

FCC Radio Test Report

FCC ID: XRSCRMXCORE101

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

Project No. : 1412C254
Equipment : 2.4G Wireless Control Module
Model Name : 200-1901
Applicant : LumenRadio AB
Address : Svangatan 2B, SE-41668 Gothenburg, Sweden

Date of Receipt : Dec. 30, 2014
Date of Test : Dec. 30, 2014 ~ Mar. 04, 2015
Issued Date : Mar. 05, 2015
Tested by : BTL Inc.

Testing Engineer : David Mao
(David Mao)

Technical Manager : Leo Hung
(Leo Hung)

Authorized Signatory : Steven Lu
(Steven Lu)

B T L I N C .

No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan,
Guangdong, China.

TEL: +86-769-8318-3000 FAX: +86-769-8319-6000

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 the standards traceable to National Measurement Laboratory (NML) of **CHINA**, or National Institute of Standards and Technology (**NIST**) of **U.S.A.**

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 reports must not be used by the client to claim product endorsement by the authorities or any agency of the 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	9
3.1 GENERAL DESCRIPTION OF EUT	9
3.2 DESCRIPTION OF TEST MODES	11
3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING	11
3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	12
3.5 DESCRIPTION OF SUPPORT UNITS	12
4 . EMC EMISSION TEST	13
4.1 CONDUCTED EMISSION MEASUREMENT	13
4.1.1 POWER LINE CONDUCTED EMISSION LIMITS	13
4.1.2 TEST PROCEDURE	13
4.1.3 DEVIATION FROM TEST STANDARD	13
4.1.4 TEST SETUP	14
4.1.5 EUT OPERATING CONDITIONS	14
4.1.6 EUT TEST CONDITIONS	14
4.1.7 TEST RESULTS	14
4.2 RADIATED EMISSION MEASUREMENT	15
4.2.1 RADIATED EMISSION LIMITS	15
4.2.2 TEST PROCEDURE	16
4.2.3 DEVIATION FROM TEST STANDARD	16
4.2.4 TEST SETUP	16
4.2.5 EUT OPERATING CONDITIONS	17
4.2.6 EUT TEST CONDITIONS	17
4.2.7 TEST RESULTS (9KHZ TO 30MHZ)	18
4.2.8 TEST RESULTS (BETWEEN 30MHZ TO 1000 MHZ)	18
4.2.9 TEST RESULTS (ABOVE 1000 MHZ)	18
5 . BANDWIDTH TEST	19
5.1 APPLIED PROCEDURES	19
5.1.1 TEST PROCEDURE	19
5.1.2 DEVIATION FROM STANDARD	19
5.1.3 TEST SETUP	19
5.1.4 EUT OPERATION CONDITIONS	19
5.1.5 EUT TEST CONDITIONS	19
5.1.6 TEST RESULTS	19
6 . MAXIMUM PEAK CONDUCTED OUTPUT POWER TEST	20

Table of Contents	Page
6.1 APPLIED PROCEDURES / LIMIT	20
6.1.1 TEST PROCEDURE	20
6.1.2 DEVIATION FROM STANDARD	20
6.1.3 TEST SETUP	20
6.1.4 EUT OPERATION CONDITIONS	20
6.1.5 EUT TEST CONDITIONS	20
6.1.6 TEST RESULTS	20
7 . ANTENNA CONDUCTED SPURIOUS EMISSION	21
7.1 APPLIED PROCEDURES / LIMIT	21
7.1.1 TEST PROCEDURE	21
7.1.2 DEVIATION FROM STANDARD	21
7.1.3 TEST SETUP	21
7.1.4 EUT OPERATION CONDITIONS	21
7.1.5 EUT TEST CONDITIONS	21
7.1.6 TEST RESULTS	21
8 . POWER SPECTRAL DENSITY TEST	22
8.1 APPLIED PROCEDURES / LIMIT	22
8.1.1 TEST PROCEDURE	22
8.1.2 DEVIATION FROM STANDARD	22
8.1.3 TEST SETUP	22
8.1.4 EUT OPERATION CONDITIONS	22
8.1.5 EUT TEST CONDITIONS	22
8.1.6 TEST RESULTS	22
9 . MEASUREMENT INSTRUMENTS LIST	23
10 . EUT TEST PHOTO	25
ATTACHMENT A - CONDUCTED EMISSION	29
ATTACHMENT B - RADIATED EMISSION (9KHZ-30MHZ)	32
ATTACHMENT C - RADIATED EMISSION (30MHZ TO 1000MHZ)	35
ATTACHMENT D - RADIATED EMISSION (ABOVE 1000MHZ)	48
ATTACHMENT E - BANDWIDTH	73
ATTACHMENT F - PEAK OUTPUT POWER	77
ATTACHMENT G - ANTENNA CONDUCTED SPURIOUS EMISSION	79
ATTACHMENT H - POWER SPECTRAL DENSITY	86

REPORT ISSUED HISTORY

Issued No.	Description	Issued Date
BTL-FCCP-1-1412C254	Original Issue.	Mar. 05, 2015

1. CERTIFICATION

Equipment : 2.4G Wireless Control Module
Brand Name : CRMX CORE
Model Name : 200-1901
Applicant : LumenRadio AB
Manufacturer : LumenRadio AB
Address : Svangatan 2B, SE-41668 Gothenburg, Sweden
Factory : Inission AB
Address : Rimmaregatan 6, SE 422 55 Gothenburg, Sweden
Date of Test : Dec. 30, 2014 ~ Mar. 04, 2015
Test Item : ENGINEERING SAMPLE
Standard(s) : FCC Part15, Subpart C : 2013 (15.247) / ANSI C63.4 : 2009 /

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-1-1412C254) 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: 2013				
Standard(s) Section		Test Item	Judgment	Remark
FCC				
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 is **DG-CB03** at the location of No.3,Jinshagang 1st Road, Shixia, Dalang Town, Dong Guan, China.523792

BTL's test firm number for FCC: 319330

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 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 Measurement :

Test Site	Method	Measurement Frequency Range	U, (dB)	NOTE
DG-C02	CISPR	150 KHz ~ 30MHz	1.94	

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V	U , (dB)	Note
DG-CB03	CISPR	9KHz~30MHz	V	3.79	
		9KHz~0MHz	H	3.57	
		30MHz ~ 200MHz	V	3.82	
		30MHz ~ 200MHz	H	3.60	
		200MHz ~ 1,000MHz	V	3.86	
		200MHz ~ 1,000MHz	H	3.94	
		1GHz~18GHz	V	3.12	
		1GHz~18GHz	H	3.68	
		18GHz~40GHz	V	4.15	
		18GHz~40GHz	H	4.14	

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	2.4G Wireless Control Module	
Brand Name	CRMX CORE	
Model Name	200-1901	
Model Difference	N/A	
Output Power (Max.)	Operation Frequency	2405 MHz ~ 2480 MHz
	Modulation Technology	QPSK
	Bit Rate of Transmitter	250kbps
	Output Power Max for Dipole Antenna	14.12 dBm
	Output Power Max for Chip Antenna	14.85 dBm
Power Source	Supplied from DC source.	
Power Rating	DC 3V	
Connecting I/O Port(s)	Please refer to the User's Manual	

Note:

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

2.

Channel	Frequency (MHz)
11	2405
12	2410
13	2415
14	2420
15	2425
16	2430
17	2435
18	2440
19	2445
20	2450
21	2455
22	2460
23	2465
24	2470
25	2475
26	2480

3. Table for Filed Antenna

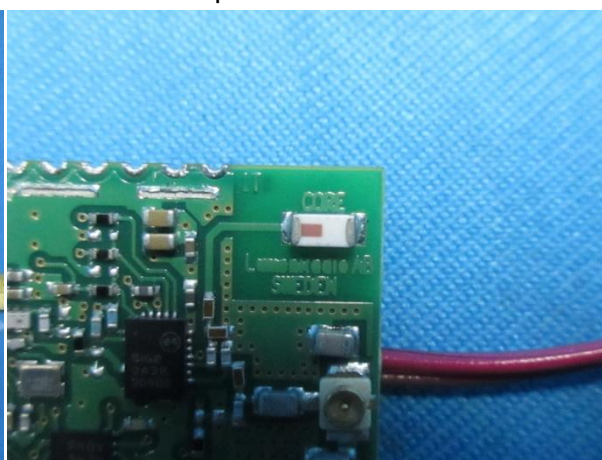
Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	104-1001	Dipole	N/A	2.15
2	N/A	N/A	Chip	N/A	0.5

There are two kinds of antennas, Dipole Antenna and Chip Antenna. Only one antenna works per time. Radiated emission of test results are recorded for two kinds of antennas.

Dipole



Chip



3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly 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 Mode CH11/19/26
Mode 2	TX MODE

For Conducted Test	
Final Test Mode	Description
Mode 2	TX MODE

For Radiated Emission	
Final Test Mode	Description
Mode 1	TX Mode CH 11/16/26

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

Note:

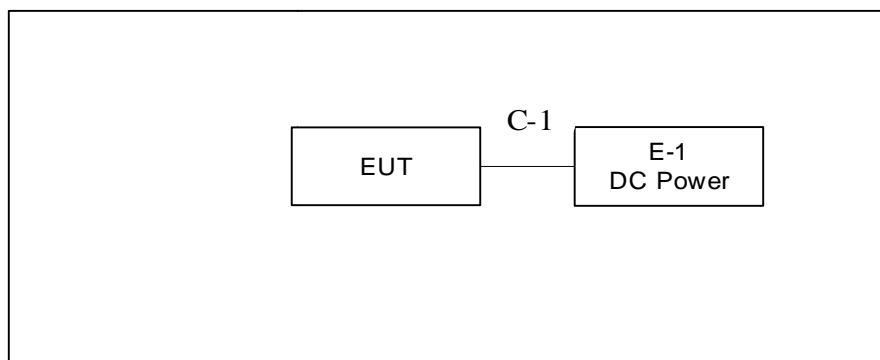
- (1) The measurements are performed at the high, middle, low available channels.

3.3 TABLE OF PARAMETERS OF TEST 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 FHSS

Test software version	realterm		
Frequency	2405 MHz	2445 MHz	2480 MHz
Parameters	120	196	200

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.	Note
E-1	DC POWER	N/A	GPC-3030DN	N/A	N/A	-

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	50CM	-

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 -0.5	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

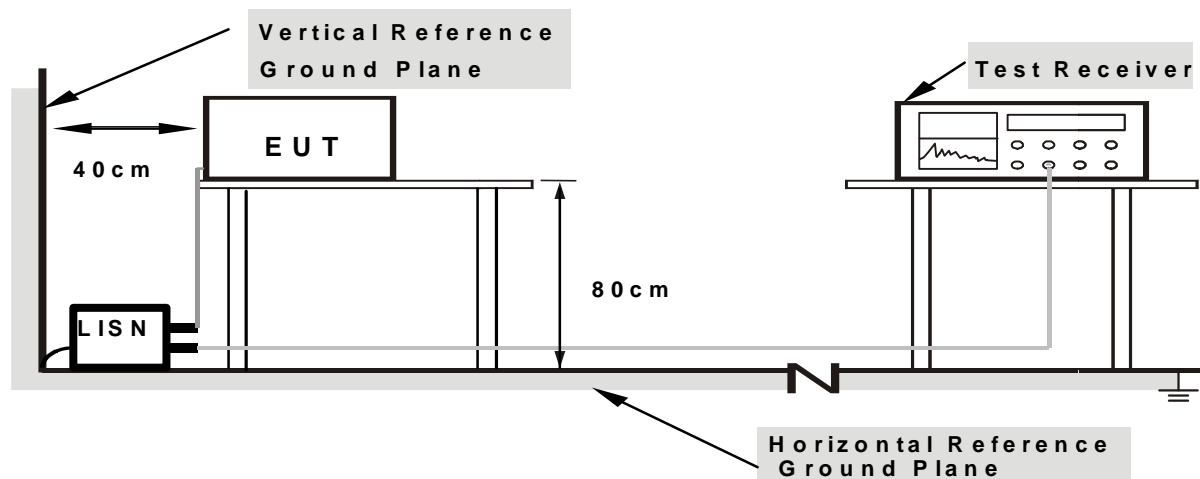
4.1.2 TEST PROCEDURE

- 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 cm from other units and other metal planes

4.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

4.1.6 EUT TEST CONDITIONS

Temperature: 25°C Relative Humidity: 55% Test Voltage: DC 3V

4.1.7 TEST RESULTS

Please refer to the Attachment A.

4.2 RADIATED EMISSION MEASUREMENT

4.2.1 RADIATED EMISSION LIMITS

20dB in any 100 KHz bandwidth outside the operating frequency band. 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	RBW1MHz VBW 3MHz Peak detector for PK value ,RMS detector for AV value

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 EUT was placed on the top of a rotating table 0.8 meters 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 EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter fully-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 0.8 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.
- The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

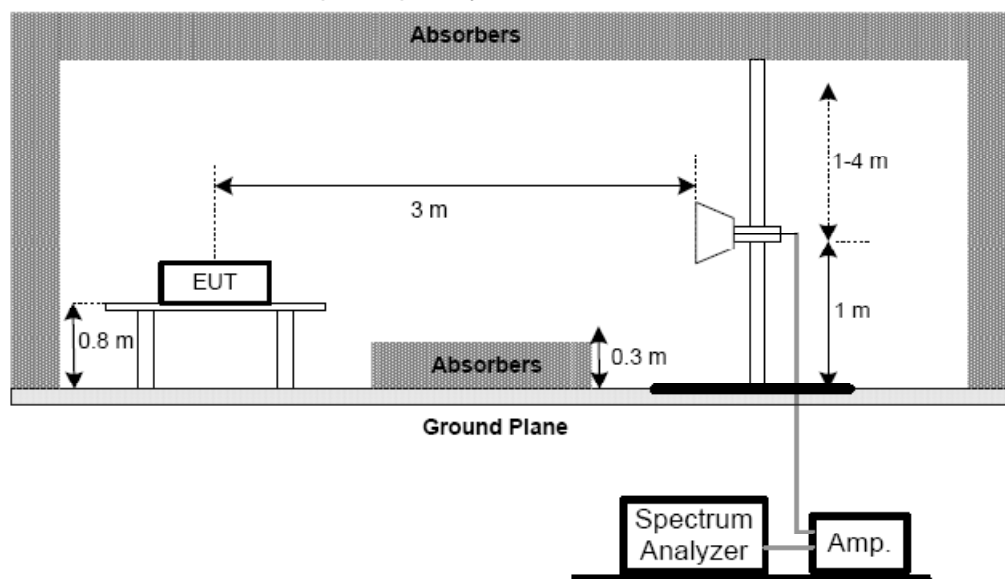
4.2.3 DEVIATION FROM TEST STANDARD

No deviation

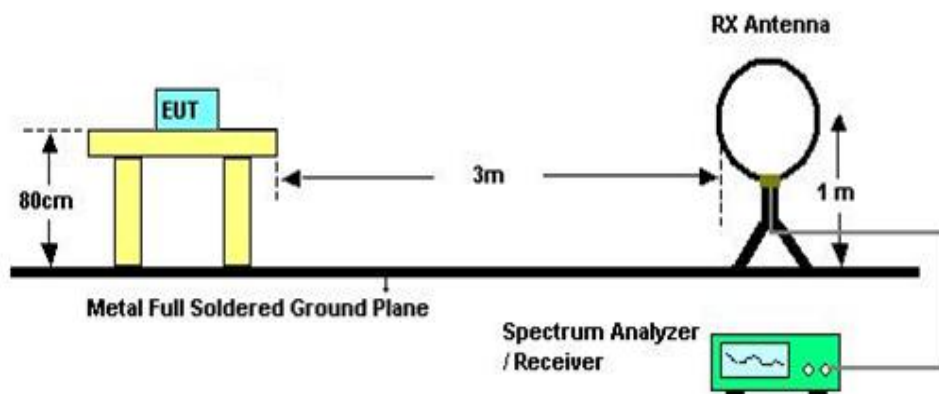
4.2.4 TEST SETUP

(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 tested system was configured as the statements of **4.1.5 Unless** otherwise a special operating condition is specified in the follows during the testing.

4.2.6 EUT TEST CONDITIONS

Temperature: 25°C Relative Humidity: 55% Test Voltage: DC 3V

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 (BETWEEN 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

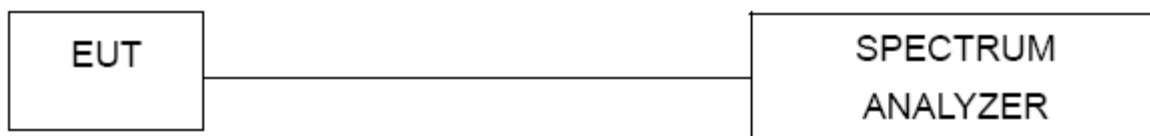
5.1.1 TEST PROCEDURE

- 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 tested system was configured as the statements of 4.1.5 Unless otherwise a special operating condition is specified in the follows during the testing.

5.1.5 EUT TEST CONDITIONS

Temperature: 25°C Relative Humidity: 55% Test Voltage: DC 3V

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,

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP



6.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.5 Unless otherwise a special operating condition is specified in the follows during the testing. Transmit output power was measured while the host equipment supply voltage was varied from 85 % to 115 % of the nominal rated supply voltage. No change in transmit output power was observed.

6.1.5 EUT TEST CONDITIONS

Temperature: 25°C Relative Humidity: 55% Test Voltage: DC 3V

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 intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted measurement, provided 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.

7.1.2 DEVIATION FROM STANDARD

No deviation.

7.1.3 TEST SETUP



7.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.5 Unless otherwise a special operating condition is specified in the follows during the testing.

7.1.5 EUT TEST CONDITIONS

Temperature: 25°C Relative Humidity: 55% Test Voltage: DC 3V

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

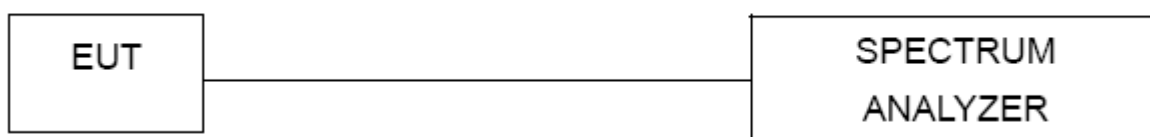
8.1.1 TEST PROCEDURE

- 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 tested system was configured as the statements of 4.1.5 Unless otherwise a special operating condition is specified in the follows during the testing.

8.1.5 EUT TEST CONDITIONS

Temperature: 25°C Relative Humidity: 55% Test Voltage: DC 3V

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	LISN	EMCO	3816/2	00052765	Mar. 29, 2015
2	LISN	R&S	ENV216	101447	Mar. 29, 2015
3	Test Cable	N/A	C_17	N/A	Mar. 14, 2015
4	EMI TEST RECEIVER	R&S	ESCS30	833364/017	Mar. 29, 2015
5	50Ω Terminator	SHX	TF2-3G-A	08122902	Mar. 29, 2015
6	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

Radiated Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	Schwarbeck	VULB9160	9160-3232	Mar. 29, 2015
2	Amplifier	HP	8447D	2944A09673	Mar. 29, 2015
3	Receiver	AGILENT	N9038A	MY5213003 9	Sep. 30, 2015
4	Test Cable	N/A	C-01_CB03	N/A	Jul. 01, 2015
5	Controller	CT	SC100	N/A	N/A
6	Antenna	ETS	3115	00075789	Mar. 29, 2015
7	Amplifier	Agilent	8449B	3008A02274	Mar. 29, 2015
8	Receiver	AGILENT	N9038A	MY5213003 9	Sep. 30, 2015
9	Test Cable	HUBER+SUHNER	C-48	N/A	Apr. 30, 2015
10	Controller	CT	SC100	N/A	N/A
11	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Feb. 22, 2016
12	Microwave Preamplifier With Adaptor	EMC INSTRUMENT	EMC2654045	980039 & HA01	Feb. 22, 2016
13	Active Loop Antenna	R&S	HFH2-Z2	830749/020	Mar. 29, 2015
14	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

6dB Bandwidth Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov. 02, 2015

Peak Output Power Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	P-series Power meter	Agilent	N1911A	MY45100473	Mar. 29, 2015
2	Wireband Power sensor	Agilent	N1921A	MY51100041	Mar. 29, 2015

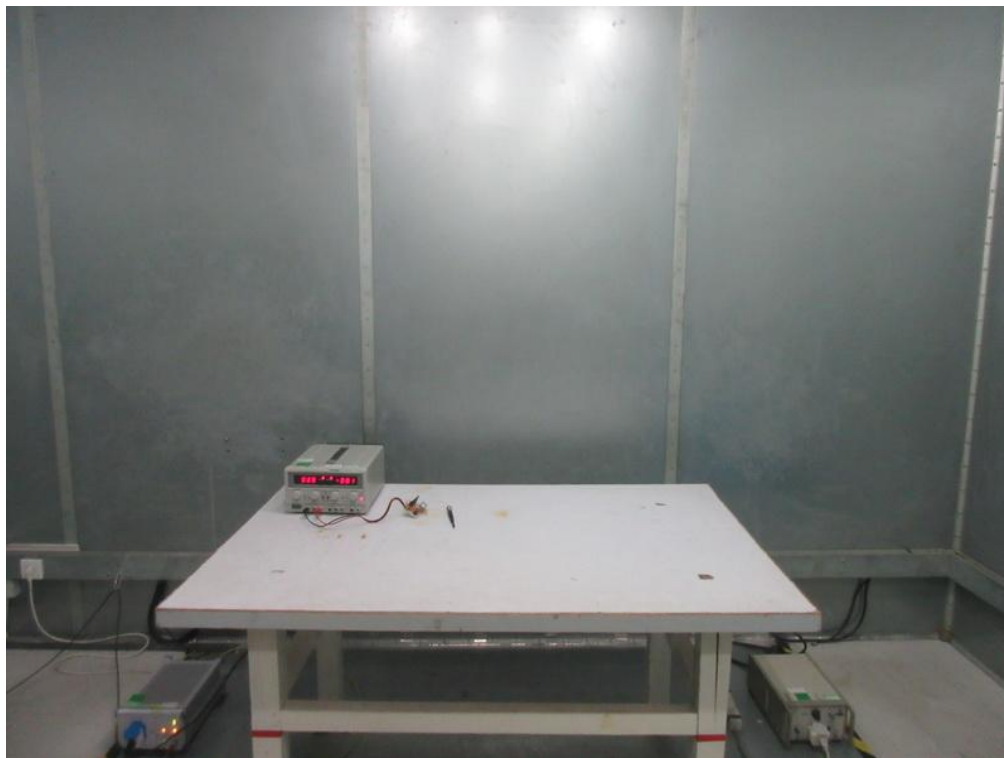
Antenna Conducted Spurious Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov. 02, 2015

Power Spectral Density Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov. 02, 2015

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

10. EUT TEST PHOTO

Conducted Measurement Photos



Radiated Measurement Photos

9KHz to 30MHz



Radiated Measurement Photos

30MHz to 1000MHz



Radiated Measurement Photos

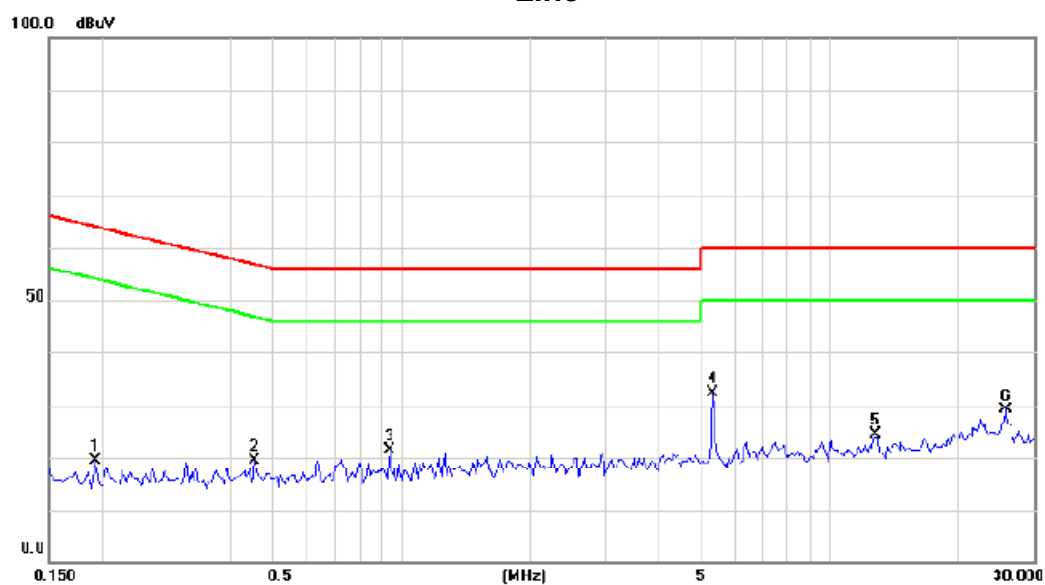
Above 1000MHz



ATTACHMENT A - CONDUCTED EMISSION

Test Mode : TX MODE

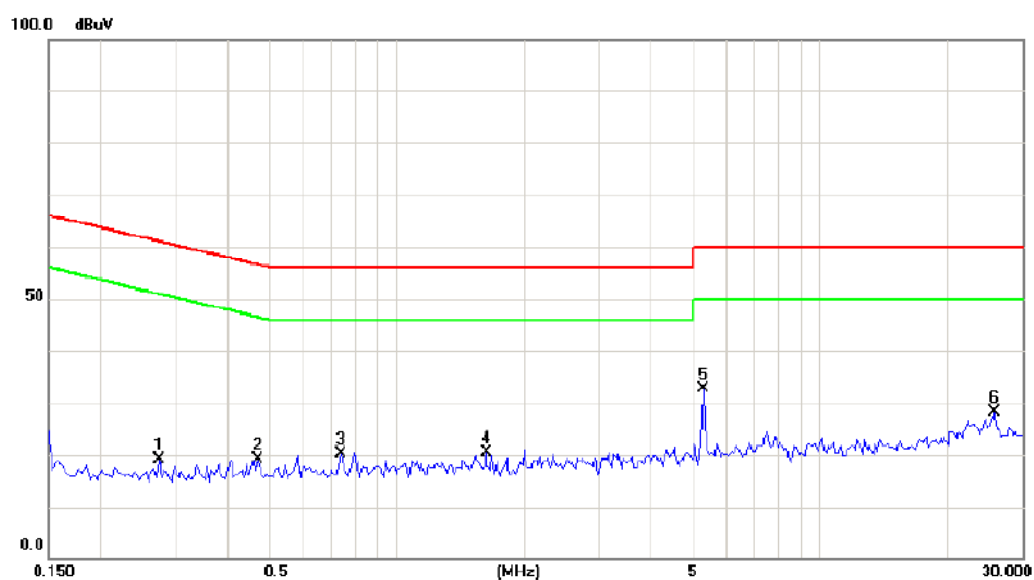
Line



No	Mk	Freq MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1930	9.84	9.50	19.34	63.91	-44.57	peak	
2		0.4547	9.70	9.02	19.32	56.79	-37.47	peak	
3		0.9352	11.67	9.61	21.28	56.00	-34.72	peak	
4	*	5.3510	22.05	9.09	32.34	60.00	-27.66	peak	
5		12.7617	14.62	9.84	24.46	60.00	-35.54	peak	
6		25.6914	18.85	10.16	29.01	60.00	-30.99	peak	

Test Mode : TX MODE

Neutral



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.2750	9.54	9.57	19.11	60.97	-41.86	peak	
2		0.4703	9.65	9.58	19.23	56.51	-37.28	peak	
3		0.7398	10.58	9.59	20.17	56.00	-35.83	peak	
4		1.6227	10.64	9.62	20.26	56.00	-35.74	peak	
5	*	5.3008	22.97	9.69	32.66	60.00	-27.34	peak	
6		25.6953	17.68	10.39	28.07	60.00	-31.93	peak	

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

Dipole Antenna

Test Mode:	TX Mode
------------	---------

Freq. (MHz)	Ant. 0°/90°	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Note
0.0127	0°	1.25	24.30	25.55	125.53	-99.98	AVG
0.0127	0°	5.55	24.30	29.85	145.53	-115.68	PEAK
0.0253	0°	1.58	23.96	25.54	119.54	-94.00	AVG
0.0253	0°	5.13	23.96	29.09	139.54	-110.45	PEAK
0.0295	0°	0.69	23.70	24.39	118.21	-93.82	AVG
0.0295	0°	4.26	23.70	27.96	138.21	-110.25	PEAK
0.0441	0°	0.13	22.77	22.90	114.72	-91.82	AVG
0.0441	0°	4.87	22.77	27.64	134.72	107.08	PEAK
0.4937	0°	21.36	19.82	41.18	73.73	-32.55	QP
1.5265	0°	25.69	19.55	45.24	63.93	-18.69	QP

Freq. (MHz)	Ant. 0°/90°	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Note
0.0125	90°	2.66	24.30	26.96	125.67	-98.71	AVG
0.0125	90°	6.31	24.30	30.61	145.67	-115.06	PEAK
0.0161	90°	2.69	24.30	26.99	123.47	-96.48	AVG
0.0161	90°	6.03	24.30	30.33	143.47	-113.14	PEAK
0.0383	90°	1.85	23.14	24.99	115.94	-90.95	AVG
0.0383	90°	5.97	23.14	29.11	135.94	-106.83	PEAK
0.0443	90°	1.00	22.76	23.76	114.68	-90.92	AVG
0.0443	90°	4.96	22.76	27.72	134.68	-106.96	PEAK
0.4718	90°	20.69	19.87	40.56	94.13	-53.57	QP
1.5369	90°	23.88	19.55	43.43	63.87	-20.44	QP

Chip Antenna

Test Mode:	TX Mode
------------	---------

Freq. (MHz)	Ant. 0°/90°	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Note
0.0129	0°	1.26	24.30	25.56	125.39	-99.83	AVG
0.0129	0°	5.39	24.30	29.69	145.39	-115.70	PEAK
0.0252	0°	1.57	23.97	25.54	119.58	-94.04	AVG
0.0252	0°	5.03	23.97	29.00	139.58	-110.58	PEAK
0.0296	0°	0.98	23.69	24.67	118.18	-93.51	AVG
0.0296	0°	4.79	23.69	28.48	138.18	-109.70	PEAK
0.0443	0°	0.77	22.76	23.53	114.68	-91.15	AVG
0.0443	0°	4.63	22.76	27.39	134.68	-107.29	PEAK
0.4936	0°	20.39	19.82	40.21	73.74	-33.53	QP
1.5271	0°	23.87	19.55	43.42	63.93	-20.51	QP

Freq. (MHz)	Ant. 0°/90°	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Note
0.0122	90°	2.39	24.30	26.69	125.88	-99.19	AVG
0.0122	90°	6.58	24.30	30.88	145.88	-115.00	PEAK
0.0163	90°	2.14	24.30	26.44	123.36	-96.92	AVG
0.0163	90°	6.28	24.30	30.58	143.36	-112.78	PEAK
0.0385	90°	1.36	23.13	24.49	115.90	-91.41	AVG
0.0385	90°	5.66	23.13	28.79	135.90	-107.11	PEAK
0.0446	90°	1.08	22.74	23.82	114.62	-90.80	AVG
0.0446	90°	5.09	22.74	27.83	134.62	-106.79	PEAK
0.4715	90°	19.68	19.87	39.55	94.13	-54.58	QP
1.5863	90°	22.37	19.54	41.91	63.60	-21.69	QP

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

Dipole Antenna

Test Mode: TX 2405MHz _CH11

Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	75.5900	41.18	-16.67	24.51	40.00	-15.49	peak	
2		138.6400	31.83	-13.15	18.68	43.50	-24.82	peak	
3		377.2600	30.26	-10.56	19.70	46.00	-26.30	peak	
4		458.7400	30.55	-8.95	21.60	46.00	-24.40	peak	
5		549.9200	30.99	-7.93	23.06	46.00	-22.94	peak	
6		660.5000	29.40	-5.10	24.30	46.00	-21.70	peak	

Test Mode: TX 2405MHz _CH11

Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	69.7700	37.67	-16.22	21.45	40.00	-18.55	peak	
2		178.4100	30.93	-12.96	17.97	43.50	-25.53	peak	
3		320.0300	30.92	-11.31	19.61	46.00	-26.39	peak	
4		416.0600	30.55	-9.24	21.31	46.00	-24.69	peak	
5		624.6100	29.84	-6.55	23.29	46.00	-22.71	peak	
6		676.0200	29.09	-5.04	24.05	46.00	-21.95	peak	

Test Mode:	TX 2445MHz _CH19
------------	------------------

Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	75.5900	41.35	-16.67	24.68	40.00	-15.32	peak	
2		138.6400	31.69	-13.15	18.54	43.50	-24.96	peak	
3		364.6500	29.67	-11.13	18.54	46.00	-27.46	peak	
4		466.5000	31.01	-9.25	21.76	46.00	-24.24	peak	
5		547.0100	29.26	-8.08	21.18	46.00	-24.82	peak	
6		719.6700	27.50	-4.81	22.69	46.00	-23.31	peak	

Test Mode: TX 2445MHz _CH19

Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	69.7700	37.74	-16.22	21.52	40.00	-18.48	peak	
2		139.6100	30.18	-13.15	17.03	43.50	-26.47	peak	
3		320.0300	30.68	-11.31	19.37	46.00	-26.63	peak	
4		416.0600	31.92	-9.24	22.68	46.00	-23.32	peak	
5		609.0900	27.84	-7.41	20.43	46.00	-25.57	peak	
6		785.6300	28.41	-3.39	25.02	46.00	-20.98	peak	

Test Mode: TX 2480MHz _CH26

Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	75.5900	40.82	-16.67	24.15	40.00	-15.85	peak	
2		138.6400	31.84	-13.15	18.69	43.50	-24.81	peak	
3		353.0100	33.64	-11.65	21.99	46.00	-24.01	peak	
4		397.6300	31.65	-9.63	22.02	46.00	-23.98	peak	
5		565.4400	30.66	-7.92	22.74	46.00	-23.26	peak	
6		747.8000	31.00	-4.63	26.37	46.00	-19.63	peak	

Test Mode: TX 2480MHz _CH26

Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	69.7700	37.54	-16.22	21.32	40.00	-18.68	peak	
2		288.0200	30.34	-11.40	18.94	46.00	-27.06	peak	
3		320.0300	32.34	-11.31	21.03	46.00	-24.97	peak	
4		416.0600	32.85	-9.24	23.61	46.00	-22.39	peak	
5		538.2800	29.49	-8.54	20.95	46.00	-25.05	peak	
6		629.4600	28.30	-6.28	22.02	46.00	-23.98	peak	

Chip Antenna

Test Mode: TX 2405MHz _CH11

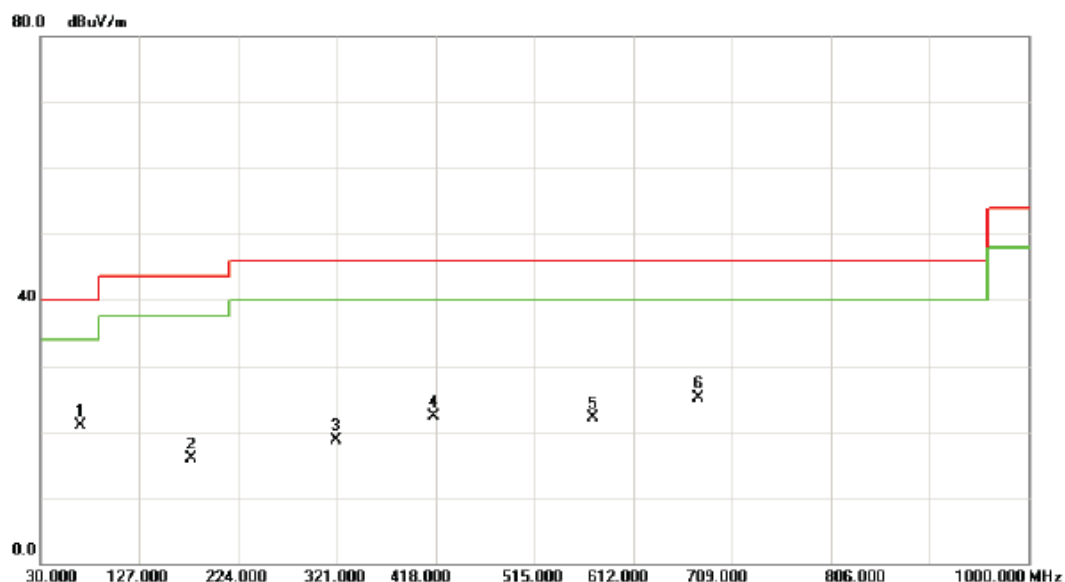
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	75.5900	40.68	-16.67	24.01	40.00	-15.99	peak	
2		138.6400	31.33	-13.15	18.18	43.50	-25.32	peak	
3		303.5400	28.78	-11.05	17.73	46.00	-28.27	peak	
4		458.7400	30.05	-8.95	21.10	46.00	-24.90	peak	
5		549.9200	29.99	-7.93	22.06	46.00	-23.94	peak	
6		660.5000	29.40	-5.10	24.30	46.00	-21.70	peak	

Test Mode: TX 2405MHz _CH11

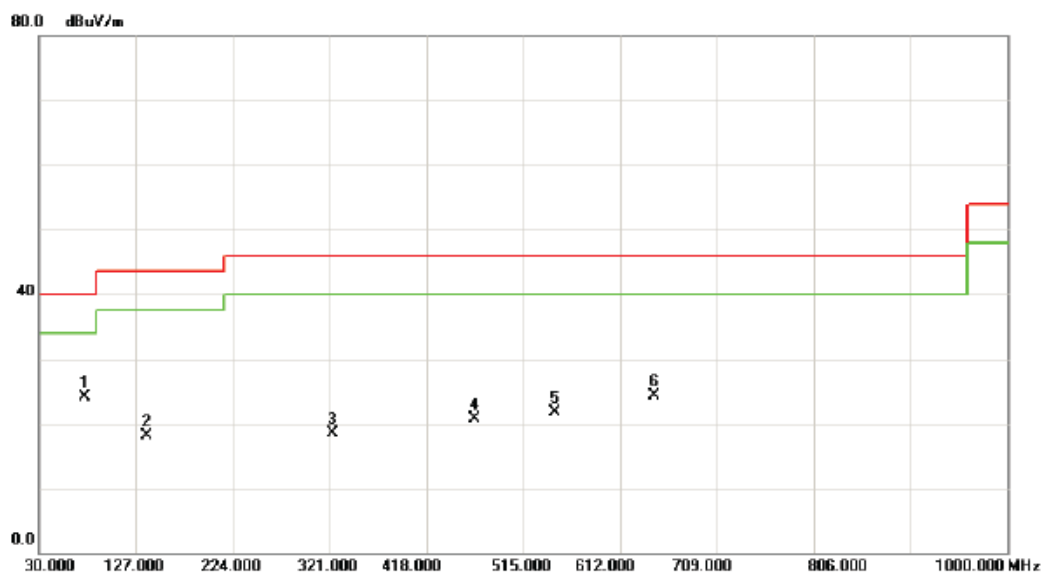
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	69.7700	37.17	-16.22	20.95	40.00	-19.05	peak	
2		178.4100	28.93	-12.96	15.97	43.50	-27.53	peak	
3		320.0300	29.92	-11.31	18.61	46.00	-27.39	peak	
4		416.0600	31.55	-9.24	22.31	46.00	-23.69	peak	
5		572.2300	30.08	-7.92	22.16	46.00	-23.84	peak	
6		676.0200	30.09	-5.04	25.05	46.00	-20.95	peak	

Test Mode:	TX 2445MHz _CH19
------------	------------------

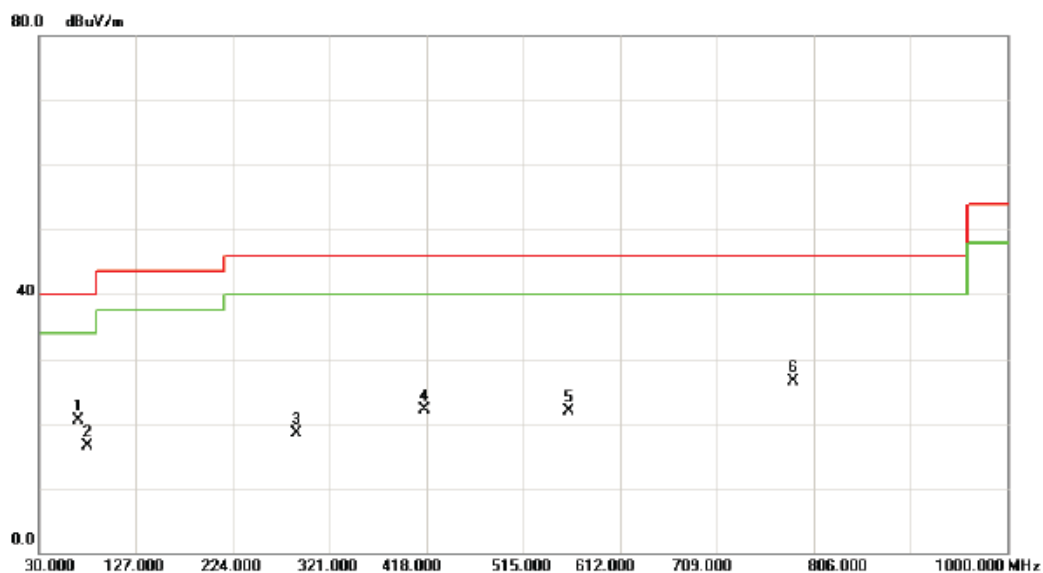
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	75.5900	40.85	-16.67	24.18	40.00	-15.82	peak	
2		138.6400	31.19	-13.15	18.04	43.50	-25.46	peak	
3		323.9100	29.82	-11.37	18.45	46.00	-27.55	peak	
4		466.5000	30.01	-9.25	20.76	46.00	-25.24	peak	
5		547.0100	29.76	-8.08	21.68	46.00	-24.32	peak	
6		645.9500	29.78	-5.38	24.40	46.00	-21.60	peak	

Test Mode:	TX 2445MHz _CH19
------------	------------------

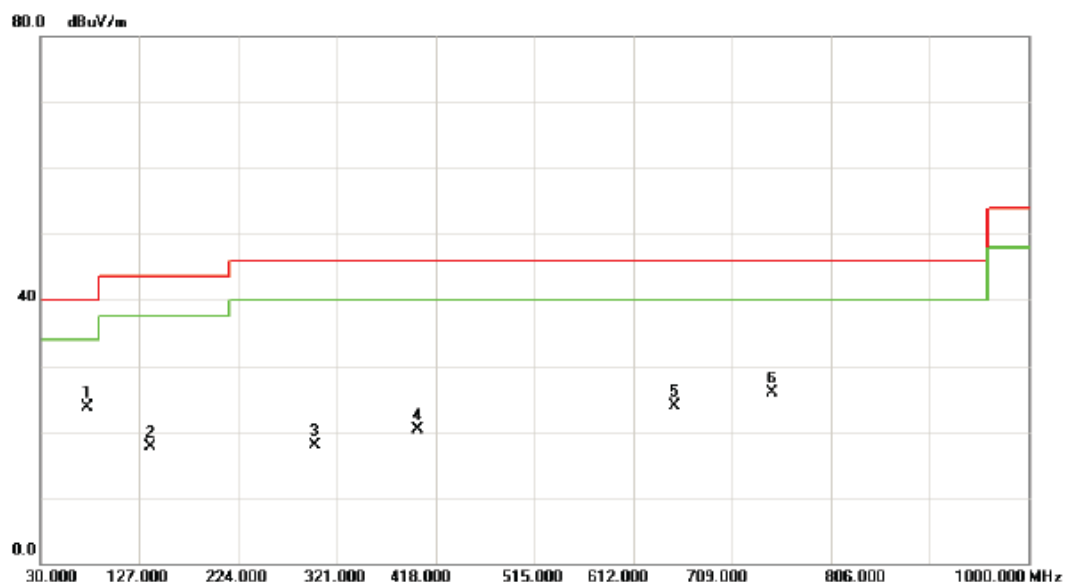
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	69.7700	36.74	-16.22	20.52	40.00	-19.48	peak	
2		78.5000	33.56	-16.98	16.58	40.00	-23.42	peak	
3		288.0200	29.88	-11.40	18.48	46.00	-27.52	peak	
4		416.0600	31.42	-9.24	22.18	46.00	-23.82	peak	
5		560.5900	29.77	-7.92	21.85	46.00	-24.15	peak	
6		785.6300	29.91	-3.39	26.52	46.00	-19.48	peak	

Test Mode:	TX 2480MHz _CH26
------------	------------------

Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	75.5900	40.32	-16.67	23.65	40.00	-16.35	peak	
2		138.6400	30.84	-13.15	17.69	43.50	-25.81	peak	
3		299.6600	28.91	-10.99	17.92	46.00	-28.08	peak	
4		400.5400	29.83	-9.52	20.31	46.00	-25.69	peak	
5		652.7400	29.11	-5.13	23.98	46.00	-22.02	peak	
6		747.8000	30.50	-4.63	25.87	46.00	-20.13	peak	

Test Mode:	TX 2480MHz _CH26
------------	------------------

Horizontal



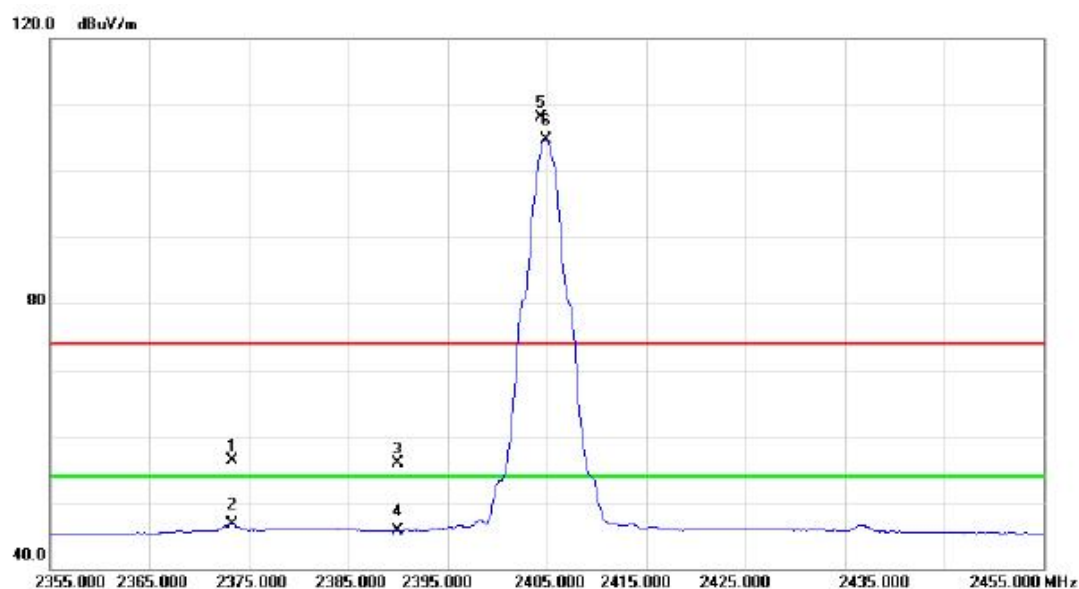
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	69.7700	37.04	-16.22	20.82	40.00	-19.18	peak	
2		224.0000	30.50	-14.62	15.88	46.00	-30.12	peak	
3		320.0300	31.34	-11.31	20.03	46.00	-25.97	peak	
4		416.0600	31.85	-9.24	22.61	46.00	-23.39	peak	
5		538.2800	29.99	-8.54	21.45	46.00	-24.55	peak	
6		702.2100	29.45	-4.93	24.52	46.00	-21.48	peak	

ATTACHMENT D - RADIATED EMISSION (ABOVE 1000MHZ)

Dipole Antenna

Orthogonal Axis :	X
Test Mode :	TX 2405MHz _CH11

Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		2373.300	24.47	31.86	56.33	74.00	-17.67	peak	
2		2373.300	14.91	31.86	46.77	54.00	-7.23	AVG	
3		2390.000	24.09	31.88	55.97	74.00	-18.03	peak	
4		2390.000	13.87	31.88	45.75	54.00	-8.25	AVG	
5	X	2404.400	76.13	31.89	108.02	74.00	34.02	peak	no limit
6	*	2404.900	72.91	31.89	104.80	54.00	50.80	AVG	no limit

Orthogonal Axis :	X
Test Mode :	TX 2405MHz _CH11

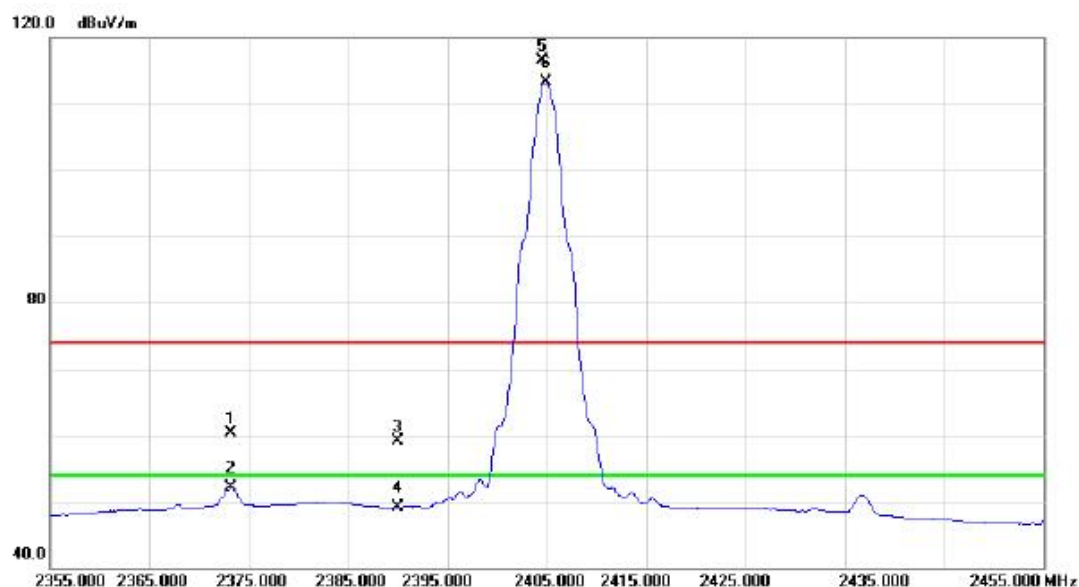
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		4810.330	50.68	3.60	54.28	74.00	-19.72	peak	
2	*	4810.330	44.61	3.60	48.21	54.00	-5.79	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2405MHz _CH11

Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		2373.200	28.49	31.86	60.35	74.00	-13.65	peak	
2		2373.200	20.17	31.86	52.03	54.00	-1.97	AVG	
3		2390.000	27.30	31.88	59.18	74.00	-14.82	peak	
4		2390.000	17.17	31.88	49.05	54.00	-4.95	AVG	
5	X	2404.500	84.63	31.89	116.52	74.00	42.52	peak	no limit
6	*	2404.900	81.37	31.89	113.26	54.00	59.26	AVG	no limit

Orthogonal Axis :	X
Test Mode :	TX 2405MHz _CH11

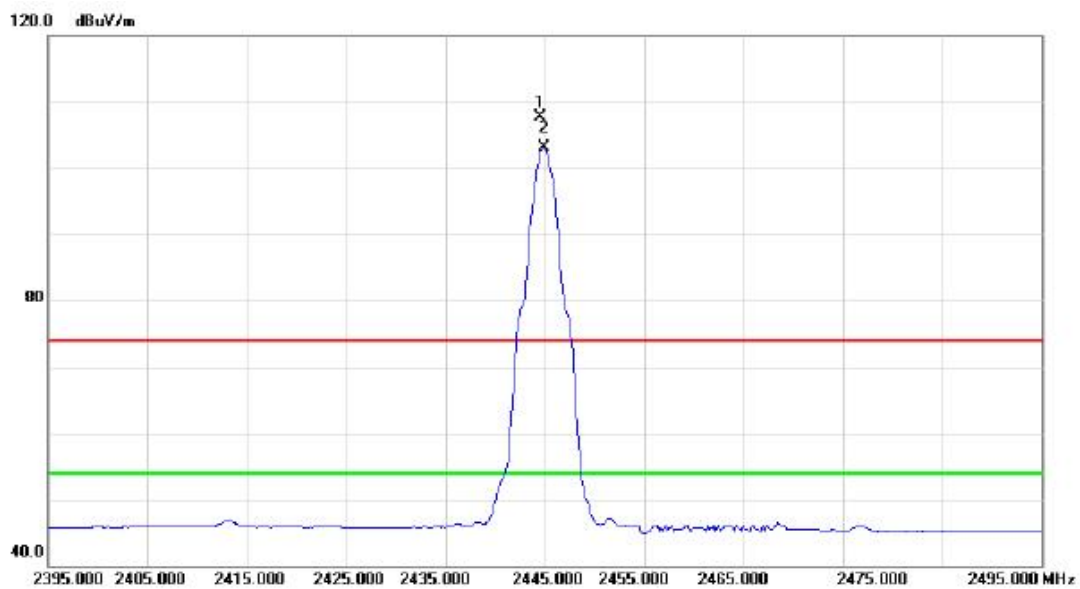
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		4810.250	49.08	3.60	52.68	74.00	-21.32	peak	
2	*	4810.250	41.63	3.60	45.23	54.00	-8.77	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2445MHz _CH19

Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	X	2444.500	75.72	31.96	107.68	74.00	33.68	peak	no limit
2	*	2444.900	71.06	31.96	103.02	54.00	49.02	AVG	no limit

Orthogonal Axis :	X
Test Mode :	TX 2445MHz _CH19

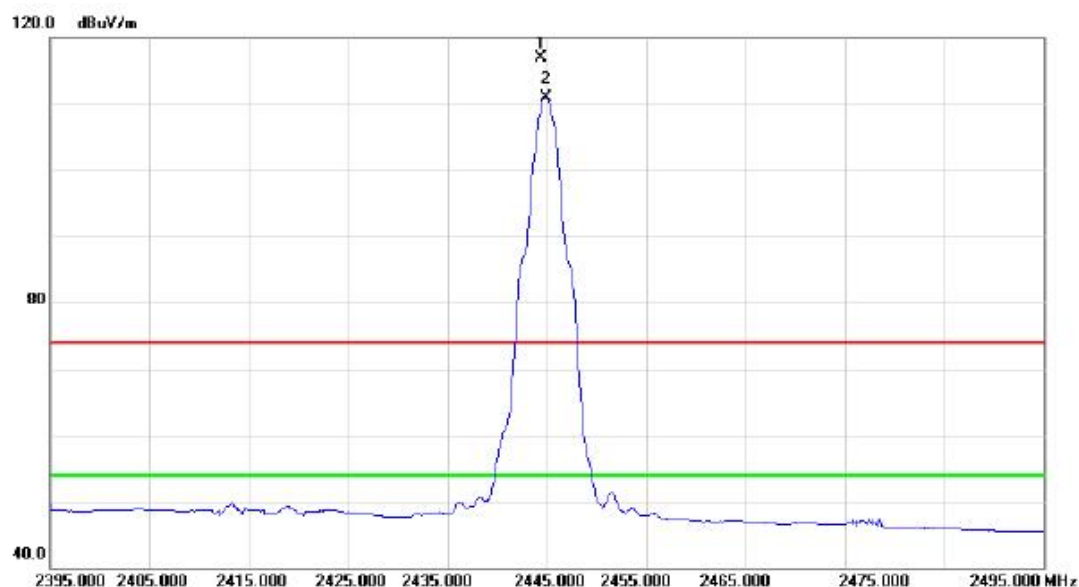
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		4890.540	50.23	3.74	53.97	74.00	-20.03	peak	
2	*	4890.540	44.52	3.74	48.26	54.00	-5.74	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2445MHz _CH19

Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	X	2444.400	84.88	31.96	116.84	74.00	42.84	peak	no limit
2	*	2444.900	78.98	31.96	110.94	54.00	56.94	AVG	no limit

Orthogonal Axis :	X
Test Mode :	TX 2445MHz _CH19

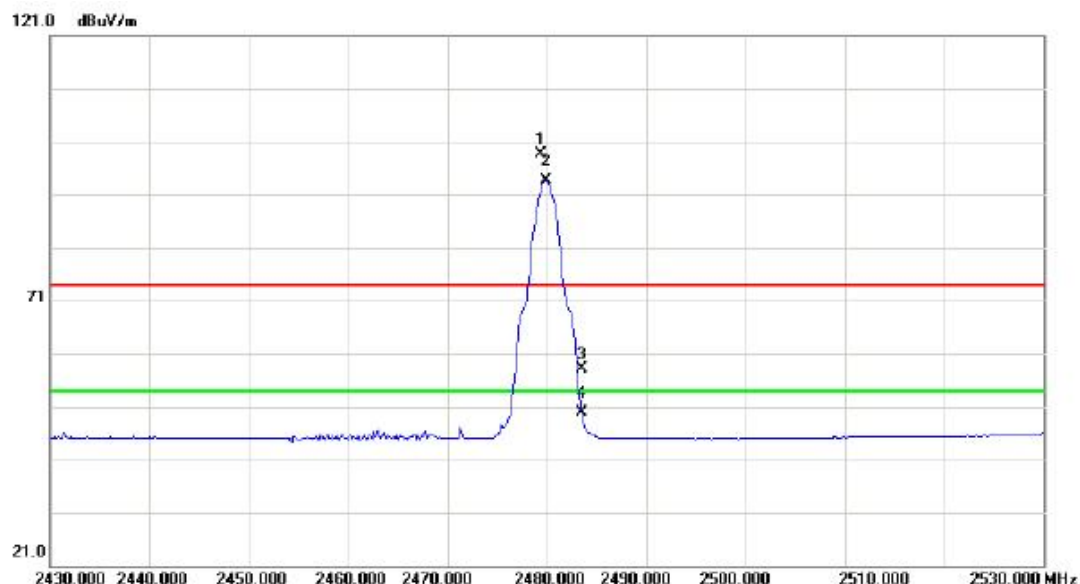
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		4890.000	49.90	3.74	53.64	74.00	-20.36	peak	
2	*	4890.000	41.53	3.74	45.27	54.00	-8.73	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2480MHz _CH26

Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	X	2479.400	66.57	32.00	98.57	74.00	24.57	peak	no limit
2	*	2479.900	61.67	32.00	93.67	54.00	39.67	AVG	no limit
3		2483.500	26.24	32.01	58.25	74.00	-15.75	peak	
4		2483.500	17.89	32.01	49.90	54.00	-4.10	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2480MHz _CH26

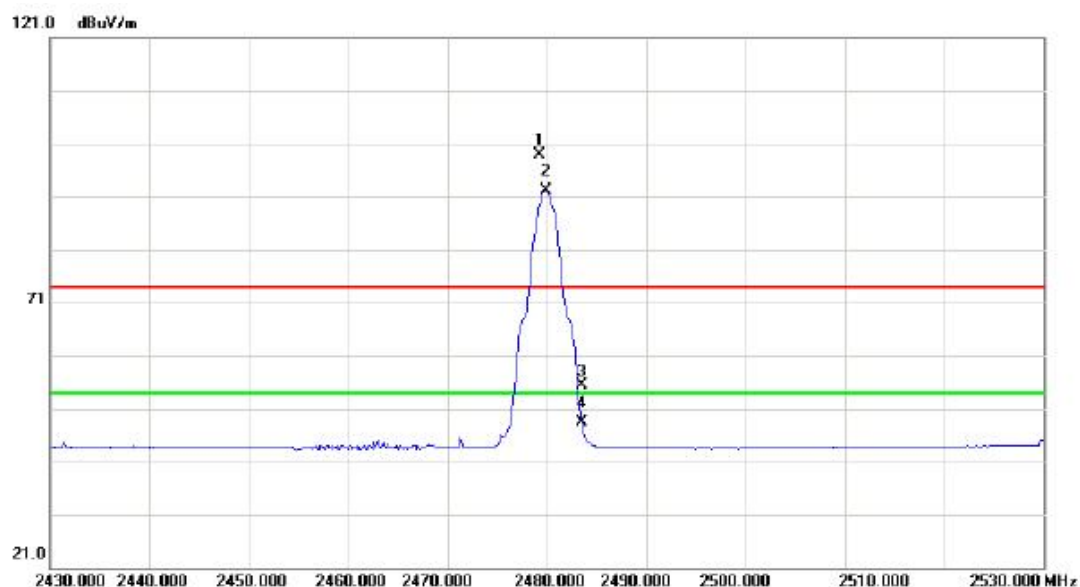
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		4960.000	41.83	3.88	45.71	74.00	-28.29	peak	
2	*	4960.000	34.81	3.88	38.69	54.00	-15.31	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2480MHz _CH26

Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	X	2479.310	66.88	32.00	98.88	74.00	24.88	peak	no limit
2	*	2479.900	60.17	32.00	92.17	54.00	38.17	AVG	no limit
3		2483.500	23.38	32.01	55.39	74.00	-18.61	peak	
4		2483.500	16.39	32.01	48.40	54.00	-5.60	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2480MHz _CH26

Horizontal

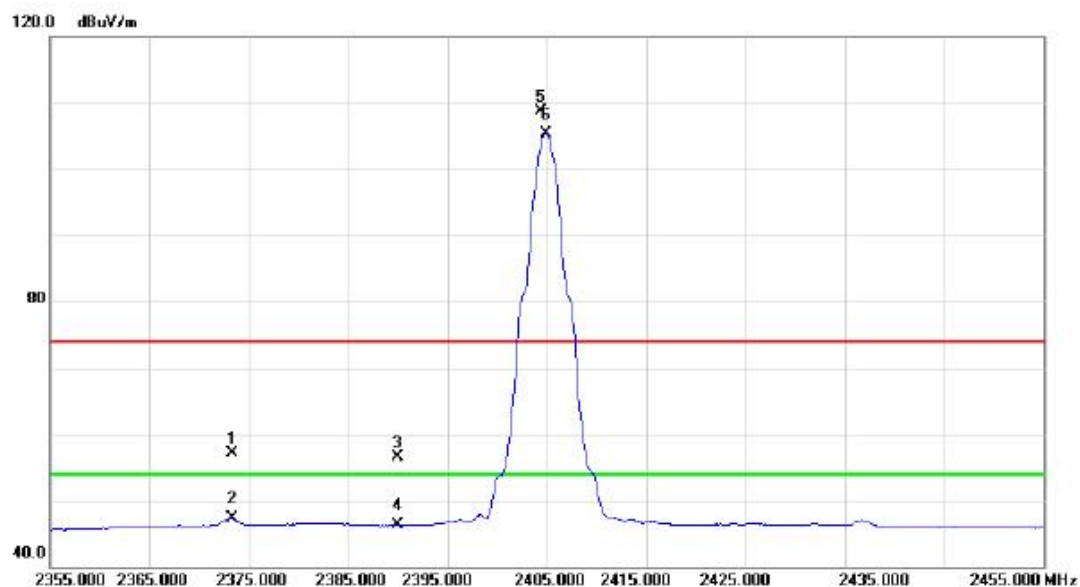


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		4960.030	42.50	3.88	46.38	74.00	-27.62	peak	
2	*	4960.030	34.87	3.88	38.75	54.00	-15.25	AVG	

Chip Antenna

Orthogonal Axis :	X
Test Mode :	TX 2405MHz _CH11

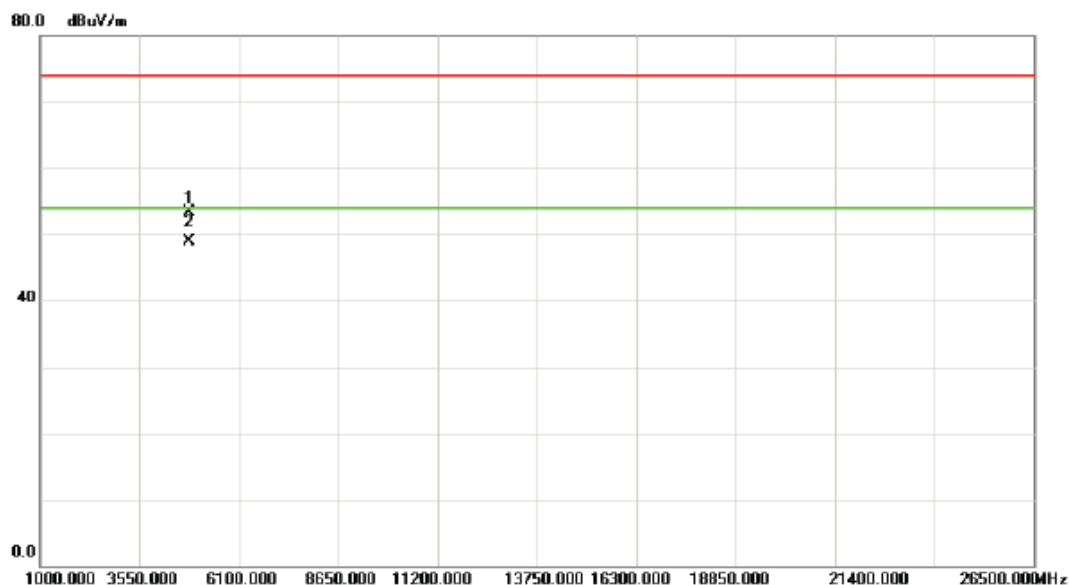
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		2373.300	25.16	31.86	57.02	74.00	-16.98	peak	
2		2373.300	15.41	31.86	47.27	54.00	-6.73	AVG	
3		2390.000	24.63	31.88	56.51	74.00	-17.49	peak	
4		2390.000	14.37	31.88	46.25	54.00	-7.75	AVG	
5	X	2404.400	76.86	31.89	108.75	74.00	34.75	peak	no limit
6	*	2404.900	73.41	31.89	105.30	54.00	51.30	AVG	no limit

Orthogonal Axis :	X
Test Mode :	TX 2405MHz _CH11

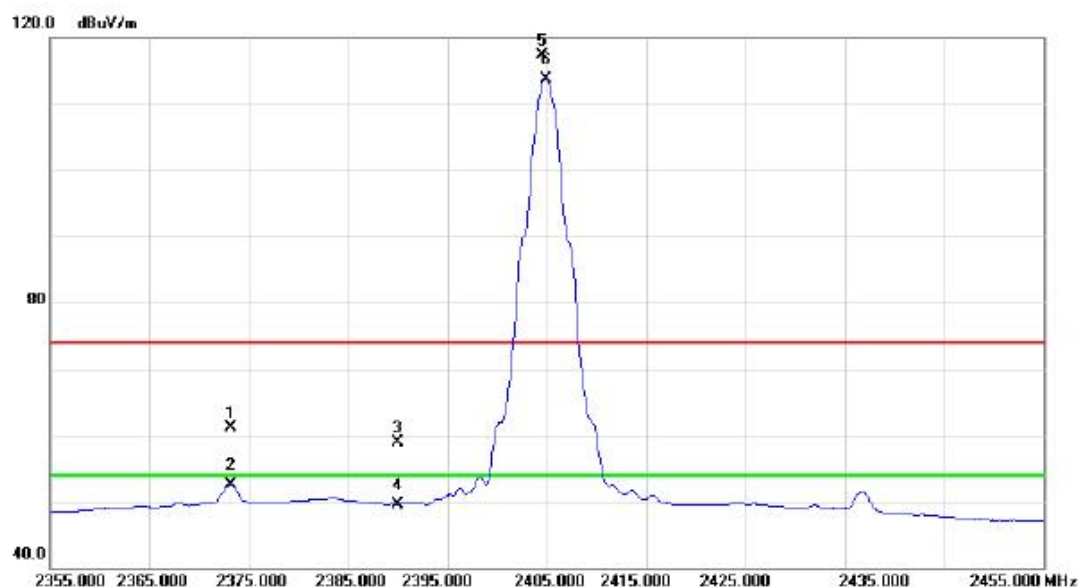
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		4810.800	49.64	3.60	53.24	74.00	-20.76	peak	
2	*	4810.800	45.33	3.60	48.93	54.00	-5.07	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2405MHz _CH11

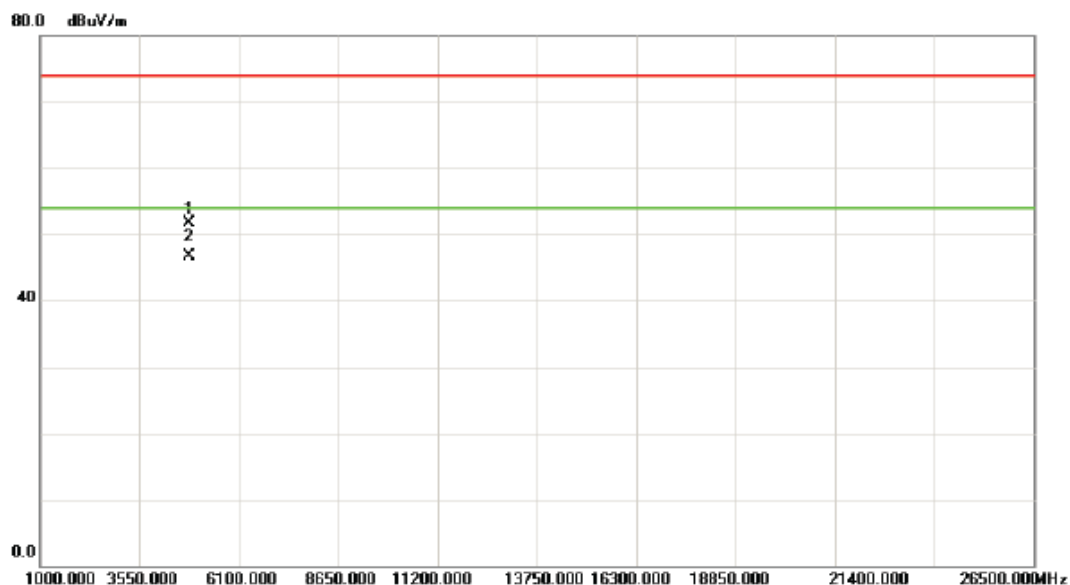
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		2373.200	29.23	31.86	61.09	74.00	-12.91	peak	
2		2373.200	20.67	31.86	52.53	54.00	-1.47	AVG	
3		2390.000	27.03	31.88	58.91	74.00	-15.09	peak	
4		2390.000	17.67	31.88	49.55	54.00	-4.45	AVG	
5	X	2404.500	85.41	31.89	117.30	74.00	43.30	peak	no limit
6	*	2404.900	81.87	31.89	113.76	54.00	59.76	AVG	no limit

Orthogonal Axis :	X
Test Mode :	TX 2405MHz _CH11

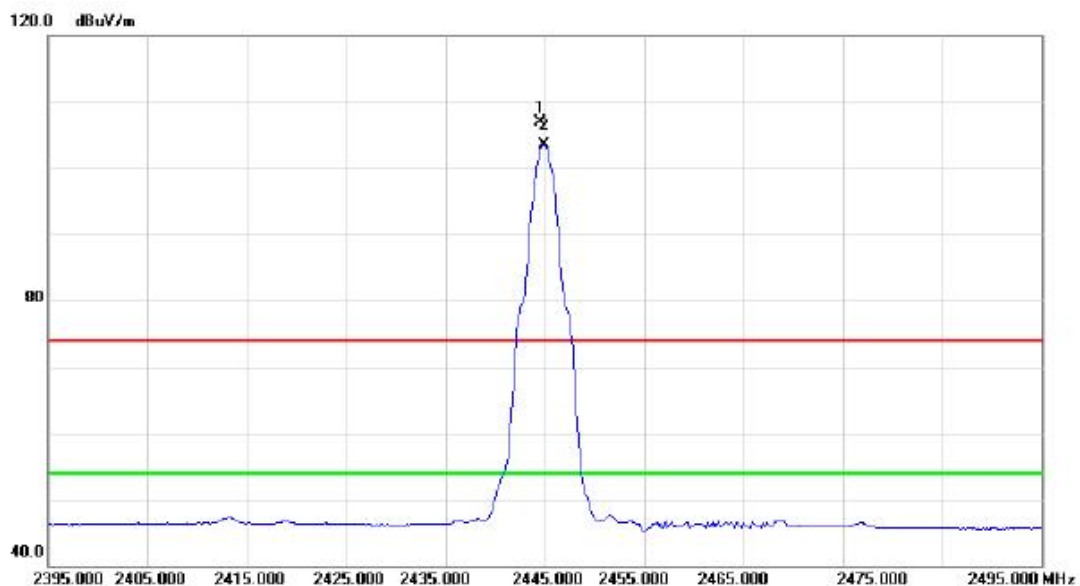
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		4810.820	48.02	3.60	51.62	74.00	-22.38	peak	
2	*	4810.820	43.09	3.60	46.69	54.00	-7.31	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2445MHz _CH19

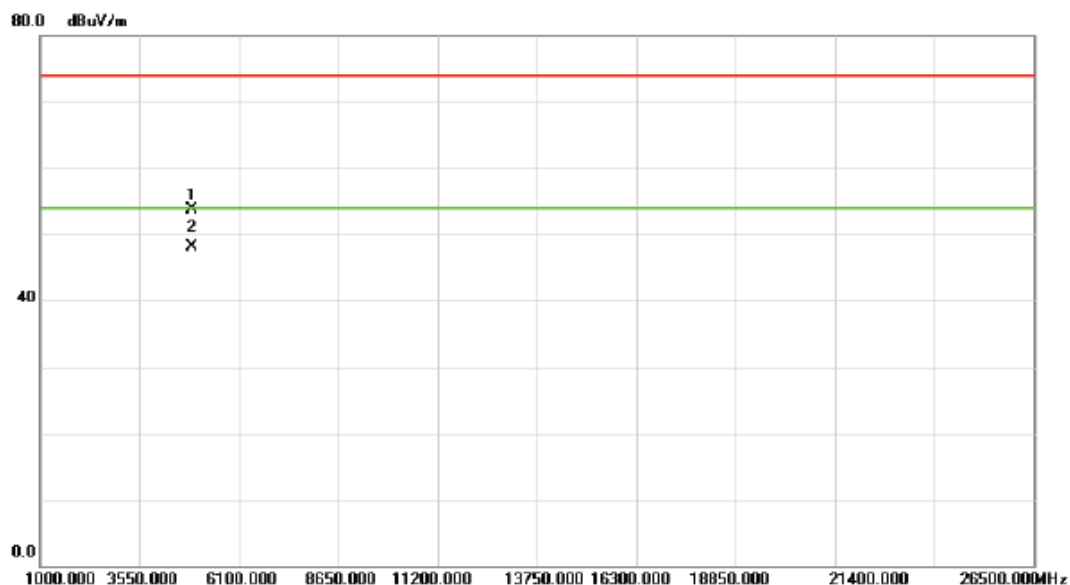
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2444.500	74.96	31.96	106.92	74.00	32.92	peak	no limit
2	*	2444.900	71.56	31.96	103.52	54.00	49.52	AVG	no limit

Orthogonal Axis :	X
Test Mode :	TX 2445MHz _CH19

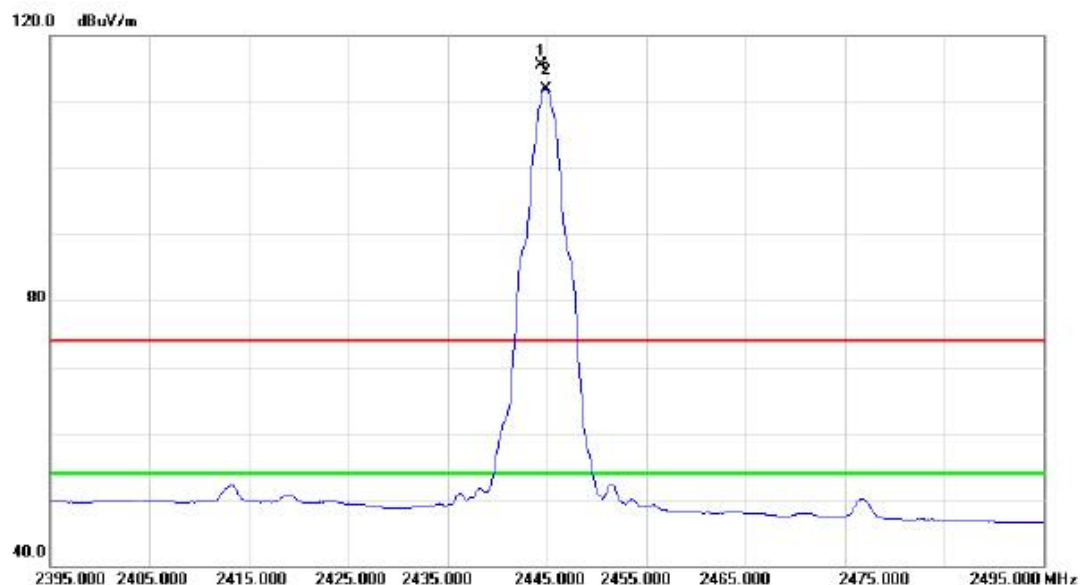
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		4890.320	49.94	3.74	53.68	74.00	-20.32	peak	
2	*	4890.320	44.29	3.74	48.03	54.00	-5.97	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2445MHz _CH19

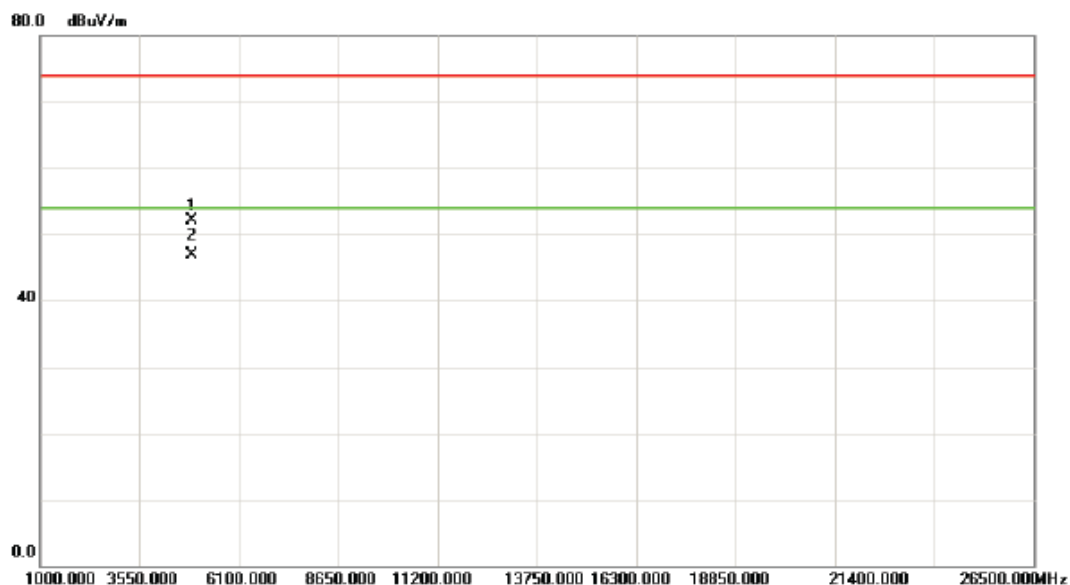
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	X	2444.400	83.48	31.96	115.44	74.00	41.44	peak	no limit
2	*	2444.900	79.98	31.96	111.94	54.00	57.94	AVG	no limit

Orthogonal Axis :	X
Test Mode :	TX 2445MHz _CH19

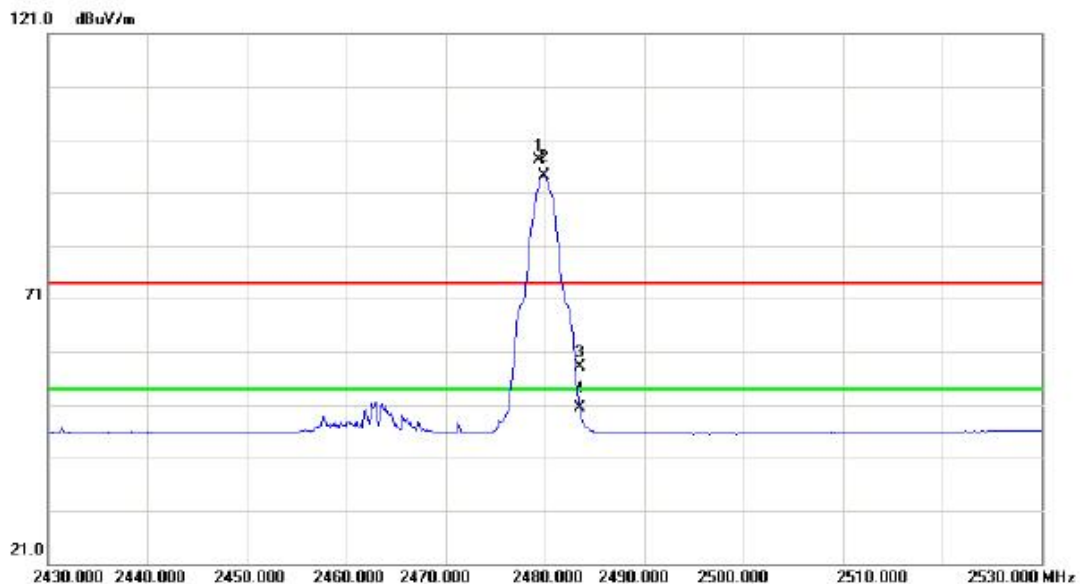
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		4890.150	48.32	3.74	52.06	74.00	-21.94	peak	
2	*	4890.150	43.23	3.74	46.97	54.00	-7.03	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2480MHz _CH26

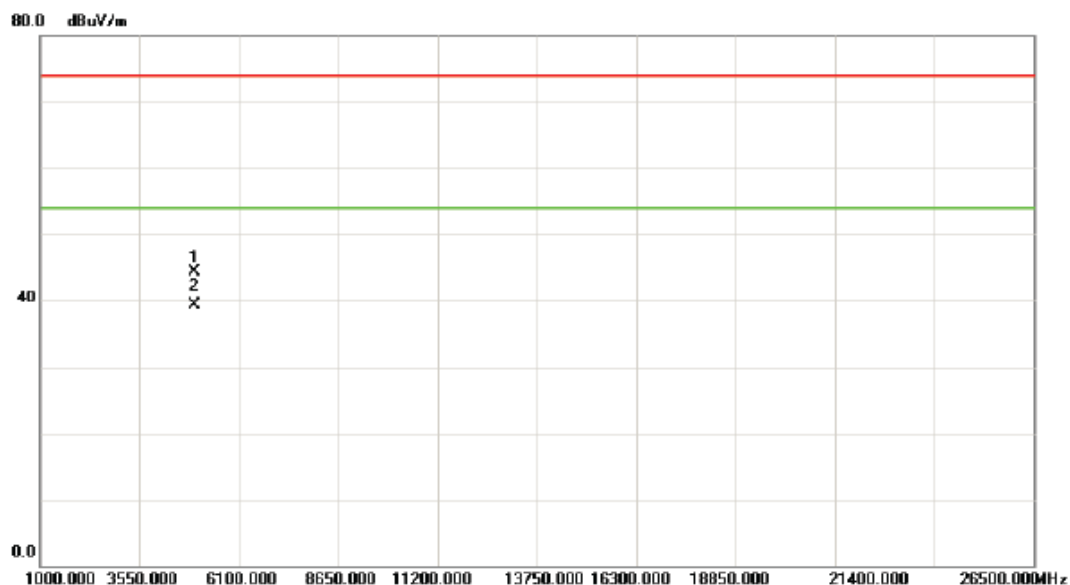
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	X	2479.400	65.20	32.00	97.20	74.00	23.20	peak	no limit
2	*	2479.900	62.17	32.00	94.17	54.00	40.17	AVG	no limit
3		2483.500	26.04	32.01	58.05	74.00	-15.95	peak	
4		2483.500	18.39	32.01	50.40	54.00	-3.60	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2480MHz _CH26

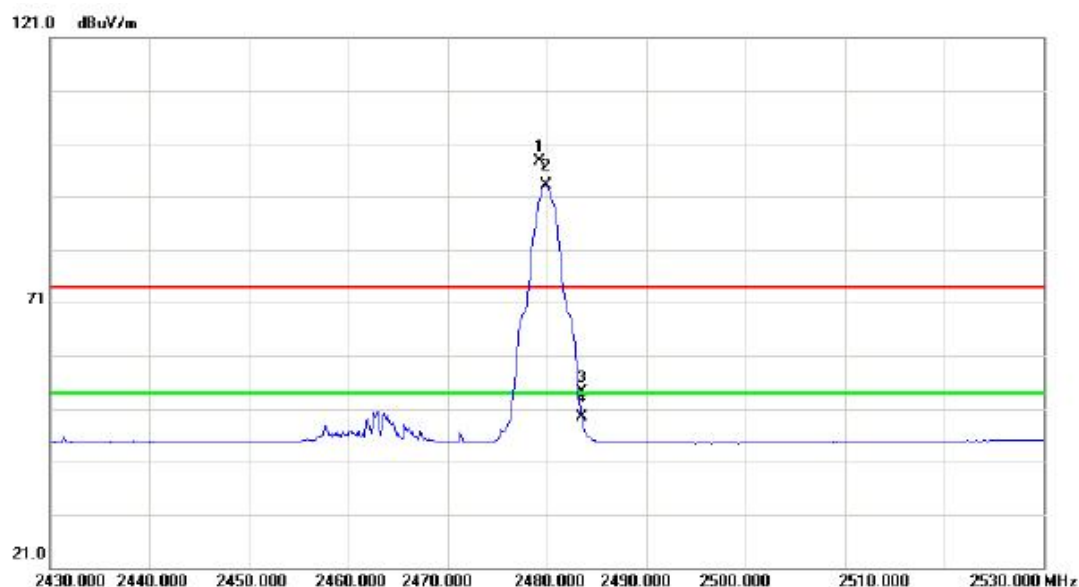
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		4960.030	40.51	3.88	44.39	74.00	-29.61	peak	
2	*	4960.030	35.38	3.88	39.26	54.00	-14.74	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2480MHz _CH26

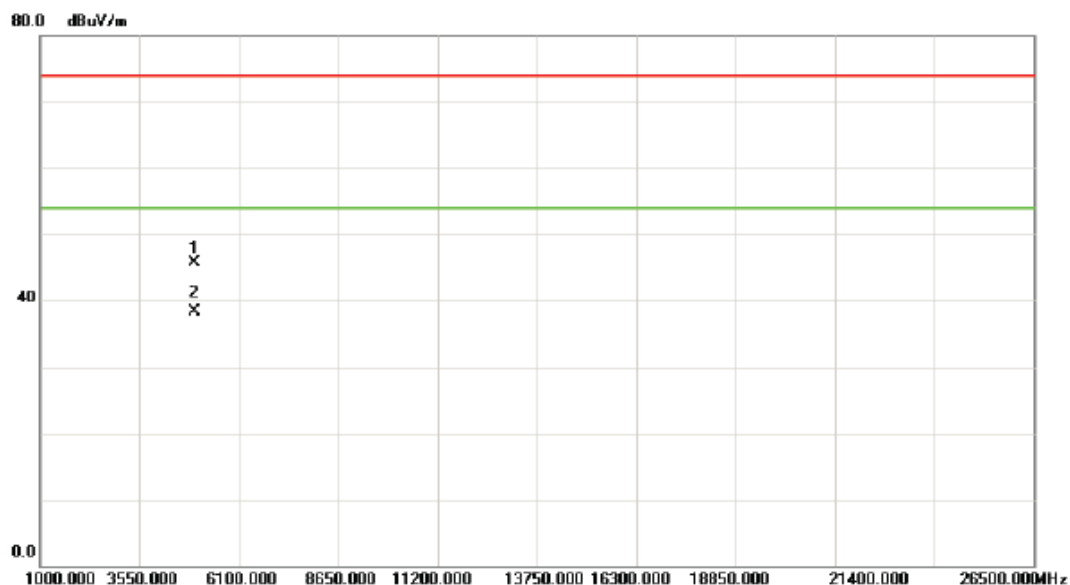
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	X	2479.310	65.58	32.00	97.58	74.00	23.58	peak	no limit
2	*	2479.900	61.17	32.00	93.17	54.00	39.17	AVG	no limit
3		2483.500	22.11	32.01	54.12	74.00	-19.88	peak	
4		2483.500	17.39	32.01	49.40	54.00	-4.60	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2480MHz _CH26

Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		4960.250	41.84	3.88	45.72	74.00	-28.28	peak	
2	*	4960.250	34.38	3.88	38.26	54.00	-15.74	AVG	

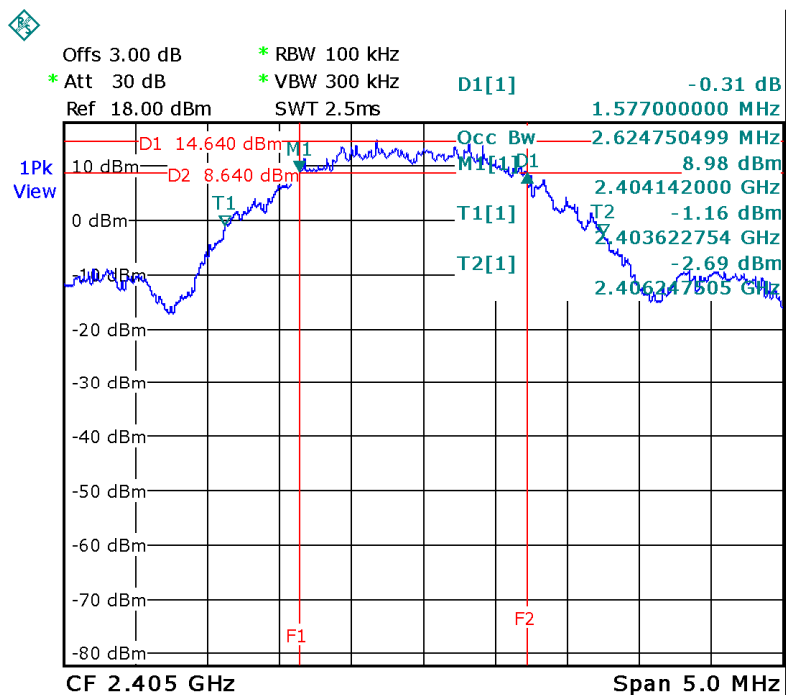
ATTACHMENT E - BANDWIDTH

Test Mode: CH11/19/26

Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2405	1.58	2.62	500	Complies
2445	1.60	2.59	500	Complies
2480	1.70	2.58	500	Complies

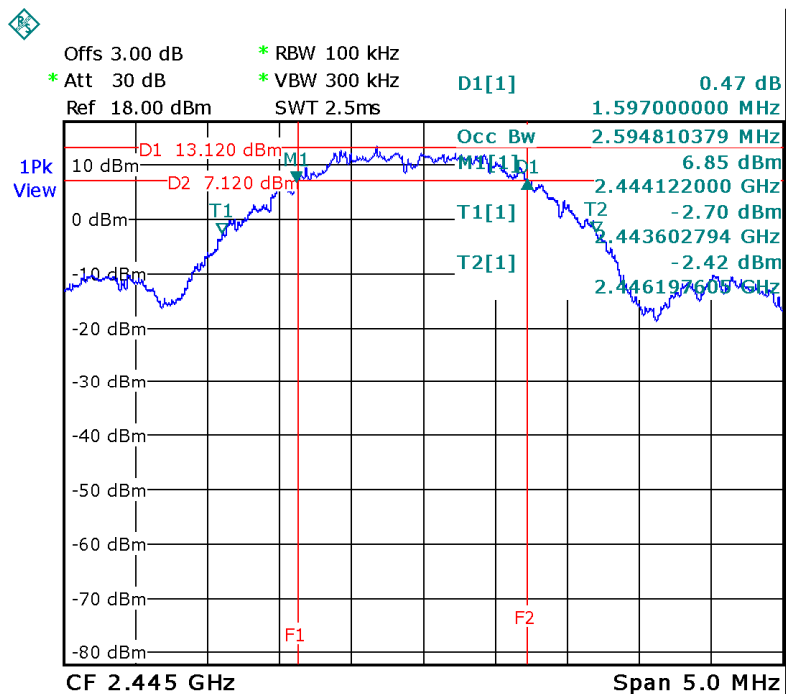
* 2 antenna port all have been tested, only worse case is reported.

CH11



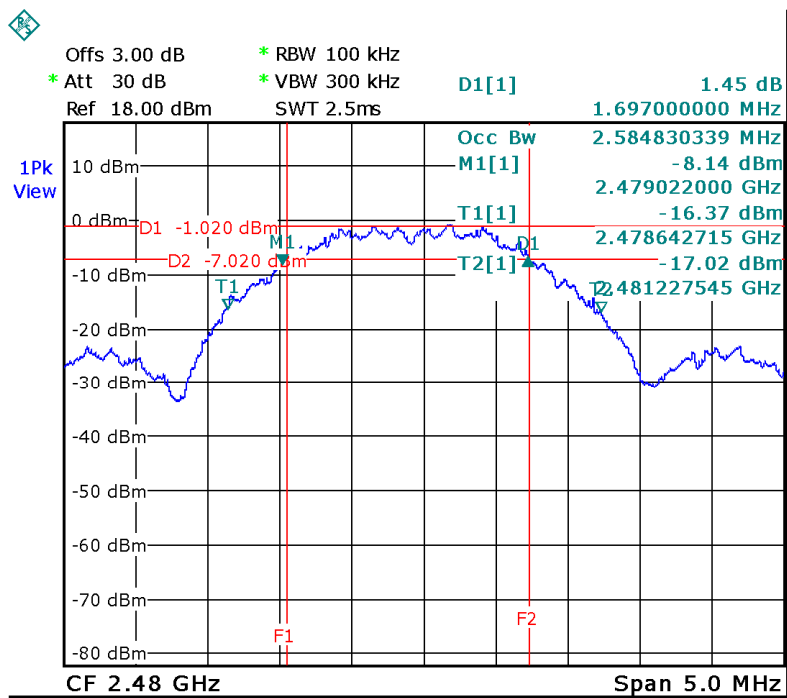
Date: 27.FEB.2015 14:36:08

CH11



Date: 27.FEB.2015 14:38:24

CH26



Date: 27.FEB.2015 14:42:49

ATTACHMENT F - PEAK OUTPUT POWER

Dipole Antenna

Test Mode: CH11/19/26

Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2405	14.11	0.0258	30.00	1.00	Complies
2445	14.12	0.0258	30.00	1.00	Complies
2480	4.46	0.0028	30.00	1.00	Complies

Chip Antenna

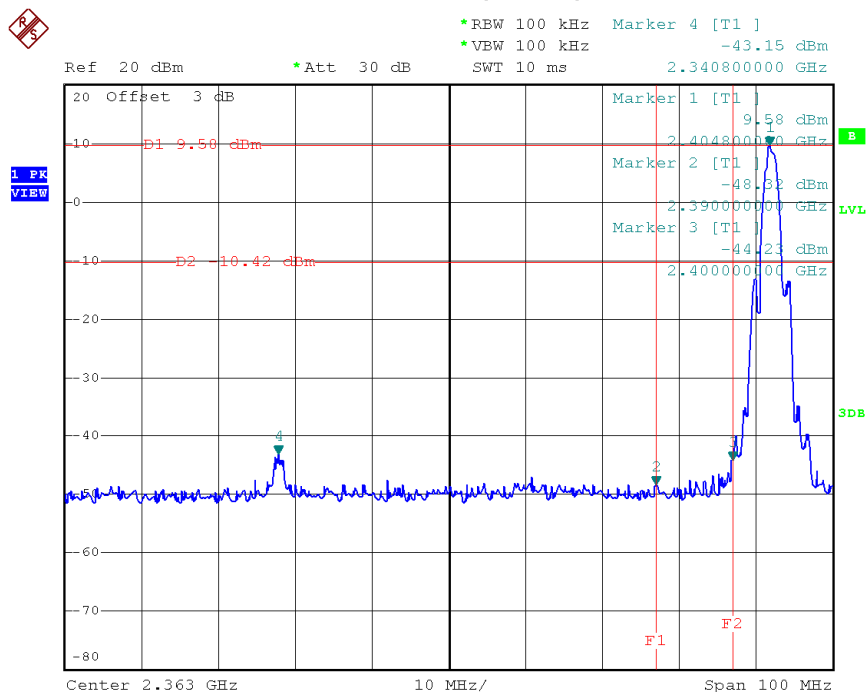
Test Mode: CH11/19/26

Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2405	14.85	0.0305	30.00	1.00	Complies
2445	14.20	0.0263	30.00	1.00	Complies
2480	4.47	0.0028	30.00	1.00	Complies

ATTACHMENT G - ANTENNA CONDUCTED SPURIOUS EMISSION

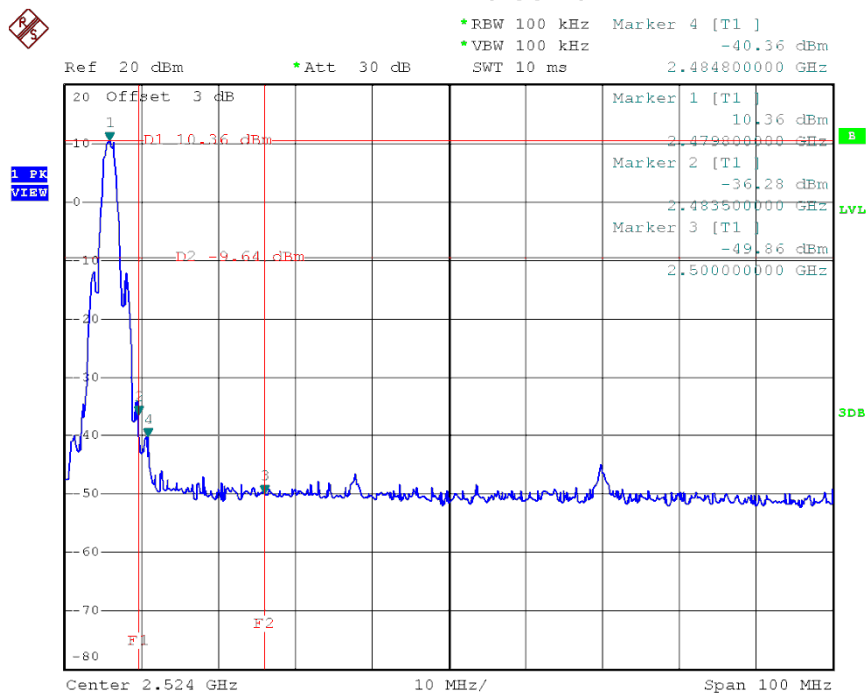
Dipole Antenna

CH11(Lower)



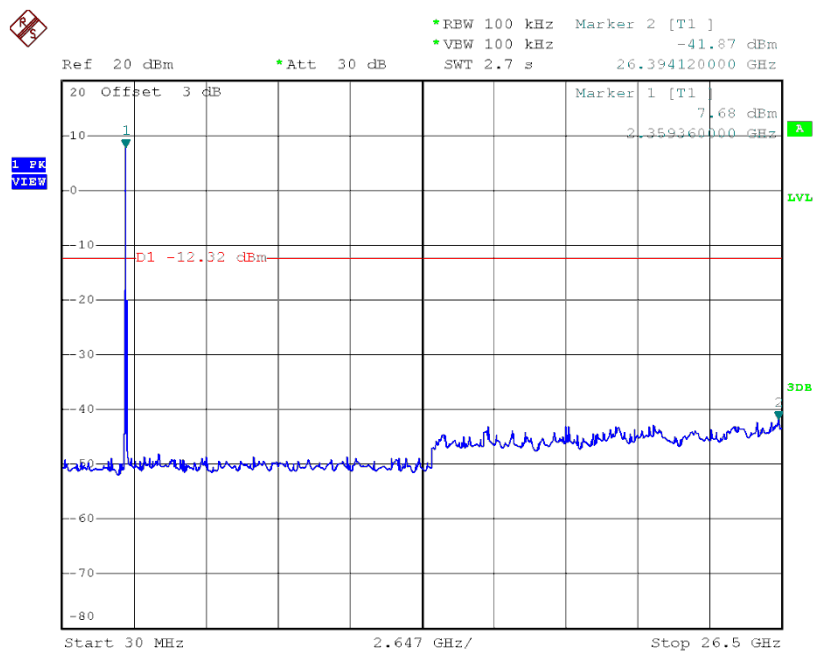
Date: 16.JAN.2015 16:16:20

CH26 (Upper)



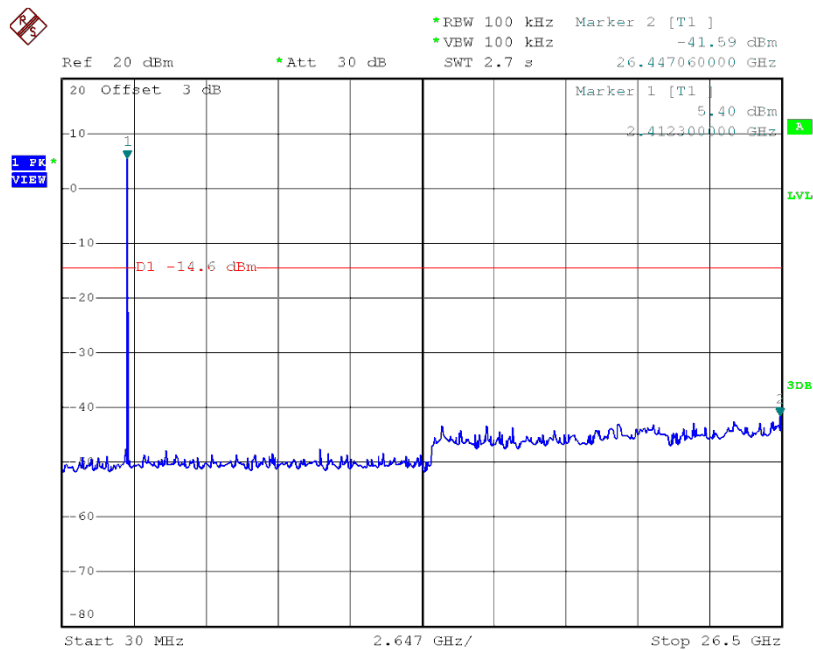
Date: 16.JAN.2015 16:13:12

CH11 (1GHz~10th Harmonic)



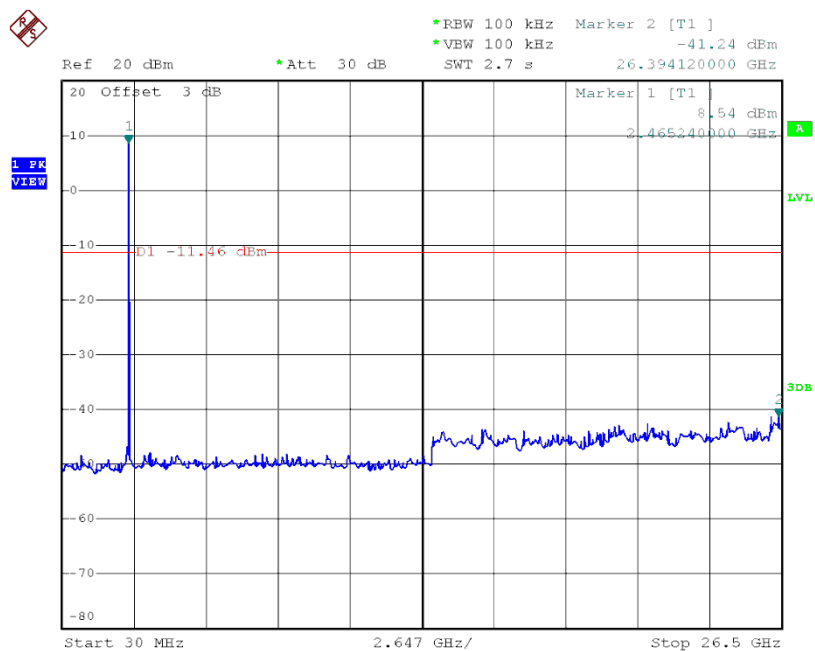
Date: 16.JAN.2015 16:15:16

CH19(1GHz~10th Harmonic)



Date: 16.JAN.2015 16:14:33

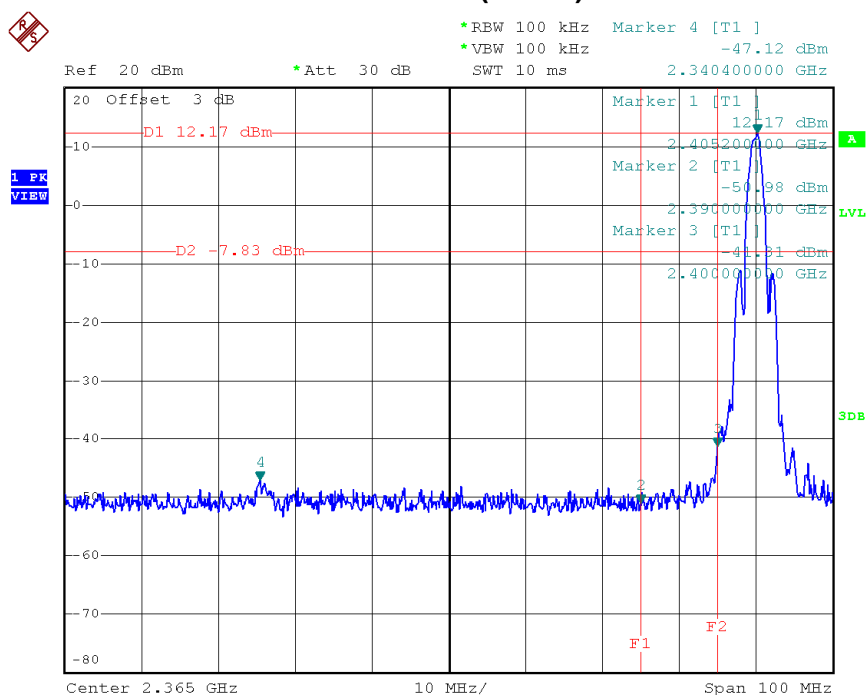
CH26 (1GHz~10th Harmonic)



Date: 16.JAN.2015 16:10:57

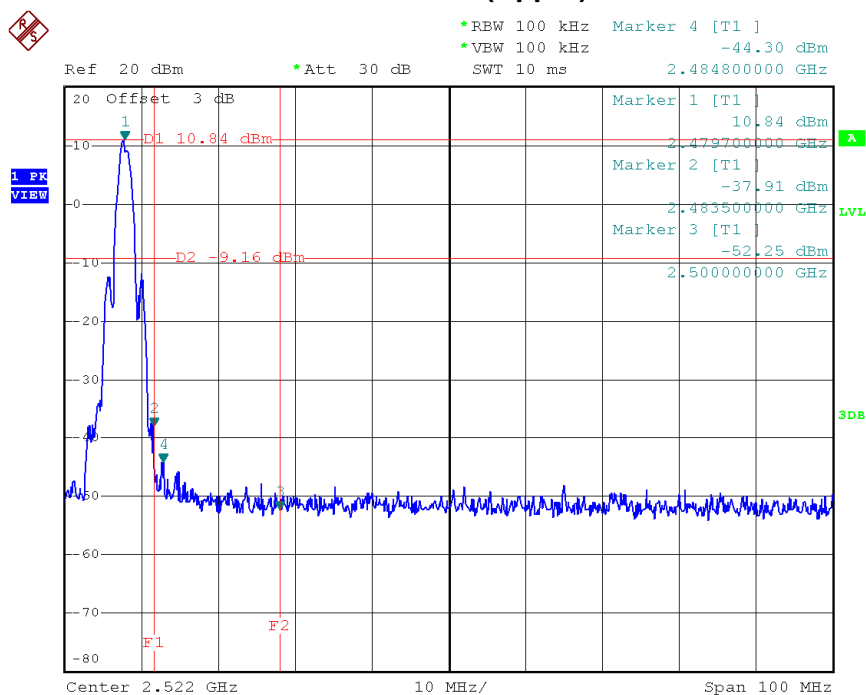
Chip Antenna

CH11(Lower)



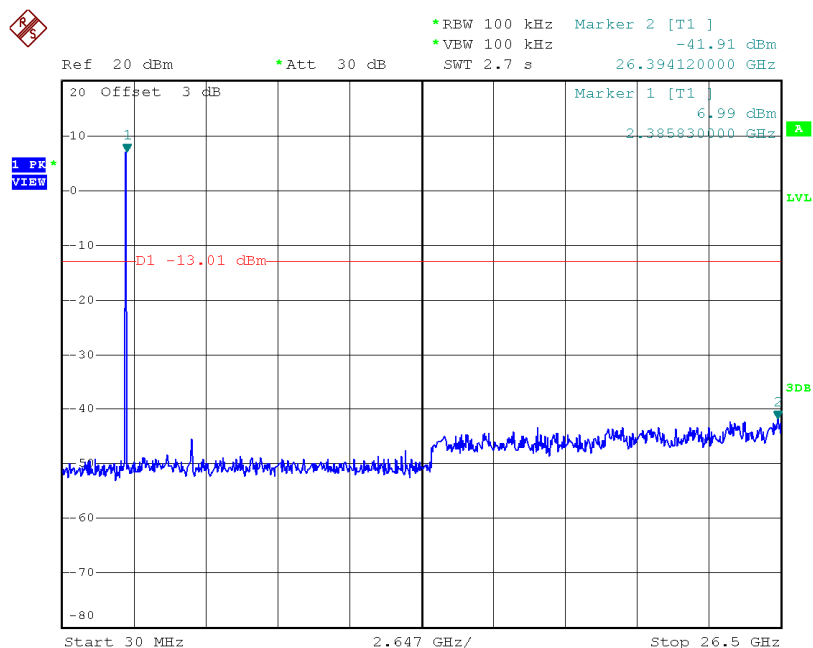
Date: 16.JAN.2015 17:04:10

CH26 (Upper)



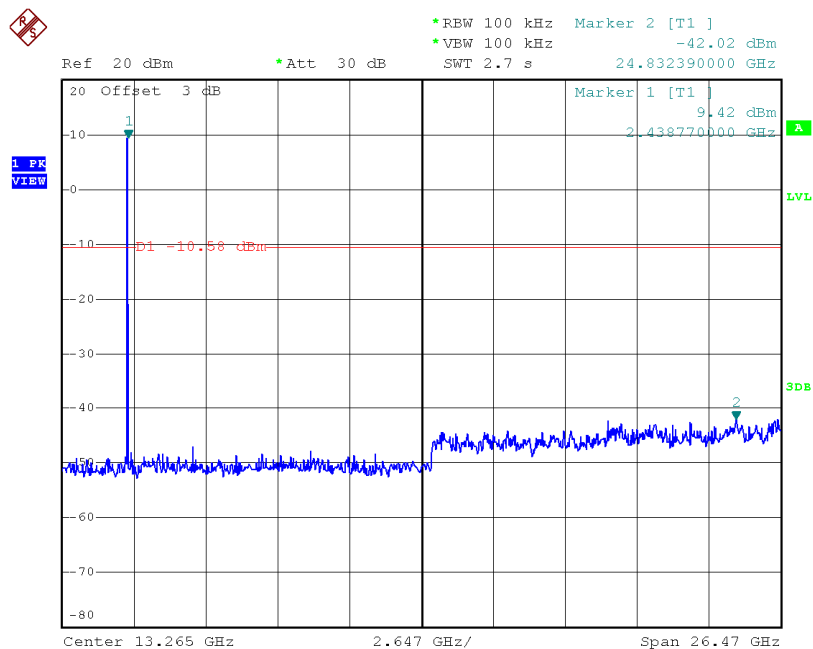
Date: 16.JAN.2015 17:02:26

CH11 (1GHz~10th Harmonic)



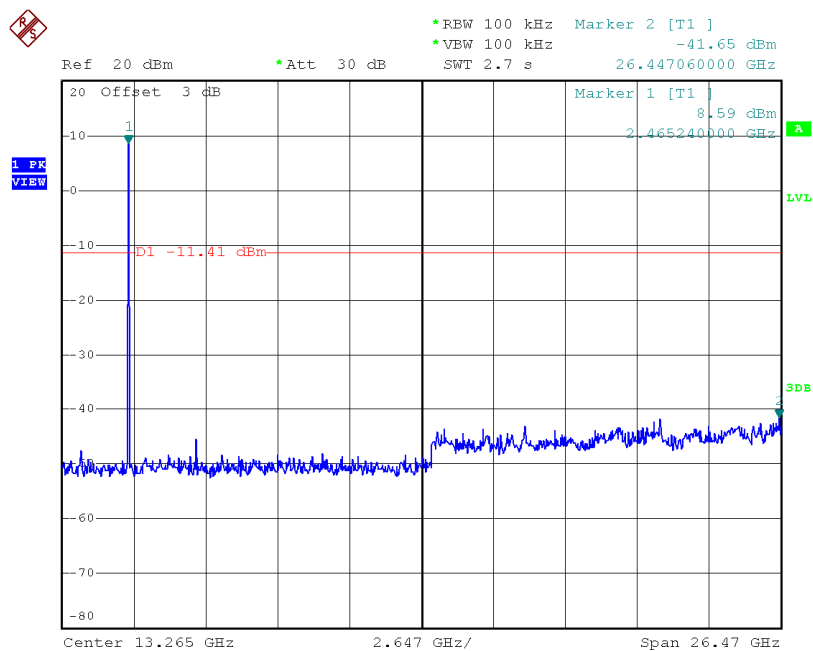
Date: 16.JAN.2015 16:53:55

CH19(1GHz~10th Harmonic)



Date: 16.JAN.2015 16:58:52

CH26 (1GHz~10th Harmonic)



Date: 16.JAN.2015 17:00:57

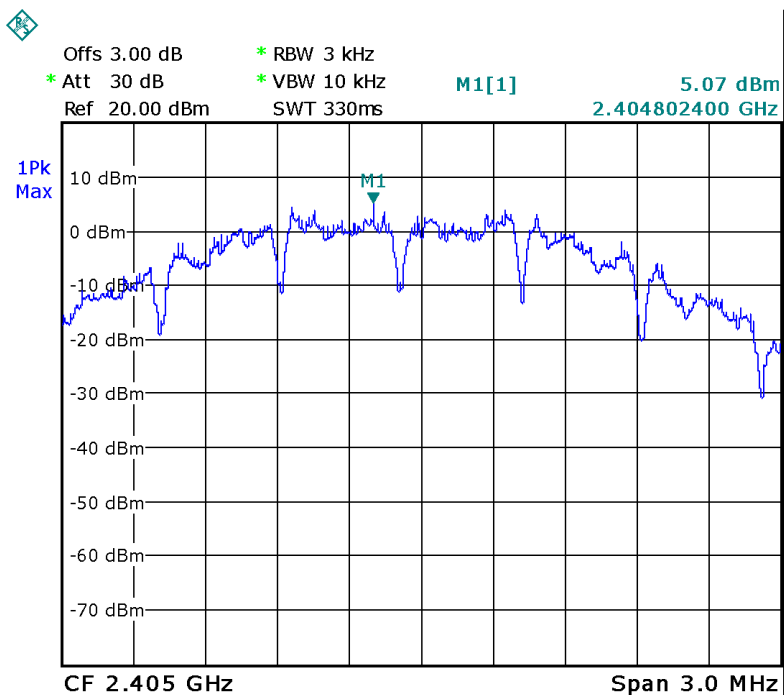
ATTACHMENT H - POWER SPECTRAL DENSITY

Dipole Antenna

Test Mode :TX CH11/19/26

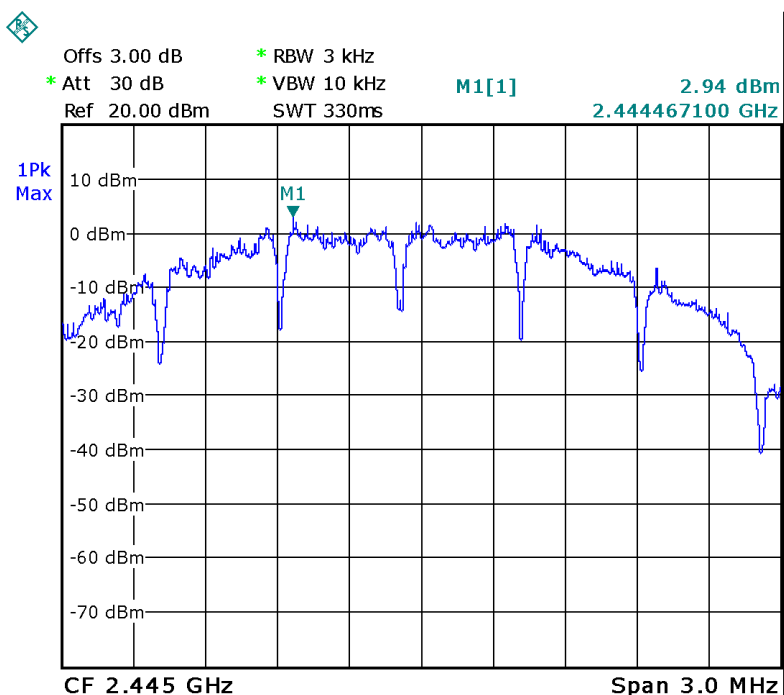
Frequency MHz	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm)	Result
2405	5.07	3.21	8.00	Complies
2445	2.94	1.97	8.00	Complies
2480	2.79	1.90	8.00	Complies

TX CH11



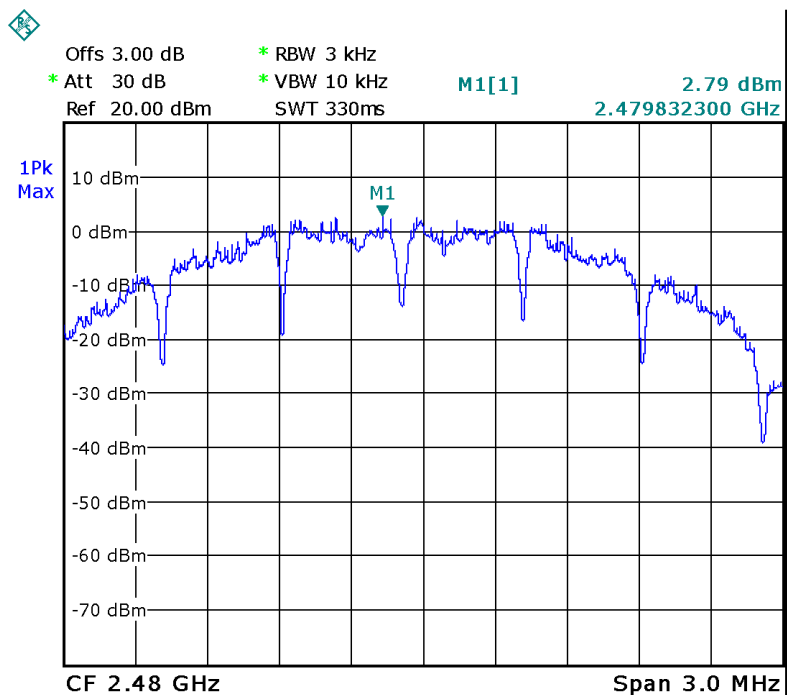
Date: 3.MAR.2015 08:34:00

TX CH19



Date: 3.MAR.2015 08:35:05

TX CH26



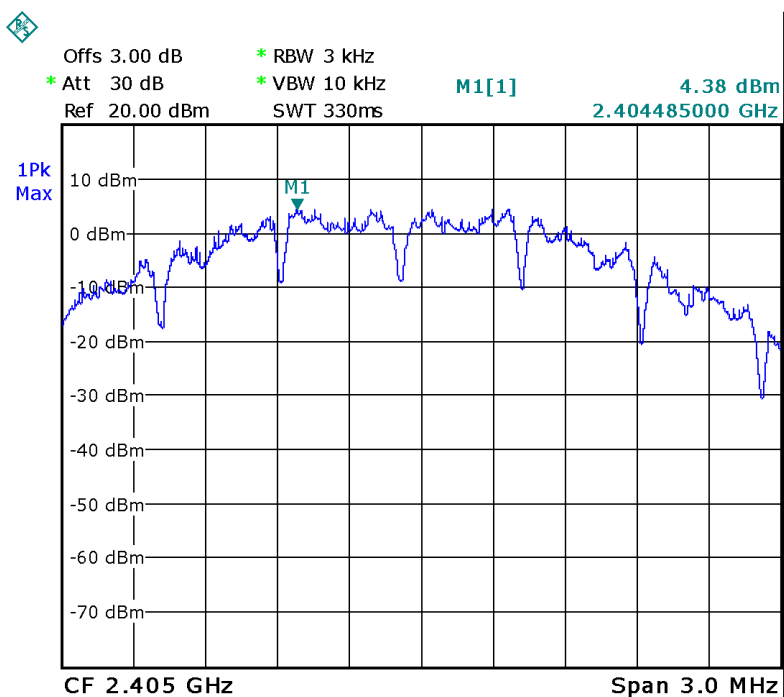
Date: 3.MAR.2015 08:36:07

Chip Antenna

Test Mode :TX CH11/19/26

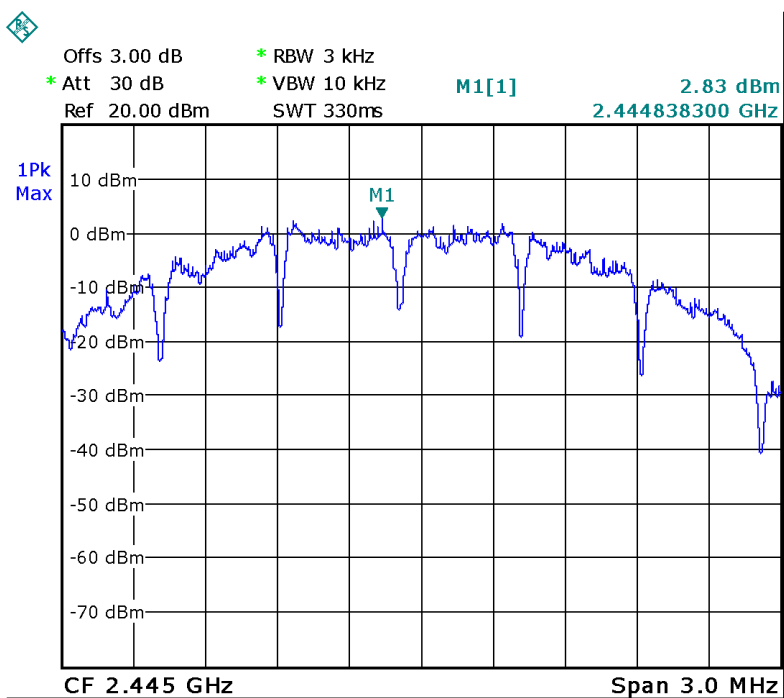
Frequency MHz	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm)	Result
2405	4.38	2.74	8.00	Complies
2445	2.83	1.92	8.00	Complies
2480	3.12	2.05	8.00	Complies

TX CH11



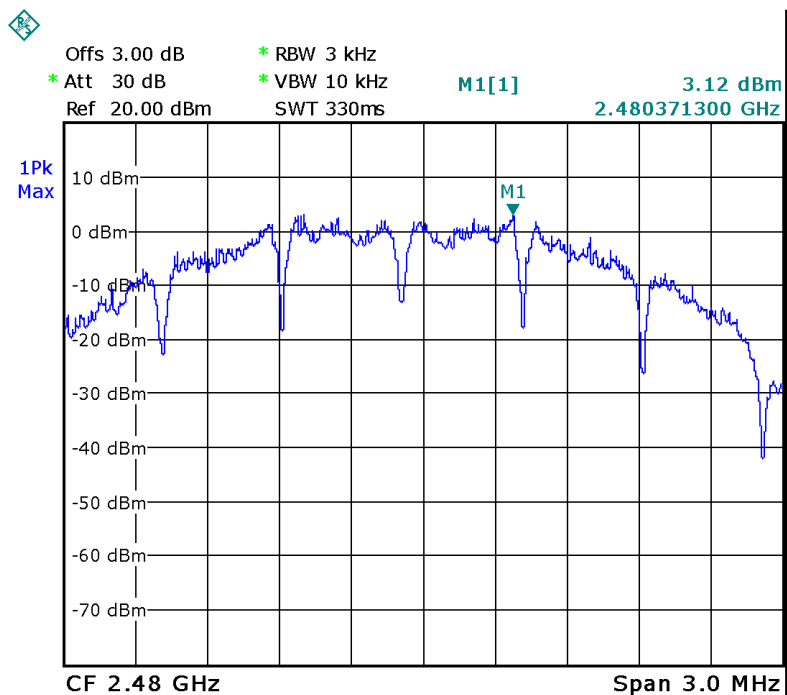
Date: 3.MAR.2015 08:33:37

TX CH19



Date: 3.MAR.2015 08:34:36

TX CH26



Date: 3.MAR.2015 08:35:34