

FCC AND IC CERTIFICATION TEST REPORT FOR

Applicant : Turning Technologies, LLC

Address : 255 W. Federal Street Youngstown, OH 44503

Equipment under Test : 2.4GHz RF module

Model No. : RRDR-01

FCC ID : R4WRRDR01

IC : 5994A-RRDR01

Manufacturer : Globalscale Technologies, Inc.(shenzhen)

Address : 5F.No.2 Building, Minxing Industrial Park, Minkang Road,
Minzhi Street, Baoan District, Shenzhen, Guangdong, China

Issued By: Dongguan Dongdian Testing Service Co., Ltd.

Add: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City,
Guangdong Province, China, 523808

Tel: +86-0769-22891499 <http://www.dgddt.com>

REPORT

TABLE OF CONTENTS

	Test report declares.....	3
1.	Summary of test results	5
2.	General test information.....	6
2.1.	Description of EUT	6
2.2.	Accessories of EUT.....	6
2.3.	Assistant equipment used for test.....	6
2.4.	Block diagram of EUT configuration for test	6
2.5.	Test environment conditions	7
2.6.	Test laboratory.....	7
2.7.	Measurement uncertainty	7
3.	20dB Bandwidth and 99% Bandwidth.....	8
3.1.	Test equipment	8
3.2.	Block diagram of test setup	8
3.3.	Limits	8
3.4.	Test Procedure.....	8
3.5.	Test Result.....	9
3.6.	Original test data	9
4.	Power Line Conducted Emission	16
4.1.	Test equipment	16
4.2.	Block diagram of test setup	16
4.3.	Power Line Conducted Emission Limits(Class B).....	16
4.4.	Test Procedure.....	16
4.5.	Test Result.....	17
5.	Radiated emission	20
5.1.	Test equipment	20
5.2.	Block diagram of test setup	20
5.3.	Limit	21
5.4.	Test Procedure.....	22
5.5.	Test result	22
6.	Band Edge Compliance	49
6.1.	Test equipment	49
6.2.	Block diagram of test setup	49
6.3.	Limit	50
6.4.	Test Procedure.....	50
6.5.	Test result	50
7.	Antenna Requirements	60

7.1.	Limit	60
7.2.	Result.....	60
8.	Test setup photograph	61
9.	Photos of the EUT	63

TEST REPORT DECLARE

Applicant : Turning Technologies, LLC
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Equipment under Test : 2.4GHz RF module
Model No. : RRDR-01
FCC ID : R4WRRDR01
IC : 5994A-RRDR01
Manufacturer : Globalscale Technologies Inc
Address : 5F.No.2 Building, Minxing Industrial Park, Minkang Road, Minzhi Street, Baoan District, Shenzhen, Guangdong, China

Test Standard Used: FCC Rules and Regulations Part 15 Subpart C: 2012; RSS-210 Issue 8, December 2010; RSS-Gen Issue 4, December 2010

Test procedure used: ANSI C63.10:2013;

We Declare:

The equipment described above is tested by Dongguan Dongdian Testing Service Co., Ltd and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Dongguan Dongdian Testing Service Co., Ltd is assumed of full responsibility for the accuracy and completeness of these tests.

After test and evaluation, our opinion is that the equipment provided for test compliance with the requirement of the above FCC and IC standards.

Report No:	DDT-RFF140132		
Date of Test:	Mar.01,2015----Mar.02,2015	Date of Report:	Mar.06,2015

Prepared By:



Leo Liu/Engineer

Approved By:



Jamy Yu/EMC Manager

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Dongguan Dongdian Testing Service Co., Ltd.

1. Summary of test results

EMISSION		
Description of Test Item	Standard	Results
Power Line Conducted Emission	FCC Part 15C : 15.207 ANSI C63.10 :2013 ANSI C63.4 :2009 RSS-Gen Issue 4,	PASS
Radiated Emission	FCC Part 15C : 15.209 FCC Part 15C : 15.249 ANSI C63.10 :2013 ANSI C63.4 :2009 RSS-Gen Issue 4, RSS-210 Issue 8	PASS
Band Edge Compliance	FCC Part 15: 15.249 ANSI C63.10 :2013 ANSI C63.4 :2009 RSS-210 Issue 8	PASS
20dB and 99% Bandwidth	FCC Part 15: 15.215 ANSI C63.10 :2013 RSS-210 Issue 8	PASS

2. General test information

2.1. Description of EUT

EUT* Name	:	2.4GHz RF module
Model Number	:	RRDR-01
EUT function description	:	Please reference user manual of this device
Power supply	:	DC 5V from host
FCC ID	:	R4WRRDR01
IC	:	5994A-RRDR01
FCC Operation frequency	:	2401MHz -2482MHz
Modulation	:	GFSK
Antenna Type	:	“L” Shape integral PCB Antenna, Gain: 0dBi Note: This RF module have same two radiated antennas, but not transmit same time, uer can specify transmit antenna.
Date of Receipt	:	Aug.04,2014
Sample Type	:	Series production

Note: EUT is the ab. of equipment under test.

2.2. Accessories of EUT

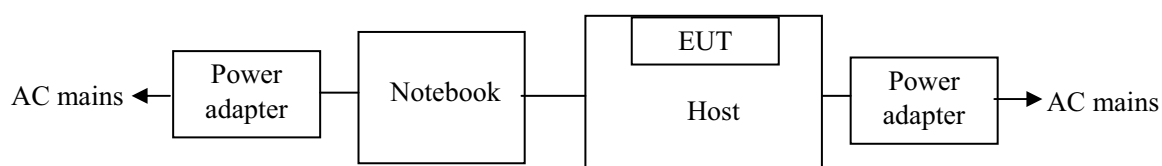
Description of Accessories	Manufacturer	Model number or Type	Other
/	/	/	/

2.3. Assistant equipment used for test

Description of Assistant equipment	Manufacturer	Model number or Type	Other
Notebook	DELL	LATITUDE / D610	AC ADAPTER MODEL NO.: LA65NS0-00
Typical Host	Globalscale Technologies Inc	RRAP-01	/
Power adapter	GME	GFP241-1220BX-1	/

2.4. Block diagram of EUT configuration for test

TX Mode:



This EUT is RF module and normal used to a specific Host (Turning/ RRAP-01), so all the tests were performed with host.

A special test firmware “putty_xp.exe” was installed in the notebook and which can exercise the EUT work in continues RF test mode at specified test channel as below:

Tested mode, channel, and data rate information		
Mode	Channel	Frequency (MHz)
Tx Mode	Low: CH1	2401
	Middle: CH41	2441
	High: CH82	2482

2.5. Test environment conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature range:	21-25℃
Humidity range:	40-75%
Pressure range:	86-106kPa

2.6. Test laboratory

Dongguan Dongdian Testing Service Co., Ltd

Add: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, China, 523808 Tel: +86-0769-22891499

FCC Registration Number: 270092 Industry Canada site registration number: 10288A

2.7. Measurement uncertainty

Test Item	Uncertainty
Uncertainty for Conduction emission test	2.40dB
Uncertainty for Radiation Emission test (150KHz-30MHz)	3.21dB
Uncertainty for Radiation Emission test (30MHz-1GHz)	2.78 dB (Polarize: V)
	3.20 dB (Polarize: H)
Uncertainty for Radiation Emission test (1GHz to 25GHz)	2.08dB(Polarize: V)
	2.56dB (Polarize: H)
Uncertainty for radio frequency	1×10-9
Uncertainty for conducted RF Power	0.65dB

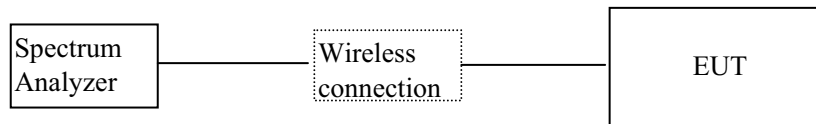
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3. 20dB Bandwidth and 99% Bandwidth

3.1. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum analyzer	R&S	FSU	1166.1660.26	2014/10/25	1Y

3.2. Block diagram of test setup



3.3. Limits

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in § 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

3.4. Test Procedure

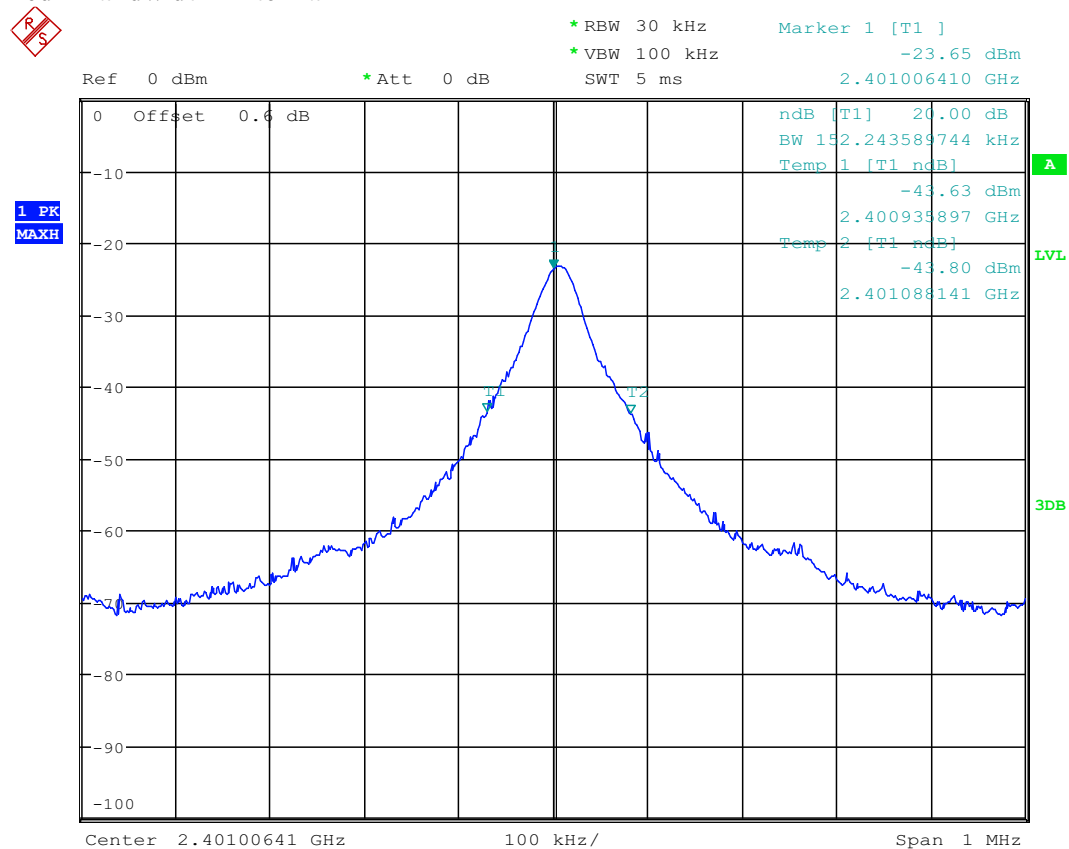
- (1) The EUT's RF signal was coupled to spectrum analyzer by a antenna connected to spectrum analyzer.
- (2) Configure EUT work in Tx mode as stated in clause 2.4.
- (3) The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 kHz RBW and 300kHz VBW. Measure out the 20dB bandwidth and 99% bandwidth with spectrum analyzer bandwidth measure function.

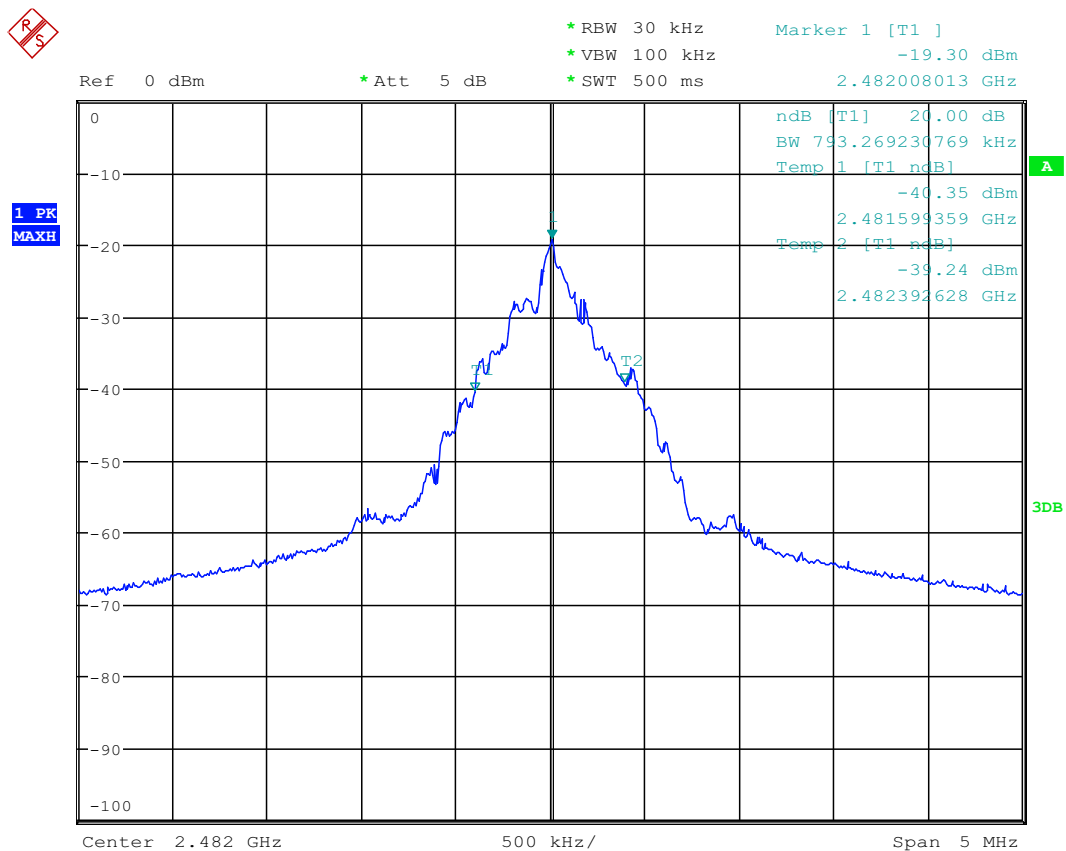
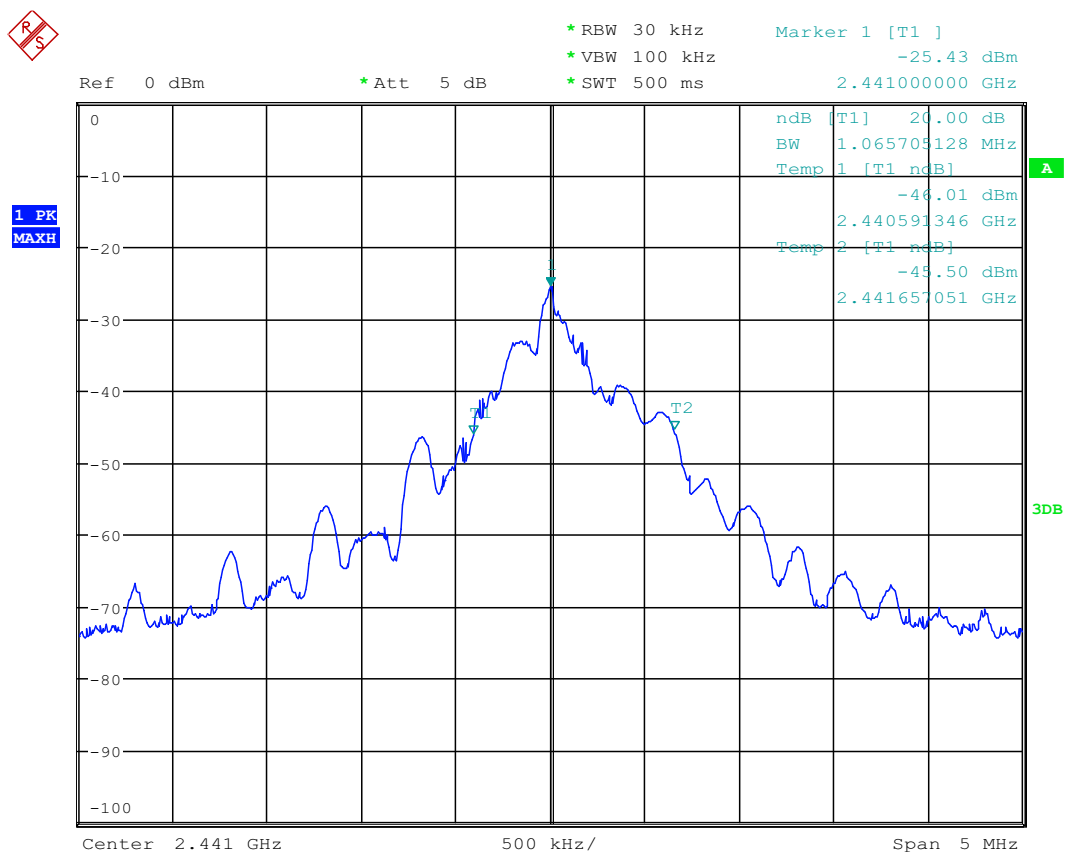
3.5. Test Result

EUT: 2.4GHz RF module M/N: RRDR-01					
Mode	Freq (MHz)	20dB bandwidth Result (MHz)	99% bandwidth Result (MHz)	Limit (MHz)	Conclusion
Tx Mode Antenna 1	2401	0.152	0.905	/	PASS
	2441	1.066	1.35	/	PASS
	2482	0.793	0.913	/	PASS
Tx Mode Antenna 2	2401	0.144	1.06	/	PASS
	2441	0.777	0.905	/	PASS
	2482	0.793	0.905	/	PASS
Test Date : Mar.01,2015				Test Engineer : Damon Hu	

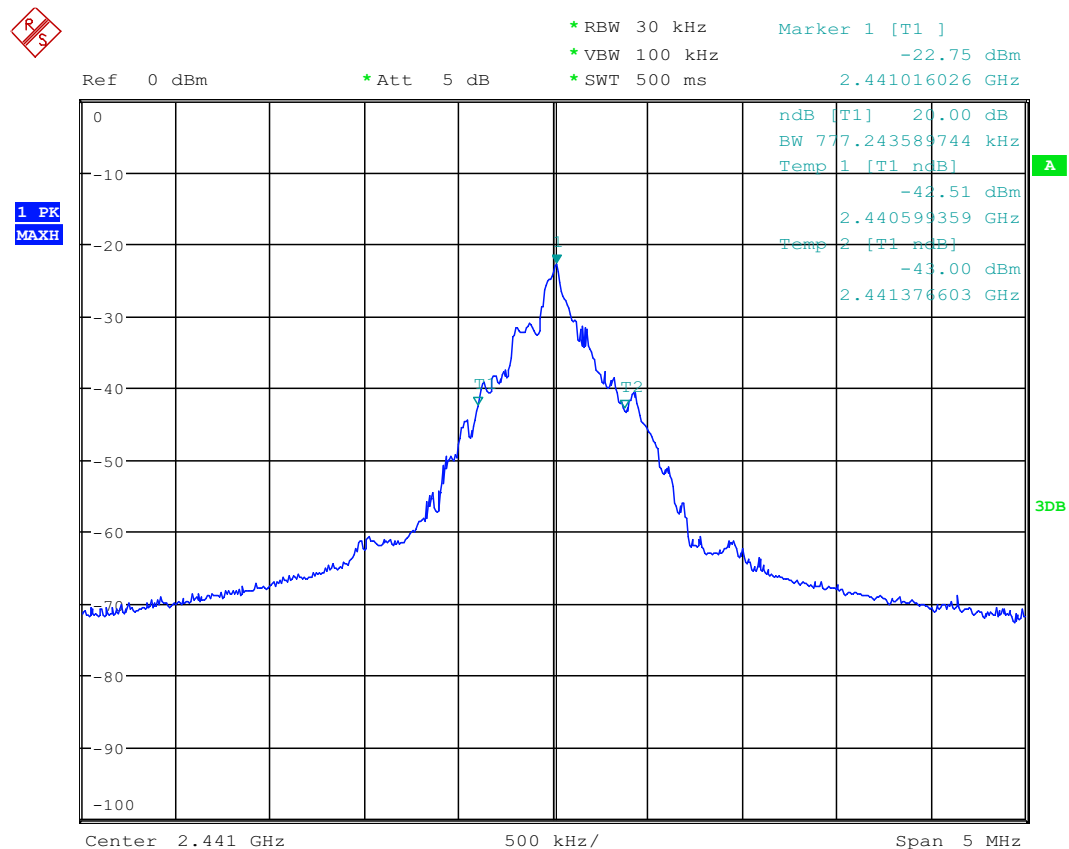
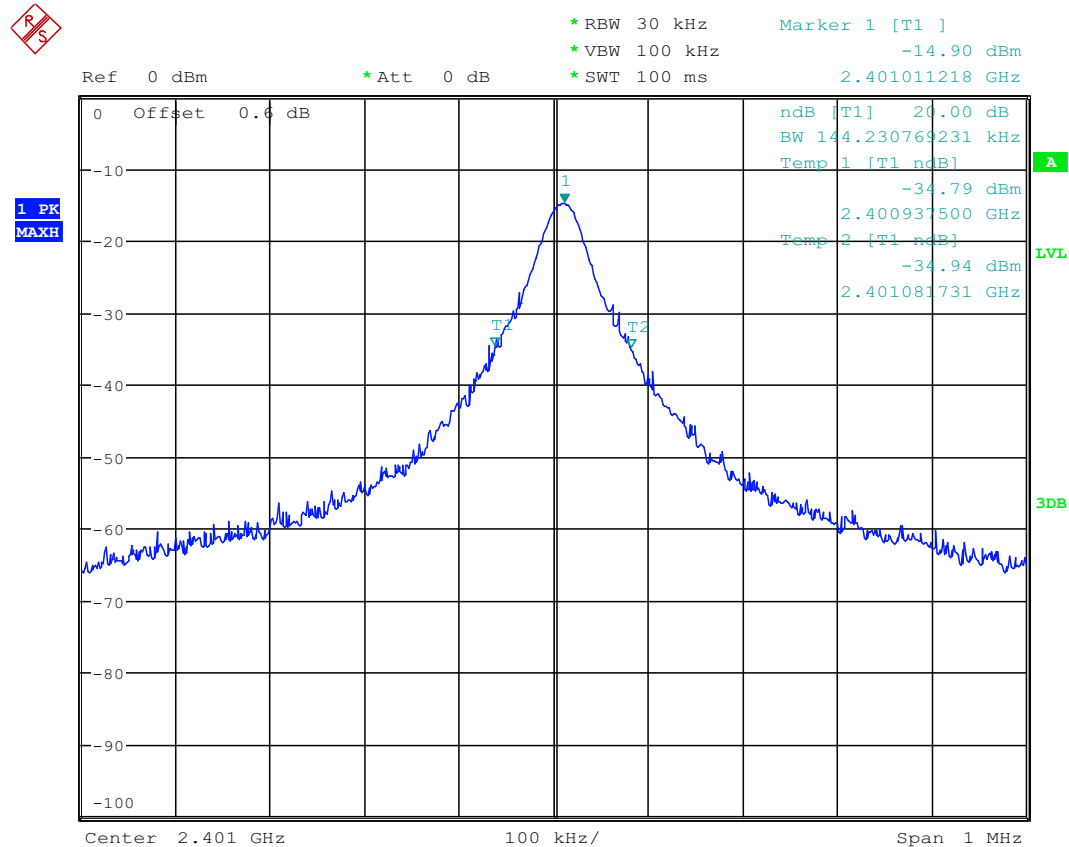
3.6. Original test data

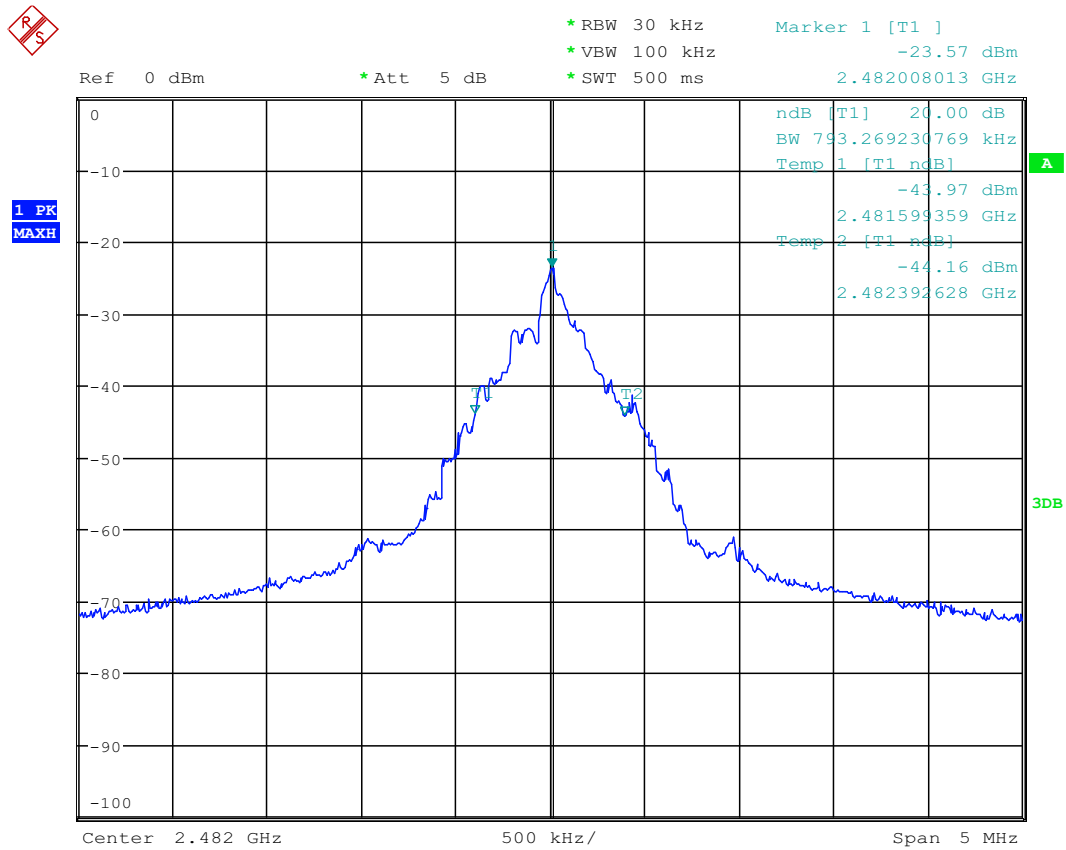
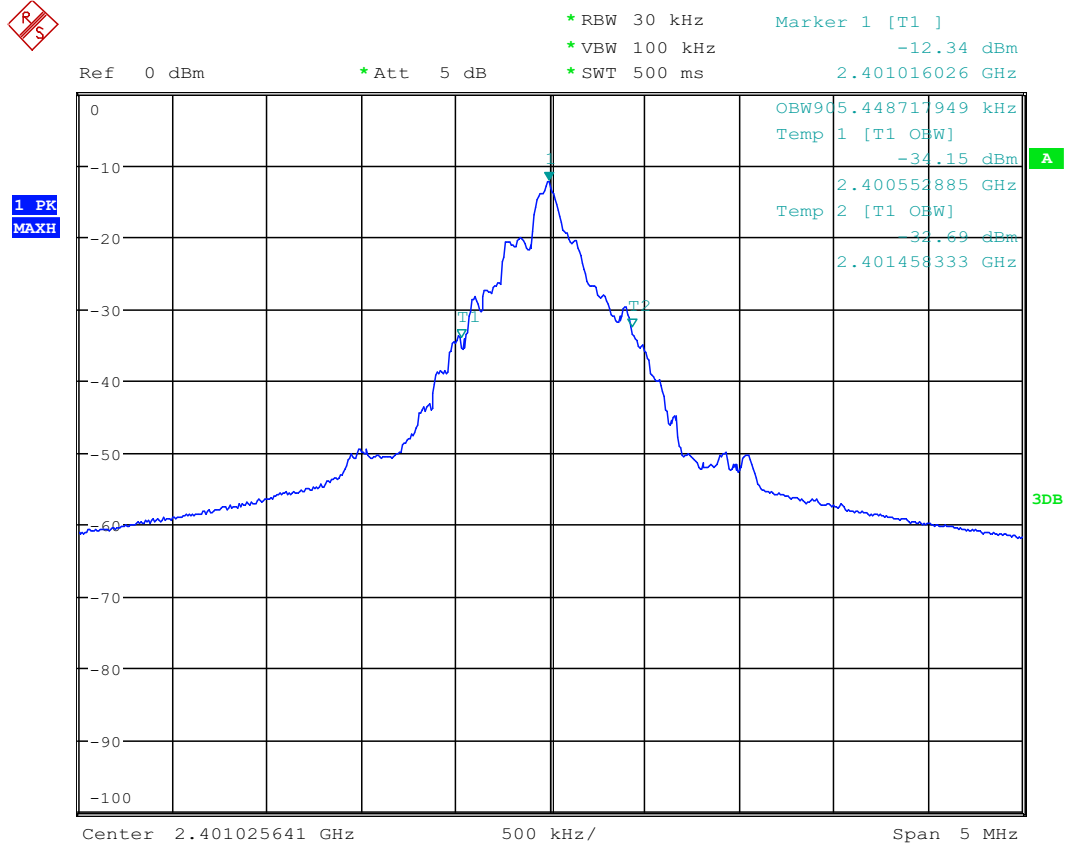
20dB Bandwidth Antenna 1

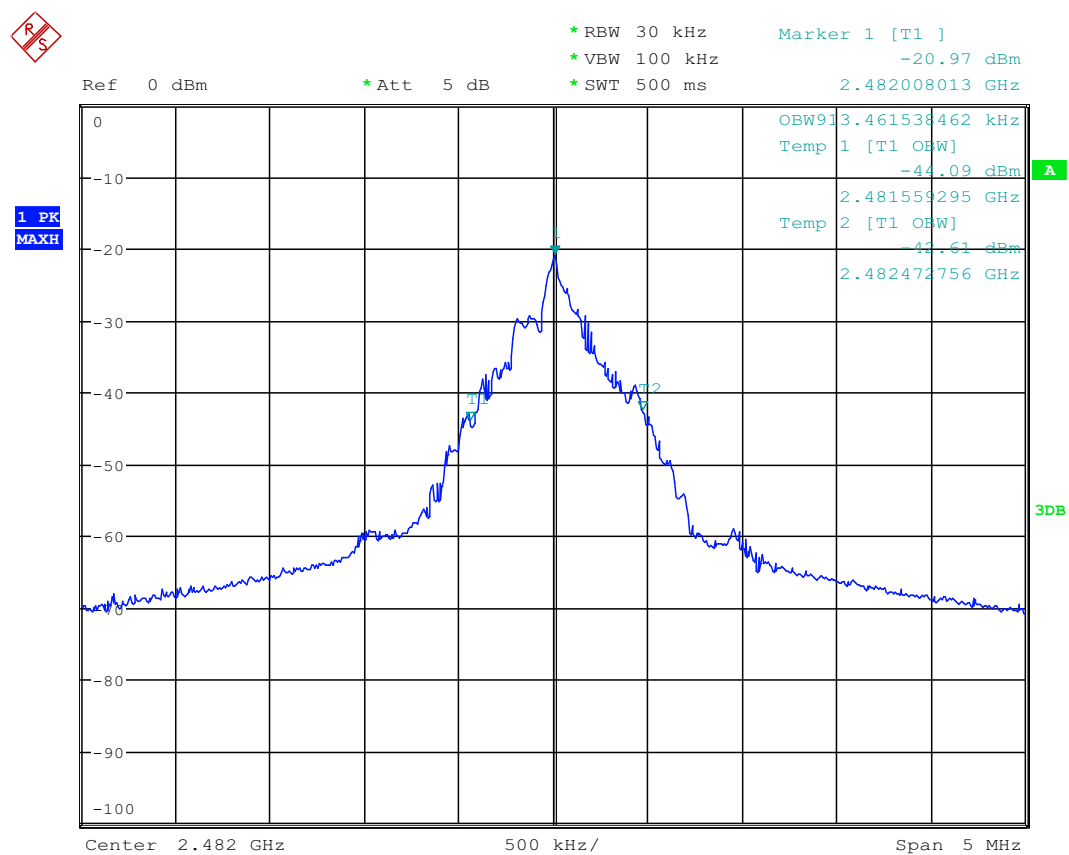
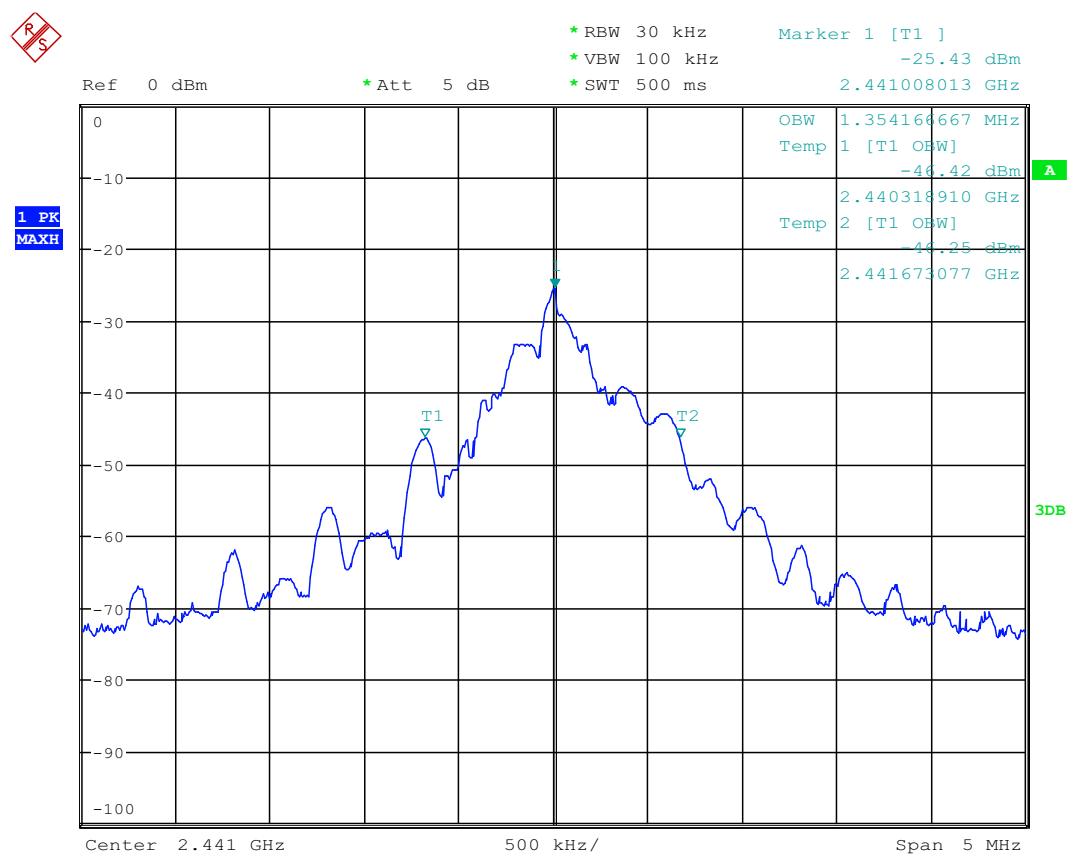




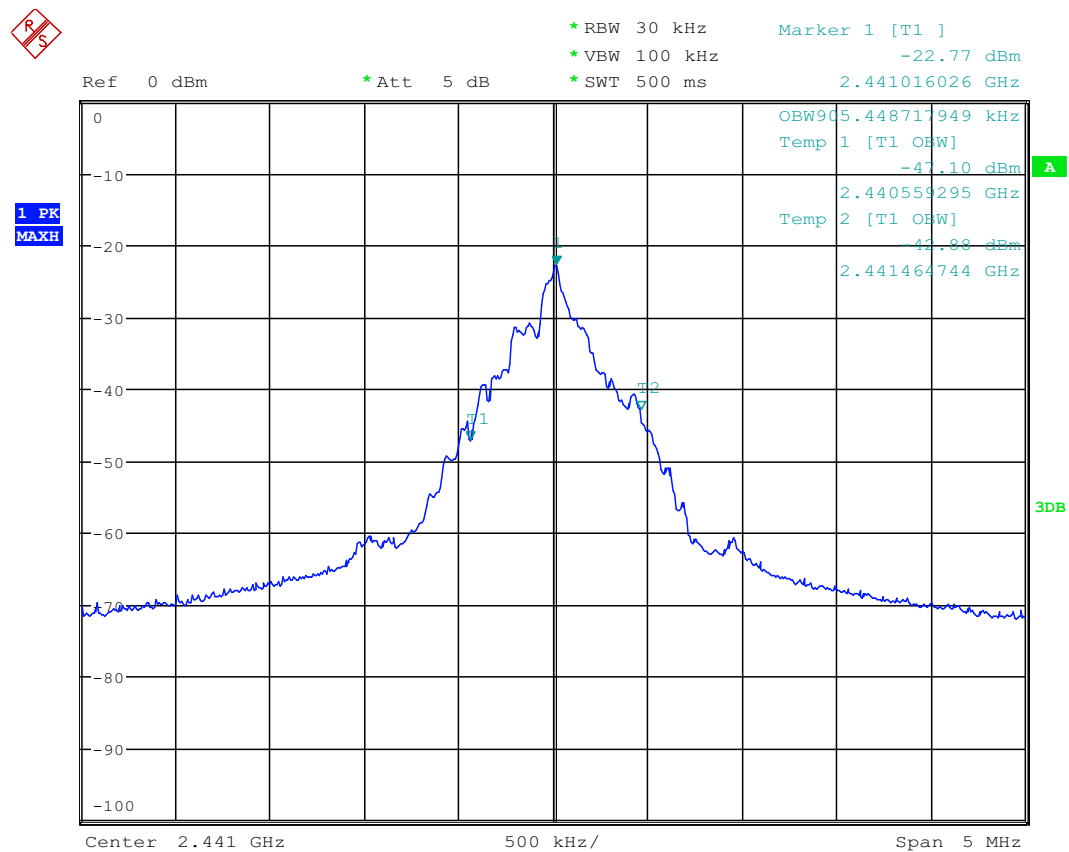
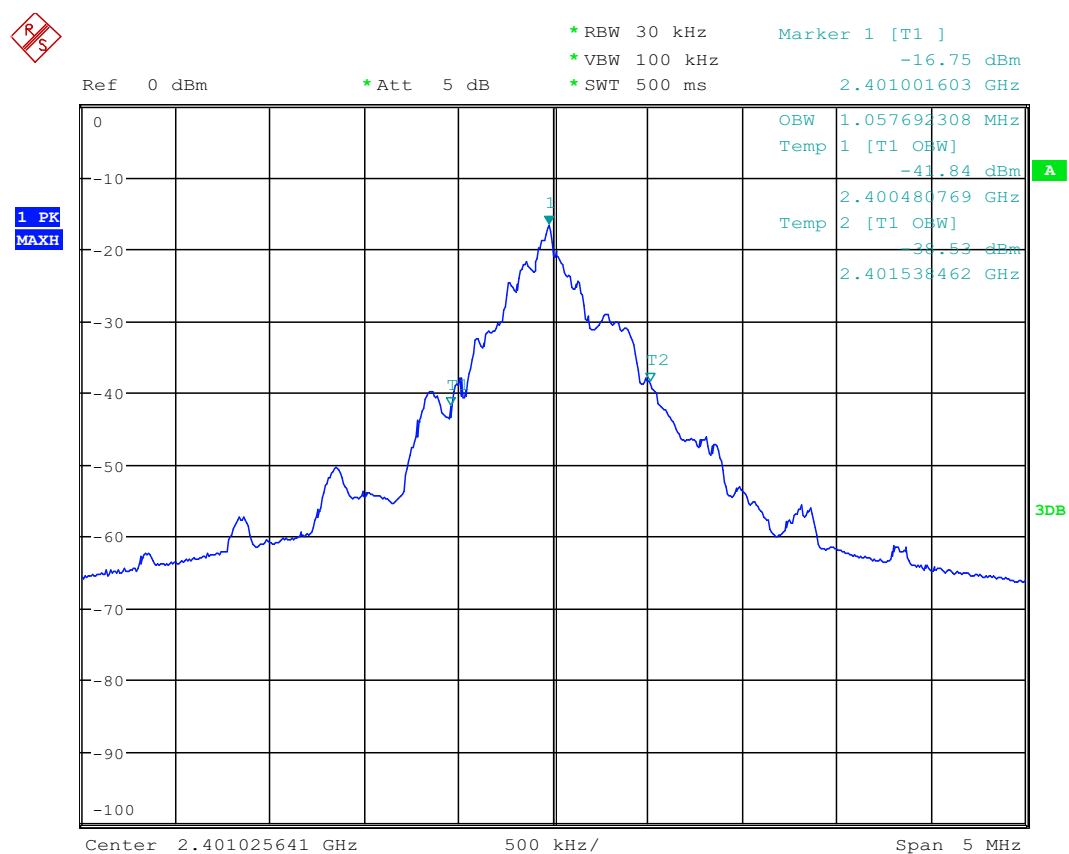
20dB Bandwidth Antenna 2

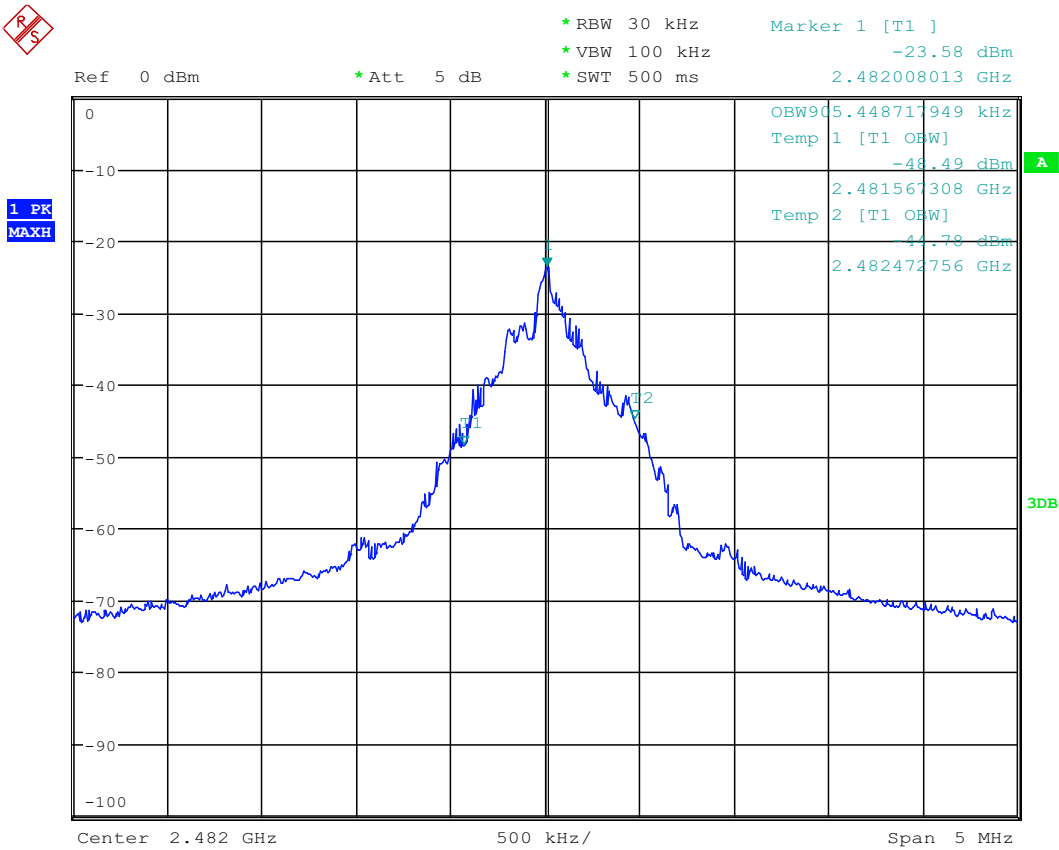


**99% Bandwidth Antenna 1**



99% Bandwidth Antenna 2



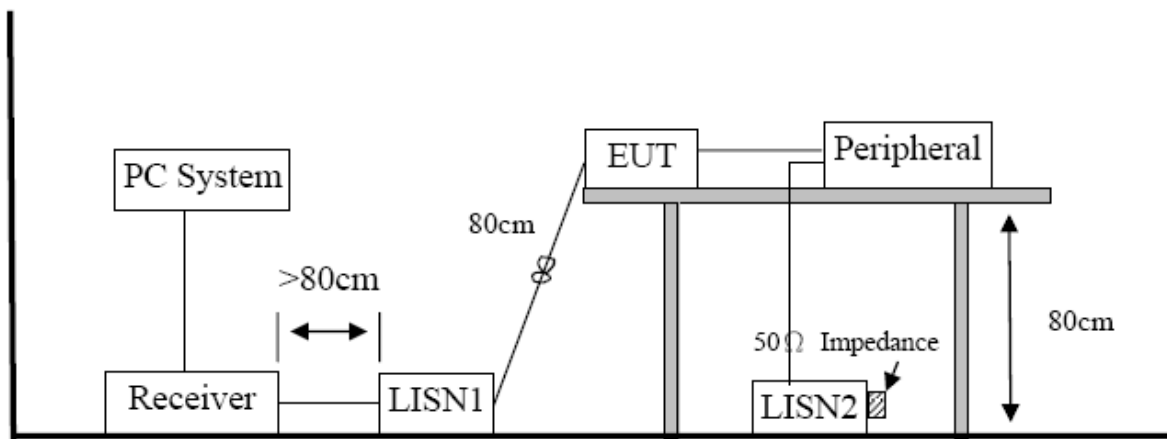


4. Power Line Conducted Emission

4.1. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Test Receiver	R&S	ESU8	100316	2014/10/25	1 Year
2	LISN 1	R&S	ENV216	101109	2014/10/25	1 Year
3	LISN 2	R&S	ESH2-Z5	100309	2014/10/25	1 Year
4	Pulse Limiter	R&S	ESH3-Z2	101242	2014/10/25	1 Year
5	Cable	HUBSER	RG214/U	534971	2014/10/25	1 Year

4.2. Block diagram of test setup



4.3. Power Line Conducted Emission Limits(Class B)

Frequency	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Note 1: * Decreasing linearly with logarithm of frequency.

Note 2: The lower limit shall apply at the transition frequencies.

4.4. Test Procedure

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80cm above the ground plane.

Configuration EUT to simulate typical usage as described in clause 2.4 and test equipment as described in clause 4.2 of this report.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.

All support equipment power received from a second LISN.

Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in clause 2.4 were scanned during the preliminary test.

After the preliminary scan, we found the test mode producing the highest emission level.

The EUT configuration and worse cable configuration of the above highest emission levels were recorded for reference of the final test.

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Neutral and Line, recording at least the six highest emissions.

Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.

The bandwidth of test receiver is set at 9 KHz.

4.5. Test Result

PASS. (See below detailed test result)

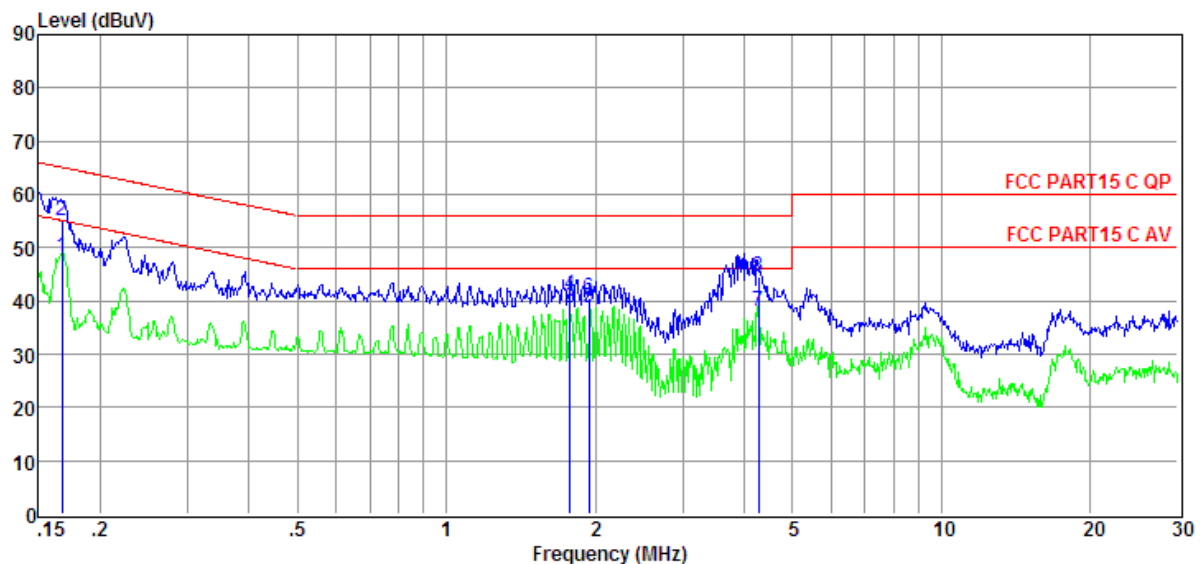
Note1: All emissions not reported below are too low against the prescribed limits.

Note2: “----” means average detection; “----” mans peak detection

TR-4-E-010 Conducted Emission Test Result

Test Site : DDT 1# Shield Room **E:\2015 report data\HJR\CE.EM6**
Test Date : 2015-03-01 **Tested By** : Damon
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : TX Mid Channe41: 2441MHz
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **LISN** : 2013 ENV216/LINE
Memo :

Data : 2



Item	Freq	Read Level	LISN Factor	Cable Loss	Pulse Limiter Factor	Result Level	Limit Line	Over Limit	Detector	Phase
(Mark)	(MHz)	(dBμV)	(dB)	(dB)	(dB)	(dBμV)	(dBμV)	(dB)		
1	0.17	28.80	9.61	0.01	9.84	48.26	55.08	-6.82	Average	LINE
2	0.17	35.67	9.61	0.01	9.84	55.13	65.08	-9.95	QP	LINE
3	1.78	18.96	9.63	0.06	9.86	38.51	46.00	-7.49	Average	LINE
4	1.78	21.70	9.63	0.06	9.86	41.25	56.00	-14.75	QP	LINE
5	1.94	19.14	9.63	0.07	9.86	38.70	46.00	-7.30	Average	LINE
6	1.94	20.94	9.63	0.07	9.86	40.50	56.00	-15.50	QP	LINE
7	4.27	18.30	9.67	0.10	9.87	37.94	46.00	-8.06	Average	LINE
8	4.27	24.92	9.67	0.10	9.87	44.56	56.00	-11.44	QP	LINE

Note: 1. Result Level = Read Level + LISN Factor + Pulse Limiter Factor + Cable loss.

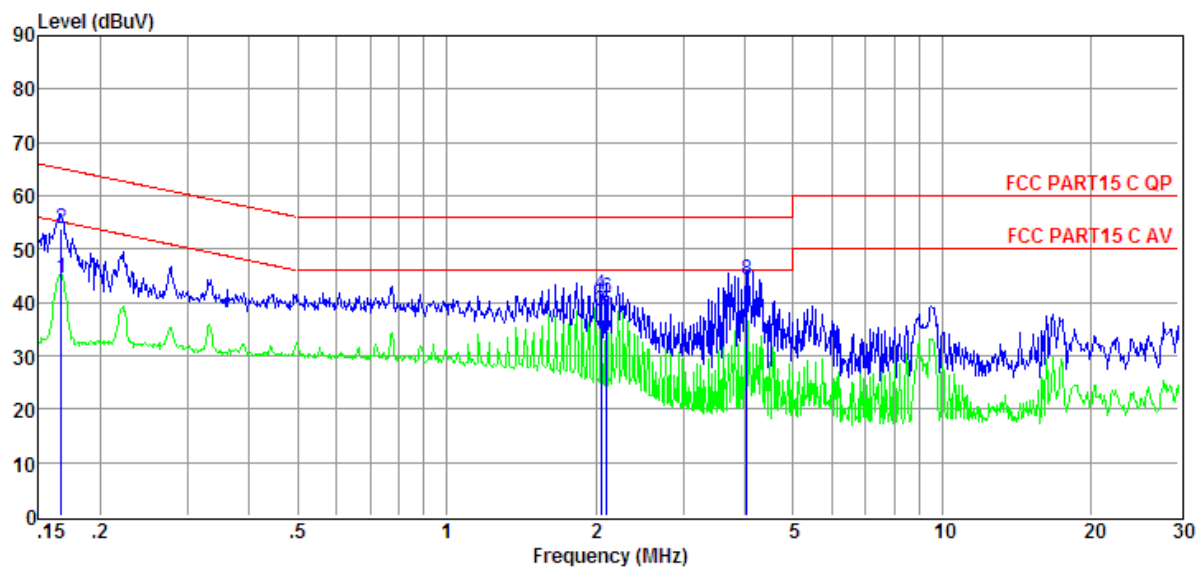
2. If QP Result comply with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 200Hz (9kHz—150kHz) , 9kHz (150kHz—30MHz), Step size: 4kHz, Scan time: auto.

TR-4-E-010 Conducted Emission Test Result

Test Site : DDT 1# Shield Room **E:\2015 report data\HJR\CE.EM6**
Test Date : 2015-03-01 **Tested By** : Damon
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : TX Mid Channel 41 2441MHz
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **LISN** : 2013 ENV216/NEUTRAL
Memo :

Data : 4



Item	Freq	Read Level	LISN Factor	Cable Loss	Pulse Limiter Factor	Result Level	Limit Line	Over Limit	Detector	Phase
(Mark)	(MHz)	(dBμV)	(dB)	(dB)	(dB)	(dBμV)	(dBμV)	(dB)		
1	0.17	25.17	9.60	0.01	9.84	44.62	55.12	-10.50	Average	NEUTRAL
2	0.17	34.22	9.60	0.01	9.84	53.67	65.12	-11.45	QP	NEUTRAL
3	2.05	18.79	9.61	0.07	9.86	38.33	46.00	-7.67	Average	NEUTRAL
4	2.05	22.05	9.61	0.07	9.86	41.59	56.00	-14.41	QP	NEUTRAL
5	2.11	18.79	9.61	0.07	9.86	38.33	46.00	-7.67	Average	NEUTRAL
6	2.11	21.24	9.61	0.07	9.86	40.78	56.00	-15.22	QP	NEUTRAL
7	4.04	16.54	9.62	0.10	9.87	36.13	46.00	-9.87	Average	NEUTRAL
8	4.04	24.64	9.62	0.10	9.87	44.23	56.00	-11.77	QP	NEUTRAL

Note: 1. Result Level = Read Level + LISN Factor + Pulse Limiter Factor + Cable loss.

2. If QP Result comply with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 200Hz (9kHz—150kHz) , 9kHz (150kHz—30MHz), Step size:4kHz, Scan time: auto.

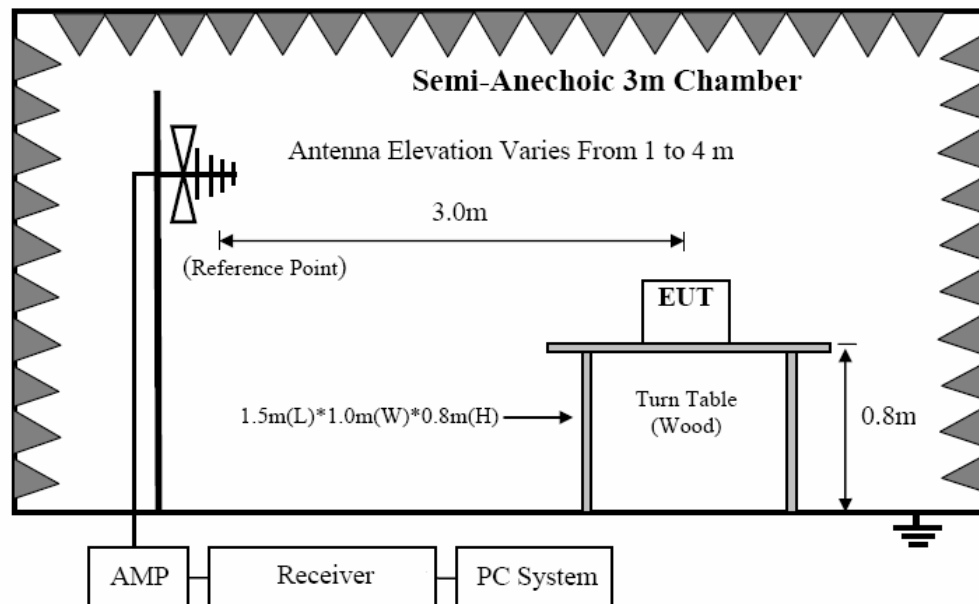
5. Radiated emission

5.1. Test equipment

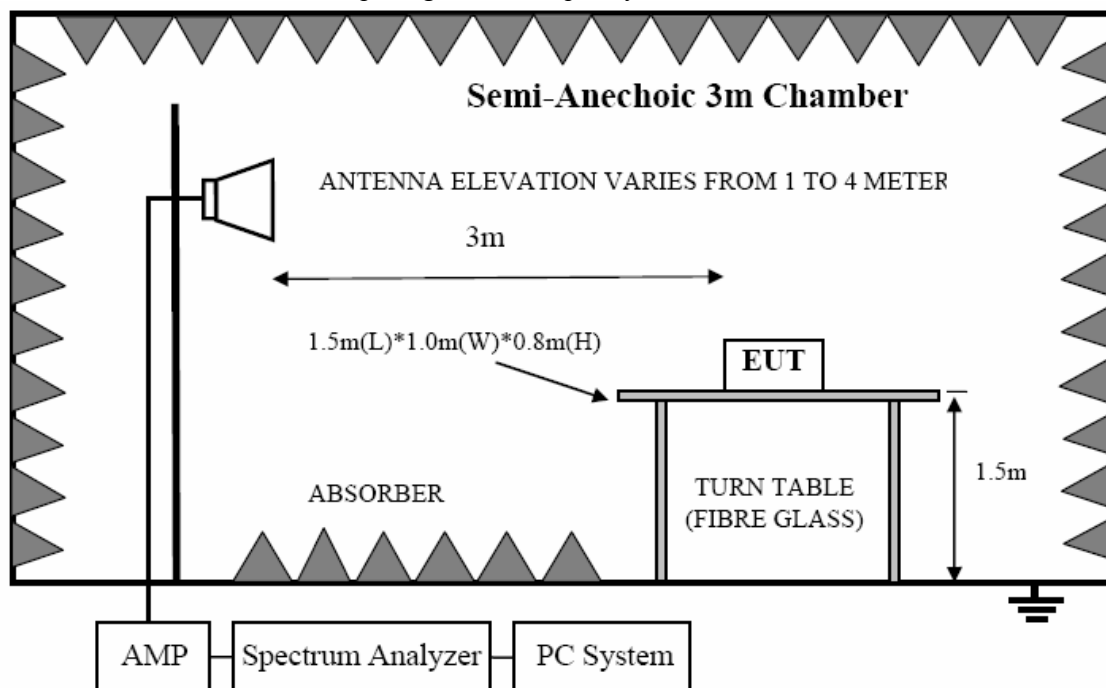
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	EMI Test Receiver	R&S	ESU8	100316	2014/10/25	1Y
2	Spectrum analyzer	R&S	FSU	1166.1660.26	2014/10/25	1Y
3	Loop antenna	TESEQ	HLA6120	20129	2014/10/25	1Y
4	Trilog Broadband Antenna	Schwarzbeck	VULB9163	9163-462	2014/10/25	1Y
5	Double Ridged Horn Antenna	R&S	HF907	100276	2014/10/25	1Y
6	Horn Antenna	EMCO	3116	00060095	2014/10/25	1Y
7	Pre-Amplifier	R&S	SCU-01	10049	2014/10/25	1Y
8	Pre-amplifier	A.H.	PAM0-0118	360	2014/10/25	1Y
9	Pre-amplifier	A.H.	PAM-1840VH	562	2014/10/25	1Y
10	RF Cable	R&S	R01	10403	2014/10/25	1Y
11	RF Cable	R&S	R02	10512	2014/10/25	1Y

5.2. Block diagram of test setup

In 3m Anechoic Chamber Test Setup Diagram for below 1GHz



In 3m Anechoic Chamber Test Setup Diagram for frequency above 1GHz



Note: For harmonic emissions test a appropriate high pass filter was inserted in the input port of AMP.

5.3. Limit

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V}/\text{m}$	$\text{dB}(\mu\text{V})/\text{m}$
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000MHz	3	74.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak) 54.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average)	
Field Strength of Fundamental emission for 2.4GHz-2.4835GHz	3	94.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average) 114.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak)	
Field Strength of Harmonics	3	74.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak) 54.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average)	

Remark : (1) Emission level $\text{dB}\mu\text{V} = 20 \log$ Emission level $\mu\text{V}/\text{m}$

- (2) The smaller limit shall apply at the cross point between two frequency bands.
- (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.
- (4) The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

5.4. Test Procedure

- (1) EUT was placed on a non-metallic table, 80 cm above the ground plane(for emissions below 1GHz) and 1.5m above the ground plane(for emissions above 1GHz) inside a semi-anechoic chamber.
- (2) Setup EUT and assistant system according clause 2.4 and 5.2
- (3) Test antenna was located 3m from the EUT on an adjustable mast. Below pre-scan procedure was first performed in order to find prominent radiated emissions.
 - (a) Change work frequency or channel of device if practicable.
 - (b) Change modulation type of device if practicable.
 - (c) Change power supply range from 85% to 115% of the rated supply voltage
 - (d) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions
- (4) Spectrum frequency from 9KHz to 25GHz (tenth harmonic of fundamental frequency) was investigated, and no any obvious emission were detected from 9KHz to 30MHz and 18GHz to 25GHz, so below final test was performed with frequency range from 30MHz to 18GHz.
- (5) For final emissions measurements at each frequency of interest, the EUT were rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.10 2009 on Radiated Emission test.
- (6) For emissions from 30MHz to 1GHz, Quasi-Peak values were measured with EMI Receiver and the bandwidth of Receiver is 120 KHz.
- (7) For emissions above 1GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1MHz, VBW is set at 3MHz for Peak measure; RBW is set at 1MHz, VBW is set at 10Hz for Average measure. Peak detector is used for both PK and AV test.
- (8) For fundamental frequency RBW=2MHz ;VBW=3MHz, Peak detector.
- (8) For emissions below 1GHz, according explorer test, when change Tx mode and channel, have no distinct influence on emissions level, so for emissions below 1GHz, the final test was only performed with EUT working in Tx 2441MHz mode.

5.5. Test result

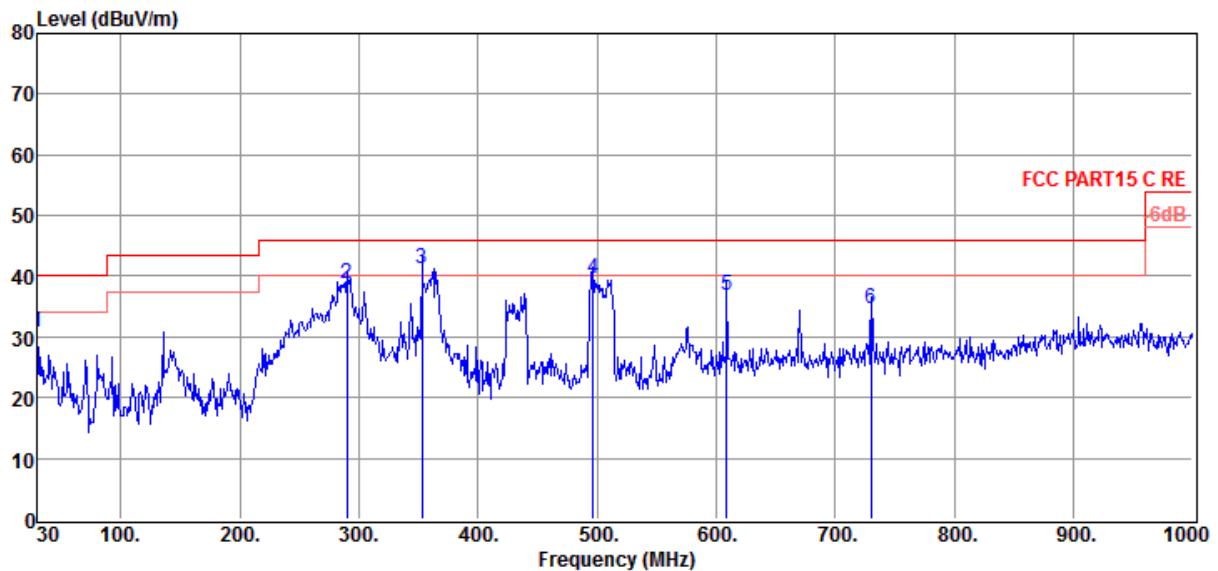
PASS. (See below detailed test result)

All the emissions except fundamental emission from 9 KHz to 25GHz were comply with 15.209 limit and RSS-210 A2.9 limit.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:\2015 Test Data\H\HJR\20140826RF.EM6**
Test Date : 2015-03-02 **Tested By** : Damon
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : TX Mid Channe41 2441MHz
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : VULB 9163 2014-05/3m/VERTICAL
Memo :

Data: 39



Item (Mark)	Freq (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	30.00	16.34	11.60	2.92	30.86	40.00	-9.14	QP	VERTICAL
2	289.96	19.16	14.70	4.94	38.80	46.00	-7.20	QP	VERTICAL
3	353.01	21.41	14.77	5.17	41.35	46.00	-4.65	QP	VERTICAL
4	496.57	17.77	16.00	5.80	39.57	46.00	-6.43	QP	VERTICAL
5	609.09	12.55	18.22	6.15	36.92	46.00	-9.08	QP	VERTICAL
6	730.34	9.14	19.02	6.51	34.67	46.00	-11.33	QP	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

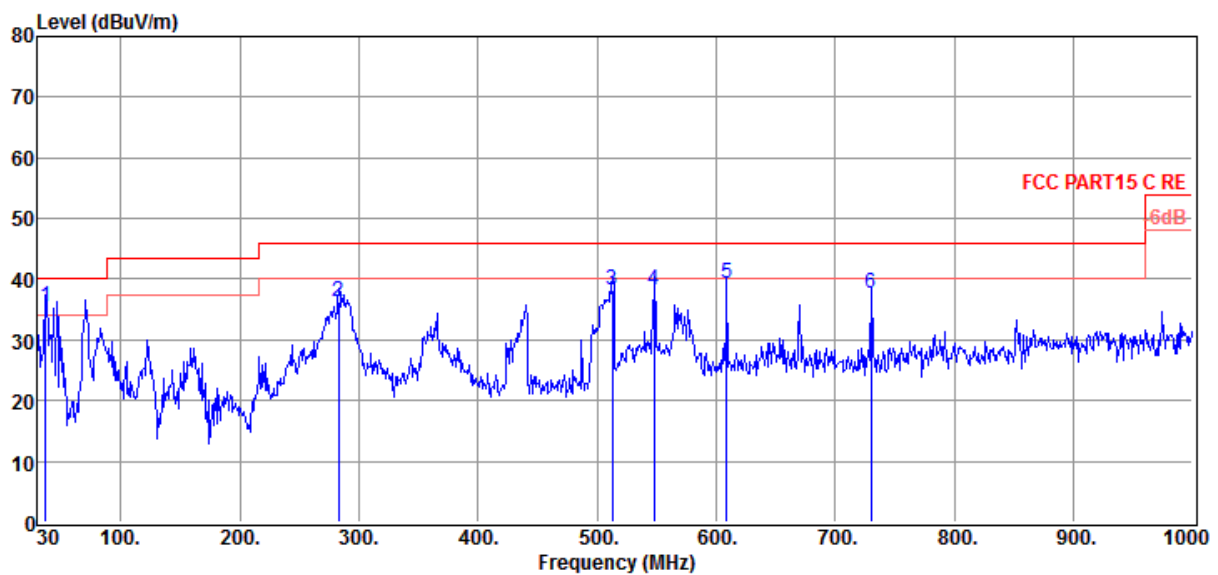
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:\2015 Test Data\H\HJR\20140826RF.EM6**
Test Date : 2015-03-02 **Tested By** : Damon
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : TX Mid Channel 41 2441MHz
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : VULB 9163 2014-05/3m/HORIZONTAL
Memo :

Data: 40



Item (Mark)	Freq (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	36.79	19.32	13.15	3.03	35.50	40.00	-4.50	QP	HORIZONTAL
2	283.17	18.24	13.25	4.90	36.39	46.00	-9.61	QP	HORIZONTAL
3	513.06	16.27	16.18	5.86	38.31	46.00	-7.69	QP	HORIZONTAL
4	547.98	15.36	16.99	5.96	38.31	46.00	-7.69	QP	HORIZONTAL
5	609.09	15.06	18.22	6.15	39.43	46.00	-6.57	QP	HORIZONTAL
6	730.34	12.02	19.02	6.51	37.55	46.00	-8.45	QP	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

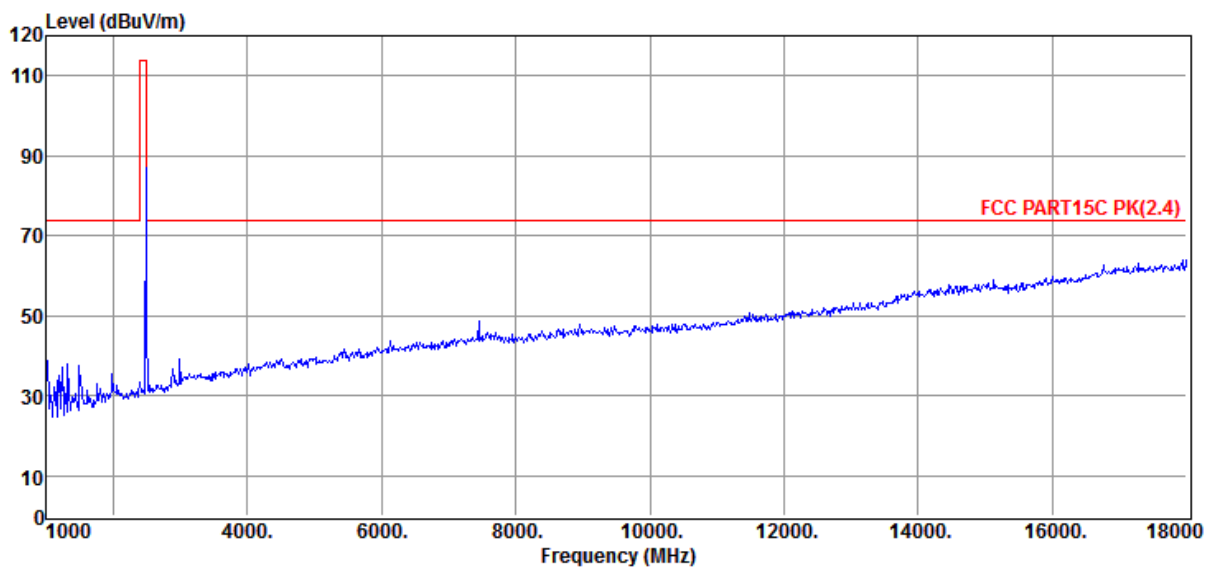
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:\2015 Test Data\H\HJR\20140826RF.EM6**
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 82 Antenna 1
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/VERTICAL
Memo :

Data: 7



Item	Freq	Read Level	Antenna Factor	PRM Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector	Polarization
(Mark)	(MHz)	(dBμV)	(dB/m)	dB	dB	(dBμV/m)	(dBμV/m)	(dB)		

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

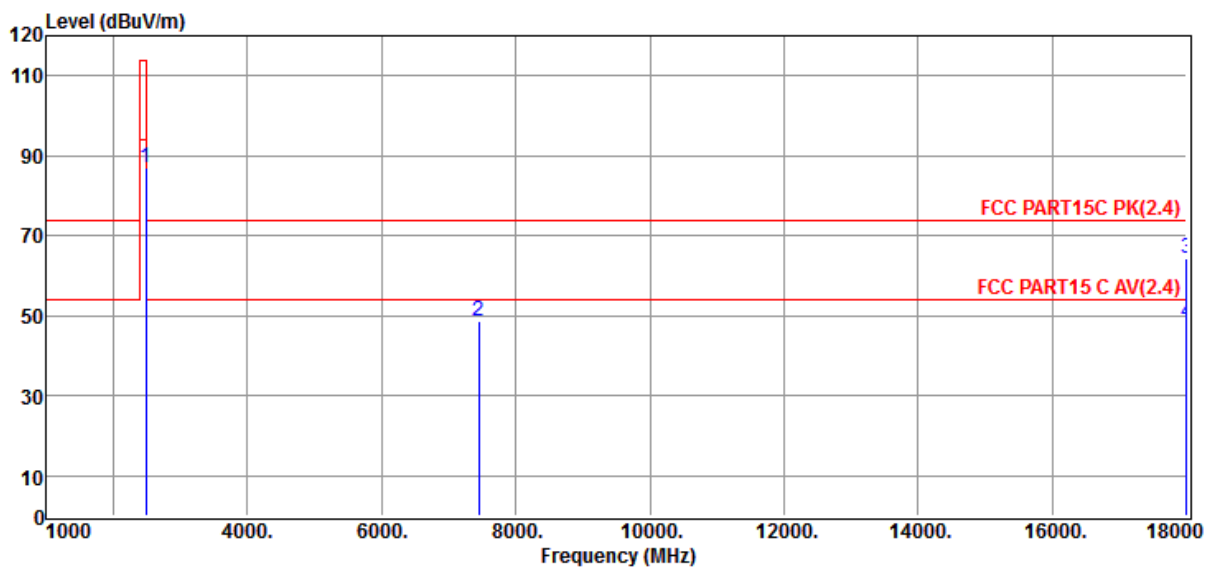
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:** \2015 Test Data\H\HJR\20140826RF.EM6
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 82 Antenna 1
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/VERTICAL
Memo :

Data: 8



Item (Mark)	Freq (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	2482.00	92.69	29.18	43.50	8.50	86.87	114.00	-27.13	Peak	VERTICAL
2	7446.00	40.41	35.84	43.07	15.60	48.78	74.00	-25.22	Peak	VERTICAL
3	18000.00	36.21	44.39	41.87	25.70	64.43	74.00	-9.57	Peak	VERTICAL
4	18000.00	20.14	44.39	41.87	25.70	48.36	54.00	-5.64	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

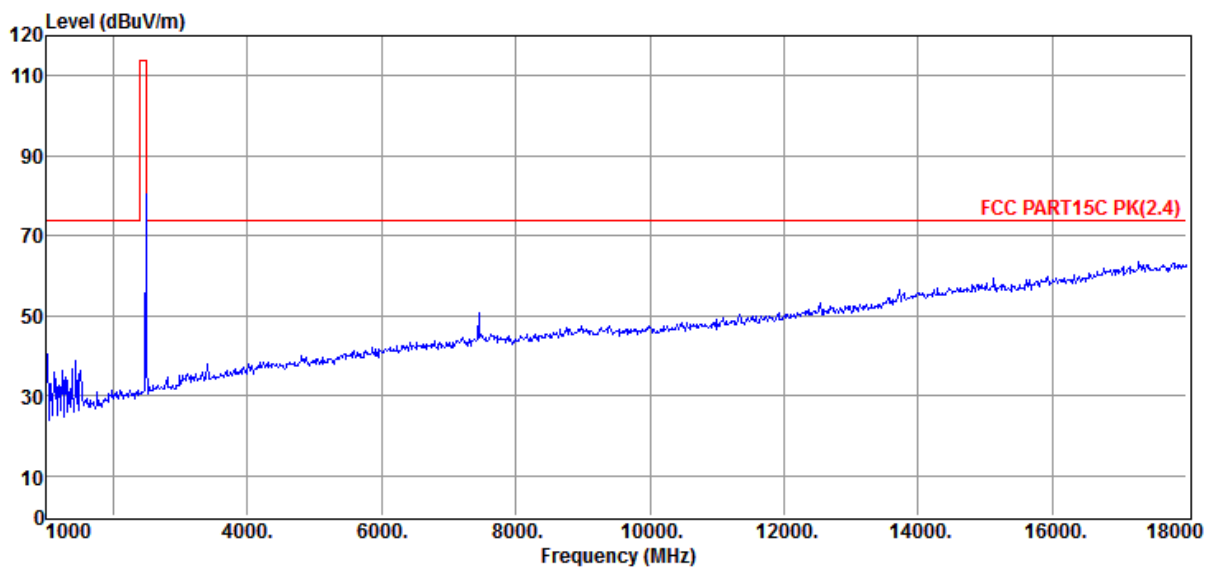
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:\2015 Test Data\H\HJR\20140826RF.EM6**
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 82 Antenna 1
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/HORIZONTAL
Memo :

Data: 9



Item	Freq	Read Level	Antenna Factor	PRM Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector	Polarization
(Mark)	(MHz)	(dBμV)	(dB/m)	dB	dB	(dBμV/m)	(dBμV/m)	(dB)		

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

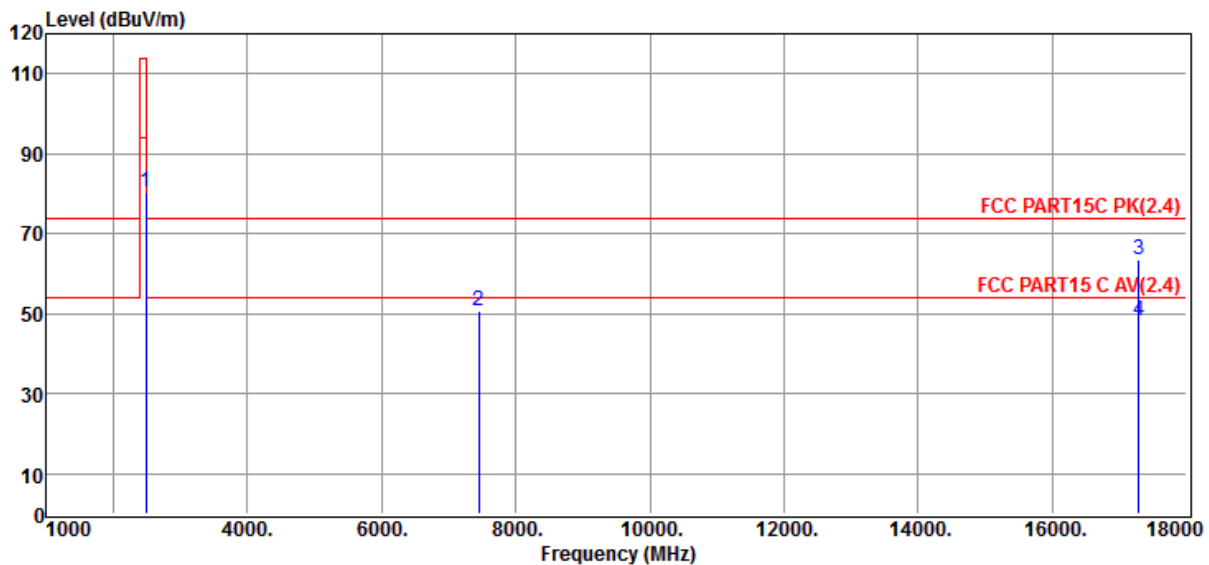
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:** \2015 Test Data\H\HJR\20140826RF.EM6
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 82 Antenna 1
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/HORIZONTAL
Memo :

Data: 10



Item (Mark)	Freq (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	2482.00	86.28	29.18	43.50	8.50	80.46	114.00	-33.54	Peak	HORIZONTAL
2	7446.00	42.45	35.84	43.07	15.60	50.82	74.00	-23.18	Peak	HORIZONTAL
3	17286.00	36.13	42.98	41.00	25.33	63.44	74.00	-10.56	Peak	HORIZONTAL
4	17286.00	21.03	42.98	41.00	25.33	48.34	54.00	-5.66	Average	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

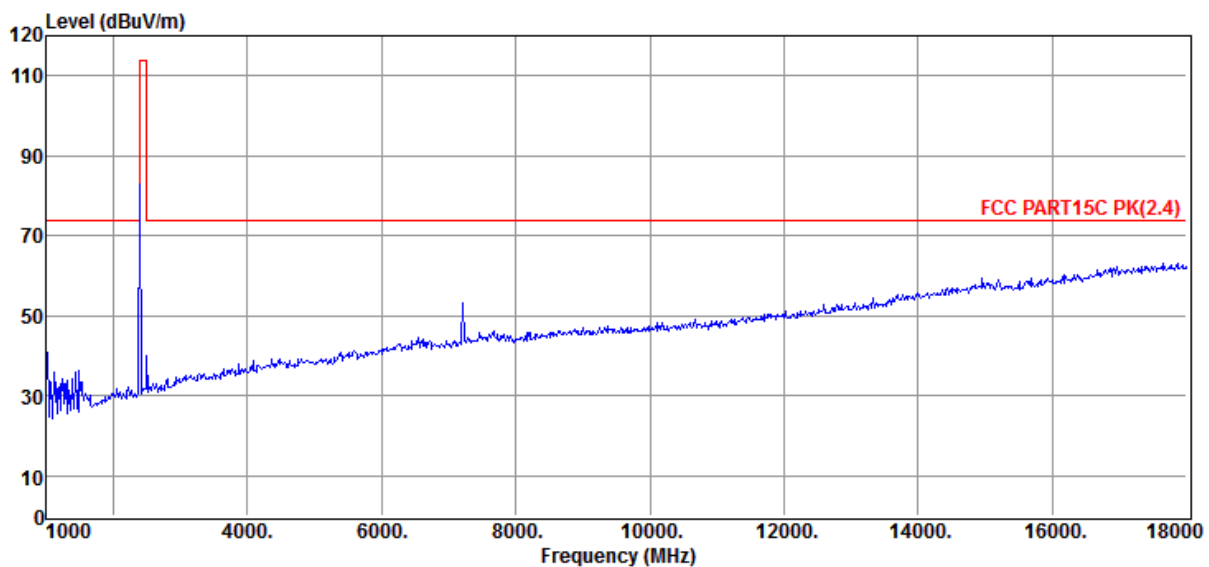
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:\2015 Test Data\H\HJR\20140826RF.EM6**
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 01 Antenna 1
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/HORIZONTAL
Memo :

Data: 11



Item	Freq	Read Level	Antenna Factor	PRM Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector	Polarization
(Mark)	(MHz)	(dBμV)	(dB/m)	dB	dB	(dBμV/m)	(dBμV/m)	(dB)		

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

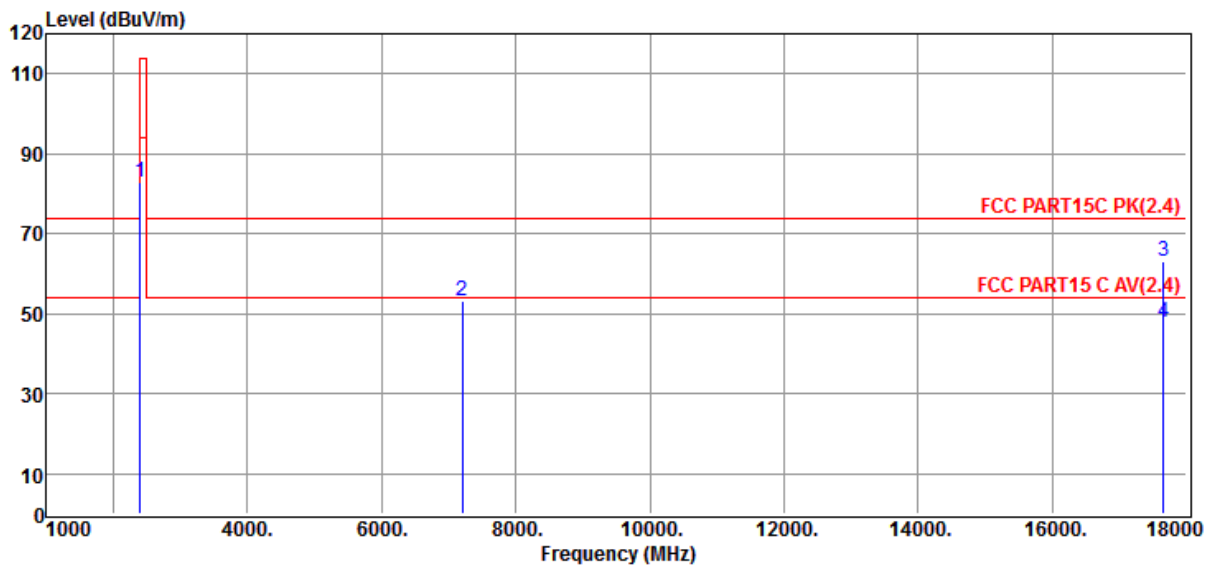
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:\2015 Test Data\H\HJR\20140826RF.EM6**
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 01 Antenna 1
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/HORIZONTAL
Memo :

Data: 12



Item (Mark)	Freq (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2401.00	89.38	28.93	43.49	8.35	83.17	114.00	-30.83	Peak	HORIZONTAL
2	7206.00	46.32	35.72	43.62	15.18	53.6	74.00	-20.40	Peak	HORIZONTAL
3	17660.00	36.16	43.51	41.07	25.2	63.8	74.00	-10.20	Peak	HORIZONTAL
4	17660.00	21.45	43.51	41.07	25.2	49.09	54.00	-4.91	Average	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

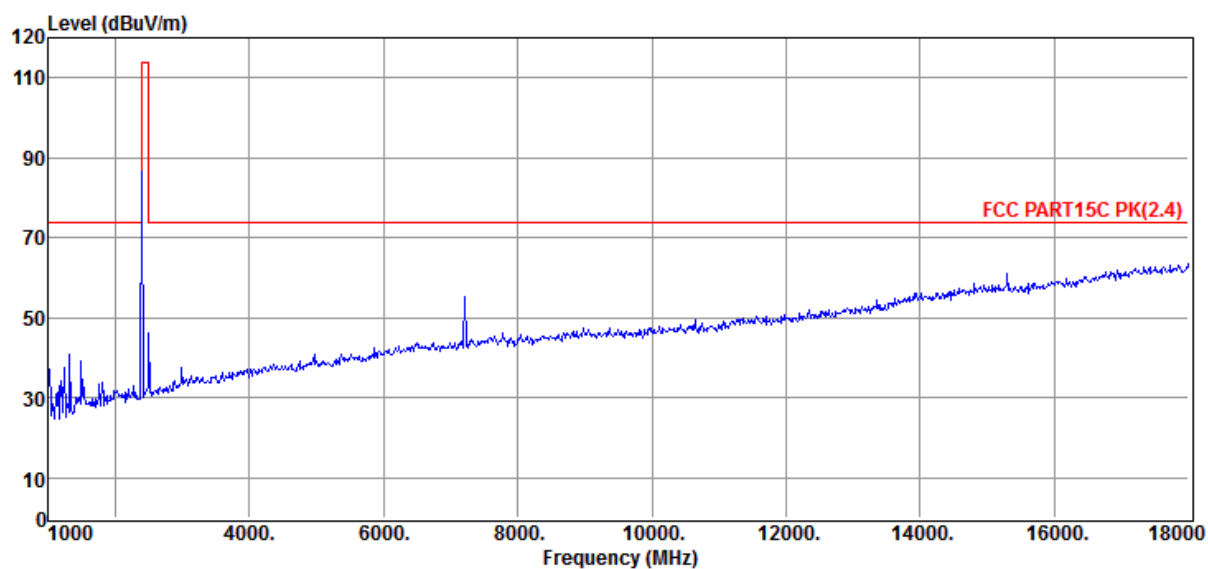
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:\2015 Test Data\H\HJR\20140826RF.EM6**
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 01 Antenna 1
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/VERTICAL
Memo :

Data: 13



Item	Freq	Read Level	Antenna Factor	PRM Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector	Polarization
(Mark)	(MHz)	(dBμV)	(dB/m)	dB	dB	(dBμV/m)	(dBμV/m)	(dB)		

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

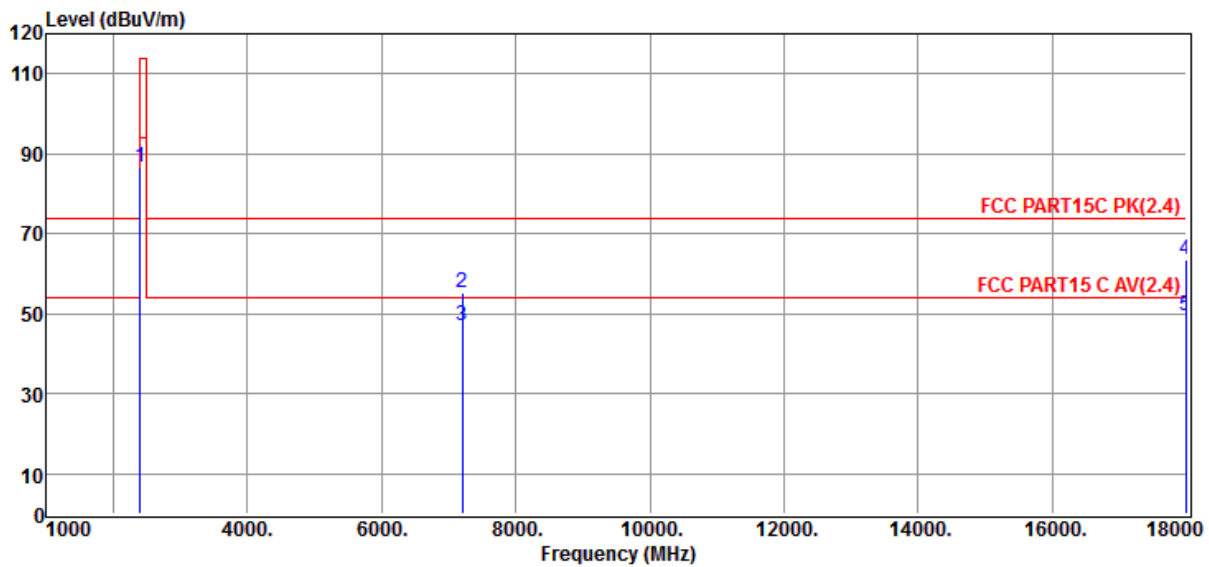
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:** \2015 Test Data\H\HJR\20140826RF.EM6
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 01 Antenna 1
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/VERTICAL
Memo :

Data: 14



Item (Mark)	Freq (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	2401.00	91.68	28.93	43.48	8.35	85.48	114.00	-28.52	Peak	VERTICAL
2	7206.00	48.45	35.72	43.62	15.18	55.73	74.00	-18.27	Peak	VERTICAL
3	7206.00	39.89	35.72	43.62	15.18	47.17	54.00	-6.83	Average	VERTICAL
4	17983.00	35.9	44.33	41.80	25.70	64.13	74.00	-9.87	Peak	VERTICAL
5	17983.00	20.45	44.33	41.80	25.70	48.68	54.00	-5.32	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

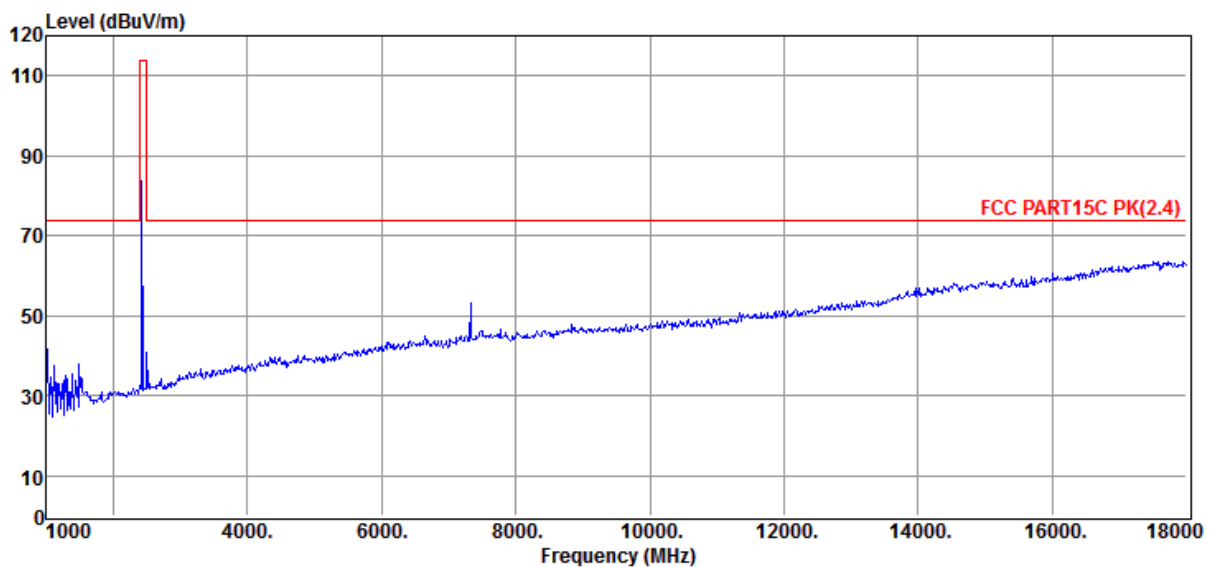
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:\2015 Test Data\H\HJR\20140826RF.EM6**
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 41 Antenna 1
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/HORIZONTAL
Memo :

Data: 17



Item	Freq	Read Level	Antenna Factor	PRM Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector	Polarization
(Mark)	(MHz)	(dBμV)	(dB/m)	dB	dB	(dBμV/m)	(dBμV/m)	(dB)		

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

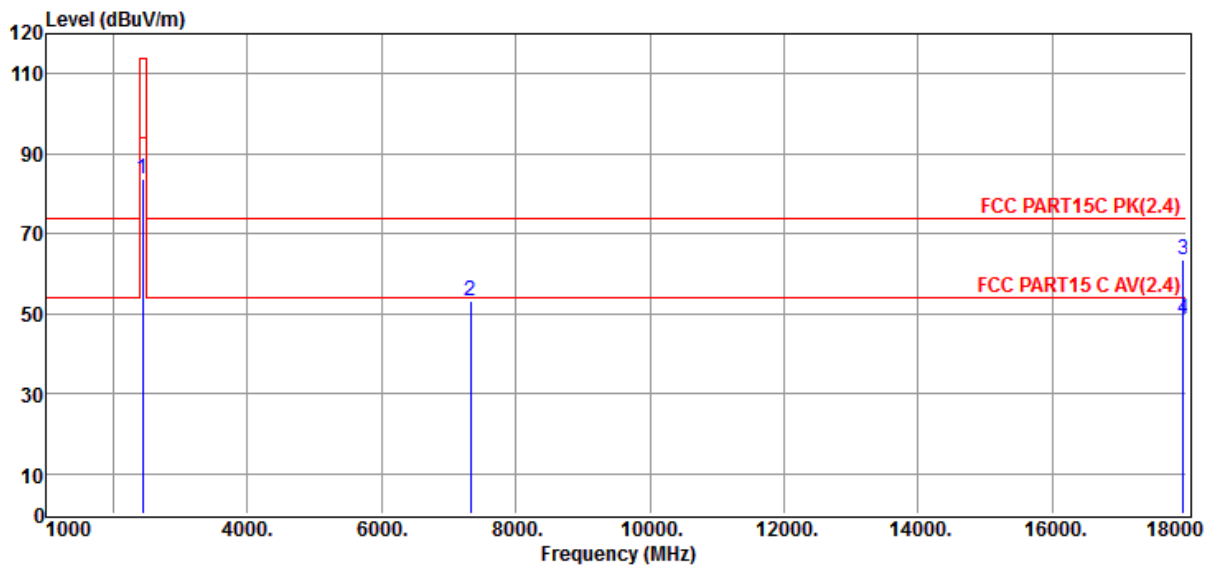
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:** \2015 Test Data\H\HJR\20140826RF.EM6
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 41 Antenna 1
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/HORIZONTAL
Memo :

Data: 18



Item (Mark)	Freq (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	2441.00	89.70	29.03	43.49	8.40	83.64	114.00	-30.36	Peak	HORIZONTAL
2	7323.00	45.72	35.63	43.32	15.32	53.35	74.00	-20.65	Peak	HORIZONTAL
3	17949.00	35.30	44.21	41.72	25.70	63.49	74.00	-10.51	Peak	HORIZONTAL
4	17949.00	20.65	44.21	41.72	25.70	48.84	54.00	-5.16	Average	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

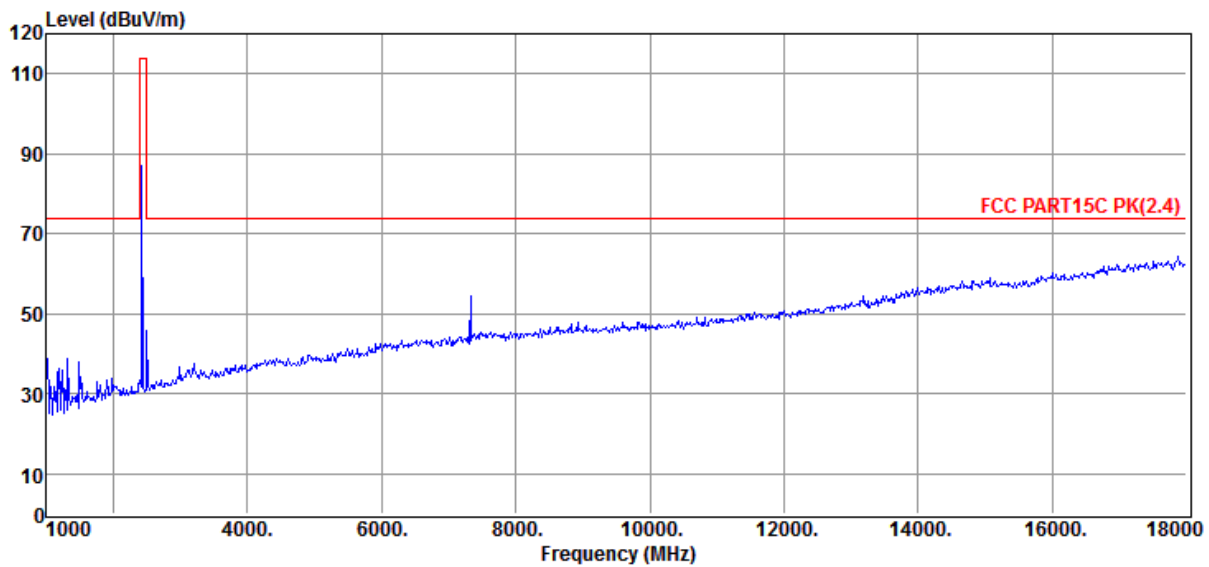
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:\2015 Test Data\H\HJR\20140826RF.EM6**
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 41 Antenna 1
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/VERTICAL
Memo :

Data: 19



Item	Freq	Read Level	Antenna Factor	PRM Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector	Polarization
(Mark)	(MHz)	(dBμV)	(dB/m)	dB	dB	(dBμV/m)	(dBμV/m)	(dB)		

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

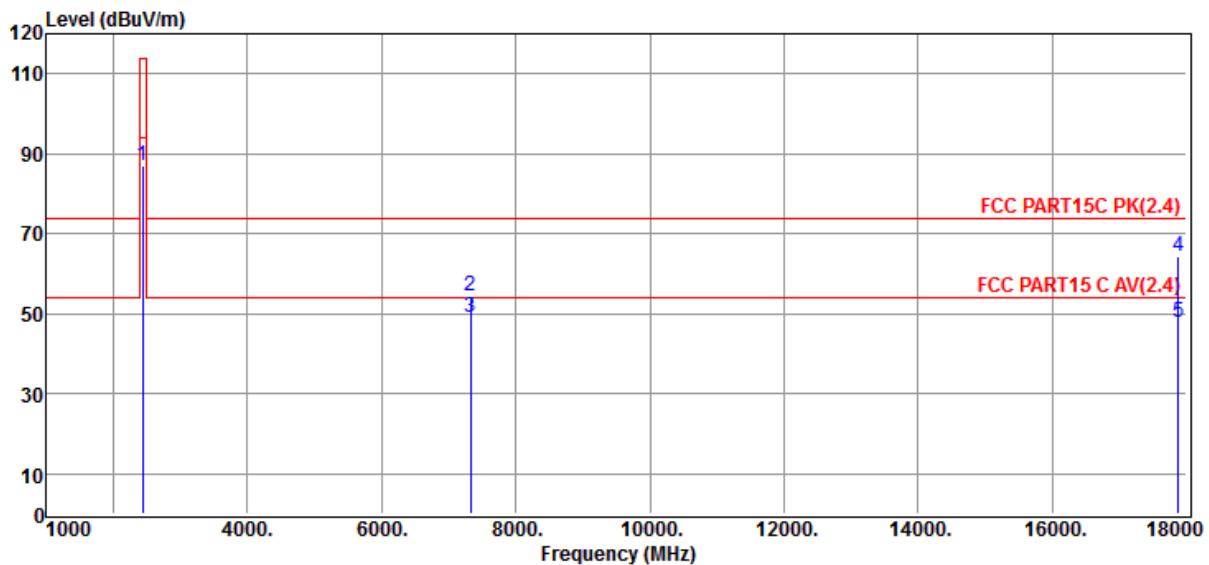
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:** \2015 Test Data\H\HJR\20140826RF.EM6
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 41 Antenna 1
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/VERTICAL
Memo :

Data: 20



Item (Mark)	Freq (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	2441.00	93.10	29.03	43.49	8.40	87.04	114.00	-26.96	Peak	VERTICAL
2	7323.00	46.71	35.63	43.32	15.32	54.34	74.00	-19.66	Peak	VERTICAL
3	7323.00	41.56	35.63	43.32	15.32	49.19	54.00	-4.81	Average	VERTICAL
4	17881.00	36.59	43.97	41.63	25.45	64.38	74.00	-9.62	Peak	VERTICAL
5	17881.00	20.14	43.97	41.63	25.45	47.93	54.00	-6.07	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

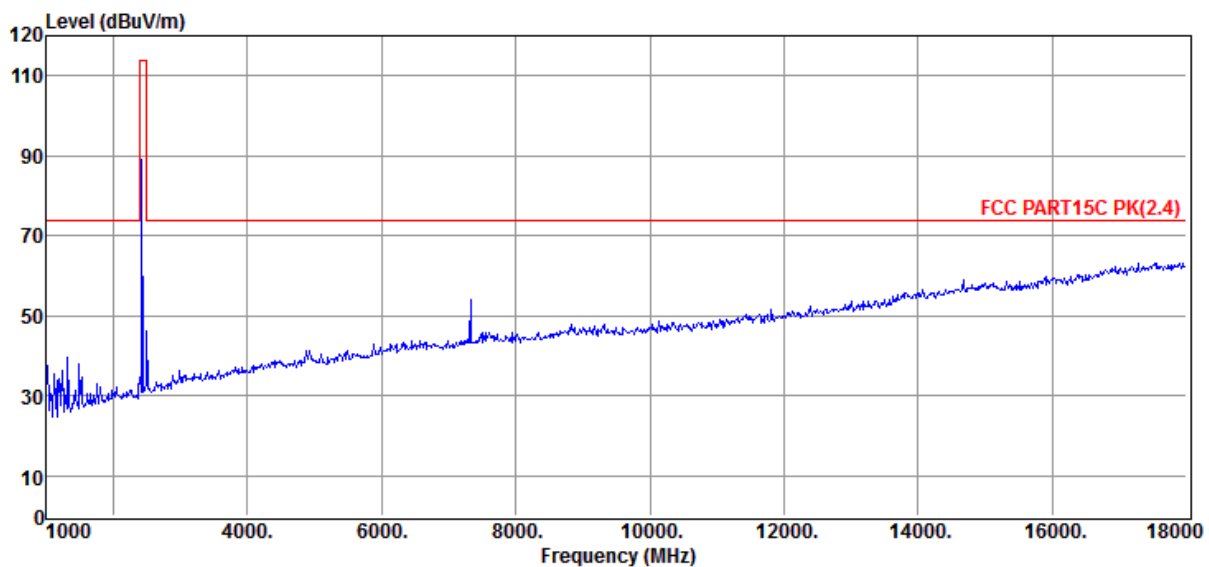
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:\2015 Test Data\H\HJR\20140826RF.EM6**
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 41 Antenna 2
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/VERTICAL
Memo :

Data: 21



Item	Freq	Read Level	Antenna Factor	PRM Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector	Polarization
(Mark)	(MHz)	(dBμV)	(dB/m)	dB	dB	(dBμV/m)	(dBμV/m)	(dB)		

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

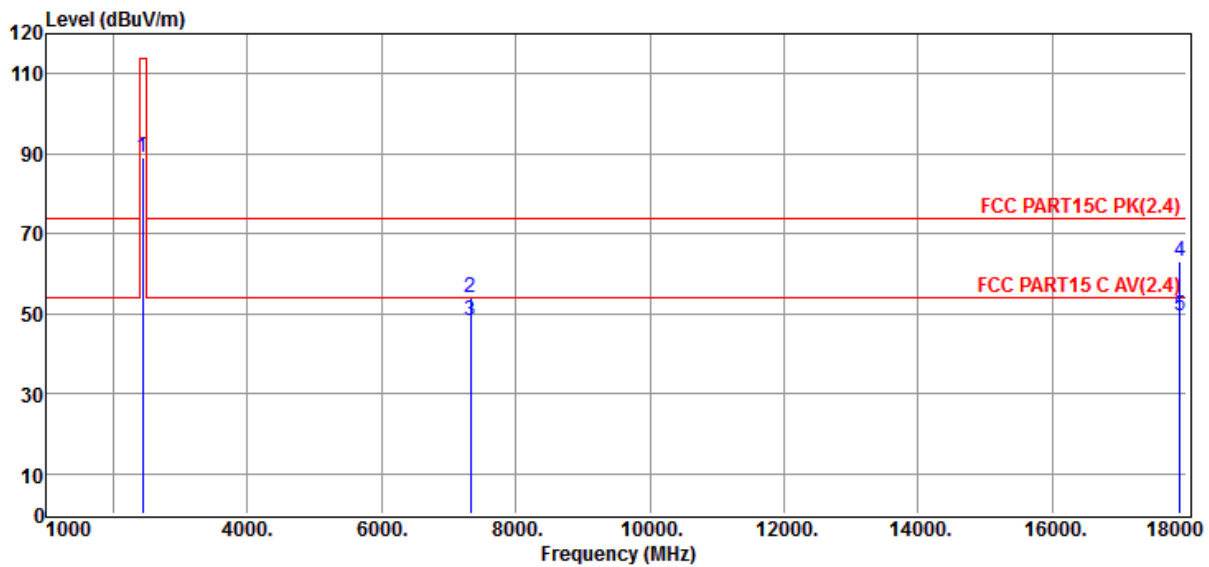
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:** \2015 Test Data\H\HJR\20140826RF.EM6
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 41 Antenna 2
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/VERTICAL
Memo :

Data: 22



Item (Mark)	Freq (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	2441.00	95.05	29.03	43.49	8.40	88.99	114.00	-25.01	Peak	VERTICAL
2	7323.00	46.20	35.63	43.32	15.32	53.83	74.00	-20.17	Peak	VERTICAL
3	7323.00	40.64	35.63	43.32	15.32	48.27	54.00	-5.73	Average	VERTICAL
4	17898.00	35.14	44.03	41.63	25.70	63.24	74.00	-10.76	Peak	VERTICAL
5	17898.00	21.35	44.03	41.63	25.70	49.45	54.00	-4.55	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

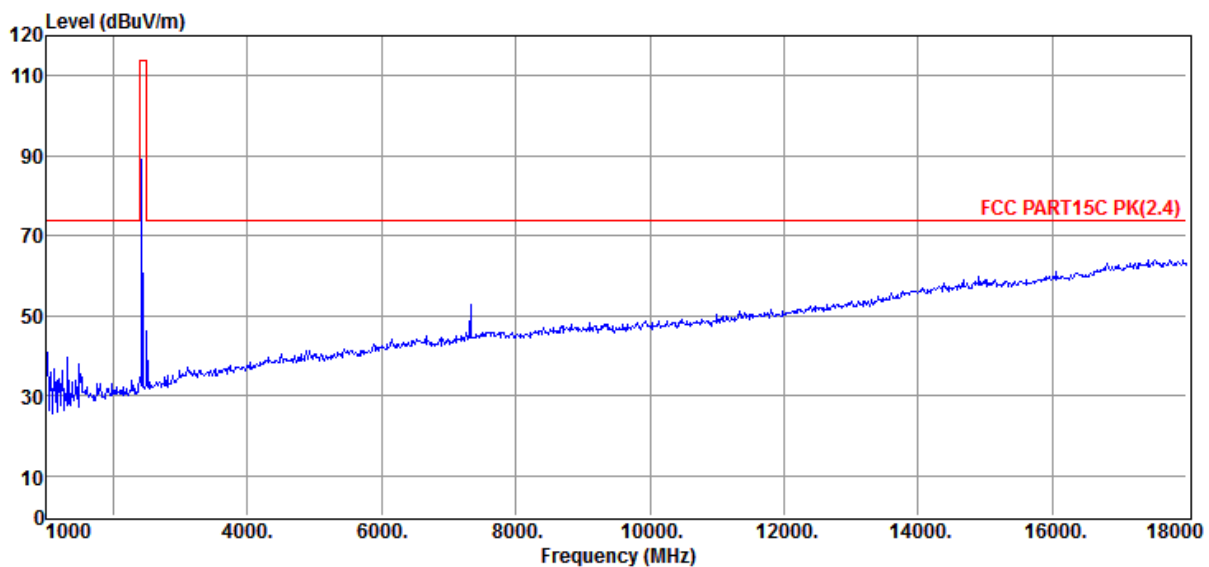
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:\2015 Test Data\H\HJR\20140826RF.EM6**
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 41 Antenna 2
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/HORIZONTAL
Memo :

Data: 23



Item	Freq	Read Level	Antenna Factor	PRM Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector	Polarization
(Mark)	(MHz)	(dBμV)	(dB/m)	dB	dB	(dBμV/m)	(dBμV/m)	(dB)		

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

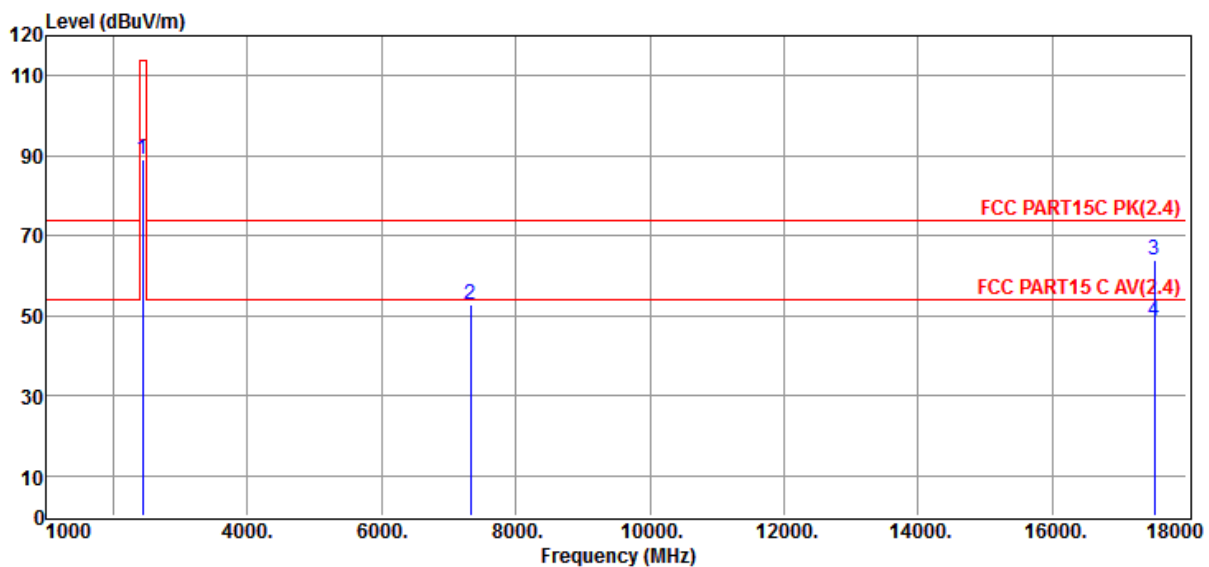
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:** \2015 Test Data\H\HJR\20140826RF.EM6
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 41 Antenna 2
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/HORIZONTAL
Memo :

Data: 24



Item (Mark)	Freq (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2441.00	95.05	29.03	43.49	8.40	88.99	114.00	-25.01	Peak	HORIZONTAL
2	7323.00	45.20	35.63	43.32	15.32	52.83	74.00	-21.17	Peak	HORIZONTAL
3	17524.00	36.22	43.36	40.86	25.20	63.92	74.00	-10.08	Peak	HORIZONTAL
4	17524.00	21.03	43.36	40.86	25.20	48.73	54.00	-5.27	Average	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

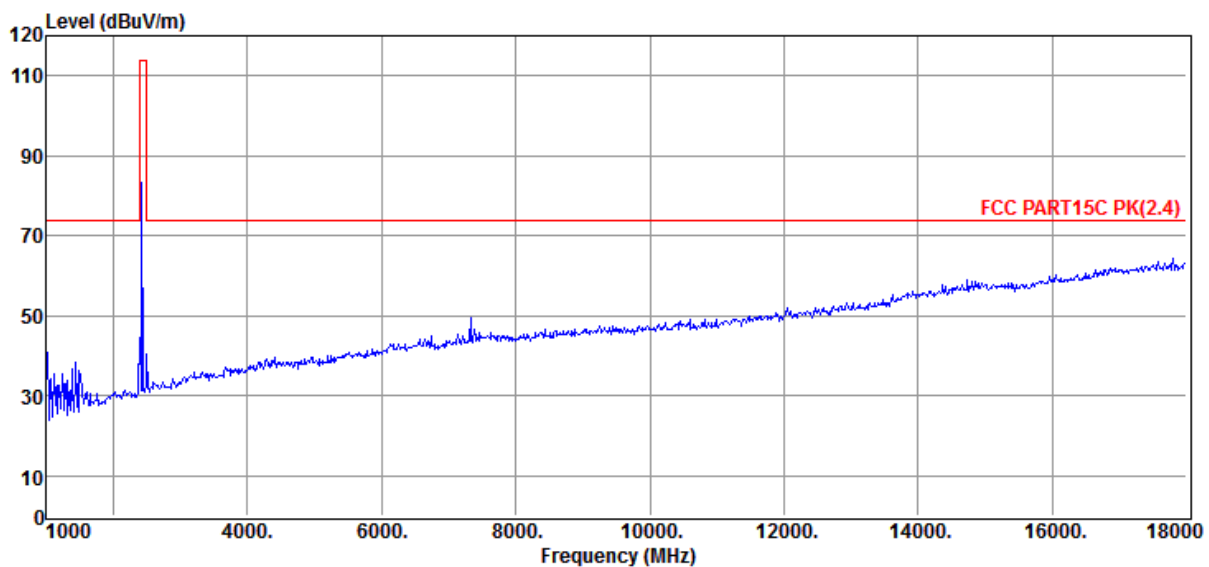
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:\2015 Test Data\H\HJR\20140826RF.EM6**
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 01 Antenna 2
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/HORIZONTAL
Memo :

Data: 25



Item	Freq	Read Level	Antenna Factor	PRM Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector	Polarization
(Mark)	(MHz)	(dBμV)	(dB/m)	dB	dB	(dBμV/m)	(dBμV/m)	(dB)		

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

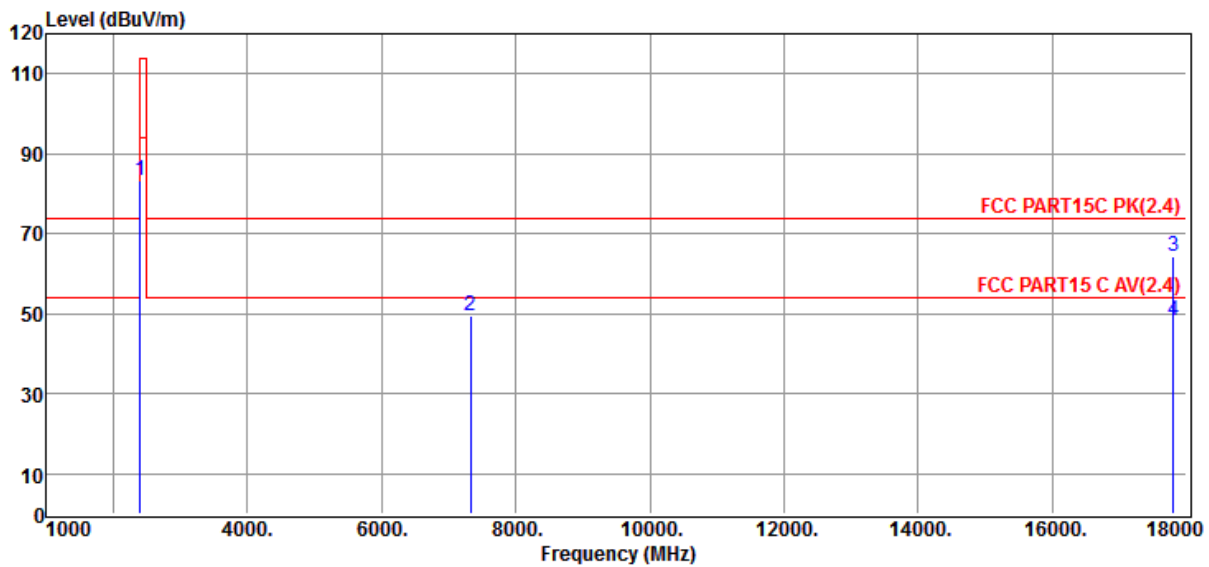
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:** \2015 Test Data\H\HJR\20140826RF.EM6
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 01 Antenna 2
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/HORIZONTAL
Memo :

Data: 26



Item (Mark)	Freq (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	2401.00	90.14	28.93	43.48	8.35	83.94	114.00	-30.06	Peak	HORIZONTAL
2	7323.00	42.56	35.72	43.62	15.18	49.84	74.00	-24.16	Peak	HORIZONTAL
3	17796.00	35.64	35.72	43.62	15.18	42.92	74.00	-31.08	Peak	HORIZONTAL
4	17796.00	21.28	44.33	41.8	25.7	49.51	54.00	-4.49	Average	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

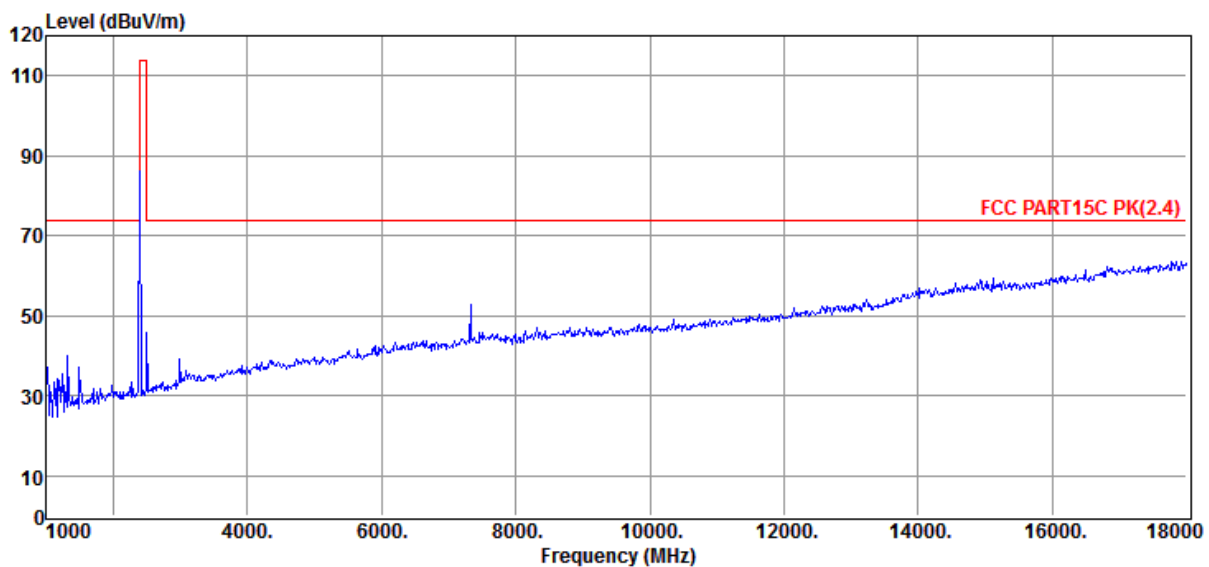
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:\2015 Test Data\H\HJR\20140826RF.EM6**
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 01 Antenna 2
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/VERTICAL
Memo :

Data: 27



Item	Freq	Read Level	Antenna Factor	PRM Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector	Polarization
(Mark)	(MHz)	(dBμV)	(dB/m)	dB	dB	(dBμV/m)	(dBμV/m)	(dB)		

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

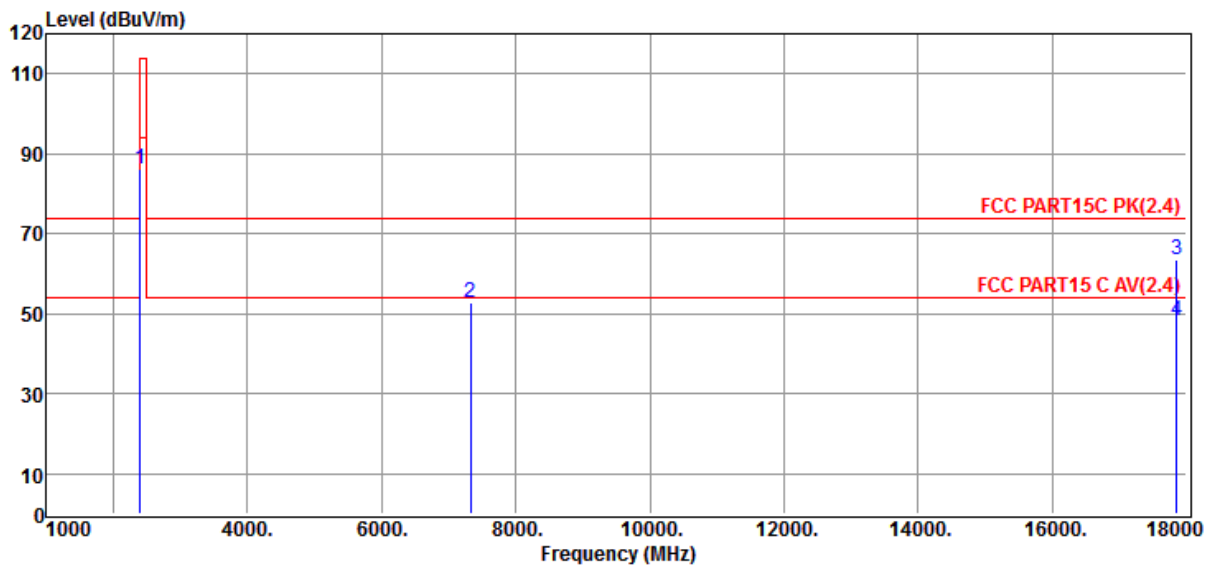
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:** \2015 Test Data\H\HJR\20140826RF.EM6
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 01 Antenna 2
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/VERTICAL
Memo :

Data: 28



Item (Mark)	Freq (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2401.00	91.89	28.93	43.49	8.35	86.2	114.00	-27.80	Peak	VERTICAL
2	7323.00	43.4	35.63	43.32	15.32	52.84	74.00	-21.16	Peak	VERTICAL
3	17847.00	34.13	43.85	41.54	25.45	63.6	74.00	-10.40	Peak	VERTICAL
4	17847.00	20.21	43.85	41.54	25.45	48.3	54.00	-5.70	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

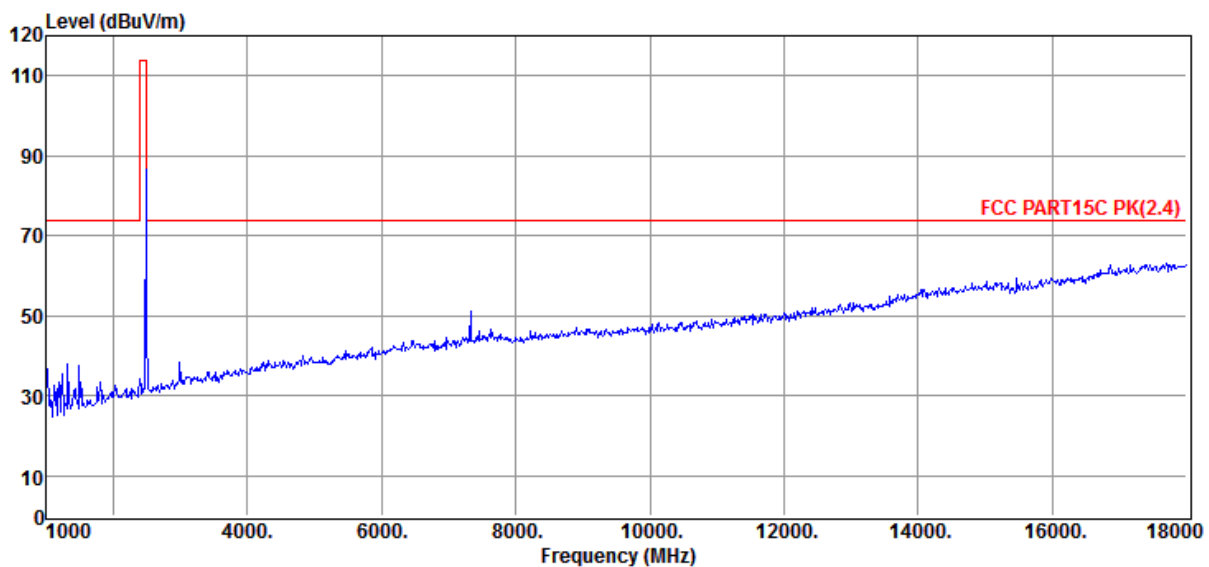
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:\2015 Test Data\H\HJR\20140826RF.EM6**
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 82 Antenna 2
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/VERTICAL
Memo :

Data: 33



Item	Freq	Read Level	Antenna Factor	PRM Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector	Polarization
(Mark)	(MHz)	(dBμV)	(dB/m)	dB	dB	(dBμV/m)	(dBμV/m)	(dB)		

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

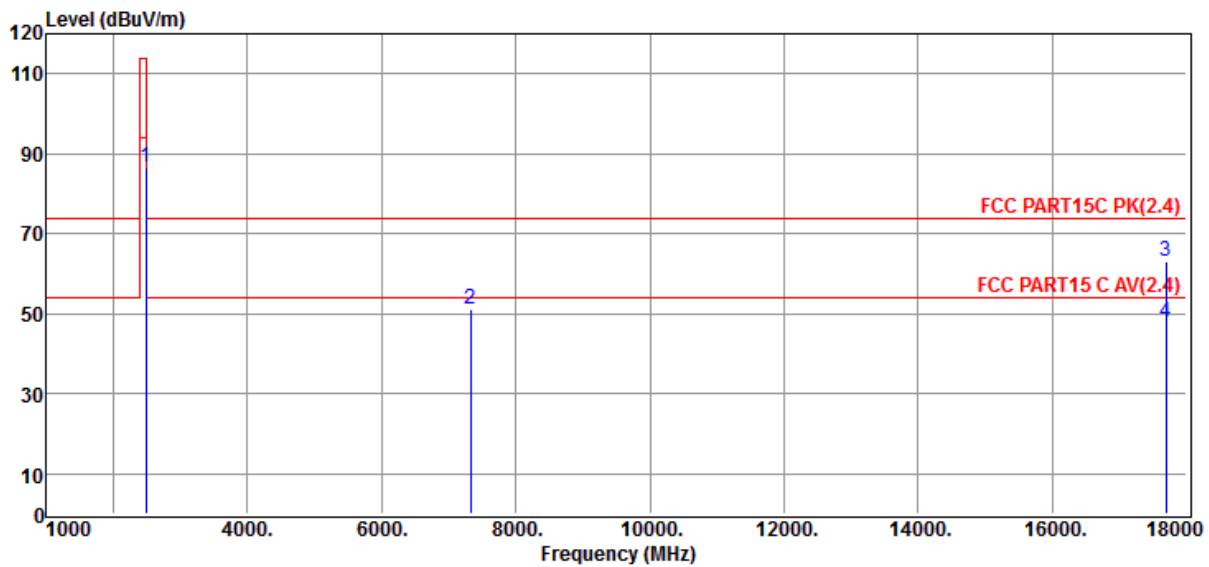
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:\2015 Test Data\H\HJR\20140826RF.EM6**
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 82 Antenna 2
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/VERTICAL
Memo :

Data: 34



Item (Mark)	Freq (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2482.00	92.33	29.18	43.50	8.50	86.51	114.00	-27.49	Peak	VERTICAL
2	7324.00	43.51	35.63	43.32	15.32	51.14	74.00	-22.86	Peak	VERTICAL
3	17694.00	35.05	43.55	41.15	25.45	62.90	74.00	-11.10	Peak	VERTICAL
4	17694.00	20.14	43.55	41.15	25.45	47.99	54.00	-6.01	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

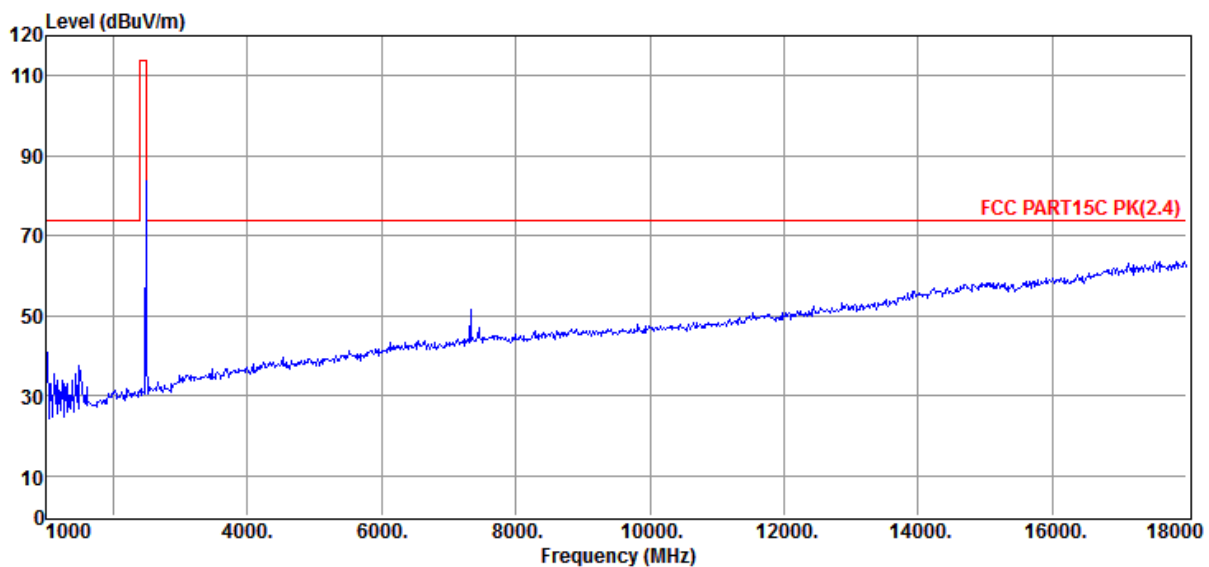
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:\2015 Test Data\H\HJR\20140826RF.EM6**
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 82 Antenna 2
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/HORIZONTAL
Memo :

Data: 35



Item	Freq	Read Level	Antenna Factor	PRM Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector	Polarization
(Mark)	(MHz)	(dBμV)	(dB/m)	dB	dB	(dBμV/m)	(dBμV/m)	(dB)		

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

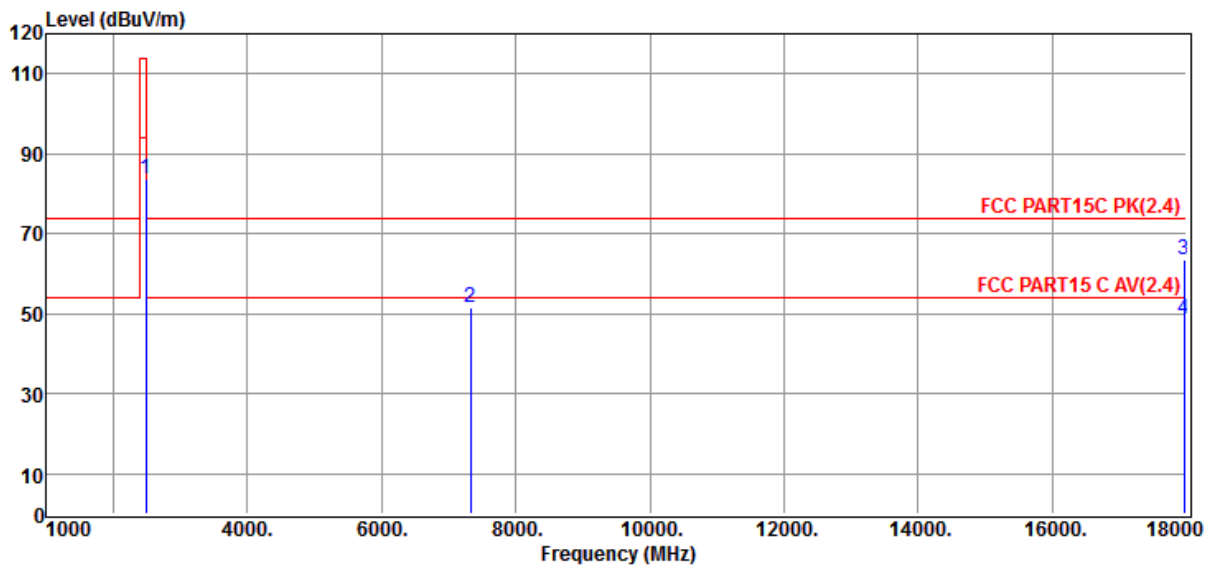
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:** \2015 Test Data\H\HJR\20140826RF.EM6
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 82 Antenna 2
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/HORIZONTAL
Memo :

Data: 36



Item (Mark)	Freq (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	2482.00	89.48	29.18	43.50	8.50	83.66	114.00	-30.34	Peak	HORIZONTAL
2	7324.00	43.89	35.63	43.32	15.32	51.52	74.00	-22.48	Peak	HORIZONTAL
3	17966.00	35.35	44.27	41.80	25.70	63.52	74.00	-10.48	Peak	HORIZONTAL
4	17966.00	20.36	44.27	41.80	25.70	48.53	54.00	-5.47	Average	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

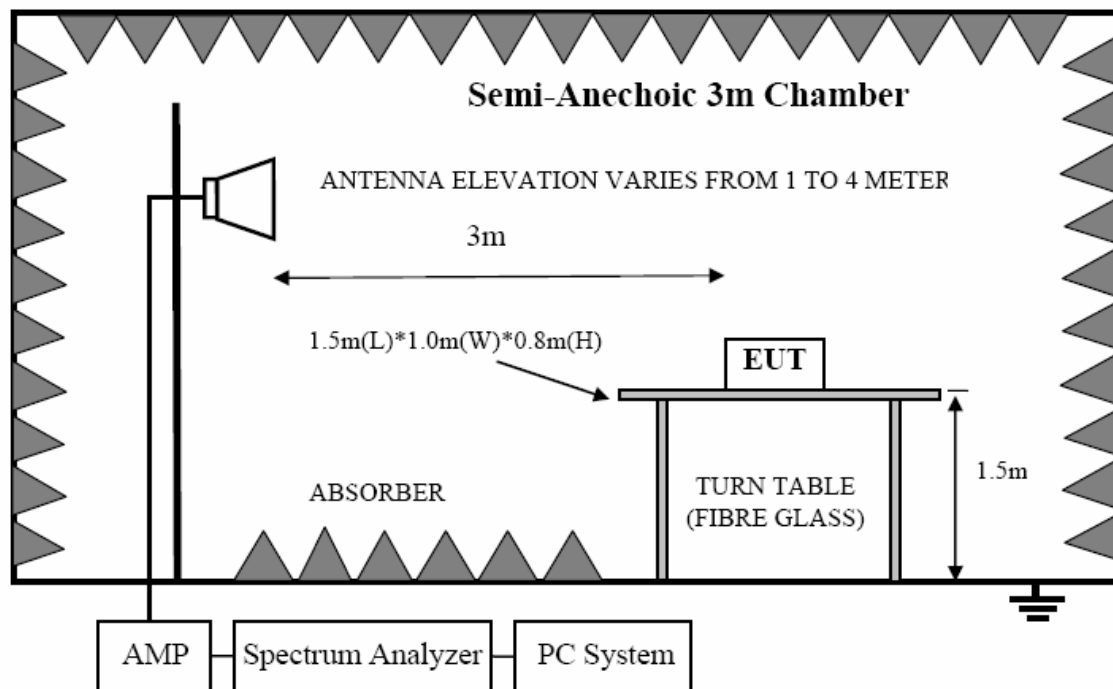
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

6. Band Edge Compliance

6.1. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	EMI Test Receiver	R&S	ESU8	100316	2014/10/25	1Y
2	Spectrum analyzer	R&S	FSU	1166.1660.26	2014/10/25	1Y
3	Trilog Broadband Antenna	Schwarzbeck	VULB9163	9163-462	2014/10/25	1Y
4	Double Ridged Horn Antenna	R&S	HF907	100276	2014/10/25	1Y
5	Pre-Amplifier	R&S	SCU-01	10049	2014/10/25	1Y
6	Pre-amplifier	A.H.	PAM0-0118	360	2014/10/25	1Y
7	RF Cable	R&S	R01	10403	2014/10/25	1Y
8	RF Cable	R&S	R02	10512	2014/10/25	1Y

6.2. Block diagram of test setup



6.3. Limit

All the lower and upper band-edges emissions appearing within 2310MHz to 2390MHz and 2483.5MHz to 2500MHz restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation frequency band 2400MHz to 2483.5MHz except for harmonics, shall be at least 50dB below the fundamental emissions, or comply with 15.209 limits.

6.4. Test Procedure

Same with clause 5.4 except change investigated frequency range from 2310MHz to 2410MHz and 2475MHz to 2500MHz. All band have been tested, only worse case is reported.

The Marker-delta method for band-edge measurement as described in 6.9.3 of ANSI C63.10:2013 was used for emissions (2398MHz to 2400MHz) up to 2MHz removed from the band edge.

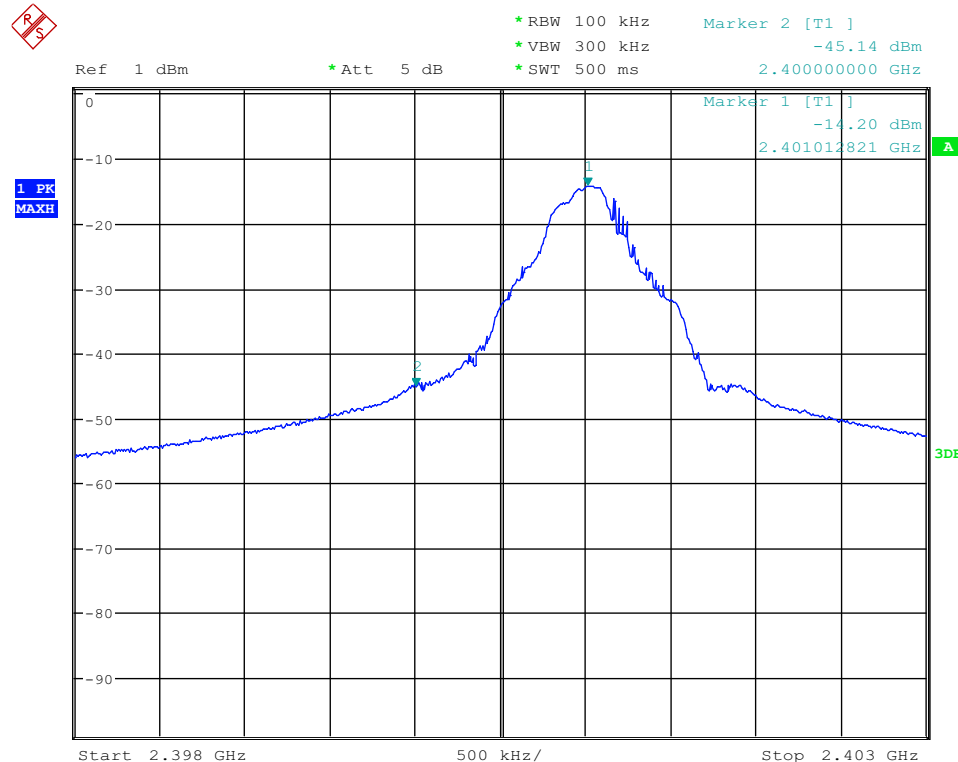
Average level = PK level – Duty cycle factor.

6.5. Test result

PASS. (See below detailed test result)

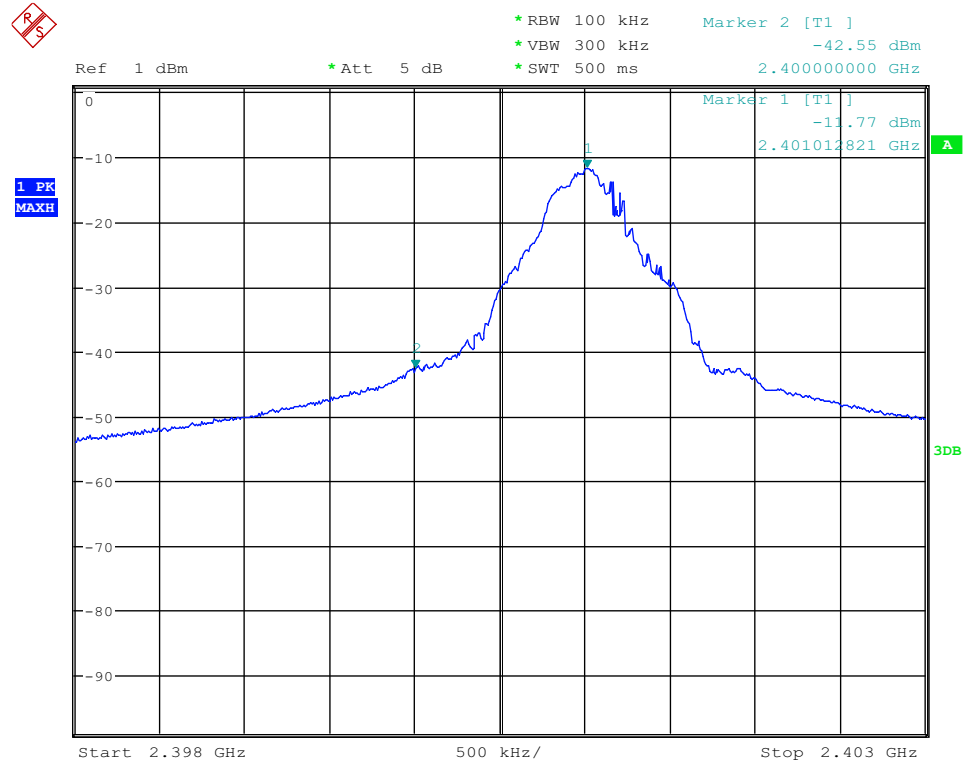
Note: Because the duty cycle factor used for calculate average level is 27.6dB, and average limit is 20dB below PK limit, so if PK level comply with PK limit, average level is deemed to comply with AV limit.

Delta for Antenna 1 CH 1



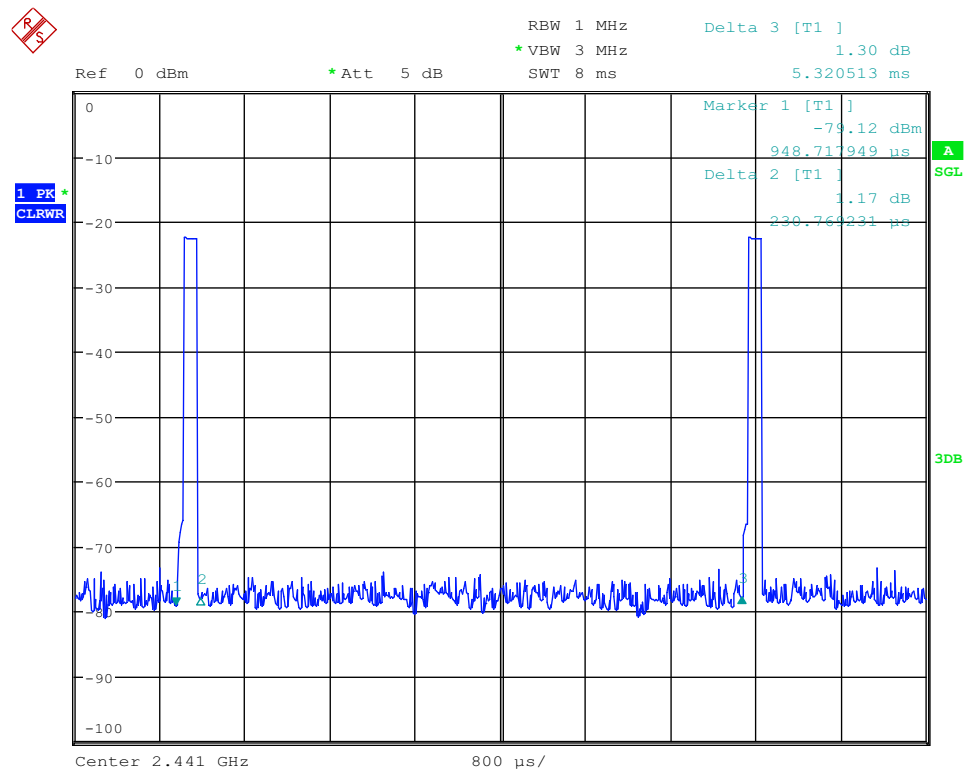
$$\Delta = -14.21\text{dBm} - (-45.14\text{dBm}) = 30.93\text{dB}$$

Delta for Antenna 2 CH 1



$$\Delta = -11.77\text{dBm} - (-42.55\text{dBm}) = 30.78\text{dB}$$

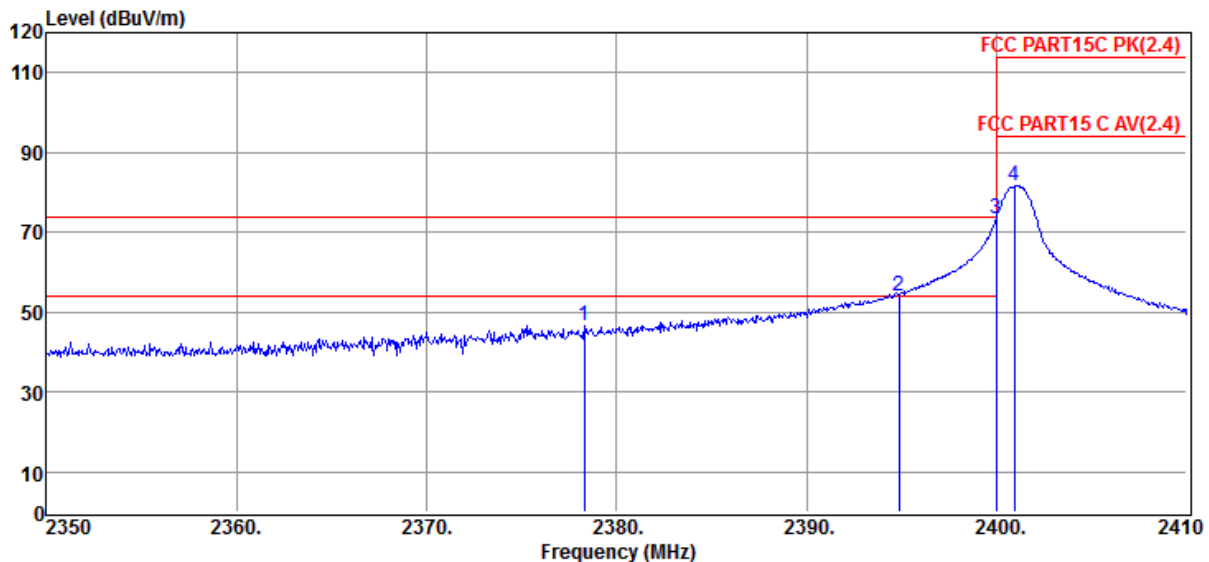
$$\text{Duty cycle factor} = 20 \log(5.32/0.221) = 27.6\text{dB}$$



TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:\2015 Test Data\H\HJR\20140826RF.EM6**
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 1 Antenna 1
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/HORIZONTAL

Data: 11



Item (Mark)	Freq (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	2378.32	52.07	28.70	41.08	6.80	46.49	74.00	-27.51	Peak	HORIZONTAL
2	2394.88	59.33	28.93	41.06	6.93	54.13	74.00	-19.87	Peak	HORIZONTAL
3	2400.00	78.44	28.93	41.06	7.00	73.31	74.00	-0.69	Peak	HORIZONTAL
4	2400.94	86.62	28.93	41.06	7.00	81.49	114.00	-32.51	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

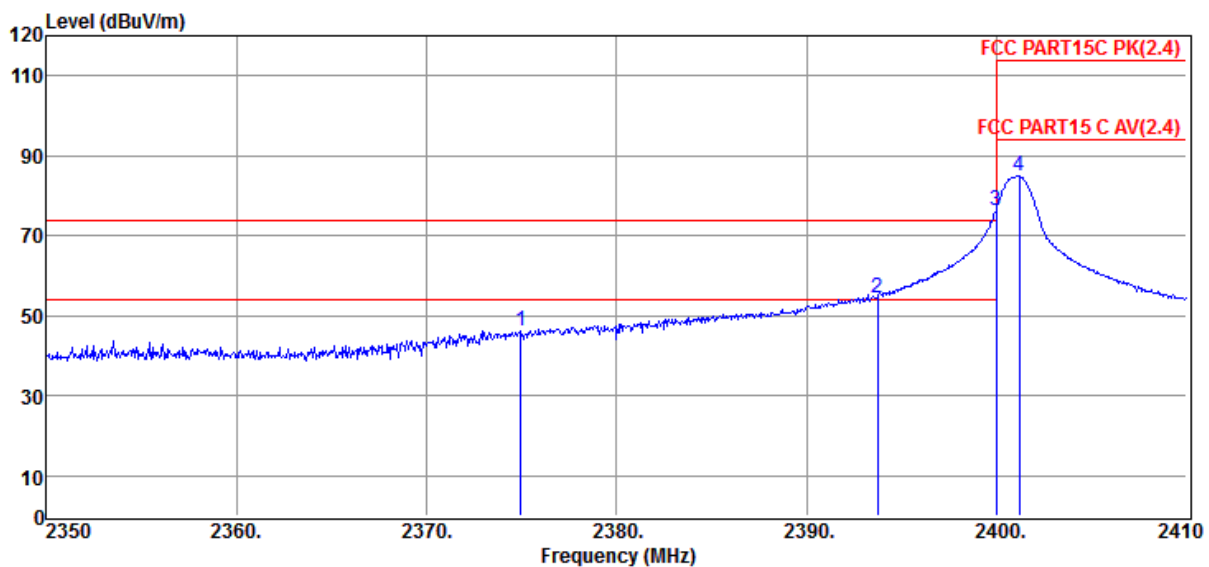
For PK emissions 2MHz removed from the band edge.

Frequency (MHz)	PK measured Level(dBuV/m)	Delta (dB)	Result Level(dBuV/m)	Limt (dBuV/m)	Over Limit (dB)
2400	73.31	30.93	42.38	74.00	-31.62

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:** \2015 Test Data\H\HJR\20140826RF.EM6
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 1 Antenna 1
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/VERTICAL
Memo :

Data: 12



Item (Mark)	Freq (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	2374.96	51.74	28.70	41.09	6.83	46.18	74.00	-27.82	Peak	VERTICAL
2	2393.74	59.76	28.93	41.07	6.93	54.55	74.00	-19.45	Peak	VERTICAL
3	2400.00	81.50	28.93	41.06	7.00	76.37	74.00	2.37	Peak	VERTICAL
4	2401.18	89.96	28.93	41.06	7.00	84.83	114.00	-29.17	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

For PK emissions 2MHz removed from the band edge.

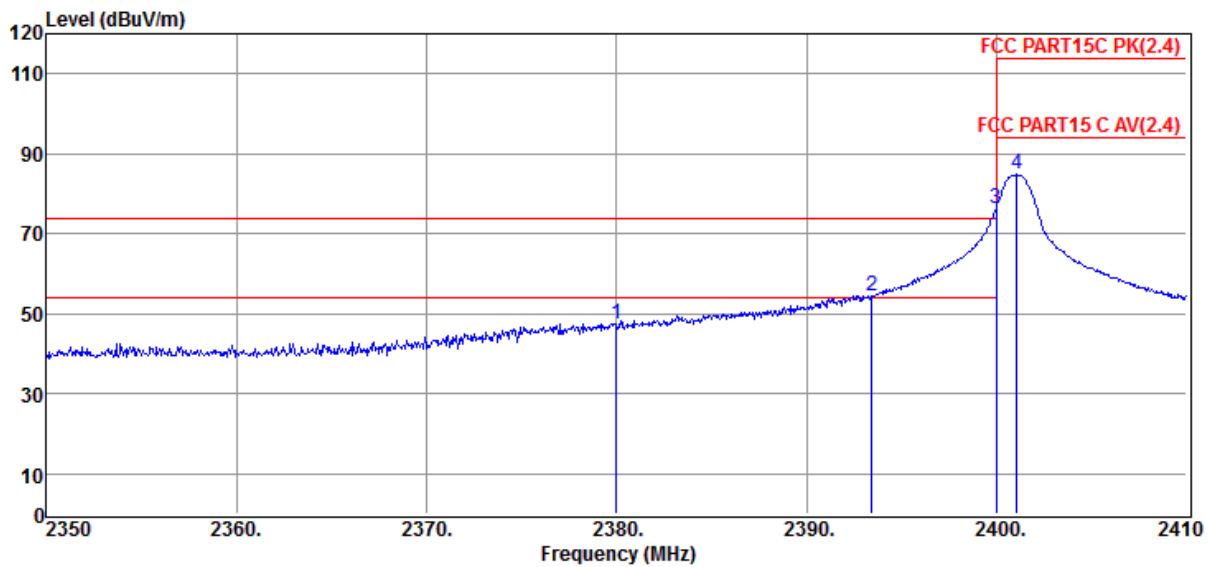
Frequency (MHz)	PK measured Level(dBuV/m)	Delta (dB)	Result Level(dBuV/m)	Limt (dBuV/m)	Over Limit (dB)
2400	76.37	30.93	45.44	74.00	-28.56

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber
Test Date : 2015-03-02
EUT : 2.4GHz RF module
Power Supply : DC 5V from Host
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa
Memo :

E:\2015 Test Data\H\HJR\20140826RF.EM6
Tested By : Jerry
Model Number : RRXR-01
Test Mode : Tx CH 1 Antenna 2
Antenna/Distance : HF907 SN100276/3m/VERTICAL

Data: 13



Item (Mark)	Freq (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2380.00	53.04	28.70	41.08	6.80	47.46	74.00	-26.54	Peak	VERTICAL
2	2393.44	59.51	28.93	41.07	6.93	54.30	74.00	-19.70	Peak	VERTICAL
3	2400.00	81.52	28.93	41.06	7.00	76.39	74.00	2.39	Peak	VERTICAL
4	2401.06	89.90	28.93	41.06	7.00	84.77	114.00	-29.23	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

For PK emissions 2MHz removed from the band edge.

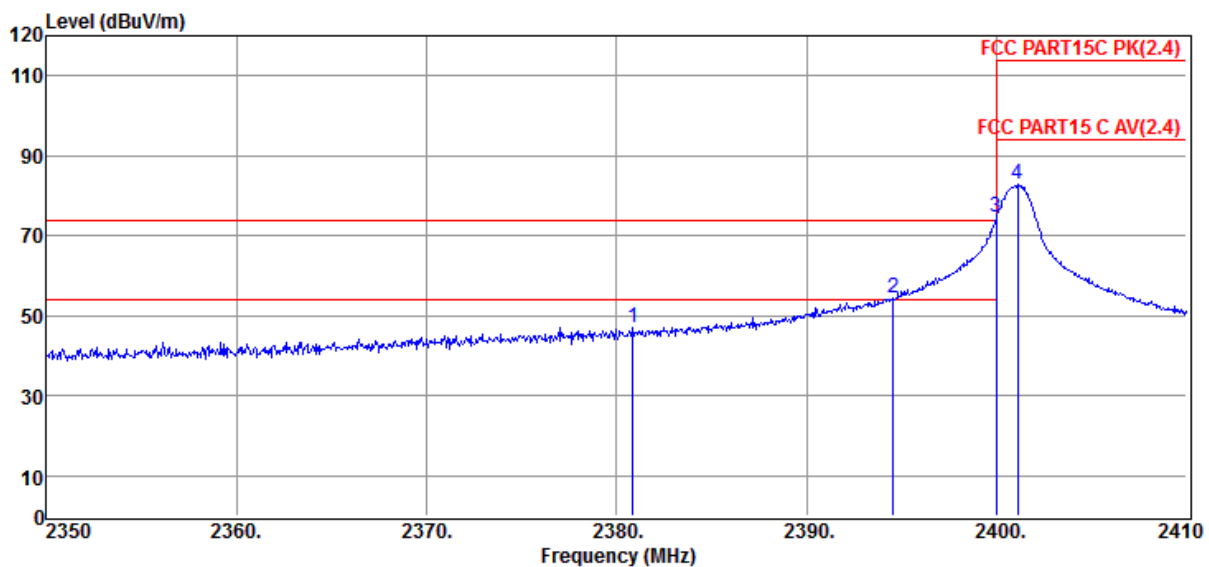
Frequency (MHz)	PK measured Level(dBuV/m)	Delta (dB)	Result Level(dBuV/m)	Limt (dBuV/m)	Over Limit (dB)
2400	76.39	30.78	45.61	74.00	-28.39

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber
Test Date : 2015-03-02
EUT : 2.4GHz RF module
Power Supply : DC 5V from Host
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa
Memo :

E:\2015 Test Data\H\HJR\20140826RF.EM6
Tested By : Jerry
Model Number : RRXR-01
Test Mode : Tx CH 1 Antenna 2
Antenna/Distance : HF907 SN100276/3m/HORIZONTAL

Data: 14



Item (Mark)	Freq (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	2380.84	52.76	28.70	41.08	6.80	47.18	74.00	-26.82	Peak	HORIZONTAL
2	2394.58	59.80	28.93	41.06	6.93	54.60	74.00	-19.40	Peak	HORIZONTAL
3	2400.00	79.85	28.93	41.06	7.00	74.72	74.00	0.72	Peak	HORIZONTAL
4	2401.12	87.90	28.93	41.06	7.00	82.77	114.00	-31.23	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

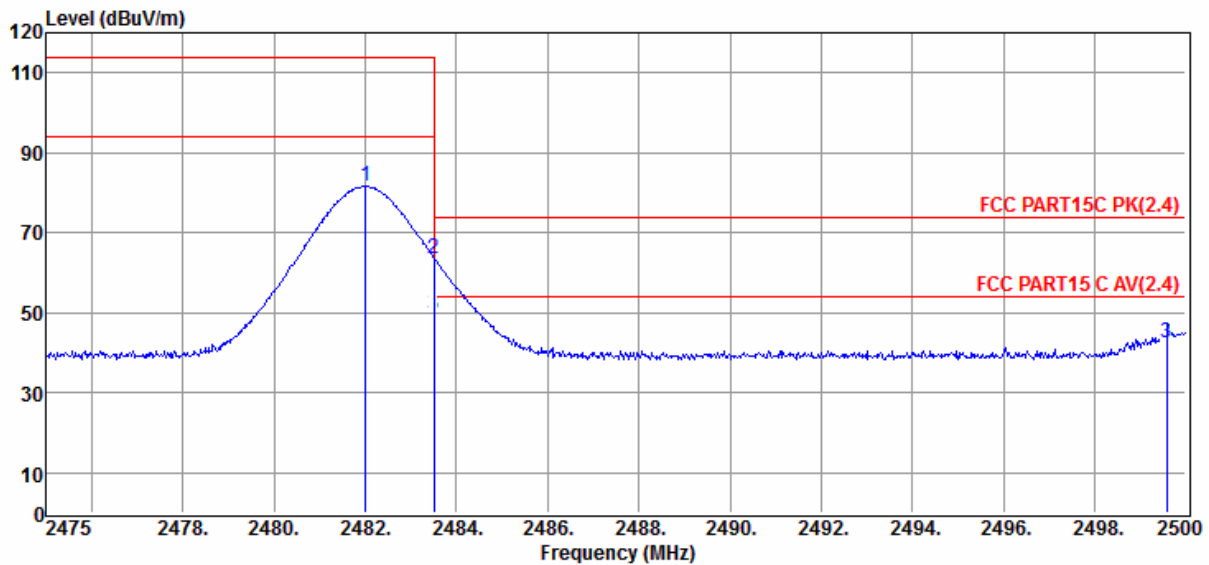
For PK emissions 2MHz removed from the band edge.

Frequency (MHz)	PK measured Level(dBuV/m)	Delta (dB)	Result Level(dBuV/m)	Limt (dBuV/m)	Over Limit (dB)
2400	74.72	30.78	43.94	74.00	-30.06

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:\2015 Test Data\H\HJR\20140826RF.EM6**
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 82 Antenna 1
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/HORIZONTAL
Memo :

Data: 5



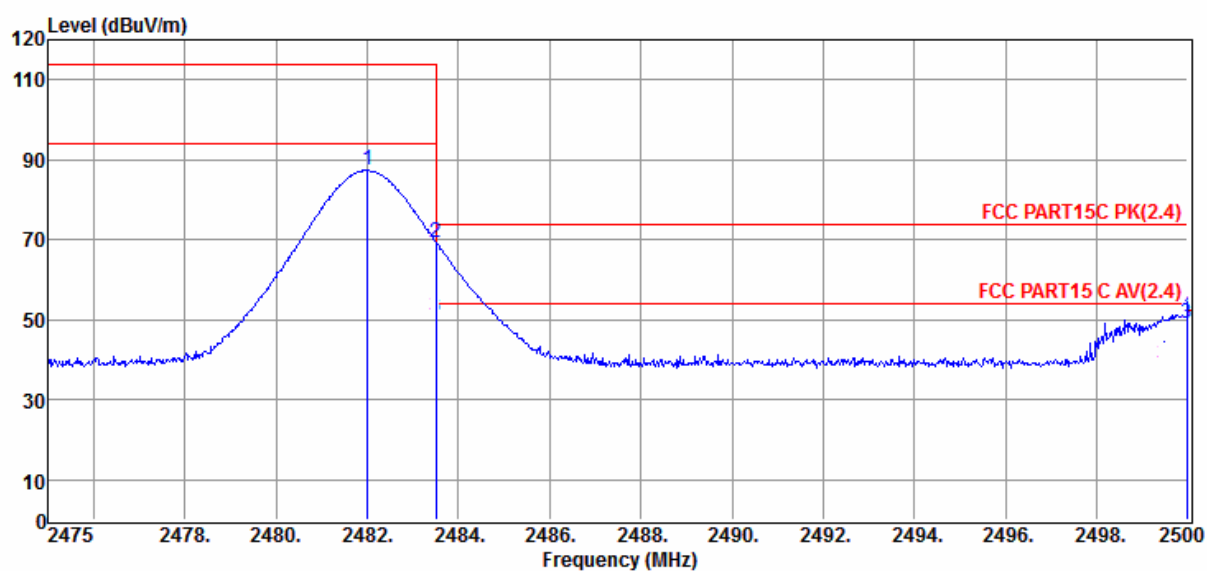
Item (Mark)	Freq (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	2482.00	87.35	29.18	43.50	8.50	81.53	114.00	-32.47	Peak	HORIZONTAL
2	2483.50	69.51	29.18	43.50	8.50	63.69	74.00	-10.31	Peak	HORIZONTAL
3	2499.60	51.13	29.25	43.50	8.50	45.38	74.00	-28.62	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:** \2015 Test Data\H\HJR\20140826RF.EM6
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 82 Antenna 1
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/VERTICAL
Memo :

Data: 6



Item (Mark)	Freq (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	2482.00	93.12	29.18	43.50	8.50	87.30	114.00	-26.70	Peak	VERTICAL
2	2483.50	75.30	29.18	43.50	8.50	69.48	74.00	-4.52	Peak	VERTICAL
3	2500.00	56.86	29.25	43.50	8.50	51.11	74.00	-22.89	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

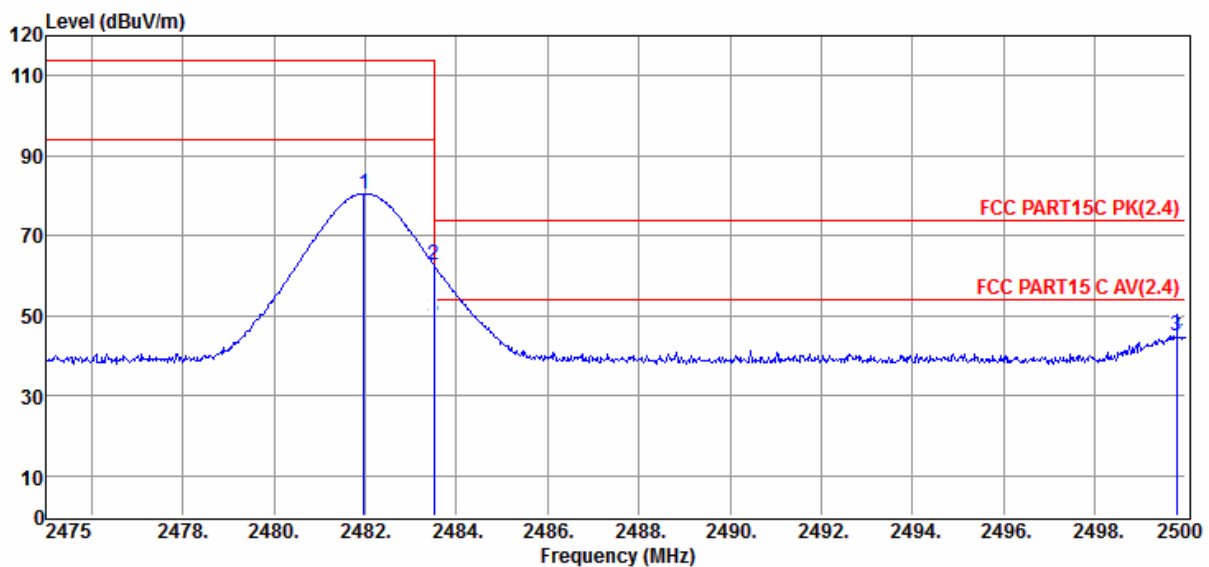
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:\2015 Test Data\H\HJR\20140826RF.EM6**
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 82 Antenna 2
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/HORIZONTAL
Memo :

Data: 31



Item (Mark)	Freq (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	2481.98	86.41	29.18	43.50	8.50	80.59	114.00	-33.41	Peak	HORIZONTAL
2	2483.50	68.55	29.18	43.50	8.50	62.73	74.00	-11.27	Peak	HORIZONTAL
3	2499.83	50.91	29.25	43.50	8.50	45.16	74.00	-28.84	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

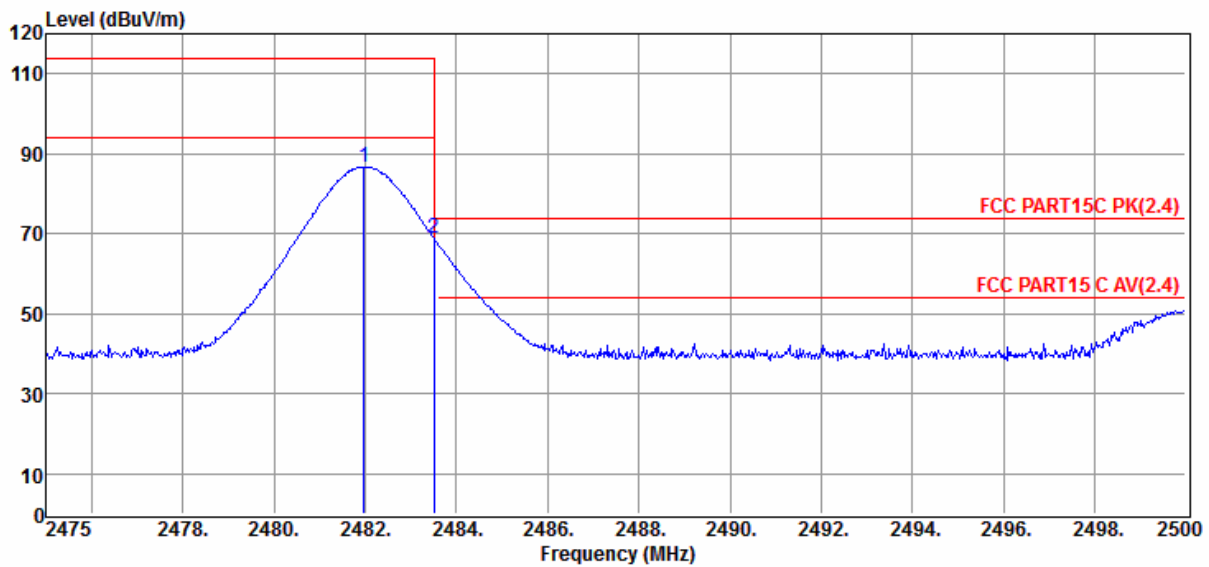
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber **E:** \2015 Test Data\H\HJR\20140826RF.EM6
Test Date : 2015-03-02 **Tested By** : Jerry
EUT : 2.4GHz RF module **Model Number** : RRXR-01
Power Supply : DC 5V from Host **Test Mode** : Tx CH 82 Antenna 2
Condition : Temp:24.5'C,Humi:55%,
 Press:100.1kPa **Antenna/Distance** : HF907 SN100276/3m/VERTICAL
Memo :

Data: 32



Item (Mark)	Freq (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	2481.98	92.59	29.18	43.50	8.50	86.77	114.00	-27.23	Peak	VERTICAL
2	2483.50	74.80	29.18	43.50	8.50	68.98	74.00	-5.02	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

7. Antenna Requirements

7.1. Limit

For intentional device, according to FCC 47 CFR Section 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.

7.2. Result

The antennas used for this product are integral PCB Antenna and that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is only 0dBi.