

ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR LOW-POWER, NON-LICENSED TRANSMITTER

Test Report No. : OT-209-RWD-081

Reception No. : 2008003013

Applicant : LG Innotek Co., Ltd.

Address : 26, Hanamsandan 5beon-ro Gwangsan-gu, Gwangju, 506-731, South Korea

Manufacturer : LG Innotek Co., Ltd.

Address : 26, Hanamsandan 5beon-ro Gwangsan-gu, Gwangju, 506-731, South Korea

Type of Equipment : RF Module

FCC ID. : YZP-ATC5CPC001

Model Name : ATC5CPC001

Serial number : N/A

Total page of Report : 300 pages (including this page)

Date of Incoming : September 07, 2020

Date of issue : September 23, 2020

SUMMARY

The equipment complies with the regulation; **FCC PART 15 SUBPART E Section 15.407**

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

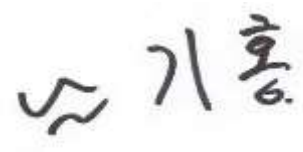
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Revision History

Rev. No.	Issue Report No.	Issued Date	Revisions	Section Affected
0	OT-209-RWD-081	September 23, 2020	Initial Release	All

1. VERIFICATION OF COMPLIANCE

Applicant : LG Innotek Co., Ltd.
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Contact Person : Jeong Inchang / Chief Research Engineer
Telephone No. : +82-10-2326-9972
FCC ID : YZP-ATC5CPC001
Model Name : ATC5CPC001
Brand Name : LG Innotek Co., Ltd.
Serial Number : N/A
Date : September 23, 2020

EQUIPMENT CLASS	Unlicensed National Information infrastructure(UNII)
E.U.T. DESCRIPTION	Modular Transmitter, RF Module
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 789033 D02 General UNII Test Procedures New Rules v02r01
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 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.

2. TEST SUMMARY

2.1 Test items and results

SECTION	TEST ITEMS	RESULTS
15.407(a)	26 dB Bandwidth	PASS
15.407(a)	Maximum Conducted Output Power	Met the Limit / PASS
15.407(a)	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)	Undesirable Emissions	Met the Limit / PASS
15.205, 15.407(b)	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Met the Limit / PASS
15.207	AC Conducted Emissions 150 kHz-30 MHz	N/A (See Note)
15.407(h)	Dynamic frequency Selection	Met the Limit / PASS

Note: This test is not performed because the EUT is operated by DC Power.

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

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.

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-14617/ G-10666/ T-11842

ISED (Innovation, Science and Economic Development Canada) – Registration No. Site# 3736A-3

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

FCC (Federal Communications Commission) - Accreditation No. KR0013

RRA (Radio Research Agency) – Designation No. KR0013

3. GENERAL INFORMATION

3.1 Product Description

The LG Innotek Co., Ltd., Model ATC5CPC001 (referred to as the EUT in this report) is a RF Module. The product specification described herein was obtained from product data sheet or user's manual.

DEVICE TYPE	RF Module	
Temperature Range	-40 °C ~ 85 °C	
OPERATING FREQUENCY	Bluetooth LE	2 402 MHz ~ 2 480 MHz
	Bluetooth	2 402 MHz ~ 2 480 MHz
	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 ~ 5 690 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	Bluetooth LE	GFSK for 1 Mbps
	Bluetooth	GFSK for 1Mbps, $\pi/4$ -DQPSK for 2Mbps, 8-DPSK for 3Mbps
	WLAN 2.4 GHz	802.11b: DSSS Modulation(DBPSK/DQPSK/CCK)
		802.11g/n(HT20) OFDM Modulation(BPSK/QPSK/16QAM/64QAM)
	WLAN 5 GHz	802.11a/n(HT20)/n(HT40)/ac(VHT80): OFDM Modulation(BPSK/QPSK/16QAM/64QAM)

RF OUTPUT POWER	Bluetooth LE	1 Mbps	4.25 dBm
	Bluetooth	1 Mbps	4.85 dBm
		2 Mbps	2.67 dBm
		3 Mbps	3.07 dBm
	WLAN 2.4 GHz	Antenna 0	16.05 dBm(802.11b) 16.48 dBm(802.11g) 14.62 dBm(802.11n_HT20)
		Antenna 1	16.06 dBm(802.11b) 18.22 dBm(802.11g) 16.20 dBm(802.11n_HT20)
		Multiple Antenna	18.29 dBm(802.11n_HT20)
	5 150 MHz ~ 5 250 MHz Band	Antenna 0	17.28 dBm(802.11a) 15.53 dBm(802.11n_HT20) 15.75 dBm(802.11n_HT40) 15.03 dBm(802.11ac_VHT80)
		Antenna 1	15.47 dBm(802.11a) 14.40 dBm(802.11n_HT20) 13.82 dBm(802.11n_HT40) 13.83 dBm(802.11ac_VHT80)
		Multiple Antenna	18.04 dBm(802.11n_HT20) 17.87 dBm(802.11n_HT40) 17.48 dBm(802.11ac_VHT80)
	5 250 MHz ~ 5 350 MHz Band	Antenna 0	17.99 dBm(802.11a) 16.87 dBm(802.11n_HT20) 16.37 dBm(802.11n_HT40) 16.12 dBm(802.11ac_VHT80)
		Antenna 1	15.36 dBm(802.11a) 14.18 dBm(802.11n_HT20) 14.12 dBm(802.11n_HT40) 14.13 dBm(802.11ac_VHT80)
		Multiple Antenna	18.66 dBm(802.11n_HT20) 18.31 dBm(802.11n_HT40) 18.25 dBm(802.11ac_VHT80)

RF OUTPUT POWER	5 470 MHz ~ 5 725 MHz Band	Antenna 0	16.96 dBm(802.11a) 15.76 dBm(802.11n_HT20) 17.47 dBm(802.11n_HT40) 17.14 dBm(802.11ac_VHT80)
		Antenna 0_Straddle	14.04 dBm(802.11a) 12.84 dBm(802.11n_HT20) 15.23 dBm(802.11n_HT40) 15.09 dBm(802.11ac_VHT80)
		Antenna 1	16.39 dBm(802.11a) 15.41 dBm(802.11n_HT20) 15.85 dBm(802.11n_HT40) 15.55 dBm(802.11ac_VHT80)
		Antenna 1_Straddle	14.74 dBm(802.11a) 13.52 dBm(802.11n_HT20) 14.19 dBm(802.11n_HT40) 14.34 dBm(802.11ac_VHT80)
		Multiple Antenna	18.58 dBm(802.11n_HT20) 19.73 dBm(802.11n_HT40) 19.44 dBm(802.11ac_VHT80)
		Multiple Antenna _Straddle	16.23 dBm(802.11n_HT20) 17.76 dBm(802.11n_HT40) 17.75 dBm(802.11ac_VHT80)

RF OUTPUT POWER	5 725 MHz ~ 5 850 MHz Band	Antenna 0	15.67 dBm(802.11a) 14.59 dBm(802.11n_HT20) 15.34 dBm(802.11n_HT40) 14.72 dBm(802.11ac_VHT80)
		Antenna 0_Straddle	6.57 dBm(802.11a) 5.97 dBm(802.11n_HT20) 2.88 dBm(802.11n_HT40) -0.70 dBm(802.11ac_VHT80)
		Antenna 1	15.88 dBm(802.11a) 14.57 dBm(802.11n_HT20) 14.40 dBm(802.11n_HT40) 13.83 dBm(802.11ac_VHT80)
		Antenna 1_Straddle	7.26 dBm(802.11a) 6.69 dBm(802.11n_HT20) 2.22 dBm(802.11n_HT40) -1.34 dBm(802.11ac_VHT80)
		Multiple Antenna	17.57 dBm(802.11n_HT20) 17.92 dBm(802.11n_HT40) 17.31 dBm(802.11ac_VHT80)
		Multiple Antenna _Straddle	9.33 dBm(802.11n_HT20) 5.59 dBm(802.11n_HT40) 2.01 dBm(802.11ac_VHT80)

ANTENNA TYPE	PCB Antenna		
ANTENNA GAIN	Bluetooth LE	1.49 dBi	
	Bluetooth	1.49 dBi	
	WLAN 2.4 GHz	Antenna 0	1.49 dBi
		Antenna 1	0.14 dBi
		Multiple Antenna	3.88 dBi
	5 150 MHz ~ 5 250 MHz Band	Antenna 0	-2.10 dBi
		Antenna 1	-6.66 dBi
		Multiple Antenna	-0.80 dBi
	5 250 MHz ~ 5 350 MHz Band	Antenna 0	-2.10 dBi
		Antenna 1	-6.66 dBi
		Multiple Antenna	-0.80 dBi
	5 470 MHz ~ 5 725 MHz Band	Antenna 0	-2.82 dBi
		Antenna 1	-6.82 dBi
		Multiple Antenna	-1.36 dBi
	5 725 MHz ~ 5 850 MHz Band	Antenna 0	-2.61 dBi
		Antenna 1	-7.60 dBi
		Multiple Antenna	-1.41 dBi
List of each Osc. or crystal Freq.(Freq. >= 1 MHz)		37.4 MHz	

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	LG Innotek Co., Ltd.	RBHP-B216C_RDK_Rev0.2	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
ATC5CPC001	LG Innotek Co., Ltd.	RF Module (EUT)	
HP Probook	HP	Notebook PC	EUT
PPP009L-E	LIE-ON TECHNOLOGY (CHANGZHOU)CO.,LTD.	AC Adapter	
RBHX-Q20XX_Carrier_Interface_Rev.0.2	LG Inntek Co., LTD.	Interface Board	EUT
PWS-3003D	Protek	DC Power Supply	EUT

5.3 Mode of operation during the test

For the testing, software used to control the EUT for staying in continuous transmitting mode is programmed.

-. Channel List (5 150 MHz ~ 5 250 MHz Band)

802.11a / n_HT20 / ac_VHT20		802.11n_HT40 / ac_VHT40		802.11ac_VHT80	
Channel	Frequency[MHz]	Channel	Frequency[MHz]	Channel	Frequency[MHz]
36	5 180.00	38	5 190.00	42	5 210.00
40	5 200.00	46	5 230.00		
44	5 220.00				
48	5 240.00				

-. Channel List (5 250 MHz ~ 5 350 MHz Band)

802.11a / n_HT20 / ac_VHT20		802.11n_HT40 / ac_VHT40		802.11ac_VHT80	
Channel	Frequency[MHz]	Channel	Frequency[MHz]	Channel	Frequency[MHz]
52	5 260.00	54	5 270.00	58	5 290.00
56	5 280.00	62	5 310.00		
60	5 300.00				
64	5 320.00				

-. Channel List (5 470 MHz ~ 5 725 MHz Band)

802.11a / n_HT20 / ac_VHT20		802.11n_HT40 / ac_VHT40		802.11ac_VHT80	
Channel	Frequency[MHz]	Channel	Frequency[MHz]	Channel	Frequency[MHz]
100	5 500.00	102	5 510.00	106	5 530.00
104	5 520.00	110	5 550.00	138	5 690.00
108	5 540.00	118	5 590.00		
112	5 560.00	126	5 630.00		
116	5 580.00	134	5 670.00		
120	5 600.00				
124	5 620.00				
128	5 640.00				
132	5 660.00				
136	5 680.00				
140	5 700.00				

-. Channel List (5 725 MHz ~ 5 850 MHz Band)

802.11a / n_HT20 / ac_VHT20		802.11n_HT40 / ac_VHT40		802.11ac_VHT80	
Channel	Frequency[MHz]	Channel	Frequency[MHz]	Channel	Frequency[MHz]
149	5 745.00	151	5 755.00	155	5 775.00
153	5 765.00	159	5 795.00		
157	5 785.00				
161	5 805.00				
165	5 825.00				

UNII 1

Modulation	DATA RATE	OUTPUT POWER[dBm]	
		Antenna 0	Antenna 1
802.11 a (Middle Channel)	6 Mbps	16.96	15.08
	9 Mbps	16.73	14.87
	12 Mbps	16.48	14.69
	18 Mbps	16.15	14.52
	24 Mbps	15.79	14.34
	36 Mbps	15.52	14.15
	48 Mbps	15.20	13.88
	54 Mbps	15.08	13.69
HT 20 (Middle Channel)	6.5 Mbps	14.86	13.68
	13 Mbps	14.58	13.52
	19.5 Mbps	14.39	13.39
	26 Mbps	13.97	13.24
	39 Mbps	13.62	13.09
	52 Mbps	13.38	12.89
	58.5 Mbps	13.15	12.74
	65 Mbps	13.02	12.59
HT 40 (Low Channel)	13.5 Mbps	14.64	12.71
	27 Mbps	14.20	12.58
	40.5 Mbps	14.08	12.34
	54 Mbps	13.76	12.18
	81 Mbps	13.51	11.87
	108 Mbps	13.39	11.76
	121.5 Mbps	13.21	11.54
	135 Mbps	13.08	11.32

VHT80 (Middle Channel)	29.3 Mbps	13.15	11.96
	58.5 Mbps	13.02	11.88
	87.8 Mbps	12.89	11.73
	117 Mbps	12.73	11.54
	175.5 Mbps	12.54	11.39
	234 Mbps	12.36	11.26
	263.3 Mbps	12.17	11.18
	292.5 Mbps	11.88	11.09

- The worse case data rate for each modulation is determined 6 Mbps(Ant.0/Ant.1) for IEEE 802.11a, 6.5 Mbps(Ant.0/Ant.1) for HT20, 13.5 Mbps(Ant.0/Ant.1) for HT40, 29.3 Mbps(Ant.0/Ant.1) 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[dBm]	
		Antenna 0	Antenna 1
802.11 a (Middle Channel)	6 Mbps	17.57	14.67
	9 Mbps	17.39	14.54
	12 Mbps	17.24	14.39
	18 Mbps	17.03	14.17
	24 Mbps	16.89	13.96
	36 Mbps	16.72	13.78
	48 Mbps	16.54	13.54
	54 Mbps	16.38	13.28
HT 20 (Middle Channel)	6.5 Mbps	16.28	13.19
	13 Mbps	16.02	12.97
	19.5 Mbps	15.89	12.64
	26 Mbps	15.74	12.55
	39 Mbps	15.56	12.37
	52 Mbps	15.33	12.29
	58.5 Mbps	15.21	12.05
	65 Mbps	15.03	11.87
HT 40 (Low Channel)	13.5 Mbps	15.26	12.75
	27 Mbps	15.11	12.63
	40.5 Mbps	14.99	12.48
	54 Mbps	14.76	12.29
	81 Mbps	14.58	12.20
	108 Mbps	14.34	12.04
	121.5 Mbps	14.23	11.89
	135 Mbps	14.05	11.67

VHT80 (Middle Channel)	29.3 Mbps	14.25	12.25
	58.5 Mbps	14.02	12.06
	87.8 Mbps	13.86	11.89
	117 Mbps	13.65	11.64
	175.5 Mbps	13.52	11.53
	234 Mbps	13.39	11.37
	263.3 Mbps	13.21	11.18
	292.5 Mbps	13.08	11.02

- . The worse case data rate for each modulation is determined 6 Mbps(Ant.0/Ant.1) for IEEE 802.11a, 6.5 Mbps(Ant.0/Ant.1) for HT20, 13.5 Mbps(Ant.0/Ant.1) for HT40, 29.3 Mbps(Ant.0/Ant.1) 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[dBm]	
		Antenna 0	Antenna 1
802.11 a (Middle Channel)	6 Mbps	16.44	16.10
	9 Mbps	16.32	15.96
	12 Mbps	16.19	15.78
	18 Mbps	15.94	15.70
	24 Mbps	15.78	15.49
	36 Mbps	15.64	15.28
	48 Mbps	15.49	15.13
	54 Mbps	15.22	14.97
HT 20 (Middle Channel)	6.5 Mbps	14.99	14.76
	13 Mbps	14.83	14.56
	19.5 Mbps	14.68	14.33
	26 Mbps	14.59	14.18
	39 Mbps	14.37	14.03
	52 Mbps	14.20	13.97
	58.5 Mbps	14.08	13.74
	65 Mbps	14.03	13.63
HT 40 (Middle Channel)	13.5 Mbps	16.33	14.74
	27 Mbps	16.20	14.56
	40.5 Mbps	16.04	14.39
	54 Mbps	15.89	14.18
	81 Mbps	15.73	14.05
	108 Mbps	15.54	13.87
	121.5 Mbps	15.39	13.65
	135 Mbps	15.12	13.42

VHT80 (Low Channel)	29.3 Mbps	15.27	13.66
	58.5 Mbps	15.19	13.40
	87.8 Mbps	15.02	13.29
	117 Mbps	14.83	13.16
	175.5 Mbps	14.69	12.97
	234 Mbps	14.62	12.68
	263.3 Mbps	14.48	12.49
	292.5 Mbps	14.25	12.35

- The worse case data rate for each modulation is determined 6 Mbps(Ant.0/Ant.1) for IEEE 802.11a, 6.5 Mbps(Ant.0/Ant.1) for HT20, 13.5 Mbps(Ant.0/Ant.1) for HT40, 29.3 Mbps(Ant.0/Ant.1) 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[dBm]	
		Antenna 0	Antenna 1
802.11 a (Middle Channel)	6 Mbps	15.33	15.30
	9 Mbps	15.28	15.15
	12 Mbps	15.17	15.04
	18 Mbps	15.05	14.93
	24 Mbps	14.89	14.77
	36 Mbps	14.73	14.56
	48 Mbps	14.52	14.39
	54 Mbps	14.39	14.25
HT 20 (Middle Channel)	6.5 Mbps	13.82	13.73
	13 Mbps	13.66	13.56
	19.5 Mbps	13.54	13.49
	26 Mbps	13.38	13.38
	39 Mbps	13.17	13.21
	52 Mbps	13.05	13.10
	58.5 Mbps	12.87	12.99
	65 Mbps	12.68	12.83
HT 40 (Low Channel)	13.5 Mbps	14.26	13.29
	27 Mbps	14.05	13.10
	40.5 Mbps	13.97	13.02
	54 Mbps	13.74	12.94
	81 Mbps	13.58	12.78
	108 Mbps	13.39	12.64
	121.5 Mbps	13.30	12.50
	135 Mbps	13.17	12.36

VHT80 (Middle Channel)	29.3 Mbps	12.84	11.94
	58.5 Mbps	12.66	11.89
	87.8 Mbps	12.53	11.76
	117 Mbps	12.39	11.54
	175.5 Mbps	12.14	11.39
	234 Mbps	12.03	11.18
	263.3 Mbps	11.87	11.05
	292.5 Mbps	11.64	11.96

- . The worse case data rate for each modulation is determined 6 Mbps(Ant.0/Ant.1) for IEEE 802.11a, 6.5 Mbps(Ant.0/Ant.1) for HT20, 13.5 Mbps(Ant.0/Ant.1) for HT40, 29.3 Mbps(Ant.0/Ant.1) 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.

- Duty Cycle

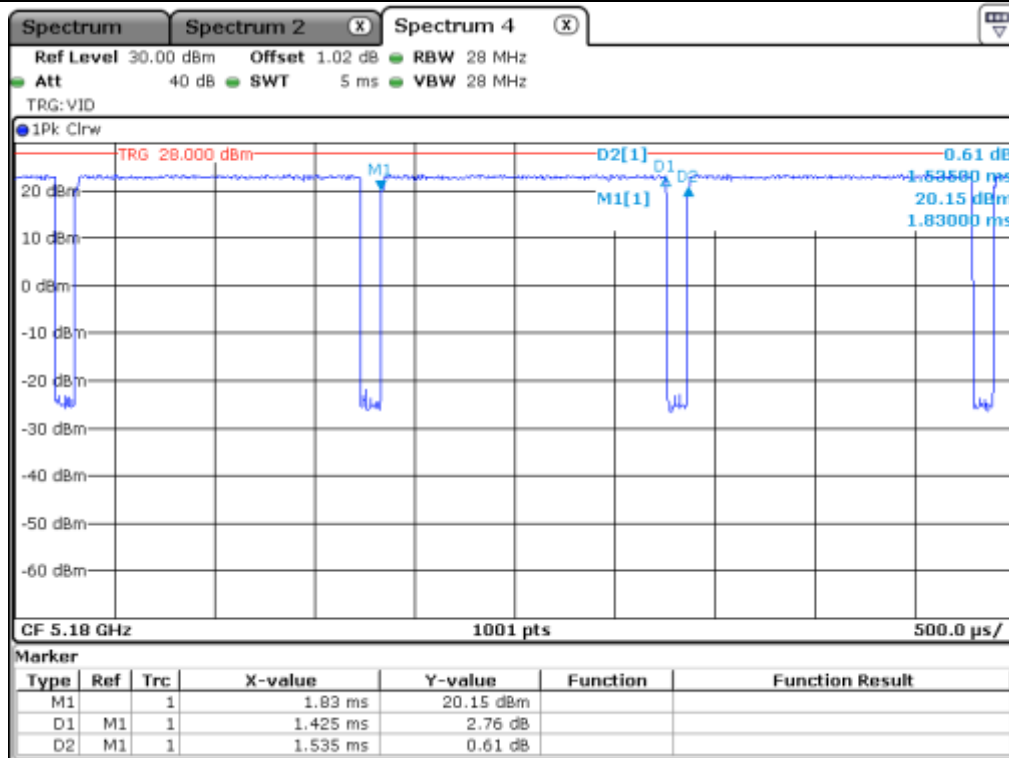
	Band	Mode	Tx On Time [ms]	Tx Off Time [ms]	Duty Cycle [%]	Correction Factor [dB]
Antenna 0	UNII 1	802.11 a	1.43	0.11	92.86	0.32
		802.11 HT 20	0.69	0.10	87.34	0.59
		802.11 HT 40	0.35	0.10	77.53	1.11
		802.11 VHT 80	0.19	0.10	64.83	1.88
	UNII 2A	802.11 a	1.43	0.10	93.46	0.29
		802.11 HT 20	0.69	0.10	87.34	0.59
		802.11 HT 40	0.35	0.10	77.53	1.11
		802.11 VHT 80	0.19	0.10	65.05	1.87
	UNII 2C	802.11 a	1.43	0.10	93.46	0.29
		802.11 HT 20	0.69	0.10	87.34	0.59
		802.11 HT 40	0.35	0.10	77.88	1.09
		802.11 VHT 80	0.19	0.10	65.05	1.87
	UNII 3	802.11 a	1.43	0.10	93.46	0.29
		802.11 HT 20	0.68	0.11	86.08	0.65
		802.11 HT 40	0.35	0.10	77.97	1.08
		802.11 VHT 80	0.18	0.10	64.83	1.88

Antenna 1	UNII 1	802.11 a	1.41	0.12	92.16	0.35
		802.11 HT 20	0.67	0.12	84.81	0.72
		802.11 HT 40	0.35	0.10	77.92	1.08
		802.11 VHT 80	0.19	0.10	65.05	1.87
	UNII 2A	802.11 a	1.43	0.11	92.86	0.32
		802.11 HT 20	0.68	0.11	86.08	0.65
		802.11 HT 40	0.35	0.10	77.53	1.11
		802.11 VHT 80	0.19	0.10	64.83	1.88
	UNII 2C	802.11 a	1.43	0.10	93.46	0.29
		802.11 HT 20	0.68	0.11	86.08	0.65
		802.11 HT 40	0.35	0.10	77.53	1.11
		802.11 VHT 80	0.19	0.10	64.71	1.89
	UNII 3	802.11 a	1.43	0.11	93.14	0.31
		802.11 HT 20	0.68	0.10	87.18	0.60
		802.11 HT 40	0.35	0.10	77.53	1.11
		802.11 VHT 80	0.19	0.10	64.71	1.89

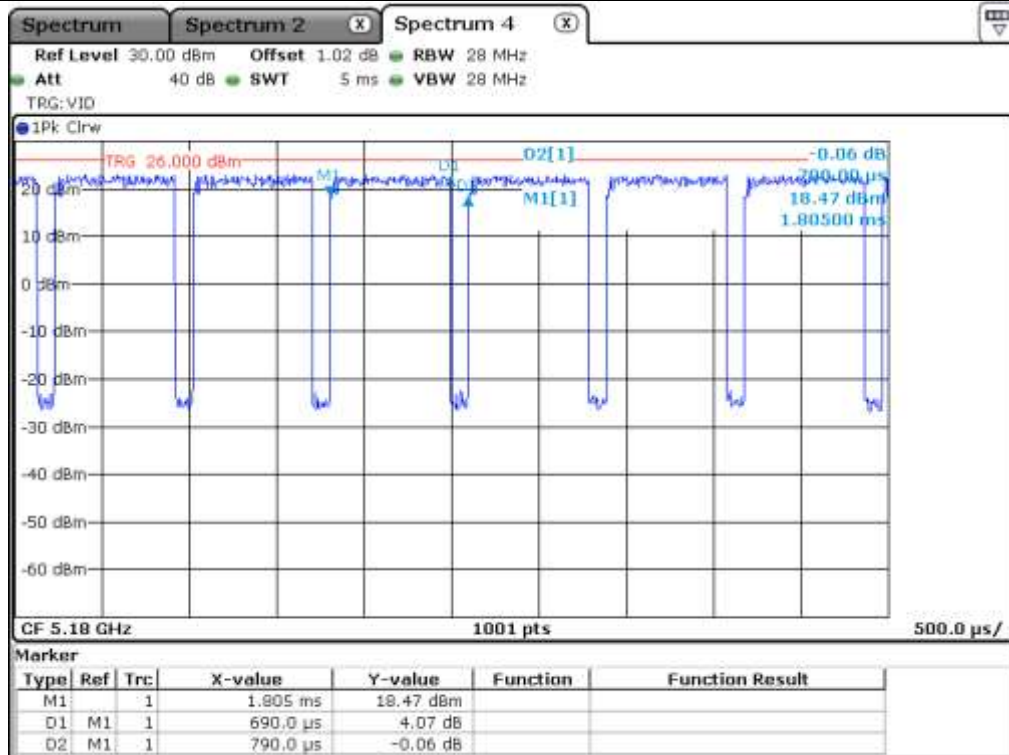
Note – Duty Cycle : (Tx On Time / (Tx On Time + Tx Off Time)) * 100

Correction Factor : 10 * Log(1 / (Duty Cycle / 100))

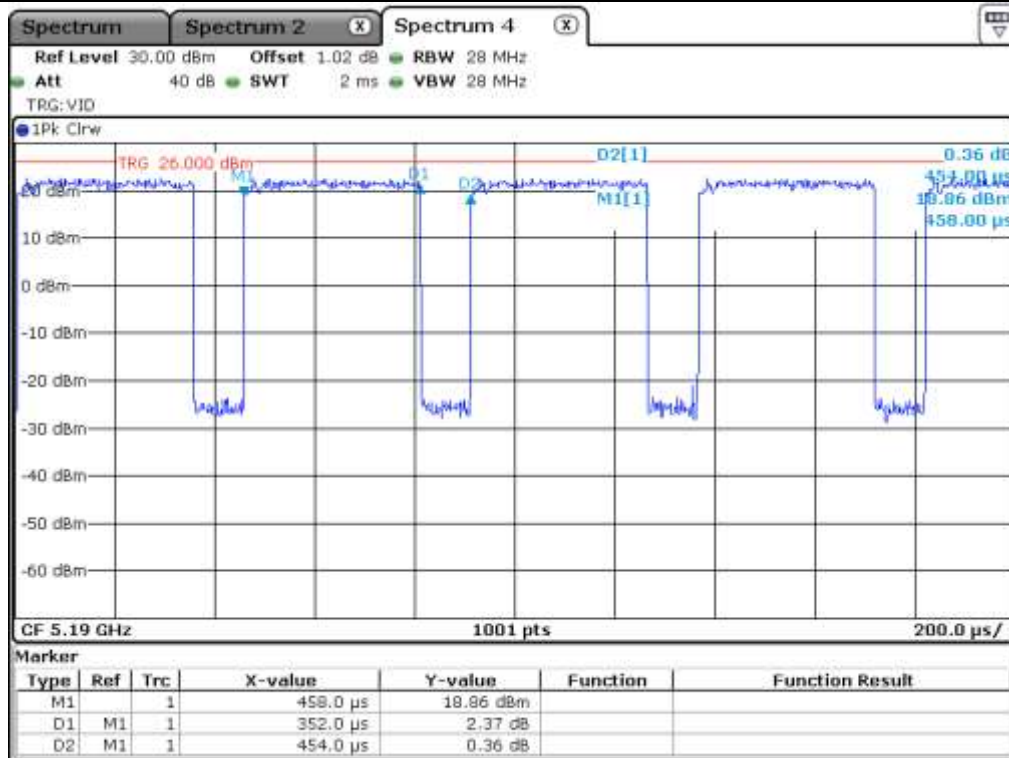
-. Test Plot



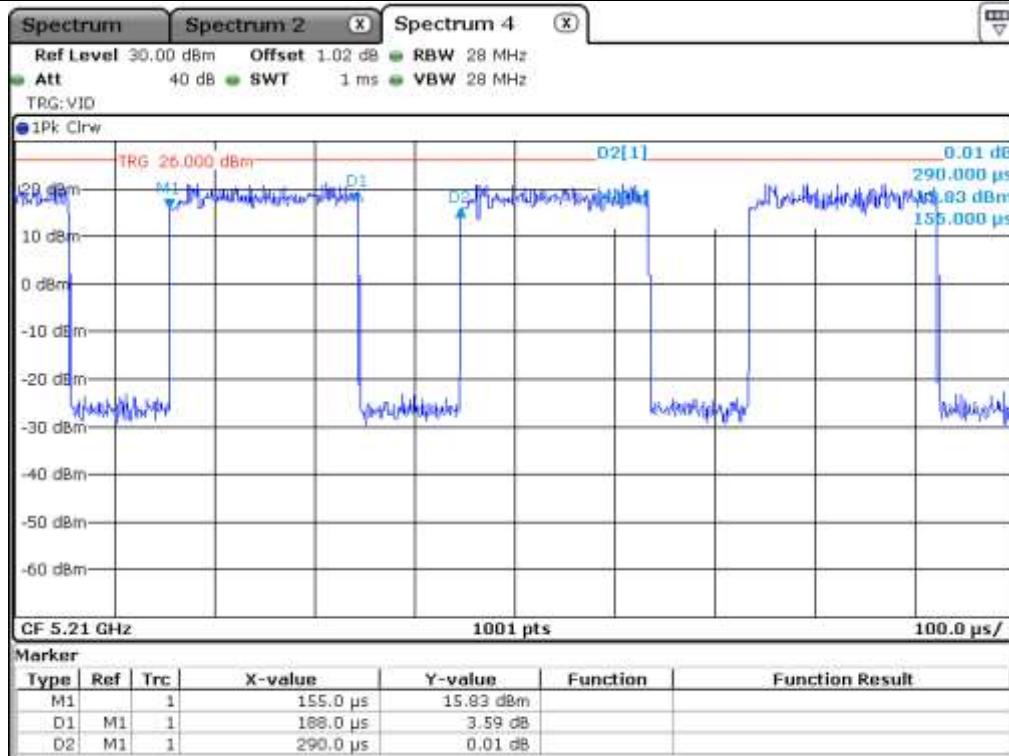
UNII 1_802.11 a_Antenna 0



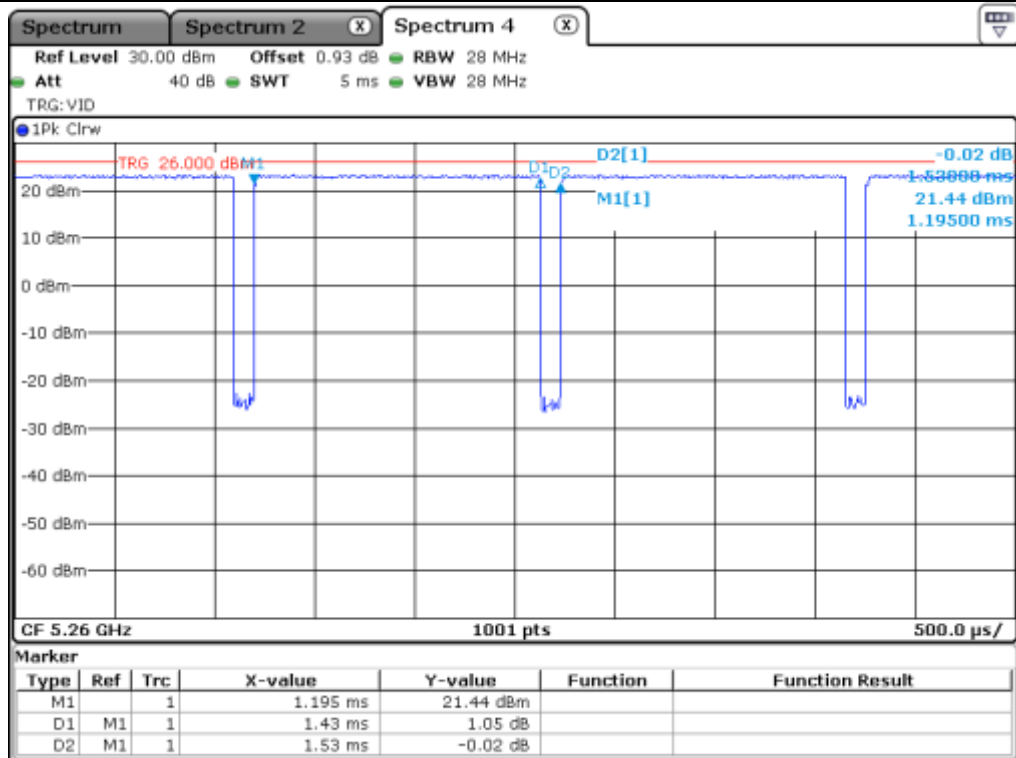
UNII 1_802.11 HT 20_Antenna 0



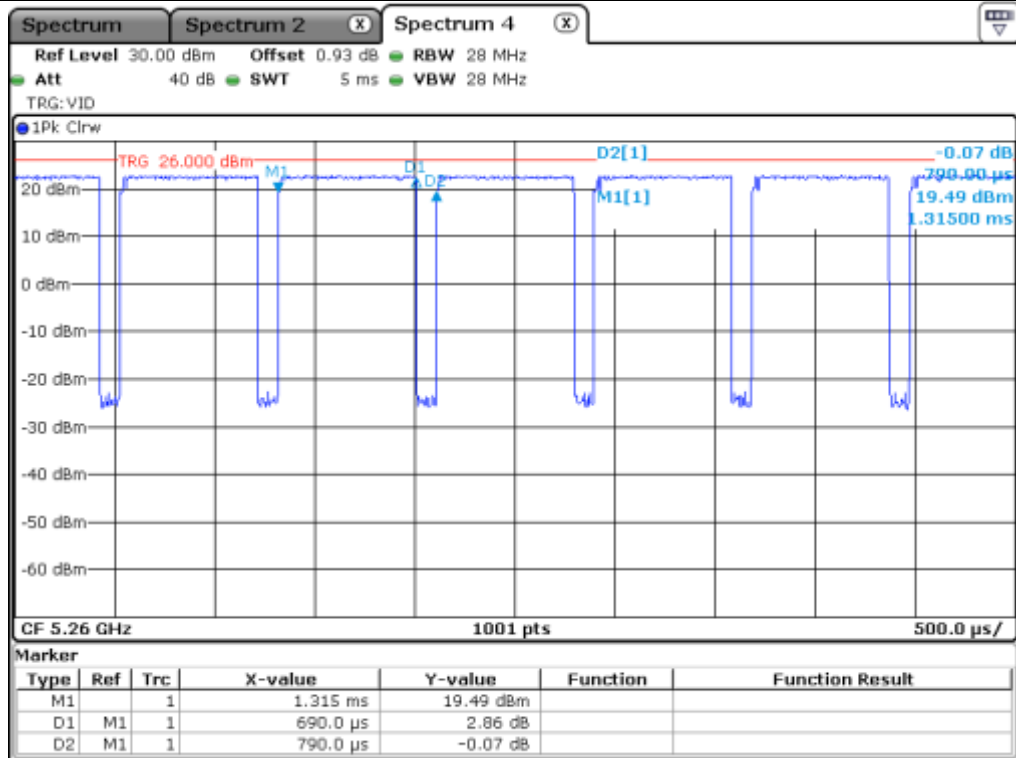
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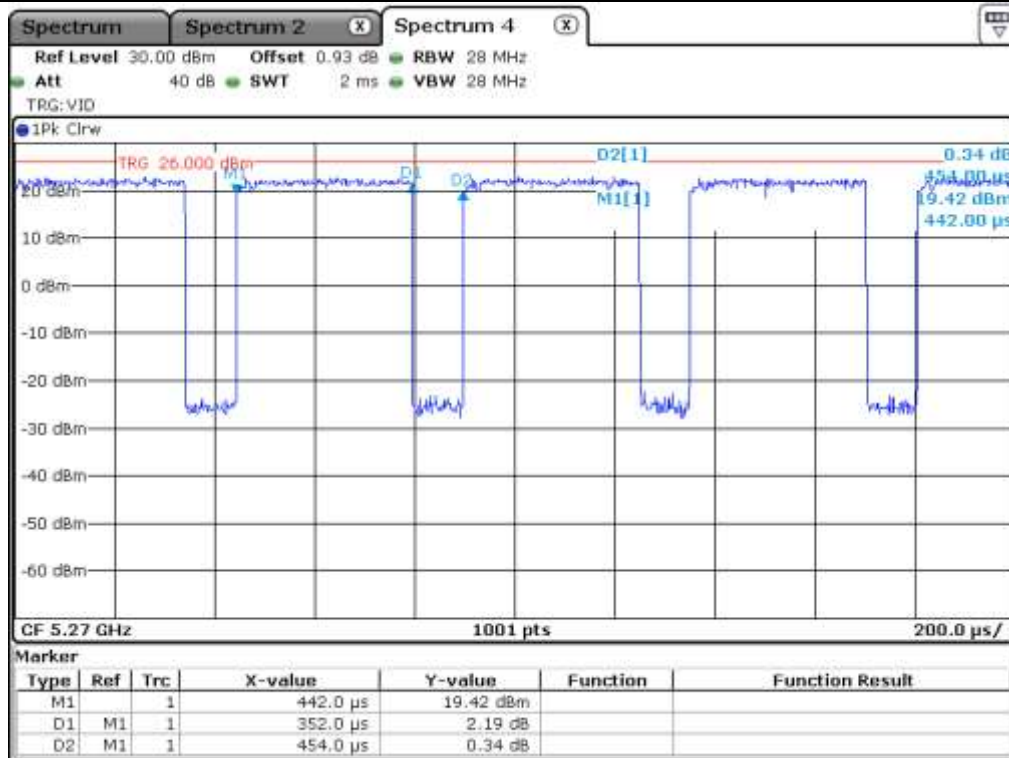
UNII 1_802.11 VHT 80_Antenna 0



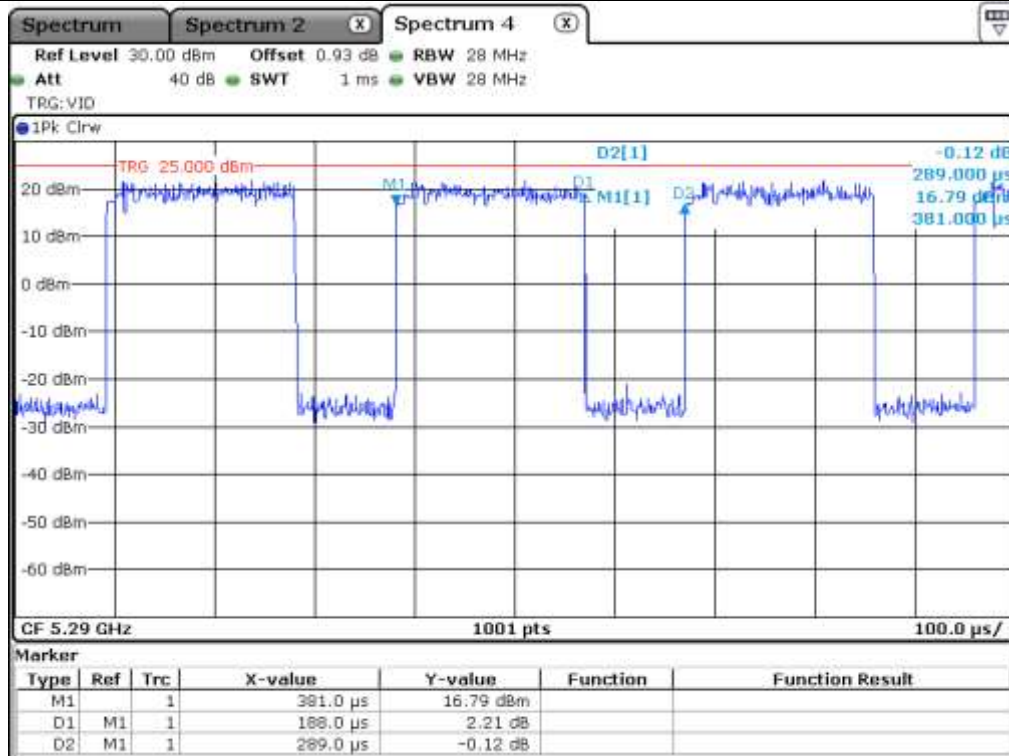
UNII 2A_802.11 a_Antenna 0



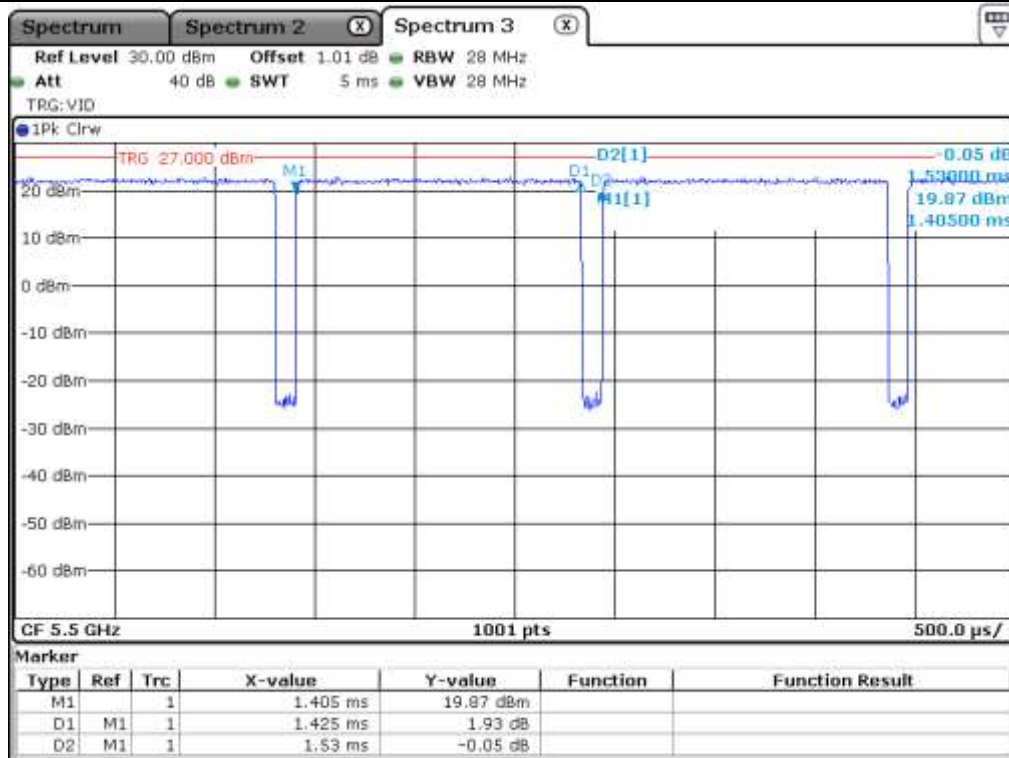
UNII 2A_802.11 HT 20_Antenna 0



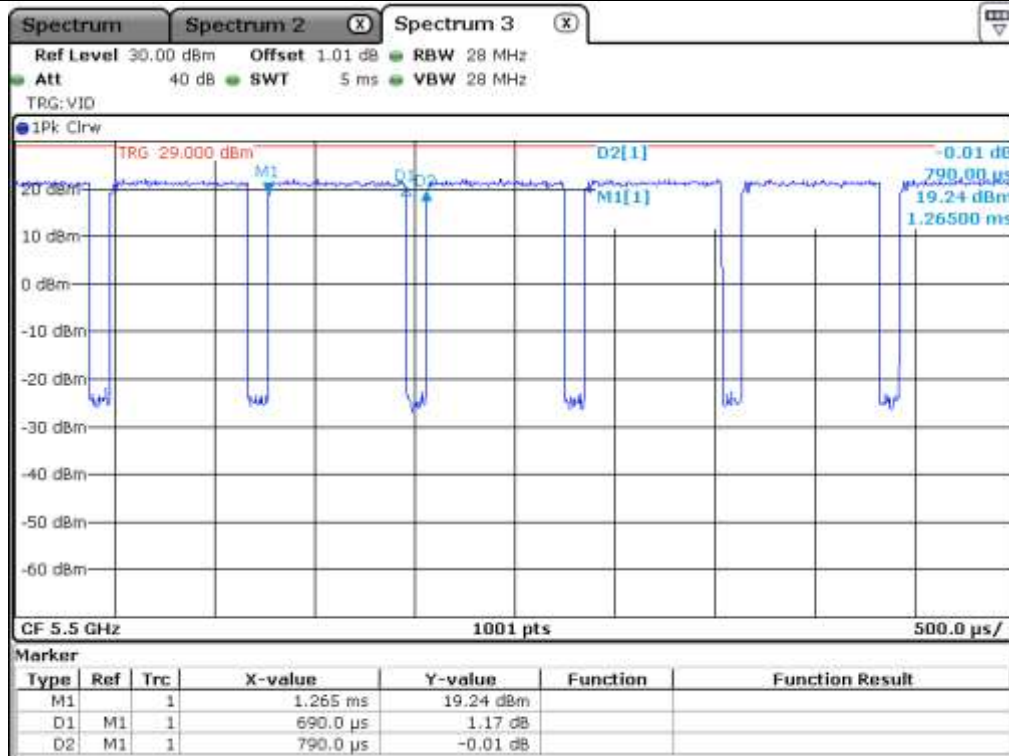
UNII 2A_802.11 HT40_Antenna 0



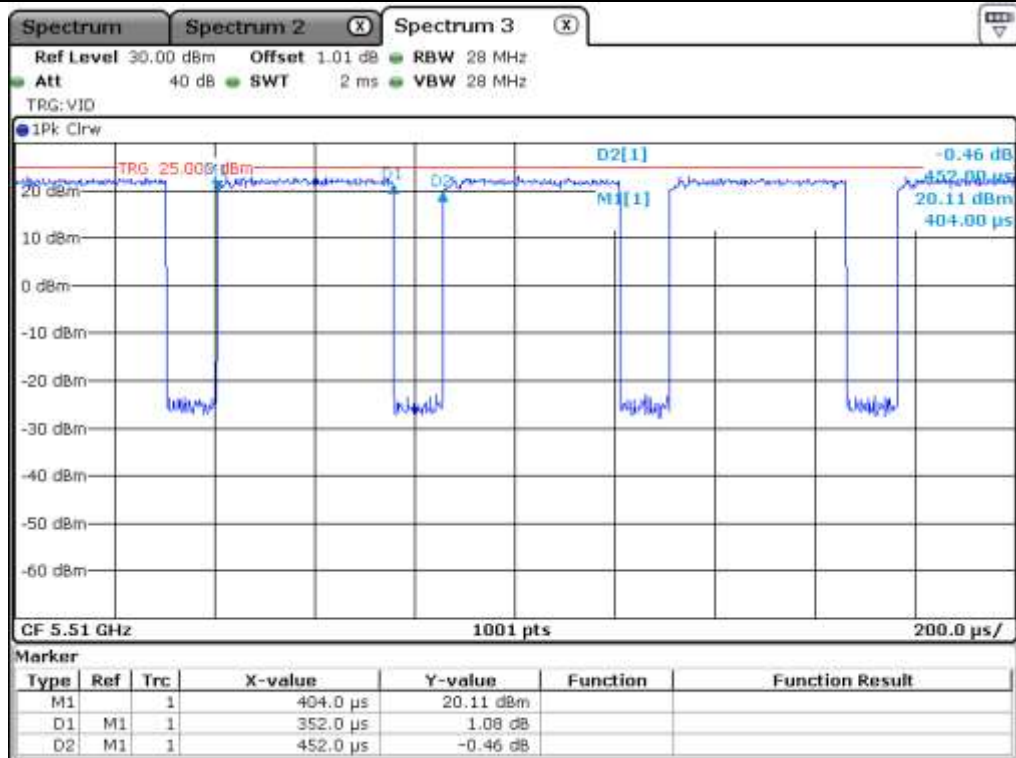
UNII 2A_802.11 VHT 80_Antenna 0



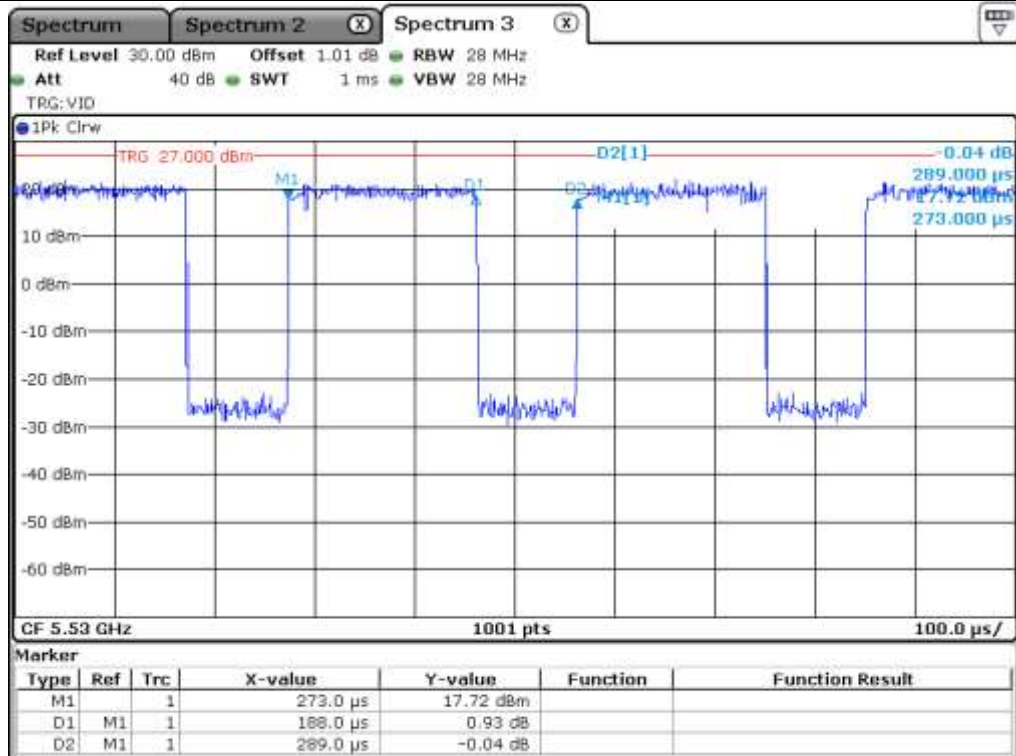
UNII 2C_802.11 a_Antenna 0



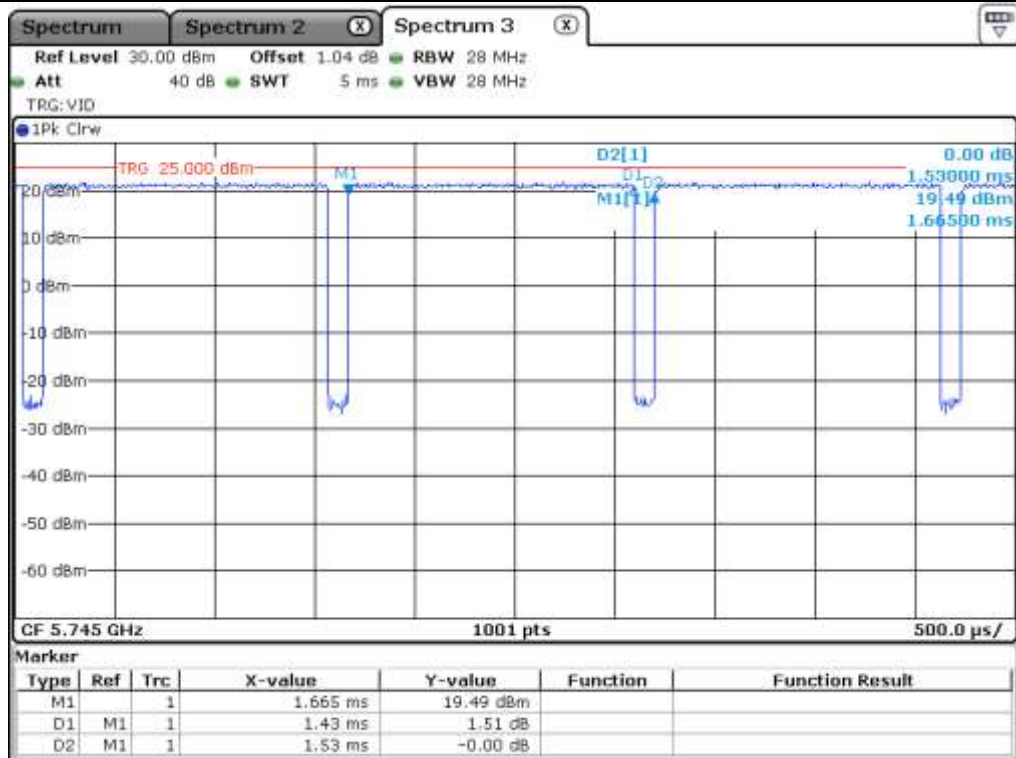
UNII 2C_802.11 HT 20_Antenna 0



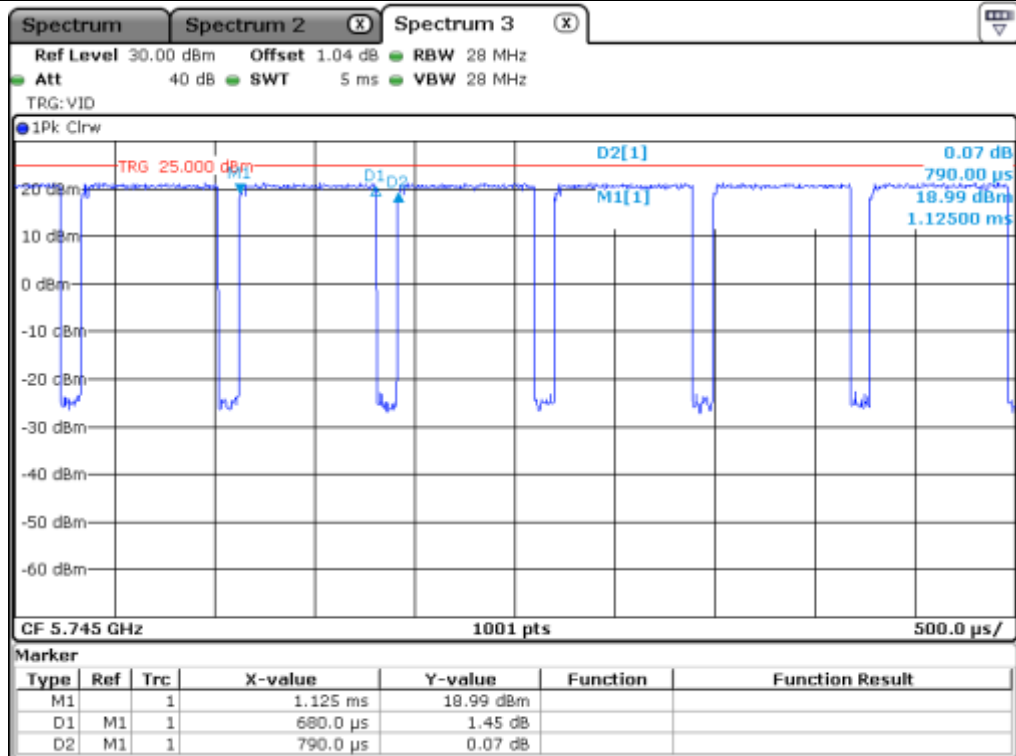
UNII 2C_802.11 HT40_Antenna 0



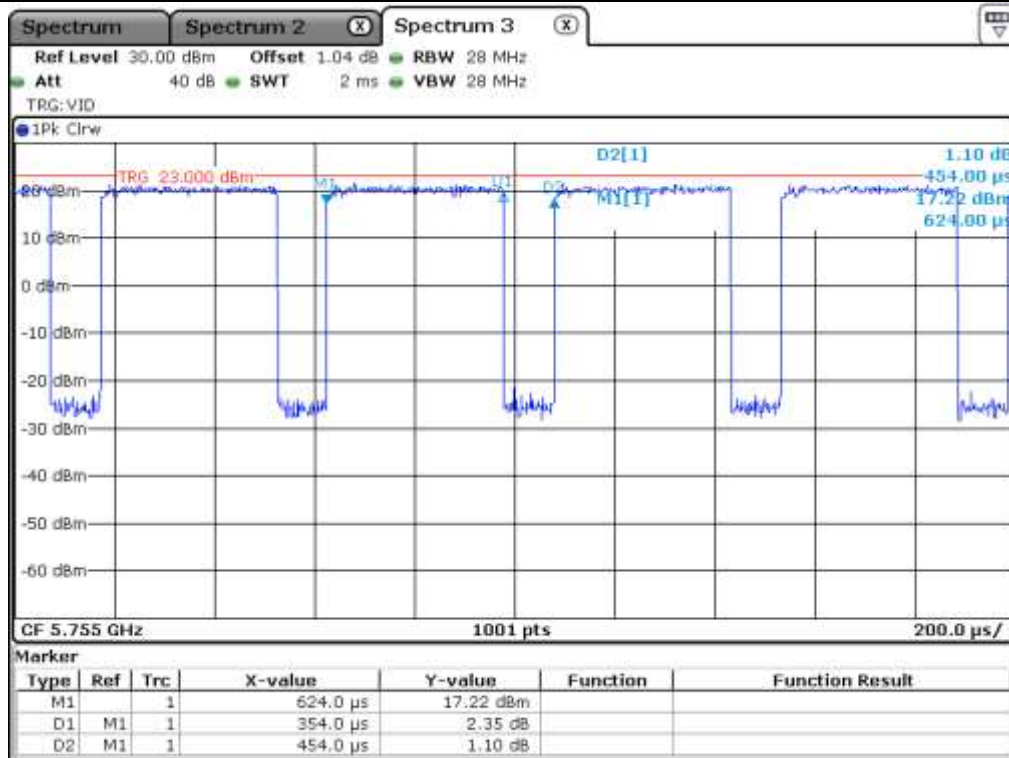
UNII 2C_802.11 VHT 80_Antenna 0



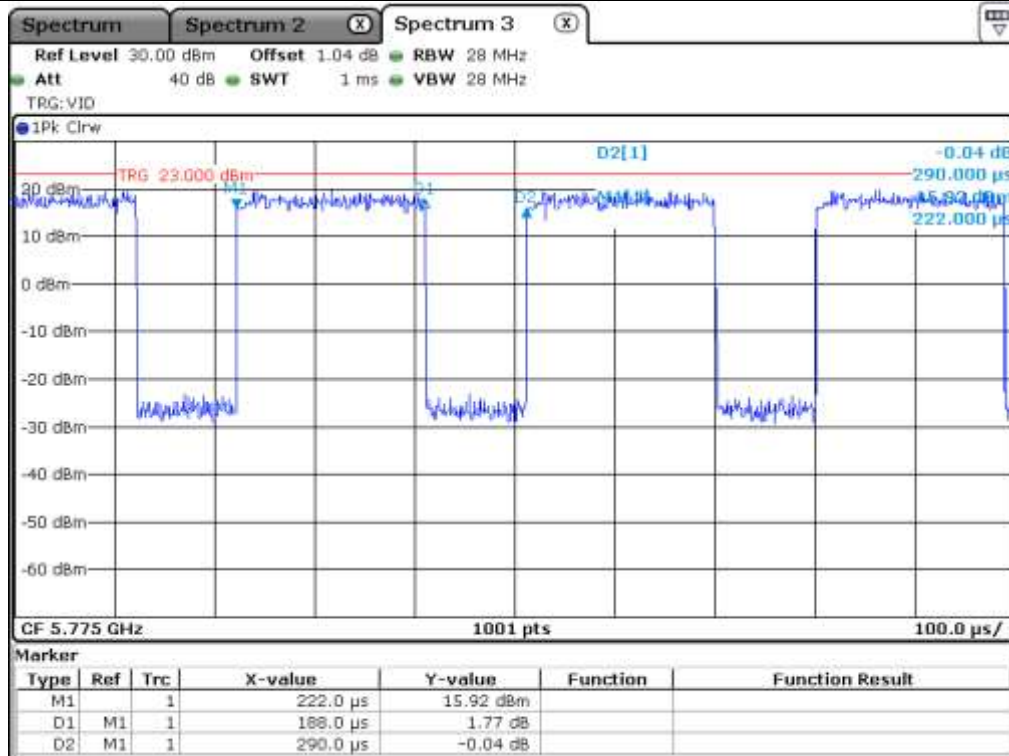
UNII 3_802.11 a_Antenna 0



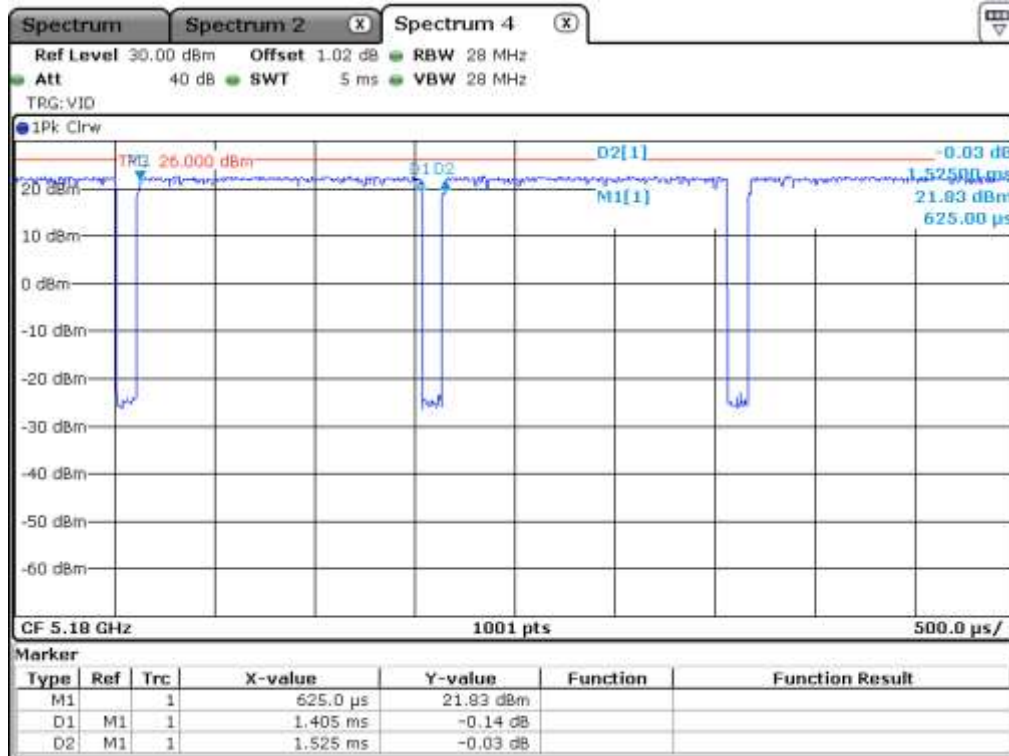
UNII 3_802.11 HT 20_Antenna 0



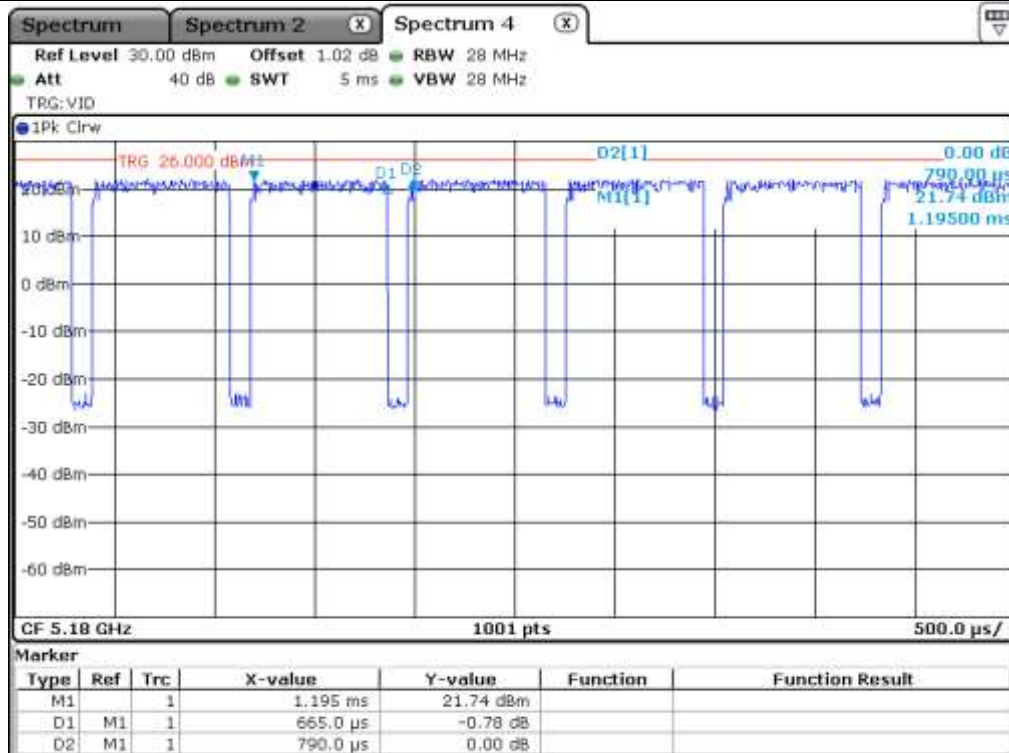
UNII 3_802.11 HT40_Antenna 0



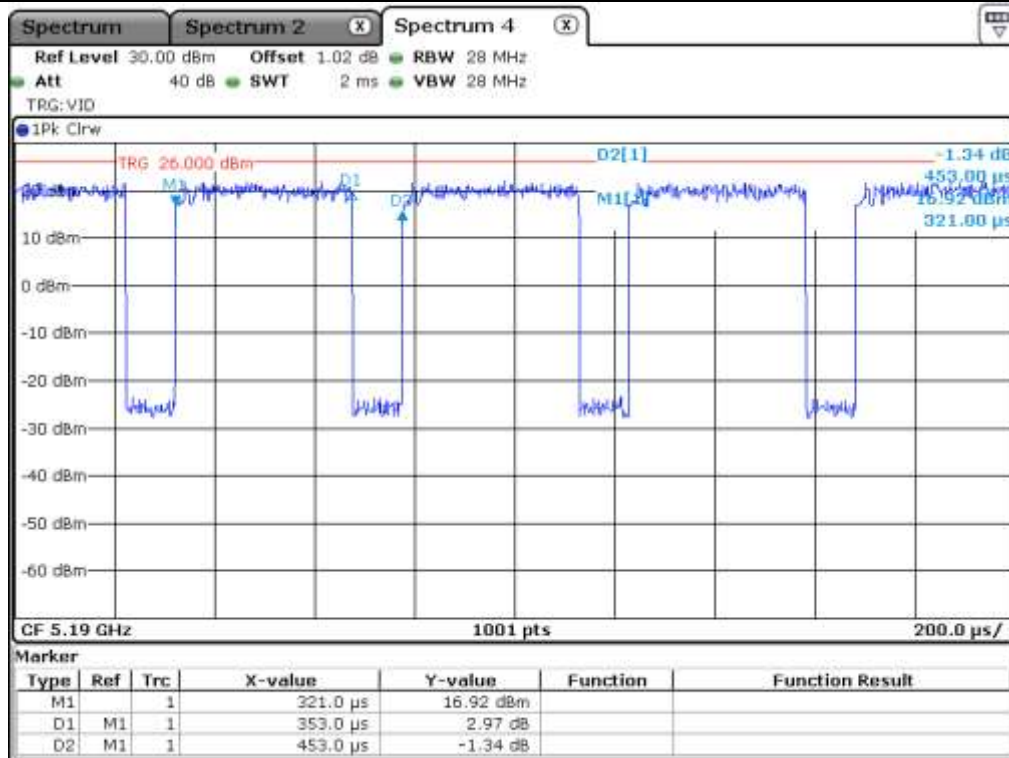
UNII 3_802.11 VHT 80_Antenna 0



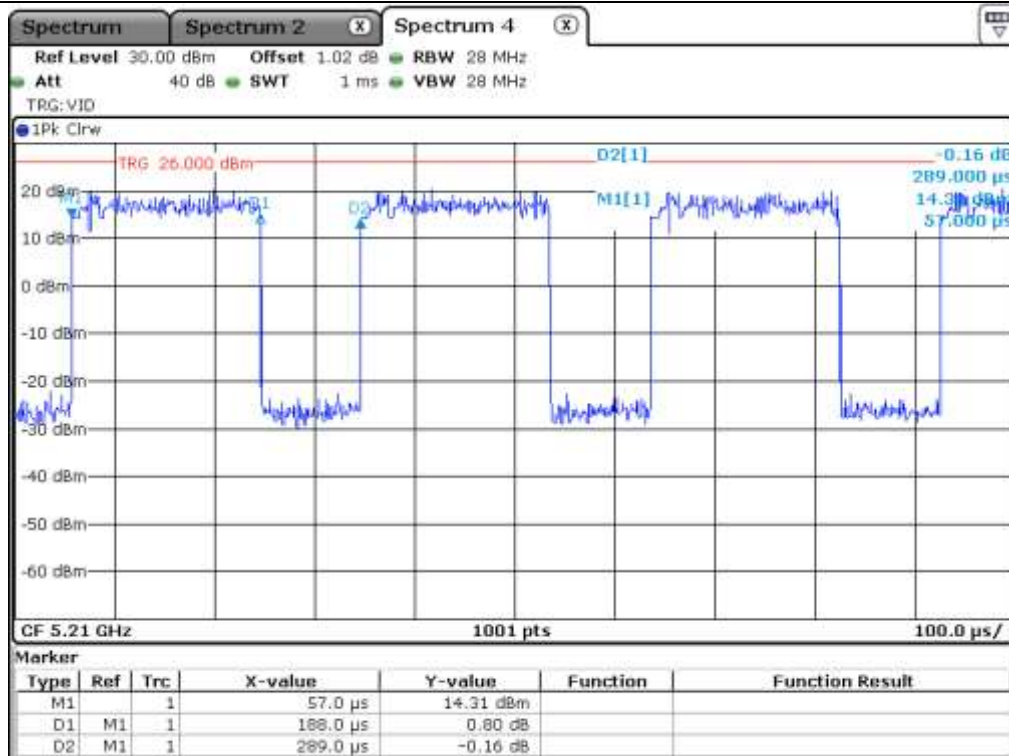
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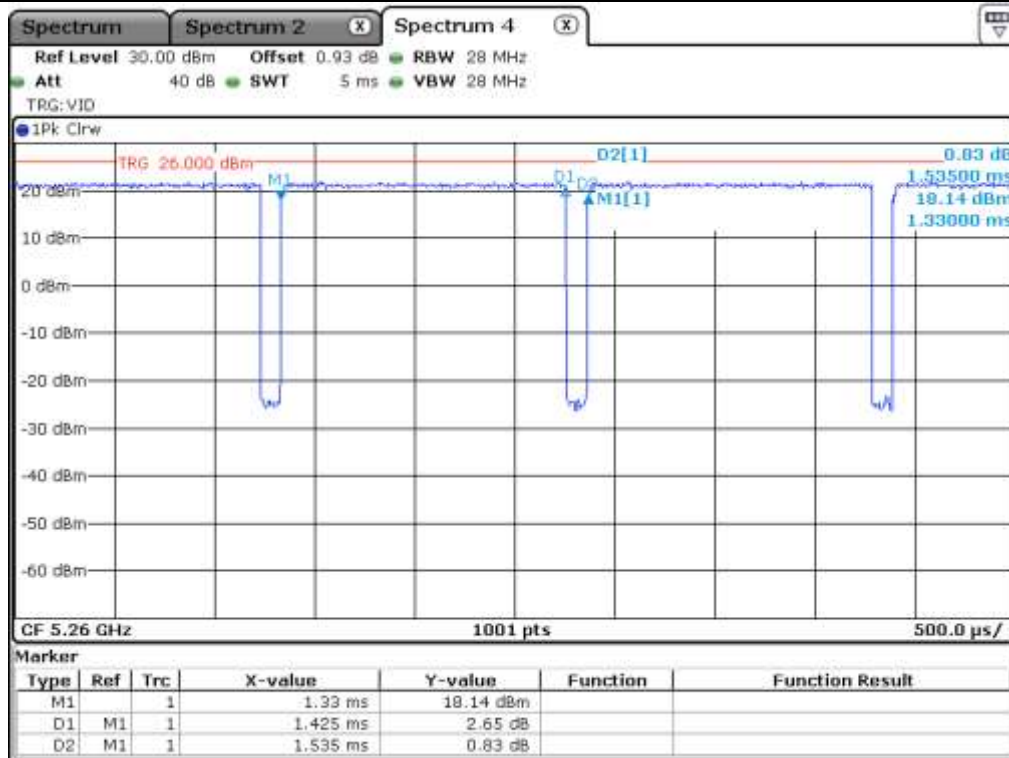
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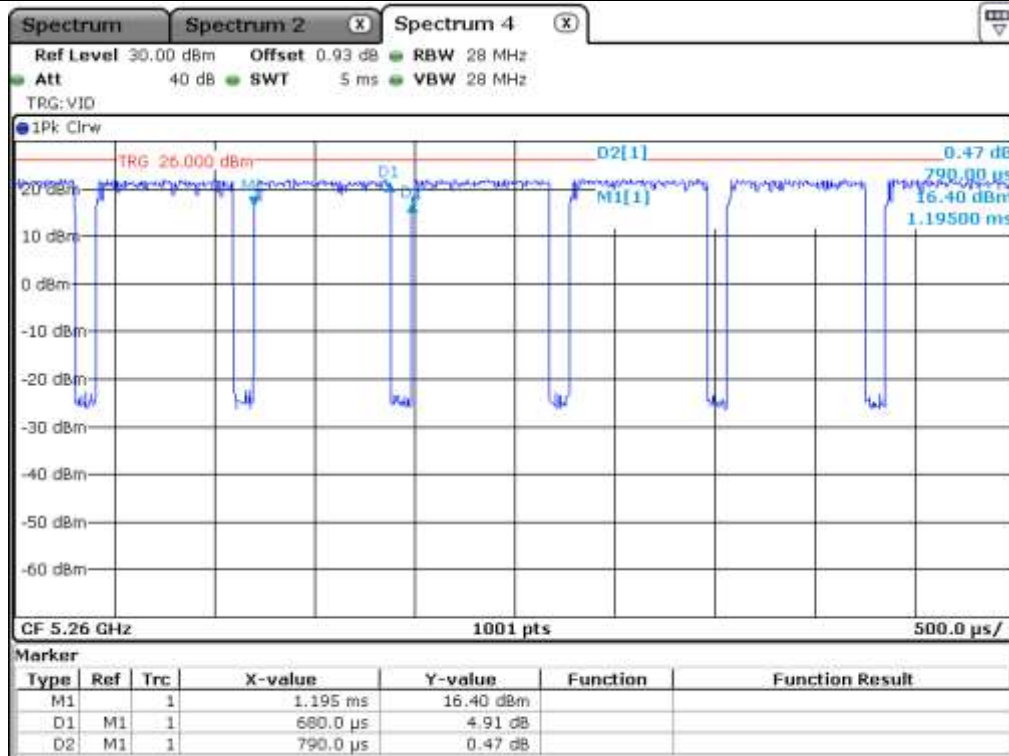
UNII 1_802.11 HT40_Antenna 1



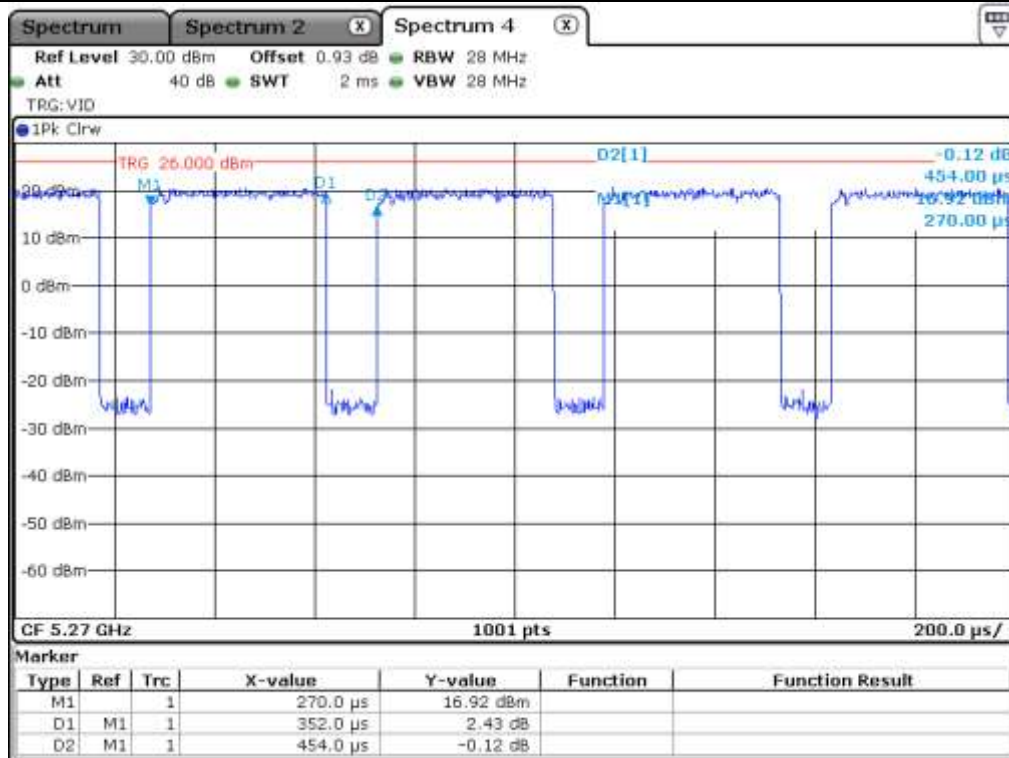
UNII 1_802.11 VHT 80_Antenna 1



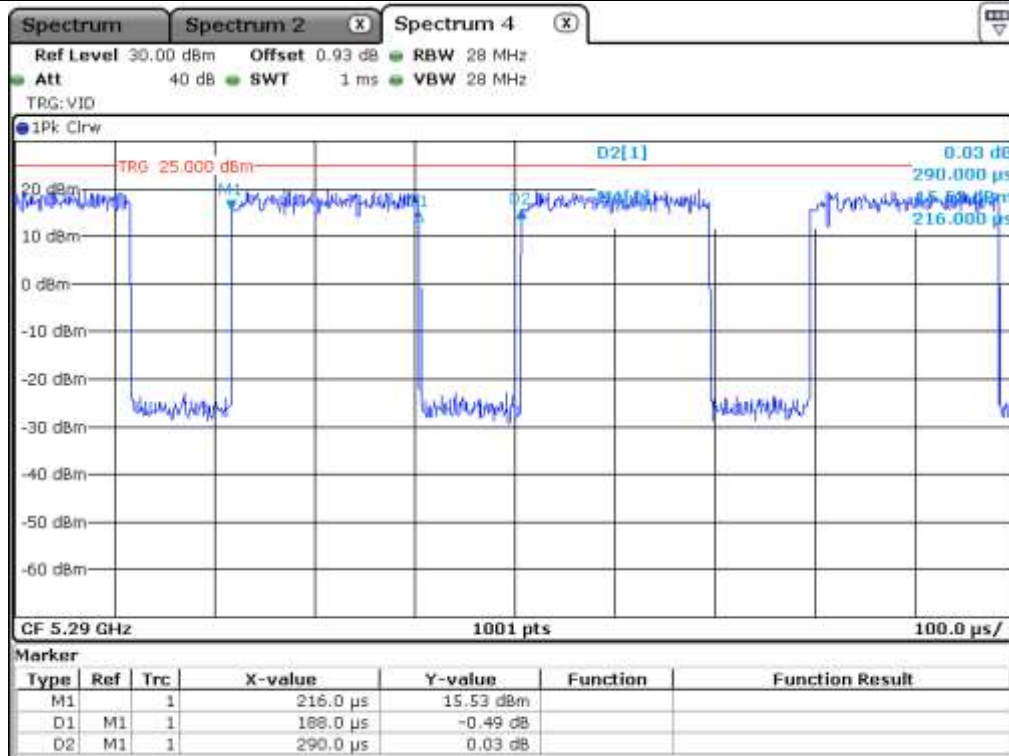
UNII 2A_802.11 a_Antenna 1



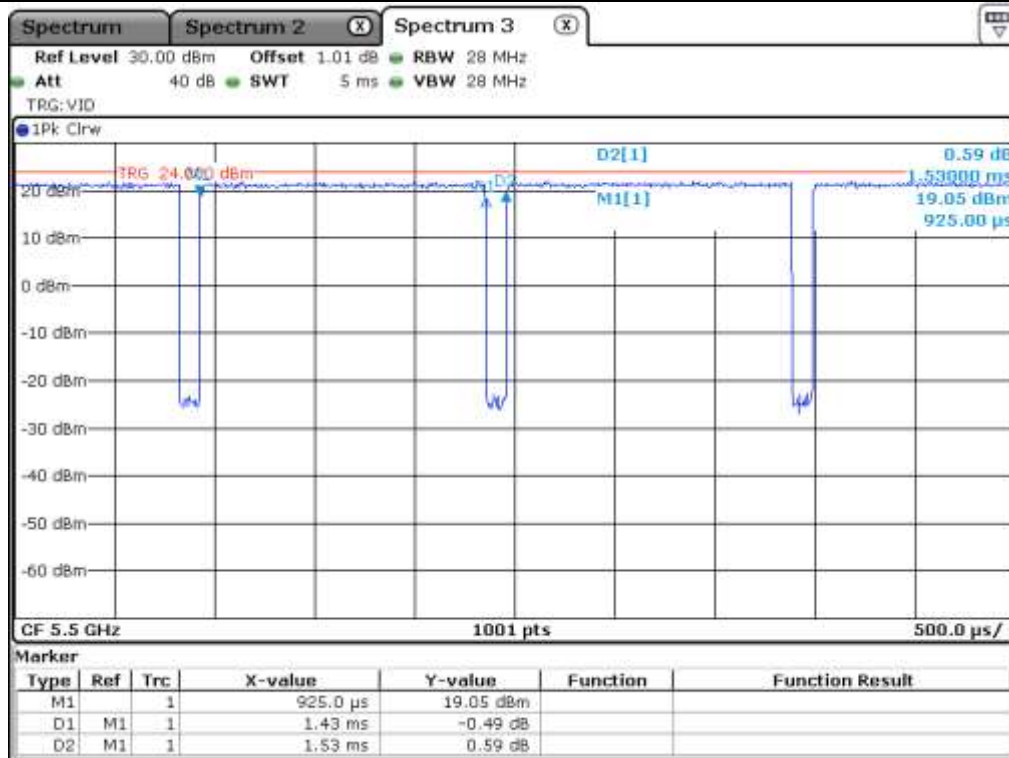
UNII 2A_802.11 HT 20_Antenna 1



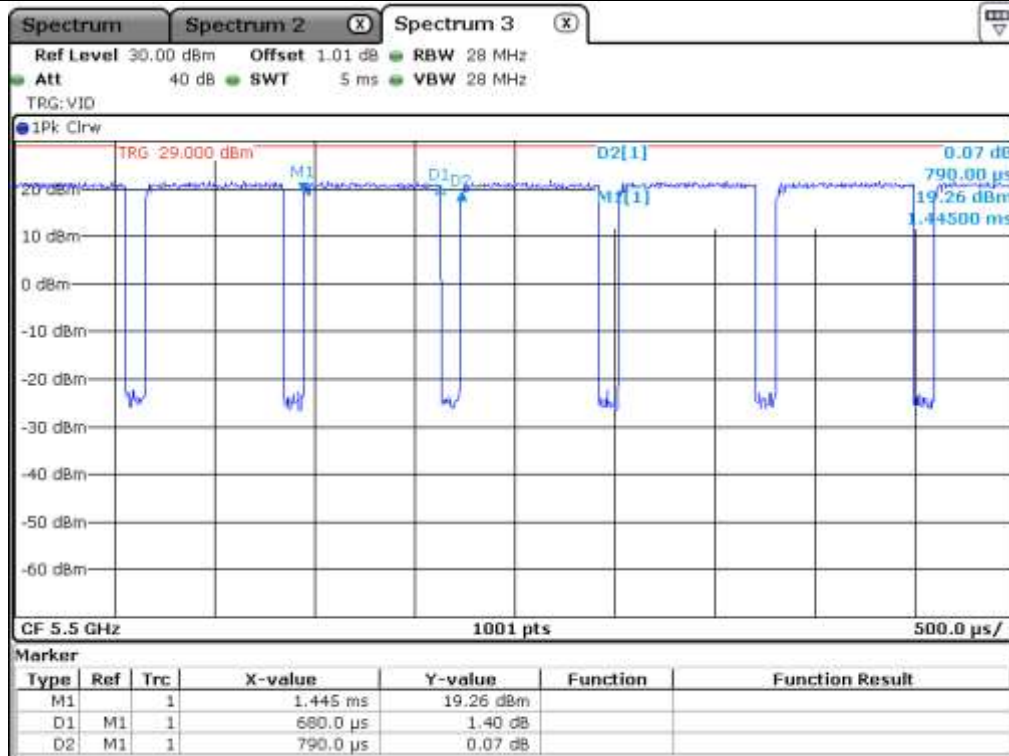
UNII 2A_802.11 HT40_Antenna 1



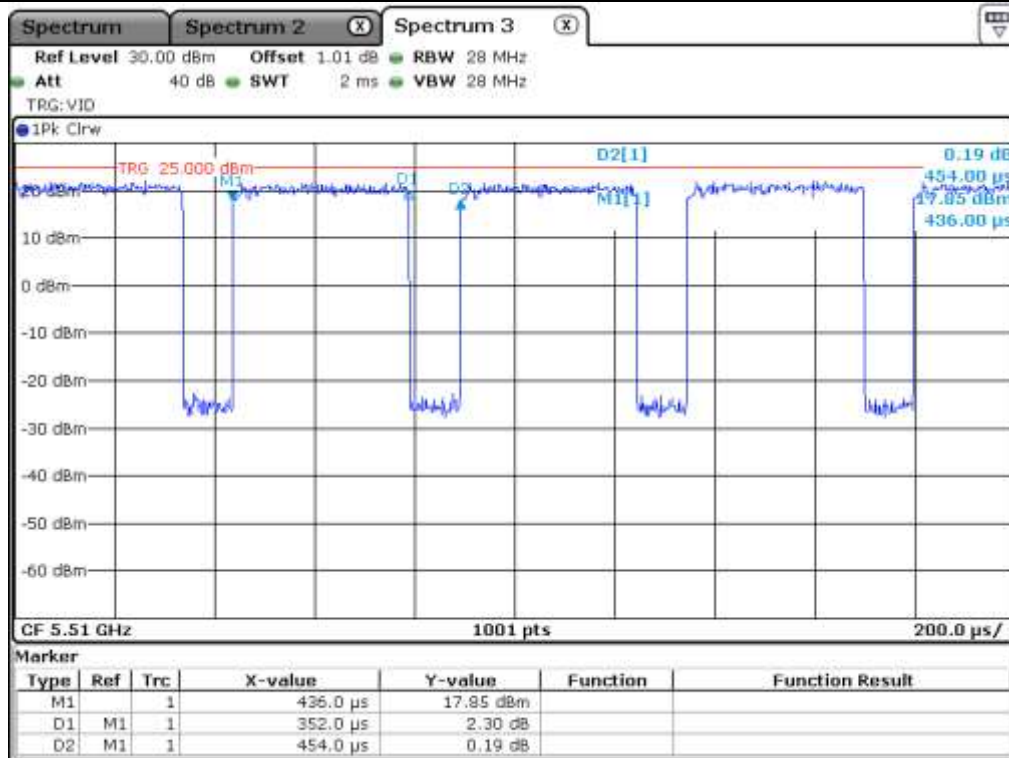
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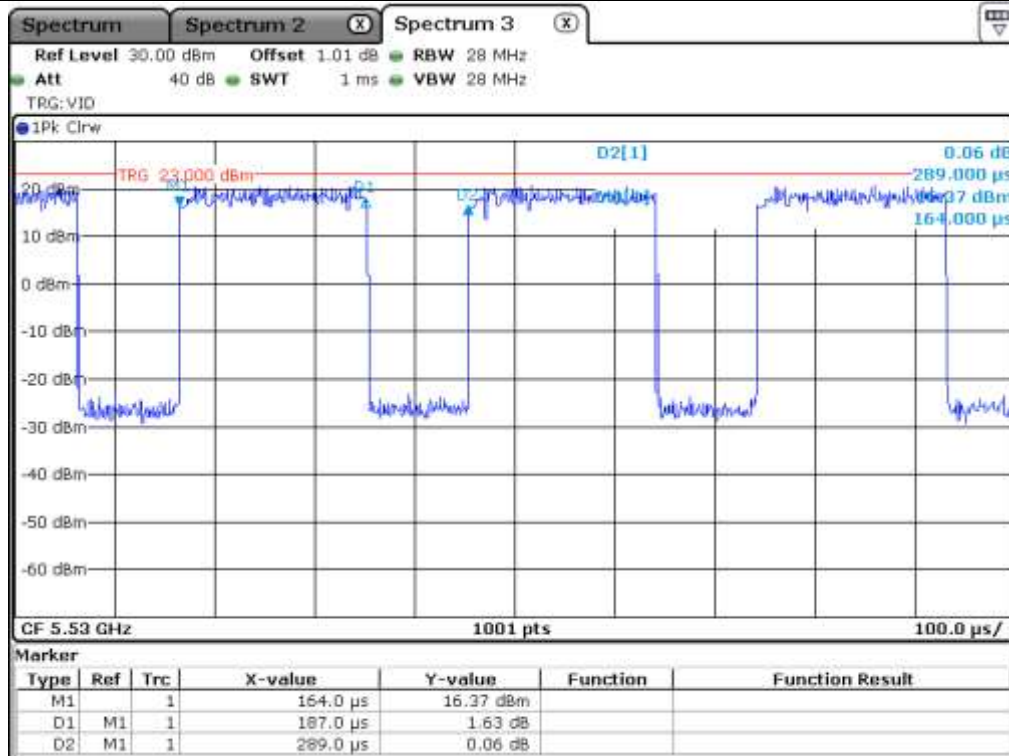
UNII 2C_802.11 a_Antenna 1



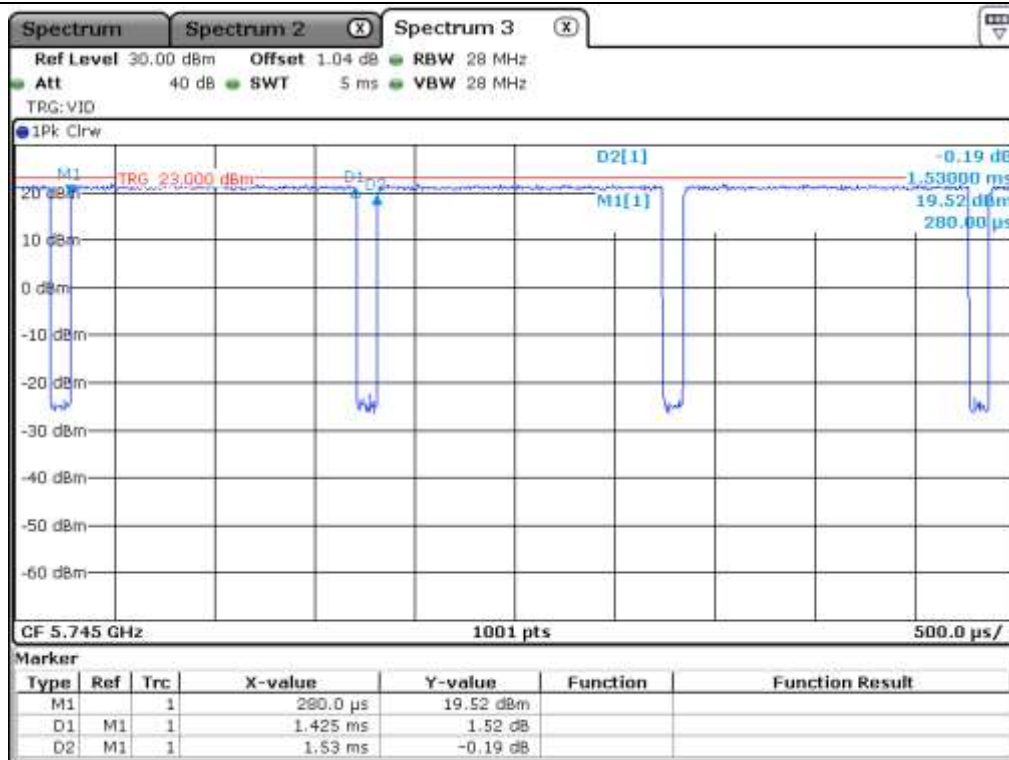
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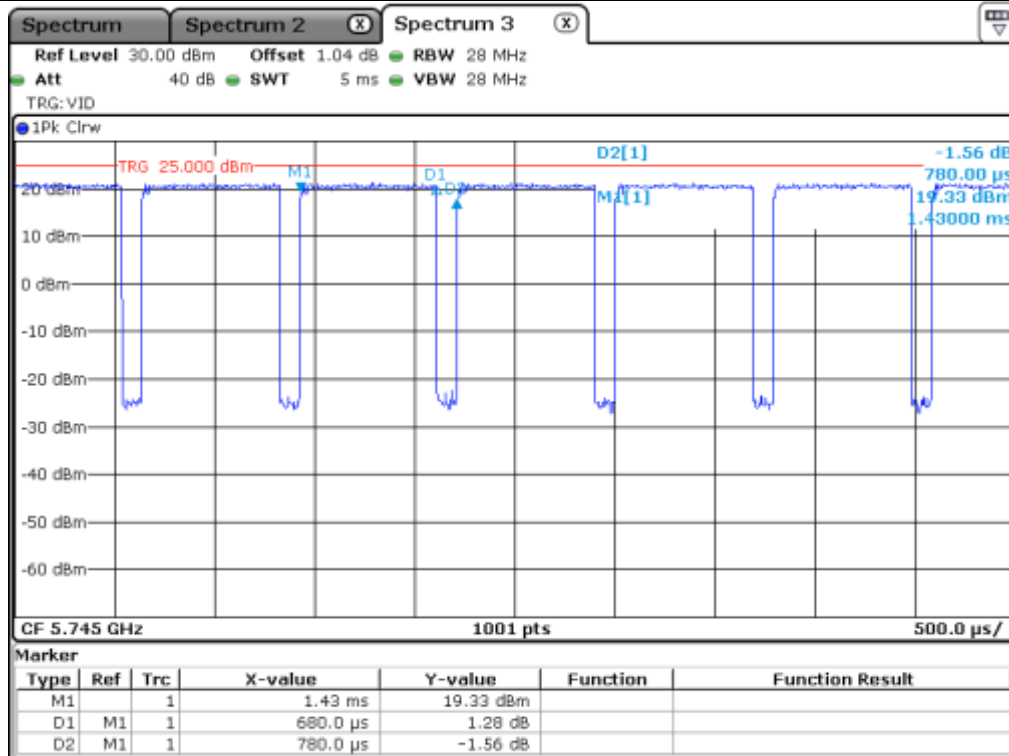
UNII 2C_802.11 HT40_Antenna 1



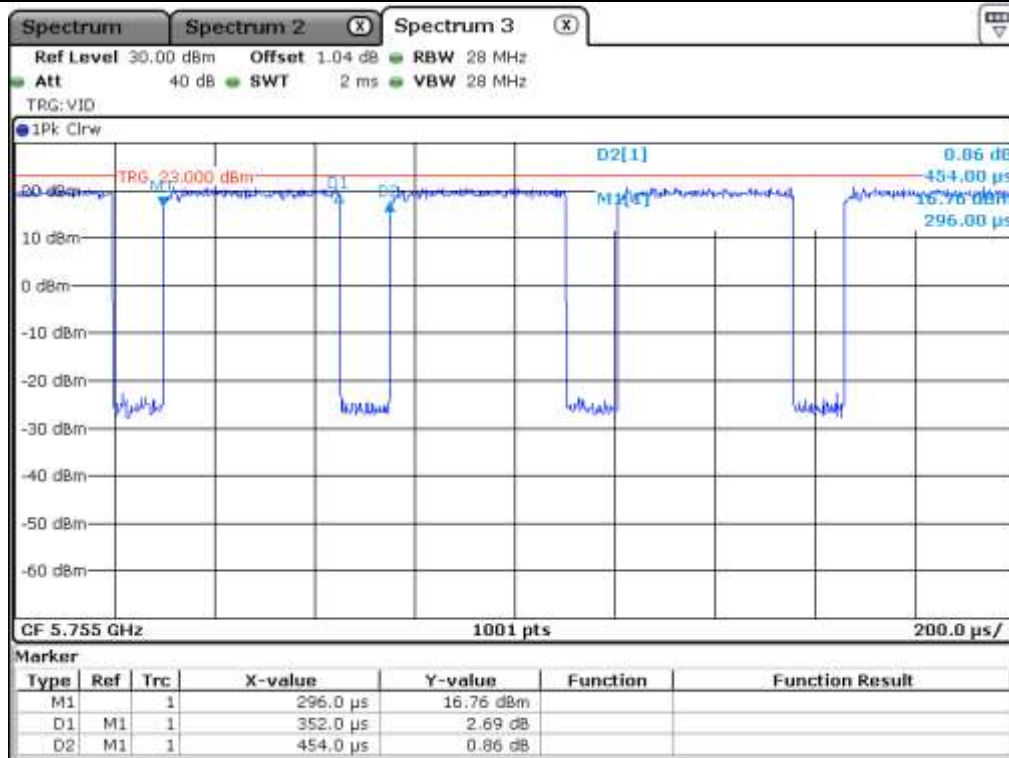
UNII 2C_802.11 VHT 80_Antenna 1



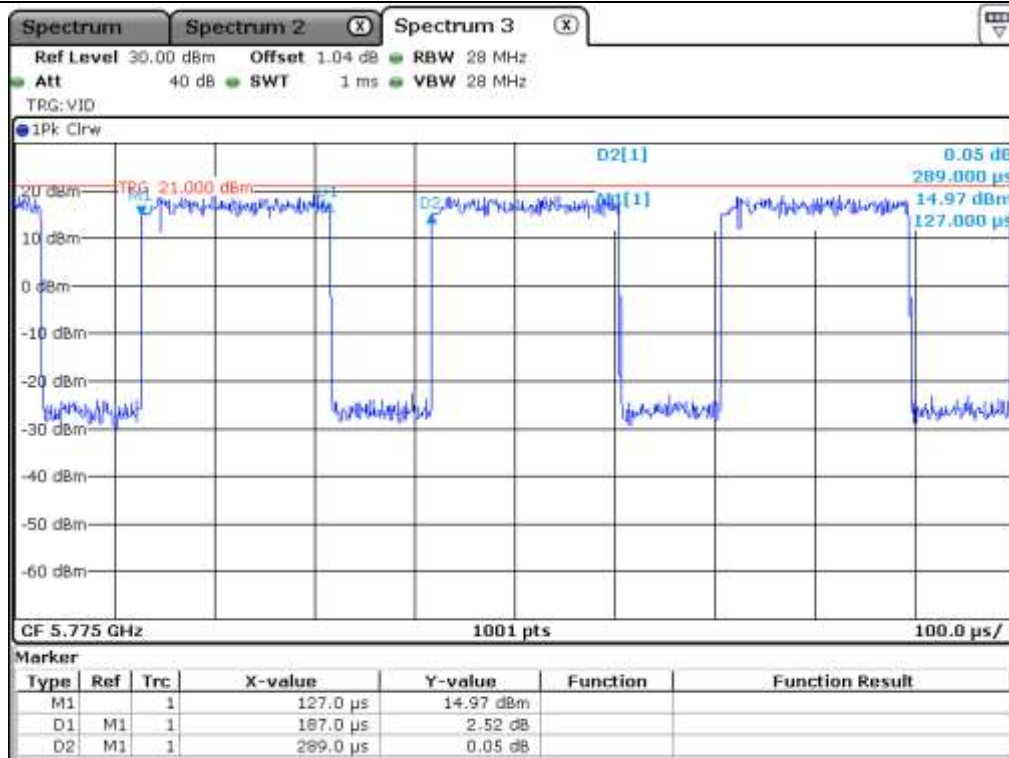
UNII 3_802.11 a_Antenna 1



UNII 3_802.11 HT 20_Antenna 1



UNII 3_802.11 HT40_Antenna 1



UNII 3_802.11 VHT 80_Antenna 1

5.4 Configuration of Test System

Line Conducted Test: It is not need to test this requirement, because the EUT shall be operated by DC Power.

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 Semi Anechoic Chamber.

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, 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 antenna of the EUT is a PCB Antenna on the main board in the EUT, The manufacturer has designed a structure that connects to the antenna using a unique coupling connector of the MCX type. So no consideration of replacement by the user.

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)
It is not need to test this requirement, because the power of the EUT is supplied by DC Power.	

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

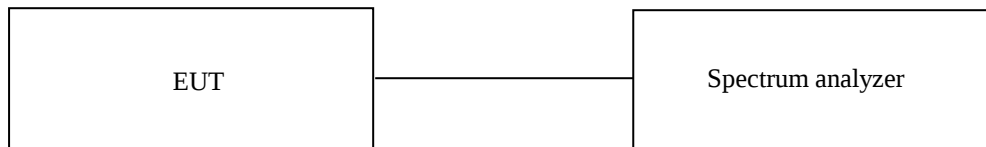
7. MINIMUM 26 dB BANDWIDTH

7.1 Operating environment

Temperature : 23 °C
Relative humidity : 45 % 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 1 % to 5 % of the OBW, 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 Date

September 07, 2020 ~ September 11, 2020

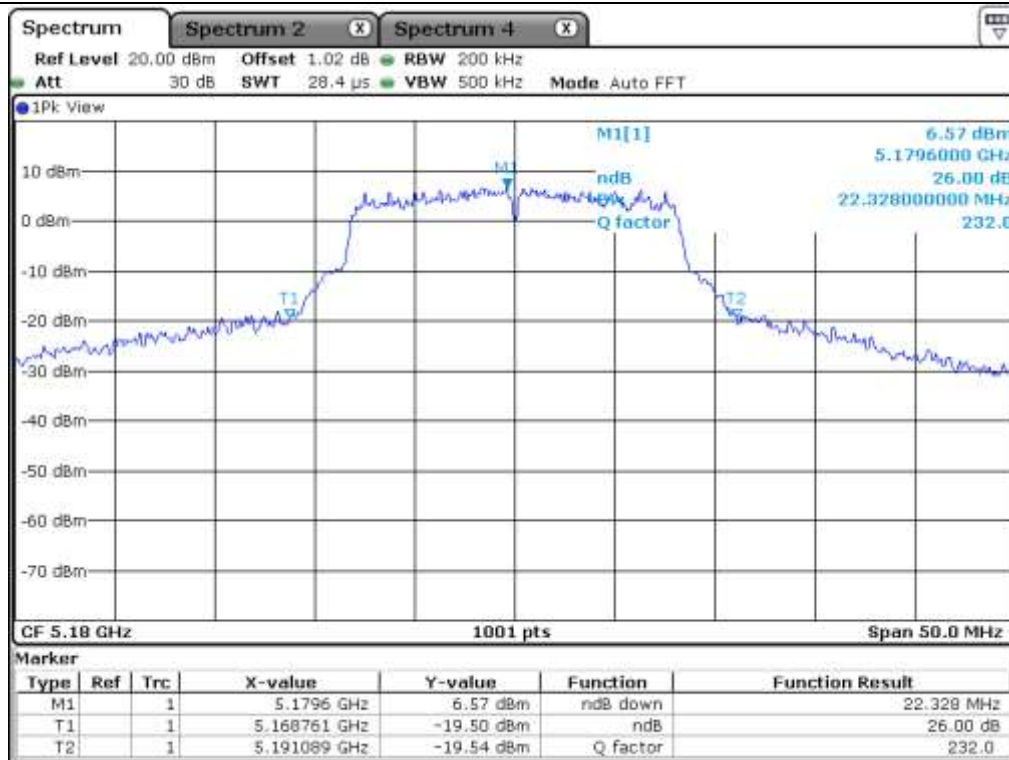
7.4 Test data for 802.11a RLAN Mode

7.4.1 Test data for Antenna 0

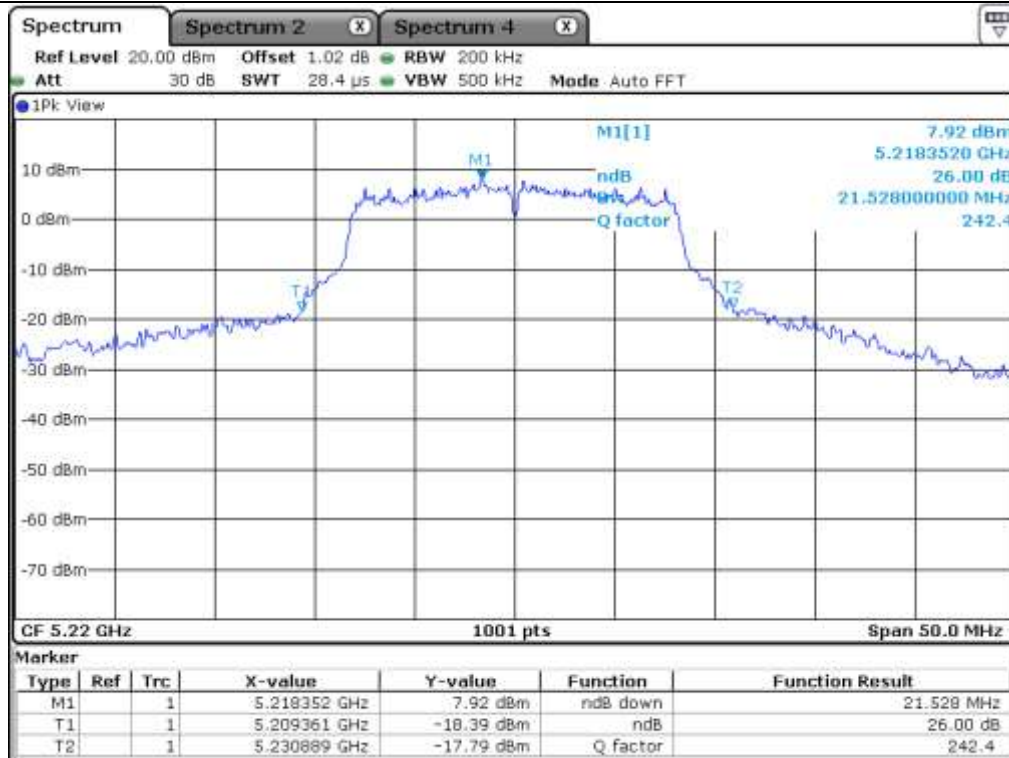
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180.00	22.33
	Middle	5 220.00	21.53
	High	5 240.00	21.78
5 250 ~ 5 350	Low	5 260.00	19.78
	Middle	5 300.00	21.63
	High	5 320.00	21.63
5 470 ~ 5 725	Low	5 500.00	19.93
	Middle	5 580.00	21.68
	High	5 700.00	21.13
5 725 ~ 5 850	Low	5 745.00	21.98
	Middle	5 785.00	21.98
	High	5 825.00	21.78

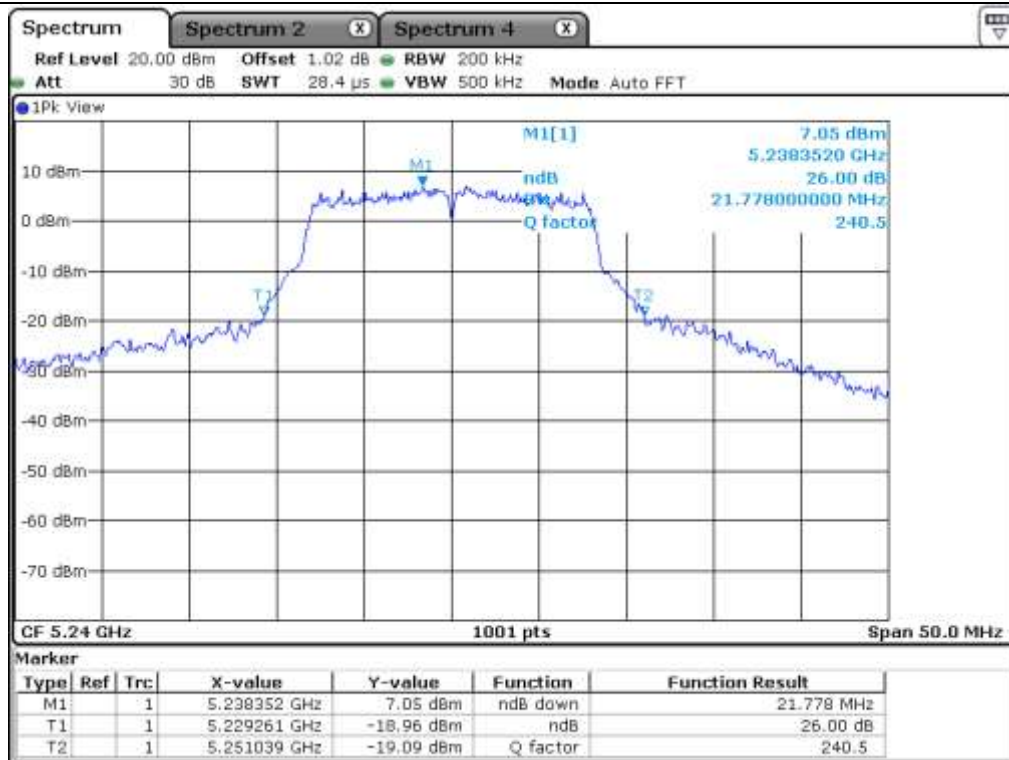
Remark: See next page for measurement data.



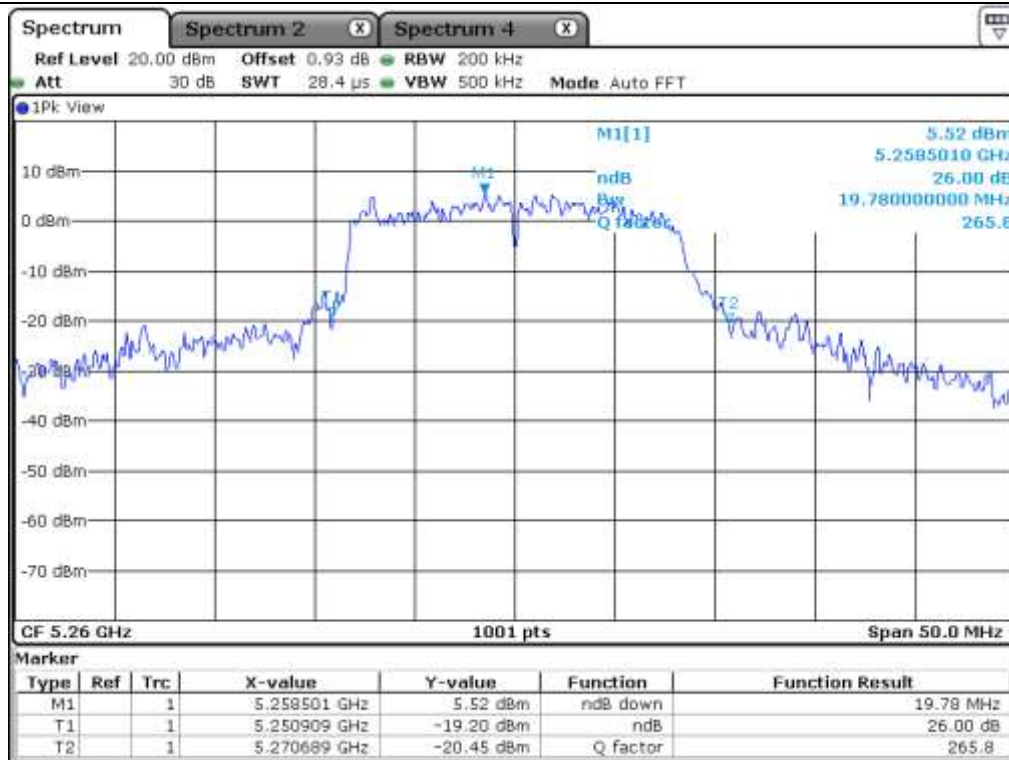
Low Channel (5 180 MHz)



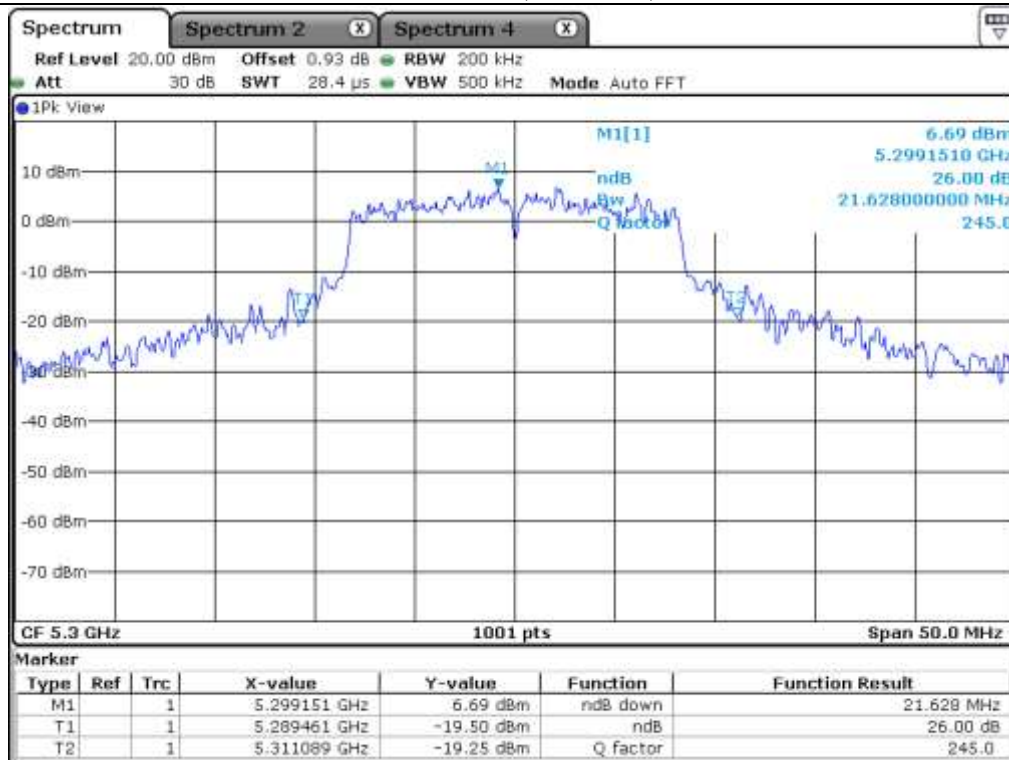
Middle Channel (5 220 MHz)



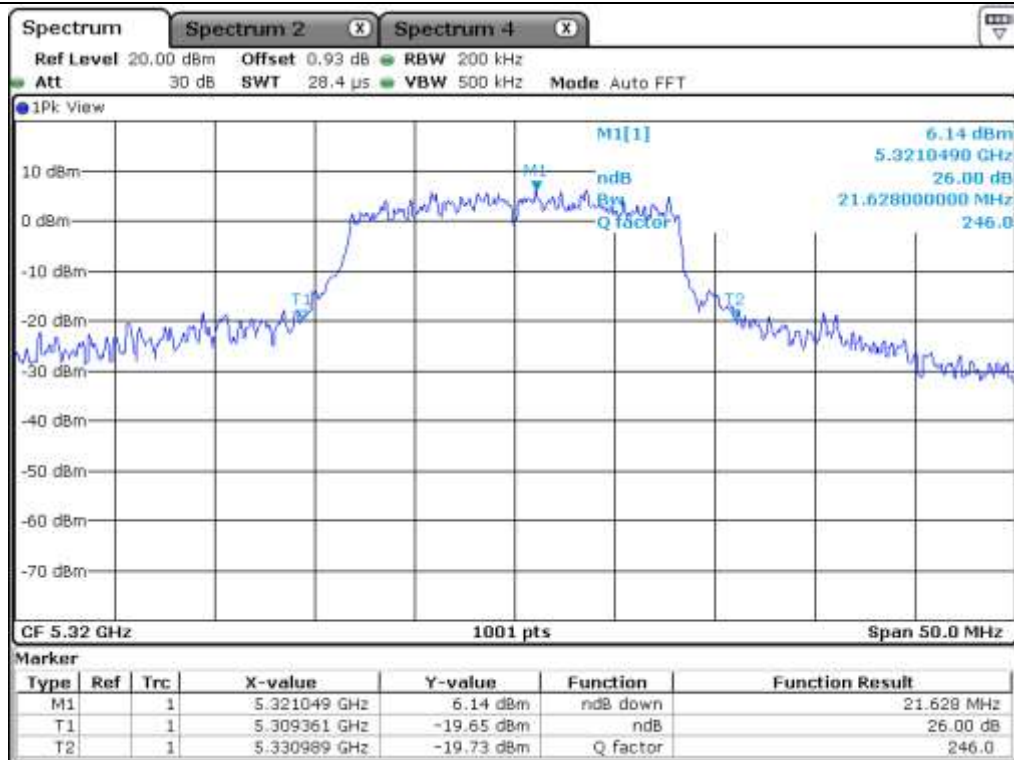
High Channel (5 240 MHz)



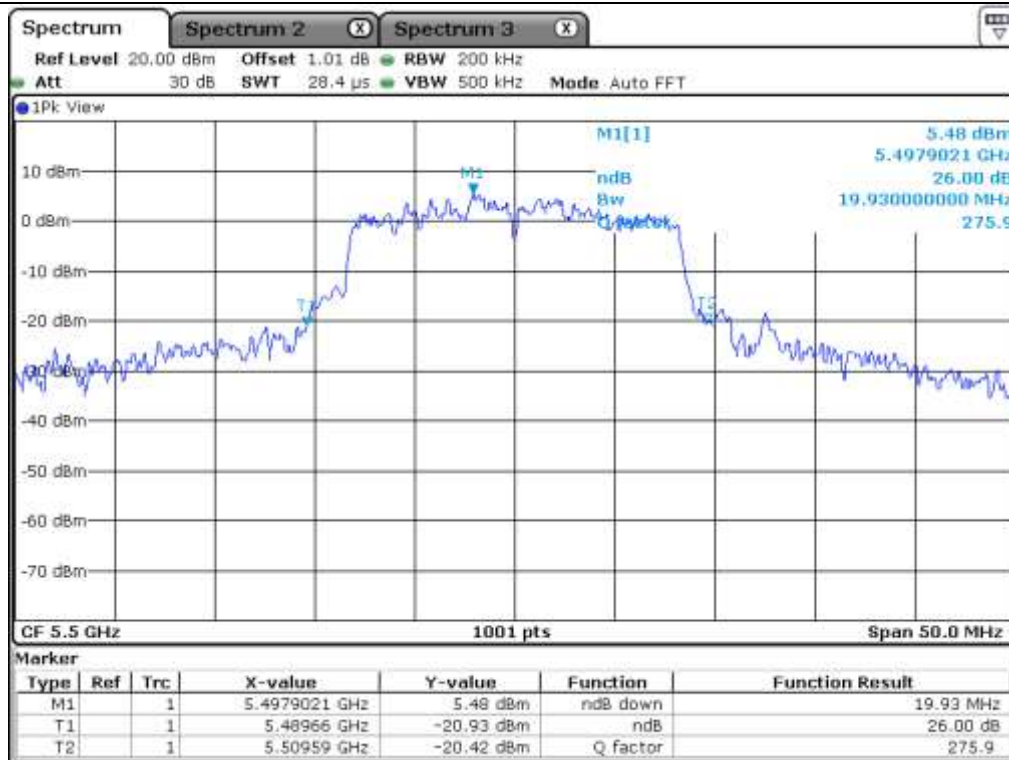
Low Channel (5 260 MHz)



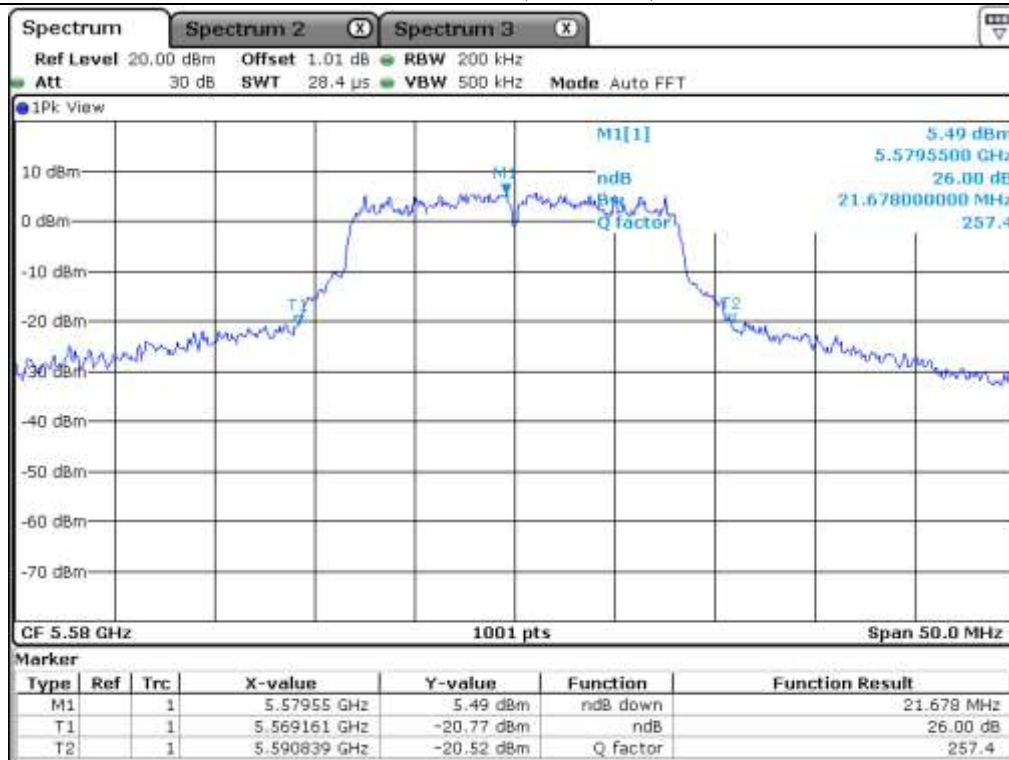
Middle Channel (5 300 MHz)



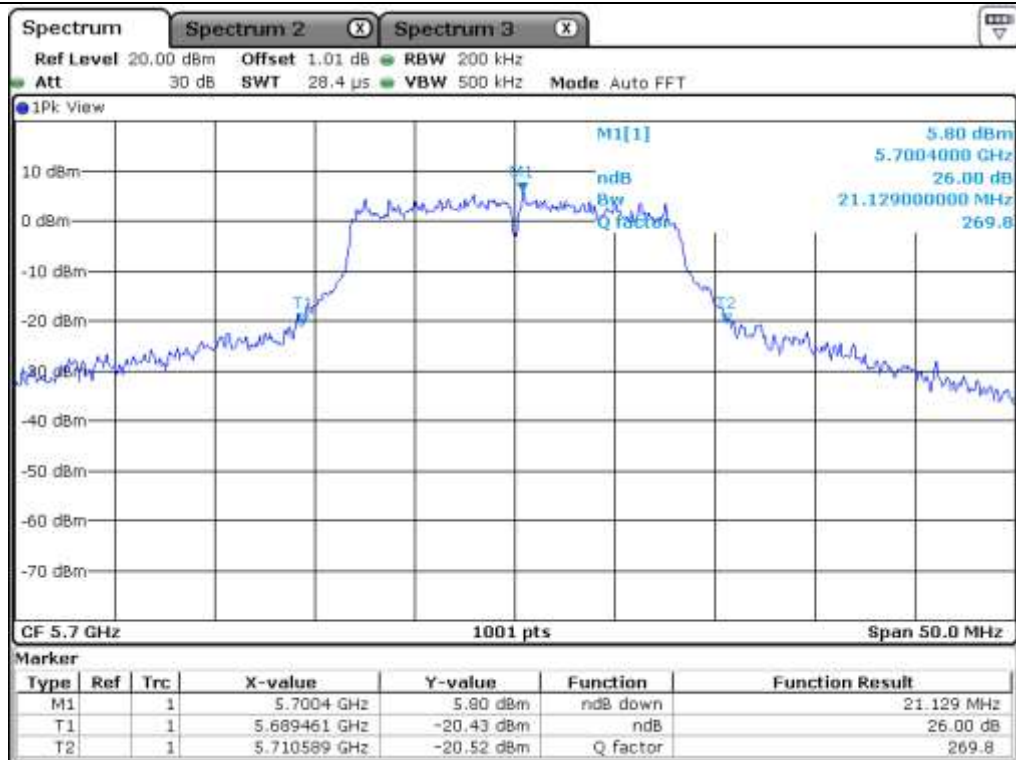
High Channel (5 320 MHz)



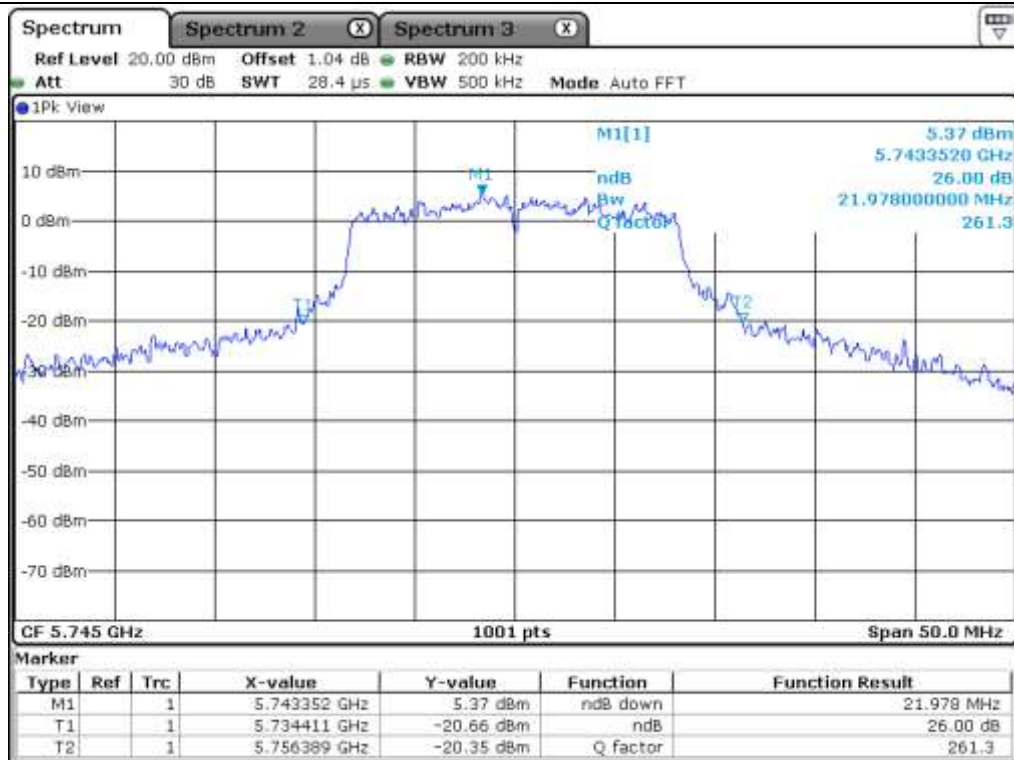
Low Channel (5 500 MHz)



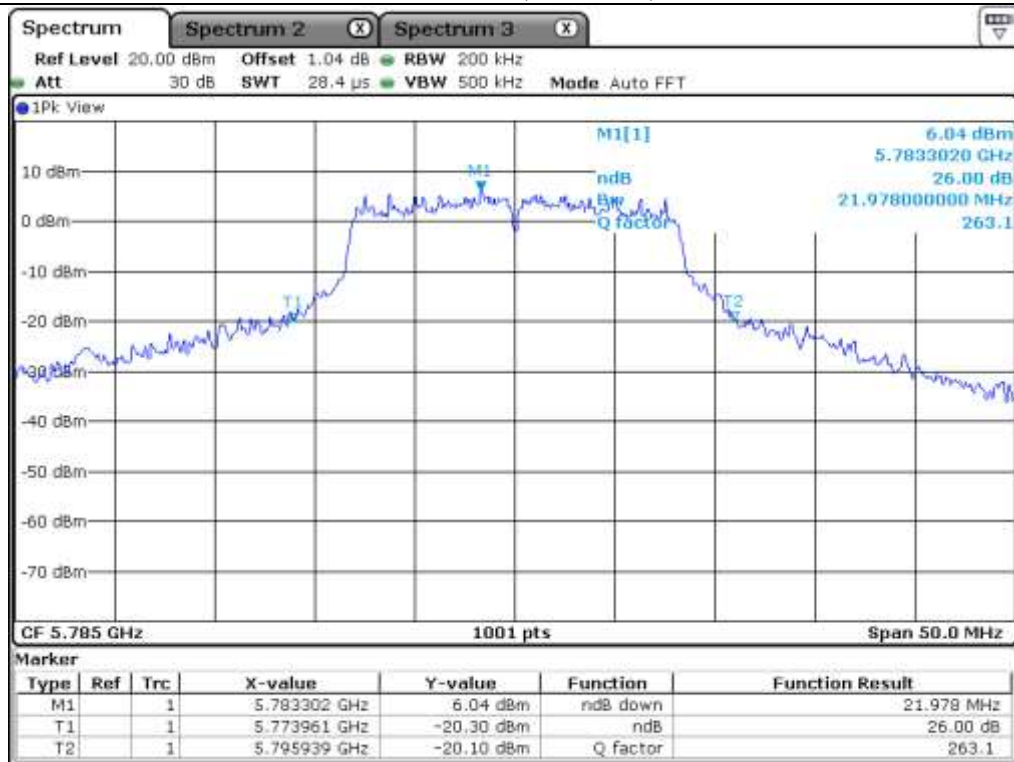
Middle Channel (5 580 MHz)



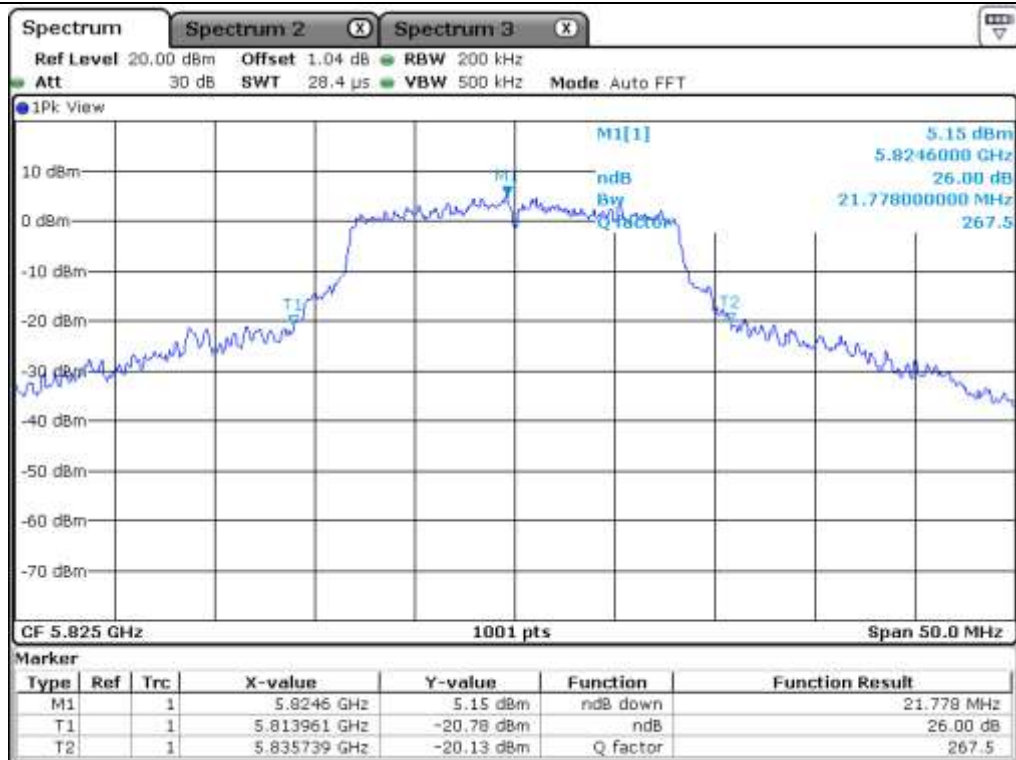
High Channel (5 700 MHz)



Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)



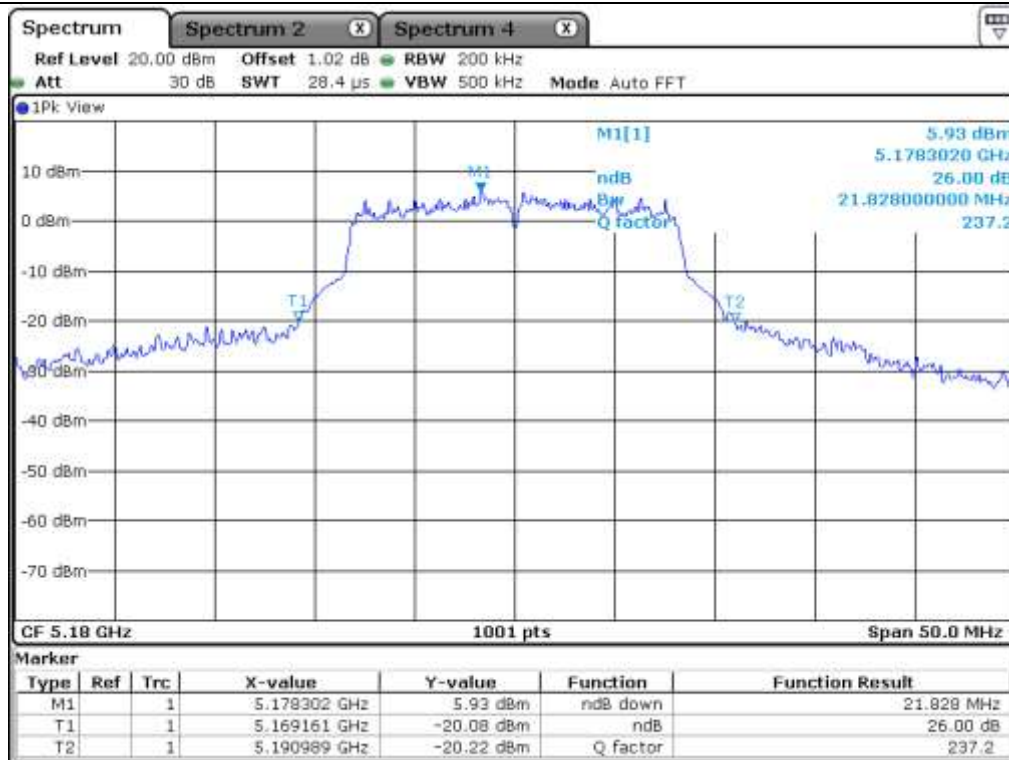
High Channel (5 825 MHz)

7.4.2 Test data for Antenna 1

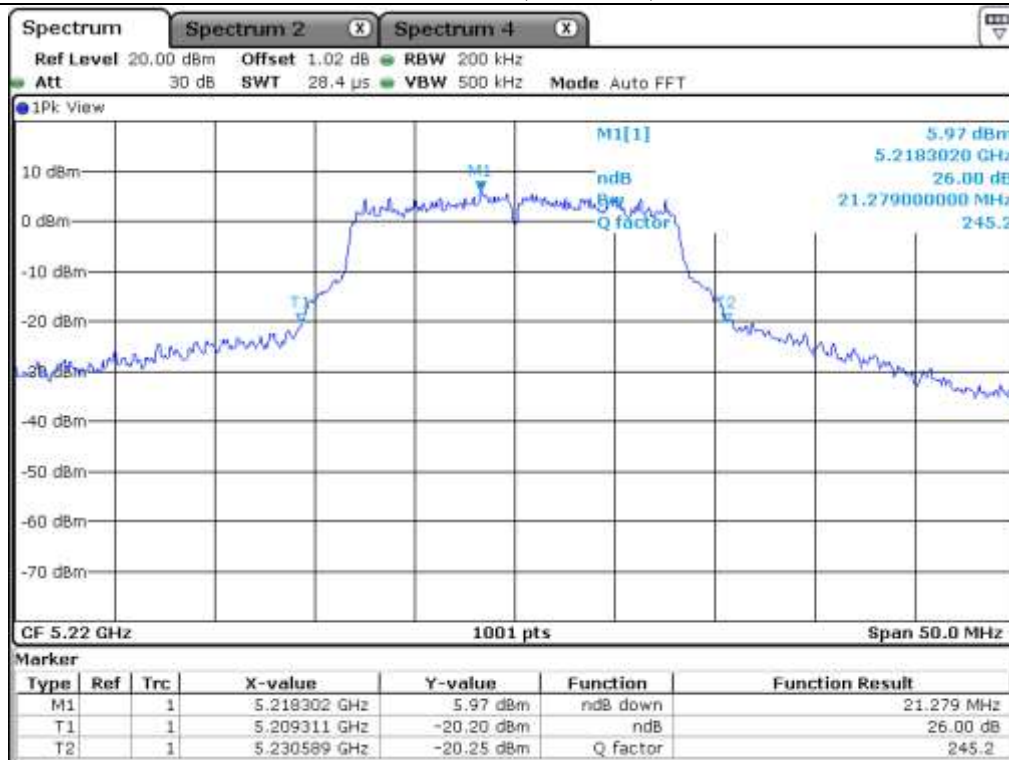
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180.00	21.83
	Middle	5 220.00	21.28
	High	5 240.00	21.48
5 250 ~ 5 350	Low	5 260.00	20.18
	Middle	5 300.00	21.08
	High	5 320.00	21.33
5 470 ~ 5 725	Low	5 500.00	19.03
	Middle	5 580.00	20.73
	High	5 700.00	21.13
5 725 ~ 5 850	Low	5 745.00	22.08
	Middle	5 785.00	21.98
	High	5 825.00	21.48

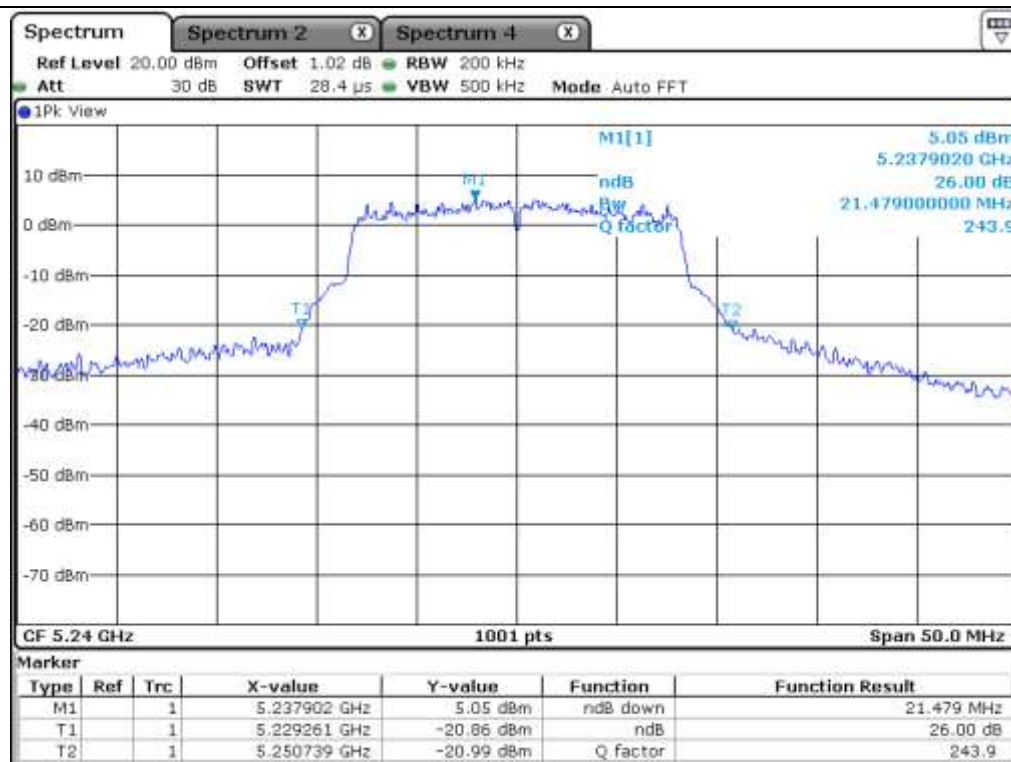
Remark: See next page for measurement data.



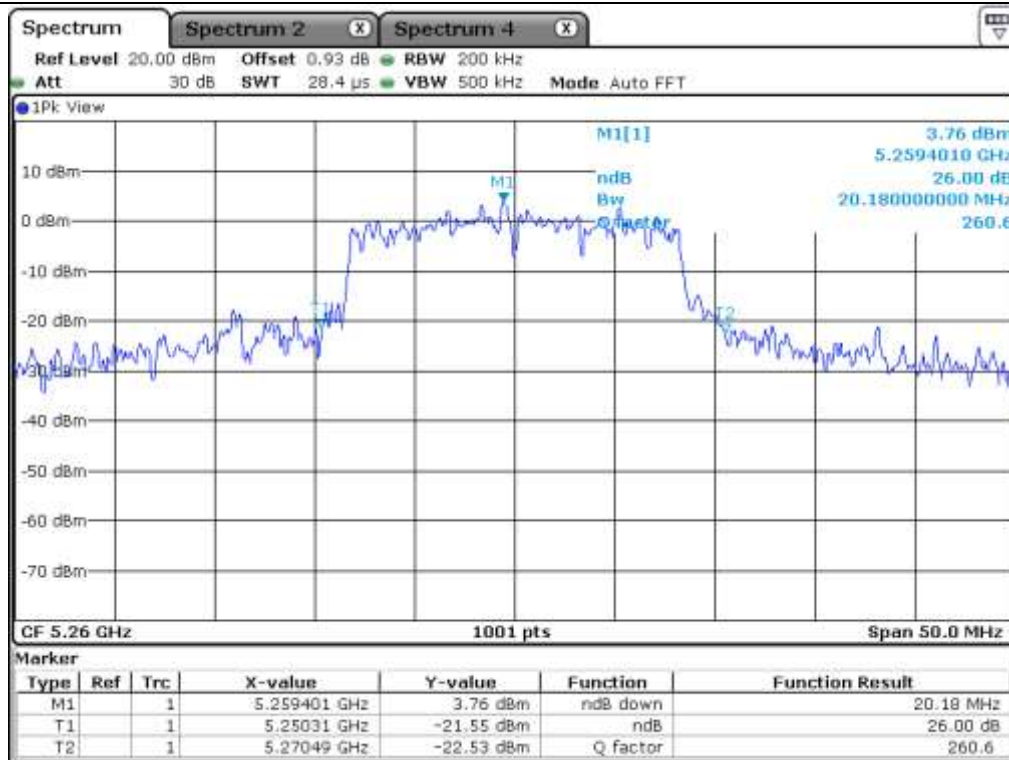
Low Channel (5 180 MHz)



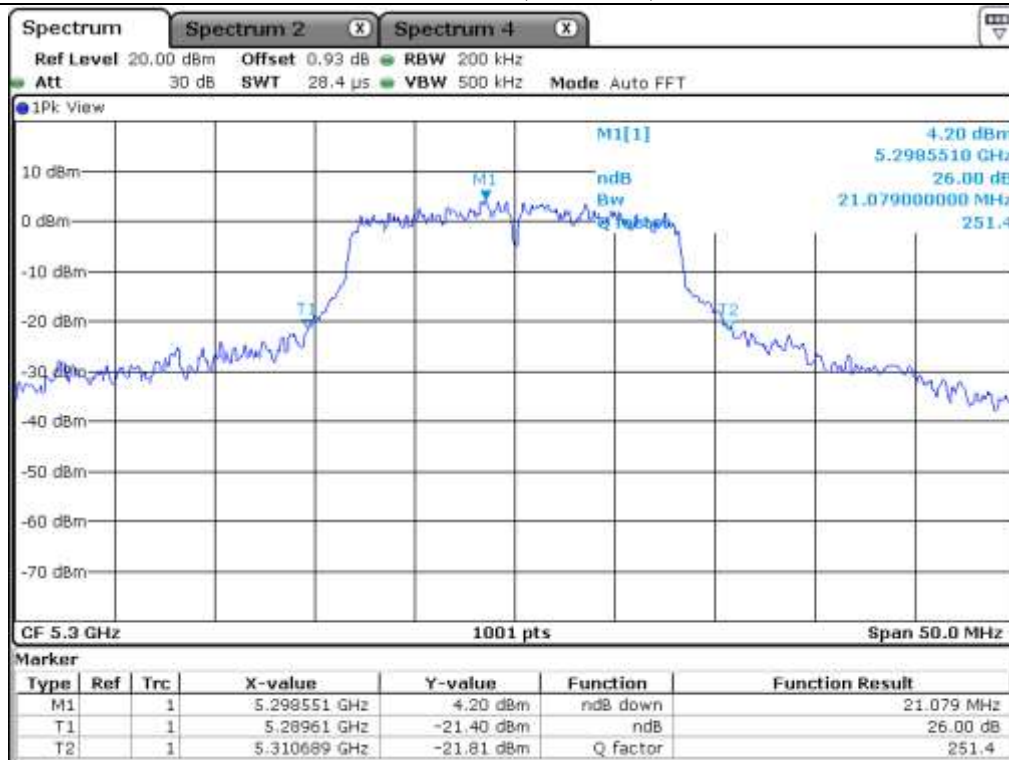
Middle Channel (5 220 MHz)



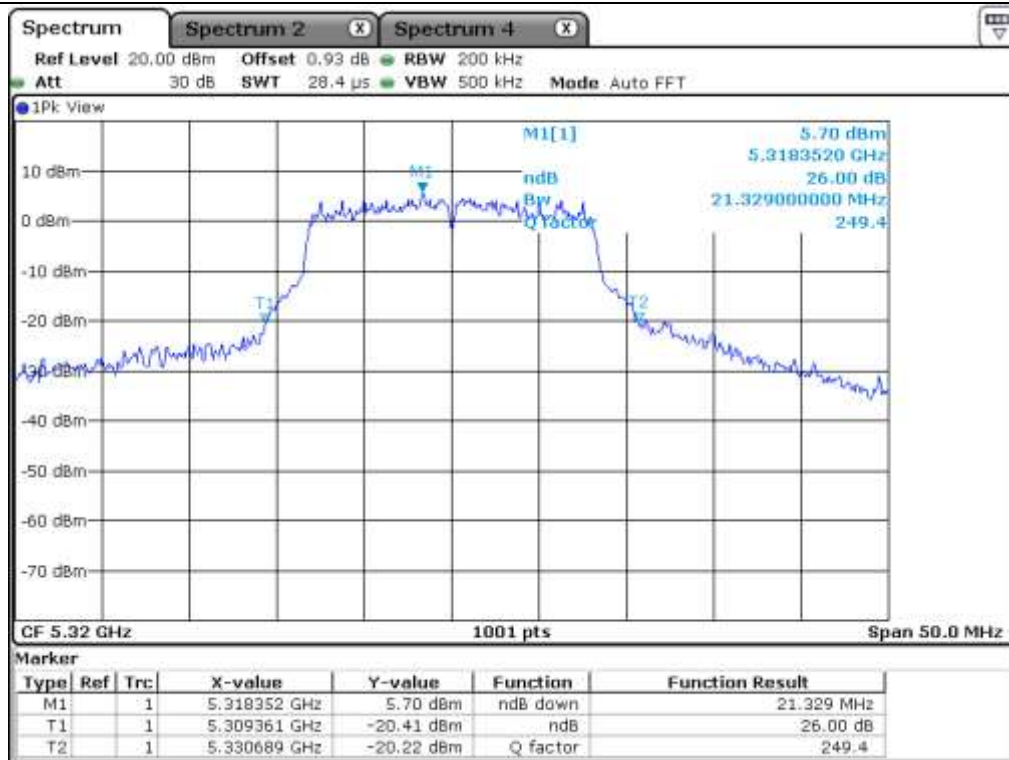
High Channel (5 240 MHz)



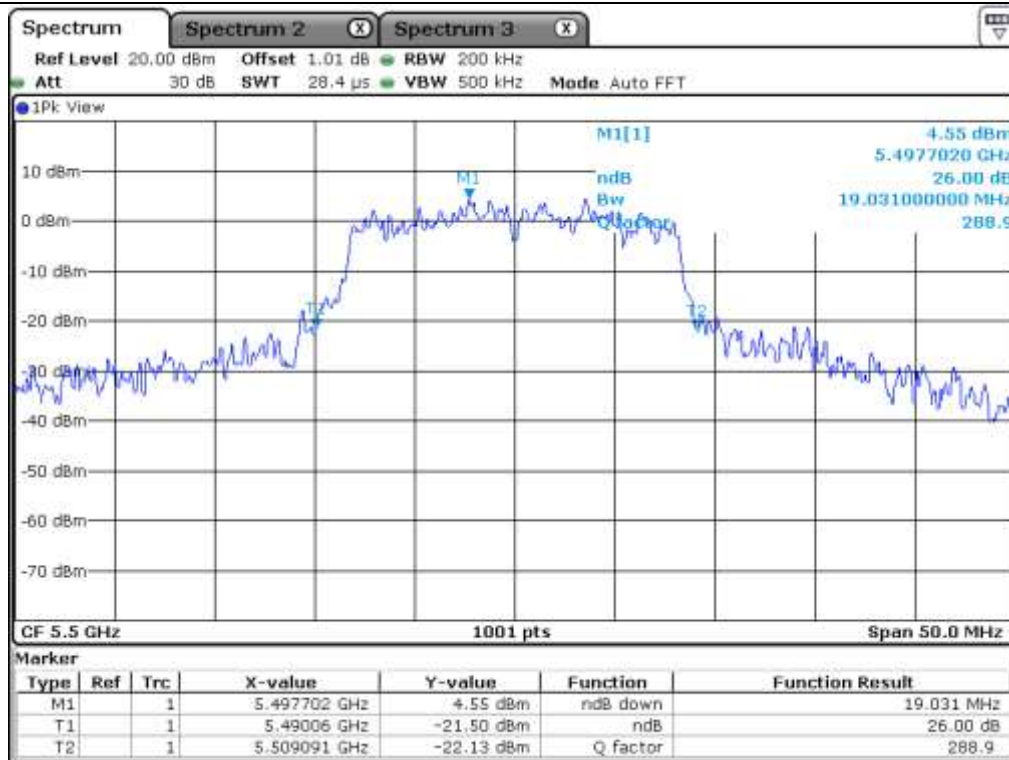
Low Channel (5 260 MHz)



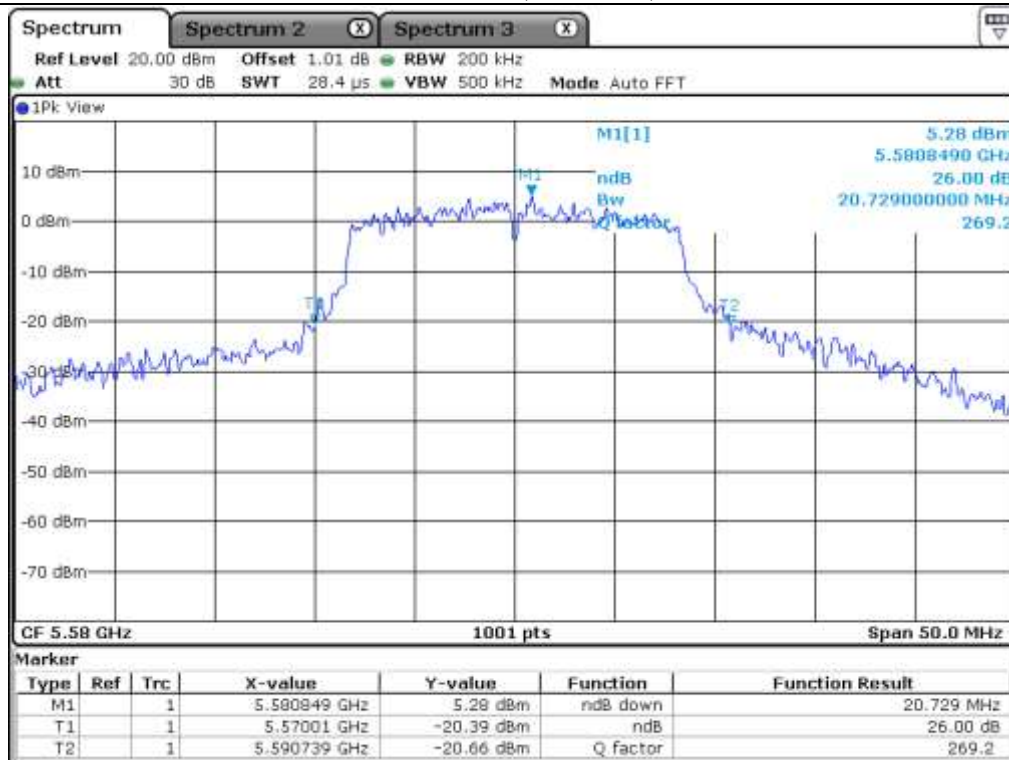
Middle Channel (5 300 MHz)



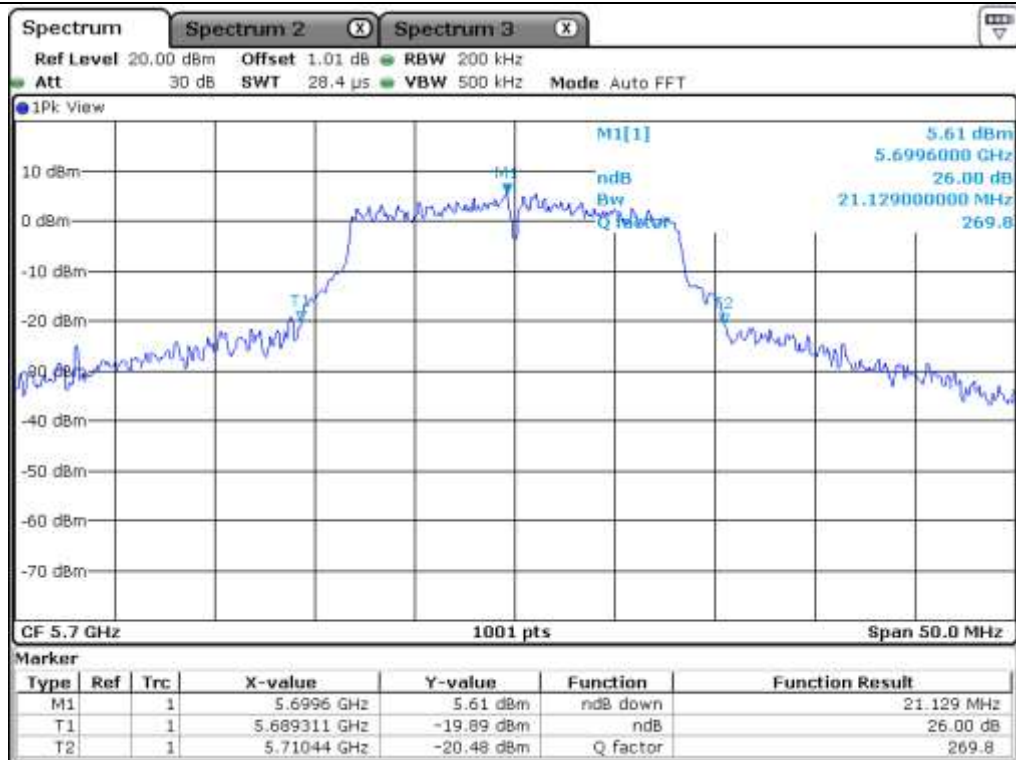
High Channel (5 320 MHz)



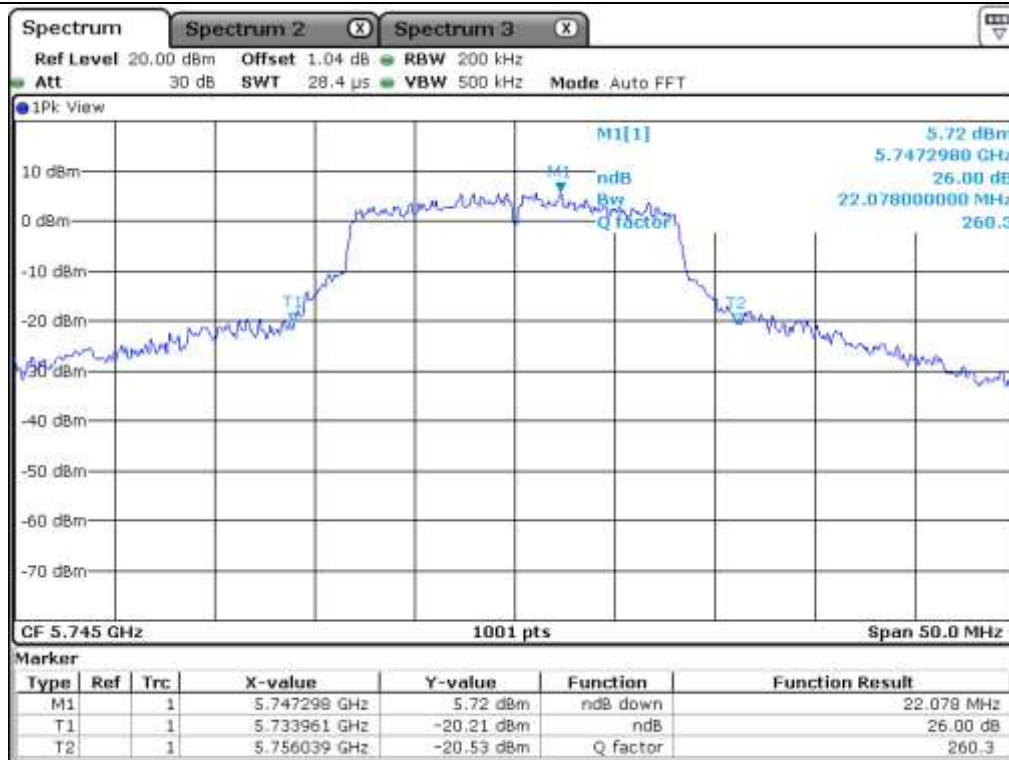
Low Channel (5 500 MHz)



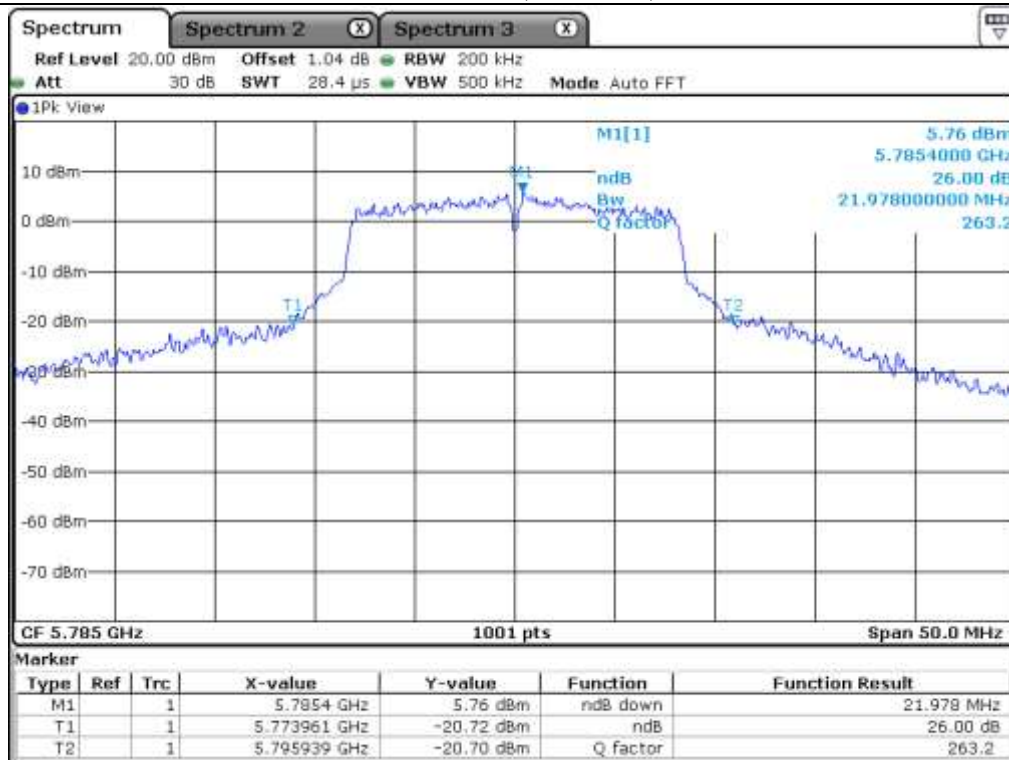
Middle Channel (5 580 MHz)



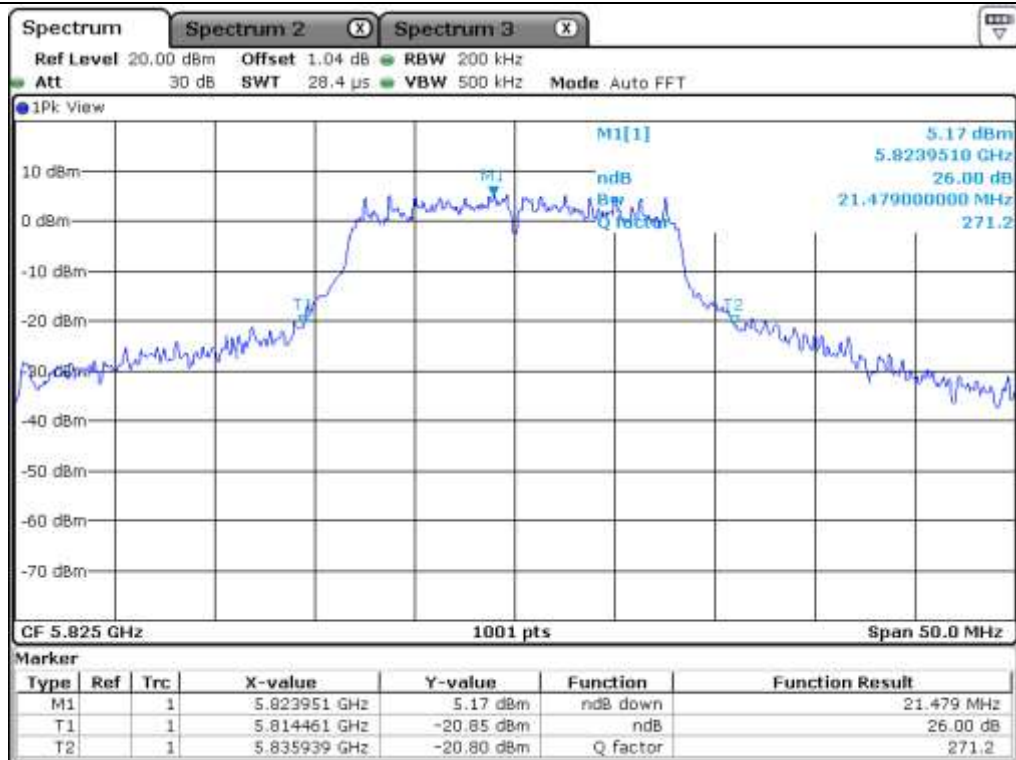
High Channel (5 700 MHz)



Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)

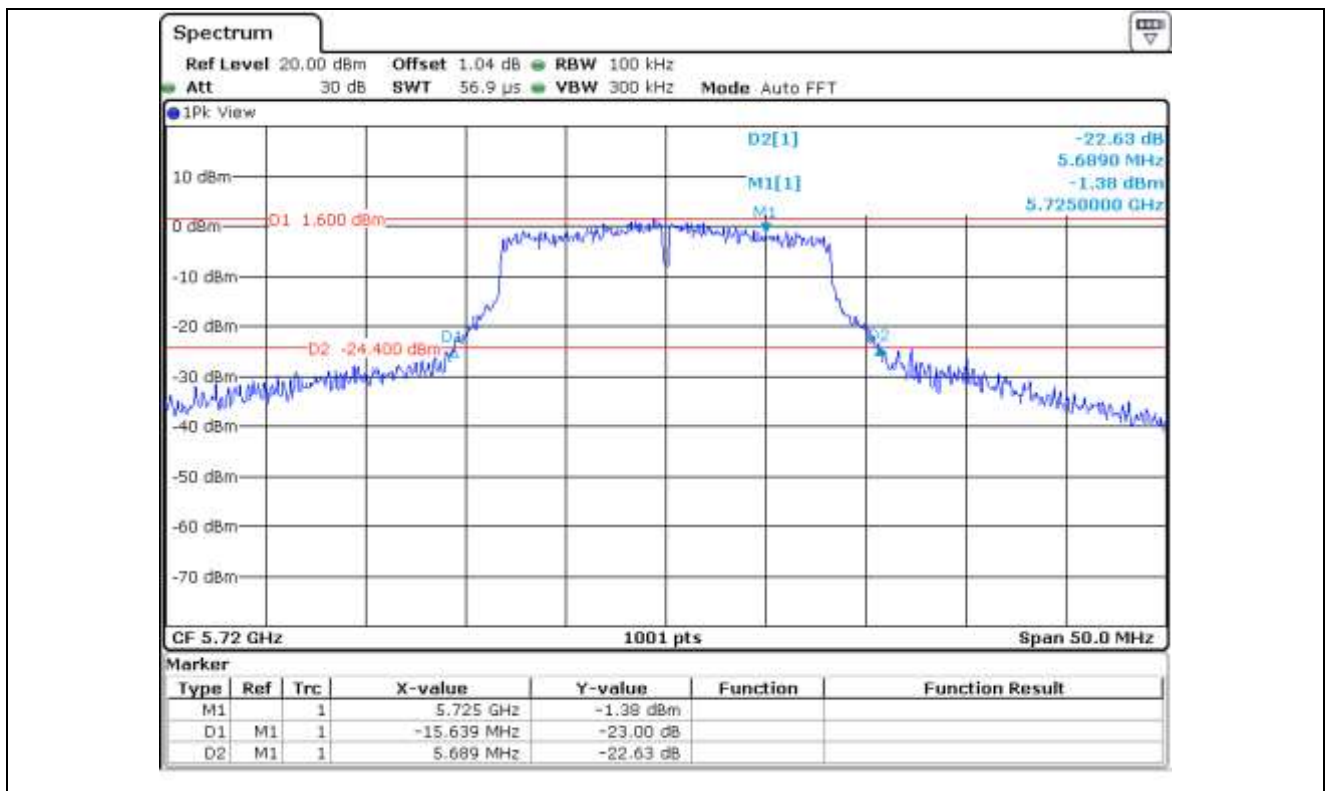


High Channel (5 825 MHz)

7.4.3 Test data for Straddle Channel_Antenna 0

-. Test Result : Pass

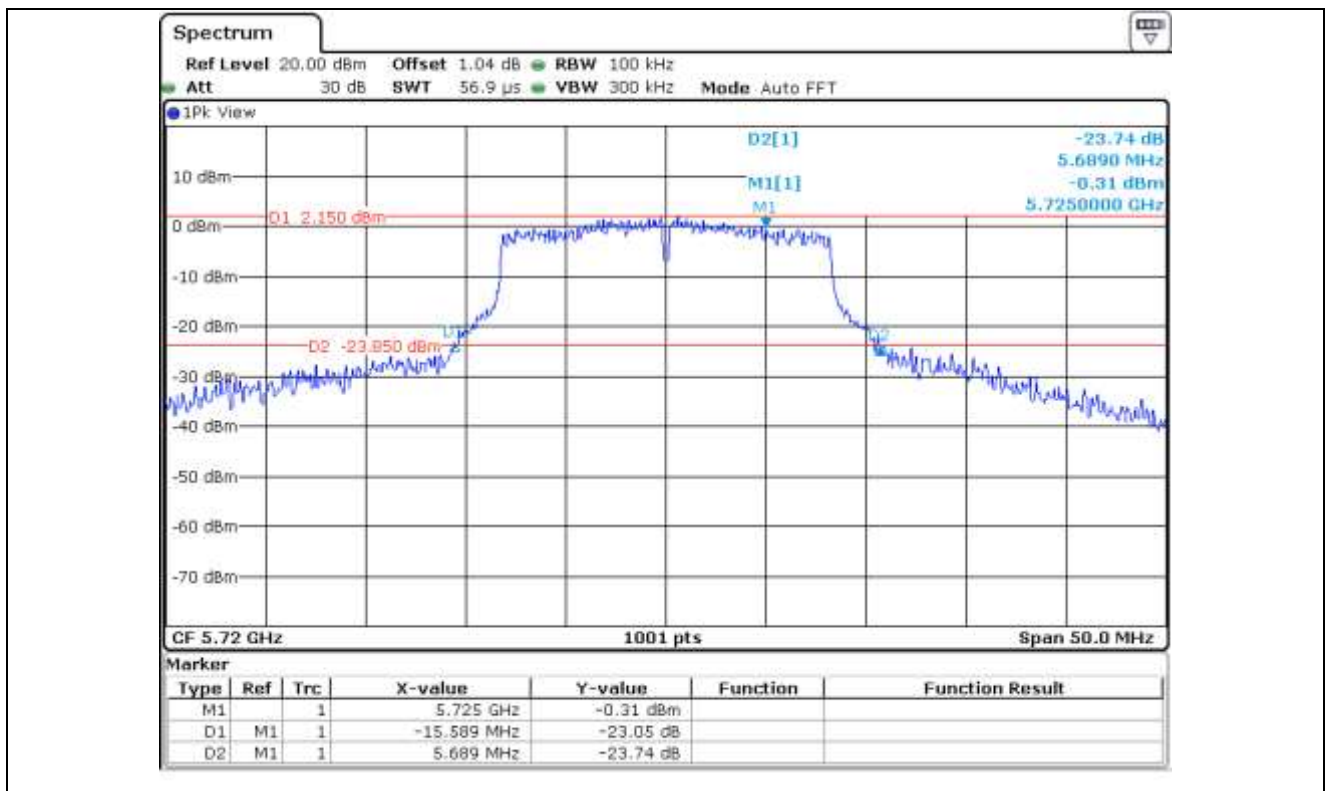
FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 720.00	15.64
5 725 ~ 5 850	5 720.00	5.69



7.4.4 Test data for Straddle Channel_Antenna 1

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 720.00	15.59
5 725 ~ 5 850	5 720.00	5.69



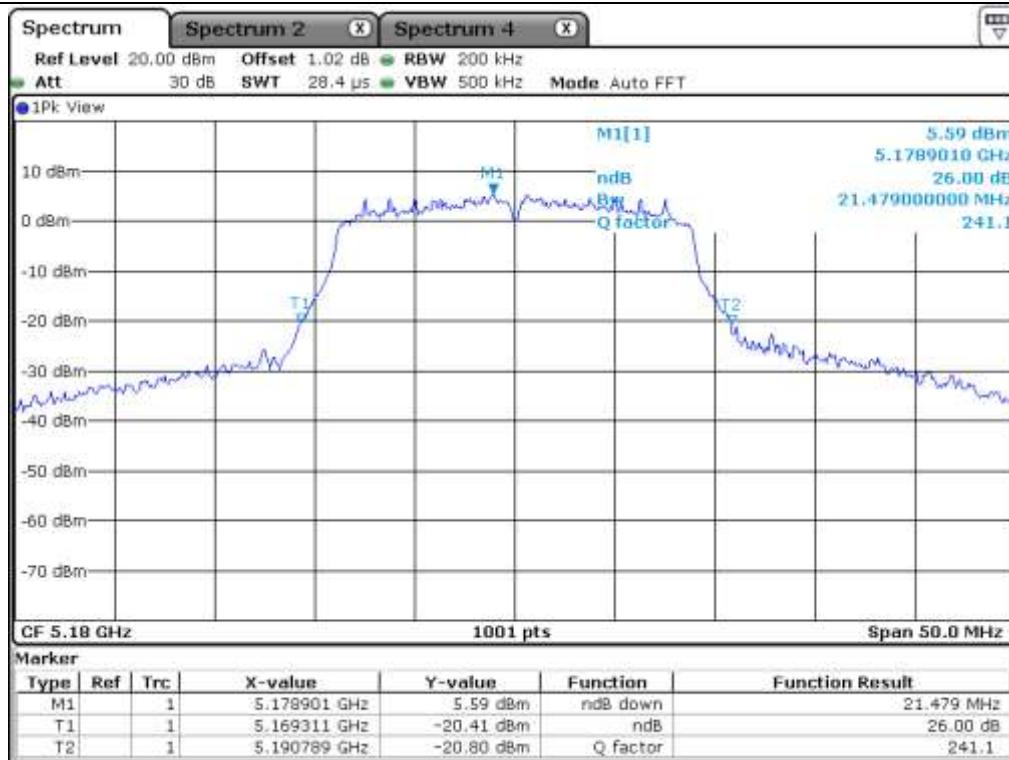
7.5 Test data for 802.11n_HT20 RLAN Mode

7.5.1 Test data for Antenna 0

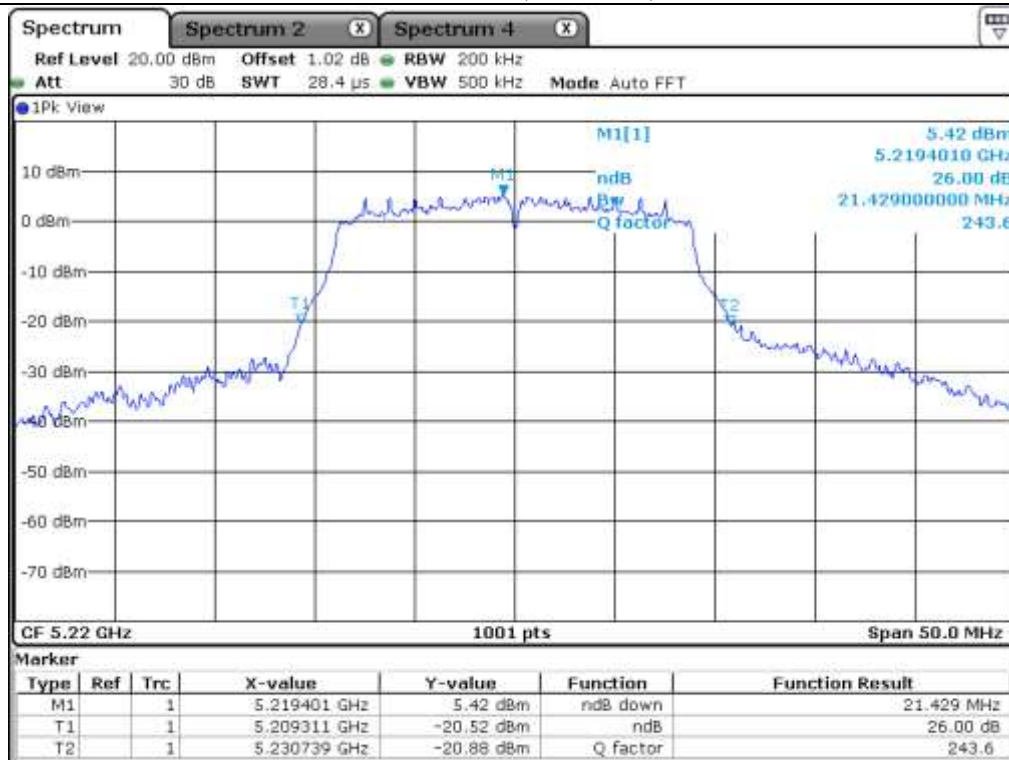
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180.00	21.48
	Middle	5 220.00	21.43
	High	5 240.00	21.53
5 250 ~ 5 350	Low	5 260.00	21.73
	Middle	5 300.00	21.78
	High	5 320.00	21.63
5 470 ~ 5 725	Low	5 500.00	21.08
	Middle	5 580.00	21.53
	High	5 700.00	21.28
5 725 ~ 5 850	Low	5 745.00	21.58
	Middle	5 785.00	21.68
	High	5 825.00	21.78

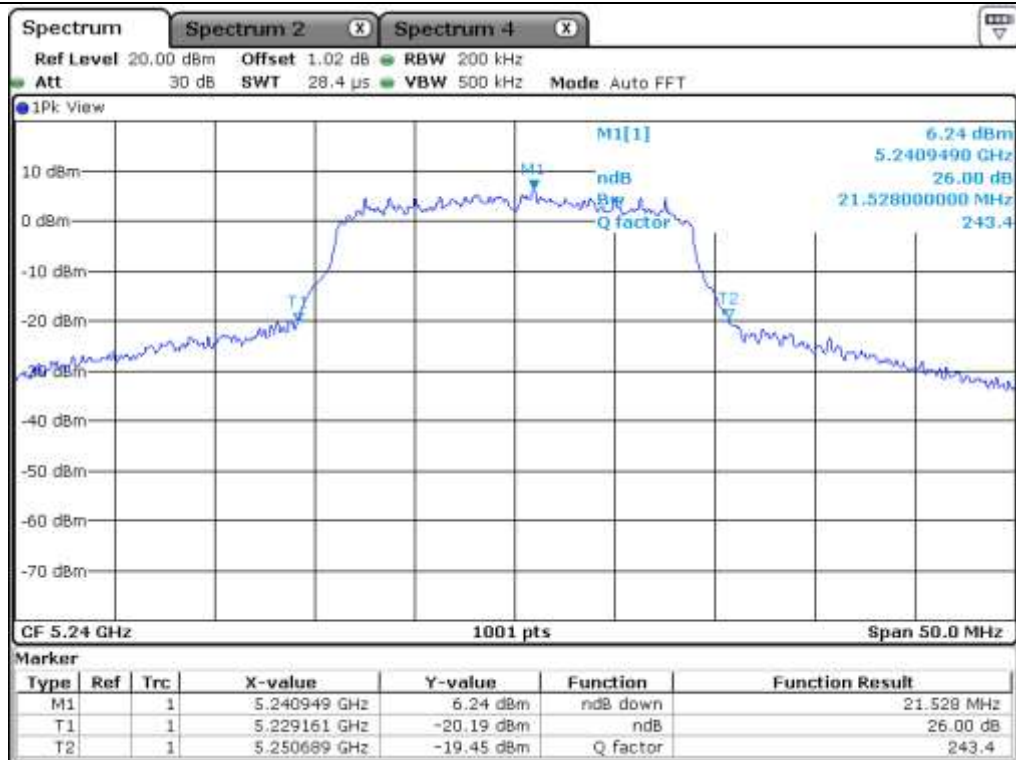
Remark: See next page for measurement data.



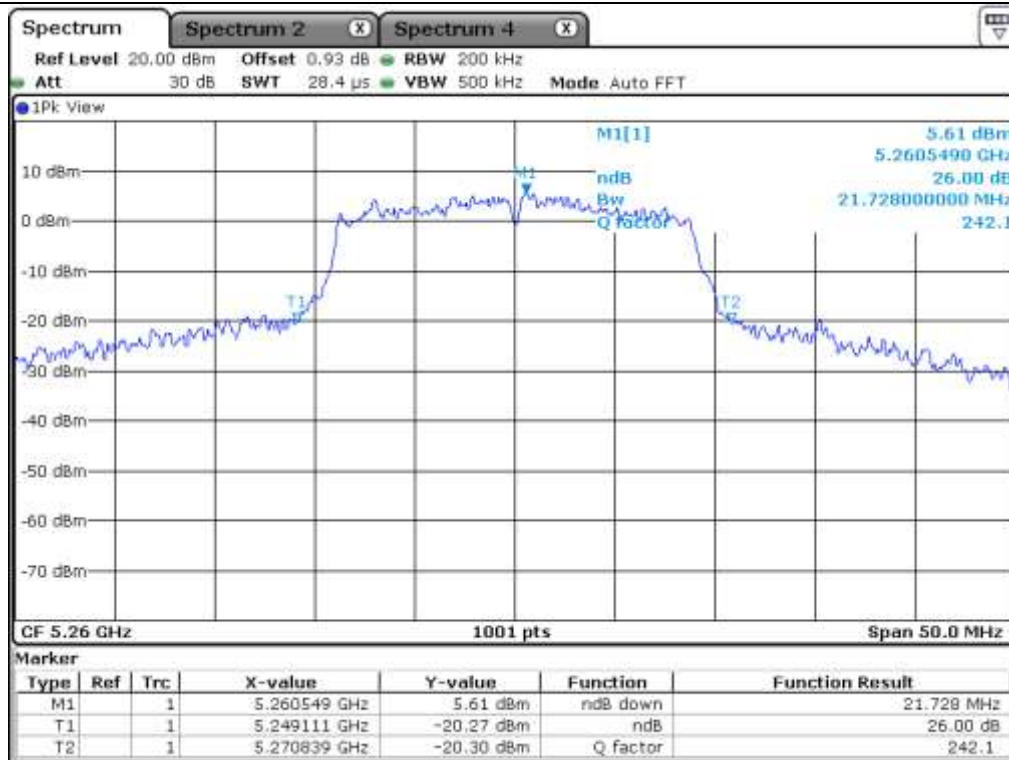
Low Channel (5 180 MHz)



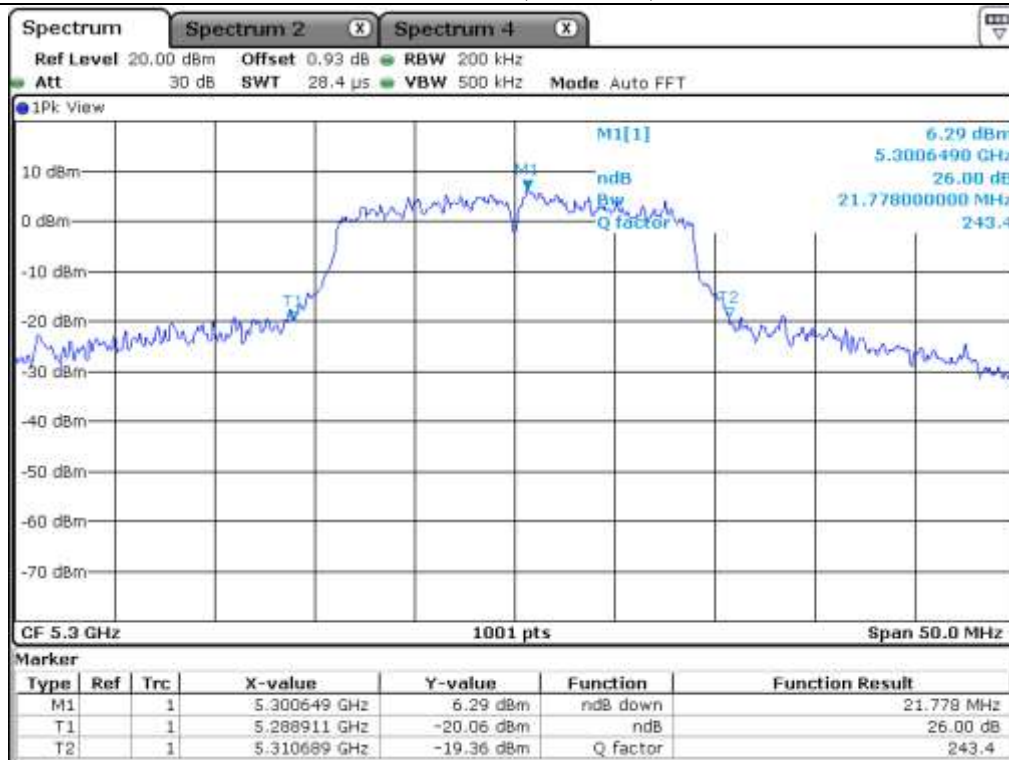
Middle Channel (5 220 MHz)



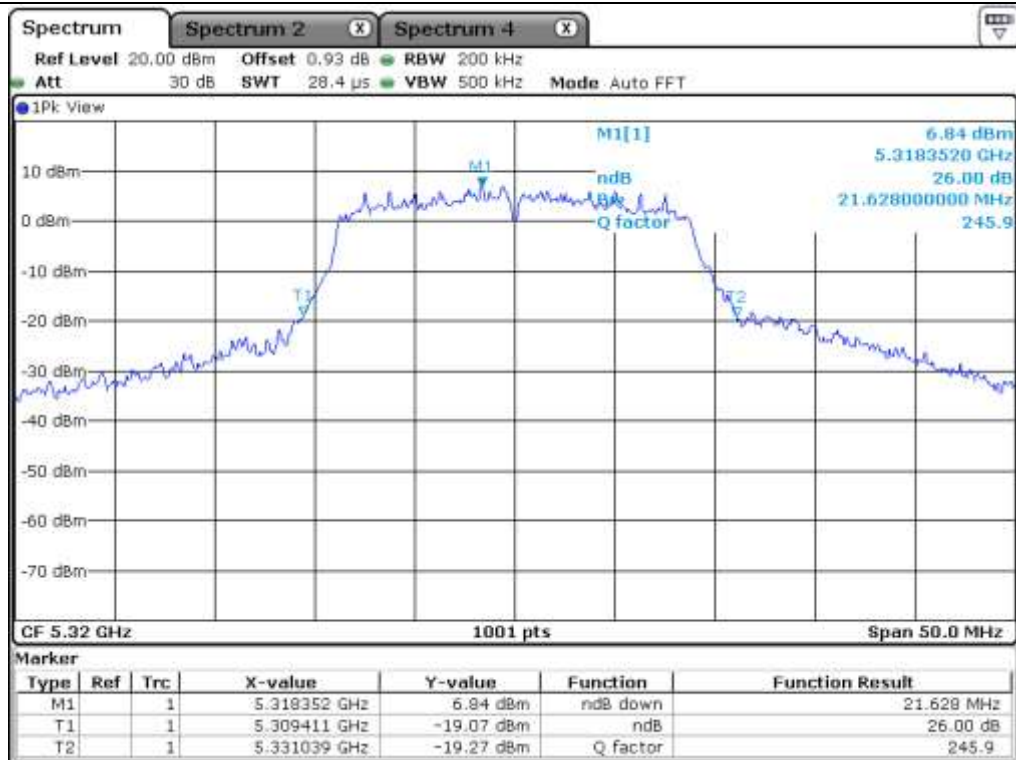
High Channel (5 240 MHz)



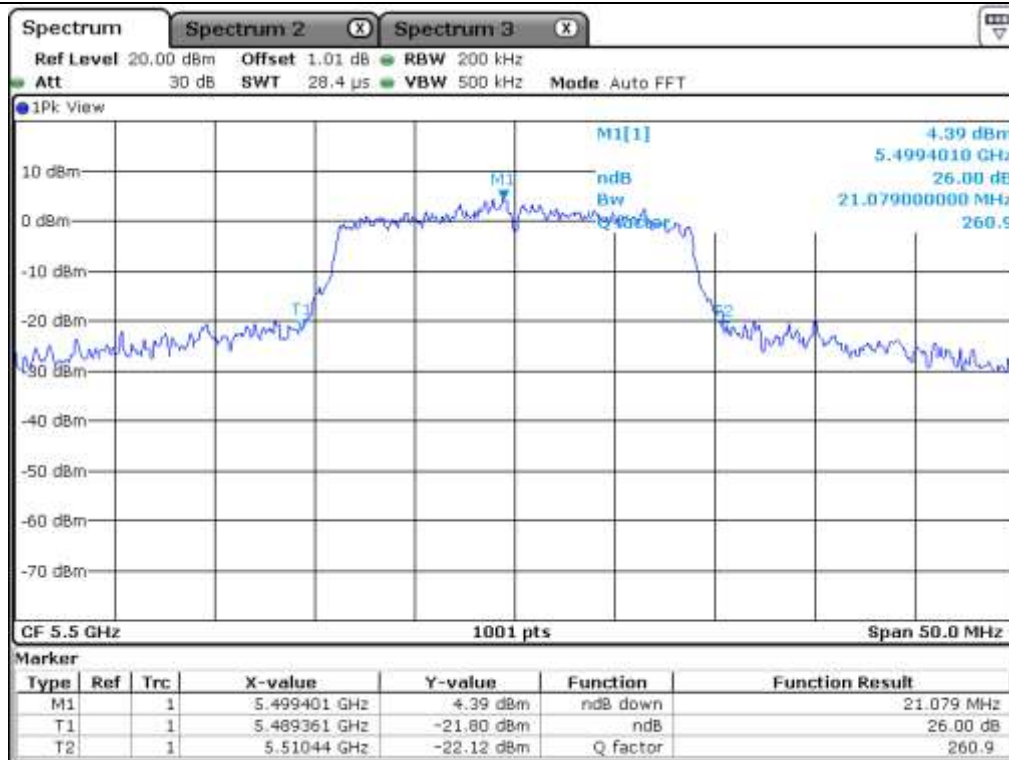
Low Channel (5 260 MHz)



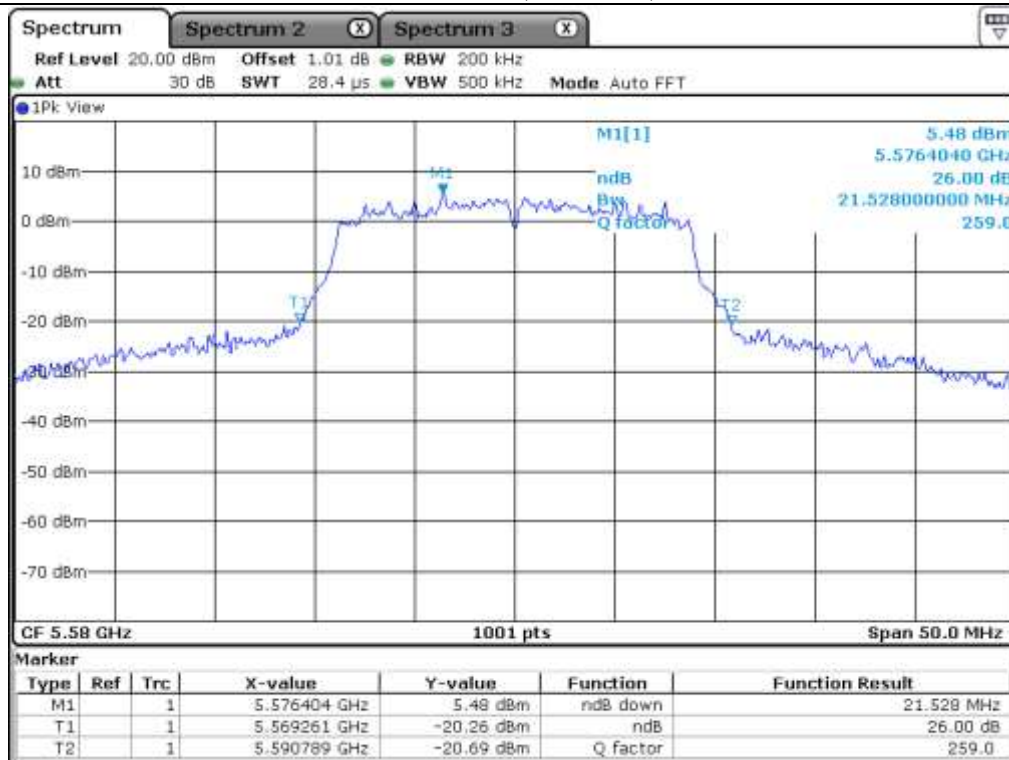
Middle Channel (5 300 MHz)



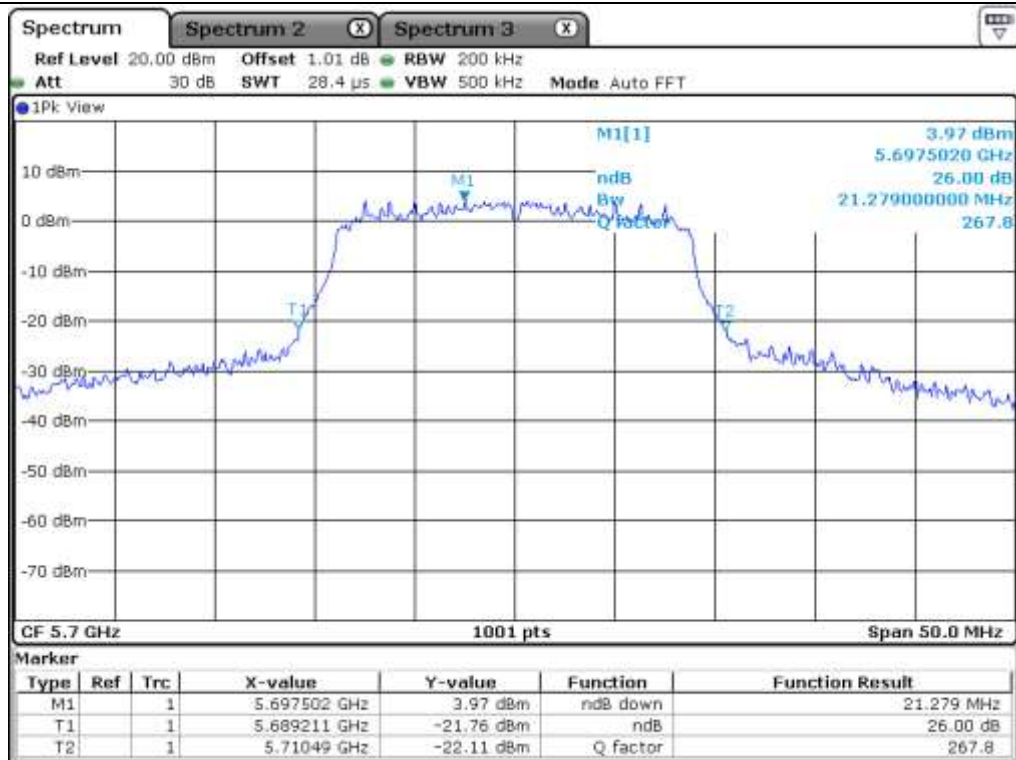
High Channel (5 320 MHz)



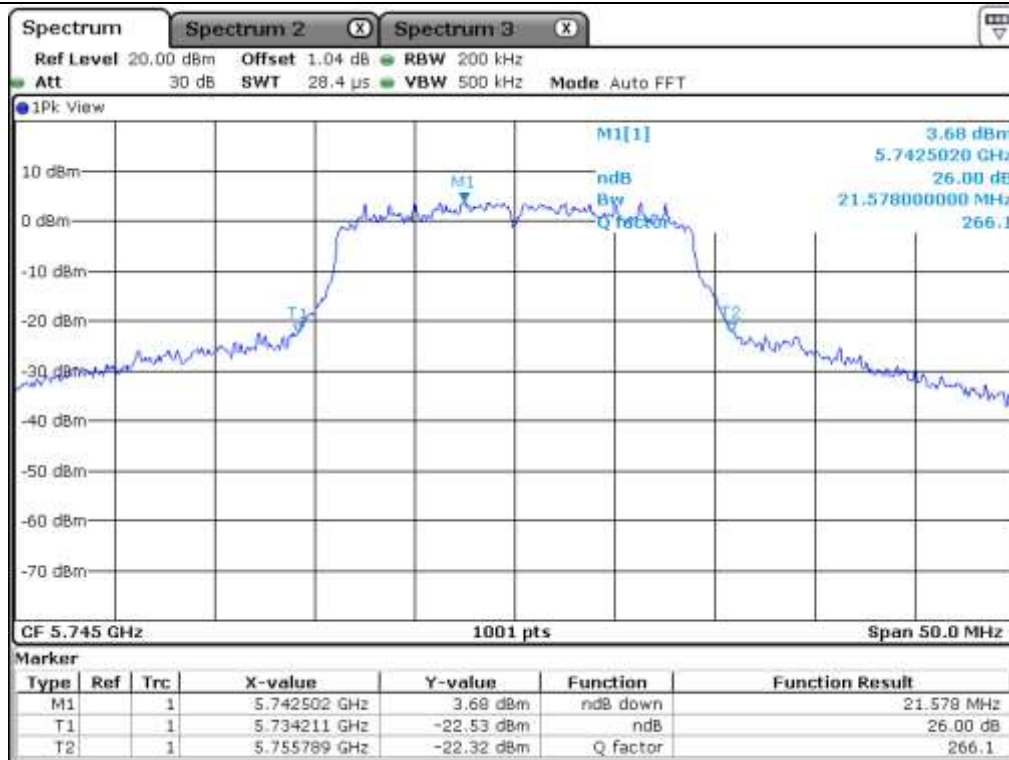
Low Channel (5 500 MHz)



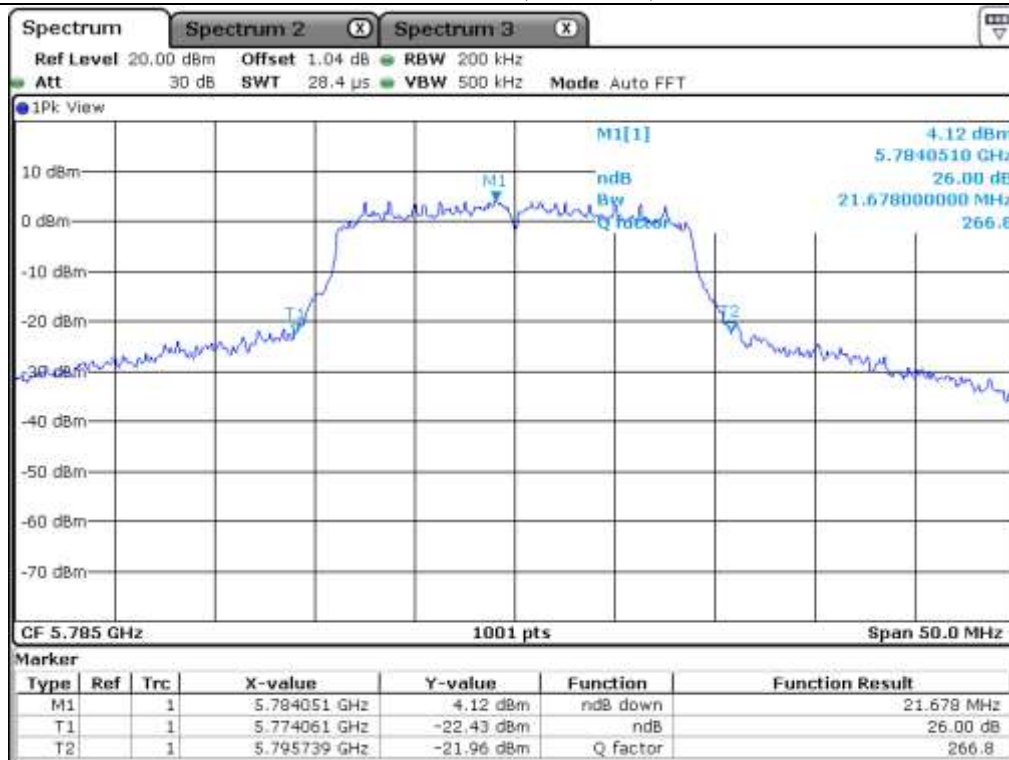
Middle Channel (5 580 MHz)



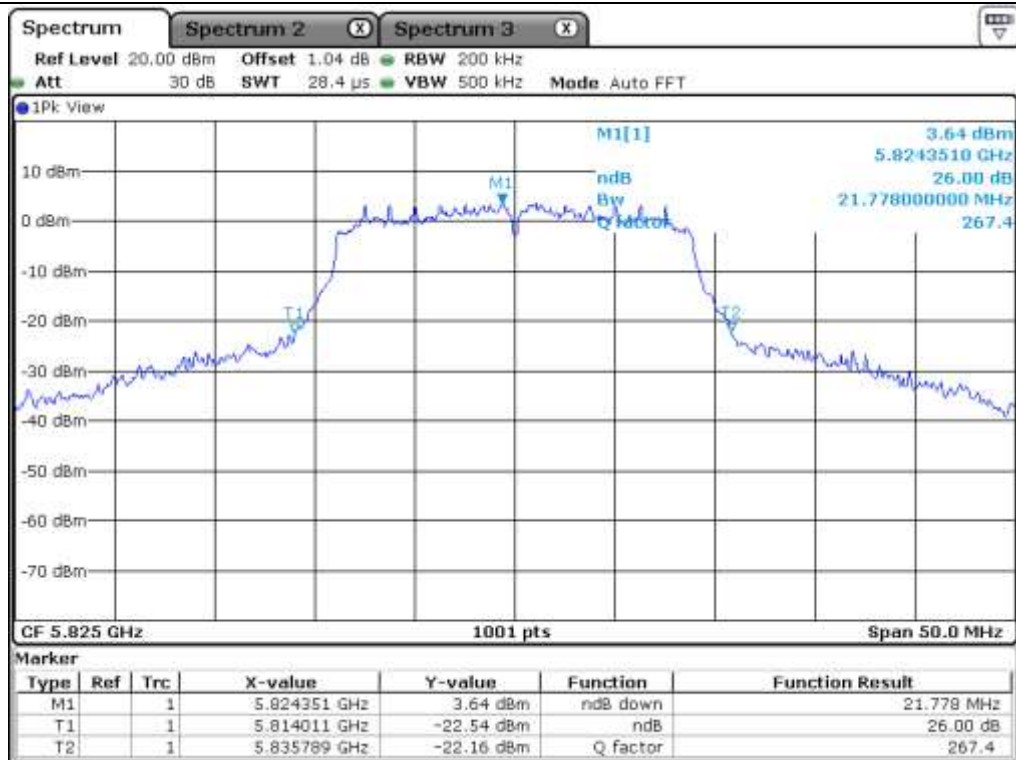
High Channel (5 700 MHz)



Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)



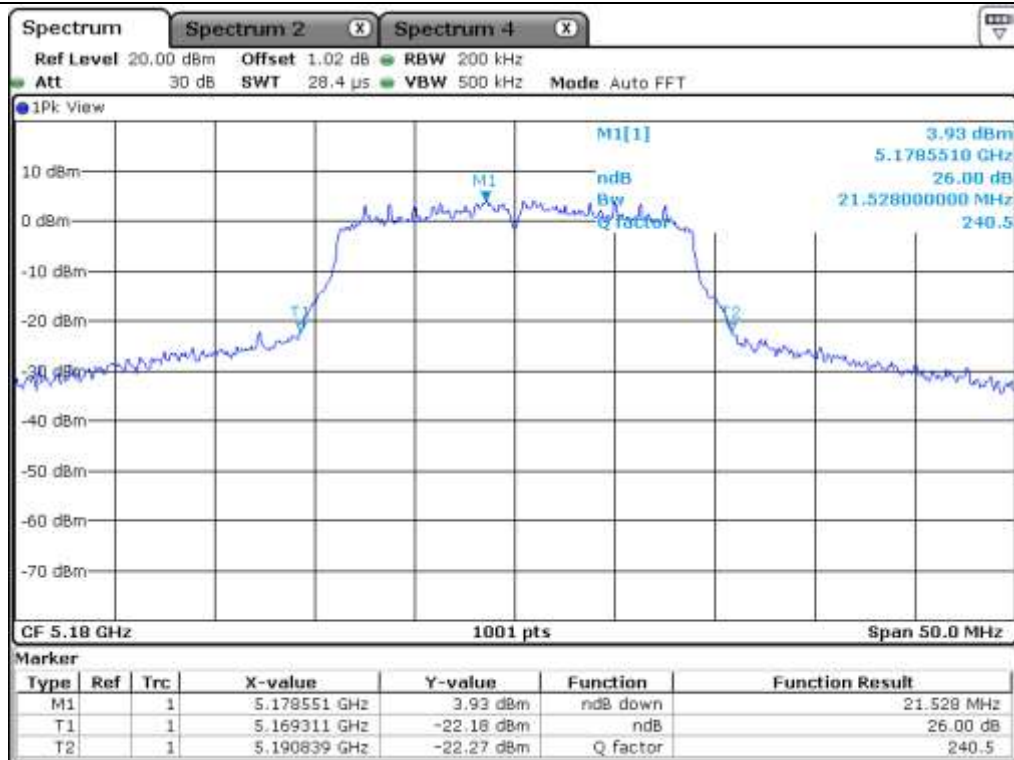
High Channel (5 825 MHz)

7.5.2 Test data for Antenna 1

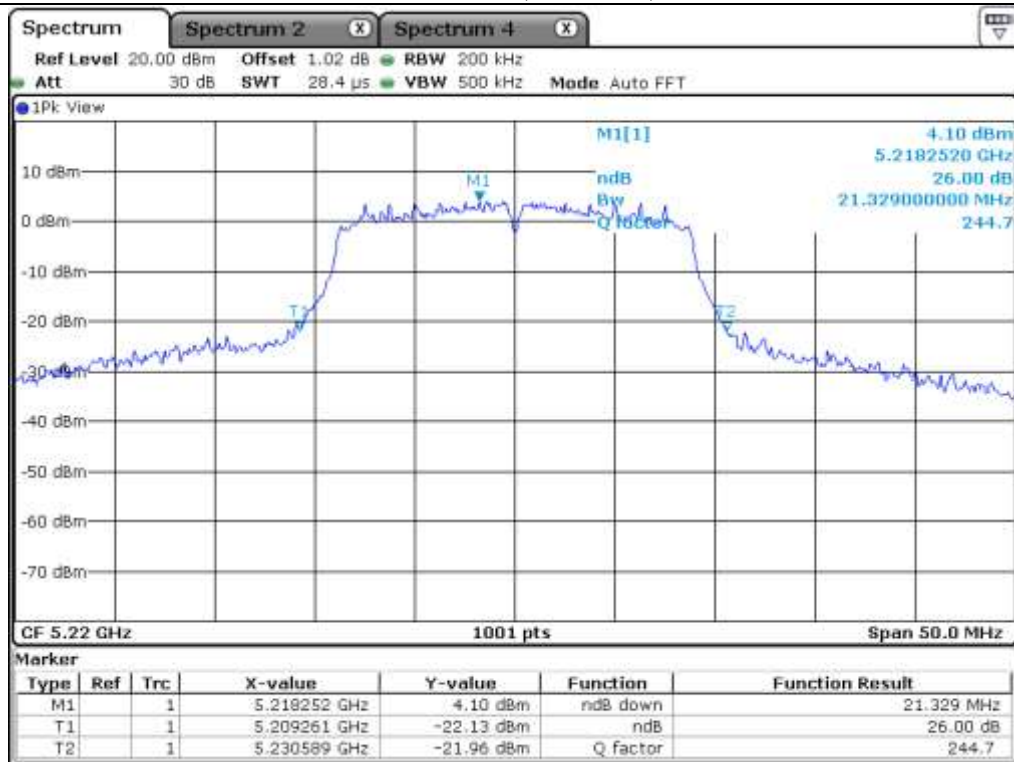
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180.00	21.53
	Middle	5 220.00	21.33
	High	5 240.00	21.68
5 250 ~ 5 350	Low	5 260.00	21.78
	Middle	5 300.00	21.63
	High	5 320.00	21.33
5 470 ~ 5 725	Low	5 500.00	20.98
	Middle	5 580.00	21.93
	High	5 700.00	21.78
5 725 ~ 5 850	Low	5 745.00	21.68
	Middle	5 785.00	21.53
	High	5 825.00	21.78

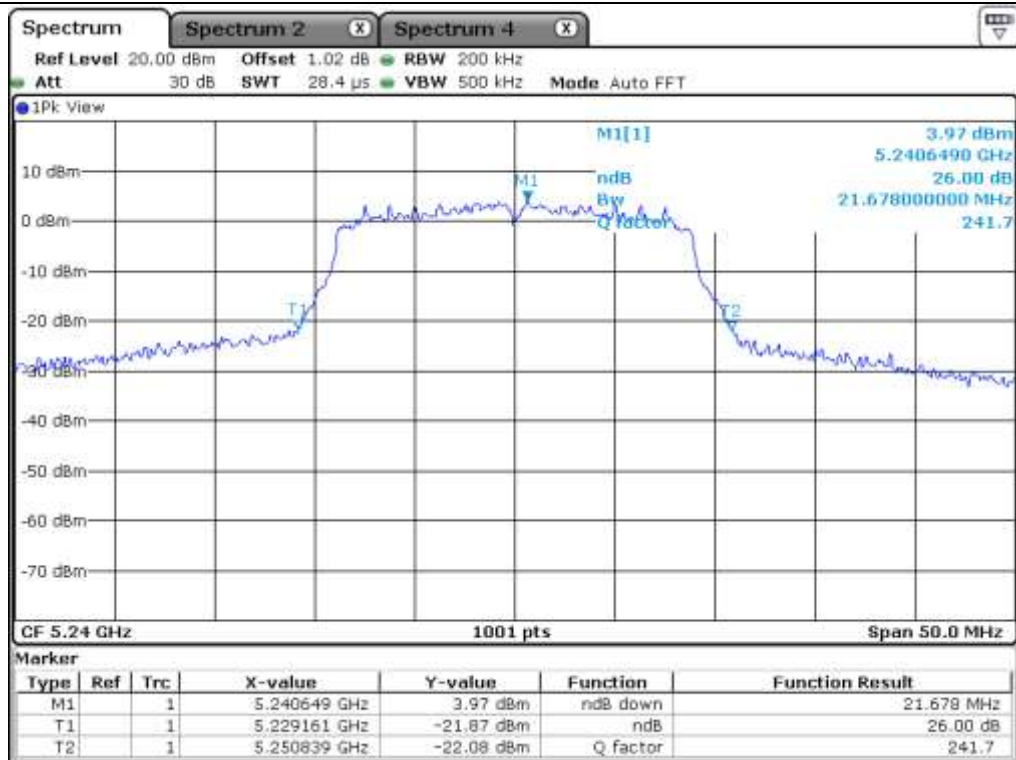
Remark: See next page for measurement data.



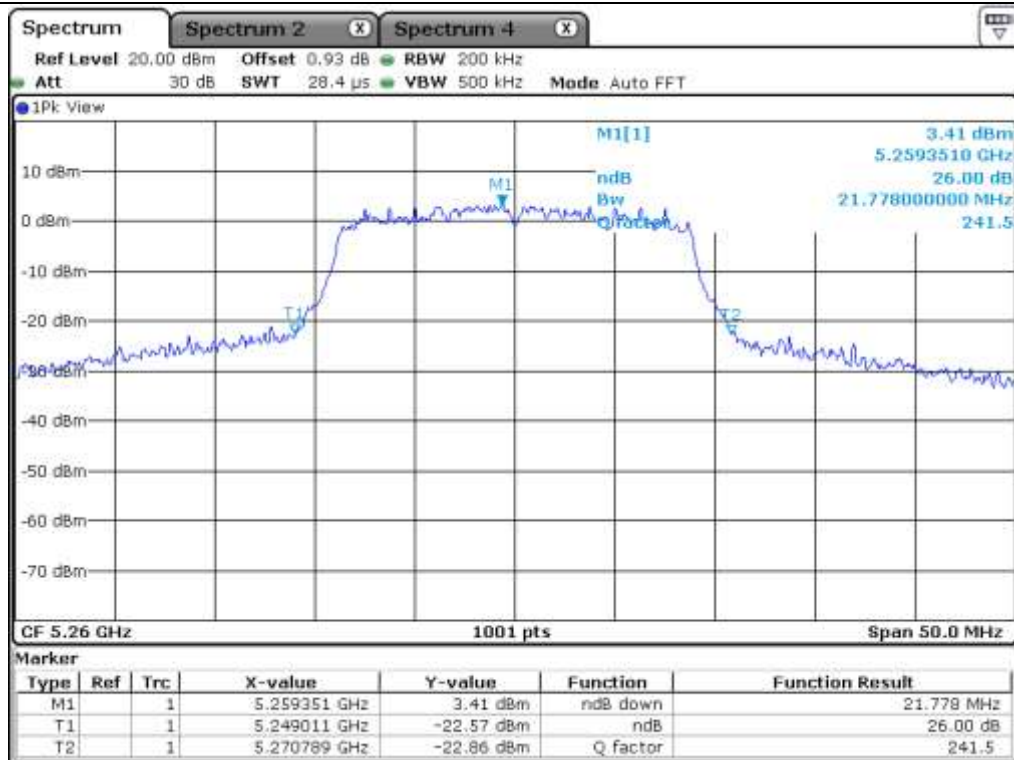
Low Channel (5 180 MHz)



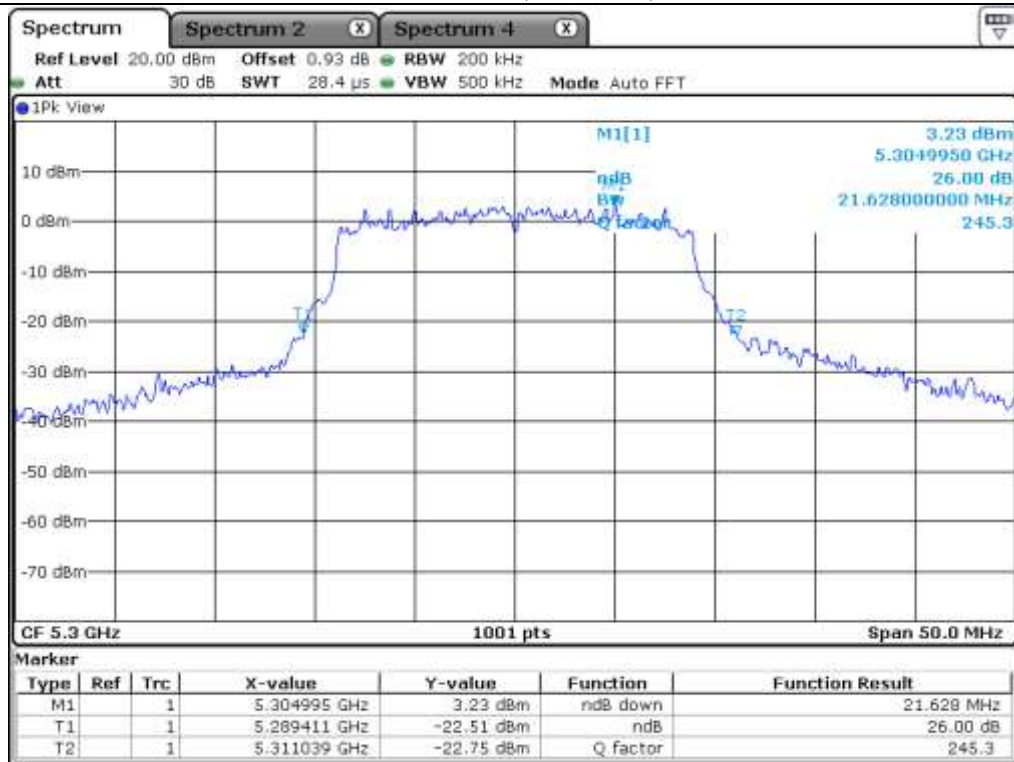
Middle Channel (5 220 MHz)



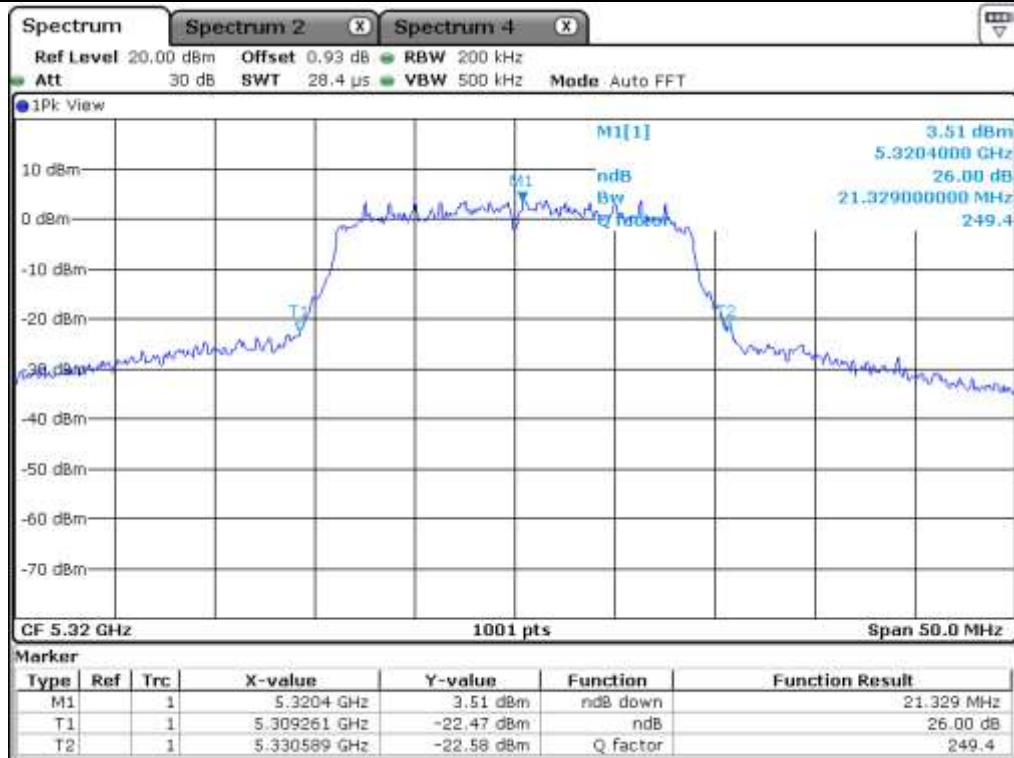
High Channel (5 240 MHz)



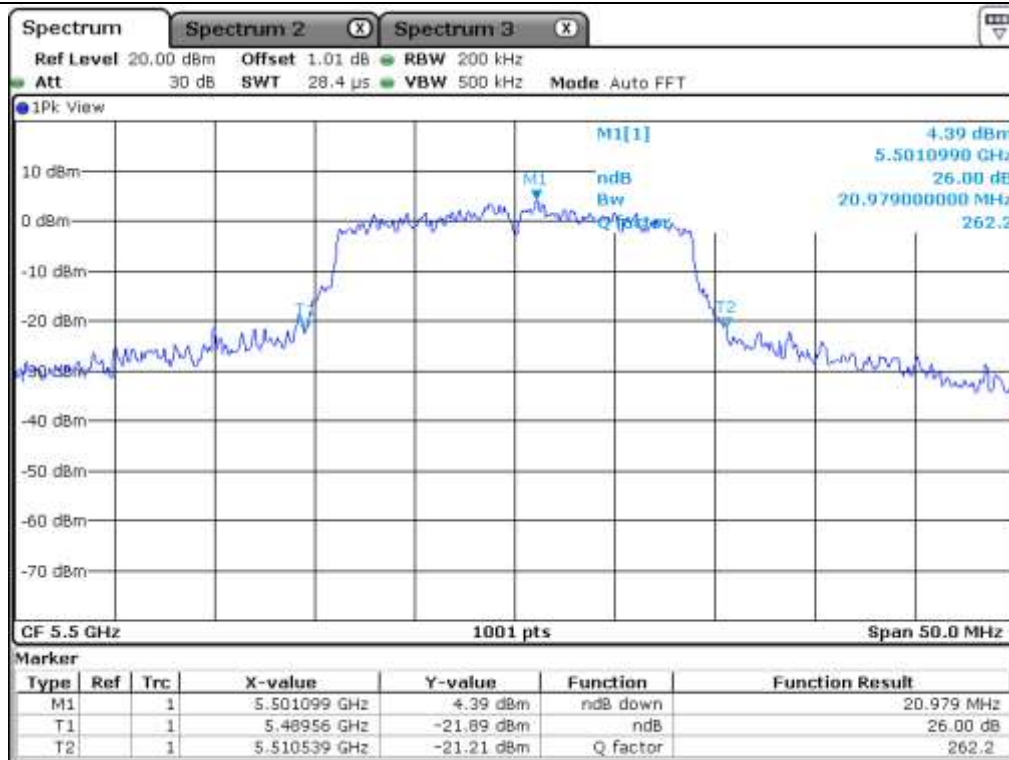
Low Channel (5 260 MHz)



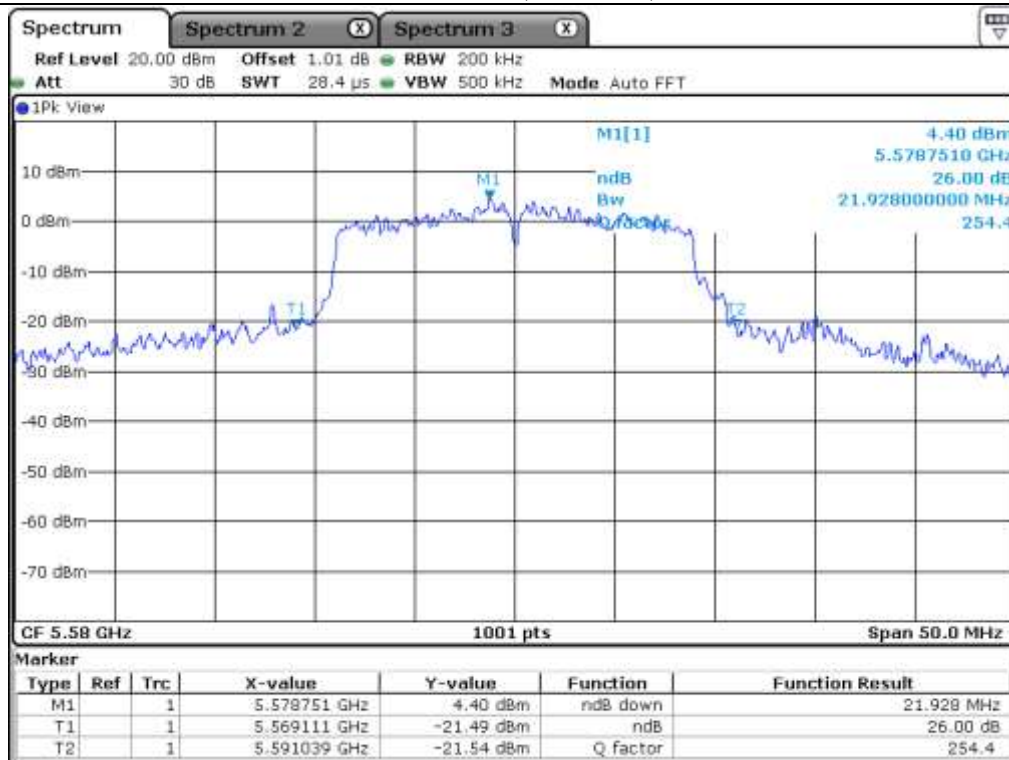
Middle Channel (5 300 MHz)



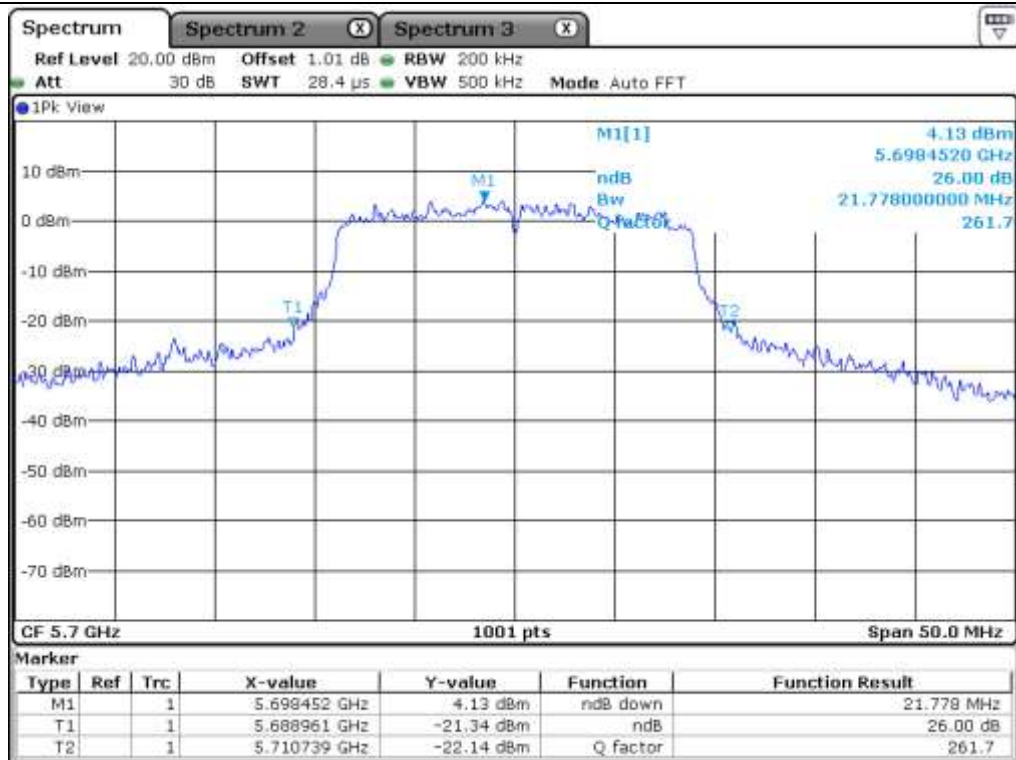
High Channel (5 320 MHz)



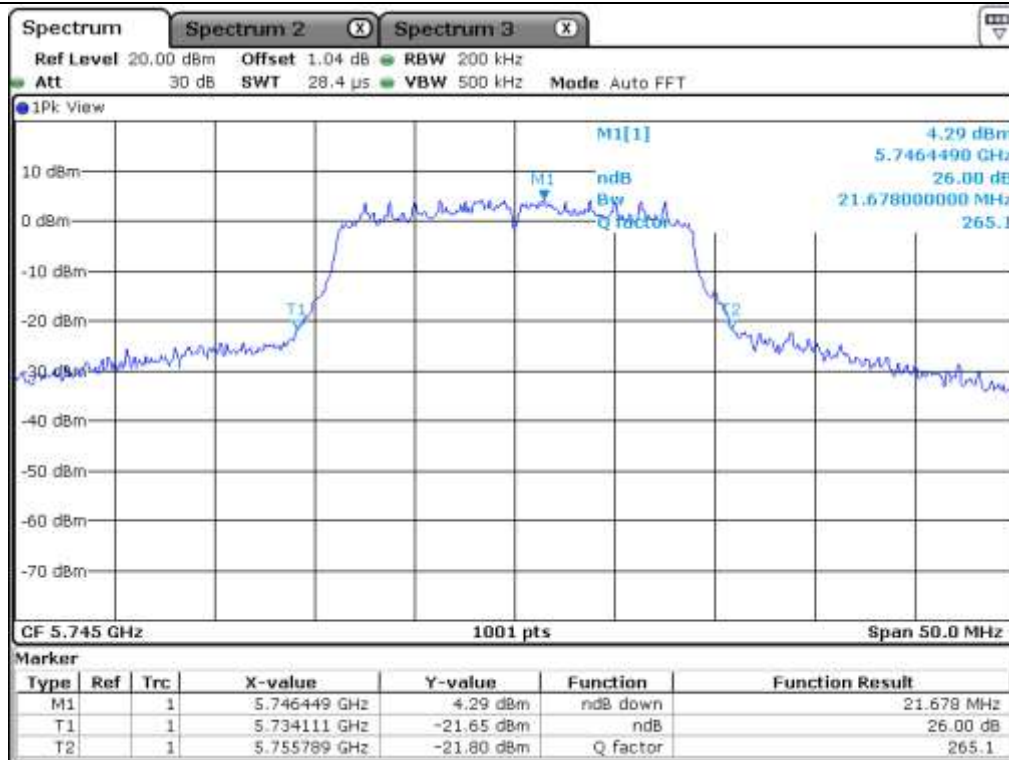
Low Channel (5 500 MHz)



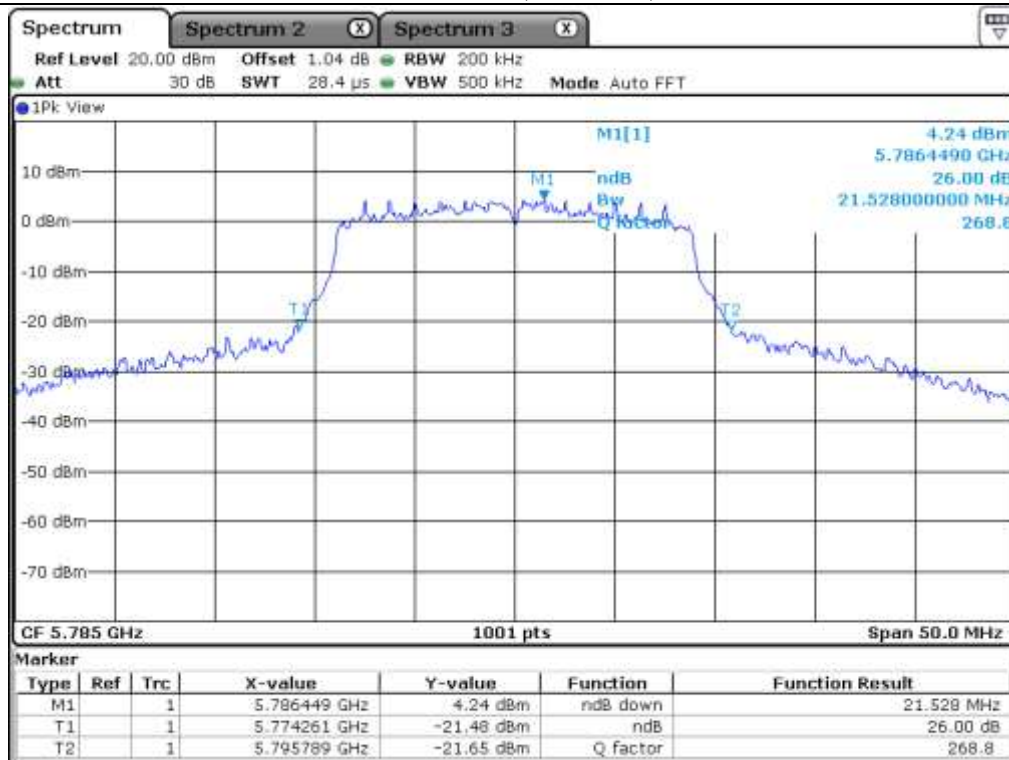
Middle Channel (5 580 MHz)



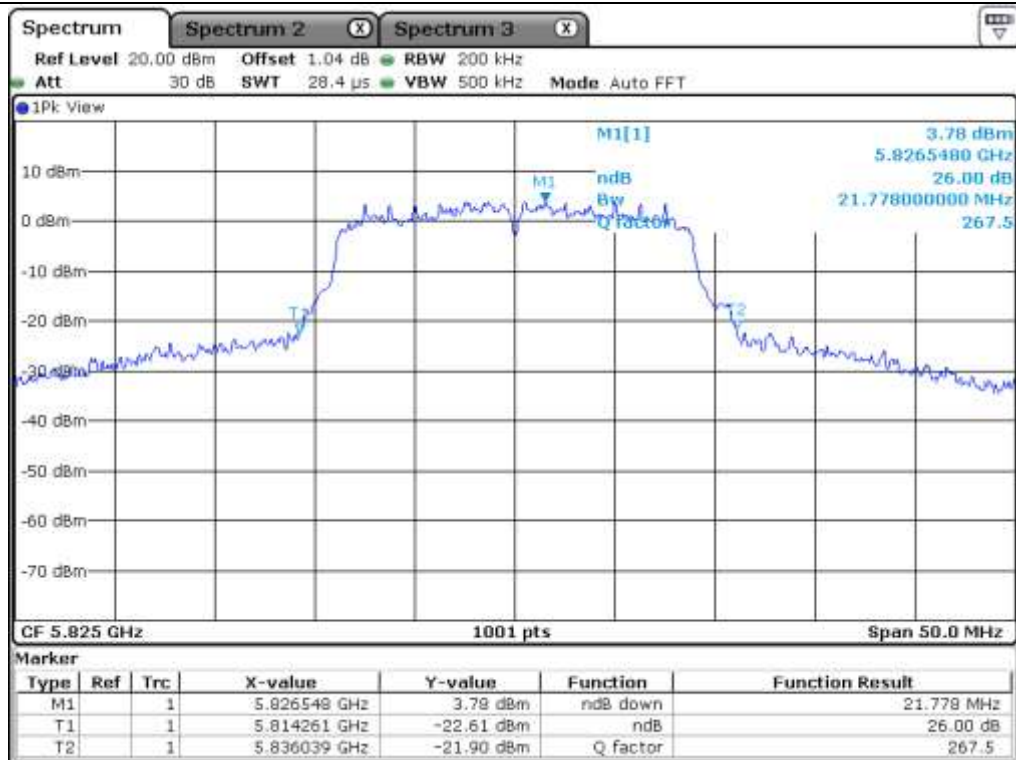
High Channel (5 700 MHz)



Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)

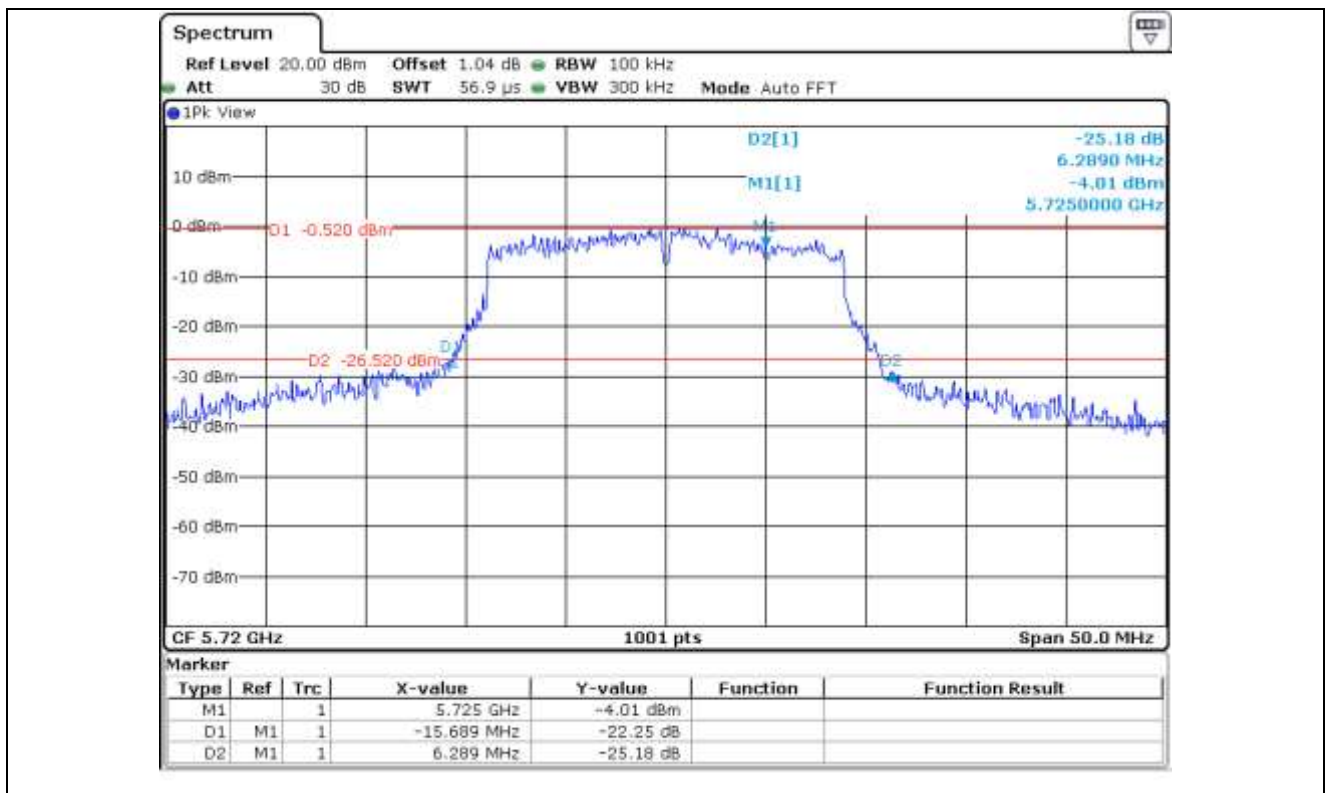


High Channel (5 825 MHz)

7.4.3 Test data for Straddle Channel_Antenna 0

-. Test Result : Pass

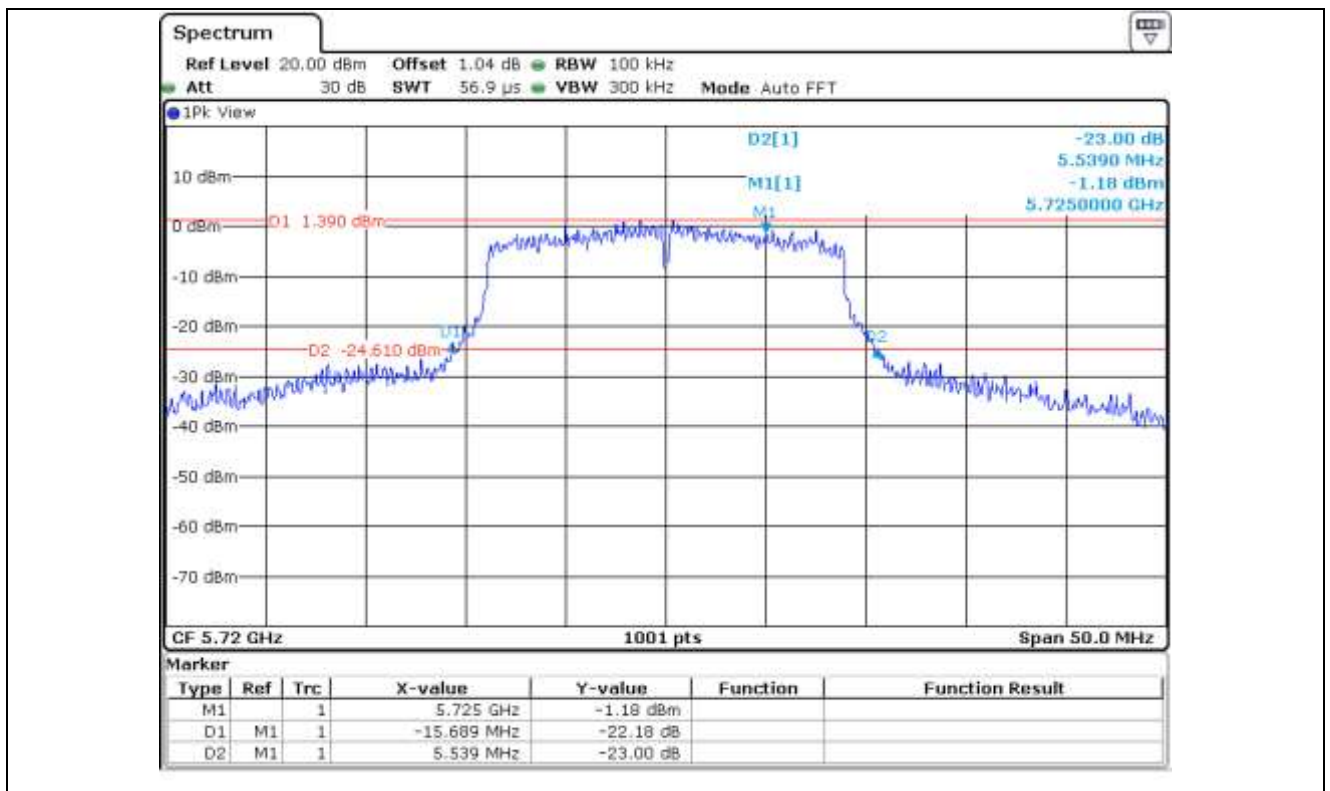
FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 720.00	15.69
5 725 ~ 5 850	5 720.00	6.29



7.4.4 Test data for Straddle Channel_Antenna 1

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 720.00	15.69
5 725 ~ 5 850	5 720.00	5.54



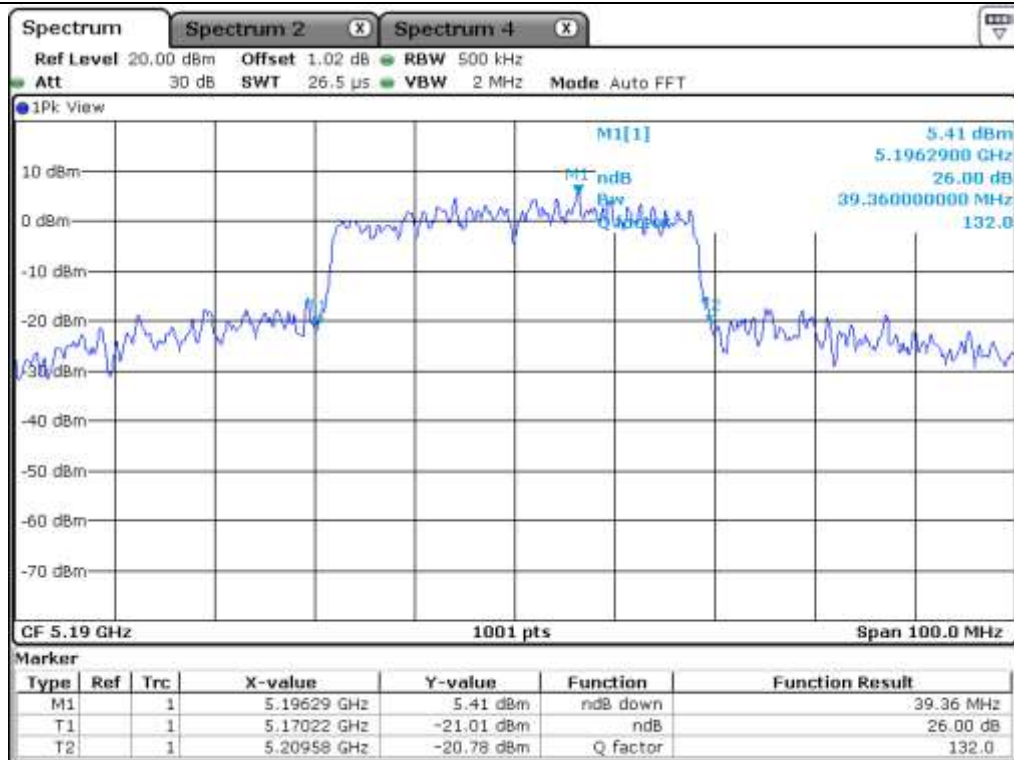
7.6 Test data for 802.11n_HT40 RLAN Mode

7.6.1 Test data for Antenna 0

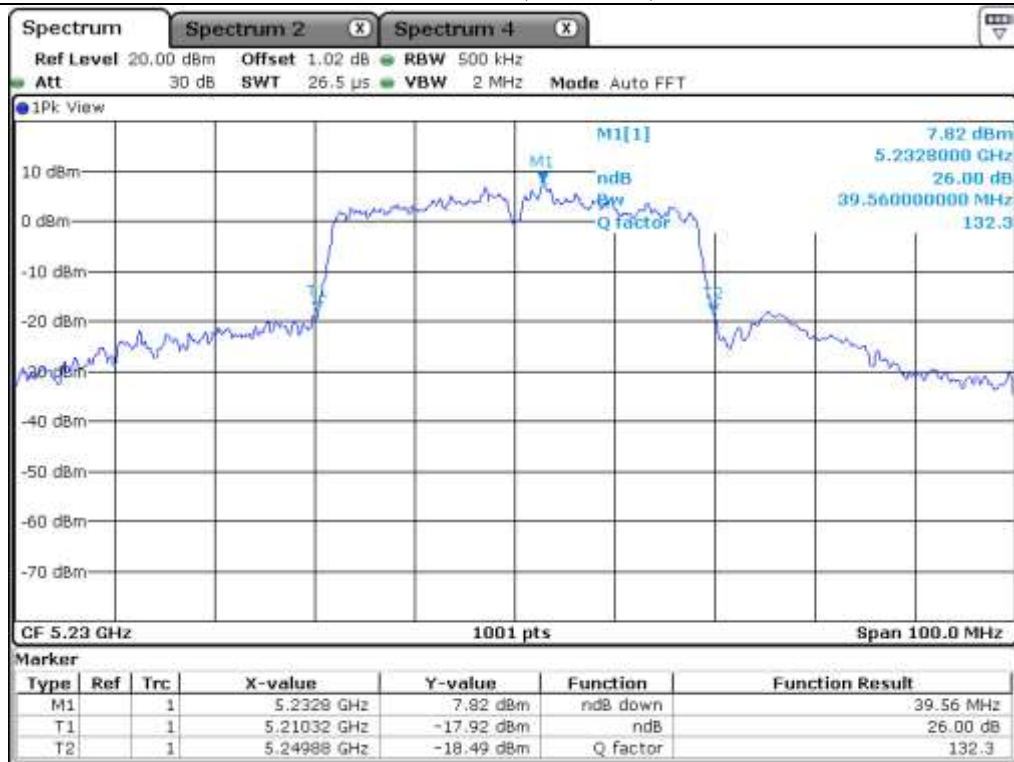
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 190.00	39.36
	High	5 230.00	39.56
5 250 ~ 5 350	Low	5 270.00	40.16
	High	5 310.00	39.46
5 470 ~ 5 725	Low	5 510.00	41.16
	Middle	5 550.00	41.06
	High	5 670.00	39.86
5 725 ~ 5 850	Low	5 755.00	39.76
	High	5 795.00	39.16

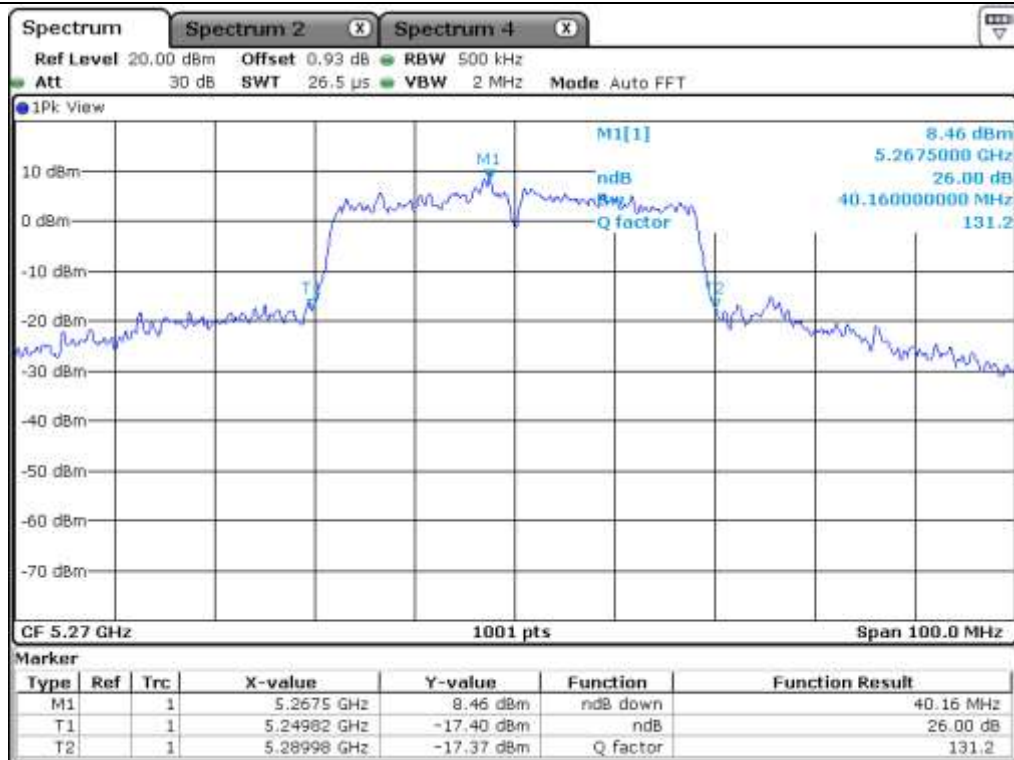
Remark: See next page for measurement data.



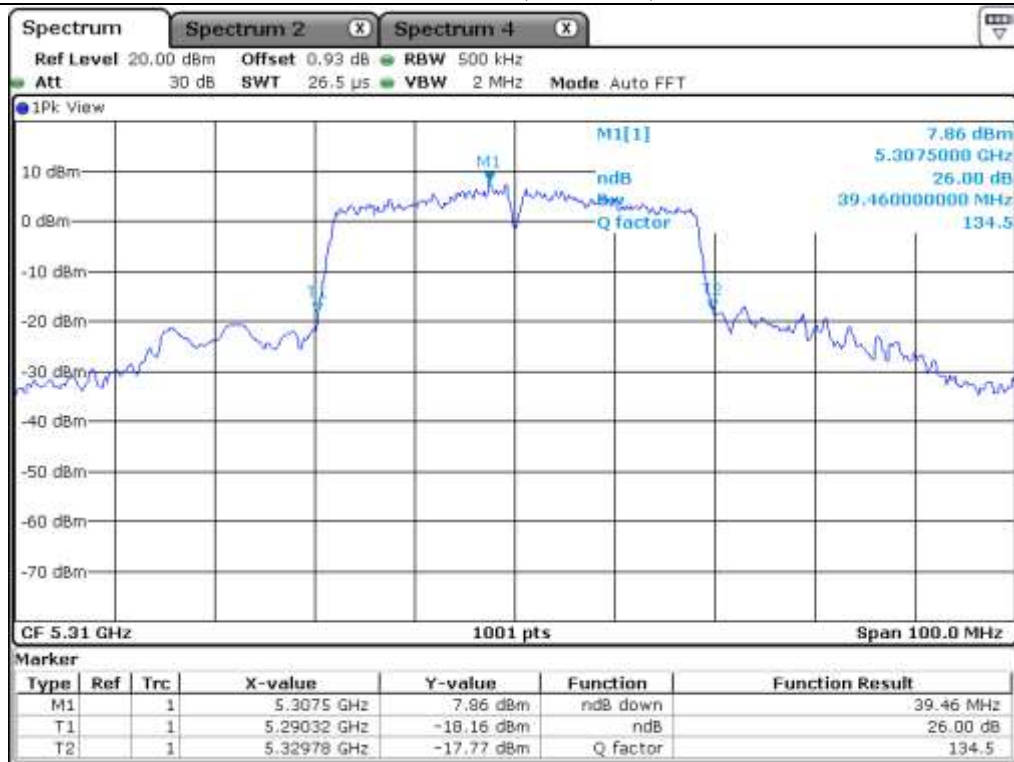
Low Channel (5 190 MHz)



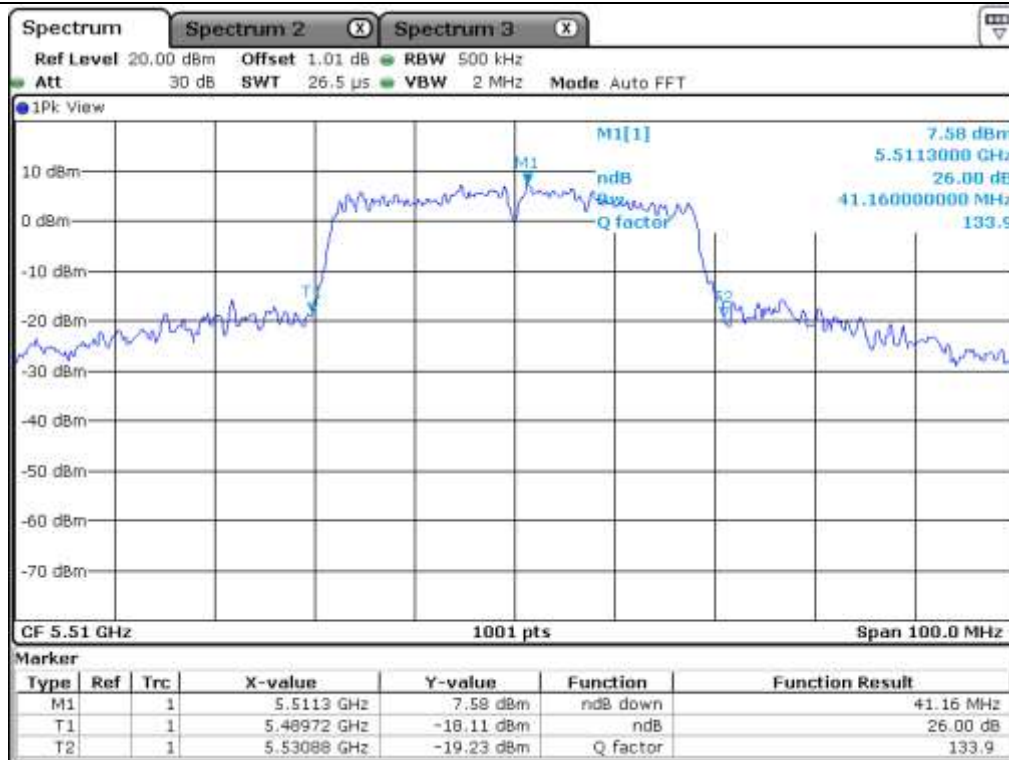
High Channel (5 230 MHz)



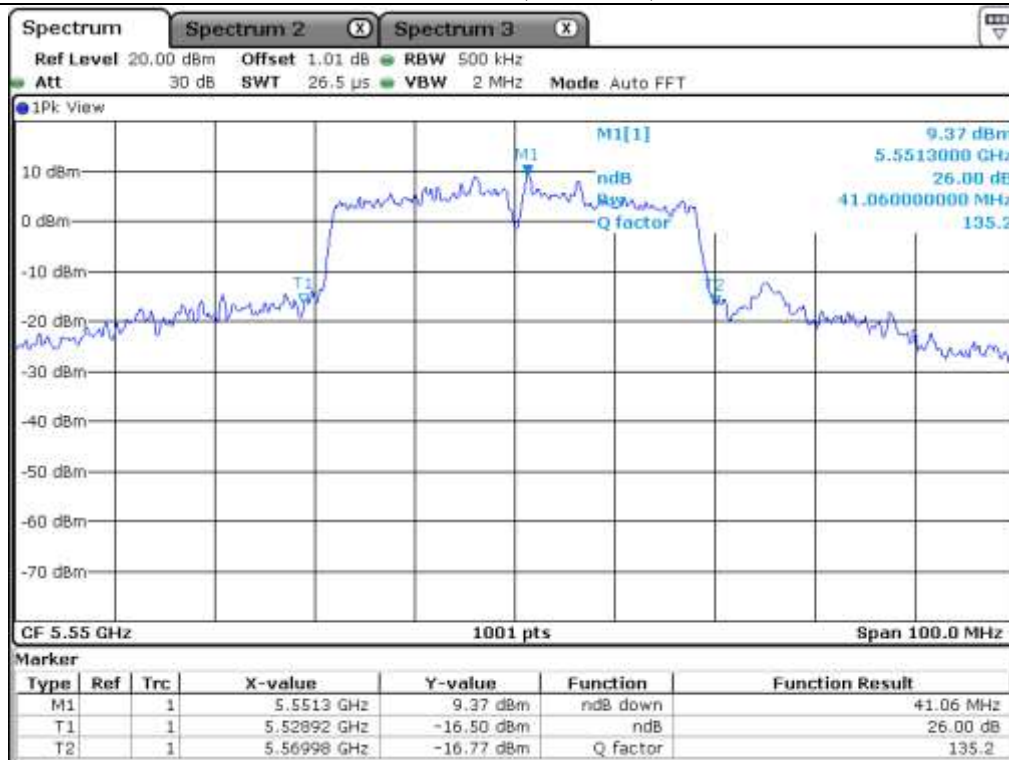
Low Channel (5 270 MHz)



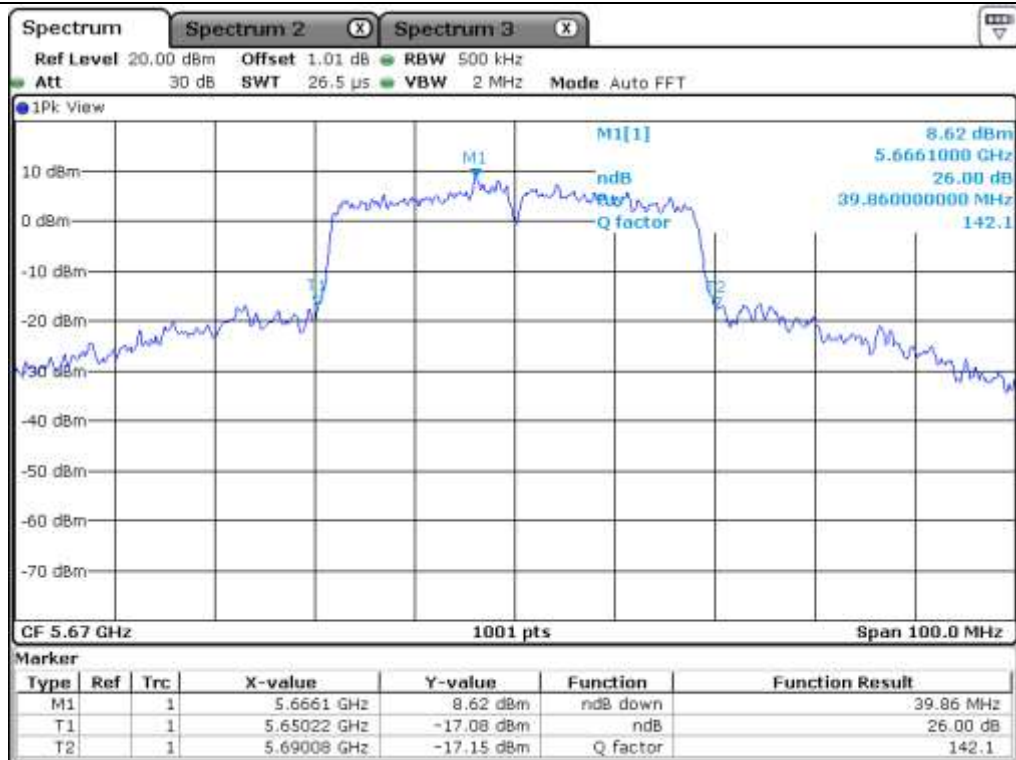
High Channel (5 310 MHz)



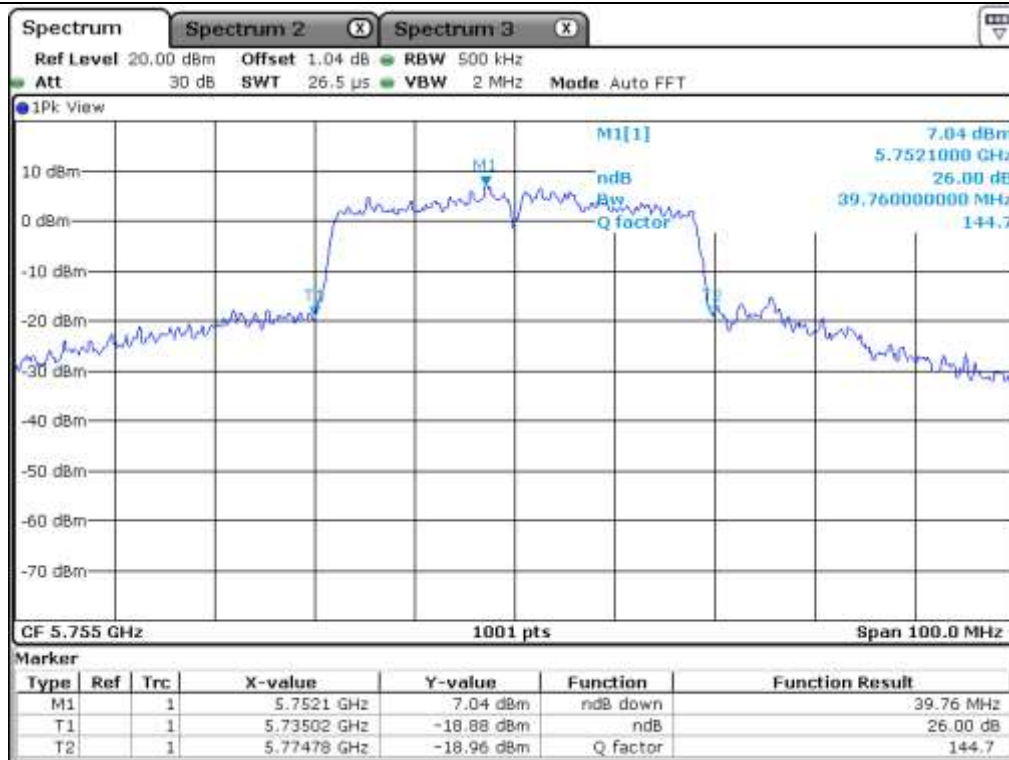
Low Channel (5 510 MHz)



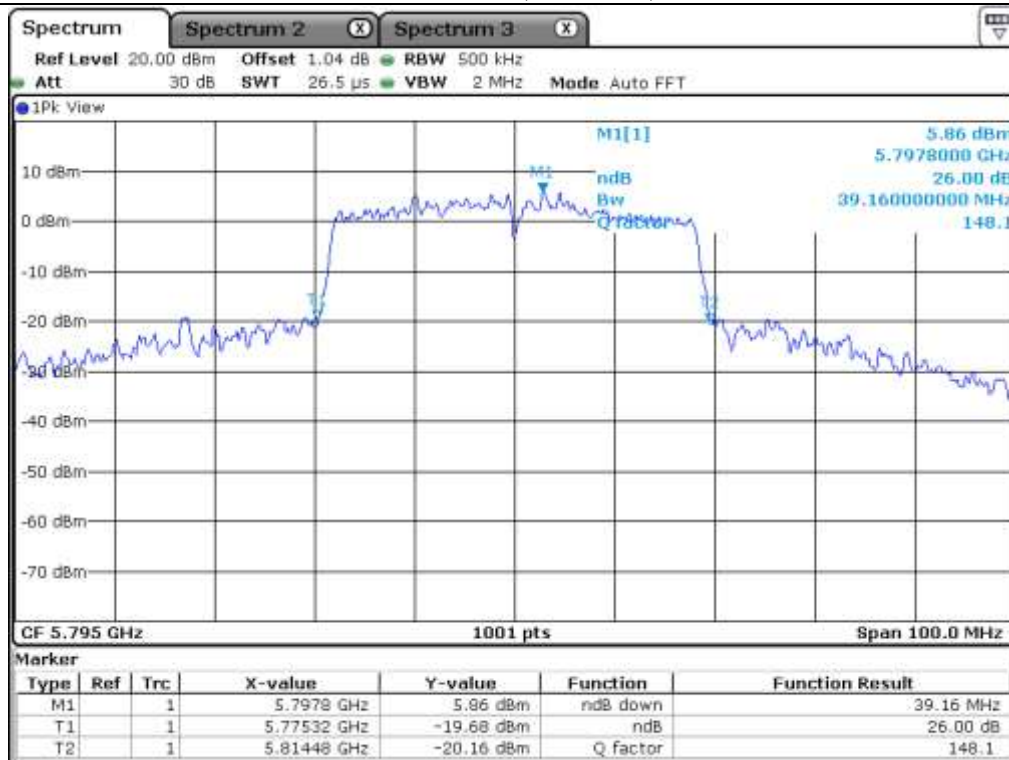
Middle Channel (5 550 MHz)



High Channel (5 670 MHz)



Low Channel (5 755 MHz)



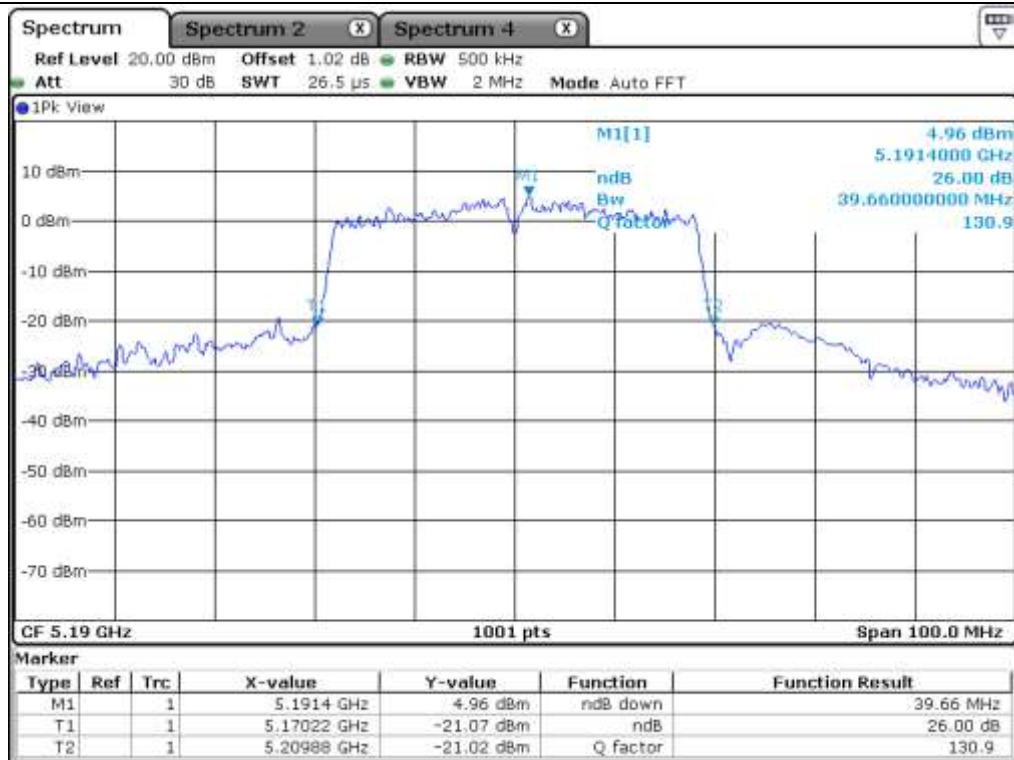
High Channel (5 795 MHz)

7.6.2 Test data for Antenna 1

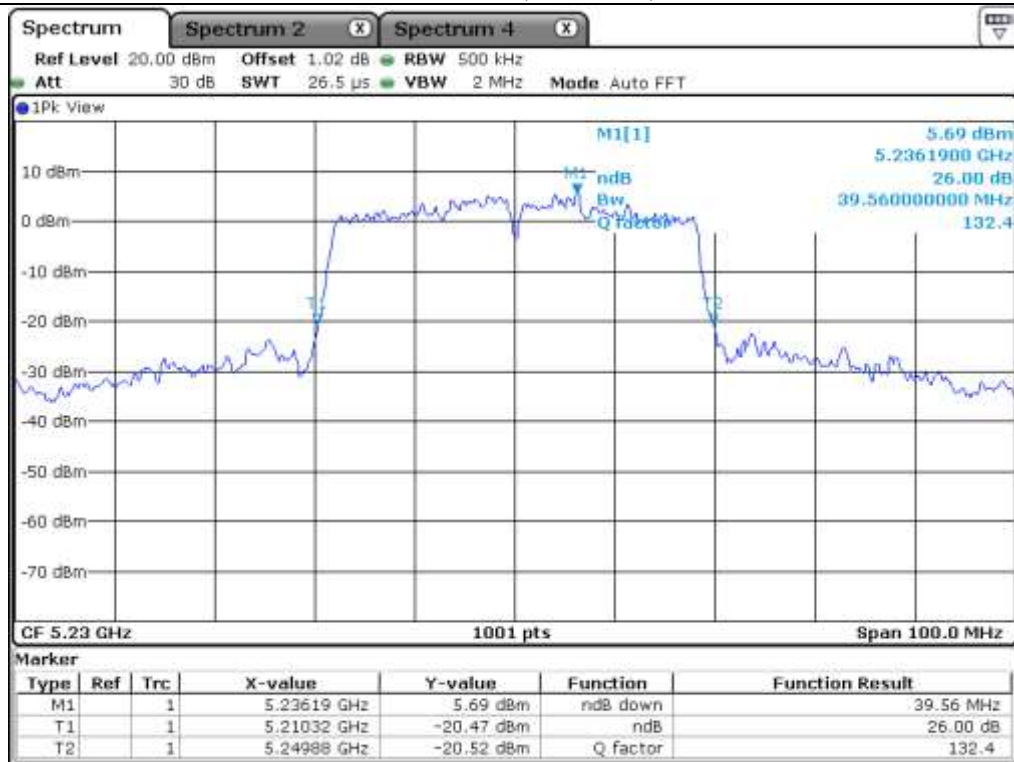
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 190.00	39.66
	High	5 230.00	39.56
5 250 ~ 5 350	Low	5 270.00	40.16
	High	5 310.00	39.76
5 470 ~ 5 725	Low	5 510.00	41.06
	Middle	5 550.00	40.46
	High	5 670.00	40.36
5 725 ~ 5 850	Low	5 755.00	39.66
	High	5 795.00	39.56

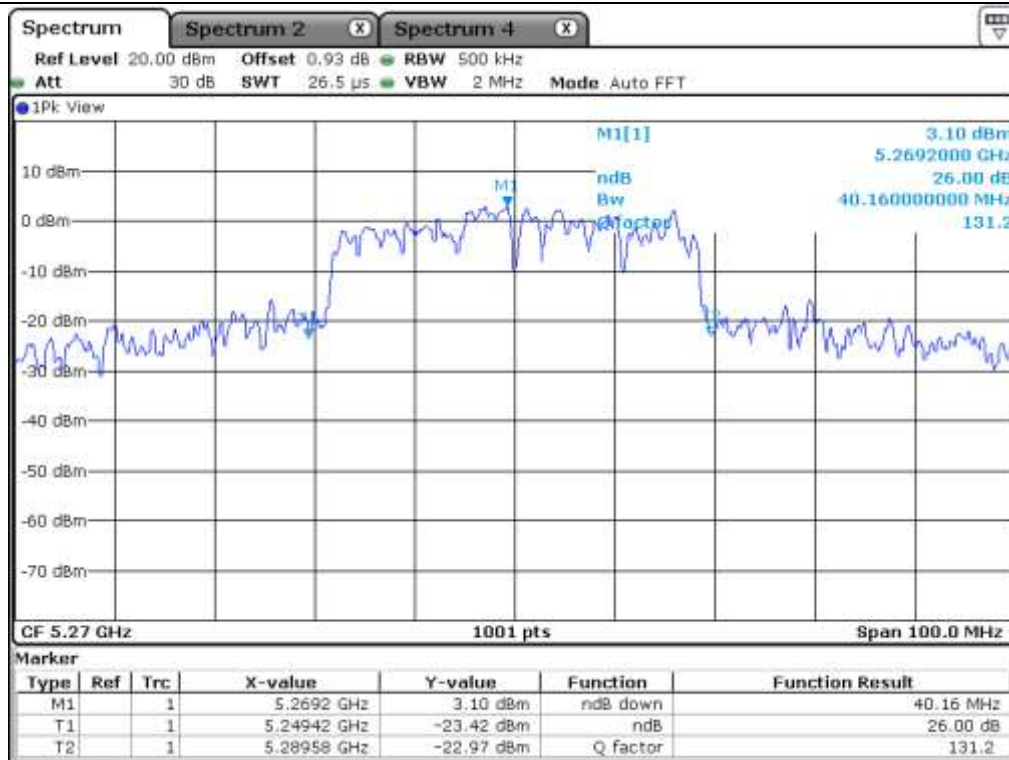
Remark: See next page for measurement data.



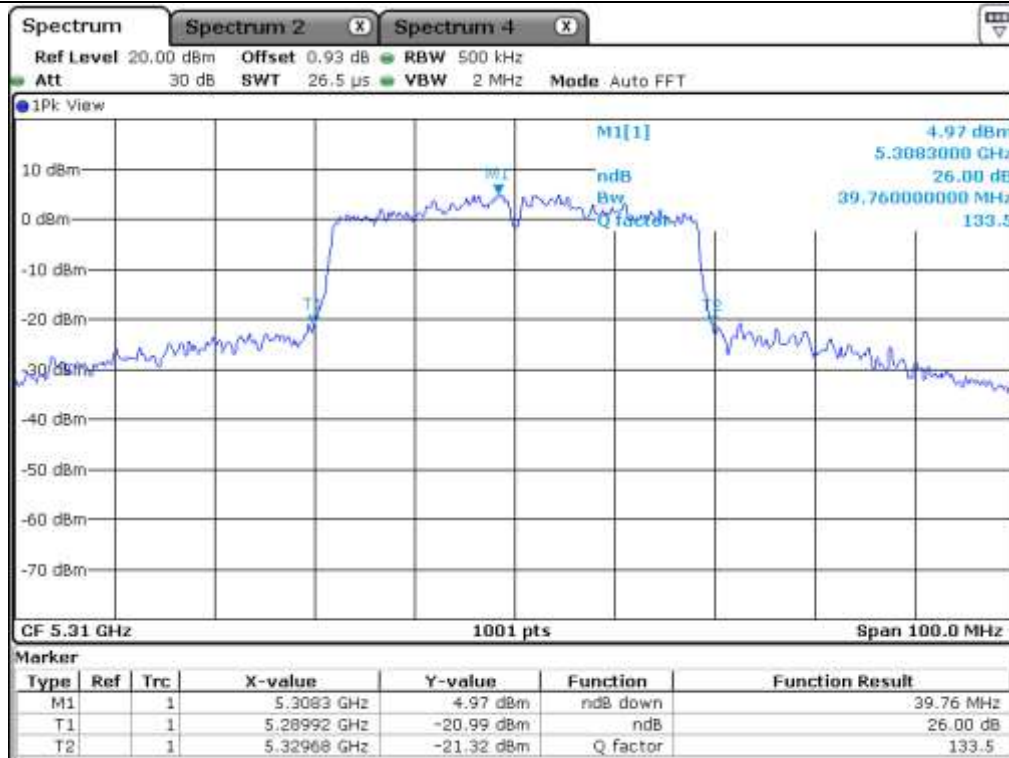
Low Channel (5 190 MHz)



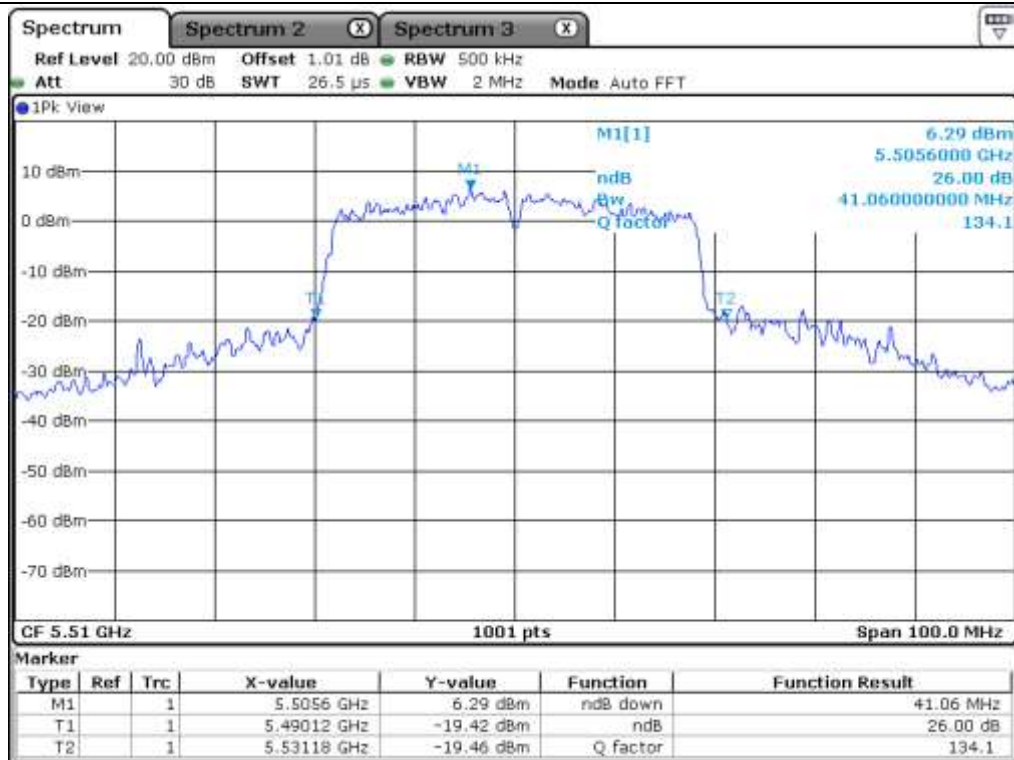
High Channel (5 230 MHz)



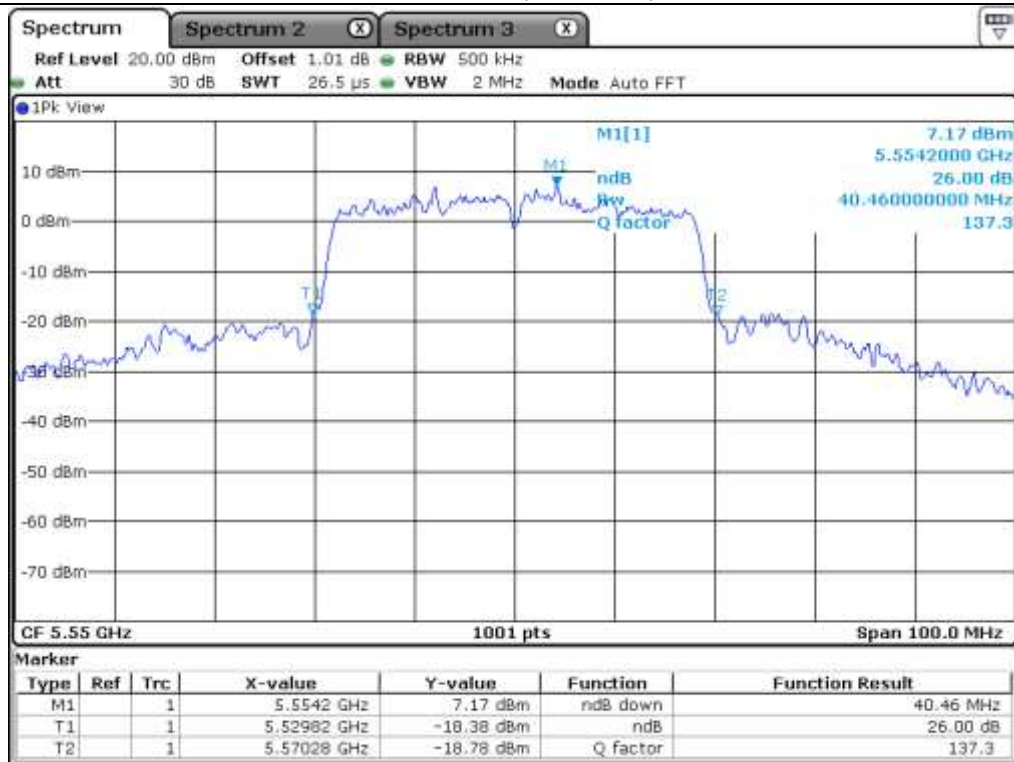
Low Channel (5 270 MHz)



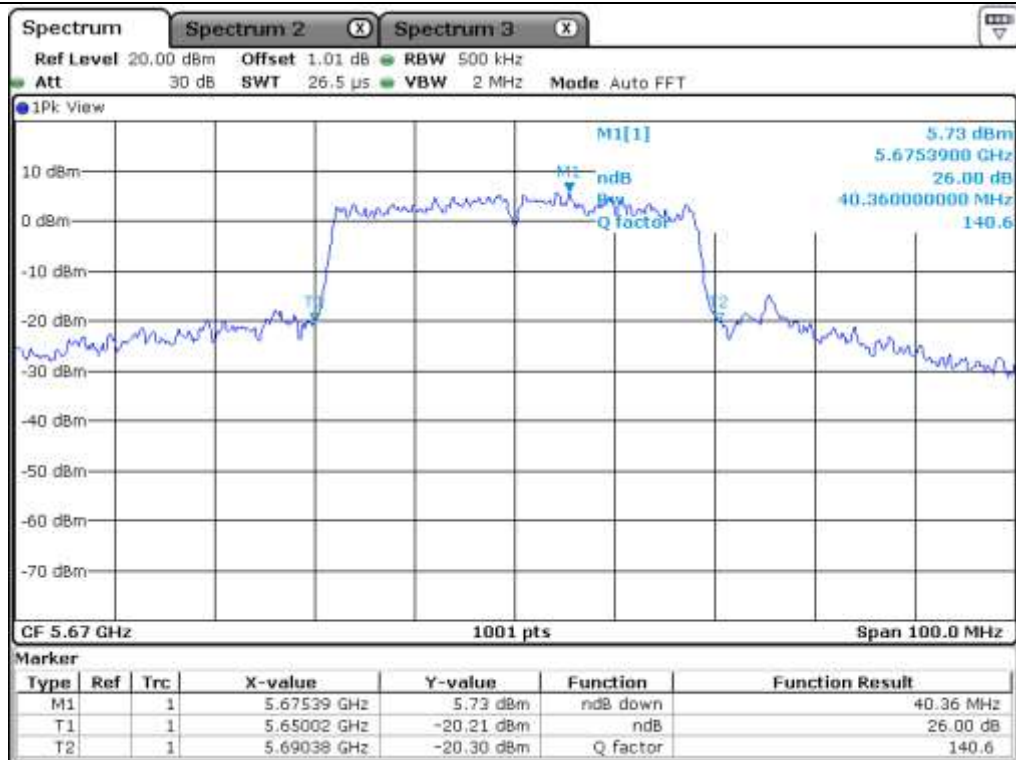
High Channel (5 310 MHz)



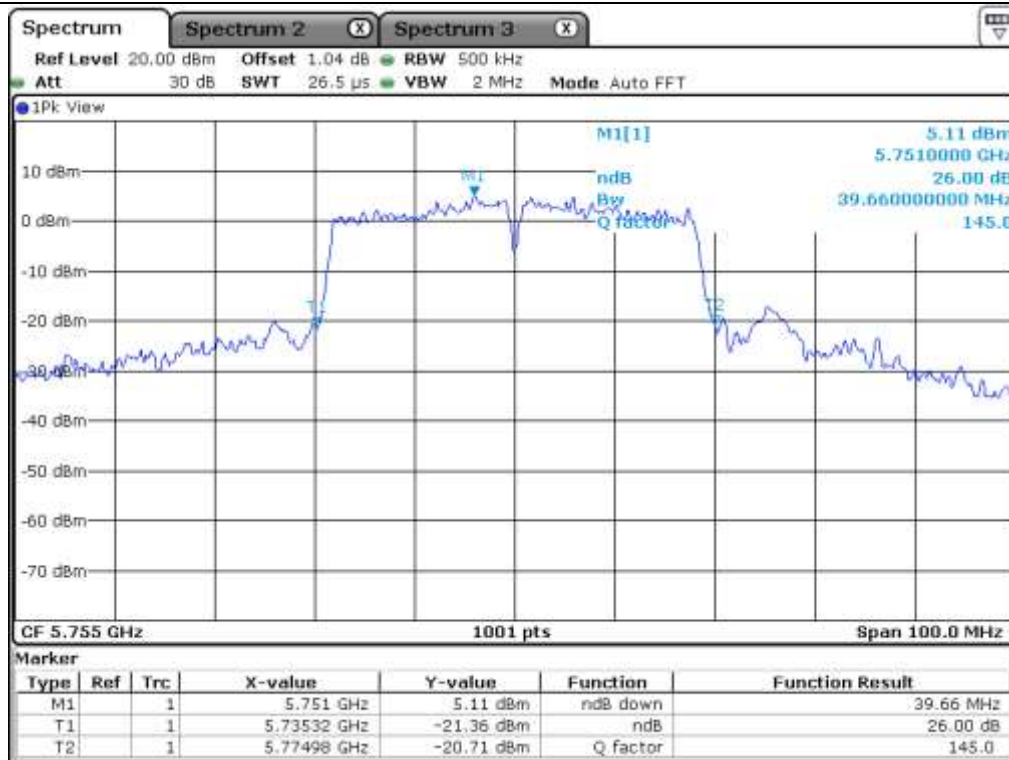
Low Channel (5 510 MHz)



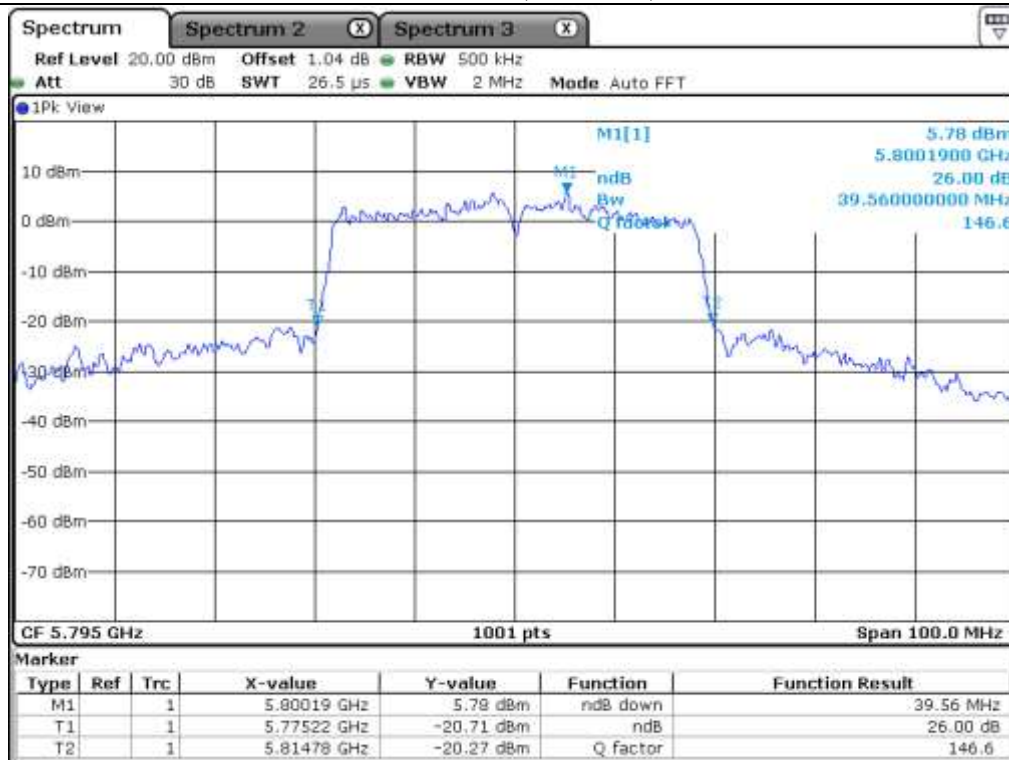
Middle Channel (5 550 MHz)



High Channel (5 670 MHz)



Low Channel (5 755 MHz)

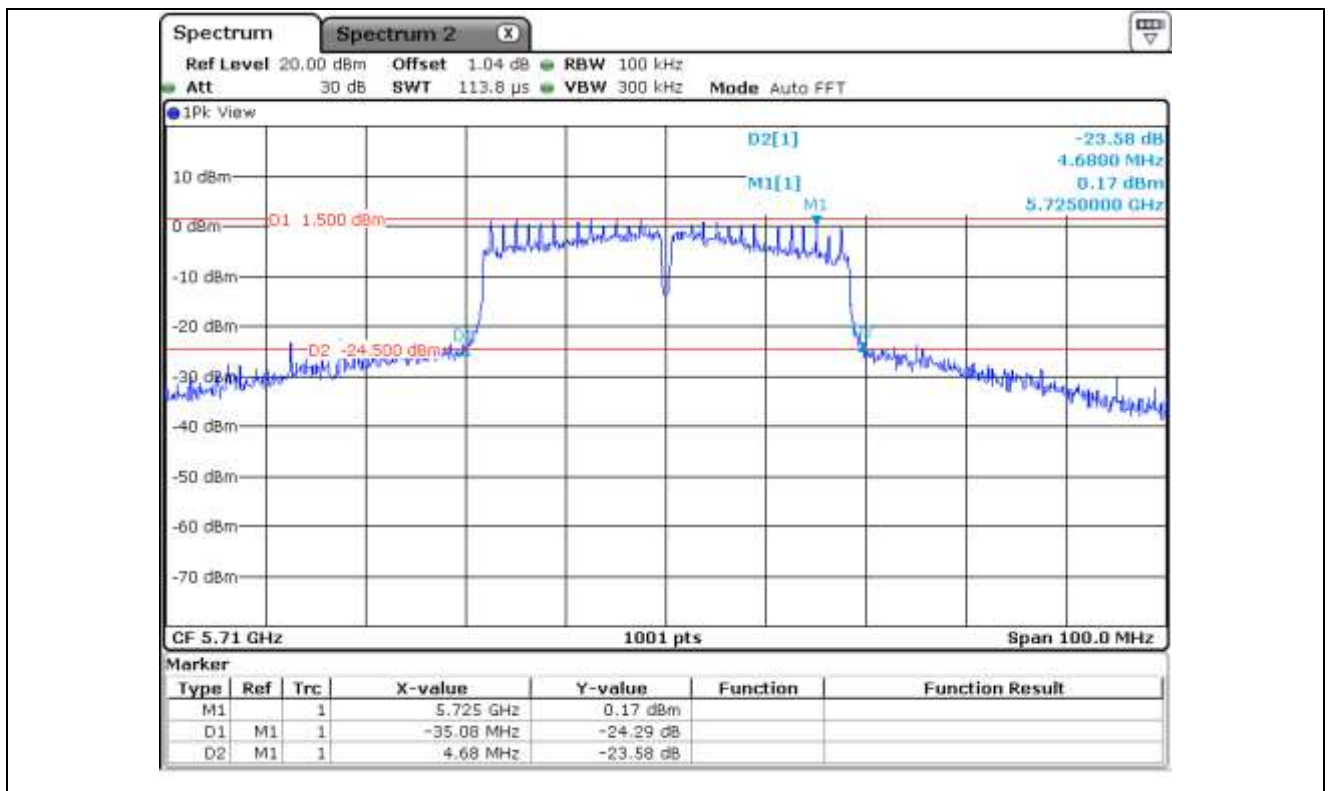


High Channel (5 795 MHz)

7.6.3 Test data for Straddle Channel_Antenna 0

-. Test Result : Pass

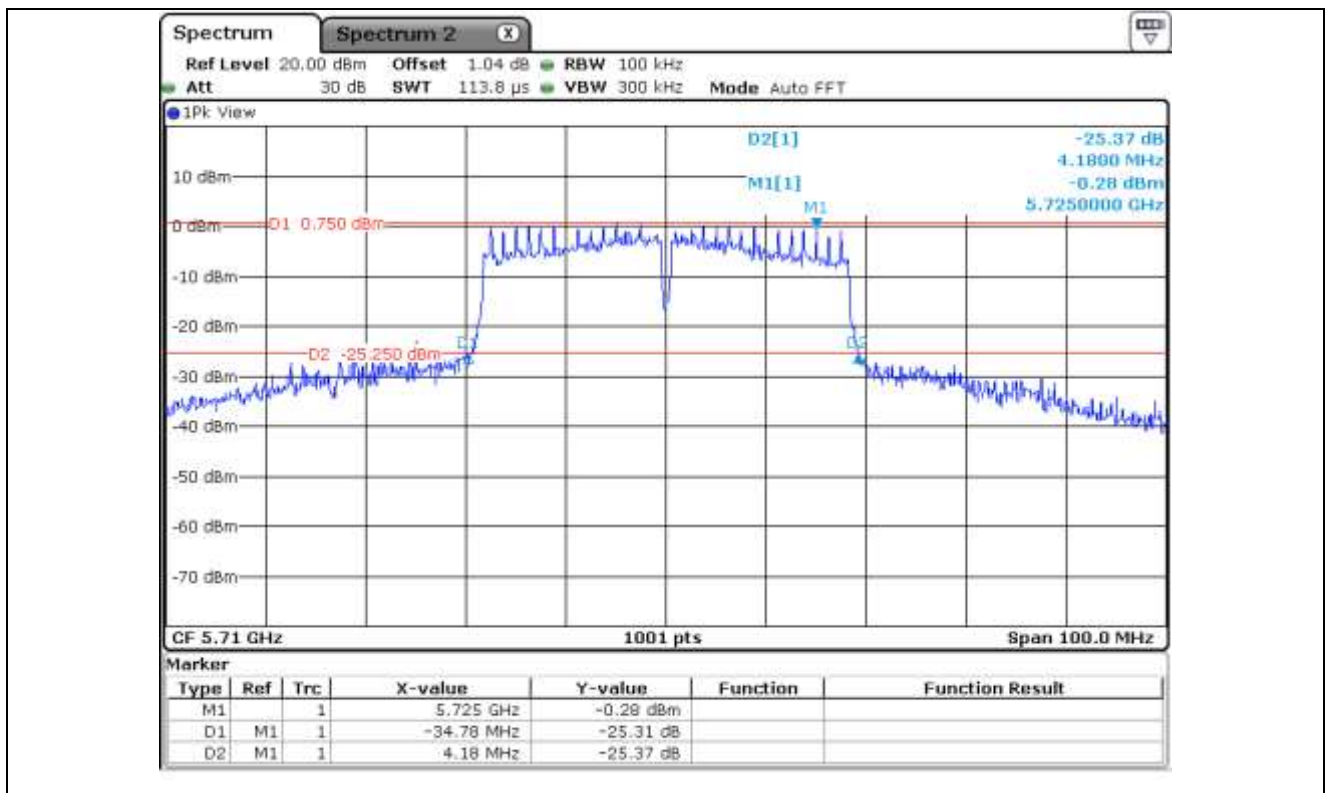
FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 710.00	35.08
5 725 ~ 5 850	5 710.00	4.68



7.6.4 Test data for Straddle Channel_Antenna 1

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 710.00	34.78
5 725 ~ 5 850	5 710.00	4.18

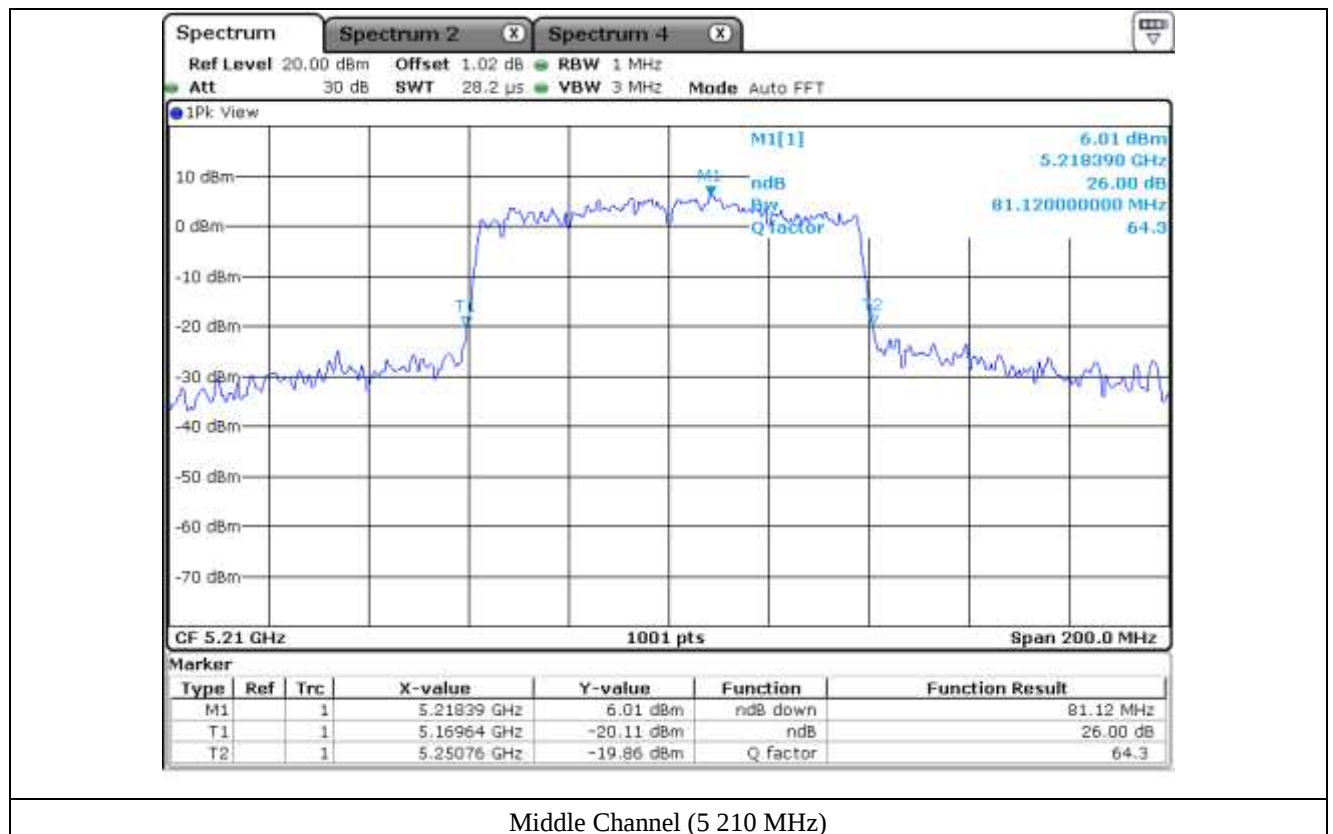


7.7 Test data for 802.11ac_VHT80 RLAN Mode

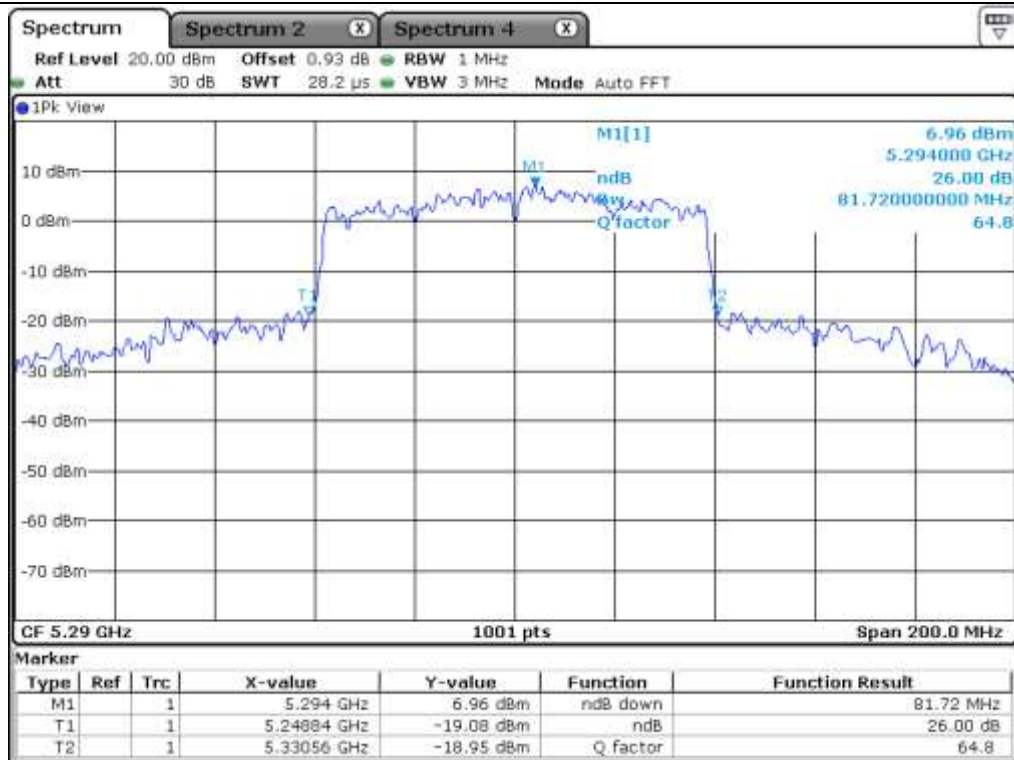
7.7.1 Test data for Antenna 0

-. Test Result : Pass

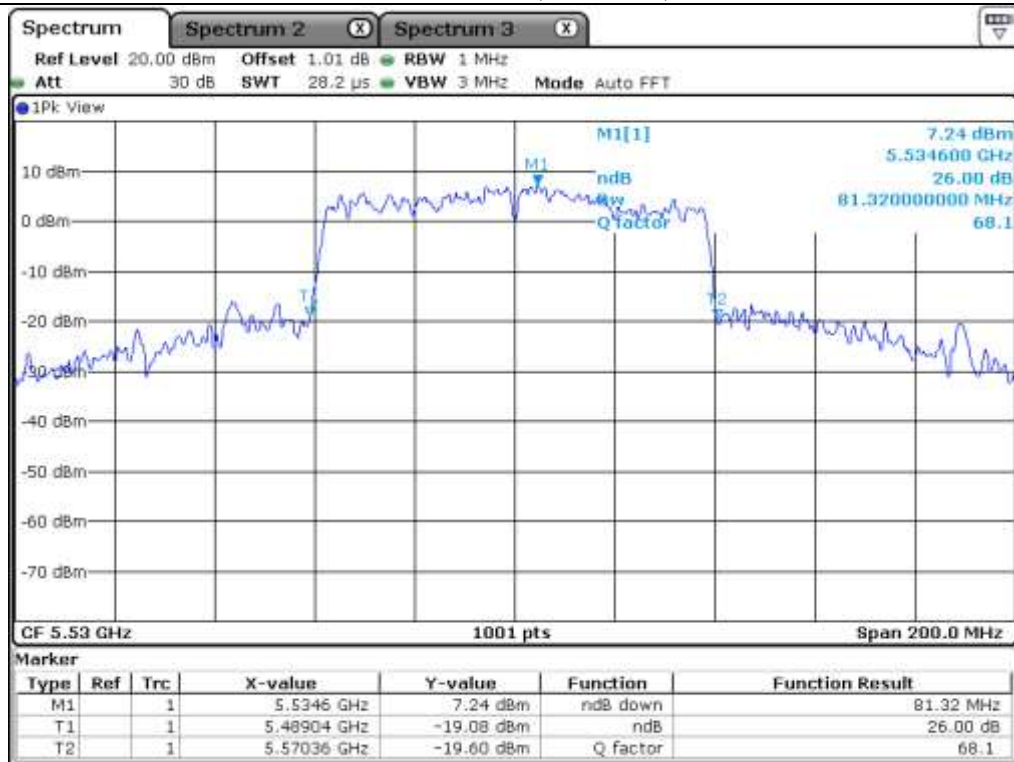
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Middle	5 210.00	81.12
5 250 ~ 5 350	Middle	5 290.00	81.72
5 470 ~ 5 725	Low	5 530.00	81.32
	High	5 690.00	81.32
5 725 ~ 5 850	Middle	5 775.00	81.12



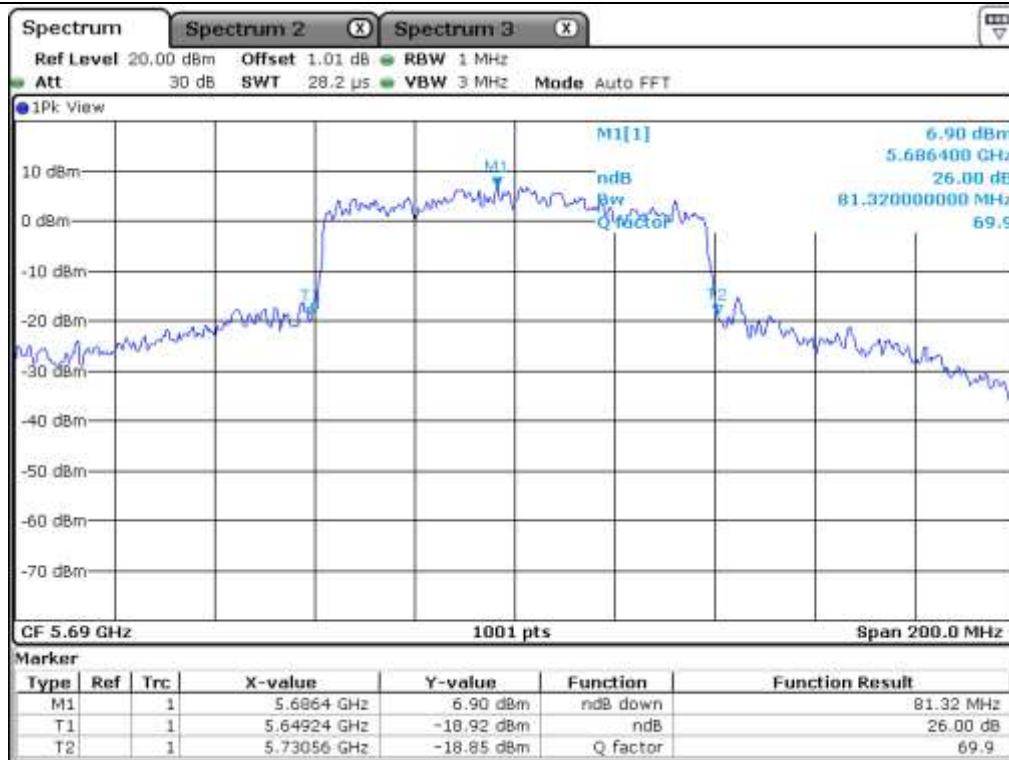
Middle Channel (5 210 MHz)



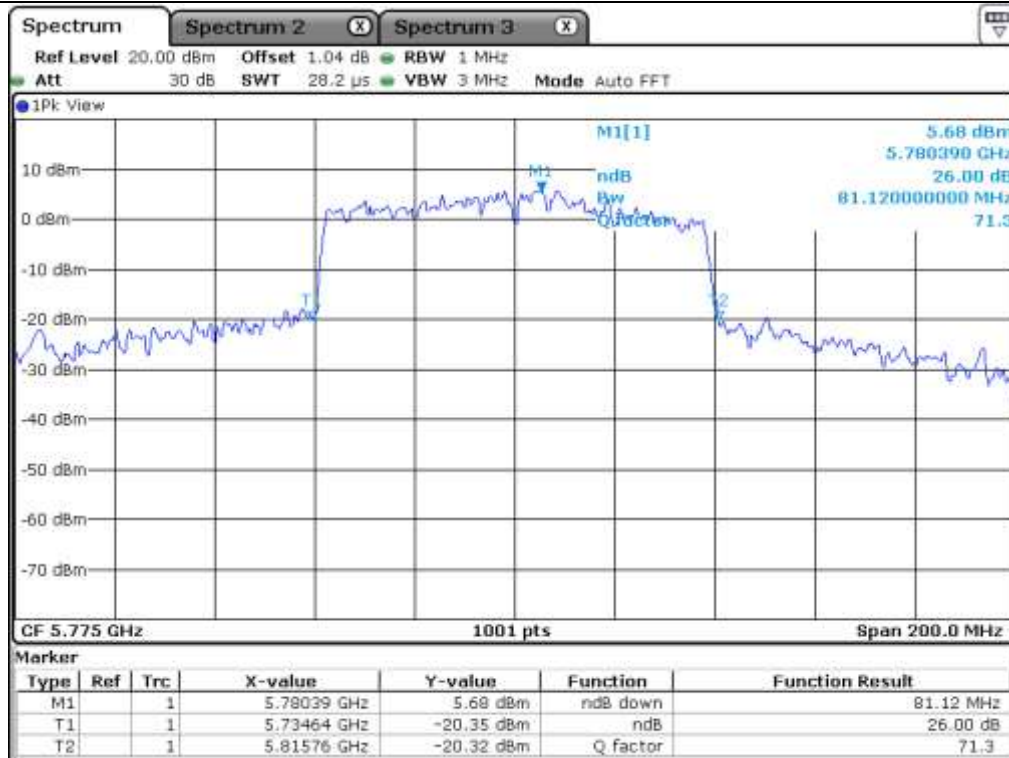
Middle Channel (5 290 MHz)



Low Channel (5 530 MHz)



High Channel (5 690 MHz)



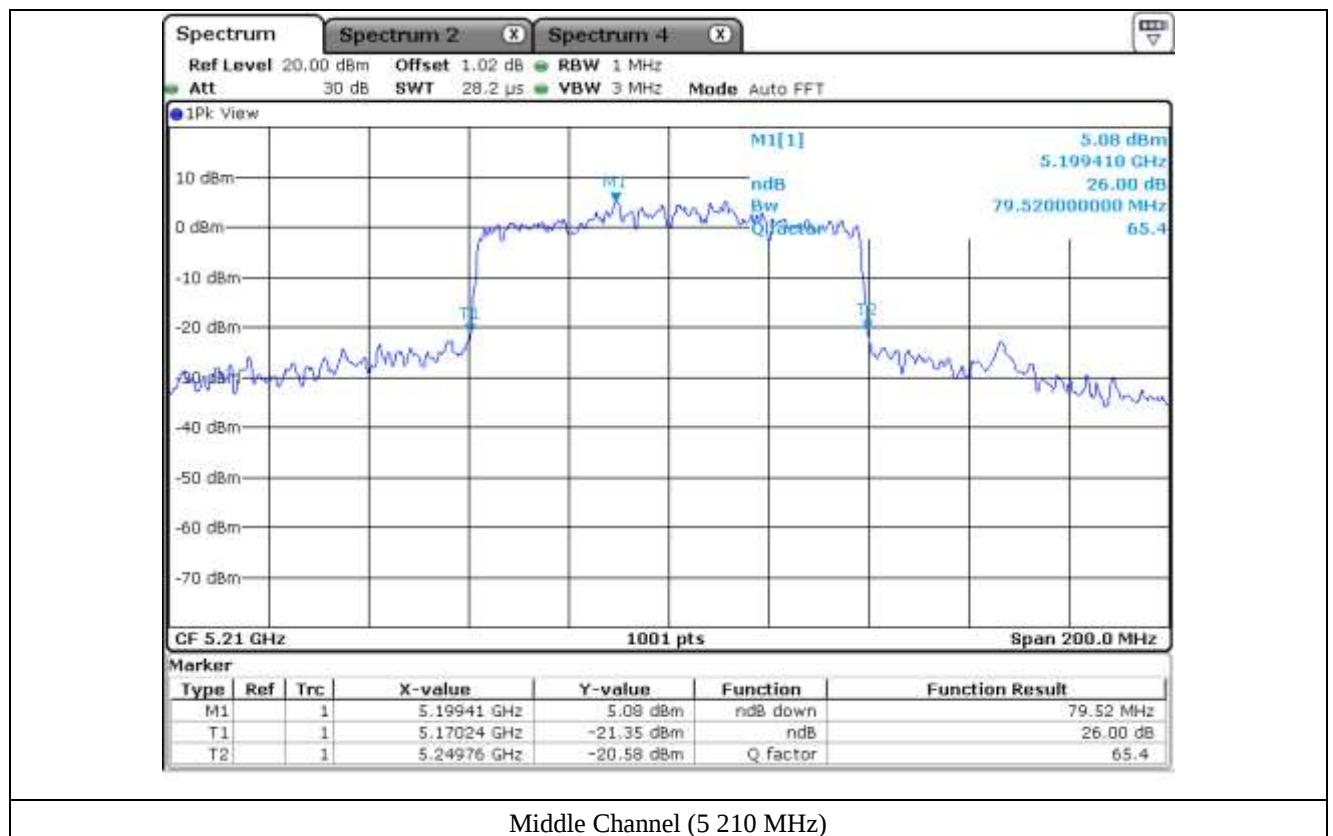
Middle Channel (5 775 MHz)

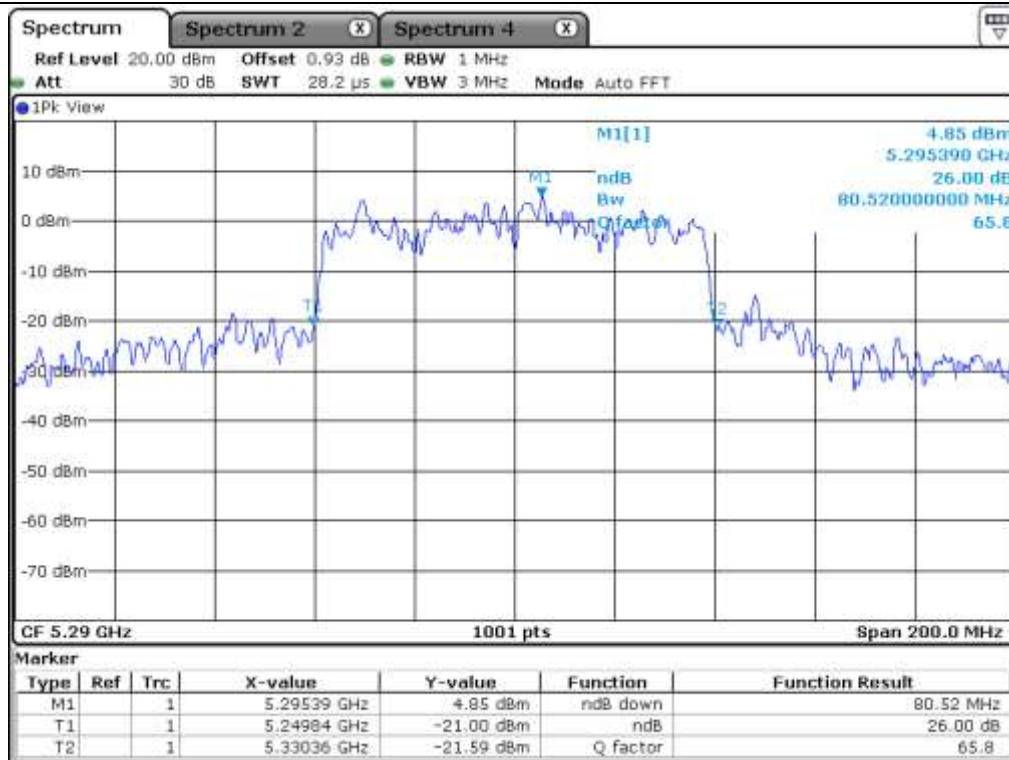
7.7.2 Test data for Antenna 1

-. Test Result : Pass

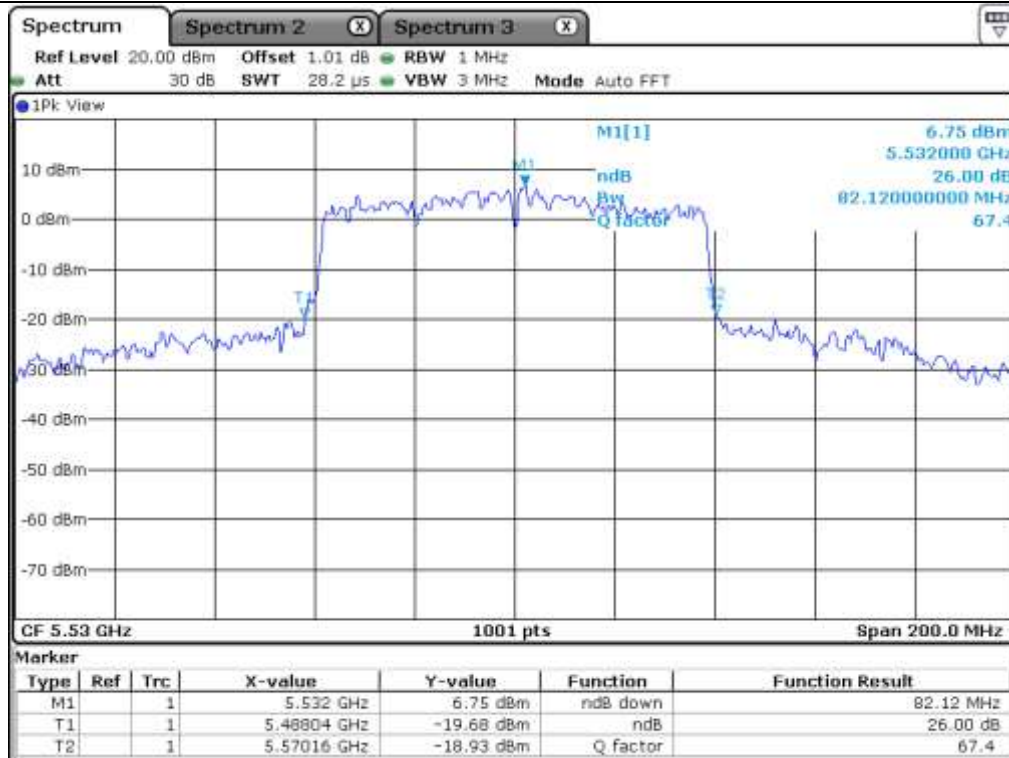
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Middle	5 210.00	79.52
5 250 ~ 5 350	Middle	5 290.00	80.52
5 470 ~ 5 725	Low	5 530.00	82.12
	High	5 690.00	80.92
5 725 ~ 5 850	Middle	5 775.00	80.32

Remark: See next page for measurement data.

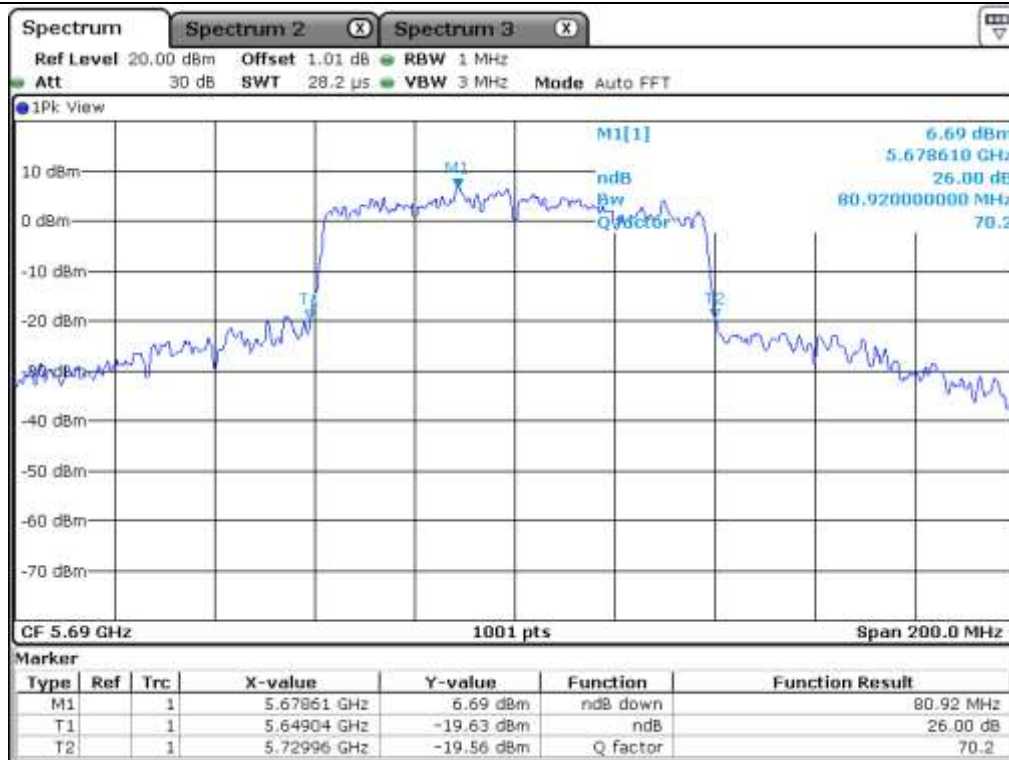




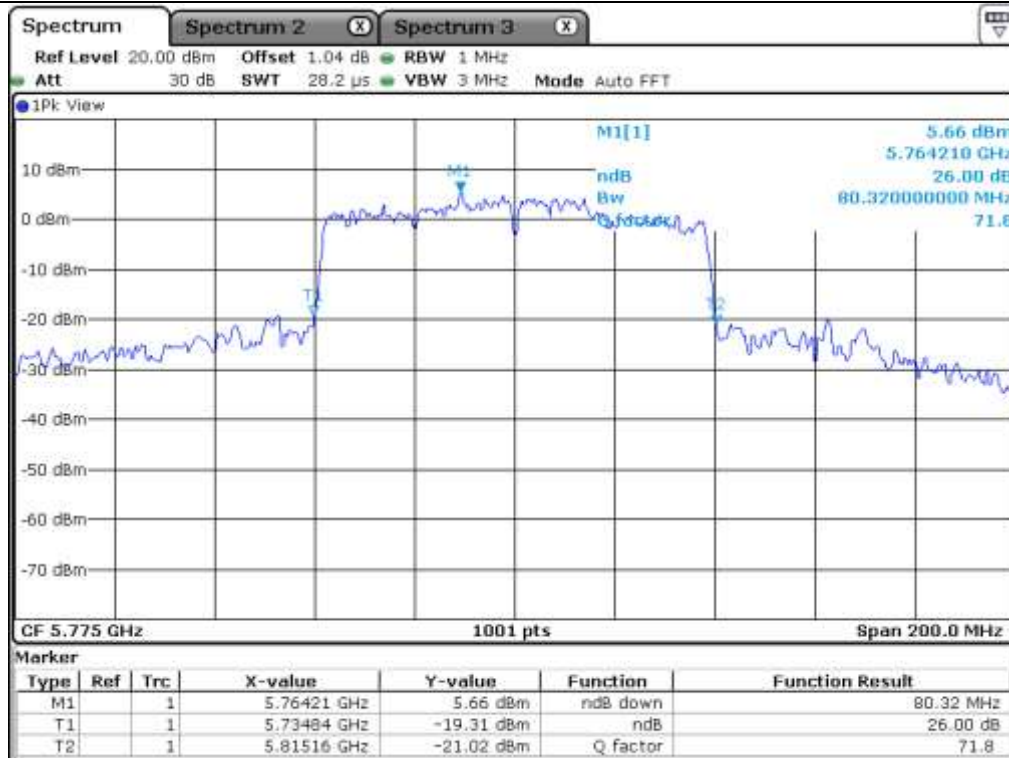
Middle Channel (5 290 MHz)



Low Channel (5 530 MHz)



High Channel (5 690 MHz)

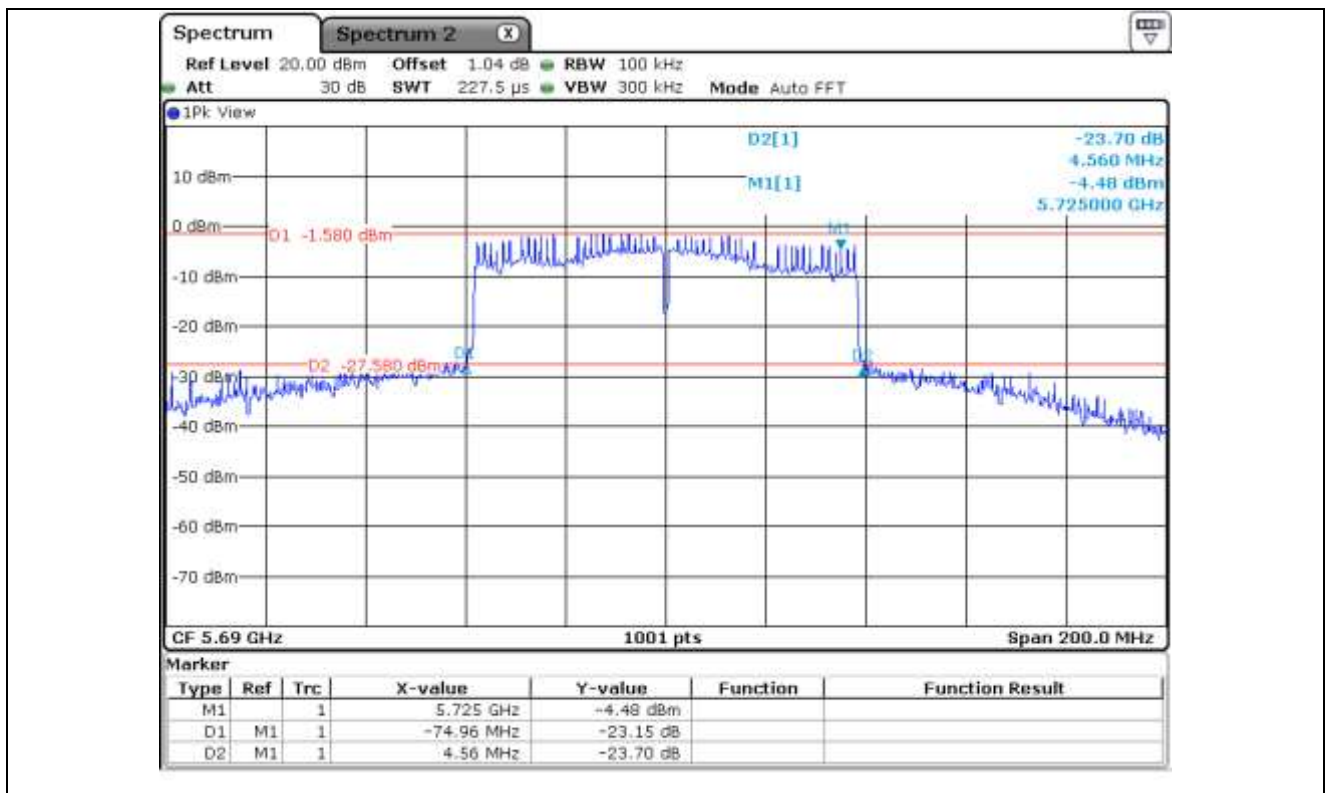


Middle Channel (5 775 MHz)

7.7.3 Test data for Straddle Channel_Antenna 0

-. Test Result : Pass

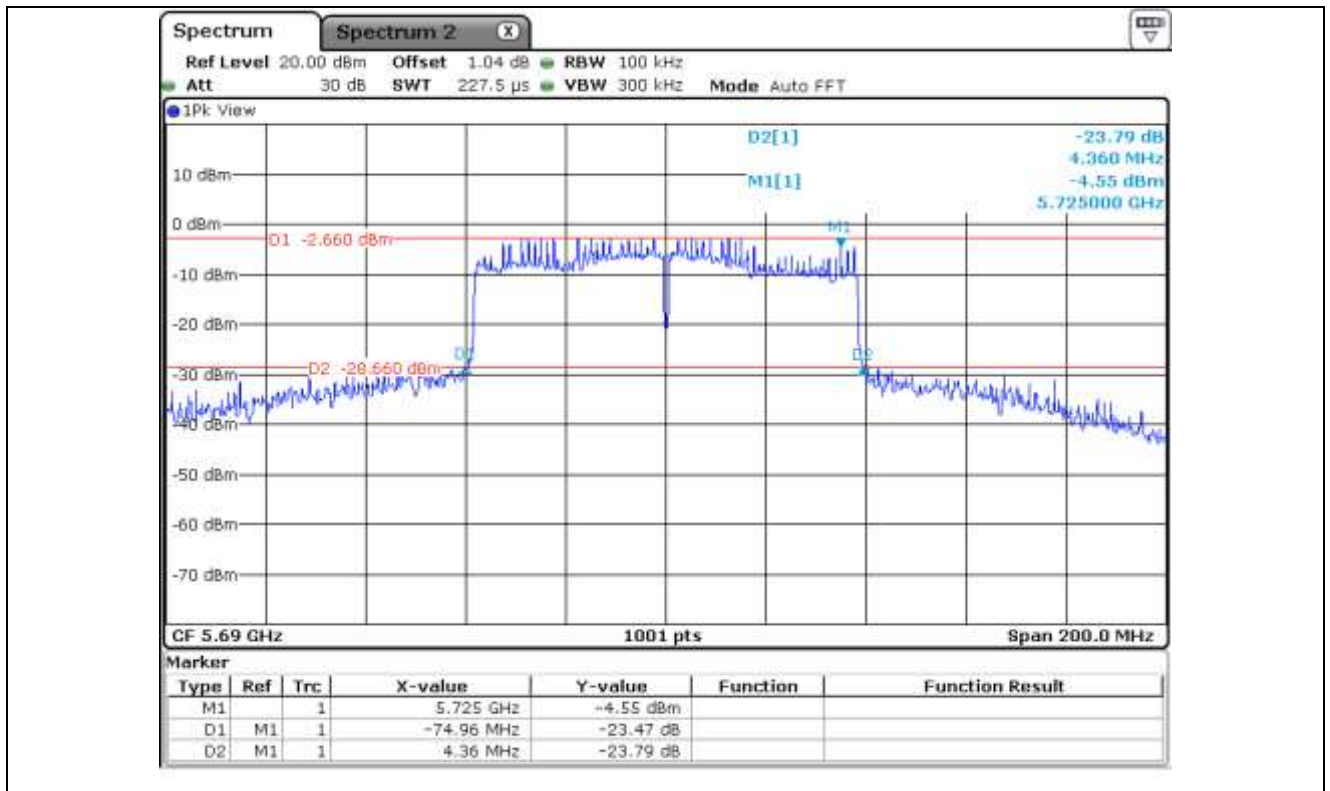
FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 690.00	74.96
5 725 ~ 5 850	5 690.00	4.56



7.7.4 Test data for Straddle Channel_Antenna 1

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 690.00	74.96
5 725 ~ 5 850	5 690.00	4.36



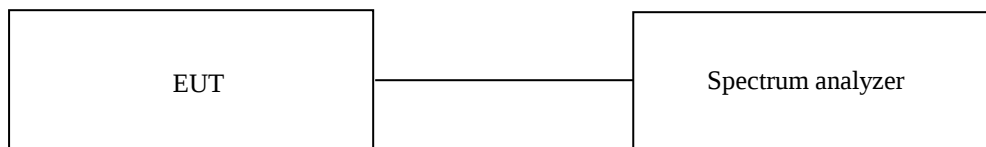
8. 6 dB BANDWIDTH

8.1 Operating environment

Temperature : 23 °C
Relative humidity : 45 % R.H.

8.2 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 6 dB bandwidth is defined as the total spectrum over which the power is higher than the peak power minus 6 dB.



8.3 Test Date

September 07, 2020 ~ September 11, 2020

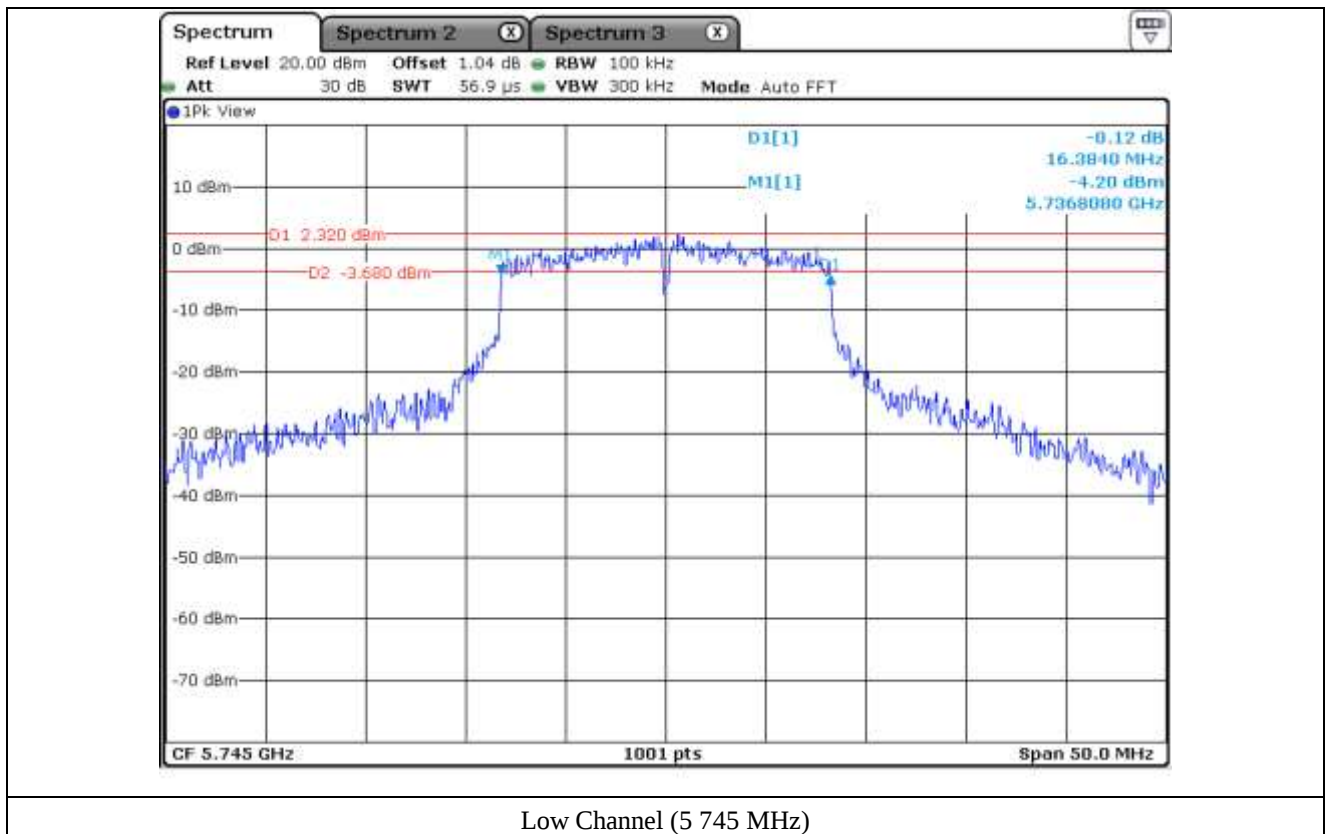
8.4 Test data for 802.11a RLAN Mode

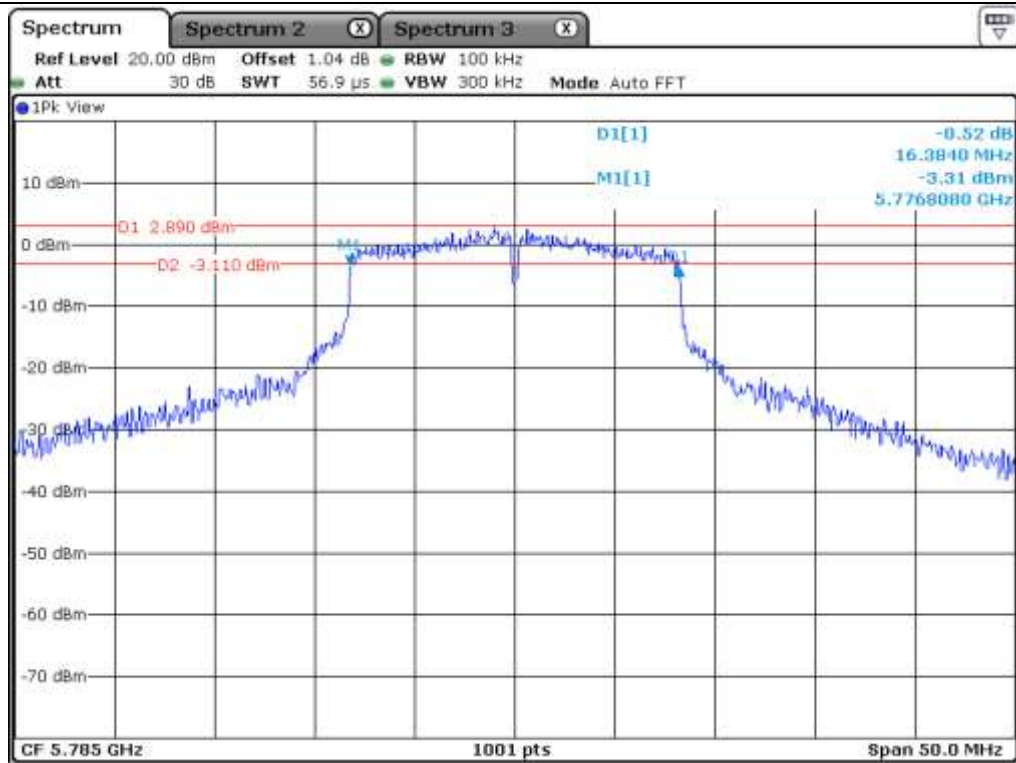
8.4.1 Test data for Antenna 0

-. Test Result : Pass

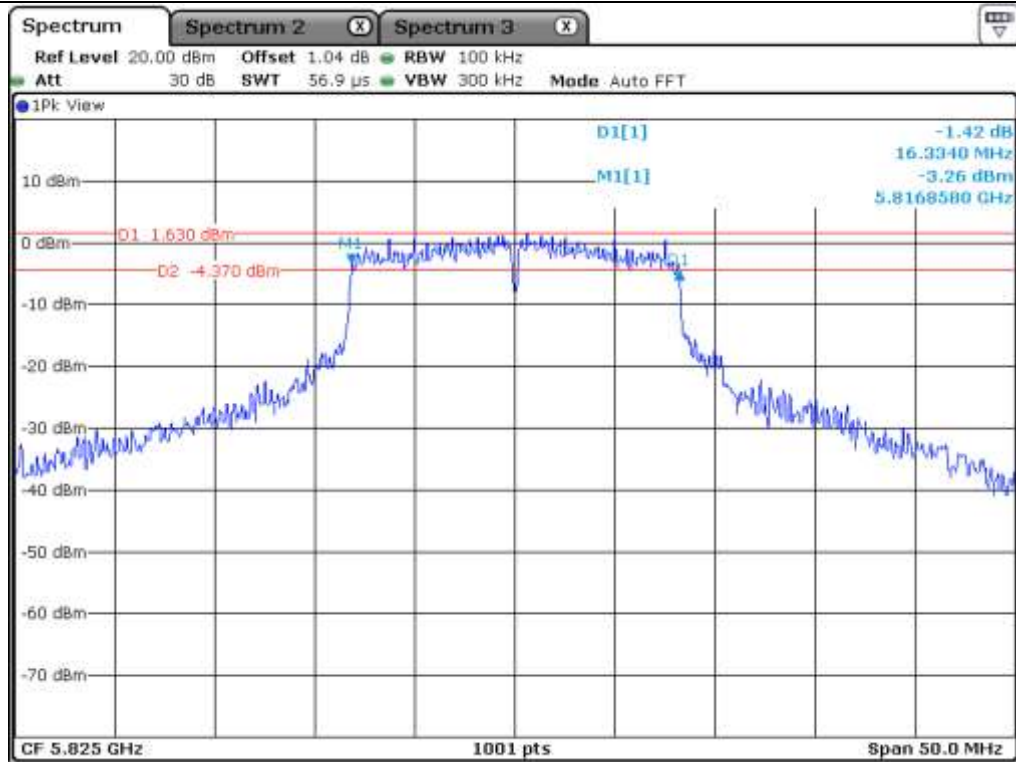
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 725 ~ 5 850	Low	5 745.00	16.38
	Middle	5 785.00	16.38
	High	5 825.00	16.33

Remark: See next page for measurement data.





Middle Channel (5 785 MHz)



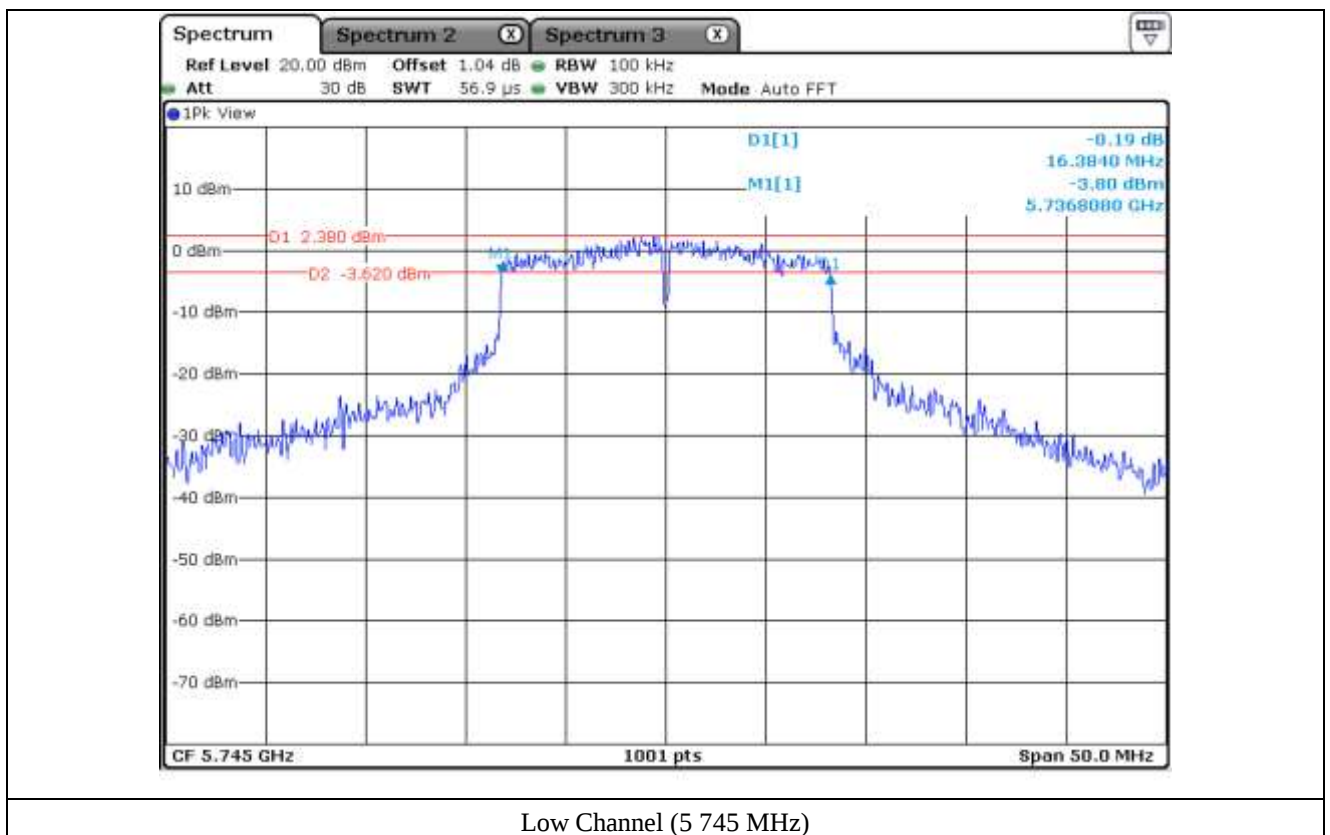
High Channel (5 825 MHz)

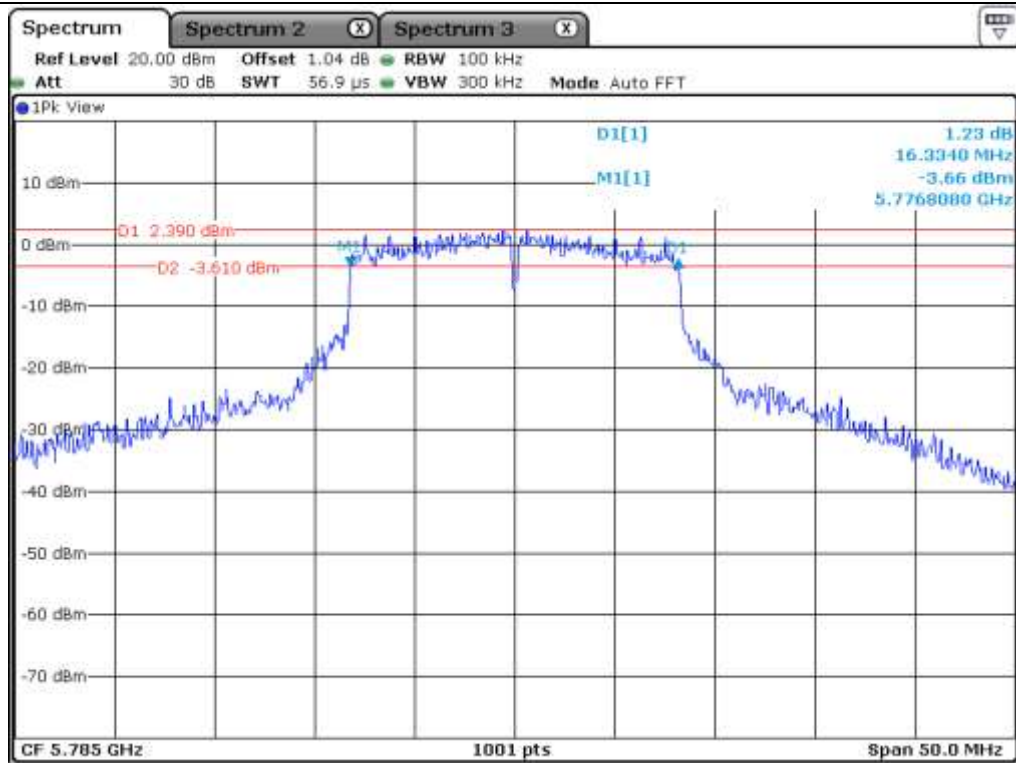
8.4.2 Test data for Antenna 1

-. Test Result : Pass

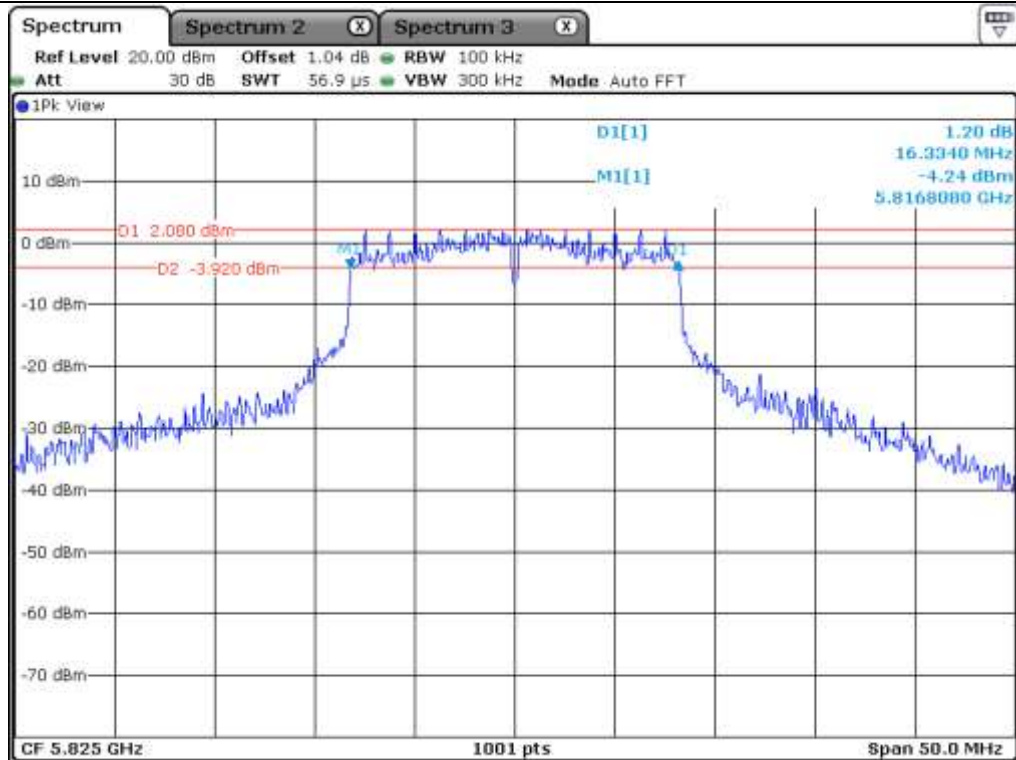
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 725 ~ 5 850	Low	5 745.00	16.38
	Middle	5 785.00	16.33
	High	5 825.00	16.33

Remark: See next page for measurement data.





Middle Channel (5.785 MHz)



High Channel (5.825 MHz)

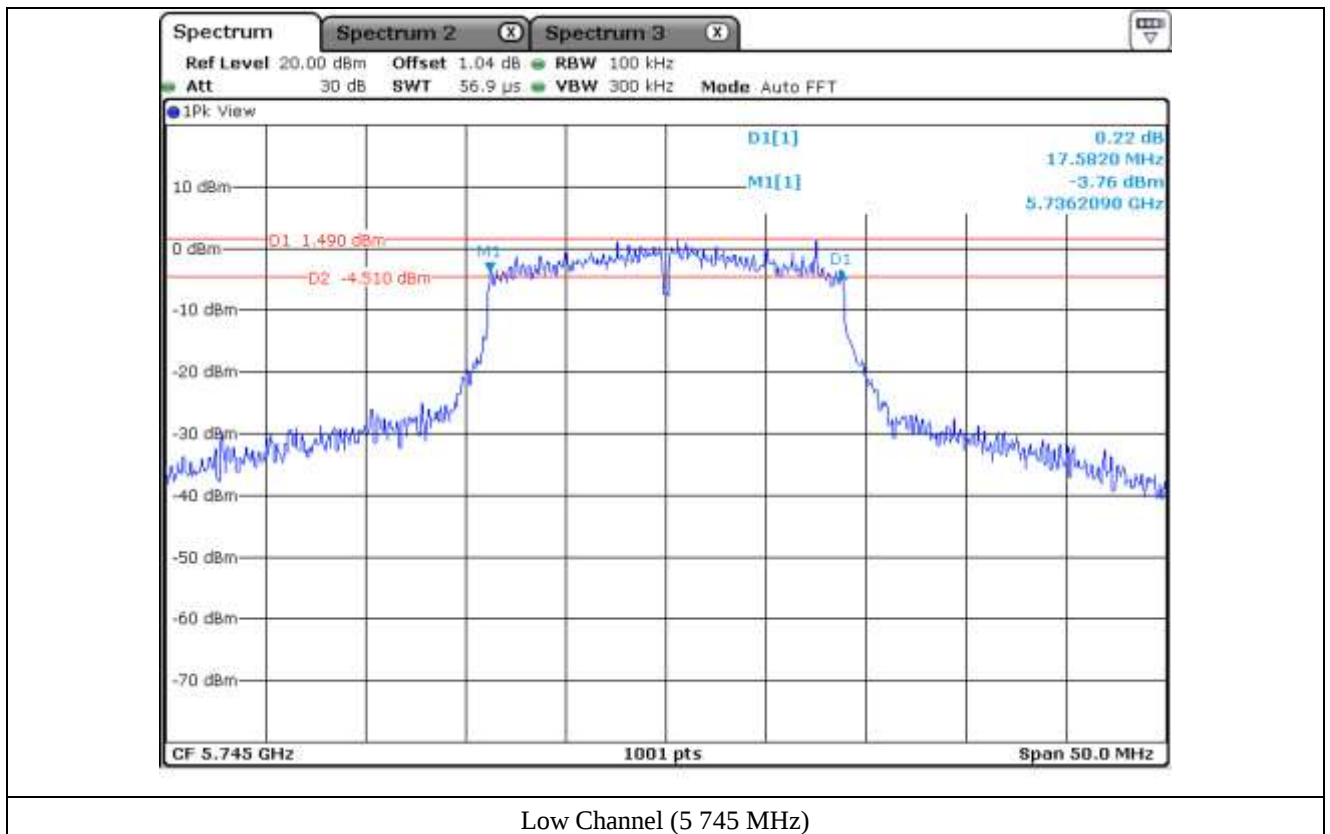
8.5 Test data for 802.11n_HT20 RLAN Mode

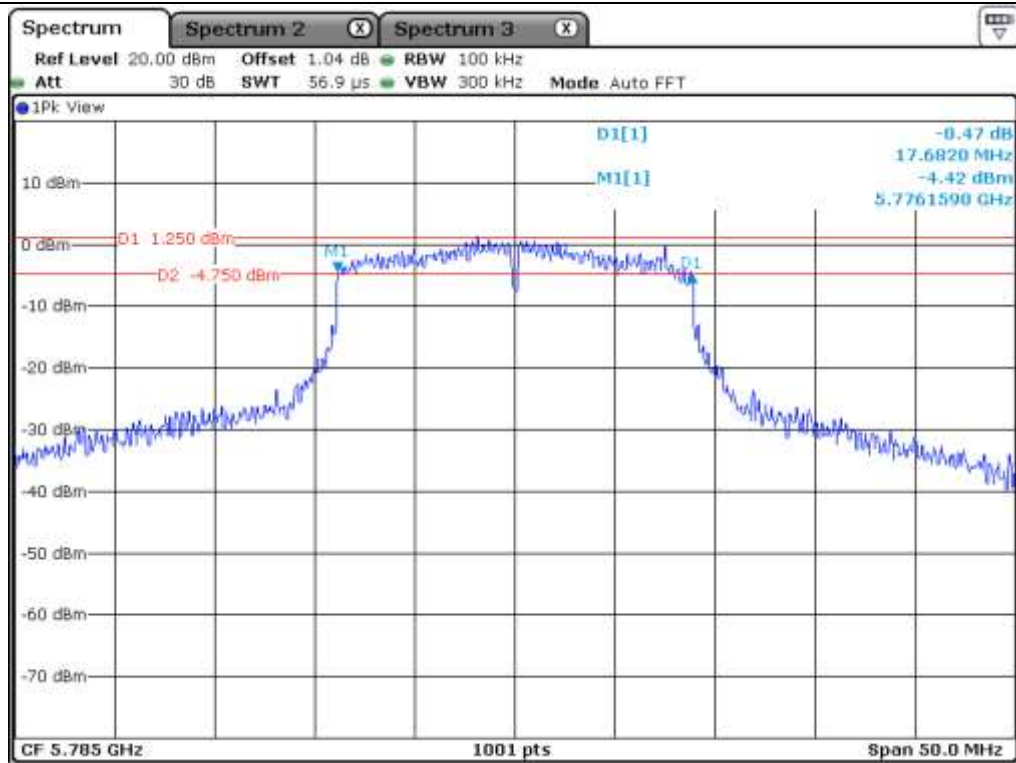
8.5.1 Test data for Antenna 0

-. Test Result : Pass

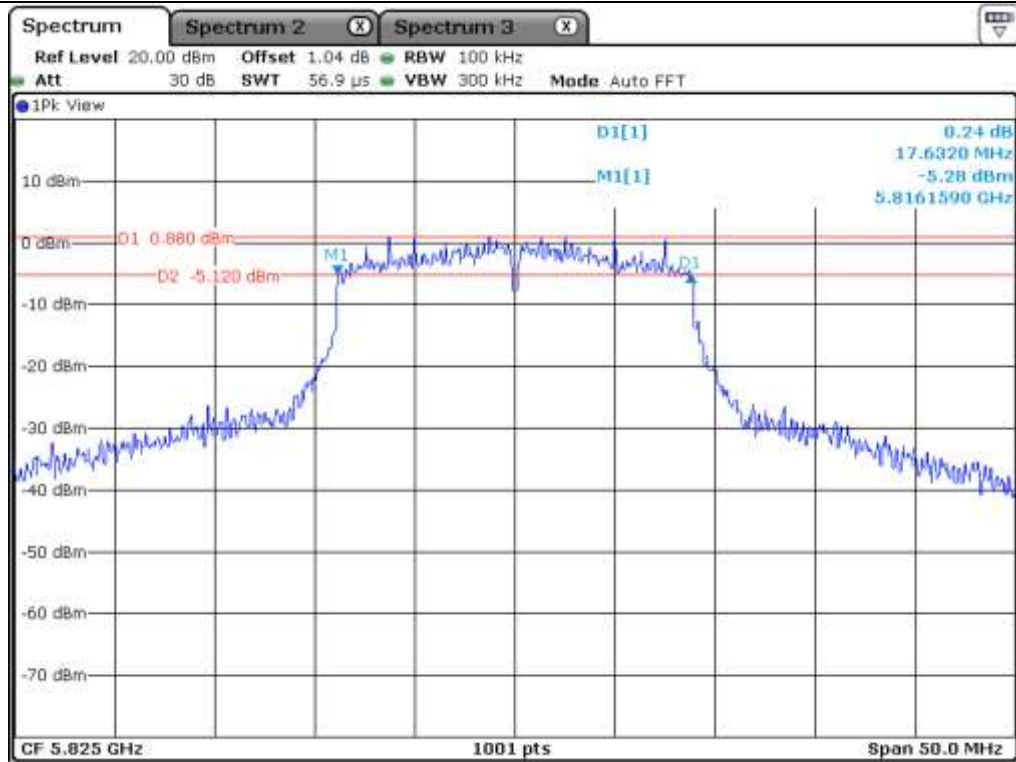
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 725 ~ 5 850	Low	5 745.00	17.58
	Middle	5 785.00	17.68
	High	5 825.00	17.63

Remark: See next page for measurement data.





Middle Channel (5 785 MHz)



High Channel (5 825 MHz)

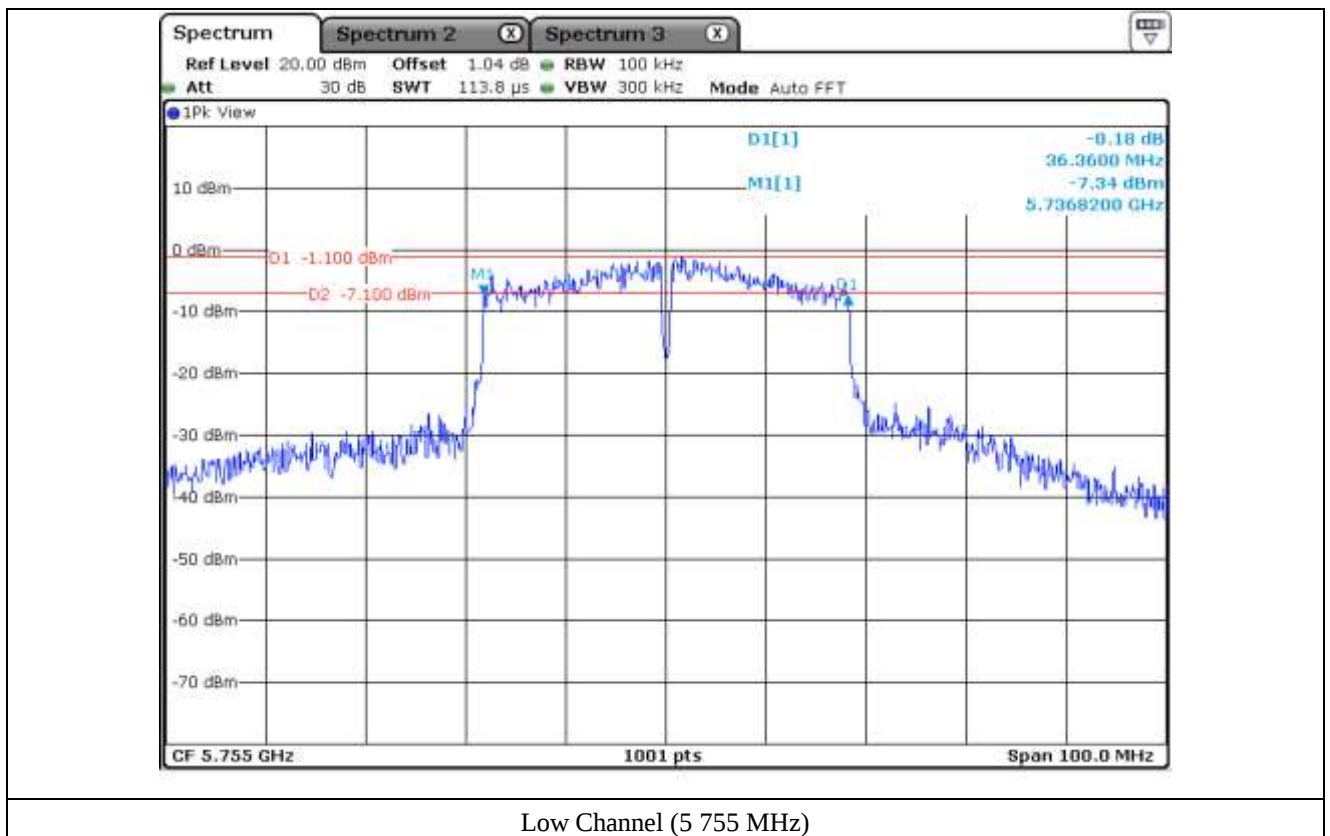
8.6 Test data for 802.11n_HT40 RLAN Mode

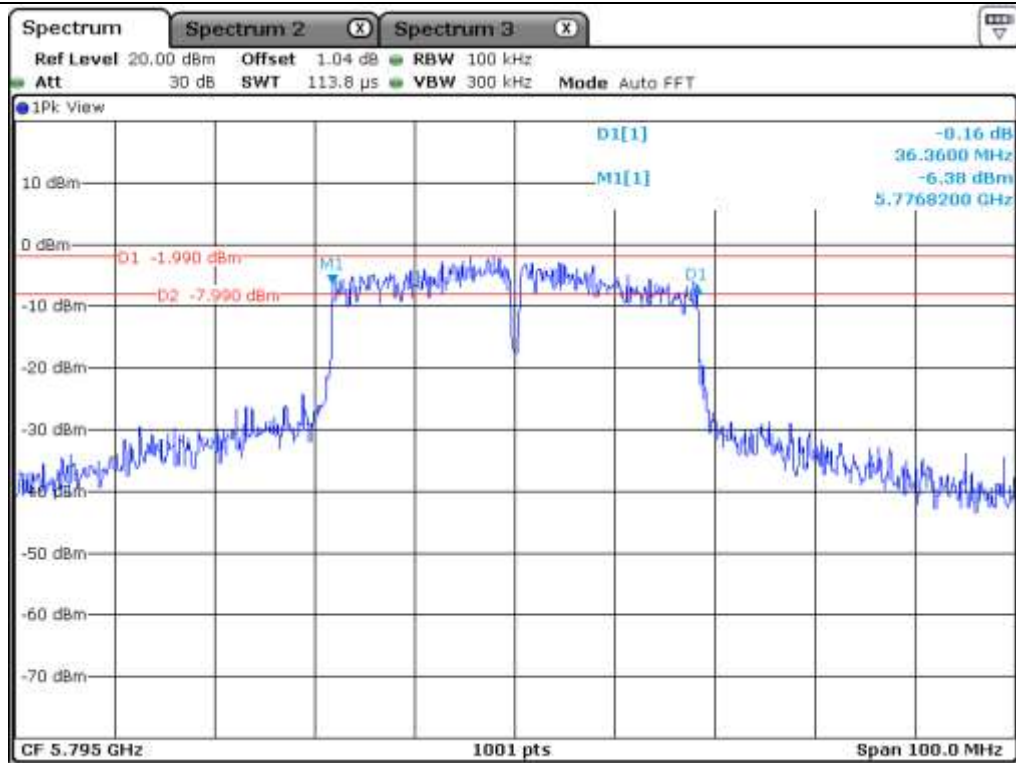
8.6.1 Test data for Antenna 0

-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 725 ~ 5 850	Low	5 755.00	36.36
	High	5 795.00	36.36

Remark: See next page for measurement data.





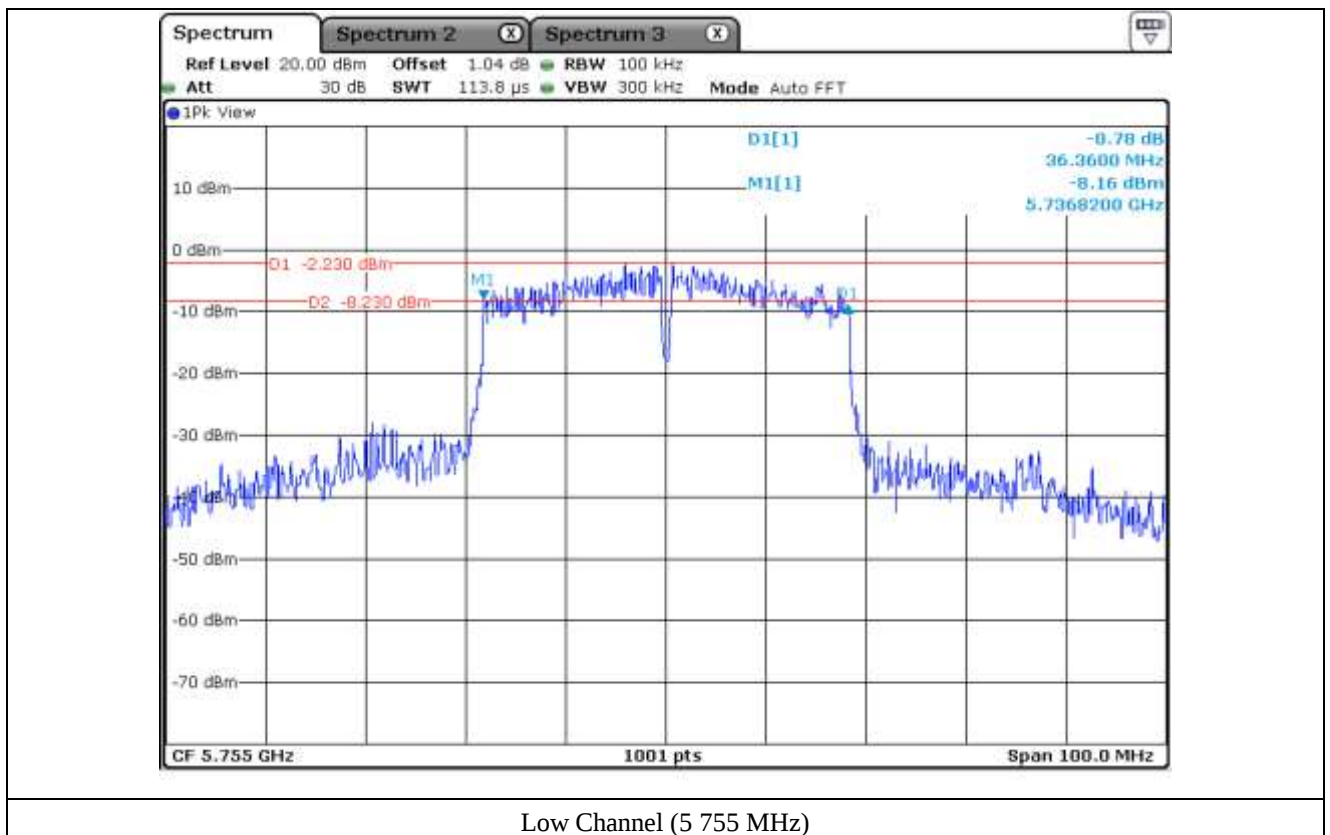
High Channel (5 795 MHz)

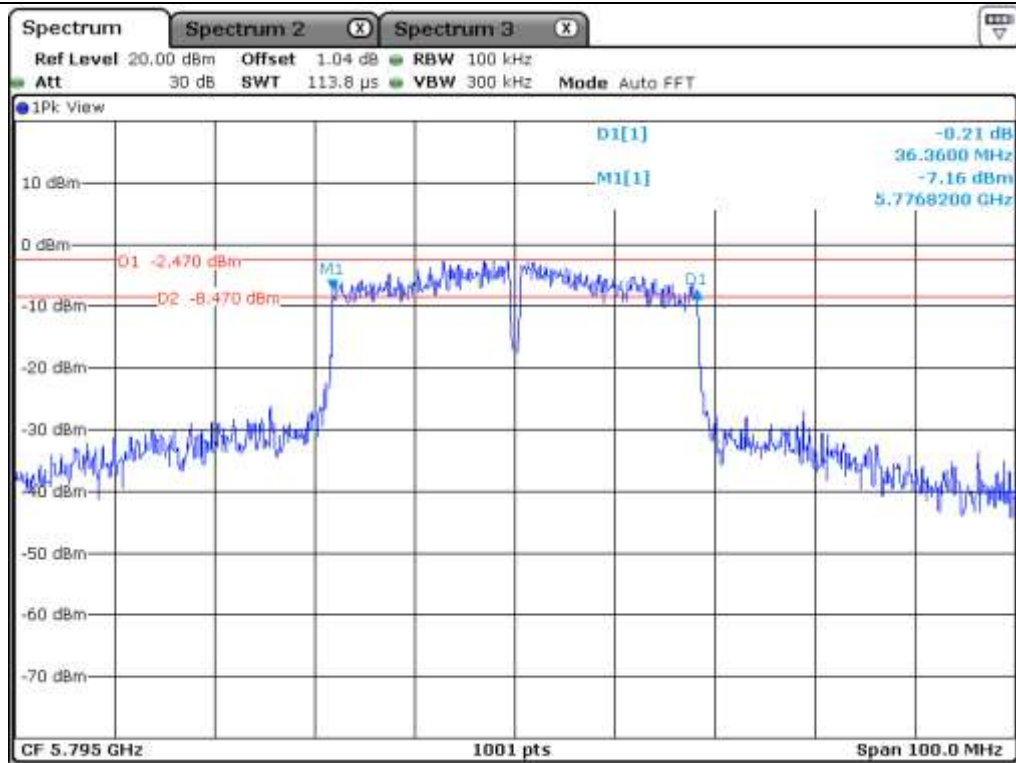
8.6.2 Test data for Antenna 1

-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 725 ~ 5 850	Low	5 755.00	36.36
	High	5 795.00	36.36

Remark: See next page for measurement data.





High Channel (5 795 MHz)

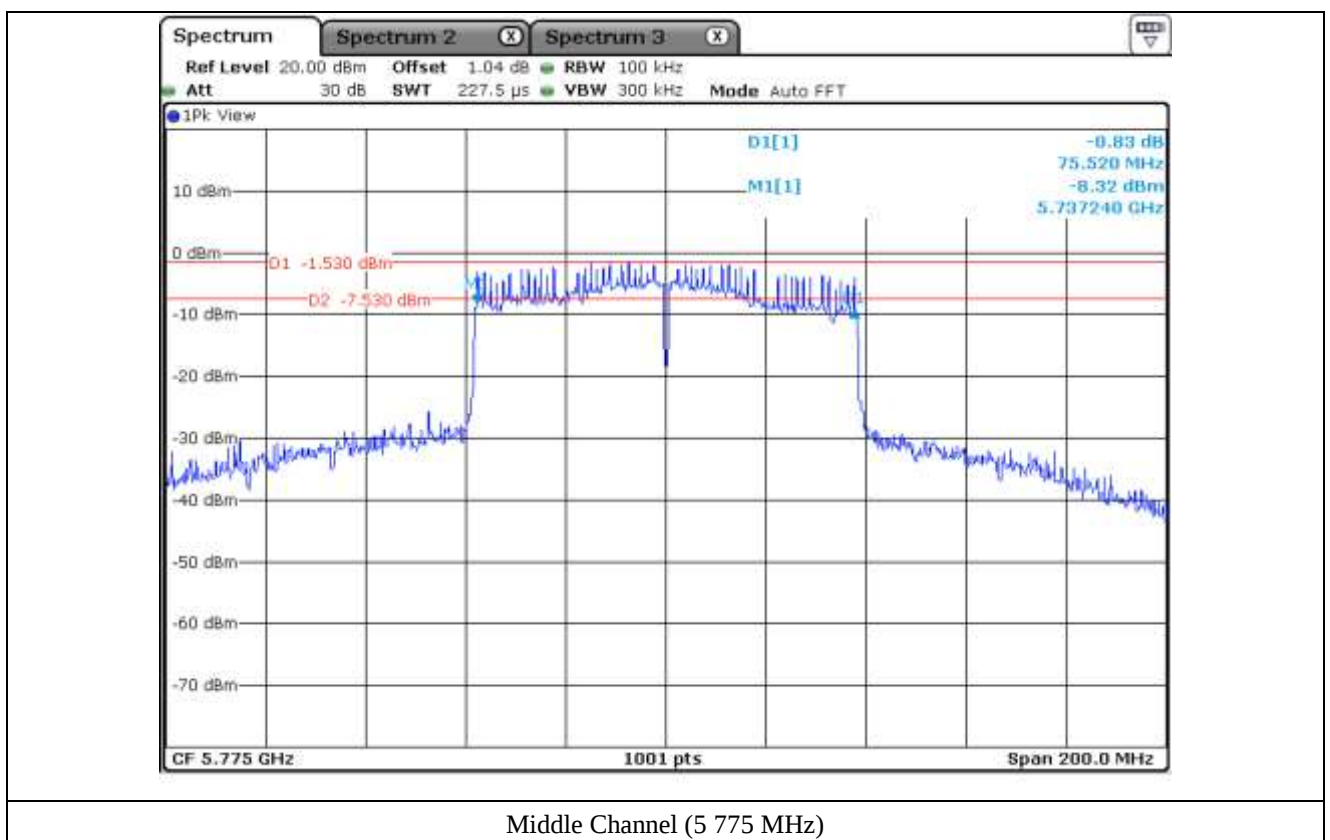
8.7 Test data for 802.11ac_VHT80 RLAN Mode

8.7.1 Test data for Antenna 0

-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 725 ~ 5 850	Middle	5 775.00	75.52

Remark: See next page for measurement data.

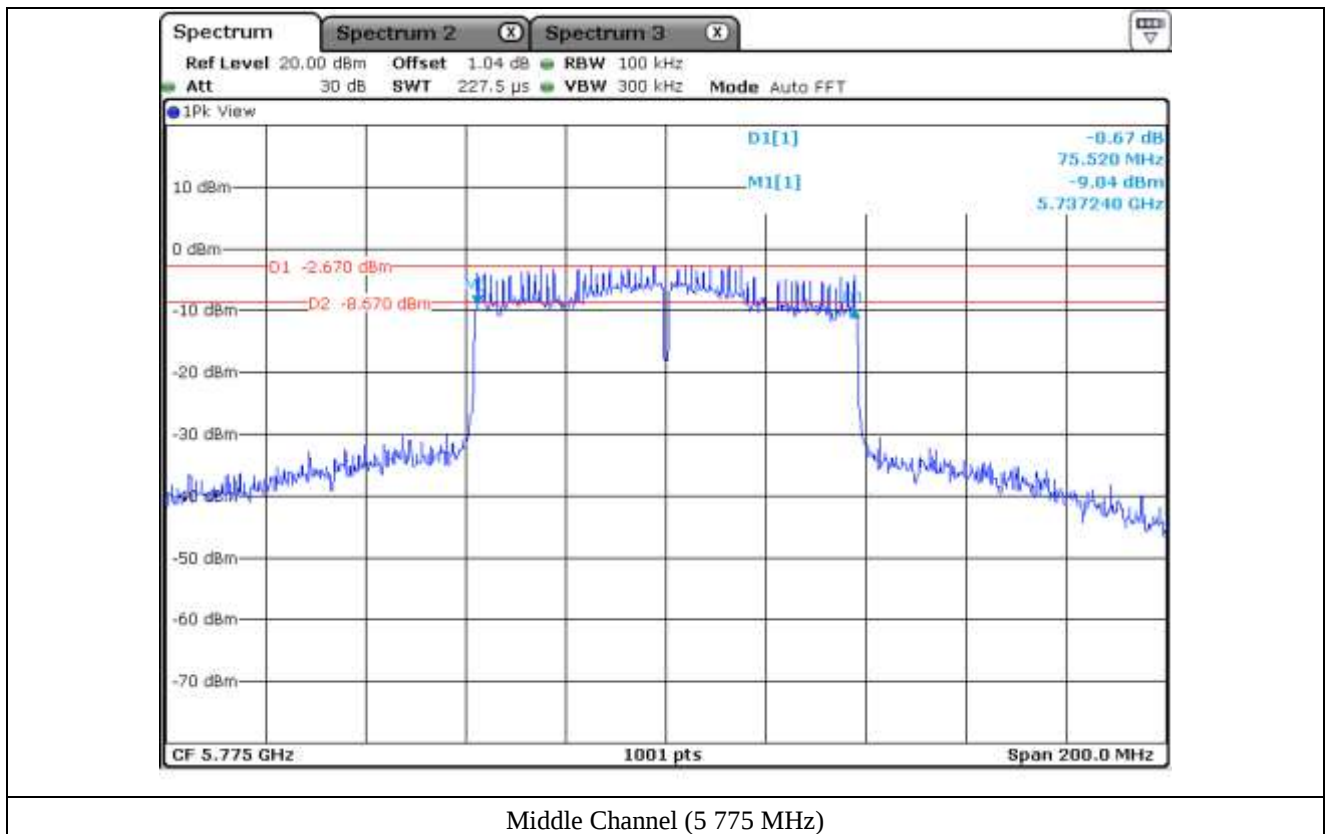


8.7.2 Test data for Antenna 1

-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 725 ~ 5 850	Middle	5 775.00	75.52

Remark: See next page for measurement data.



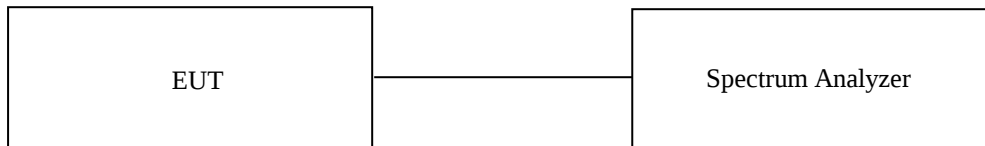
9. MAXIMUM CONDUCTED (AVERAGE) OUTPUT POWER

9.1 Operating environment

Temperature : 23 °C
Relative humidity : 45 % R.H.

9.2 Test set-up

The maximum peak output power was measured with the spectrum analyzer connected to the antenna output of the EUT. The spectrum analyzer's internal channel power integration function is used to integrate the power over a bandwidth greater than or equal to the 99 % bandwidth. The EUT was operating in transmit mode at the appropriate center frequency.



9.3 Test Date

September 07, 2020 ~ September 11, 2020

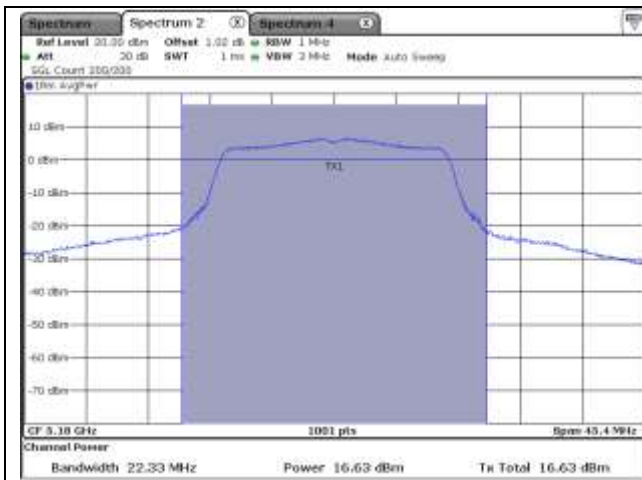
9.4 Test data for 802.11a RLAN Mode

9.4.1 Test data for Antenna 0

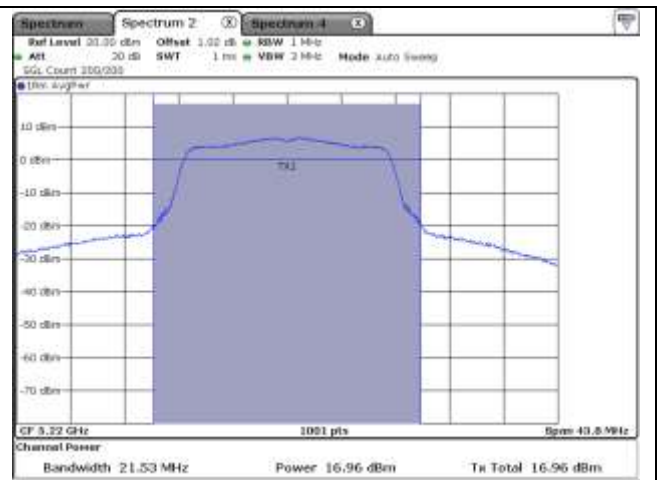
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Correction Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 180.00	16.63	0.32	16.95	23.97	7.02
	Middle	5 220.00	16.96	0.32	17.28	23.97	6.69
	High	5 240.00	16.76	0.32	17.08	23.97	6.89
5 250 ~ 5 350	Low	5 260.00	17.61	0.29	17.90	23.97	6.07
	Middle	5 300.00	17.57	0.29	17.86	23.97	6.11
	High	5 320.00	17.70	0.29	17.99	23.97	5.98
5 470 ~ 5 725	Low	5 500.00	16.67	0.29	16.96	23.97	7.01
	Middle	5 580.00	16.44	0.29	16.73	23.97	7.24
	High	5 700.00	15.67	0.29	15.96	23.97	8.01
5 725 ~ 5 850	Low	5 745.00	15.38	0.29	15.67	30.00	14.33
	Middle	5 785.00	15.33	0.29	15.62	30.00	14.38
	High	5 825.00	14.88	0.29	15.17	30.00	14.83

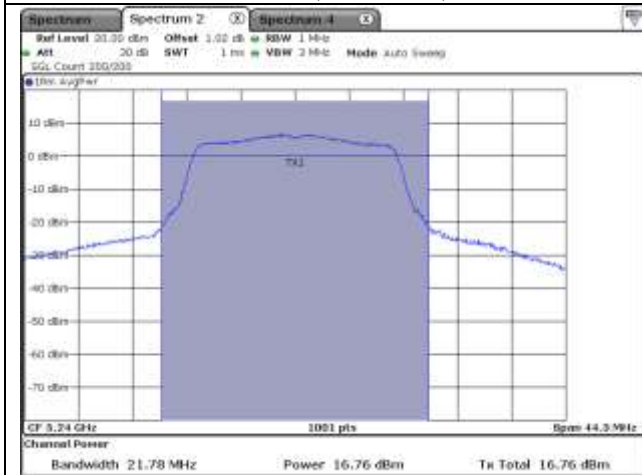
Remark : Margin = Limit – Result(Measured Value + Correction Factor)



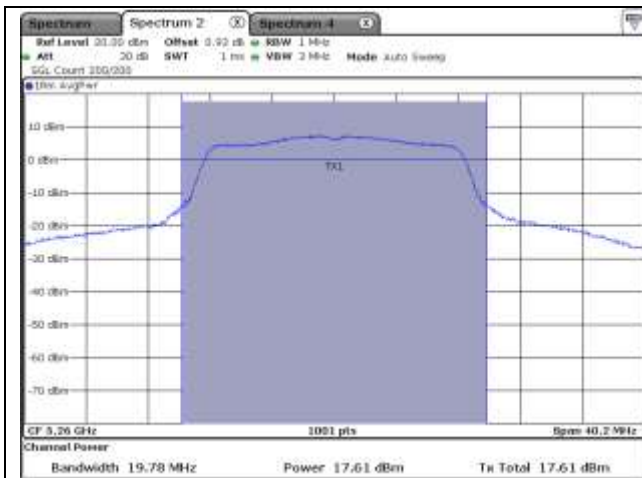
U-NII-1 (5 180 MHz)



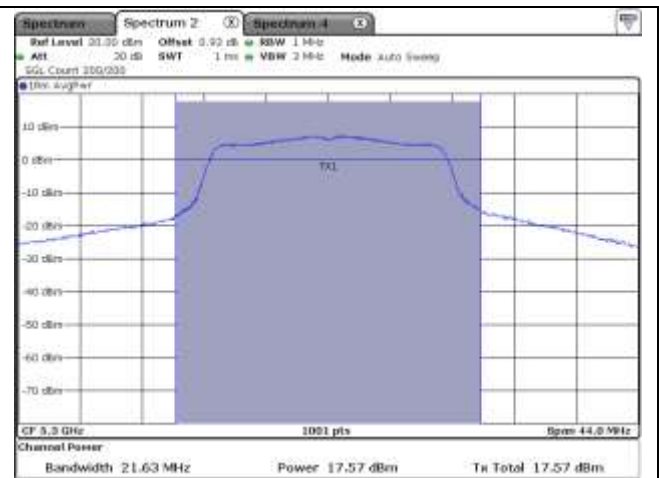
U-NII-1 (5 220 MHz)



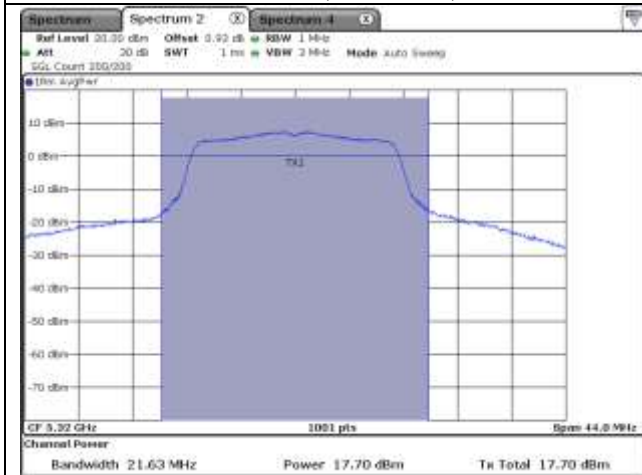
U-NII-1 (5 240 MHz)



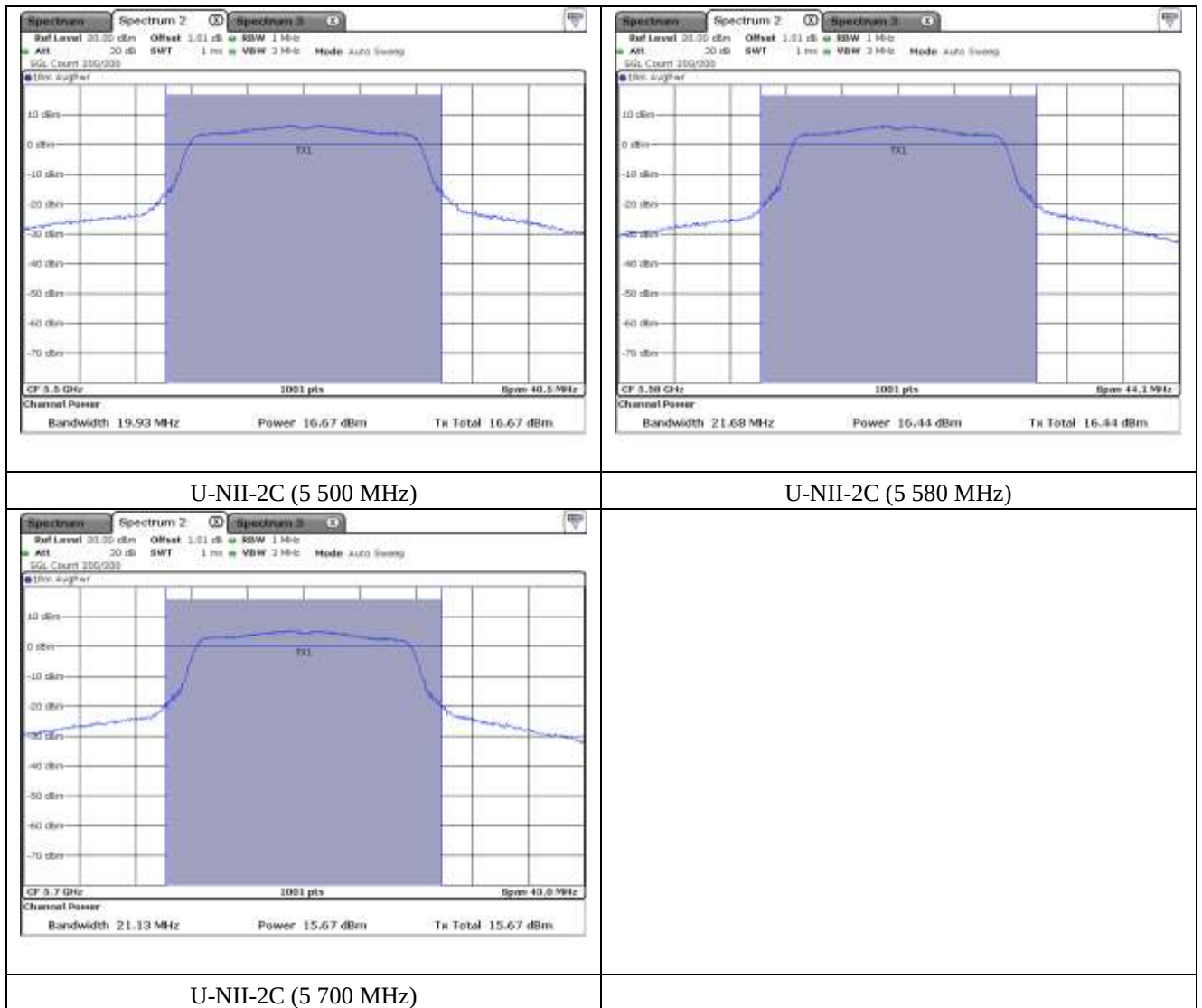
U-NII-2A (5 260 MHz)

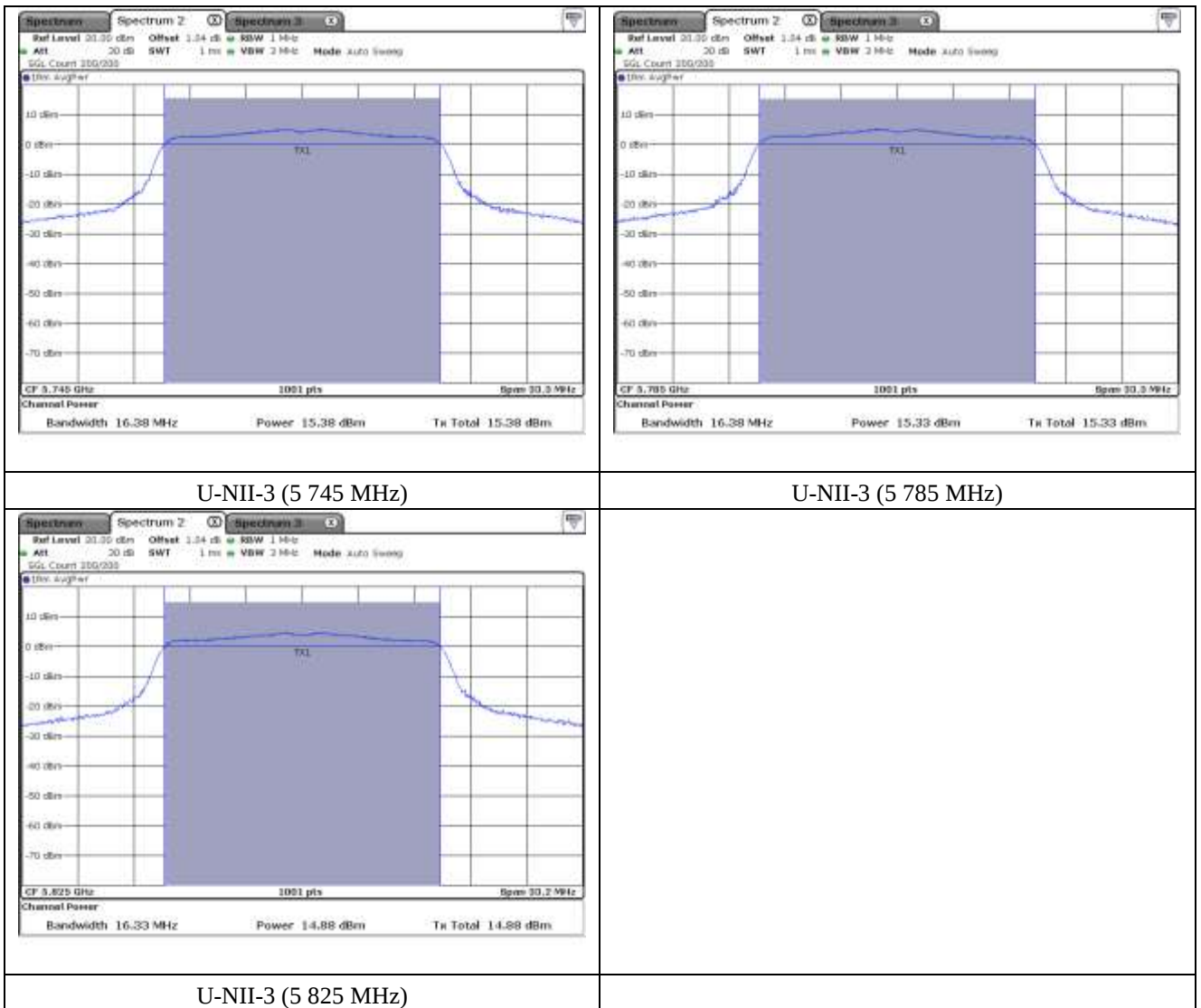


U-NII-2A (5 300 MHz)



U-NII-2A (5 320 MHz)



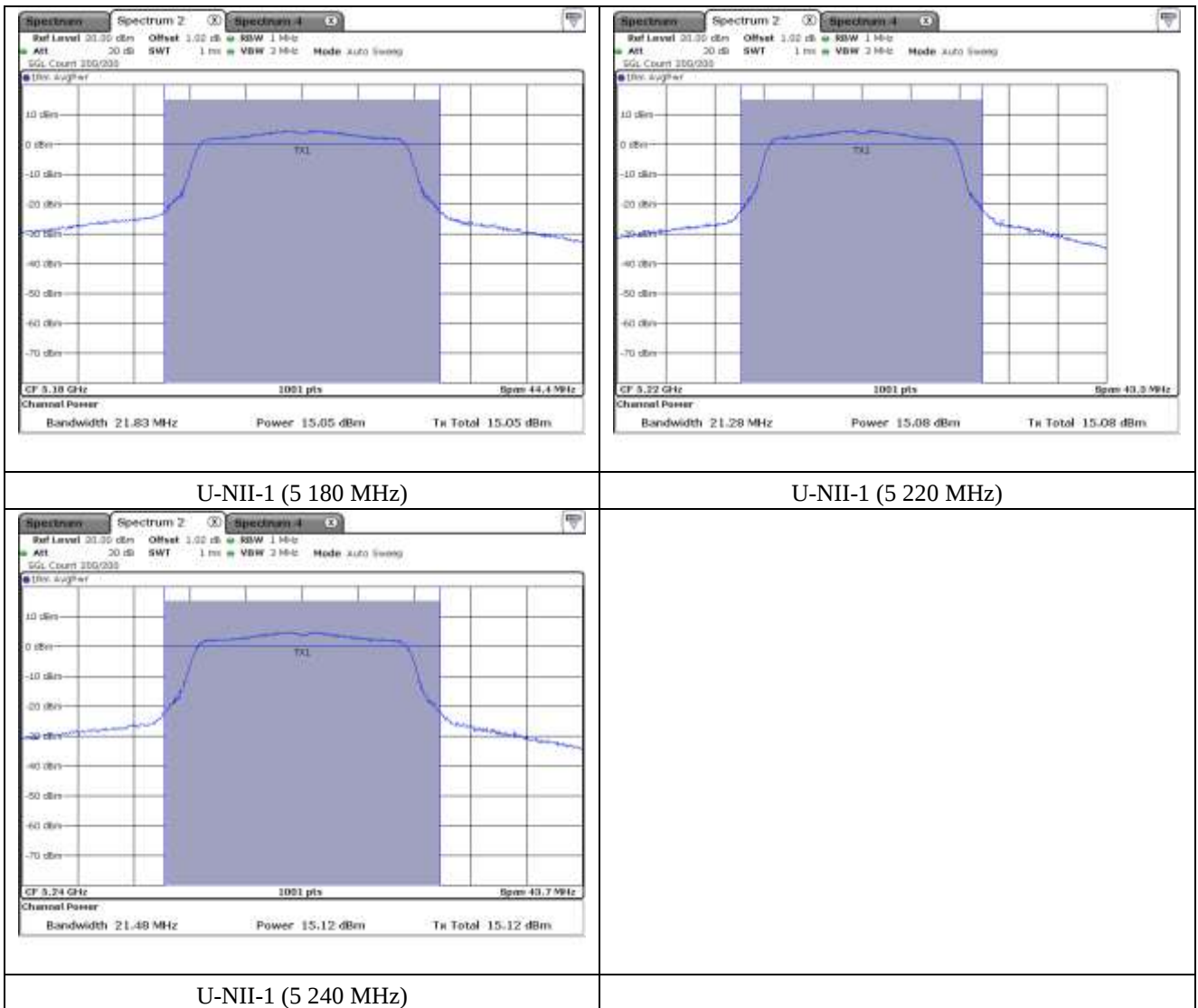


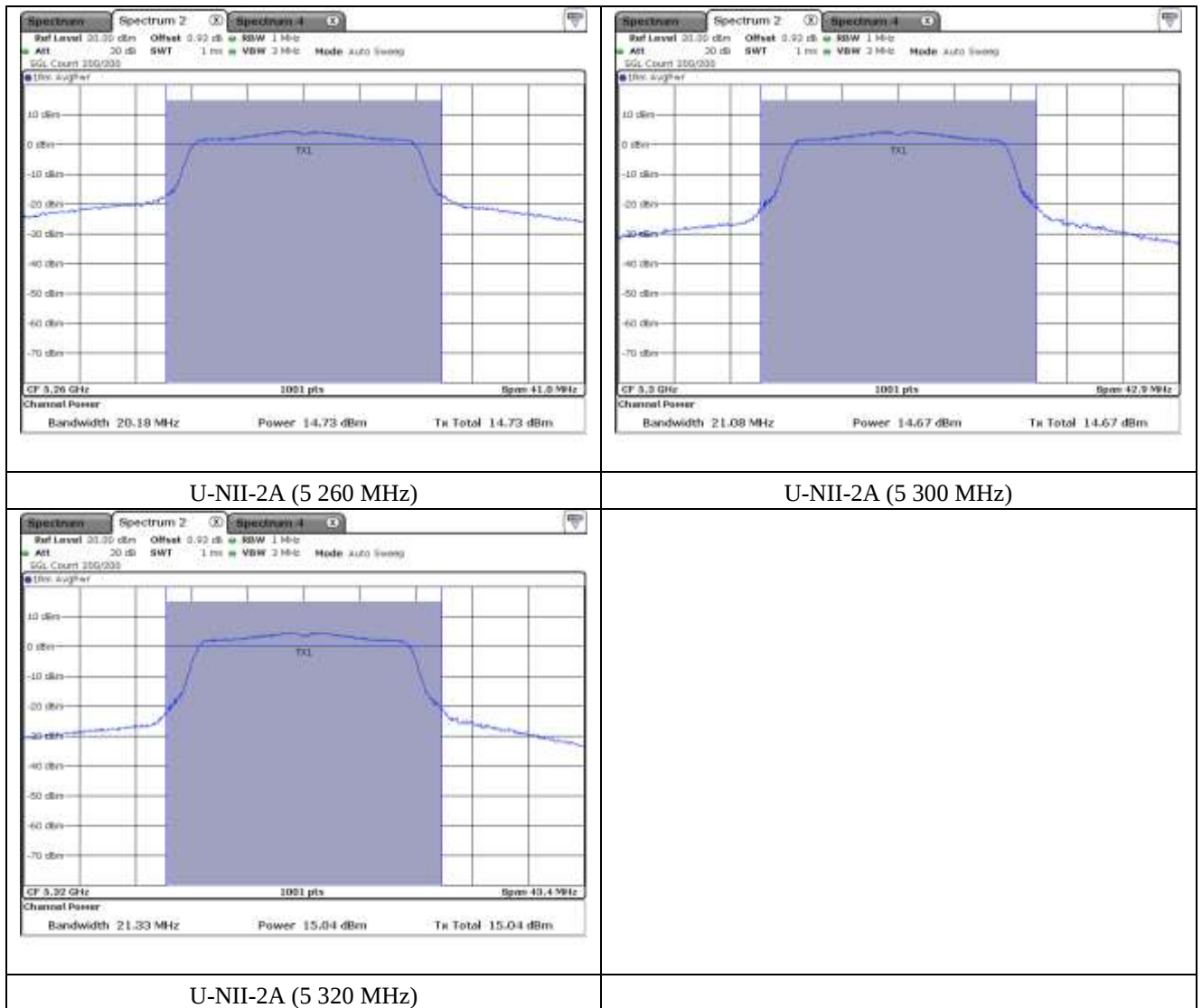
9.4.2 Test data for Antenna 1

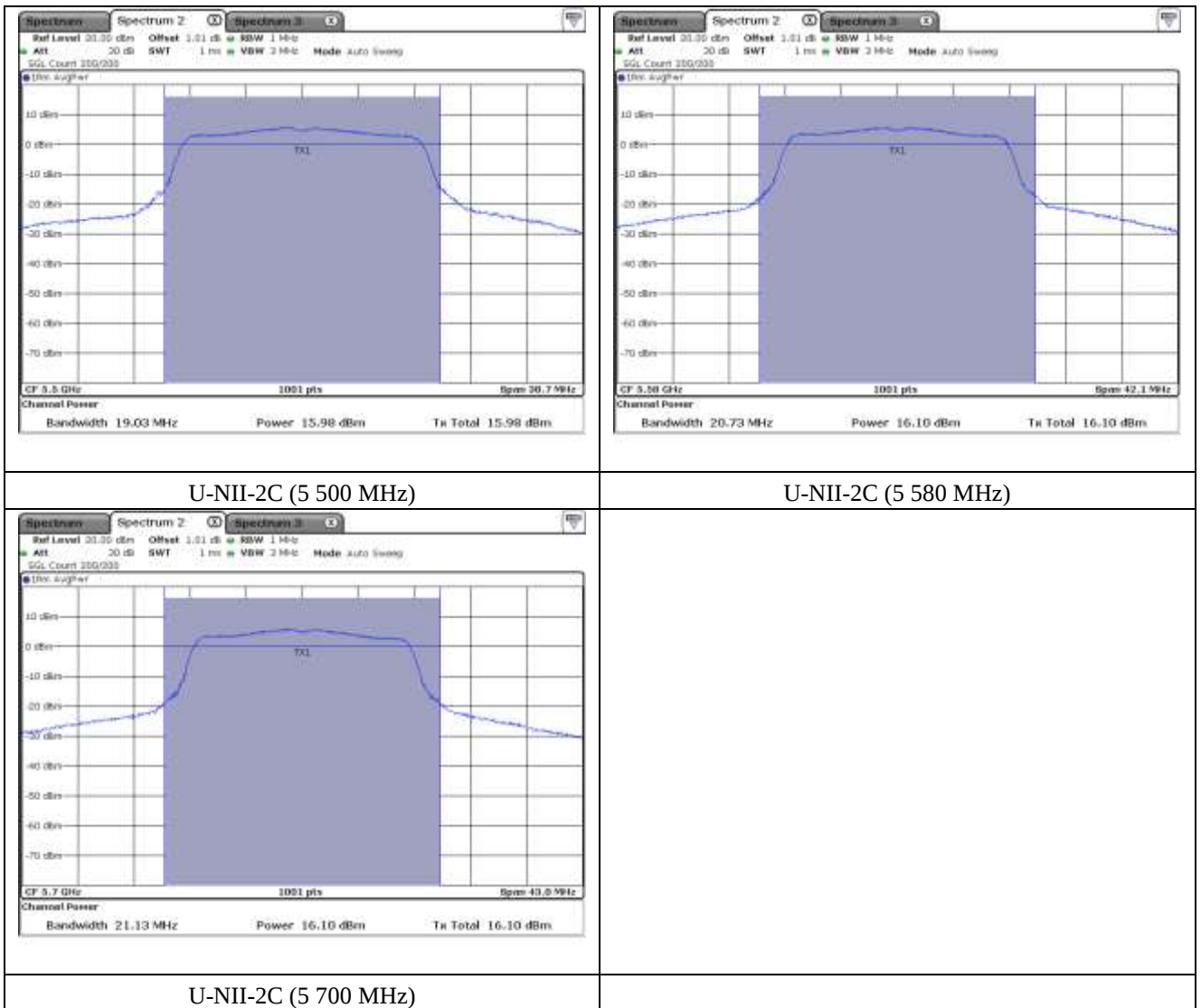
-. Test Result : Pass

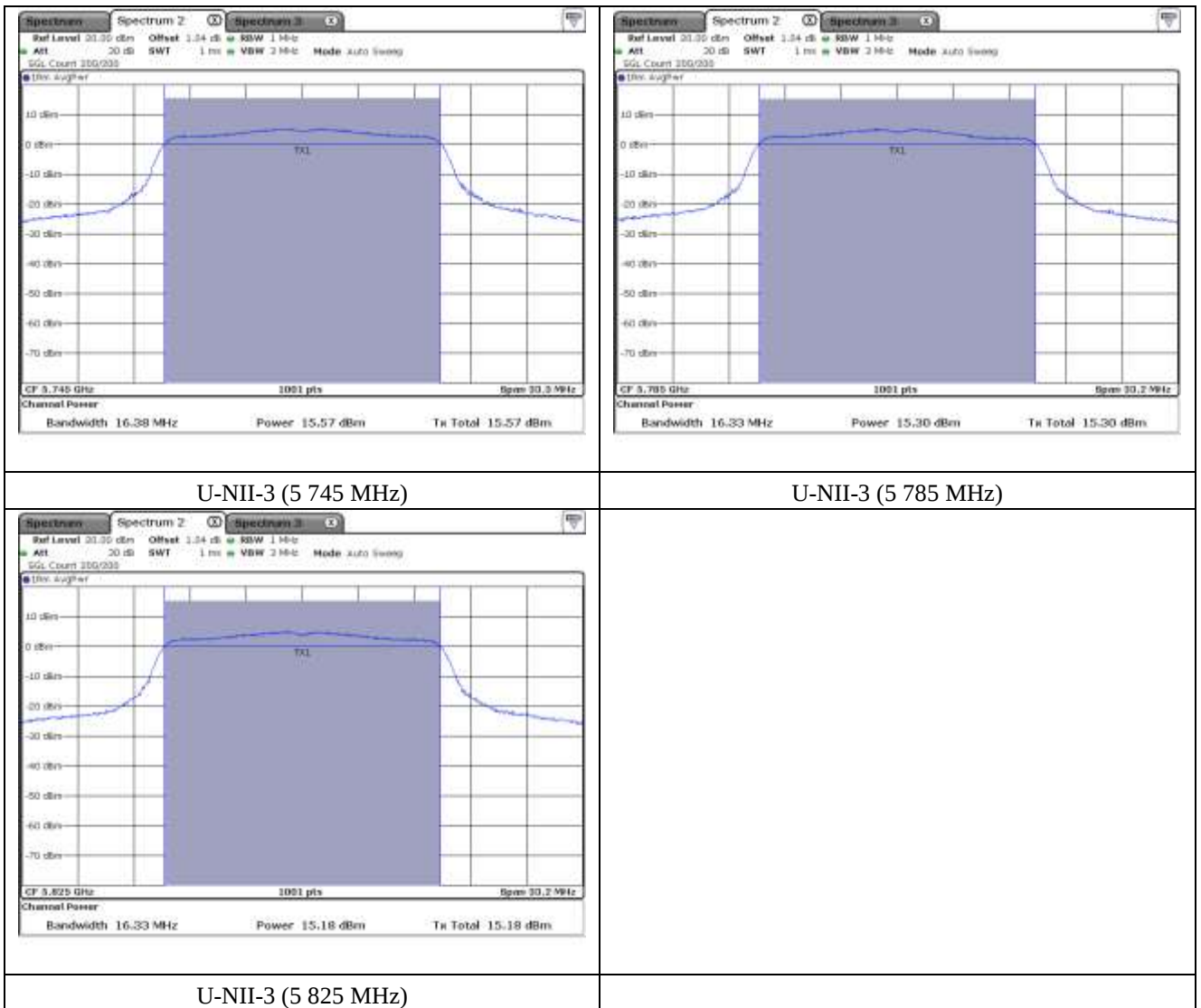
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Correction Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 180.00	15.05	0.35	15.40	23.97	8.92
	Middle	5 220.00	15.08	0.35	15.43	23.97	8.89
	High	5 240.00	15.12	0.35	15.47	23.97	8.85
5 250 ~ 5 350	Low	5 260.00	14.73	0.32	15.05	23.97	9.24
	Middle	5 300.00	14.67	0.32	14.99	23.97	9.30
	High	5 320.00	15.04	0.32	15.36	23.97	8.93
5 470 ~ 5 725	Low	5 500.00	15.98	0.29	16.27	23.97	7.99
	Middle	5 580.00	16.10	0.29	16.39	23.97	7.87
	High	5 700.00	16.10	0.29	16.39	23.97	7.87
5 725 ~ 5 850	Low	5 745.00	15.57	0.31	15.88	30.00	14.43
	Middle	5 785.00	15.30	0.31	15.61	30.00	14.70
	High	5 825.00	15.18	0.31	15.49	30.00	14.82

Remark : Margin = Limit – Result(Measured Value + Correction Factor)







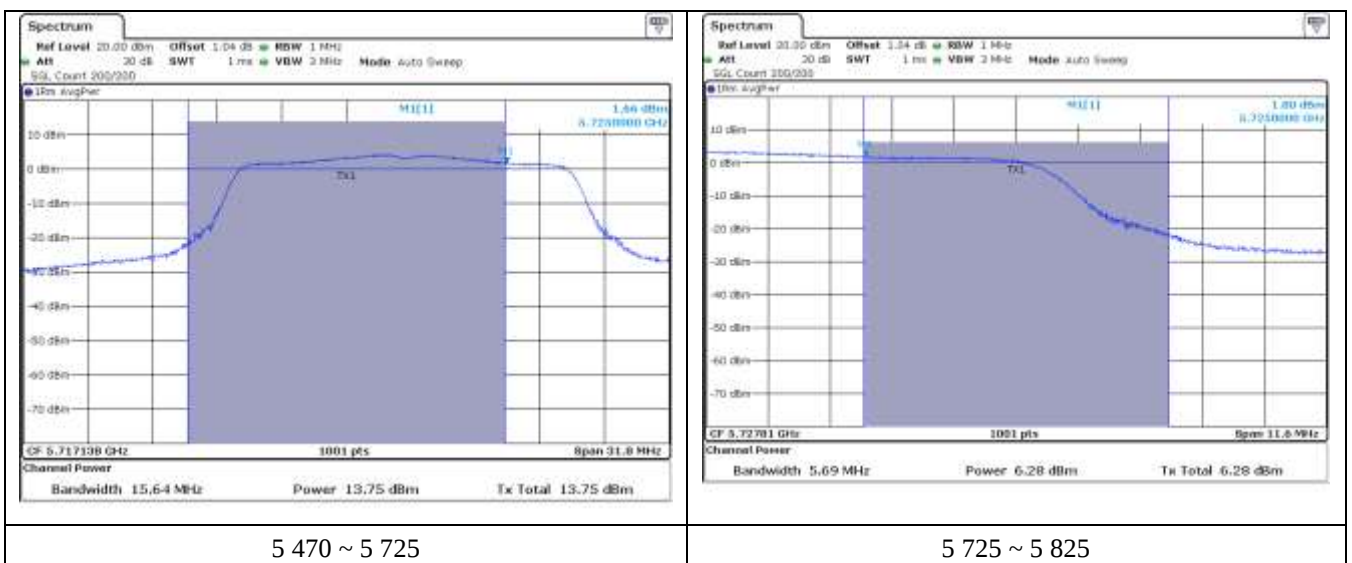


9.4.4 Test data for Straddle Channel_Antenna 0

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Correction Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
5 470 ~ 5 725	5 720.00	13.75	0.29	14.04	23.97	9.93
5 725 ~ 5 825	5 720.00	6.28	0.29	6.57	30.00	23.43

Remark : Margin = Limit – Result(Measured Value + Correction Factor)

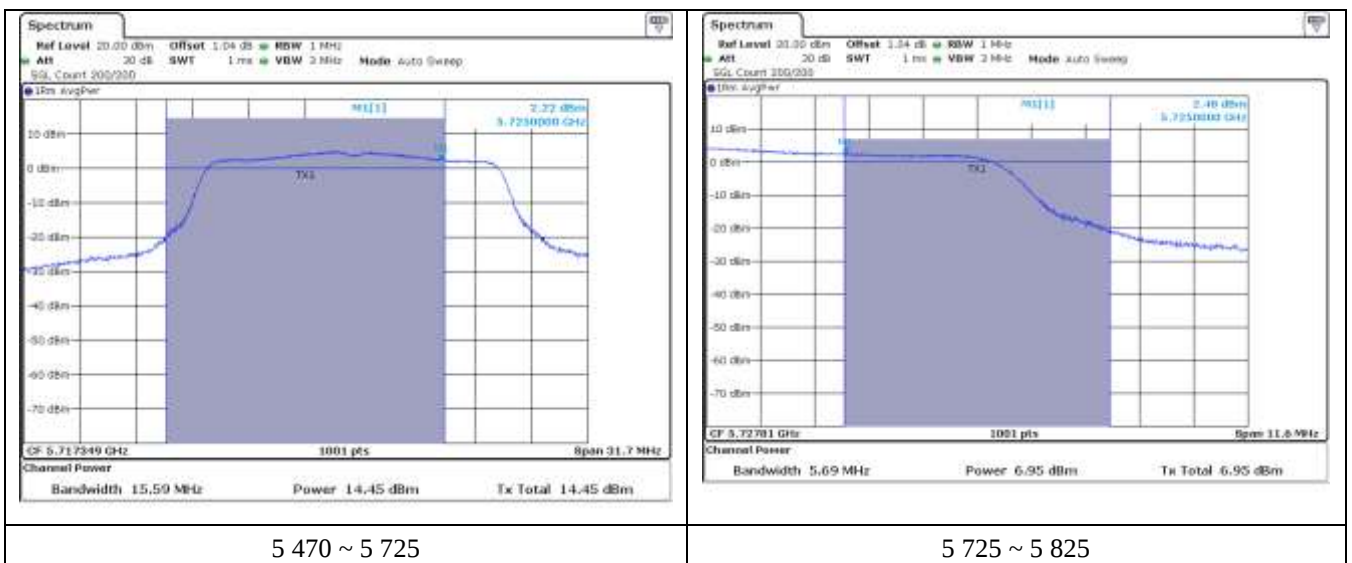


9.4.5 Test data for Straddle Channel_Antenna 1

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Correction Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
5 470 ~ 5 725	5 720.00	14.45	0.29	14.74	23.97	9.23
5 725 ~ 5 825	5 720.00	6.95	0.31	7.26	30.00	22.74

Remark : Margin = Limit – Result(Measured Value + Correction Factor)



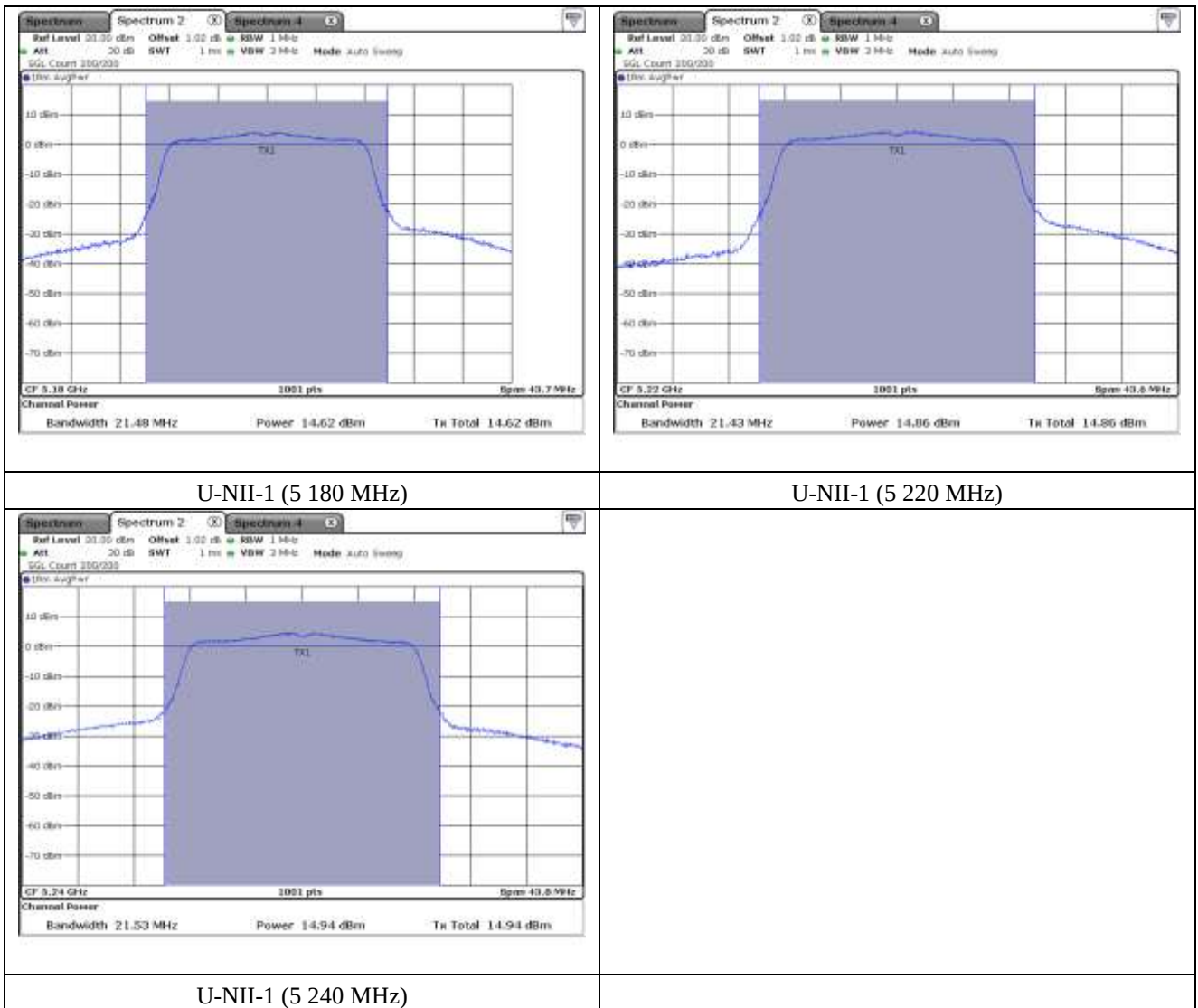
9.5 Test data for 802.11n_HT20 RLAN Mode

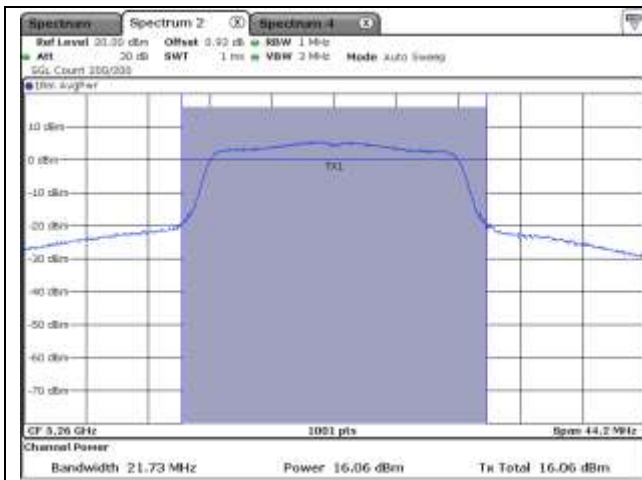
9.5.1 Test data for Antenna 0

-. Test Result : Pass

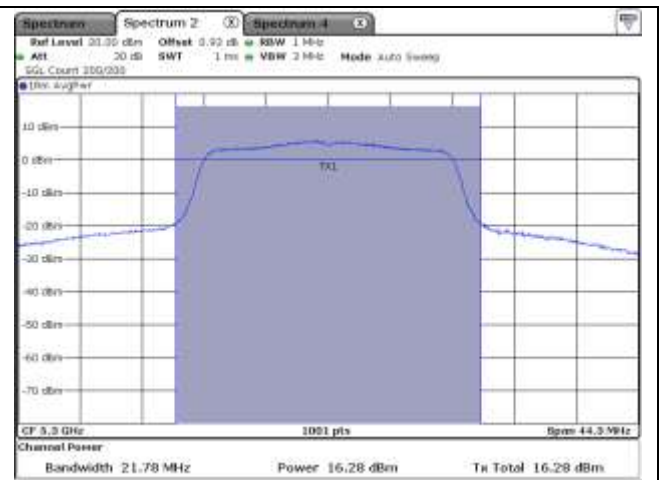
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Correction Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 180.00	14.62	0.59	15.21	23.97	8.76
	Middle	5 220.00	14.86	0.59	15.45	23.97	8.52
	High	5 240.00	14.94	0.59	15.53	23.97	8.44
5 250 ~ 5 350	Low	5 260.00	16.06	0.59	16.65	23.97	7.32
	Middle	5 300.00	16.28	0.59	16.87	23.97	7.10
	High	5 320.00	15.88	0.59	16.47	23.97	7.50
5 470 ~ 5 725	Low	5 500.00	15.17	0.59	15.76	23.97	8.21
	Middle	5 580.00	14.99	0.59	15.58	23.97	8.39
	High	5 700.00	14.33	0.59	14.92	23.97	9.05
5 725 ~ 5 850	Low	5 745.00	13.94	0.65	14.59	30.00	15.41
	Middle	5 785.00	13.82	0.65	14.47	30.00	15.53
	High	5 825.00	13.42	0.65	14.07	30.00	15.93

Remark : Margin = Limit – Result(Measured Value + Correction Factor)

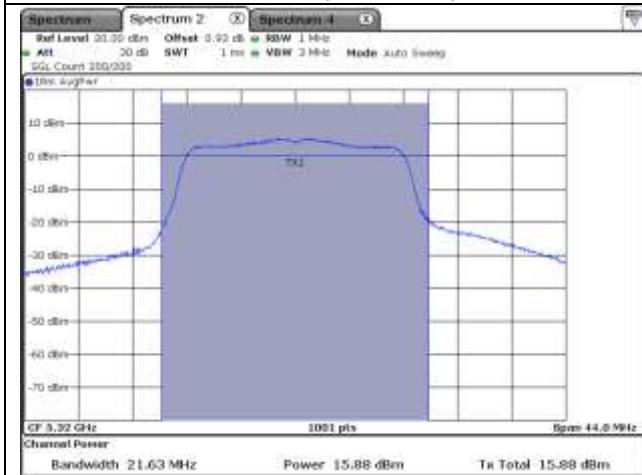




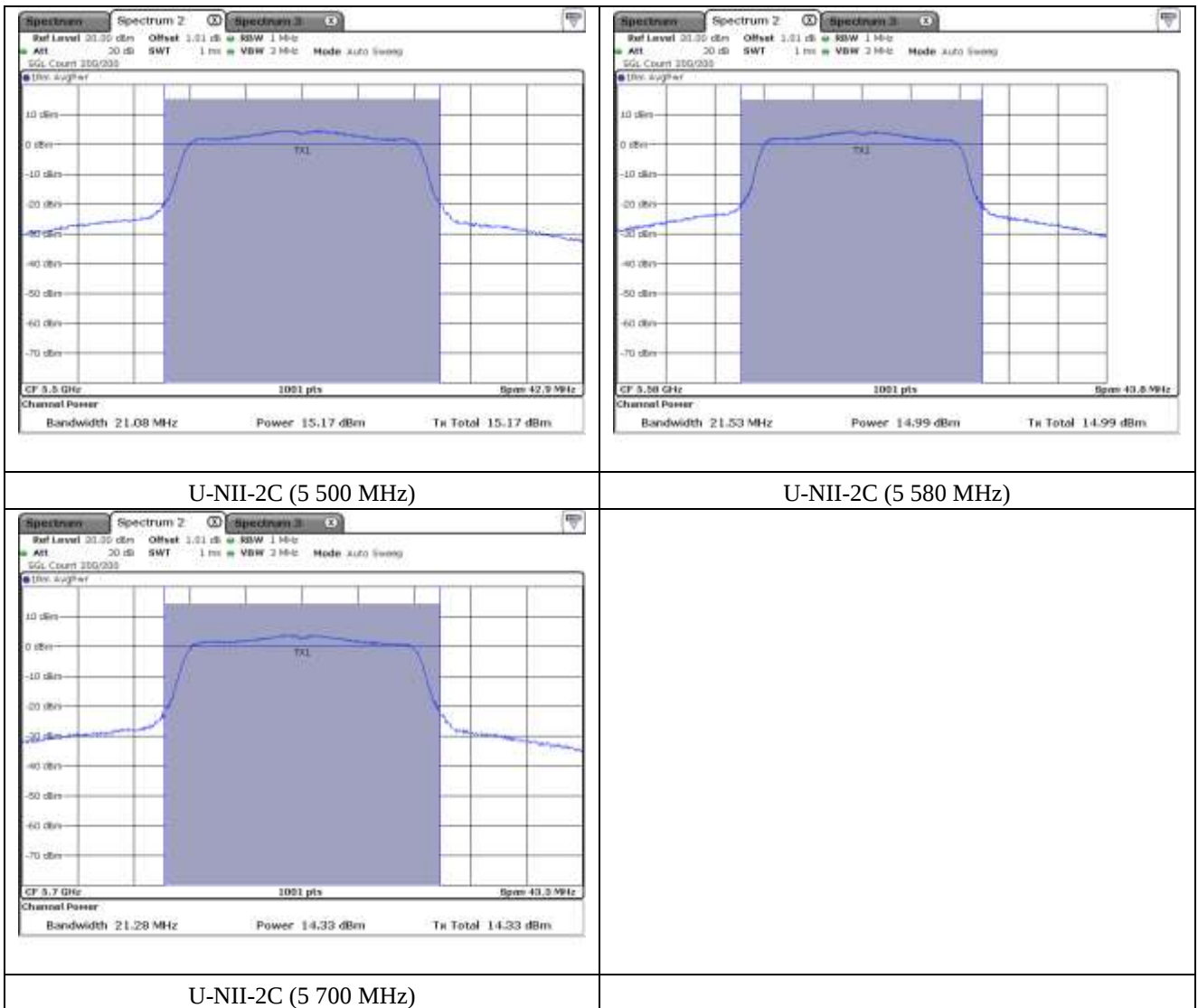
U-NII-2A (5 260 MHz)

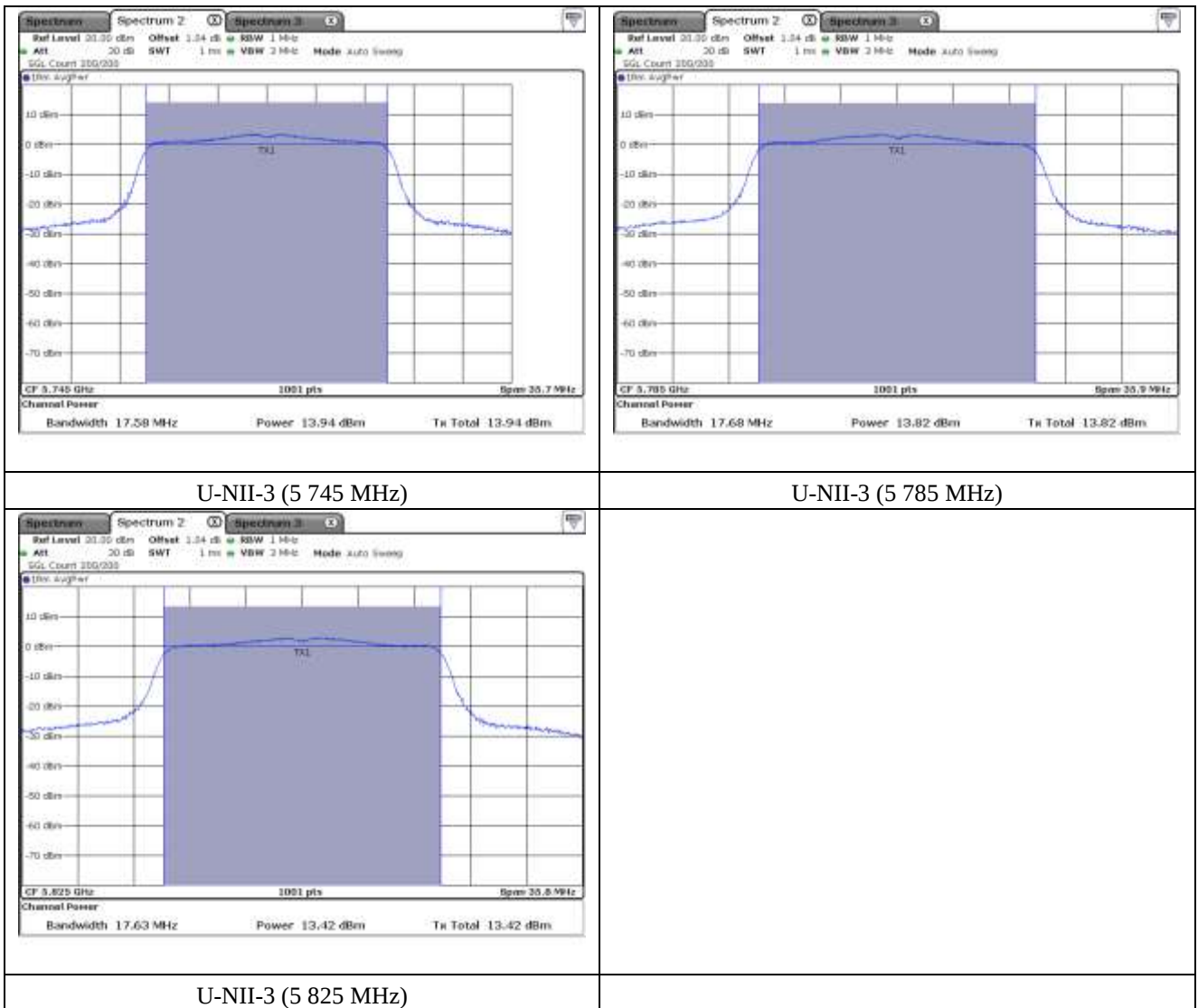


U-NII-2A (5 300 MHz)



U-NII-2A (5 320 MHz)



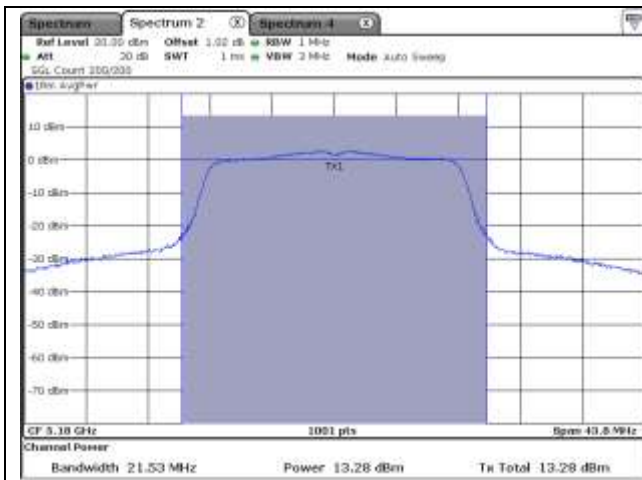


9.5.2 Test data for Antenna 1

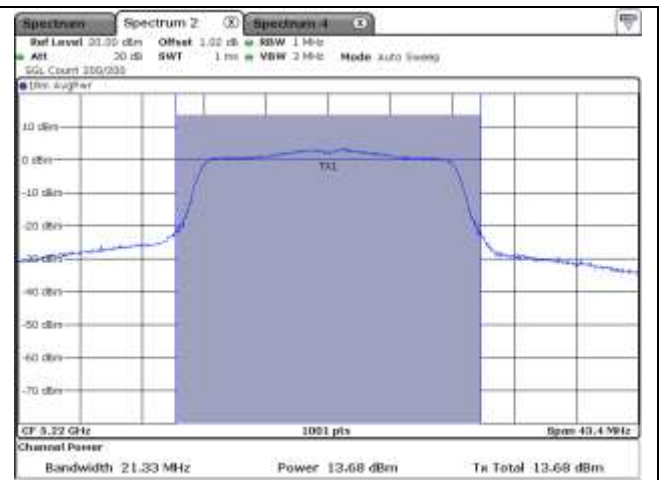
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Correction Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 180.00	13.28	0.72	14.00	23.97	9.97
	Middle	5 220.00	13.68	0.72	14.40	23.97	9.57
	High	5 240.00	13.47	0.72	14.19	23.97	9.78
5 250 ~ 5 350	Low	5 260.00	13.40	0.65	14.05	23.97	9.92
	Middle	5 300.00	13.19	0.65	13.84	23.97	10.13
	High	5 320.00	13.53	0.65	14.18	23.97	9.79
5 470 ~ 5 725	Low	5 500.00	14.66	0.65	15.31	23.97	8.66
	Middle	5 580.00	14.76	0.65	15.41	23.97	8.56
	High	5 700.00	14.74	0.65	15.39	23.97	8.58
5 725 ~ 5 850	Low	5 745.00	13.97	0.60	14.57	30.00	15.43
	Middle	5 785.00	13.73	0.60	14.33	30.00	15.67
	High	5 825.00	13.49	0.60	14.09	30.00	15.91

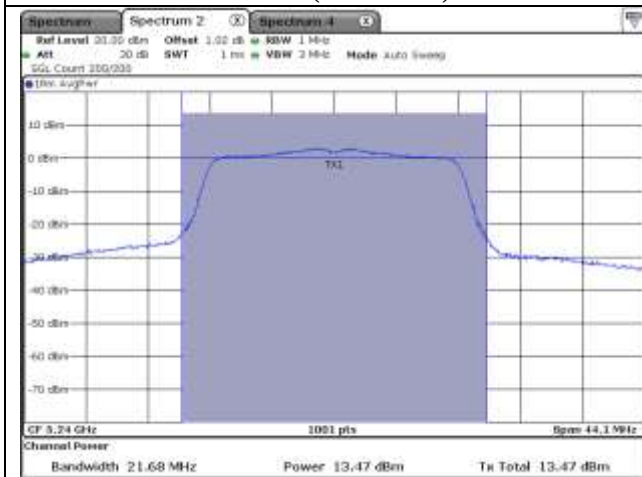
Remark : Margin = Limit – Result(Measured Value + Correction Factor)



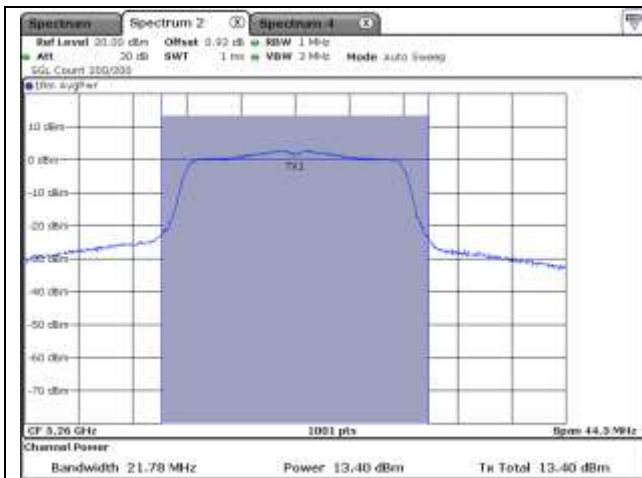
U-NII-1 (5 180 MHz)



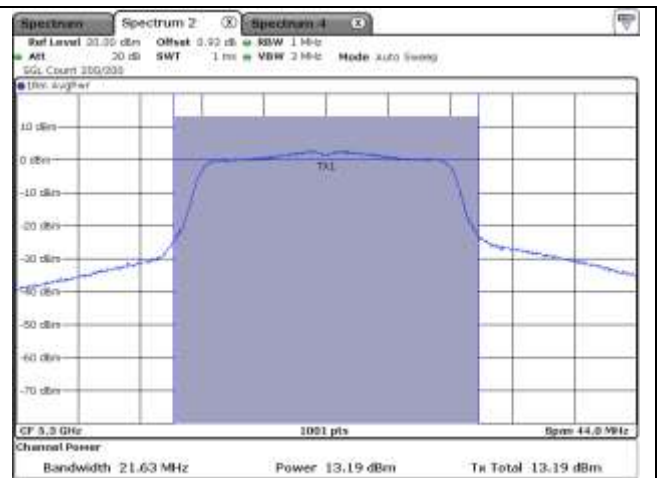
U-NII-1 (5 220 MHz)



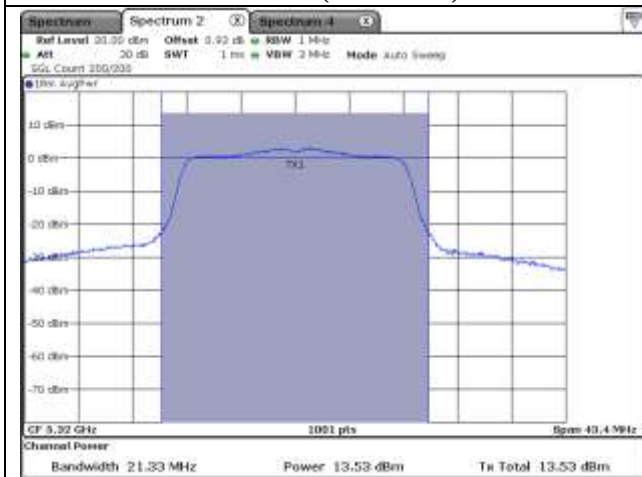
U-NII-1 (5 240 MHz)



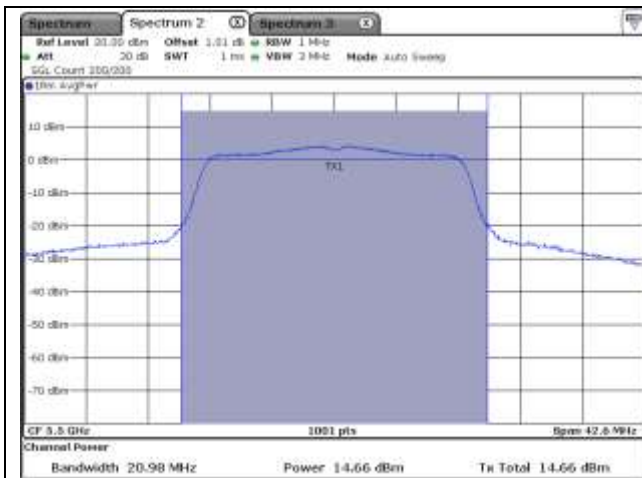
U-NII-2A (5 260 MHz)



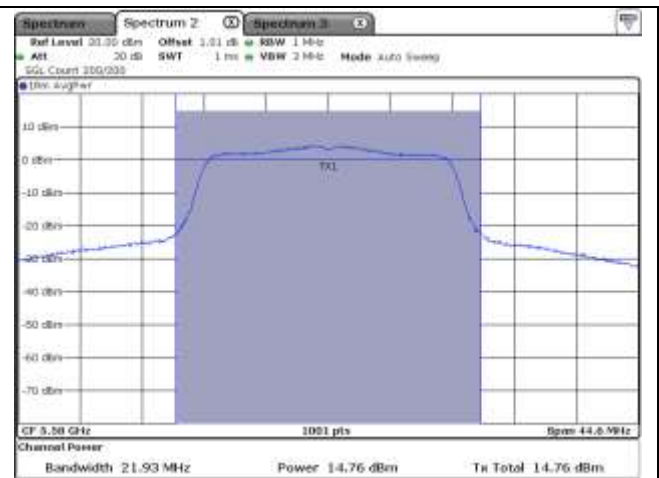
U-NII-2A (5 300 MHz)



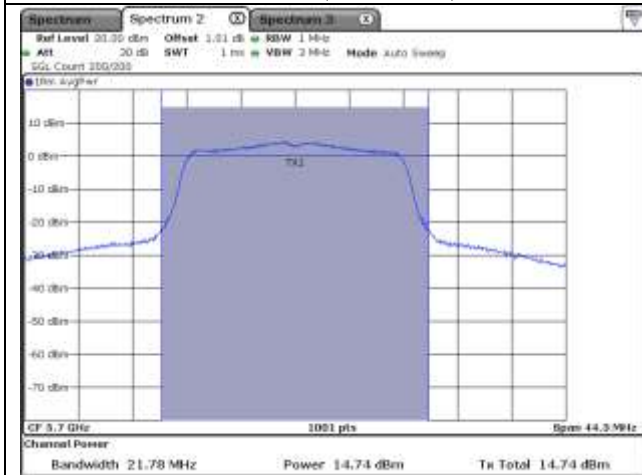
U-NII-2A (5 320 MHz)



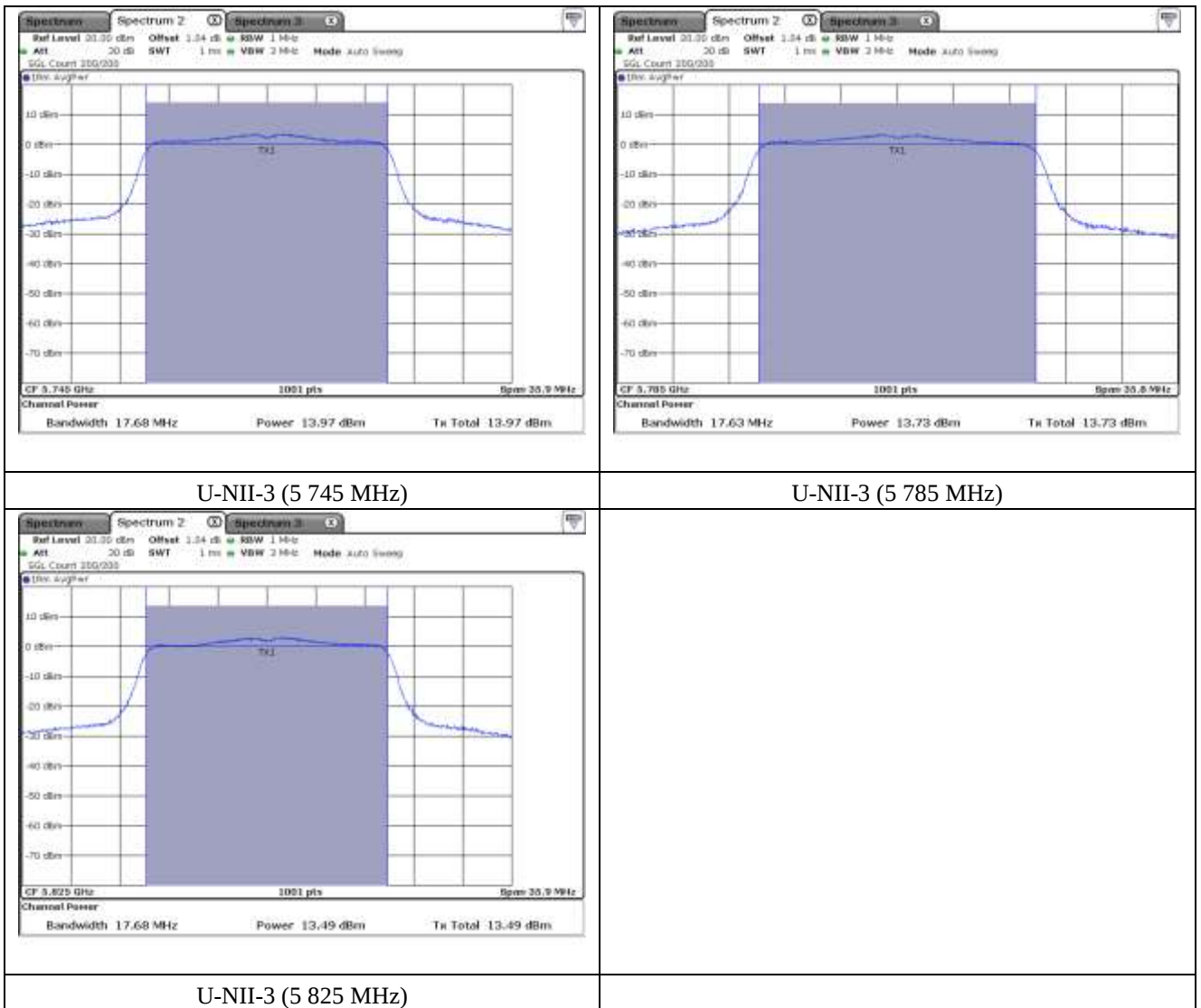
U-NII-2C (5 500 MHz)



U-NII-2C (5 580 MHz)



U-NII-2C (5 700 MHz)



9.5.3 Test data for Multiple Transmit

-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Correction Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 180.00	17.01	0.72	17.73	23.97	6.24
	Middle	5 220.00	17.32	0.72	18.04	23.97	5.93
	High	5 240.00	17.28	0.72	18.00	23.97	5.97
5 250 ~ 5 350	Low	5 260.00	17.94	0.65	18.59	23.97	5.38
	Middle	5 300.00	18.01	0.65	18.66	23.97	5.31
	High	5 320.00	17.87	0.65	18.52	23.97	5.45
5 470 ~ 5 725	Low	5 500.00	17.93	0.65	18.58	23.97	5.39
	Middle	5 580.00	17.89	0.65	18.54	23.97	5.43
	High	5 700.00	17.55	0.65	18.20	23.97	5.77
5 725 ~ 5 850	Low	5 745.00	16.97	0.60	17.57	30.00	12.43
	Middle	5 785.00	16.79	0.60	17.39	30.00	12.61
	High	5 825.00	16.47	0.60	17.07	30.00	12.93

Remark : Margin = Limit – Result(Measured Value + Correction Factor)

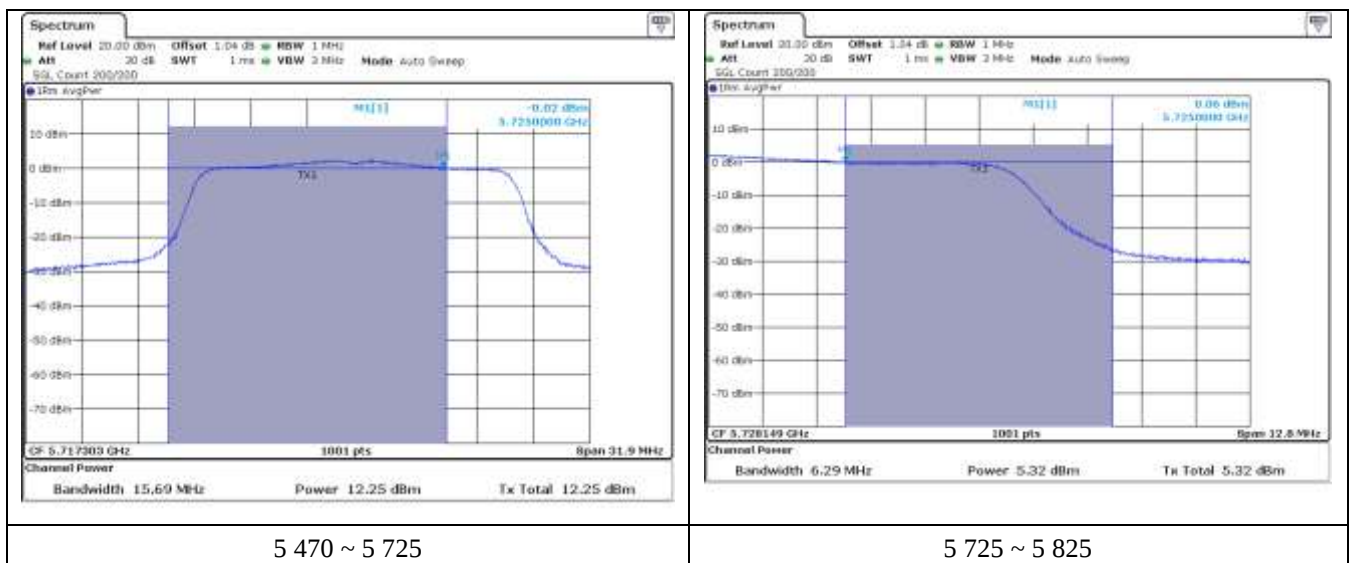
Remark 2: Calculated Output Power= $10\log(10^{(\text{Antenna0 Output Power}/10)} + 10^{(\text{Antenna1 Output Power}/10)})$

9.5.4 Test data for Straddle Channel_Antenna 0

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Correction Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
5 470 ~ 5 725	5 720.00	12.25	0.59	12.84	23.97	11.13
5 725 ~ 5 825	5 720.00	5.32	0.65	5.97	30.00	24.03

Remark : Margin = Limit – Result(Measured Value + Correction Factor)

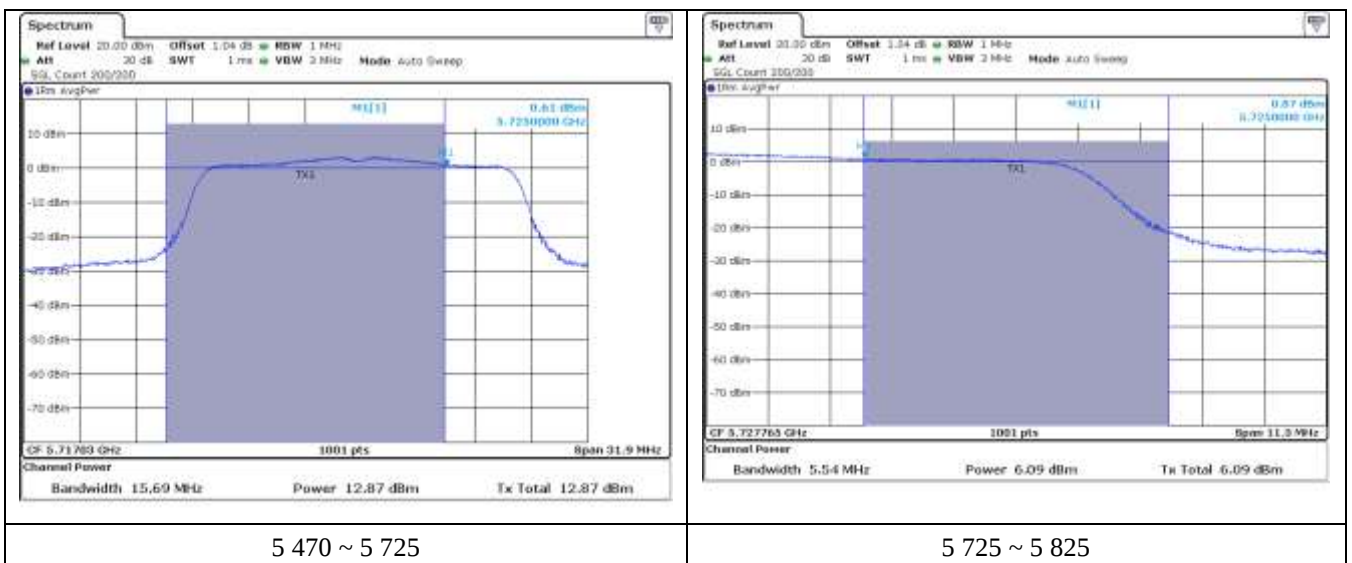


9.5.5 Test data for Straddle Channel_Antenna 1

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Correction Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
5 470 ~ 5 725	5 720.00	12.87	0.65	13.52	23.97	10.45
5 725 ~ 5 825	5 720.00	6.09	0.60	6.69	30.00	23.31

Remark : Margin = Limit – Result(Measured Value + Correction Factor)



9.5.6 Test data for Straddle Channel_Multiple Transmit

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Correction Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
5 470 ~ 5 725	5 720.00	15.58	0.65	16.23	23.97	7.74
5 725 ~ 5 825	5 720.00	8.73	0.60	9.33	30.00	20.67

Remark 1 : Margin = Limit – Result(Measured Value + Correction Factor)

Remark 2 : Calculated Output Power= $10\log (10^{(\text{Antenna1 Output Power}/10)}+10^{(\text{Antenna2 Output Power}/10)})$

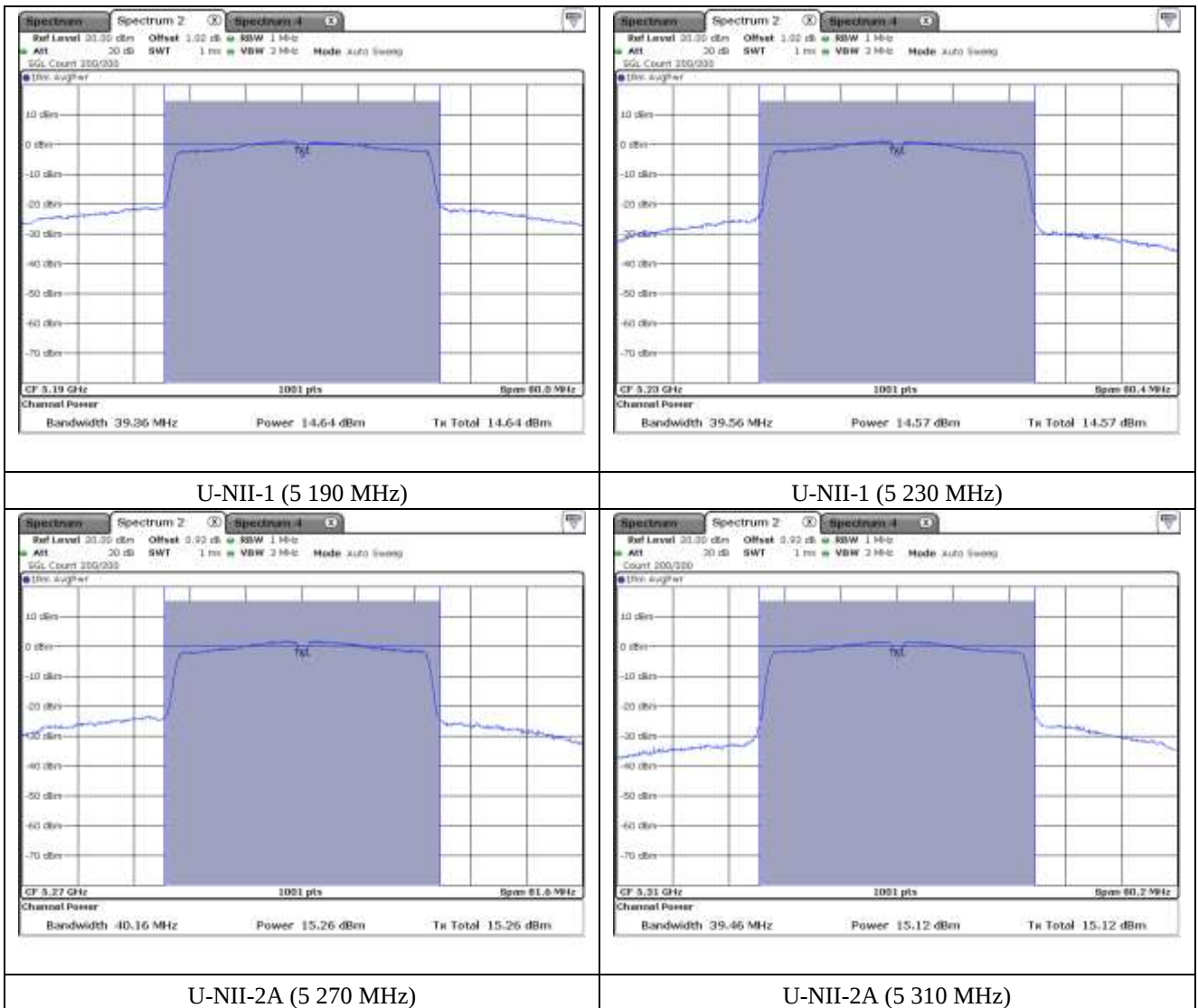
9.6 Test data for 802.11n_HT40 RLAN Mode

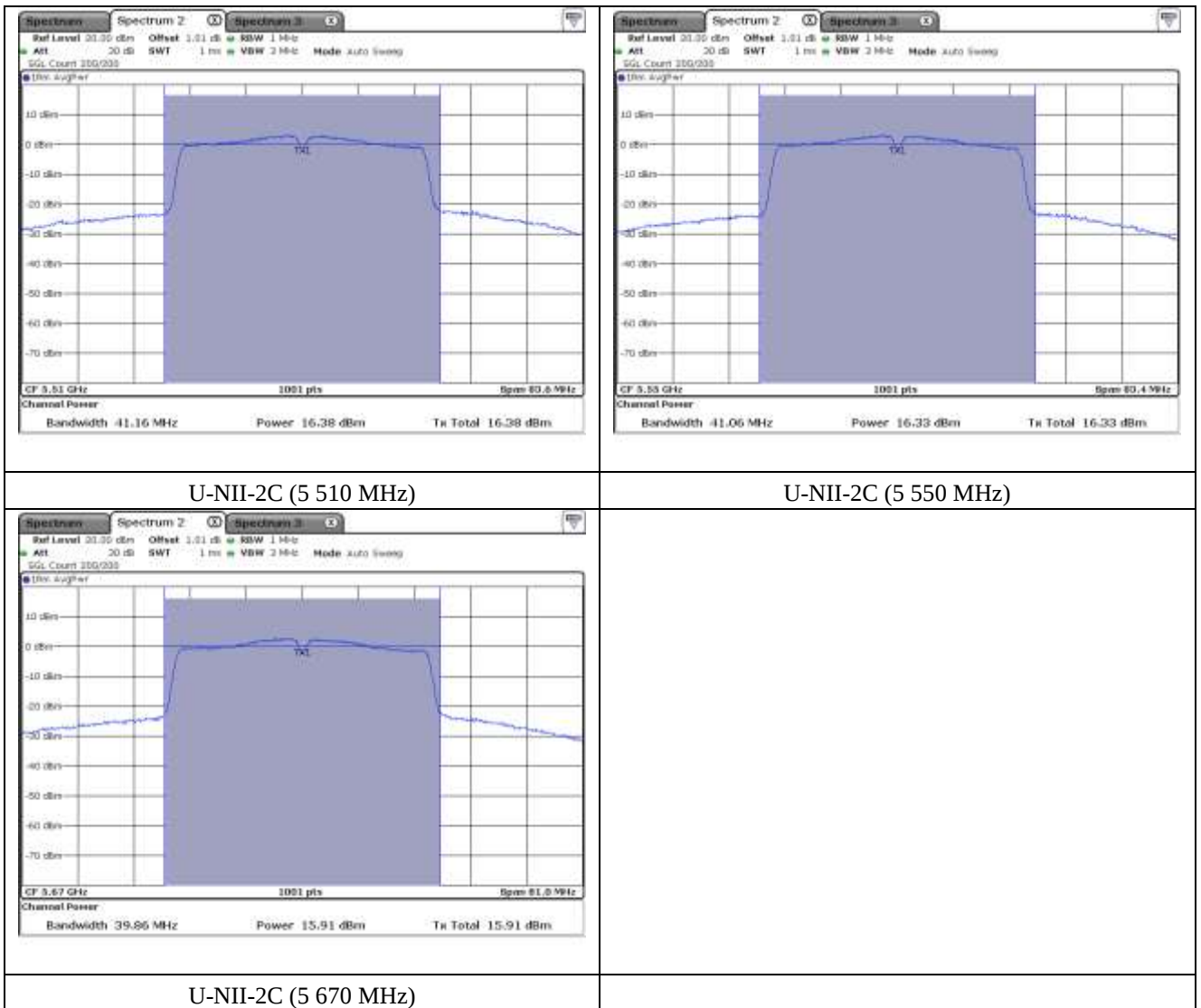
9.6.1 Test data for Antenna 0

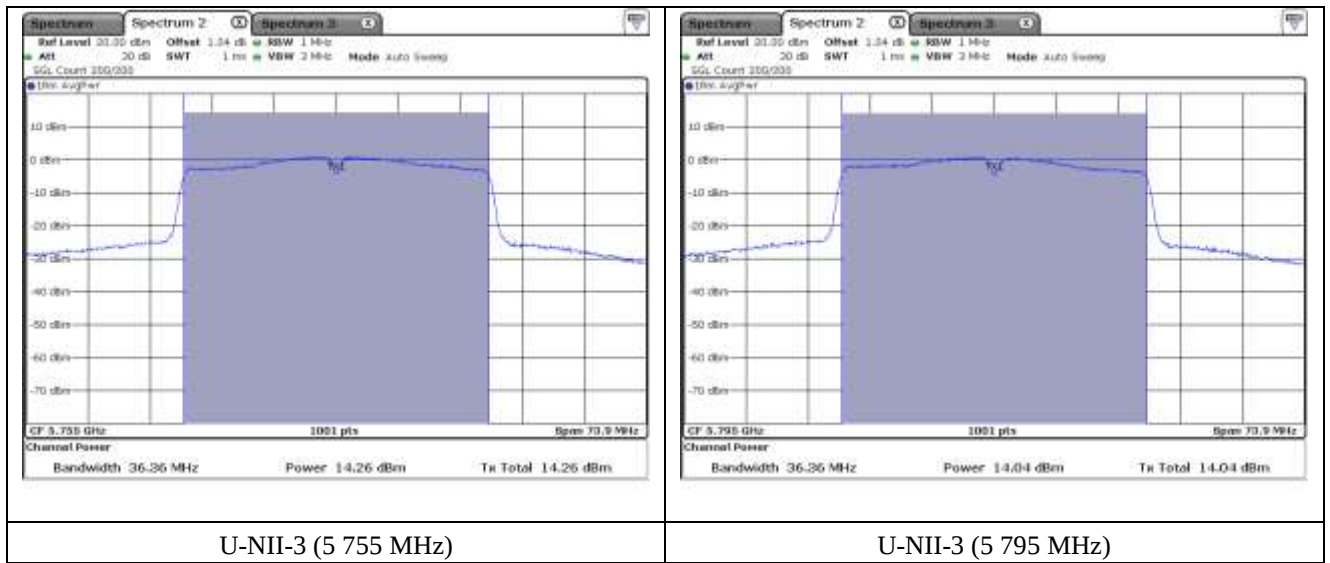
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Correction Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 190.00	14.64	1.11	15.75	23.97	8.22
	High	5 230.00	14.57	1.11	15.68	23.97	8.29
5 250 ~ 5 350	Low	5 270.00	15.26	1.11	16.37	23.97	7.60
	High	5 310.00	15.12	1.11	16.23	23.97	7.74
5 470 ~ 5 725	Low	5 510.00	1.09	17.47	23.97	6.50	16.38
	Middle	5 550.00	1.09	17.42	23.97	6.55	16.33
	High	5 670.00	1.09	17.00	23.97	6.97	15.91
5 725 ~ 5 850	Low	5 755.00	14.26	1.08	15.34	30.00	14.66
	High	5 795.00	14.04	1.08	15.12	30.00	14.88

Remark : Margin = Limit – Result(Measured Value + Correction Factor)





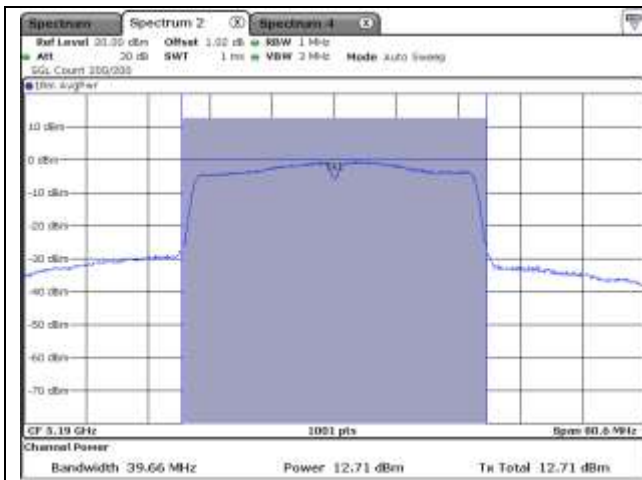


9.6.2 Test data for Antenna 1

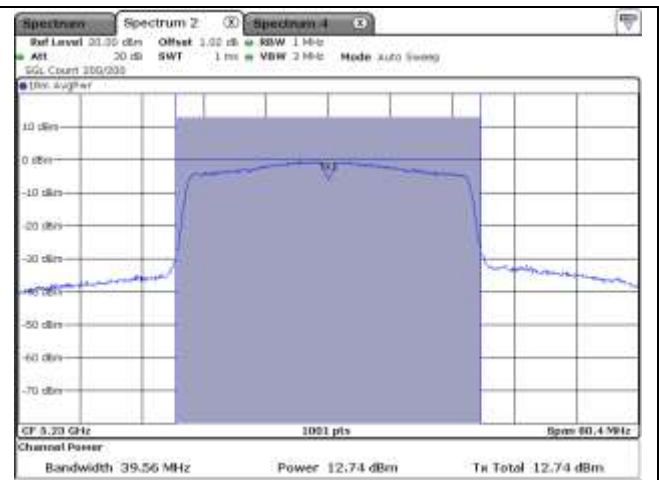
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Correction Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 190.00	12.71	1.08	13.79	23.97	10.18
	High	5 230.00	12.74	1.08	13.82	23.97	10.15
5 250 ~ 5 350	Low	5 270.00	12.75	1.11	13.86	23.97	10.11
	High	5 310.00	13.01	1.11	14.12	23.97	9.85
5 470 ~ 5 725	Low	5 510.00	14.29	1.11	15.40	23.97	8.57
	Middle	5 550.00	14.74	1.11	15.85	23.97	8.12
	High	5 670.00	14.61	1.11	15.72	23.97	8.25
5 725 ~ 5 850	Low	5 755.00	13.29	1.11	14.40	30.00	15.60
	High	5 795.00	13.12	1.11	14.23	30.00	15.77

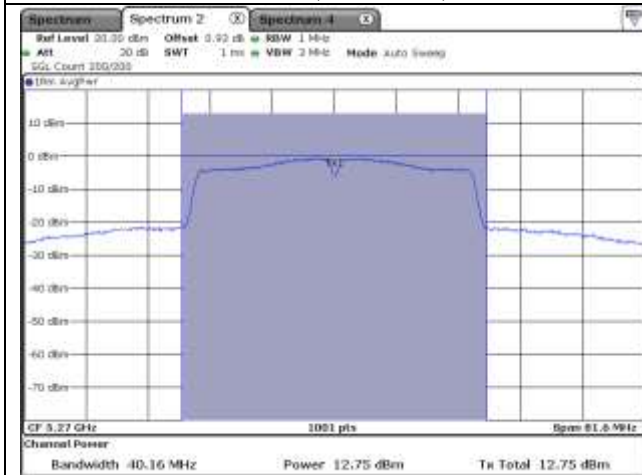
Remark : Margin = Limit – Result(Measured Value + Correction Factor)



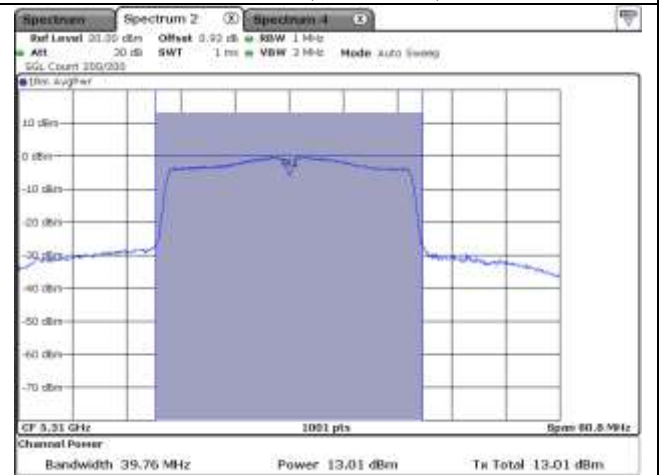
U-NII-1 (5 190 MHz)



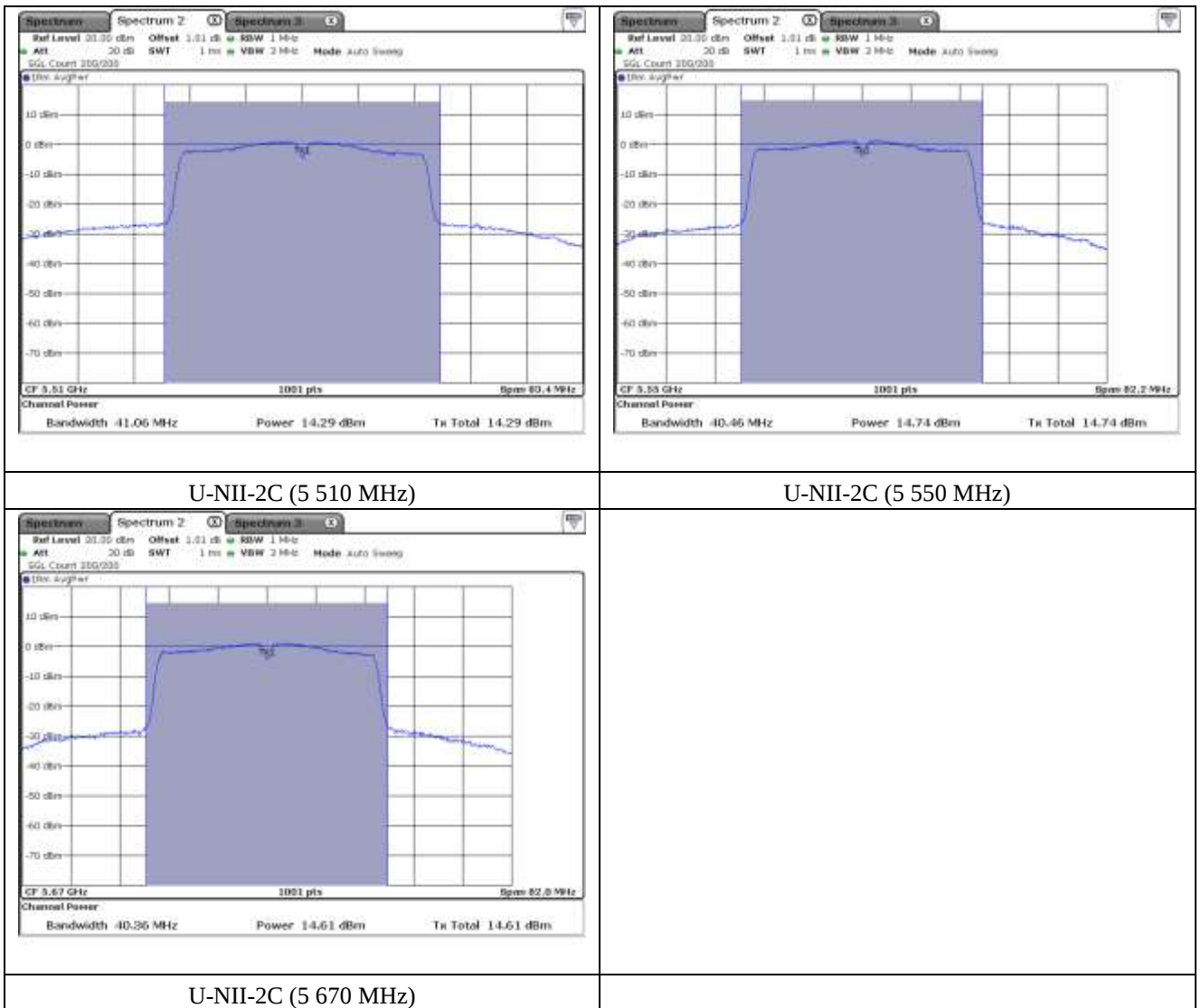
U-NII-1 (5 230 MHz)

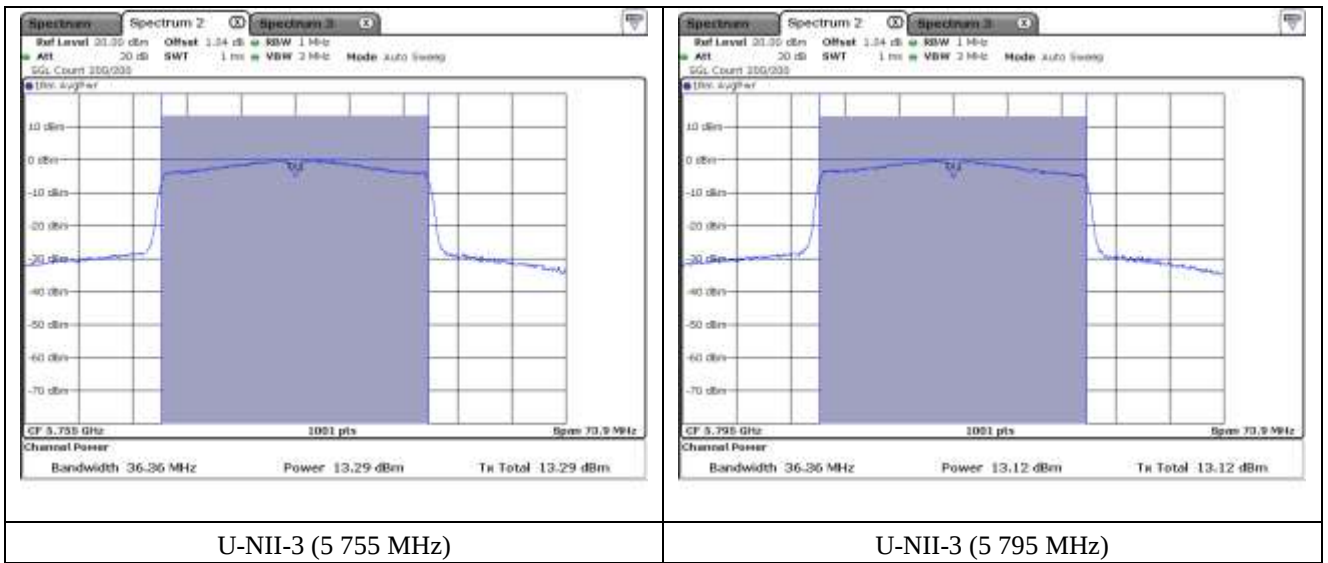


U-NII-2A (5 270 MHz)



U-NII-2A (5 310 MHz)





9.6.3 Test data for Multiple Transmit

-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Correction Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 190.00	16.79	1.08	17.87	23.97	6.10
	High	5 230.00	16.76	1.08	17.84	23.97	6.13
5 250 ~ 5 350	Low	5 270.00	17.19	1.11	18.30	23.97	5.67
	High	5 310.00	17.20	1.11	18.31	23.97	5.66
5 470 ~ 5 725	Low	5 510.00	18.47	1.11	19.58	23.97	4.39
	Middle	5 550.00	18.62	1.11	19.73	23.97	4.24
	High	5 670.00	18.32	1.11	19.43	23.97	4.54
5 725 ~ 5 850	Low	5 755.00	16.81	1.11	17.92	30.00	12.08
	High	5 795.00	16.61	1.11	17.72	30.00	12.28

Remark 1 : Margin = Limit – Result(Measured Value + Correction Factor)

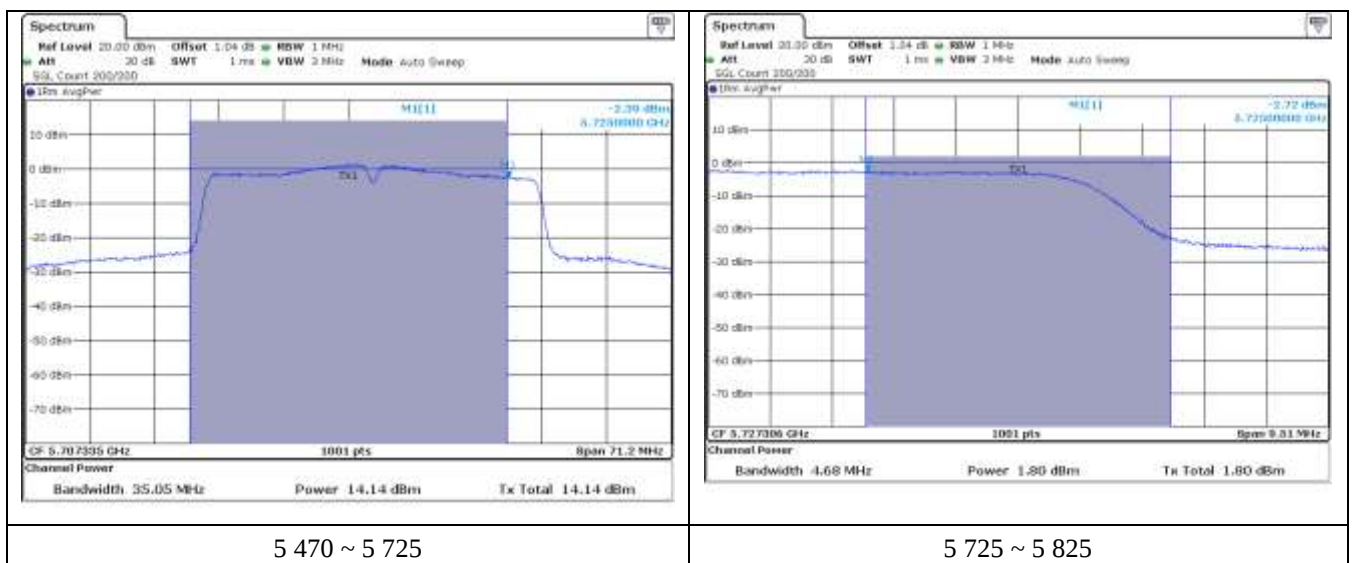
Remark 2: Calculated Output Power= $10\log(10^{(\text{Antenna0 Output Power}/10)} + 10^{(\text{Antenna1 Output Power}/10)})$

9.6.4 Test data for Straddle Channel_Antenna 0

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Correction Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
5 470 ~ 5 725	5 710.00	14.14	1.09	15.23	23.97	8.74
5 725 ~ 5 825	5 710.00	1.80	1.08	2.88	30.00	27.12

Remark : Margin = Limit – Result(Measured Value + Correction Factor)

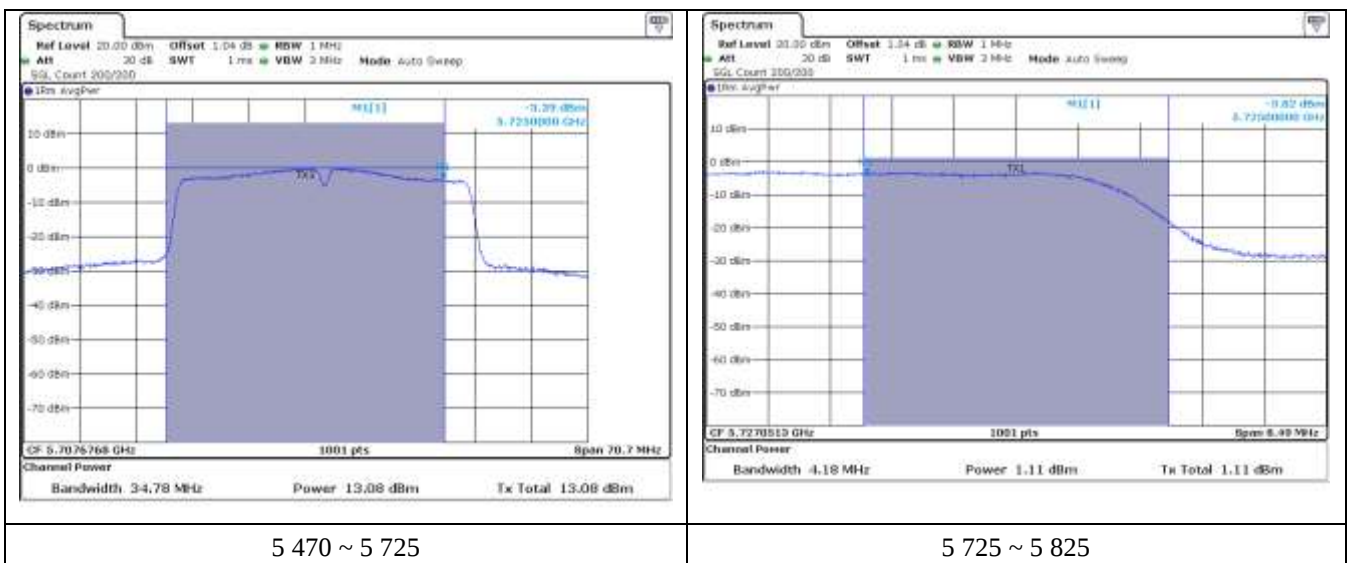


9.6.5 Test data for Straddle Channel_Antenna 1

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Correction Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
5 470 ~ 5 725	5 710.00	13.08	1.11	14.19	23.97	9.78
5 725 ~ 5 825	5 710.00	1.11	1.11	2.22	30.00	27.78

Remark : Margin = Limit – Result(Measured Value + Correction Factor)



9.6.6 Test data for Straddle Channel_Multiple Transmit

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Correction Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
5 470 ~ 5 725	5 720.00	16.65	1.11	17.76	23.97	6.21
5 725 ~ 5 825	5 720.00	4.48	1.11	5.59	30.00	24.41

Remark 1 : Margin = Limit – Result(Measured Value + Correction Factor)

Remark 2 : Calculated Output Power= $10\log (10^{(\text{Antenna1 Output Power}/10)}+10^{(\text{Antenna2 Output Power}/10)})$

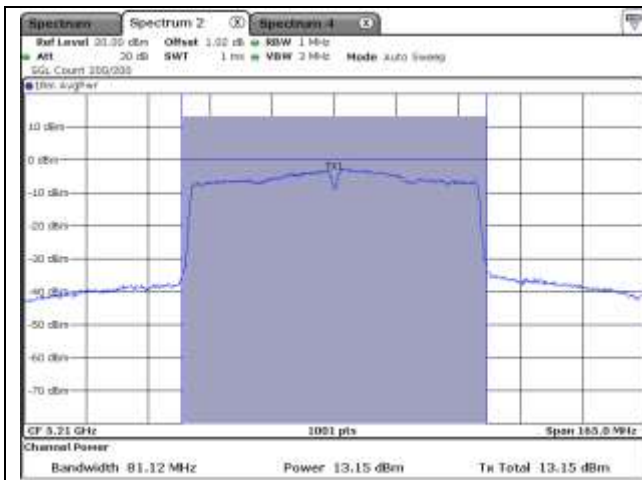
9.7 Test data for 802.11ac_HT80 RLAN Mode

9.7.1 Test data for Antenna 0

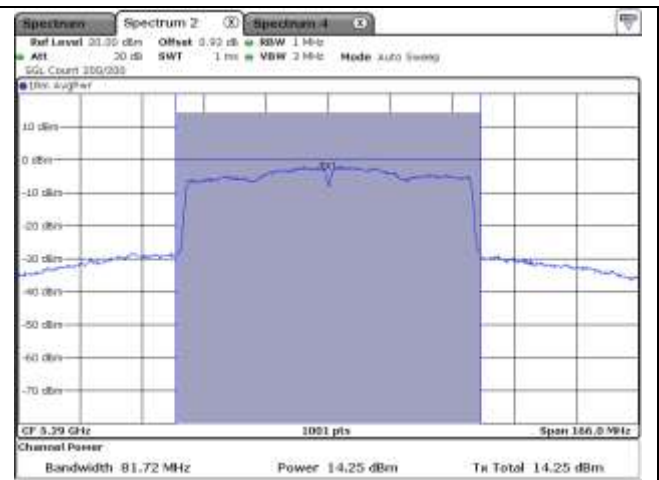
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Correction Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Middle	5 210.00	13.15	1.88	15.03	23.97	8.94
5 250 ~ 5 350	Middle	5 290.00	14.25	1.87	16.12	23.97	7.85
5 470 ~ 5 725	Low	5 530.00	15.27	1.87	17.14	23.97	6.83
	High	5 690.00	14.36	1.87	16.23	23.97	7.74
5 725 ~ 5 850	Middle	5 775.00	12.84	1.88	14.72	30.00	15.28

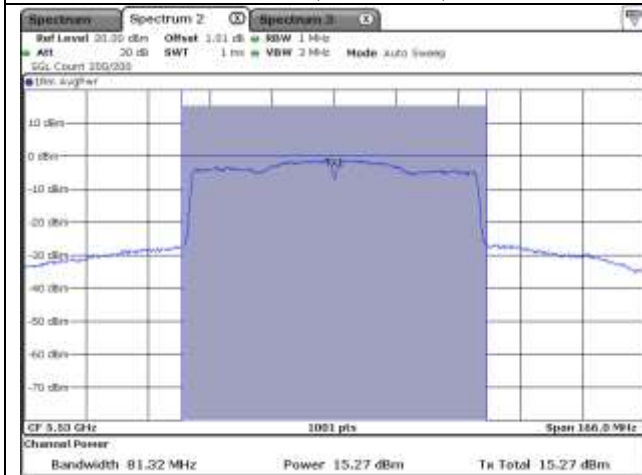
Remark : Margin = Limit – Result(Measured Value + Correction Factor)



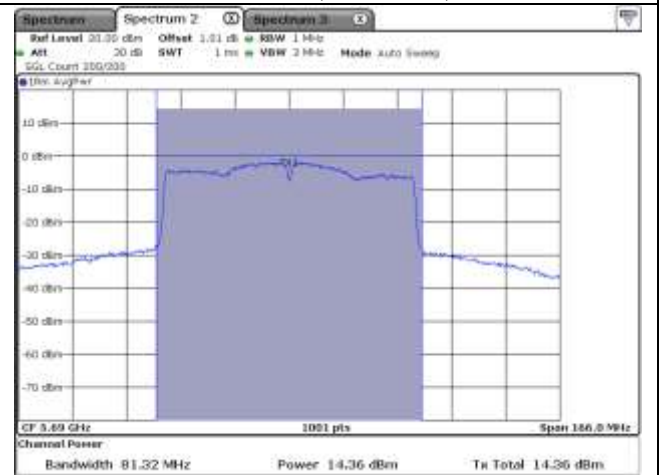
U-NII-1 (5 210 MHz)



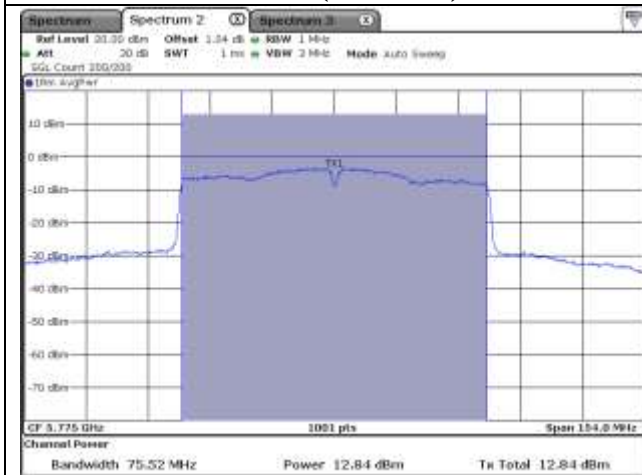
U-NII-2A (5 290 MHz)



U-NII-2C (5 530 MHz)



U-NII-2C (5 690 MHz)



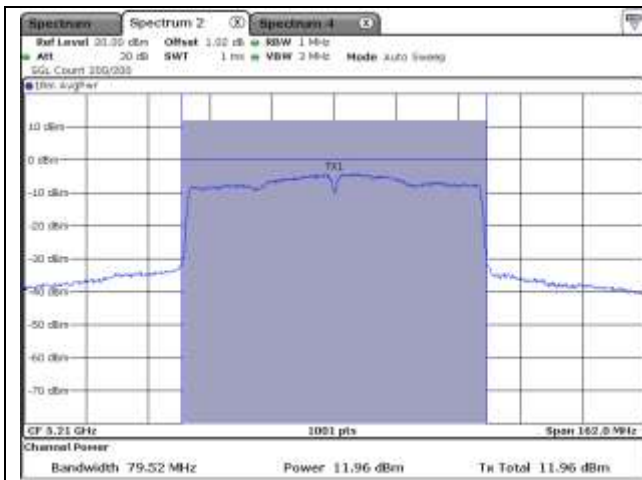
U-NII-3 (5 775 MHz)

9.7.2 Test data for Antenna 1

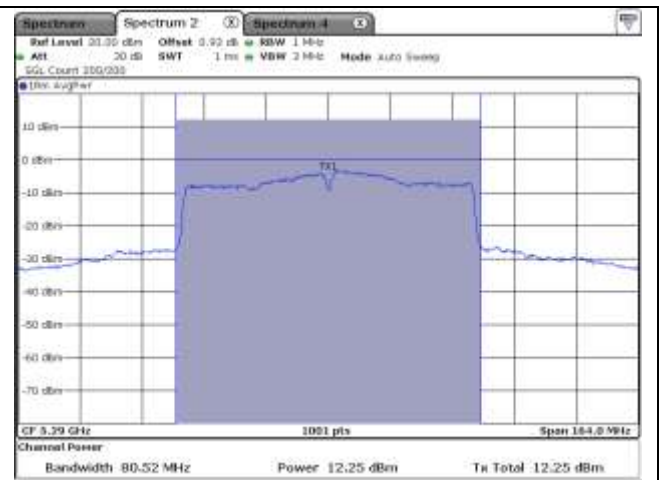
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Correction Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Middle	5 210.00	11.96	1.87	13.83	23.97	10.14
5 250 ~ 5 350	Middle	5 290.00	12.25	1.88	14.13	23.97	9.84
5 470 ~ 5 725	Low	5 530.00	13.66	1.89	15.55	23.97	8.42
	High	5 690.00	13.51	1.89	15.40	23.97	8.57
5 725 ~ 5 850	Middle	5 775.00	11.94	1.89	13.83	30.00	16.17

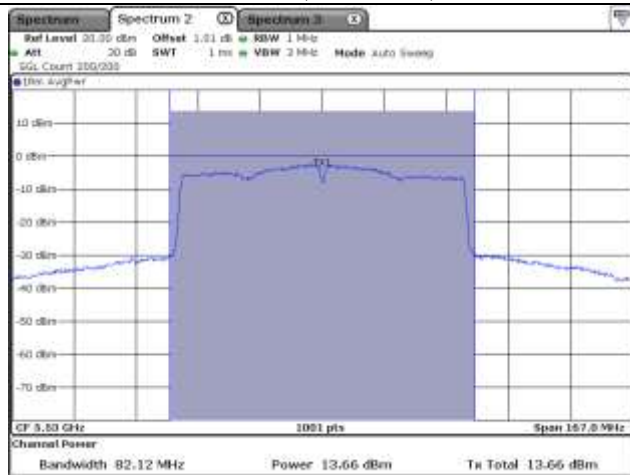
Remark : Margin = Limit – Result(Measured Value + Correction Factor)



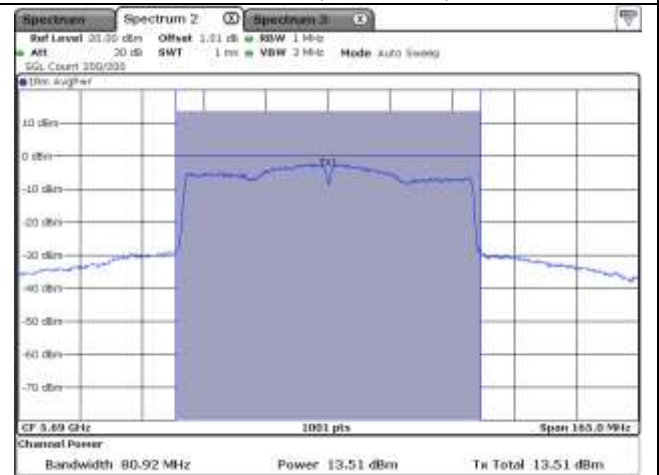
U-NII-1 (5 210 MHz)



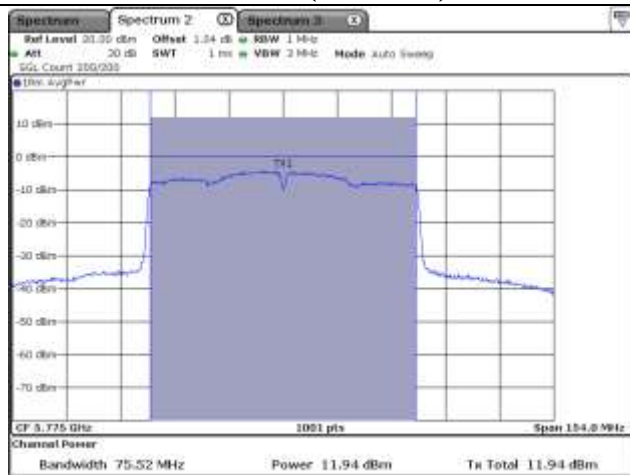
U-NII-2A (5 290 MHz)



U-NII-2C (5 530 MHz)



U-NII-2C (5 690 MHz)



U-NII-3 (5 775 MHz)

9.7.3 Test data for Multiple Transmit

-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Correction Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Middle	5 210.00	15.61	1.87	17.48	23.97	6.49
5 250 ~ 5 350	Middle	5 290.00	16.37	1.88	18.25	23.97	5.72
5 470 ~ 5 725	Low	5 530.00	17.55	1.89	19.44	23.97	4.53
	High	5 690.00	16.97	1.89	18.86	23.97	5.11
5 725 ~ 5 850	Middle	5 775.00	15.42	1.89	17.31	30.00	12.69

Remark 1 : Margin = Limit – Result(Measured Value + Correction Factor)

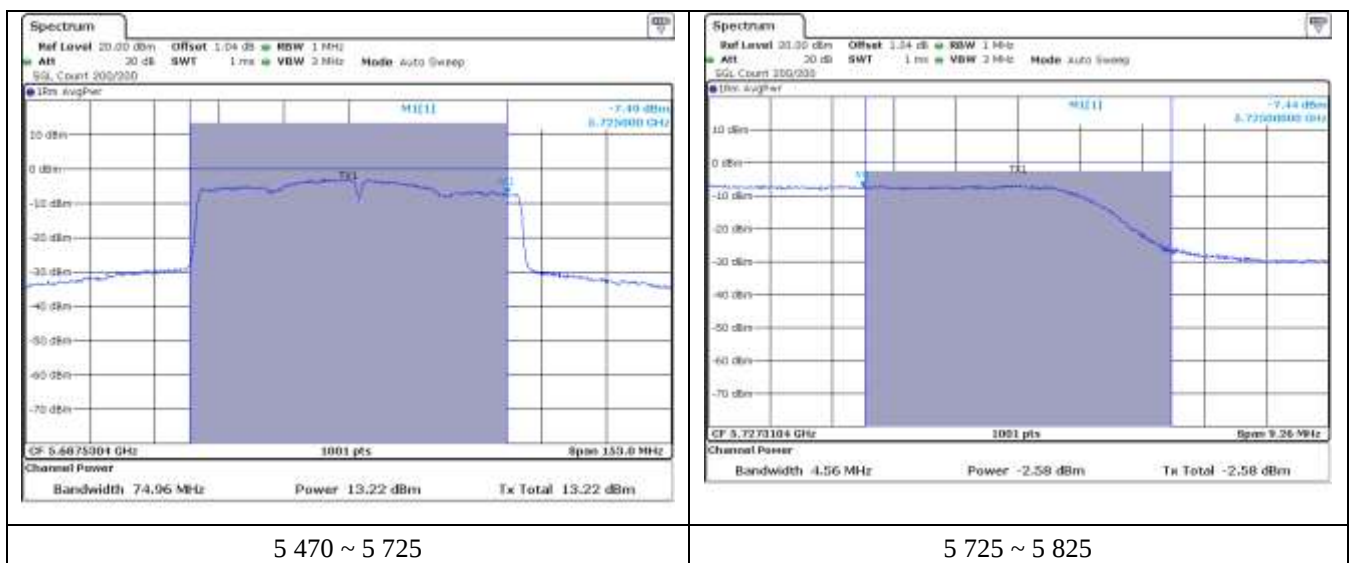
Remark 2: Calculated Output Power= $10\log(10^{(\text{Antenna0 Output Power}/10)} + 10^{(\text{Antenna1 Output Power}/10)})$

9.7.4 Test data for Straddle Channel_Antenna 0

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Correction Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
5 470 ~ 5 725	5 690.00	13.22	1.87	15.09	23.97	8.88
5 725 ~ 5 825	5 690.00	-2.58	1.88	-0.70	30.00	30.70

Remark : Margin = Limit – Result(Measured Value + Correction Factor)

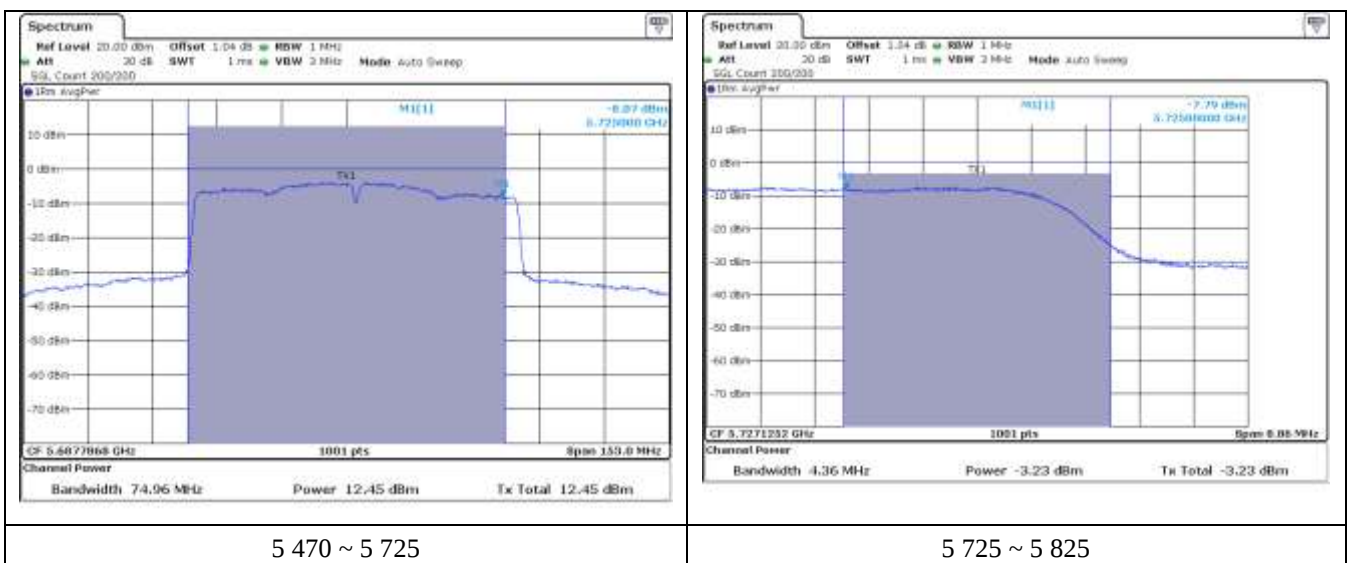


9.7.5 Test data for Straddle Channel_Antenna 1

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Correction Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
5 470 ~ 5 725	5 690.00	12.45	1.89	14.34	23.97	9.63
5 725 ~ 5 825	5 690.00	-3.23	1.89	-1.34	30.00	31.34

Remark : Margin = Limit – Result(Measured Value + Correction Factor)



9.7.6 Test data for Straddle Channel_Multiple Transmit

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Correction Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
5 470 ~ 5 725	5 690.00	15.86	1.89	17.75	23.97	6.22
5 725 ~ 5 825	5 690.00	0.12	1.89	2.01	30.00	27.99

Remark 1 : Margin = Limit – Result(Measured Value + Correction Factor)

Remark 2 : Calculated Output Power= $10\log (10^{(\text{Antenna1 Output Power}/10)}+10^{(\text{Antenna2 Output Power}/10)})$