

FCC Radio Test Report

FCC ID: P27DBC831

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

Project No. : 1611139
Equipment : Wireless HD Doorbell Camera, Doorbell HD Wi-Fi Camera
Test Model : DBC831
Series Model : DBC831xxxxxxxx, VistaCam 1200xxxxx (the 1st x should be "blank" or "-"; the rest x could be 0 to 9, A to Z, "blank" or "-", for marking purpose)
Applicant : Sercomm Corporation
Address : 8F, No. 3-1, YuanQu St., NanKang, Taipei, Taiwan 115

Date of Receipt : Dec. 08, 2016
Date of Test : Dec. 08, 2016 ~ Dec. 22, 2016
Issued Date : Dec. 26, 2016
Tested by : BTL Inc.

Testing Engineer : Rush Kao
(Rush Kao)

Technical Manager : Jeff Yang
(Jeff Yang)

Authorized Signatory : Andy Chiu
(Andy Chiu)

B T L I N C .

B1, No.37, Lane 365, Yang Guang St.,
Nei-Hu District, Taipei City 114, Taiwan.
TEL:+886-2-2657-3299 FAX: +886-2- 2657-3331

Declaration

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

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

BTL's report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

This report is the confidential property of the client. As a mutual protection to the clients, the public and **BTL-self**, extracts from the test report shall not be reproduced except in full with **BTL's** authorized written approval.

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

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
1 . CERTIFICATION	6
2 . SUMMARY OF TEST RESULTS	7
2.1 TEST FACILITY	8
2.2 MEASUREMENT UNCERTAINTY	8
3 . GENERAL INFORMATION	10
3.1 GENERAL DESCRIPTION OF EUT	10
3.2 DESCRIPTION OF TEST MODES	11
3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING	12
3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	13
3.5 DESCRIPTION OF SUPPORT UNITS	13
4 . EMC EMISSION TEST	14
4.1 CONDUCTED EMISSION MEASUREMENT	14
4.1.1 POWER LINE CONDUCTED EMISSION LIMITS	14
4.1.2 TEST PROCEDURE	14
4.1.3 DEVIATION FROM TEST STANDARD	14
4.1.4 TEST SETUP	15
4.1.5 EUT OPERATING CONDITIONS	15
4.1.6 EUT TEST CONDITIONS	15
4.1.7 TEST RESULTS	15
4.2 RADIATED EMISSION MEASUREMENT	16
4.2.1 RADIATED EMISSION LIMITS	16
4.2.2 TEST PROCEDURE	17
4.2.3 DEVIATION FROM TEST STANDARD	17
4.2.4 TEST SETUP	18
4.2.5 EUT OPERATING CONDITIONS	19
4.2.6 EUT TEST CONDITIONS	19
4.2.7 TEST RESULTS (9KHZ TO 30MHZ)	19
4.2.8 TEST RESULTS (30MHZ TO 1000 MHZ)	19
4.2.9 TEST RESULTS (ABOVE 1000 MHZ)	19
5 . BANDWIDTH TEST	20
5.1 APPLIED PROCEDURES	20
5.1.1 TEST PROCEDURE	20
5.1.2 DEVIATION FROM STANDARD	20
5.1.3 TEST SETUP	20
5.1.4 EUT OPERATION CONDITIONS	20
5.1.5 EUT TEST CONDITIONS	20
5.1.6 TEST RESULTS	20
6 . MAXIMUM PEAK CONDUCTED OUTPUT POWER TEST	21

Table of Contents	Page
6.1 APPLIED PROCEDURES / LIMIT	21
6.1.1 TEST PROCEDURE	21
6.1.2 DEVIATION FROM STANDARD	21
6.1.3 TEST SETUP	21
6.1.4 EUT OPERATION CONDITIONS	21
6.1.5 EUT TEST CONDITIONS	21
6.1.6 TEST RESULTS	21
7 . ANTENNA CONDUCTED SPURIOUS EMISSION	22
7.1 APPLIED PROCEDURES / LIMIT	22
7.1.1 TEST PROCEDURE	22
7.1.2 DEVIATION FROM STANDARD	22
7.1.3 TEST SETUP	22
7.1.4 EUT OPERATION CONDITIONS	22
7.1.5 EUT TEST CONDITIONS	22
7.1.6 TEST RESULTS	22
8 . POWER SPECTRAL DENSITY TEST	23
8.1 APPLIED PROCEDURES / LIMIT	23
8.1.1 TEST PROCEDURE	23
8.1.2 DEVIATION FROM STANDARD	23
8.1.3 TEST SETUP	23
8.1.4 EUT OPERATION CONDITIONS	23
8.1.5 EUT TEST CONDITIONS	23
8.1.6 TEST RESULTS	23
9 . MEASUREMENT INSTRUMENTS LIST	24
10 . EUT TEST PHOTO	26
ATTACHMENT A - CONDUCTED EMISSION	30
ATTACHMENT B - RADIATED EMISSION (9KHZ TO 30MHZ)	33
ATTACHMENT C - RADIATED EMISSION (30MHZ TO 1000MHZ)	38
ATTACHMENT D - RADIATED EMISSION (ABOVE 1000MHZ)	41
ATTACHMENT E - BANDWIDTH	78
ATTACHMENT F – MAXIMUM PEAK CONDUCTED OUTPUT POWER	85
ATTACHMENT G - ANTENNA CONDUCTED SPURIOUS EMISSION	87
ATTACHMENT H - POWER SPECTRAL DENSITY	106

REPORT ISSUED HISTORY

Issued No.	Description	Issued Date
BTL-FCCP-1-1611139	Original Issue.	Dec. 26, 2016

1. CERTIFICATION

Equipment : Wireless HD Doorbell Camera, Doorbell HD Wi-Fi Camera
Brand Name : Sercomm ; Vera Control, Ltd. ; MiOS, Ltd.
Test Model : DBC831
Series Model : DBC831xxxxxxx, VistaCam 1200xxxxx (the 1st x should be "blank" or "-"; the rest x could be 0 to 9, A to Z, "blank" or "-", for marking purpose)
Applicant : Sercomm Corporation
Date of Test : Dec. 08, 2016 ~ Dec. 22, 2016
Test Sample : Engineering Sample
Standard(s) : FCC Part15, Subpart C:(15.247) / ANSI C63.10-2013

The above equipment has been tested and found 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-1-1611139) 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	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.

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

A. Conducted emission test:

Test Site	Method	Measurement Frequency Range	U,(dB)
C05	CISPR	150 kHz ~ 30MHz	3.06

B. Radiated emission test:

Test Site	Method	Measurement Frequency Range	U,(dB)
CB15 (3m)	CISPR	9kHz ~ 150kHz	2.96
		150kHz ~ 30MHz	2.74

Test Site	Method	Measurement Frequency Range	Ant.	U,(dB)
CB15 (3m)	CISPR	30MHz ~ 200MHz	V	4.76
		30MHz ~ 200MHz	H	4.28
		200MHz ~ 1,000MHz	V	5.08
		200MHz ~ 1,000MHz	H	4.50

Test Site	Method	Measurement Frequency Range	Ant.	U,(dB)
CB15 (3m)	CISPR	1GHz ~ 6GHz	V	4.48
		1GHz ~ 6GHz	H	4.50
		6GHz ~ 18GHz	V	4.30
		6GHz ~ 18GHz	H	4.14

Test Site	Method	Measurement Frequency Range	U,(dB)
CB15 (1m)	CISPR	18 ~ 26.5 GHz	4.72
		26.5 ~ 40 GHz	5.20

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	Wireless HD Doorbell Camera, Doorbell HD Wi-Fi Camera	
Brand Name	Sercomm ; Vera Control, Ltd. ; MiOS, Ltd.	
Test Model	DBC831	
Series Model	DBC831xxxxxxx, VistaCam 1200xxxxx (the 1st x should be "blank" or "-"; the rest x could be 0 to 9, A to Z, "blank" or "-", for marking purpose)	
Model Difference	The market distribution is different only.	
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: 20.31dBm 802.11g: 26.42dBm 802.11n(20MHz): 26.20dBm
Power Source	Supplied from AC source or host system or battery.	
Power Rating	I/P: AC8~24V Battery: DC 3.7V, 730mA	

Note:

- For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
- 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.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Note
1	SERCOM	DBC831	FPC	IPEX	0.31	NA

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	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 4	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

Note:

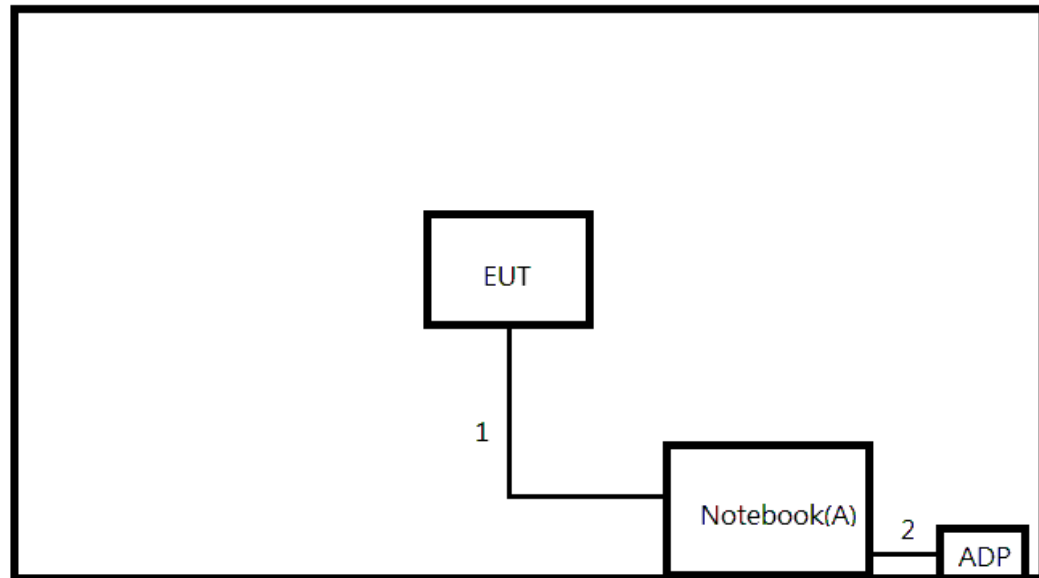
- (1) The measurements are performed at the high, middle, low available channels.
- (2) 802.11b mode: DBPSK (1Mbps)
 802.11g mode: OFDM (6Mbps)
 802.11n HT20 mode : BPSK (6.5Mbps)
 For radiated emission tests, the highest output powers were set for final test.
- (3) For radiated below 1G test, the 802.11b is found to be the worst case and recorded.
- (4) The EUT was programmed to be in continuously transmitting mode and the transmit duty cycle is not less than 98%.

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	Tera Term		
Frequency (MHz)	2412	2437	2462
802.11b	80	80	80
802.11g	80	80	72
802.11n (20MHz)	80	80	72

3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



3.5 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	Acer	Z8C	DOC -	N/A

Item	Shielded Type	Ferrite Core	Length	Note
1	NO	NO	0.8m	USB Cable
2	NO	NO	1.5m	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

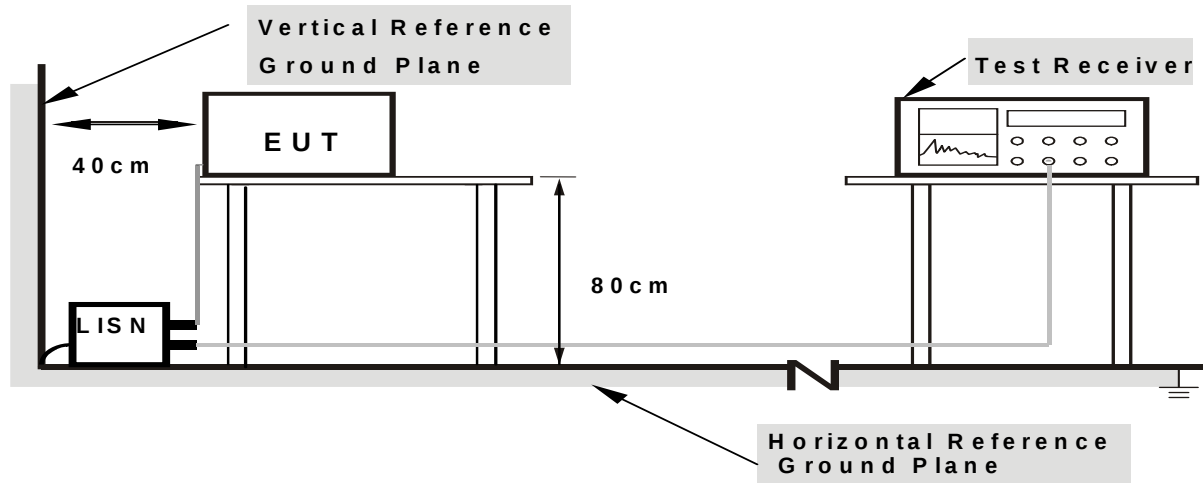
4.1.2 TEST PROCEDURE

- 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



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

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

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

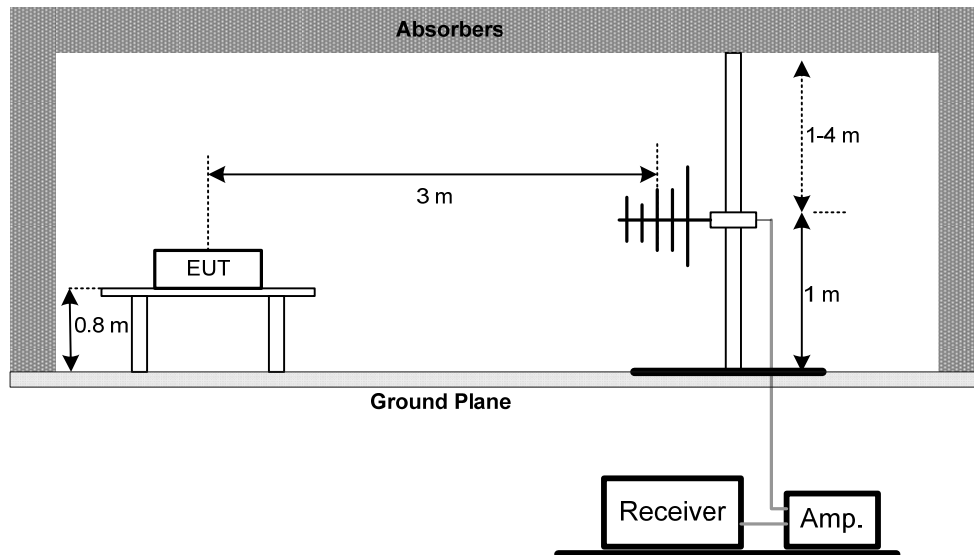
- The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
- The measuring distance of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

4.2.3 DEVIATION FROM TEST STANDARD

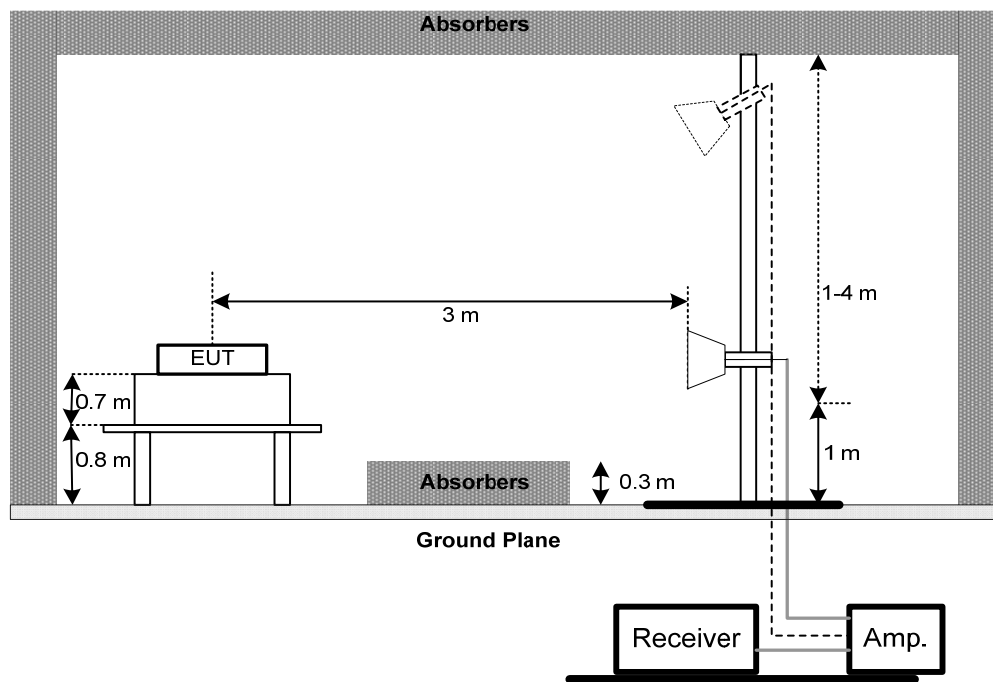
No deviation

4.2.4 TEST SETUP

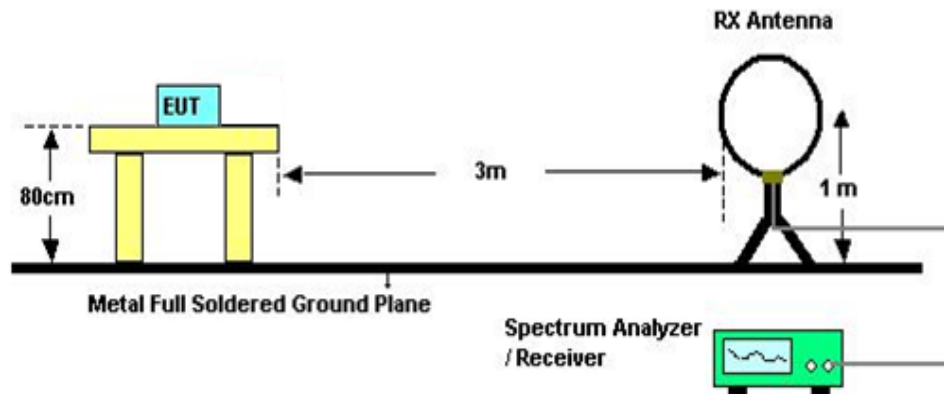
(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



(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: 25°C Relative Humidity: 55% 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 = $40 \log (\text{specific distance} / \text{test distance})$ (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

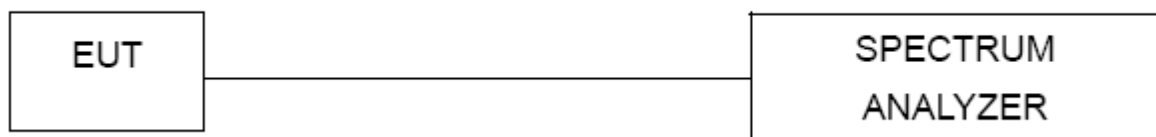
5.1.1 TEST PROCEDURE

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

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

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

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.

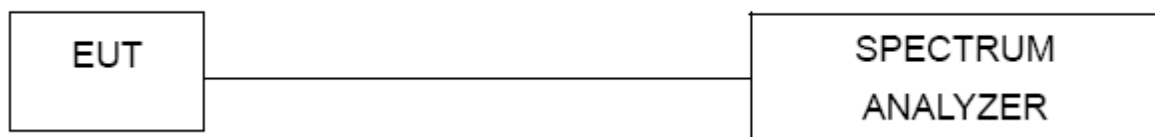
7.1.1 TEST PROCEDURE

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

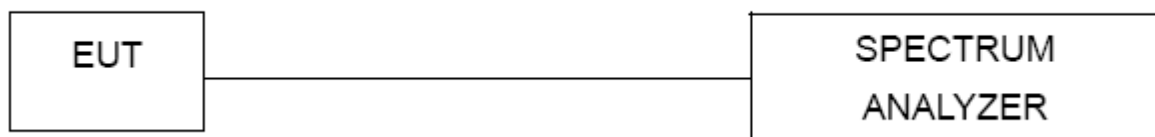
8.1.1 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- 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. 26, 2017
2	Test Cable	TIMES	CFD300-NL	C02	Jun. 15, 2017
3	EMI Test Receiver	R&S	ESR7	101433	Dec. 10, 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	EMI Receiver	Keysight	N9038A	MY55420127	Jan. 07, 2017
2	EXA Spectrum Analyzer	Keysight	N9010A	MY52220990	Feb. 23, 2017
3	Horn Antenna(1G~18G)	SCHWARZBECK	BBHA 9120 D	9120D-1342	Mar. 01, 2017
4	Trilog-Broadband Antenna(30M~1G)	Schwarzbeck	VULB9168	9168-548	Jan. 17, 2017
5	Pre-Amplifier(30M~1G)	EMCI	EMC02325	980217	Dec. 29, 2016
6	Pre-Amplifier(1G~26G)	EMCI	012645B	980267	Mar. 01, 2017
7	Test Cable	EMCI	EMC104-SM-S M-800	150207	Jan. 05, 2017
8	Test Cable	EMCI	EEMC104-SM-S M-3000	151205	Jan. 05, 2017
9	Test Cable	EMCI	S104-SMAP-2	M001220	Jan. 05, 2017
10	EXA Spectrum Analyzer	Agilent	N9010A	MY52220990	Feb. 24, 2017
11	EMI Test Receiver	Agilent	N9038A	MY51210215	Jan. 08, 2017
12	Loop Antenna	EMCO	6502	00042960	Nov. 24, 2017

6dB Bandwidth Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Jan. 18, 2017

Peak Output Power Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Jan. 18, 2017

Antenna Conducted Spurious Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Jan. 18, 2017

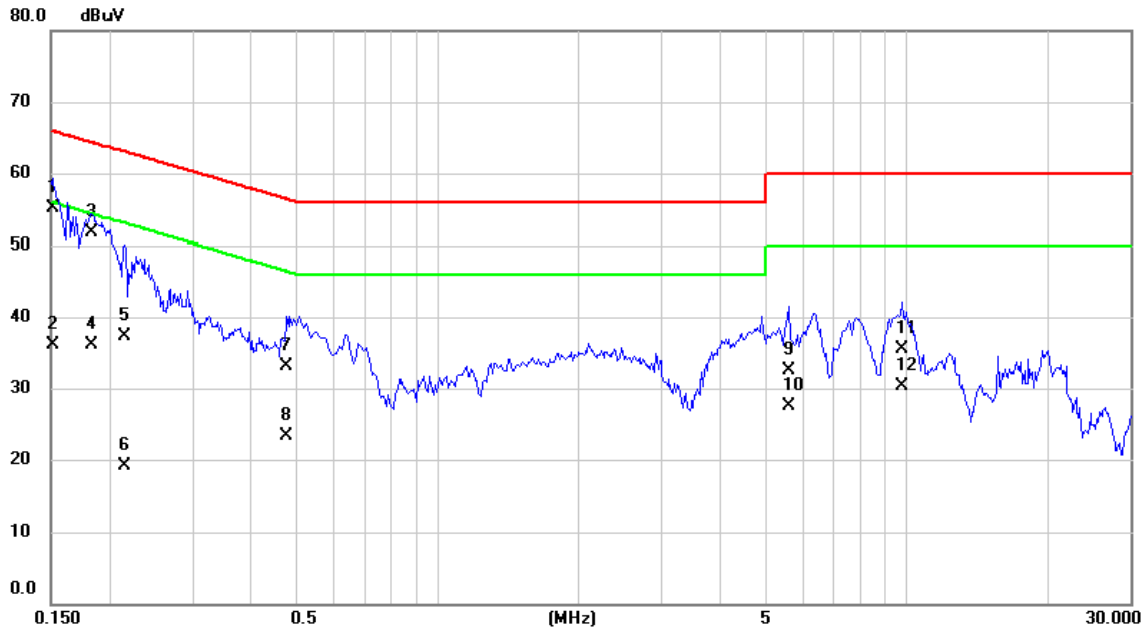
Power Spectral Density Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Jan. 18, 2017

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

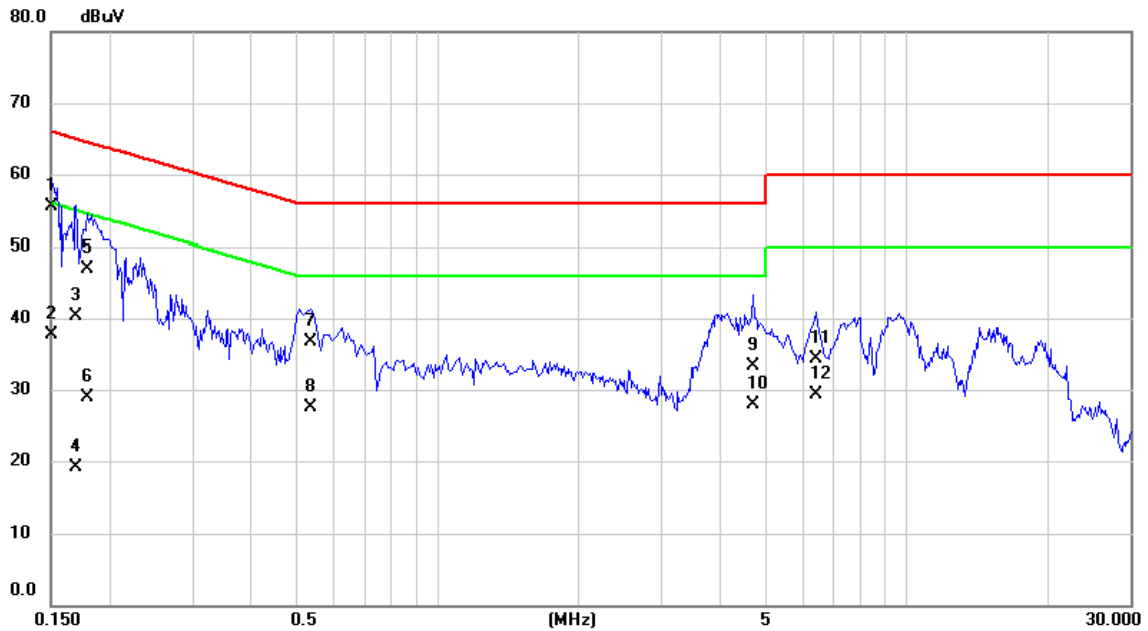
Line



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	*	0.1514	45.40	9.64	55.04	65.92	-10.88	QP	
2		0.1514	26.50	9.64	36.14	55.92	-19.78	AVG	
3		0.1836	42.00	9.64	51.64	64.32	-12.68	QP	
4		0.1836	26.50	9.64	36.14	54.32	-18.18	AVG	
5		0.2144	27.60	9.64	37.24	63.03	-25.79	QP	
6		0.2144	9.50	9.64	19.14	53.03	-33.89	AVG	
7		0.4776	23.40	9.63	33.03	56.38	-23.35	QP	
8		0.4776	13.60	9.63	23.23	46.38	-23.15	AVG	
9		5.6000	22.80	9.67	32.47	60.00	-27.53	QP	
10		5.6000	17.80	9.67	27.47	50.00	-22.53	AVG	
11		9.8000	25.80	9.70	35.50	60.00	-24.50	QP	
12		9.8000	20.70	9.70	30.40	50.00	-19.60	AVG	

Test Mode: Normal Link

Neutral

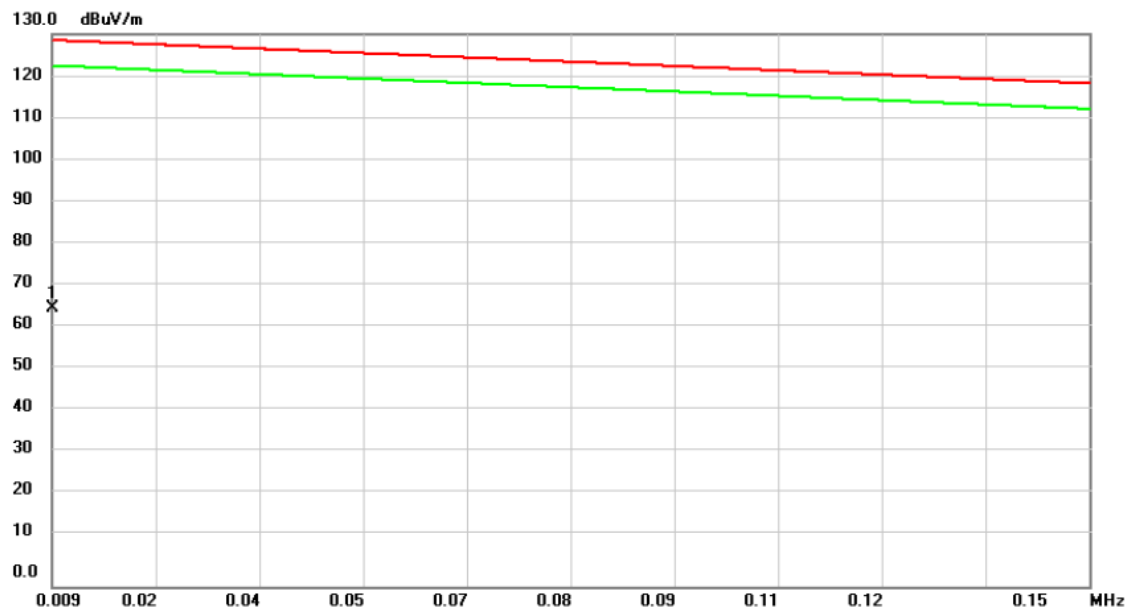


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	*	0.1500	45.90	9.65	55.55	66.00	-10.45	QP	
2		0.1500	28.00	9.65	37.65	56.00	-18.35	AVG	
3		0.1703	30.60	9.65	40.25	64.95	-24.70	QP	
4		0.1703	9.40	9.65	19.05	54.95	-35.90	AVG	
5		0.1794	37.30	9.64	46.94	64.51	-17.57	QP	
6		0.1794	19.30	9.64	28.94	54.51	-25.57	AVG	
7		0.5360	27.10	9.63	36.73	56.00	-19.27	QP	
8		0.5360	17.90	9.63	27.53	46.00	-18.47	AVG	
9		4.6940	23.70	9.67	33.37	56.00	-22.63	QP	
10		4.6940	18.30	9.67	27.97	46.00	-18.03	AVG	
11		6.4000	24.60	9.68	34.28	60.00	-25.72	QP	
12		6.4000	19.60	9.68	29.28	50.00	-20.72	AVG	

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

Test Mode: TX MODE

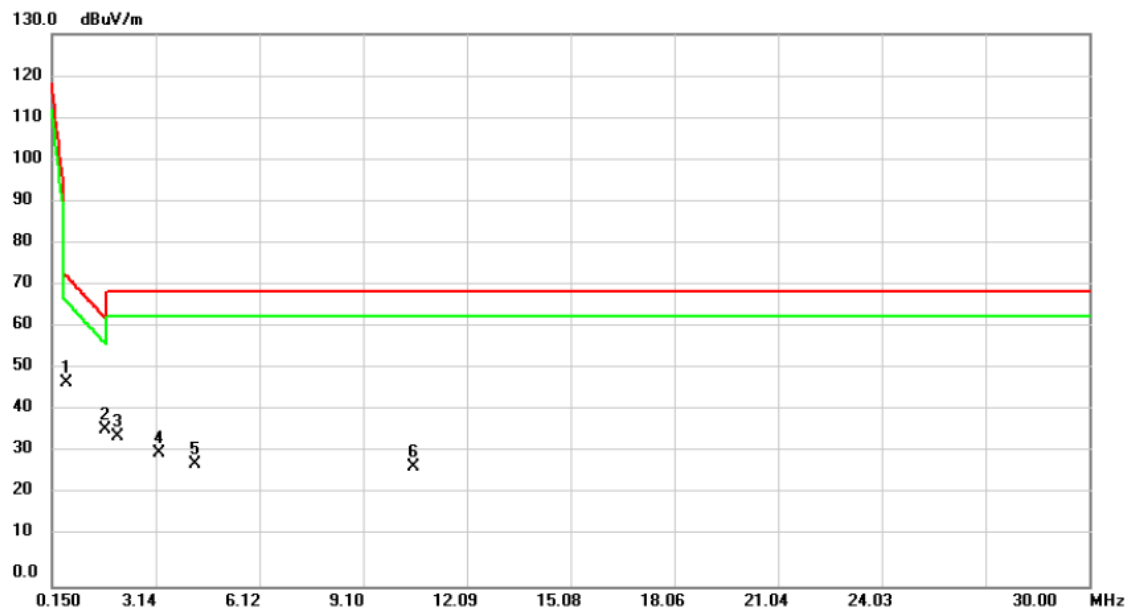
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree
1	*	0.0091	44.96	20.50	65.46	128.51	-63.05	peak	100	65

Test Mode: TX MODE

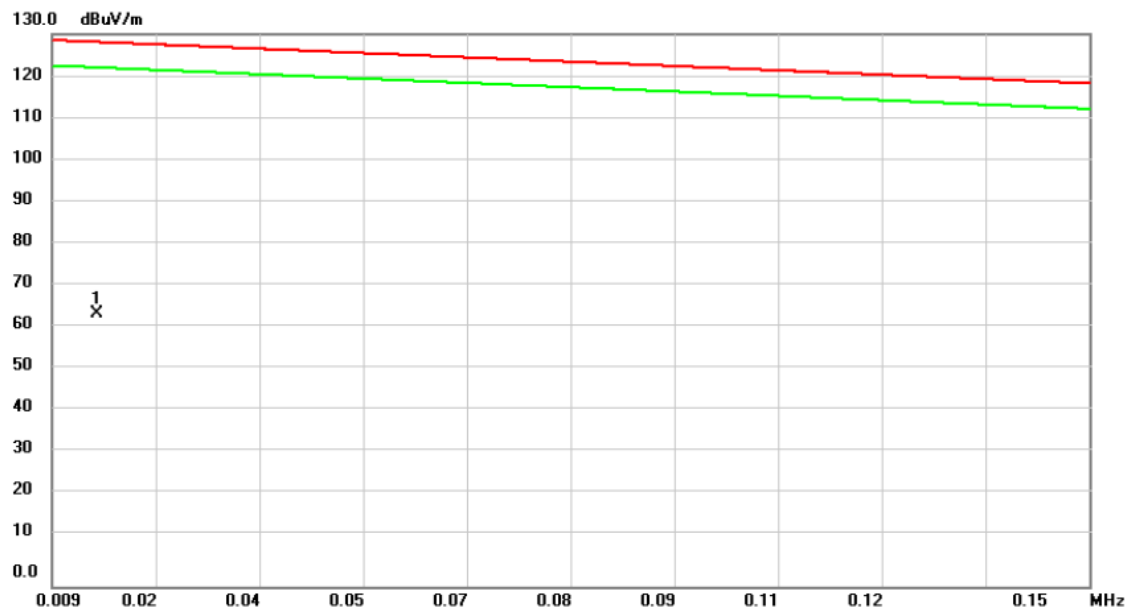
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	0.5680	36.24	11.83	48.07	73.10	-25.03	peak	100	319
2		1.6724	25.08	11.70	36.78	63.26	-26.48	peak	100	30
3		2.0305	23.84	11.54	35.38	69.54	-34.16	peak	100	174
4		3.2244	20.14	11.13	31.27	69.54	-38.27	peak	100	231
5		4.2693	17.43	11.29	28.72	69.54	-40.82	peak	100	359
6		10.5378	16.70	11.28	27.98	69.54	-41.56	peak	100	30

Test Mode: TX MODE

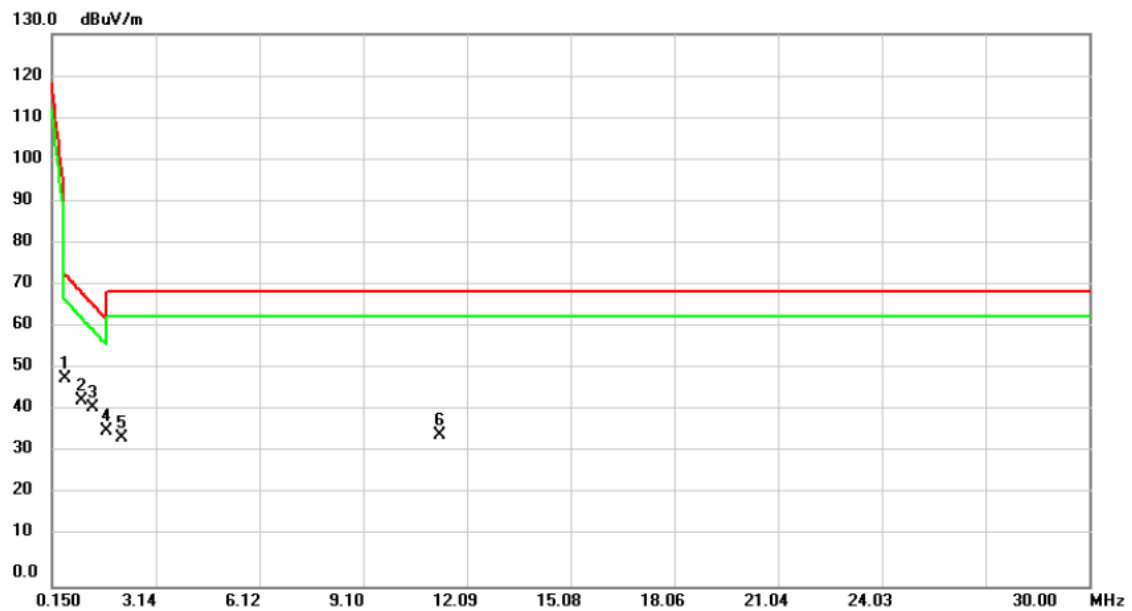
Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	0.0152	45.23	19.07	64.30	128.07	-63.77	peak	100	93

Test Mode: TX MODE

Ant 90°

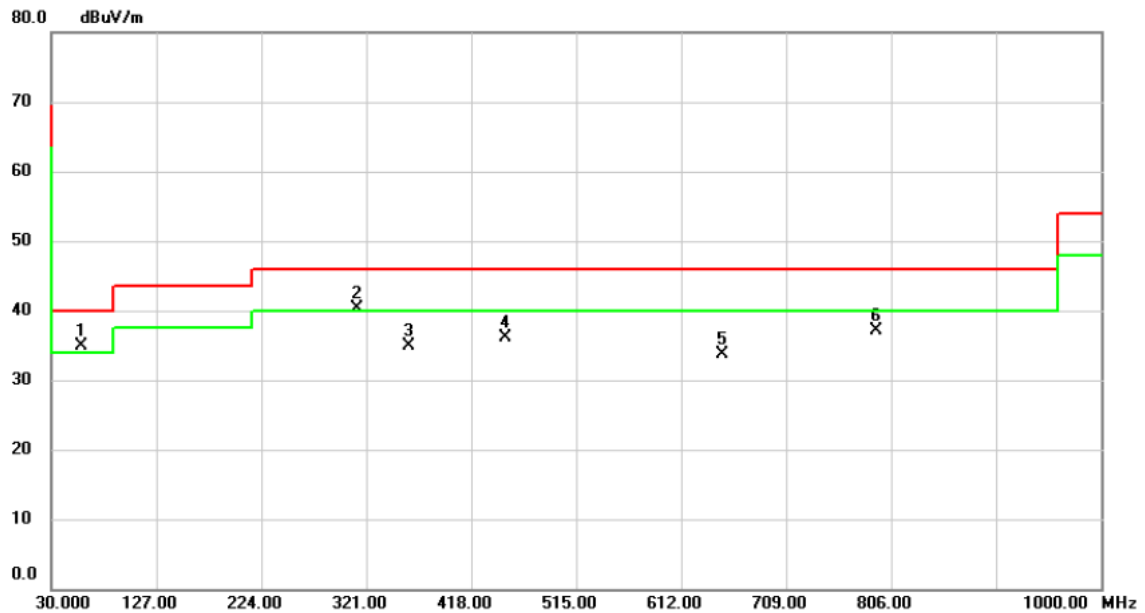


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	0.5381	37.16	11.82	48.98	73.37	-24.39	peak	100	350
2		0.9858	31.75	11.99	43.74	69.38	-25.64	peak	100	262
3		1.3141	30.12	11.86	41.98	66.45	-24.47	peak	100	157
4		1.7022	24.86	11.68	36.54	62.99	-26.45	peak	100	41
5		2.1500	23.45	11.48	34.93	69.54	-34.61	peak	100	304
6		11.3140	24.43	11.26	35.69	69.54	-33.85	peak	100	319

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

Test Mode: TX MODE

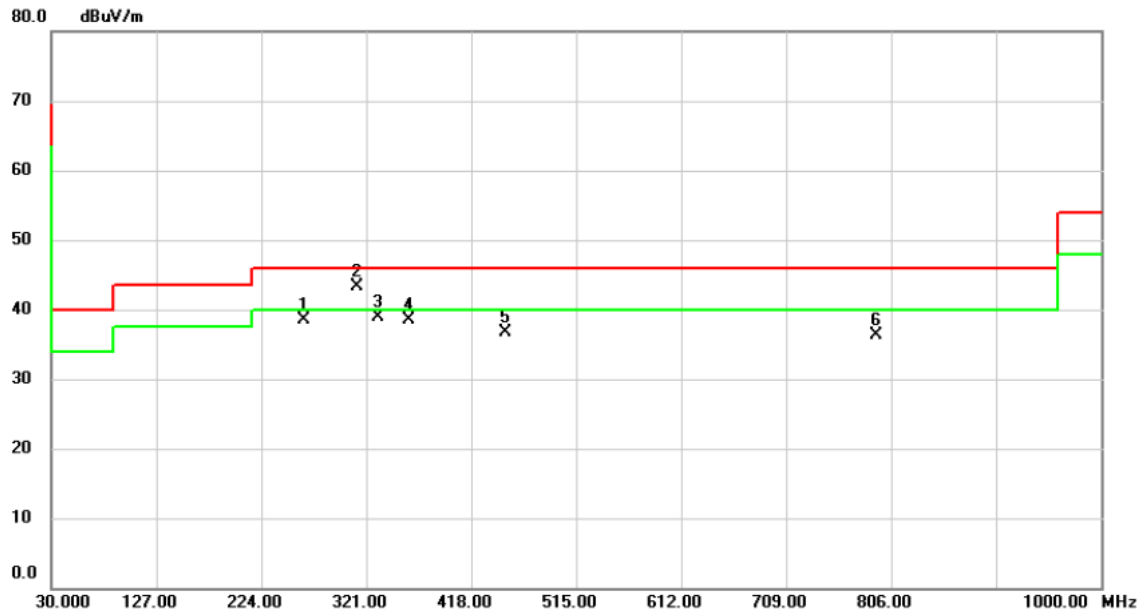
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	57.1600	43.78	-8.83	34.95	40.00	-5.05	peak	100	188
2	!	312.2700	47.66	-7.44	40.22	46.00	-5.78	peak	100	29
3		359.8000	40.98	-6.12	34.86	46.00	-11.14	peak	250	0
4		450.0100	40.04	-3.86	36.18	46.00	-9.82	peak	100	40
5		649.8300	34.01	-0.23	33.78	46.00	-12.22	peak	100	262
6		792.4200	34.77	2.34	37.11	46.00	-8.89	peak	140	360

Test Mode: TX MODE

Horizontal

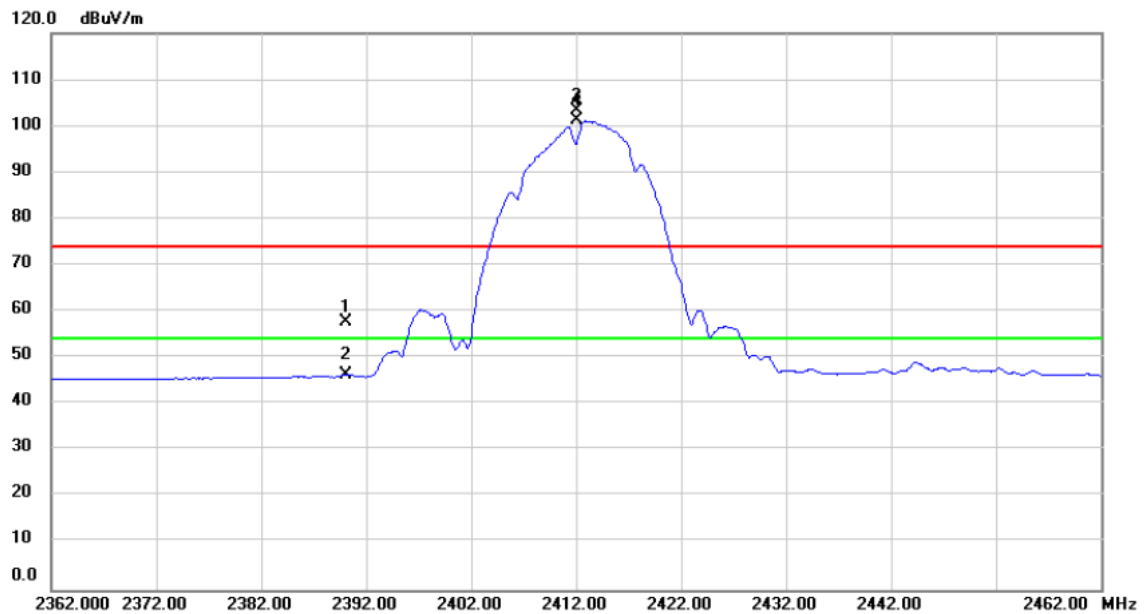


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Antenna Height cm	Table Degree	Comment
1		263.7700	47.44	-8.90	38.54	46.00	-7.46	peak	100	35	
2	*	312.2700	50.82	-7.44	43.38	46.00	-2.62	peak	100	35	
3		331.6700	45.79	-6.87	38.92	46.00	-7.08	peak	100	281	
4		359.8000	44.68	-6.12	38.56	46.00	-7.44	peak	100	292	
5		450.0100	40.61	-3.86	36.75	46.00	-9.25	peak	100	125	
6		792.4200	33.95	2.34	36.29	46.00	-9.71	peak	100	24	

ATTACHMENT D - RADIATED EMISSION (ABOVE 1000MHZ)

Orthogonal Axis :	X
Test Mode :	TX B MODE 2412MHz

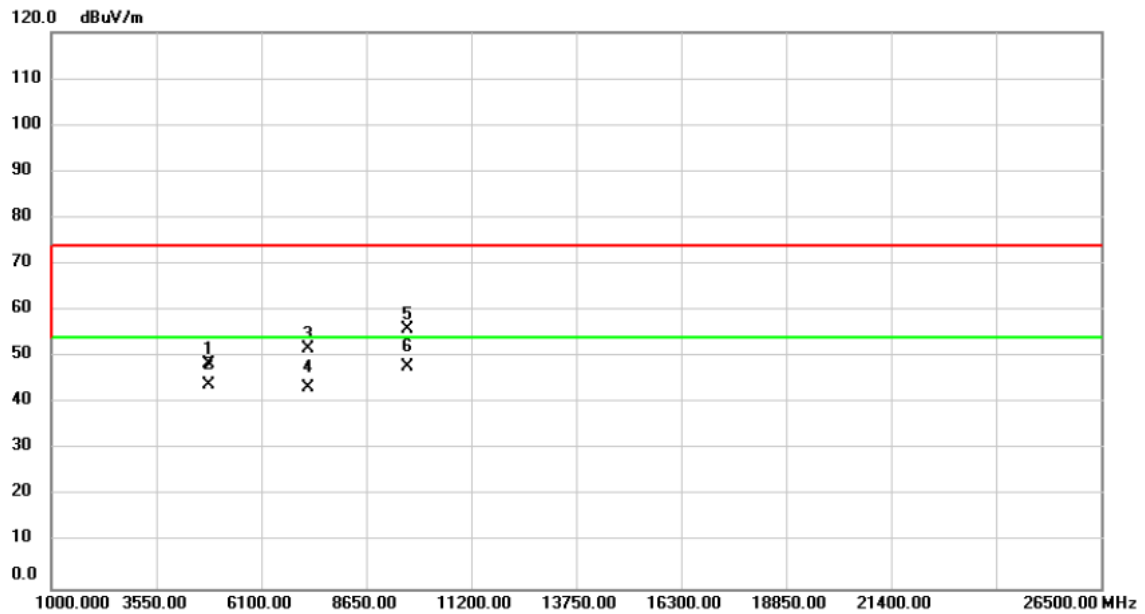
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Antenna Height cm	Table Degree	Comment
1		2390.000	26.69	30.96	57.65	74.00	-16.35	peak	336	51	
2		2390.000	15.45	30.96	46.41	54.00	-7.59	AVG	336	51	
3	X	2412.000	72.23	31.04	103.27	74.00	29.27	peak	336	51	No Limit
4	*	2412.000	70.07	31.04	101.11	54.00	47.11	AVG	336	51	No Limit

Orthogonal Axis :	X
Test Mode :	TX B MODE 2412MHz

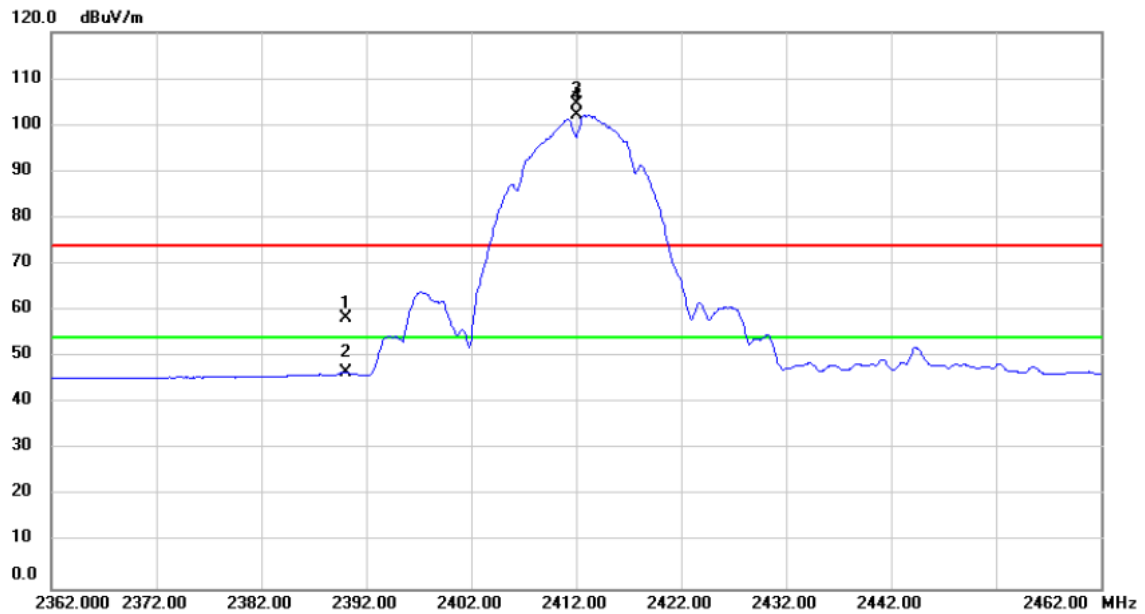
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Antenna Height cm	Table Degree	Comment
1		4824.000	59.89	-11.47	48.42	74.00	-25.58	peak	291	277	
2		4824.000	55.32	-11.47	43.85	54.00	-10.15	AVG	291	277	
3		7236.000	57.10	-5.36	51.74	74.00	-22.26	peak	103	284	
4		7236.000	48.67	-5.36	43.31	54.00	-10.69	AVG	103	284	
5		9648.000	55.08	0.81	55.89	74.00	-18.11	peak	160	198	
6	*	9648.000	47.06	0.81	47.87	54.00	-6.13	AVG	160	198	

Orthogonal Axis :	X
Test Mode :	TX B MODE 2412MHz

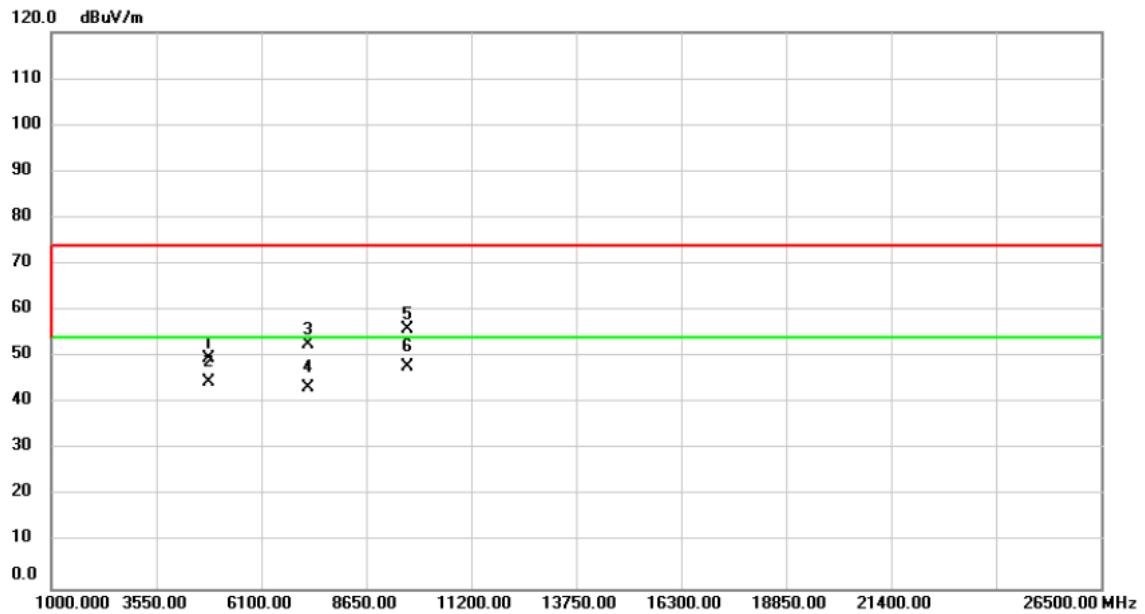
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Antenna Height cm	Table Degree	Comment
1		2390.000	27.40	30.96	58.36	74.00	-15.64	peak	179	163	
2		2390.000	15.71	30.96	46.67	54.00	-7.33	AVG	179	163	
3	X	2412.000	73.46	31.04	104.50	74.00	30.50	peak	179	163	No Limit
4	*	2412.000	71.10	31.04	102.14	54.00	48.14	AVG	179	163	No Limit

Orthogonal Axis :	X
Test Mode :	TX B MODE 2412MHz

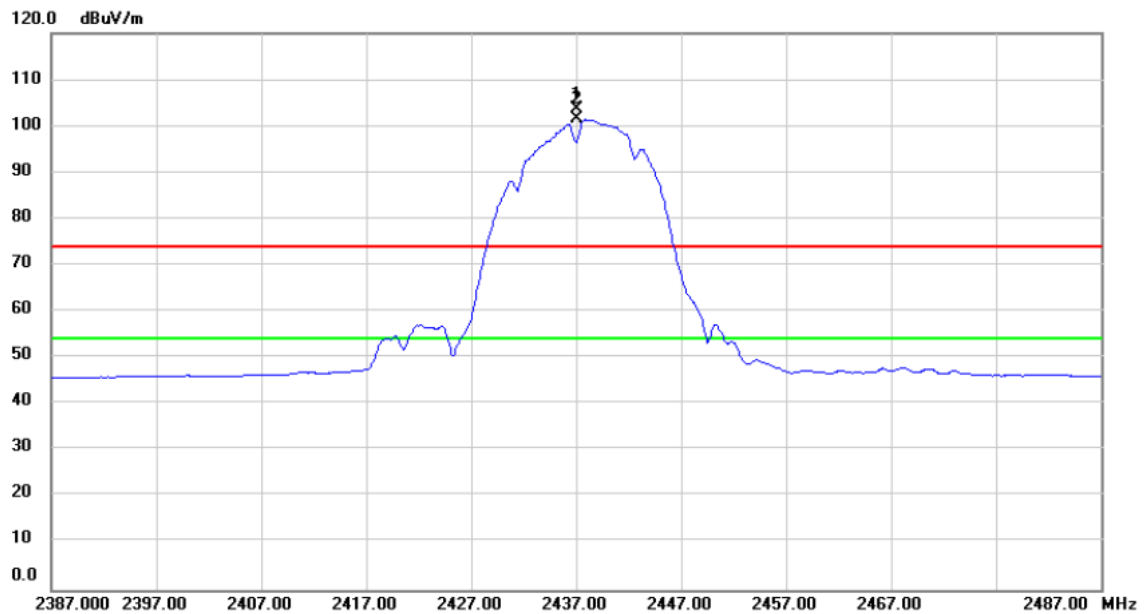
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		4824.000	61.15	-11.47	49.68	74.00	-24.32	peak	240	274
2		4824.000	55.93	-11.47	44.46	54.00	-9.54	AVG	240	274
3		7236.000	57.92	-5.36	52.56	74.00	-21.44	peak	100	289
4		7236.000	48.70	-5.36	43.34	54.00	-10.66	AVG	100	289
5		9648.000	55.23	0.81	56.04	74.00	-17.96	peak	171	198
6	*	9648.000	46.91	0.81	47.72	54.00	-6.28	AVG	171	198

Orthogonal Axis :	X
Test Mode :	TX B MODE 2437MHz

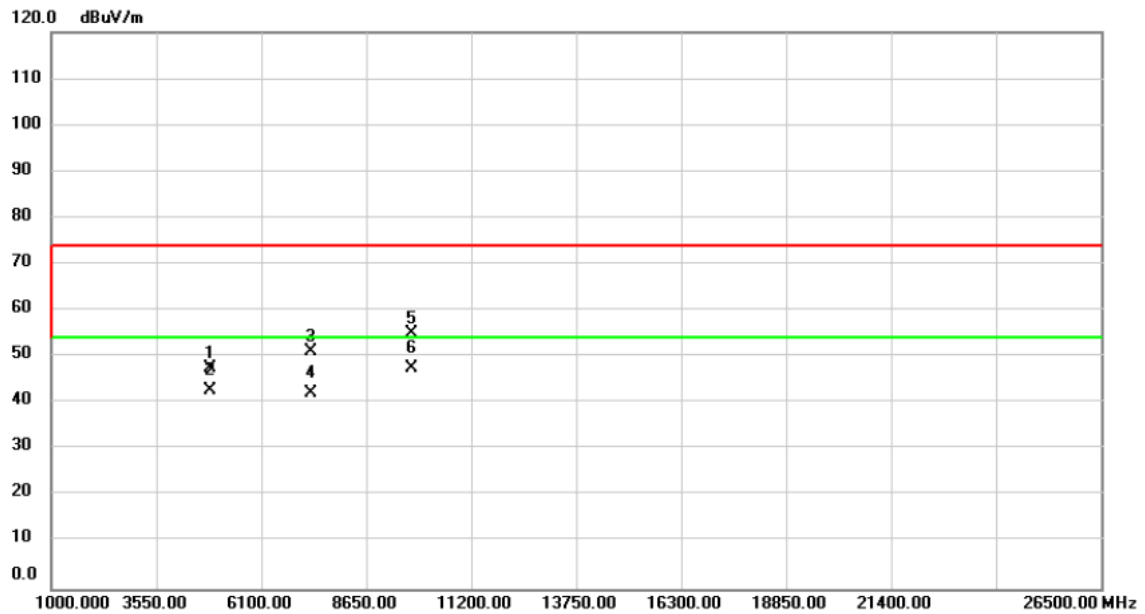
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Antenna Height cm	Table Degree	Comment
1	X	2437.000	72.51	31.13	103.64	74.00	29.64	peak	321	51	No Limit
2	*	2437.000	70.34	31.13	101.47	54.00	47.47	AVG	321	51	No Limit

Orthogonal Axis :	X
Test Mode :	TX B MODE 2437MHz

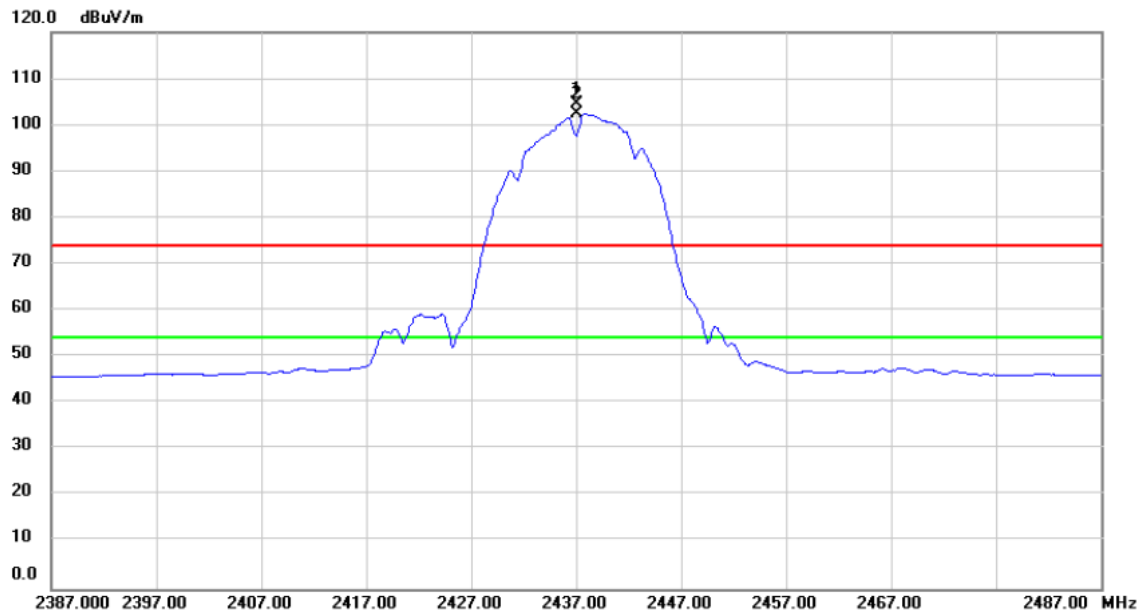
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Antenna Height cm	Table Degree	Comment
1		4874.000	58.80	-11.39	47.41	74.00	-26.59	peak	115	126
2		4874.000	54.07	-11.39	42.68	54.00	-11.32	AVG	115	126
3		7311.000	56.35	-5.07	51.28	74.00	-22.72	peak	100	304
4		7311.000	47.36	-5.07	42.29	54.00	-11.71	AVG	100	304
5		9748.000	53.98	1.10	55.08	74.00	-18.92	peak	194	154
6	*	9748.000	46.56	1.10	47.66	54.00	-6.34	AVG	194	154

Orthogonal Axis :	X
Test Mode :	TX B MODE 2437MHz

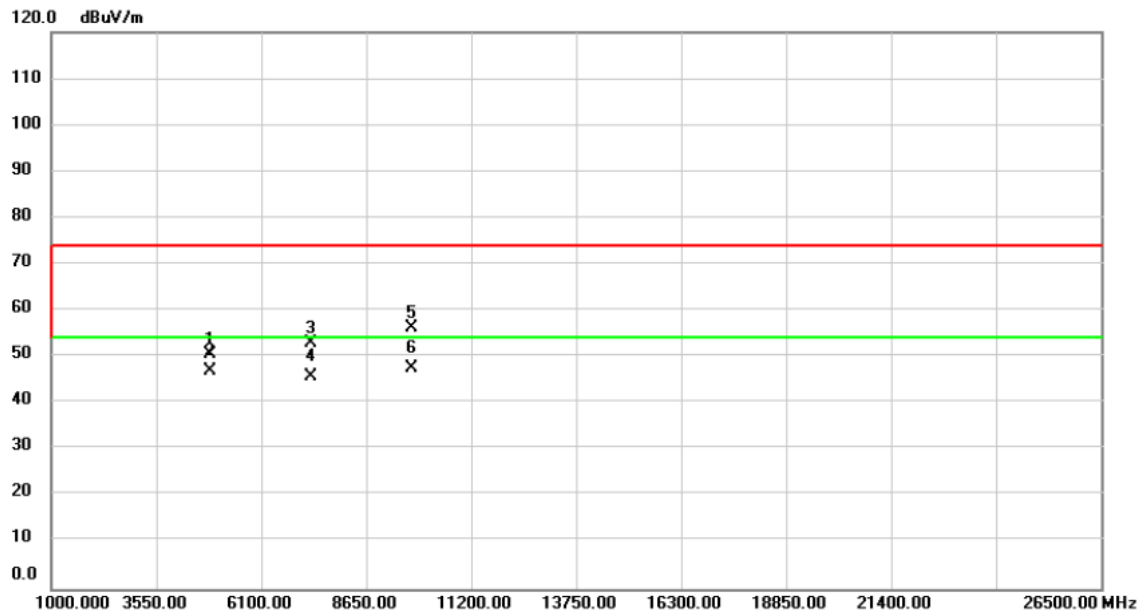
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Antenna Height cm	Table Degree	Comment
1	X	2437.000	73.47	31.13	104.60	74.00	30.60	peak	178	163	No Limit
2	*	2437.000	71.24	31.13	102.37	54.00	48.37	AVG	178	163	No Limit

Orthogonal Axis :	X
Test Mode :	TX B MODE 2437MHz

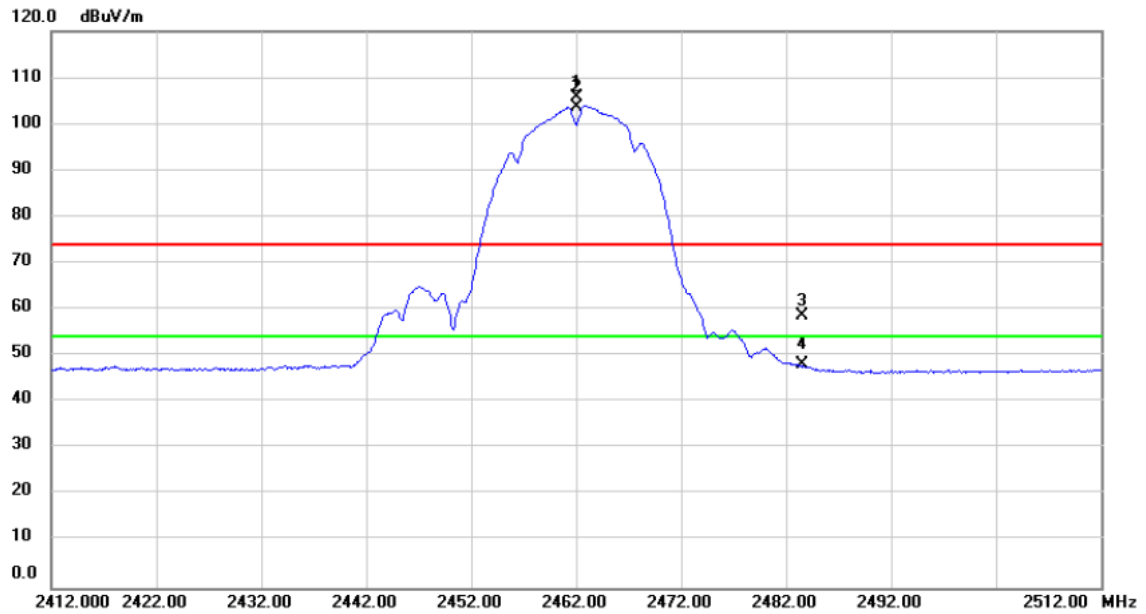
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		4874.000	62.00	-11.39	50.61	74.00	-23.39	peak	104	169
2		4874.000	58.49	-11.39	47.10	54.00	-6.90	AVG	104	169
3		7311.000	58.04	-5.07	52.97	74.00	-21.03	peak	358	163
4		7311.000	50.95	-5.07	45.88	54.00	-8.12	AVG	358	163
5		9748.000	55.29	1.10	56.39	74.00	-17.61	peak	145	198
6	*	9748.000	46.58	1.10	47.68	54.00	-6.32	AVG	145	198

Orthogonal Axis :	X
Test Mode :	TX B MODE 2462MHz

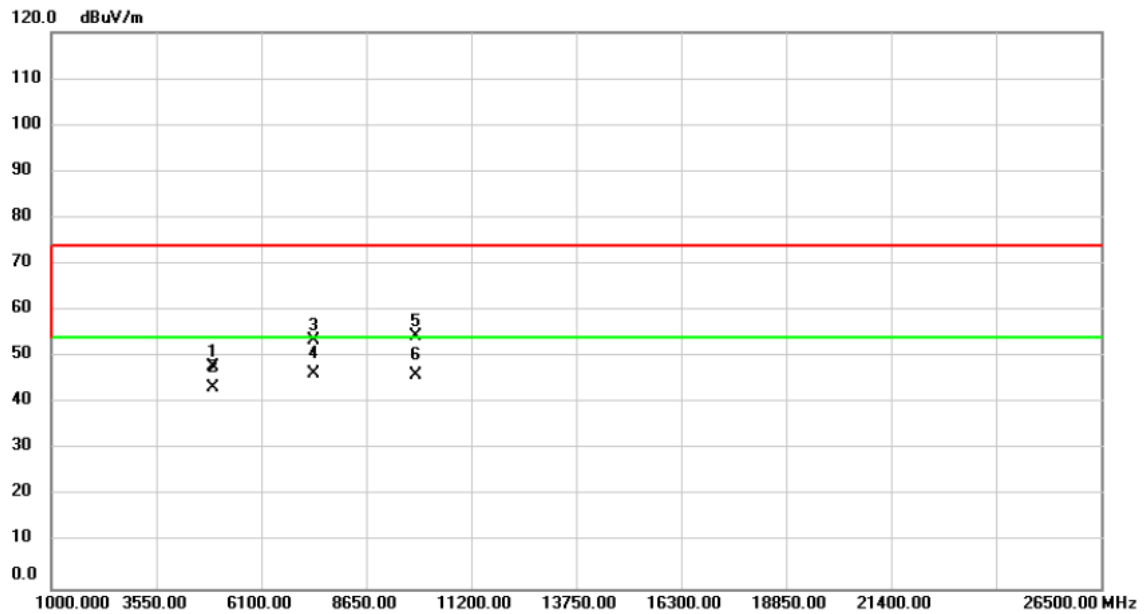
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Antenna Height cm	Table Degree	Comment
1	X	2462.000	74.57	31.23	105.80	74.00	31.80	peak	324	48	No Limit
2	*	2462.000	72.45	31.23	103.68	54.00	49.68	AVG	324	48	No Limit
3		2483.533	27.43	31.31	58.74	74.00	-15.26	peak	324	48	
4		2483.533	16.84	31.31	48.15	54.00	-5.85	AVG	324	48	

Orthogonal Axis :	X
Test Mode :	TX B MODE 2462MHz

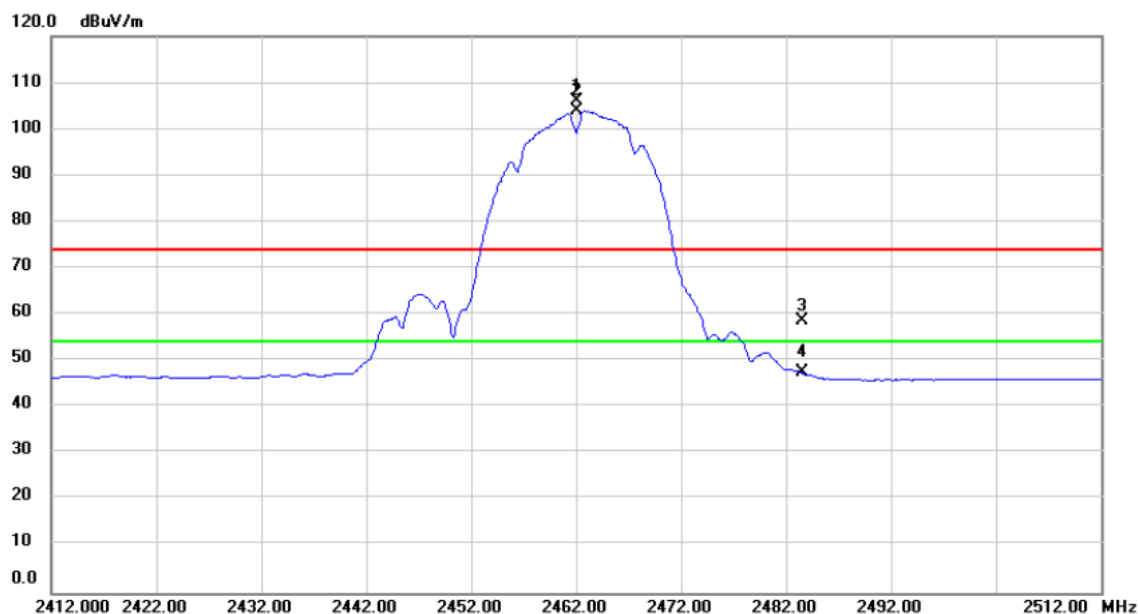
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Antenna Height cm	Table Degree	Comment
1		4924.000	59.29	-11.32	47.97	74.00	-26.03	peak	100	121
2		4924.000	54.54	-11.32	43.22	54.00	-10.78	AVG	100	121
3		7386.000	58.36	-4.80	53.56	74.00	-20.44	peak	154	14
4	*	7386.000	51.08	-4.80	46.28	54.00	-7.72	AVG	154	14
5		9848.000	53.10	1.39	54.49	74.00	-19.51	peak	211	152
6		9848.000	44.56	1.39	45.95	54.00	-8.05	AVG	211	152

Orthogonal Axis :	X
Test Mode :	TX B MODE 2462MHz

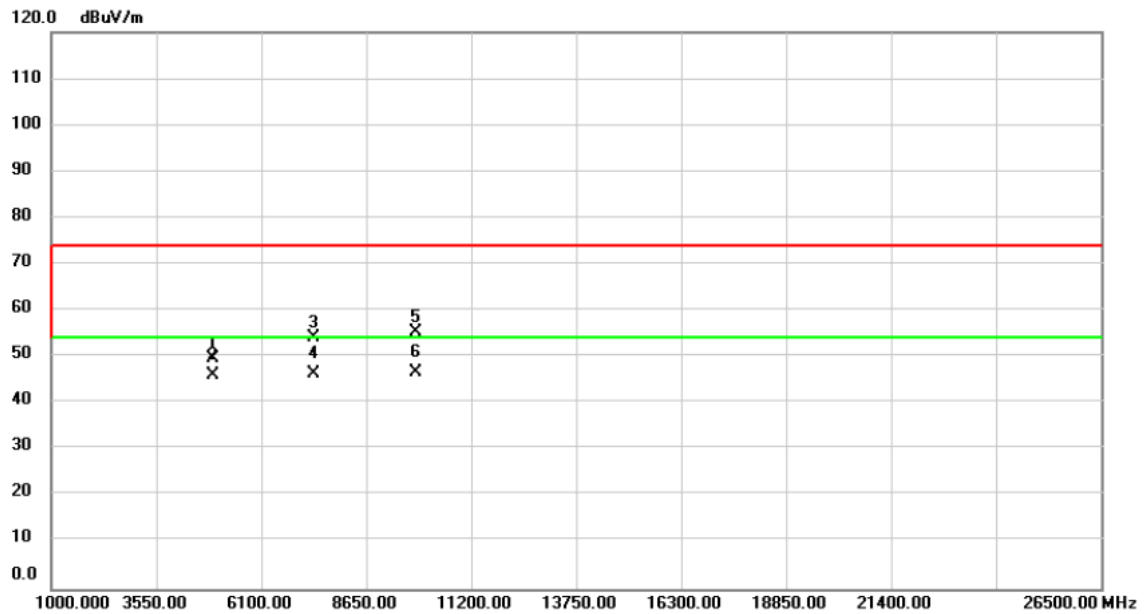
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	X	2462.000	74.91	31.23	106.14	74.00	32.14	peak	142	160	No Limit
2	*	2462.000	72.75	31.23	103.98	54.00	49.98	AVG	142	160	No Limit
3		2483.599	27.41	31.31	58.72	74.00	-15.28	peak	142	160	
4		2483.599	16.10	31.31	47.41	54.00	-6.59	AVG	142	160	

Orthogonal Axis :	X
Test Mode :	TX B MODE 2462MHz

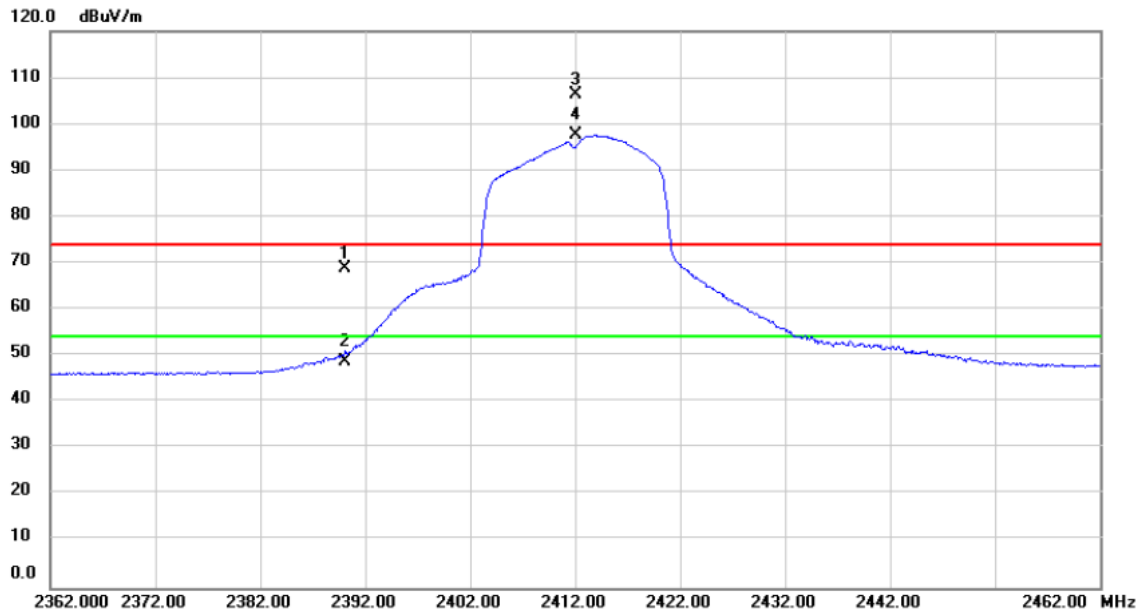
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		4924.000	60.92	-11.32	49.60	74.00	-24.40	peak	100	261
2		4924.000	57.49	-11.32	46.17	54.00	-7.83	AVG	100	261
3		7386.000	58.94	-4.80	54.14	74.00	-19.86	peak	100	173
4		7386.000	51.28	-4.80	46.48	54.00	-7.52	AVG	100	173
5		9848.000	53.90	1.39	55.29	74.00	-18.71	peak	199	190
6	*	9848.000	45.18	1.39	46.57	54.00	-7.43	AVG	199	190

Orthogonal Axis :	X
Test Mode :	TX G MODE 2412MHz

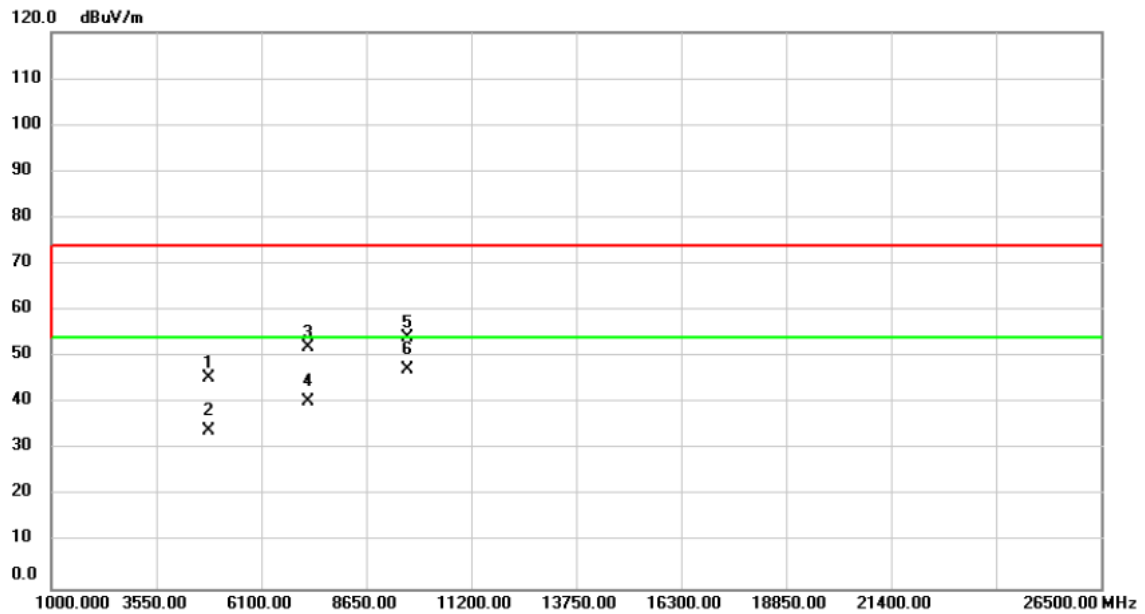
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Antenna Height cm	Table Degree	Comment
1		2390.000	37.85	30.96	68.81	74.00	-5.19	peak	392	7	
2		2390.000	17.85	30.96	48.81	54.00	-5.19	AVG	392	7	
3	X	2412.000	75.17	31.04	106.21	74.00	32.21	peak	392	7	No Limit
4	*	2412.000	66.54	31.04	97.58	54.00	43.58	AVG	392	7	No Limit

Orthogonal Axis :	X
Test Mode :	TX G MODE 2412MHz

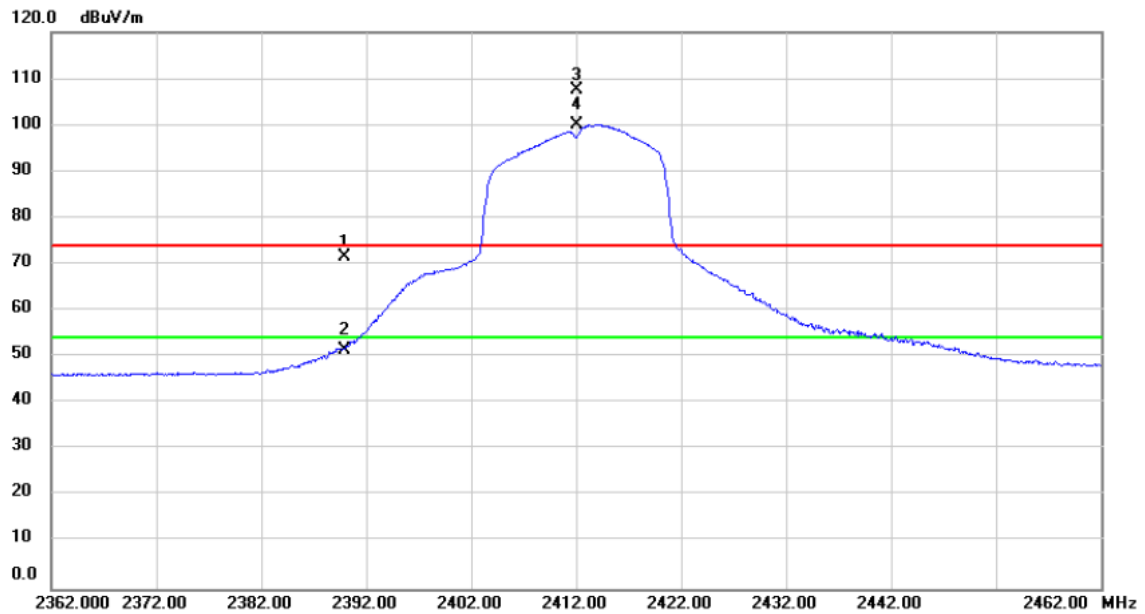
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		4824.000	57.05	-11.47	45.58	74.00	-28.42	peak	259	172
2		4824.000	45.52	-11.47	34.05	54.00	-19.95	AVG	259	172
3		7236.000	57.46	-5.36	52.10	74.00	-21.90	peak	400	196
4		7236.000	45.83	-5.36	40.47	54.00	-13.53	AVG	400	196
5		9648.000	53.45	0.81	54.26	74.00	-19.74	peak	196	158
6	*	9648.000	46.52	0.81	47.33	54.00	-6.67	AVG	196	158

Orthogonal Axis :	X
Test Mode :	TX G MODE 2412MHz

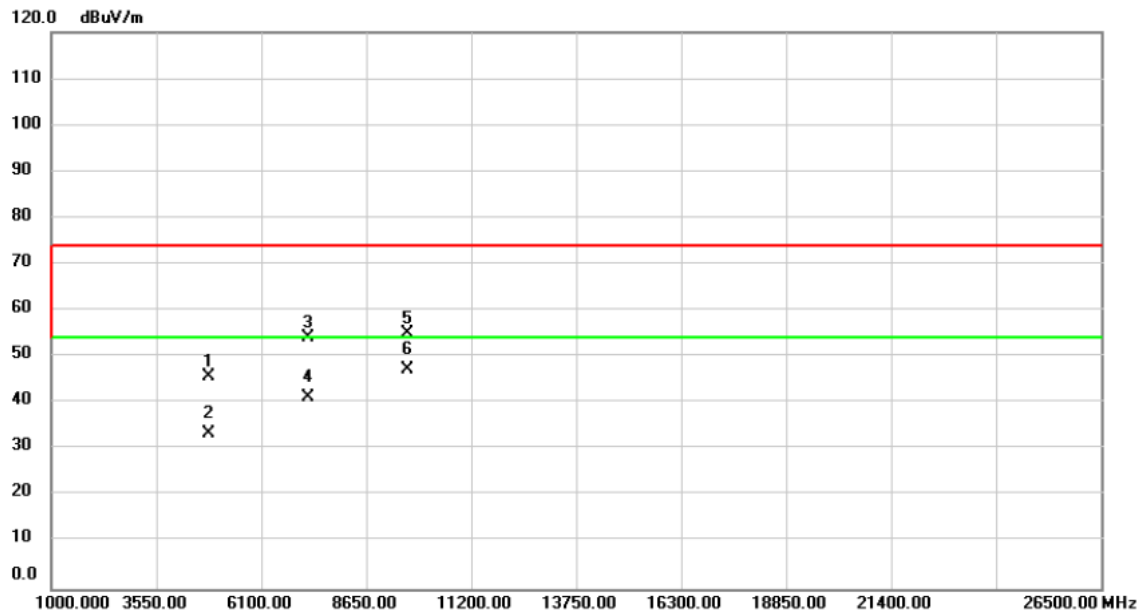
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Antenna Height cm	Table Degree	Comment
1		2389.944	40.56	30.96	71.52	74.00	-2.48	peak	179	161
2		2389.944	20.56	30.96	51.52	54.00	-2.48	AVG	179	161
3	X	2412.000	76.55	31.04	107.59	74.00	33.59	peak	179	161 No Limit
4	*	2412.000	69.02	31.04	100.06	54.00	46.06	AVG	179	161 No Limit

Orthogonal Axis :	X
Test Mode :	TX G MODE 2412MHz

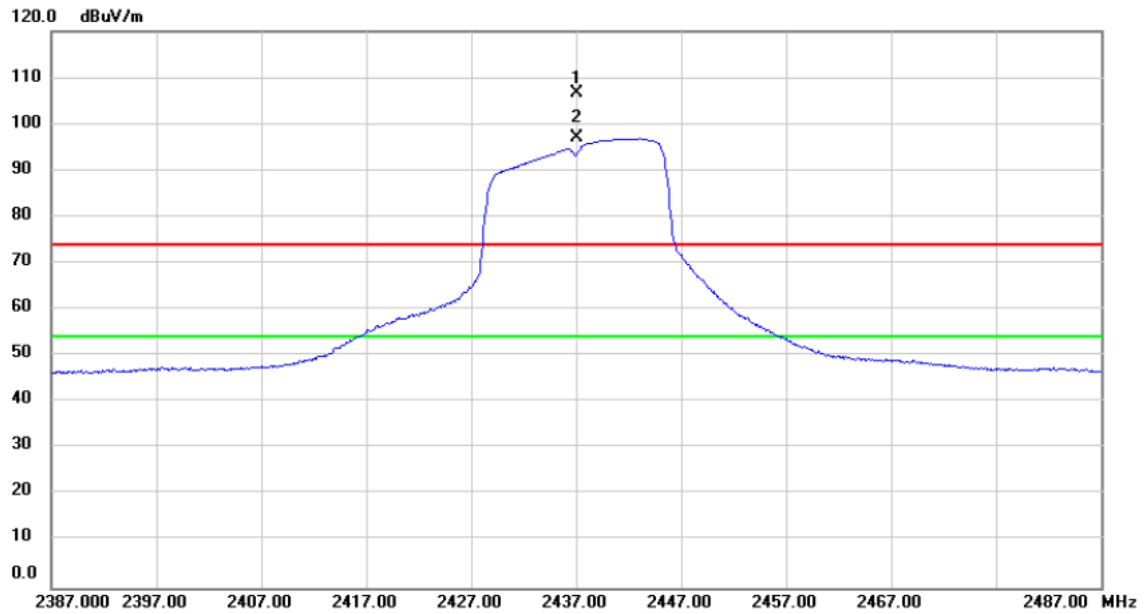
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Antenna Height cm	Table Degree	Comment
1		4824.000	57.14	-11.47	45.67	74.00	-28.33	peak	100	254	
2		4824.000	45.04	-11.47	33.57	54.00	-20.43	AVG	100	254	
3		7236.000	59.52	-5.36	54.16	74.00	-19.84	peak	260	191	
4		7236.000	46.70	-5.36	41.34	54.00	-12.66	AVG	260	191	
5		9648.000	54.15	0.81	54.96	74.00	-19.04	peak	145	199	
6	*	9648.000	46.32	0.81	47.13	54.00	-6.87	AVG	145	199	

Orthogonal Axis :	X
Test Mode :	TX G MODE 2437MHz

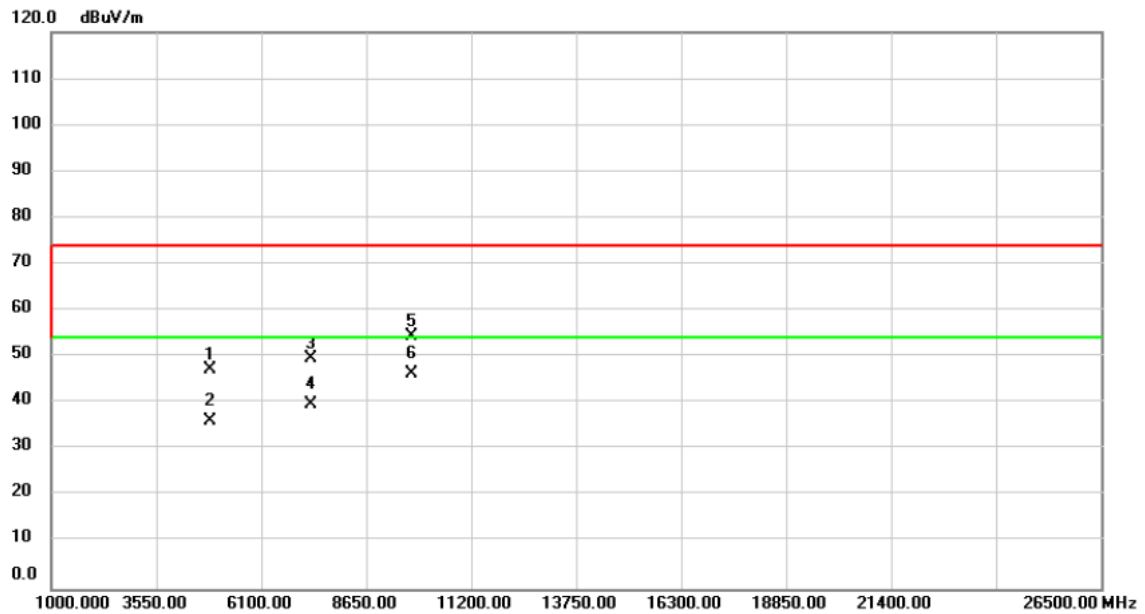
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Antenna Height cm	Table Degree	Comment
1	X	2437.000	75.45	31.13	106.58	74.00	32.58	peak	371	13	No Limit
2	*	2437.000	65.83	31.13	96.96	54.00	42.96	AVG	371	13	No Limit

Orthogonal Axis :	X
Test Mode :	TX G MODE 2437MHz

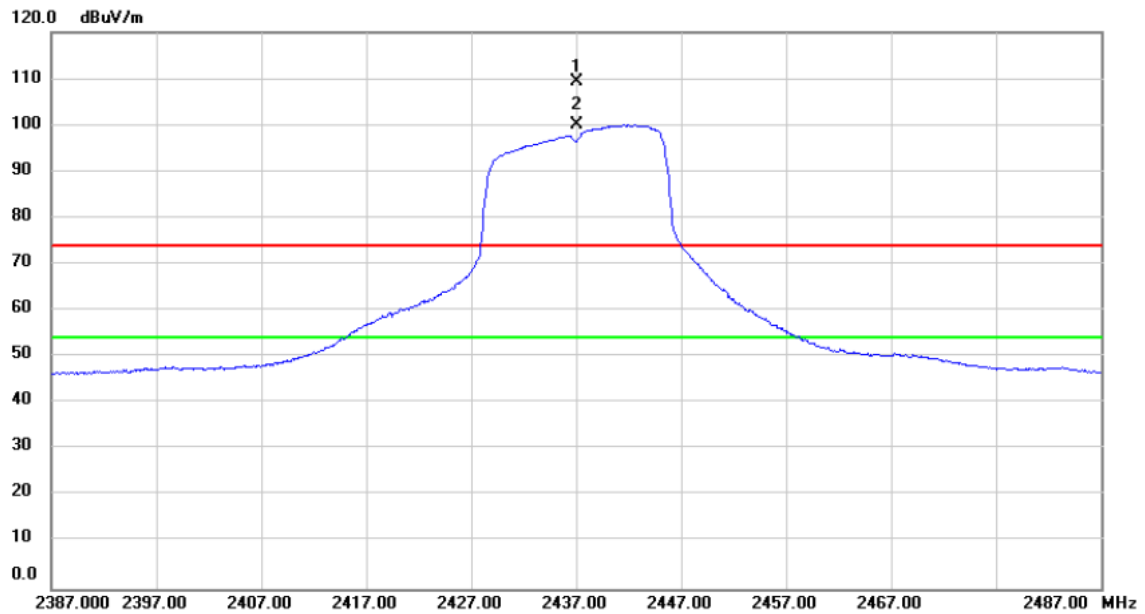
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Antenna Height cm	Table Degree	Comment
1		4874.000	58.60	-11.39	47.21	74.00	-26.79	peak	201	182
2		4874.000	47.53	-11.39	36.14	54.00	-17.86	AVG	201	182
3		7311.000	54.76	-5.07	49.69	74.00	-24.31	peak	119	163
4		7311.000	44.96	-5.07	39.89	54.00	-14.11	AVG	119	163
5		9748.000	53.40	1.10	54.50	74.00	-19.50	peak	181	155
6	*	9748.000	45.18	1.10	46.28	54.00	-7.72	AVG	181	155

Orthogonal Axis :	X
Test Mode :	TX G MODE 2437MHz

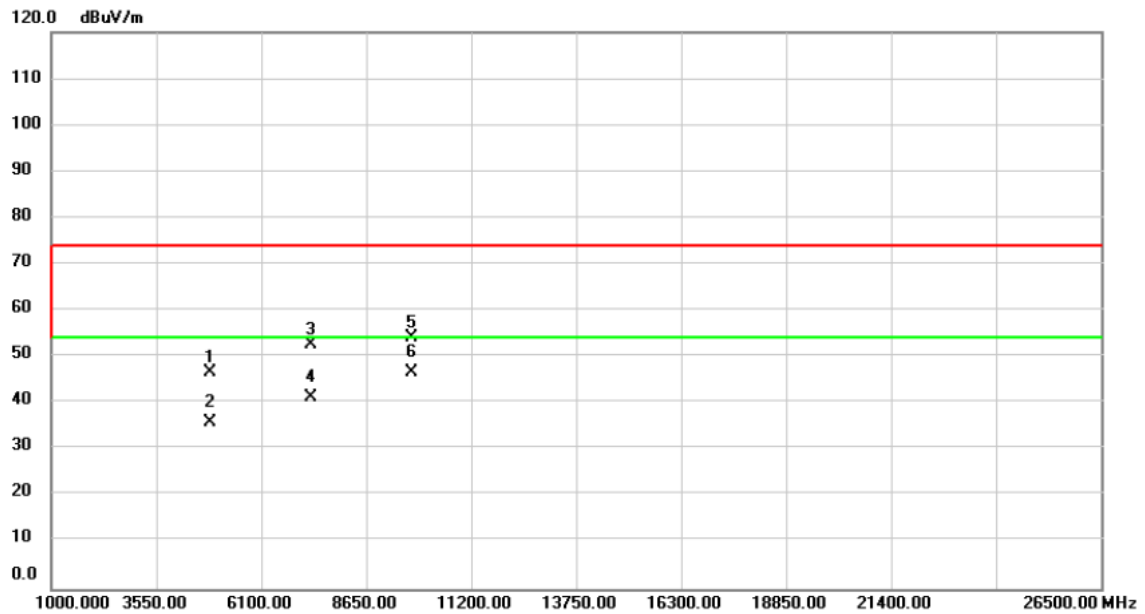
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Antenna Height cm	Table Degree	Comment
1	X	2437.000	78.30	31.13	109.43	74.00	35.43	peak	161	No Limit
2	*	2437.000	69.04	31.13	100.17	54.00	46.17	AVG	161	No Limit

Orthogonal Axis :	X
Test Mode :	TX G MODE 2437MHz

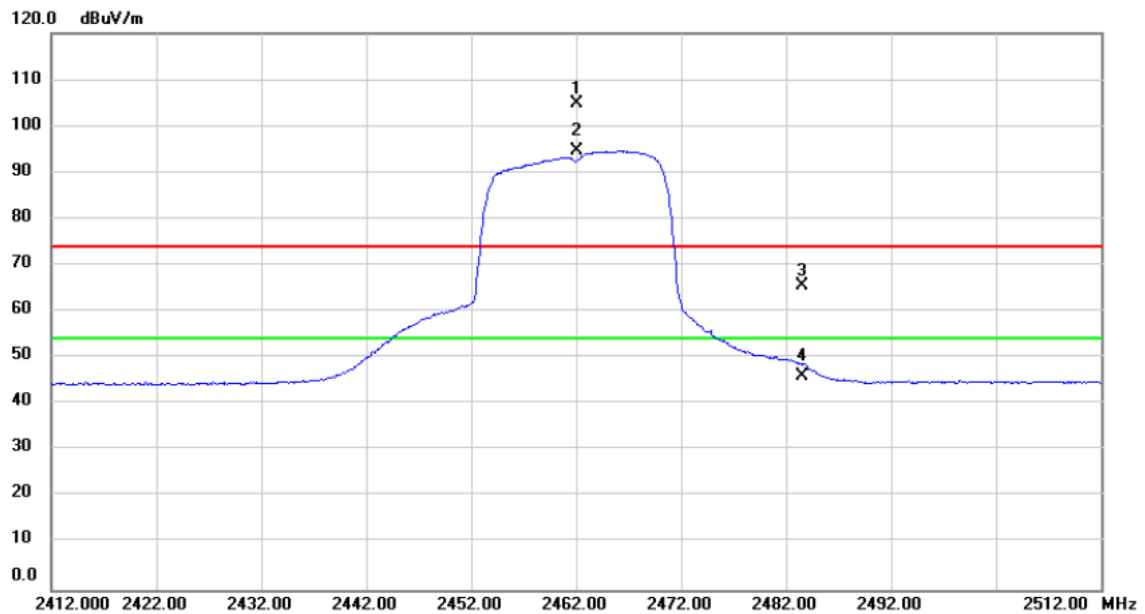
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Antenna Height cm	Table Degree	Comment
1		4874.000	58.08	-11.39	46.69	74.00	-27.31	peak	100	259	
2		4874.000	47.19	-11.39	35.80	54.00	-18.20	AVG	100	259	
3		7311.000	57.71	-5.07	52.64	74.00	-21.36	peak	312	195	
4		7311.000	46.31	-5.07	41.24	54.00	-12.76	AVG	312	195	
5		9748.000	53.12	1.10	54.22	74.00	-19.78	peak	180	203	
6	*	9748.000	45.64	1.10	46.74	54.00	-7.26	AVG	180	203	

Orthogonal Axis :	X
Test Mode :	TX G MODE 2462MHz

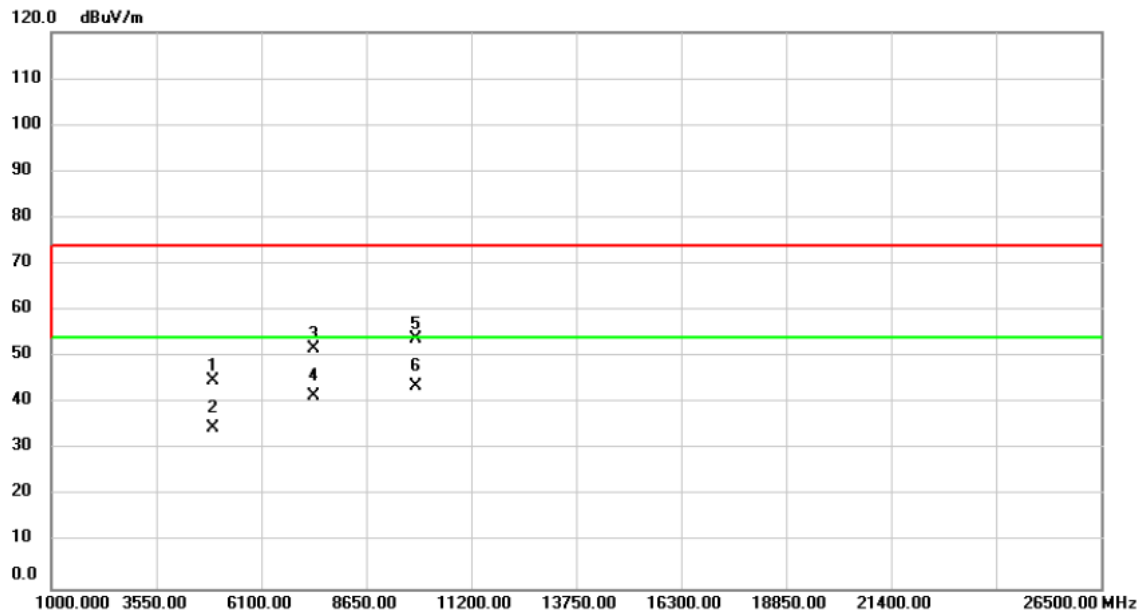
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Antenna Height cm	Table Degree	Comment
1	X	2462.000	73.58	31.23	104.81	74.00	30.81	peak	303	301	No Limit
2	*	2462.000	63.35	31.23	94.58	54.00	40.58	AVG	303	301	No Limit
3		2483.500	34.17	31.31	65.48	74.00	-8.52	peak	303	301	
4		2483.500	14.72	31.31	46.03	54.00	-7.97	AVG	303	301	

Orthogonal Axis :	X
Test Mode :	TX G MODE 2462MHz

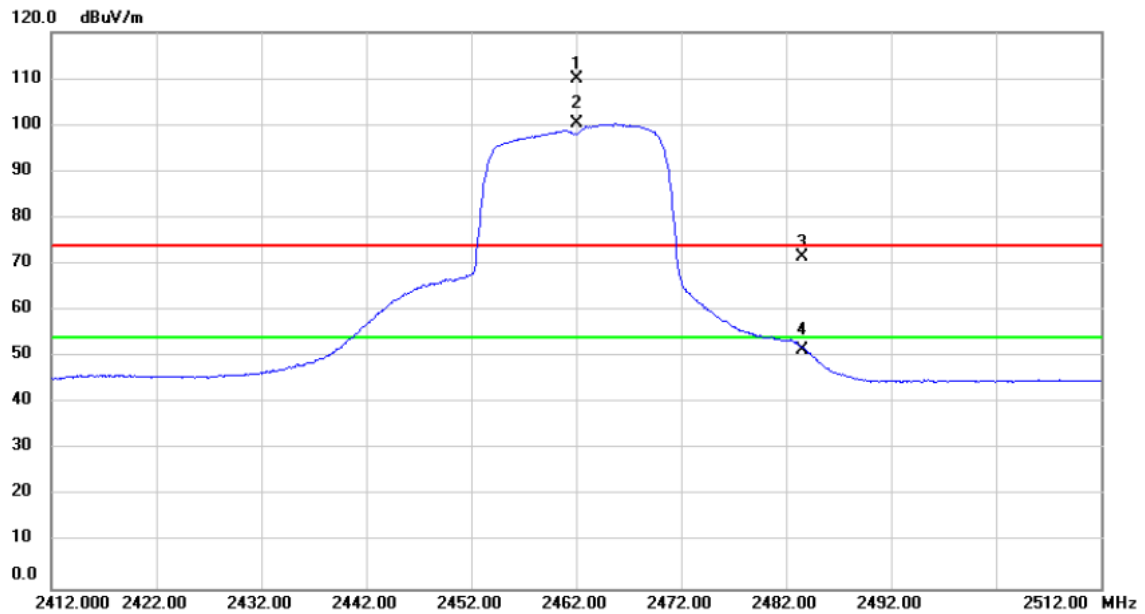
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Antenna Height cm	Table Degree	Comment
1		4924.000	56.11	-11.32	44.79	74.00	-29.21	peak	147	174	
2		4924.000	45.85	-11.32	34.53	54.00	-19.47	AVG	147	174	
3		7386.000	56.44	-4.80	51.64	74.00	-22.36	peak	367	139	
4		7386.000	46.21	-4.80	41.41	54.00	-12.59	AVG	367	139	
5		9848.000	52.33	1.39	53.72	74.00	-20.28	peak	202	147	
6	*	9848.000	42.23	1.39	43.62	54.00	-10.38	AVG	202	147	

Orthogonal Axis :	X
Test Mode :	TX G MODE 2462MHz

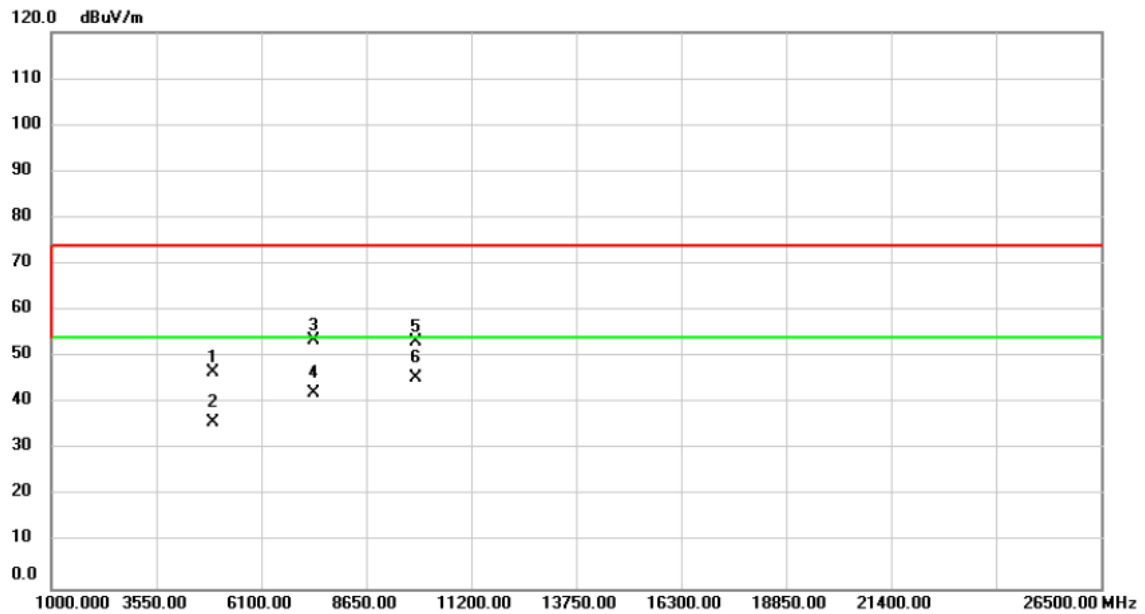
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	X	2462.000	78.82	31.23	110.05	74.00	36.05	peak	212	191	No Limit
2	*	2462.000	69.14	31.23	100.37	54.00	46.37	AVG	212	191	No Limit
3		2483.500	40.17	31.31	71.48	74.00	-2.52	peak	212	191	
4		2483.500	20.00	31.31	51.31	54.00	-2.69	AVG	212	191	

Orthogonal Axis :	X
Test Mode :	TX G MODE 2462MHz

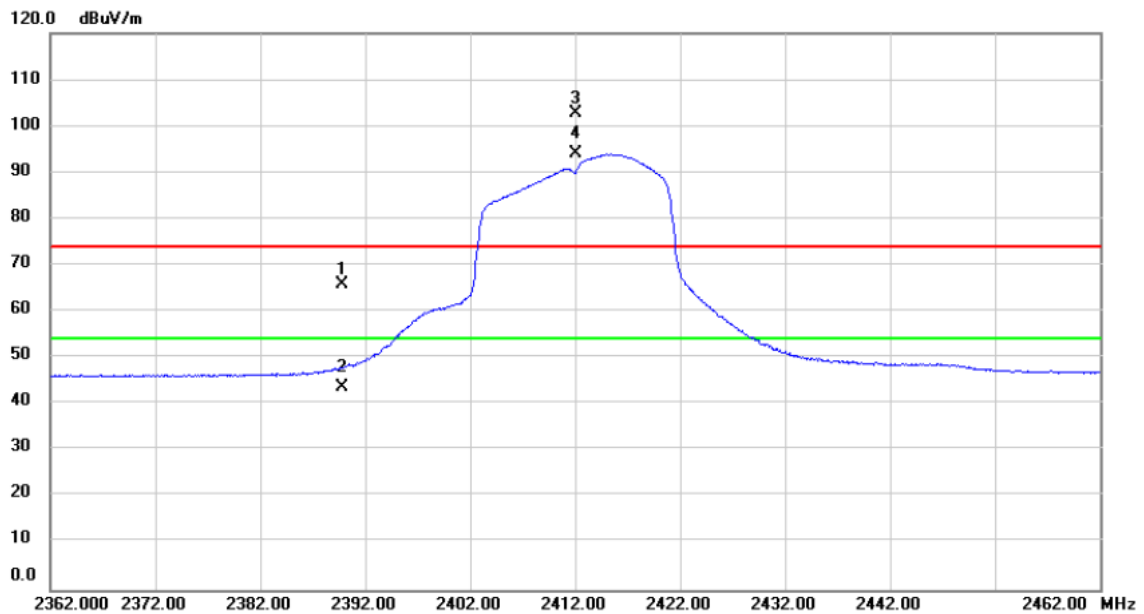
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Antenna Height cm	Table Degree	Comment
1		4924.000	58.04	-11.32	46.72	74.00	-27.28	peak	101	253	
2		4924.000	47.07	-11.32	35.75	54.00	-18.25	AVG	101	253	
3		7386.000	58.49	-4.80	53.69	74.00	-20.31	peak	326	272	
4		7386.000	46.85	-4.80	42.05	54.00	-11.95	AVG	326	272	
5		9848.000	51.78	1.39	53.17	74.00	-20.83	peak	141	199	
6	*	9848.000	44.09	1.39	45.48	54.00	-8.52	AVG	141	199	

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2412MHz

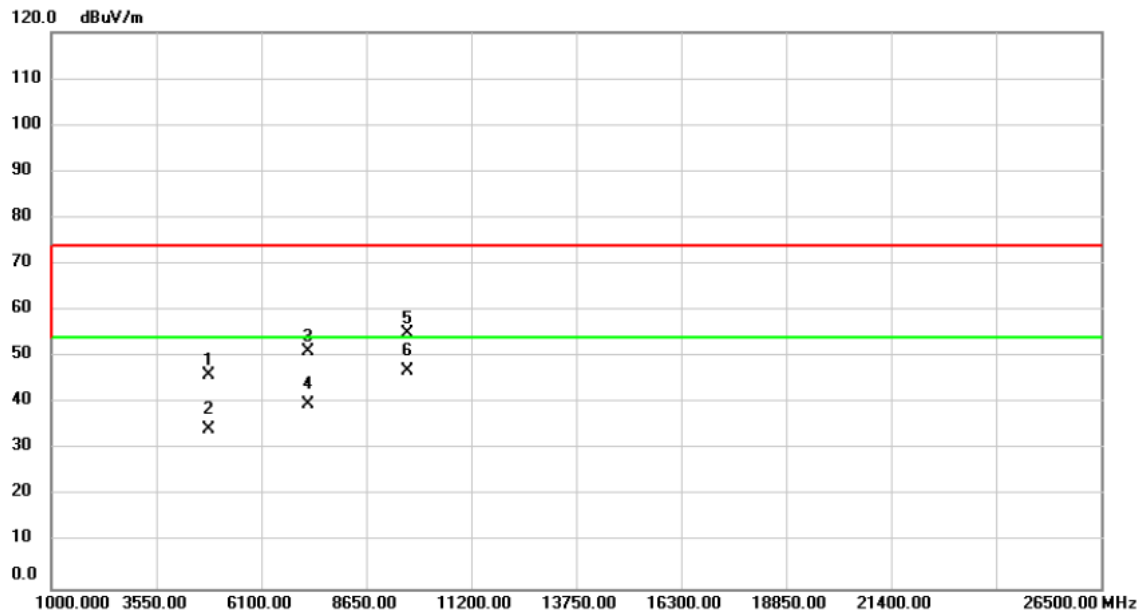
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Antenna Height cm	Table Degree	Comment
1		2389.804	34.94	30.96	65.90	74.00	-8.10	peak	329	355	
2		2389.804	12.70	30.96	43.66	54.00	-10.34	AVG	329	355	
3	X	2412.000	71.63	31.04	102.67	74.00	28.67	peak	329	355	No Limit
4	*	2412.000	63.05	31.04	94.09	54.00	40.09	AVG	329	355	No Limit

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2412MHz

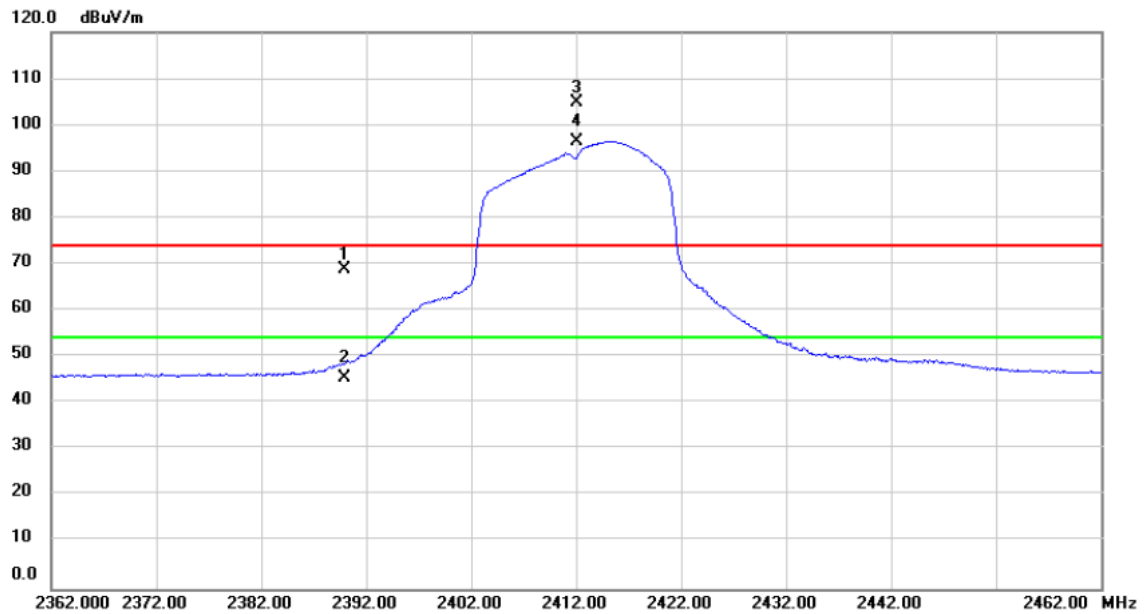
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Antenna Height cm	Table Degree	Comment
1		4824.000	57.63	-11.47	46.16	74.00	-27.84	peak	189	195
2		4824.000	45.89	-11.47	34.42	54.00	-19.58	AVG	189	195
3		7236.000	56.52	-5.36	51.16	74.00	-22.84	peak	103	324
4		7236.000	45.24	-5.36	39.88	54.00	-14.12	AVG	103	324
5		9648.000	54.36	0.81	55.17	74.00	-18.83	peak	156	166
6	*	9648.000	46.09	0.81	46.90	54.00	-7.10	AVG	156	166

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2412MHz

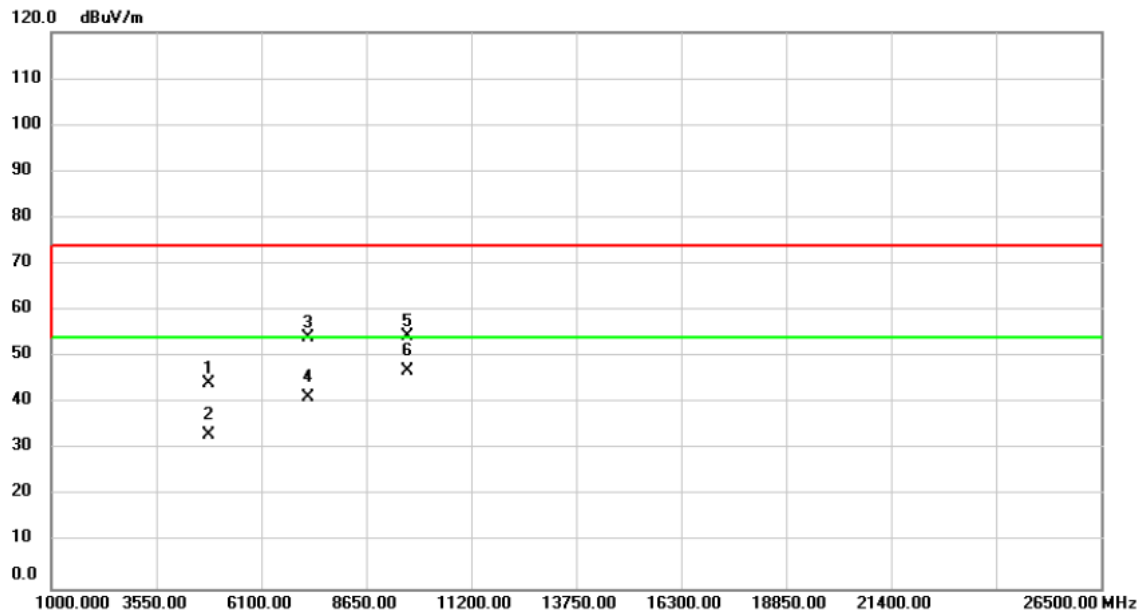
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Antenna Height cm	Table Degree	Comment
1		2389.888	37.85	30.96	68.81	74.00	-5.19	peak	142	17
2		2389.888	14.43	30.96	45.39	54.00	-8.61	AVG	142	17
3	X	2412.000	73.95	31.04	104.99	74.00	30.99	peak	142	17 No Limit
4	*	2412.000	65.43	31.04	96.47	54.00	42.47	AVG	142	17 No Limit

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2412MHz

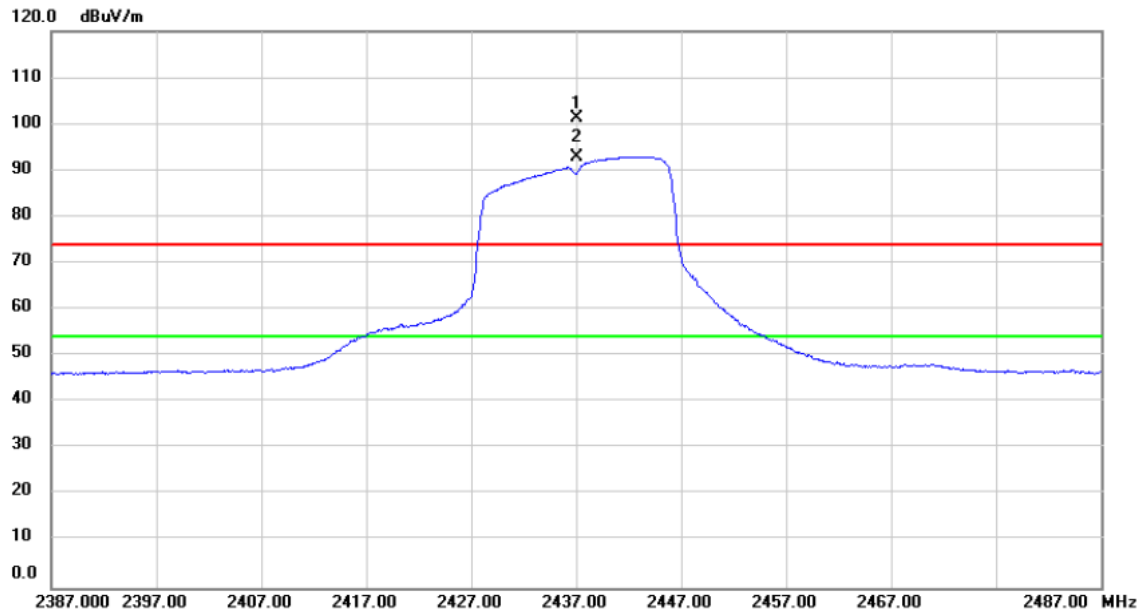
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Antenna Height cm	Table Degree	Comment
1		4824.000	55.67	-11.47	44.20	74.00	-29.80	peak	100	255
2		4824.000	44.70	-11.47	33.23	54.00	-20.77	AVG	100	255
3		7236.000	59.48	-5.36	54.12	74.00	-19.88	peak	262	201
4		7236.000	46.63	-5.36	41.27	54.00	-12.73	AVG	262	201
5		9648.000	53.72	0.81	54.53	74.00	-19.47	peak	153	202
6	*	9648.000	46.27	0.81	47.08	54.00	-6.92	AVG	153	202

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2437MHz

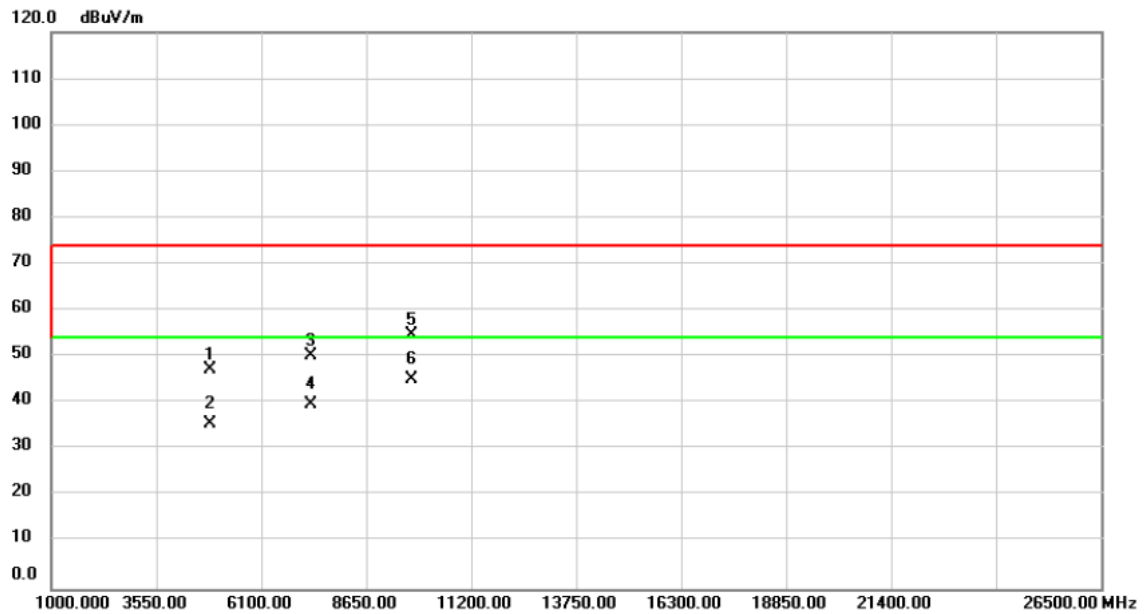
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Antenna Height cm	Table Degree	Comment
1	X	2437.000	70.01	31.13	101.14	74.00	27.14	peak	109	357	No Limit
2	*	2437.000	61.85	31.13	92.98	54.00	38.98	AVG	109	357	No Limit

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2437MHz

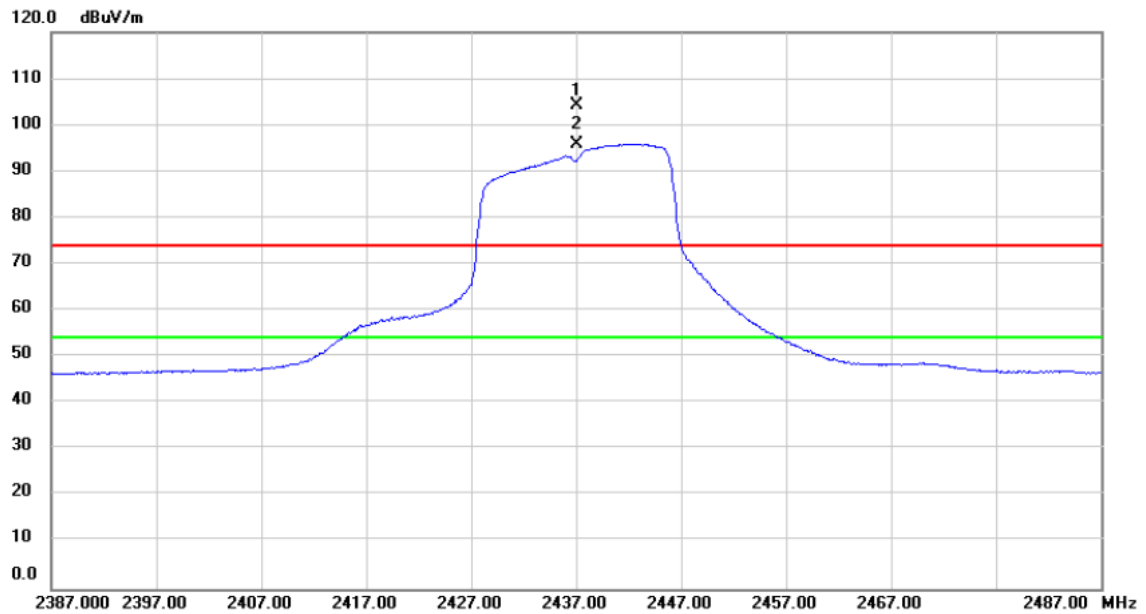
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		4874.000	58.54	-11.39	47.15	74.00	-26.85	peak	158	195
2		4874.000	47.06	-11.39	35.67	54.00	-18.33	AVG	158	194
3		7311.000	55.18	-5.07	50.11	74.00	-23.89	peak	106	321
4		7311.000	44.78	-5.07	39.71	54.00	-14.29	AVG	106	321
5		9748.000	53.72	1.10	54.82	74.00	-19.18	peak	204	151
6	*	9748.000	43.95	1.10	45.05	54.00	-8.95	AVG	204	151

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2437MHz

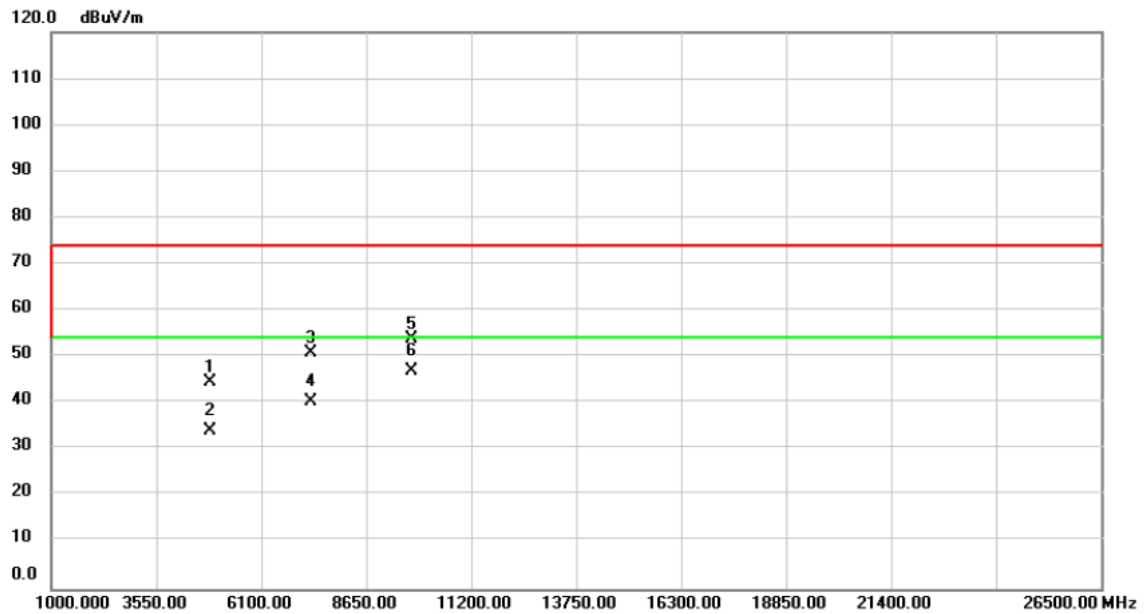
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	X	2437.000	73.03	31.13	104.16	74.00	30.16	peak	159	358	No Limit
2	*	2437.000	64.75	31.13	95.88	54.00	41.88	AVG	159	358	No Limit

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2437MHz

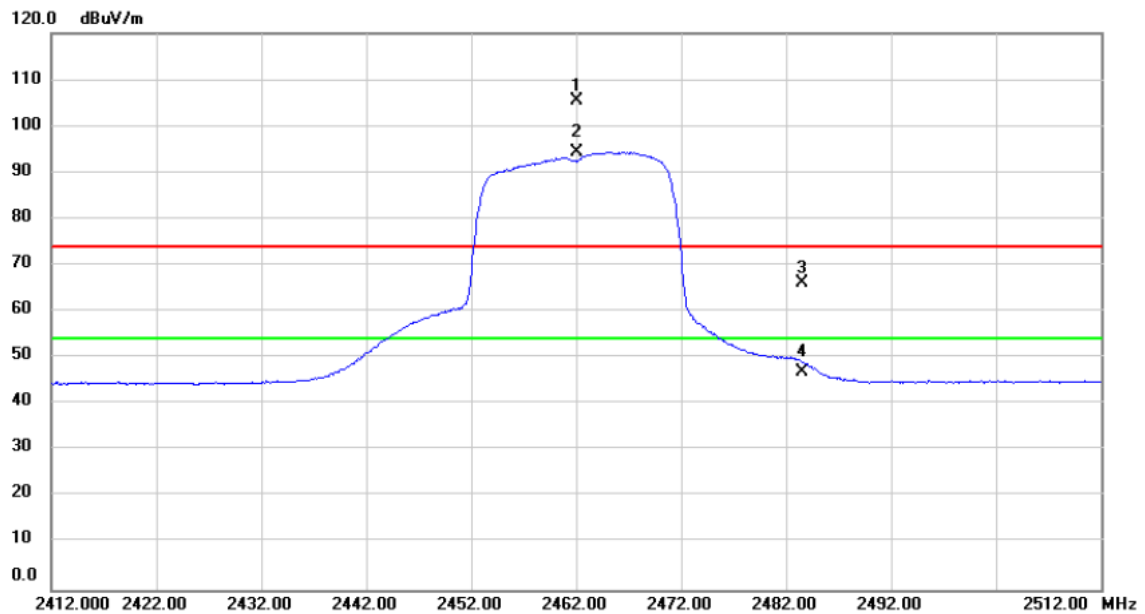
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Antenna Height cm	Table Degree	Comment
1		4874.000	55.88	-11.39	44.49	74.00	-29.51	peak	100	239
2		4874.000	45.39	-11.39	34.00	54.00	-20.00	AVG	100	239
3		7311.000	55.79	-5.07	50.72	74.00	-23.28	peak	101	306
4		7311.000	45.49	-5.07	40.42	54.00	-13.58	AVG	101	306
5		9748.000	52.75	1.10	53.85	74.00	-20.15	peak	154	194
6	*	9748.000	45.82	1.10	46.92	54.00	-7.08	AVG	154	194

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2462MHz

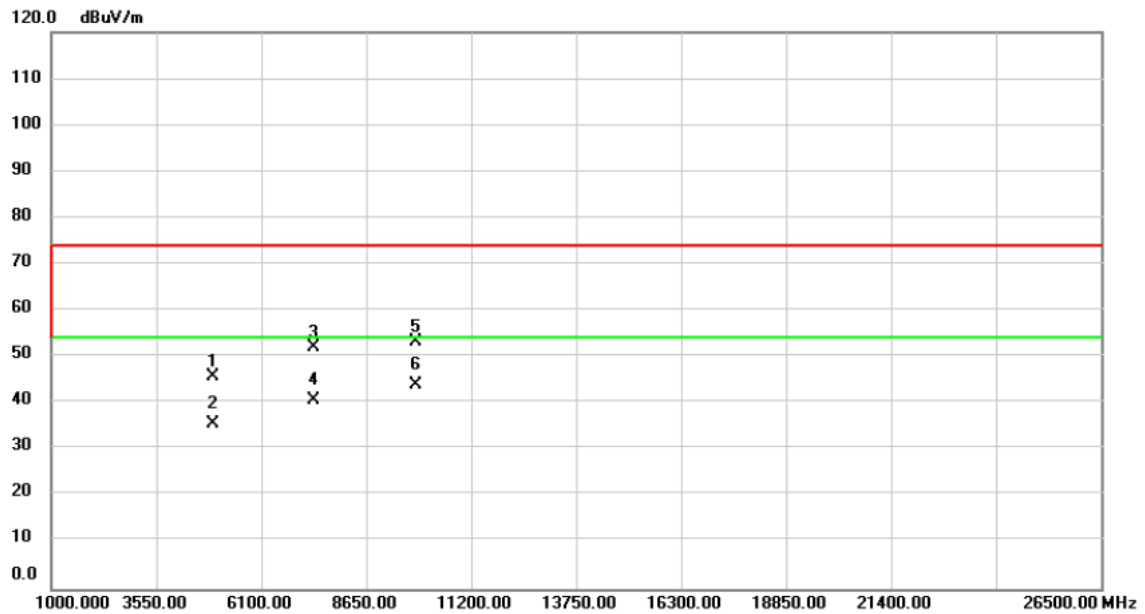
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Antenna Height cm	Table Degree	Comment
1	X	2462.000	74.31	31.23	105.54	74.00	31.54	peak	304	300	No Limit
2	*	2462.000	63.14	31.23	94.37	54.00	40.37	AVG	304	300	No Limit
3		2483.533	34.92	31.31	66.23	74.00	-7.77	peak	304	300	
4		2483.533	15.75	31.31	47.06	54.00	-6.94	AVG	304	300	

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2462MHz

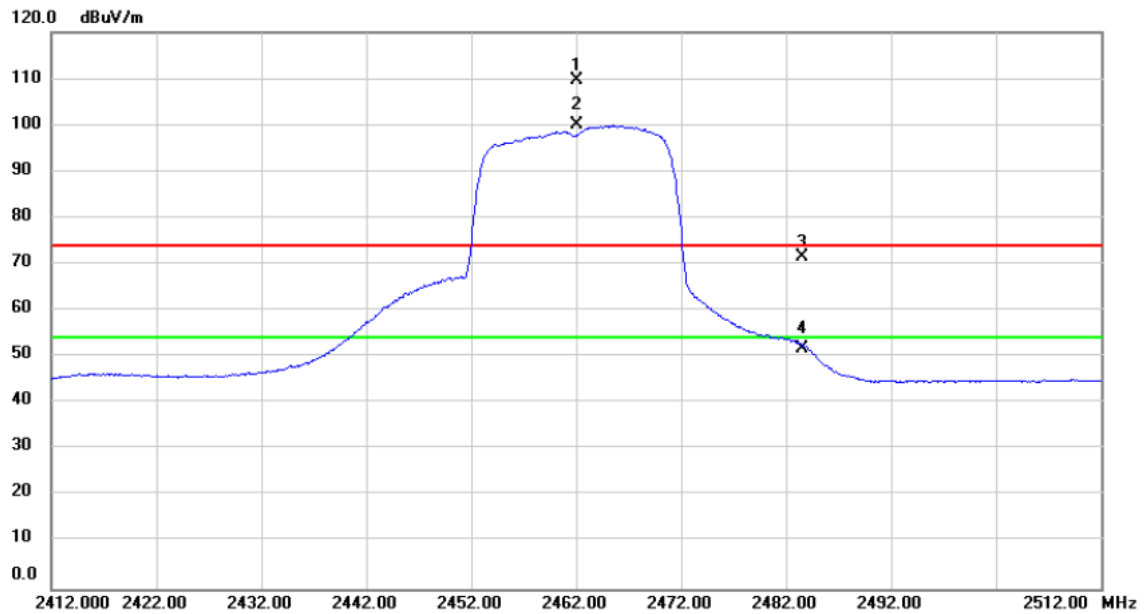
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Antenna Height cm	Table Degree	Comment
1		4924.000	57.20	-11.32	45.88	74.00	-28.12	peak	191	193
2		4924.000	46.84	-11.32	35.52	54.00	-18.48	AVG	191	193
3		7386.000	56.93	-4.80	52.13	74.00	-21.87	peak	100	331
4		7386.000	45.42	-4.80	40.62	54.00	-13.38	AVG	100	331
5		9848.000	51.87	1.39	53.26	74.00	-20.74	peak	181	159
6	*	9848.000	42.67	1.39	44.06	54.00	-9.94	AVG	181	159

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2462MHz

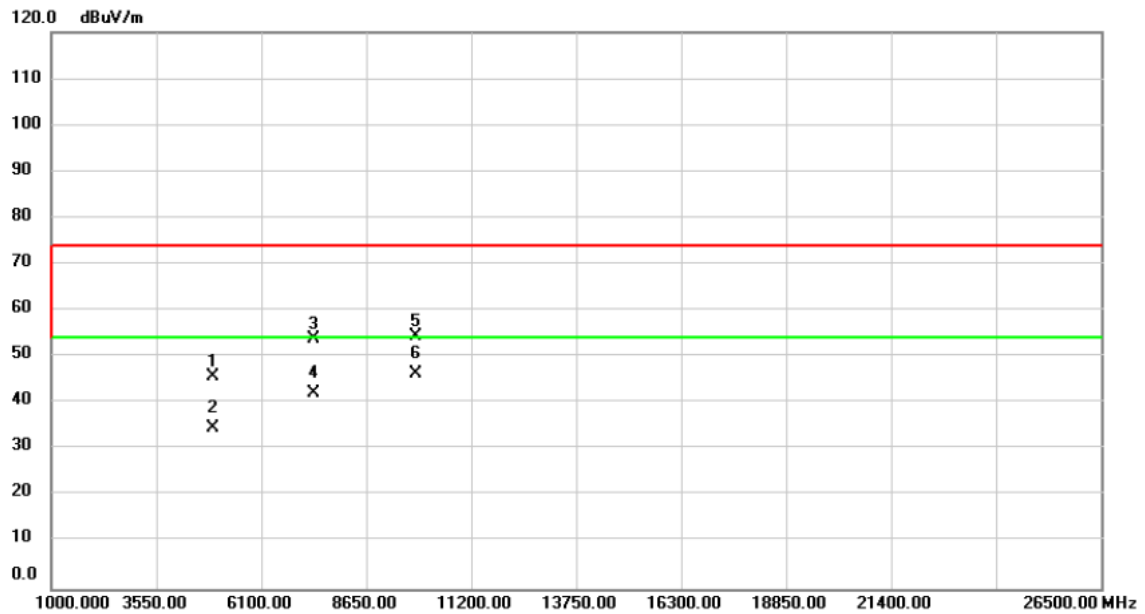
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	X	2462.000	78.31	31.23	109.54	74.00	35.54	peak	177	189	No Limit
2	*	2462.000	68.67	31.23	99.90	54.00	45.90	AVG	177	189	No Limit
3		2483.500	40.23	31.31	71.54	74.00	-2.46	peak	177	189	
4		2483.500	20.52	31.31	51.83	54.00	-2.17	AVG	177	189	

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2462MHz

Horizontal



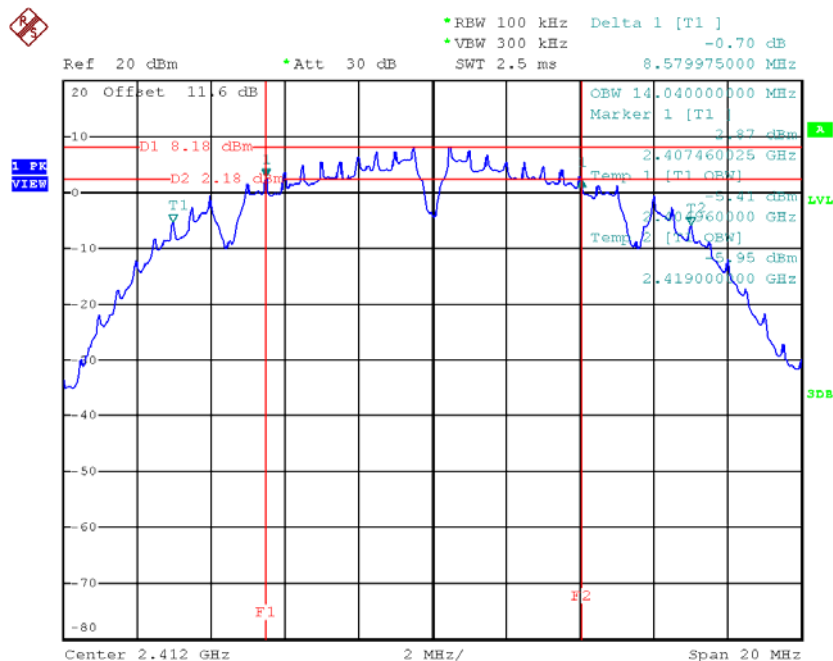
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Antenna Height cm	Table Degree	Comment
1		4924.000	56.95	-11.32	45.63	74.00	-28.37	peak	100	240
2		4924.000	46.00	-11.32	34.68	54.00	-19.32	AVG	100	240
3		7386.000	58.64	-4.80	53.84	74.00	-20.16	peak	329	253
4		7386.000	47.00	-4.80	42.20	54.00	-11.80	AVG	329	253
5		9848.000	52.94	1.39	54.33	74.00	-19.67	peak	158	198
6	*	9848.000	44.85	1.39	46.24	54.00	-7.76	AVG	158	198

ATTACHMENT E - BANDWIDTH

Test Mode : TX B Mode_CH01/06/11

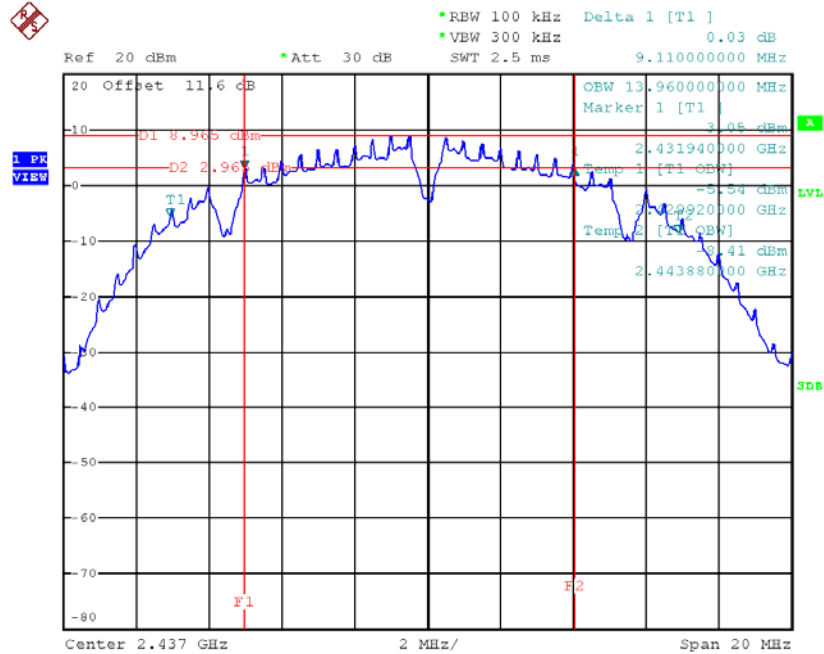
Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2412	8.58	14.04	500	Complies
2437	9.11	13.96	500	Complies
2462	8.55	13.64	500	Complies

TX CH01



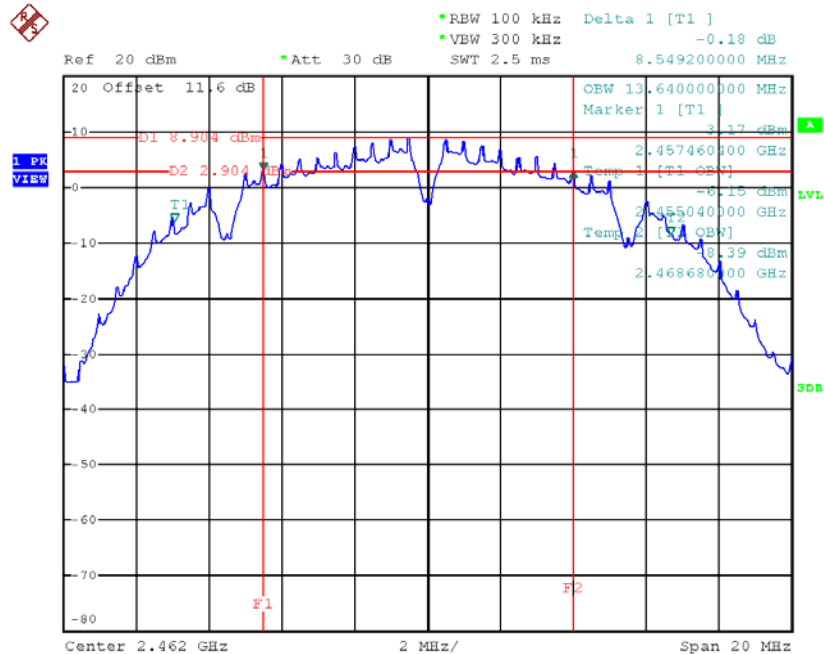
Date: 20.DEC.2016 10:38:38

TX CH06



Date: 20.DEC.2016 10:41:31

TX CH11

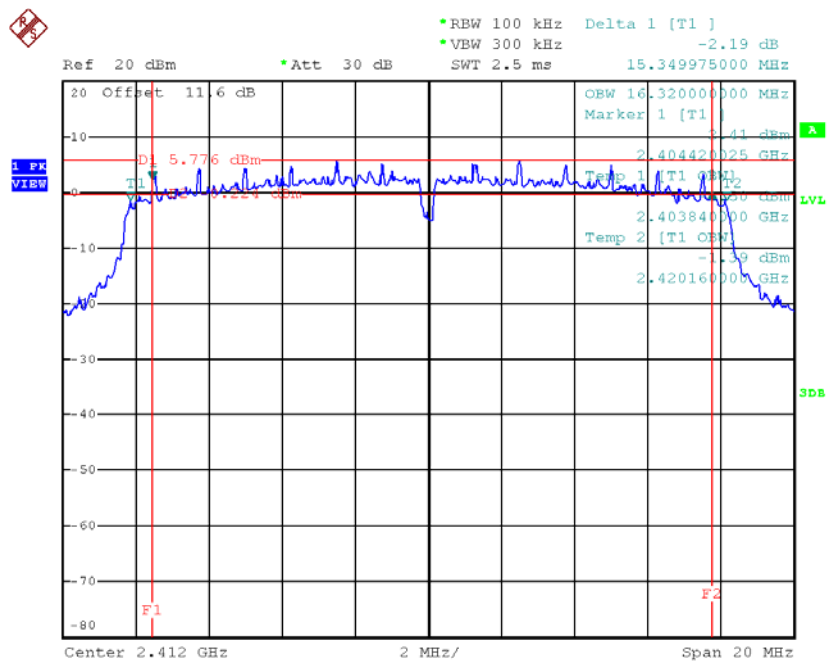


Date: 20.DEC.2016 10:44:21

Test Mode: TX G Mode_CH01/06/11

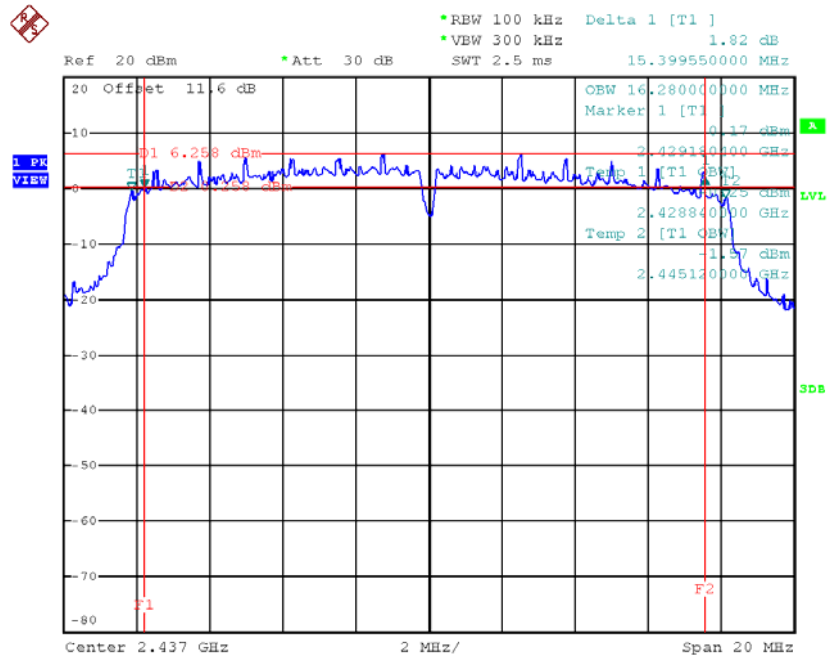
Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2412	15.35	16.32	500	Complies
2437	15.40	16.28	500	Complies
2462	15.10	16.20	500	Complies

TX CH01



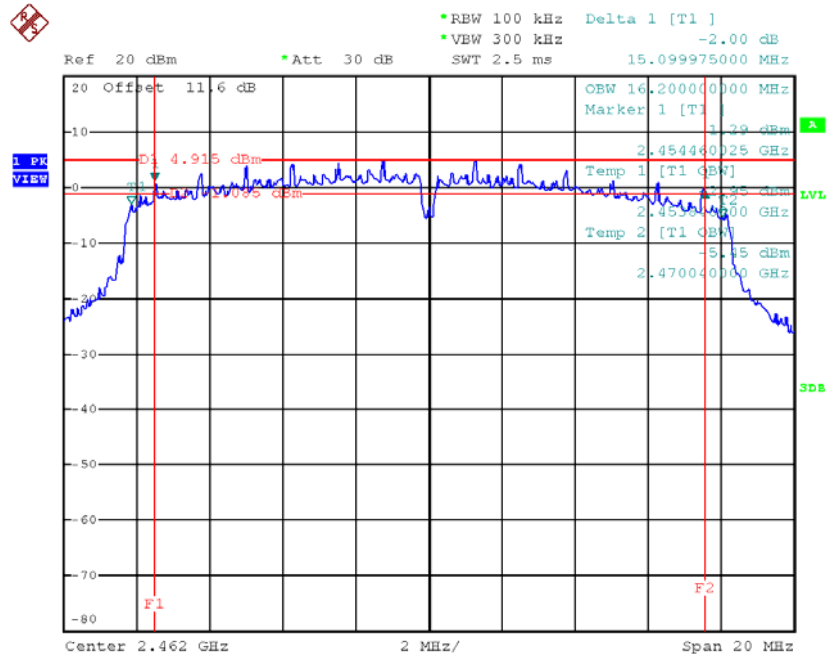
Date: 20.DEC.2016 10:50:30

TX CH06



Date: 20.DEC.2016 11:03:03

TX CH11

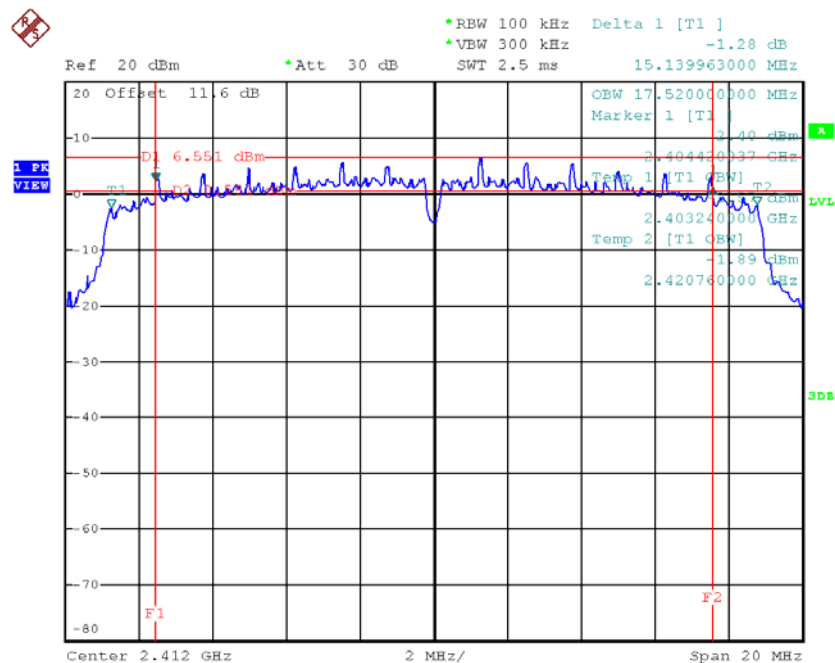


Date: 20.DEC.2016 11:04:49

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

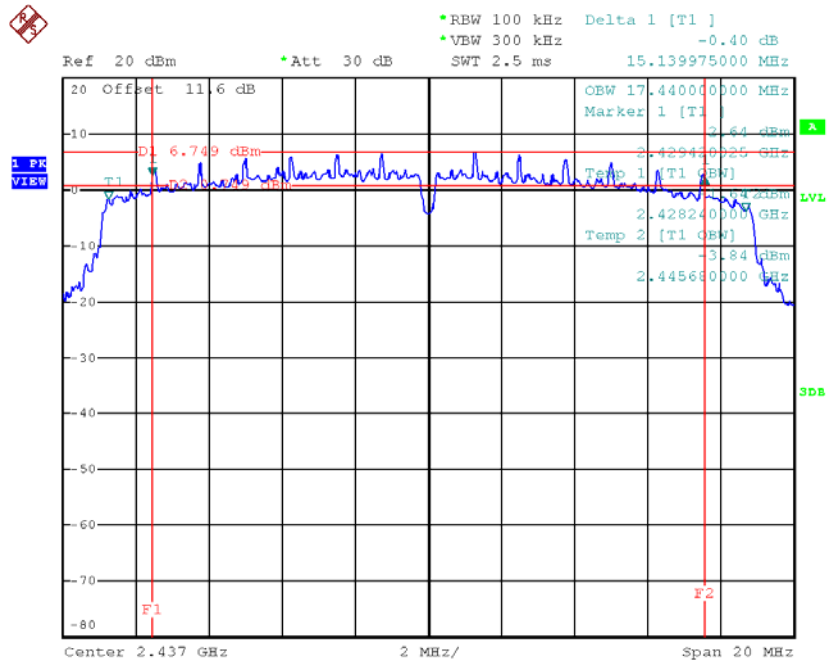
Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2412	15.14	17.52	500	Complies
2437	15.14	17.44	500	Complies
2462	15.14	17.28	500	Complies

TX CH01



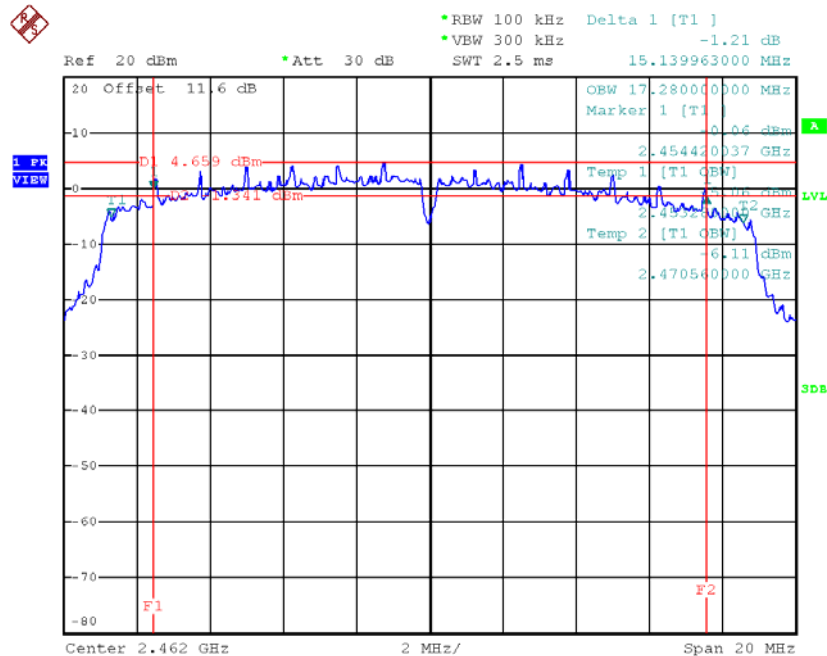
Date: 20.DEC.2016 11:08:08

TX CH06



Date: 20.DEC.2016 11:10:06

TX CH11



Date: 20.DEC.2016 11:11:46

ATTACHMENT 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	19.31	0.09	30.00	1.00	Complies
2437	20.31	0.11	30.00	1.00	Complies
2462	20.17	0.10	30.00	1.00	Complies

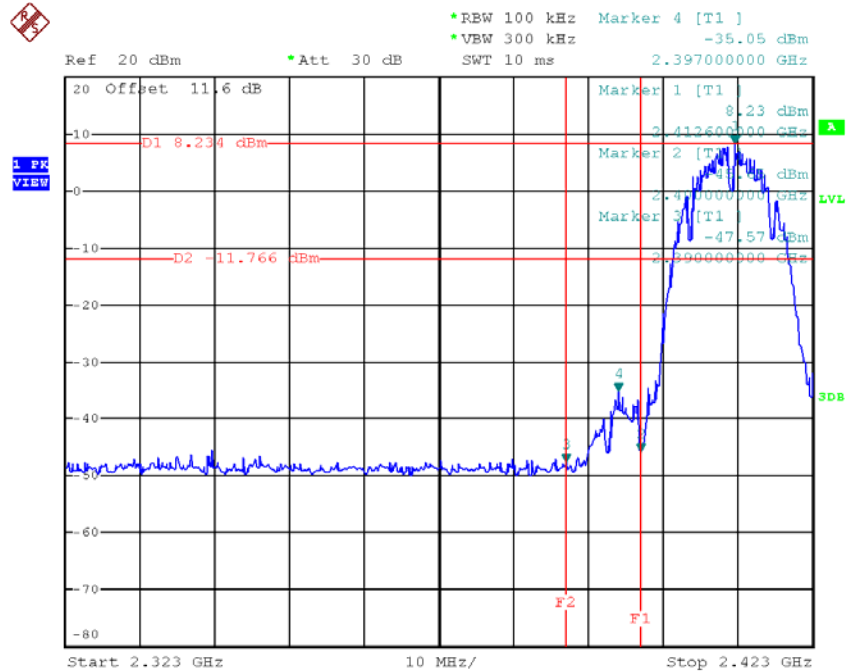
Test Mode :TX G Mode_CH01/06/11					
Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2412	25.75	0.38	30.00	1.00	Complies
2437	26.42	0.44	30.00	1.00	Complies
2462	24.34	0.27	30.00	1.00	Complies

Test Mode :TX N20 Mode_CH01/06/11					
Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2412	25.90	0.39	30.00	1.00	Complies
2437	26.20	0.42	30.00	1.00	Complies
2462	24.02	0.25	30.00	1.00	Complies

ATTACHMENT G - ANTENNA CONDUCTED SPURIOUS EMISSION

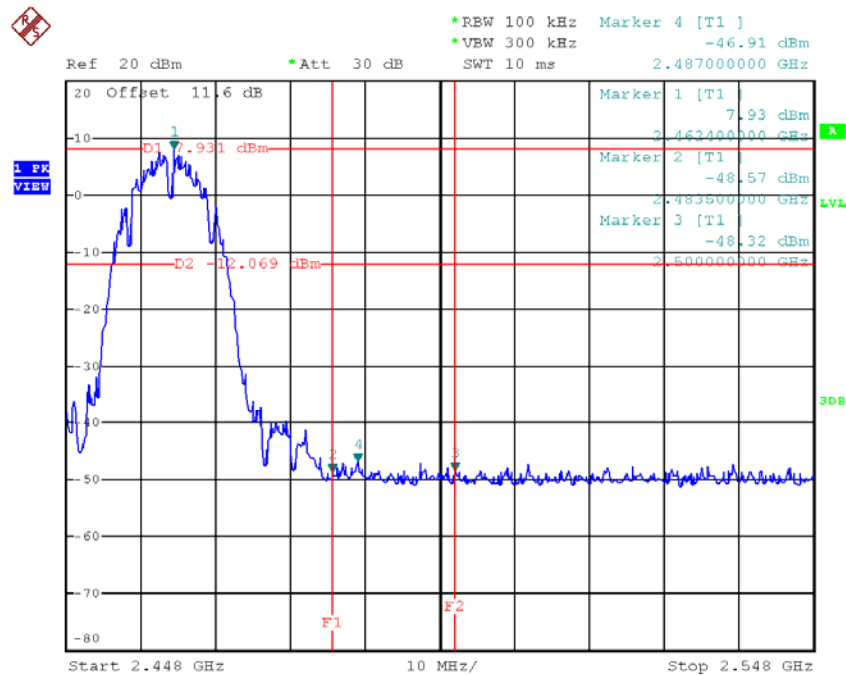
Test Mode : TX B Mode

TX B mode CH01



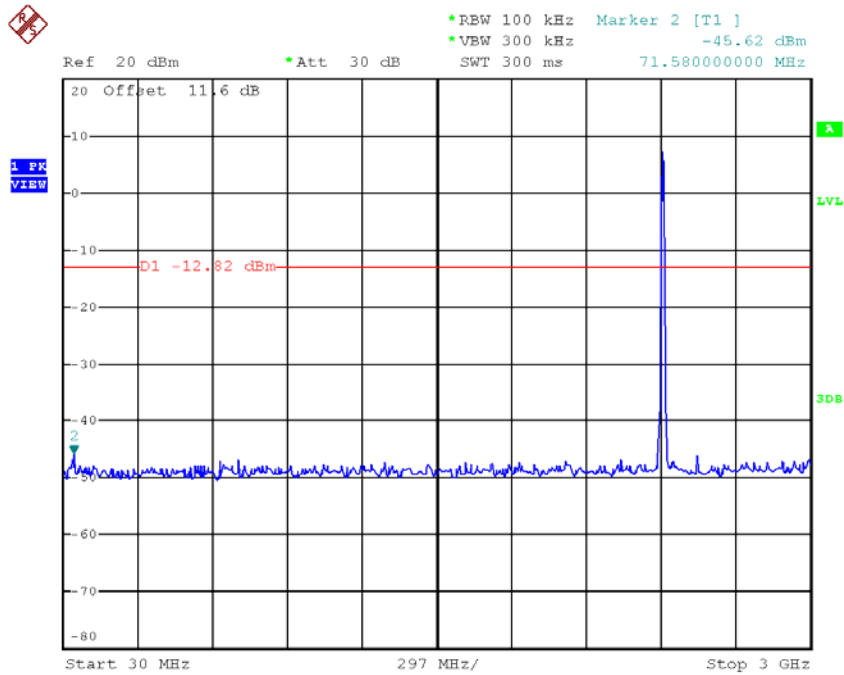
Date: 20.DEC.2016 10:39:37

TX B mode CH11

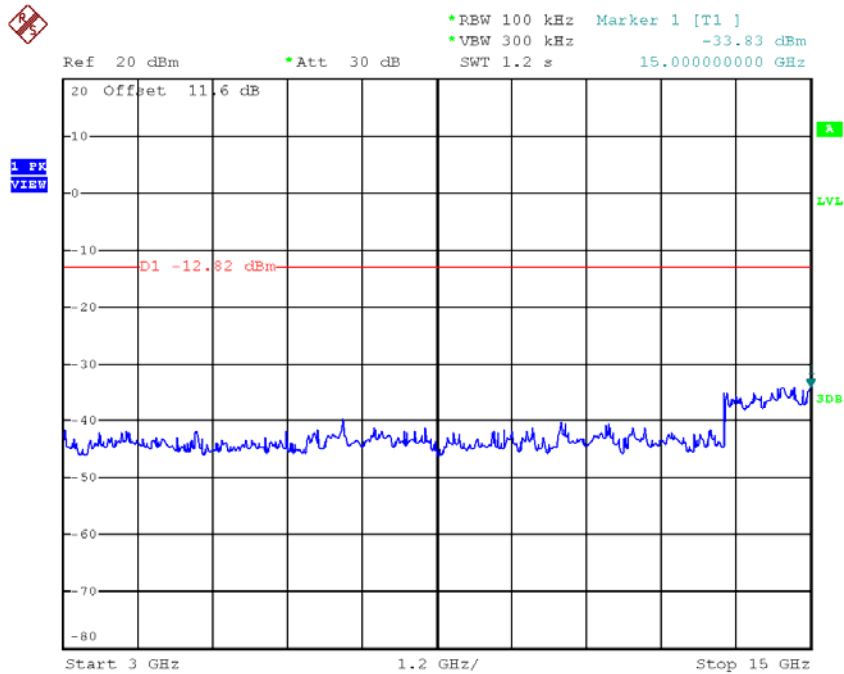


Date: 20.DEC.2016 10:45:12

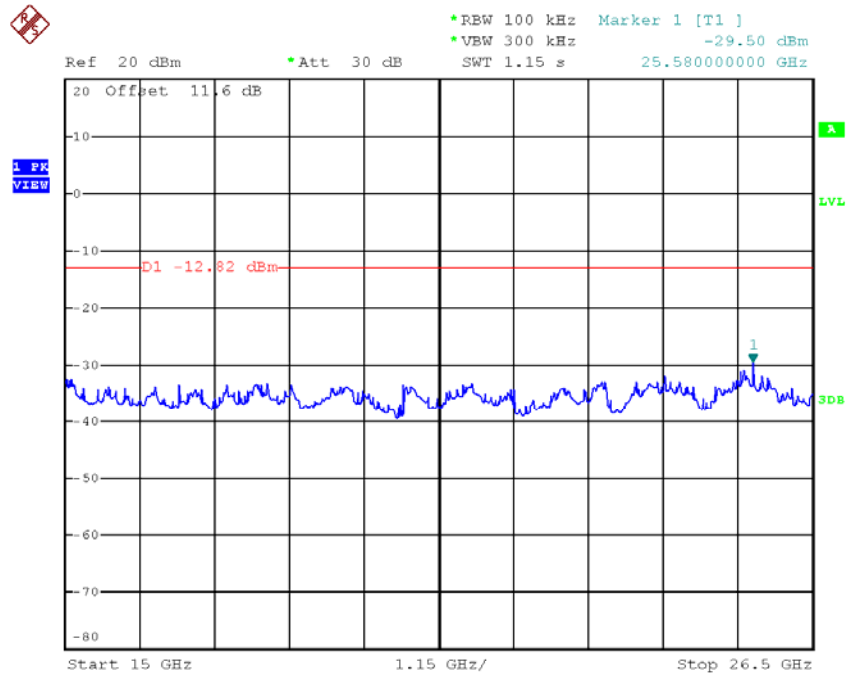
TX B mode CH01 (10th Harmonic of the frequency)



Date: 20.DEC.2016 10:38:51

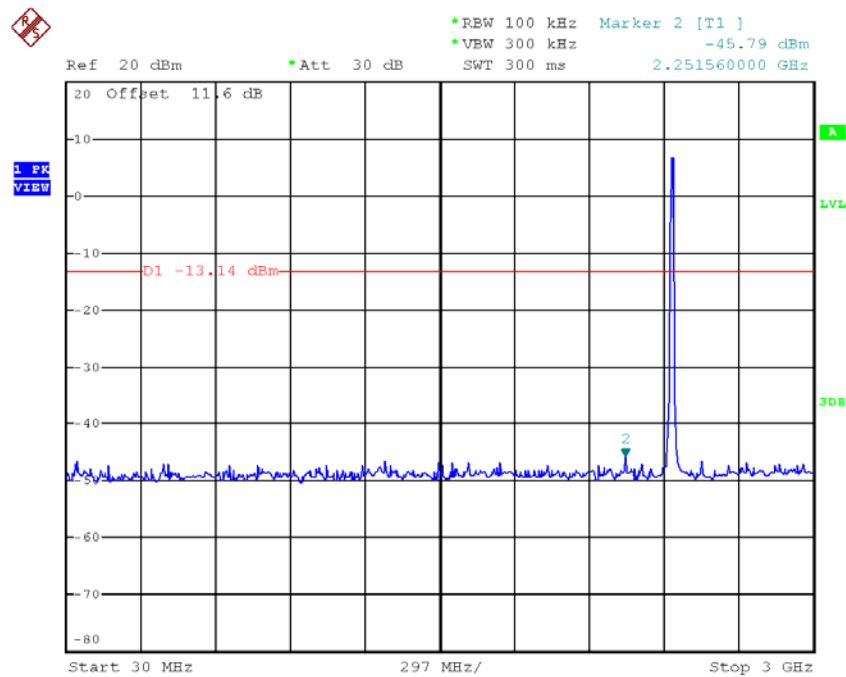


Date: 20.DEC.2016 10:38:57

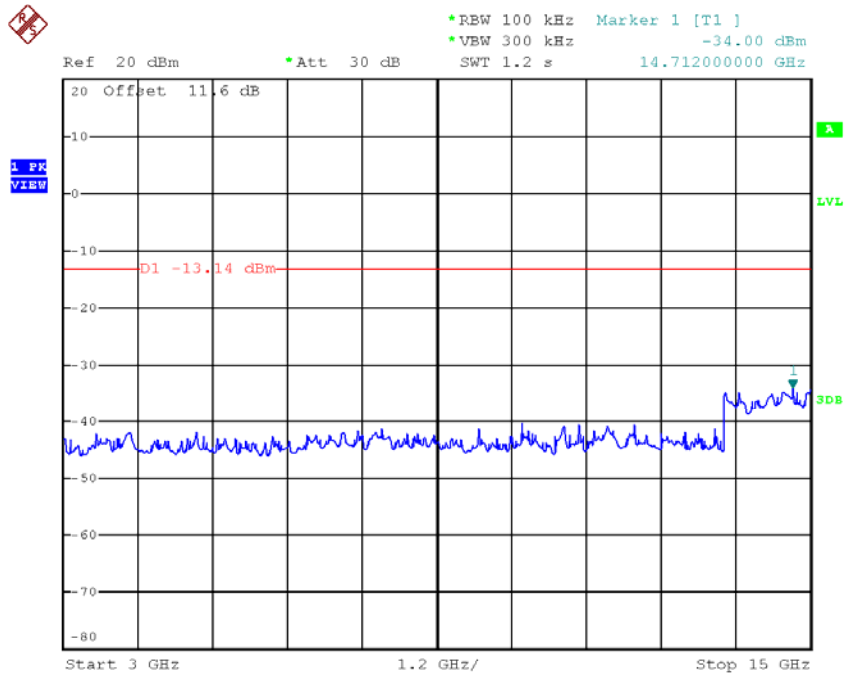


Date: 20.DEC.2016 10:39:04

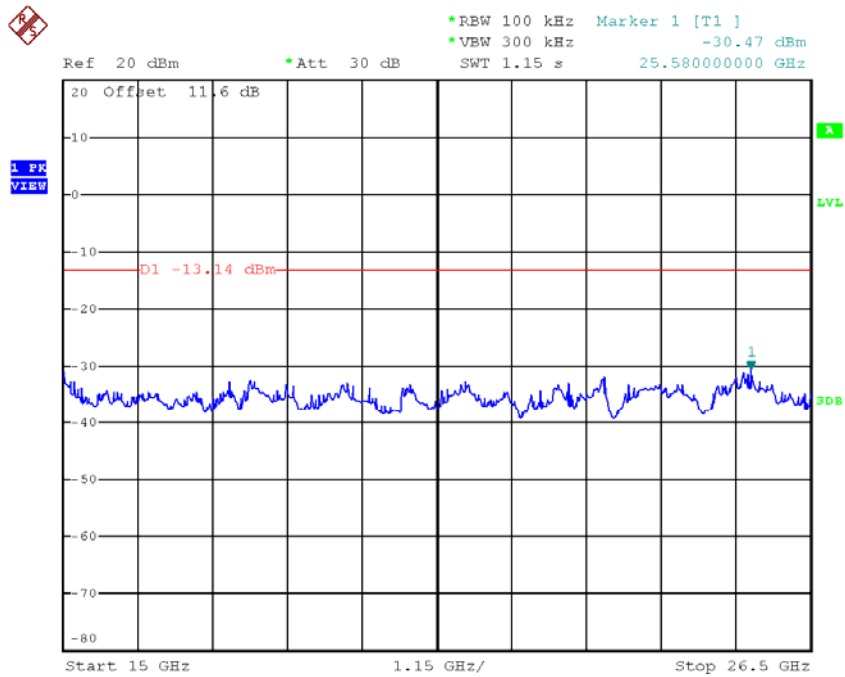
TX B mode CH06 (10th Harmonic of the frequency)



Date: 20.DEC.2016 10:41:45

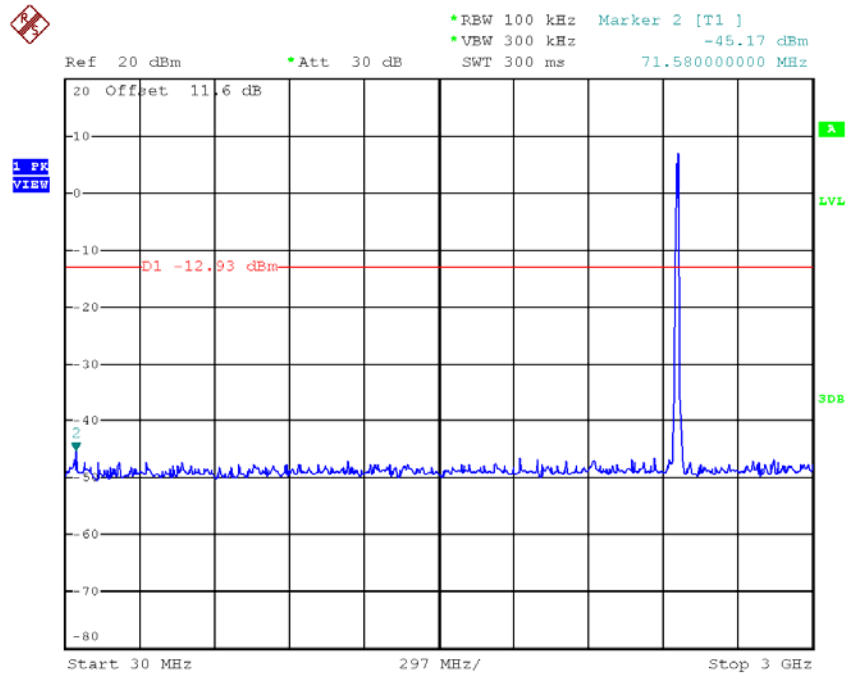


Date: 20.DEC.2016 10:41:51

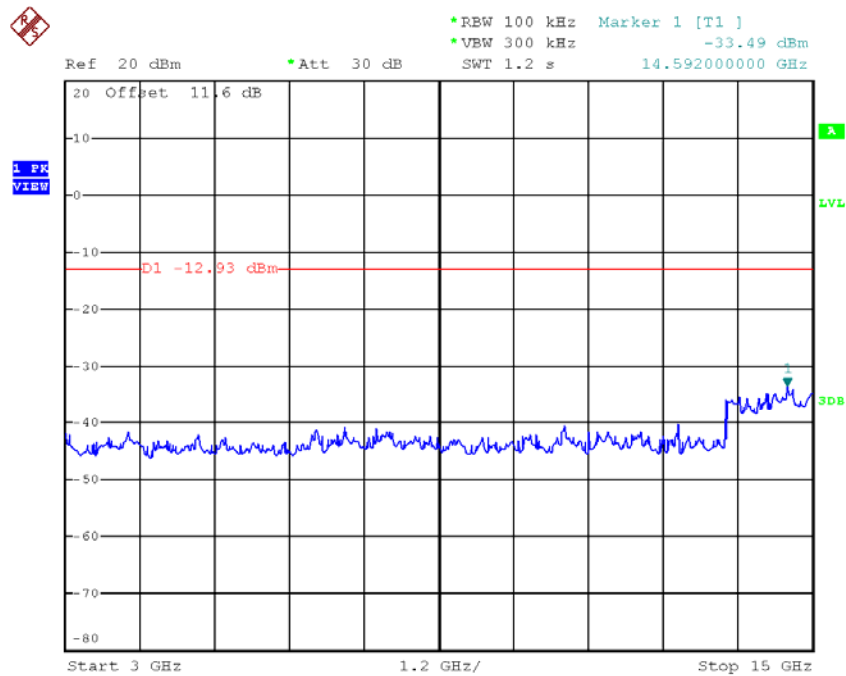


Date: 20.DEC.2016 10:41:58

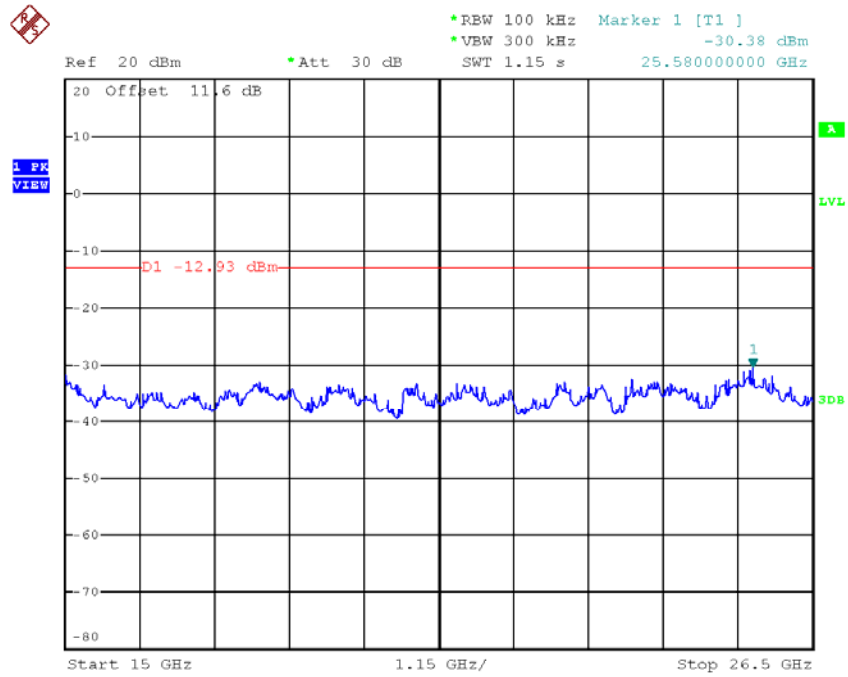
TX B mode CH11 (10th Harmonic of the frequency)



Date: 20.DEC.2016 10:44:35



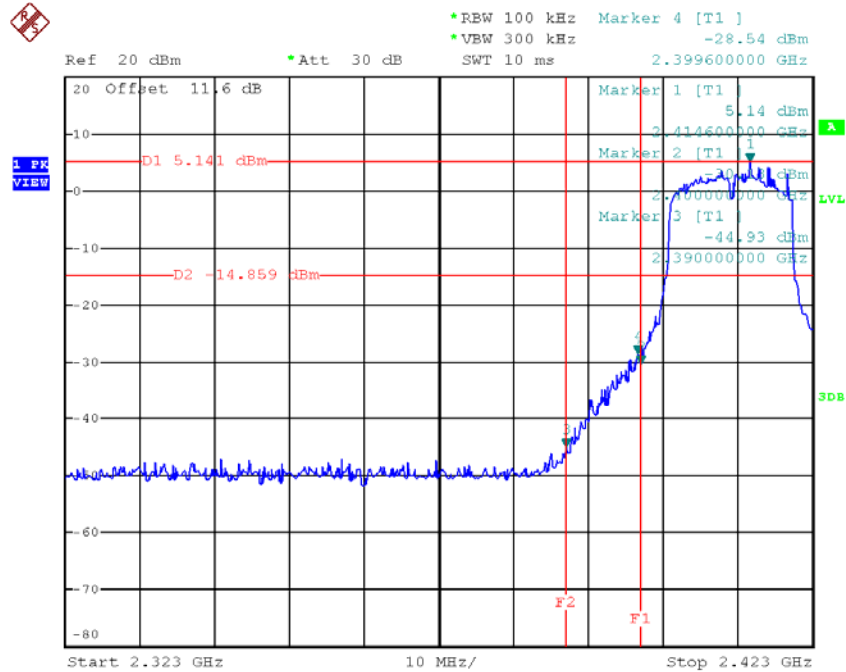
Date: 20.DEC.2016 10:44:41



Date: 20.DEC.2016 10:44:48

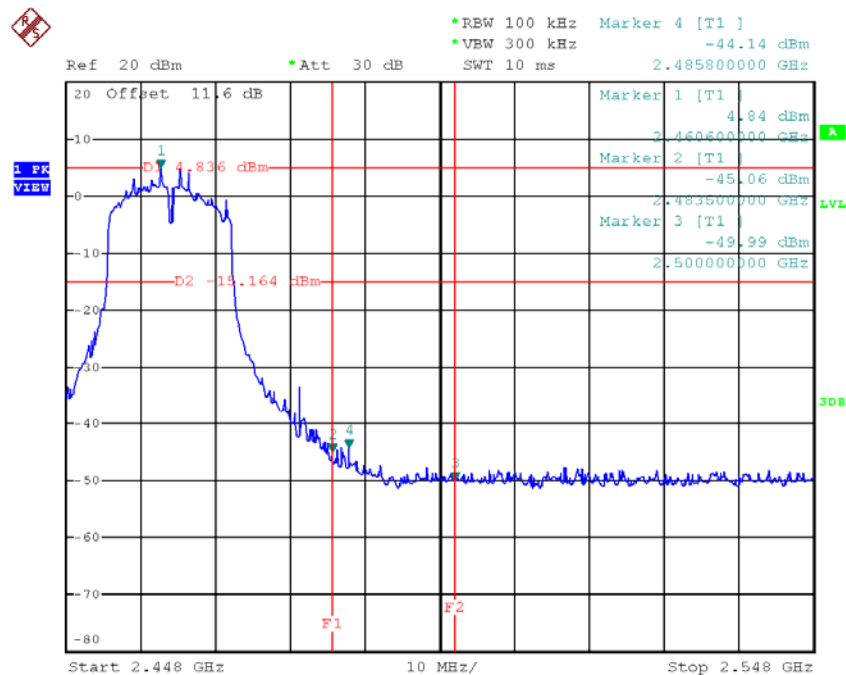
Test Mode : TX G Mode

TX G mode CH01



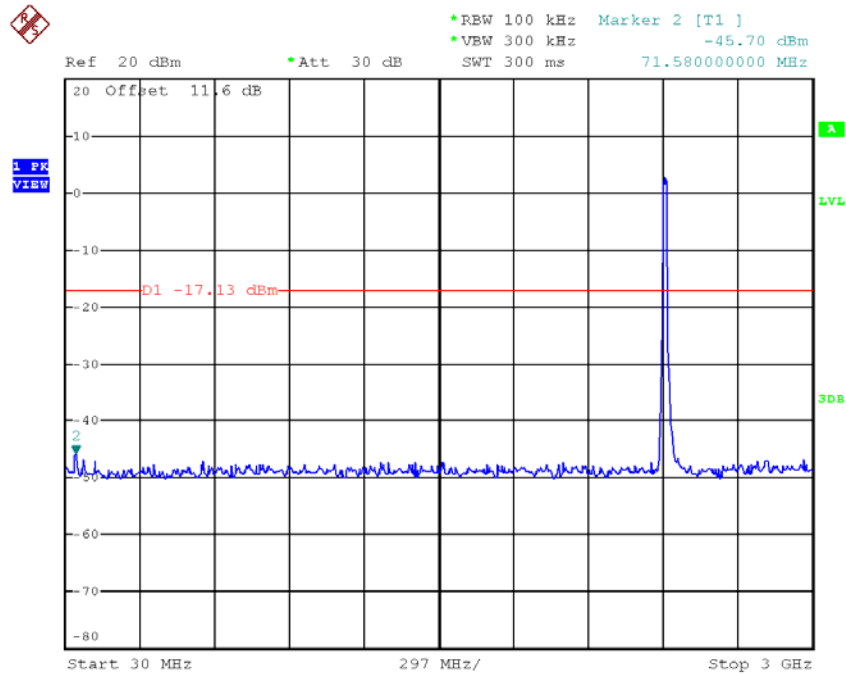
Date: 20.DEC.2016 10:51:20

TX G mode CH11

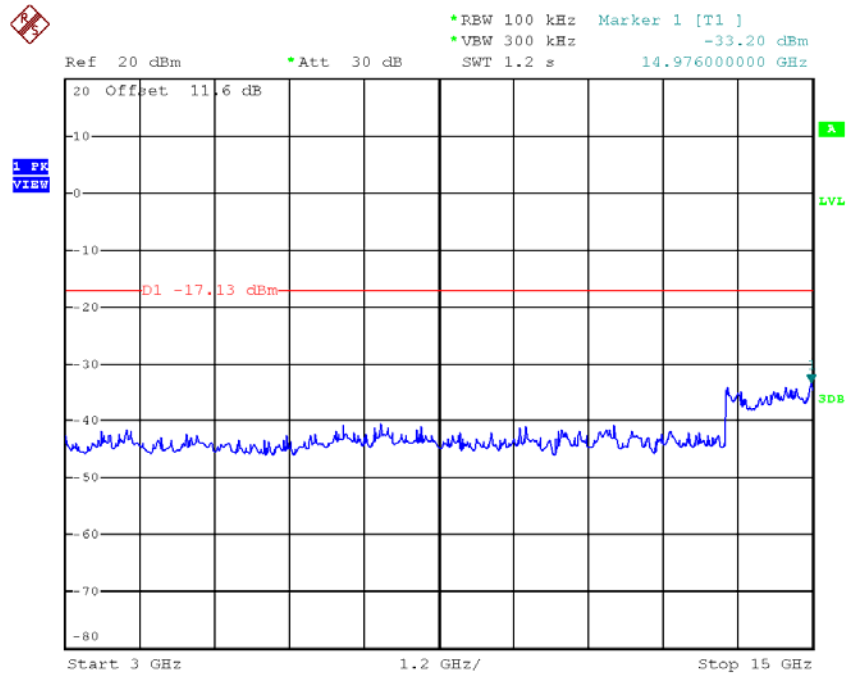


Date: 20.DEC.2016 11:05:23

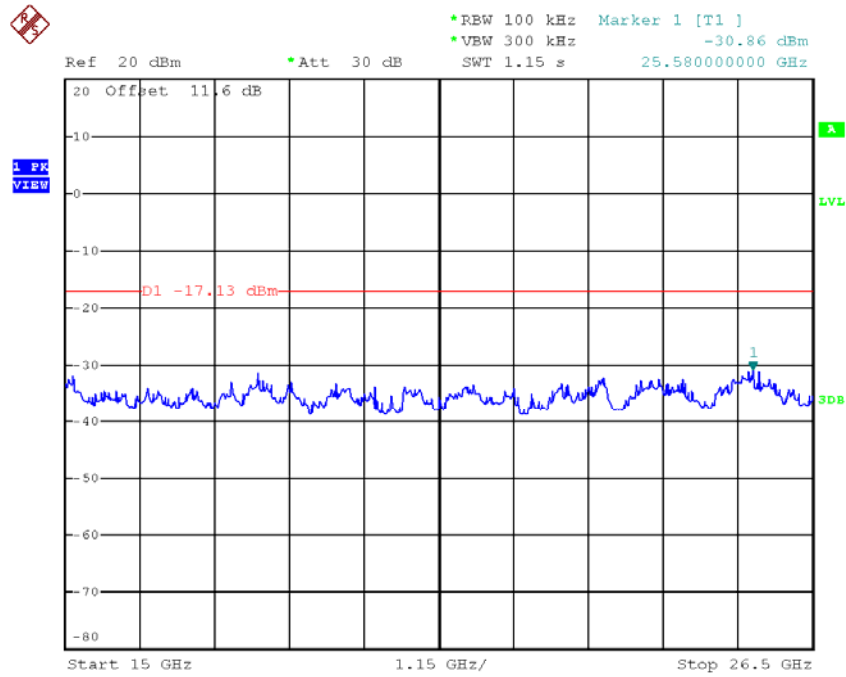
TX G mode CH01 (10th Harmonic of the frequency)



Date: 20.DEC.2016 10:50:43

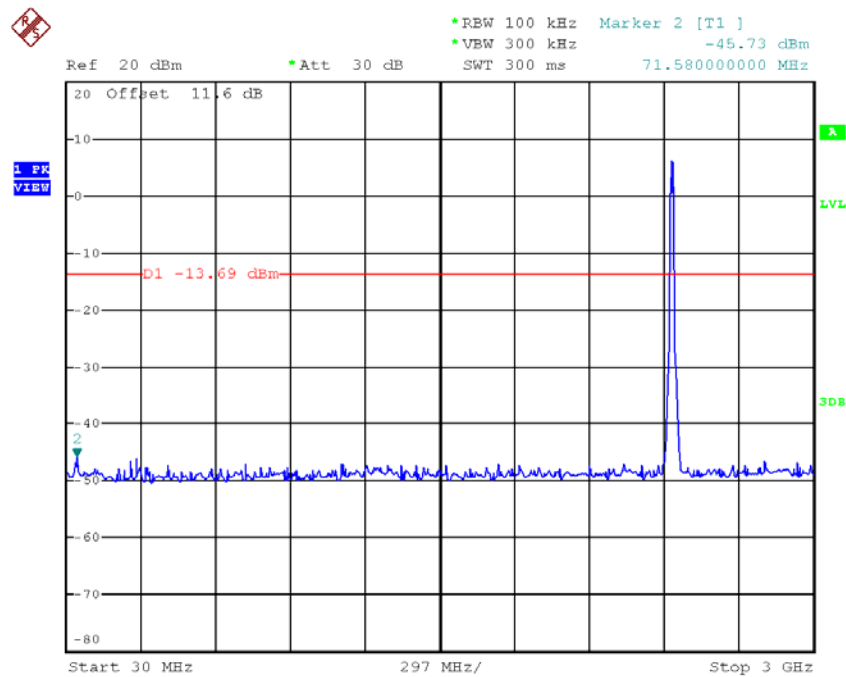


Date: 20.DEC.2016 10:50:50

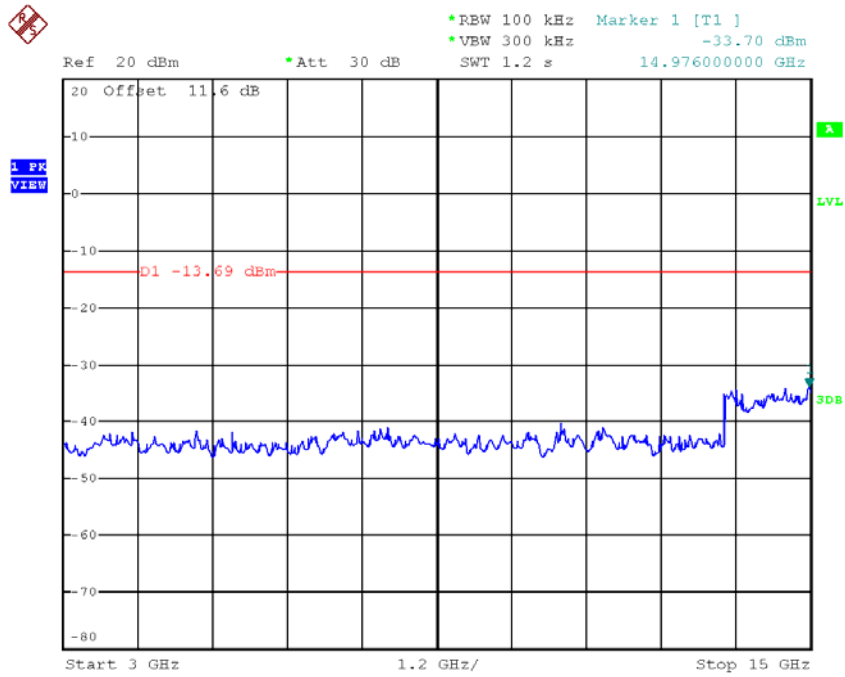


Date: 20.DEC.2016 10:50:56

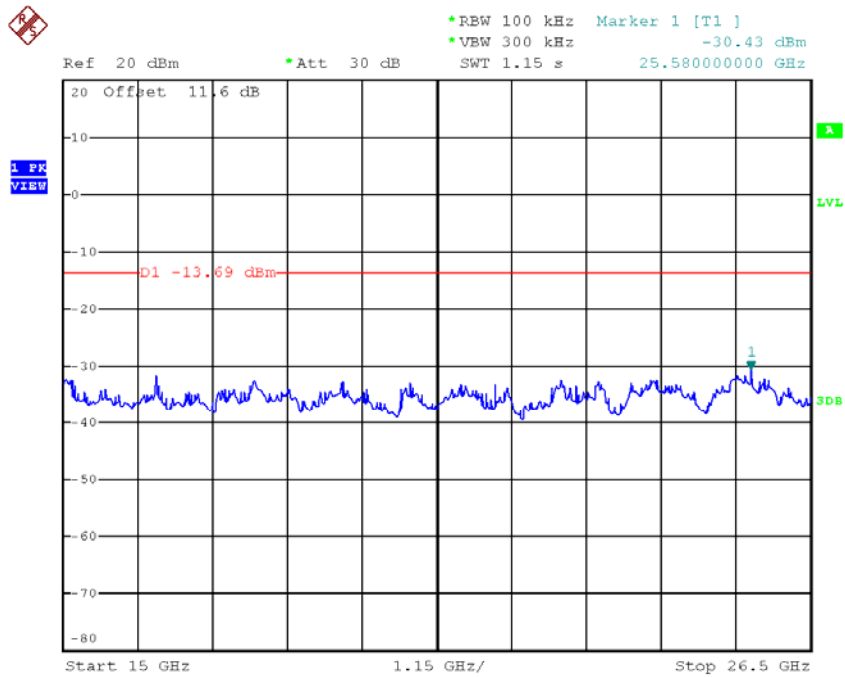
TX G mode CH06 (10th Harmonic of the frequency)



Date: 20.DEC.2016 11:03:18

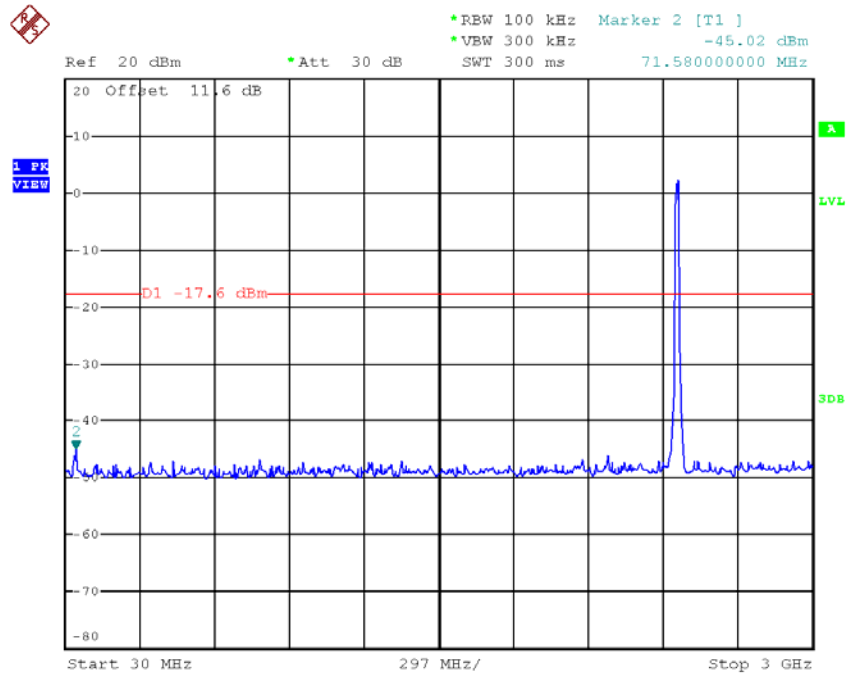


Date: 20.DEC.2016 11:03:25

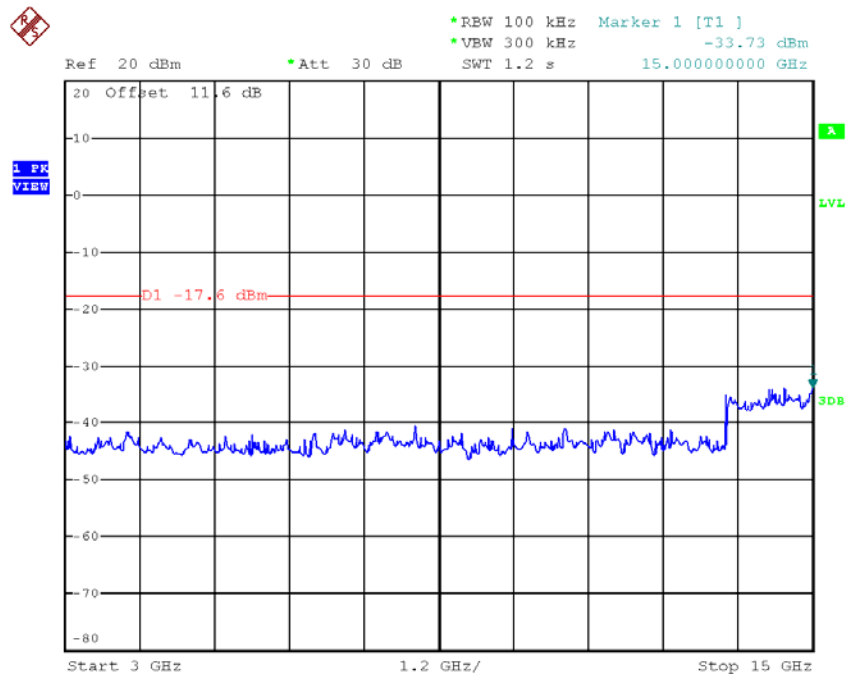


Date: 20.DEC.2016 11:03:31

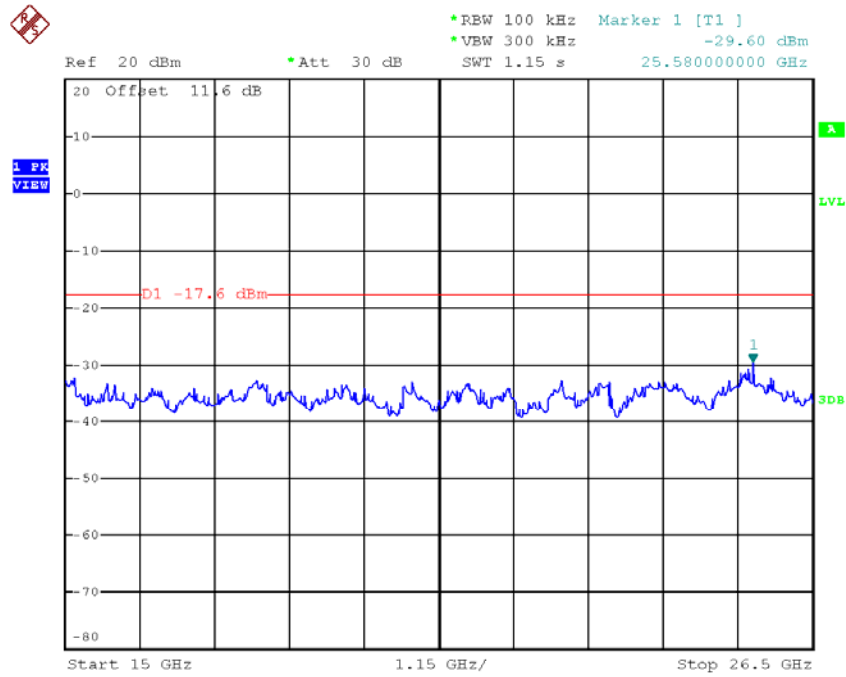
TX G mode CH11 (10th Harmonic of the frequency)



Date: 20.DEC.2016 11:05:03



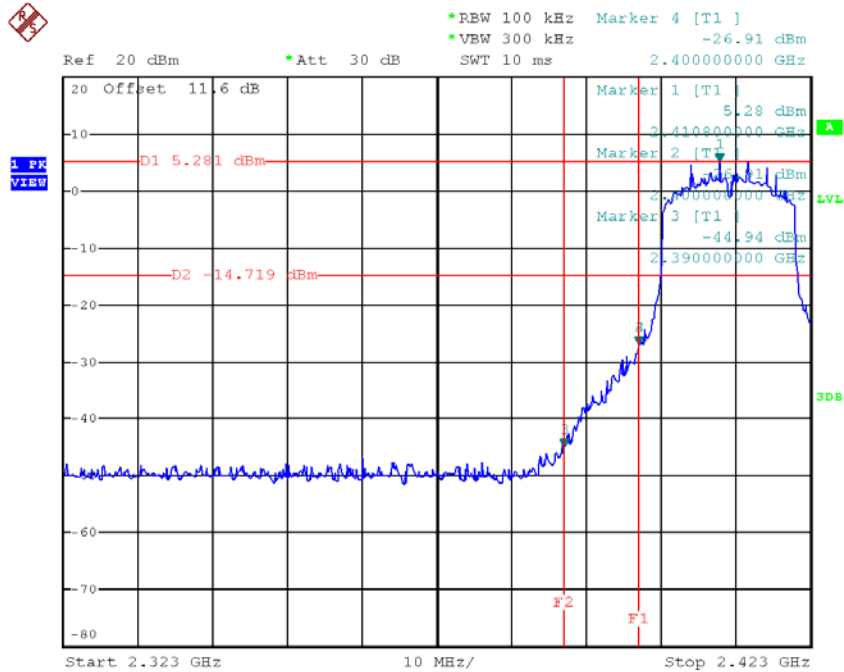
Date: 20.DEC.2016 11:05:09



Date: 20.DEC.2016 11:05:16

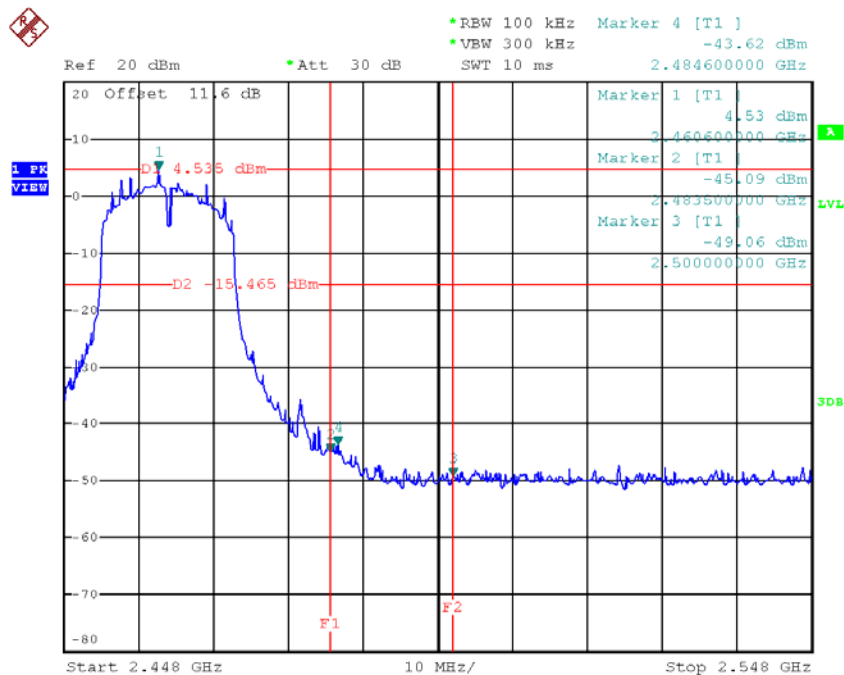
Test Mode : TX N-20M Mode

TX HT20 mode CH01



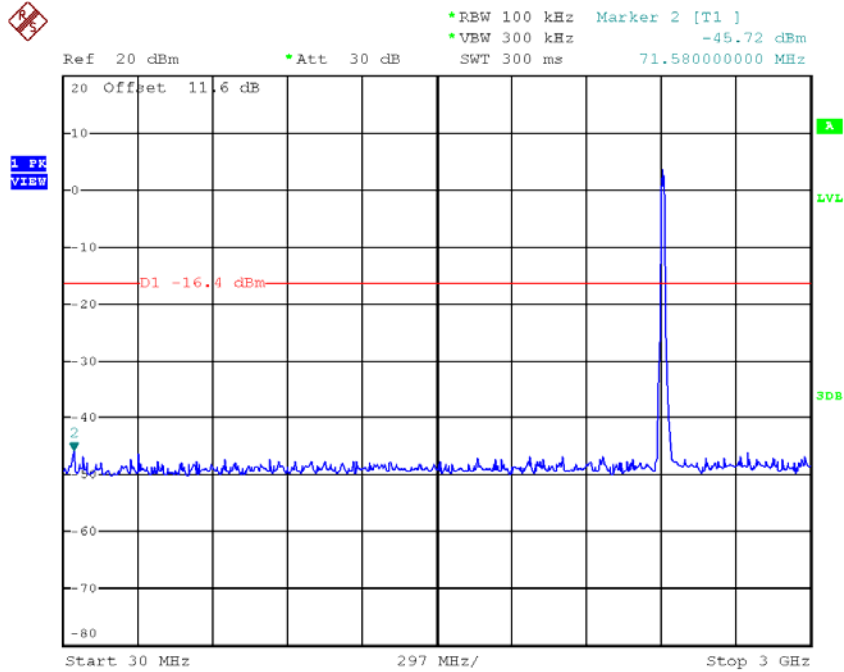
Date: 20.DEC.2016 11:08:59

TX HT20 mode CH11

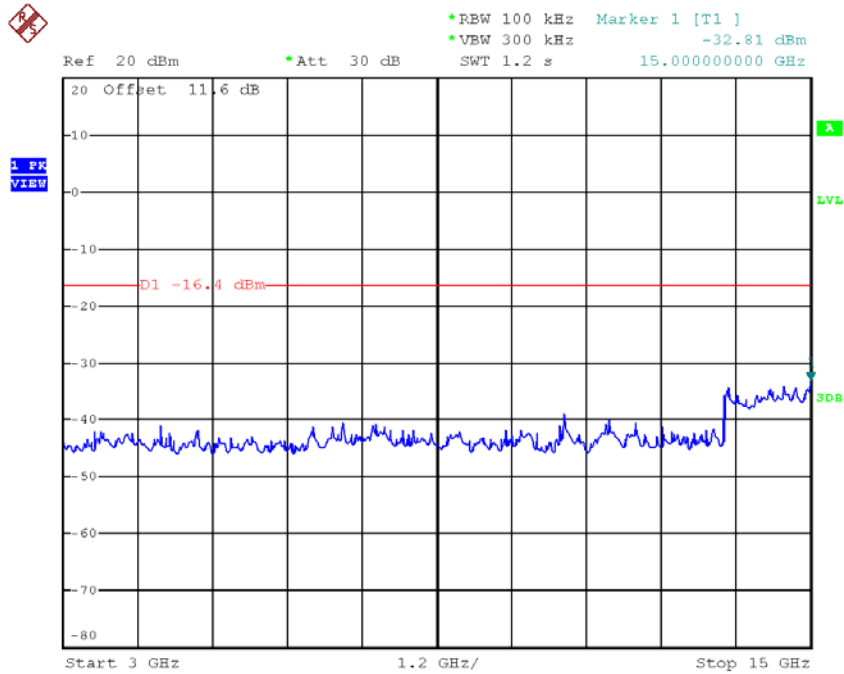


Date: 20.DEC.2016 11:12:19

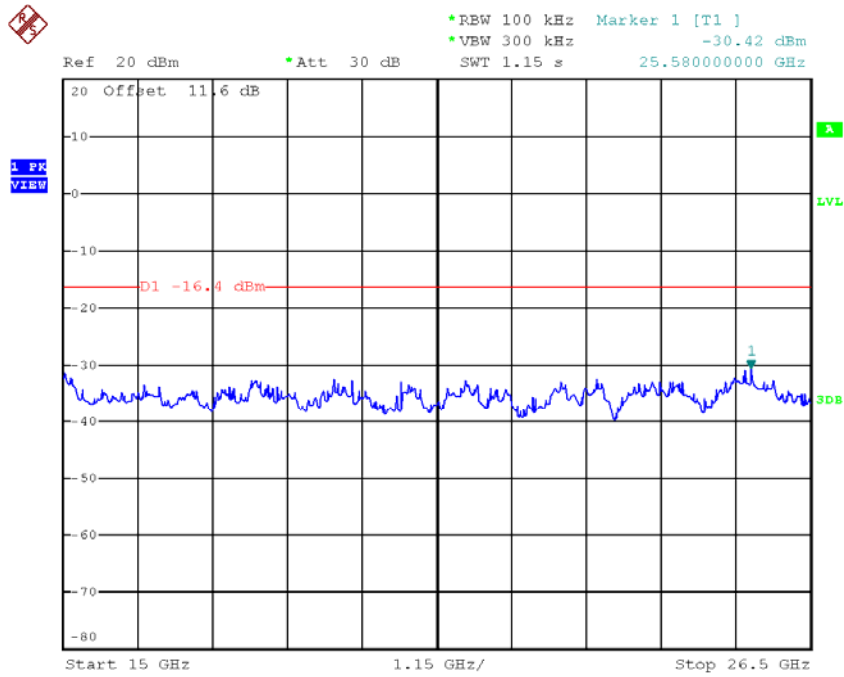
TX HT20 mode CH01 (10th Harmonic of the frequency)



Date: 20.DEC.2016 11:08:22

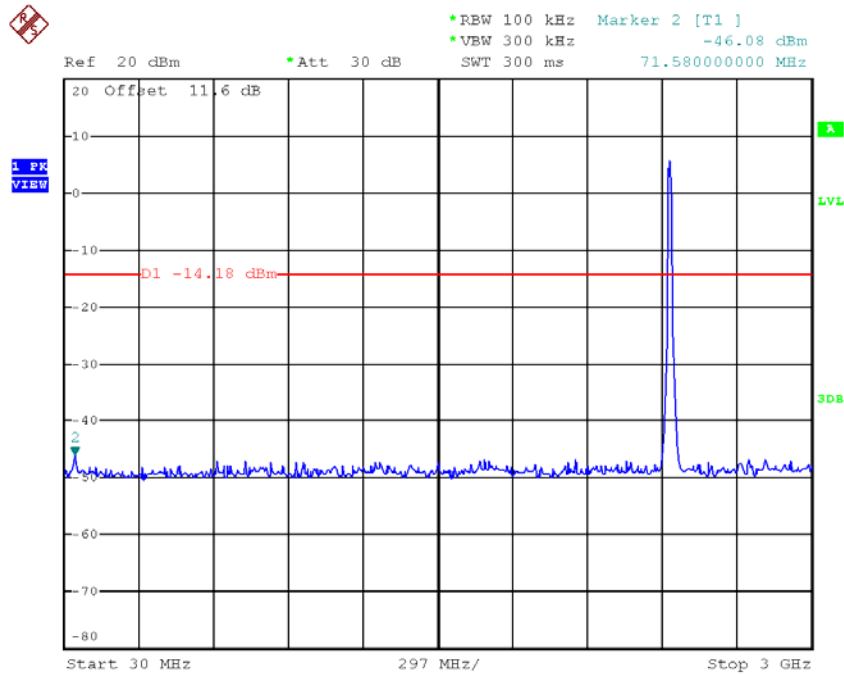


Date: 20.DEC.2016 11:08:28

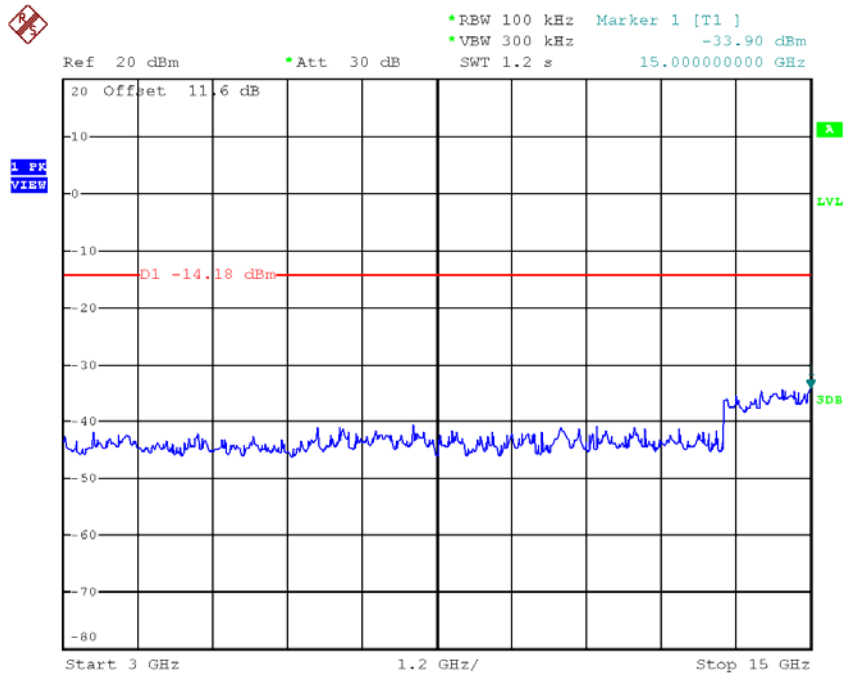


Date: 20.DEC.2016 11:08:35

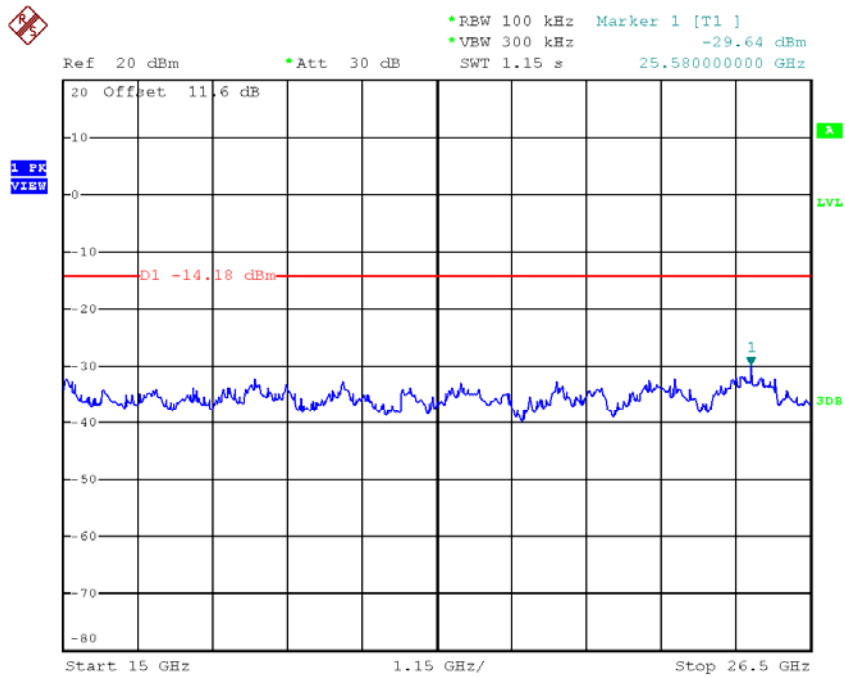
TX HT20 mode CH06 (10th Harmonic of the frequency)



Date: 20.DEC.2016 11:10:19

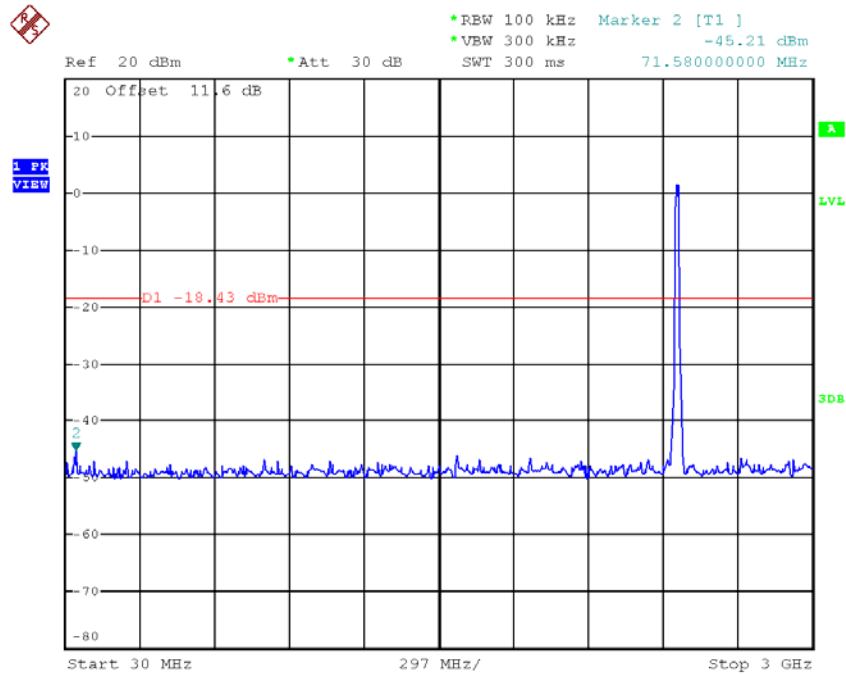


Date: 20.DEC.2016 11:10:26

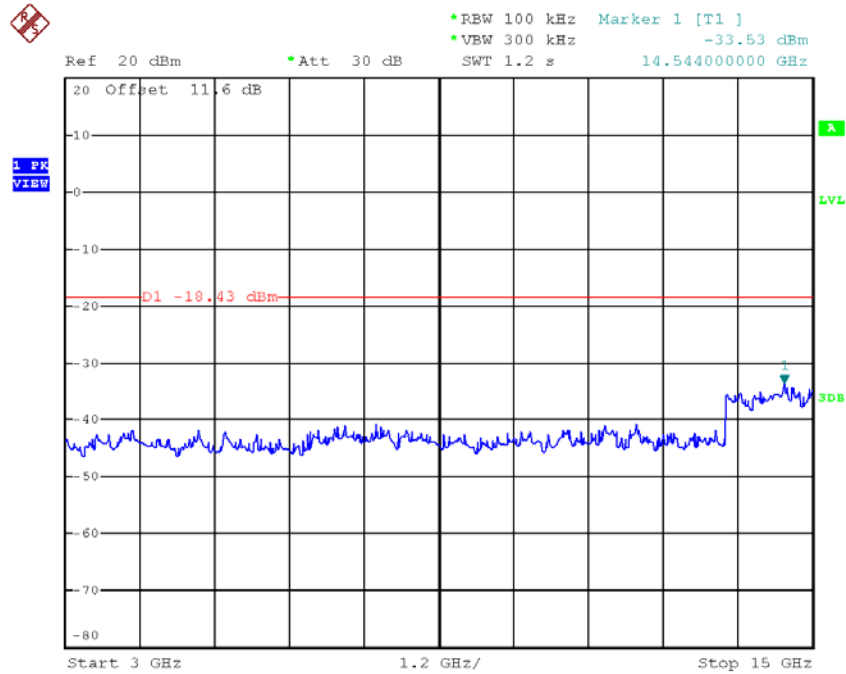


Date: 20.DEC.2016 11:10:32

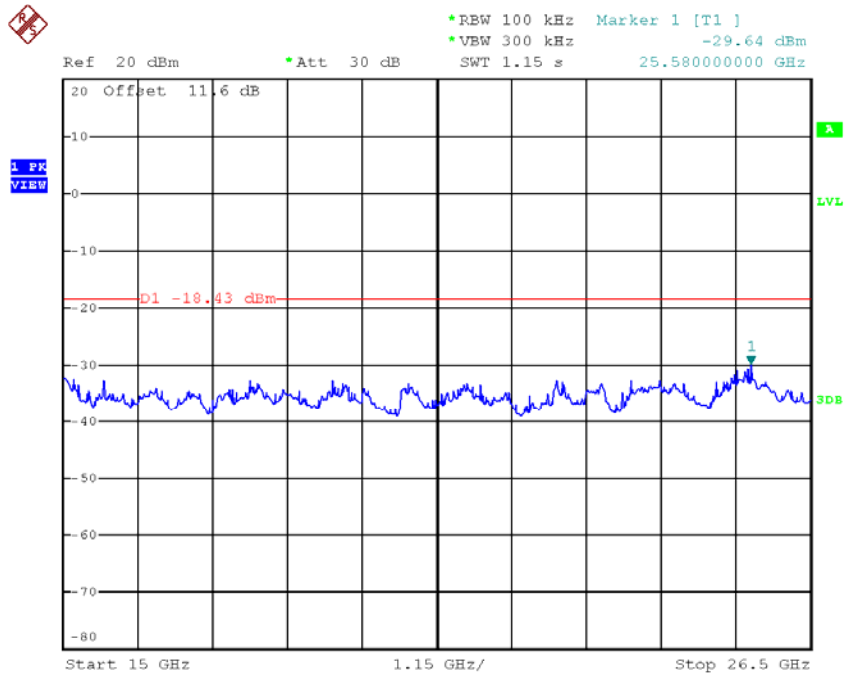
TX HT20 mode CH11 (10th Harmonic of the frequency)



Date: 20.DEC.2016 11:11:59



Date: 20.DEC.2016 11:12:06



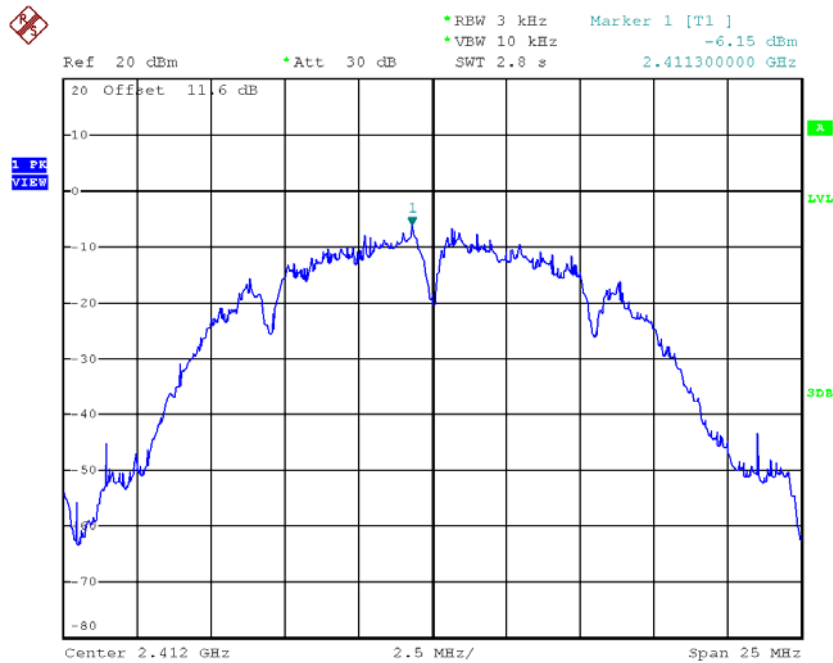
Date: 20.DEC.2016 11:12:13

ATTACHMENT H - POWER SPECTRAL DENSITY

Test Mode :TX B Mode_CH01/06/11

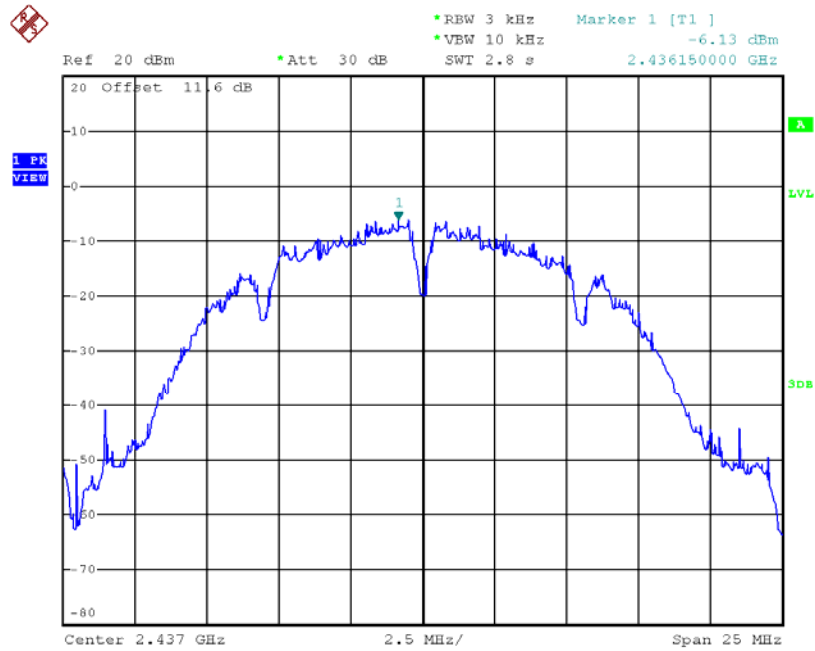
Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-6.15	0.2427	8.00	Complies
2437	-6.13	0.2438	8.00	Complies
2462	-4.50	0.3548	8.00	Complies

TX CH01



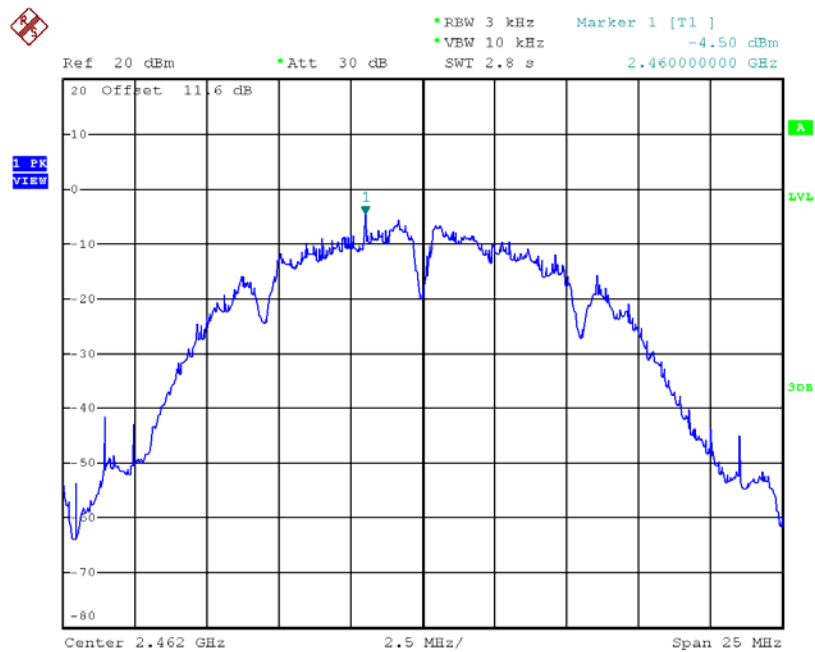
Date: 20.DEC.2016 10:39:56

TX CH06



Date: 20.DEC.2016 10:42:16

TX CH11

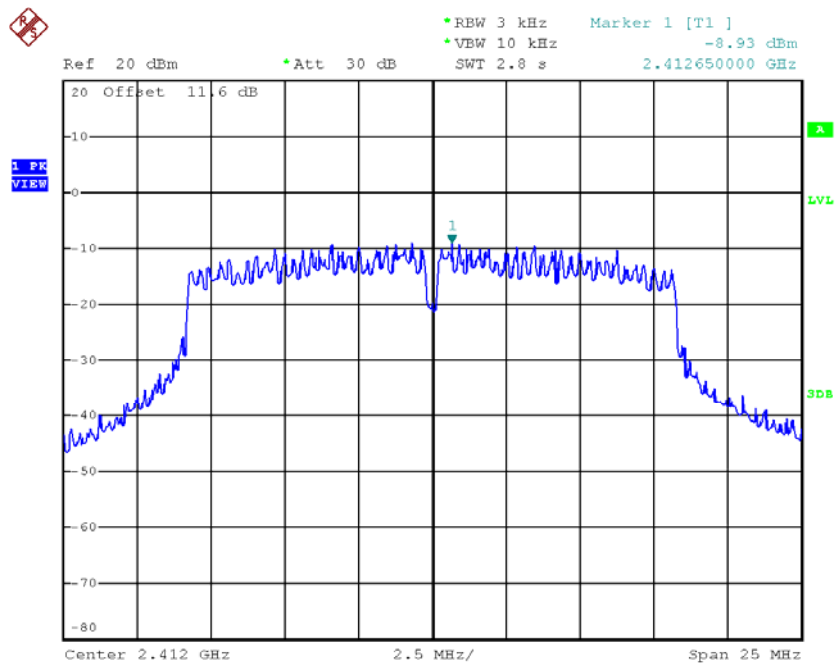


Date: 20.DEC.2016 10:45:30

Test Mode :TX G Mode_CH01/06/11

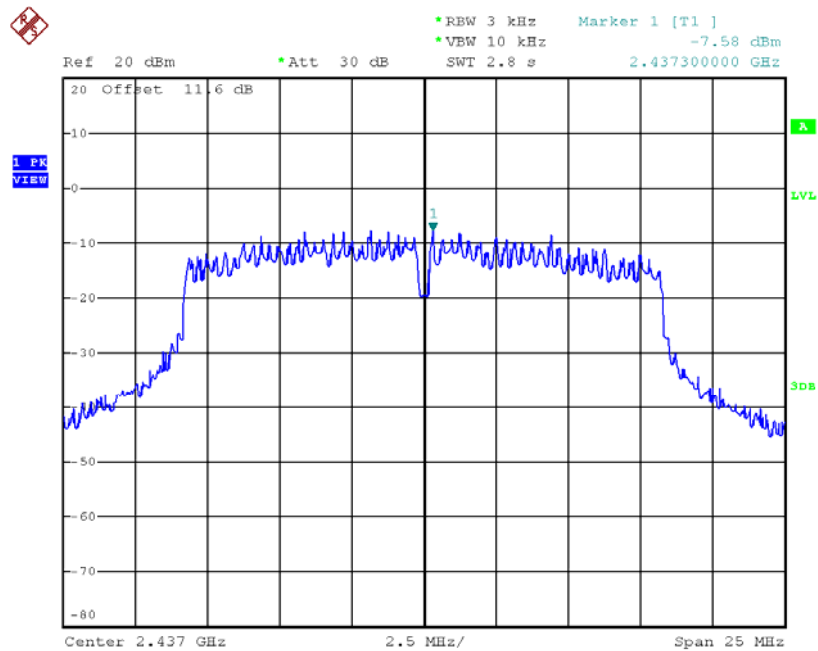
Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-8.93	0.1279	8.00	Complies
2437	-7.58	0.1746	8.00	Complies
2462	-8.78	0.1324	8.00	Complies

TX CH01



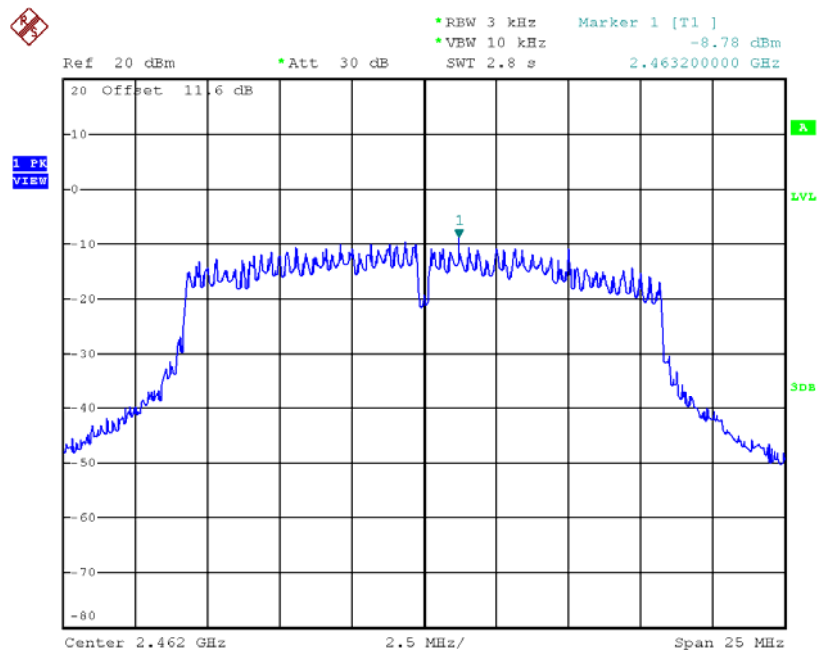
Date: 20.DEC.2016 10:51:38

TX CH06



Date: 20.DEC.2016 11:03:50

TX CH11

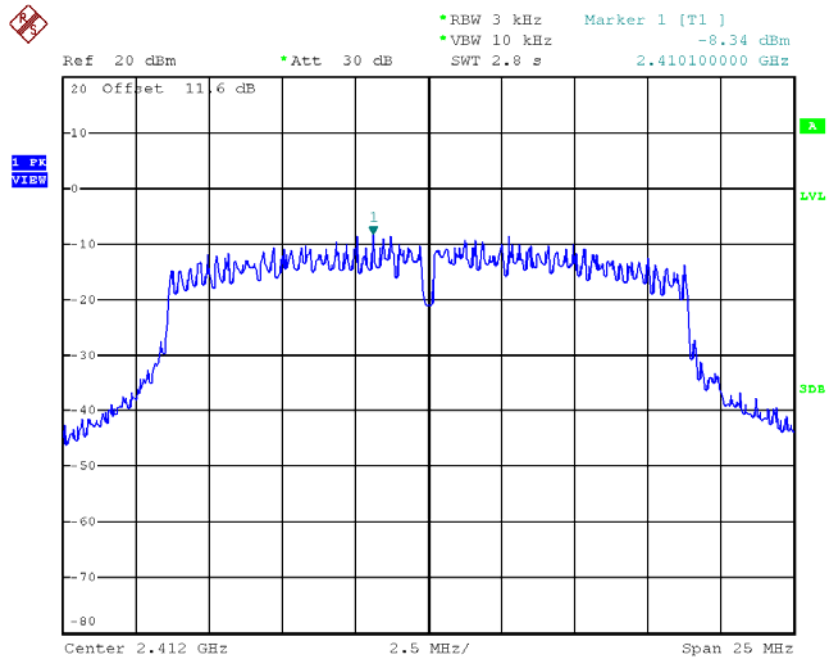


Date: 20.DEC.2016 11:05:41

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

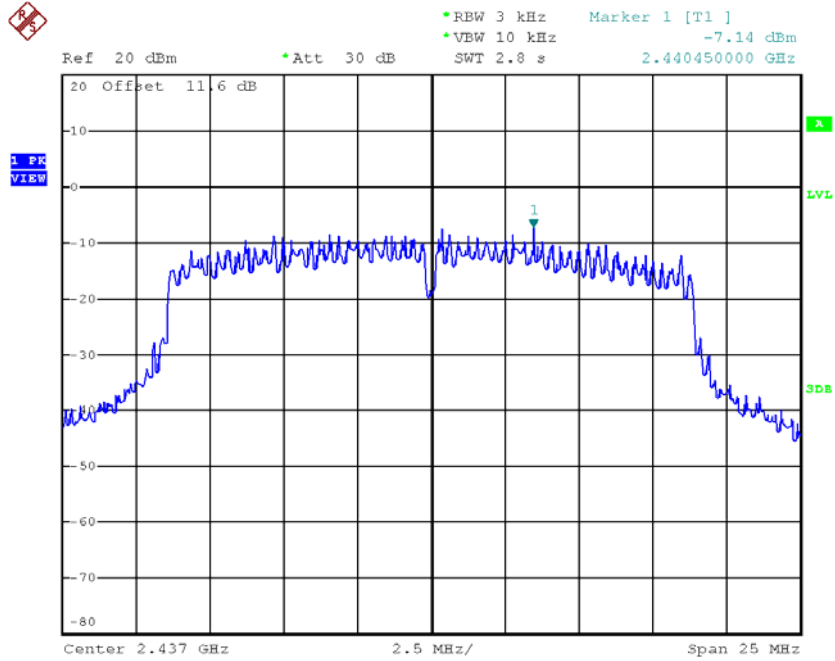
Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-8.34	0.1466	8.00	Complies
2437	-7.14	0.1932	8.00	Complies
2462	-8.29	0.1483	8.00	Complies

TX CH01



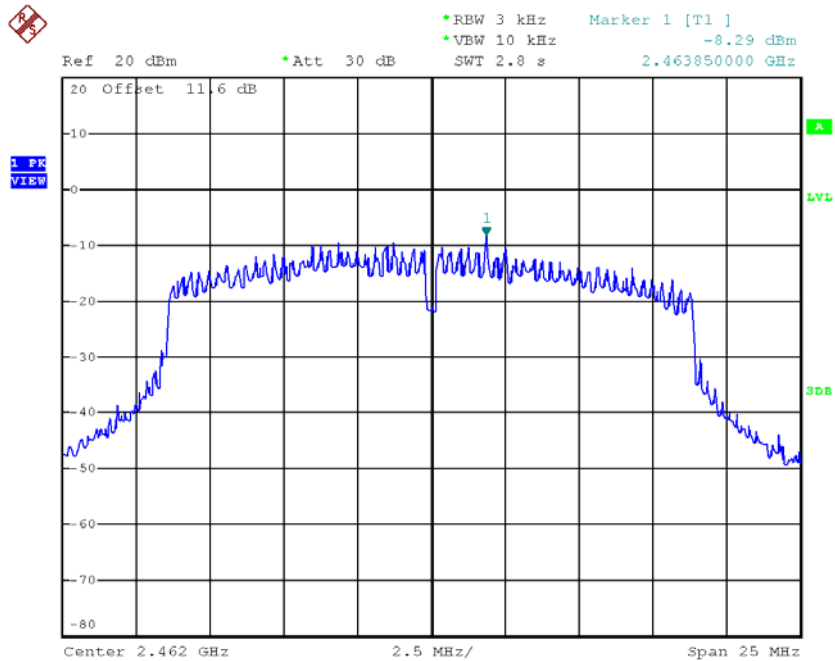
Date: 20.DEC.2016 11:09:17

TX CH06



Date: 20.DEC.2016 11:10:51

TX CH11



Date: 20.DEC.2016 11:12:38