ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR L OW-POWER, NON-LICENSED TRANSMITTER

Test Report No.	**: W168R-D023**
AGR No.	**: A165A-160**
Applicant	**: Samsung Electronics Co Ltd**
Address	**: 19 Chapin Rd., Building D, Pine Brook, New Jersey, 07058**
Manufacturer	**: Samsung Electronics Co Ltd**
Address	**: 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 443-742, Rep of Korea**
Type of Equipment	**: WLAN Access Point**
FCC ID.	**: A3LWEA514I**
IC Certification No.	**: 649E-WEA514I**
Model Name	**: WEA514i**
Serial number	**: N/A**
Total page of Report	**: 446 pages (including this page)**
Date of Incoming	**: May 19, 2016**
Date of issue	**: August 17, 2016**

SUMMARY

The equipment complies with the regulation; ***FCC PART 15 SUBPART E Section 15.407 and IC RSS-Gen Issue 4 Nov 2014 and RSS-247 Issue 1 May 2015***

This test report only contains the result of a single test of the sample supplied for the examination.

It is not a generally valid assessment of the features of the respective products of the mass-production.

Reviewed by: Jae-Ho, Lee / Chief Engineer
ONETECH Corp.

Approved by: Sung-ik, Han/ Managing Director
ONETECH Corp.

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CONTENTS

PAGE

1. VERIFICATION OF COMPLIANCE **7**

2. TEST SUMMARY **8**

2.1 TEST ITEMS AND RESULTS 8

2.2 ADDITIONS, DEVIATIONS, EXCLUSIONS FROM STANDARDS 8

2.3 RELATED SUBMITTAL(S) / GRANT(S) 8

2.4 PURPOSE OF THE TEST 8

2.5 TEST METHODOLOGY 8

2.6 TEST FACILITY 9

3. GENERAL INFORMATION **10**

3.1 PRODUCT DESCRIPTION 10

4. EUT MODIFICATIONS **15**

5. SYSTEM TEST CONFIGURATION **16**

5.1 JUSTIFICATION 16

5.2 PERIPHERAL EQUIPMENT 16

5.4 CONFIGURATION OF TEST SYSTEM 26

5.5 ANTENNA REQUIREMENT 26

6. PRELIMINARY TEST **27**

6.1 AC POWER LINE CONDUCTED EMISSIONS TESTS 27

6.2 GENERAL RADIATED EMISSIONS TESTS 27

7. MINIMUM 26 DB BANDWIDTH & 99 % OCCUPIED BANDWIDTH **28**

7.1 OPERATING ENVIRONMENT 28

7.2 TEST SET-UP 28

7.3 TEST EQUIPMENT USED 28

7.4 TEST DATA FOR SERVICE PORT 29

7.4.1 Test data for 802.11a RLAN Mode *29*

7.4.2 Test data for 802.11n_HT20 RLAN Mode *45*

7.4.3 Test data for 802.11n_HT40 RLAN Mode *61*

7.4.4 Test data for 802.11ac_VHT20 RLAN Mode *77*

7.4.5 Test data for 802.11ac_VHT40 RLAN Mode *93*

7.4.6 Test data for 802.11ac_VHT80 RLAN Mode *109*

8.1 OPERATING ENVIRONMENT 125

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8.2 TEST SET-UP 125
8.3 TEST EQUIPMENT USED 125
8.4 TEST DATA FOR SERVICE PORT 126
8.4.1 Test data for 802.11a RLAN Mode *126*
8.4.2 Test data for 802.11n_HT20 RLAN Mode *129*
8.4.3 Test data for 802.11n_HT40 RLAN Mode *132*
8.4.4 Test data for 802.11ac_VHT20 RLAN Mode *135*
8.4.5 Test data for 802.11ac_VHT40 RLAN Mode *138*
8.4.6 Test data for 802.11ac_VHT80 RLAN Mode *141*
9. MAXIMUM PEAK OUTPUT POWER **144**
9.1 OPERATING ENVIRONMENT 144
9.2 TEST SET-UP 144
9.3 TEST EQUIPMENT USED 144
9.4 LIMIT 145
9.5 TEST DATA FOR SERVICE PORT 151
9.5.1 Test data for 802.11a RLAN Mode *151*
9.5.2 Test data for 802.11n_HT20 RLAN Mode *172*
9.5.3 Test data for 802.11n_HT40 RLAN Mode *193*
9.5.4 Test data for 802.11ac_VHT20 RLAN Mode *214*
9.5.5 Test data for 802.11ac_VHT40 RLAN Mode *235*
9.5.6 Test data for 802.11ac_VHT80 RLAN Mode *256*
10. PEAK POWER SPECTRUL DENSITY **277**
10.1 OPERATING ENVIRONMENT 277
10.2 TEST SET-UP 277
10.3 TEST EQUIPMENT USED 277
10.4 TEST DATA FOR SERVICE PORT 278
10.4.1 Test data for 802.11a RLAN Mode *278*
10.4.2 Test data for 802.11n_HT20 RLAN Mode *291*
10.4.3 Test data for 802.11n_HT40 RLAN Mode *304*
10.4.4 Test data for 802.11ac_VHT20 RLAN Mode *317*
10.4.5 Test data for 802.11ac_VHT40 RLAN Mode *330*
10.4.6 Test data for 802.11ac_VHT80 RLAN Mode *343*
10.5 MEASUREMENT FOR E.I.R.P. AT VARIOUS ELEVATIONS 356
10.5.1 Test data for Multiple Antenna *356*
11. FREQUENCY STABILITY WITH TEMPERATURE VARIATION **357**
11.1 OPERATING ENVIRONMENT 357

11.2 TEST SET-UP 357
11.3 TEST EQUIPMENT USED 357
11.4 TEST DATA FOR U-NII-1 358
11.5 TEST DATA FOR U-NII-2A 359
11.6 TEST DATA FOR U-NII-2C 360
11.7 TEST DATA FOR U-NII-3 361
12. FREQUENCY STABILITY WITH VOLTAGE VARIATION **362**
12.1 OPERATING ENVIRONMENT 362
12.2 TEST SET-UP 362
12.3 TEST EQUIPMENT USED 362
12.4 TEST DATA FOR U-NII-1 363
12.5 TEST DATA FOR U-NII-2A 364
12.6 TEST DATA FOR U-NII-2C 365
12.7 TEST DATA FOR U-NII-3 366
13. RADIATED SPURIOUS EMISSIONS **367**
13.1 OPERATING ENVIRONMENT 367
13.2 TEST SET-UP FOR CONDUCTED MEASUREMENT 367
13.3 TEST EQUIPMENT USED 367
13.4 TEST DATA FOR SERVICE PORT 368
13.4.1 Test data for 802.11a RLAN Mode *368*
13.4.2 Test data for 802.11n_HT20 RLAN Mode *376*
13.4.3 Test data for 802.11n_HT40 RLAN Mode *384*
13.4.4 Test data for 802.11ac_VHT20 RLAN Mode *392*
13.4.5 Test data for 802.11ac_VHT40 RLAN Mode *400*
13.4.6 Test data for 802.11ac_VHT80 RLAN Mode *408*
14. SPURIOUS EMISSION - RECEIVER **416**
14.1 OPERATING ENVIRONMENT 416
14.2 TEST SET-UP FOR CONDUCTED MEASUREMENT 416
14.3 TEST SET-UP FOR RADIATED MEASUREMENT 416
14.4 TEST EQUIPMENT USED 416
14.5 TEST DATA 417
14.5.1 Test data for 30 MHz ~ 1 000 MHz *417*
14.5.2 Test data for Below 30 MHz *418*
14.5.3 Test data for above 1 GHz *418*
15. RADIATED RESTRICTED BAND EDGE MEASUREMENTS **419**
15.1 OPERATING ENVIRONMENT 419

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15.2 TEST SET-UP FOR CONDUCTED MEASUREMENT 419
15.3 TEST EQUIPMENT USED 419
15.4 TEST DATA FOR SERVICE PORT 420
15.4.1 Test data for 802.11a RLAN Mode *420*
15.4.2 Test data for 802.11n_HT20 RLAN Mode *424*
15.4.3 Test data for 802.11n_HT40 RLAN Mode *428*
15.4.4 Test data for 802.11ac_VHT20 RLAN Mode *432*
15.4.5 Test data for 802.11ac_VHT40 RLAN Mode *436*
15.4.6 Test data for 802.11ac_VHT80 RLAN Mode *440*
16. CONDUCTED EMISSION TEST **444**
16.1 OPERATING ENVIRONMENT 444
16.2 TEST SET-UP 444
16.3 TEST EQUIPMENT USED 444
16.4 TEST DATA 445

Revision History

Issued Report No.	Issued Date	Revisions	Effect Section
W168R-D023	August 17, 2016	Initial Issue	All

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1. VERIFICATION OF COMPLIANCE

Applicant	: Samsung Electronics Co Ltd
Address	: 19 Chapin Rd., Building D, Pine Brook, New Jersey, 07058
Contact Person	: Chan Ho Youn / General Manager
Telephone No.	: 973-808-6362
FCC ID	: A3LWEA514I
IC Certification No.	: 649E-WEA514I
Model Name	: WEA514i
Serial Number	: N/A
Date	: August 17, 2016

EQUIPMENT CLASS	FCC : Unlicensed National Information infrastructure(UNII) IC : Low Power License-Exempt Radio-communication Device
E.U.T. DESCRIPTION	WLAN Access Point
THIS REPORT CONCERNS	Original Grant
MEASUREMENT PROCEDURES	ANSI C63.10: 2013
TYPE OF EQUIPMENT TESTED	Pre-Production
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	Certification
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	FCC PART 15 SUBPART E Section 15.407, RSS-Gen Issue 4 Nov 2014, RSS-247 Issue 1 May 2015
Modifications on the Equipment to Achieve Compliance	None
Final Test was Conducted On	3 m, Semi Anechoic Chamber

-. The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC&IC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

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2. TEST SUMMARY

2.1 Test items and results

SECTION		TEST ITEMS	RESULTS
15.407(a)	RSS-247, 6.6	26 dB Bandwidth & 99 % Occupied Bandwidth	PASS
15.407(e)	RSS-247, 6.2.4.1	6 dB Bandwidth	PASS
15.407(a)	RSS-247, 6.2	Maximum Conducted Output Power	Met the Limit / PASS
15.407(a)	RSS-247, 6.2	Peak Power Spectral Density	Met the Limit / PASS
15.407(a)	-	Peak Excursion	Met the Limit / PASS
15.407(g)	-	Frequency Stability	Met the Limit / PASS
15.407(b)	RSS-247, 6.2	Undesirable Emissions	Met the Limit / PASS
-	RSS-GEN, 5, 7.1.2	Receiver Spurious Emissions	PASS
15.205, 15.407(b)	RSS-GEN, 8.9,8.10	General Field Strength Limits (Restricted Bandsand Radiated Emission Limits)	Met the Limit / PASS
15.207	RSS GEN, 8.8	AC Conducted Emissions 150 kHz-30 MHz	Met the Limit / PASS

2.2 Additions, deviations, exclusions from standards

No additions, deviations or exclusions have been made from standard.

2.3 Related Submittal(s) / Grant(s)

Original submittal only

2.4 Purpose of the test

To determine whether the equipment under test fulfills the requirements of the regulation stated in FCC PART 15 SUBPART E Section 15.407, IC RSS-Gen Issue 4 Nov 2014 and RSS-247 Issue 1 May 2015

2.5 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10: 2013. Radiated testing was performed at a distance of 3 m from EUT to the antenna.

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2.6 Test Facility

The Onetech Corp. has been designated to perform equipment testing in compliance with ISO/IEC 17025.

The Electromagnetic compatibility measurement facilities are located at 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea.

-. Site Filing:

VCCI (Voluntary Control Council for Interference) – Registration No. R-4112/ C-4617/ G-666/ T-1842

IC (Industry Canada) – Registration No. Site# 3736A-3

-. Site Accreditation:

KOLAS (Korea Laboratory Accreditation Scheme) - Accreditation NO. KT085

FCC (Federal Communications Commission) - Accreditation No. KR0013

RRA (Radio Research Agency) – Designation No. KR0013

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3. GENERAL INFORMATION

3.1 Product Description

The Samsung Electronics Co Ltd, Model WEA514i (referred to as the EUT in this report) is a WLAN Access Point. Product specification information described herein was obtained from product data sheet or user's manual.

DEVICE TYPE	WLAN Access Point	
OPERATING FREQUENCY	WLAN 2.4 GHz	2 412 MHz ~ 2 462 MHz (802.11b/g/n(HT20))
	5 150 MHz ~ 5 250 MHz Band	5 180 MHz ~ 5 240 MHz (802.11a/n(HT20)/ac(VHT20))
		5 190 MHz ~ 5 230 MHz (802.11n(HT40)/ac(VHT40))
		5 210 MHz (802.11ac(VHT80))
	5 250 MHz ~ 5 350 MHz Band	5 260 MHz ~ 5 320 MHz 802.11a/n(HT20)/ac(VHT20))
		5 270 MHz ~ 5 310 MHz (802.11n(HT40)/ac(VHT40))
		5 290 MHz (802.11ac(VHT80))
	5 470 MHz ~ 5 725 MHz Band	5 500 MHz ~ 5 700 MHz 802.11a/n(HT20)/ac(VHT20))
		5 510 MHz ~ 5 670 MHz (802.11n(HT40)/ac(VHT40))
		5 530 MHz (802.11ac(VHT80))
	5 725 MHz ~ 5 850 MHz Band	5 745 MHz ~ 5 825 MHz (802.11a/n(HT20)/ac(VHT20))
		5 755 MHz ~ 5 795 MHz (802.11n(HT40)/ac(VHT40))
		5 775 MHz (802.11ac(VHT80))
MODULATION TYPE	WLAN 2.4 G	DSSS Modulation(DBPSK/DQPSK/CCK) OFDM Modulation(BPSK/QPSK/16QAM/64QAM)
	WLAN 5 G	OFDM Modulation(BPSK/QPSK/16QAM/64QAM)
ANTENNA TYPE	PIFA Antenna	
List of each Osc. or crystal Freq.(Freq. >= 1 MHz)	40 MHz	

Antenna Gain

-.UNII 1

Service Port	Antenna Gain	802.11a/n/ac	Ant 0	5.06
			Ant 1	5.38
			Ant 2	4.99
			Ant 3	5.59
	Directional Antenna Gain	802.11a/n/ac	Ant 0 + 1	8.23
			Ant 0 + 2	8.04
			Ant 0 + 3	8.34
			Ant 1 + 2	8.20
			Ant 1 + 3	8.50
			Ant 2 + 3	8.31
			Ant 0 + 1 + 2	9.92
			Ant 0 + 1 + 3	10.12
			Ant 0 + 2 + 3	9.99
			Ant 1 + 2 + 3	10.10
			Ant 0 + 1 + 2 + 3	11.28

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-.UNII 2A

Service Port	Antenna Gain	802.11a/n/ac	Ant 0	4.68
			Ant 1	5.36
			Ant 2	5.01
			Ant 3	5.94
	Directional Antenna Gain	802.11a/n/ac	Ant 0 + 1	8.04
			Ant 0 + 2	7.86
			Ant 0 + 3	8.37
			Ant 1 + 2	8.20
			Ant 1 + 3	8.67
			Ant 2 + 3	8.51
			Ant 0 + 1 + 2	9.80
			Ant 0 + 1 + 3	10.13
			Ant 0 + 2 + 3	10.01
			Ant 1 + 2 + 3	10.22
			Ant 0 + 1 + 2 + 3	11.29

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-.UNII 2C

Service Port	Antenna Gain	802.11a/n/ac	Ant 0	5.08
			Ant 1	5.33
			Ant 2	4.59
			Ant 3	5.32
	Directional Antenna Gain	802.11a/n/ac	Ant 0 + 1	8.22
			Ant 0 + 2	7.85
			Ant 0 + 3	8.21
			Ant 1 + 2	7.99
			Ant 1 + 3	8.34
			Ant 2 + 3	7.98
			Ant 0 + 1 + 2	9.78
			Ant 0 + 1 + 3	10.02
			Ant 0 + 2 + 3	9.78
			Ant 1 + 2 + 3	9.86
			Ant 0 + 1 + 2 + 3	11.11

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-.UNII 3

Service Port	Antenna Gain	802.11a/n/ac	Ant 0	4.64
			Ant 1	4.49
			Ant 2	4.00
			Ant 3	4.19
	Directional Antenna Gain	802.11a/n/ac	Ant 0 + 1	7.58
			Ant 0 + 2	7.34
			Ant 0 + 3	7.43
			Ant 1 + 2	7.26
			Ant 1 + 3	7.35
			Ant 2 + 3	7.11
			Ant 0 + 1 + 2	9.16
			Ant 0 + 1 + 3	9.22
			Ant 0 + 2 + 3	9.06
			Ant 1 + 2 + 3	9.00
			Ant 0 + 1 + 2 + 3	10.36

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MAX. RF OUTPUT POWER

-. Service Port

Band	Mode	Ant 0 (dBm)	Ant 1 (dBm)	Ant 2 (dBm)	Ant 3 (dBm)	Ant 0+1+2+3 (dBm)
UNII1	802.11a	6.91	6.55	5.82	5.15	12.18
	802.11n(HT20)	8.67	7.55	7.71	6.76	13.60
	802.11n(HT40)	9.46	9.45	9.40	8.67	15.28
	802.11ac(VHT20)	8.76	7.89	7.50	6.67	13.70
	802.11ac(VHT40)	10.22	9.77	9.65	8.70	15.64
	802.11ac(VHT80)	9.61	9.18	8.76	7.79	14.91
UNII2A	802.11a	11.92	10.90	11.82	10.99	17.43
	802.11n(HT20)	12.33	11.18	11.89	10.36	17.50
	802.11n(HT40)	11.07	10.77	11.24	10.01	16.81
	802.11ac(VHT20)	11.69	11.19	11.50	10.68	17.30
	802.11ac(VHT40)	11.66	11.01	11.40	10.17	17.12
	802.11ac(VHT80)	9.59	11.65	11.73	10.65	17.01
UNII2C	802.11a	10.31	9.82	10.03	8.78	15.79
	802.11n(HT20)	12.02	11.57	12.06	10.67	17.47
	802.11n(HT40)	11.61	11.38	11.33	11.29	17.17
	802.11ac(VHT20)	10.74	10.51	10.58	9.56	16.31
	802.11ac(VHT40)	11.90	11.39	11.63	10.49	17.32
	802.11ac(VHT80)	6.50	7.10	7.50	5.88	12.81
UNII3	802.11a	14.69	13.36	13.96	12.30	19.68
	802.11n(HT20)	13.24	12.89	13.04	12.30	18.90
	802.11n(HT40)	15.17	14.74	14.56	13.80	20.62
	802.11ac(VHT20)	14.36	13.32	13.35	12.43	19.44
	802.11ac(VHT40)	17.72	18.33	18.24	17.97	24.09
	802.11ac(VHT80)	7.10	14.61	14.55	13.80	20.56

3.2 Alternative type(s)/model(s); also covered by this test report.

-. None

4. EUT MODIFICATIONS

-. None

5. SYSTEM TEST CONFIGURATION

5.1 Justification

This device was configured for testing in a typical way as a normal customer is supposed to be used. During the test, the following components were installed inside of the EUT.

DEVICE TYPE	MANUFACTURER	MODEL/PART NUMBER	FCC ID
Main Board	Samsung Electronics Co Ltd	WDS-A504I	N/A

5.2 Peripheral equipment

Defined as equipment needed for correct operation of the EUT, but not considered as tested:

Model	Manufacturer	Description	Connected to
WEA514i	Samsung Electronics Co Ltd	WLAN Access Point (EUT)	Notebook PC
ProBooks 4540s	H.P	Notebook PC	EUT
H508	IPTIME	HUB	EUT

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5.3 Mode of operation during the test

- Service Port

UNII 1

Modulation	DATA RATE	OUTPUT POWER			
		Ant 0	Ant 1	Ant 2	Ant 3
802.11 a	6 Mbps	6.91	6.55	5.82	5.15
	9 Mbps	6.61	6.23	5.74	4.97
	12 Mbps	6.44	5.73	5.35	4.55
	18 Mbps	5.94	5.30	5.08	4.45
	24 Mbps	5.51	5.20	4.77	4.14
	36 Mbps	5.09	4.76	4.31	3.90
	48 Mbps	4.99	4.31	4.13	3.53
	54 Mbps	4.52	4.21	4.02	3.29
HT 20	6.5 Mbps	8.67	7.55	7.71	6.76
	13 Mbps	8.24	6.95	7.24	6.22
	19.5 Mbps	7.49	6.37	6.91	5.72
	26 Mbps	7.44	6.21	6.63	5.26
	39 Mbps	7.35	5.63	6.26	4.89
	52 Mbps	6.75	5.30	6.14	4.78
	58.5 Mbps	6.69	4.88	5.71	4.58
	65 Mbps	6.32	4.75	5.51	4.34
HT 40	13.5 Mbps	9.46	9.45	9.40	8.67
	27 Mbps	9.18	9.05	9.36	8.12
	40.5 Mbps	8.68	8.16	8.63	7.83
	54 Mbps	8.47	7.84	8.44	7.21
	81 Mbps	8.26	7.63	7.96	6.62
	108 Mbps	7.60	7.19	7.42	6.30
	121.5 Mbps	7.57	6.63	6.78	6.02
	135 Mbps	7.37	6.44	6.61	5.76

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VHT20	6.5 Mbps	8.76	7.89	7.50	6.67
	13 Mbps	8.58	7.47	7.37	6.13
	19.5 Mbps	8.31	6.79	7.24	5.84
	26 Mbps	7.93	6.17	7.01	5.55
	39 Mbps	7.27	5.57	6.96	5.39
	52 Mbps	6.70	5.46	6.43	5.13
	58.5 Mbps	6.18	5.07	6.41	4.75
	65 Mbps	5.91	4.75	5.92	4.58
	78 Mbps	5.52	4.49	5.85	4.16
VHT40	13.5 Mbps	10.22	9.77	9.65	8.70
	27 Mbps	9.55	9.35	9.63	8.57
	40.5 Mbps	9.53	8.80	9.01	8.33
	54 Mbps	8.79	8.54	8.19	7.69
	81 Mbps	8.51	7.69	7.63	7.34
	108 Mbps	8.10	7.08	6.88	6.82
	121.5 Mbps	7.34	6.46	6.78	6.69
	135 Mbps	7.03	5.92	6.68	6.06
	162 Mbps	6.56	5.70	6.54	5.84
	180 Mbps	6.13	5.51	6.49	5.58
VHT80	29.3 Mbps	9.61	9.18	8.76	7.79
	58.5 Mbps	9.43	8.29	8.16	7.42
	87.8 Mbps	8.53	7.69	8.12	6.81
	117 Mbps	7.81	7.40	7.66	6.28
	175.5 Mbps	7.49	6.87	7.49	5.96
	234 Mbps	6.78	6.40	6.85	5.79
	263.3 Mbps	6.71	6.03	6.33	5.36
	292.5 Mbps	6.67	5.47	6.09	4.87
	351 Mbps	6.28	5.21	5.88	4.56
	390 Mbps	6.06	5.02	5.34	4.15

The worst case data rate for each modulation is determined 6 Mbps(Ant.0,1,2,3) for IEEE 802.11a, 6.5 Mbps(Ant.0,1,2,3) for HT20, 13.5 Mbps(Ant.0,1,2,3) for HT40, 6.5 Mbps(Ant.0,1,2,3) for VHT20, 13.5 Mbps(Ant.0,1,2,3) for VHT40, 29.3 Mbps(Ant.0,1,2,3) for VHT80

- To get a maximum emission levels from the EUT, the EUT was moved throughout the XY, XZ, and YZ planes and the worst case is “XY” axis.

UNII 2A

Modulation	DATA RATE	OUTPUT POWER			
		Ant 0	Ant 1	Ant 2	Ant 3
802.11 a	6 Mbps	11.92	10.90	11.82	10.99
	9 Mbps	10.91	10.33	11.71	9.92
	12 Mbps	9.92	9.56	10.80	9.15
	18 Mbps	9.68	9.37	10.14	8.59
	24 Mbps	8.97	8.90	9.22	8.06
	36 Mbps	8.53	8.30	8.78	7.78
	48 Mbps	8.07	7.57	8.33	7.37
	54 Mbps	7.65	7.14	7.83	7.22
HT 20	6.5 Mbps	12.33	11.18	11.89	10.36
	13 Mbps	11.93	10.31	11.09	9.72
	19.5 Mbps	10.86	9.59	10.86	8.97
	26 Mbps	10.46	8.92	10.43	8.60
	39 Mbps	9.91	8.67	9.72	7.77
	52 Mbps	9.06	8.32	9.22	7.57
	58.5 Mbps	8.97	7.99	8.59	7.25
	65 Mbps	8.23	7.33	8.04	6.78
HT 40	13.5 Mbps	11.07	10.77	11.24	10.01
	27 Mbps	10.75	10.03	11.11	9.26
	40.5 Mbps	10.68	9.37	10.46	9.08
	54 Mbps	10.59	8.50	9.42	8.67
	81 Mbps	9.53	8.20	8.94	8.19
	108 Mbps	9.44	7.89	8.60	7.57
	121.5 Mbps	9.24	7.23	8.18	7.32
	135 Mbps	8.75	6.76	8.02	6.89

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VHT20	6.5 Mbps	11.69	11.19	11.50	10.68
	13 Mbps	11.22	10.68	10.96	9.80
	19.5 Mbps	11.04	10.53	10.54	9.08
	26 Mbps	10.94	10.02	10.16	8.73
	39 Mbps	10.41	9.25	9.70	8.06
	52 Mbps	10.31	8.43	8.79	7.32
	58.5 Mbps	9.31	7.72	7.97	6.67
	65 Mbps	9.07	7.05	7.86	6.02
	78 Mbps	11.22	10.68	10.96	9.80
VHT40	13.5 Mbps	11.66	11.01	11.40	10.17
	27 Mbps	11.28	10.44	11.23	9.51
	40.5 Mbps	10.74	9.83	11.04	8.61
	54 Mbps	10.47	9.30	10.32	7.82
	81 Mbps	10.10	9.18	10.27	7.32
	108 Mbps	9.30	8.61	9.32	6.74
	121.5 Mbps	8.55	8.16	8.85	6.33
	135 Mbps	8.48	7.91	8.16	6.02
	162 Mbps	7.65	7.75	8.12	5.82
	180 Mbps	7.60	7.63	7.43	5.34
VHT80	29.3 Mbps	9.59	11.65	11.73	10.65
	58.5 Mbps	8.90	10.95	11.12	10.01
	87.8 Mbps	8.51	9.88	10.17	9.89
	117 Mbps	7.95	9.36	9.26	9.27
	175.5 Mbps	7.86	8.46	8.42	8.58
	234 Mbps	7.62	7.76	7.74	8.21
	263.3 Mbps	7.11	7.31	7.37	7.94
	292.5 Mbps	7.02	7.00	7.35	7.43
	351 Mbps	6.39	6.69	6.99	6.88
	390 Mbps	5.86	6.35	6.71	6.65

The worst case data rate for each modulation is determined 6 Mbps(Ant.0,1,2,3) for IEEE 802.11a, 6.5 Mbps(Ant.0,1,2,3) for HT20, 13.5 Mbps(Ant.0,1,2,3) for HT40, 6.5 Mbps(Ant.0,1,2,3) for VHT20, 13.5 Mbps(Ant.0,1,2,3) for VHT40, 29.3 Mbps(Ant.0,1,2,3) for VHT80

- To get a maximum emission levels from the EUT, the EUT was moved throughout the XY, XZ, and YZ planes and the worst case is “XY” axis.

UNII 2C

Modulation	DATA RATE	OUTPUT POWER			
		Ant 0	Ant 1	Ant 2	Ant 3
802.11 a	6 Mbps	10.31	9.82	10.03	8.78
	9 Mbps	10.20	9.46	9.24	8.01
	12 Mbps	9.64	9.18	8.69	7.68
	18 Mbps	8.99	8.97	8.27	7.04
	24 Mbps	8.90	8.85	7.98	6.55
	36 Mbps	8.22	8.26	7.58	6.26
	48 Mbps	7.57	7.55	7.34	5.69
	54 Mbps	7.10	7.14	6.81	5.48
HT 20	6.5 Mbps	12.02	11.57	12.06	10.67
	13 Mbps	11.97	11.12	11.24	10.09
	19.5 Mbps	10.80	10.29	10.17	9.17
	26 Mbps	10.39	9.43	9.21	8.55
	39 Mbps	9.51	8.94	8.30	7.96
	52 Mbps	8.76	8.51	7.64	7.68
	58.5 Mbps	8.00	8.26	6.90	7.44
	65 Mbps	7.47	8.08	6.63	6.95
HT 40	13.5 Mbps	11.61	11.38	11.33	11.29
	27 Mbps	11.49	10.94	10.91	11.04
	40.5 Mbps	10.70	10.69	10.08	10.62
	54 Mbps	9.94	9.69	9.67	9.78
	81 Mbps	9.13	9.03	9.35	9.19
	108 Mbps	8.62	8.82	8.63	8.97
	121.5 Mbps	7.91	8.58	8.09	8.29
	135 Mbps	7.82	7.96	7.97	7.86

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VHT20	6.5 Mbps	10.74	10.51	10.58	9.56
	13 Mbps	10.23	9.99	9.67	9.01
	19.5 Mbps	10.02	9.73	9.00	8.64
	26 Mbps	9.12	8.87	8.13	8.26
	39 Mbps	8.74	8.17	7.97	7.47
	52 Mbps	8.09	7.74	7.75	6.93
	58.5 Mbps	7.90	7.01	7.69	6.65
	65 Mbps	7.19	6.79	7.09	6.49
	78 Mbps	6.67	6.16	6.96	5.90
VHT40	13.5 Mbps	11.90	11.39	11.63	10.49
	27 Mbps	11.69	11.18	11.03	9.78
	40.5 Mbps	11.53	10.36	10.96	9.35
	54 Mbps	10.88	9.35	10.76	8.89
	81 Mbps	10.06	8.47	10.39	8.61
	108 Mbps	9.77	8.10	9.88	8.13
	121.5 Mbps	9.37	7.64	9.50	7.94
	135 Mbps	9.12	7.05	9.24	7.35
	162 Mbps	8.60	6.43	8.65	6.89
	180 Mbps	8.46	5.89	8.40	6.39
VHT80	29.3 Mbps	6.50	7.10	7.50	5.88
	58.5 Mbps	6.41	6.70	7.19	5.53
	87.8 Mbps	5.78	6.37	7.11	5.06
	117 Mbps	5.60	6.24	6.94	4.70
	175.5 Mbps	5.05	5.83	6.64	4.57
	234 Mbps	4.77	5.40	6.16	4.39
	263.3 Mbps	4.48	5.15	5.90	4.00
	292.5 Mbps	4.44	4.88	5.43	3.74
	351 Mbps	4.25	4.40	5.24	3.37
	390 Mbps	4.08	4.12	4.73	3.20

The worst case data rate for each modulation is determined 6 Mbps(Ant.0,1,2,3) for IEEE 802.11a, 6.5 Mbps(Ant.0,1,2,3) for HT20, 13.5 Mbps(Ant.0,1,2,3) for HT40, 6.5 Mbps(Ant.0,1,2,3) for VHT20, 13.5 Mbps(Ant.0,1,2,3) for VHT40, 29.3 Mbps(Ant.0,1,2,3) for VHT80

- To get a maximum emission levels from the EUT, the EUT was moved throughout the XY, XZ, and YZ planes and the worst case is “XY” axis.

UNII 3

Modulation	DATA RATE	OUTPUT POWER			
		Ant 0	Ant 1	Ant 2	Ant 3
802.11 a	6 Mbps	14.69	13.36	13.96	12.30
	9 Mbps	14.28	12.53	12.57	11.11
	12 Mbps	13.47	12.38	12.50	10.97
	18 Mbps	13.05	11.45	12.31	10.60
	24 Mbps	12.03	11.23	12.09	10.41
	36 Mbps	11.54	10.48	11.17	9.57
	48 Mbps	11.52	9.78	10.10	9.09
	54 Mbps	11.39	9.11	9.47	8.62
HT 20	6.5 Mbps	13.24	12.89	13.04	12.30
	13 Mbps	13.00	11.68	12.96	11.70
	19.5 Mbps	12.76	11.48	12.81	10.53
	26 Mbps	11.83	11.27	11.64	9.96
	39 Mbps	11.34	10.24	11.32	9.31
	52 Mbps	10.43	9.43	10.62	9.02
	58.5 Mbps	9.84	8.59	10.39	8.75
	65 Mbps	9.77	7.75	10.15	8.17
HT 40	13.5 Mbps	15.17	14.74	14.56	13.80
	27 Mbps	13.76	14.48	14.32	13.38
	40.5 Mbps	13.30	13.98	14.03	13.00
	54 Mbps	12.78	13.32	13.96	12.28
	81 Mbps	12.71	12.46	13.67	12.07
	108 Mbps	11.96	12.24	12.49	11.57
	121.5 Mbps	11.44	11.78	11.81	10.97
	135 Mbps	11.36	11.07	10.98	10.42

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VHT20	6.5 Mbps	14.36	13.32	13.35	12.43
	13 Mbps	13.71	13.11	12.28	11.60
	19.5 Mbps	12.99	12.67	11.63	11.31
	26 Mbps	12.51	12.35	11.50	10.22
	39 Mbps	11.40	11.57	11.31	9.47
	52 Mbps	10.56	11.02	10.99	8.92
	58.5 Mbps	10.03	10.48	9.91	8.66
	65 Mbps	9.84	10.14	9.89	7.86
	78 Mbps	9.63	9.22	9.47	7.32
VHT40	13.5 Mbps	17.72	18.33	18.24	17.97
	27 Mbps	16.84	17.80	17.08	17.74
	40.5 Mbps	16.20	17.17	15.51	16.90
	54 Mbps	14.61	16.57	14.74	15.56
	81 Mbps	13.61	15.76	13.77	14.52
	108 Mbps	12.66	15.32	12.99	13.24
	121.5 Mbps	11.66	14.44	12.75	12.29
	135 Mbps	11.58	14.14	12.14	11.24
	162 Mbps	10.82	13.77	11.42	10.23
	180 Mbps	10.43	13.55	10.67	9.76
VHT80	29.3 Mbps	7.10	14.61	14.55	13.80
	58.5 Mbps	6.68	14.42	14.03	13.54
	87.8 Mbps	6.31	13.04	13.43	12.86
	117 Mbps	5.76	12.28	12.88	12.66
	175.5 Mbps	5.50	11.42	12.25	11.49
	234 Mbps	5.20	10.71	11.41	10.62
	263.3 Mbps	5.14	9.91	11.36	10.51
	292.5 Mbps	4.72	9.24	10.24	9.66
	351 Mbps	4.30	8.44	9.51	9.03
	390 Mbps	4.01	7.74	8.95	8.55

The worst case data rate for each modulation is determined 6 Mbps(Ant.0,1,2,3) for IEEE 802.11a, 6.5 Mbps(Ant.0,1,2,3) for HT20, 13.5 Mbps(Ant.0,1,2,3) for HT40, 6.5 Mbps(Ant.0,1,2,3) for VHT20, 13.5 Mbps(Ant.0,1,2,3) for VHT40, 29.3 Mbps(Ant.0,1,2,3) for VHT80

- To get a maximum emission levels from the EUT, the EUT was moved throughout the XY, XZ, and YZ planes and the worst case is “XY” axis.

Port	Mode	Operating Mode	Operating Ant.
Service	802.11a/n(HT20)/n(HT40)/ac(HT40)/ac(VHT40)/ac(VHT80)	SISO	Ant 0
			Ant 1
			Ant 2
			Ant 3
		MIMO	Ant 0+1
			Ant 0+2
			Ant 0+3
			Ant 1+2
			Ant 1+3
			Ant 2+3
			Ant 0+1+2
			Ant 0+1+3
			Ant 0+2+3
			Ant 1+2+3
			Ant 0+1+2+3

Note 1: This EUT is supported the AC adapter and POE. Because worst case is AC adapter, so we attached only the results for AC adapter.

Note 2: In case of radiation test, we have done all test case. Worst case is Ant 0+1+2+3 for Service. So, we attached the results of only worst case.

5.4 Configuration of Test System

Line Conducted Test: The EUT was connected to LAN and the power of POE was connected to Notebook PC. All supporting equipments were connected to another LISN. Preliminary Power line Conducted Emission test was performed by using the procedure in ANSI C63.10: 2013 to determine the worse operating conditions.

Radiated Emission Test: Preliminary radiated emissions test were conducted using the procedure in ANSI C63.10: 2013 to determine the worse operating conditions. Final radiated emission tests were conducted at 3 meter open area test site.

The turntable was rotated through 360 degrees and the EUT was tested by positioned three orthogonal planes to obtain the highest reading on the field strength meter. Once maximum reading was determined, the search antenna was raised and lowered in both vertical and horizontal polarization.

5.5 Antenna Requirement

For intentional device, according to section 15.203 and RSS-Gen Issue 4 November 2014 Section 8.3, 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.

Antenna Construction:

The transmitter antenna of the EUT is WLAN PIFA antenna, so no consideration of replacement by the user.

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6. PRELIMINARY TEST

6.1 AC Power line Conducted Emissions Tests

During Preliminary Test, the following operating mode was investigated.

Operation Mode	The Worse operating condition (Please check one only)
Transmitting Mode	X

6.2 General Radiated Emissions Tests

During Preliminary Test, the following operating mode was investigated.

Operation Mode	The Worse operating condition (Please check one only)
Transmitting Mode	X

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7. MINIMUM 26 dB BANDWIDTH & 99 % OCCUPIED BANDWIDTH

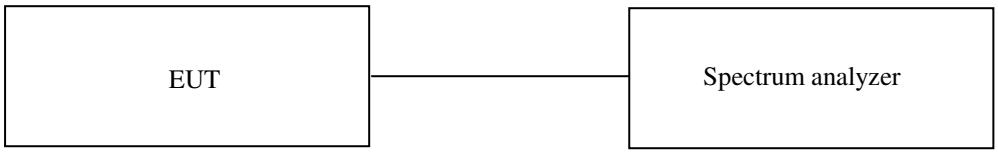
7.1 Operating environment

Temperature : 24 °C

Relative humidity : 47 % R.H.

7.2 Test set-up

The antenna output of the EUT was connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz, and peak detection was used. The 26 dB bandwidth is defined as the total spectrum over which the power is higher than the peak power minus 26 dB.



7.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ -	FSV30	Rohde & Schwarz	Signal Analyzer	101199	May. 04, 2016 (1Y)

All test equipment used is calibrated on a regular basis.

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7.4 Test data for Service Port

7.4.1 Test data for 802.11a RLAN Mode

7.4.1.1 Test data for Antenna 0

-. Test Date : June 14, 2016

-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180	20.78	16.53
	Middle	5 220	20.73	16.58
	High	5 240	20.78	16.58
5 250 ~ 5 350	Low	5 260	20.68	16.58
	Middle	5 300	20.58	16.58
	High	5 320	20.78	16.58
5 470 ~ 5 725	Low	5 500	20.73	16.53
	Middle	5 560	20.63	16.53
	High	5 720	20.88	16.53
5 725 ~ 5 850	Low	5 745	20.68	16.53
	Middle	5 785	20.73	16.58
	High	5 825	20.63	16.58

Tested by: Min-Gu, Ji / Project Engineer

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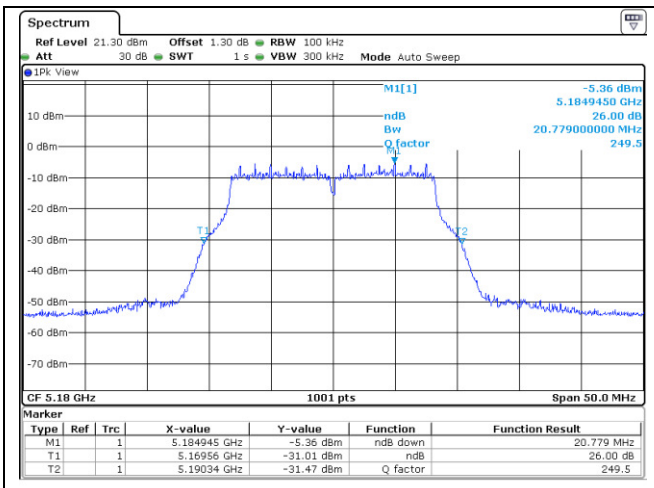
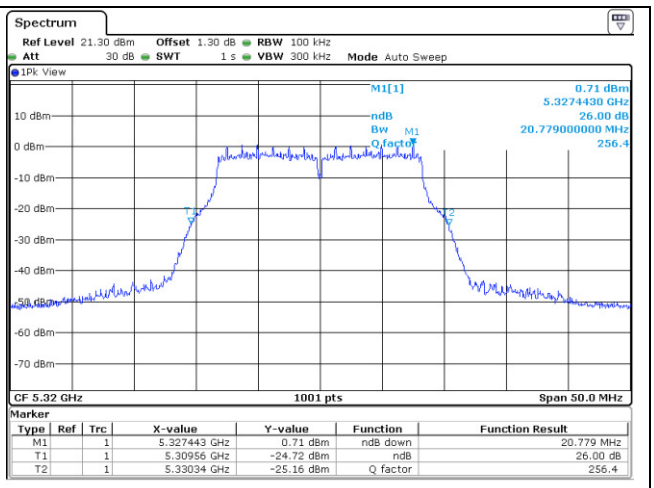
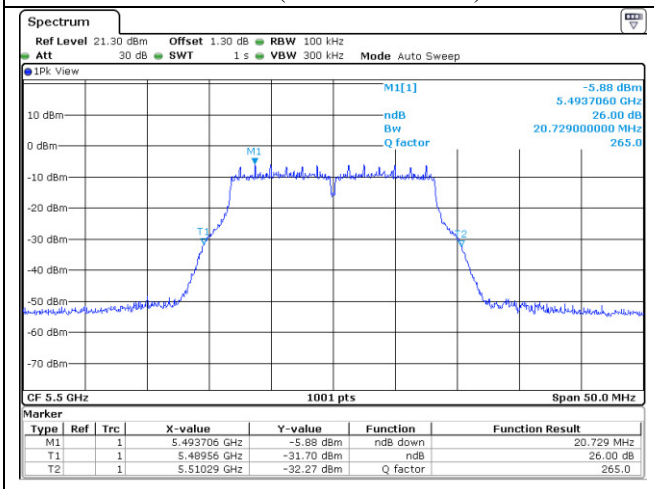


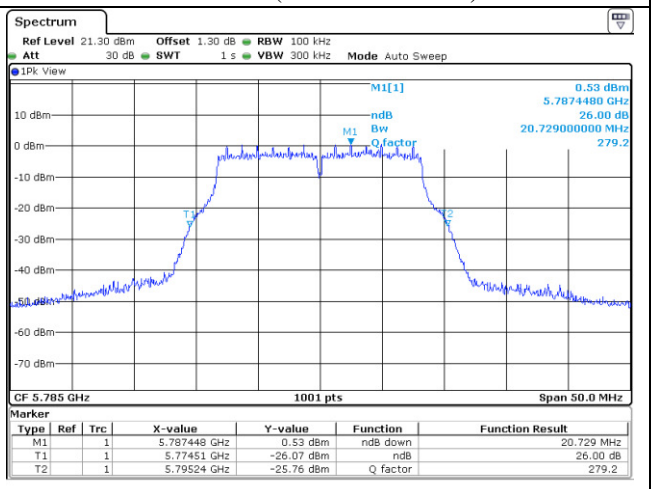
U-NII-1 (26 dB Bandwidth)



U-NII-2A (26 dB Bandwidth)



U-NII-2C (26 dB Bandwidth)



U-NII-3 (26 dB Bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel.

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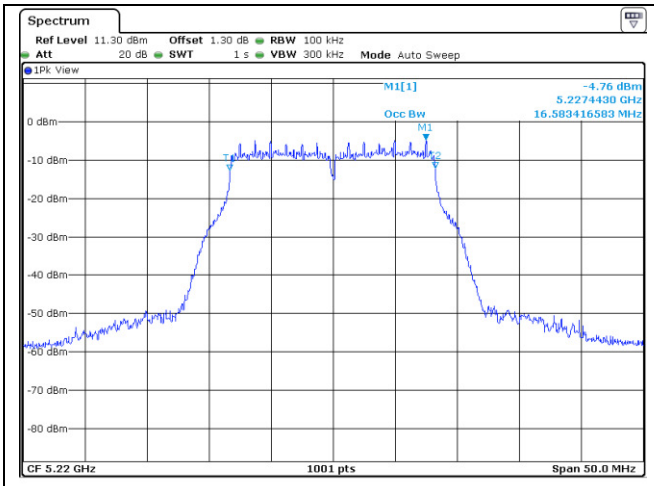
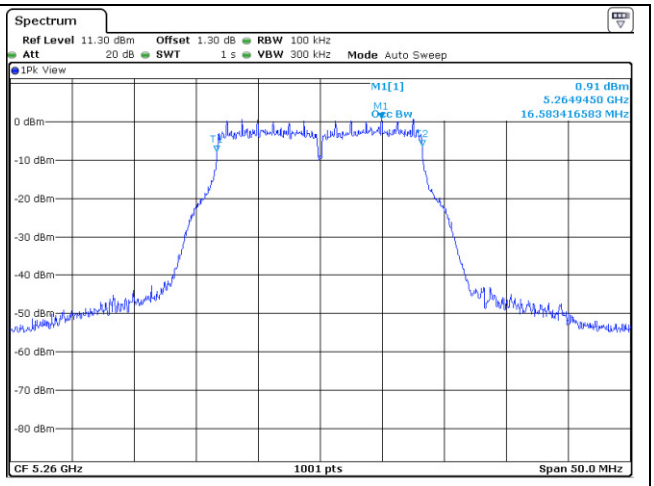
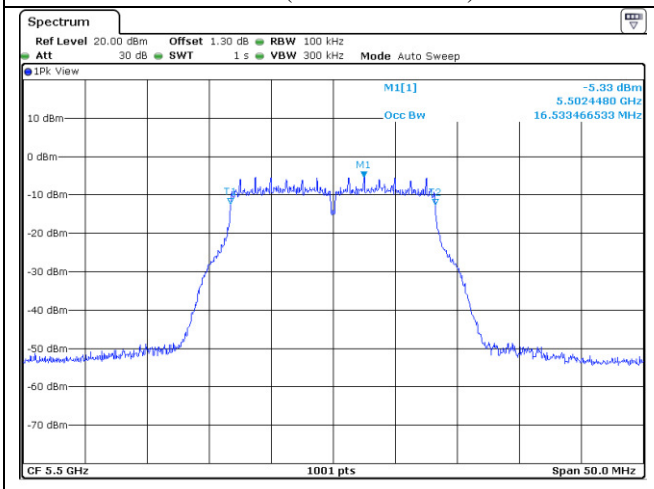


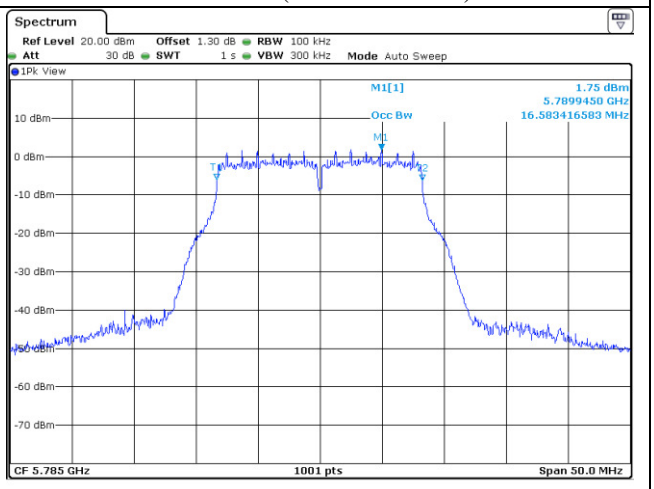
U-NII-1 (99 % bandwidth)



U-NII-2A (99 % bandwidth)



U-NII-2C (99 % bandwidth)



U-NII-3 (99 % bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel.

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7.4.1.2 Test data for Antenna 1

-. Test Date : June 14, 2016

-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180	20.68	16.53
	Middle	5 220	20.58	16.53
	High	5 240	20.73	16.53
5 250 ~ 5 350	Low	5 260	20.63	16.53
	Middle	5 300	20.63	16.58
	High	5 320	20.58	16.58
5 470 ~ 5 725	Low	5 500	20.63	16.53
	Middle	5 560	20.63	16.53
	High	5 720	20.73	16.53
5 725 ~ 5 850	Low	5 745	20.63	16.58
	Middle	5 785	20.63	16.53
	High	5 825	20.28	16.43

Tested by: Min-Gu, Ji / Project Engineer

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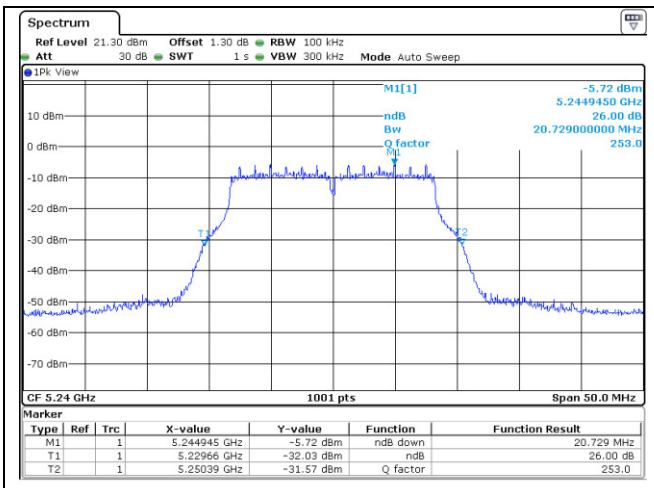
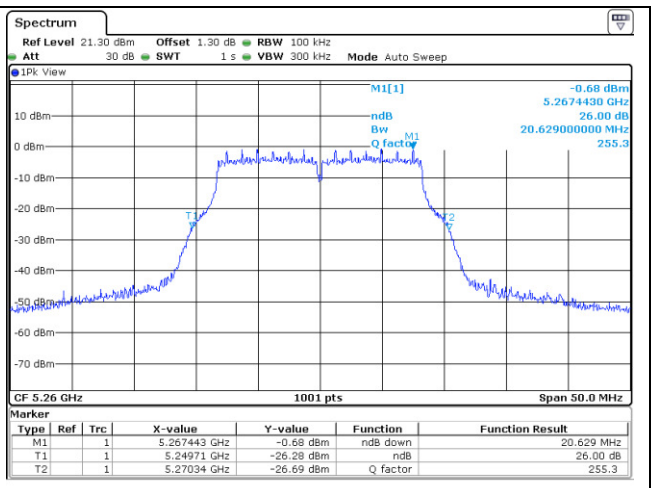
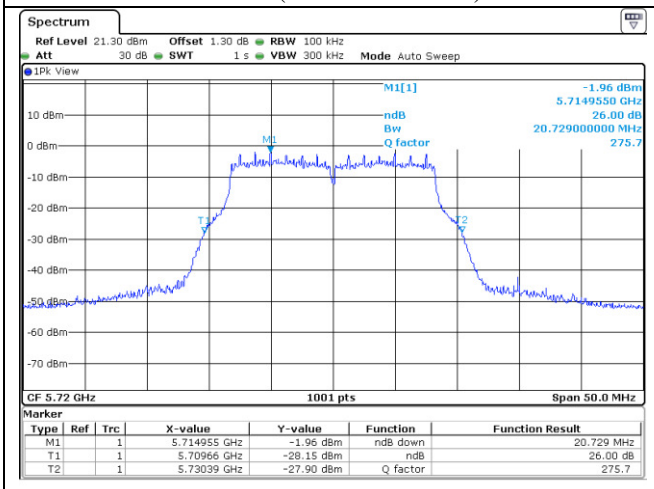


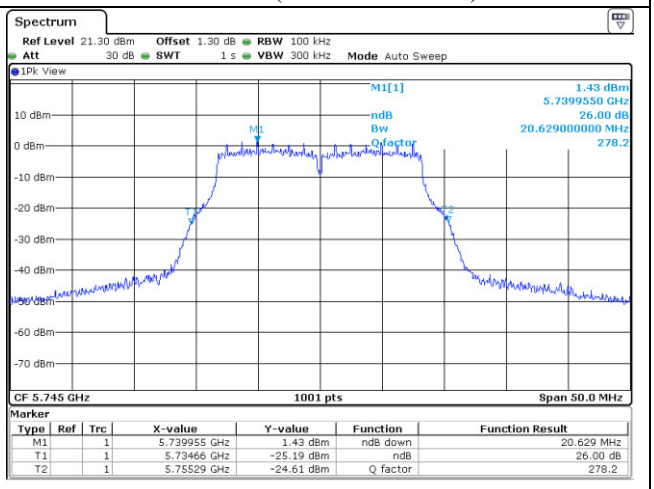
U-NII-1 (26 dB Bandwidth)



U-NII-2A (26 dB Bandwidth)

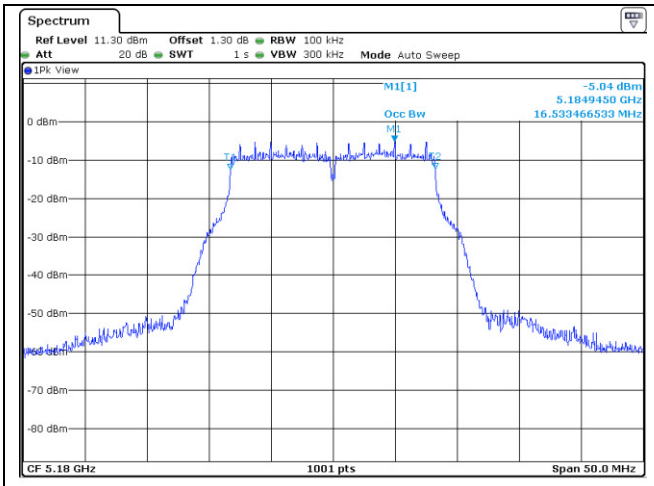


U-NII-2C (26 dB Bandwidth)

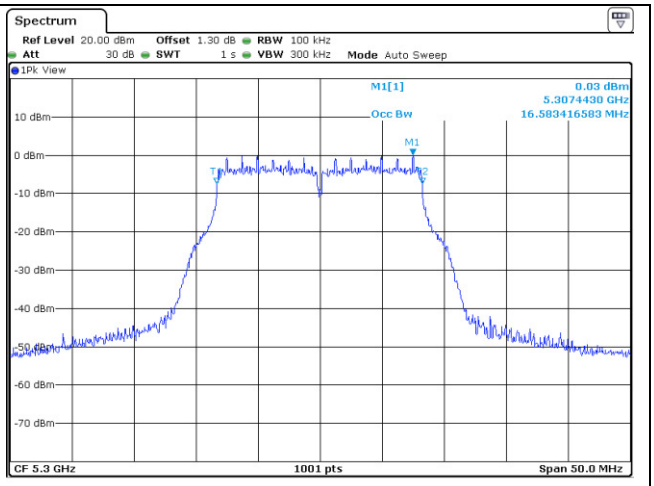


U-NII-3 (26 dB Bandwidth)

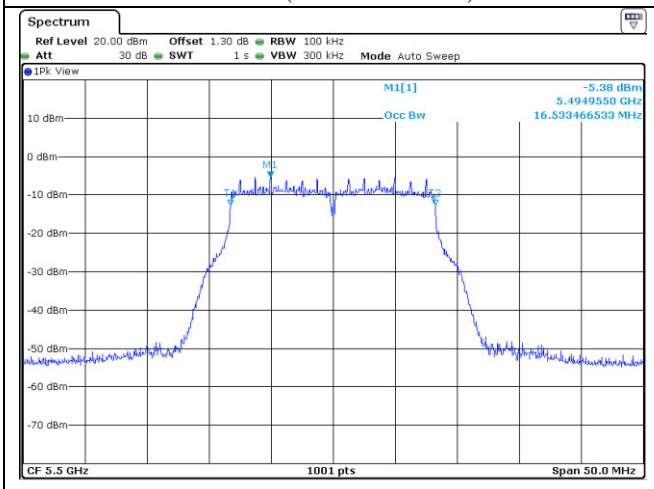
Note: In order to simplify the report, attached plots were only the most wide channel.



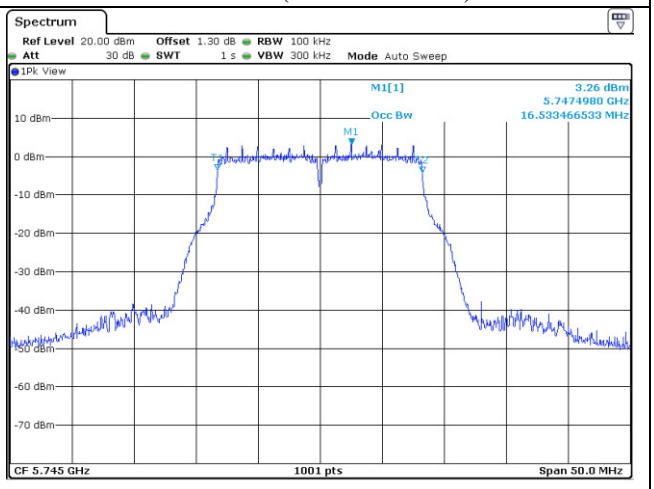
U-NII-1 (99 % bandwidth)



U-NII-2A (99 % bandwidth)



U-NII-2C (99 % bandwidth)



U-NII-3 (99 % bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel.

7.4.1.3 Test data for Antenna 2

-. Test Date : June 14, 2016

-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180	20.53	16.53
	Middle	5 220	20.58	16.48
	High	5 240	20.58	16.48
5 250 ~ 5 350	Low	5 260	20.78	16.48
	Middle	5 300	20.73	16.48
	High	5 320	20.73	16.53
5 470 ~ 5 725	Low	5 500	20.73	16.53
	Middle	5 560	20.58	16.53
	High	5 720	20.53	16.48
5 725 ~ 5 850	Low	5 745	20.48	16.48
	Middle	5 785	20.53	16.48
	High	5 825	20.48	16.43

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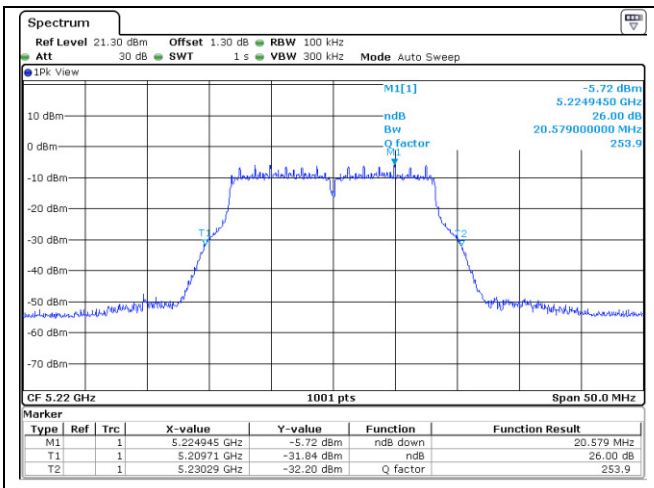
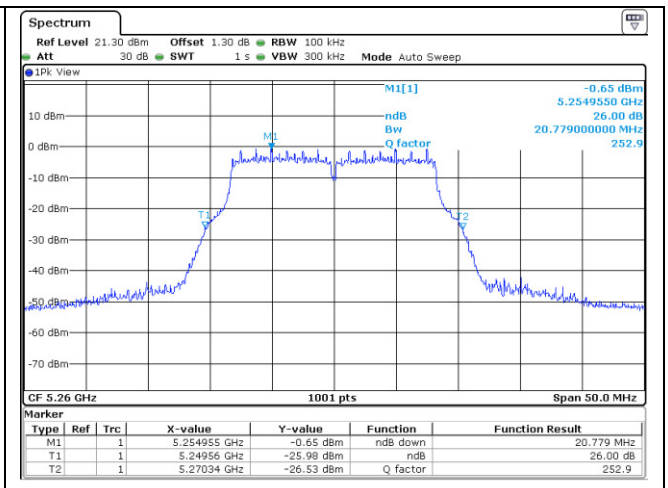
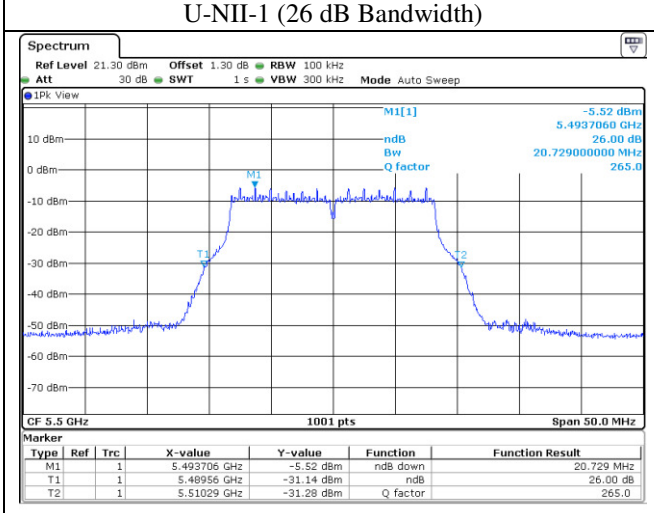


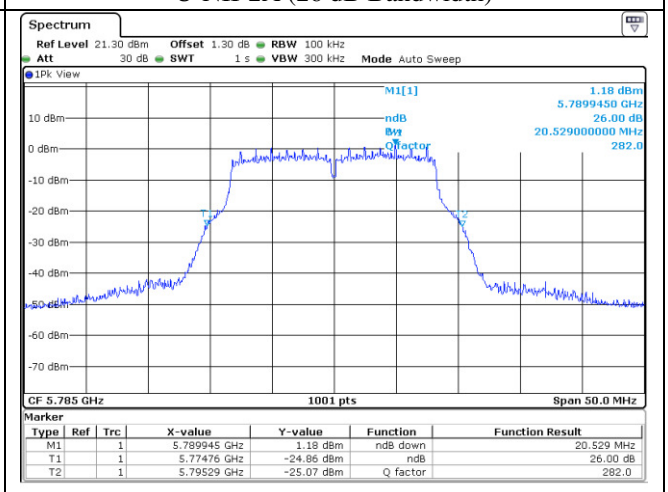
U-NII-1 (26 dB Bandwidth)



U-NII-2A (26 dB Bandwidth)

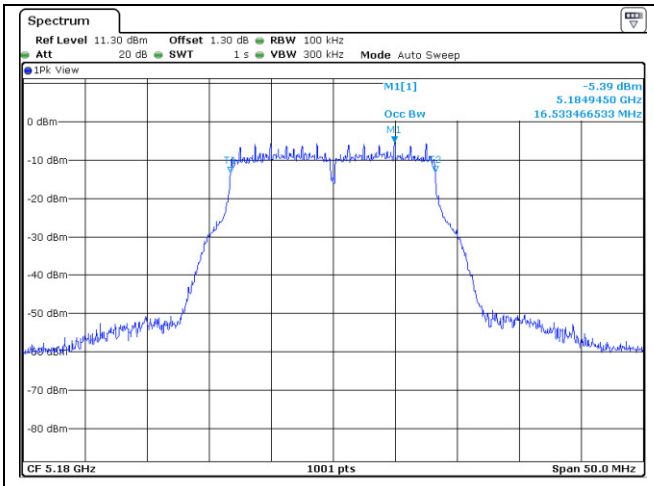


U-NII-2C (26 dB Bandwidth)

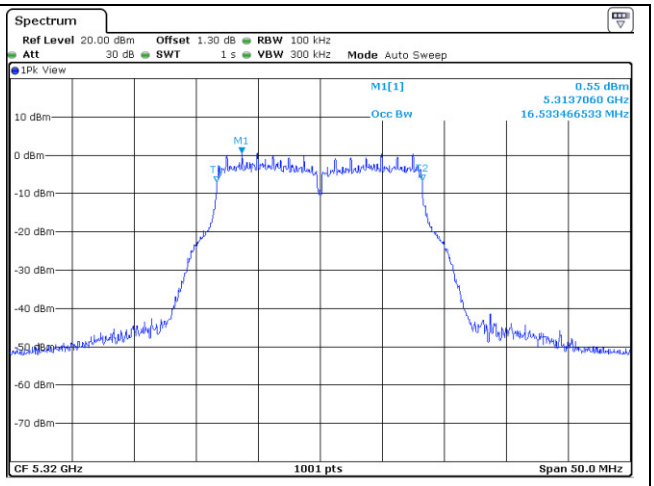


U-NII-3 (26 dB Bandwidth)

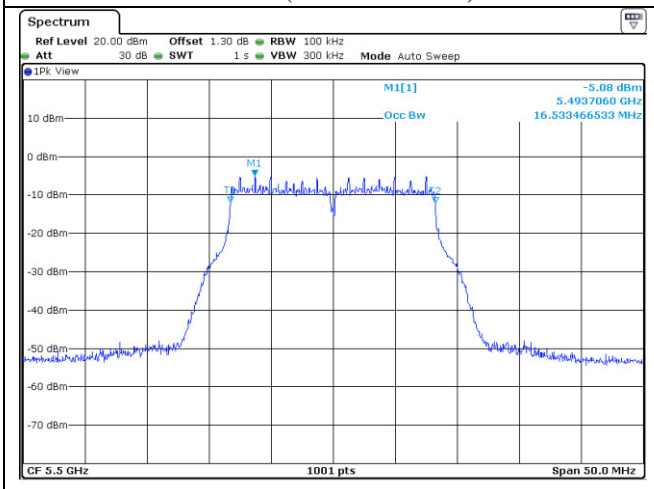
Note: In order to simplify the report, attached plots were only the most wide channel.



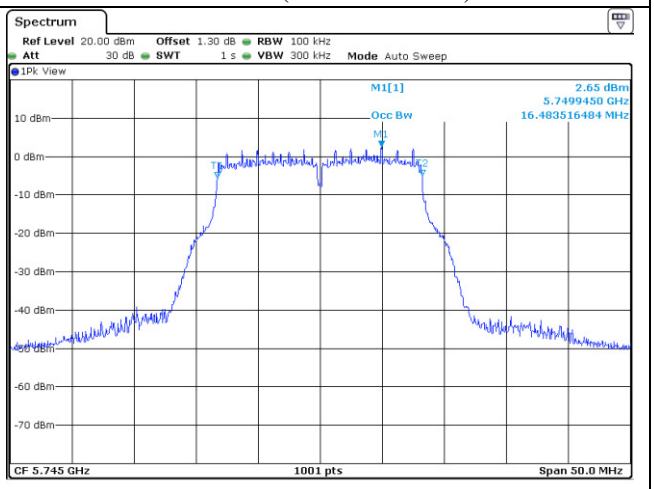
U-NII-1 (99 % bandwidth)



U-NII-2A (99 % bandwidth)



U-NII-2C (99 % bandwidth)



U-NII-3 (99 % bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel.

7.4.1.4 Test data for Antenna 3

-. Test Date : June 14, 2016

-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180	20.53	16.48
	Middle	5 220	20.53	16.48
	High	5 240	20.63	16.48
5 250 ~ 5 350	Low	5 260	20.43	16.48
	Middle	5 300	20.63	16.48
	High	5 320	20.63	16.53
5 470 ~ 5 725	Low	5 500	20.73	16.53
	Middle	5 560	20.33	16.53
	High	5 720	20.23	16.48
5 725 ~ 5 850	Low	5 745	20.38	16.48
	Middle	5 785	20.43	16.48
	High	5 825	20.18	16.58

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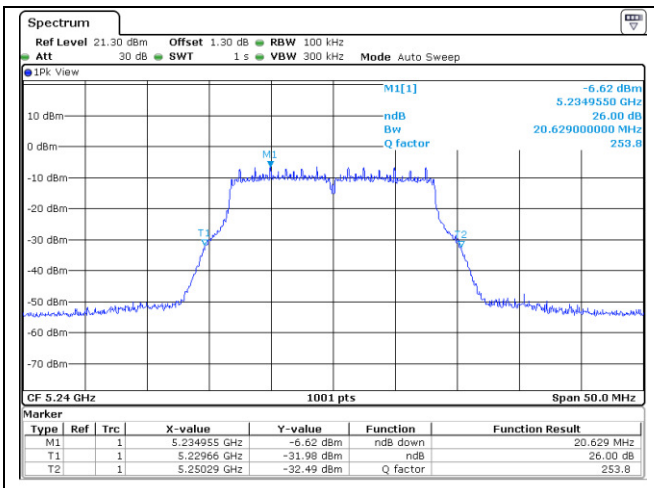
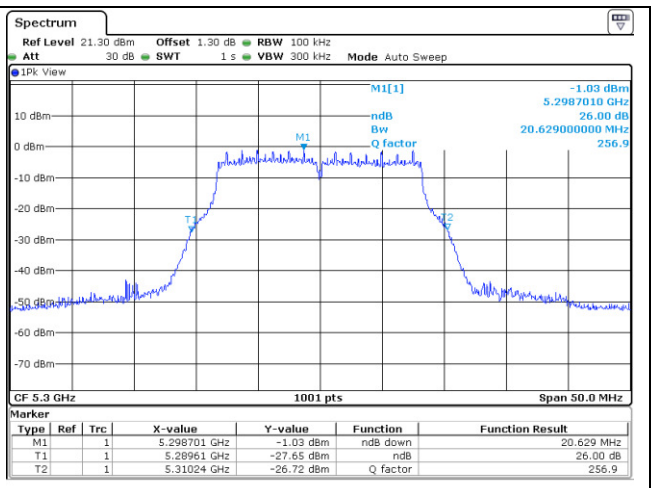
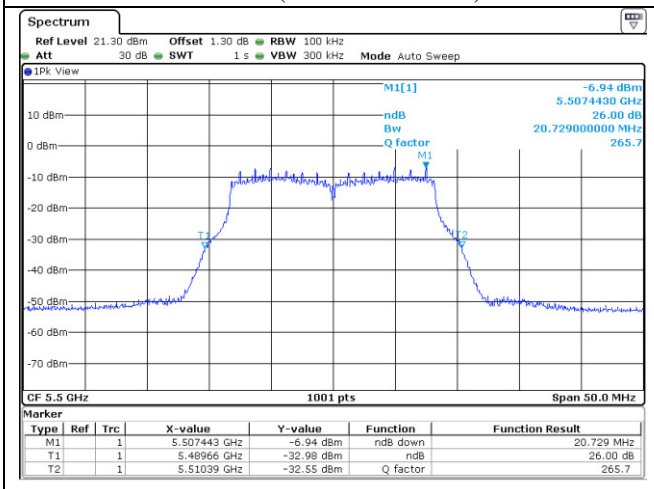


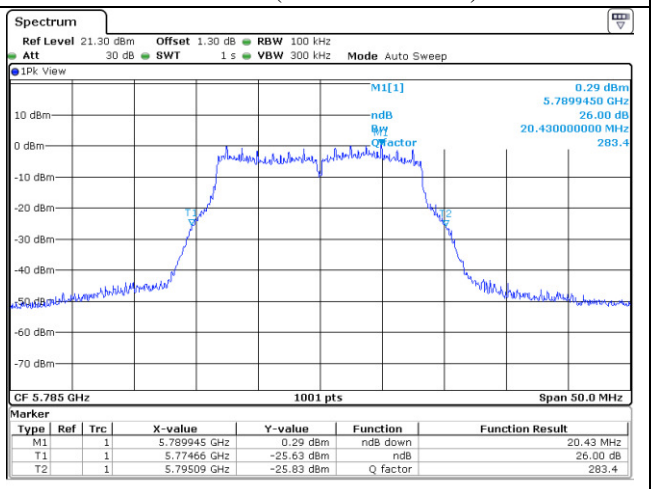
U-NII-1 (26 dB Bandwidth)



U-NII-2A (26 dB Bandwidth)

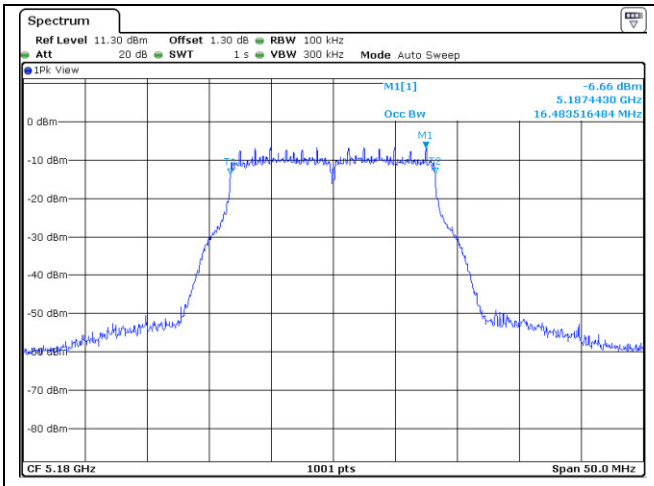


U-NII-2C (26 dB Bandwidth)

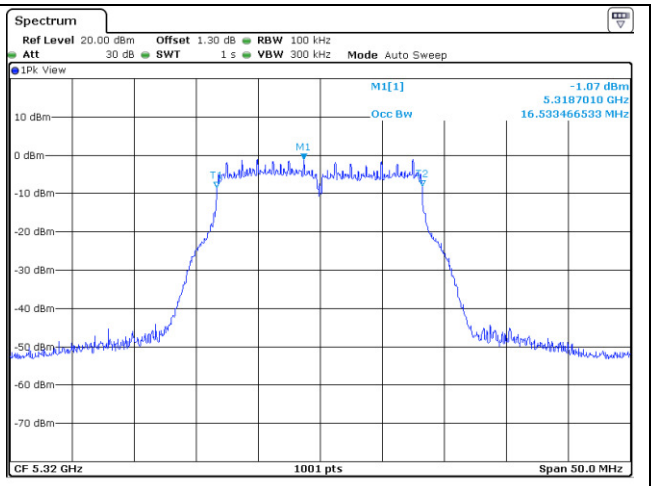


U-NII-3 (26 dB Bandwidth)

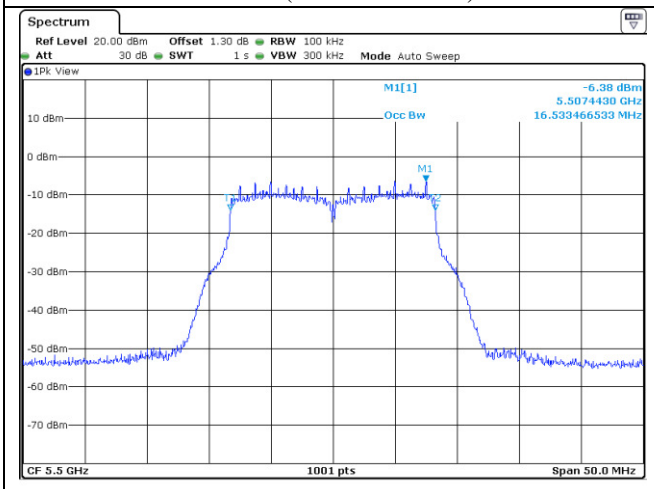
Note: In order to simplify the report, attached plots were only the most wide channel.



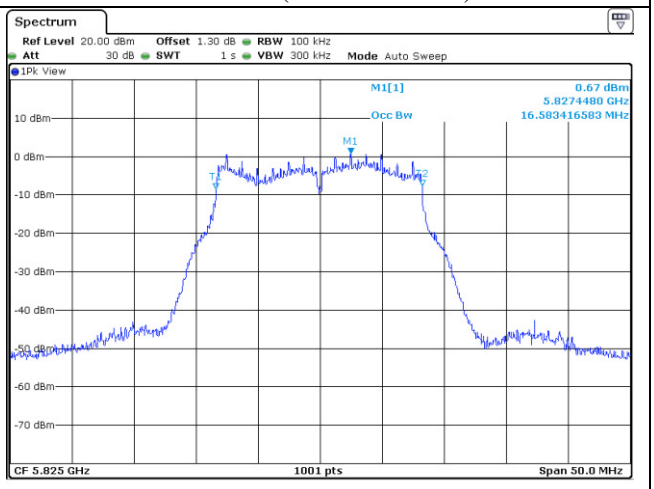
U-NII-1 (99 % bandwidth)



U-NII-2A (99 % bandwidth)



U-NII-2C (99 % bandwidth)



U-NII-3 (99 % bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel.

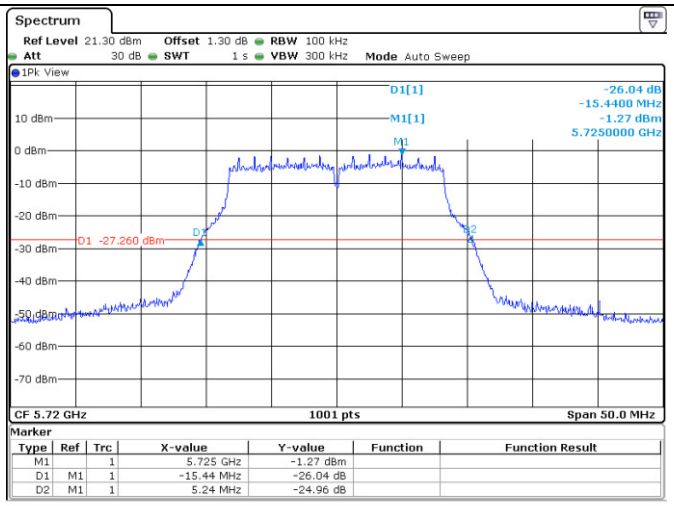
7.4.1.5 Test data for Staddle Channel_Antenna 0

-. Test Date : June 14, 2016

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 720	15.44
5 725 ~ 5 850	5 720	5.24

Tested by: Min-Gu, Ji / Project Engineer



U-NII-2C, U-NII-3 (26 dB Bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel.

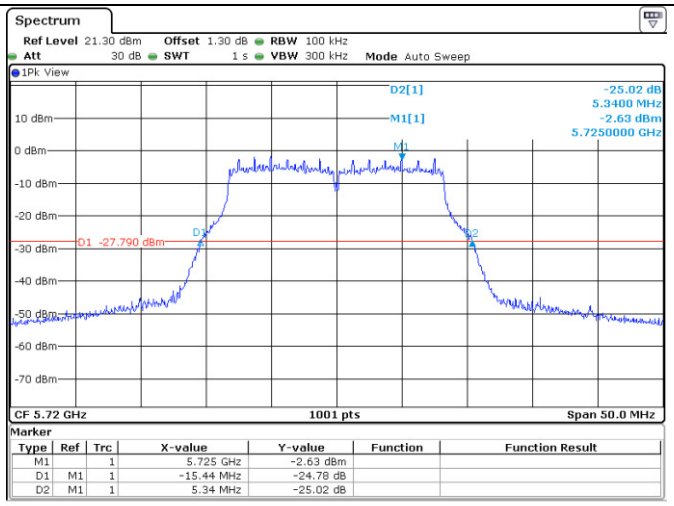
7.4.1.6 Test data for Staddle Channel_Antenna 1

-. Test Date : June 14, 2016

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 720	15.44
5 725 ~ 5 850	5 720	5.34

Tested by: Min-Gu, Ji / Project Engineer



U-NII-2C, U-NII-3 (26 dB Bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel.

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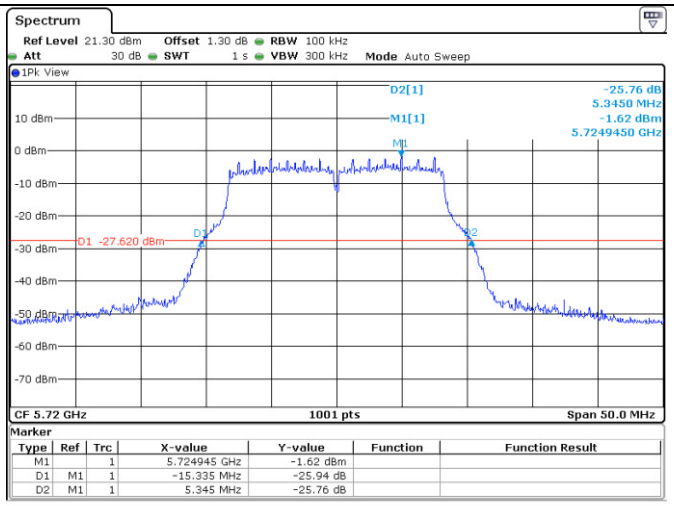
7.4.1.7 Test data for Staddle Channel_Antenna 2

-. Test Date : June 14, 2016

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 720	15.34
5 725 ~ 5 850	5 720	5.35

Tested by: Min-Gu, Ji / Project Engineer



U-NII-2C, U-NII-3 (26 dB Bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel.

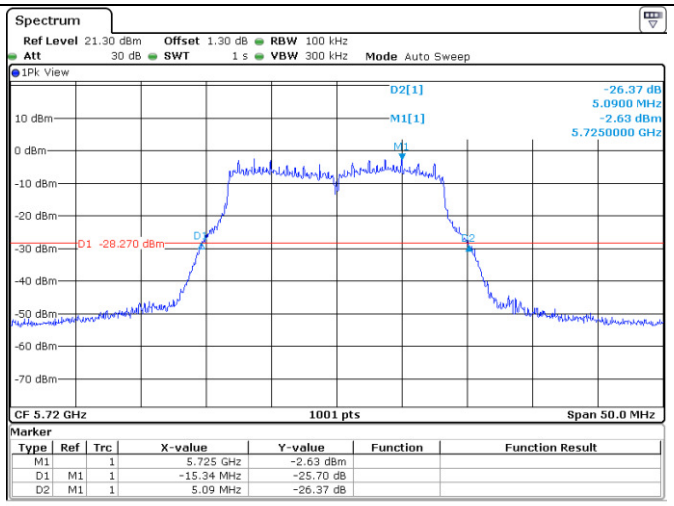
7.4.1.8 Test data for Staddle Channel_Antenna 3

-. Test Date : June 14, 2016

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 720	15.34
5 725 ~ 5 850	5 720	5.09

Tested by: Min-Gu, Ji / Project Engineer



U-NII-2C, U-NII-3 (26 dB Bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel.

7.4.2 Test data for 802.11n_HT20 RLAN Mode

7.4.2.1 Test data for Antenna 0

-. Test Date : June 14, 2016

-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180	20.98	17.73
	Middle	5 220	20.93	17.73
	High	5 240	21.08	17.78
5 250 ~ 5 350	Low	5 260	21.03	17.73
	Middle	5 300	20.93	17.68
	High	5 320	20.98	17.73
5 470 ~ 5 725	Low	5 500	21.28	17.73
	Middle	5 560	21.13	17.73
	High	5 720	20.98	17.73
5 725 ~ 5 850	Low	5 745	21.03	17.78
	Middle	5 785	20.88	17.73
	High	5 825	21.08	17.73

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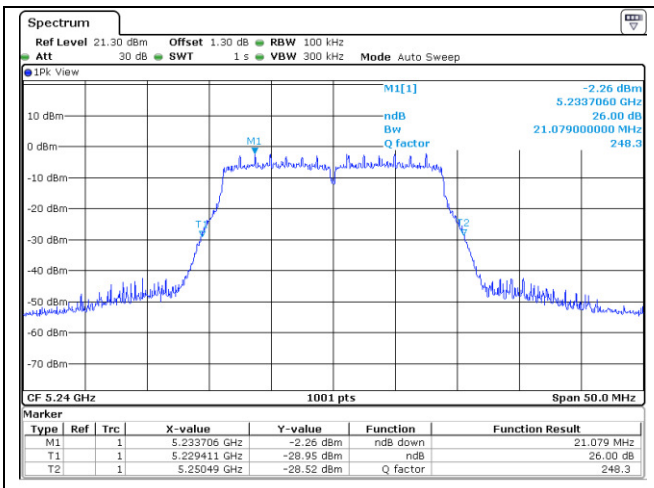
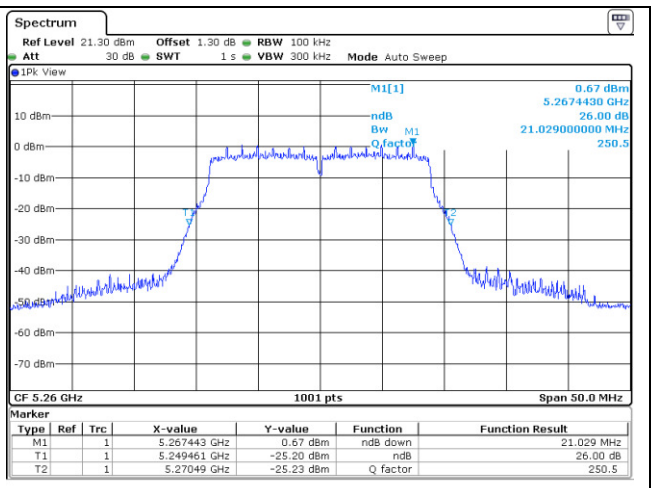
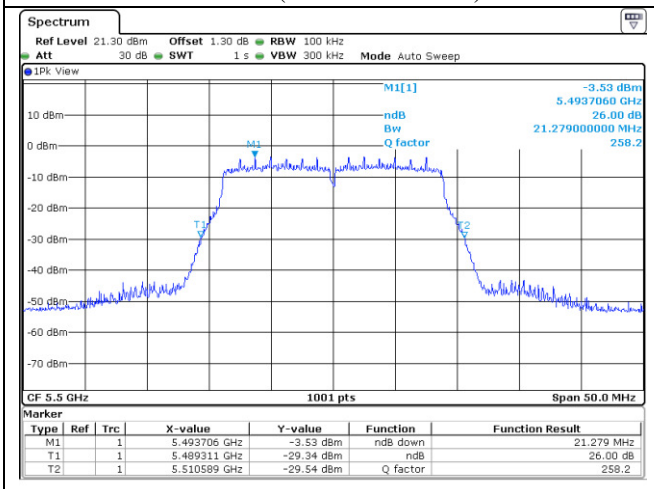


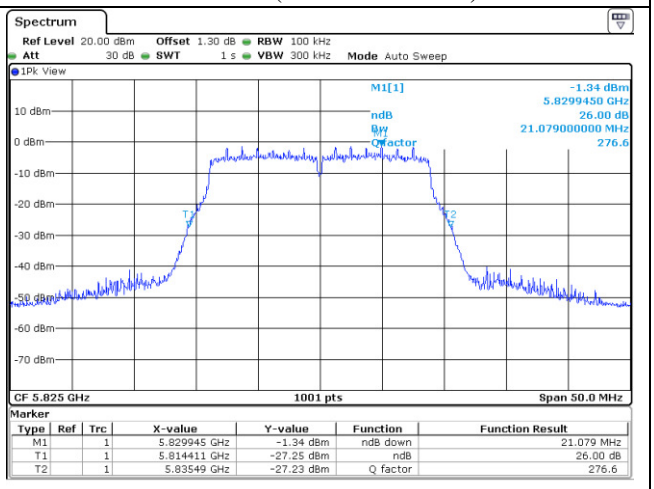
U-NII-1 (26 dB Bandwidth)



U-NII-2A (26 dB Bandwidth)

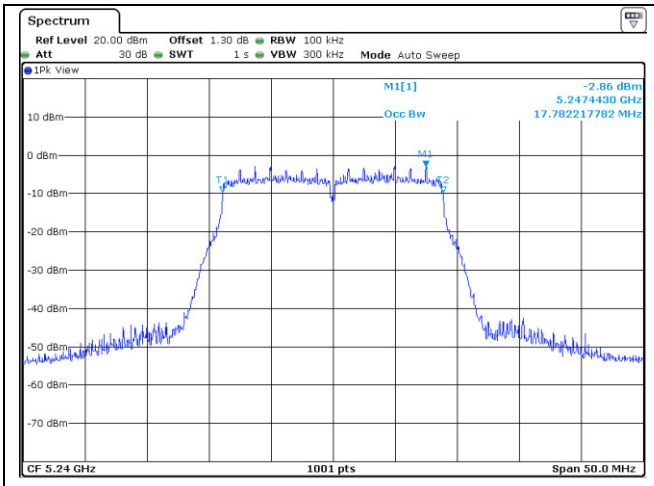


U-NII-2C (26 dB Bandwidth)

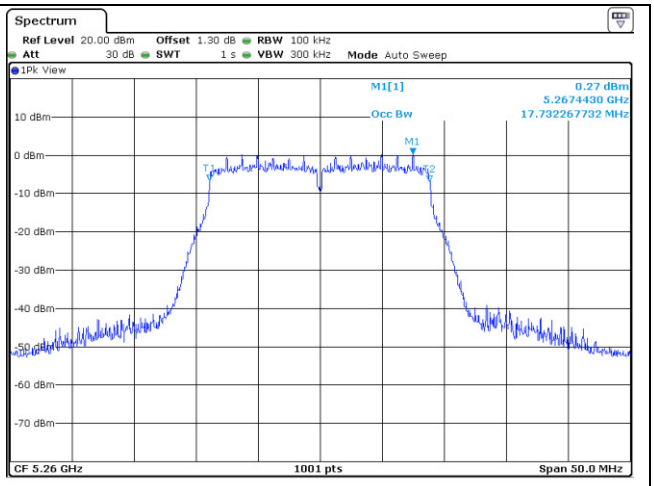


U-NII-3 (26 dB Bandwidth)

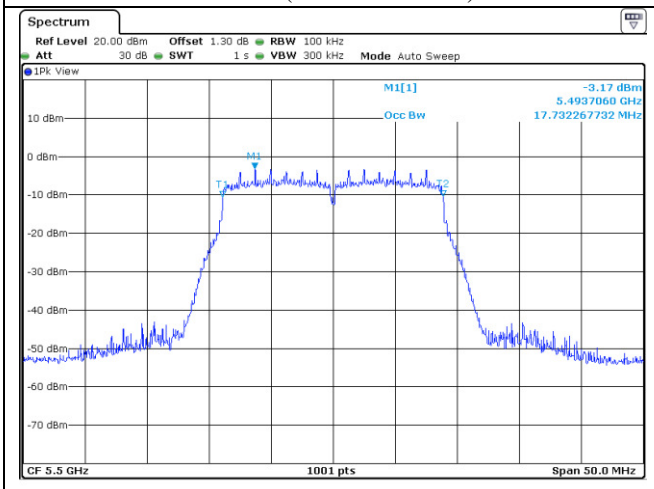
Note: In order to simplify the report, attached plots were only the most wide channel.



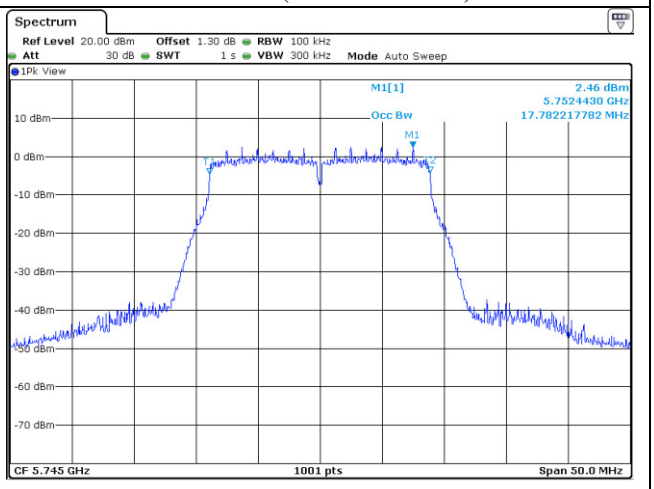
U-NII-1 (99 % bandwidth)



U-NII-2A (99 % bandwidth)



U-NII-2C (99 % bandwidth)



U-NII-3 (99 % bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel.

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7.4.2.2 Test data for Antenna 1

-. Test Date : June 14, 2016

-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180	21.23	17.73
	Middle	5 220	20.98	17.73
	High	5 240	21.23	17.73
5 250 ~ 5 350	Low	5 260	21.03	17.73
	Middle	5 300	21.23	17.78
	High	5 320	21.23	17.73
5 470 ~ 5 725	Low	5 500	21.03	17.73
	Middle	5 560	21.03	17.73
	High	5 720	21.18	17.73
5 725 ~ 5 850	Low	5 745	21.08	17.73
	Middle	5 785	21.13	17.73
	High	5 825	20.78	17.68

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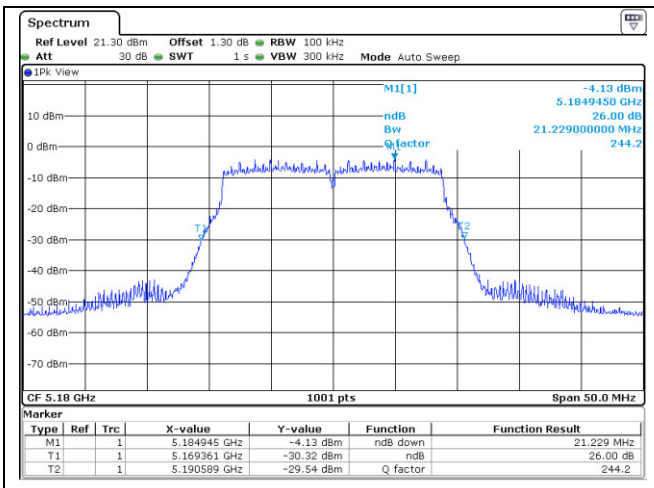
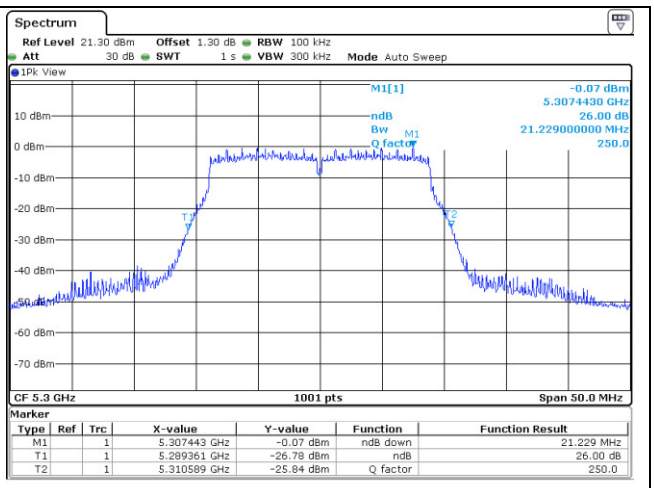
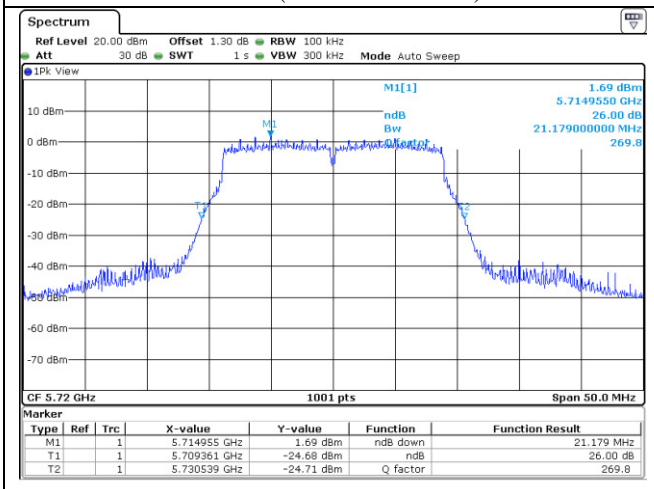


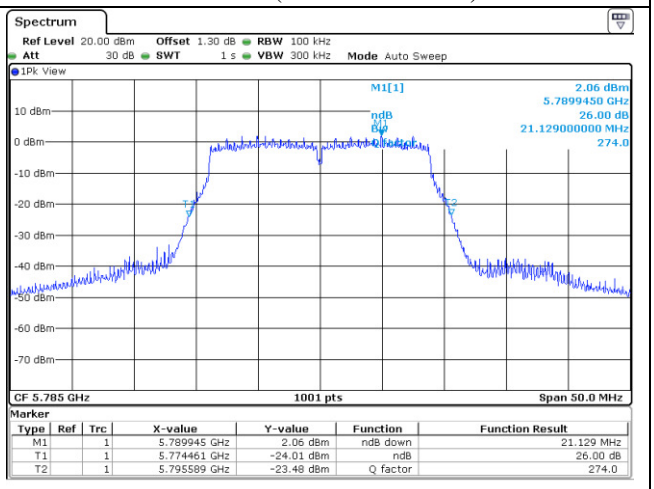
U-NII-1 (26 dB Bandwidth)



U-NII-2A (26 dB Bandwidth)

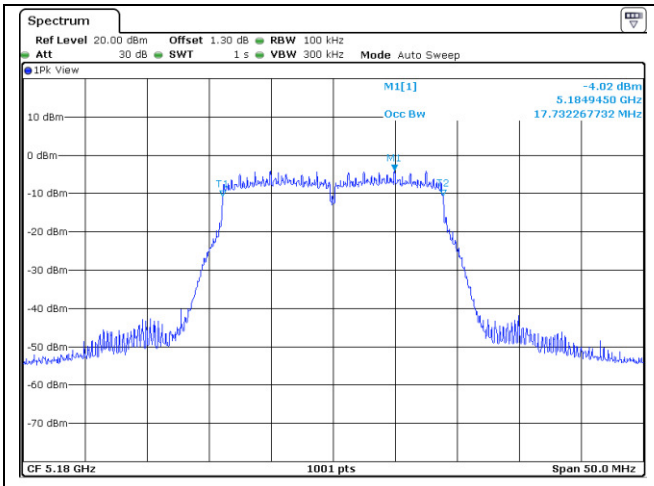


U-NII-2C (26 dB Bandwidth)

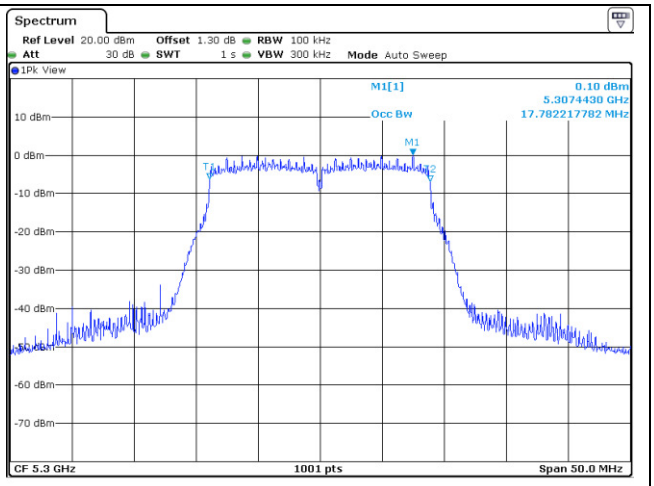


U-NII-3 (26 dB Bandwidth)

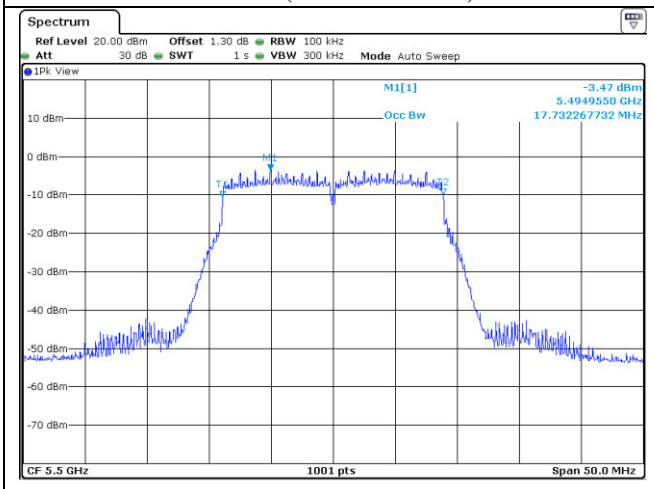
Note: In order to simplify the report, attached plots were only the most wide channel.



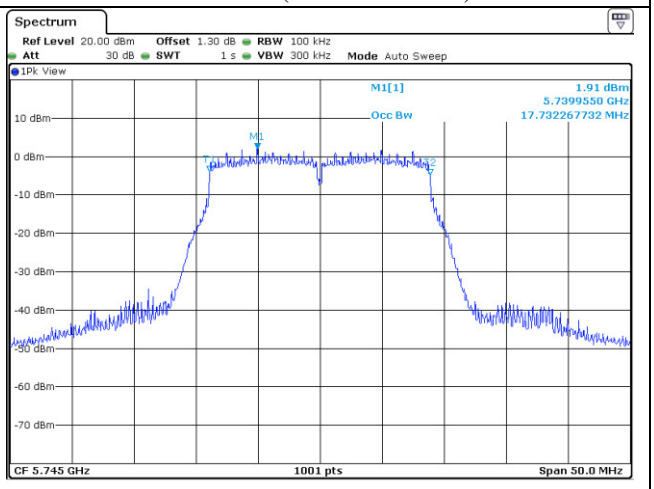
U-NII-1 (99 % bandwidth)



U-NII-2A (99 % bandwidth)



U-NII-2C (99 % bandwidth)



U-NII-3 (99 % bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel.

7.4.2.3 Test data for Antenna 2

-. Test Date : June 14, 2016

-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180	20.93	17.73
	Middle	5 220	21.08	17.68
	High	5 240	21.03	17.68
5 250 ~ 5 350	Low	5 260	20.98	17.68
	Middle	5 300	21.03	17.68
	High	5 320	20.93	17.68
5 470 ~ 5 725	Low	5 500	21.13	17.73
	Middle	5 560	20.83	17.68
	High	5 720	20.88	17.68
5 725 ~ 5 850	Low	5 745	20.88	17.68
	Middle	5 785	21.03	17.68
	High	5 825	20.88	17.68

Tested by: Min-Gu, Ji / Project Engineer

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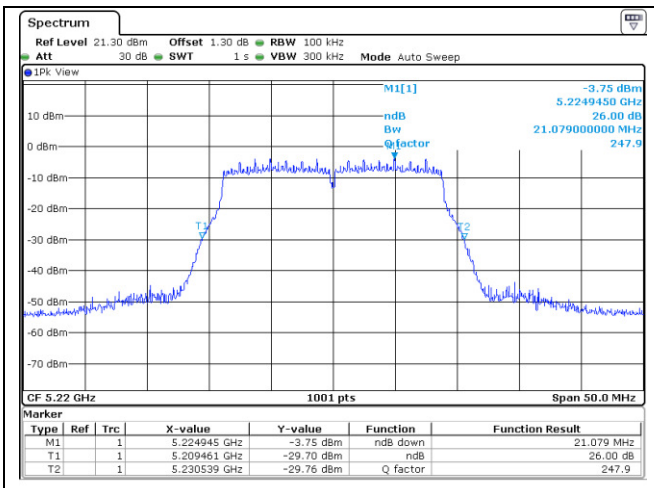
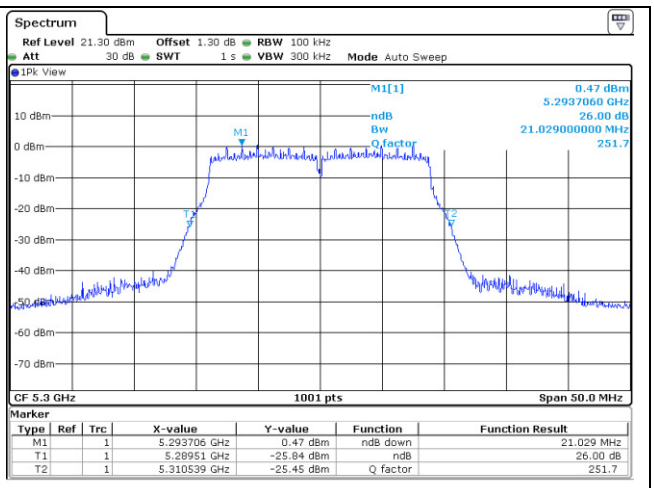
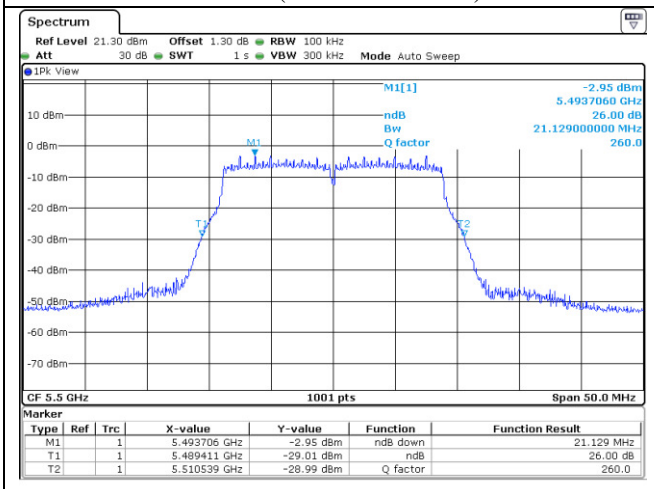


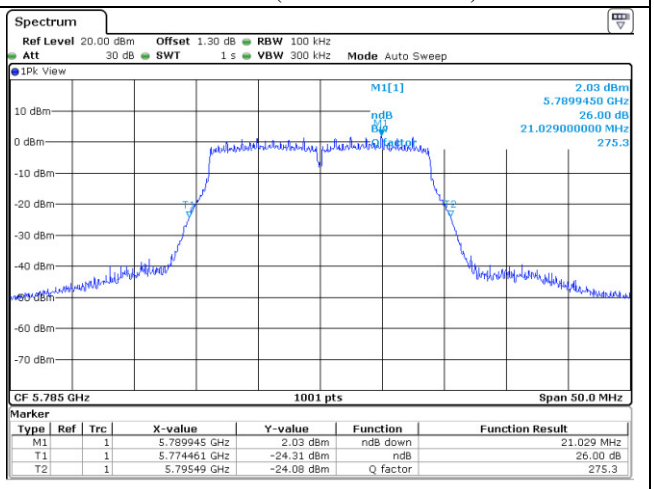
U-NII-1 (26 dB Bandwidth)



U-NII-2A (26 dB Bandwidth)



U-NII-2C (26 dB Bandwidth)



U-NII-3 (26 dB Bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel.

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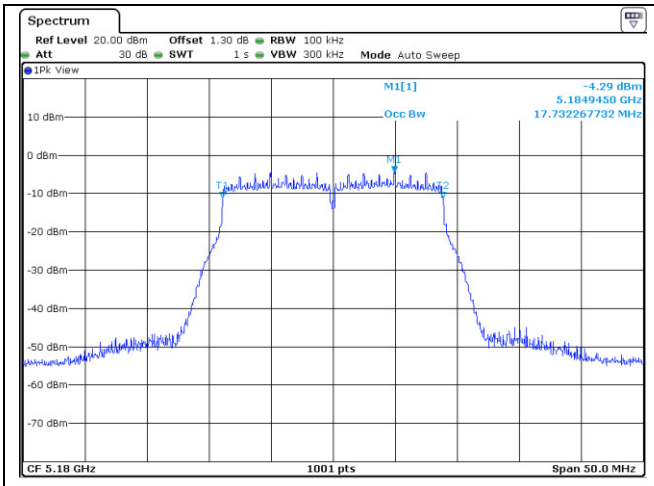
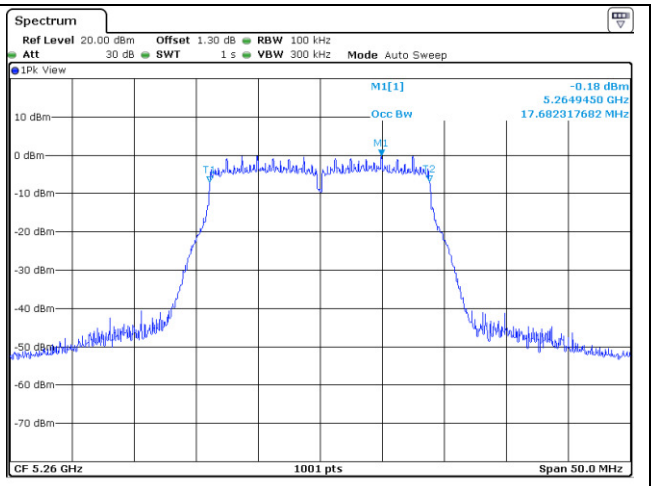
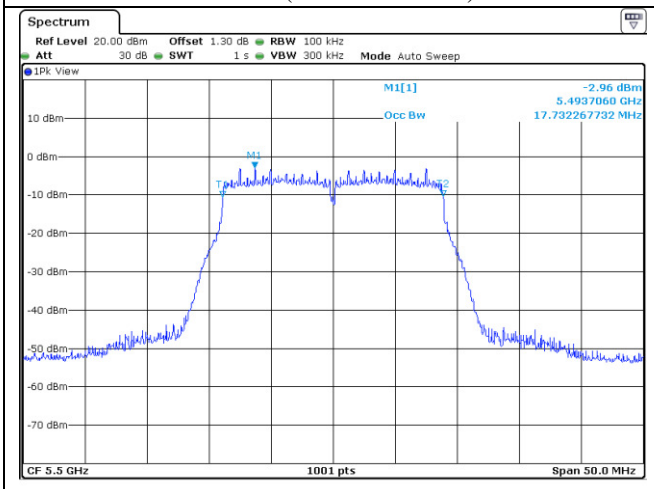


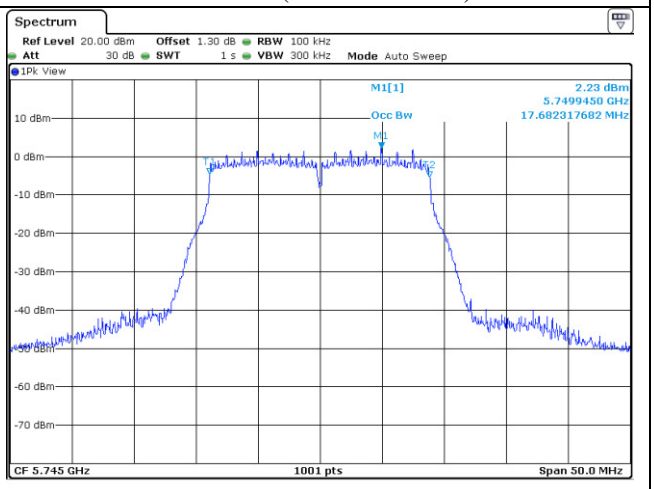
U-NII-1 (99 % bandwidth)



U-NII-2A (99 % bandwidth)



U-NII-2C (99 % bandwidth)



U-NII-3 (99 % bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel.

7.4.2.4 Test data for Antenna 3

-. Test Date : June 14, 2016

-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180	20.93	17.68
	Middle	5 220	21.08	17.68
	High	5 240	21.33	17.68
5 250 ~ 5 350	Low	5 260	21.23	17.68
	Middle	5 300	21.18	17.68
	High	5 320	21.28	17.73
5 470 ~ 5 725	Low	5 500	21.18	17.73
	Middle	5 560	21.03	17.73
	High	5 720	20.88	17.68
5 725 ~ 5 850	Low	5 745	20.68	17.68
	Middle	5 785	20.93	17.68
	High	5 825	20.93	17.68

Tested by: Min-Gu, Ji / Project Engineer

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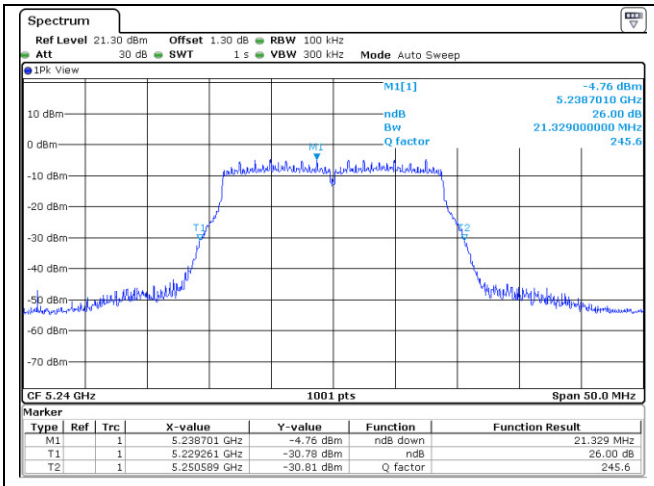
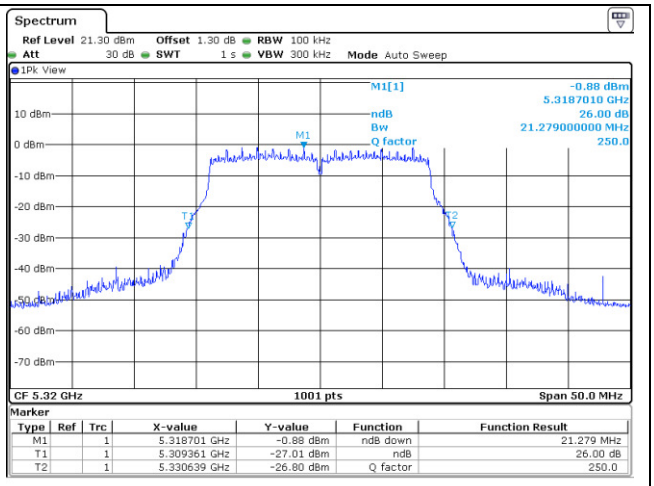
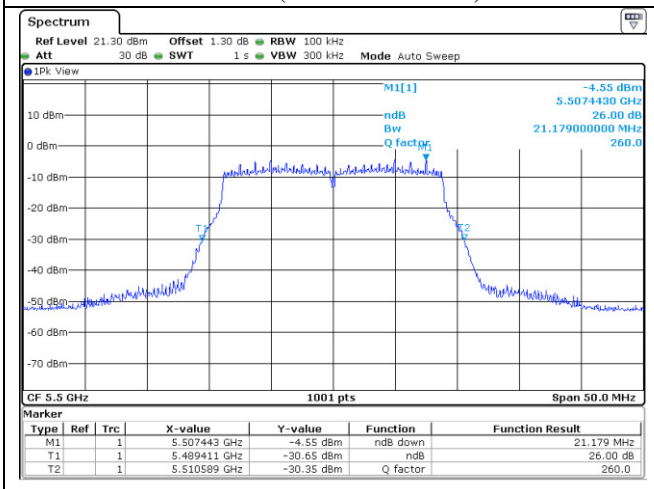


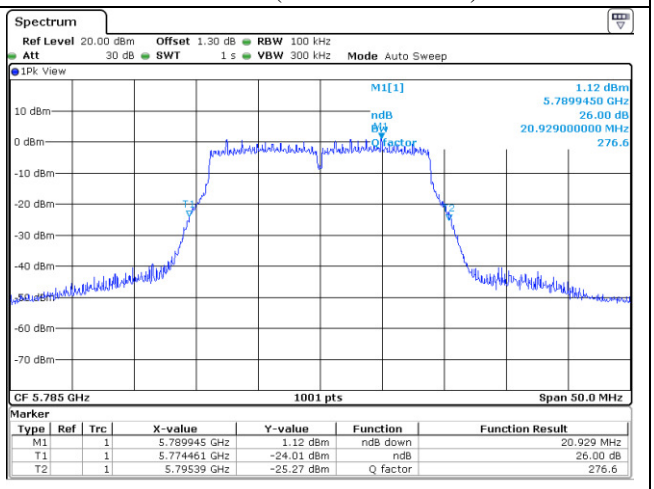
U-NII-1 (26 dB Bandwidth)



U-NII-2A (26 dB Bandwidth)



U-NII-2C (26 dB Bandwidth)



U-NII-3 (26 dB Bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel.

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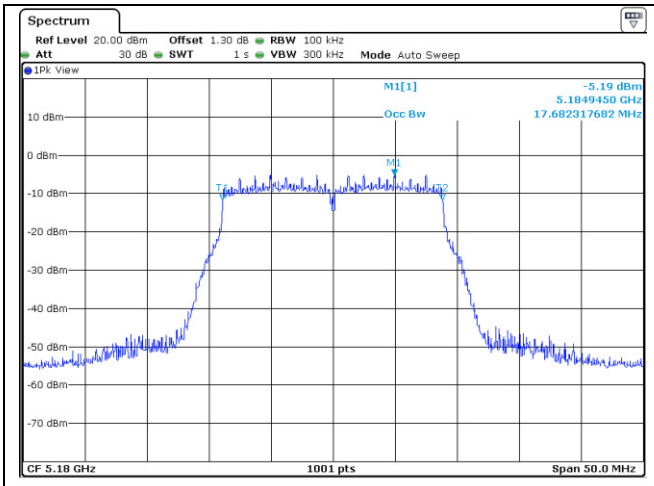
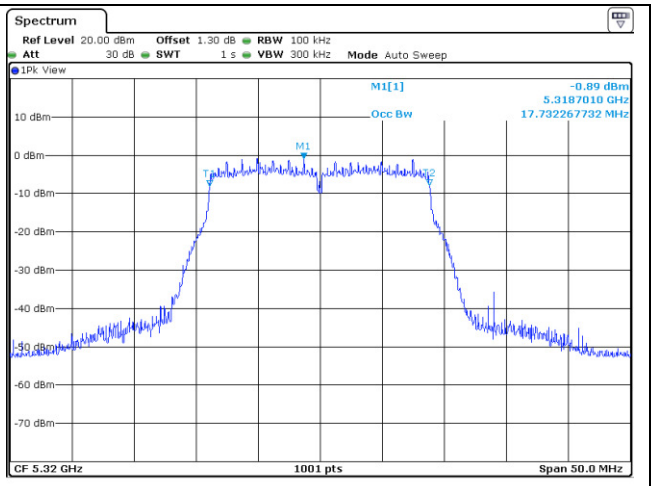
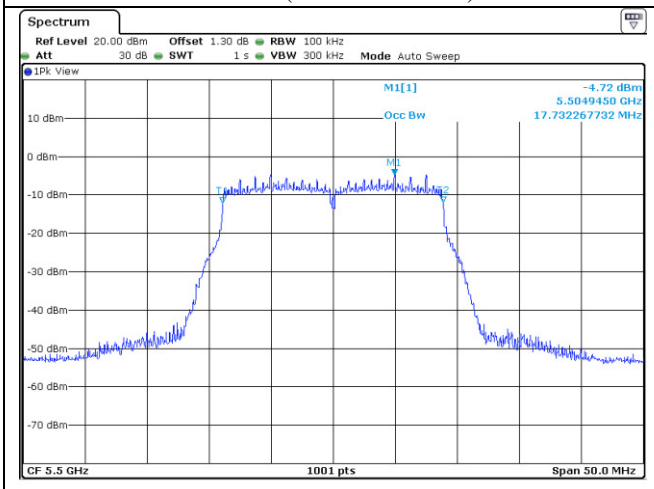


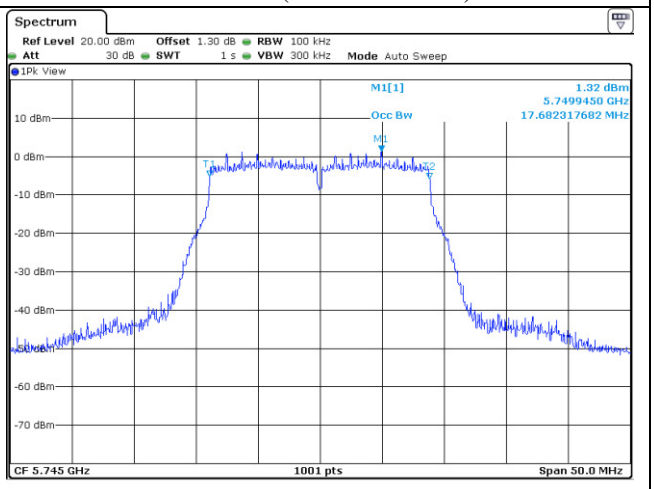
U-NII-1 (99 % bandwidth)



U-NII-2A (99 % bandwidth)



U-NII-2C (99 % bandwidth)



U-NII-3 (99 % bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel.

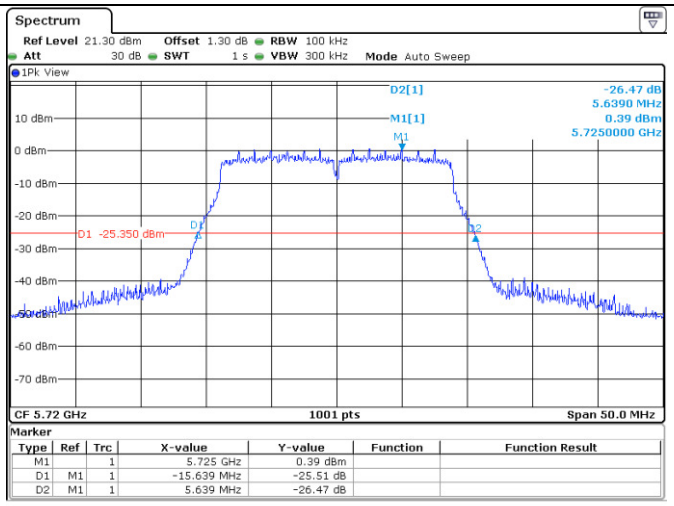
7.4.2.6 Test data for Staddle Channel_Antenna 0

-. Test Date : June 14, 2016

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 720	15.64
5 725 ~ 5 850	5 720	5.64

Tested by: Min-Gu, Ji / Project Engineer



U-NII-2C, U-NII-3 (26 dB Bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel.

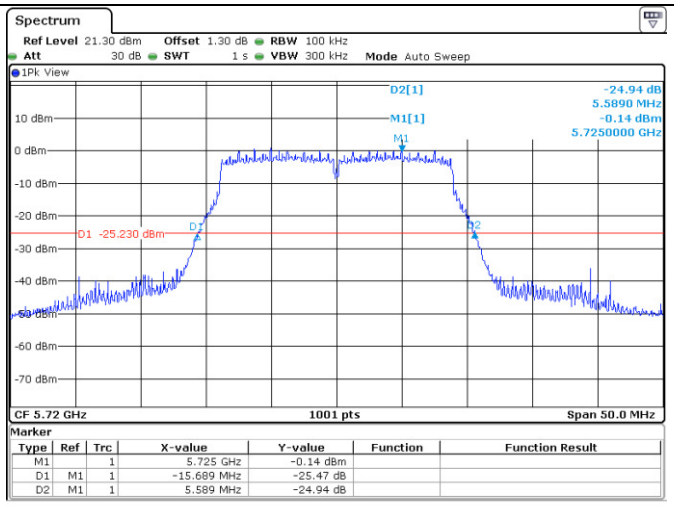
7.4.2.7 Test data for Staddle Channel_Antenna 1

-. Test Date : June 14, 2016

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 720	15.69
5 725 ~ 5 850	5 720	5.59

Tested by: Min-Gu, Ji / Project Engineer



U-NII-2C, U-NII-3 (26 dB Bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel.

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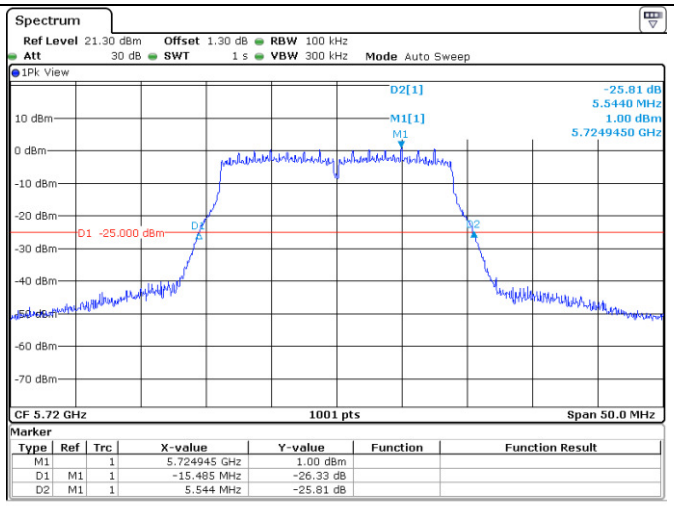
7.4.2.8 Test data for Staddle Channel_Antenna 2

-. Test Date : June 14, 2016

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 720	15.49
5 725 ~ 5 850	5 720	5.54

Tested by: Min-Gu, Ji / Project Engineer



U-NII-2C, U-NII-3 (26 dB Bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel

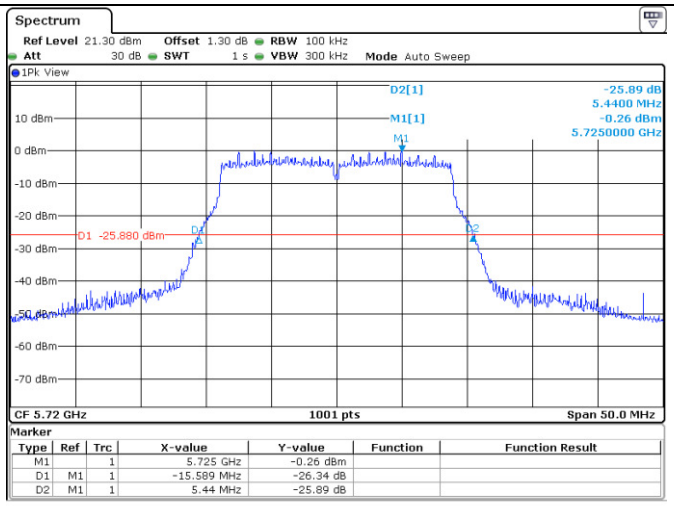
7.4.2.9 Test data for Staddle Channel_Antenna 3

-. Test Date : June 14, 2016

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 720	15.59
5 725 ~ 5 850	5 720	5.44

Tested by: Min-Gu, Ji / Project Engineer



U-NII-2C, U-NII-3 (26 dB Bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel

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7.4.3 Test data for 802.11n_HT40 RLAN Mode

7.4.3.1 Test data for Antenna 0

-. Test Date : June 14, 2016

-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
5 150 ~ 5 250	Low	5 190	38.96	36.16
	High	5 230	38.96	36.16
5 250 ~ 5 350	Low	5 270	39.06	36.16
	High	5 310	39.06	36.16
5 470 ~ 5 725	Low	5 510	39.06	36.16
	Middle	5 550	39.06	36.16
	High	5 710	39.06	36.16
5 725 ~ 5 850	Low	5 755	39.06	36.26
	High	5 795	38.36	36.16

Tested by: Min-Gu, Ji / Project Engineer

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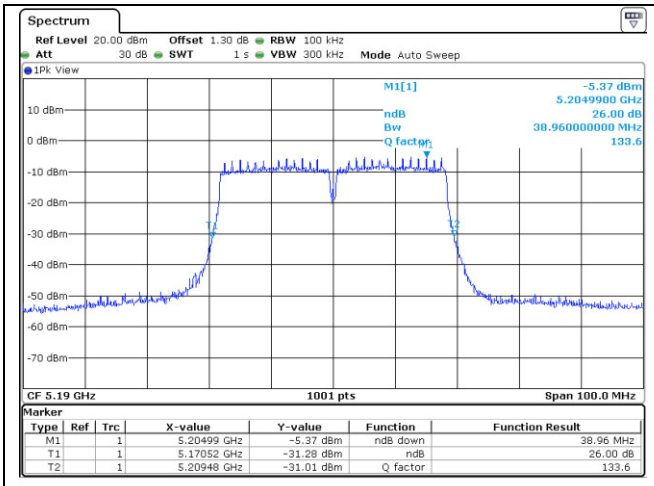
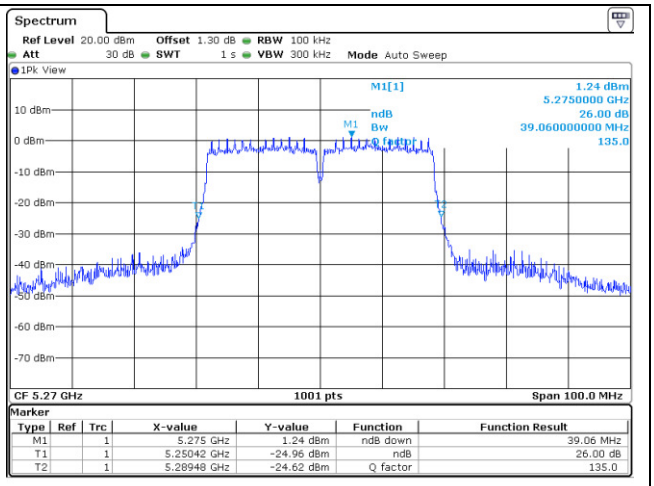
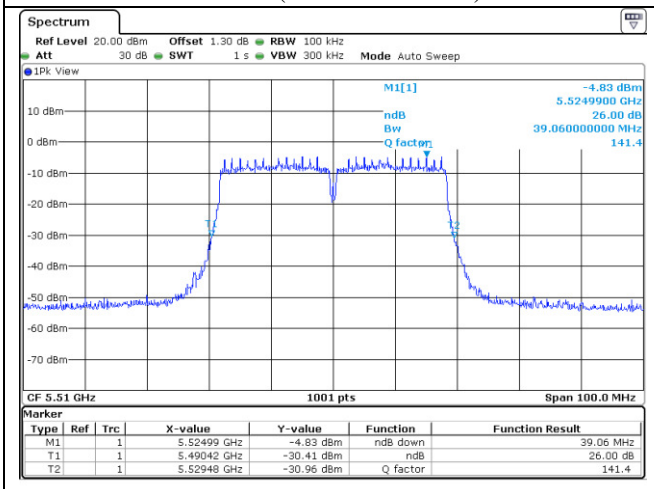


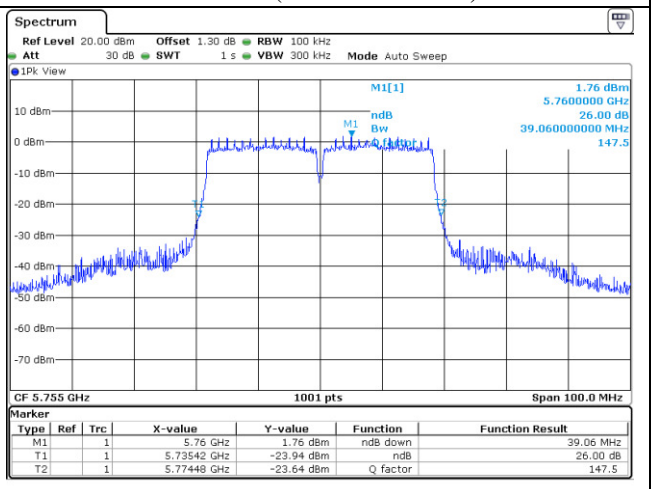
U-NII-1 (26 dB Bandwidth)



U-NII-2A (26 dB Bandwidth)



U-NII-2C (26 dB Bandwidth)



U-NII-3 (26 dB Bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel.

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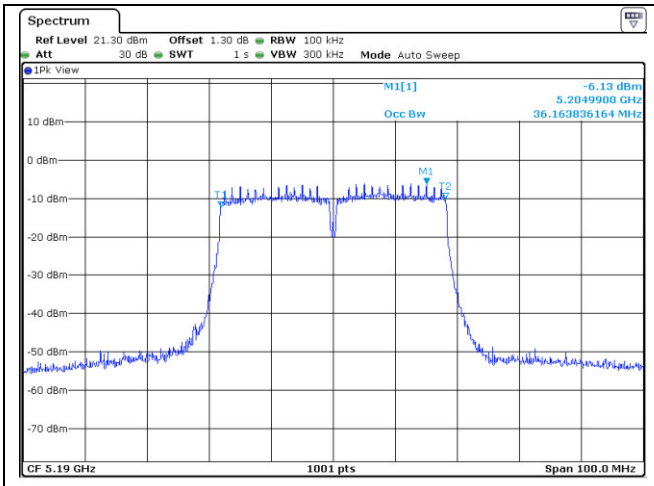
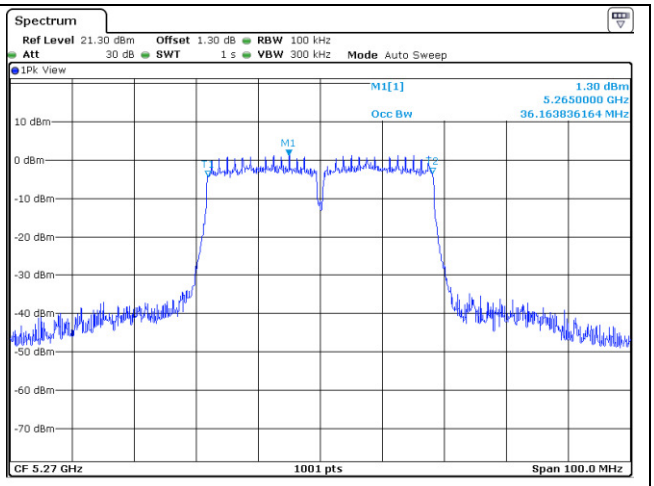
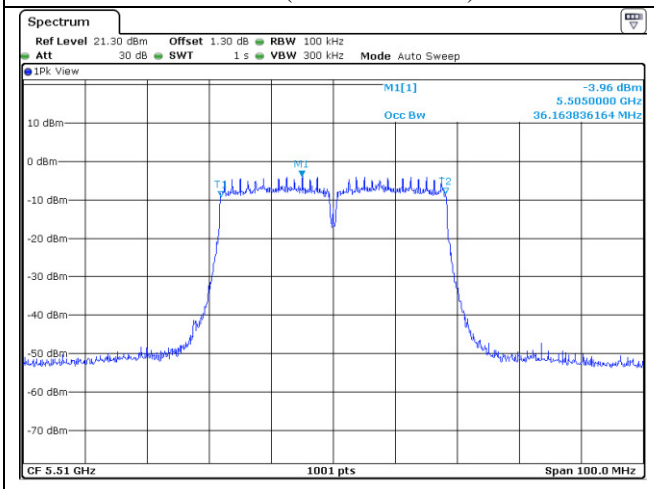


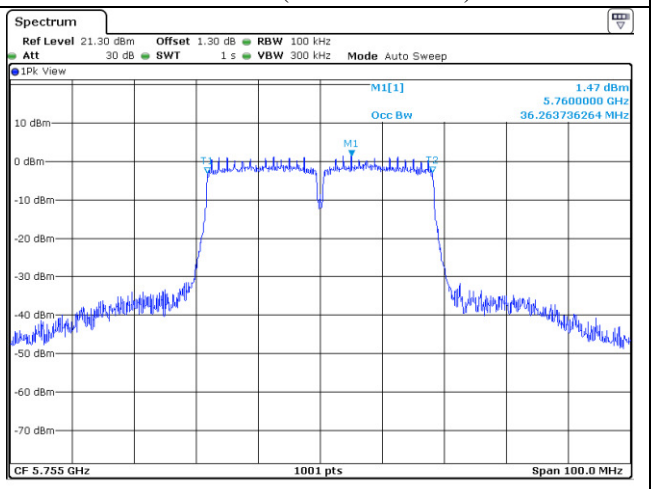
U-NII-1 (99 % bandwidth)



U-NII-2A (99 % bandwidth)



U-NII-2C (99 % bandwidth)



U-NII-3 (99 % bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel.

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7.4.3.2 Test data for Antenna 1

-. Test Date : June 14, 2016

-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
5 150 ~ 5 250	Low	5 190	39.16	36.16
	High	5 230	38.96	36.16
5 250 ~ 5 350	Low	5 270	39.06	36.16
	High	5 310	39.06	36.16
5 470 ~ 5 725	Low	5 510	38.96	36.16
	Middle	5 550	39.16	36.16
	High	5 710	39.16	36.26
5 725 ~ 5 850	Low	5 755	38.86	36.16
	High	5 795	39.26	36.16

Tested by: Min-Gu, Ji / Project Engineer

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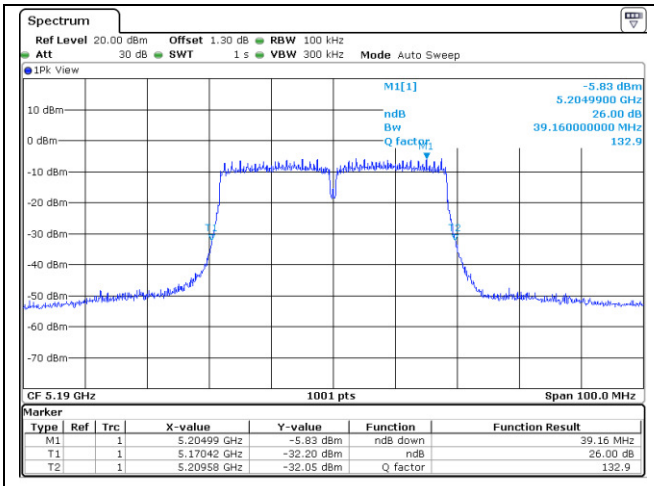
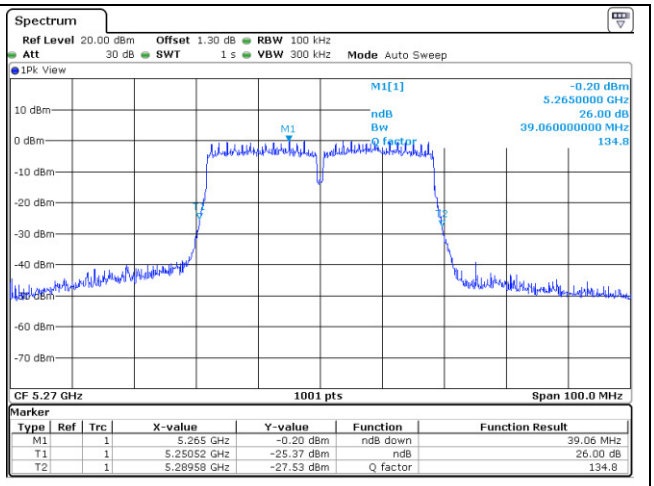
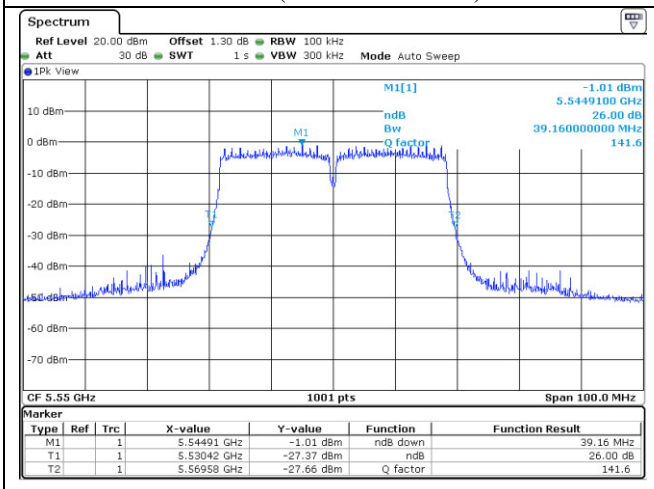


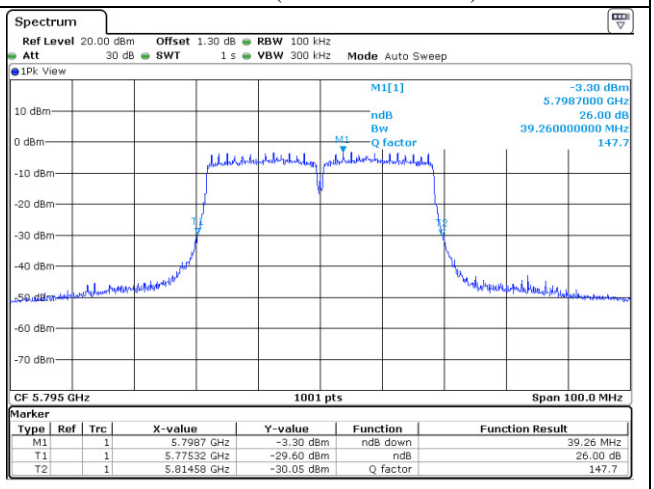
U-NII-1 (26 dB Bandwidth)



U-NII-2A (26 dB Bandwidth)



U-NII-2C (26 dB Bandwidth)



U-NII-3 (26 dB Bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel.

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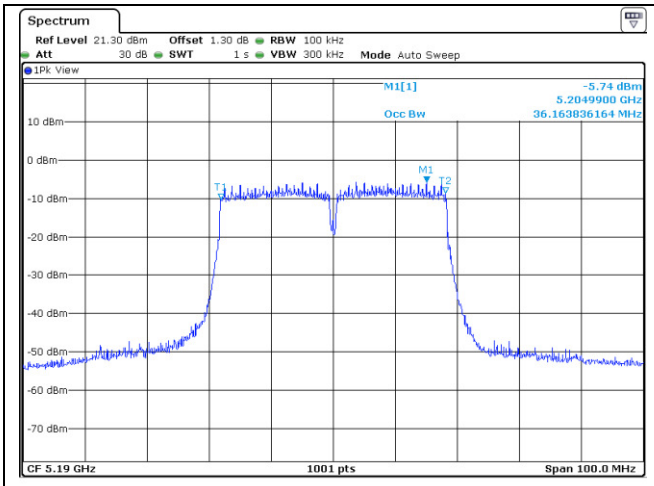
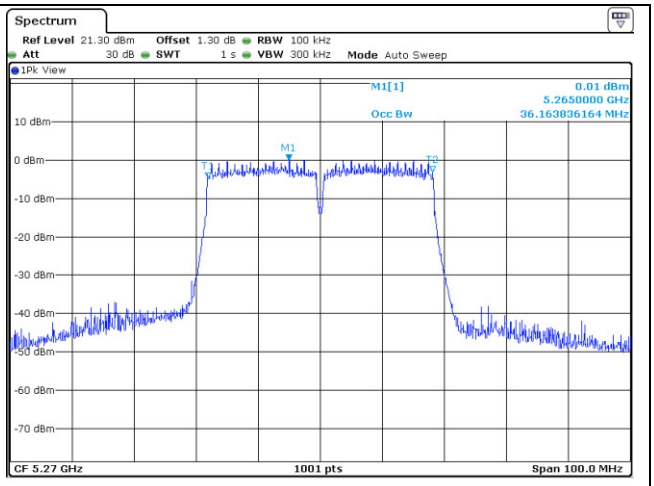
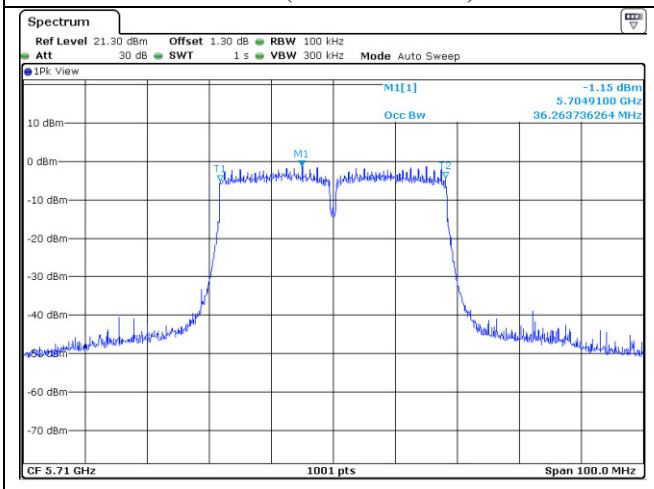


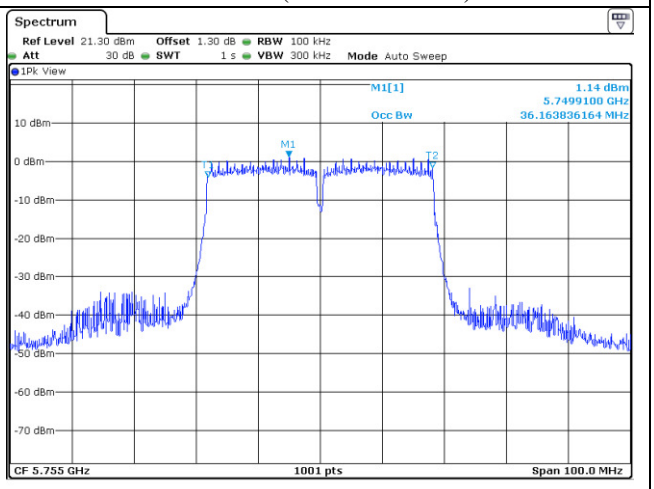
U-NII-1 (99 % bandwidth)



U-NII-2A (99 % bandwidth)



U-NII-2C (99 % bandwidth)



U-NII-3 (99 % bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel.

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7.4.3.3 Test data for Antenna 2

-. Test Date : June 14, 2016

-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
5 150 ~ 5 250	Low	5 190	38.96	36.16
	High	5 230	38.76	36.16
5 250 ~ 5 350	Low	5 270	38.86	36.16
	High	5 310	38.76	36.16
5 470 ~ 5 725	Low	5 510	39.06	36.16
	Middle	5 550	38.96	36.16
	High	5 710	39.06	36.26
5 725 ~ 5 850	Low	5 755	39.06	36.26
	High	5 795	38.96	36.16

Tested by: Min-Gu, Ji / Project Engineer

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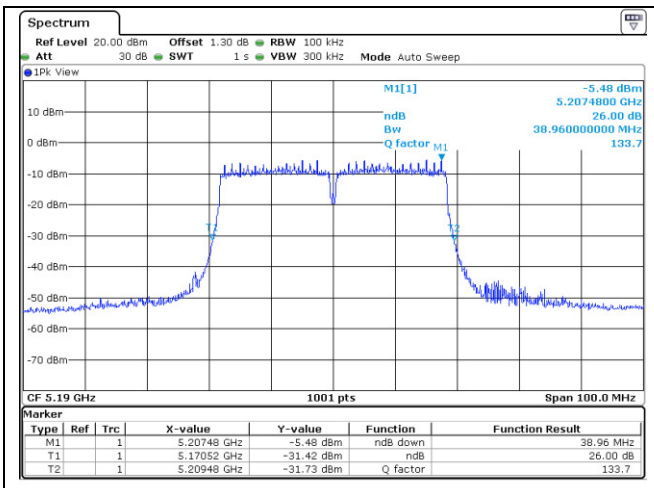
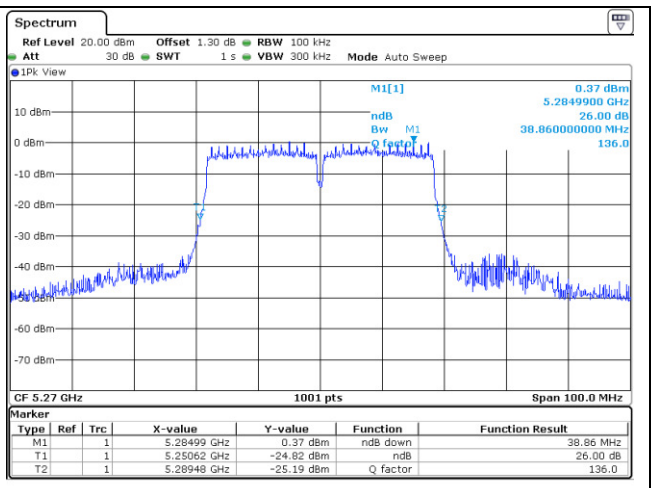
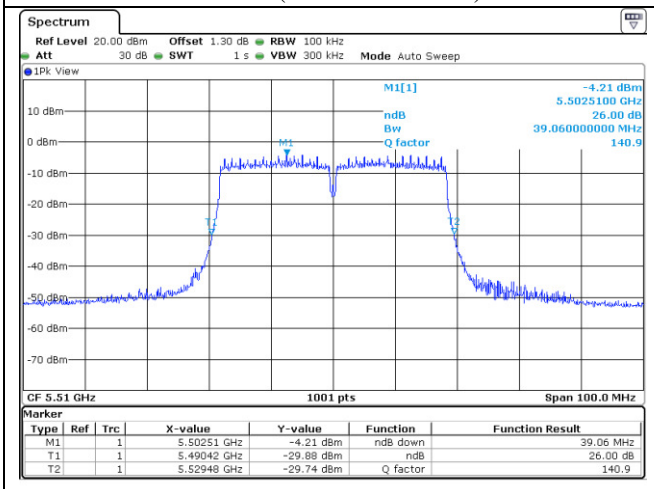


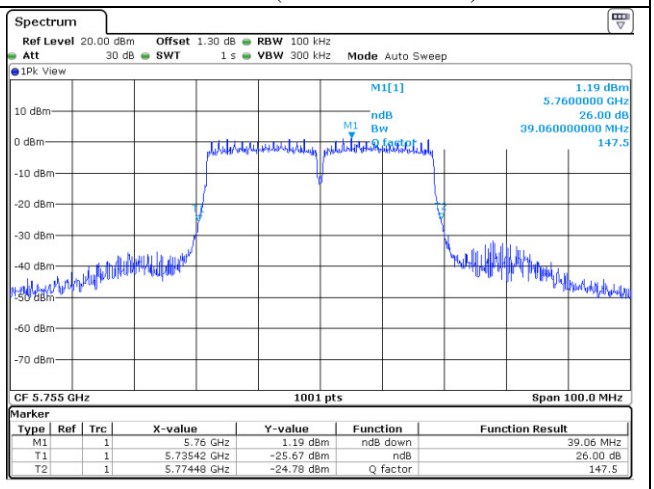
U-NII-1 (26 dB Bandwidth)



U-NII-2A (26 dB Bandwidth)

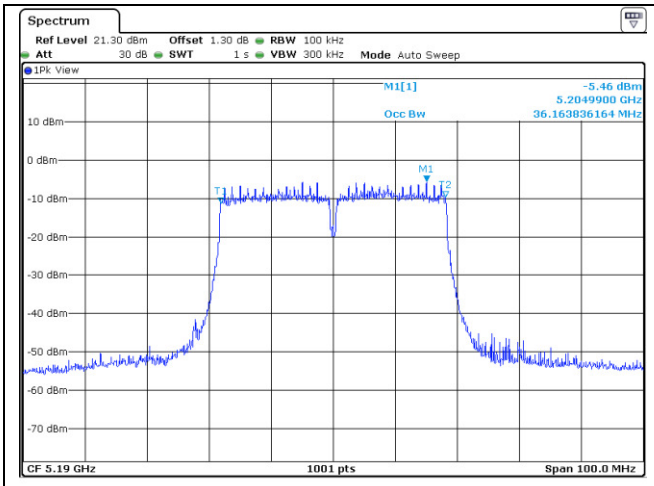


U-NII-2C (26 dB Bandwidth)

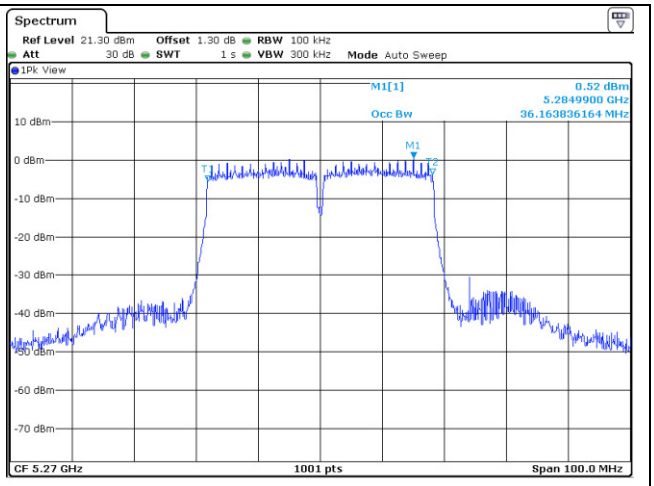


U-NII-3 (26 dB Bandwidth)

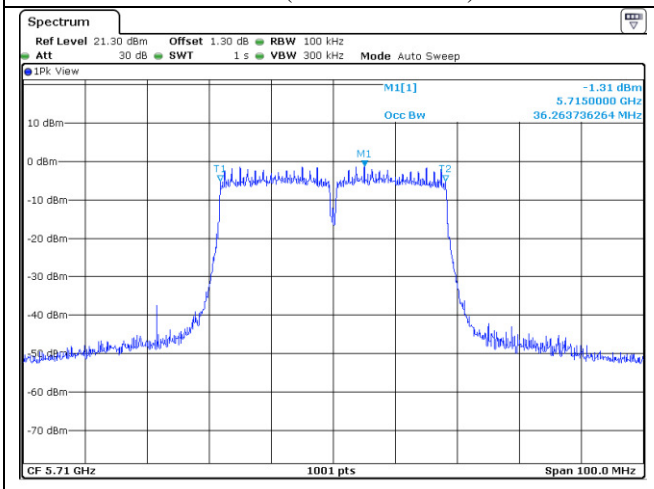
Note: In order to simplify the report, attached plots were only the most wide channel.



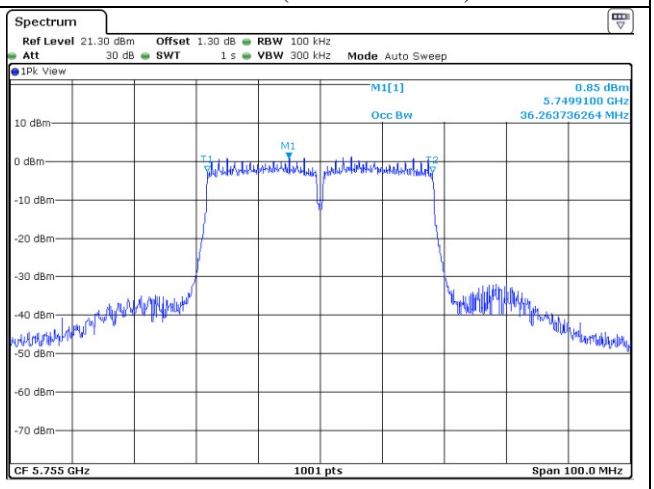
U-NII-1 (99 % bandwidth)



U-NII-2A (99 % bandwidth)



U-NII-2C (99 % bandwidth)



U-NII-3 (99 % bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel.

7.4.3.4 Test data for Antenna 3

-. Test Date : June 14, 2016

-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
5 150 ~ 5 250	Low	5 190	38.76	36.16
	High	5 230	38.76	36.16
5 250 ~ 5 350	Low	5 270	38.76	36.16
	High	5 310	38.86	36.16
5 470 ~ 5 725	Low	5 510	38.96	36.16
	Middle	5 550	38.76	36.16
	High	5 710	38.86	36.26
5 725 ~ 5 850	Low	5 755	38.86	36.26
	High	5 795	38.86	36.16

Tested by: Min-Gu, Ji / Project Engineer

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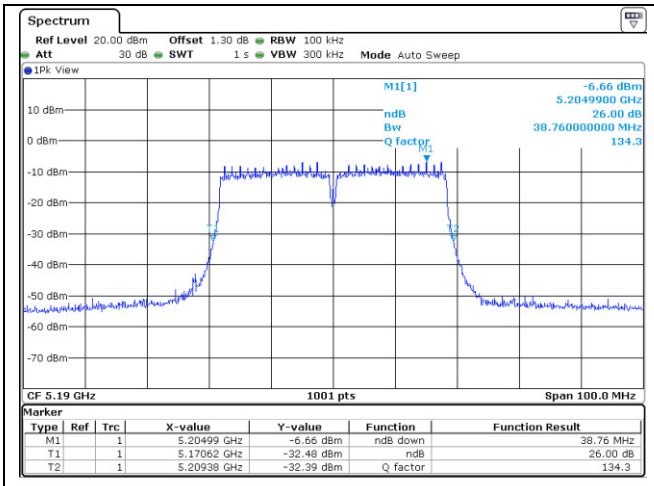
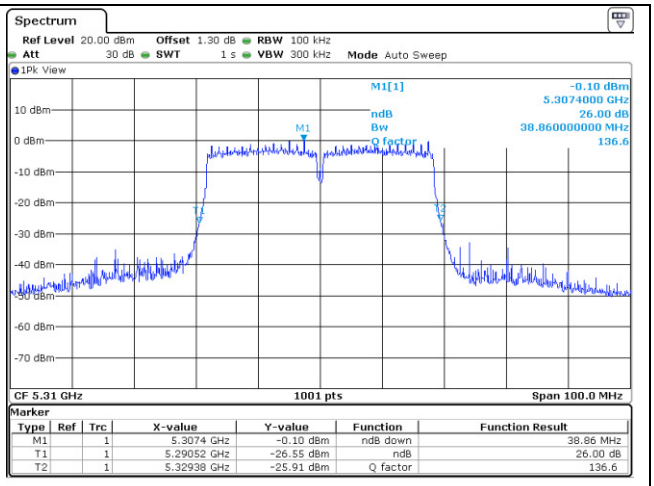
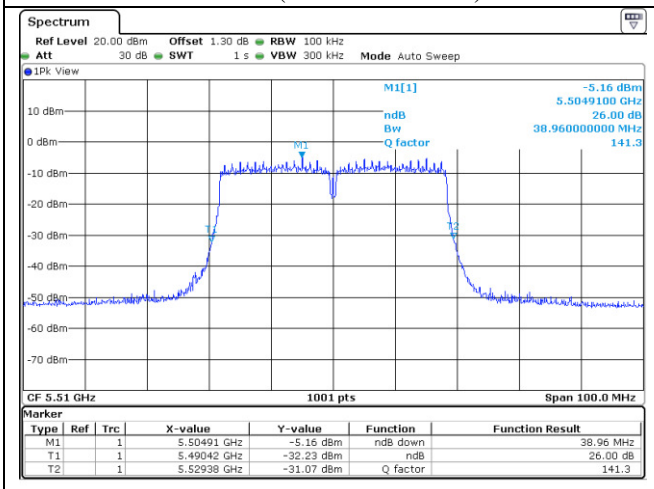


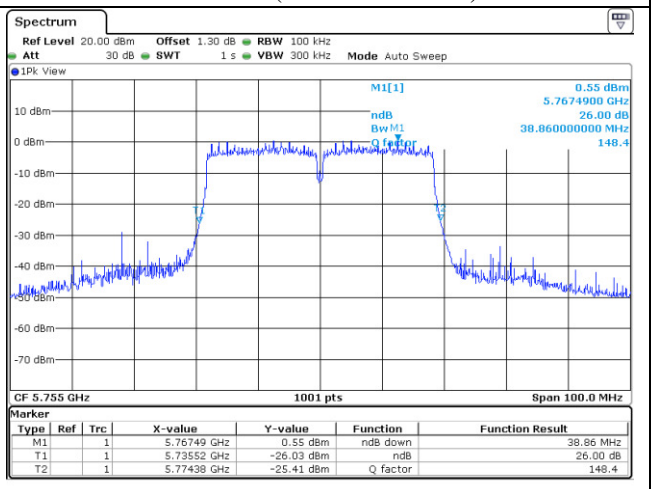
U-NII-1 (26 dB Bandwidth)



U-NII-2A (26 dB Bandwidth)



U-NII-2C (26 dB Bandwidth)



U-NII-3 (26 dB Bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel.

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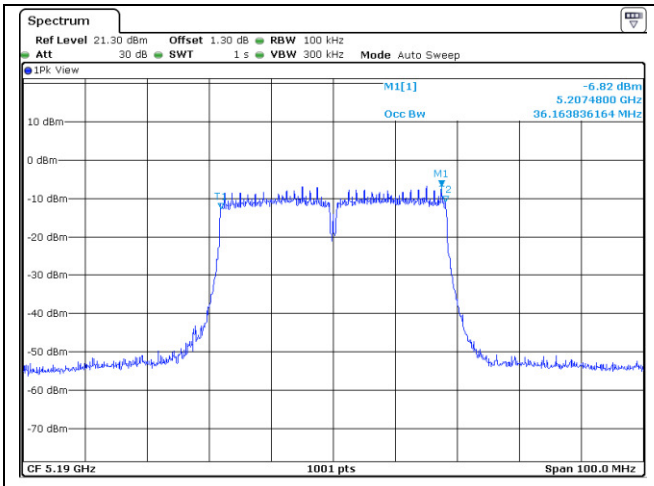
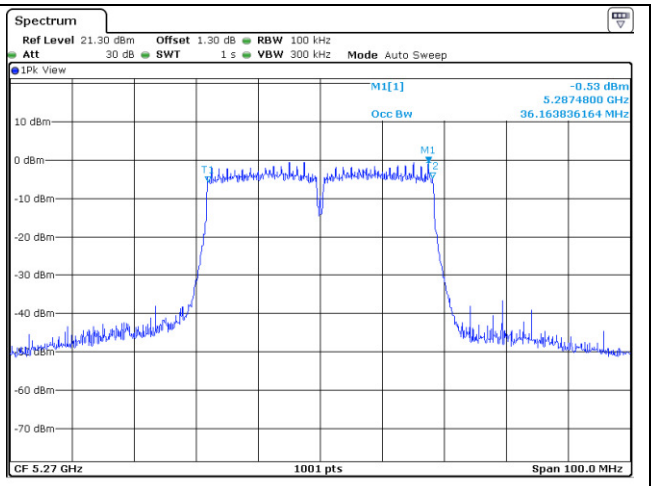
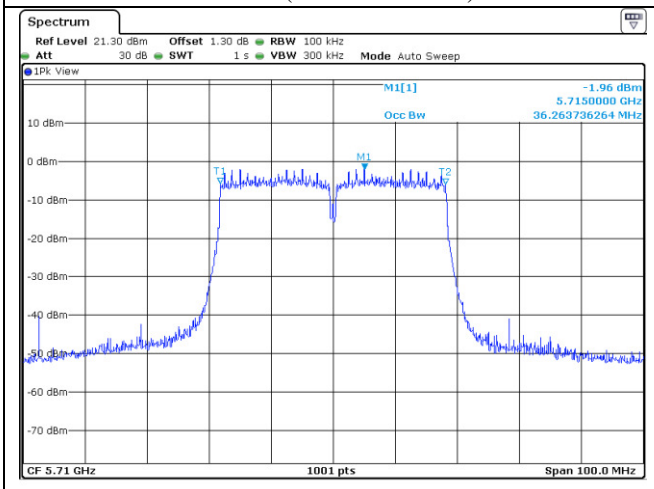


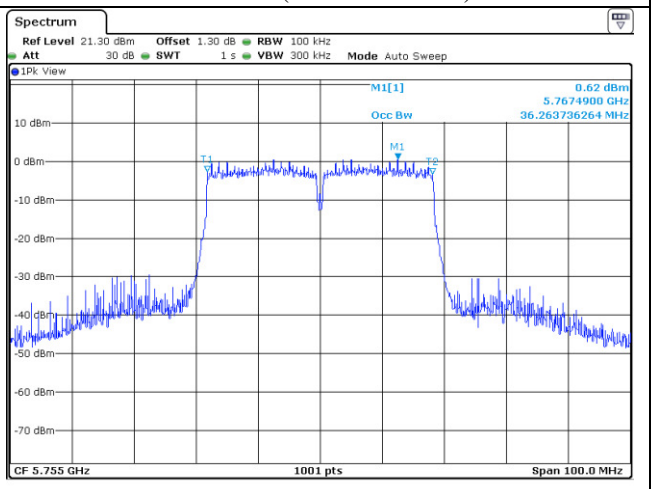
U-NII-1 (99 % bandwidth)



U-NII-2A (99 % bandwidth)



U-NII-2C (99 % bandwidth)



U-NII-3 (99 % bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel.

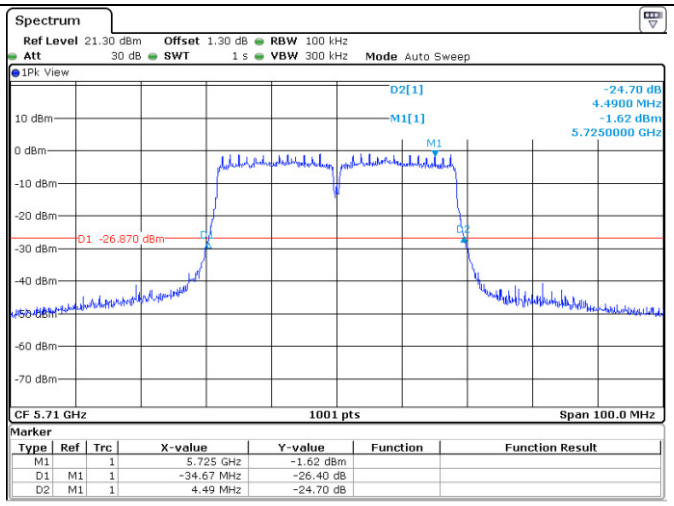
7.4.3.5 Test data for Staddle Channel_Antenna 0

-. Test Date : June 14, 2016

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 710	34.67
5 725 ~ 5 850	5 710	4.49

Tested by: Min-Gu, Ji / Project Engineer



U-NII-2C, U-NII-3 (26 dB Bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel.

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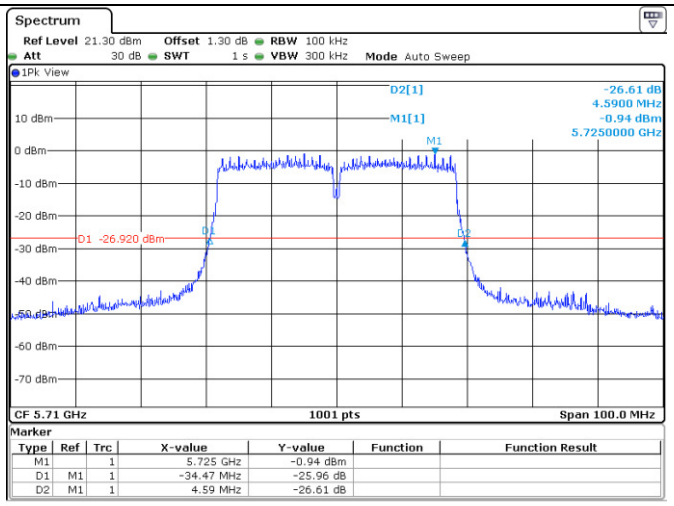
7.4.3.6 Test data for Staddle Channel_Antenna 1

-. Test Date : June 14, 2016

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 710	34.47
5 725 ~ 5 850	5 710	4.59

Tested by: Min-Gu, Ji / Project Engineer



U-NII-2C, U-NII-3 (26 dB Bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel.

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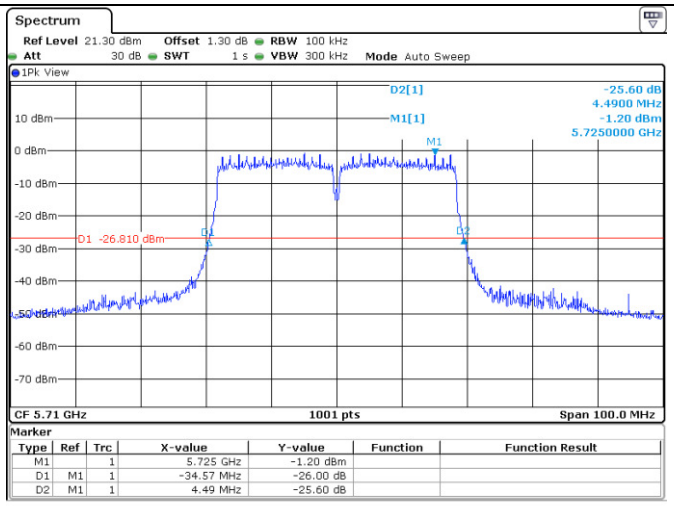
7.4.3.7 Test data for Staddle Channel_Antenna 2

-. Test Date : June 14, 2016

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 710	34.57
5 725 ~ 5 850	5 710	4.49

Tested by: Min-Gu, Ji / Project Engineer



U-NII-2C, U-NII-3 (26 dB Bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel.

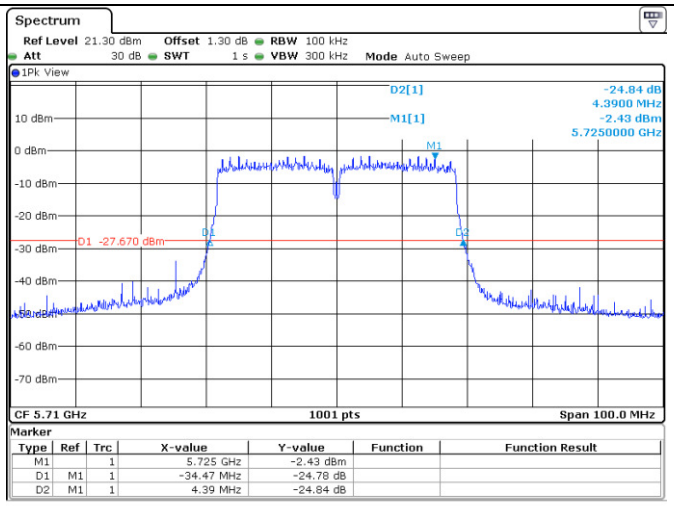
7.4.3.8 Test data for Staddle Channel_Antenna 3

-. Test Date : June 14, 2016

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 710	34.47
5 725 ~ 5 850	5 710	4.39

Tested by: Min-Gu, Ji / Project Engineer



U-NII-2C, U-NII-3 (26 dB Bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel.

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7.4.4 Test data for 802.11ac_VHT20 RLAN Mode

7.4.4.1 Test data for Antenna 0

-. Test Date : June 14, 2016

-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180	21.23	17.73
	Middle	5 220	20.93	17.78
	High	5 240	21.03	17.73
5 250 ~ 5 350	Low	5 260	21.08	17.78
	Middle	5 300	20.88	17.73
	High	5 320	20.98	17.78
5 470 ~ 5 725	Low	5 500	21.08	17.68
	Middle	5 560	21.18	17.73
	High	5 720	21.18	17.68
5 725 ~ 5 850	Low	5 745	21.13	17.73
	Middle	5 785	20.98	17.73
	High	5 825	21.23	17.68

Tested by: Min-Gu, Ji / Project Engineer

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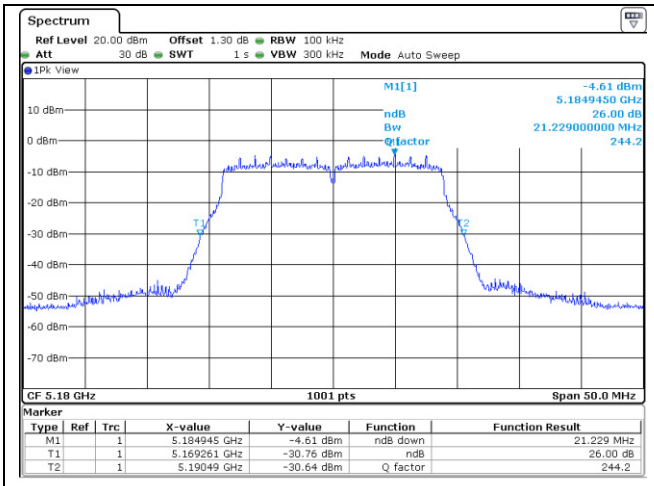
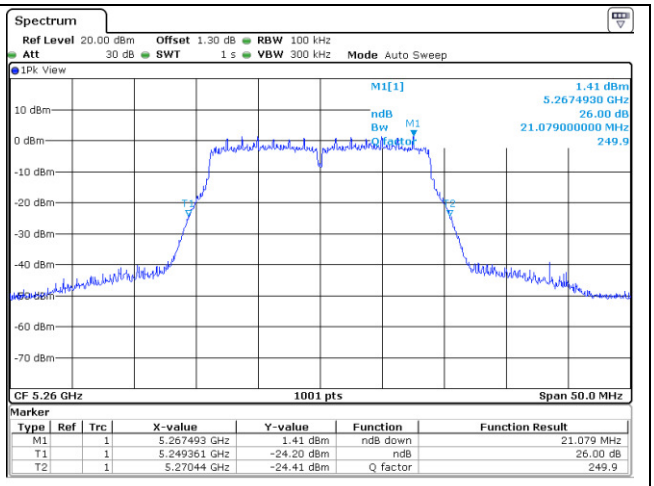
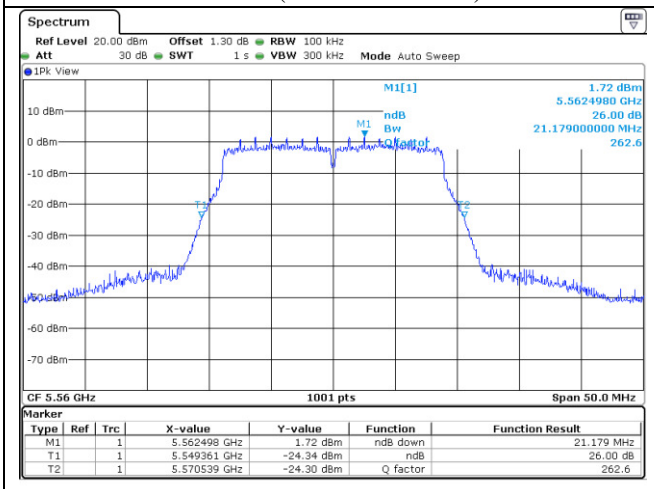


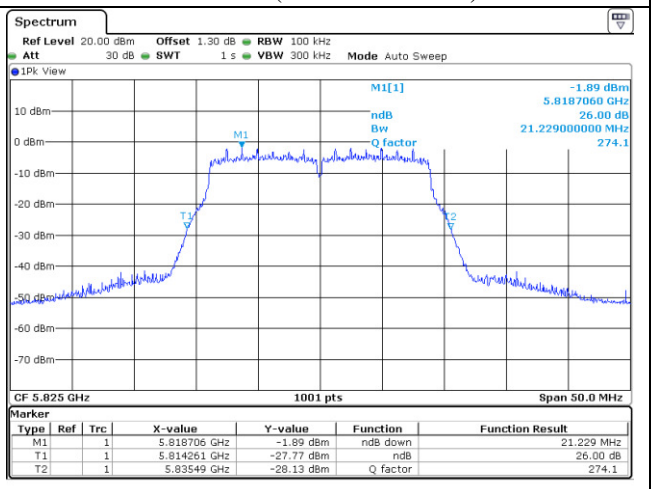
U-NII-1 (26 dB Bandwidth)



U-NII-2A (26 dB Bandwidth)

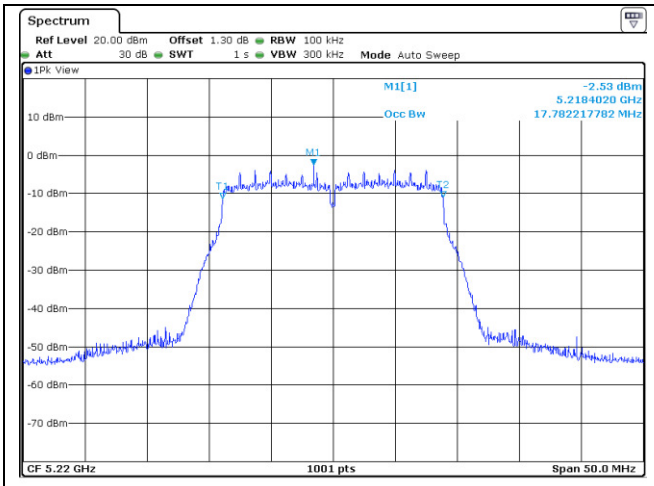


U-NII-2C (26 dB Bandwidth)

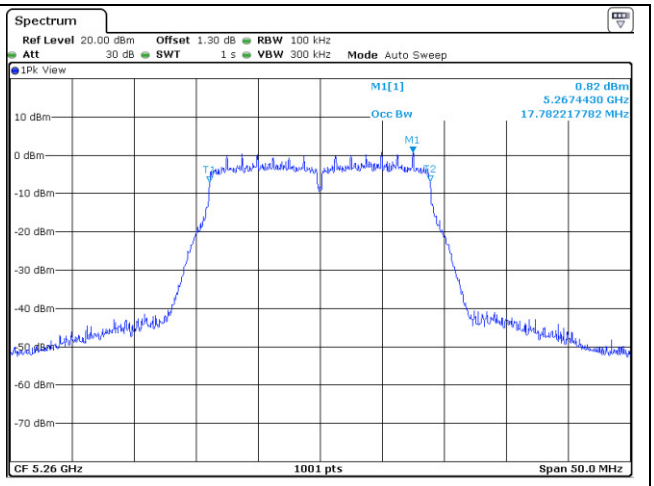


U-NII-3 (26 dB Bandwidth)

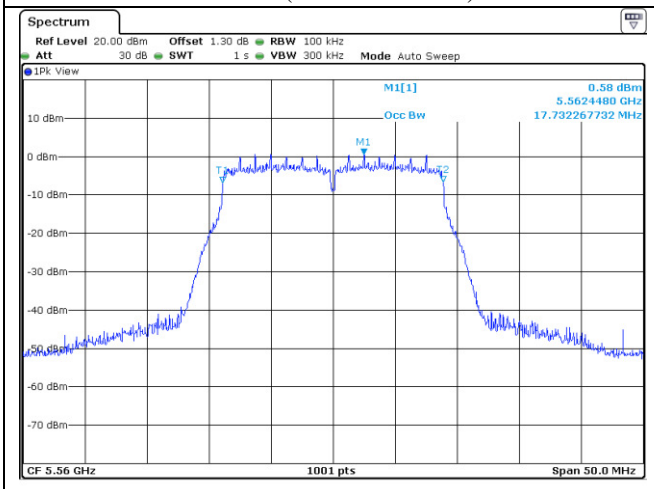
Note: In order to simplify the report, attached plots were only the most wide channel.



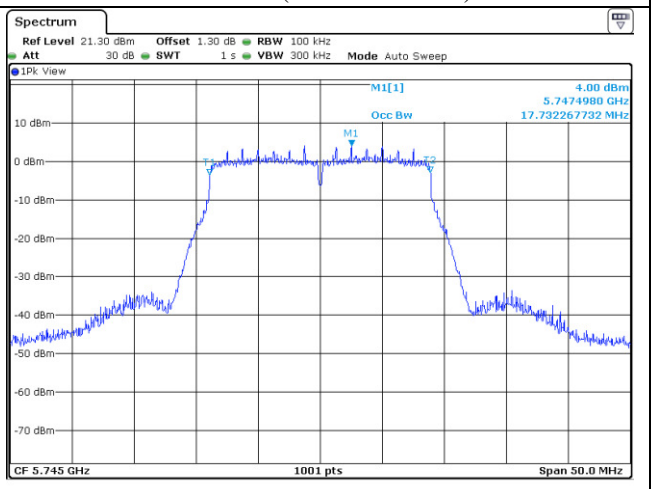
U-NII-1 (99 % bandwidth)



U-NII-2A (99 % bandwidth)



U-NII-2C (99 % bandwidth)



U-NII-3 (99 % bandwidth)

Note: In order to simplify the report, attached plots were only the most wide channel.

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7.4.4.2 Test data for Antenna 1

-. Test Date : June 14, 2016

-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180	21.23	17.73
	Middle	5 220	21.23	17.73
	High	5 240	20.98	17.73
5 250 ~ 5 350	Low	5 260	21.23	17.73
	Middle	5 300	21.13	17.68
	High	5 320	21.13	17.73
5 470 ~ 5 725	Low	5 500	21.08	17.73
	Middle	5 560	21.28	17.73
	High	5 720	21.18	17.73
5 725 ~ 5 850	Low	5 745	21.03	17.73
	Middle	5 785	21.28	17.73
	High	5 825	20.73	17.68

Tested by: Min-Gu, Ji / Project Engineer

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