

# FCC Radio Test Report

## FCC ID: 2AGZWLS35X

This report concerns: Original Grant


**Project No.** : 1808T008  
**Equipment** : Wireless Headset  
**Test Model** : LS35X  
**Series Model** : N/A  
**Applicant** : LucidSound Inc.  
**Address** : 5939 Darwin Ct. Suite 100 Carlsbad, CA 92008 United States

**Date of Receipt** : Aug. 03, 2018  
**Date of Test** : Aug. 03, 2018 ~ Oct. 23, 2018  
**Issued Date** : Dec. 21, 2018  
**Tested by** : BTL Inc.


**Testing Engineer** :

  
(Kay Wu)

**Technical Manager** :

  
(James Chiu)

**Authorized Signatory** :

  
(Andy Chiu)

# B T L I N C .

No.18, Ln. 171, Sec. 2, Jiuzong Rd.,  
Neihu Dist., Taipei City 114, Taiwan (R.O.C.)  
TEL: +886-2-2657-3299 FAX: +886-2-2657-3331



## 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, 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 Guide 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, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements 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.

## CONTENTS

REPORT ISSUED HISTORY	5
1 CERTIFICATION	6
2 SUMMARY OF TEST RESULTS	7
2.1 TEST FACILITY	8
2.2 MEASUREMENT UNCERTAINTY	8
3 GENERAL INFORMATION	10
3.1 DESCRIPTION OF EUT	10
3.2 TEST MODES	11
3.3 PARAMETERS OF TEST SOFTWARE	12
3.4 DUTY CYCLE	13
3.5 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	14
3.6 SUPPORT UNITS	14
4 AC POWER LINE CONDUCTED EMISSIONS TEST	15
4.1 LIMIT	15
4.2 TEST PROCEDURE	15
4.3 DEVIATION FROM TEST STANDARD	15
4.4 TEST SETUP	16
4.5 EUT OPERATING CONDITIONS	16
4.6 TEST RESULT	16
5 RADIATED EMISSIONS TEST	17
5.1 LIMIT	17
5.2 TEST PROCEDURE	18
5.3 DEVIATION FROM TEST STANDARD	18
5.4 TEST SETUP	19
5.5 EUT OPERATING CONDITIONS	20
5.6 TEST RESULT – 9 KHZ TO 30 MHZ	20
5.7 TEST RESULT – 30MHZ TO 1000 MHZ	20
5.8 TEST RESULT – ABOVE 1000 MHZ	21
6 BANDWIDTH TEST	22
6.1 LIMIT	22
6.2 TEST PROCEDURE	22
6.3 DEVIATION FROM TEST STANDARD	22
6.4 TEST SETUP	22
6.5 EUT OPERATING CONDITIONS	22
6.6 TEST RESULT	22
7 PEAK OUTPUT POWER TEST	23
7.1 LIMIT	23
7.2 TEST PROCEDURE	23
7.3 DEVIATION FROM TEST STANDARD	23
7.4 TEST SETUP	23
7.5 EUT OPERATING CONDITIONS	23

7.6	TEST RESULT	23
8	ANTENNA CONDUCTED SPURIOUS EMISSIONS TEST	24
8.1	LIMIT	24
8.2	TEST PROCEDURE	24
8.3	DEVIATION FROM TEST STANDARD	24
8.4	TEST SETUP	24
8.5	EUT OPERATING CONDITIONS	24
8.6	TEST RESULT	24
9	POWER SPECTRAL DENSITY	25
9.1	LIMIT	25
9.2	TEST PROCEDURE	25
9.3	DEVIATION FROM TEST STANDARD	25
9.4	TEST SETUP	25
9.5	EUT OPERATING CONDITIONS	25
9.6	TEST RESULT	25
10	LIST OF MEASURING EQUIPMENTS	26
11	EUT TEST PHOTO	28
APPENDIX A	AC POWER LINE CONDUCTED EMISSIONS	32
APPENDIX B	RADIATED EMISSIONS - 9 KHZ TO 30 MHZ	35
APPENDIX C	RADIATED EMISSIONS - 30 MHZ TO 1000 MHZ	40
APPENDIX D	RADIATED EMISSIONS - ABOVE 1000 MHZ	43
APPENDIX E	BANDWIDTH	80
APPENDIX F	PEAK OUTPUT POWER	84
APPENDIX G	ANTENNA CONDUCTED SPURIOUS EMISSIONS	86
APPENDIX H	POWER SPECTRAL DENSITY	90

## REPORT ISSUED HISTORY

Report Version	Description	Issued Date
R00	Original Issue.	Oct. 26, 2018
R01	Revised report to address TCB's comments.	Dec. 21, 2018

## 1 CERTIFICATION

Equipment : Wireless Headset  
Brand Name : LucidSound  
Test Model : LS35X  
Series Model : N/A  
Applicant : LucidSound Inc.  
Manufacturer : Ampacs corp.  
Address : 3F., No.19-3, Sanchong Rd., Nangang Dist., Taipei City 11501, Taiwan  
Date of Test : Aug. 03, 2018 ~ Oct. 23, 2018  
Test Sample : Engineering Sample  
Standard(s) : FCC Part15, Subpart C (§15.247)  
ANSI C63.10-2013

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

The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCCP-1-1808T008) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO-17025 quality assessment standard and technical standard(s).

**Test results included in this report is only for the WLAN 2.4 GHz part.**

## 2 SUMMARY OF TEST RESULTS

Test procedures according to the technical standards.

FCC Part15, Subpart C (§15.247)				
FCC Clause No	Description	Test Result	Judgement	Remark
§15.207	AC Power Line Conducted Emissions	APPENDIX A	Pass	-----
§15.205 §15.209 §15.247(d)	Radiated Emissions	APPENDIX B APPENDIX C APPENDIX D	Pass	-----
§15.247(a)	Bandwidth	APPENDIX E	Pass	-----
§15.247(b)	Peak Output Power	APPENDIX F	Pass	-----
§15.247(d)	Antenna Conducted Spurious Emissions	APPENDIX G	Pass	-----
§15.247(e)	Power Spectral Density	APPENDIX H	Pass	-----
§15.203	Antenna Requirement	-----	Pass	-----

NOTE:

(1) "N/A" denotes test is not applicable in this Test Report.

## 2.1 TEST FACILITY

The test facilities used to collect the test data in this report:

**CB05:** (FCC RN:674415; FCC DN:TW0659)

No. 68-1, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)

**CB15:** (VCCI RN: R-20020; FCC RN:674415; FCC DN:TW0659; ISED Assigned Code:20088-5)

No. 68-1, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)

## 2.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. The BTL measurement uncertainty is less than the CISPR 16-4-2  $U_{\text{CISPR}}$  requirement.

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95 %.

### A. AC power line conducted emissions test:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U (dB)
C05	CISPR	150 kHz ~ 30MHz	2.68	C05

### B. Radiated emissions below 1 GHz test:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U (dB)
CB15 (3m)	CISPR	30 MHz ~ 200 MHz	V	4.20
		30 MHz ~ 200 MHz	H	3.64
		200 MHz ~ 1,000 MHz	V	4.56
		200 MHz ~ 1,000 MHz	H	3.90

### C. Radiated emissions above 1 GHz test:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U (dB)
CB15 (3m)	CISPR	1 GHz ~ 6 GHz	V	4.46
		1 GHz ~ 6 GHz	H	4.40
		6 GHz ~18 GHz	V	3.88
		6 GHz ~18 GHz	H	4.00

Test Site	Method	Measurement Frequency Range	U (dB)
CB15 (1m)	CISPR	18 GHz ~ 26.5 GHz	4.62
		26.5 GHz ~ 40 GHz	5.12

### D. Conducted tests:

Item	Method	U
Bandwidth	ANSI	3.8 %
Output Power	ANSI	0.95 dB
Power Spectral Density	ANSI	0.86 dB
Conducted Spurious Emissions	ANSI	2.71 dB



NOTE:

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

Our calculated Measurement Instrumentation Uncertainty is shown in the tables above. These are our  $U_{lab}$  values in CISPR 16-4-2 terminology.

Since Table 1 of CISPR 16-4-2 has values of measurement instrumentation uncertainty, called  $U_{CISPR}$ , as follows:

Conducted Disturbance (mains port) – 150 kHz – 30 MHz : 3.6 dB

Radiated Disturbance (electric field strength on an open area test site or alternative test site) – 30 MHz – 1000 MHz : 5.2 dB

### 3 GENERAL INFORMATION

#### 3.1 DESCRIPTION OF EUT

Equipment	Wireless Headset
Brand Name	LucidSound
Test Model	LS35X
Series Model	N/A
Model Difference	N/A
Power Source	#1 DC voltage supplied from USB port. #2 Supplied from Li-ion battery.
Power Rating	#1 DC 5V #2 DC 3.65V~4.2V
Products Covered	N/A
Operation Frequency	2412 MHz to 2462 MHz
Modulation Type	IEEE 802.11b: DSSS IEEE 802.11g: OFDM IEEE 802.11n: OFDM
Bit Rate of Transmitter	IEEE 802.11b: 11/5.5/2/1 Mbps IEEE 802.11g: 54/48/36/24/18/12/9/6 Mbps IEEE 802.11n: up to 150 Mbps
Maximum Output Power	IEEE 802.11b: 11.87 dBm (0.0154 W) IEEE 802.11g: 19.51 dBm (0.0893 W) IEEE 802.11n (HT20): 19.37 dBm (0.0865 W)

**NOTE:**

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

(2) Channel List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	05	2432	09	2452
02	2417	06	2437	10	2457
03	2422	07	2442	11	2462
04	2427	08	2447		

(3) Table for Filed Antenna:

Ant.	Brand	Model	Type	Connector	Gain (dBi)
1	ONEWAVE	WAN7020LD25N04	Chip	N/A	3.98

### 3.2 TEST MODES

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

Pretest Mode	Description
1	TX B MODE CHANNEL 01/06/11
2	TX G MODE CHANNEL 01/06/11
3	TX N (HT20) MODE CHANNEL 01/06/11

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

AC power line conducted emissions test	
Test Mode	Description
1	TX B MODE CHANNEL 01

Radiated emissions test	
Test Mode	Description
1	TX B MODE CHANNEL 01/06/11
2	TX G MODE CHANNEL 01/06/11
3	TX N (HT20) MODE CHANNEL 01/06/11

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

**NOTE:**

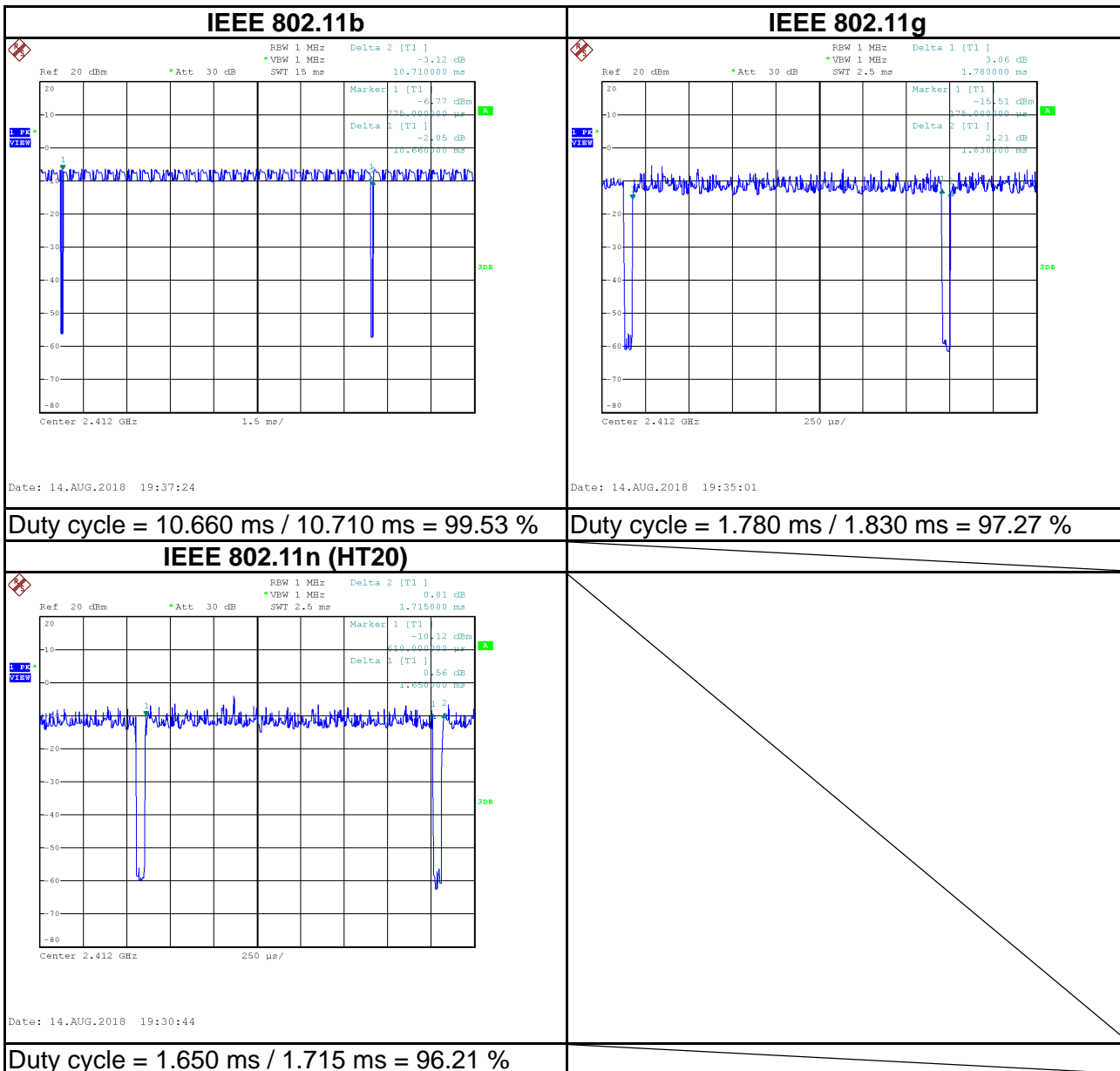
- (1) The measurements are performed at the low, middle and high available channels.
- (2) For radiated emission tests, the highest output powers were set for final test.
- (3) For radiated emission below 1 GHz test, the IEEE 802.11b was found to be the worst case and recorded.

### 3.3 PARAMETERS OF TEST SOFTWARE

Test Software	ART2-GUI(Verion:2.3)			
Mode	2412 MHz	2437 MHz	2462 MHz	Data Rate
IEEE 802.11b	8	7	6.5	1 Mbps
IEEE 802.11g	7.5	6.5	6	6 Mbps
IEEE 802.11n (HT20)	7.5	6.5	6	MCS 0

### 3.4 DUTY CYCLE

If duty cycle is  $\geq 98\%$ , duty factor is not required.  
If duty cycle is  $< 98\%$ , duty factor shall be considered.

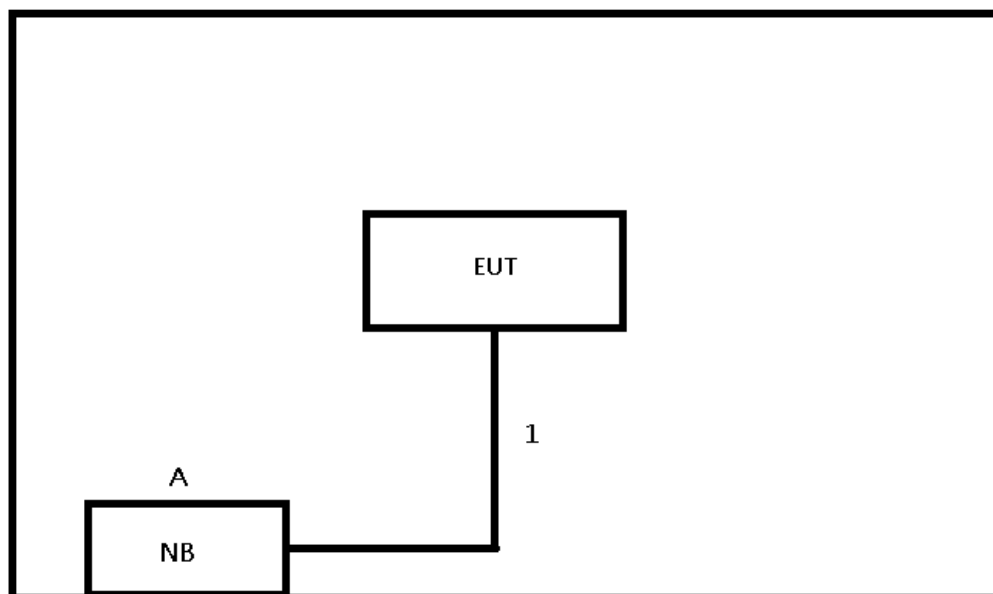


#### NOTE:

For IEEE 802.11g and IEEE 802.11n (HT20):

For radiated emissions frequency above 1 GHz, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 1 kHz (Duty cycle  $< 98\%$ ).

### 3.5 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



### 3.6 SUPPORT UNITS

Item	Equipment	Brand	Model No.	Series No.	Remarks
A	NB	HP	TPN-I119	5CG7032BNS	Furnished at test lab

Item	Shielded	Ferrite Core	Length	Cable Type	Remarks
1	NO	NO	1m	USB Cable	Furnished at test lab

## 4 AC POWER LINE CONDUCTED EMISSIONS TEST

### 4.1 LIMIT

Frequency (MHz)	Class A (dB $\mu$ V)		Class B (dB $\mu$ V)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56 *	56 - 46 *
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	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) The test result calculated as following:  
 Measurement Value = Reading Level + Correct Factor  
 Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor (if use)  
 Margin Level = Measurement Value – Limit Value

The following table is the setting of the receiver.

Receiver Parameter	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 KHz

### 4.2 TEST PROCEDURE

- a. The EUT was placed 0.8 m above the horizontal ground plane with the EUT being connected to the power mains through a line impedance stabilization network (LISN).  
 All other support equipment were powered from an additional LISN(s).  
 The LISN provides 50 Ohm/50uH of 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 to keep the cable above 40 cm.
- c. Excess I/O cables that are not connected to a peripheral shall be bundled in the center.  
 The end of the cable will be terminated, using the correct terminating impedance.  
 The overall length shall not exceed 1 m.
- d. The LISN is spaced at least 80 cm from the nearest part of the EUT chassis.
- e. For the actual test configuration, please refer to the related Item - EUT Test Photos.

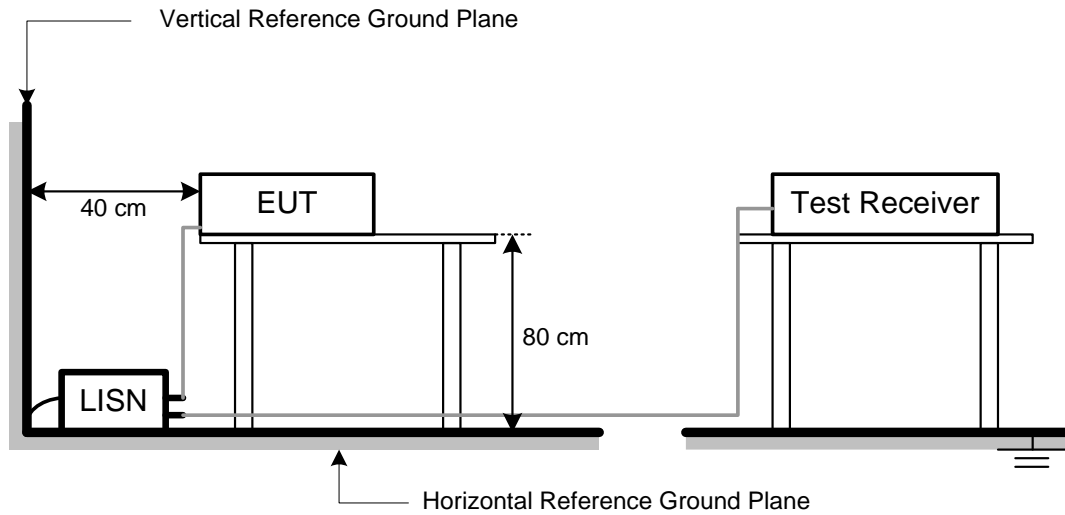
**NOTE:**

- (1) In the results, each reading is marked as Peak, QP or AVG per the detector used.  
 BW=9 kHz (6 dB Bandwidth)
- (2) All readings are Peak unless otherwise stated QP or AVG in column of Note. Both the QP and the AVG readings must be less than the limit for compliance.

### 4.3 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.4 TEST SETUP



#### 4.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in normal link mode.

#### 4.6 TEST RESULT

Temperature: 25 °C    Relative Humidity: 45 %    Test Voltage: AC 120V/50Hz

Please refer to the APPENDIX A.



## 5 RADIATED EMISSIONS TEST

### 5.1 LIMIT

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

#### LIMITS OF RADIATED EMISSIONS MEASUREMENT (9 kHz to 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
960~1000	500	3

#### LIMITS OF RADIATED EMISSIONS MEASUREMENT (Above 1000 MHz)

Frequency (MHz)	Radiated Emissions (dBuV/m)		Measurement Distance (meters)
	Peak	Average	
Above 1000	74	54	3

#### NOTE:

- (1) The limit for radiated test was performed according to FCC Part 15, Subpart C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).
- (4) The test result calculated as following:  
 Measurement Value = Reading Level + Correct Factor  
 Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use)  
 Margin Level = Measurement Value - Limit Value

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 1/T for Average

Spectrum Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9KHz~90KHz for PK/AVG detector
Start ~ Stop Frequency	90KHz~110KHz for QP detector
Start ~ Stop Frequency	110KHz~490KHz for PK/AVG detector
Start ~ Stop Frequency	490KHz~30MHz for QP detector
Start ~ Stop Frequency	30MHz~1000MHz for QP detector

## 5.2 TEST PROCEDURE

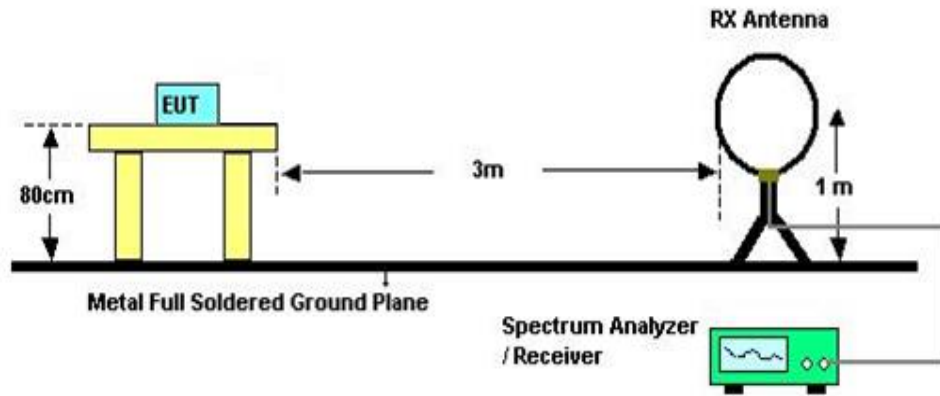
- a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
- b. The measuring distance 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 1GHz)
- c. The height of the equipment or of the substitution antenna shall be 0.8 m or 1.5 m, 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 1GHz.
- 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 1GHz)
- 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 1GHz)
- i. For the actual test configuration, please refer to the related Item –EUT Test Photos.

## 5.3 DEVIATION FROM TEST STANDARD

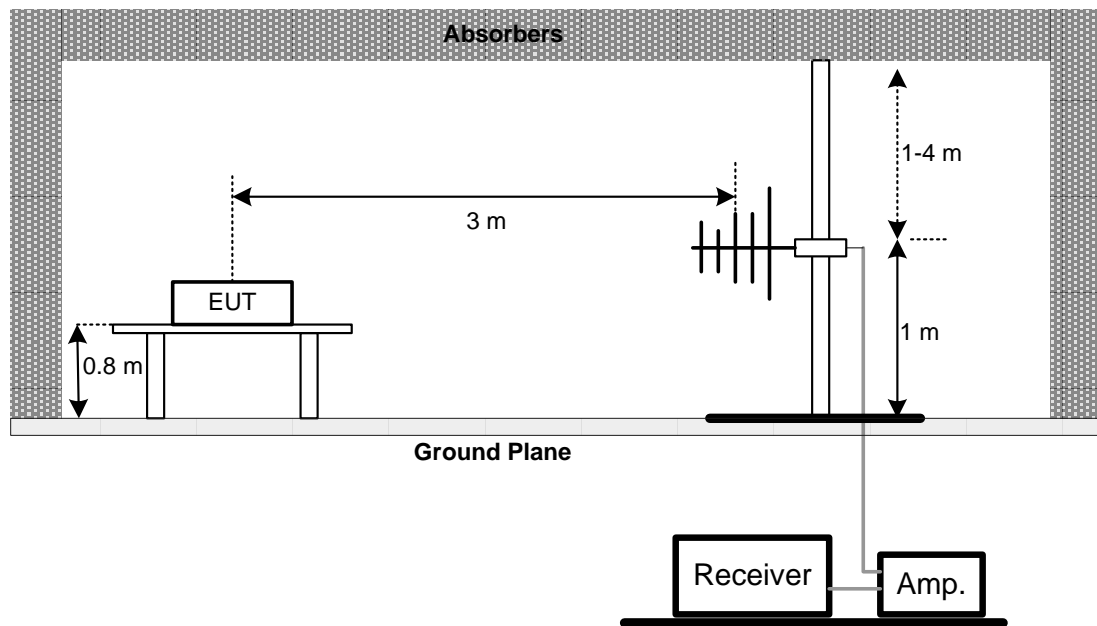
No deviation.

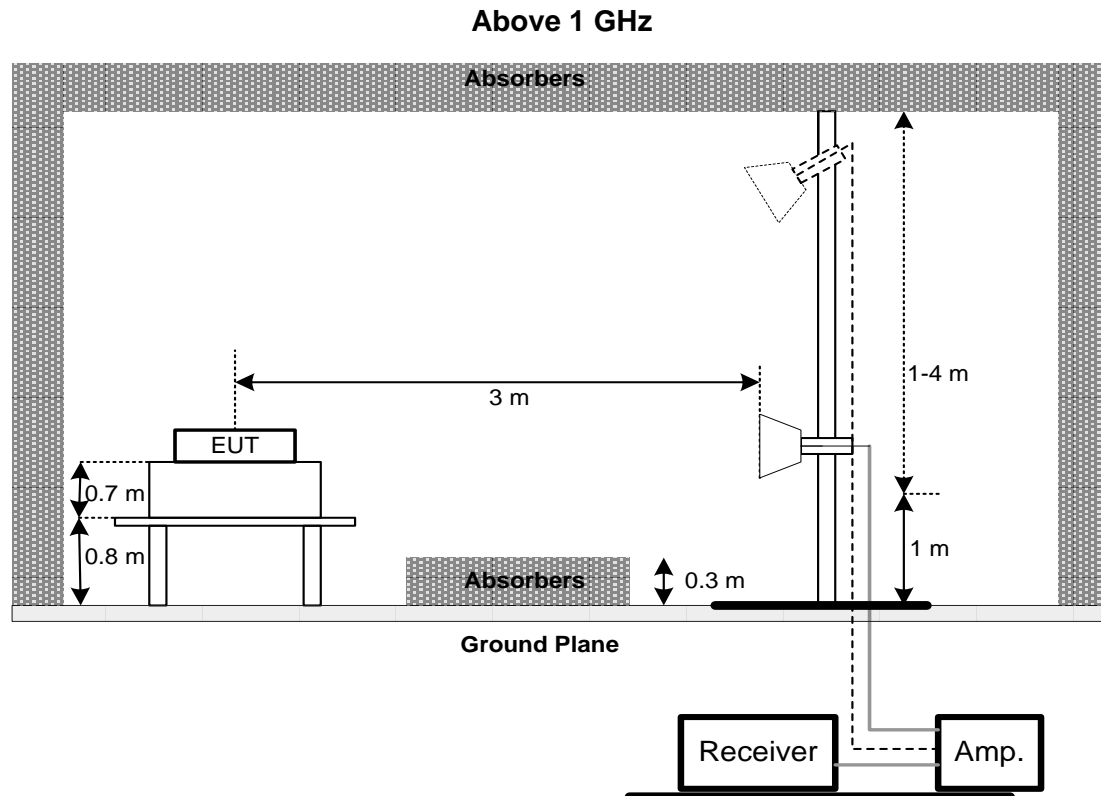
## 5.4 TEST SETUP

### Below 30 MHz



### 30 MHz to 1 GHz





## 5.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

## 5.6 TEST RESULT – 9 KHZ TO 30 MHZ

Temperature: 23 °C    Relative Humidity: 70 %    Test Voltage: AC 120V/50Hz

Please refer to the APPENDIX B.

### NOTE:

- (1) The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
- (2) Distance extrapolation factor =  $40 \log (\text{specific distance} / \text{test distance})$  (dB).
- (3) Limit line = specific limits (dBuV) + distance extrapolation factor.

## 5.7 TEST RESULT – 30MHZ TO 1000 MHZ

Temperature: 23 °C    Relative Humidity: 70 %    Test Voltage: AC 120V/50Hz

Please refer to the APPENDIX C.

## 5.8 TEST RESULT – ABOVE 1000 MHZ

Temperature: 23 °C    Relative Humidity: 70 %    Test Voltage: AC 120V/50Hz

Please refer to the APPENDIX D.

### NOTE:

- (1) No limit: This is fundamental signal, the judgment is not applicable.  
For fundamental signal judgment was referred to Peak output test.

## 6 BANDWIDTH TEST

### 6.1 LIMIT

FCC Part15, Subpart C (§15.247)		
Section	Test Item	Limit
§15.247(a)	6 dB Bandwidth	500 kHz

### 6.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- Spectrum Setting: RBW= 100KHz, VBW=300KHz, Sweep time = 2.5 ms.

### 6.3 DEVIATION FROM TEST STANDARD

No deviation.

### 6.4 TEST SETUP



### 6.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

### 6.6 TEST RESULT

Please refer to the APPENDIX E.

## 7 PEAK OUTPUT POWER TEST

### 7.1 LIMIT

FCC Part15, Subpart C (§15.247)		
Section	Test Item	Limit
§15.247(b)	Maximum Output Power	1 Watt or 30dBm

### 7.2 TEST PROCEDURE

- The EUT was directly connected to the power meter and antenna output port as show in the block diagram below.
- The maximum peak conducted output power was performed in accordance with method 9.1.2 of FCC KDB 558074 D01 DTS Meas Guidance.

### 7.3 DEVIATION FROM TEST STANDARD

No deviation.

### 7.4 TEST SETUP



### 7.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

### 7.6 TEST RESULT

Please refer to the APPENDIX F.

## 8 ANTENNA CONDUCTED SPURIOUS EMISSIONS TEST

### 8.1 LIMIT

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits.

### 8.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- Spectrum Setting: RBW = 100 kHz, VBW=300 kHz, Sweep time = Auto.
- Offset = antenna gain + cable loss.

### 8.3 DEVIATION FROM TEST STANDARD

No deviation.

### 8.4 TEST SETUP



### 8.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

### 8.6 TEST RESULT

Please refer to the APPENDIX G.



## 9 POWER SPECTRAL DENSITY

### 9.1 LIMIT

FCC Part15, Subpart C (§15.247)		
Section	Test Item	Limit
§15.247(e)	Power Spectral Density	8 dBm (in any 3 kHz)

### 9.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- Spectrum Setting: RBW = 3 kHz, VBW = 10 kHz, Sweep time = Auto.

### 9.3 DEVIATION FROM TEST STANDARD

No deviation.

### 9.4 TEST SETUP



### 9.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

### 9.6 TEST RESULT

Please refer to the APPENDIX H.

## 10 LIST OF MEASURING EQUIPMENTS

AC Power Line Conducted Emissions					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	TWO-LINE V-NETWORK	R&S	ENV216	101050	Mar. 08, 2019
2	Test Cable	EMCI	EMCCFD300-BM-BMR-6000	170715	Aug. 06, 2018 Aug. 07, 2019
3	EMI Test Receiver	R&S	ESR7	101433	Dec. 10, 2018
4	Measurement Software	EZ	EZ EMC (Version NB-03A)	N/A	N/A

Radiated Emissions					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Preamplifier	EMCI	012645B	980267	Feb. 27, 2019
2	Preamplifier	EMCI	EMC02325	980217	Dec. 28, 2018
3	Preamplifier	EMCI	EMC2654045	980030	Feb. 13, 2019
4	Test Cable	EMCI	EMC104-SM-SM-8000	8m	Jan. 03, 2019
5	Test Cable	EMCI	EMC104-SM-SM-800	150207	Jan. 03, 2019
6	Test Cable	EMCI	EEMC104-SM-SM-3000	151205	Jan. 03, 2019
7	MXE EMI Receiver	Agilent	N9038A	MY55420127	Jan. 08, 2019
8	Signal Analyzer	Agilent	N9010A	MY52220990	Feb. 21, 2019
9	Loop Ant	EMCI	LPA600	274	May 03, 2019
10	Horn Ant	SCHWARZBECK	BBHA 9120D	9120D-1342	Feb. 27, 2019
11	Horn Ant	Schwarzbeck	BBHA 9170	187	Dec. 05, 2018
12	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	9168-548	Jan. 15, 2019
13	5dB Attenuator	EMCI	EMCI-N-6-05	AT-N0623	Jan. 15, 2019
14	Measurement Software	Farad	EZ EMC (Ver. NB-03A1-01)	N/A	N/A

Bandwidth					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	R&S/FSP40	101139	May 25, 2019

Peak Output Power					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Power Meter	Anritsu	ML2495A	1128008	Oct. 02, 2018 Oct. 01, 2019
2	Power Sensor	Anritsu	MA2411B	1126001	Oct. 02, 2018 Oct. 01, 2019

Antenna Conducted Spurious Emissions					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	R&S/FSP40	101139	May 25, 2019

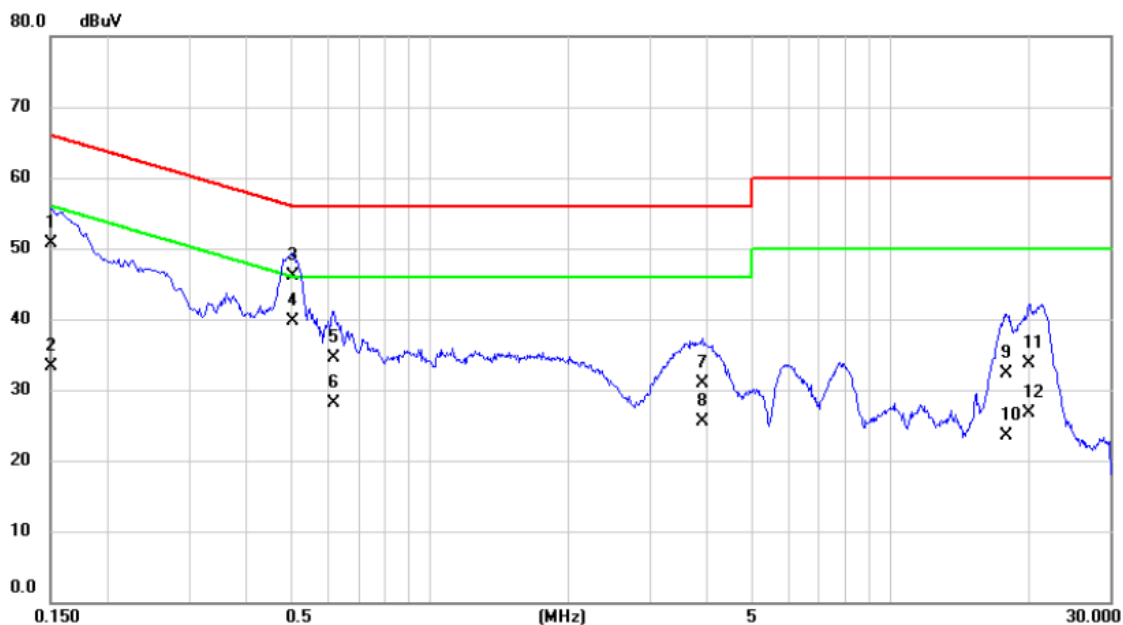
Power Spectral Density					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	R&S/FSP40	101139	May 25, 2019

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

## APPENDIX A AC POWER LINE CONDUCTED EMISSIONS

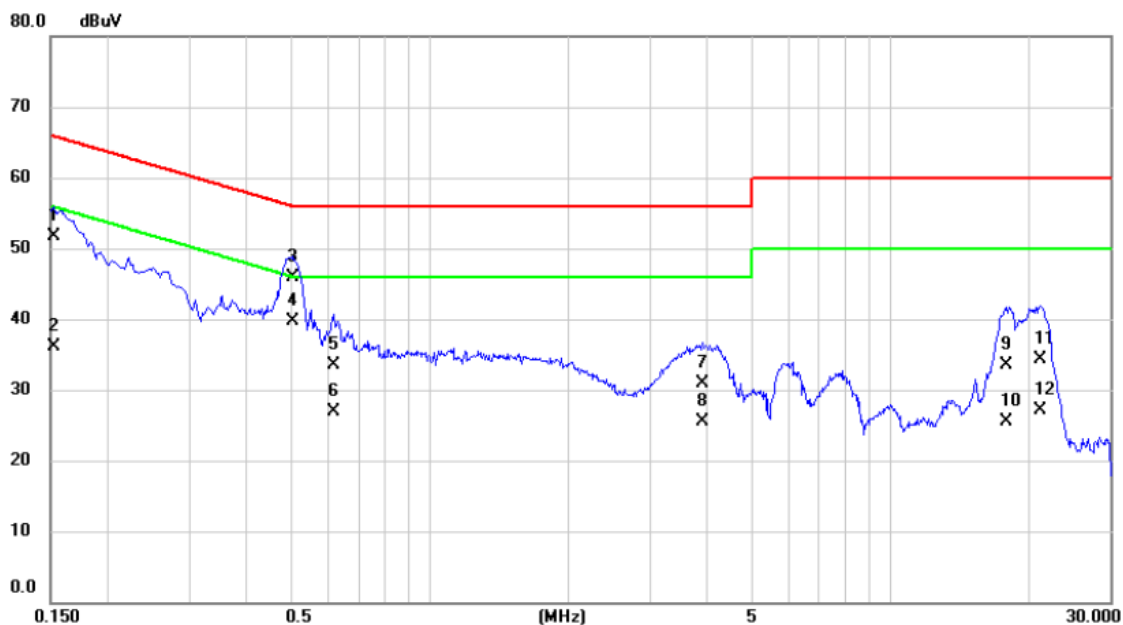
CONTINUE ON NEXT PAGE

Test Mode	TX B MODE CHANNEL 2412 MHz	Phase	Line
-----------	----------------------------	-------	------



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1500	41.10	9.63	50.73	66.00	-15.27	QP	
2		0.1500	23.70	9.63	33.33	56.00	-22.67	AVG	
3		0.5032	36.40	9.66	46.06	56.00	-9.94	QP	
4	*	0.5032	30.00	9.66	39.66	46.00	-6.34	AVG	
5		0.6180	24.80	9.66	34.46	56.00	-21.54	QP	
6		0.6180	18.40	9.66	28.06	46.00	-17.94	AVG	
7		3.9187	21.20	9.73	30.93	56.00	-25.07	QP	
8		3.9187	15.80	9.73	25.53	46.00	-20.47	AVG	
9		17.9115	22.30	9.96	32.26	60.00	-27.74	QP	
10		17.9115	13.60	9.96	23.56	50.00	-26.44	AVG	
11		20.0220	23.80	9.97	33.77	60.00	-26.23	QP	
12		20.0220	16.80	9.97	26.77	50.00	-23.23	AVG	

Test Mode	TX B MODE CHANNEL 2412 MHz	Phase	Neutral
-----------	----------------------------	-------	---------

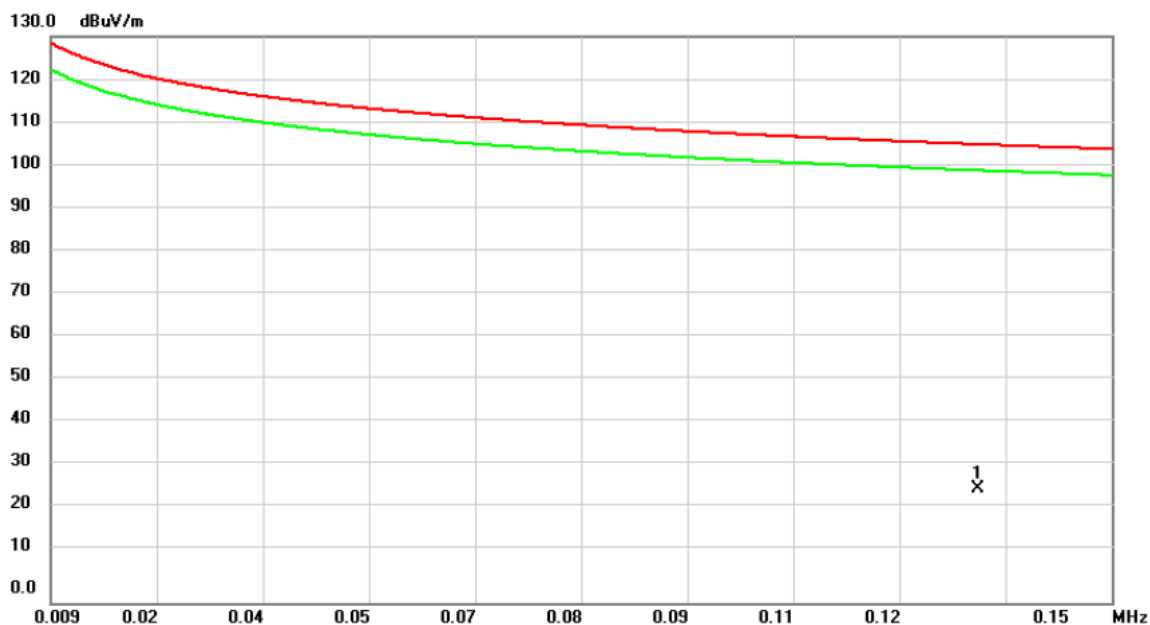


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1522	42.10	9.62	51.72	65.88	-14.16	QP	
2		0.1522	26.50	9.62	36.12	55.88	-19.76	AVG	
3		0.5032	36.20	9.65	45.85	56.00	-10.15	QP	
4	*	0.5032	30.00	9.65	39.65	46.00	-6.35	AVG	
5		0.6202	23.80	9.65	33.45	56.00	-22.55	QP	
6		0.6202	17.20	9.65	26.85	46.00	-19.15	AVG	
7		3.9053	21.20	9.72	30.92	56.00	-25.08	QP	
8		3.9053	15.70	9.72	25.42	46.00	-20.58	AVG	
9		17.8373	23.50	9.97	33.47	60.00	-26.53	QP	
10		17.8373	15.50	9.97	25.47	50.00	-24.53	AVG	
11		21.0840	24.30	9.98	34.28	60.00	-25.72	QP	
12		21.0840	17.20	9.98	27.18	50.00	-22.82	AVG	

## APPENDIX B    RADIATED EMISSIONS - 9 KHZ TO 30 MHZ

CONTINUE ON NEXT PAGE

Test Mode	TX B MODE CHANNEL 2412 MHz	Azimuth Angle	90°
-----------	----------------------------	---------------	-----



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	0.1323	12.10	14.20	26.30	105.17	-78.87	peak	

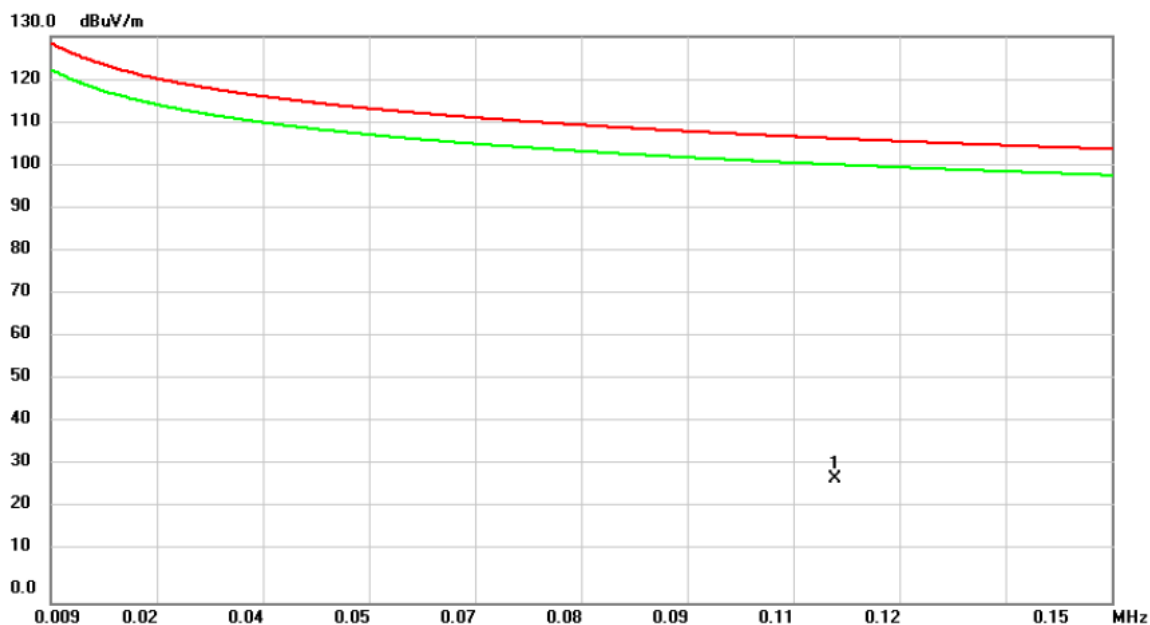


Test Mode	TX B MODE CHANNEL 2412 MHz	Azimuth Angle	90°
-----------	----------------------------	---------------	-----



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	0.5878	29.18	2.72	31.90	72.22	-40.32	peak	
2		1.9012	29.02	-2.68	26.34	69.54	-43.20	peak	
3		3.4932	28.32	-3.73	24.59	69.54	-44.95	peak	
4		6.9160	28.94	-4.11	24.83	69.54	-44.71	peak	
5		8.3090	28.85	-4.44	24.41	69.54	-45.13	peak	
6		12.8860	28.03	-4.82	23.21	69.54	-46.33	peak	

Test Mode	TX B MODE CHANNEL 2412 MHz	Azimuth Angle	0°
-----------	----------------------------	---------------	----



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.1132	13.07	15.28	28.35	106.53	-78.18	peak	

Test Mode	TX B MODE CHANNEL 2412 MHz	Azimuth Angle	0°
-----------	----------------------------	---------------	----

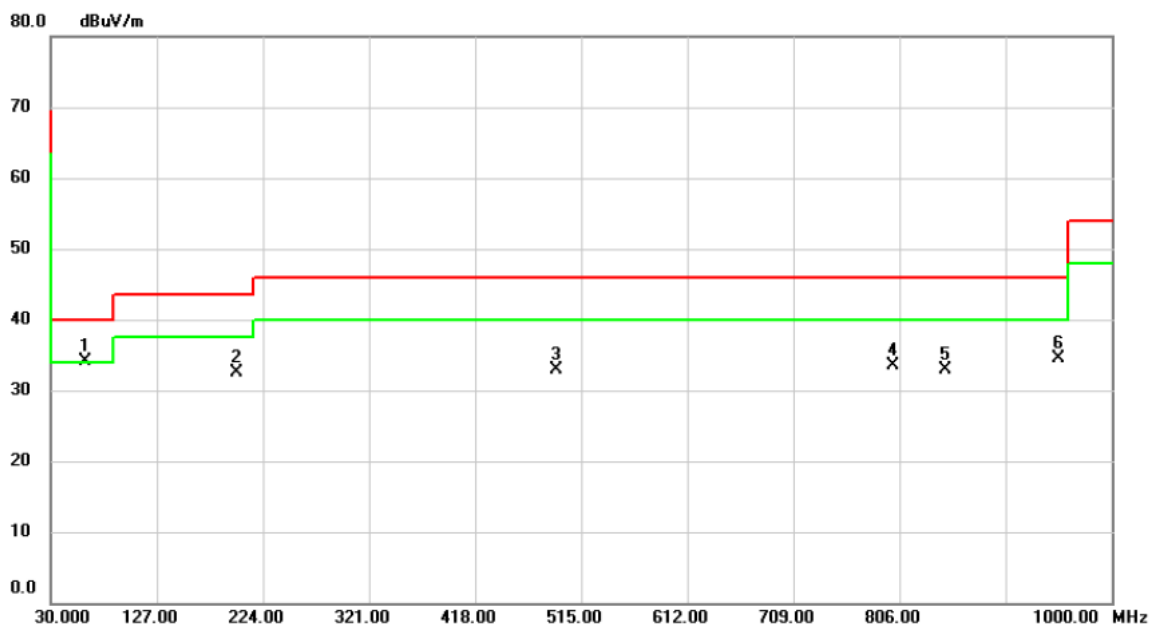


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		0.2694	30.02	8.03	38.05	99.00	-60.95	peak	
2	*	1.2644	29.38	-1.03	28.35	65.57	-37.22	peak	
3		2.0206	29.30	-2.95	26.35	69.54	-43.19	peak	
4		4.2892	29.29	-3.84	25.45	69.54	-44.09	peak	
5		6.9160	29.27	-4.11	25.16	69.54	-44.38	peak	
6		10.1796	28.33	-4.73	23.60	69.54	-45.94	peak	

## APPENDIX C    RADIATED EMISSIONS - 30 MHZ TO 1000 MHZ

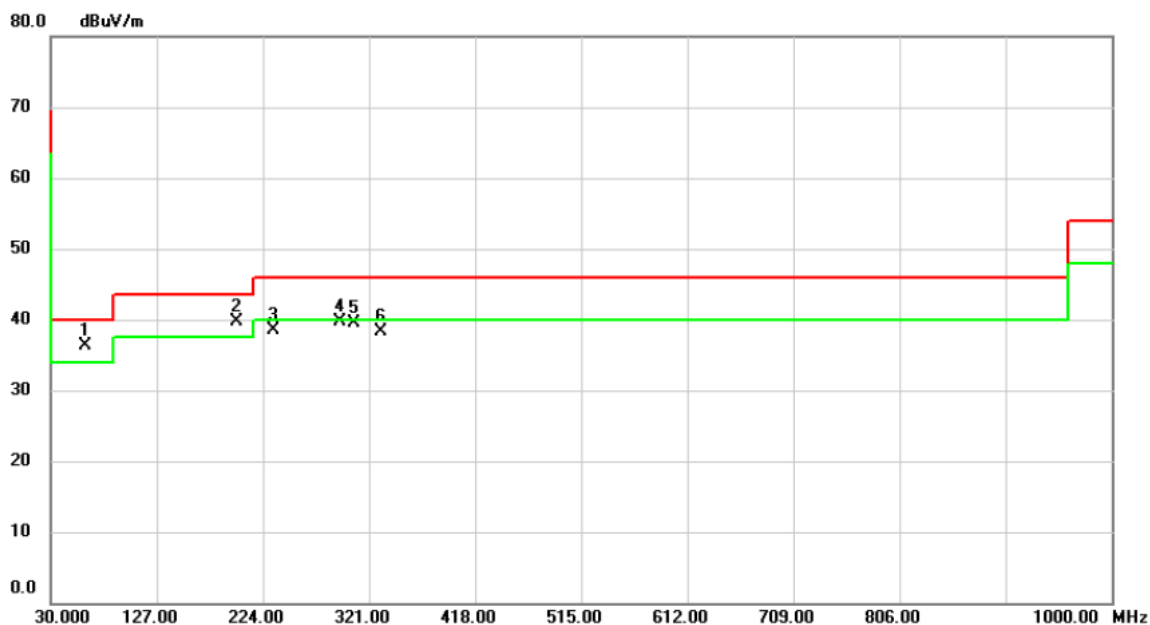
CONTINUE ON NEXT PAGE

Test Mode	TX B MODE CHANNEL 2412 MHz	Polarization	Vertical
-----------	----------------------------	--------------	----------



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	61.0400	43.03	-8.94	34.09	40.00	-5.91	peak	
2		199.7500	43.39	-10.90	32.49	43.50	-11.01	peak	
3		491.7200	35.94	-3.07	32.87	46.00	-13.13	peak	
4		800.1800	30.44	3.06	33.50	46.00	-12.50	peak	
5		847.7100	29.03	3.93	32.96	46.00	-13.04	peak	
6		951.5000	28.77	5.81	34.58	46.00	-11.42	peak	

Test Mode	TX B MODE CHANNEL 2412 MHz	Polarization	Horizontal
-----------	----------------------------	--------------	------------



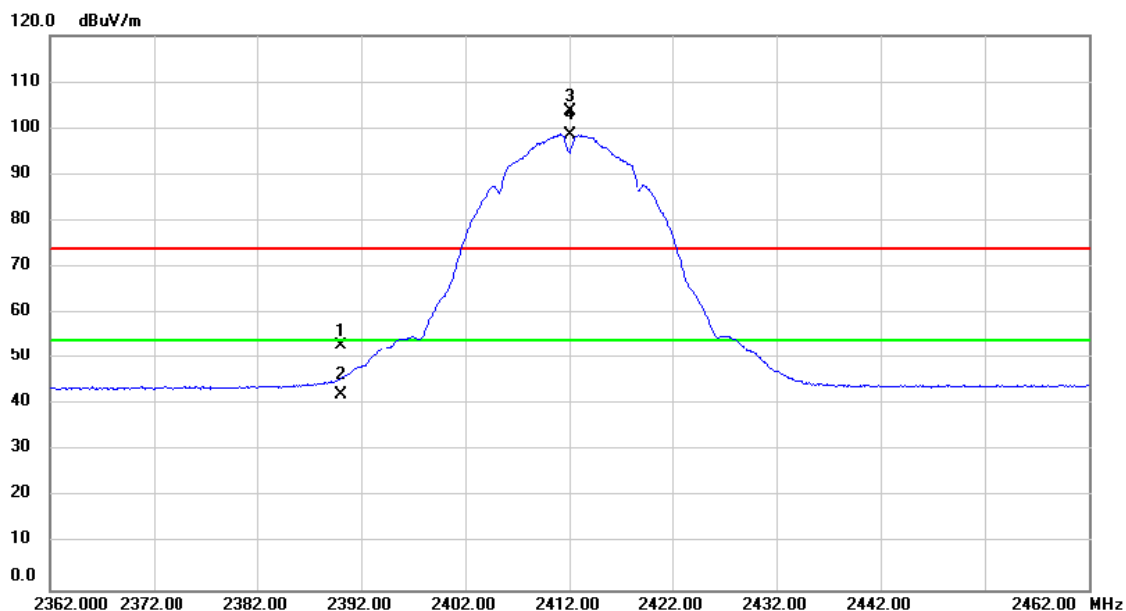
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	61.0400	45.32	-8.94	36.38	40.00	-3.62	peak	
2	!	199.7500	50.59	-10.90	39.69	43.50	-3.81	peak	
3		233.7000	47.93	-9.39	38.54	46.00	-7.46	peak	
4		294.8100	47.38	-7.61	39.77	46.00	-6.23	peak	
5		307.4200	46.89	-7.32	39.57	46.00	-6.43	peak	
6		331.6700	45.08	-6.68	38.40	46.00	-7.60	peak	

## APPENDIX D    RADIATED EMISSIONS - ABOVE 1000 MHZ

CONTINUE ON NEXT PAGE

Test Mode	TX B MODE _2412 MHz	Polarization	Vertical
-----------	---------------------	--------------	----------

Orthogonal Axis: Z

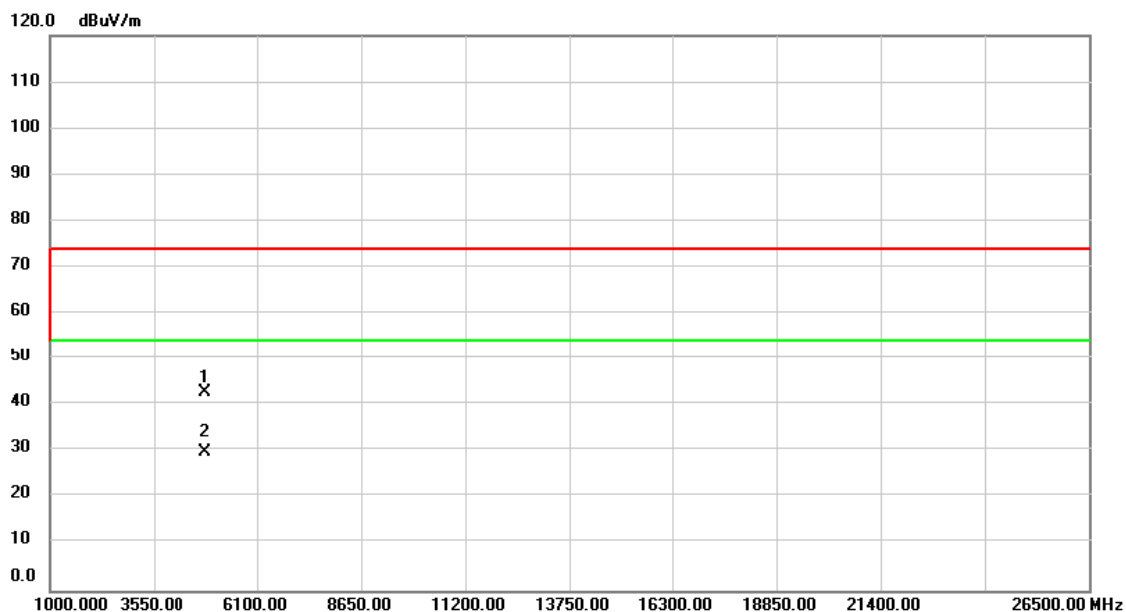


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2390.000	22.10	30.84	52.94	74.00	-21.06	peak	
2		2390.000	11.20	30.84	42.04	54.00	-11.96	AVG	
3	X	2412.000	72.86	30.92	103.78	74.00	29.78	peak	No Limit
4	*	2412.000	67.77	30.92	98.69	54.00	44.69	AVG	No Limit



Test Mode	TX B MODE _2412 MHz	Polarization	Vertical
-----------	---------------------	--------------	----------

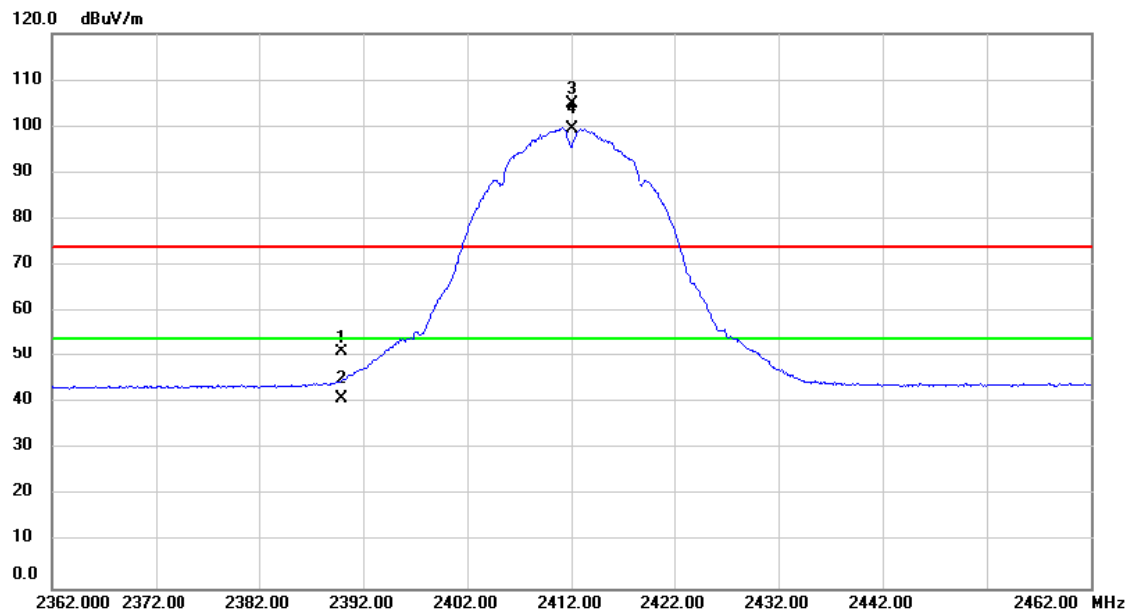
**Orthogonal Axis: Z**



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4824.000	54.20	-11.48	42.72	74.00	-31.28	peak	
2	*	4824.000	41.46	-11.48	29.98	54.00	-24.02	AVG	

Test Mode	TX B MODE _2412 MHz	Polarization	Horizontal
-----------	---------------------	--------------	------------

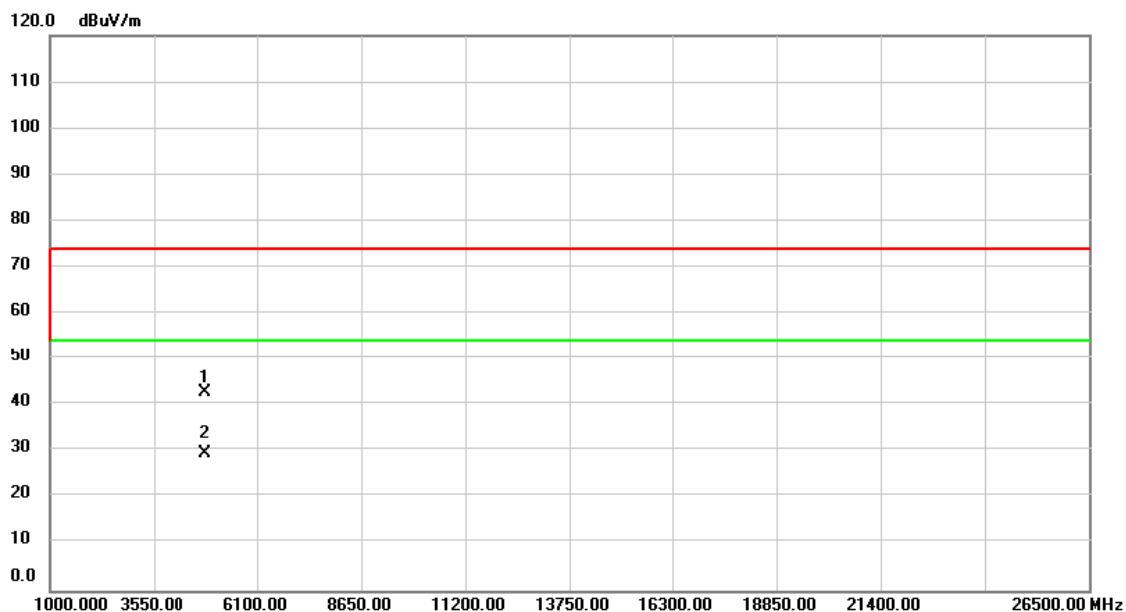
Orthogonal Axis: Z



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2389.972	20.17	30.84	51.01	74.00	-22.99	peak	
2		2389.972	10.22	30.84	41.06	54.00	-12.94	AVG	
3	X	2412.000	73.94	30.92	104.86	74.00	30.86	peak	No Limit
4	*	2412.000	68.61	30.92	99.53	54.00	45.53	AVG	No Limit

Test Mode	TX B MODE _2412 MHz	Polarization	Horizontal
-----------	---------------------	--------------	------------

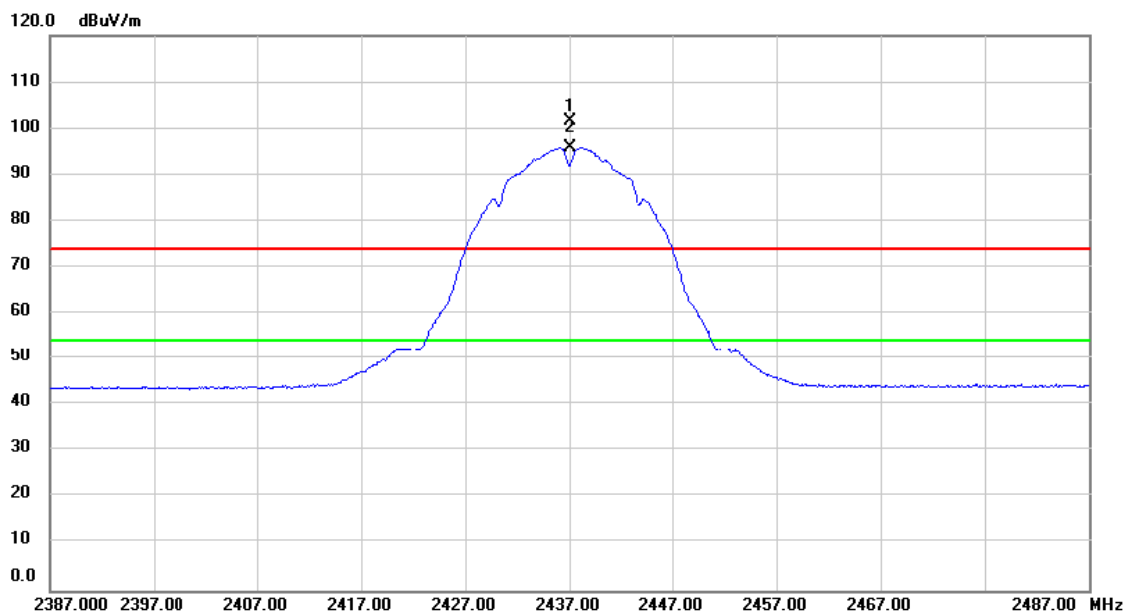
Orthogonal Axis: Z



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4824.000	54.31	-11.48	42.83	74.00	-31.17	peak	
2	*	4824.000	41.09	-11.48	29.61	54.00	-24.39	AVG	

Test Mode	TX B MODE _2437 MHz	Polarization	Vertical
-----------	---------------------	--------------	----------

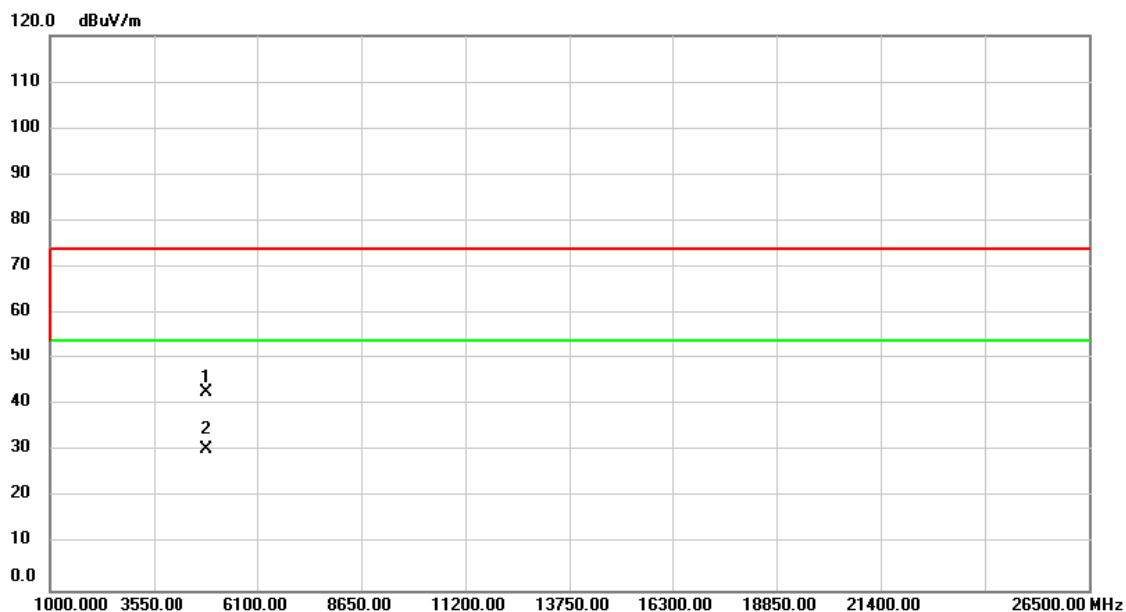
**Orthogonal Axis: Z**



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2437.000	70.50	31.01	101.51	74.00	27.51	peak	No Limit
2	*	2437.000	64.75	31.01	95.76	54.00	41.76	AVG	No Limit

Test Mode	TX B MODE _2437 MHz	Polarization	Vertical
-----------	---------------------	--------------	----------

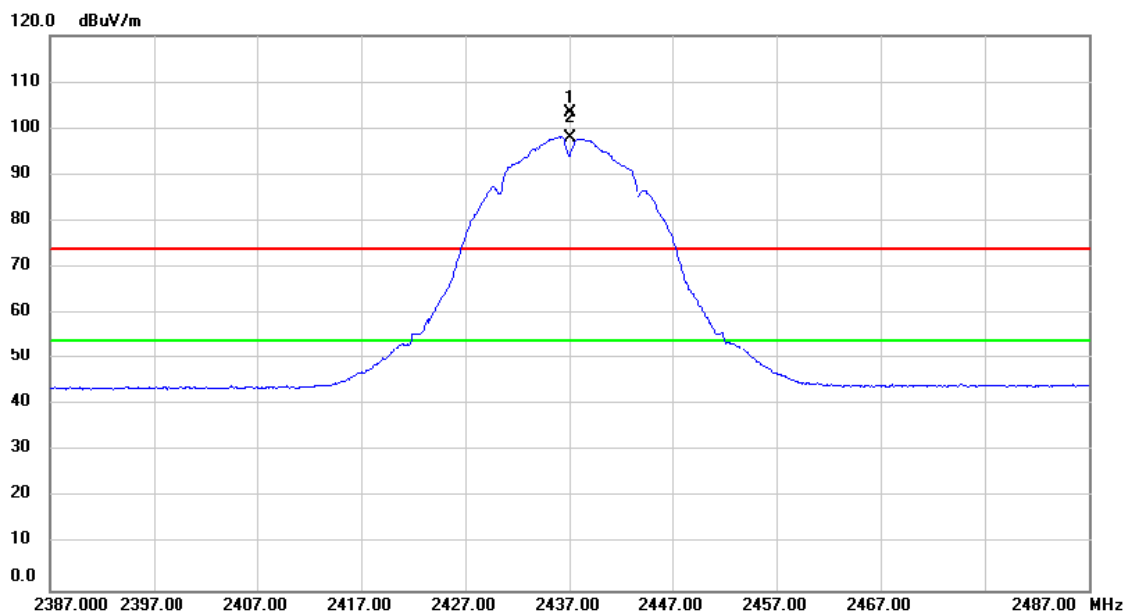
Orthogonal Axis: Z



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4874.000	54.09	-11.42	42.67	74.00	-31.33	peak	
2	*	4874.000	41.75	-11.42	30.33	54.00	-23.67	AVG	

Test Mode	TX B MODE _2437 MHz	Polarization	Horizontal
-----------	---------------------	--------------	------------

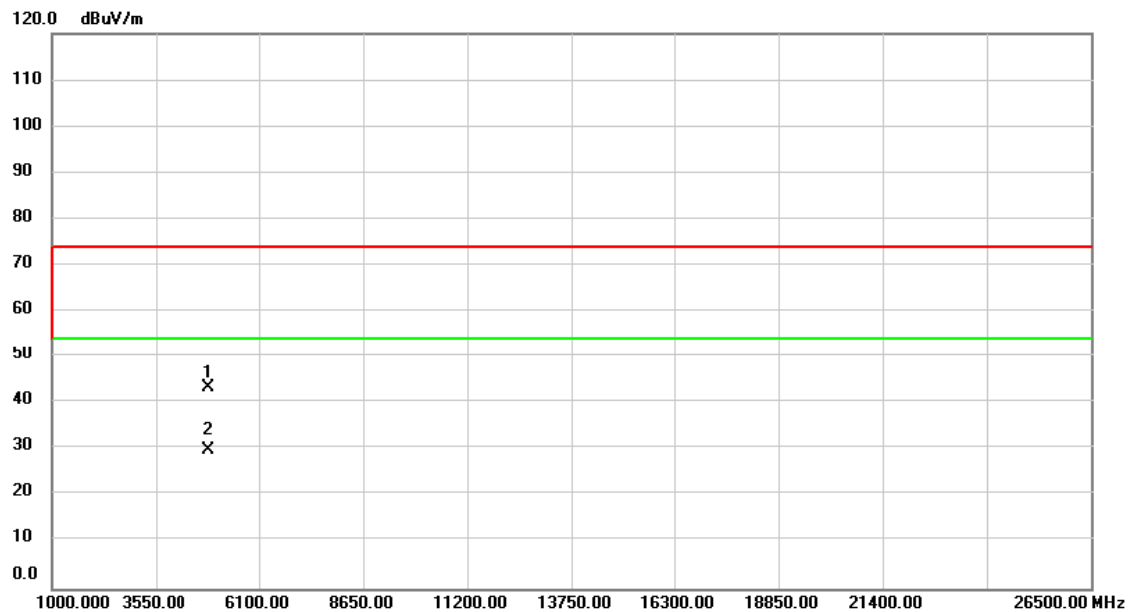
Orthogonal Axis: Z



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2437.000	72.22	31.01	103.23	74.00	29.23	peak	No Limit
2	*	2437.000	66.93	31.01	97.94	54.00	43.94	AVG	No Limit

Test Mode	TX B MODE _2437 MHz	Polarization	Horizontal
-----------	---------------------	--------------	------------

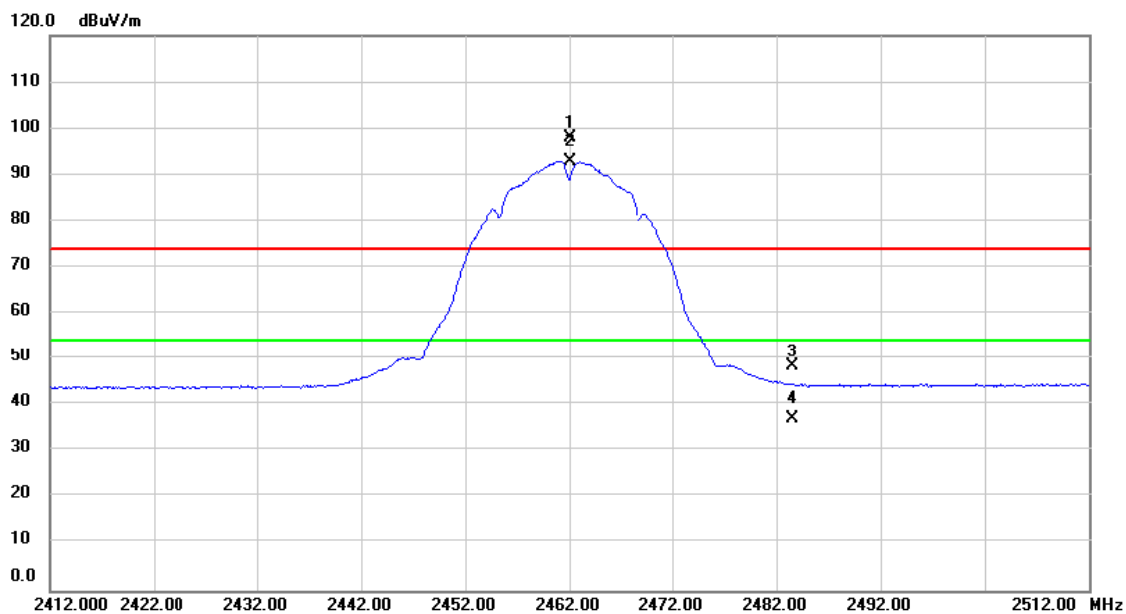
### Orthogonal Axis: Z



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4874.000	54.92	-11.42	43.50	74.00	-30.50	peak	
2	*	4874.000	41.36	-11.42	29.94	54.00	-24.06	AVG	

Test Mode	TX B MODE _2462 MHz	Polarization	Vertical
-----------	---------------------	--------------	----------

Orthogonal Axis: Z

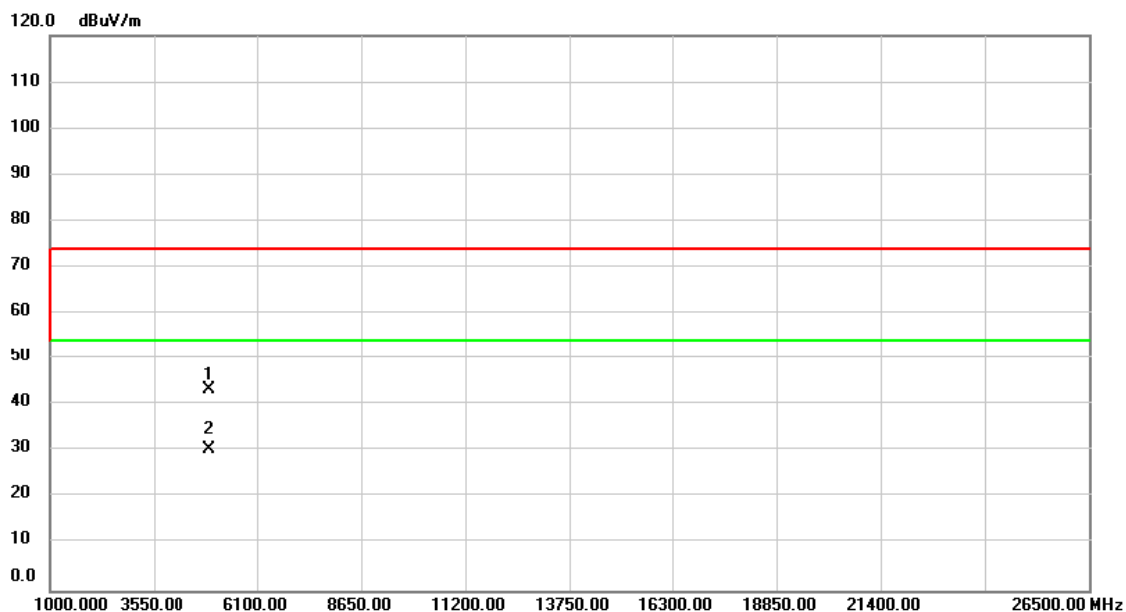


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2462.000	66.99	31.09	98.08	74.00	24.08	peak	No Limit
2	*	2462.000	61.75	31.09	92.84	54.00	38.84	AVG	No Limit
3		2483.517	17.14	31.17	48.31	74.00	-25.69	peak	
4		2483.517	5.98	31.17	37.15	54.00	-16.85	AVG	



Test Mode	TX B MODE _2462 MHz	Polarization	Vertical
-----------	---------------------	--------------	----------

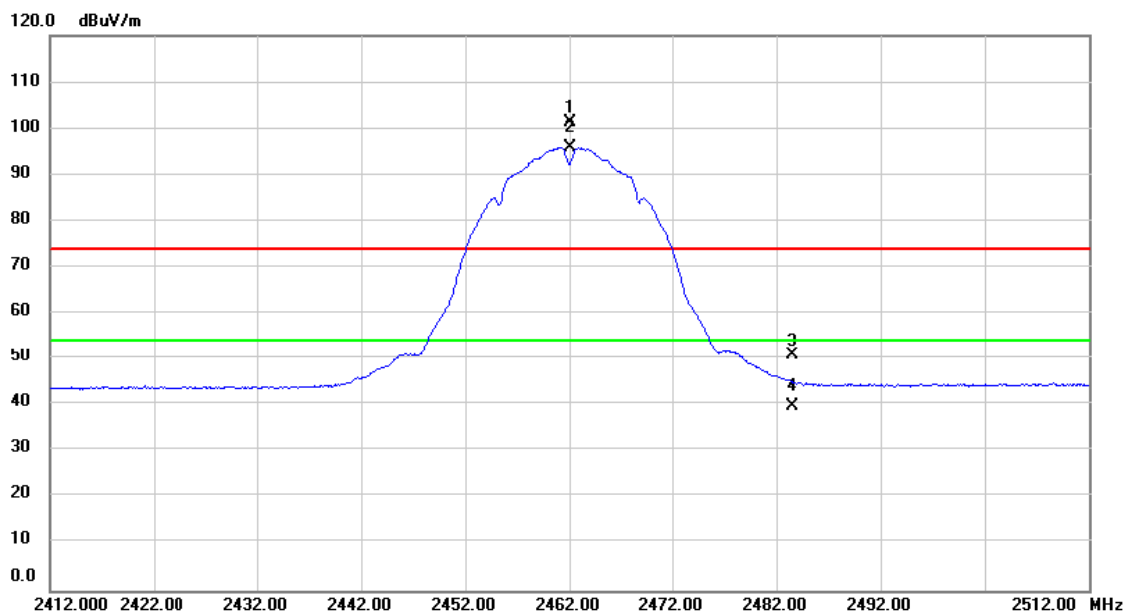
Orthogonal Axis: Z



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4924.000	54.67	-11.37	43.30	74.00	-30.70	peak	
2	*	4924.000	41.96	-11.37	30.59	54.00	-23.41	AVG	

Test Mode	TX B MODE _2462 MHz	Polarization	Horizontal
-----------	---------------------	--------------	------------

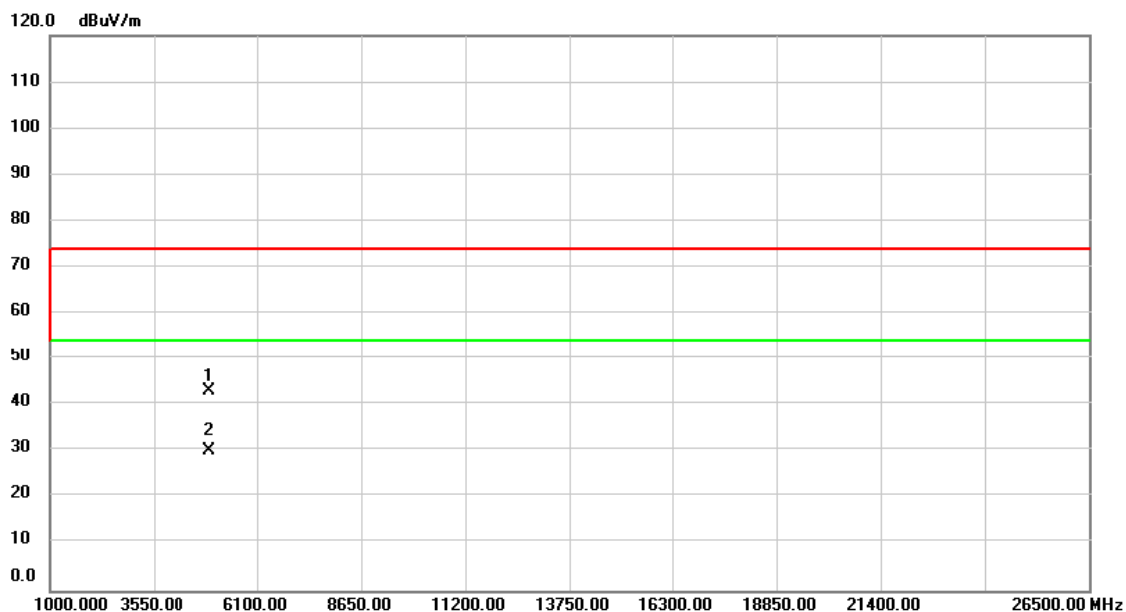
Orthogonal Axis: Z



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2462.000	70.05	31.09	101.14	74.00	27.14	peak	No Limit
2	*	2462.000	64.87	31.09	95.96	54.00	41.96	AVG	No Limit
3		2483.500	19.79	31.17	50.96	74.00	-23.04	peak	
4		2483.500	8.62	31.17	39.79	54.00	-14.21	AVG	

Test Mode	TX B MODE _2462 MHz	Polarization	Horizontal
-----------	---------------------	--------------	------------

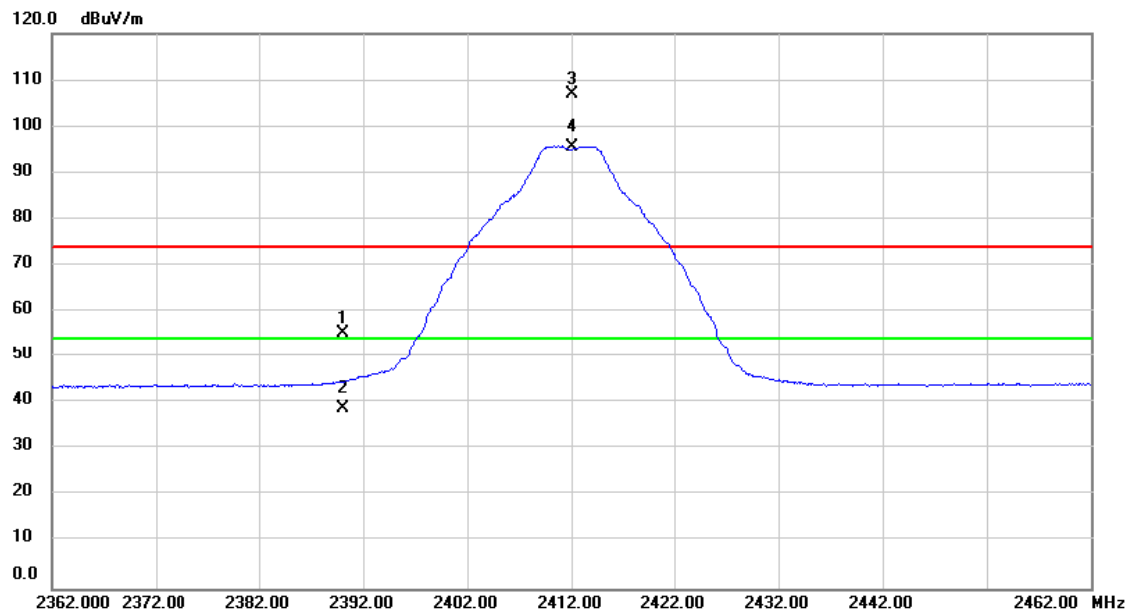
Orthogonal Axis: Z



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4924.000	54.47	-11.37	43.10	74.00	-30.90	peak	
2	*	4924.000	41.64	-11.37	30.27	54.00	-23.73	AVG	

Test Mode	TX G MODE _2412 MHz	Polarization	Vertical
-----------	---------------------	--------------	----------

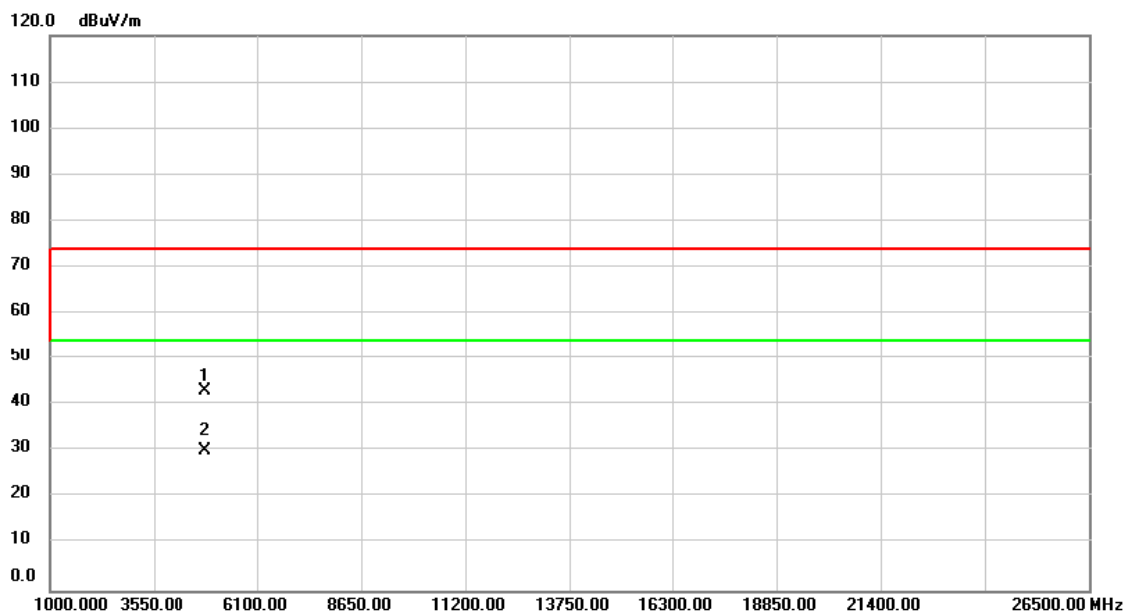
Orthogonal Axis: Z



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2390.000	24.51	30.84	55.35	74.00	-18.65	peak	
2		2390.000	7.96	30.84	38.80	54.00	-15.20	AVG	
3	X	2412.000	76.16	30.92	107.08	74.00	33.08	peak	No Limit
4	*	2412.000	64.75	30.92	95.67	54.00	41.67	AVG	No Limit

Test Mode	TX G MODE _2412 MHz	Polarization	Vertical
-----------	---------------------	--------------	----------

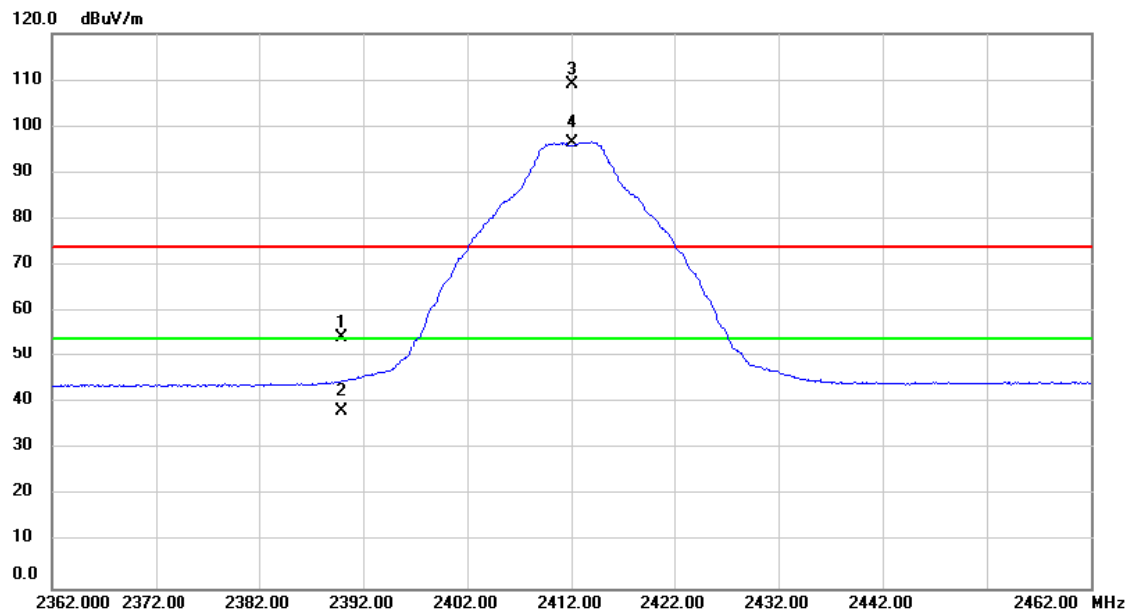
Orthogonal Axis: Z



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4824.000	54.59	-11.48	43.11	74.00	-30.89	peak	
2	*	4824.000	41.52	-11.48	30.04	54.00	-23.96	AVG	

Test Mode	TX G MODE _2412 MHz	Polarization	Horizontal
-----------	---------------------	--------------	------------

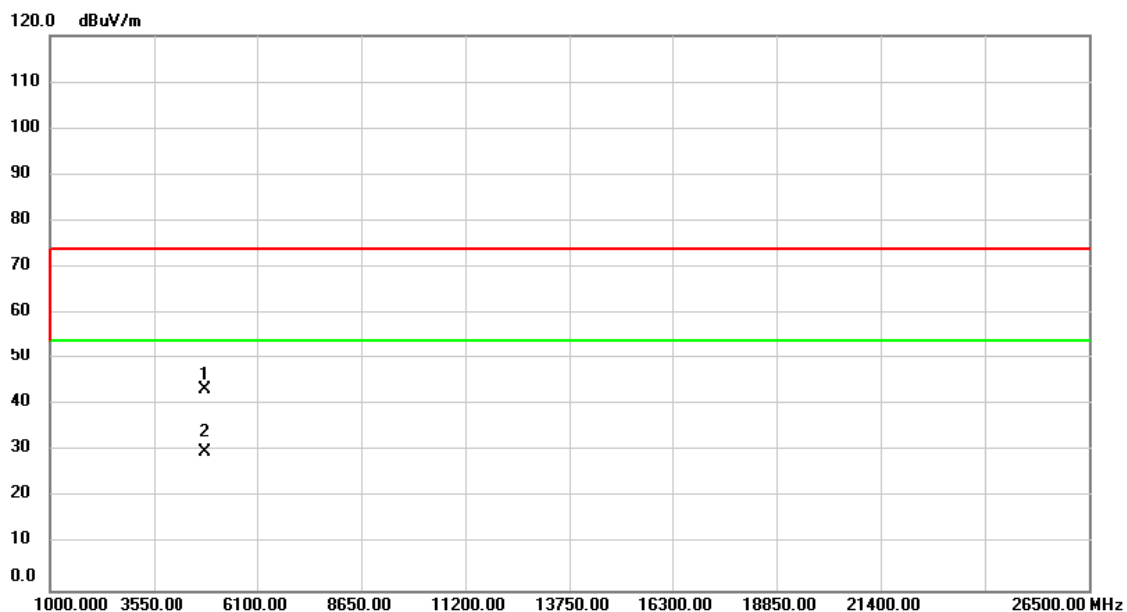
### Orthogonal Axis: Z



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2389.972	23.56	30.84	54.40	74.00	-19.60	peak	
2		2389.972	7.46	30.84	38.30	54.00	-15.70	AVG	
3	X	2412.000	78.18	30.92	109.10	74.00	35.10	peak	No Limit
4	*	2412.000	65.61	30.92	96.53	54.00	42.53	AVG	No Limit

Test Mode	TX G MODE _2412 MHz	Polarization	Horizontal
-----------	---------------------	--------------	------------

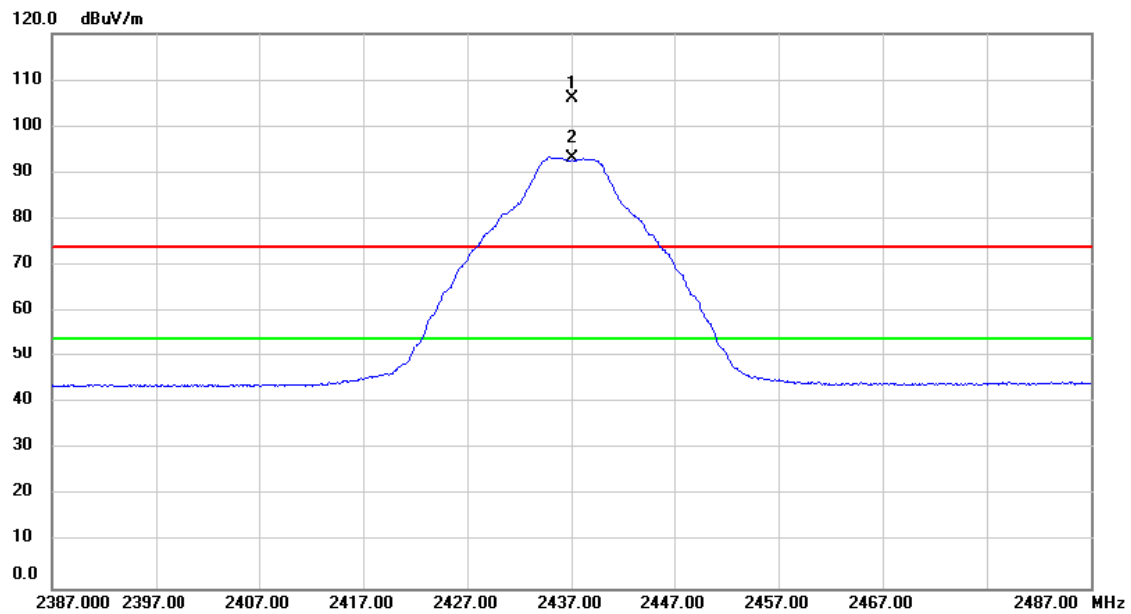
**Orthogonal Axis: Z**



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4824.000	54.86	-11.48	43.38	74.00	-30.62	peak	
2	*	4824.000	41.29	-11.48	29.81	54.00	-24.19	AVG	

Test Mode	TX G MODE _2437 MHz	Polarization	Vertical
-----------	---------------------	--------------	----------

Orthogonal Axis: Z

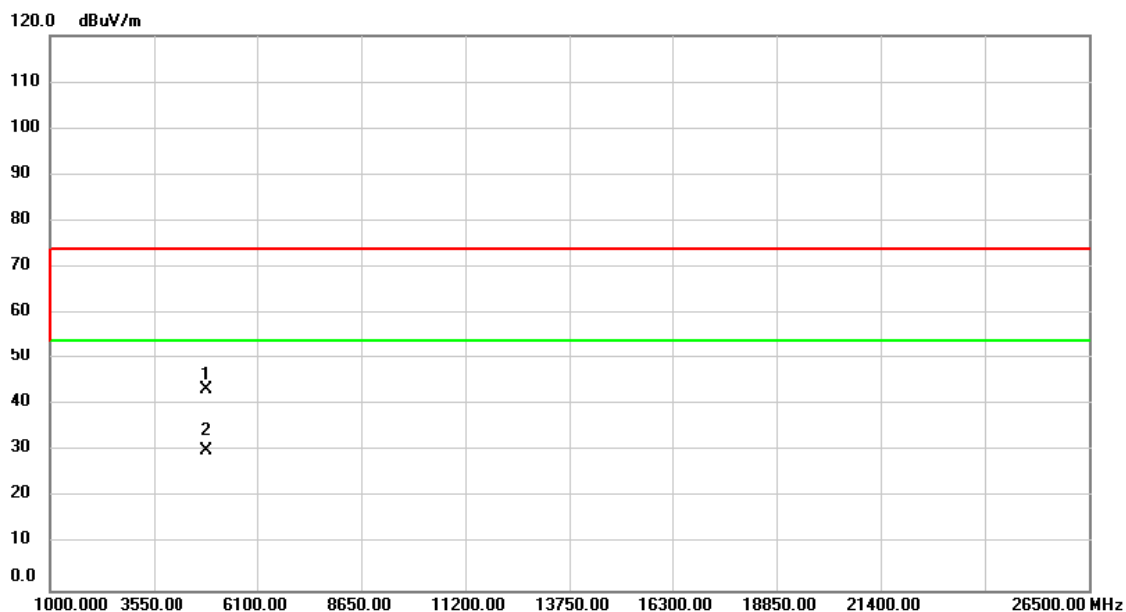


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2437.000	75.02	31.01	106.03	74.00	32.03	peak	No Limit
2	*	2437.000	62.12	31.01	93.13	54.00	39.13	AVG	No Limit



Test Mode	TX G MODE _2437 MHz	Polarization	Vertical
-----------	---------------------	--------------	----------

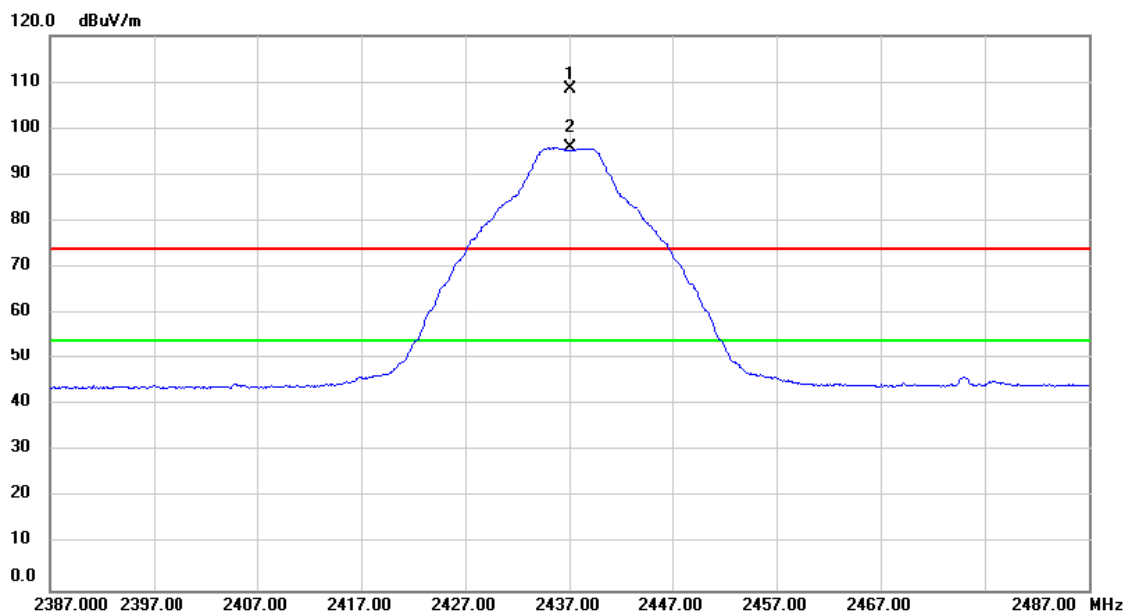
Orthogonal Axis: Z



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4874.000	54.70	-11.42	43.28	74.00	-30.72	peak	
2	*	4874.000	41.45	-11.42	30.03	54.00	-23.97	AVG	

Test Mode	TX G MODE _2437 MHz	Polarization	Horizontal
-----------	---------------------	--------------	------------

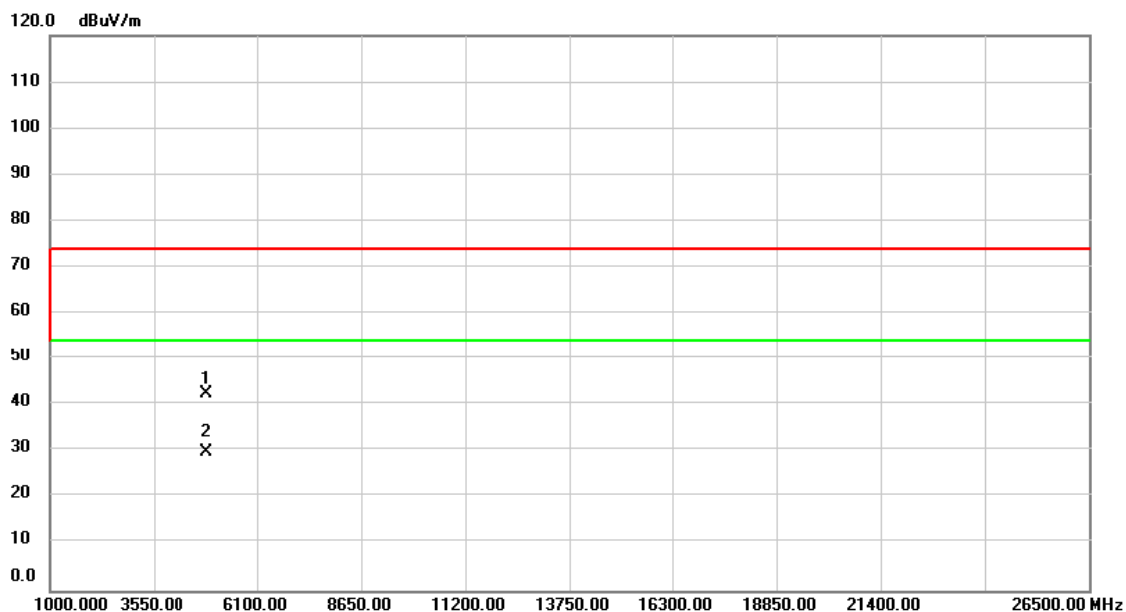
**Orthogonal Axis: Z**



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2437.000	77.59	31.01	108.60	74.00	34.60	peak	No Limit
2	*	2437.000	64.71	31.01	95.72	54.00	41.72	AVG	No Limit

Test Mode	TX G MODE _2437 MHz	Polarization	Horizontal
-----------	---------------------	--------------	------------

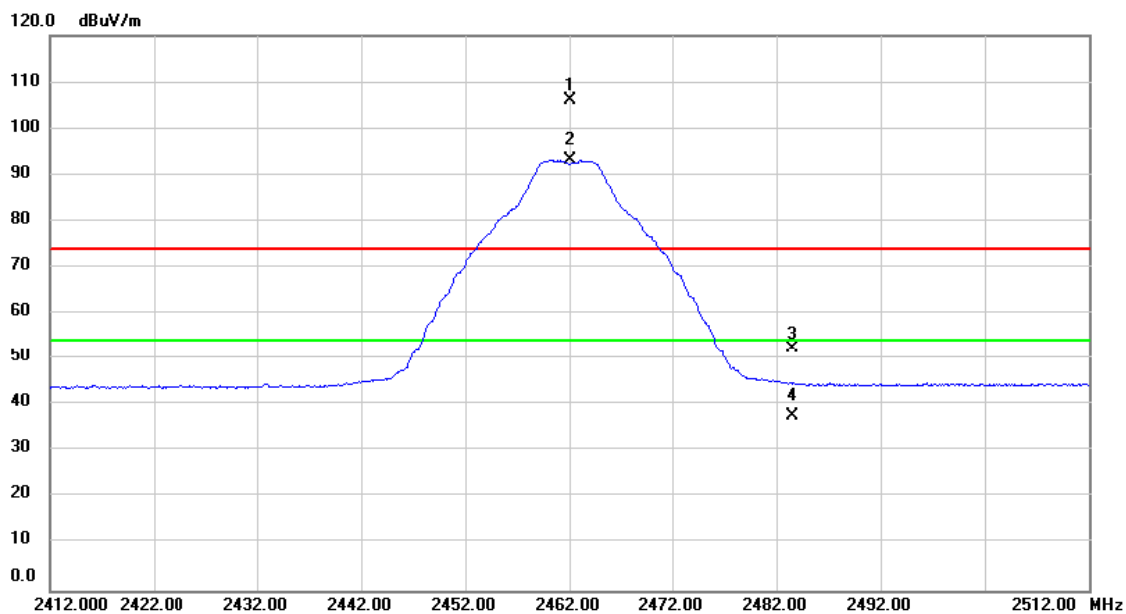
Orthogonal Axis: Z



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4874.000	53.84	-11.42	42.42	74.00	-31.58	peak	
2	*	4874.000	41.29	-11.42	29.87	54.00	-24.13	AVG	

Test Mode	TX G MODE _2462 MHz	Polarization	Vertical
-----------	---------------------	--------------	----------

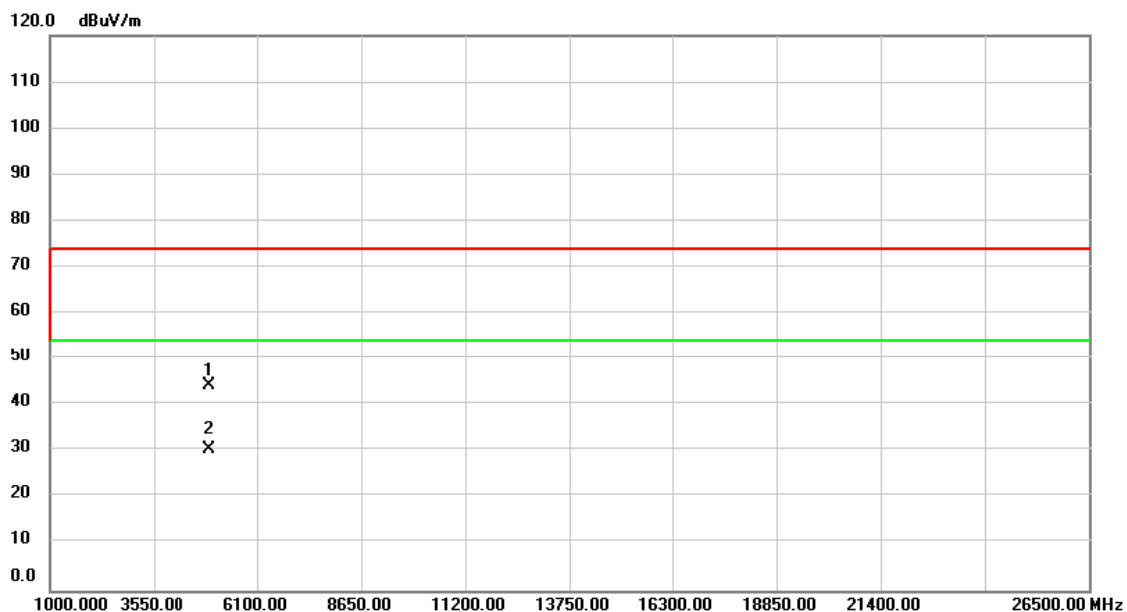
Orthogonal Axis: Z



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2462.000	74.88	31.09	105.97	74.00	31.97	peak	No Limit
2	*	2462.000	61.96	31.09	93.05	54.00	39.05	AVG	No Limit
3		2483.500	21.19	31.17	52.36	74.00	-21.64	peak	
4		2483.500	6.55	31.17	37.72	54.00	-16.28	AVG	

Test Mode	TX G MODE _2462 MHz	Polarization	Vertical
-----------	---------------------	--------------	----------

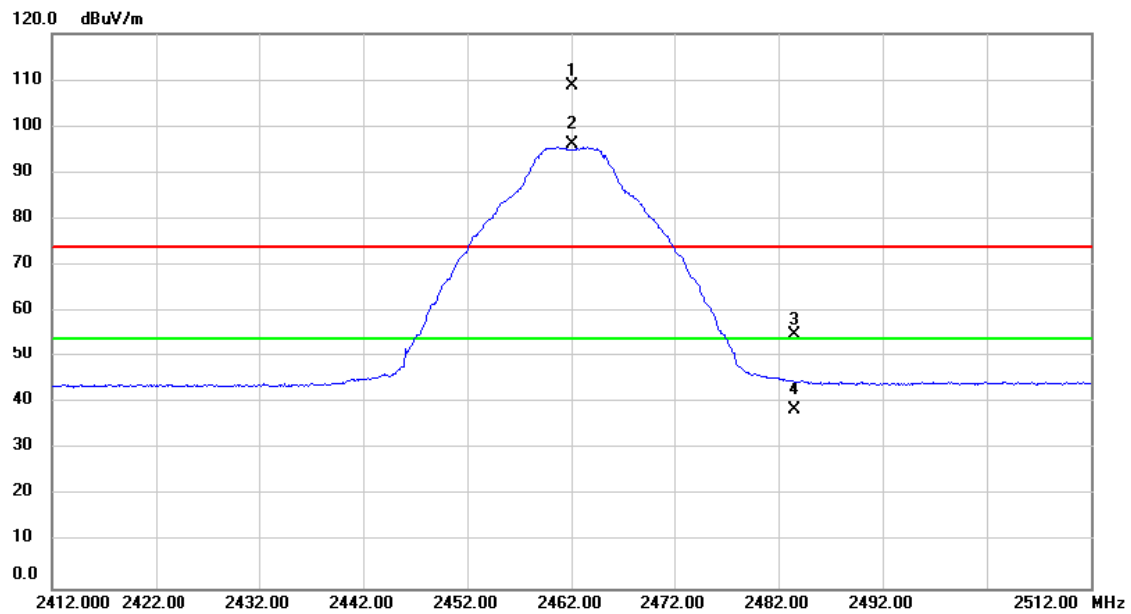
Orthogonal Axis: Z



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4924.000	55.75	-11.37	44.38	74.00	-29.62	peak	
2	*	4924.000	41.75	-11.37	30.38	54.00	-23.62	AVG	

Test Mode	TX G MODE _2462 MHz	Polarization	Horizontal
-----------	---------------------	--------------	------------

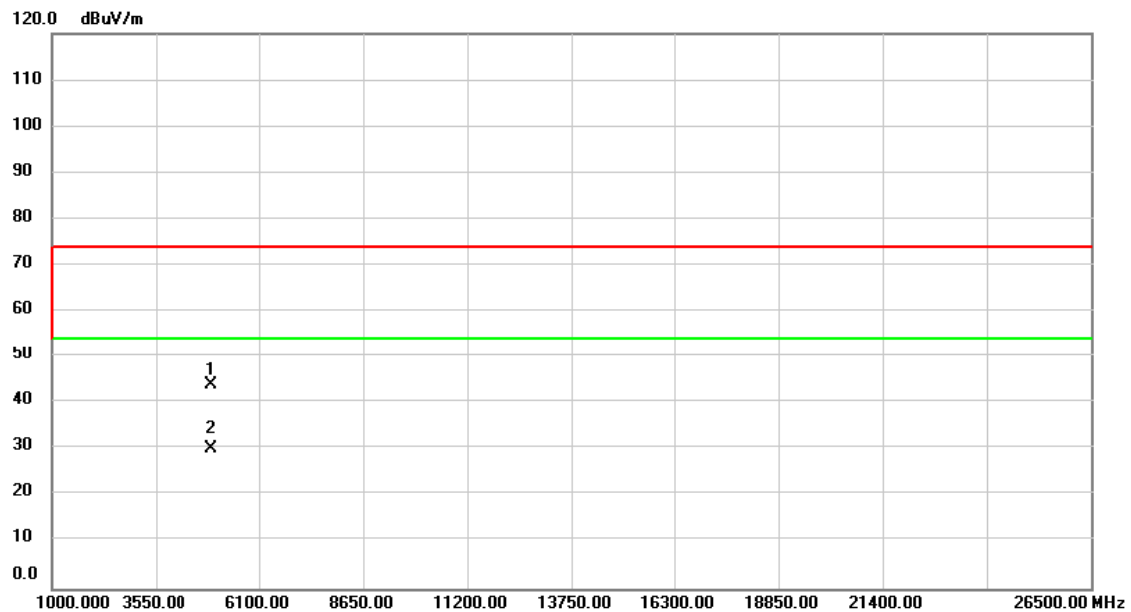
Orthogonal Axis: Z



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2462.000	77.58	31.09	108.67	74.00	34.67	peak	No Limit
2	*	2462.000	65.04	31.09	96.13	54.00	42.13	AVG	No Limit
3		2483.500	23.96	31.17	55.13	74.00	-18.87	peak	
4		2483.500	7.42	31.17	38.59	54.00	-15.41	AVG	

Test Mode	TX G MODE _2462 MHz	Polarization	Horizontal
-----------	---------------------	--------------	------------

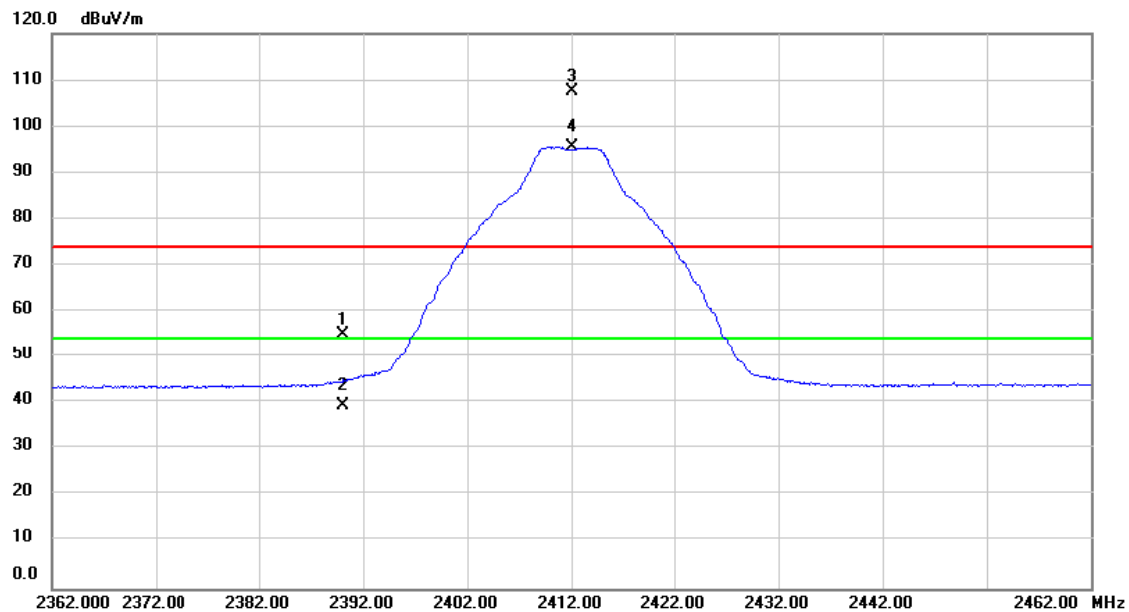
Orthogonal Axis: Z



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4924.000	55.24	-11.37	43.87	74.00	-30.13	peak	
2	*	4924.000	41.60	-11.37	30.23	54.00	-23.77	AVG	

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

Orthogonal Axis: Z

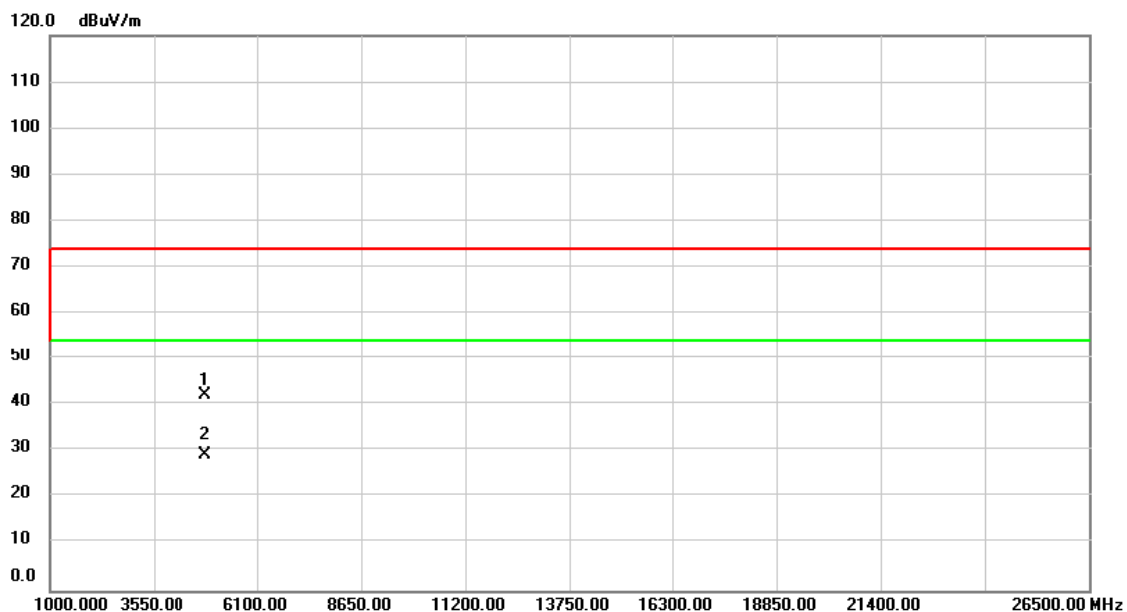


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2390.000	24.20	30.84	55.04	74.00	-18.96	peak	
2		2390.000	8.68	30.84	39.52	54.00	-14.48	AVG	
3	X	2412.000	76.58	30.92	107.50	74.00	33.50	peak	No Limit
4	*	2412.000	64.63	30.92	95.55	54.00	41.55	AVG	No Limit



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

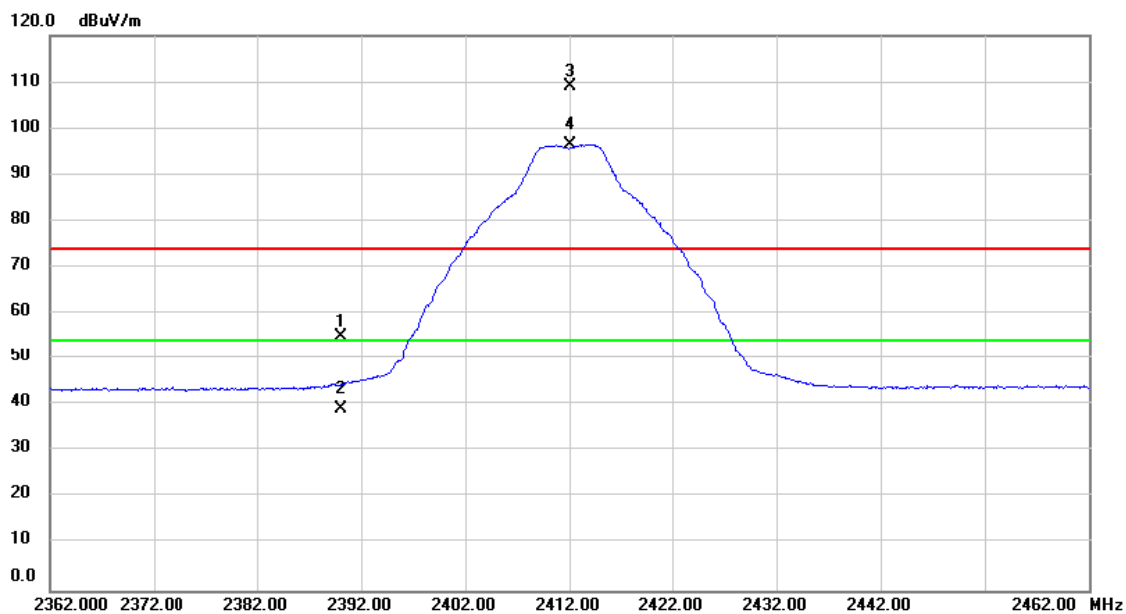
Orthogonal Axis: Z



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4824.000	53.78	-11.48	42.30	74.00	-31.70	peak	
2	*	4824.000	40.82	-11.48	29.34	54.00	-24.66	AVG	

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

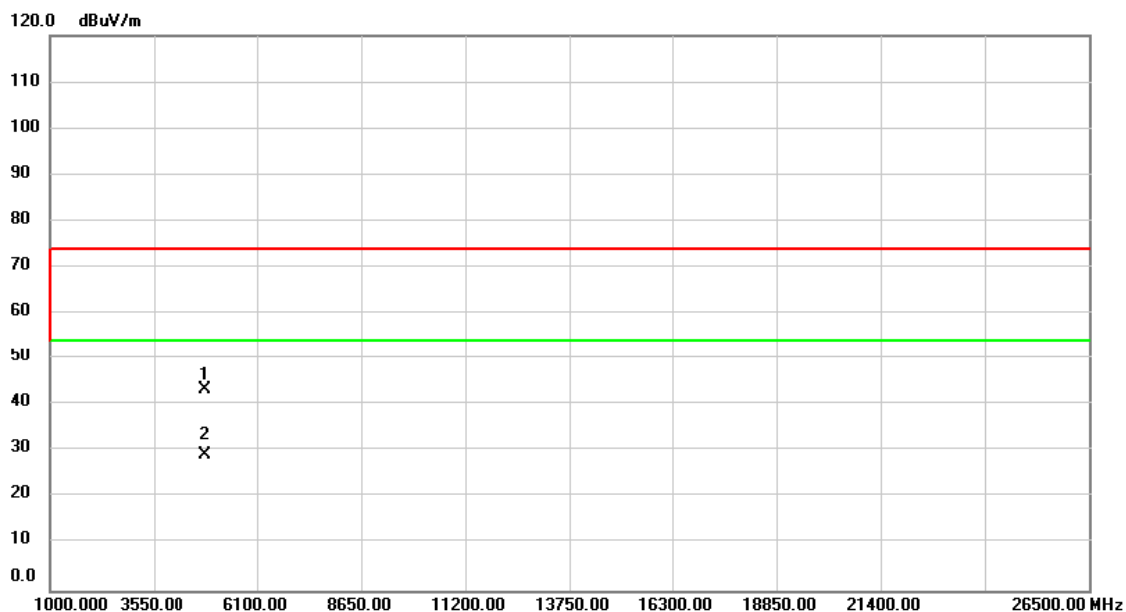
Orthogonal Axis: Z



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2390.000	24.31	30.84	55.15	74.00	-18.85	peak	
2		2390.000	8.31	30.84	39.15	54.00	-14.85	AVG	
3	X	2412.000	77.99	30.92	108.91	74.00	34.91	peak	No Limit
4	*	2412.000	65.59	30.92	96.51	54.00	42.51	AVG	No Limit

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

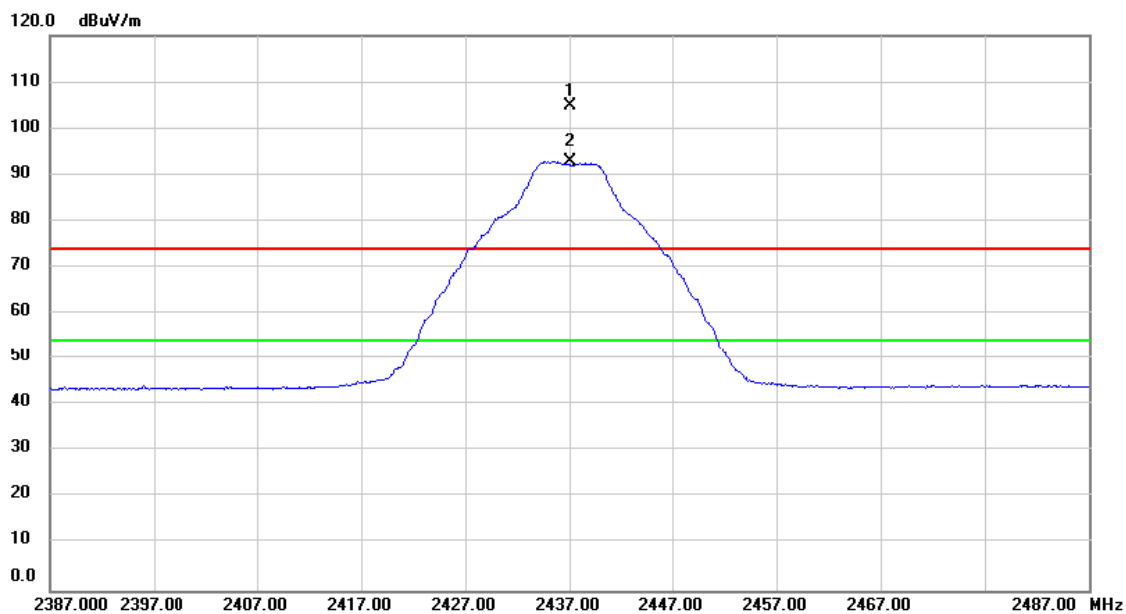
**Orthogonal Axis: Z**



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4824.000	54.95	-11.48	43.47	74.00	-30.53	peak	
2	*	4824.000	40.81	-11.48	29.33	54.00	-24.67	AVG	

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

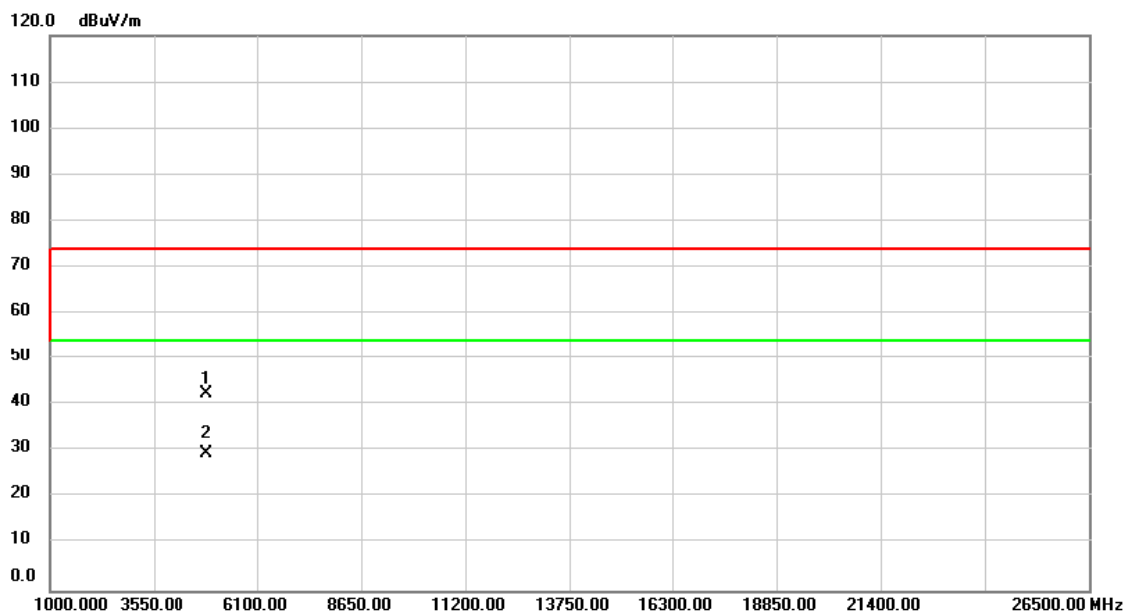
Orthogonal Axis: Z



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2437.000	73.96	31.01	104.97	74.00	30.97	peak	No Limit
2	*	2437.000	61.84	31.01	92.85	54.00	38.85	AVG	No Limit

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

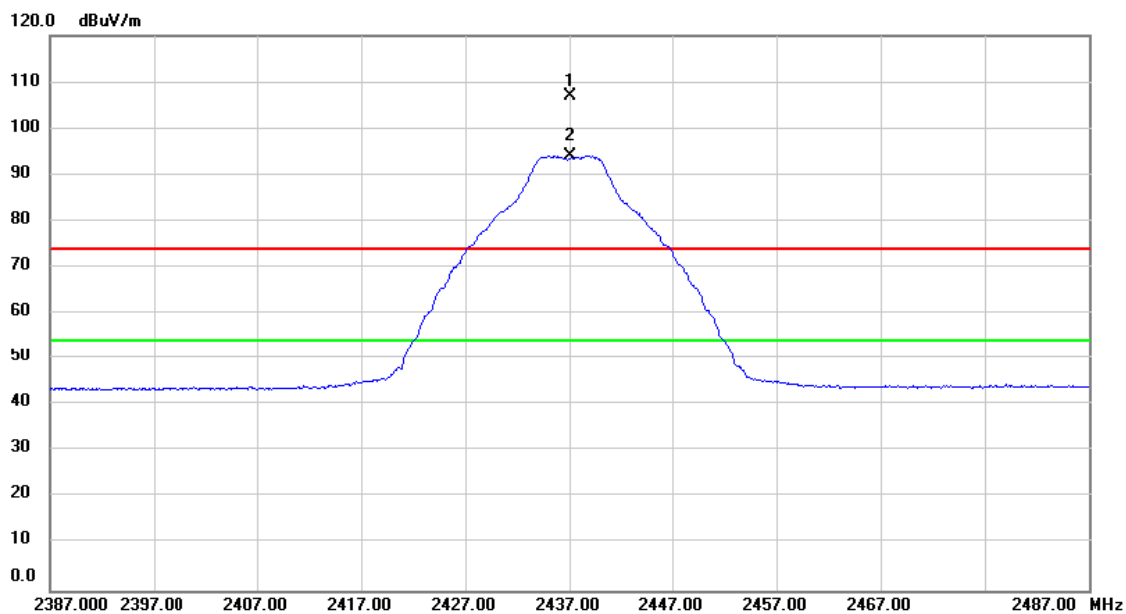
Orthogonal Axis: Z



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4874.000	53.78	-11.42	42.36	74.00	-31.64	peak	
2	*	4874.000	40.83	-11.42	29.41	54.00	-24.59	AVG	

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

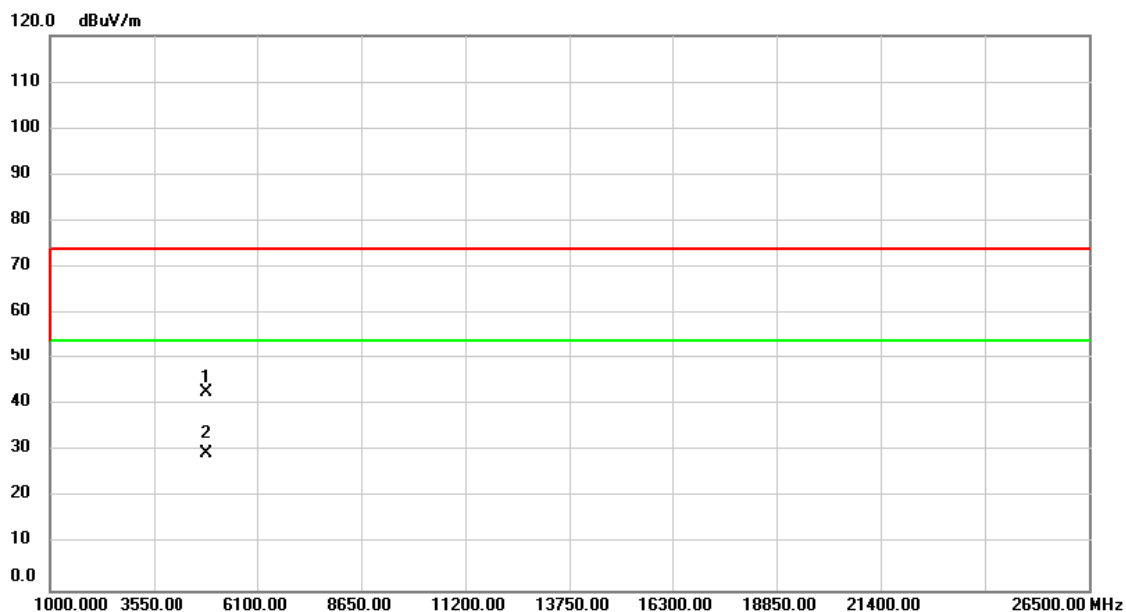
Orthogonal Axis: Z



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2437.000	75.84	31.01	106.85	74.00	32.85	peak	No Limit
2	*	2437.000	62.91	31.01	93.92	54.00	39.92	AVG	No Limit

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

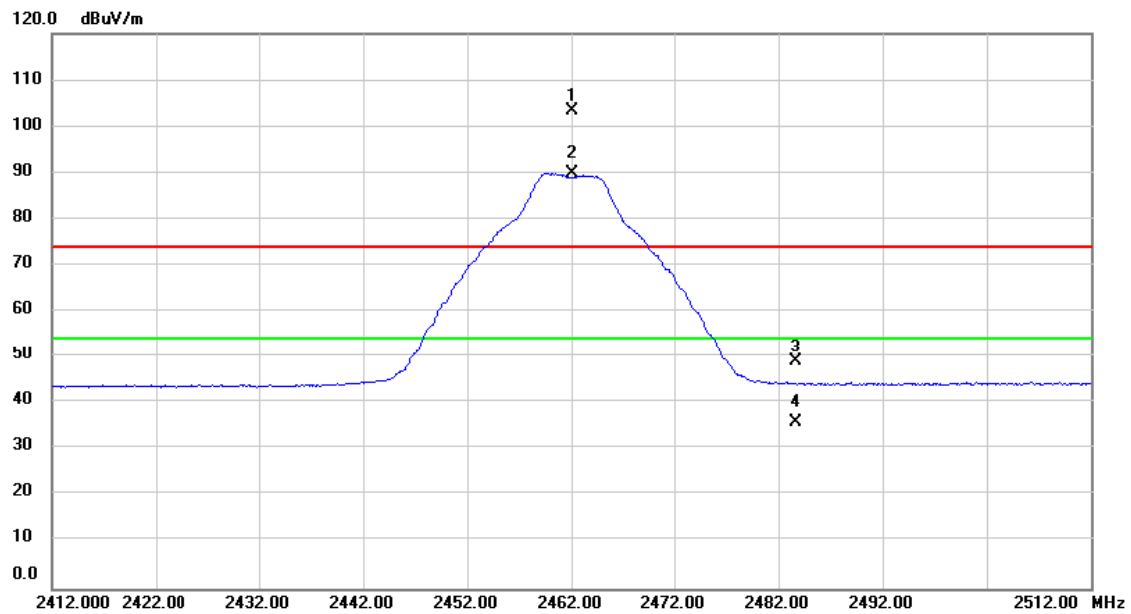
Orthogonal Axis: Z



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4874.000	54.10	-11.42	42.68	74.00	-31.32	peak	
2	*	4874.000	40.90	-11.42	29.48	54.00	-24.52	AVG	

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

Orthogonal Axis: Z

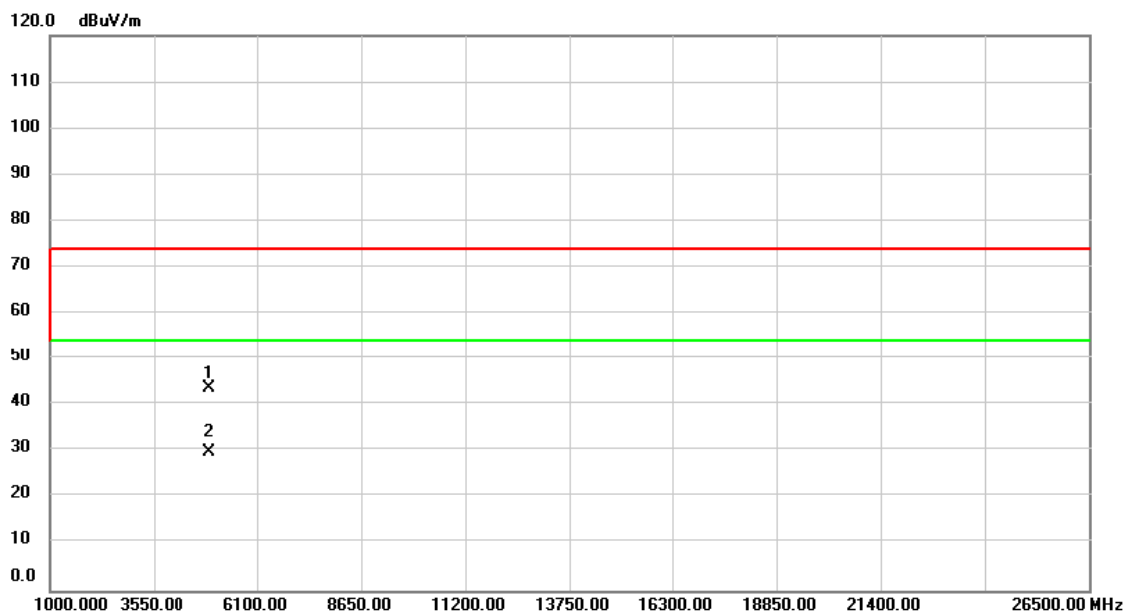


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2462.000	72.17	31.09	103.26	74.00	29.26	peak	No Limit
2	*	2462.000	58.71	31.09	89.80	54.00	35.80	AVG	No Limit
3		2483.715	18.00	31.17	49.17	74.00	-24.83	peak	
4		2483.715	4.57	31.17	35.74	54.00	-18.26	AVG	



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

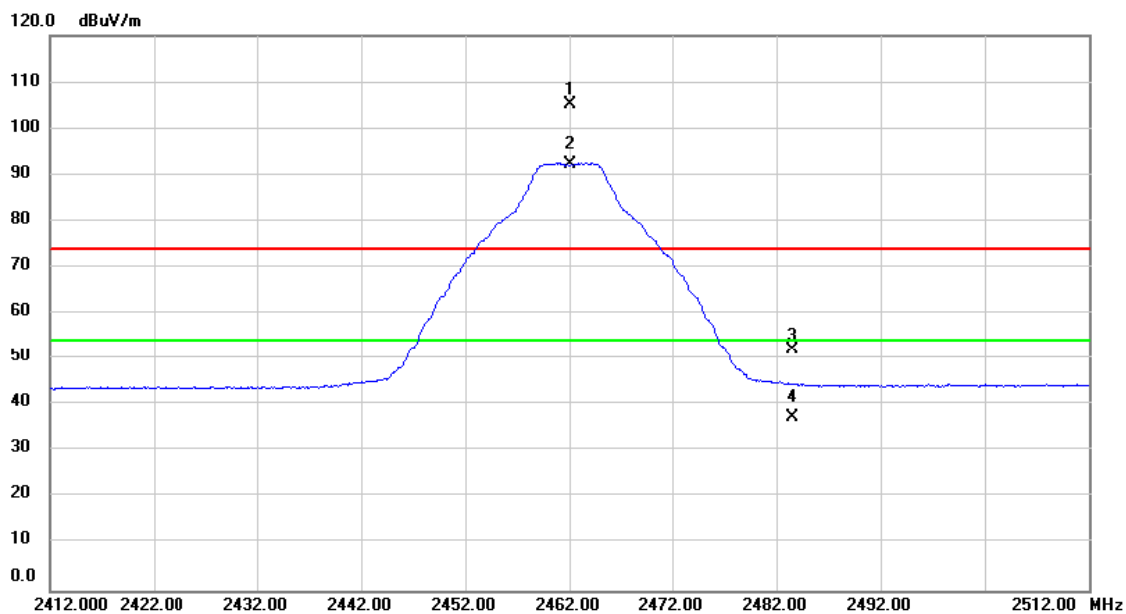
Orthogonal Axis: Z



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4924.000	54.89	-11.37	43.52	74.00	-30.48	peak	
2	*	4924.000	41.32	-11.37	29.95	54.00	-24.05	AVG	

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

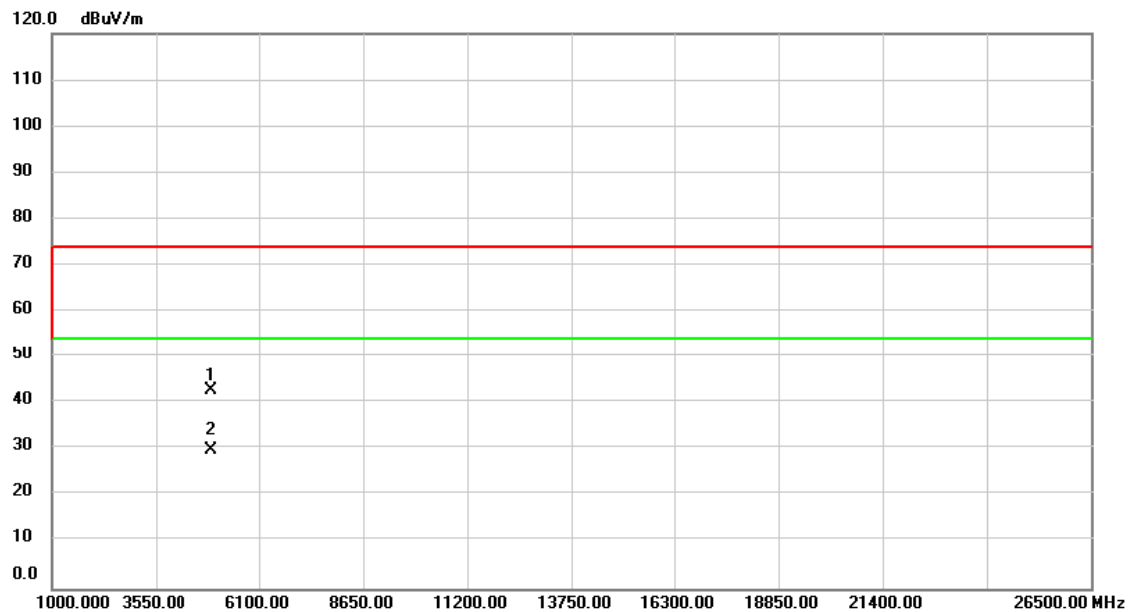
Orthogonal Axis: Z



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2462.000	74.17	31.09	105.26	74.00	31.26	peak	No Limit
2	*	2462.000	61.26	31.09	92.35	54.00	38.35	AVG	No Limit
3		2483.500	20.89	31.17	52.06	74.00	-21.94	peak	
4		2483.500	6.26	31.17	37.43	54.00	-16.57	AVG	

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

**Orthogonal Axis: Z**



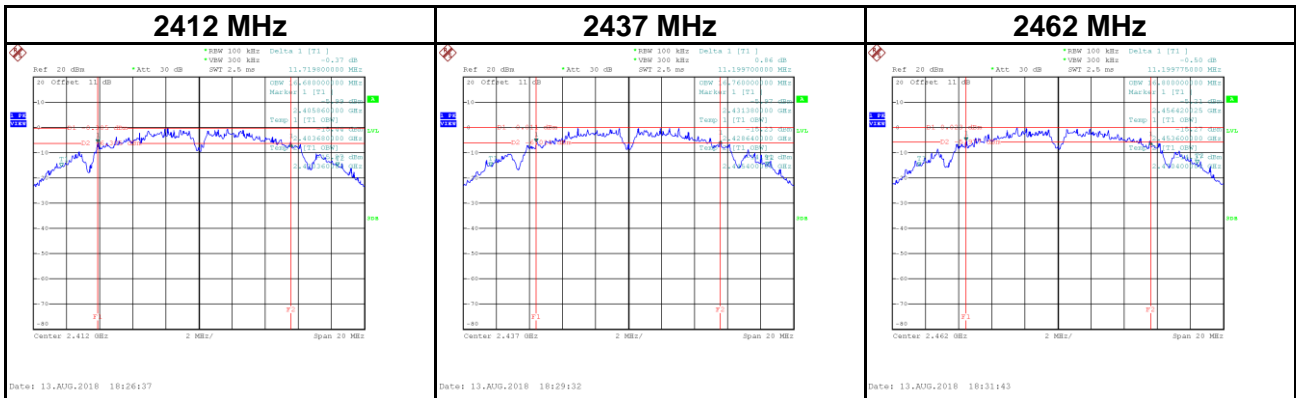
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4924.000	54.06	-11.37	42.69	74.00	-31.31	peak	
2	*	4924.000	41.20	-11.37	29.83	54.00	-24.17	AVG	

## APPENDIX E BANDWIDTH

CONTINUE ON NEXT PAGE

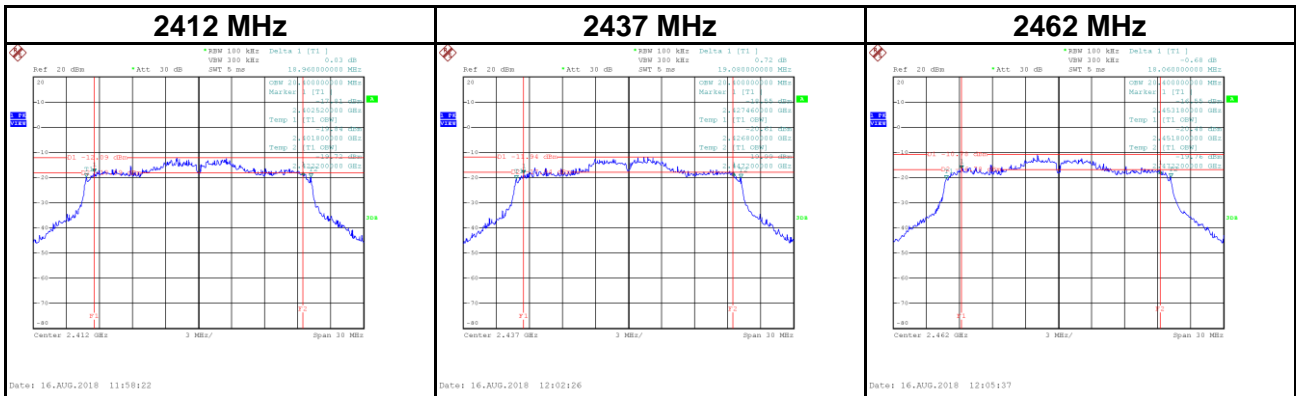
Test Mode	IEEE 802.11b
-----------	--------------

Frequency (MHz)	6 dB Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6 dB Bandwidth Limit (kHz)	Result
2412	11.72	16.68	500	Complies
2437	11.20	16.76	500	Complies
2462	11.20	16.80	500	Complies



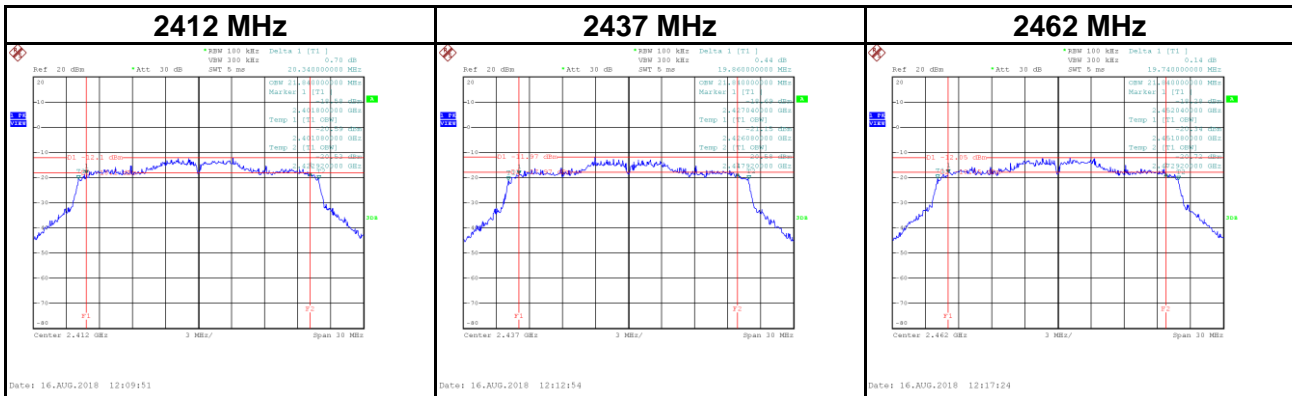
Test Mode	IEEE 802.11g
-----------	--------------

Frequency (MHz)	6 dB Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6 dB Bandwidth Limit (kHz)	Result
2412	18.96	20.40	500	Complies
2437	19.08	20.40	500	Complies
2462	18.06	20.40	500	Complies



Test Mode	IEEE 802.11n (HT20)
-----------	---------------------

Frequency (MHz)	6 dB Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6 dB Bandwidth Limit (kHz)	Result
2412	20.34	21.84	500	Complies
2437	19.86	21.84	500	Complies
2462	19.74	21.84	500	Complies



## APPENDIX F    PEAK OUTPUT POWER

CONTINUE ON NEXT PAGE



Test Mode	IEEE 802.11b
-----------	--------------

Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Limit (dBm)	Limit (W)	Result
2412	11.62	0.0145	30.00	1.0000	Complies
2437	11.54	0.0143	30.00	1.0000	Complies
2462	11.87	0.0154	30.00	1.0000	Complies

Test Mode	IEEE 802.11g
-----------	--------------

Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Limit (dBm)	Limit (W)	Result
2412	19.51	0.0893	30.00	1.0000	Complies
2437	19.11	0.0815	30.00	1.0000	Complies
2462	19.13	0.0818	30.00	1.0000	Complies

Test Mode	IEEE 802.11n (HT20)
-----------	---------------------

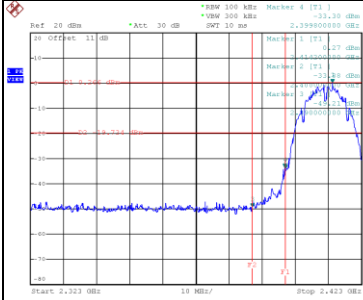
Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Limit (dBm)	Limit (W)	Result
2412	19.37	0.0865	30.00	1.0000	Complies
2437	19.20	0.0832	30.00	1.0000	Complies
2462	19.32	0.0855	30.00	1.0000	Complies

## APPENDIX G ANTENNA CONDUCTED SPURIOUS EMISSIONS

CONTINUE ON NEXT PAGE

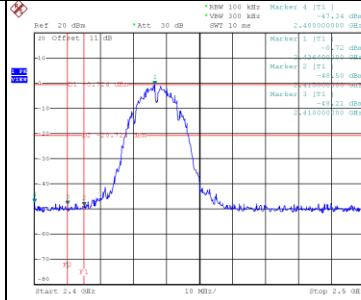
Test Mode IEEE 802.11b

### Bandedge-2412 MHz



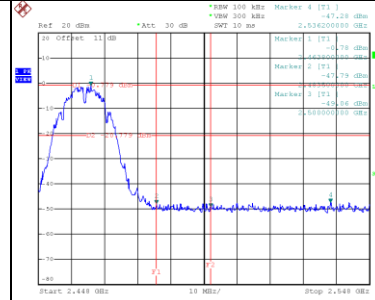
Date: 13.AUG.2018 18:27:01

### Bandedge-2437 MHz



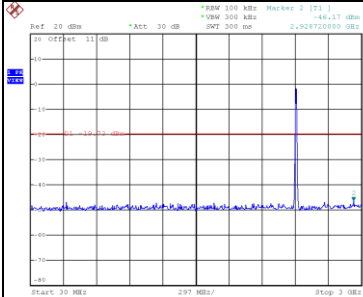
Date: 13.AUG.2018 18:29:39

### Bandedge-2462 MHz

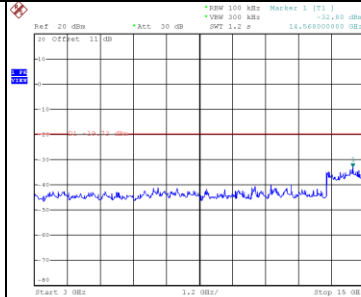


Date: 13.AUG.2018 18:32:07

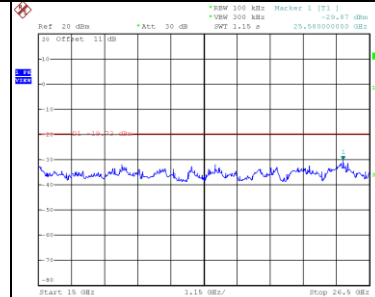
### 2412 MHz – 10 Harmonics



Date: 13.AUG.2018 18:27:14

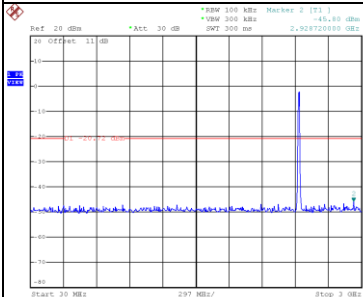


Date: 13.AUG.2018 18:27:20

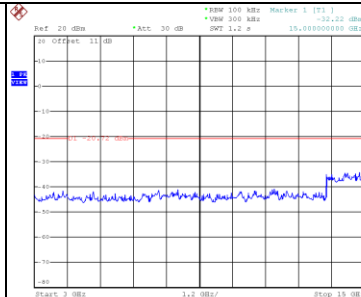


Date: 13.AUG.2018 18:27:27

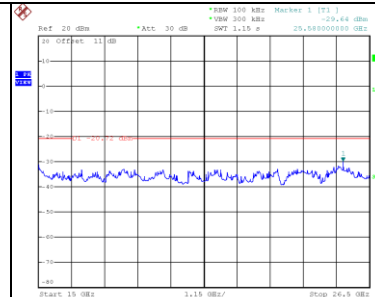
### 2437 MHz – 10 Harmonics



Date: 13.AUG.2018 18:29:52

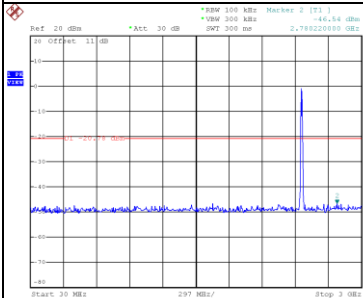


Date: 13.AUG.2018 18:29:59

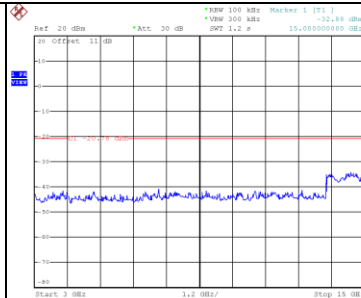


Date: 13.AUG.2018 18:30:06

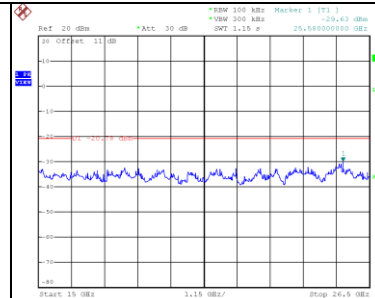
### 2462 MHz – 10 Harmonics



Date: 13.AUG.2018 18:32:20

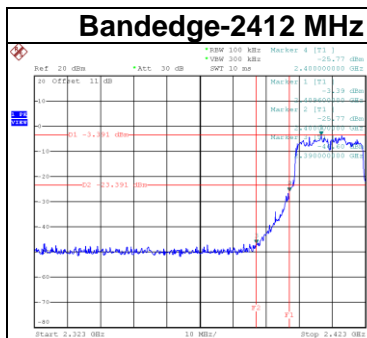


Date: 13.AUG.2018 18:32:27

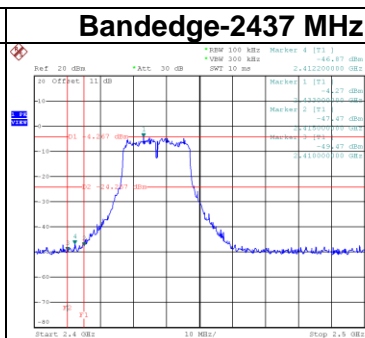


Date: 13.AUG.2018 18:32:33

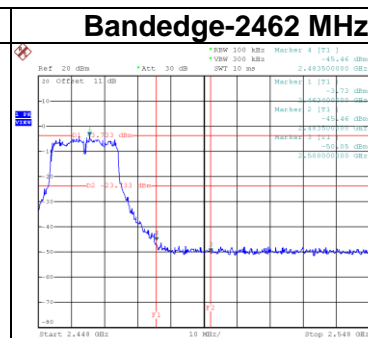
Test Mode	IEEE 802.11g
-----------	--------------



Date: 13.AUG.2018 18:34:15

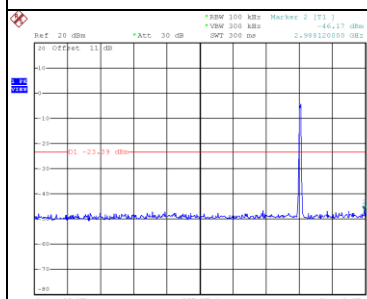


Date: 13.AUG.2018 18:36:37

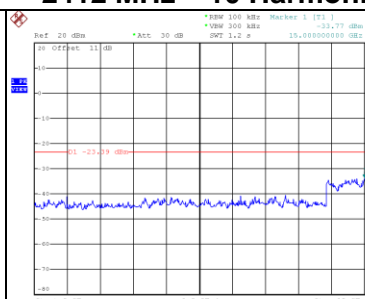


Date: 13.AUG.2018 18:38:38

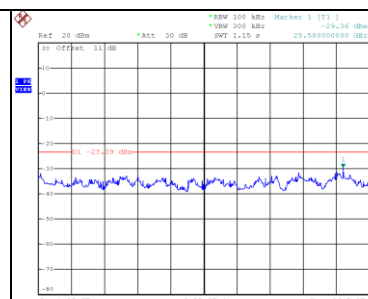
## 2412 MHz – 10 Harmonics



Date: 13.AUG.2018 18:34:28

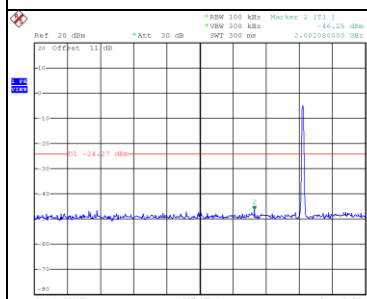


Date: 13.AUG.2018 18:34:35

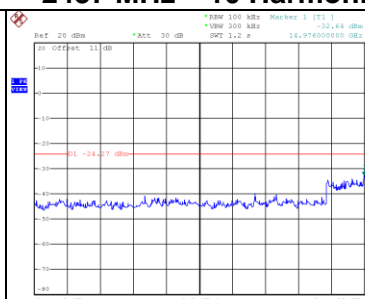


Date: 13.AUG.2018 18:34:42

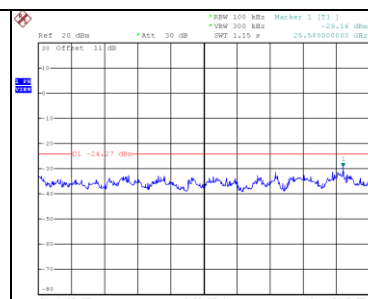
## 2437 MHz – 10 Harmonics



Date: 13.AUG.2018 18:36:50

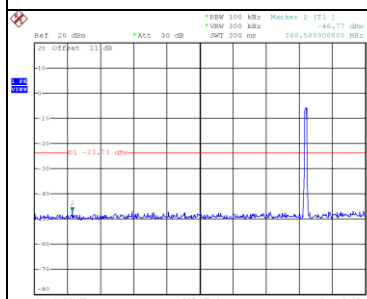


Date: 13.AUG.2018 18:36:57

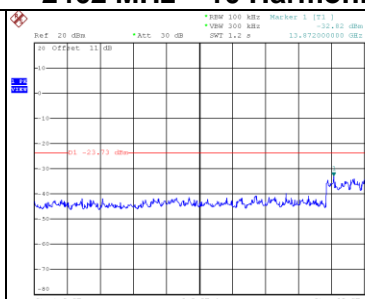


Date: 13.AUG.2018 18:37:04

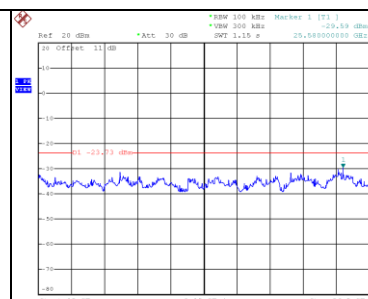
## 2462 MHz – 10 Harmonics



Date: 13.AUG.2018 18:38:50



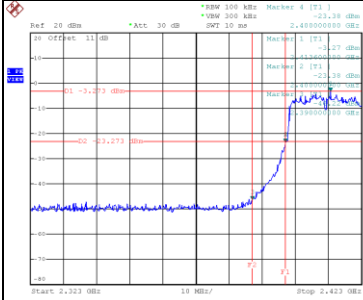
Date: 13.AUG.2018 18:38:57



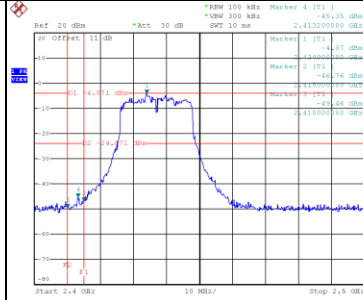
Date: 13.AUG.2018 18:39:04

Test Mode IEEE 802.11n (HT20)

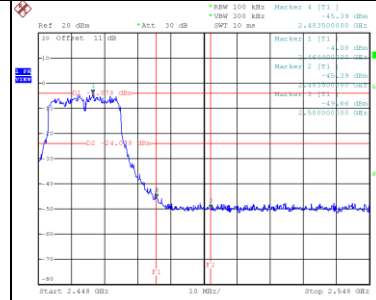
### Bandedge-2412 MHz



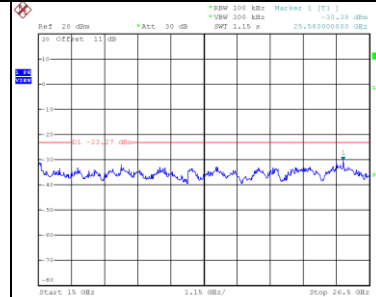
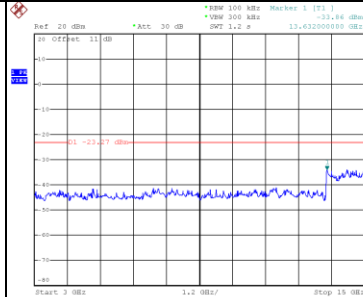
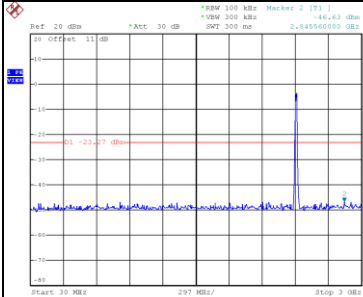
### Bandedge-2437 MHz



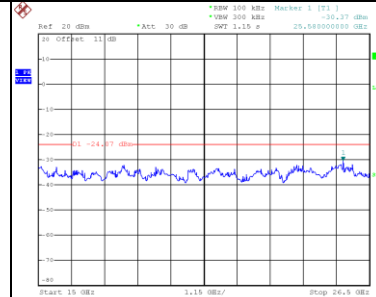
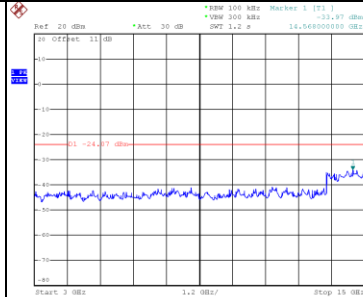
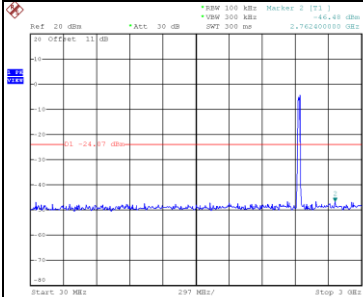
### Bandedge-2462 MHz



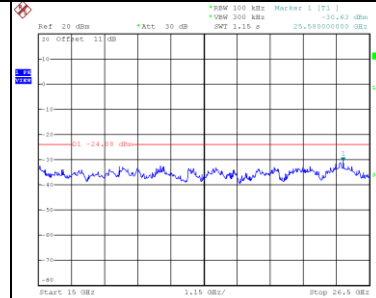
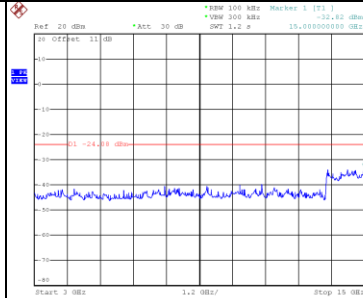
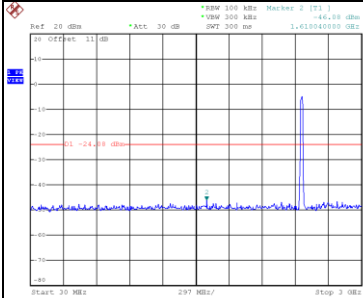
### 2412 MHz – 10 Harmonics



### 2437 MHz – 10 Harmonics



### 2462 MHz – 10 Harmonics

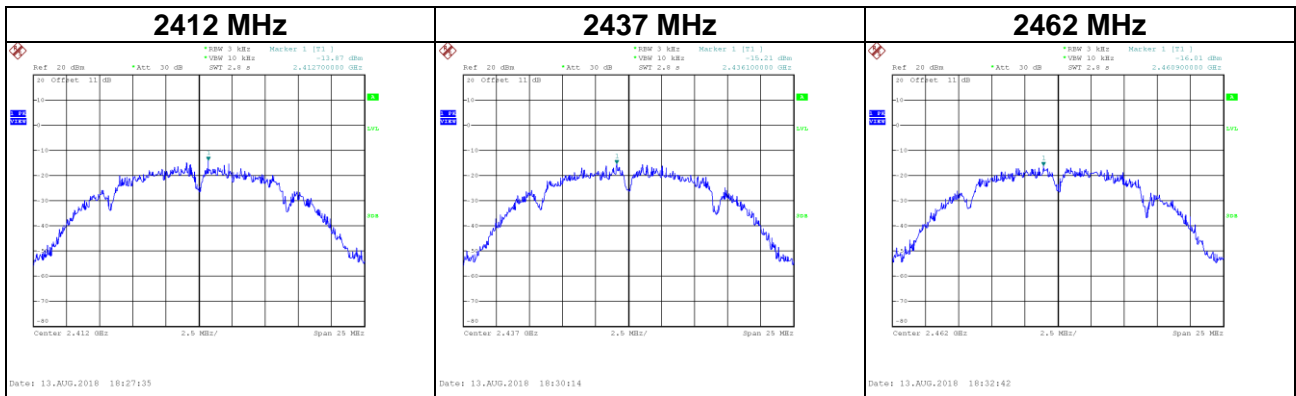


## APPENDIX H POWER SPECTRAL DENSITY

CONTINUE ON NEXT PAGE

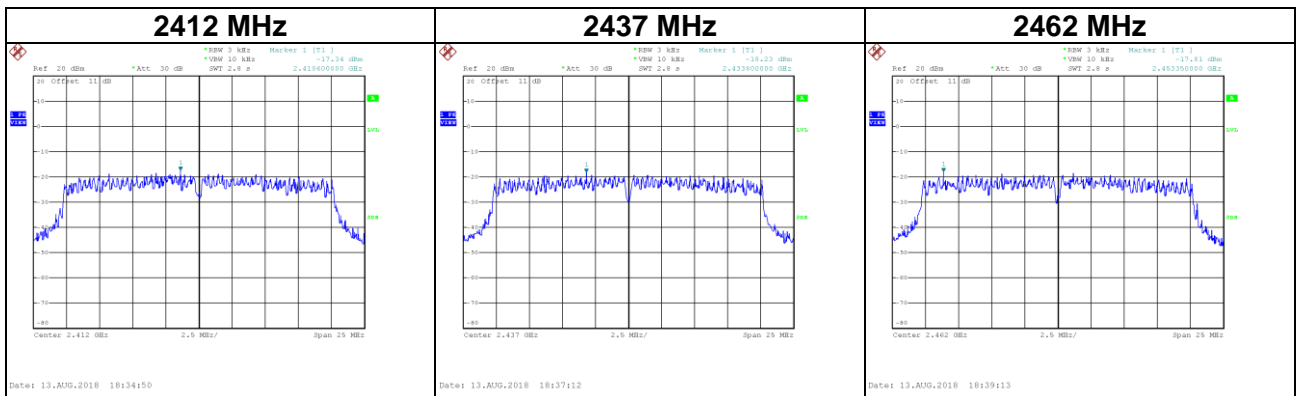
Test Mode	IEEE 802.11b
-----------	--------------

Frequency (MHz)	Power Spectral Density (dBm/3 kHz)	Limit (dBm/3 kHz)	Result
2412	-13.87	8.00	Complies
2437	-15.21	8.00	Complies
2462	-16.01	8.00	Complies



Test Mode	IEEE 802.11g
-----------	--------------

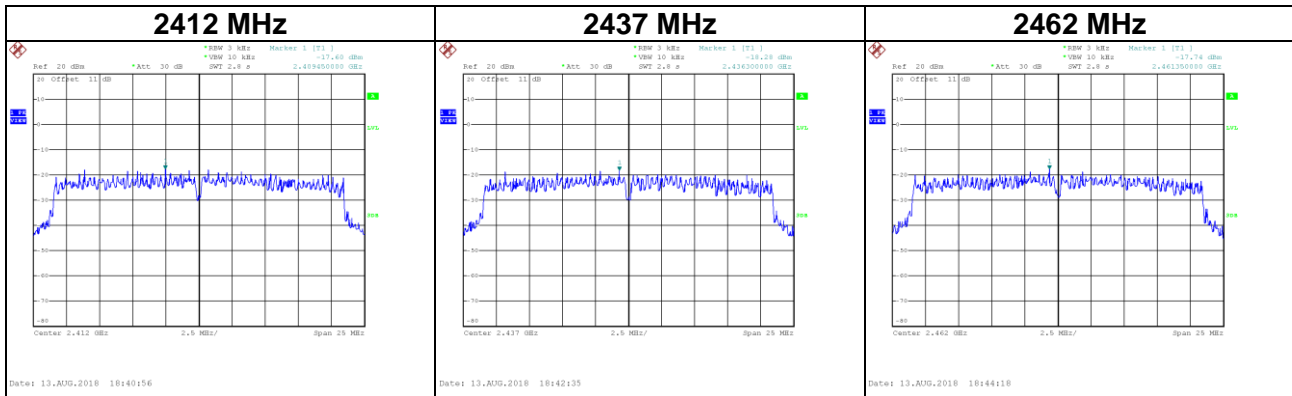
Frequency (MHz)	Power Spectral Density (dBm/3 kHz)	Limit (dBm/3 kHz)	Result
2412	-17.34	8.00	Complies
2437	-18.23	8.00	Complies
2462	-17.81	8.00	Complies





Test Mode	IEEE 802.11n (HT20)
-----------	---------------------

Frequency (MHz)	Power Spectral Density (dBm/3 kHz)	Limit (dBm/3 kHz)	Result
2412	-17.60	8.00	Complies
2437	-18.28	8.00	Complies
2462	-17.74	8.00	Complies



**End of Test Report**