

FCC Radio Test Report

FCC ID: R9C-CPH2015

This report concerns: Original Grant

Project No. : 1911C066
Equipment : Mobile Phone
Brand Name : OPPO
Test Model : CPH2015
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 : Nov. 12, 2019
Date of Test : Nov. 12, 2019 ~ Dec. 18, 2019
Issued Date : Dec. 24, 2019
Report Version : R00
Test Sample : Engineering Sample No.: DG2019112569 for conducted, DG2019112570 for radiated.
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.

Treey Chen

Prepared by : Treey Chen

Steven Lu

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 PEAK 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 PEAK 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.	Dec. 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 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.

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	150kHz ~ 30MHz	2.60

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	-	3.62
		26.5GHz ~ 40GHz	-	4.00

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℃	53%	AC 120V/60Hz	Laughing Zhang
Radiated Emissions-9K-30MHz	25℃	60%	AC 120V/60Hz	Laughing Zhang
Radiated Emissions-30 MHz to 1GHz	24℃	68%	AC 120V/60Hz	Laughing Zhang
Radiated Emissions-Above 1000 MHz	24℃	68%	AC 120V/60Hz	Laughing Zhang
Bandwidth	22.1℃	52.3%	DC 3.85V	Jonas Chen
Maximum Peak Output Power	22.1℃	52.3%	DC 3.85V	Laughing Zhang
Conducted Spurious Emissions	22.1℃	52.3%	DC 3.85V	Jonas Chen
Power Spectral Density	22.1℃	52.3%	DC 3.85V	Jonas Chen

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Mobile Phone
Brand Name	OPPO
Test Model	CPH2015
Series Model	N/A
Model Difference(s)	N/A
Hardware Version	11
Software Version	ColorOS V6.1.2
Power Source	1. DC Voltage supplied from AC/DC adapter. 1# Model: OP52KAUH 2# Model: OP52JAUH 3# Model: OP52JBUH 4# Model: OP52YAUH 2. Supplied from Li-ion Polymer battery. 1# Factory / Model: Scud / BLP673 2# Factory / Model: Desay / BLP673 3. Supplied from USB port.
Power Rating	1. I/P:100-240V~ 50/60Hz 0.4A O/P:5V --- 2A 2. 3.85Vdc, 4100mAh/15.78Wh 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 72.2 Mbps
Maximum Peak Output Power	IEEE 802.11b: 19.73 dBm (0.0940 W) IEEE 802.11g: 26.26 dBm (0.4227 W) IEEE 802.11n (HT20): 26.17 dBm (0.4140 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. Table for Filed Antenna:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	Internal	N/A	0.77

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 06

Following mode(s) was (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 06

Radiated emissions test - Below 1GHz	
Final Test Mode:	Description
Mode 4	TX G Mode Channel 06

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:

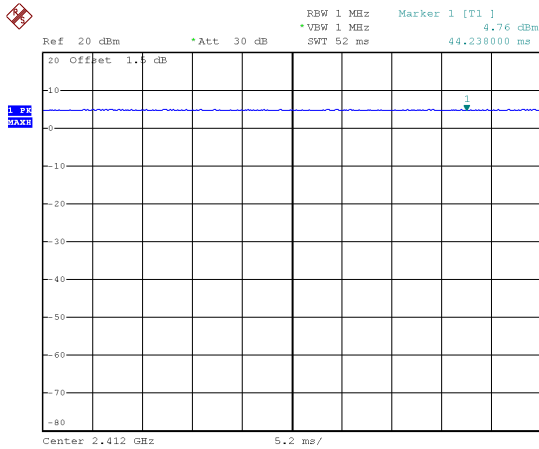
- (1) The measurements are performed at the high, middle, low available channels.
- (2) For radiated emission below 1 GHz test, the IEEE 802.11g Channel 06 is found to be the worst case and recorded.
- (3) For radiated emission above 1 GHz test, 1GHz~26.5GHz have been pre-tested and in this report only recorded the worst case.
- (4) For radiated spurious emissions below 1 GHz test, all adapters had been pre-tested and in this report only recorded the worst case.

2.3 PARAMETERS OF TEST SOFTWARE

Test Software	*#36446337#		
Frequency (MHz)	2412	2437	2462
IEEE 802.11b	16	16	16
IEEE 802.11g	12	17	12
IEEE 802.11n (HT20)	12	17	12

2.4 DUTY CYCLE

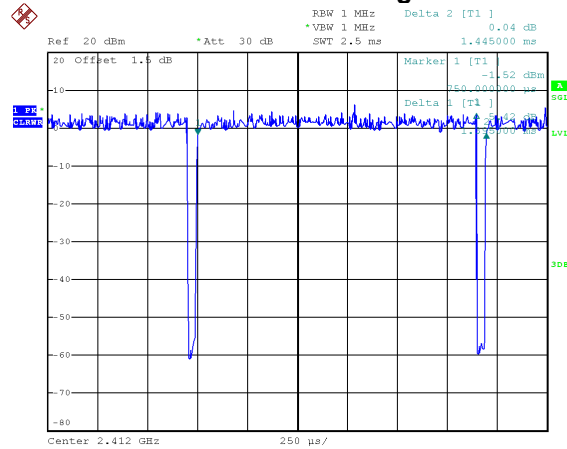
IEEE 802.11b



Date: 5.DEC.2019 20:57:28

Duty cycle = 0.000 ms / 0.000 ms = 0.00%
Duty Factor = $10 \log(1/\text{Duty cycle}) = 0.00$

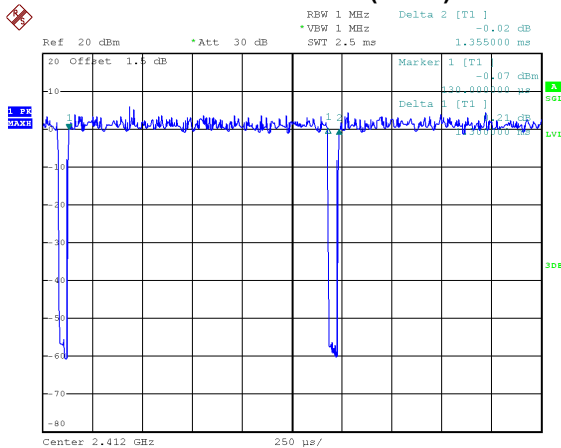
IEEE 802.11g



Date: 5.DEC.2019 20:58:26

Duty cycle = 1.395 ms / 1.445 ms = 96.54%
Duty Factor = $10 \log(1/\text{Duty cycle}) = 0.15$

IEEE 802.11n (HT20)



Date: 5.DEC.2019 20:58:47

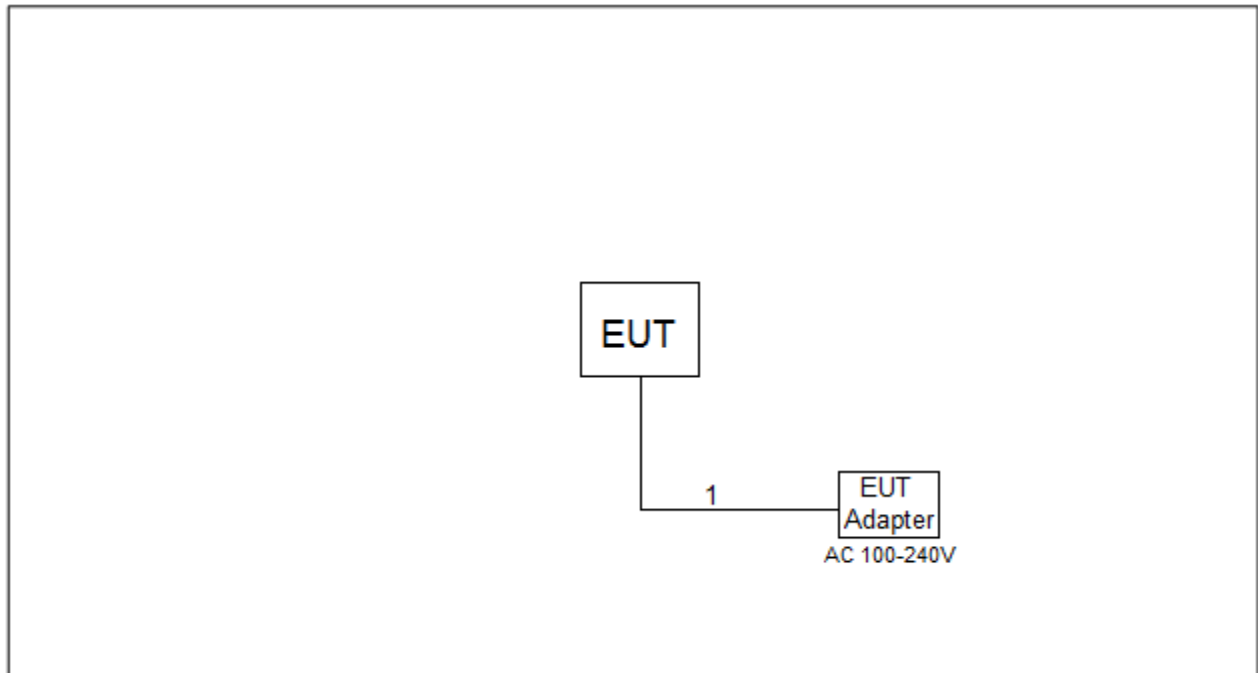
Duty cycle = 1.300 ms / 1.355 ms = 95.94%
Duty Factor = $10 \log(1/\text{Duty cycle}) = 0.18$

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	USB Cable	YES	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 - 0.5	66 to 56*	56 to 46*
0.5 - 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

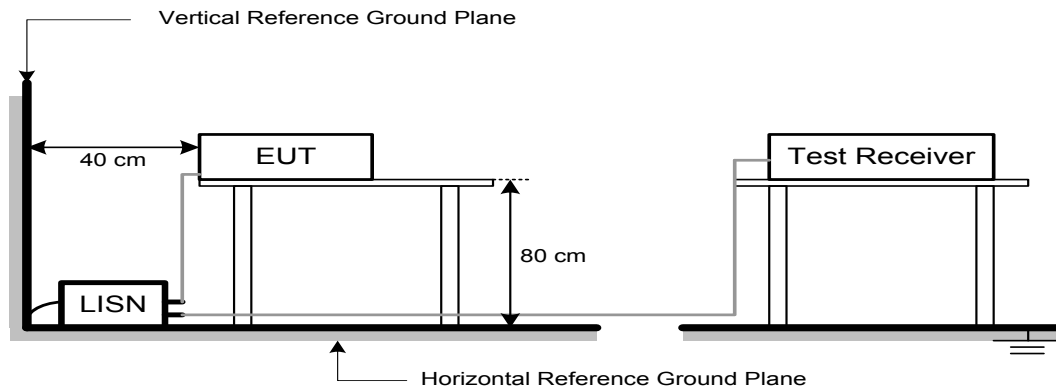
3.2 TEST PROCEDURE

- 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

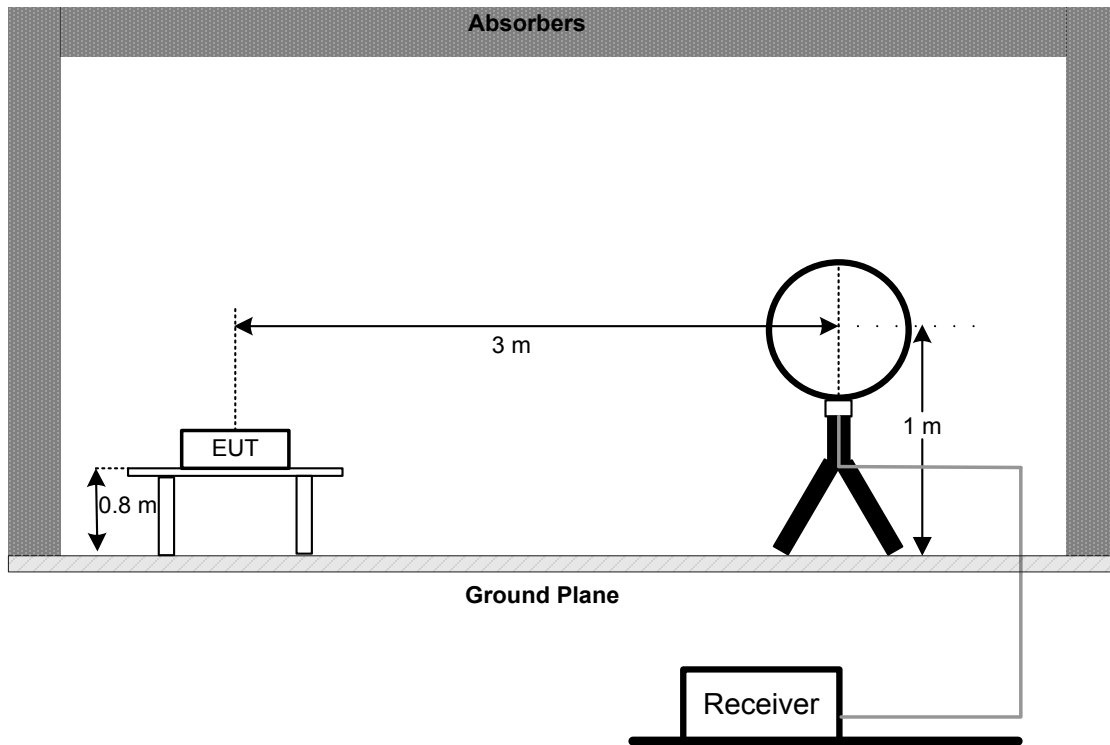
- The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1 GHz)
- The measuring distance 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

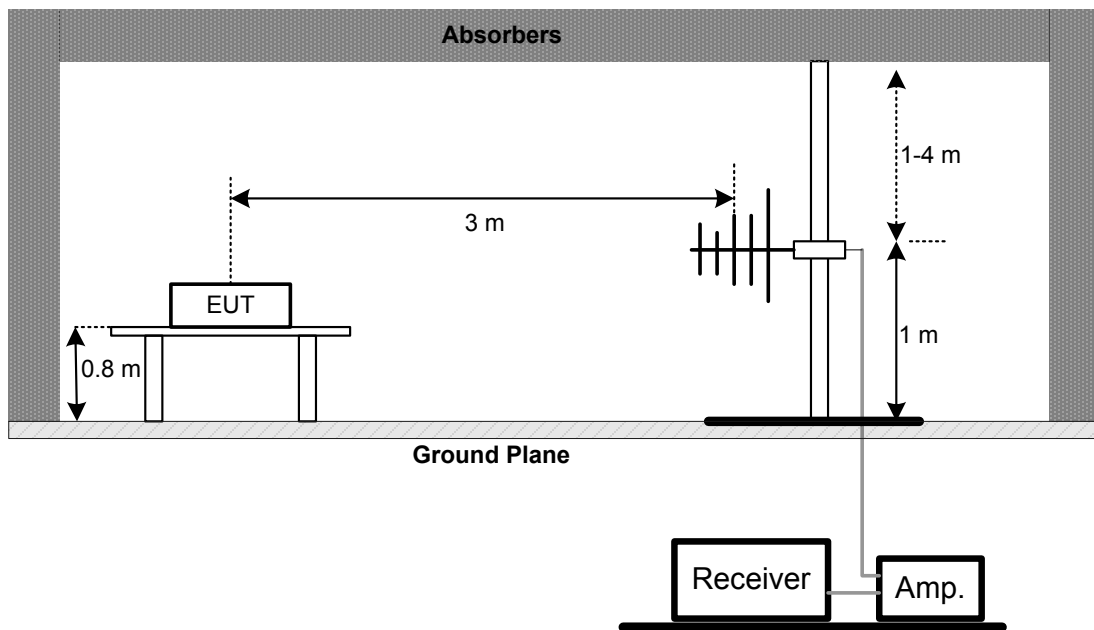
No deviation

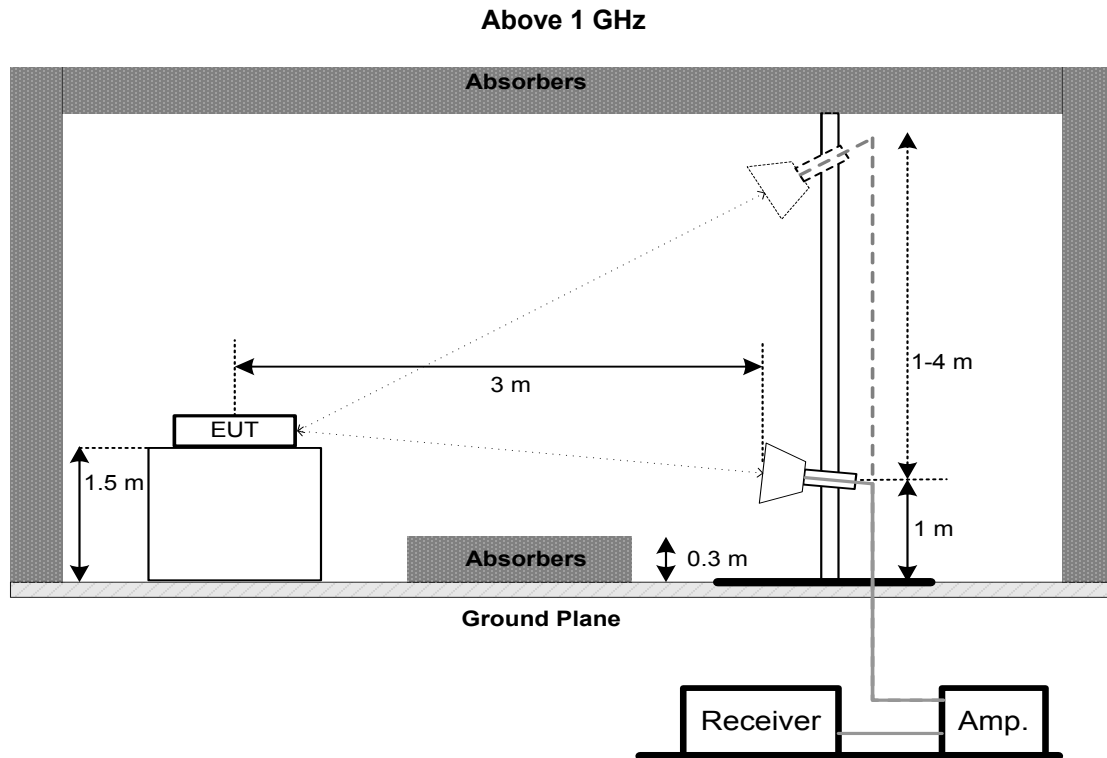
4.4 TEST SETUP

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.
- Spectrum Setting:
For 6 dB Bandwidth : RBW= 100 kHz, VBW=300 kHz, Sweep time = 2.5 ms.
For 99% Emission Bandwidth B/G/N-20 Mode: RBW= 300 KHz, VBW=1 MHz, 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 PEAK OUTPUT POWER TEST

6.1 LIMIT

FCC Part15, Subpart C (15.247)		
Section	Test Item	Limit
15.247(b)(3)	Maximum Peak 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.

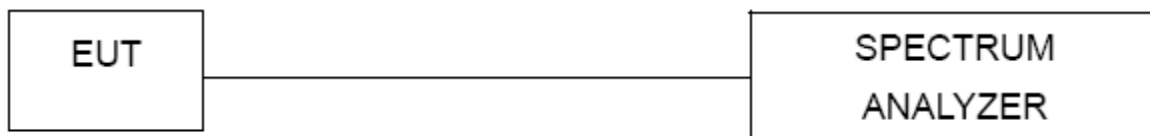
7.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- 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-1 GHz)(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 & 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 Peak 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

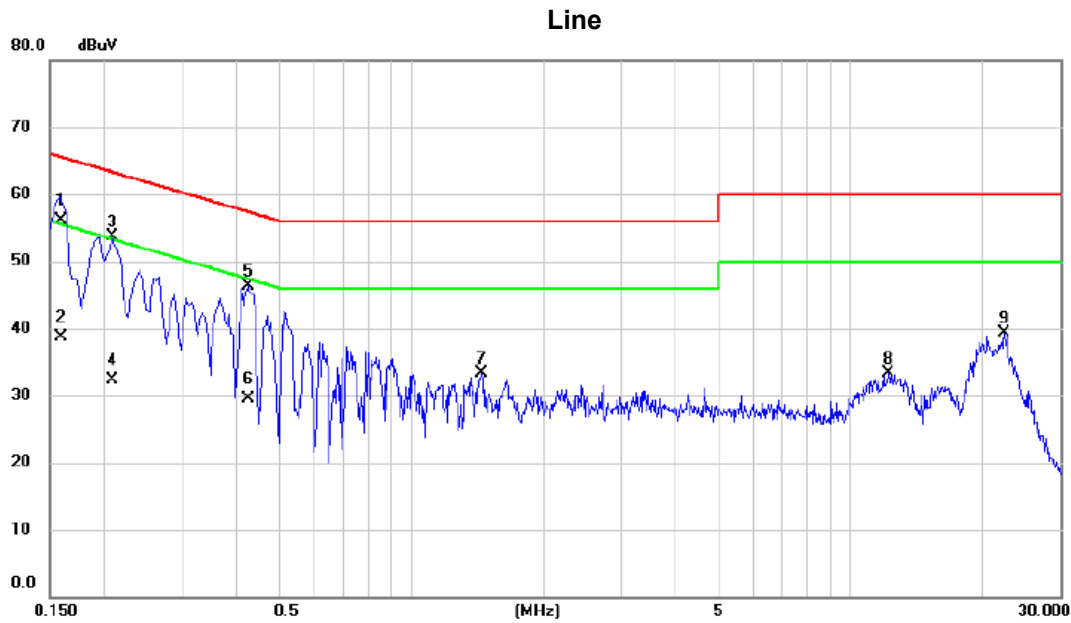
Remark: "N/A" denotes no model name, serial no. or calibration specified.

"*" 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 06



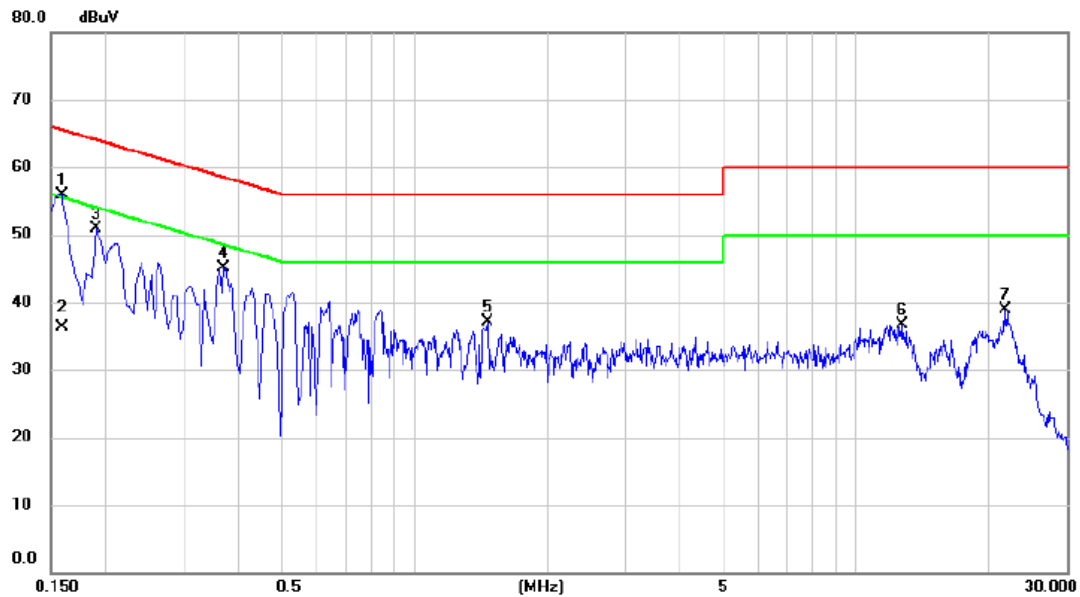
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	*	0.1590	46.24	9.82	56.06	65.52	-9.46	QP	
2		0.1590	28.88	9.82	38.70	55.52	-16.82	AVG	
3		0.2085	43.84	9.81	53.65	63.26	-9.61	peak	
4		0.2085	22.46	9.81	32.27	53.26	-20.99	AVG	
5		0.4245	36.36	9.87	46.23	57.36	-11.13	peak	
6		0.4245	19.68	9.87	29.55	47.36	-17.81	AVG	
7		1.4414	23.45	9.95	33.40	56.00	-22.60	peak	
8		12.1560	22.66	10.60	33.26	60.00	-26.74	peak	
9		22.3395	28.10	11.16	39.26	60.00	-20.74	peak	

REMARKS:

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

Test Mode: TX G Mode Channel 06

Neutral



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1590	45.97	9.91	55.88	65.52	-9.64	peak	
2		0.1590	26.41	9.91	36.32	55.52	-19.20	AVG	
3		0.1905	40.94	9.90	50.84	64.01	-13.17	peak	
4		0.3704	35.16	9.99	45.15	58.49	-13.34	peak	
5		1.4595	26.97	10.15	37.12	56.00	-18.88	peak	
6		12.7275	25.81	10.93	36.74	60.00	-23.26	peak	
7		21.6915	27.34	11.48	38.82	60.00	-21.18	peak	

REMARKS:

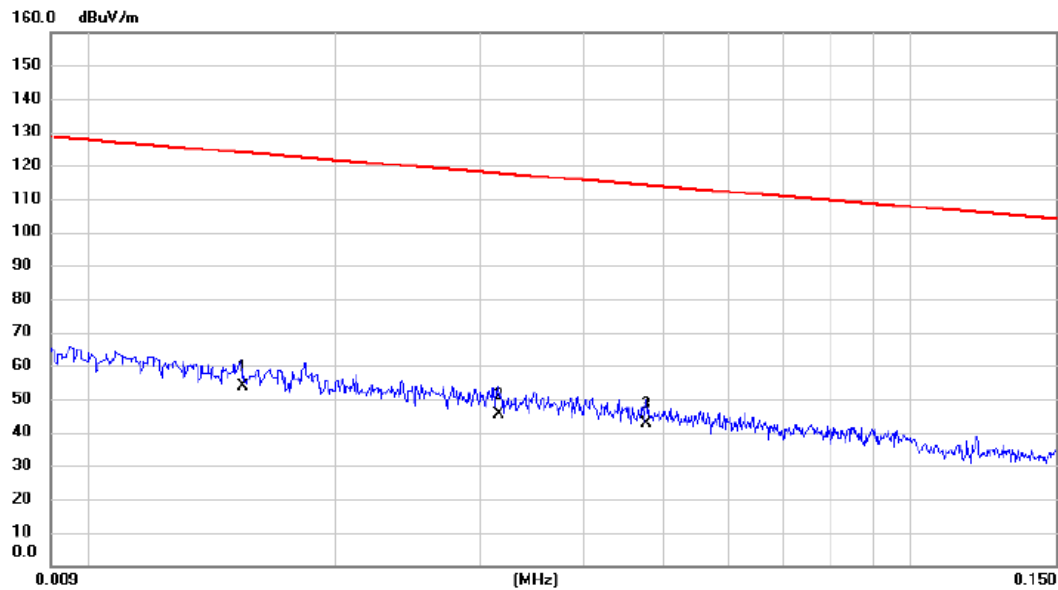
(1) Measurement Value = Reading Level + Correct Factor.

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

APPENDIX B - RADIATED EMISSION - 9 KHZ TO 30 MHZ

Test Mode: TX G Mode Channel 06

Ant 0°

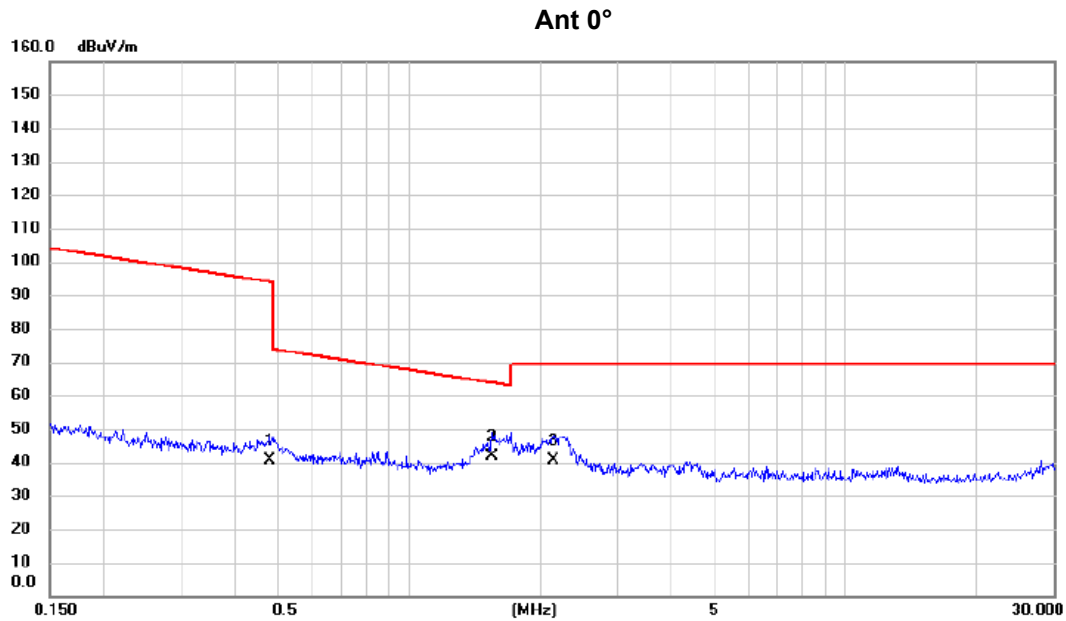


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0154	38.45	15.20	53.65	123.85	-70.20	AVG	
2		0.0316	31.58	13.86	45.44	117.61	-72.17	AVG	
3		0.0477	28.73	13.92	42.65	114.03	-71.38	AVG	

REMARKS:

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

Test Mode: TX G Mode Channel 06



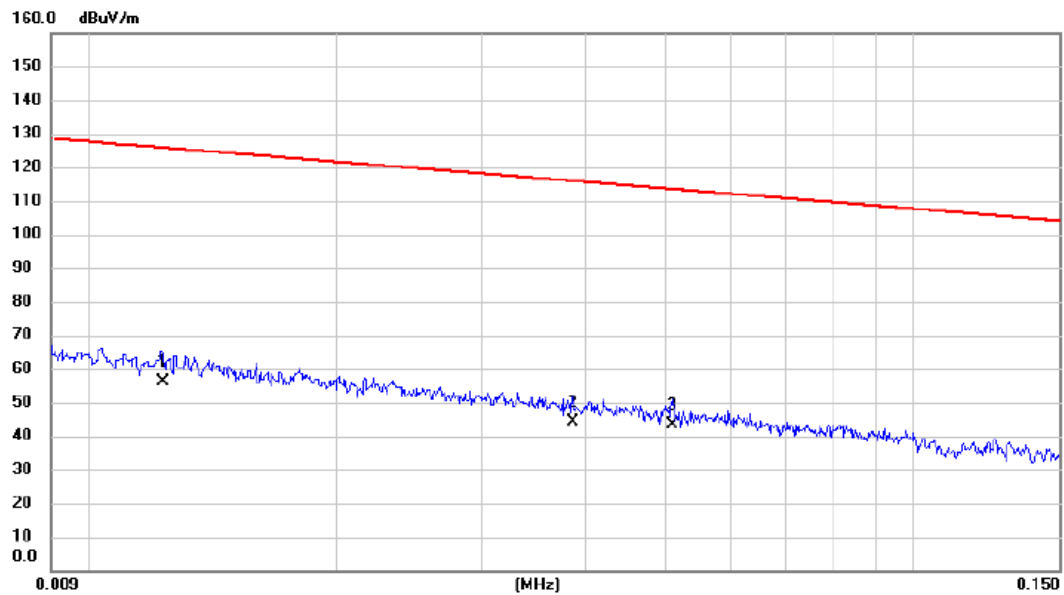
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.4786	27.65	13.11	40.76	94.00	-53.24	AVG	
2	*	1.5518	29.87	12.12	41.99	63.79	-21.80	QP	
3		2.1440	28.74	11.73	40.47	69.54	-29.07	QP	

REMARKS:

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

Test Mode: TX G Mode Channel 06

Ant 90°



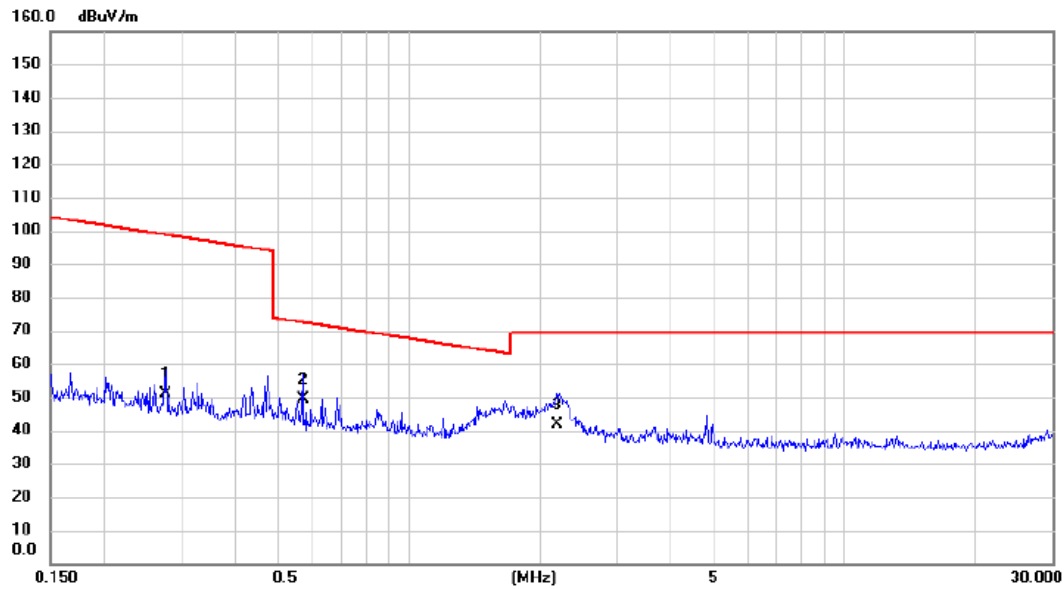
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0123	40.25	16.13	56.38	125.81	-69.43	AVG	
2		0.0387	30.14	13.89	44.03	115.85	-71.82	AVG	
3		0.0510	29.66	13.91	43.57	113.45	-69.88	AVG	

REMARKS:

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

Test Mode: TX G Mode Channel 06

Ant 90°



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		0.2760	37.45	13.60	51.05	98.79	-47.74	AVG	
2	*	0.5701	36.48	12.93	49.41	72.48	-23.07	QP	
3		2.1898	30.15	11.71	41.86	69.54	-27.68	QP	

REMARKS:

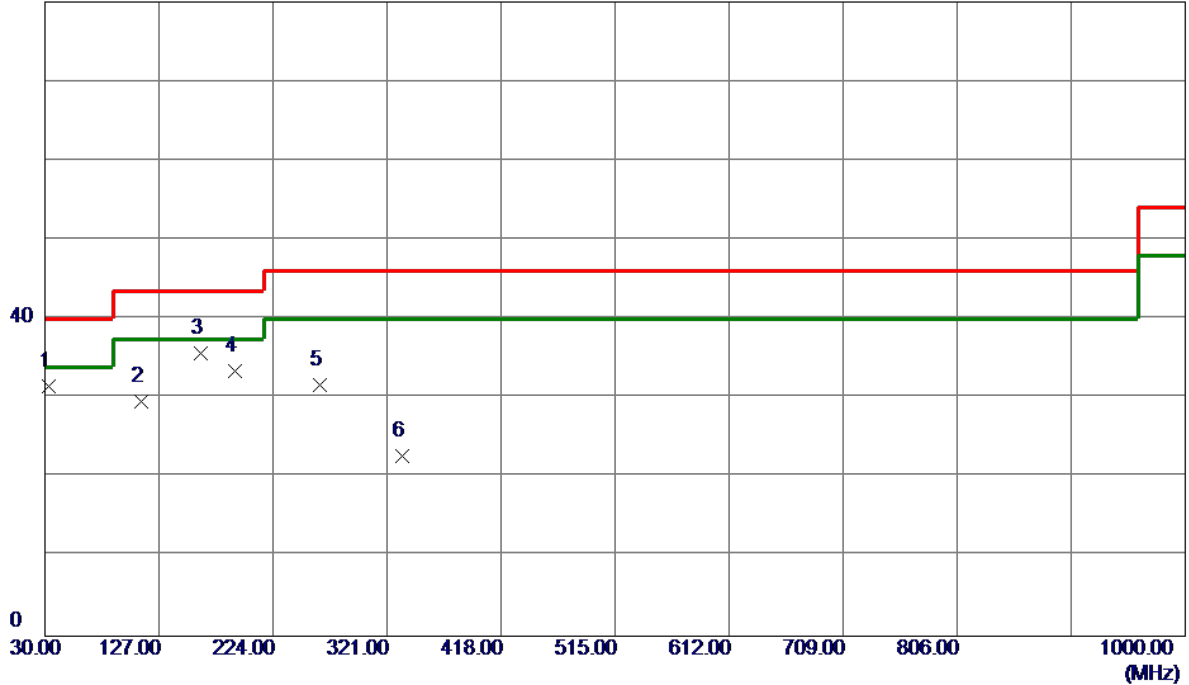
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

APPENDIX C - RADIATED EMISSION - 30 MHZ TO 1000 MHZ

Test Mode: TX G Mode Channel 06

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	32.9100	46.53	-14.96	31.57	40.00	-8.43	Peak	
2	111.4800	44.00	-14.36	29.64	43.50	-13.86	Peak	
3 *	162.8900	47.24	-11.48	35.76	43.50	-7.74	Peak	
4	191.9900	48.13	-14.66	33.47	43.50	-10.03	Peak	
5	263.7700	44.56	-12.89	31.67	46.00	-14.33	Peak	
6	333.6099	33.78	-11.01	22.77	46.00	-23.23	Peak	

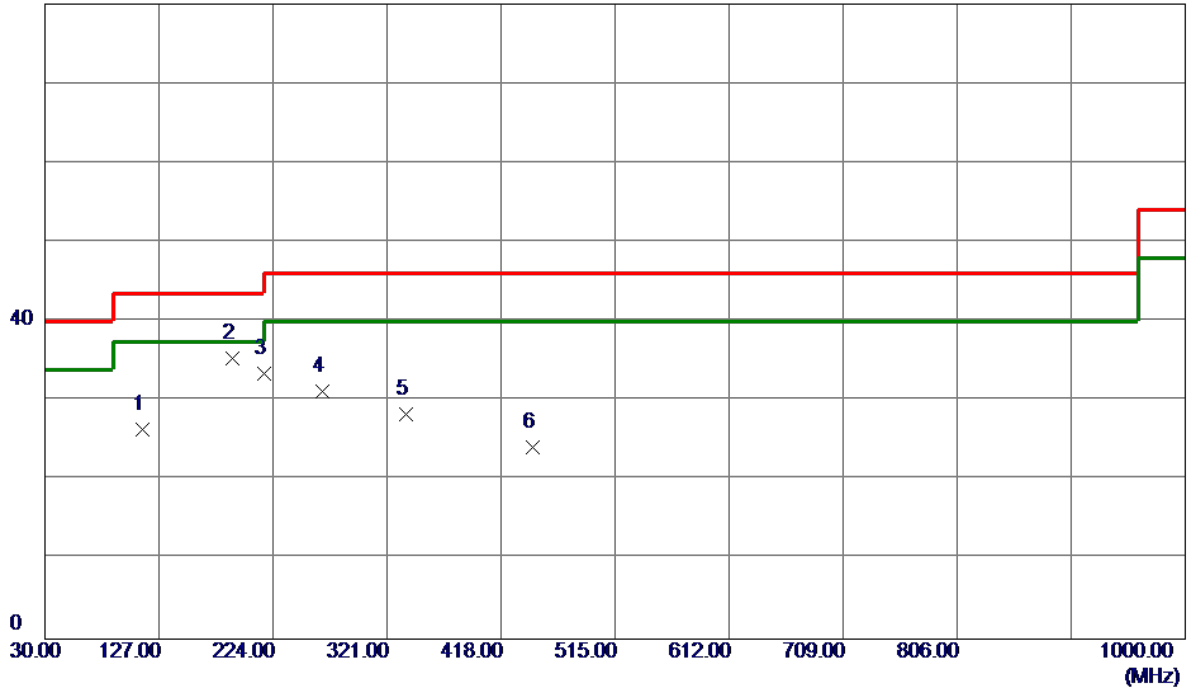
REMARKS:

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

Test Mode: TX G Mode Channel 06

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	113.4200	40.48	-14.07	26.41	43.50	-17.09	Peak	
2 *	189.0800	49.74	-14.40	35.34	43.50	-8.16	Peak	
3	216.2400	48.56	-15.07	33.49	46.00	-12.51	Peak	
4	265.7100	44.20	-12.97	31.23	46.00	-14.77	Peak	
5	337.4900	39.29	-10.95	28.34	46.00	-17.66	Peak	
6	445.1600	32.49	-8.28	24.21	46.00	-21.79	Peak	

REMARKS:

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

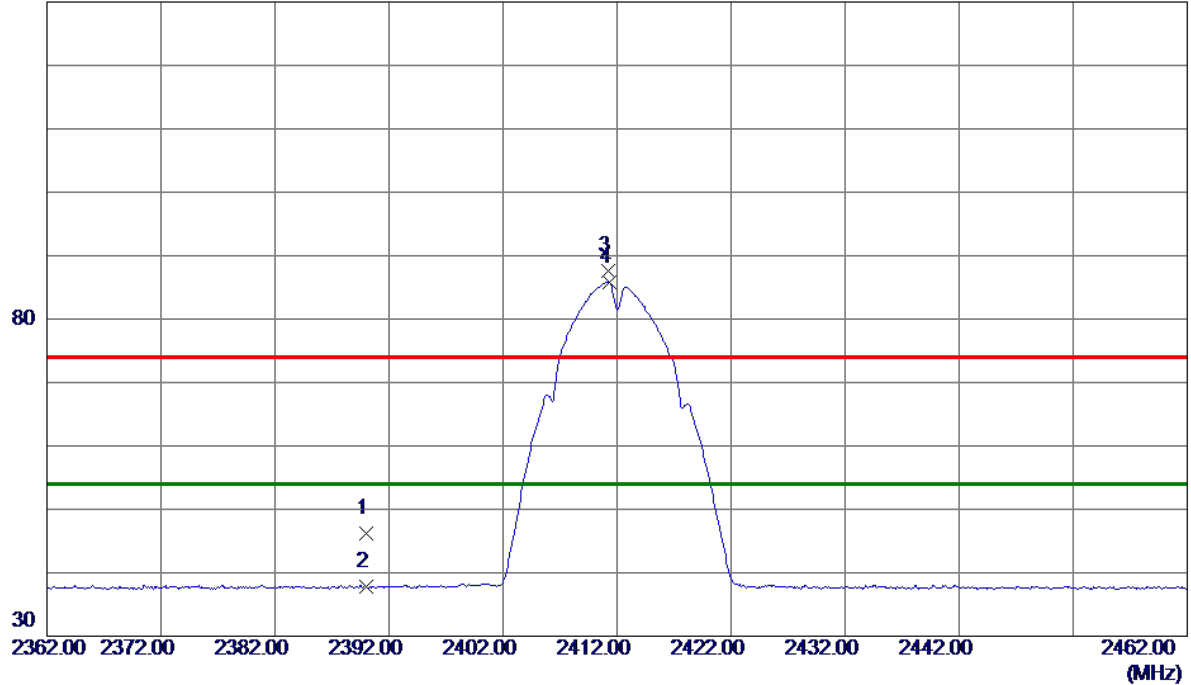
(2) Margin Level = Measurement Value - Limit Value.

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	37.05	9.07	46.12	74.00	-27.88	Peak	
2	2390.0000	28.71	9.07	37.78	54.00	-16.22	AVG	
3	2411.2000	78.61	9.06	87.67	74.00	13.67	Peak	No Limit
4 *	2411.3000	76.77	9.06	85.83	54.00	31.83	AVG	No Limit

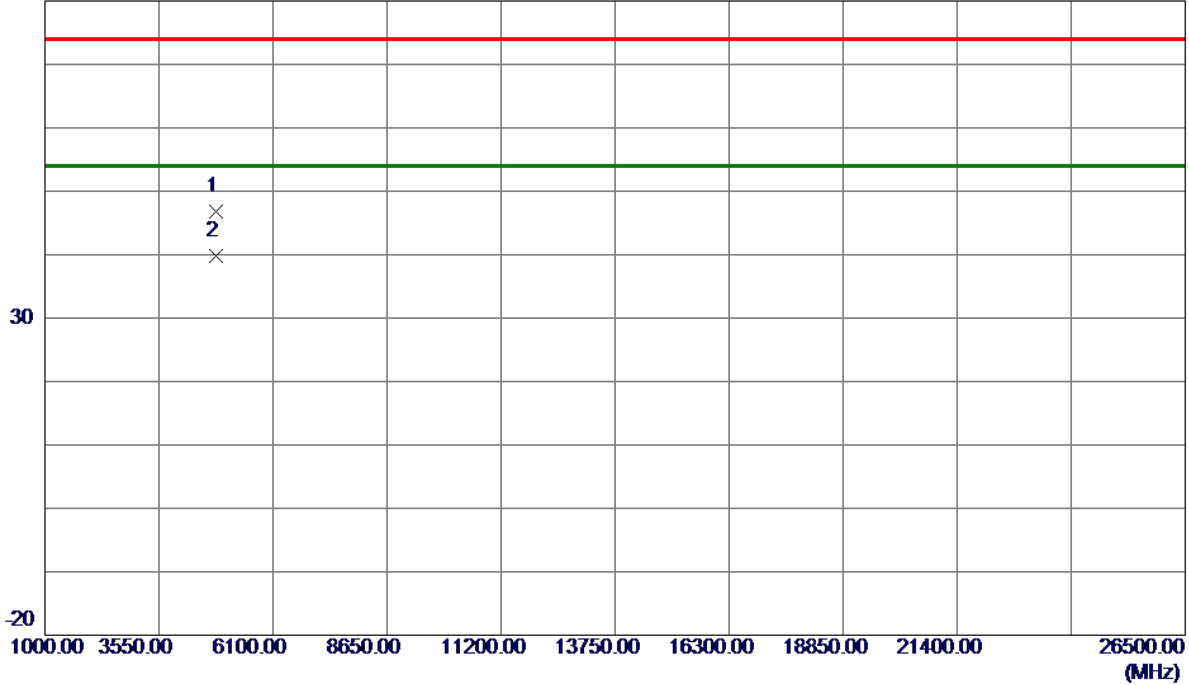
REMARKS:

- (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	4823.9600	38.71	8.04	46.75	74.00	-27.25	Peak	
2 *	4823.9700	31.82	8.04	39.86	54.00	-14.14	AVG	

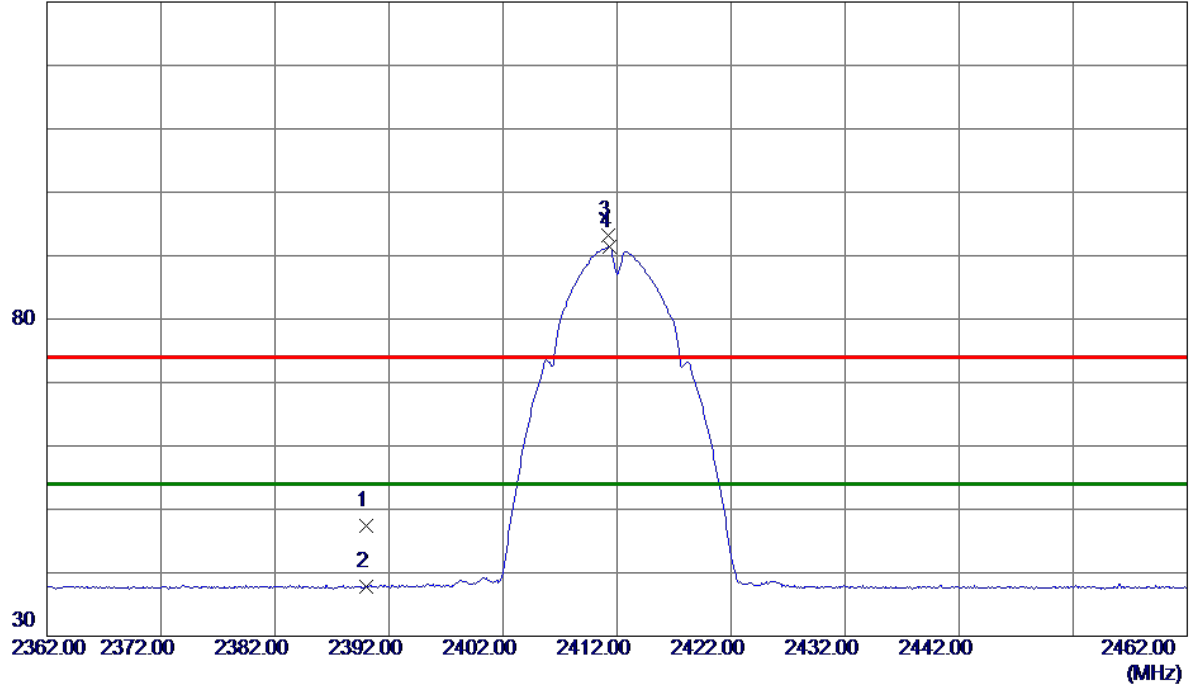
REMARKS:

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

Test Mode: TX B 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	38.38	9.07	47.45	74.00	-26.55	Peak	
2	2390.0000	28.76	9.07	37.83	54.00	-16.17	AVG	
3	2411.2000	84.22	9.06	93.28	74.00	19.28	Peak	No Limit
4 *	2411.3000	82.43	9.06	91.49	54.00	37.49	AVG	No Limit

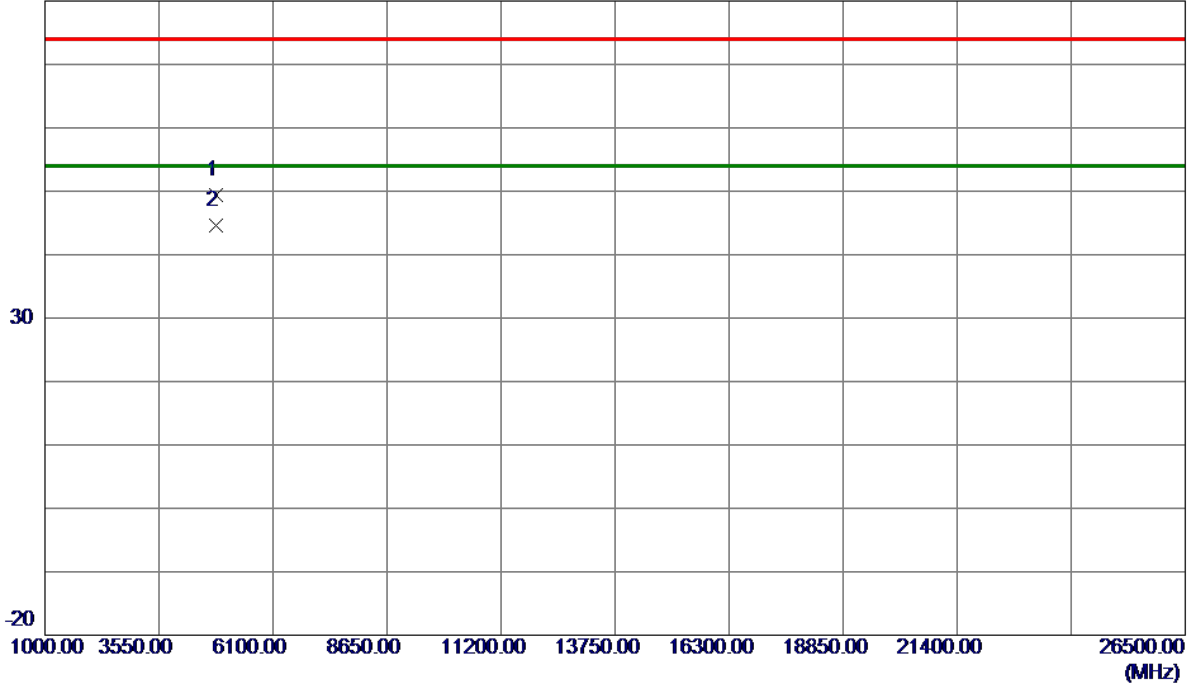
REMARKS:

- (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	4823.9150	41.44	8.04	49.48	74.00	-24.52	Peak	
2 *	4824.0050	36.62	8.04	44.66	54.00	-9.34	AVG	

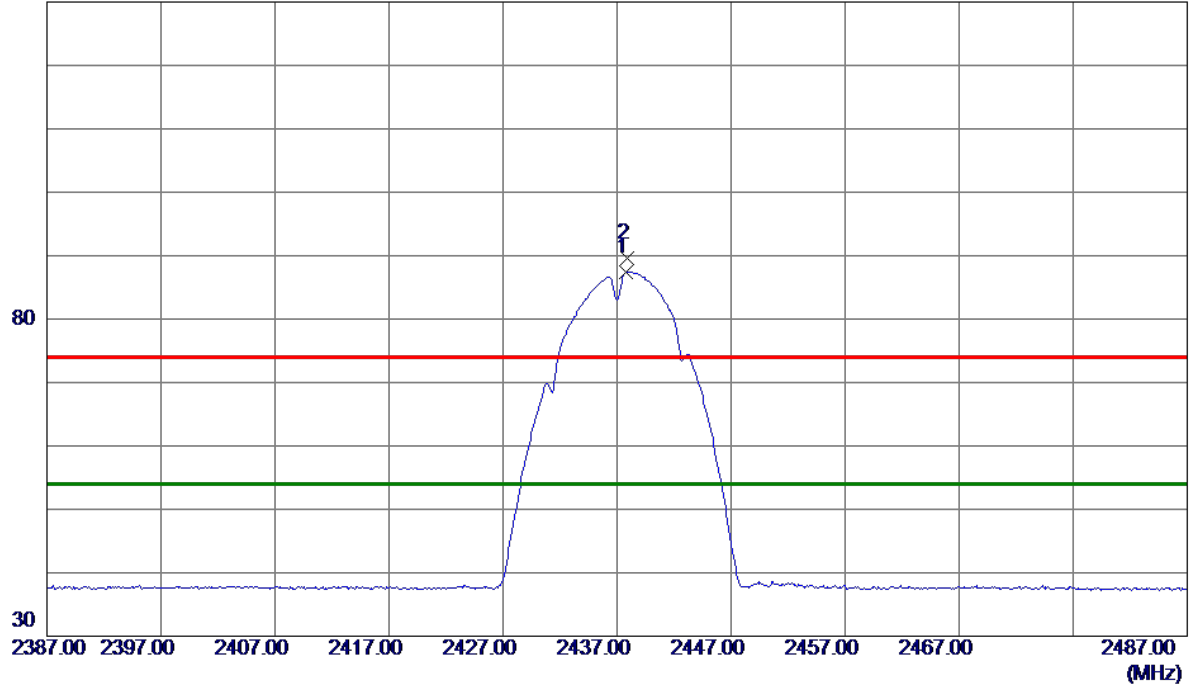
REMARKS:

- (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 *	2437.8000	78.44	9.04	87.48	54.00	33.48	AVG	No Limit
2	2437.9000	80.47	9.04	89.51	74.00	15.51	Peak	No Limit

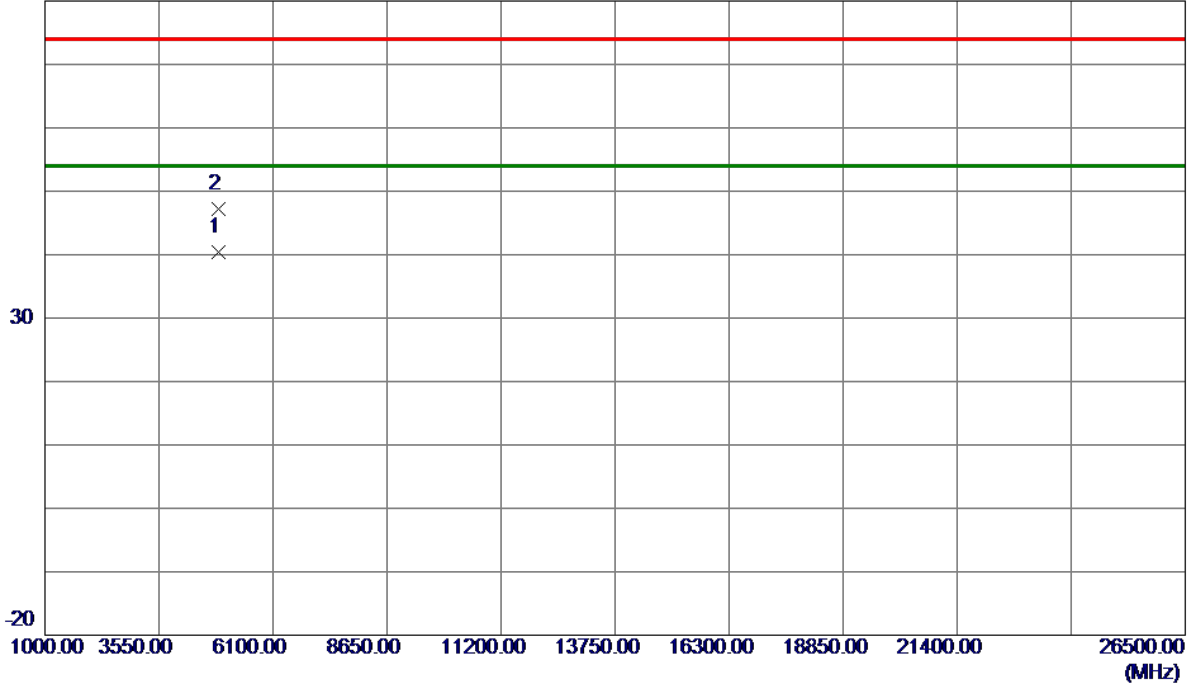
REMARKS:

- (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 *	4873.9800	32.17	8.21	40.38	54.00	-13.62	AVG	
2	4873.9950	38.90	8.21	47.11	74.00	-26.89	Peak	

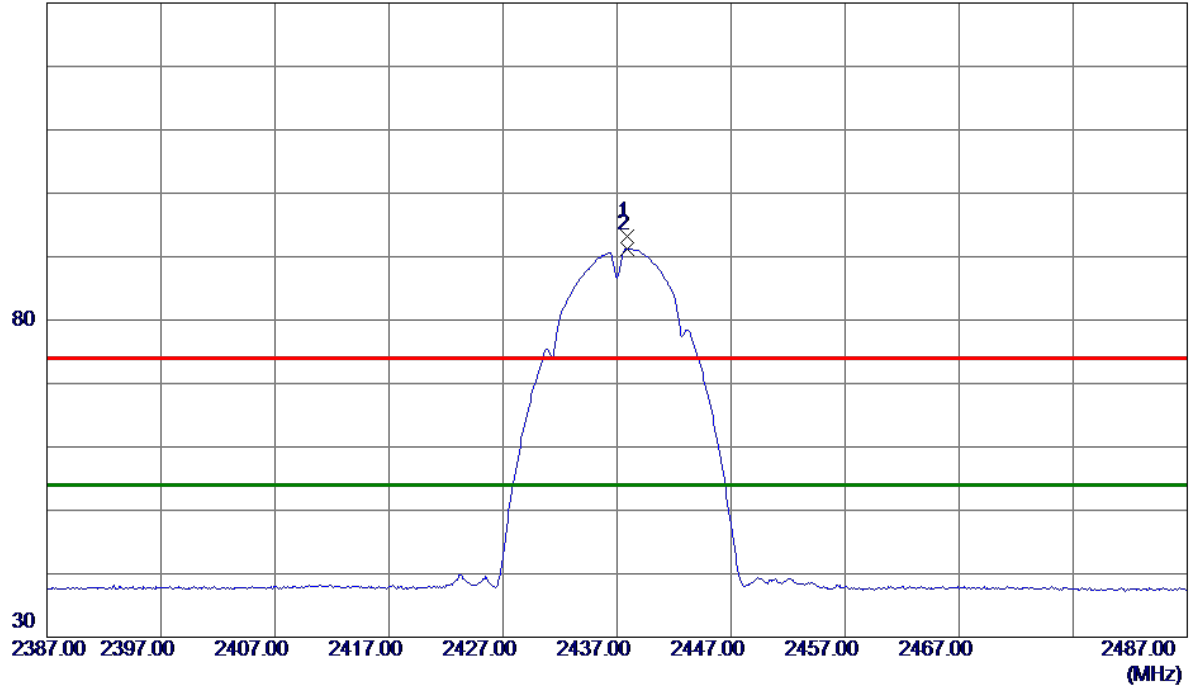
REMARKS:

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

Test Mode: TX B 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	2437.9000	84.11	9.04	93.15	74.00	19.15	Peak	No Limit
2 *	2437.9000	82.23	9.04	91.27	54.00	37.27	AVG	No Limit

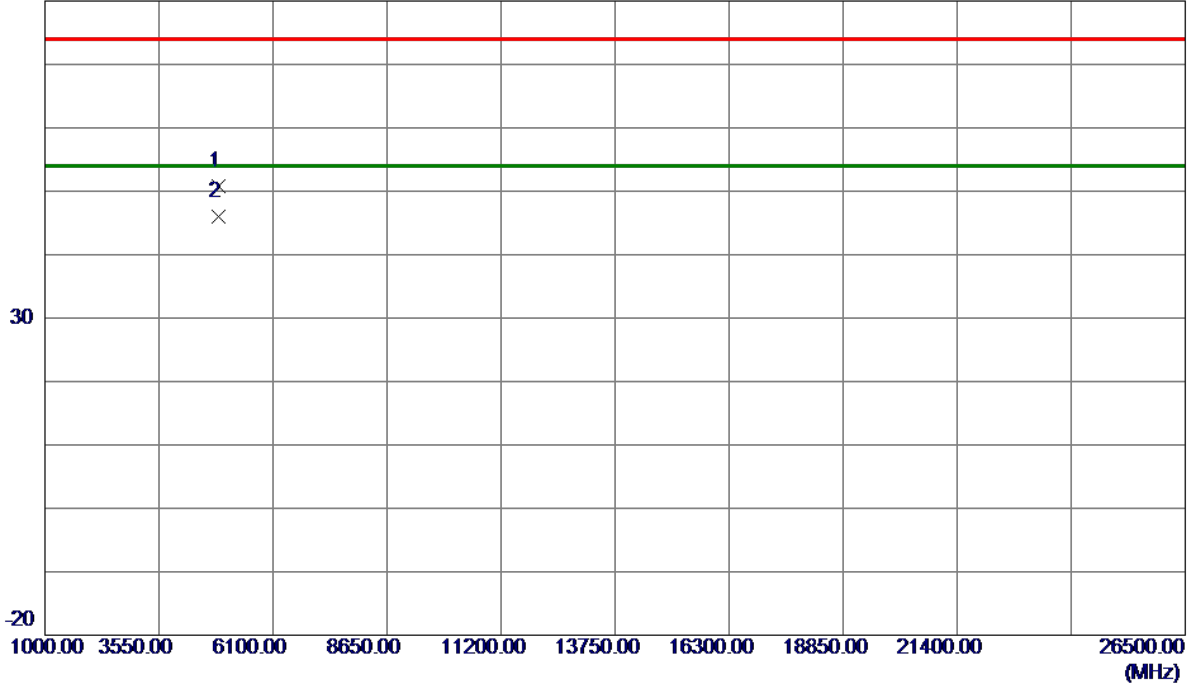
REMARKS:

- (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	4874.0299	42.57	8.21	50.78	74.00	-23.22	Peak	
2 *	4874.0299	37.83	8.21	46.04	54.00	-7.96	AVG	

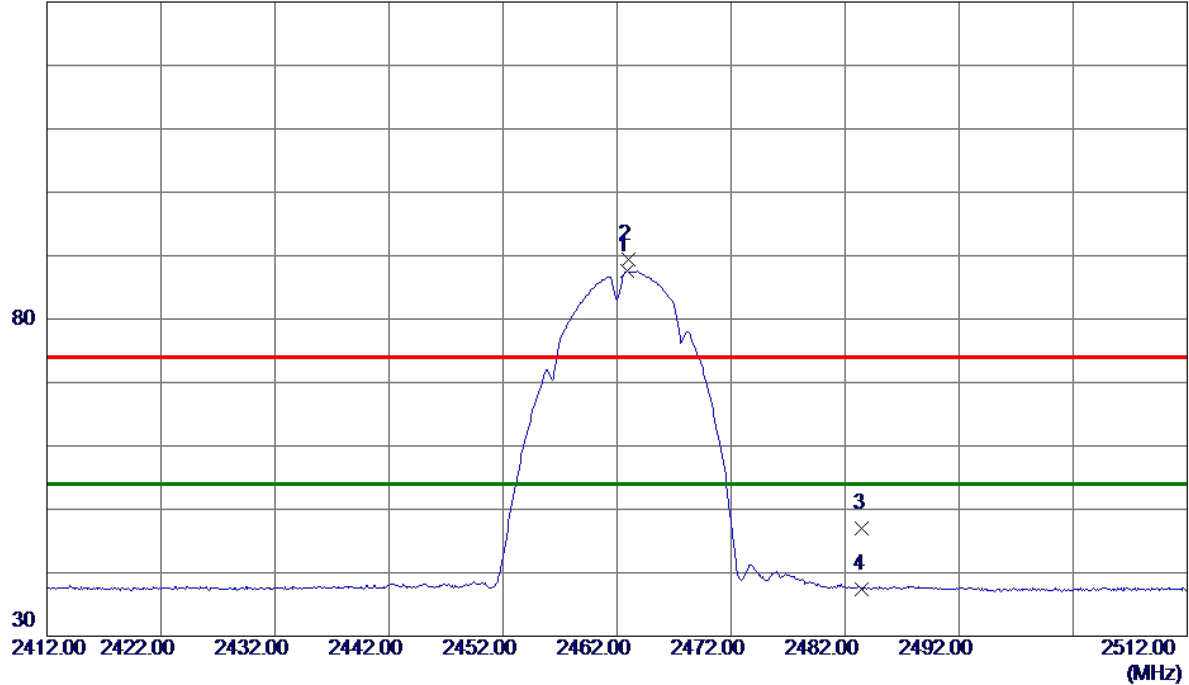
REMARKS:

- (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 *	2462.9000	78.55	9.03	87.58	54.00	33.58	AVG	No Limit
2	2463.0000	80.41	9.03	89.44	74.00	15.44	Peak	No Limit
3	2483.5000	37.95	9.01	46.96	74.00	-27.04	Peak	
4	2483.5000	28.41	9.01	37.42	54.00	-16.58	AVG	

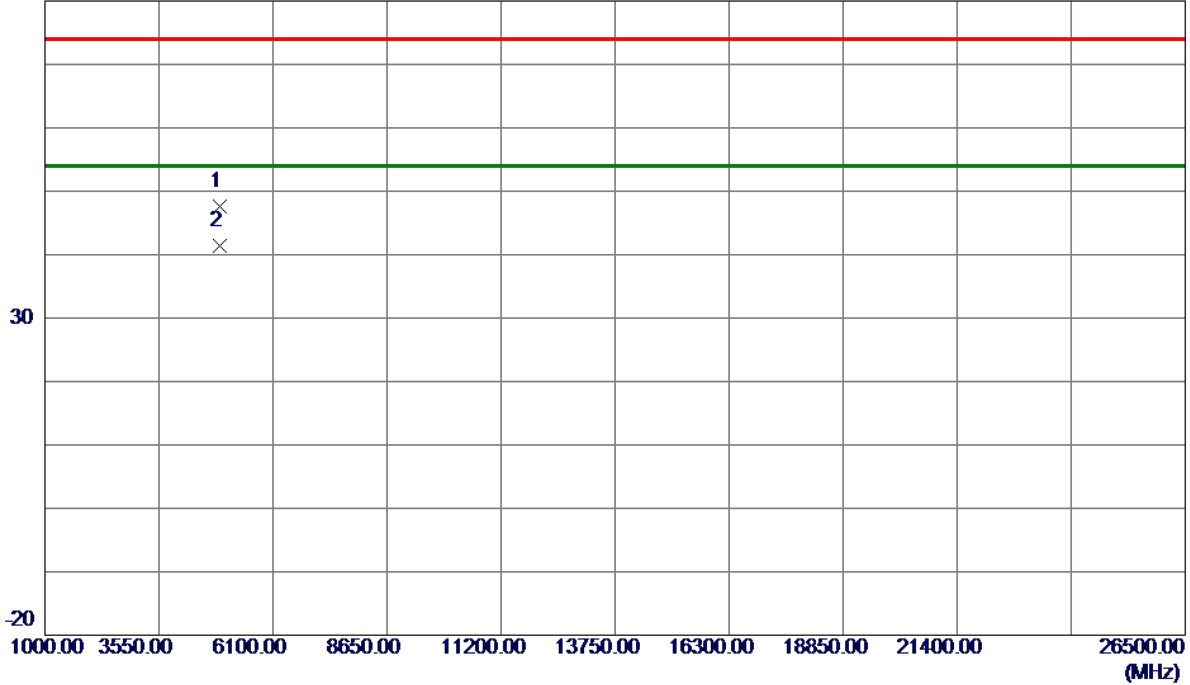
REMARKS:

- (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	4923.9600	39.18	8.38	47.56	74.00	-26.44	Peak	
2 *	4923.9850	32.95	8.38	41.33	54.00	-12.67	AVG	

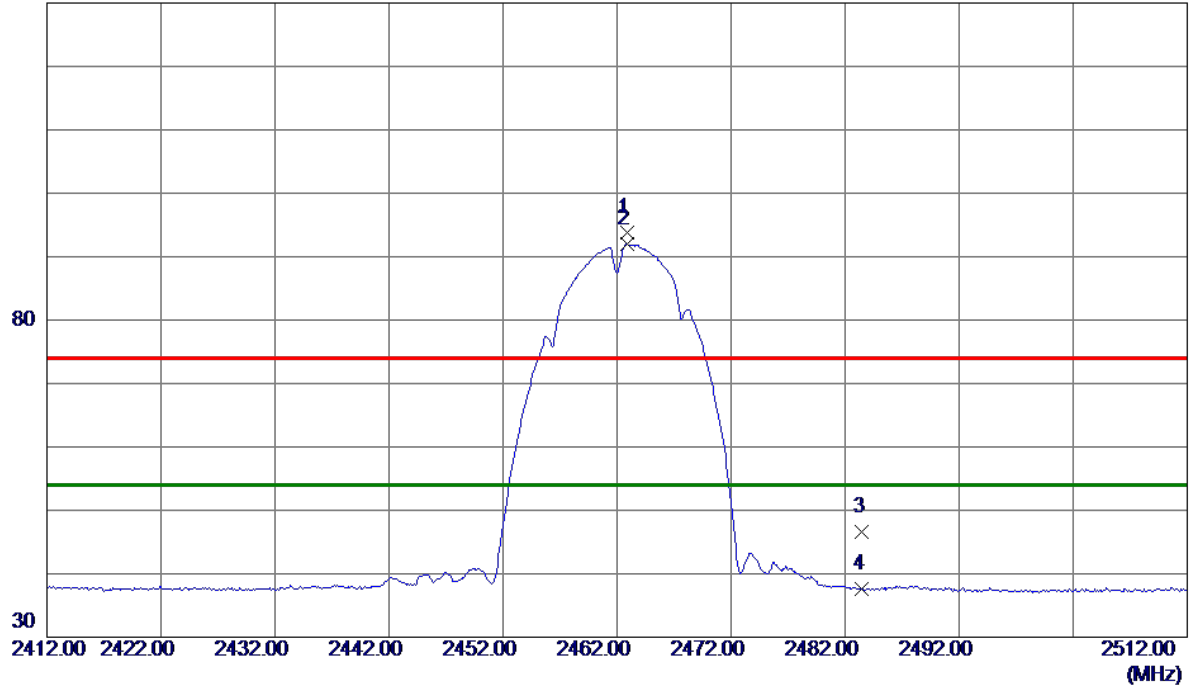
REMARKS:

- (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	2462.9000	84.80	9.03	93.83	74.00	19.83	Peak	No Limit
2 *	2462.9000	82.94	9.03	91.97	54.00	37.97	AVG	No Limit
3	2483.5000	37.53	9.01	46.54	74.00	-27.46	Peak	
4	2483.5000	28.65	9.01	37.66	54.00	-16.34	AVG	

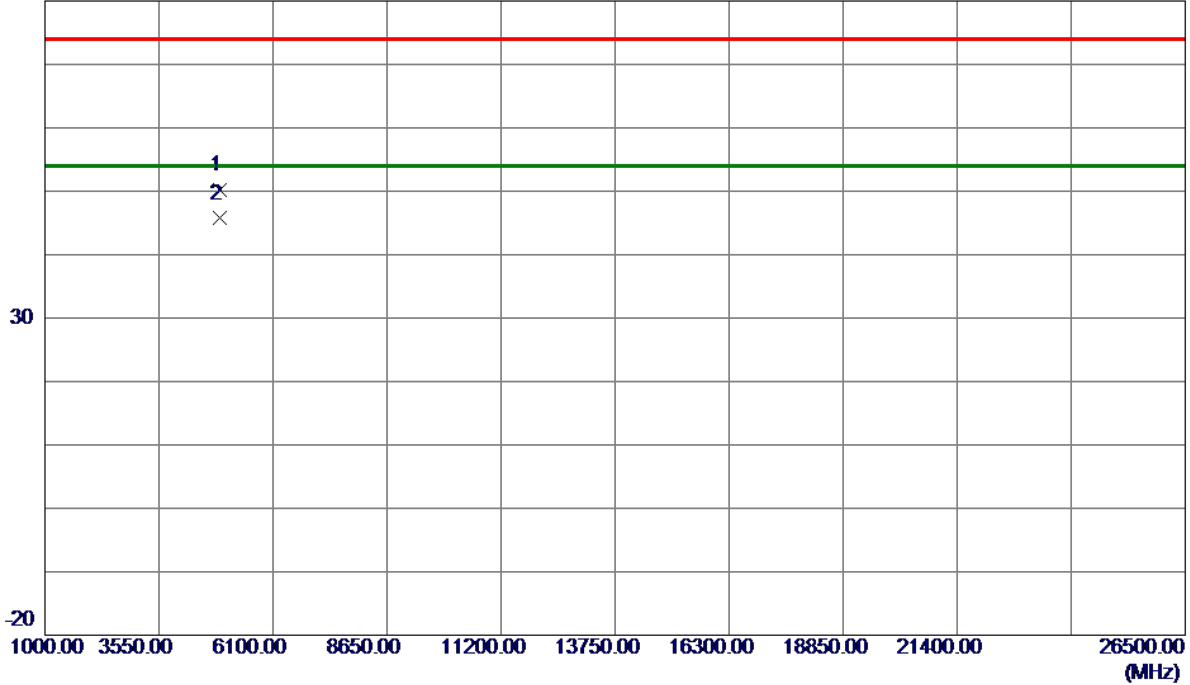
REMARKS:

- (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. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	4923.9850	41.89	8.38	50.27	74.00	-23.73	Peak	
2 *	4924.0350	37.32	8.38	45.70	54.00	-8.30	AVG	

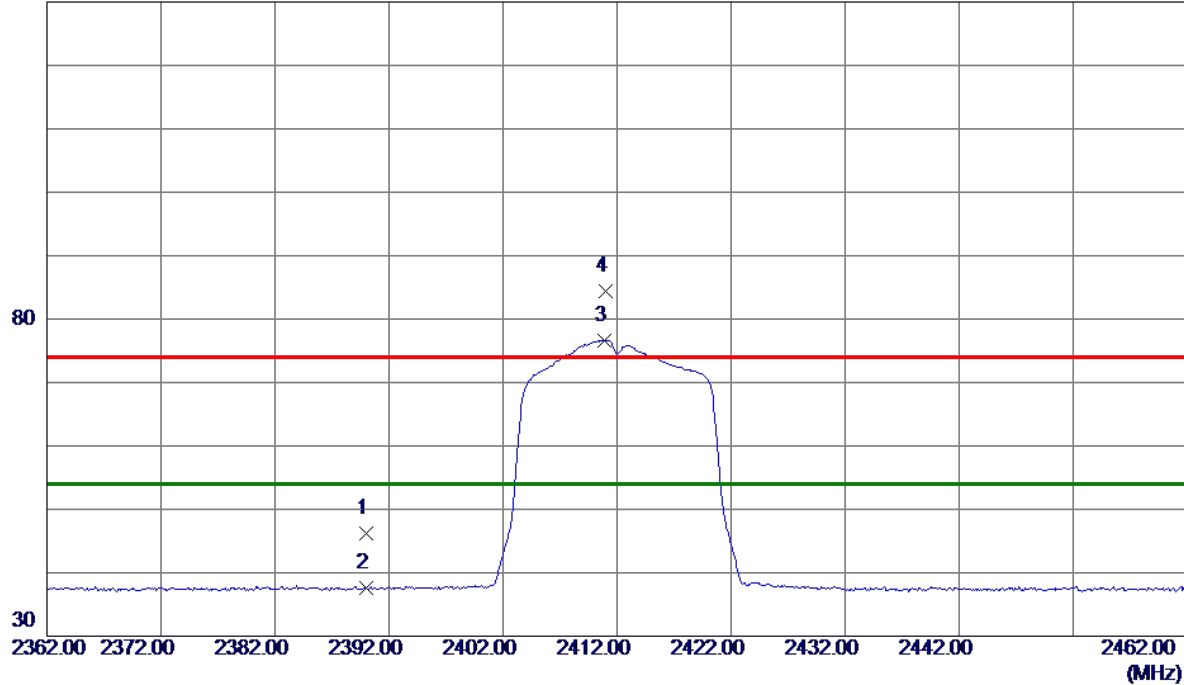
REMARKS:

- (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	37.09	9.07	46.16	74.00	-27.84	Peak	
2	2390.0000	28.51	9.07	37.58	54.00	-16.42	AVG	
3 *	2410.9000	67.60	9.06	76.66	54.00	22.66	AVG	No Limit
4	2411.0000	75.25	9.06	84.31	74.00	10.31	Peak	No Limit

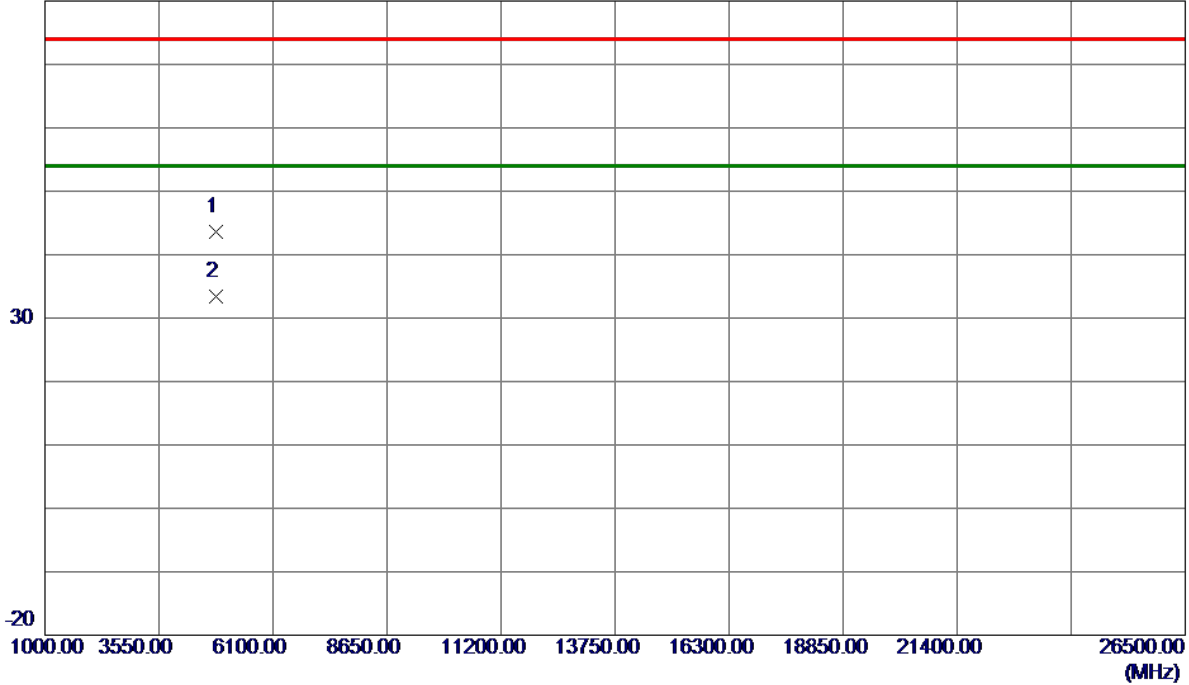
REMARKS:

- (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	4827.5700	35.48	8.05	43.53	74.00	-30.47	Peak	
2 *	4828.3500	25.30	8.05	33.35	54.00	-20.65	AVG	

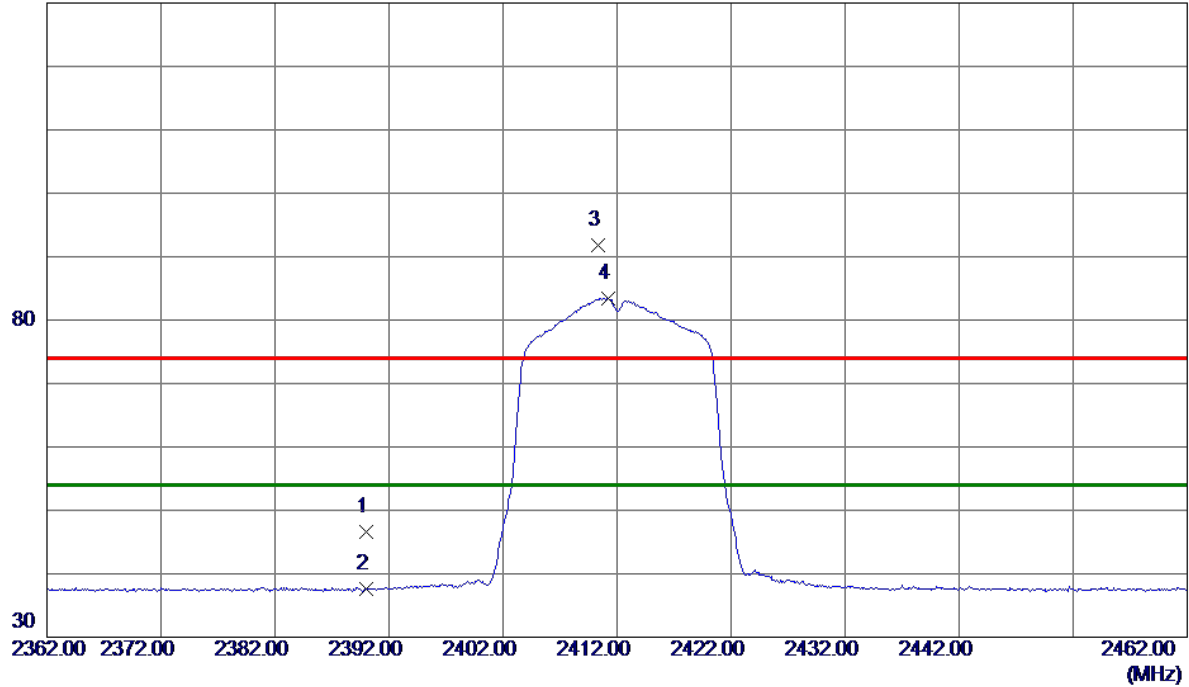
REMARKS:

- (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	37.57	9.07	46.64	74.00	-27.36	Peak	
2	2390.0000	28.59	9.07	37.66	54.00	-16.34	AVG	
3	2410.3000	82.83	9.06	91.89	74.00	17.89	Peak	No Limit
4 *	2411.2000	74.35	9.06	83.41	54.00	29.41	AVG	No Limit

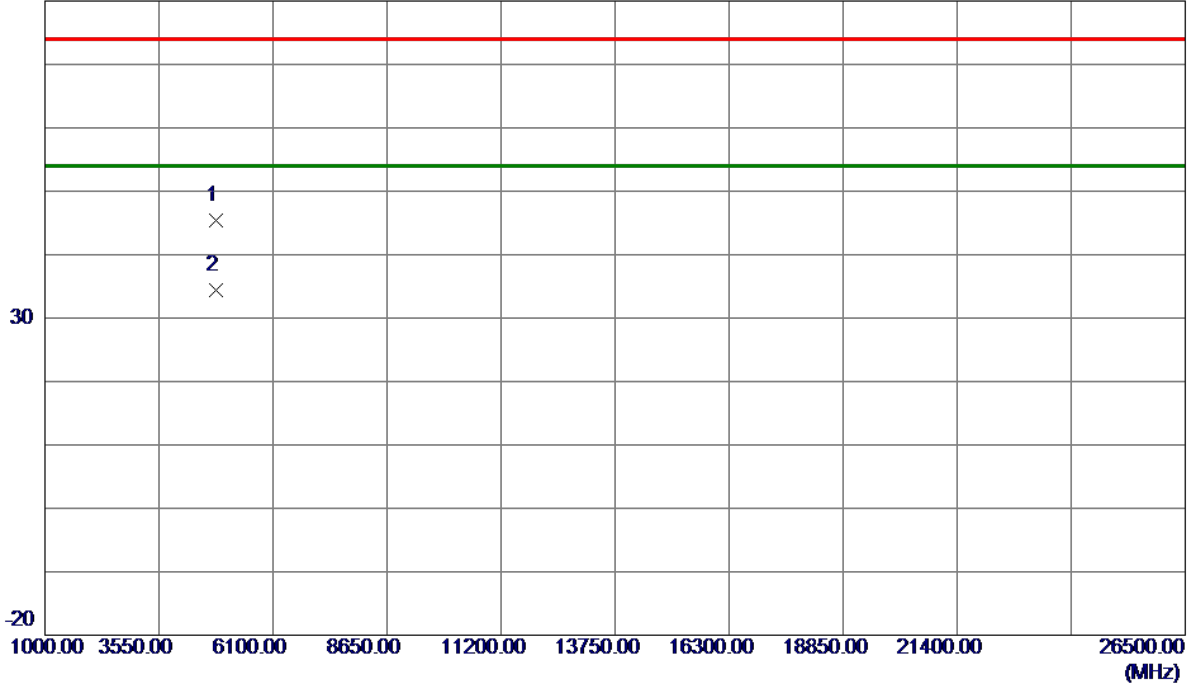
REMARKS:

- (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	4820.3200	37.30	8.03	45.33	74.00	-28.67	Peak	
2 *	4825.4100	26.34	8.05	34.39	54.00	-19.61	AVG	

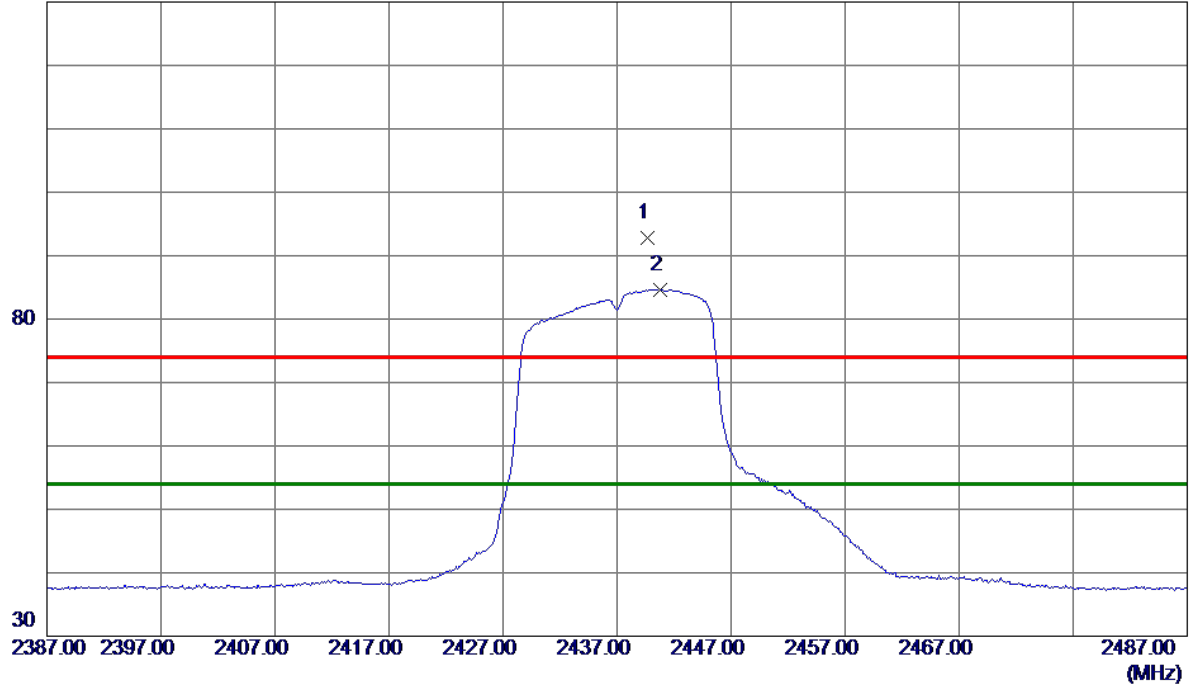
REMARKS:

- (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	2439.7000	83.80	9.04	92.84	74.00	18.84	Peak	No Limit
2 *	2440.8000	75.65	9.04	84.69	54.00	30.69	AVG	No Limit

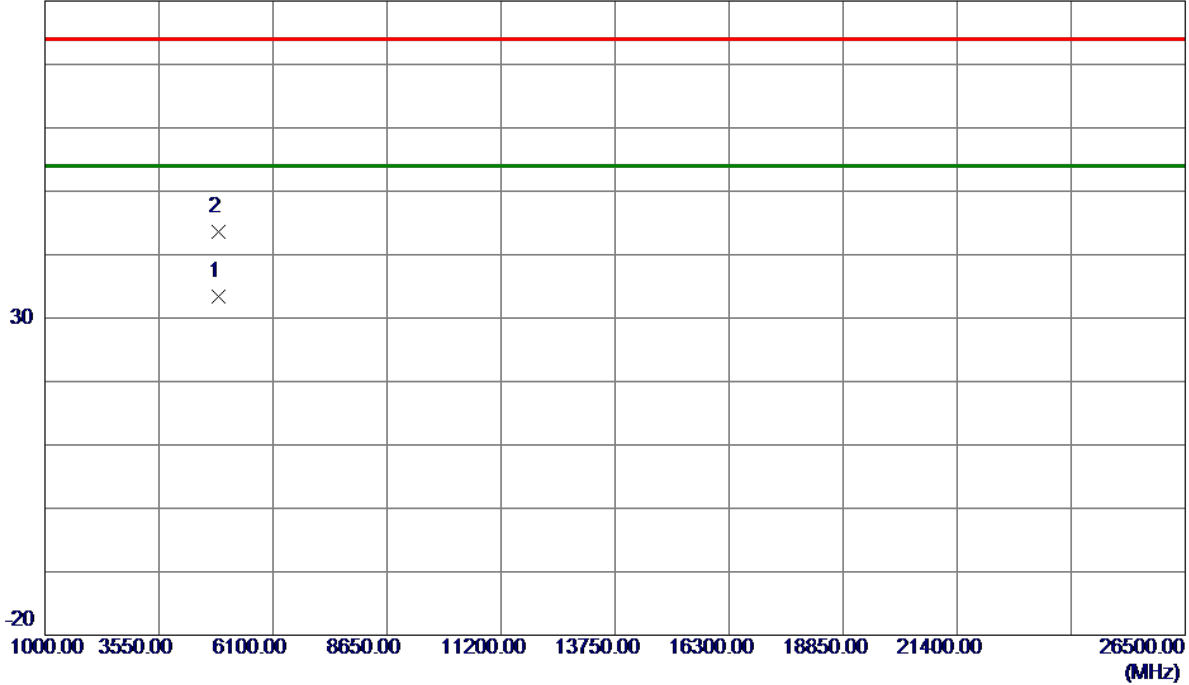
REMARKS:

- (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 *	4869.2900	25.18	8.19	33.37	54.00	-20.63	AVG	
2	4871.8100	35.41	8.20	43.61	74.00	-30.39	Peak	

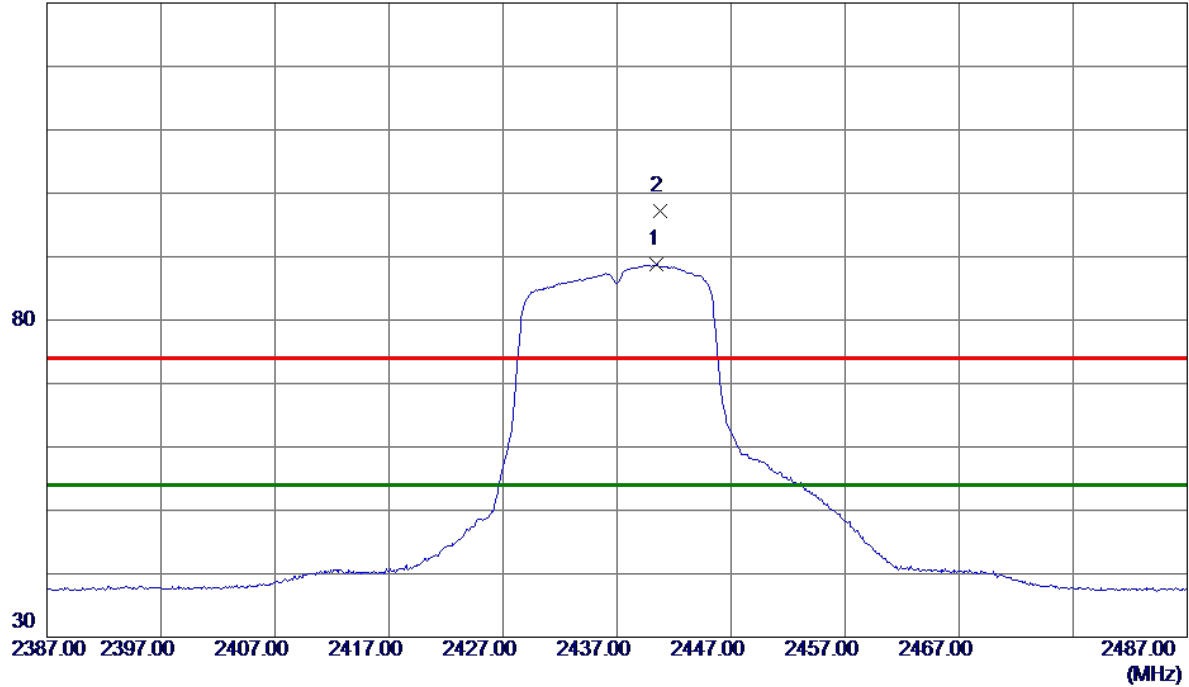
REMARKS:

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

Test Mode: TX G 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 *	2440.5000	79.70	9.04	88.74	54.00	34.74	AVG	No Limit
2	2440.8000	88.08	9.04	97.12	74.00	23.12	Peak	No Limit

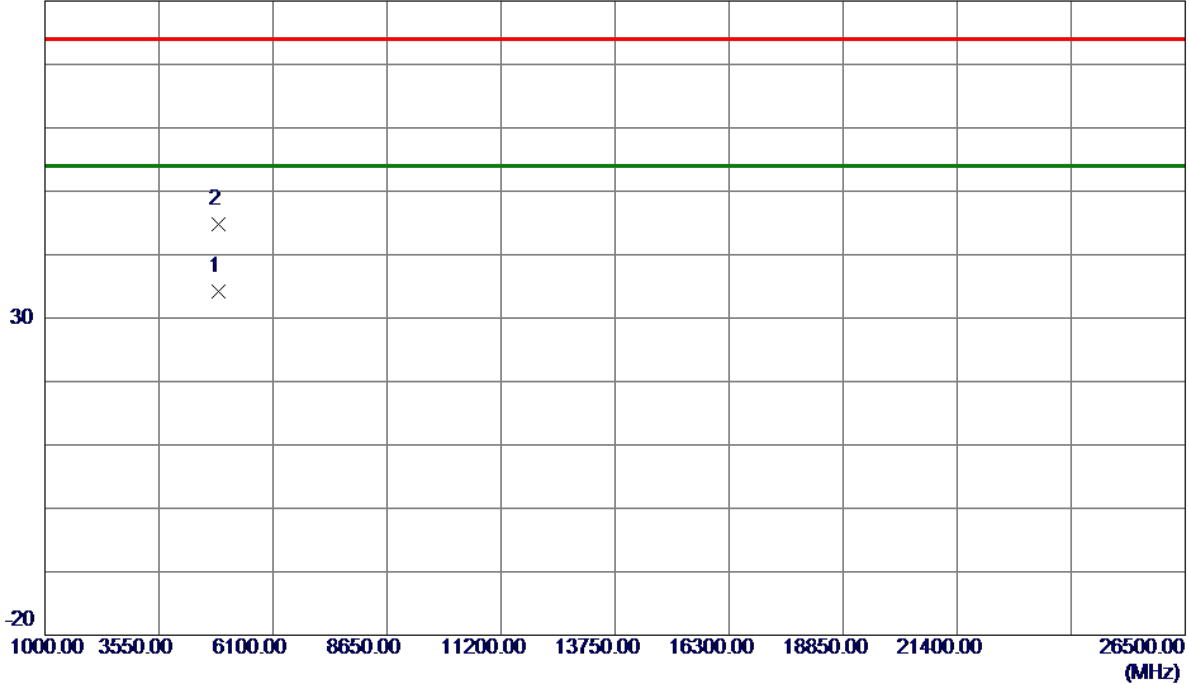
REMARKS:

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

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

Horizontal

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 *	4874.7700	25.98	8.21	34.19	54.00	-19.81	AVG	
2	4875.0500	36.51	8.21	44.72	74.00	-29.28	Peak	

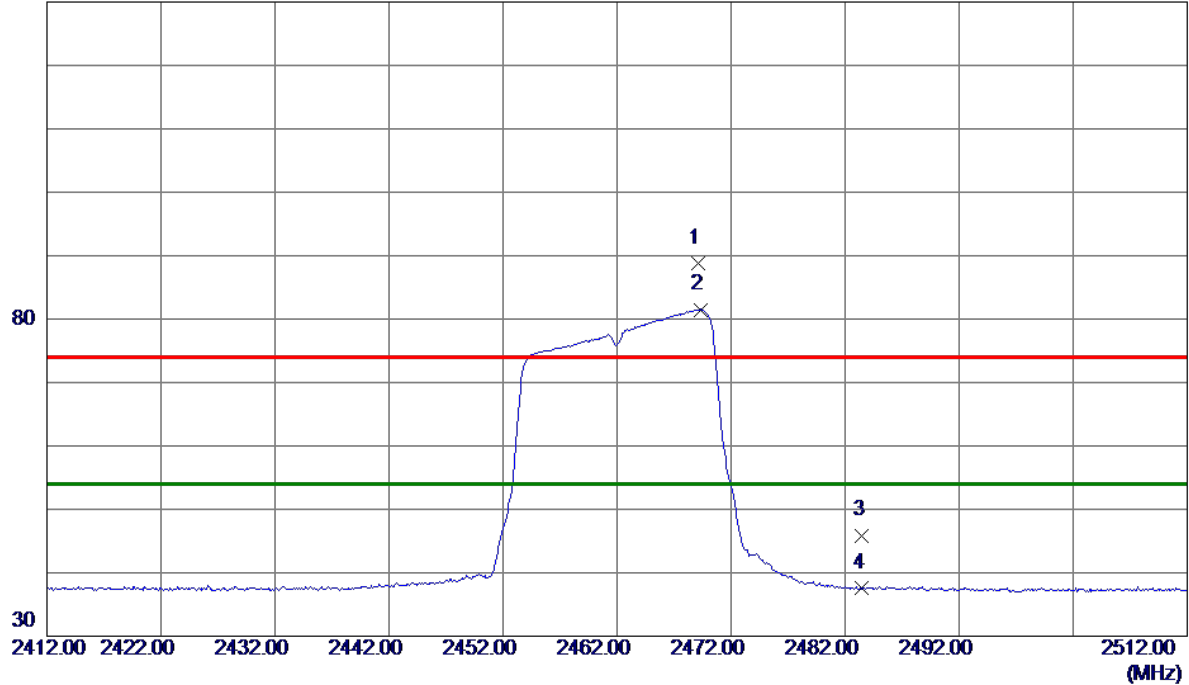
REMARKS:

- (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	2469.1000	79.80	9.02	88.82	74.00	14.82	Peak	No Limit
2 *	2469.3000	72.48	9.02	81.50	54.00	27.50	AVG	No Limit
3	2483.5000	36.89	9.01	45.90	74.00	-28.10	Peak	
4	2483.5000	28.57	9.01	37.58	54.00	-16.42	AVG	

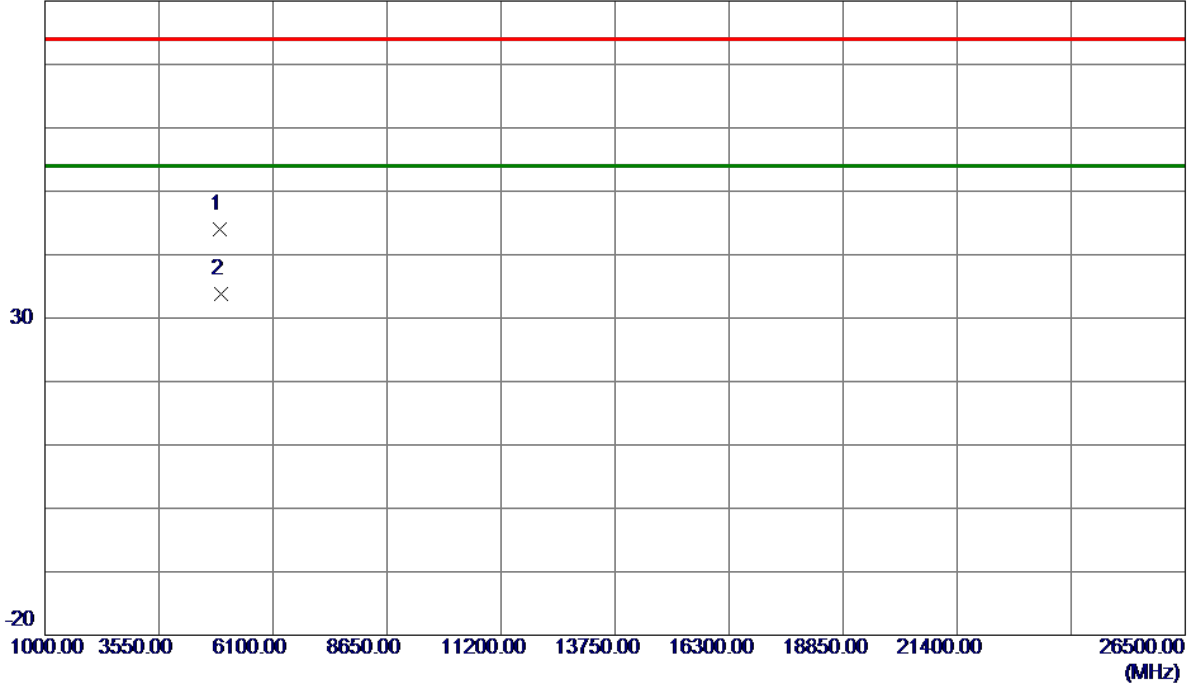
REMARKS:

- (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	4920.8600	35.62	8.36	43.98	74.00	-30.02	Peak	
2 *	4928.5600	25.36	8.39	33.75	54.00	-20.25	AVG	

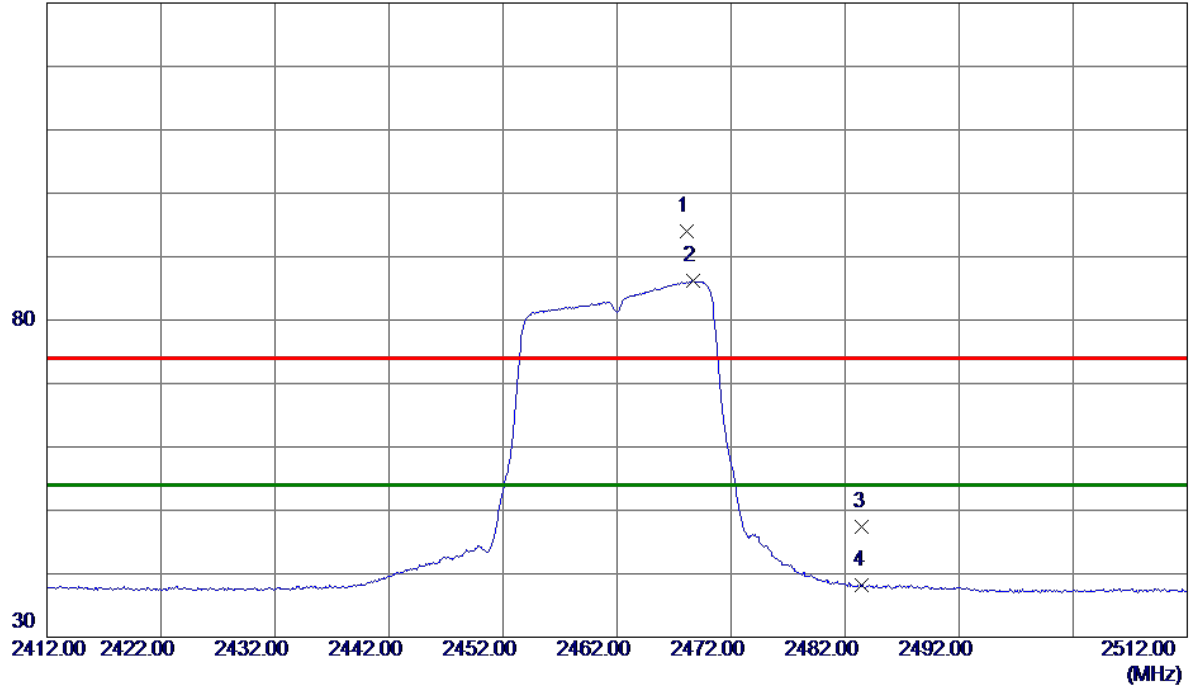
REMARKS:

- (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	2468.1000	85.06	9.02	94.08	74.00	20.08	Peak	No Limit
2 *	2468.7000	77.24	9.02	86.26	54.00	32.26	AVG	No Limit
3	2483.5000	38.44	9.01	47.45	74.00	-26.55	Peak	
4	2483.5000	29.15	9.01	38.16	54.00	-15.84	AVG	

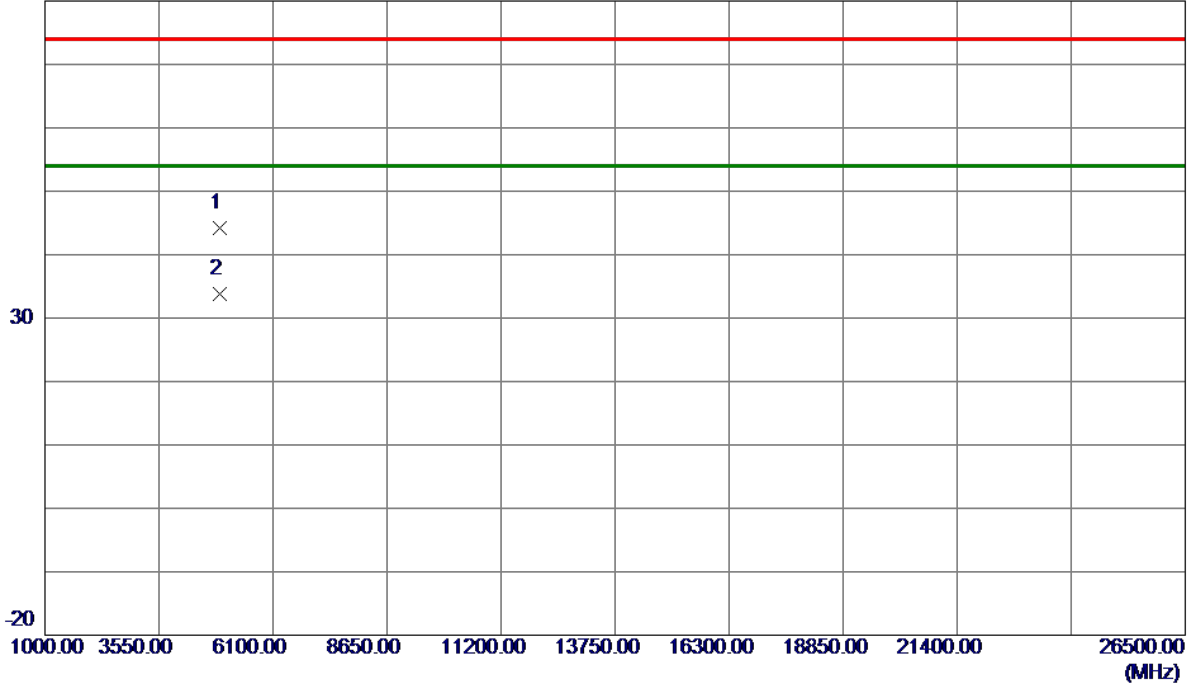
REMARKS:

- (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	4919.1300	35.92	8.36	44.28	74.00	-29.72	Peak	
2 *	4919.1400	25.51	8.36	33.87	54.00	-20.13	AVG	

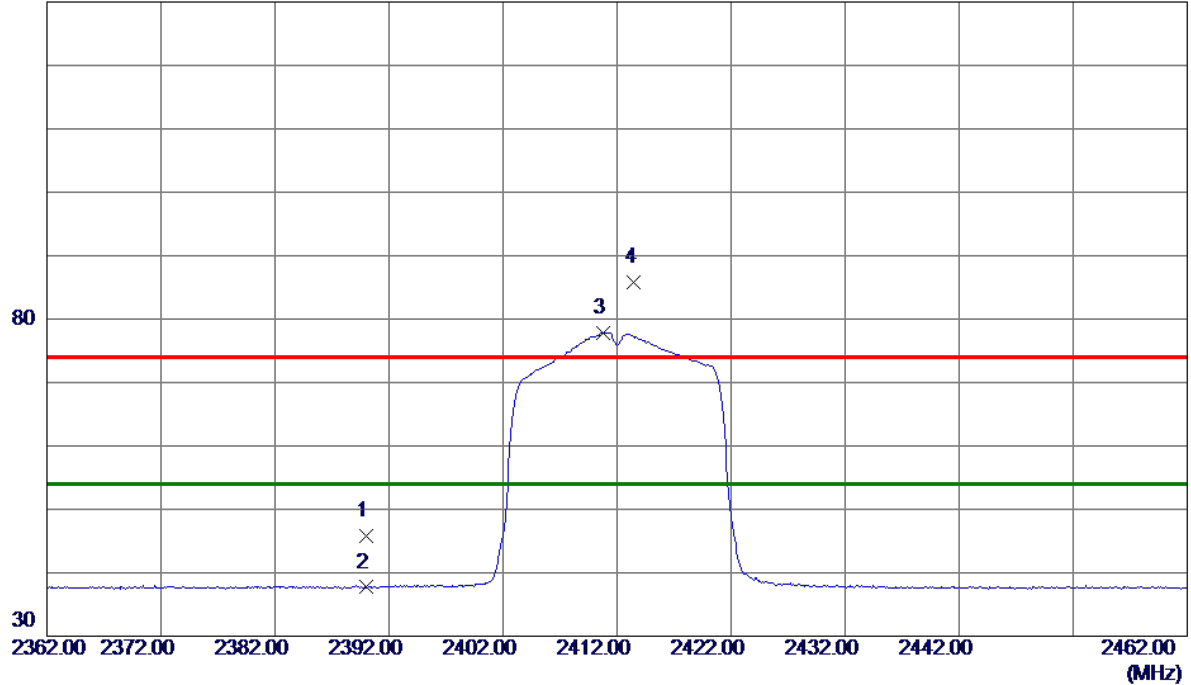
REMARKS:

- (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	36.75	9.07	45.82	74.00	-28.18	Peak	
2	2390.0000	28.63	9.07	37.70	54.00	-16.30	AVG	
3 *	2410.8000	68.78	9.06	77.84	54.00	23.84	AVG	No Limit
4	2413.5000	76.80	9.06	85.86	74.00	11.86	Peak	No Limit

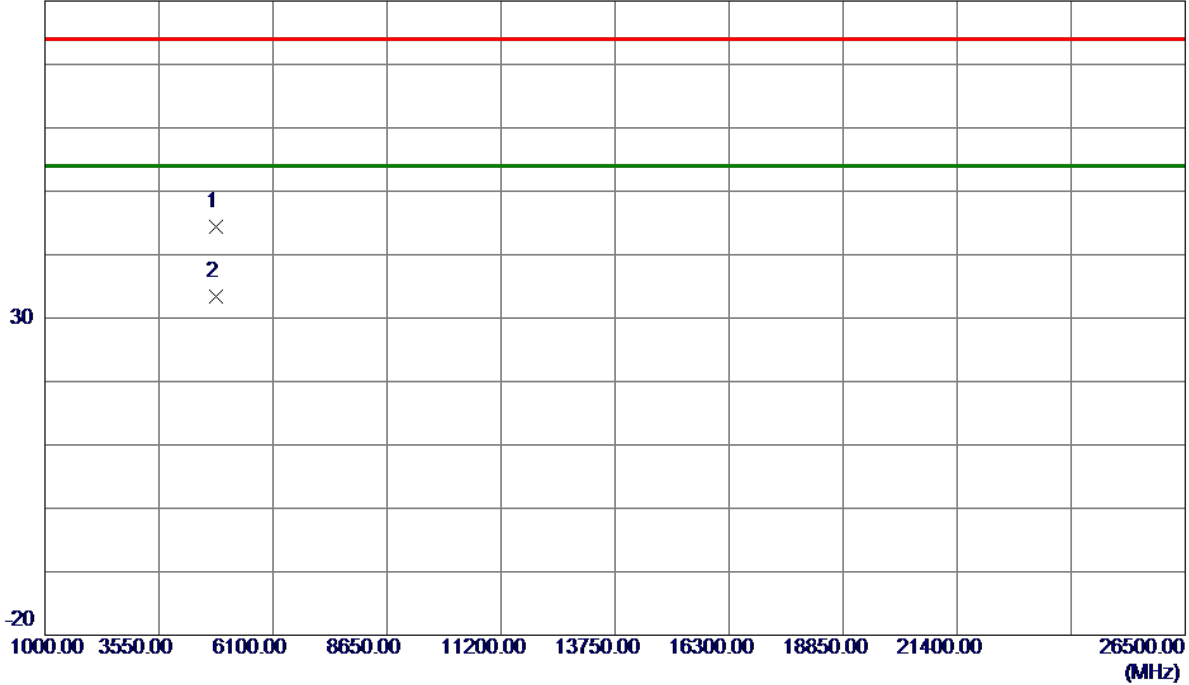
REMARKS:

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

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

Vertical

80 dBuV/m



No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	4821.8300	36.40	8.03	44.43	74.00	-29.57	Peak	
2 *	4828.3900	25.31	8.06	33.37	54.00	-20.63	AVG	

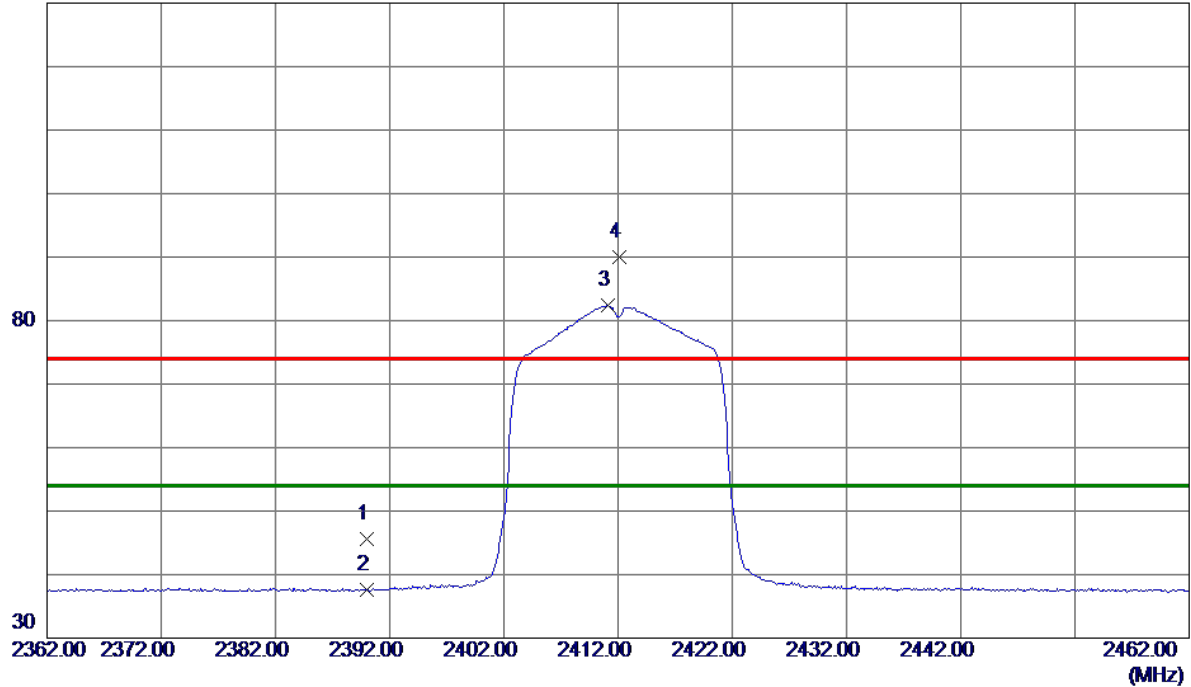
REMARKS:

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

Test Mode: TX N-20M 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	36.47	9.07	45.54	74.00	-28.46	Peak	
2	2390.0000	28.58	9.07	37.65	54.00	-16.35	AVG	
3 *	2411.1000	73.27	9.06	82.33	54.00	28.33	AVG	No Limit
4	2412.1000	80.90	9.06	89.96	74.00	15.96	Peak	No Limit

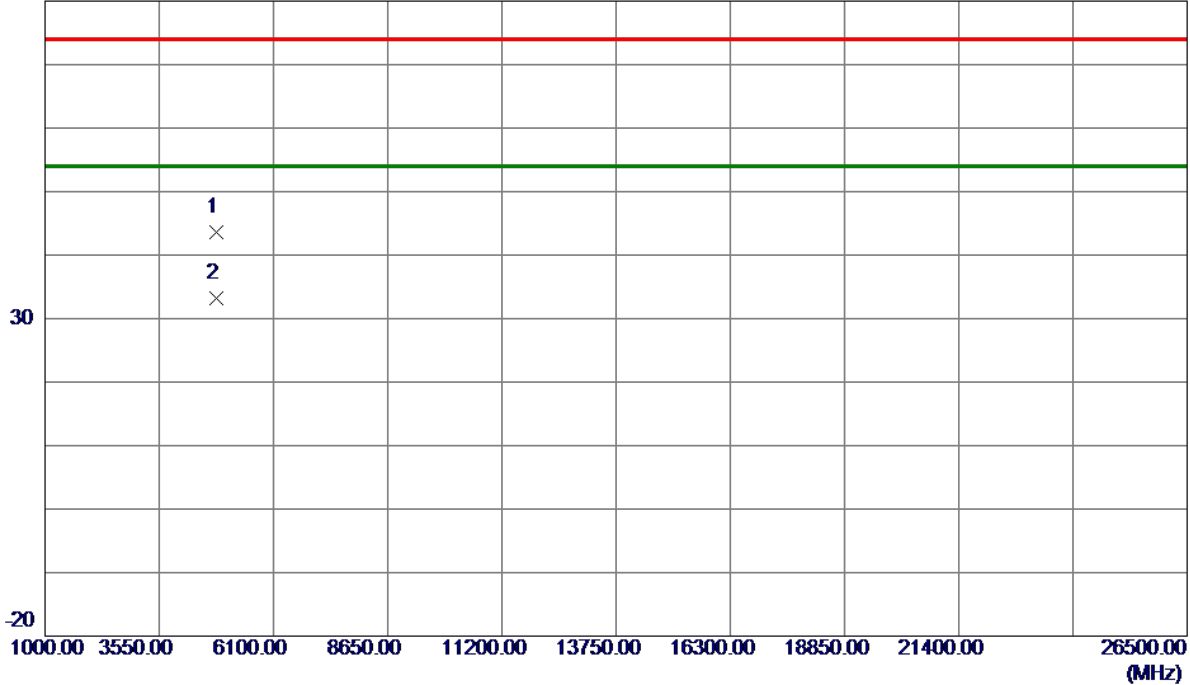
REMARKS:

- (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.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	4823.7799	35.50	8.04	43.54	74.00	-30.46	Peak	
2 *	4826.7500	25.16	8.05	33.21	54.00	-20.79	AVG	

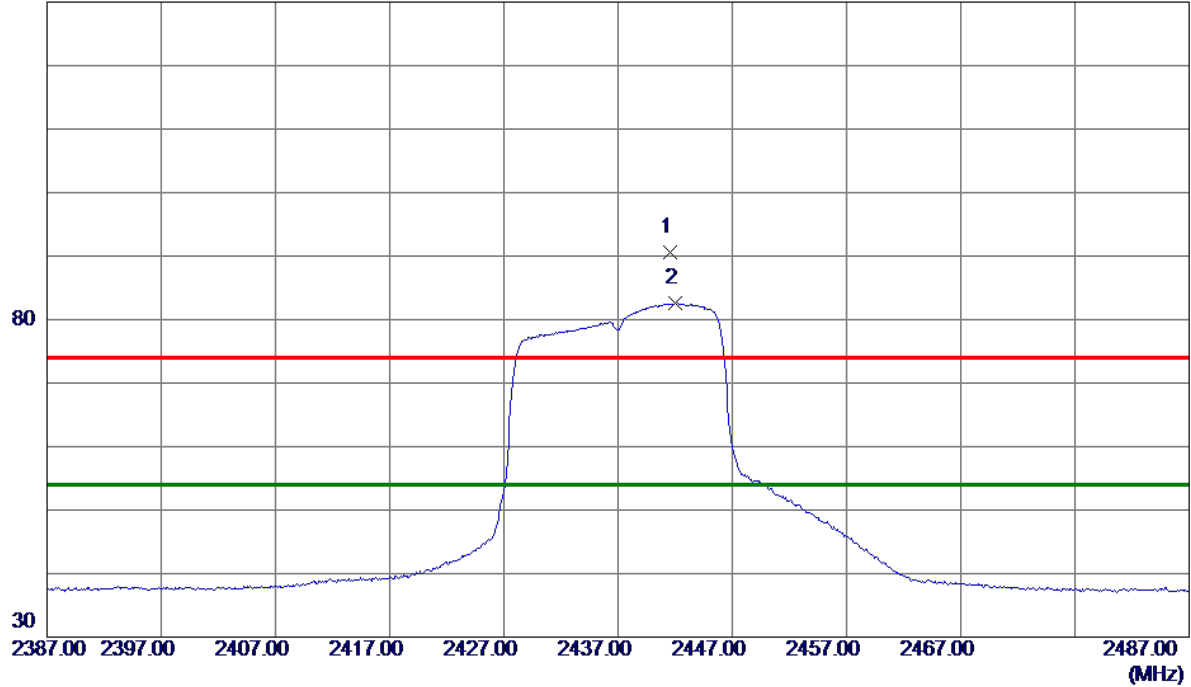
REMARKS:

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

Test Mode: TX N-20M Mode 2437 MHz

Vertical

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	2441.6000	81.62	9.04	90.66	74.00	16.66	Peak	No Limit
2 *	2442.0000	73.49	9.04	82.53	54.00	28.53	AVG	No Limit

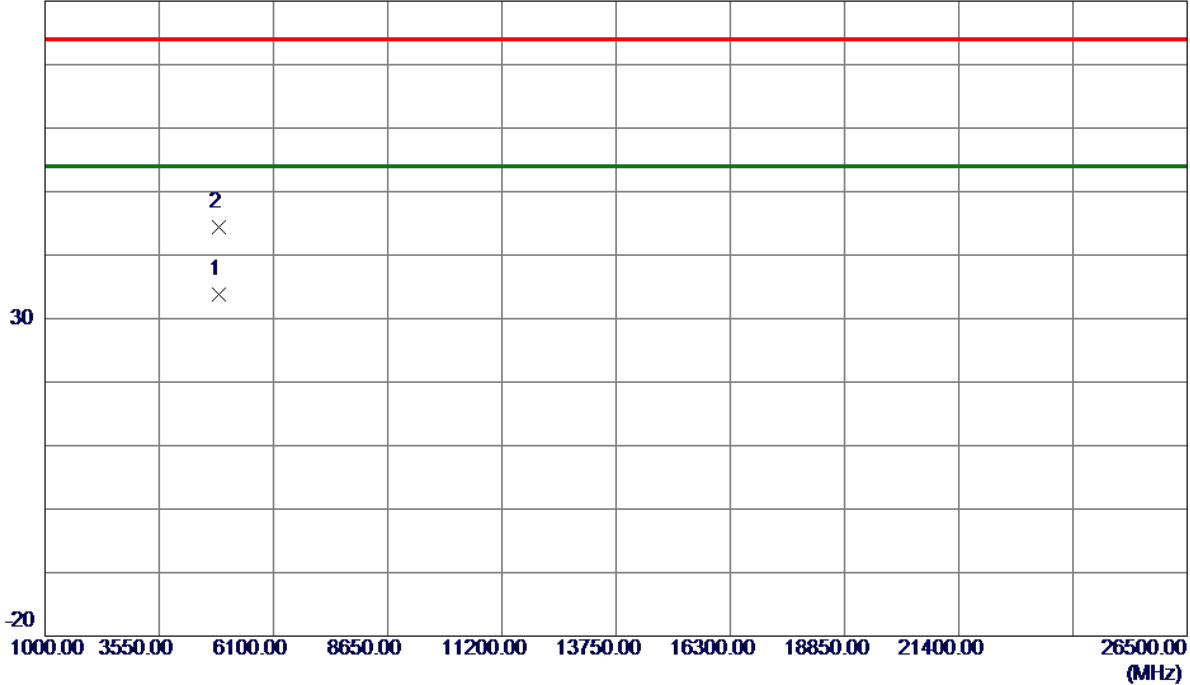
REMARKS:

- (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 *	4872.5800	25.56	8.20	33.76	54.00	-20.24	AVG	
2	4870.7400	36.19	8.20	44.39	74.00	-29.61	Peak	

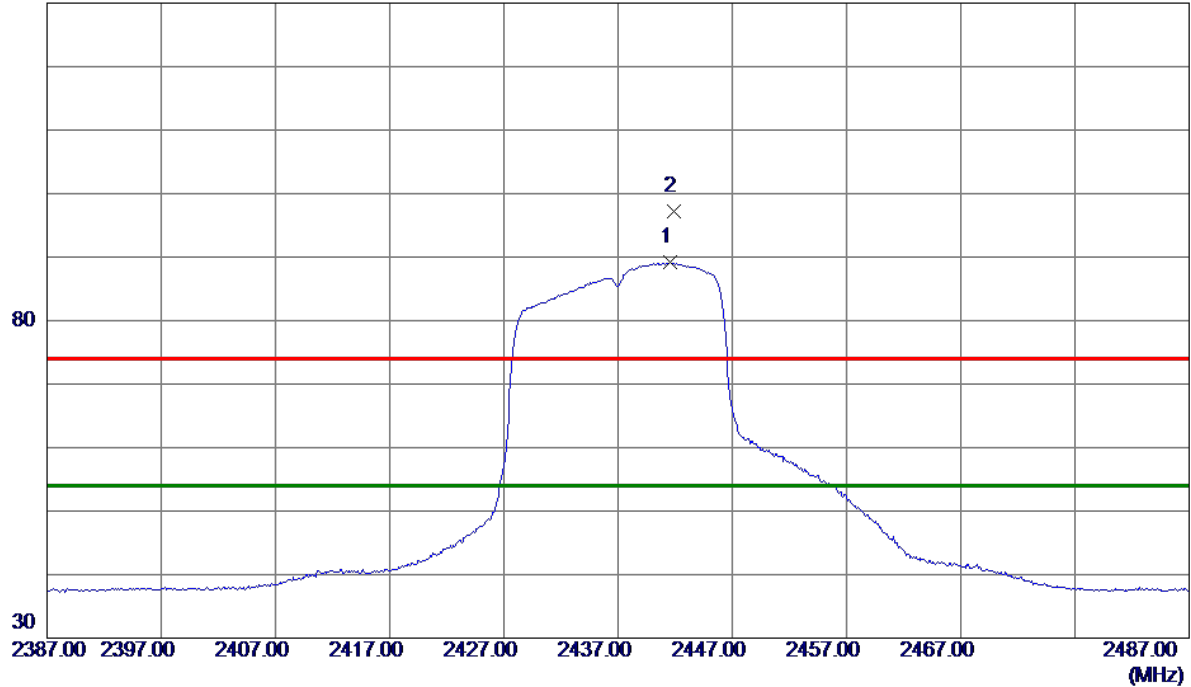
REMARKS:

- (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 *	2441.6000	80.08	9.04	89.12	54.00	35.12	AVG	No Limit
2	2441.9000	88.14	9.04	97.18	74.00	23.18	Peak	No Limit

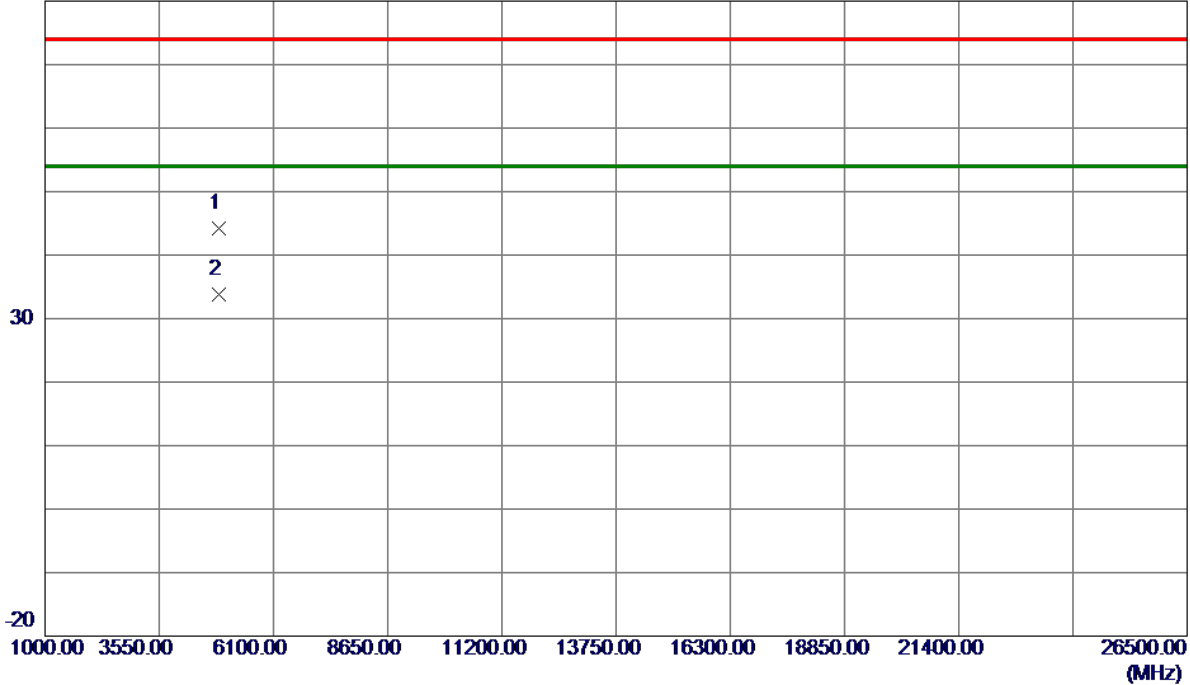
REMARKS:

- (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	4875.6400	36.03	8.21	44.24	74.00	-29.76	Peak	
2 *	4875.7200	25.60	8.21	33.81	54.00	-20.19	AVG	

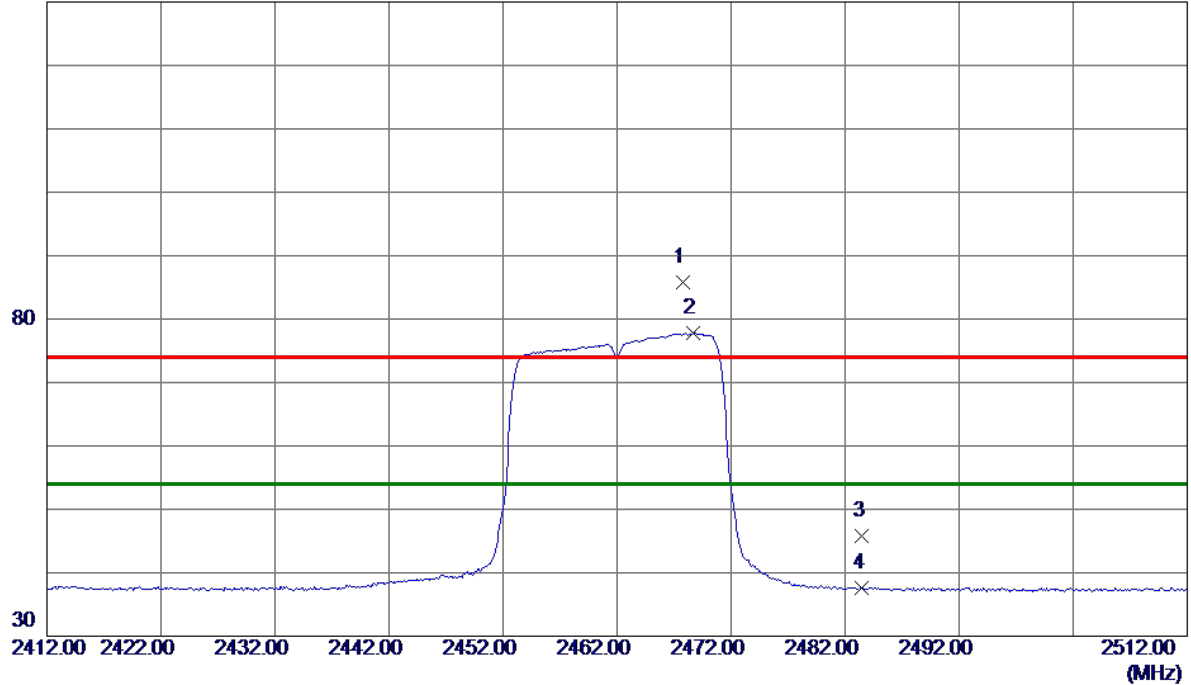
REMARKS:

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

Test Mode: TX N-20M Mode 2462 MHz

Vertical

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	2467.8000	76.76	9.02	85.78	74.00	11.78	Peak	No Limit
2 *	2468.7000	68.80	9.02	77.82	54.00	23.82	AVG	No Limit
3	2483.5000	36.86	9.01	45.87	74.00	-28.13	Peak	
4	2483.5000	28.59	9.01	37.60	54.00	-16.40	AVG	

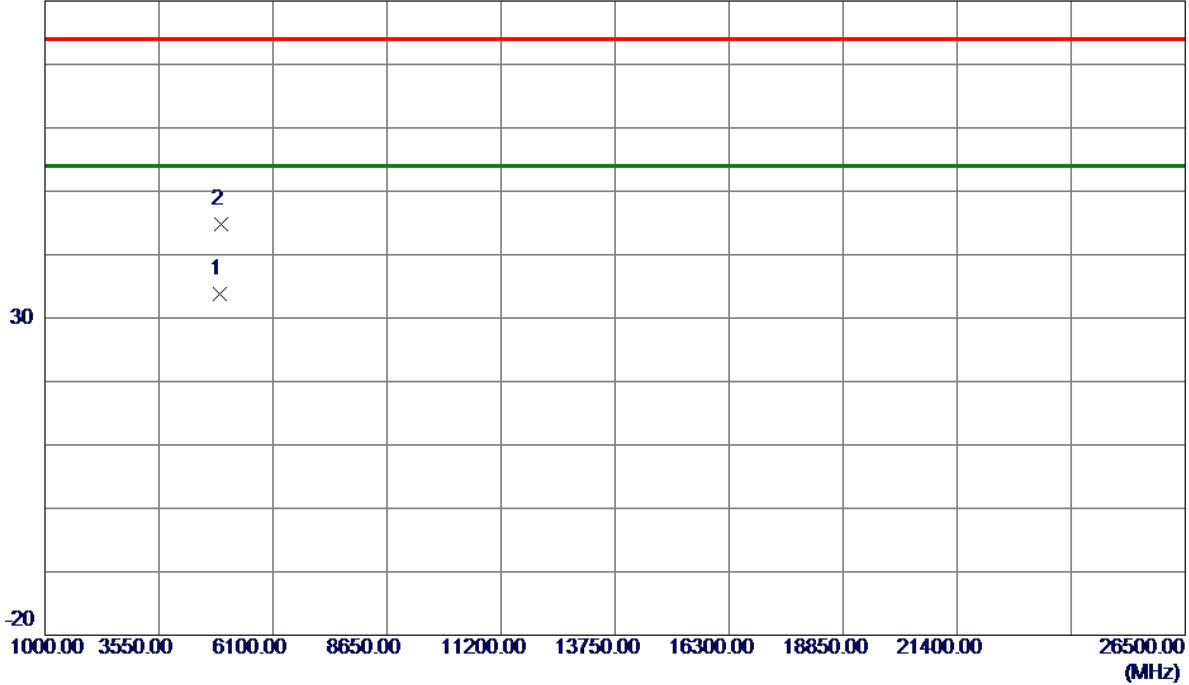
REMARKS:

- (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 *	4923.9600	25.35	8.38	33.73	54.00	-20.27	AVG	
2	4927.3900	36.50	8.39	44.89	74.00	-29.11	Peak	

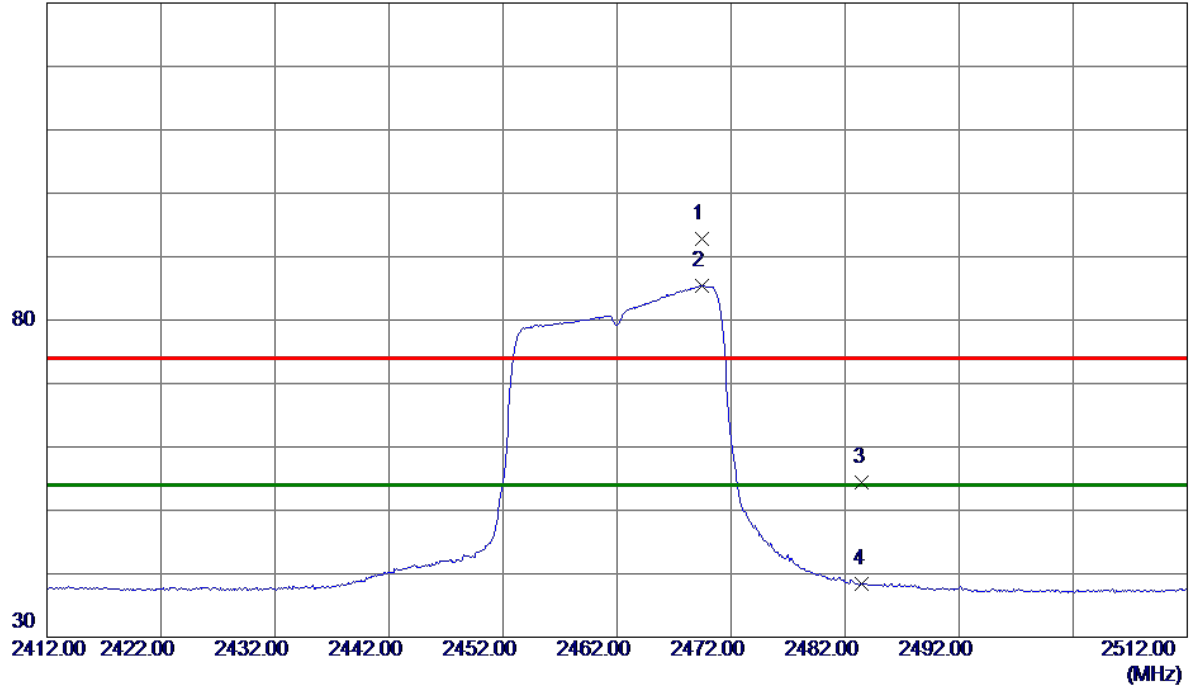
REMARKS:

- (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	2469.4000	83.79	9.02	92.81	74.00	18.81	Peak	No Limit
2 *	2469.4000	76.40	9.02	85.42	54.00	31.42	AVG	No Limit
3	2483.5000	45.46	9.01	54.47	74.00	-19.53	Peak	
4	2483.5000	29.35	9.01	38.36	54.00	-15.64	AVG	

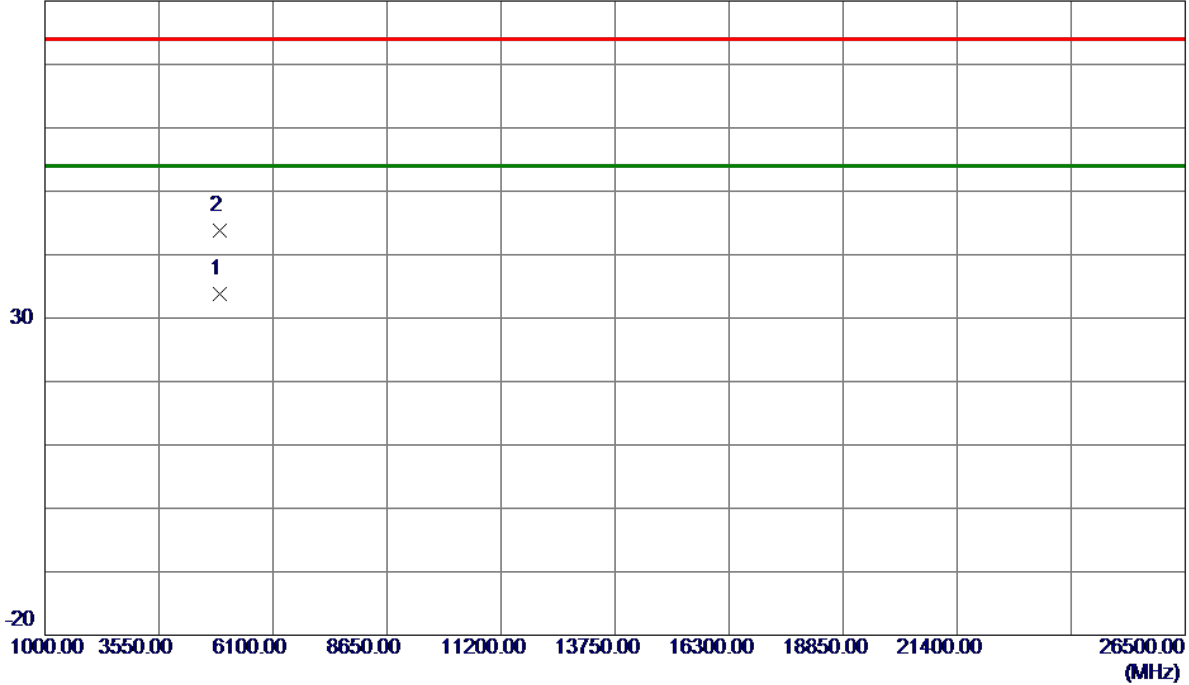
REMARKS:

- (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 *	4919.7000	25.41	8.36	33.77	54.00	-20.23	AVG	
2	4923.4100	35.41	8.37	43.78	74.00	-30.22	Peak	

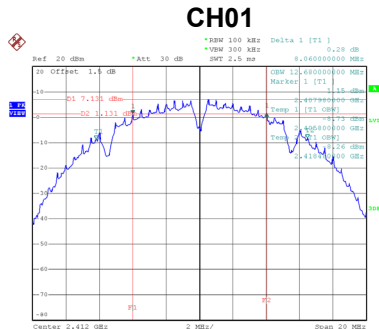
REMARKS:

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

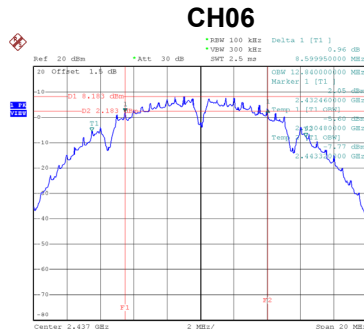
APPENDIX E - BANDWIDTH

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

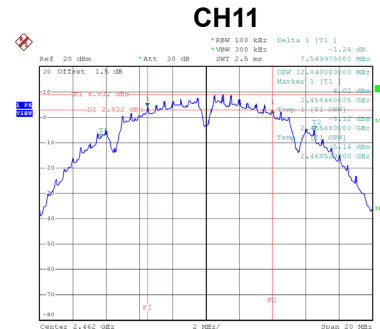
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	6 dB Bandwidth Min. Limit (kHz)	Result
01	2412	8.06	500	Complies
06	2437	8.60	500	Complies
11	2462	7.55	500	Complies



Date: 6.DEC.2019 12:42:15

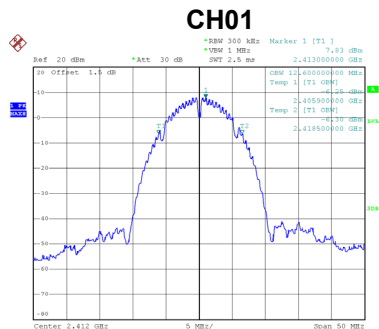


Date: 6.DEC.2019 12:44:39

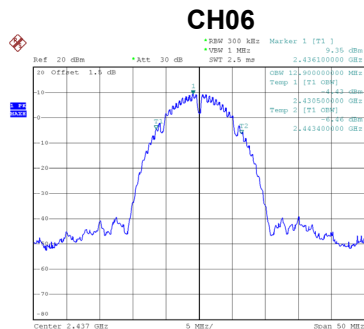


Date: 6.DEC.2019 12:46:33

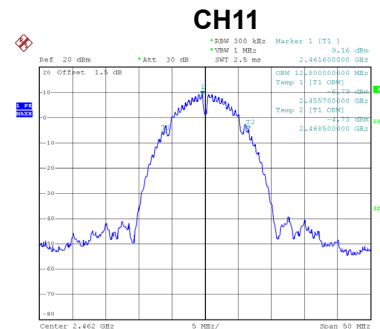
Channel	Frequency (MHz)	99 % Emission Bandwidth (MHz)	Result
01	2412	12.60	Complies
06	2437	12.90	Complies
11	2462	12.80	Complies



Date: 6.DEC.2019 13:11:06

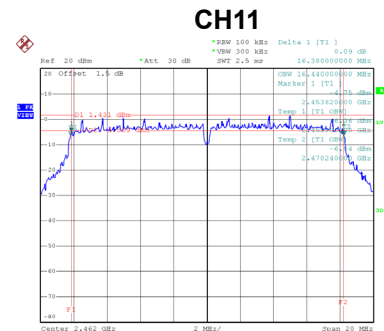


Date: 6.DEC.2019 13:11:22



Date: 6.DEC.2019 13:11:39

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	6 dB Bandwidth Min. Limit (kHz)	Result
01	2412	16.12	500	Complies
06	2437	16.35	500	Complies
11	2462	16.38	500	Complies



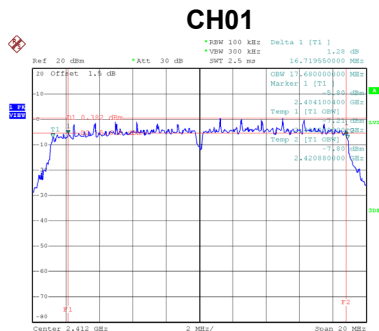
Date: 6.DEC.2019 12:51:34

[illegible]

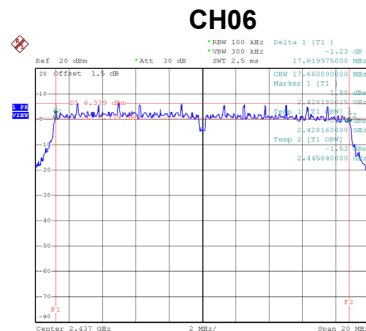
Date: 6.DEC.2019 13:13:08

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

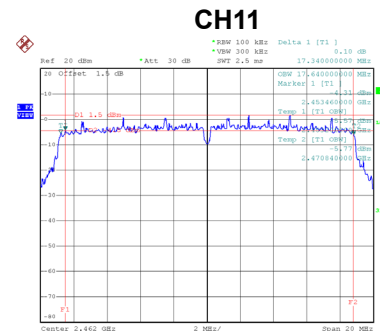
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	6 dB Bandwidth Min. Limit (kHz)	Result
01	2412	16.72	500	Complies
06	2437	17.62	500	Complies
11	2462	17.34	500	Complies



Date: 6.DEC.2019 12:53:10

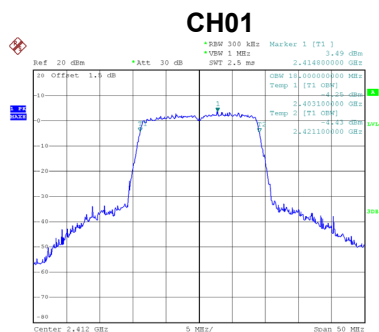


Date: 6.DEC.2019 12:54:41

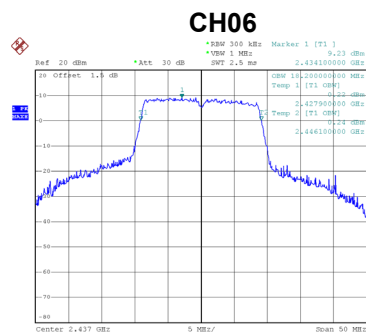


Date: 6.DEC.2019 12:56:01

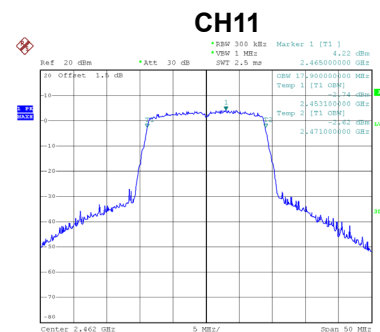
Channel	Frequency (MHz)	99 % Emission Bandwidth (MHz)	Result
01	2412	18.00	Complies
06	2437	18.20	Complies
11	2462	17.90	Complies



Date: 6.DEC.2019 13:13:44



Date: 6.DEC.2019 13:15:51



Date: 6.DEC.2019 13:16:17

APPENDIX F - MAXIMUM PEAK OUTPUT POWER

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

Channel	Frequency (MHz)	Peak Output Power (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	18.41	30.00	1.0000	Complies
06	2437	19.73	30.00	1.0000	Complies
11	2462	19.69	30.00	1.0000	Complies

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

Channel	Frequency (MHz)	Peak Output Power (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	21.63	30.00	1.0000	Complies
06	2437	26.26	30.00	1.0000	Complies
11	2462	22.88	30.00	1.0000	Complies

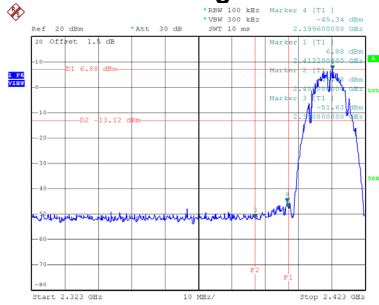
Test Mode	TX N-20M Mode
-----------	---------------

Channel	Frequency (MHz)	Peak Output Power (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	21.67	30.00	1.0000	Complies
06	2437	26.17	30.00	1.0000	Complies
11	2462	23.24	30.00	1.0000	Complies

APPENDIX G - CONDUCTED SPURIOUS EMISSIONS

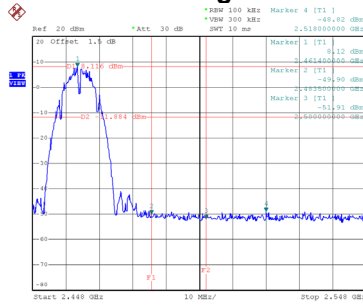
Test Mode TX B Mode

Bandedge CH01



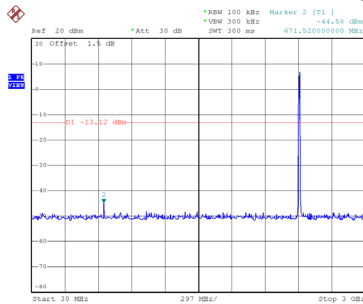
Date: 6.DEC.2019 12:42:23

Bandedge CH11

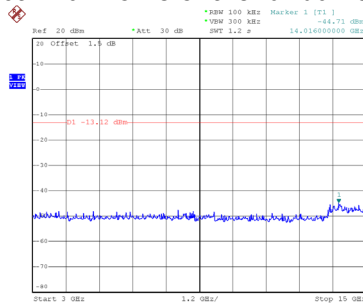


Date: 6.DEC.2019 12:46:42

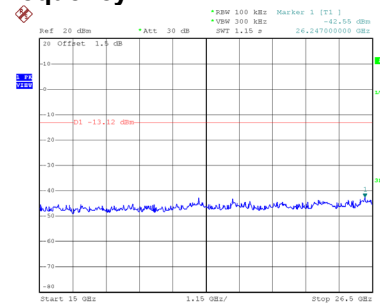
CH01 – 10th Harmonic of the fundamental frequency



Date: 6.DEC.2019 12:42:37

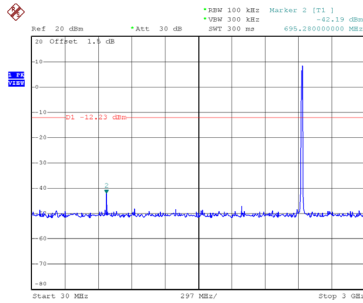


Date: 6.DEC.2019 12:42:46

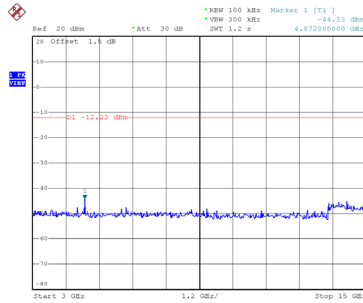


Date: 6.DEC.2019 12:42:54

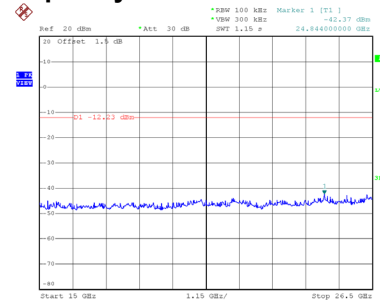
CH06 – 10th Harmonic of the fundamental frequency



Date: 6.DEC.2019 12:45:01

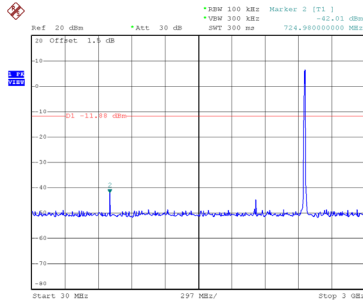


Date: 6.DEC.2019 12:45:10

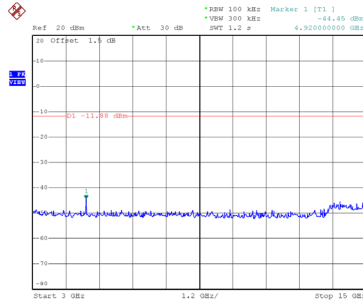


Date: 6.DEC.2019 12:45:18

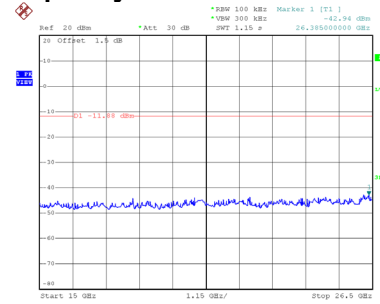
CH11 – 10th Harmonic of the fundamental frequency



Date: 6.DEC.2019 12:46:56



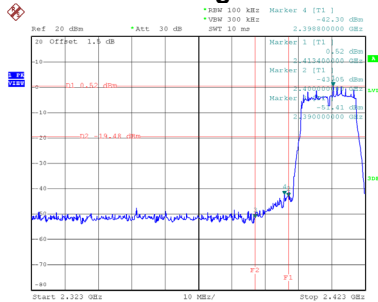
Date: 6.DEC.2019 12:47:05



Date: 6.DEC.2019 12:47:13

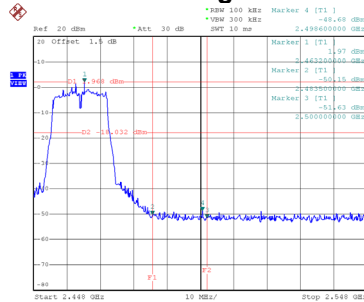
Test Mode TX G Mode

Bandedge CH01



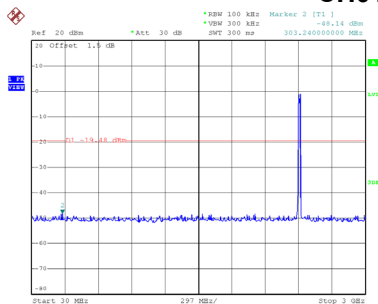
Date: 6.DEC.2019 12:48:45

Bandedge CH11

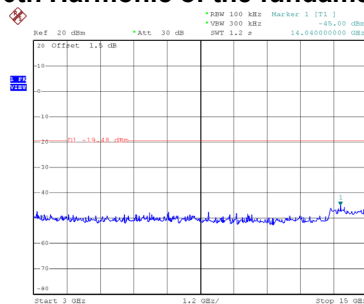


Date: 6.DEC.2019 12:51:42

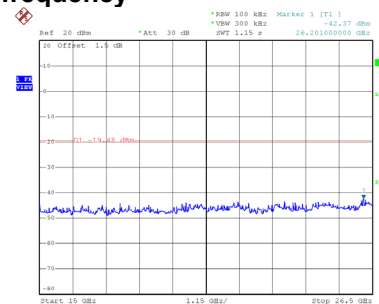
CH01 – 10th Harmonic of the fundamental frequency



Date: 6.DEC.2019 12:48:58

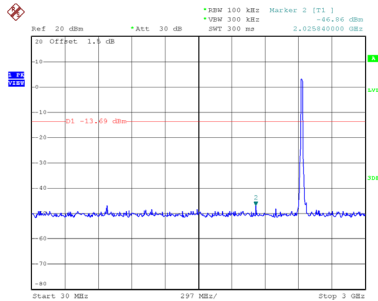


Date: 6.DEC.2019 12:49:07

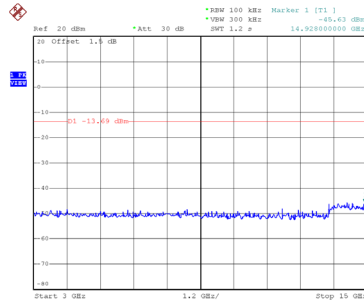


Date: 6.DEC.2019 12:49:15

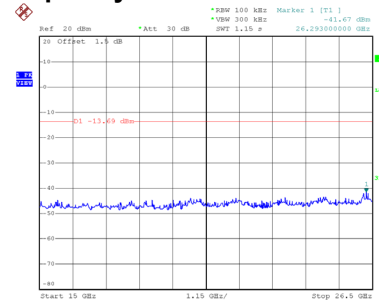
CH06 – 10th Harmonic of the fundamental frequency



Date: 6.DEC.2019 12:50:32

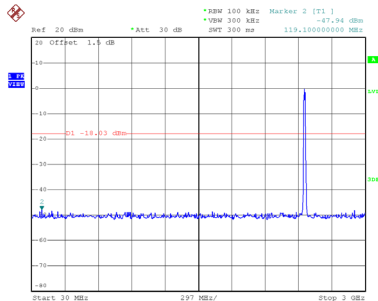


Date: 6.DEC.2019 12:50:41

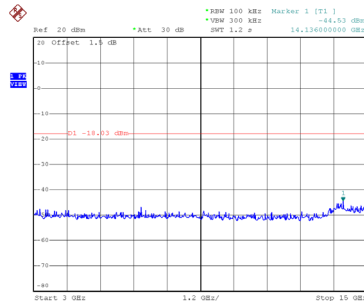


Date: 6.DEC.2019 12:50:49

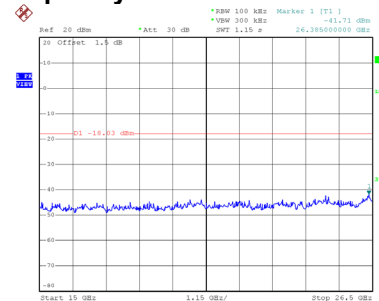
CH11 – 10th Harmonic of the fundamental frequency



Date: 6.DEC.2019 12:51:56



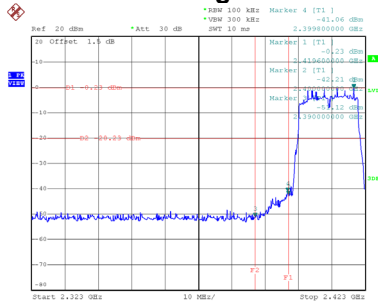
Date: 6.DEC.2019 12:52:04



Date: 6.DEC.2019 12:52:13

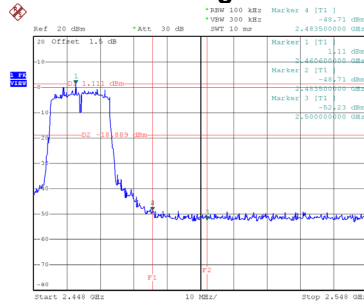
Test Mode TX N-20M Mode

Bandedge CH01



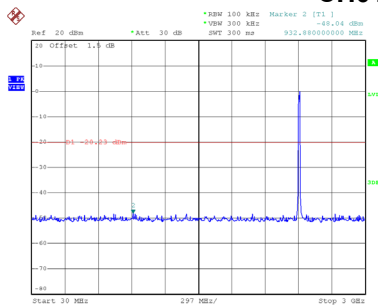
Date: 6.DEC.2019 12:53:19

Bandedge CH11

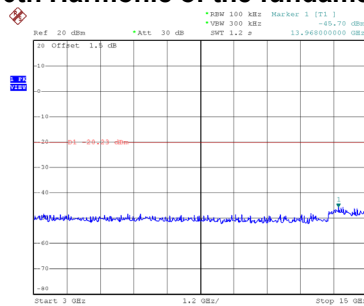


Date: 6.DEC.2019 12:56:10

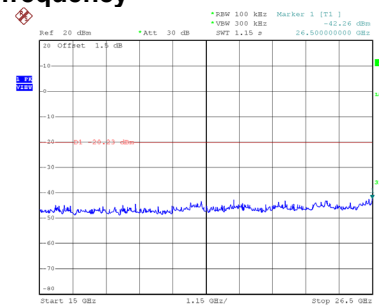
CH01 – 10th Harmonic of the fundamental frequency



Date: 6.DEC.2019 12:53:33

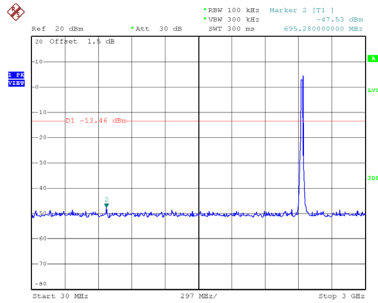


Date: 6.DEC.2019 12:53:42

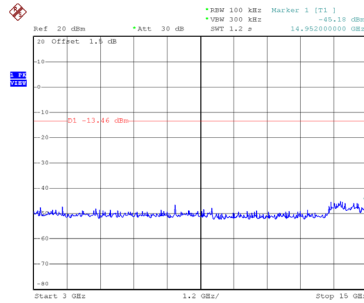


Date: 6.DEC.2019 12:53:50

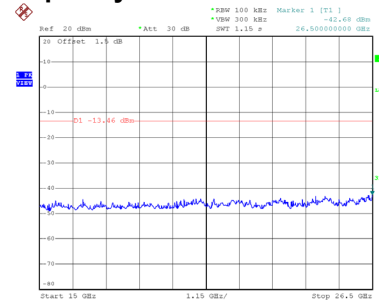
CH06 – 10th Harmonic of the fundamental frequency



Date: 6.DEC.2019 12:55:03

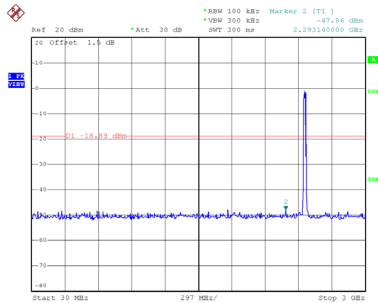


Date: 6.DEC.2019 12:55:12

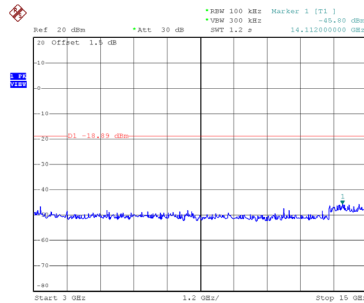


Date: 6.DEC.2019 12:55:21

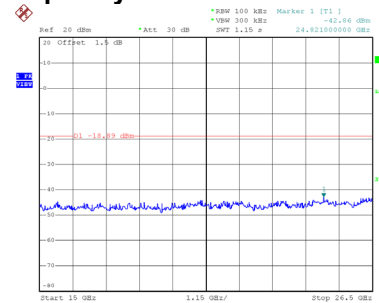
CH11 – 10th Harmonic of the fundamental frequency



Date: 6.DEC.2019 12:56:24



Date: 6.DEC.2019 12:56:32

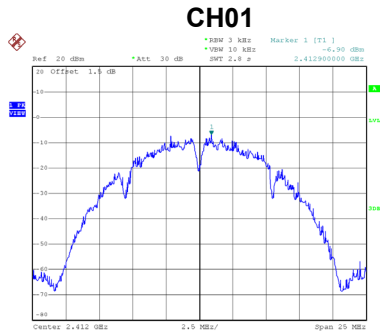


Date: 6.DEC.2019 12:56:41

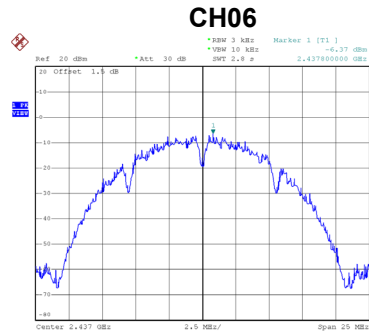
APPENDIX H - POWER SPECTRAL DENSITY

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

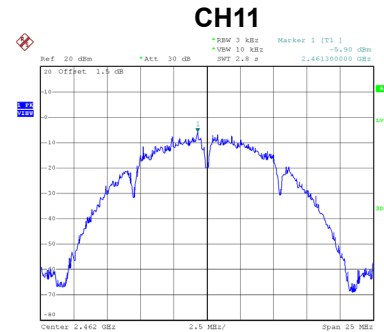
Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
01	2412	-6.90	8	Complies
06	2437	-6.37	8	Complies
11	2462	-5.90	8	Complies



Date: 6.DEC.2019 12:43:03



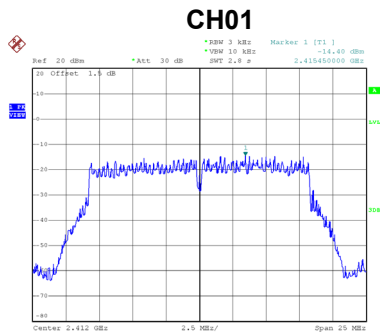
Date: 6.DEC.2019 12:45:28



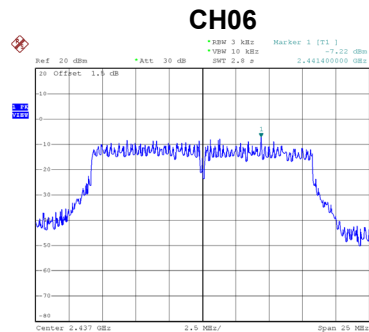
Date: 6.DEC.2019 12:47:22

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

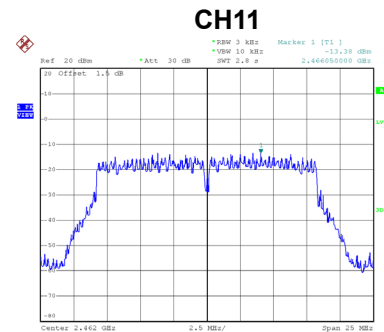
Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
01	2412	-14.40	8	Complies
06	2437	-7.22	8	Complies
11	2462	-13.38	8	Complies



Date: 6.DEC.2019 12:49:25



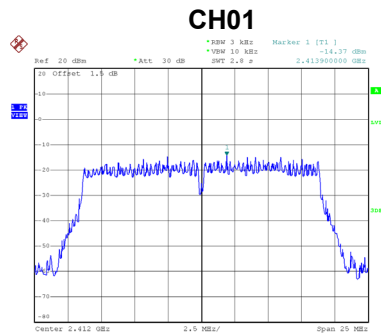
Date: 6.DEC.2019 12:50:59



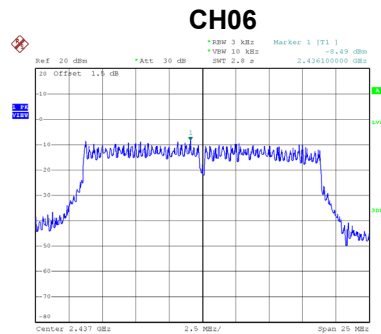
Date: 6.DEC.2019 12:52:22

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

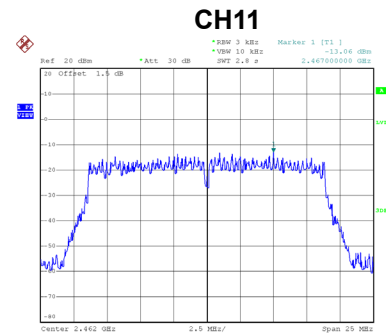
Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
01	2412	-14.37	8	Complies
06	2437	-8.49	8	Complies
11	2462	-13.06	8	Complies



Date: 6.DEC.2019 12:54:00



Date: 6.DEC.2019 12:55:30



Date: 6.DEC.2019 12:56:50

End of Test Report