

FCC 47 CFR PART 15 SUBPART C

Product Type : Rugged Tablet Computer
Applicant : AAEON Technology. Inc.
Address : 5F, No. 135, Lane 235, Pao Chiao Rd., Taiwan, ROC
Trade Name : AAEON
Model Number : xxxRTC-700y-TAxx-WBGz-xxxx
FCC ID : OHBRTC700RAWBGH
Test Specification : FCC 47 CFR PART 15 SUBPART C: Oct., 2011
ANSI C63.4-2009
Application Purpose : Original
Receive Date : May 30, 2012
Issue Date : Jul. 11, 2012

Issue by

A Test Lab Techno Corp.
No. 140-1, Changan Street, Bade City,
Taoyuan County 334, Taiwan R.O.C.
Tel : +86-3-2710188 / Fax : +86-3-2710190



Taiwan Accreditation Foundation accreditation number: 1330

Note: This report shall not be reproduced except in full, without the written approval of A Test Lab Techno Corp. This document may be altered or revised by A Test Lab Techno Corp. personnel only, and shall be noted in the revision section of the document. The client should not use it to claim product endorsement by TAF, or any government agencies. The test results in the report only apply to the tested sample.



Revision History

Rev.	Issue Date	Revisions	Revised By
00	Jul. 11, 2012	Initial Issue	

Verification of Compliance

Issued Date: 07/11/2012

Product Type : Rugged Tablet Computer
Applicant : AAEON Technology. Inc.
Address : 5F, No. 135, Lane 235, Pao Chiao Rd., Taiwan, ROC

Trade Name : AAEON
Model Number : xxxRTC-700y-TAxx-WBGz-xxxx
FCC ID : OHBRTC700RAWBGH
EUT Rated Voltage : DC 12V, 2A
Test Voltage : 120 Vac / 60 Hz
Applicable : FCC 47 CFR PART 15 SUBPART C: Oct., 2011
Standard : ANSI C63.4-2009
Test Result : Complied
Application : Original
Purpose :
Performing Lab. : A Test Lab Techno Corp.

No. 140-1, Changan Street, Bade City,
Taoyuan County 334, Taiwan R.O.C.

Tel : +86-3-2710188 / Fax : +86-3-2710190

Taiwan Accreditation Foundation accreditation number:
1330



<http://www.atl-lab.com.tw/e-index.htm>

The above equipment was tested by A Test Lab Techno Corp. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2009 and the energy emitted by the sample tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247 .

The test results of this report relate only to the tested sample identified in this report.

Approved By :



(Manager)

Reviewed By :



(Testing Engineer)

(Fly Lu)

TABLE OF CONTENTS

1	General Information	6
2	EUT Description	7
3	Test Methodology.....	8
	3.1. Mode of Operation	8
	3.2. EUT Exercise Software.....	9
	3.3. Configuration of Test System Details.....	9
	3.4. Test Site Environment.....	10
4	Conducted Emission Measurement	10
	4.1. Limit	10
	4.2. Test Instruments.....	11
	4.3. Test Setup	11
	4.4. Test Procedure.....	12
	4.5. Test Result	13
5	Radiated Interference Measurement	17
	5.1. Limit	17
	5.2. Test Instruments.....	17
	5.3. Setup.....	18
	5.4. Test Procedure.....	19
	5.5. Test Result	21
6	Maximum Conducted Output Power Measurement.....	28
	6.1. Limit	28
	6.2. Test Setup	28
	6.3. Test Instruments.....	28
	6.4. Test Procedure.....	28
	6.5. Test Result	29
7	6dB RF Bandwidth Measurement	30
	7.1. Limit	30
	7.2. Test Setup	30
	7.3. Test Instruments.....	30
	7.4. Test Procedure.....	30
	7.5. Test Result	31
	7.6. Test Graphs.....	32

8	Maximum Power Density Measurement.....	35
8.1.	Limit	35
8.2.	Test Setup	35
8.3.	Test Instruments.....	35
8.4.	Test Procedure.....	35
8.5.	Test Result	36
8.6.	Test Graphs.....	37
9	Out of Band Conducted Emissions Measurement	40
9.1.	Limit	40
9.2.	Test Setup	40
9.3.	Test Instruments.....	40
9.4.	Test Procedure.....	40
9.5.	Test Graphs.....	41
10	Band Edges Measurement	44
10.1	Limit.....	44
10.2	Test Setup.....	44
10.3	Test Instruments	44
10.4	Test Procedure	45
10.5	Test Result.....	46
11	99 % Occupied Bandwidth Measurement.....	58
11.1	Limit	58
11.2	Test Setup	58
11.3	Test Instruments	58
11.4	Test Procedure.....	58
11.5	Test Result	59
11.6	Test Graphs	60
12	Antenna Measurement.....	63
12.1	Limit.....	63
12.2	Antenna Connector Construction	63

1 General Information

1.1 Summary of Test Result

Standard		Item	Result	Remark
15.247	RSS-GEN			
15.207	7.2.2	AC Power Conducted Emission	PASS	-----
-----	6	Receiver Radiated Emissions	PASS	-----
Standard		Item	Result	Remark
15.247	RSS-210			
15.247(d)	A8.5	Transmitter Radiated Emissions	PASS	-----
15.247(b)(3)	A8.4	Max. Output Power	PASS	-----
15.247(a)(2)	A8.2 (a)	6dB RF Bandwidth	PASS	-----
15.247(e)	A8.2 (b)	Power Spectral Density	PASS	-----
15.247(c)	A8.5	Out of Band Conducted Spurious Emission	PASS	-----
15.247(d)	A8.5	Band Edge Measurement	PASS	-----
15.247(c)	A8.5	Occupied Bandwidth Measurement	PASS	-----
15.203	-	Antenna Requirement	PASS	-----

The test results of this report relate only to the tested sample(s) identified in this report. Manufacturer or whom it may concern should recognize the pass or fail of the test result.

1.2 Measurement Uncertainty

Conducted Emission

The measurement uncertainty is evaluated as ± 2.24 dB.

Radiated Emission

The measurement uncertainty is evaluated as ± 3.072 dB.

2 EUT Description

Product	:	Rugged Tablet Computer
Trade Name	:	AAEON
Model No.	:	xxxRTC-700y-TAxx-WBGz-xxxx (x is for marketing purpose) 1. xxx=TF-(TF: Toxic Free) or blank 2. xx=SD (S: sunlight readable, D: Digitizer) or blank 3. xxxx=SW revision, ex: 1110=rev1, x:0~9 (y=R or A(R:Virgo,A:Aries)) (z is blank or H,blank means without 3G function;H means with 3G function)
Applicant	:	AAEON Technology. Inc. 5F, No. 135, Lane 235, Pao Chiao Rd.,Taiwan, ROC
Manufacturer	:	AAEON Technology. Inc. 5F, No. 135, Lane 235, Pao Chiao Rd.,Taiwan, ROC
FCC ID	:	OHBRTC700RAWBGH
Frequency Range	:	2412 ~ 2462 MHz
Modulation Type	:	IEEE 802.11b:DSSS IEEE 802.11g:DSSS+OFDM draft 802.11n Standard-20MHz channel mode: OFDM
Antenna Type	:	PCB Type
Antenna Gain	:	3.91 dBi
RF Output Power	:	IEEE 802.11b: 0.052 W / 17.19 dBm IEEE 802.11g: 0.185 W / 22.66 dBm draft 802.11n Standard-20MHz: 0.185 W / 22.67 dBm
Component		
Power Adapter	:	L.E.I, LTE24E-S2-2 Input:100-240VAC, 50-60Hz, 1A Output: 12.0VDC, 2A Cable in: Non-Shielded, 1.8 m, Detachable at Power Adapter Cable out: Non-Shielded, 1.8 m, Non-Detachable at Power Adapter

3 Test Methodology

3.1. Mode of Operation

Decision of Test ATL has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: TF-RTC-700R-TA-WBG-1110 _IDLE Mode
Mode 2: TF-RTC-700R-TA-WBG-1110 _Normal Operation Mode
Mode 3: TF-RTC-700A-TA-WBGH-1110_Normal Operation Mode
Mode 4: TF-RTC-700R-TA-WBG-1110 _IEEE 802.11b Link Mode
Mode 5: TF-RTC-700R-TA-WBG-1110 _IEEE 802.11g Link Mode
Mode 6: TF-RTC-700R-TA-WBG-1110 _draft 802.11n Standard-20MHz Link Mode
Mode 7: TF-RTC-700R-TA-WBG-1110 _Receiver Mode

Note: TF-RTC-700R-TA-WBG-1110 and TF-RTC-700A-TA-WBGH-1110 differ from each other in case material. After our engineering evaluation, TF-RTC-700A-TA-WBGH-1110 only need to test the below 1GHz of Radiated Emission.

Software used to control the EUT for staying in continuous transmitting mode was programmed.

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz and power line conducted emissions below 30MHz, which worst case was in normal link mode only.

IEEE 802.11b mode:

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 1Mbps data rate were chosen for full testing.

IEEE 802.11g mode:

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6Mbps data rate were chosen for full testing.

draft 802.11n Standard-20 MHz Channel mode:

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6.5Mbps data rate were chosen for full testing.

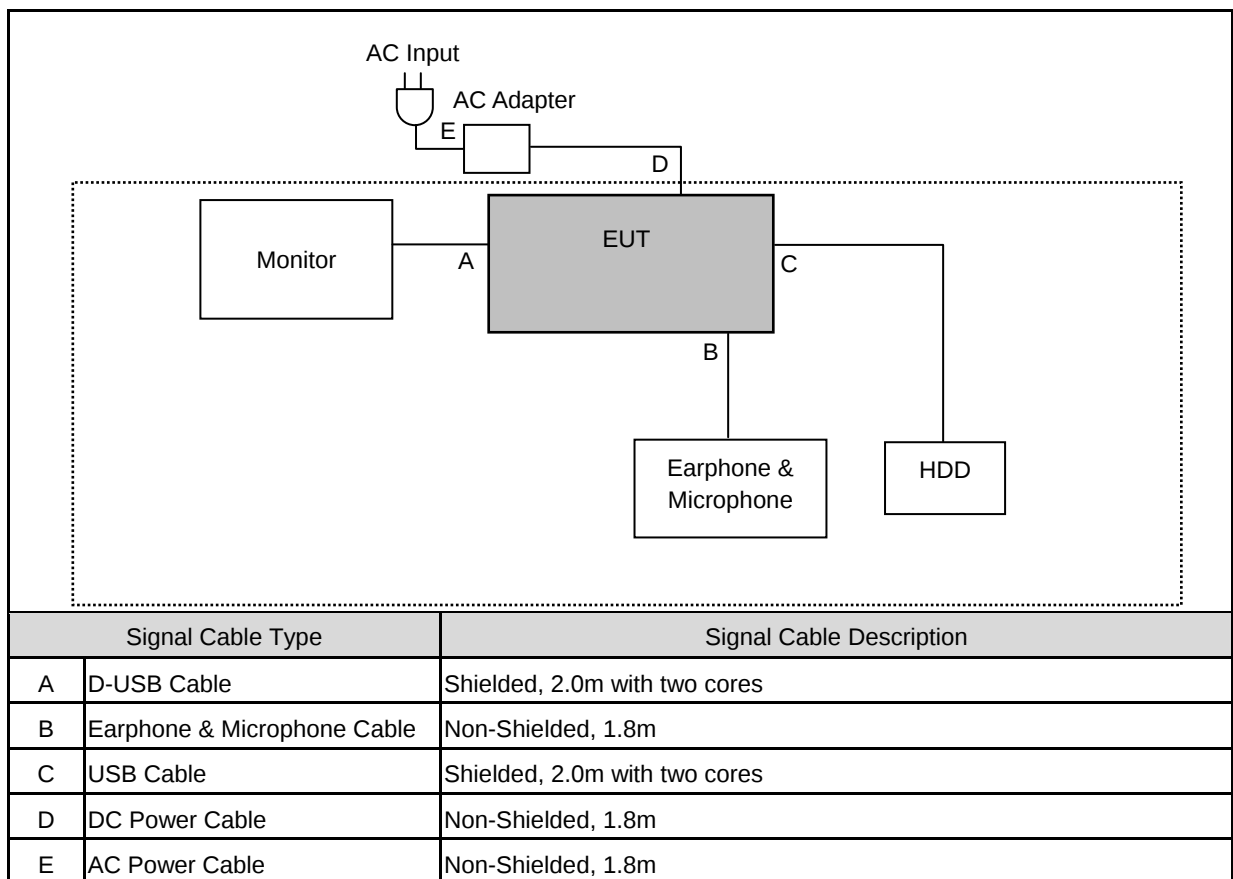
By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that "X axis" position was the worst, then the final test was executed the worst condition and test data were recorded in this report.

3.2. EUT Exercise Software

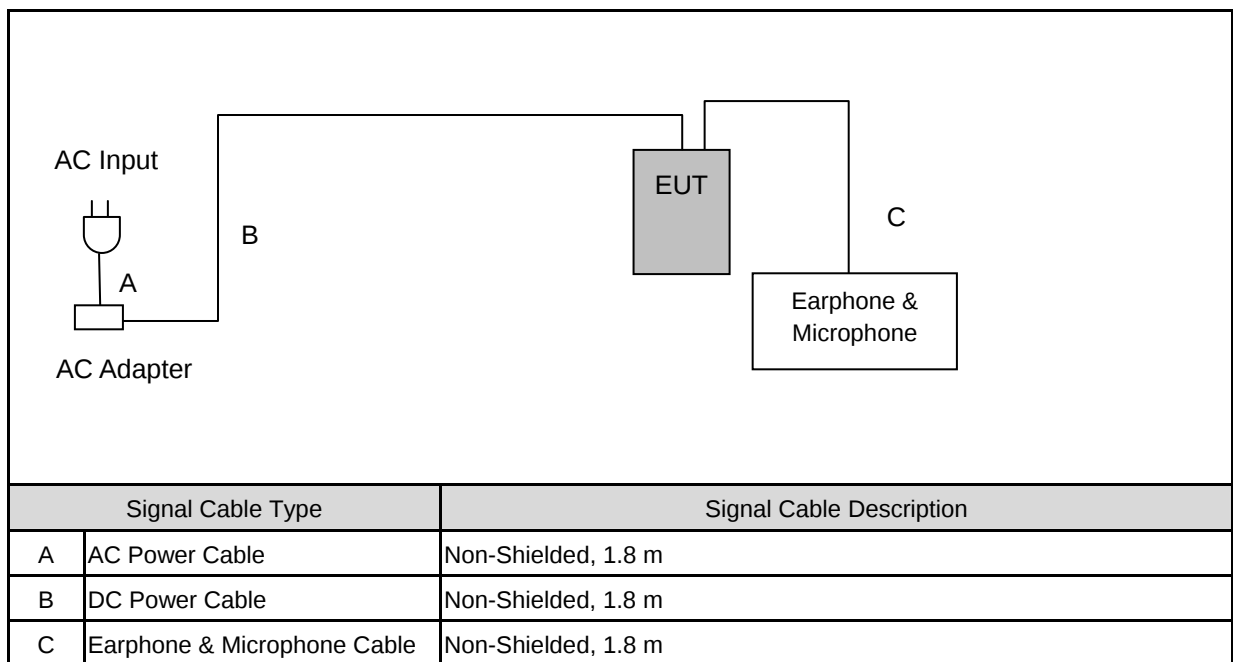
1.	Setup the EUT shown on 3.3.
2.	Turn on the power of all equipment.
3.	Turn on Wi-Fi function link to AP.
4.	EUT run test program.

3.3. Configuration of Test System Details

Conducted Emission



Radiated Emission



3.4. Test Site Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	26
Humidity (%RH)	25-75	60
Barometric pressure (mbar)	860-1060	950

4 Conducted Emission Measurement

4.1. Limit

Frequency (MHz)	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

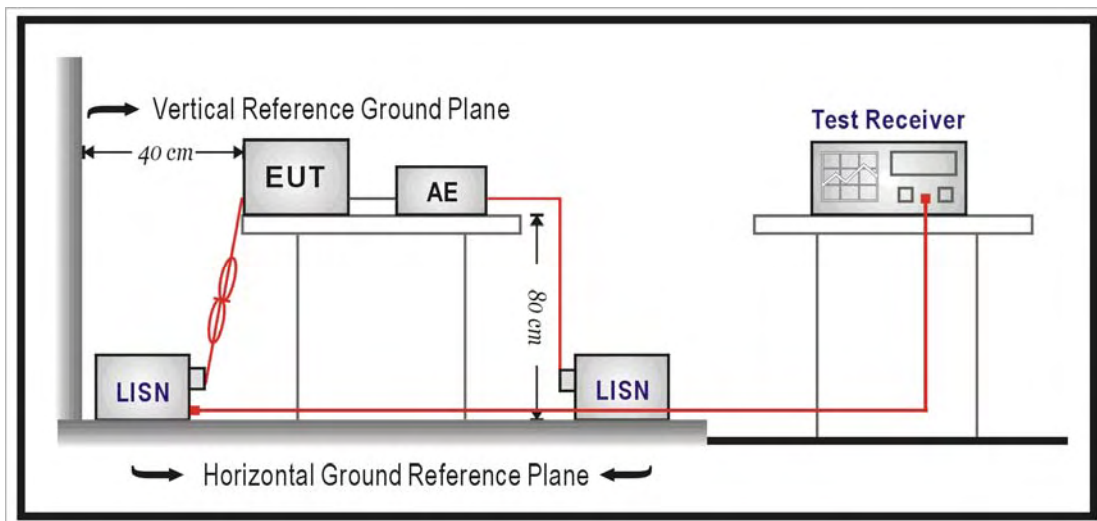
4.2. Test Instruments

Describe	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Test Receiver	R&S	ESCI	100367	06/18/2012	(1)
LISN	R&S	ENV216	101040	03/07/2012	(1)
LISN	R&S	ENV216	101041	03/07/2012	(1)
Test Site	ATL	TE05	TE05	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

4.3. Test Setup



4.4. Test Procedure

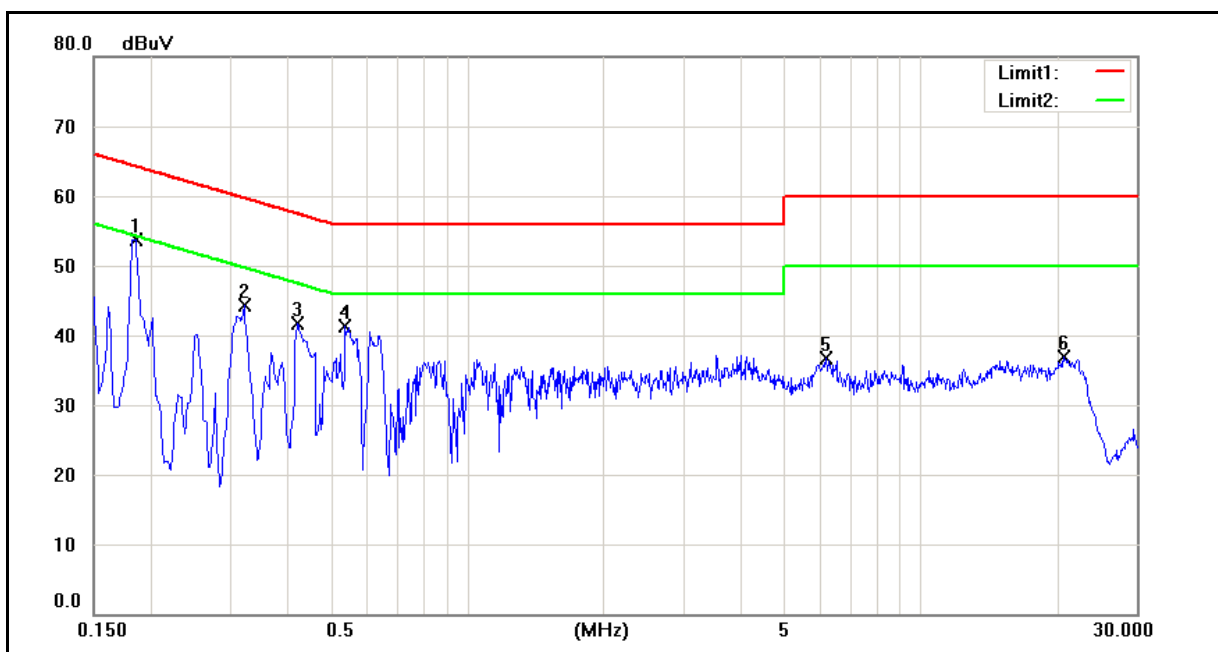
The power line conducted emission measurements were performed in a shielded enclosure. The EUT was assembled on a wooden table which is 80 centimeters high, was placed 40 centimeters from the back wall and at least 1 meter from the sidewall.

Power was fed to the EUT from the public utility power grid through a line filter and EMCO Model 3162/2 SH Line Impedance Stabilization Networks (LISN). The LISN housing, measuring instrumentation case, ground plane, etc., were electrically bonded together at the same RF potential. The Spectrum analyzer was connected to the AC line through an isolation transformer. The 50-ohm output of the LISN was connected to the spectrum analyzer directly. Conducted emission levels were in the CISPR quasi-peak detection mode. The analyzer's 6 dB bandwidth was set to 9 KHz. No post-detector video filter was used.

The spectrum was scanned from 150 KHz to 30 MHz. The physical arrangement of the test system and associated cabling was varied (within the scope of arrangements likely to be encountered in actual use) to determine the effect on the unit's emanations in amplitude and frequency. All spurious emission frequencies were observed. The highest emission amplitudes relative to the appropriate limit were measured and have been recorded in paragraph 4.1.

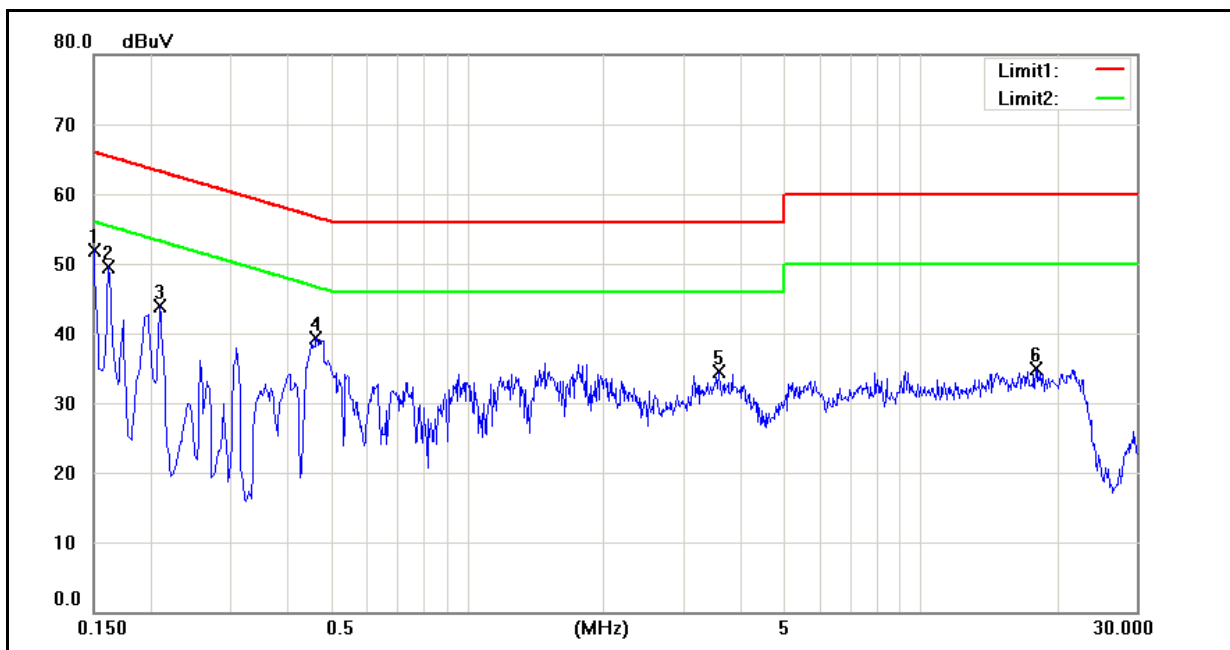
4.5. Test Result

Standard:	FCC Part 15C	Line:	L1
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model Number:	TF-RTC-700R-TA-WBG-1110	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 1	Date:	06/01/2012
		Test By:	Fly Lu
Description:			



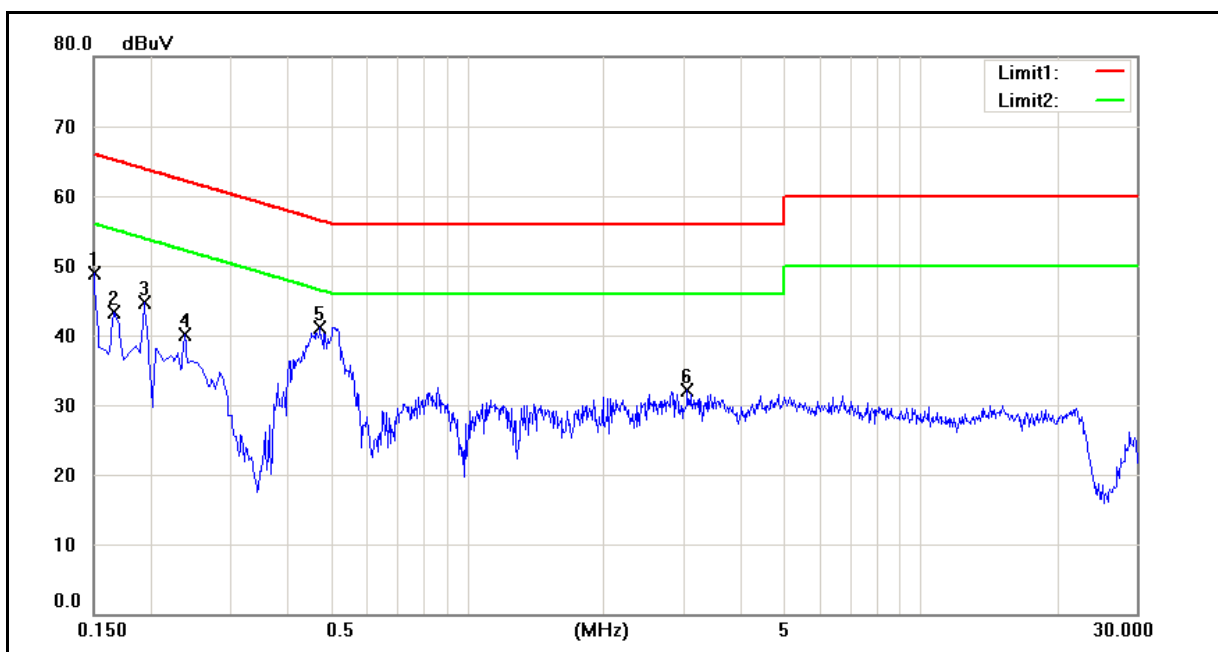
No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1860	41.31	31.47	9.72	51.03	41.19	64.21	54.21	-13.18	-13.02	Pass
2	0.3220	29.78	18.95	9.72	39.50	28.67	59.66	49.66	-20.16	-20.99	Pass
3	0.4220	30.50	22.78	9.72	40.22	32.50	57.41	47.41	-17.19	-14.91	Pass
4	0.5380	29.79	20.18	9.72	39.51	29.90	56.00	46.00	-16.49	-16.10	Pass
5	6.2100	21.00	14.34	9.89	30.89	24.23	60.00	50.00	-29.11	-25.77	Pass
6	20.7060	20.53	14.73	9.76	30.29	24.49	60.00	50.00	-29.71	-25.51	Pass

Standard:	FCC Part 15C	Line:	N
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model Number:	TF-RTC-700R-TA-WBG-1110	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 1	Date:	06/01/2012
		Test By:	Fly Lu
Description:			



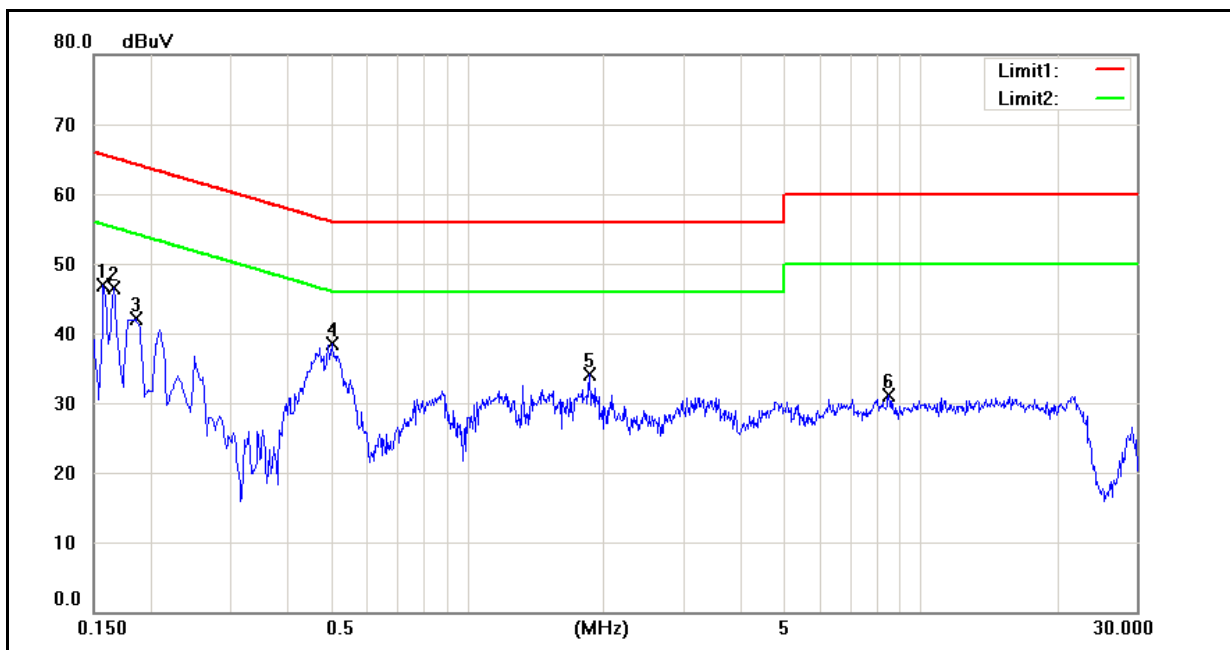
No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1500	41.67	27.49	9.65	51.32	37.14	66.00	56.00	-14.68	-18.86	Pass
2	0.1620	34.96	18.13	9.65	44.61	27.78	65.36	55.36	-20.75	-27.58	Pass
3	0.2100	31.41	16.99	9.64	41.05	26.63	63.21	53.21	-22.16	-26.58	Pass
4	0.4660	28.69	18.70	9.64	38.33	28.34	56.58	46.58	-18.25	-18.24	Pass
5	3.5860	18.95	12.10	9.74	28.69	21.84	56.00	46.00	-27.31	-24.16	Pass
6	17.9580	18.94	12.92	9.92	28.86	22.84	60.00	50.00	-31.14	-27.16	Pass

Standard:	FCC Part 15C	Line:	L1
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model Number:	TF-RTC-700R-TA-WBG-1110	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 2	Date:	06/01/2012
		Test By:	Fly Lu
Description:			



No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1500	36.54	25.58	9.72	46.26	35.30	66.00	56.00	-19.74	-20.70	Pass
2	0.1660	31.42	14.90	9.72	41.14	24.62	65.16	55.16	-24.02	-30.54	Pass
3	0.1940	28.33	15.73	9.72	38.05	25.45	63.86	53.86	-25.81	-28.41	Pass
4	0.2380	25.30	13.35	9.72	35.02	23.07	62.17	52.17	-27.15	-29.10	Pass
5	0.4740	29.24	21.09	9.72	38.96	30.81	56.44	46.44	-17.48	-15.63	Pass
6	3.0620	17.18	10.62	9.83	27.01	20.45	56.00	46.00	-28.99	-25.55	Pass

Standard:	FCC Part 15C	Line:	N
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model Number:	TF-RTC-700R-TA-WBG-1110	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 2	Date:	06/01/2012
		Test By:	Fly Lu
Description:			



No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1580	34.66	16.31	9.65	44.31	25.96	65.57	55.57	-21.26	-29.61	Pass
2	0.1660	31.21	13.42	9.65	40.86	23.07	65.16	55.16	-24.30	-32.09	Pass
3	0.1860	31.44	17.37	9.64	41.08	27.01	64.21	54.21	-23.13	-27.20	Pass
4	0.5020	26.62	18.64	9.64	36.26	28.28	56.00	46.00	-19.74	-17.72	Pass
5	1.8660	16.73	11.41	9.71	26.44	21.12	56.00	46.00	-29.56	-24.88	Pass
6	8.5260	15.38	9.45	10.12	25.50	19.57	60.00	50.00	-34.50	-30.43	Pass

5 Radiated Interference Measurement

5.1. Limit

According to §15.209(a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength ($\mu\text{V/m}$ at 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
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

5.2. Test Instruments

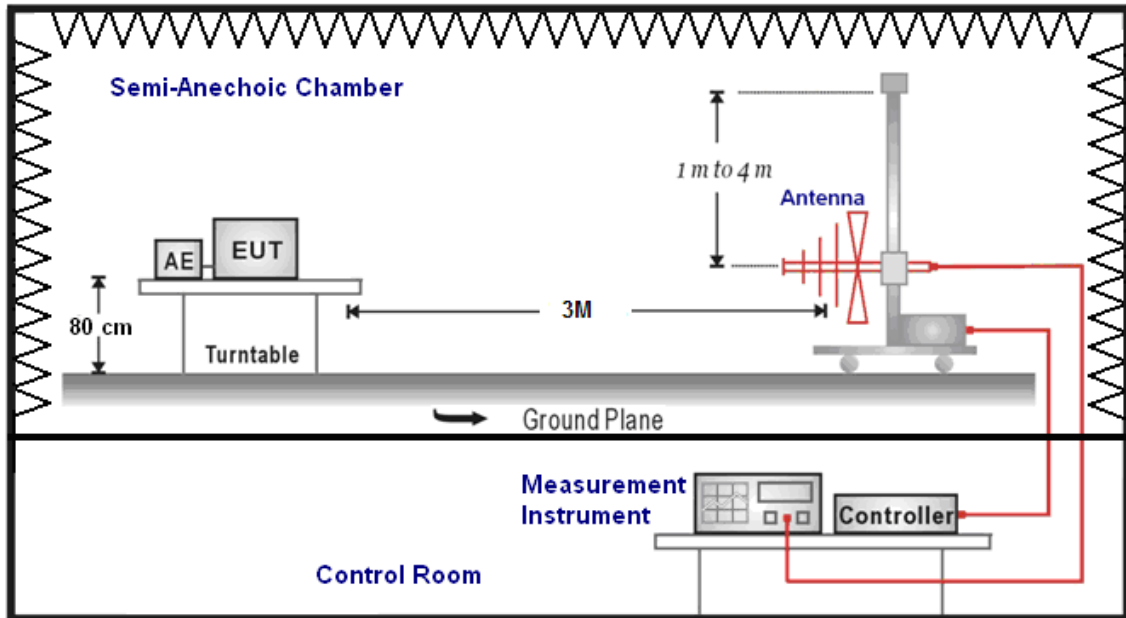
3 Meter Chamber					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
RF Pre-selector	Agilent	N9039A	MY46520256	01/16/2012	(1)
Spectrum Analyzer	Agilent	E4446A	MY46180578	01/16/2012	(1)
Pre Amplifier	Agilent	8449B	3008A02237	02/22/2012	(1)
Pre Amplifier	Agilent	8447D	2944A10961	02/22/2012	(1)
Broadband Antenna (30MHz~1GHz)	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	9163-270	06/29/2012	(1)
Horn Antenna (1~18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	06/15/2012	(1)
Horn Antenna (18~40GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9170	9170-320	06/21/2012	(1)
Loop Antenna	COM-POWER CORPORATION	AL-130	121014	08/14/2009	(3)
Test Site	ATL	TE01	888001	12/20/2011	(1)

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years. (3) Calibration period 3 years.

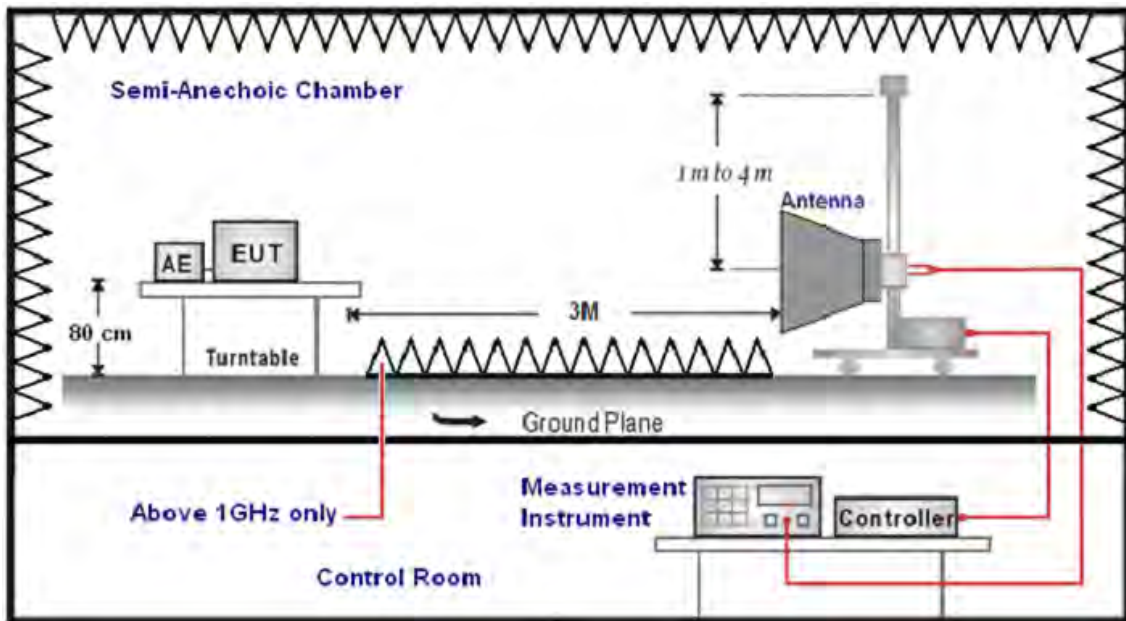
NOTE: N.C.R. = No Calibration Request.

5.3. Setup

Below 1GHz



Above 1GHz



5.4. Test Procedure

Final radiation measurements were made on a three-meter, Semi Anechoic Chamber. The EUT system was placed on a nonconductive turntable which is 0.8 meters height, top surface 1.0 x 1.5 meter. The spectrum was examined from 250 MHz to 2.5 GHz in order to cover the whole spectrum below 10th harmonic which could generate from the EUT. During the test, EUT was set to transmit continuously & Measurements spectrum range from 9 kHz to 26.5 GHz is investigated.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

A nonconductive material surrounded the EUT to supporting the EUT for standing on three orthogonal planes. At each condition, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization.

SCHWARZBECK MESS-ELEKTRONIK Biconilog Antenna (model VULB9163) at 3 Meter and the SCHWARZBECK Double Ridged Guide Antenna (model BBHA9120D&9170) was used in frequencies 1 – 26.5 GHz at a distance of 1 meter. All test results were extrapolated to equivalent signal at 3 meters utilizing an inverse linear distance extrapolation Factor (20dB/decade).

For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. No post – detector video filters were used in the test.

The spectrum analyzer's 6 dB bandwidth was set to 1 MHz, and the analyzer was operated in the peak detection mode, for frequencies both below and up 1 GHz. The average levels were obtained by subtracting the duty cycle correction factor from the peak readings.

The following procedures were used to convert the emission levels measured in decibels referenced to 1 microvolt (dBuV) into field intensity in micro volts per meter (uV/m).

The actual field intensity in decibels referenced to 1 microvolt in to field intensity in micro volts per meter (dBuV/m).

The actual field intensity in referenced to 1 microvolt per meter (dBuV/m) is determined by algebraically adding the measured reading in dBuV, the antenna factor (dB), and cable loss (dB) and Subtracting the gain of preamplifier (dB) is auto calculate in spectrum analyzer.

(1) $\text{Amplitude (dBuV/m)} = \text{FI (dBuV)} + \text{AF (dBuV)} + \text{CL (dBuV)} - \text{Gain (dB)}$

FI= Reading of the field intensity.

AF= Antenna factor.

CL= Cable loss.

P.S Amplitude is auto calculate in spectrum analyzer.

(2) $\text{Actual Amplitude (dBuV/m)} = \text{Amplitude (dBuV)} - \text{Dis (dB)}$

The FCC specified emission limits were calculated according the EUT operating frequency and by following linear interpolation equations:

(a) For fundamental frequency : Transmitter Output < +30dBm

(b) For spurious frequency : Spurious emission limits = fundamental emission limit /10

Data of measurement within this frequency range without mark in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

5.5. Test Result

Below 1GHz

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	TF-RTC-700R-TA-WBG-1110			Temp.(℃)/Hum.(%RH):	26(℃)/60%RH		
Mode:	Mode 2			Date:	06/01/2012		
Ant.Polar.:	Horizontal			Test By:	Fly Lu		
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	92.5000	44.25	-15.36	28.89	43.50	-14.61	QP
2	202.5000	43.18	-14.02	29.16	43.50	-14.34	QP
3	390.0000	37.88	-8.70	29.18	46.00	-16.82	QP
4	546.0000	30.66	-6.45	24.21	46.00	-21.79	QP
5	780.0000	31.14	-1.87	29.27	46.00	-16.73	QP
6	924.0000	26.03	0.60	26.63	46.00	-19.37	QP

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	TF-RTC-700R-TA-WBG-1110			Temp.(℃)/Hum.(%RH):	26(℃)/60%RH		
Mode:	Mode 2			Date:	06/01/2012		
Ant.Polar.:	Vertical			Test By:	Fly Lu		
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	92.5000	43.36	-15.36	28.00	43.50	-15.50	QP
2	216.0000	41.02	-13.70	27.32	43.50	-16.18	QP
3	351.0000	36.86	-8.79	28.07	46.00	-17.93	QP
4	520.0000	34.78	-6.67	28.11	46.00	-17.89	QP
5	702.0000	28.61	-3.35	25.26	46.00	-20.74	QP
6	939.5000	25.91	0.80	26.71	46.00	-19.29	QP

Note: No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	TF-RTC-700A-TA-WBGH-1110	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 3	Date:	06/26/2012
Ant.Polar.:	Horizontal	Test By:	Fly Lu

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	92.5000	40.79	-15.36	25.43	43.50	-18.07	QP
2	192.0000	32.32	-13.85	18.47	43.50	-25.03	QP
3	336.0000	31.52	-9.28	22.24	46.00	-23.76	QP
4	467.5000	26.11	-7.85	18.26	46.00	-27.74	QP
5	611.0000	26.60	-4.76	21.84	46.00	-24.16	QP
6	857.0000	21.32	-0.78	20.54	46.00	-25.46	QP

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	TF-RTC-700A-TA-WBGH-1110	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 3	Date:	03/19/2012
Ant.Polar.:	Vertical	Test By:	Fly Lu

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	92.5000	39.21	-15.36	23.85	43.50	-19.65	QP
2	167.0000	32.81	-16.16	16.65	43.50	-26.85	QP
3	384.0000	26.77	-8.71	18.06	46.00	-27.94	QP
4	497.0000	30.02	-6.96	23.06	46.00	-22.94	QP
5	754.0000	25.20	-2.20	23.00	46.00	-23.00	QP
6	923.5000	24.67	0.60	25.27	46.00	-20.73	QP

Note: No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).

Above 1GHz

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	TF-RTC-700R-TA-WBG-1110			Temp.(℃)/Hum.(%RH):	26(℃)/60%RH		
Mode:	Mode 4			Date:	06/01/2012		
Frequency:	2412MHz			Test By:	Fly Lu		
Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3093.000	38.39	2.41	40.80	74.00	-33.20	peak	H
5039.000	35.29	8.61	43.90	74.00	-30.10	peak	H
6607.000	34.16	13.45	47.61	74.00	-26.39	peak	H
2953.000	38.94	2.03	40.97	74.00	-33.03	peak	V
4824.000	38.20	7.95	46.15	74.00	-27.85	peak	V
6600.000	34.89	13.42	48.31	74.00	-25.69	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	TF-RTC-700R-TA-WBG-1110			Temp.(℃)/Hum.(%RH):	26(℃)/60%RH		
Mode:	Mode 4			Date:	06/01/2012		
Frequency:	2437MHz			Test By:	Fly Lu		
Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3065.000	38.76	2.35	41.11	74.00	-32.89	peak	H
4874.000	38.30	8.11	46.41	74.00	-27.59	peak	H
6621.000	36.16	13.49	49.65	74.00	-24.35	peak	H
2995.000	38.73	2.18	40.91	74.00	-33.09	peak	V
4874.000	38.92	8.11	47.03	74.00	-26.97	peak	V
6635.000	35.16	13.53	48.69	74.00	-25.31	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	TF-RTC-700R-TA-WBG-1110			Temp.(℃)/Hum.(%RH):	26(℃)/60%RH		
Mode:	Mode 4			Date:	06/01/2012		
Frequency:	2462MHz			Test By:	Fly Lu		
Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3100.000	38.26	2.42	40.68	74.00	-33.32	peak	H
4924.000	38.21	8.26	46.47	74.00	-27.53	peak	H
6649.000	34.58	13.57	48.15	74.00	-25.85	peak	H
3079.000	38.21	2.38	40.59	74.00	-33.41	peak	V
4924.000	38.43	8.26	46.69	74.00	-27.31	peak	V
6460.000	34.29	12.91	47.20	74.00	-26.80	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	TF-RTC-700R-TA-WBG-1110			Temp.(℃)/Hum.(%RH):	26(℃)/60%RH		
Mode:	Mode 5			Date:	06/01/2012		
Frequency:	2412MHz			Test By:	Fly Lu		
Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3037.000	38.25	2.28	40.53	74.00	-33.47	peak	H
4787.000	35.31	7.85	43.16	74.00	-30.84	peak	H
6418.000	33.53	12.73	46.26	74.00	-27.74	peak	H
3051.000	39.23	2.31	41.54	74.00	-32.46	peak	V
4633.000	35.67	7.36	43.03	74.00	-30.97	peak	V
6558.000	34.77	13.28	48.05	74.00	-25.95	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	TF-RTC-700R-TA-WBG-1110			Temp.(℃)/Hum.(%RH):	26(℃)/60%RH		
Mode:	Mode 5			Date:	06/01/2012		
Frequency:	2437MHz			Test By:	Fly Lu		
Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
2953.000	38.55	2.03	40.58	74.00	-33.42	peak	H
4647.000	36.08	7.40	43.48	74.00	-30.52	peak	H
6502.000	34.38	13.09	47.47	74.00	-26.53	peak	H
2939.000	37.70	1.98	39.68	74.00	-34.32	peak	V
4717.000	35.83	7.62	43.45	74.00	-30.55	peak	V
6411.000	33.88	12.69	46.57	74.00	-27.43	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	TF-RTC-700R-TA-WBG-1110			Temp.(℃)/Hum.(%RH):	26(℃)/60%RH		
Mode:	Mode 5			Date:	06/01/2012		
Frequency:	2462MHz			Test By:	Fly Lu		
Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3142.000	37.32	2.52	39.84	74.00	-34.16	peak	H
4969.000	34.60	8.40	43.00	74.00	-31.00	peak	H
6544.000	35.64	13.24	48.88	74.00	-25.12	peak	H
3170.000	37.80	2.58	40.38	74.00	-33.62	peak	V
5018.000	34.11	8.55	42.66	74.00	-31.34	peak	V
6607.000	34.35	13.45	47.80	74.00	-26.20	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	TF-RTC-700R-TA-WBG-1110			Temp.(℃)/Hum.(%RH):	26(℃)/60%RH		
Mode:	Mode 6			Date:	06/01/2012		
Frequency:	2412MHz			Test By:	Fly Lu		
Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3093.000	37.48	2.41	39.89	74.00	-34.11	peak	H
5011.000	35.11	8.54	43.65	74.00	-30.35	peak	H
6698.000	33.57	13.73	47.30	74.00	-26.70	peak	H
3037.000	37.52	2.28	39.80	74.00	-34.20	peak	V
4906.000	35.87	8.20	44.07	74.00	-29.93	peak	V
6369.000	33.80	12.50	46.30	74.00	-27.70	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	TF-RTC-700R-TA-WBG-1110			Temp.(℃)/Hum.(%RH):	26(℃)/60%RH		
Mode:	Mode 6			Date:	06/01/2012		
Frequency:	2437MHz			Test By:	Fly Lu		
Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3030.000	37.04	2.27	39.31	74.00	-34.69	peak	H
4990.000	34.69	8.47	43.16	74.00	-30.84	peak	H
6754.000	33.87	13.91	47.78	74.00	-26.22	peak	H
3191.000	37.43	2.62	40.05	74.00	-33.95	peak	V
5046.000	34.79	8.64	43.43	74.00	-30.57	peak	V
6691.000	34.48	13.71	48.19	74.00	-25.81	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	TF-RTC-700R-TA-WBG-1110			Temp.(℃)/Hum.(%RH):	26(℃)/60%RH		
Mode:	Mode 6			Date:	06/01/2012		
Frequency:	2462MHz			Test By:	Fly Lu		
Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3009.000	36.65	2.22	38.87	74.00	-35.13	peak	H
5137.000	34.99	8.90	43.89	74.00	-30.11	peak	H
6719.000	34.12	13.80	47.92	74.00	-26.08	peak	H
3226.000	37.69	2.71	40.40	74.00	-33.60	peak	V
5067.000	34.58	8.69	43.27	74.00	-30.73	peak	V
6649.000	34.26	13.57	47.83	74.00	-26.17	peak	V

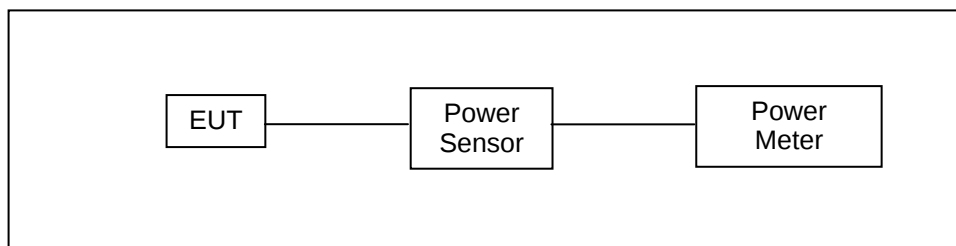
Standard:	FCC Part 15C				Test Distance:	3m		
Test item:	Radiated Emission				Power:	AC 120V/60Hz		
Model Number:	TF-RTC-700R-TA-WBG-1110				Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	Mode 7				Date:	06/01/2012		
Modulation:	IEEE 802.11b				Test By:	Fly Lu		
Frequency:	2437MHz							
Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Peak Limit (dBuV/m)	AVG. Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3135.000	38.60	2.49	41.09	74.00	54.00	-32.91	peak	H
5081.000	35.72	8.74	44.46	74.00	54.00	-29.54	peak	H
6691.000	34.65	13.71	48.36	74.00	54.00	-25.64	peak	H
3051.000	38.42	2.31	40.73	74.00	54.00	-33.27	peak	V
5095.000	34.90	8.79	43.69	74.00	54.00	-30.31	peak	V
6446.000	34.34	12.85	47.19	74.00	54.00	-26.81	peak	V

6 Maximum Conducted Output Power Measurement

6.1. Limit

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm.

6.2. Test Setup



6.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Single Channel PK Power Sensor	Agilent	N1911A	MY45101619	12/15/2011	(2)
Wideband Power Meter	Agilent	N1921A	MY45241957	12/15/2011	(2)
Test Site	ATL	TE02	TE02	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

6.4. Test Procedure

The tests below are run with the EUT's transmitter set at high power in TX mode. The EUT is needed to force selection of output power level and channel number. While testing, EUT was set to transmit continuously. Remove the Subjective device's antenna and connect the RF output port to power sensor. The maximum peak output power shall not exceed 1 watt.

Use a direct connection between the antenna port of transmitter and the power sensor, for prevent the power sensor input attenuation 40-50 dB. Set the RBW Bandwidth of the emission or use a channel power meter mode.

For antennas with gains of 6 dBi or less, maximum allowed transmitter output is 1 watt (+30 dBm). For antennas with gains greater than 6 dBi, transmitter output level must be decreased by an amount equal to (GAIN - 6)/3 dBm.

The antenna port of the EUT was connected to the input of a power sensor. Power was read directly and cable loss correction was added to the reading to obtain power at the EUT antenna terminals.

6.5. Test Result

Model Number	TF-RTC-700R-TA-WBG-1110					
Test Item	Maximum Conducted Output Power					
Test Mode	Mode 4: IEEE 802.11b Link Mode					
Date of Test	06/01/2012			Test Site	TE02	
Frequency (MHz)	Data Rate	Average Power		Peak Power		Limit (dBm)
		(dBm)	(W)	(dBm)	(W)	
2412	1	12.90	0.019	15.96	0.039	< 30
2437		13.95	0.025	17.19	0.052	< 30
2462		13.11	0.020	16.15	0.041	< 30
2412	11	12.46	0.018	16.46	0.044	< 30
2437		12.82	0.019	16.76	0.047	< 30
2462		12.29	0.017	16.27	0.042	< 30

Model Number	TF-RTC-700R-TA-WBG-1110					
Test Item	Maximum Conducted Output Power					
Test Mode	Mode 5: IEEE 802.11g Link Mode					
Date of Test	06/01/2012			Test Site	TE02	
Frequency (MHz)	Data Rate	Average Power		Peak Power		Limit (dBm)
		(dBm)	(W)	(dBm)	(W)	
2412	6	12.56	0.018	22.35	0.172	< 30
2437		13.06	0.019	22.66	0.185	< 30
2462		12.86	0.017	22.25	0.168	< 30
2412	54	9.43	0.009	22.50	0.178	< 30
2437		10.04	0.010	22.53	0.179	< 30
2462		10.14	0.010	22.60	0.182	< 30

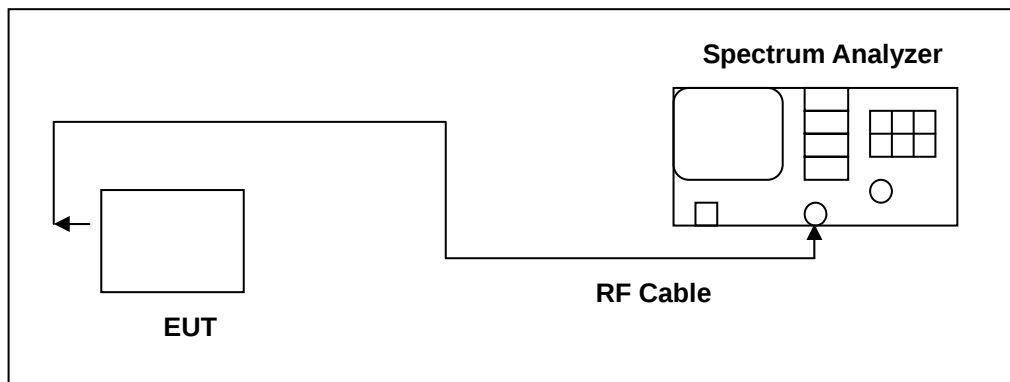
Model Number	TF-RTC-700R-TA-WBG-1110					
Test Item	Maximum Conducted Output Power					
Test Mode	Mode 6: draft 802.11n Standard-20MHz Link Mode					
Date of Test	06/01/2012			Test Site	TE02	
Frequency (MHz)	Data Rate	Average Power		Peak Power		Limit (dBm)
		(dBm)	(W)	(dBm)	(W)	
2412	MCS0	10.97	0.013	21.32	0.136	< 30
2437		11.98	0.016	22.67	0.185	< 30
2462		11.72	0.015	22.27	0.169	< 30
2412	MCS7	7.80	0.006	21.46	0.140	< 30
2437		8.42	0.007	21.47	0.140	< 30
2462		8.70	0.007	21.51	0.142	< 30

7 6dB RF Bandwidth Measurement

7.1. Limit

Systems using digital modulation techniques may operate in the 2400–2483.5 MHz bands. The minimum 6 dB band-width shall be at least 500 kHz.

7.2. Test Setup



7.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/28/2010	(2)
Test Site	ATL	TE02	TE02	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

7.4. Test Procedure

The EUT was setup to ANSI C63.4, 2009; tested to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RES BW was set to 100 kHz. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A peak output reading was taken, a DISPLAY line was drawn 6 dB lower than peak level. The 6 dB bandwidth was determined from where the channel output spectrum intersected the display line.

The test was performed at 3 channels (Channel 1, 6, 11)

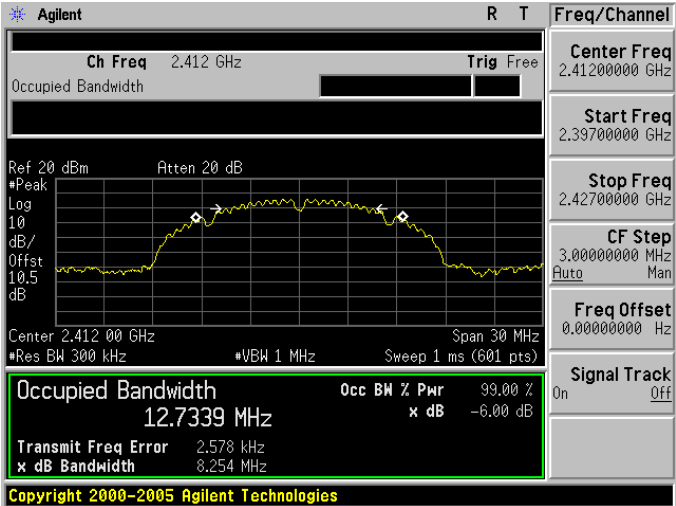
7.5. Test Result

Model Number	TF-RTC-700R-TA-WBG-1110		
Test Item	6dB RF Bandwidth		
Test Mode	Mode 4: IEEE 802.11b Link Mode		
Date of Test	06/05/2012	Test Site	TE02
Frequency (MHz)	Measurement (kHz)	Limit (kHz)	
2412	8254	> 500	
2437	8249	> 500	
2462	8255	> 500	

Model Number	TF-RTC-700R-TA-WBG-1110		
Test Item	6dB RF Bandwidth		
Test Mode	Mode 5: IEEE 802.11g Link Mode		
Date of Test	06/05/2012	Test Site	TE06
Frequency (MHz)	Measurement (kHz)	Limit (kHz)	
2412	16083	> 500	
2437	15814	> 500	
2462	15914	> 500	

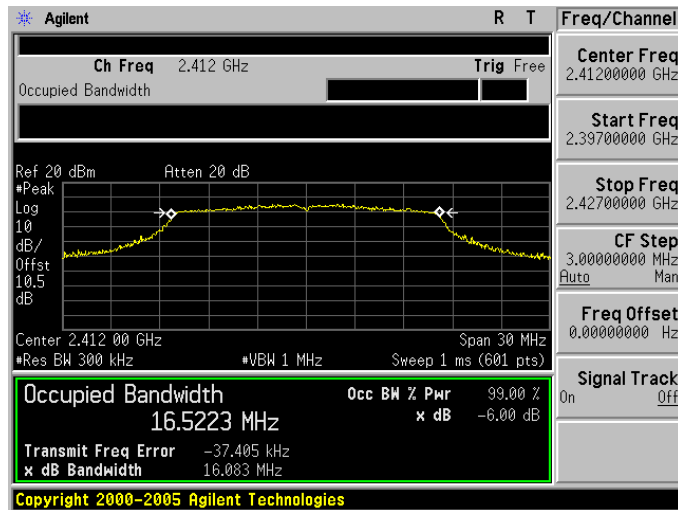
Model Number	TF-RTC-700R-TA-WBG-1110		
Test Item	6dB RF Bandwidth		
Test Mode	Mode 6: draft 802.11n Standard-20MHz Link Mode		
Date of Test	06/05/2012	Test Site	TE02
Frequency (MHz)	Measurement (kHz)	Limit (kHz)	
2412	17426	> 500	
2437	17274	> 500	
2462	17413	> 500	

7.6. Test Graphs

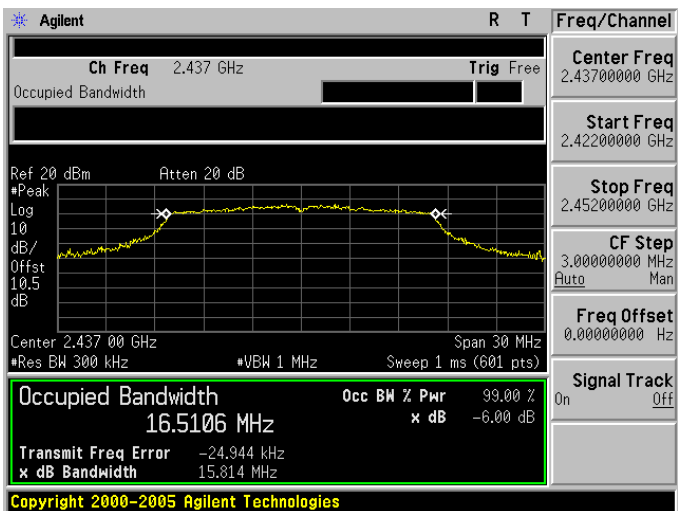
Mode 4: IEEE 802.11b Link Mode	
2412	 Agilent R T Freq/Channel Ch Freq 2.412 GHz Trig Free Center Freq 2.41200000 GHz Start Freq 2.39700000 GHz Stop Freq 2.42700000 GHz CF Step 3.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off Ref 20 dBm Atten 20 dB Peak Log 10 dB/Offst 10.5 dB Center 2.412 00 GHz Span 30 MHz Res BW 300 kHz VBW 1 MHz Sweep 1 ms (601 pts) Occupied Bandwidth 12.7339 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error 2.578 kHz x dB Bandwidth 8.254 MHz Copyright 2000-2005 Agilent Technologies
2437	 Agilent R T Freq/Channel Ch Freq 2.437 GHz Trig Free Center Freq 2.43700000 GHz Start Freq 2.42200000 GHz Stop Freq 2.45200000 GHz CF Step 3.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off Ref 20 dBm Atten 20 dB Peak Log 10 dB/Offst 10.5 dB Center 2.437 00 GHz Span 30 MHz Res BW 300 kHz VBW 1 MHz Sweep 1 ms (601 pts) Occupied Bandwidth 12.7669 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error 3.483 kHz x dB Bandwidth 8.249 MHz Copyright 2000-2005 Agilent Technologies
2462	 Agilent R T Freq/Channel Ch Freq 2.462 GHz Trig Free Center Freq 2.46200000 GHz Start Freq 2.44700000 GHz Stop Freq 2.47700000 GHz CF Step 3.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off Ref 20 dBm Atten 20 dB Peak Log 10 dB/Offst 10.5 dB Center 2.462 00 GHz Span 30 MHz Res BW 300 kHz VBW 1 MHz Sweep 1 ms (601 pts) Occupied Bandwidth 12.7720 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error 16.445 kHz x dB Bandwidth 8.255 MHz Copyright 2000-2005 Agilent Technologies

Mode 5: IEEE 802.11g Link Mode

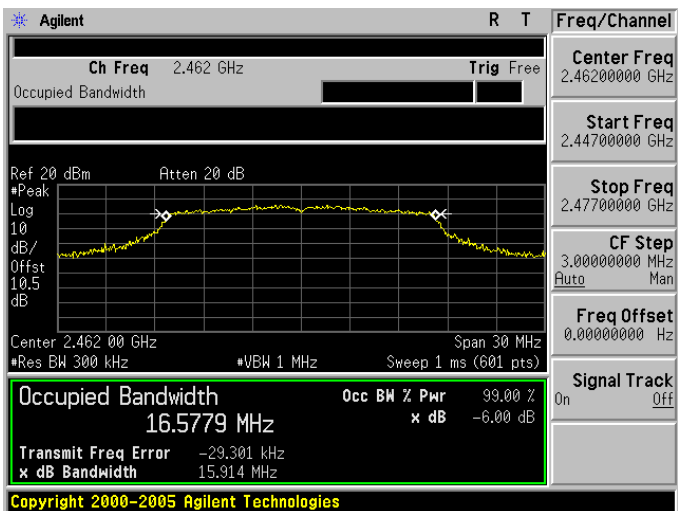
2412



2437

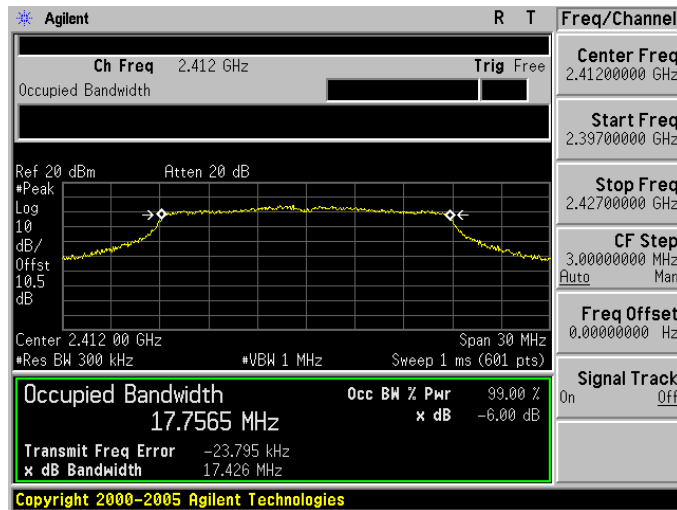


2462

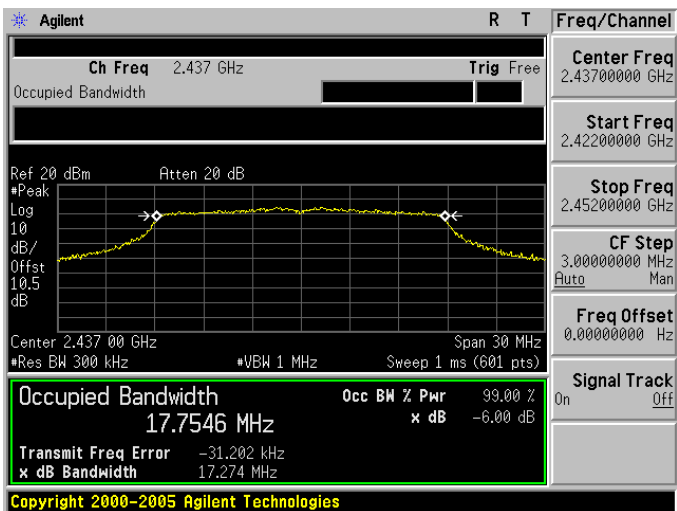


Mode 6: draft 802.11n Standard-20MHz Link Mode

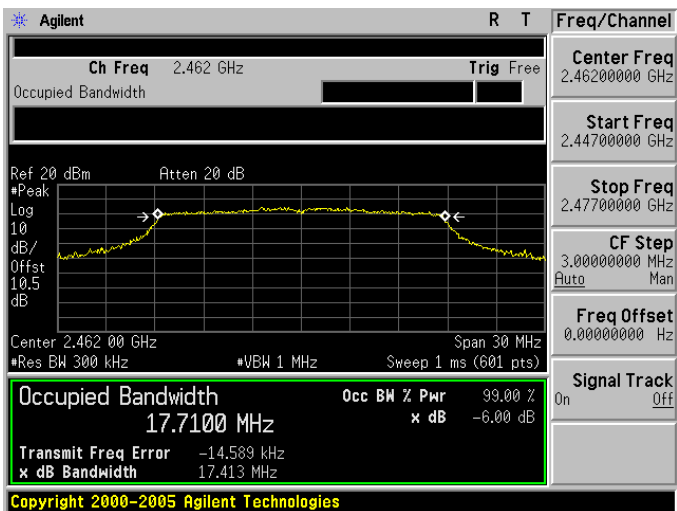
2412



2437



2462

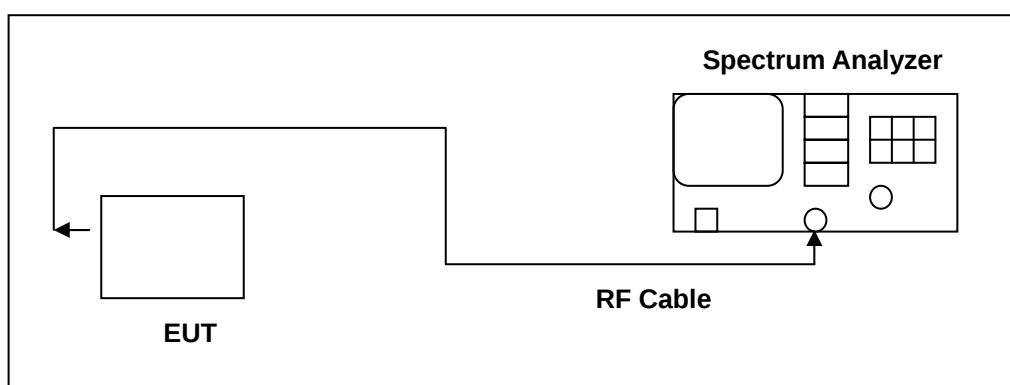


8 Maximum Power Density Measurement

8.1. Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

8.2. Test Setup



8.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/28/2010	(2)
Test Site	ATL	TE02	TE02	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

8.4. Test Procedure

The EUT was setup to ANSI C63.4, 2009; tested to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The spectrum analyzer RES BW was set to 3 kHz. The START and STOP frequencies were set to the band edges of the maximum output pass band. If there is no clear maximum amplitude in any given portion of the band, it may be necessary to make measurements at a number of bands defined by several START and STOP frequency pairs. The specification calls for a 1 second interval at each 3 kHz bandwidth; total SWEEP TIME is calculated as follows:

$$\text{SWEEP TIME (SEC)} = (\text{Fstop, kHz} - \text{Fstart, kHz}) / 3 \text{ kHz}$$

Antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated for with the analyzer OFFSET function.

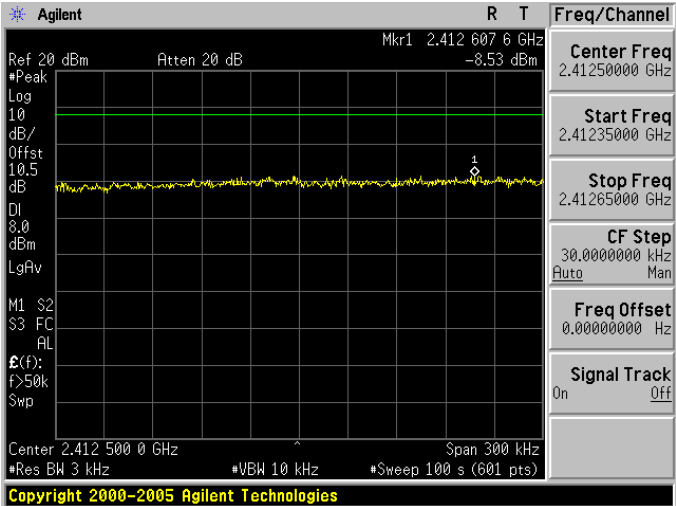
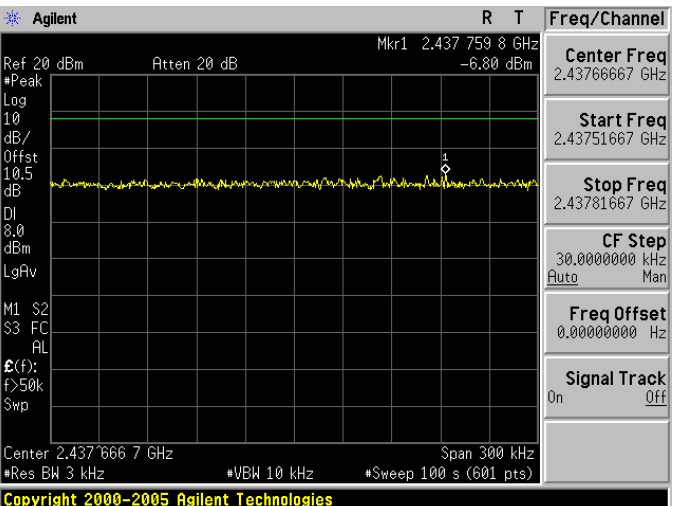
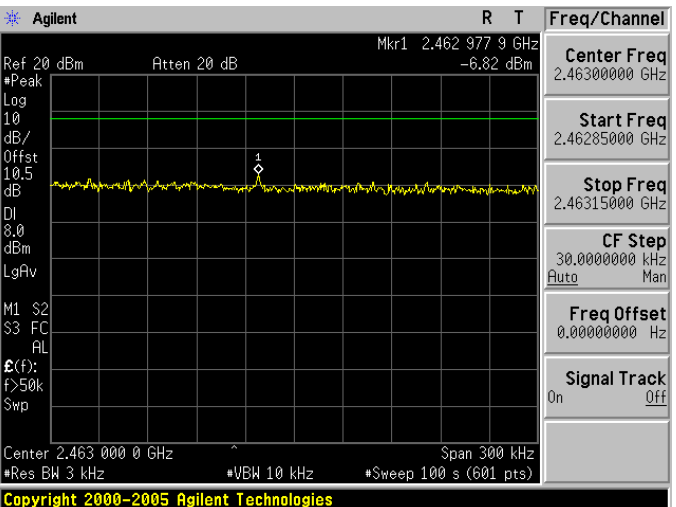
8.5. Test Result

Model Number	TF-RTC-700R-TA-WBG-1110		
Test Item	Maximum Power Density		
Test Mode	Mode 4: IEEE 802.11b Link Mode		
Date of Test	06/05/2012	Test Site	TE02
Frequency (MHz)	Measurement (dBm)	Limit (dBm)	
2412	-8.53	< 8	
2437	-6.80	< 8	
2462	-6.82	< 8	

Model Number	TF-RTC-700R-TA-WBG-1110		
Test Item	Maximum Power Density		
Test Mode	Mode 5: IEEE 802.11g Link Mode		
Date of Test	06/05/2012	Test Site	TE02
Frequency (MHz)	Measurement (dBm)	Limit (dBm)	
2412	-11.24	< 8	
2437	-9.83	< 8	
2462	-10.38	< 8	

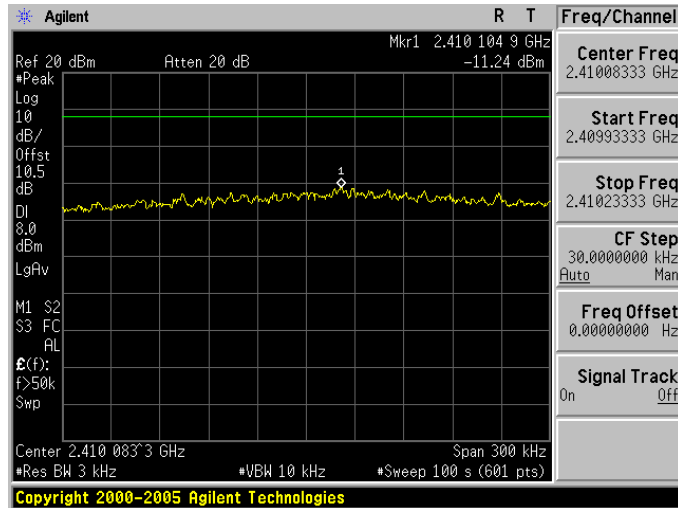
Model Number	TF-RTC-700R-TA-WBG-1110		
Test Item	Maximum Power Density		
Test Mode	Mode 6: draft 802.11n Standard-20MHz Link Mode		
Date of Test	06/05/2012	Test Site	TE02
Frequency (MHz)	Measurement (dBm)	Limit (dBm)	
2412	-11.66	< 8	
2437	-10.89	< 8	
2462	-11.87	< 8	

8.6. Test Graphs

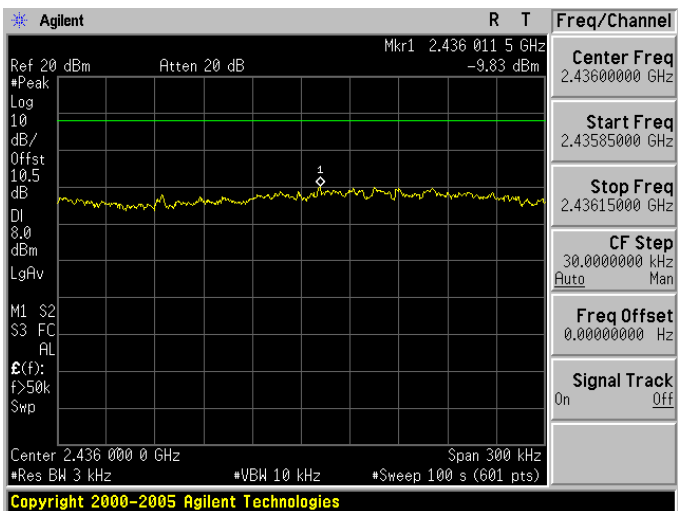
Mode 4: IEEE 802.11b Link Mode	
2412	 Agilent R T Freq/Channel Ref 20 dBm Atten 20 dB Mkr1 2.412 607 6 GHz -8.53 dBm Center Freq 2.4125000 GHz Start Freq 2.41235000 GHz Stop Freq 2.41265000 GHz CF Step 30.0000000 kHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off Center 2.412 500 0 GHz Span 300 kHz Res BW 3 kHz VBW 10 kHz Sweep 100 s (601 pts) Copyright 2000-2005 Agilent Technologies
2437	 Agilent R T Freq/Channel Ref 20 dBm Atten 20 dB Mkr1 2.437 759 8 GHz -6.80 dBm Center Freq 2.4376667 GHz Start Freq 2.43751667 GHz Stop Freq 2.43781667 GHz CF Step 30.0000000 kHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off Center 2.437 666 7 GHz Span 300 kHz Res BW 3 kHz VBW 10 kHz Sweep 100 s (601 pts) Copyright 2000-2005 Agilent Technologies
2462	 Agilent R T Freq/Channel Ref 20 dBm Atten 20 dB Mkr1 2.462 977 9 GHz -6.82 dBm Center Freq 2.4630000 GHz Start Freq 2.46285000 GHz Stop Freq 2.46315000 GHz CF Step 30.0000000 kHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off Center 2.463 000 0 GHz Span 300 kHz Res BW 3 kHz VBW 10 kHz Sweep 100 s (601 pts) Copyright 2000-2005 Agilent Technologies

Mode 5: IEEE 802.11g Link Mode

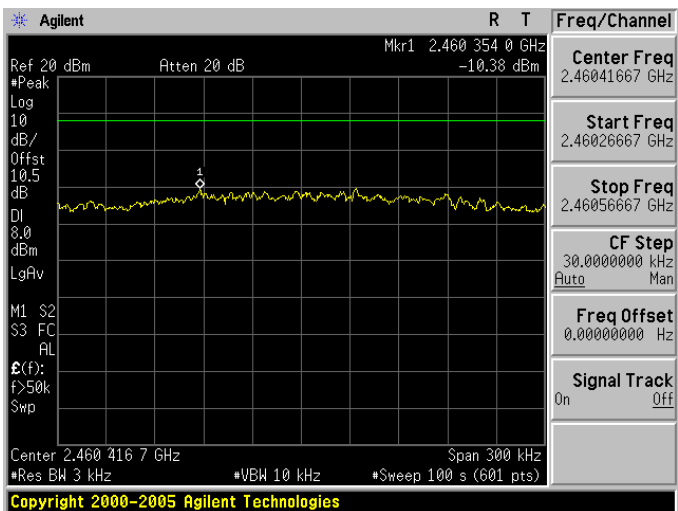
2412



2437

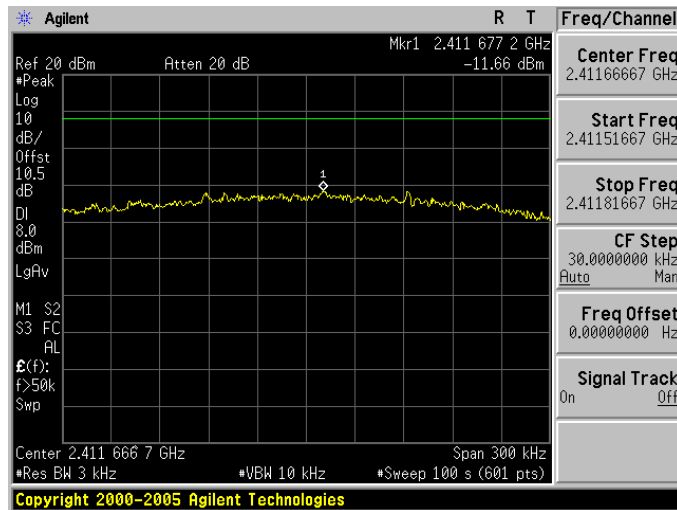


2462

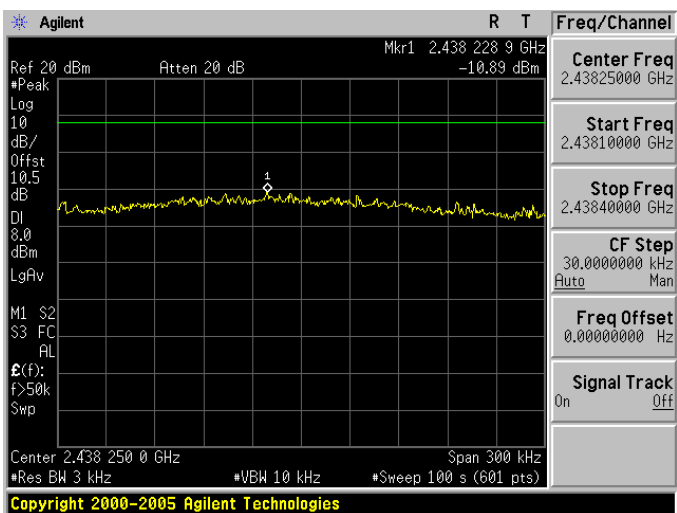


Mode 6: draft 802.11n Standard-20MHz Link Mode

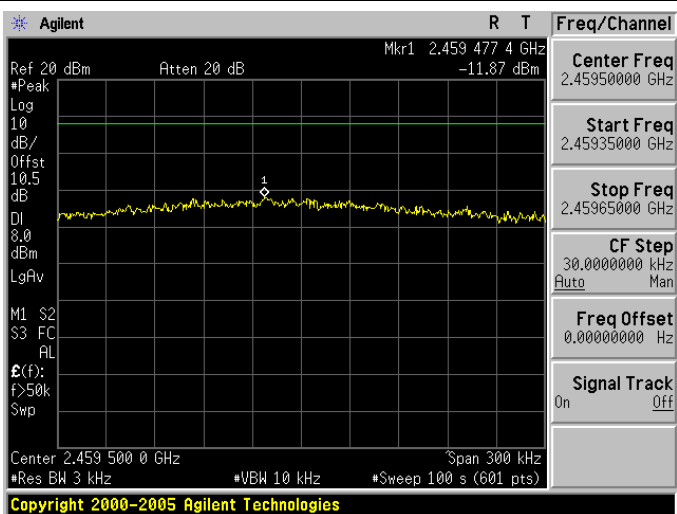
2412



2437



2462

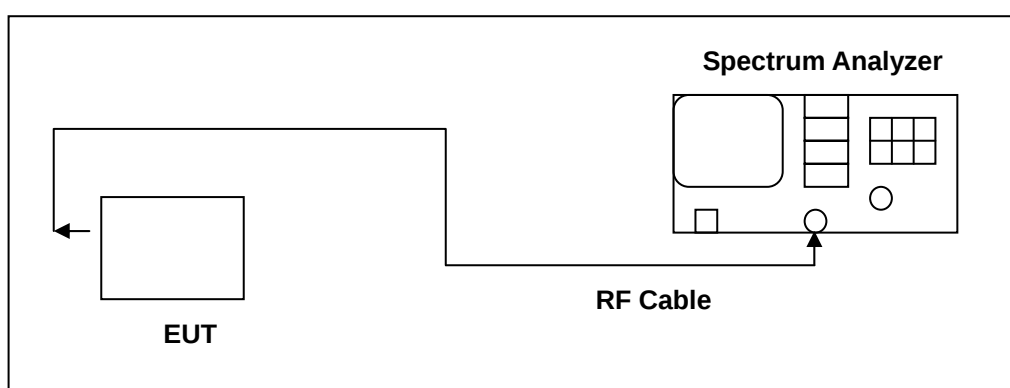


9 Out of Band Conducted Emissions Measurement

9.1. 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

9.2. Test Setup



9.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/28/2010	(2)
Spectrum Analyzer	Agilent	E4408B	MY45107753	07/07/2012	(1)
Test Site	ATL	TE02	TE02	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

9.4. Test Procedure

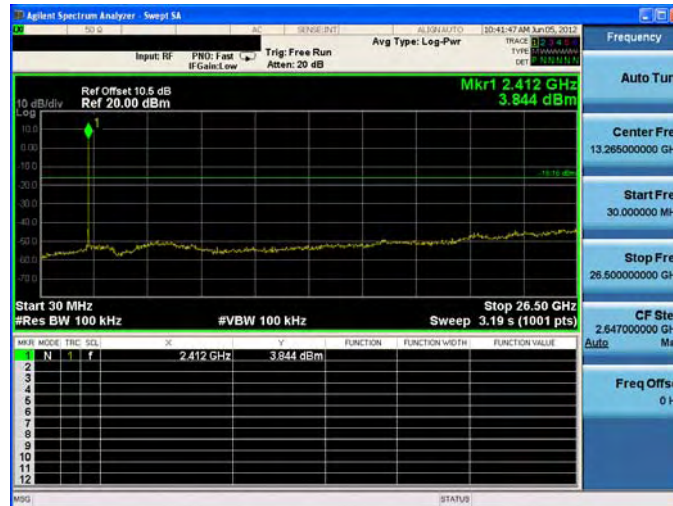
In any 100 kHz bandwidth outside the EUT pass band, the RF power produced by the modulation products of the spreading sequence, the information sequence, and the carrier frequency shall be at least 20 dB below that of the maximum in-band 100 kHz emission, antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated for with the analyzer OFFSET function.

All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the pass band. The test was performed at 3 channels (Channel 1, 6, 11)

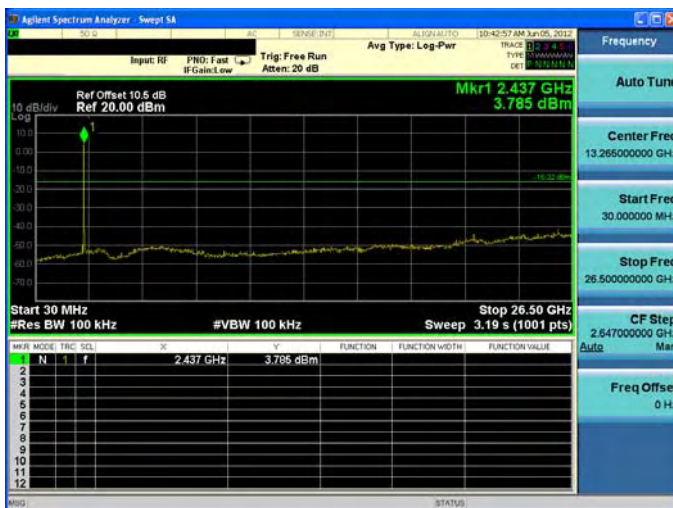
9.5. Test Graphs

Mode 4: IEEE 802.11b Link Mode

2412



2437

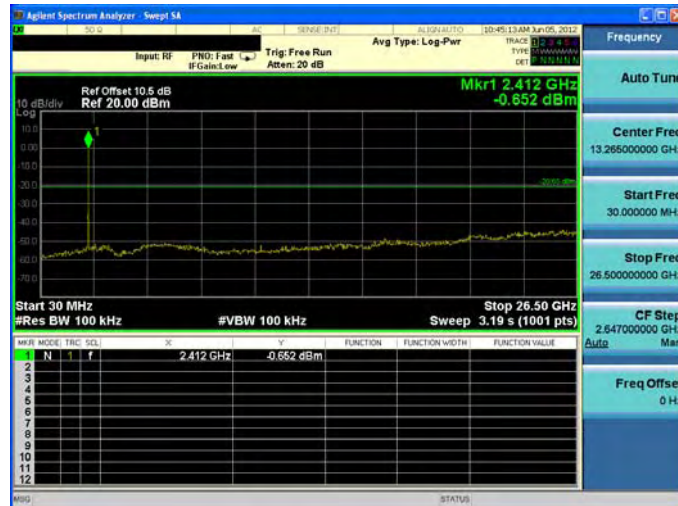


2462

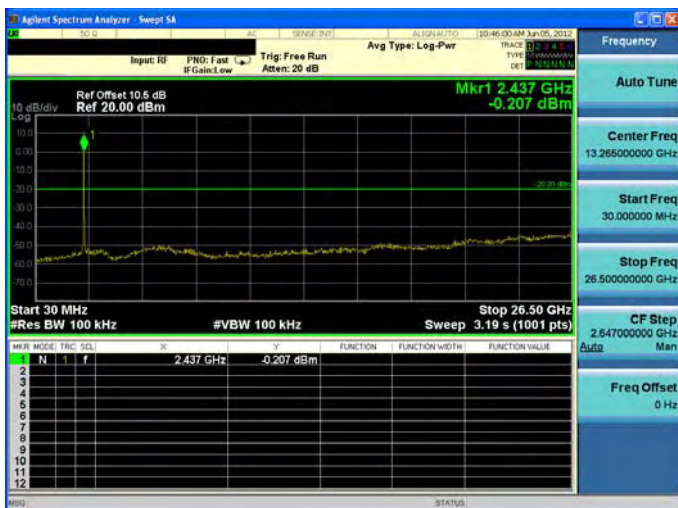


Mode 5: IEEE 802.11g Link Mode

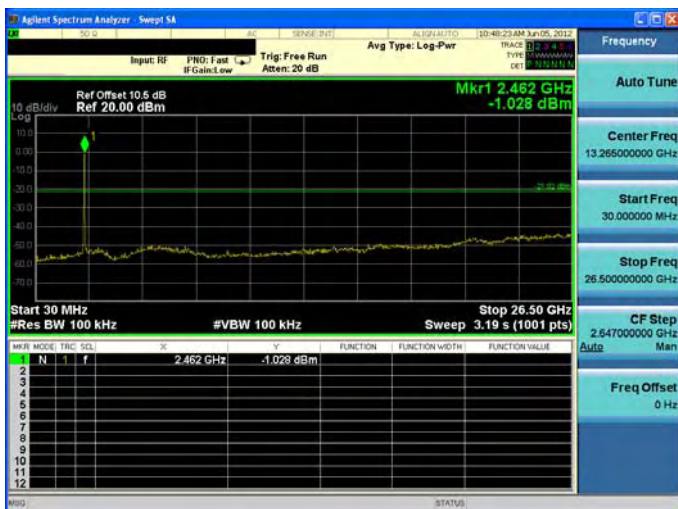
2412



2437



2462

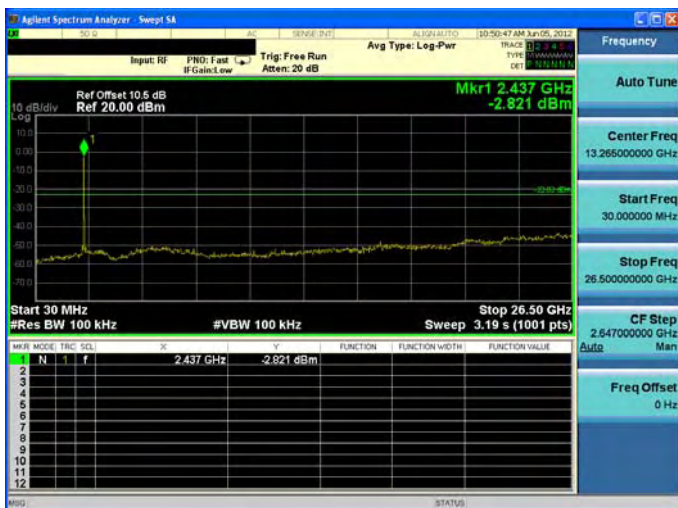


Mode 6: draft 802.11n Standard-20MHz Link Mode

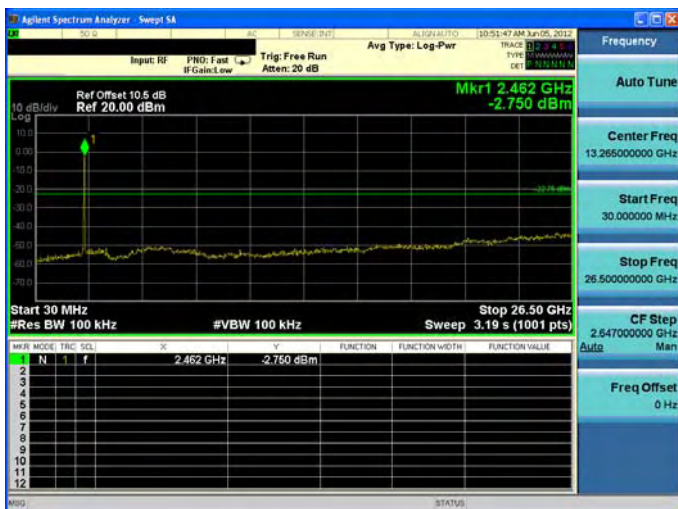
2412



2437



2462

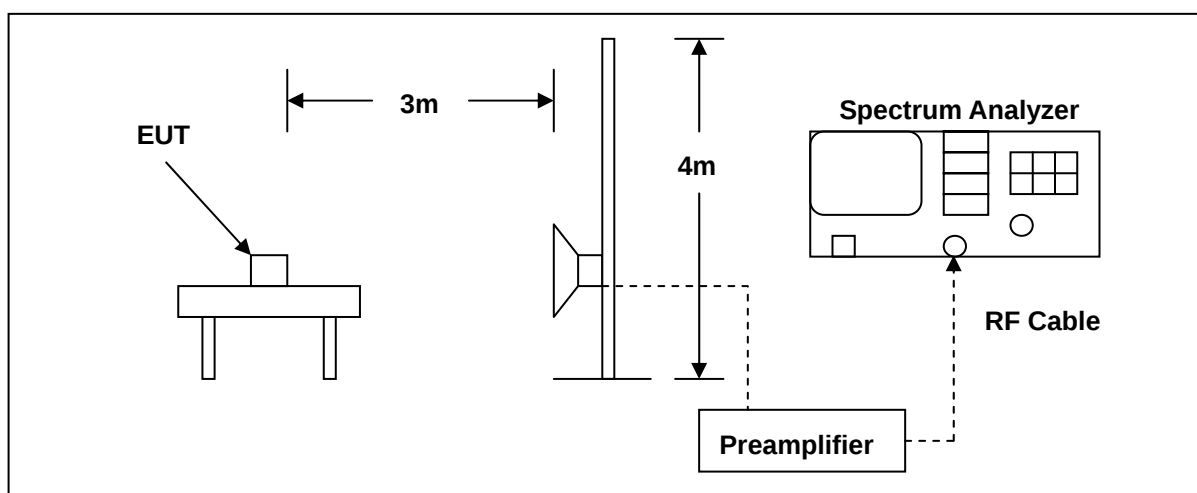


10 Band Edges Measurement

10.1.Limit

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.

10.2.Test Setup



10.3.Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4408B	MY45107753	07/07/2012	(1)
Pre Amplifier	Agilent	8449B	3008A02237	02/22/2012	(1)
Horn Antenna	SCHWARZBECK MESS-ELEKTRONIK	9120D	9120D-550	06/15/2012	(1)
Test Site	ATL	TE01	888001	12/20/2011	-----

Remark: ⁽¹⁾ Calibration period 1 year. ⁽²⁾ Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

10.4. Test Procedure

The EUT was setup to ANSI C63.4, 2009; tested to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The emissions on the harmonics frequencies, the limits, and the margin of compliance are presented. These tests were made when the transmitter was in full radiated power. The additional test was performed to show compliance with the requirement at the band-edge frequency 2483.5 MHz and up to 2500 MHz and at 2390.0 MHz.

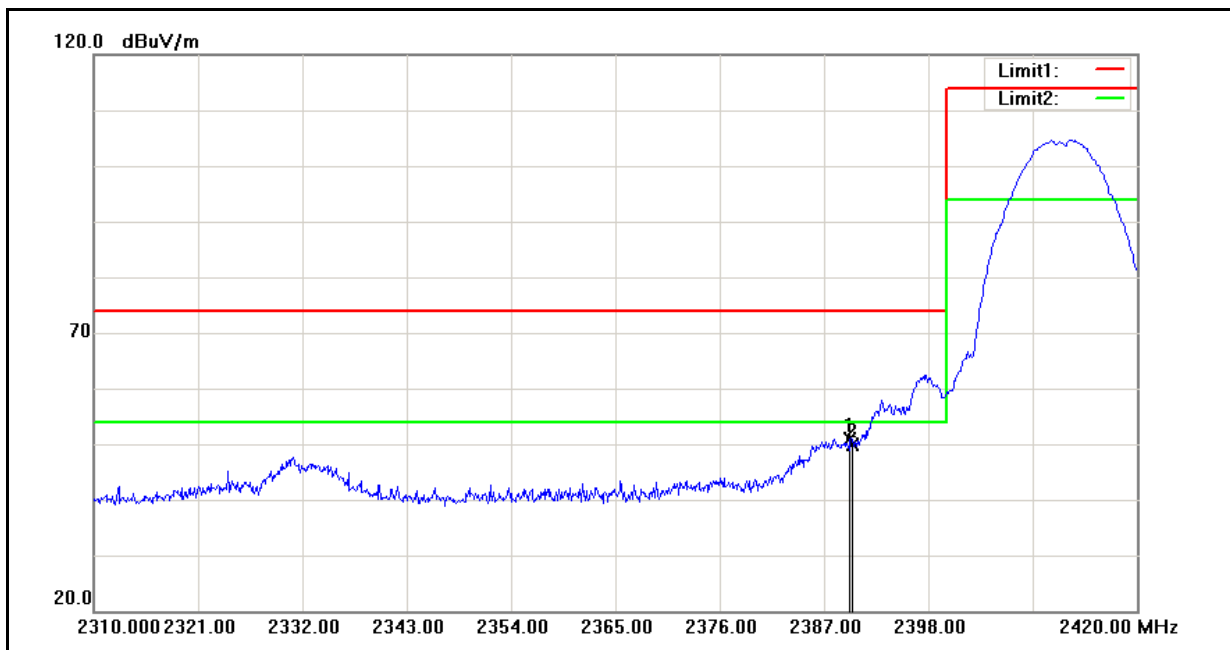
The transmitter was configured with the worst case antenna and setup to transmit at the highest channel. Then the field strength was measured at 2483.5 MHz.

The transmitter was then configured with the worst case antenna and setup to transmit at the lowest channel. Then the field strength was measured at 2390.0 MHz. These tests were performed at 4 different bit rates.

For measurements the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

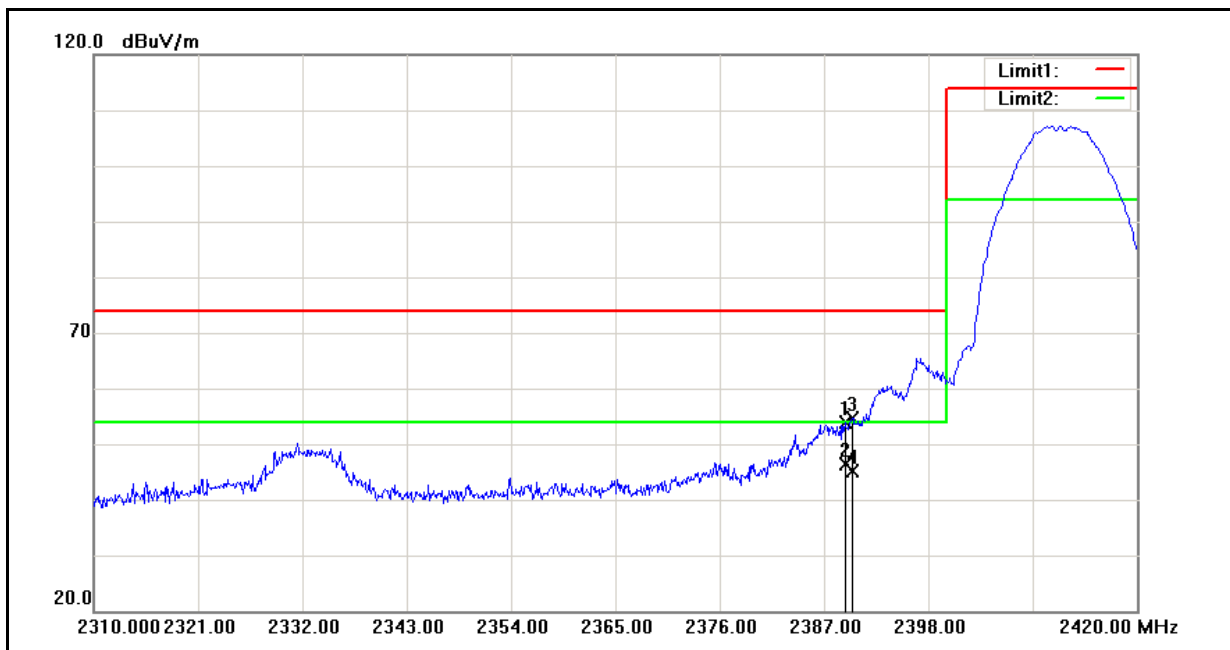
10.5.Test Result

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	TF-RTC-700R-TA-WBG-1110	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 4	Date:	06/01/2012
Frequency:	2412 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



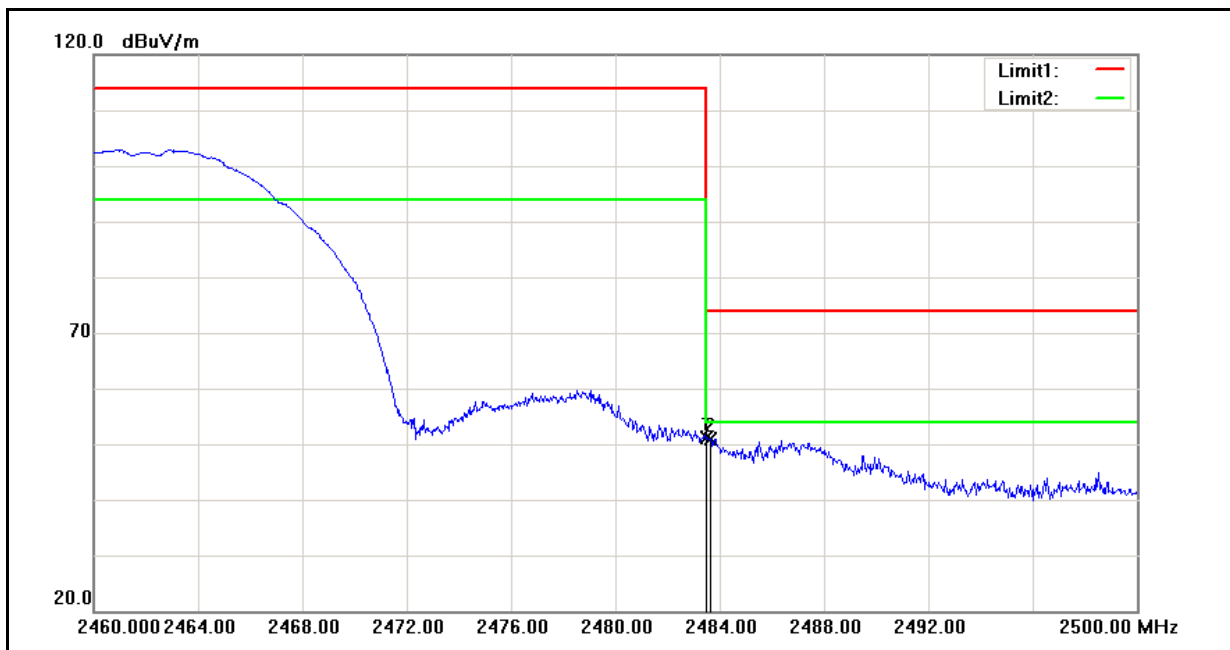
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.750	51.00	-0.06	50.94	74.00	-23.06	peak
2	2390.000	49.84	-0.06	49.78	74.00	-24.22	peak

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	TF-RTC-700R-TA-WBG-1110	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 4	Date:	06/01/2012
Frequency:	2412 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



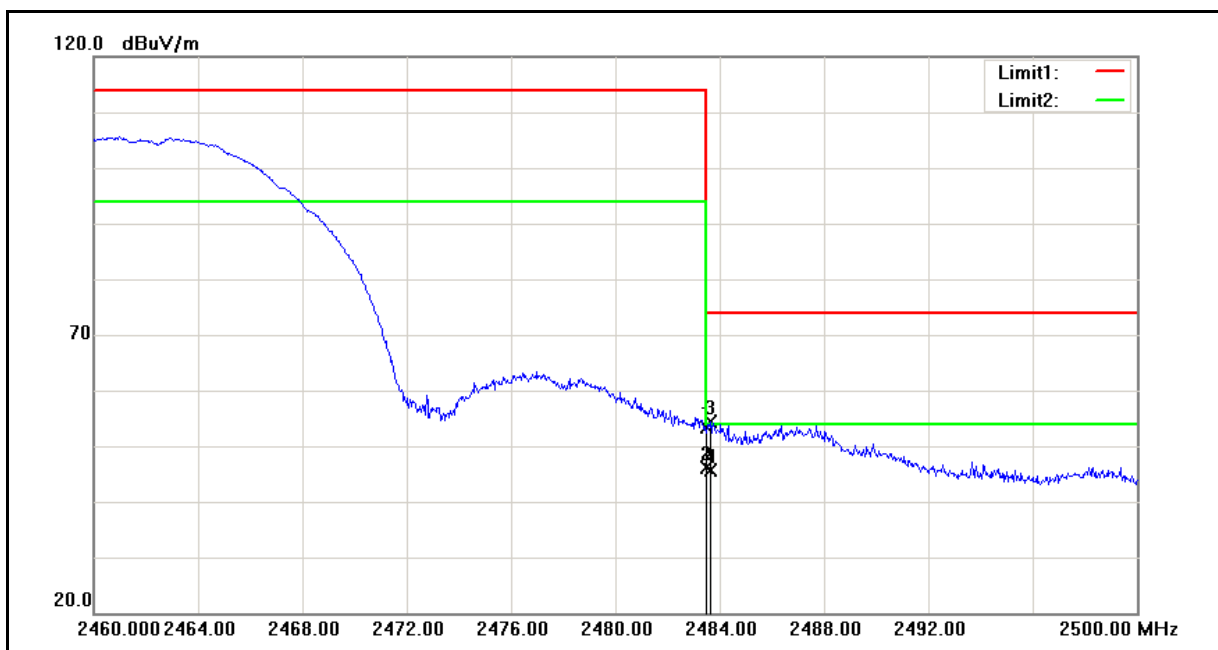
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.200	54.04	-0.06	53.98	74.00	-20.02	peak
2	2389.200	46.49	-0.06	46.43	54.00	-7.57	AVG
3	2390.000	54.76	-0.06	54.70	74.00	-19.30	peak
4	2390.000	45.15	-0.06	45.09	54.00	-8.91	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	TF-RTC-700R-TA-WBG-1110	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 4	Date:	06/01/2012
Frequency:	2462 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



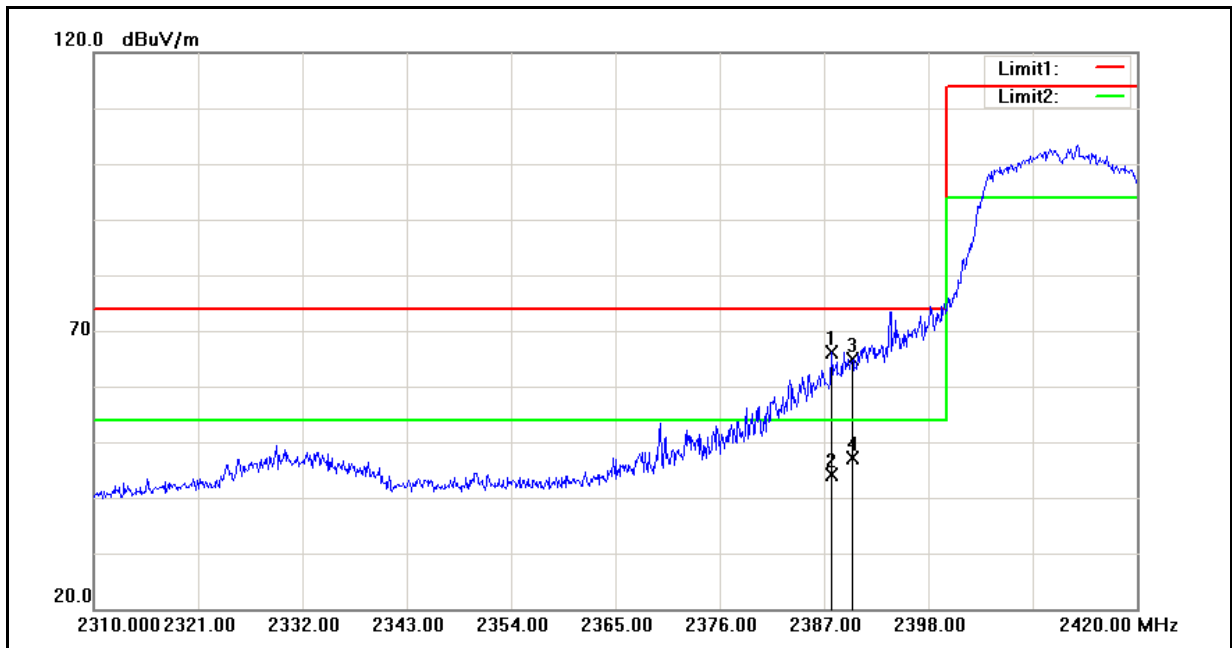
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	50.69	0.35	51.04	74.00	-22.96	peak
2	2483.640	50.59	0.35	50.94	74.00	-23.06	peak

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	TF-RTC-700R-TA-WBG-1110	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 4	Date:	06/01/2012
Frequency:	2462 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



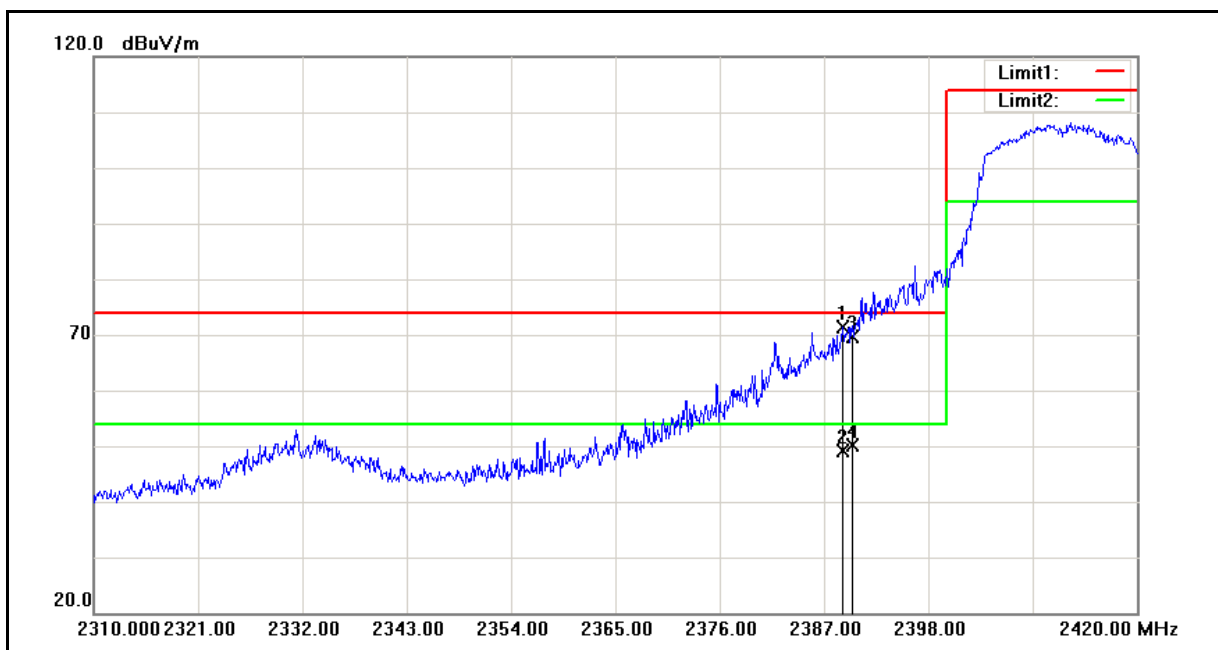
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	52.98	0.35	53.33	74.00	-20.67	peak
2	2483.500	45.81	0.35	46.16	54.00	-7.84	AVG
3	2483.640	54.02	0.35	54.37	74.00	-19.63	peak
4	2483.640	45.35	0.35	45.70	54.00	-8.30	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	TF-RTC-700R-TA-WBG-1110	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 5	Date:	06/01/2012
Frequency:	2412 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



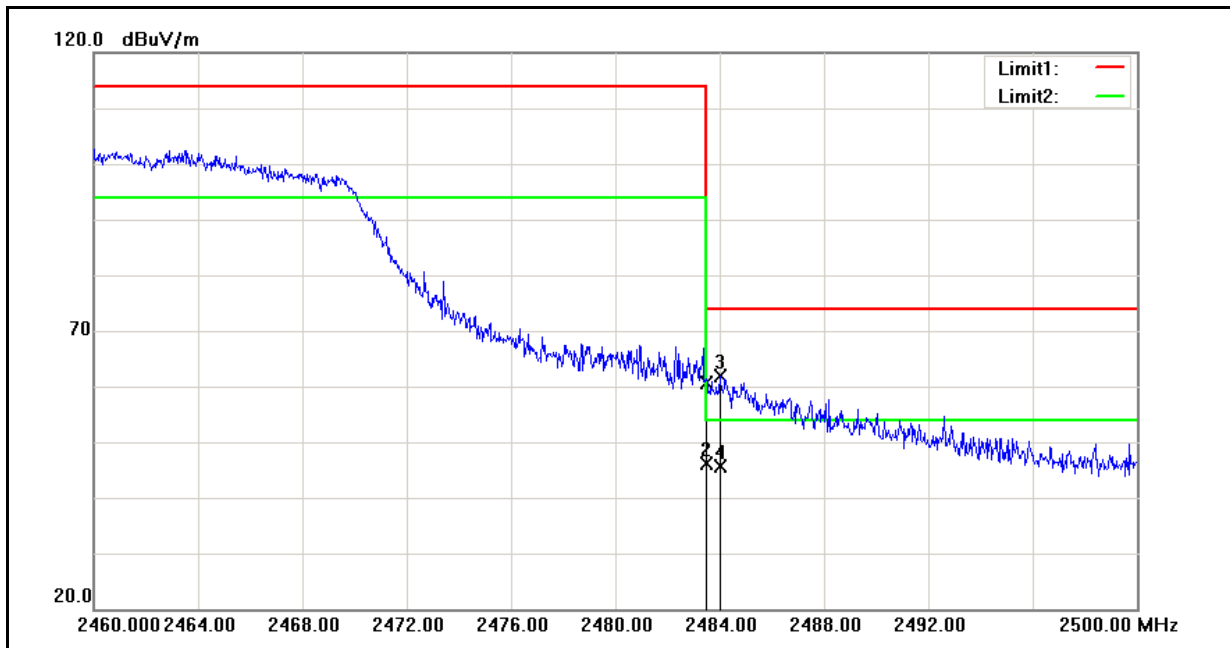
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2387.770	66.27	-0.07	66.20	74.00	-7.80	peak
2	2387.770	44.09	-0.07	44.02	54.00	-9.98	AVG
3	2390.000	65.03	-0.06	64.97	74.00	-9.03	peak
4	2390.000	47.21	-0.06	47.15	54.00	-6.85	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	TF-RTC-700R-TA-WBG-1110	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 5	Date:	06/01/2012
Frequency:	2412 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



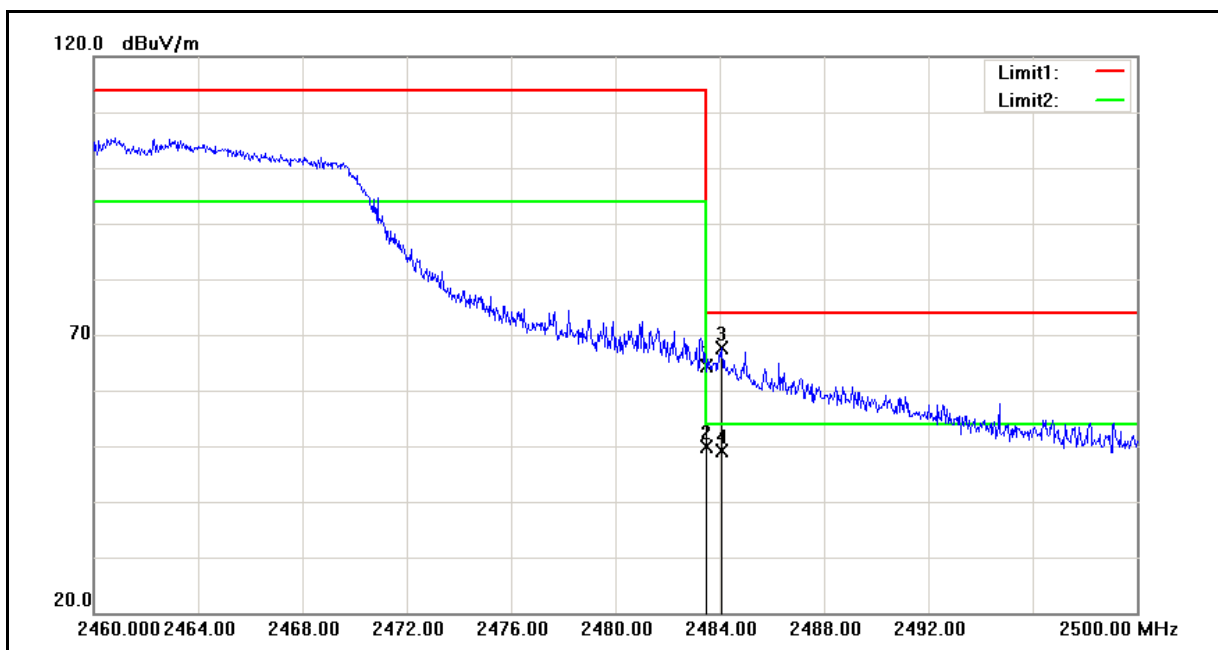
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2388.980	71.43	-0.06	71.37	74.00	-2.63	peak
2	2388.980	49.08	-0.06	49.02	54.00	-4.98	AVG
3	2390.000	69.72	-0.06	69.66	74.00	-4.34	peak
4	2390.000	50.28	-0.06	50.22	54.00	-3.78	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	TF-RTC-700R-TA-WBG-1110	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 5	Date:	06/01/2012
Frequency:	2462 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



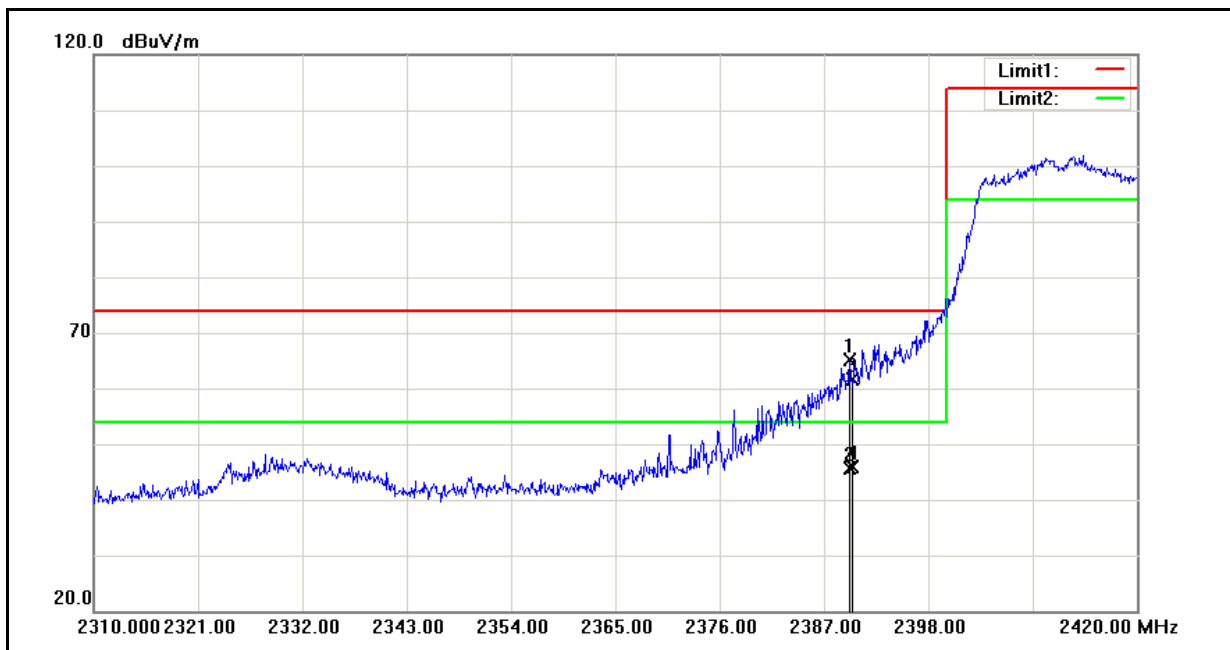
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	60.33	0.35	60.68	74.00	-13.32	peak
2	2483.500	45.74	0.35	46.09	54.00	-7.91	AVG
3	2484.000	61.59	0.35	61.94	74.00	-12.06	peak
4	2484.000	45.32	0.35	45.67	54.00	-8.33	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	TF-RTC-700R-TA-WBG-1110	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 5	Date:	06/01/2012
Frequency:	2462 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



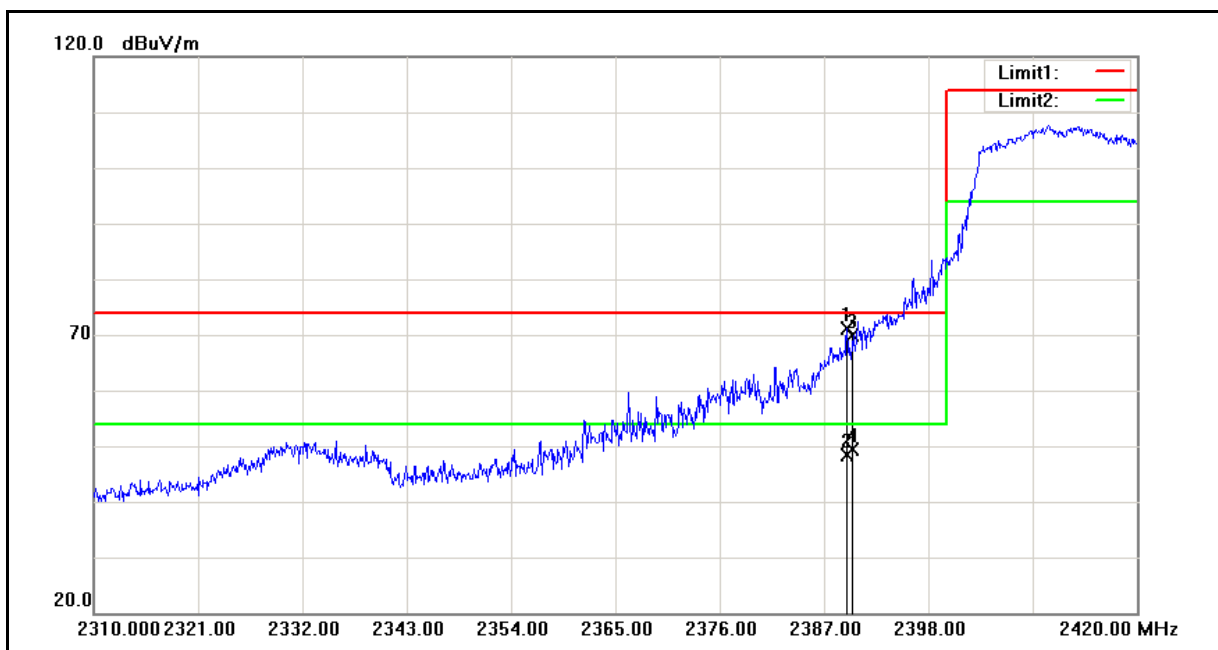
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	64.10	0.35	64.45	74.00	-9.55	peak
2	2483.500	49.42	0.35	49.77	54.00	-4.23	AVG
3	2484.080	67.23	0.35	67.58	74.00	-6.42	peak
4	2484.080	48.73	0.35	49.08	54.00	-4.92	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	TF-RTC-700R-TA-WBG-1110	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 6	Date:	06/01/2012
Frequency:	2412 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



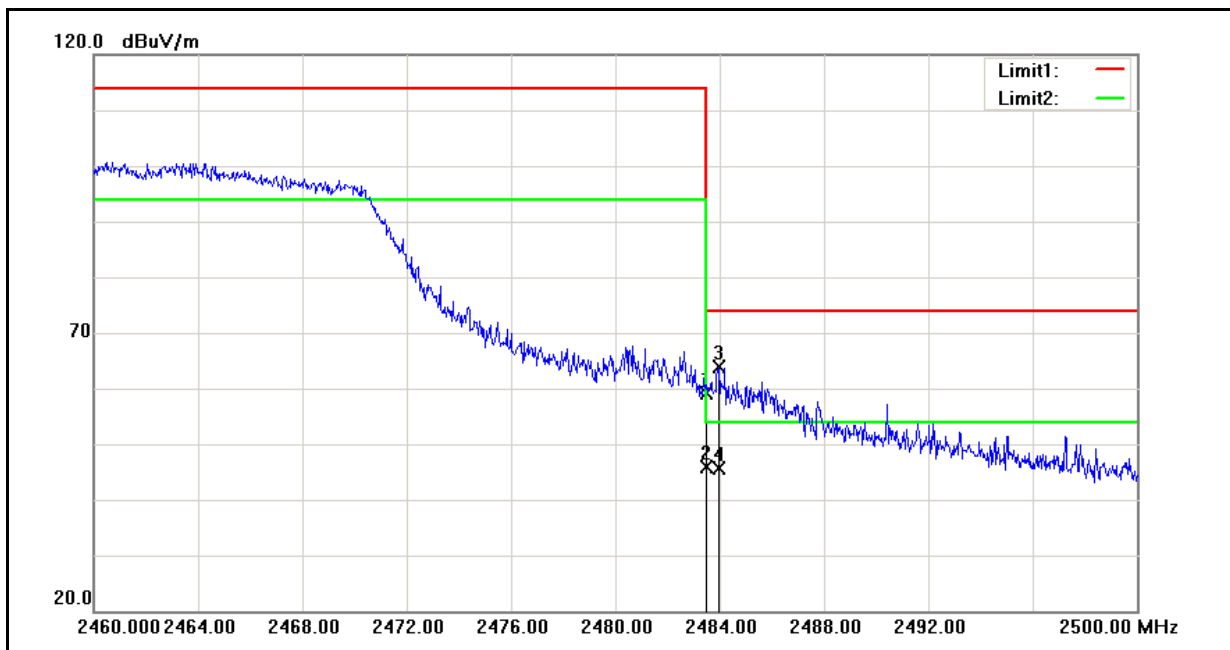
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.640	65.21	-0.06	65.15	74.00	-8.85	peak
2	2389.640	45.59	-0.06	45.53	54.00	-8.47	AVG
3	2390.000	61.61	-0.06	61.55	74.00	-12.45	peak
4	2390.000	45.98	-0.06	45.92	54.00	-8.08	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	TF-RTC-700R-TA-WBG-1110	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 6	Date:	06/01/2012
Frequency:	2412 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



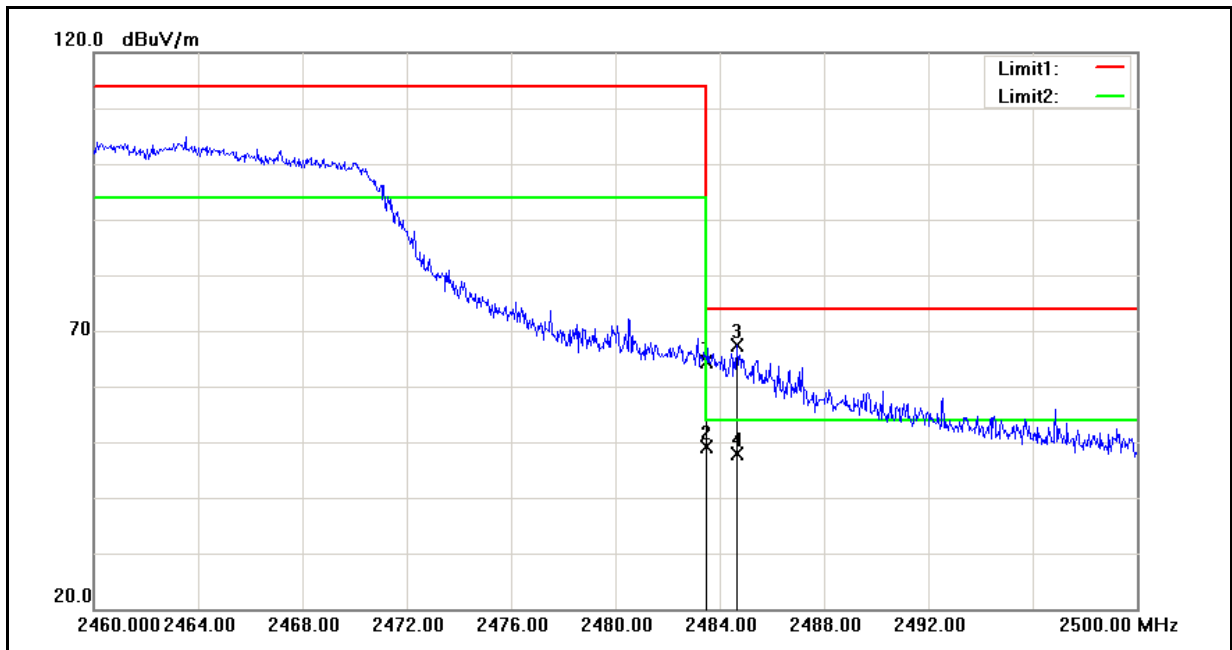
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.420	71.14	-0.06	71.08	74.00	-2.92	peak
2	2389.420	48.51	-0.06	48.45	54.00	-5.55	AVG
3	2390.000	69.82	-0.06	69.76	74.00	-4.24	peak
4	2390.000	49.48	-0.06	49.42	54.00	-4.58	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	TF-RTC-700R-TA-WBG-1110	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 6	Date:	06/01/2012
Frequency:	2462 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	58.75	0.35	59.10	74.00	-14.90	peak
2	2483.500	45.61	0.35	45.96	54.00	-8.04	AVG
3	2483.960	63.56	0.35	63.91	74.00	-10.09	peak
4	2483.960	45.18	0.35	45.53	54.00	-8.47	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	TF-RTC-700R-TA-WBG-1110	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 6	Date:	06/01/2012
Frequency:	2462 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



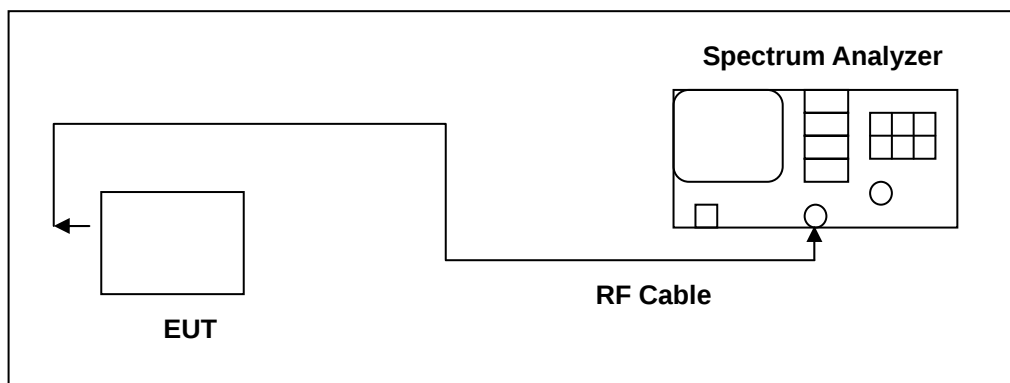
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	64.05	0.35	64.40	74.00	-9.60	peak
2	2483.500	48.86	0.35	49.21	54.00	-4.79	AVG
3	2484.680	66.91	0.35	67.26	74.00	-6.74	peak
4	2484.680	47.46	0.35	47.81	54.00	-6.19	AVG

11 99 % Occupied Bandwidth Measurement

11.1.Limit

N/A

11.2.Test Setup



11.3.Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/21/2011	(2)
Test Site	ATL	TE02	TE02	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

11.4.Test Procedure

The transmitter shall be operated at its maximum carrier power measured under normal test conditions. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used since a peak or, peak hold, may produce a wider bandwidth than actual.

The trace data points are recovered and are directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded.

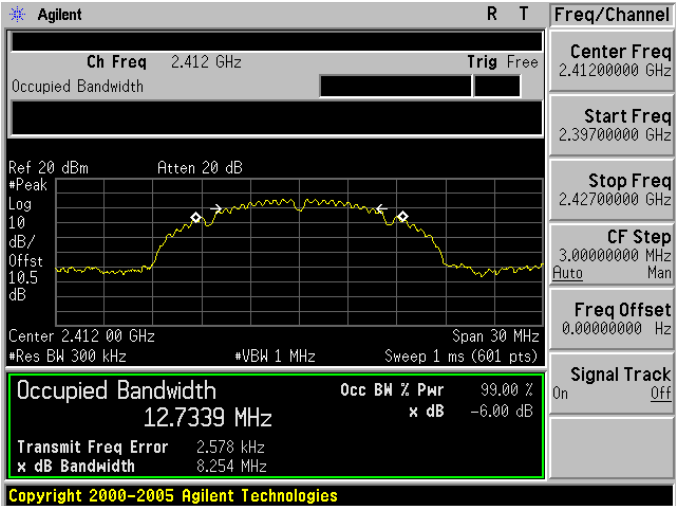
11.5. Test Result

Model Number	TF-RTC-700R-TA-WBG-1110		
Test Item	99 % Occupied Bandwidth		
Test Mode	Mode 4: IEEE 802.11b Link Mode		
Date of Test	06/05/2012	Test Site	TE02
Frequency (MHz)	Measurement (kHz)	Limit (kHz)	
2412	12733.9	-----	
2437	12766.9	-----	
2462	12772.0	-----	

Model Number	TF-RTC-700R-TA-WBG-1110		
Test Item	99 % Occupied Bandwidth		
Test Mode	Mode 5: IEEE 802.11g Link Mode		
Date of Test	06/05/2012	Test Site	TE02
Frequency (MHz)	Measurement (kHz)	Limit (kHz)	
2412	16522.3	-----	
2437	16510.6	-----	
2462	16577.9	-----	

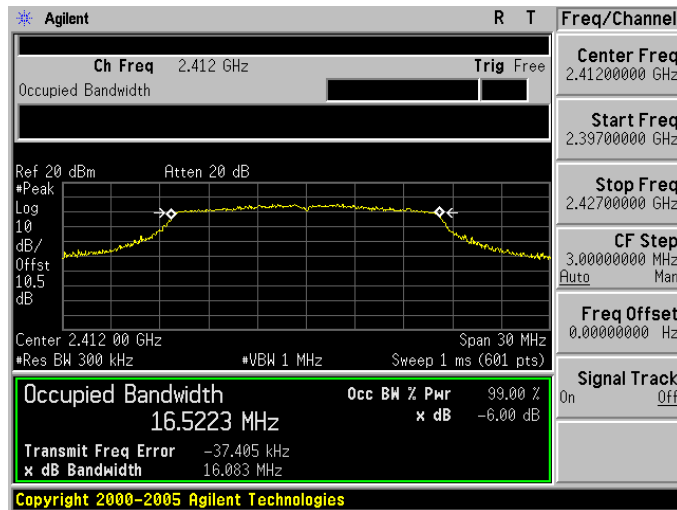
Model Number	TF-RTC-700R-TA-WBG-1110		
Test Item	99 % Occupied Bandwidth		
Test Mode	Mode 6: draft 802.11n Standard-20MHz Link Mode		
Date of Test	06/05/2012	Test Site	TE02
Frequency (MHz)	Measurement (kHz)	Limit (kHz)	
2412	17756.5	-----	
2437	17754.6	-----	
2462	17710.0	-----	

11.6. Test Graphs

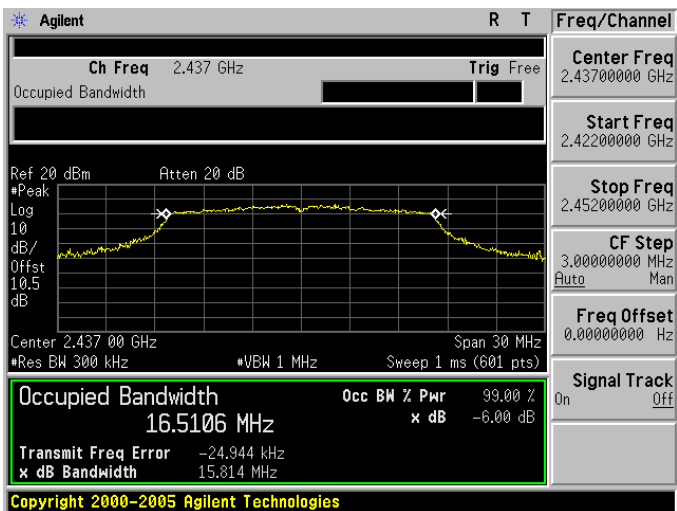
Mode 4: IEEE 802.11b Link Mode	
2412	 Agilent R T Freq/Channel Ch Freq 2.412 GHz Trig Free Center Freq 2.41200000 GHz Start Freq 2.39700000 GHz Stop Freq 2.42700000 GHz CF Step 3.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off Ref 20 dBm Atten 20 dB Peak Log 10 dB/Offst 10.5 dB Center 2.412 00 GHz Span 30 MHz Res BW 300 kHz VBW 1 MHz Sweep 1 ms (601 pts) Occupied Bandwidth 12.7339 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error 2.578 kHz x dB Bandwidth 8.254 MHz Copyright 2000-2005 Agilent Technologies
2437	 Agilent R T Freq/Channel Ch Freq 2.437 GHz Trig Free Center Freq 2.43700000 GHz Start Freq 2.42200000 GHz Stop Freq 2.45200000 GHz CF Step 3.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off Ref 20 dBm Atten 20 dB Peak Log 10 dB/Offst 10.5 dB Center 2.437 00 GHz Span 30 MHz Res BW 300 kHz VBW 1 MHz Sweep 1 ms (601 pts) Occupied Bandwidth 12.7669 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error 3.483 kHz x dB Bandwidth 8.249 MHz Copyright 2000-2005 Agilent Technologies
2462	 Agilent R T Freq/Channel Ch Freq 2.462 GHz Trig Free Center Freq 2.46200000 GHz Start Freq 2.44700000 GHz Stop Freq 2.47700000 GHz CF Step 3.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off Ref 20 dBm Atten 20 dB Peak Log 10 dB/Offst 10.5 dB Center 2.462 00 GHz Span 30 MHz Res BW 300 kHz VBW 1 MHz Sweep 1 ms (601 pts) Occupied Bandwidth 12.7720 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error 16.445 kHz x dB Bandwidth 8.255 MHz Copyright 2000-2005 Agilent Technologies

Mode 5: IEEE 802.11g Link Mode

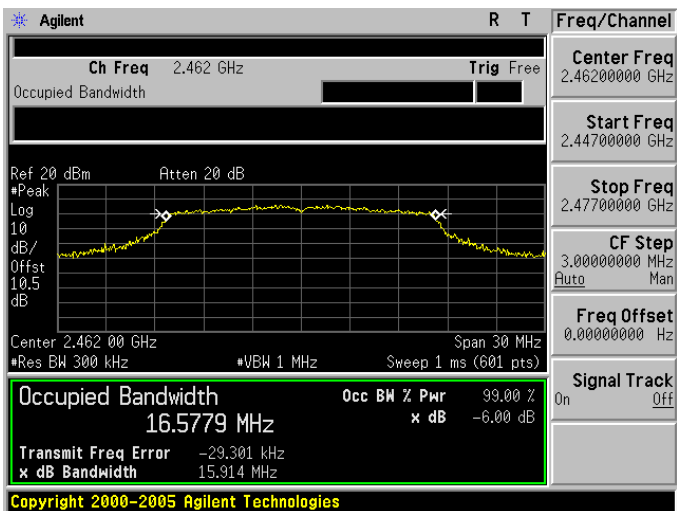
2412



2437

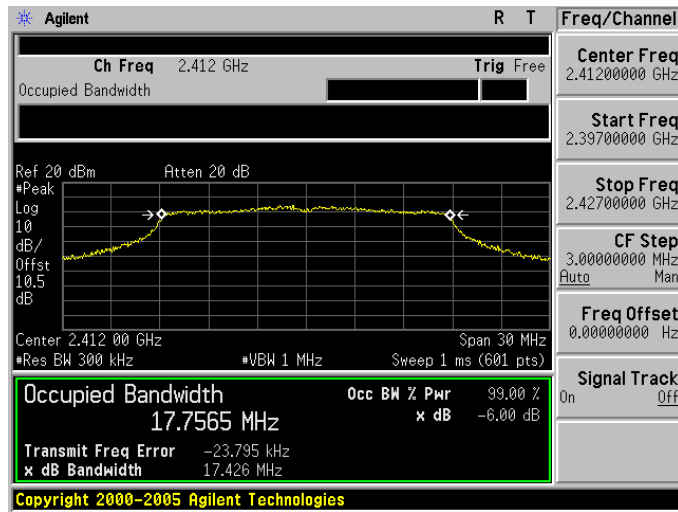


2462

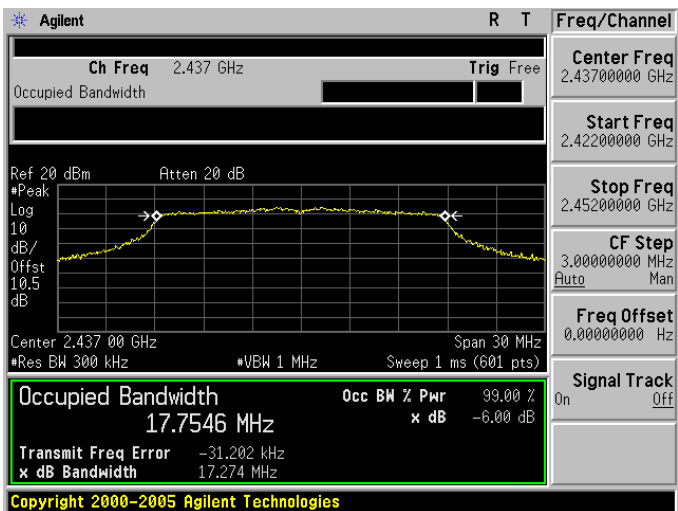


Mode 6: draft 802.11n Standard-20MHz Link Mode

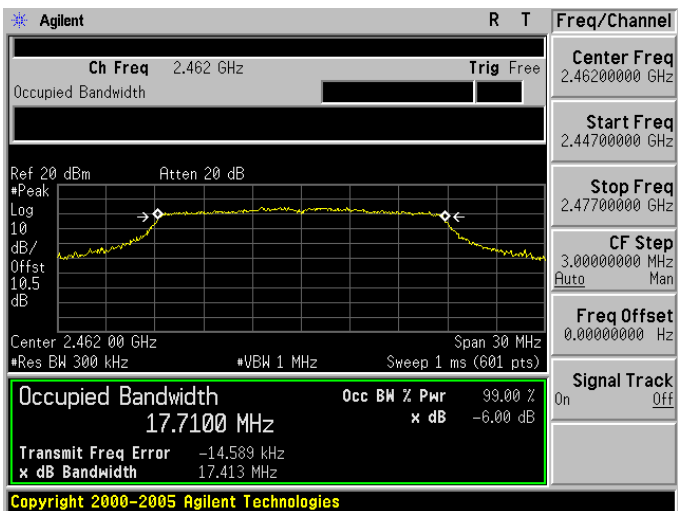
2412



2437



2462



12 Antenna Measurement

12.1.Limit

For intentional device, according to 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And According to 15.247 (b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

12.2.Antenna Connector Construction

The antenna used in this product is **PCB antenna**. And the maximum Gain of this antenna is only **3.91 dBi**.