FCC Radio Test Report

FCC ID: 2AXJ4S500

This report concerns: Original Grant

The worst cases of power and radiated emissions above 1GHz have been re-evaluated by sample of FCC ID: 2AXJ4S500, model name: Tapo S500. It is found that the original data are the worse, so the test data are reissue from the FCC ID: 2AXJ4KS200, model name: KS200. Model difference(s):
a. Changed the product name.
b. Changed the main chip to RTL8710CF from RTL8720CM.
c. Deleted the LDO, peripheral one resistor and three capacitors.
d. Deleted the flash and its surrounding resistance and capacitance devices.
e. Removed LE function through software.

Project No.	:	2205C096A
Equipment	:	Smart Wi-Fi Light Switch, Single Pole
Brand Name	:	tp-link
Test Model	:	Tapo S500
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	:	May 20, 2022 Aug. 22, 2022
Date of Test	:	May 23, 2022 ~ Jun. 16, 2022
Issued Date	:	Sep. 29, 2022
Report Version	:	R01
Test Sample	:	Please refer to page 2.
Standard(s)	:	Please refer to page 2.

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

Prepared by : Chella Zheng

Approved by : Chay Cai

TESTING CERT #5123.02

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Test Sample	:	Engineering Sample No.: DG2022052066 for conducted, DG2022052065 for radiated.
Standard(s)	:	FCC CFR Title 47, Part 15, Subpart C FCC KDB 558074 D01 15.247 Meas Guidance v05r02 FCC KDB 662911 D01 Multiple Transmitter Output v02r01 ANSI C63.10-2013

Declaration

BTL represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

BTL's reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

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

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

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

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

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

Limitation

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

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REPORT ISSUED HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-FCCP-2-2205C096A	R00	Original Report.	Sep. 21, 2022	Invalid
BTL-FCCP-2-2205C096A	R01	Modified the comments of TCB.	Sep. 29, 2022	Valid

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC CFR Title 47, Part 15, Subpart C				
Standard(s) Section	**Test Item**	**Test Result**	**Judgment**	**Remark**
15.207	AC Power Line Conducted Emissions	APPENDIX A	PASS	------
15.247(d) 15.205(a) 15.209(a)	Radiated Emissions	APPENDIX B APPENDIX C APPENDIX D	PASS	------
15.247(a)(2)	Bandwidth	APPENDIX E	PASS	------
15.247(b)(3)	Maximum Average Output Power	APPENDIX F	PASS	------
15.247(d)	Conducted Spurious Emissions	APPENDIX G	PASS	------
15.247(e)	Power Spectral Density	APPENDIX H	PASS	------
15.203	Antenna Requirement	------	PASS	Note(2)

Note:

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

(2) The device what use a permanently attached antenna were considered sufficient to comply with the provisions of 15.203.

1.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No. 3 Jinshagang 1st Rd. Shixia, Dalang Town Dongguan City, Guangdong 523792 People's Republic of China.
BTL's Registration Number for FCC: 357015
BTL's Designation Number for FCC: CN1240

1.2 MEASUREMENT UNCERTAINTY

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))
The BTL measurement uncertainty as below table:

A. AC power line conducted emissions test:

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-C02	CISPR	150kHz ~ 30MHz	2.60

B. Radiated emissions test:

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-CB01	CISPR	9kHz ~ 30MHz	2.36

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

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

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

C. Other Measurement:

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

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

1.3 TEST ENVIRONMENT CONDITIONS

Test Item	Temperature	Humidity	Test Voltage	Tested By
AC Power Line Conducted Emissions	26°C	58%	AC 120V/60Hz	Jeter Wang
Radiated Emissions-9kHz to 30 MHz	24°C	58%	AC 120V/60Hz	Rod Tang
Radiated Emissions-30MHz to 1000MHz	24°C	60%	AC 120V/60Hz	Chen Mo
Radiated Emissions-Above 1000MHz	26°C	56%	AC 120V/60Hz	Chen Mo
Bandwidth	24-25°C	60-63%	AC 120V/60Hz	Ansel Yang Kwok Guo
Maximum Average Output Power	22.8-24.1°C	56.8-68.6%	AC 120V/60Hz	Complex Qin
Conducted Spurious Emissions	24-25°C	60-63%	AC 120V/60Hz	Ansel Yang Kwok Guo
Power Spectral Density	24-25°C	60-63%	AC 120V/60Hz	Ansel Yang Kwok Guo

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Smart Wi-Fi Light Switch, Single Pole
Brand Name	tp-link
Test Model	Tapo S500
Series Model	N/A
Model Difference(s)	N/A
Power Source	AC Mains.
Power Rating	120V~ 60Hz
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 802.11b: 22.97 dBm (0.1982 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	P/N	Antenna Type	Connector	Gain (dBi)
1	tp-link	6035500079	PIFA	N/A	2.98

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 B Mode Channel 01
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 B Mode Channel 01

Radiated emissions test - Below 1GHz	
Final Test Mode	Description
Mode 4	TX B Mode Channel 01

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 B 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 above 1 GHz test, the polarization of Vertical and Hoizontal are evaluated, the worst case is Vertical for Band edge, Hoizontal for Harmonic. In this report only recorded the worst case.

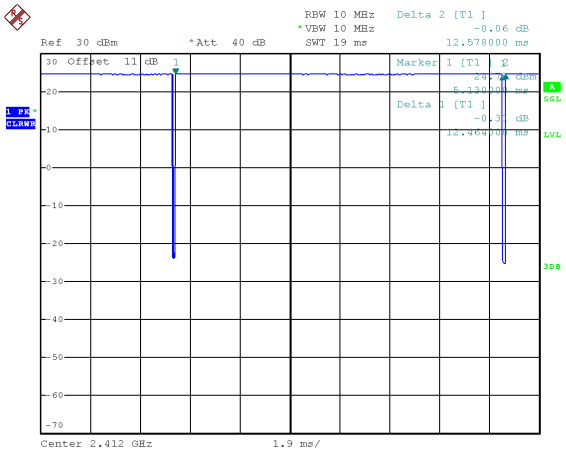
2.3 PARAMETERS OF TEST SOFTWARE

Test Software Version	UI_mptool V1.0.0.1		
Frequency (MHz)	2412	2437	2462
IEEE 802.11b	118	118	117
IEEE 802.11g	111	127	109
IEEE 802.11n(HT20)	110	127	105

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.

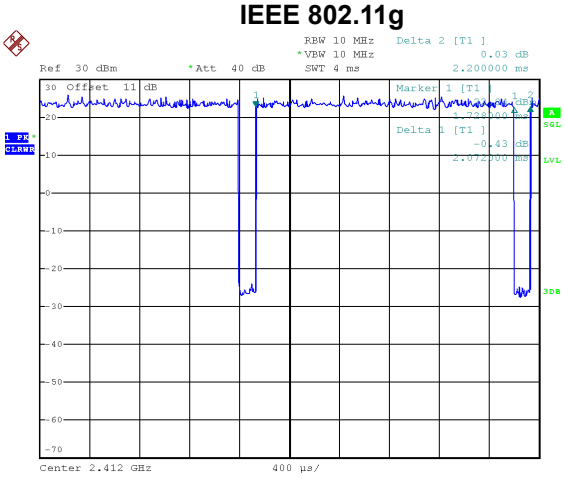
IEEE 802.11b



Date: 28.MAY.2022 12:26:56

Duty cycle = 12.464 ms / 12.578 ms = 99.09%
Duty Factor = 10 log(1/Duty cycle) = 0.00

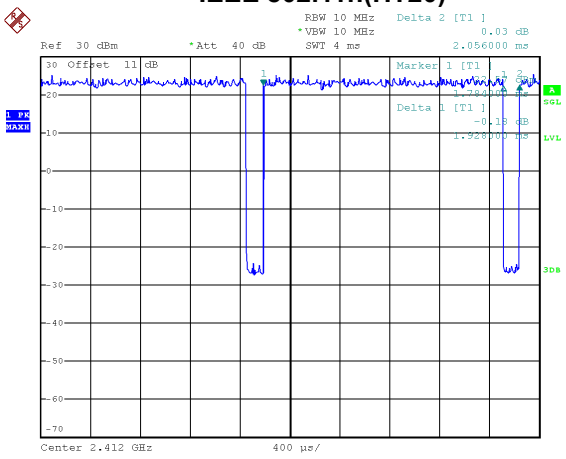
IEEE 802.11g



Date: 28.MAY.2022 12:26:30

Duty cycle = 2.072 ms / 2.200 ms = 94.18%
Duty Factor = 10 log(1/Duty cycle) = 0.26

IEEE 802.11n(HT20)



Date: 28.MAY.2022 12:26:06

Duty cycle = 1.928 ms / 2.056 ms = 93.77%
Duty Factor = 10 log(1/Duty cycle) = 0.28

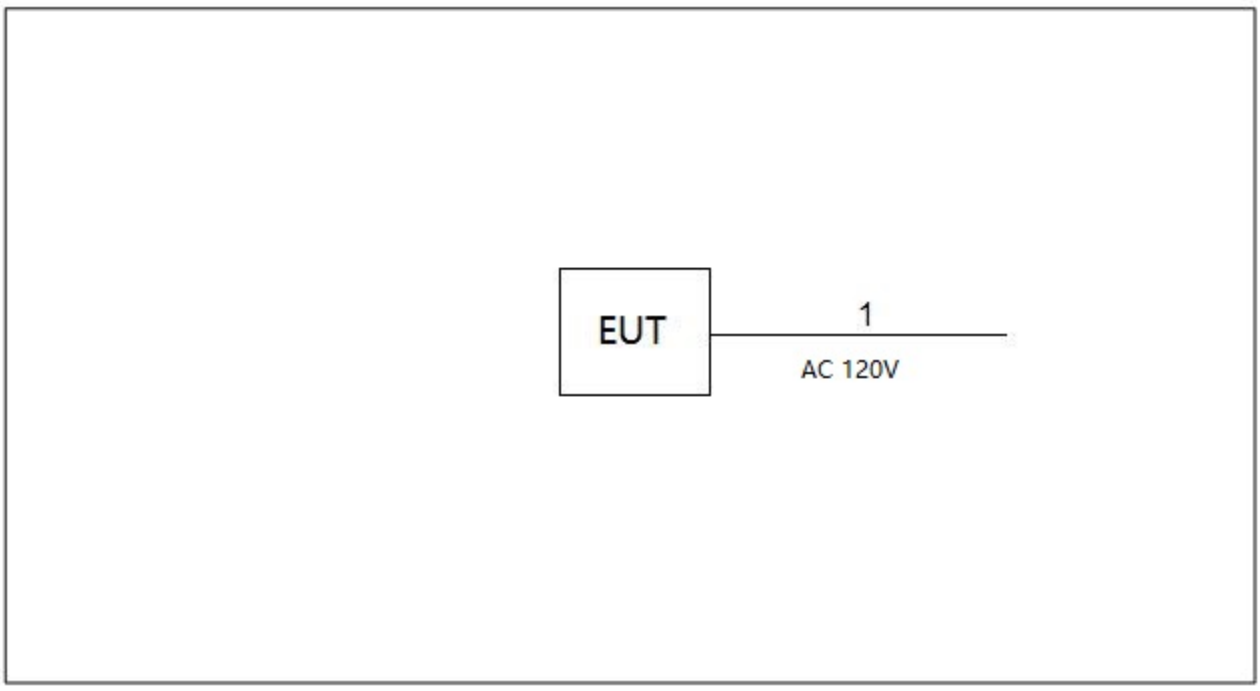
NOTE:
For IEEE 802.11b:
For radiated emissions frequency above 1 GHz, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 1 kHz.

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 519 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.

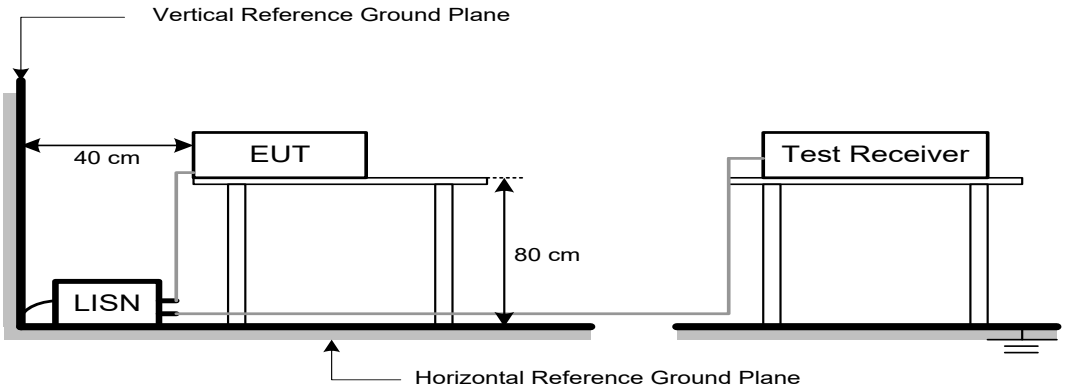
The following table is the setting of the receiver:

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 15.205(a), then the 15.209(a) limit in the table below has to be followed.

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

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

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000 MHz)

Frequency (MHz)	(dBuV/m at 3 m)	
	Peak	Average
Above 1000	74	54

NOTE:
(1) The limit for radiated test was performed according to FCC CFR Title 47, Part 15, Subpart C.
(2) The tighter limit applies at the band edges.
(3) Emission level (dBuV/m)=20log Emission level (uV/m).

4.2 TEST PROCEDURE

a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1 GHz)
b. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(above 1 GHz)
c. The height of the equipment or of the substitution antenna shall be 0.8m or 1.5m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
e. The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.
f. The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
g. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn‘t perform. (below 1 GHz)
h. All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn‘t perform. (above 1 GHz)
i. For the actual test configuration, please refer to the related Item -EUT Test Photos.

The following table is the setting of the receiver:

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

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

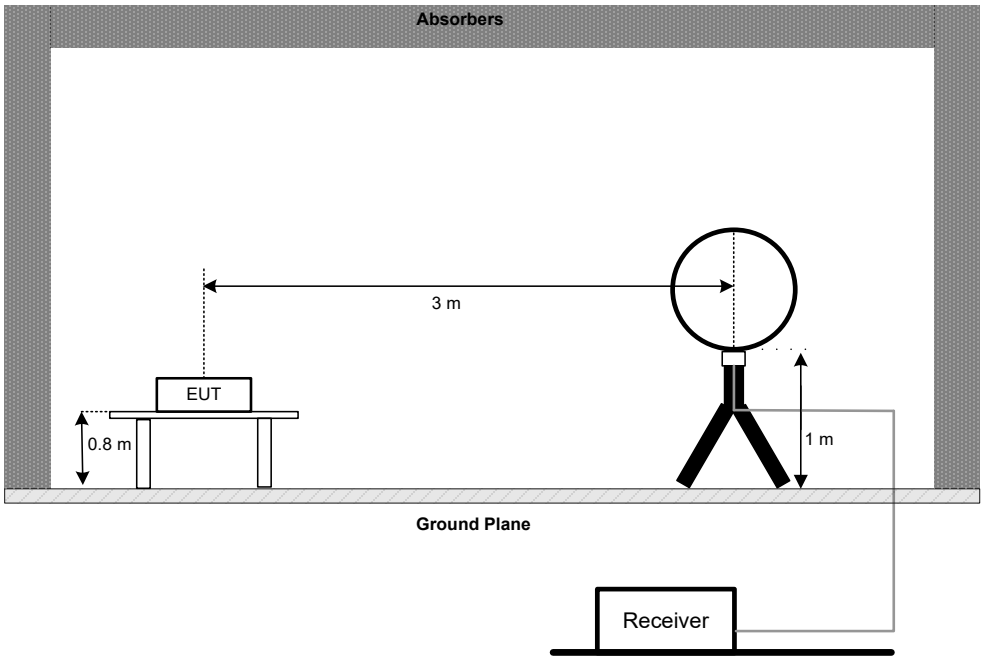
Receiver Parameters	Setting
Start ~ Stop Frequency	9 kHz~90 kHz for PK/AVG detector
Start ~ Stop Frequency	90 kHz~110 kHz for QP detector
Start ~ Stop Frequency	110 kHz~490 kHz for PK/AVG detector
Start ~ Stop Frequency	490 kHz~30 MHz for QP detector
Start ~ Stop Frequency	30 MHz~1000 MHz for QP detector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

4.3 DEVIATION FROM TEST STANDARD

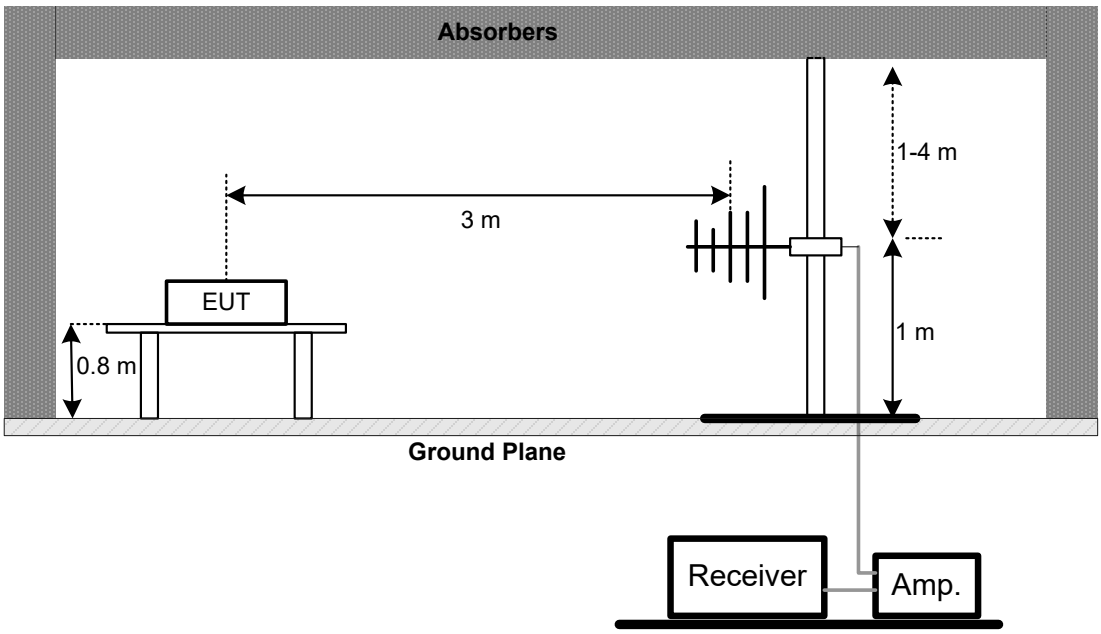
No deviation.

4.4 TEST SETUP

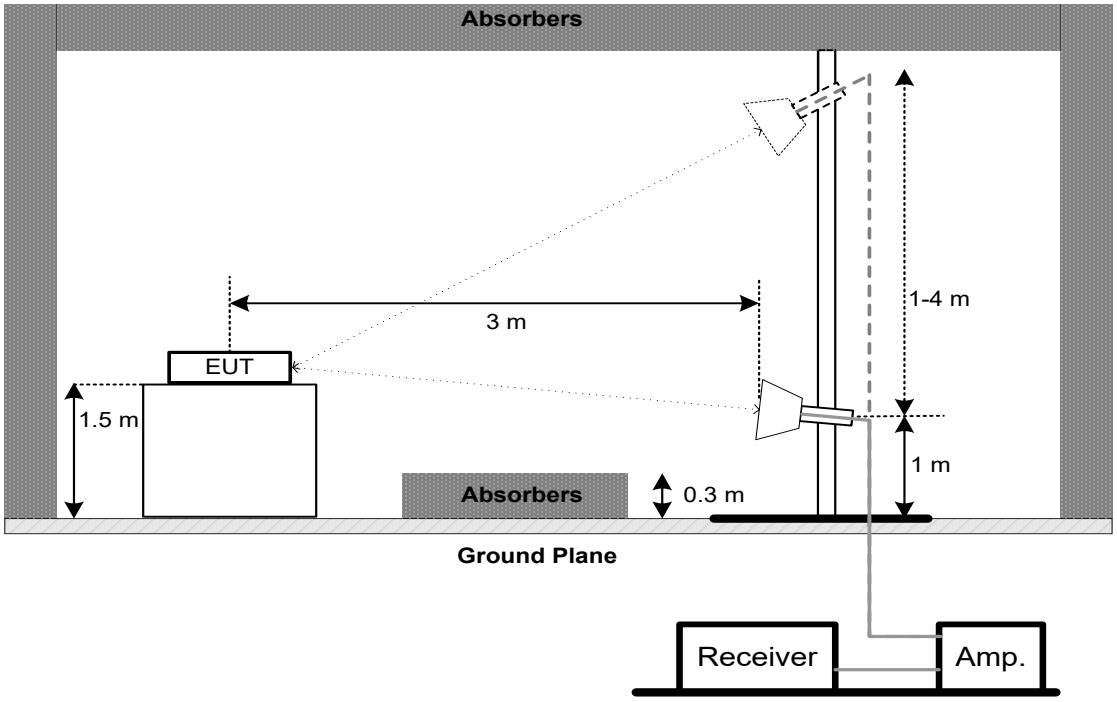
9 kHz to 30 MHz



30 MHz to 1 GHz



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
FCC 15.247(a)(2)	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

6.1 LIMIT

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

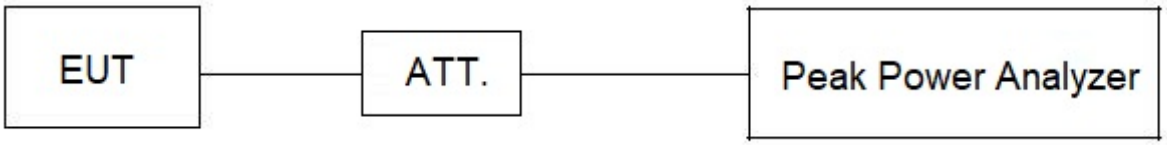
6.2 TEST PROCEDURE

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

7.2 TEST PROCEDURE

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

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
FCC 15.247(e)	Power Spectral Density	8 dBm (in any 3 kHz)

8.2 TEST PROCEDURE

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

Spectrum Parameters	Setting
Span Frequency	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	15041305	N/A
5	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
6	Cable	N/A	RG223	12m	Mar. 08, 2023
7	643 Shield Room	ETS	6*4*3	N/A	N/A

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

Radiated Emissions - 30 MHz to 1 GHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	Schwarzbeck	VULB9160	9160-3232	Mar. 03, 2023
2	Amplifier	HP	8447D	2944A08742	Jan. 22, 2023
3	Cable	emci	LMR-400	N/A	Nov. 30, 2022
4	Controller	CT	SC100	N/A	N/A
5	Controller	MF	MF-7802	MF780208416	N/A
6	Receiver	Agilent	N9038A	MY52130039	Jan. 22, 2023
7	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
8	966 Chamber Room	RM	9*6*6	N/A	Jul. 24, 2022

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

Bandwidth & Conducted Spurious Emissions & Power Spectral Density					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP40	100185	Jul. 10, 2022
2	Attenuator	WOKEN	6SM3502	VAS1214NL	N/A
3	RF Cable	Tongkaichuan	N/A	N/A	N/A
4	DC Block	Mini	N/A	N/A	N/A

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

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

“*” calibration period of equipment list is three year.

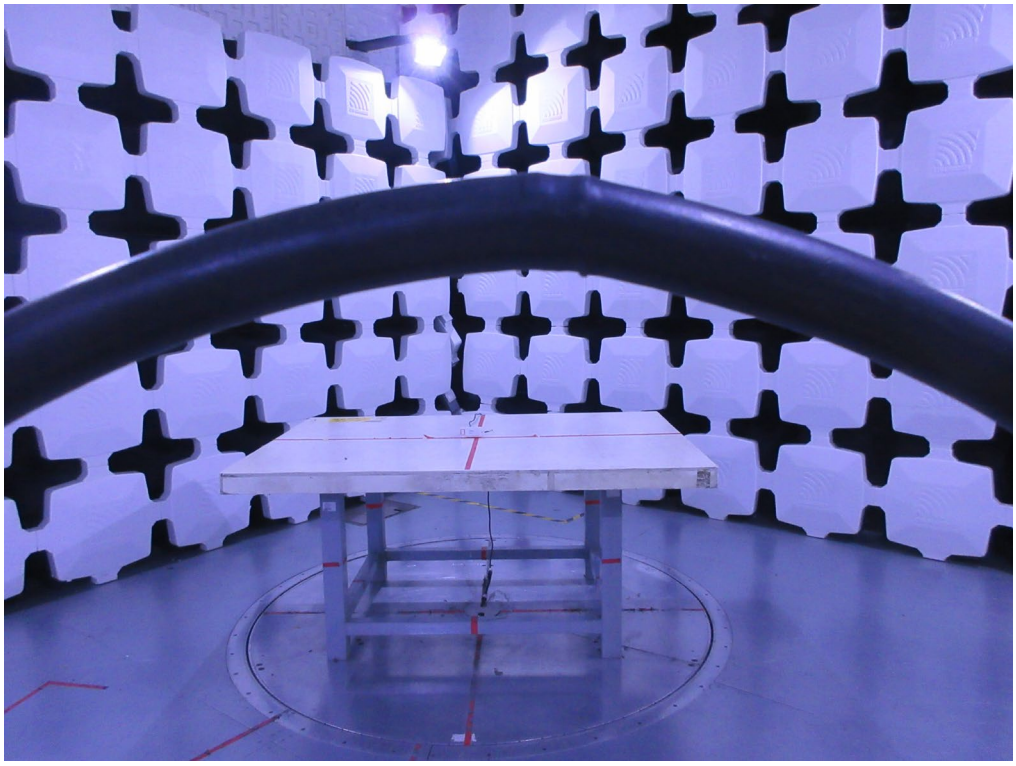
Except * item, all calibration period of equipment list is one year.

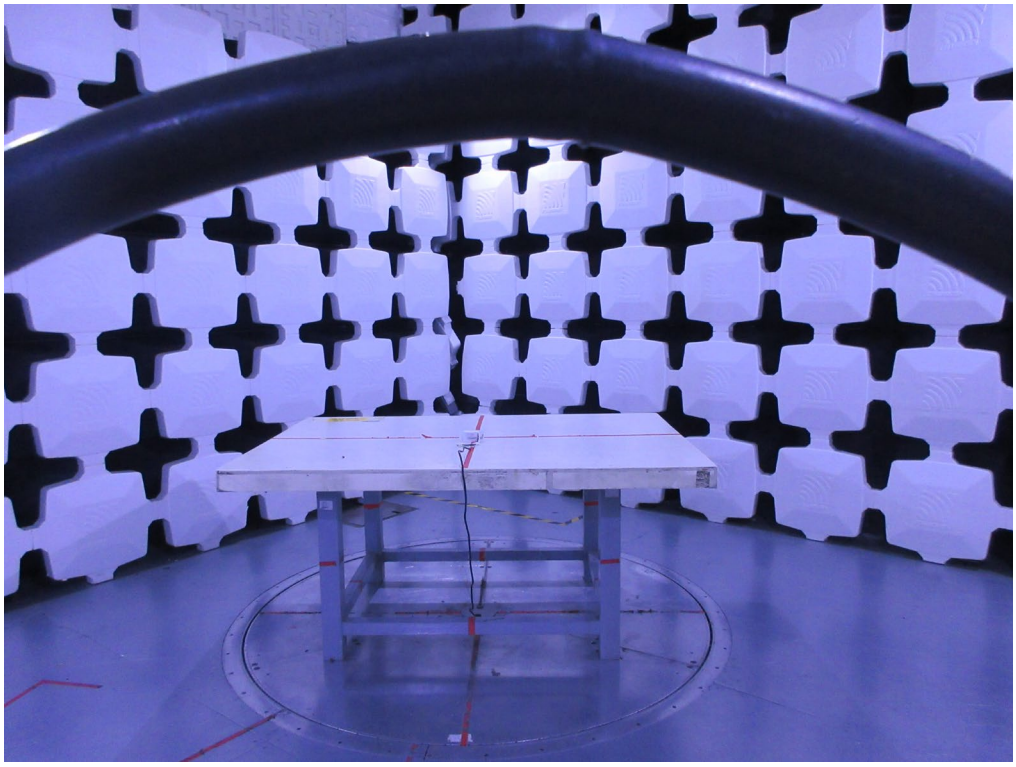
10. EUT TEST PHOTO

AC Power Line Conducted Emissions Test Photos

Radiated Emissions Test Photos

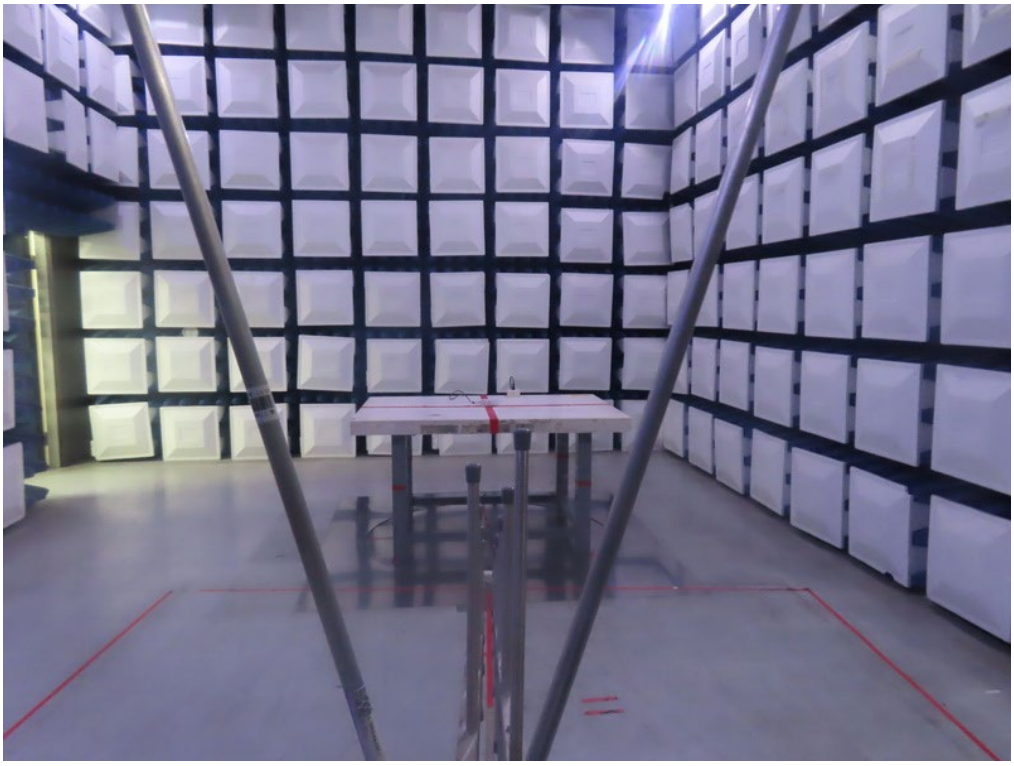
9 kHz to 30 MHz

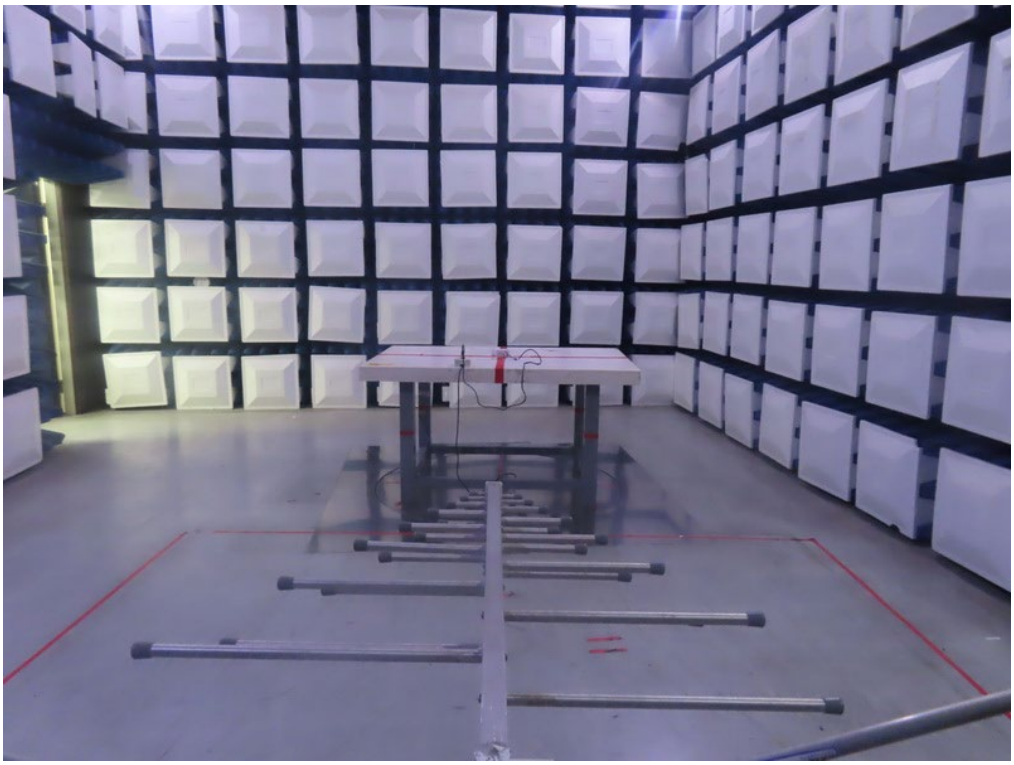




Radiated Emissions Test Photos

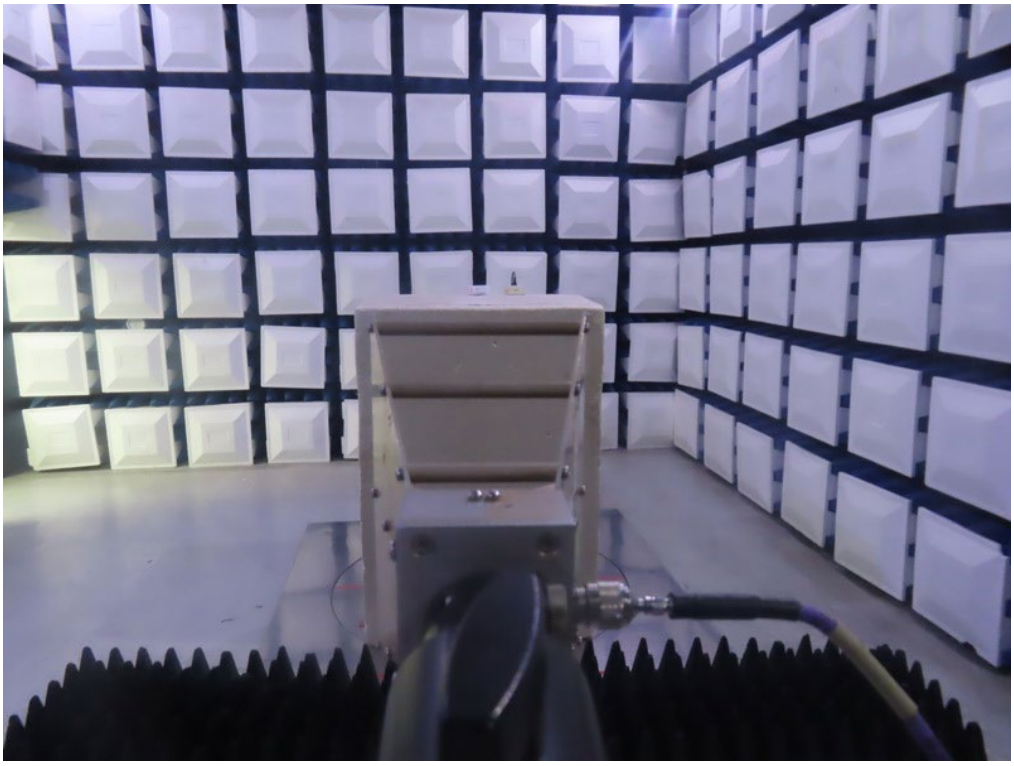
30 MHz to 1 GHz



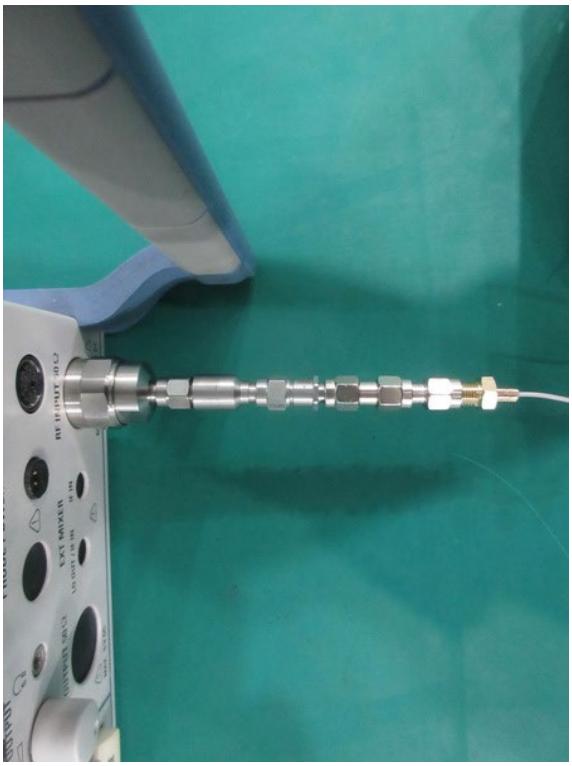


Radiated Emissions Test Photos

Above 1 GHz

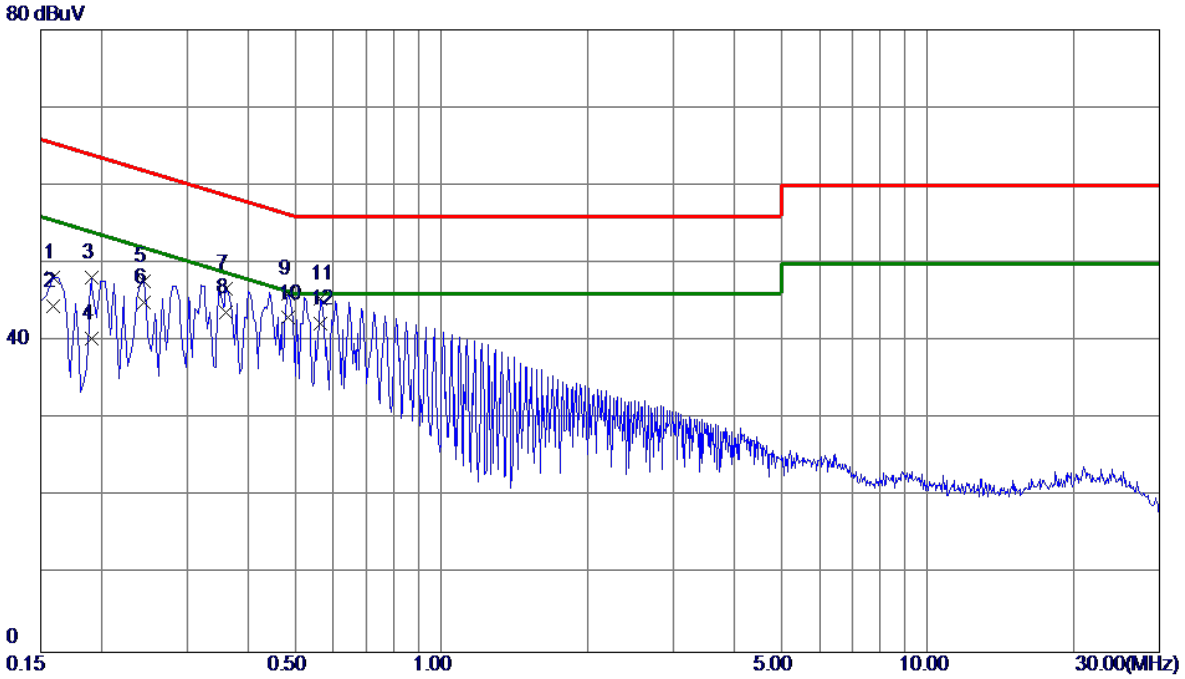


Conducted Test Photos



APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS

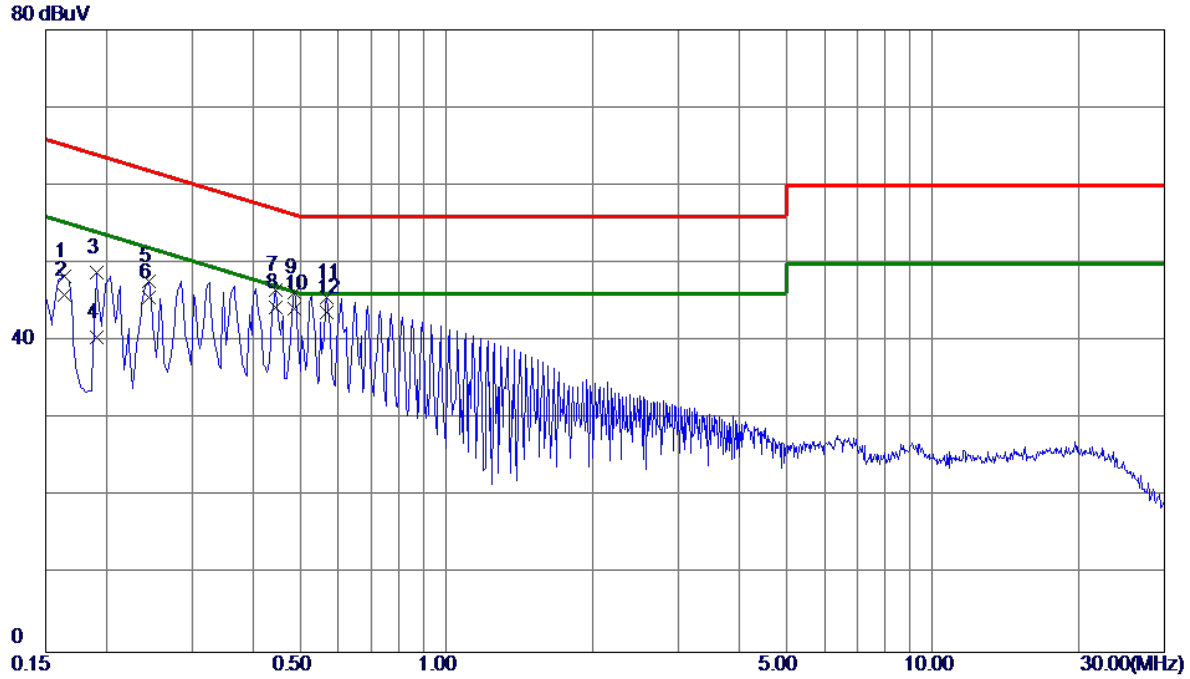
Test Mode	TX B Mode Channel 01	Phase	Line



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1590	38.51	9.66	48.17	65.52	-17.35	QP	
2	0.1590	34.80	9.66	44.46	55.52	-11.06	AVG	
3	0.1905	38.43	9.68	48.11	64.01	-15.90	QP	
4	0.1905	30.71	9.68	40.39	54.01	-13.62	AVG	
5	0.2445	38.04	9.70	47.74	61.94	-14.20	QP	
6	0.2445	35.30	9.70	45.00	51.94	-6.94	AVG	
7	0.3615	37.05	9.74	46.79	58.69	-11.90	QP	
8	0.3615	34.00	9.74	43.74	48.69	-4.95	AVG	
9	0.4830	36.25	9.76	46.01	56.29	-10.28	QP	
10 *	0.4830	33.20	9.76	42.96	46.29	-3.33	AVG	
11	0.5639	35.59	9.78	45.37	56.00	-10.63	QP	
12	0.5639	32.50	9.78	42.28	46.00	-3.72	AVG	

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

Test Mode	TX B Mode Channel 01	Phase	Neutral

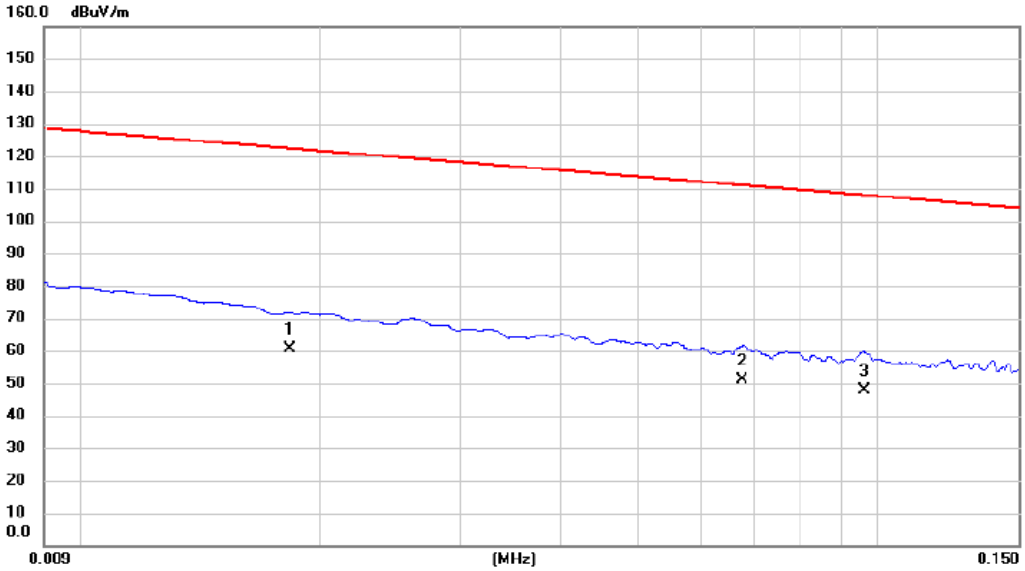


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1635	38.66	9.71	48.37	65.28	-16.91	QP	
2	0.1635	36.20	9.71	45.91	55.28	-9.37	AVG	
3	0.1905	39.02	9.72	48.74	64.01	-15.27	QP	
4	0.1905	30.71	9.72	40.43	54.01	-13.58	AVG	
5	0.2445	37.91	9.74	47.65	61.94	-14.29	QP	
6	0.2445	35.80	9.74	45.54	51.94	-6.40	AVG	
7	0.4470	36.71	9.79	46.50	56.93	-10.43	QP	
8	0.4470	34.50	9.79	44.29	46.93	-2.64	AVG	
9	0.4875	36.51	9.79	46.30	56.21	-9.91	QP	
10 *	0.4875	34.30	9.79	44.09	46.21	-2.12	AVG	
11	0.5685	35.82	9.81	45.63	56.00	-10.37	QP	
12	0.5685	33.80	9.81	43.61	46.00	-2.39	AVG	

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

APPENDIX B - RADIATED EMISSION - 9 KHZ TO 30 MHZ

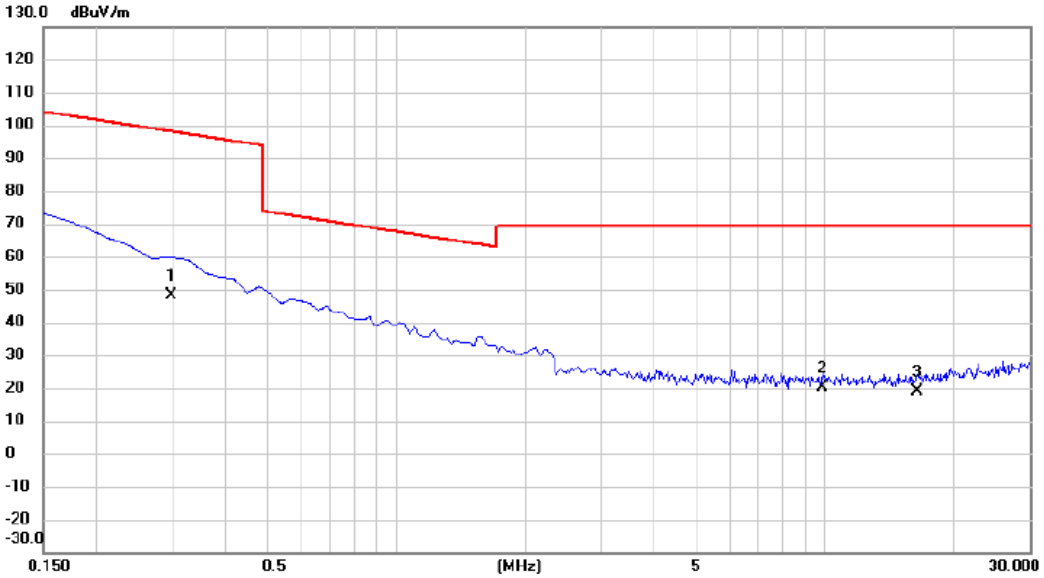
Test Mode	TX B Mode Channel 01	Polarization	Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.018	45.62	14.82	60.44	122.36	-61.92	AVG	
2	*	0.068	37.58	13.61	51.19	110.99	-59.80	AVG	
3		0.096	34.12	13.77	47.89	107.96	-60.07	QP	

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

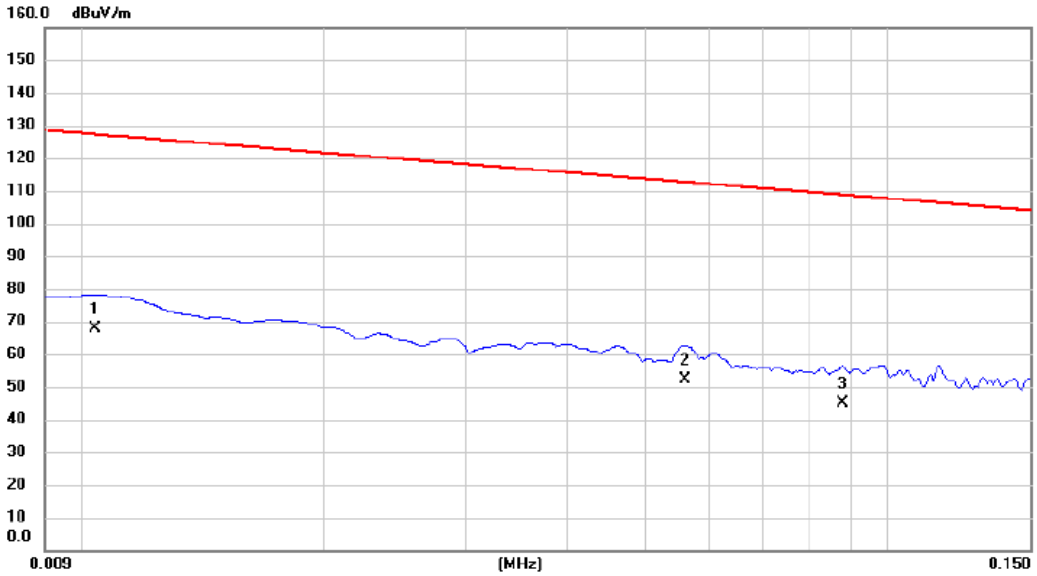
Test Mode	TX B Mode Channel 01	Polarization	Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.299	34.26	13.84	48.10	98.08	-49.98	AVG	
2	*	9.851	7.84	12.37	20.21	69.54	-49.33	QP	
3		16.418	6.53	12.43	18.96	69.54	-50.58	QP	

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

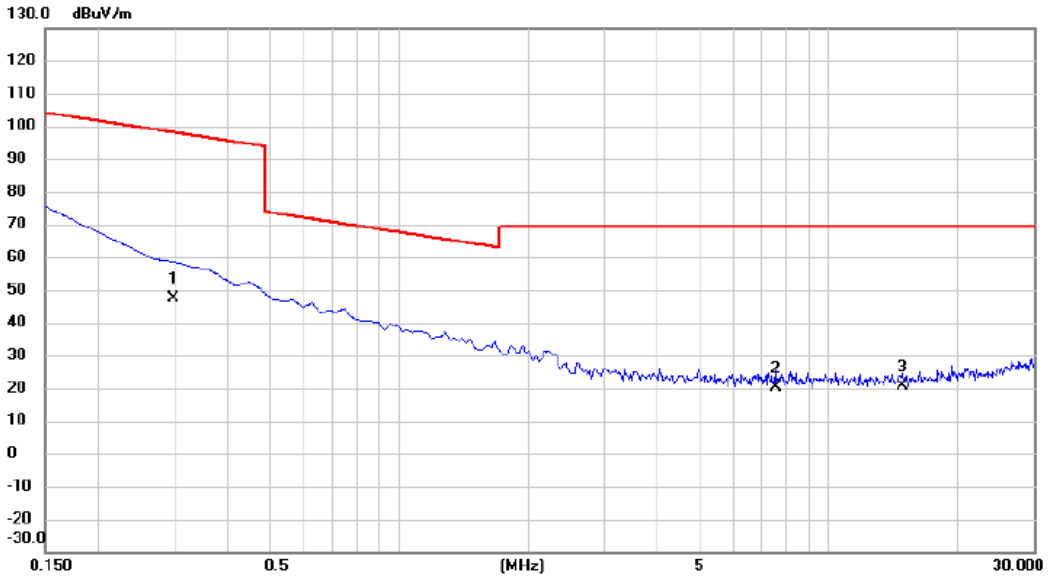
Test Mode	TX B Mode Channel 01	Polarization	Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.010	50.42	17.31	67.73	127.26	-59.53	AVG	
2		0.056	38.62	13.60	52.22	112.63	-60.41	AVG	
3		0.088	31.47	13.65	45.12	108.73	-63.61	AVG	

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

Test Mode	TX B Mode Channel 01	Polarization	Ant 90°

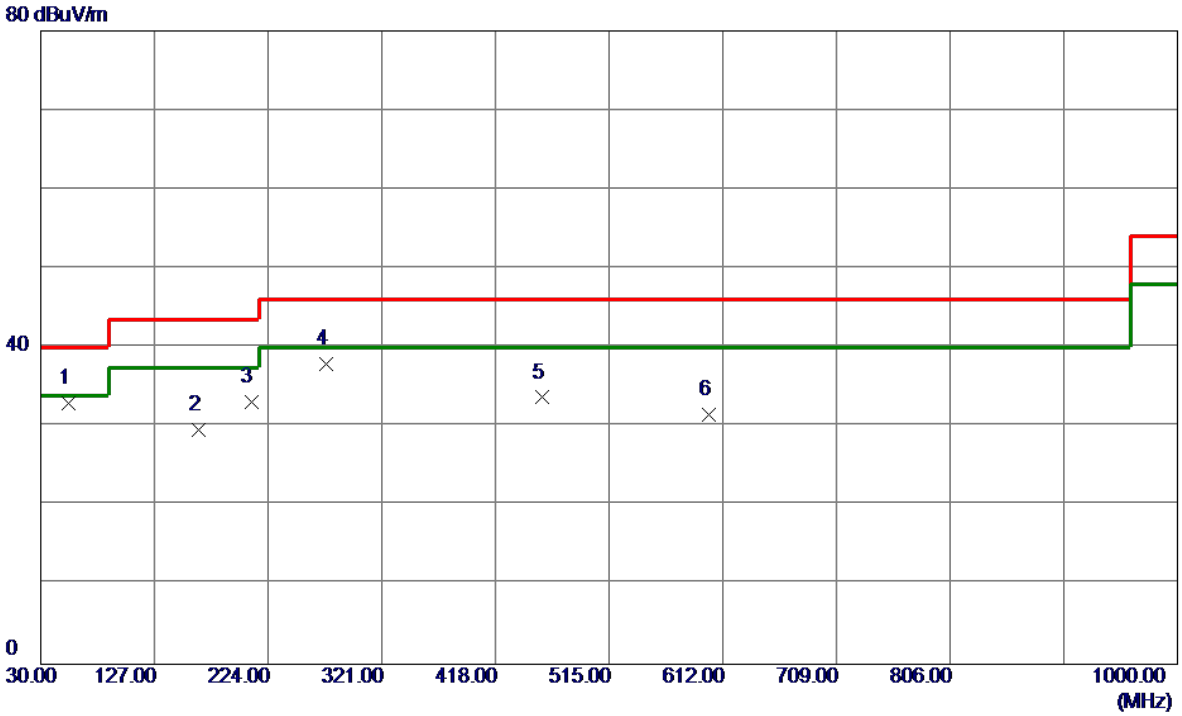


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.299	33.52	13.84	47.36	98.08	-50.72	AVG	
2		7.523	7.64	12.41	20.05	69.54	-49.49	QP	
3	*	14.806	8.51	12.17	20.68	69.54	-48.86	QP	

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

APPENDIX C - RADIATED EMISSION - 30 MHZ TO 1000 MHZ

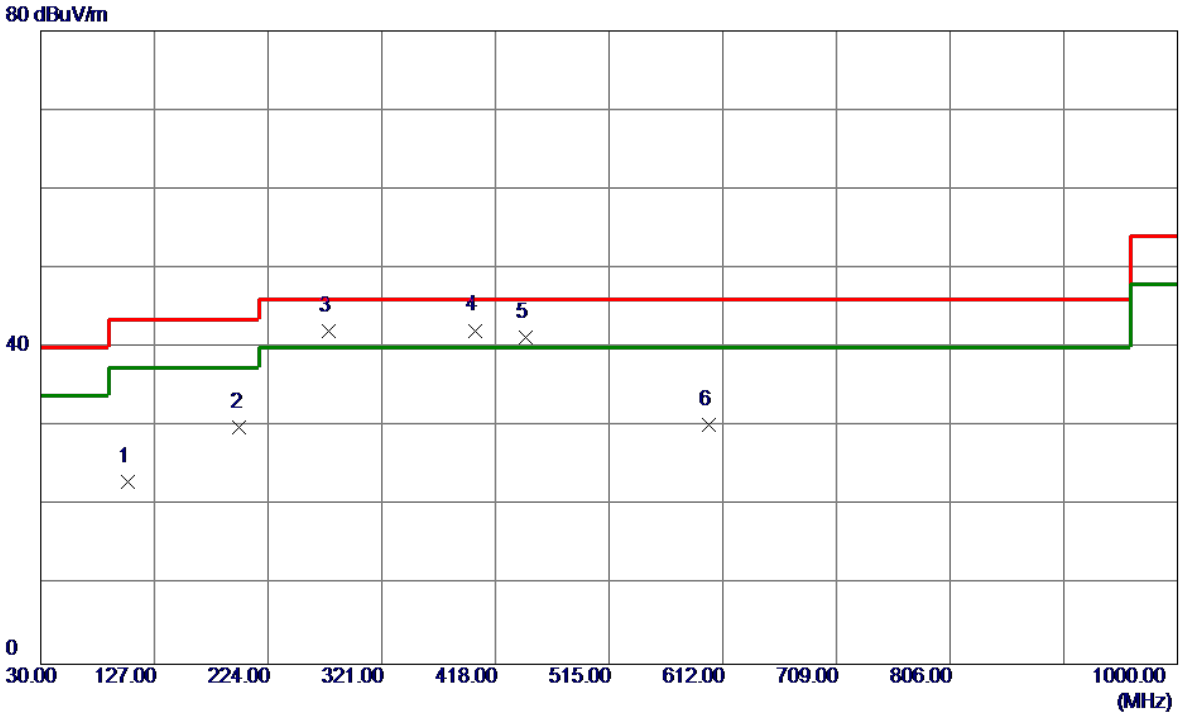
Test Mode	TX B Mode Channel 01	Polarization	Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	53.2800	46.88	-13.89	32.99	40.00	-7.01	Peak	
2	164.8300	41.85	-12.29	29.56	43.50	-13.94	Peak	
3	209.4500	48.09	-15.02	33.07	43.50	-10.43	Peak	
4	273.4700	49.70	-11.75	37.95	46.00	-8.05	Peak	
5	457.7700	40.66	-6.98	33.68	46.00	-12.32	Peak	
6	600.3600	35.72	-4.19	31.53	46.00	-14.47	Peak	

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

Test Mode	TX B Mode Channel 01	Polarization	Horizontal

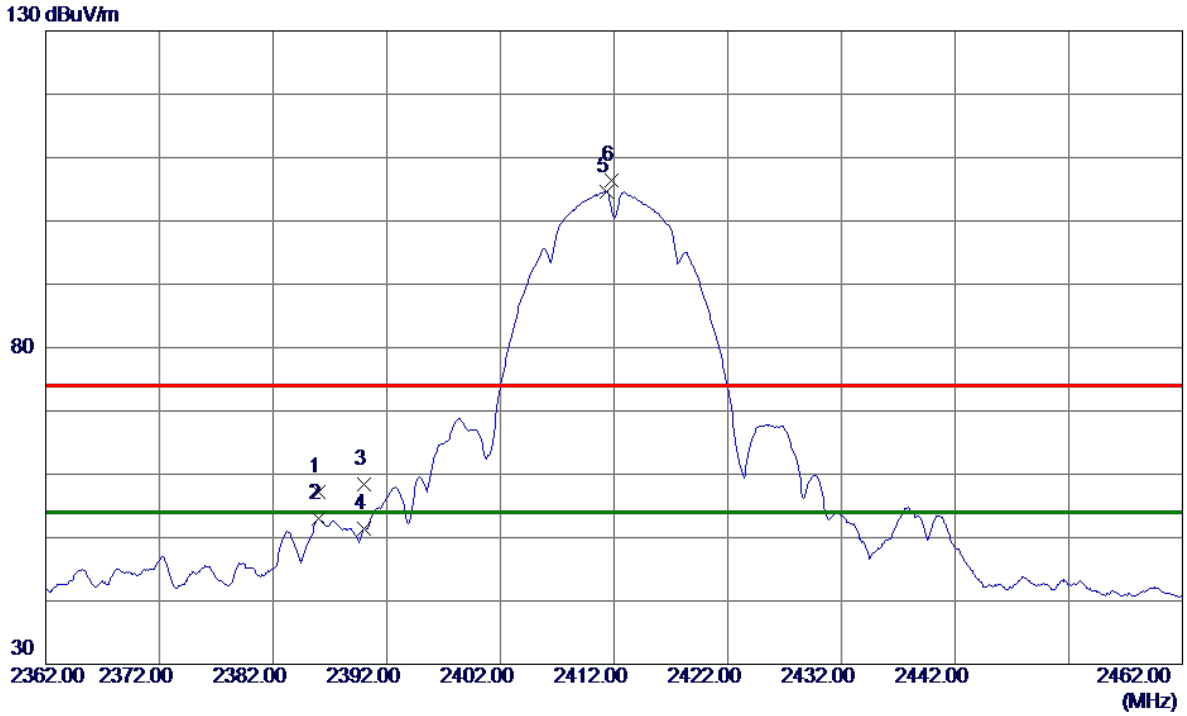


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	104.6900	38.79	-15.72	23.07	43.50	-20.43	Peak	
2	199.7500	45.14	-15.18	29.96	43.50	-13.54	Peak	
3	275.4100	53.78	-11.63	42.15	46.00	-3.85	Peak	
4 *	400.5400	50.64	-8.48	42.16	46.00	-3.84	Peak	
5	444.1900	48.51	-7.28	41.23	46.00	-4.77	Peak	
6	600.3600	34.39	-4.19	30.20	46.00	-15.80	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	Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2386.0000	49.26	7.97	57.23	74.00	-16.77	Peak	
2	2386.0000	45.06	7.97	53.03	54.00	-0.97	AVG	
3	2390.0000	50.43	7.98	58.41	74.00	-15.59	Peak	
4	2390.0000	43.46	7.98	51.44	54.00	-2.56	AVG	
5 *	2411.3000	96.60	8.01	104.61	54.00	50.61	AVG	No Limit
6	2411.8000	98.43	8.01	106.44	74.00	32.44	Peak	No Limit

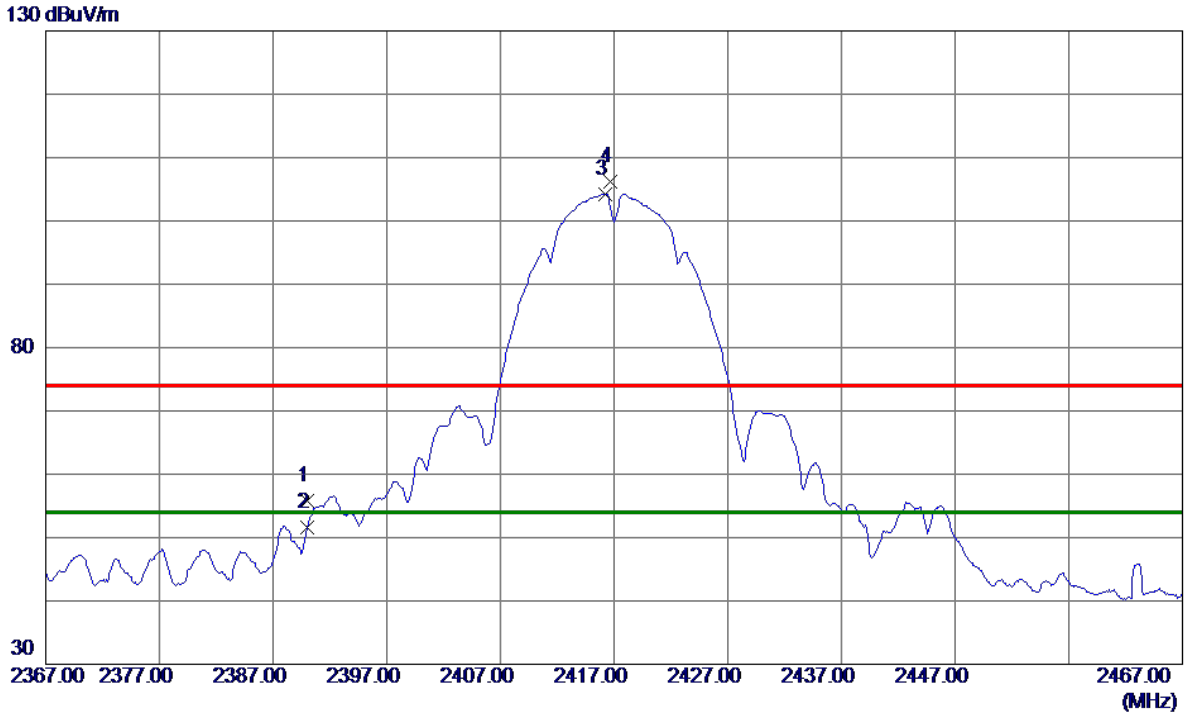
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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 *	4824.0700	44.46	4.33	48.79	54.00	-5.21	AVG	
2	4824.2300	47.33	4.33	51.66	74.00	-22.34	Peak	

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

Test Mode	TX B Mode 2417 MHz	Polarization	Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.0000	47.86	7.98	55.84	74.00	-18.16	Peak	
2	2390.0000	43.58	7.98	51.56	54.00	-2.44	AVG	
3 *	2416.2000	96.19	8.02	104.21	54.00	50.21	AVG	No Limit
4	2416.7000	98.10	8.02	106.12	74.00	32.12	Peak	No Limit

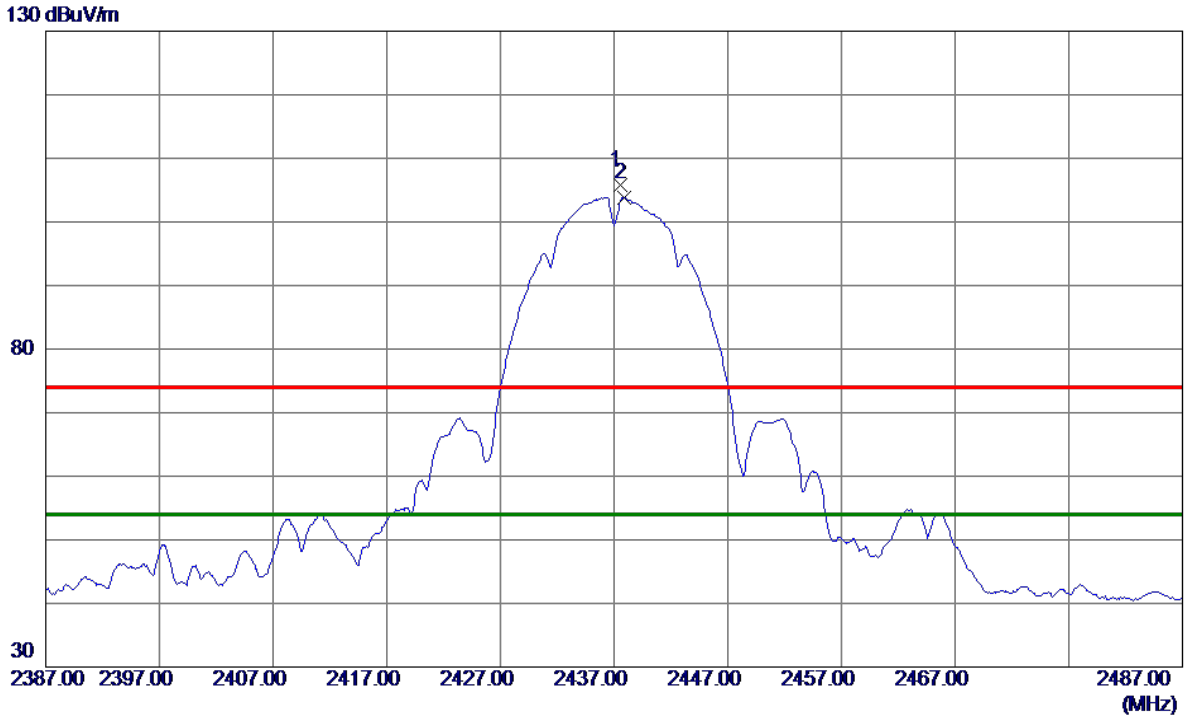
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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 *	4834.0000	47.59	4.60	52.19	54.00	-1.81	AVG	
2	4834.0350	49.76	4.60	54.36	74.00	-19.64	Peak	

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

Test Mode	TX B Mode 2437 MHz	Polarization	Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2437.5000	97.78	8.06	105.84	74.00	31.84	Peak	No Limit
2 *	2437.9000	95.80	8.06	103.86	54.00	49.86	AVG	No Limit

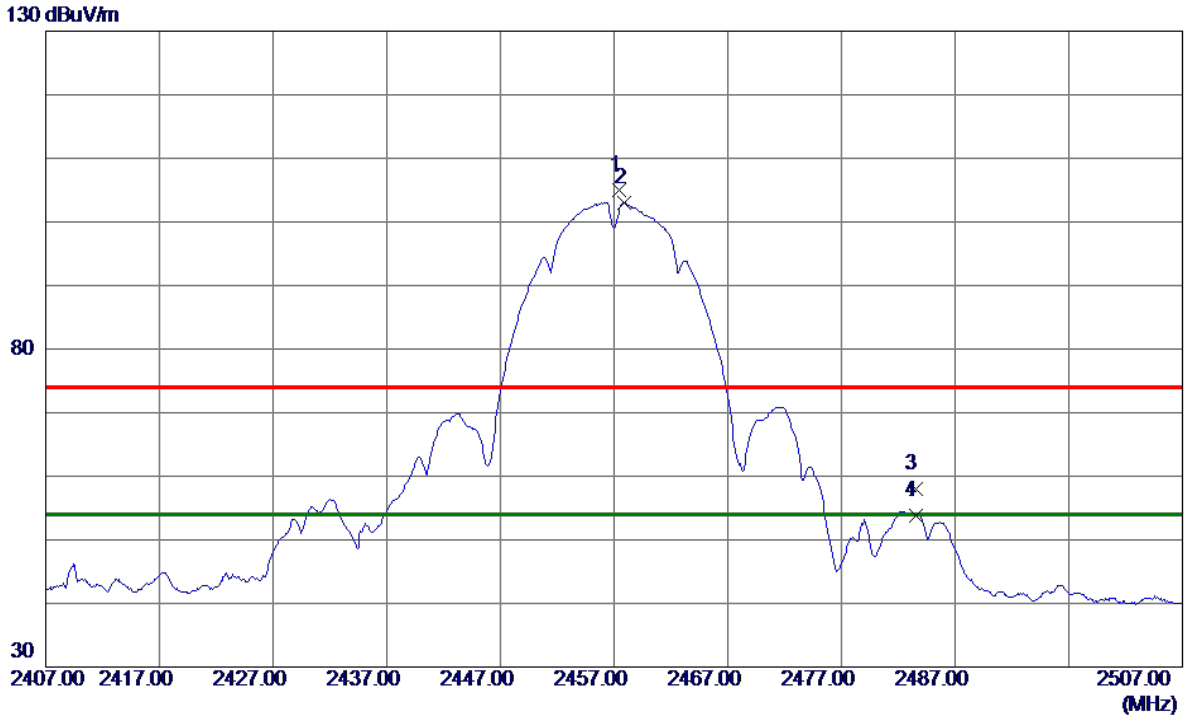
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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	4874.0299	45.63	4.41	50.04	74.00	-23.96	Peak	
2 *	4874.0400	42.40	4.41	46.81	54.00	-7.19	AVG	

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

Test Mode	TX B Mode 2457 MHz	Polarization	Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2457.4000	96.93	8.09	105.02	74.00	31.02	Peak	No Limit
2 *	2457.9000	94.95	8.09	103.04	54.00	49.04	AVG	No Limit
3	2483.5000	49.82	8.14	57.96	74.00	-16.04	Peak	
4	2483.5000	45.75	8.14	53.89	54.00	-0.11	AVG	

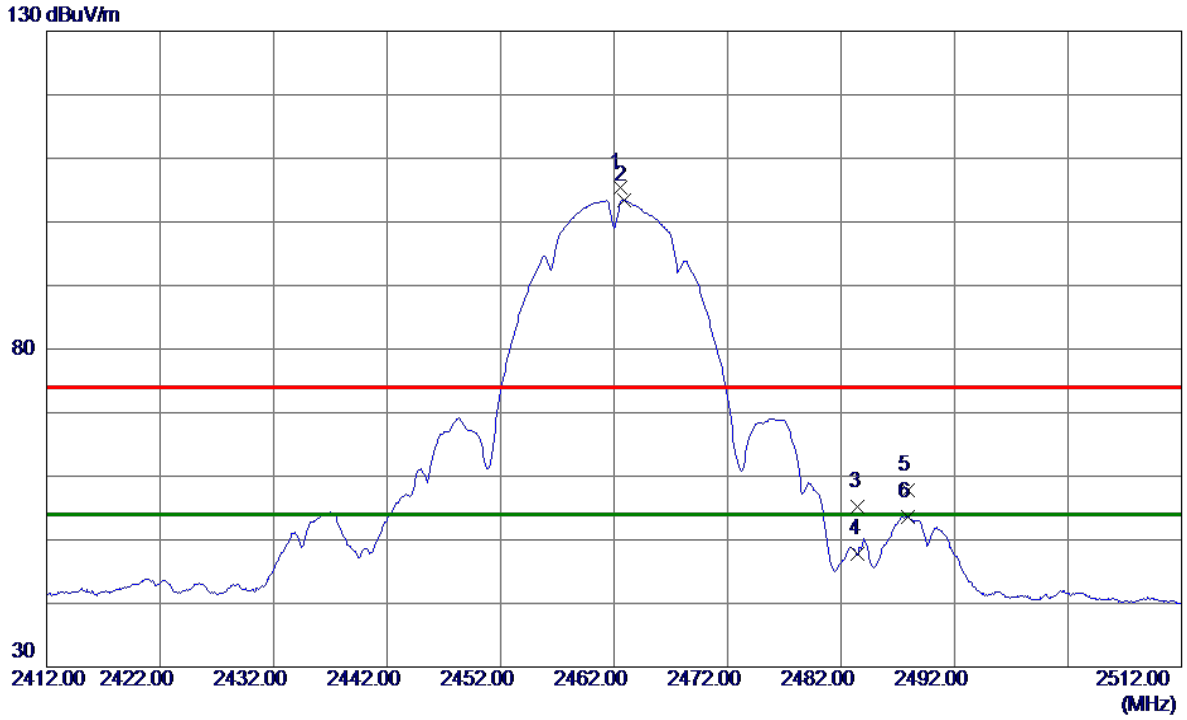
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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 *	4913.9950	47.71	4.93	52.64	54.00	-1.36	AVG	
2	4914.0800	49.98	4.94	54.92	74.00	-19.08	Peak	

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

Test Mode	TX B Mode 2462 MHz	Polarization	Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2462.5000	97.34	8.10	105.44	74.00	31.44	Peak	No Limit
2 *	2462.9000	95.36	8.10	103.46	54.00	49.46	AVG	No Limit
3	2483.5000	46.98	8.14	55.12	74.00	-18.88	Peak	
4	2483.5000	39.73	8.14	47.87	54.00	-6.13	AVG	
5	2487.9000	49.65	8.14	57.79	74.00	-16.21	Peak	
6	2487.9000	45.45	8.14	53.59	54.00	-0.41	AVG	

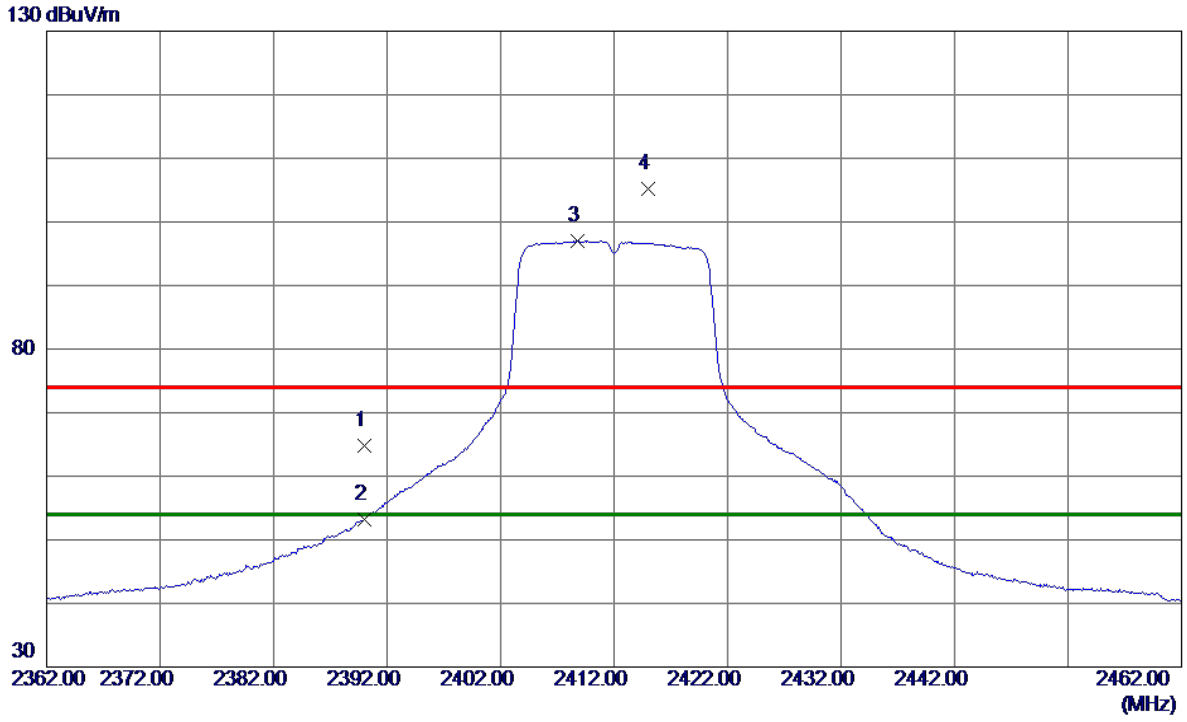
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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 *	4924.0350	38.85	4.49	43.34	54.00	-10.66	AVG	
2	4924.0650	43.53	4.49	48.02	74.00	-25.98	Peak	

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.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.0000	56.81	7.98	64.79	74.00	-9.21	Peak	
2	2390.0000	45.15	7.98	53.13	54.00	-0.87	AVG	
3 *	2408.8000	88.95	8.01	96.96	54.00	42.96	AVG	No Limit
4	2415.0000	97.17	8.02	105.19	74.00	31.19	Peak	No Limit

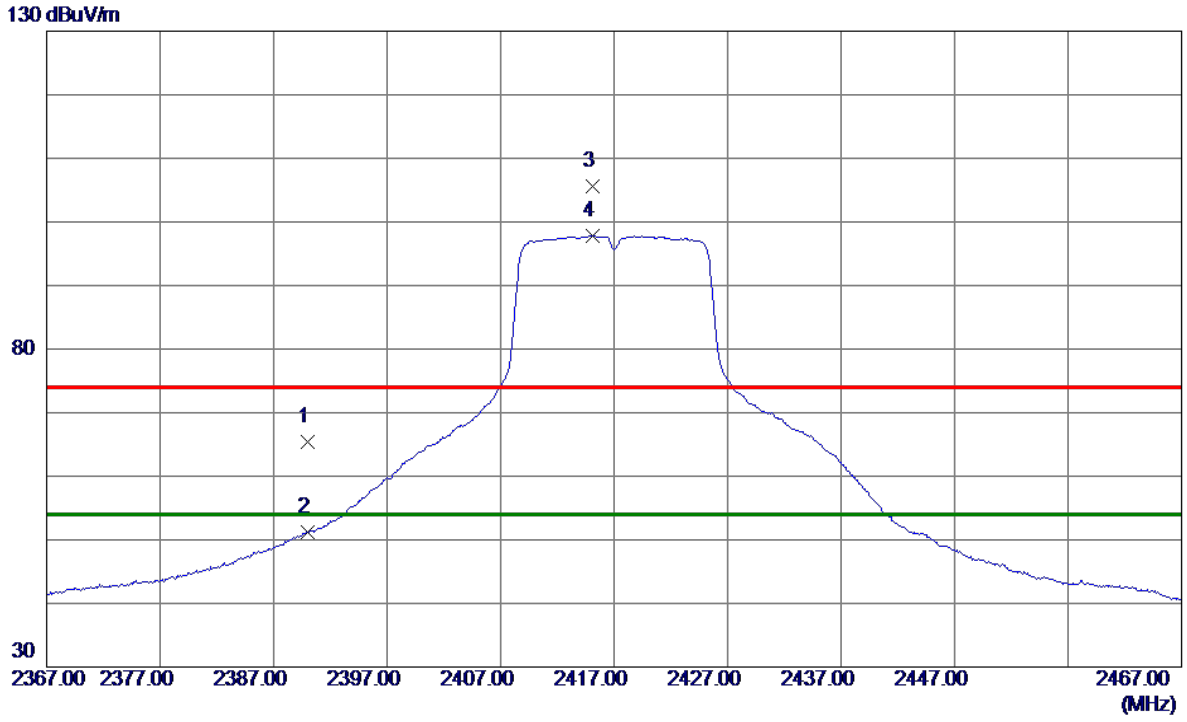
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode	TX G Mode 2412 MHz	Polarization	Horizontal

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4819.7500	42.70	4.32	47.02	74.00	-26.98	Peak	
2 *	4823.3200	32.28	4.32	36.60	54.00	-17.40	AVG	

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

Test Mode	TX G Mode 2417 MHz	Polarization	Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.0000	57.42	7.98	65.40	74.00	-8.60	Peak	
2	2390.0000	43.23	7.98	51.21	54.00	-2.79	AVG	
3	2415.1000	97.59	8.02	105.61	74.00	31.61	Peak	No Limit
4 *	2415.1000	89.84	8.02	97.86	54.00	43.86	AVG	No Limit

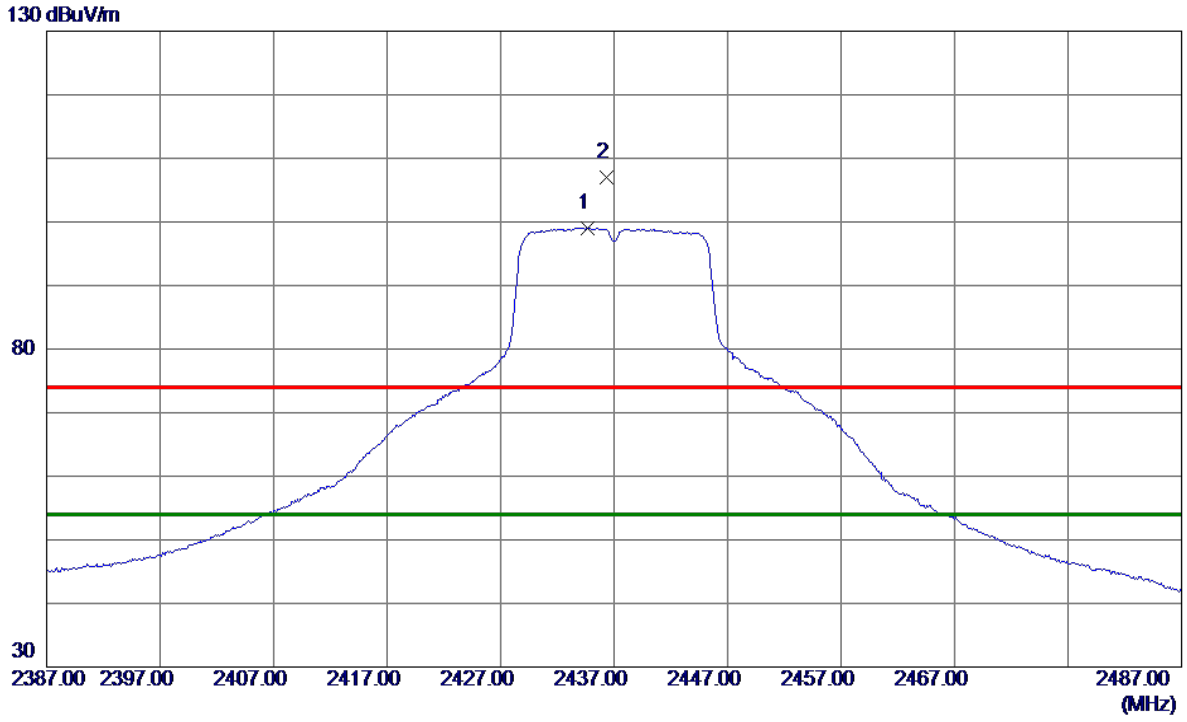
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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 *	4834.7050	34.91	4.61	39.52	54.00	-14.48	AVG	
2	4835.9650	46.71	4.61	51.32	74.00	-22.68	Peak	

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

Test Mode	TX G Mode 2437 MHz	Polarization	Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	2434.7000	91.01	8.05	99.06	54.00	45.06	AVG	No Limit
2	2436.3000	98.98	8.06	107.04	74.00	33.04	Peak	No Limit

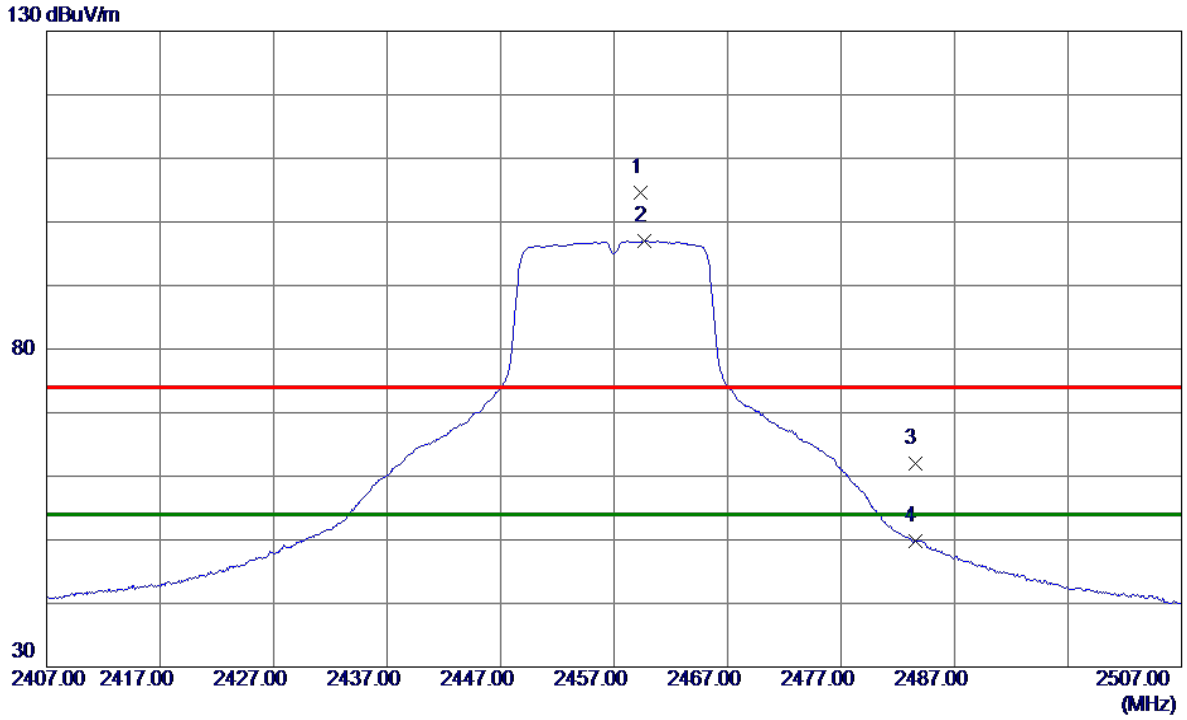
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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 *	4874.4200	31.66	4.41	36.07	54.00	-17.93	AVG	
2	4874.9200	42.19	4.41	46.60	74.00	-27.40	Peak	

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

Test Mode	TX G Mode 2457 MHz	Polarization	Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2459.3000	96.46	8.10	104.56	74.00	30.56	Peak	No Limit
2 *	2459.7000	88.86	8.10	96.96	54.00	42.96	AVG	No Limit
3	2483.5000	53.93	8.14	62.07	74.00	-11.93	Peak	
4	2483.5000	41.63	8.14	49.77	54.00	-4.23	AVG	

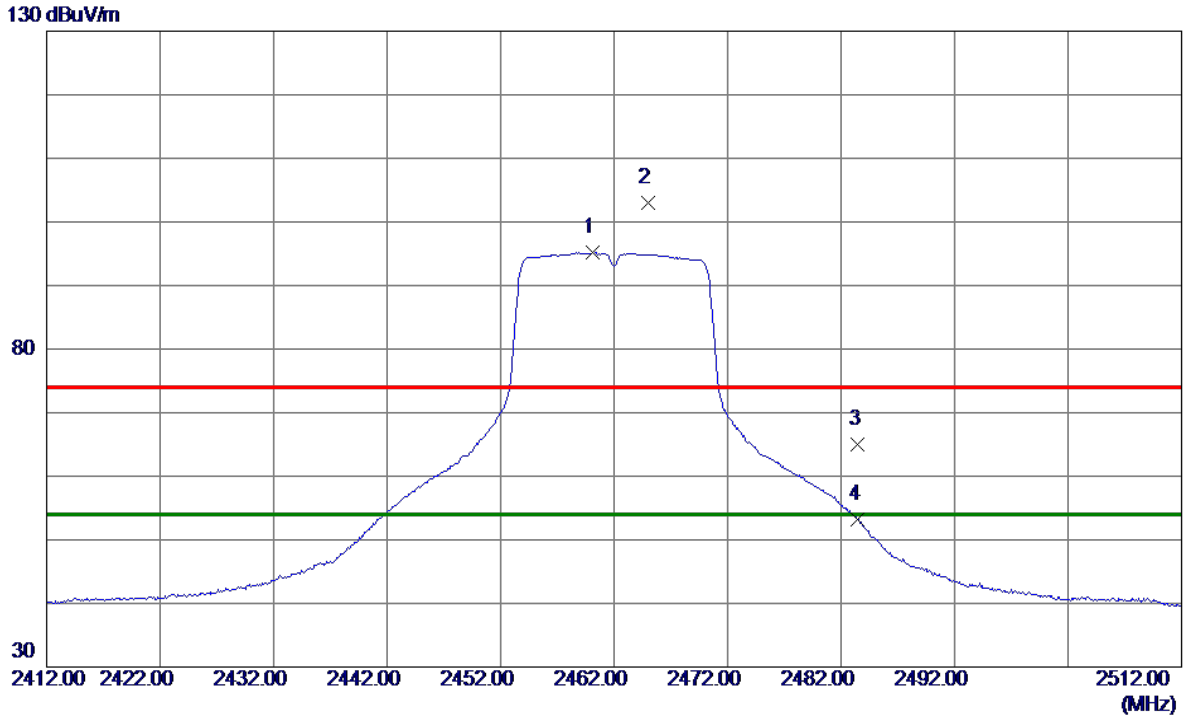
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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	4916.0650	45.67	4.94	50.61	74.00	-23.39	Peak	
2 *	4916.2850	34.94	4.94	39.88	54.00	-14.12	AVG	

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

Test Mode	TX G Mode 2462 MHz	Polarization	Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	2460.1000	87.06	8.10	95.16	54.00	41.16	AVG	No Limit
2	2465.0000	94.89	8.11	103.00	74.00	29.00	Peak	No Limit
3	2483.5000	56.94	8.14	65.08	74.00	-8.92	Peak	
4	2483.5000	44.98	8.14	53.12	54.00	-0.88	AVG	

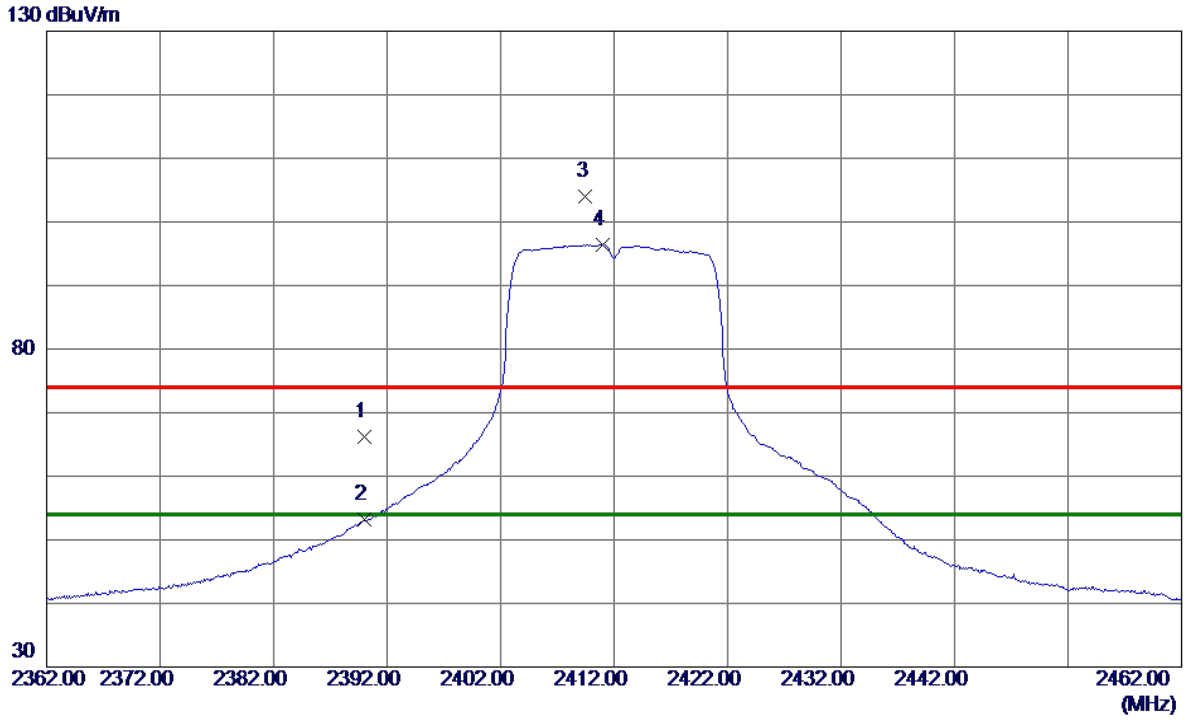
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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 *	4924.8500	31.65	4.49	36.14	54.00	-17.86	AVG	
2	4925.4049	42.58	4.50	47.08	74.00	-26.92	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	Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.0000	58.18	7.98	66.16	74.00	-7.84	Peak	
2	2390.0000	45.16	7.98	53.14	54.00	-0.86	AVG	
3	2409.5000	96.05	8.01	104.06	74.00	30.06	Peak	No Limit
4 *	2411.0000	88.42	8.01	96.43	54.00	42.43	AVG	No Limit

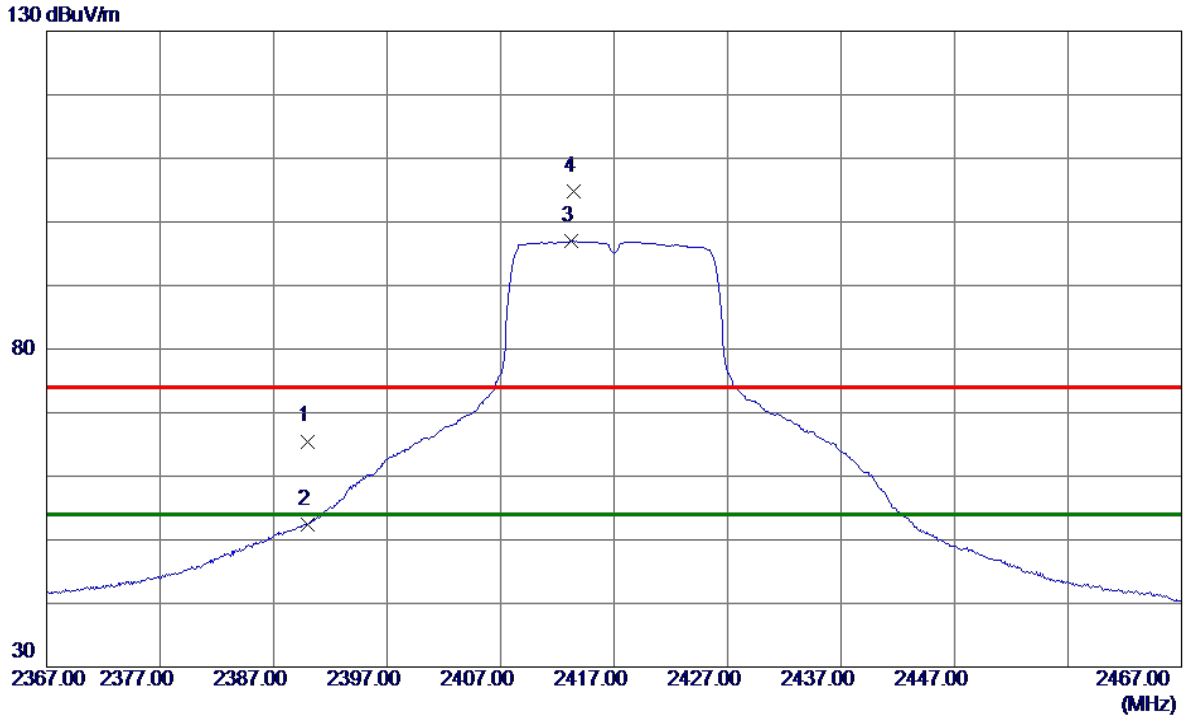
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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 *	4823.4049	31.01	4.33	35.34	54.00	-18.66	AVG	
2	4823.4300	43.41	4.33	47.74	74.00	-26.26	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	Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.0000	57.52	7.98	65.50	74.00	-8.50	Peak	
2	2390.0000	44.50	7.98	52.48	54.00	-1.52	AVG	
3 *	2413.2000	88.95	8.02	96.97	54.00	42.97	AVG	No Limit
4	2413.4000	96.78	8.02	104.80	74.00	30.80	Peak	No Limit

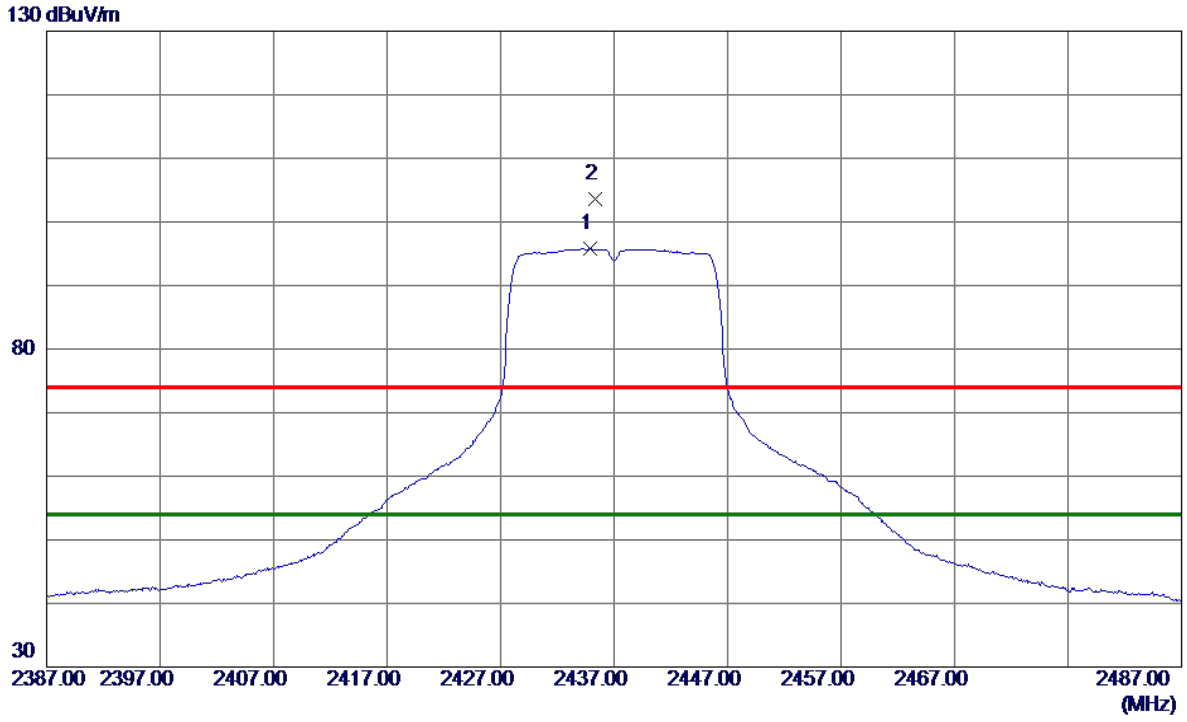
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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	4833.1400	45.57	4.60	50.17	74.00	-23.83	Peak	
2 *	4833.2350	34.17	4.60	38.77	54.00	-15.23	AVG	

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

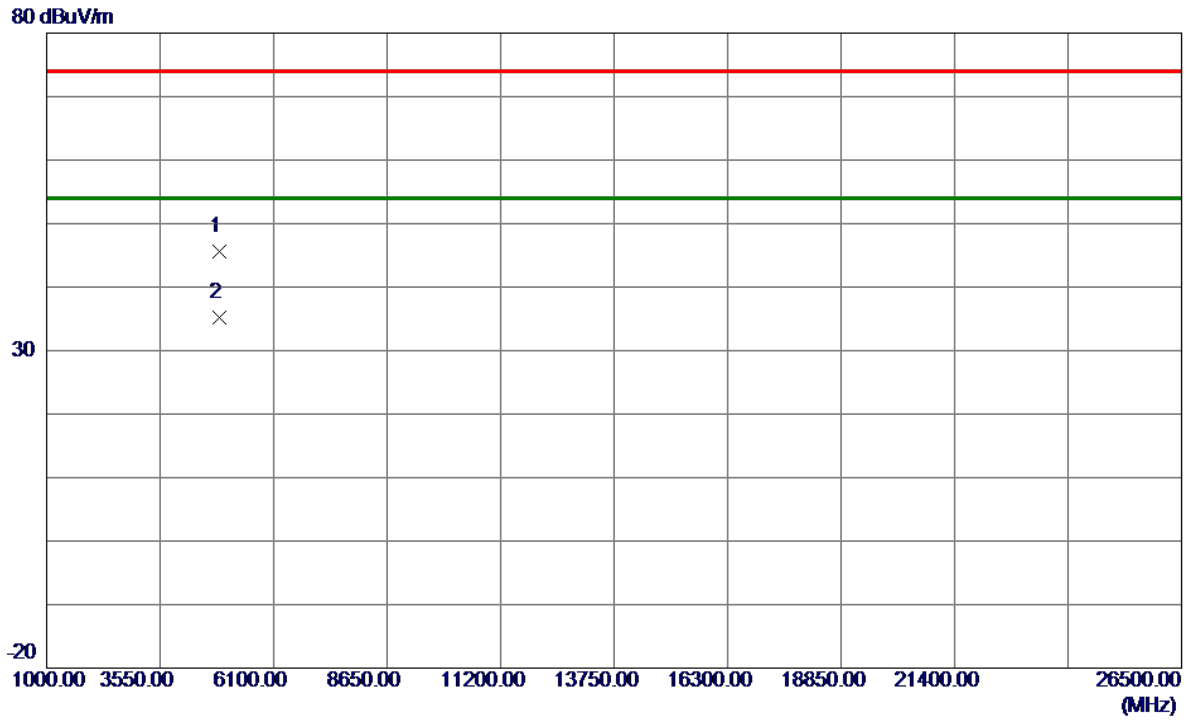
Test Mode	TX N(HT20) Mode 2437 MHz	Polarization	Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	2434.9000	87.69	8.05	95.74	54.00	41.74	AVG	No Limit
2	2435.3000	95.47	8.05	103.52	74.00	29.52	Peak	No Limit

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

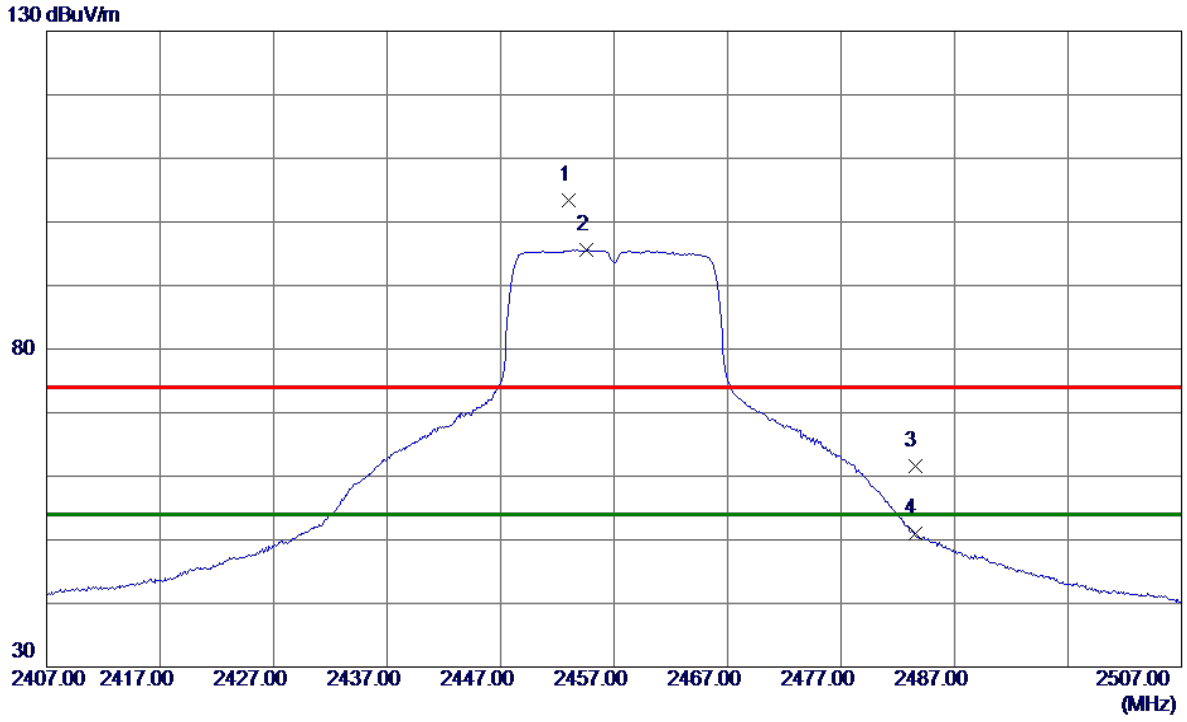
Test Mode	TX N(HT20) Mode 2437 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4872.9600	41.13	4.41	45.54	74.00	-28.46	Peak	
2 *	4873.4000	30.81	4.41	35.22	54.00	-18.78	AVG	

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

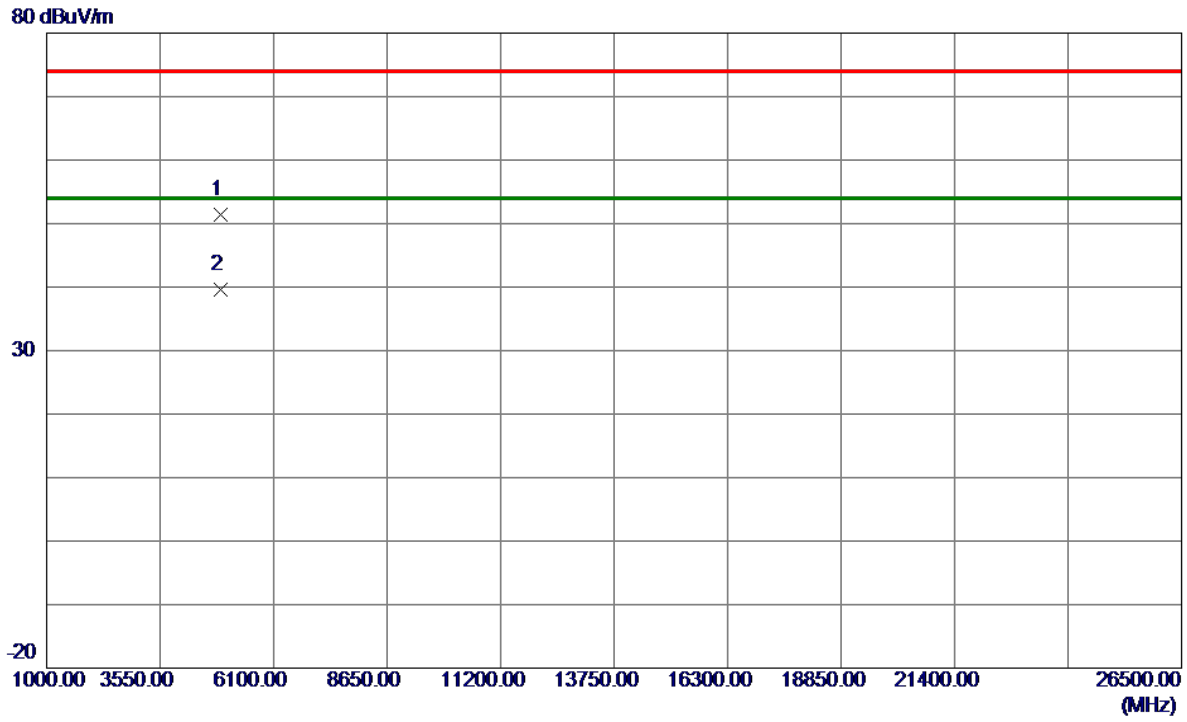
Test Mode	TX N(HT20) Mode 2457 MHz	Polarization	Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2453.0000	95.36	8.08	103.44	74.00	29.44	Peak	No Limit
2 *	2454.6000	87.50	8.09	95.59	54.00	41.59	AVG	No Limit
3	2483.5000	53.54	8.14	61.68	74.00	-12.32	Peak	
4	2483.5000	42.85	8.14	50.99	54.00	-3.01	AVG	

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

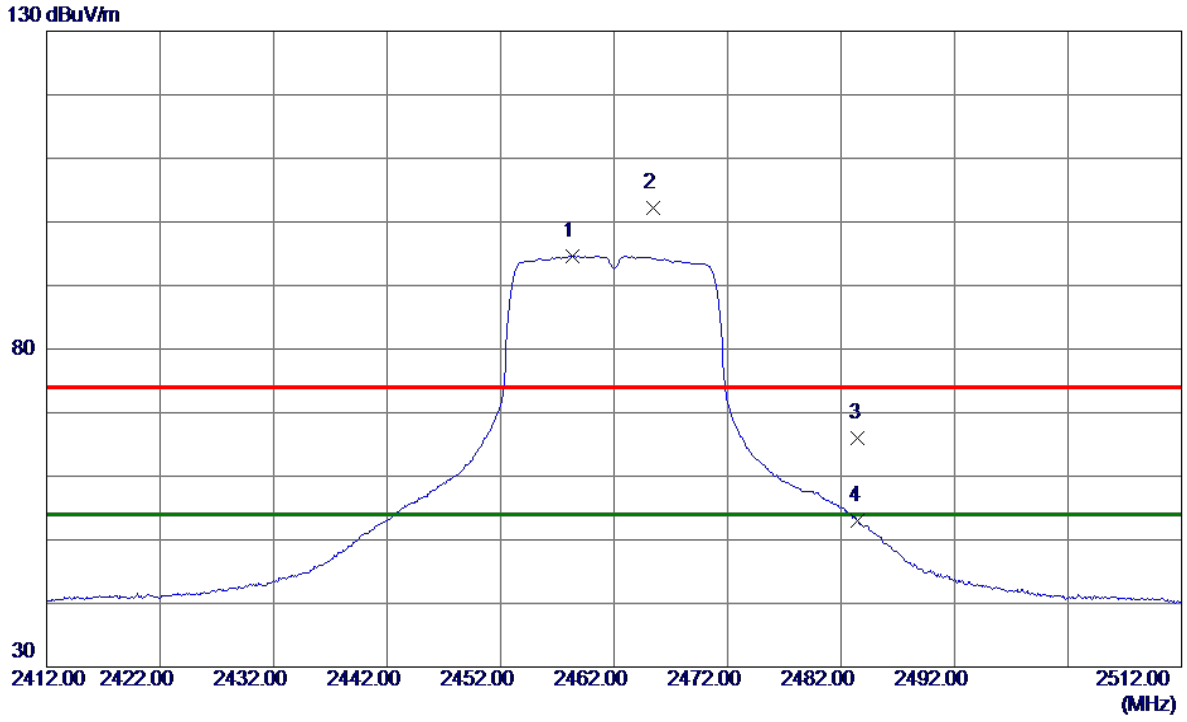
Test Mode	TX N(HT20) Mode 2457 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4913.5250	46.46	4.93	51.39	74.00	-22.61	Peak	
2 *	4915.9400	34.65	4.94	39.59	54.00	-14.41	AVG	

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

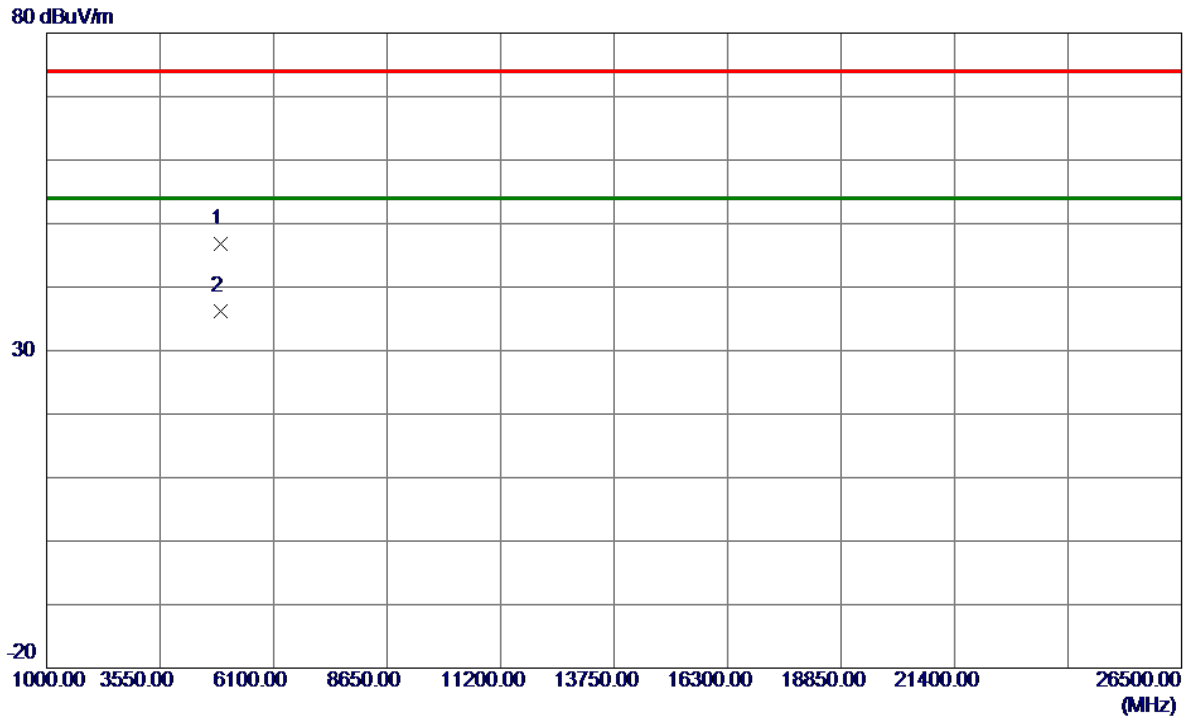
Test Mode	TX N(HT20) Mode 2462 MHz	Polarization	Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	2458.3000	86.54	8.09	94.63	54.00	40.63	AVG	No Limit
2	2465.4000	94.04	8.11	102.15	74.00	28.15	Peak	No Limit
3	2483.5000	57.79	8.14	65.93	74.00	-8.07	Peak	
4	2483.5000	44.89	8.14	53.03	54.00	-0.97	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	4922.8650	42.30	4.49	46.79	74.00	-27.21	Peak	
2 *	4923.1500	31.69	4.49	36.18	54.00	-17.82	AVG	

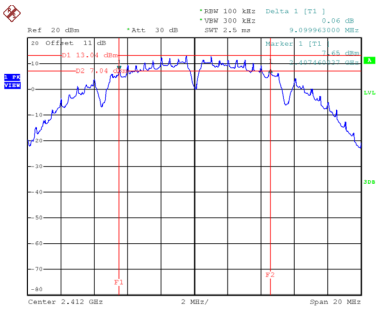
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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	9.100	14.480	0.5	Complies
06	2437	9.110	14.560	0.5	Complies
11	2462	10.080	14.640	0.5	Complies

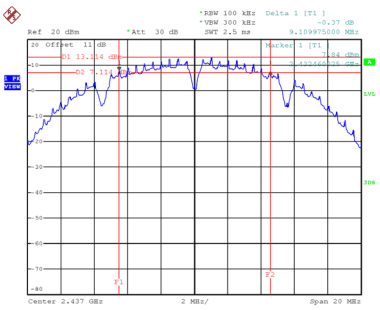
CH01



Date: 28.MAY.2022 12:11:03

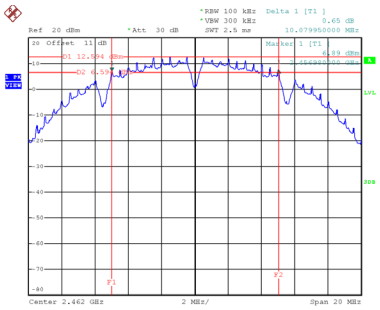
CH06

6 dB Bandwidth



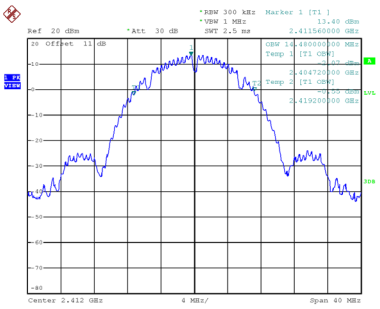
Date: 28.MAY.2022 12:13:49

CH11

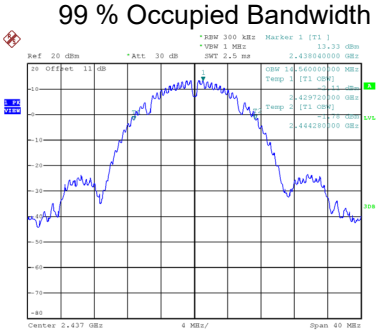


Date: 28.MAY.2022 12:15:27

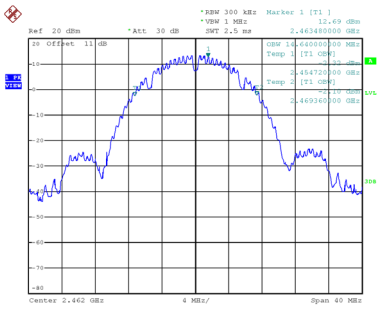
99 % Occupied Bandwidth



Date: 28.MAY.2022 12:11:11



Date: 28.MAY.2022 12:13:56

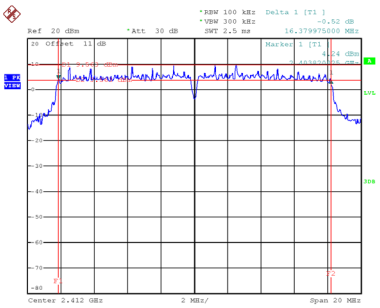


Date: 28.MAY.2022 12:15:34

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	16.380	18.400	0.5	Complies
06	2437	16.380	18.480	0.5	Complies
11	2462	16.380	18.480	0.5	Complies

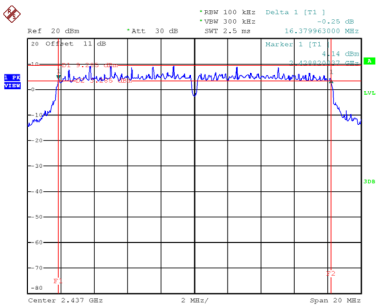
CH01



Date: 28.MAY.2022 12:17:07

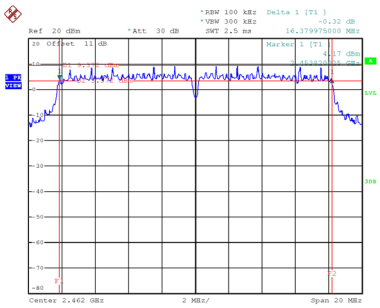
CH06

6 dB Bandwidth



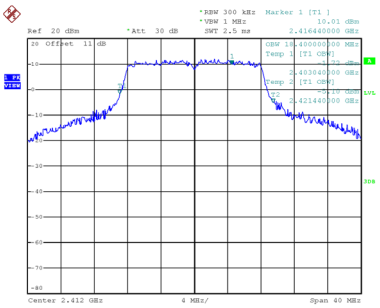
Date: 28.MAY.2022 12:18:27

CH11

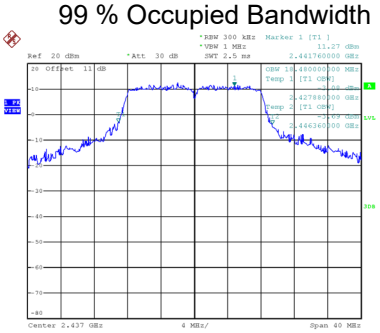


Date: 28.MAY.2022 12:19:51

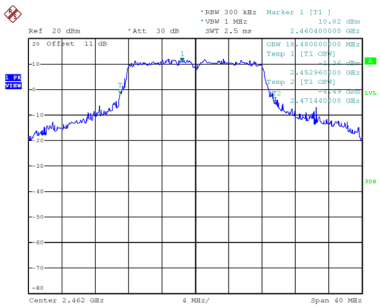
99 % Occupied Bandwidth



Date: 28.MAY.2022 12:17:14



Date: 28.MAY.2022 12:18:34

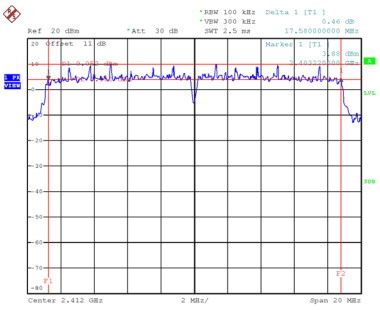


Date: 28.MAY.2022 12:19:59

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	17.580	19.120	0.5	Complies
06	2437	17.640	19.280	0.5	Complies
11	2462	17.610	19.280	0.5	Complies

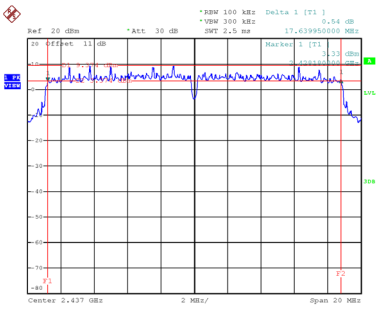
CH01



Date: 28.MAY.2022 12:21:14

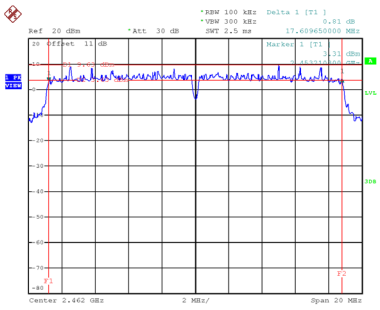
CH06

6 dB Bandwidth

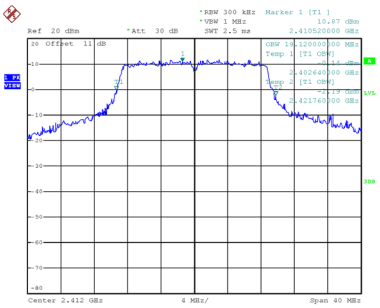


Date: 28.MAY.2022 12:22:35

CH11

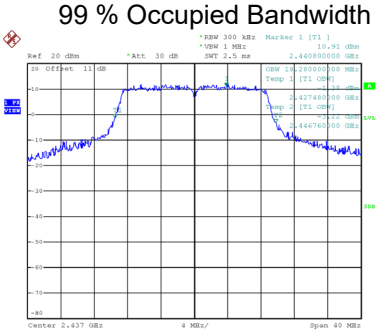


Date: 28.MAY.2022 12:24:03

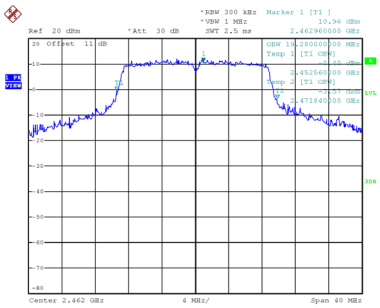


Date: 28.MAY.2022 12:21:22

99 % Occupied Bandwidth



Date: 28.MAY.2022 12:22:47



Date: 28.MAY.2022 12:24:11

APPENDIX F - MAXIMUM AVERAGE OUTPUT POWER

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	22.97	0.00	22.97	30.00	1.0000	Complies
06	2437	22.91	0.00	22.91	30.00	1.0000	Complies
11	2462	22.03	0.00	22.03	30.00	1.0000	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	18.33	0.26	18.59	30.00	1.0000	Complies
06	2437	21.11	0.26	21.37	30.00	1.0000	Complies
11	2462	18.29	0.26	18.55	30.00	1.0000	Complies

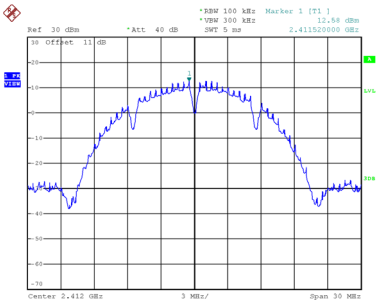
Test Mode	TX N(HT20) Mode

Channel	Frequency (MHz)	Average Output Power (dBm)	Duty Factor	Average Output Power + Duty Factor (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	18.35	0.28	18.63	30.00	1.0000	Complies
06	2437	21.22	0.28	21.50	30.00	1.0000	Complies
11	2462	17.38	0.28	17.66	30.00	1.0000	Complies

APPENDIX G - CONDUCTED SPURIOUS EMISSIONS

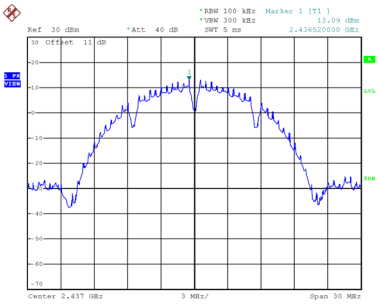
Test Mode	TX B Mode

Reference Level-CH01



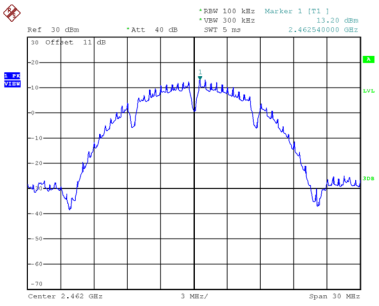
Date: 31.MAY.2022 13:22:42

Reference Level-CH06



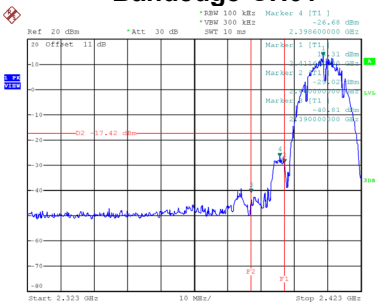
Date: 31.MAY.2022 13:23:23

Reference Level-CH11



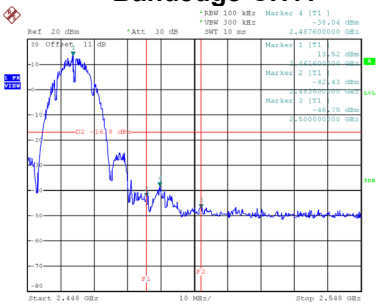
Date: 31.MAY.2022 13:23:59

Bandedge-CH01



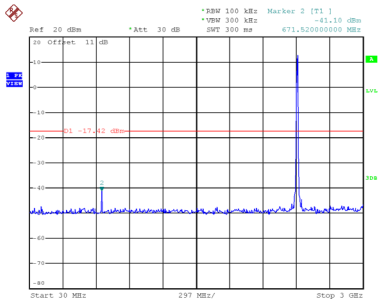
Date: 31.MAY.2022 13:45:15

Bandedge-CH11

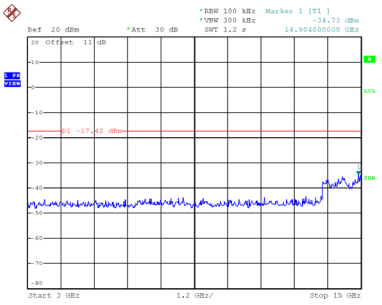


Date: 31.MAY.2022 13:54:33

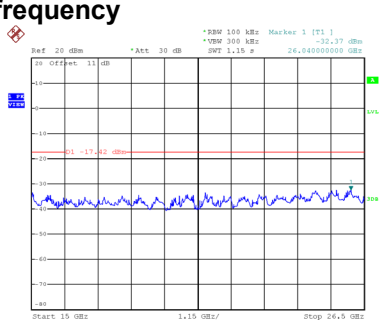
CH01 – 10th Harmonic of the fundamental frequency



Date: 31.MAY.2022 14:16:20



Date: 31.MAY.2022 14:16:28



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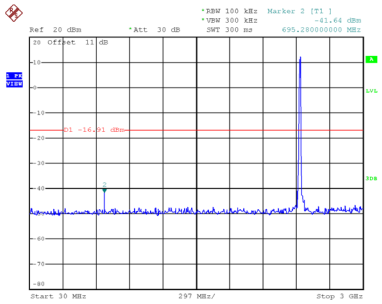
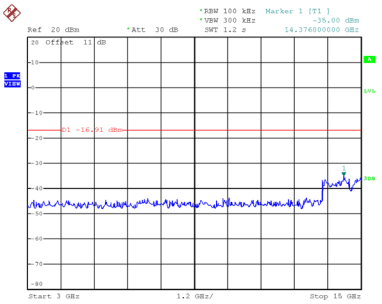
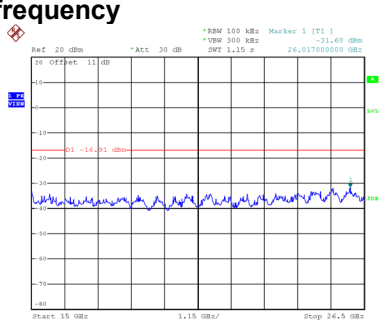
CH06 – 10th Harmonic of the fundamental frequency



Date: 31.MAY.2022 14:18:11

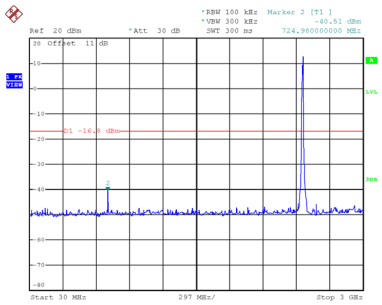


Date: 31.MAY.2022 14:18:18

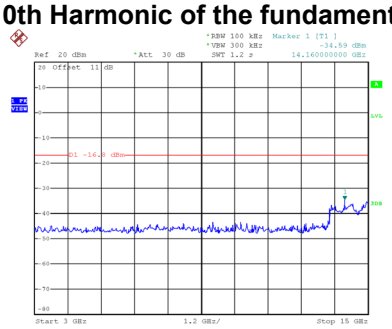


Date: 31.MAY.2022 14:18:26

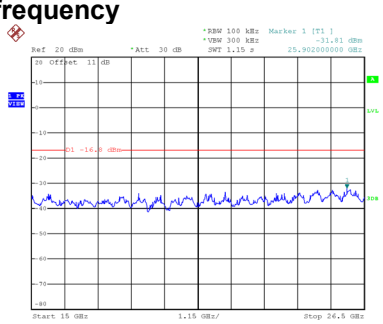
CH11 – 10th Harmonic of the fundamental frequency



Date: 31.MAY.2022 14:18:58



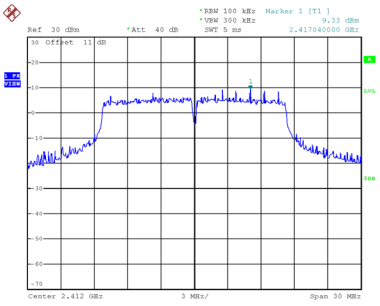
Date: 31.MAY.2022 14:19:06



Date: 31.MAY.2022 14:19:13

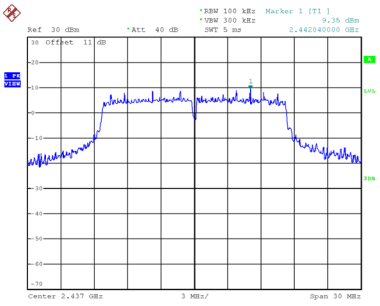
Test Mode	TX G Mode

Reference Level-CH01



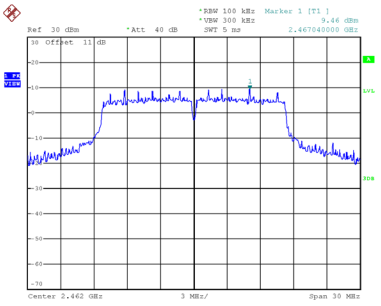
Date: 31.MAY.2022 13:24:30

Reference Level-CH06



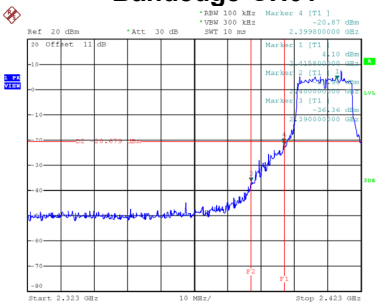
Date: 31.MAY.2022 13:24:54

Reference Level-CH11



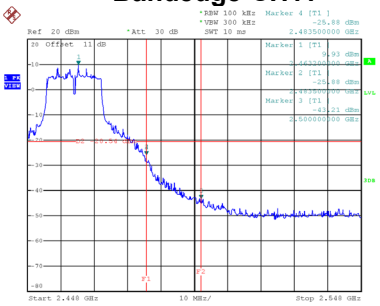
Date: 31.MAY.2022 13:25:17

Bandedge-CH01



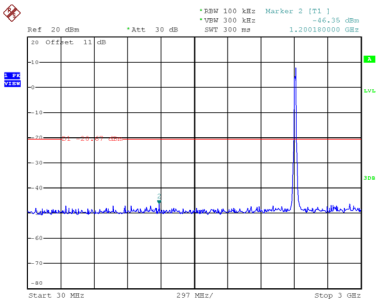
Date: 7.JUN.2022 17:16:56

Bandedge-CH11

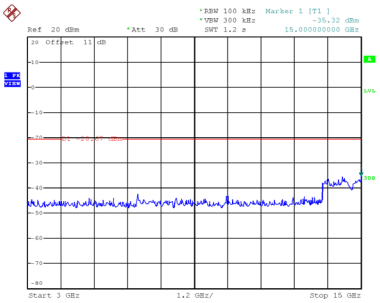


Date: 31.MAY.2022 13:57:37

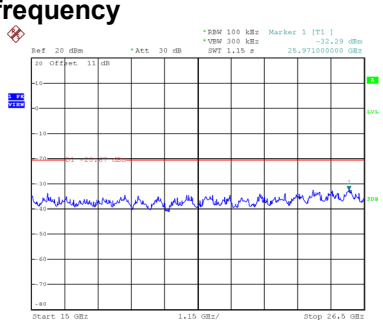
CH01 – 10th Harmonic of the fundamental frequency



Date: 7.JUN.2022 17:18:21

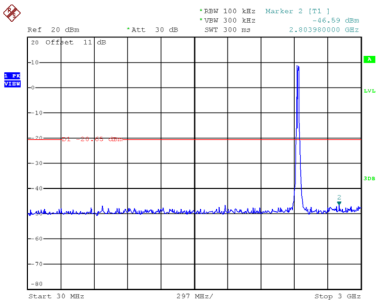


Date: 7.JUN.2022 17:18:29



Date: 7.JUN.2022 17:18:37

CH06 – 10th Harmonic of the fundamental frequency



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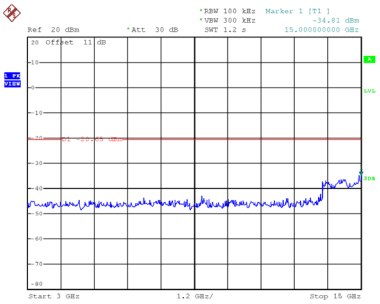

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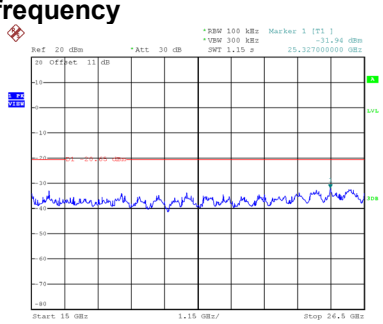
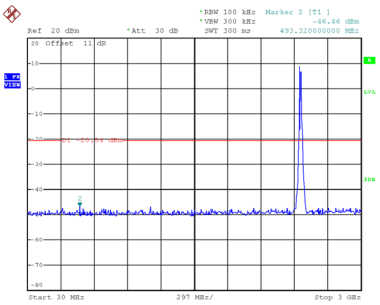


Date: 31.MAY.2022 14:22:00

CH11 – 10th Harmonic of the fundamental frequency



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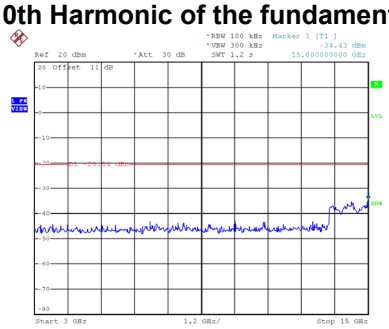
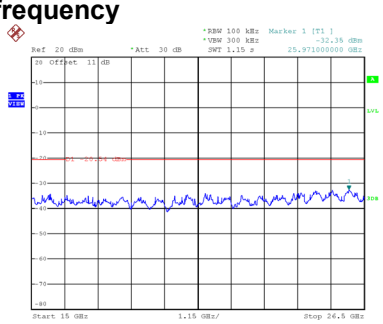


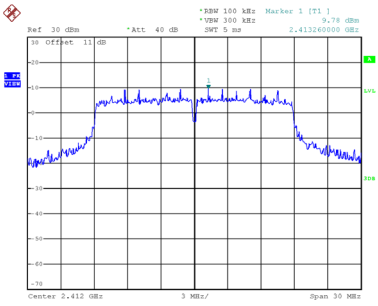
Date: 31.MAY.2022 14:22:37



Date: 31.MAY.2022 14:22:44

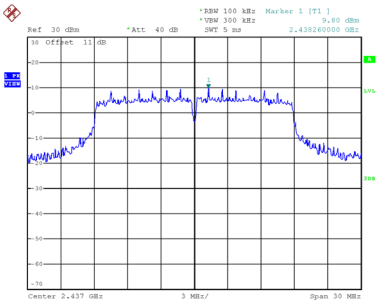
Test Mode	TX N(HT20) Mode

Reference Level-CH01



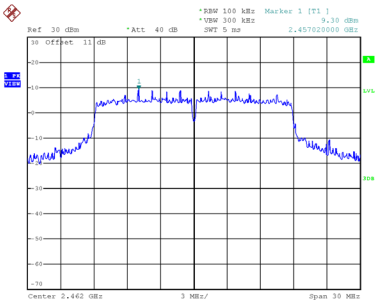
Date: 31.MAY.2022 13:25:44

Reference Level-CH06



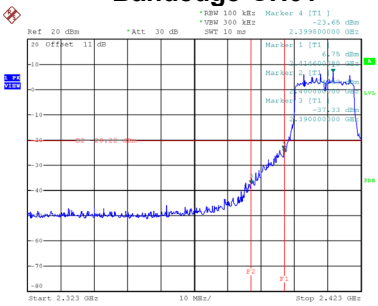
Date: 31.MAY.2022 13:26:10

Reference Level-CH11



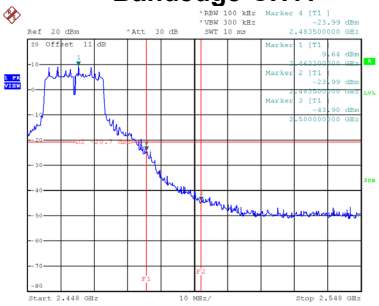
Date: 31.MAY.2022 13:26:32

Bandedge-CH01



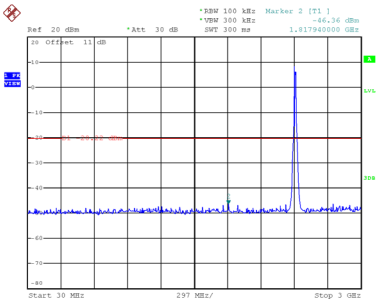
Date: 31.MAY.2022 14:01:43

Bandedge-CH11

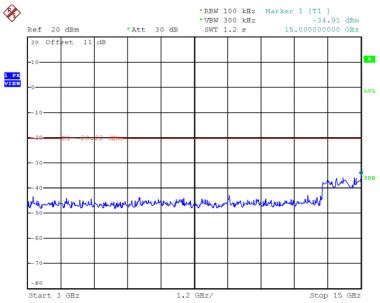


Date: 31.MAY.2022 14:06:08

CH01 – 10th Harmonic of the fundamental frequency



Date: 31.MAY.2022 14:23:14



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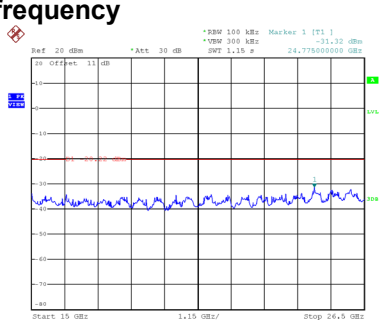
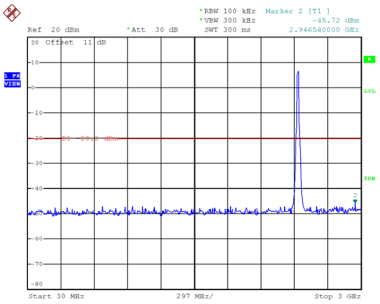
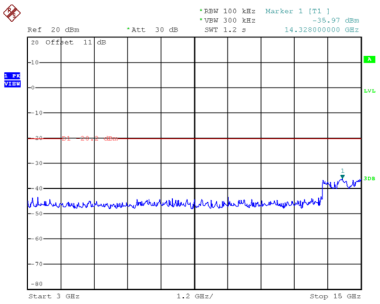


Date: 31.MAY.2022 14:23:29

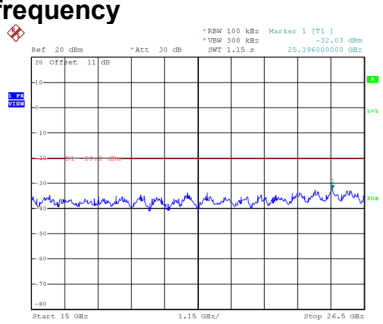
CH06 – 10th Harmonic of the fundamental frequency



Date: 31.MAY.2022 14:23:52



Date: 31.MAY.2022 14:24:00



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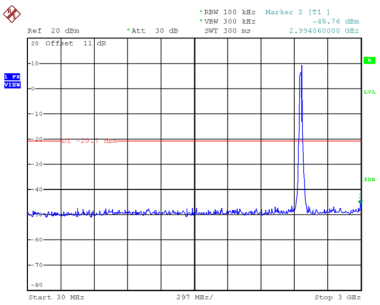
CH11 – 10th Harmonic of the fundamental frequency



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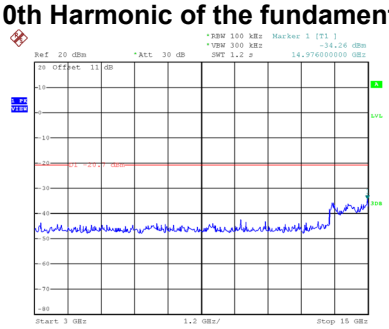

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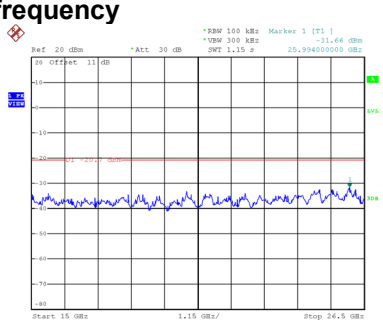


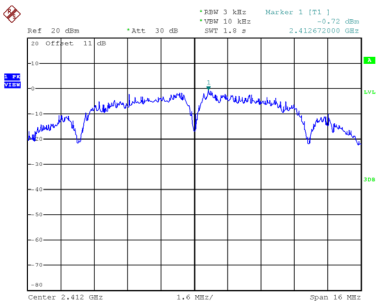
Date: 31.MAY.2022 14:24:50

APPENDIX H - POWER SPECTRAL DENSITY

Test Mode	TX B Mode

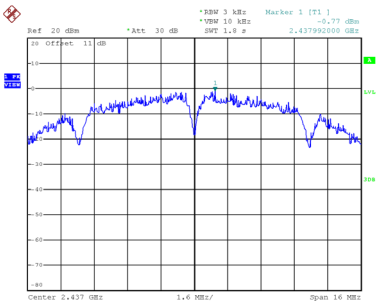
Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
01	2412	-0.72	8.00	Complies
06	2437	-0.77	8.00	Complies
11	2462	-0.61	8.00	Complies

CH01



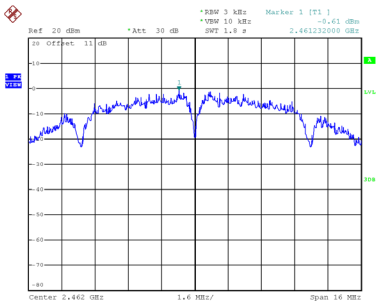
Date: 31.MAY.2022 13:07:54

CH06



Date: 31.MAY.2022 13:08:41

CH11

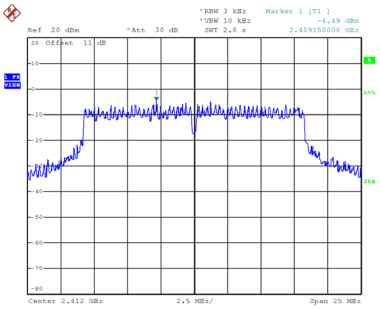


Date: 31.MAY.2022 13:09:19

Test Mode	TX G Mode

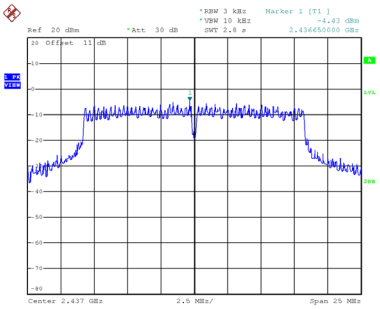
Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
01	2412	-4.49	8.00	Complies
06	2437	-4.43	8.00	Complies
11	2462	-4.84	8.00	Complies

CH01



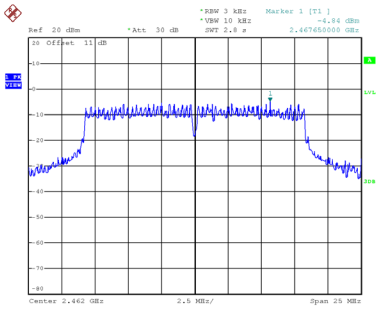
Date: 31.MAY.2022 13:10:58

CH06



Date: 31.MAY.2022 13:12:01

CH11

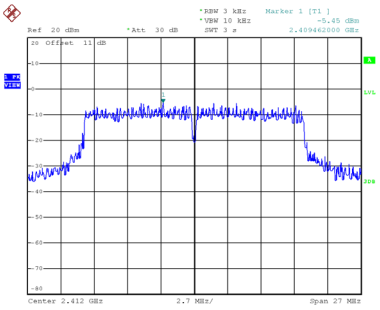


Date: 31.MAY.2022 13:12:46

Test Mode	TX N(HT20) Mode

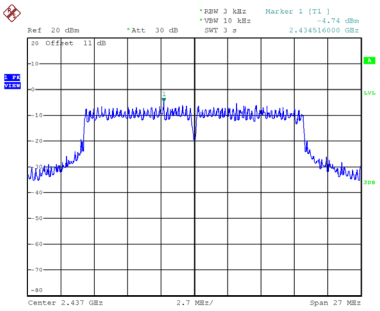
Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
01	2412	-5.45	8.00	Complies
06	2437	-4.74	8.00	Complies
11	2462	-5.07	8.00	Complies

CH01



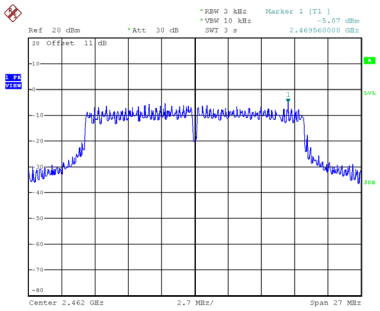
Date: 31.MAY.2022 13:14:04

CH06



Date: 31.MAY.2022 13:15:12

CH11



Date: 31.MAY.2022 13:15:49

End of Test Report