

FCC Radio Test Report

FCC ID: 2ACNIRTSA04NU

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

Project No. : 1407C202
Equipment : ADSL Home Station
Model Name : BHS-RTA S
Applicant : OBSERVA Telecom
Address : Monte Esquinza, 28 - 1st floor - Right hand,
Madrid, Spain

Date of Receipt : Jul. 24, 2014
Date of Test : Jul. 24, 2014~ Aug. 04, 2014
Issued Date : Aug. 05, 2014
Tested by : BTL Inc.

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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 **R.O.C.**, or National Institute of Standards and Technology (**NIST**) of **U.S.A.**

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For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

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REPORT ISSUED HISTORY

Issued No.	Description	Issued Date
BTL-FCCP-1- 1407C202	Original Issue.	Aug. 05, 2014

1. CERTIFICATION

Equipment : ADSL Home Station
Brand Name : Observa Telecom
Model Name : BHS-RTA S
Applicant : OBSERVA Telecom
Manufacturer : OBSERVA Telecom
Address : Monte Esquinza, 28 - 1st floor - Right hand, Madrid, Spain
Factory : 1. Shenzhen Gongjin Electronics Co., Ltd
2. Taicang T&W Electronics Co., Ltd
Address : 1. No 2&3 Buildings, Mingwei Factory Area, Songgang Road West, No. A Building, 1# Songgang Road Songgang Sub-District, Shenzhen, Guangdong, 518105, P.R. China
2. Jiangnan Road 89, Ludu Town, Taicang, Jiangsu, 215412, P.R. China
Date of Test : Jul. 24, 2014~ Aug. 04, 2014
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-1-1407C202) 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
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) The test follows FCC KDB Publication No. 558074 D01 DTS Meas Guidance v03r02 (Measurement Guidelines of DTS)

2.1 TEST FACILITY

The test facilities used to collect the test data in this report is **DG-C02/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~30MHz	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	ADSL Home Station	
Brand Name	Observa Telecom	
Model Name	BHS-RTA S	
Model Difference	N/A	
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 300 Mbps
	Output Power (Max.)	802.11b: 17.33dBm 802.11g: 22.75dBm 802.11n(20MHz): 22.63dBm 802.11n(40MHz): 22.19dBm
Power Source	DC Voltage supplied from AC/DC adapter. Model : S12B22-120A100-04	
Power Rating	I/P AC 100-240V 50/60Hz max0.5A O/P 12V 1A	
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 List:

CH01 – CH11 for 802.11b, 802.11g, 802.11n(20MHz) CH03 – CH09 for 802.11n(40MHz)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	04	2427	07	2442	10	2457
02	2417	05	2432	08	2447	11	2462
03	2422	06	2437	09	2452		

3. Table for Filed Antenna

Ant.	Manufacturer	Model Name	Antenna Type	Connector	Gain (dBi)
1	Airgain	N2420DS	Internal	N/A	3.10
2	Airgain	N2420DS	Internal	N/A	3.10

Note:

(1) The EUT incorporates a MIMO function. Physically, the EUT provides two completed two transmitters and two receivers (2T2R).

4.

Operating Mode	2TX
TX Mode	
802.11b	V (ANT 1 + ANT 2)
802.11g	V (ANT 1 + ANT 2)
802.11n(20MHz)	V (ANT 1 + ANT 2)
802.11n(40MHz)	V (ANT 1 + ANT 2)

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

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

For Conducted Test	
Final Test Mode	Description
Mode 5	TX MODE

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

Note:

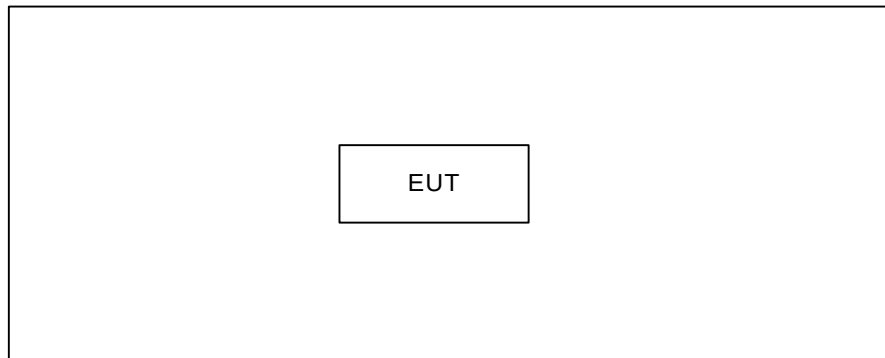
- (1) The measurements are performed at the high, middle, low available channels.
- (2) 802.11b mode: DBPSK (1Mbps)
802.11g mode: OFDM (6Mbps)
802.11n HT20 mode : BPSK (13Mbps)
802.11n HT40 mode : BPSK (27Mbps)
For radiated emission tests, the highest output powers were set for final test.
- (3) For radiated below 1G test, the 802.11b is found to be the worst case and recorded.

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	CMD		
Frequency	2412 MHz	2437 MHz	2462 MHz
IEEE 802.11b DSSS	43	43	44
IEEE 802.11g OFDM	43	43	42
IEEE 802.11n (20MHz)	42	42	42
Frequency	2422 MHz	2437 MHz	2452 MHz
IEEE 802.11n (40MHz)	41	44	44

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/IC	Series No.	Note
-	-	-	-	-	-	

Item	Shielded Type	Ferrite Core	Length	Note
-	-	-	-	

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

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

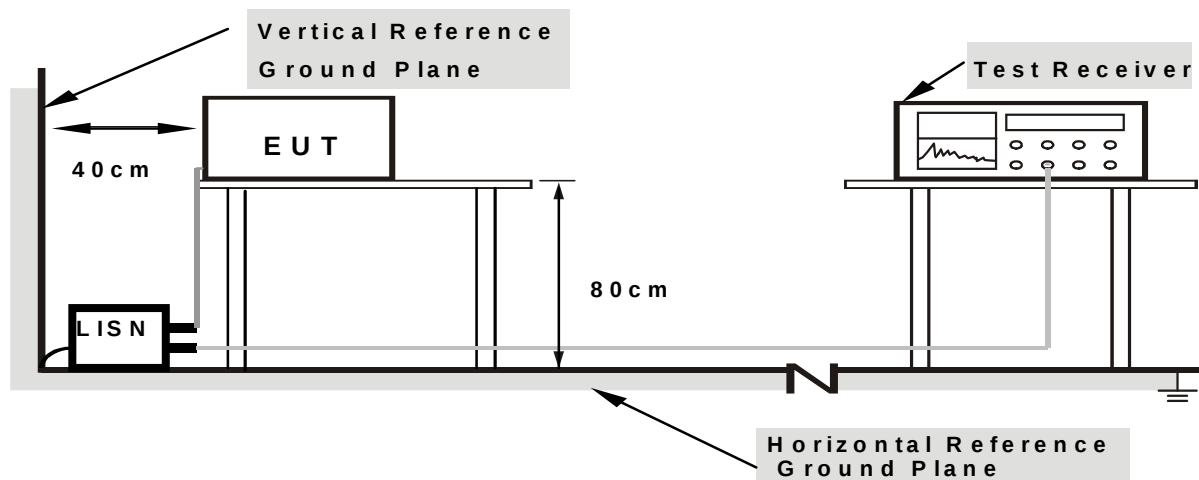
4.1.2 TEST PROCEDURE

- 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.
- 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.
- 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.
- LISN at least 80 cm from nearest part of EUT chassis.
- 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: 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

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).

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

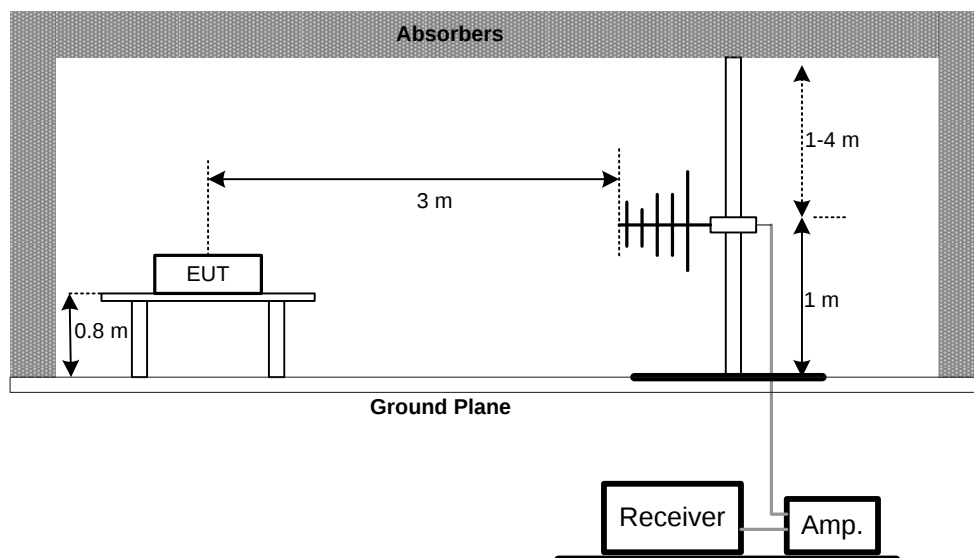
- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 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

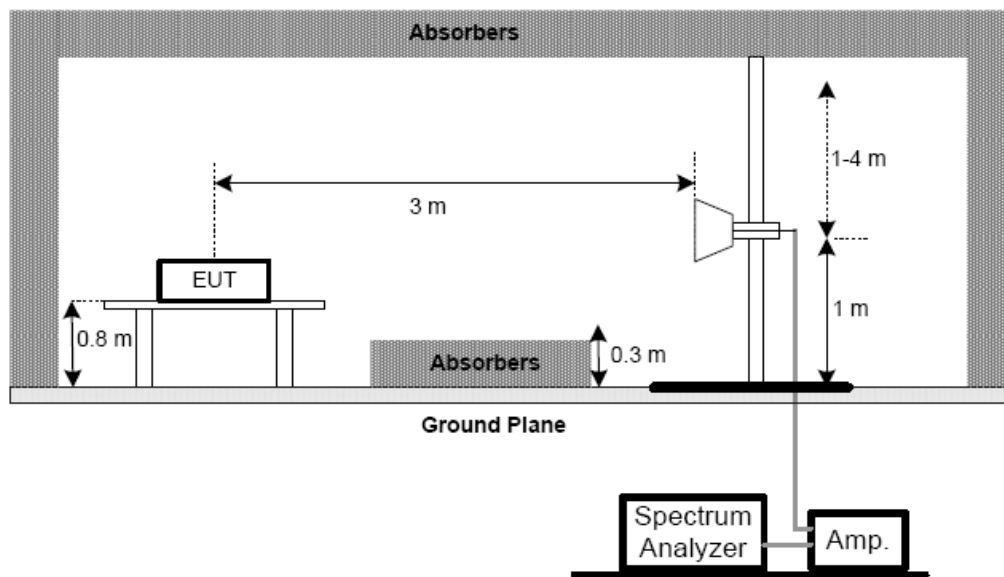
No deviation

4.2.4 TEST SETUP

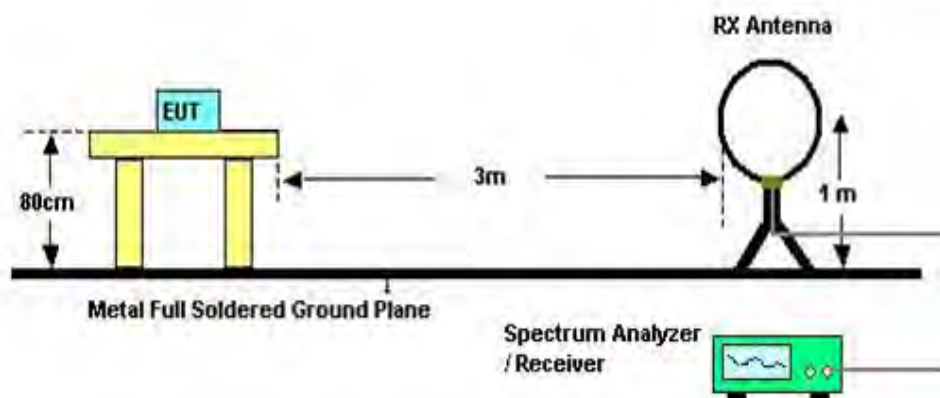
(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



(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 **4.1.6** 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: 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 (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.

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 4.1.6 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: AC 120V/60Hz

5.1.6 TEST RESULTS

Please refer to the Attachment E.

6. MAXIMUM 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 9.1.3 of FCC KDB 558074 D01 DTS Meas Guidance v03r01.

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 4.1.6 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: 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 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.

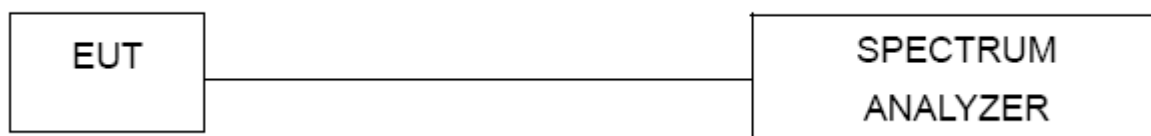
7.1.1 TEST PROCEDURE

- 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 4.1.6 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: 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 tested system was configured as the statements of 4.1.6 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: 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	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

Radiated Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	EMCO	3142C	00066462	Mar. 29, 2015
2	Antenna	EMCO	3142C	00066464	Mar. 29, 2015
3	Amplifier	Agilent	8447D	2944A11203	Nov. 11, 2014
4	Amplifier	Agilent	8447D	2944A11204	Nov. 11, 2014
5	Spectrum Analyzer	Agilent	E4443A	MY48250370	Nov. 11, 2014
6	RF Pre-selector	Agilent	N9039A	MY46520201	Nov. 11, 2014
7	Test Cable	N/A	Cable_5m_8m 15m	N/A	Jan. 14, 2015
8	Test Cable	N/A	Cable_5m_11 m_15m	N/A	Jan. 14, 2015
9	Spectrum Analyzer	Agilent	E4447A	MY48250208	Nov. 11, 2014
10	RF Pre-selector	Agilent	N9039A	MY46520214	Nov. 11, 2014
11	Multi-Device Controller	ETS-Lindgren	2090	N/A	N/A
12	Horn Antenna	EMCO	3115	9605-4803	Mar. 29, 2015
13	Amplifier	Agilent	8449B	3008A02584	Nov. 11, 2014
14	Spectrum Analyzer	Agilent	E4447A	MY48250208	Nov. 11, 2014
15	Test Cable	Huber+Suhner	SUCOFLEX_1 5m_4m	N/A	Jan. 14, 2015

6dB Bandwidth Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov. 11, 2014

Peak Output Power Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	P-series Power meter	Agilent	N1911A	MY45100473	Apr. 25, 2015
2	Wireband Power sensor	Agilent	N1921A	MY51100041	Apr. 25, 2015

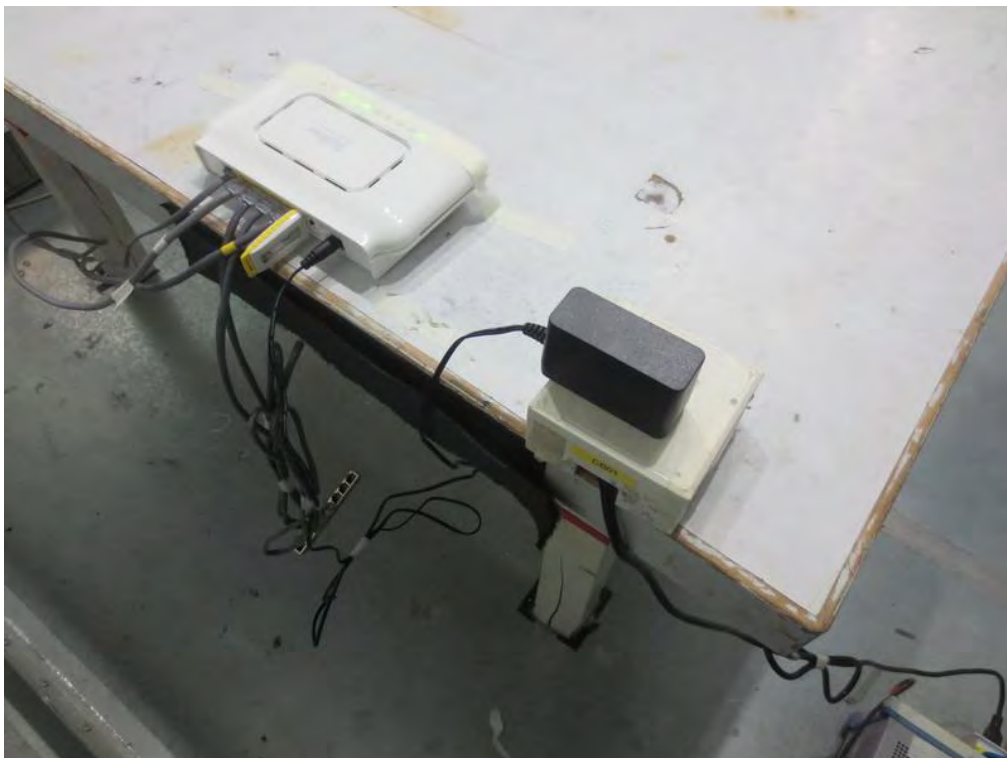
Antenna Conducted Spurious Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov. 11, 2014

Power Spectral Density Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov. 11, 2014

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



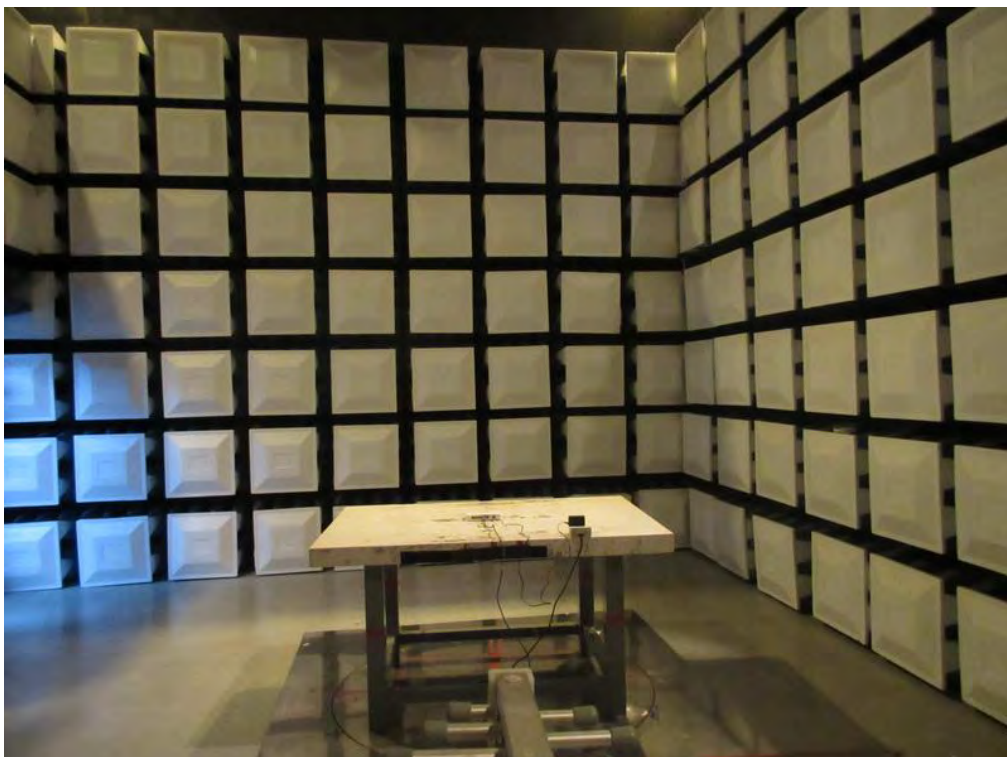
Radiated Measurement Photos

9KHz to 30MHz



Radiated Measurement Photos

30MHz to 1000MHz



Radiated Measurement Photos

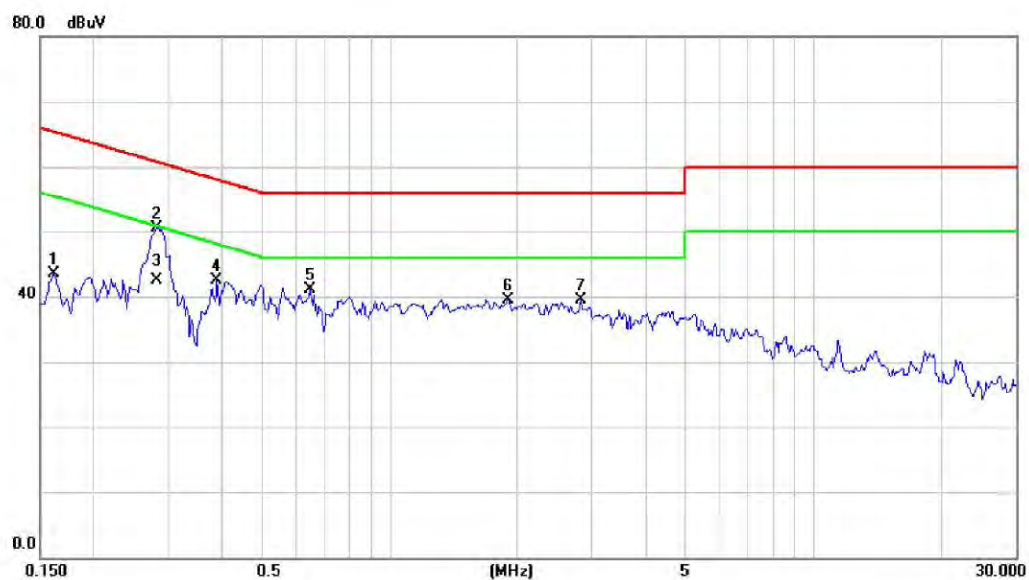
Above 1000MHz



ATTACHMENT A - CONDUCTED EMISSION

Test Mode : TX MODE

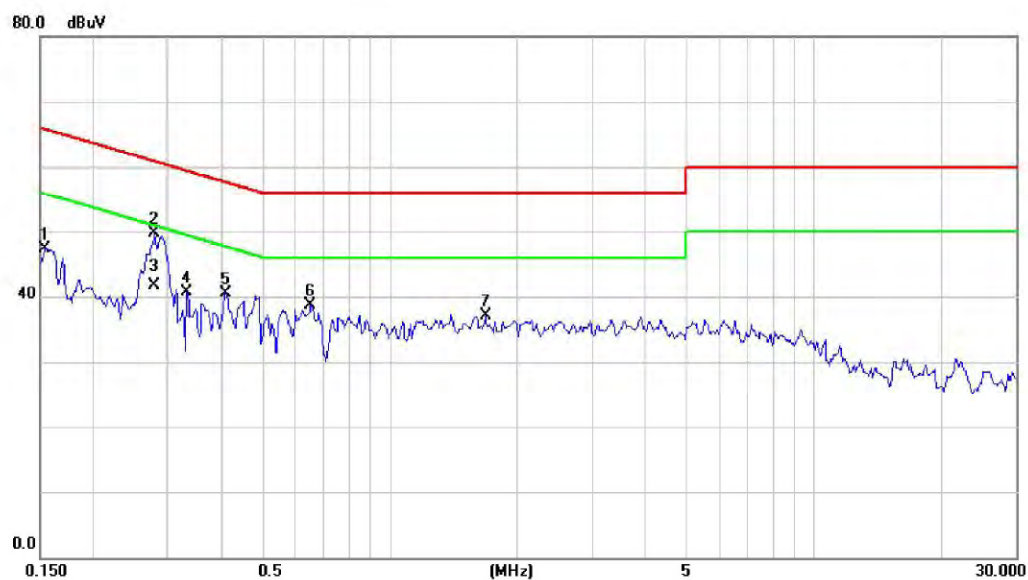
Line



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1617	33.91	9.52	43.43	65.38	-21.95	peak	
2		0.2827	40.98	9.59	50.57	60.74	-10.17	peak	
3	*	0.2827	32.98	9.59	42.57	50.74	-8.17	AVG	
4		0.3921	32.77	9.64	42.41	58.02	-15.61	peak	
5		0.6500	31.40	9.65	41.05	56.00	-14.95	peak	
6		1.9076	29.86	9.71	39.57	56.00	-16.43	peak	
7		2.8374	29.74	9.76	39.50	56.00	-16.50	peak	

Test Mode : TX MODE

Neutral



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1540	37.72	9.63	47.35	65.78	-18.43	peak	
2		0.2790	40.03	9.62	49.65	60.85	-11.20	peak	
3	*	0.2790	32.03	9.62	41.65	50.85	-9.20	AVG	
4		0.3335	31.14	9.62	40.76	59.36	-18.60	peak	
5		0.4117	30.94	9.63	40.57	57.61	-17.04	peak	
6		0.6540	29.04	9.66	38.70	56.00	-17.30	peak	
7		1.6851	27.33	9.72	37.05	56.00	-18.95	peak	

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

Test Mode: TX Mode

Freq. (MHz)	Ant. 0°/90°	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
0.0095	0°	19.58	24.97	44.55	108.10	-63.55	AVG
0.0095	0°	34.78	24.97	59.75	128.10	-68.35	PEAK
0.0239	0°	20.38	24.05	44.43	100.04	-55.60	AVG
0.0239	0°	36.35	24.05	60.40	120.04	-59.63	PEAK
0.0317	0°	22.37	23.56	45.93	97.58	-51.65	AVG
0.0317	0°	32.35	23.56	55.91	117.58	-61.67	PEAK
0.0426	0°	23.77	22.87	46.64	95.02	-48.38	AVG
0.0426	0°	34.37	22.87	57.24	115.02	-57.78	PEAK
0.4916	0°	24.45	19.82	44.27	73.77	-29.50	QP
1.7157	0°	29.63	19.53	49.16	69.54	-20.38	QP

Freq. (MHz)	Ant. 0°/90°	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
0.0093	90°	20.72	24.30	45.02	128.28	-83.26	AVG
0.0093	90°	32.14	24.30	56.44	148.28	-91.84	PEAK
0.0234	90°	21.38	24.08	45.46	120.22	-74.76	AVG
0.0234	90°	33.35	24.08	57.43	140.22	-82.79	PEAK
0.0312	90°	23.28	23.59	46.87	117.72	-70.85	AVG
0.0312	90°	40.35	23.59	63.94	137.72	-73.78	PEAK
0.0423	90°	24.35	22.89	47.24	115.08	-67.84	AVG
0.0423	90°	43.35	22.89	66.24	135.08	-68.84	PEAK
0.4916	90°	10.45	19.82	30.27	73.77	-43.50	QP
1.7153	90°	18.63	19.53	38.16	69.54	-31.38	QP

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.

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

Test Mode: TX B MODE CHANNEL 01

Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		49.4000	41.35	-12.48	28.87	40.00	-11.13	peak	
2	*	150.2800	45.78	-11.60	34.18	43.50	-9.32	peak	
3		216.2400	41.49	-13.41	28.08	46.00	-17.92	peak	
4		319.0600	38.59	-9.76	28.83	46.00	-17.17	peak	
5		500.4500	34.99	-7.51	27.48	46.00	-18.52	peak	
6		706.0900	29.47	-0.88	28.59	46.00	-17.41	peak	

Test Mode:	TX B MODE CHANNEL 01
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Horizontal



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Detector	Comment
		MHz	Level	Factor	ment				
			dBuV	dB	dBuV/m	dBuV/m	dB		
1	*	150.2800	43.65	-11.60	32.05	43.50	-11.45	peak	
2		224.9700	45.83	-13.19	32.64	46.00	-13.36	peak	
3		250.1900	44.46	-13.28	31.18	46.00	-14.82	peak	
4		299.6600	42.54	-9.60	32.94	46.00	-13.06	peak	
5		412.1800	39.76	-7.19	32.57	46.00	-13.43	peak	
6		500.4500	38.54	-7.51	31.03	46.00	-14.97	peak	

Test Mode: TX B MODE CHANNEL 06

Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		45.5200	39.59	-11.93	27.66	40.00	-12.34	peak	
2	*	150.2800	44.51	-11.60	32.91	43.50	-10.59	peak	
3		224.9700	42.14	-13.19	28.95	46.00	-17.05	peak	
4		299.6600	36.04	-9.60	26.44	46.00	-19.56	peak	
5		319.0600	34.80	-9.76	25.04	46.00	-20.96	peak	
6		412.1800	34.08	-7.19	26.89	46.00	-19.11	peak	

Test Mode:	TX B MODE CHANNEL 06
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Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1		150.2800	41.98	-11.60	30.38	43.50	-13.12	peak	
2		224.9700	47.58	-13.19	34.39	46.00	-11.61	peak	
3		250.1900	44.20	-13.28	30.92	46.00	-15.08	peak	
4		299.6600	40.66	-9.60	31.06	46.00	-14.94	peak	
5		337.4900	41.21	-9.92	31.29	46.00	-14.71	peak	
6	*	412.1800	41.73	-7.19	34.54	46.00	-11.46	peak	

Test Mode:	TX B MODE CHANNEL 11
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Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		50.3700	41.55	-12.53	29.02	40.00	-10.98	peak	
2		108.5700	40.54	-14.02	26.52	43.50	-16.98	peak	
3	*	150.2800	45.35	-11.60	33.75	43.50	-9.75	peak	
4		224.9700	41.98	-13.19	28.79	46.00	-17.21	peak	
5		299.6600	38.44	-9.60	28.84	46.00	-17.16	peak	
6		319.0600	41.07	-9.76	31.31	46.00	-14.69	peak	

Test Mode: TX B MODE CHANNEL 11

Horizontal

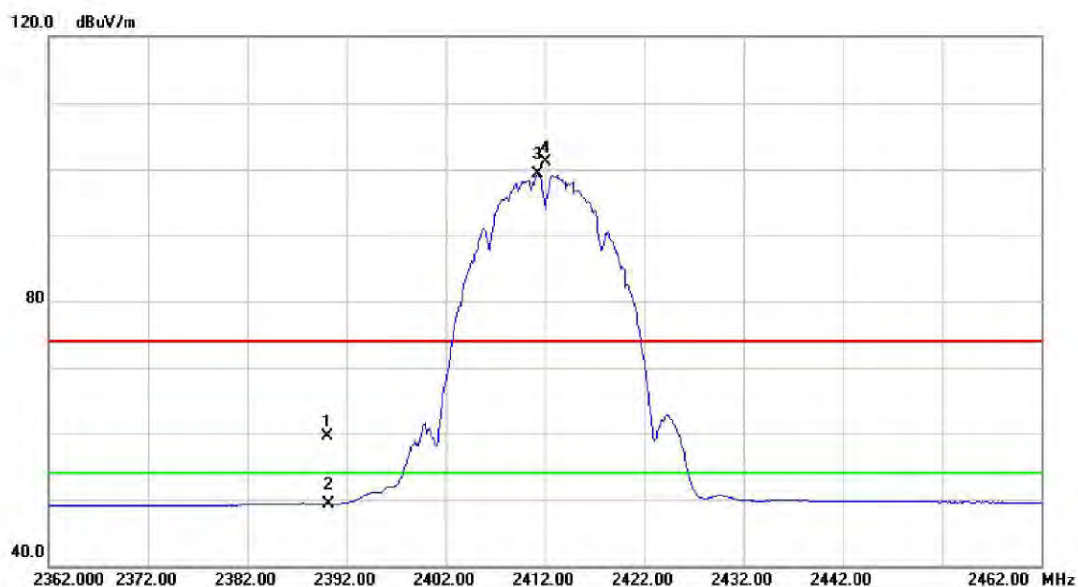


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	150.2800	44.53	-11.60	32.93	43.50	-10.57	peak	
2		224.9700	44.86	-13.19	31.67	46.00	-14.33	peak	
3		250.1900	43.21	-13.28	29.93	46.00	-16.07	peak	
4		299.6600	43.13	-9.60	33.53	46.00	-12.47	peak	
5		412.1800	39.14	-7.19	31.95	46.00	-14.05	peak	
6		500.4500	38.39	-7.51	30.88	46.00	-15.12	peak	

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	Over dB	Detector	Comment
1		2390.000	26.03	33.54	59.57	74.00	-14.43	peak	
2		2390.000	15.81	33.54	49.35	54.00	-4.65	AVG	
3	*	2411.300	65.81	33.57	99.38	54.00	45.38	AVG	Fundamental frequency, no limit
4	X	2412.000	67.45	33.57	101.02	74.00	27.02	peak	Fundamental frequency, no limit

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

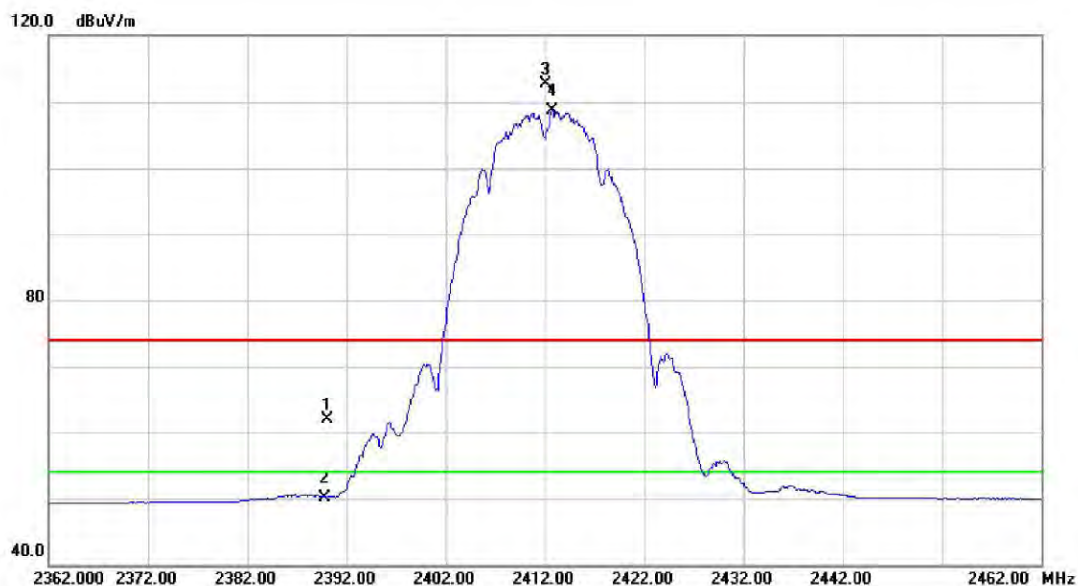
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4824.050	46.00	8.14	54.14	74.00	-19.86	peak	
2	*	4824.050	43.59	8.14	51.73	54.00	-2.27	AVG	

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	Over dB	Detector	Comment
1		2390.000	28.34	33.54	61.88	74.00	-12.12	peak	
2		2390.000	16.65	33.54	50.19	54.00	-3.81	AVG	
3	X	2412.000	79.12	33.57	112.69	74.00	38.69	peak	Fundamental frequency, no limit
4	*	2412.700	75.12	33.57	108.69	54.00	54.69	AVG	Fundamental frequency, no limit

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

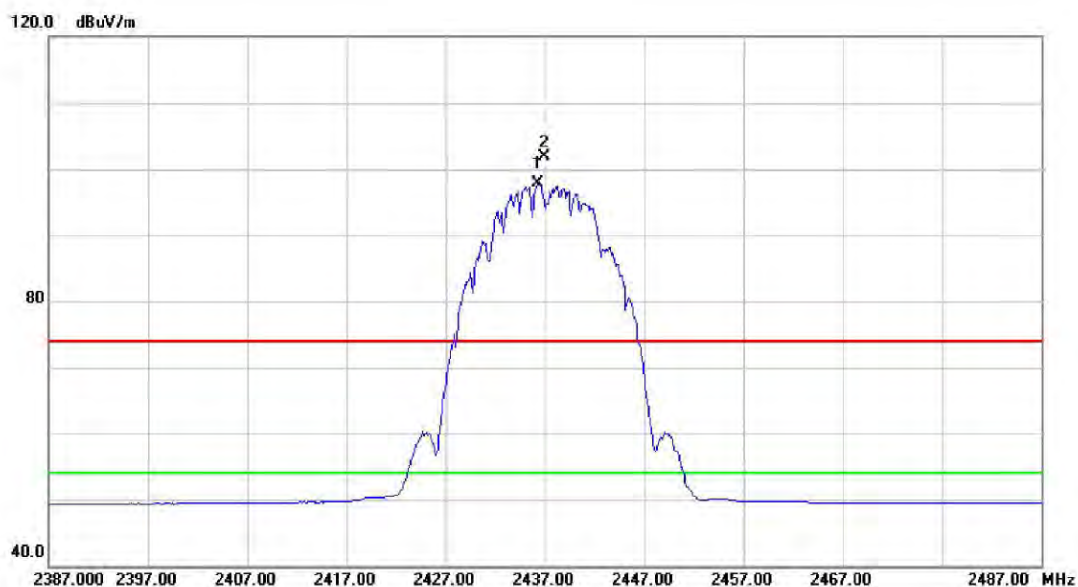
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4824.100	44.56	8.14	52.70	74.00	-21.30	peak	
2	*	4824.150	41.36	8.14	49.50	54.00	-4.50	AVG	

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	Over dB	Detector	Comment
1	*	2436.300	64.31	33.60	97.91	54.00	43.91	AVG	Fundamental frequency, no limit
2	X	2436.900	68.23	33.60	101.83	74.00	27.83	peak	Fundamental frequency, no limit

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

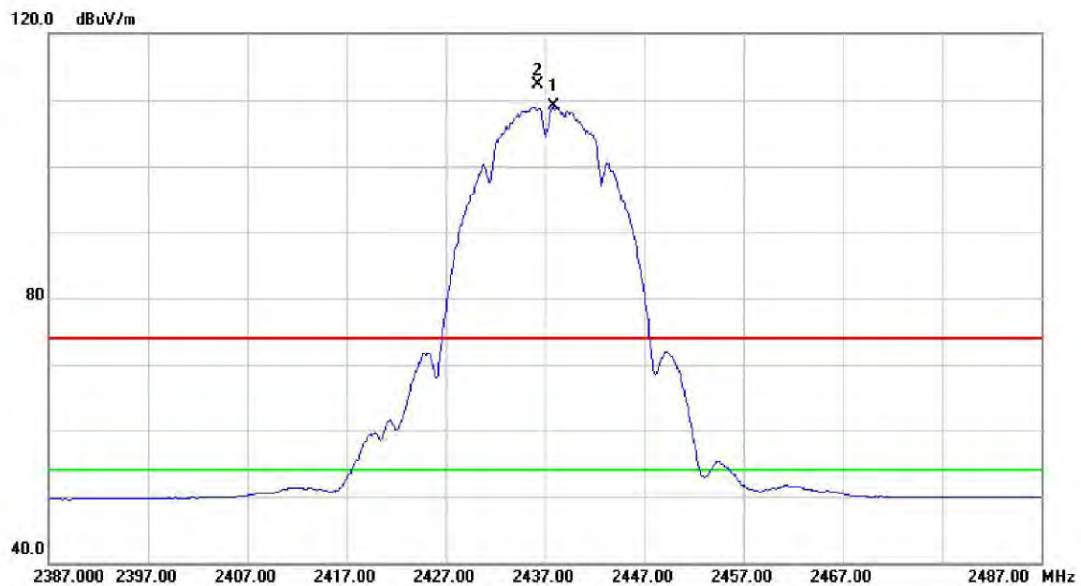
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	4874.150	42.31	8.26	50.57	54.00	-3.43	AVG	
2		4874.250	44.86	8.26	53.12	74.00	-20.88	peak	

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	Over dB	Detector	Comment
1	*	2437.800	75.44	33.60	109.04	54.00	55.04	AVG	Fundamental frequency, no limit
2	X	2436.300	78.66	33.60	112.26	74.00	38.26	peak	Fundamental frequency, no limit

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

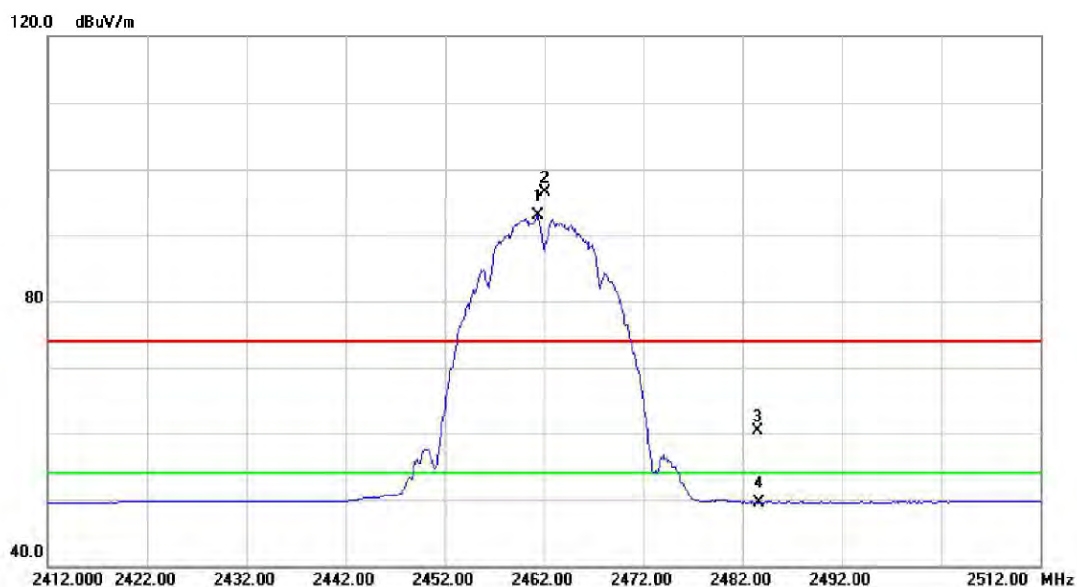
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4874.050	44.30	8.26	52.56	74.00	-21.44	peak	
2	*	4874.100	40.77	8.26	49.03	54.00	-4.97	AVG	

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	Over dB	Detector	Comment
1	*	2461.400	59.19	33.63	92.82	54.00	38.82	AVG	Fundamental frequency, no limit
2	X	2462.000	62.81	33.63	96.44	74.00	22.44	peak	Fundamental frequency, no limit
3		2483.500	26.68	33.66	60.34	74.00	-13.66	peak	
4		2483.500	15.90	33.66	49.56	54.00	-4.44	AVG	

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	Over dB	Detector	Comment
1		4924.150	43.95	8.37	52.32	74.00	-21.68	peak	
2	*	4924.150	41.51	8.37	49.88	54.00	-4.12	AVG	

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

Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2461.000	76.16	33.63	109.79	74.00	35.79	peak	Fundamental frequency, no limit
2	*	2462.900	74.37	33.63	108.00	54.00	54.00	AVG	Fundamental frequency, no limit
3		2483.500	29.13	33.66	62.79	74.00	-11.21	peak	
4		2483.500	16.88	33.66	50.54	54.00	-3.46	AVG	

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

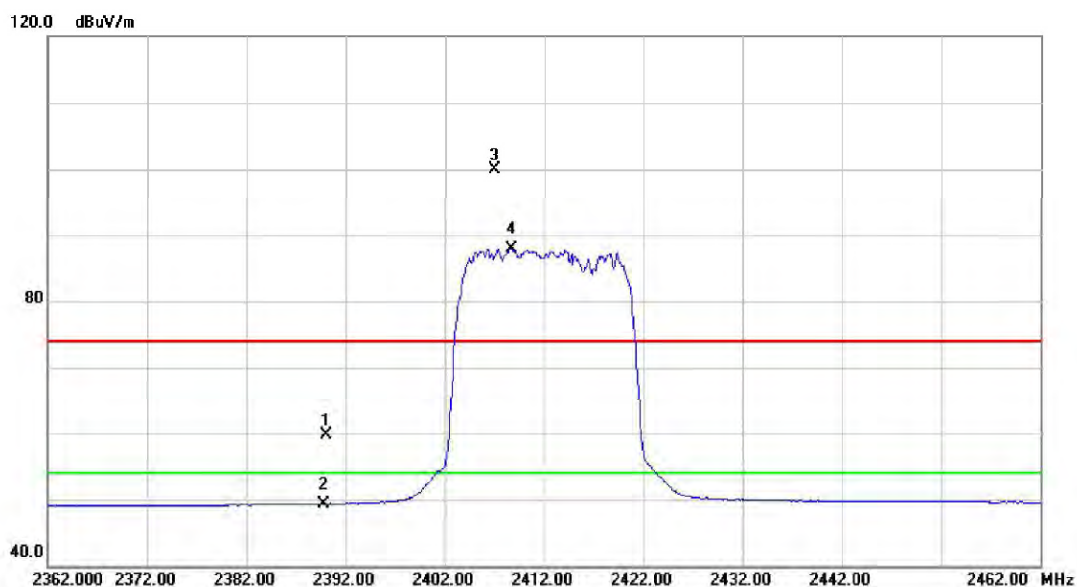
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4924.100	44.42	8.37	52.79	74.00	-21.21	peak	
2	*	4924.150	41.76	8.37	50.13	54.00	-3.87	AVG	

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	Over dB	Detector	Comment
1		2390.000	26.13	33.54	59.67	74.00	-14.33	peak	
2		2390.000	15.80	33.54	49.34	54.00	-4.66	AVG	
3	X	2407.000	66.42	33.57	99.99	74.00	25.99	peak	Fundamental frequency, no limit
4	*	2408.700	54.37	33.57	87.94	54.00	33.94	AVG	Fundamental frequency, no limit

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

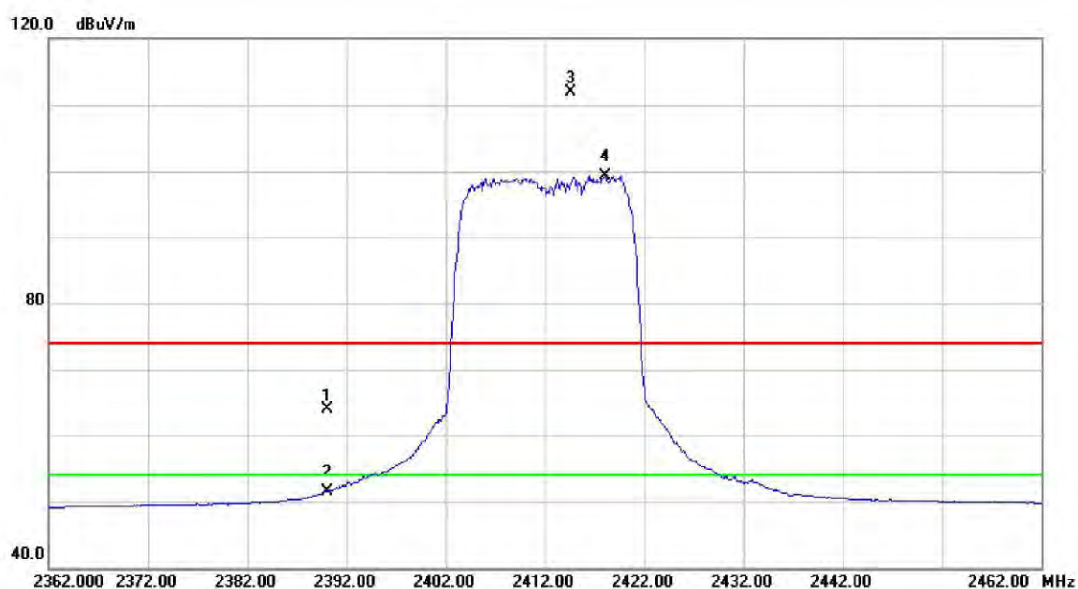
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4823.900	45.63	8.14	53.77	74.00	-20.23	peak	
2	*	4824.100	39.02	8.14	47.16	54.00	-6.84	AVG	

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	Over dB	Detector	Comment
1		2390.000	30.36	33.54	63.90	74.00	-10.10	peak	
2		2390.000	18.05	33.54	51.59	54.00	-2.41	AVG	
3	X	2414.600	78.28	33.57	111.85	74.00	37.85	peak	Fundamental frequency, no limit
4	*	2418.100	65.83	33.57	99.40	54.00	45.40	AVG	Fundamental frequency, no limit

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

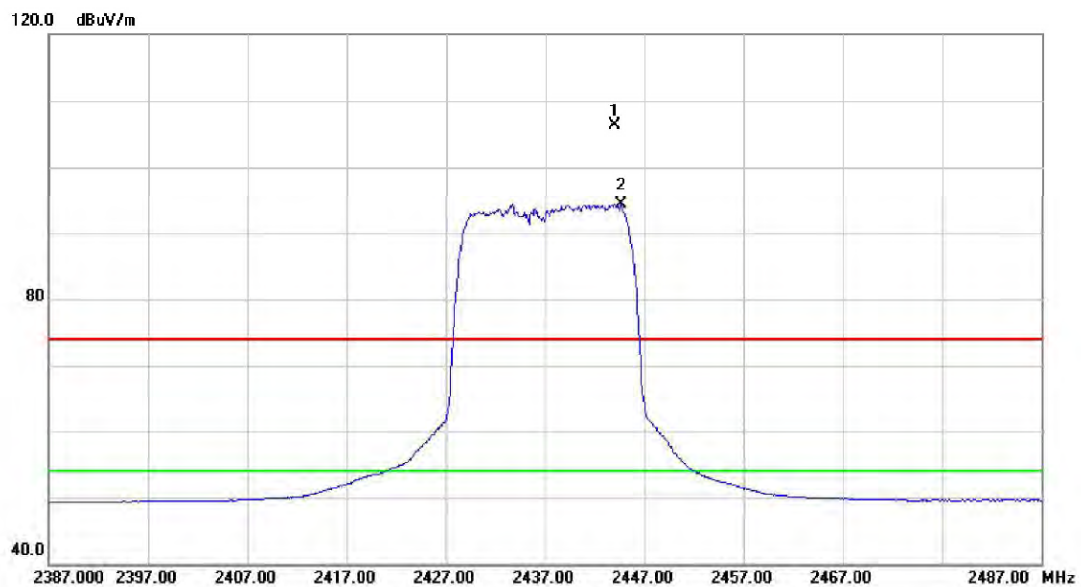
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4824.000	38.27	8.14	46.41	74.00	-27.59	peak	
2	*	4824.100	30.93	8.14	39.07	54.00	-14.93	AVG	

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	Over dB	Detector	Comment
1	X	2444.000	72.61	33.61	106.22	74.00	32.22	peak	Fundamental frequency, no limit
2	*	2444.700	60.74	33.61	94.35	54.00	40.35	AVG	Fundamental frequency, no limit

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

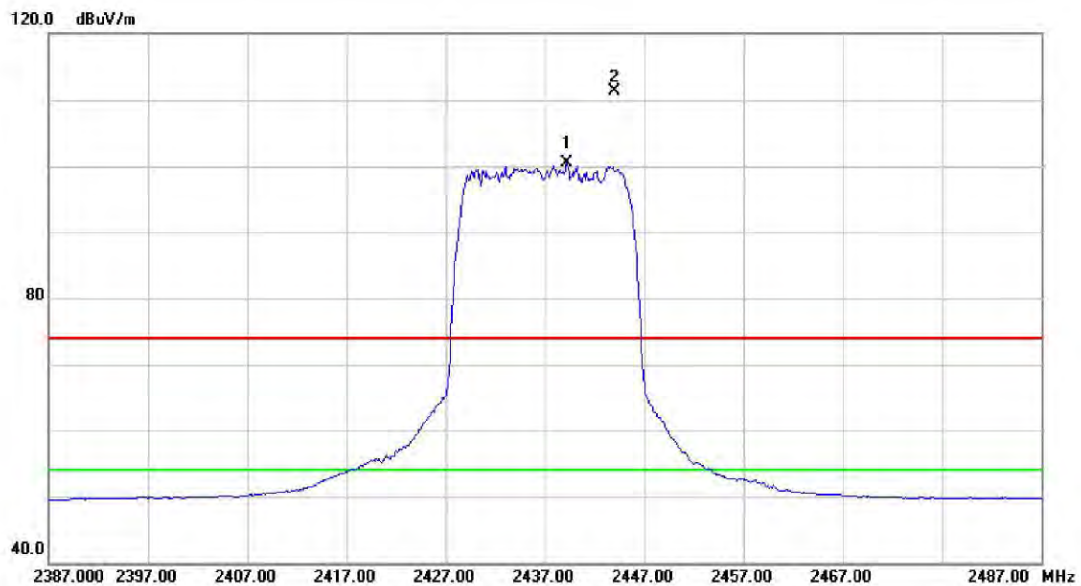
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4873.800	45.00	8.26	53.26	74.00	-20.74	peak	
2	*	4874.150	38.77	8.26	47.03	54.00	-6.97	AVG	

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	Over dB	Detector	Comment
1	*	2439.200	66.99	33.60	100.59	54.00	46.59	AVG	Fundamental frequency, no limit
2	X	2444.000	77.64	33.61	111.25	74.00	37.25	peak	Fundamental frequency, no limit

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

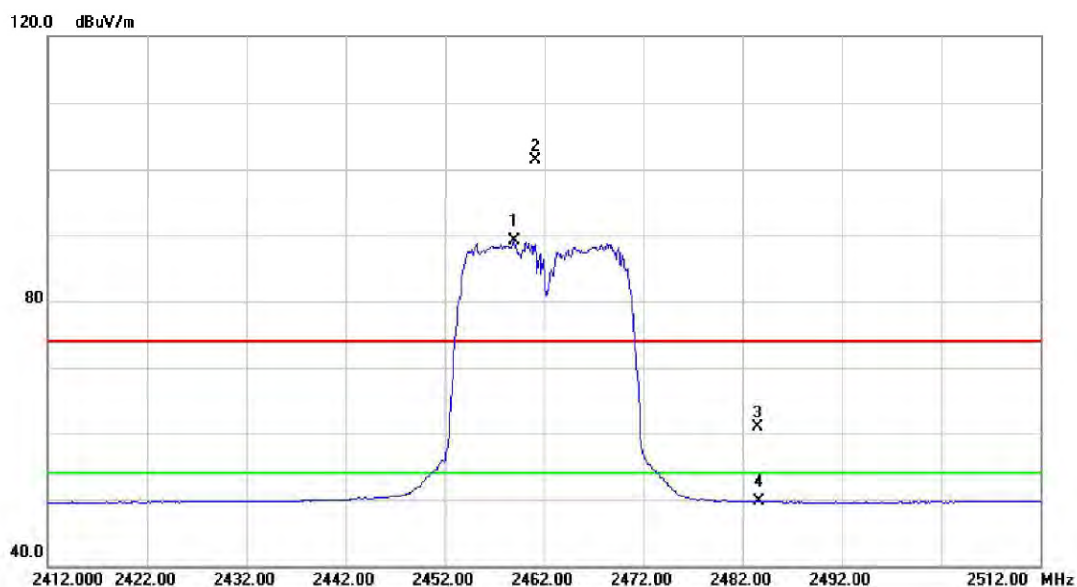
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	4874.100	30.37	8.26	38.63	54.00	-15.37	AVG	
2		4874.150	39.18	8.26	47.44	74.00	-26.56	peak	

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	Over dB	Detector	Comment
1	*	2459.000	55.40	33.63	89.03	54.00	35.03	AVG	Fundamental frequency, no limit
2	X	2461.100	67.67	33.63	101.30	74.00	27.30	peak	Fundamental frequency, no limit
3		2483.500	27.33	33.66	60.99	74.00	-13.01	peak	
4		2483.500	16.02	33.66	49.68	54.00	-4.32	AVG	

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

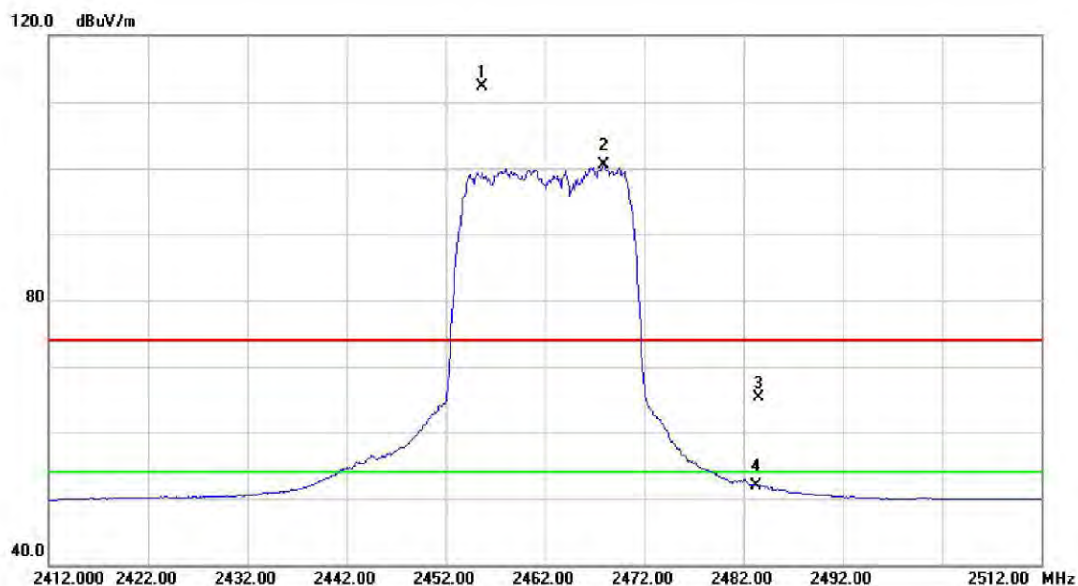
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	4924.100	35.22	8.37	43.59	54.00	-10.41	AVG	
2		4924.150	43.53	8.37	51.90	74.00	-22.10	peak	

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	Over dB	Detector	Comment
1	X	2455.700	78.60	33.62	112.22	74.00	38.22	peak	Fundamental frequency, no limit
2	*	2467.900	66.82	33.63	100.45	54.00	46.45	AVG	Fundamental frequency, no limit
3		2483.500	31.62	33.66	65.28	74.00	-8.72	peak	
4		2483.500	18.33	33.66	51.99	54.00	-2.01	AVG	

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

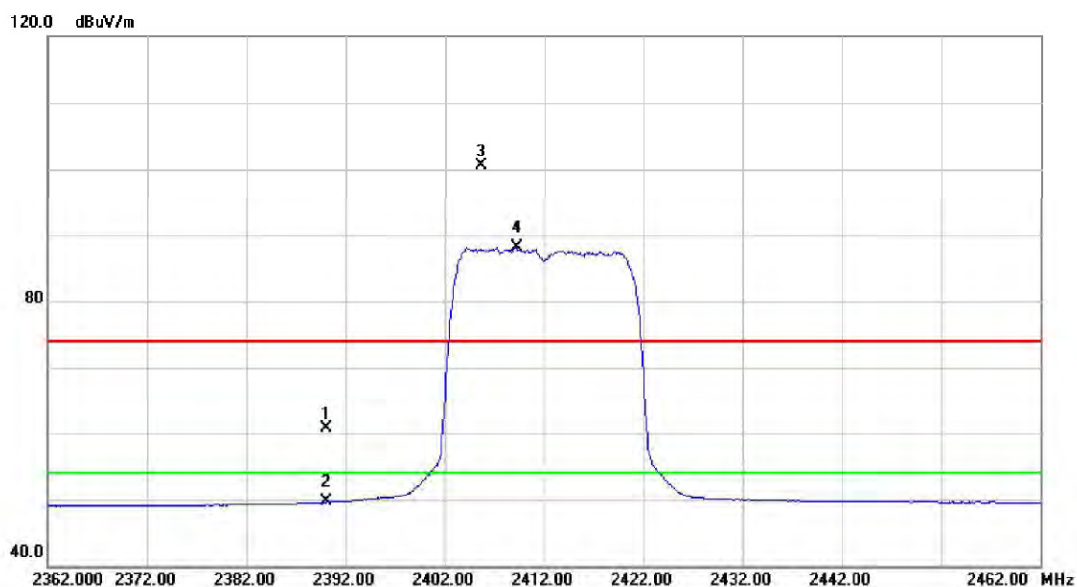
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4923.850	40.36	8.37	48.73	74.00	-25.27	peak	
2	*	4924.100	29.50	8.37	37.87	54.00	-16.13	AVG	

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	Over dB	Detector	Comment
1		2390.000	27.25	33.54	60.79	74.00	-13.21	peak	
2		2390.000	16.06	33.54	49.60	54.00	-4.40	AVG	
3	X	2405.600	66.87	33.55	100.42	74.00	26.42	peak	Fundamental frequency, no limit
4	*	2409.200	54.55	33.57	88.12	54.00	34.12	AVG	Fundamental frequency, no limit

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

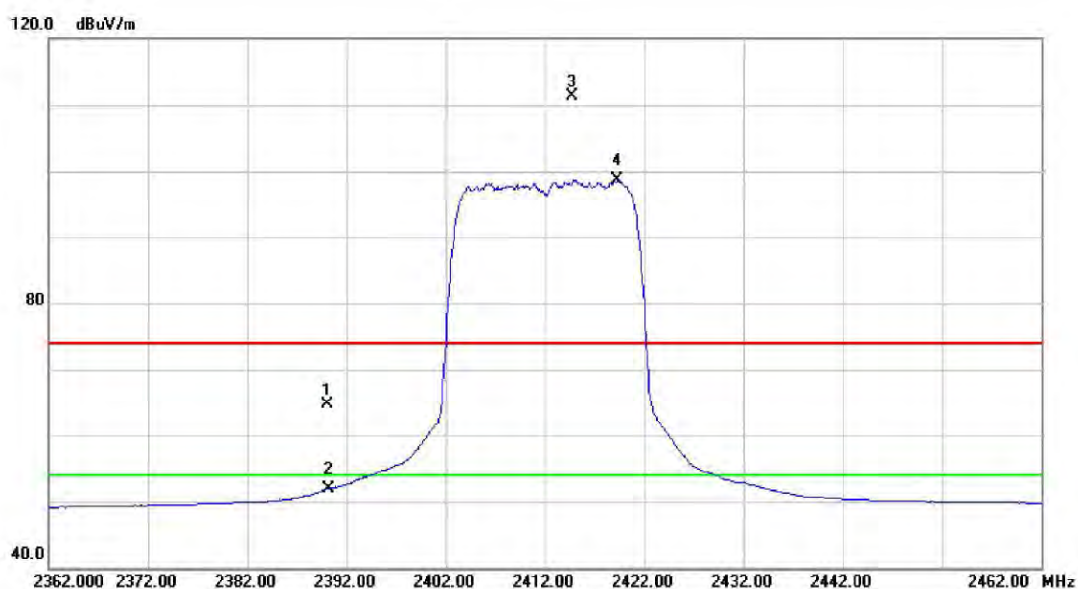
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	4824.050	38.87	8.14	47.01	54.00	-6.99	AVG	
2		4824.150	46.25	8.14	54.39	74.00	-19.61	peak	

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	Over dB	Detector	Comment
1		2390.000	31.10	33.54	64.64	74.00	-9.36	peak	
2		2390.000	18.31	33.54	51.85	54.00	-2.15	AVG	
3	X	2414.700	77.66	33.57	111.23	74.00	37.23	peak	Fundamental frequency, no limit
4	*	2419.300	65.14	33.58	98.72	54.00	44.72	AVG	Fundamental frequency, no limit

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

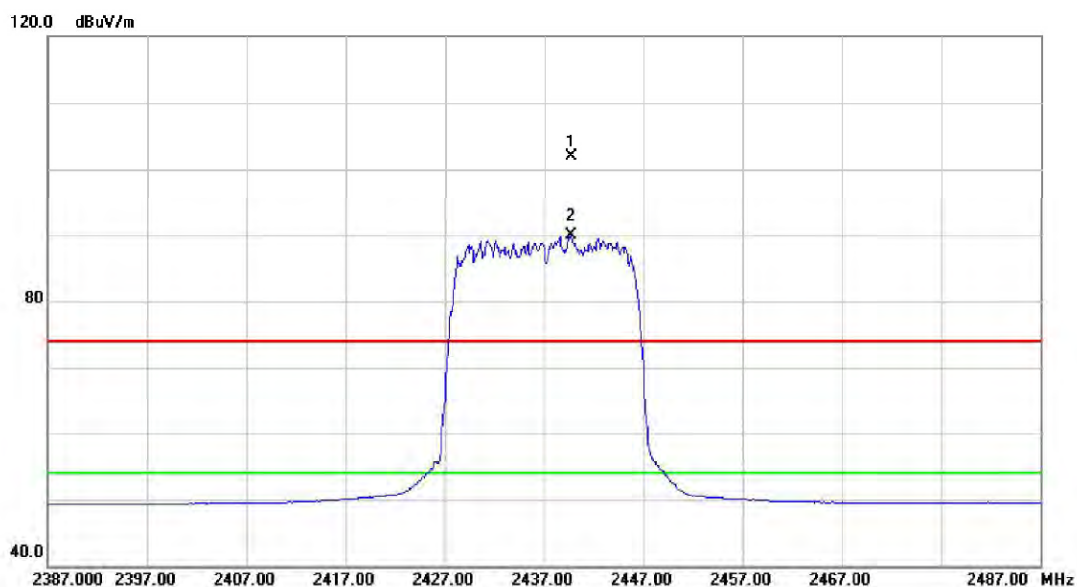
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4823.850	38.45	8.14	46.59	74.00	-27.41	peak	
2	*	4824.100	30.47	8.14	38.61	54.00	-15.39	AVG	

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	Over dB	Detector	Comment
1	X	2439.700	68.23	33.60	101.83	74.00	27.83	peak	Fundamental frequency, no limit
2	*	2439.700	56.29	33.60	89.89	54.00	35.89	AVG	Fundamental frequency, no limit

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

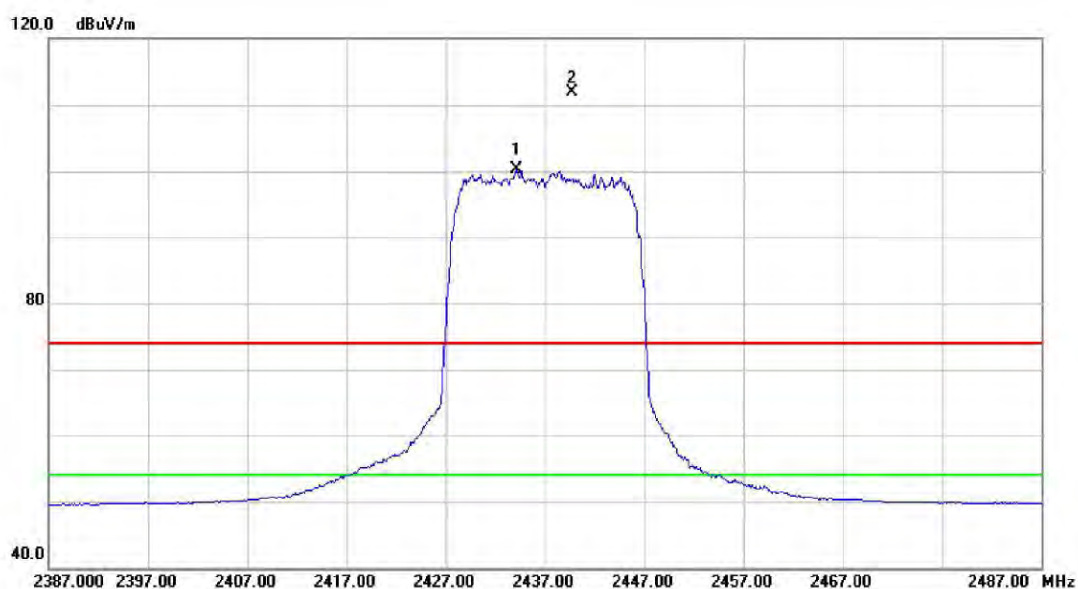
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4874.000	44.90	8.26	53.16	74.00	-20.84	peak	
2	*	4874.150	38.44	8.26	46.70	54.00	-7.30	AVG	

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	Over dB	Detector	Comment
1	*	2434.100	66.61	33.60	100.21	54.00	46.21	AVG	Fundamental frequency, no limit
2	X	2439.700	78.31	33.60	111.91	74.00	37.91	peak	Fundamental frequency, no limit

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

Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	4874.100	30.12	8.26	38.38	54.00	-15.62	AVG	
2		4874.450	38.62	8.26	46.88	74.00	-27.12	peak	