FCC Radio Test Report

FCC ID: Q3N-82312

This report concerns (check one): ☒**Original Grant** ☐**Class I Change** ☐**Class II Change**

Project No.	:	1808T030
Equipment	:	Terminal
Test Model	:	8231
Series Model	:	N/A
Applicant	:	CIPHERLAB CO., LTD.
Address	:	12F, 333, Dunhua S. Rd., Sec. 2, Taipei, Taiwan

Date of Receipt	:	Aug. 10, 2018
Date of Test	:	Aug. 10, 2018 ~ Sep. 04, 2018
Issued Date	:	Sep. 05, 2018
Tested by	:	BTL Inc.

Testing Engineer : (Kenji Lin)

Technical Manager : (James Chiu)

Authorized Signatory : (Andy Chiu)

BTL INC.

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Testing Laboratory
0659

Declaration

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

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

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BTL's laboratory quality assurance procedures are in compliance with the **ISO 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.

Table of Contents Page

Table of Contents Page

REPORT ISSUED HISTORY

Issued No.	Description	Issued Date
BTL-FCCP-3-1808T030	Original Issue.	Sep. 05, 2018

1. CERTIFICATION

Equipment	:	Terminal
Brand Name	:	CIPHERLAB
Test Model	:	8231
Series Model	:	N/A
Applicant	:	CIPHERLAB CO., LTD.
Manufacturer	:	CIPHERLAB CO., LTD.
Address	:	12F, 333, Dunhua S. Rd., Sec. 2, Taipei, Taiwan
Date of Test	:	Aug. 10, 2018 ~ Sep. 04, 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-3-1808T030) 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 WIFI 2.4GHz part.

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

Applied Standard(s): FCC Part15 (15.247) , Subpart C			
Standard(s) Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.247(d)	Antenna conducted Spurious Emission	PASS	
15.247(a)(2)	6dB Bandwidth	PASS	
15.247(b)(3)	Peak Output Power	PASS	
15.247(e)	Power Spectral Density	PASS	
15.203	Antenna Requirement	PASS	
15.247(d)/ 15.205/ 15.209	Transmitter Radiated Emissions	PASS	

NOTE:

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

(2) Input power is supplied by battery.

2.1 TEST FACILITY

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

Conducted emission Test:

C05: (VCCI RN: C-4742; 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.)

Radiated emission Test (Below 1 GHz):

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.)

Radiated emission Test (Above 1 GHz):

CB15: (VCCI RN: G-20031; 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_{cispr} requirement.

The reported uncertainty of measurement y ± 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. Radiated emission test:

Test Site	Method	Measurement Frequency Range	U,(dB)
CB15 (3m)	CISPR	9kHz ~ 150kHz	2.82
		150kHz ~ 30MHz	2.58

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

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

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

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

It can be seen that our U_{lab} values are smaller than U_{CISPR}.
Note: unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	Terminal
Brand Name	CIPHERLAB
Test Model	8231
Series Model	N/A
Model Difference	N/A
Power Source	#1 DC Voltage supplied from AC adapter. Model: SYS1561-1005 #2 Supplied from Li-ion Battery. Model: BA-80S1A2
Power Rating	#1 I/P: 100-240V~1.0A MAX 50-60Hz O/P: 5V⎓2A10W MAX (1) #2 DC 3.7V 1200mAh, 4.44Wh
Operation Frequency	2412~2462 MHz
Modulation Technology	802.11b:DSSS 802.11g:OFDM 802.11n:OFDM
Bit Rate of Transmitter	802.11b: 11/5.5/2/1 Mbps 802.11g: 54/48/36/24/18/12/9/6 Mbps 802.11n up to 72.2 Mbps
Conducted Power (Max.)	802.11b: 17.70dBm 802.11g: 24.24dBm 802.11n(20MHz): 24.33dBm
Average Power (Max.)	802.11b: 14.70dBm 802.11g: 18.15dBm 802.11n(20MHz): 18.13dBm

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 802.11b, 802.11g, 802.11n(20MHz)							
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. Table for Filed Antenna:

Ant.	Manufacturer	Model Name	Antenna Type	Connector	Gain (dBi)
1	CipherLab	8231 WIFI Antenna	PIFA	U.FL	2.41

3.2 DESCRIPTION OF TEST MODES

The test system was pre-tested based on the consideration of all possible combinations of EUT operation mode.
Following mode(s) as (were) found to be the worst case(s) and selected for the final test.

Test Items	Test mode	Channel	Note
Conducted Emission	TX N-20M MODE	01	
Transmitter Radiated Emissions (BELOW 1GHz)	TX N-20M MODE	01	-
Transmitter Radiated Emissions (ABOVE 1GHz)	TX B MODE	01/06/11	-
	TX G MODE	01/06/11	
	TX N-20M MODE	01/06/11	
6dB Bandwidth	TX B MODE	01/06/11	-
	TX G MODE	01/06/11	-
	TX N-20M MODE	01/06/11	-
Peak Output Power	TX B MODE	01/06/11	-
	TX G MODE	01/06/11	-
	TX N-20M MODE	01/06/11	-
Antenna conducted Spurious Emission	TX B MODE	01/06/11	-
	TX G MODE	01/06/11	-
	TX N-20M MODE	01/06/11	-
Power Spectral Density	TX B MODE	01/06/11	-
	TX G MODE	01/06/11	-
	TX N-20M MODE	01/06/11	-

Note:

(1) The measurements are performed at the high, middle, low available channels.

(2) 802.11b mode: DBPSK (1Mbps)
802.11g mode: OFDM (6Mbps)
802.11n HT20 mode : BPSK (MCS 0)
For radiated emission tests, the highest output powers were set for final test.

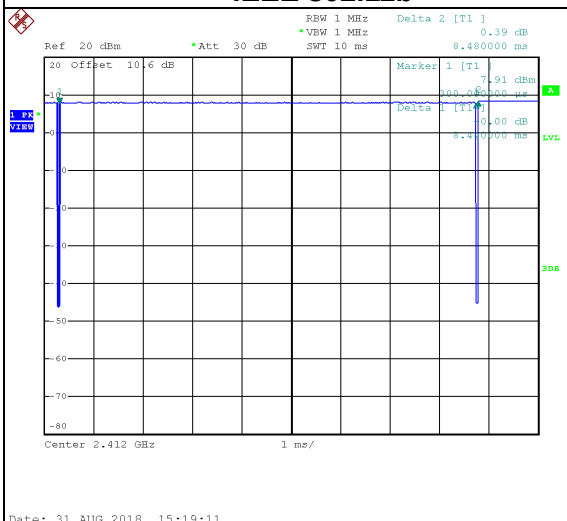
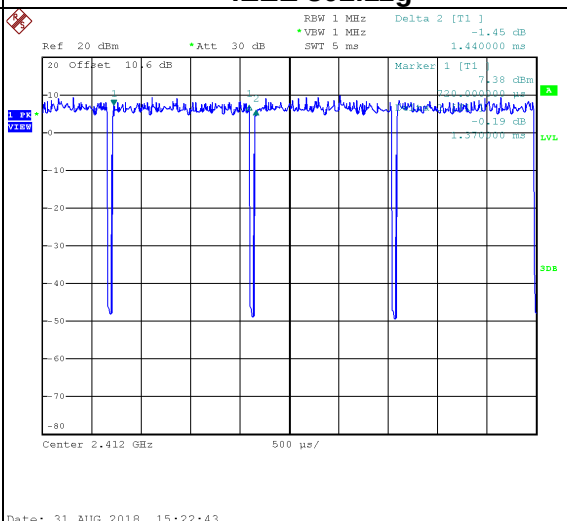
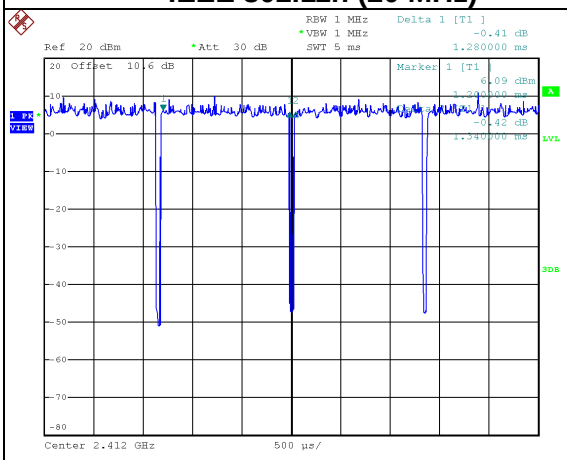
3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

During testing, channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of WLAN

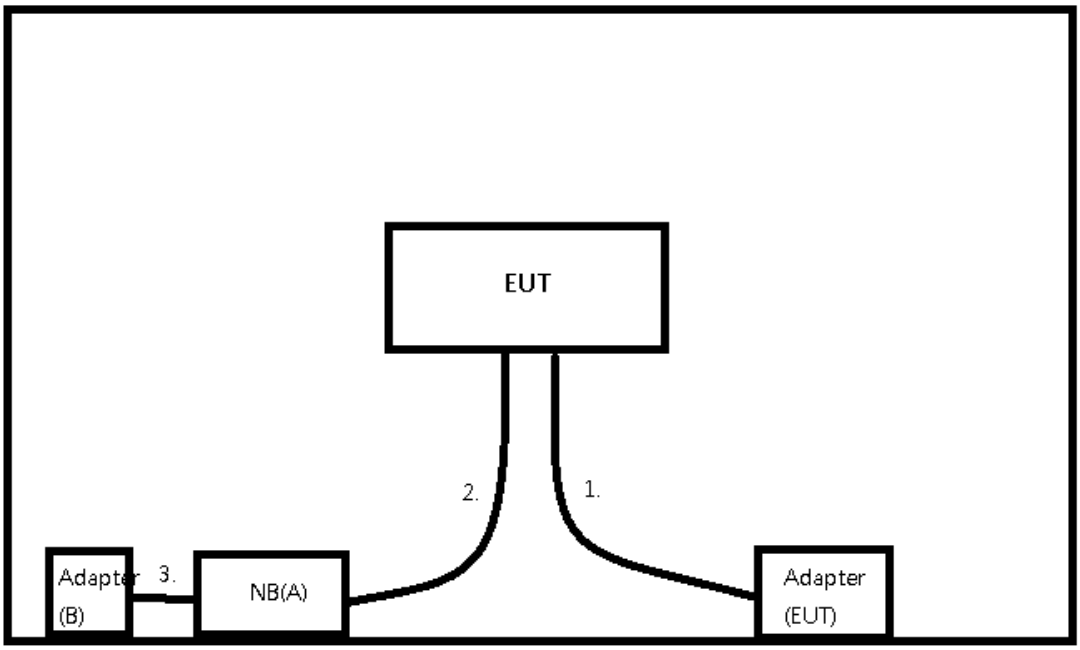
Test software version	N/A		
Frequency (MHz)	2412	2437	2462
802.11b	15	15	14
802.11g	15	20	20
802.11n (20MHz)	15	20	20

3.4 DUTY CYCLE

If duty cycle is ≥ 98 %, duty factor is not required.
If duty cycle is < 98 %, duty factor shall be considered.

IEEE 802.11b	IEEE 802.11g
	
Duty cycle = 8.440 ms / 8.480 ms = 99.53 % Duty Factor = 10 * log(1 / 0.9953) = 0.02	Duty cycle = 1.370 ms / 1.440 ms = 95.14 % Duty Factor = 10 * log(1 / 0.9514) = 0.22
IEEE 802.11n (20 MHz)	
	
Duty cycle = 1.340 ms / 1.280 ms = 95.52 % Duty Factor = 10 * log(1 / 0.9552) = 0.20	

3.5 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



3.6 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.
A	NB	HP	TPN-I119	-	N/A
B	Adapter	HP	HSTNN-CA40	-	1588-3003

Item	Shielded Type	Ferrite Core	Length	Note
1	YES	NO	1.0m	Power Cable
2	YES	YES	1.5m	USB Cable
3	YES	NO	2.0m	Power Cable

4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 POWER LINE CONDUCTED EMISSION LIMITS (Frequency Range 150KHz-30MHz)

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15 -0.50	66 to 56*	56 to 46*
0. 0 -5.0	56	46
5.0 -30.0	60	50

Note:

(1) The limit of " * " decreases with the logarithm of the frequency

(2) 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 Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 KHz

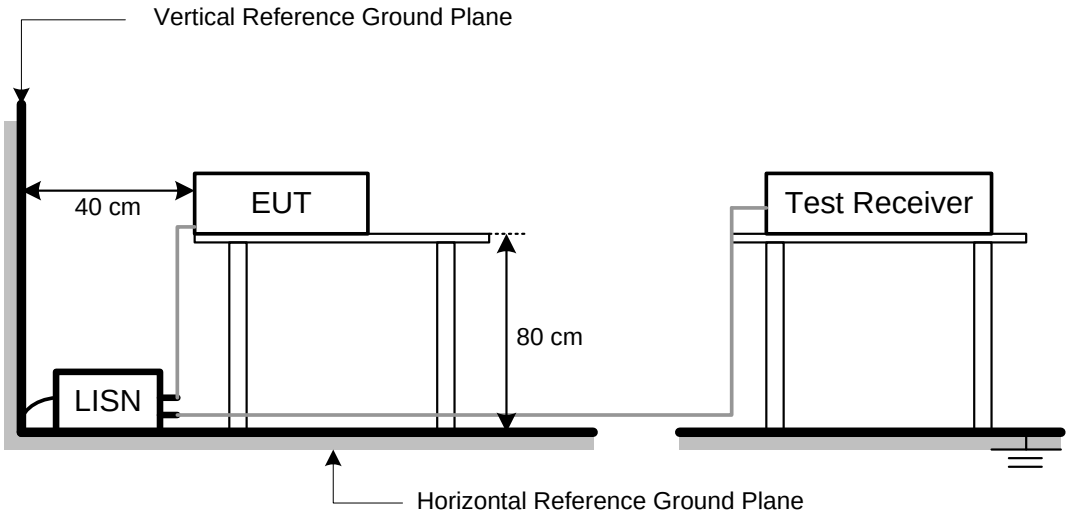
4.1.2 TEST PROCEDURE

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 equipments 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.

4.1.3 DEVIATION FROM TEST STANDARD

No deviation

4.1.4 TEST SETUP



4.1.5 EUT OPERATING CONDITIONS

The EUT was placed on the test table and programmed in normal function.

4.1.6 EUT TEST CONDITIONS

Temperature: 25°C
Relative Humidity: 45%
Test Voltage: AC 120V/60Hz

4.1.7 TEST RESULTS

Please refer to the Appendix A.

4.2 RADIATED EMISSION MEASUREMENT

4.2.1 RADIATED EMISSION LIMITS

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 (9KHz-1000MHz)

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 EMISSION MEASUREMENT (Above 1000MHz)

Frequency (MHz)	(dBuV/m) (at 3 meters)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(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

Receiver 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

4.2.2 TEST PROCEDURE

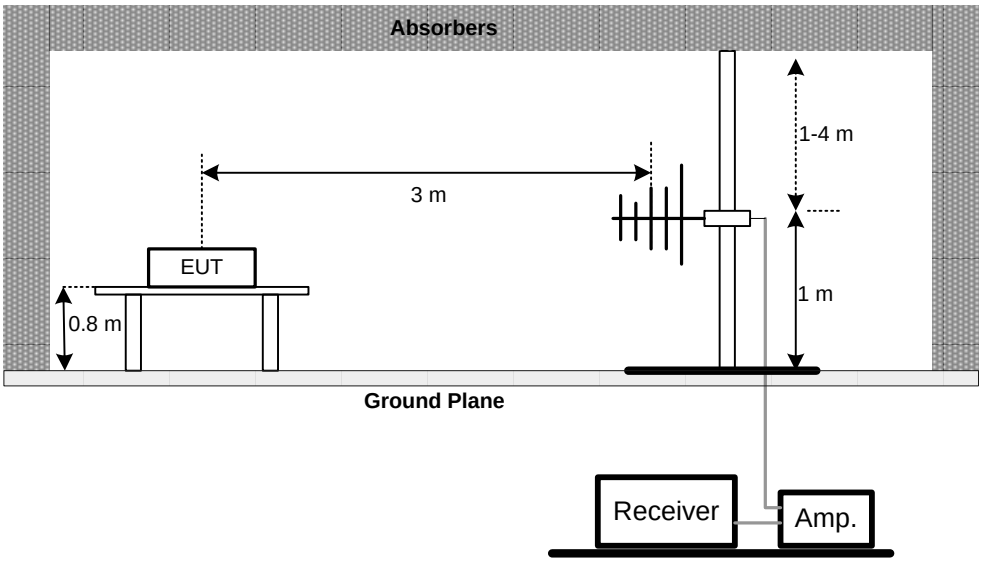
a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
b. The measuring distance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

4.2.3 DEVIATION FROM TEST STANDARD

No deviation

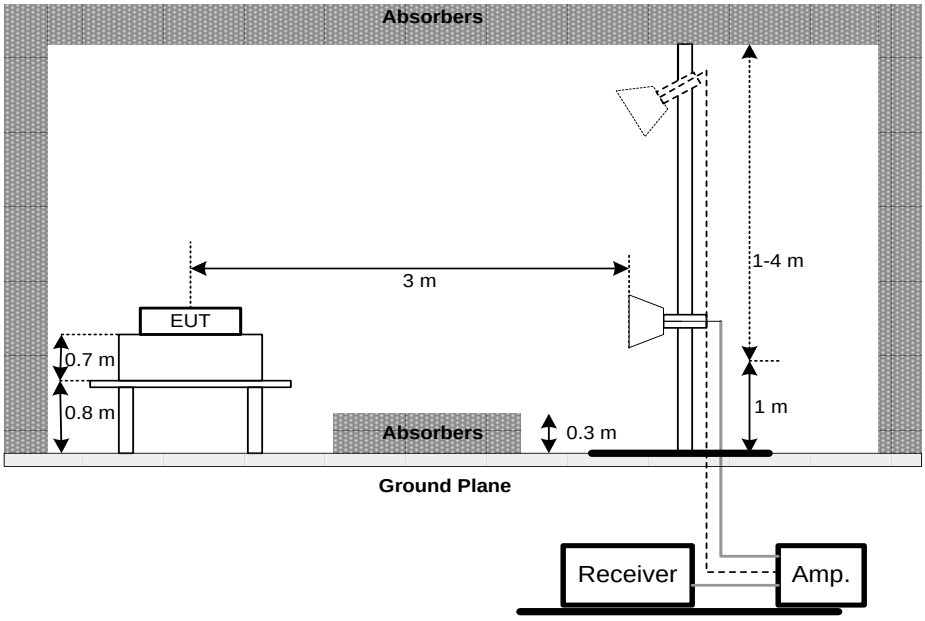
4.2.4 TEST SETUP

(A) Radiated Emission Test Set-Up Frequency Below 1 GHz

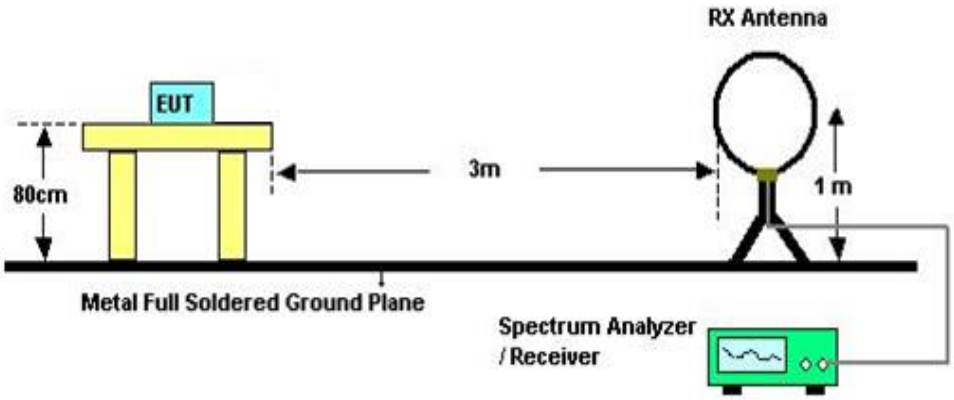


(B) Radiated Emission Test Set-Up Frequency Above 1 GHz

Band edge



(C) For Radiated Emissions Below 30MHz



4.2.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

4.2.6 EUT TEST CONDITIONS

Temperature: 23°C Relative Humidity: 70% Test Voltage: AC 120V/60Hz

4.2.7 TEST RESULTS (9KHZ TO 30MHZ)

Please refer to the Appendix B

Remark:

(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 (specific distance / test distance) (dB).
(3) Limit line = specific limits (dBuV) + distance extrapolation factor.

4.2.8 TEST RESULTS (30MHZ TO 1000 MHZ)

Please refer to the Appendix C.

4.2.9 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 TEST

5.1 APPLIED PROCEDURES

FCC Part15 (15.247) , Subpart C			
Section	Test Item	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	2400-2483.5	PASS

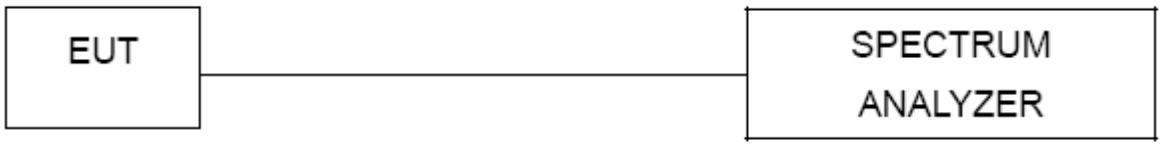
5.1.1 TEST PROCEDURE

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

5.1.2 DEVIATION FROM STANDARD

No deviation.

5.1.3 TEST SETUP



5.1.4 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

5.1.5 EUT TEST CONDITIONS

Temperature: 25°C Relative Humidity: 55% Test Voltage: AC 120V/60Hz

5.1.6 TEST RESULTS

Please refer to the Appendix E.

6. MAXIMUM PEAK CONDUCTED OUTPUT POWER TEST

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Maximum Output Power	1 Watt or 30dBm	2400-2483.5	PASS

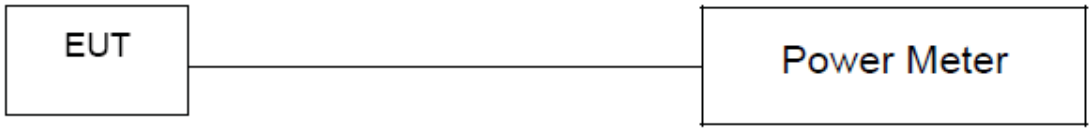
6.1.1 TEST PROCEDURE

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

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP



6.1.4 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

6.1.5 EUT TEST CONDITIONS

Temperature: 25°C Relative Humidity: 55% Test Voltage: AC 120V/60Hz

6.1.6 TEST RESULTS

Please refer to the Appendix F.

7. ANTENNA CONDUCTED SPURIOUS EMISSION

7.1 APPLIED PROCEDURES / 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.

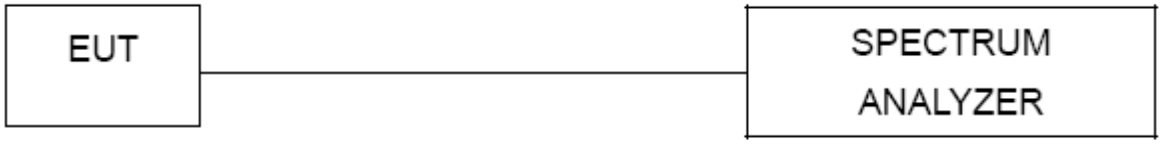
7.1.1 TEST PROCEDURE

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

7.1.2 DEVIATION FROM STANDARD

No deviation.

7.1.3 TEST SETUP



7.1.4 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

7.1.5 EUT TEST CONDITIONS

Temperature: 25°C Relative Humidity: 55% Test Voltage: AC 120V/60Hz

7.1.6 TEST RESULTS

Please refer to the Appendix G.

8. POWER SPECTRAL DENSITY TEST

8.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(e)	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS

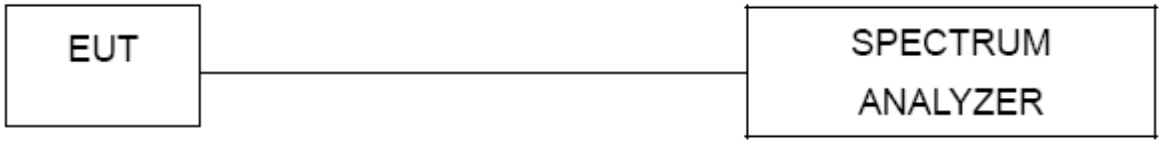
8.1.1 TEST PROCEDURE

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

8.1.2 DEVIATION FROM STANDARD

No deviation.

8.1.3 TEST SETUP



8.1.4 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

8.1.5 EUT TEST CONDITIONS

Temperature: 25°C Relative Humidity: 55% Test Voltage: AC 120V/60Hz

8.1.6 TEST RESULTS

Please refer to the Appendix H.

9. MEASUREMENT INSTRUMENTS LIST

Conducted Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	TWO-LINE V-NETWORK	R&S	ENV216	101050	Jan. 24, 2019
2	Test Cable	TIMES	CFD300-NL	C02	Jun. 13, 2019
3	EMI Test Receiver	R&S	ESR7	101433	Dec. 07, 2018
4	Measurement Software	EZ	EZ_EMC (Version NB-03A)	N/A	N/A

Radiated Emission Measurement					
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. 27, 2019
3	Test Cable	EMCI	EMC104-SM-SM-8000	8m	Jan. 03, 2019
4	Test Cable	EMCI	EMC104-SM-SM-800	150207	Jan. 03, 2019
5	Test Cable	EMCI	EEMC104-SM-SM-3000	151205	Jan. 03, 2019
6	MXE EMI Receiver	Agilent	N9038A	MY55420127	Jan. 08, 2019
7	Signal Analyzer	Agilent	N9010A	MY52220990	Feb. 21, 2019
8	Loop Ant	EMCI	LPA600	274	May 03, 2019
9	Horm Ant	SCHWARZBECK	BBHA 9120D	9120D-1342	Feb. 27, 2019
10	Horm Ant	Schwarzbeck	BBHA 9170	187	Dec. 05, 2018
11	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	9168-548	Jan. 15, 2019
12	5dB Attenuator	EMCI	EMCI-N-6-05	AT-N0623	Jan. 15, 2019

6dB Bandwidth Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	R&S/FSP30	100854(E-208)	May 25, 2019

Peak Output Power Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Power Meter	Anritsu	ML2487A	6K00004714	Sep.10, 2018
2	Power Sensor	Anritsu	MA2411B	1126001	Aug. 15, 2019

Antenna Conducted Spurious Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	R&S/FSP30	100854(E-208)	May 25, 2019

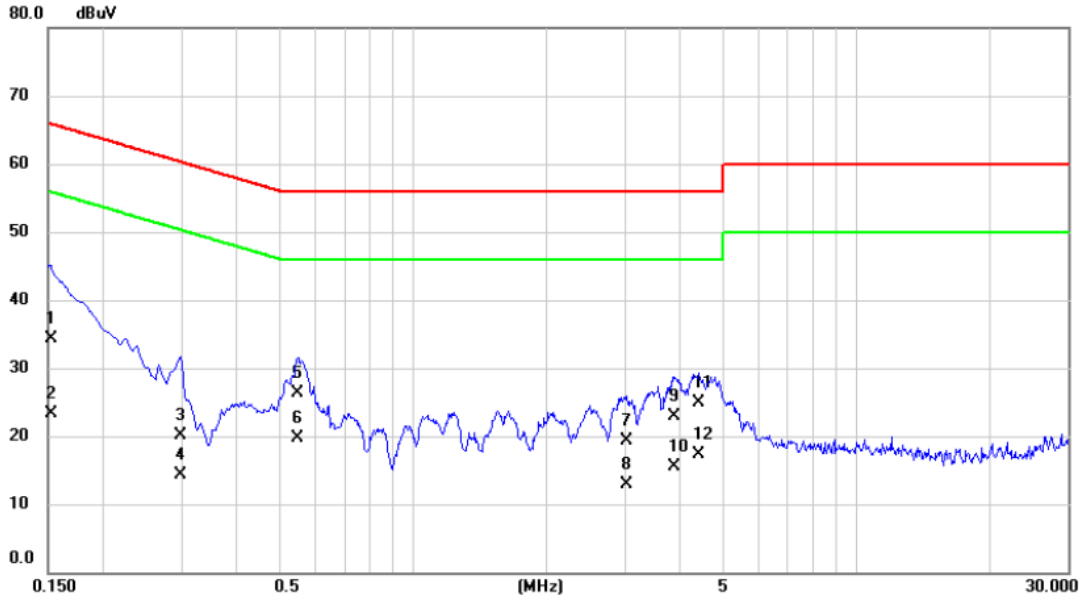
Power Spectral Density Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	R&S/FSP30	100854(E-208)	May 25, 2019

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

APPENDIX A - CONDUCTED EMISSION

Test Mode:	TX N-20M MODE 2412MHz

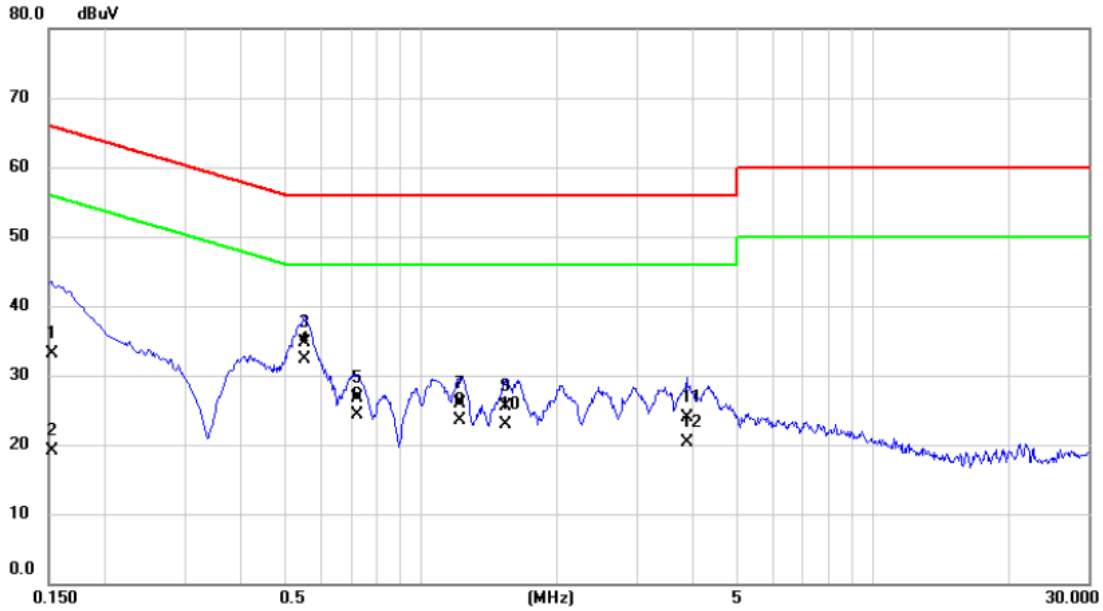
Line



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1522	24.70	9.63	34.33	65.88	-31.55	QP	
2		0.1522	13.60	9.63	23.23	55.88	-32.65	AVG	
3		0.2985	10.40	9.66	20.06	60.28	-40.22	QP	
4		0.2985	4.70	9.66	14.36	50.28	-35.92	AVG	
5		0.5482	16.70	9.66	26.36	56.00	-29.64	QP	
6	*	0.5482	10.10	9.66	19.76	46.00	-26.24	AVG	
7		3.0278	9.60	9.72	19.32	56.00	-36.68	QP	
8		3.0278	3.20	9.72	12.92	46.00	-33.08	AVG	
9		3.8895	13.10	9.73	22.83	56.00	-33.17	QP	
10		3.8895	5.80	9.73	15.53	46.00	-30.47	AVG	
11		4.4093	15.20	9.74	24.94	56.00	-31.06	QP	
12		4.4093	7.50	9.74	17.24	46.00	-28.76	AVG	

Test Mode:	TX N-20M MODE 2412MHz

Neutral

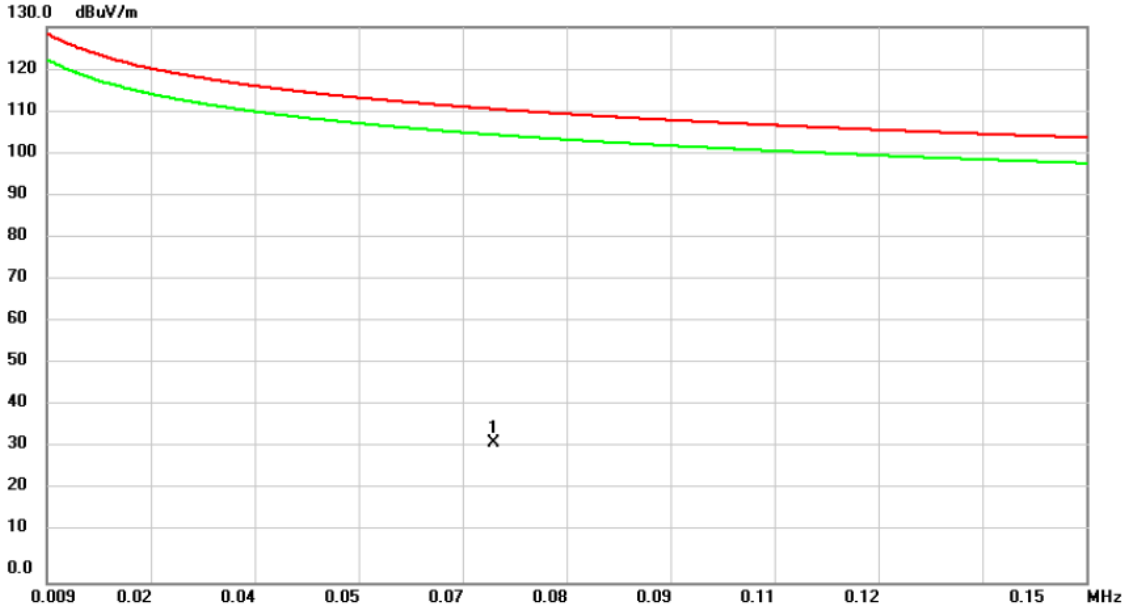


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1522	23.50	9.62	33.12	65.88	-32.76	QP	
2		0.1522	9.50	9.62	19.12	55.88	-36.76	AVG	
3		0.5505	25.00	9.65	34.65	56.00	-21.35	QP	
4	*	0.5505	22.70	9.65	32.35	46.00	-13.65	AVG	
5		0.7236	17.00	9.66	26.66	56.00	-29.34	QP	
6		0.7236	14.60	9.66	24.26	46.00	-21.74	AVG	
7		1.2164	16.20	9.66	25.86	56.00	-30.14	QP	
8		1.2164	13.80	9.66	23.46	46.00	-22.54	AVG	
9		1.5338	15.90	9.67	25.57	56.00	-30.43	QP	
10		1.5338	13.30	9.67	22.97	46.00	-23.03	AVG	
11		3.8715	14.10	9.72	23.82	56.00	-32.18	QP	
12		3.8715	10.60	9.72	20.32	46.00	-25.68	AVG	

APPENDIX B - RADIATED EMISSION (9KHZ TO 30MHZ)

Test Mode:	TX N-20M MODE 2412MHz

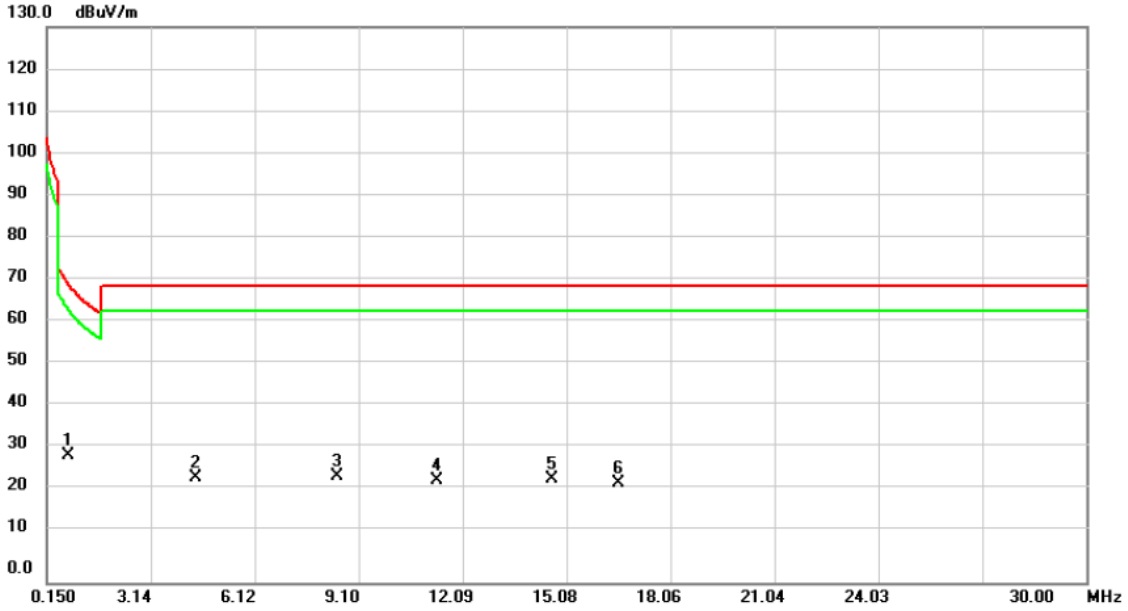
Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0697	13.19	19.34	32.53	110.74	-78.21	peak	

Test Mode:	TX N-20M MODE 2412MHz

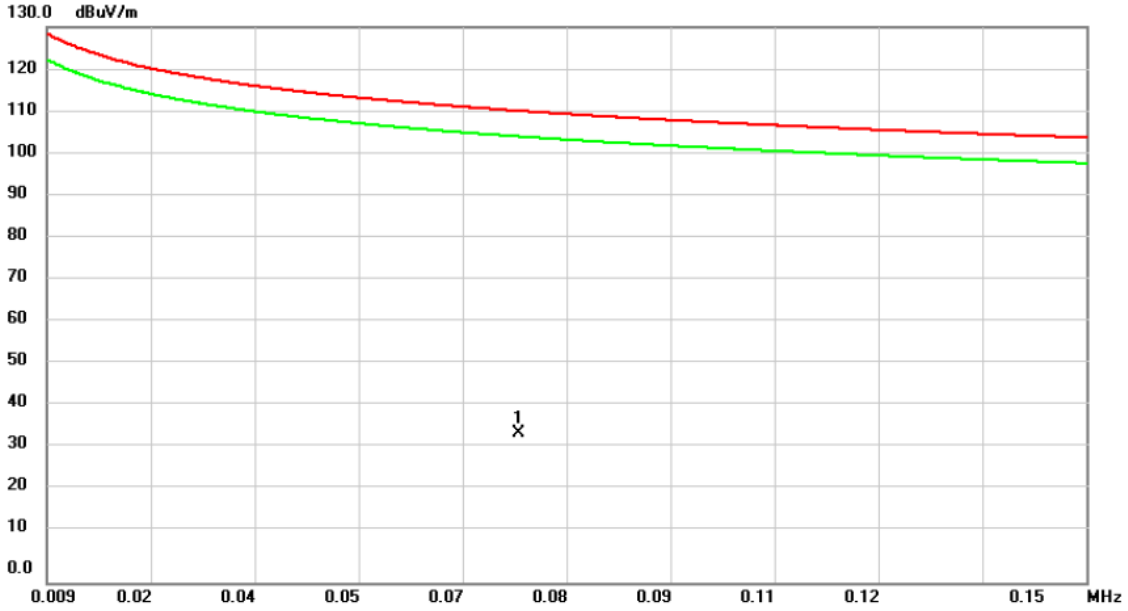
Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.7867	28.99	0.64	29.63	69.69	-40.06	peak	
2		4.4086	28.46	-3.85	24.61	69.54	-44.93	peak	
3		8.4682	29.39	-4.50	24.89	69.54	-44.65	peak	
4		11.3338	28.77	-4.81	23.96	69.54	-45.58	peak	
5		14.6372	29.29	-4.95	24.34	69.54	-45.20	peak	
6		16.5476	28.81	-5.60	23.21	69.54	-46.33	peak	

Test Mode:	TX N-20M MODE 2412MHz

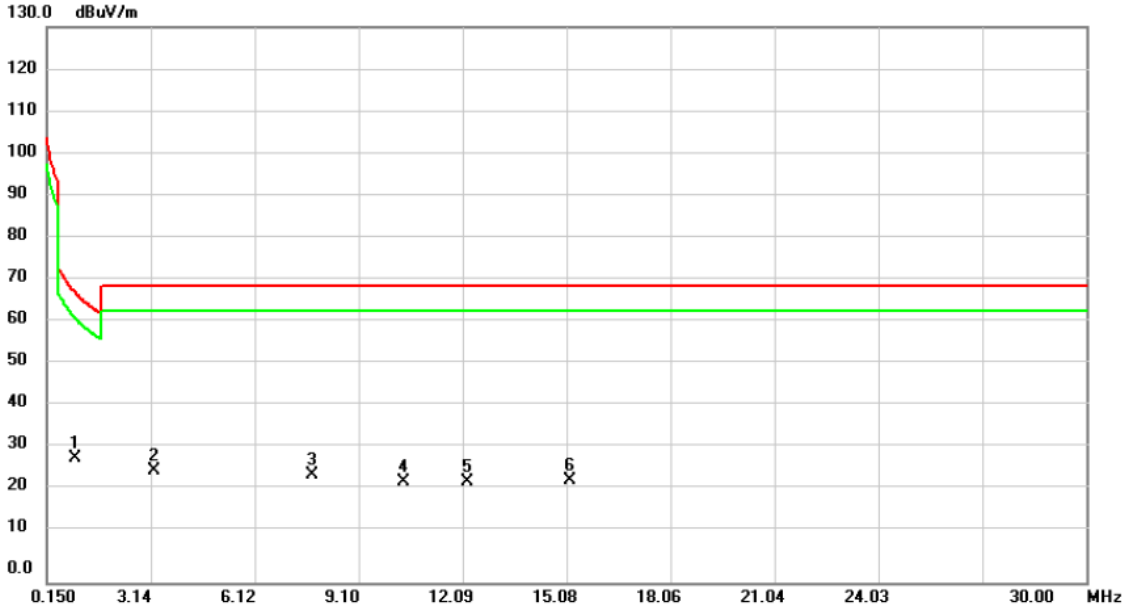
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0731	16.01	18.96	34.97	110.33	-75.36	peak	

Test Mode:	TX N-20M MODE 2412MHz

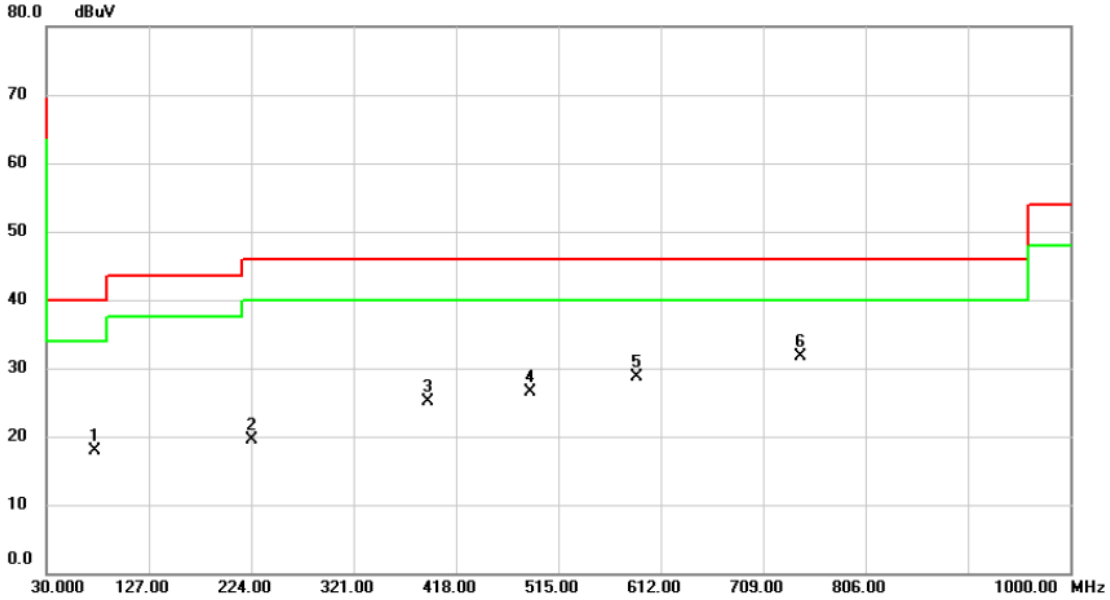
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.9460	29.23	-0.14	29.09	68.09	-39.00	peak	
2		3.2146	29.87	-3.69	26.18	69.54	-43.36	peak	
3		7.7518	29.54	-4.27	25.27	69.54	-44.27	peak	
4		10.3786	28.24	-4.75	23.49	69.54	-46.05	peak	
5		12.2094	28.32	-4.82	23.50	69.54	-46.04	peak	
6		15.1546	29.08	-5.08	24.00	69.54	-45.54	peak	

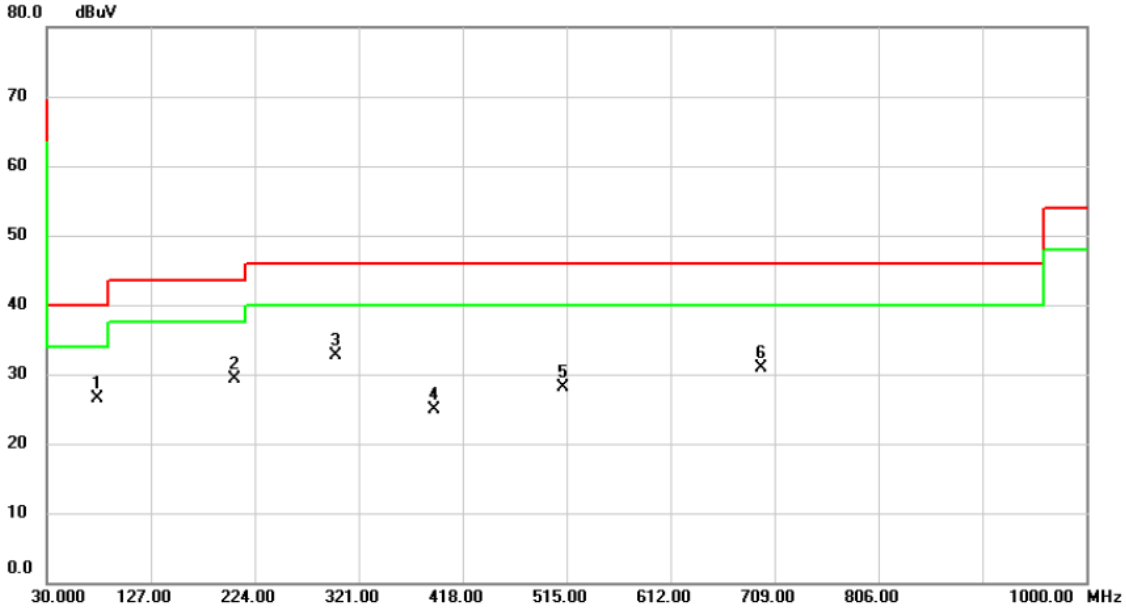
APPENDIX C - RADIATED EMISSION (30MHZ TO 1000MHZ)

Test Mode	TX N-20M MODE 2412MHz	Polarization	Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		75.2667	29.48	-11.66	17.82	40.00	-22.18	peak	
2		225.2933	29.61	-10.03	19.58	46.00	-26.42	peak	
3		390.8400	30.43	-5.27	25.16	46.00	-20.84	peak	
4		487.8400	29.69	-3.13	26.56	46.00	-19.44	peak	
5		590.0133	29.51	-0.73	28.78	46.00	-17.22	peak	
6	*	745.2133	29.55	2.22	31.77	46.00	-14.23	peak	

Test Mode	TX N-20M MODE 2412MHz	Polarization	Horizontal

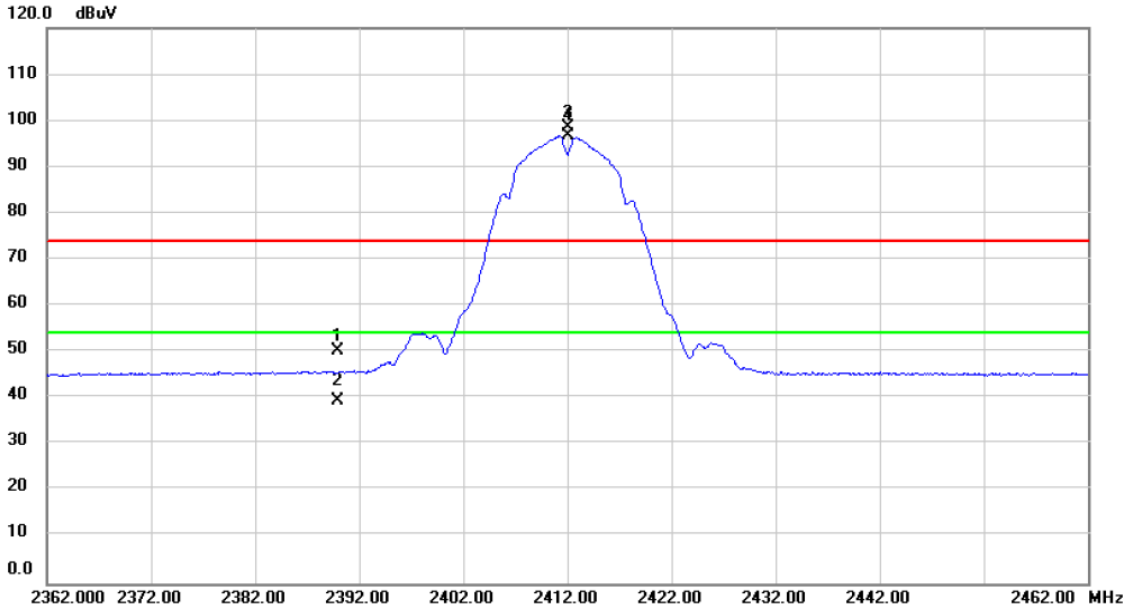


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		77.5300	38.63	-12.08	26.55	40.00	-13.45	peak	
2		205.5700	40.13	-10.79	29.34	43.50	-14.16	peak	
3	*	299.6600	40.28	-7.52	32.76	46.00	-13.24	peak	
4		390.8400	30.26	-5.27	24.99	46.00	-21.01	peak	
5		511.1200	30.83	-2.72	28.11	46.00	-17.89	peak	
6		696.0667	29.74	1.19	30.93	46.00	-15.07	peak	

APPENDIX D - RADIATED EMISSION (ABOVE 1000MHZ)

Test Mode	TX B MODE _2412 MHz	Polarization	Vertical

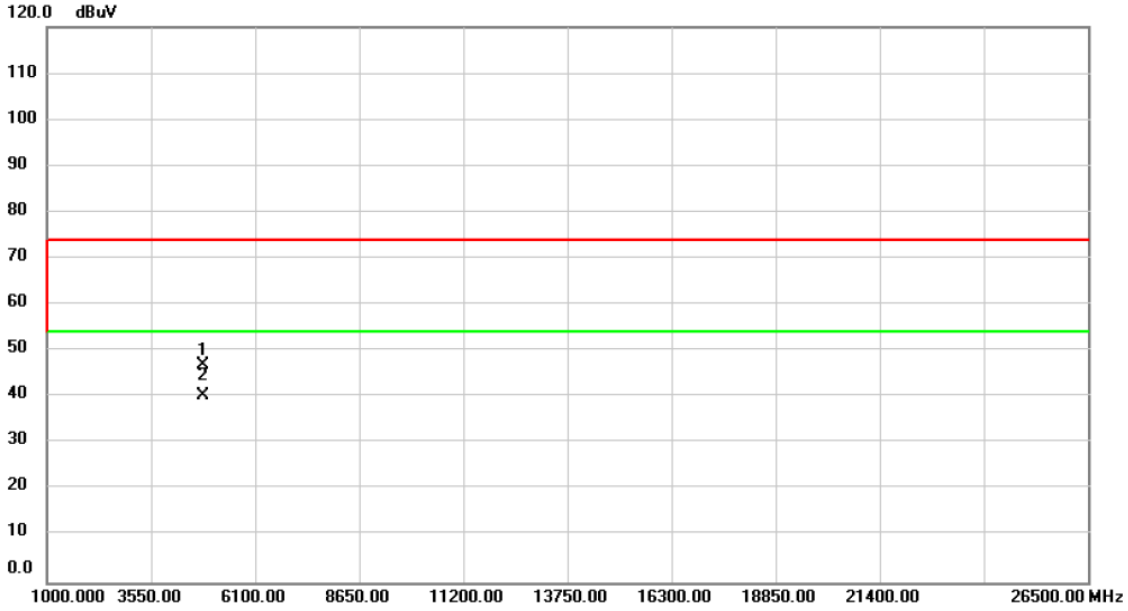
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		2389.972	19.34	30.84	50.18	74.00	-23.82	peak	
2		2389.972	8.60	30.84	39.44	54.00	-14.56	AVG	
3	X	2412.000	67.68	30.92	98.60	74.00	24.60	peak	No Limit
4	*	2412.000	65.87	30.92	96.79	54.00	42.79	AVG	No Limit

Test Mode	TX B MODE _2412 MHz	Polarization	Vertical

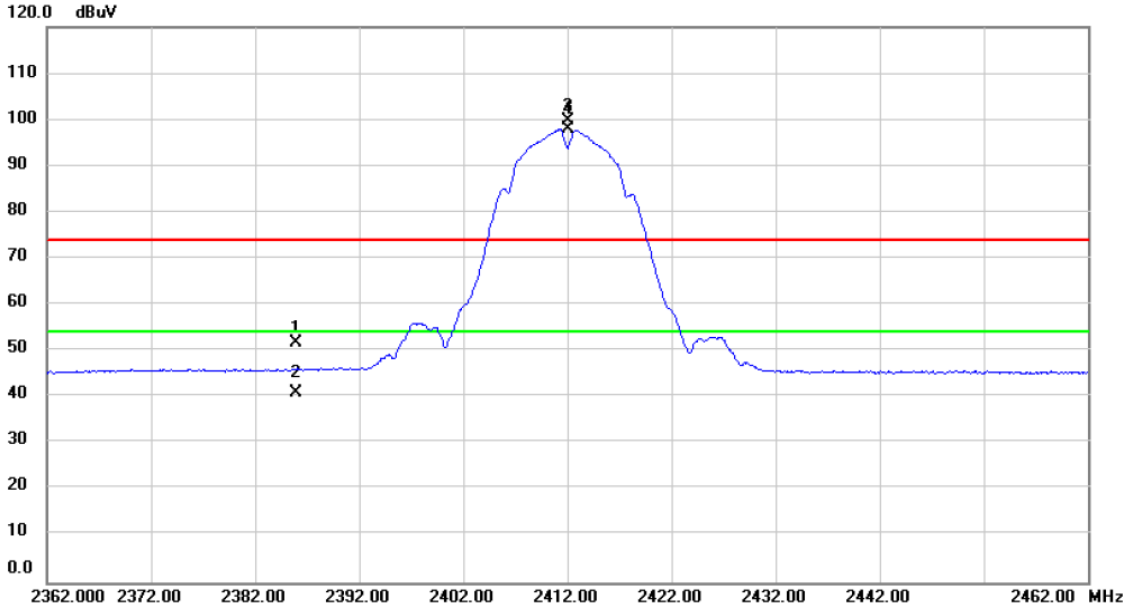
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		4824.000	58.50	-11.48	47.02	74.00	-26.98	peak	
2	*	4824.000	51.95	-11.48	40.47	54.00	-13.53	AVG	

Test Mode	TX B MODE _2412 MHz	Polarization	Horizontal

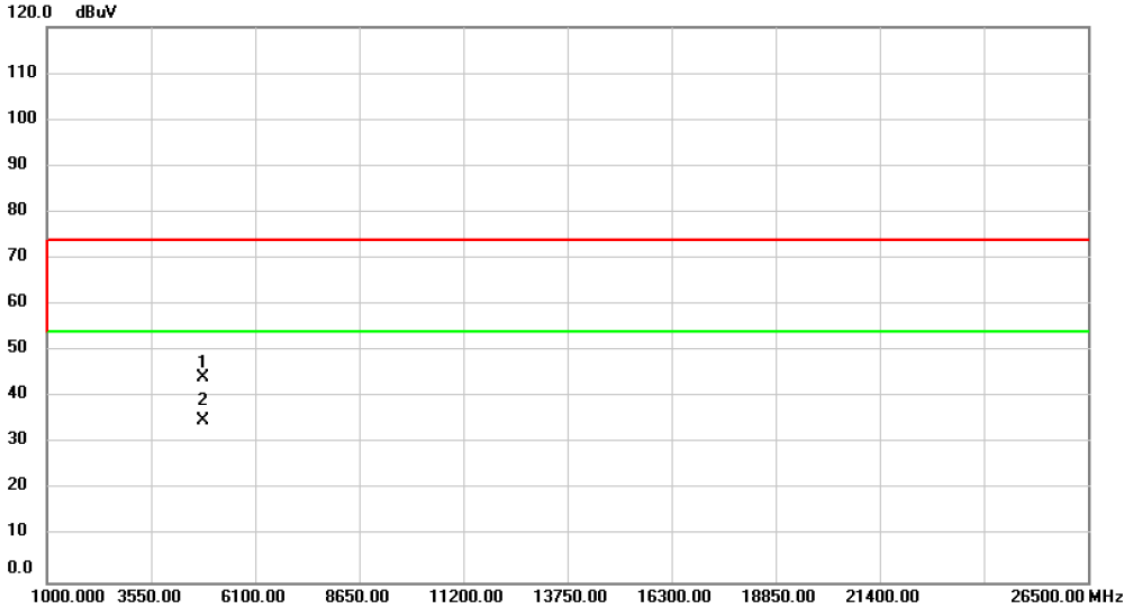
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		2385.968	21.06	30.83	51.89	74.00	-22.11	peak	
2		2385.968	10.05	30.83	40.88	54.00	-13.12	AVG	
3	X	2412.000	68.83	30.92	99.75	74.00	25.75	peak	No Limit
4	*	2412.000	66.91	30.92	97.83	54.00	43.83	AVG	No Limit

Test Mode	TX B MODE _2412 MHz	Polarization	Horizontal

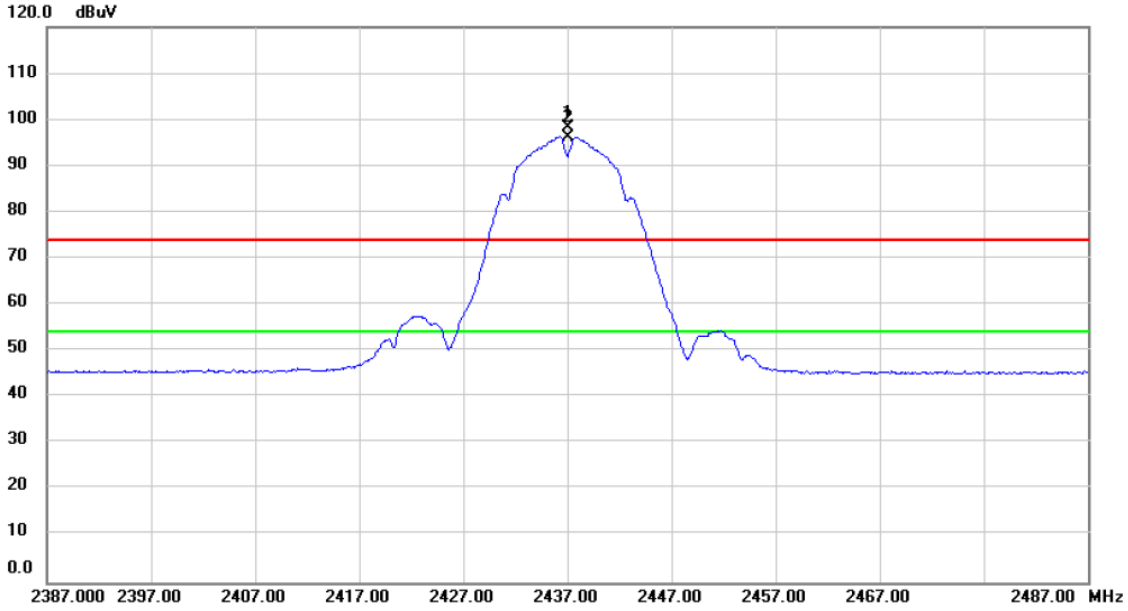
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		4824.000	55.81	-11.48	44.33	74.00	-29.67	peak	
2	*	4824.000	46.32	-11.48	34.84	54.00	-19.16	AVG	

Test Mode	TX B MODE _2437 MHz	Polarization	Vertical

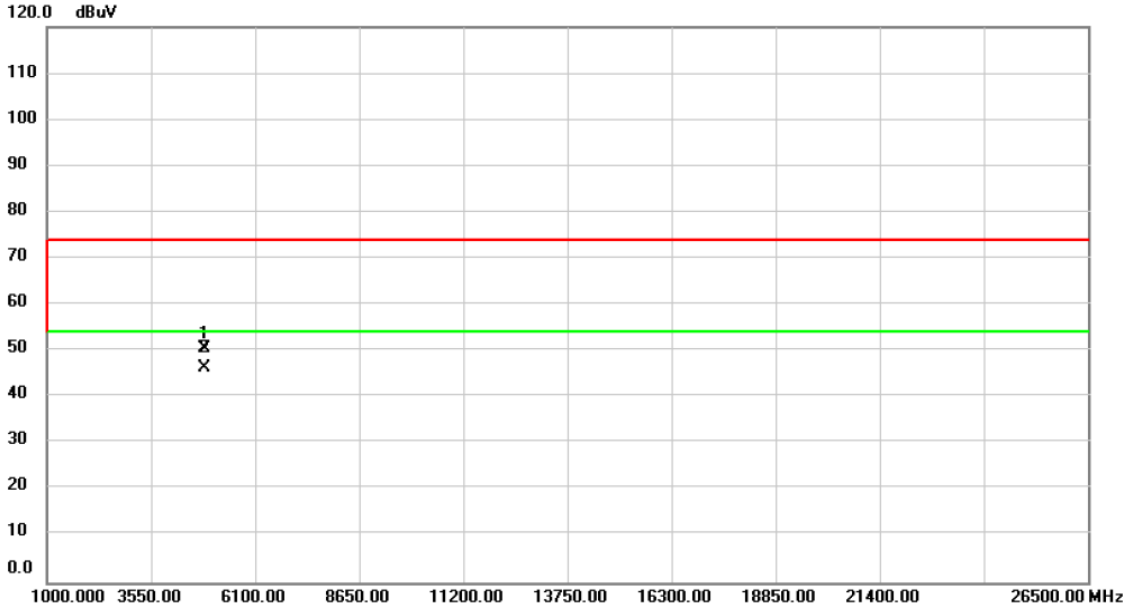
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	X	2437.000	67.23	31.01	98.24	74.00	24.24	peak	No Limit
2	*	2437.000	65.29	31.01	96.30	54.00	42.30	AVG	No Limit

Test Mode	TX B MODE _2437 MHz	Polarization	Vertical

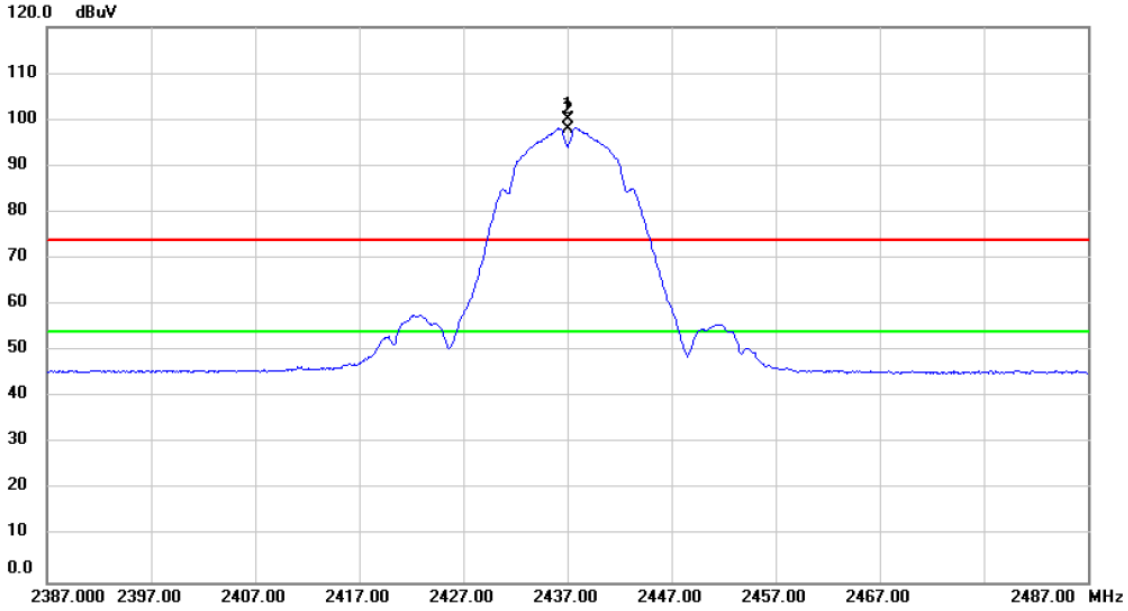
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		4874.000	61.94	-11.42	50.52	74.00	-23.48	peak	
2	*	4874.000	57.73	-11.42	46.31	54.00	-7.69	AVG	

Test Mode	TX B MODE _2437 MHz	Polarization	Horizontal

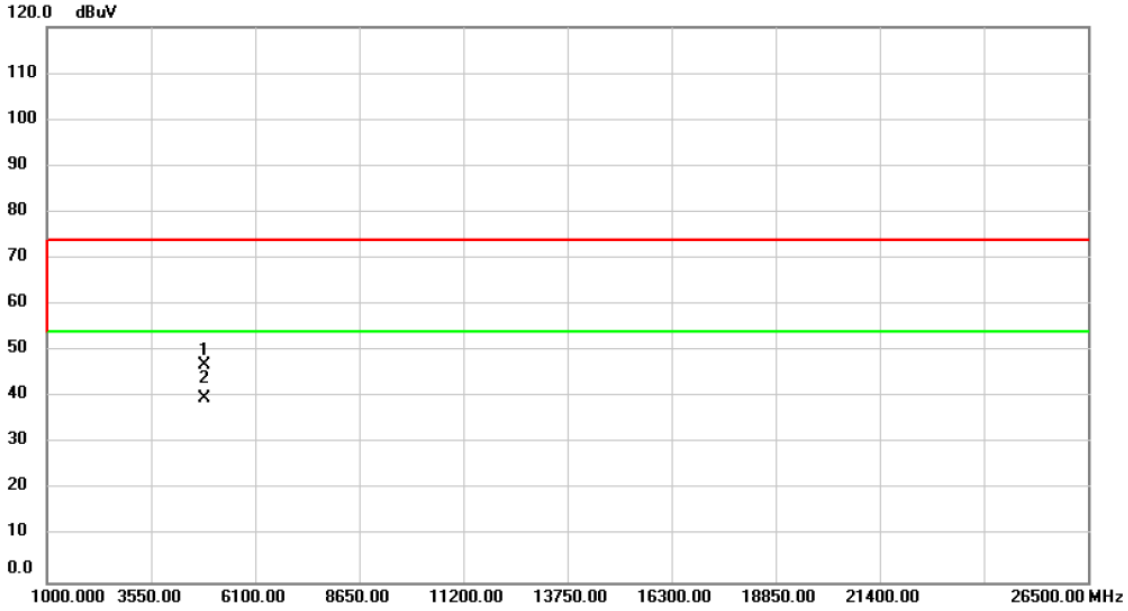
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	X	2437.000	69.05	31.01	100.06	74.00	26.06	peak	No Limit
2	*	2437.000	66.88	31.01	97.89	54.00	43.89	AVG	No Limit

Test Mode	TX B MODE _2437 MHz	Polarization	Horizontal

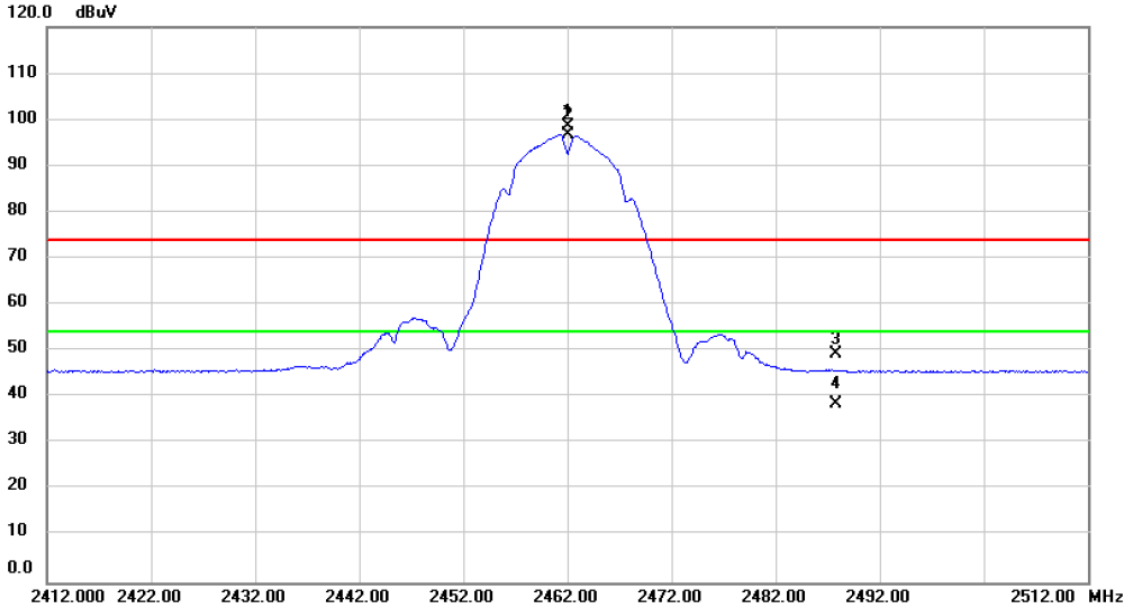
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		4874.000	58.42	-11.42	47.00	74.00	-27.00	peak	
2	*	4874.000	51.23	-11.42	39.81	54.00	-14.19	AVG	

Test Mode	TX B MODE _2462 MHz	Polarization	Vertical

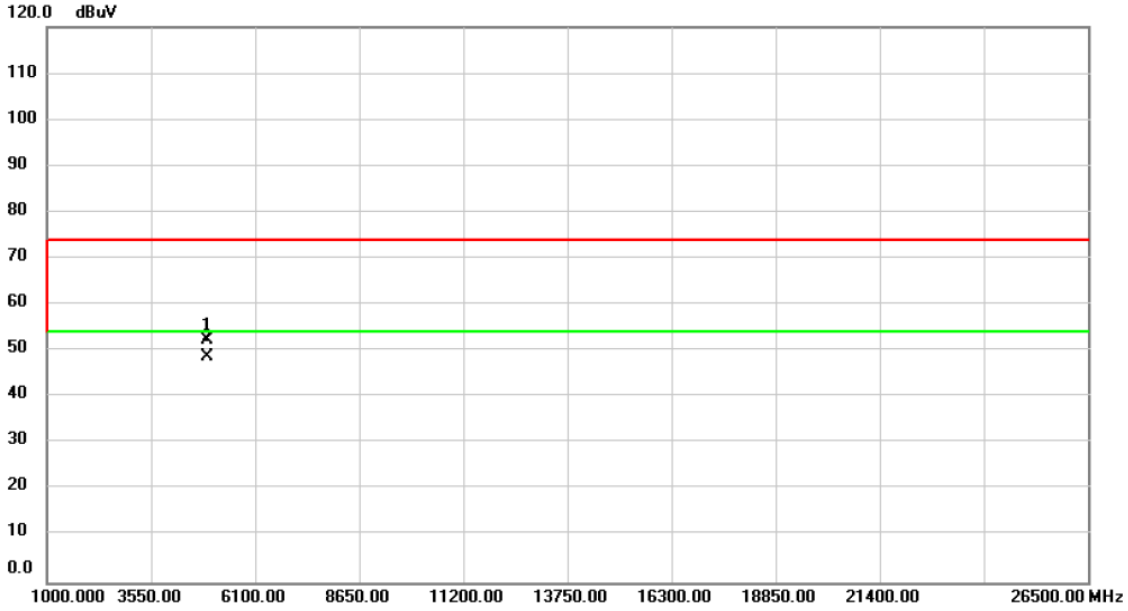
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	X	2462.000	67.57	31.09	98.66	74.00	24.66	peak	No Limit
2	*	2462.000	65.54	31.09	96.63	54.00	42.63	AVG	No Limit
3		2487.790	18.29	31.19	49.48	74.00	-24.52	peak	
4		2487.790	7.37	31.19	38.56	54.00	-15.44	AVG	

Test Mode	TX B MODE _2462 MHz	Polarization	Vertical

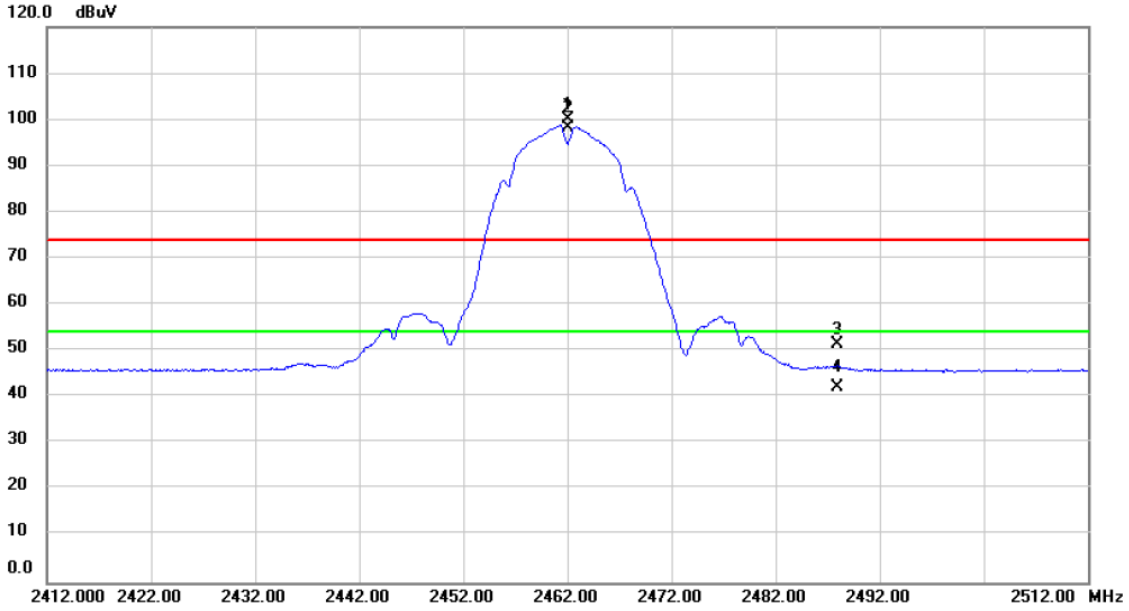
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		4924.000	63.57	-11.37	52.20	74.00	-21.80	peak	
2	*	4924.000	59.98	-11.37	48.61	54.00	-5.39	AVG	

Test Mode	TX B MODE _2462 MHz	Polarization	Horizontal

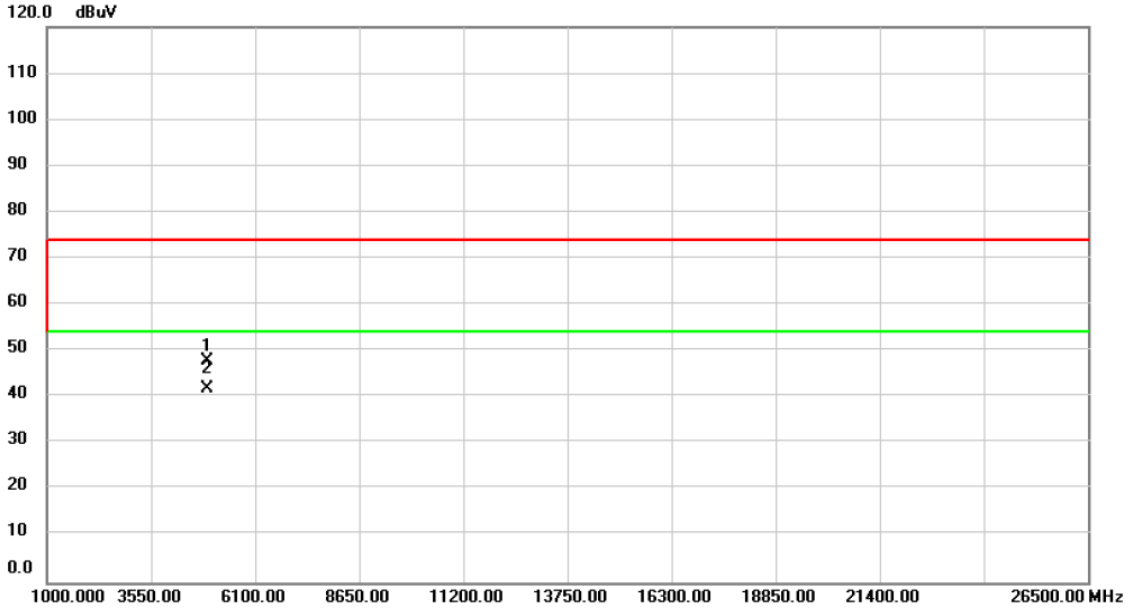
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	X	2462.000	69.01	31.09	100.10	74.00	26.10	peak	No Limit
2	*	2462.000	67.09	31.09	98.18	54.00	44.18	AVG	No Limit
3		2487.889	20.17	31.19	51.36	74.00	-22.64	peak	
4		2487.889	10.85	31.19	42.04	54.00	-11.96	AVG	

Test Mode	TX B MODE _2462 MHz	Polarization	Horizontal

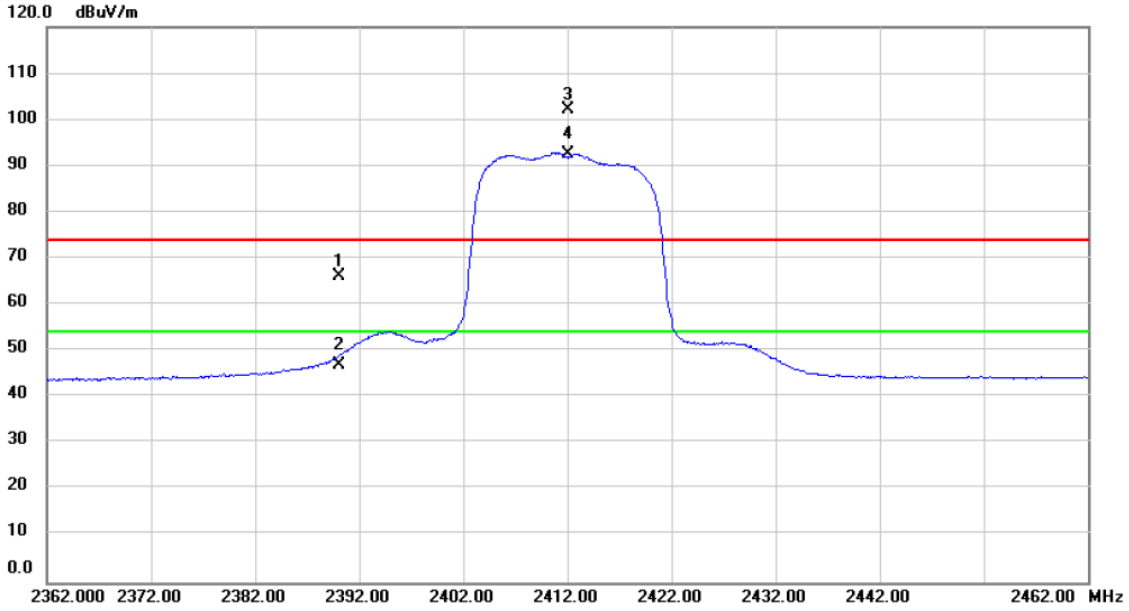
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		4924.000	59.20	-11.37	47.83	74.00	-26.17	peak	
2	*	4924.000	53.19	-11.37	41.82	54.00	-12.18	AVG	

Test Mode	TX G MODE _2412 MHz	Polarization	Vertical

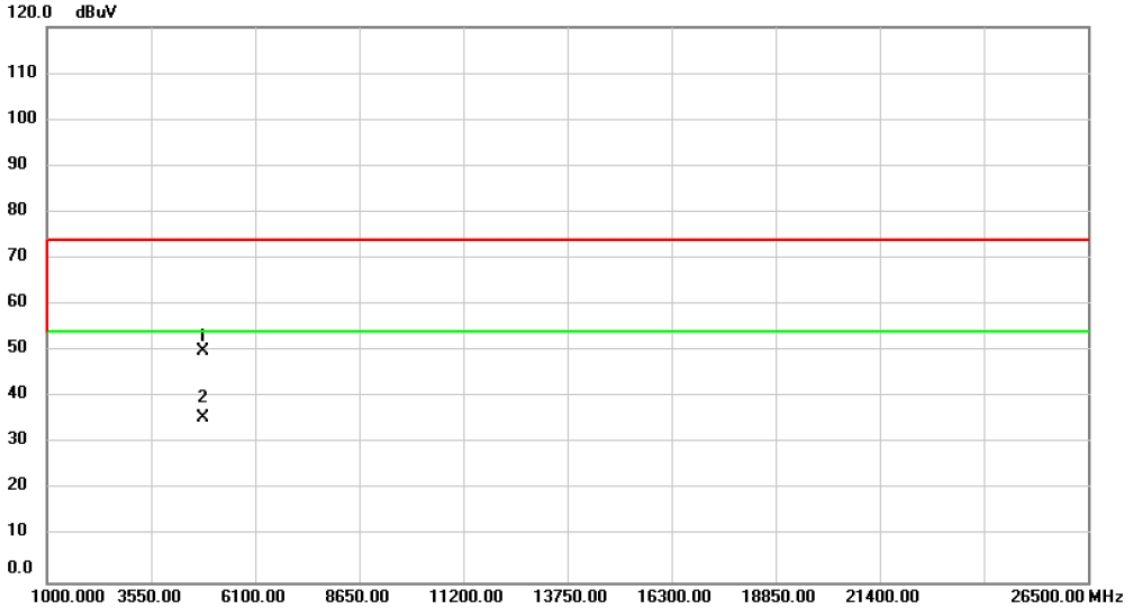
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2390.000	35.42	30.84	66.26	74.00	-7.74	peak	
2		2390.000	16.18	30.84	47.02	54.00	-6.98	AVG	
3	X	2412.000	71.31	30.92	102.23	74.00	28.23	peak	No Limit
4	*	2412.000	61.65	30.92	92.57	54.00	38.57	AVG	No Limit

Test Mode	TX G MODE _2412 MHz	Polarization	Vertical

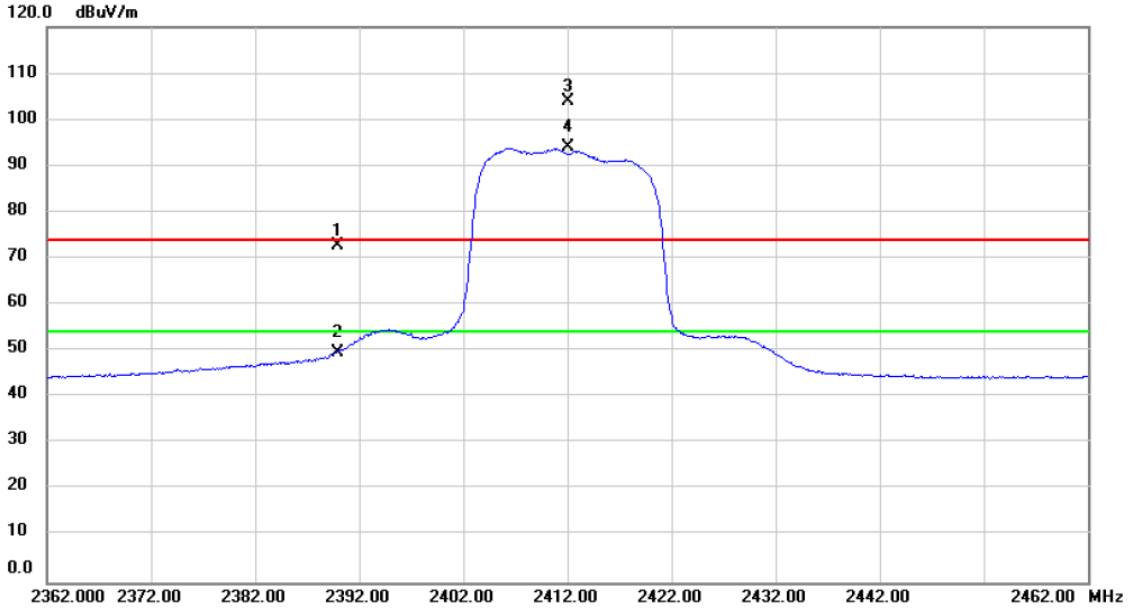
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		4824.000	61.37	-11.48	49.89	74.00	-24.11	peak	
2	*	4824.000	47.14	-11.48	35.66	54.00	-18.34	AVG	

Test Mode	TX G MODE _2412 MHz	Polarization	Horizontal

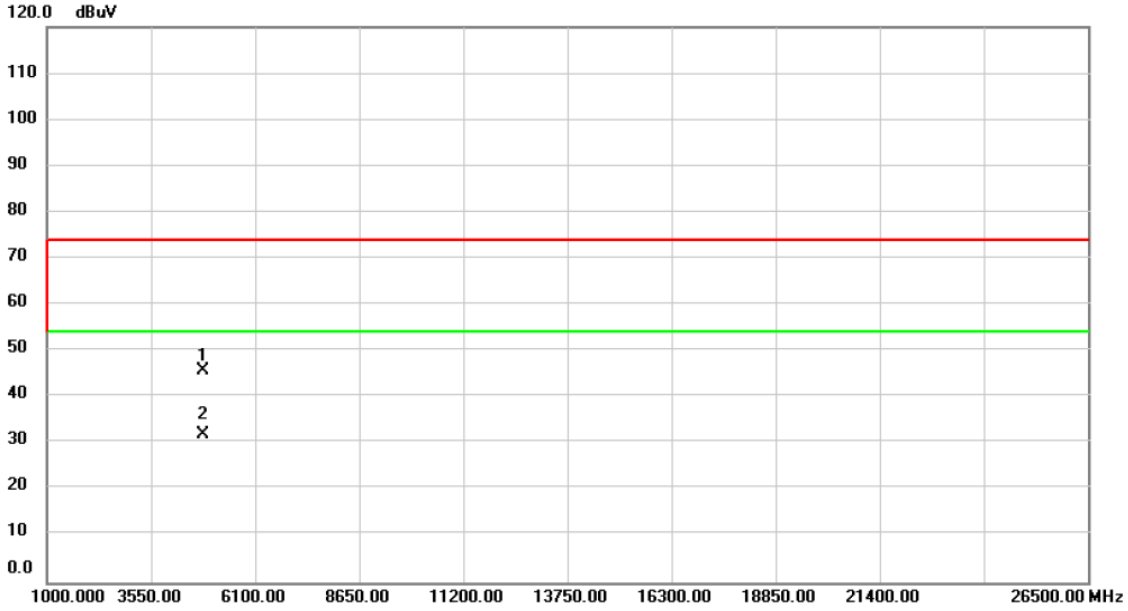
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2389.944	41.78	30.84	72.62	74.00	-1.38	peak	
2		2389.944	18.73	30.84	49.57	54.00	-4.43	AVG	
3	X	2412.000	72.96	30.92	103.88	74.00	29.88	peak	No Limit
4	*	2412.000	63.00	30.92	93.92	54.00	39.92	AVG	No Limit

Test Mode	TX G MODE _2412 MHz	Polarization	Horizontal

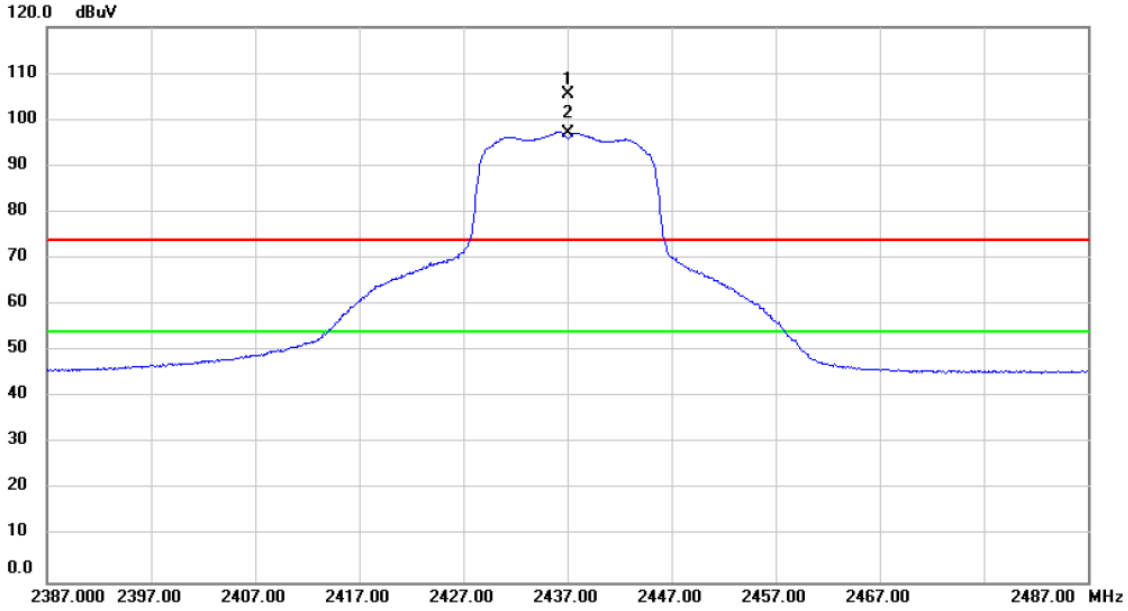
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		4824.000	57.13	-11.48	45.65	74.00	-28.35	peak	
2	*	4824.000	43.29	-11.48	31.81	54.00	-22.19	AVG	

Test Mode	TX G MODE _2437 MHz	Polarization	Vertical

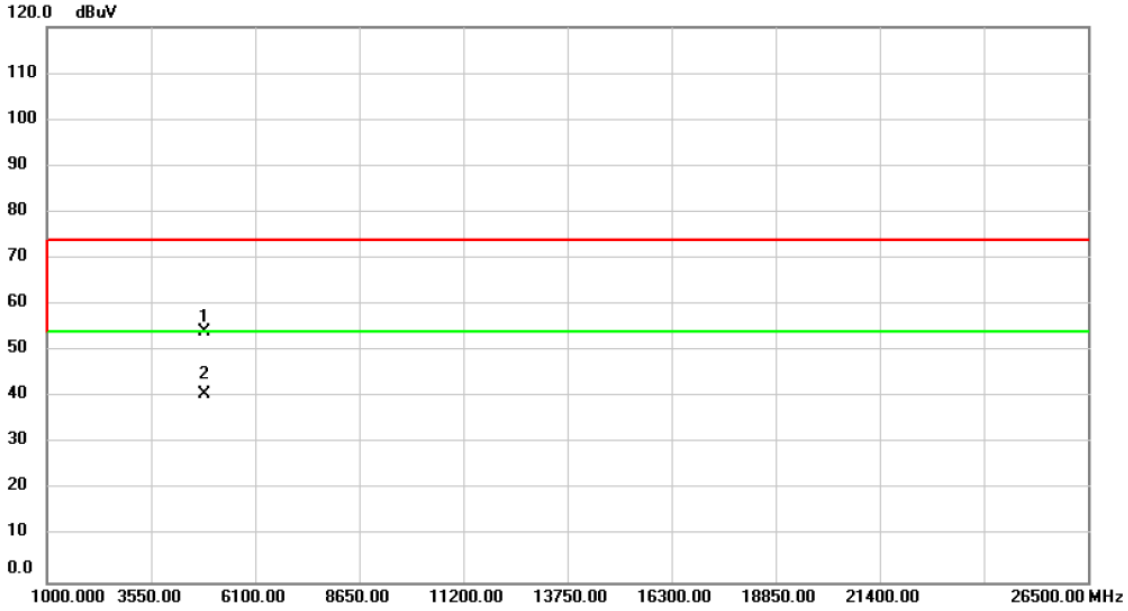
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	X	2437.000	74.30	31.01	105.31	74.00	31.31	peak	No Limit
2	*	2437.000	66.19	31.01	97.20	54.00	43.20	AVG	No Limit

Test Mode	TX G MODE _2437 MHz	Polarization	Vertical

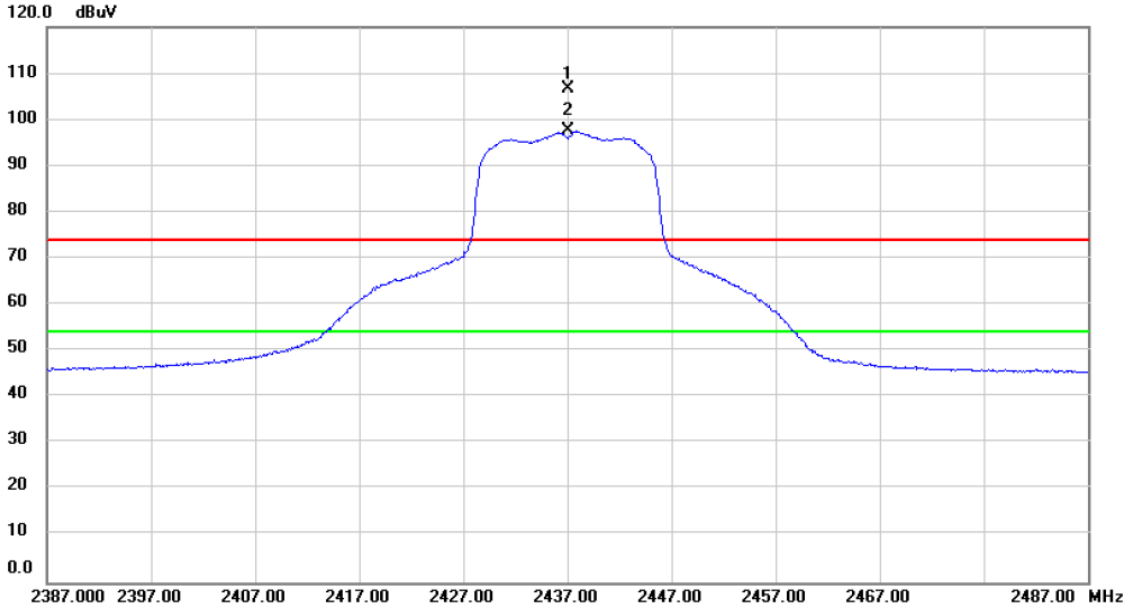
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		4874.000	65.54	-11.42	54.12	74.00	-19.88	peak	
2	*	4874.000	52.13	-11.42	40.71	54.00	-13.29	AVG	

Test Mode	TX G MODE _2437 MHz	Polarization	Horizontal

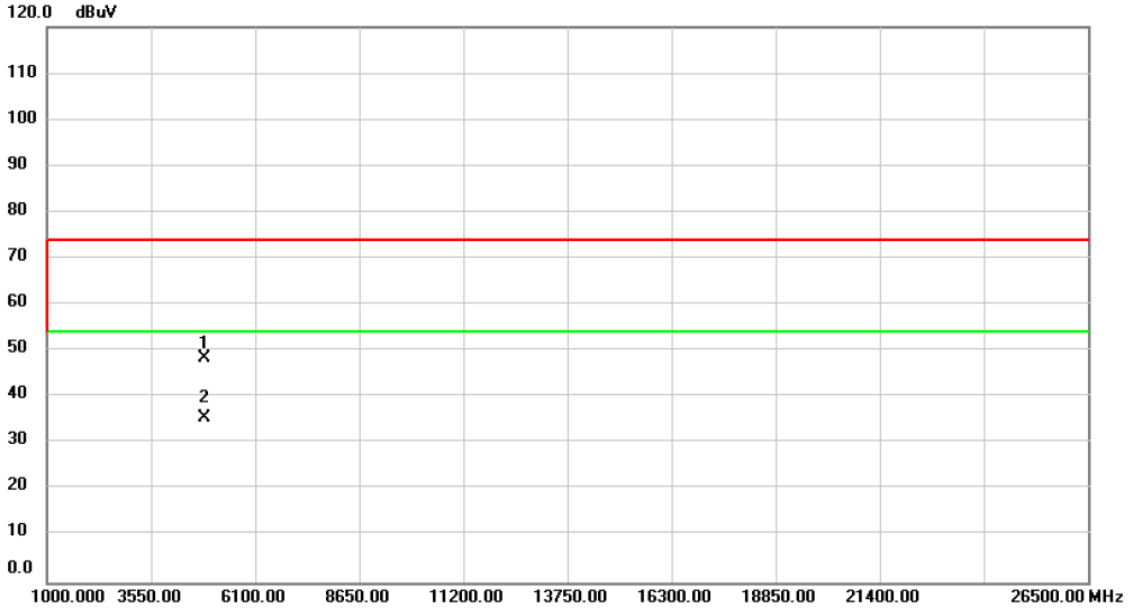
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	X	2437.000	75.79	31.01	106.80	74.00	32.80	peak	No Limit
2	*	2437.000	66.51	31.01	97.52	54.00	43.52	AVG	No Limit

Test Mode	TX G MODE _2437 MHz	Polarization	Horizontal

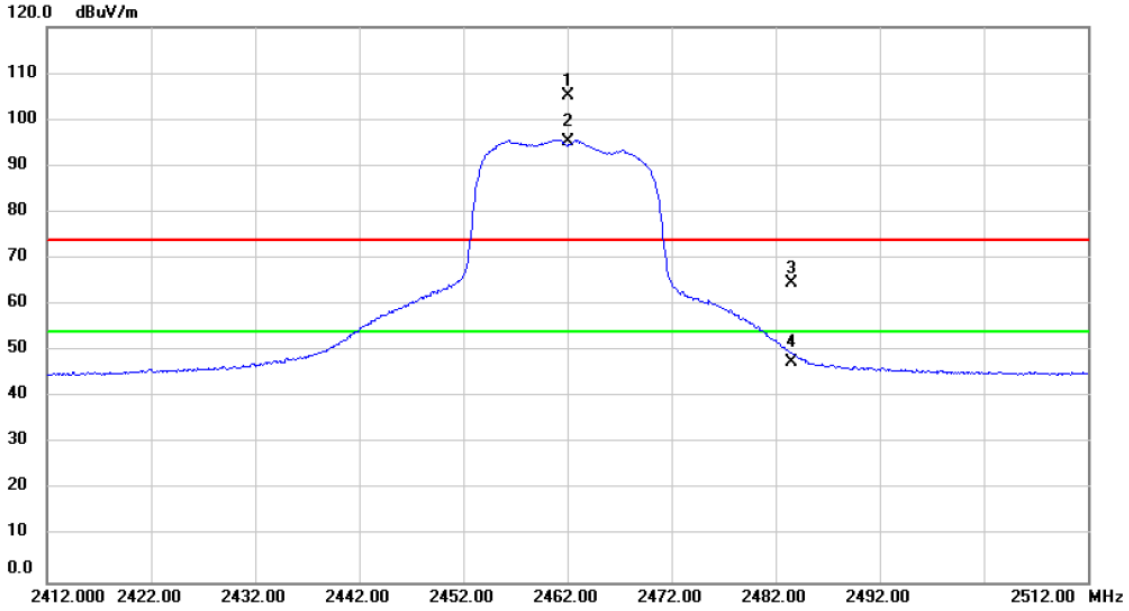
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		4874.000	59.79	-11.42	48.37	74.00	-25.63	peak	
2	*	4874.000	47.00	-11.42	35.58	54.00	-18.42	AVG	

Test Mode	TX G MODE _2462 MHz	Polarization	Vertical

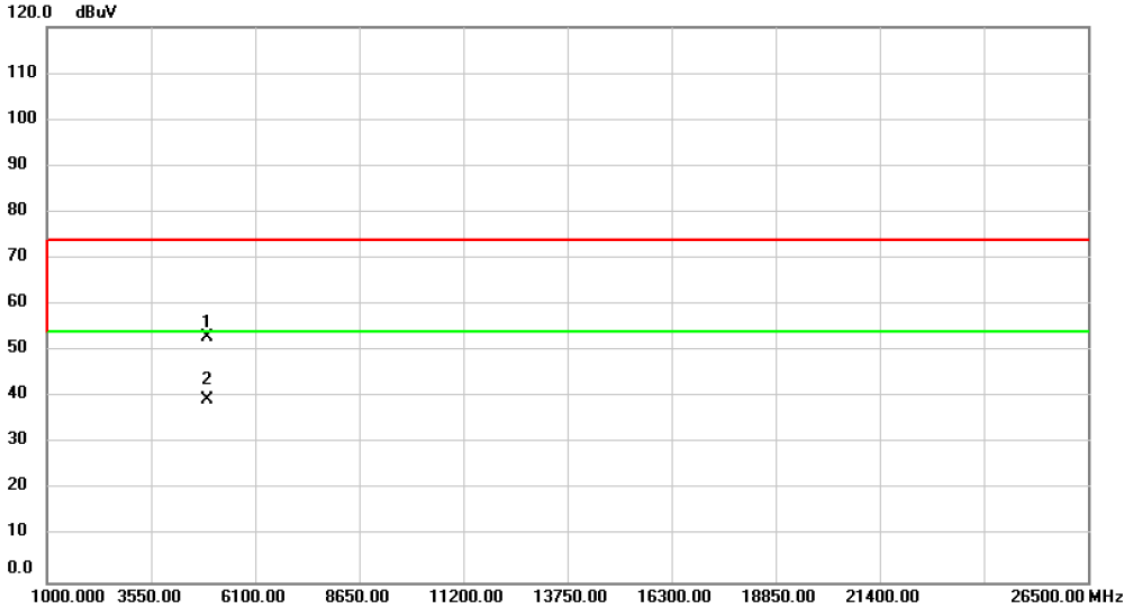
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2462.000	73.98	31.09	105.07	74.00	31.07	peak	No Limit
2	*	2462.000	64.24	31.09	95.33	54.00	41.33	AVG	No Limit
3		2483.500	33.53	31.17	64.70	74.00	-9.30	peak	
4		2483.500	16.45	31.17	47.62	54.00	-6.38	AVG	

Test Mode	TX G MODE _2462 MHz	Polarization	Vertical

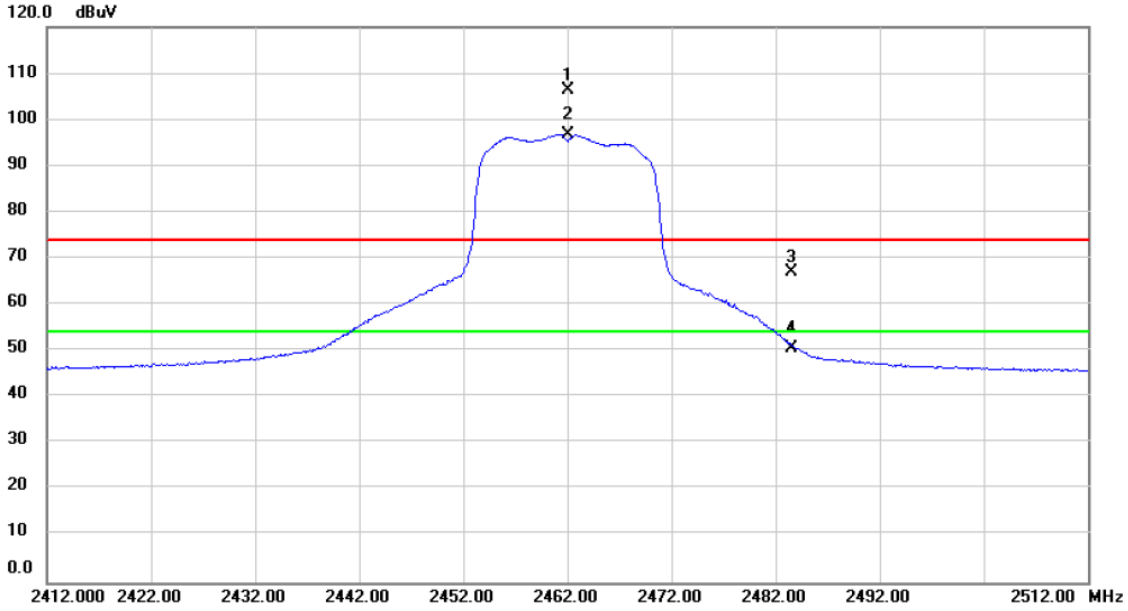
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		4924.000	64.30	-11.37	52.93	74.00	-21.07	peak	
2	*	4924.000	50.97	-11.37	39.60	54.00	-14.40	AVG	

Test Mode	TX G MODE _2462 MHz	Polarization	Horizontal

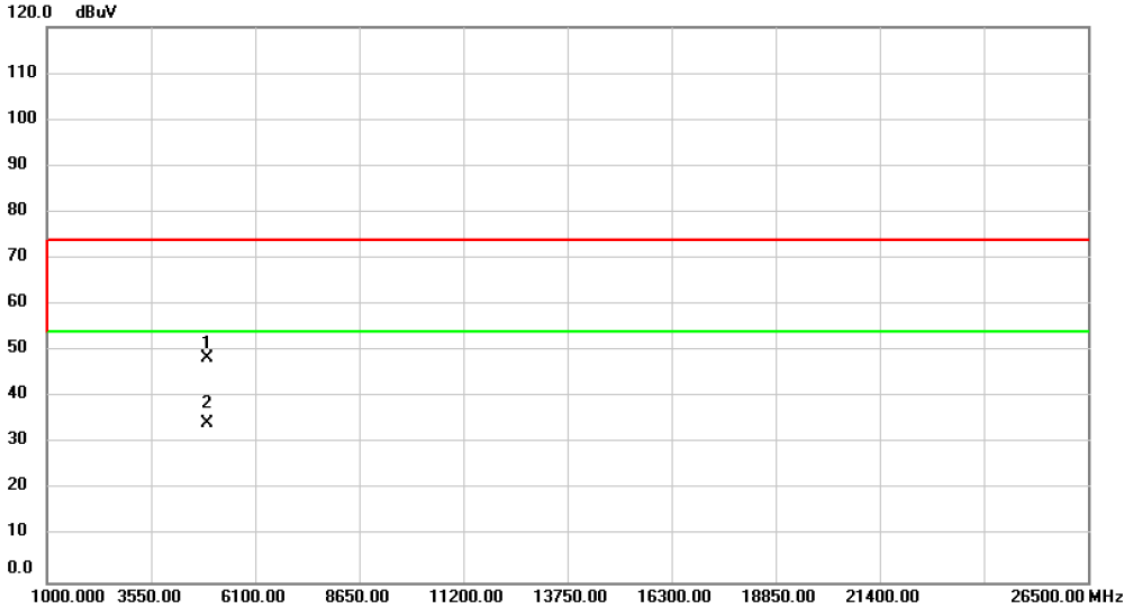
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	X	2462.000	75.19	31.09	106.28	74.00	32.28	peak	No Limit
2	*	2462.000	65.61	31.09	96.70	54.00	42.70	AVG	No Limit
3		2483.500	36.01	31.17	67.18	74.00	-6.82	peak	
4		2483.500	19.43	31.17	50.60	54.00	-3.40	AVG	

Test Mode	TX G MODE _2462 MHz	Polarization	Horizontal

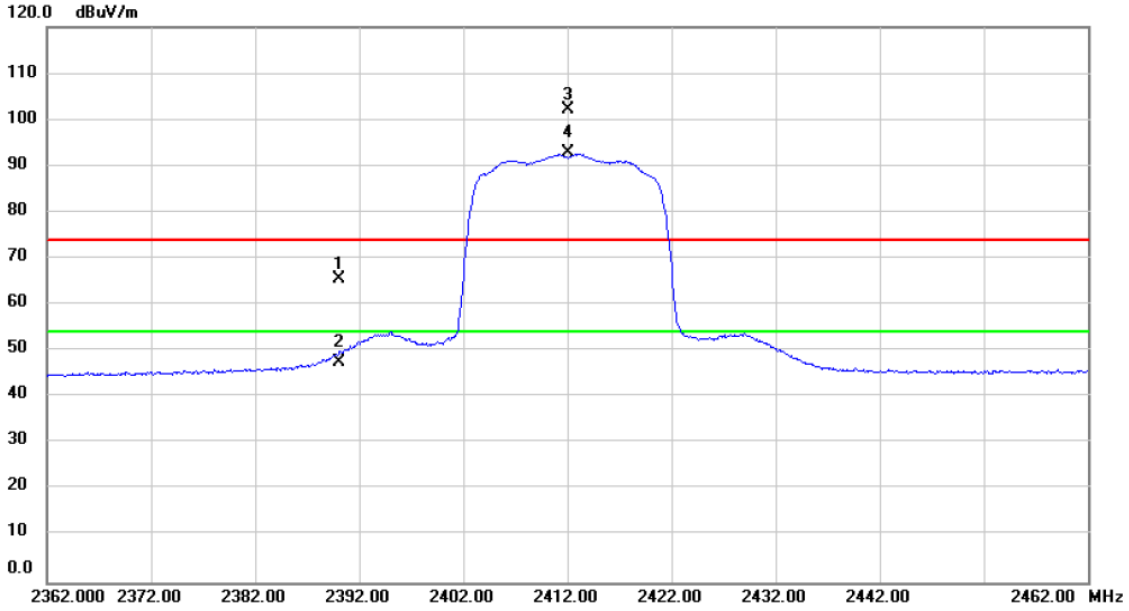
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		4924.000	59.81	-11.37	48.44	74.00	-25.56	peak	
2	*	4924.000	45.59	-11.37	34.22	54.00	-19.78	AVG	

Test Mode	TX N-20M MODE 2412MHz	Polarization	Vertical

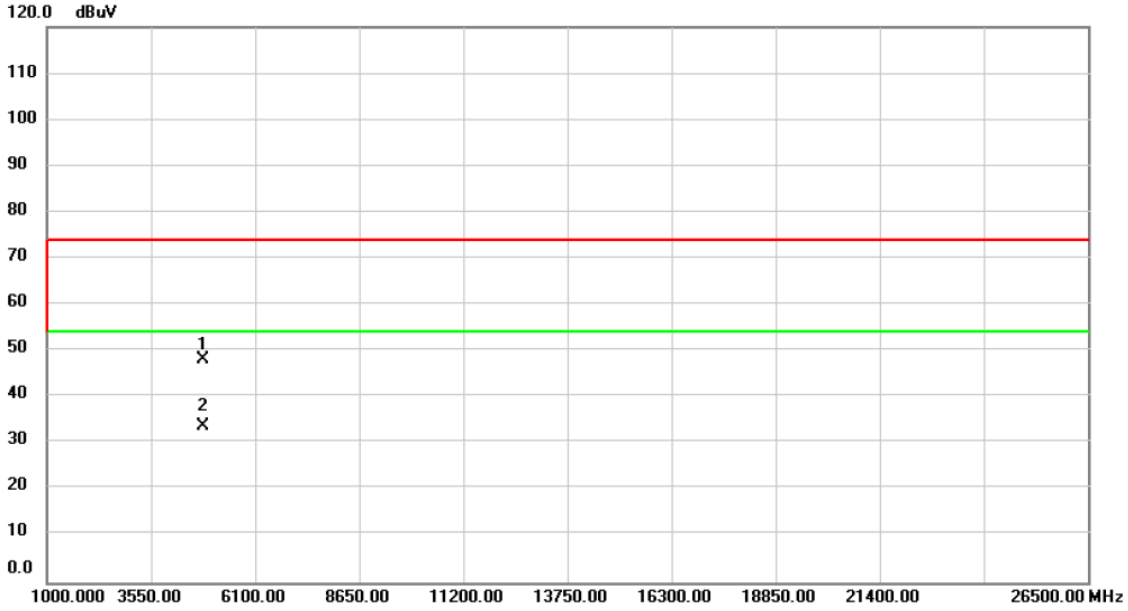
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2390.000	34.73	30.84	65.57	74.00	-8.43	peak	
2		2390.000	16.64	30.84	47.48	54.00	-6.52	AVG	
3	X	2412.000	71.26	30.92	102.18	74.00	28.18	peak	No Limit
4	*	2412.000	61.79	30.92	92.71	54.00	38.71	AVG	No Limit

Test Mode	TX N-20M MODE 2412MHz	Polarization	Vertical

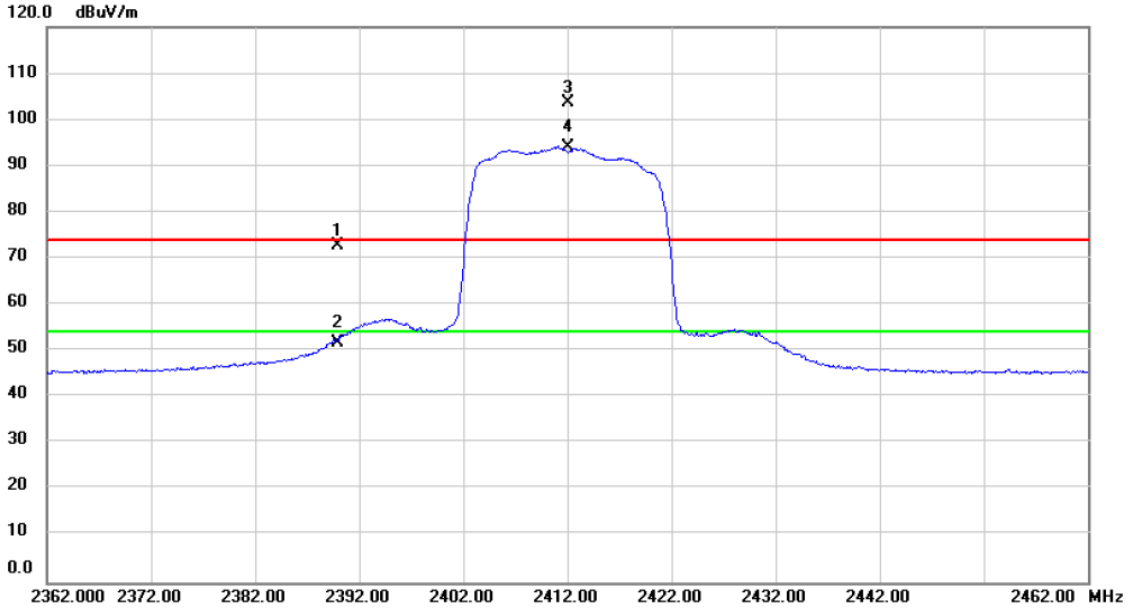
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		4824.000	59.75	-11.48	48.27	74.00	-25.73	peak	
2	*	4824.000	45.27	-11.48	33.79	54.00	-20.21	AVG	

Test Mode	TX N-20M MODE 2412MHz	Polarization	Horizontal

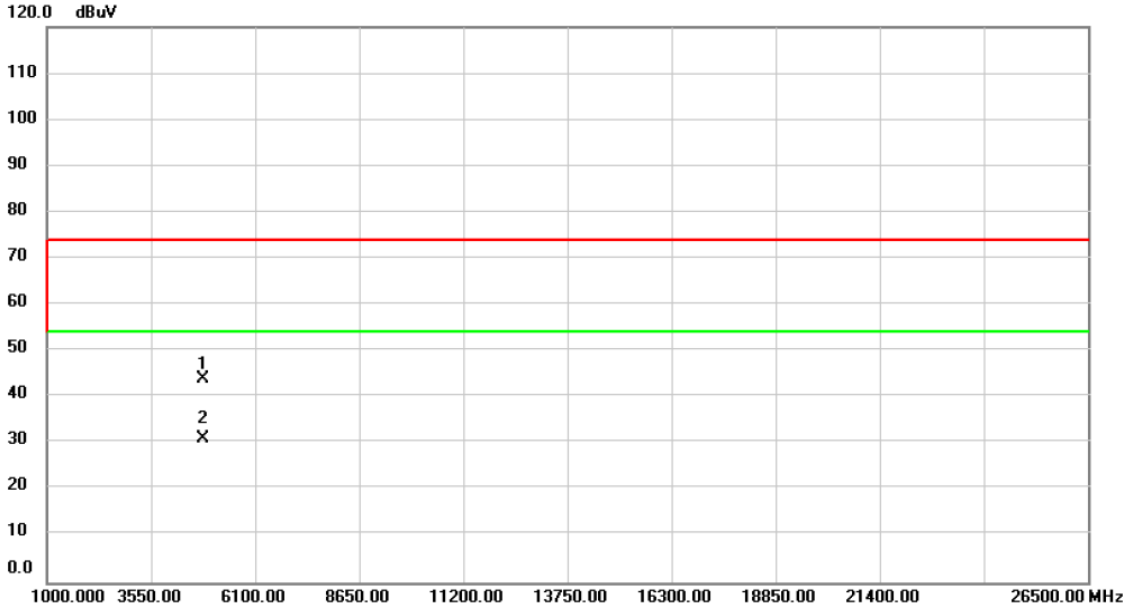
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2389.944	41.99	30.84	72.83	74.00	-1.17	peak	
2		2389.944	20.85	30.84	51.69	54.00	-2.31	AVG	
3	X	2412.000	72.60	30.92	103.52	74.00	29.52	peak	No Limit
4	*	2412.000	63.08	30.92	94.00	54.00	40.00	AVG	No Limit

Test Mode	TX N-20M MODE 2412MHz	Polarization	Horizontal

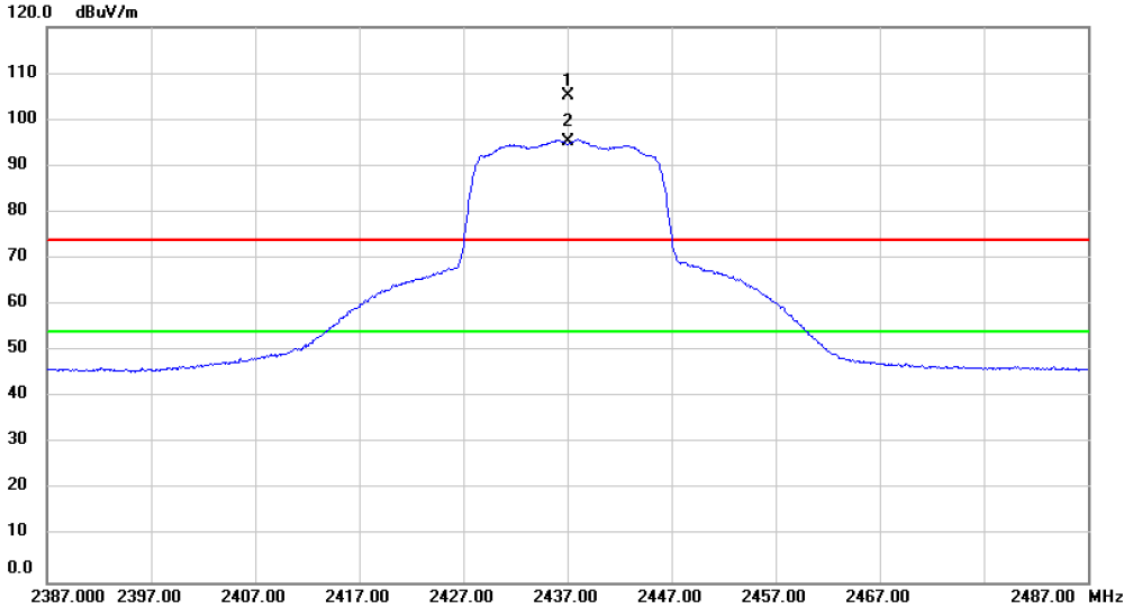
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		4824.000	55.55	-11.48	44.07	74.00	-29.93	peak	
2	*	4824.000	42.46	-11.48	30.98	54.00	-23.02	AVG	

Test Mode	TX N-20M MODE 2437MHz	Polarization	Vertical

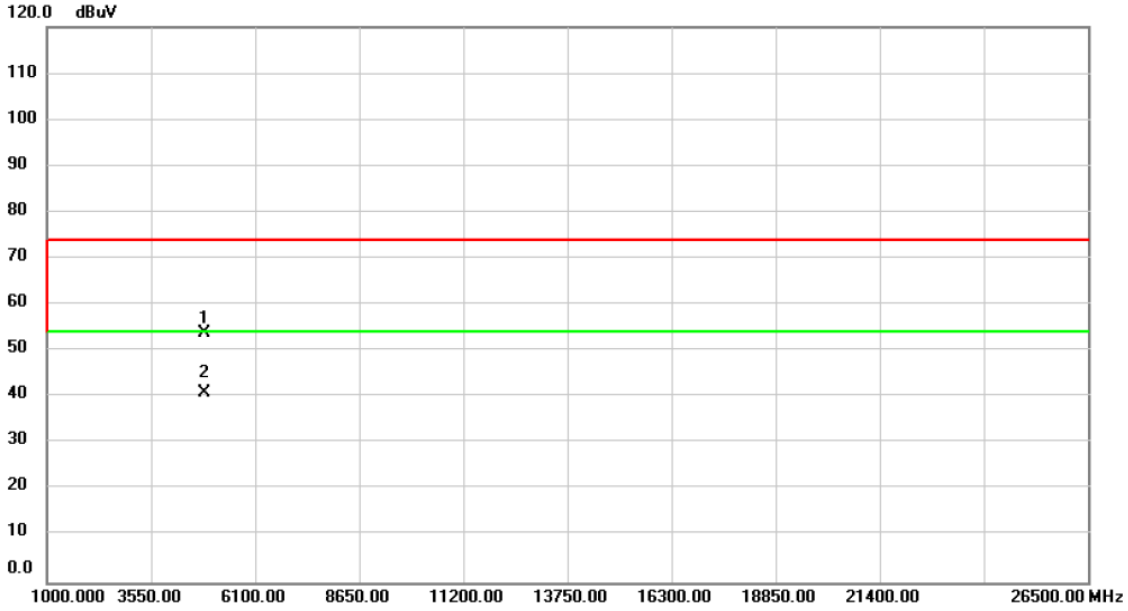
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2437.000	74.21	31.01	105.22	74.00	31.22	peak	
2	*	2437.000	64.35	31.01	95.36	54.00	41.36	AVG	

Test Mode	TX N-20M MODE 2437MHz	Polarization	Vertical

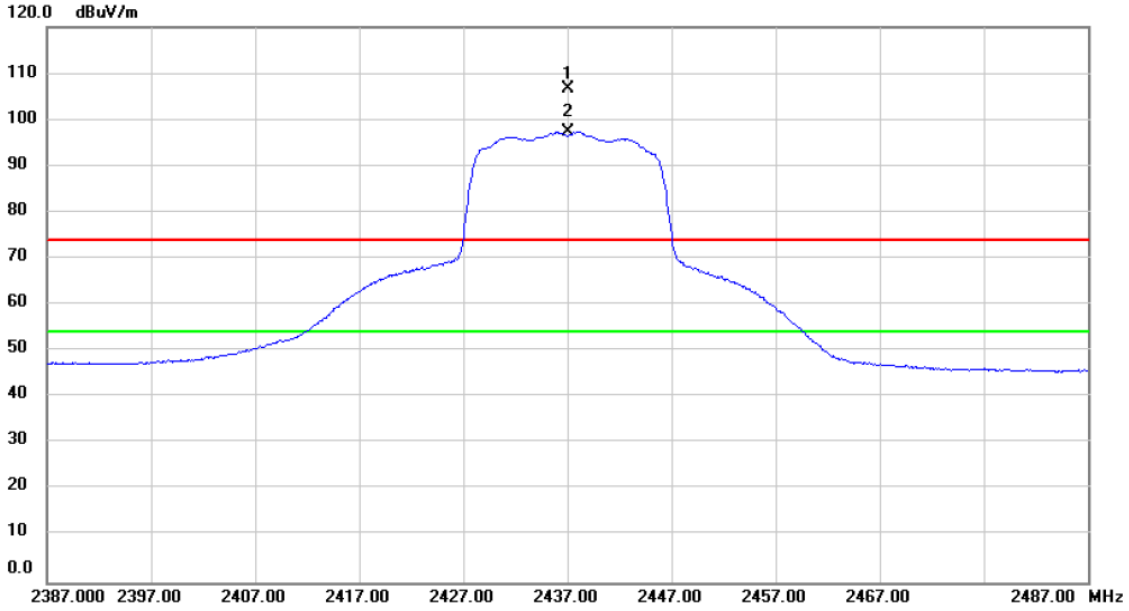
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		4874.000	65.21	-11.42	53.79	74.00	-20.21	peak	No Limit
2	*	4874.000	52.24	-11.42	40.82	54.00	-13.18	AVG	No Limit

Test Mode	TX N-20M MODE 2437MHz	Polarization	Horizontal

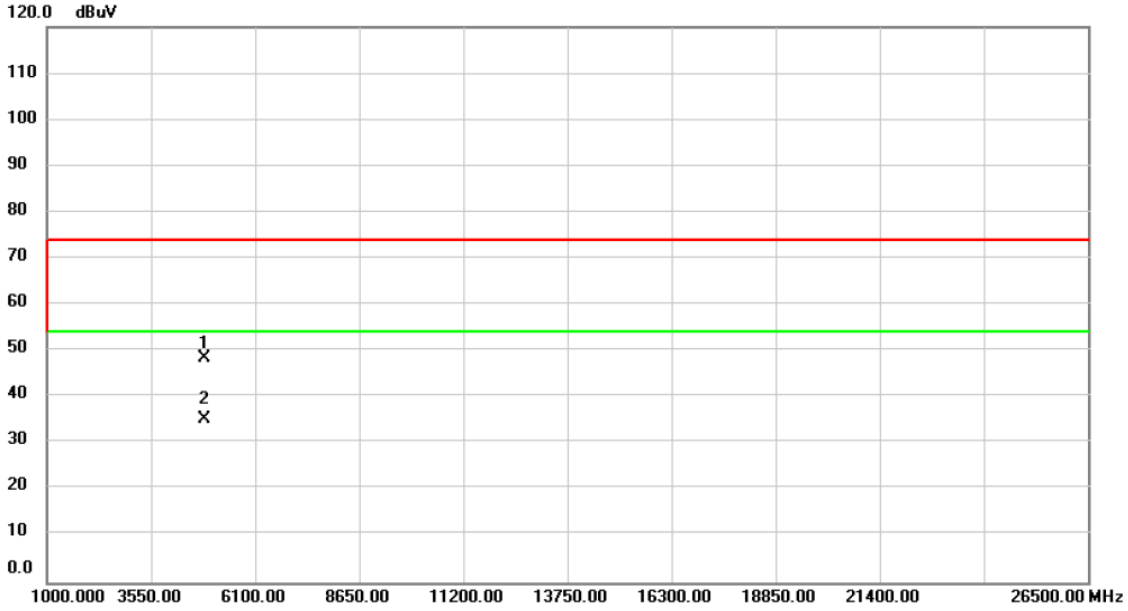
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2437.000	75.73	31.01	106.74	74.00	32.74	peak	No Limit
2	*	2437.000	66.32	31.01	97.33	54.00	43.33	AVG	No Limit

Test Mode	TX N-20M MODE 2437MHz	Polarization	Horizontal

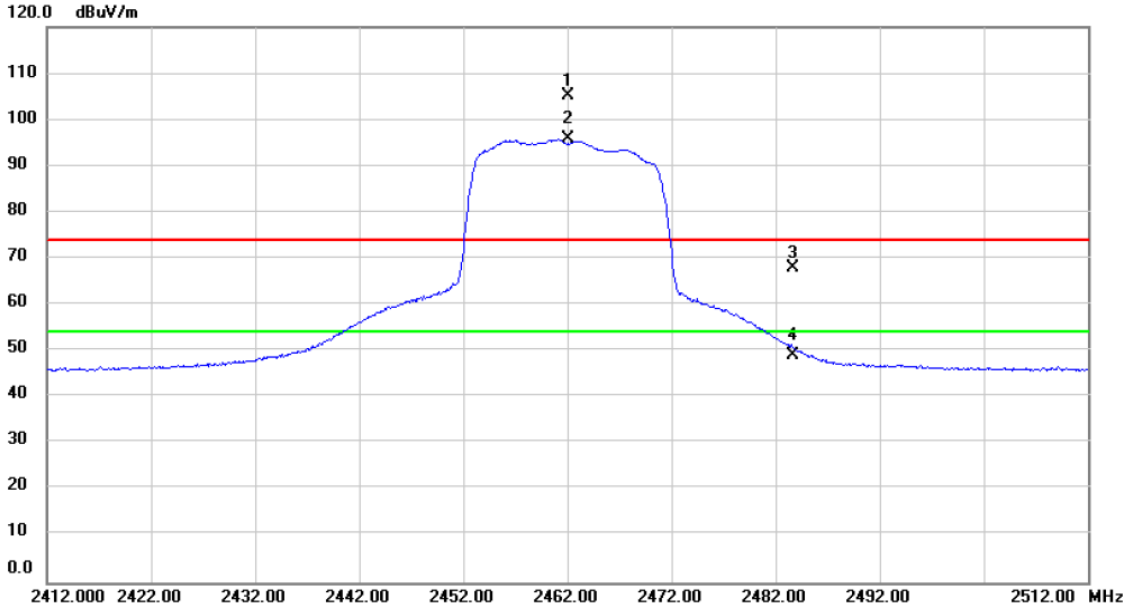
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		4874.000	59.93	-11.42	48.51	74.00	-25.49	peak	
2	*	4874.000	46.80	-11.42	35.38	54.00	-18.62	AVG	

Test Mode	TX N-20M MODE 2462MHz	Polarization	Vertical

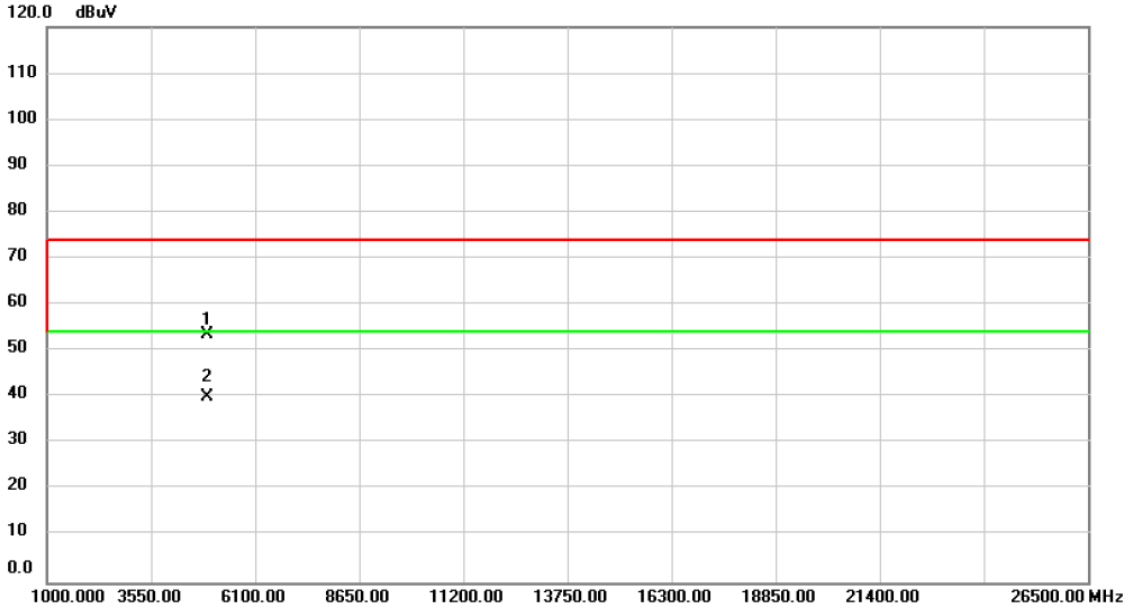
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2462.000	74.17	31.09	105.26	74.00	31.26	peak	No Limit
2	*	2462.000	64.64	31.09	95.73	54.00	41.73	AVG	No Limit
3		2483.731	36.89	31.17	68.06	74.00	-5.94	peak	
4		2483.731	17.82	31.17	48.99	54.00	-5.01	AVG	

Test Mode	TX N-20M MODE 2462MHz	Polarization	Vertical

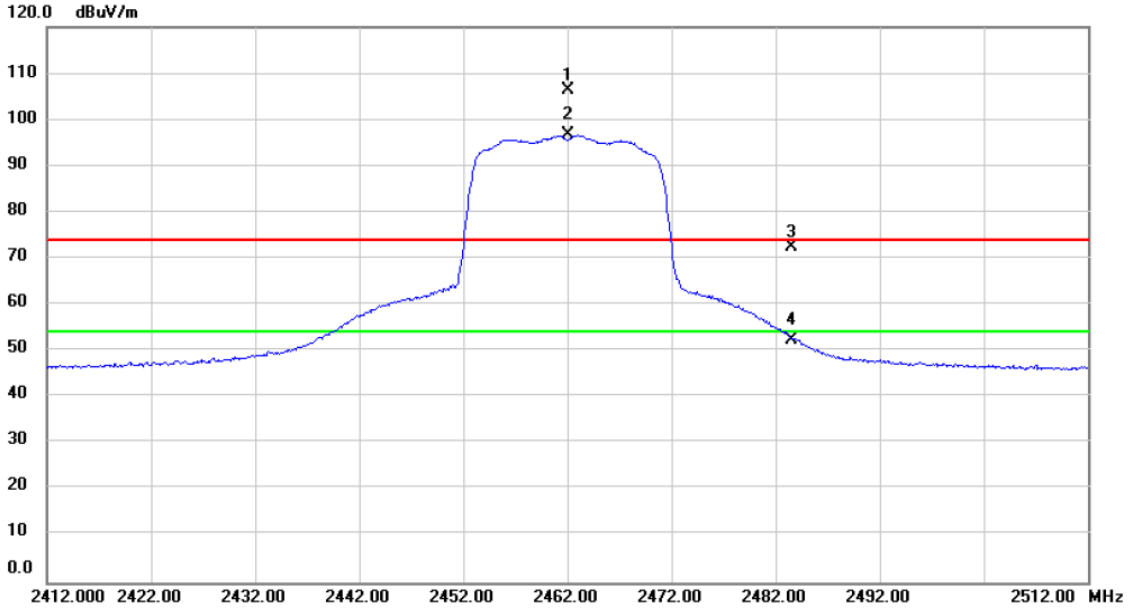
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		4924.000	65.02	-11.37	53.65	74.00	-20.35	peak	
2	*	4924.000	51.56	-11.37	40.19	54.00	-13.81	AVG	

Test Mode	TX N-20M MODE 2462MHz	Polarization	Horizontal

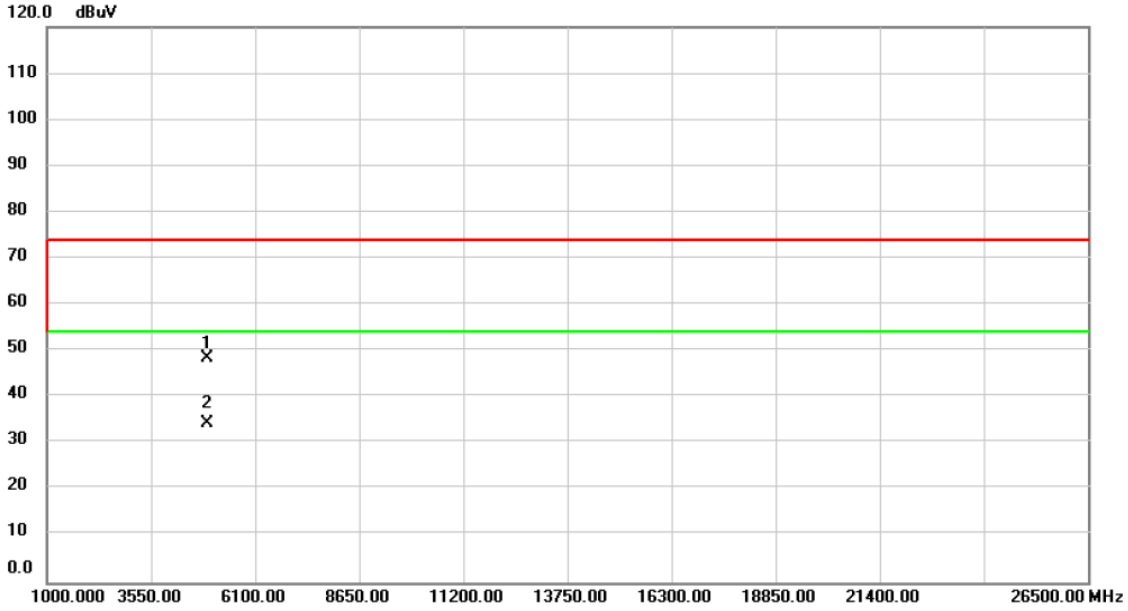
Orthogonal Axis: X



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2462.000	75.32	31.09	106.41	74.00	32.41	peak	No Limit
2	*	2462.000	65.58	31.09	96.67	54.00	42.67	AVG	No Limit
3		2483.500	41.40	31.17	72.57	74.00	-1.43	peak	
4		2483.500	21.07	31.17	52.24	54.00	-1.76	AVG	

Test Mode	TX N-20M MODE 2462MHz	Polarization	Horizontal

Orthogonal Axis: X

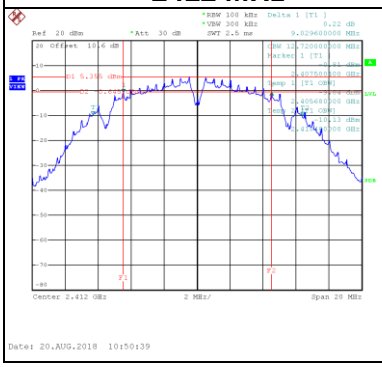
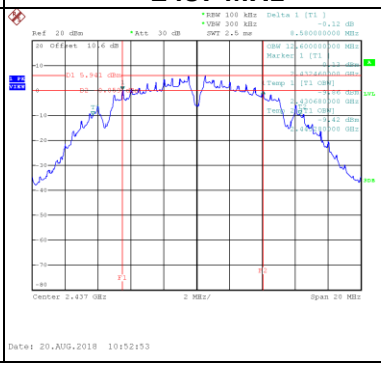
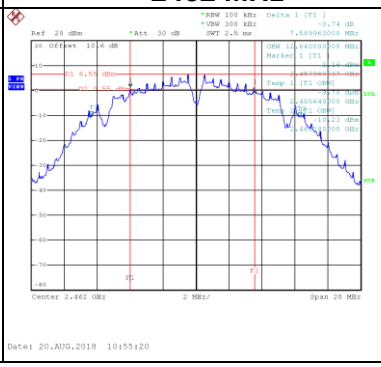


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		4924.000	59.80	-11.37	48.43	74.00	-25.57	peak	
2	*	4924.000	45.58	-11.37	34.21	54.00	-19.79	AVG	

APPENDIX E - BANDWIDTH

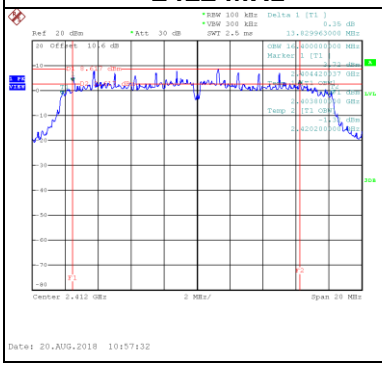
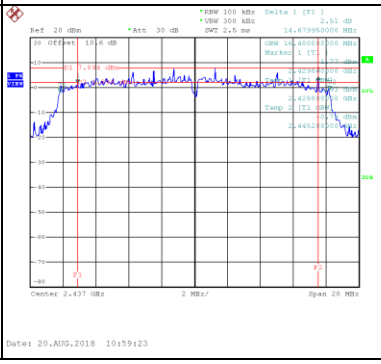
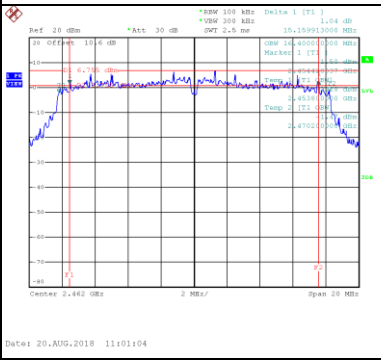
Test Mode : TX B Mode_CH01/06/11

Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2412	9.03	12.72	500	Complies
2437	8.58	12.60	500	Complies
2462	7.59	12.64	500	Complies

2412 MHz	2437 MHz	2462 MHz
		

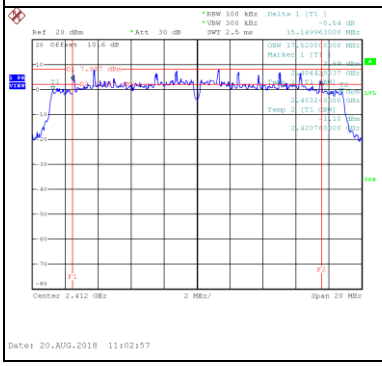
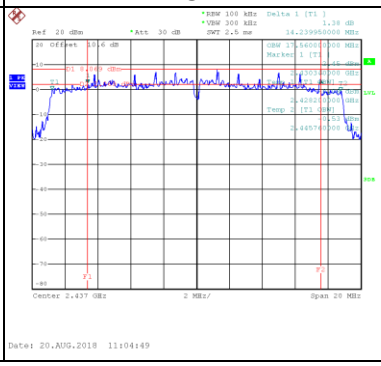
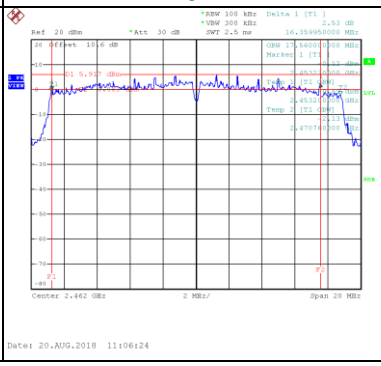
Test Mode: TX G Mode_CH01/06/11

Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2412	13.03	16.40	500	Complies
2437	14.68	16.40	500	Complies
2462	15.16	16.40	500	Complies

2412 MHz	2437 MHz	2462 MHz
		

Test Mode : TX N-20MHz Mode_CH01/06/11

Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2412	15.15	17.52	500	Complies
2437	14.24	17.56	500	Complies
2462	16.36	17.56	500	Complies

2412 MHz	2437 MHz	2462 MHz
		

APPENDIX F - MAXIMUM PEAK CONDUCTED OUTPUT POWER

Test Mode :TX B Mode_CH01/06/11					
Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2412	17.65	0.0582	30.00	1.00	Complies
2437	17.70	0.0589	30.00	1.00	Complies
2462	16.93	0.0493	30.00	1.00	Complies

Test Mode :TX G Mode_CH01/06/11					
Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2412	23.88	0.2443	30.00	1.00	Complies
2437	23.84	0.2421	30.00	1.00	Complies
2462	24.24	0.2655	30.00	1.00	Complies

Test Mode :TX N20 Mode_CH01/06/11					
Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2412	23.57	0.2275	30.00	1.00	Complies
2437	23.99	0.2506	30.00	1.00	Complies
2462	24.33	0.2710	30.00	1.00	Complies

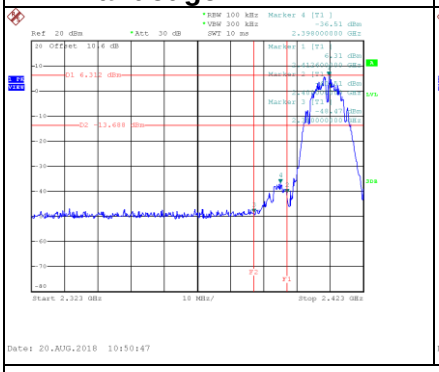
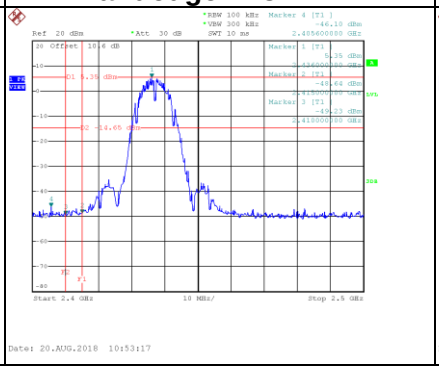
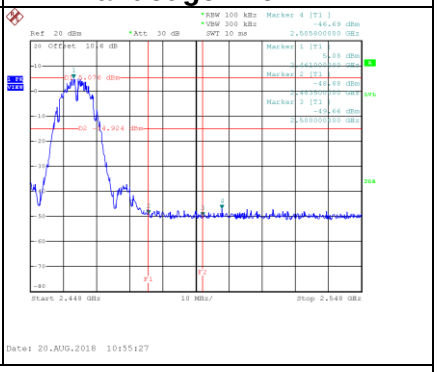
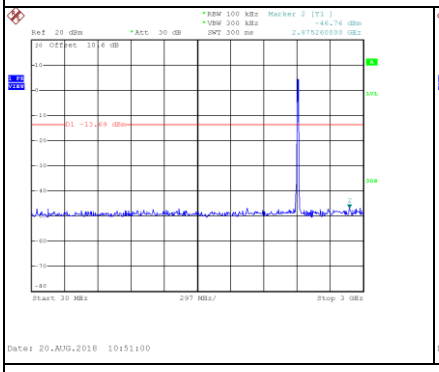
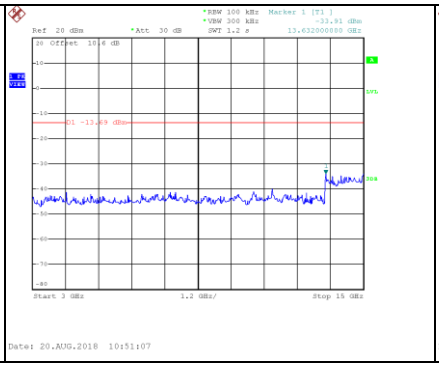
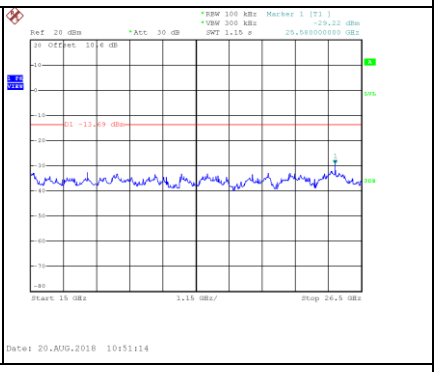
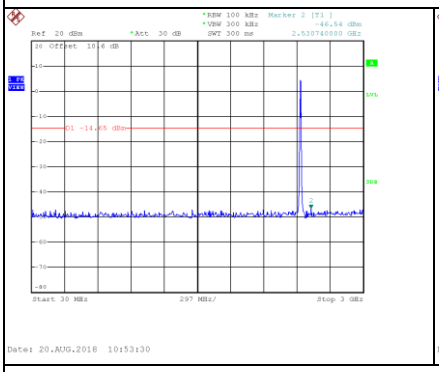
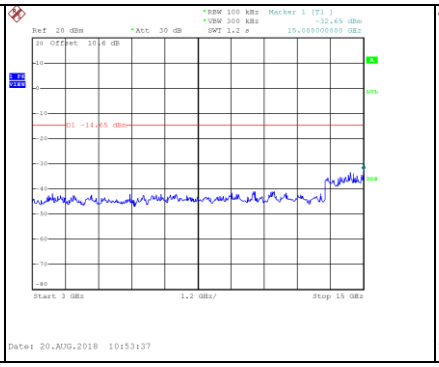
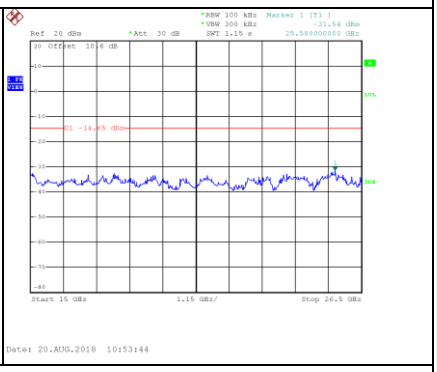
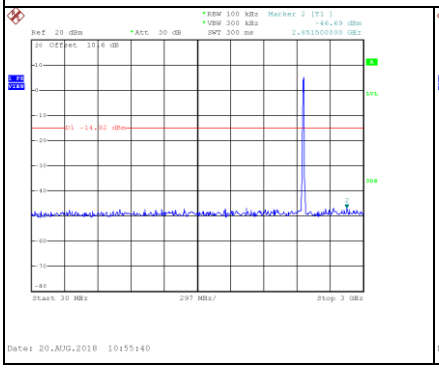
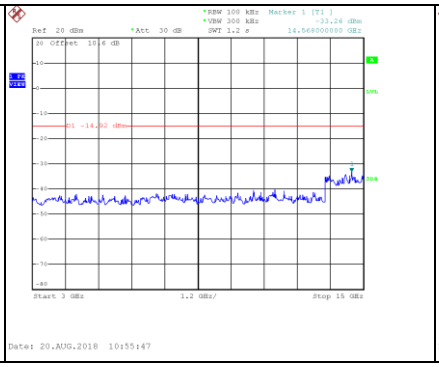
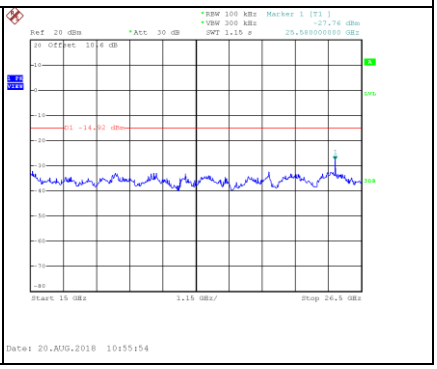
Test Mode :TX B Mode_CH01/06/11					
Frequency (MHz)	Average Power (dBm)	Average Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2412	14.69	0.0294	30.00	1.00	Complies
2437	14.70	0.0295	30.00	1.00	Complies
2462	13.97	0.0249	30.00	1.00	Complies

Test Mode :TX G Mode_CH01/06/11					
Frequency (MHz)	Average Power (dBm)	Average Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2412	14.34	0.0272	30.00	1.00	Complies
2437	18.15	0.0653	30.00	1.00	Complies
2462	17.92	0.0619	30.00	1.00	Complies

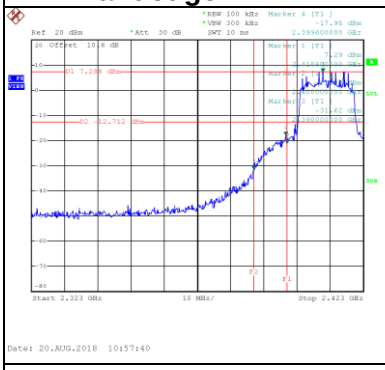
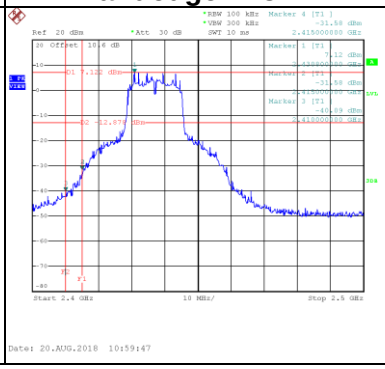
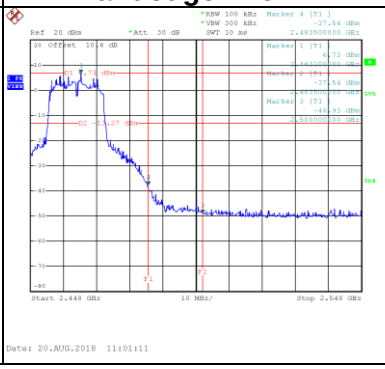
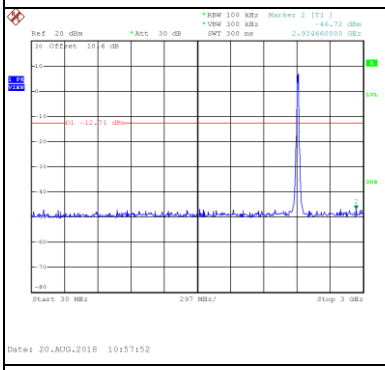
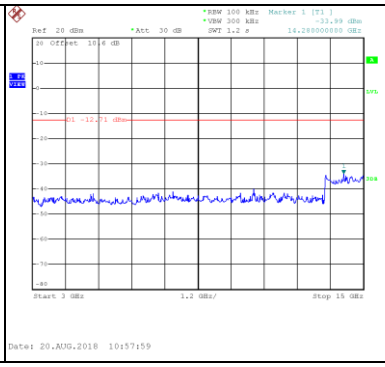
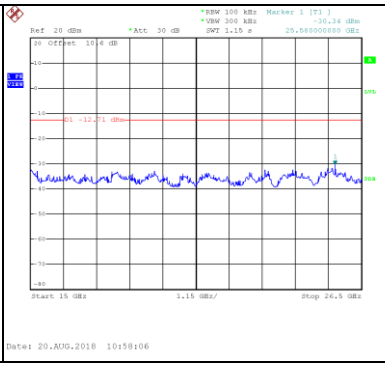
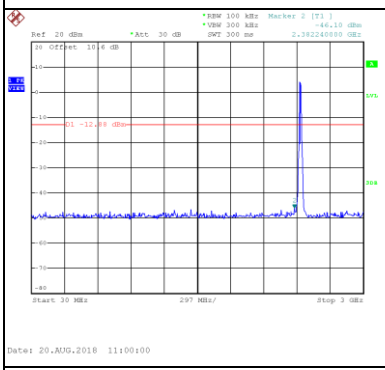
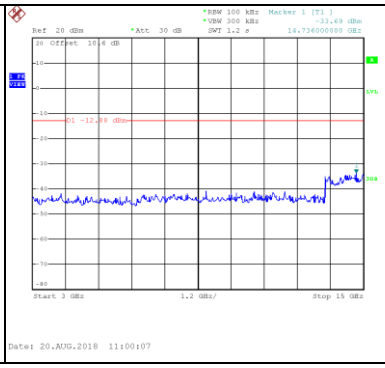
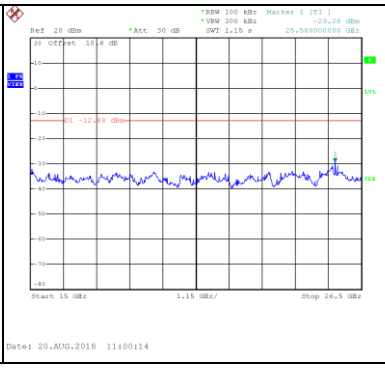
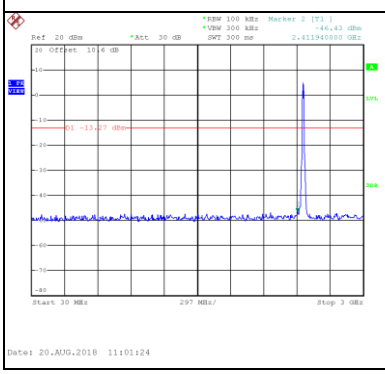
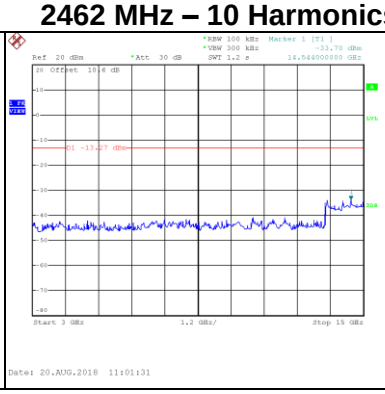
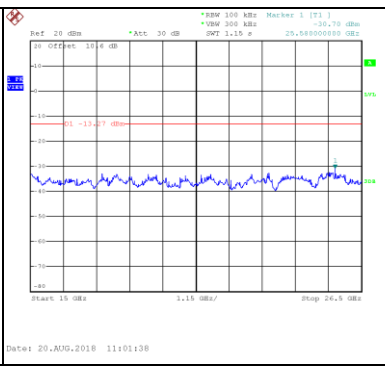
Test Mode :TX N20 Mode_CH01/06/11					
Frequency (MHz)	Average Power (dBm)	Average Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2412	14.25	0.0266	30.00	1.00	Complies
2437	18.13	0.0650	30.00	1.00	Complies
2462	17.79	0.0601	30.00	1.00	Complies

APPENDIX G - ANTENNA CONDUCTED SPURIOUS EMISSION

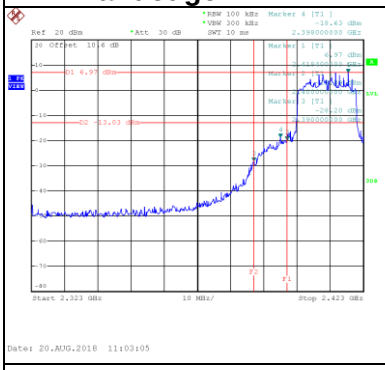
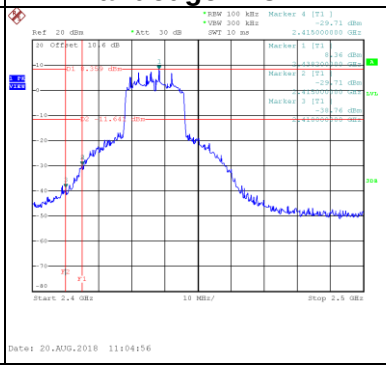
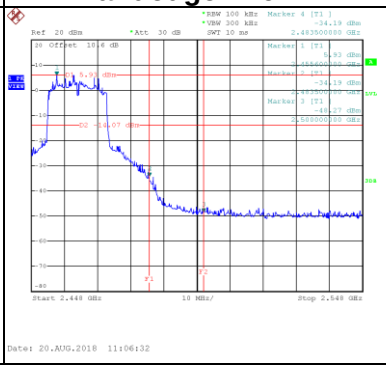
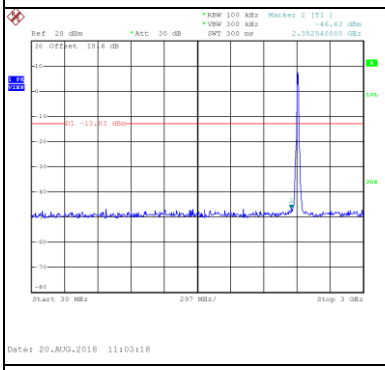
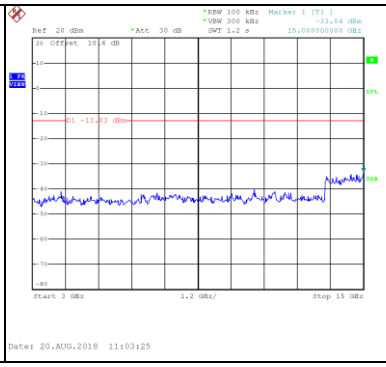
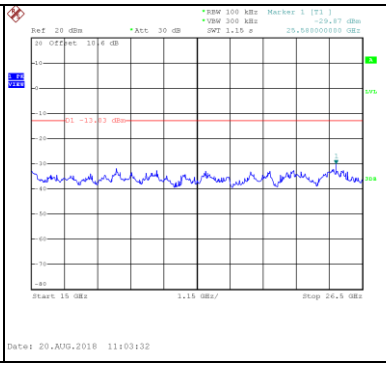
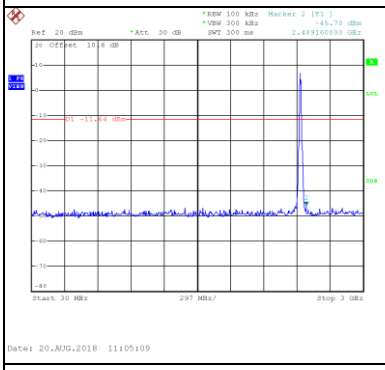
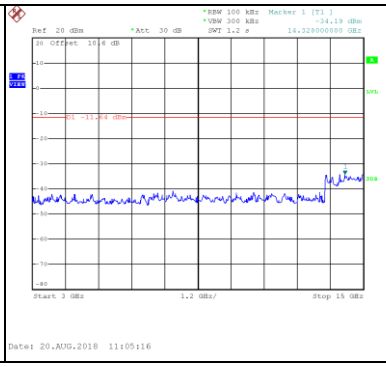
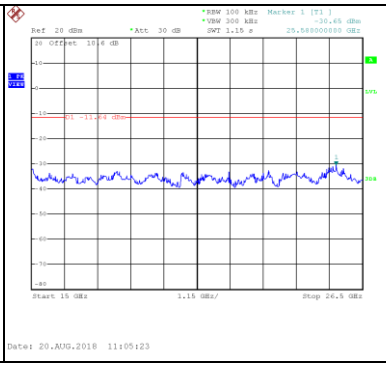
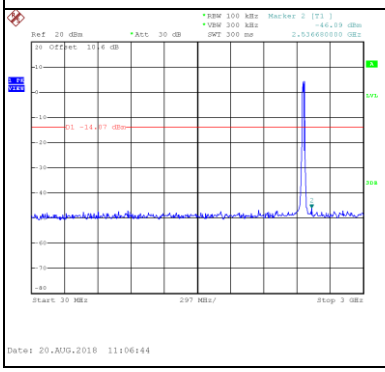
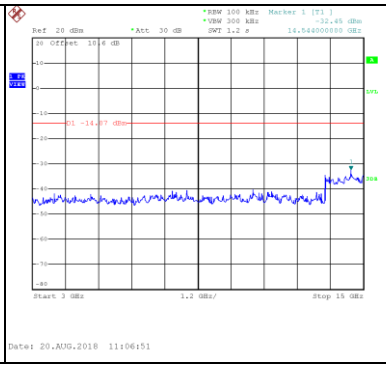
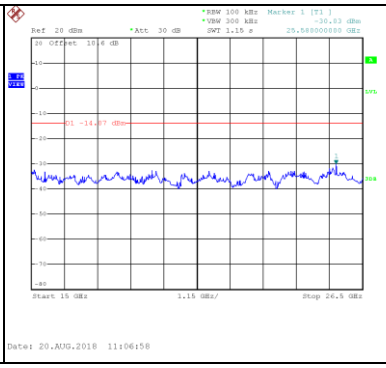
Test Mode :TX B Mode_CH01/06/11

Bandedge-2412 MHz	Bandedge-2437 MHz	Bandedge-2462 MHz
		
2412 MHz – 10 Harmonics		
		
2437 MHz – 10 Harmonics		
		
2462 MHz – 10 Harmonics		
		

Test Mode :TX G Mode_CH01/06/11

Bandedge-2412 MHz	Bandedge-2437 MHz	Bandedge-2462 MHz
		
2412 MHz – 10 Harmonics		
		
2437 MHz – 10 Harmonics		
		
2462 MHz – 10 Harmonics		
		

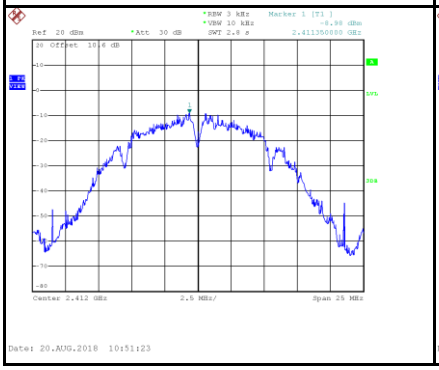
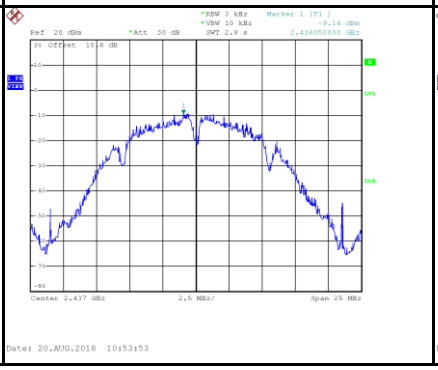
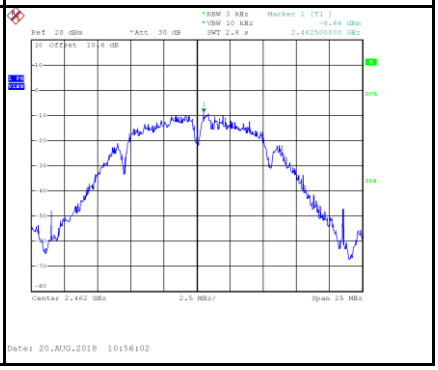
Test Mode :TX N-20M Mode_CH01/06/11

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

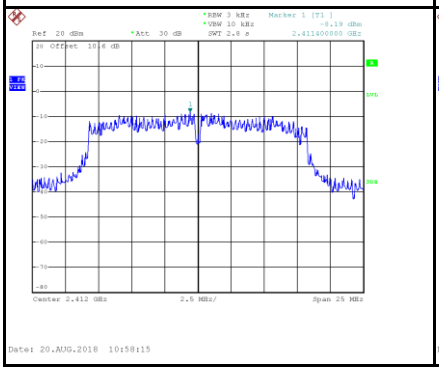
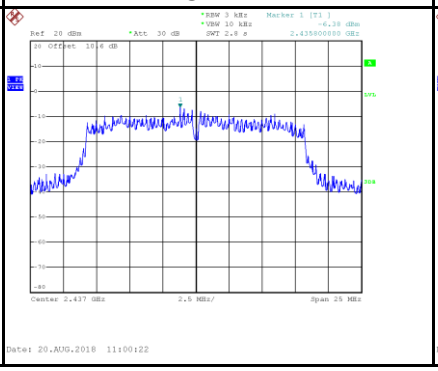
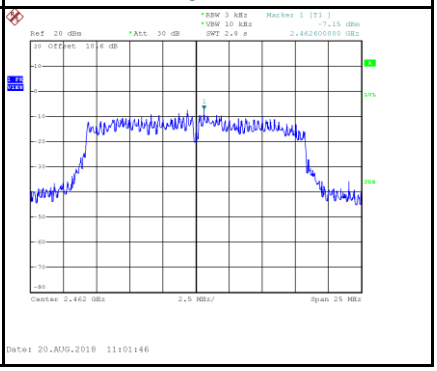
Test Mode :TX B Mode_CH01/06/11

Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-8.98	0.13	8.00	Complies
2437	-9.14	0.12	8.00	Complies
2462	-8.66	0.14	8.00	Complies

2412 MHz	2437 MHz	2462 MHz
		

Test Mode :TX G Mode_CH01/06/11

Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-8.19	0.15	8.00	Complies
2437	-6.38	0.23	8.00	Complies
2462	-7.15	0.19	8.00	Complies

2412 MHz	2437 MHz	2462 MHz
		

Test Mode : TX N-20M Mode_CH01/06/11

Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-7.63	0.17	8.00	Complies
2437	-7.62	0.17	8.00	Complies
2462	-7.16	0.19	8.00	Complies

2412 MHz	2437 MHz	2462 MHz