Zoomnetcom Inc.

Application
For
Certification

FCC ID: SFG-BGATE

Wireless Access Point

Model: Bgate-GT10-I

Report No.: 130426028SZN-007

We hereby certify that the sample of the above item is considered to comply with the requirements of FCC Part 15, Subpart E for Intentional Radiator, mention 47 CFR [10-1-12]

Prepared and Checked by:

Sign on file

Billy Li
Supervisor

Approved by:

Digitally signed by Tommy Leung
Location: Intertek Testing Services

Leung Wai Leung, Tommy
Deputy General Manager
Date: April 29, 2013

- The test results reported in this test report shall refer only to the sample actually tested and shall not refer or be deemed to refer to bulk from which such a sample may be said to have been obtained.
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2 GENERAL INFORMATION

2.1 Product Description for Equipment Under Test (EUT)

The Zoomnetcom Inc.'s product, model number: Bgate-GT10-I (FCC ID: SFG-BGATE)(the "EUT") in this report is a Wireless Access Point, which was measured approximately: 300mm * 226mm * 144.5mm
Adapter information:
Model: DBcom-PSE01A-G
Input: AC100-240V, 50/60Hz,
Output: DC48V, 500mA/25W
Appearance of EUT:

2.2 Objective

This Type approval report is prepared on behalf of Zoomnetcom Inc. in accordance with Part 2、Part 15 of the Federal Communication Commissions rules.

2.3 Related Submittal(s)/Grant(s)

No related submittal(s).

2.4 Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of federal Regulations Title 47 Part 2. as well as the following parts:
Part 15 Wireless Communication Services
Applicable Standards: ANSI C63.4-2009, KDB 789033, KDB 662911.
All radiated and conducted measurement was performed at ZTE Corporation Reliability Testing Center. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

2.5 Test Facility

The Test site used by ZTE Corporation to collect test data is located in the 1/F,B2 Wing, ZTE Plaza, Keji Road South, Shenzhen, Guangdong, 518057, P.R.China, Tel: +86-755-26771609,Fax: +86-755-26770347. Test site at ZTE Corporation has been fully described in reports submitted to the Federal Communication Commission (FCC). ZTE Corporation EMC Lab was certificated by CNAS and the registration number was L0611. The FCC registration number of ZTE corporation EMC lab is 373926. The IC registration number of ZTE corporation EMC lab is 5200A. The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

2.6 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.
Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiated emissions measurement at the EMC lab. is 3.8dB,and conducted emission is 2.1dB

3 SYSTEM TEST CONFIGURATION

3.1 Identification of EUT

Category: IEEE 802.11b/g /n Wireless Access Point
Model Name: Bgate-GT10-I
Alternate model: Bgate-GT10
Brand name: N/A
Adapter:
Product: Switching Power Supply
Model : DBcom-PSE01A-G
Input: 100-240Vac 50/60Hz
Output: DC48V, 500mA/25W

3.2 Detail Specification

Operation Frequency:5150 MHz -5250MHz
Type of Spectrum: OFDM
Category: 802.11a;
Antenna Type: External Antenna
Antenna Number: 1
MIMO Antenna gain: 17dBi

Data rate: 6,9,12,18,24,30,36,48,54 Mbps

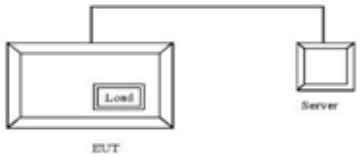
3.3 Information Related to Testing

Test mode
TM1: 120VAC 60Hz TX MODE continuous transmitting with maximum power control level.
For 802.11a
CH LOW: 5180MHz
CH MID: 5220MHz
CH HIGH: 5240MHz
IEEE 802.11a: 6Mbps data rate
Remark: Only the worse case found by prescan is listed

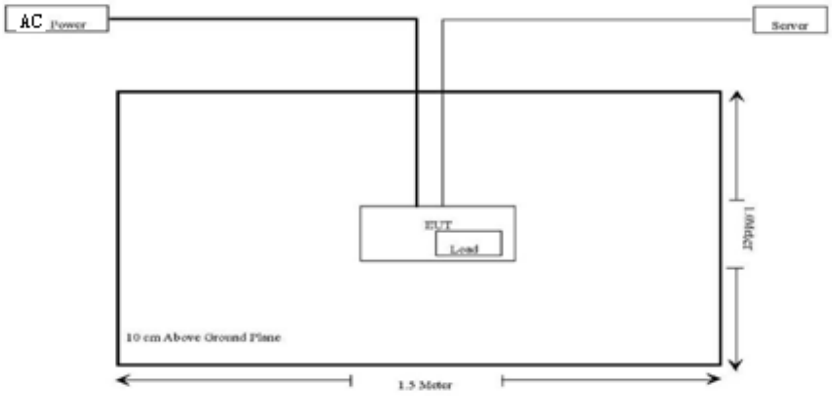
Support Equipment:

Description	Manufacturer	Model No.
RJ 45 Cable connected between POE adapter and EUT	N/A	unshielded 1.5m
RJ 45 Cable connected between POE adapter and PC	N/A	Unshielded 10m
PC	DELL	Pro80Jn
2 x Antenna Interconnecting Cable	N/A	2.0m
POE adapter	N/A	Model: DBcom-PSE01A-G

Configuration of Test Setup



Block Diagram of Test Setup



4 SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.203	Antenna requirement	Not applicable
§15.207(a)	AC line conducted emissions	Compliance
§15.209 §15.205	Radiated Emissions	Compliance
§15.403(i)	26dB Emission Bandwidth	Compliance
§15.407(a)	Maximum Peak Output Power	Compliance
§15.407(a)	Power Spectral Density	Compliance
§ 15.407(a)	Peak excursion and PSD-to-average ratio	Compliance
§15.407(g)	Frequency stability	Compliance

5 ANTENNA REQUIREMENT

5.1 Applicable standard: FCC §15.203

5.2 Limit

According to FCC §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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with the section §15.203 of the rules, §15.203 state that the subject device must meet the following criteria:

a. Antenna must be permanently attached to the unit.
b. Antenna must use a unique type of connector to attach to the EUT.

Further, this requirement does not apply to intentional radiators that must be professionally installed.

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

5.3 Test Data

According to the user manual, the device cannot be sold retail, to the general public or by mail order. It must be sold to dealers. It is installed by licensed professionals with special training.

The EUT used one fixed antenna, the maximum gain is 17dBi. And according to FCC47CFR section 15.407(a), If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. Please refer to MAXIMUM PEAK OUTPUT POWER and POWER SPECTRAL DENSITY

5.4 Test Result: **Not applicable**

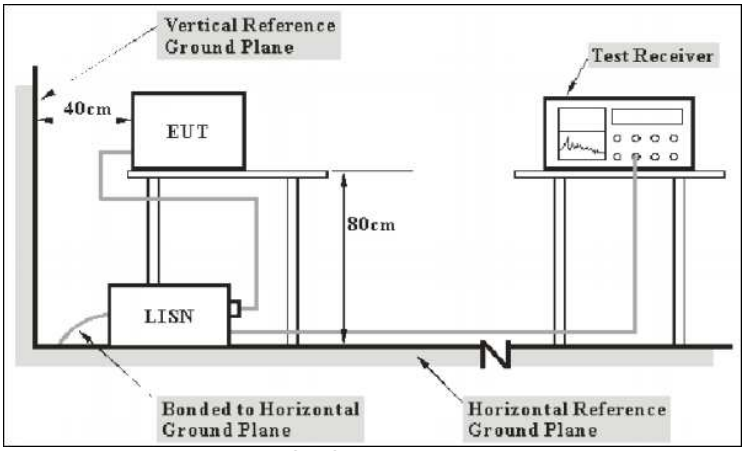
6 AC LINE CONDUCTED EMISSIONS

6.1 Applicable Standard: FCC §15.207

6.2 Test Equipment List and Details

Manufacturer	Equipment	Model	Last Cal.	Cal. Interval
R&S	EMI Test receiver	ESCI 3	2012-7-25	1 year
TESE Q	ISN	ISN T800	2012-5-24	1
Schwarzbeck	LISN	NSLK8128	2012-10-24	1
FCC	Current Probe	F-35	N/A	1

EUT Setup



The setup of EUT is according with per ANSI C63.4-2009 measurement procedure, The specification used was the FCC Part 15.207 limits.

6.3 Test Procedure

During the conducted emission test, the adapter was connected to the LISN.
Maximizing procedure was performed on the six highest emissions of the EUT.
All data was recorded in the Quasi-peak and average detection mode.

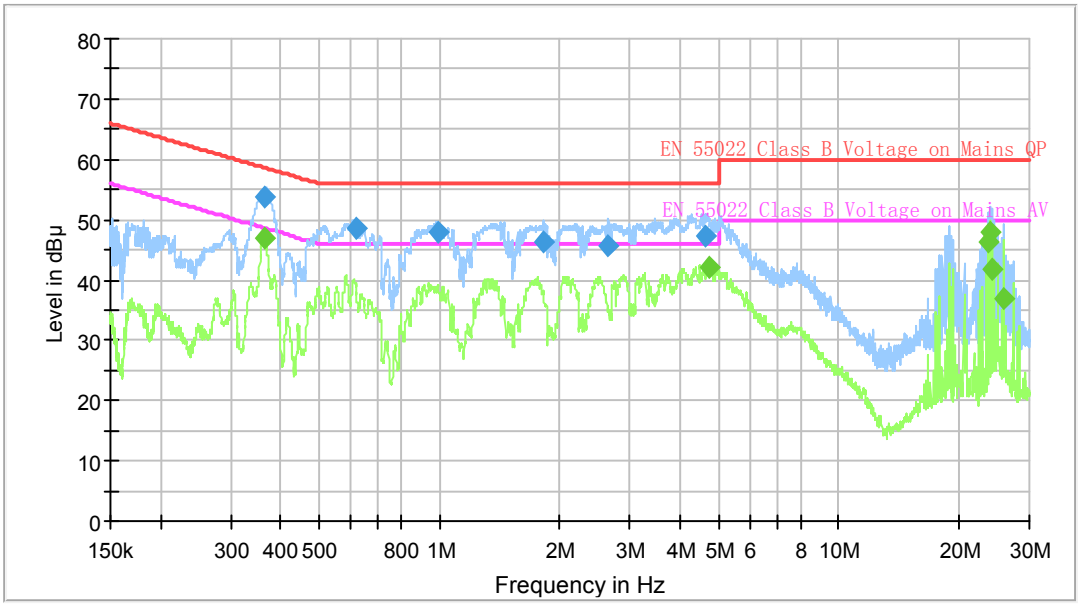
6.4 Environmental Conditions

Temperature:	20°C
Relative Humidity:	60 %
ATM Pressure:	1009 mbar

6.5 Test Result: Pass

120Vac/60Hz,Line

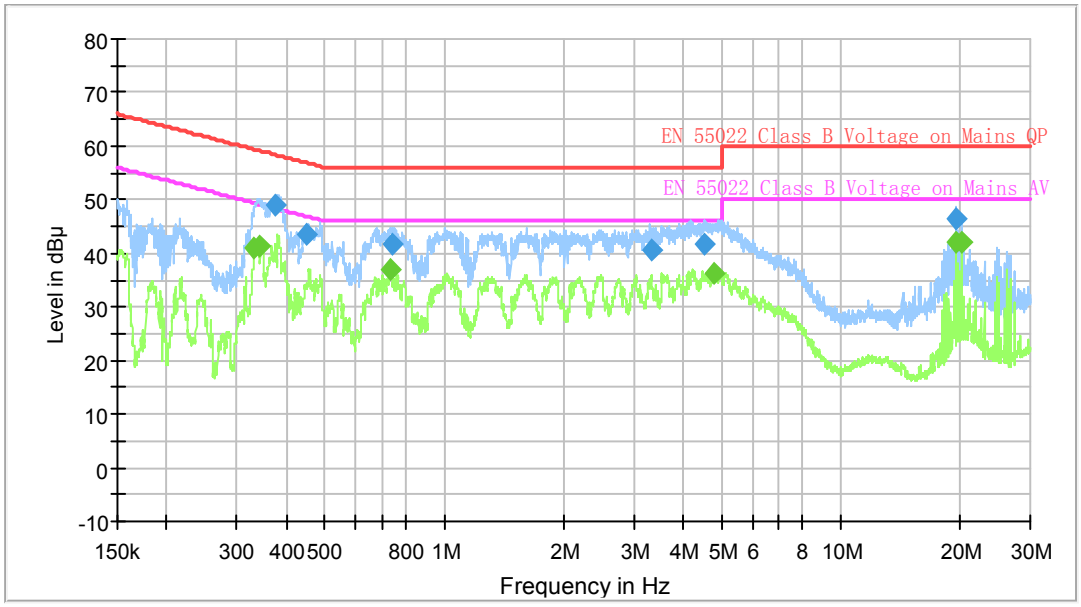
CLASSB CISPR22 Voltage 150k to 30MHz



Conducted Emissions			FCC Part 15.207		
Frequency (MHz)	Corrected Result(dBuV)	Correction Factor(dB)	Limit(dBuV)	Margin(dB)	Detector (QP/AV)
0.365508	53.7	10.0	58.6	4.9	QP
0.617134	48.6	10.0	56.0	7.4	QP
0.988178	47.8	10.0	56.0	8.2	QP
1.823356	46.4	10.0	56.0	9.6	QP
2.654724	45.5	10.0	56.0	10.5	QP
4.613442	47.3	10.0	56.0	8.7	QP
0.362970	47.0	10.0	48.7	1.7	AV
4.752210	42.0	10.0	46.0	4.0	AV
23.699346	46.4	10.0	50.0	3.6	AV
23.937861	47.9	10.0	50.0	2.1	AV
24.178773	41.8	10.0	50.0	8.2	AV
25.856510	37.0	10.0	50.0	13.0	AV

120Vac/60Hz,Neutral

CISPR22 Voltage 150k to 30MHz_N



Conducted Emissions			FCC Part 15.207		
Frequency (MHz)	Corrected Result(dBuV)	Correction Factor(dB)	Limit(dBuV)	Margin(dB)	Detector (QP/AV.)
0.376434	48.9	10.0	58.4	9.5	QP
0.451580	43.6	10.0	56.8	13.3	QP
0.737101	41.9	10.0	56.0	14.1	QP
3.352966	40.6	10.0	56.0	15.4	QP
4.532222	41.9	10.0	56.0	14.1	QP
19.436056	46.3	10.0	60.0	13.7	QP
0.332777	40.9	10.0	49.4	8.5	AV
0.340923	41.3	10.0	49.2	7.9	AV
0.733164	36.9	10.0	46.0	9.1	AV
4.795562	36.4	10.0	46.0	9.6	AV
19.436056	42.0	10.0	50.0	8.0	AV
20.149791	42.2	10.0	50.0	7.8	AV

7 RADIATED EMISSIONS

7.1 Applicable Standard: FCC §15.209(a),15.205

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)
According to FCC Part15.209 and relevant rules:
The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table

Frequency MHz	Distance m	Field strength		Distance m	Field strength
		μV/m	dBμV/m(QP)		dBμV/m(QP)
30-88	3	100	40.0	10	30.0
88-216	3	150	43.5	10	33.5
216-960	3	200	46.0	10	36.0
960-1000	3	500	54.0	10	44.0
Above 1000	3	74.0 dBμV/m (PK) 54.0 dBμV/m (AV)		/	/

15.205 Restricted bands:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])
13.36 - 13.41			

7.2 Test Equipment List and Details

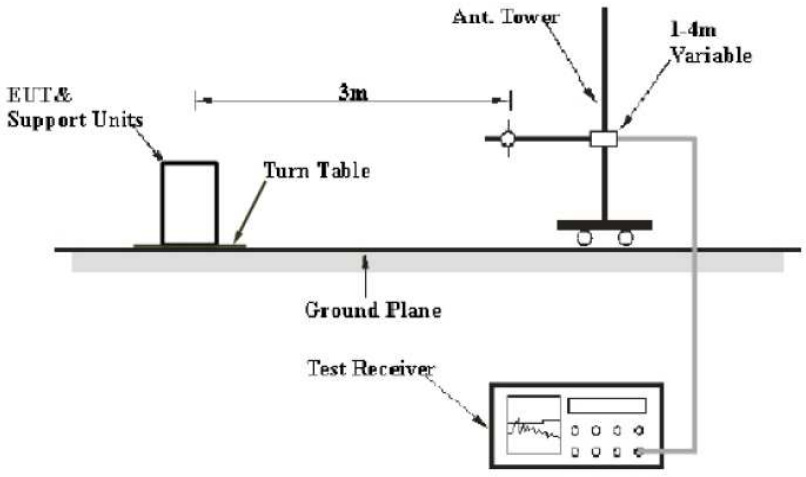
Manufacturer	Equipment	Model	Last Cal.	Cal. Interval
R&S	EMI Test receiver	ESU26	2012-11-3	1 year
R&S	Log periodic Antenna	SWB-VULB 9163	2012-7-25	1 year
R&S	Horn Antenna	HF907	2012-7-25	1 year
ETS-LINDGREN	Active loop Antenna	6502	2012-7-16	1 year

7.3 Test Procedure

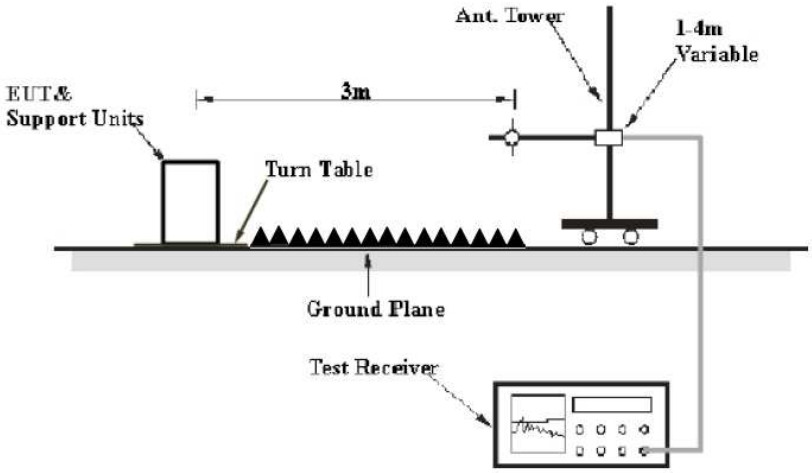
During the radiated emission test, the MIMO and continuously Tx mode was used.
The EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber. An antenna was located 3m from the EUT on an adjustable mast.
The EUT were rotated 0 to 360 degree and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and thedata was recorded. The test result are reported as below.

The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower. Detector function for radiated emissions above 1GHz is in peak mode and Quasi-Peak mode is used below 1GHz. The IF bandwidth used for measurement of radiated signal strength was 10 kHz for emission below 30 MHz and 120 kHz for emission from 30 MHz to 1000 MHz. Above 1000 MHz, a resolution bandwidth of 1 MHz as below is used.

RBW=1MHz; VBW=1MHz, PK detector for peak emissions measurement above 1GHz
RBW=1MHz; VBW=10Hz, AV detector for average emissions measure above 1GHz
EUT Setup:
Below 1 GHz



Above 1GHz



The radiated emission tests were performed in the 3-meter Chamber, using the setup accordance with the FCC part 2.1053.The specification used was the FCC 15.209 and FCC 15.247 limits.

7.4 Environmental Conditions

Temperature:	26°C
Relative Humidity:	60 %
ATM Pressure:	1009 mbar

7.5 Test Result: Pass

Remark: If PK value is lower than AV limit, only show PK diagram as below. The spurious emissions more than 20 dB below the permissible value are not reported.
From 9 KHz to 30MHz and 18GHz to 40GHz, the spurious emissions more than 20 dB below the limit.
For some 7G to 18G, Spurious Emission meet the limits of the field strength that not be measured.
"*" donates fundamental frequency.
For restriction band test: Only list the restriction band test which there found emission.
For other restriction band: no emission found.
For Radiated emission test: The EUThave been tested at X, Y, Z axial direction. Only list the worse mode.
5.1G

Frequency (MHz)	Reading (dBµV/m)	Polarization	Margin (dB)	Limit (dBµV/m)	Comment
30.032333	27.2	H	12.8	40.0	Diagram 2- 1
32.619000	31.6	H	8.4	40.0	
359.994000	43.0	H	3.0	46.0	
600.004333	32.4	H	13.6	46.0	
720.025667	36.8	H	9.2	46.0	
840.014667	36.9	H	9.1	46.0	
36.466667	31.7	V	8.3	40.0	Diagram 2-2
47.524667	29.4	V	10.6	40.0	
55.834333	33.3	V	6.7	40.0	
359.994000	39.0	V	7.0	46.0	
479.950667	34.1	V	11.9	46.0	

839.982333	40.6	V	5.4	46.0	

Diagram 2- 1

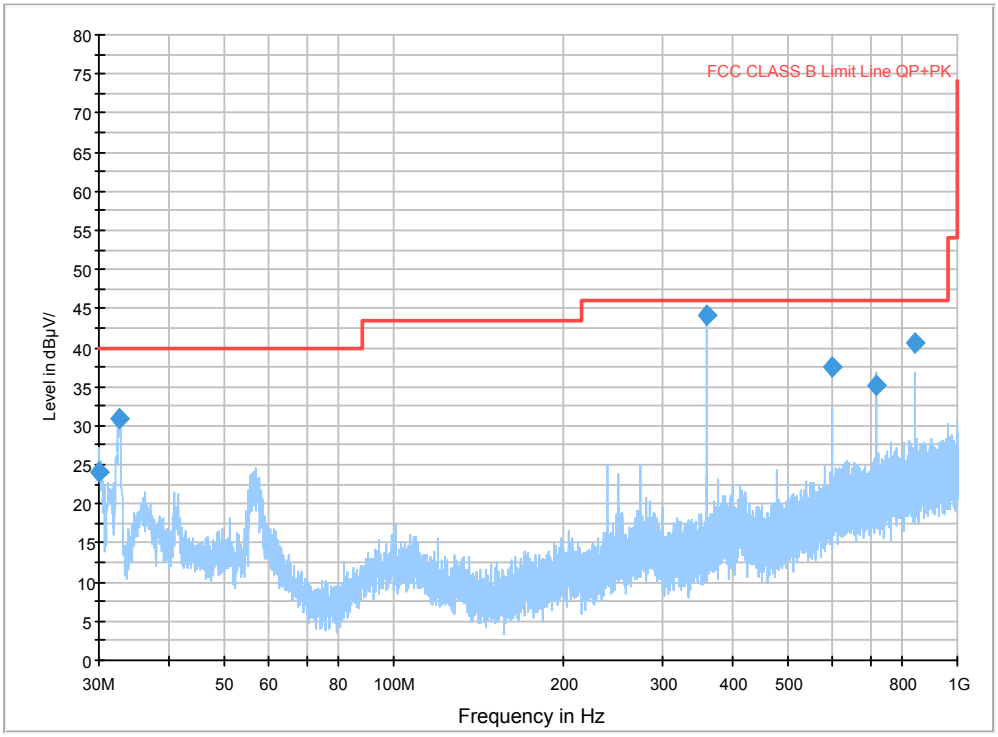
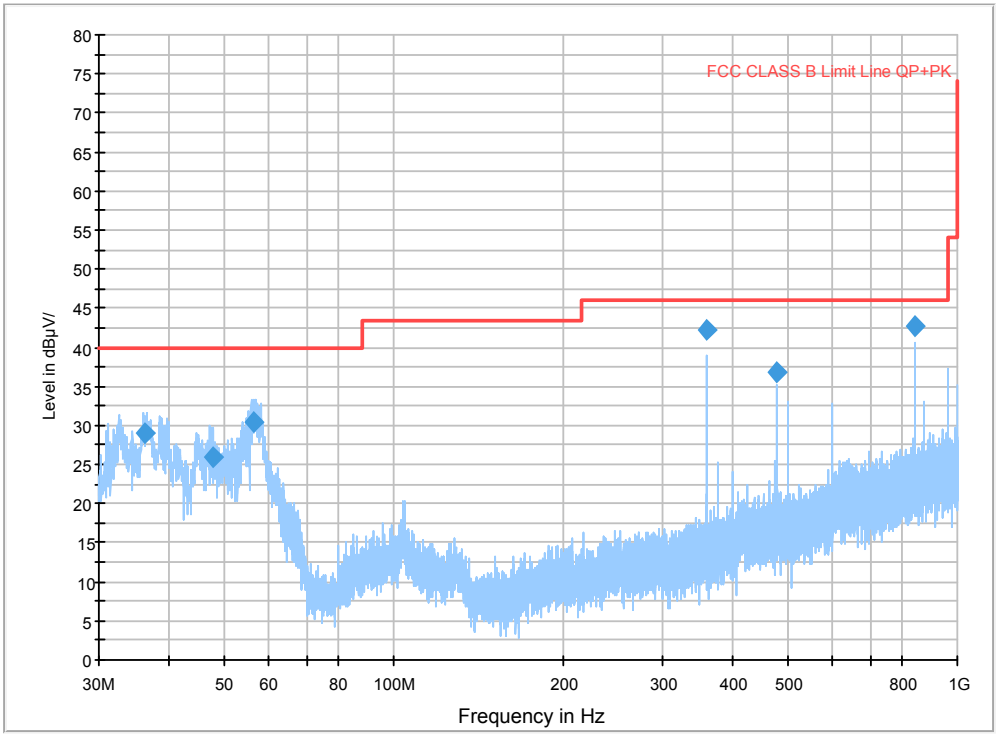


Diagram 2- 2



Test Mode	802.11.a-5180MHz					
Frequency (MHz)	Reading (dBµV/m)	Polarization	Margin (dB)	Limit (dBµV/m)	Detector (PK/AV)	Comment
1320.043000	45.9	H	28.1	74.0	PK	Diagram 2- 3
5000.138333	54.6	H	19.4	74.0	PK	
4999.858000	47.3	H	6.7	54.0	AV	
1320.095333	50.8	V	23.2	74.0	PK	Diagram 2-4
5000.058334	53.9	V	20.1	74.0	PK	
1319.882000	48.5	V	5.5	54.0	AV	
--	--	--	--	--	--	Diagram 2-5
--	--	--	--	--	--	
--	--	--	--	--	--	Diagram 2-6
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Diagram 2- 3

FCC CLASS B HF3.0_1G-7G_HOR

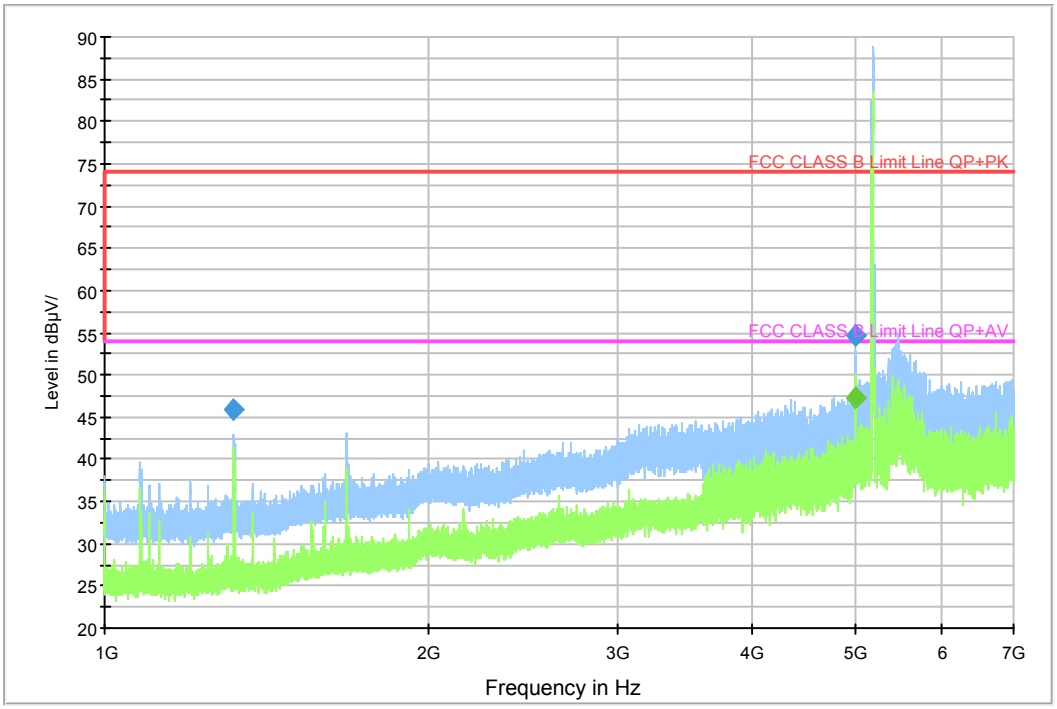


Diagram 2- 4

FCC CLASS B HF3.0_1G-7G_VER

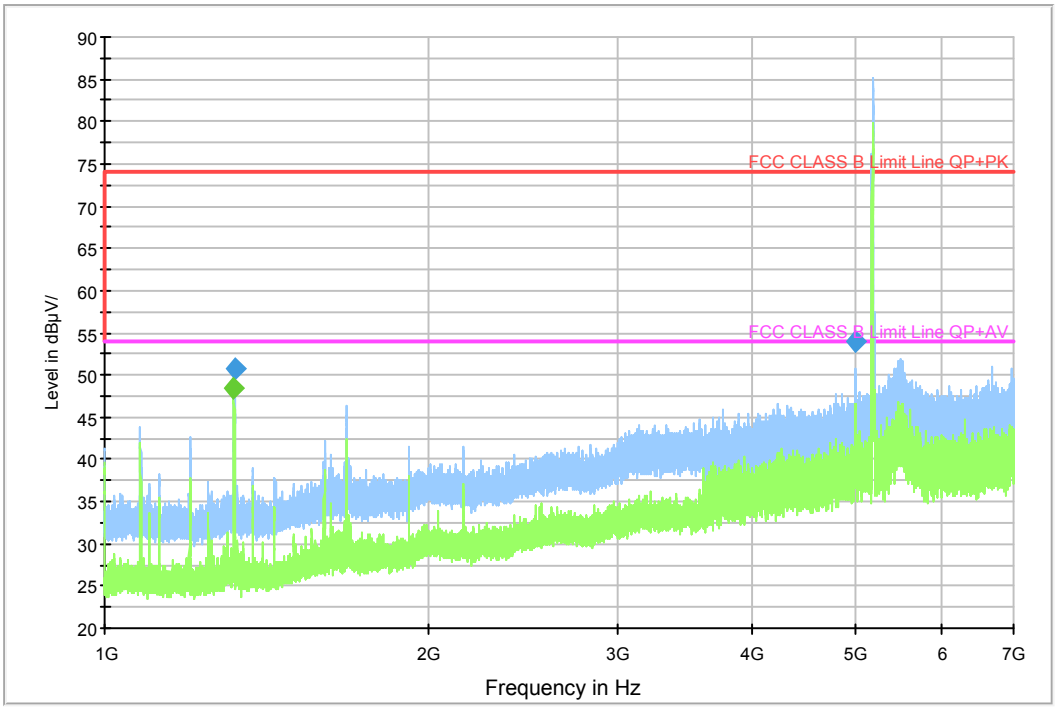


Diagram 2- 5

FCC CLASS B HF7.0_7G-18G_HOR

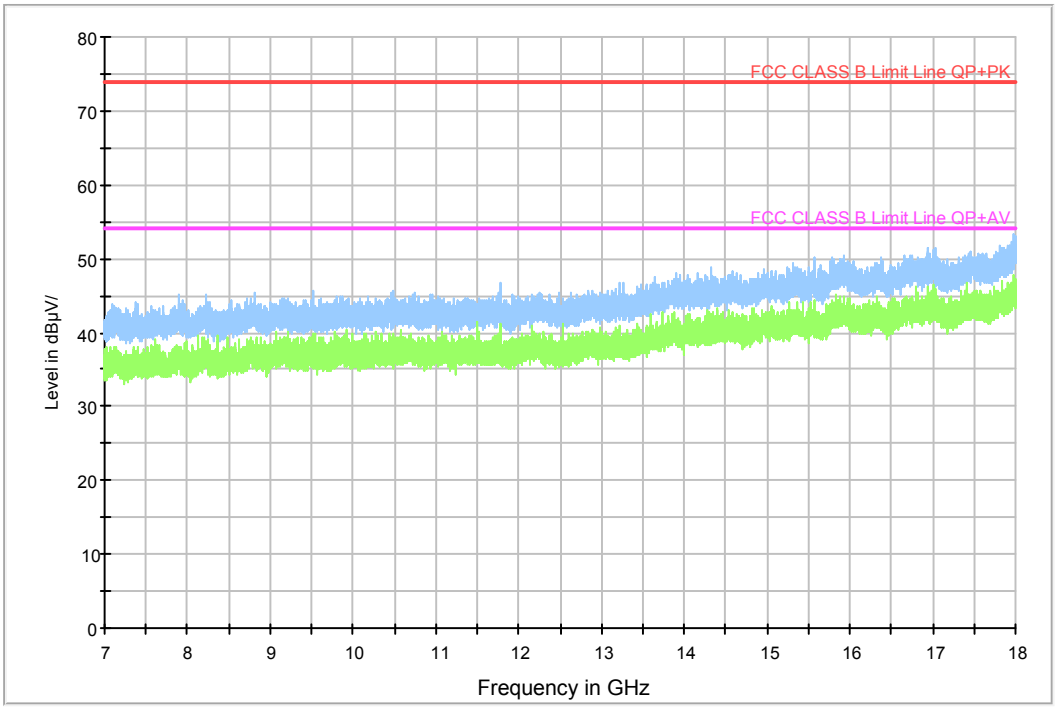
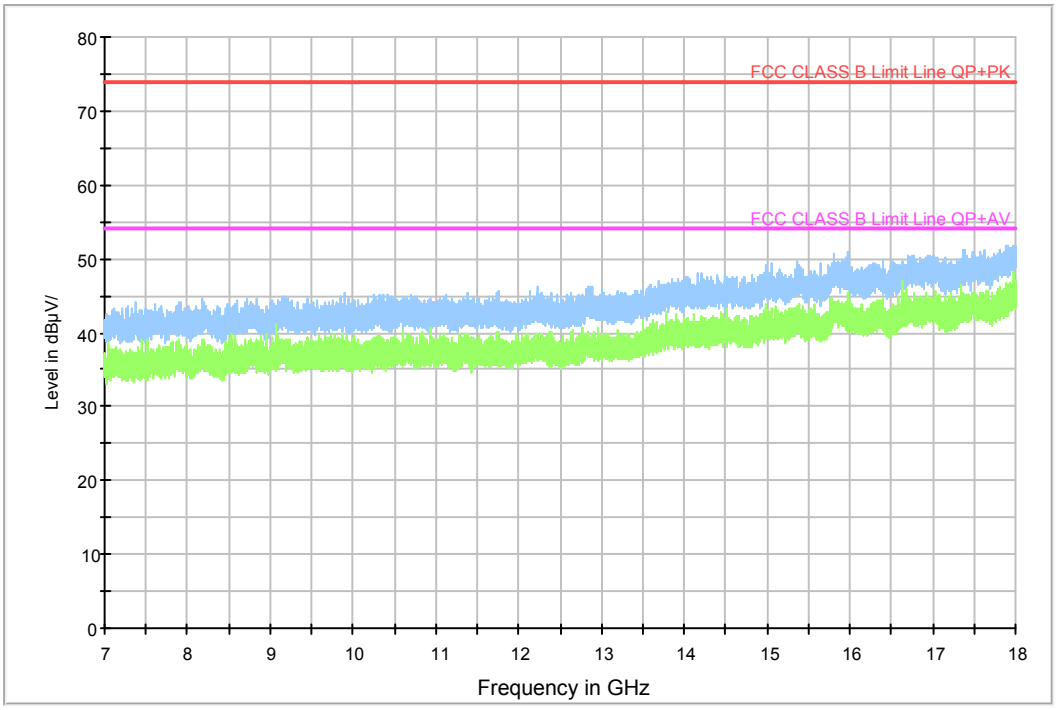


Diagram 2- 6

FCC CLASS B HF7.0_7G-18G_VER



Test Mode	802.11.a-5220MHz					
Frequency (MHz)	Reading (dBµV/m)	Polarization	Margin (dB)	Limit (dBµV/m)	Detector (PK/AV)	Comment
1319.989666	45.6	H	28.4	74.0	PK	Diagram 2- 7
4999.947667	53.8	H	20.2	74.0	PK	
1319.949333	42.1	H	11.9	54.0	AV	
1320.003667	50.9	V	23.1	74.0	PK	Diagram 2-8
4999.619000	52.7	V	21.3	74.0	PK	
1320.011334	48.2	V	5.8	54.0	AV	
5486.625000	40.1	V	13.9	54.0	AV	
--	--	H	--	--	PK	Diagram 2-9
--	--	H	--	--	PK	
--	--	V	--	--	PK	Diagram 2-10
--	--	V	--	--	PK	

Diagram 2- 7

FCC CLASS B HF3.0_1G-7G_HOR

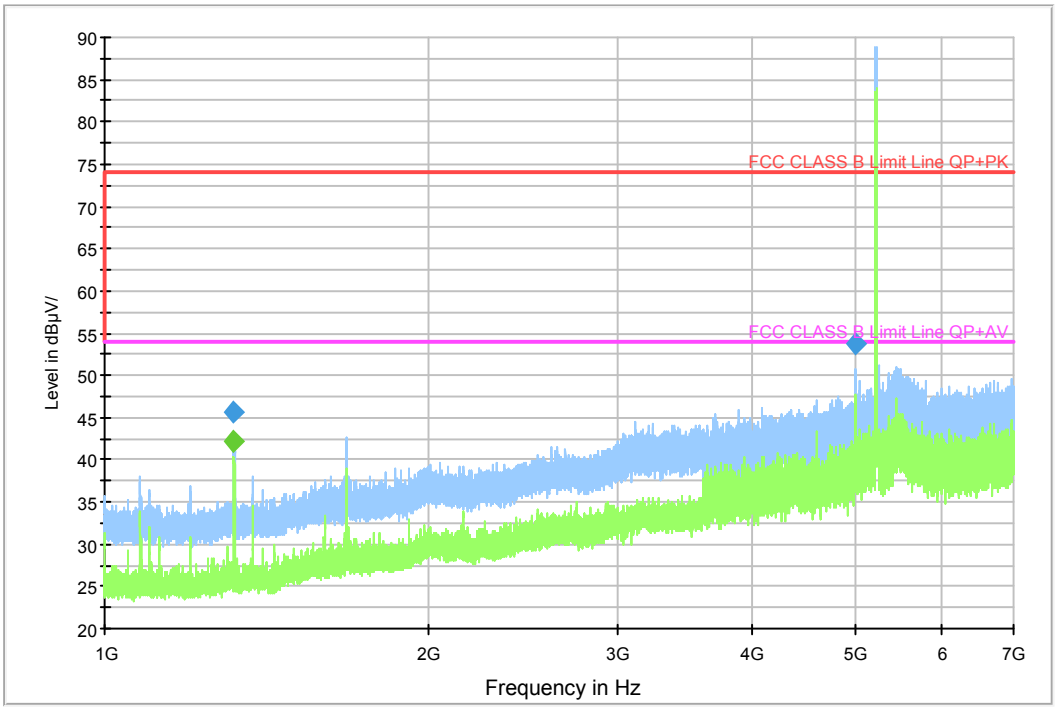


Diagram 2- 8

FCC CLASS B HF3.0_1G-7G_VER

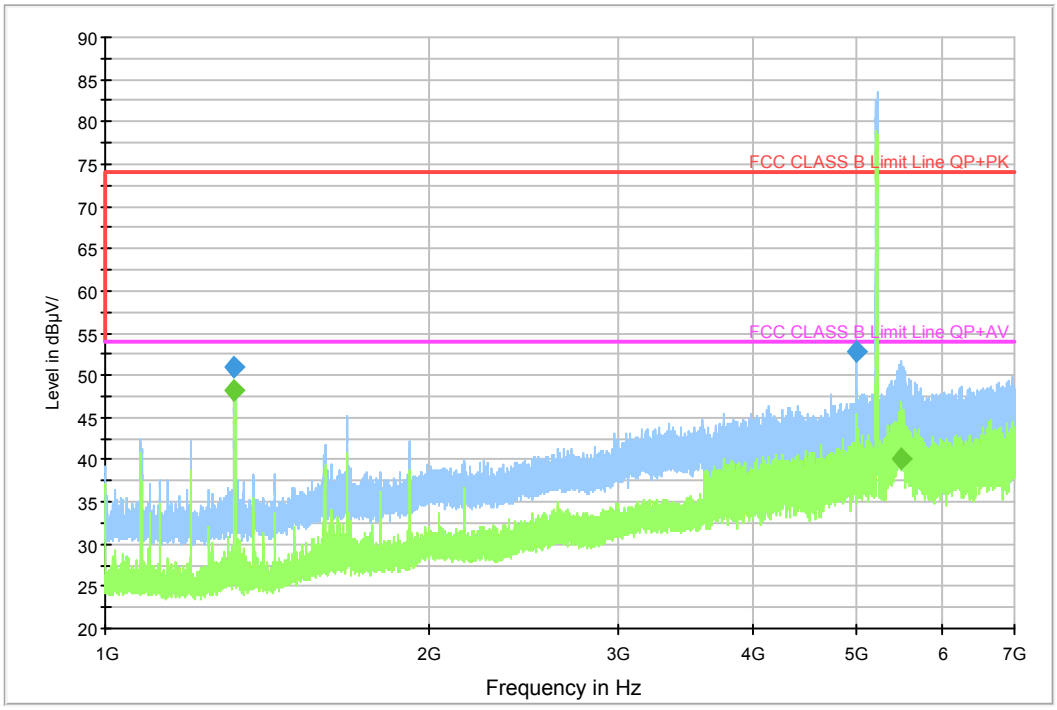


Diagram 2- 9

FCC CLASS B HF7.0_7G-18G_HOR

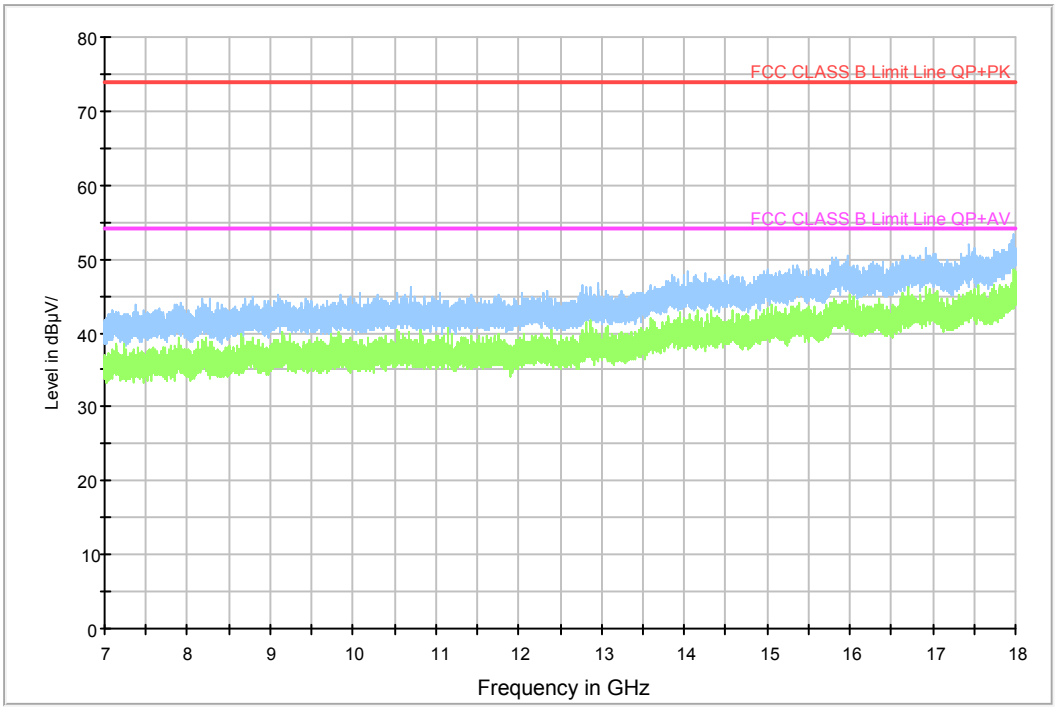
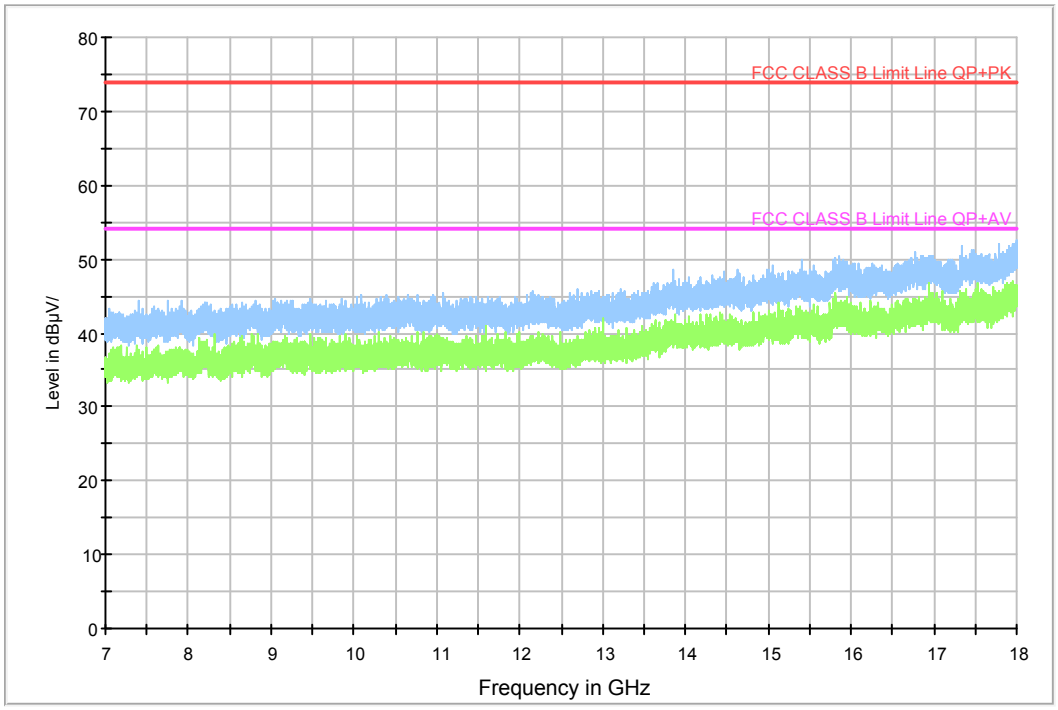


Diagram 2- 10

FCC CLASS B HF7.0_7G-18G_VER



Test Mode	802.11.a-5240MHz					
Frequency (MHz)	Reading (dBµV/m)	Polarization	Margin (dB)	Limit (dBµV/m)	Detector (PK/AV)	Comment
1319.983333	45.7	H	28.3	74.0	PK	Diagram 2- 11
4999.976333	53.6	H	20.4	74.0	PK	
1319.795000	41.5	H	12.5	54.0	AV	
1319.907333	51.3	V	22.7	74.0	PK	Diagram 2-12
1680.170000	49.0	V	25.0	74.0	PK	
1320.043334	48.3	V	5.7	54.0	AV	
--	--	--	--	--	--	Diagram 2-13
--	--	--	--	--	--	
--	--	--	--	--	--	Diagram 2-14
--	--	--	--	--	--	

Diagram 2- 11

FCC CLASS B HF3.0_1G-7G_HOR

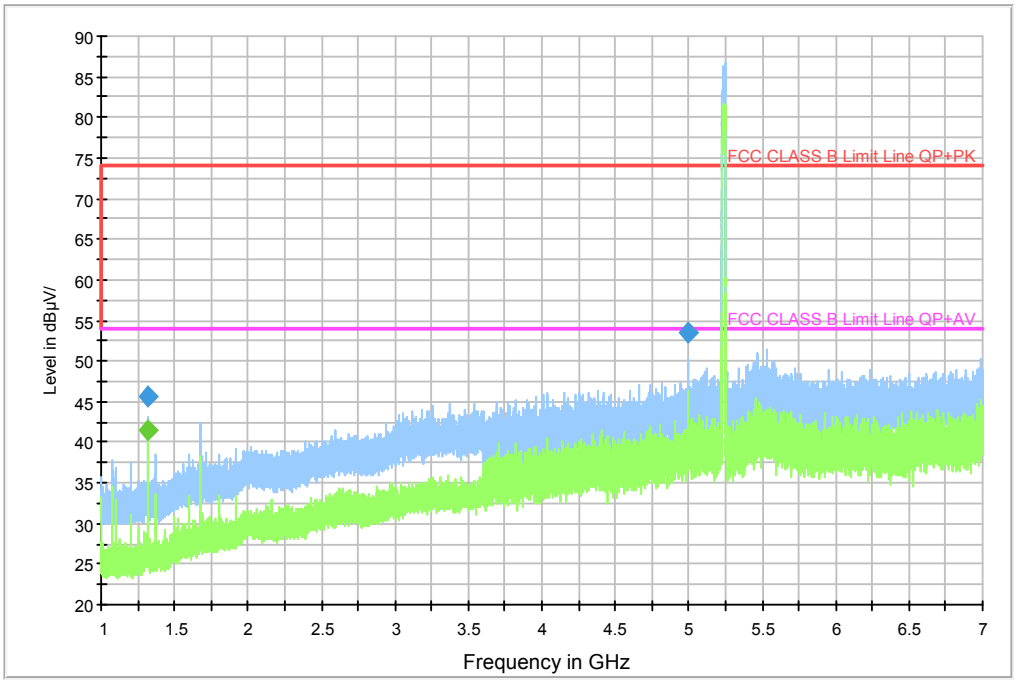


Diagram 2- 12

FCC CLASS B HF3.0_1G-7G_VER

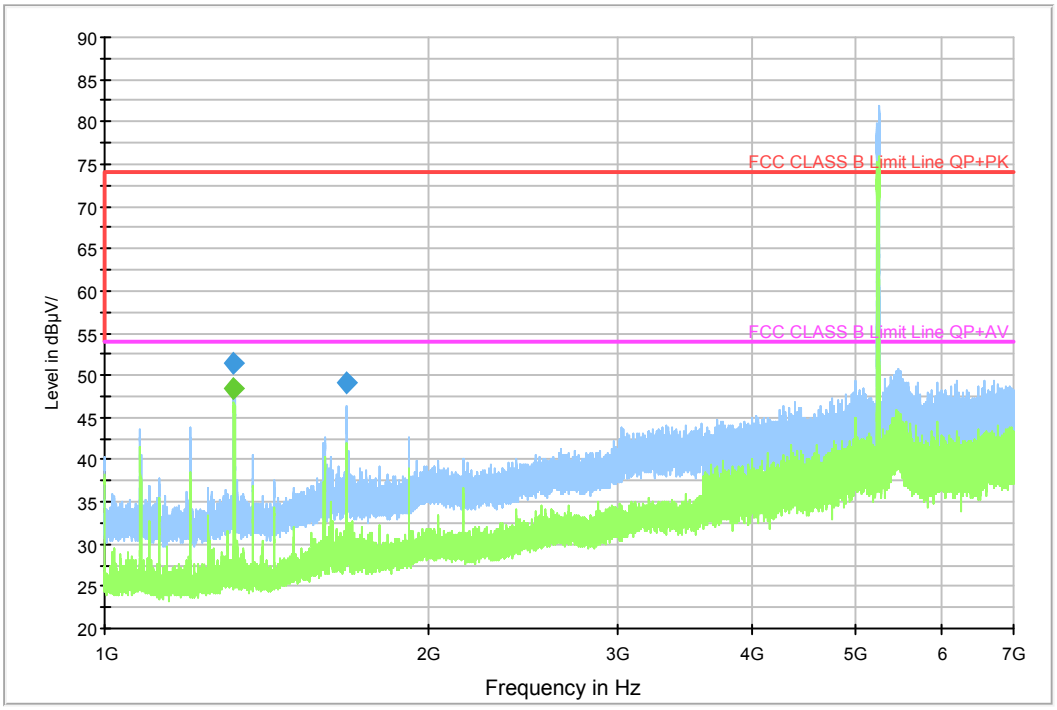


Diagram 2- 13

FCC CLASS B HF7.0_7G-18G_HOR

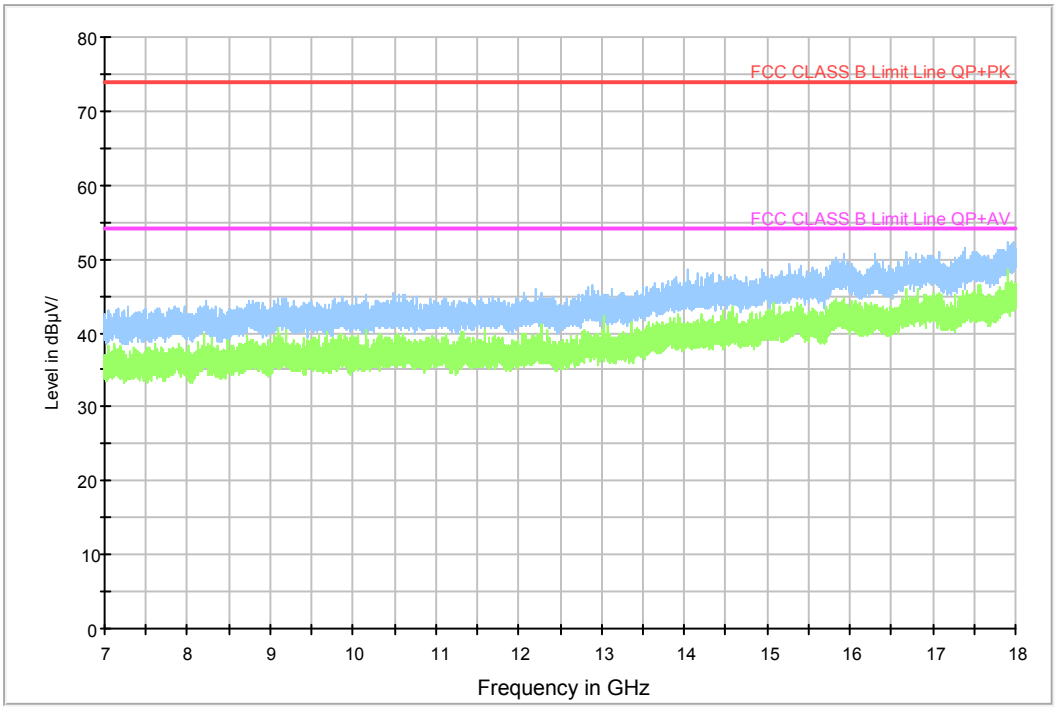
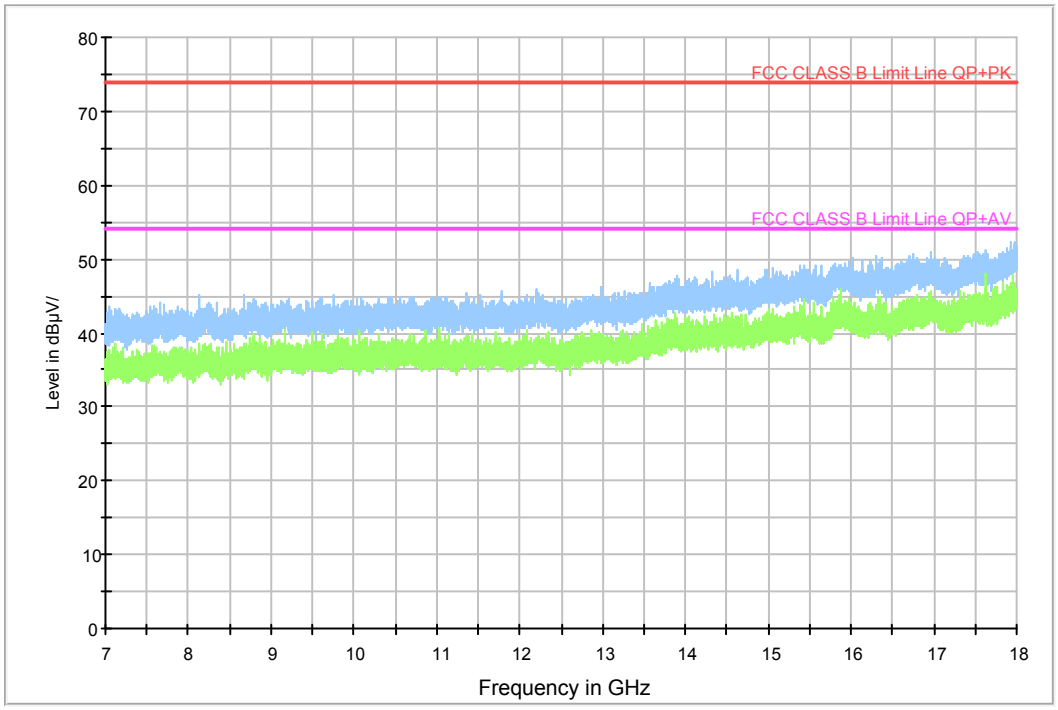


Diagram 2- 14

FCC CLASS B HF7.0_7G-18G_VER



Test Mode	802.11.a-5180MHz					
Frequency (MHz)	Reading (dBµV/m)	Polarization	Margin (dB)	Limit (dBµV/m)	Detector (PK/AV)	Comment
5150.000000	44.6	H	29.4	74.0	PK	Diagram 2-15
5173.763000	92.5	H	21.5	114.0	PK	
5119.930000	49.9	H	24.1	74.0	PK	
5120.099000	48.4	V	25.6	74.0	PK	Diagram 2-16
5184.826000	92.5	V	21.5	114.0	PK	
5150.000000	46.9	V	27.1	74.0	PK	
5120.047000	45.7	H	8.3	54.0	AV	Diagram 2-17
5178.573000	87.5	H	6.5	94.0	AV	
5150.000000	42.1	H	11.9	54.0	AV	
5119.891000	48.0	V	6	54.0	AV	Diagram 2-18
5150.000000	41.2	V	12.8	54.0	AV	
5174.361000	85.6	V	8.4	94.0	AV	

Diagram 2- 15

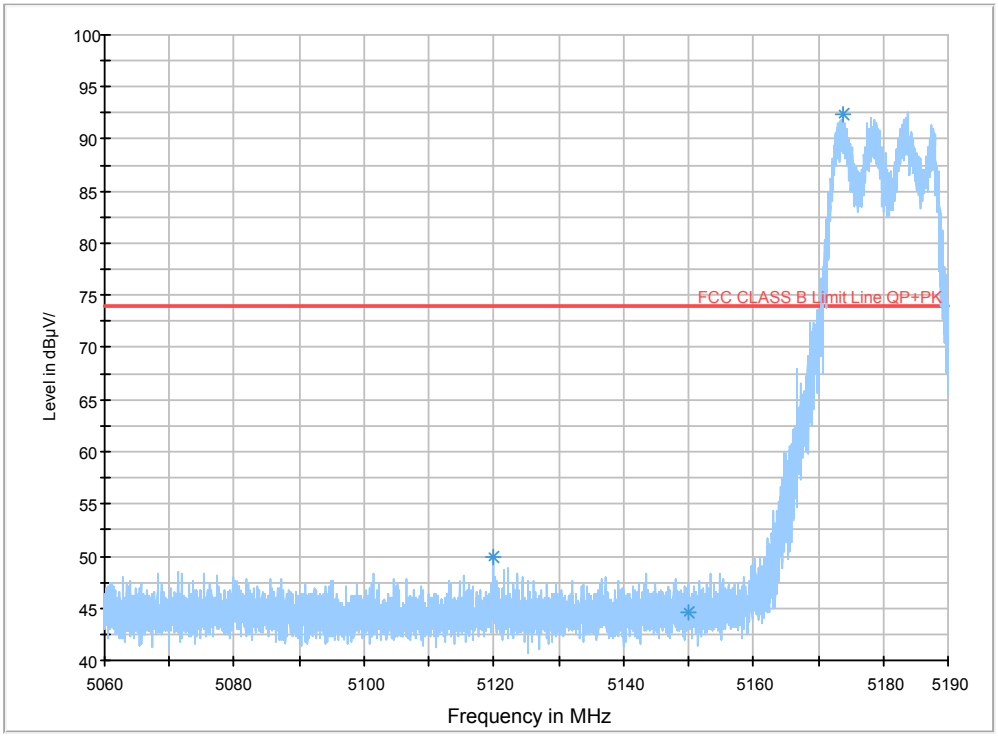


Diagram 2- 16

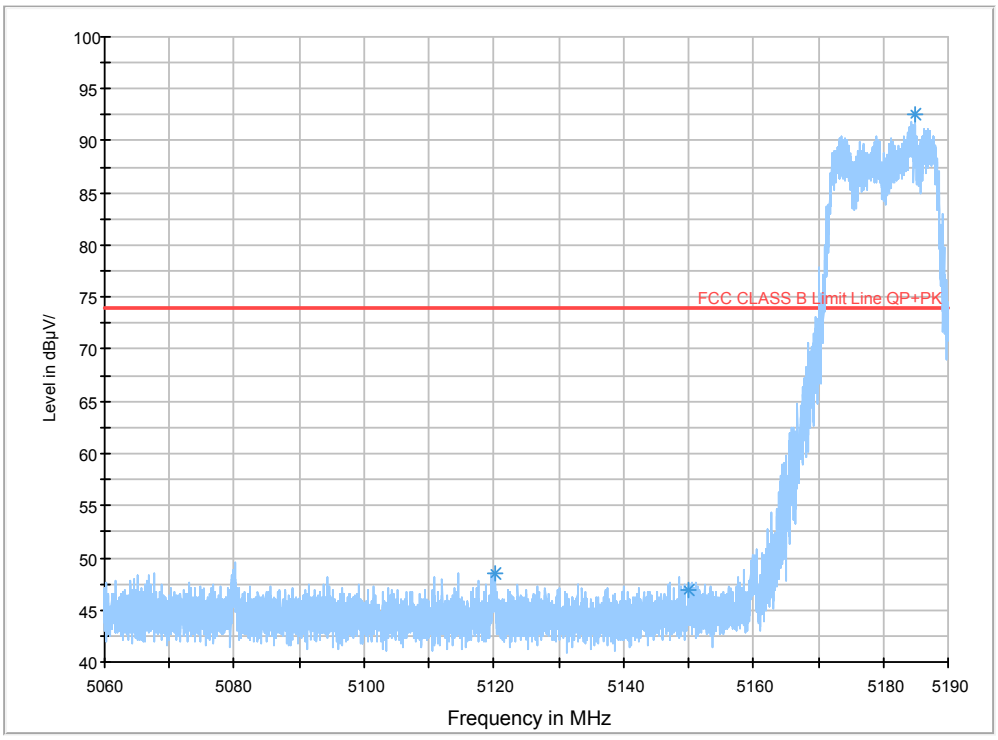


Diagram 2- 17

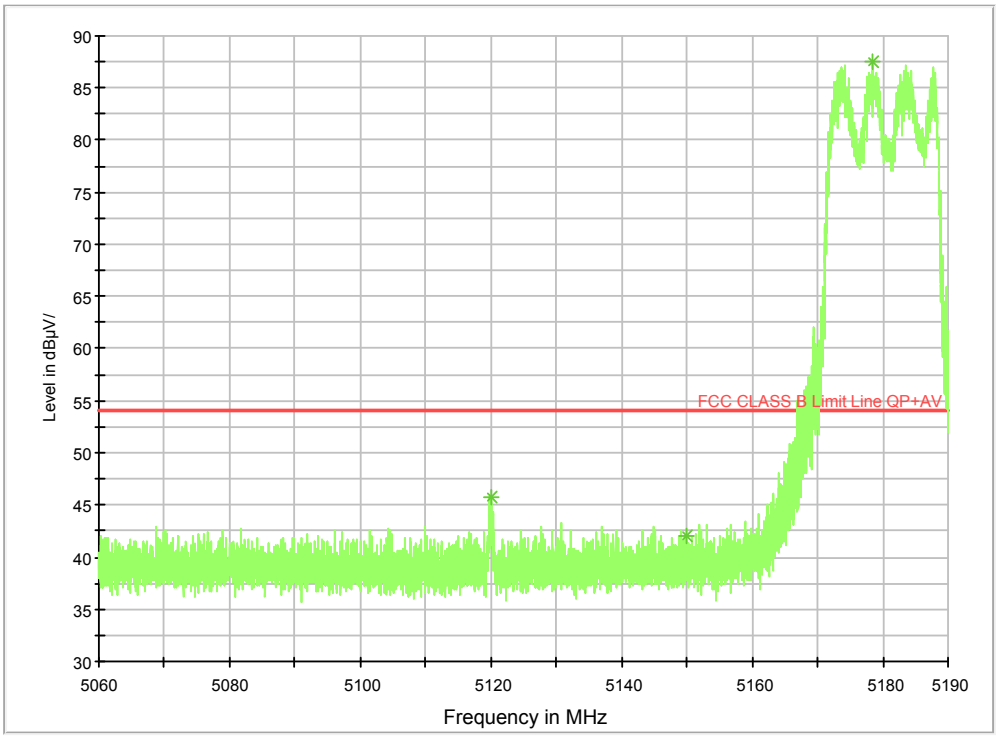
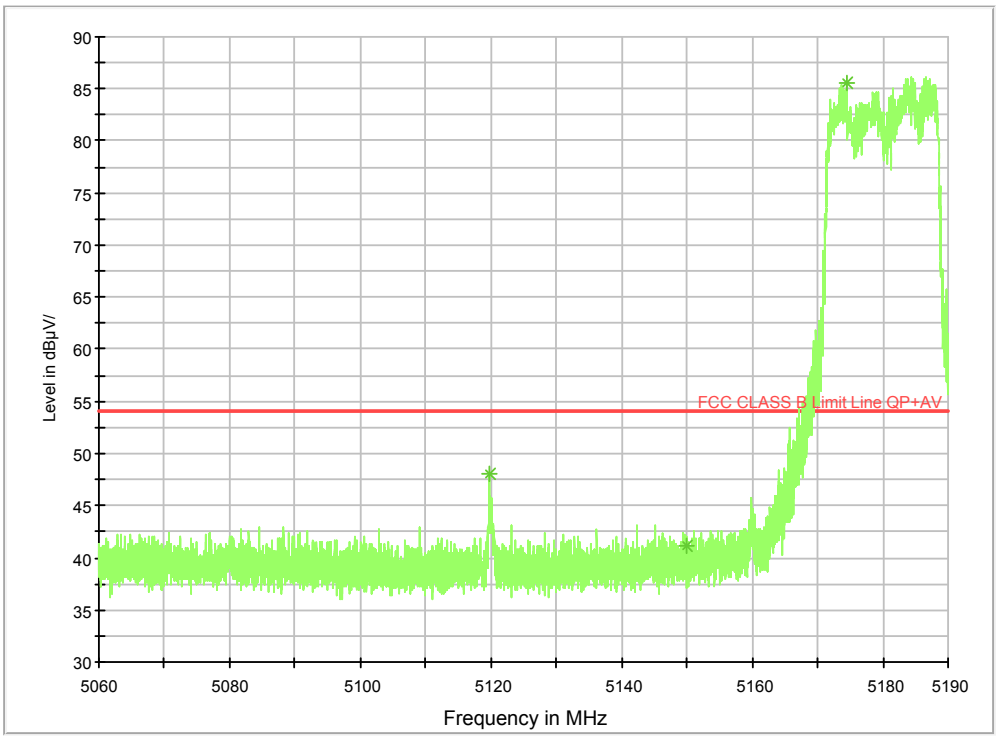


Diagram 2- 18


90
85
80
75
70
65
60
55
50
45
40
35
30
Level in dBµV/
FCC CLASS B Limit Line QP+AV
5060
5080
5100
5120
5140
5160
5180
5190
Frequency in MHz

Test Mode	802.11.a-5240MHz					
Frequency (MHz)	Reading (dBµV/m)	Polarization	Margin (dB)	Limit (dBµV/m)	Detector (PK/AV)	Comment
5240.284000	91.2	H	22.8	114.0	PK	Diagram 2-19
5359.678000	49.8	H	24.2	74.0	PK	
5350.000000	47.3	H	26.7	74.0	PK	
5235.766000	90.2	V	23.8	114.0	PK	Diagram 2-20
5320.186000	48.8	V	25.2	74.0	PK	
5350.000000	46.2	V	27.8	74.0	PK	
5359.858000	50.9	V	23.1	74.0	PK	
5235.604000	86.4	H	7.6	94.0	AV	Diagram 2-21
5319.736000	45.3	H	8.7	54.0	AV	
5350.000000	42.1	H	11.9	54.0	AV	
5243.380000	84.6	V	9.4	94.0	AV	Diagram 2-22
5320.042000	47.1	V	6.9	54.0	AV	
5350.000000	42.6	V	11.4	54.0	AV	

Diagram 2- 19

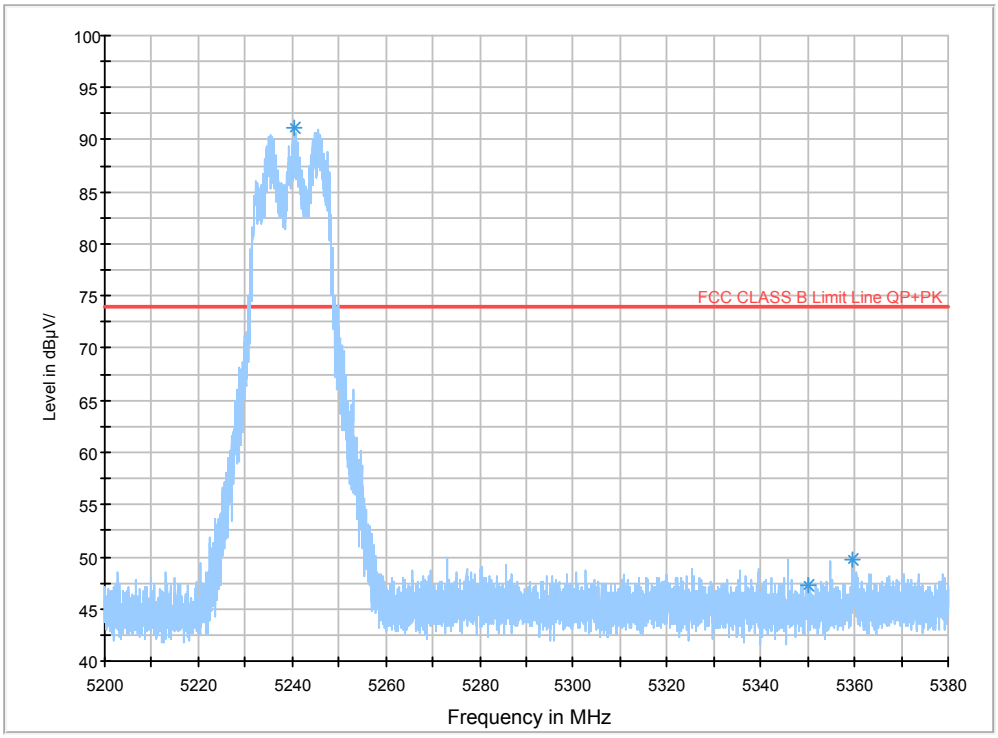


Diagram 2- 20

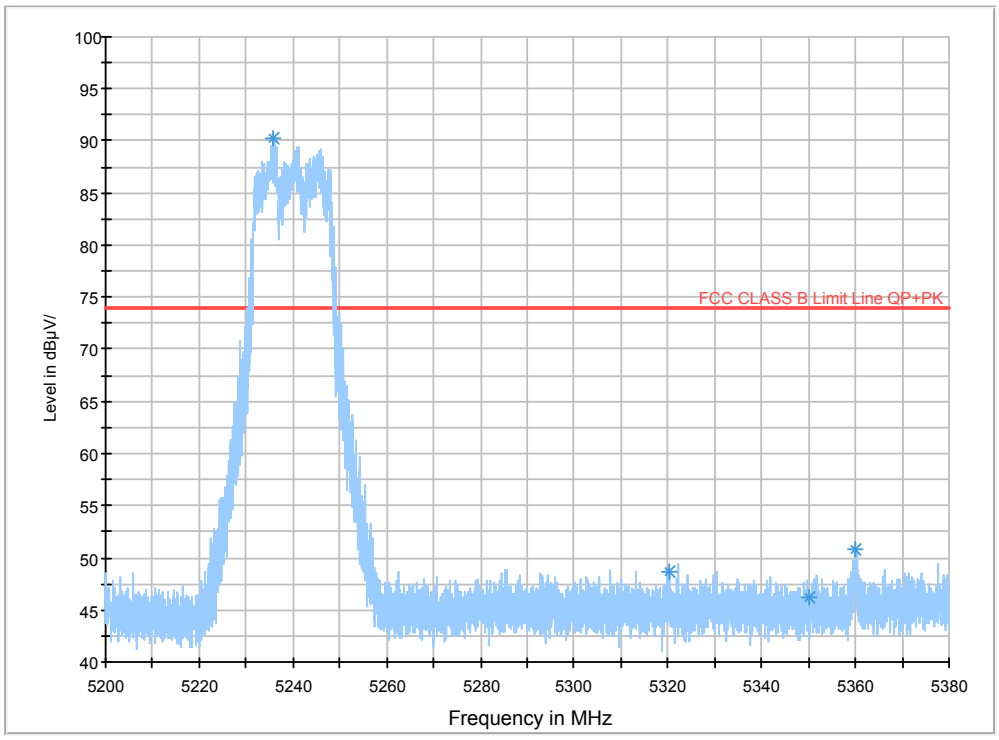


Diagram 2- 21

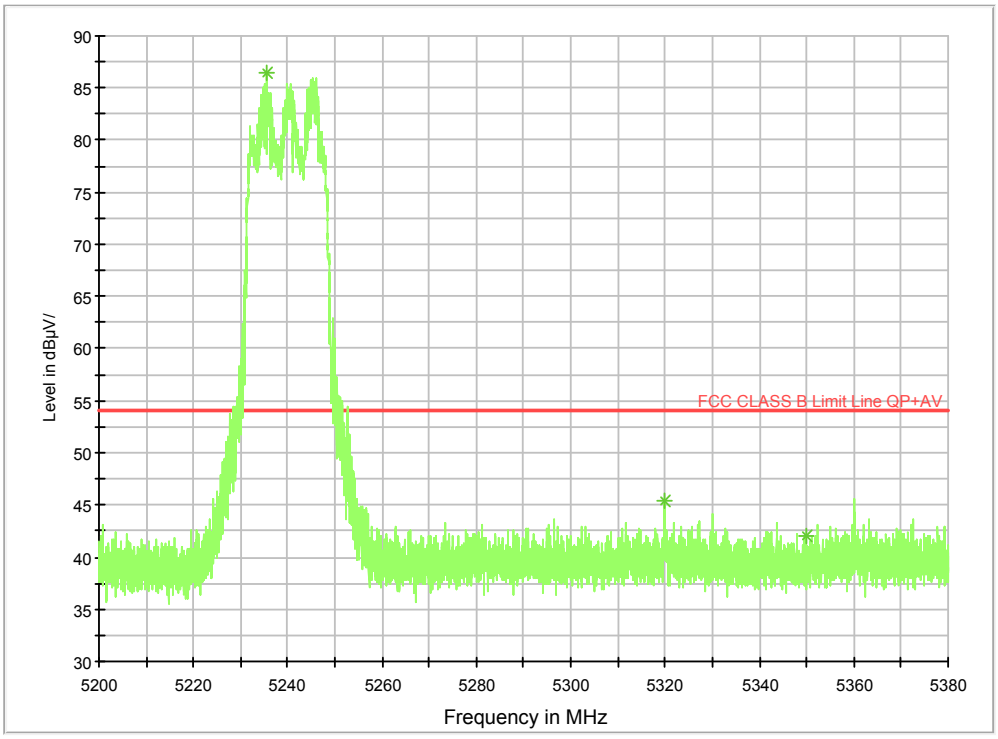
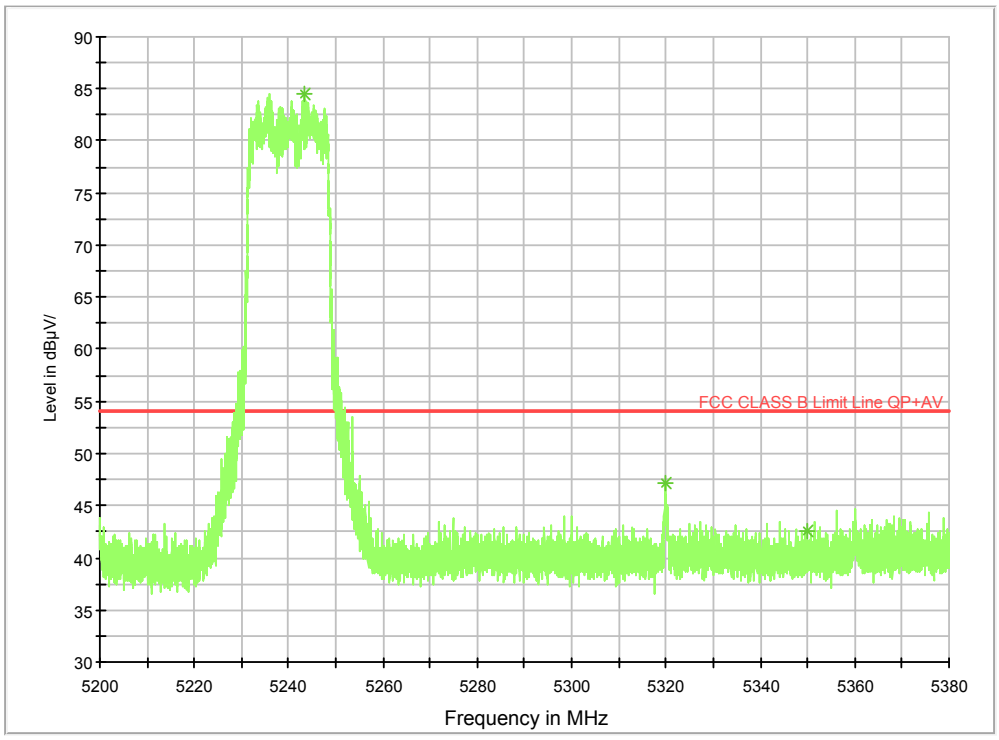


Diagram 2- 22


90
85
80
75
70
65
60
55
50
45
40
35
30
Level in dBµV/
FCC CLASS B Limit Line QP+AV
5200
5220
5240
5260
5280
5300
5320
5340
5360
5380
Frequency in MHz

8 26dB EMISSION BANDWIDTH

8.1 Applicable Standard: FCC §15.403(i)

For purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier.

8.2 Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9020A	MY48011941	2012-6-17	2013-6-17

***statement of traceability:**ZTE Corporation Reliability Testing Center attest that all calibration have been performed per the NVLAP requirements, traceable to NIST.

8.3 Test Procedure

The RF out of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation. RBW =300kHz, VBW=1000kHz; Detector = Peak, Trace mode = max hold, Span frequency> 26dB bandwidth

8.4 Environmental Conditions

Temperature:	20 ° C
Relative Humidity:	53%
ATM Pressure:	1009mbar

8.5 Test Result

Mode	Channel	Antenna Port	26dB bandwidth(MHz)	Limit	Test Data	Result
802.11.a	CH LOW	Port 1	23.90	--	Diagram 8-1	Pass
		Port 2	23.70	--		Pass
	CH MID	Port 1	24.06	--	Diagram 8-2	Pass
		Port 2	23.81	--		Pass
	CH HIGH	Port 1	24.17	--	Diagram 8-3	Pass
		Port 2	23.36	--		Pass

Diagram 8-1

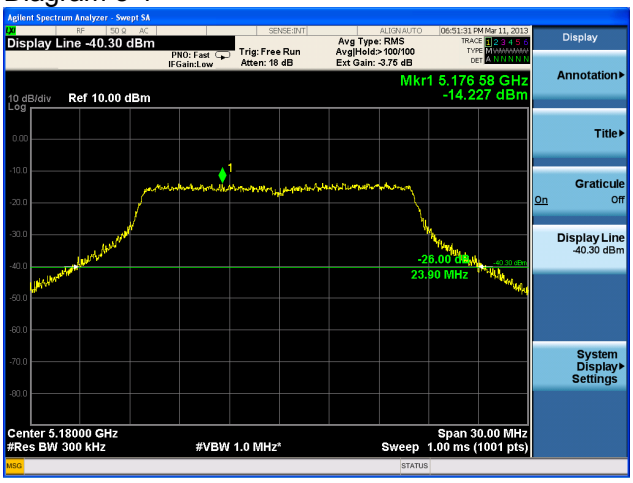
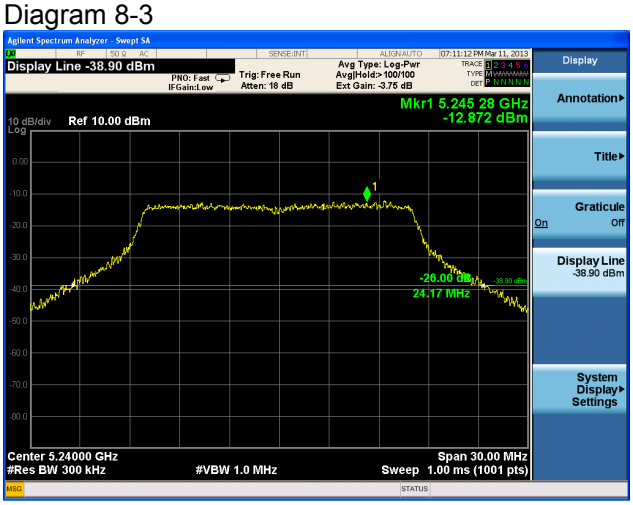
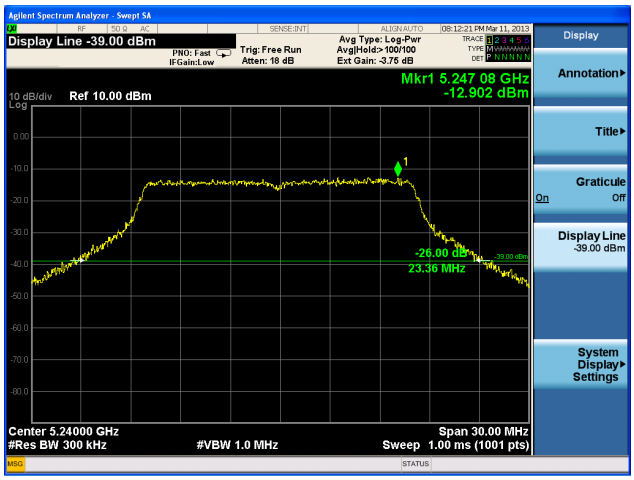


Diagram 8-2


Agilent Spectrum Analyzer - Swept SA
N dB -26.00 dB
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 18 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -3.75 dB
08:15:07 PM Mar 11, 2013
Mkr1 5.224 68 GHz
-13.934 dBm
10 dB/div
Log
Ref 10.00 dBm
-26.00 dB
23.81 MHz
Center 5.22000 GHz
#Res BW 300 kHz
#VBW 1.0 MHz
Span 30.00 MHz
Sweep 1.00 ms (1001 pts)
Meas Setup
Average/Hold Number
100
Average Type
Log-Pwr (Video)
Auto
Man
N dB Points
-26.00 dB
On
Off
PhNoise Opt
Fast Tuning
Auto
Man
ADC Dither
Medium
Auto
Man
More
1 of 2
MSG
STATUS

Diagram 8-3


Agilent Spectrum Analyzer - Swept SA
Display Line -38.90 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 18 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -3.75 dB
Mkr1 5.245 28 GHz
-12.872 dBm
10 dB/div
Log
Ref 10.00 dBm
-26.00 dB
24.17 MHz
Center 5.24000 GHz
#Res BW 300 kHz
#VBW 1.0 MHz
Span 30.00 MHz
Sweep 1.00 ms (1001 pts)
Display
Annotation
Title
Graticule
On
Off
Display Line
-38.90 dBm
System Display Settings
MSG
STATUS


Agilent Spectrum Analyzer - Swept SA
Display Line -39.00 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 18 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -3.75 dB
Mkr1 5.247 08 GHz
-12.902 dBm
10 dB/div
Log
Ref 10.00 dBm
-26.00 dB
23.36 MHz
Center 5.24000 GHz
#Res BW 300 kHz
#VBW 1.0 MHz
Span 30.00 MHz
Sweep 1.00 ms (1001 pts)
Display
Annotation
Title
Graticule
On
Off
Display Line
-39.00 dBm
System Display Settings
MSG
STATUS

9 MAXIMUM PEAK OUTPUT POWER

9.1 Applicable Standard: FCC §15.407(a)

According to FCC§15.407(a) (1), for the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10log B, where B is the 26-dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 4 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

9.2 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9020A	MY48011941	2012-6-17	2013-6-17

*__statement of traceability:__ ZTE Corporation Reliability Testing Center attest that all calibration have been performed per the NVLAP requirements , traceable to NIST.

9.3 Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation. The resolution bandwidth of the spectrum analyzer was set at 1MHz, and video bandwidth was set at 3MHz. Set the Integral bandwidth=26-dB emission bandwidth, and the span to fully encompass the DTS bandwidth. Detector = RMS, Sweep time = auto couple, Trace mode = max hold. Sweep point=100.

9.4 Test Data Environmental Conditions

Temperature:	20 °C
Relative Humidity:	53%
ATM Pressure:	1009mbar

9.5 Test Result: Pass

According to the minimum 26-dB emission bandwidth, the output power limit was calculated eg:
4 dBm + 10*log(23.36)=17.68dBm
So 50 mW(17dBm) is lesser than 4 dBm + 10log B
Since the transmitting antennas of directional gain greater than 6 dBi are used, both the maximum

conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. the applicable output power limit shall be calculated as follows:

$P_{Out} = 17 – Floor[(G_{Tx} – 6)]=17-[(17-6)]=6$

where:

P_{Out} = maximum conducted output power in dBm,

G_{Tx} = the maximum transmitting antenna directional gain in dBi.

Mode	Channel	Antenna Port	Power (dBm)	Total Power (dBm)	Limit (dBm)	Test Data	Result
802.11.a	CH LOW	Port 1	1.60	4.330	6	Diagram 9-1	Pass
		Port 2	1.02				Pass
	CH MID	Port 1	1.50	4.334	6	Diagram 9-2	Pass
		Port 2	1.14				Pass
	CH HIGH	Port 1	1.98	4.738	6	Diagram 9-3	Pass
		Port 2	1.46				Pass

Diagram 9-1

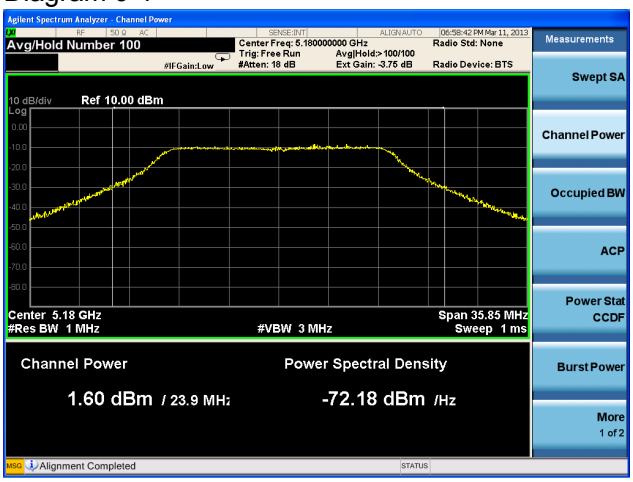
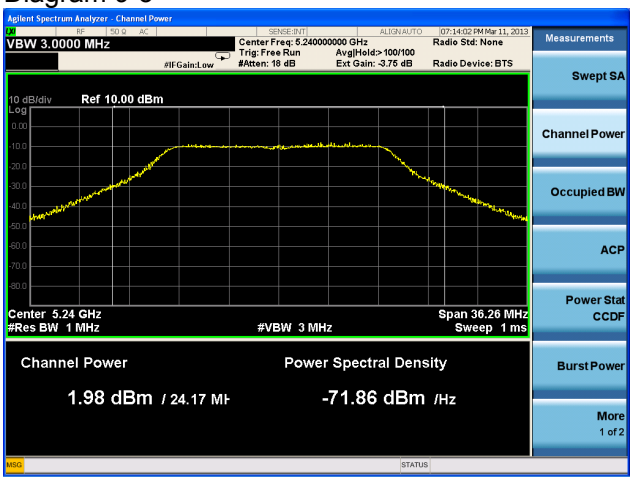


Diagram 9-2

Diagram 9-3


Agilent Spectrum Analyzer - Channel Power
VBW 3.0000 MHz
Center Freq: 5.240000000 GHz
Trig: Free Run
Avg|Hold:>100/100
#Atten: 18 dB
Ext Gain: -3.75 dB
Radio Std: None
Radio Device: BTS
Measurements
Swept SA
Channel Power
Occupied BW
ACP
Power Stat CCDF
Burst Power
More 1 of 2
10 dB/div
Ref 10.00 dBm
Center 5.24 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 36.26 MHz
Sweep 1 ms
Channel Power
1.98 dBm / 24.17 MH
Power Spectral Density
-71.86 dBm /Hz


Agilent Spectrum Analyzer - Channel Power
Avg/Hold Number 100
Center Freq: 5.240000000 GHz
Trig: Free Run
Avg|Hold:>100/100
#Atten: 18 dB
Ext Gain: -3.75 dB
Radio Std: None
Radio Device: BTS
Measurements
Spurious Emissions
Spectrum Emission Mask
List Sweep
More 2 of 2
10 dB/div
Ref 10.00 dBm
Center 5.24 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 35.04 MHz
Sweep 1 ms
Channel Power
1.46 dBm / 23.36 MH
Power Spectral Density
-72.23 dBm /Hz

10 POWER SPECTRAL DENSITY

10.1 Applicable Standard: FCC § 15.407(a)

According to FCC§15.407(a) (1), for the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10log B, where B is the 26-dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 4 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

10.2 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9020A	MY48011941	2012-6-17	2013-6-17

*__statement of traceability:__ ZTE Corporation Reliability Testing Center attest that all calibration have been performed per the NVLAP requirements, traceable to NIST.

10.3 Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation. The resolution bandwidth of the spectrum analyzer was set at 1MHz, and video bandwidth was set at 3MHz. Detector = RMS, Sweep time = auto couple, Trace mode = max hold.

10.4 Test Data Environmental Conditions

Temperature:	20 °C
Relative Humidity:	53 %
ATM Pressure:	1009 mbar

10.5 Test Result: Pass

According to the transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. the applicable output power limit shall be calculated as follows:

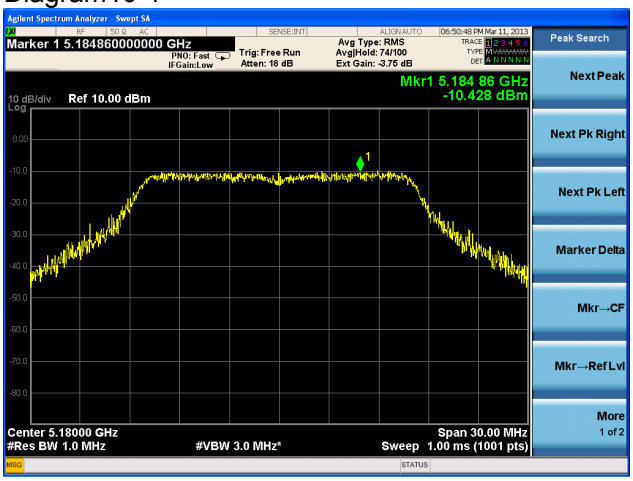
PSD = 4 – Floor[(G_{Tx} – 6)]=4-[(17-6)]=-7

where:

PSD = peak power spectral density,
G_{Tx} = the maximum transmitting antenna directional gain in dBi.

Mode	Channel	Antenna Port	Power Spectral Density(dBm)	Total Power Spectral Density(dBm)	Limit (dBm)	Test Data	Result
802.11.a	CH LOW	Port 1	-10.428	-7.232	-7	Diagram 10-1	Pass
		Port 2	-10.242				Pass
	CH MID	Port 1	-10.204	-7.052	-7	Diagram 10-2	Pass
		Port 2	-10.062				Pass
	CH HIGH	Port 1	-10.135	-7.047	-7	Diagram 10-3	Pass
		Port 2	-10.057				Pass

Diagram10-1



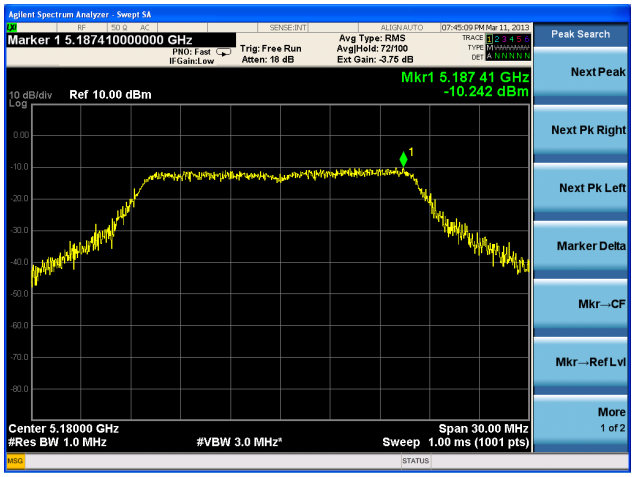
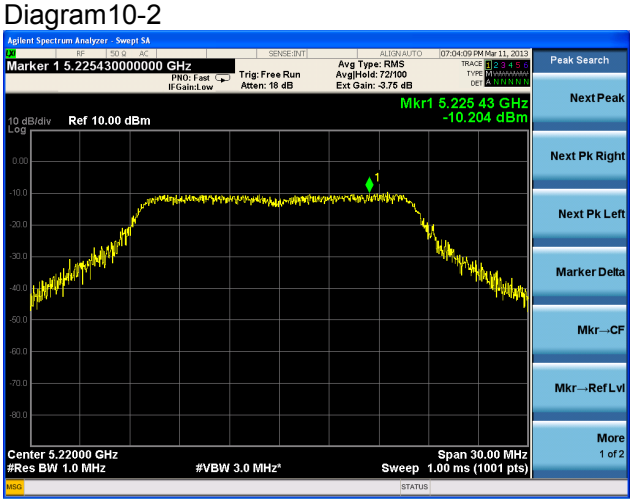


Diagram10-2



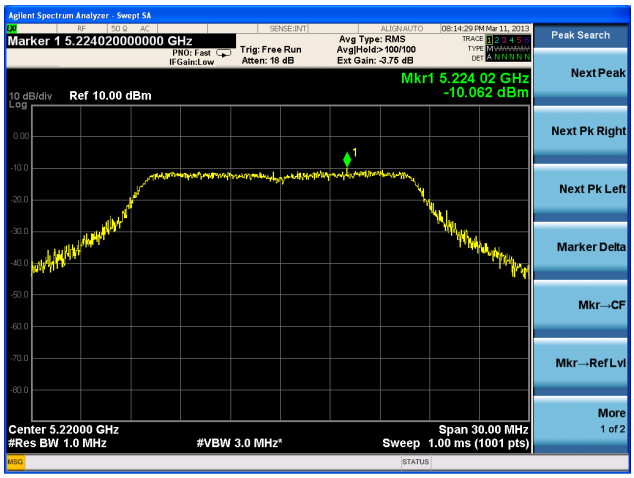
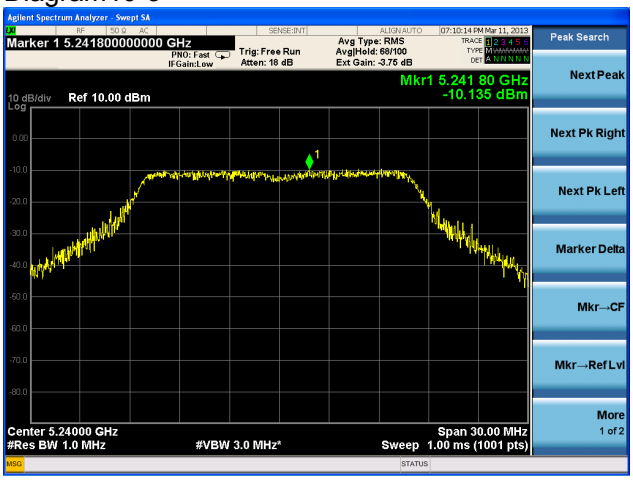
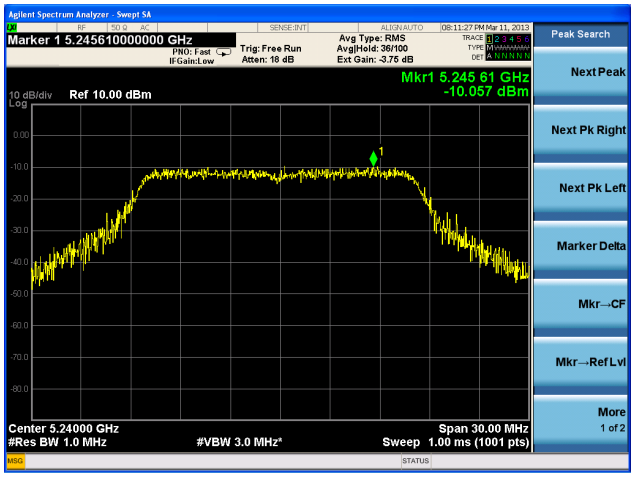


Diagram10-3


Agilent Spectrum Analyzer - Swept SA
Marker 1 5.241800000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 18 dB
Avg Type: RMS
Avg|Hold: 68/100
Ext Gain: -3.75 dB
07:10:14 PM Mar 11, 2013
Mkr1 5.241 80 GHz
-10.135 dBm
10 dB/div
Log
Ref 10.00 dBm
Center 5.24000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Span 30.00 MHz
Sweep 1.00 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2


Agilent Spectrum Analyzer - Swept SA
Marker 1 5.245610000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 18 dB
Avg Type: RMS
Avg|Hold: 36/100
Ext Gain: -3.75 dB
08:11:27 PM Mar 11, 2013
Mkr1 5.245 61 GHz
-10.057 dBm
10 dB/div
Log
Ref 10.00 dBm
Center 5.24000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Span 30.00 MHz
Sweep 1.00 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

11 PEAK EXCURSION and PSD-to-AVERAGE RATIO

11.1 Applicable Standard: FCC § 15.407(a)

According to FCC§15.407(a) (6), the ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

11.2 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9020A	MY48011941	2012-6-17	2013-6-17

*__statement of traceability:__ ZTE Corporation Reliability Testing Center attest that all calibration have been performed per the NVLAP requirements, traceable to NIST.

11.3 Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation. The resolution bandwidth of the spectrum analyzer was set at 1MHz, and video bandwidth was set at 3MHz. Detector = PEAK, Sweep time = auto couple, Trace mode = max hold. Use the peak search function to find the peak of the spectrum. PSD-to-AVERAGE RATIO is peak value subtracting RMS(average) value.

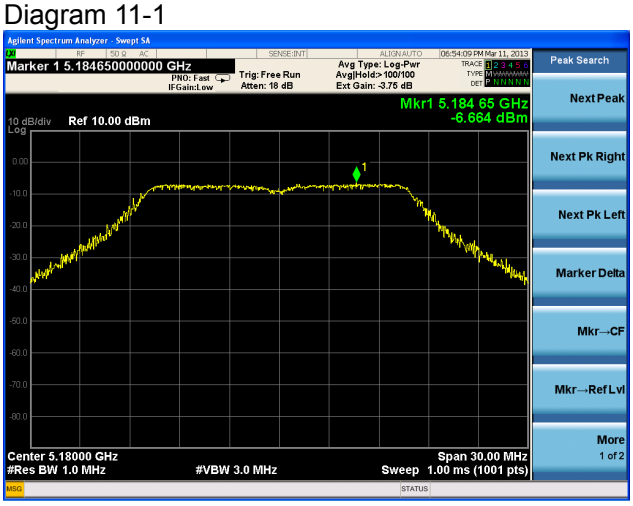
11.4 Test Data Environmental Conditions

Temperature:	20 °C
Relative Humidity:	53 %
ATM Pressure:	1009 mbar

11.5 Test Result: Pass

Mode	Channel	Antenna Port	Peak Power (dBm)	RMS Power (dBm)	Peak excursion (dB)	Limit (dB)	Test Data	Result
802.11.a	CH LOW	Port 1	-6.664	-10.428	3.764	13	Diagram 11-1	Pass
		Port 2	-7.590	-10.242	2.652	13		Pass
	CH MID	Port 1	-7.064	-10.204	3.140	13	Diagram 11-2	Pass
		Port 2	-7.035	-10.062	3.027	13		Pass
	CH HIGH	Port 1	-6.363	-10.135	3.772	13	Diagram 11-3	Pass
		Port 2	-6.629	-10.057	3.428	13		Pass

Diagram 11-1



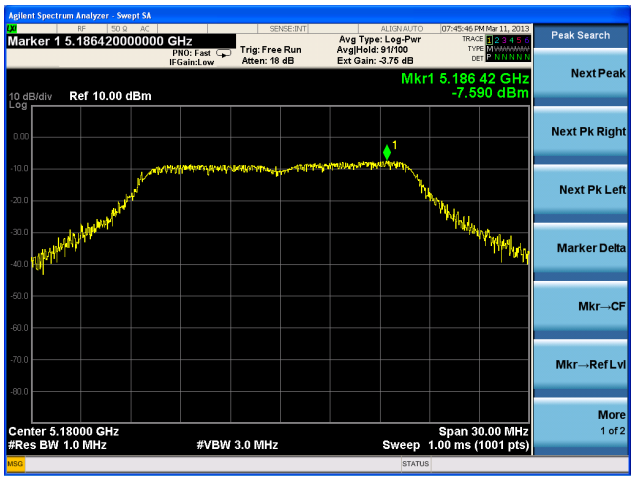
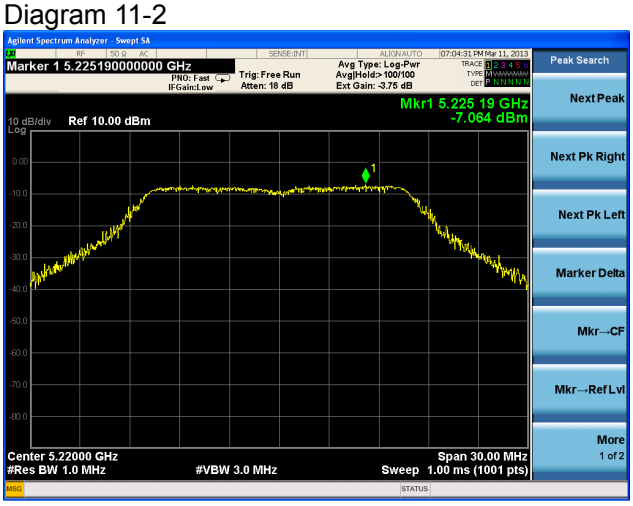


Diagram 11-2



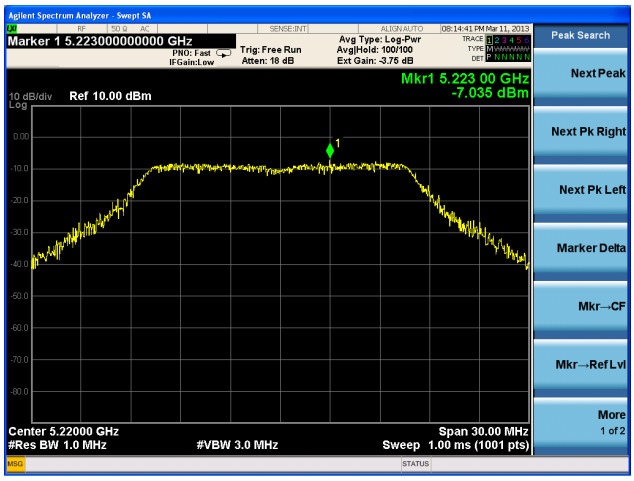
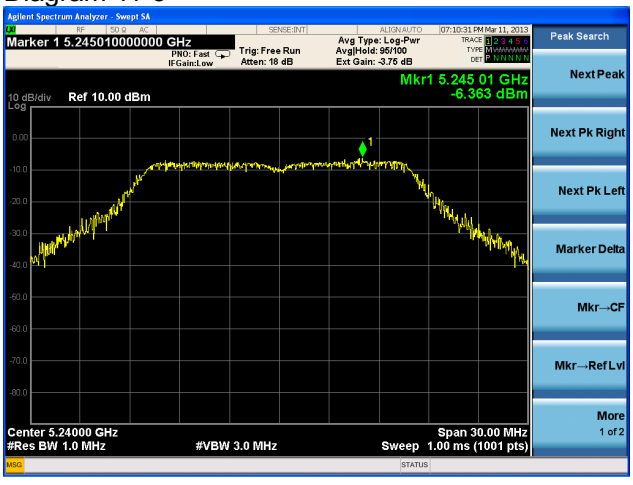
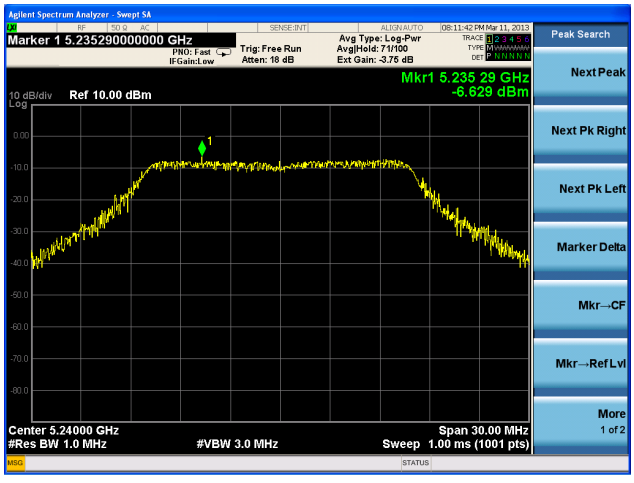


Diagram 11-3





12 FREQUENCY STABILITY

12.1 Applicable Standard: FCC §15.407(g)

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

12.2 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
GZ-ESPEC	Temperature Chamber	EW0470	06113028	2012-12-12	2013-12-12
Agilent	MXA Series Spectrum Analyzer	N9020A	MY48011941	2012-6-17	2013-6-17

***statement of traceability:** ZTE Corporation Reliability Testing Center attest that all calibration have been performed per the NVLAP requirements, traceable to NIST.

12.3 Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to a Spectrum Analyzer via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.
After the temperature stabilized for approximately 150 minutes, the frequency output (20dB bandwidth point) was recorded from the counter.
Frequency Stability vs. Voltage: An external variable AC power supply Source. The voltage was set to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the end point. The output frequency was recorded for each voltage.

12.4 Environmental Conditions

Normal condition:	20° C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

12.5 Test Result: Pass

Frequency Stability vs. Temperature				
Temperature ℃	Power Supplied	Frequency Measure MHz	Limit MHz	Result
Low channel (5180MHz, 20 dB bandwidth left Point)				
-40	Nominal	5175.35	5150-5250	PASS
-30	Nominal	5175.37	5150-5250	PASS
-20	Nominal	5175.42	5150-5250	PASS
-10	Nominal	5175.38	5150-5250	PASS
0	Nominal	5175.41	5150-5250	PASS
10	Nominal	5175.43	5150-5250	PASS
20	Nominal	5175.45	5150-5250	PASS
30	Nominal	5175.41	5150-5250	PASS
40	Nominal	5175.38	5150-5250	PASS
50	Nominal	5175.42	5150-5250	PASS
55	Nominal	5175.38	5150-5250	PASS
High channel (5240MHz, 20 dB bandwidth right Point)				
-40	Nominal	5248.97	5150-5250	PASS
-30	Nominal	5248.96	5150-5250	PASS
-20	Nominal	5249.12	5150-5250	PASS
-10	Nominal	5249.15	5150-5250	PASS
0	Nominal	5248.99	5150-5250	PASS
10	Nominal	5249.08	5150-5250	PASS
20	Nominal	5249.18	5150-5250	PASS
30	Nominal	5249.13	5150-5250	PASS
40	Nominal	5249.06	5150-5250	PASS
50	Nominal	5249.07	5150-5250	PASS
55	Nominal	5249.11	5150-5250	PASS

Frequency Stability vs. Voltage				
Voltage Vac	Temperature	Frequency Measure MHz	Limit MHz	Result
Low channel (5180MHz, 20 dB bandwidth left Point)				
+15%	20	5175.43	5150-5250	PASS
-15%	20	5175.38	5150-5250	PASS
High channel (5240MHz, 20 dB bandwidth right Point)				
+15%	20	5249.12	5150-5250	PASS
-15%	20	5249.16	5150-5250	PASS