ISED Radio Test Report

IC: 26583-KS230V2

This report concerns: Original Grant

Project No.	:	2207C049
Equipment	:	Smart Wi-Fi Dimmer Switch
Brand Name	:	tp-link
Test Model	:	KS230 KIT
Series Model	:	N/A
Applicant	:	TP-Link Corporation Limited
Address	:	Room 901, 9/F. , New East Ocean Centre, 9 Science Museum Road, Tsim Sha Tsui, Kowloon, Hong Kong
Manufacturer	:	TP-Link Corporation Limited
Address	:	Room 901, 9/F. , New East Ocean Centre, 9 Science Museum Road, Tsim Sha Tsui, Kowloon, Hong Kong
Date of Receipt	:	Jul. 11, 2022
Date of Test	:	Jul. 12, 2022 ~ Aug. 05, 2022
Issued Date	:	Aug. 29, 2022
Report Version	:	R01
Test Sample	:	Engineering Sample No.: DG20220711102 for conducted, DG20220711103 for others.
Standard(s)	:	RSS-247,Issue 2, Feb. 2017 RSS-Gen,Issue 5, Amendment 2, Feb. 2021 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

BTL Inc.

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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** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

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

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

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

Limitation

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

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REPORT ISSUED HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-ISEDR-1-2207C049	R00	Original Report.	Aug. 12, 2022	Invalid
BTL-ISEDR-1-2207C049	R01	Added FVIN.	Aug. 29, 2022	Valid

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

RSS-247,Issue 2, Feb. 2017 RSS-Gen,Issue 5, Amendment 2, Feb. 2021				
Standard(s) Section	**Test Item**	**Test Result**	**Judgment**	**Remark**
RSS-Gen 8.8	AC Power Line Conducted Emissions	APPENDIX A	PASS	------
RSS-247 5.5 RSS-Gen 8.9 RSS-Gen 8.10	Radiated Emissions	APPENDIX B APPENDIX C APPENDIX D	PASS	------
RSS-247 5.2 (a) RSS-Gen 6.7	Bandwidth	APPENDIX E	PASS	------
RSS-247 5.4 (d)	Maximum Average Output Power & e.i.r.p.	APPENDIX F	PASS	------
RSS-247 5.5	Conducted Spurious Emissions	APPENDIX G	PASS	------
RSS-247 5.2 (b)	Power Spectral Density	APPENDIX H	PASS	------

Note:

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

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 Company Number for ISED: 4428B
BTL's CAB Identifier for ISED: CN0042

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	22°C	53%	AC 120V/60Hz	Jeter Wang
Radiated Emissions-9kHz to 30 MHz	25°C	54%	AC 120V/60Hz	Farun Liang
Radiated Emissions-30MHz to 1000MHz	23°C	53%	AC 120V/60Hz	Chen Mo
Radiated Emissions-Above 1000MHz	23°C	53%	AC 120V/60Hz	Chen Mo
Bandwidth	25°C	43%	AC 120V/60Hz	NicoleChen
Maximum Average Output Power & e.i.r.p.	23.1-24.6°C	54.7-66.2%	AC 120V/60Hz	Complex Qin
Conducted Spurious Emissions	25°C	43%	AC 120V/60Hz	NicoleChen
Power Spectral Density	25°C	43%	AC 120V/60Hz	NicoleChen

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Smart Wi-Fi Dimmer Switch
Brand Name	tp-link
Test Model	KS230 KIT
Series Model	N/A
Model Difference(s)	N/A
PMN	Smart Wi-Fi Dimmer Switch
HVIN	KS230V2
FVIN	2.X
Power Source	AC Mains.
Power Rating	120VAC 60Hz 300W Incandescent 150W LED
Operation Frequency	2412 MHz ~ 2462 MHz
Modulation Type	IEEE 802.11b: DSSS IEEE 802.11g: OFDM IEEE 802.11n: OFDM
Bit Rate of Transmitter	IEEE 802.11b: 11/5.5/2/1 Mbps IEEE 802.11g: 54/48/36/24/18/12/9/6 Mbps IEEE 802.11n: up to 72.2 Mbps
Maximum Average Output Power	IEEE 802.11n(HT20): 21.36 dBm (0.1368 W)
Maximum e.i.r.p.	IEEE 802.11n(HT20): 24.16 dBm (0.2606 W)

Note:

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

2. Channel List:

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

3. Antenna Specification:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	tp-link	N/A	PIFA	N/A	2.80

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(HT20) Mode Channel 06
Mode 5	TX B Mode Channel 01/02/06/10/11
Mode 6	TX G Mode Channel 01/02/06/10/11
Mode 7	TX N(HT20) Mode Channel 01/02/06/10/11

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

AC power line conducted emissions test	
Final Test Mode	Description
Mode 4	TX N(HT20) Mode Channel 06

Radiated emissions test - Below 1GHz	
Final Test Mode	Description
Mode 4	TX N(HT20) Mode Channel 06

Radiated emissions test- Above 1GHz	
Final Test Mode	Description
Mode 5	TX B Mode Channel 01/02/06/10/11
Mode 6	TX G Mode Channel 01/02/06/10/11
Mode 7	TX N(HT20) Mode Channel 01/02/06/10/11

Conducted test	
Final Test Mode	Description
Mode 1	TX B Mode Channel 01/06/11
Mode 2	TX G Mode Channel 01/06/11
Mode 3	TX N(HT20) Mode Channel 01/06/11

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 N(HT20) Mode Channel 06 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) The product has two forms: Main and Satellite. Two forms must be matched together to work normally, the WiFi line is on Main and the Satellite is a wired product.
(5) For radiated emission above 1 GHz test, the polarization of Vertical and Hoizontal are evaluated, the worst case is Hoizontal and recorded.
(6) For radiated emission test, every axis (X, Y, Z) are verified. The test results shown in the following sections represent the worst case emissions.

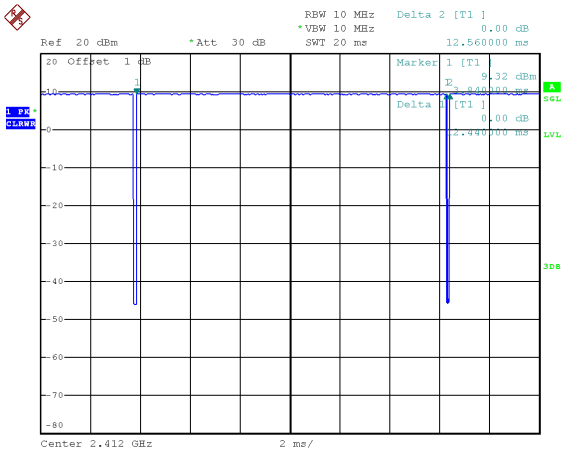
2.3 PARAMETERS OF TEST SOFTWARE

Test Software Version	AmebaZ2_mptool_1V3		
Frequency (MHz)	2412	2437	2462
IEEE 802.11b	90	90	95
IEEE 802.11g	106	112	104
IEEE 802.11n(HT20)	107	113	104

2.4 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.

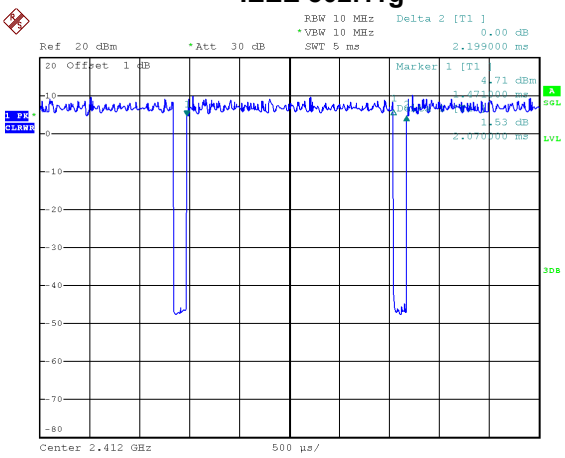
IEEE 802.11b



Date: 17.JUL.2022 14:56:22

Duty cycle = 12.440 ms / 12.560 ms = 99.04%
Duty Factor = 10 log(1/Duty cycle) = 0.00

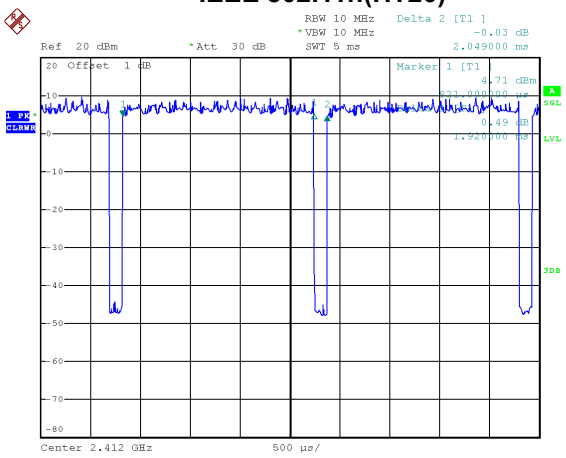
IEEE 802.11g



Date: 17.JUL.2022 14:57:12

Duty cycle = 2.070 ms / 2.199 ms = 94.13%
Duty Factor = 10 log(1/Duty cycle) = 0.26

IEEE 802.11n(HT20)



Date: 17.JUL.2022 14:57:49

Duty cycle = 1.920 ms / 2.049 ms = 93.70%
Duty Factor = 10 log(1/Duty cycle) = 0.28

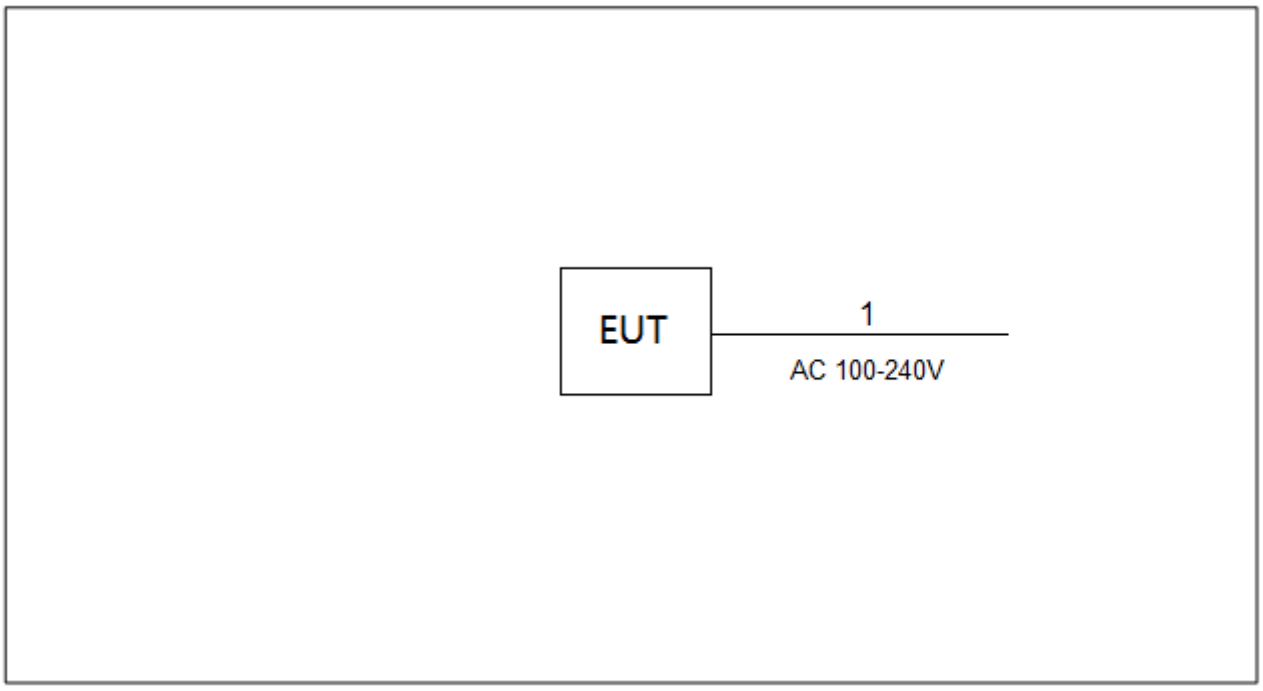
NOTE:
For IEEE 802.11b:
For radiated emissions frequency above 1 GHz, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 1 kHz.

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 483 Hz.

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 521 Hz.

(Remark: The video bandwidth of the spectrum analyzer was set to 1kHz during the test.)

2.5 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



2.6 SUPPORT UNITS

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

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

3. AC POWER LINE CONDUCTED EMISSIONS

3.1 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.

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.

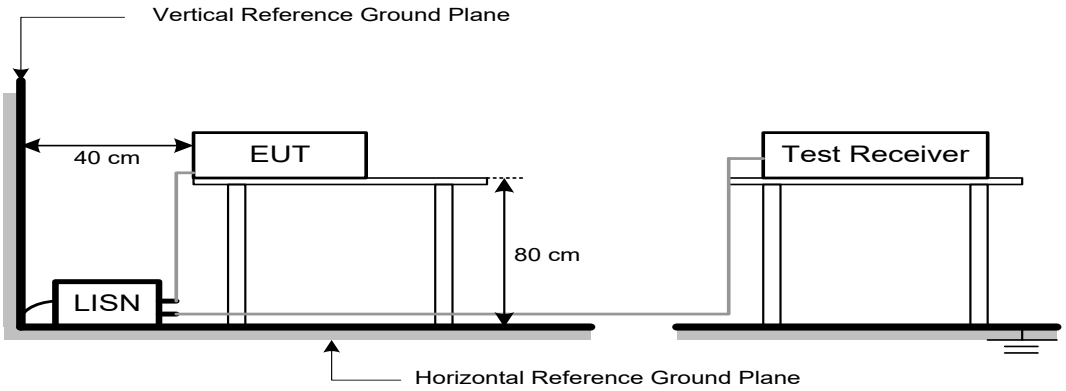
The following table is the setting of the receiver:

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 RSS-Gen 8.10, then the RSS-Gen 8.9 limit in the table below has to be followed.

LIMITS OF RADIATED EMISSION MEASUREMENT (9 kHz-30 MHz)

Frequency (MHz)	Magnetic field strength (H-Field) (μA/m)	Measurement Distance (meters)
0.009-0.490	6.37/F(F in kHz)	300
0.490-1.705	63.7/F(F in□kHz)	30
1.705-30.0	0.08	30

LIMITS OF RADIATED EMISSION MEASUREMENT (30 MHz-1000 MHz)

Frequency (MHz)	Field Strength (μV/m at 3m)
30-88	100
88-216	150
216-960	200
Above 960	500

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 RSS-Gen.
(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

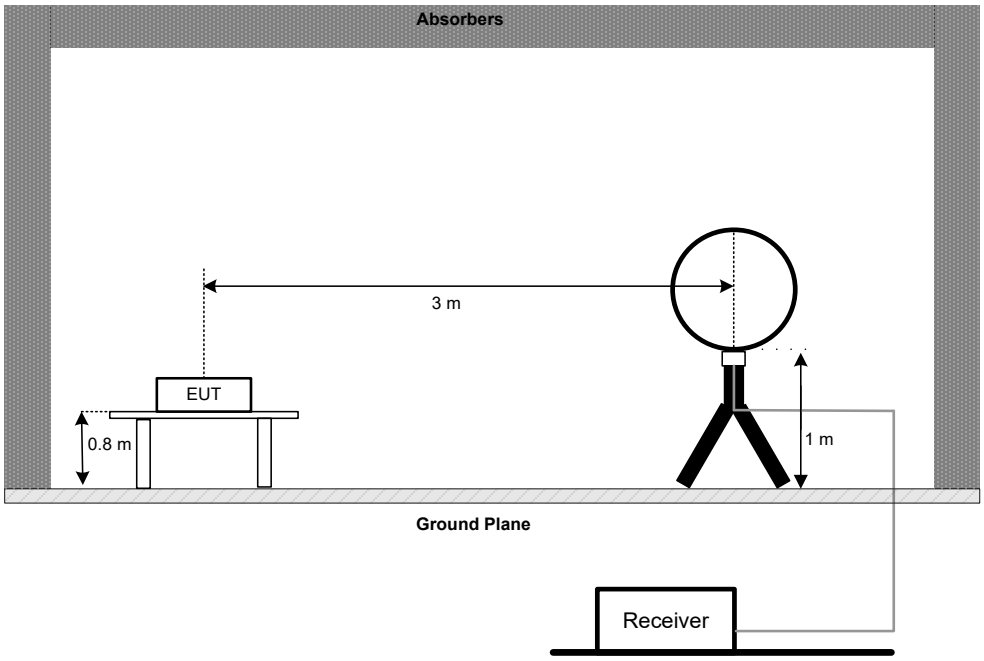
Receiver Parameters	Setting
Start ~ Stop Frequency	9 kHz~90 kHz for PK/AVG detector
Start ~ Stop Frequency	90 kHz~110 kHz for QP detector
Start ~ Stop Frequency	110 kHz~490 kHz for PK/AVG detector
Start ~ Stop Frequency	490 kHz~30 MHz for QP detector
Start ~ Stop Frequency	30 MHz~1000 MHz for QP detector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

4.3 DEVIATION FROM TEST STANDARD

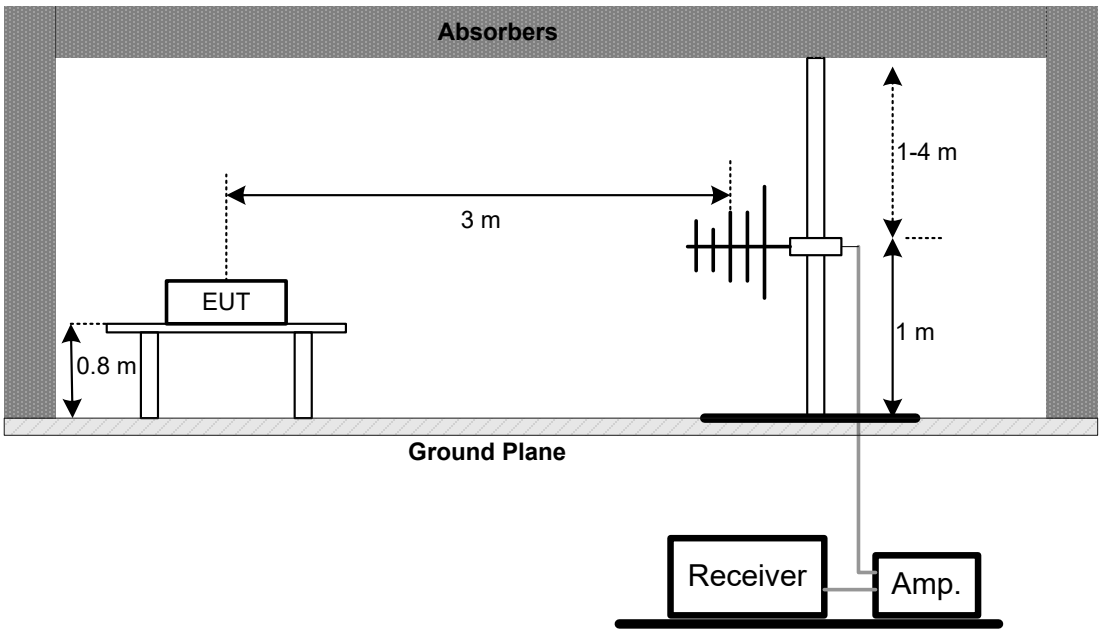
No deviation.

4.4 TEST SETUP

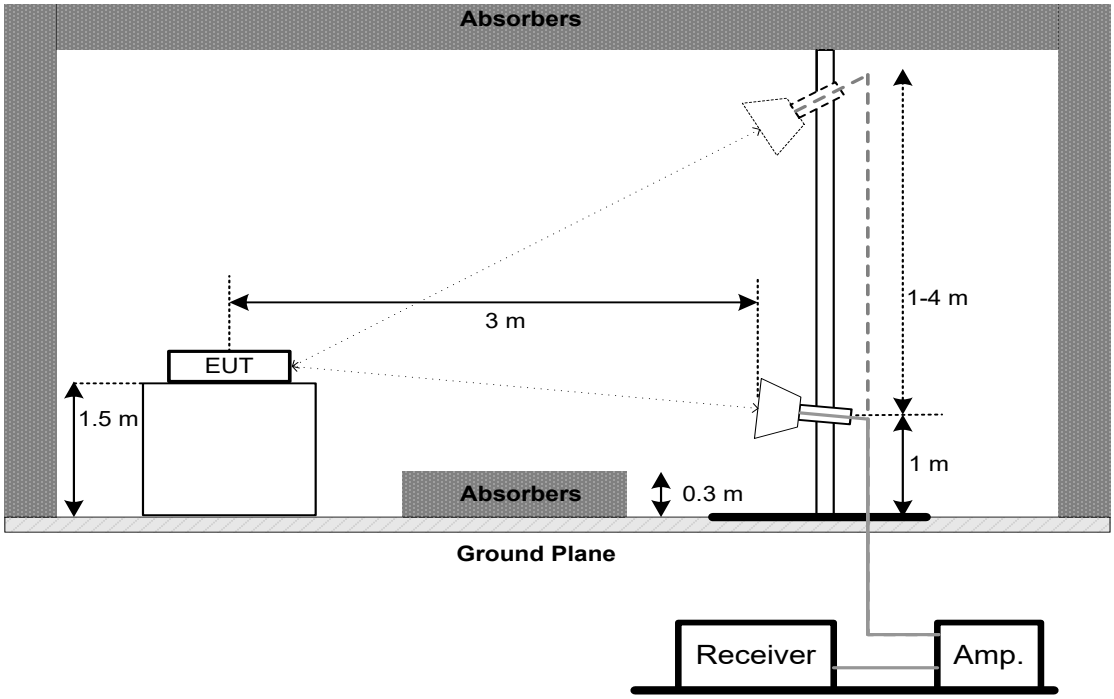
9 kHz to 30 MHz



30 MHz to 1 GHz



Above 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 (specific distance / 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
RSS-Gen 6.7 RSS-247 5.2 (a)	6 dB Bandwidth	Minimum 500 kHz
	99% Emission Bandwidth	-

5.2 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
VBW	1 MHz
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 AVERAGE OUTPUT POWER & E.I.R.P.

6.1 LIMIT

Section	Test Item	Limit
RSS-247 5.4 (d)	Maximum Average Output Power	1.0000 Watt or 30.00 dBm
	Maximum e.i.r.p.	4.0000 Watt or 36.02 dBm

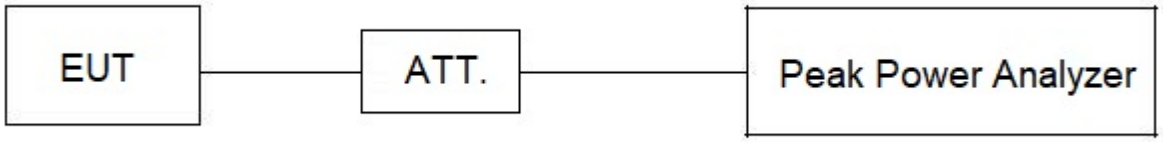
6.2 TEST PROCEDURE

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.

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 device is operating, the RF power that is produced 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 that the transmitter demonstrates compliance with the peak Output Power limits. If the transmitter complies with the Output Power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen 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:

For Reference Level:

Spectrum Parameters	Setting
Span Frequency	≥ 1.5 times the bandwidth.
RBW	100 kHz
VBW	300 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

For Emission Level:

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
RSS-247 5.2 (b)	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	1.5 times the DTS bandwidth
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	15041304	Jan. 22, 2023
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	Jun. 17, 2023
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. 14, 2022 Jul. 14, 2023

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. 15, 2022 Jul. 15, 2023

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	May 27, 2023
3	Amplifier	Agilent	8449B	3008A02584	Jul. 03, 2023
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. 05, 2022 Jul. 05, 2025
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. 03, 2023
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. 15, 2022 Jul. 15, 2023

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. 03, 2023
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 Average Output Power					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Peak Power Analyzer	Keysight	8990B	MY51000506	Jul. 03, 2023
2	Wideband power sensor	Keysight	N1923A	MY58310004	Jul. 03, 2023
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.

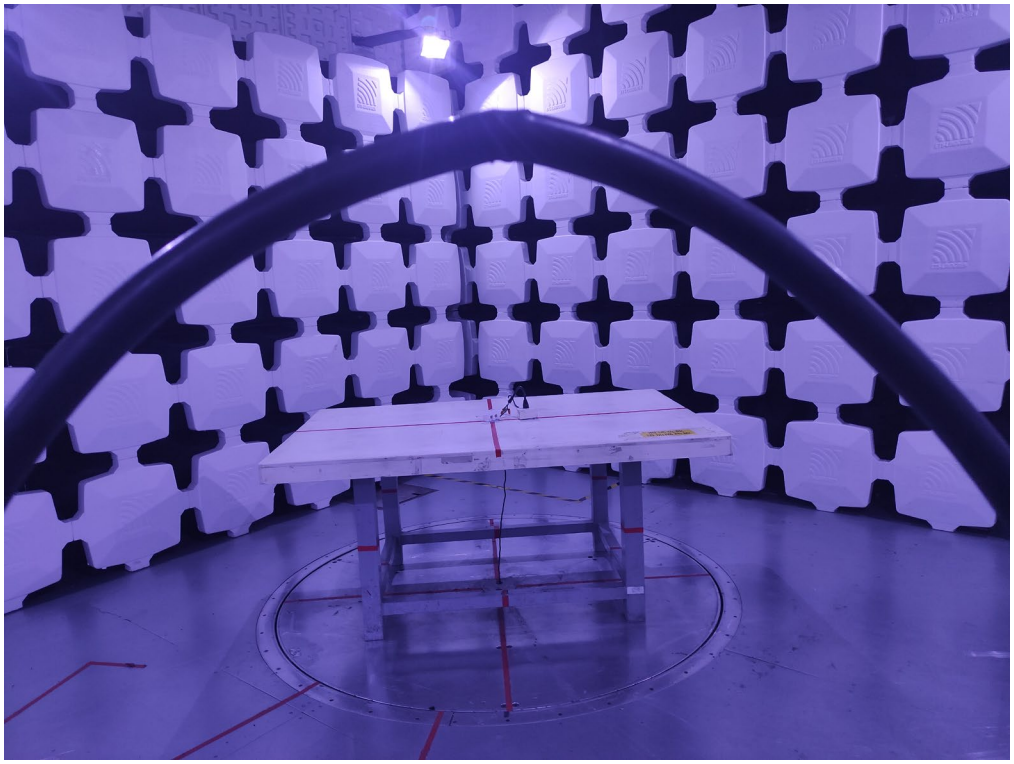
Except * item, all calibration period of equipment list is one year.

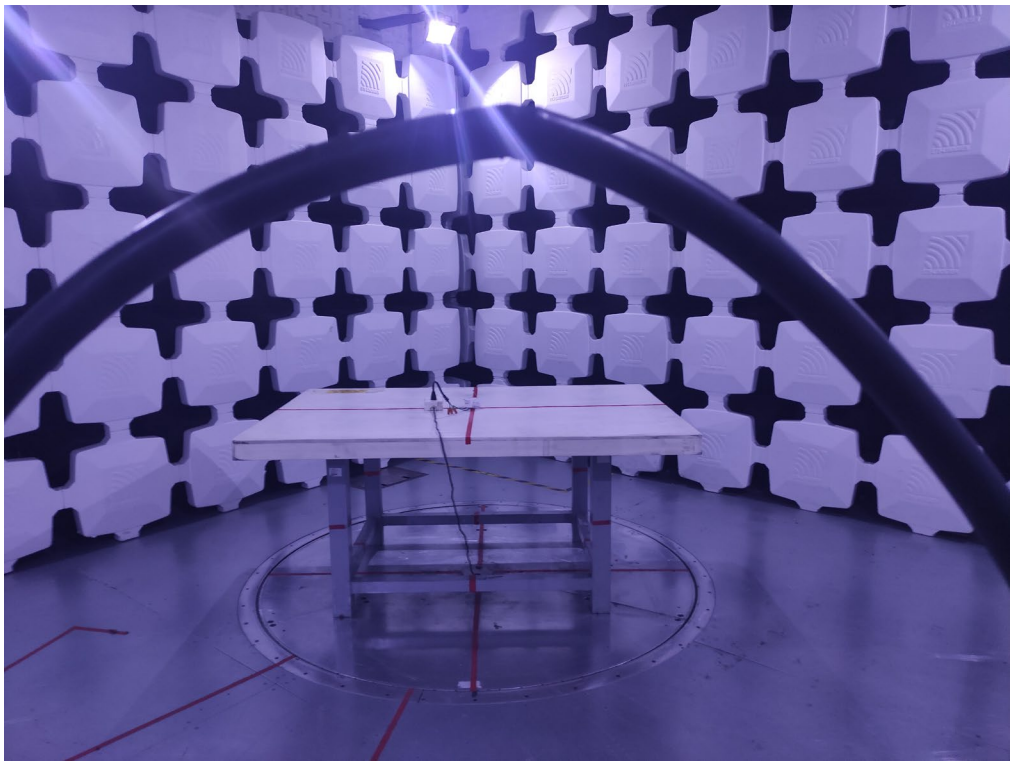
10. EUT TEST PHOTO

AC Power Line Conducted Emissions Test Photos

Radiated Emissions Test Photos

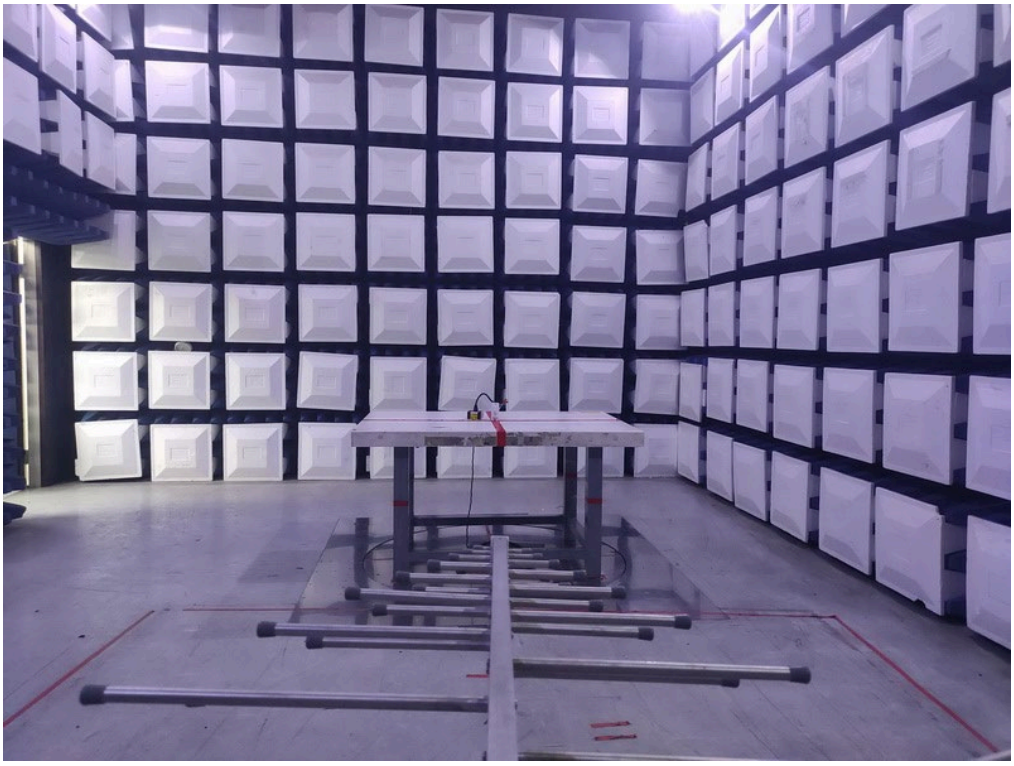
9 kHz to 30 MHz

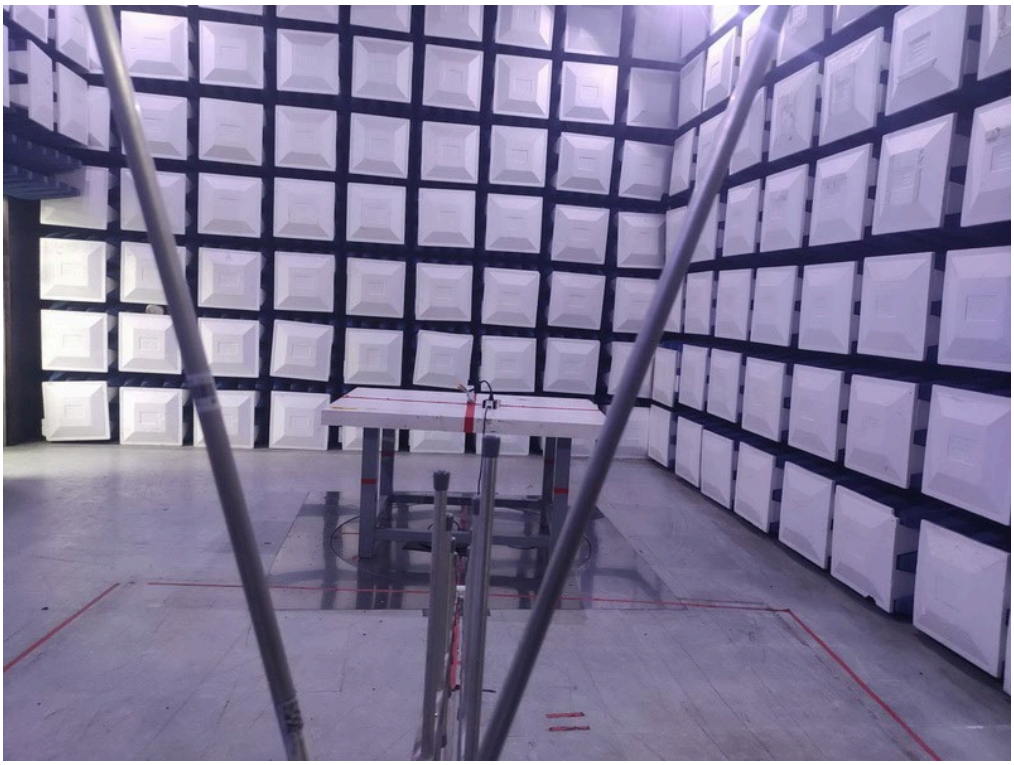




Radiated Emissions Test Photos

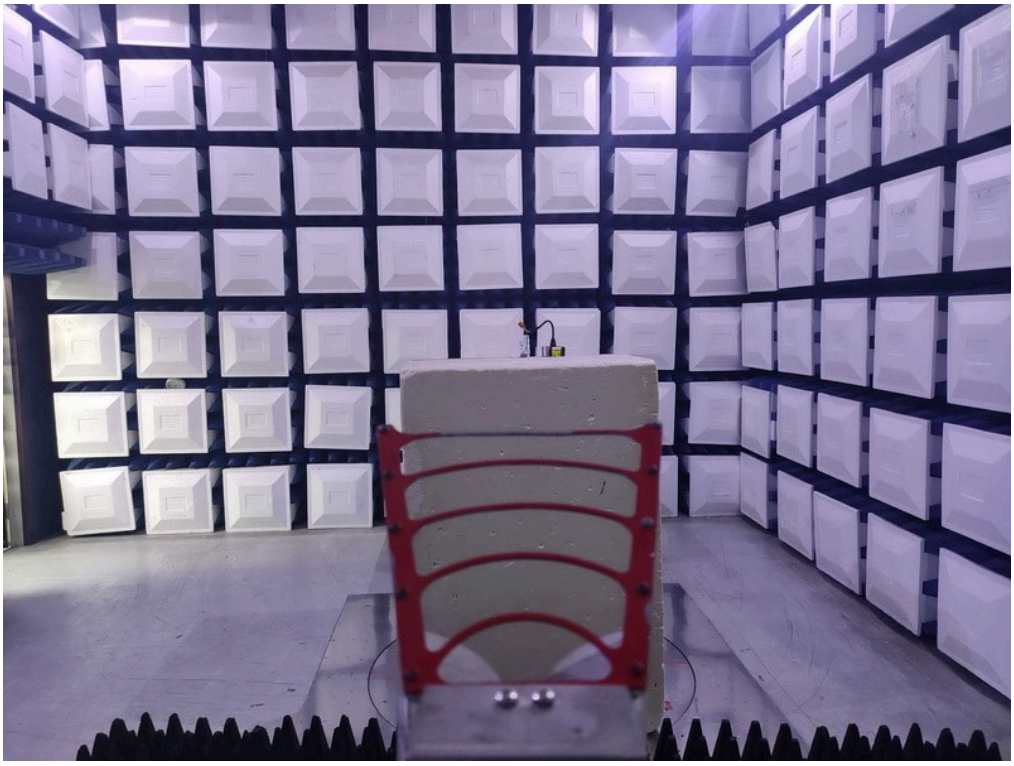
30 MHz to 1 GHz



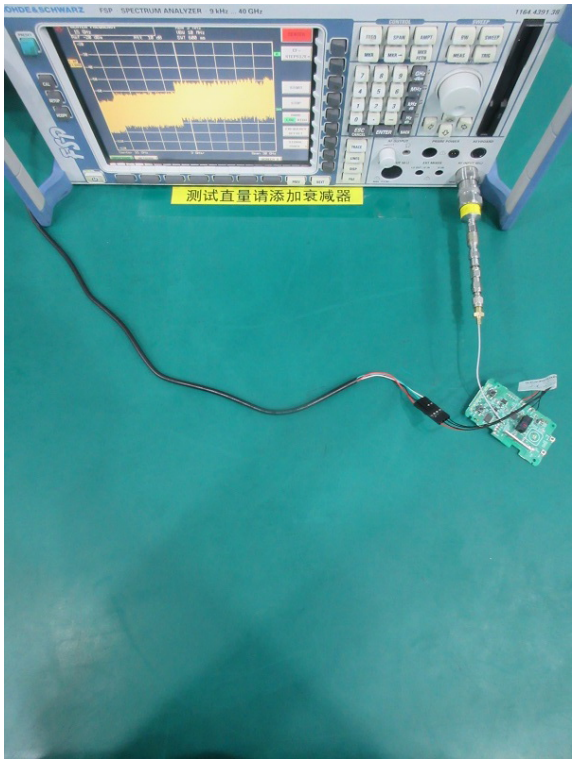


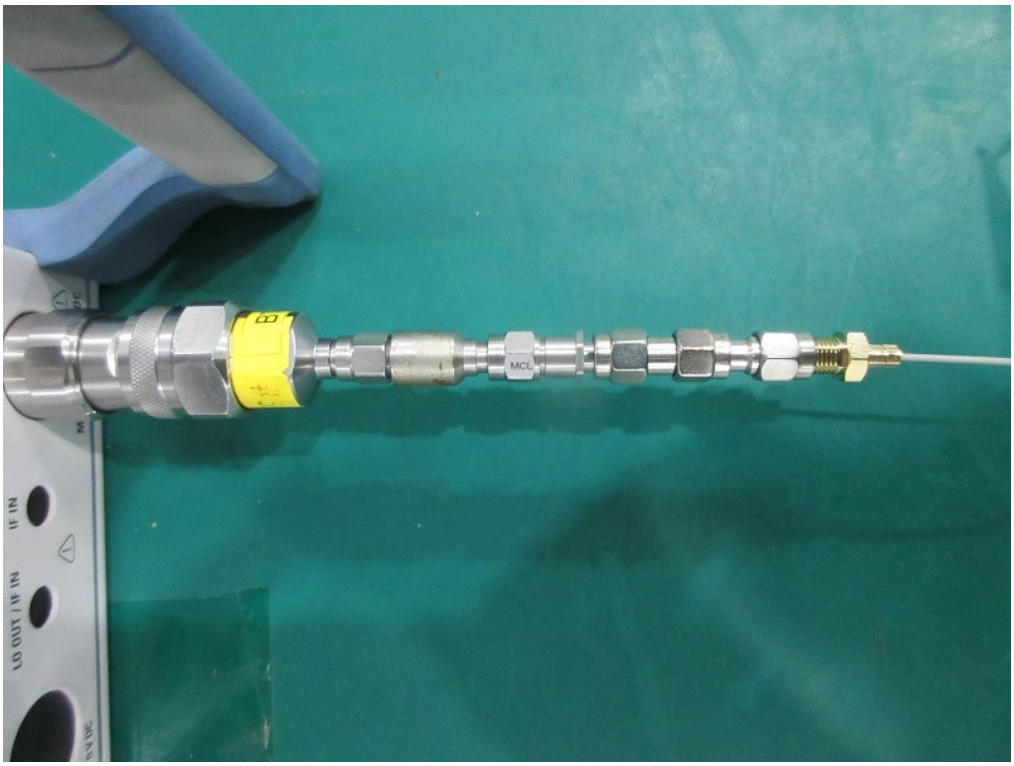
Radiated Emissions Test Photos

Above 1 GHz



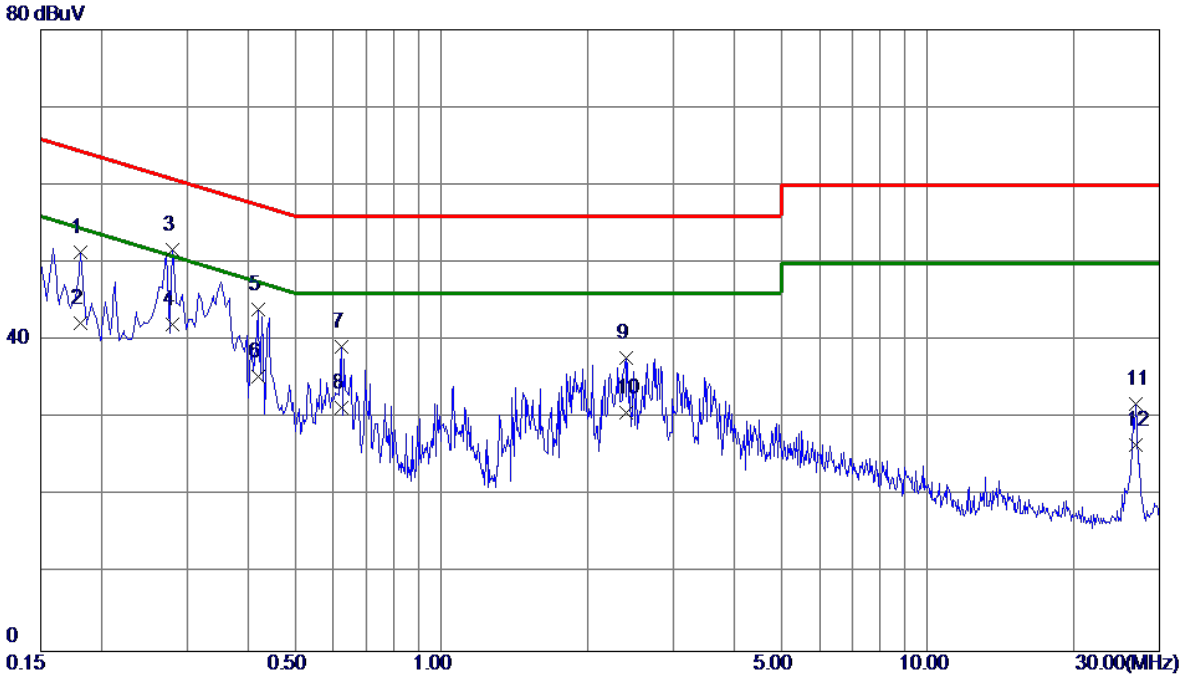
Conducted Test Photos





APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS

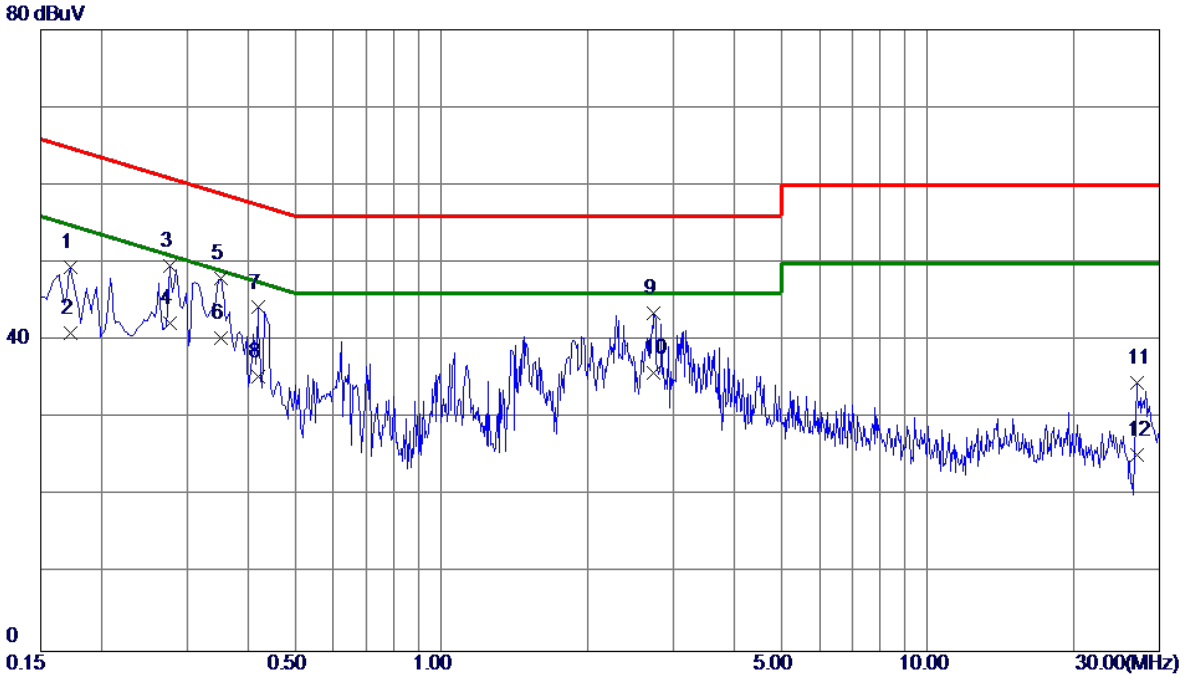
Test Mode	TX N(HT20) Mode Channel 06	Phase	Line



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1815	41.75	9.68	51.43	64.42	-12.99	QP	
2	0.1815	32.59	9.68	42.27	54.42	-12.15	AVG	
3	0.2805	41.93	9.71	51.64	60.80	-9.16	QP	
4 *	0.2805	32.31	9.71	42.02	50.80	-8.78	AVG	
5	0.4200	34.27	9.76	44.03	57.45	-13.42	QP	
6	0.4200	25.60	9.76	35.36	47.45	-12.09	AVG	
7	0.6225	29.35	9.79	39.14	56.00	-16.86	QP	
8	0.6225	21.60	9.79	31.39	46.00	-14.61	AVG	
9	2.3955	27.84	9.92	37.76	56.00	-18.24	QP	
10	2.3955	20.80	9.92	30.72	46.00	-15.28	AVG	
11	26.7945	20.82	11.01	31.83	60.00	-28.17	QP	
12	26.7945	15.60	11.01	26.61	50.00	-23.39	AVG	

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

Test Mode	TX N(HT20) Mode Channel 06	Phase	Neutral

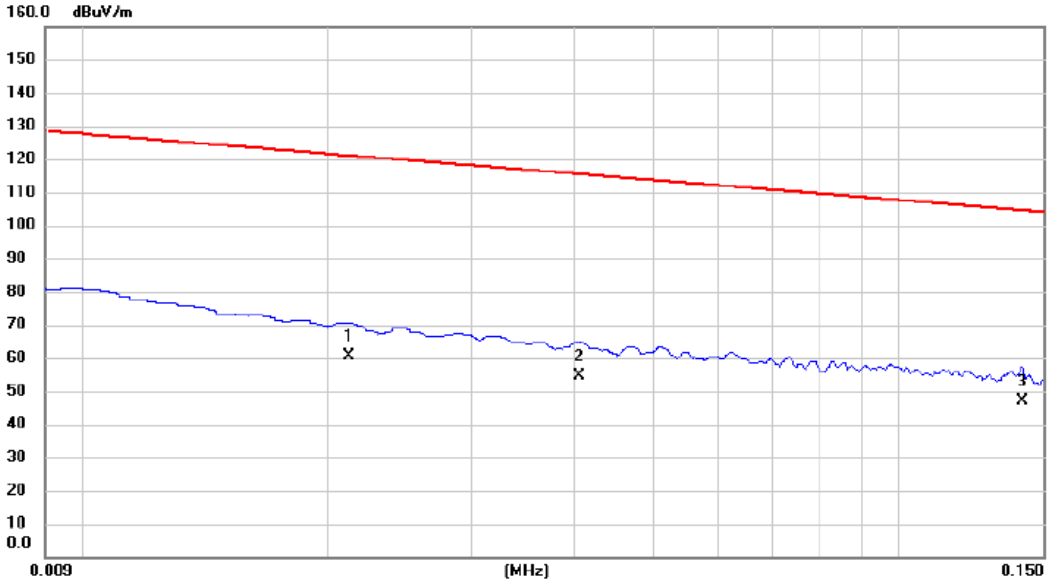


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1725	39.80	9.71	49.51	64.84	-15.33	QP	
2	0.1725	31.20	9.71	40.91	54.84	-13.93	AVG	
3	0.2760	39.88	9.75	49.63	60.94	-11.31	QP	
4	0.2760	32.50	9.75	42.25	50.94	-8.69	AVG	
5	0.3525	38.17	9.78	47.95	58.90	-10.95	QP	
6 *	0.3525	30.60	9.78	40.38	48.90	-8.52	AVG	
7	0.4200	34.45	9.79	44.24	57.45	-13.21	QP	
8	0.4200	25.60	9.79	35.39	47.45	-12.06	AVG	
9	2.7375	33.57	9.98	43.55	56.00	-12.45	QP	
10	2.7375	25.89	9.98	35.87	46.00	-10.13	AVG	
11	26.9565	23.47	11.07	34.54	60.00	-25.46	QP	
12	26.9565	14.21	11.07	25.28	50.00	-24.72	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

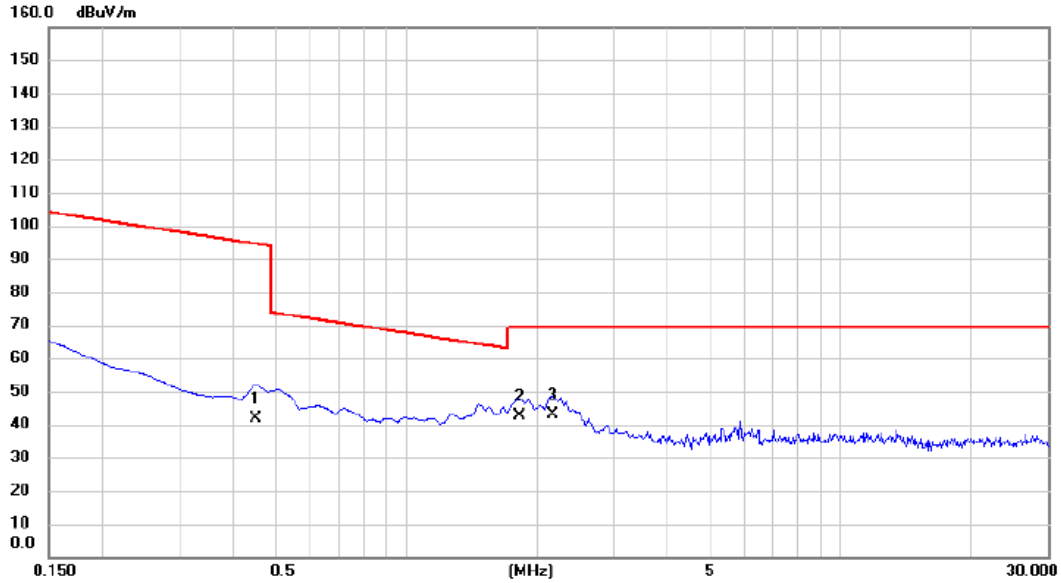
Test Mode	TX N(HT20) Mode Channel 06	Polarization	0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.0212	46.21	14.28	60.49	121.08	-60.59	AVG	
2		0.0406	40.89	13.85	54.74	115.43	-60.69	AVG	
3	*	0.1414	33.26	13.70	46.96	104.60	-57.64	AVG	

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

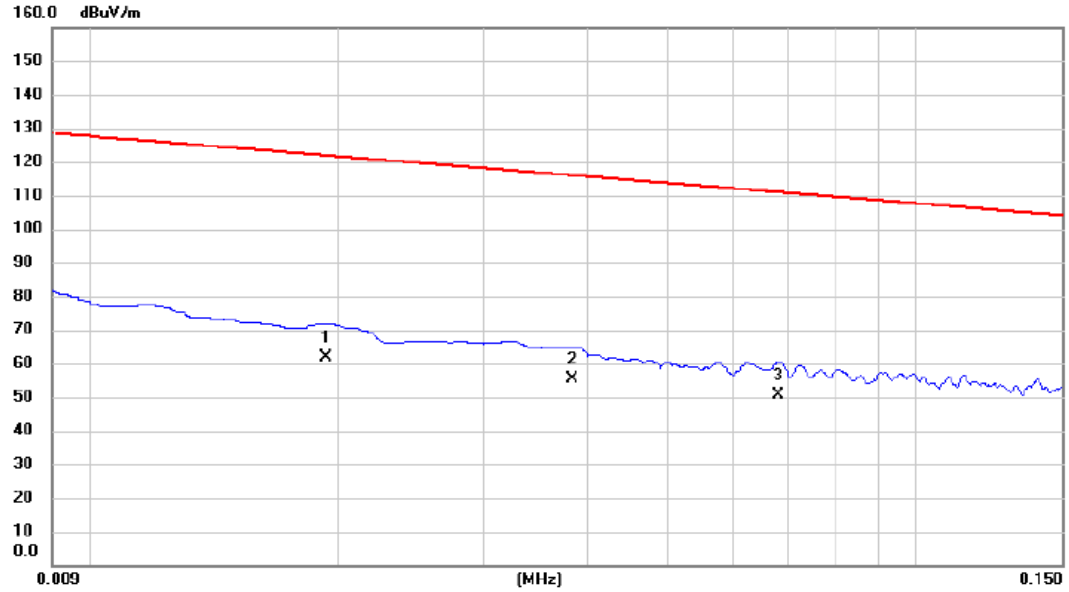
Test Mode	TX N(HT20) Mode Channel 06	Polarization	0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.4485	28.47	13.38	41.85	94.57	-52.72	AVG	
2		1.8216	30.49	12.10	42.59	69.54	-26.95	QP	
3	*	2.1668	31.22	11.89	43.11	69.54	-26.43	QP	

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

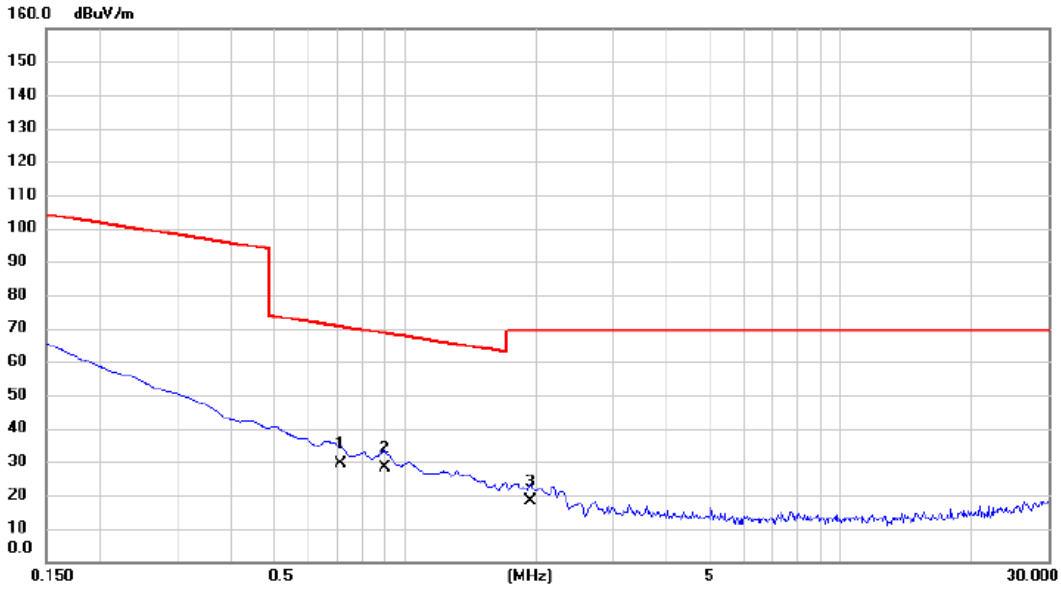
Test Mode	TX N(HT20) Mode Channel 06	Polarization	90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0193	47.20	14.53	61.73	121.89	-60.16	AVG	
2		0.0384	41.35	13.90	55.25	115.92	-60.67	AVG	
3		0.0682	37.01	13.64	50.65	110.93	-60.28	AVG	

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

Test Mode	TX N(HT20) Mode Channel 06	Polarization	90°

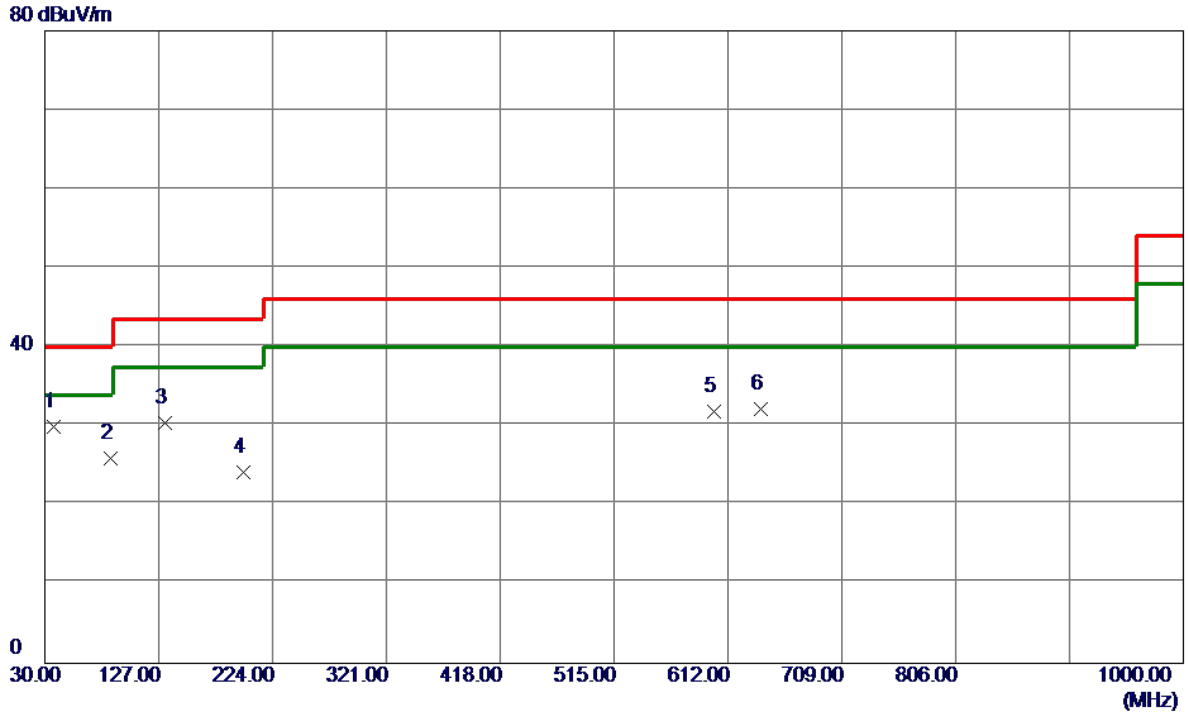


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.7122	16.21	13.09	29.30	70.55	-41.25	QP	
2	*	0.8962	15.28	12.88	28.16	68.56	-40.40	QP	
3		1.9410	6.09	12.00	18.09	69.54	-51.45	QP	

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

APPENDIX C - RADIATED EMISSION - 30 MHZ TO 1000 MHZ

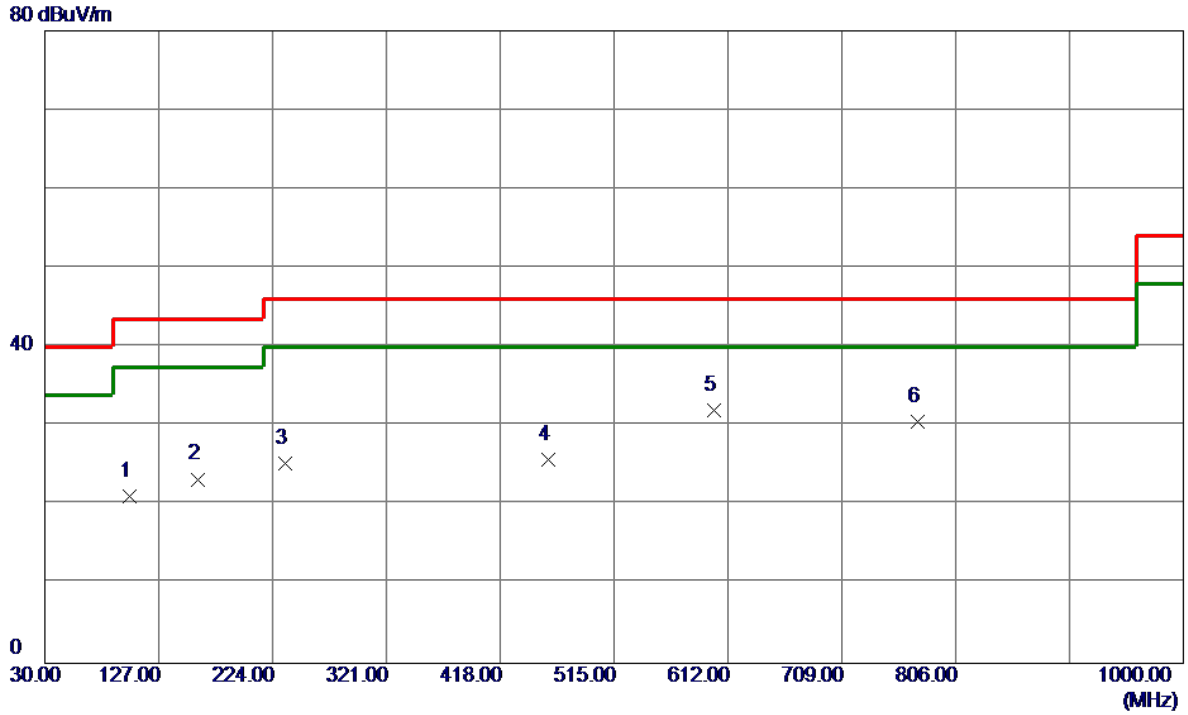
Test Mode	TX N(HT20) Mode Channel 06	Polarization	Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	37.7599	45.01	-15.08	29.93	40.00	-10.07	Peak	
2	86.2600	44.84	-18.88	25.96	40.00	-14.04	Peak	
3	132.8200	43.91	-13.54	30.37	43.50	-13.13	Peak	
4	198.7800	39.77	-15.57	24.20	43.50	-19.30	Peak	
5	600.3600	36.65	-4.78	31.87	46.00	-14.13	Peak	
6	640.1300	36.38	-4.16	32.22	46.00	-13.78	Peak	

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

Test Mode	TX N(HT20) Mode Channel 06	Polarization	Horizontal

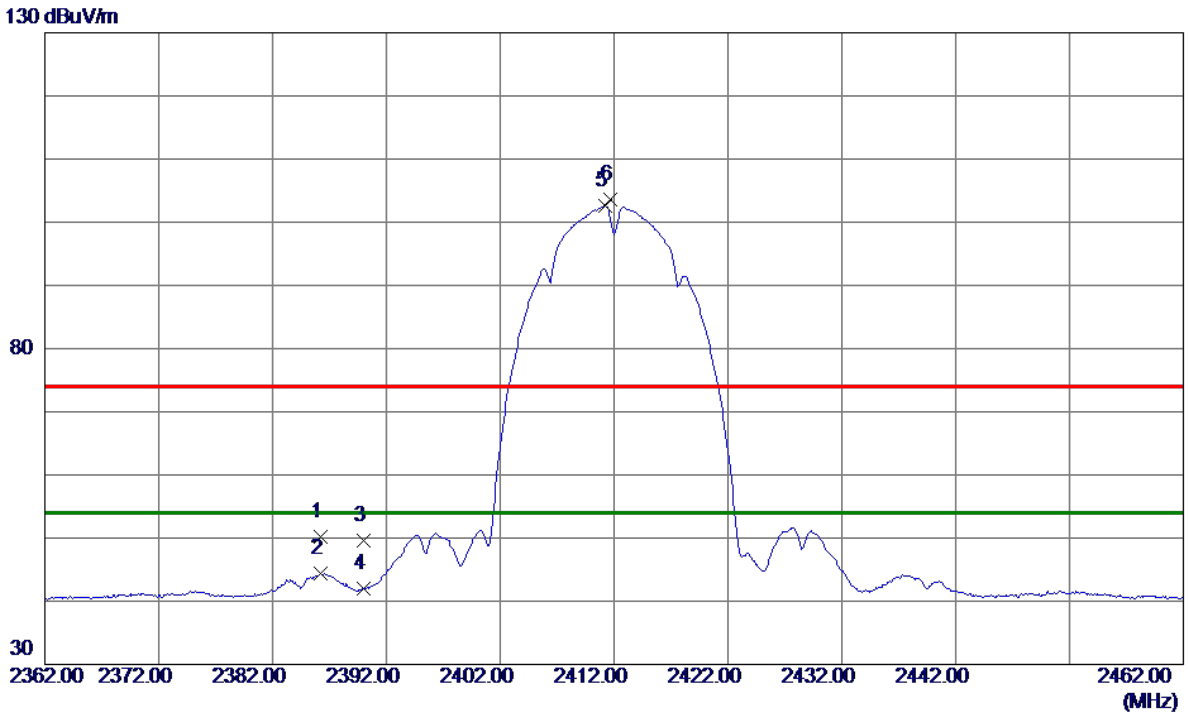


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	101.7800	37.86	-16.72	21.14	43.50	-22.36	Peak	
2	159.9800	36.00	-12.72	23.28	43.50	-20.22	Peak	
3	234.6700	39.30	-13.97	25.33	46.00	-20.67	Peak	
4	458.7400	33.22	-7.39	25.83	46.00	-20.17	Peak	
5 *	600.3600	36.78	-4.78	32.00	46.00	-14.00	Peak	
6	773.9900	32.26	-1.67	30.59	46.00	-15.41	Peak	

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

APPENDIX D - RADIATED EMISSION- ABOVE 1000 MHZ

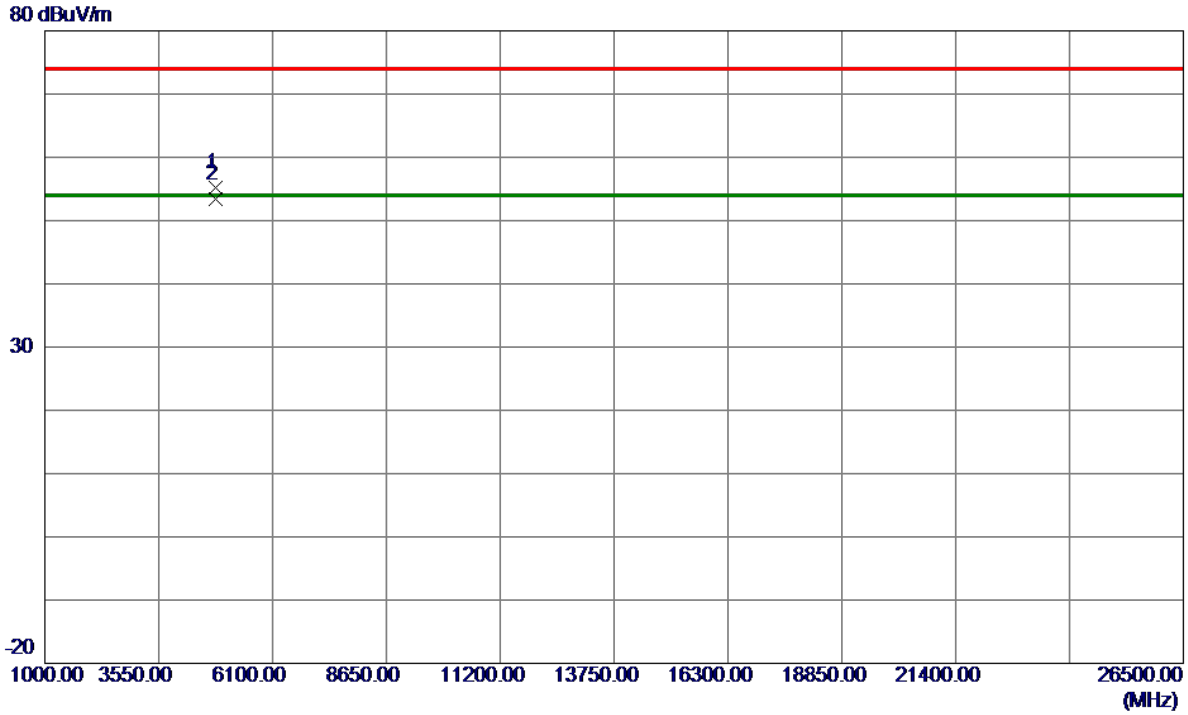
Test Mode	TX B Mode 2412 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2386.2000	42.94	7.17	50.11	74.00	-23.89	Peak	
2	2386.2000	37.21	7.17	44.38	54.00	-9.62	AVG	
3	2390.0000	42.39	7.17	49.56	74.00	-24.44	Peak	
4	2390.0000	34.83	7.17	42.00	54.00	-12.00	AVG	
5 *	2411.2000	95.34	7.17	102.51	54.00	48.51	AVG	No Limit
6	2411.7000	96.36	7.17	103.53	74.00	29.53	Peak	No Limit

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

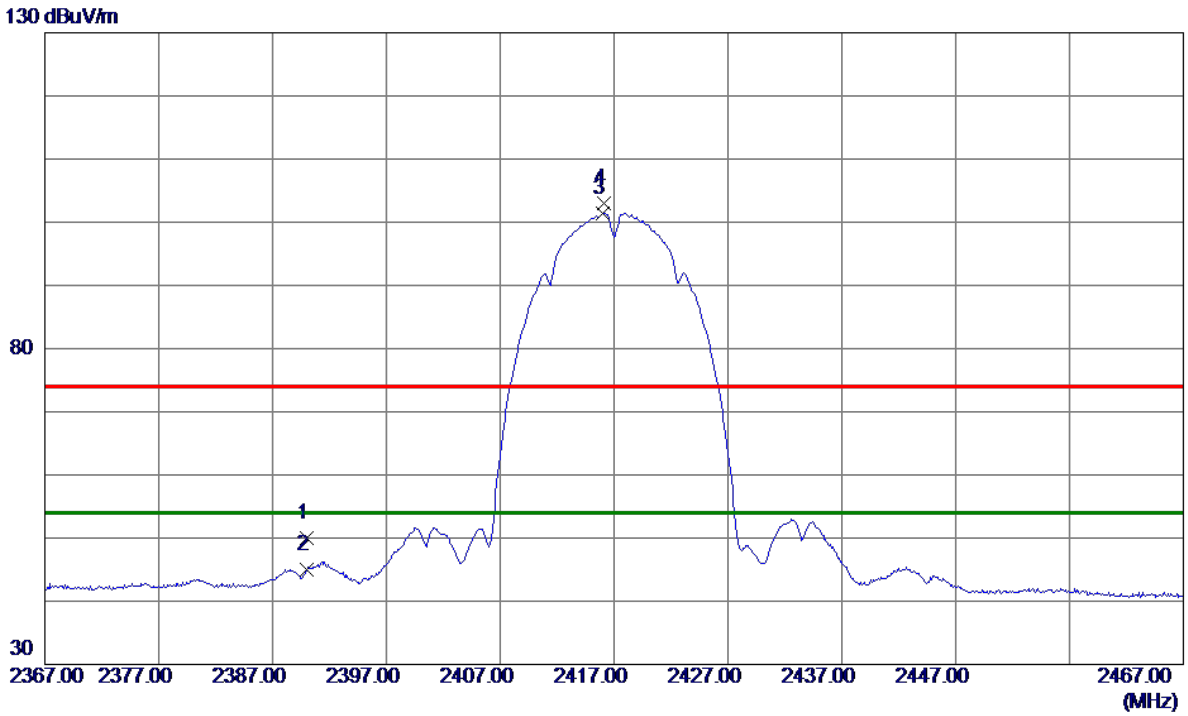
Test Mode	TX B Mode 2412 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4823.9200	51.06	4.23	55.29	74.00	-18.71	Peak	
2 *	4823.9850	49.14	4.23	53.37	54.00	-0.63	AVG	

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

Test Mode	TX B Mode 2417 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	42.75	7.17	49.92	74.00	-24.08	Peak	
2	2390.0000	37.84	7.17	45.01	54.00	-8.99	AVG	
3 *	2416.0000	94.25	7.17	101.42	54.00	47.42	AVG	No Limit
4	2416.1000	95.80	7.17	102.97	74.00	28.97	Peak	No Limit

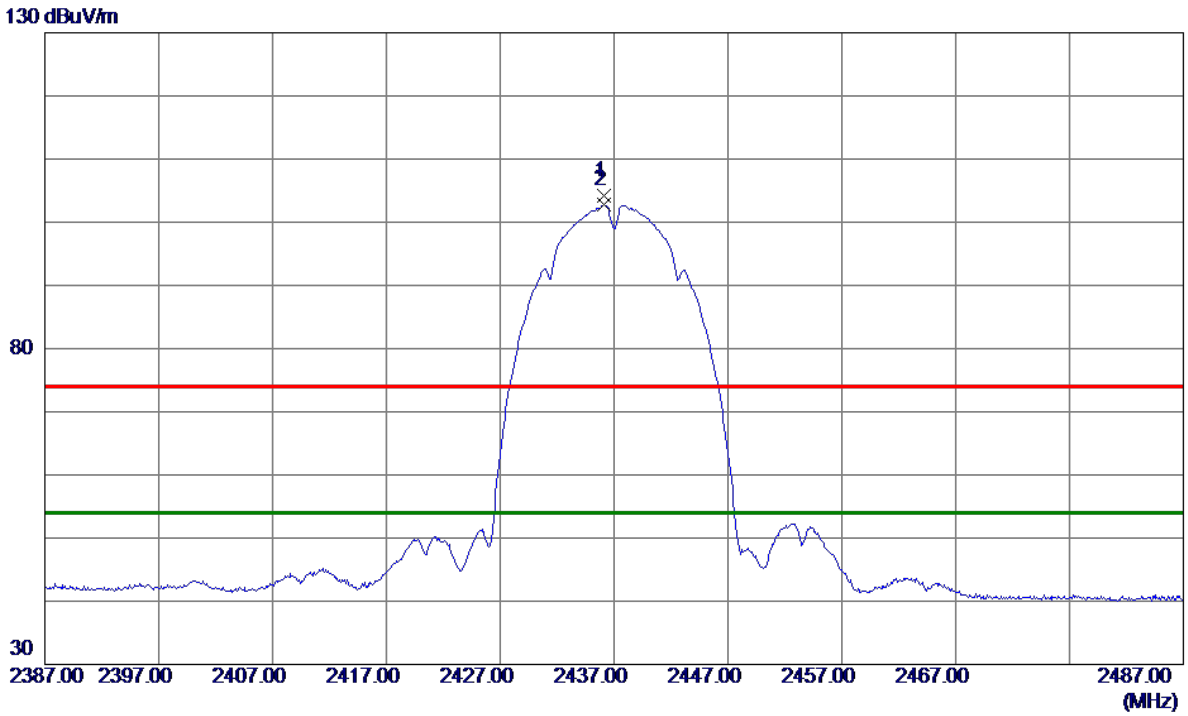
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode	TX B Mode 2417 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	4833.9000	51.50	4.26	55.76	74.00	-18.24	Peak	
2 *	4834.0200	49.06	4.26	53.32	54.00	-0.68	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	2436.1000	97.11	7.18	104.29	74.00	30.29	Peak	No Limit
2 *	2436.1000	95.59	7.18	102.77	54.00	48.77	AVG	No Limit

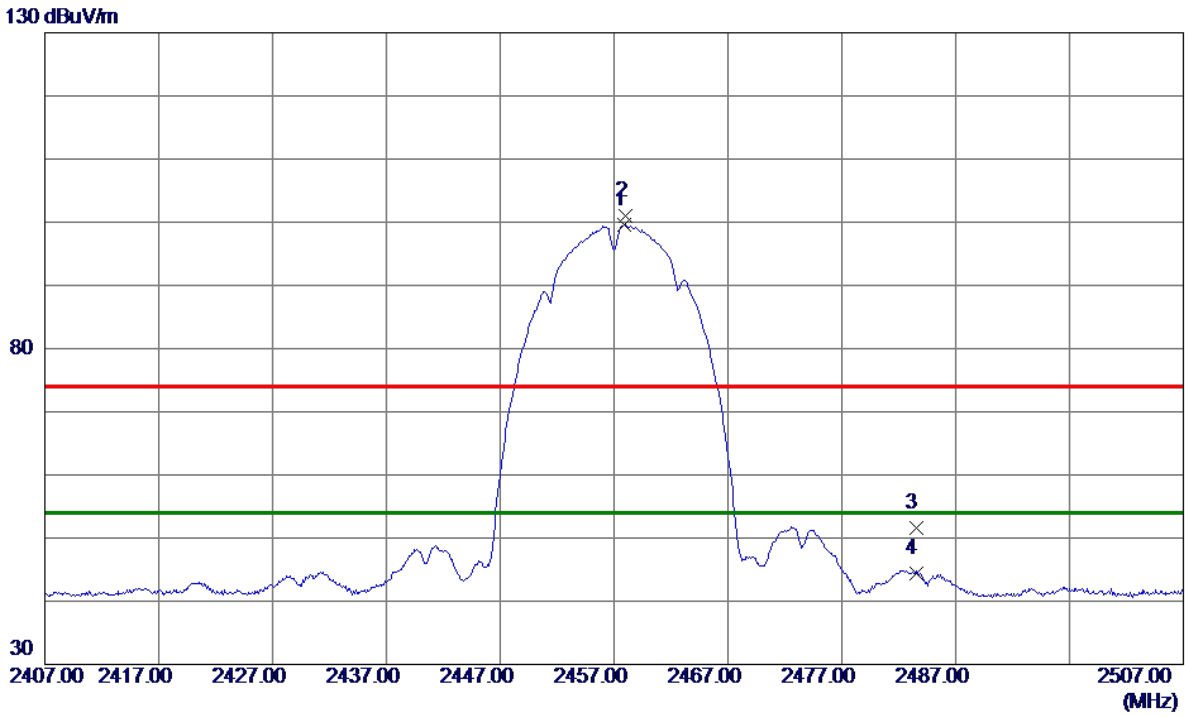
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode	TX B Mode 2437 MHz	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	50.95	4.38	55.33	74.00	-18.67	Peak	
2 *	4874.0099	49.03	4.38	53.41	54.00	-0.59	AVG	

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

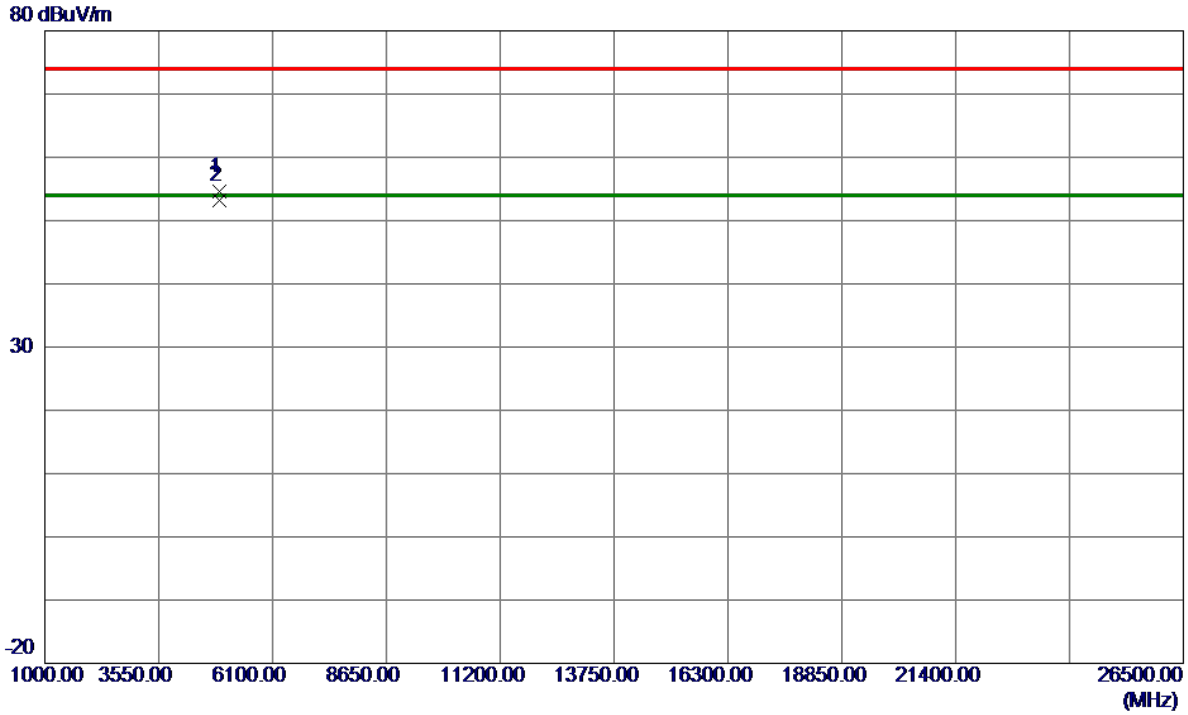
Test Mode	TX B Mode 2457 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	2457.9000	92.46	7.18	99.64	54.00	45.64	AVG	No Limit
2	2458.0000	93.78	7.18	100.96	74.00	26.96	Peak	No Limit
3	2483.5000	44.47	7.19	51.66	74.00	-22.34	Peak	
4	2483.5000	37.12	7.19	44.31	54.00	-9.69	AVG	

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

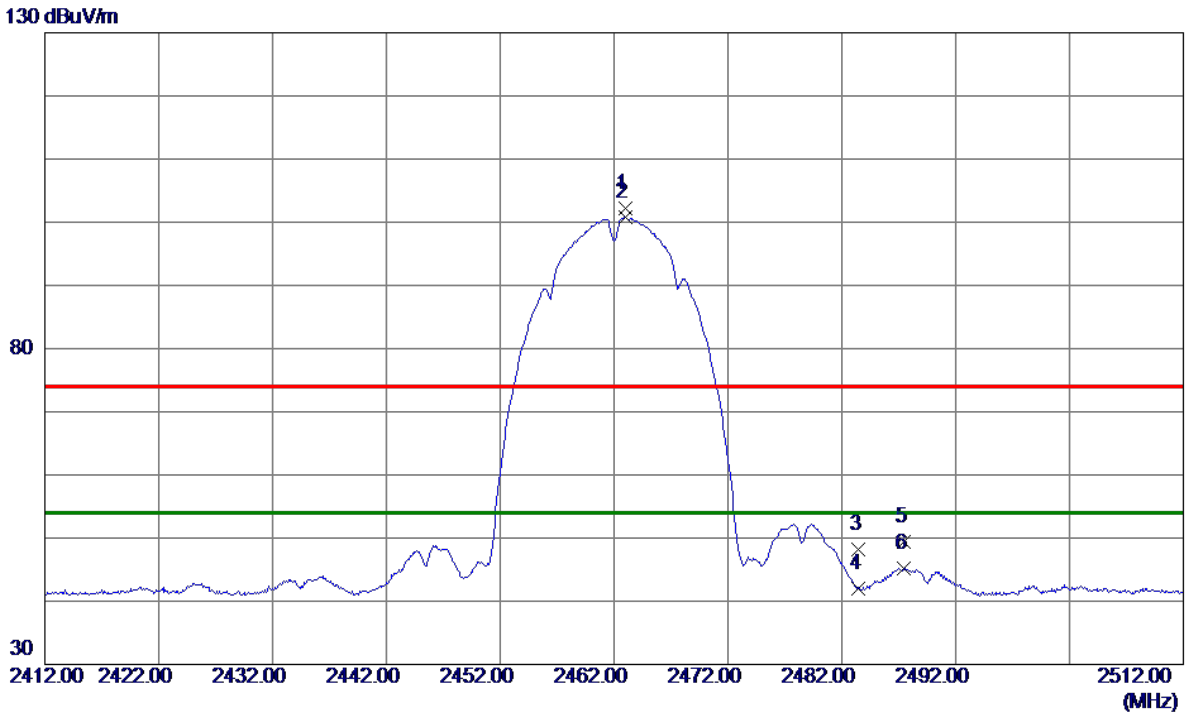
Test Mode	TX B Mode 2457 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4913.9450	50.16	4.49	54.65	74.00	-19.35	Peak	
2 *	4913.9850	48.69	4.49	53.18	54.00	-0.82	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	2463.0000	95.02	7.19	102.21	74.00	28.21	Peak	No Limit
2 *	2463.0000	93.60	7.19	100.79	54.00	46.79	AVG	No Limit
3	2483.5000	40.96	7.19	48.15	74.00	-25.85	Peak	
4	2483.5000	34.88	7.19	42.07	54.00	-11.93	AVG	
5	2487.5000	42.26	7.19	49.45	74.00	-24.55	Peak	
6	2487.5000	38.05	7.19	45.24	54.00	-8.76	AVG	

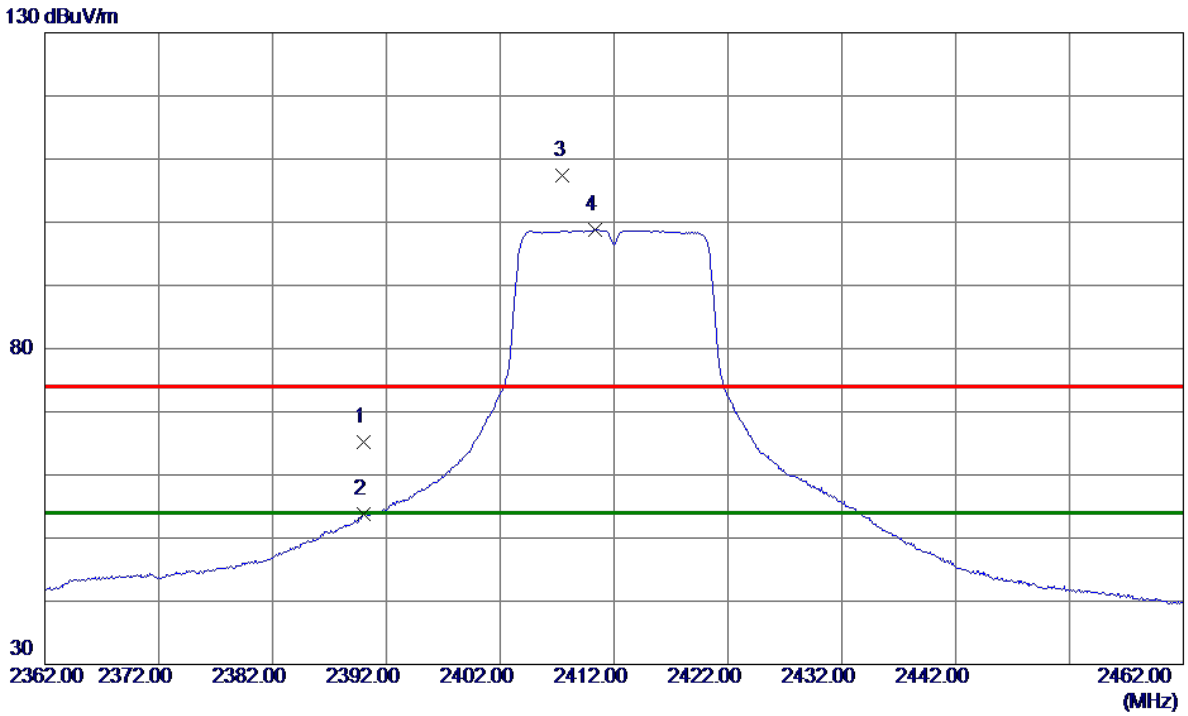
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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 *	4924.0000	47.55	4.52	52.07	54.00	-1.93	AVG	
2	4924.0950	49.87	4.52	54.39	74.00	-19.61	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	57.98	7.17	65.15	74.00	-8.85	Peak	
2	2390.0000	46.70	7.17	53.87	54.00	-0.13	AVG	
3	2407.5000	100.29	7.17	107.46	74.00	33.46	Peak	No Limit
4 *	2410.3000	91.67	7.17	98.84	54.00	44.84	AVG	No Limit

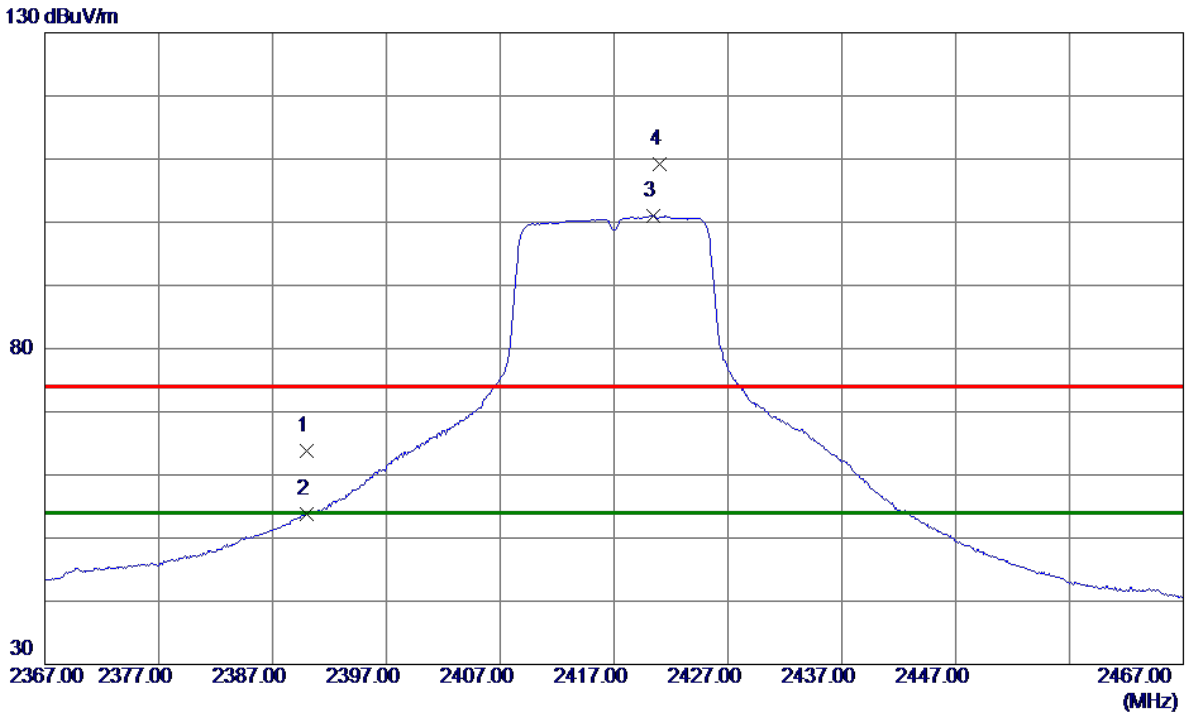
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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	4822.7500	53.75	4.22	57.97	74.00	-16.03	Peak	
2 *	4824.5800	41.29	4.23	45.52	54.00	-8.48	AVG	

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

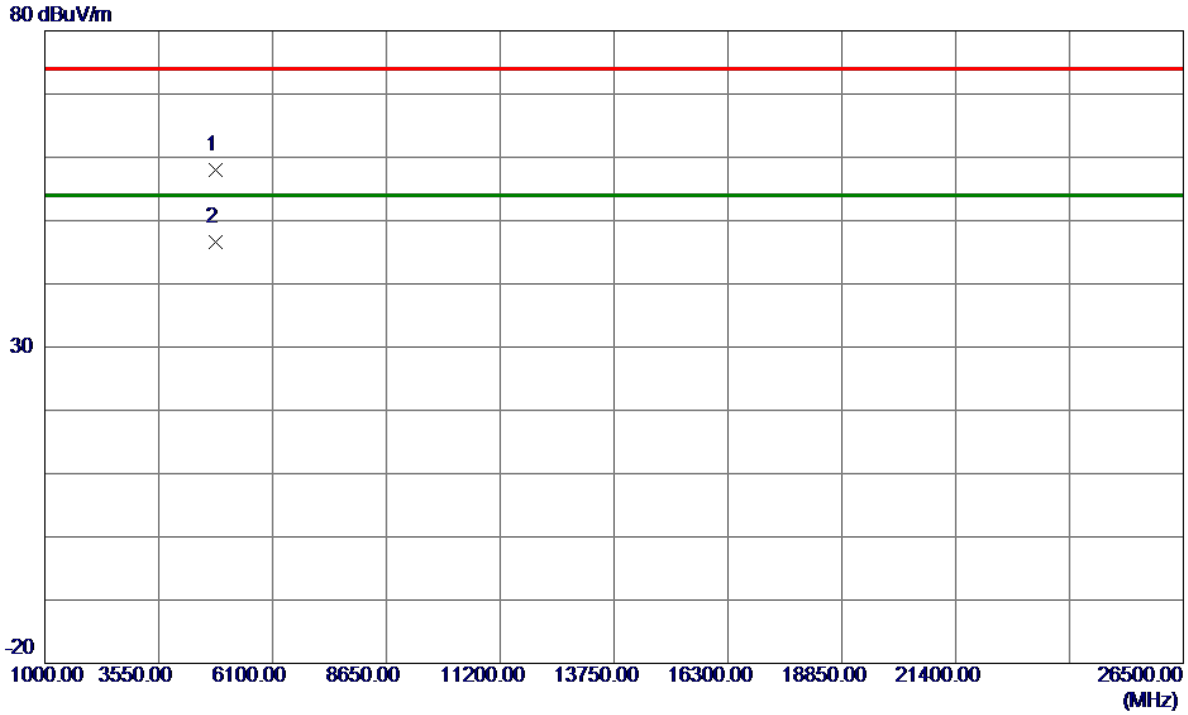
Test Mode	TX G Mode 2417 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.0000	56.55	7.17	63.72	74.00	-10.28	Peak	
2	2390.0000	46.72	7.17	53.89	54.00	-0.11	AVG	
3 *	2420.4000	93.78	7.18	100.96	54.00	46.96	AVG	No Limit
4	2421.0000	101.93	7.18	109.11	74.00	35.11	Peak	No Limit

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

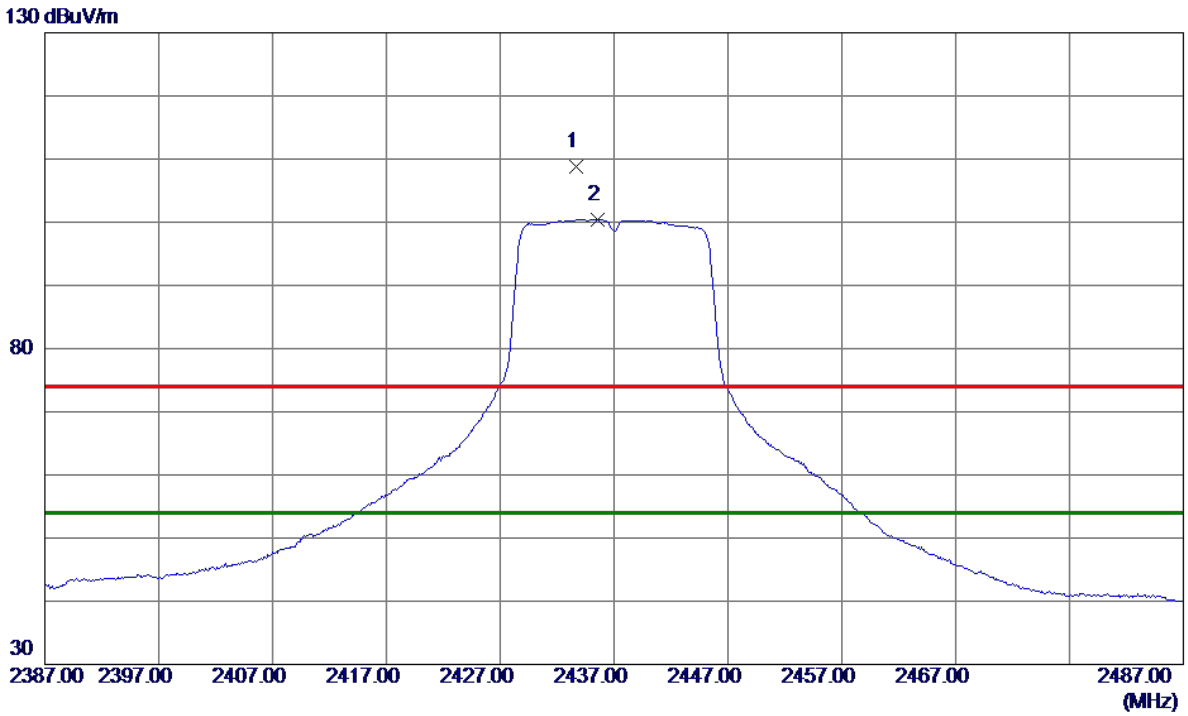
Test Mode	TX G Mode 2417 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4831.9100	53.78	4.25	58.03	74.00	-15.97	Peak	
2 *	4833.5900	42.26	4.26	46.52	54.00	-7.48	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	2433.7000	101.68	7.18	108.86	74.00	34.86	Peak	No Limit
2 *	2435.6000	93.29	7.18	100.47	54.00	46.47	AVG	No Limit

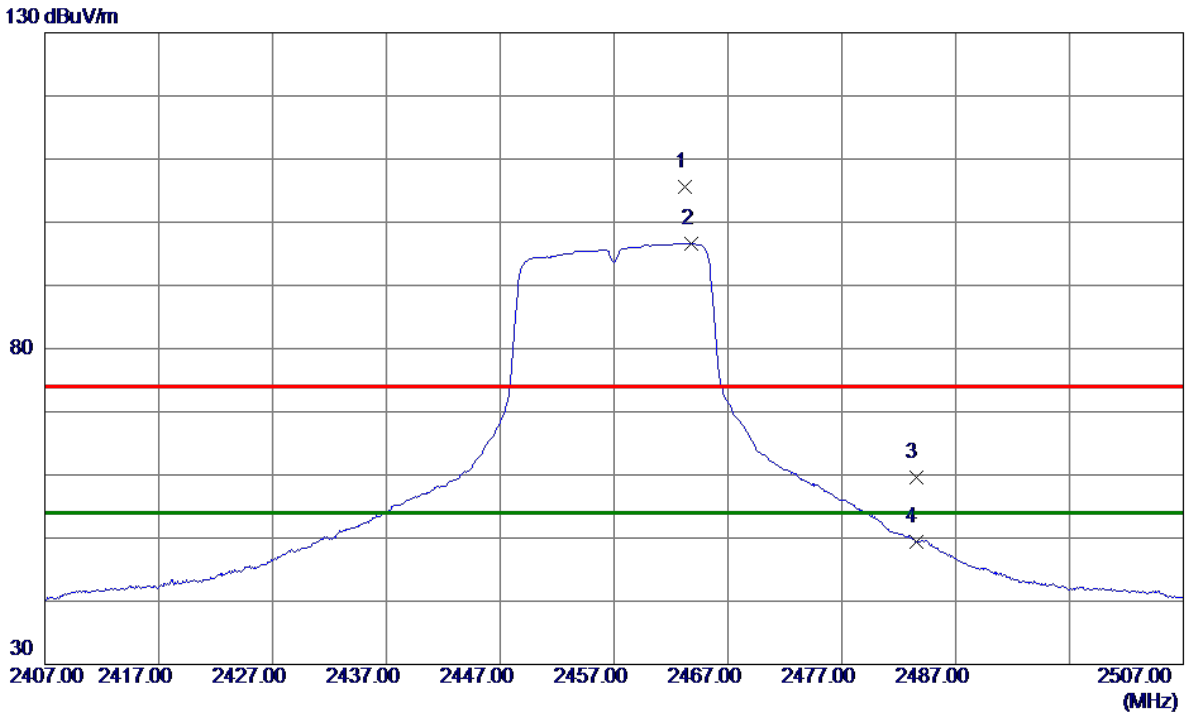
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode	TX G Mode 2437 MHz	Polarization	Horizontal

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	4875.3100	40.28	4.38	44.66	54.00	-9.34	AVG	
2	4878.2799	52.59	4.39	56.98	74.00	-17.02	Peak	

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

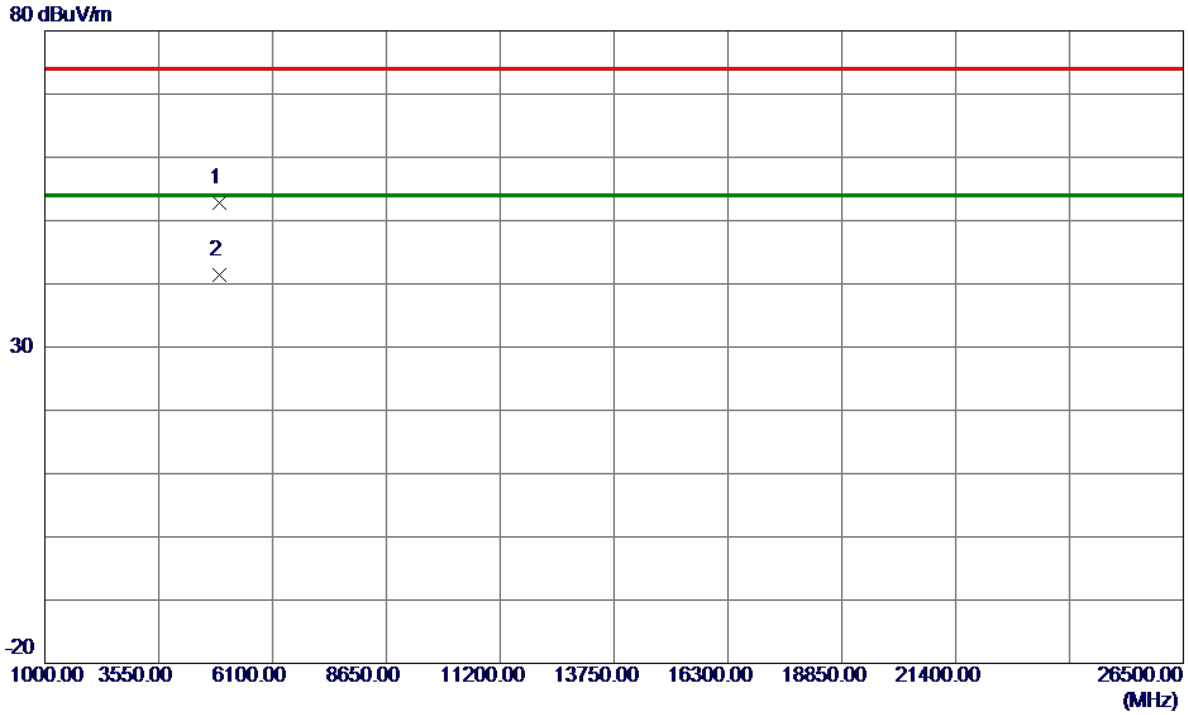
Test Mode	TX G Mode 2457 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2463.2000	98.35	7.19	105.54	74.00	31.54	Peak	No Limit
2 *	2463.8000	89.49	7.19	96.68	54.00	42.68	AVG	No Limit
3	2483.5000	52.45	7.19	59.64	74.00	-14.36	Peak	
4	2483.5000	42.23	7.19	49.42	54.00	-4.58	AVG	

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

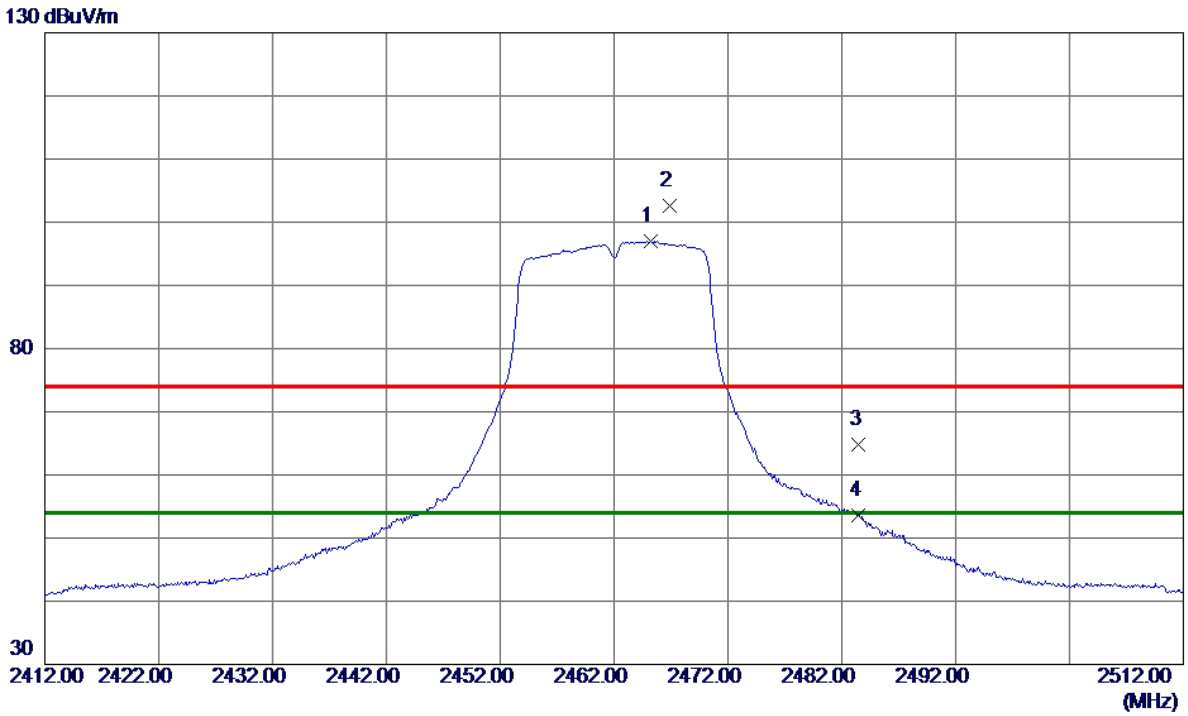
Test Mode	TX G Mode 2457 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4912.1100	48.29	4.49	52.78	74.00	-21.22	Peak	
2 *	4913.7799	36.98	4.49	41.47	54.00	-12.53	AVG	

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

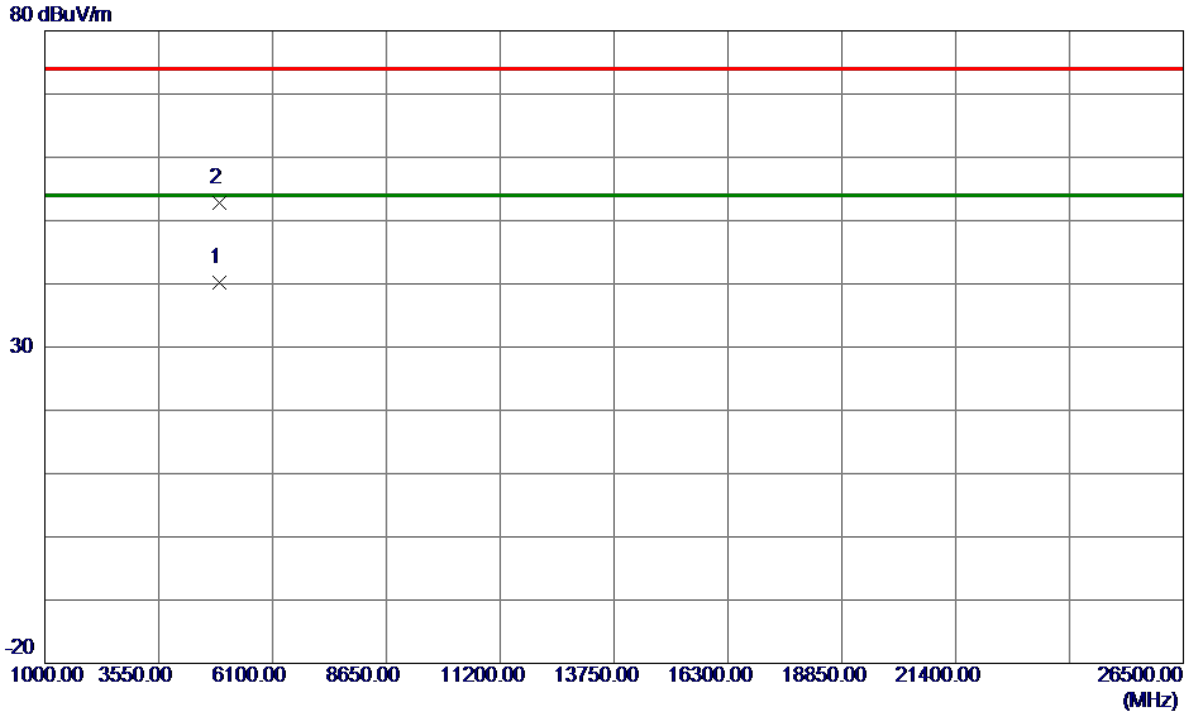
Test Mode	TX G Mode 2462 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	2465.2000	89.76	7.19	96.95	54.00	42.95	AVG	No Limit
2	2466.9000	95.45	7.19	102.64	74.00	28.64	Peak	No Limit
3	2483.5000	57.56	7.19	64.75	74.00	-9.25	Peak	
4	2483.5000	46.38	7.19	53.57	54.00	-0.43	AVG	

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

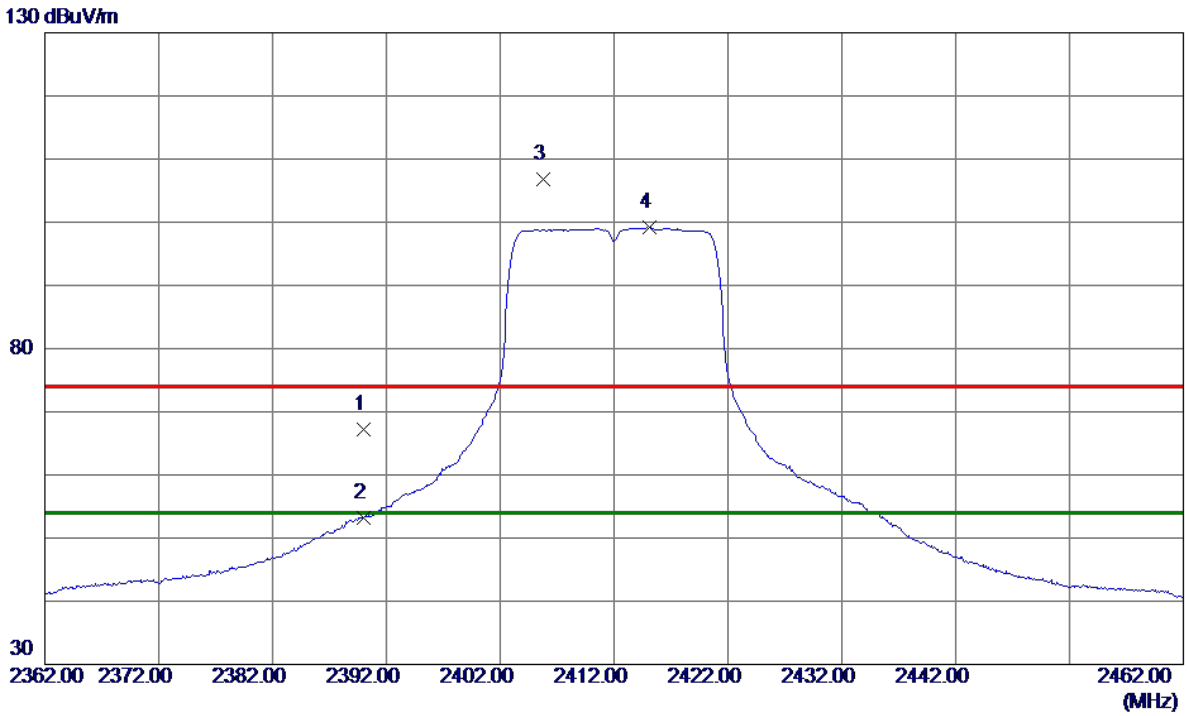
Test Mode	TX G Mode 2462 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	4922.5500	35.76	4.52	40.28	54.00	-13.72	AVG	
2	4923.1700	48.34	4.52	52.86	74.00	-21.14	Peak	

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

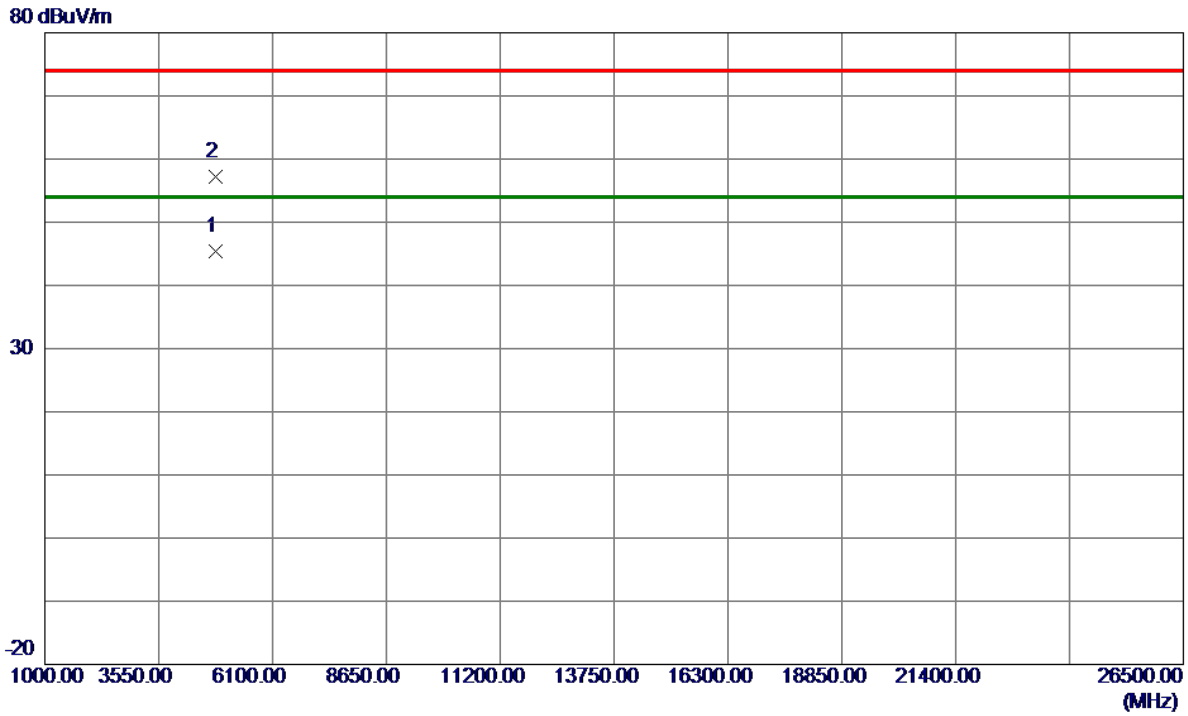
Test Mode	TX N(HT20) Mode 2412 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.0000	60.04	7.17	67.21	74.00	-6.79	Peak	
2	2390.0000	46.08	7.17	53.25	54.00	-0.75	AVG	
3	2405.8000	99.69	7.17	106.86	74.00	32.86	Peak	No Limit
4 *	2415.1000	91.98	7.17	99.15	54.00	45.15	AVG	No Limit

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

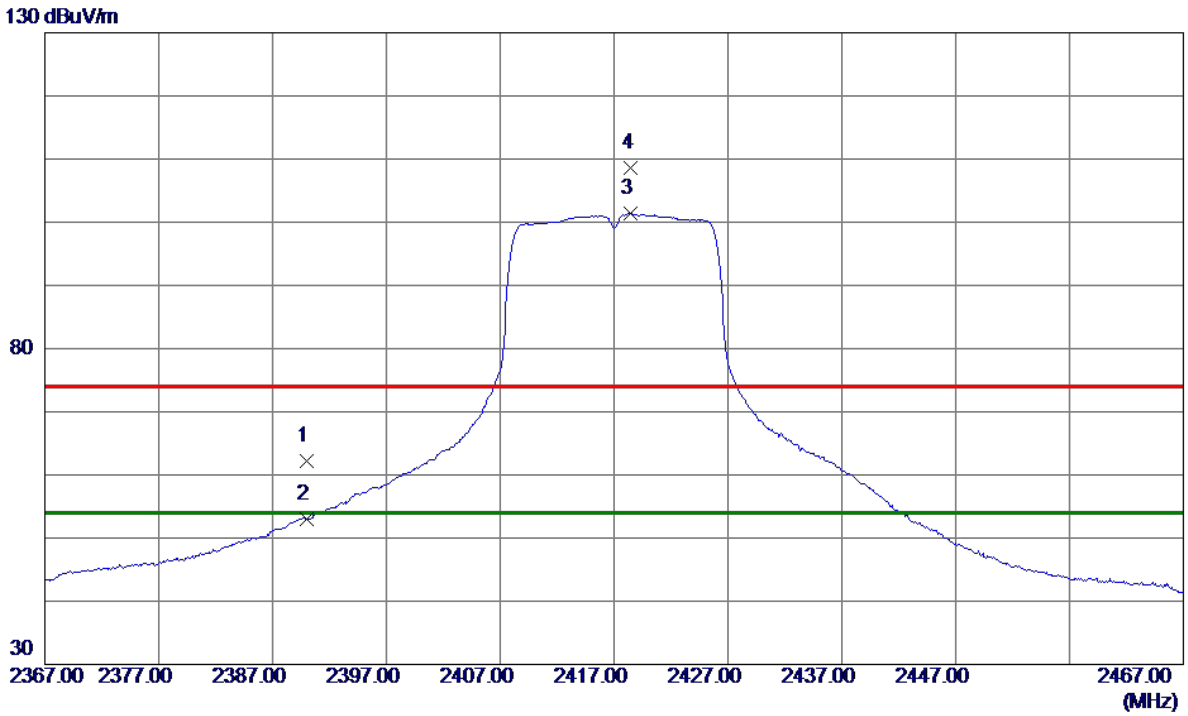
Test Mode	TX N(HT20) Mode 2412 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	4822.8800	41.25	4.22	45.47	54.00	-8.53	AVG	
2	4824.9900	52.88	4.23	57.11	74.00	-16.89	Peak	

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

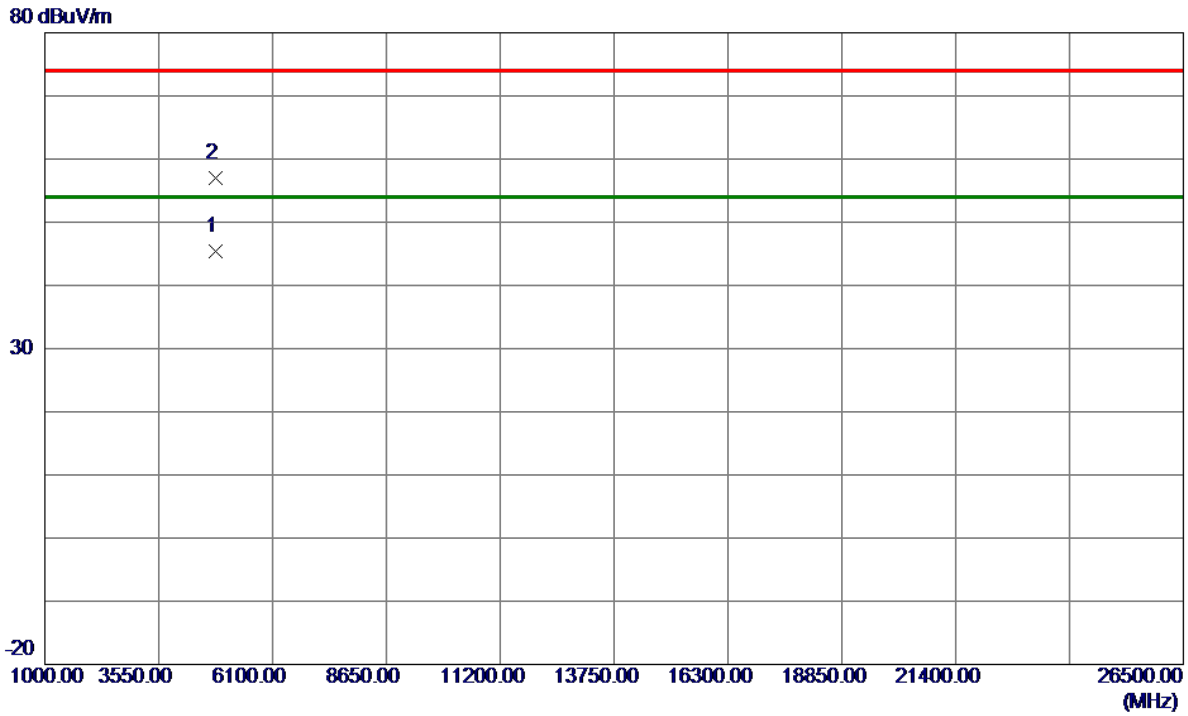
Test Mode	TX N(HT20) Mode 2417 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.0000	55.00	7.17	62.17	74.00	-11.83	Peak	
2	2390.0000	45.89	7.17	53.06	54.00	-0.94	AVG	
3 *	2418.4000	94.26	7.17	101.43	54.00	47.43	AVG	No Limit
4	2418.5000	101.45	7.17	108.62	74.00	34.62	Peak	No Limit

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

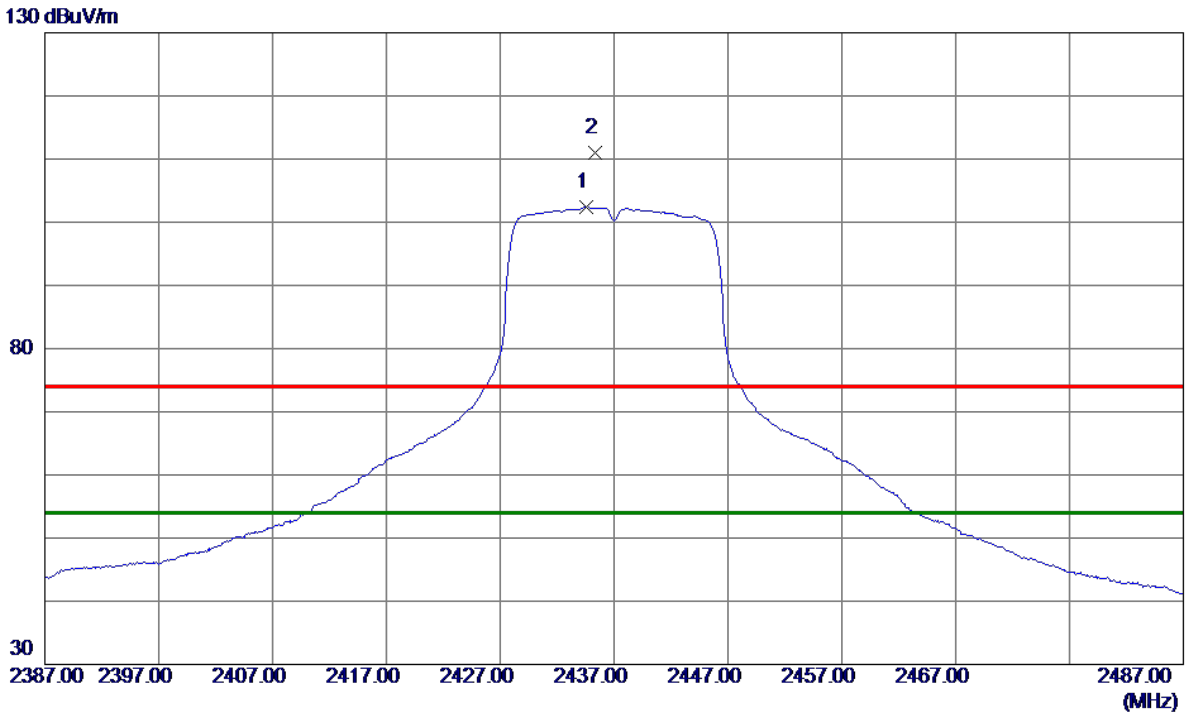
Test Mode	TX N(HT20) Mode 2417 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	4834.3400	41.13	4.26	45.39	54.00	-8.61	AVG	
2	4834.6900	52.79	4.26	57.05	74.00	-16.95	Peak	

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

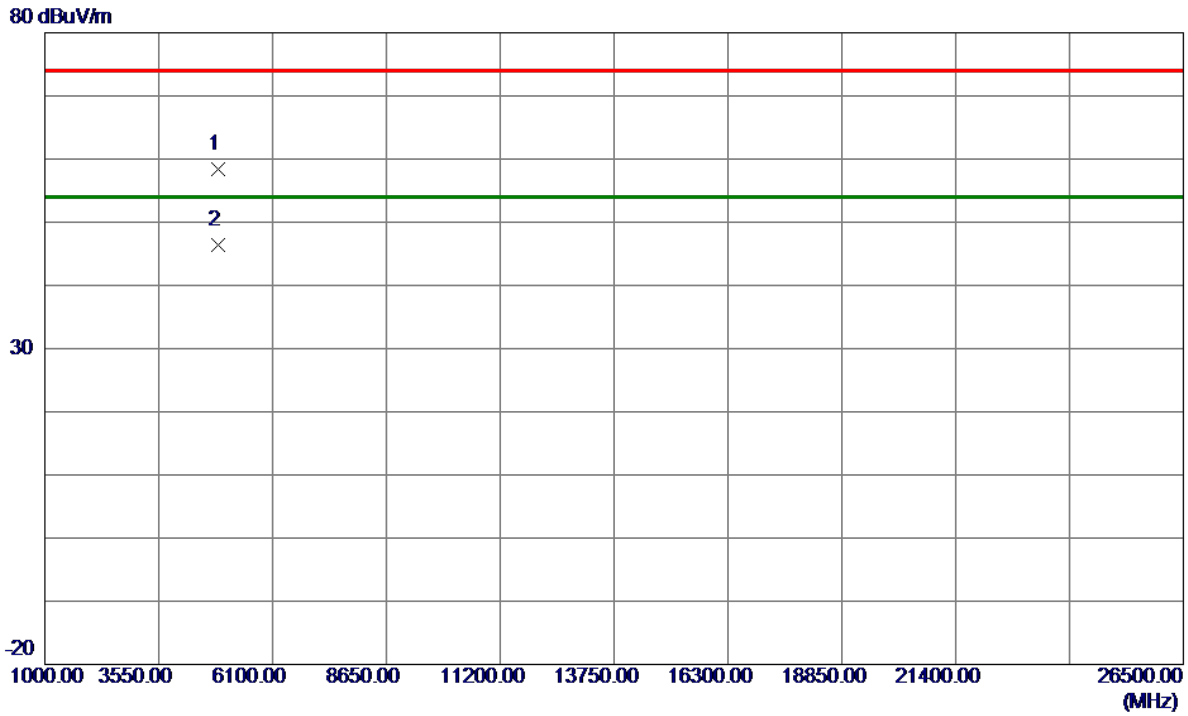
Test Mode	TX N(HT20) Mode 2437 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	2434.6000	95.14	7.18	102.32	54.00	48.32	AVG	No Limit
2	2435.3000	103.75	7.18	110.93	74.00	36.93	Peak	No Limit

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

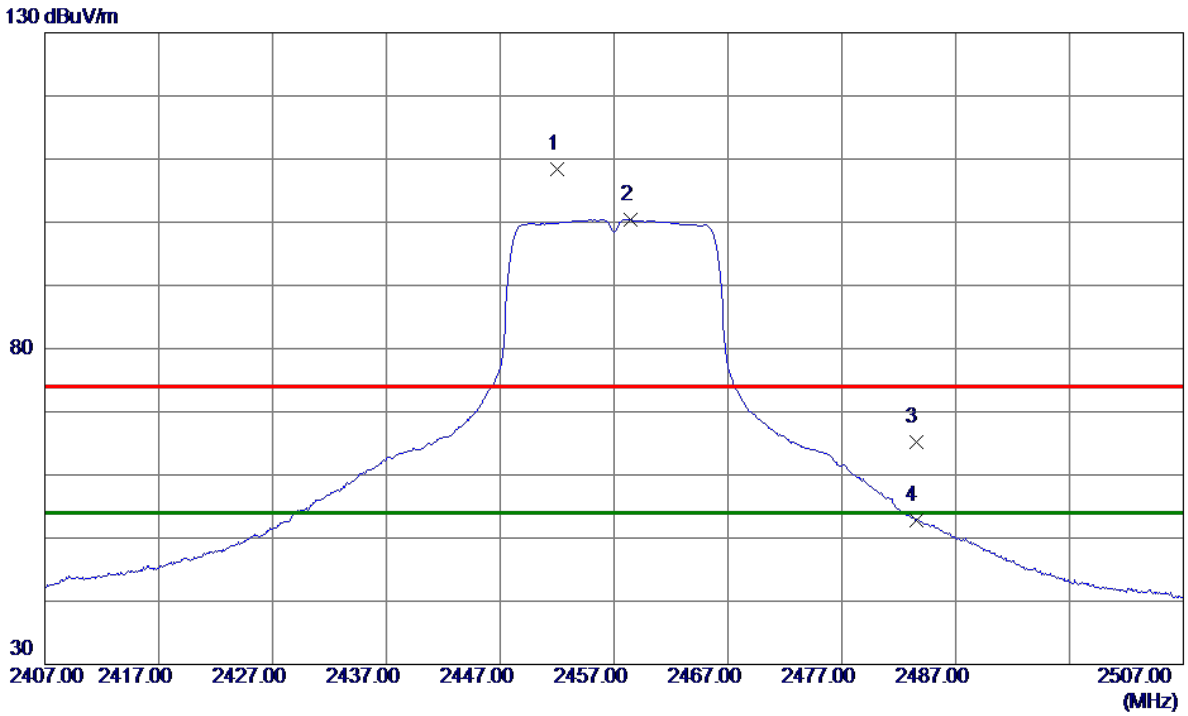
Test Mode	TX N(HT20) Mode 2437 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4871.0700	53.98	4.37	58.35	74.00	-15.65	Peak	
2 *	4875.7100	42.11	4.38	46.49	54.00	-7.51	AVG	

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

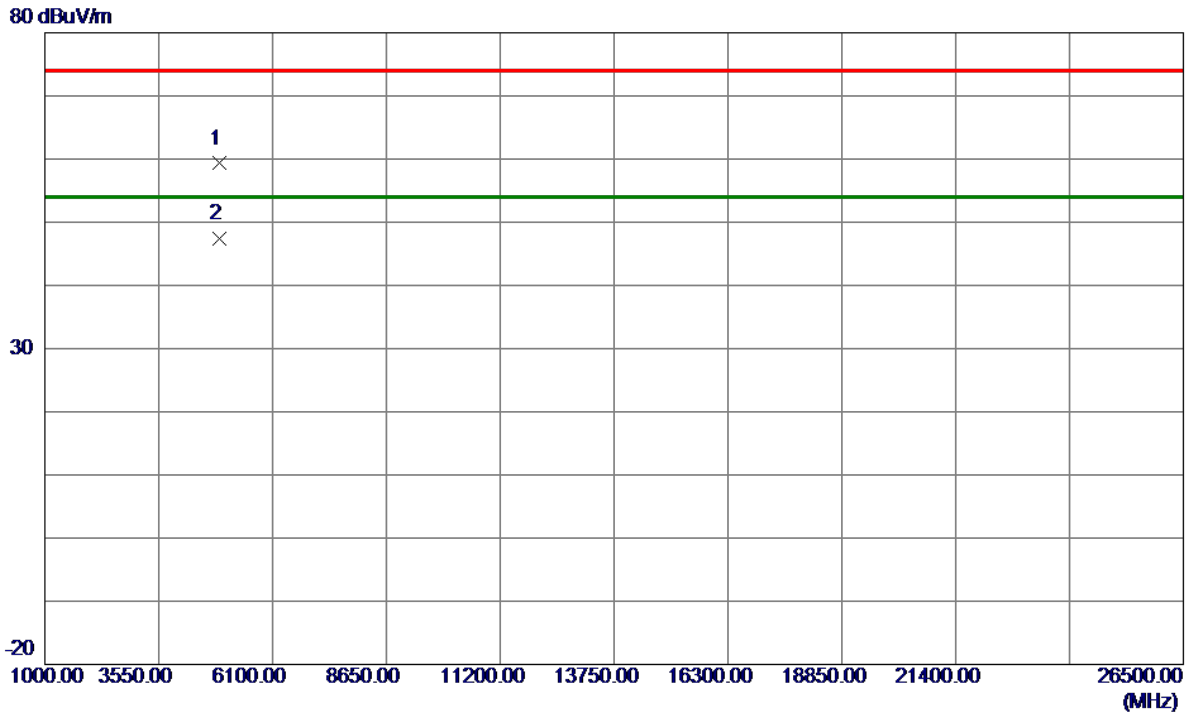
Test Mode	TX N(HT20) Mode 2457 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2452.0000	101.16	7.18	108.34	74.00	34.34	Peak	No Limit
2 *	2458.4000	93.23	7.18	100.41	54.00	46.41	AVG	No Limit
3	2483.5000	58.04	7.19	65.23	74.00	-8.77	Peak	
4	2483.5000	45.66	7.19	52.85	54.00	-1.15	AVG	

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

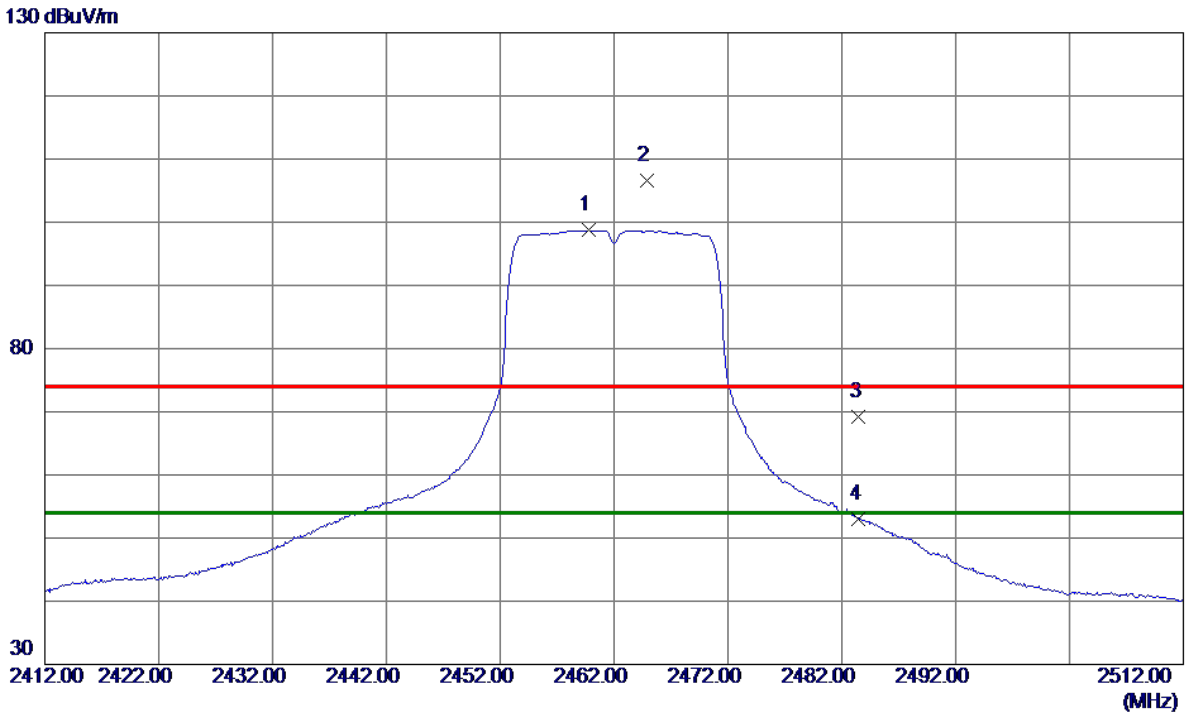
Test Mode	TX N(HT20) Mode 2457 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4911.2000	54.81	4.49	59.30	74.00	-14.70	Peak	
2 *	4912.1600	42.90	4.49	47.39	54.00	-6.61	AVG	

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

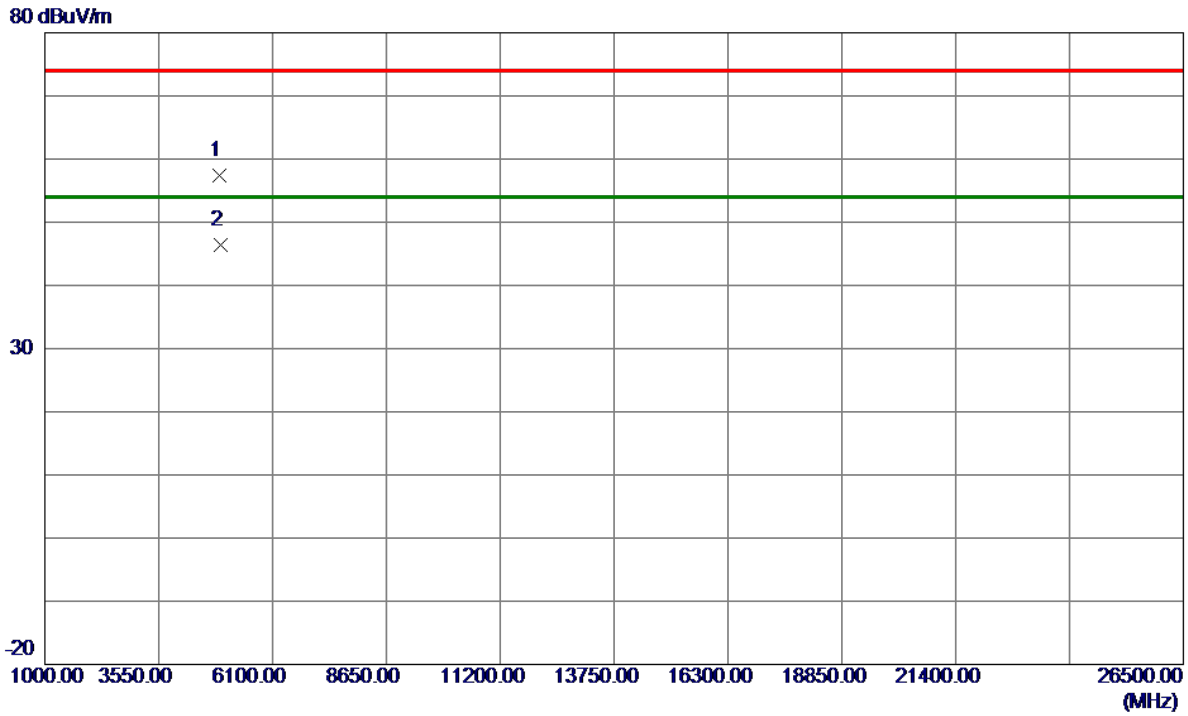
Test Mode	TX N(HT20) Mode 2462 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	2459.8000	91.53	7.18	98.71	54.00	44.71	AVG	No Limit
2	2464.9000	99.42	7.19	106.61	74.00	32.61	Peak	No Limit
3	2483.5000	61.96	7.19	69.15	74.00	-4.85	Peak	
4	2483.5000	45.86	7.19	53.05	54.00	-0.95	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	4923.7500	52.97	4.52	57.49	74.00	-16.51	Peak	
2 *	4927.7599	41.93	4.54	46.47	54.00	-7.53	AVG	

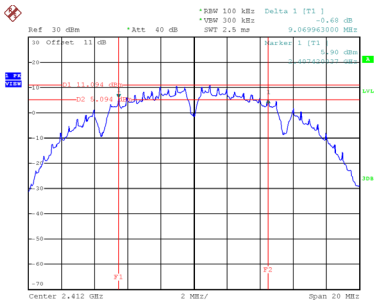
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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	9.070	14.160	0.5	Complies
06	2437	9.110	14.160	0.5	Complies
11	2462	10.040	14.160	0.5	Complies

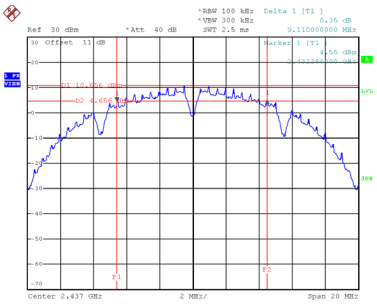
CH01



Date: 17.JUL.2022 15:01:23

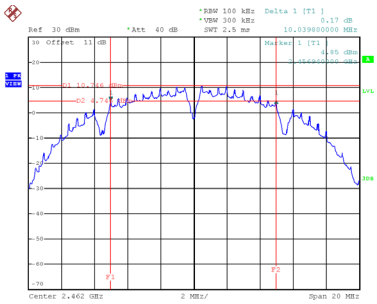
CH06

6 dB Bandwidth

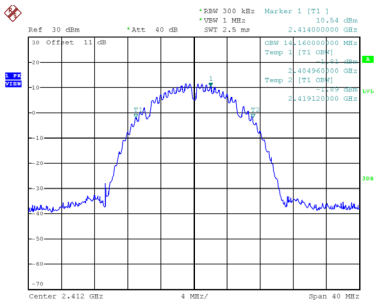


Date: 17.JUL.2022 15:02:13

CH11

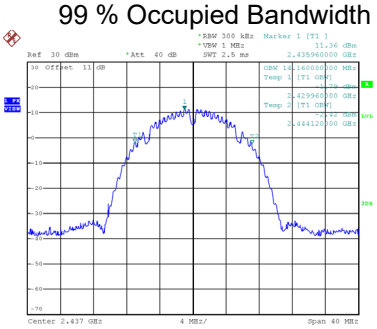


Date: 17.JUL.2022 15:02:52

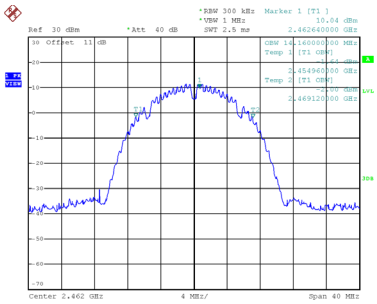


Date: 17.JUL.2022 15:01:31

99 % Occupied Bandwidth



Date: 17.JUL.2022 15:02:20

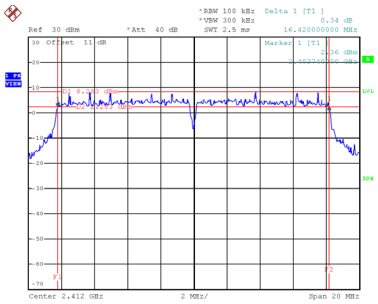


Date: 17.JUL.2022 15:02:59

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	16.420	17.200	0.5	Complies
06	2437	16.420	17.360	0.5	Complies
11	2462	16.410	17.280	0.5	Complies

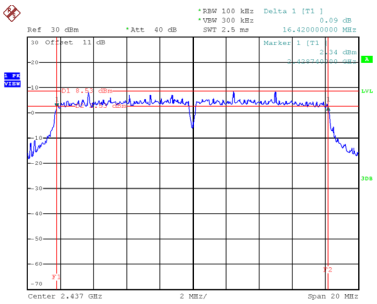
CH01



Date: 17.JUL.2022 15:03:36

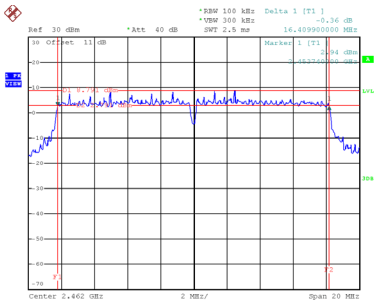
CH06

6 dB Bandwidth

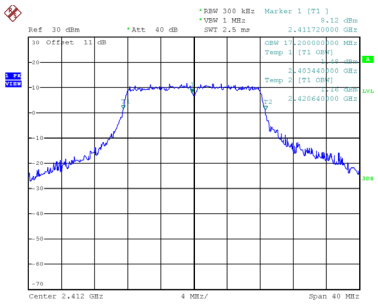


Date: 17.JUL.2022 15:04:59

CH11

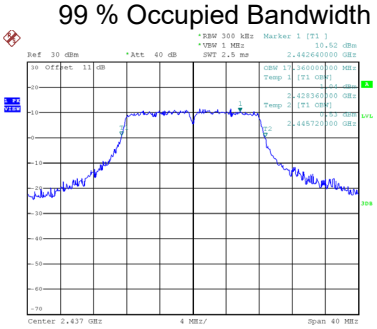


Date: 17.JUL.2022 15:05:38

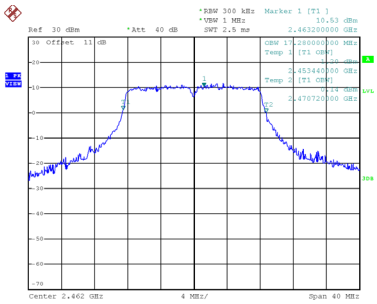


Date: 17.JUL.2022 15:03:43

99 % Occupied Bandwidth



Date: 17.JUL.2022 15:05:06

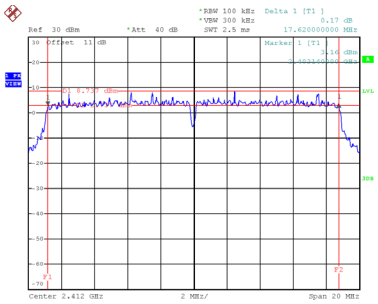


Date: 17.JUL.2022 15:05:45

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	17.620	18.320	0.5	Complies
06	2437	17.640	18.480	0.5	Complies
11	2462	17.640	18.400	0.5	Complies

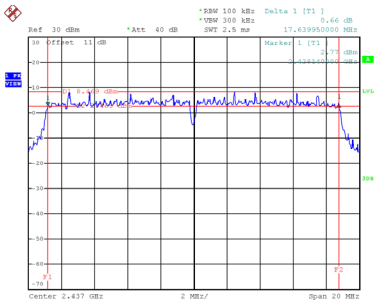
CH01



Date: 17.JUL.2022 15:06:15

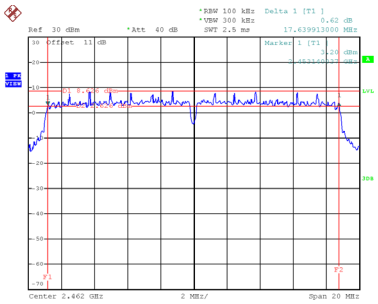
CH06

6 dB Bandwidth

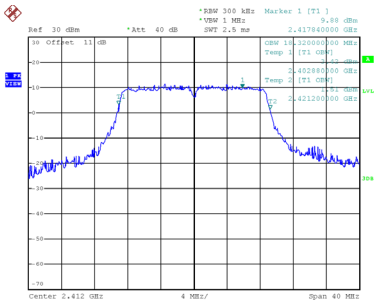


Date: 17.JUL.2022 15:06:59

CH11

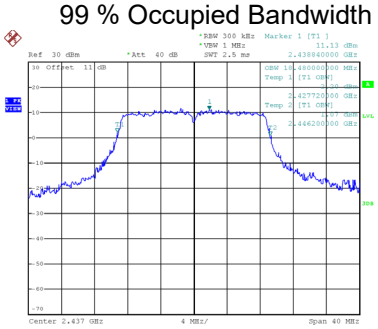


Date: 17.JUL.2022 15:07:29

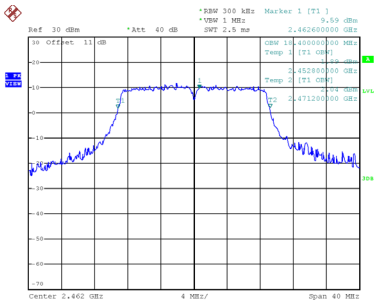


Date: 17.JUL.2022 15:06:22

99 % Occupied Bandwidth



Date: 17.JUL.2022 15:07:06



Date: 17.JUL.2022 15:07:36

APPENDIX F - MAXIMUM AVERAGE OUTPUT POWER & E.I.R.P.

Test Mode	TX B Mode

Channel	Frequency (MHz)	Average Output Power (dBm)	Duty Factor	Average Output Power + Duty Factor (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	19.21	0.00	19.21	30.00	1.0000	Complies
06	2437	19.50	0.00	19.50	30.00	1.0000	Complies
11	2462	20.92	0.00	20.92	30.00	1.0000	Complies

Channel	Frequency (MHz)	Average Output Power (dBm)	Duty Factor	e.i.r.p. (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	19.21	0.00	22.01	36.02	4.0000	Complies
06	2437	19.50	0.00	22.30	36.02	4.0000	Complies
11	2462	20.92	0.00	23.72	36.02	4.0000	Complies

Test Mode	TX G Mode

Channel	Frequency (MHz)	Average Output Power (dBm)	Duty Factor	Average Output Power + Duty Factor (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	19.24	0.26	19.50	30.00	1.0000	Complies
06	2437	21.06	0.26	21.32	30.00	1.0000	Complies
11	2462	19.27	0.26	19.53	30.00	1.0000	Complies

Channel	Frequency (MHz)	Average Output Power (dBm)	Duty Factor	e.i.r.p. (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	19.24	0.26	22.30	36.02	4.0000	Complies
06	2437	21.06	0.26	24.12	36.02	4.0000	Complies
11	2462	19.27	0.26	22.33	36.02	4.0000	Complies

Test Mode	TX N(HT20) Mode

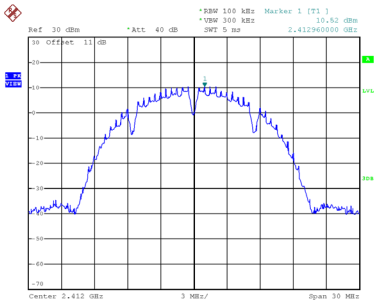
Channel	Frequency (MHz)	Average Output Power (dBm)	Duty Factor	Average Output Power + Duty Factor (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	19.56	0.28	19.84	30.00	1.0000	Complies
06	2437	21.08	0.28	21.36	30.00	1.0000	Complies
11	2462	18.99	0.28	19.27	30.00	1.0000	Complies

Channel	Frequency (MHz)	Average Output Power (dBm)	Duty Factor	e.i.r.p. (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	19.56	0.28	22.64	36.02	4.0000	Complies
06	2437	21.08	0.28	24.16	36.02	4.0000	Complies
11	2462	18.99	0.28	22.07	36.02	4.0000	Complies

APPENDIX G - CONDUCTED SPURIOUS EMISSIONS

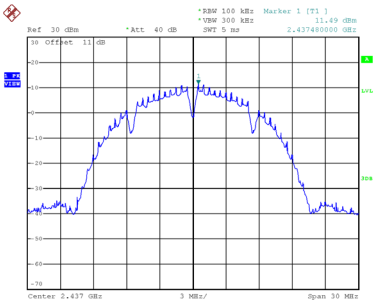
Test Mode	TX B Mode

Reference Level-CH01



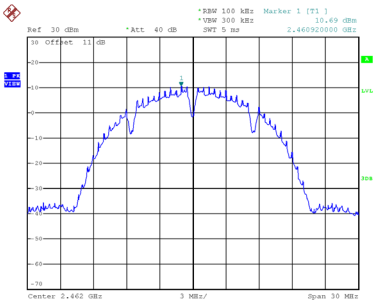
Date: 17.JUL.2022 15:19:01

Reference Level-CH06



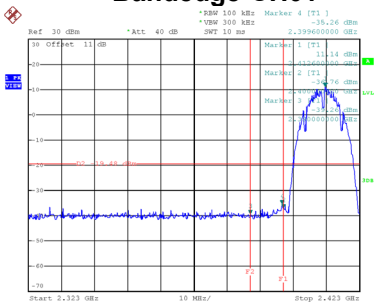
Date: 17.JUL.2022 15:19:24

Reference Level-CH11



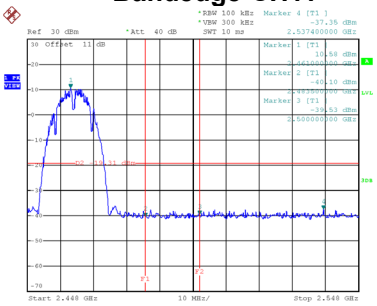
Date: 17.JUL.2022 15:19:56

Bandedge-CH01



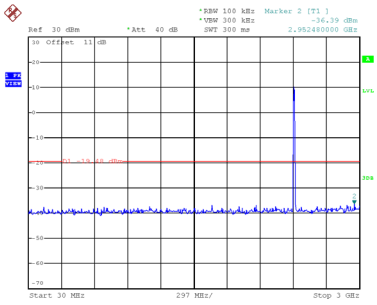
Date: 17.JUL.2022 15:26:05

Bandedge-CH11

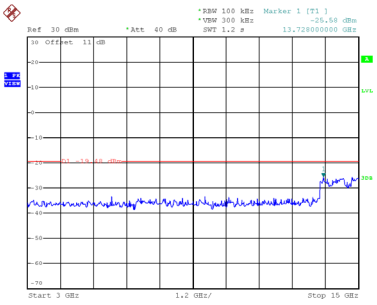


Date: 17.JUL.2022 15:27:02

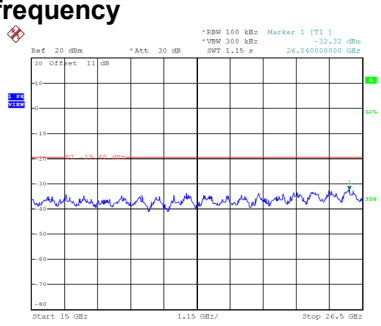
CH01 – 10th Harmonic of the fundamental frequency



Date: 17.JUL.2022 15:33:33

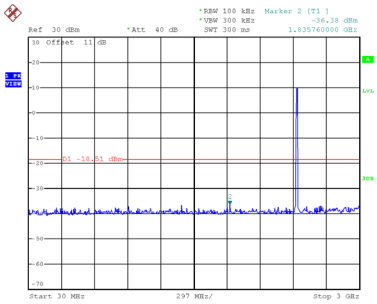


Date: 17.JUL.2022 15:33:41

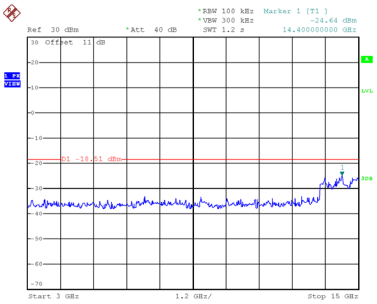


Date: 17.JUL.2022 15:34:22

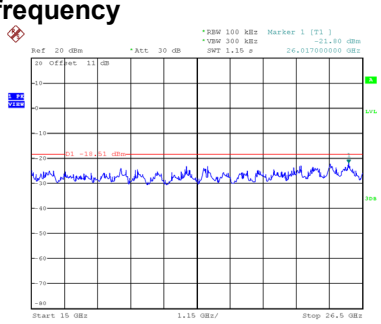
CH06 – 10th Harmonic of the fundamental frequency



Date: 17.JUL.2022 15:34:57

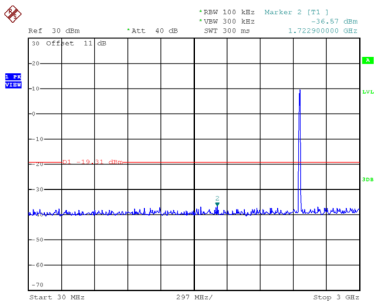


Date: 17.JUL.2022 15:35:05

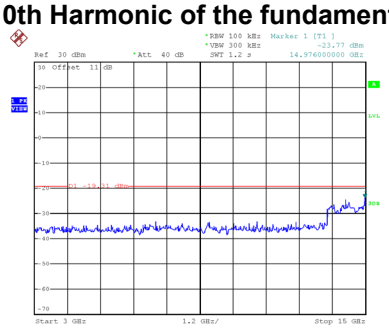


Date: 17.JUL.2022 15:35:18

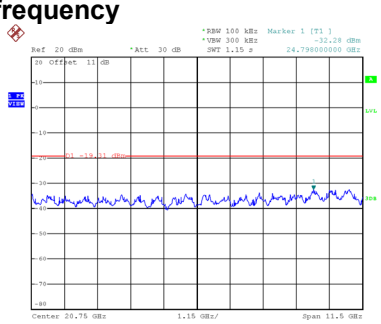
CH11 – 10th Harmonic of the fundamental frequency



Date: 17.JUL.2022 15:37:21



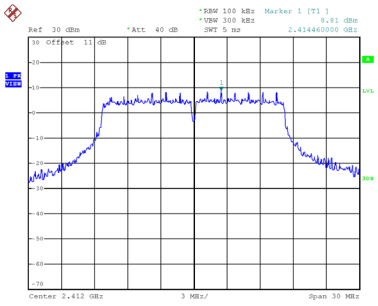
Date: 17.JUL.2022 15:37:27



Date: 17.JUL.2022 15:53:29

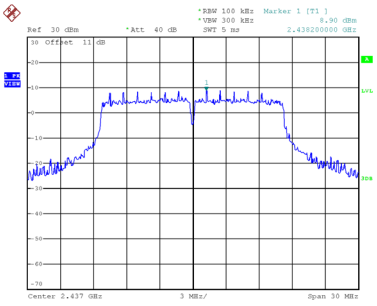
Test Mode	TX G Mode

Reference Level-CH01



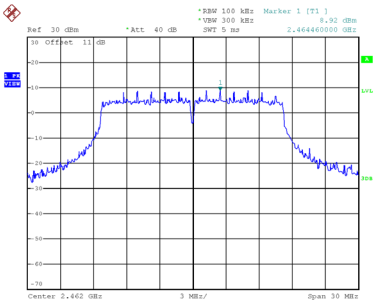
Date: 17.JUL.2022 15:20:26

Reference Level-CH06



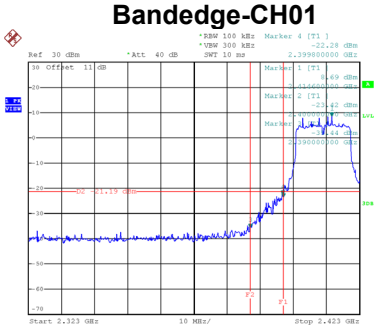
Date: 17.JUL.2022 15:20:48

Reference Level-CH11



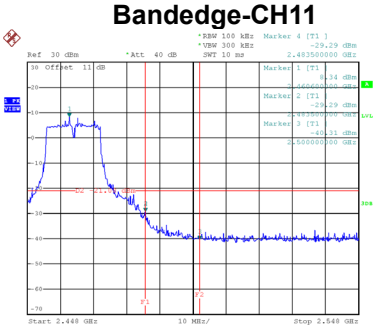
Date: 17.JUL.2022 15:21:12

Bandedge-CH01



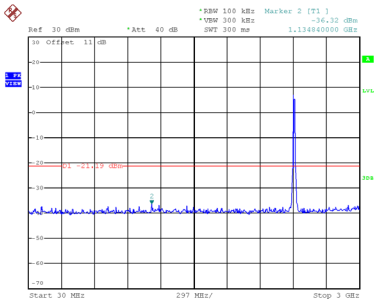
Date: 17.JUL.2022 15:28:22

Bandedge-CH11

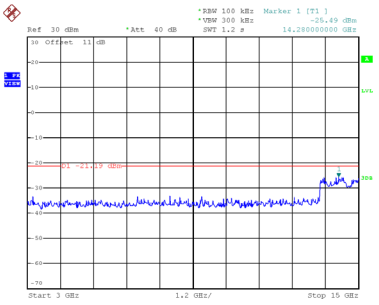


Date: 17.JUL.2022 15:29:13

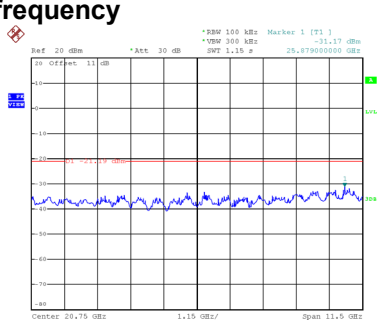
CH01 – 10th Harmonic of the fundamental frequency



Date: 17.JUL.2022 15:54:01

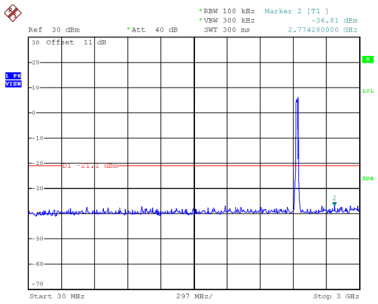


Date: 17.JUL.2022 15:54:08

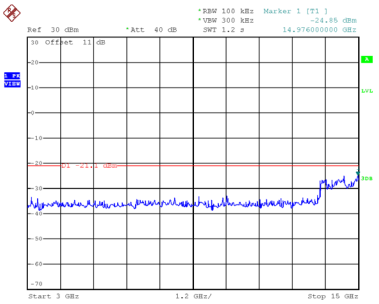


Date: 17.JUL.2022 15:54:21

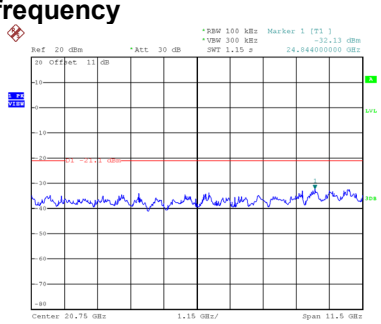
CH06 – 10th Harmonic of the fundamental frequency



Date: 17.JUL.2022 15:54:53

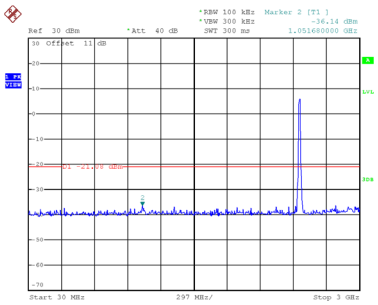


Date: 17.JUL.2022 15:54:59

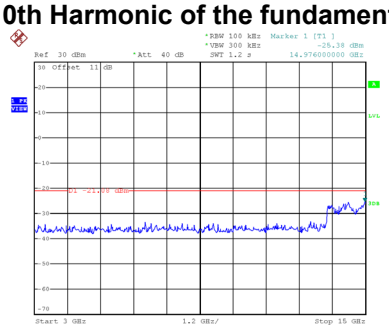


Date: 17.JUL.2022 15:55:12

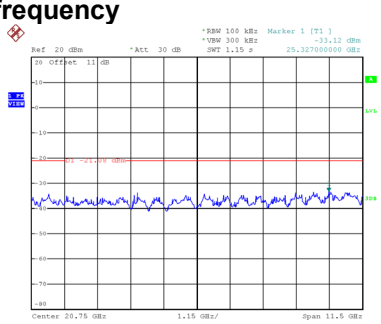
CH11 – 10th Harmonic of the fundamental frequency



Date: 17.JUL.2022 15:55:41



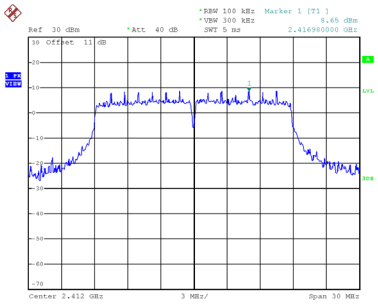
Date: 17.JUL.2022 15:55:48



Date: 17.JUL.2022 15:56:01

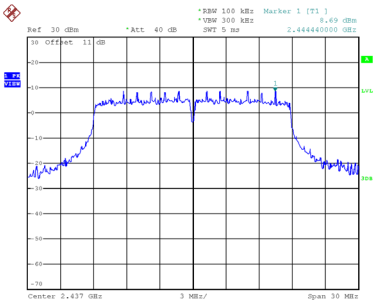
Test Mode	TX N(HT20) Mode

Reference Level-CH01



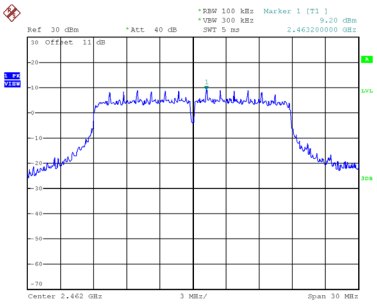
Date: 17.JUL.2022 15:21:35

Reference Level-CH06



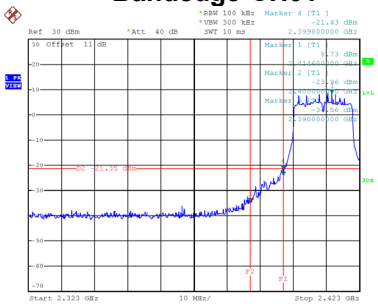
Date: 17.JUL.2022 15:21:59

Reference Level-CH11



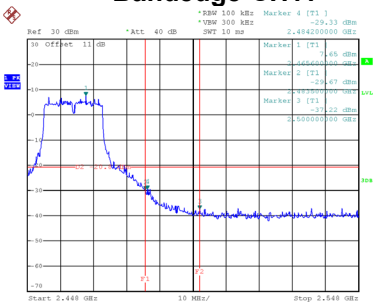
Date: 17.JUL.2022 15:22:23

Bandedge-CH01



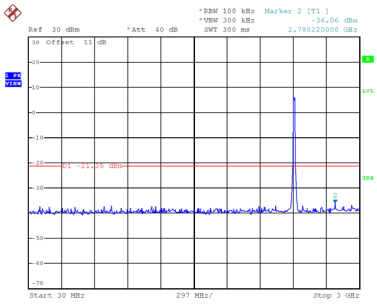
Date: 17.JUL.2022 15:29:48

Bandedge-CH11



Date: 17.JUL.2022 15:30:45

CH01 – 10th Harmonic of the fundamental frequency



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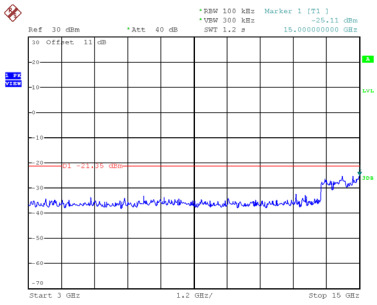

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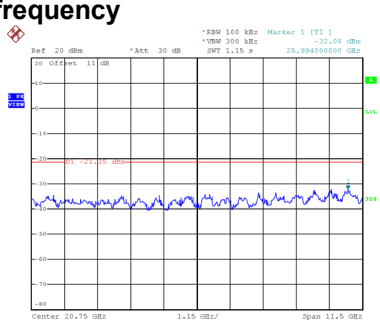

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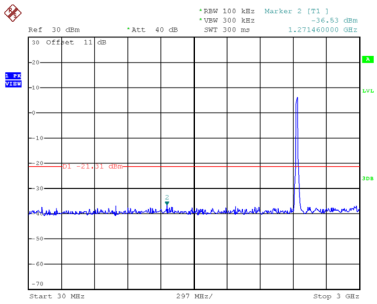
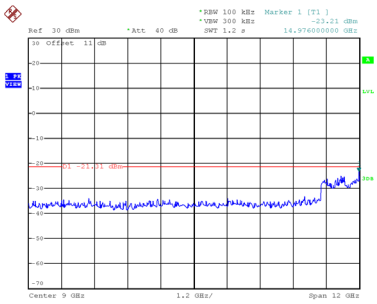
CH06 – 10th Harmonic of the fundamental frequency



Date: 17.JUL.2022 15:57:04



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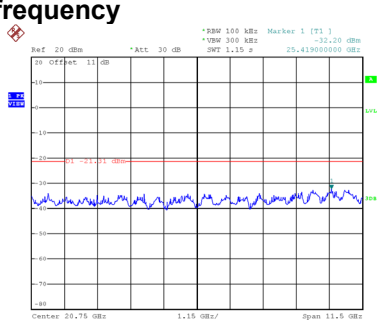
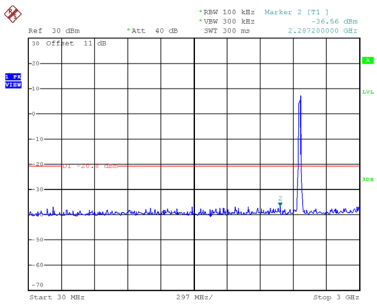
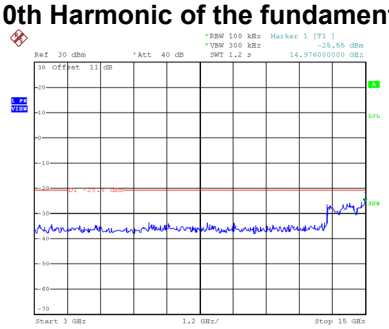


Date: 17.JUL.2022 15:57:42

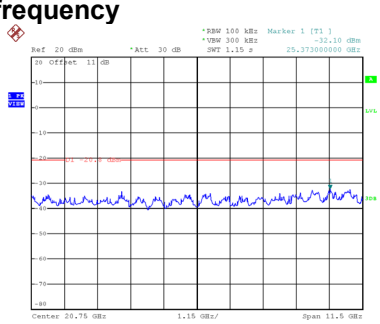
CH11 – 10th Harmonic of the fundamental frequency



Date: 17.JUL.2022 15:58:12



Date: 17.JUL.2022 15:58:18



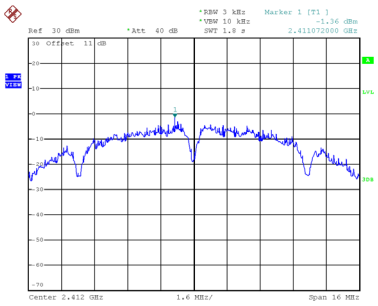
Date: 17.JUL.2022 15:58:31

APPENDIX H - POWER SPECTRAL DENSITY

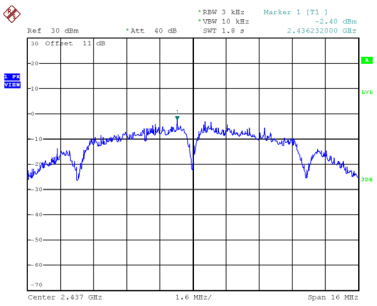
Test Mode	TX B Mode

Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
01	2412	-1.36	8.00	Complies
06	2437	-2.40	8.00	Complies
11	2462	-3.05	8.00	Complies

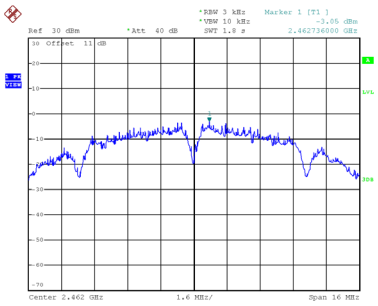
CH01



CH06



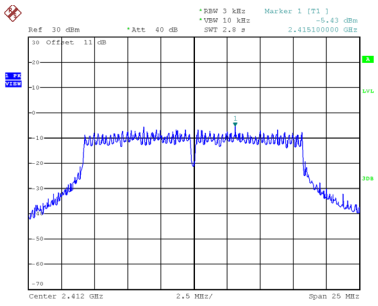
CH11



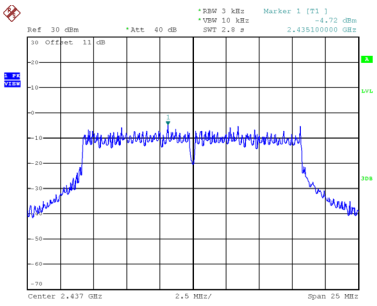
Test Mode	TX G Mode

Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
01	2412	-5.43	8.00	Complies
06	2437	-4.72	8.00	Complies
11	2462	-5.92	8.00	Complies

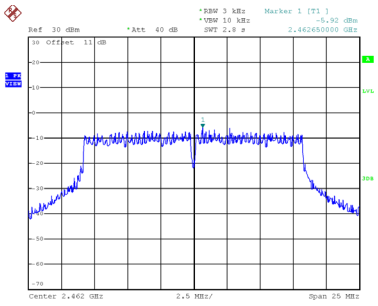
CH01



CH06



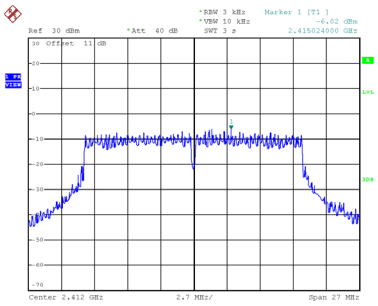
CH11



Test Mode	TX N(HT20) Mode

Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
01	2412	-6.02	8.00	Complies
06	2437	-5.74	8.00	Complies
11	2462	-5.57	8.00	Complies

CH01



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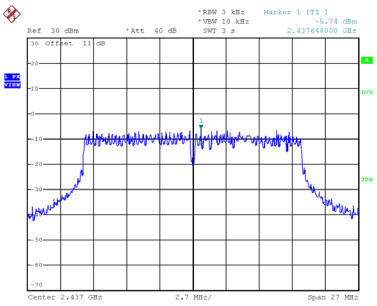
CH06



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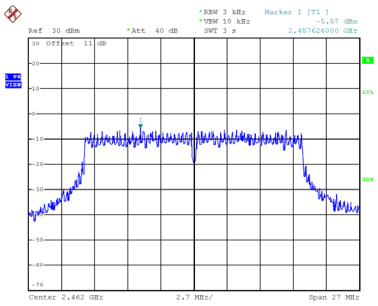
CH11



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End of Test Report