.4450	45.26	-14.71	30.55	43.50	-12.95	Peak	
6	281.2300	35.26	-12.53	22.73	46.00	-23.27	Peak	

REMARKS:

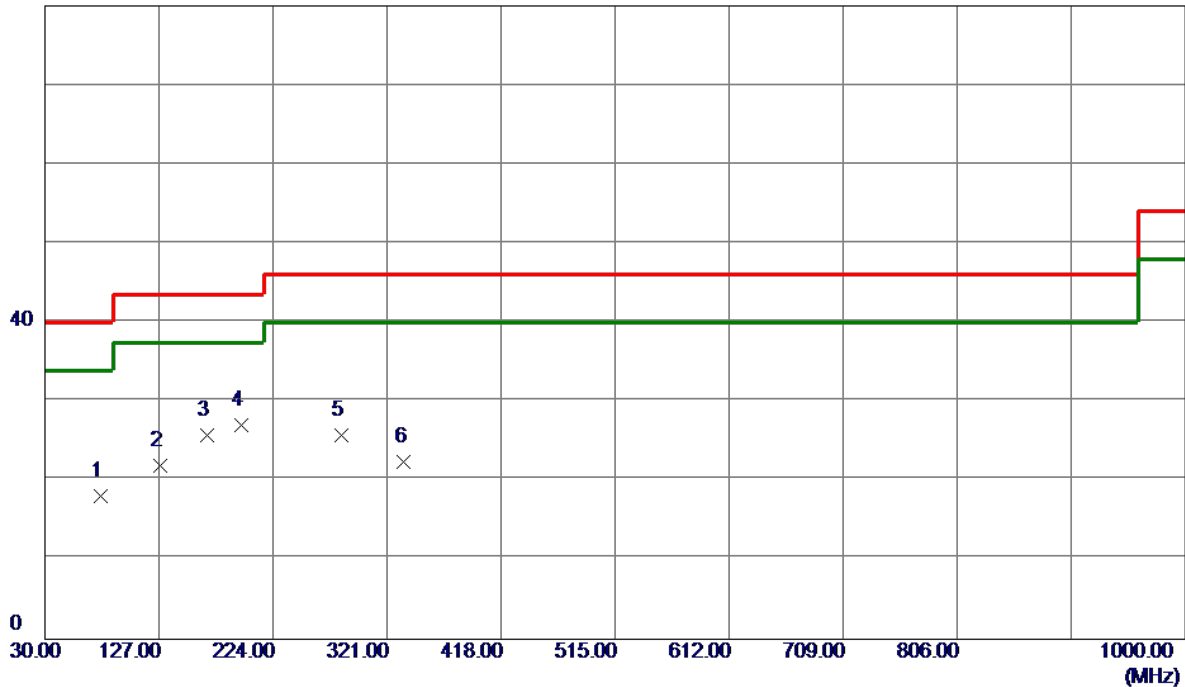
(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode: TX G Mode Channel 11

Horizontal

80 dBuV/m



No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	77.5300	35.69	-17.60	18.09	40.00	-21.91	Peak	
2	128.4550	34.93	-13.05	21.88	43.50	-21.62	Peak	
3	168.2250	38.00	-12.17	25.83	43.50	-17.67	Peak	
4 *	197.3250	42.04	-14.99	27.05	43.50	-16.45	Peak	
5	282.6850	38.18	-12.43	25.75	46.00	-20.25	Peak	
6	335.5500	33.30	-10.90	22.40	46.00	-23.60	Peak	

REMARKS:

(1) Measurement Value = Reading Level + Correct Factor.

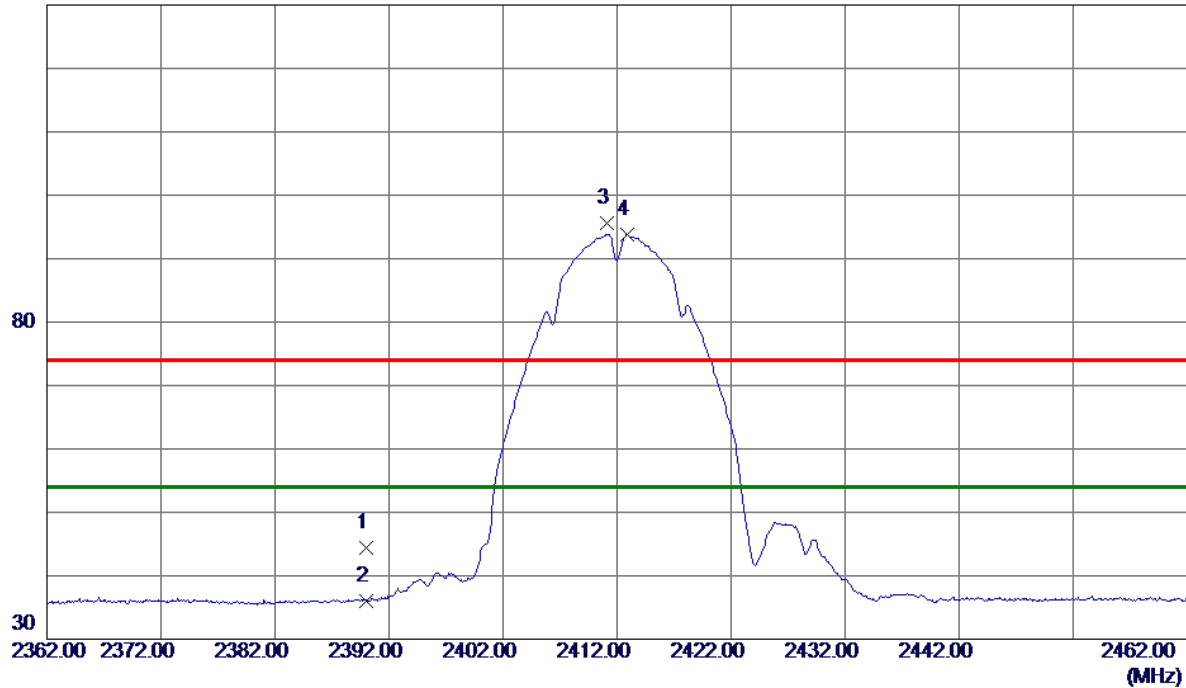
(2) Margin Level = Measurement Value - Limit Value.

APPENDIX D - RADIATED EMISSION- ABOVE 1000 MHZ

Test Mode: TX B Mode 2412 MHz

Vertical

130 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2390.0000	38.07	6.24	44.31	74.00	-29.69	Peak	
2	2390.0000	29.78	6.24	36.02	54.00	-17.98	AVG	
3	2411.1500	89.49	6.20	95.69	74.00	21.69	Peak	No Limit
4 *	2412.9000	87.61	6.20	93.81	54.00	39.81	AVG	No Limit

REMARKS:

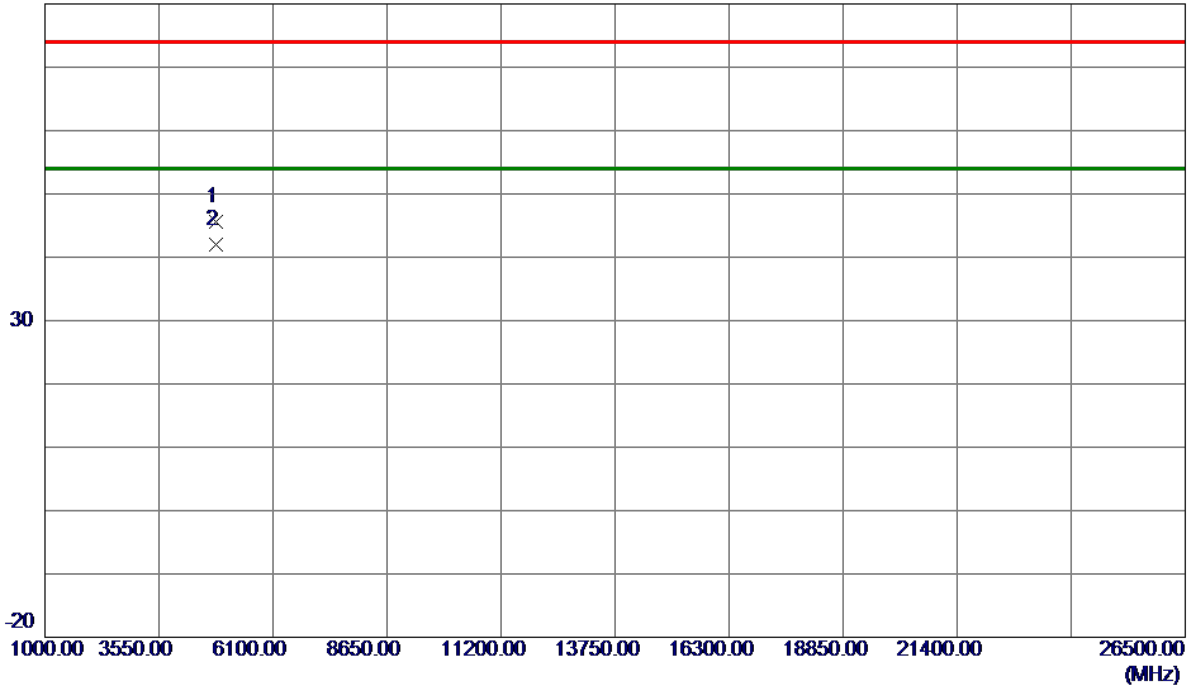
(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX B Mode 2412 MHz
------------	--------------------

Vertical

80 dBuV/m



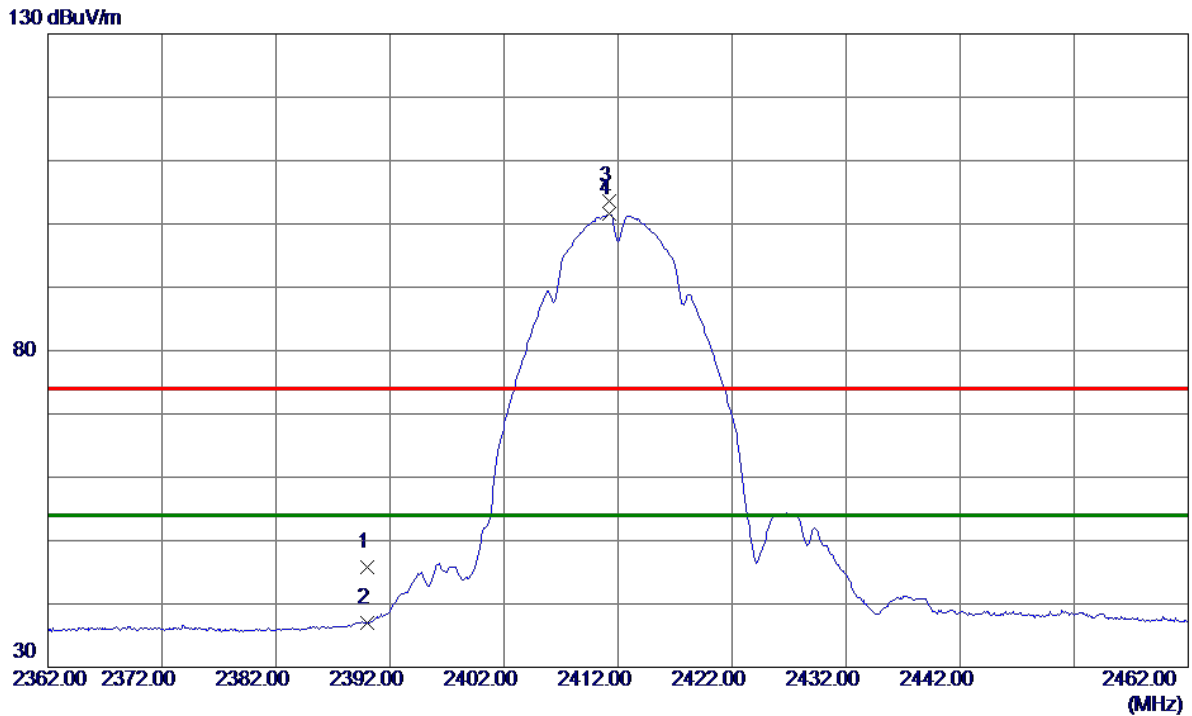
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	4824.0050	43.10	2.49	45.59	74.00	-28.41	Peak	
2 *	4824.0050	39.50	2.49	41.99	54.00	-12.01	AVG	

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. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2390.0000	39.64	6.24	45.88	74.00	-28.12	Peak	
2	2390.0000	30.68	6.24	36.92	54.00	-17.08	AVG	
3	2411.2000	97.34	6.20	103.54	74.00	29.54	Peak	No Limit
4 *	2411.2500	95.33	6.20	101.53	54.00	47.53	AVG	No Limit

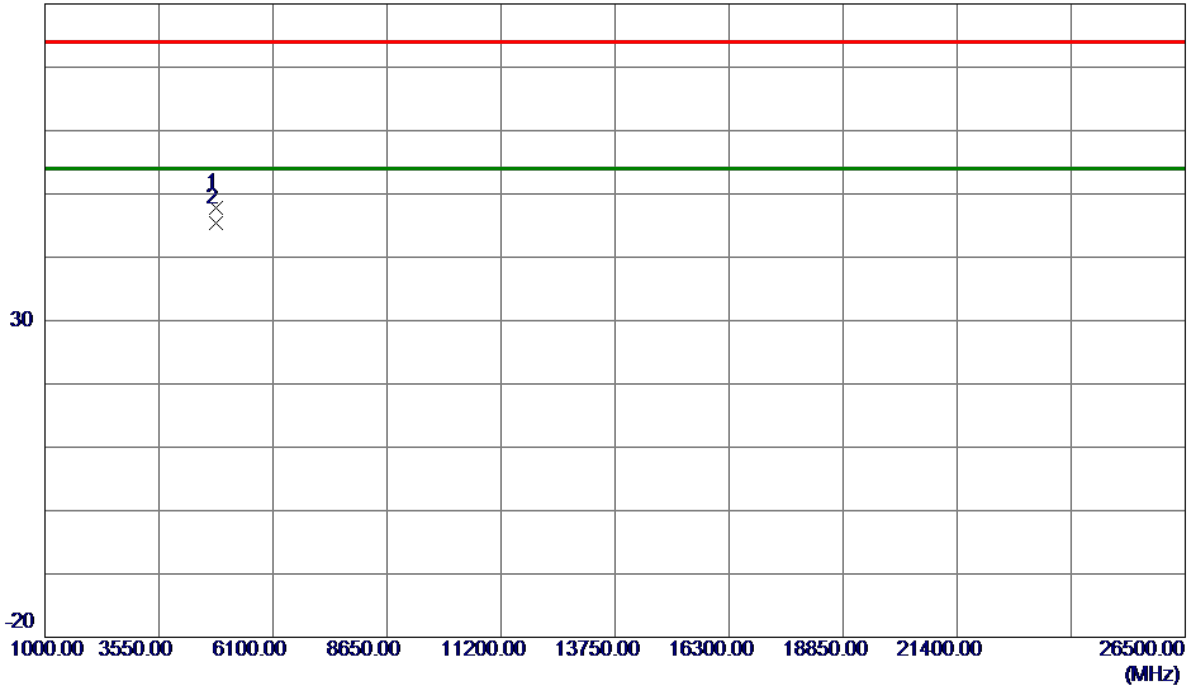
REMARKS:

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

Test Mode:	TX B Mode 2412 MHz
------------	--------------------

Horizontal

80 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	4823.9700	45.36	2.49	47.85	74.00	-26.15	Peak	
2 *	4824.0200	42.96	2.50	45.46	54.00	-8.54	AVG	

REMARKS:

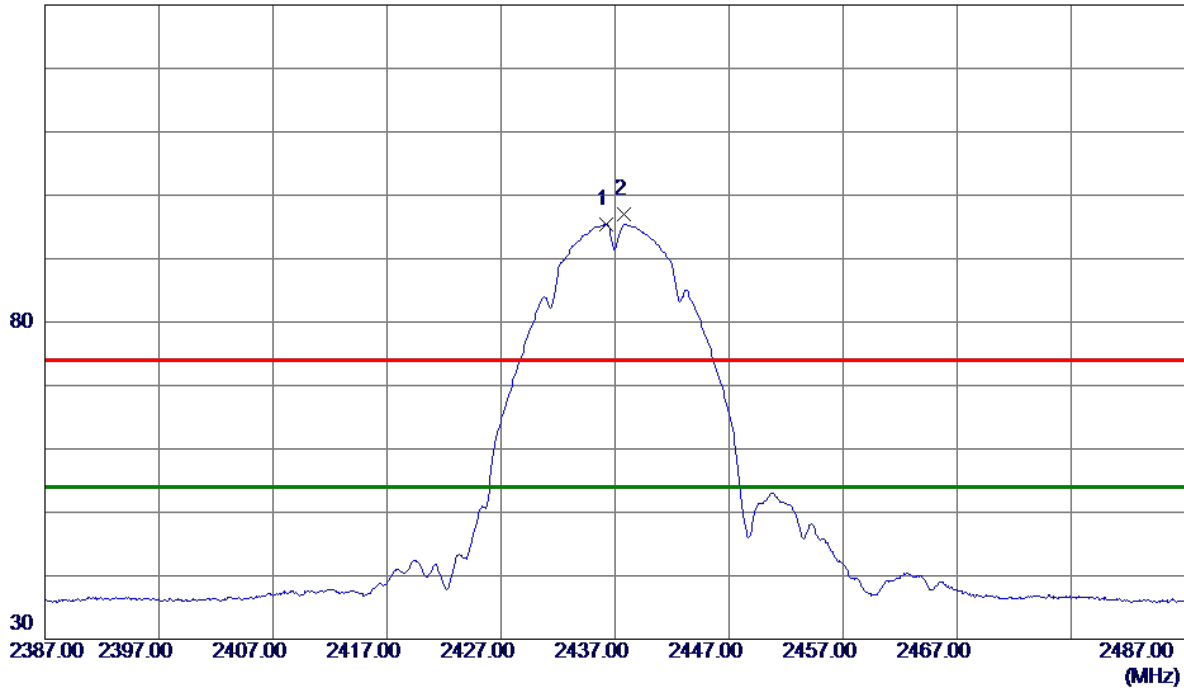
(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode: TX B Mode 2437 MHz

Vertical

130 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	2436.2000	89.25	6.16	95.41	54.00	41.41	AVG	No Limit
2	2437.8000	90.78	6.16	96.94	74.00	22.94	Peak	No Limit

REMARKS:

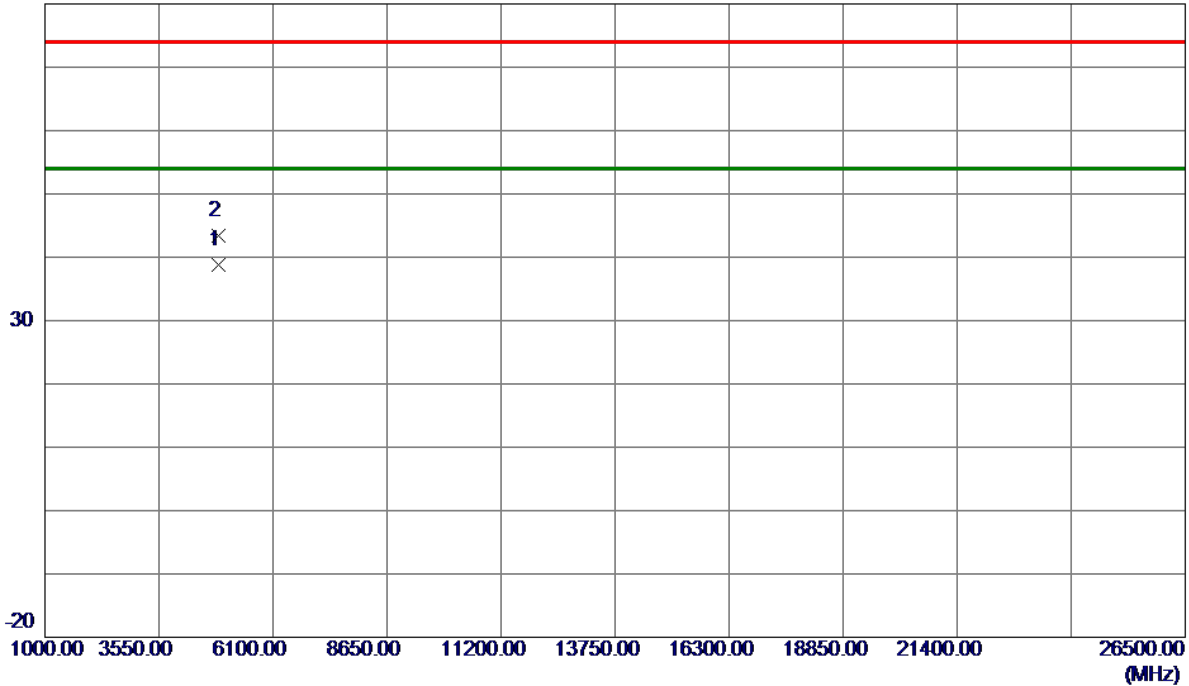
(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode: TX B Mode 2437 MHz

Vertical

80 dBuV/m



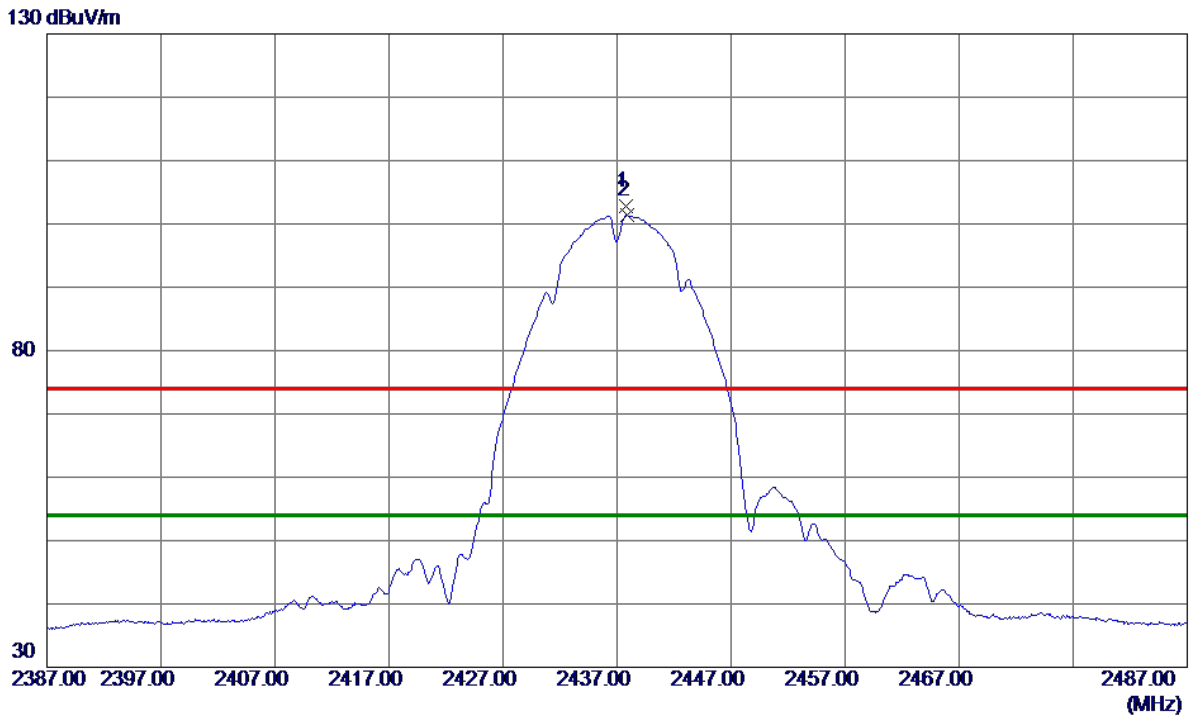
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	4873.9550	36.13	2.66	38.79	54.00	-15.21	AVG	
2	4874.0900	40.71	2.66	43.37	74.00	-30.63	Peak	

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. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2437.8000	96.56	6.16	102.72	74.00	28.72	Peak	No Limit
2 *	2437.9000	95.23	6.16	101.39	54.00	47.39	AVG	No Limit

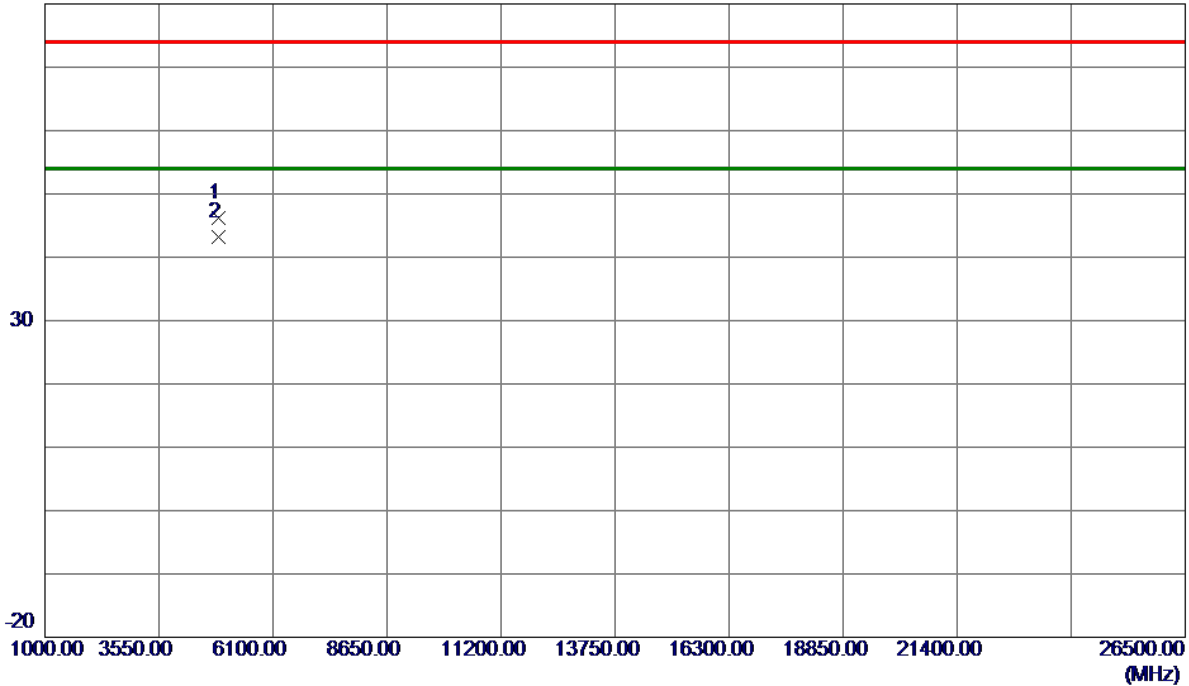
REMARKS:

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

Test Mode:	TX B Mode 2437 MHz
------------	--------------------

Horizontal

80 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	4873.9850	43.59	2.66	46.25	74.00	-27.75	Peak	
2 *	4874.0000	40.53	2.66	43.19	54.00	-10.81	AVG	

REMARKS:

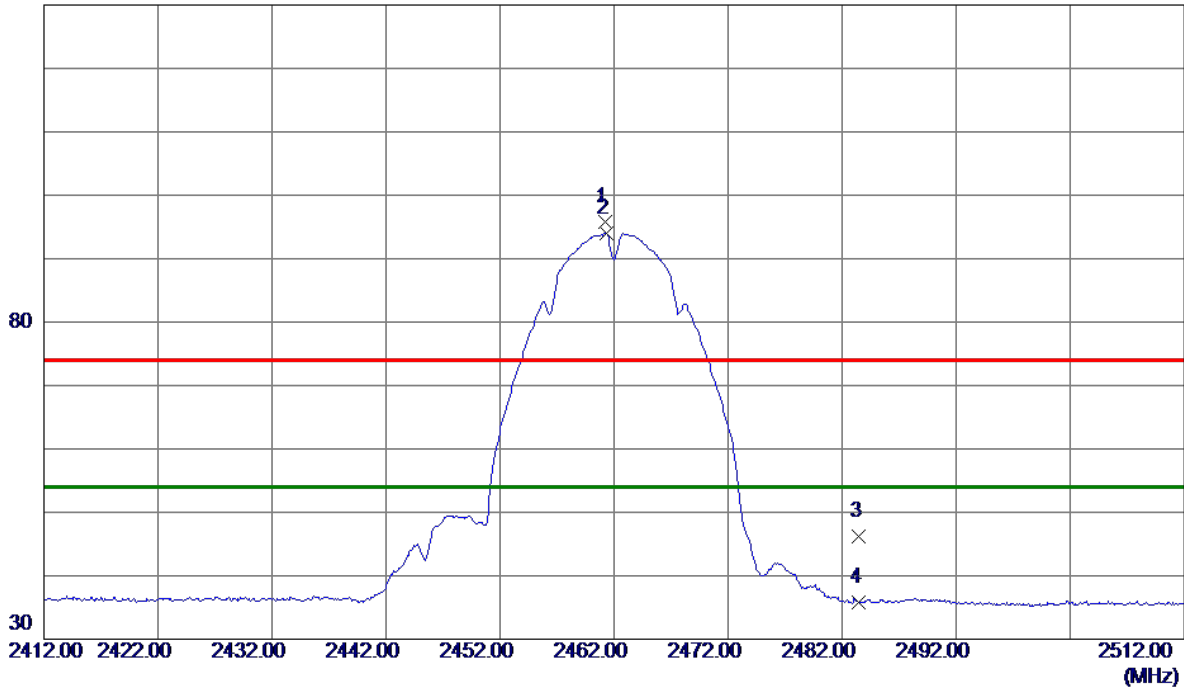
(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode: TX B Mode 2462 MHz

Vertical

130 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2461.2000	89.69	6.12	95.81	74.00	21.81	Peak	No Limit
2 *	2461.3000	87.94	6.12	94.06	54.00	40.06	AVG	No Limit
3	2483.5000	40.14	6.08	46.22	74.00	-27.78	Peak	
4	2483.5000	29.80	6.08	35.88	54.00	-18.12	AVG	

REMARKS:

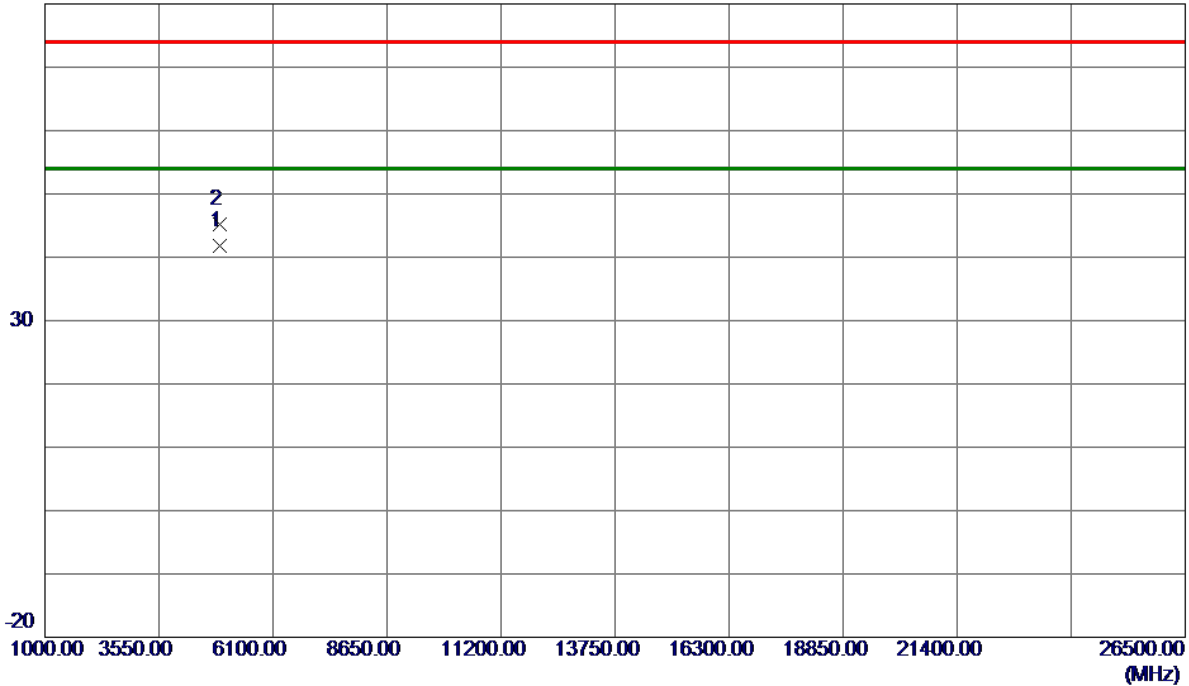
(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX B Mode 2462 MHz
------------	--------------------

Vertical

80 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	4924.0150	39.01	2.82	41.83	54.00	-12.17	AVG	
2	4924.0700	42.32	2.82	45.14	74.00	-28.86	Peak	

REMARKS:

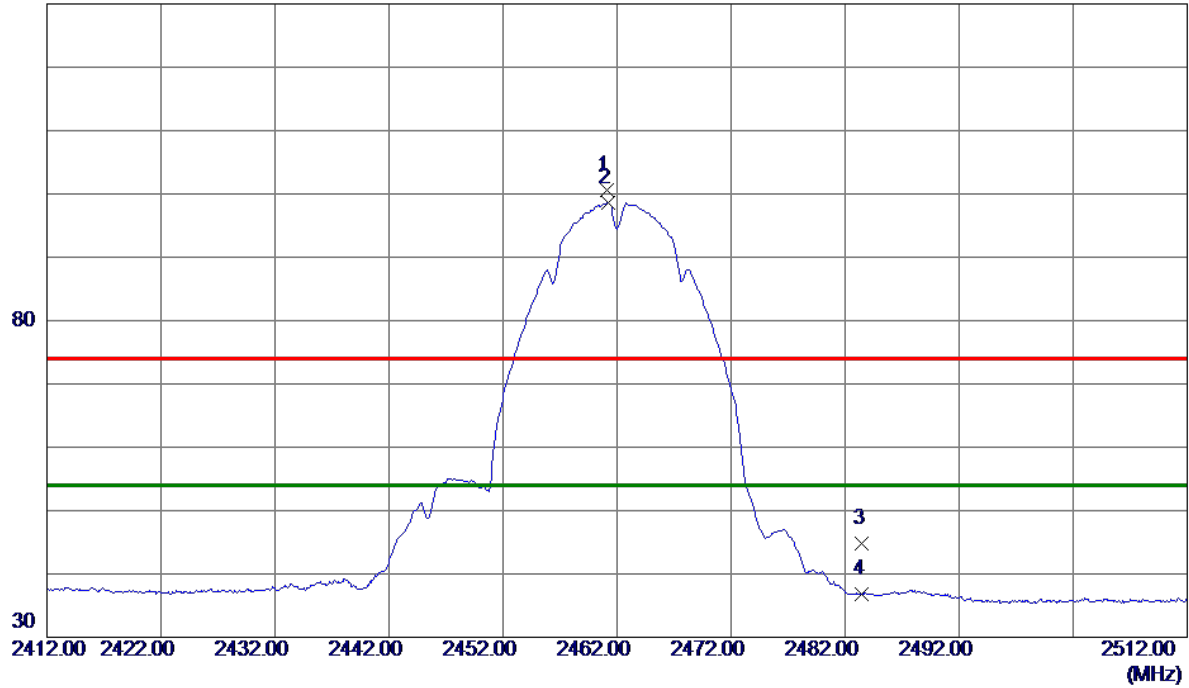
(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode: TX B Mode 2462 MHz

Horizontal

130 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2461.1500	94.47	6.12	100.59	74.00	26.59	Peak	No Limit
2 *	2461.2000	92.45	6.12	98.57	54.00	44.57	AVG	No Limit
3	2483.5000	38.74	6.08	44.82	74.00	-29.18	Peak	
4	2483.5000	30.66	6.08	36.74	54.00	-17.26	AVG	

REMARKS:

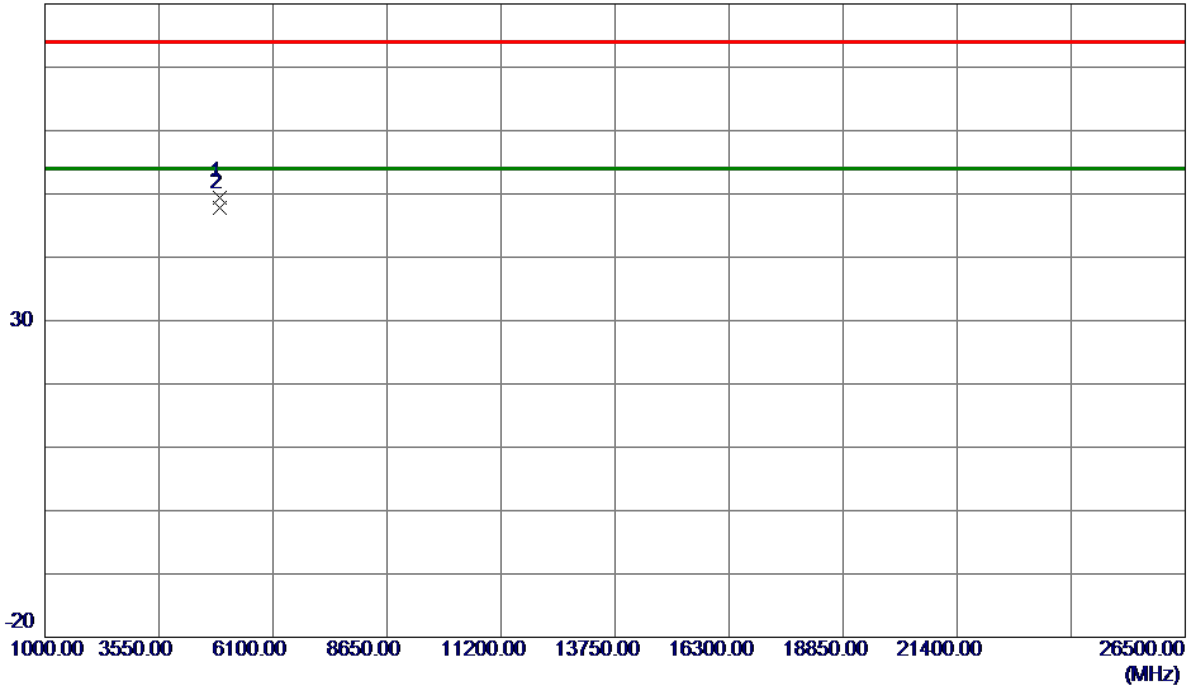
(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX B Mode 2462 MHz
------------	--------------------

Horizontal

80 dBuV/m



No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4923.8950	46.68	2.82	49.50	74.00	-24.50	Peak	
2 *	4924.0200	44.90	2.82	47.72	54.00	-6.28	AVG	

REMARKS:

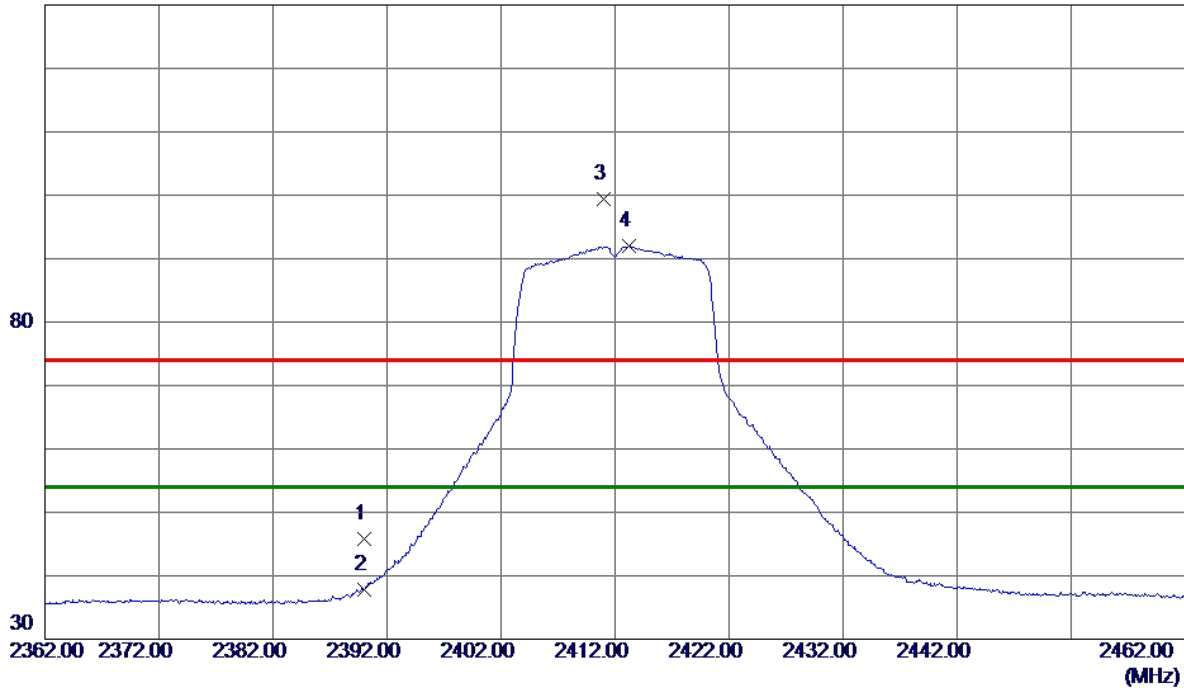
(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode: TX G Mode 2412 MHz

Vertical

130 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2390.0000	39.63	6.24	45.87	74.00	-28.13	Peak	
2	2390.0000	31.62	6.24	37.86	54.00	-16.14	AVG	
3	2411.0500	93.15	6.20	99.35	74.00	25.35	Peak	No Limit
4 *	2413.2000	85.79	6.20	91.99	54.00	37.99	AVG	No Limit

REMARKS:

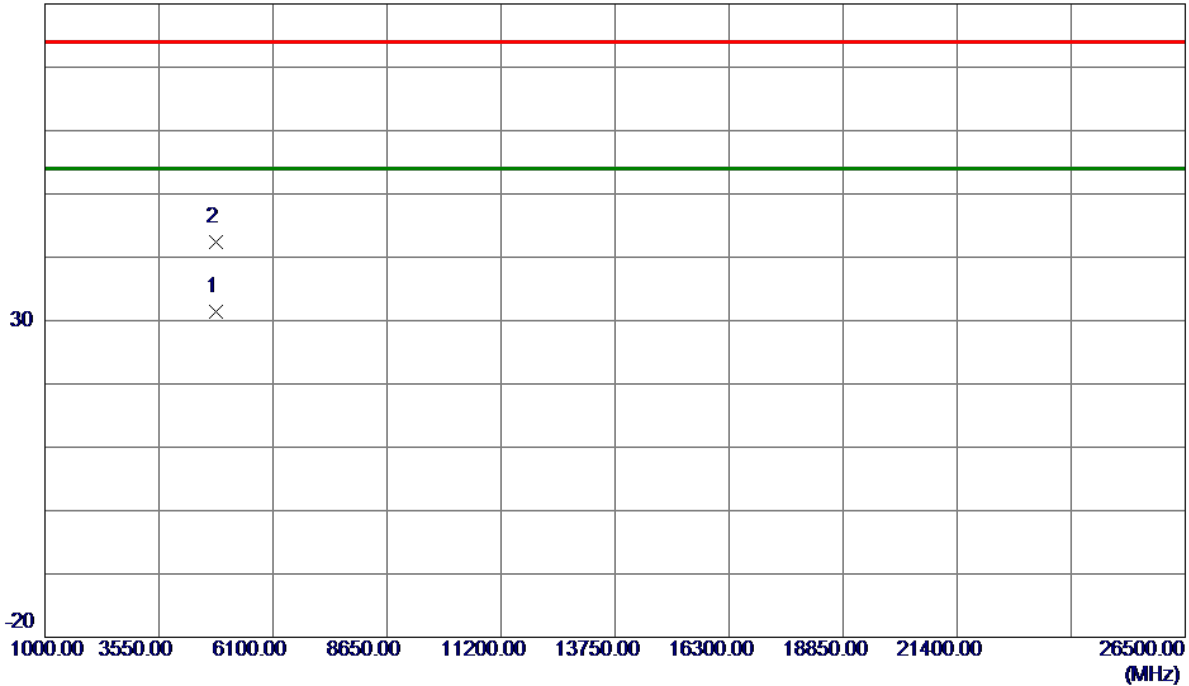
(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX G Mode 2412 MHz
------------	--------------------

Vertical

80 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	4824.4500	28.99	2.50	31.49	54.00	-22.51	AVG	
2	4826.0200	39.88	2.50	42.38	74.00	-31.62	Peak	

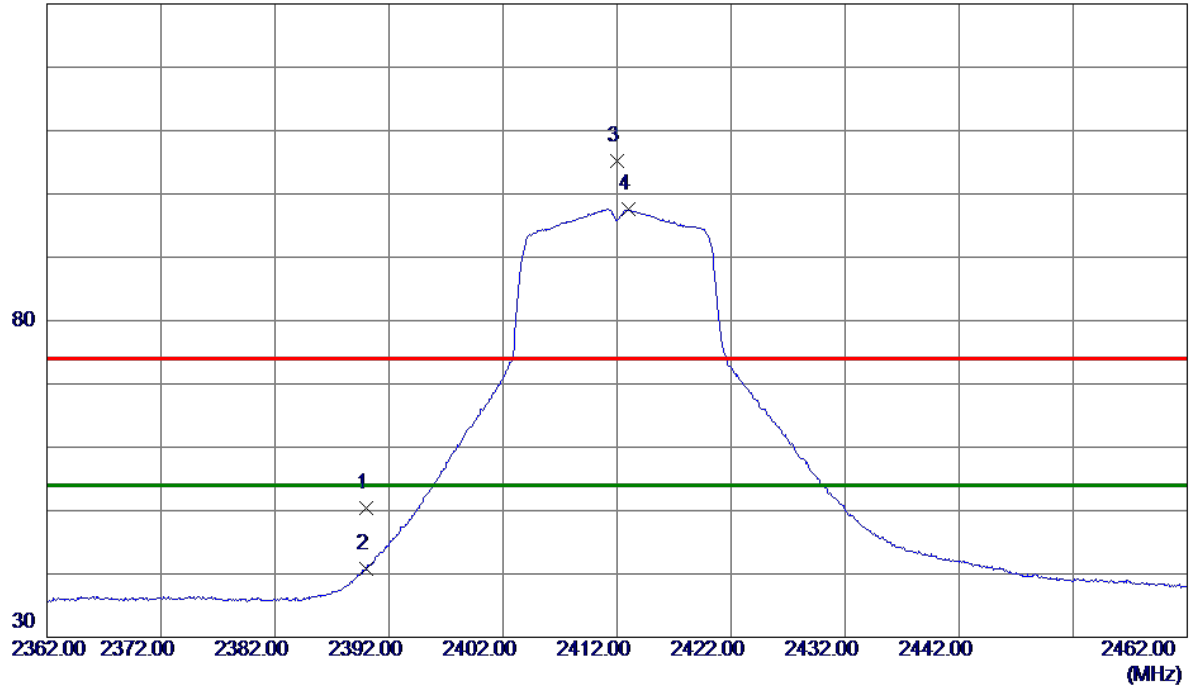
REMARKS:

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

Test Mode: TX G Mode 2412 MHz

Horizontal

130 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2390.0000	44.13	6.24	50.37	74.00	-23.63	Peak	
2	2390.0000	34.65	6.24	40.89	54.00	-13.11	AVG	
3	2412.0500	98.98	6.20	105.18	74.00	31.18	Peak	No Limit
4 *	2413.0500	91.33	6.20	97.53	54.00	43.53	AVG	No Limit

REMARKS:

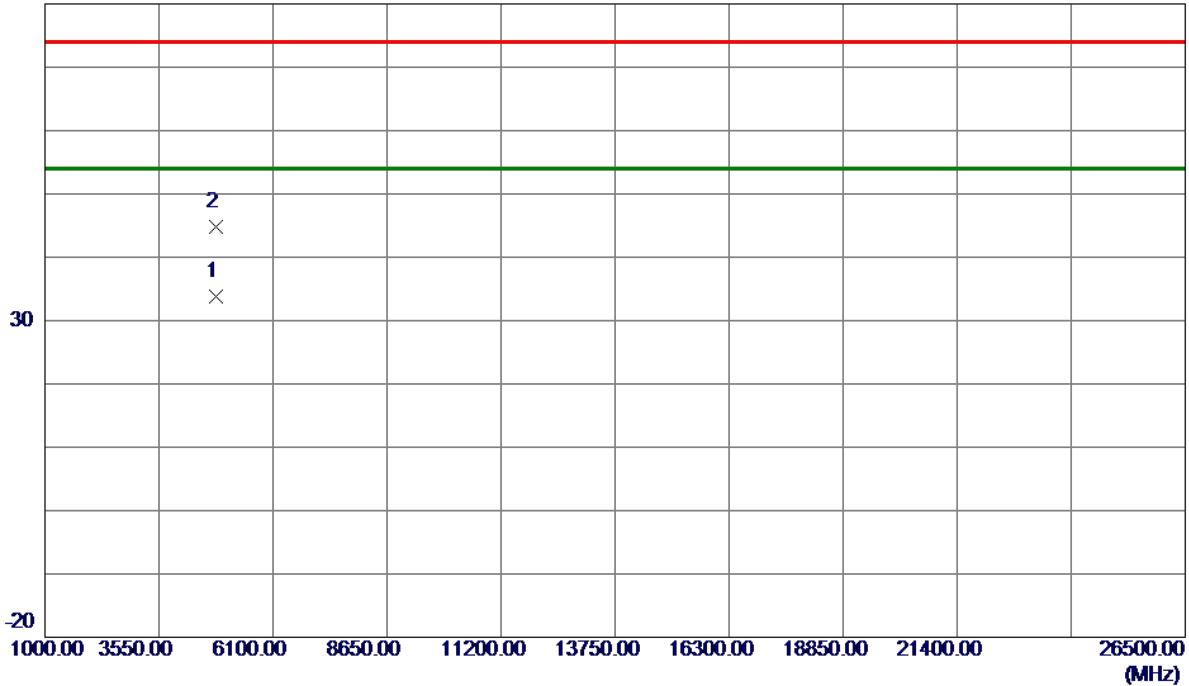
(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX G Mode 2412 MHz
------------	--------------------

Horizontal

80 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	4824.3300	31.35	2.50	33.85	54.00	-20.15	AVG	
2	4826.0350	42.36	2.50	44.86	74.00	-29.14	Peak	

REMARKS:

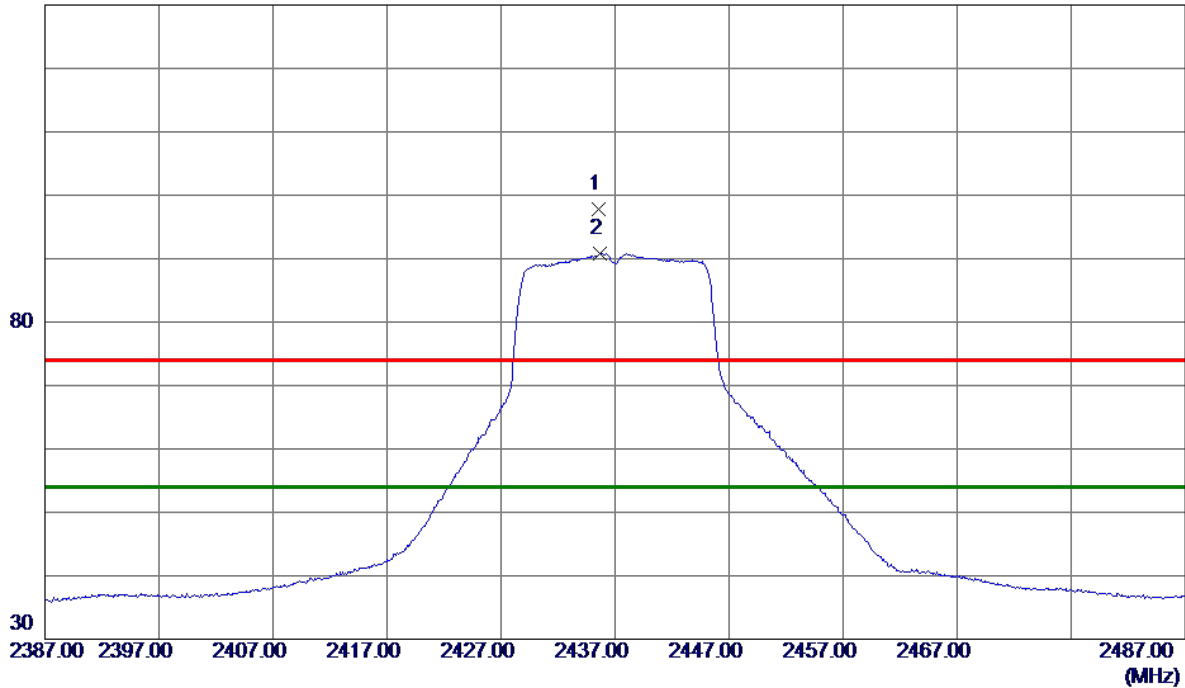
(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode: TX G Mode 2437 MHz

Vertical

130 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2435.6000	91.65	6.16	97.81	74.00	23.81	Peak	No Limit
2 *	2435.7000	84.65	6.16	90.81	54.00	36.81	AVG	No Limit

REMARKS:

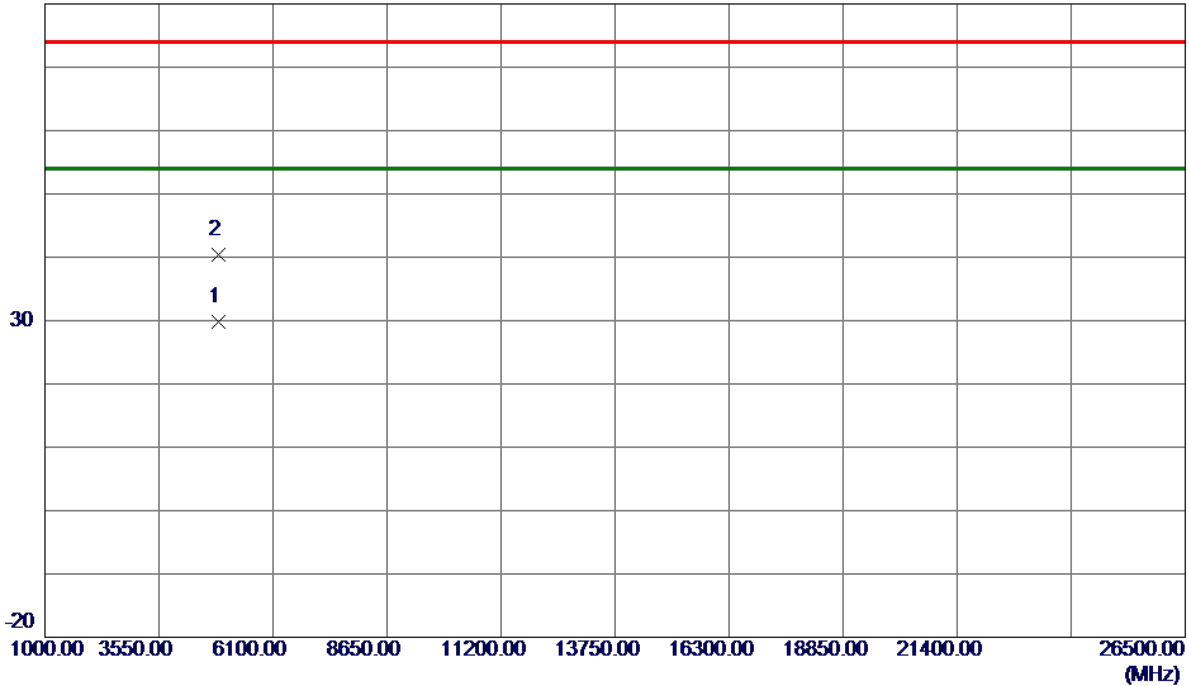
(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX G Mode 2437 MHz
------------	--------------------

Vertical

80 dBuV/m



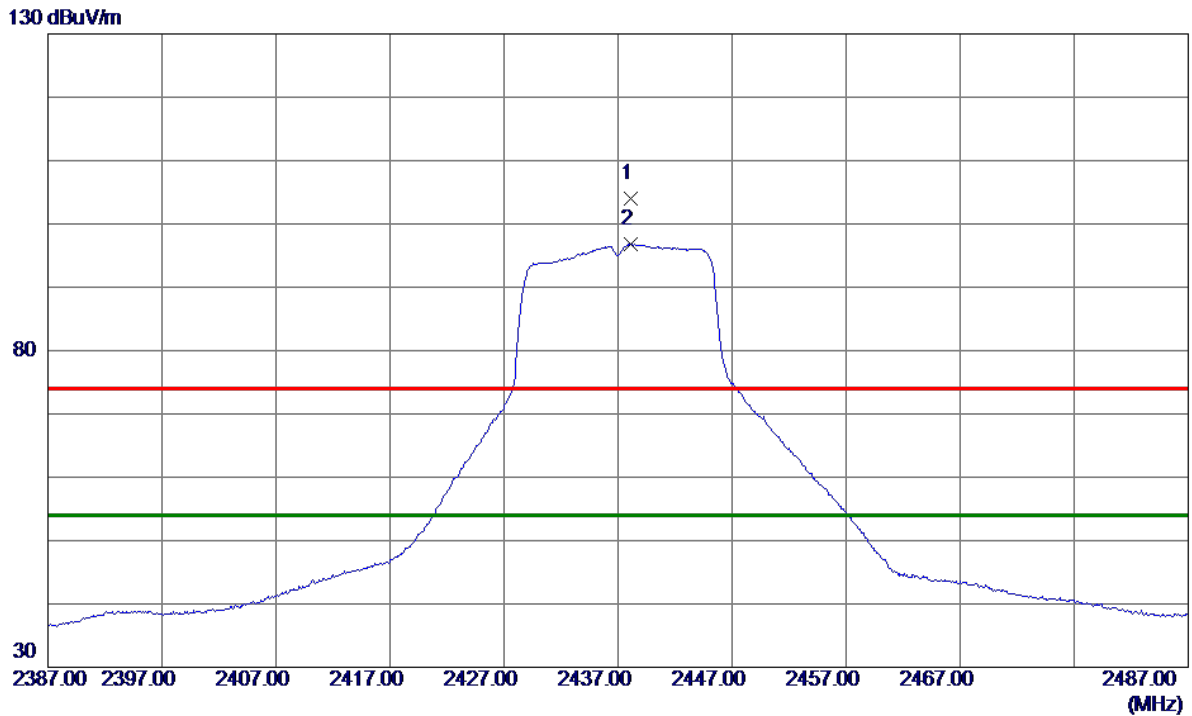
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	4874.0350	27.21	2.66	29.87	54.00	-24.13	AVG	
2	4877.5450	37.79	2.67	40.46	74.00	-33.54	Peak	

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. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2438.1500	97.84	6.16	104.00	74.00	30.00	Peak	No Limit
2 *	2438.1500	90.62	6.16	96.78	54.00	42.78	AVG	No Limit

REMARKS:

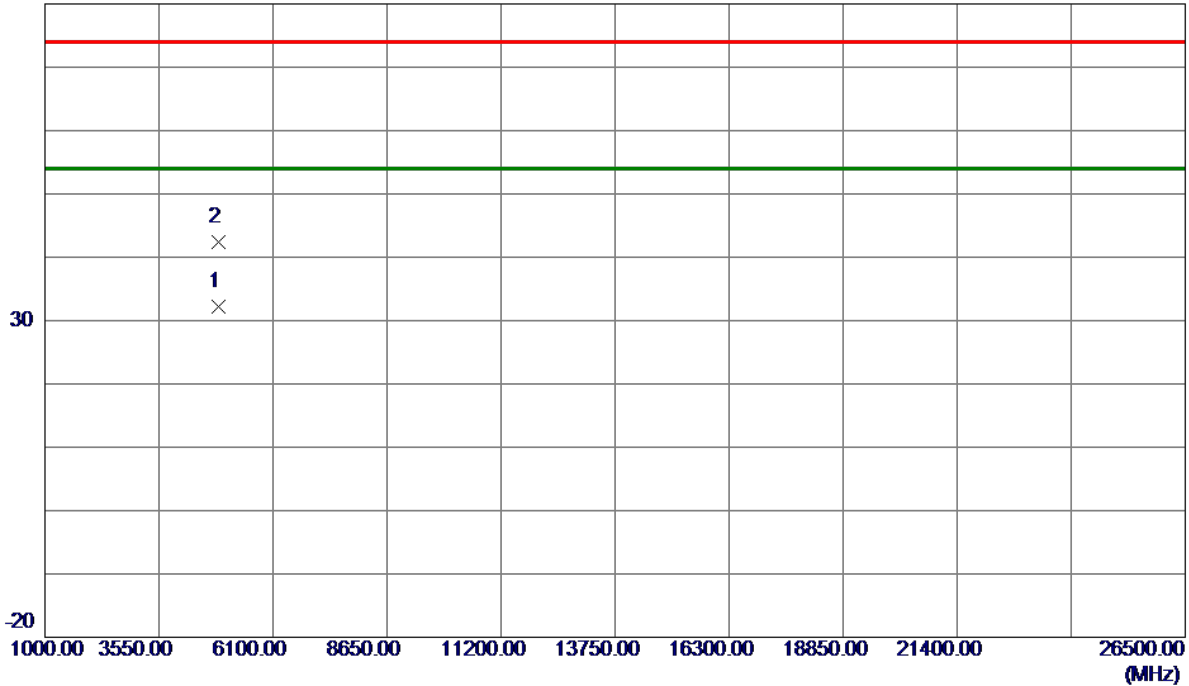
(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX G Mode 2437 MHz
------------	--------------------

Horizontal

80 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	4873.9800	29.52	2.66	32.18	54.00	-21.82	AVG	
2	4878.1050	39.66	2.67	42.33	74.00	-31.67	Peak	

REMARKS:

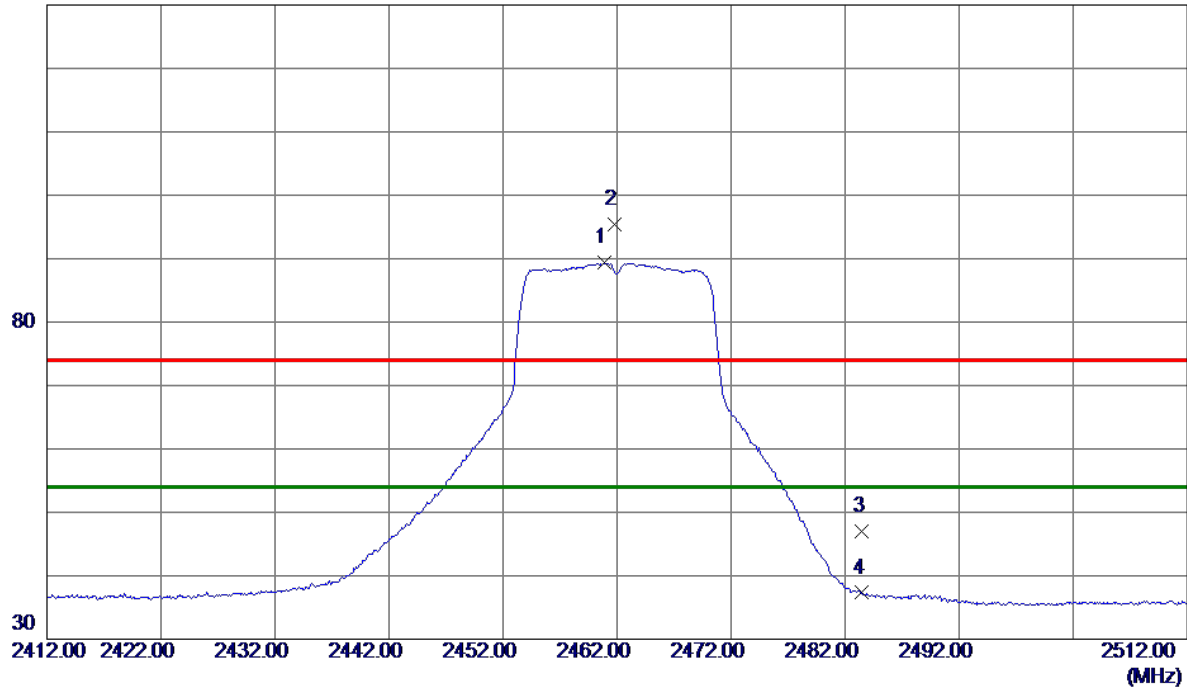
(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode: TX G Mode 2462 MHz

Vertical

130 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	2460.9000	83.23	6.12	89.35	54.00	35.35	AVG	No Limit
2	2461.7500	89.24	6.12	95.36	74.00	21.36	Peak	No Limit
3	2483.5000	40.85	6.08	46.93	74.00	-27.07	Peak	
4	2483.5000	31.22	6.08	37.30	54.00	-16.70	AVG	

REMARKS:

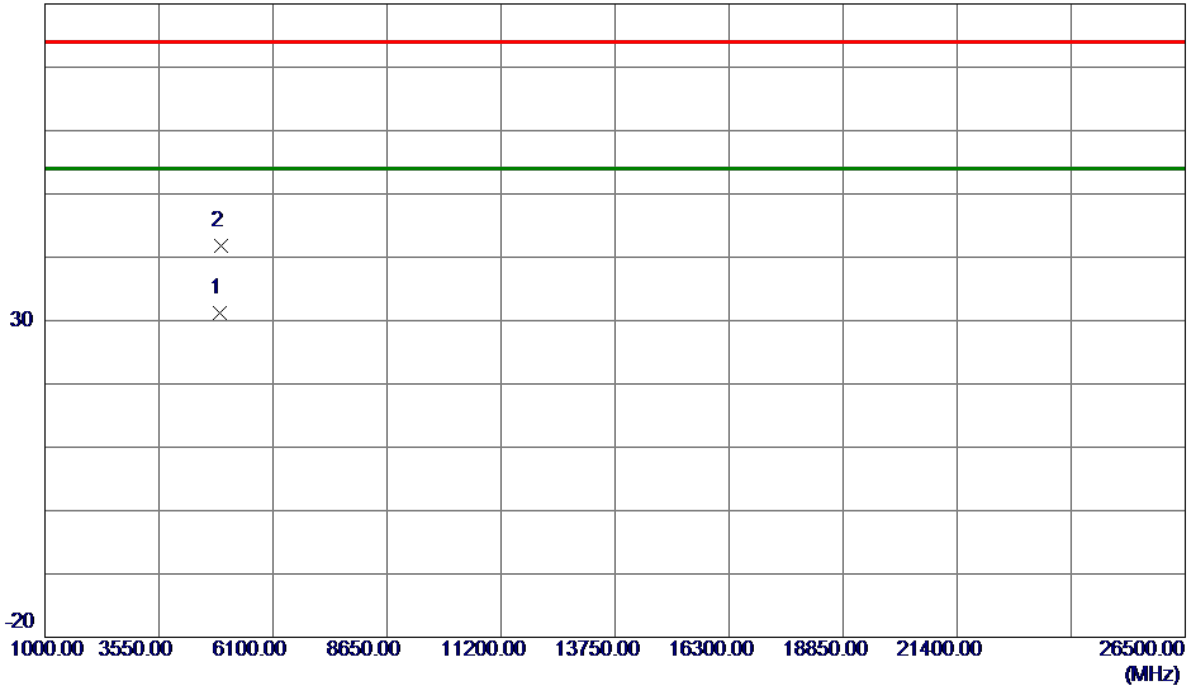
(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX G Mode 2462 MHz
------------	--------------------

Vertical

80 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	4919.6850	28.46	2.80	31.26	54.00	-22.74	AVG	
2	4925.7799	38.98	2.82	41.80	74.00	-32.20	Peak	

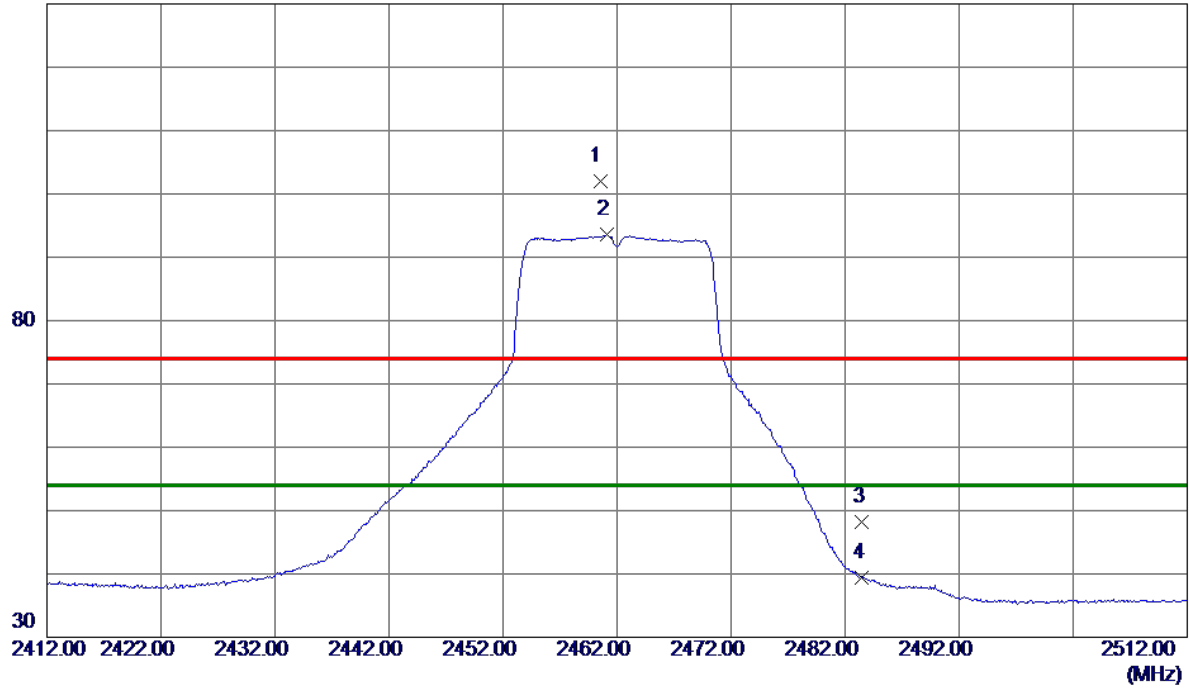
REMARKS:

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

Test Mode: TX G Mode 2462 MHz

Horizontal

130 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2460.5000	95.88	6.12	102.00	74.00	28.00	Peak	No Limit
2 *	2461.1500	87.41	6.12	93.53	54.00	39.53	AVG	No Limit
3	2483.5000	42.09	6.08	48.17	74.00	-25.83	Peak	
4	2483.5000	33.27	6.08	39.35	54.00	-14.65	AVG	

REMARKS:

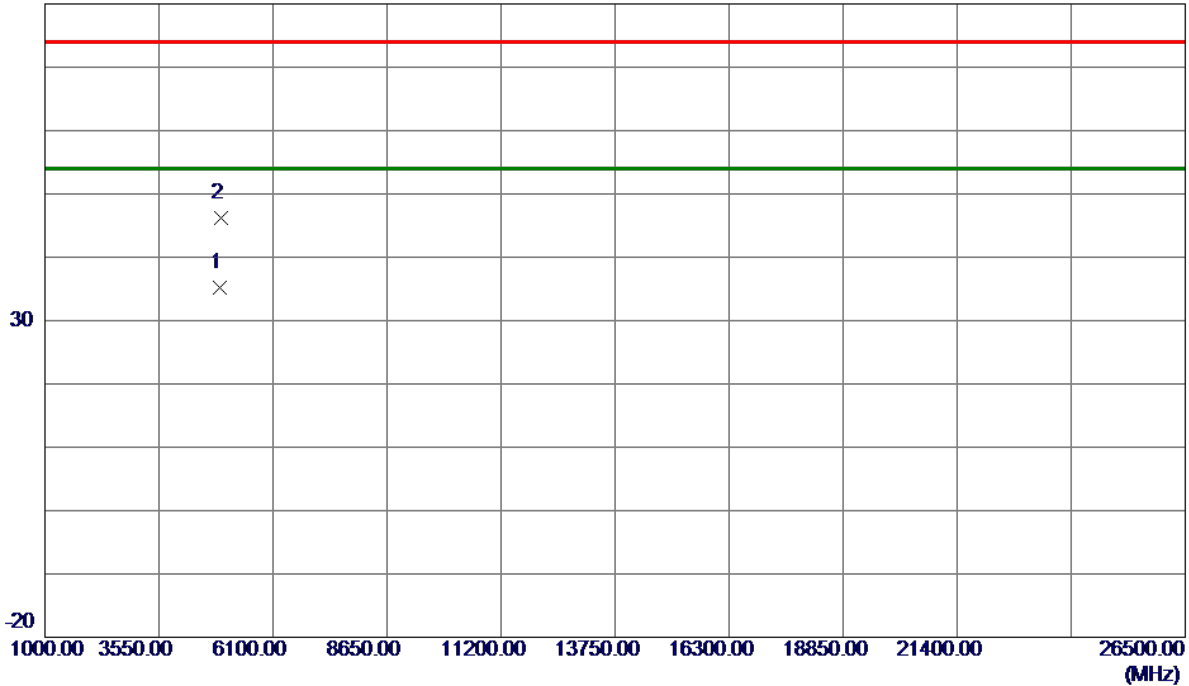
(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX G Mode 2462 MHz
------------	--------------------

Horizontal

80 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	4923.7400	32.34	2.82	35.16	54.00	-18.84	AVG	
2	4924.6900	43.34	2.82	46.16	74.00	-27.84	Peak	

REMARKS:

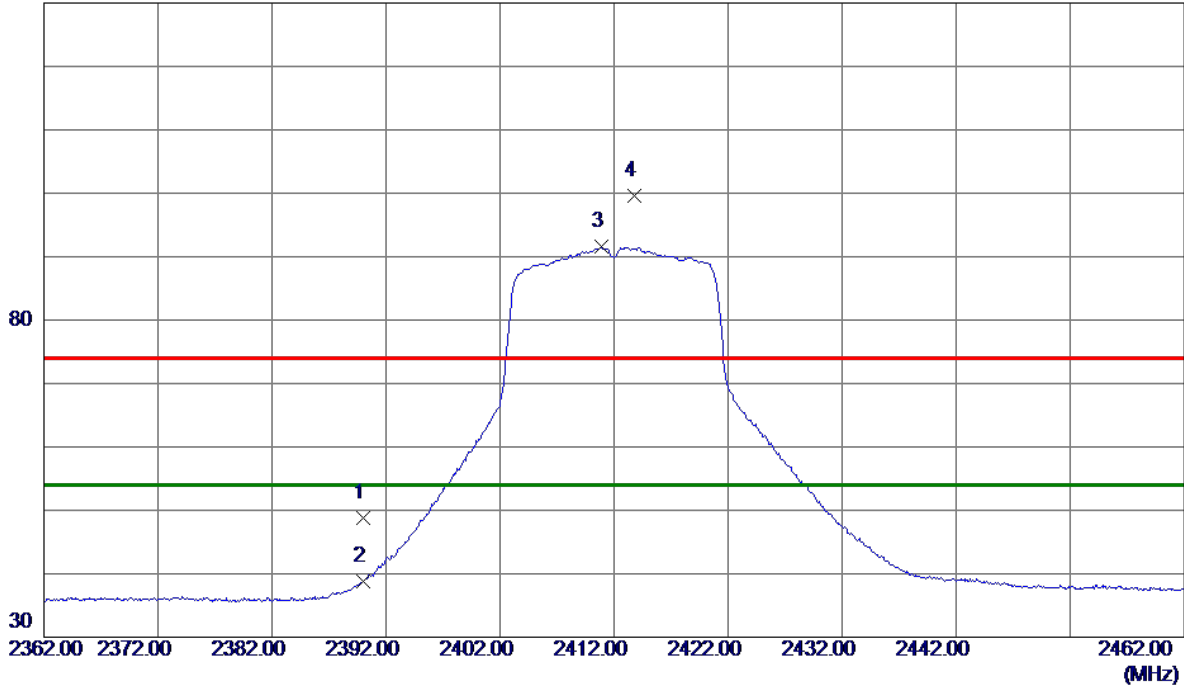
(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode: TX N-20M Mode 2412 MHz

Vertical

130 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2390.0000	42.51	6.24	48.75	74.00	-25.25	Peak	
2	2390.0000	32.61	6.24	38.85	54.00	-15.15	AVG	
3 *	2410.9000	85.32	6.20	91.52	54.00	37.52	AVG	No Limit
4	2413.8000	93.47	6.20	99.67	74.00	25.67	Peak	No Limit

REMARKS:

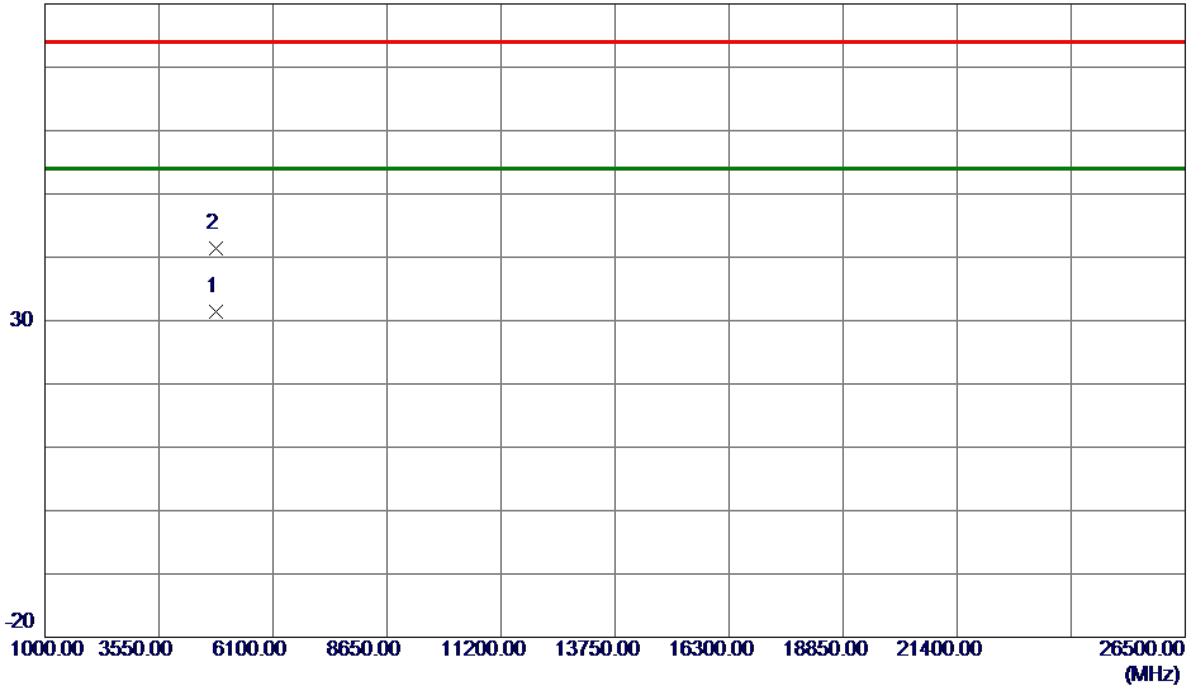
(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX N-20M Mode 2412 MHz
------------	------------------------

Vertical

80 dBuV/m



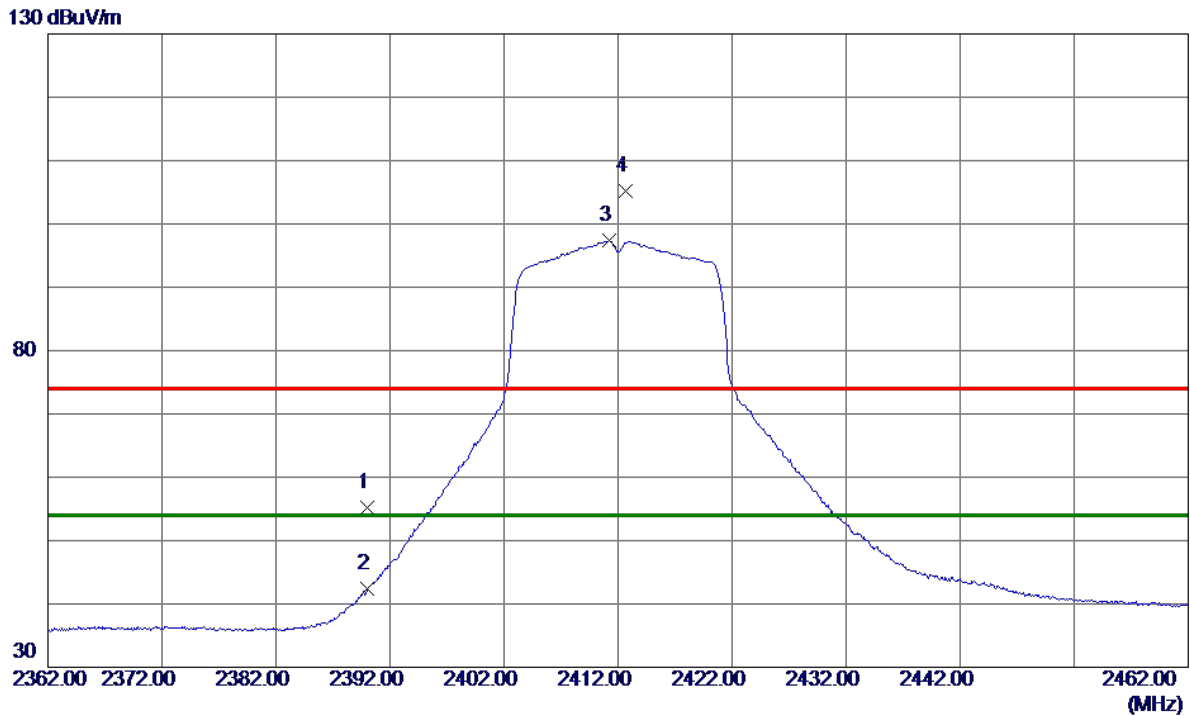
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	4824.9600	28.91	2.50	31.41	54.00	-22.59	AVG	
2	4825.9100	38.83	2.50	41.33	74.00	-32.67	Peak	

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	Measurement	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.0000	49.01	6.24	55.25	74.00	-18.75	Peak	
2	2390.0000	36.12	6.24	42.36	54.00	-11.64	AVG	
3 *	2411.2000	91.14	6.20	97.34	54.00	43.34	AVG	No Limit
4	2412.7000	99.08	6.20	105.28	74.00	31.28	Peak	No Limit

REMARKS:

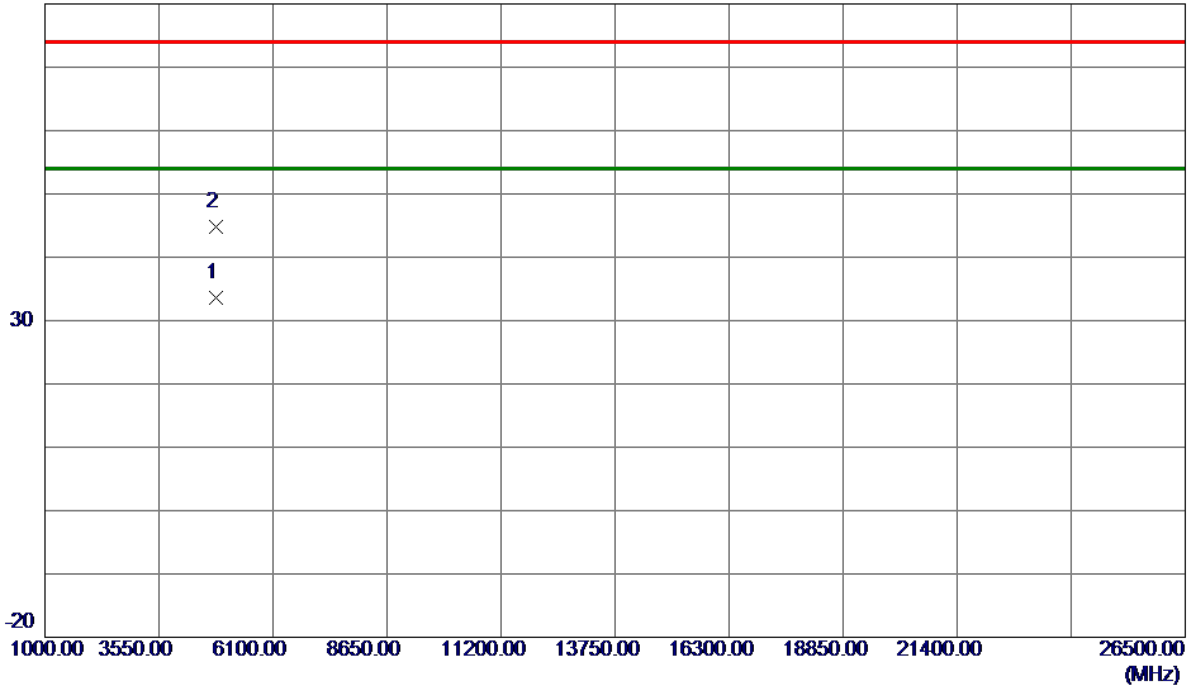
(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX N-20M Mode 2412 MHz
------------	------------------------

Horizontal

80 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	4825.9850	31.14	2.50	33.64	54.00	-20.36	AVG	
2	4826.8950	42.34	2.50	44.84	74.00	-29.16	Peak	

REMARKS:

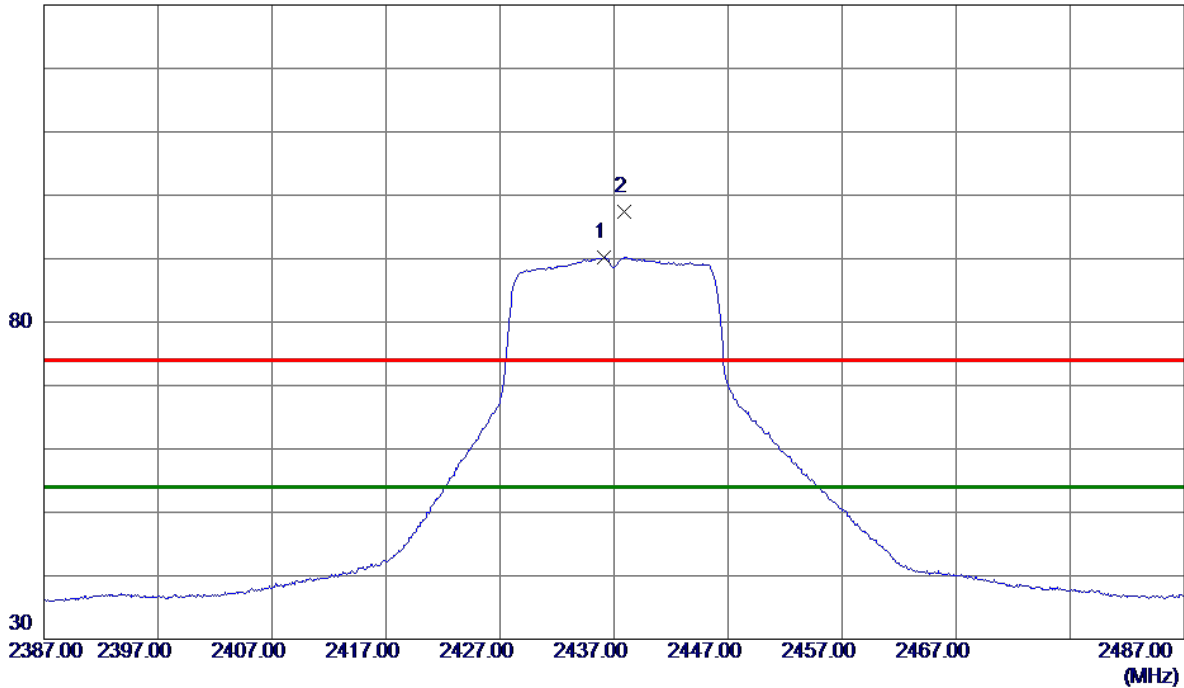
(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode: TX N-20M Mode 2437 MHz

Vertical

130 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	2436.1500	84.04	6.16	90.20	54.00	36.20	AVG	No Limit
2	2437.9000	91.26	6.16	97.42	74.00	23.42	Peak	No Limit

REMARKS:

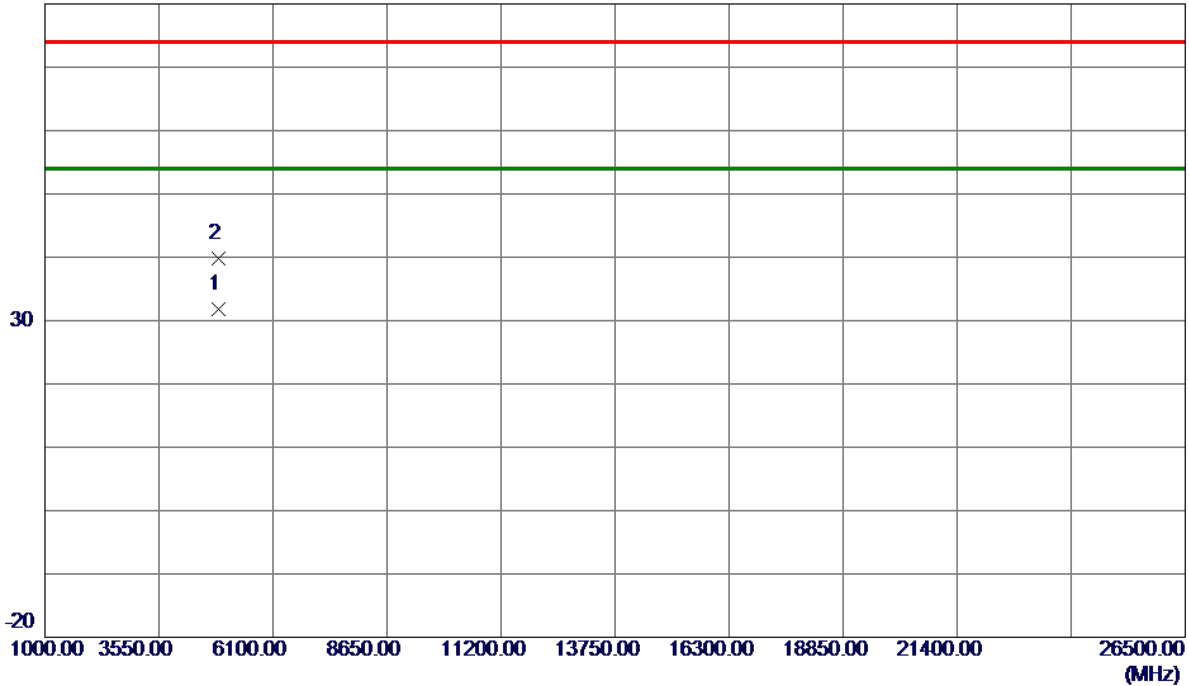
(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX N-20M Mode 2437 MHz
------------	------------------------

Vertical

80 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	4871.0350	29.13	2.65	31.78	54.00	-22.22	AVG	
2	4875.7500	37.22	2.66	39.88	74.00	-34.12	Peak	

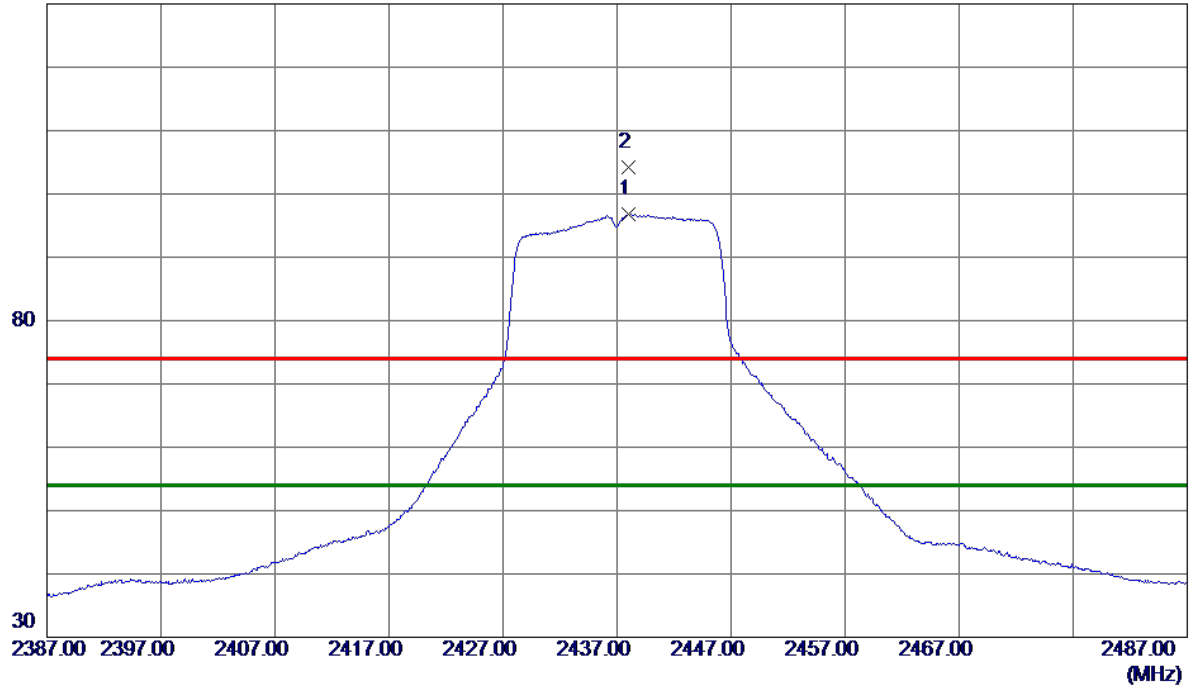
REMARKS:

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

Test Mode: TX N-20M Mode 2437 MHz

Horizontal

130 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	2438.0000	90.70	6.16	96.86	54.00	42.86	AVG	No Limit
2	2438.0500	98.05	6.16	104.21	74.00	30.21	Peak	No Limit

REMARKS:

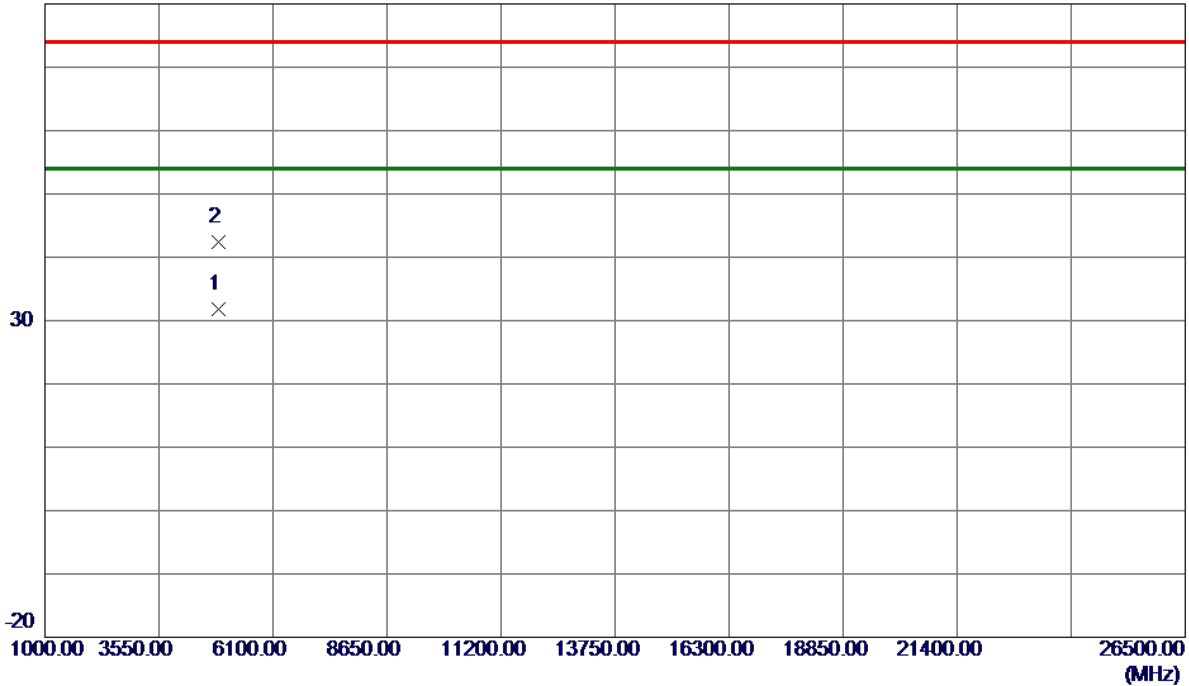
(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX N-20M Mode 2437 MHz
------------	------------------------

Horizontal

80 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	4873.7500	29.16	2.65	31.81	54.00	-22.19	AVG	
2	4873.8750	39.69	2.66	42.35	74.00	-31.65	Peak	

REMARKS:

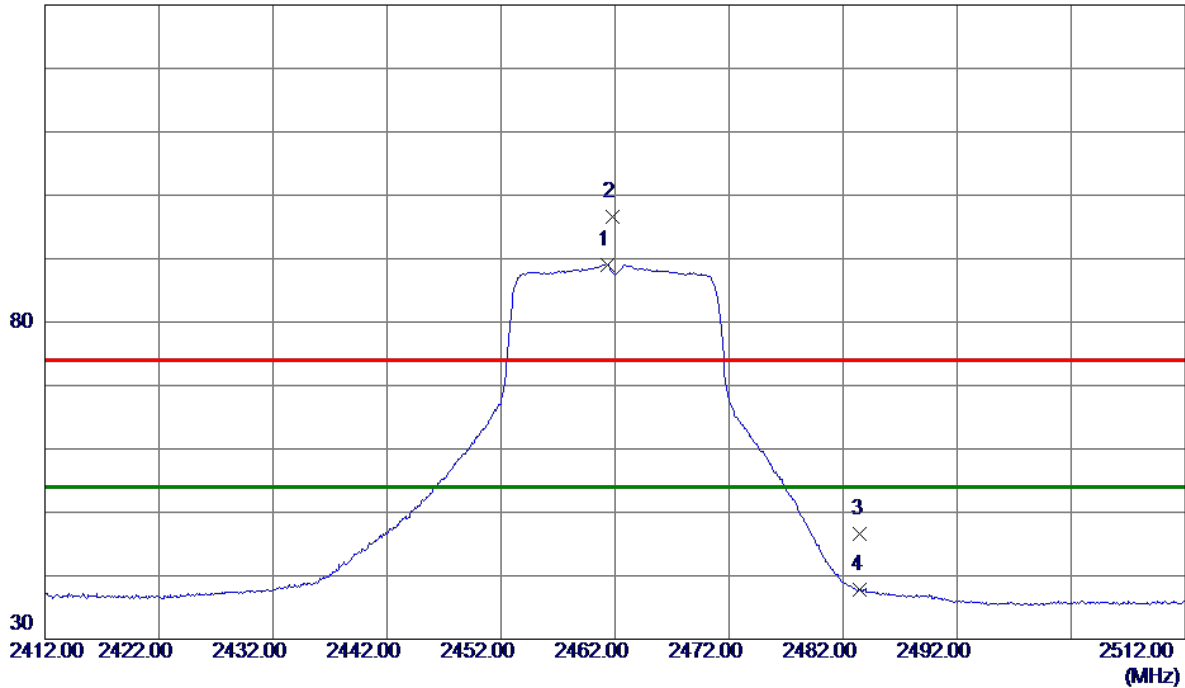
(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode: TX N-20M Mode 2462 MHz

Vertical

130 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	2461.3500	82.96	6.12	89.08	54.00	35.08	AVG	No Limit
2	2461.7500	90.55	6.12	96.67	74.00	22.67	Peak	No Limit
3	2483.5000	40.60	6.08	46.68	74.00	-27.32	Peak	
4	2483.5000	31.63	6.08	37.71	54.00	-16.29	AVG	

REMARKS:

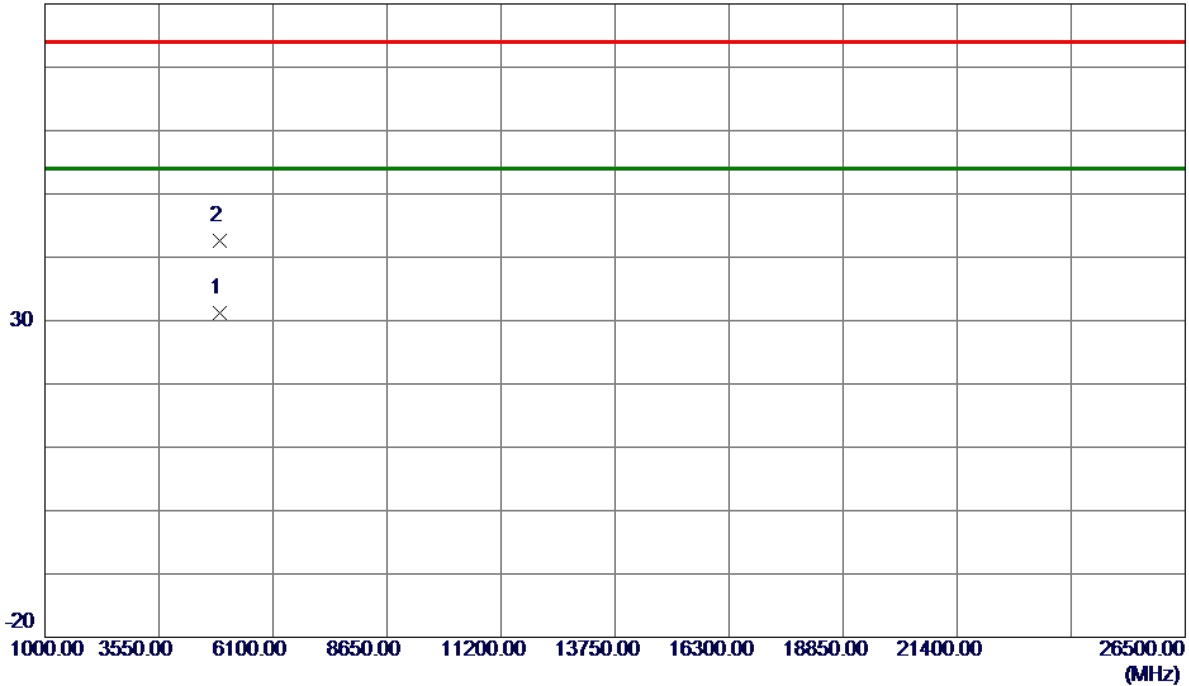
(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX N-20M Mode 2462 MHz
------------	------------------------

Vertical

80 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	4919.0050	28.32	2.80	31.12	54.00	-22.88	AVG	
2	4921.0150	39.79	2.81	42.60	74.00	-31.40	Peak	

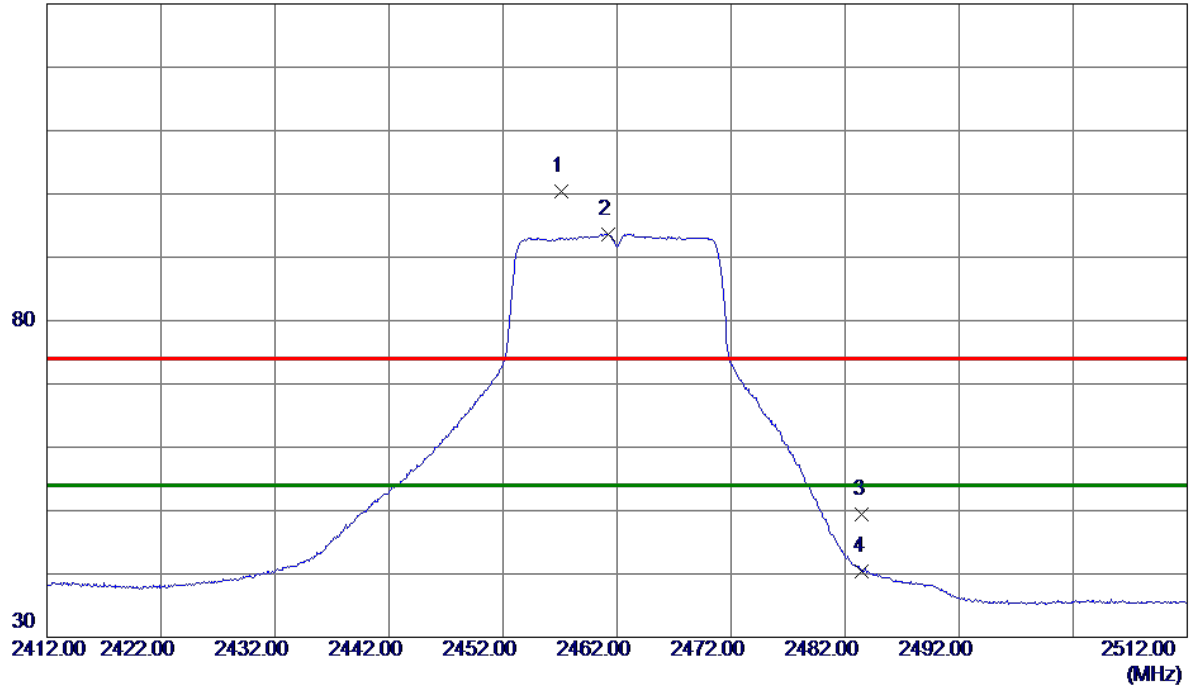
REMARKS:

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

Test Mode: TX N-20M Mode 2462 MHz

Horizontal

130 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2457.1000	94.30	6.13	100.43	74.00	26.43	Peak	No Limit
2 *	2461.2000	87.54	6.12	93.66	54.00	39.66	AVG	No Limit
3	2483.5000	43.30	6.08	49.38	74.00	-24.62	Peak	
4	2483.5000	34.38	6.08	40.46	54.00	-13.54	AVG	

REMARKS:

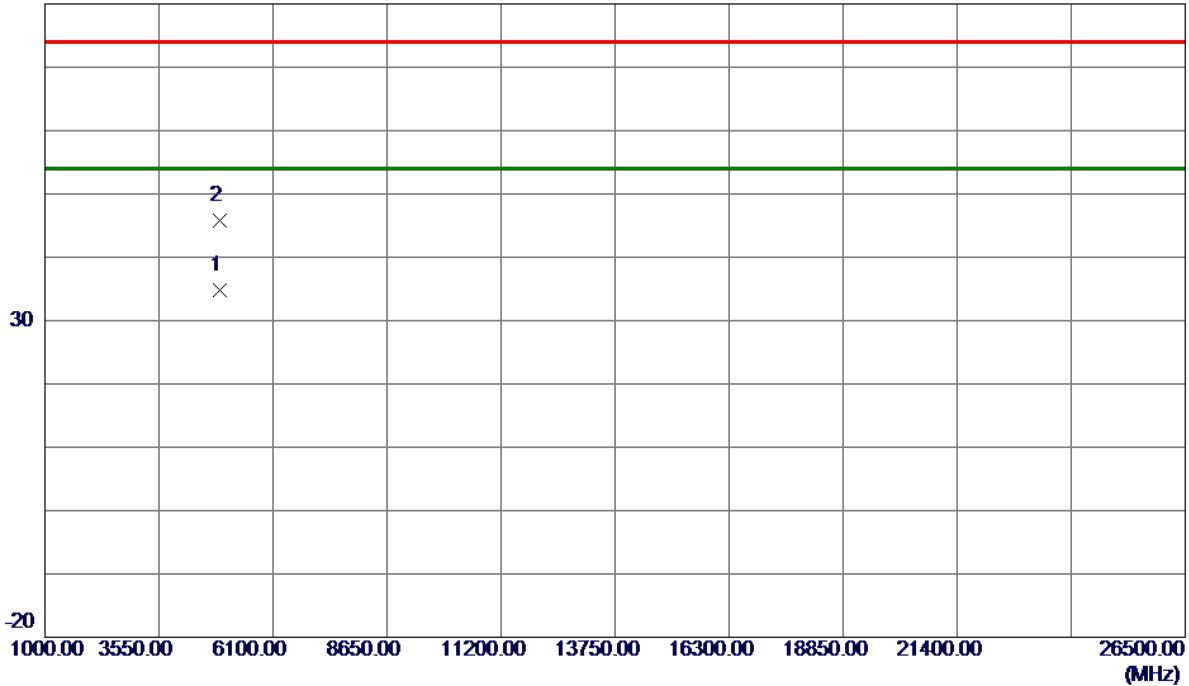
(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX N-20M Mode 2462 MHz
------------	------------------------

Horizontal

80 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	4923.5550	31.98	2.81	34.79	54.00	-19.21	AVG	
2	4923.9550	43.01	2.82	45.83	74.00	-28.17	Peak	

REMARKS:

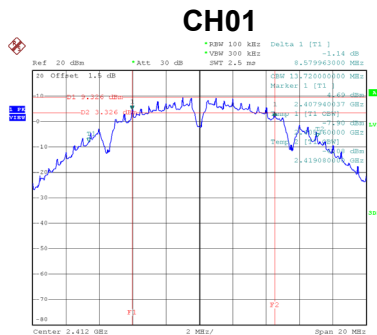
(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

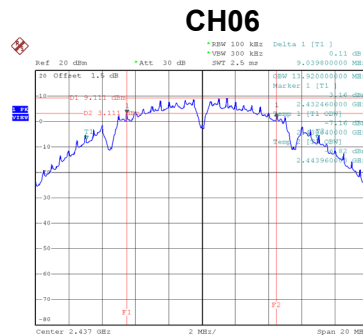
APPENDIX E - BANDWIDTH

Test Mode	TX B Mode
-----------	-----------

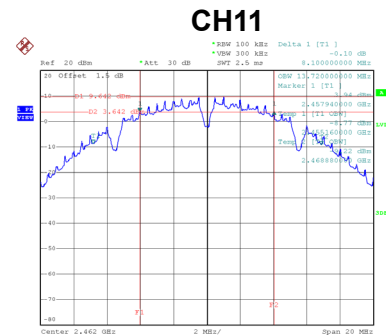
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	6 dB Bandwidth Min. Limit (kHz)	Result
01	2412	8.58	500	Complies
06	2437	9.04	500	Complies
11	2462	8.10	500	Complies



Date: 27.SEP.2019 14:38:24

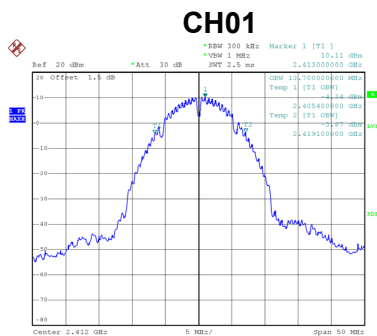


Date: 27.SEP.2019 14:40:26

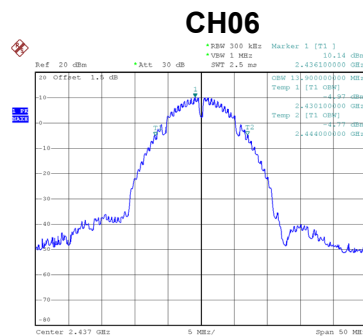


Date: 27.SEP.2019 14:42:17

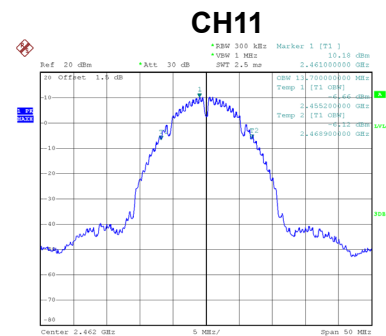
Channel	Frequency (MHz)	99 % Emission Bandwidth (MHz)	Result
01	2412	13.70	Complies
06	2437	13.90	Complies
11	2462	13.70	Complies



Date: 27.SEP.2019 14:56:15



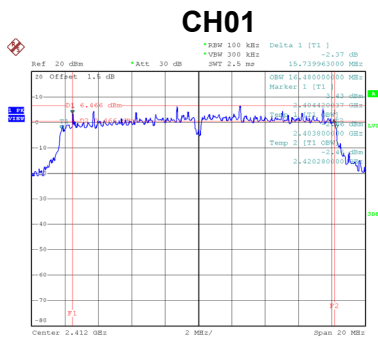
Date: 27.SEP.2019 14:56:43



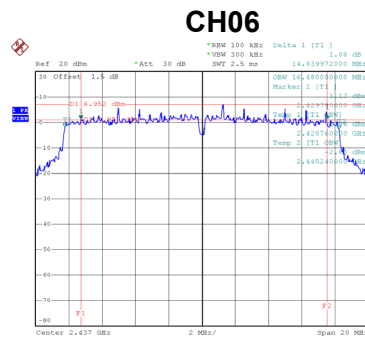
Date: 27.SEP.2019 14:57:50

Test Mode	TX G Mode
-----------	-----------

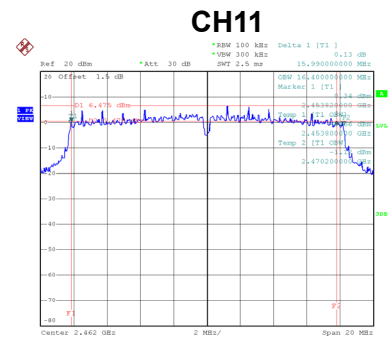
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	6 dB Bandwidth Min. Limit (kHz)	Result
01	2412	15.74	500	Complies
06	2437	14.84	500	Complies
11	2462	15.99	500	Complies



Date: 27.SEP.2019 14:43:58

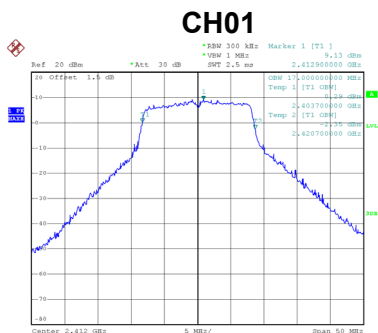


Date: 27.SEP.2019 14:45:32

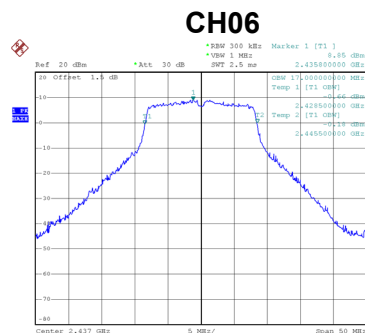


Date: 27.SEP.2019 14:47:10

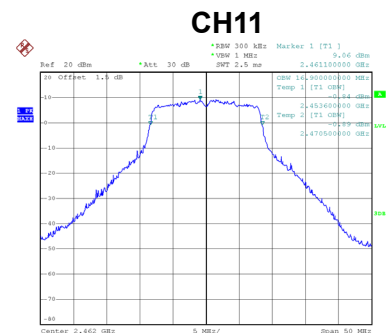
Channel	Frequency (MHz)	99 % Emission Bandwidth (MHz)	Result
01	2412	17.00	Complies
06	2437	17.00	Complies
11	2462	16.90	Complies



Date: 27.SEP.2019 14:58:20



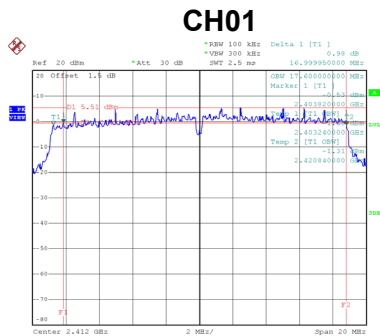
Date: 27.SEP.2019 14:58:53



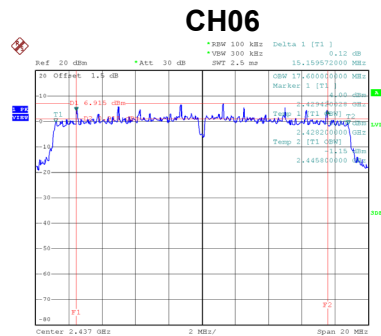
Date: 27.SEP.2019 14:59:21

Test Mode	TX N-20M Mode
-----------	---------------

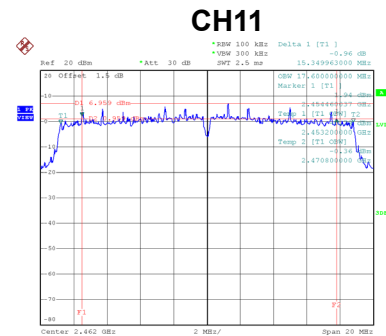
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	6 dB Bandwidth Min. Limit (kHz)	Result
01	2412	17.00	500	Complies
06	2437	15.16	500	Complies
11	2462	15.35	500	Complies



Date: 27.SEP.2019 14:49:13

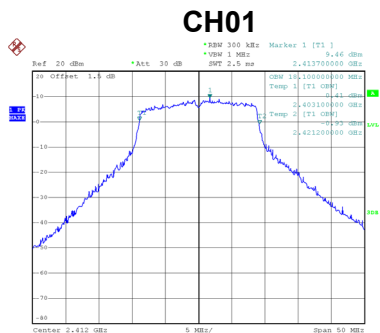


Date: 27.SEP.2019 14:50:48

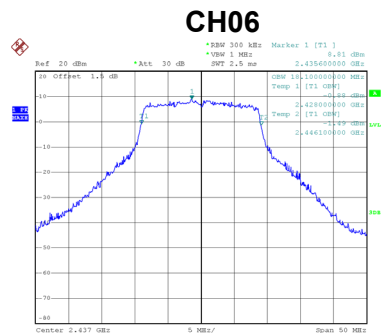


Date: 27.SEP.2019 14:52:14

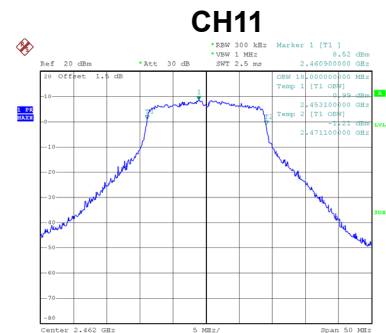
Channel	Frequency (MHz)	99 % Emission Bandwidth (MHz)	Result
01	2412	18.10	Complies
06	2437	18.10	Complies
11	2462	18.00	Complies



Date: 27.SEP.2019 14:59:42



Date: 27.SEP.2019 15:00:16



Date: 27.SEP.2019 15:01:05

APPENDIX F - MAXIMUM OUTPUT POWER

Test Mode	TX B Mode
-----------	-----------

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	20.84	0.1213	30.00	1.0000	Complies
06	2437	20.89	0.1227	30.00	1.0000	Complies
11	2462	21.02	0.1265	30.00	1.0000	Complies

Test Mode	TX G Mode
-----------	-----------

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	21.88	0.1542	30.00	1.0000	Complies
06	2437	21.75	0.1496	30.00	1.0000	Complies
11	2462	21.94	0.1563	30.00	1.0000	Complies

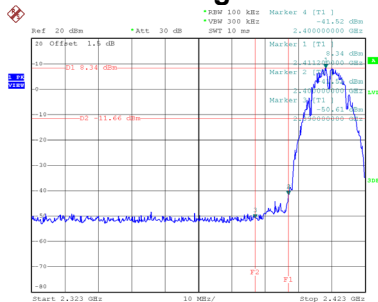
Test Mode	TX N-20M Mode
-----------	---------------

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	21.88	0.1542	30.00	1.0000	Complies
06	2437	21.62	0.1452	30.00	1.0000	Complies
11	2462	21.82	0.1521	30.00	1.0000	Complies

APPENDIX G - CONDUCTED SPURIOUS EMISSIONS

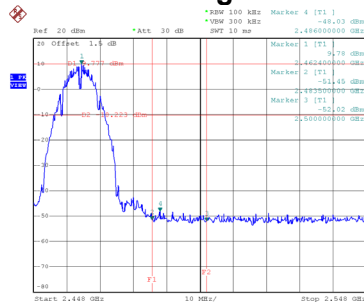
Test Mode	TX B Mode
-----------	-----------

Bandedge-CH01



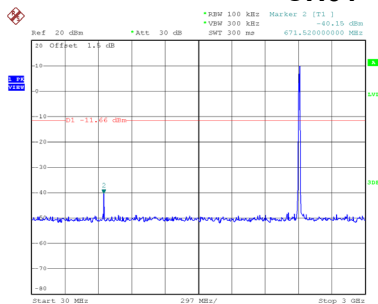
Date: 27.SEP.2019 14:38:43

Bandedge-CH11

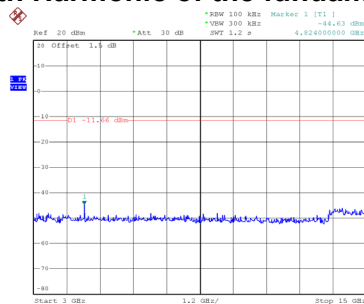


Date: 27.SEP.2019 14:42:25

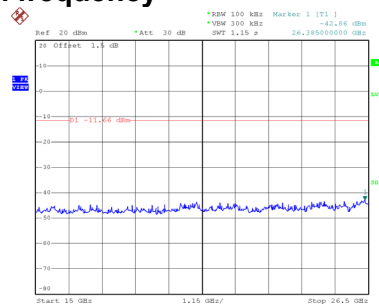
CH01 – 10th Harmonic of the fundamental frequency



Date: 27.SEP.2019 14:38:57

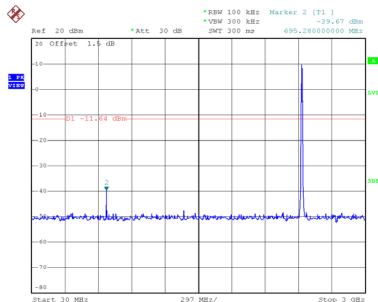


Date: 27.SEP.2019 14:39:06

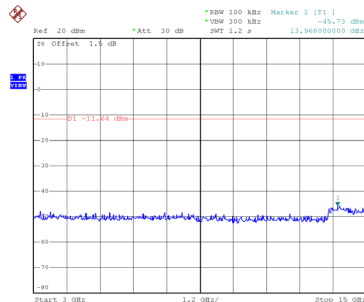


Date: 27.SEP.2019 14:39:14

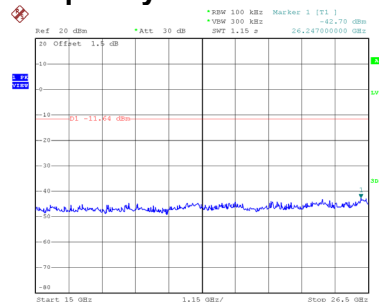
CH06 – 10th Harmonic of the fundamental frequency



Date: 27.SEP.2019 14:40:49

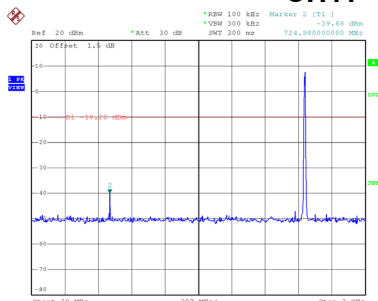


Date: 27.SEP.2019 14:40:57

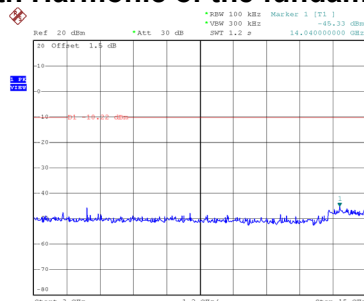


Date: 27.SEP.2019 14:41:06

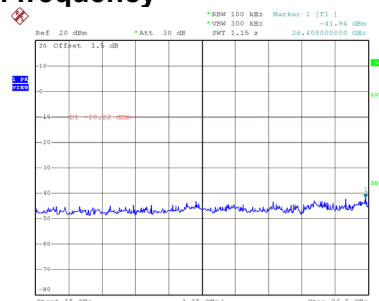
CH11 – 10th Harmonic of the fundamental frequency



Date: 27.SEP.2019 14:42:39



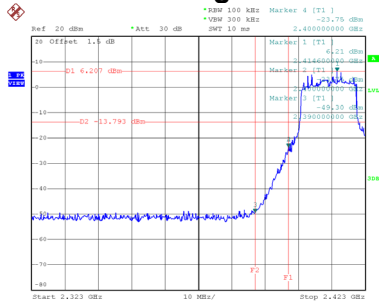
Date: 27.SEP.2019 14:42:48



Date: 27.SEP.2019 14:42:57

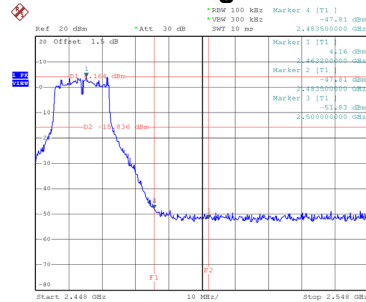
Test Mode TX G Mode

Bandedge-CH01



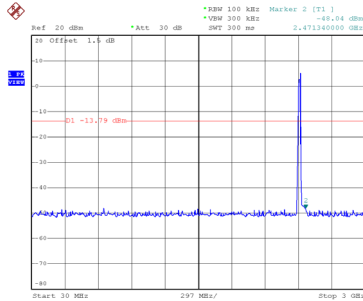
Date: 27.SEP.2019 14:44:07

Bandedge-CH11

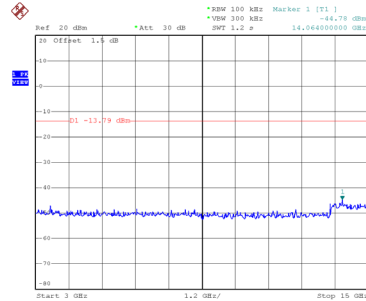


Date: 27.SEP.2019 14:47:19

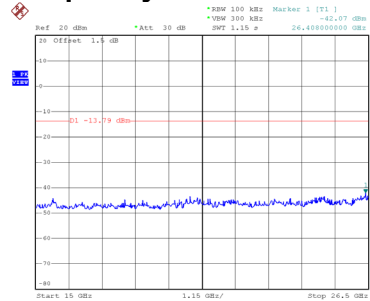
CH01 – 10th Harmonic of the fundamental frequency



Date: 27.SEP.2019 14:44:21

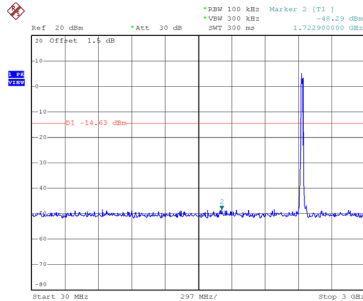


Date: 27.SEP.2019 14:44:29

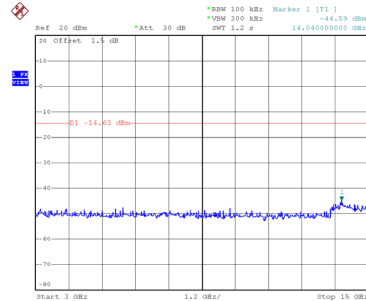


Date: 27.SEP.2019 14:44:38

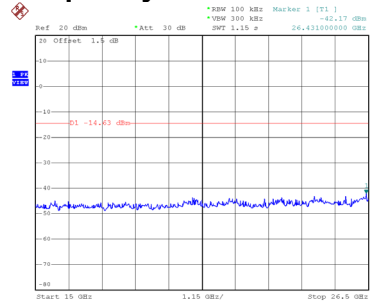
CH06 – 10th Harmonic of the fundamental frequency



Date: 27.SEP.2019 14:45:54

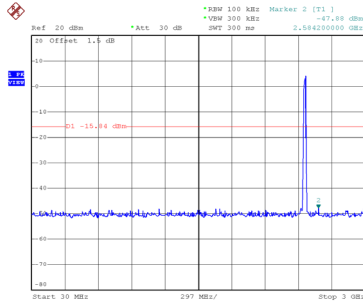


Date: 27.SEP.2019 14:46:02

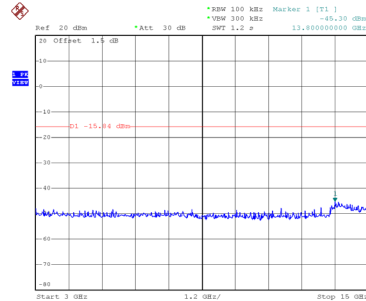


Date: 27.SEP.2019 14:46:11

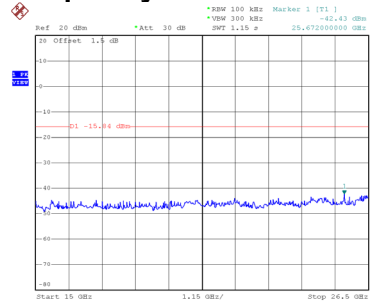
CH11 – 10th Harmonic of the fundamental frequency



Date: 27.SEP.2019 14:47:33



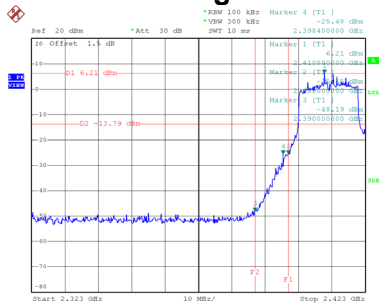
Date: 27.SEP.2019 14:47:41



Date: 27.SEP.2019 14:47:50

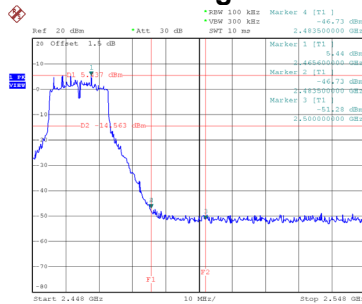
Test Mode TX N-20M Mode

Bandedge-CH01



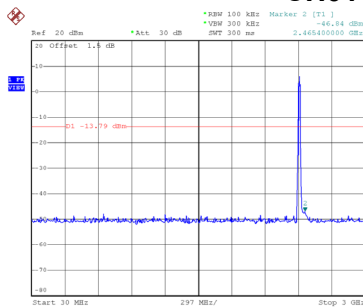
Date: 27.SEP.2019 14:49:22

Bandedge-CH11

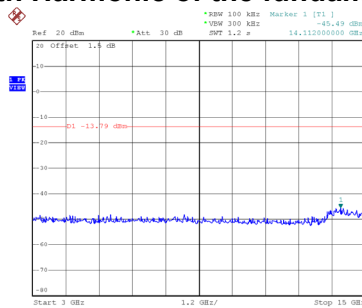


Date: 27.SEP.2019 14:52:23

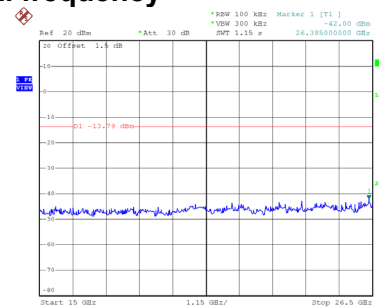
CH01 – 10th Harmonic of the fundamental frequency



Date: 27.SEP.2019 14:49:36

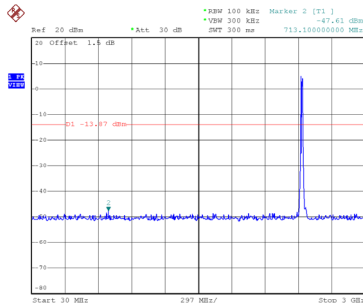


Date: 27.SEP.2019 14:49:45

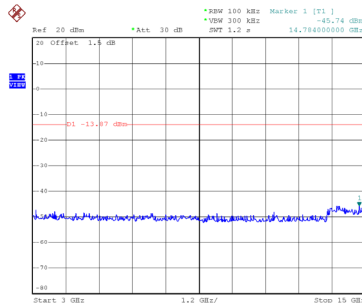


Date: 27.SEP.2019 14:49:53

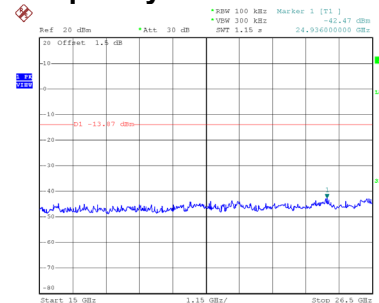
CH06 – 10th Harmonic of the fundamental frequency



Date: 27.SEP.2019 14:51:10

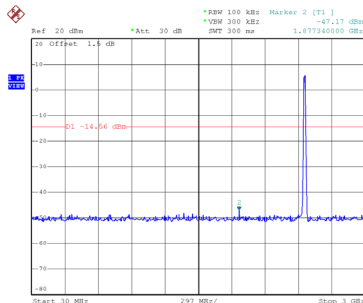


Date: 27.SEP.2019 14:51:19

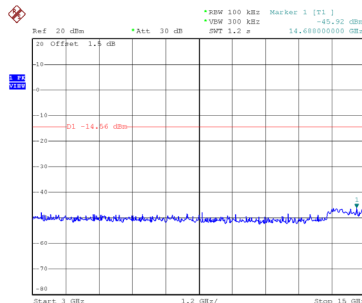


Date: 27.SEP.2019 14:51:27

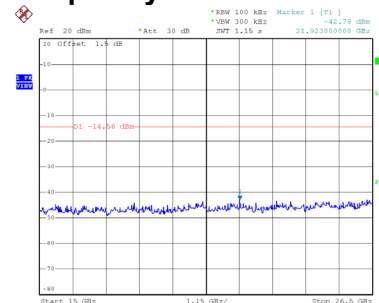
CH11 – 10th Harmonic of the fundamental frequency



Date: 27.SEP.2019 14:52:37



Date: 27.SEP.2019 14:52:45

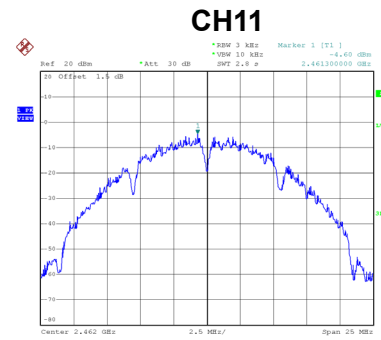
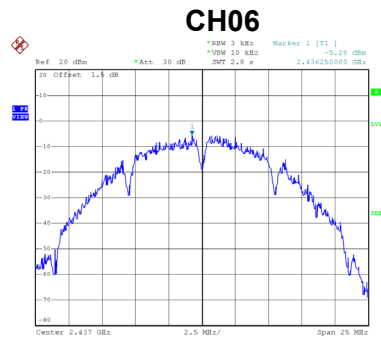
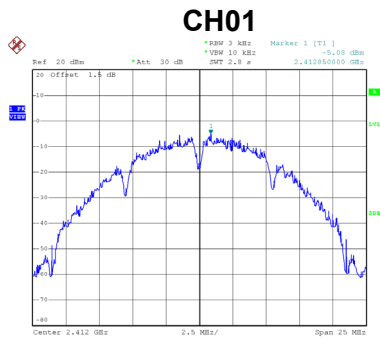


Date: 27.SEP.2019 14:52:54

APPENDIX H - POWER SPECTRAL DENSITY

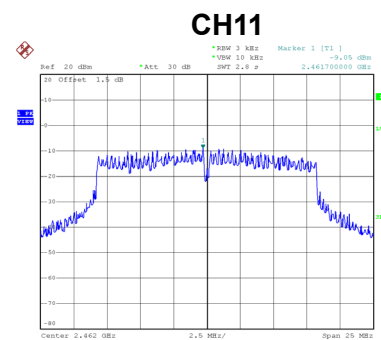
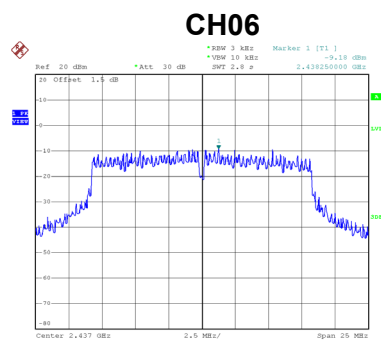
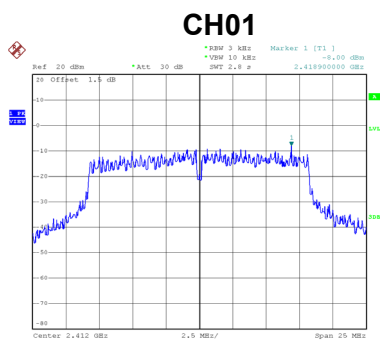
Test Mode	TX B Mode
-----------	-----------

Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
01	2412	-5.08	8	Complies
06	2437	-5.28	8	Complies
11	2462	-4.60	8	Complies



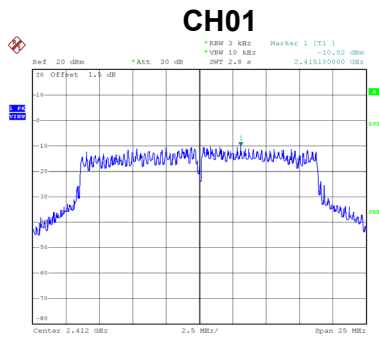
Test Mode	TX G Mode
-----------	-----------

Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
01	2412	-8.00	8	Complies
06	2437	-9.18	8	Complies
11	2462	-9.05	8	Complies

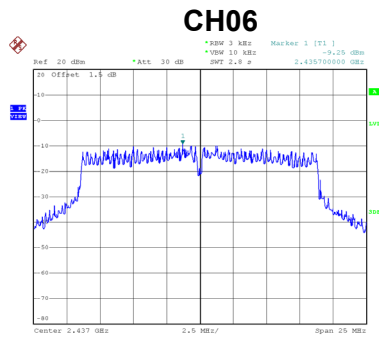


Test Mode	TX N-20M Mode
-----------	---------------

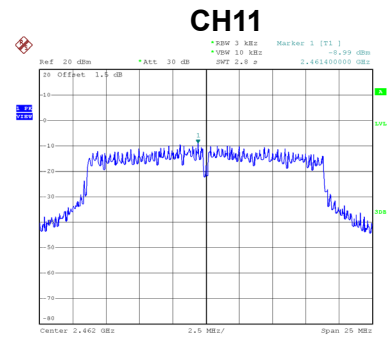
Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
01	2412	-10.02	8	Complies
06	2437	-9.25	8	Complies
11	2462	-8.99	8	Complies



Date: 27.SEP.2019 14:50:03



Date: 27.SEP.2019 14:51:37



Date: 27.SEP.2019 14:53:04

End of Test Report