

# FCC Radio Test Report

## FCC ID: 2AOHHTURBOXC4290

This report concerns: Original Grant

**Project No.** : 2205C022  
**Equipment** : TurboX C4290 SOM  
**Brand Name** : N/A  
**Test Model** : TurboX C4290  
**Series Model** : N/A  
**Applicant** : Thundercomm Technology Co., Ltd  
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**Manufacturer** : Thundercomm Technology Co., Ltd  
**Address** : Building 4, No. 99, Data Valley Middle Road, Xiantao District, Yubei District Chongqing, China  
**Date of Receipt** : May 07, 2022  
**Date of Test** : May 19, 2022 ~ Jun. 13, 2022  
**Issued Date** : Jun. 27, 2022  
**Report Version** : R00  
**Test Sample** : Engineering Sample No.: DG2022051887 for conducted, DG2022051846 for radiated and AC power line conducted emissions.  
**Standard(s)** : FCC CFR Title 47, Part 15, Subpart C  
FCC KDB 558074 D01 15.247 Meas Guidance v05r02  
ANSI C63.10-2013

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

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TESTING CERT #5123.02

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**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.

<b>Table of Contents</b>	<b>Page</b>
<b>REPORT ISSUED HISTORY</b>	<b>6</b>
<b>1 . SUMMARY OF TEST RESULTS</b>	<b>7</b>
1.1 TEST FACILITY	8
1.2 MEASUREMENT UNCERTAINTY	8
1.3 TEST ENVIRONMENT CONDITIONS	9
<b>2 . GENERAL INFORMATION</b>	<b>10</b>
2.1 GENERAL DESCRIPTION OF EUT	10
2.2 DESCRIPTION OF TEST MODES	11
2.3 PARAMETERS OF TEST SOFTWARE	12
2.4 DUTY CYCLE	13
2.5 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	15
2.6 SUPPORT UNITS	15
<b>3 . AC POWER LINE CONDUCTED EMISSIONS</b>	<b>16</b>
3.1 LIMIT	16
3.2 TEST PROCEDURE	16
3.3 DEVIATION FROM TEST STANDARD	16
3.4 TEST SETUP	17
3.5 EUT OPERATION CONDITIONS	17
3.6 TEST RESULTS	17
<b>4 . RADIATED EMISSIONS</b>	<b>18</b>
4.1 LIMIT	18
4.2 TEST PROCEDURE	19
4.3 DEVIATION FROM TEST STANDARD	20
4.4 TEST SETUP	20
4.5 EUT OPERATION CONDITIONS	21
4.6 TEST RESULTS - 9 KHZ TO 30 MHZ	21
4.7 TEST RESULTS - 30 MHZ TO 1000 MHZ	21
4.8 TEST RESULTS - ABOVE 1000 MHZ	21
<b>5 . BANDWIDTH</b>	<b>22</b>
5.1 LIMIT	22
5.2 TEST PROCEDURE	22
5.3 DEVIATION FROM STANDARD	22

<b>Table of Contents</b>	<b>Page</b>
5.4 TEST SETUP	22
5.5 EUT OPERATION CONDITIONS	22
5.6 TEST RESULTS	22
<b>6 . MAXIMUM OUTPUT POWER</b>	<b>23</b>
6.1 LIMIT	23
6.2 TEST PROCEDURE	23
6.3 DEVIATION FROM STANDARD	23
6.4 TEST SETUP	23
6.5 EUT OPERATION CONDITIONS	23
6.6 TEST RESULTS	23
<b>7 . CONDUCTED SPURIOUS EMISSIONS</b>	<b>24</b>
7.1 LIMIT	24
7.2 TEST PROCEDURE	24
7.3 DEVIATION FROM STANDARD	24
7.4 TEST SETUP	24
7.5 EUT OPERATION CONDITIONS	24
7.6 TEST RESULTS	24
<b>8 . POWER SPECTRAL DENSITY</b>	<b>25</b>
8.1 LIMIT	25
8.2 TEST PROCEDURE	25
8.3 DEVIATION FROM STANDARD	25
8.4 TEST SETUP	25
8.5 EUT OPERATION CONDITIONS	25
8.6 TEST RESULTS	25
<b>9 . MEASUREMENT INSTRUMENTS LIST</b>	<b>26</b>
<b>10 . EUT TEST PHOTO</b>	<b>28</b>
<b>APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS</b>	<b>32</b>
<b>APPENDIX B - RADIATED EMISSION - 9 KHZ TO 30 MHZ</b>	<b>35</b>
<b>APPENDIX C - RADIATED EMISSION - 30 MHZ TO 1000 MHZ</b>	<b>40</b>
<b>APPENDIX D - RADIATED EMISSION- ABOVE 1000 MHZ</b>	<b>43</b>
<b>APPENDIX E - BANDWIDTH</b>	<b>68</b>
<b>APPENDIX F - MAXIMUM OUTPUT POWER</b>	<b>73</b>

**Table of Contents****Page****APPENDIX G - CONDUCTED SPURIOUS EMISSIONS****75****APPENDIX H - POWER SPECTRAL DENSITY****80**

**REPORT ISSUED HISTORY**

Report No.	Version	Description	Issued Date	Note
BTL-FCCP-3-2205C022	R00	Original Report	Jun. 27, 2022	Valid

## 1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC CFR Title 47, Part 15, Subpart C				
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 Rd. Shixia, Dalang Town Dongguan City, Guangdong 523792 People's Republic of China.

BTL's 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	U,(dB)
DG-CB01	CISPR	9kHz ~ 30MHz	2.36

Test Site	Method	Measurement Frequency Range	Ant. H / V	U,(dB)
DG-CB03 (3m)	CISPR	30MHz ~ 200MHz	V	4.36
		30MHz ~ 200MHz	H	3.32
		200MHz ~ 1,000MHz	V	4.08
		200MHz ~ 1,000MHz	H	3.96

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-CB03 (3m)	CISPR	1GHz ~ 6GHz	3.80
		6GHz ~ 18GHz	4.82

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-CB03 (1m)	CISPR	18 ~ 26.5 GHz	3.62
		26.5 ~ 40 GHz	4.00



## C. Other Measurement:

Test Item	Uncertainty
Bandwidth	±3.8 %
Maximum Output Power	±0.95 dB
Conducted Spurious Emission	±2.71 dB
Power Spectral Density	±0.86 dB
Temperature	±0.08 °C
Humidity	±1.5%

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	26°C	58%	AC 120V/60Hz	Jeter Wang
Radiated Emissions-9kHz to 30 MHz	24°C	58%	DC 3.8V	Rod Tang
Radiated Emissions-30MHz to 1000MHz	26°C	58%	DC 3.8V	Eli Chen
Radiated Emissions-Above 1000MHz	22°C~23°C	50%~51%	DC 3.8V	Eli Chen
Bandwidth	24°C	55%	DC 3.8V	Kwok Guo
Maximum Output Power	22.5°C~24.5	57.6%~65.8	DC 3.8V	Complex Qin
Conducted Spurious Emissions	24°C	55%	DC 3.8V	Kwok Guo
Power Spectral Density	24°C	55%	DC 3.8V	Kwok Guo

## 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

Equipment	TurboX C4290 SOM
Brand Name	N/A
Test Model	TurboX C4290
Series Model	N/A
Model Difference(s)	N/A
Software Version	FlatBuild_Turbox-CM4290_c4290_32go_la1.0.1.D.userdebug.20220430.0337
Hardware Version	V01
Power Source	DC voltage supplied from external power supply.
Power Rating	Input: DC 3.8~4.2V
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 150 Mbps
Maximum Output Power	IEEE 802.11b: 18.39 dBm (0.0690 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) CH03 - CH09 for IEEE 802.11n(HT40)							
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	P/N	Antenna Type	Connector	Gain (dBi)
1	<b>molex</b>	1461531100	FPC	N/A	3.0

Note: The antenna gain is provided by the manufacturer.

## 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(HT20) Mode Channel 01/06/11
Mode 4	TX N(HT40) Mode Channel 03/06/09
Mode 5	TX B Mode Channel 11

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

<b>AC power line conducted emissions test</b>	
Final Test Mode	Description
Mode 5	TX B Mode Channel 11

<b>Radiated emissions test - Below 1GHz</b>	
Final Test Mode	Description
Mode 5	TX B Mode Channel 11

<b>Radiated emissions test- Above 1GHz</b>	
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(HT20) Mode Channel 01/06/11
Mode 4	TX N(HT40) Mode Channel 03/06/09

<b>Conducted test</b>	
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(HT20) Mode Channel 01/06/11
Mode 4	TX N(HT40) Mode Channel 03/06/09

**NOTE:**

- (1) All the bit rate of transmitter have been tested and found the lowest rate is found to be the worst case and recorded.
- (2) For AC power line conducted emissions and radiated emission below 1 GHz test, the TX B Mode Channel 11 is found to be the worst case and recorded.
- (3) For radiated emission above 1 GHz test, the spurious points of 1GHz~26.5GHz have been pre-tested and in this report only recorded the worst case. The remaining spurious points are all below the limit value of 20dB.
- (4) For radiated emission above 1 GHz test: The polarization of vertical and horizontal are evaluated, the worst case is horizontal and recorded.

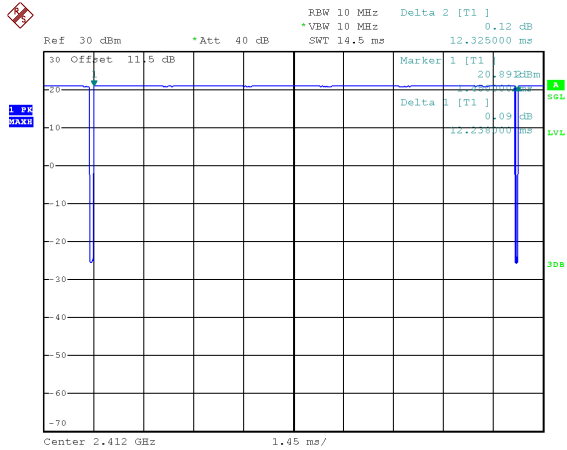
**2.3 PARAMETERS OF TEST SOFTWARE**

Test Software Version	QRCT5		
Frequency (MHz)	2412	2437	2462
IEEE 802.11b	17.5	18	17.5
IEEE 802.11g	15.5	16.5	15.5
IEEE 802.11n(HT20)	16	17	15.5
Frequency (MHz)	2422	2437	2452
IEEE 802.11n(HT40)	14	16	14

## 2.4 DUTY CYCLE

If duty cycle is  $\geq 98\%$ , duty factor is not required.  
 If duty cycle is  $< 98\%$ , duty factor shall be considered.  
 The output power = measured power + duty factor.

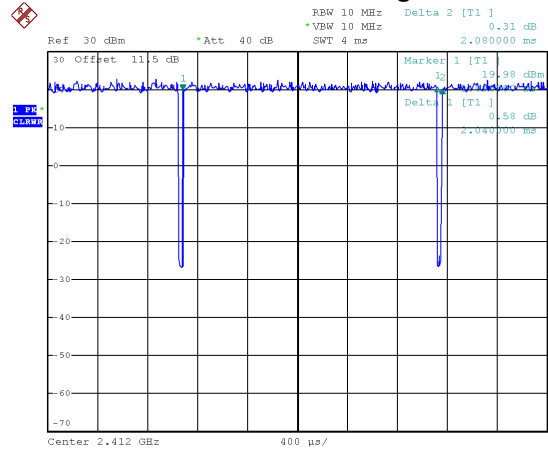
**IEEE 802.11b**



Date: 26.MAY.2022 16:50:36

Duty cycle =  $12.238 \text{ ms} / 12.325 \text{ ms} = 99.29\%$   
 Duty Factor =  $10 \log(1/\text{Duty cycle}) = 0.00$

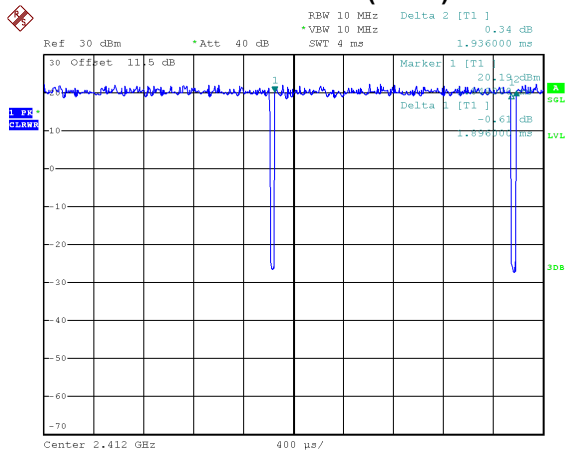
**IEEE 802.11g**



Date: 26.MAY.2022 16:51:04

Duty cycle =  $2.040 \text{ ms} / 2.080 \text{ ms} = 98.08\%$   
 Duty Factor =  $10 \log(1/\text{Duty cycle}) = 0.00$

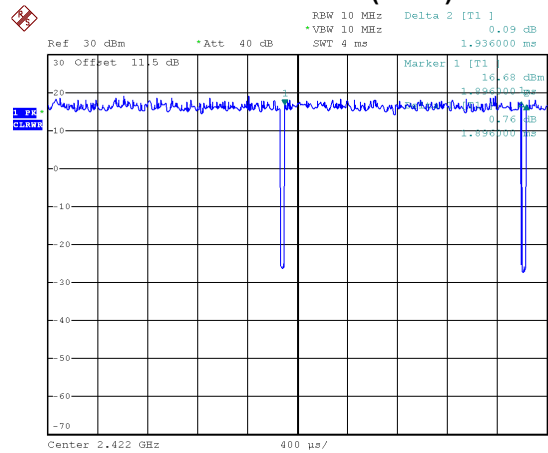
**IEEE 802.11n(HT20)**



Date: 26.MAY.2022 16:51:20

Duty cycle =  $1.896 \text{ ms} / 1.936 \text{ ms} = 97.93\%$   
 Duty Factor =  $10 \log(1/\text{Duty cycle}) = 0.09$

**IEEE 802.11n(HT40)**



Date: 26.MAY.2022 16:51:40

Duty cycle =  $1.896 \text{ ms} / 1.936 \text{ ms} = 97.93\%$   
 Duty Factor =  $10 \log(1/\text{Duty cycle}) = 0.09$

**NOTE:**

For IEEE 802.11b:

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.

For IEEE 802.11g:

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.

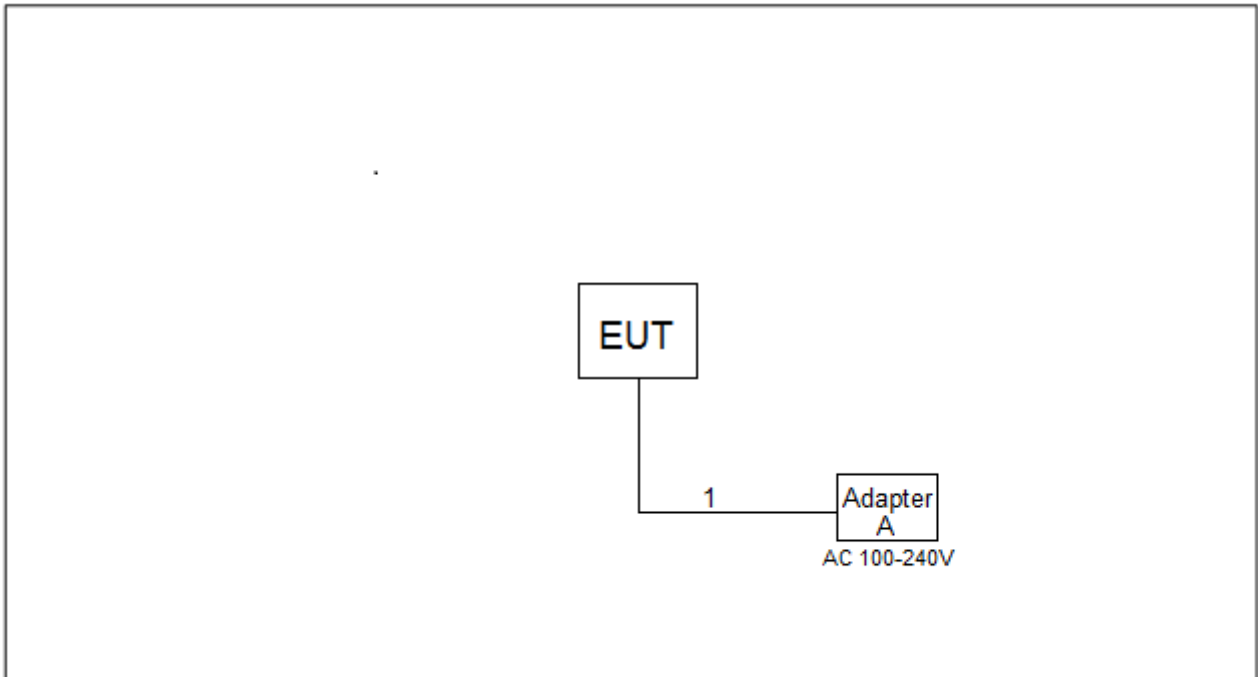
For IEEE 802.11n(HT20):

For radiated emissions frequency above 1 GHz, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 527 Hz.

For IEEE 802.11n(HT40):

For radiated emissions frequency above 1 GHz, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 527 Hz.

## 2.5 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



## 2.6 SUPPORT UNITS

Item	Equipment	Brand	Model No.	Series No.
A	Adapter	N/A	N/A	N/A

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

### 3. AC POWER LINE CONDUCTED EMISSIONS

#### 3.1 LIMIT

Frequency of Emission (MHz)	Limit (dB $\mu$ 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.

#### 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.

The following table is the setting of the receiver:

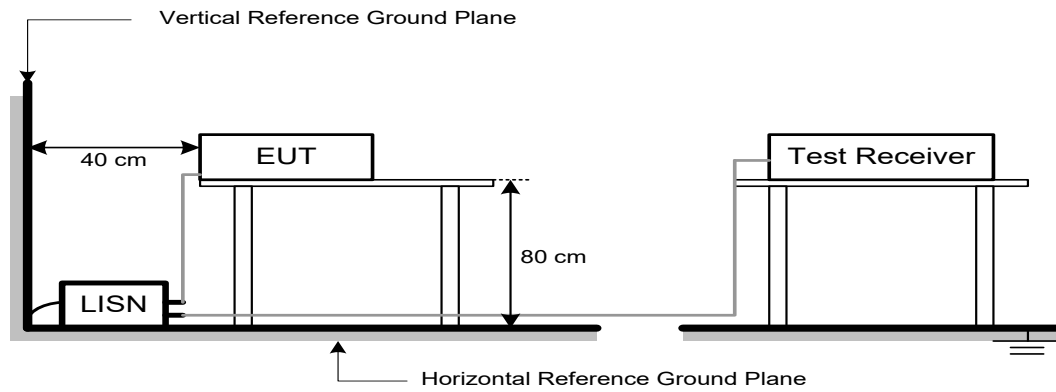
Receiver Parameters	Setting
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

#### 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

### 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 CFR Title 47, Part 15, Subpart C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

## 4.2 TEST PROCEDURE

- a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1 GHz)
- b. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(above 1 GHz)
- c. The height of the equipment or of the substitution antenna shall be 0.8m or 1.5m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
- e. The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.
- f. The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- g. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform. (below 1 GHz)
- h. All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn't perform. (above 1 GHz)
- i. For the actual test configuration, please refer to the related Item -EUT Test Photos.

The following table is the setting of the receiver:

Spectrum Parameters	Setting
Start ~ Stop Frequency	9 kHz~150 kHz for RBW 200 Hz
Start ~ Stop Frequency	0.15 MHz~30 MHz for RBW 9 kHz
Start ~ Stop Frequency	30 MHz~1000 MHz for RBW 100 kHz

Spectrum Parameters	Setting
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW (Emission in restricted band)	1 MHz / 3 MHz for PK value 1 MHz / 1/T Hz for AVG value

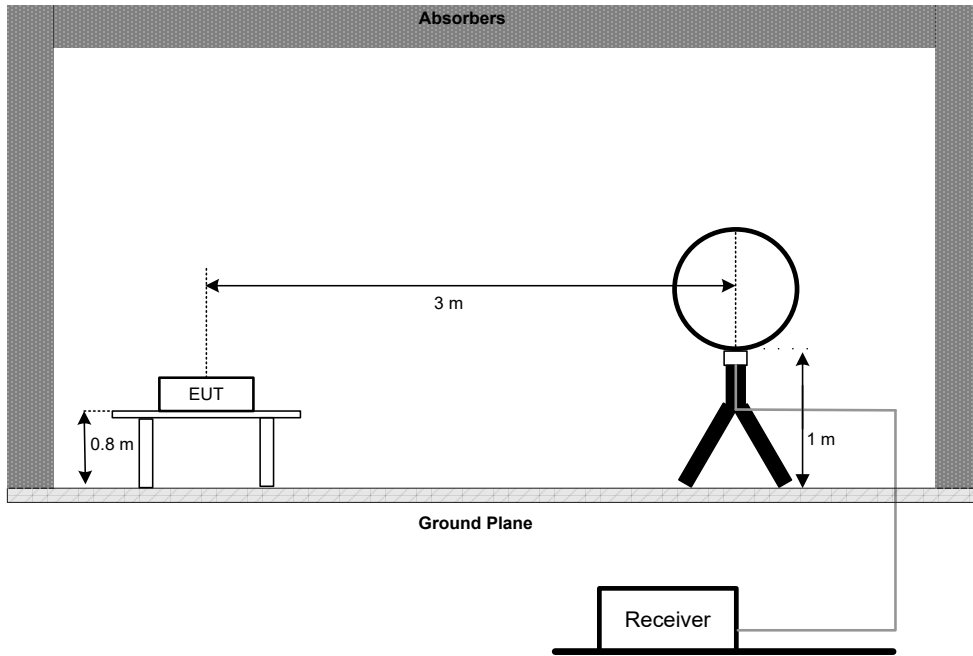
Receiver Parameters	Setting
Start ~ Stop Frequency	9 kHz~90 kHz for PK/AVG detector
Start ~ Stop Frequency	90 kHz~110 kHz for QP detector
Start ~ Stop Frequency	110 kHz~490 kHz for PK/AVG detector
Start ~ Stop Frequency	490 kHz~30 MHz for QP detector
Start ~ Stop Frequency	30 MHz~1000 MHz for QP detector
Start ~ Stop Frequency	1 GHz~26.5 GHz for PK/AVG detector

**4.3 DEVIATION FROM TEST STANDARD**

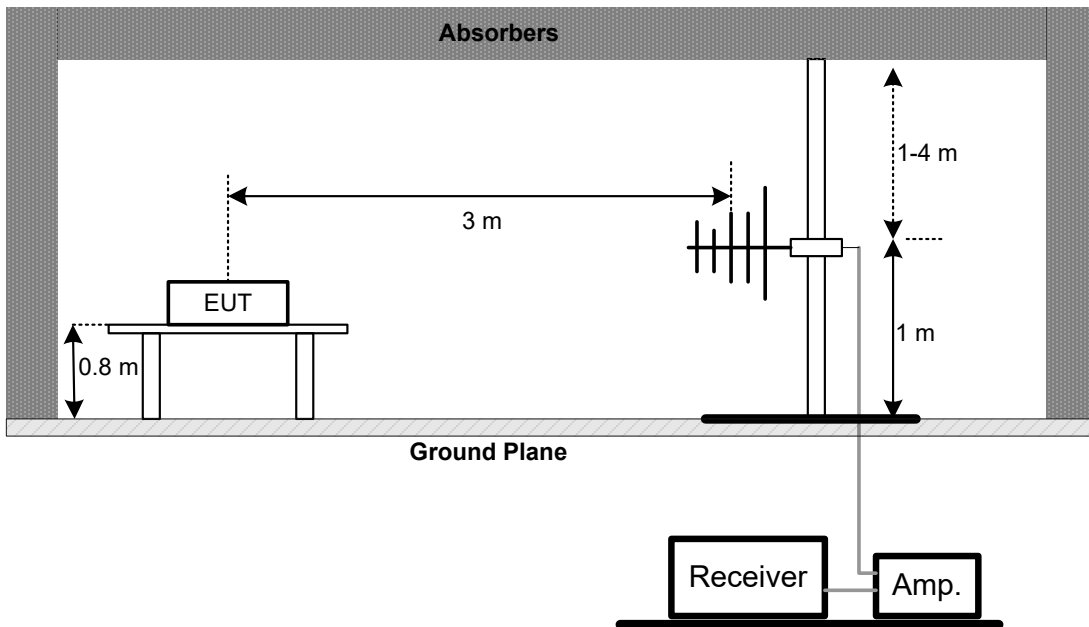
No deviation.

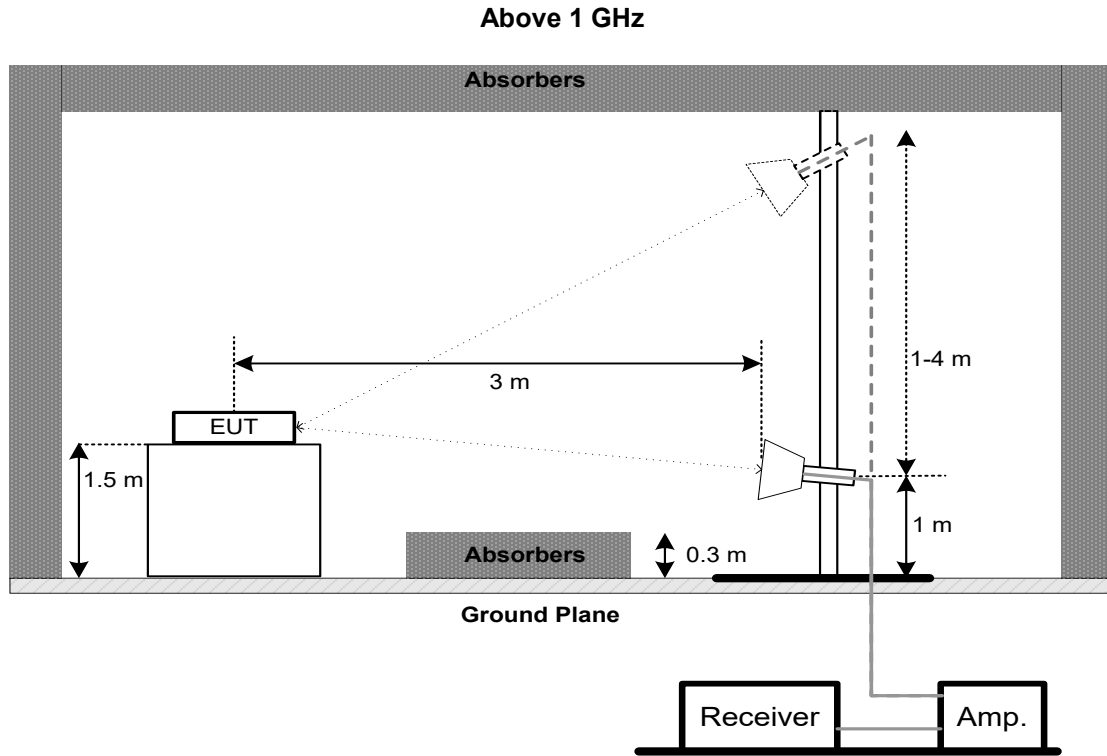
**4.4 TEST SETUP**

**9 kHz to 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

### 5.1 LIMIT

Section	Test Item	Limit
FCC 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.
- The following table is the setting of the spectrum analyzer:

For 6 dB Bandwidth:

Spectrum Parameters	Setting
Span Frequency	> Measurement Bandwidth
RBW	100 kHz
VBW	300 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

For 99% Emission Bandwidth:

Spectrum Parameters	Setting
Span Frequency	Between 1.5 times and 5.0 times the OBW
RBW	300 kHz For 20MHz 1 MHz For 40MHz
VBW	1 MHz For 20MHz 3 MHz For 40MHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

### 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

### 6.1 LIMIT

Section	Test Item	Limit
FCC 15.247(b)(3)	Maximum Output Power	1.0000 Watt or 30.00 dBm

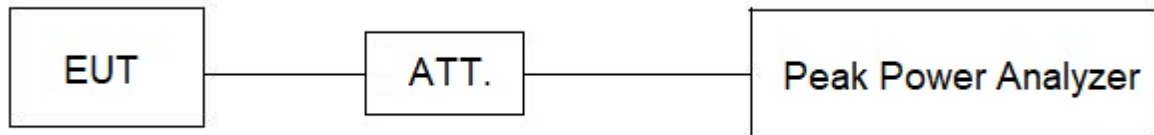
### 6.2 TEST PROCEDURE

- The EUT was directly connected to the peak power analyzer and antenna output port as show in the block diagram below.
- The maximum conducted output power was performed in accordance with method 11.9.2.3.1 of ANSI C63.10-2013.

### 6.3 DEVIATION FROM STANDARD

No deviation.

### 6.4 TEST SETUP



### 6.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

### 6.6 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. The following table is the setting of the spectrum analyzer:

Spectrum Parameters	Setting
Start Frequency	30 MHz
Stop Frequency	26.5 GHz
RBW	100 kHz
VBW	300 kHz
Detector	Peak
Trace	Max Hold
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

### 8.1 LIMIT

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

### 8.2 TEST PROCEDURE

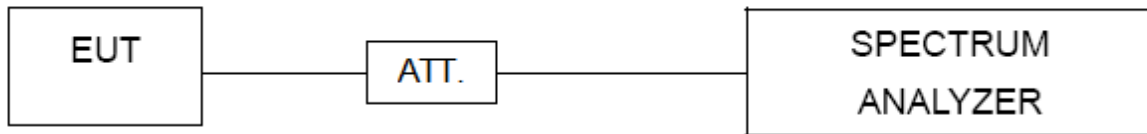
- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- b. The following table is the setting of the spectrum analyzer:

Spectrum Parameters	Setting
Span Frequency	25 MHz (20 MHz) / 60 MHz (40 MHz)
RBW	3 kHz
VBW	10 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

### 8.3 DEVIATION FROM STANDARD

No deviation.

### 8.4 TEST SETUP



### 8.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

### 8.6 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	Jan. 22, 2023
2	LISN	EMCO	3816/2	52765	Jan. 23, 2023
3	TWO-LINE V-NETWORK	R&S	ENV216	101447	Jan. 23, 2023
4	50Ω Terminator	SHX	TF5-3	15041305	N/A
5	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
6	Cable	N/A	RG223	12m	Mar. 08, 2023
7	643 Shield Room	ETS	6*4*3	N/A	N/A

Radiated Emissions - 9 kHz to 30 MHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	MXE EMI Receiver	Keysight	N9038A	MY56400091	Jan. 22, 2023
2*	Active Loop Antenna	R&S	HFH2-Z2	830749/020	Aug. 23, 2024
3	Cable	N/A	RG 213/U(9kHz~1GHz)	N/A	Jul. 09, 2022
4	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
5	966 Chamber Room	ETS	9*6*6	N/A	Jul. 17, 2022

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. 03, 2023
2	Amplifier	HP	8447D	2944A08742	Jan. 22, 2023
3	Cable	emci	LMR-400	N/A	Nov. 30, 2022
4	Controller	CT	SC100	N/A	N/A
5	Controller	MF	MF-7802	MF780208416	N/A
6	Receiver	Agilent	N9038A	MY52130039	Jan. 22, 2023
7	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
8	966 Chamber Room	RM	9*6*6	N/A	Jul. 24, 2022

Radiated Emissions - Above 1 GHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Double Ridged Horn Antenna	ARA	DRG-118A	16554	Apr. 18, 2023
2	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Jun. 30, 2022
3	Amplifier	Agilent	8449B	3008A02584	Jul. 10, 2022
4	Controller	CT	SC100	N/A	N/A
5	Controller	MF	MF-7802	MF780208416	N/A
6	Receiver	Agilent	N9038A	MY52130039	Jan. 22, 2023
7	EXA Spectrum Analyzer	Keysight	N9010A	MY56480488	Jan. 22, 2023
8	Low Noise Amplifier	CONNPHY	CLN-18G40G-4330-K	619413	Jul. 16, 2022
9	Cable	Talent microwave	A81-SMAMSMAM-12.5M	N/A	Oct. 15, 2022
10	Cable	Talent microwave	A40-2.92M2.92M-2.5M	N/A	Nov. 30, 2022
11	Filter	STI	STI15-9912	N/A	Jul. 10, 2022
12	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
13	966 Chamber Room	RM	9*6*6	N/A	Jul. 24, 2022

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	Jul. 10, 2022
2	Attenuator	WOKEN	6SM3502	VAS1214NL	N/A
3	RF Cable	Tongkaichuan	N/A	N/A	N/A
4	DC Block	Mini	N/A	N/A	N/A

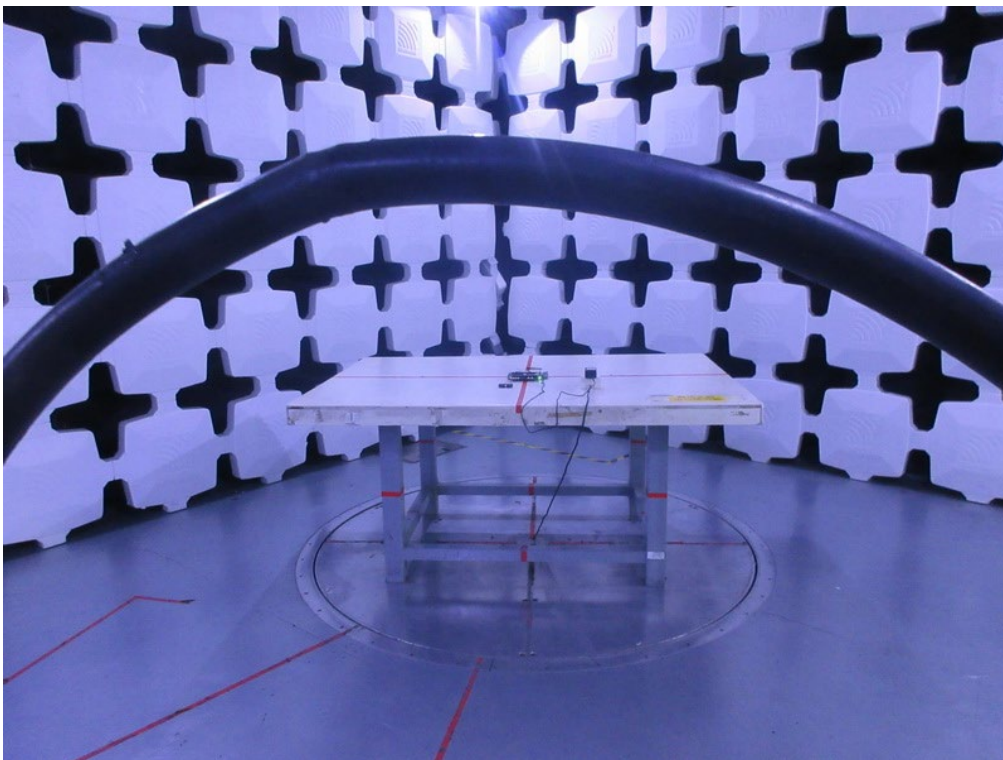
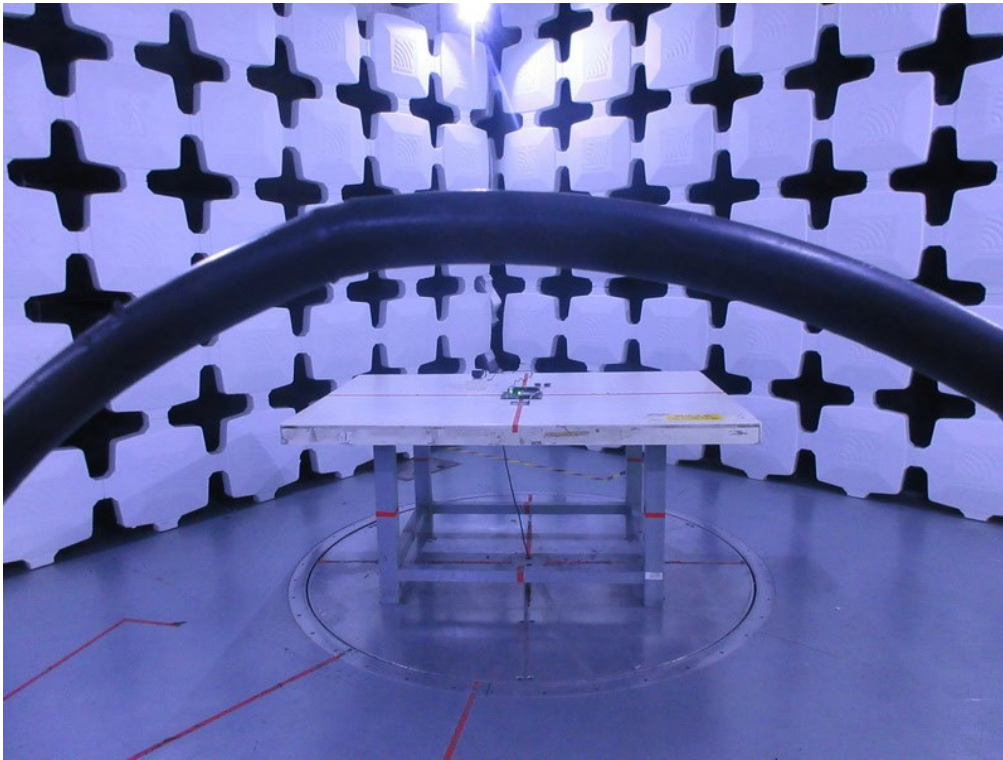
Maximum Output Power					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Peak Power Analyzer	Keysight	8990B	MY51000506	Jul. 10, 2022
2	Wideband power sensor	Keysight	N1923A	MY58310004	Jul. 10, 2022
3	Attenuator	WOKEN	6SM3502	VAS1214NL	N/A
4	RF Cable	Tongkaichuan	N/A	N/A	N/A

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

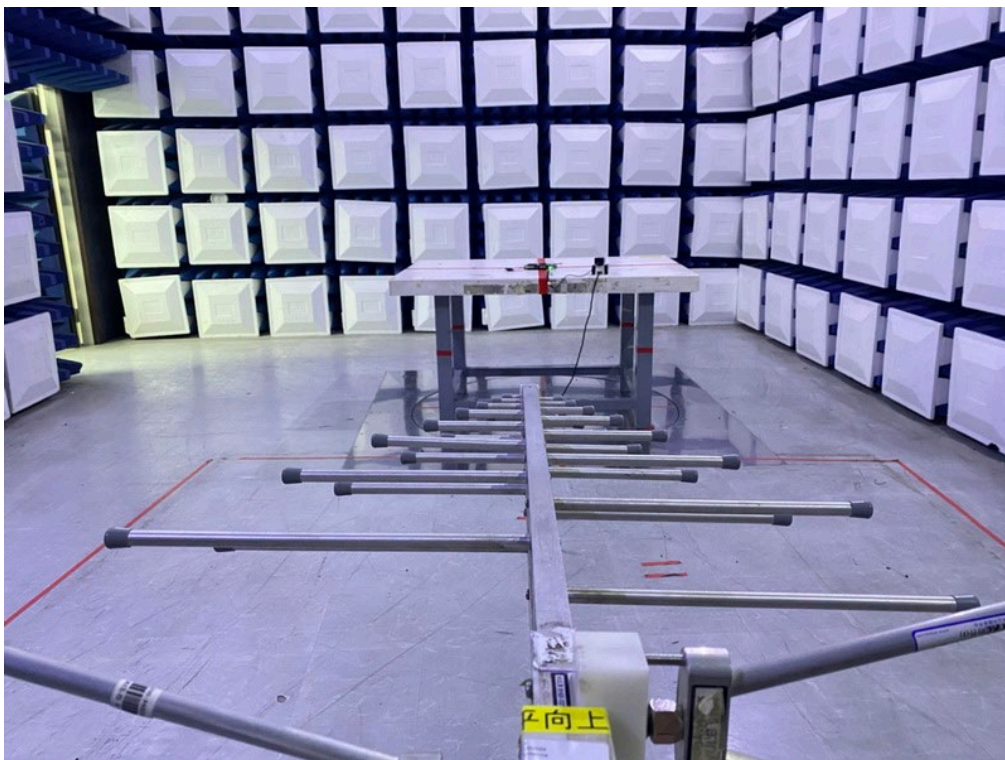
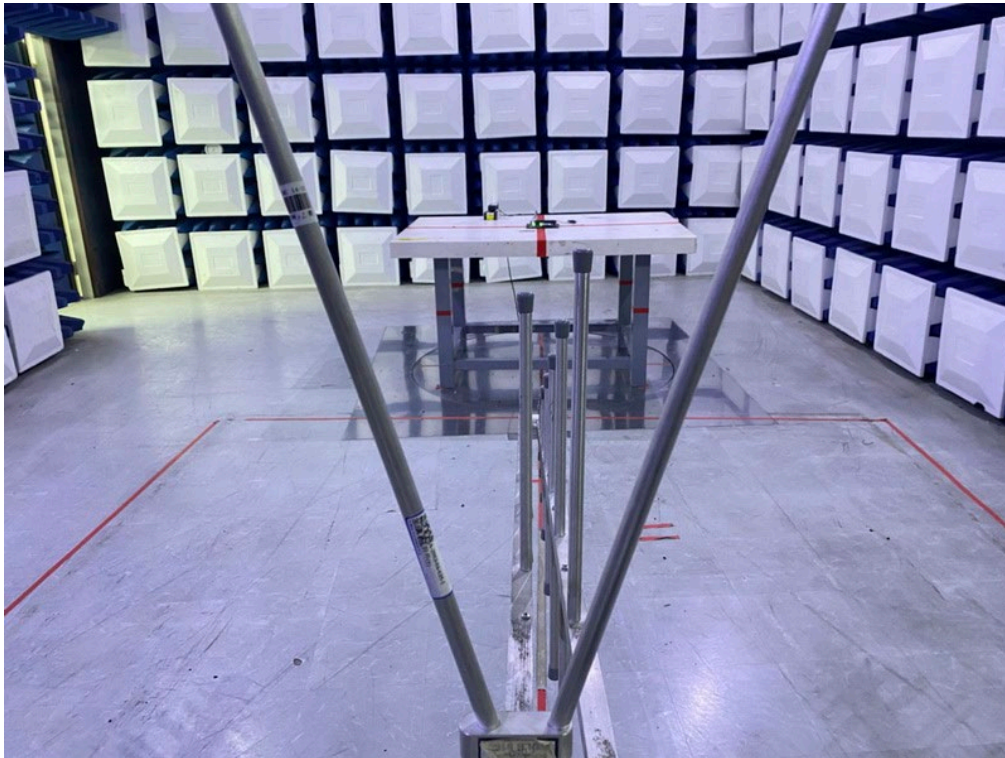
"\*\*" calibration period of equipment list is three year.

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

**10. EUT TEST PHOTO****AC Power Line Conducted Emissions Test Photos**

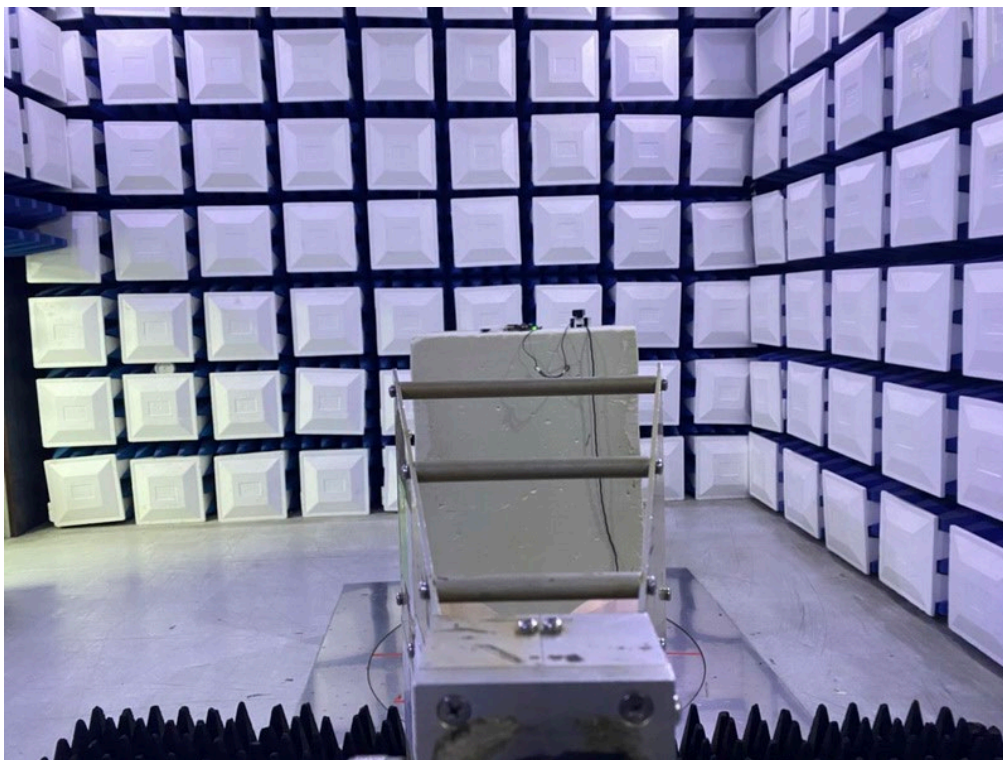
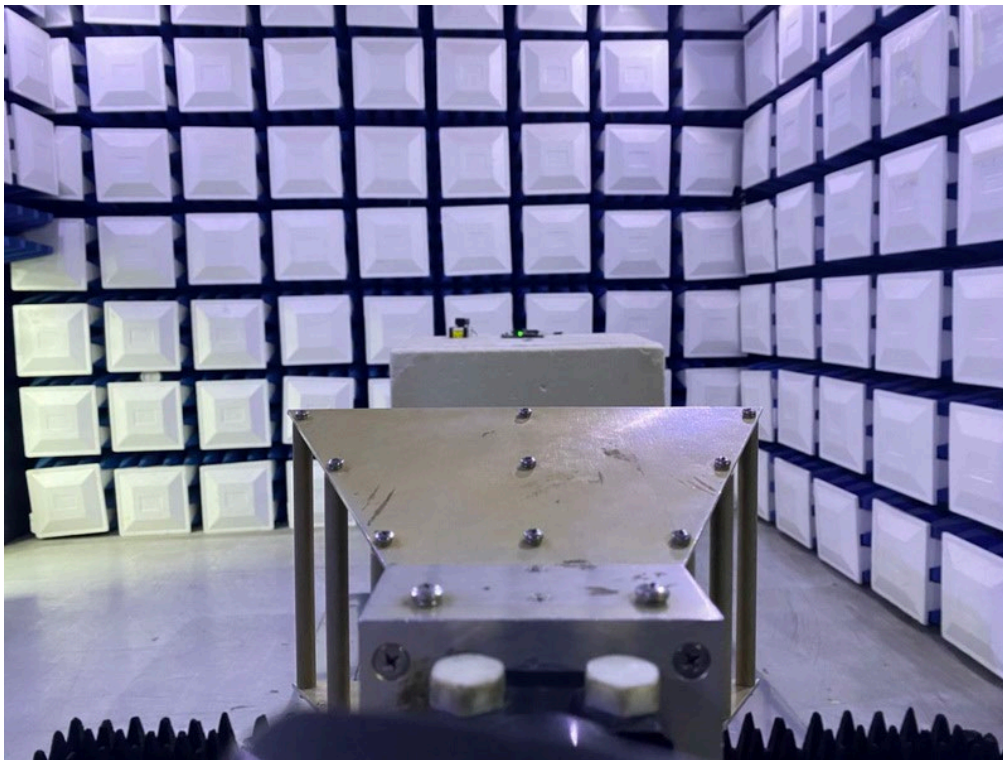
**Radiated Emissions Test Photos****9 kHz to 30 MHz**



**Radiated Emissions Test Photos****30 MHz to 1 GHz**

**Radiated Emissions Test Photos**

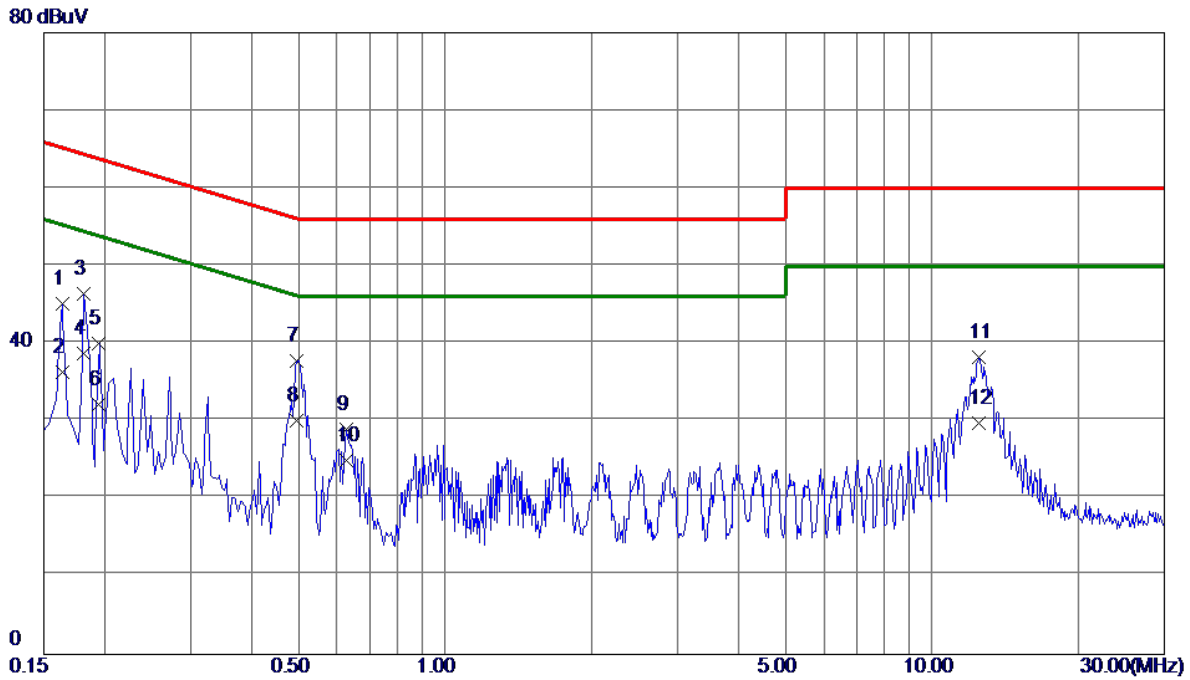
**Above 1 GHz**



## **APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS**



Test Mode	TX B Mode Channel 11	Phase	Line
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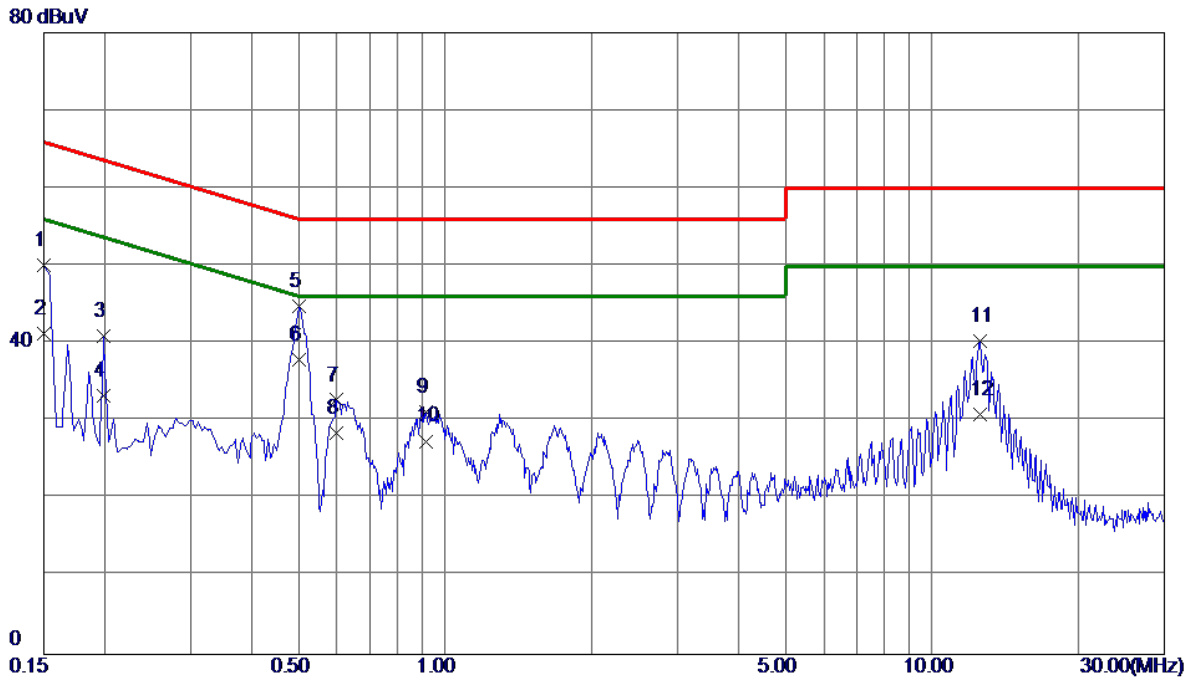


No.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	0.1635	35.49	9.67	45.16	65.28	-20.12	QP	
2	0.1635	26.70	9.67	36.37	55.28	-18.91	AVG	
3	0.1815	36.77	9.68	46.45	64.42	-17.97	QP	
4 *	0.1815	29.09	9.68	38.77	54.42	-15.65	AVG	
5	0.1949	30.31	9.69	40.00	63.83	-23.83	QP	
6	0.1949	22.40	9.69	32.09	53.83	-21.74	AVG	
7	0.4965	28.05	9.76	37.81	56.06	-18.25	QP	
8	0.4965	20.30	9.76	30.06	46.06	-16.00	AVG	
9	0.6270	19.23	9.79	29.02	56.00	-26.98	QP	
10	0.6270	15.10	9.79	24.89	46.00	-21.11	AVG	
11	12.4575	27.71	10.54	38.25	60.00	-21.75	QP	
12	12.4575	19.19	10.54	29.73	50.00	-20.27	AVG	

**REMARKS:**

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

Test Mode	TX B Mode Channel 11	Phase	Neutral
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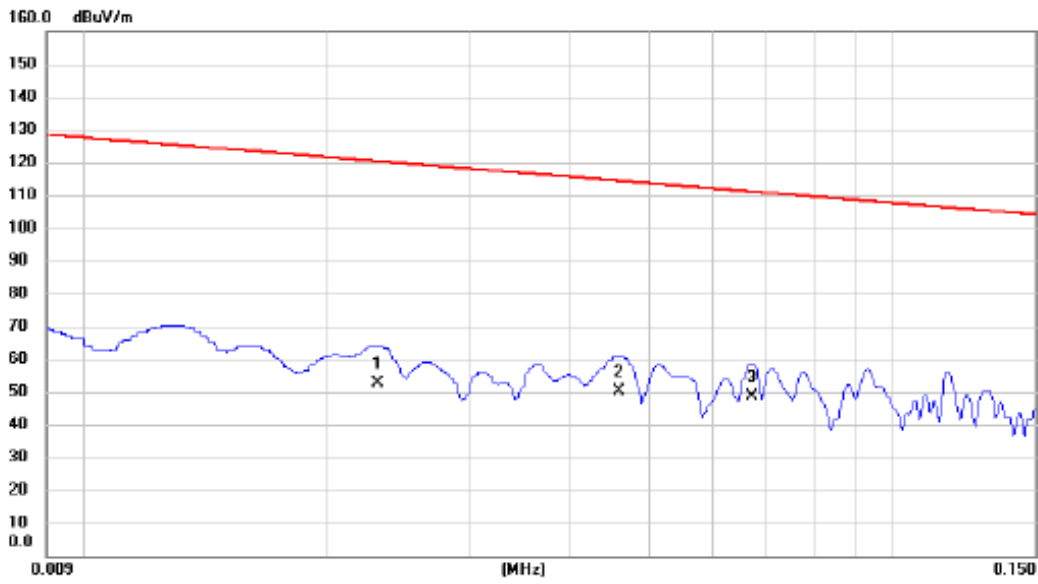
No.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	0.1500	40.33	9.70	50.03	66.00	-15.97	QP	
2	0.1500	31.61	9.70	41.31	56.00	-14.69	AVG	
3	0.1995	31.16	9.73	40.89	63.63	-22.74	QP	
4	0.1995	23.50	9.73	33.23	53.63	-20.40	AVG	
5	0.5010	34.96	9.79	44.75	56.00	-11.25	QP	
6 *	0.5010	28.10	9.79	37.89	46.00	-8.11	AVG	
7	0.6000	22.90	9.82	32.72	56.00	-23.28	QP	
8	0.6000	18.70	9.82	28.52	46.00	-17.48	AVG	
9	0.9150	21.42	9.84	31.26	56.00	-24.74	QP	
10	0.9150	17.60	9.84	27.44	46.00	-18.56	AVG	
11	12.5475	29.79	10.56	40.35	60.00	-19.65	QP	
12	12.5475	20.30	10.56	30.86	50.00	-19.14	AVG	

**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 B Mode Channel 11	Polarization	Ant 0°
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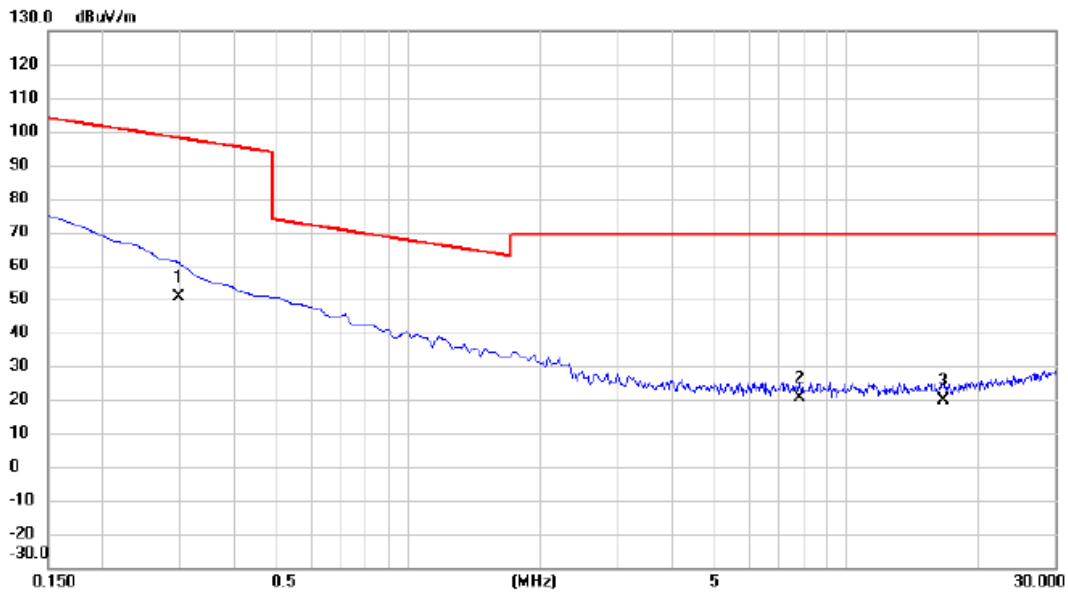
No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measurement dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	0.0231	38.52	14.22	52.74	120.33	-67.59	AVG	
2	0.0460	36.54	13.69	50.23	114.35	-64.12	AVG	
3 *	0.0670	35.17	13.61	48.78	111.08	-62.30	AVG	

**REMARKS:**

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

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

Test Mode	TX B Mode Channel 11	Polarization	Ant 0°
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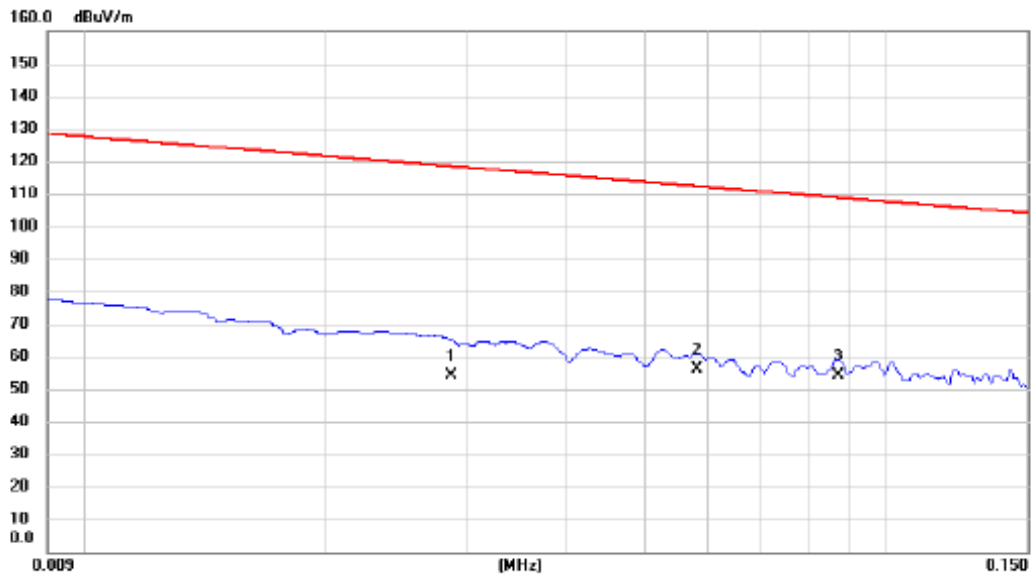
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Antenna Height cm	Table Degree	Comment
1	*	0.2993	36.95	13.84	50.79	98.08	-47.29	AVG			
2		7.8214	8.03	12.41	20.44	69.54	-49.10	QP			
3		16.6272	7.46	12.47	19.93	69.54	-49.61	QP			

**REMARKS:**

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

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

Test Mode	TX B Mode Channel 11	Polarization	Ant 90°
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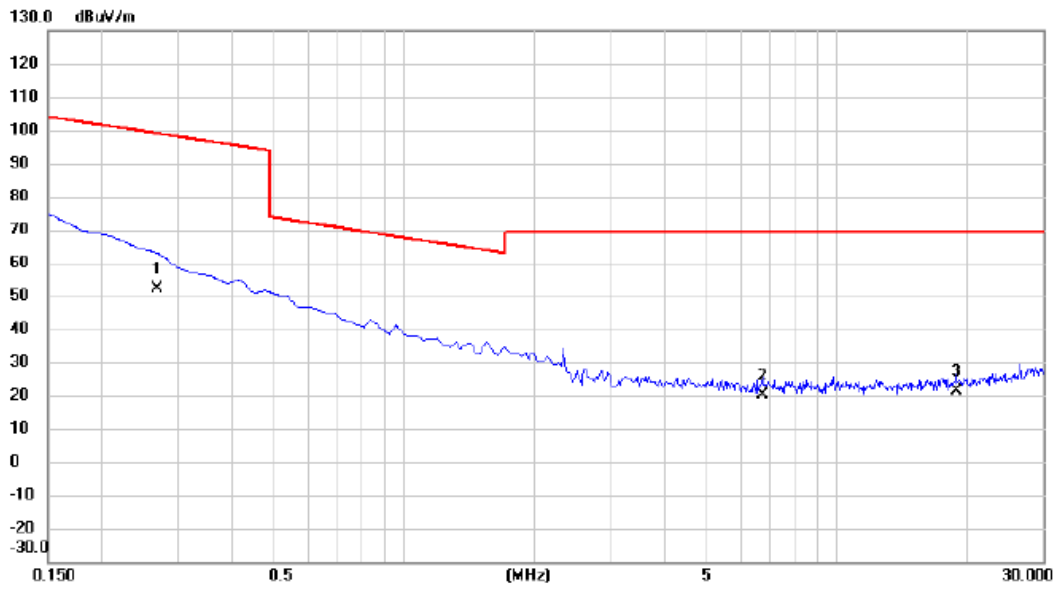


No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measurement dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	0.0287	40.21	14.09	54.30	118.45	-64.15	AVG	
2	0.0581	42.51	13.60	56.11	112.32	-56.21	AVG	
3 *	0.0871	40.73	13.64	54.37	108.80	-54.43	AVG	

**REMARKS:**

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

Test Mode	TX B Mode Channel 11	Polarization	Ant 90°
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No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Antenna Height cm	Table Degree	Comment
1	*	0.2694	38.54	13.85	52.39	99.00	-46.61	AVG			
2		6.7170	7.69	12.39	20.08	69.54	-49.46	QP			
3		18.8660	8.52	12.88	21.40	69.54	-48.14	QP			

REMARKS:

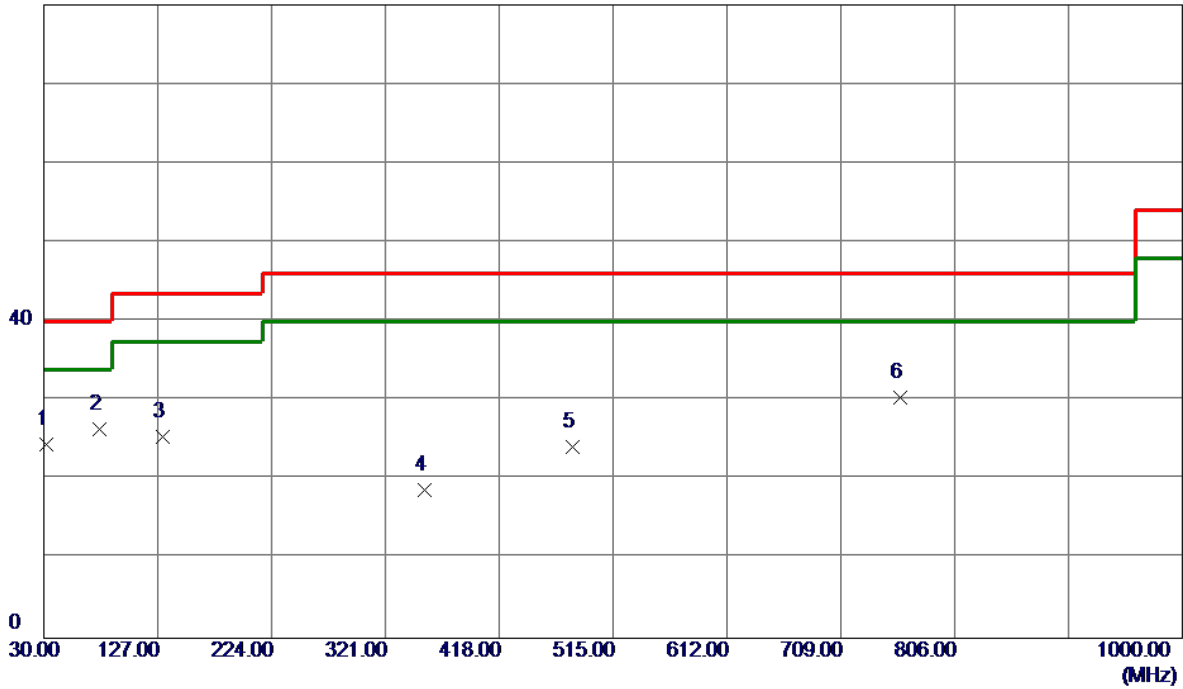
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

**APPENDIX C - RADIATED EMISSION - 30 MHZ TO 1000 MHZ**



Test Mode	TX B Mode Channel 11	Polarization	Vertical
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80 dBuV/m

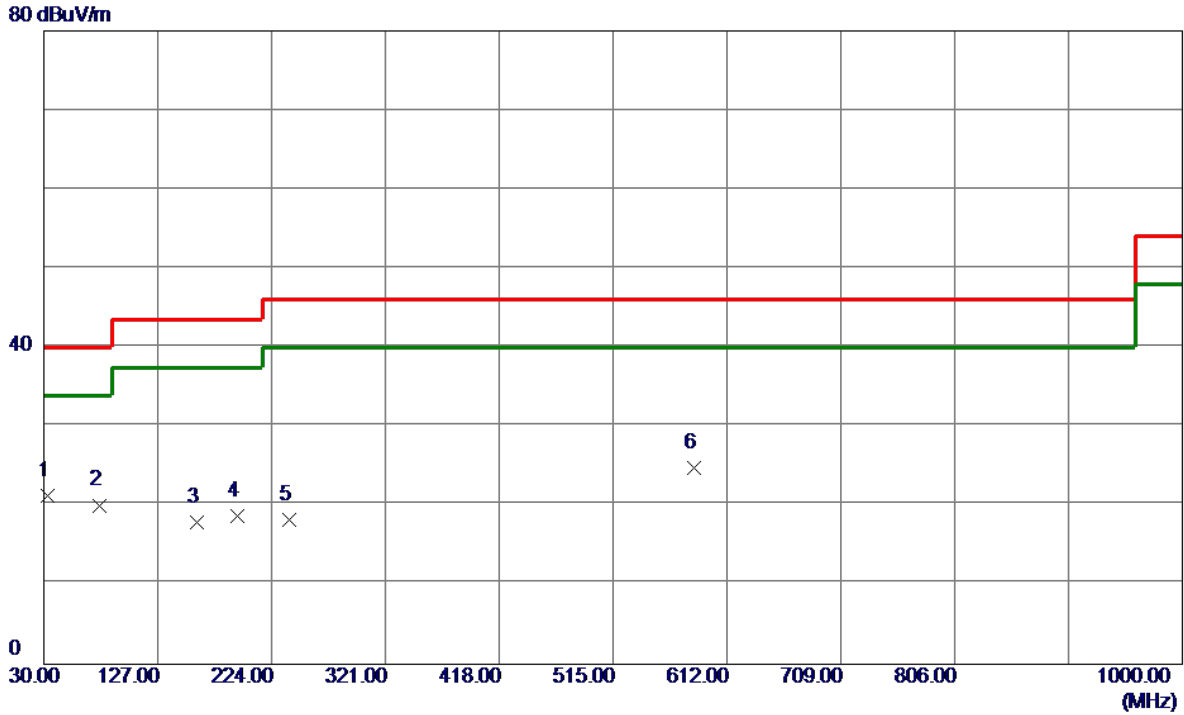


No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	31.9400	40.20	-15.74	24.46	40.00	-15.54	Peak	
2 *	77.5300	44.33	-17.92	26.41	40.00	-13.59	Peak	
3	130.8800	39.06	-13.67	25.39	43.50	-18.11	Peak	
4	353.9800	28.78	-10.12	18.66	46.00	-27.34	Peak	
5	480.0800	31.34	-7.12	24.22	46.00	-21.78	Peak	
6	759.4400	32.10	-1.73	30.37	46.00	-15.63	Peak	

REMARKS:

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

Test Mode	TX B Mode Channel 11	Polarization	Horizontal
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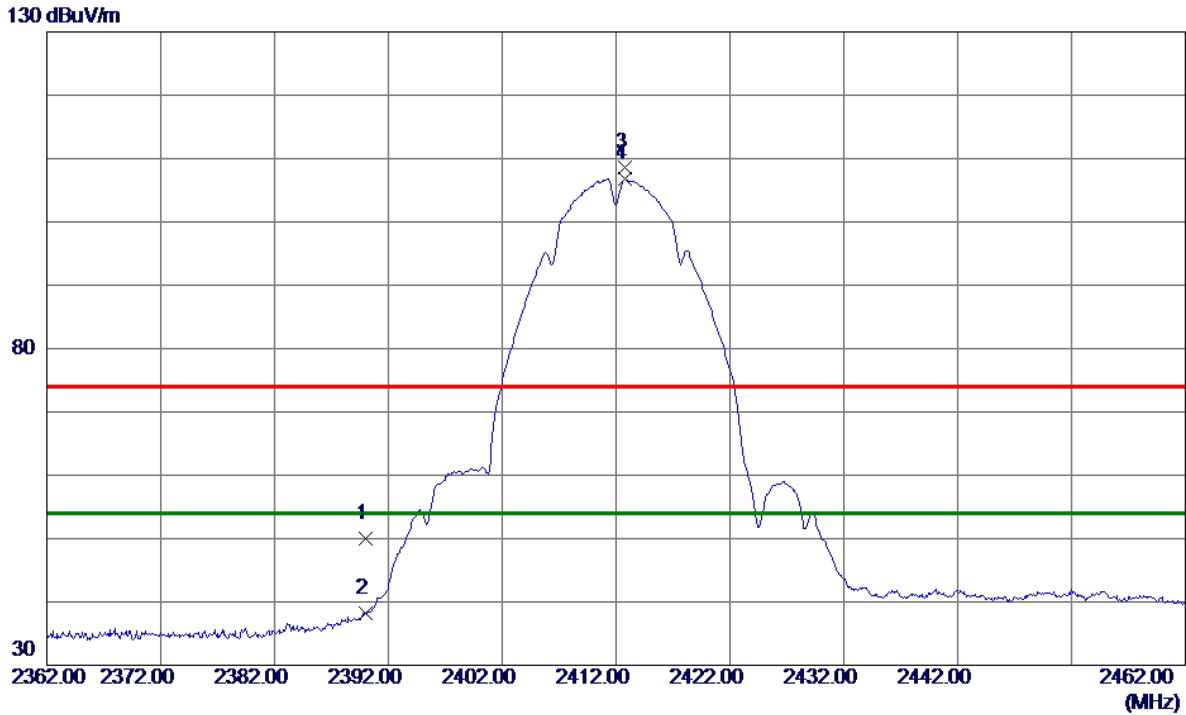
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	32.9100	36.92	-15.63	21.29	40.00	-18.71	Peak	
2	77.5300	38.00	-17.92	20.08	40.00	-19.92	Peak	
3	159.9800	30.63	-12.72	17.91	43.50	-25.59	Peak	
4	194.9000	34.05	-15.35	18.70	43.50	-24.80	Peak	
5	239.5200	31.89	-13.58	18.31	46.00	-27.69	Peak	
6	583.8700	29.88	-5.05	24.83	46.00	-21.17	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	Polarization	Horizontal
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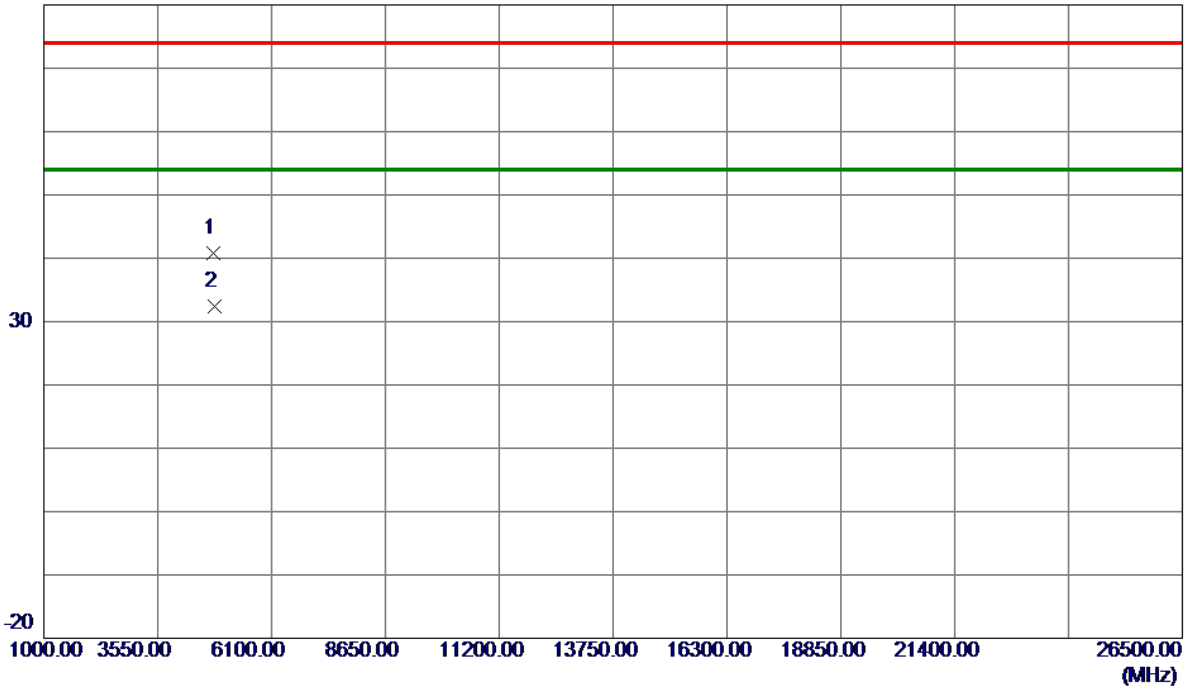
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2390.0000	44.61	5.37	49.98	74.00	-24.02	Peak	
2	2390.0000	32.77	5.37	38.14	54.00	-15.86	AVG	
3	2412.8000	103.19	5.43	108.62	74.00	34.62	Peak	No Limit
4 *	2412.8000	101.39	5.43	106.82	54.00	52.82	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	Polarization	Horizontal
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80 dBuV/m

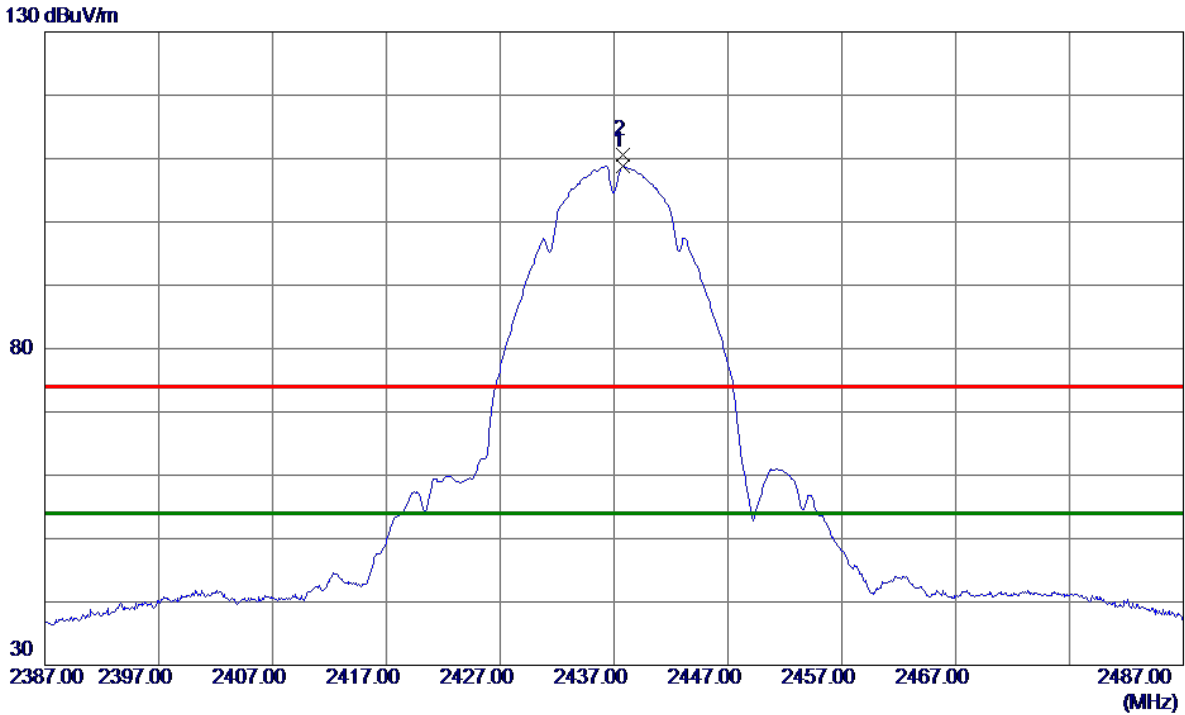


No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	4799.1800	38.59	2.12	40.71	74.00	-33.29	Peak	
2 *	4812.8700	30.21	2.16	32.37	54.00	-21.63	AVG	

**REMARKS:**

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

Test Mode	TX B Mode 2437 MHz	Polarization	Horizontal
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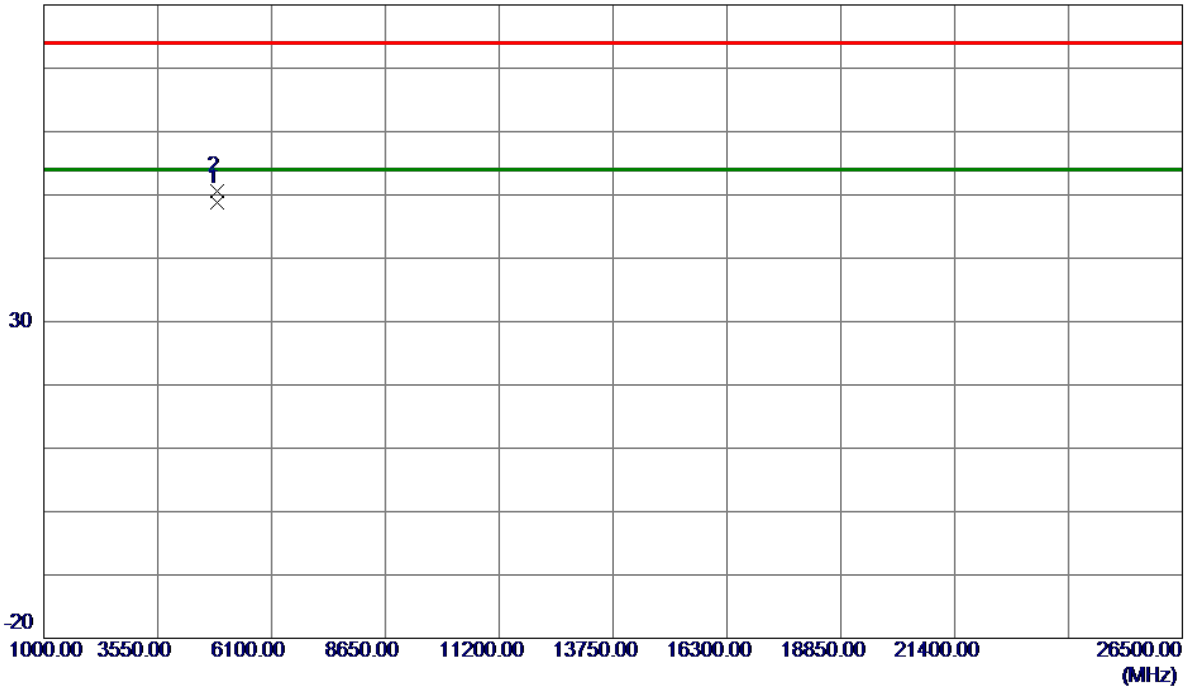
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	2437.7500	103.31	5.49	108.80	54.00	54.80	AVG	No Limit
2	2437.8000	105.10	5.49	110.59	74.00	36.59	Peak	No Limit

**REMARKS:**

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

Test Mode	TX B Mode 2437 MHz	Polarization	Horizontal
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80 dBuV/m

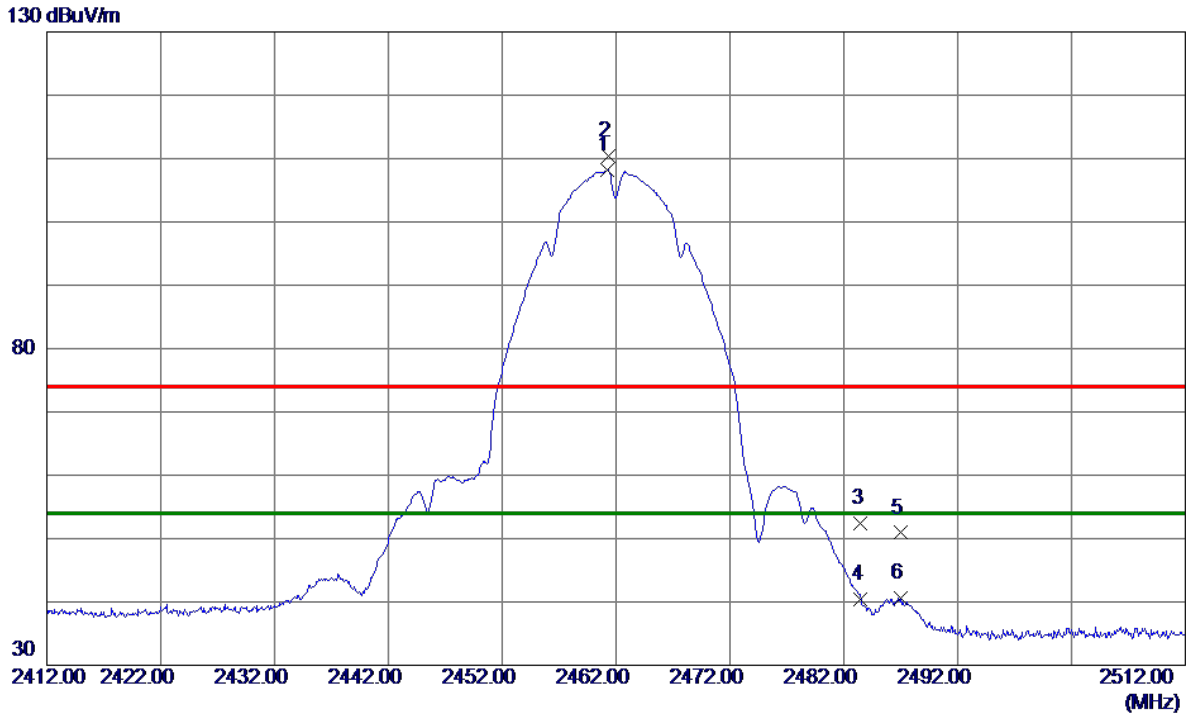


No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	4873.9500	46.49	2.35	48.84	54.00	-5.16	AVG	
2	4874.0099	48.16	2.35	50.51	74.00	-23.49	Peak	

**REMARKS:**

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

Test Mode	TX B Mode 2462 MHz	Polarization	Horizontal
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No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	2461.2000	102.58	5.55	108.13	54.00	54.13	AVG	No Limit
2	2461.3000	104.84	5.55	110.39	74.00	36.39	Peak	No Limit
3	2483.5000	46.88	5.60	52.48	74.00	-21.52	Peak	
4	2483.5000	34.88	5.60	40.48	54.00	-13.52	AVG	
5	2487.0000	45.29	5.61	50.90	74.00	-23.10	Peak	
6	2487.0000	34.99	5.61	40.60	54.00	-13.40	AVG	

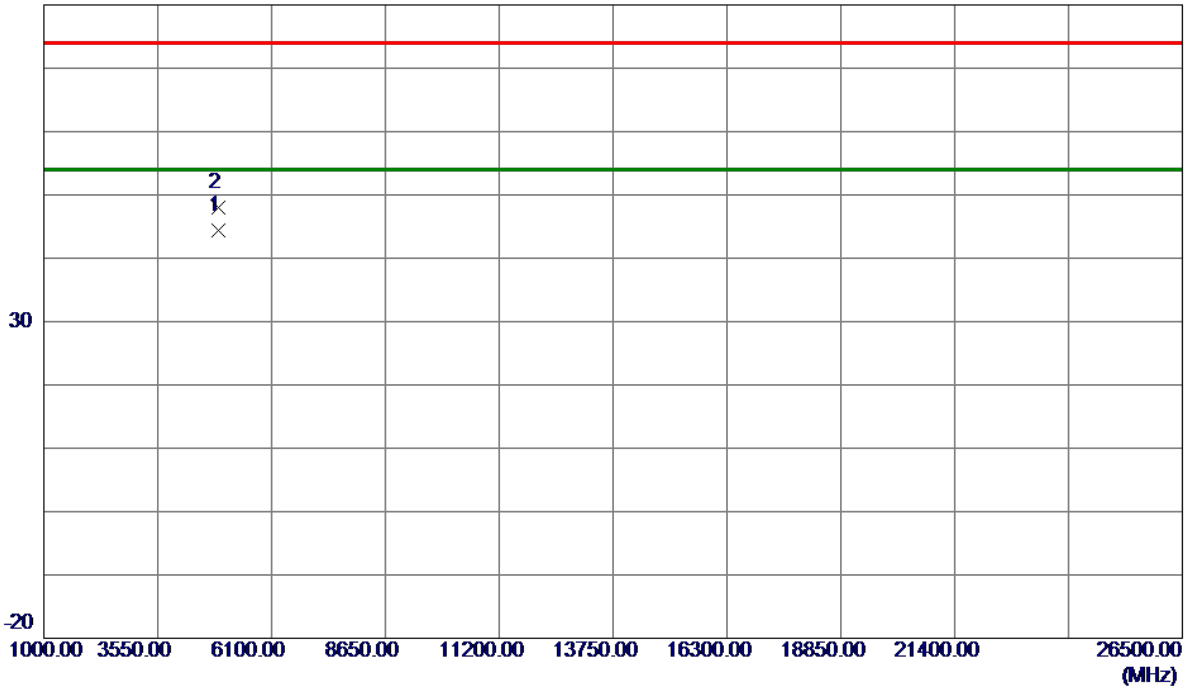
**REMARKS:**

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



Test Mode	TX B Mode 2462 MHz	Polarization	Horizontal
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80 dBuV/m



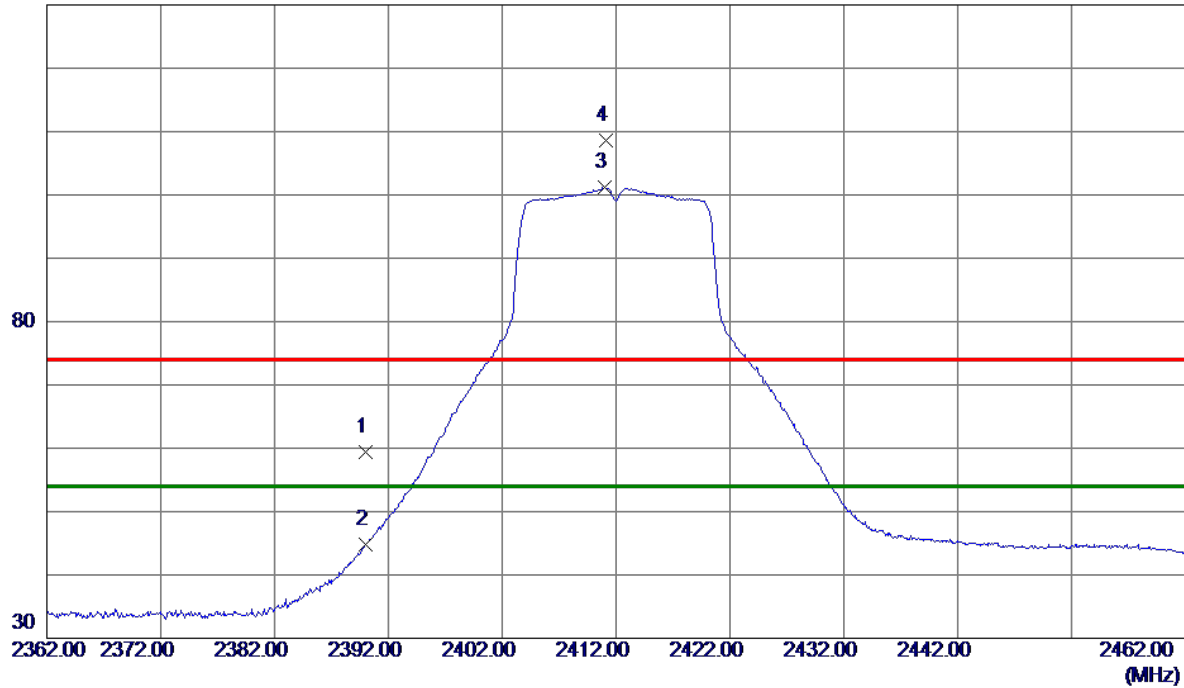
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	4923.9700	41.99	2.50	44.49	54.00	-9.51	AVG	
2	4923.9800	45.59	2.50	48.09	74.00	-25.91	Peak	

**REMARKS:**

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

Test Mode	TX G Mode 2412 MHz	Polarization	Horizontal
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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	54.03	5.37	59.40	74.00	-14.60	Peak	
2	2390.0000	39.42	5.37	44.79	54.00	-9.21	AVG	
3 *	2410.9500	95.83	5.42	101.25	54.00	47.25	AVG	No Limit
4	2411.1000	103.12	5.42	108.54	74.00	34.54	Peak	No Limit

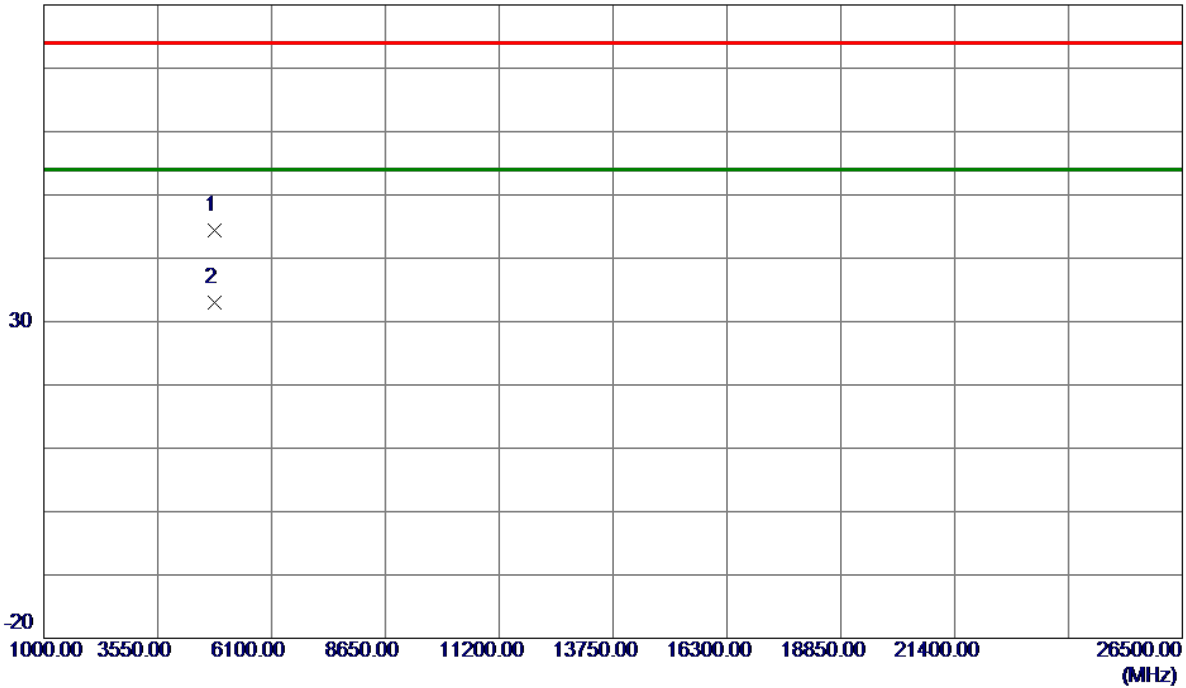
**REMARKS:**

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

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

Test Mode	TX G Mode 2412 MHz	Polarization	Horizontal
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80 dBuV/m

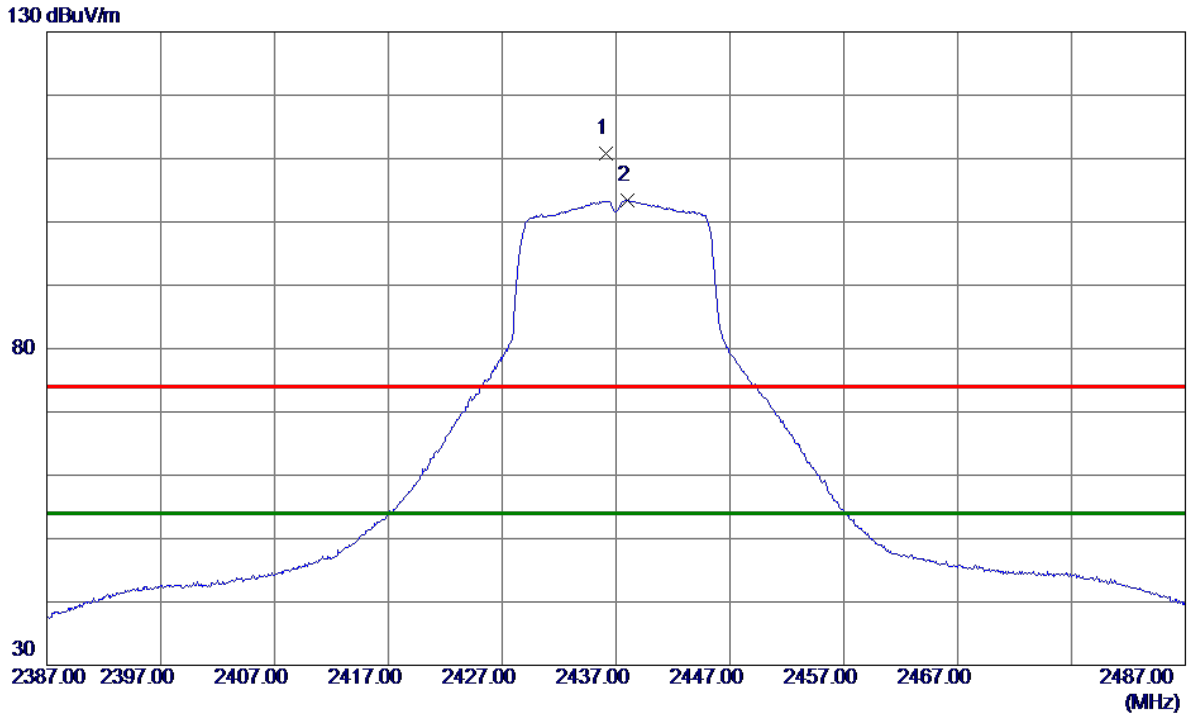


No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	4826.3400	42.11	2.21	44.32	74.00	-29.68	Peak	
2 *	4826.9800	30.79	2.21	33.00	54.00	-21.00	AVG	

**REMARKS:**

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

Test Mode	TX G Mode 2437 MHz	Polarization	Horizontal
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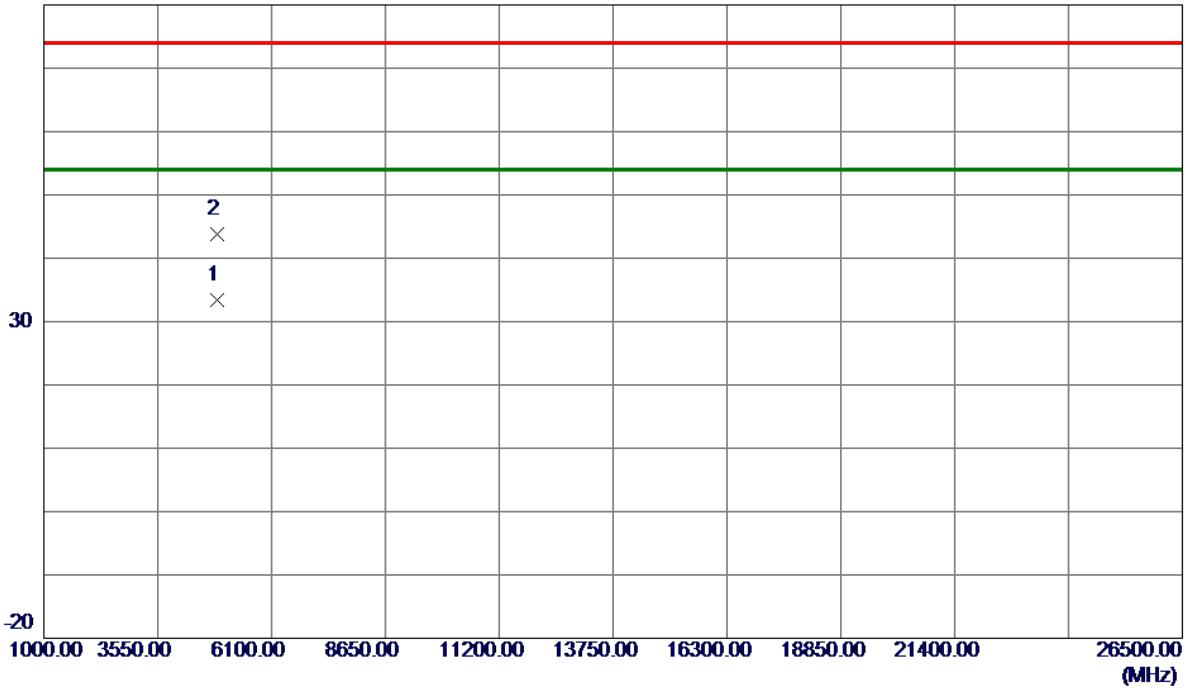
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2436.1500	105.26	5.49	110.75	74.00	36.75	Peak	No Limit
2 *	2438.0500	97.90	5.49	103.39	54.00	49.39	AVG	No Limit

**REMARKS:**

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

Test Mode	TX G Mode 2437 MHz	Polarization	Horizontal
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80 dBuV/m

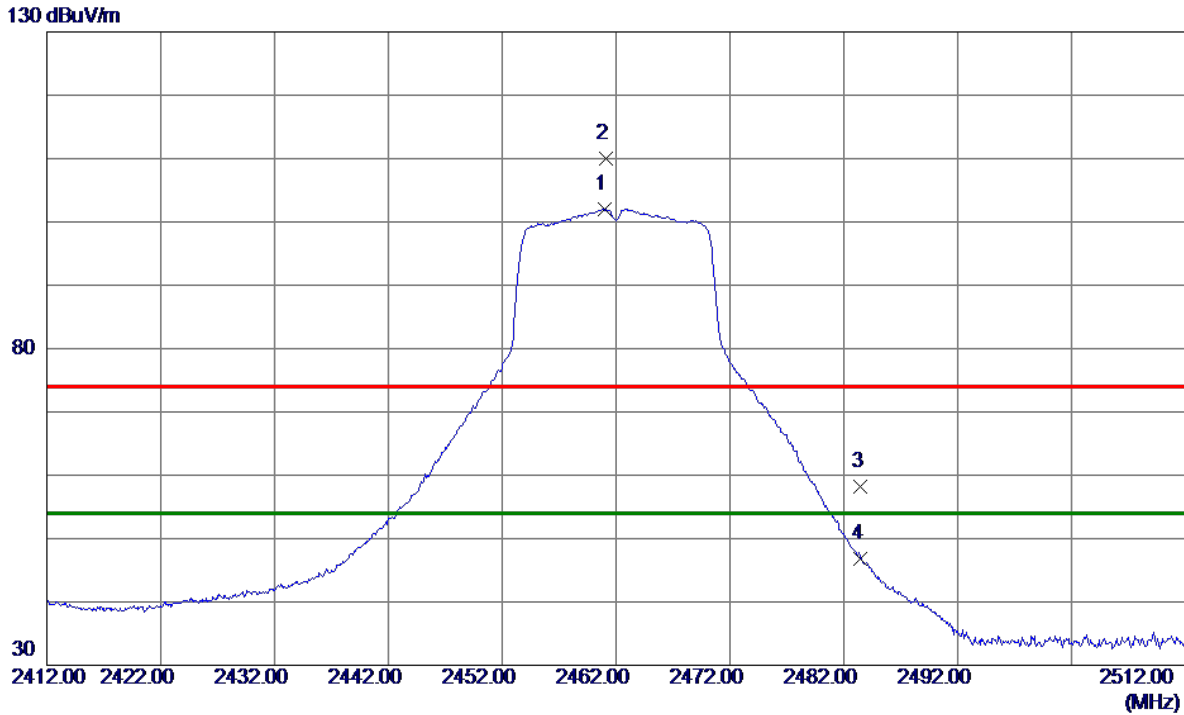


No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	4868.9600	31.11	2.33	33.44	54.00	-20.56	AVG	
2	4878.6300	41.50	2.36	43.86	74.00	-30.14	Peak	

**REMARKS:**

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

Test Mode	TX G Mode 2462 MHz	Polarization	Horizontal
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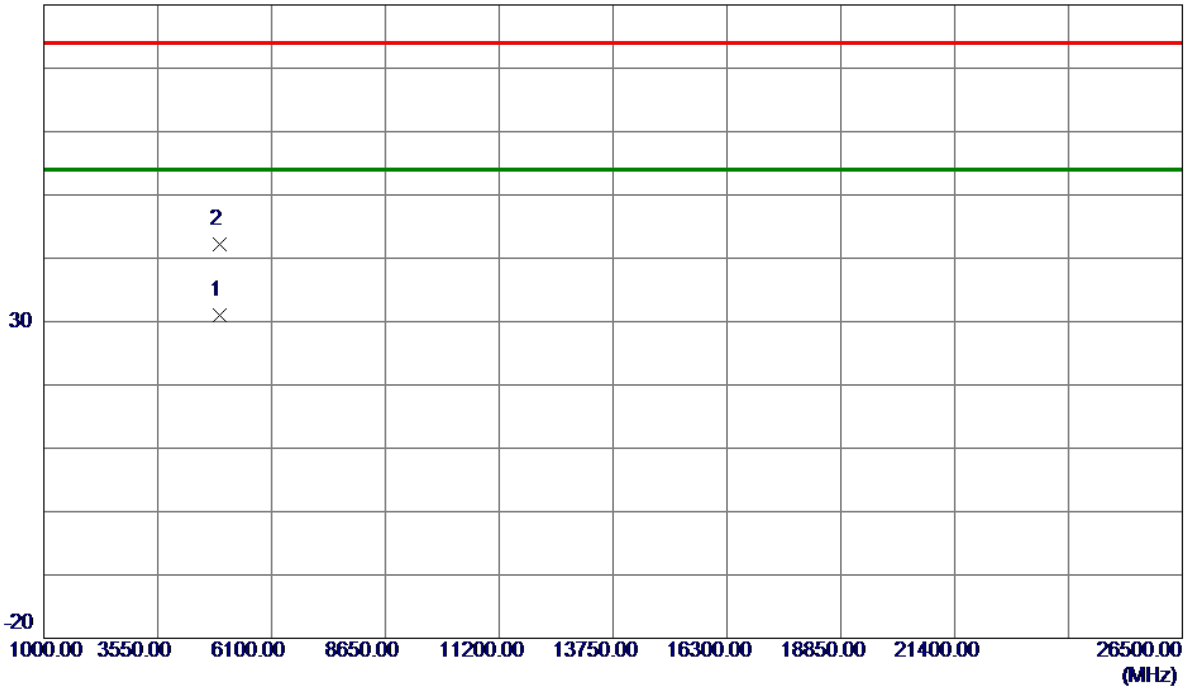
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	2461.0500	96.53	5.55	102.08	54.00	48.08	AVG	No Limit
2	2461.1500	104.38	5.55	109.93	74.00	35.93	Peak	No Limit
3	2483.5000	52.63	5.60	58.23	74.00	-15.77	Peak	
4	2483.5000	41.28	5.60	46.88	54.00	-7.12	AVG	

**REMARKS:**

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

Test Mode	TX G Mode 2462 MHz	Polarization	Horizontal
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80 dBuV/m

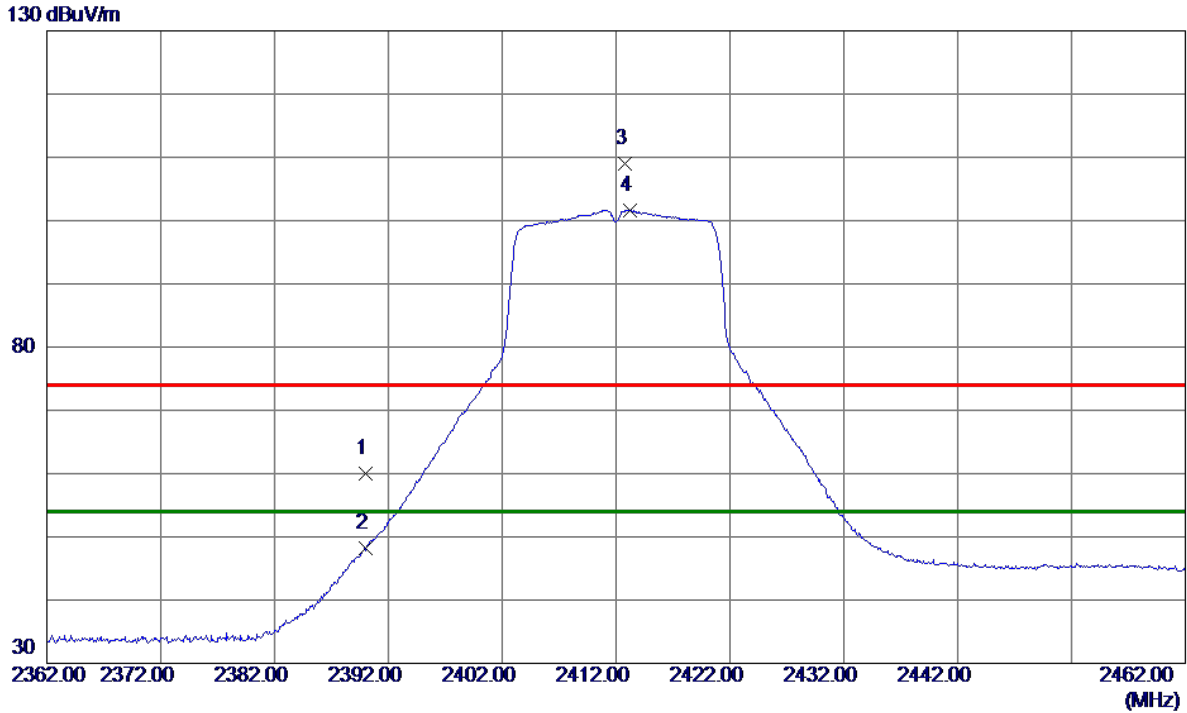


No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	4924.2500	28.59	2.50	31.09	54.00	-22.91	AVG	
2	4926.5600	39.76	2.51	42.27	74.00	-31.73	Peak	

**REMARKS:**

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

Test Mode	TX N(HT20) Mode 2412 MHz	Polarization	Horizontal
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No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2390.0000	54.60	5.37	59.97	74.00	-14.03	Peak	
2	2390.0000	42.89	5.37	48.26	54.00	-5.74	AVG	
3	2412.7500	103.51	5.43	108.94	74.00	34.94	Peak	No Limit
4 *	2413.2000	96.24	5.43	101.67	54.00	47.67	AVG	No Limit

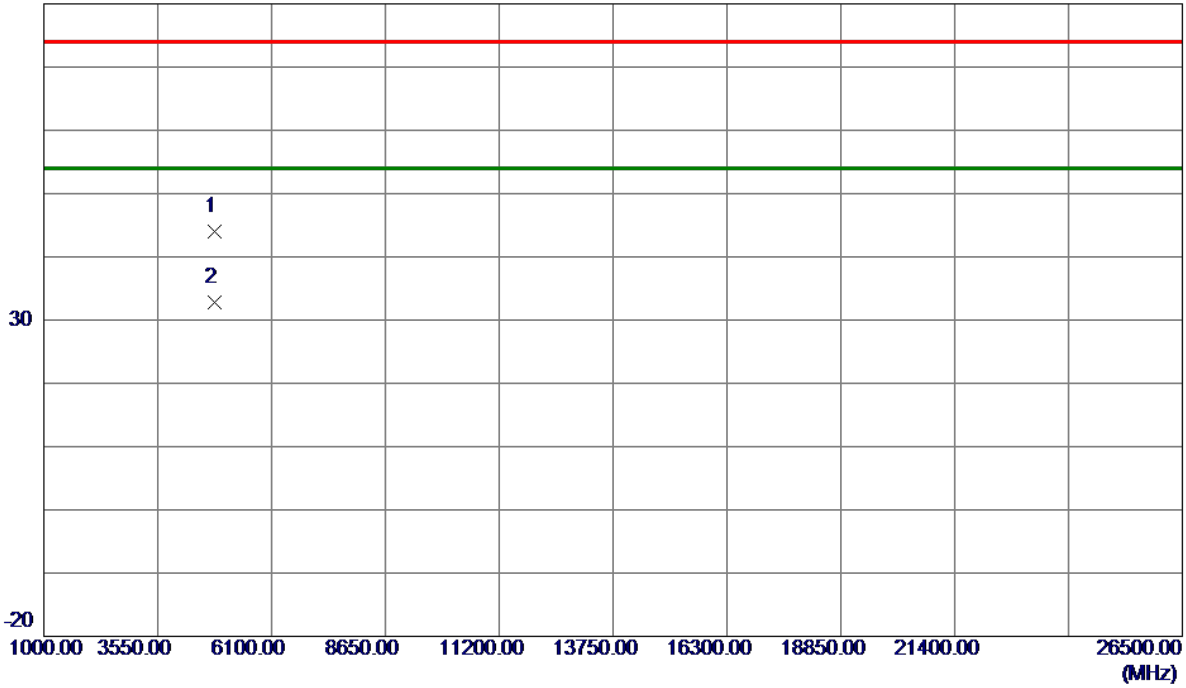
**REMARKS:**

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



Test Mode	TX N(HT20) Mode 2412 MHz	Polarization	Horizontal
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80 dBuV/m

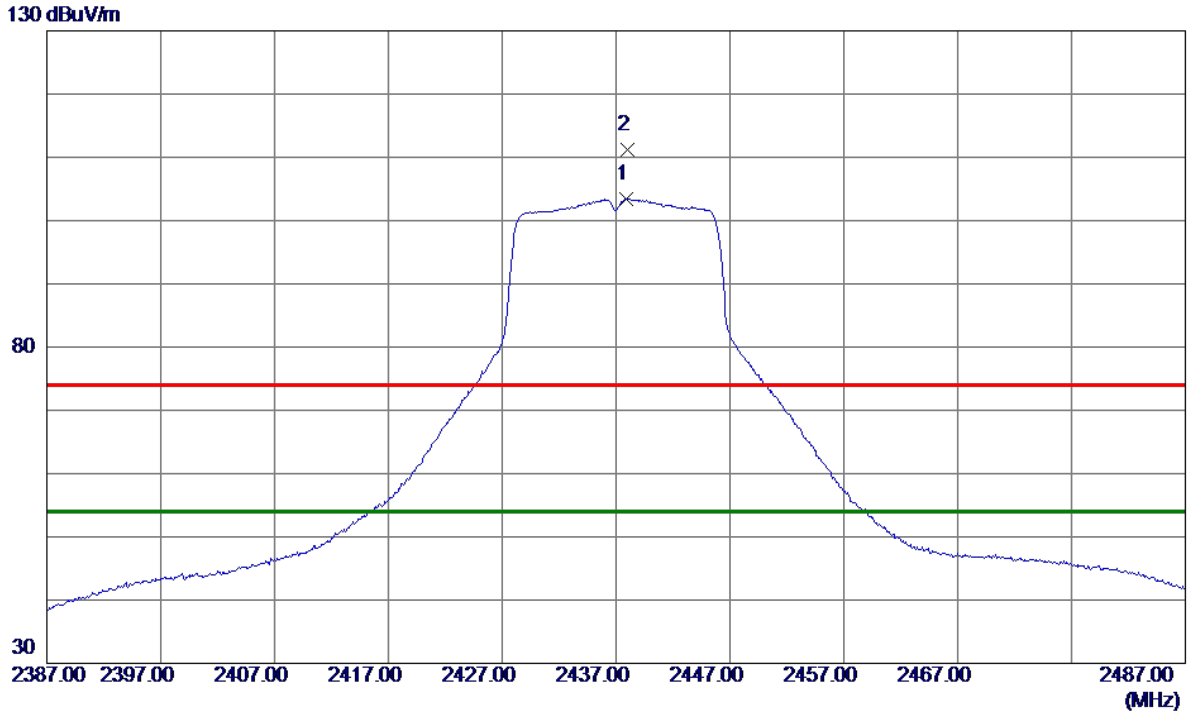


No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	4819.1700	41.88	2.18	44.06	74.00	-29.94	Peak	
2 *	4821.3500	30.56	2.19	32.75	54.00	-21.25	AVG	

REMARKS:

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

Test Mode	TX N(HT20) Mode 2437 MHz	Polarization	Horizontal
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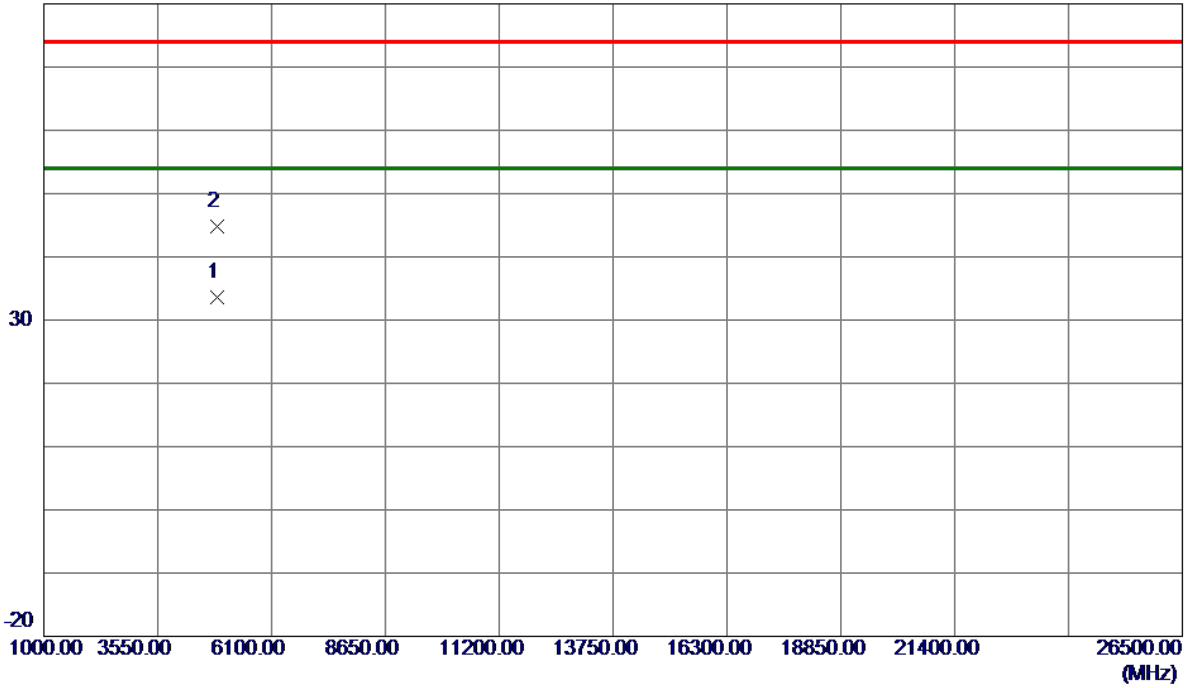
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	2437.8500	97.95	5.49	103.44	54.00	49.44	AVG	No Limit
2	2438.0500	105.66	5.49	111.15	74.00	37.15	Peak	No Limit

**REMARKS:**

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

Test Mode	TX N(HT20) Mode 2437 MHz	Polarization	Horizontal
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80 dBuV/m

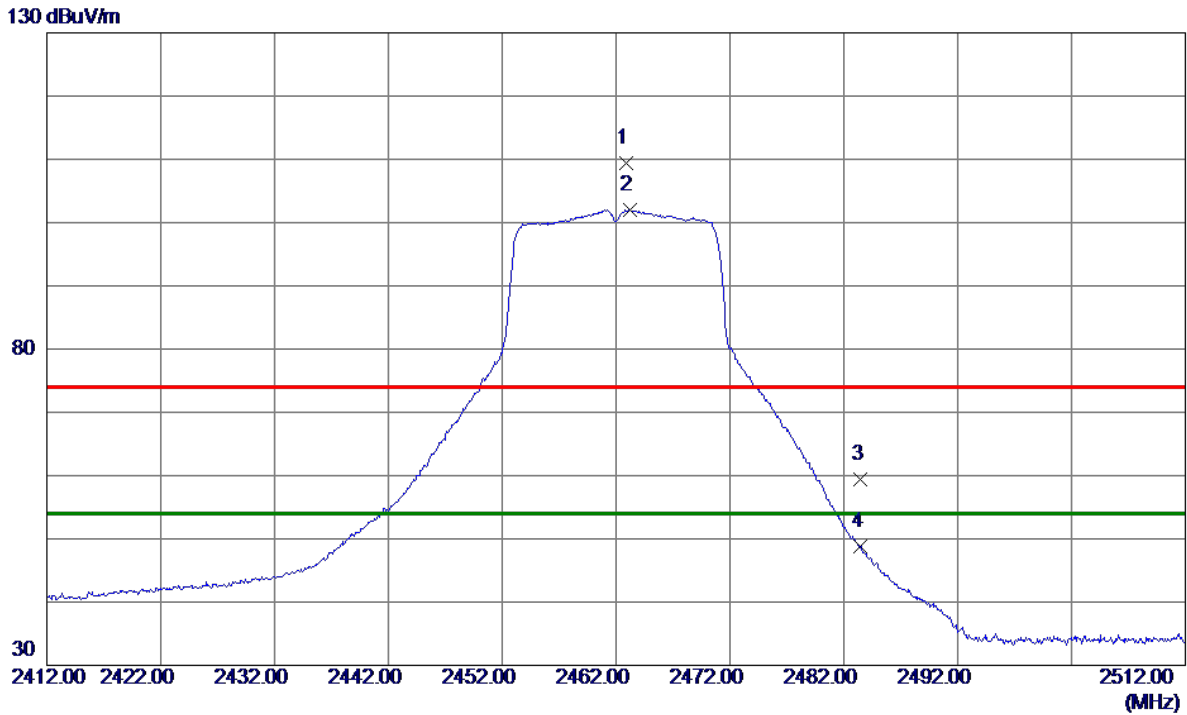


No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	4875.4500	31.20	2.35	33.55	54.00	-20.45	AVG	
2	4879.3300	42.44	2.37	44.81	74.00	-29.19	Peak	

**REMARKS:**

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

Test Mode	TX N(HT20) Mode 2462 MHz	Polarization	Horizontal
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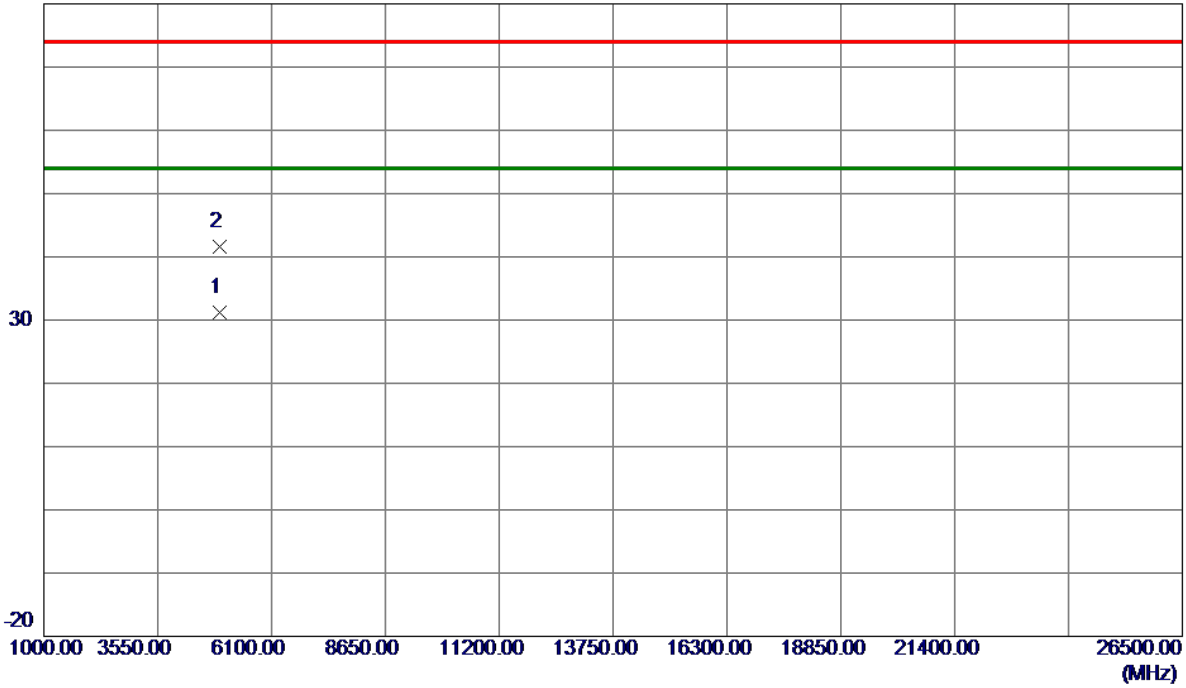
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2462.8500	103.94	5.55	109.49	74.00	35.49	Peak	No Limit
2 *	2463.2000	96.43	5.55	101.98	54.00	47.98	AVG	No Limit
3	2483.5000	53.78	5.60	59.38	74.00	-14.62	Peak	
4	2483.5000	43.17	5.60	48.77	54.00	-5.23	AVG	

**REMARKS:**

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

Test Mode	TX N(HT20) Mode 2462 MHz	Polarization	Horizontal
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80 dBuV/m

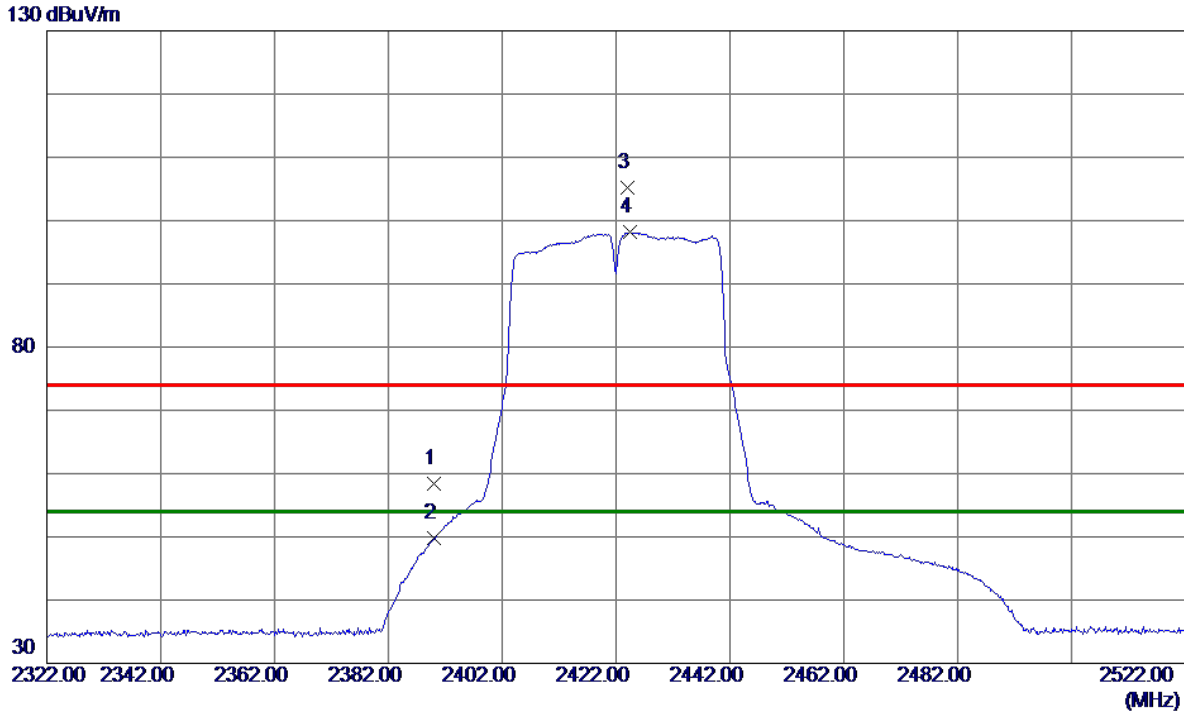


No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	4925.5200	28.67	2.50	31.17	54.00	-22.83	AVG	
2	4929.0299	39.00	2.52	41.52	74.00	-32.48	Peak	

REMARKS:

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

Test Mode	TX N(HT40) Mode 2422 MHz	Polarization	Horizontal
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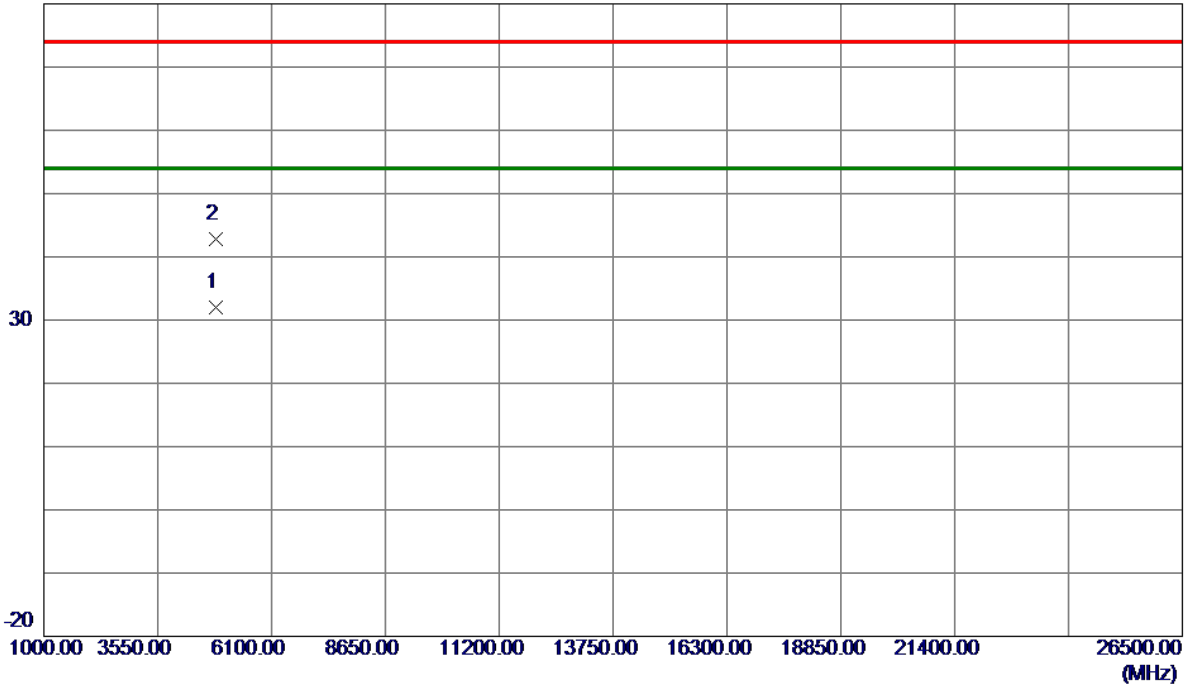
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2390.0000	52.95	5.37	58.32	74.00	-15.68	Peak	
2	2390.0000	44.42	5.37	49.79	54.00	-4.21	AVG	
3	2424.1000	99.77	5.46	105.23	74.00	31.23	Peak	No Limit
4 *	2424.4000	92.69	5.46	98.15	54.00	44.15	AVG	No Limit

**REMARKS:**

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

Test Mode	TX N(HT40) Mode 2422 MHz	Polarization	Horizontal
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80 dBuV/m

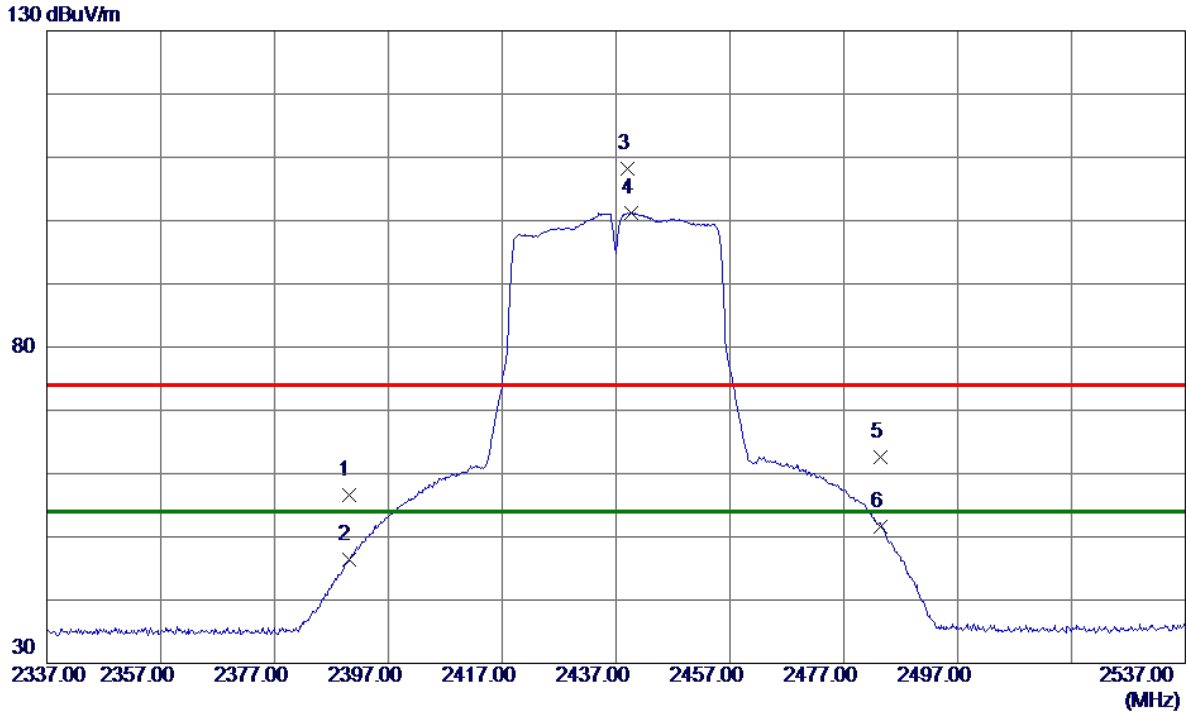


No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	4851.5200	29.64	2.28	31.92	54.00	-22.08	AVG	
2	4852.2200	40.44	2.28	42.72	74.00	-31.28	Peak	

**REMARKS:**

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

Test Mode	TX N(HT40) Mode 2437 MHz	Polarization	Horizontal
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No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2390.0000	51.29	5.37	56.66	74.00	-17.34	Peak	
2	2390.0000	41.07	5.37	46.44	54.00	-7.56	AVG	
3	2439.0000	102.64	5.49	108.13	74.00	34.13	Peak	No Limit
4 *	2439.6000	95.77	5.49	101.26	54.00	47.26	AVG	No Limit
5	2483.5000	57.05	5.60	62.65	74.00	-11.35	Peak	
6	2483.5000	46.06	5.60	51.66	54.00	-2.34	AVG	

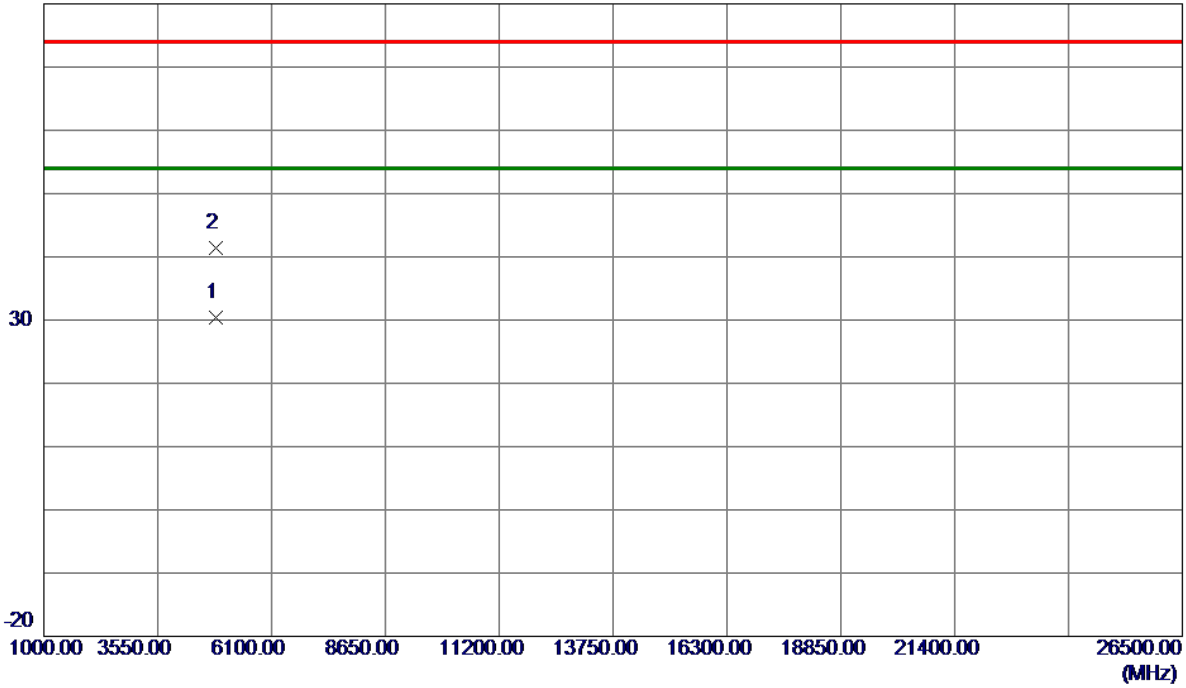
**REMARKS:**

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



Test Mode	TX N(HT40) Mode 2437 MHz	Polarization	Horizontal
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80 dBuV/m

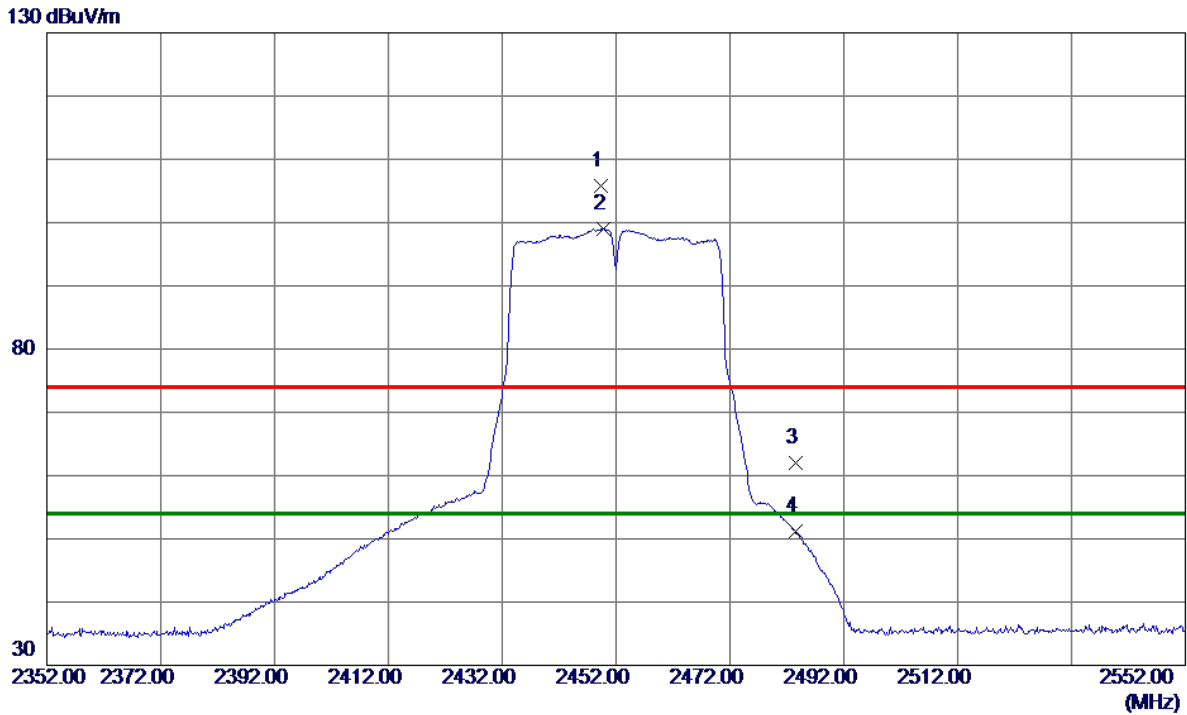


No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	4865.1700	28.11	2.32	30.43	54.00	-23.57	AVG	
2	4866.6100	39.05	2.33	41.38	74.00	-32.62	Peak	

REMARKS:

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

Test Mode	TX N(HT40) Mode 2452 MHz	Polarization	Horizontal
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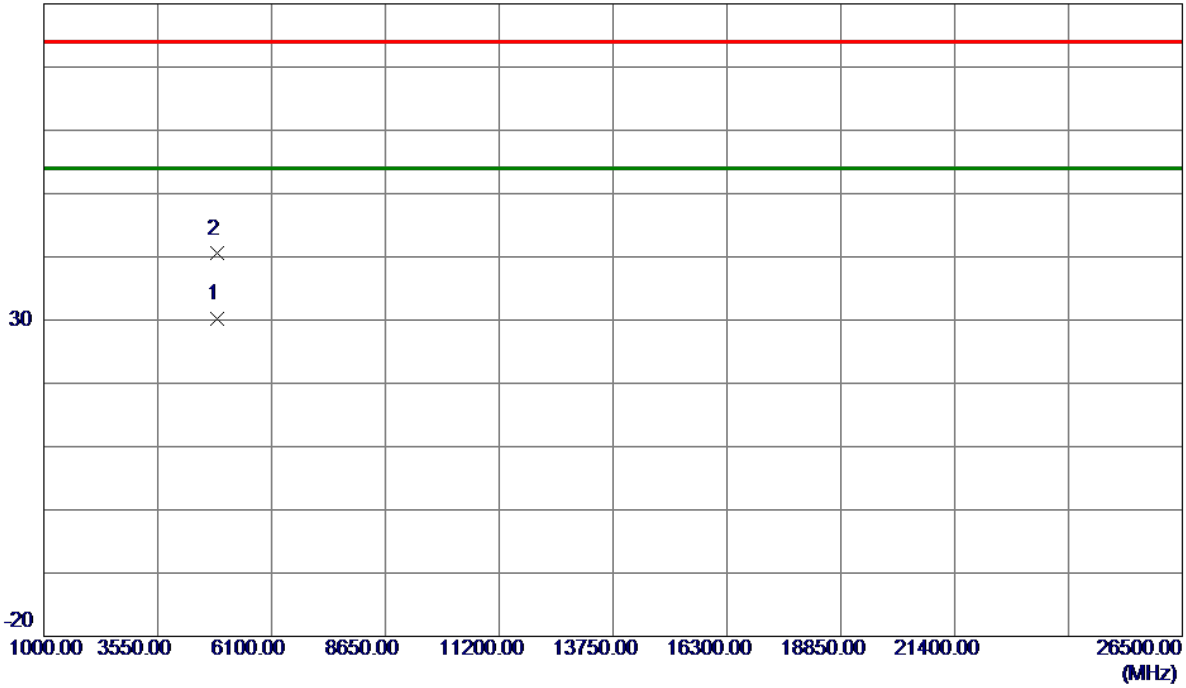
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2449.3000	100.29	5.52	105.81	74.00	31.81	Peak	No Limit
2 *	2449.8000	93.57	5.52	99.09	54.00	45.09	AVG	No Limit
3	2483.5000	56.42	5.60	62.02	74.00	-11.98	Peak	
4	2483.5000	45.60	5.60	51.20	54.00	-2.80	AVG	

**REMARKS:**

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

Test Mode	TX N(HT40) Mode 2452 MHz	Polarization	Horizontal
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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 *	4894.1300	27.78	2.41	30.19	54.00	-23.81	AVG	
2	4895.1700	38.09	2.41	40.50	74.00	-33.50	Peak	

REMARKS:

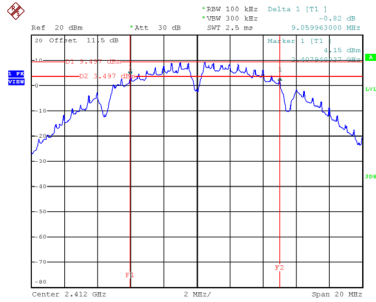
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

**APPENDIX E - BANDWIDTH**

Test Mode TX B Mode

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6 dB Bandwidth Min. Limit (MHz)	Result
01	2412	9.060	13.680	0.5	Complies
06	2437	8.600	13.920	0.5	Complies
11	2462	8.120	13.680	0.5	Complies

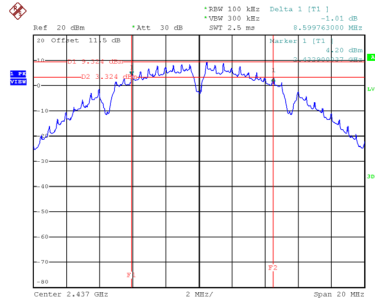
CH01



Date: 26.MAY.2022 16:53:41

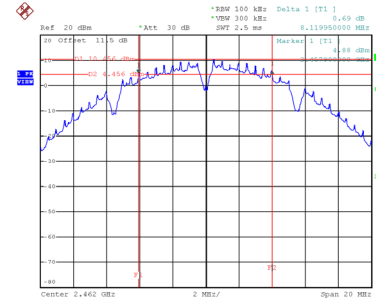
CH06

6 dB Bandwidth



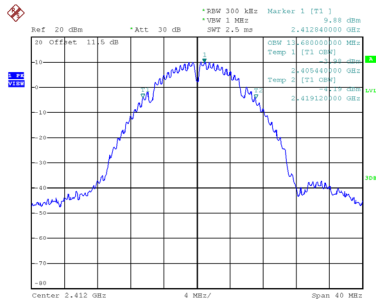
Date: 26.MAY.2022 16:56:27

CH11

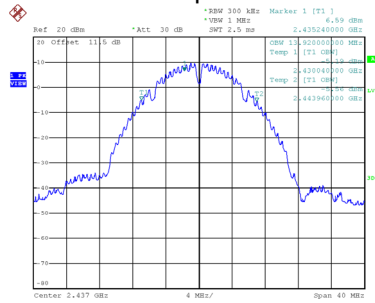


Date: 26.MAY.2022 16:59:13

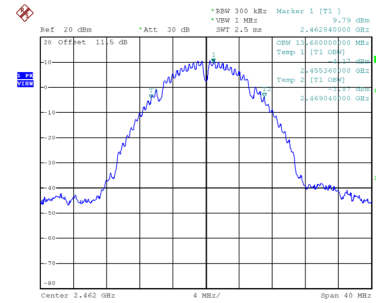
99 % Occupied Bandwidth



Date: 26.MAY.2022 16:53:48



Date: 26.MAY.2022 16:56:34

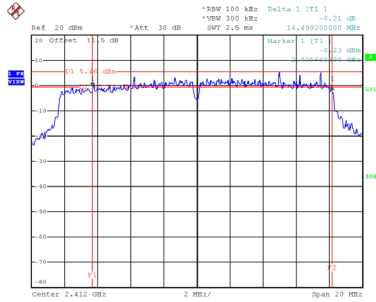


Date: 26.MAY.2022 16:59:21

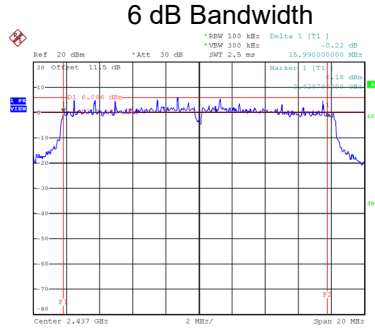
Test Mode TX G Mode

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6 dB Bandwidth Min. Limit (MHz)	Result
01	2412	14.499	16.880	0.5	Complies
06	2437	15.990	16.960	0.5	Complies
11	2462	15.710	16.800	0.5	Complies

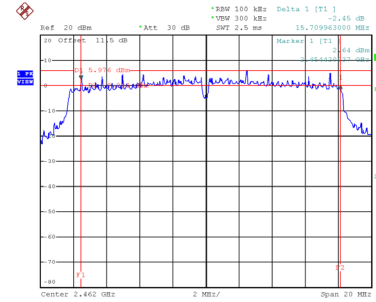
**CH01**



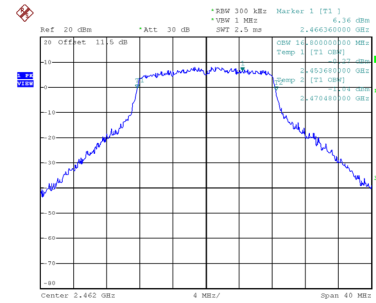
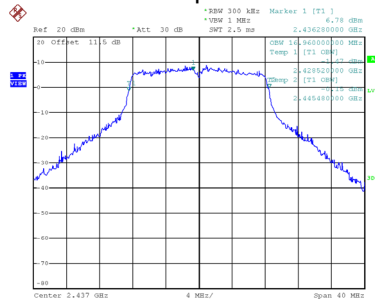
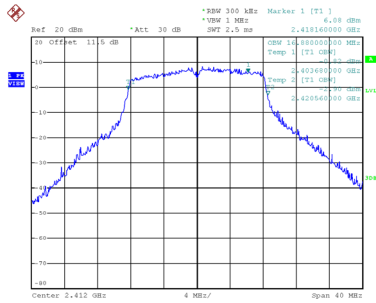
**CH06**



**CH11**



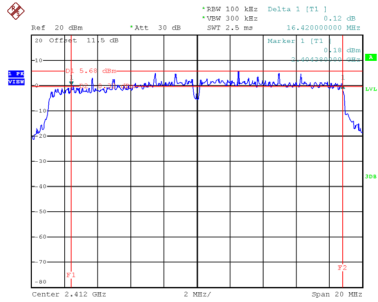
**99 % Occupied Bandwidth**



Test Mode	TX N(HT20) Mode
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Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6 dB Bandwidth Min. Limit (MHz)	Result
01	2412	16.420	18.000	0.5	Complies
06	2437	15.760	18.160	0.5	Complies
11	2462	16.100	18.000	0.5	Complies

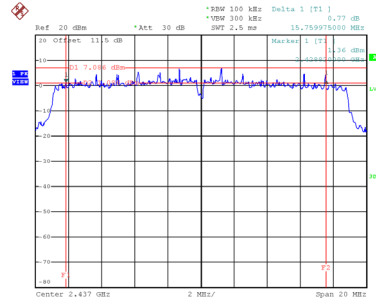
**CH01**



Date: 26.MAY.2022 17:08:18

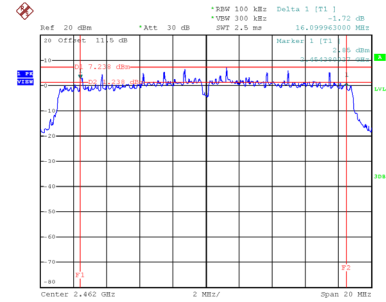
**CH06**

**6 dB Bandwidth**



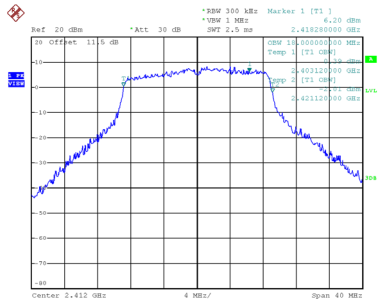
Date: 26.MAY.2022 17:09:51

**CH11**

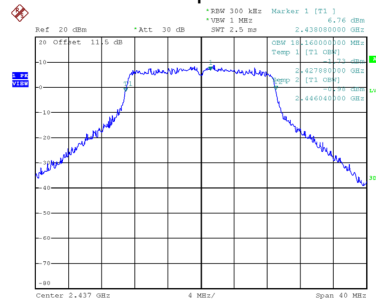


Date: 26.MAY.2022 17:12:48

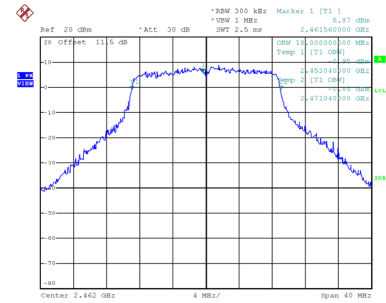
**99 % Occupied Bandwidth**



Date: 26.MAY.2022 17:08:25



Date: 26.MAY.2022 17:09:58

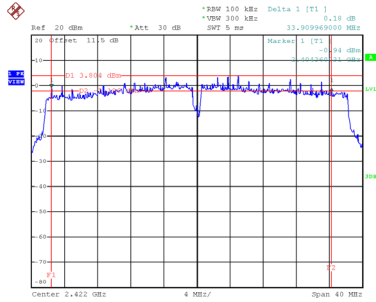


Date: 26.MAY.2022 17:12:56

Test Mode	TX N(HT40) Mode
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Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6 dB Bandwidth Min. Limit (MHz)	Result
03	2422	33.910	36.320	0.5	Complies
06	2437	36.440	36.800	0.5	Complies
09	2452	35.830	36.800	0.5	Complies

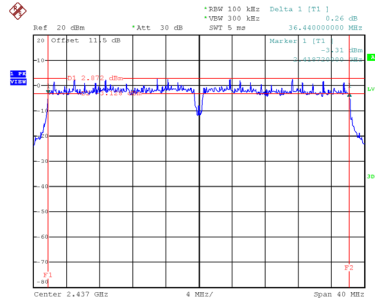
**CH03**



Date: 26.MAY.2022 17:14:23

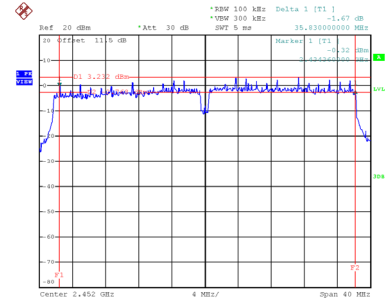
**CH06**

**6 dB Bandwidth**



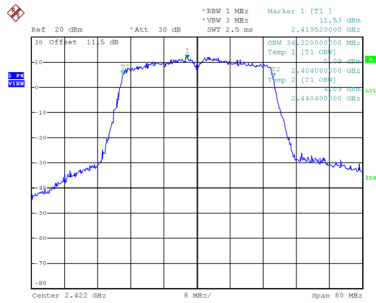
Date: 26.MAY.2022 17:15:41

**CH09**

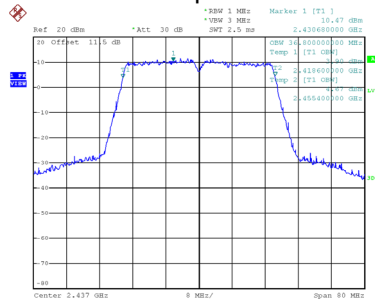


Date: 26.MAY.2022 17:17:09

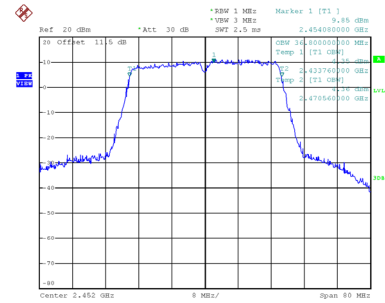
**99 % Occupied Bandwidth**



Date: 26.MAY.2022 17:14:31



Date: 26.MAY.2022 17:15:48



Date: 26.MAY.2022 17:17:17



## **APPENDIX F - MAXIMUM OUTPUT POWER**

Test Mode	TX B Mode
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Channel	Frequency (MHz)	Output Power (dBm)	Duty Factor	Output Power + Duty Factor (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	18.21	0.00	18.21	30.00	1.0000	Complies
06	2437	17.74	0.00	17.74	30.00	1.0000	Complies
11	2462	18.39	0.00	18.39	30.00	1.0000	Complies

Test Mode	TX G Mode
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Channel	Frequency (MHz)	Output Power (dBm)	Duty Factor	Output Power + Duty Factor (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	15.73	0.00	15.73	30.00	1.0000	Complies
06	2437	16.07	0.00	16.07	30.00	1.0000	Complies
11	2462	15.98	0.00	15.98	30.00	1.0000	Complies

Test Mode	TX N(HT20) Mode
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Channel	Frequency (MHz)	Output Power (dBm)	Duty Factor	Output Power + Duty Factor (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	16.08	0.09	16.17	30.00	1.0000	Complies
06	2437	16.24	0.09	16.33	30.00	1.0000	Complies
11	2462	15.87	0.09	15.96	30.00	1.0000	Complies

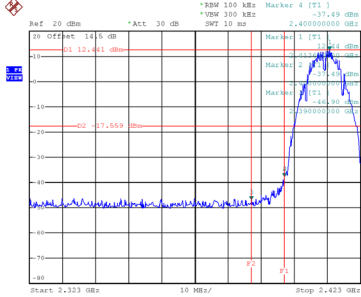
Test Mode	TX N(HT40) Mode
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Channel	Frequency (MHz)	Output Power (dBm)	Duty Factor	Output Power + Duty Factor (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
03	2422	14.27	0.09	14.36	30.00	1.0000	Complies
06	2437	16.17	0.09	16.26	30.00	1.0000	Complies
09	2452	14.53	0.09	14.62	30.00	1.0000	Complies

## **APPENDIX G - CONDUCTED SPURIOUS EMISSIONS**

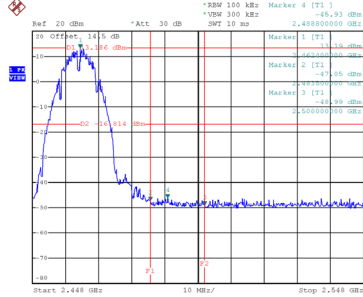
Test Mode TX B Mode

### Bandedge-CH01



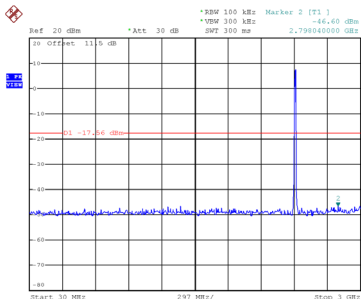
Date: 26.MAY.2022 16:53:56

### Bandedge-CH11

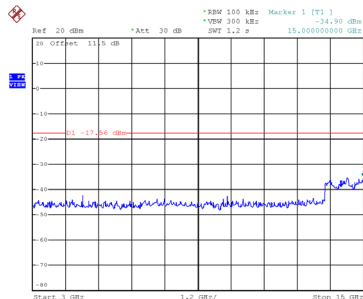


Date: 26.MAY.2022 16:59:29

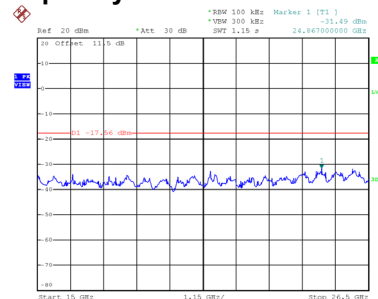
### CH01 – 10th Harmonic of the fundamental frequency



Date: 26.MAY.2022 16:54:10

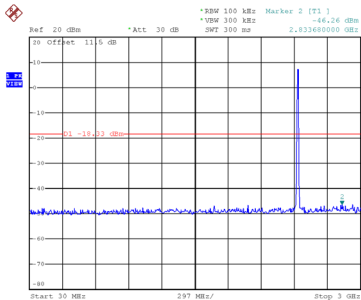


Date: 26.MAY.2022 16:54:18

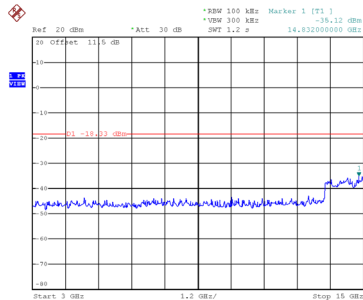


Date: 26.MAY.2022 16:54:26

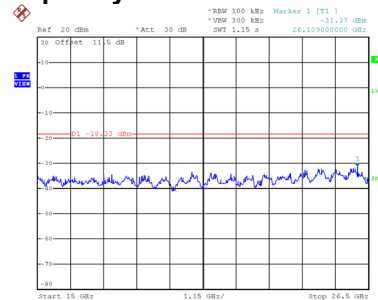
### CH06 – 10th Harmonic of the fundamental frequency



Date: 26.MAY.2022 16:56:56

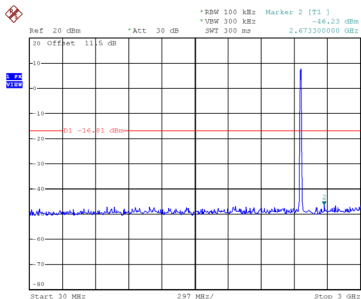


Date: 26.MAY.2022 16:57:04

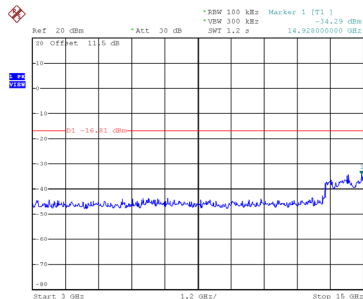


Date: 26.MAY.2022 16:57:11

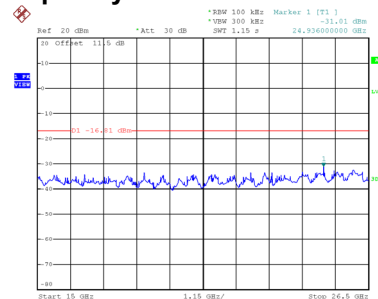
### CH11 – 10th Harmonic of the fundamental frequency



Date: 26.MAY.2022 16:59:42



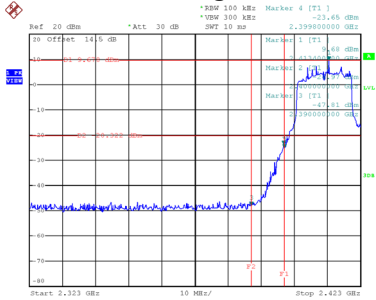
Date: 26.MAY.2022 16:59:50



Date: 26.MAY.2022 16:59:58

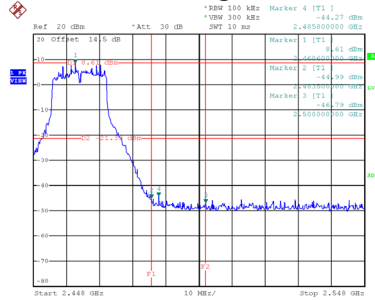
Test Mode TX G Mode

### Bandedge-CH01



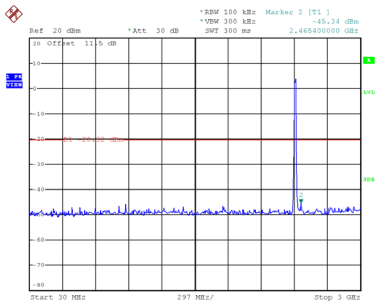
Date: 26.MAY.2022 17:02:17

### Bandedge-CH11

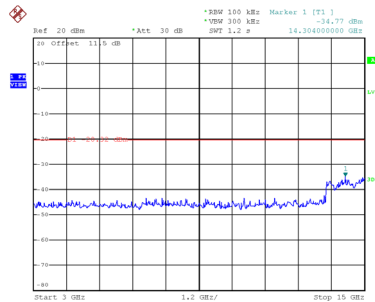


Date: 26.MAY.2022 17:05:10

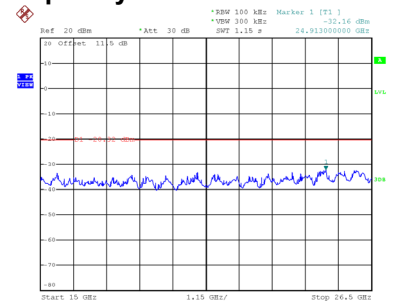
### CH01 – 10th Harmonic of the fundamental frequency



Date: 26.MAY.2022 17:02:30

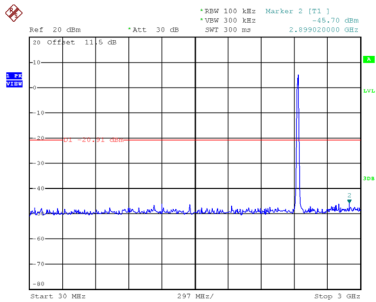


Date: 26.MAY.2022 17:02:38

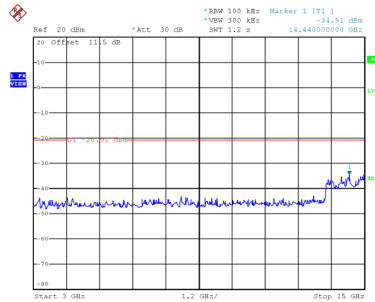


Date: 26.MAY.2022 17:02:46

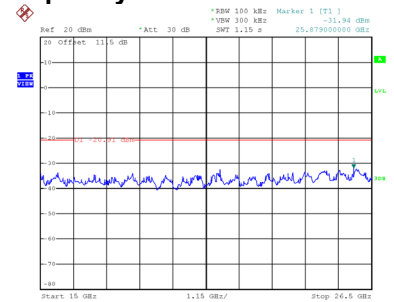
### CH06 – 10th Harmonic of the fundamental frequency



Date: 26.MAY.2022 17:03:56

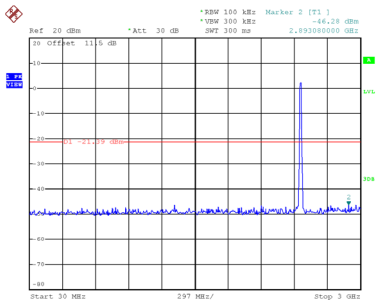


Date: 26.MAY.2022 17:04:04

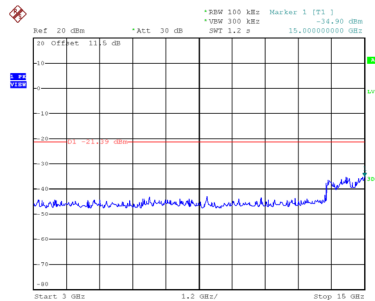


Date: 26.MAY.2022 17:04:12

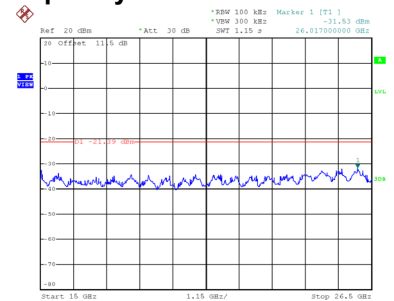
### CH11 – 10th Harmonic of the fundamental frequency



Date: 26.MAY.2022 17:05:24



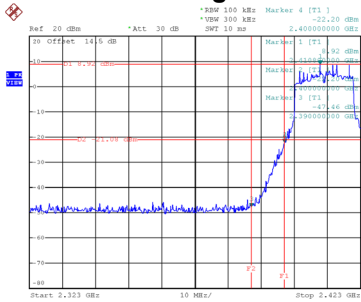
Date: 26.MAY.2022 17:05:32



Date: 26.MAY.2022 17:05:40

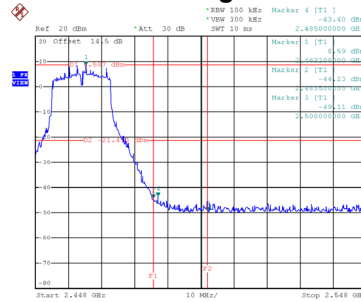
Test Mode TX N(HT20) Mode

### Bandedge-CH01



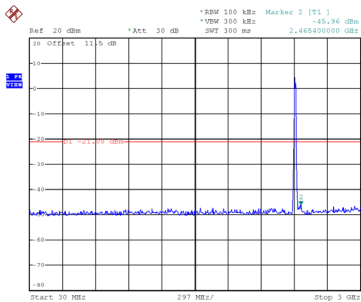
Date: 26.MAY.2022 17:08:34

### Bandedge-CH11

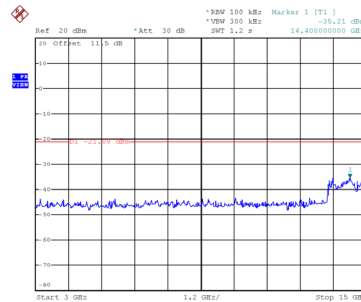


Date: 26.MAY.2022 17:13:04

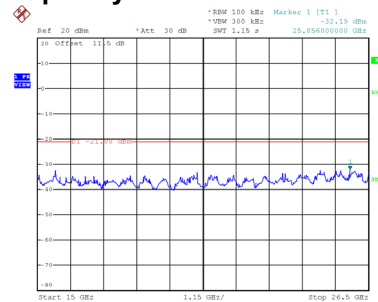
### CH01 – 10th Harmonic of the fundamental frequency



Date: 26.MAY.2022 17:08:48

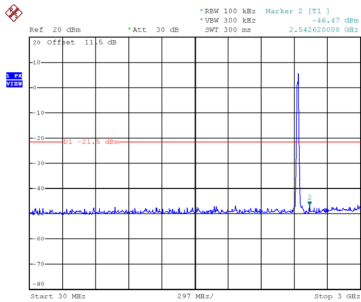


Date: 26.MAY.2022 17:08:56

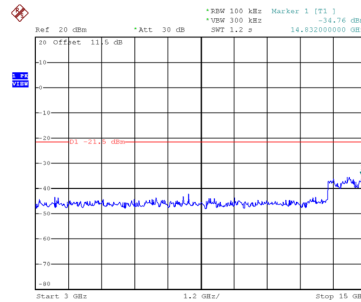


Date: 26.MAY.2022 17:09:04

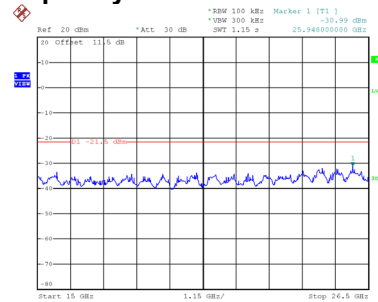
### CH06 – 10th Harmonic of the fundamental frequency



Date: 26.MAY.2022 17:10:21

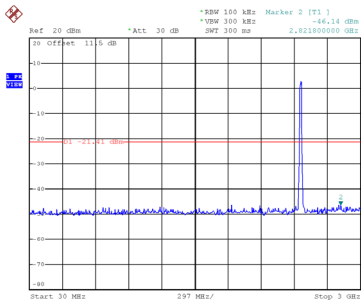


Date: 26.MAY.2022 17:10:28

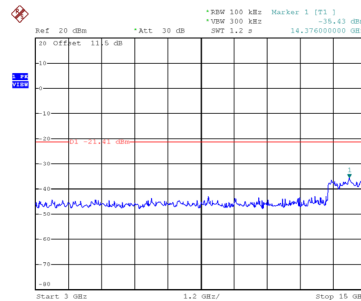


Date: 26.MAY.2022 17:10:36

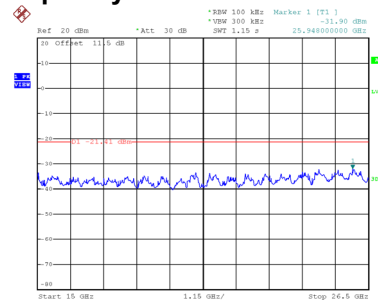
### CH11 – 10th Harmonic of the fundamental frequency



Date: 26.MAY.2022 17:13:17



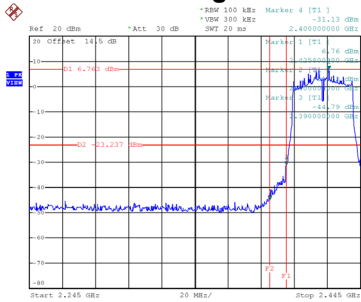
Date: 26.MAY.2022 17:13:25



Date: 26.MAY.2022 17:13:33

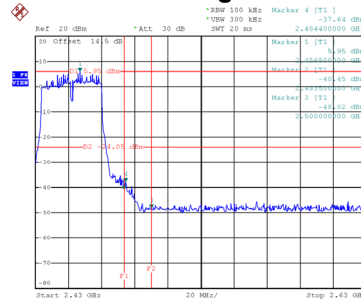
Test Mode TX N(HT40) Mode

### Bandedge-CH03



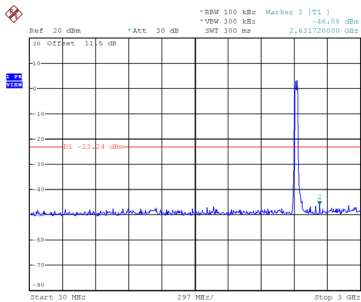
Date: 26.MAY.2022 17:14:39

### Bandedge-CH09

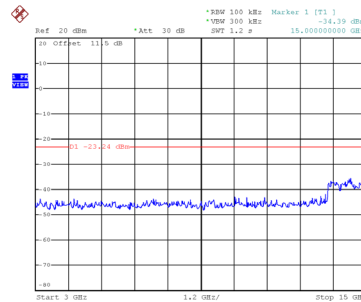


Date: 26.MAY.2022 17:17:25

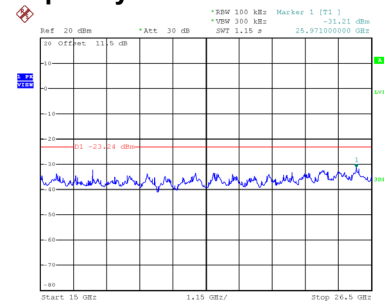
### CH03 – 10th Harmonic of the fundamental frequency



Date: 26.MAY.2022 17:14:52

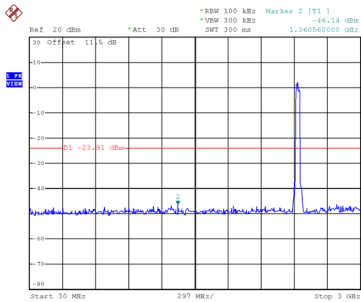


Date: 26.MAY.2022 17:15:00

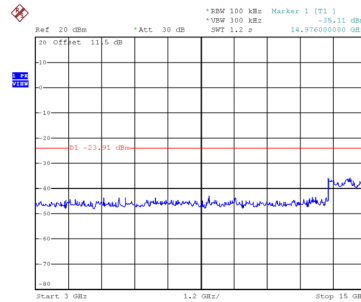


Date: 26.MAY.2022 17:15:08

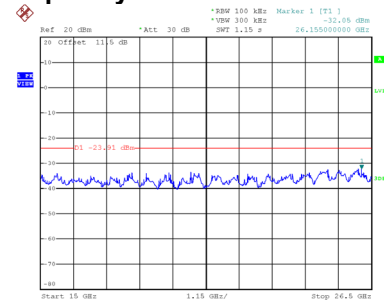
### CH06 – 10th Harmonic of the fundamental frequency



Date: 26.MAY.2022 17:16:10

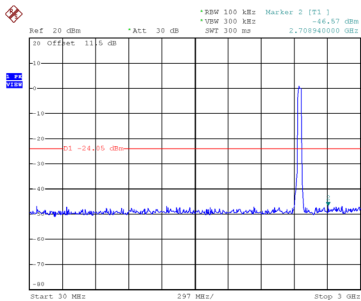


Date: 26.MAY.2022 17:16:18

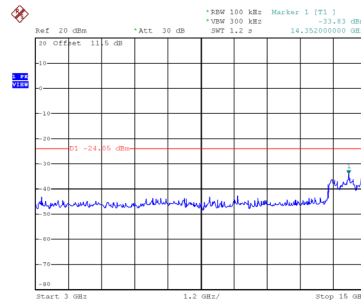


Date: 26.MAY.2022 17:16:26

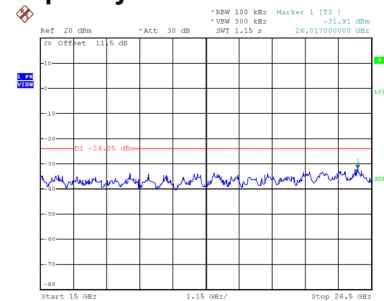
### CH09 – 10th Harmonic of the fundamental frequency



Date: 26.MAY.2022 17:17:39



Date: 26.MAY.2022 17:17:47



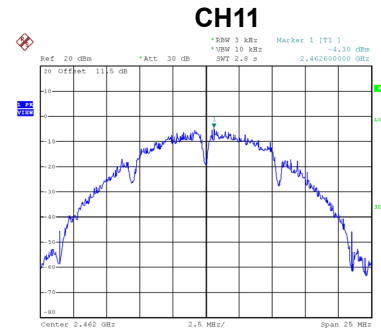
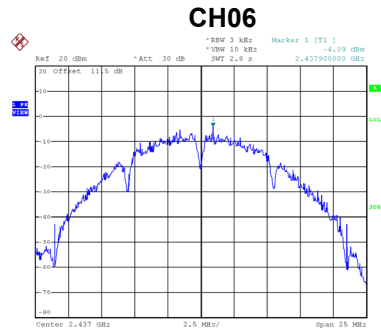
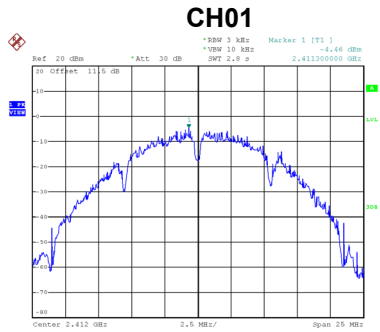
Date: 26.MAY.2022 17:17:55

## **APPENDIX H - POWER SPECTRAL DENSITY**



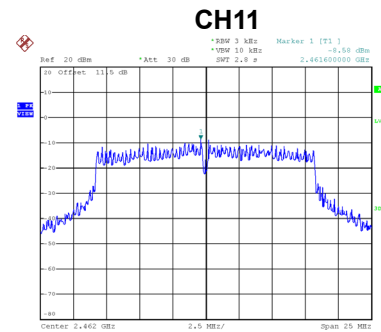
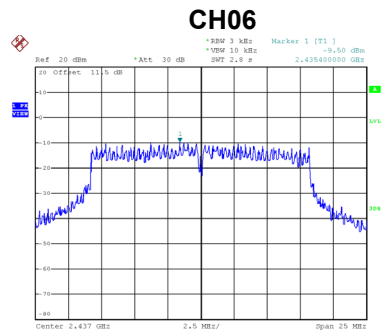
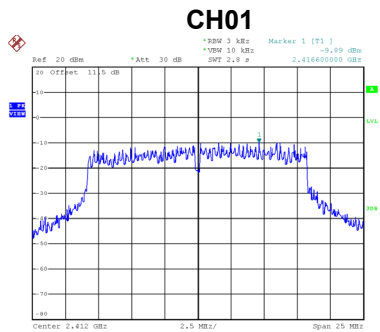
Test Mode	TX B Mode
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Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
01	2412	-4.46	8.00	Complies
06	2437	-4.09	8.00	Complies
11	2462	-4.30	8.00	Complies



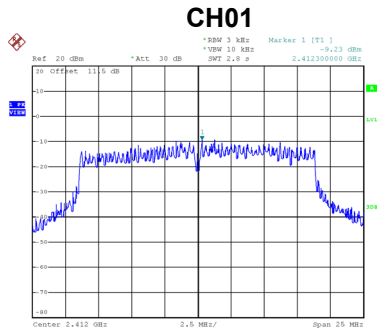
Test Mode	TX G Mode
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Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
01	2412	-9.89	8.00	Complies
06	2437	-9.50	8.00	Complies
11	2462	-8.58	8.00	Complies

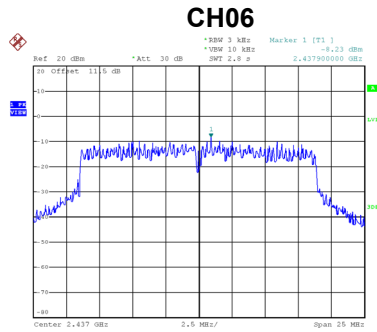


Test Mode	TX N(HT20) Mode
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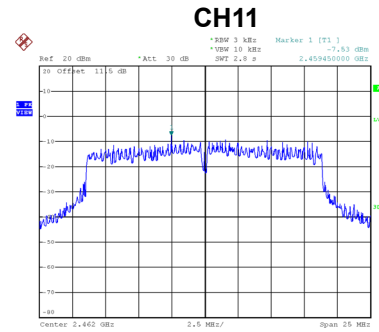
Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
01	2412	-9.23	8.00	Complies
06	2437	-8.23	8.00	Complies
11	2462	-7.53	8.00	Complies



Date: 26.MAY.2022 17:09:14



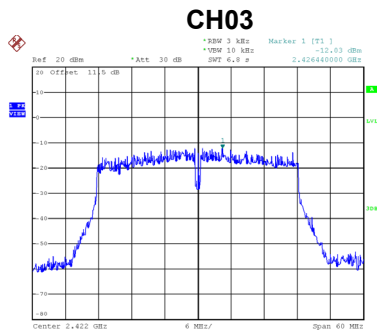
Date: 26.MAY.2022 17:10:46



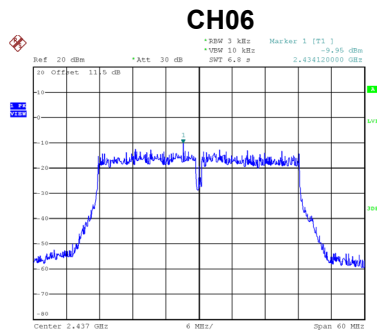
Date: 26.MAY.2022 17:13:42

Test Mode	TX N(HT40) Mode
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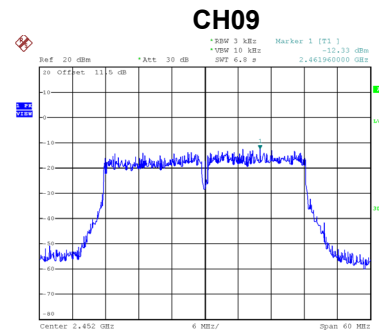
Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
03	2422	-12.03	8.00	Complies
06	2437	-9.95	8.00	Complies
09	2452	-12.33	8.00	Complies



Date: 26.MAY.2022 17:15:20



Date: 26.MAY.2022 17:16:39



Date: 26.MAY.2022 17:18:07

End of Test Report