NVLAP TESTING
NVLAP LAB CODE 600354-0

FCC Radio Test Report

FCC ID: 2BFBC-M01

This report concerns: Original Grant

Project No.	:	2312C186
Equipment	:	Harbor Monitor
Brand Name	:	Harbor
Test Model	:	M01
Series Model	:	N/A
Applicant	:	PROJECT MONITOR INC
Address	:	4516 Lovers Lane STE 392, DALLAS Texas, United States 75225
Manufacturer	:	Thundercomm Technology Co., Ltd.
Address	:	No. 107, Data Valley Middle Road,Xiantao District, Yubei District Chongqing, China
Factory	:	HuaZhuang Electronics (Vietnam) Co.,LTD.
Address	:	A part of lot J, Dong Van II Industrial park, Bach Thuong ward, Duy Tien town, Ha Nam Province, Vietnam
Date of Receipt	:	Feb. 05, 2024
Date of Test	:	Feb. 06, 2024 ~ Mar. 23, 2024
Issued Date	:	Apr. 26, 2024
Report Version	:	R00
Test Sample	:	Engineering Sample No.: DG2024020563 for AC power line conducted emissions and radiated emissions, DG2024020564 for others.
Standard(s)	:	FCC CFR Title 47, Part 15, Subpart C

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

Prepared by : Sheldon Ou

Approved by : Welly Zhou

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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 assumes no responsibility for the data provided by the customer, any statements, inferences or generalizations drawn by the customer or others from the reports issued by BTL.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, 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: 2017 requirements, and accredited by the conformity assessment authorities listed in this test report.

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

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

Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.
Please note that the measurement uncertainty is provided for informational purpose only and are not use in determining the Pass/Fail results.

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REPORT ISSUED HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-FCCP-3-2312C186	R00	Original Report.	Apr. 26, 2024	Valid

1. APPLICABLE STANDARDS

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:
ANSI C63.10-2013
The following reference test guidance is not within the scope of accreditation of NVLAP:
KDB 558074 D01 15.247 Meas Guidance v05r02

2. 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.

2.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No. 3 Jinshagang 1st Rd. Shixia, Dalang Town, Dongguan City, Guangdong 523792
BTL's Registration Number for FCC: 162128
BTL's Designation Number for FCC: CN5042

2.2 MEASUREMENT UNCERTAINTY

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95.45% 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	2.88

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	4.40
		30MHz ~ 200MHz	H	3.62
		200MHz ~ 1,000MHz	V	4.58
		200MHz ~ 1,000MHz	H	3.98

Test Site	Method	Measurement Frequency Range	*U*,(dB)
DG-CB03 (3m)	CISPR	1GHz ~ 6GHz	4.08
		6GHz ~ 18GHz	4.62

Test Site	Method	Measurement Frequency Range	*U*,(dB)
DG-CB03 (1m)	CISPR	18 ~ 26.5 GHz	3.36

C. Other Measurement:

Test Item	Uncertainty
Bandwidth	0.90 %
Maximum Output Power	1.3 dB
Conducted Spurious Emission	1.9 dB
Power Spectral Density	1.4 dB
Temperature	0.8 °C
Humidity	2.2 %

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

2.3 TEST ENVIRONMENT CONDITIONS

Test Item	Temperature	Humidity	Test Voltage	Tested By	Test Date
AC Power Line Conducted Emissions	24°C	68%	AC 120V/60Hz	Hayden Chen	Feb. 21, 2024
Radiated Emissions -9kHz to 30 MHz	22°C	53%	AC 120V/60Hz	Hayden Chen	Feb. 20, 2024
Radiated Emissions -30MHz to 1000MHz	22°C	43%	AC 120V/60Hz	Allen Tong	Feb. 26, 2024
Radiated Emissions -Above 1000MHz	21-23°C	40-42%	AC 120V/60Hz	Allen Tong	Feb. 25, 2024-Mar. 10, 2024
Bandwidth	25°C	51%	DC 12V	Steve Zhou	Mar. 05, 2024
Maximum Output Power	24-25°C	46-57%	DC 12V	Oliver Wang	Feb. 24, 2024-Mar. 20, 2024
Conducted Spurious Emissions	25°C	51%	DC 12V	Steve Zhou	Mar. 05, 2024
Power Spectral Density	25°C	51%	DC 12V	Steve Zhou	Mar. 05, 2024

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	Harbor Monitor
Brand Name	Harbor
Test Model	M01
Series Model	N/A
Model Difference(s)	N/A
HVIN	M01
FVIN	FlatBuild_Turbox-CM6125_DK.V03_la3.0.D.userdebug.20240423.1023.zip
Power Source	1# DC voltage supplied from AC adapter. Model: S-TR-151PU4 2# Supplied from battery. Model: GSP297987HV-1S2P
Power Rating	1# I/P: 100-240V~, 50/60Hz 0.5A Max Type-C O/P: 5.0V ⎓ 3.0A, 9.0V ⎓ 2.22A, 12.0V ⎓ 1.67A 2# 6200mAh, 3.8V, 23.56Wh
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 802.11g: 12.44 dBm (0.0175 W)

Note:

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

2. Channel List:

CH01 - CH11 for IEEE 802.11b, IEEE 802.11g, IEEE 802.11n(HT20) 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. Antenna Specification:

Ant.	Manufacturer	P/N	Antenna Type	Connector	Gain (dBi)
1	Etheta Communication Technoloies (china) Co., LTD.	RD1202305NB87-1	PIFA	N/A	2.20

3.2 DESCRIPTION OF TEST MODES

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

Pretest Mode	Description
Mode 1	TX B Mode Channel 01/06/11
Mode 2	TX G Mode Channel 01/06/11
Mode 3	TX N(HT20) Mode Channel 01/06/11
Mode 4	TX N(HT40) Mode Channel 03/06/09
Mode 5	TX G Mode Channel 01

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 5	TX G Mode Channel 01

Radiated emissions test - Below 1GHz	
Final Test Mode	Description
Mode 5	TX G Mode Channel 01

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

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(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 G Mode Channel 01 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 Harmonic 18-26.5GHz test, only tested the worst case and recorded.
(5) For radiated emission above 1 GHz test, the polarization of Vertical and Horizontal are evaluated, the worst case is Horizontal and recorded.

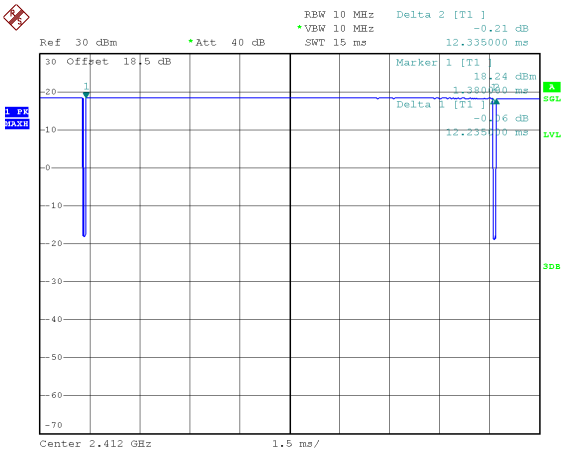
3.3 PARAMETERS OF TEST SOFTWARE

Test Software Version	QRCT4.0		
Frequency (MHz)	2412	2437	2462
IEEE 802.11b	12.5	12.5	12.5
IEEE 802.11g	12.5	12.5	12.5
IEEE 802.11n(HT20)	12.5	12.5	12.5
Frequency (MHz)	2422	2437	2452
IEEE 802.11n(HT40)	12	12	12

3.4 DUTY CYCLE

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

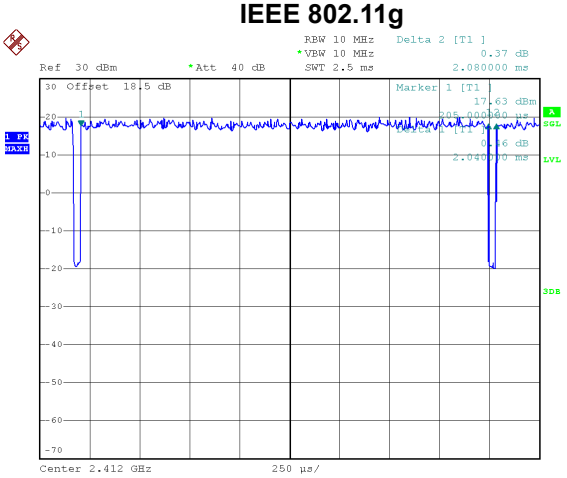
IEEE 802.11b



Date: 5.MAR.2024 10:58:15

Duty cycle = 12.235 ms / 12.335 ms = 99.19%
Duty Factor = 10 log(1/Duty cycle) = 0.00

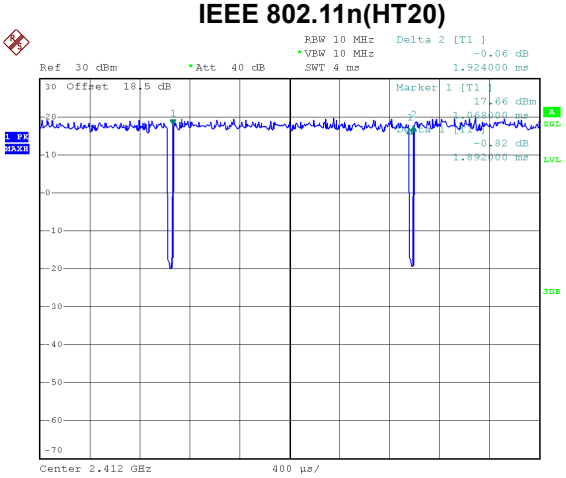
IEEE 802.11g



Date: 5.MAR.2024 10:57:08

Duty cycle = 2.040 ms / 2.080 ms = 98.08%
Duty Factor = 10 log(1/Duty cycle) = 0.00

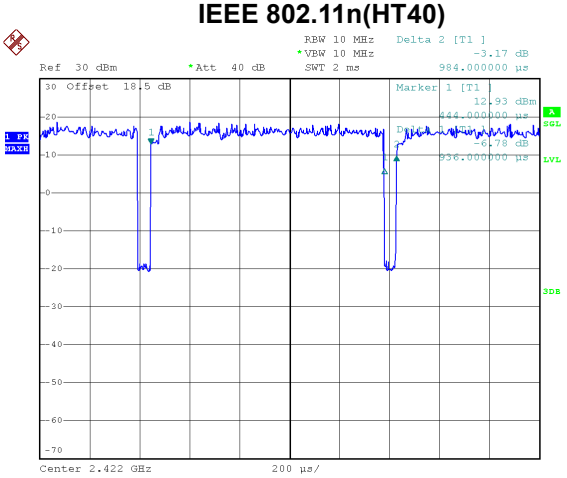
IEEE 802.11n(HT20)



Date: 5.MAR.2024 10:59:19

Duty cycle = 1.892 ms / 1.924 ms = 98.34%
Duty Factor = 10 log(1/Duty cycle) = 0.00

IEEE 802.11n(HT40)



Date: 5.MAR.2024 11:00:12

Duty cycle = 0.936 ms / 0.984 ms = 95.12%
Duty Factor = 10 log(1/Duty cycle) = 0.22

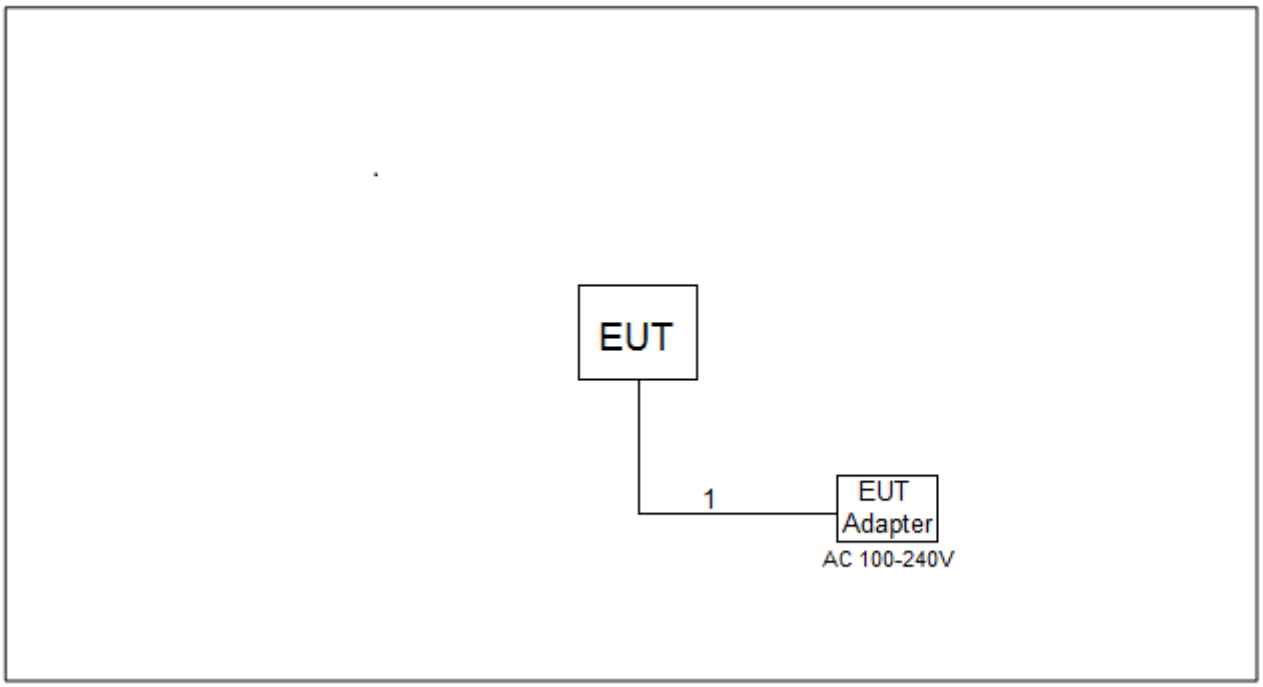
NOTE:
For IEEE 802.11b:
For radiated emissions frequency above 1 GHz, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 1 kHz.

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 1 kHz.

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 1068 Hz.

3.5 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



3.6 SUPPORT UNITS

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

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	DC Cable	NO	NO	1.2m

3.7 CUSTOMER INFORMATION DESCRIPTION

1) The antenna gain is provided by the manufacturer.
2) Except for AC power line conducted emissions and radiated emissions, the results of all test items include cable losses. All cable losses are provided by the testing laboratory.

4. AC POWER LINE CONDUCTED EMISSIONS

4.1 LIMIT

Frequency of Emission (MHz)	Limit (dBμV)	
	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.

4.2 TEST PROCEDURE

a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item -EUT Test Photos.

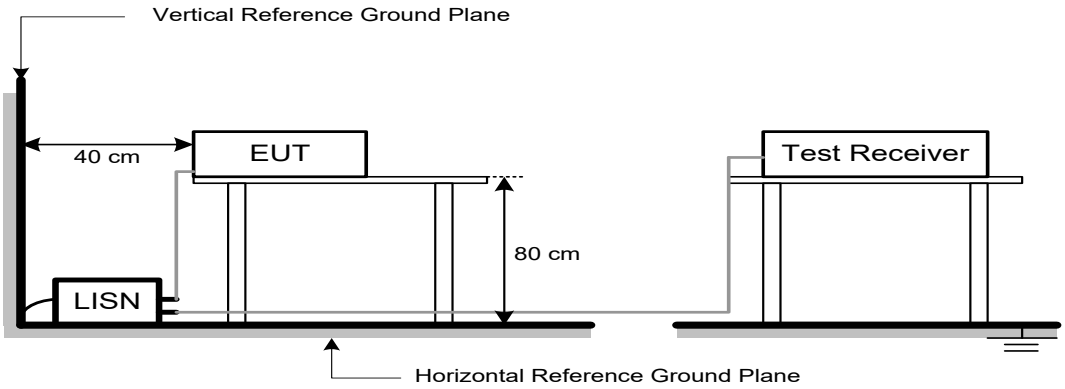
The following table is the setting of the receiver:

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

4.3 DEVIATION FROM TEST STANDARD

No deviation.

4.4 TEST SETUP



4.5 EUT OPERATION CONDITIONS

EUT was programmed to be in continuously transmitting mode.

4.6 TEST RESULTS

Please refer to the APPENDIX A.

5. RADIATED EMISSIONS

5.1 LIMIT

In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

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

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000 MHz)

Frequency (MHz)	Band edge/ Harmonic at 3m (dBμV/m)		Harmonic at 1m (dBμV/m)	
	Peak	Average	Peak	Average
Above 1000	74	54	83.5 (Note 4)	63.5 (Note 4)

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)

$$FS_{\text{limit}} = FS_{\max} - 20\log\left(\frac{d_{\text{limit}}}{d_{\text{measure}}}\right)$$

20log ($d_{limit}/d_{measure}$)=20log (3/1)=9.5 dB.

5.2 TEST PROCEDURE

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

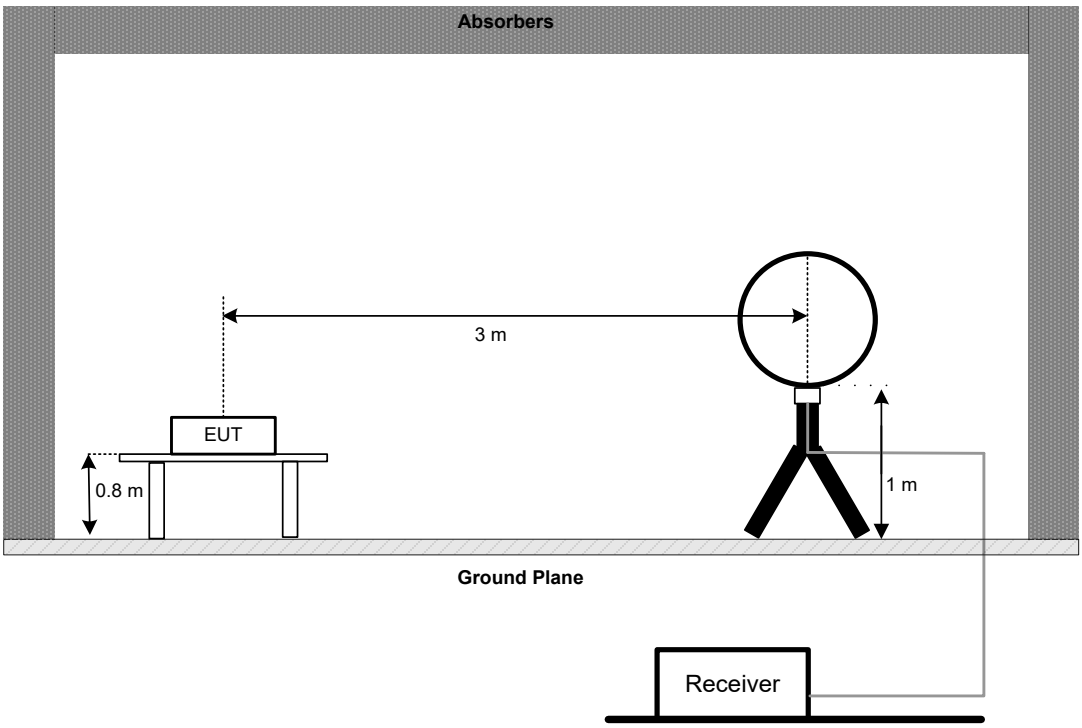
Receiver Parameters	Setting
Start ~ Stop Frequency	9 kHz~90 kHz for PK/AVG detector
Start ~ Stop Frequency	90 kHz~110 kHz for QP detector
Start ~ Stop Frequency	110 kHz~490 kHz for PK/AVG detector
Start ~ Stop Frequency	490 kHz~30 MHz for QP detector
Start ~ Stop Frequency	30 MHz~1000 MHz for QP detector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

5.3 DEVIATION FROM TEST STANDARD

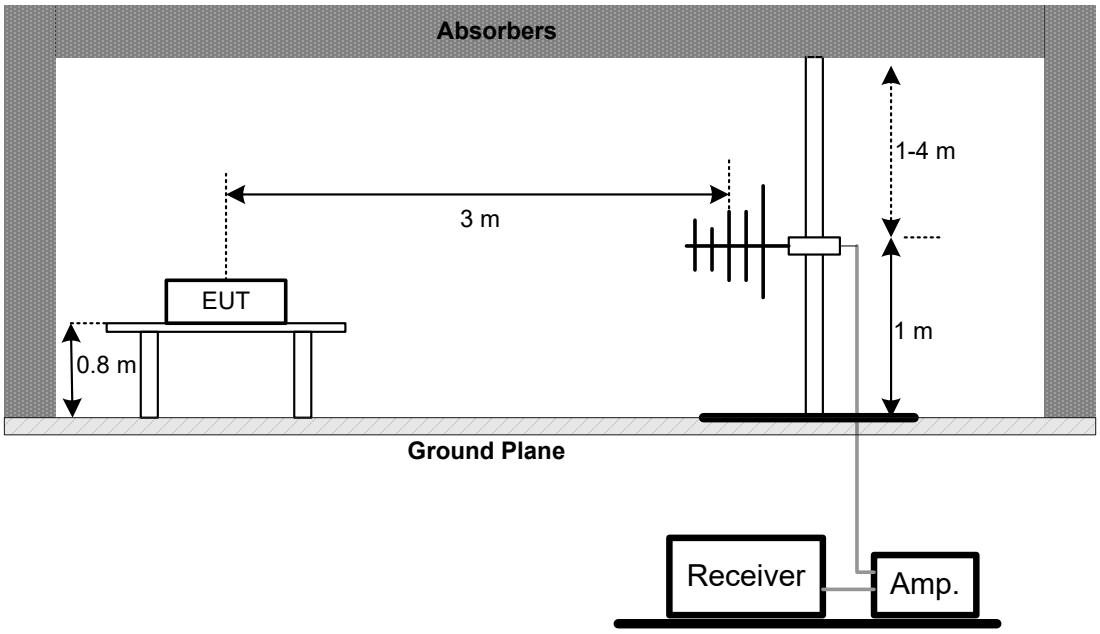
No deviation.

5.4 TEST SETUP

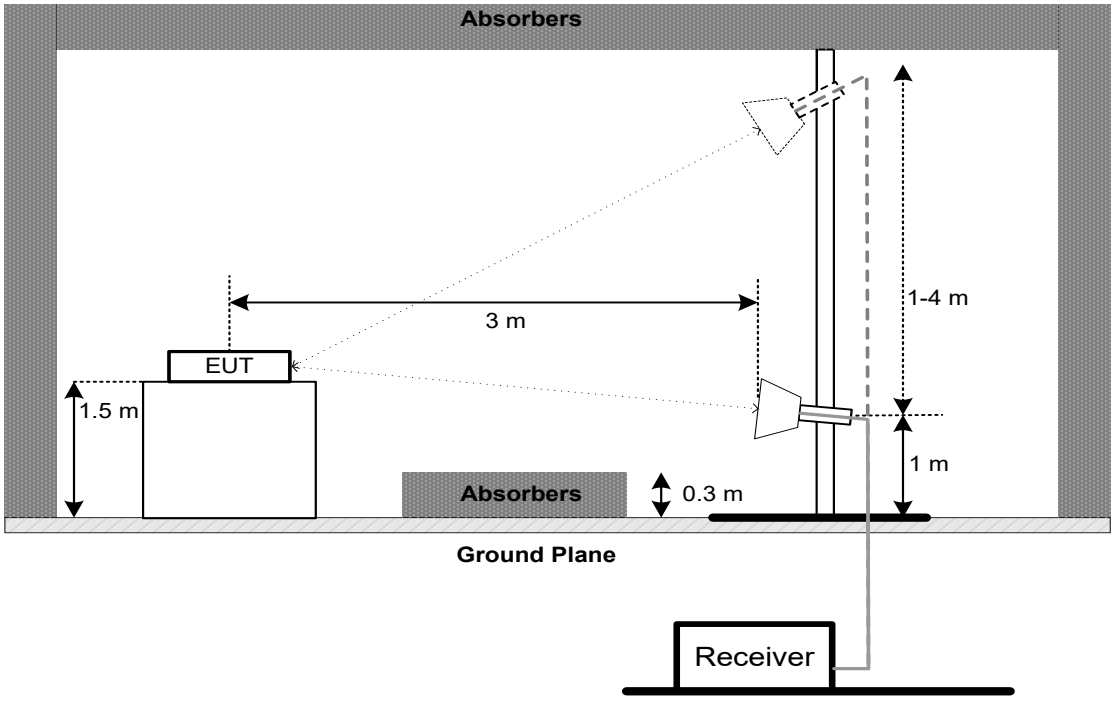
9 kHz to 30 MHz



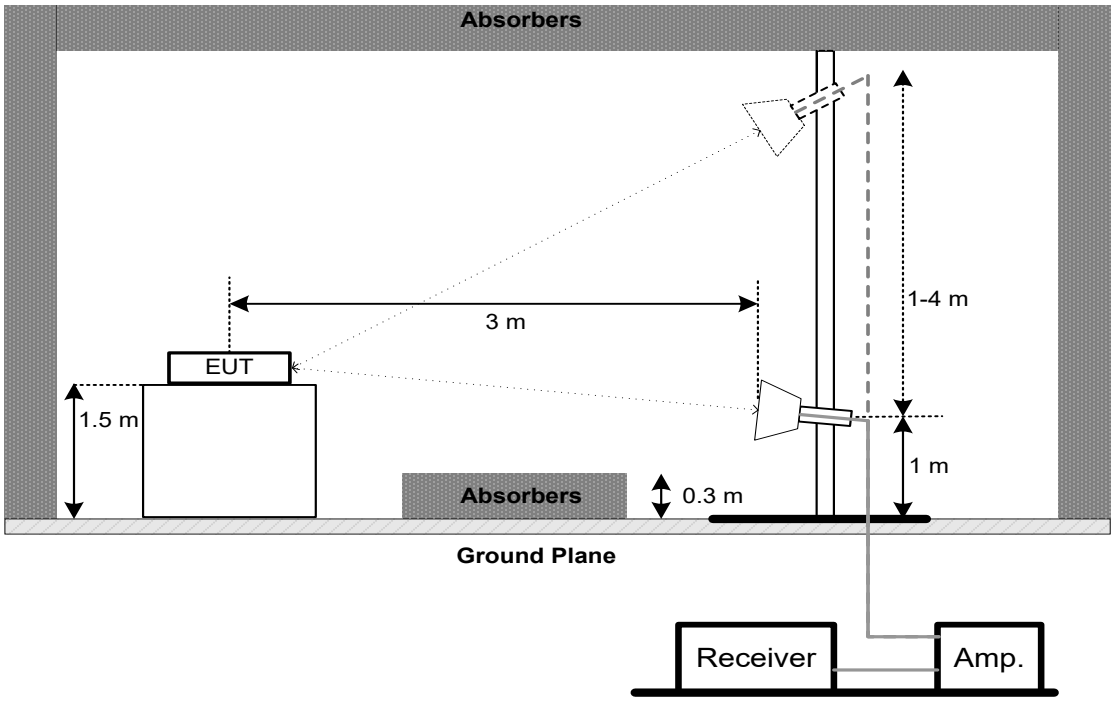
30 MHz to 1 GHz



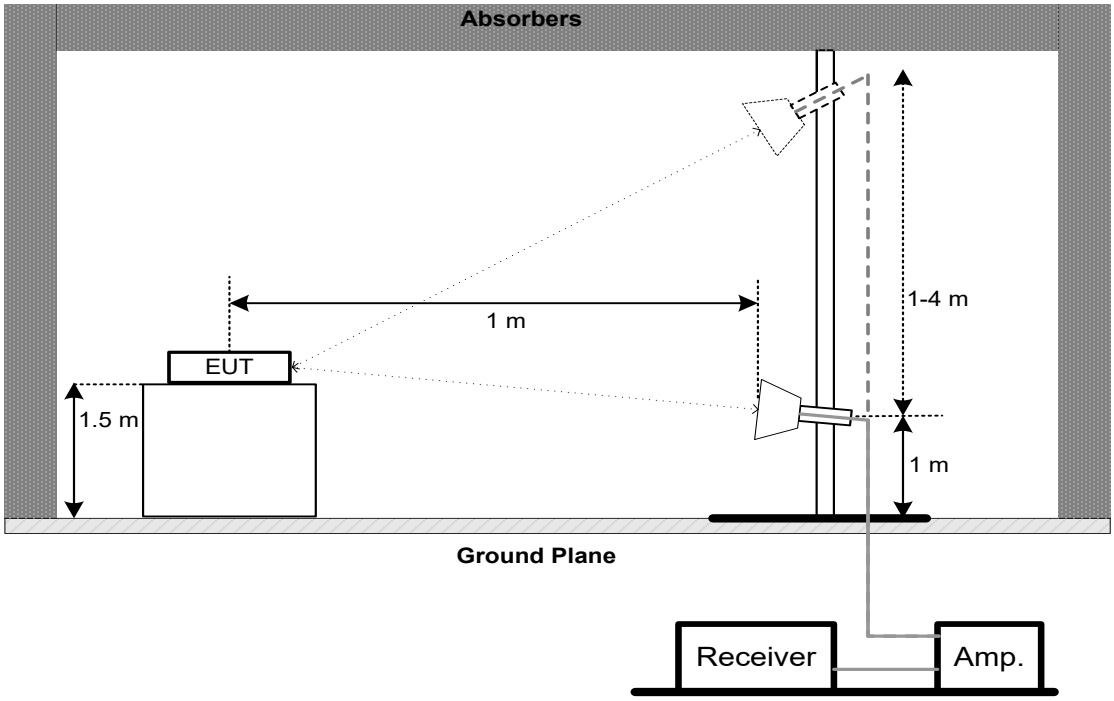
Above 1 GHz
Band edge



Harmonic (1 GHz to 18 GHz)



Harmonic (18 GHz to 26.5 GHz)



5.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

5.6 TEST RESULTS - 9 KHZ TO 30 MHZ

Please refer to the APPENDIX B.

Remark:

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

5.7 TEST RESULTS - 30 MHZ TO 1000 MHZ

Please refer to the APPENDIX C.

5.8 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.

6. BANDWIDTH

6.1 LIMIT

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

6.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
b. 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

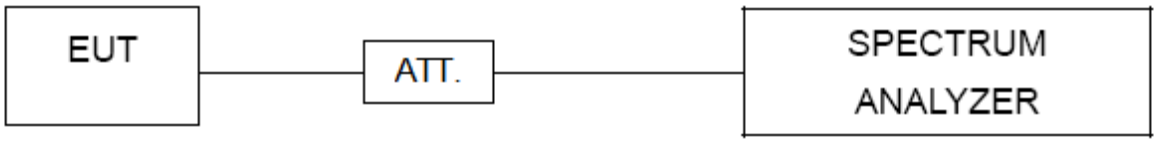
For 99% Emission Bandwidth:

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

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 E.

7. MAXIMUM OUTPUT POWER

7.1 LIMIT

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

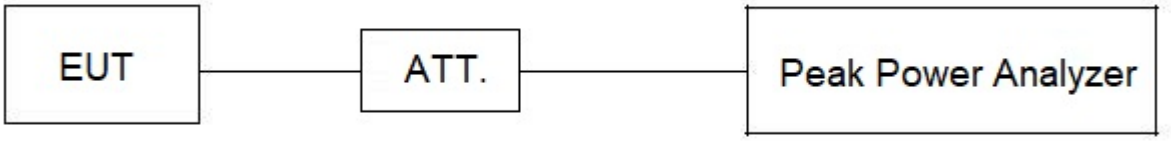
7.2 TEST PROCEDURE

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

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



7.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

7.6 TEST RESULTS

Please refer to the APPENDIX F.

8. CONDUCTED SPURIOUS EMISSIONS

8.1 LIMIT

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

8.2 TEST PROCEDURE

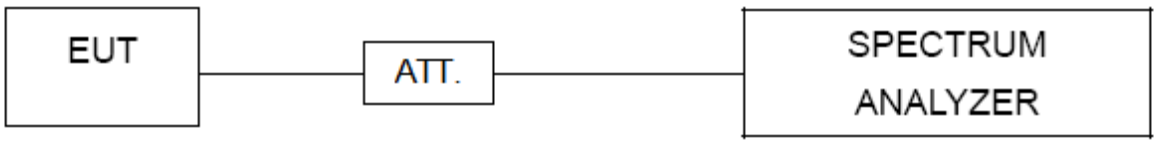
a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
b. The following table is the setting of the spectrum analyzer:

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

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 G.

9. POWER SPECTRAL DENSITY

9.1 LIMIT

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

9.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.

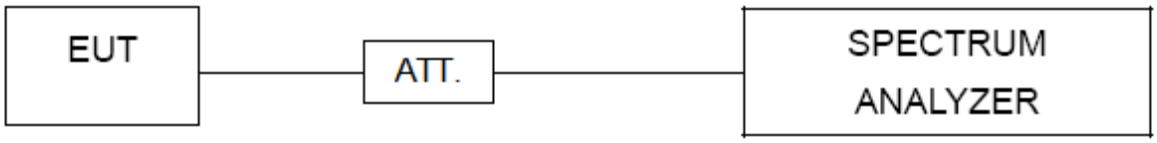
b. The following table is the setting of the spectrum analyzer:

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

9.3 DEVIATION FROM STANDARD

No deviation.

9.4 TEST SETUP



9.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

9.6 TEST RESULTS

Please refer to the APPENDIX H.

10. MEASUREMENT INSTRUMENTS LIST

AC Power Line Conducted Emissions					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	EMI Test Receiver	R&S	ESR3	103027	Jun. 16, 2024
2	TWO-LINE V-NETWORK	R&S	ENV216	101447	Dec. 22, 2024
3	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
4	Cable	N/A	SFT205-NMNM-9M -001	9M	Nov. 27, 2024
5	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	Active Loop Antenna	Schwarzbeck	FMZB 1513-60B	1513-60 B-034	Apr. 01, 2024
2	MXE EMI Receiver	Keysight	N9038A	MY56400091	Dec. 22, 2024
3	Cable	N/A	RW2350-3.8A-NMB M-1.5M	N/A	Jun. 10, 2024
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. 11, 2024

Radiated Emissions - 30 MHz to 1 GHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	1462	Dec. 13, 2024
2	Attenuator	EMC INSTRUMENT	EMCI-N-6-06	AT-06009	Dec. 13, 2024
3	Preamplifier	EMC INSTRUMENT	EMC001330	980863	Nov. 17, 2024
4	Cable	RegalWay	LMR400-NMNM-12 .5m	N/A	Jul. 04, 2024
5	Cable	RegalWay	LMR400-NMNM-3 m	N/A	Jul. 04, 2024
6	Cable	RegalWay	LMR400-NMNM-0. 5m	N/A	Jul. 04, 2024
7	Receiver	Agilent	N9038A	MY52130039	Dec. 22, 2024
8	Positioning Controller	MF	MF-7802	N/A	N/A
9	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
10	966 Chamber room	CM	9*6*6	N/A	May 17, 2024

Radiated Emissions - Above 1 GHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Receiver	Agilent	N9038A	MY52130039	Dec. 22, 2024
2	Preamplifier	EMC INSTRUMENT	EMC118A45SE	980888	Nov. 17, 2024
3	EXA Spectrum Analyzer	Keysight	N9010A	MY55150209	Jun. 16, 2024
4	Double Ridged Guide Antenna	ETS	3115	75789	May 31, 2024
5	Cable	RegalWay	RWLP50-4.0A-SMSM-12.5M	N/A	Feb. 19, 2025
6	Cable	RegalWay	RWLP50-4.0A-NMRASM-2.5M	N/A	Aug. 08, 2024
7	Cable	RegalWay	RWLP50-4.0A-NMRASMRA-0.8M	N/A	Aug. 08, 2024
8	Low Noise Amplifier	CONNPHY	CLN-18G40G-4330-K	619413	Jul. 06, 2024
9	Cable	RegalWay	RWLP50-2.6A-2.92M2.92M-1.1M	N/A	Jul. 26, 2024
10	Cable	Tonscend	HF160-KMKM-3M	N/A	Jul. 26, 2024
11	Broad-Band Horn Antenna	Schwarzbeck	BBHA9170(3m)	9170-319	Jun. 20, 2024
12	966 Chamber room	CM	9*6*6	N/A	May 17, 2024
13	Attenuator	Talent Microwave	TA10A2-S-18	N/A	N/A
14	Filter	STI	STI15-9912	N/A	Jun. 16, 2024
15	Positioning Controller	MF	MF-7802	N/A	N/A
16	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

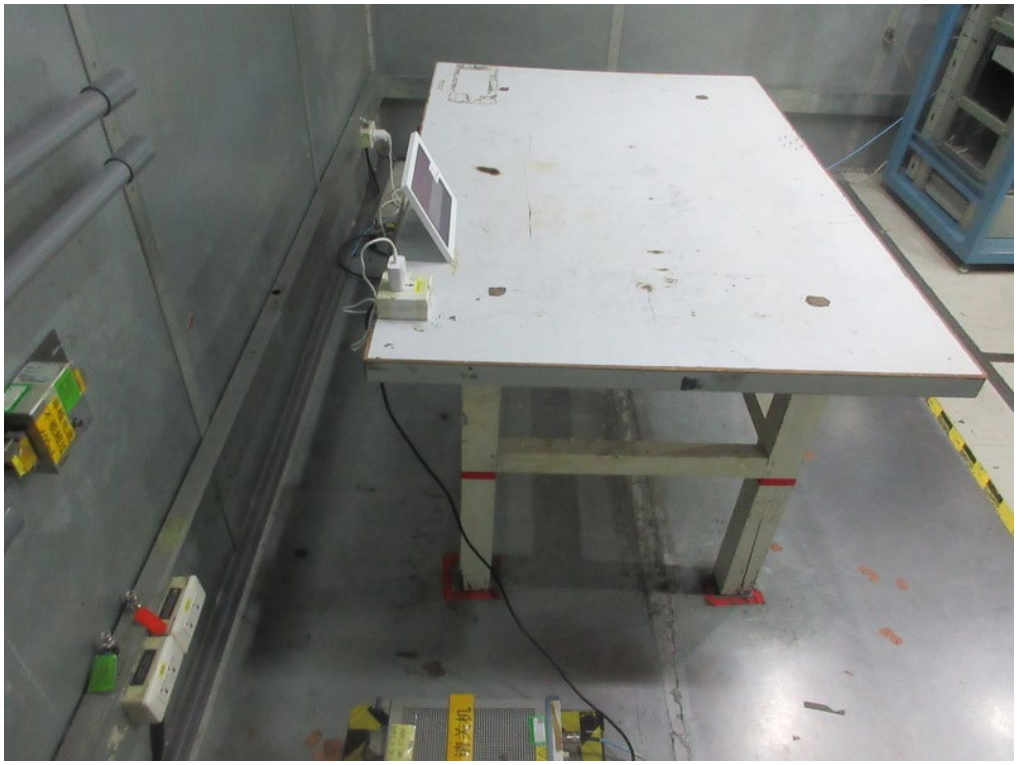
Maximum Output Power					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Peak Power Analyzer	Keysight	8990B	MY51000506	Jun. 17, 2024
2	Wideband power sensor	Keysight	N1923A	MY58310004	Jun. 17, 2024
3	Attenuator	Talent Microwave	TA10A2-S-18	N/A	N/A

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	Jun. 16, 2024
2	Attenuator	Talent Microwave	TA10A0-S-26.5	N/A	N/A
3	Attenuator	Talent Microwave	TA10A0-S-26.5	N/A	N/A
4	DC Block	N/A	N/A	N/A	N/A
5	Measurement Software	BTL	BTL Conducted Test	N/A	N/A

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

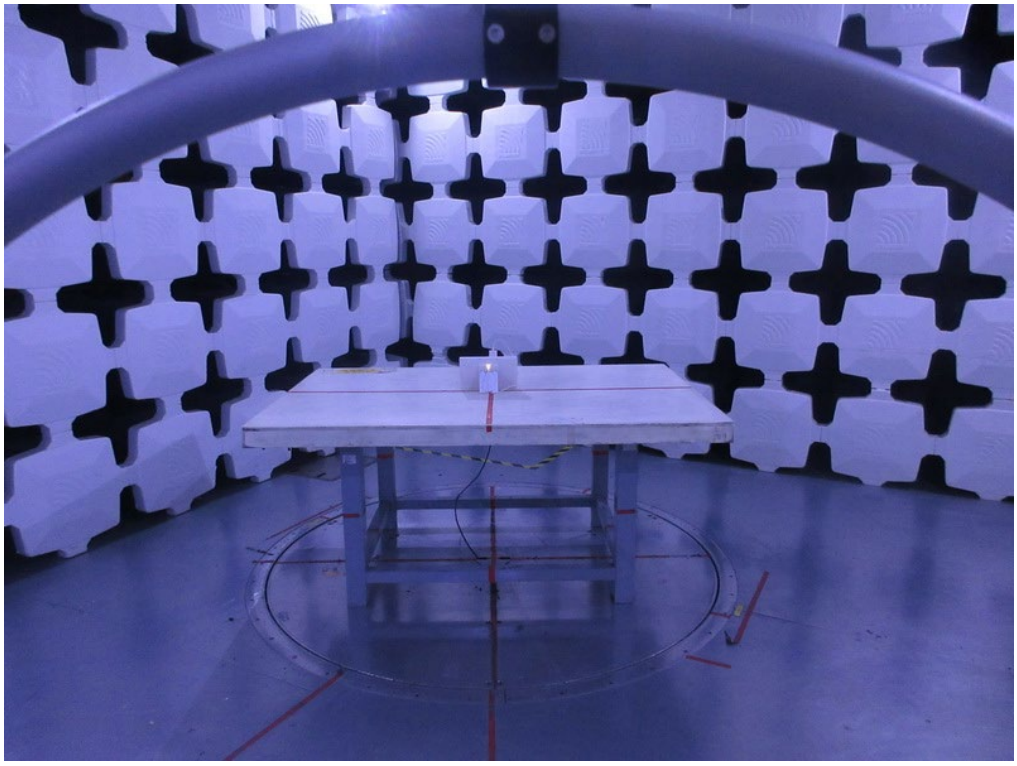
11. EUT TEST PHOTO

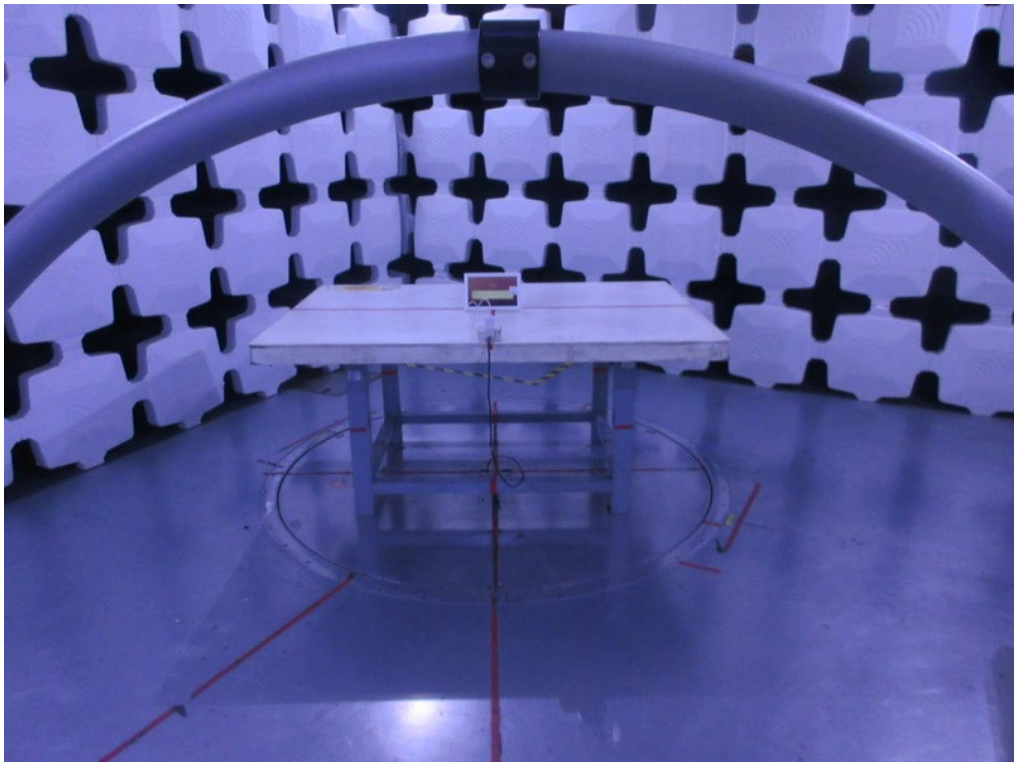
AC Power Line Conducted Emissions Test Photos



Radiated Emissions Test Photos

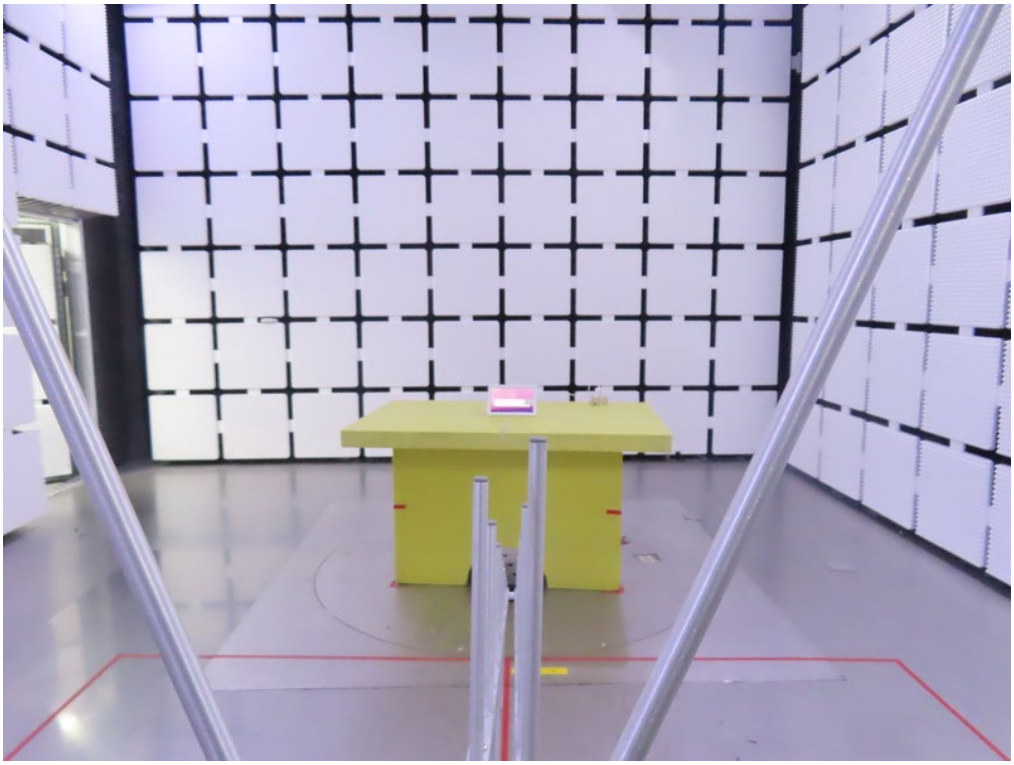
9 kHz to 30 MHz

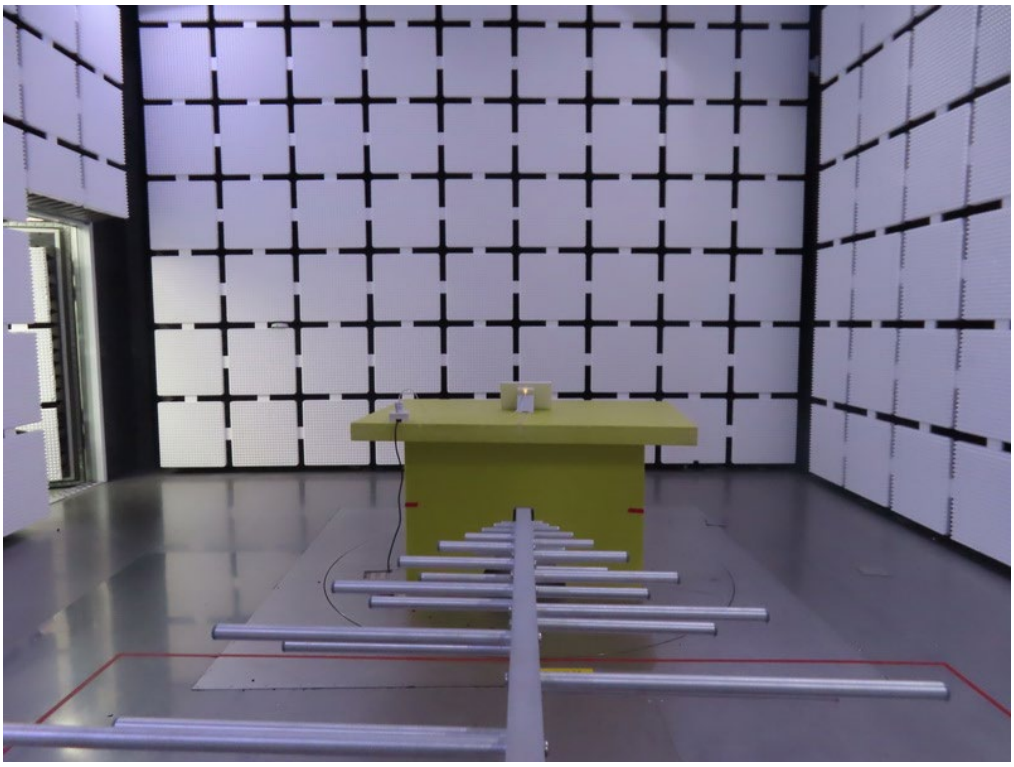




Radiated Emissions Test Photos

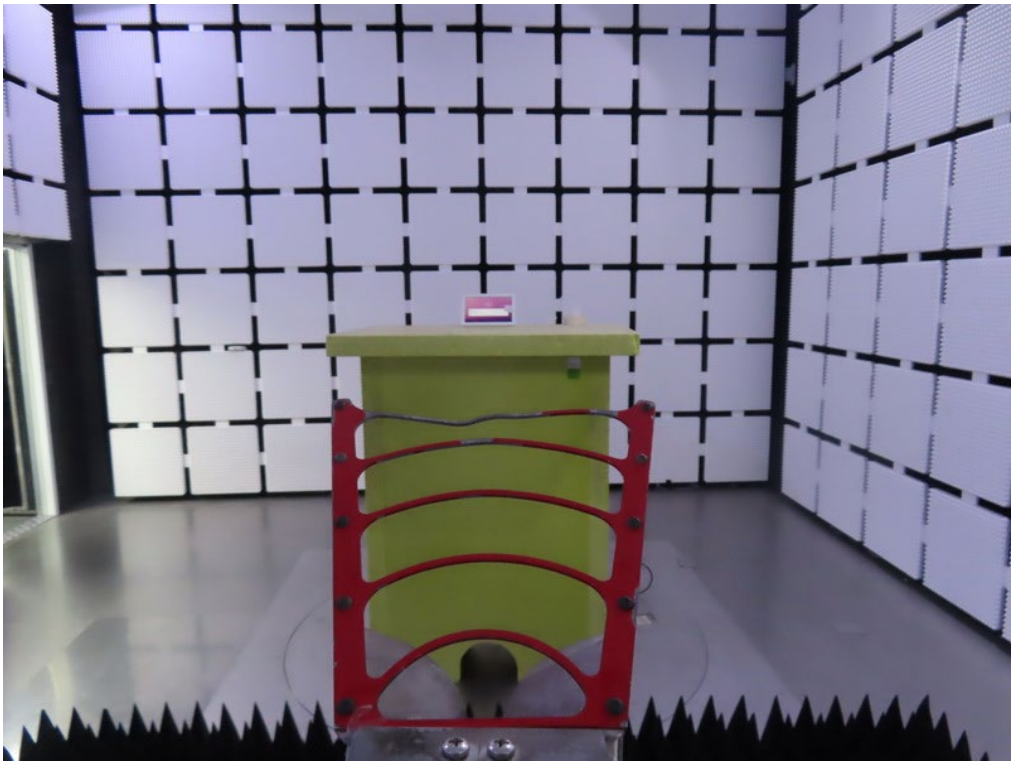
30 MHz to 1000 MHz

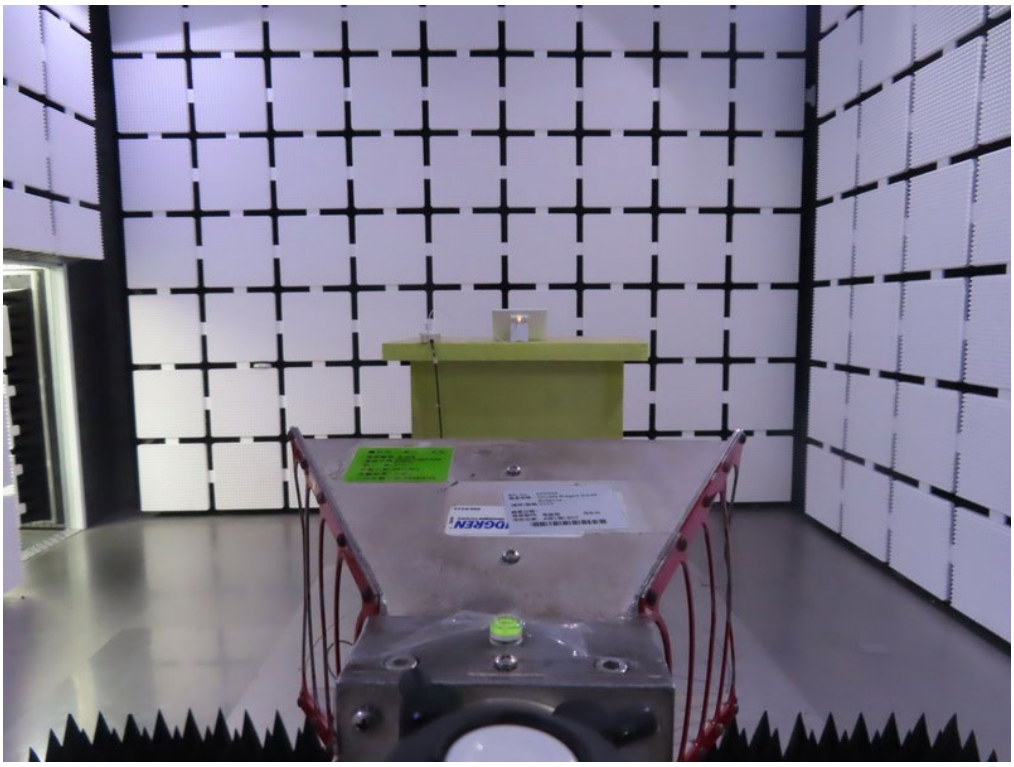




Radiated Emissions Test Photos

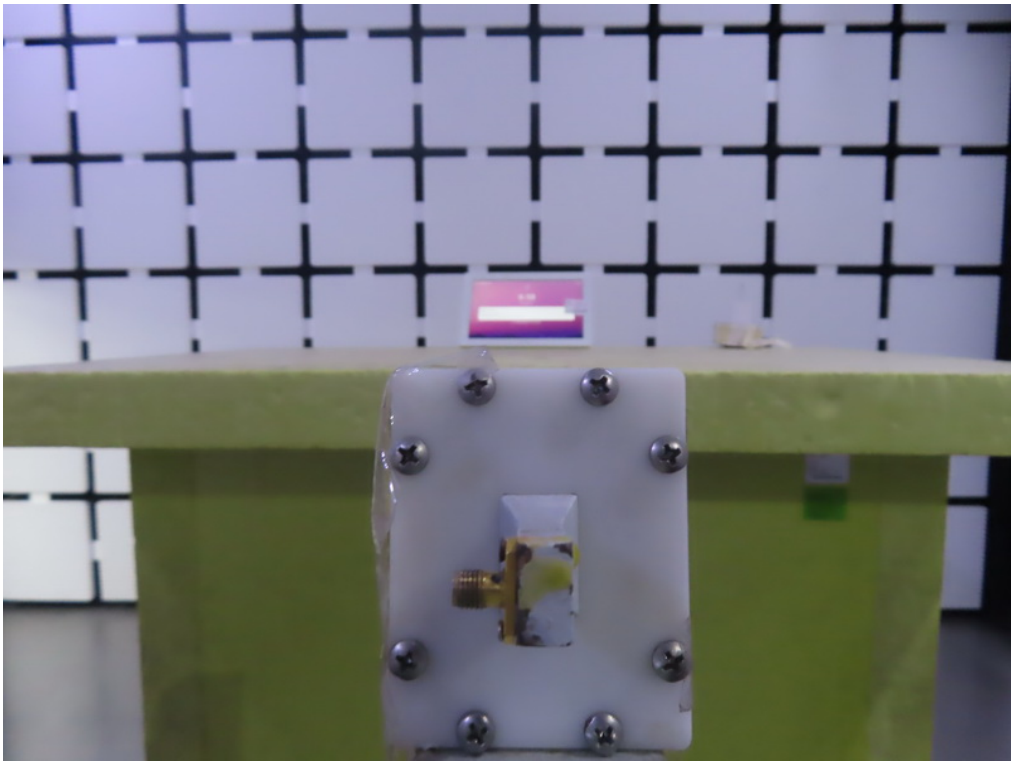
Band edge & Harmonic (1 GHz - 18GHz)

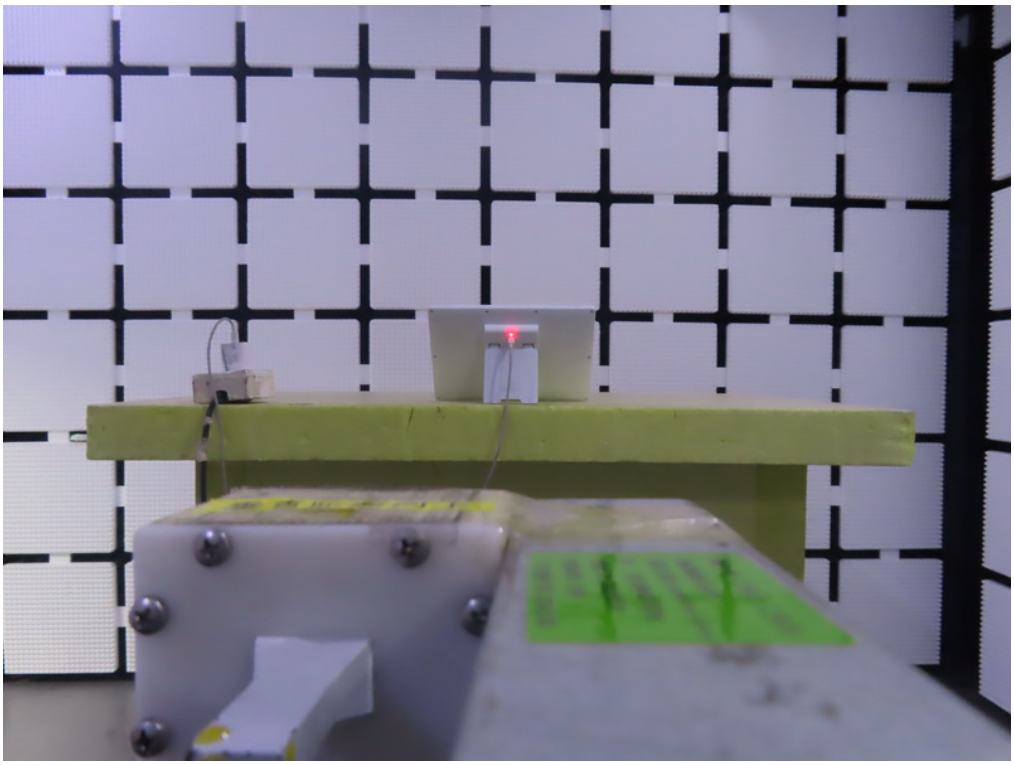




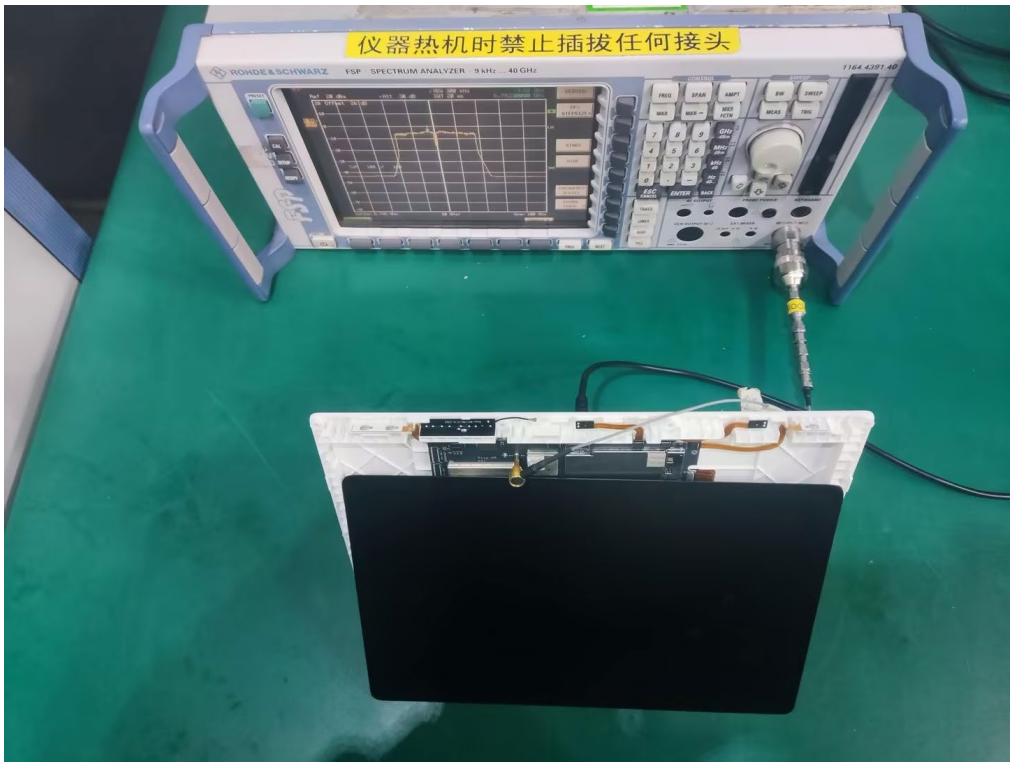
Radiated Emissions Test Photos

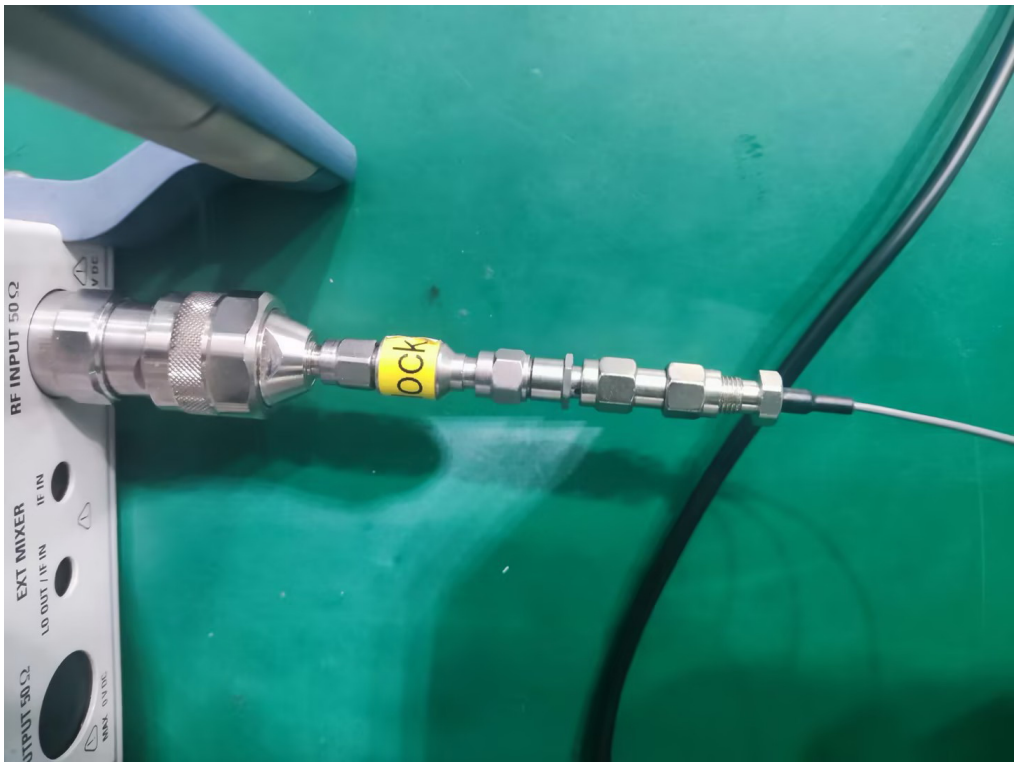
Harmonic (Above 18 GHz)





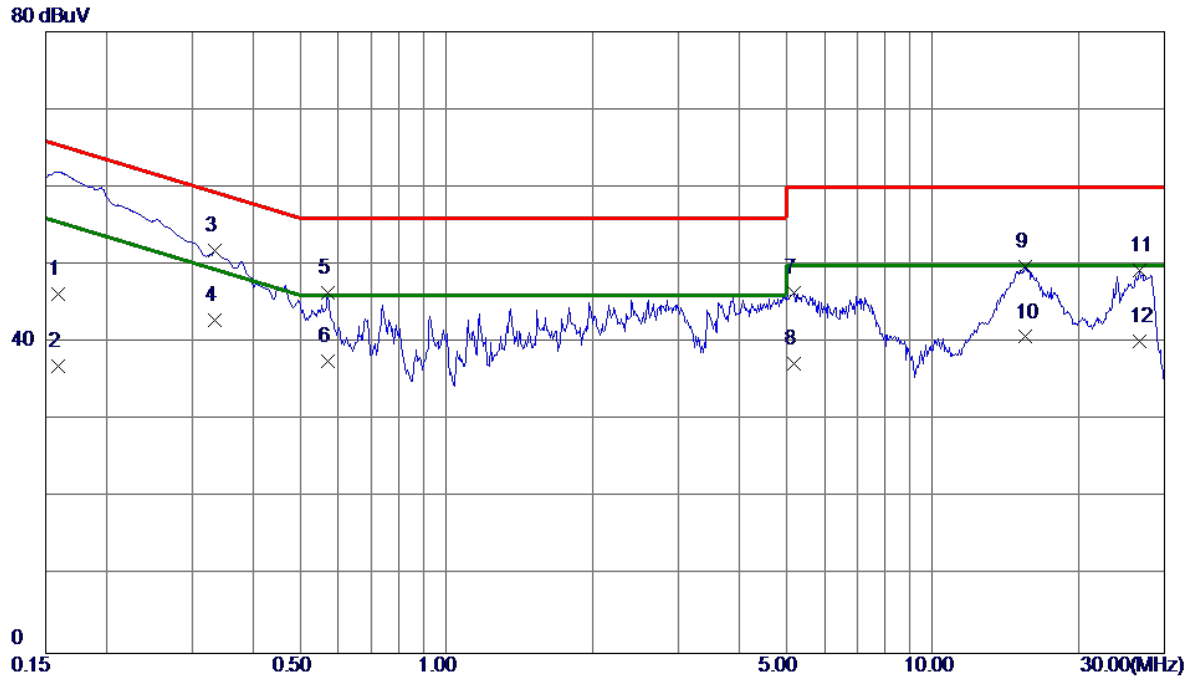
Conducted Test Photos





APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS

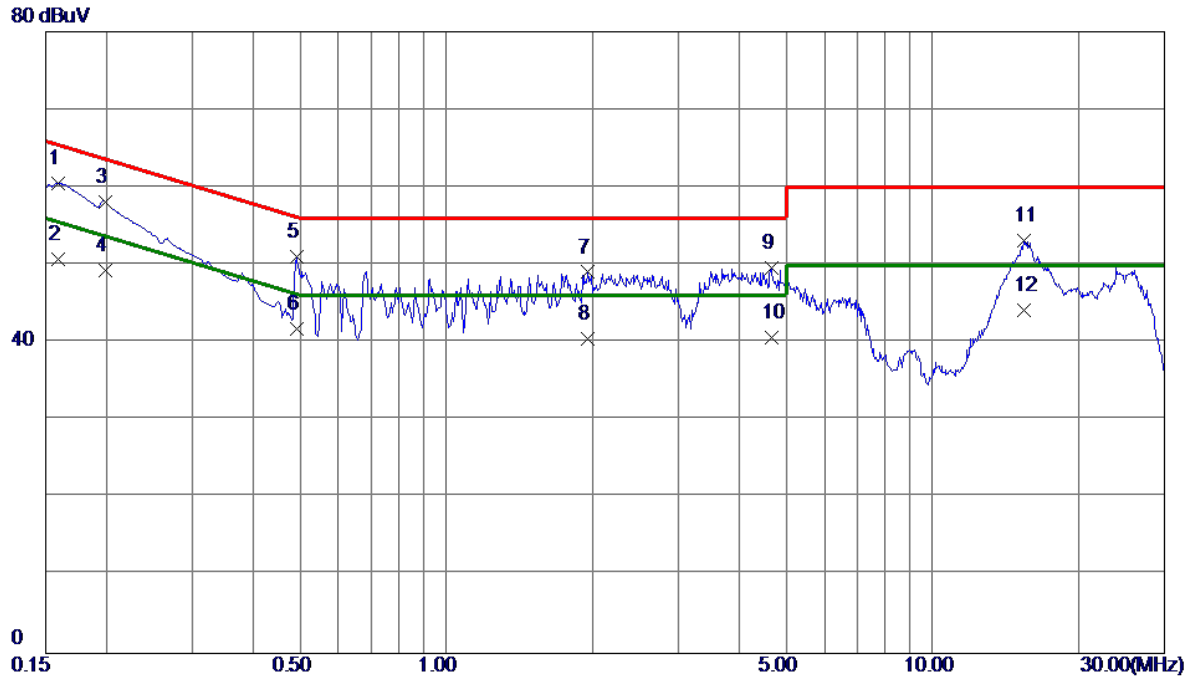
Test Mode	TX G Mode Channel 01	Phase	Line



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1590	36.50	9.74	46.24	65.52	-19.28	QP	
2	0.1590	27.20	9.74	36.94	55.52	-18.58	AVG	
3	0.3345	42.02	9.77	51.79	59.34	-7.55	QP	
4 *	0.3345	33.10	9.77	42.87	49.34	-6.47	AVG	
5	0.5707	36.55	9.79	46.34	56.00	-9.66	QP	
6	0.5707	27.80	9.79	37.59	46.00	-8.41	AVG	
7	5.1788	36.39	10.00	46.39	60.00	-13.61	QP	
8	5.1788	27.30	10.00	37.30	50.00	-12.70	AVG	
9	15.4928	39.39	10.32	49.71	60.00	-10.29	QP	
10	15.4928	30.40	10.32	40.72	50.00	-9.28	AVG	
11	26.6910	38.59	10.61	49.20	60.00	-10.80	QP	
12	26.6910	29.60	10.61	40.21	50.00	-9.79	AVG	

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

Test Mode	TX G Mode Channel 01	Phase	Neutral

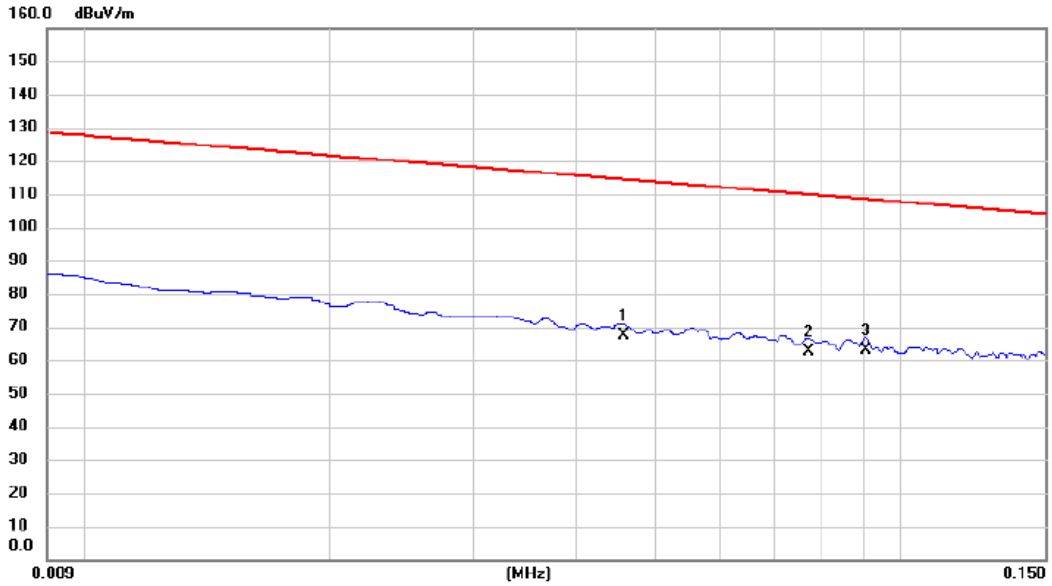


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1590	50.91	9.59	60.50	65.52	-5.02	QP	
2	0.1590	41.20	9.59	50.79	55.52	-4.73	AVG	
3	0.1995	48.46	9.60	58.06	63.63	-5.57	QP	
4	0.1995	39.60	9.60	49.20	53.63	-4.43	AVG	
5	0.4920	41.39	9.65	51.04	56.13	-5.09	QP	
6 *	0.4920	32.10	9.65	41.75	46.13	-4.38	AVG	
7	1.9568	39.33	9.71	49.04	56.00	-6.96	QP	
8	1.9568	30.70	9.71	40.41	46.00	-5.59	AVG	
9	4.6680	39.72	9.83	49.55	56.00	-6.45	QP	
10	4.6680	30.81	9.83	40.64	46.00	-5.36	AVG	
11	15.4208	42.95	10.19	53.14	60.00	-6.86	QP	
12	15.4208	33.90	10.19	44.09	50.00	-5.91	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

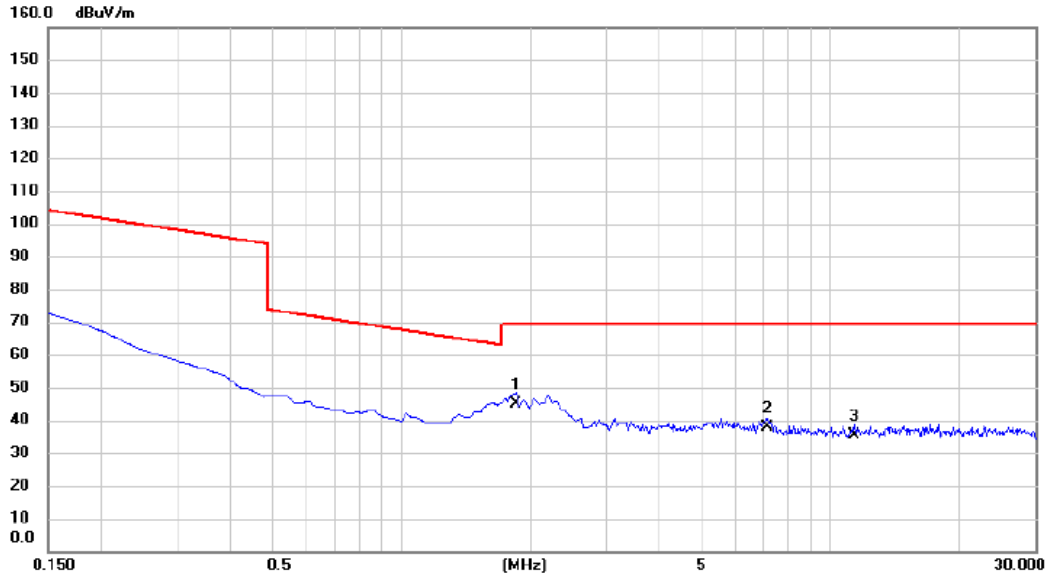
Test Mode	TX G Mode Channel 01	Polarization	Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.0458	47.62	19.80	67.42	114.39	-46.97	AVG	
2		0.0770	42.85	19.89	62.74	109.88	-47.14	AVG	
3	*	0.0906	43.21	19.88	63.09	108.46	-45.37	QP	

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

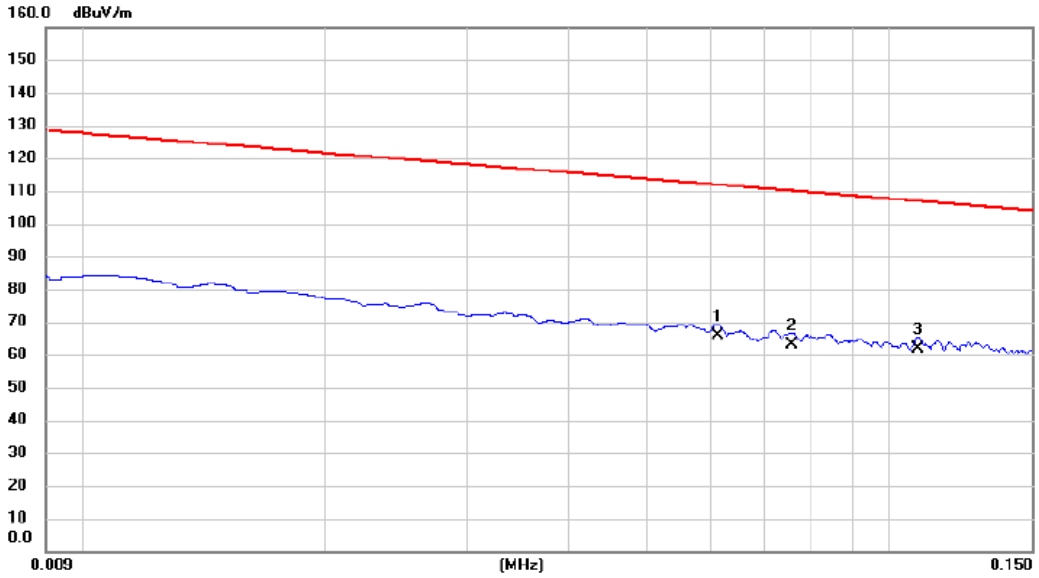
Test Mode	TX G Mode Channel 01	Polarization	Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	1.8515	25.31	19.80	45.11	69.54	-24.43	QP	
2		7.1051	17.68	20.03	37.71	69.54	-31.83	QP	
3		11.3288	15.36	20.22	35.58	69.54	-33.96	QP	

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

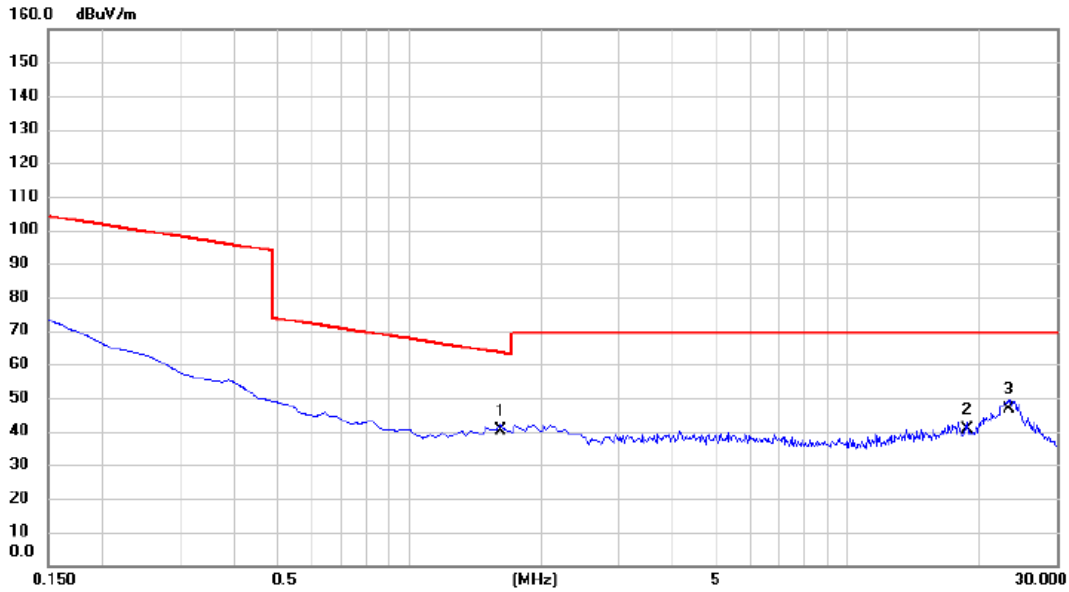
Test Mode	TX G Mode Channel 01	Polarization	Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.0612	45.84	19.84	65.68	111.87	-46.19	AVG	
2		0.0756	42.94	19.89	62.83	110.03	-47.20	AVG	
3	*	0.1085	41.85	19.83	61.68	106.90	-45.22	QP	

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

Test Mode	TX G Mode Channel 01	Polarization	Ant 90°

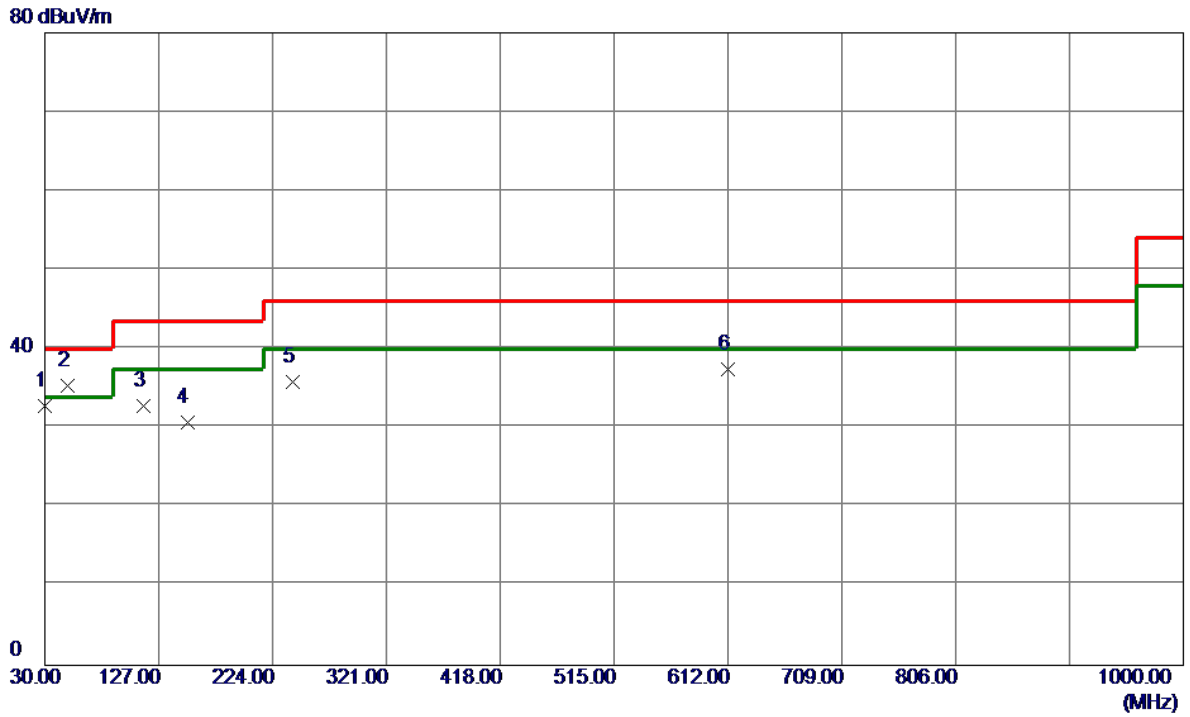


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		1.6126	20.32	19.82	40.14	63.45	-23.31	QP	
2		18.7465	19.89	20.54	40.43	69.54	-29.11	QP	
3	*	23.3584	25.84	20.81	46.65	69.54	-22.89	QP	

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

APPENDIX C - RADIATED EMISSION - 30 MHZ TO 1000 MHZ

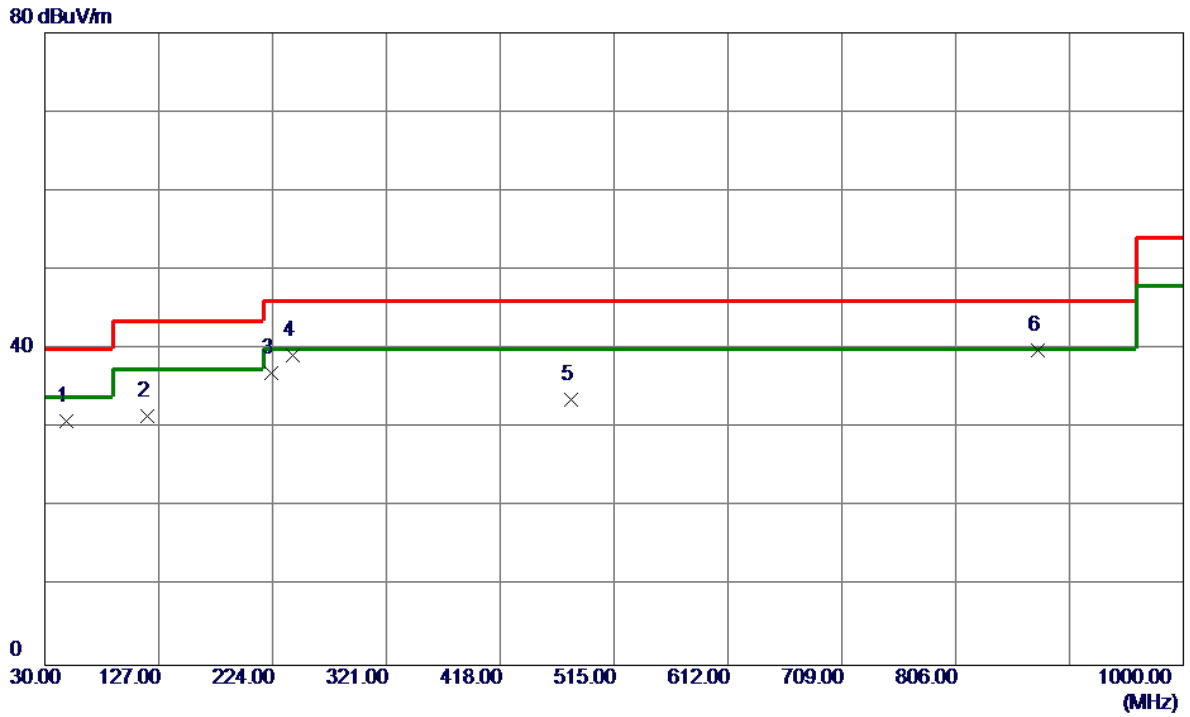
Test Mode	TX G Mode Channel 01	Polarization	Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	30.0000	45.90	-13.07	32.83	40.00	-7.17	Peak	
2 *	49.4000	46.72	-11.35	35.37	40.00	-4.63	Peak	
3	114.3900	46.62	-13.81	32.81	43.50	-10.69	Peak	
4	151.2500	41.83	-11.16	30.67	43.50	-12.83	Peak	
5	240.9750	48.55	-12.71	35.84	46.00	-10.16	Peak	
6	611.5150	40.92	-3.50	37.42	46.00	-8.58	Peak	

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

Test Mode	TX G Mode Channel 01	Polarization	Horizontal

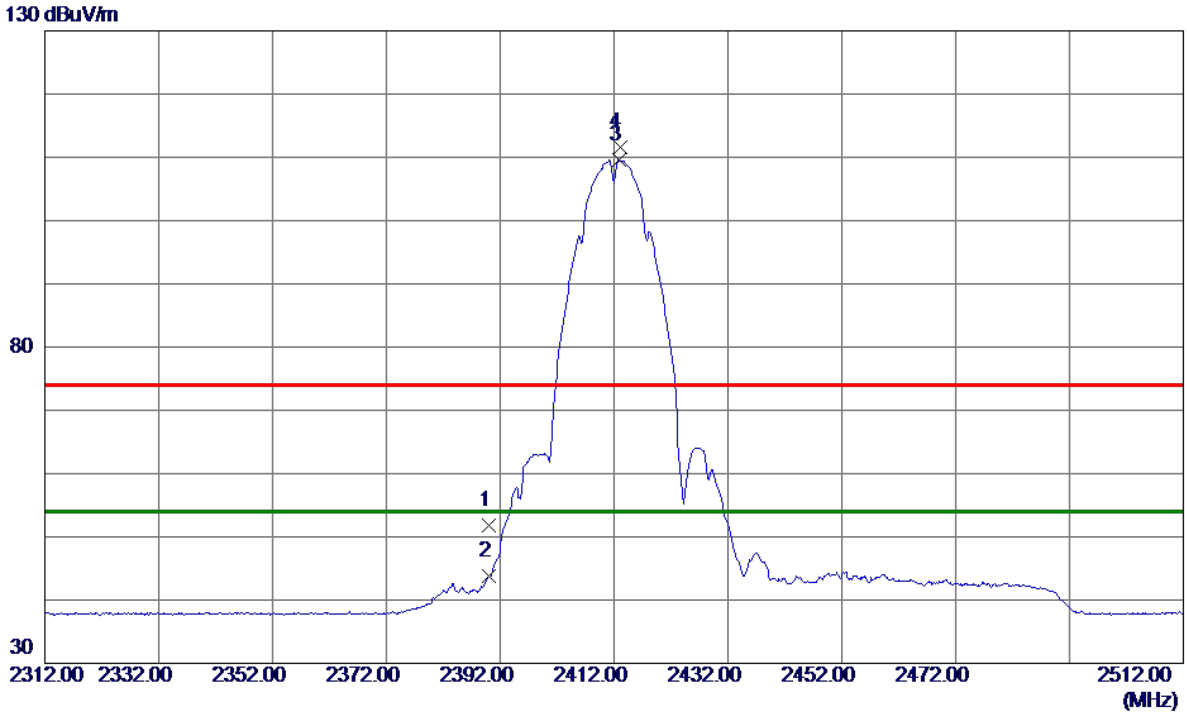


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	47.9450	42.17	-11.34	30.83	40.00	-9.17	Peak	
2	116.8150	45.12	-13.55	31.57	43.50	-11.93	Peak	
3	222.5450	51.14	-14.21	36.93	46.00	-9.07	Peak	
4	241.4600	51.82	-12.69	39.13	46.00	-6.87	Peak	
5	478.1400	39.94	-6.37	33.57	46.00	-12.43	Peak	
6 *	876.3250	40.01	-0.16	39.85	46.00	-6.15	Peak	

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

APPENDIX D - RADIATED EMISSION- ABOVE 1000 MHZ

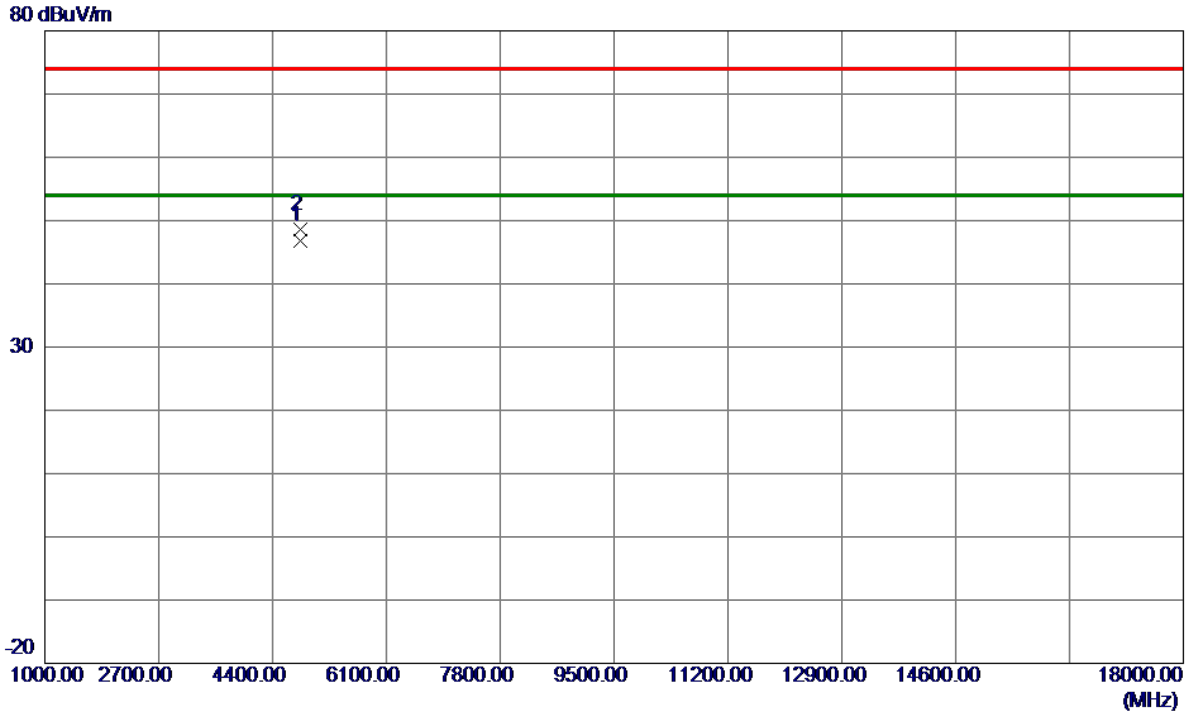
Test Mode	TX B Mode 2412 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.0000	45.84	6.00	51.84	74.00	-22.16	Peak	
2	2390.0000	37.86	6.00	43.86	54.00	-10.14	AVG	
3 *	2412.9000	103.65	6.00	109.65	54.00	55.65	AVG	No Limit
4	2413.0000	105.63	6.00	111.63	74.00	37.63	Peak	No Limit

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

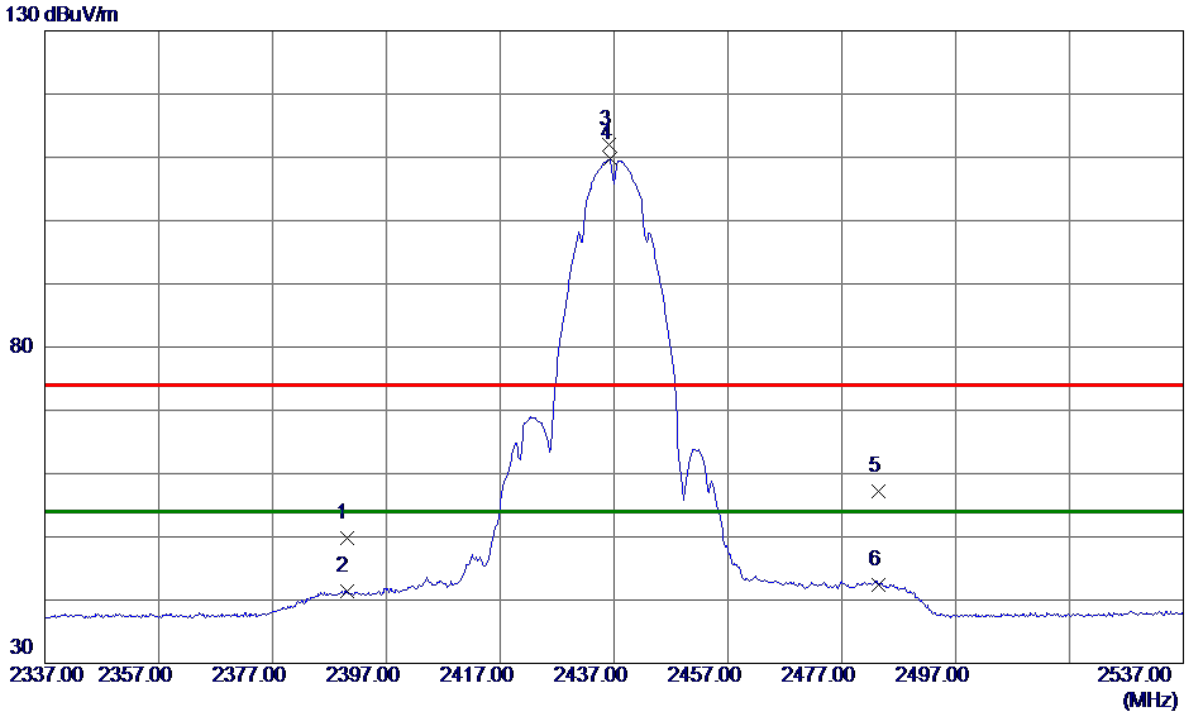
Test Mode	TX B Mode 2412 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	4824.0250	46.13	0.72	46.85	54.00	-7.15	AVG	
2	4824.1750	47.90	0.72	48.62	74.00	-25.38	Peak	

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

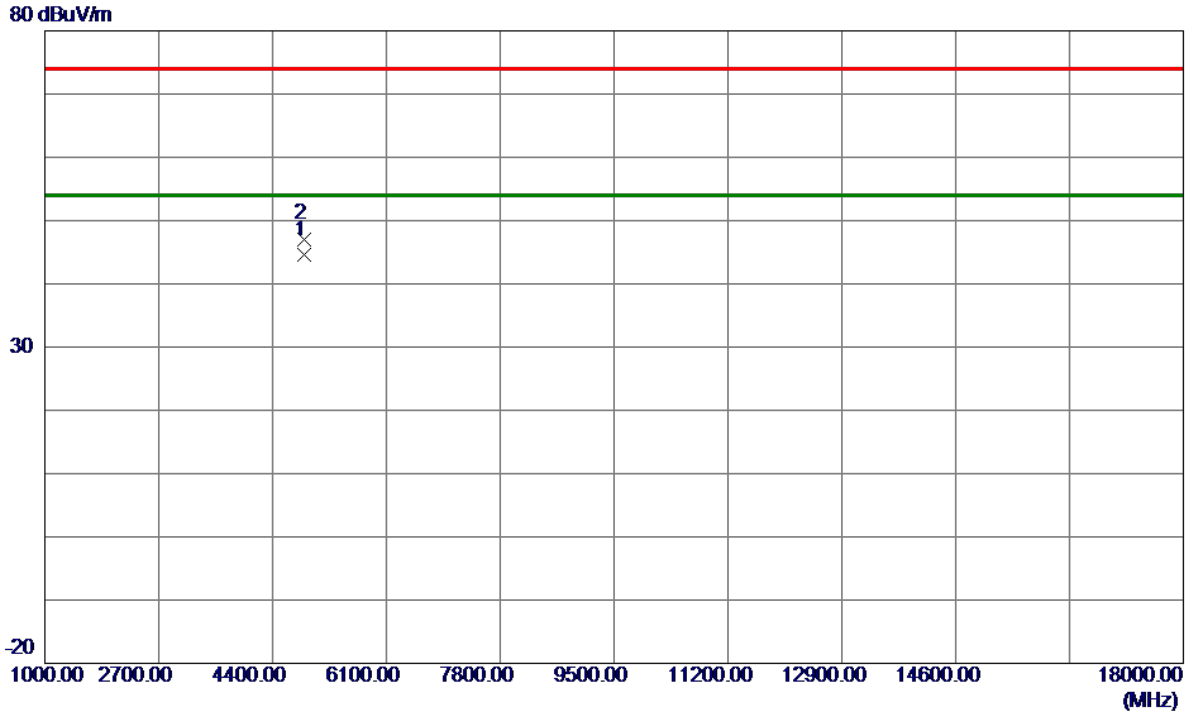
Test Mode	TX B Mode 2437 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.0000	43.84	6.00	49.84	74.00	-24.16	Peak	
2	2390.0000	35.31	6.00	41.31	54.00	-12.69	AVG	
3	2436.2000	105.92	6.00	111.92	74.00	37.92	Peak	No Limit
4 *	2436.3000	103.80	6.00	109.80	54.00	55.80	AVG	No Limit
5	2483.5000	51.21	6.00	57.21	74.00	-16.79	Peak	
6	2483.5000	36.42	6.00	42.42	54.00	-11.58	AVG	

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

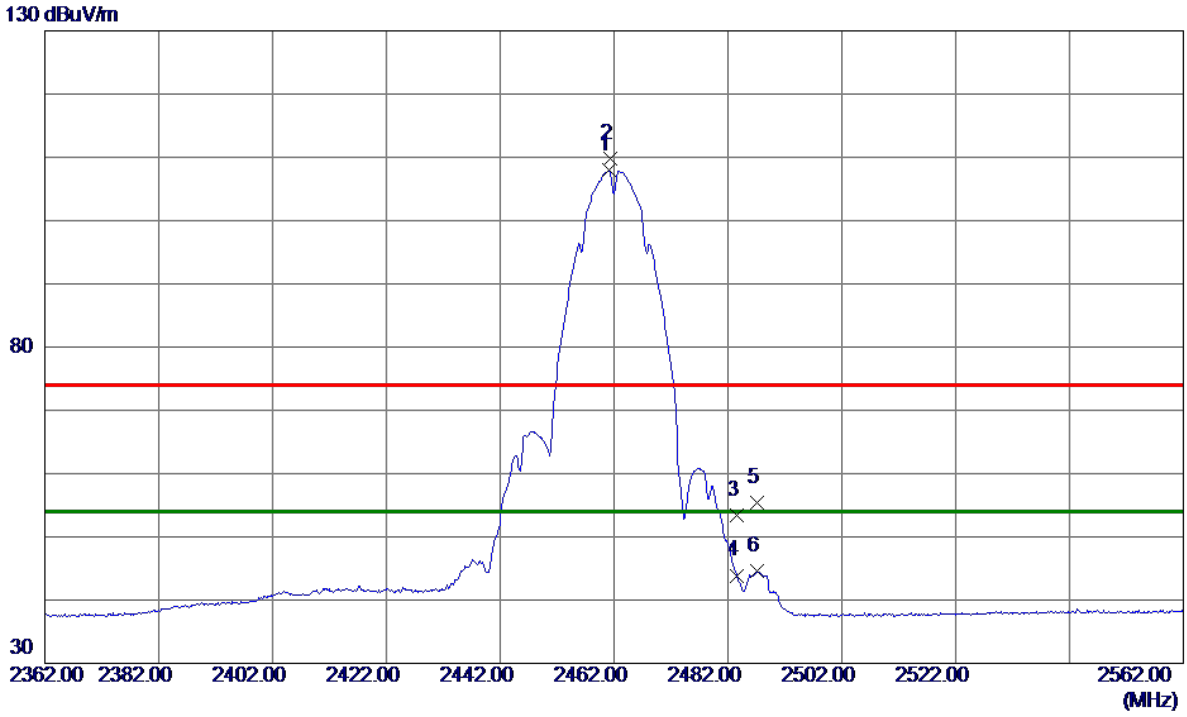
Test Mode	TX B Mode 2437 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	4874.0250	43.66	0.86	44.52	54.00	-9.48	AVG	
2	4874.0750	46.24	0.86	47.10	74.00	-26.90	Peak	

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

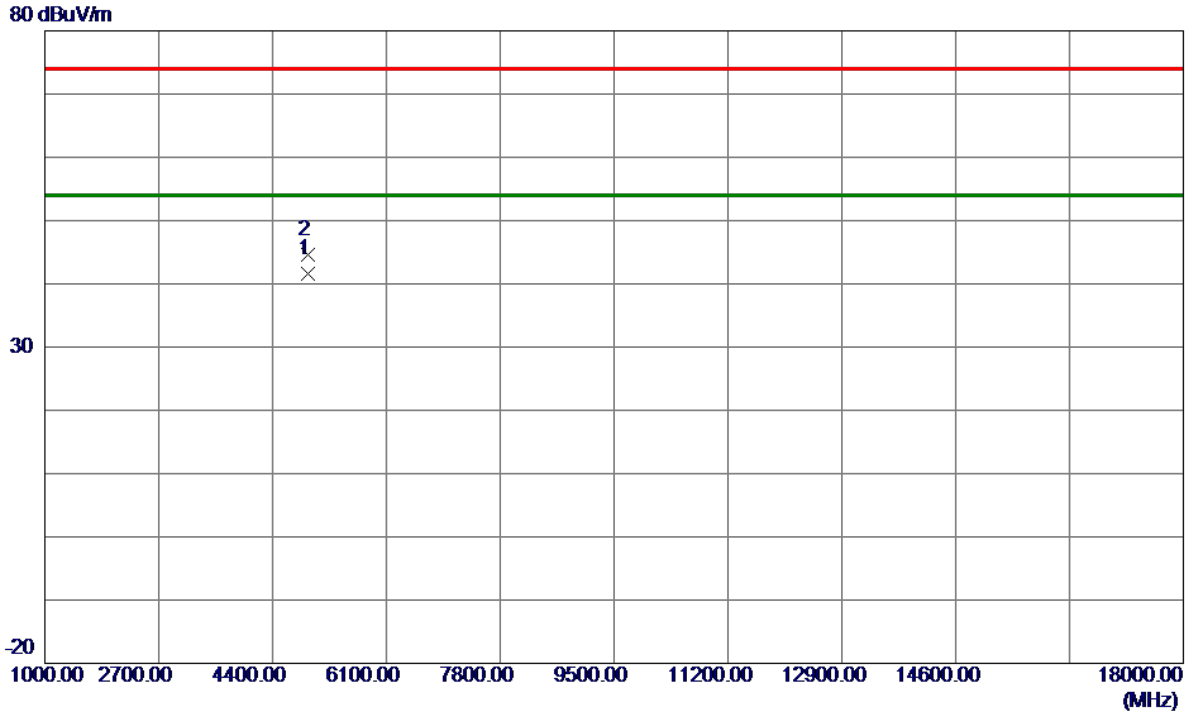
Test Mode	TX B Mode 2462 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	2461.2000	101.95	6.00	107.95	54.00	53.95	AVG	No Limit
2	2461.3000	103.77	6.00	109.77	74.00	35.77	Peak	No Limit
3	2483.5000	47.48	6.00	53.48	74.00	-20.52	Peak	
4	2483.5000	37.90	6.00	43.90	54.00	-10.10	AVG	
5	2487.2000	49.48	6.00	55.48	74.00	-18.52	Peak	
6	2487.2000	38.51	6.00	44.51	54.00	-9.49	AVG	

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

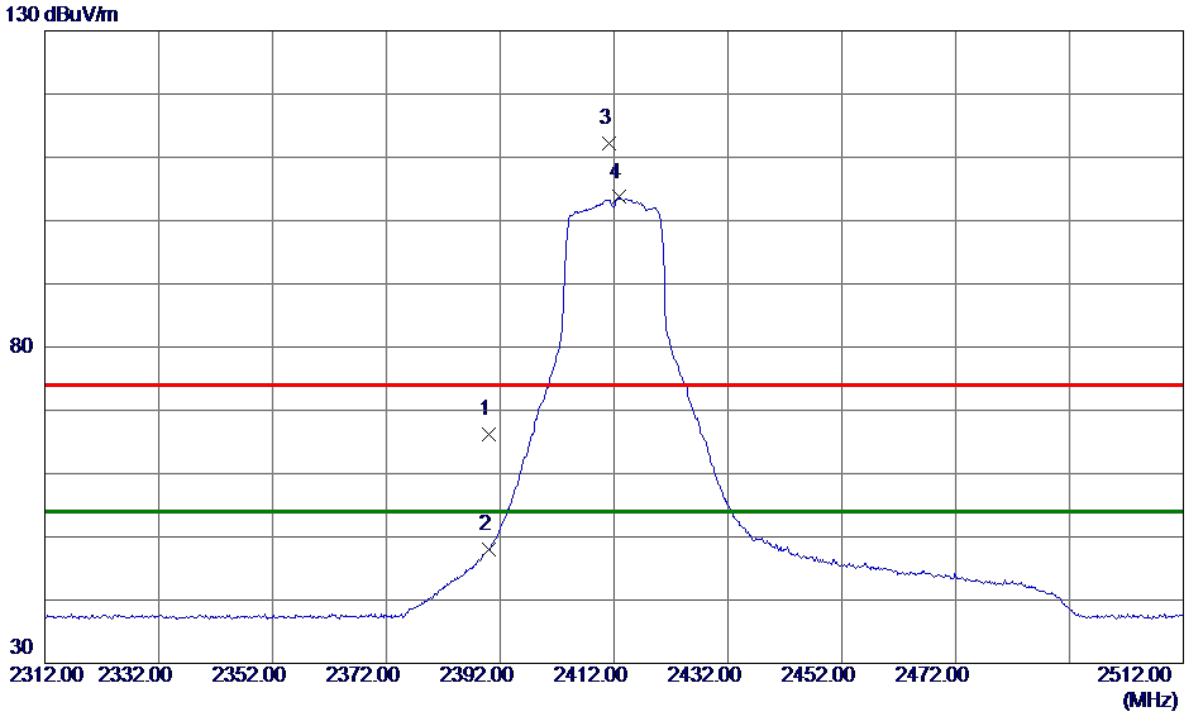
Test Mode	TX B Mode 2462 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	4924.0500	40.63	1.00	41.63	54.00	-12.37	AVG	
2	4924.1000	43.65	1.00	44.65	74.00	-29.35	Peak	

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

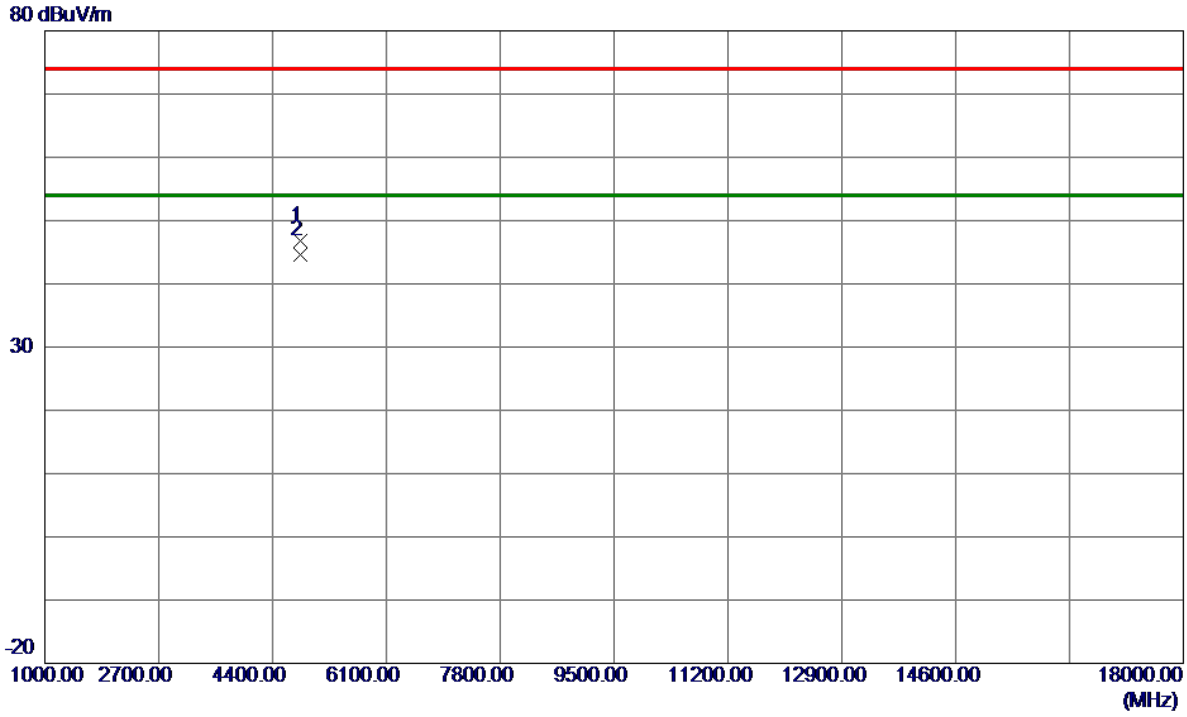
Test Mode	TX G Mode 2412 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.0000	60.22	6.00	66.22	74.00	-7.78	Peak	
2	2390.0000	41.95	6.00	47.95	54.00	-6.05	AVG	
3	2411.2000	106.23	6.00	112.23	74.00	38.23	Peak	No Limit
4 *	2412.8000	97.70	6.00	103.70	54.00	49.70	AVG	No Limit

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

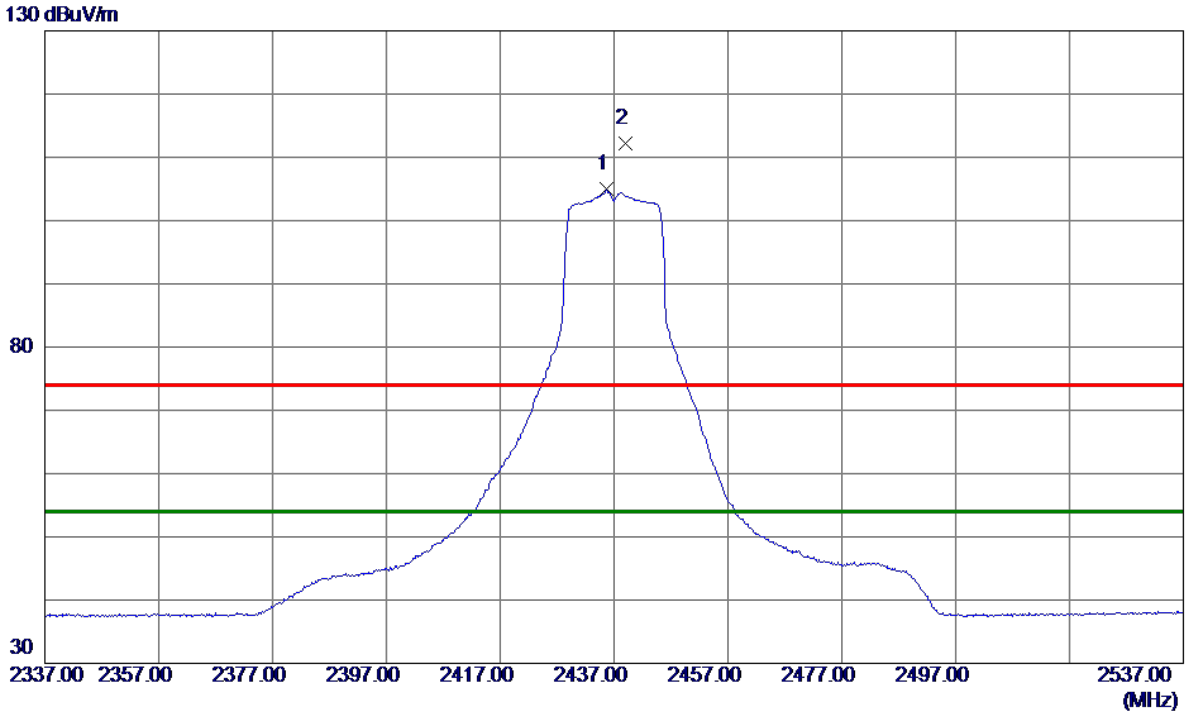
Test Mode	TX G Mode 2412 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4824.0000	46.07	0.72	46.79	74.00	-27.21	Peak	
2 *	4824.0000	43.89	0.72	44.61	54.00	-9.39	AVG	

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

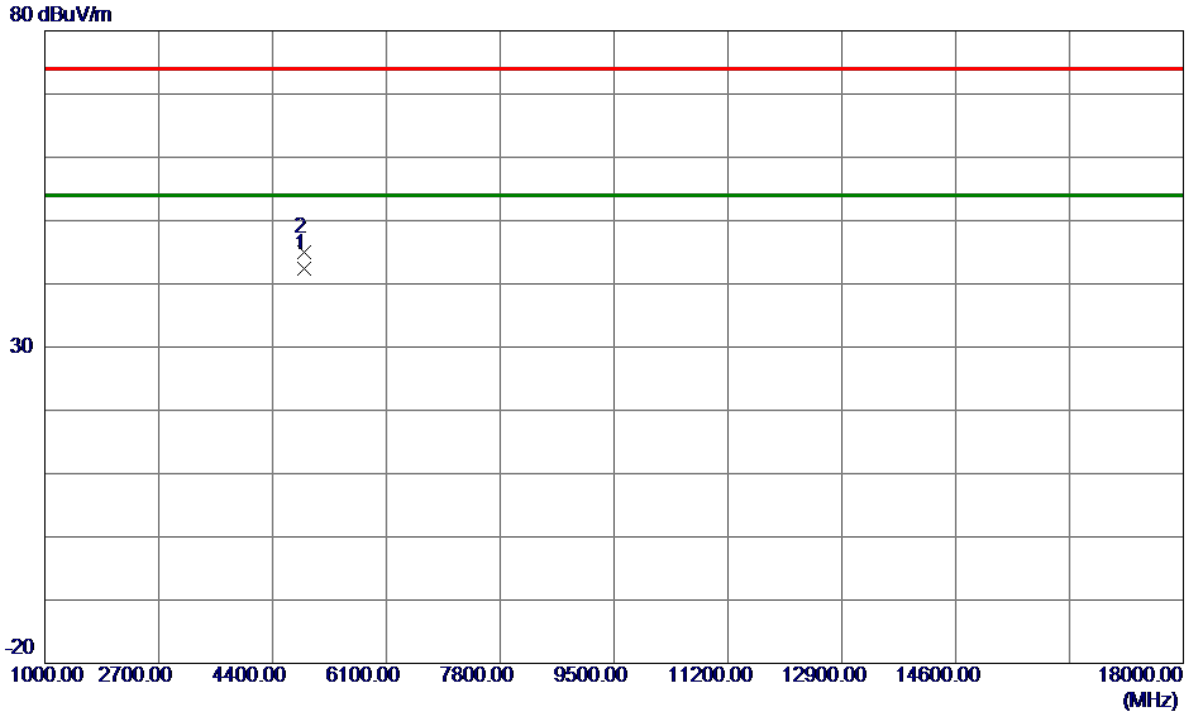
Test Mode	TX G Mode 2437 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	2435.7000	98.91	6.00	104.91	54.00	50.91	AVG	No Limit
2	2439.0000	106.12	6.00	112.12	74.00	38.12	Peak	No Limit

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

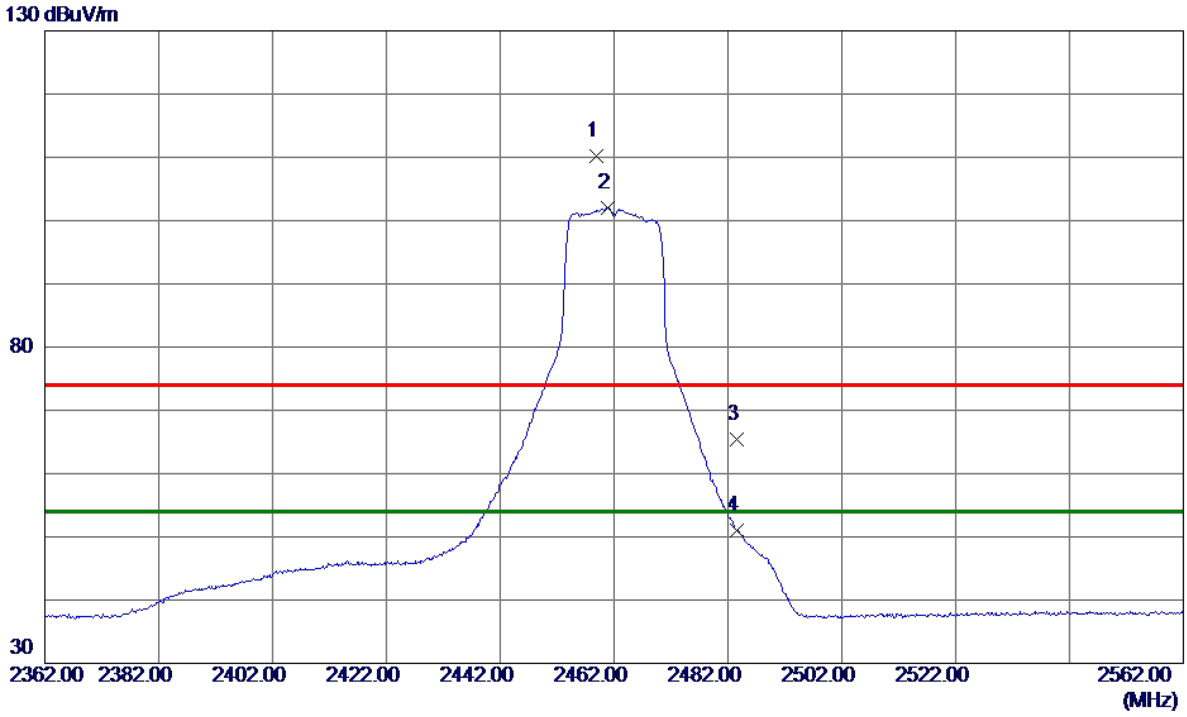
Test Mode	TX G Mode 2437 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	4874.0000	41.61	0.86	42.47	54.00	-11.53	AVG	
2	4874.0500	44.09	0.86	44.95	74.00	-29.05	Peak	

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

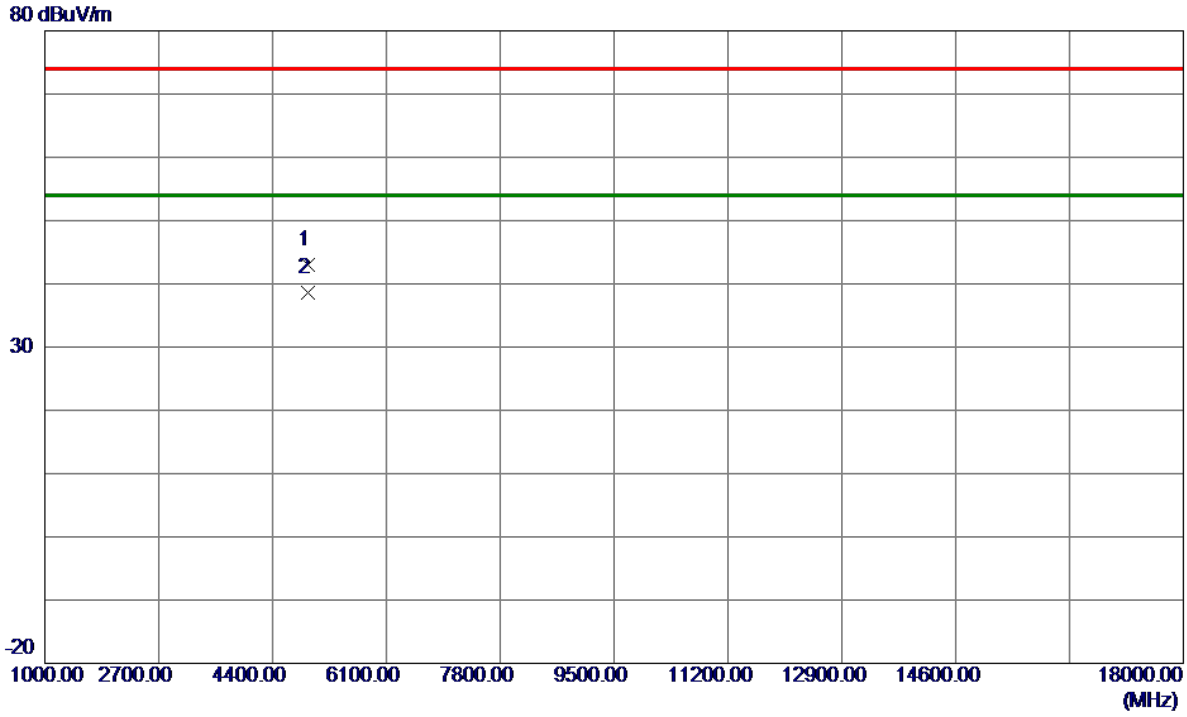
Test Mode	TX G Mode 2462 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2458.8000	104.18	6.00	110.18	74.00	36.18	Peak	No Limit
2 *	2460.8000	96.02	6.00	102.02	54.00	48.02	AVG	No Limit
3	2483.5000	59.32	6.00	65.32	74.00	-8.68	Peak	
4	2483.5000	44.99	6.00	50.99	54.00	-3.01	AVG	

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

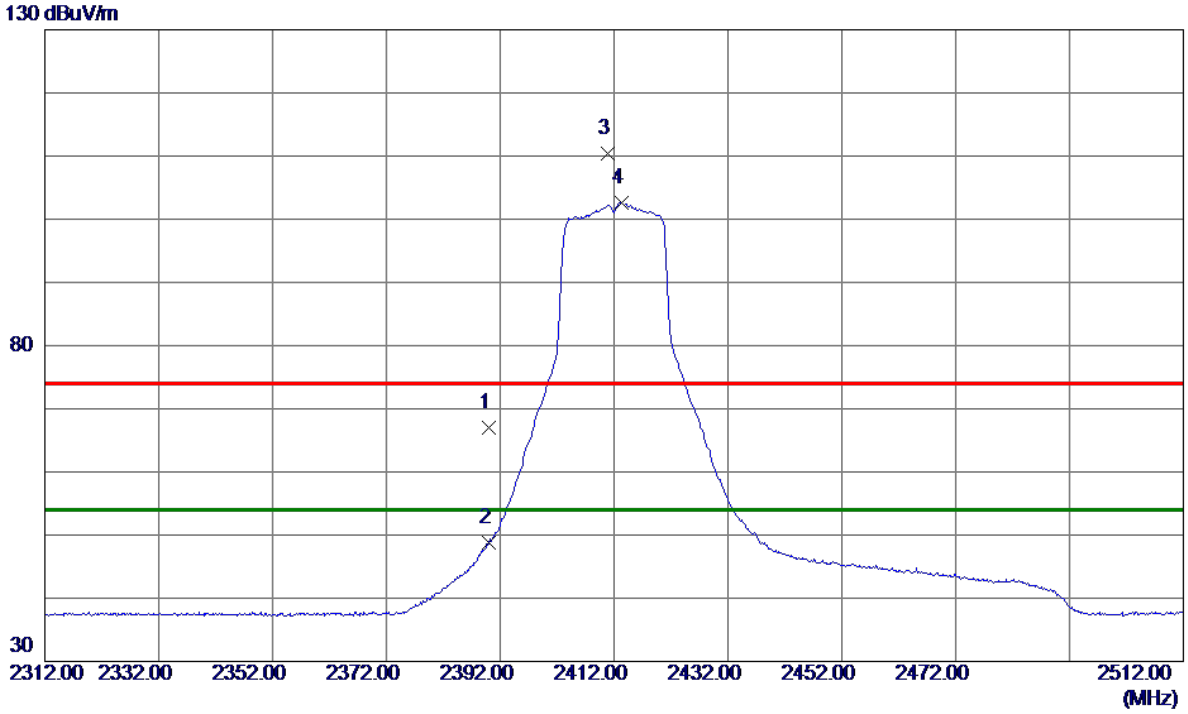
Test Mode	TX G Mode 2462 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4923.9750	41.92	1.00	42.92	74.00	-31.08	Peak	
2 *	4924.0000	37.67	1.00	38.67	54.00	-15.33	AVG	

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

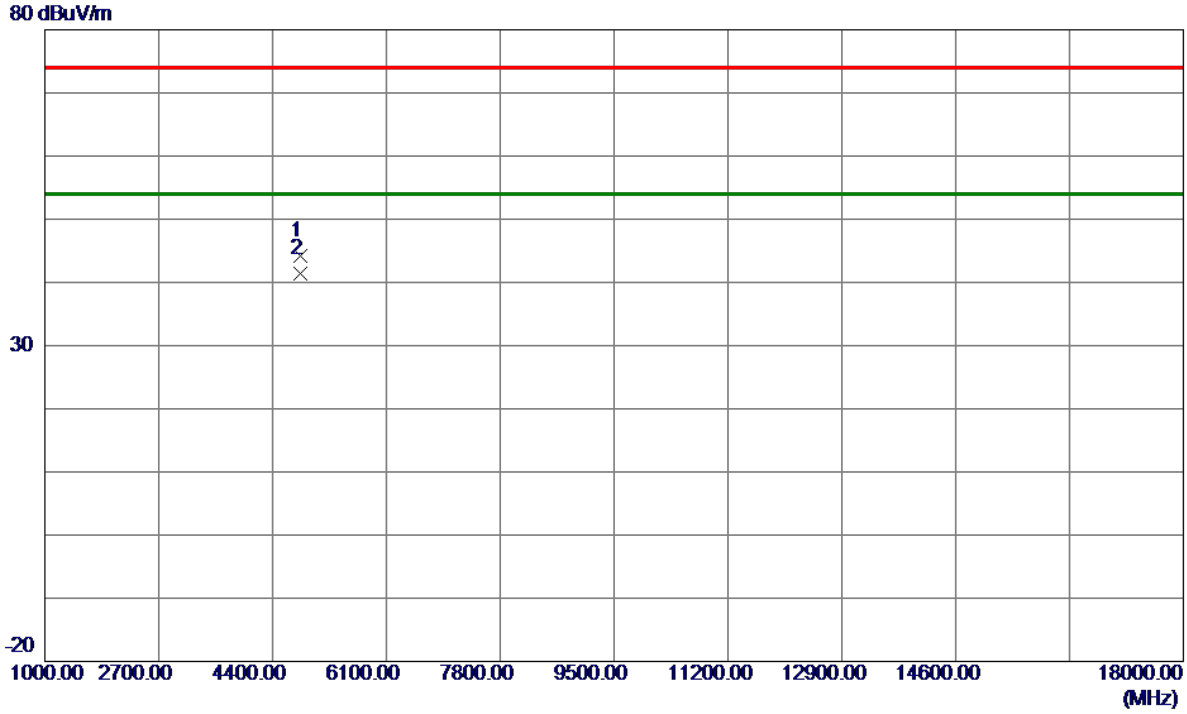
Test Mode	TX N(HT20) Mode 2412 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.0000	60.93	6.00	66.93	74.00	-7.07	Peak	
2	2390.0000	42.76	6.00	48.76	54.00	-5.24	AVG	
3	2410.8000	104.37	6.00	110.37	74.00	36.37	Peak	No Limit
4 *	2413.4000	96.69	6.00	102.69	54.00	48.69	AVG	No Limit

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

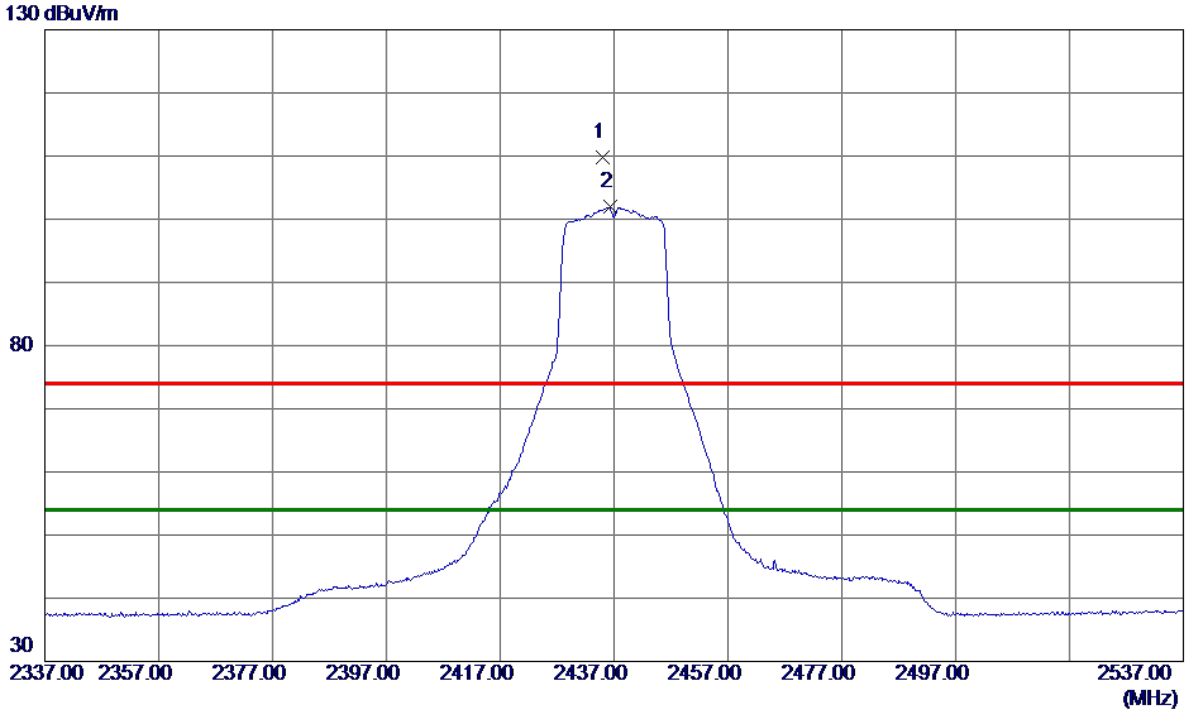
Test Mode	TX N(HT20) Mode 2412 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4823.8000	43.49	0.72	44.21	74.00	-29.79	Peak	
2 *	4824.0250	40.70	0.72	41.42	54.00	-12.58	AVG	

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

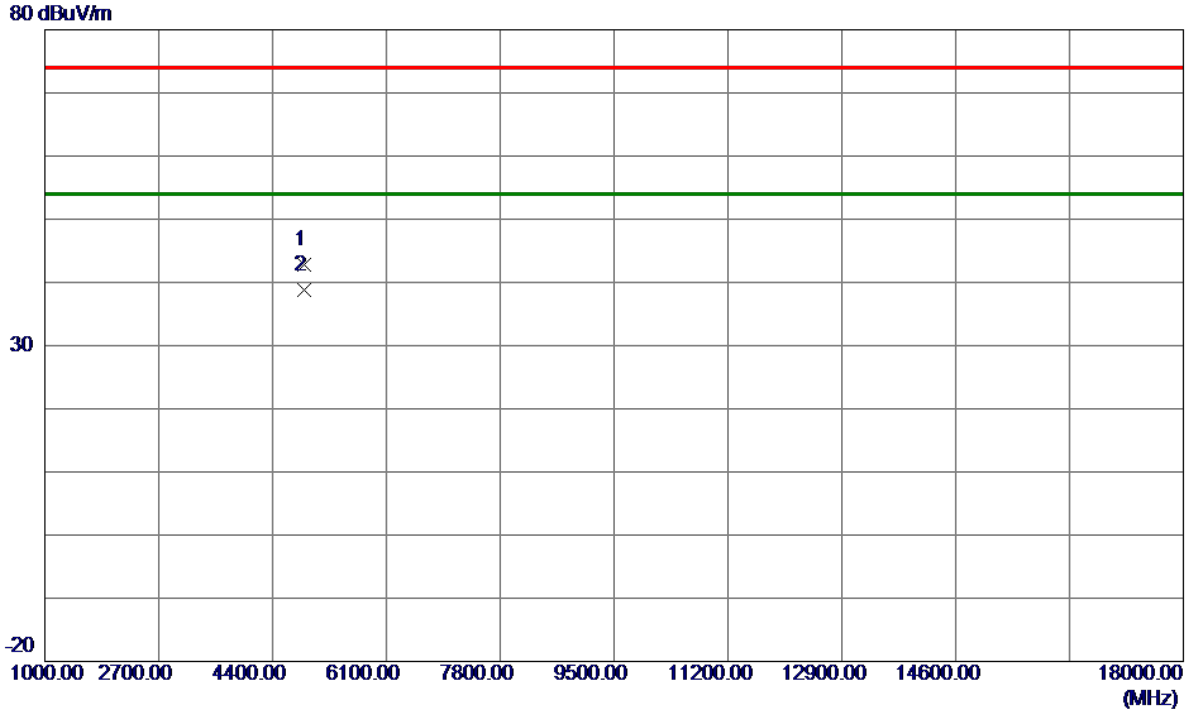
Test Mode	TX N(HT20) Mode 2437 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	2435.1000	103.72	6.00	109.72	54.00	55.72	AVG	No Limit
2	2436.3000	95.95	6.00	101.95	74.00	27.95	Peak	No Limit

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

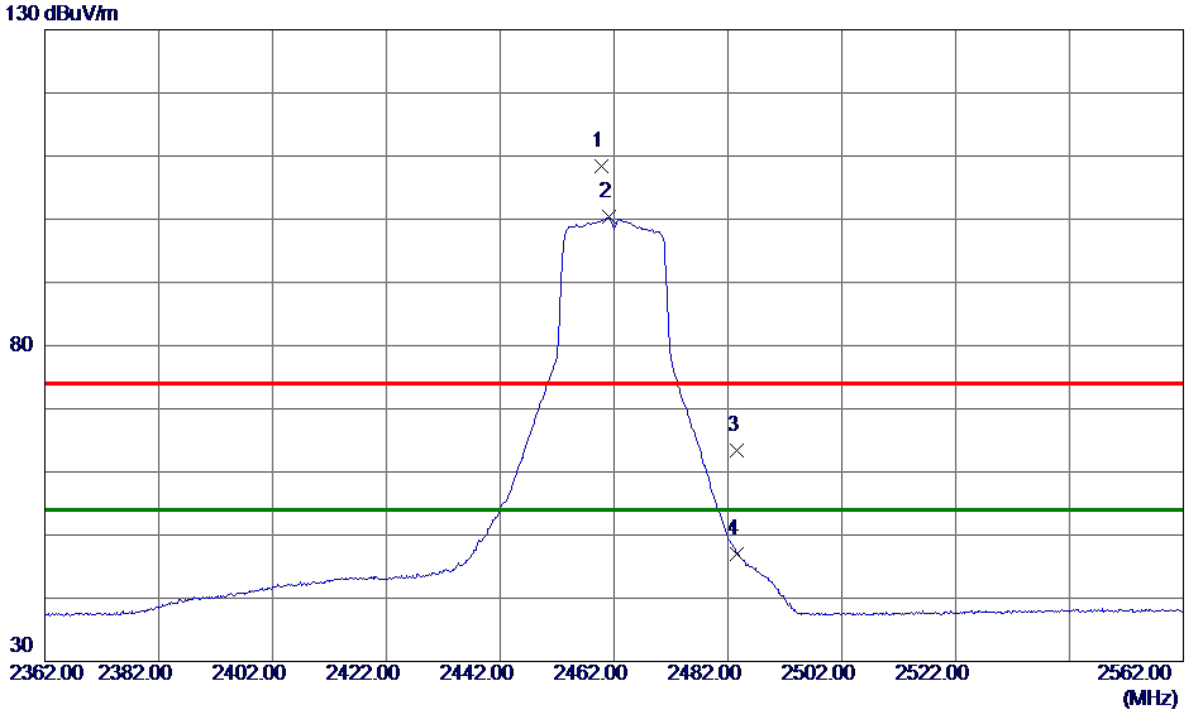
Test Mode	TX N(HT20) Mode 2437 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4873.9250	42.02	0.86	42.88	74.00	-31.12	Peak	
2 *	4874.0000	37.97	0.86	38.83	54.00	-15.17	AVG	

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

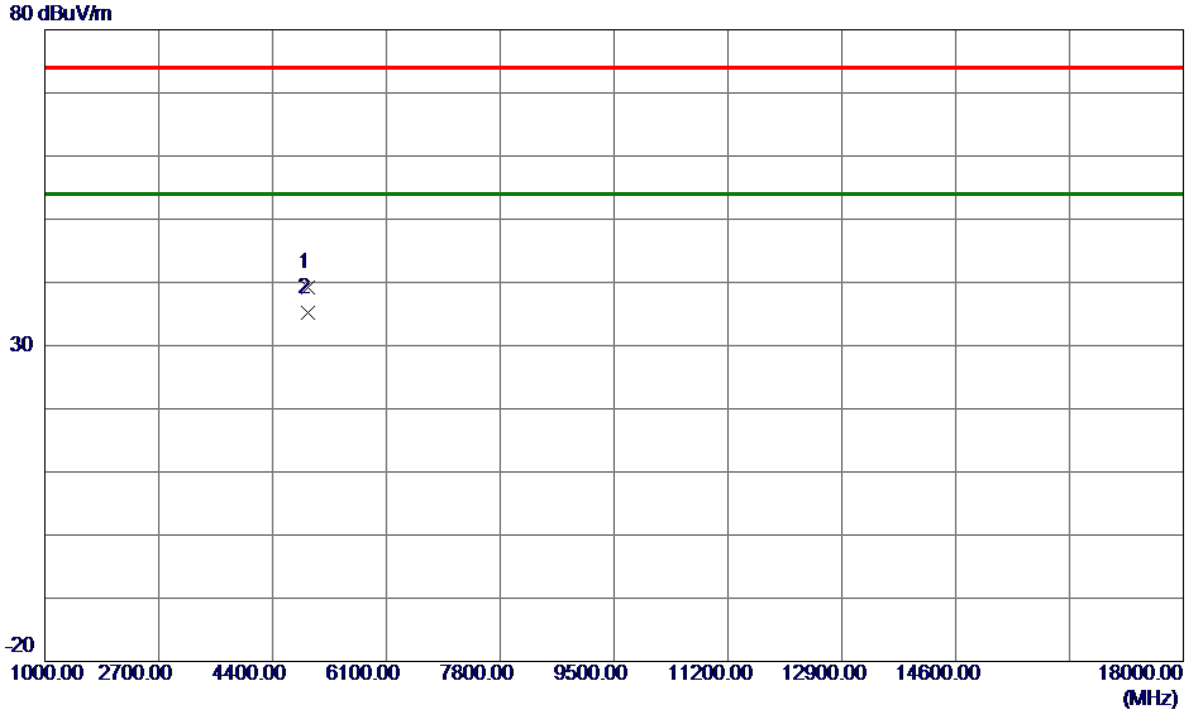
Test Mode	TX N(HT20) Mode 2462 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2459.8000	102.35	6.00	108.35	74.00	34.35	Peak	No Limit
2 *	2461.1000	94.39	6.00	100.39	54.00	46.39	AVG	No Limit
3	2483.5000	57.33	6.00	63.33	74.00	-10.67	Peak	
4	2483.5000	40.98	6.00	46.98	54.00	-7.02	AVG	

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

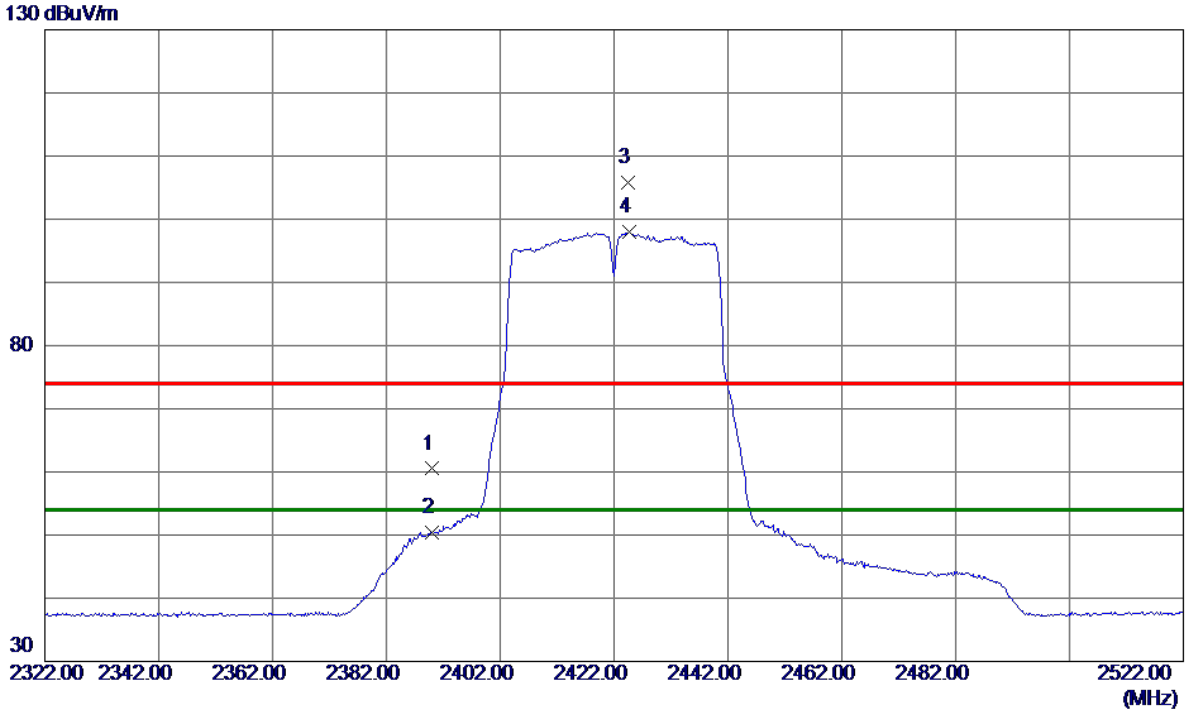
Test Mode	TX N(HT20) Mode 2462 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4923.5000	38.18	1.00	39.18	74.00	-34.82	Peak	
2 *	4923.9500	34.20	1.00	35.20	54.00	-18.80	AVG	

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

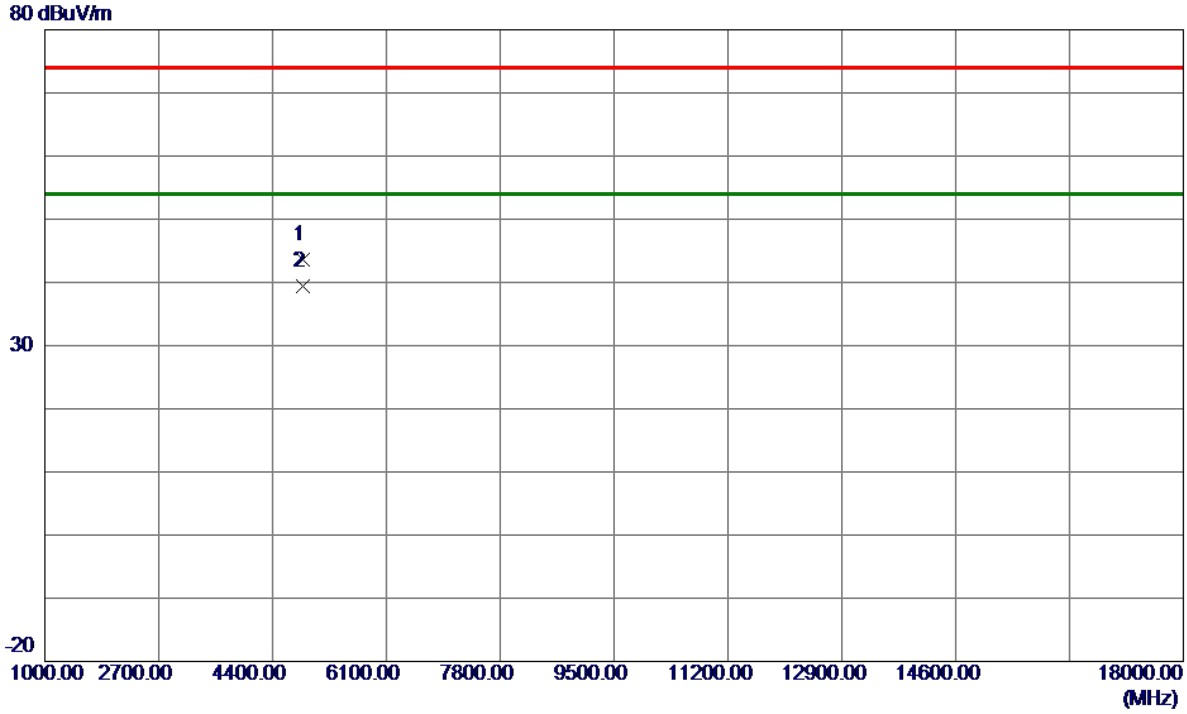
Test Mode	TX N(HT40) Mode 2422 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.0000	54.50	6.00	60.50	74.00	-13.50	Peak	
2	2390.0000	44.39	6.00	50.39	54.00	-3.61	AVG	
3	2424.4000	99.89	6.00	105.89	74.00	31.89	Peak	No Limit
4 *	2424.6000	91.90	6.00	97.90	54.00	43.90	AVG	No Limit

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

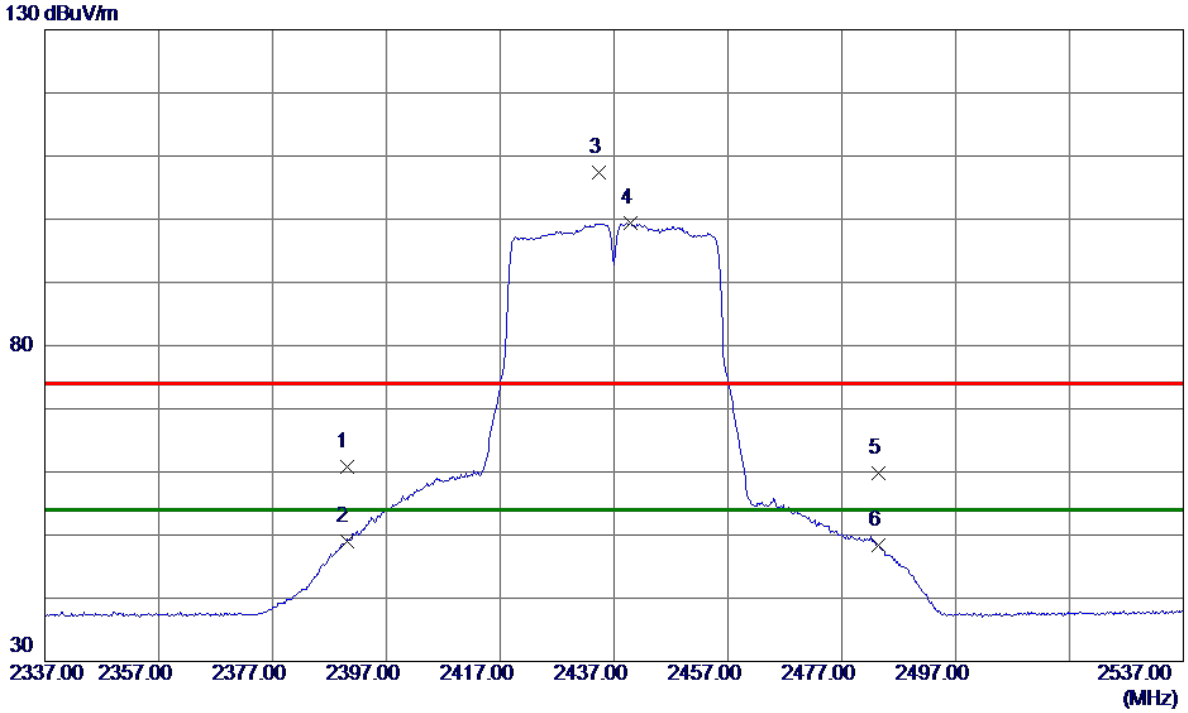
Test Mode	TX N(HT40) Mode 2422 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4843.9750	42.79	0.78	43.57	74.00	-30.43	Peak	
2 *	4844.0250	38.69	0.78	39.47	54.00	-14.53	AVG	

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

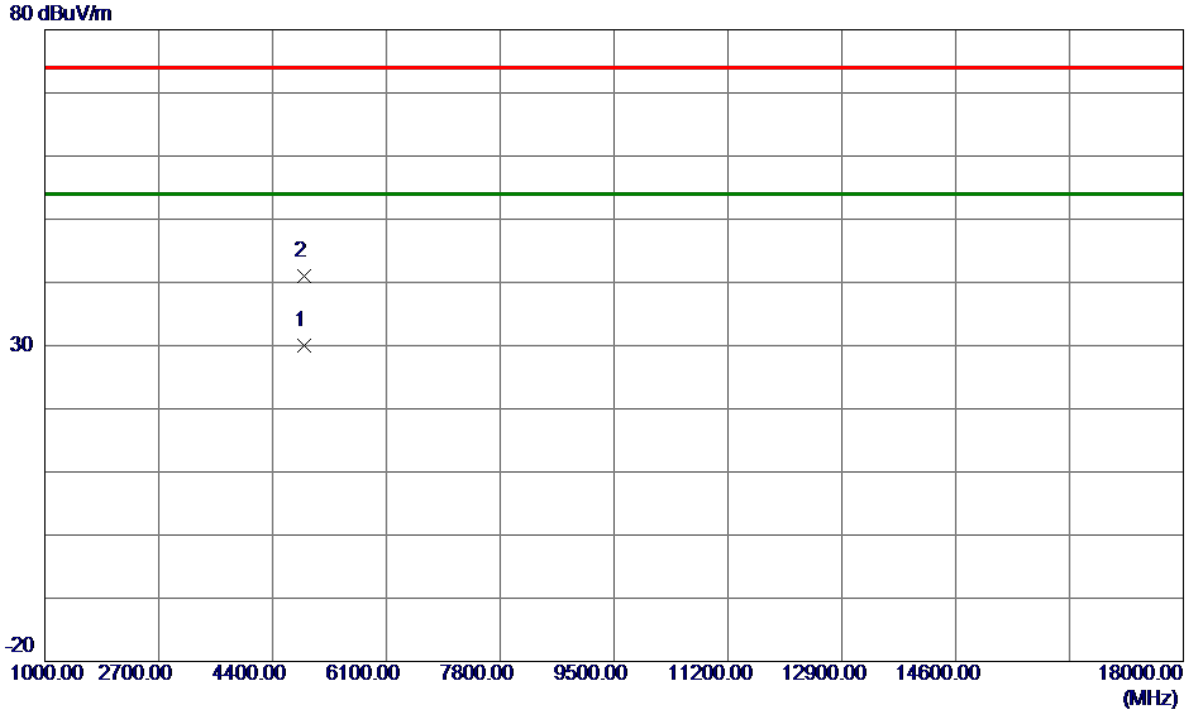
Test Mode	TX N(HT40) Mode 2437 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.0000	54.88	6.00	60.88	74.00	-13.12	Peak	
2	2390.0000	42.92	6.00	48.92	54.00	-5.08	AVG	
3	2434.4000	101.31	6.00	107.31	74.00	33.31	Peak	No Limit
4 *	2439.9000	93.36	6.00	99.36	54.00	45.36	AVG	No Limit
5	2483.5000	53.76	6.00	59.76	74.00	-14.24	Peak	
6	2483.5000	42.39	6.00	48.39	54.00	-5.61	AVG	

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

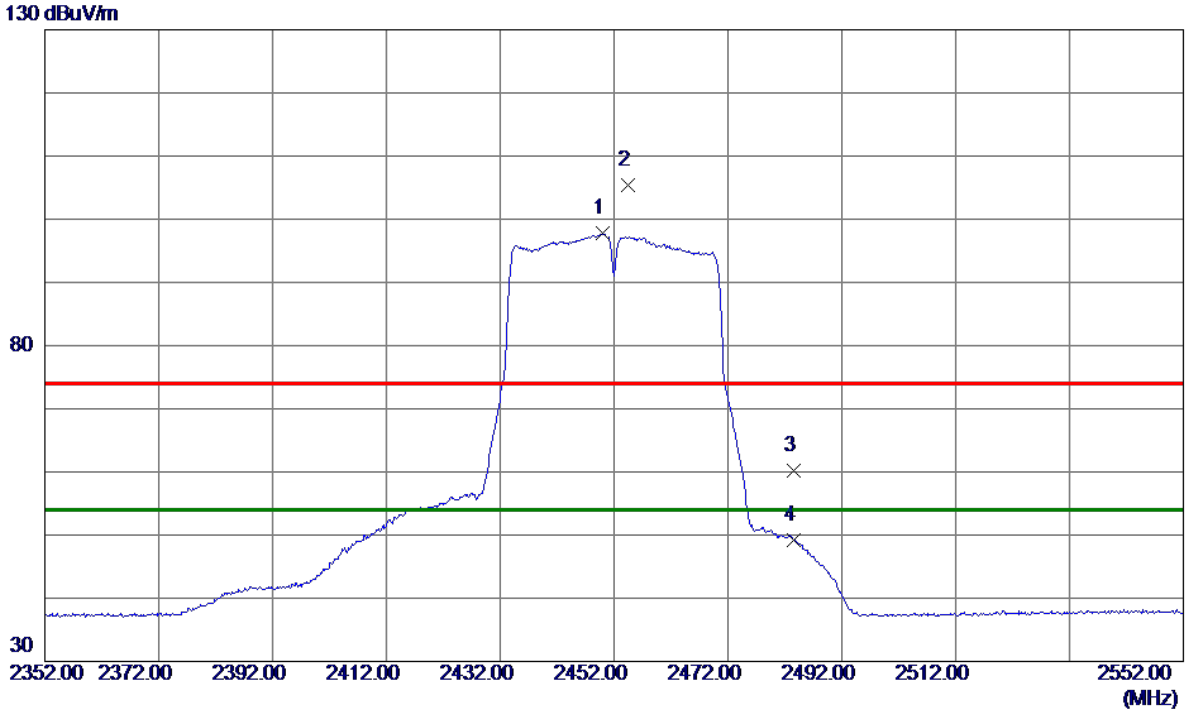
Test Mode	TX N(HT40) Mode 2437 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	4865.5000	29.13	0.84	29.97	54.00	-24.03	AVG	
2	4869.2000	40.15	0.85	41.00	74.00	-33.00	Peak	

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

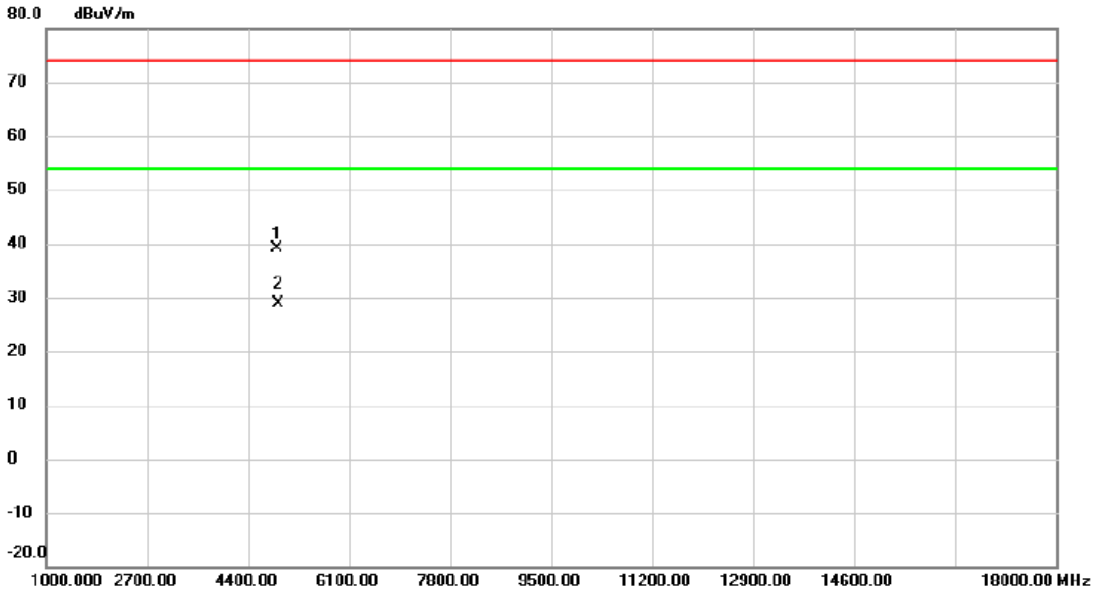
Test Mode	TX N(HT40) Mode 2452 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	2449.9000	91.75	6.00	97.75	54.00	43.75	AVG	No Limit
2	2454.4000	99.48	6.00	105.48	74.00	31.48	Peak	No Limit
3	2483.5000	54.23	6.00	60.23	74.00	-13.77	Peak	
4	2483.5000	43.20	6.00	49.20	54.00	-4.80	AVG	

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

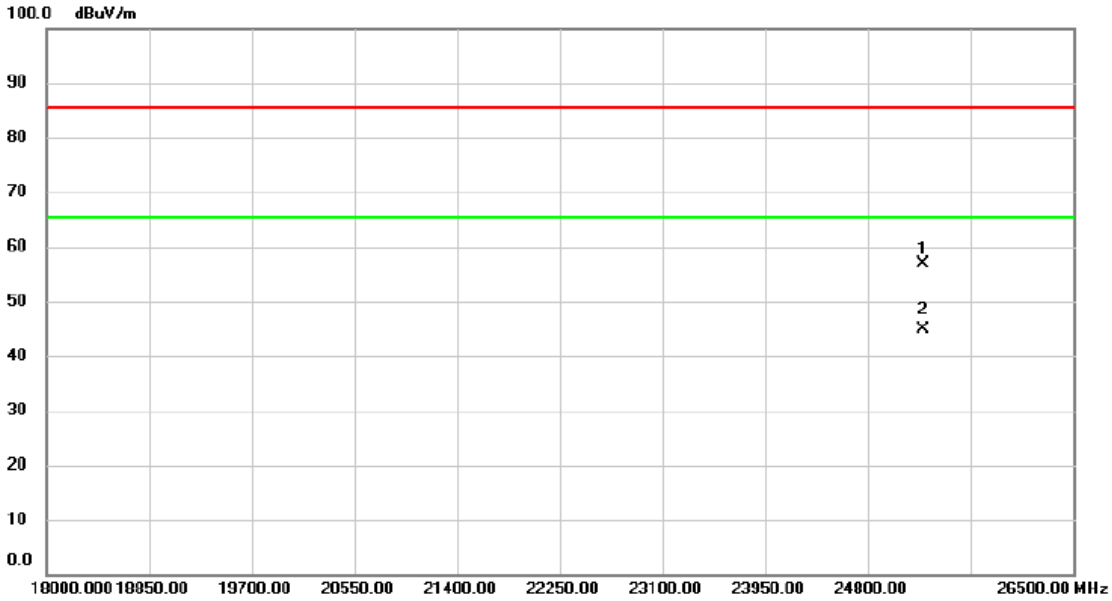
Test Mode	TX N(HT40) Mode 2452 MHz	Polarization	Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4894.500	38.32	0.92	39.24	74.00	-34.76	peak	
2	*	4905.800	28.05	0.95	29.00	54.00	-25.00	AVG	

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

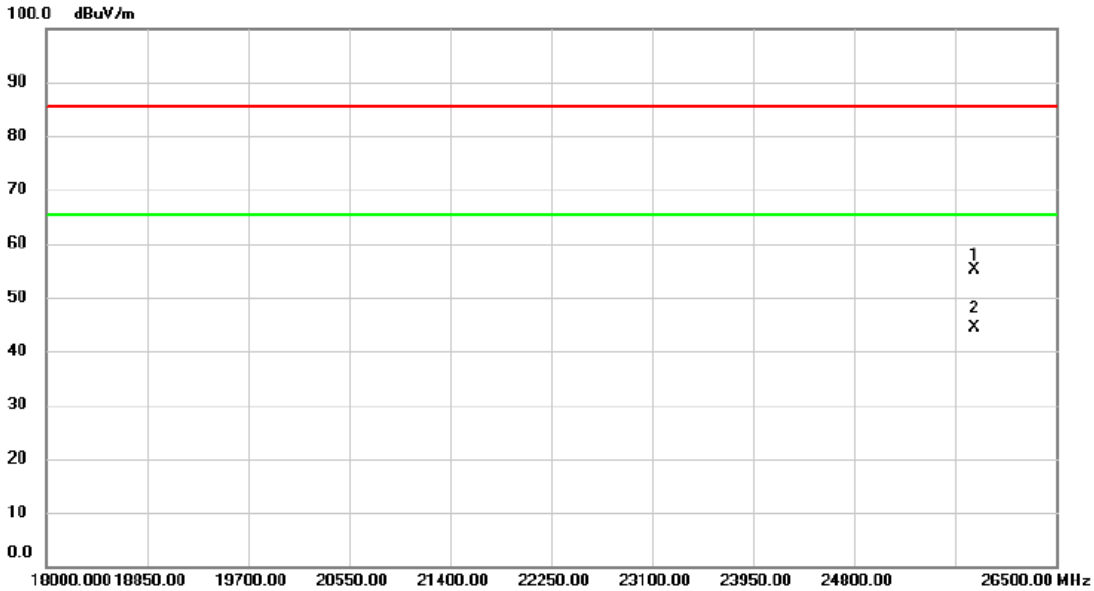
Test Mode	TX G Mode 2412 MHz	Polarization	Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		25259.00	47.70	9.23	56.93	85.30	-28.37	peak	
2	*	25259.00	35.57	9.23	44.80	65.30	-20.50	AVG	

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

Test Mode	TX G Mode 2412 MHz	Polarization	Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		25811.50	44.98	10.17	55.15	85.30	-30.15	peak	
2	*	25811.50	34.24	10.17	44.41	65.30	-20.89	AVG	

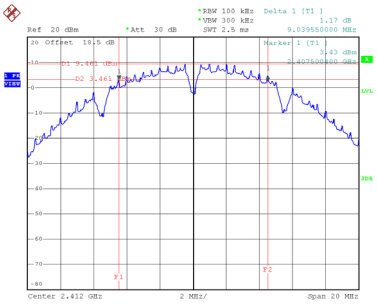
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

APPENDIX E - BANDWIDTH

Test Mode	TX B Mode

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6 dB Bandwidth Min. Limit (MHz)	Result
01	2412	9.040	13.680	0.5	Complies
06	2437	9.060	14.000	0.5	Complies
11	2462	8.060	13.440	0.5	Complies

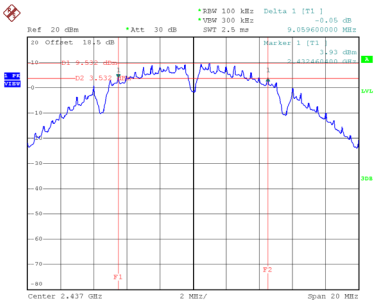
CH01



Date: 5.MAR.2024 10:08:16

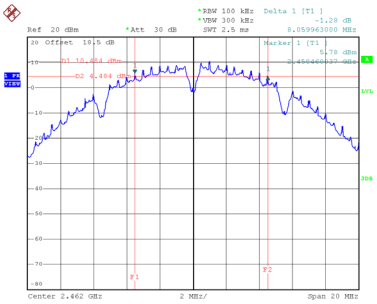
CH06

6 dB Bandwidth



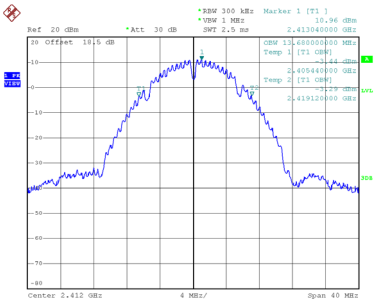
Date: 5.MAR.2024 10:10:15

CH11

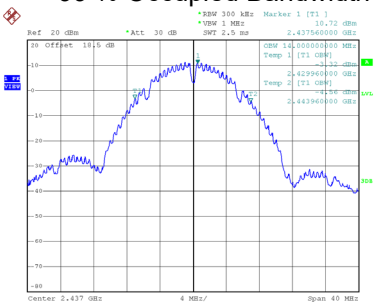


Date: 5.MAR.2024 10:11:56

99 % Occupied Bandwidth



Date: 5.MAR.2024 10:08:24



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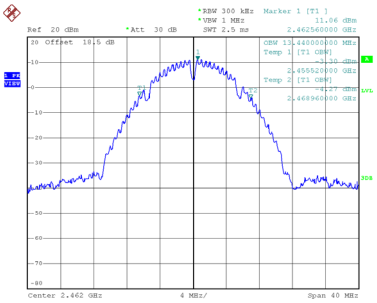
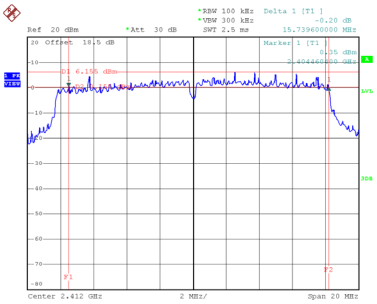


Date: 5.MAR.2024 10:12:03

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	15.740	16.800	0.5	Complies
06	2437	16.390	17.120	0.5	Complies
11	2462	14.440	16.640	0.5	Complies

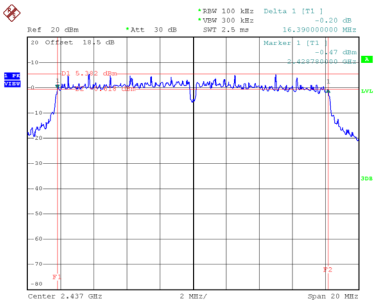
CH01



Date: 5.MAR.2024 10:13:37

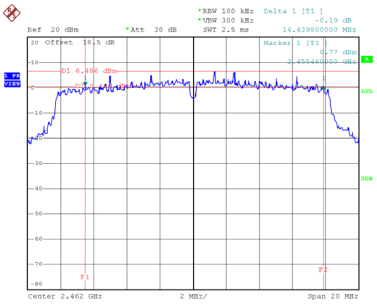
CH06

6 dB Bandwidth



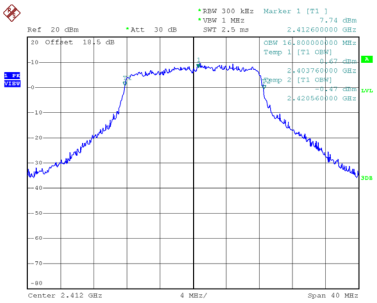
Date: 5.MAR.2024 10:14:49

CH11



Date: 5.MAR.2024 10:16:10

99 % Occupied Bandwidth



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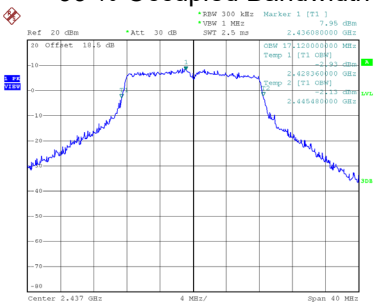

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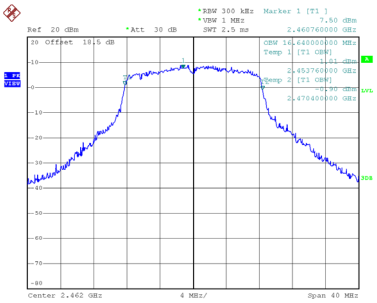
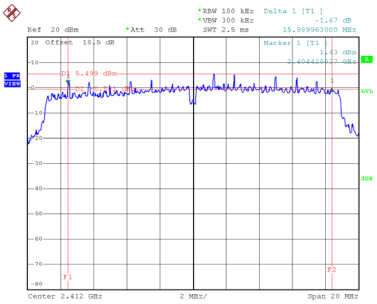


Date: 5.MAR.2024 10:16:17

Test Mode	TX N(HT20) Mode

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6 dB Bandwidth Min. Limit (MHz)	Result
01	2412	15.990	18.080	0.5	Complies
06	2437	16.399	18.160	0.5	Complies
11	2462	15.790	17.760	0.5	Complies

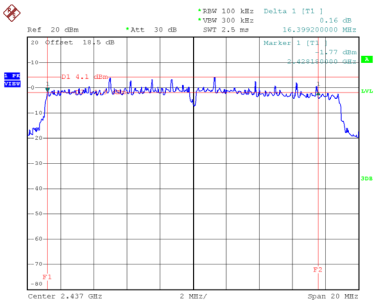
CH01



Date: 5.MAR.2024 10:20:27

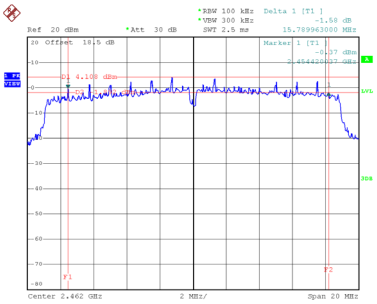
CH06

6 dB Bandwidth



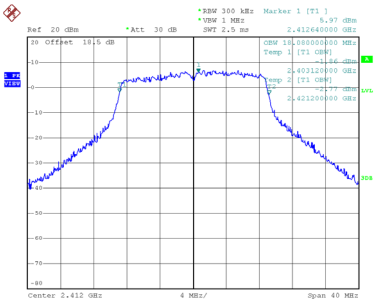
Date: 5.MAR.2024 10:21:47

CH11



Date: 5.MAR.2024 10:23:10

99 % Occupied Bandwidth



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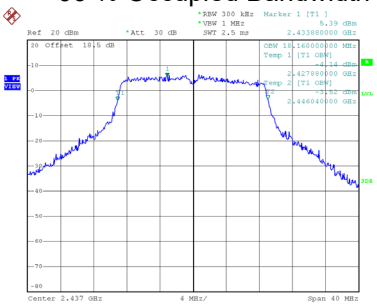
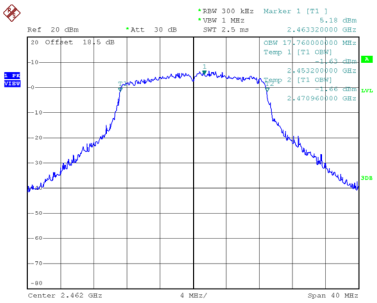


Date: 5.MAR.2024 10:21:54

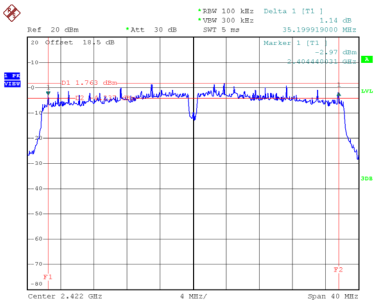


Date: 5.MAR.2024 10:23:17

Test Mode	TX N(HT40) Mode

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6 dB Bandwidth Min. Limit (MHz)	Result
03	2422	35.200	36.320	0.5	Complies
06	2437	36.360	36.800	0.5	Complies
09	2452	35.760	36.800	0.5	Complies

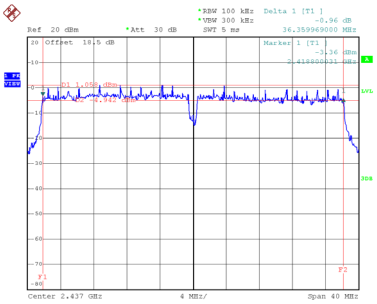
CH03



Date: 5.MAR.2024 10:24:39

CH06

6 dB Bandwidth



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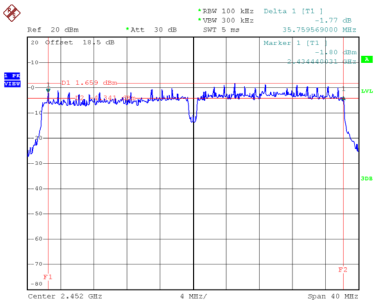
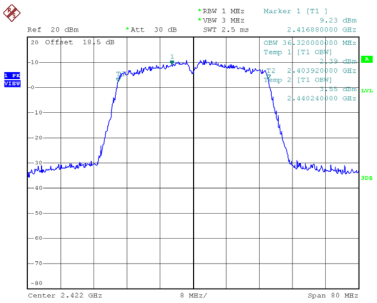
CH09



Date: 5.MAR.2024 10:27:43

99 % Occupied Bandwidth



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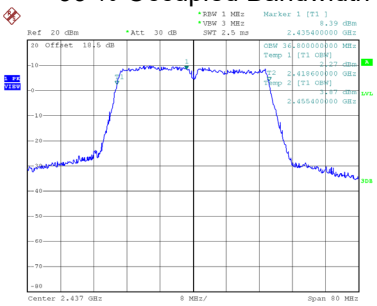

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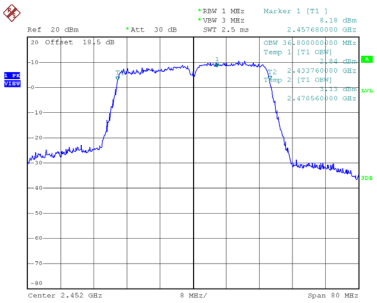


Date: 5.MAR.2024 10:27:51

APPENDIX F - MAXIMUM OUTPUT POWER

Test Mode	TX B Mode

Channel	Frequency (MHz)	Output Power (dBm)	Duty Factor	Output Power + Duty Factor (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	12.38	0.00	12.38	30.00	1.0000	Complies
06	2437	12.28	0.00	12.28	30.00	1.0000	Complies
11	2462	12.43	0.00	12.43	30.00	1.0000	Complies

Test Mode	TX G Mode

Channel	Frequency (MHz)	Output Power (dBm)	Duty Factor	Output Power + Duty Factor (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	12.44	0.00	12.44	30.00	1.0000	Complies
06	2437	12.26	0.00	12.26	30.00	1.0000	Complies
11	2462	12.19	0.00	12.19	30.00	1.0000	Complies

Test Mode	TX N(HT20) Mode

Channel	Frequency (MHz)	Output Power (dBm)	Duty Factor	Output Power + Duty Factor (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	12.37	0.00	12.37	30.00	1.0000	Complies
06	2437	12.16	0.00	12.16	30.00	1.0000	Complies
11	2462	12.09	0.00	12.09	30.00	1.0000	Complies

Test Mode	TX N(HT40) Mode

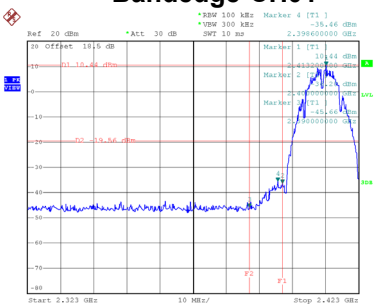
Channel	Frequency (MHz)	Output Power (dBm)	Duty Factor	Output Power + Duty Factor (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
03	2422	12.19	0.22	12.41	30.00	1.0000	Complies
06	2437	12.01	0.22	12.23	30.00	1.0000	Complies
09	2452	11.88	0.22	12.10	30.00	1.0000	Complies

Note: Output power = Measure result + Cable loss

APPENDIX G - CONDUCTED SPURIOUS EMISSIONS

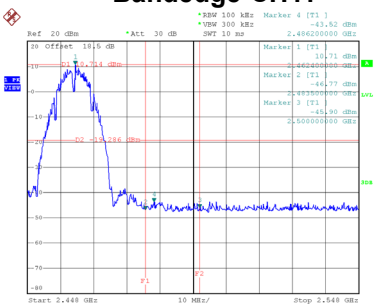
Test Mode	TX B Mode

Bandedge-CH01



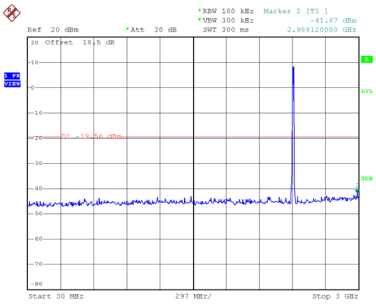
Date: 5.MAR.2024 10:08:32

Bandedge-CH11



Date: 5.MAR.2024 10:12:11

CH01 – 10th Harmonic of the fundamental frequency



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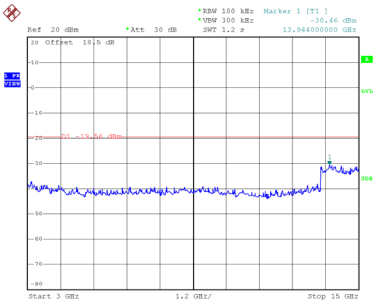

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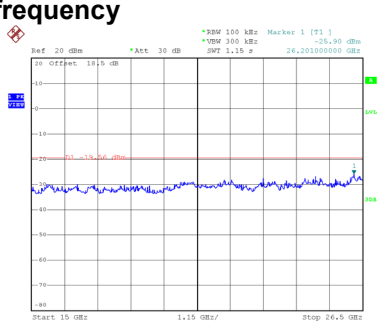
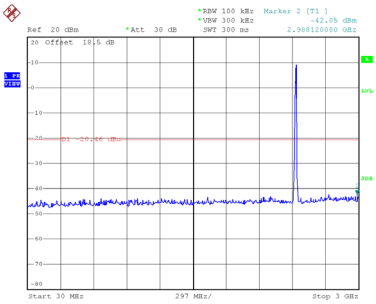
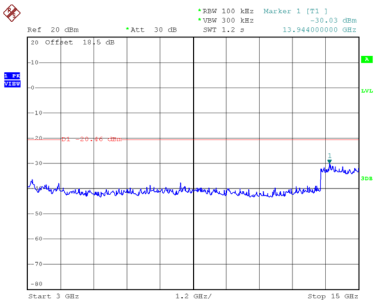


Date: 5.MAR.2024 10:09:03

CH06 – 10th Harmonic of the fundamental frequency



Date: 5.MAR.2024 10:10:45



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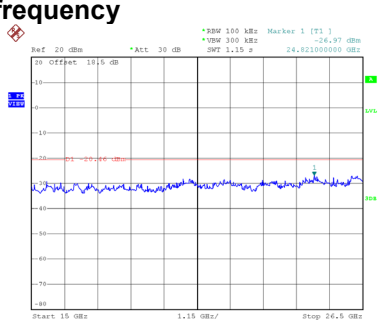
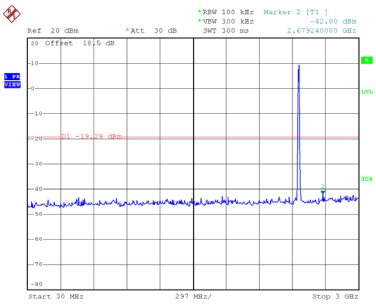


Date: 5.MAR.2024 10:11:02

CH11 – 10th Harmonic of the fundamental frequency



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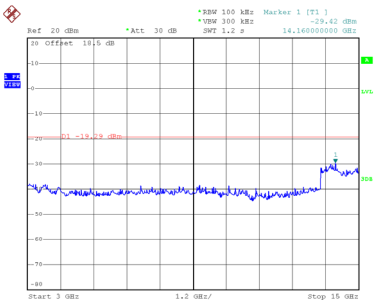
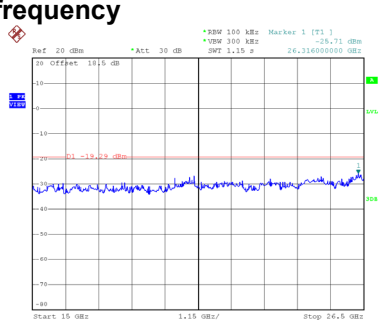


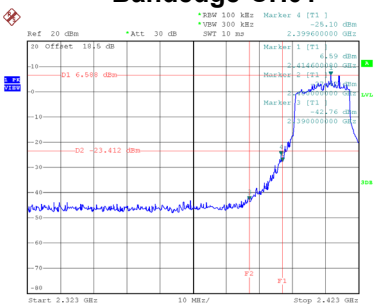
Date: 5.MAR.2024 10:12:34



Date: 5.MAR.2024 10:12:43

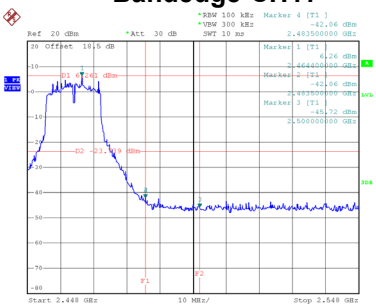
Test Mode	TX G Mode

Bandedge-CH01



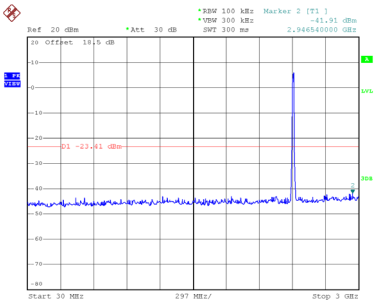
Date: 5.MAR.2024 10:13:54

Bandedge-CH11

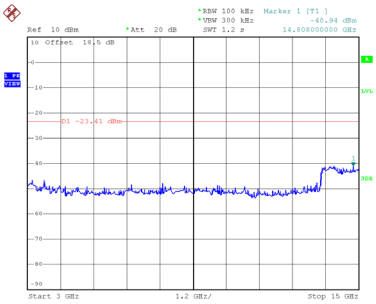


Date: 5.MAR.2024 10:48:46

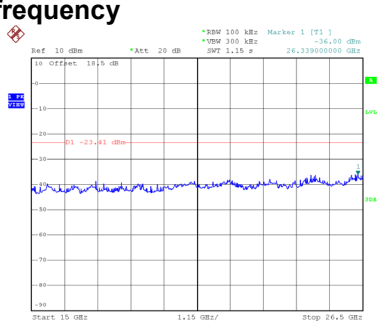
CH01 – 10th Harmonic of the fundamental frequency



Date: 5.MAR.2024 10:37:05

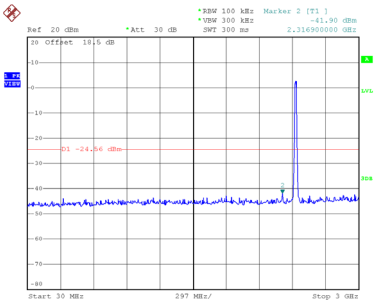


Date: 5.MAR.2024 10:37:14

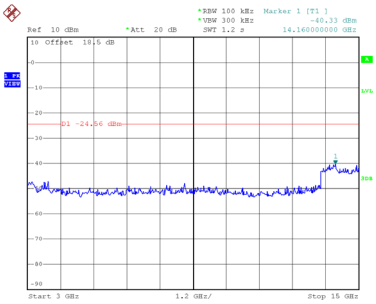


Date: 5.MAR.2024 10:37:23

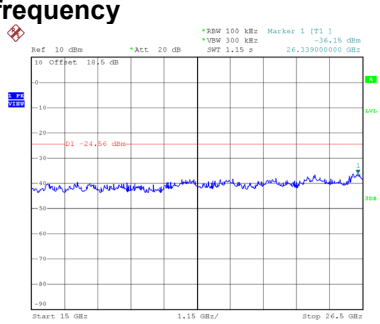
CH06 – 10th Harmonic of the fundamental frequency



Date: 5.MAR.2024 10:37:49

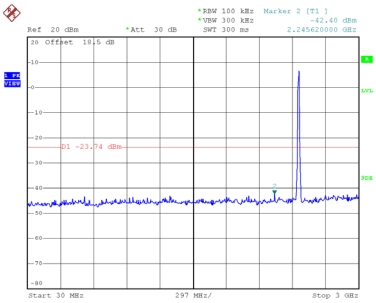


Date: 5.MAR.2024 10:37:57

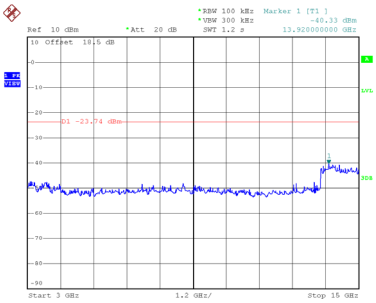


Date: 5.MAR.2024 10:38:06

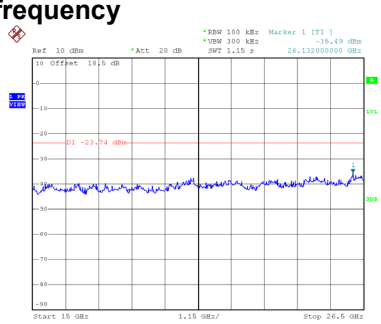
CH11 – 10th Harmonic of the fundamental frequency



Date: 5.MAR.2024 10:49:19



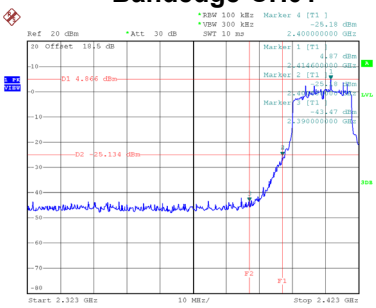
Date: 5.MAR.2024 10:49:28



Date: 5.MAR.2024 10:49:37

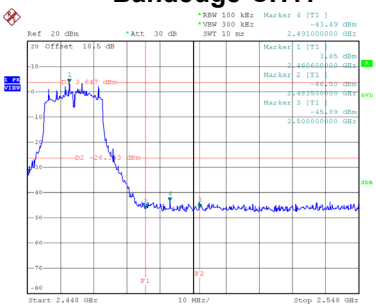
Test Mode	TX N(HT20) Mode

Bandedge-CH01



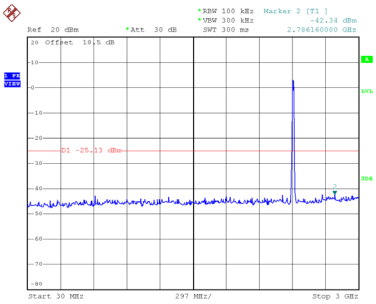
Date: 5.MAR.2024 10:20:43

Bandedge-CH11

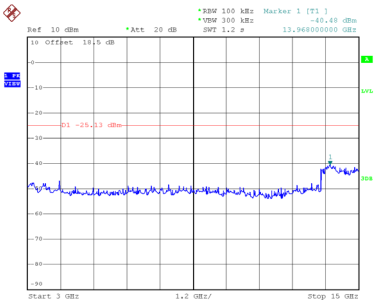


Date: 5.MAR.2024 10:46:21

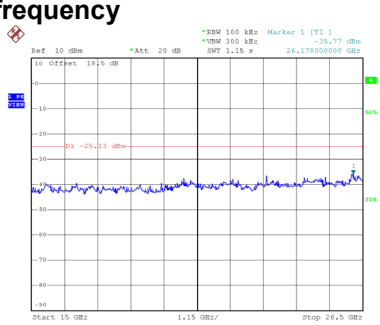
CH01 – 10th Harmonic of the fundamental frequency



Date: 5.MAR.2024 10:44:38

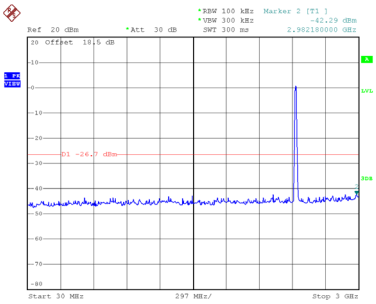


Date: 5.MAR.2024 10:44:47

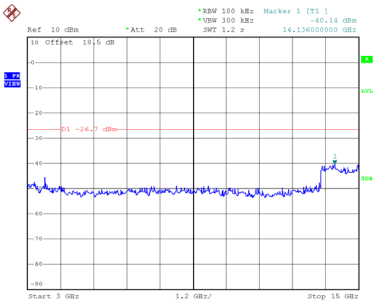


Date: 5.MAR.2024 10:44:55

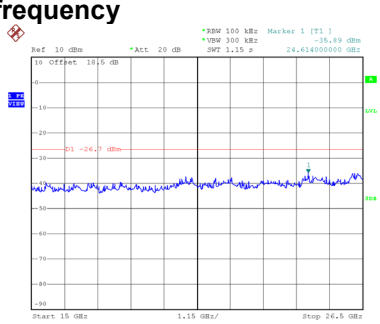
CH06 – 10th Harmonic of the fundamental frequency



Date: 5.MAR.2024 10:41:03

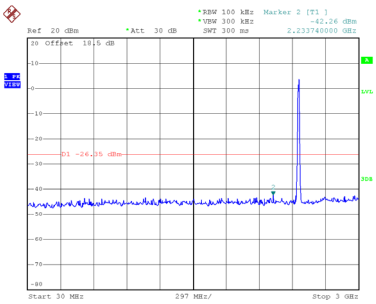


Date: 5.MAR.2024 10:41:11

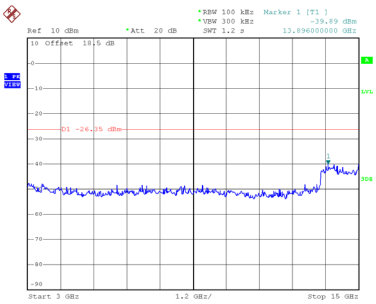


Date: 5.MAR.2024 10:41:20

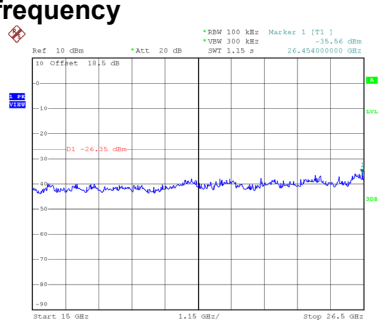
CH11 – 10th Harmonic of the fundamental frequency



Date: 5.MAR.2024 10:46:47



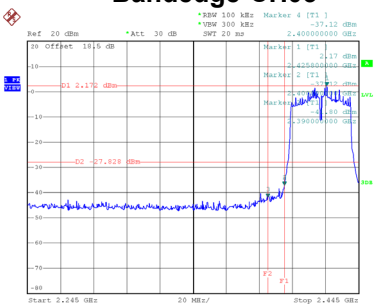
Date: 5.MAR.2024 10:46:56



Date: 5.MAR.2024 10:47:04

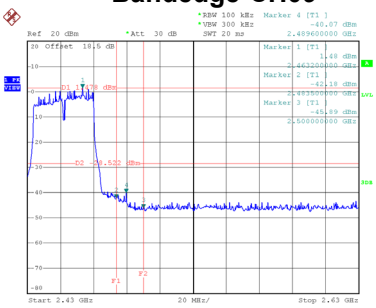
Test Mode	TX N(HT40) Mode

Bandedge-CH03



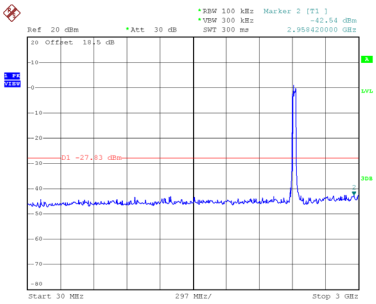
Date: 5.MAR.2024 10:24:55

Bandedge-CH09

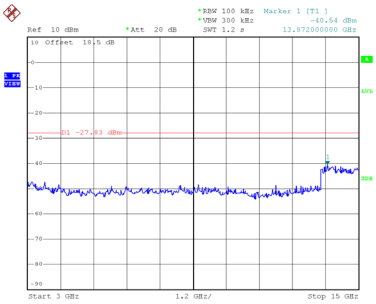


Date: 5.MAR.2024 10:27:59

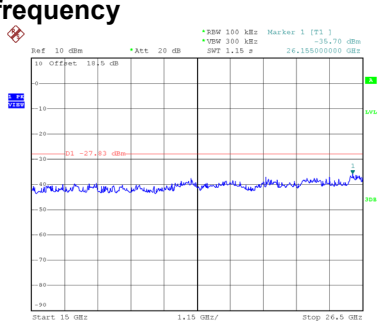
CH03 – 10th Harmonic of the fundamental frequency



Date: 5.MAR.2024 10:31:59

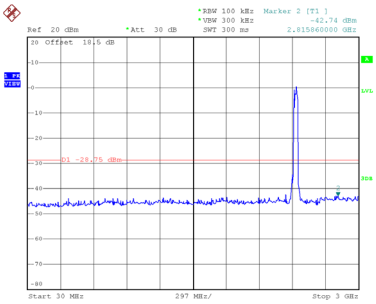


Date: 5.MAR.2024 10:32:08

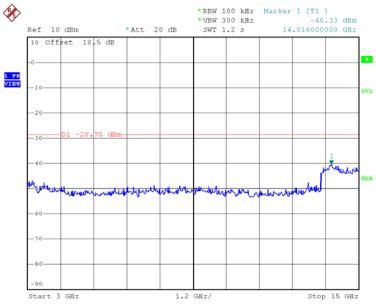


Date: 5.MAR.2024 10:32:16

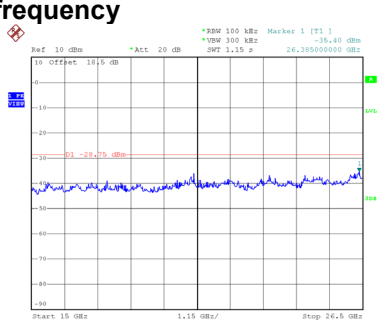
CH06 – 10th Harmonic of the fundamental frequency



Date: 5.MAR.2024 10:32:38

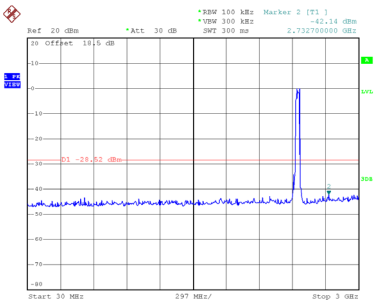


Date: 5.MAR.2024 10:32:46

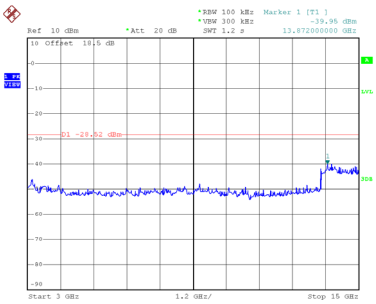


Date: 5.MAR.2024 10:32:55

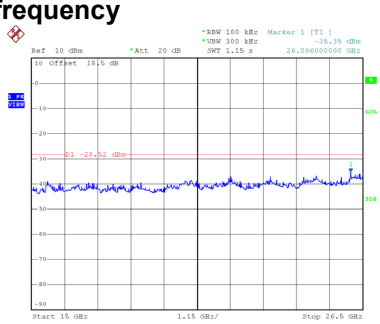
CH09 – 10th Harmonic of the fundamental frequency



Date: 5.MAR.2024 10:33:31



Date: 5.MAR.2024 10:33:40



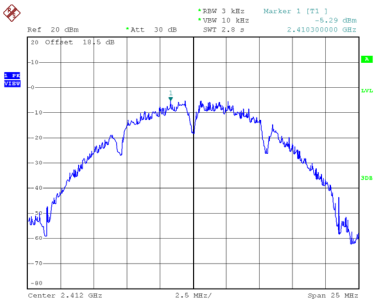
Date: 5.MAR.2024 10:33:48

APPENDIX H - POWER SPECTRAL DENSITY

Test Mode	TX B Mode

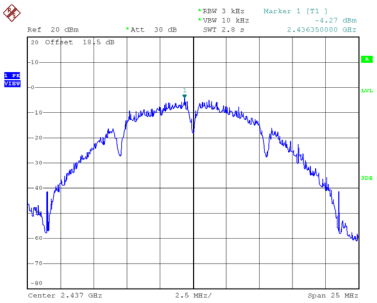
Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
01	2412	-5.29	8.00	Complies
06	2437	-4.27	8.00	Complies
11	2462	-4.17	8.00	Complies

CH01



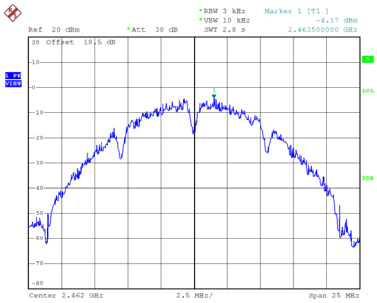
Date: 5.MAR.2024 09:53:44

CH06



Date: 5.MAR.2024 09:54:08

CH11

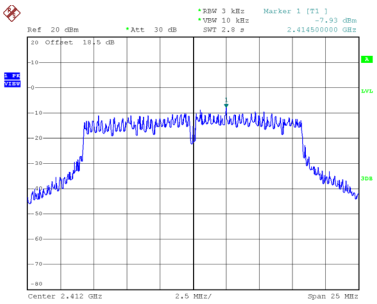


Date: 5.MAR.2024 09:54:33

Test Mode	TX G Mode

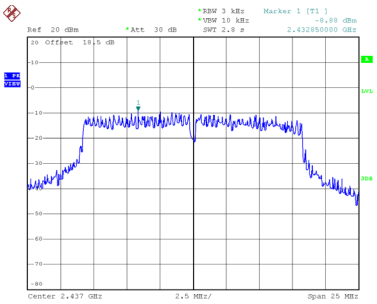
Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
01	2412	-7.93	8.00	Complies
06	2437	-8.88	8.00	Complies
11	2462	-8.27	8.00	Complies

CH01



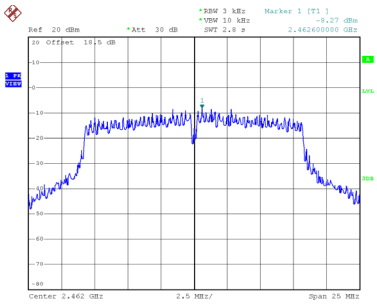
Date: 5.MAR.2024 09:55:11

CH06



Date: 5.MAR.2024 09:55:35

CH11

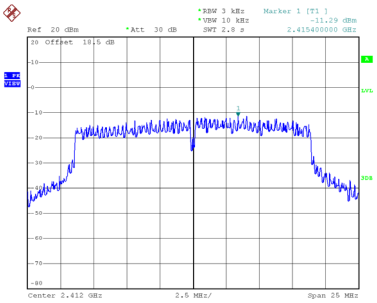


Date: 5.MAR.2024 09:55:55

Test Mode	TX N(HT20) Mode

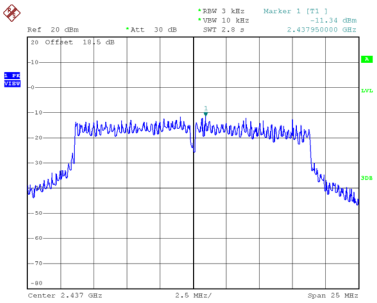
Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
01	2412	-11.29	8.00	Complies
06	2437	-11.34	8.00	Complies
11	2462	-11.19	8.00	Complies

CH01



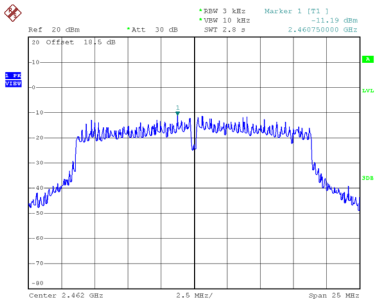
Date: 5.MAR.2024 09:58:17

CH06



Date: 5.MAR.2024 09:59:00

CH11

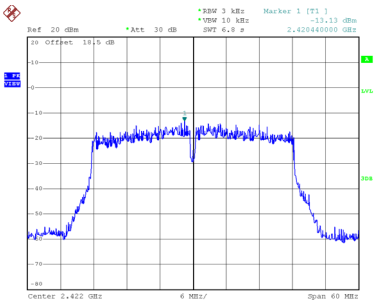


Date: 5.MAR.2024 09:59:48

Test Mode	TX N(HT40) Mode

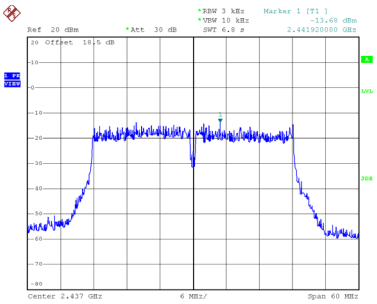
Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
03	2422	-13.13	8.00	Complies
06	2437	-13.68	8.00	Complies
09	2452	-14.35	8.00	Complies

CH03



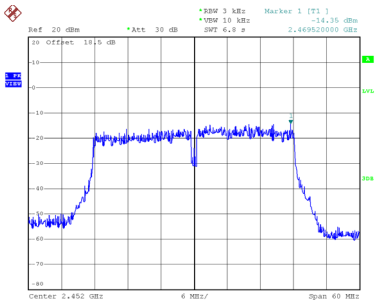
Date: 5.MAR.2024 10:04:56

CH06



Date: 5.MAR.2024 10:05:22

CH09



Date: 5.MAR.2024 10:05:39

End of Test Report