FCC Radio Test Report

FCC ID: RYK-WPEQ160ACNBT

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

Project No.	:	1706188
Equipment	:	802.11ac/a/b/g/n Wi-Fi+BT Module
Test Model	:	WPEQ-160ACN(BT)
Serial Model	:	WPEQ-160ACN
Applicant	:	SparkLAN Communications, Inc.
Address	:	8F.,No.257,Sec.2,Tiding-Blvd.,Neihu District,Taipei City 11493,Taiwan (R.O.C.)

Date of Receipt	:	Jun. 29, 2017
Date of Test	:	Jun. 29, 2017 ~ Jan. 02, 2018
Issued Date	:	Jan. 10, 2018
Tested by	:	BTL Inc.

Testing Engineer : Kenji Lin
(Kenji Lin)

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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.

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REPORT ISSUED HISTORY

Issued No.	Description	Issued Date
BTL-FCCP-1-1706188	Original Issue.	Jan. 10, 2018

1. CERTIFICATION

Equipment	:	802.11ac/a/b/g/n Wi-Fi+BT Module
Brand Name	:	SparkLAN
Test Model	:	WPEQ-160ACN(BT)
Serial Model	:	WPEQ-160ACN
Applicant	:	SparkLAN Communications, Inc.
Manufacturer	:	SparkLAN Communications, Inc.
Address	:	8F.,No.257,Sec.2,Tiding-Blvd.,Neihu District,Taipei City 11493,Taiwan (R.O.C.)
Date of Test	:	Jun. 29, 2017 ~ Jan. 02, 2018
Test Sample	:	Production Unit
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-1-1706188) 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).

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	Judgement	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	
15.209/15.205	Transmitter Radiated Emissions	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:

Conducted emission Test:

C05: (VCCI RN: C-4742; FCC RN:965108; FCC DN:TW1082)
No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

Radiated emission Test (Below 1 GHz):

CB15: (FCC RN:674415; FCC DN:TW0659)
No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

Radiated emission Test (Above 1 GHz):

CB15: (FCC RN:674415; FCC DN:TW0659)
No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

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. Conducted emission test:

Test Site	Method	Measurement Frequency Range	U,(dB)
C05	CISPR	150 kHz ~ 30MHz	2.68

B. 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	802.11ac/a/b/g/n Wi-Fi+BT Module	
Brand Name	SparkLAN	
Test Model	WPEQ-160ACN(BT)	
Serial Model	WPEQ-160ACN	
Model Difference	Model No. / BT Function	WPEQ-160ACN(BT): ○ / WPEQ-160ACN: ×
EUT Power Rating	DC 3.3V (System supplied.)	
Product Description	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 150 Mbps
	Output Power (Max.)	802.11b: 22.88 dBm 802.11g: 22.56 dBm 802.11n(20MHz): 22.21 dBm 802.11n(40MHz): 21.76 dBm

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)
CH03 – CH09 for 802.11n(40MHz)

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.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	Wanshin	WSS038	Dipole	RP-SMA	4.6

Note: 2 U.FL connectors (main antenna 0 on, diversity antenna 1 off) for 1T1R.

4. The EUT doesn't support one or more than one antenna simultaneous transmitting for BT/WIFI 2.4G & 5G.

3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	TX B MODE CHANNEL 01/06/11
Mode 2	TX G MODE CHANNEL 01/06/11
Mode 3	TX N-20MHZ MODE CHANNEL 01/06/11
Mode 4	TX N-40MHZ MODE CHANNEL 03/06/09
Mode 5	Normal Link

The EUT system operated these modes were found to be the worst case during the pre-scanning test as following:

For Conducted Test	
Final Test Mode	Description
Mode 5	Normal Link

For Radiated Test	
Final Test Mode	Description
Mode 1	TX B MODE CHANNEL 01/06/11
Mode 2	TX G MODE CHANNEL 01/06/11
Mode 3	TX N-20MHZ MODE CHANNEL 01/06/11
Mode 4	TX N-40MHZ MODE CHANNEL 03/06/09

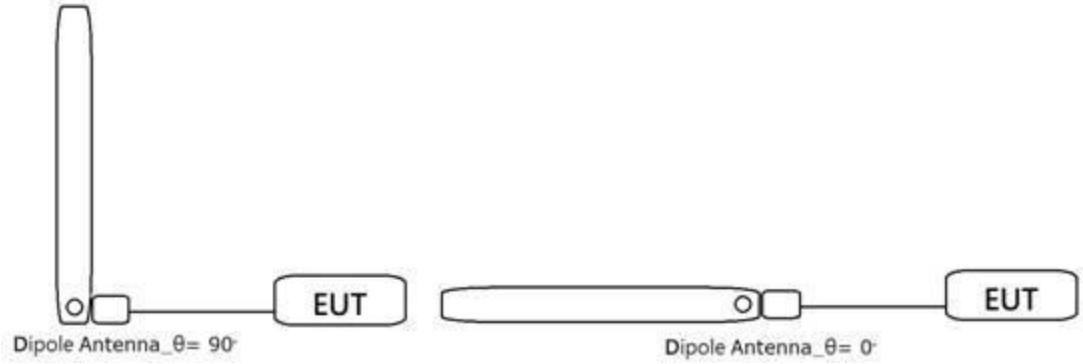
Note:

(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 (6.5Mbps)
802.11n HT40 mode : BPSK (13.5Mbps)
For radiated emission tests, the highest output powers were set for final test.

(3) For radiated below 1G test, the 802.11g is are found to be the worst case and recorded.

(4) For Dipole Antenna, the EUT has pre-tested on positioned of 0° & 90°. The worst case was found positioned on 90°. Therefore only the test data of this 90° was used for radiated emission measurement test.



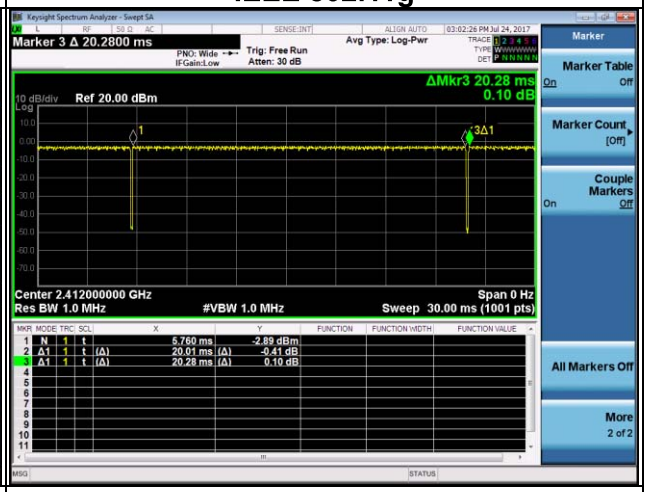
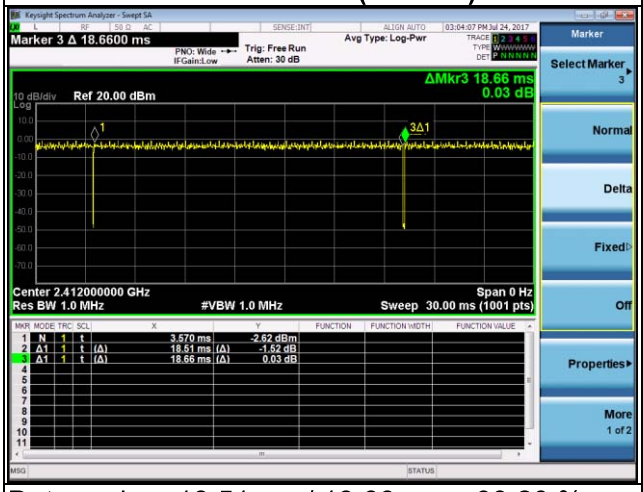
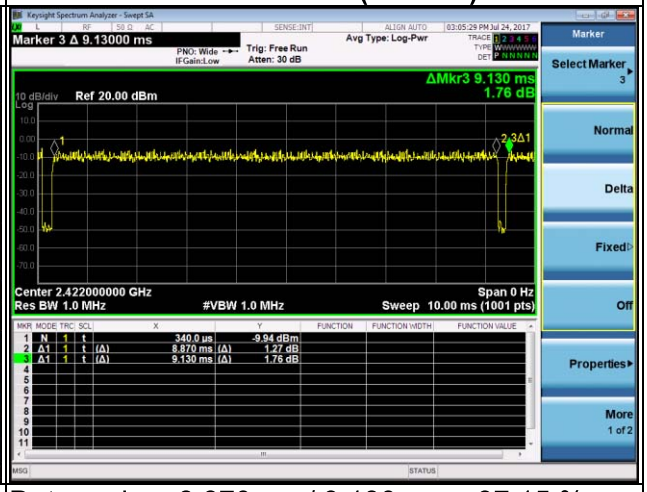
3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

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	QRCT		
Frequency (MHz)	2412	2437	2462
802.11b	22	22	19
802.11g	18	18	15
802.11n (20MHz)	17	17	15
Frequency	2422	2437	2452
802.11n (40MHz)	15	16	13

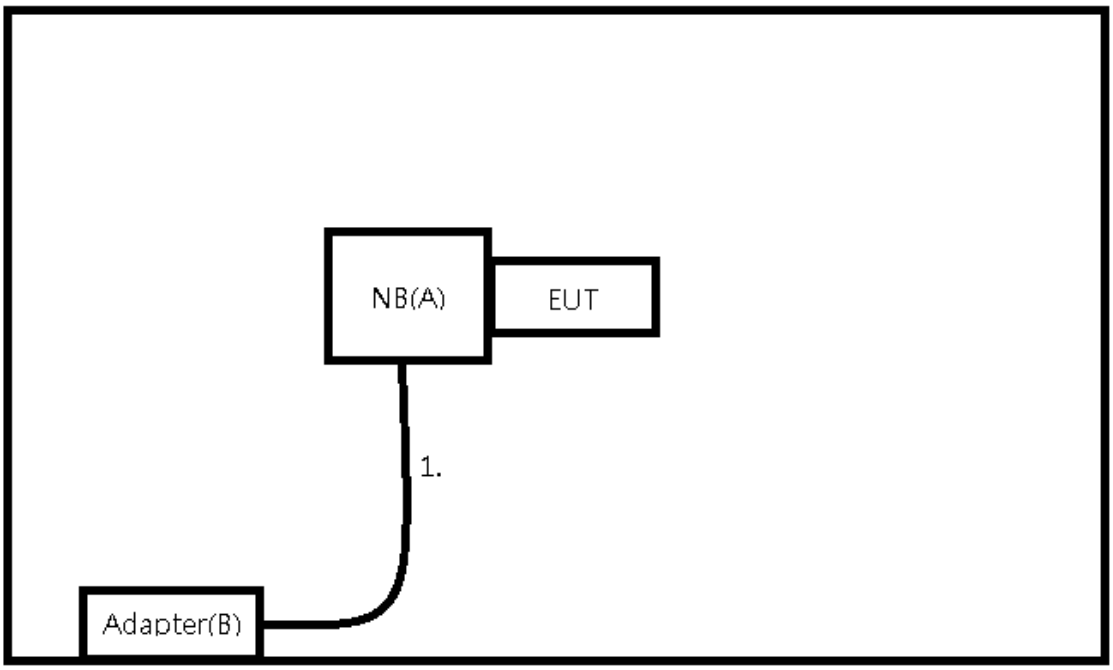
3.4 DUTY CYCLE

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 = 100 % Duty Factor = 10 * log(1 / 1) = 0	Duty cycle = 20.01 ms / 20.28 ms = 98.67 % Duty Factor = 10 * log(1 / 0.9867) = 0.06
IEEE 802.11n (20 MHz)	**IEEE 802.11n (40 MHz)**
	
Duty cycle = 18.51 ms / 18.66 ms = 99.20 % Duty Factor = 10 * log(1 / 0.9920) = 0.04	Duty cycle = 8.870 ms / 9.130 ms = 97.15 % Duty Factor = 10 * log(1 / 0.9715 = 0.13

Note:
For IEEE 802.11n (40 MHz):
For radiated emissions frequency above 1 GHz, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 2 kHz (Duty cycle < 98%).

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	Notebook PC	HP	TPN-I119	N/A	N/A
B	Adapter	HP	HSTNN-CA40	N/A	N/A

Item	Shielded Type	Ferrite Core	Length	Note
1	YES	NO	1.5	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*
0.50 -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

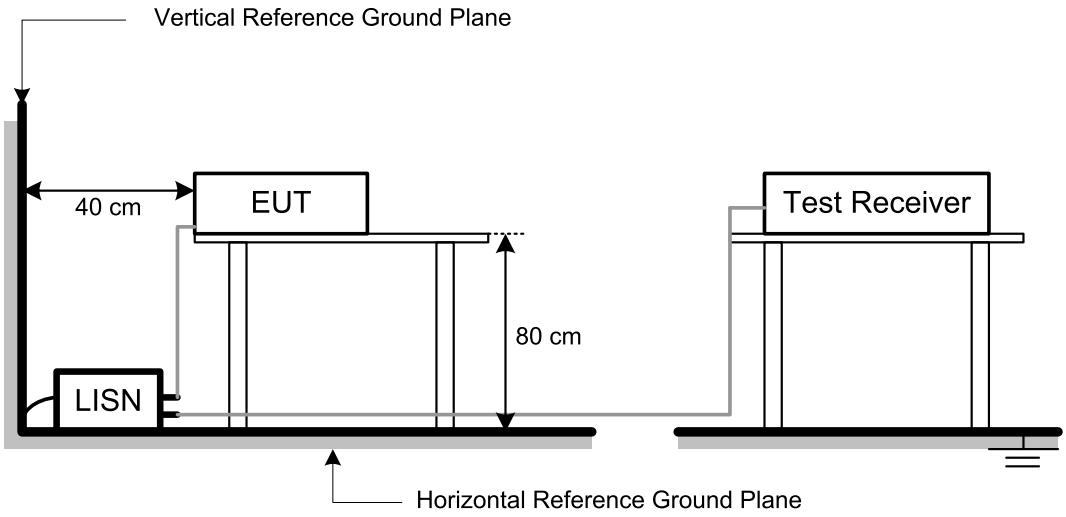
4.1.2 TEST PROCEDURE

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: 55% Test Voltage: AC 120V/60Hz

4.1.7 TEST RESULTS

Please refer to the Attachment 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

Notes:

(1) The 9k ~ 30MHz radiated emissions have been verified between the Semi-anechoic chamber and Open site, it meets KDB414788 requirement.

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

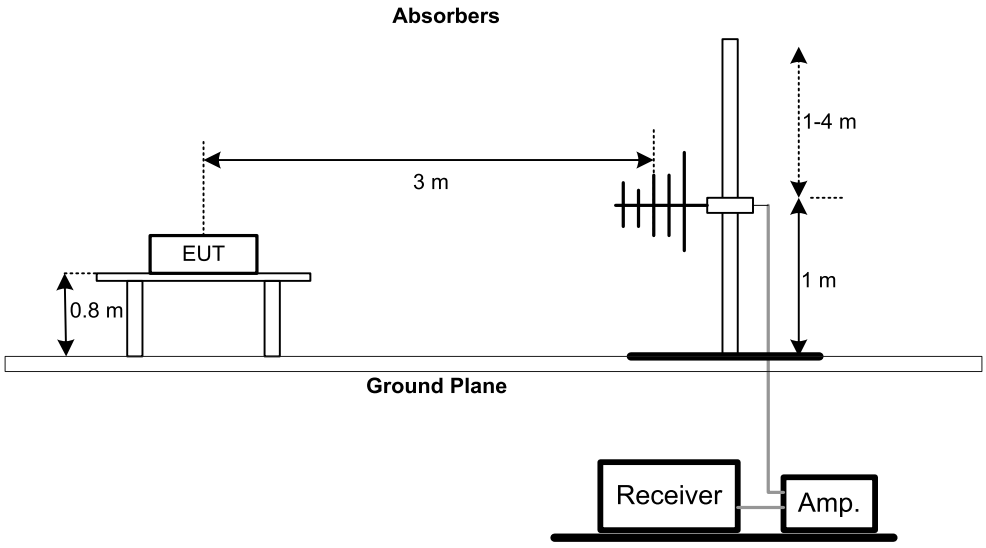
a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
b. The measuring distance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

4.2.3 DEVIATION FROM TEST STANDARD

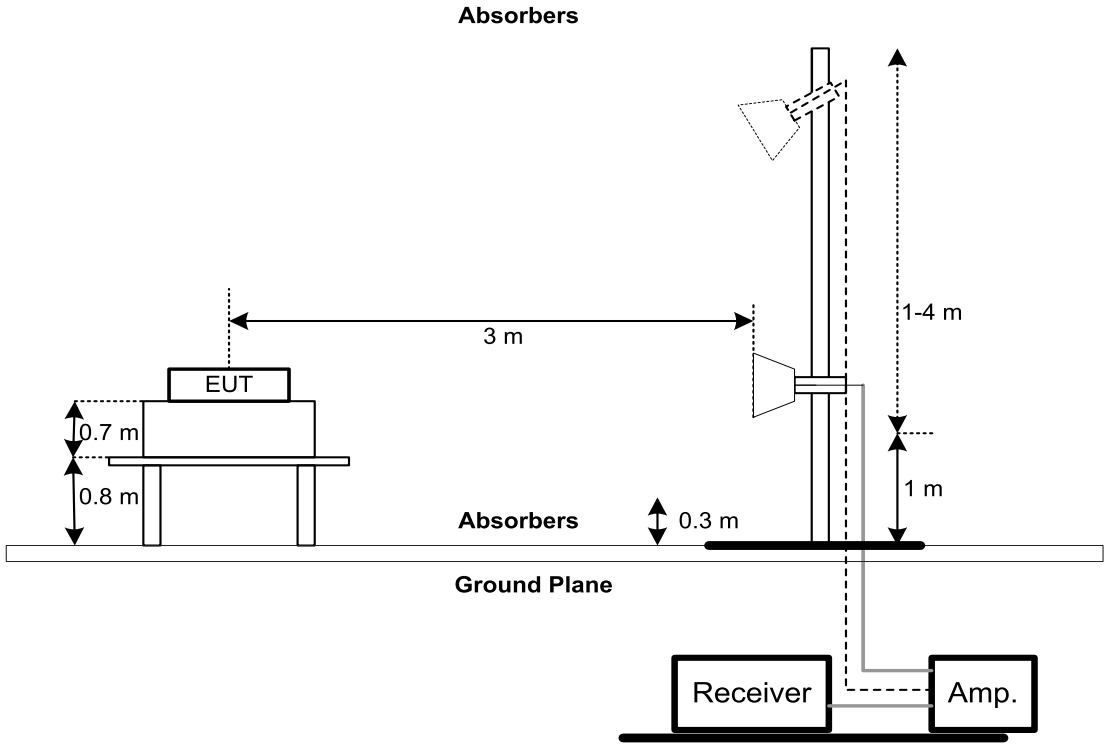
No deviation

4.2.4 TEST SETUP

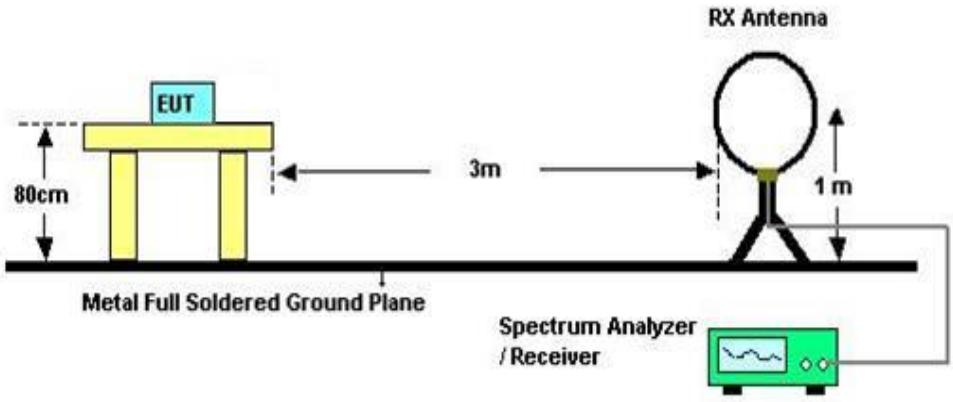
(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



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



(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 Attachment 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 Attachment C.

4.2.9 TEST RESULTS (ABOVE 1000 MHZ)

Please refer to the Attachment 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

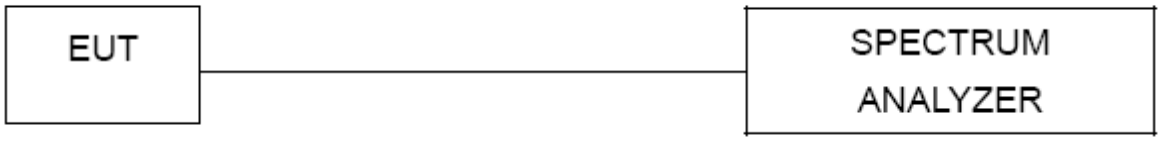
5.1.1 TEST PROCEDURE

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 Attachment 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 v03r04.

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 Attachment 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 Attachment 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

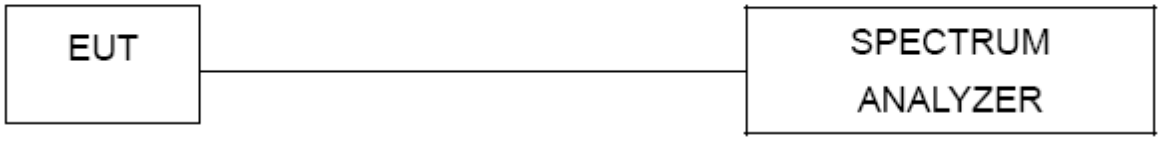
8.1.1 TEST PROCEDURE

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 Attachment 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. 25, 2018
2	Test Cable	TIMES	CFD300-NL	C02	Dec. 08, 2018
3	EMI Test Receiver	R&S	ESR7	101433	Dec. 09, 2017
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. 28, 2018
2	Preamplifier	EMCI	EMC02325	980217	Dec. 28, 2018
3	Preamplifier	EMCI	EMC2654045	980030	Feb. 14, 2018
4	Test Cable	EMCI	EMC104-SM-SM-8000	8m	Jan. 04, 2018
5	Test Cable	EMCI	EMC104-SM-SM-800	150207	Jan. 04, 2018
6	Test Cable	EMCI	EEMC104-SM-SM-3000	151205	Jan. 04, 2018
7	MXE EMI Receiver	Agilent	N9038A	MY55420127	Jan. 09, 2018
8	Signal Analyzer	Agilent	N9010A	MY52220990	Feb. 22, 2018
9	Loop Ant	EMCO	6502	42960	Nov. 23, 2018
10	Horm Ant	SCHWARZBECK	BBHA 9120D	9120D-1342	Feb. 28, 2018
11	Horm Ant	Schwarzbeck	BBHA 9170	187	May 11, 2018
12	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	9168-548	Jan. 16, 2018
13	5dB Attenuator	EMCI	EMCI-N-6-05	AT-N0623	Jan. 16, 2018

6dB Bandwidth Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	R&S/FSP30	100854	May 25, 2018

Peak Output Power Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	R&S/FSP30	100854	May 25, 2018

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	May 25, 2018

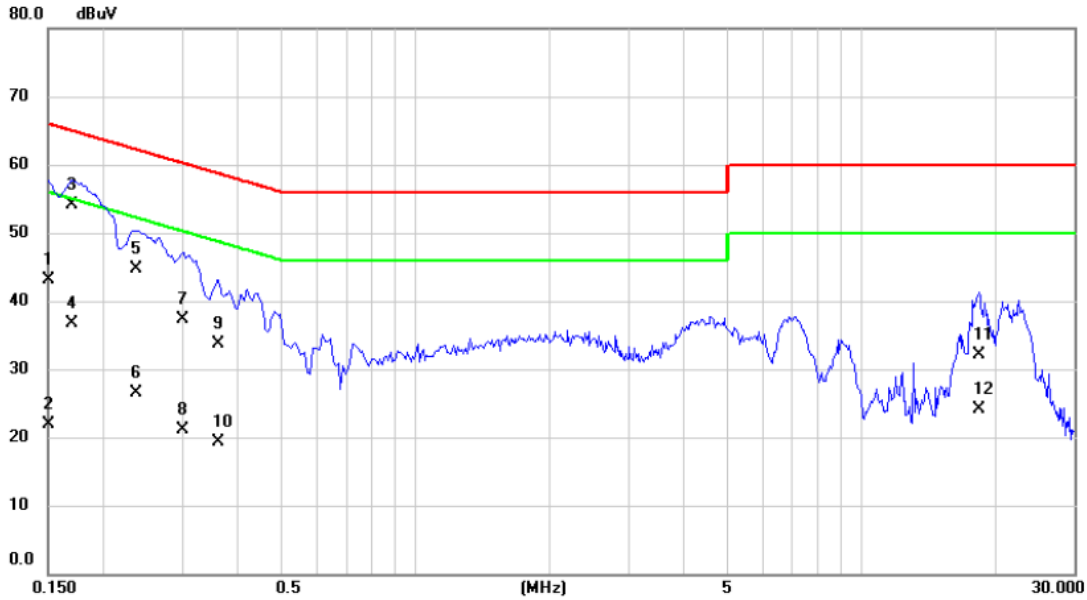
Power Spectral Density Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	R&S/FSP30	100854	May 25, 2018

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

ATTACHMENT A - CONDUCTED EMISSION

Test Mode :	Normal Link

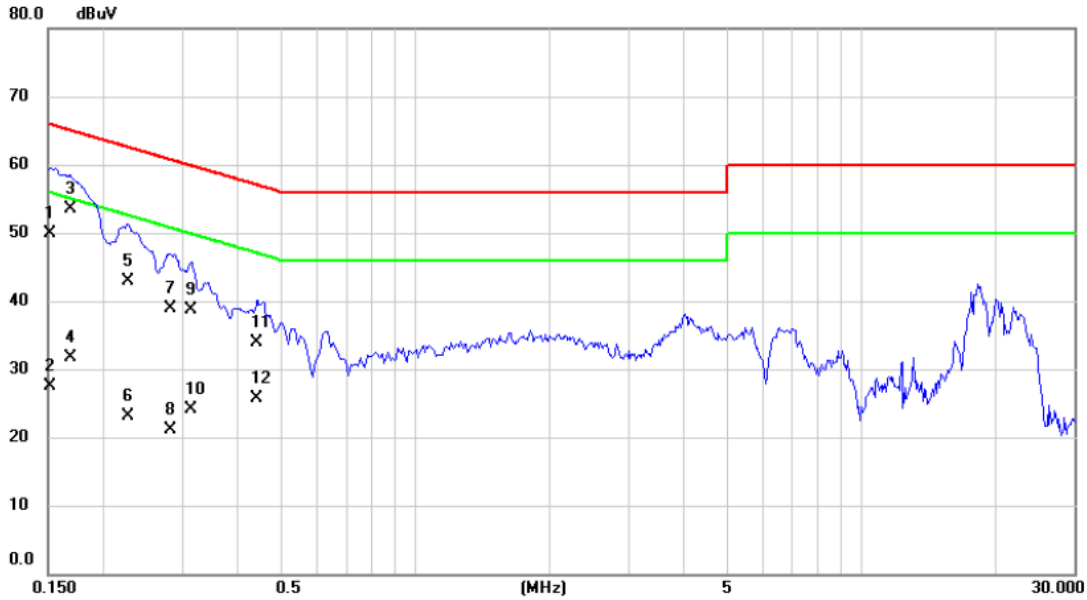
Line



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	33.30	9.76	43.06	66.00	-22.94	QP	
2		0.1500	12.10	9.76	21.86	56.00	-34.14	AVG	
3	*	0.1696	44.30	9.75	54.05	64.98	-10.93	QP	
4		0.1696	26.90	9.75	36.65	54.98	-18.33	AVG	
5		0.2368	35.00	9.74	44.74	62.21	-17.47	QP	
6		0.2368	16.80	9.74	26.54	52.21	-25.67	AVG	
7		0.3011	27.50	9.74	37.24	60.21	-22.97	QP	
8		0.3011	11.40	9.74	21.14	50.21	-29.07	AVG	
9		0.3607	23.90	9.75	33.65	58.71	-25.06	QP	
10		0.3607	9.60	9.75	19.35	48.71	-29.36	AVG	
11		18.3000	22.20	10.00	32.20	60.00	-27.80	QP	
12		18.3000	14.10	10.00	24.10	50.00	-25.90	AVG	

Test Mode :	Normal Link

Neutral

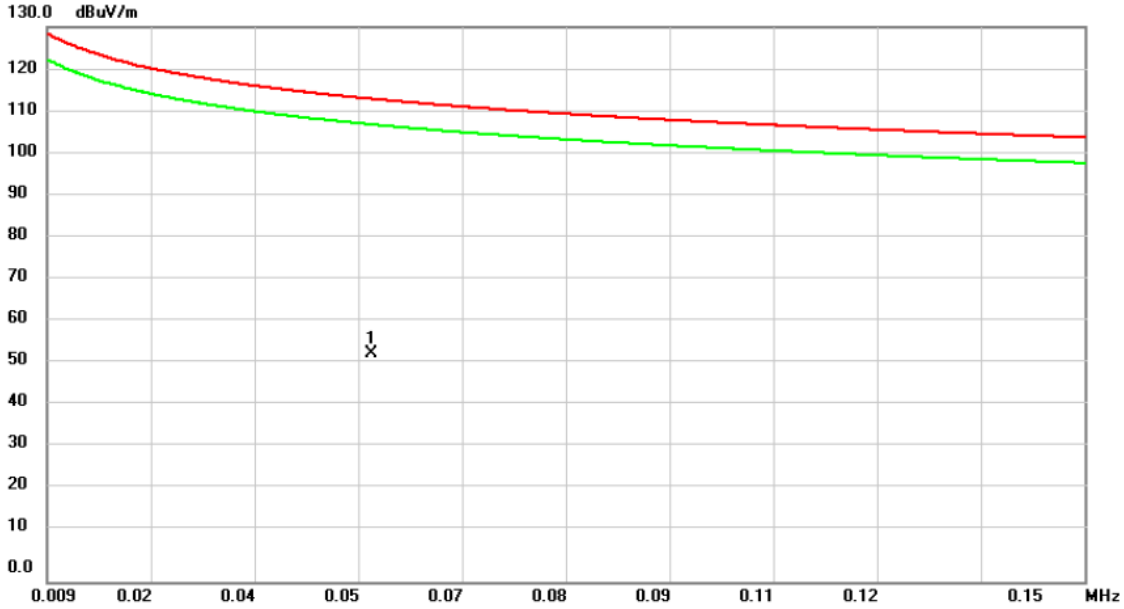


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1521	40.30	9.68	49.98	65.88	-15.90	QP	
2		0.1521	17.90	9.68	27.58	55.88	-28.30	AVG	
3	*	0.1690	43.80	9.68	53.48	65.01	-11.53	QP	
4		0.1690	22.10	9.68	31.78	55.01	-23.23	AVG	
5		0.2263	33.20	9.68	42.88	62.58	-19.70	QP	
6		0.2263	13.50	9.68	23.18	52.58	-29.40	AVG	
7		0.2823	29.20	9.69	38.89	60.75	-21.86	QP	
8		0.2823	11.50	9.69	21.19	50.75	-29.56	AVG	
9		0.3138	29.10	9.68	38.78	59.87	-21.09	QP	
10		0.3138	14.40	9.68	24.08	49.87	-25.79	AVG	
11		0.4420	24.20	9.69	33.89	57.02	-23.13	QP	
12		0.4420	16.10	9.69	25.79	47.02	-21.23	AVG	

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

Test Mode:	TX G MODE 2462MHz _θ=90°

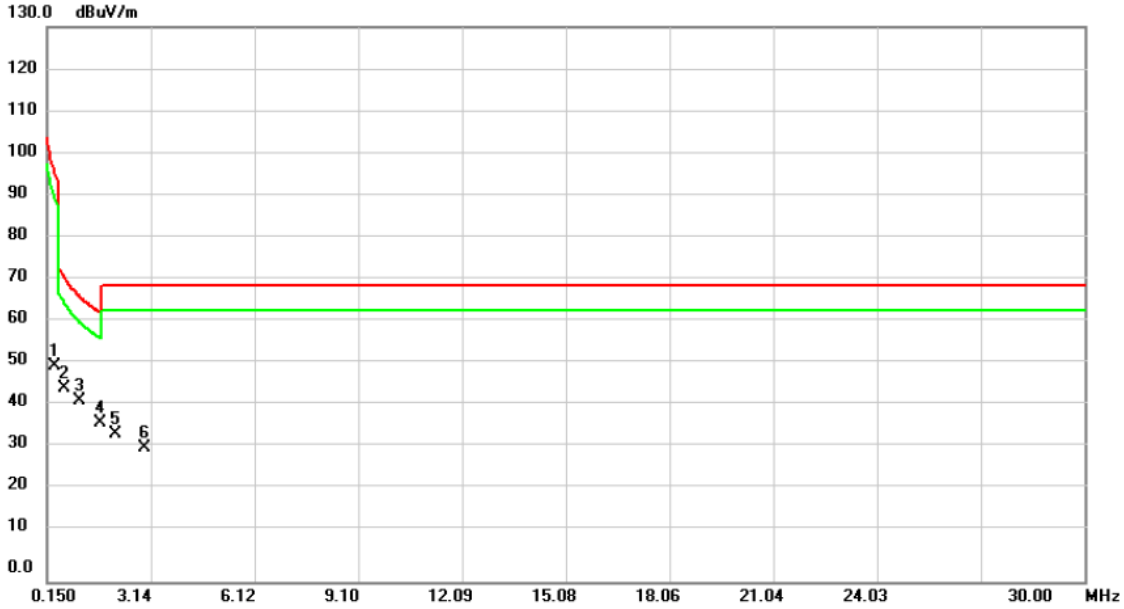
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0530	40.57	12.95	53.52	113.12	-59.60	peak	

Test Mode:	TX G MODE 2462MHz _θ=90°

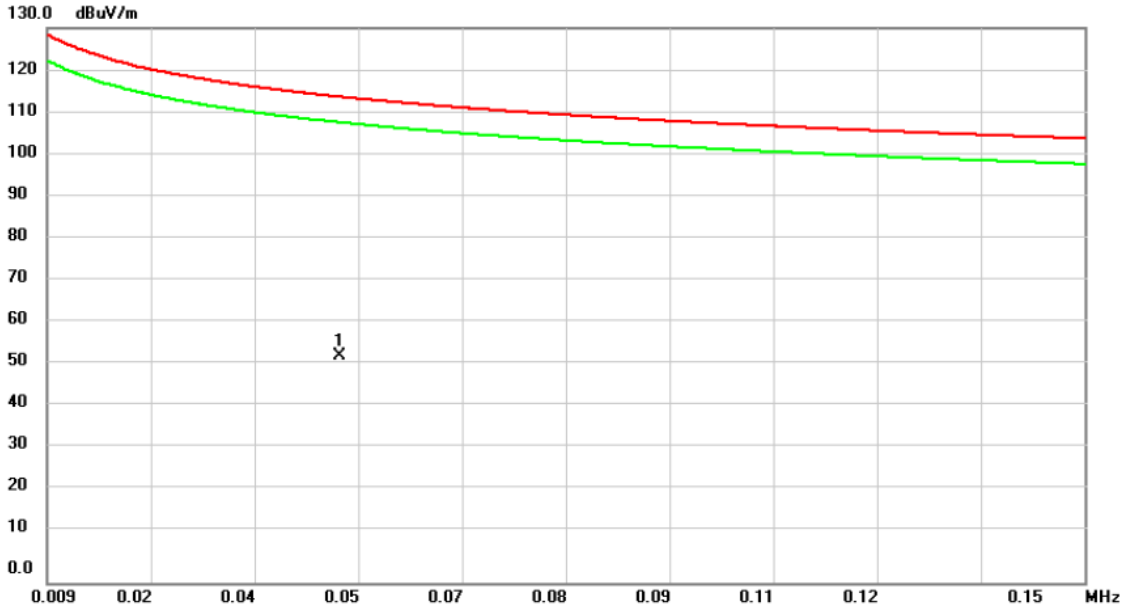
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.3886	38.80	11.80	50.60	95.81	-45.21	peak	
2		0.6276	33.55	11.85	45.40	71.65	-26.25	peak	
3	*	1.0750	30.36	11.97	42.33	66.98	-24.65	peak	
4		1.7020	25.41	11.68	37.09	62.98	-25.89	peak	
5		2.1200	23.06	11.50	34.56	69.54	-34.98	peak	
6		2.9560	20.15	11.12	31.27	69.54	-38.27	peak	

Test Mode:	TX G MODE 2462MHz _θ=90°

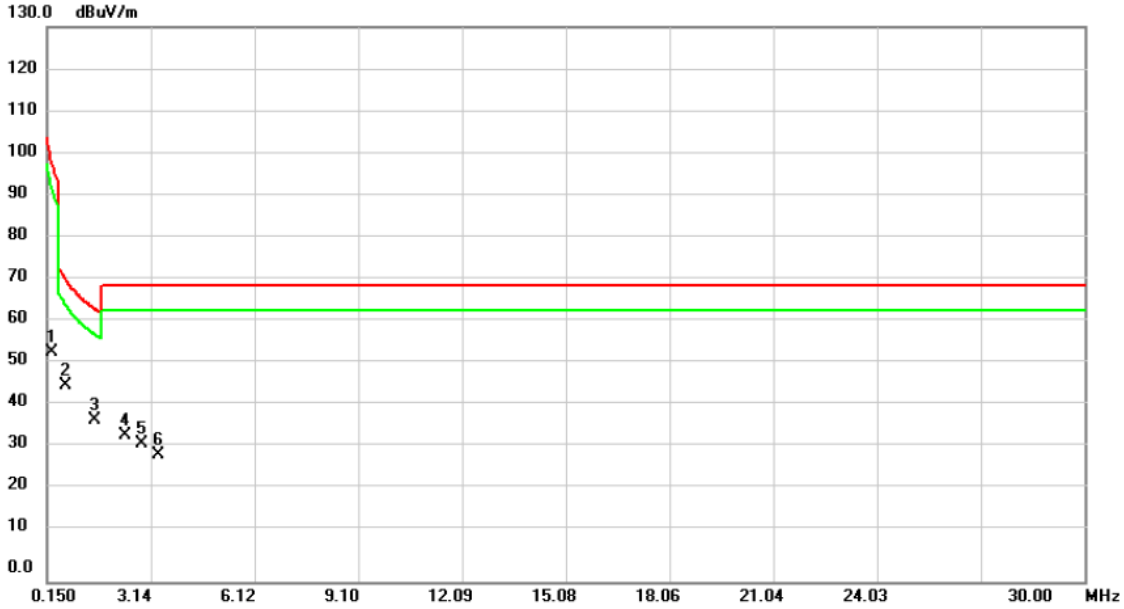
Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0488	39.87	13.12	52.99	113.84	-60.85	peak	

Test Mode:	TX G MODE 2462MHz _θ=90°

Ant 90°

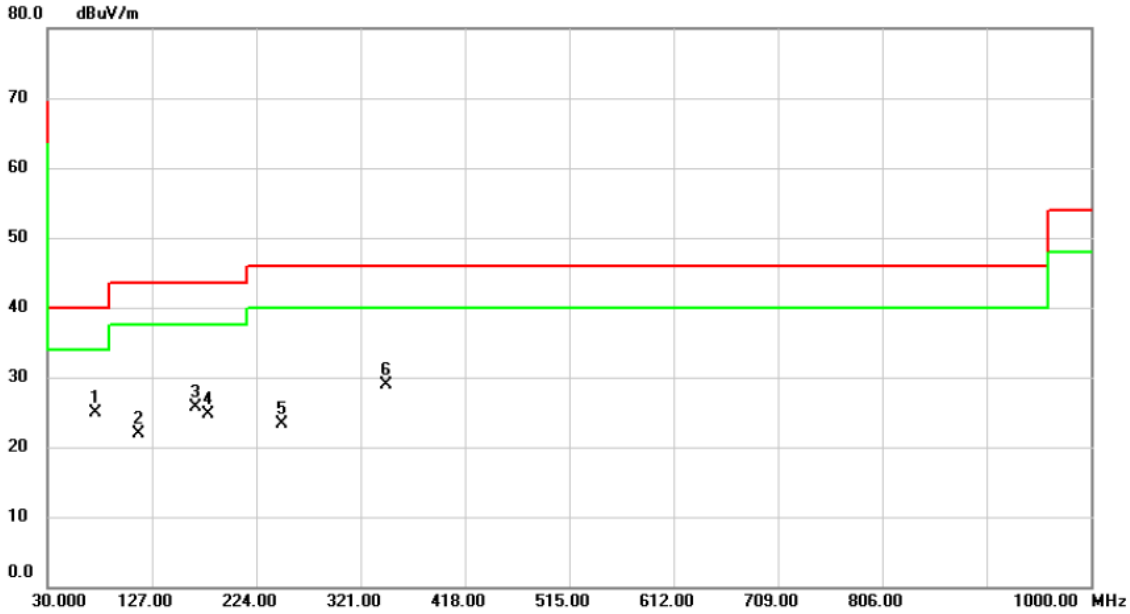


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.2993	41.85	11.80	53.65	98.08	-44.43	peak	
2	*	0.6873	34.17	11.87	46.04	70.86	-24.82	peak	
3		1.5230	26.24	11.76	38.00	63.95	-25.95	peak	
4		2.3887	22.98	11.38	34.36	69.54	-35.18	peak	
5		2.8664	21.25	11.16	32.41	69.54	-37.13	peak	
6		3.3440	18.53	11.15	29.68	69.54	-39.86	peak	

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

Test Mode:	TX G MODE 2462MHz _θ=90°

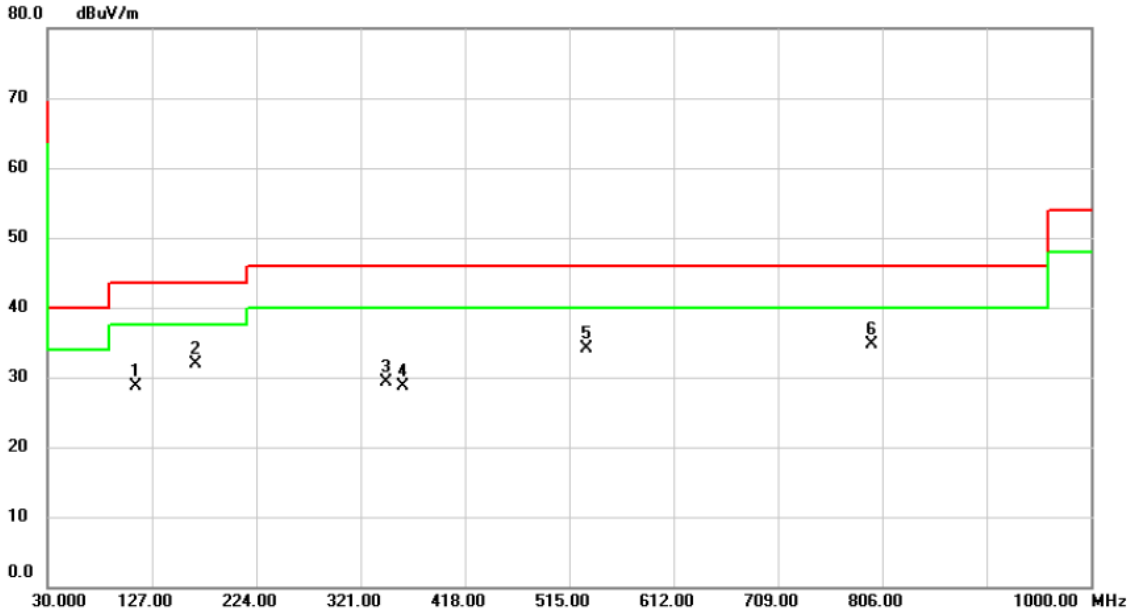
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	74.6200	35.92	-10.98	24.94	40.00	-15.06	peak	
2		114.3900	32.33	-10.52	21.81	43.50	-21.69	peak	
3		167.7400	34.23	-8.59	25.64	43.50	-17.86	peak	
4		179.3800	34.35	-9.55	24.80	43.50	-18.70	peak	
5		248.2500	32.44	-9.14	23.30	46.00	-22.70	peak	
6		345.2500	35.19	-6.36	28.83	46.00	-17.17	peak	

Test Mode:	TX G MODE 2462MHz_θ=90°

Horizontal

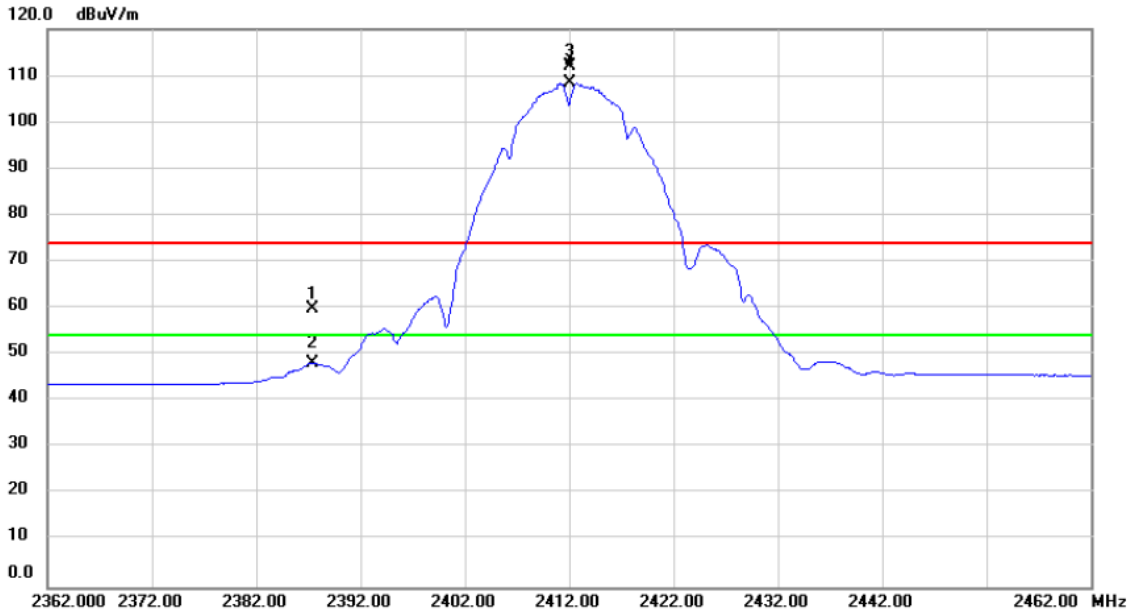


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		112.4500	39.29	-10.63	28.66	43.50	-14.84	peak	
2		167.7400	40.49	-8.59	31.90	43.50	-11.60	peak	
3		345.2500	35.66	-6.36	29.30	46.00	-16.70	peak	
4		359.8000	34.73	-5.98	28.75	46.00	-17.25	peak	
5		531.4900	36.14	-2.10	34.04	46.00	-11.96	peak	
6	*	796.3000	32.05	2.56	34.61	46.00	-11.39	peak	

ATTACHMENT D - RADIATED EMISSION (ABOVE 1000MHZ)

Orthogonal Axis :	X
Test Mode :	TX B MODE 2412MHz_θ=90°

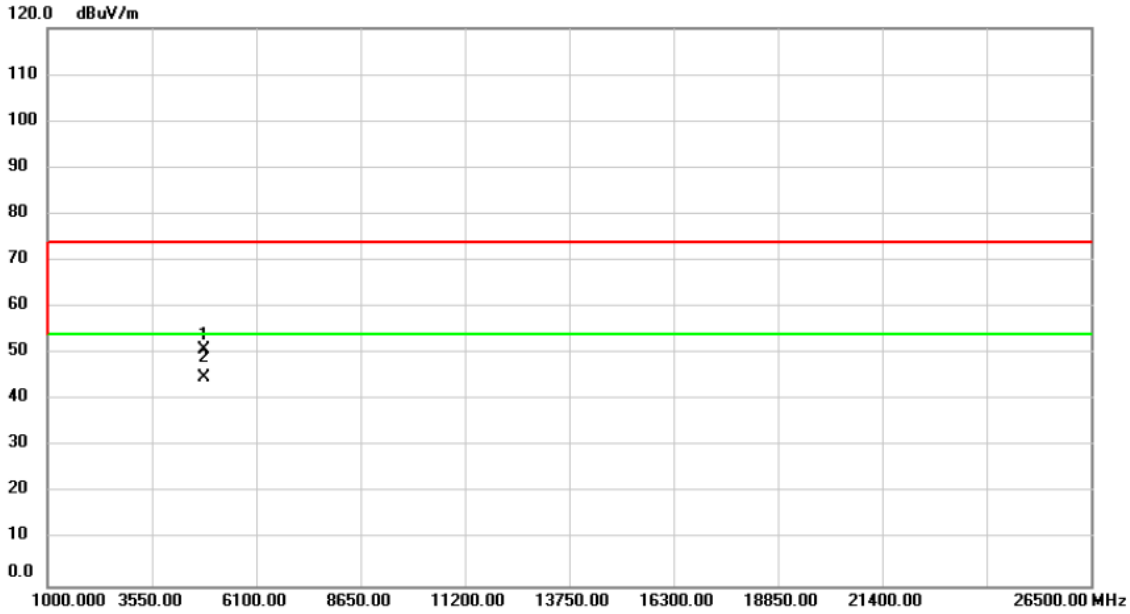
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2387.452	28.86	31.05	59.91	74.00	-14.09	peak	
2		2387.452	17.22	31.05	48.27	54.00	-5.73	AVG	
3	X	2412.000	80.82	31.14	111.96	74.00	37.96	peak	No Limit
4	*	2412.000	77.26	31.14	108.40	54.00	54.40	AVG	No Limit

Orthogonal Axis :	X
Test Mode :	TX B MODE 2412MHz_θ=90°

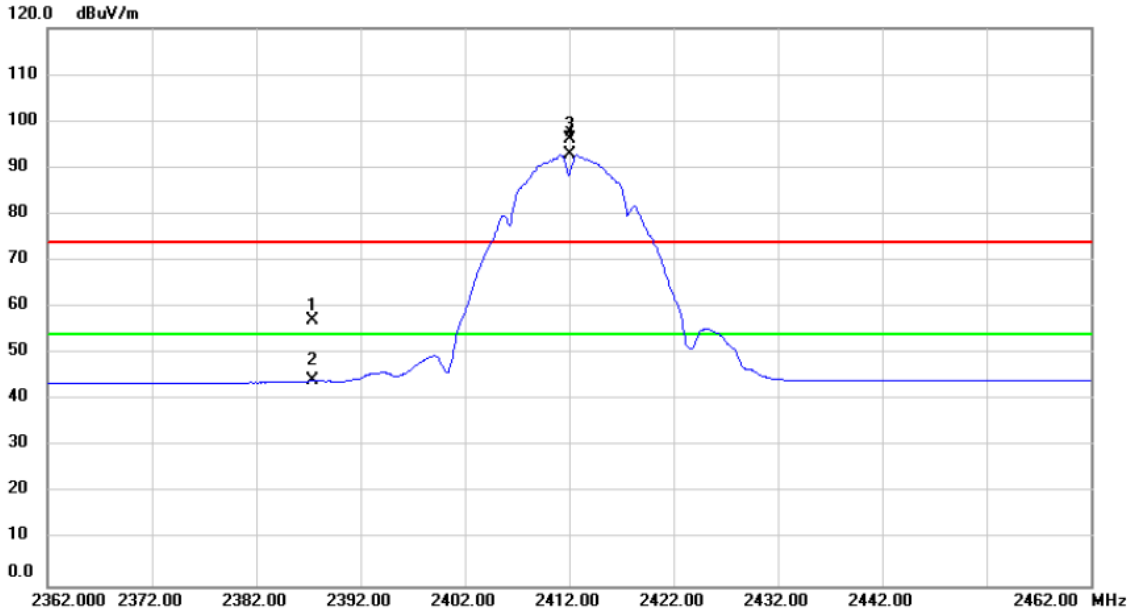
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4824.000	62.13	-11.37	50.76	74.00	-23.24	peak	
2	*	4824.000	56.29	-11.37	44.92	54.00	-9.08	AVG	

Orthogonal Axis :	X
Test Mode :	TX B MODE 2412MHz_θ=90°

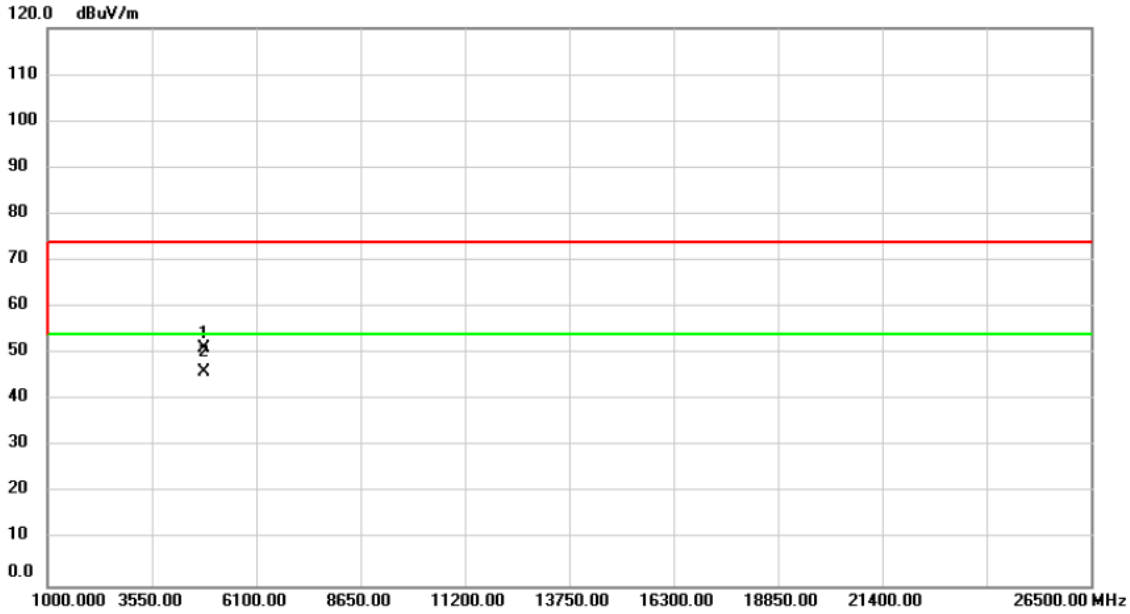
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2387.396	26.18	31.05	57.23	74.00	-16.77	peak	
2		2387.396	13.11	31.05	44.16	54.00	-9.84	AVG	
3	X	2412.000	65.15	31.14	96.29	74.00	22.29	peak	No Limit
4	*	2412.000	61.63	31.14	92.77	54.00	38.77	AVG	No Limit

Orthogonal Axis :	X
Test Mode :	TX B MODE 2412MHz_θ=90°

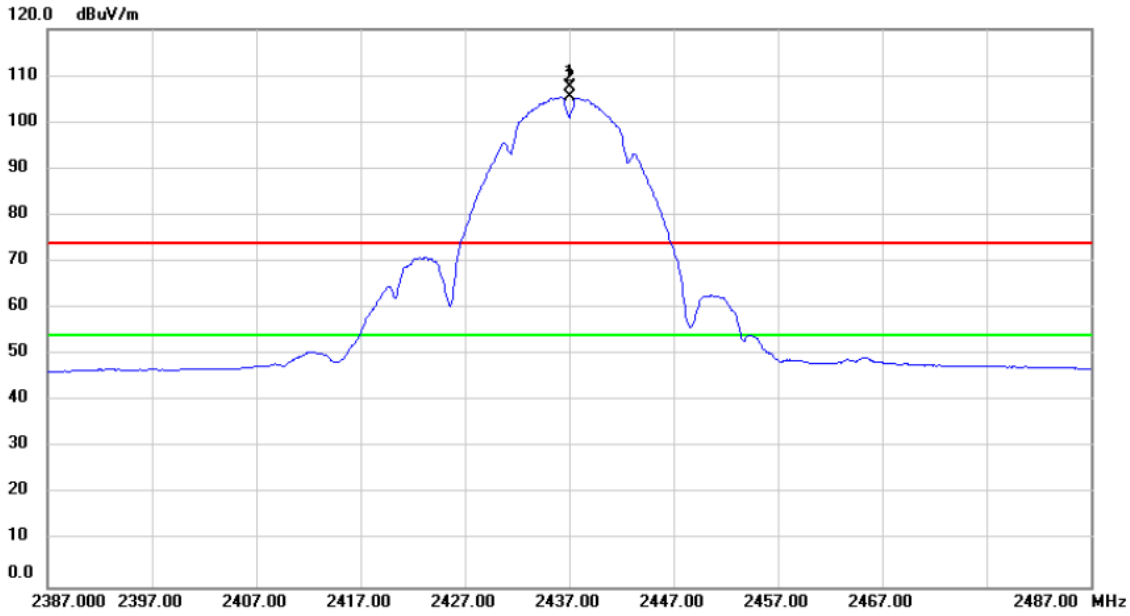
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4824.000	62.66	-11.37	51.29	74.00	-22.71	peak	
2	*	4824.000	57.33	-11.37	45.96	54.00	-8.04	AVG	

Orthogonal Axis :	X
Test Mode :	TX B MODE 2437MHz_θ=90°

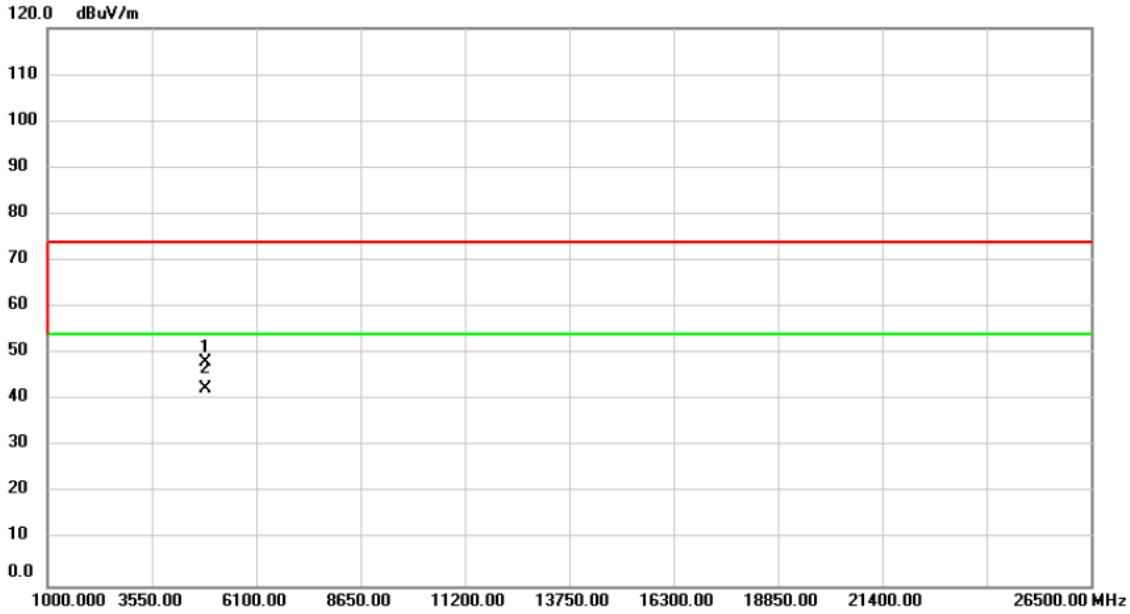
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2437.000	76.36	31.23	107.59	74.00	33.59	peak	No Limit
2	*	2437.000	74.26	31.23	105.49	54.00	51.49	AVG	No Limit

Orthogonal Axis :	X
Test Mode :	TX B MODE 2437MHz_θ=90°

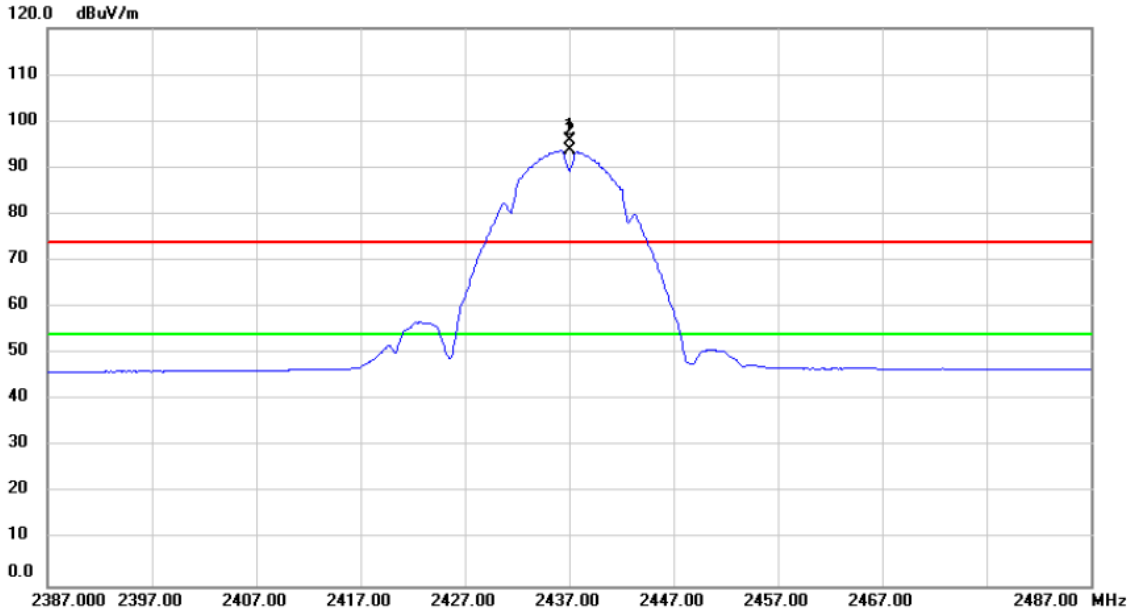
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4874.000	59.52	-11.29	48.23	74.00	-25.77	peak	
2	*	4874.000	53.80	-11.29	42.51	54.00	-11.49	AVG	

Orthogonal Axis :	X
Test Mode :	TX B MODE 2437MHz_ θ =90°

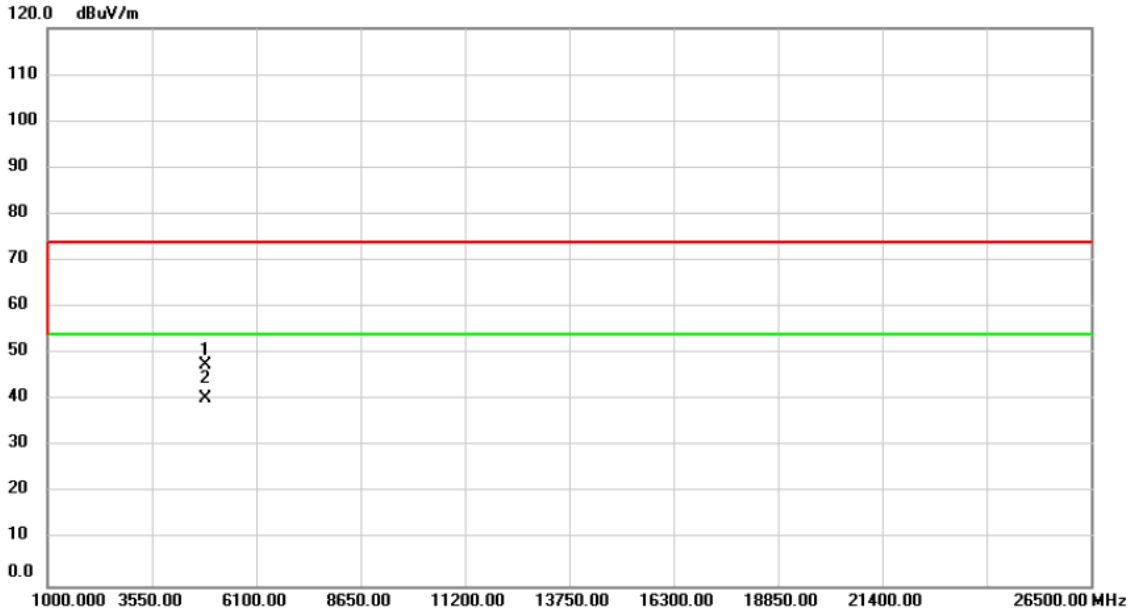
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2437.000	64.64	31.23	95.87	74.00	21.87	peak	No Limit
2	*	2437.000	62.49	31.23	93.72	54.00	39.72	AVG	No Limit

Orthogonal Axis :	X
Test Mode :	TX B MODE 2437MHz_ θ =90°

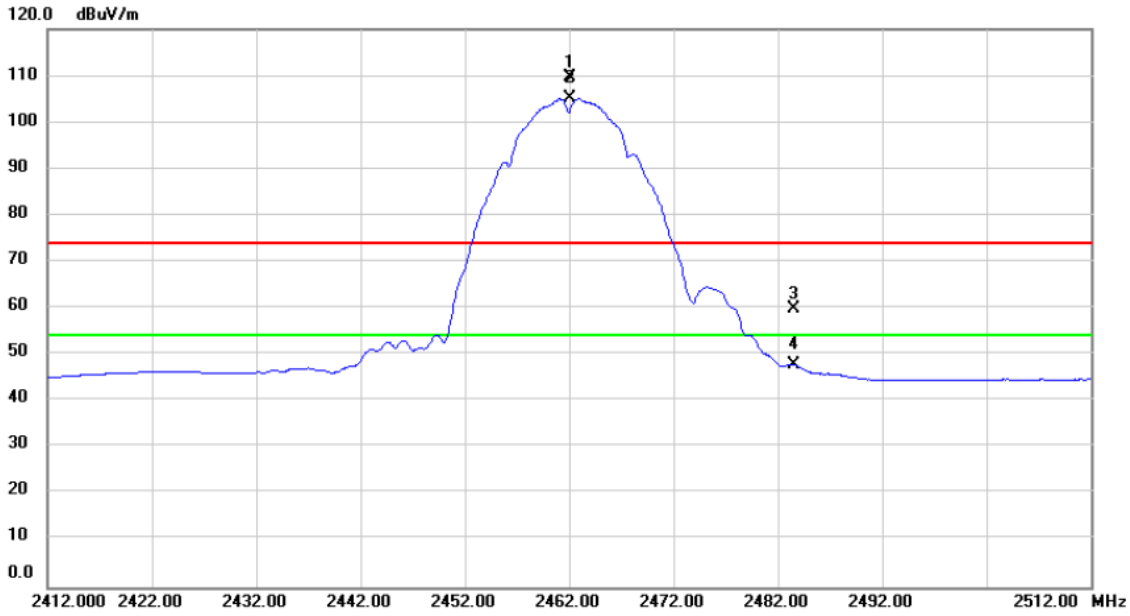
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4874.000	58.88	-11.29	47.59	74.00	-26.41	peak	
2	*	4874.000	51.62	-11.29	40.33	54.00	-13.67	AVG	

Orthogonal Axis :	X
Test Mode :	TX B MODE 2462MHz_ θ =90°

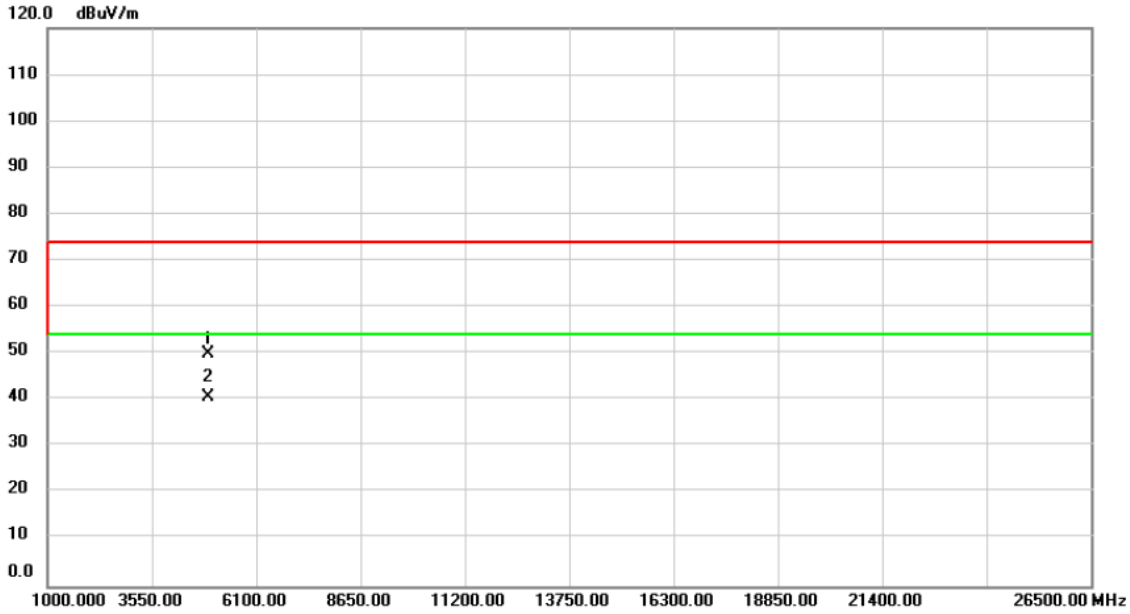
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2462.000	78.39	31.33	109.72	74.00	35.72	peak	No Limit
2	*	2462.000	73.79	31.33	105.12	54.00	51.12	AVG	No Limit
3		2483.500	28.35	31.41	59.76	74.00	-14.24	peak	
4		2483.500	16.51	31.41	47.92	54.00	-6.08	AVG	

Orthogonal Axis :	X
Test Mode :	TX B MODE 2462MHz_ θ =90°

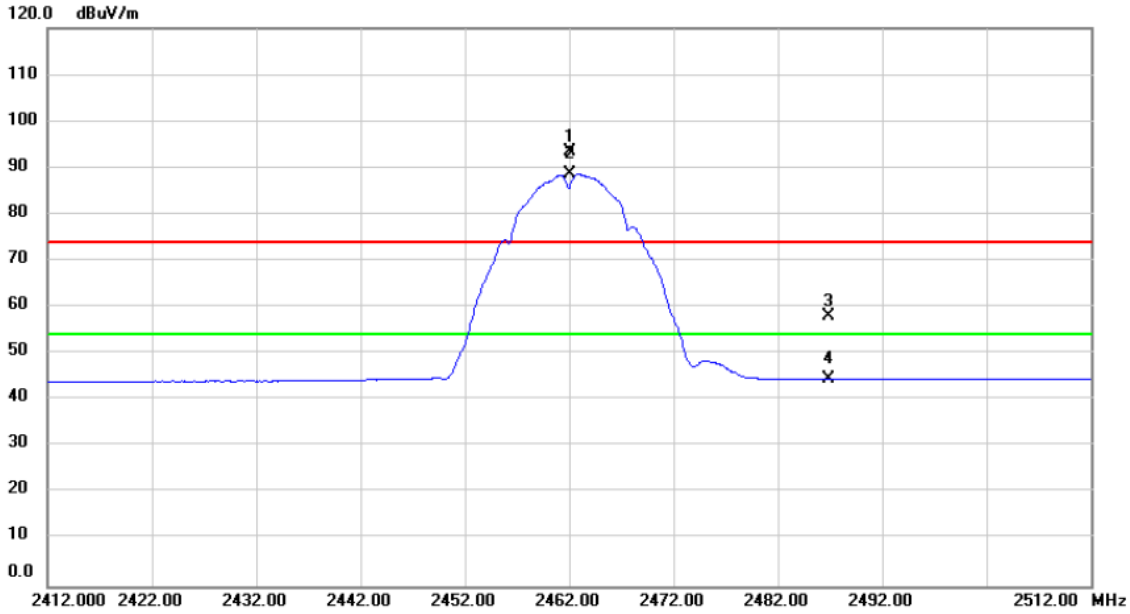
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4924.000	61.07	-11.22	49.85	74.00	-24.15	peak	
2	*	4924.000	51.90	-11.22	40.68	54.00	-13.32	AVG	

Orthogonal Axis :	X
Test Mode :	TX B MODE 2462MHz_ θ =90°

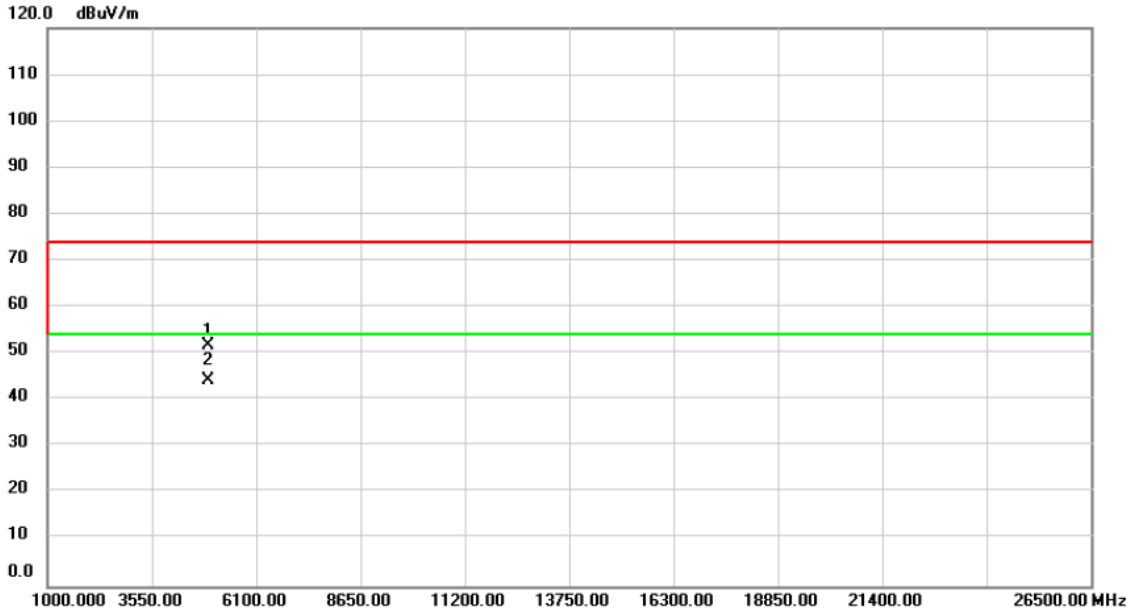
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2462.000	61.98	31.33	93.31	74.00	19.31	peak	No Limit
2	*	2462.000	57.40	31.33	88.73	54.00	34.73	AVG	No Limit
3		2486.899	26.61	31.42	58.03	74.00	-15.97	peak	
4		2486.899	13.16	31.42	44.58	54.00	-9.42	AVG	

Orthogonal Axis :	X
Test Mode :	TX B MODE 2462MHz_ θ =90°

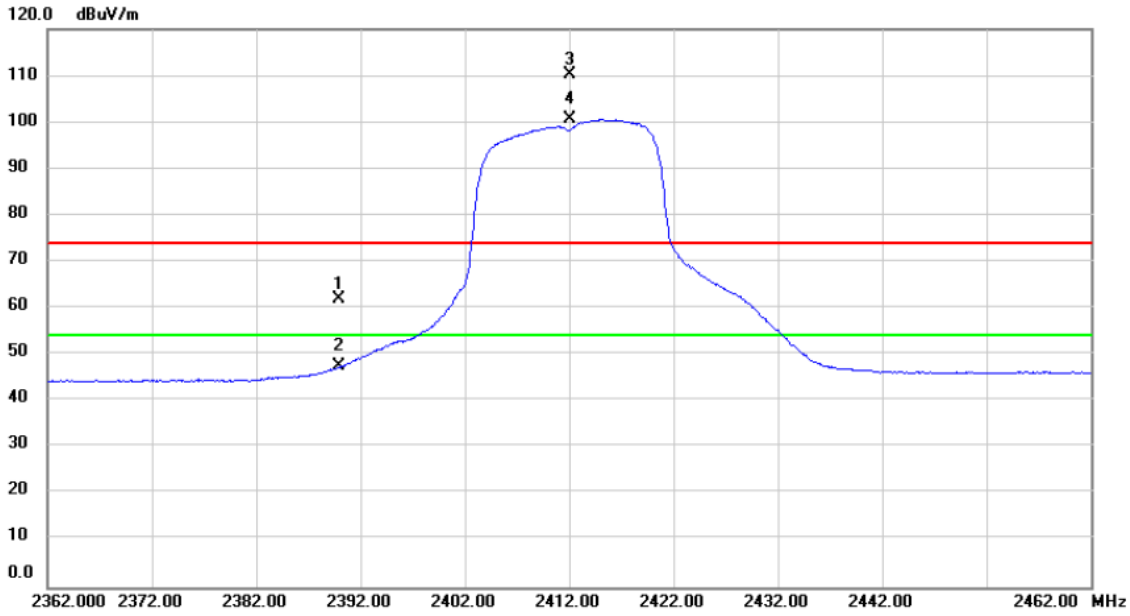
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4924.000	63.02	-11.22	51.80	74.00	-22.20	peak	
2	*	4924.000	55.61	-11.22	44.39	54.00	-9.61	AVG	

Orthogonal Axis :	X
Test Mode :	TX G MODE 2462MHz_ θ =90°

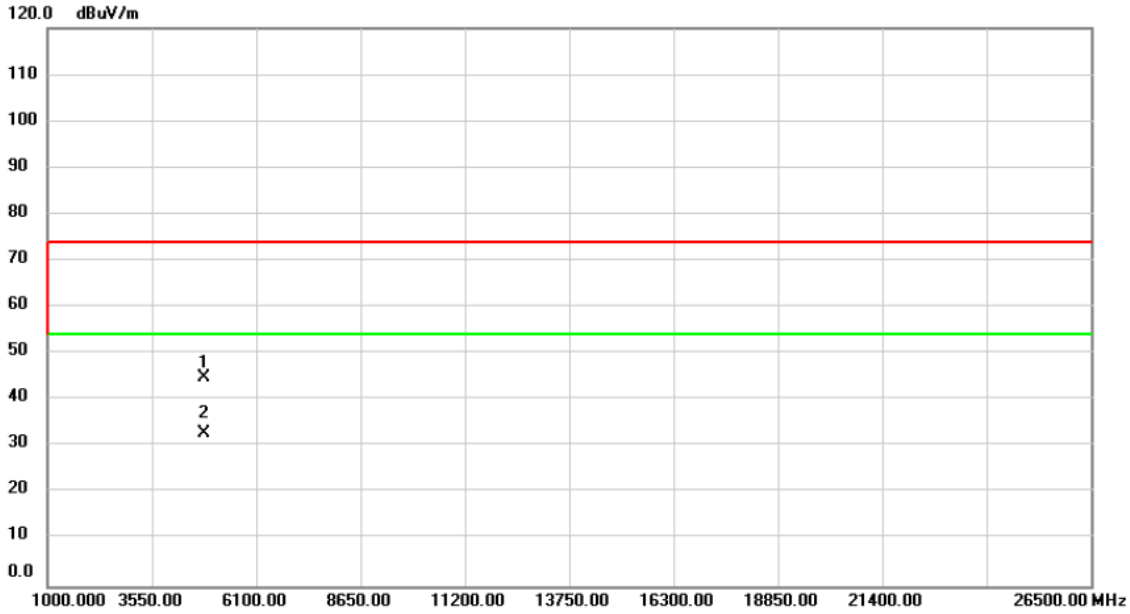
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2389.916	30.77	31.06	61.83	74.00	-12.17	peak	
2		2389.916	16.42	31.06	47.48	54.00	-6.52	AVG	
3	X	2412.000	79.15	31.14	110.29	74.00	36.29	peak	No Limit
4	*	2412.000	69.64	31.14	100.78	54.00	46.78	AVG	No Limit

Orthogonal Axis :	X
Test Mode :	TX G MODE 2412MHz_ θ =90°

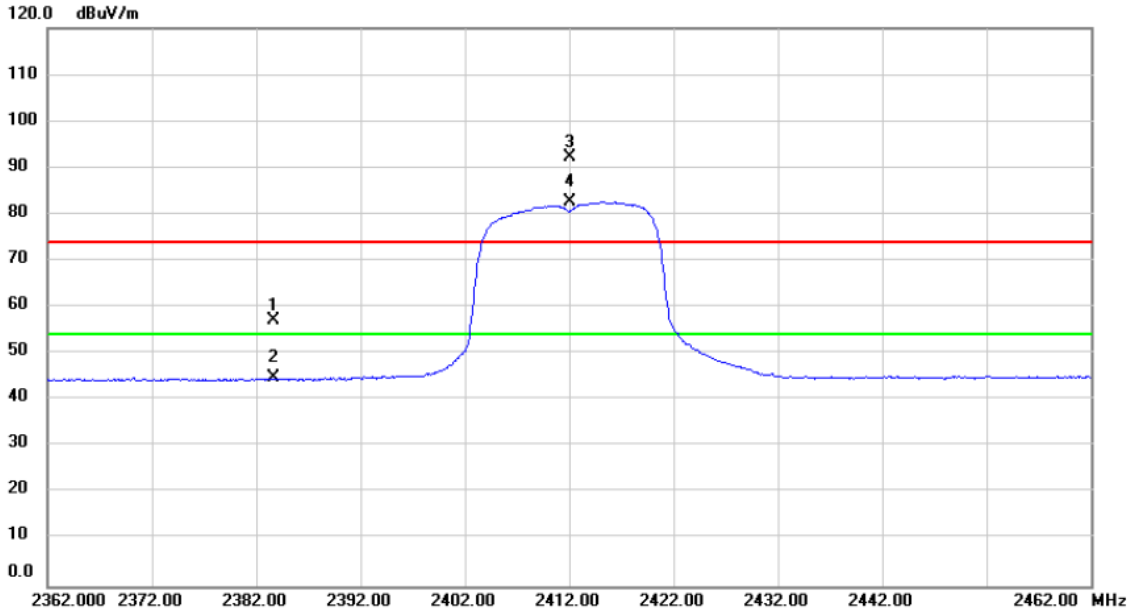
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4824.000	56.23	-11.37	44.86	74.00	-29.14	peak	
2	*	4824.000	44.26	-11.37	32.89	54.00	-21.11	AVG	

Orthogonal Axis :	X
Test Mode :	TX G MODE 2412MHz_ θ =90°

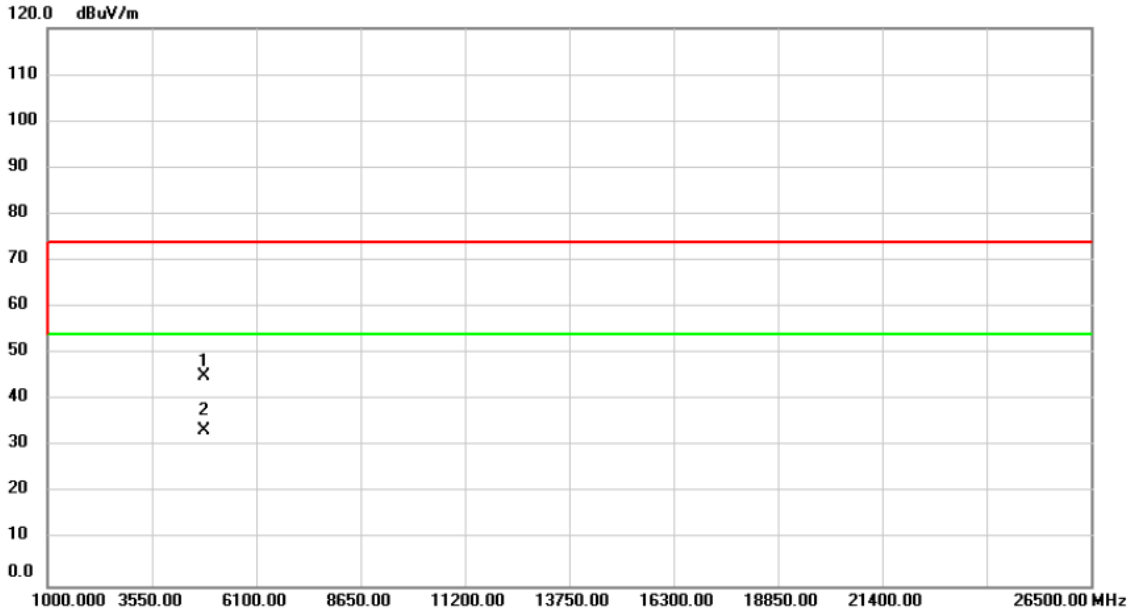
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2383.616	26.24	31.04	57.28	74.00	-16.72	peak	
2		2383.616	13.81	31.04	44.85	54.00	-9.15	AVG	
3	X	2412.000	61.01	31.14	92.15	74.00	18.15	peak	No Limit
4	*	2412.000	51.53	31.14	82.67	54.00	28.67	AVG	No Limit

Orthogonal Axis :	X
Test Mode :	TX G MODE 2412MHz_ θ =90°

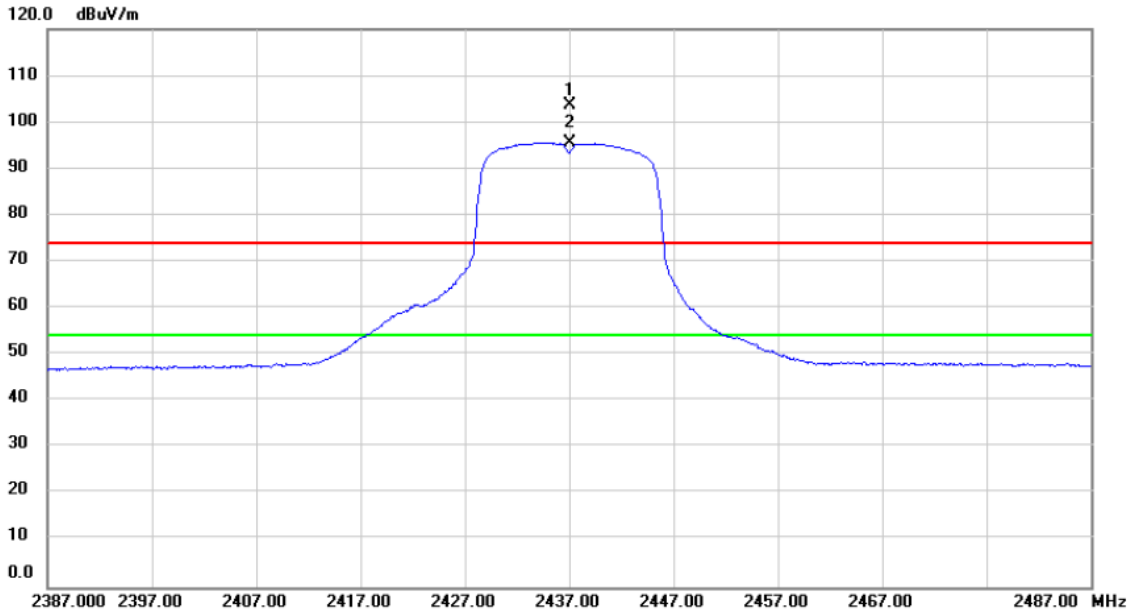
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4824.000	56.44	-11.37	45.07	74.00	-28.93	peak	
2	*	4824.000	44.78	-11.37	33.41	54.00	-20.59	AVG	

Orthogonal Axis :	X
Test Mode :	TX G MODE 2437MHz_ θ =90°

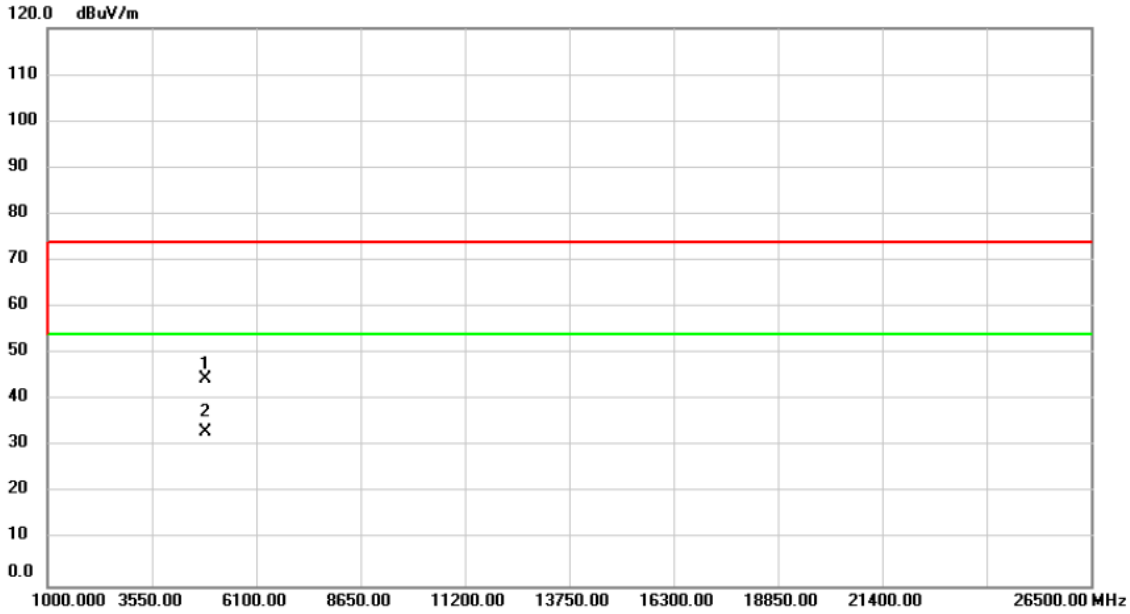
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2437.000	72.55	31.23	103.78	74.00	29.78	peak	No Limit
2	*	2437.000	64.31	31.23	95.54	54.00	41.54	AVG	No Limit

Orthogonal Axis :	X
Test Mode :	TX G MODE 2437MHz_ θ =90°

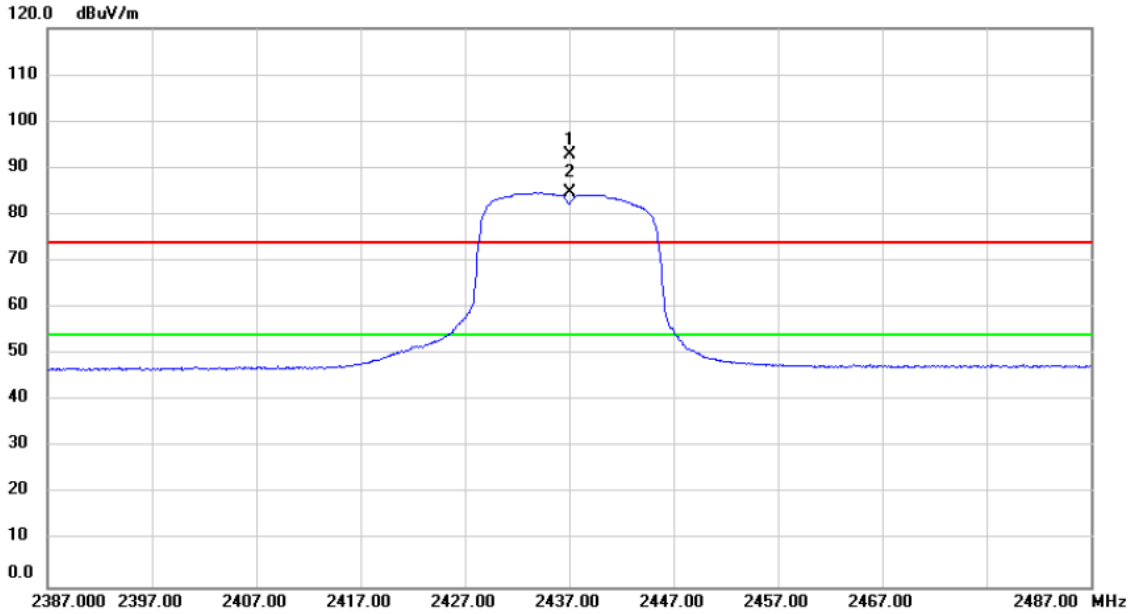
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4874.000	55.76	-11.29	44.47	74.00	-29.53	peak	
2	*	4874.000	44.41	-11.29	33.12	54.00	-20.88	AVG	

Orthogonal Axis :	X
Test Mode :	TX G MODE 2437MHz_ θ =90°

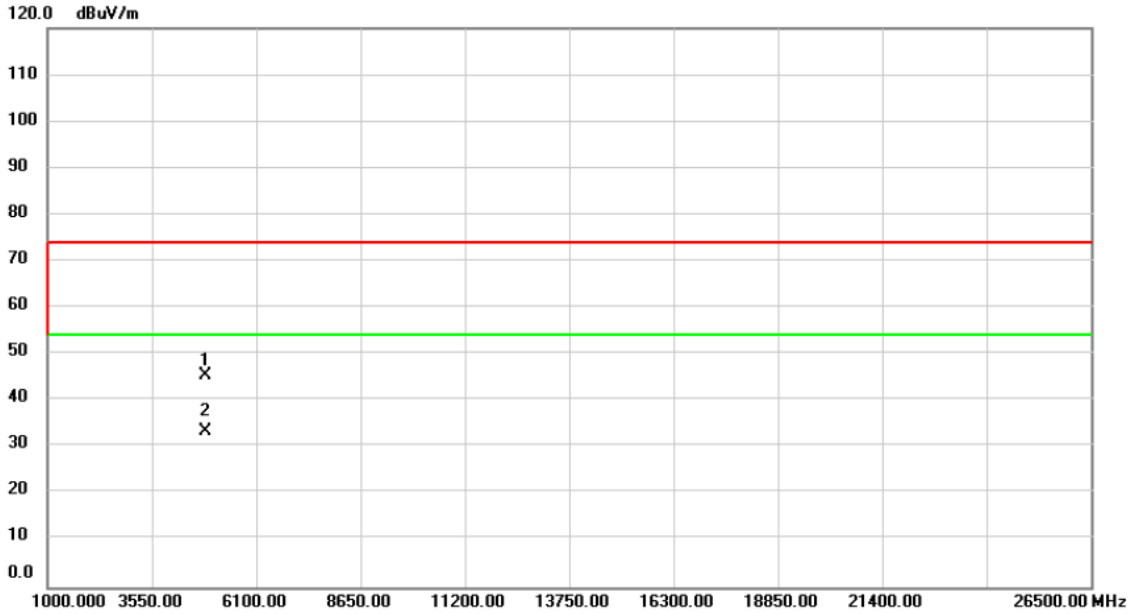
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2437.000	61.67	31.23	92.90	74.00	18.90	peak	No Limit
2	*	2437.000	53.47	31.23	84.70	54.00	30.70	AVG	No Limit

Orthogonal Axis :	X
Test Mode :	TX G MODE 2437MHz_ θ =90°

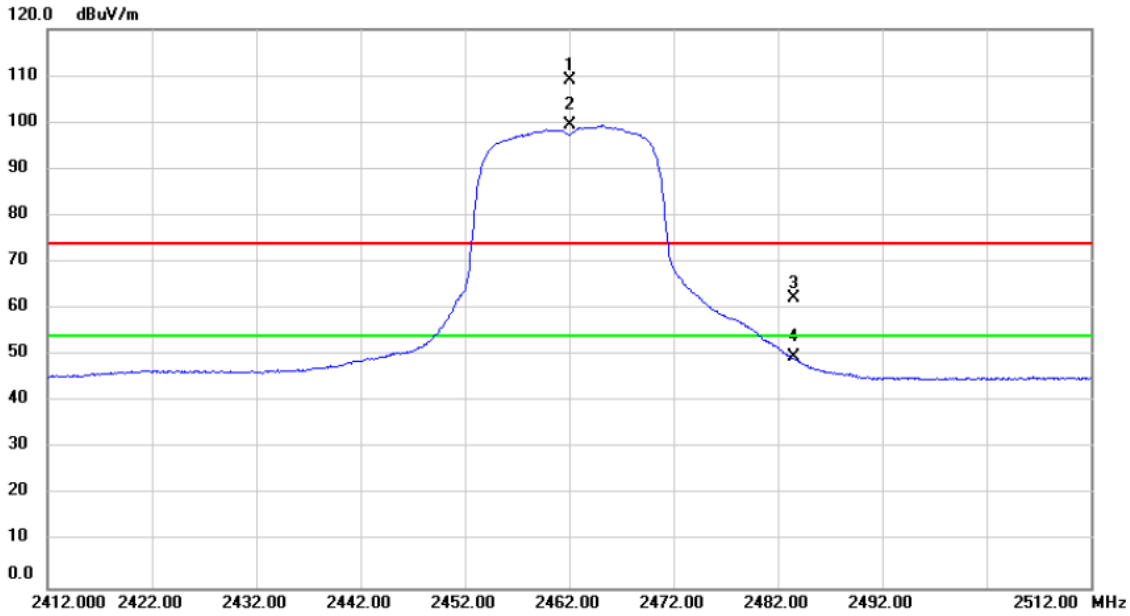
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4874.000	56.86	-11.29	45.57	74.00	-28.43	peak	
2	*	4874.000	44.68	-11.29	33.39	54.00	-20.61	AVG	

Orthogonal Axis :	X
Test Mode :	TX G MODE 2462MHz_ θ =90°

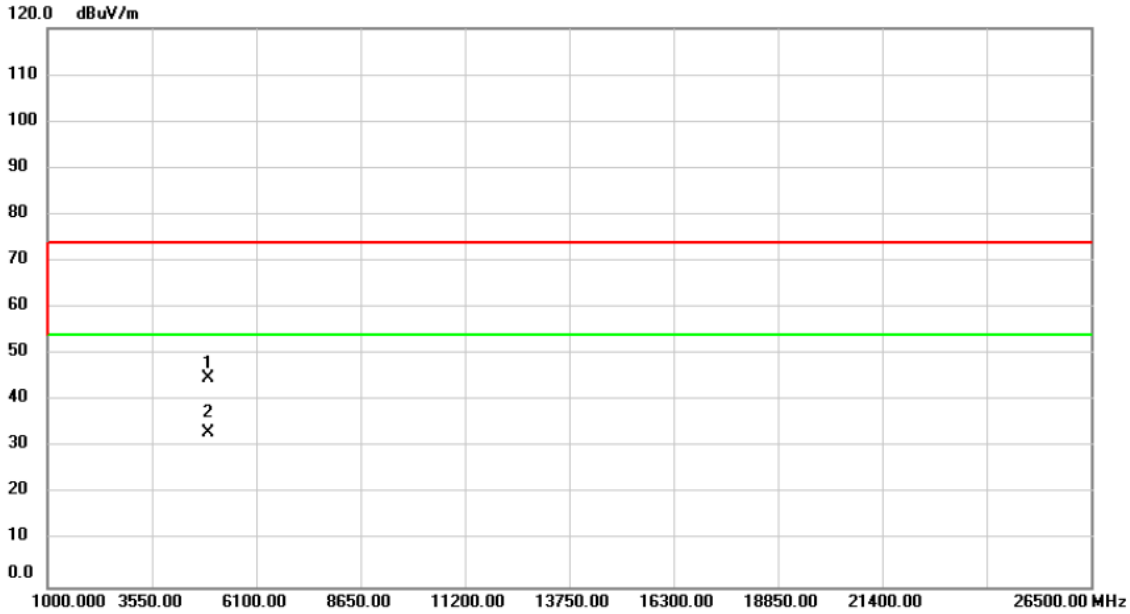
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2462.000	77.74	31.33	109.07	74.00	35.07	peak	No Limit
2	*	2462.000	67.98	31.33	99.31	54.00	45.31	AVG	No Limit
3		2483.500	30.77	31.41	62.18	74.00	-11.82	peak	
4		2483.500	18.23	31.41	49.64	54.00	-4.36	AVG	

Orthogonal Axis :	X
Test Mode :	TX G MODE 2462MHz_ θ =90°

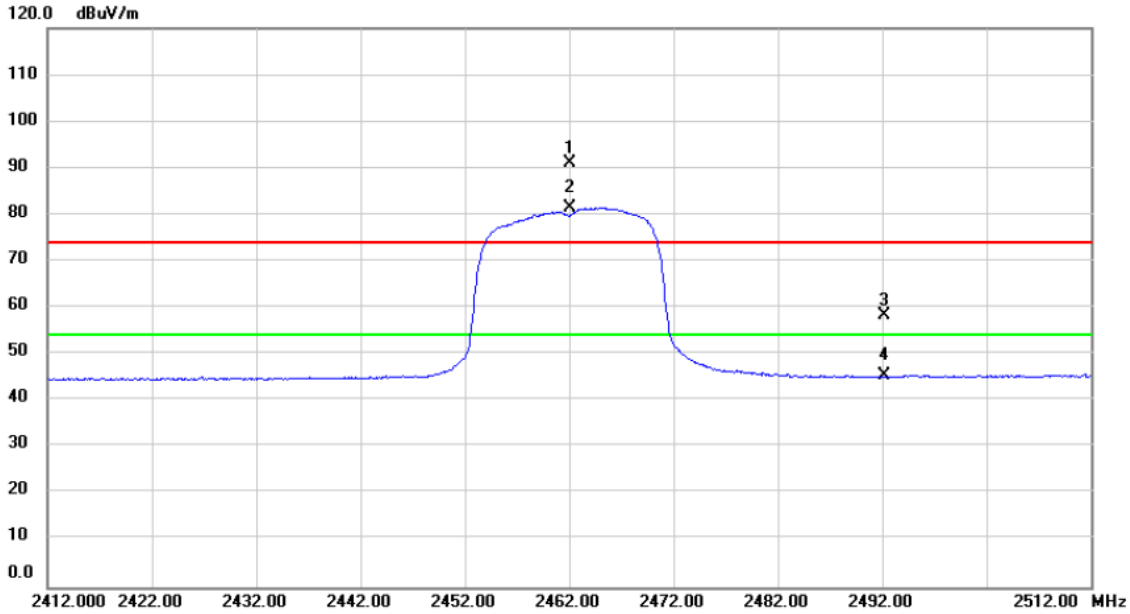
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4924.000	56.11	-11.22	44.89	74.00	-29.11	peak	
2	*	4924.000	44.32	-11.22	33.10	54.00	-20.90	AVG	

Orthogonal Axis :	X
Test Mode :	TX G MODE 2462MHz_ θ =90°

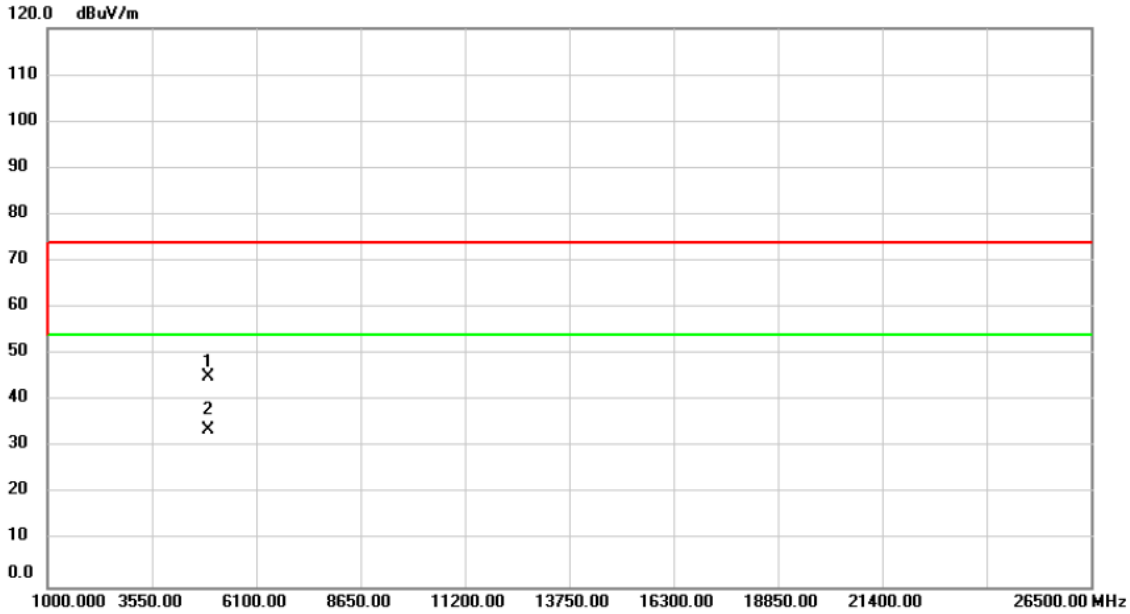
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2462.000	59.81	31.33	91.14	74.00	17.14	peak	No Limit
2	*	2462.000	50.27	31.33	81.60	54.00	27.60	AVG	No Limit
3		2492.262	26.99	31.44	58.43	74.00	-15.57	peak	
4		2492.262	14.11	31.44	45.55	54.00	-8.45	AVG	

Orthogonal Axis :	X
Test Mode :	TX G MODE 2462MHz_ θ =90°

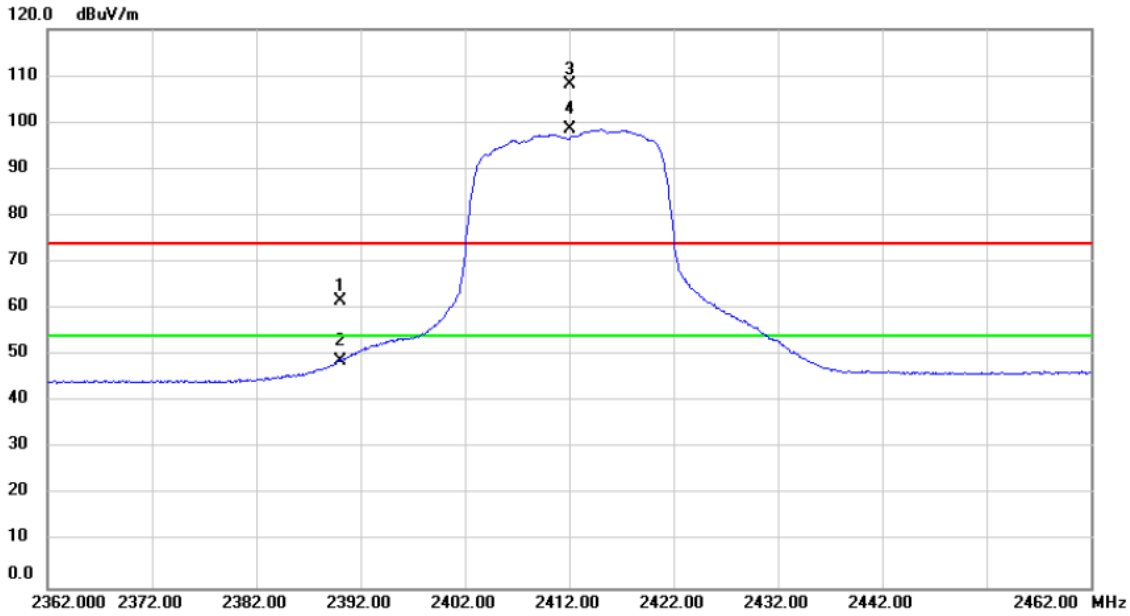
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4924.000	56.39	-11.22	45.17	74.00	-28.83	peak	
2	*	4924.000	44.86	-11.22	33.64	54.00	-20.36	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2412MHz_ θ =90°

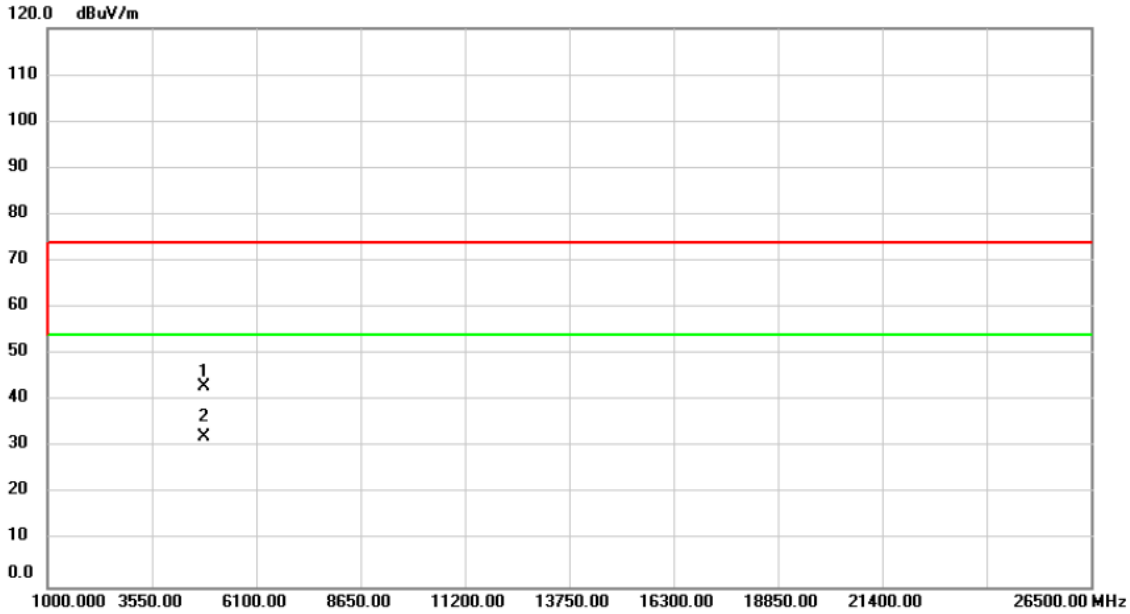
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2390.000	30.68	31.06	61.74	74.00	-12.26	peak	
2		2390.000	17.75	31.06	48.81	54.00	-5.19	AVG	
3	X	2412.000	76.94	31.14	108.08	74.00	34.08	peak	No Limit
4	*	2412.000	67.43	31.14	98.57	54.00	44.57	AVG	No Limit

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2412MHz_ θ =90°

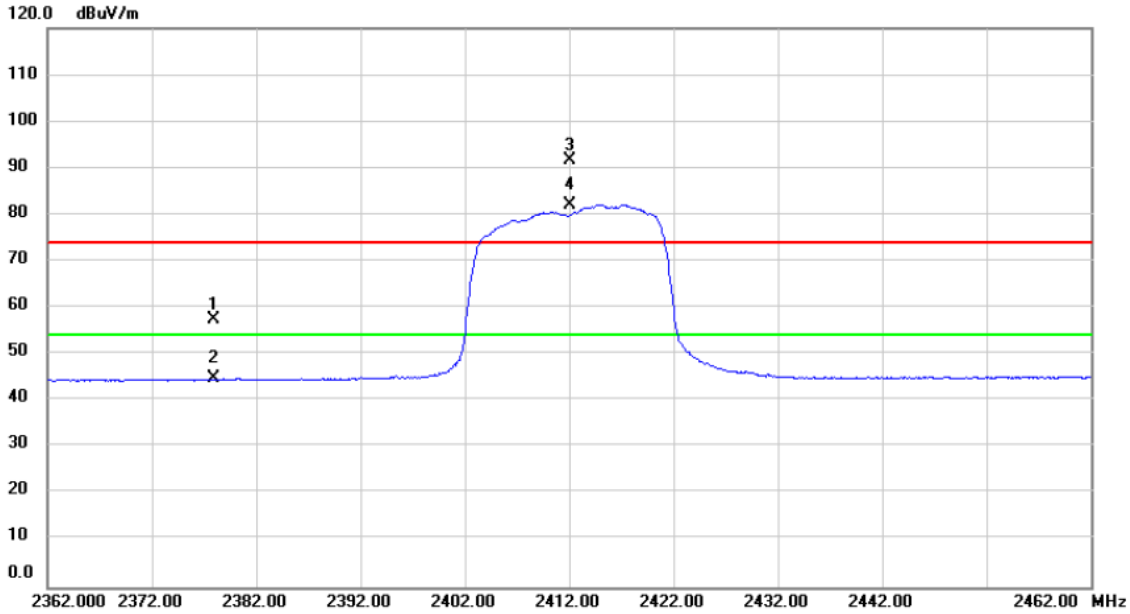
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4824.000	54.49	-11.37	43.12	74.00	-30.88	peak	
2	*	4824.000	43.58	-11.37	32.21	54.00	-21.79	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2412MHz_ θ =90°

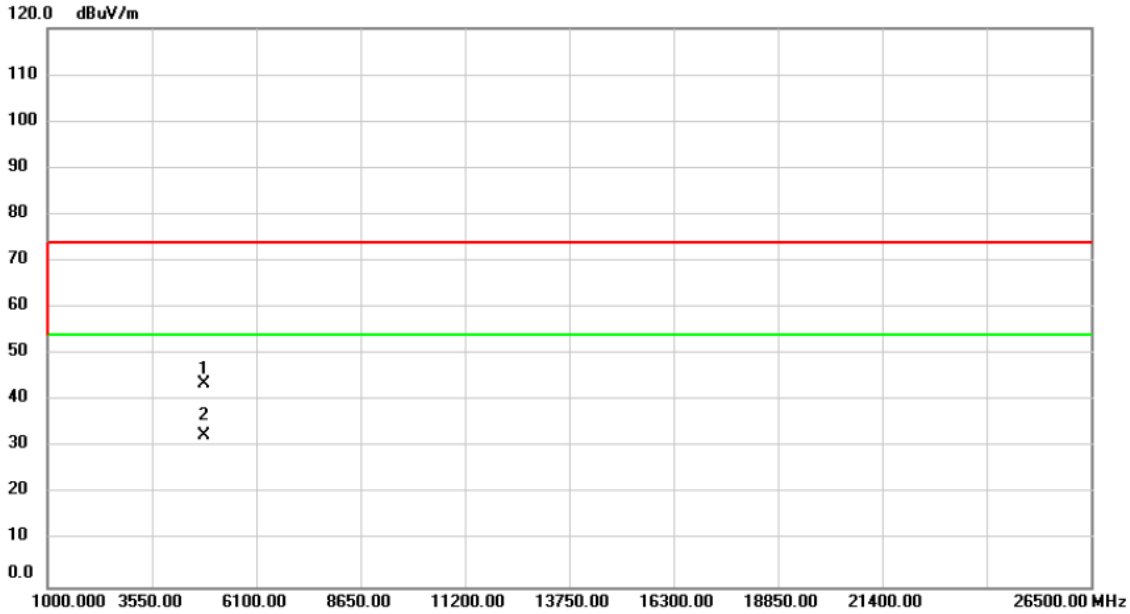
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2377.988	26.37	31.02	57.39	74.00	-16.61	peak	
2		2377.988	13.68	31.02	44.70	54.00	-9.30	AVG	
3	X	2412.000	60.56	31.14	91.70	74.00	17.70	peak	No Limit
4	*	2412.000	50.97	31.14	82.11	54.00	28.11	AVG	No Limit

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2412MHz_ θ =90°

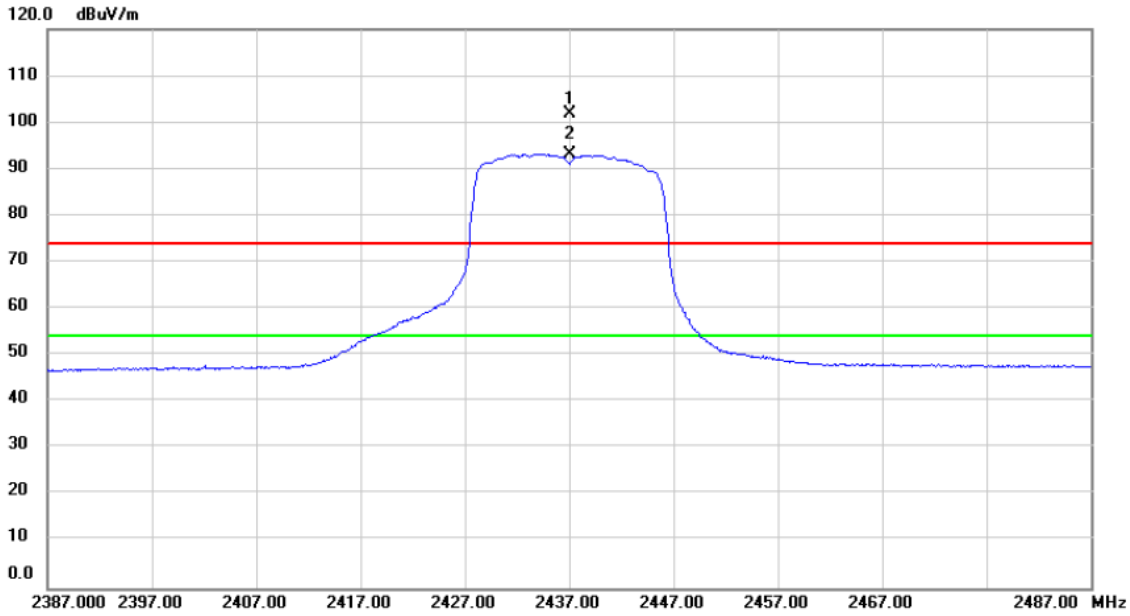
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4824.000	54.93	-11.37	43.56	74.00	-30.44	peak	
2	*	4824.000	43.97	-11.37	32.60	54.00	-21.40	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2437MHz_ θ =90°

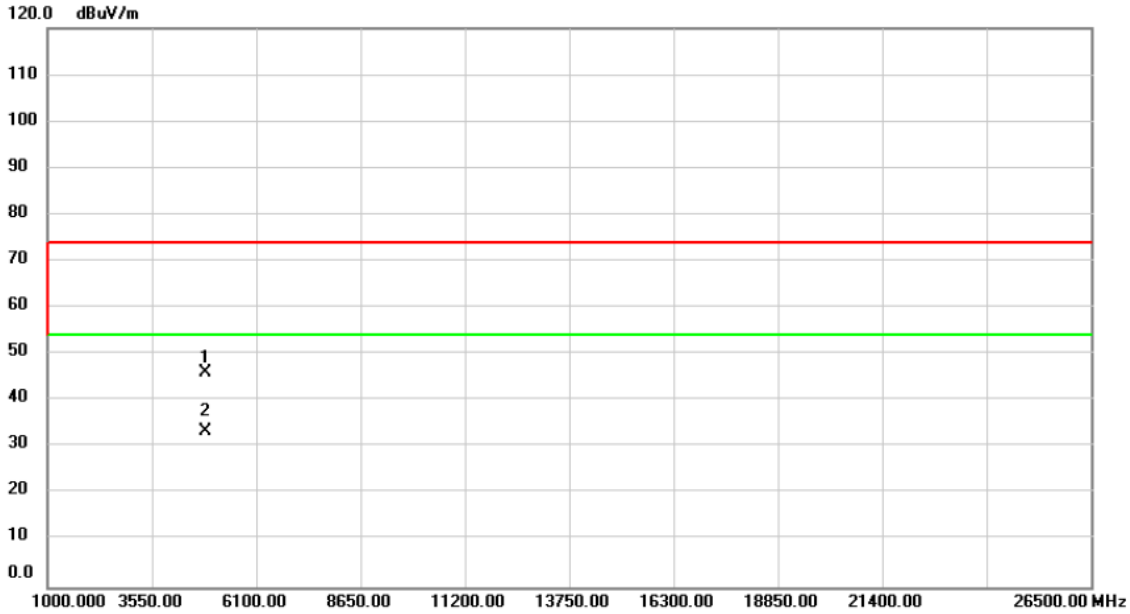
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2437.000	70.66	31.23	101.89	74.00	27.89	peak	No Limit
2	*	2437.000	62.06	31.23	93.29	54.00	39.29	AVG	No Limit

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2437MHz_ θ =90°

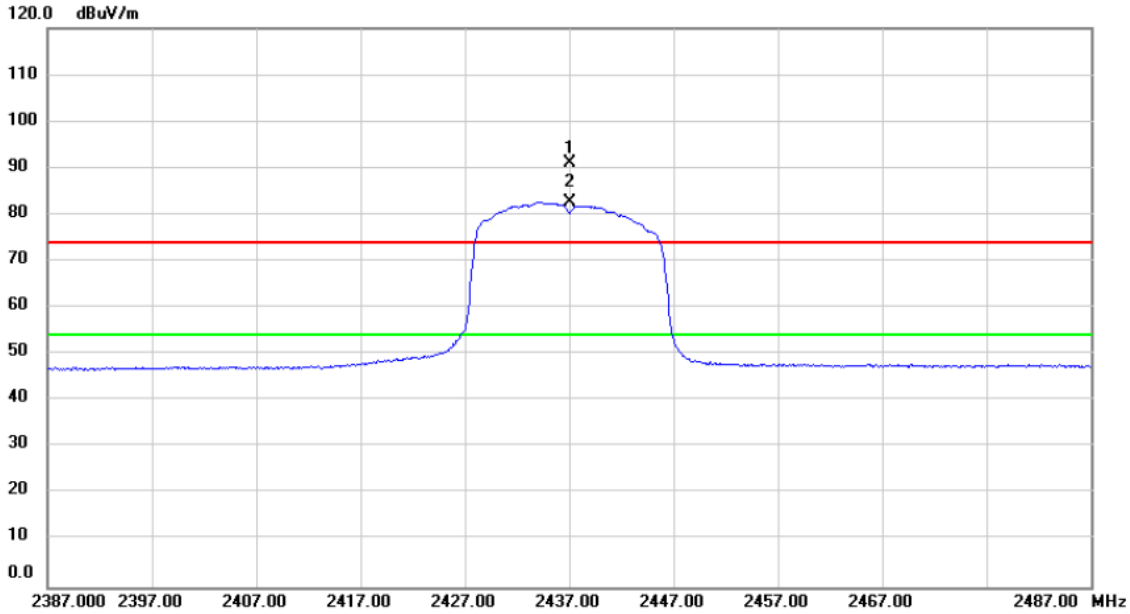
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4874.000	57.27	-11.29	45.98	74.00	-28.02	peak	
2	*	4874.000	44.80	-11.29	33.51	54.00	-20.49	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2437MHz_ θ =90°

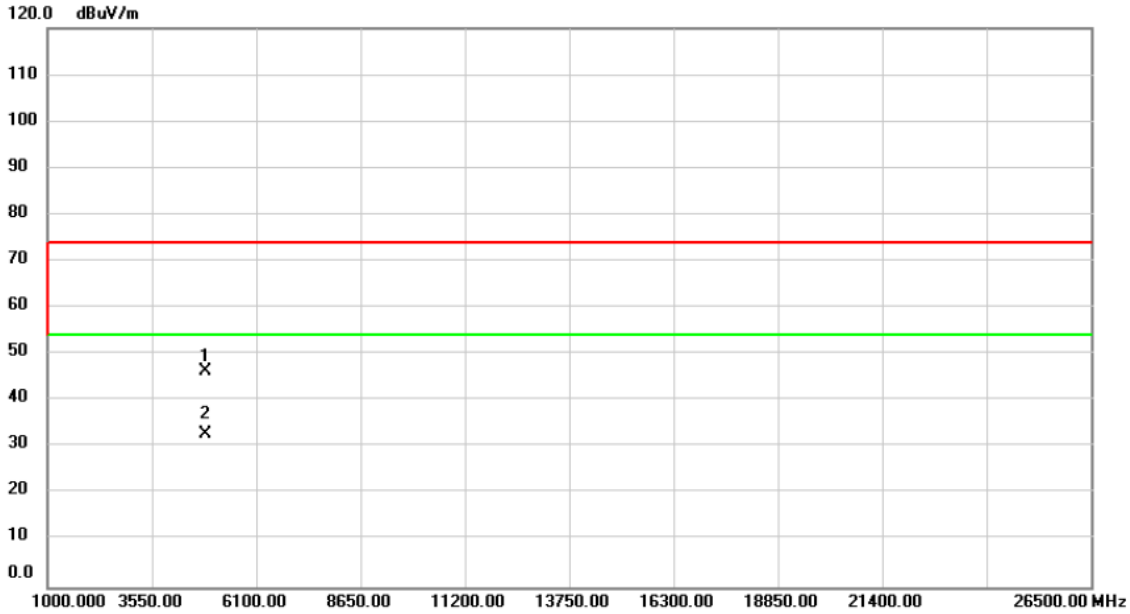
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2437.000	59.81	31.23	91.04	74.00	17.04	peak	No Limit
2	*	2437.000	51.43	31.23	82.66	54.00	28.66	AVG	No Limit

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2437MHz_ θ =90°

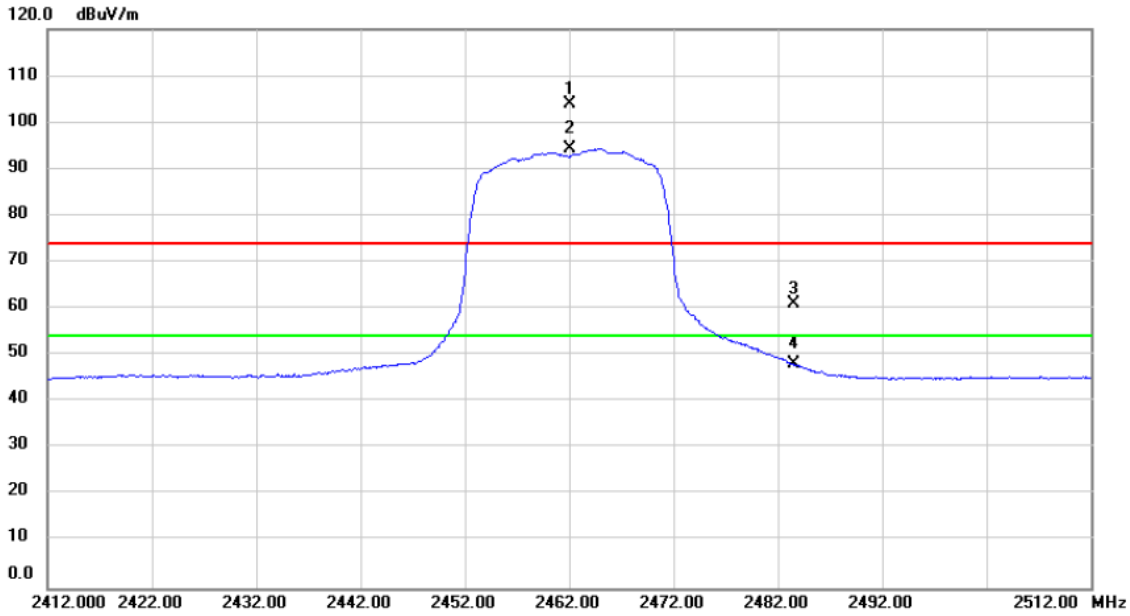
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4874.000	57.65	-11.29	46.36	74.00	-27.64	peak	
2	*	4874.000	44.06	-11.29	32.77	54.00	-21.23	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2462MHz_ θ =90°

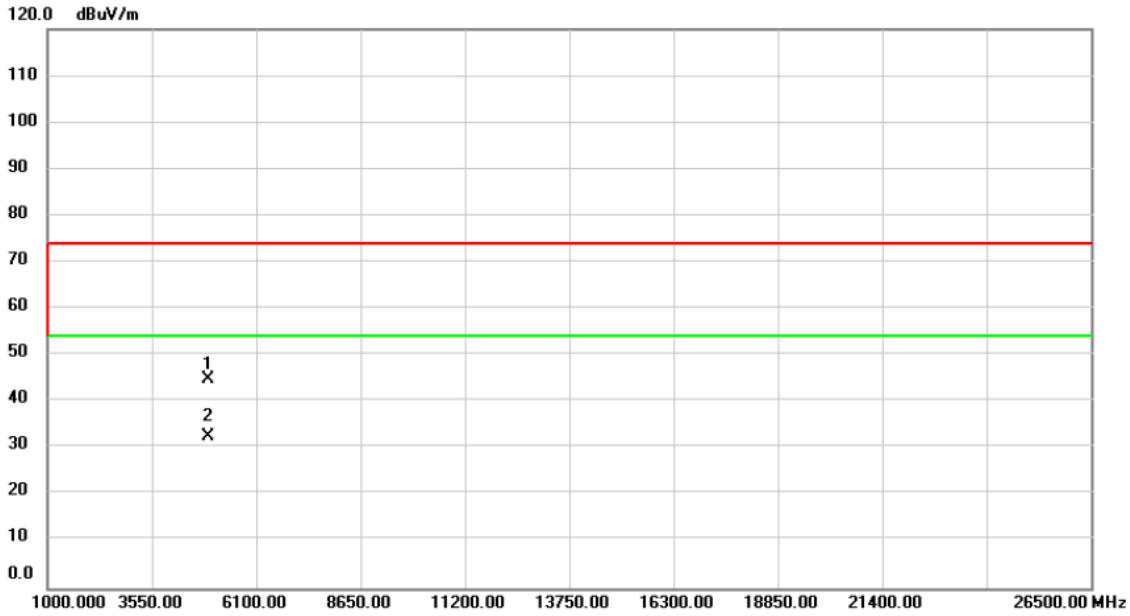
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2462.000	72.70	31.33	104.03	74.00	30.03	peak	No Limit
2	*	2462.000	63.05	31.33	94.38	54.00	40.38	AVG	No Limit
3		2483.500	29.65	31.41	61.06	74.00	-12.94	peak	
4		2483.500	16.87	31.41	48.28	54.00	-5.72	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2462MHz_ θ =90°

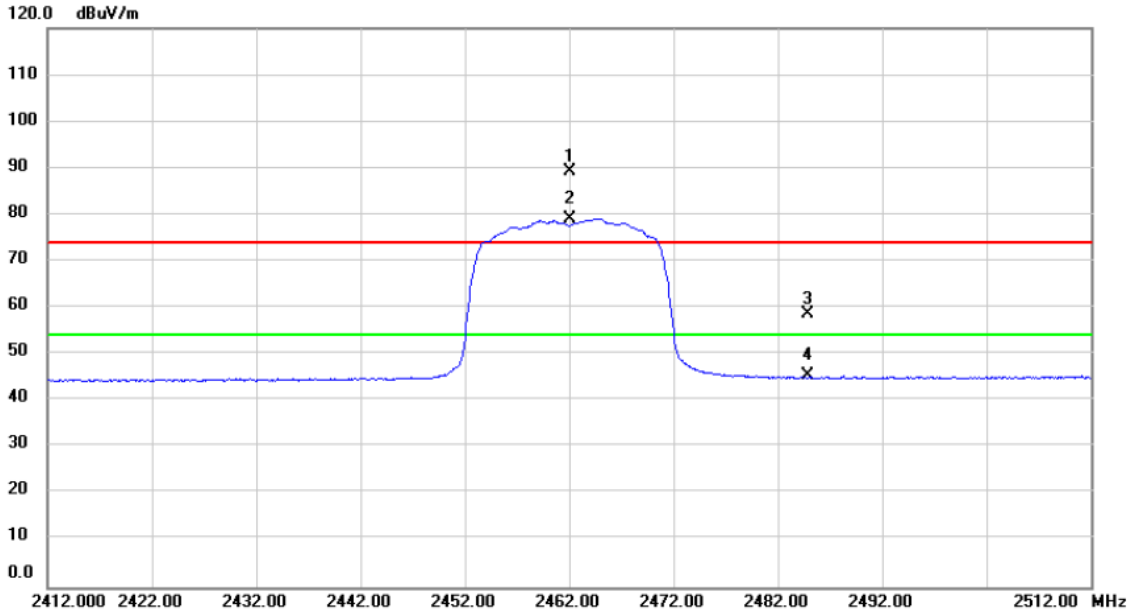
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4924.000	56.12	-11.22	44.90	74.00	-29.10	peak	
2	*	4924.000	43.77	-11.22	32.55	54.00	-21.45	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2462MHz_ θ =90°

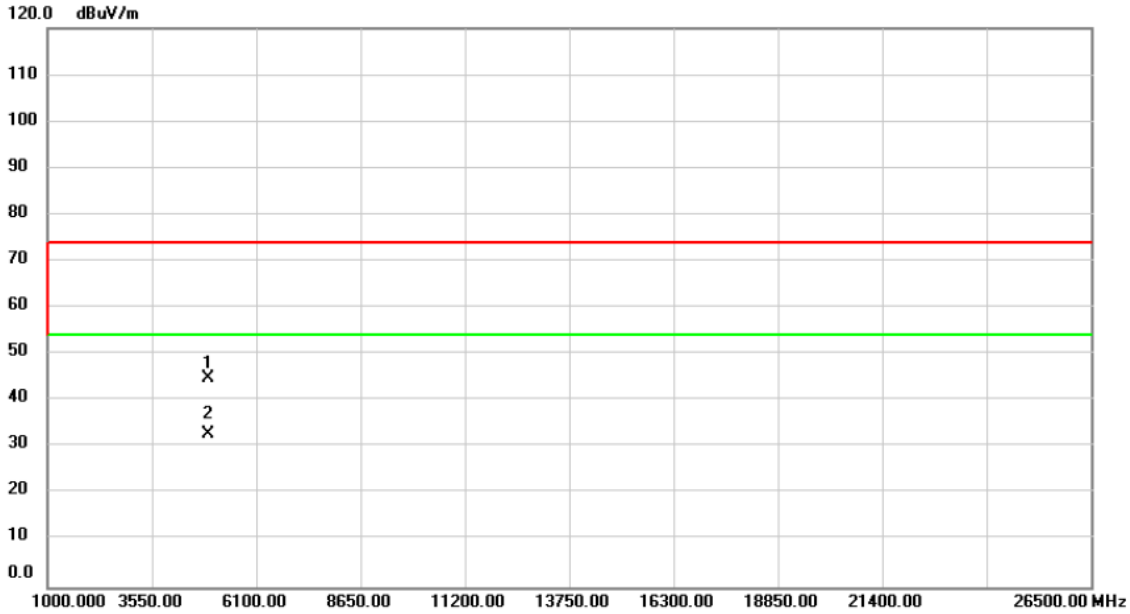
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2462.000	57.78	31.33	89.11	74.00	15.11	peak	No Limit
2	*	2462.000	47.68	31.33	79.01	54.00	25.01	AVG	No Limit
3		2484.811	27.25	31.42	58.67	74.00	-15.33	peak	
4		2484.811	14.12	31.42	45.54	54.00	-8.46	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2462MHz_ θ =90°

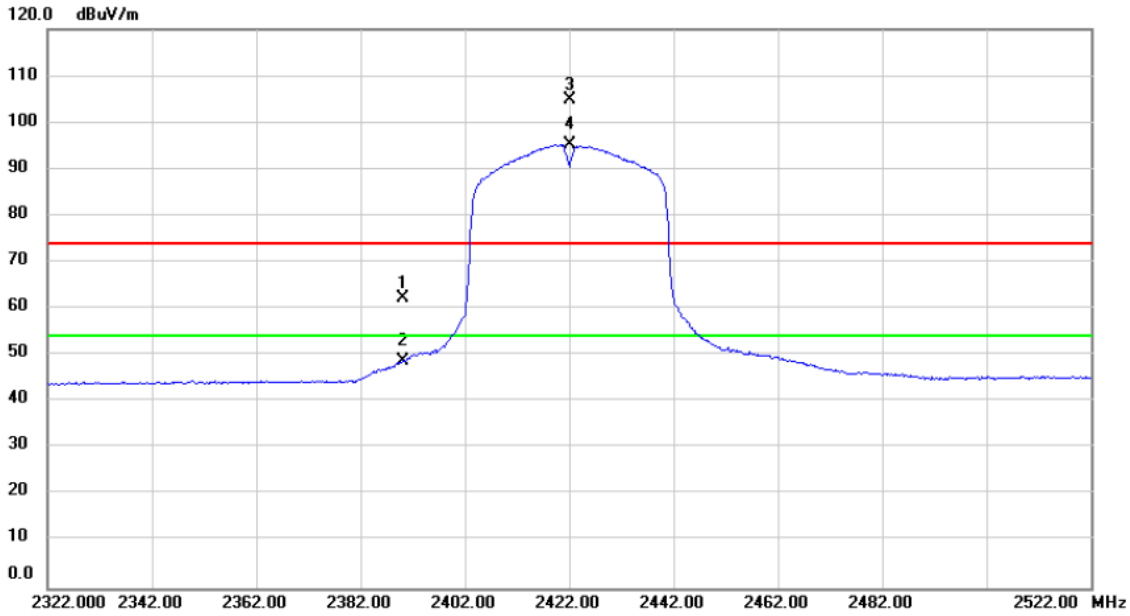
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4924.000	55.99	-11.22	44.77	74.00	-29.23	peak	
2	*	4924.000	44.06	-11.22	32.84	54.00	-21.16	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-40M MODE 2422MHz_ θ =90°

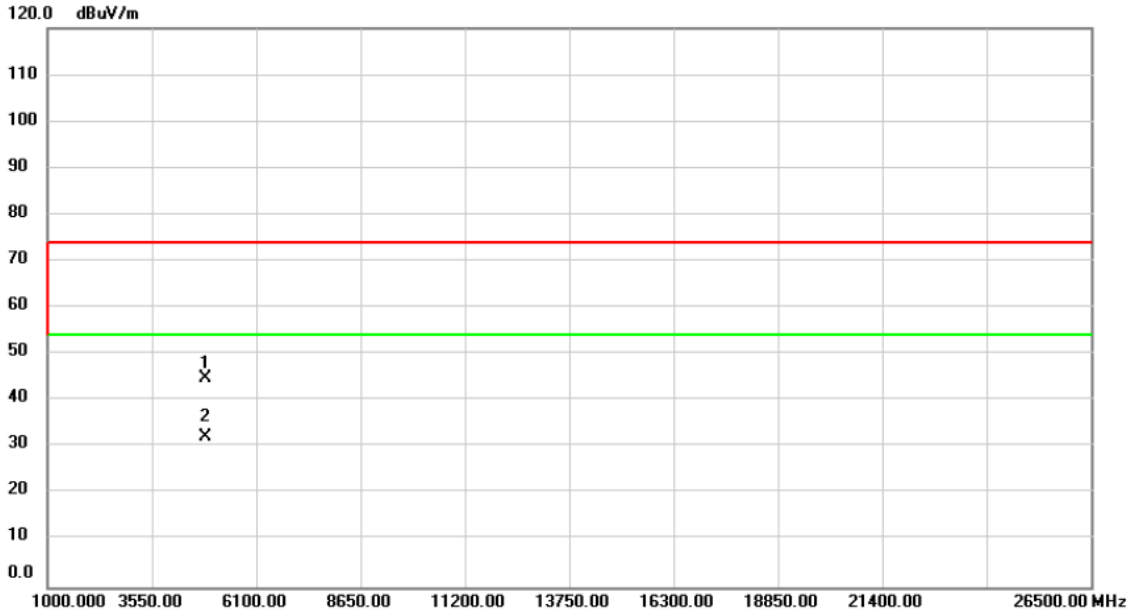
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2390.000	31.11	31.06	62.17	74.00	-11.83	peak	
2		2390.000	17.80	31.06	48.86	54.00	-5.14	AVG	
3	X	2422.000	73.77	31.18	104.95	74.00	30.95	peak	No Limit
4	*	2422.000	64.09	31.18	95.27	54.00	41.27	AVG	No Limit

Orthogonal Axis :	X
Test Mode :	TX N-40M MODE 2422MHz_ θ =90°

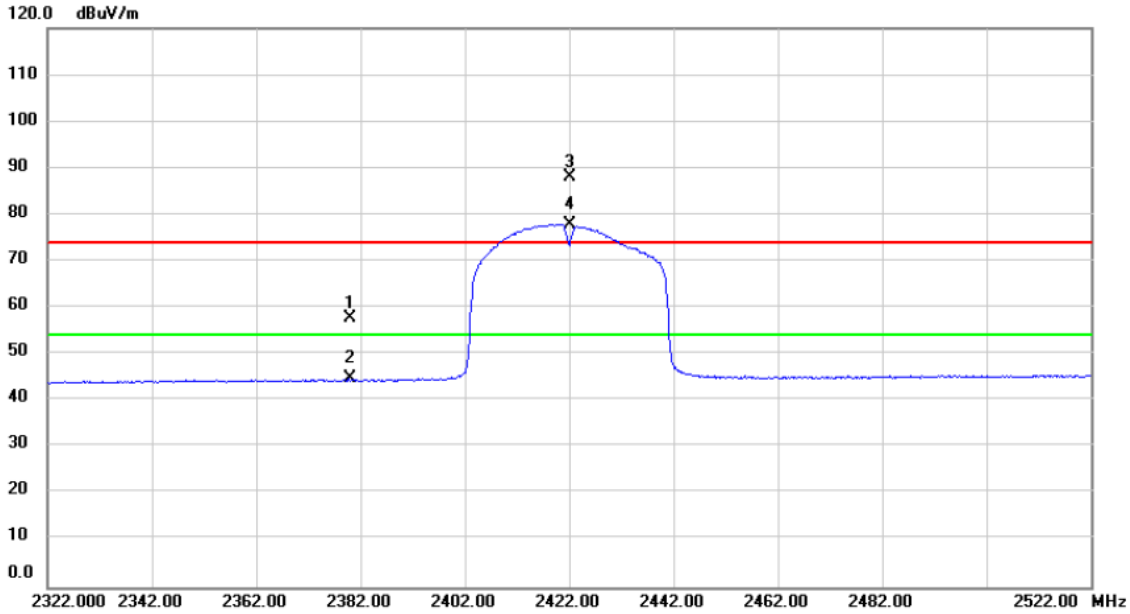
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4844.000	56.20	-11.34	44.86	74.00	-29.14	peak	
2	*	4844.000	43.45	-11.34	32.11	54.00	-21.89	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-40M MODE 2422MHz_ θ =90°

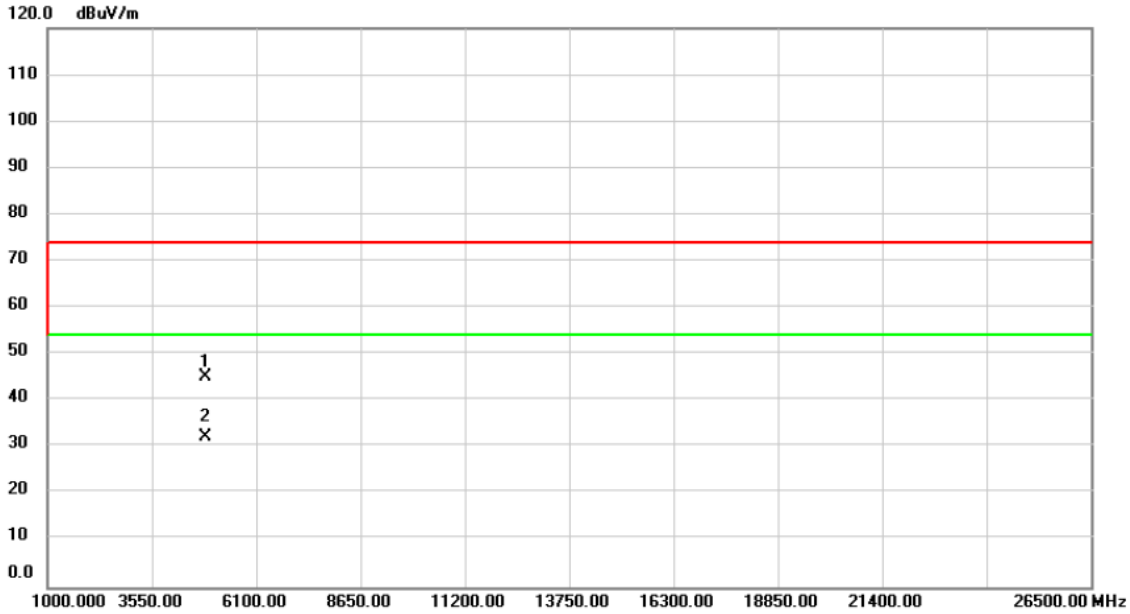
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2379.868	26.71	31.02	57.73	74.00	-16.27	peak	
2		2379.868	13.70	31.02	44.72	54.00	-9.28	AVG	
3	X	2422.000	56.79	31.18	87.97	74.00	13.97	peak	No Limit
4	*	2422.000	46.81	31.18	77.99	54.00	23.99	AVG	No Limit

Orthogonal Axis :	X
Test Mode :	TX N-40M MODE 2422MHz_ θ =90°

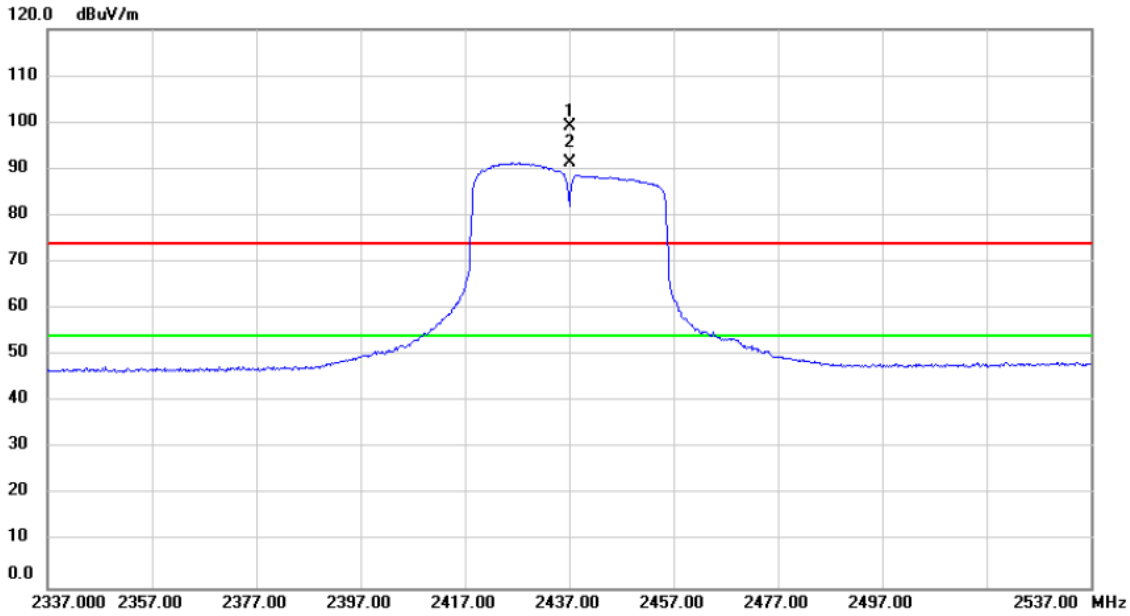
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4844.000	56.52	-11.34	45.18	74.00	-28.82	peak	
2	*	4844.000	43.60	-11.34	32.26	54.00	-21.74	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-40M MODE 2437MHz_ θ =90°

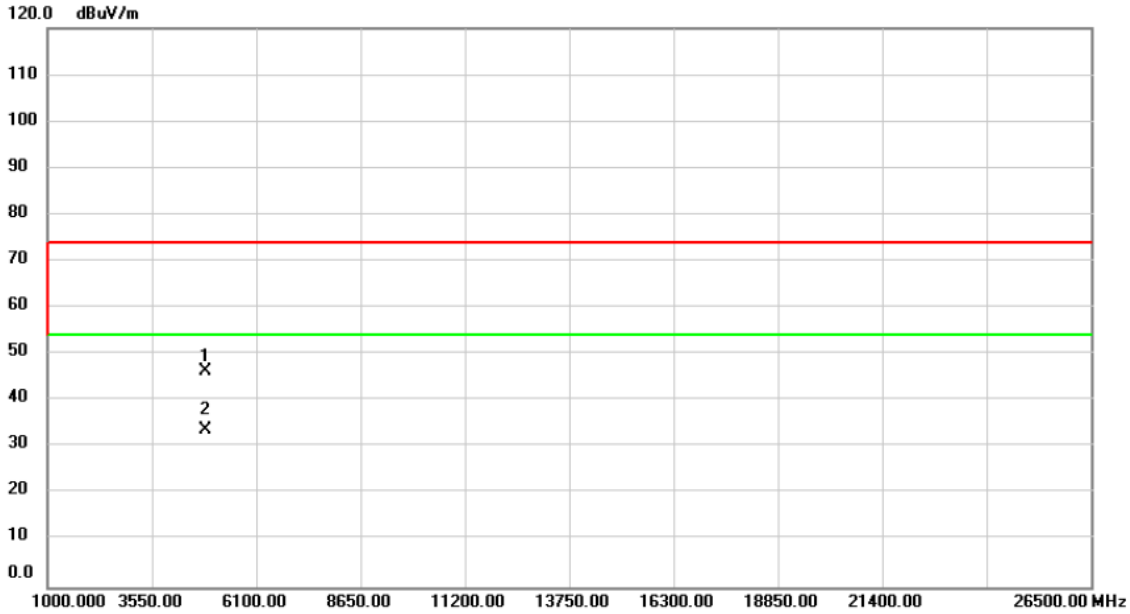
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2437.000	67.81	31.23	99.04	74.00	25.04	peak	No Limit
2	*	2437.000	60.16	31.23	91.39	54.00	37.39	AVG	No Limit

Orthogonal Axis :	X
Test Mode :	TX N-40M MODE 2437MHz_ θ =90°

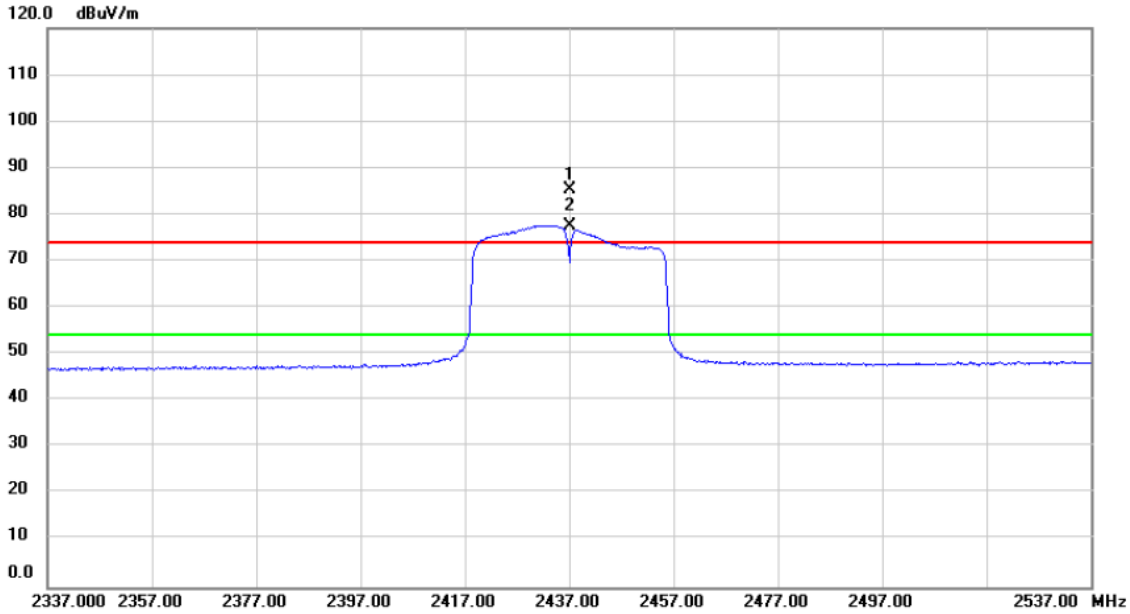
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4874.000	57.52	-11.29	46.23	74.00	-27.77	peak	
2	*	4874.000	45.15	-11.29	33.86	54.00	-20.14	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-40M MODE 2437MHz_ θ =90°

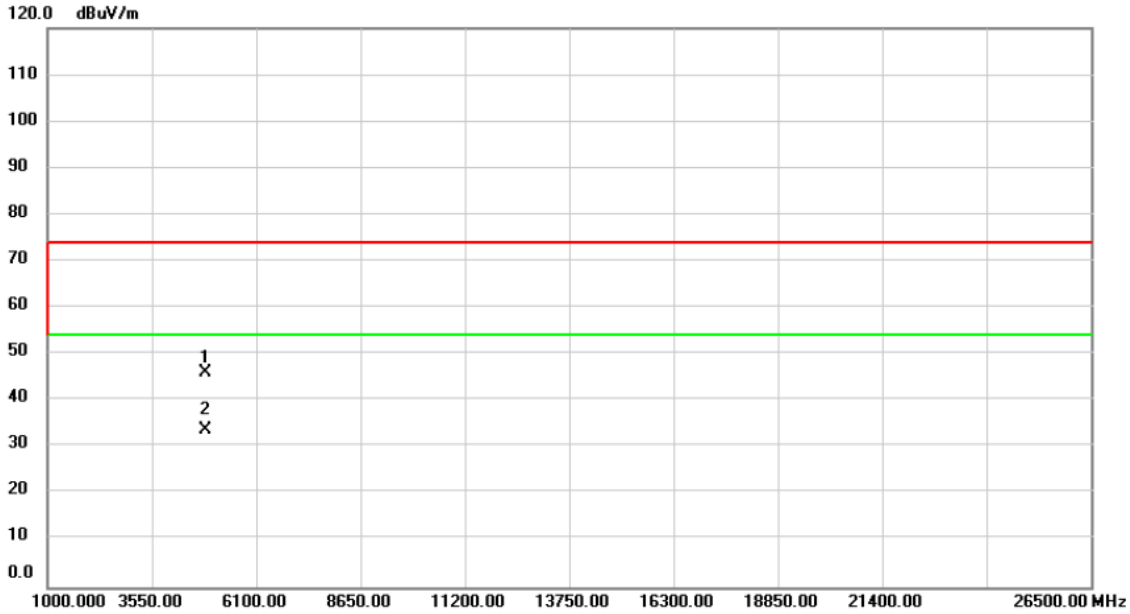
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2437.000	54.24	31.23	85.47	74.00	11.47	peak	No Limit
2	*	2437.000	46.42	31.23	77.65	54.00	23.65	AVG	No Limit

Orthogonal Axis :	X
Test Mode :	TX N-40M MODE 2437MHz_ θ =90°

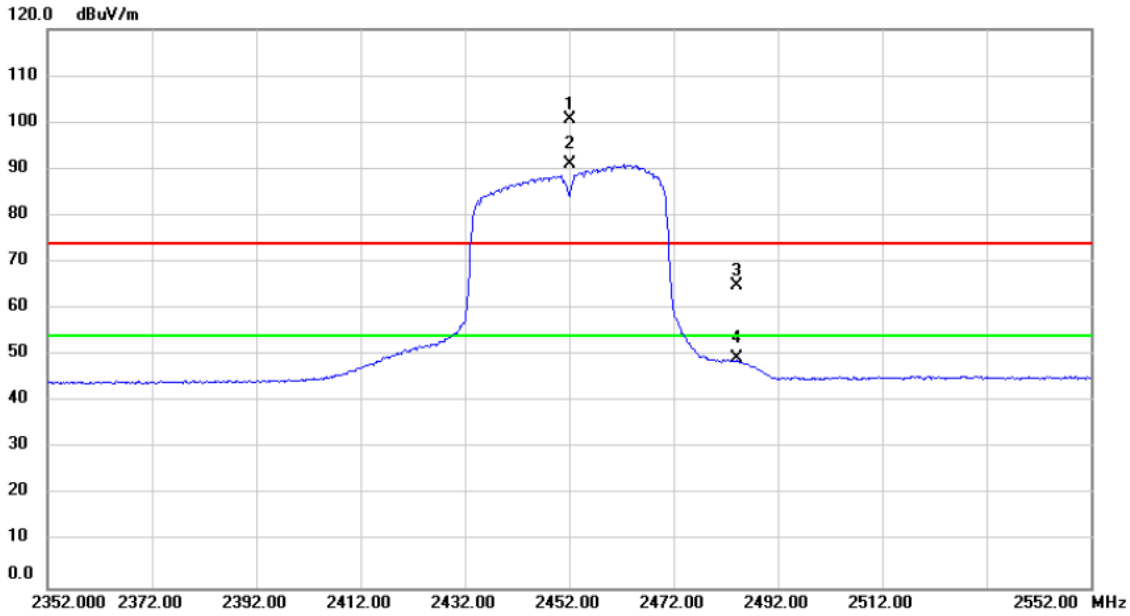
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4874.000	57.31	-11.29	46.02	74.00	-27.98	peak	
2	*	4874.000	45.11	-11.29	33.82	54.00	-20.18	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-40M MODE 2452MHz_ θ =90°

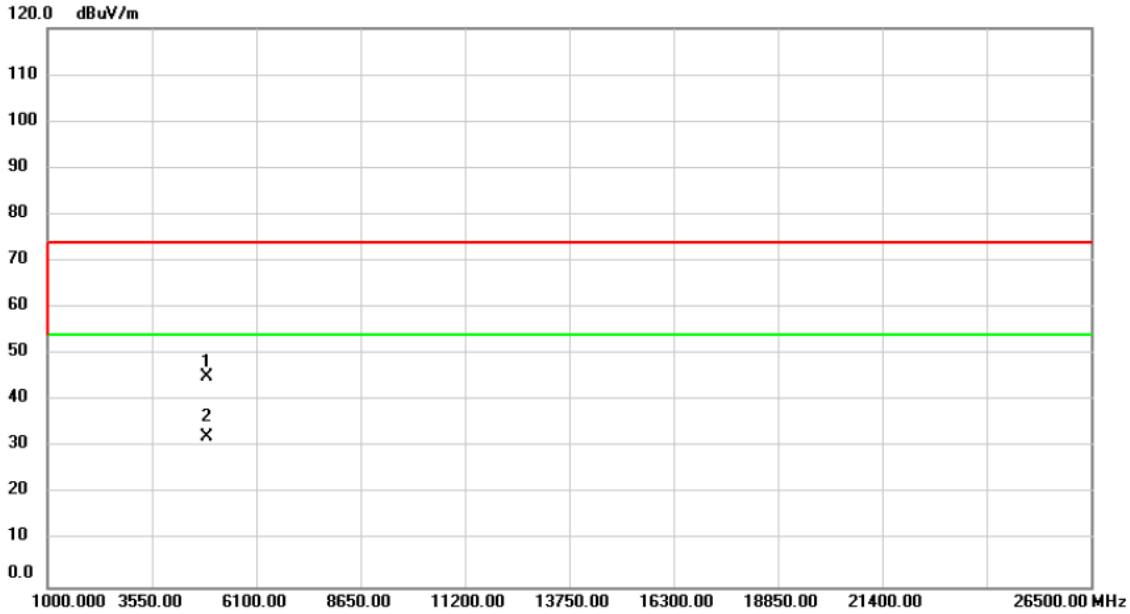
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2452.000	69.41	31.30	100.71	74.00	26.71	peak	No Limit
2	*	2452.000	59.64	31.30	90.94	54.00	36.94	AVG	No Limit
3		2484.177	33.58	31.42	65.00	74.00	-9.00	peak	
4		2484.177	17.81	31.42	49.23	54.00	-4.77	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-40M MODE 2452MHz_ θ =90°

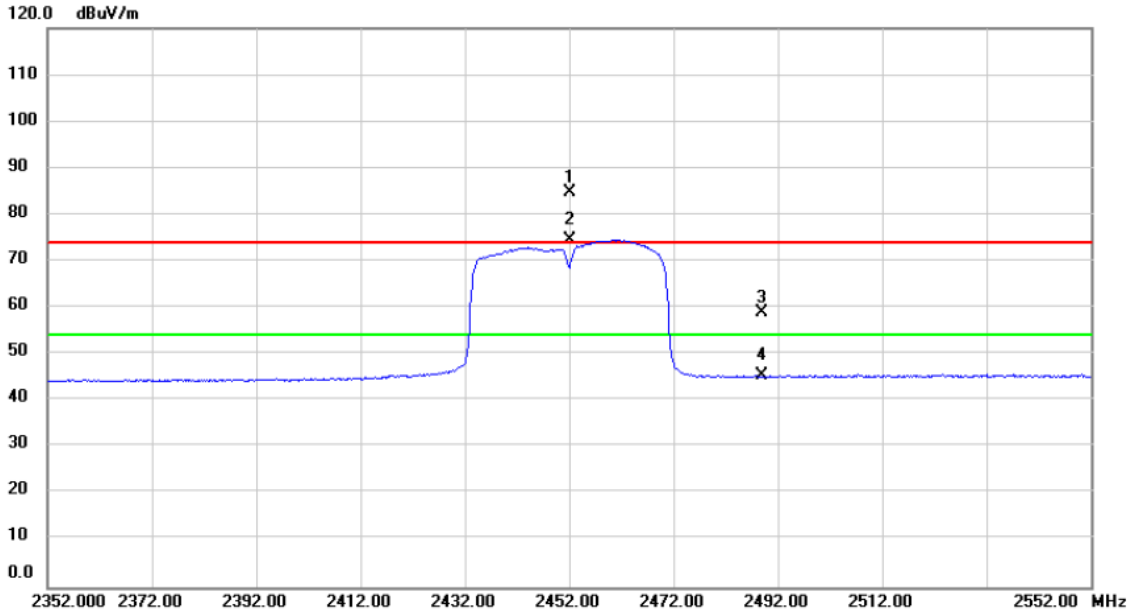
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4904.000	56.47	-11.24	45.23	74.00	-28.77	peak	
2	*	4904.000	43.43	-11.24	32.19	54.00	-21.81	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-40M MODE 2452MHz_ θ =90°

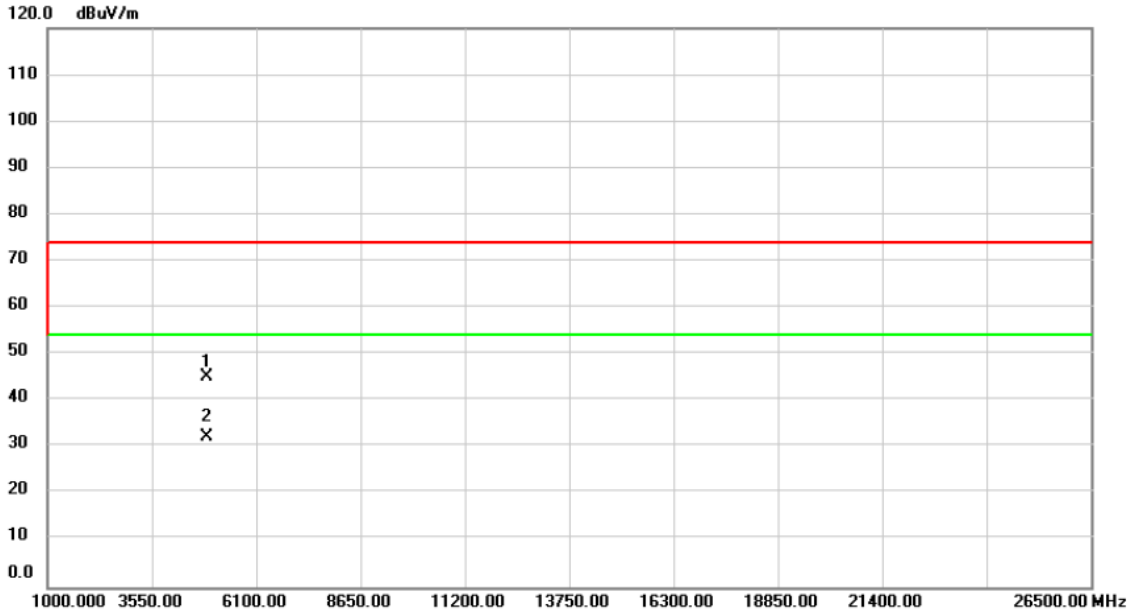
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2452.000	53.33	31.30	84.63	74.00	10.63	peak	No Limit
2	*	2452.000	43.27	31.30	74.57	54.00	20.57	AVG	No Limit
3		2488.813	27.66	31.43	59.09	74.00	-14.91	peak	
4		2488.813	14.05	31.43	45.48	54.00	-8.52	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-40M MODE 2452MHz_ θ =90°

Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4904.000	56.53	-11.24	45.29	74.00	-28.71	peak	
2	*	4904.000	43.57	-11.24	32.33	54.00	-21.67	AVG	