



FCC 47 CFR PART 15 SUBPART C TEST REPORT

For

Product Name: Mobile Phone

Brand Name: HYUNDAI

Model No.: D350

FCC ID: RQQHLT-D350

Test Report Number:

C140425R01-RPB

Issued for

HYUNDAI CORPORATION

140-2, GYE-DONG, JONGNO-GU, SEOUL, 110-793, KOREA

Issued by

Compliance Certification Services Inc.

Kun shan Laboratory

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TESTING CERT #2541.01

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Compliance Certification Services Inc.

Report No: C140425R01-RPB

FCC ID: RQQHLT-D350

Date of Issue :May 16, 2014

REVISION HISTORY

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**SUMMARY OF TEST RESULT**

Report Section	FCC Rule	Description	Limit	Result
3.1	15.247(a)(1)	Number of Channels	≥ 15 Channels	Pass
3.2	15.247(a)(1)	Hopping Channel Separation	$\geq 2/3$ of 20dB BW	Pass
3.3	15.247(a)(1)	Dwell Time of Each Channel	≤ 0.4 sec in 31.6sec period	Pass
3.4	15.247(a)(1)	20dB Bandwidth	NA	Pass
3.2	15.247(d)	Peak Output Power	≤ 1 W for 1Mbps ≤ 125 mW for 2,3Mbps	Pass
3.4	15.247(d)	Conducted Band Edges and Spurious Emission	≤ 20 dBc	Pass
3.5	15.247(d)	Radiated Band Edges and Spurious Emission	15.209(a) & 15.247(d)	Pass
3.6	15.207	AC Conducted Emission	15.207(a)	Pass
3.7	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass



1 TEST RESULT CERTIFICATION

Product Name:	Mobile Phone
Trade Name:	HYUNDAI
Model Name.:	D350
Series Model:	N/A
Applicant Discrepancy:	Initial
Device Category:	PORTABLE DEVICES
Date of Test:	April 28, 2014 ~ May 13, 2014
Applicant:	HYUNDAI CORPORATION 140-2, GYE-DONG, JONGNO-GU, SEOUL, 110-793, KOREA
Manufacturer:	WASAM TECHNOLOGY (SHEN ZHEN) CO.,LTD. B,F Building, (Hengqiang Industrial Park), Bogang Taifeng Industrial Zone, Shajing Town, Bao'an District, Shenzhen, China
Application Type:	Certification

APPLICABLE STANDARDS

STANDARD	TEST RESULT
FCC 47 CFR Part 15 Subpart C	No non-compliance noted

The above equipment was tested by Compliance Certification Services Inc. 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 EUT 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 EUT identified in this report.

Approved by:

Jeff.Fang
RF Manager
Compliance Certification Services Inc.

Tested by:

Blent.Wang
Test Engineer
Compliance Certification Services Inc.



2 EUT DESCRIPTION

Product Name:	Mobile Phone
Trade Name:	HYUNDAI
Model Name.:	D350
Model Discrepancy:	N/A
Power Adapter Power Rating :	Power supply and ADP(rating): Model:D205 INPUT: 100-300V 50/60Hz 0.15A Output: DC 5V 500mA Battery(rating): Model:D350 Capacitance:3.7V 1200mAh
Frequency Range :	Bluetooth:2402 ~ 2480 MHz
Transmit Power :	4.63dBm(2.904mW)
Modulation Technique :	FHSS
Transmit Data Rate :	GFSK(1 Mbps), $\pi/4$ -DQPSK(2 Mbps),8-DPSK(3 Mbps)
Number of Channels :	79 Channels
Antenna Specification :	PIFA Antenna
Antenna Specification:	2.6 dBi

Remark:

1. This submittal(s) (test report) is intended for **FCC ID: RQQHLT-D350** filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.



3 TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, 15.207, 15.209 and 15.247.

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2 EXERCISE EUT

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4.



3.4 TEST Mode

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode	Data Rate	Channel	Antenna
Peak Output Power	GFSK	1 Mbps	0/39/78	1
	8DPSK	3 Mbps		
Hopping Channel Bandwidth	GFSK	1 Mbps	0/39/78	1
	8DPSK	3 Mbps		
Hopping Channel Separation	GFSK	1 Mbps	38-39	1
	8DPSK	3 Mbps		
Number of Hopping Frequency	GFSK	1 Mbps	0-78	1
	8DPSK	3 Mbps		
Dwell Time	DH1/DH3/DH5	1 Mbps	39	1
	3DH1/3DH3/3DH5	3 Mbps		
Spurious Emission	GFSK	1 Mbps	0/39/78	1
	8DPSK	3 Mbps		
Band Edge Emissions	GFSK	1 Mbps	0/78	1
	8DPSK	3 Mbps		
Radiated Emissions Below 1GHz	GFSK	1 Mbps	78	1
Radiated Emissions Above 1GHz	GFSK	1 Mbps	0/39/78	1
	8DPSK	3 Mbps		
AC Power Conducted Emissions	CTX	-	-	-

Remark: For radiated test cases below 1 GHz, the worst mode data rate channel 78 of 1Mbps was reported only, because this data rate has the highest RF output power at preliminary tests.



3.5 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

- (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.0900 - 0.1100	16.420 - 16.423	399.9 - 410.0	4.50 - 5.15
0.4950 - 0.505 ⁽¹⁾	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960.0 - 1240	7.25 - 7.75
4.1250 - 4.1280	25.50 - 25.67	1300 - 1427	8.025 - 8.500
4.17725 - 4.17775	37.50 - 38.25	1435.0 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73.0 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.2150 - 6.2180	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108.00 - 121.94	1718.8 - 1722.2	13.25 - 13.40
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.50
8.2910 - 8.2940	149.90 - 150.05	2310 - 2390	15.35 - 16.20
8.3620 - 8.3660	156.52475 - 156.52525	2483.5 - 2500.0	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.1700	3260 - 3267	23.6 - 24.0
12.2900 - 12.2930	167.72 - 173.20	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345 - 3358	36.43 - 36.5 ⁽²⁾
12.57675 - 12.57725	322.0 - 335.4	3600 - 4400	
13.3600 - 13.4100			

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

- (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.



4 INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards facilities and accreditations

5 FACILITIES AND ACCREDITATIONS

5.1 FACILTIES

All measurement facilities used to collect the measurement data are located at CCS China Kunshan Lab at 10#Weiye Rd, Innovation Park Eco. & Tec. Development Zone Kunshan city JiangSu, (215300), CHINA.

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22.

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

5.3 LABORATORY ACCREDITATIONS AND LISTING

The test facilities used to perform radiated and conducted emissions tests are accredited by American Association for Laboratory Accreditation Program for the specific scope accreditation under Lab Code: 200581-0 to perform Electromagnetic Interference tests according to FCC Part 15 and CISPR 22 requirements. In addition, the test facilities are listed with Industry Canada, Certification and Engineering Bureau, IC5743 for 10m chamber 10m, IC5743 for 10m chamber 3m.



5.4 TABLE OF ACCREDITATIONS

Our laboratories are accredited and approved by the following accreditation body according to ISO/IEC 17025.

Taiwan	TAF
USA	A2LA

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

Canada	Industry Canada
Japan	VCCI
Taiwan	BSMI
USA	FCC

Copies of granted accreditation certificates are available for downloading from our web site,
<http://www.ccsrf.com>



5.5 LIST OF MEASURING EQUIPMENT

Conducted Emissions Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	RS	FSU26	200789	2014-8-19
DETECTOR NEGATIVE	Agilent	8473B	MY42240176	2015-5-11
OSCILLOSCOPE	Agilent	DSO6104A	MY44002585	2015-3-16
Power Sensor	Agilent	E9327A	US40441788	2015-3-17
Power Meter	Agilent	E4416A	QB41292714	2015-3-17
Power SPLITTER	Mini-Circuits	ZN2PD-9G	SF078500430	N.C.R
DC Power Supply	AGILENT	E3632A	MY50340053	N.C.R
Temp. / Humidity Chamber	TERCHY	MHK-120AK	X30109	2015-1-22
Test Software	EZ-EMC			

977 Chamber				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	RS	FSU26	200789	2014-8-19
EMI Test Receiver	R&S	ESPI3	101378	2015-1-22
Pre-Amplifier	MINI	ZFL-1000VH2	070306	2015-1-22
Pre-Amplifier	Miteq	NSP400-NF	N/A	N.C.R
Bilog Antenna	Sunol	JB1	A110204-1	2015-3-7
Horn-antenna	SCHWARZBECK	BBHA9120D	D:267	2015-3-7
Turn Table	CT	CT123	4165	N.C.R
Antenna Tower	CT	CTERG23	3256	N.C.R
Test Software	EZ-EMC			

Conducted Emission				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI TEST RECEIVER	R&S	ESCI	100781	2015-3-16
V (V-LISN)	Schwarzbeck	NNLK 8129	8129-143	2014-8-19
LISN (EUT)	FCC	FCC-LISN-50/250-50-2-02	SN:05012	2015-3-16
10dB Attenuation	SCHAFFNER	CFL9206	1710	N.C.R
Test Software	EZ-EMC			

Remark: Each piece of equipment is scheduled for calibration once a year.



5.6 SETUP CONFIGURATION

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

5.7 SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	Series No.	FCC ID
1.	N/A	N/A	N/A	N/A	N/A

Remark:

- 1.All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
- 2.Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.



6 FCC PART 15.247 REQUIREMENTS

6.1 PEAK POWER

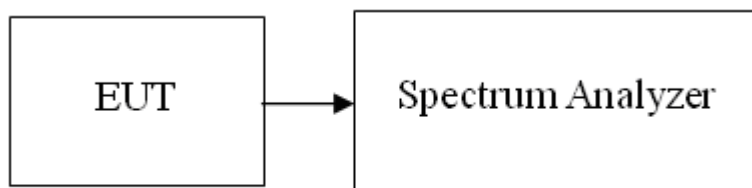
Limit

The maximum peak output power of the intentional radiator shall not exceed the following:

1. According to §15.247(a)(1), Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.
2. According to §15.247(b)(3), for systems using digital modulation in the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz: 1 Watt.
3. According to §15.247(b)(4), the conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Remark: Each piece of equipment is scheduled for calibration once a year.

Test Configuration



Test Procedure

The transmitter output is connected to the spectrum analyzer. Set the RBW = 3MHz , VBW = 3MHz, Detector = Peak, Trace mode = max hold, Sweep = auto couple. Record the max reading.

Repeat the above procedure until the measurements for all frequencies are completed.

**Test Results***No non-compliance noted***Test RESULTS****1M GFSK Modulation mode**

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Limit (mW)	Result
Low	2402	3.19	2.084	125	PASS
Mid	2441	4.42	2.767		PASS
High	2480	4.63	2.904		PASS

3M 8-DPSK Modulation mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Limit (mW)	Result
Low	2402	2.58	1.811	125	PASS
Mid	2441	3.76	2.377		PASS
High	2480	3.93	2.472		PASS



Test Data 1M

Ch low

* Agilent 14:53:54 Apr 28, 2014

R T

Mkr1 2.401 933 GHz

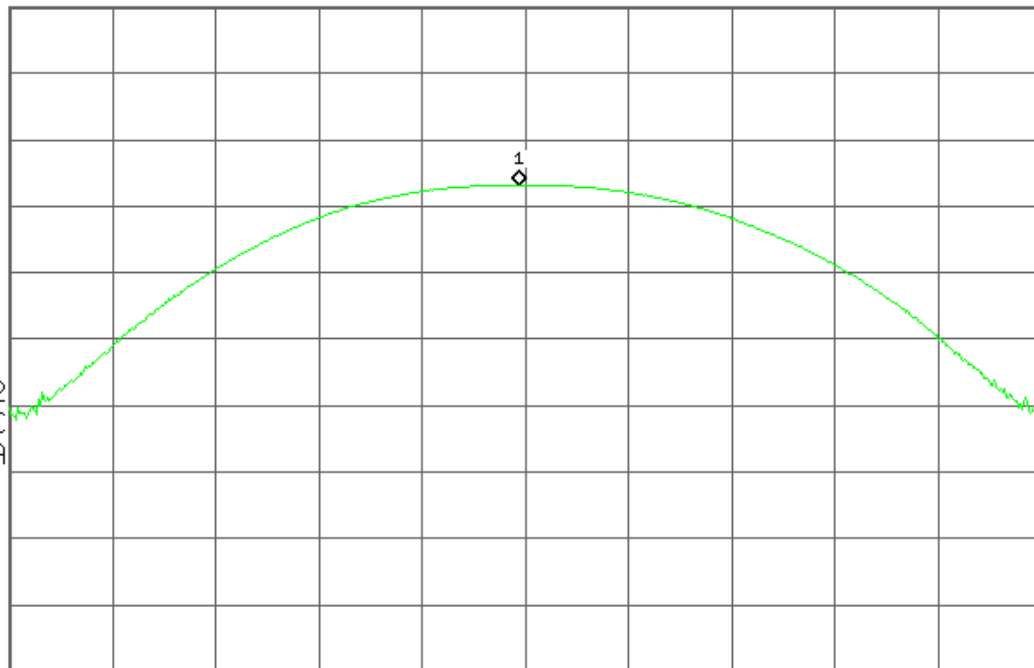
3.19 dBm

Ref 30 dBm

Atten 40 dB

Peak
Log
10
dB/
Offst
7
dB

LgAv

M1 S2
S3 FC
AAE(f):
FTun
Swp

Center 2.402 000 GHz

#Res BW 3 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Span 10 MHz

CH Mid

* Agilent 14:54:20 Apr 28, 2014

R T

Mkr1 2.440 967 GHz

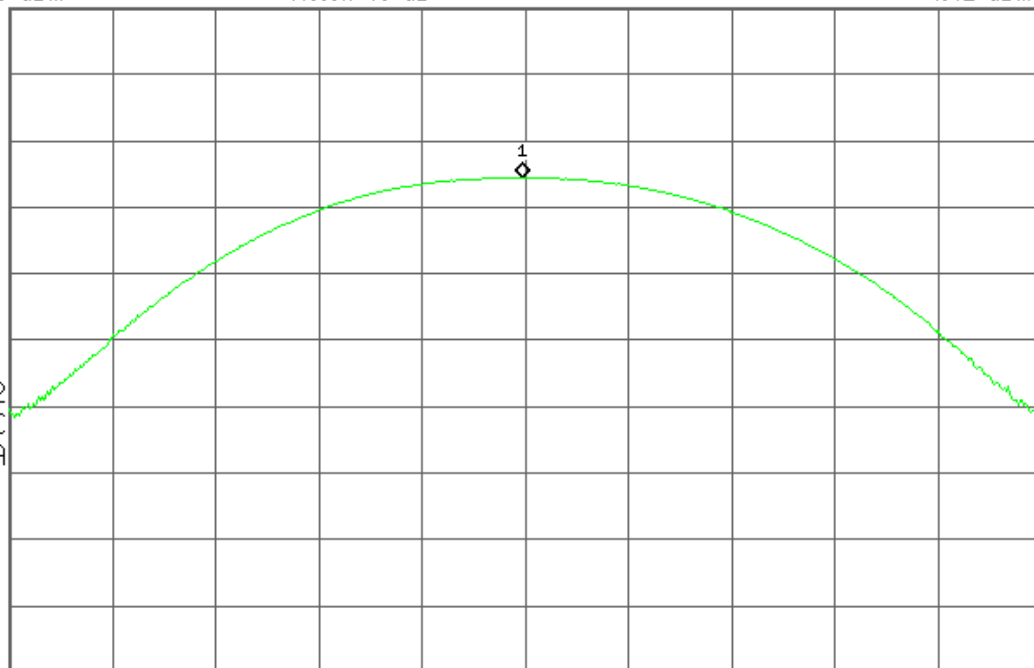
4.42 dBm

Ref 30 dBm

Atten 40 dB

Peak
Log
10
dB/
Offst
7
dB

LgAv

M1 S2
S3 FC
AAE(f):
FTun
Swp

Center 2.441 000 GHz

#Res BW 3 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Span 10 MHz



CH High

* Agilent 14:54:50 Apr 28, 2014

R T

Mkr1 2.479 900 GHz

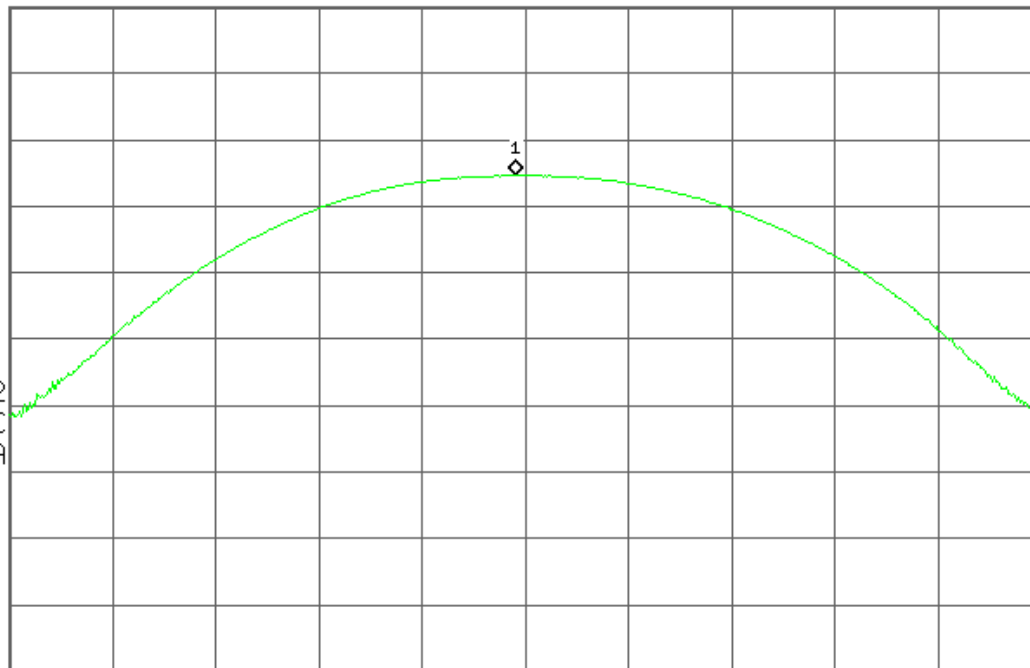
4.63 dBm

Ref 30 dBm

Atten 40 dB

Peak
Log
10
dB/
Offst
7
dB

LgAv

M1 S2
S3 FC
AAE(f):
FTun
Swp

Center 2.480 000 GHz

#Res BW 3 MHz

#VBW 3 MHz

Span 10 MHz

Sweep 1 ms (601 pts)

Test Data 3M

Ch low

* Agilent 14:53:23 Apr 28, 2014

R T

Mkr1 2.402 083 GHz

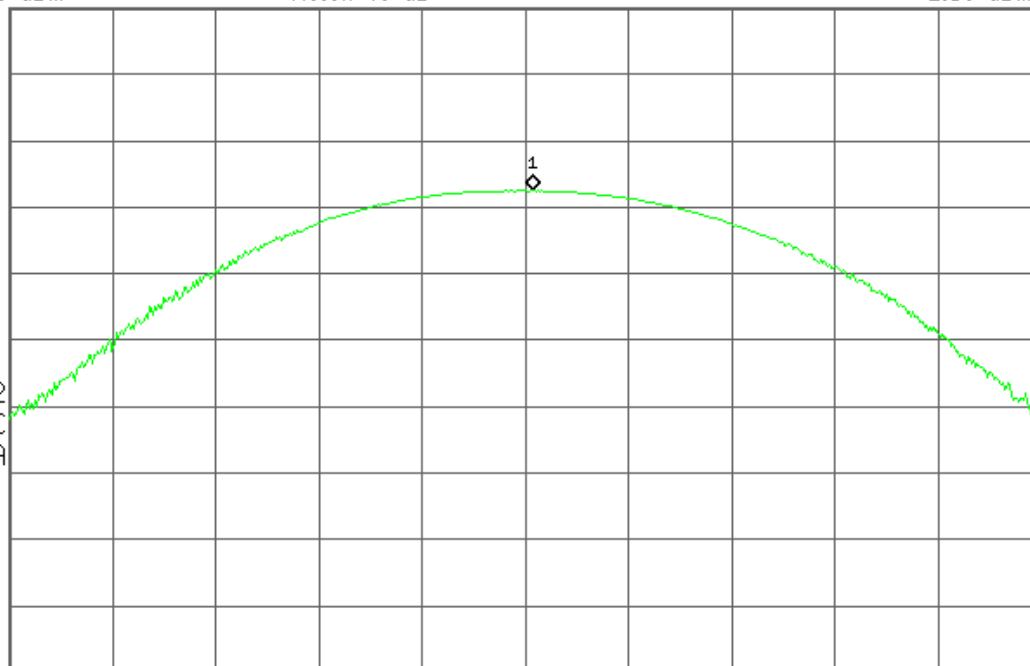
2.58 dBm

Ref 30 dBm

Atten 40 dB

Peak
Log
10
dB/
Offst
7
dB

LgAv

M1 S2
S3 FC
AAE(f):
FTun
Swp

Center 2.402 000 GHz

#Res BW 3 MHz

#VBW 3 MHz

Span 10 MHz

Sweep 1 ms (601 pts)



Ch mid

* Agilent 14:52:52 Apr 28, 2014

R T

Mkr1 2.441 000 GHz

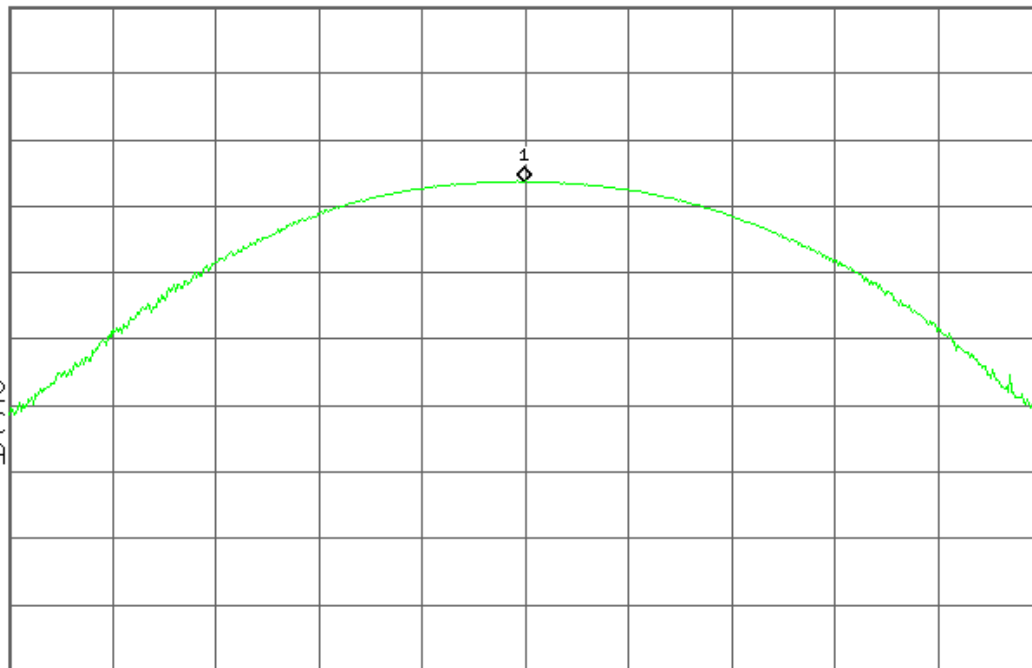
3.76 dBm

Ref 30 dBm

Atten 40 dB

Peak
Log
10
dB/
Offst
7
dB

LgAv

M1 S2
S3 FC
AAE(f):
FTun
Swp

Center 2.441 000 GHz

Span 10 MHz

#Res BW 3 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Ch High

* Agilent 14:51:15 Apr 28, 2014

R T

Mkr1 2.479 867 GHz

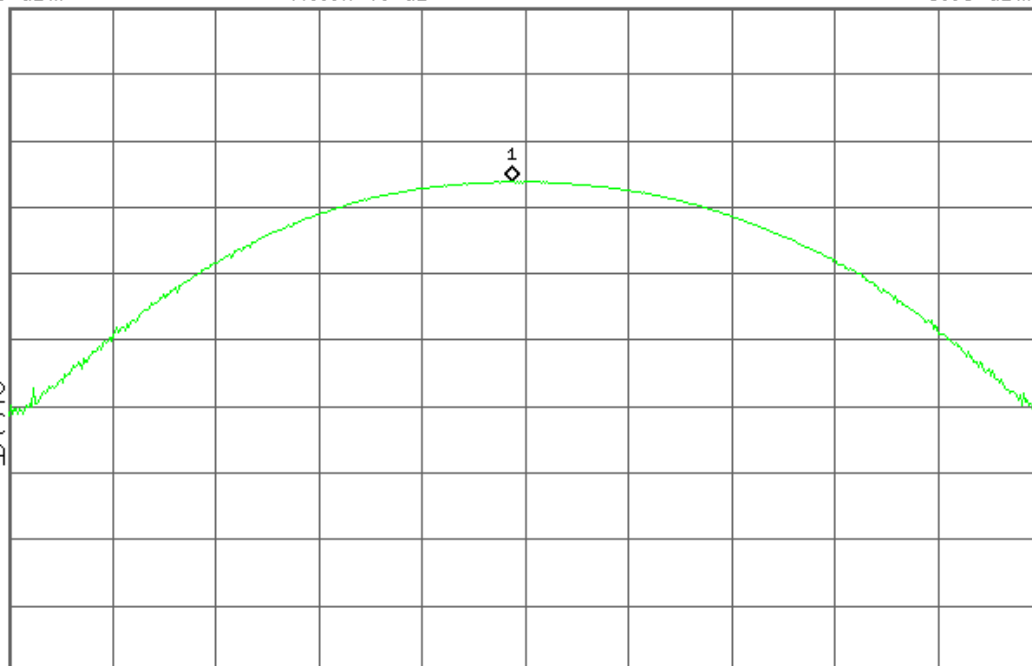
3.93 dBm

Ref 30 dBm

Atten 40 dB

Peak
Log
10
dB/
Offst
7
dB

LgAv

M1 S2
S3 FC
AAE(f):
FTun
Swp

Center 2.480 000 GHz

Span 10 MHz

#Res BW 3 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

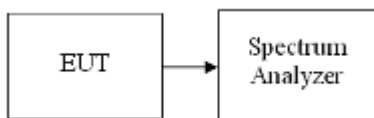


6.2 PEAK POWER SPECTRAL DENSITY

Limit

1. For direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.
2. The direct sequence operating of the hybrid system, with the frequency hopping operation turned off, shall comply with the power density requirements of paragraph (d) of this section.

Test Configuration



Test Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW = 3kHz, VBW = 10kHz, Span = 300kHz, Sweep=100s
4. Record the max. reading.
5. Repeat the above procedure until the measurements for all frequencies are completed.

Test Results

NA (this test item is not required for FHSS modulation technical)

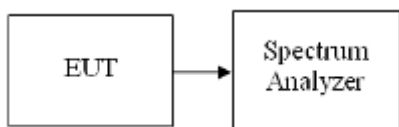


6.3 HOPPING CHANNEL BANDWIDTH

Limit

According to §15.247(a)(1), Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

Test Configuration



Test Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW = 30kHz, VBW = 300kHz, Span = 2MHz, Sweep = auto.
4. Max hold, mark 2 peaks of hopping channel and record the 2 peaks frequency.



Test Results of Bandwidth

No non-compliance noted

Operation Mode:	1 Mbps	Test Date:	April 28, 2014
Temperature:	24°C	Tested by:	Blent.Wang

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
00	2402	0.901
39	2441	0.898
78	2480	0.900

Operation Mode:	3 Mbps	Test Date:	April 28, 2014
Temperature:	24°C	Tested by:	Blent.Wang

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
00	2402	1.157
39	2441	1.157
78	2480	1.160

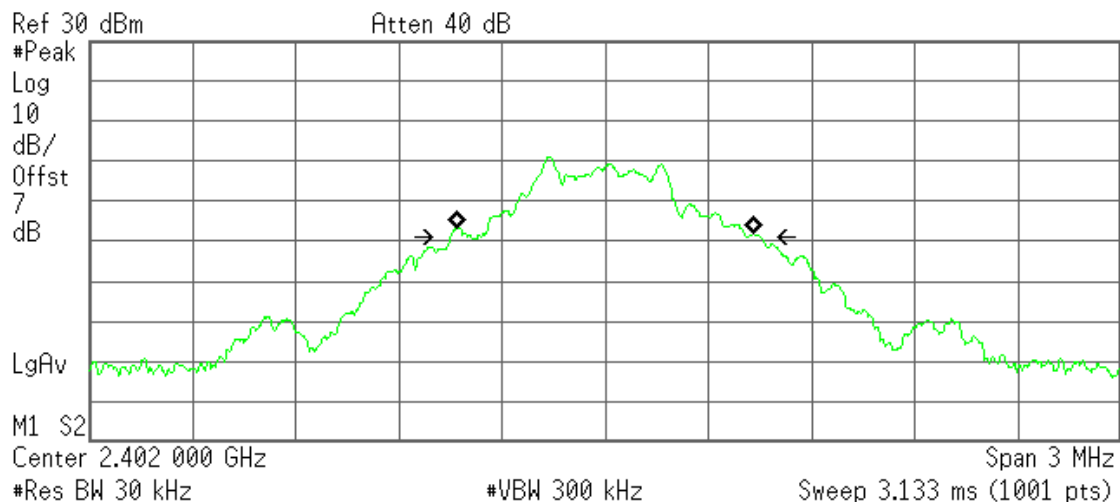


Test Plot

1M Channel 00

* Agilent 12:41:30 Apr 28, 2014

R T



Occupied Bandwidth
858.4056 kHz

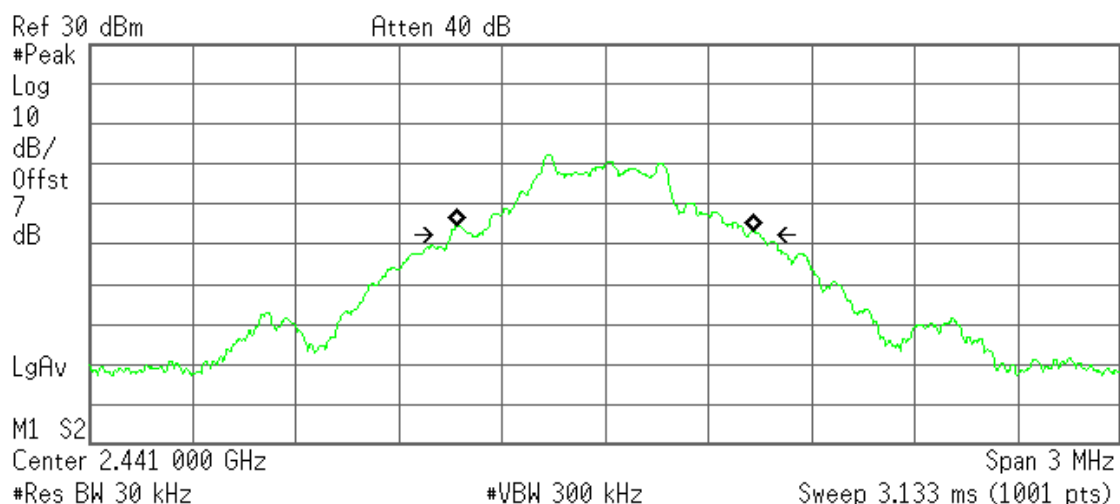
Occ BW % Pwr 99.00 %
x dB -20.00 dB

Transmit Freq Error -1.188 kHz
x dB Bandwidth 900.565 kHz

1M Channel 39

* Agilent 12:41:04 Apr 28, 2014

R T



Occupied Bandwidth
859.5058 kHz

Occ BW % Pwr 99.00 %
x dB -20.00 dB

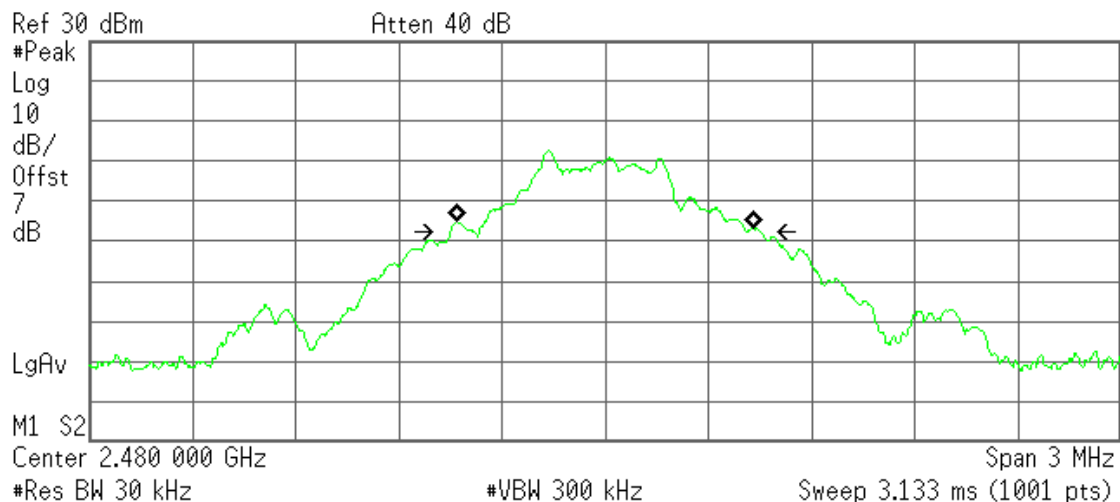
Transmit Freq Error -1.627 kHz
x dB Bandwidth 897.696 kHz



1M Channel 78

* Agilent 12:40:34 Apr 28, 2014

R T



Occupied Bandwidth
861.3608 kHz

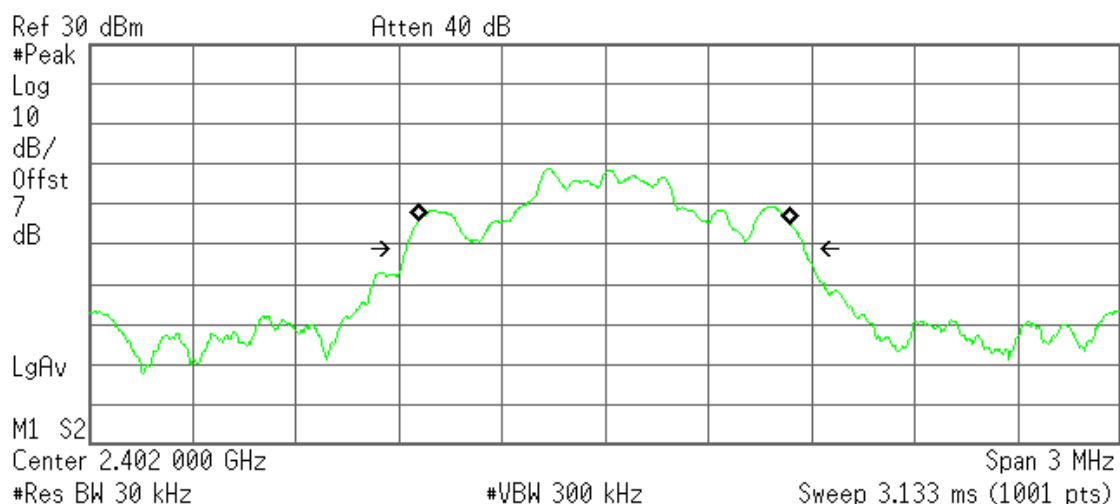
Occ BW % Pwr 99.00 %
x dB -20.00 dB

Transmit Freq Error -1.926 kHz
x dB Bandwidth 900.135 kHz

3M Channel 00

* Agilent 12:38:36 Apr 28, 2014

R T



Occupied Bandwidth
1.0816 MHz

Occ BW % Pwr 99.00 %
x dB -20.00 dB

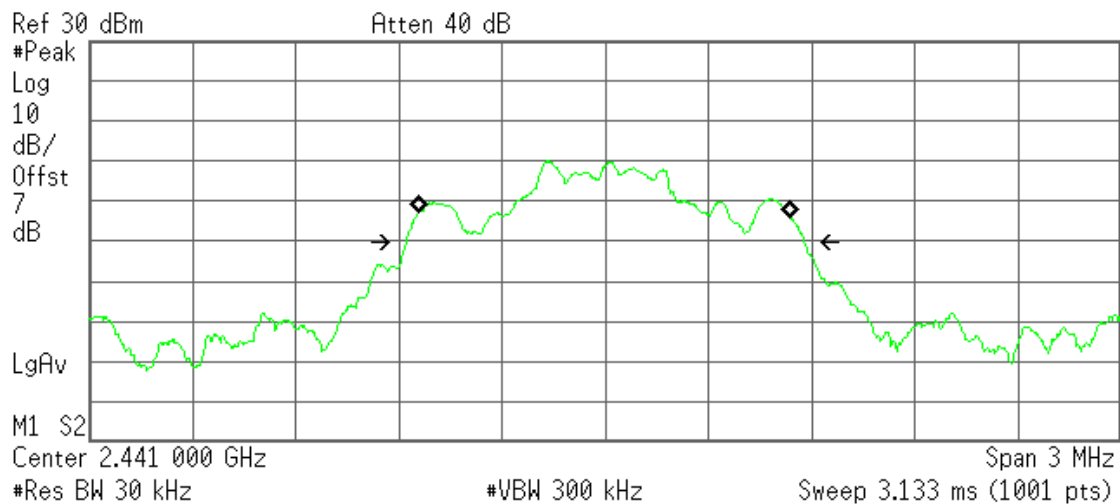
Transmit Freq Error -2.441 kHz
x dB Bandwidth 1.157 MHz



3M Channel 39

* Agilent 12:39:28 Apr 28, 2014

R T



Occupied Bandwidth
1.0800 MHz

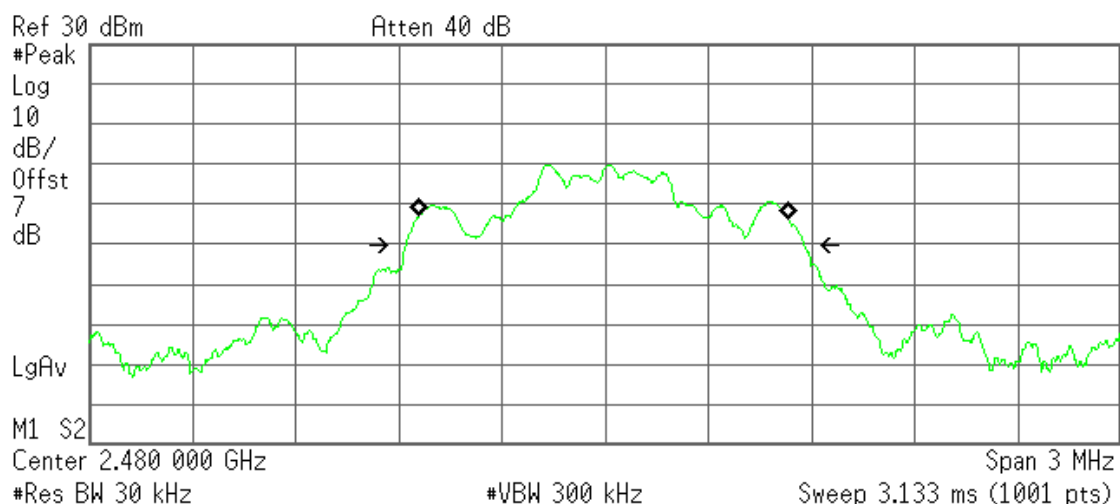
Occ BW % Pwr 99.00 %
x dB -20.00 dB

Transmit Freq Error -3.166 kHz
x dB Bandwidth 1.157 MHz

3M Channel 78

* Agilent 12:39:59 Apr 28, 2014

R T



Occupied Bandwidth
1.0768 MHz

Occ BW % Pwr 99.00 %
x dB -20.00 dB

Transmit Freq Error -3.918 kHz
x dB Bandwidth 1.160 MHz

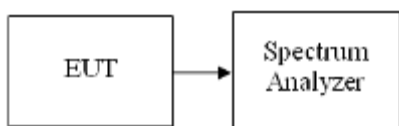


6.4 HOPPING CHANNEL SEPARATION

LIMIT

According to §15.247(a)(1) Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

Test Configuration



TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set center frequency of spectrum analyzer = middle of hopping channel.
4. Set the spectrum analyzer as RBW = 30kHz, VBW = 100kHz, Span = 3MHz, Sweep = auto.
5. Max hold, mark 2 peaks of hopping channel and record the 2 peaks frequency.



TEST RESULTS

No non-compliance noted

Operation Mode:	1 Mbps	Test Date:	April 28, 2014
Temperature:	24°C	Tested by:	Blent.Wang

Channel	Frequency	Separation	(2/3 of 20dB BW)	Result
	(MHz)	(MHz)	Limits (MHz)	
38~39	2440~2441	1.002	0.601	Pass

Operation Mode:	3 Mbps	Test Date:	April 28, 2014
Temperature:	24°C	Tested by:	Blent.Wang

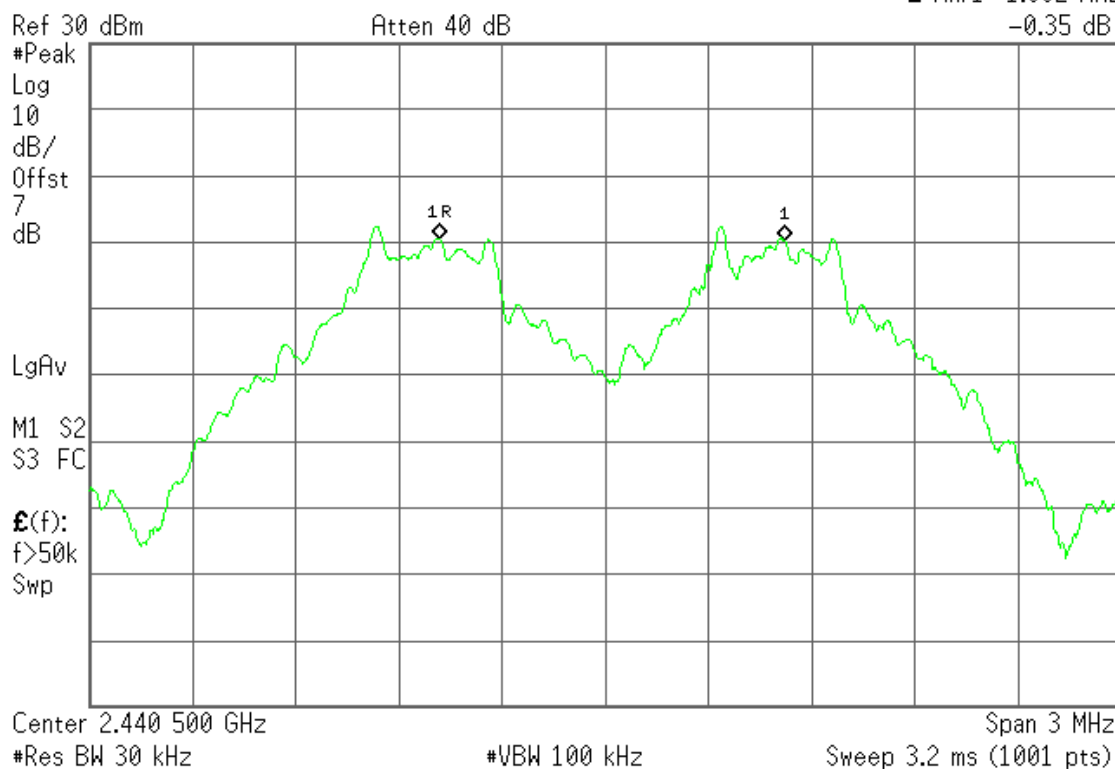
Channel	Frequency	Separation	(2/3 of 20dB BW)	Result
	(MHz)	(MHz)	Limits (MHz)	
38~39	2440~2441	1.002	0.773	Pass

1M Channel Separation Plot on Channel 38-39

Agilent 12:46:44 Apr 28, 2014

R T

▲ Mkr1 1.002 MHz
-0.35 dB





3M Channel Separation Plot on Channel 38-39

* Agilent 12:49:23 Apr 28, 2014

R T

▲ Mkr1 1.002 MHz
0.10 dB

Ref 30 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offset

7

dB

LgAv

M1 S2

S3 FC

E(f):

f>50k

Swp

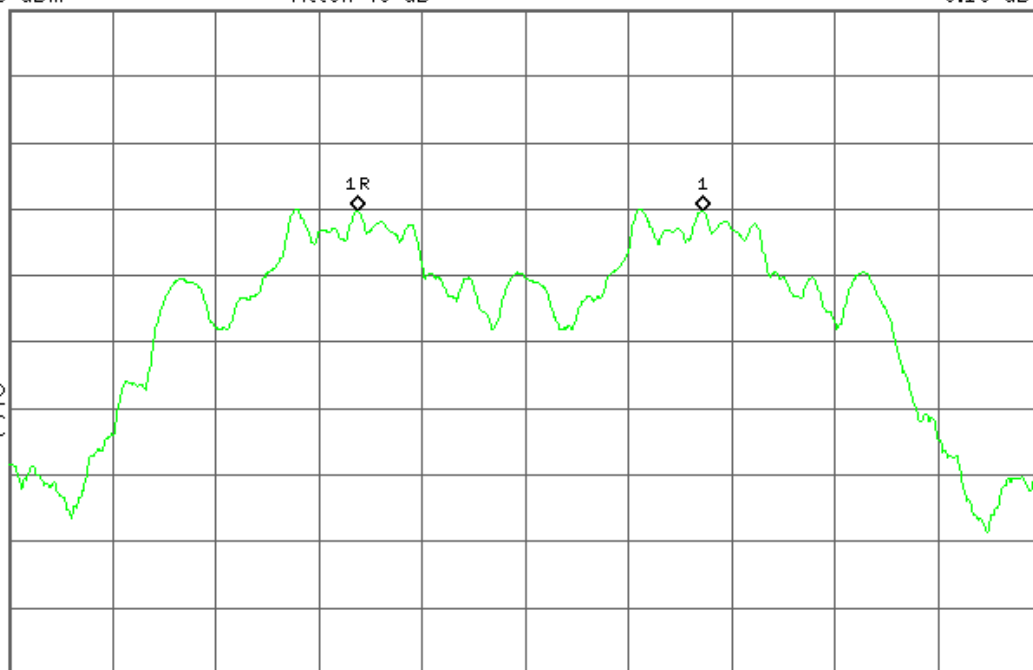
Center 2.440 500 GHz

#Res BW 30 kHz

#VBW 100 kHz

Span 3 MHz

Sweep 3.2 ms (1001 pts)



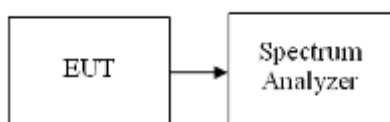


6.5 NUMBER OF HOPPING FREQUENCY

LIMIT

According to §15.247(a)(1)(iii), Frequency hopping systems operating in the 2400MHz-2483.5 MHz bands shall use at least 15 hopping frequencies.

Test Configuration



TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set spectrum analyzer Start=2400MHz, Stop = 2441MHz, Sweep = auto and Start=2441MHz, Stop = 2483.5MHz, Sweep = auto.
4. Set the spectrum analyzer as RBW, VBW=1MHz.
5. Max hold, view and count how many channel in the band.

TEST RESULTS

No non-compliance noted

Test Data

Operation Mode:	1 Mbps	Test Date:	April 28, 2014
Temperature:	24°C	Tested by:	Blent.Wang

Result (No. of CH)	Limit (No. of CH)	Result
79	>15	PASS

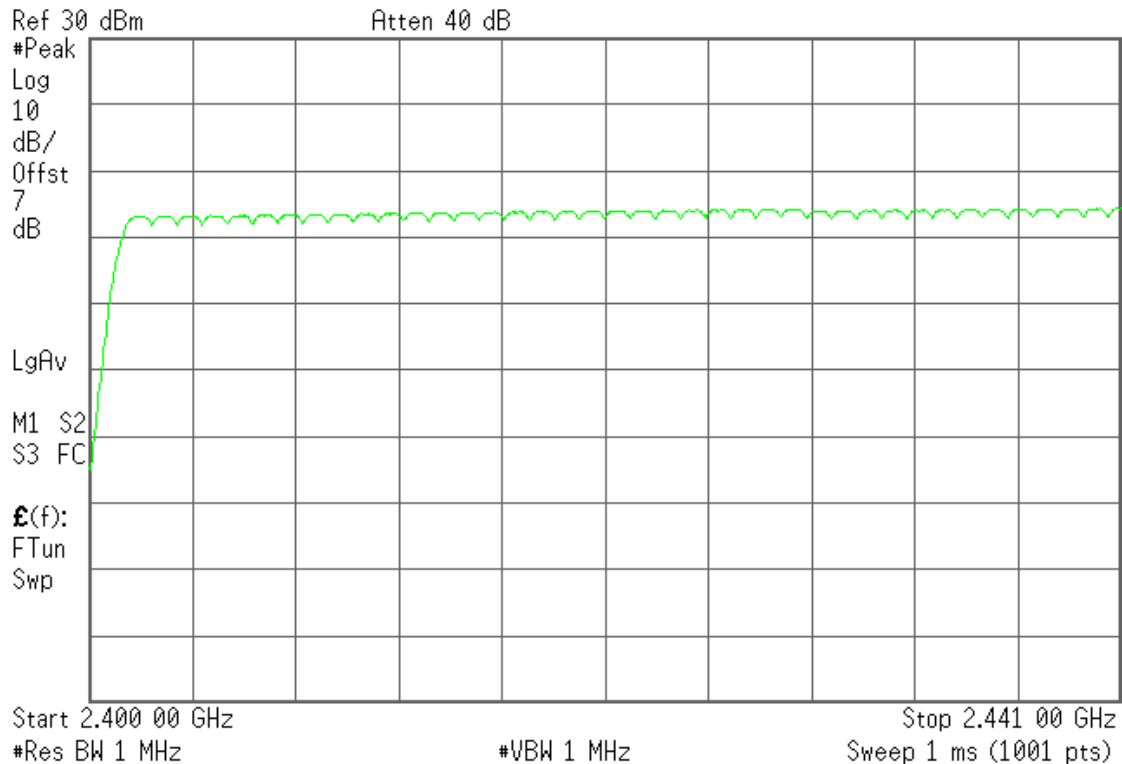
Operation Mode:	3 Mbps	Test Date:	April 28, 2014
Temperature:	24°C	Tested by:	Blent.Wang

Result (No. of CH)	Limit (No. of CH)	Result
79	>15	PASS

**Test Plot:1M****Channel Number 2.4 GHz – 2.441 GHz**

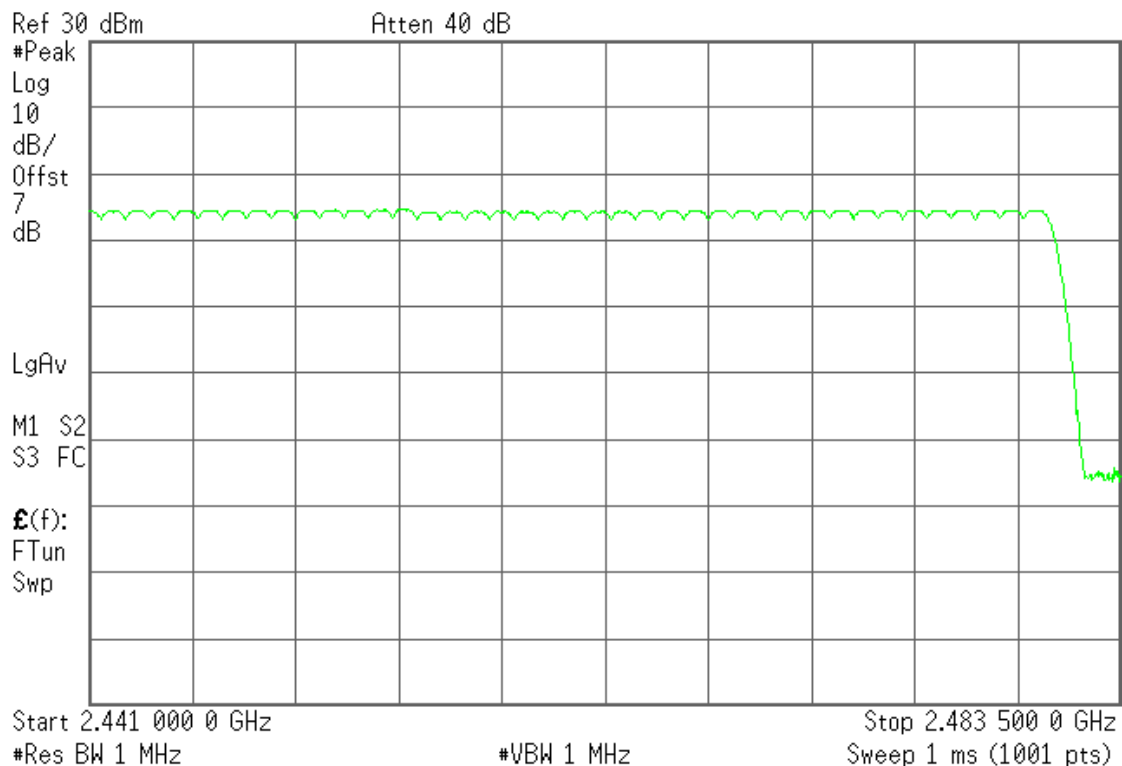
* Agilent 13:01:39 Apr 28, 2014

R T

**Channel Number 2.441 GHz – 2.4835 GHz**

* Agilent 12:58:55 Apr 28, 2014

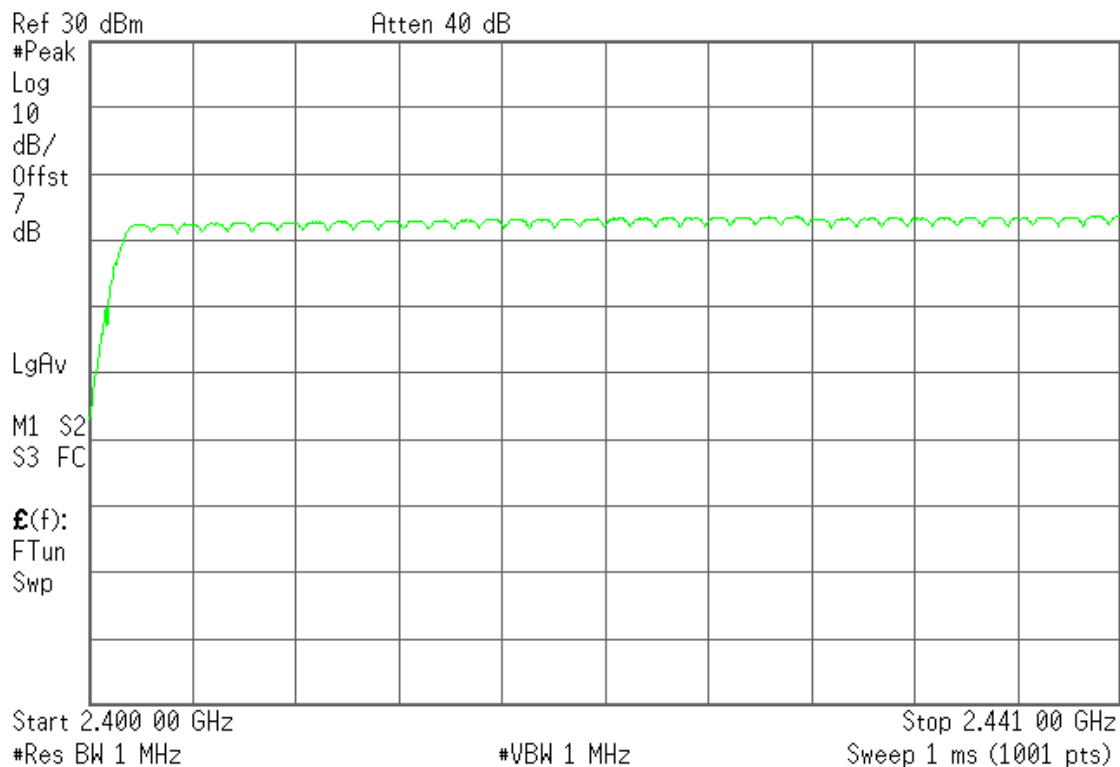
R T



**Test Plot:3M****Channel Number 2.4 GHz – 2.4415 GHz**

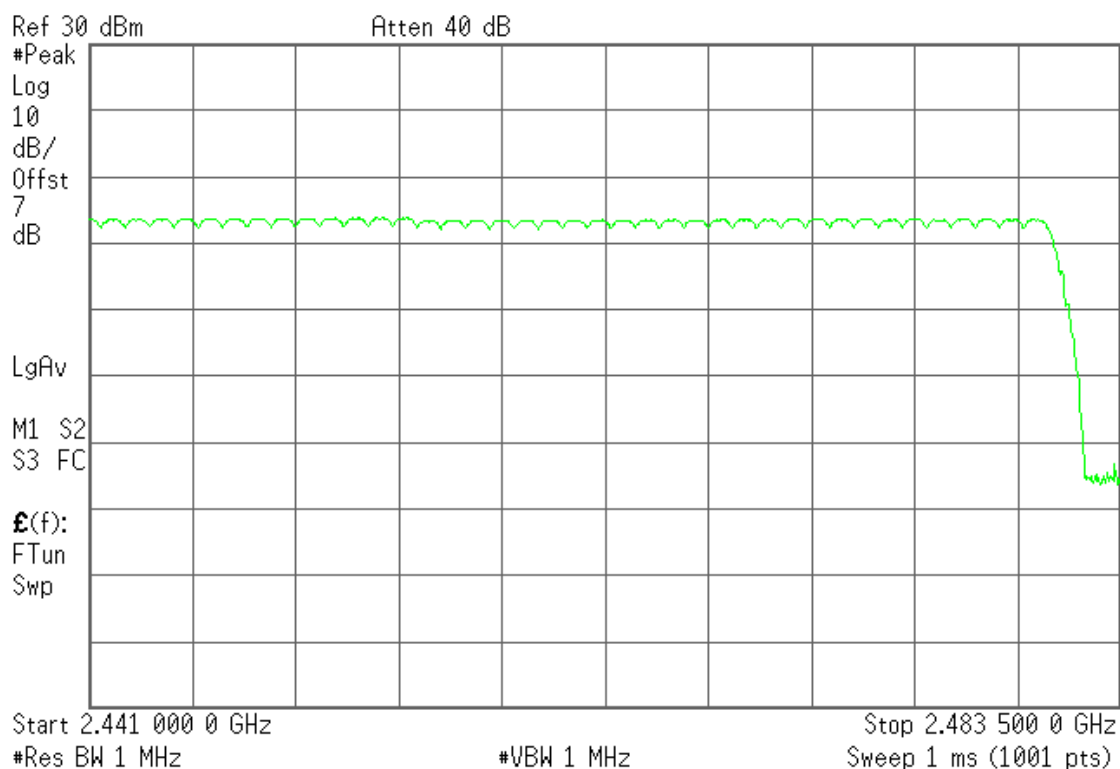
* Agilent 12:53:22 Apr 28, 2014

R T

**Channel Number 2.4415 GHz – 2.4835 GHz**

* Agilent 12:56:05 Apr 28, 2014

R T



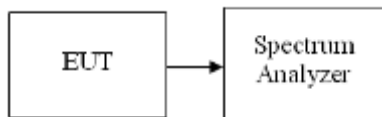


6.6 TIME OF OCCUPANCY (DWELL TIME)

LIMIT

According to §15.247(a)(1)(iii), Frequency hopping systems operating in the 2400MHz-2483.5 MHz bands. The average time of occupancy on any channels shall not greater than 0.4 s within a period 0.4 s multiplied by the number of hopping channels employed.

Test Configuration



TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set center frequency of spectrum analyzer = operating frequency.
4. Set the spectrum analyzer as RBW, VBW=1MHz, Span = 0Hz, Sweep = auto.
5. Repeat above procedures until all frequency measured were complete.

TEST RESULTS

No non-compliance noted

Test Data

1M

DH 1

$$0.362 * (1600/2)/79 * 31.6 = 115.84(\text{ms})$$

Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)	Result
0.362	115.84	31.60	400	PASS

DH 3

$$1.625 * (1600/4)/79 * 31.6 = 260.00 (\text{ms})$$

Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)	Result
1.625	260.00	31.60	400	PASS

DH 5

$$2.867 * (1600/6)/79 * 31.6 = 305.81 (\text{ms})$$

Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)	Result
2.867	305.81	31.60	400	PASS

3M



Compliance Certification Services Inc.

Report No: C140425R01-RPB

FCC ID: RQQHLT-D350

Date of Issue :May 16, 2014

DH 1

$$0.383 * (1600/2)/79 * 31.6 = 122.56 \text{ (ms)}$$

Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)	Result
0.383	122.56	31.60	400	PASS

DH 3

$$1.625 * (1600/4)/79 * 31.6 = 260.00 \text{ (ms)}$$

Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)	Result
1.625	260.00	31.60	400	PASS

DH 5

$$2.867 * (1600/6)/79 * 31.6 = 305.81 \text{ (ms)}$$

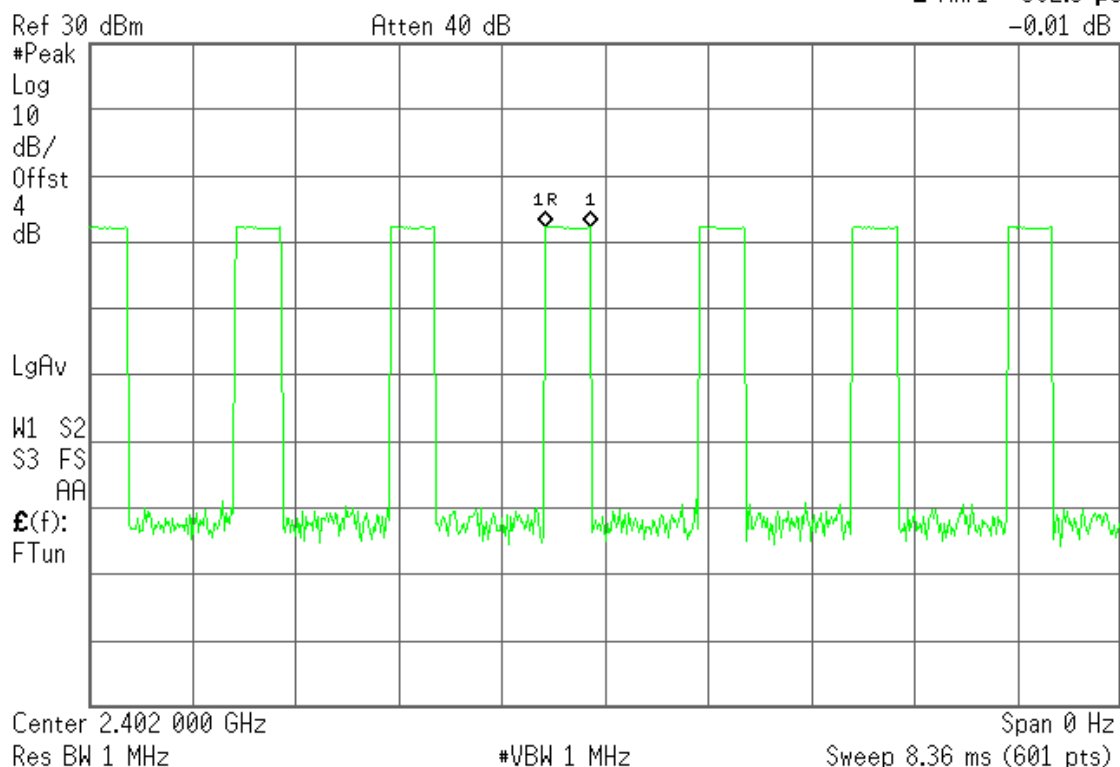
Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)	Result
2.867	305.81	31.60	400	PASS



1M-DH1

* Agilent 17:45:58 Apr 28, 2014

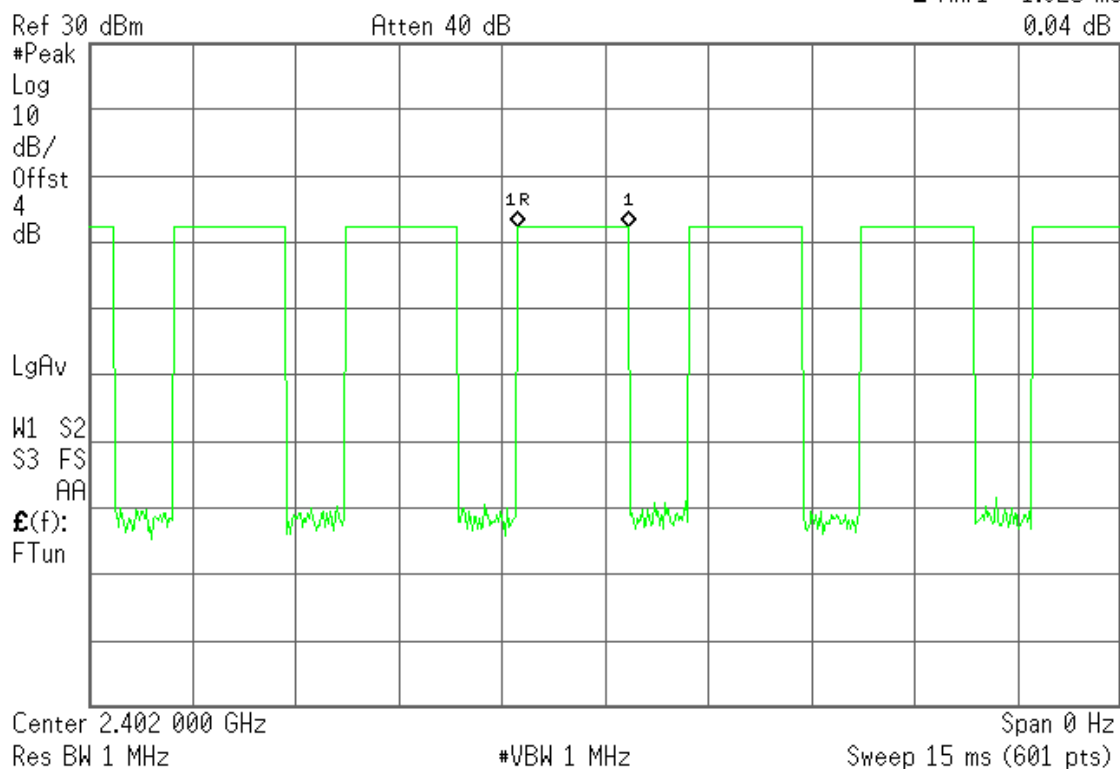
R T

▲ Mkr1 362.3 μ s
-0.01 dB

1M-DH3

* Agilent 17:47:46 Apr 28, 2014

R T

▲ Mkr1 1.625 ms
0.04 dB



1M-DH5

* Agilent 17:49:52 Apr 28, 2014

R T

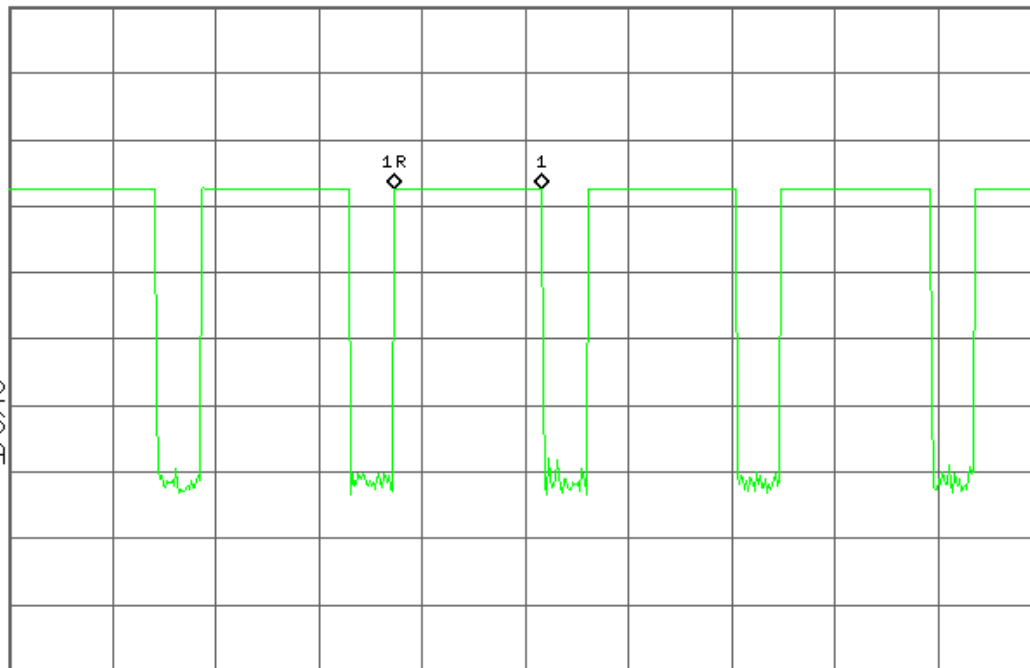
▲ Mkr1 2.867 ms
-0.02 dB

Ref 30 dBm

Atten 40 dB

#Peak
Log
10
dB/
Offst
4
dB

LgAv

W1 S2
S3 FS
AA£(f):
FTun

Center 2.402 000 GHz

Res BW 1 MHz

#VBW 1 MHz

Span 0 Hz
Sweep 20 ms (601 pts)

3M-DH1

* Agilent 17:51:10 Apr 28, 2014

R T

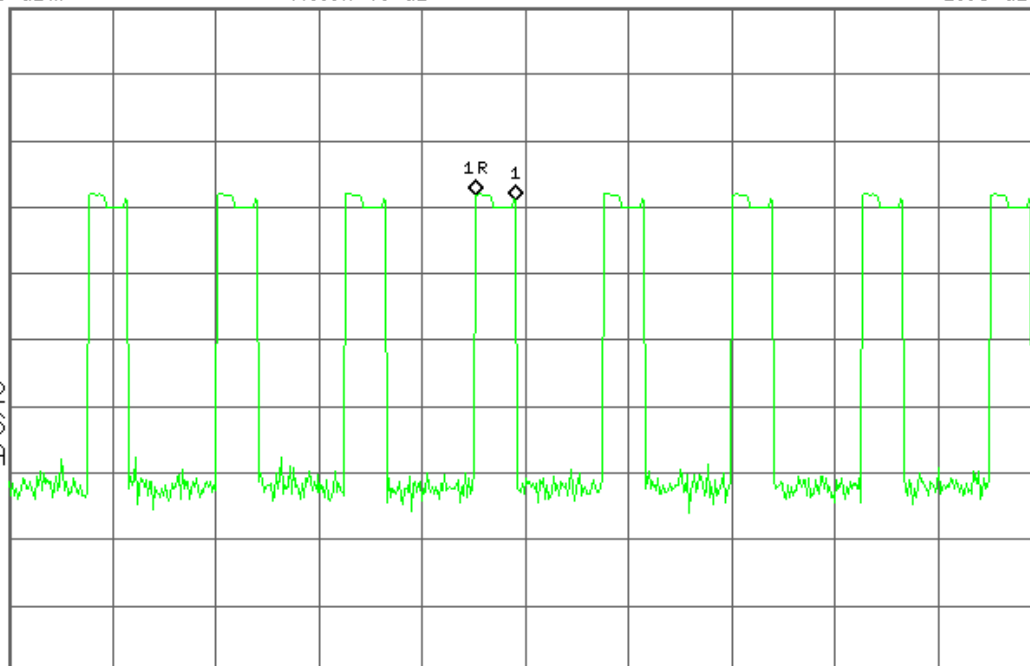
▲ Mkr1 383.3 µs
-1.03 dB

Ref 30 dBm

Atten 40 dB

#Peak
Log
10
dB/
Offst
4
dB

LgAv

W1 S2
S3 FS
AA£(f):
FTun

Center 2.402 000 GHz

Res BW 1 MHz

#VBW 1 MHz

Span 0 Hz
Sweep 10 ms (601 pts)



3M-DH3

* Agilent 17:52:23 Apr 28, 2014

R T

▲ Mkr1 1.625 ms

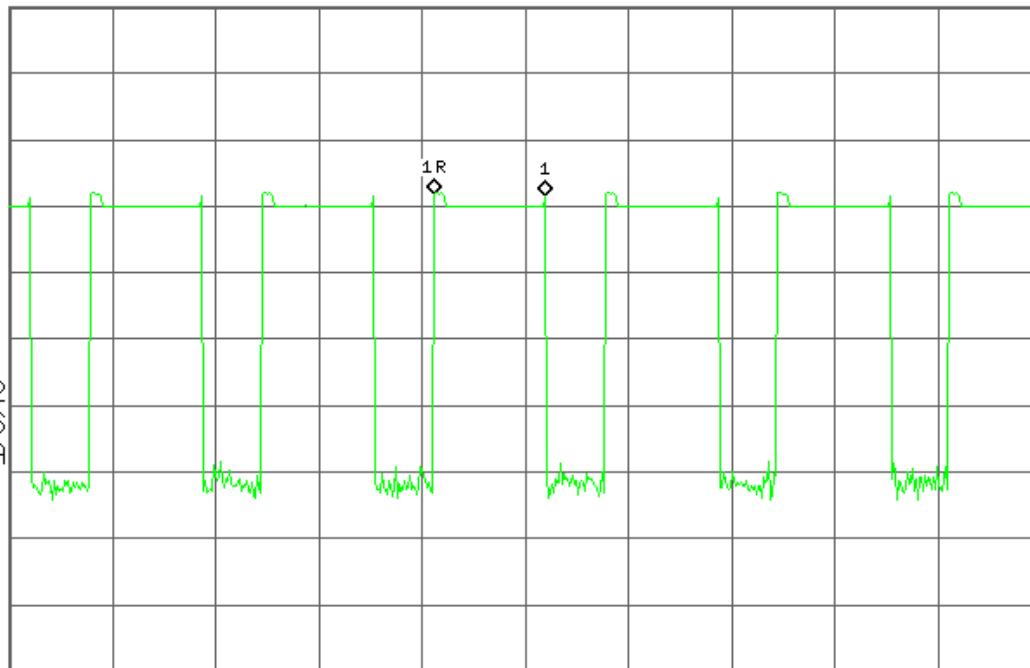
-0.48 dB

Ref 30 dBm

Atten 40 dB

#Peak
Log
10
dB/
Offst
4
dB

LgAv

W1 S2
S3 FS
AAE(f):
FTun

Center 2.402 000 GHz

Res BW 1 MHz

#VBW 1 MHz

Span 0 Hz
Sweep 15 ms (601 pts)

3M-DH5

* Agilent 17:53:31 Apr 28, 2014

R T

▲ Mkr1 2.867 ms

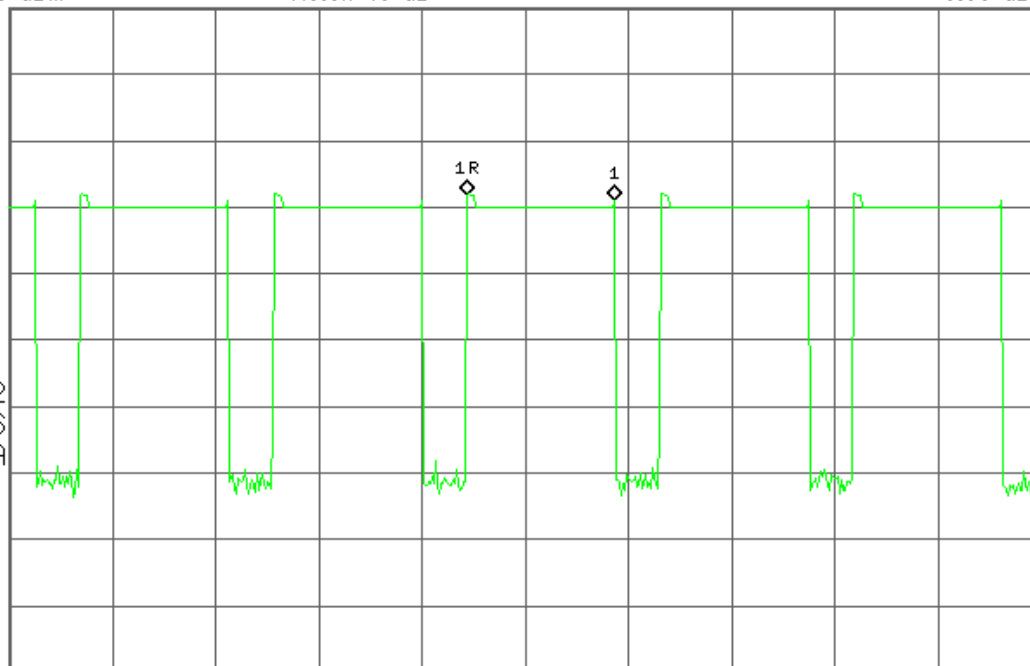
-0.88 dB

Ref 30 dBm

Atten 40 dB

#Peak
Log
10
dB/
Offst
4
dB

LgAv

W1 S2
S3 FS
AAE(f):
FTun

Center 2.402 000 GHz

Res BW 1 MHz

#VBW 1 MHz

Span 0 Hz
Sweep 20 ms (601 pts)



6.7 SPURIOUS EMISSION

Conducted Measurement

LIMIT

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

Test Configuration



TEST PROCEDURE

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 KHz. The video bandwidth is set to 300 KHz.

Measurements are made over the 30MHz to 26GHz range with the transmitter set to the lowest, middle, and highest channels.

TEST RESULTS

No non-compliance noted



Compliance Certification Services Inc.

Report No: C140425R01-RPB

FCC ID: RQQHLT-D350

Date of Issue :May 16, 2014

Operation Mode:	1 Mbps	Test Date:	May 10, 2014
Test Channel:	00	Tested by:	Blent.Wang
Humidity:	52 % RH	Temperature:	24°C

Agilent

R T

Mkr1 2.401 834 6 GHz
3.16 dBm

Ref 30 dBm

Atten 40 dB

Peak

Log

10

dB/

Offst

7

dB

DI

-16.8

dBm

LgAv

M1 S2

Center 2.402 000 GHz

Span 10 MHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 1.092 ms (8192 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.401 834 6 GHz	3.16 dBm
2	(1)	Freq	2.400 000 0 GHz	-46.00 dBm

Agilent

R T

Mkr1 459.16 MHz
-44.90 dBm

Ref 30 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

7

dB

DI

-16.8

dBm

LgAv

M1 S2

Start 30.00 MHz

Stop 1.000 00 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 92.83 ms (8192 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	459.16 MHz	-44.90 dBm



Compliance Certification Services Inc.

Report No: C140425R01-RPB

FCC ID: RQQHLT-D350

Date of Issue :May 16, 2014

Agilent

R T

Mkr1 6.926 0 GHz
-38.49 dBm

Ref 30 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

7

dB

DI

-16.8

dBm

LgAv

M1 S2

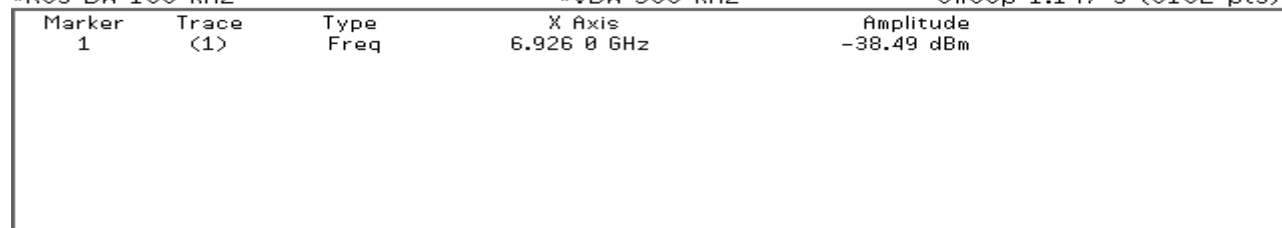
Start 1.000 0 GHz

Stop 13.000 0 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 1.147 s (8192 pts)



Agilent

R T

Mkr1 24.552 6 GHz
-33.26 dBm

Ref 30 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

7

dB

DI

-16.8

dBm

LgAv

M1 S2

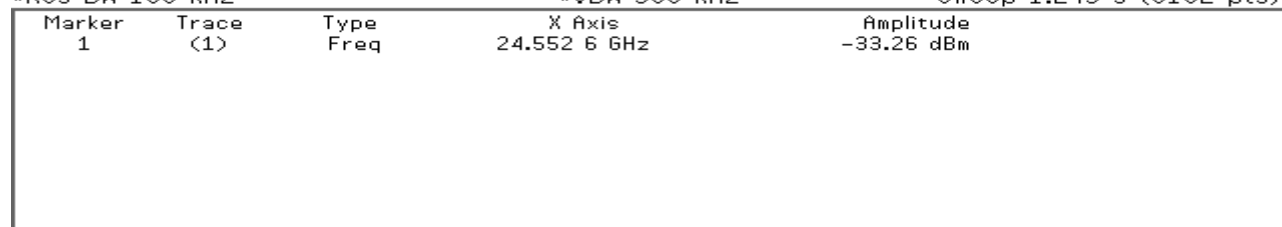
Start 13.000 0 GHz

Stop 26.000 0 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 1.243 s (8192 pts)





Compliance Certification Services Inc.

Report No: C140425R01-RPB

FCC ID: RQQHLT-D350

Date of Issue :May 16, 2014

Operation Mode:	1 Mbps	Test Date:	May 10, 2014
Test Channel:	39	Tested by:	Blent.Wang
Humidity:	52 % RH	Temperature:	24°C

Agilent

R T

Mkr1 2.440 838 2 GHz
4.66 dBm

Ref 30 dBm

Atten 40 dB

Peak

Log

10

dB/

Offst

7

dB

DI

-15.3

dBm

LgAv

M1 S2

Start 2.436 000 0 GHz

Stop 2.446 000 0 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 1.092 ms (8192 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.440 838 2 GHz	4.66 dBm

Agilent

R T

Mkr1 984.25 MHz
-43.92 dBm

Ref 30 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

7

dB

DI

-15.3

dBm

LgAv

M1 S2

Start 30.00 MHz

Stop 1.000 00 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 92.83 ms (8192 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	984.25 MHz	-43.92 dBm



Compliance Certification Services Inc.

Report No: C140425R01-RPB

FCC ID: RQQHLT-D350

Date of Issue :May 16, 2014

Agilent

R T

Mkr1 12.692 3 GHz
-38.28 dBm

Ref 30 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

7

dB

DI

-15.3

dBm

LgAv

M1 S2

Start 1.000 0 GHz

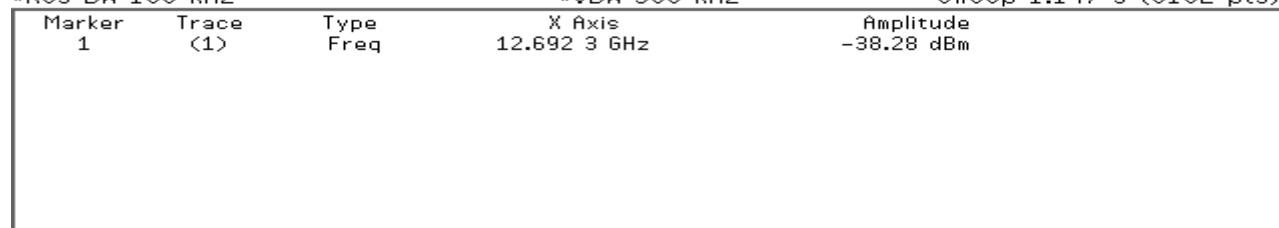
^

Stop 13.000 0 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 1.147 s (8192 pts)



Agilent

R T

Mkr1 24.570 0 GHz
-33.35 dBm

Ref 30 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

7

dB

DI

-15.3

dBm

LgAv

M1 S2

Start 13.000 0 GHz

^ Stop 26.000 0 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 1.243 s (8192 pts)





Compliance Certification Services Inc.

Report No: C140425R01-RPB

FCC ID: RQQHLT-D350

Date of Issue :May 16, 2014

Operation Mode:	1 Mbps	Test Date:	May 10, 2014
Test Channel:	78	Tested by:	Blent.Wang
Humidity:	52 % RH	Temperature:	24°C

Agilent

R T

Mkr1 2.479 837 0 GHz
4.71 dBm

Ref 30 dBm

Atten 40 dB

Peak

Log

10

dB/

Offst

7

dB

DI

-15.3

dBm

LgAv

M1 S2

Center 2.480 000 0 GHz

Span 10 MHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 1.092 ms (8192 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.479 837 0 GHz	4.71 dBm
2	(1)	Freq	2.483 500 0 GHz	-46.29 dBm

Agilent

R T

Mkr1 831.96 MHz
-44.11 dBm

Ref 30 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

7

dB

DI

-15.3

dBm

LgAv

M1 S2

Start 30.00 MHz

Stop 1.000 00 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 92.83 ms (8192 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	831.96 MHz	-44.11 dBm



Compliance Certification Services Inc.

Report No: C140425R01-RPB

FCC ID: RQQHLT-D350

Date of Issue :May 16, 2014

Agilent

R T

Mkr1 12.526 8 GHz
-39.07 dBm

Ref 30 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

7

dB

DI

-15.3

dBm

LgAv

M1 S2

Start 1.000 0 GHz

Stop 13.000 0 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 1.147 s (8192 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	12.526 8 GHz	-39.07 dBm

Agilent

R T

Mkr1 24.595 4 GHz
-33.39 dBm

Ref 30 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

7

dB

DI

-15.3

dBm

LgAv

M1 S2

Start 13.000 0 GHz

Stop 26.000 0 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 1.243 s (8192 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	24.595 4 GHz	-33.39 dBm



Compliance Certification Services Inc.

Report No: C140425R01-RPB

FCC ID: RQQHLT-D350

Date of Issue :May 16, 2014

Operation Mode:	3 Mbps	Test Date:	May 10, 2014
Test Channel:	00	Tested by:	Blent.Wang
Humidity:	52 % RH	Temperature:	24°C

Agilent

R T

Mkr1 2.401 839 5 GHz
2.30 dBm

Ref 30 dBm

Atten 40 dB

Peak

Log

10

dB/

Offst

7

dB

DI

-17.7

dBm

LgAv

M1 S2

Center 2.402 000 0 GHz

Span 10 MHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 1.092 ms (8192 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.401 839 5 GHz	2.30 dBm
2	(1)	Freq	2.400 000 0 GHz	-45.10 dBm

Agilent

R T

Mkr1 928.47 MHz
-44.43 dBm

Ref 30 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

7

dB

DI

-17.7

dBm

LgAv

M1 S2

Start 30.00 MHz

Stop 1.000 00 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 92.83 ms (8192 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	928.47 MHz	-44.43 dBm



Compliance Certification Services Inc.

Report No: C140425R01-RPB

FCC ID: RQQHLT-D350

Date of Issue :May 16, 2014

Agilent

R T

Mkr1 6.933 3 GHz
-39.13 dBm

Ref 30 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

7

dB

DI

-17.7

dBm

LgAv

M1 S2

Start 1.000 0 GHz

Stop 13.000 0 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 1.147 s (8192 pts)

Marker

Trace

Type

X Axis

Amplitude

1

(1)

Freq

6.933 3 GHz

-39.13 dBm

Agilent

R T

Mkr1 24.660 5 GHz
-32.05 dBm

Ref 30 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

7

dB

DI

-17.7

dBm

LgAv

M1 S2

Start 13.000 0 GHz

Stop 26.000 0 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 1.243 s (8192 pts)

Marker

Trace

Type

X Axis

Amplitude

1

(1)

Freq

24.660 5 GHz

-32.05 dBm



Compliance Certification Services Inc.

Report No: C140425R01-RPB

FCC ID: RQQHLT-D350

Date of Issue :May 16, 2014

Operation Mode:	3 Mbps	Test Date:	May 10, 2014
Test Channel:	39	Tested by:	Blent.Wang
Humidity:	52 % RH	Temperature:	24°C

Agilent

R T

Mkr1 2.440 826 0 GHz
3.77 dBm

Ref 30 dBm

Atten 40 dB

Peak

Log

10

dB/

Offst

7

dB

DI

-16.2

dBm

LgAv

M1 S2

Start 2.436 000 0 GHz

Stop 2.446 000 0 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 1.092 ms (8192 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.440 826 0 GHz	3.77 dBm

Agilent

R T

Mkr1 553.43 MHz
-44.48 dBm

Ref 30 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

7

dB

DI

-16.2

dBm

LgAv

M1 S2

Start 30.00 MHz

Stop 1.000 00 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 92.83 ms (8192 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	553.43 MHz	-44.48 dBm



Compliance Certification Services Inc.

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Agilent

R T

Mkr1 6.921 6 GHz
-38.46 dBm

Ref 30 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

7

dB

DI

-16.2

dBm

LgAv

M1 S2

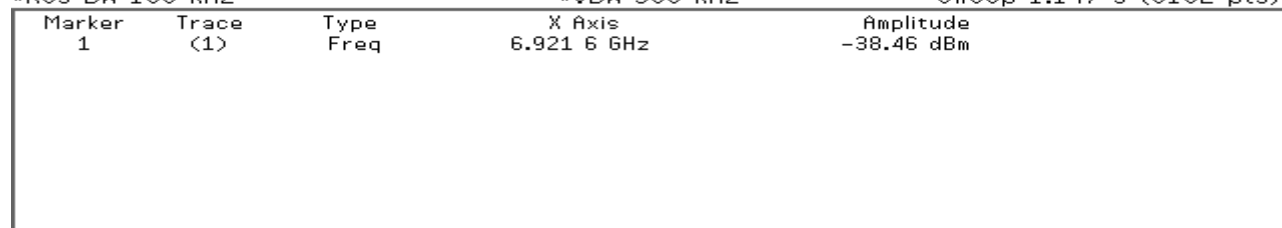
Start 1.000 0 GHz

Stop 13.000 0 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 1.147 s (8192 pts)



Agilent

R T

Mkr1 24.754 1 GHz
-33.33 dBm

Ref 30 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

7

dB

DI

-16.2

dBm

LgAv

M1 S2

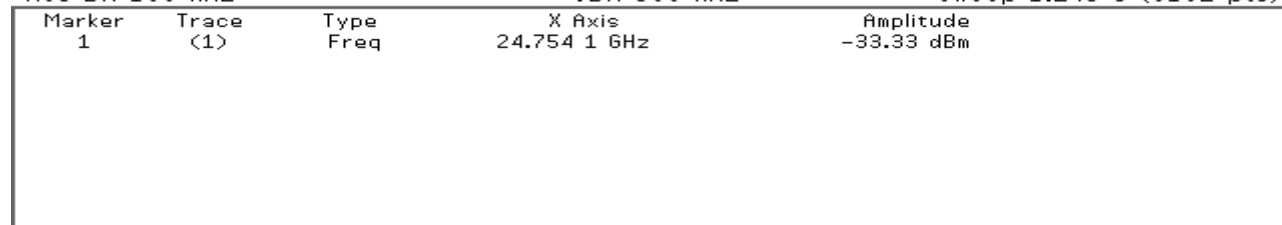
Start 13.000 0 GHz

Stop 26.000 0 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 1.243 s (8192 pts)





Compliance Certification Services Inc.

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FCC ID: RQQHLT-D350

Date of Issue :May 16, 2014

Operation Mode:	3 Mbps	Test Date:	May 10, 2014
Test Channel:	78	Tested by:	Blent.Wang
Humidity:	52 % RH	Temperature:	24°C

Agilent

R T

Mkr1 2.479 837 0 GHz
4.04 dBm

Ref 30 dBm

Atten 40 dB

Peak

Log

10

dB/

Offst

7

dB

DI

-16.0

dBm

LgAv

M1 S2

Center 2.480 000 0 GHz

Span 10 MHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 1.092 ms (8192 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.479 837 0 GHz	4.04 dBm
2	(1)	Freq	2.483 500 0 GHz	-46.80 dBm

Agilent

R T

Mkr1 777.25 MHz
-44.51 dBm

Ref 30 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

7

dB

DI

-16.0

dBm

LgAv

M1 S2

Start 30.00 MHz

Stop 1.000 00 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 92.83 ms (8192 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	777.25 MHz	-44.51 dBm



Compliance Certification Services Inc.

Report No: C140425R01-RPB

FCC ID: RQQHLT-D350

Date of Issue :May 16, 2014

Agilent

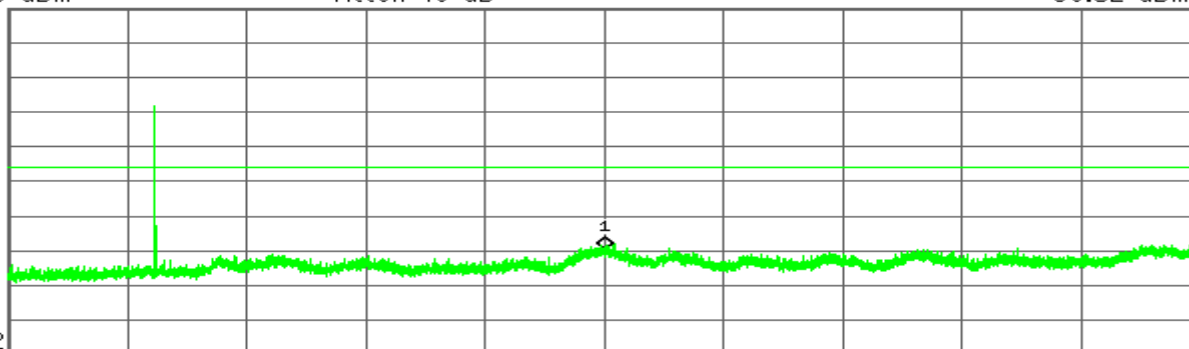
R T

Mkr1 7.012 5 GHz
-39.52 dBm

Ref 30 dBm

Atten 40 dB

#Peak
Log
10
dB/
Offst
7
dB
DI
-16.0
dBm
LgAv



M1 S2

Start 1.000 0 GHz

Stop 13.000 0 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 1.147 s (8192 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	7.012 5 GHz	-39.52 dBm

Agilent

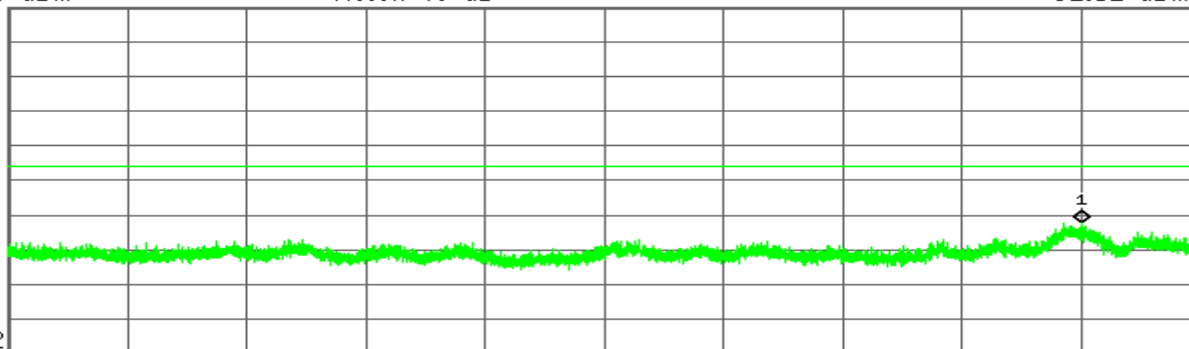
R T

Mkr1 24.716 0 GHz
-32.52 dBm

Ref 30 dBm

Atten 40 dB

#Peak
Log
10
dB/
Offst
7
dB
DI
-16.0
dBm
LgAv



M1 S2

Start 13.000 0 GHz

Stop 26.000 0 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 1.243 s (8192 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	24.716 0 GHz	-32.52 dBm



6.8 Radiated Band Edge and Spurious Emission Measurement

LIMIT

1. 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 (mV/m)	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

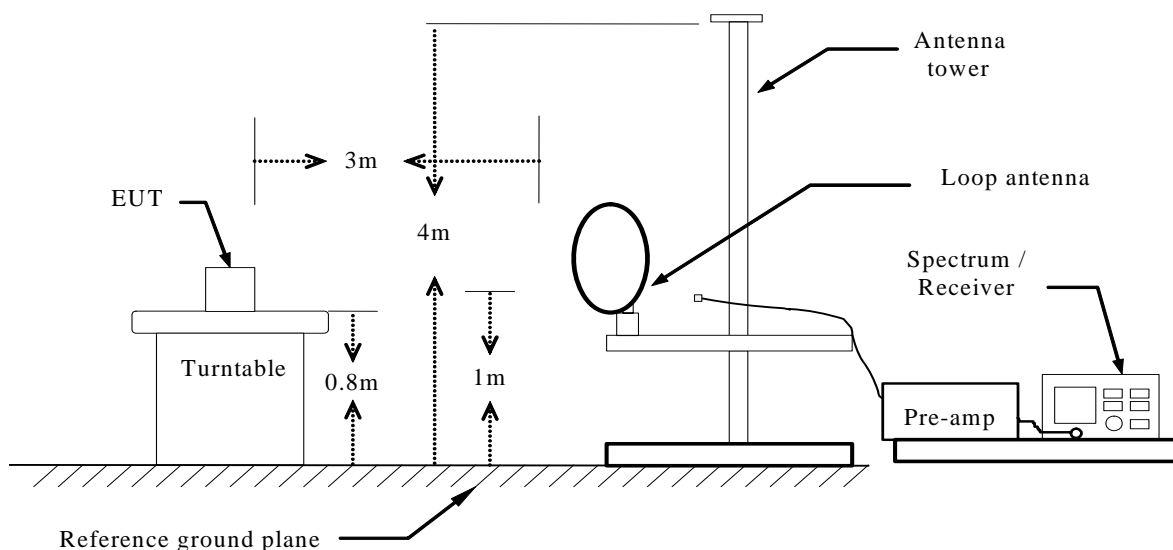
Remark: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of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

2. In the above emission table, the tighter limit applies at the band edges.

Frequency (Hz)	Field Strength ($\mu\text{V/m}$ at 3-meter)	Field Strength (dB $\mu\text{V/m}$ at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

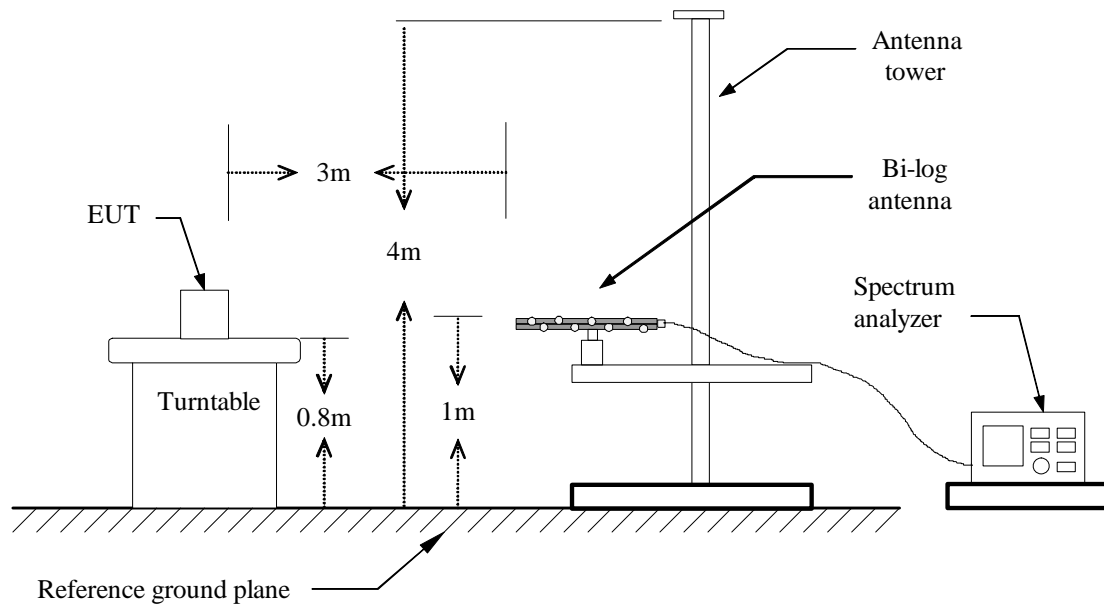
Test Configuration

Below 30MHz

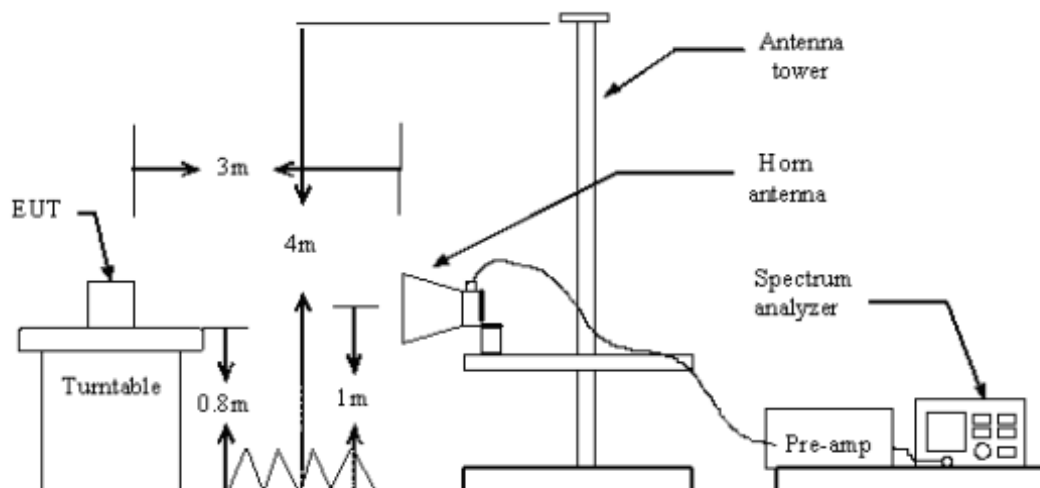




Below 1 GHz



Above 1 GHz





TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:

Below 1GHz:

RBW=100kHz / VBW=300kHz / Sweep=AUTO

Above 1GHz:

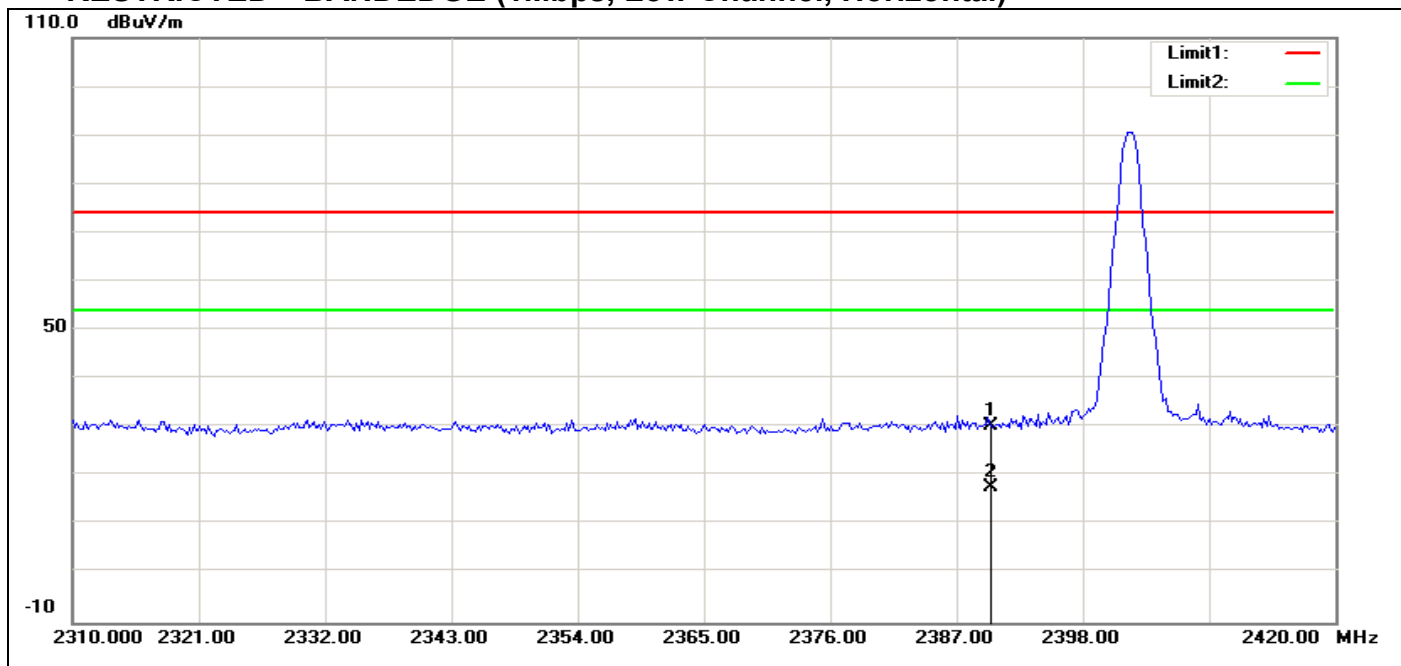
(a) PEAK: RBW=VBW=1MHz / Sweep=AUTO

(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO

7. Repeat above procedures until the measurements for all frequencies are complete.

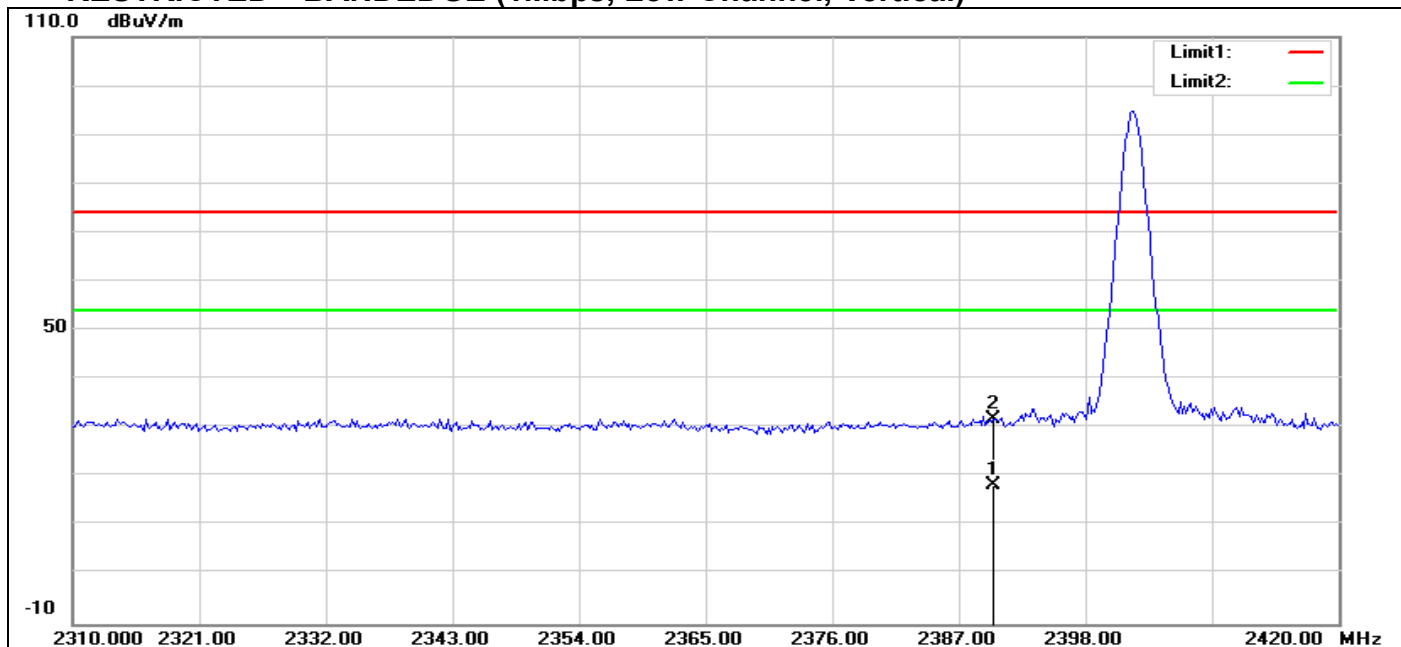


RESTRICTED BANDEDGE (1Mbps, Low Channel, Horizontal)



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2390.000	44.49	-14.28	30.21	74.00	-43.79	100	354	peak
2	2390.000	32.15	-14.29	17.86	54.00	-36.14	100	352	AVG

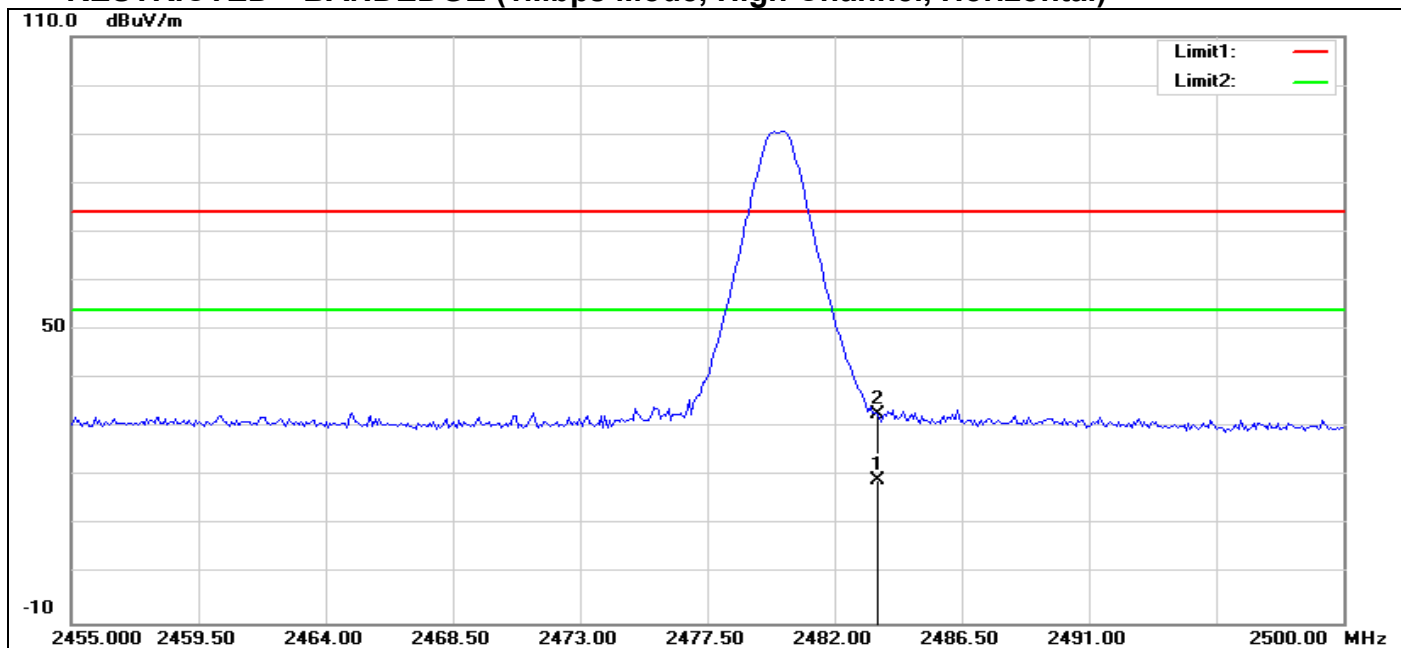
RESTRICTED BANDEDGE (1Mbps, Low Channel, Vertical)



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2390.000	32.57	-14.28	18.29	54.00	-35.71	100	116	AVG
2	2390.000	46.17	-14.28	31.89	74.00	-42.11	100	116	peak

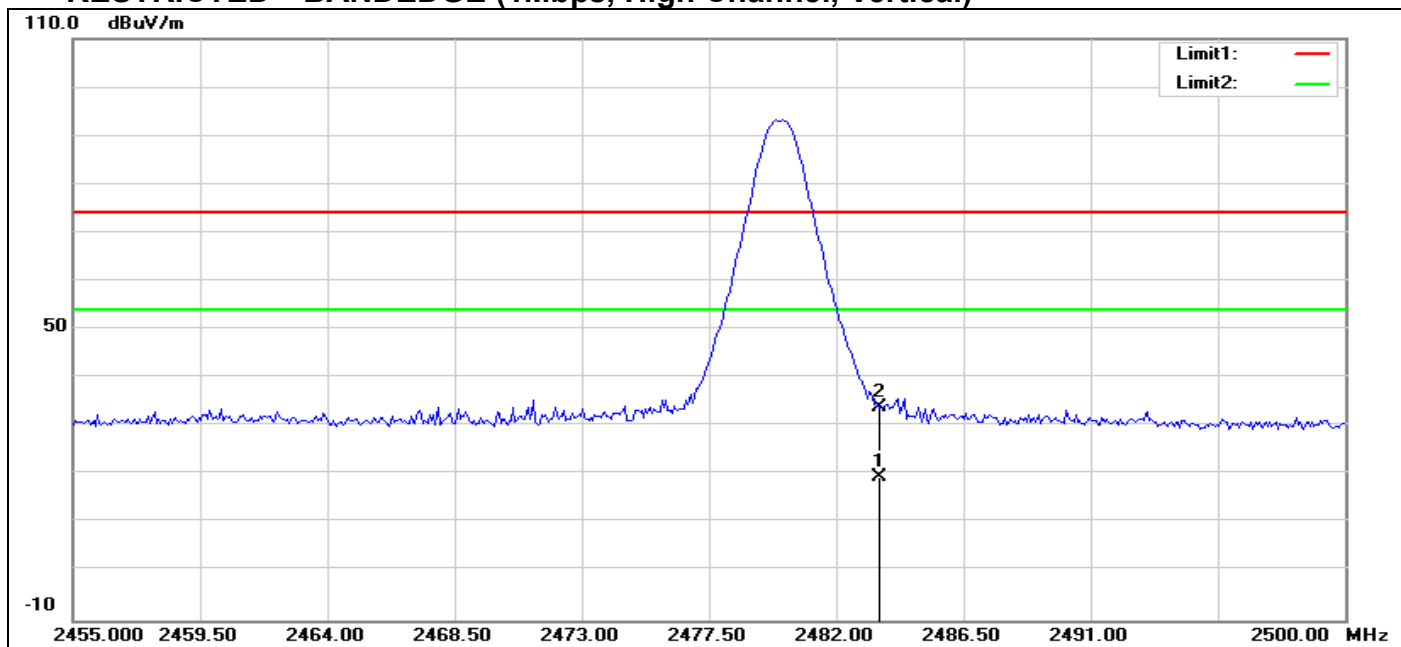


RESTRICTED BANDEDGE (1Mbps Mode, High Channel, Horizontal)



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	32.86	-13.65	19.21	54.00	-34.79	100	200	AVG
2	2483.500	46.43	-13.65	32.78	74.00	-41.22	100	200	peak

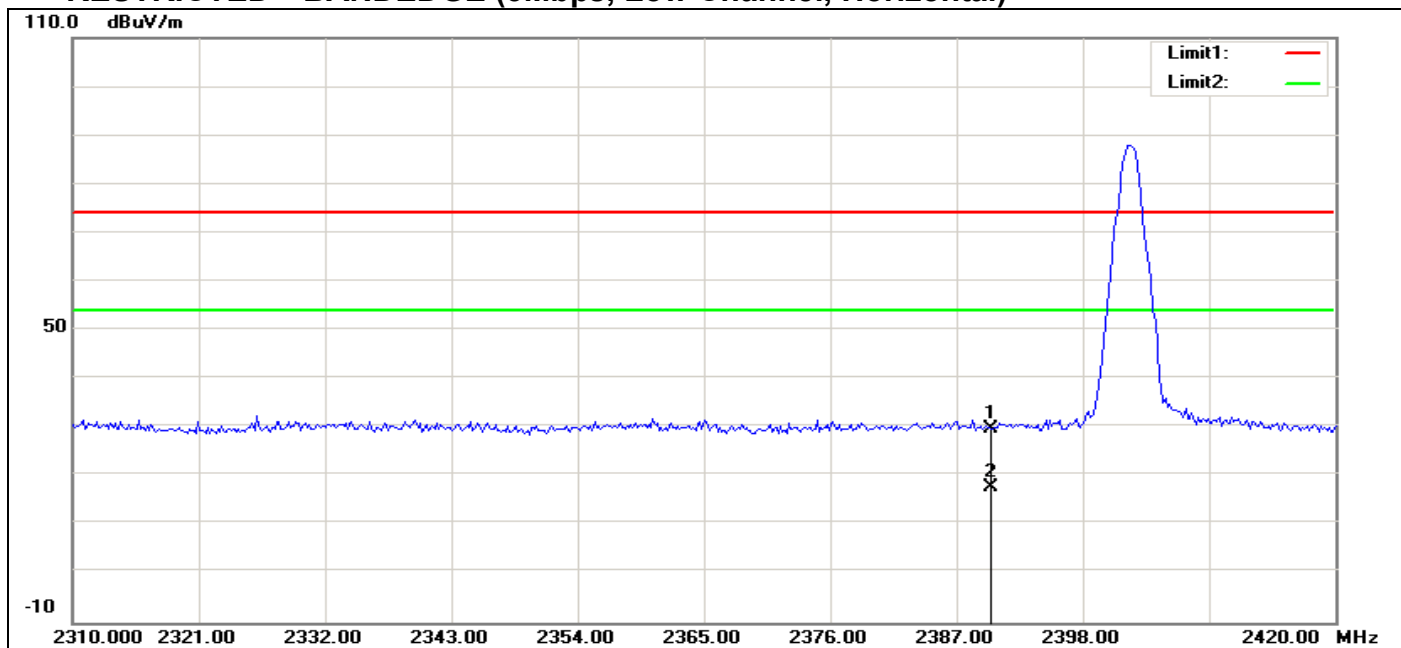
RESTRICTED BANDEDGE (1Mbps, High Channel, Vertical)



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	33.14	-13.65	19.49	54.00	-34.51	100	275	AVG
2	2483.500	47.51	-13.65	33.86	74.00	-40.14	100	275	peak

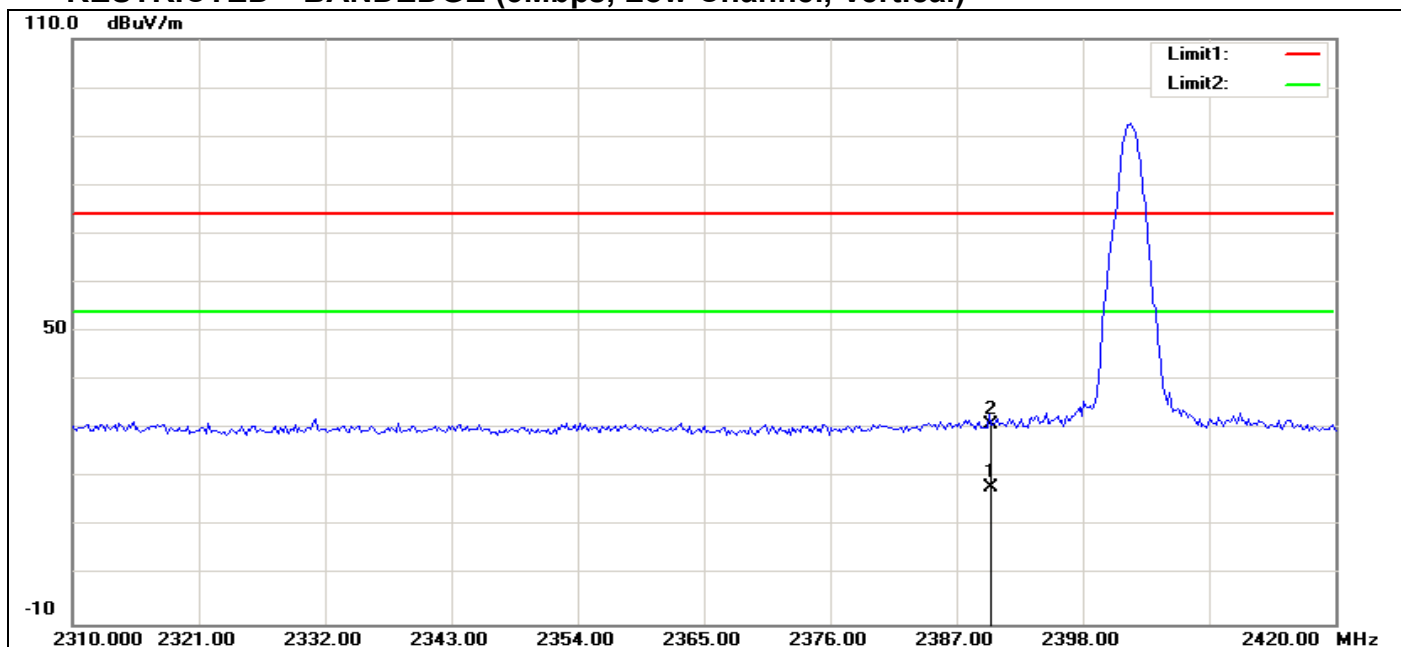


RESTRICTED BANDEDGE (3Mbps, Low Channel, Horizontal)



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2390.000	44.13	-14.28	29.85	74.00	-44.15	100	270	peak
2	2390.000	32.01	-14.29	17.72	54.00	-36.28	100	270	AVG

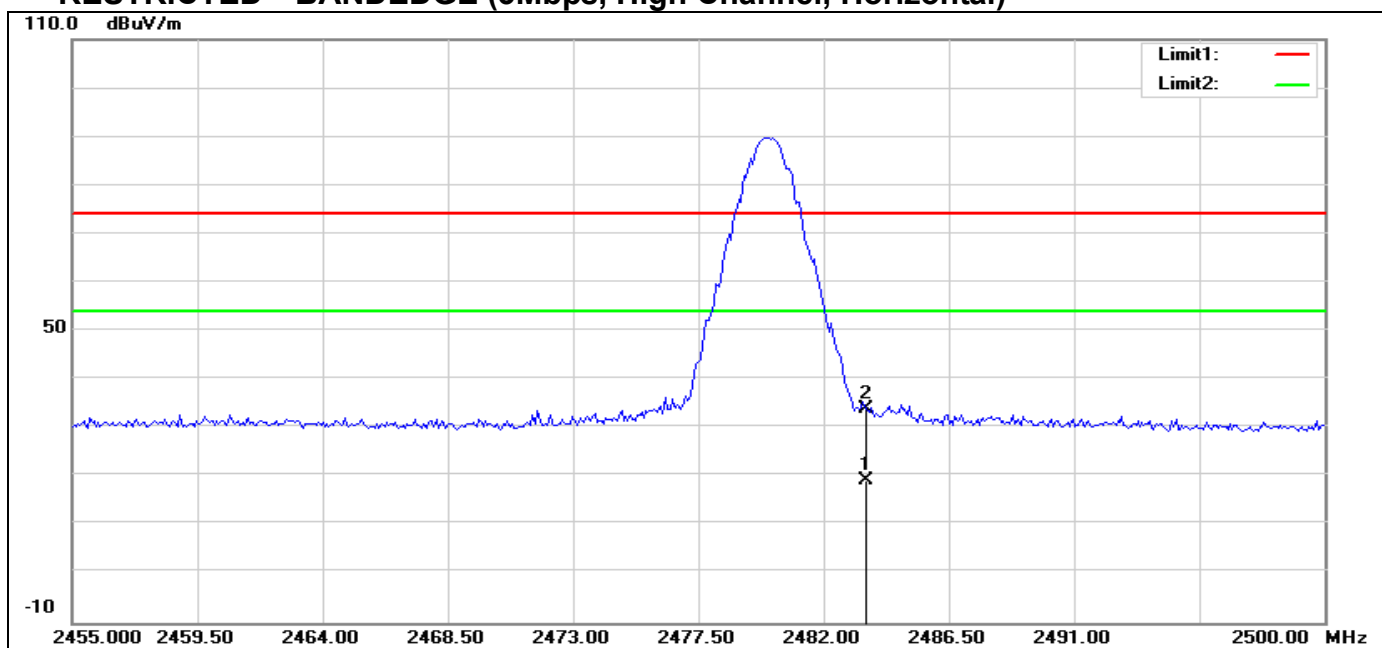
RESTRICTED BANDEDGE (3Mbps, Low Channel, Vertical)



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2390.000	32.42	-14.28	18.14	54.00	-35.86	100	277	AVG
2	2390.000	45.27	-14.28	30.99	74.00	-43.01	100	277	peak

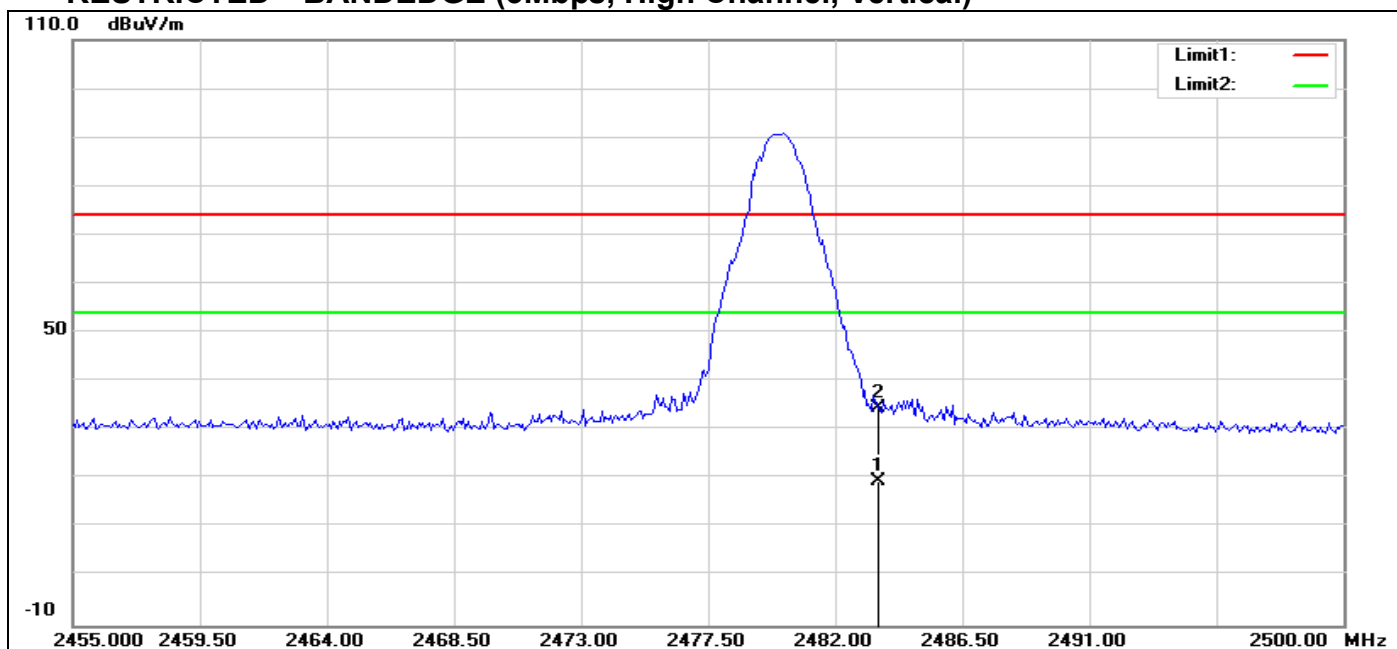


RESTRICTED BANDEDGE (3Mbps, High Channel, Horizontal)



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	32.96	-13.65	19.31	54.00	-34.69	100	307	AVG
2	2483.500	47.63	-13.65	33.98	74.00	-40.02	100	307	peak

RESTRICTED BANDEDGE (3Mbps, High Channel, Vertical)



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	33.17	-13.65	19.52	54.00	-34.48	100	267	AVG
2	2483.500	48.11	-13.65	34.46	74.00	-39.54	100	267	peak



TEST RESULT OF RADIATED EMISSION

30MHz-1GHz

Operation Mode: 1 Mbps

Test Date: May 7, 2014

Test Channel: CH78

Tested by: Blent.Wang

Temperature: 25°C

Polarity: Ver. / Hor.

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	33.8800	22.29	15.70	37.99	40.00	-2.01	200	333	peak
2	122.1500	23.56	15.30	38.86	43.50	-4.64	200	100	peak
3	152.2200	20.25	13.52	33.77	43.50	-9.73	100	238	peak
4	207.5100	22.54	13.18	35.72	43.50	-7.78	100	82	peak
5	312.2700	26.99	14.98	41.97	46.00	-4.03	100	220	peak
6	935.9800	13.11	25.30	38.41	46.00	-7.59	200	123	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	32.9100	21.18	15.70	36.88	40.00	-3.12	176	0	peak
2	55.2200	23.79	8.28	32.07	40.00	-7.93	100	359	peak
3	88.2000	19.74	9.38	29.12	43.50	-14.38	100	132	peak
4	118.2700	21.87	14.82	36.69	43.50	-6.81	100	288	peak
5	286.0800	19.10	15.14	34.24	46.00	-11.76	200	0	peak
6	946.6500	14.49	25.66	40.15	46.00	-5.85	100	159	peak

Notes:

1. Measurements above show only up to maximum emissions noted, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
2. Radiated emissions measured in frequency range from 9 KHz to 1000MHz were made with an instrument using Peak detector mode.
3. Data of measurement within this frequency range shown " --- " 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.
4. The IF bandwidth of SPA between 30MHz to 1GHz was 100kHz.



Compliance Certification Services Inc.

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Above 1 GHz

Operation Mode: 1 Mbps

Test Date: May 7, 2014

Test Channel: CH00

Tested by: Blent.Wang

Temperature: 25°C

Polarity: Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4814.103	V	43.63	-8.00	35.63	74.00	-38.37	PEAK
7211.538	V	41.79	-0.59	41.20	74.00	-32.80	PEAK
4814.103	H	43.34	-8.00	35.34	74.00	-38.66	PEAK
7211.538	H	41.76	-0.59	41.17	74.00	-32.83	PEAK

Operation Mode: 1 Mbps

Test Date: May 7, 2014

Test Channel: CH39

Tested by: Blent.Wang

Temperature: 25°C

Polarity: Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4868.590	V	68.10	-7.72	60.38	74.00	-13.62	PEAK
7320.513	V	53.28	-0.83	52.45	74.00	-21.55	PEAK
4868.590	H	61.92	-7.72	54.20	74.00	-19.80	PEAK
7320.513	H	60.90	-0.83	60.07	74.00	-13.93	PEAK

Operation Mode: 1 Mbps

Test Date: May 7, 2014

Test Channel: CH78

Tested by: Blent.Wang

Temperature: 25°C

Polarity: Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4977.564	V	43.61	-7.59	36.02	74.00	-37.98	PEAK
7456.731	V	41.84	-0.44	41.40	74.00	-32.60	PEAK
4950.320	H	44.04	-7.58	36.46	74.00	-37.54	PEAK
7456.731	H	41.49	-0.44	41.05	74.00	-32.95	PEAK



Compliance Certification Services Inc.

Report No: C140425R01-RPB

FCC ID: RQQHLT-D350

Date of Issue :May 16, 2014

Operation Mode: 3 Mbps

Test Date: May 7, 2014

Test Channel: CH00

Tested by: Blent.Wang

Temperature: 25°C

Polarity: Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4814.103	V	41.60	-8.00	33.60	74.00	-40.40	PEAK
7238.782	V	42.78	-0.68	42.10	74.00	-31.90	PEAK
4814.103	H	41.98	-8.00	33.98	74.00	-40.02	PEAK
7211.538	H	42.49	-0.59	41.90	74.00	-32.10	PEAK

Operation Mode: 3 Mbps

Test Date: May 7, 2014

Test Channel: CH39

Tested by: Blent.Wang

Temperature: 25°C

Polarity: Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4868.590	V	60.57	-7.72	52.85	74.00	-21.15	PEAK
7320.513	V	54.06	-0.83	53.23	74.00	-20.77	PEAK
4868.590	H	58.03	-7.72	50.31	74.00	-23.69	PEAK
7320.513	H	61.66	-0.83	60.83	74.00	-13.17	PEAK

Operation Mode: 3 Mbps

Test Date: May 7, 2014

Test Channel: CH78

Tested by: Blent.Wang

Temperature: 25°C

Polarity: Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4950.320	V	42.43	-7.58	34.85	74.00	-39.15	PEAK
7483.974	V	42.16	-0.34	41.82	74.00	-32.18	PEAK
4977.564	H	43.60	-7.59	36.01	74.00	-37.99	PEAK
7429.487	H	41.72	-0.55	41.17	74.00	-32.83	PEAK



Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.
 - b. AV Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep time = Auto.



6.9 POWERLINE CONDUCTED EMISSIONS

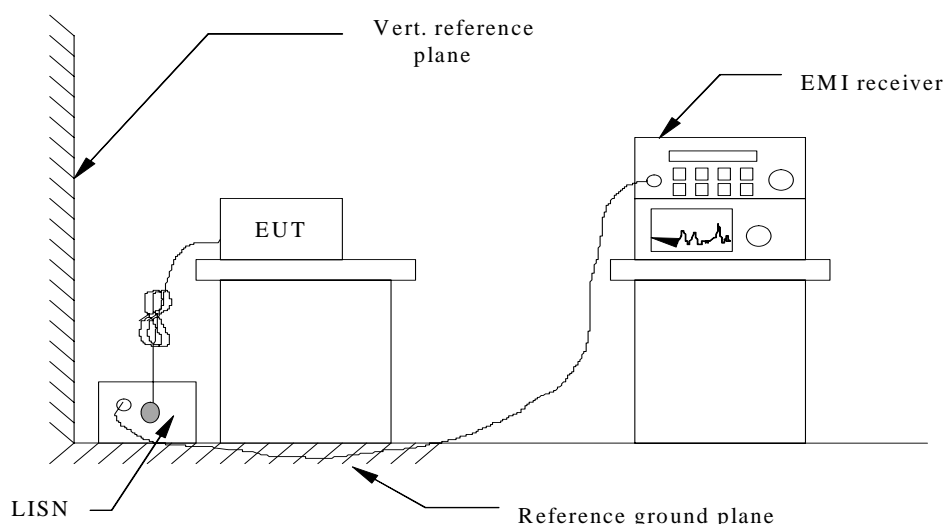
LIMIT

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

Frequency Range (MHz)	Limits (dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

Test Configuration



See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

TEST PROCEDURE

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

TEST RESULTS

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.



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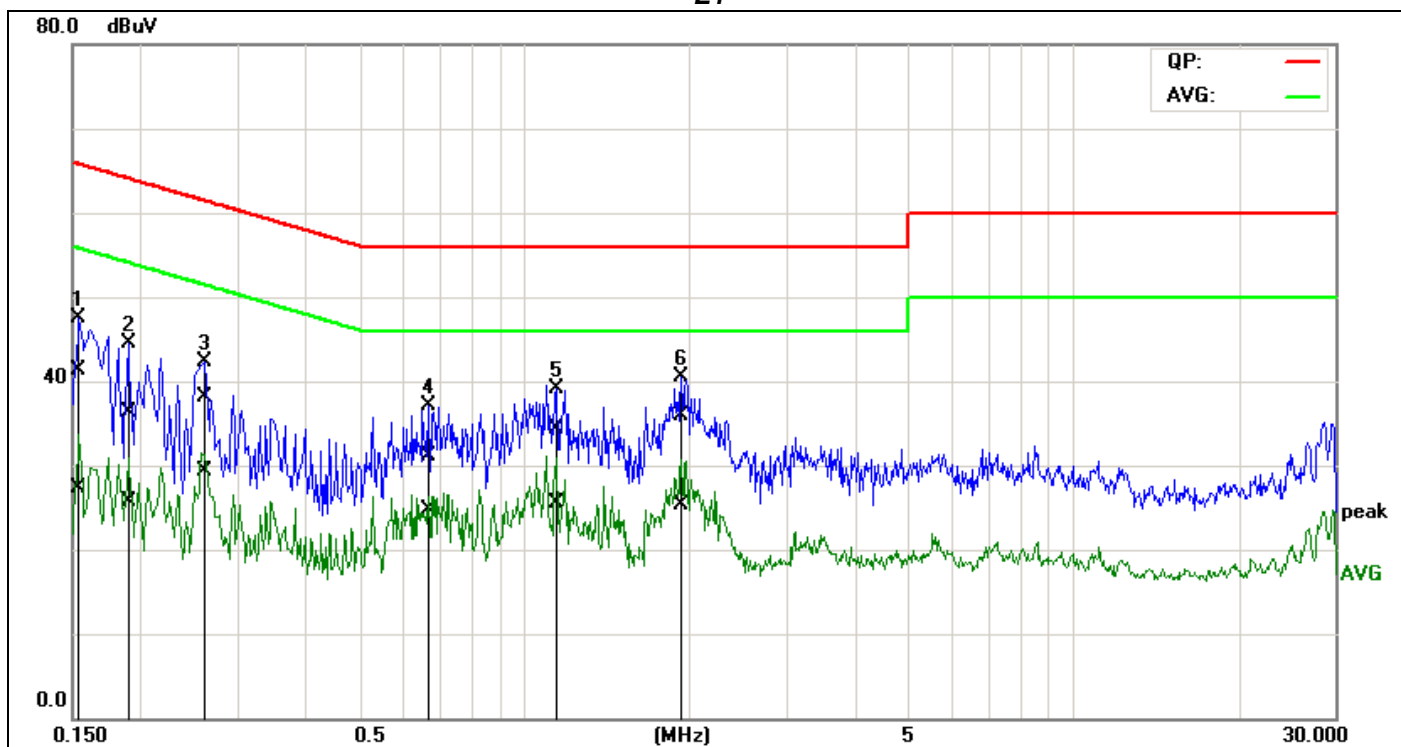
FCC ID: RQQHLT-D350

Date of Issue :May 16, 2014

Test Data

Model: D350	Humidity: 51% RH
Temperature: 23°C	Test Results: Pass
Tested by: Blent.Wang	

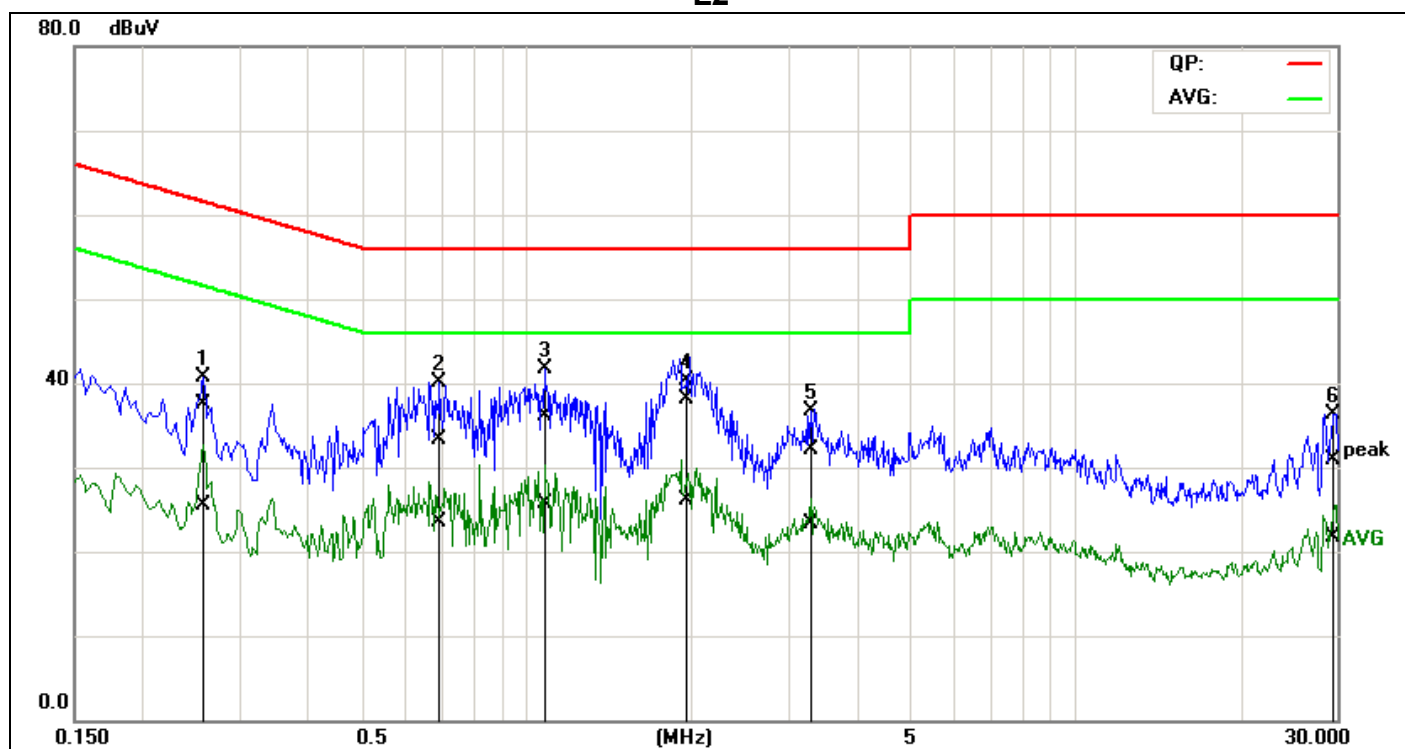
L1



No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1	0.1536	21.59	7.53	19.79	41.38	27.32	65.80	55.80	-24.42	-28.48	Pass
2*	0.1863	16.72	5.96	19.66	36.38	25.62	64.20	54.20	-27.82	-28.58	Pass
3	0.2616	18.41	9.73	19.65	38.06	29.38	61.38	51.38	-23.32	-22.00	Pass
4	0.6734	11.29	4.97	19.83	31.12	24.80	56.00	46.00	-24.88	-21.20	Pass
5	1.1338	14.44	5.70	19.85	34.29	25.55	56.00	46.00	-21.71	-20.45	Pass
6	1.9201	15.99	5.41	19.92	35.91	25.33	56.00	46.00	-20.09	-20.67	Pass



L2



No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1	0.2589	17.78	5.82	19.68	37.46	25.50	61.47	51.47	-24.01	-25.97	Pass
2	0.6925	13.56	3.73	19.84	33.40	23.57	56.00	46.00	-22.60	-22.43	Pass
3*	1.0782	16.23	5.83	19.83	36.06	25.66	56.00	46.00	-19.94	-20.34	Pass
4	1.9444	18.21	6.15	19.96	38.17	26.11	56.00	46.00	-17.83	-19.89	Pass
5	3.2924	12.02	3.16	20.11	32.13	23.27	56.00	46.00	-23.87	-22.73	Pass
6	29.6373	9.42	0.29	21.41	30.83	21.70	60.00	50.00	-29.17	-28.30	Pass

Remark:

- 1.The measuring frequencies range between 0.15 MHz and 30 MHz.
- 2.The emissions measured in the frequency range between 0.15 MHz and 30MHz were made with an instrument using Quasi-peak detector and Average detector.
- 3.“—” denotes the emission level was or more than 2dB below the Average limit, and no re-check was made.
- 4.The IF bandwidth of SPA between 0.15MHz and 30MHz was 10KHz. The IF bandwidth of Test Receiver between 0.15MHz and 30MHz was 9kHz.

END OF REPORT