FCC Radio Test Report

FCC ID: 2AWWI-ISKTG84

This report concerns: Original Grant

Project No.	:	2107C140
Equipment	:	GPON Home Gateway
Brand Name	:	N/A
Test Model	:	INNBOXG84
Series Model	:	N/A
Applicant	:	ISKRATEL,D.O.O., Kranj
Address	:	Ljubljanska cesta 24a, Kranj 4000, Slovenia
Manufacturer	:	ISKRATEL,D.O.O., Kranj
Address	:	Ljubljanska cesta 24a, Kranj 4000, Slovenia
Date of Receipt	:	Jul. 21, 2021
Date of Test	:	Aug. 02, 2021 ~ Sep. 02, 2021
Issued Date	:	Sep. 23, 2021
Report Version	:	R00
Test Sample	:	Engineering Sample No.: DG20210730110
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

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

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TESTING CERT #5123.02

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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 Version	Description	Issued Date
R00	Original Issue.	Sep. 23, 2021

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

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

Note:

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

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

1.1 TEST FACILITY

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

1.2 MEASUREMENT UNCERTAINTY

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

A. AC power line conducted emissions test:

Test Site	Method	Measurement Frequency Range	U, (dB)
DG-C02	CISPR	150kHz ~ 30MHz	2.68

B. Radiated emissions test:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U, (dB)
DG-CB03	CISPR	9kHz ~ 30MHz	-	3.02
		30MHz ~ 200MHz	V	4.36
		30MHz ~ 200MHz	H	3.32
		200MHz ~ 1,000MHz	V	4.08
		200MHz ~ 1,000MHz	H	3.96
		1GHz ~ 6GHz	-	3.80
		6GHz ~ 18GHz	-	4.82
		18GHz ~ 26.5GHz	-	3.62
		26.5GHz ~ 40GHz	-	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	25°C	53%	AC 120V/60Hz	Laughing Zhang
Radiated Emissions-9kHz to 30 MHz	26°C	52%	AC 120V/60Hz	Hayden Chen
Radiated Emissions-30MHz to 1000MHz	26°C	52%	AC 120V/60Hz	Hayden Chen
Radiated Emissions-Above 1000MHz	26°C	52%	AC 120V/60Hz	Jakyri Wen
Bandwidth	26°C	51%	DC 12V	Grani Zhou
Maximum Output Power	26°C	51%	DC 12V	Grani Zhou
Conducted Spurious Emissions	26°C	51%	DC 12V	Grani Zhou
Power Spectral Density	26°C	51%	DC 12V	Grani Zhou

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	GPON Home Gateway
Brand Name	N/A
Test Model	INNBOXG84
Series Model	N/A
Model Difference(s)	N/A
Power Source	DC voltage supplied from AC adapter. Model: S24B72-120A200-0K
Power Rating	I/P: 100-240V~ 50/60Hz 0.8A O/P: 12.0V ⎓ 2.0A
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 300 Mbps
Maximum Output Power	IEEE 802.11n(HT20): 24.42 dBm (0.2767 W)

Note:

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

2. Channel List:

CH01 - CH11 for IEEE 802.11b, IEEE 802.11g, IEEE 802.11n(HT20) CH03 - CH09 for IEEE 802.11n(HT40)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	04	2427	07	2442	10	2457
02	2417	05	2432	08	2447	11	2462
03	2422	06	2437	09	2452		

3. Antenna Specification:

Ant.	Brand	P/N	Antenna Type	Connector	Gain (dBi)
1	RF link	RF11C03055S	PCB	N/A	2.61
2	RF link	RF11C03056S	PCB	N/A	3.41

Note:

1) This EUT supports CDD, and all antenna gains are not equal, Directional gain=10log[$(10^{G1/20}+10^{G2/20}+...10^{GN/20})^2$/N]dBi, that is Directional gain=10log[$(10^{2.61/20}+10^{3.41/20})^2$/2]dBi =6.03. So, the output power limit is 30-(6.03-6)=29.97, the power spectral density limit is 8-(6.03-6)=7.97.
2) The antenna gain is provided by the manufacturer.

4. Table for Antenna Configuration:

Operating Mode / TX Mode	2TX
IEEE 802.11b	V(Ant. 1 + Ant. 2)
IEEE 802.11g	V(Ant. 1 + Ant. 2)
IEEE 802.11n(HT20)	V(Ant. 1 + Ant. 2)
IEEE 802.11n(HT40)	V(Ant. 1 + Ant. 2)

2.2 DESCRIPTION OF TEST MODES

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

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

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

AC power line conducted emissions test	
Final Test Mode	Description
Mode 5	TX N(HT20) Mode Channel 06

Radiated emissions test - Below 1GHz	
Final Test Mode	Description
Mode 5	TX N(HT20) Mode Channel 06

Radiated emissions test- Above 1GHz	
Final Test Mode	Description
Mode 1	TX B Mode Channel 01/06/11
Mode 2	TX G Mode Channel 01/06/11
Mode 3	TX N(HT20) Mode Channel 01/06/11
Mode 4	TX N(HT40) Mode Channel 03/06/09

Conducted test	
Final Test Mode	Description
Mode 1	TX B Mode Channel 01/06/11
Mode 2	TX G Mode Channel 01/06/11
Mode 3	TX N(HT20) Mode Channel 01/06/11
Mode 4	TX N(HT40) Mode Channel 03/06/09

NOTE:
(1) All the bit rate of transmitter have been tested and found the lowest rate is found to be the worst case and recorded.
(2) For AC power line conducted emissions and radiated emission below 1 GHz test, the TX 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.

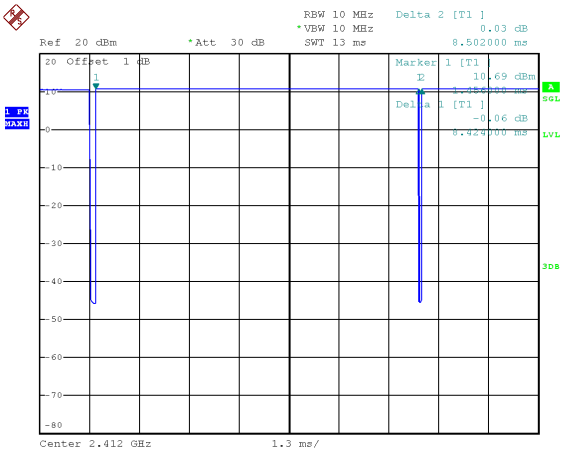
2.3 PARAMETERS OF TEST SOFTWARE

Test Software Version	QATool		
Frequency (MHz)	2412	2437	2462
IEEE 802.11b	1D	1D	27
IEEE 802.11g	1B	2D	29
IEEE 802.11n(HT20)	1B	2D	26
Frequency (MHz)	2422	2437	2452
IEEE 802.11n(HT40)	15	1D	1C

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.

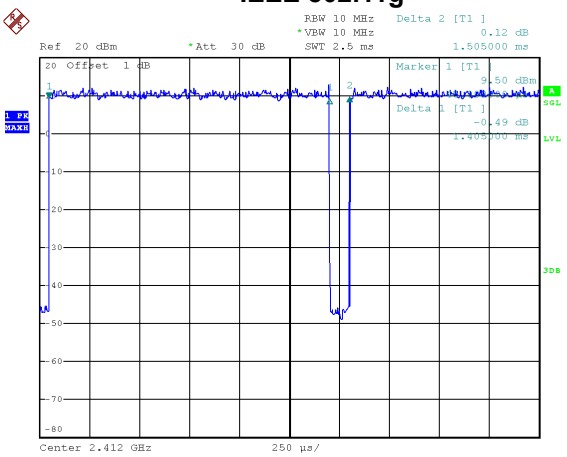
IEEE 802.11b



Date: 7.AUG.2021 14:43:56

Duty cycle = 8.424 ms / 8.502 ms = 99.08%
Duty Factor = 10 log(1/Duty cycle) = 0.00

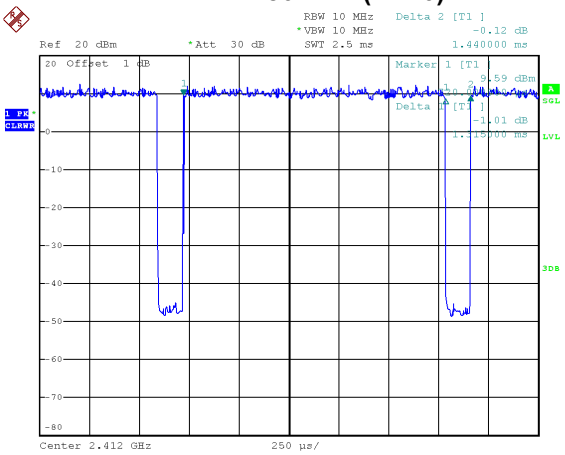
IEEE 802.11g



Date: 7.AUG.2021 14:44:17

Duty cycle = 1.405 ms / 1.505 ms = 93.36%
Duty Factor = 10 log(1/Duty cycle) = 0.30

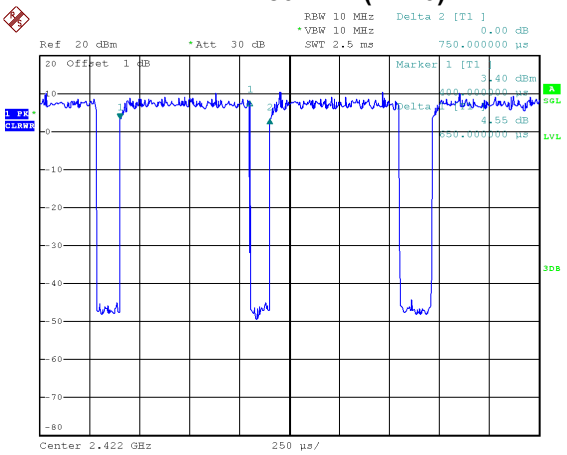
IEEE 802.11n(HT20)



Date: 7.AUG.2021 14:47:06

Duty cycle = 1.315 ms / 1.440 ms = 91.32%
Duty Factor = 10 log(1/Duty cycle) = 0.39

IEEE 802.11n(HT40)



Date: 7.AUG.2021 14:49:15

Duty cycle = 0.650 ms / 0.750 ms = 86.67%
Duty Factor = 10 log(1/Duty cycle) = 0.62

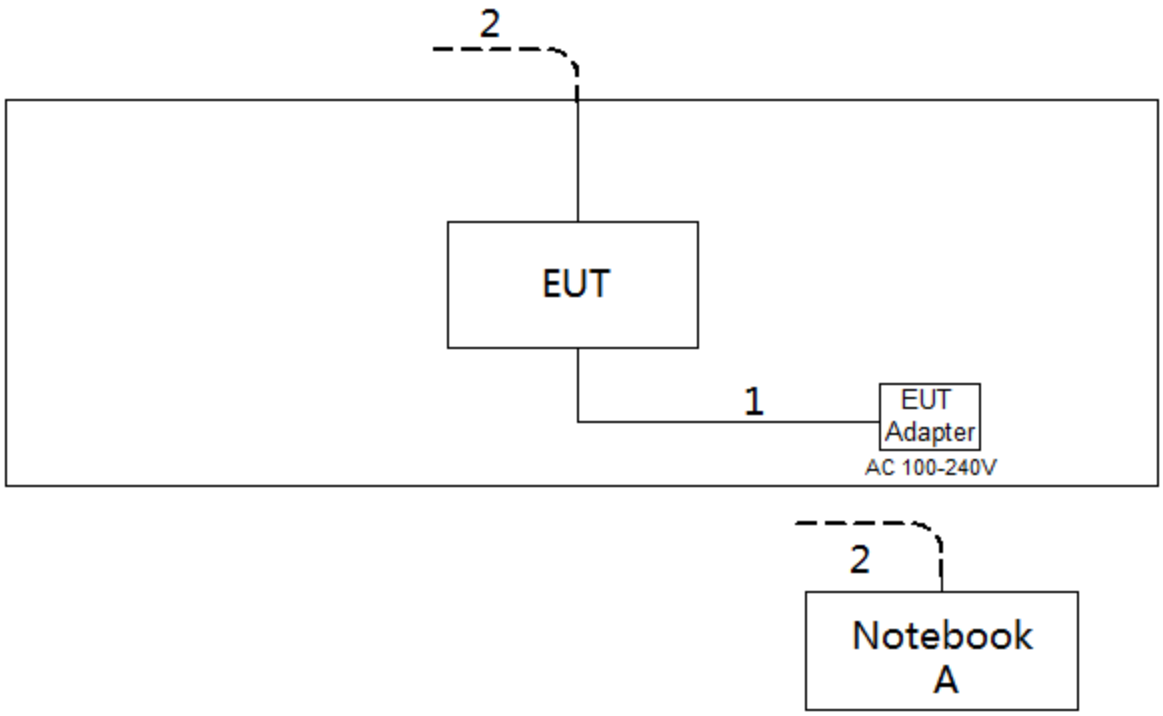
NOTE:
For IEEE 802.11b:
For radiated emissions frequency above 1 GHz, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 1 kHz.

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 712 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 760 Hz.

For IEEE 802.11n(HT40):
For radiated emissions frequency above 1 GHz, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 1538 Hz.

2.5 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



2.6 SUPPORT UNITS

Item	Equipment	Brand	Model No.	Series No.
A	Notebook	Dell	Inspiron 15-7559	N/A

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	DC Cable	NO	NO	1.5m
2	RJ45 Cable	NO	NO	10m

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.

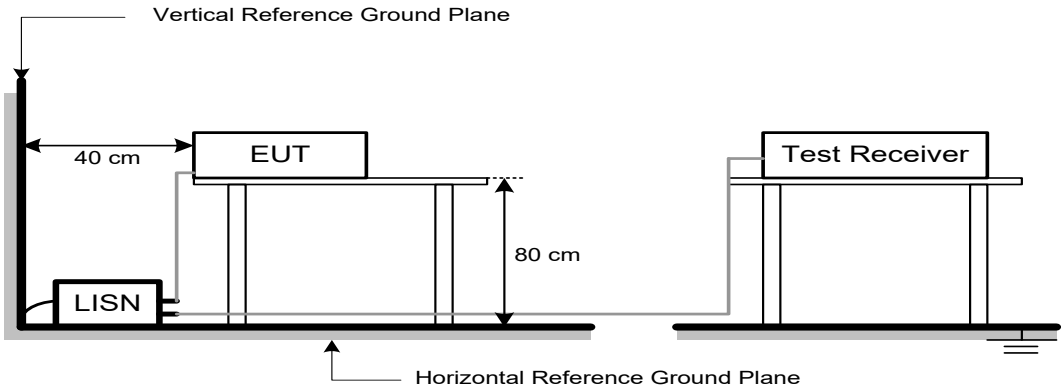
The following table is the setting of the receiver:

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

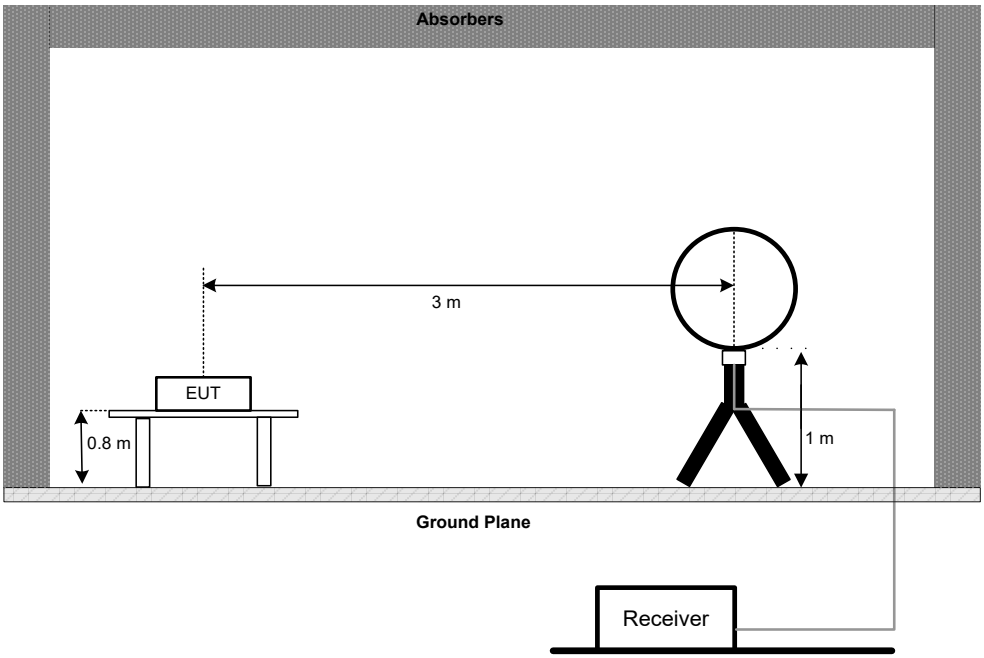
Receiver Parameters	Setting
Start ~ Stop Frequency	9 kHz~90 kHz for PK/AVG detector
Start ~ Stop Frequency	90 kHz~110 kHz for QP detector
Start ~ Stop Frequency	110 kHz~490 kHz for PK/AVG detector
Start ~ Stop Frequency	490 kHz~30 MHz for QP detector
Start ~ Stop Frequency	30 MHz~1000 MHz for QP detector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

4.3 DEVIATION FROM TEST STANDARD

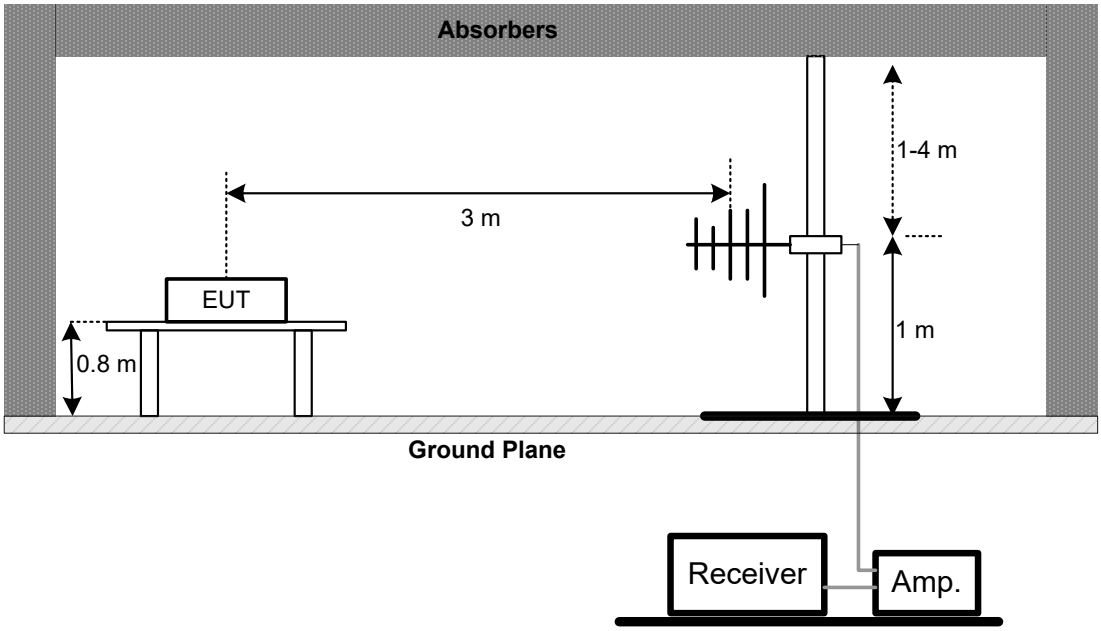
No deviation.

4.4 TEST SETUP

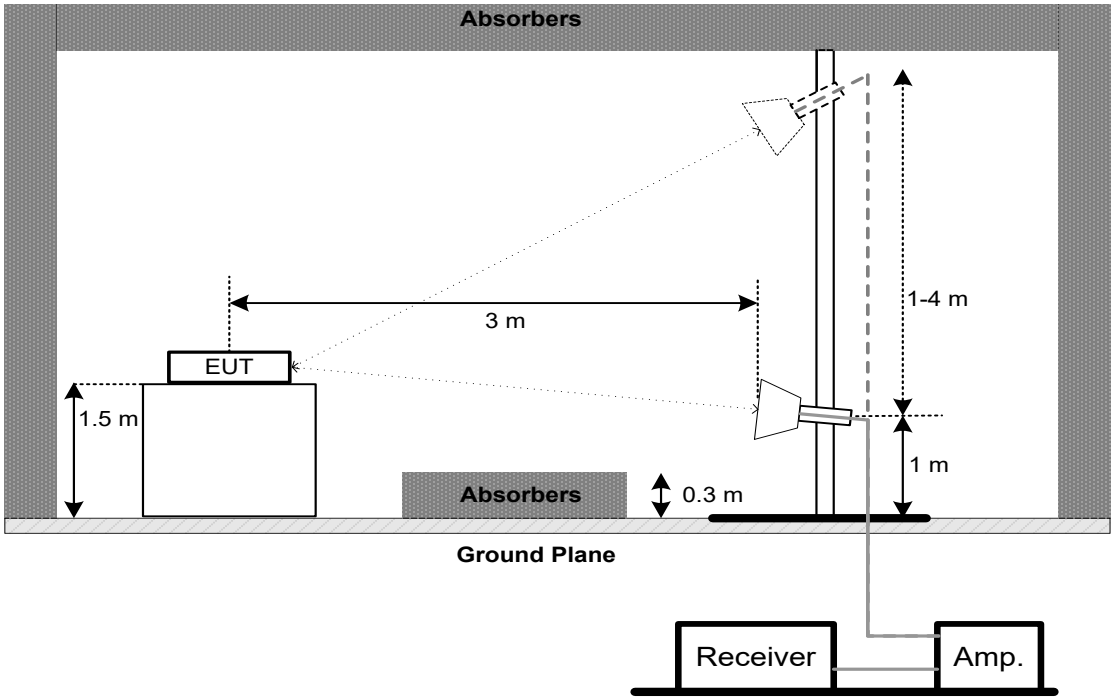
9 kHz to 30 MHz



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

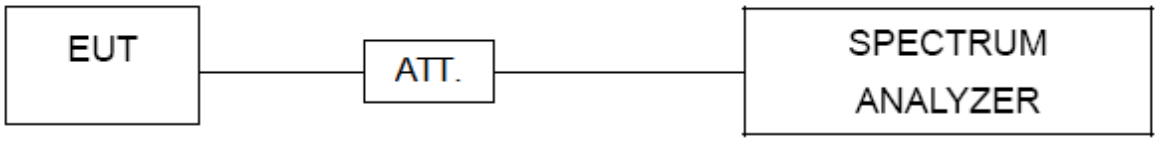
For 99% Emission Bandwidth:

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

5.3 DEVIATION FROM STANDARD

No deviation.

5.4 TEST SETUP



5.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

5.6 TEST RESULTS

Please refer to the APPENDIX E.

6. MAXIMUM OUTPUT POWER

6.1 LIMIT

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

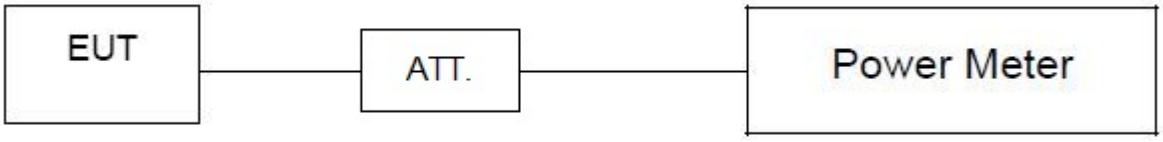
6.2 TEST PROCEDURE

a. The EUT was directly connected to the power meter 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 and FCC KDB 662911 D01 v02r01 Multiple Transmitter Output.

6.3 DEVIATION FROM STANDARD

No deviation.

6.4 TEST SETUP



6.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

6.6 TEST RESULTS

Please refer to the APPENDIX F.

7. CONDUCTED SPURIOUS EMISSIONS

7.1 LIMIT

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

7.2 TEST PROCEDURE

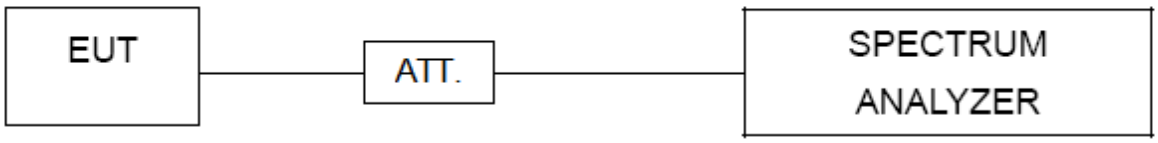
a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
b. The following table is the setting of the spectrum analyzer:

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

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



7.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

7.6 TEST RESULTS

Please refer to the APPENDIX G.

8. POWER SPECTRAL DENSITY

8.1 LIMIT

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

8.2 TEST PROCEDURE

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

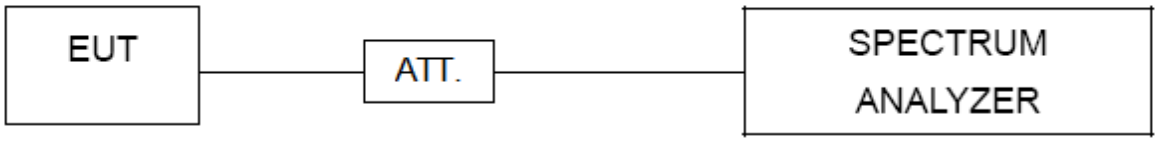
b. The following table is the setting of the spectrum analyzer:

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

8.3 DEVIATION FROM STANDARD

No deviation.

8.4 TEST SETUP



8.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

8.6 TEST RESULTS

Please refer to the APPENDIX H.

9. MEASUREMENT INSTRUMENTS LIST

AC Power Line Conducted Emissions					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	EMI Test Receiver	R&S	ESCI	100382	Feb. 28, 2022
2	LISN	EMCO	3816/2	52765	Feb. 27, 2022
3	TWO-LINE V-NETWORK	R&S	ENV216	101447	Feb. 27, 2022
4	50Ω Terminator	SHX	TF5-3	15041305	Feb. 27, 2022
5	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
6	Cable	N/A	RG223	12m	Mar. 09, 2022
7	643 Shield Room	ETS	6*4*3m	N/A	N/A

Radiated Emissions - 9 kHz to 30 MHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Loop Antenna	EM	EM-6876-1	230	Apr. 28, 2022
2	Cable	N/A	RG 213/U	N/A	May 27, 2022
3	EMI Test Receiver	R&S	ESCI	100895	Feb. 27, 2022
4	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
5	966 Chambe Room	RM	9*6*6m	N/A	Jul. 24, 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. 15, 2022
2	Amplifier	HP	8447D	2944A08742	Feb. 28, 2022
3	Receiver	Agilent	N9038A	MY52130039	Mar. 19, 2022
4	Cable	emci	LMR-400(30MHz-1 GHz)(8m+5m)	N/A	May 20, 2022
5	Controller	CT	SC100	N/A	N/A
6	Controller	MF	MF-7802	MF780208416	N/A
7	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
8	966 Chambe Room	RM	9*6*6m	N/A	Jul. 24, 2022

Radiated Emissions - Above 1 GHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Double Ridged Guide Antenna	ETS	3115	75789	May 10, 2022
2	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Jun. 30, 2022
3	Amplifier	Agilent	8449B	3008A02584	Jul. 10, 2022
4	Microwave Preamplifier With Adaptor	EMC INSTRUMENT	EMC2654045	980039 & HA01	Feb. 28, 2022
5	Receiver	Agilent	N9038A	MY52130039	Mar. 19, 2022
6	Controller	CT	SC100	N/A	N/A
7	Controller	MF	MF-7802	MF780208416	N/A
8	Cable	N/A	EMC104-SM-SM-6 000	N/A	Oct. 16, 2021
9	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
10	Filter	STI	STI15-9912	N/A	Jul. 10, 2022
11	966 Chambe Room	RM	9*6*6m	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	Feb. 07, 2022
3	RF Cable	Tongkaichuan	N/A	N/A	N/A
4	DC Block	Mini	N/A	N/A	N/A

Maximum Output Power					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Peak Power Analyzer	Keysight	8990B	MY51000506	Jul. 10, 2022
2	Wideband power sensor	Keysight	N1923A	MY58310004	Jul. 10, 2022
3	Attenuator	WOKEN	6SM3502	VAS1214NL	Feb. 07, 2022
4	RF Cable	Tongkaichuan	N/A	N/A	N/A

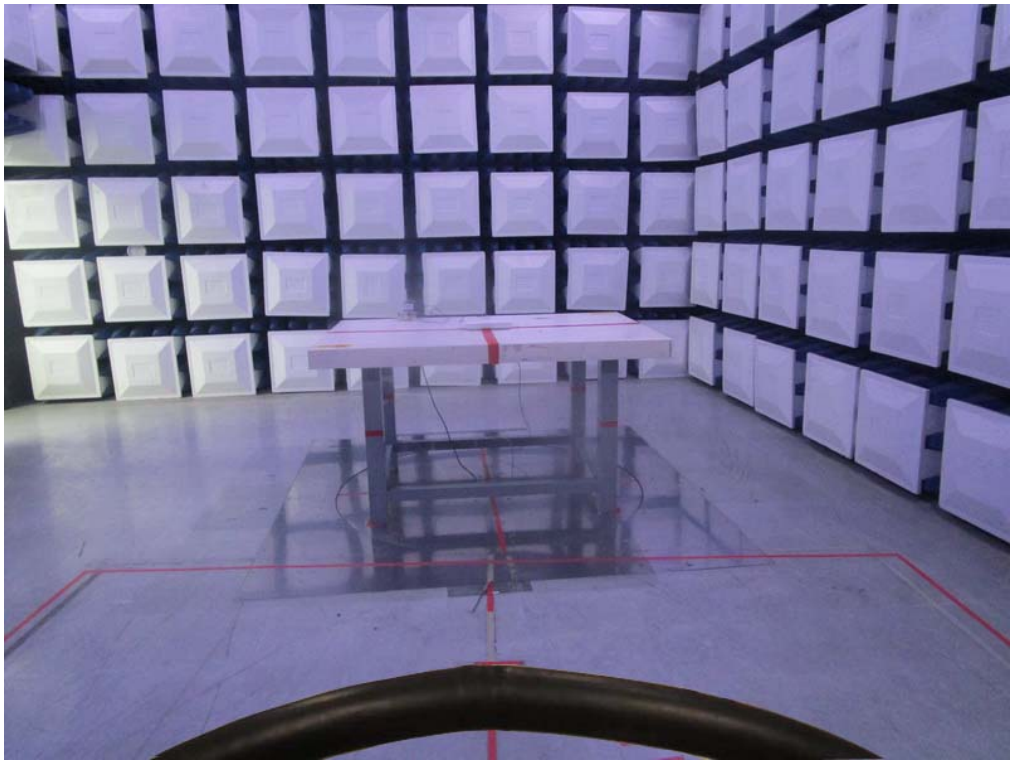
Remark: ”N/A” denotes no model name, serial no. or calibration specified.
All calibration period of equipment list is one year.

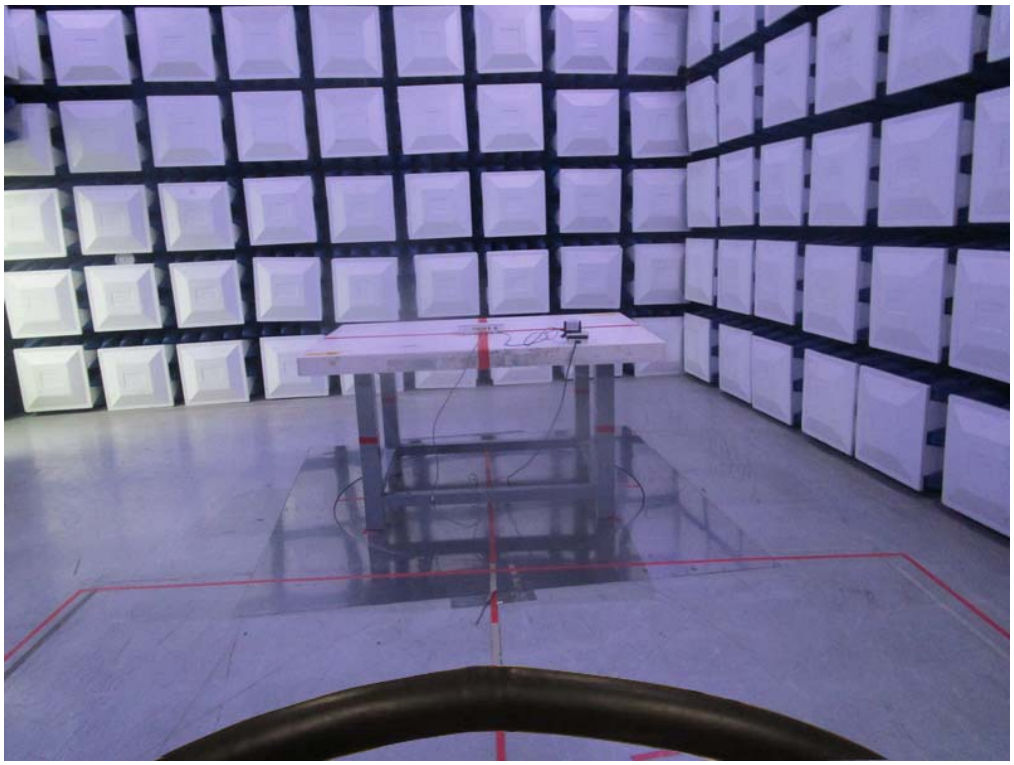
10. EUT TEST PHOTO

AC Power Line Conducted Emissions Test Photos

Radiated Emissions Test Photos

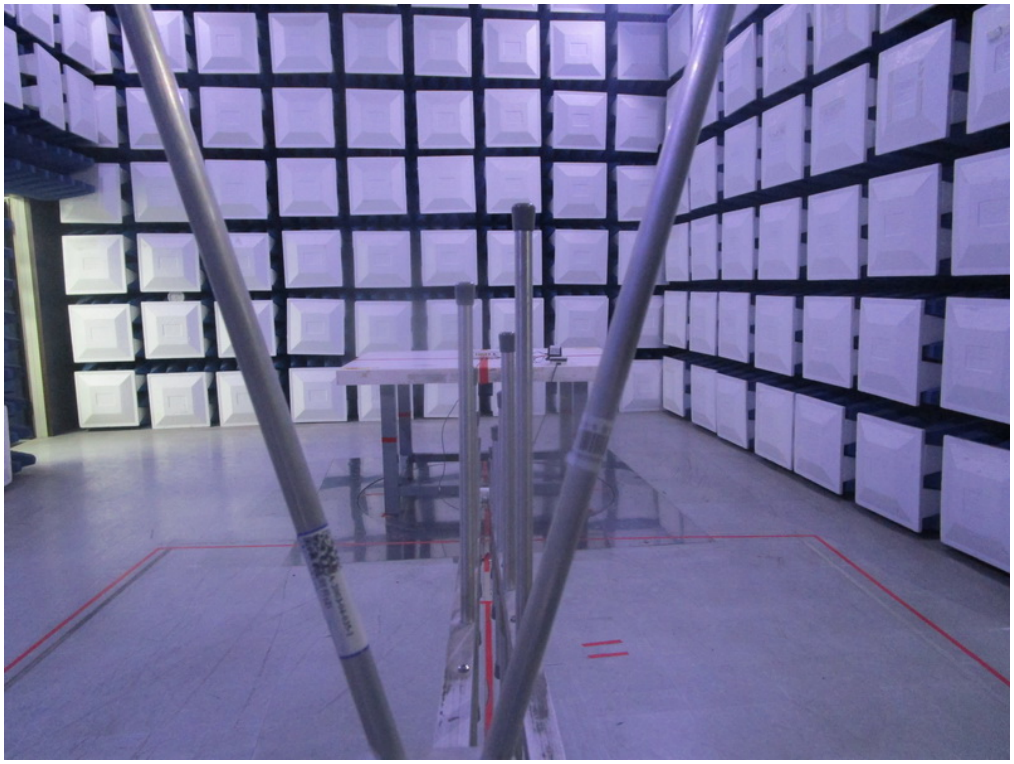
9 kHz to 30 MHz

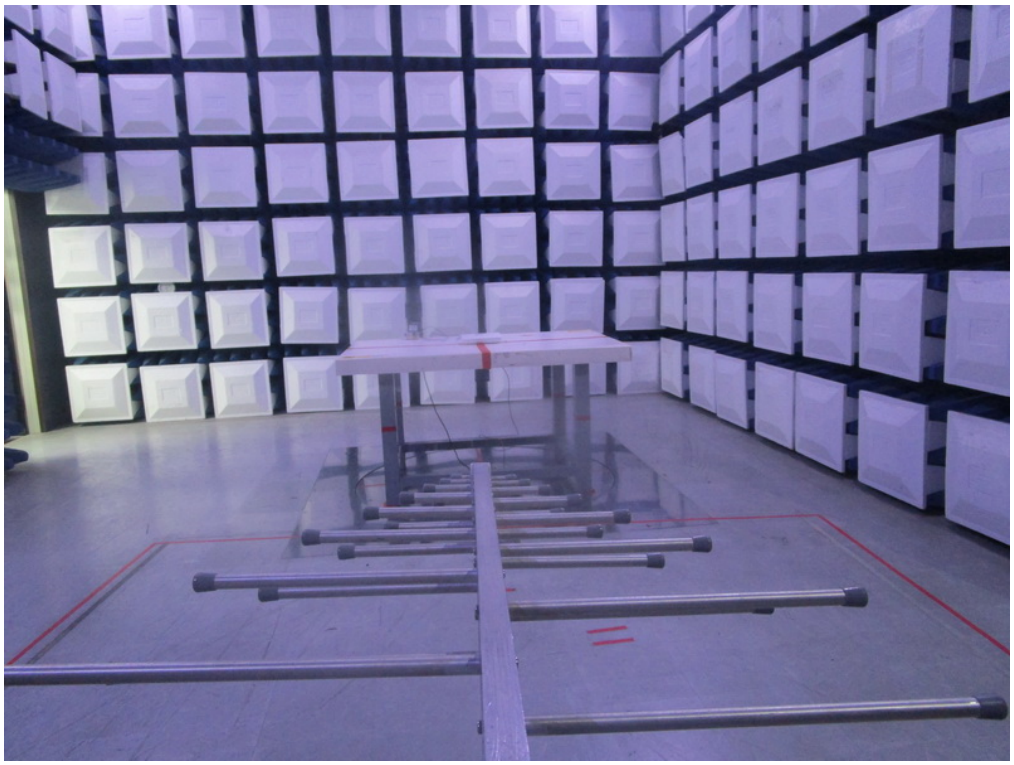




Radiated Emissions Test Photos

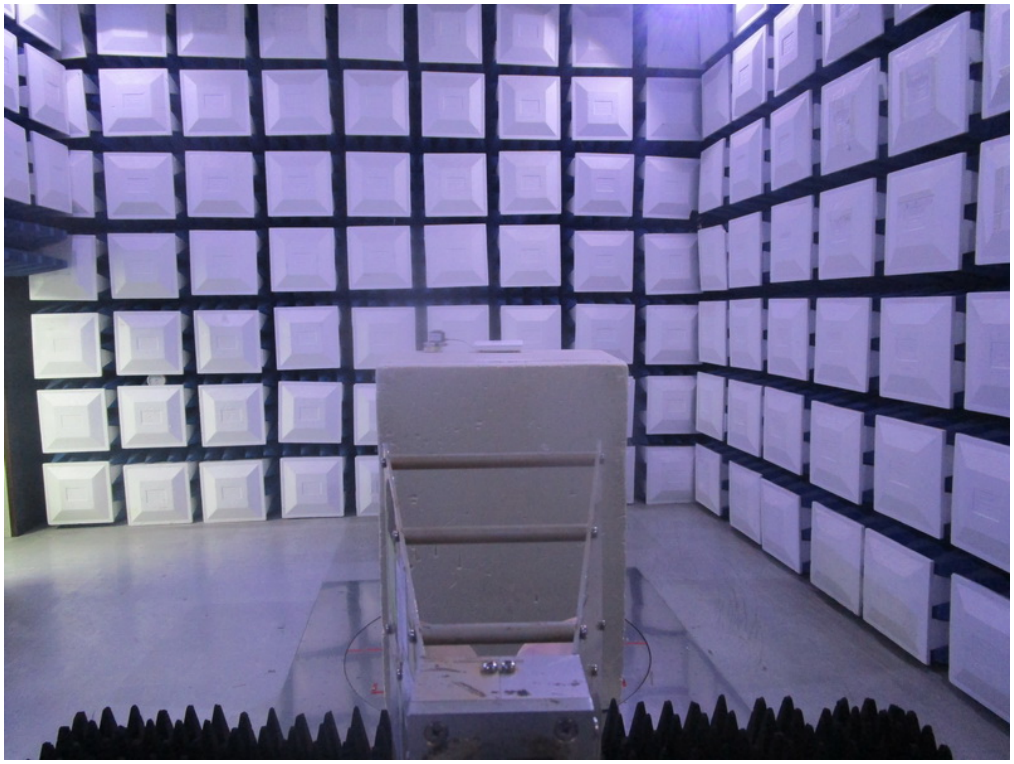
30 MHz to 1 GHz

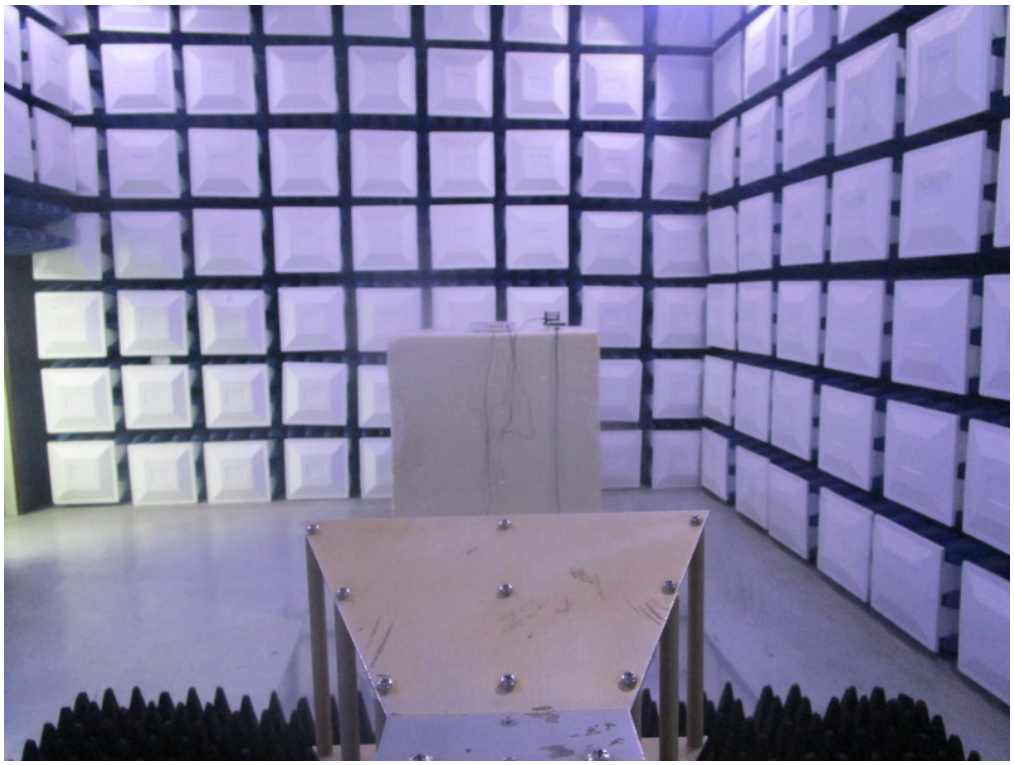




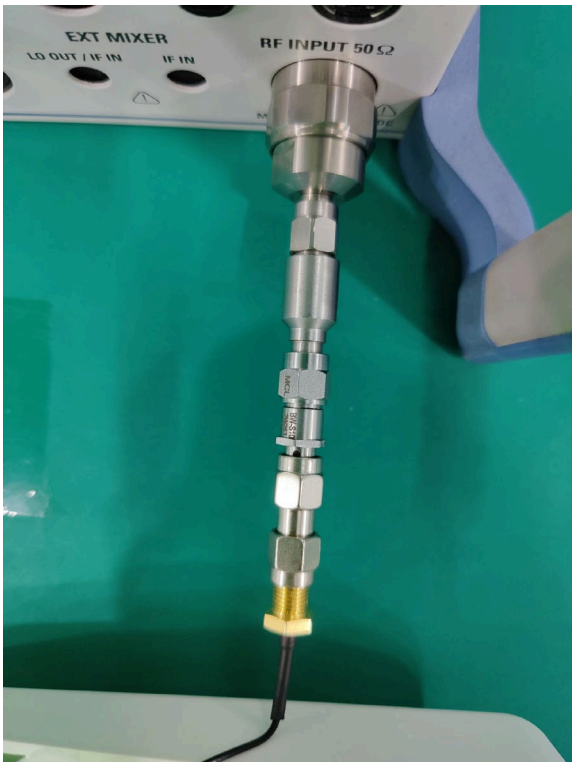
Radiated Emissions Test Photos

Above 1 GHz



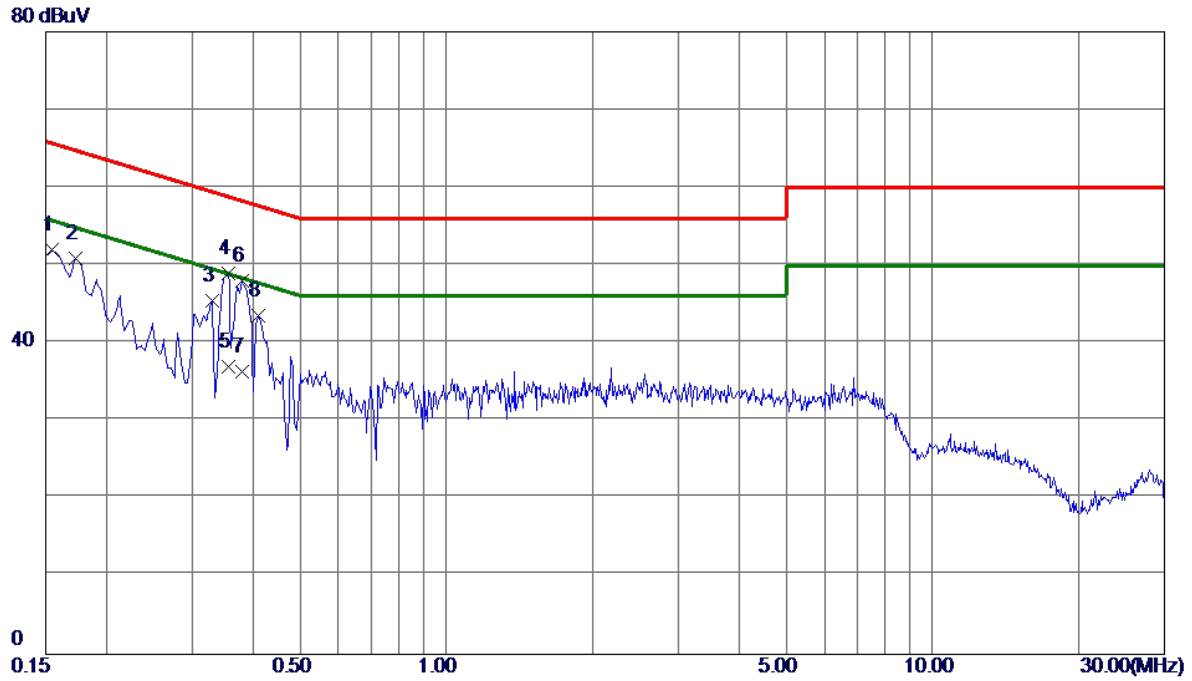


Conducted Test Photos



APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS

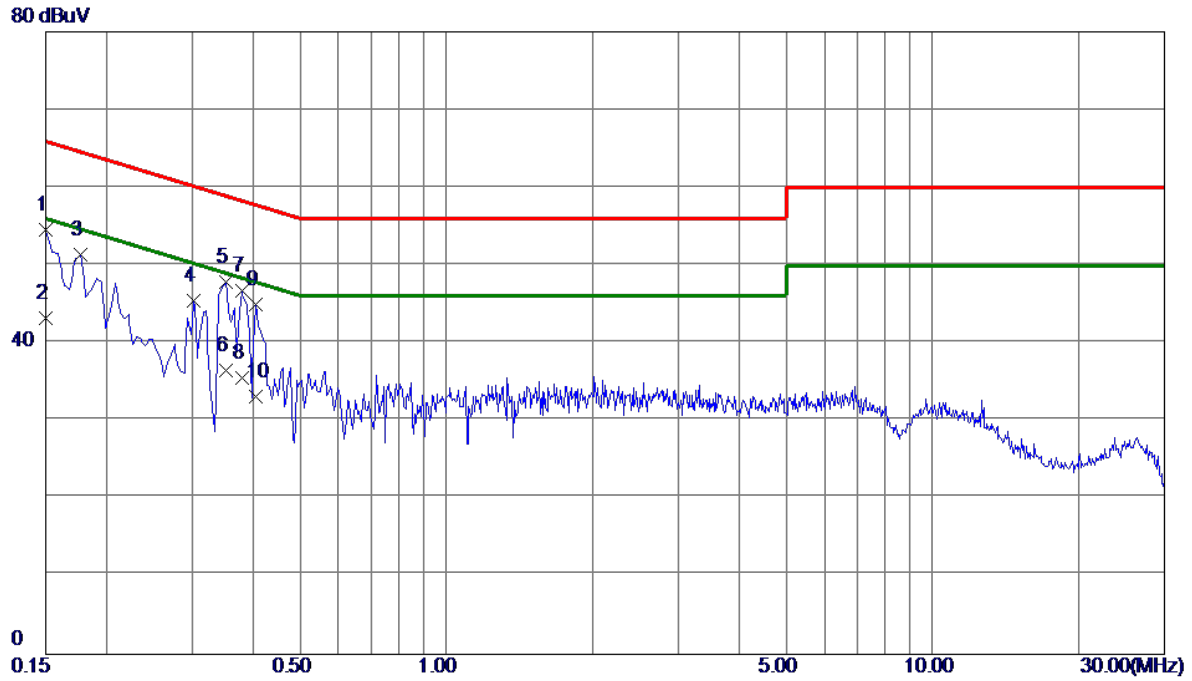
Test Mode	TX N(HT20) Mode Channel 06	Phase	Line



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1545	42.30	9.70	52.00	65.75	-13.75	Peak	
2	0.1725	41.02	9.83	50.85	64.84	-13.99	Peak	
3	0.3300	35.51	9.89	45.40	59.45	-14.05	Peak	
4 *	0.3570	38.98	9.90	48.88	58.80	-9.92	Peak	
5	0.3570	27.10	9.90	37.00	48.80	-11.80	AVG	
6	0.3795	38.10	9.90	48.00	58.29	-10.29	Peak	
7	0.3795	26.40	9.90	36.30	48.29	-11.99	AVG	
8	0.4110	33.58	9.90	43.48	57.63	-14.15	Peak	

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

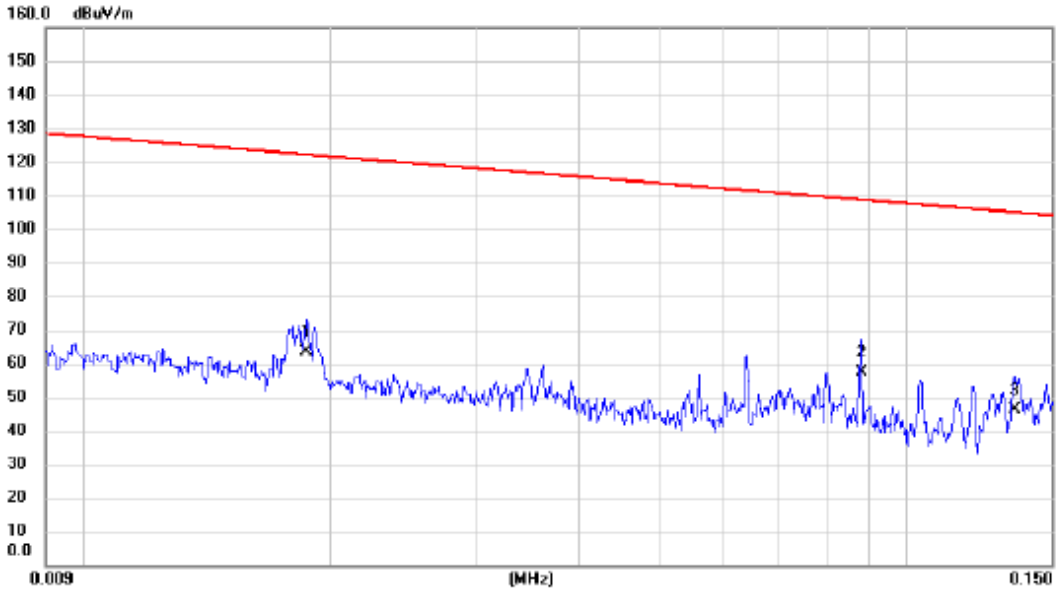


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1500	44.75	9.74	54.49	66.00	-11.51	Peak	
2	0.1500	33.40	9.74	43.14	56.00	-12.86	AVG	
3	0.1770	41.42	9.92	51.34	64.63	-13.29	Peak	
4	0.3030	35.41	10.01	45.42	60.16	-14.74	Peak	
5 *	0.3525	37.73	10.04	47.77	58.90	-11.13	Peak	
6	0.3525	26.50	10.04	36.54	48.90	-12.36	AVG	
7	0.3795	36.60	10.06	46.66	58.29	-11.63	Peak	
8	0.3795	25.40	10.06	35.46	48.29	-12.83	AVG	
9	0.4065	34.95	10.07	45.02	57.72	-12.70	Peak	
10	0.4065	23.10	10.07	33.17	47.72	-14.55	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	Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		0.0187	49.63	13.62	63.25	122.17	-58.92	AVG			
2	*	0.0881	44.86	12.65	57.51	108.71	-51.20	AVG			
3		0.1352	33.64	12.73	46.37	104.99	-58.62	AVG			

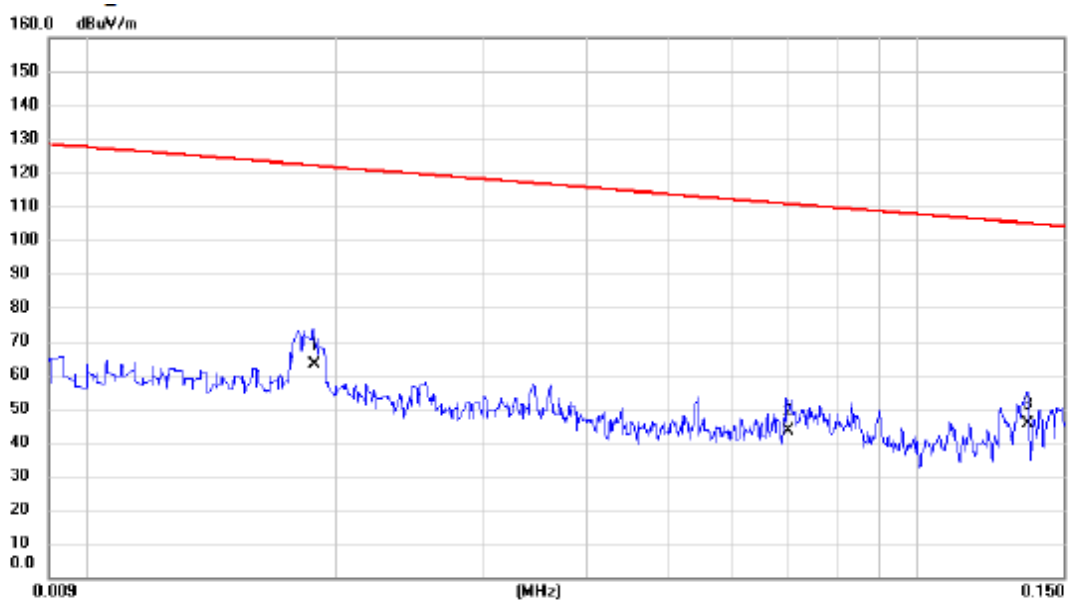
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		0.4305	48.62	12.19	60.81	94.92	-34.11	AVG			
2	*	2.1326	40.31	11.24	51.55	69.54	-17.99	QP			
3		4.3146	36.74	11.00	47.74	69.54	-21.80	QP			

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

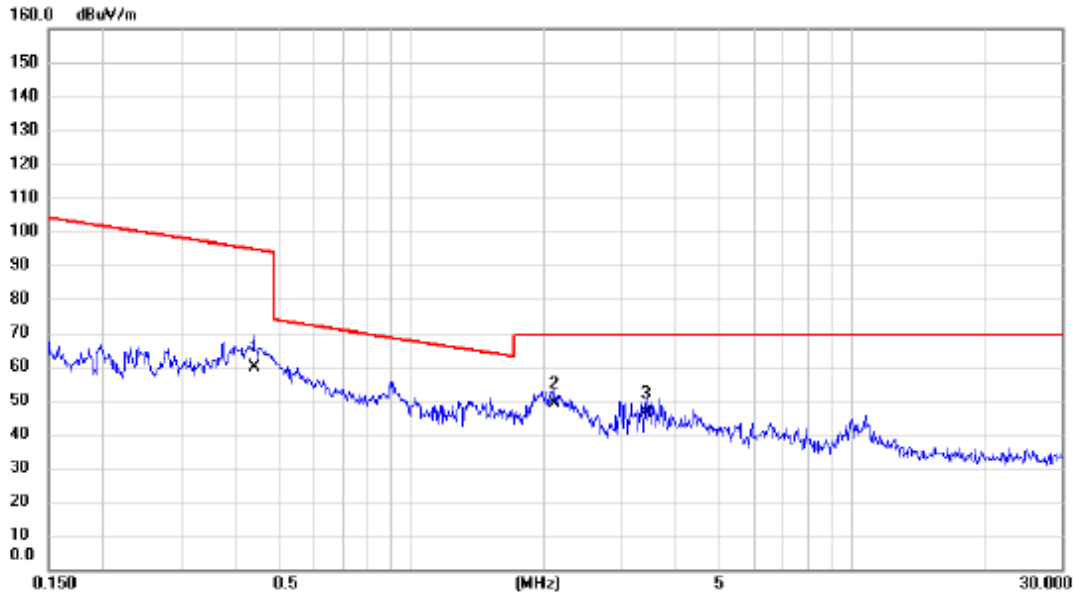
Test Mode	TX N(HT20) Mode Channel 06	Polarization	Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	0.0188	49.26	13.59	62.85	122.12	-59.27	AVG			
2		0.0698	30.78	12.54	43.32	110.73	-67.41	AVG			
3		0.1358	32.54	12.73	45.27	104.95	-59.68	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	Ant 90°

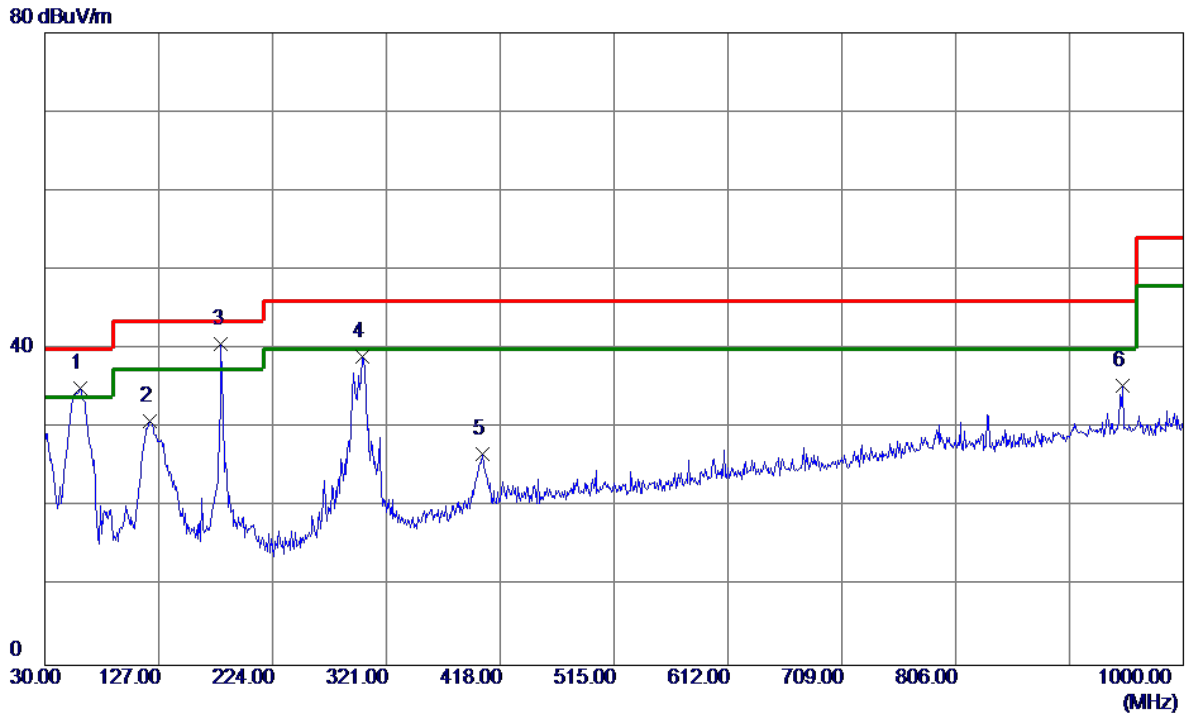


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		0.4397	47.52	12.16	59.68	94.74	-35.06	AVG			
2	*	2.1213	37.68	11.24	48.92	69.54	-20.62	QP			
3		3.4174	35.42	10.87	46.29	69.54	-23.25	QP			

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

APPENDIX C - RADIATED EMISSION - 30 MHZ TO 1000 MHZ

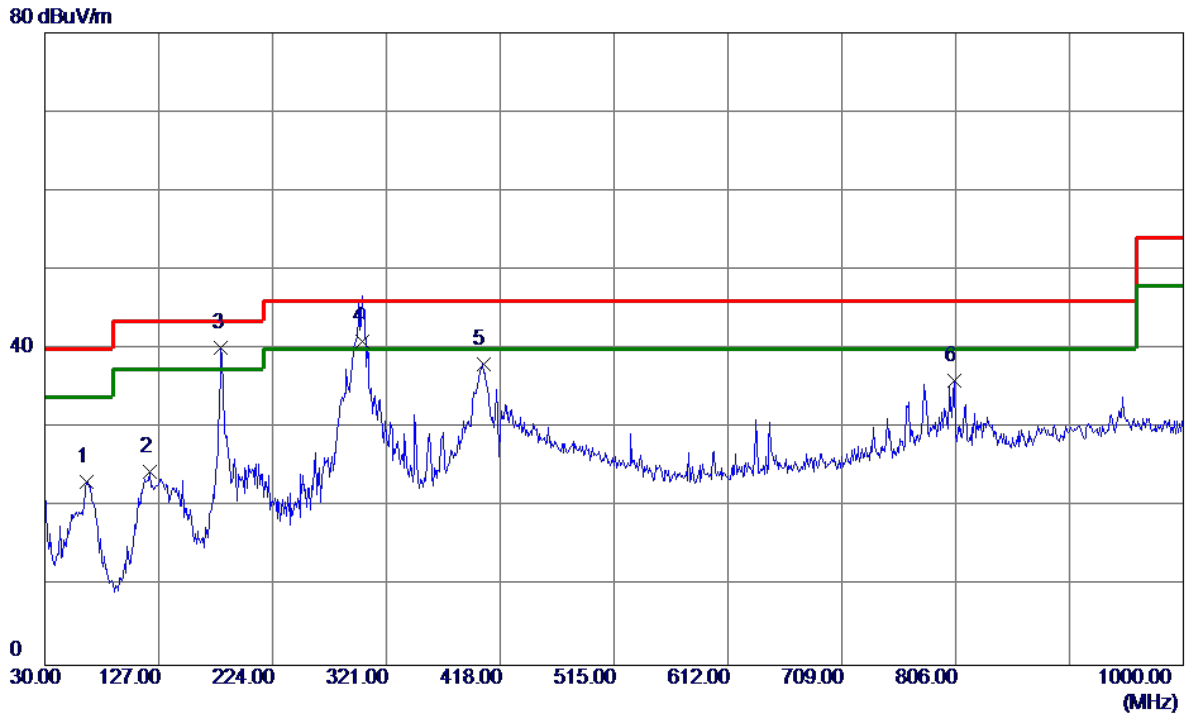
Test Mode	TX N(HT20) Mode Channel 06	Polarization	Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	60.0700	49.59	-14.49	35.10	40.00	-4.90	Peak	
2	119.2400	45.15	-14.22	30.93	43.50	-12.57	Peak	
3 *	180.3500	54.27	-13.68	40.59	43.50	-2.91	Peak	
4	300.6300	49.88	-10.88	39.00	46.00	-7.00	Peak	
5	402.4800	35.44	-8.71	26.73	46.00	-19.27	Peak	
6	948.5900	33.67	1.76	35.43	46.00	-10.57	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

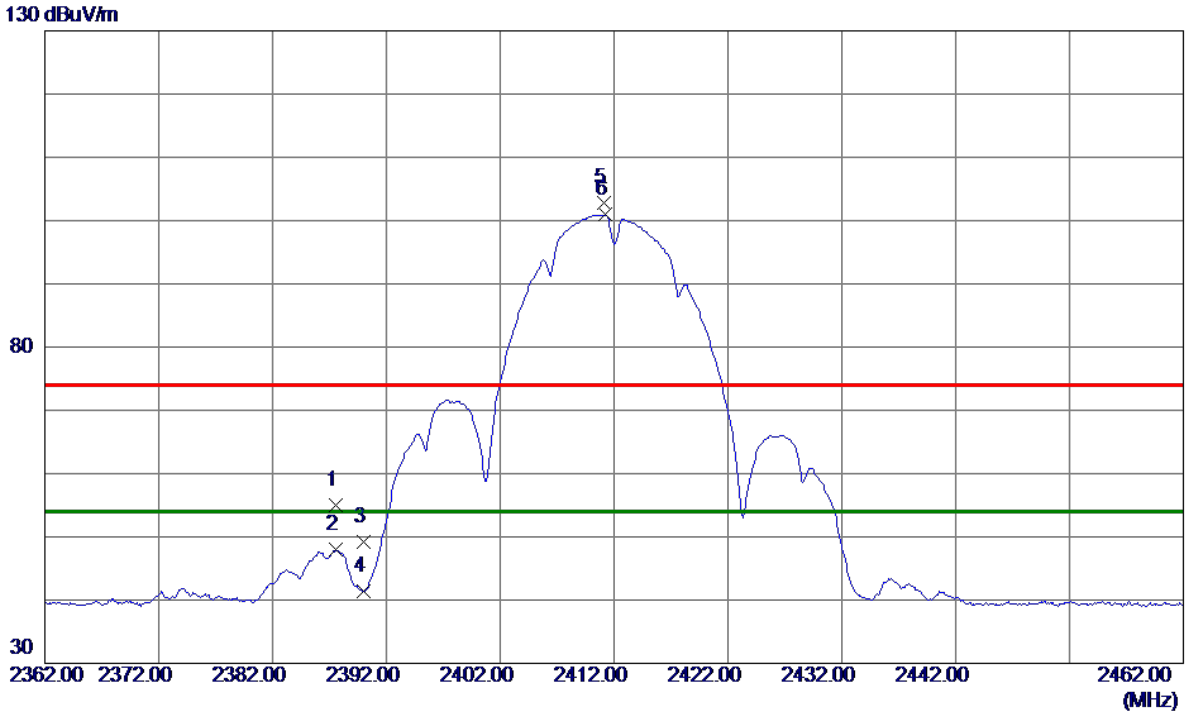


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	65.8900	38.64	-15.39	23.25	40.00	-16.75	Peak	
2	119.2400	38.68	-14.22	24.46	43.50	-19.04	Peak	
3 *	180.3500	53.86	-13.68	40.18	43.50	-3.32	Peak	
4	300.6300	51.84	-10.88	40.96	46.00	-5.04	QP	
5	403.4500	46.69	-8.68	38.01	46.00	-7.99	Peak	
6	805.0300	36.73	-0.68	36.05	46.00	-9.95	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	2387.6000	46.78	8.30	55.08	74.00	-18.92	Peak	
2	2387.6000	39.67	8.30	47.97	54.00	-6.03	AVG	
3	2390.0000	40.82	8.31	49.13	74.00	-24.87	Peak	
4	2390.0000	33.09	8.31	41.40	54.00	-12.60	AVG	
5	2411.1000	94.52	8.33	102.85	74.00	28.85	Peak	No Limit
6 *	2411.2000	92.57	8.33	100.90	54.00	46.90	AVG	No Limit

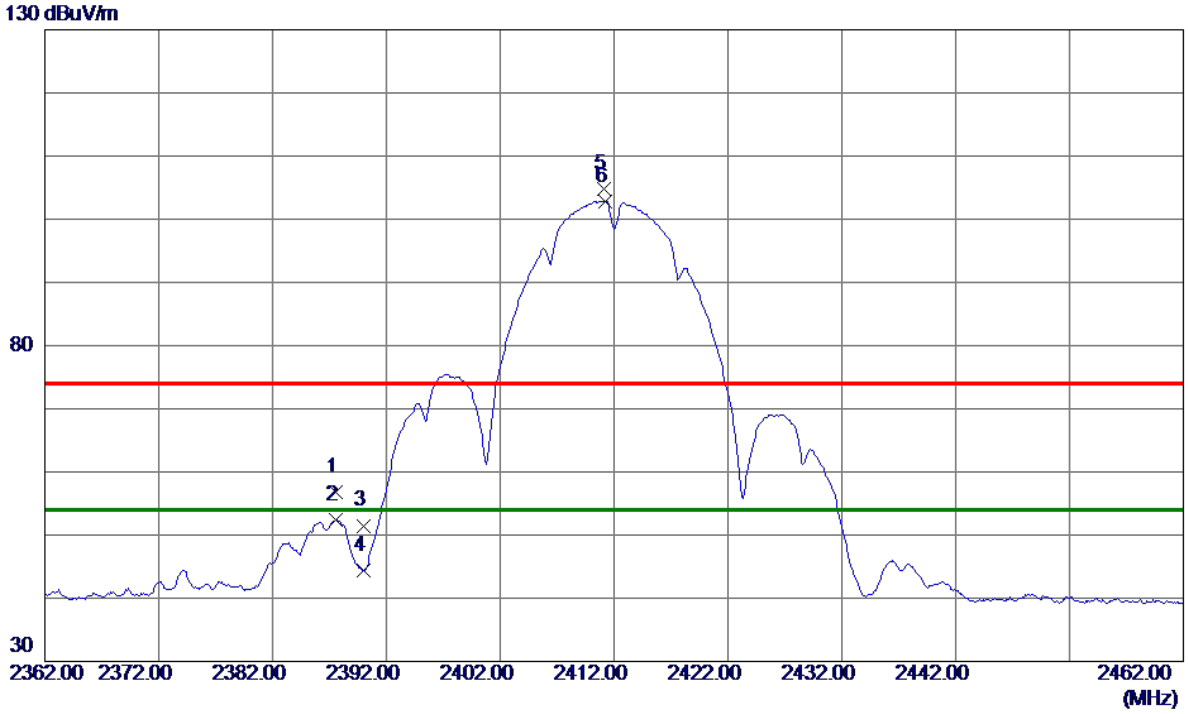
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode	TX B Mode 2412 MHz	Polarization	Vertical

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	4823.9800	47.75	5.23	52.98	54.00	-1.02	AVG	
2	4824.0200	49.26	5.23	54.49	74.00	-19.51	Peak	

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	2387.6000	48.42	8.30	56.72	74.00	-17.28	Peak	
2	2387.6000	44.11	8.30	52.41	54.00	-1.59	AVG	
3	2390.0000	43.19	8.31	51.50	74.00	-22.50	Peak	
4	2390.0000	36.14	8.31	44.45	54.00	-9.55	AVG	
5	2411.1000	96.52	8.33	104.85	74.00	30.85	Peak	No Limit
6 *	2411.2000	94.55	8.33	102.88	54.00	48.88	AVG	No Limit

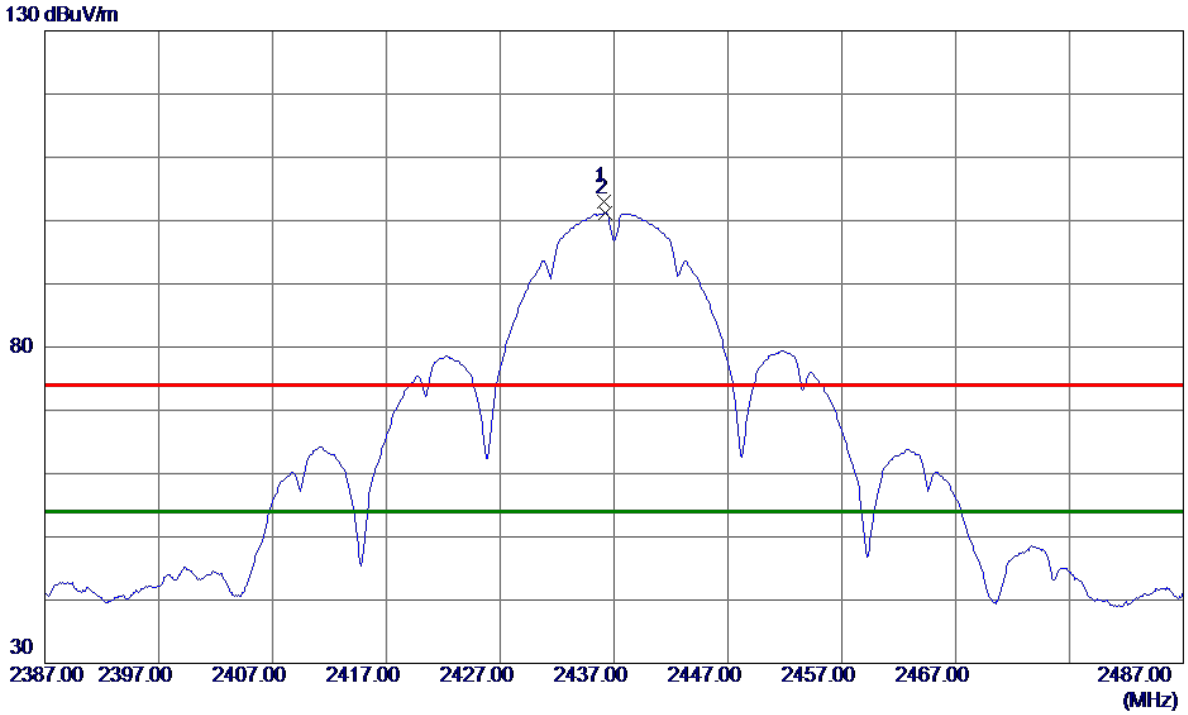
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode	TX B Mode 2412 MHz	Polarization	Horizontal

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	4824.020	47.71	5.23	52.94	54.00	-1.06	AVG	
2		4824.160	49.13	5.23	54.36	74.00	-19.64	peak	
3		7234.090	38.85	10.59	49.44	74.00	-24.56	peak	
4		7236.815	31.63	10.60	42.23	54.00	-11.77	AVG	

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	2436.1000	94.71	8.36	103.07	74.00	29.07	Peak	No Limit
2 *	2436.2000	92.81	8.36	101.17	54.00	47.17	AVG	No Limit

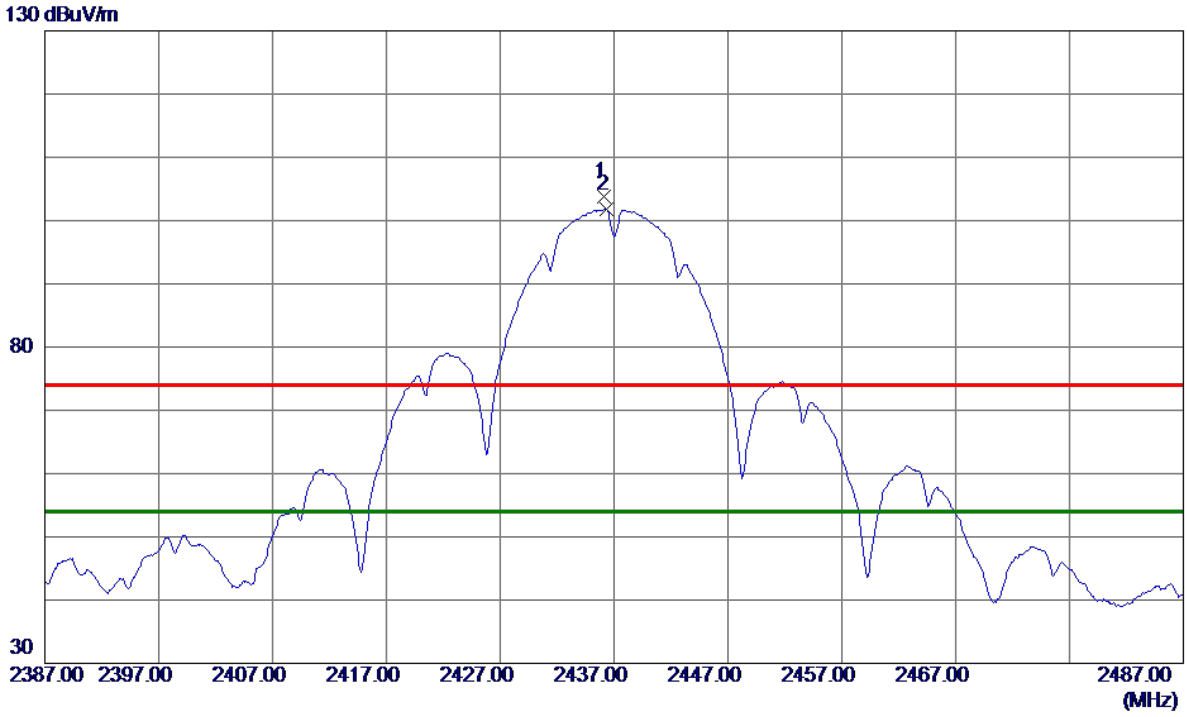
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode	TX B Mode 2437 MHz	Polarization	Vertical

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4874.0050	49.21	5.48	54.69	74.00	-19.31	Peak	
2 *	4874.0400	47.33	5.48	52.81	54.00	-1.19	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	95.48	8.36	103.84	74.00	29.84	Peak	No Limit
2 *	2436.3000	93.46	8.36	101.82	54.00	47.82	AVG	No Limit

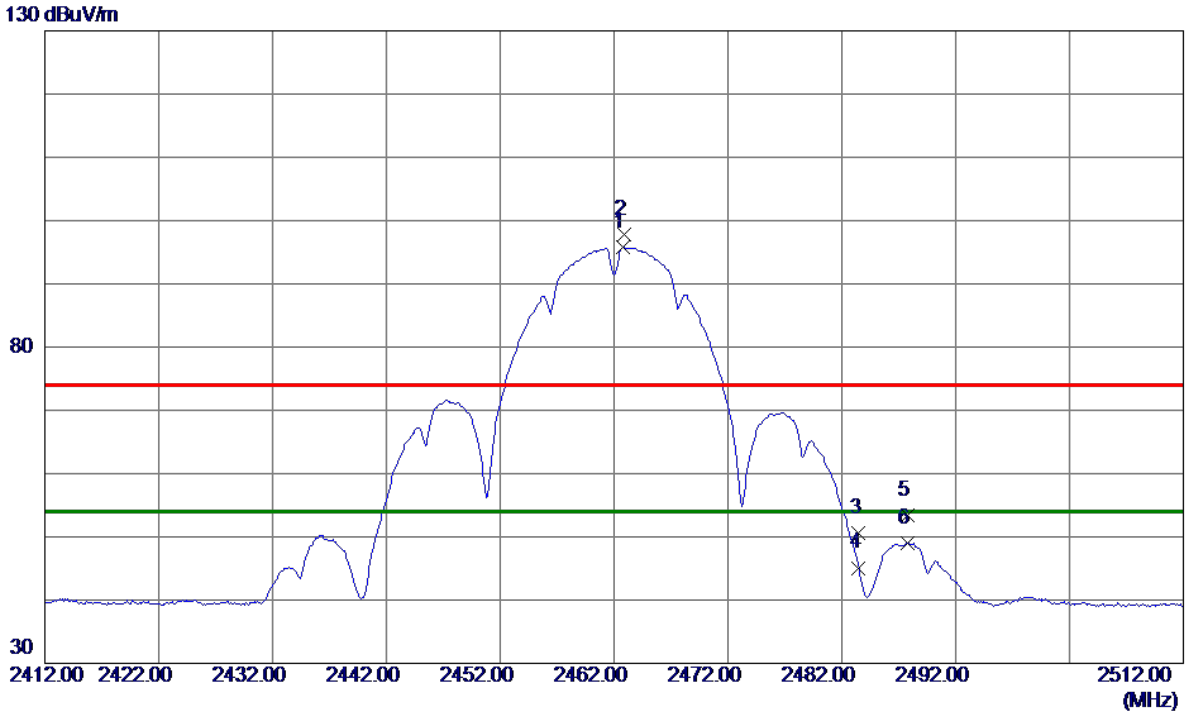
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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 *	4874.0350	47.26	5.48	52.74	54.00	-1.26	AVG	
2	4874.1549	48.60	5.48	54.08	74.00	-19.92	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 *	2462.8000	87.33	8.40	95.73	54.00	41.73	AVG	No Limit
2	2462.9000	89.40	8.40	97.80	74.00	23.80	Peak	No Limit
3	2483.5000	42.10	8.42	50.52	74.00	-23.48	Peak	
4	2483.5000	36.68	8.42	45.10	54.00	-8.90	AVG	
5	2487.8000	44.98	8.43	53.41	74.00	-20.59	Peak	
6	2487.8000	40.59	8.43	49.02	54.00	-4.98	AVG	

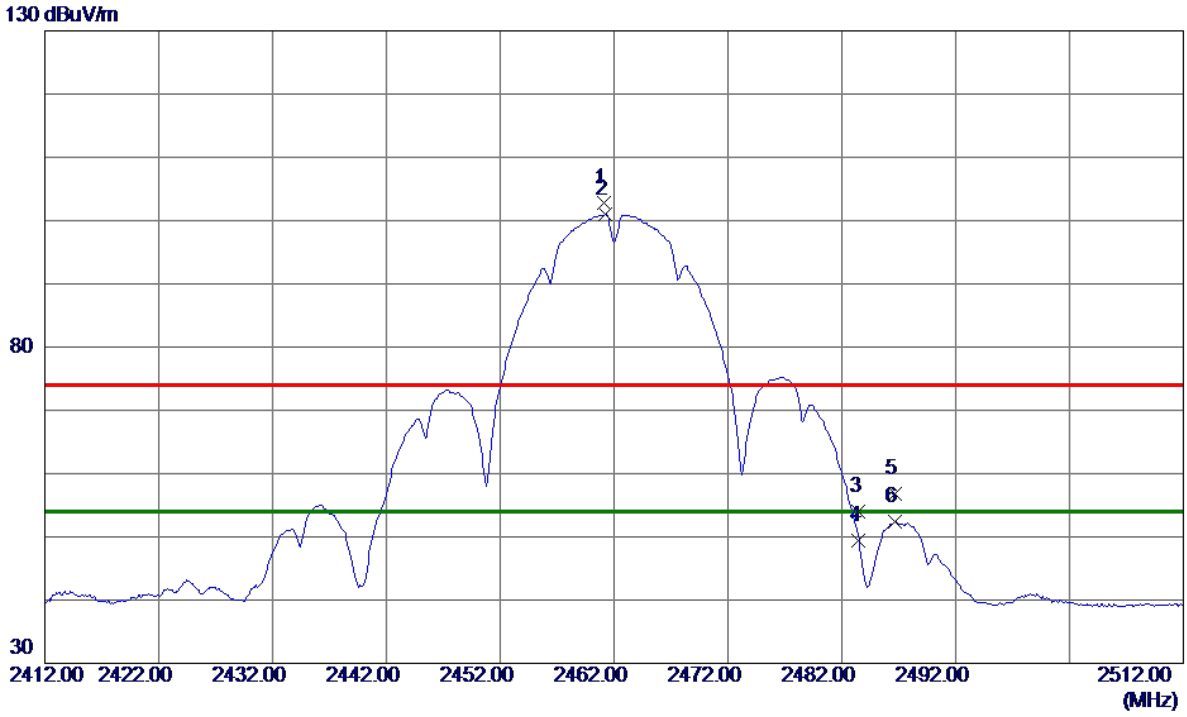
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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	4924.0200	49.05	5.73	54.78	74.00	-19.22	Peak	
2 *	4924.0550	47.21	5.73	52.94	54.00	-1.06	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	2461.1000	94.48	8.40	102.88	74.00	28.88	Peak	No Limit
2 *	2461.2000	92.55	8.40	100.95	54.00	46.95	AVG	No Limit
3	2483.5000	45.51	8.42	53.93	74.00	-20.07	Peak	
4	2483.5000	40.96	8.42	49.38	54.00	-4.62	AVG	
5	2486.7000	48.39	8.43	56.82	74.00	-17.18	Peak	
6	2486.7000	43.98	8.43	52.41	54.00	-1.59	AVG	

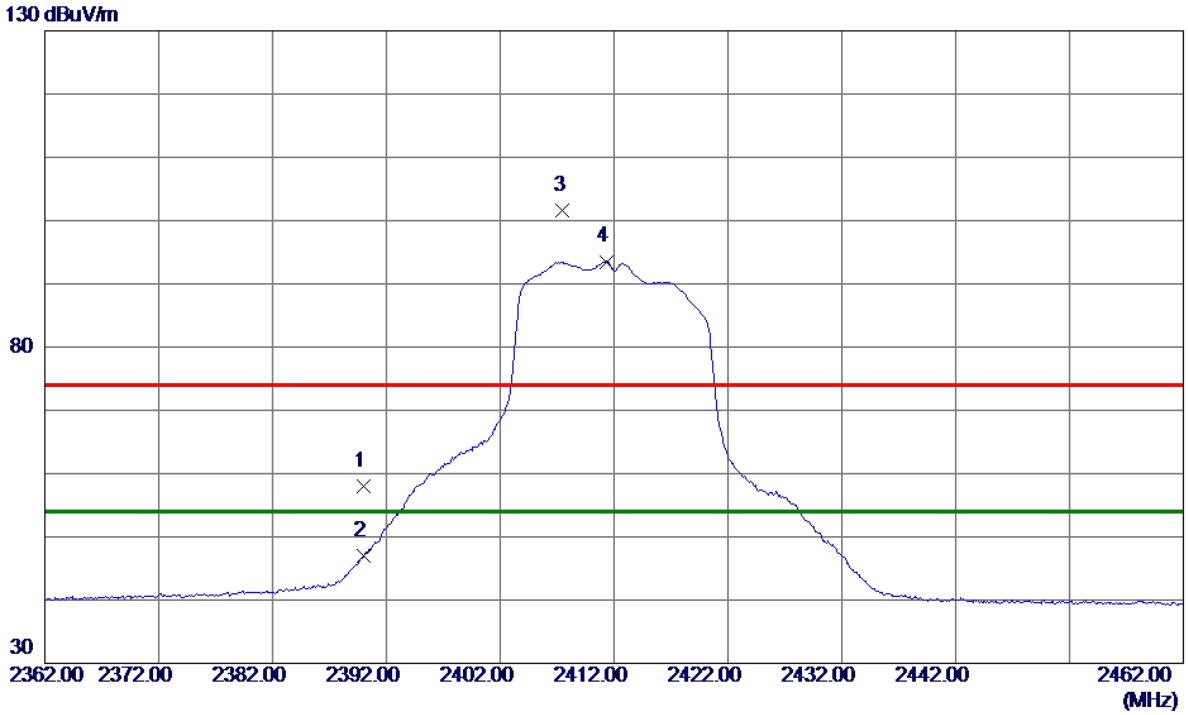
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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 *	4924.0099	47.12	5.73	52.85	54.00	-1.15	AVG	
2	4924.0500	48.94	5.73	54.67	74.00	-19.33	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	49.69	8.31	58.00	74.00	-16.00	Peak	
2	2390.0000	38.63	8.31	46.94	54.00	-7.06	AVG	
3	2407.5000	93.25	8.33	101.58	74.00	27.58	Peak	No Limit
4 *	2411.3000	85.17	8.33	93.50	54.00	39.50	AVG	No Limit

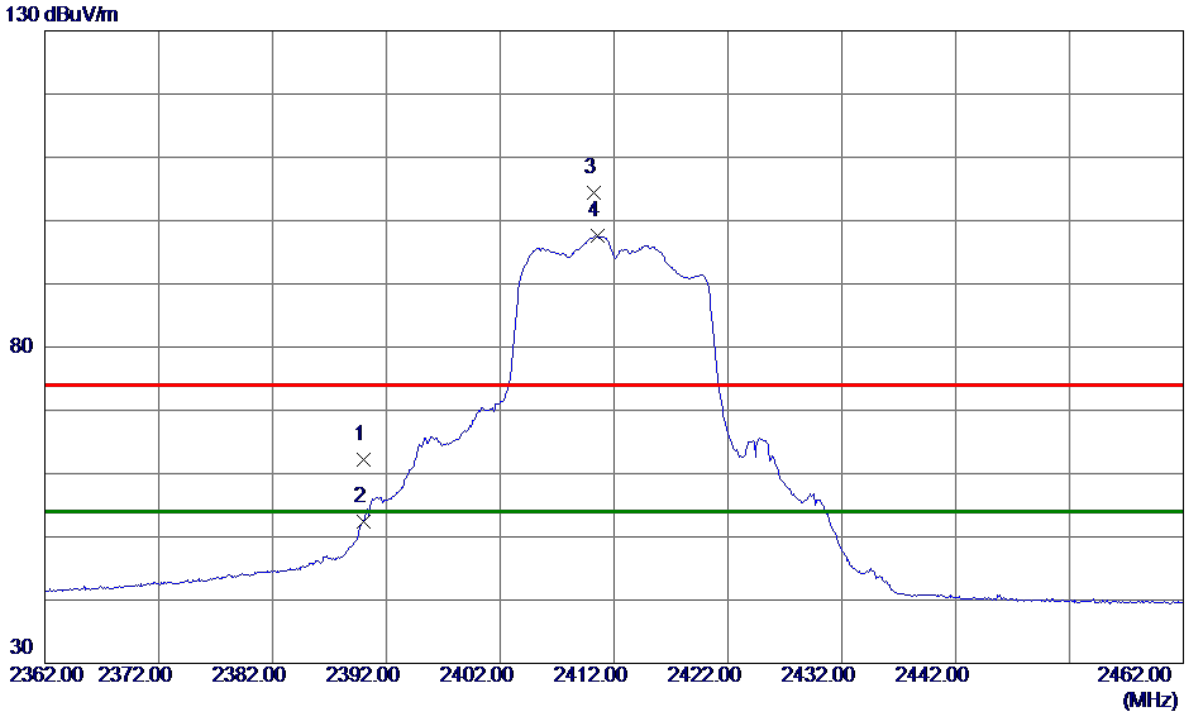
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode	TX G Mode 2412 MHz	Polarization	Vertical

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4819.5500	45.50	5.21	50.71	74.00	-23.29	Peak	
2 *	4825.0050	35.69	5.23	40.92	54.00	-13.08	AVG	

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

Test Mode	TX G Mode 2412 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.0000	53.95	8.31	62.26	74.00	-11.74	Peak	
2	2390.0000	44.14	8.31	52.45	54.00	-1.55	AVG	
3	2410.2000	96.15	8.33	104.48	74.00	30.48	Peak	No Limit
4 *	2410.6000	89.23	8.33	97.56	54.00	43.56	AVG	No Limit

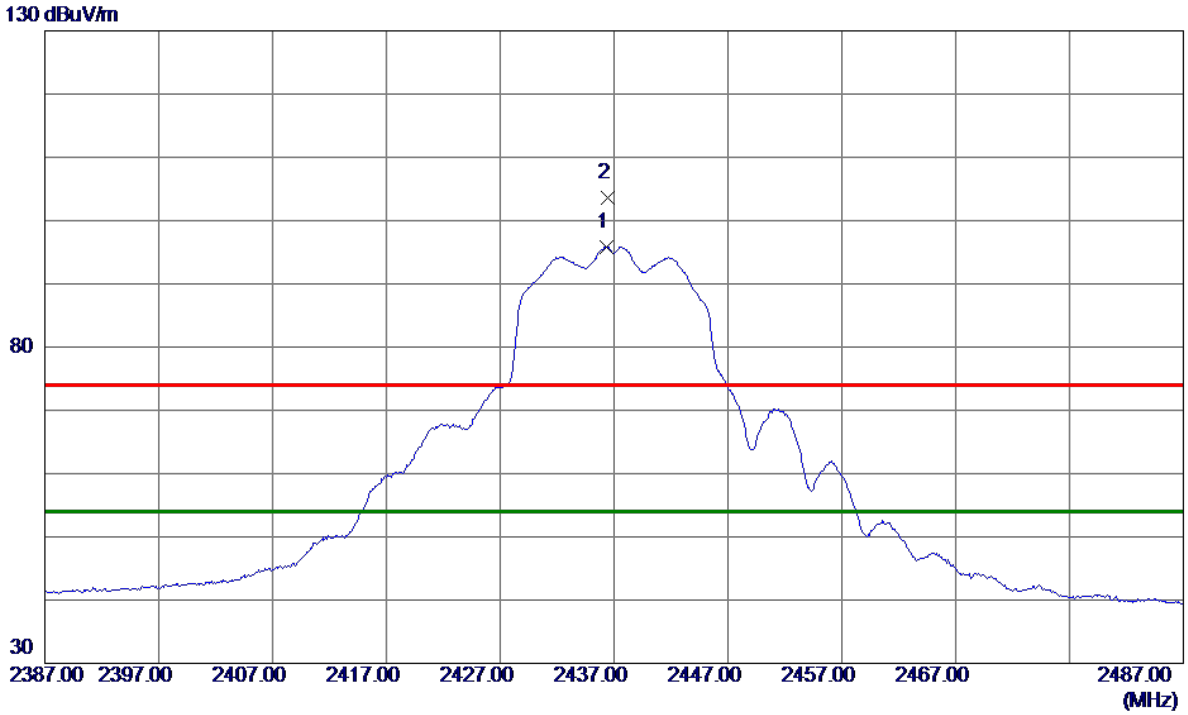
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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	4820.0500	45.13	5.21	50.34	74.00	-23.66	Peak	
2 *	4824.9650	36.10	5.23	41.33	54.00	-12.67	AVG	

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

Test Mode	TX 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 *	2436.3000	87.50	8.36	95.86	54.00	41.86	AVG	No Limit
2	2436.4000	95.16	8.36	103.52	74.00	29.52	Peak	No Limit

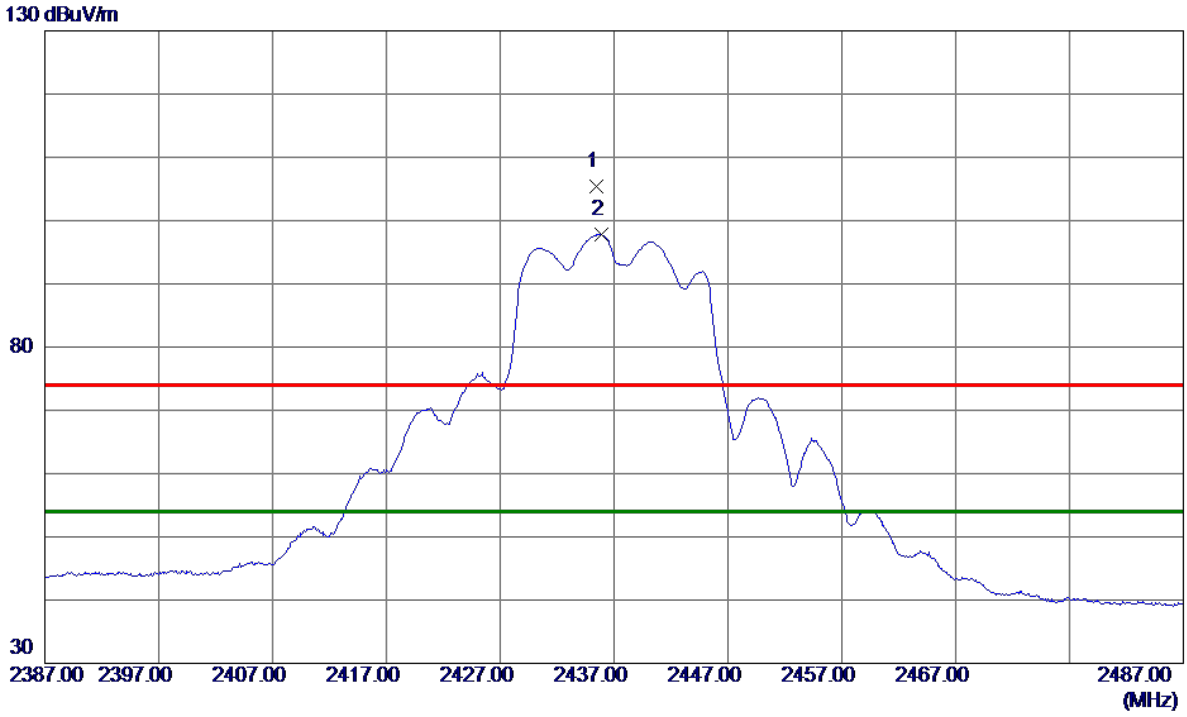
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode	TX 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 *	4875.9750	38.42	5.49	43.91	54.00	-10.09	AVG	
2	4876.0800	47.80	5.49	53.29	74.00	-20.71	Peak	

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

Test Mode	TX G Mode 2437 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2435.4000	97.01	8.36	105.37	74.00	31.37	Peak	No Limit
2 *	2435.9000	89.38	8.36	97.74	54.00	43.74	AVG	No Limit

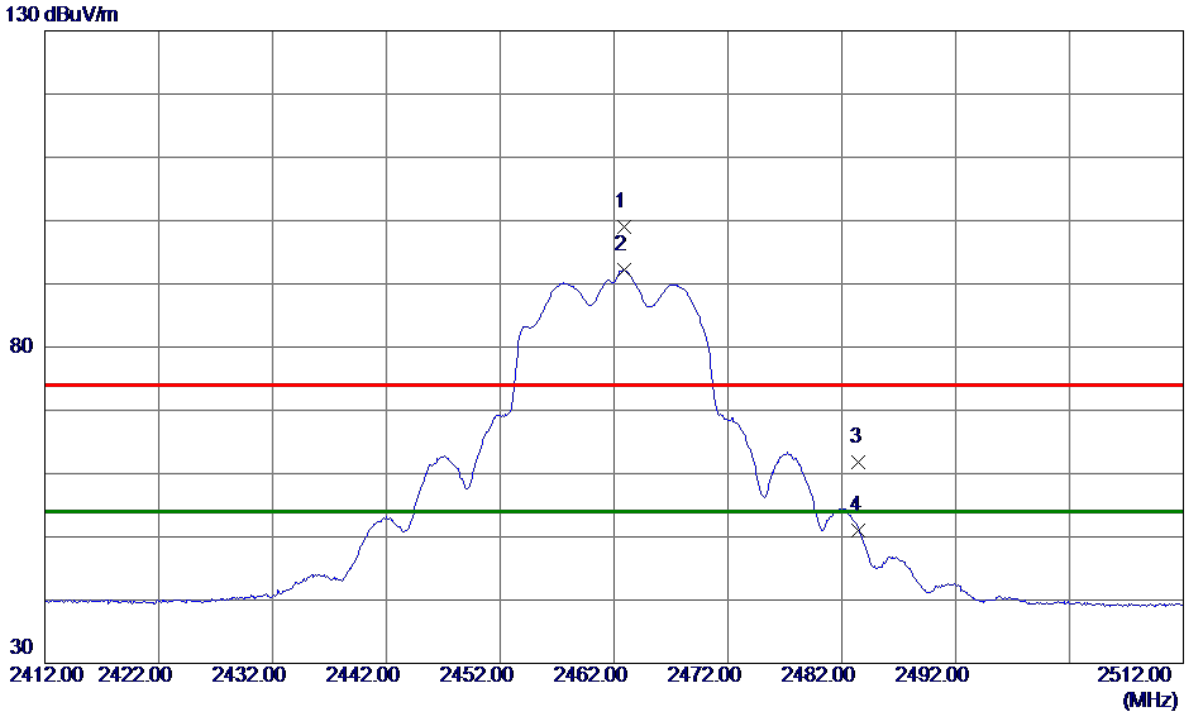
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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	4875.6100	47.71	5.49	53.20	74.00	-20.80	Peak	
2 *	4875.9450	37.97	5.49	43.46	54.00	-10.54	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	2462.9000	90.69	8.40	99.09	74.00	25.09	Peak	No Limit
2 *	2462.9000	83.79	8.40	92.19	54.00	38.19	AVG	No Limit
3	2483.5000	53.37	8.42	61.79	74.00	-12.21	Peak	
4	2483.5000	42.58	8.42	51.00	54.00	-3.00	AVG	

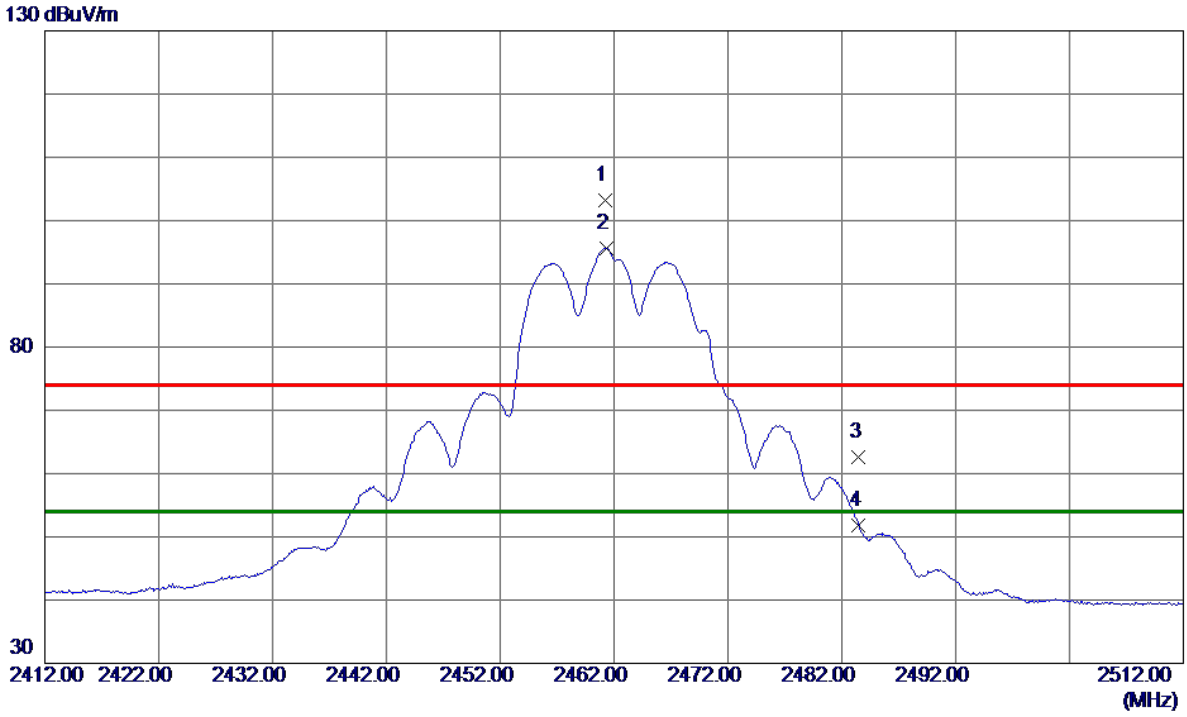
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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 *	4921.8650	35.38	5.72	41.10	54.00	-12.90	AVG	
2	4927.0850	45.00	5.75	50.75	74.00	-23.25	Peak	

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

Test Mode	TX G Mode 2462 MHz	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2461.2000	94.87	8.40	103.27	74.00	29.27	Peak	No Limit
2 *	2461.3000	87.21	8.40	95.61	54.00	41.61	AVG	No Limit
3	2483.5000	54.09	8.42	62.51	74.00	-11.49	Peak	
4	2483.5000	43.38	8.42	51.80	54.00	-2.20	AVG	

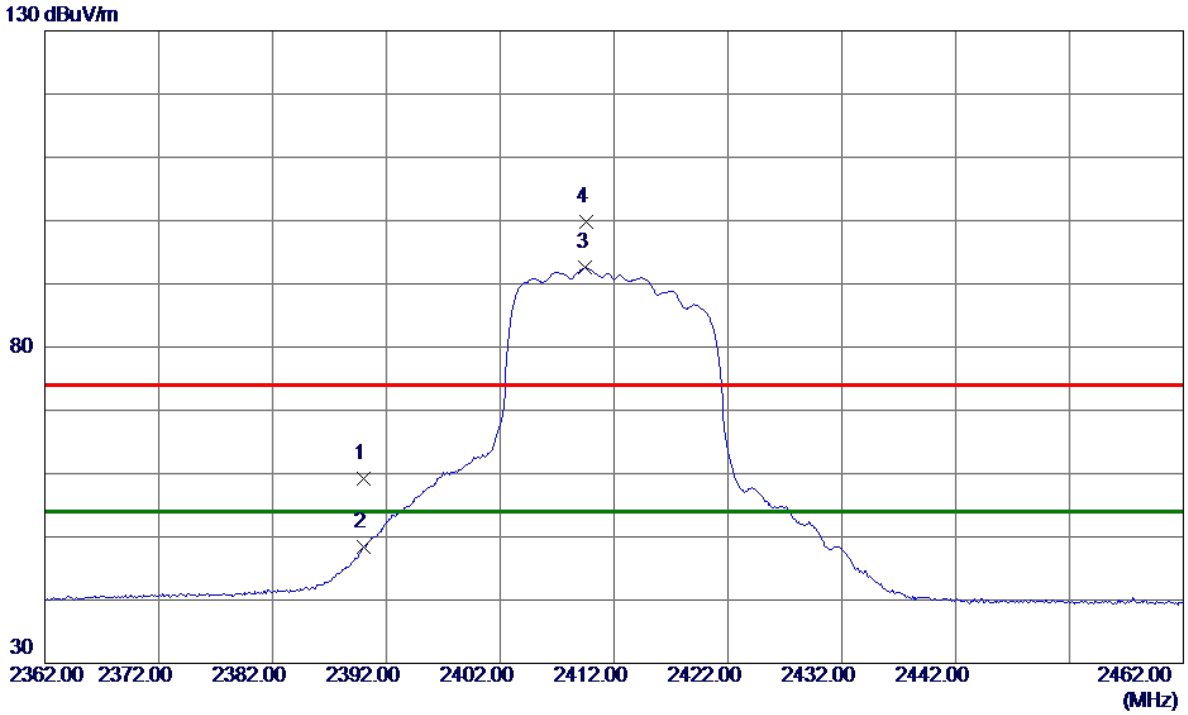
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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	4922.1900	44.87	5.73	50.60	74.00	-23.40	Peak	
2 *	4922.2300	35.56	5.73	41.29	54.00	-12.71	AVG	

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

Test Mode	TX N(HT20) Mode 2412 MHz	Polarization	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	50.97	8.31	59.28	74.00	-14.72	Peak	
2	2390.0000	40.04	8.31	48.35	54.00	-5.65	AVG	
3 *	2409.5000	84.27	8.33	92.60	54.00	38.60	AVG	No Limit
4	2409.6000	91.51	8.33	99.84	74.00	25.84	Peak	No Limit

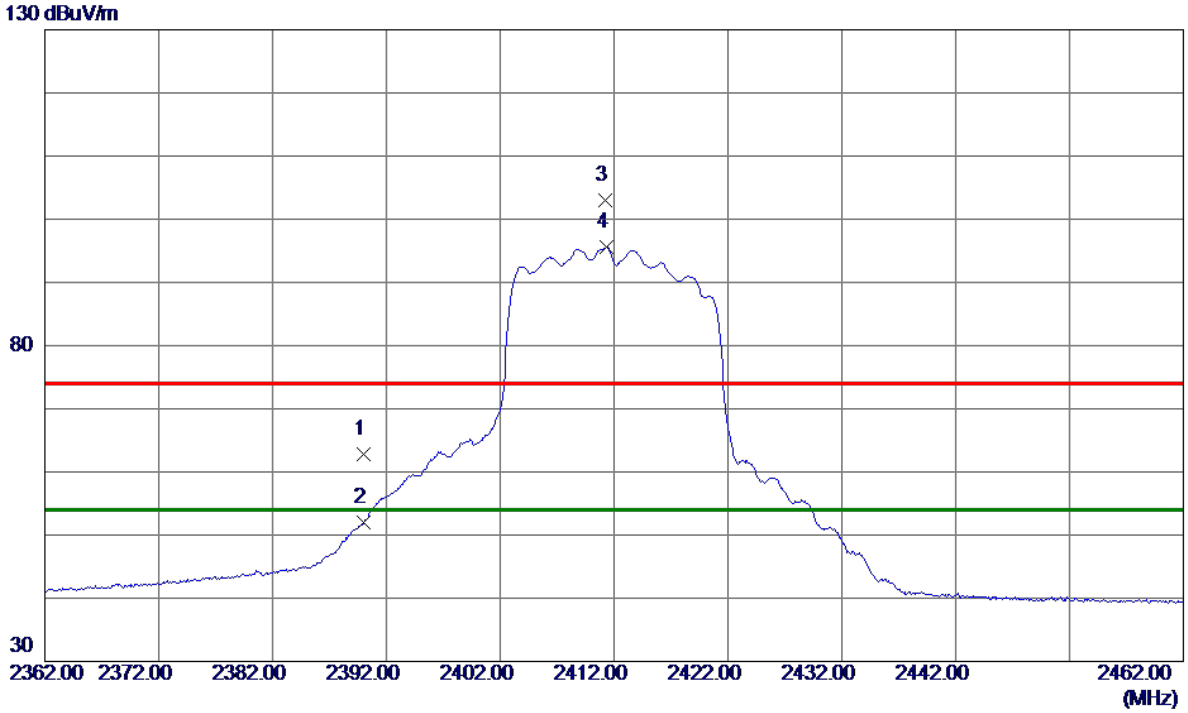
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	4825.1050	35.75	5.23	40.98	54.00	-13.02	AVG	
2	4825.9700	46.14	5.24	51.38	74.00	-22.62	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	54.49	8.31	62.80	74.00	-11.20	Peak	
2	2390.0000	43.70	8.31	52.01	54.00	-1.99	AVG	
3	2411.2000	94.63	8.33	102.96	74.00	28.96	Peak	No Limit
4 *	2411.3000	87.18	8.33	95.51	54.00	41.51	AVG	No Limit

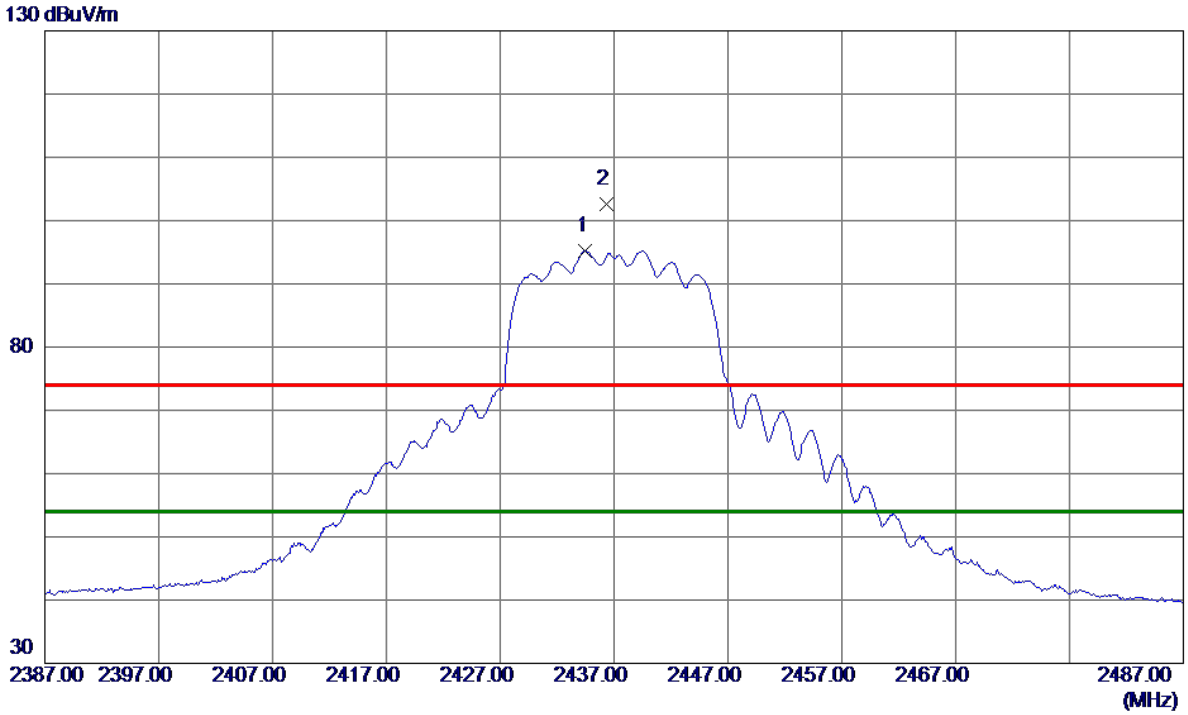
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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	4825.0450	45.15	5.23	50.38	74.00	-23.62	Peak	
2 *	4825.1100	35.73	5.23	40.96	54.00	-13.04	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 *	2434.5000	86.93	8.36	95.29	54.00	41.29	AVG	No Limit
2	2436.3000	94.27	8.36	102.63	74.00	28.63	Peak	No Limit

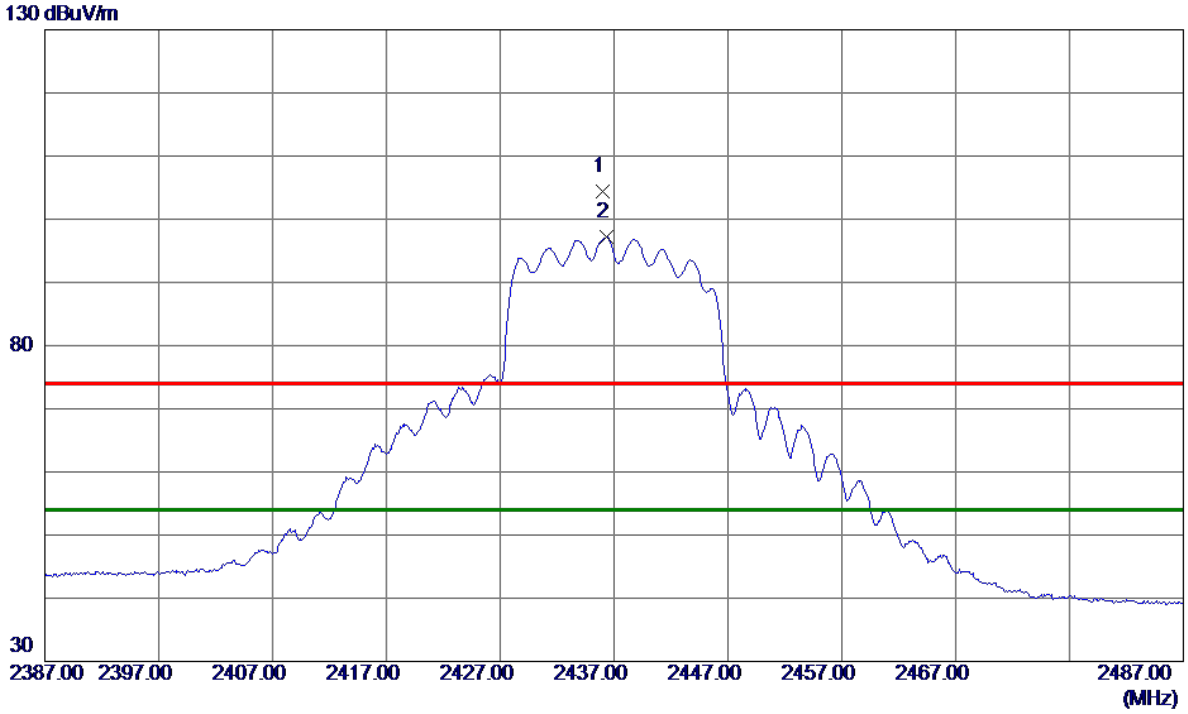
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4872.6850	47.89	5.47	53.36	74.00	-20.64	Peak	
2 *	4877.4700	36.96	5.50	42.46	54.00	-11.54	AVG	

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

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



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2436.0000	96.06	8.36	104.42	74.00	30.42	Peak	No Limit
2 *	2436.3000	88.81	8.36	97.17	54.00	43.17	AVG	No Limit

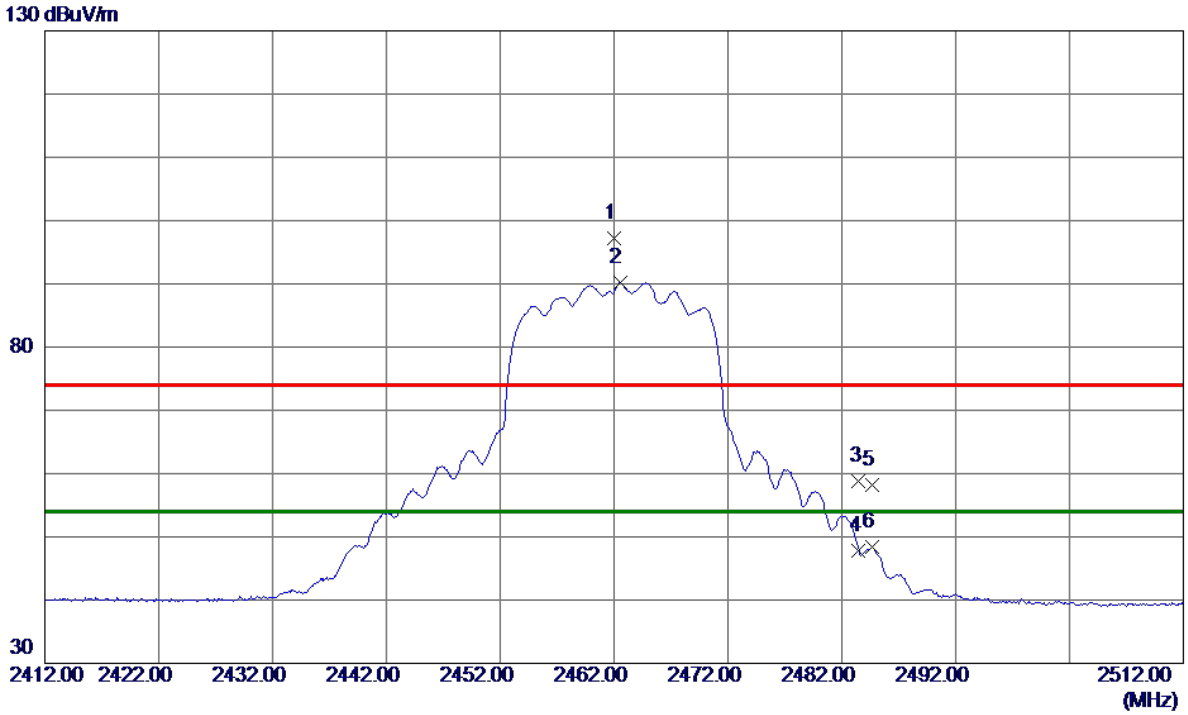
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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	4872.2150	46.66	5.47	52.13	74.00	-21.87	Peak	
2 *	4874.8100	37.49	5.49	42.98	54.00	-11.02	AVG	

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

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



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2462.0000	88.85	8.40	97.25	74.00	23.25	Peak	No Limit
2 *	2462.5000	81.81	8.40	90.21	54.00	36.21	AVG	No Limit
3	2483.5000	50.33	8.42	58.75	74.00	-15.25	Peak	
4	2483.5000	39.39	8.42	47.81	54.00	-6.19	AVG	
5	2484.7000	49.68	8.43	58.11	74.00	-15.89	Peak	
6	2484.7000	39.89	8.43	48.32	54.00	-5.68	AVG	

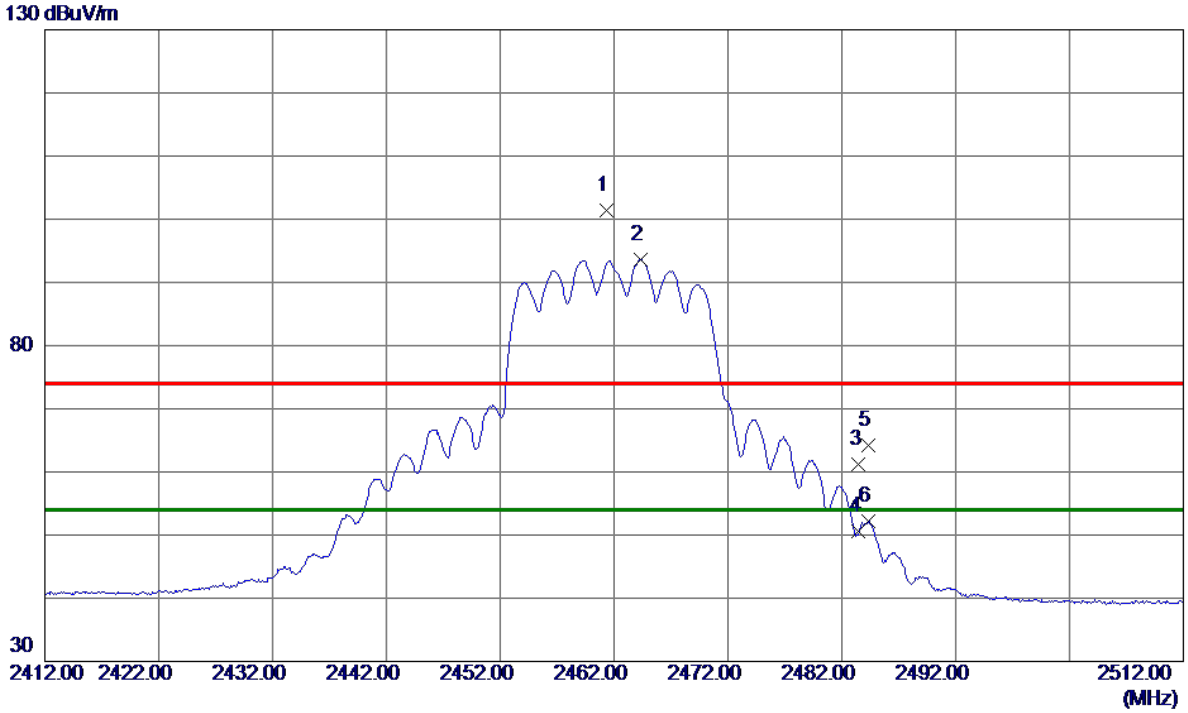
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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	4920.6850	42.99	5.72	48.71	74.00	-25.29	Peak	
2 *	4922.7500	33.92	5.73	39.65	54.00	-14.35	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	2461.3000	93.06	8.40	101.46	74.00	27.46	Peak	No Limit
2 *	2464.3000	85.16	8.40	93.56	54.00	39.56	AVG	No Limit
3	2483.5000	52.73	8.42	61.15	74.00	-12.85	Peak	
4	2483.5000	42.09	8.42	50.51	54.00	-3.49	AVG	
5	2484.3000	55.79	8.43	64.22	74.00	-9.78	Peak	
6	2484.3000	43.82	8.43	52.25	54.00	-1.75	AVG	

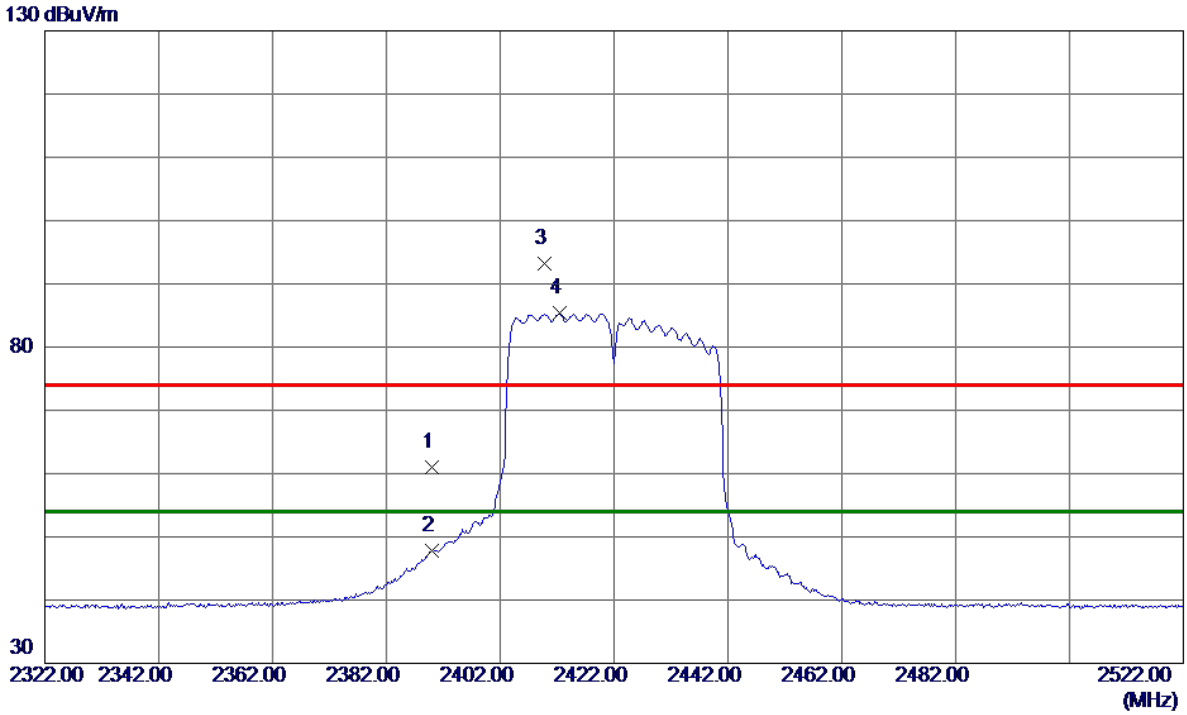
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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	4922.5800	44.19	5.73	49.92	74.00	-24.08	Peak	
2 *	4922.7450	33.61	5.73	39.34	54.00	-14.66	AVG	

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

Test Mode	TX N(HT40) Mode 2422 MHz	Polarization	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	52.64	8.31	60.95	74.00	-13.05	Peak	
2	2390.0000	39.56	8.31	47.87	54.00	-6.13	AVG	
3	2409.8000	84.94	8.33	93.27	74.00	19.27	Peak	No Limit
4 *	2412.4000	76.99	8.33	85.32	54.00	31.32	AVG	No Limit

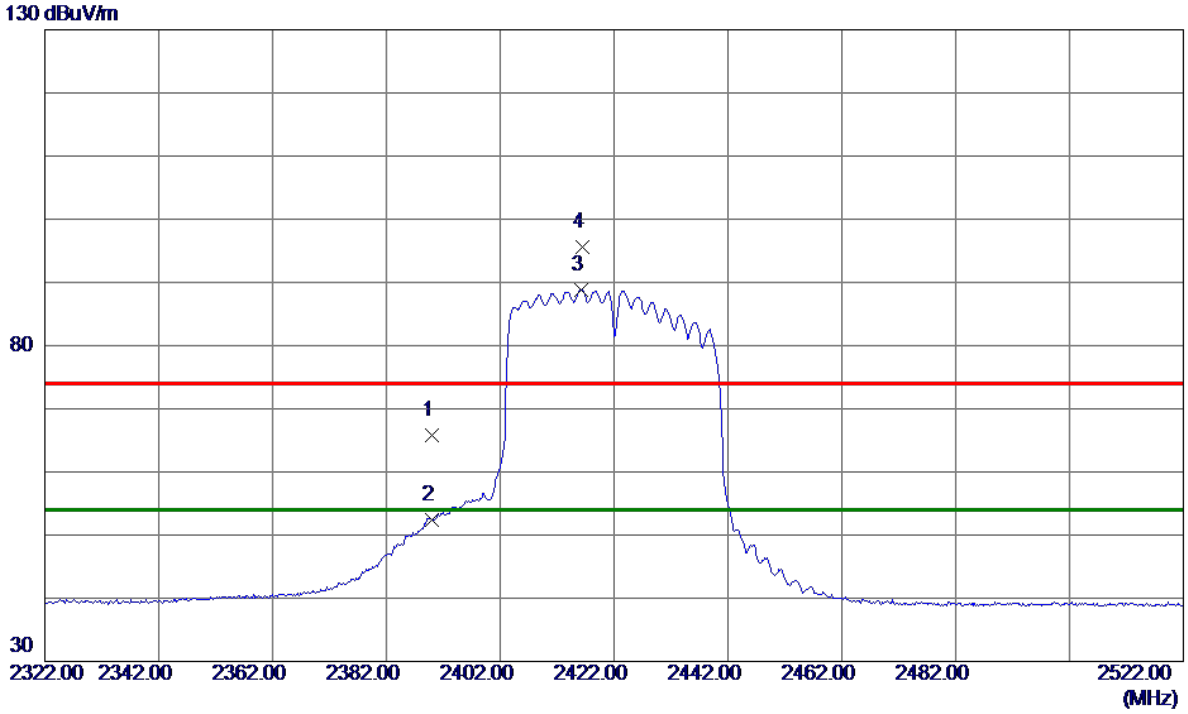
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	4844.4250	31.68	5.33	37.01	54.00	-16.99	AVG	
2	4845.1400	42.53	5.33	47.86	74.00	-26.14	Peak	

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

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



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.0000	57.51	8.31	65.82	74.00	-8.18	Peak	
2	2390.0000	44.05	8.31	52.36	54.00	-1.64	AVG	
3 *	2416.2000	80.50	8.34	88.84	54.00	34.84	AVG	No Limit
4	2416.4000	87.34	8.34	95.68	74.00	21.68	Peak	No Limit

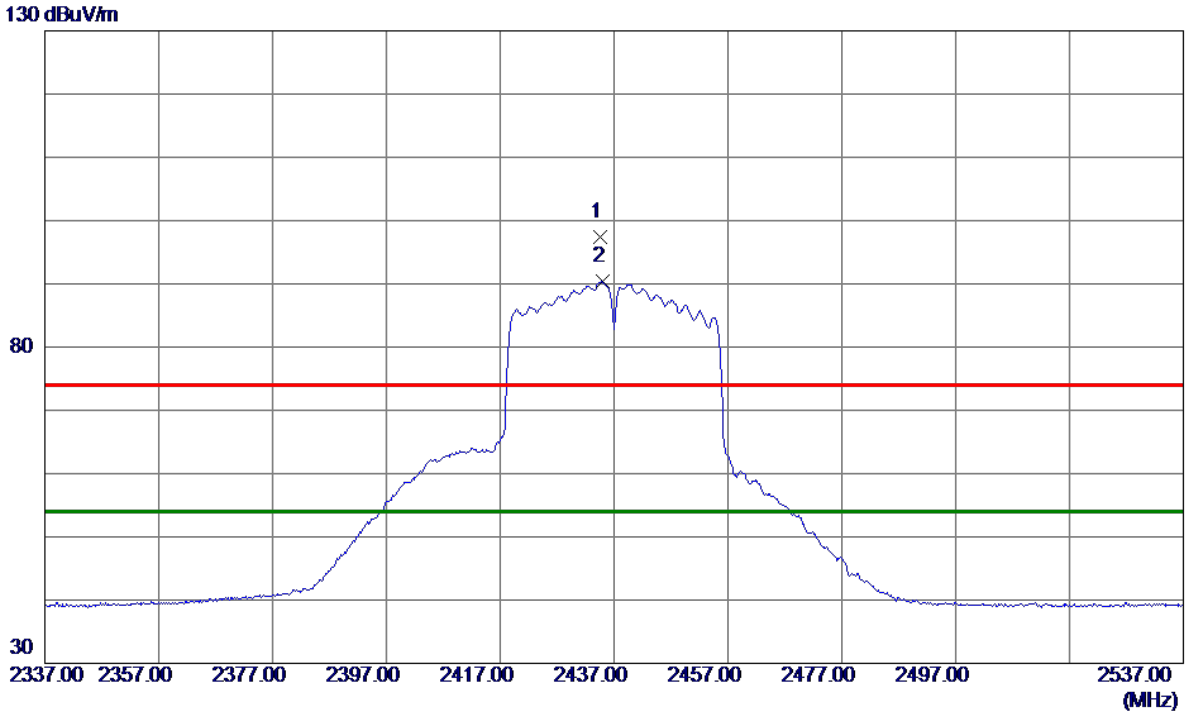
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	4844.4100	31.92	5.33	37.25	54.00	-16.75	AVG	
2	4844.5650	41.05	5.33	46.38	74.00	-27.62	Peak	

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

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



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2434.6000	89.08	8.36	97.44	74.00	23.44	Peak	No Limit
2 *	2435.0000	81.96	8.36	90.32	54.00	36.32	AVG	No Limit

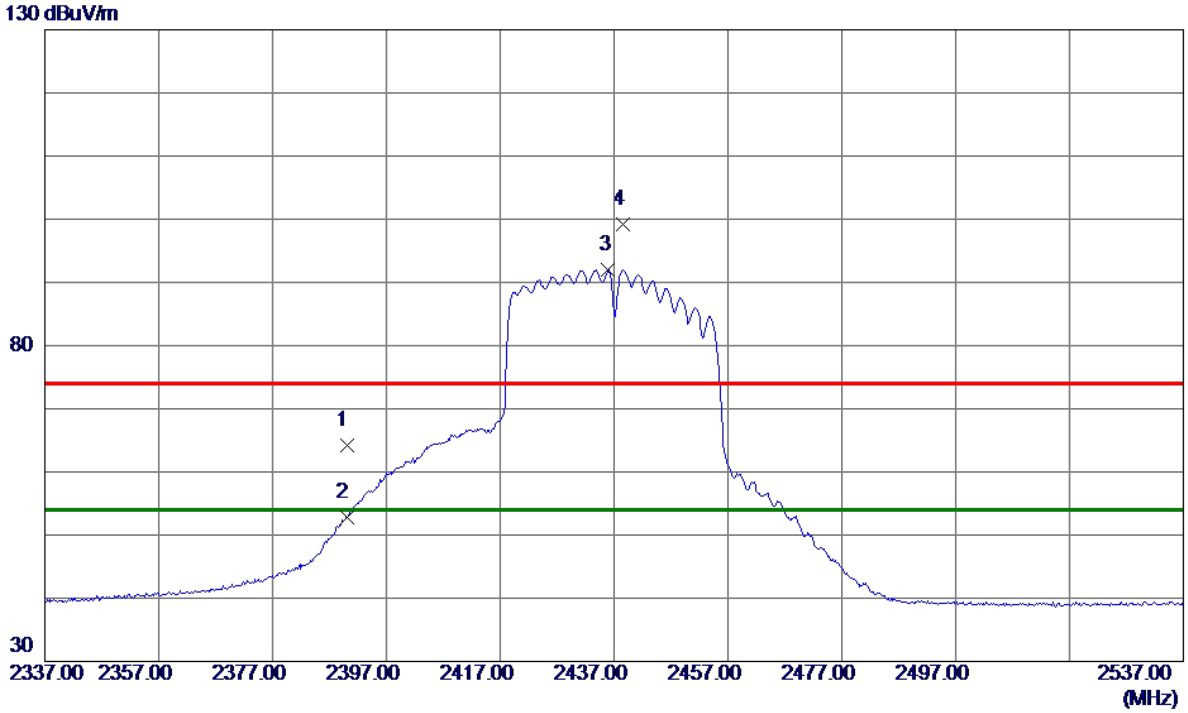
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode	TX N(HT40) 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 *	4869.5200	30.49	5.46	35.95	54.00	-18.05	AVG	
2	4870.3550	40.29	5.46	45.75	74.00	-28.25	Peak	

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

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



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.0000	55.94	8.31	64.25	74.00	-9.75	Peak	
2	2390.0000	44.52	8.31	52.83	54.00	-1.17	AVG	
3 *	2436.0000	83.66	8.36	92.02	54.00	38.02	AVG	No Limit
4	2438.6000	90.91	8.37	99.28	74.00	25.28	Peak	No Limit

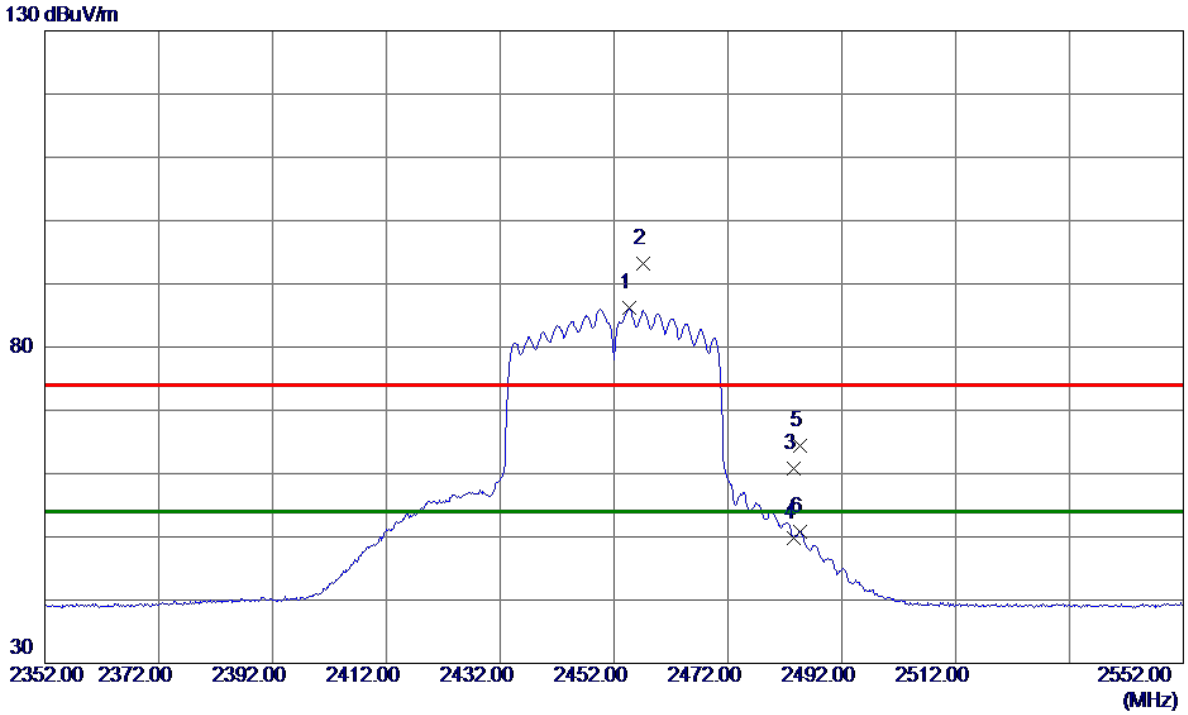
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4870.1250	40.33	5.46	45.79	74.00	-28.21	Peak	
2 *	4874.3000	30.45	5.48	35.93	54.00	-18.07	AVG	

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

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



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	2454.6000	77.72	8.39	86.11	54.00	32.11	AVG	No Limit
2	2457.2000	84.84	8.39	93.23	74.00	19.23	Peak	No Limit
3	2483.5000	52.29	8.42	60.71	74.00	-13.29	Peak	
4	2483.5000	41.43	8.42	49.85	54.00	-4.15	AVG	
5	2484.6000	56.06	8.43	64.49	74.00	-9.51	Peak	
6	2484.6000	42.44	8.43	50.87	54.00	-3.13	AVG	

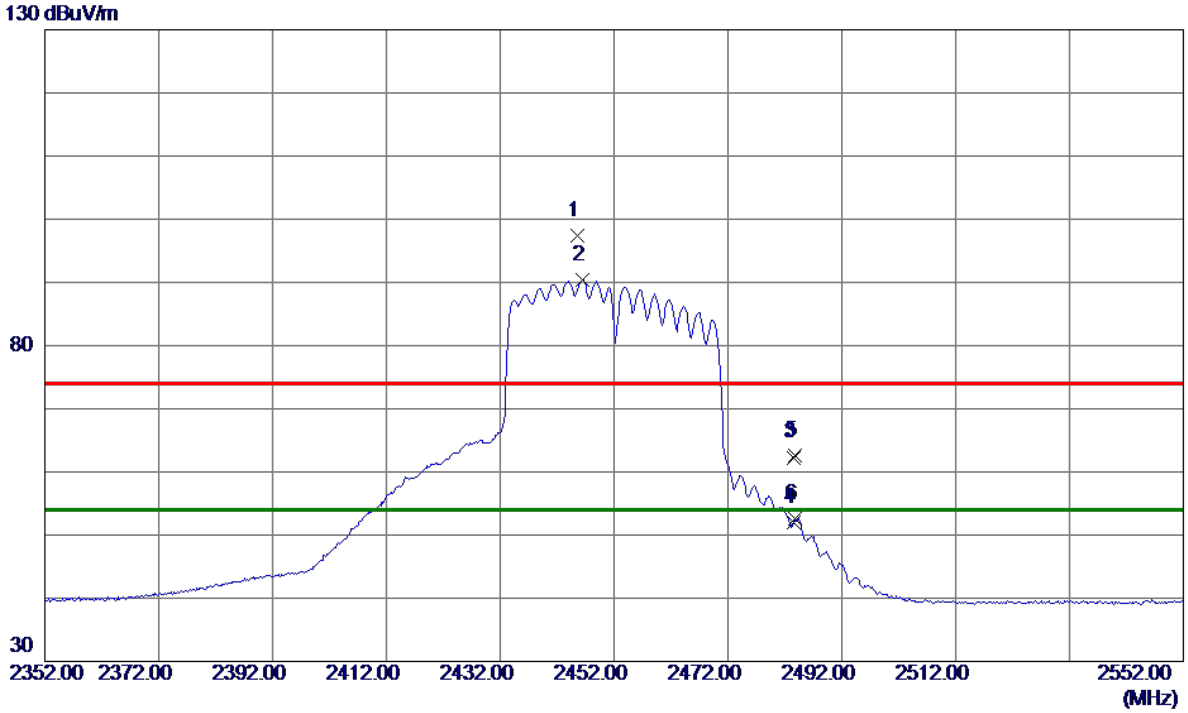
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4904.3200	40.67	5.63	46.30	74.00	-27.70	Peak	
2 *	4904.9100	30.74	5.64	36.38	54.00	-17.62	AVG	

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

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



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2445.6000	88.97	8.38	97.35	74.00	23.35	Peak	No Limit
2 *	2446.4000	81.99	8.38	90.37	54.00	36.37	AVG	No Limit
3	2483.5000	53.88	8.42	62.30	74.00	-11.70	Peak	
4	2483.5000	43.56	8.42	51.98	54.00	-2.02	AVG	
5	2483.8000	54.24	8.42	62.66	74.00	-11.34	Peak	
6	2483.8000	44.12	8.42	52.54	54.00	-1.46	AVG	

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

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

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4904.5250	41.06	5.64	46.70	74.00	-27.30	Peak	
2 *	4904.8100	30.99	5.64	36.63	54.00	-17.37	AVG	

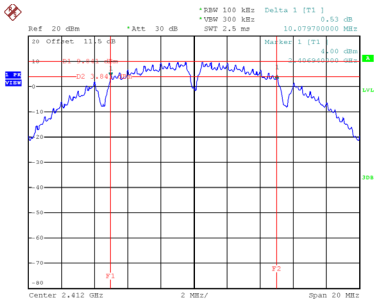
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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	10.08	15.12	0.50	Complies
06	2437	10.14	17.52	0.50	Complies
11	2462	10.11	17.04	0.50	Complies

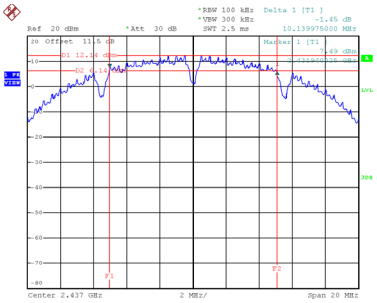
CH01



Date: 18.AUG.2021 16:09:01

CH06

6 dB Bandwidth



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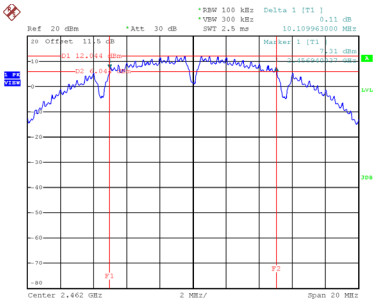
CH11



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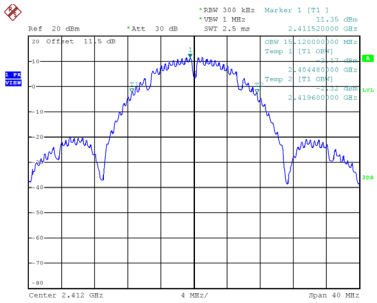
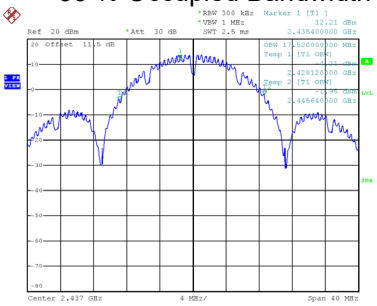


Date: 18.AUG.2021 16:09:08

99 % Occupied Bandwidth



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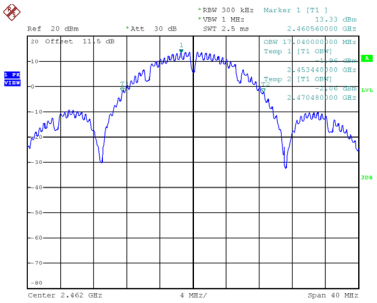


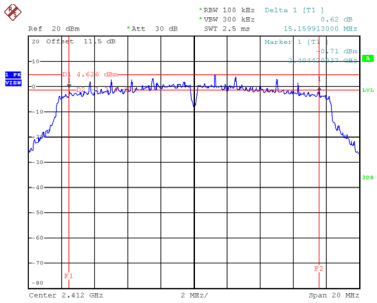
Date: 18.AUG.2021 16:17:22

Test Mode	TX G Mode

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6 dB Bandwidth Min. Limit (MHz)	Result
01	2412	15.16	16.80	0.50	Complies
06	2437	15.16	18.56	0.50	Complies
11	2462	15.16	17.92	0.50	Complies

CH01 **CH06** **CH11**

6 dB Bandwidth



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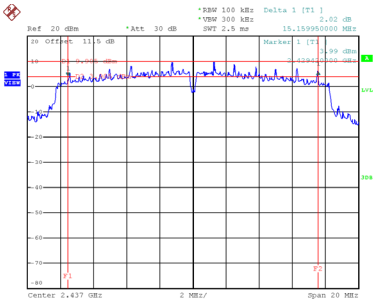

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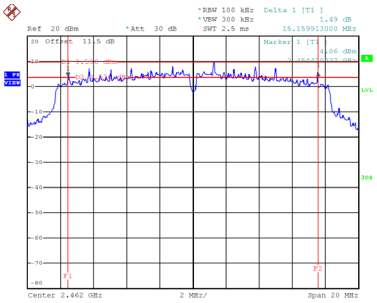

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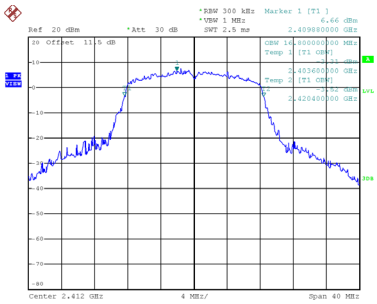
99 % Occupied Bandwidth



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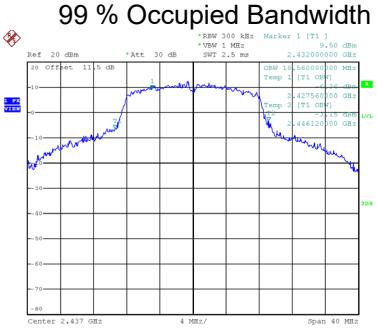

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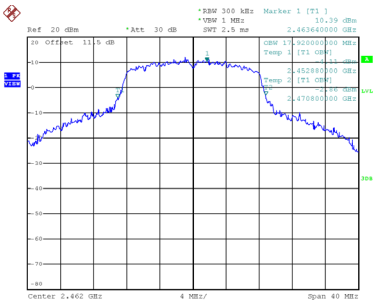
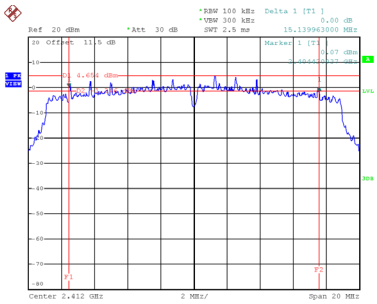


Date: 18.AUG.2021 16:26:45

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	15.14	17.68	0.50	Complies
06	2437	15.04	19.76	0.50	Complies
11	2462	15.09	18.88	0.50	Complies

CH01



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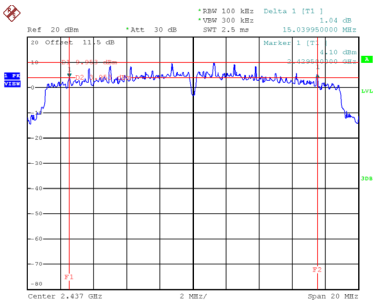
CH06

6 dB Bandwidth



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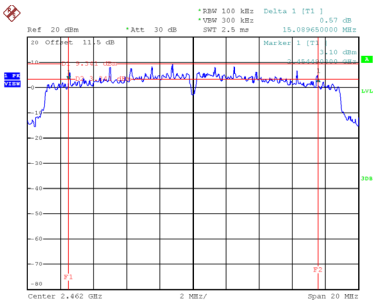
CH11



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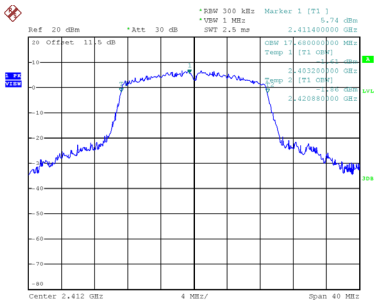

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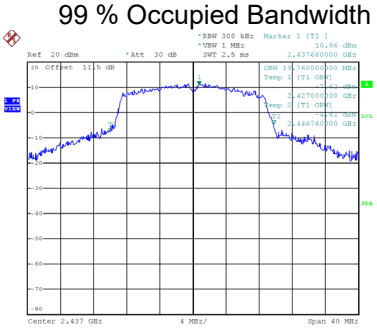
99 % Occupied Bandwidth



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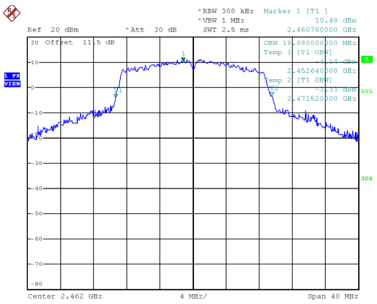
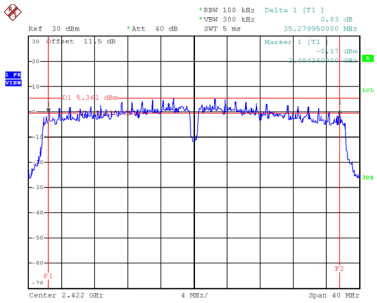


Date: 18.AUG.2021 16:34:26

Test Mode	TX N(HT40) Mode

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6 dB Bandwidth Min. Limit (MHz)	Result
03	2422	35.28	36.64	0.50	Complies
06	2437	35.21	37.76	0.50	Complies
09	2452	35.16	36.64	0.50	Complies

CH03



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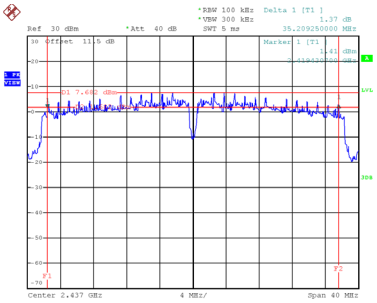
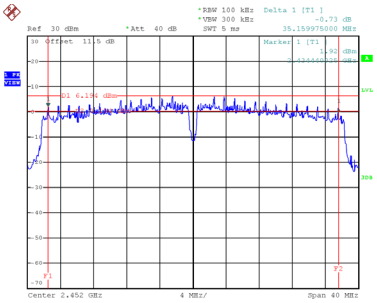
CH06

6 dB Bandwidth



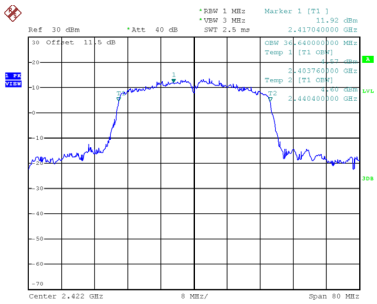
Date: 18.AUG.2021 18:46:03

CH09



Date: 18.AUG.2021 18:49:48

99 % Occupied Bandwidth



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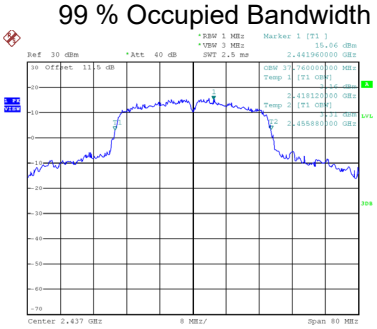

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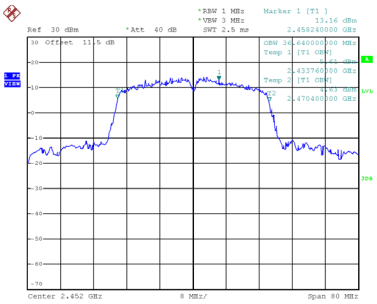


Date: 18.AUG.2021 18:49:56

APPENDIX F - MAXIMUM OUTPUT POWER

Test Mode	TX B Mode_Ant. 1

Channel	Frequency (MHz)	Output Power (dBm)	Duty Factor	Output Power + Duty Factor (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	15.45	0.00	15.45	29.97	0.9931	Complies
06	2437	15.47	0.00	15.47	29.97	0.9931	Complies
11	2462	20.35	0.00	20.35	29.97	0.9931	Complies

Test Mode	TX B Mode_Ant. 2

Channel	Frequency (MHz)	Output Power (dBm)	Duty Factor	Output Power + Duty Factor (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	15.64	0.00	15.64	29.97	0.9931	Complies
06	2437	15.68	0.00	15.68	29.97	0.9931	Complies
11	2462	20.52	0.00	20.52	29.97	0.9931	Complies

Test Mode	TX B Mode_Total

Channel	Frequency (MHz)	Output Power (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	18.56	29.97	0.9931	Complies
06	2437	18.59	29.97	0.9931	Complies
11	2462	23.45	29.97	0.9931	Complies

Test Mode	TX G Mode_Ant. 1

Channel	Frequency (MHz)	Output Power (dBm)	Duty Factor	Output Power + Duty Factor (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	13.78	0.30	14.08	29.97	0.9931	Complies
06	2437	18.86	0.30	19.16	29.97	0.9931	Complies
11	2462	17.88	0.30	18.18	29.97	0.9931	Complies

Test Mode	TX G Mode_Ant. 2

Channel	Frequency (MHz)	Output Power (dBm)	Duty Factor	Output Power + Duty Factor (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	13.52	0.30	13.82	29.97	0.9931	Complies
06	2437	22.41	0.30	22.71	29.97	0.9931	Complies
11	2462	17.95	0.30	18.25	29.97	0.9931	Complies

Test Mode	TX G Mode_Total

Channel	Frequency (MHz)	Output Power (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	16.96	29.97	0.9931	Complies
06	2437	24.30	29.97	0.9931	Complies
11	2462	21.22	29.97	0.9931	Complies

Test Mode	TX N(HT20) Mode_Ant. 1

Channel	Frequency (MHz)	Output Power (dBm)	Duty Factor	Output Power + Duty Factor (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	13.18	0.39	13.57	29.97	0.9931	Complies
06	2437	18.91	0.39	19.30	29.97	0.9931	Complies
11	2462	17.66	0.39	18.05	29.97	0.9931	Complies

Test Mode	TX N(HT20) Mode_Ant. 2

Channel	Frequency (MHz)	Output Power (dBm)	Duty Factor	Output Power + Duty Factor (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	13.44	0.39	13.83	29.97	0.9931	Complies
06	2437	22.42	0.39	22.81	29.97	0.9931	Complies
11	2462	17.83	0.39	18.22	29.97	0.9931	Complies

Test Mode	TX N(HT20) Mode_Total

Channel	Frequency (MHz)	Output Power (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	16.72	29.97	0.9931	Complies
06	2437	24.42	29.97	0.9931	Complies
11	2462	21.15	29.97	0.9931	Complies

Test Mode	TX N(HT40) Mode_Ant. 1

Channel	Frequency (MHz)	Output Power (dBm)	Duty Factor	Output Power + Duty Factor (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
03	2422	9.78	0.62	10.40	29.97	0.9931	Complies
06	2437	13.86	0.62	14.48	29.97	0.9931	Complies
09	2452	13.44	0.62	14.06	29.97	0.9931	Complies

Test Mode	TX N(HT40) Mode_Ant. 2

Channel	Frequency (MHz)	Output Power (dBm)	Duty Factor	Output Power + Duty Factor (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
03	2422	9.93	0.62	10.55	29.97	0.9931	Complies
06	2437	13.94	0.62	14.56	29.97	0.9931	Complies
09	2452	13.26	0.62	13.88	29.97	0.9931	Complies

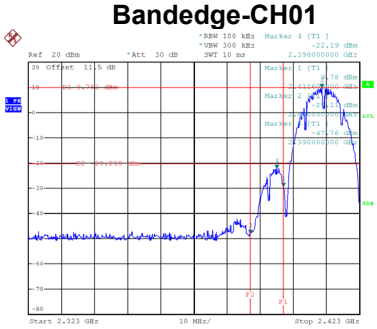
Test Mode	TX N(HT40) Mode_Total

Channel	Frequency (MHz)	Output Power (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
03	2422	13.49	29.97	0.9931	Complies
06	2437	17.53	29.97	0.9931	Complies
09	2452	16.98	29.97	0.9931	Complies

APPENDIX G - CONDUCTED SPURIOUS EMISSIONS

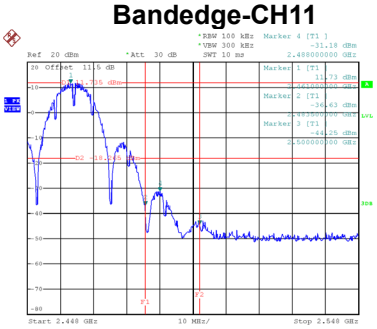
Test Mode	TX B Mode_Ant. 1

Bandedge-CH01



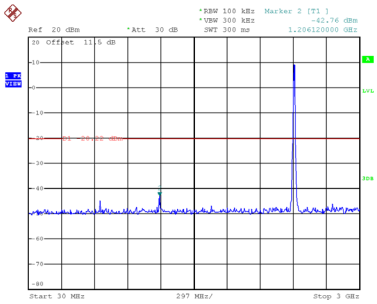
Date: 18.AUG.2021 16:09:15

Bandedge-CH11



Date: 18.AUG.2021 16:17:29

CH01 – 10th Harmonic of the fundamental frequency



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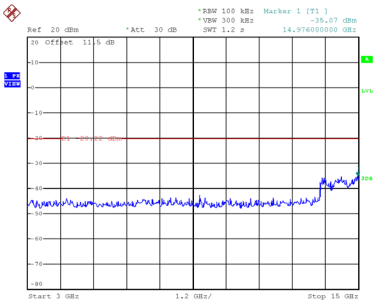

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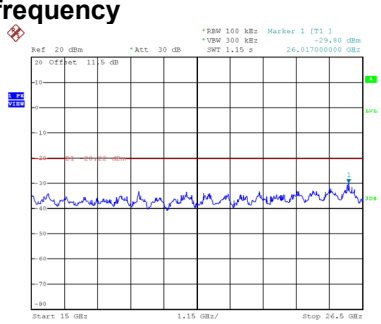
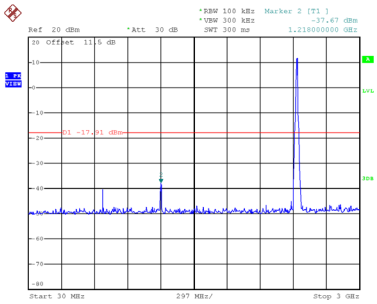
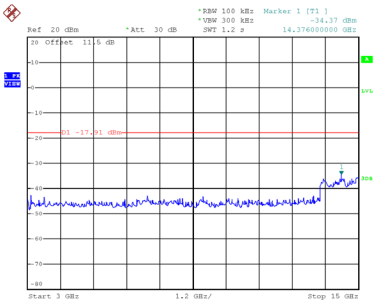


Date: 18.AUG.2021 16:09:43

CH06 – 10th Harmonic of the fundamental frequency



Date: 18.AUG.2021 17:48:16



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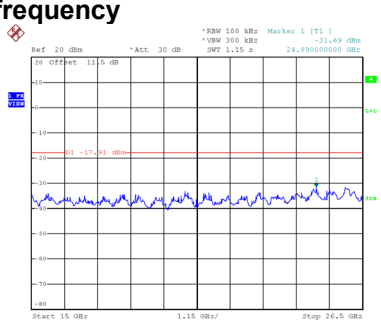
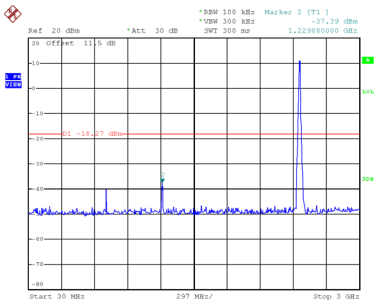


Date: 18.AUG.2021 17:48:33

CH11 – 10th Harmonic of the fundamental frequency



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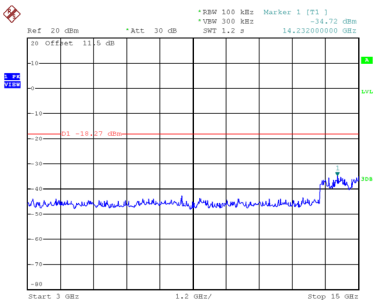

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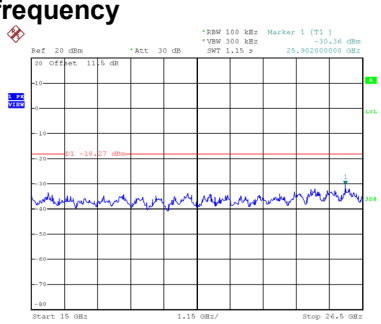

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