

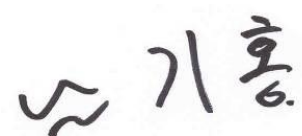
RADIO PERFORMANCE TEST REPORT

Test Report No. : OT-212-RWD-058
Reception No. : 2012005262
Applicant : LG Electronics USA
Address : 111 Sylvan Avenue North Building, Englewood Cliffs, New Jersey, United States
Manufacturer : LG Electronics Inc.
Address : 10, Magokjungang 10-ro, Gangseo-gu, Seoul, Republic of Korea
Type of Equipment : CAR NAVIGATION SYSTEM
FCC ID. : BEJCCICUS
Model Name : CCIC US
Serial number : N/A
Total page of Report : 263 pages (including this page)
Date of Incoming : January 08, 2021
Date of issue : February 16, 2021

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





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Revision History

Rev. No.	Issue Report No.	Issued Date	Revisions	Section Affected
0	OT-212-RWD-058	February 16, 2021	Initial Release	All

1. VERIFICATION OF COMPLIANCE

Applicant : LG Electronics USA
 Address : 111 Sylvan Avenue North Building, Englewood Cliffs, New Jersey, United States
 Contact Person : Dae Woong Kim / Director, Regulatory and Environmental Affairs
 Telephone No. : 201-266-2215
 FCC ID : BEJCCICUS
 Model Name : CCIC US
 Brand Name : LG
 Serial Number : N/A
 Date : February 16, 2021

EQUIPMENT CLASS	Unlicensed National Information infrastructure(UNII)
E.U.T. DESCRIPTION	CAR NAVIGATION SYSTEM
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
2.1049, 15.407(a)	26 dB Bandwidth & 99 % Occupied 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(e)	6 dB Bandwidth	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 1)
15.407(h)	Dynamic frequency Selection	N/A (See Note 2)

Note 1 : This test item is not required as this product is only using DC power

Note 2 : As EUT do not support DFS band, this test item has not been performed.

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-20122/ 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

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OTC-TRF-RF-001(0)

3. GENERAL INFORMATION

3.1 Product Description

The LG Electronics USA, Model CCIC US (referred to as the EUT in this report) is a CAR NAVIGATION SYSTEM. The product specification described herein was obtained from product data sheet or user’s manual.

DEVICE TYPE	CAR NAVIGATION SYSTEM		
Temperature Range	-30 °C ~ 85 °C		
OPERATING FREQUENCY	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))	
	5 725 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	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	1 Mbps	-0.05 dBm
		2 Mbps	-2.30 dBm
		3 Mbps	-1.87 dBm
	WLAN 2.4 GHz	15.15 dBm(802.11b) 11.58 dBm(802.11g) 11.54 dBm(802.11n_HT20)	

RF OUTPUT POWER	5 150 MHz ~ 5 250 MHz Band	Antenna 0	10.60 dBm(802.11a) 10.05 dBm(802.11n_HT20) 5.63 dBm(802.11ac_VHT20) 7.16 dBm(802.11n_HT40) 5.11 dBm(802.11ac_VHT40) 5.24 dBm(802.11ac_VHT80)
		Antenna 1	12.28 dBm(802.11a) 12.03 dBm(802.11n_HT20) 7.77 dBm(802.11ac_VHT20) 9.25 dBm(802.11n_HT40) 6.78 dBm(802.11ac_VHT40) 6.72 dBm(802.11ac_VHT80)
		Multiple Antenna	14.47 dBm(802.11a) 14.16 dBm(802.11n_HT20) 9.84 dBm(802.11ac_VHT20) 11.34 dBm(802.11n_HT40) 9.03 dBm(802.11ac_VHT40) 9.05 dBm(802.11ac_VHT80)
	5 725 MHz ~ 5 850 MHz Band	Antenna 0	10.44 dBm(802.11a) 10.23 dBm(802.11n_HT20) 5.98 dBm(802.11ac_VHT20) 10.05 dBm(802.11n_HT40) 5.70 dBm(802.11ac_VHT40) 5.62 dBm(802.11ac_VHT80)
		Antenna 1	11.88 dBm(802.11a) 12.14 dBm(802.11n_HT20) 8.91 dBm(802.11ac_VHT20) 11.91 dBm(802.11n_HT40) 8.52 dBm(802.11ac_VHT40) 8.15 dBm(802.11ac_VHT80)
		Multiple Antenna	14.13 dBm(802.11a) 14.26 dBm(802.11n_HT20) 10.57 dBm(802.11ac_VHT20) 14.06 dBm(802.11n_HT40) 10.35 dBm(802.11ac_VHT40) 10.08 dBm(802.11ac_VHT80)

ANTENNA TYPE	PCB Antenna		
ANTENNA GAIN	Bluetooth	-1.59 dBi	
	WLAN 2.4 GHz	-1.45 dBi	
	5 150 MHz ~ 5 250 MHz Band	Antenna 0	-1.15 dBi
		Antenna 1	-0.89 dBi
		Multiple Antenna	1.99 dBi
	5 725 MHz ~ 5 850 MHz Band	Antenna 0	-1.08 dBi
		Antenna 1	-1.07 dBi
		Multiple Antenna	1.94 dBi
	List of each Osc. or crystal Freq.(Freq. >= 1 MHz)	8 MHz, 24 MHz, 24.576 MHz, 25 MHz, 26 MHz, 32 MHz, 37.4 MHz, 38.4 MHz, 55.46667 MHz	
Rated Supply Voltage	DC 12.0 V		

Note. : - Bluetooth transmit simultaneously with 2.4 GHz or 5 GHz WiFi.

- Directional Gain Calculations

$$\text{Directional gain} = 10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{\text{ANT}}] \text{ dBi}$$

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 Electronics Inc.	N/A	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
CCIC US	LG Electronics Inc.	CAR NAVIGATION SYSTEM (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.

-. Frequency / Channel Operations

Band		Channel	Frequency
802.11a 802.11n(HT20) 802.11ac(VHT20)	UNII 1	36	5 180
		44	5 220
		48	5 240
	UNII 3	149	5 745
		157	5 785
		165	5 825
802.11n(HT40) 802.11ac(VHT40)	UNII 1	38	5 190
		46	5 230
	UNII 3	151	5 755
		5 795	5 795
802.11ac(VHT80)	UNII 1	42	5 210
	UNII 3	155	5 775

UNII 1

Modulation	Data Rate	Output Power [dBm]	
		Antenna 0	Antenna 1
802.11a (Middle Channel)	6 Mbps	10.37	12.02
	9 Mbps	10.14	11.83
	12 Mbps	9.96	11.72
	18 Mbps	9.41	11.07
	24 Mbps	9.09	10.94
	36 Mbps	8.54	10.06
	48 Mbps	8.16	9.83
	54 Mbps	8.03	9.65
802.11n(HT20) (Middle Channel)	6.5 Mbps	9.89	11.81
	13 Mbps	9.49	11.50
	19.5 Mbps	9.35	11.30
	26 Mbps	8.94	10.64
	39 Mbps	8.57	10.40
	52 Mbps	8.31	10.09
	58.5 Mbps	7.93	9.94
	65 Mbps	7.77	9.69
802.11ac(VHT20) (Low Channel)	6.5 Mbps	5.44	7.33
	13 Mbps	5.24	7.28
	19.5 Mbps	5.01	7.08
	26 Mbps	4.31	6.35
	39 Mbps	4.02	5.94
	52 Mbps	3.67	5.72
	58.5 Mbps	3.56	5.62
	65 Mbps	3.34	5.47
	78 Mbps	3.06	5.25

802.11n(HT40) (Middle Channel)	13.5 Mbps	7.16	9.25
	27 Mbps	6.85	8.81
	40.5 Mbps	6.30	8.41
	54 Mbps	6.14	8.06
	81 Mbps	5.73	7.74
	108 Mbps	4.93	6.74
	121.5 Mbps	4.80	6.59
	135 Mbps	4.59	6.48
802.11ac(VHT40) (Middle Channel)	13.5 Mbps	5.02	6.78
	27 Mbps	4.79	6.12
	40.5 Mbps	4.11	5.87
	54 Mbps	3.90	5.33
	81 Mbps	3.42	4.90
	108 Mbps	2.91	4.50
	121.5 Mbps	2.81	4.30
	135 Mbps	2.71	3.00
	162 Mbps	2.41	2.72
	180 Mbps	2.36	2.54
802.11ac(VHT80) (Middle Channel)	29.3 Mbps	5.24	6.72
	58.5 Mbps	4.53	6.28
	87.8 Mbps	4.13	5.48
	117 Mbps	3.62	5.15
	175.5 Mbps	3.17	4.56
	234 Mbps	2.92	4.45
	263.3 Mbps	2.77	4.30
	292.5 Mbps	2.66	4.20
	351 Mbps	2.56	4.12
	390 Mbps	2.45	3.94

-. The worst case data rate for each modulation is determined 6 Mbps(Ant.0/Ant.1) for 802.11a, 6.5 Mbps(Ant.0/Ant.1) for 802.11n(HT20), 6.5 Mbps(Ant.0/Ant.1) for 802.11ac(VHT20), 13.5 Mbps(Ant.0/Ant.1) for 802.11n(HT40), 13.5 Mbps(Ant.0/Ant.1) for 802.11ac(VHT40), 29.3 Mbps(Ant.0/Ant.1) for 802.11ac(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
802.11a (Middle Channel)	6 Mbps	10.02	11.79
	9 Mbps	9.90	11.60
	12 Mbps	9.80	11.49
	18 Mbps	9.36	10.84
	24 Mbps	8.85	10.71
	36 Mbps	8.49	9.83
	48 Mbps	7.97	9.60
	54 Mbps	7.53	9.42
802.11n(HT20) (Middle Channel)	6.5 Mbps	9.95	12.14
	13 Mbps	9.57	11.83
	19.5 Mbps	9.44	11.63
	26 Mbps	9.02	10.97
	39 Mbps	8.54	10.73
	52 Mbps	8.30	10.42
	58.5 Mbps	8.18	10.27
	65 Mbps	7.80	10.02
802.11ac(VHT20) (Low Channel)	6.5 Mbps	5.60	8.91
	13 Mbps	5.32	8.69
	19.5 Mbps	5.07	8.52
	26 Mbps	4.74	7.97
	39 Mbps	4.45	7.67
	52 Mbps	4.05	7.45
	58.5 Mbps	3.70	6.85
	65 Mbps	3.59	6.65
	78 Mbps	3.29	6.46

802.11n(HT40) (Middle Channel)	13.5 Mbps	10.05	11.86
	27 Mbps	9.55	11.42
	40.5 Mbps	9.09	11.02
	54 Mbps	8.93	10.67
	81 Mbps	8.38	10.35
	108 Mbps	7.97	9.35
	121.5 Mbps	7.86	9.20
	135 Mbps	7.78	9.09
802.11ac(VHT40) (Middle Channel)	13.5 Mbps	5.70	8.52
	27 Mbps	5.10	7.86
	40.5 Mbps	4.85	7.61
	54 Mbps	4.55	7.07
	81 Mbps	4.05	6.64
	108 Mbps	3.32	6.24
	121.5 Mbps	3.21	6.04
	135 Mbps	2.97	4.74
	162 Mbps	2.77	4.46
	180 Mbps	2.62	4.28
802.11ac(VHT80) (Middle Channel)	29.3 Mbps	5.62	8.15
	58.5 Mbps	5.22	7.71
	87.8 Mbps	4.71	6.91
	117 Mbps	4.10	6.58
	175.5 Mbps	3.76	5.99
	234 Mbps	3.54	5.88
	263.3 Mbps	3.48	5.73
	292.5 Mbps	3.23	5.63
	351 Mbps	3.12	5.55
	390 Mbps	2.99	5.37

-. The worst case data rate for each modulation is determined 6 Mbps(Ant.0/Ant.1) for 802.11a, 6.5 Mbps(Ant.0/Ant.1) for 802.11n(HT20), 6.5 Mbps(Ant.0/Ant.1) for 802.11ac(VHT20), 13.5 Mbps(Ant.0/Ant.1) for 802.11n(HT40), 13.5 Mbps(Ant.0/Ant.1) for 802.11ac(VHT40), 29.3 Mbps(Ant.0/Ant.1) for 802.11ac(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.

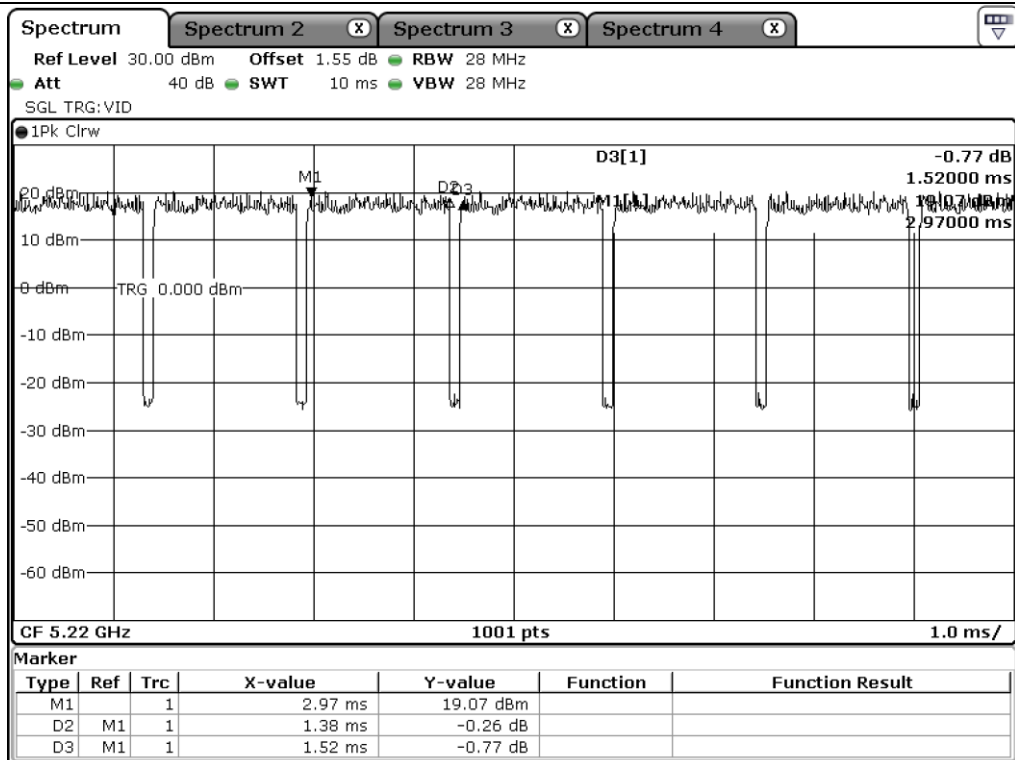
- Duty Cycle

Chain	Band	Mode	Tx On Time [ms]	Tx Off Time [ms]	Duty Cycle [%]	Correction Factor [dB]
Antenna 0	UNII 1	802.11a	1.38	0.14	90.79	0.42
		802.11n(HT20)	0.67	0.13	83.75	0.77
		802.11ac(VHT20)	1.32	0.12	91.67	0.38
		802.11n(HT40)	0.34	0.12	73.91	1.31
		802.11ac(VHT40)	0.65	0.12	84.42	0.74
		802.11ac(VHT80)	0.32	0.12	72.73	1.38
	UNII 3	802.11a	1.41	0.15	90.38	0.44
		802.11n(HT20)	0.66	0.13	83.54	0.78
		802.11ac(VHT20)	1.33	0.12	91.72	0.38
		802.11n(HT40)	0.34	0.12	73.91	1.31
		802.11ac(VHT40)	0.64	0.12	84.21	0.75
		802.11ac(VHT80)	0.31	0.13	70.45	1.52
Antenna 1	UNII 1	802.11a	1.37	0.15	90.13	0.45
		802.11n(HT20)	0.66	0.13	83.54	0.78
		802.11ac(VHT20)	1.31	0.14	90.34	0.44
		802.11n(HT40)	0.33	0.13	71.74	1.44
		802.11ac(VHT40)	0.65	0.13	83.33	0.79
		802.11ac(VHT80)	0.31	0.12	72.09	1.42
	UNII 3	802.11a	1.41	0.15	90.38	0.44
		802.11n(HT20)	0.66	0.13	83.54	0.78
		802.11ac(VHT20)	1.32	0.12	91.67	0.38
		802.11n(HT40)	0.33	0.13	71.74	1.44
		802.11ac(VHT40)	0.64	0.13	83.12	0.80
		802.11ac(VHT80)	0.31	0.12	72.09	1.42

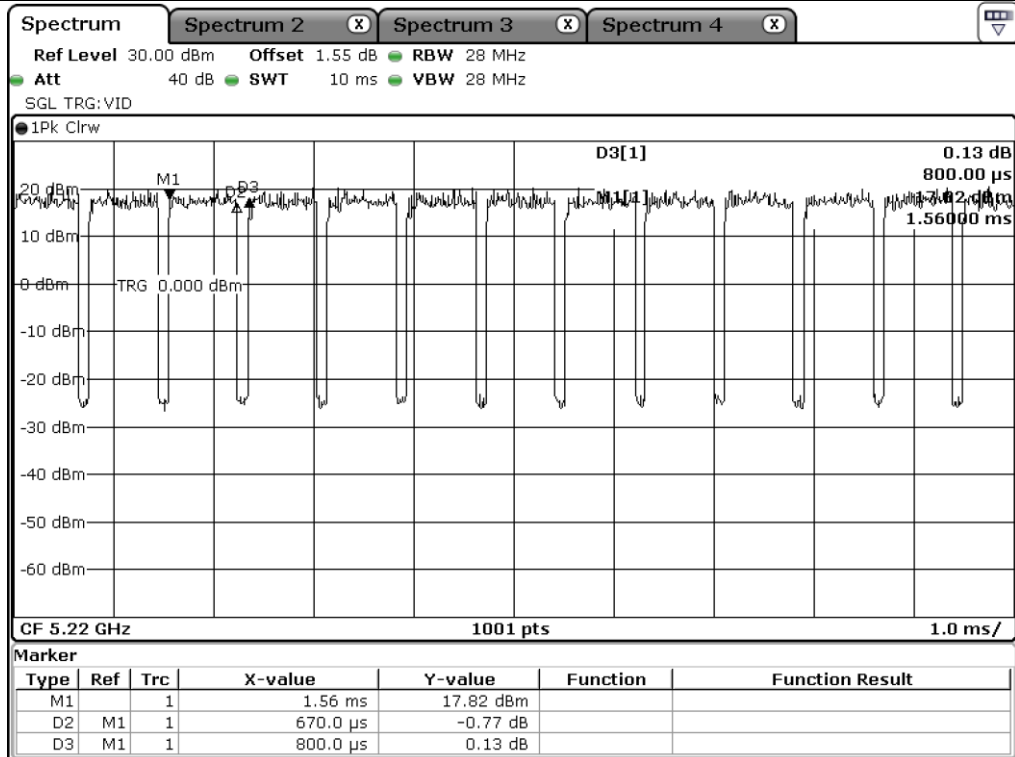
Note – Duty Cycle : (Tx On Time / (Tx On Time + Tx Off Time)) * 100

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

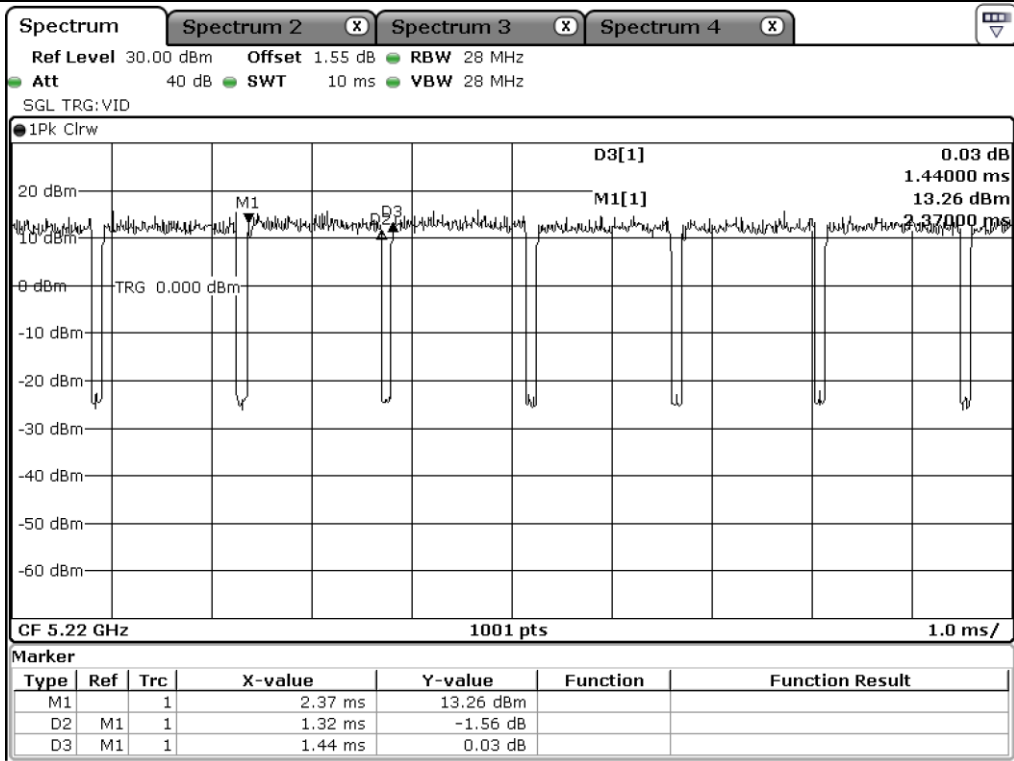
- Test Plot



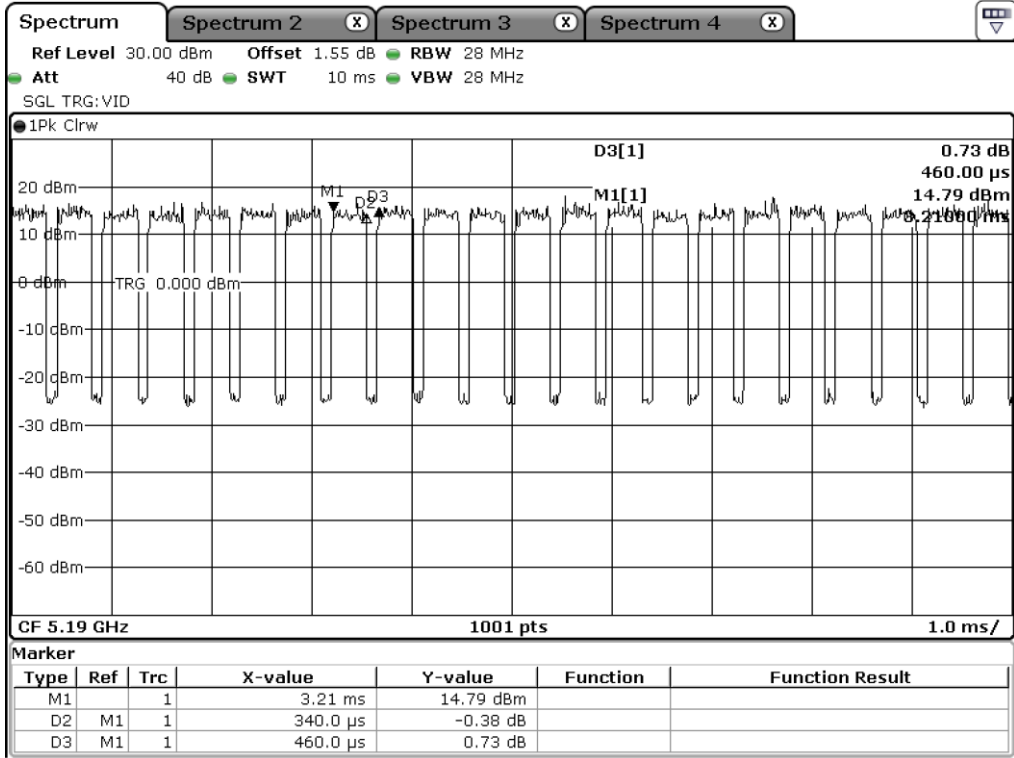
UNII 1_802.11a_Antenna 0



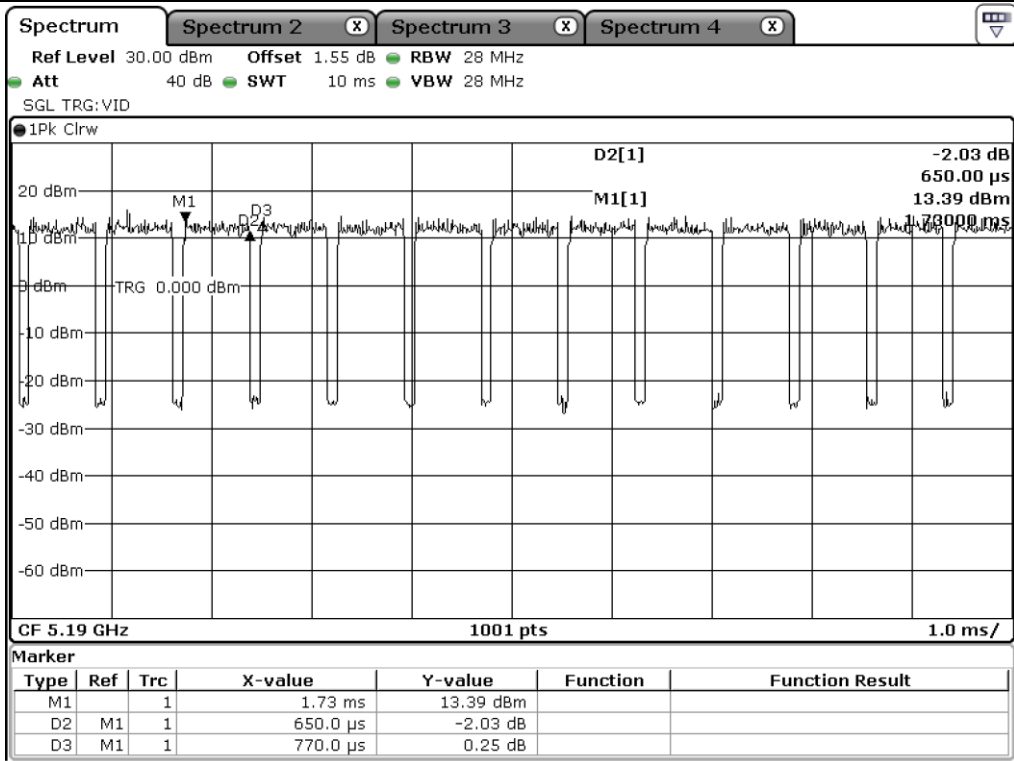
UNII 1_802.11n(HT20)_Antenna 0



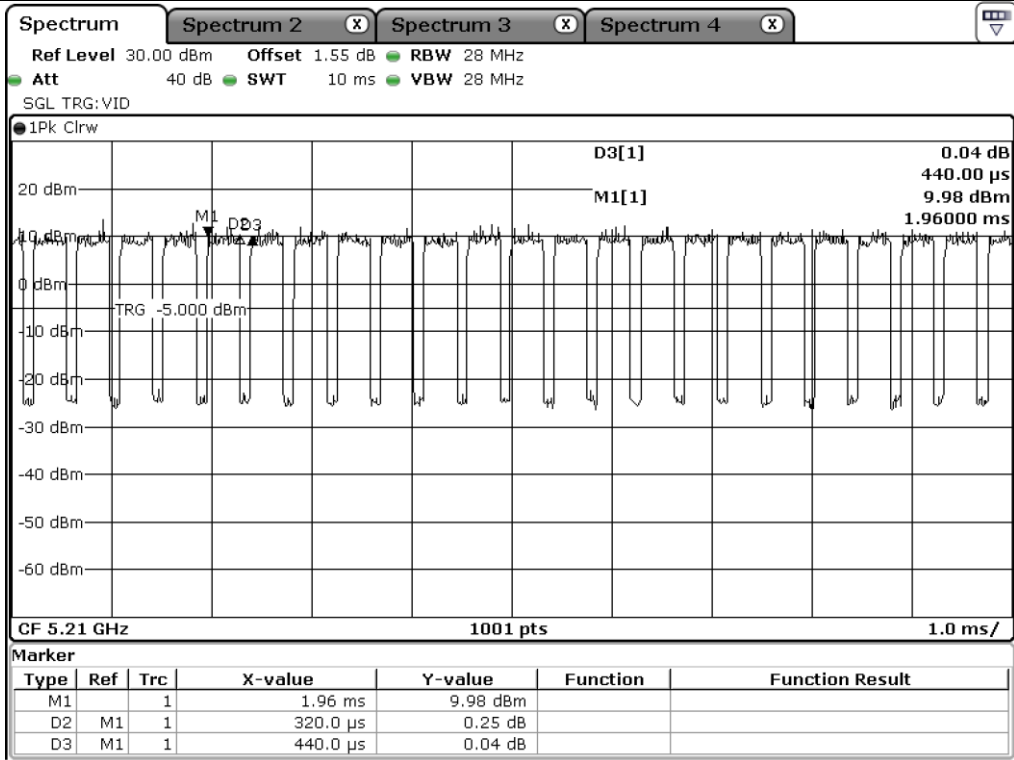
UNII 1_802.11ac(VHT20)_Antenna 0



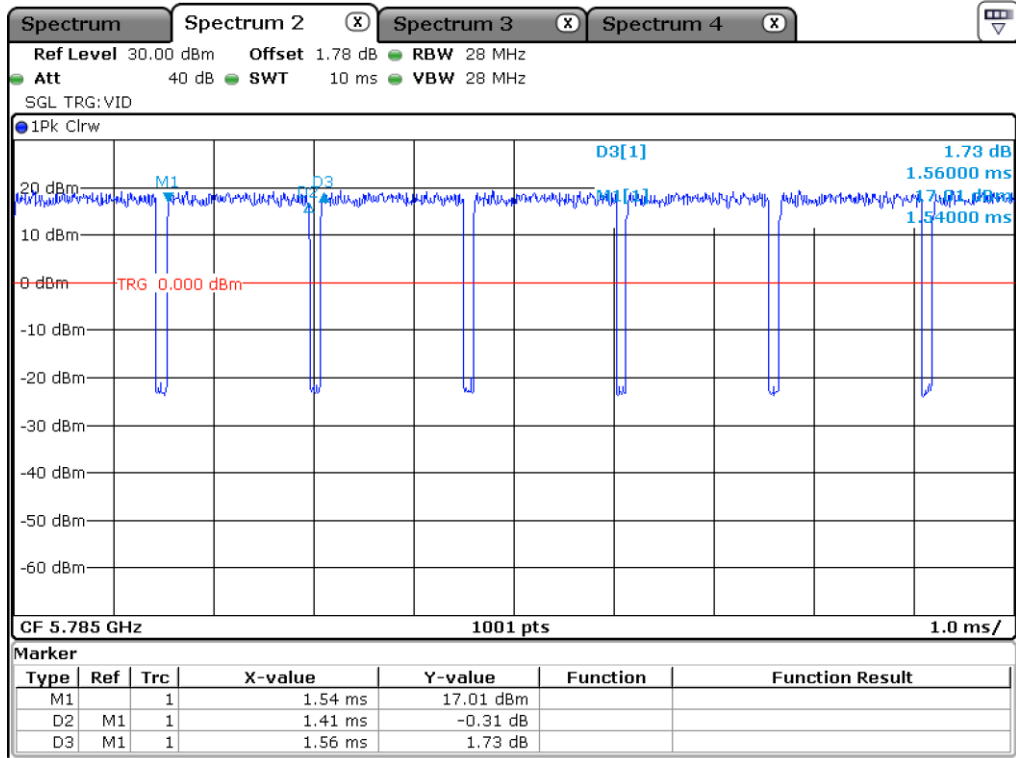
UNII 1_802.11n(HT40)_Antenna 0



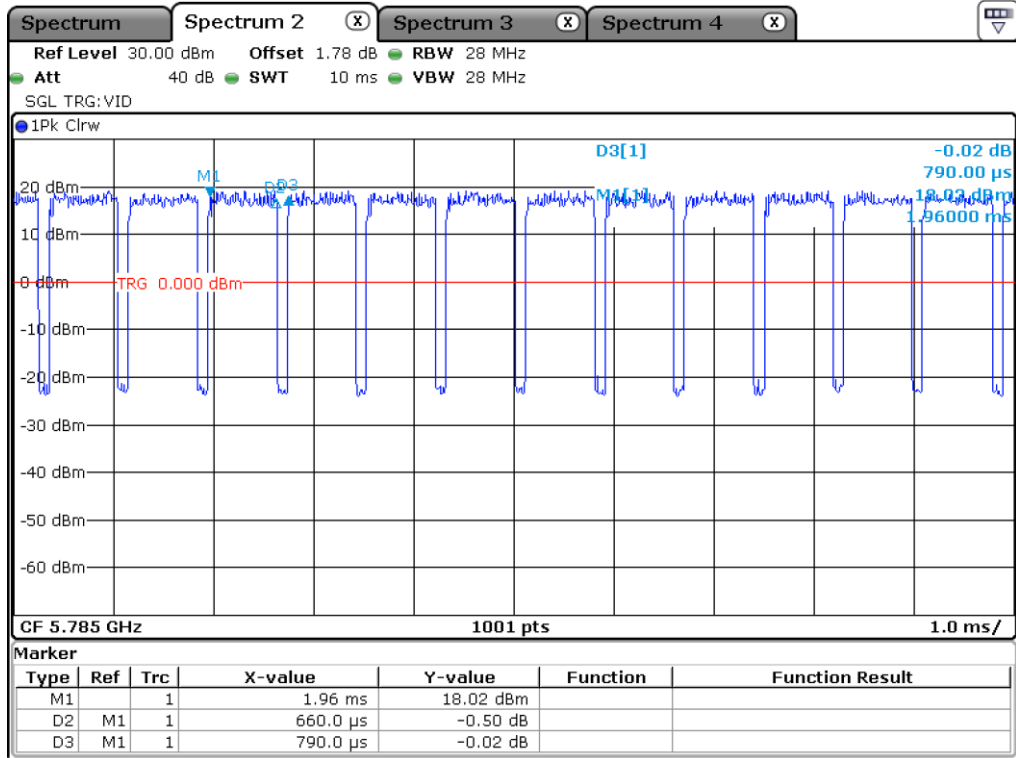
UNII 1_802.11ac(VHT40)_Antenna 0



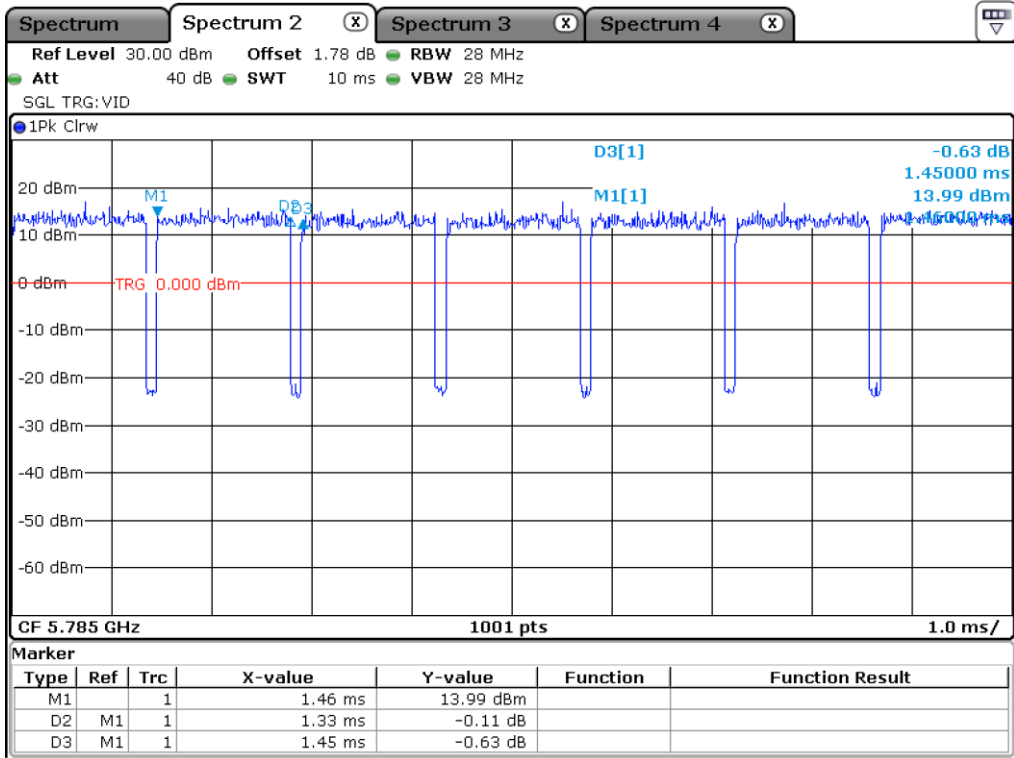
UNII 1_802.11ac(VHT80)_Antenna 0



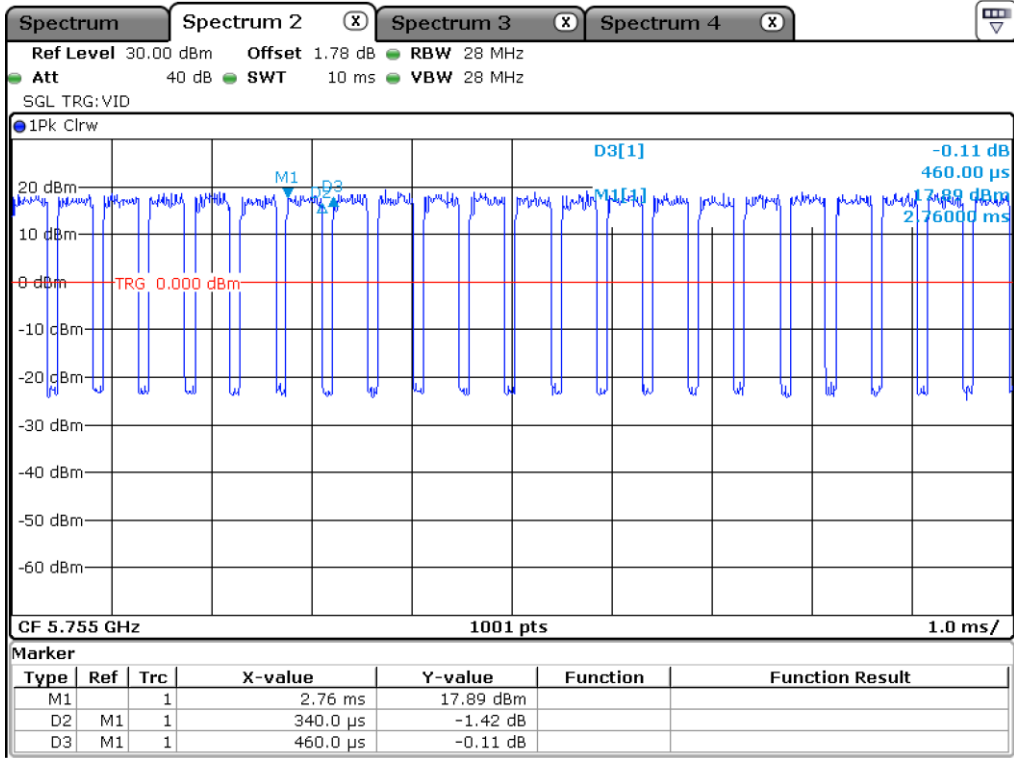
UNII 3_802.11a_Antenna 0



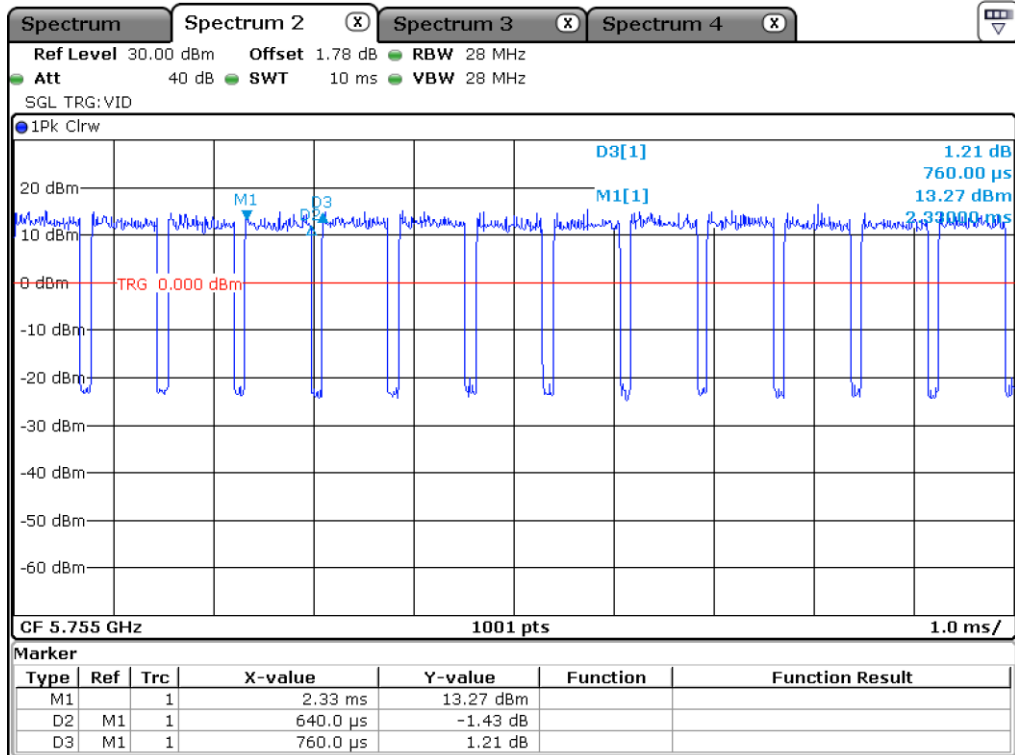
UNII 3_802.11n(HT20)_Antenna 0



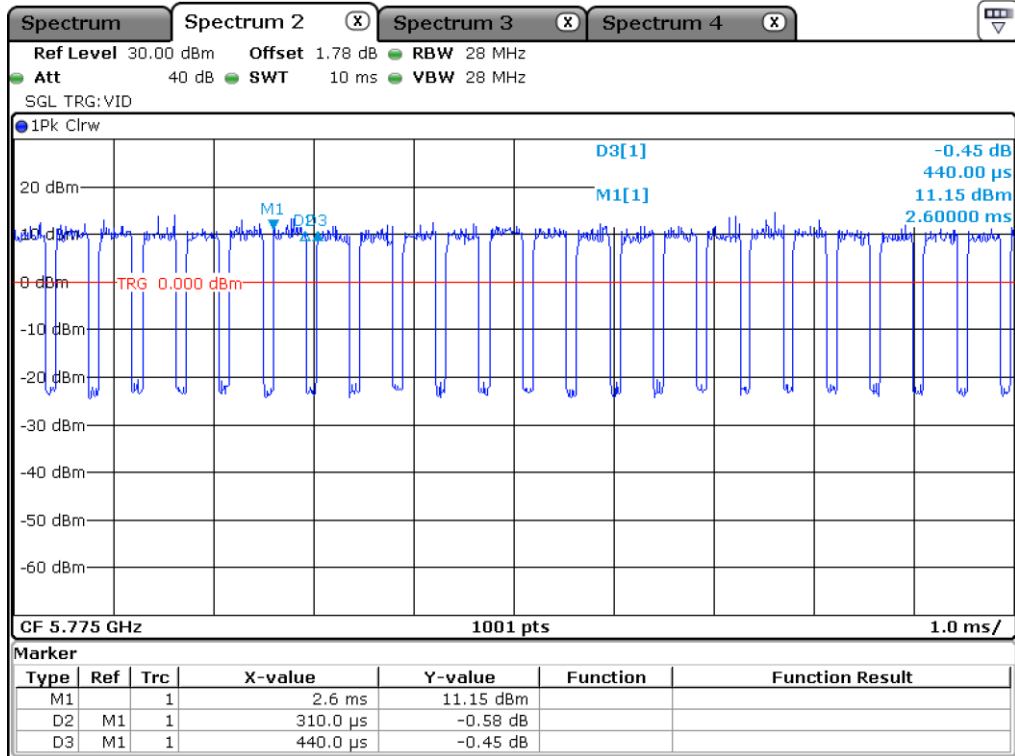
UNII 3_802.11ac(VHT20)_Antenna 0



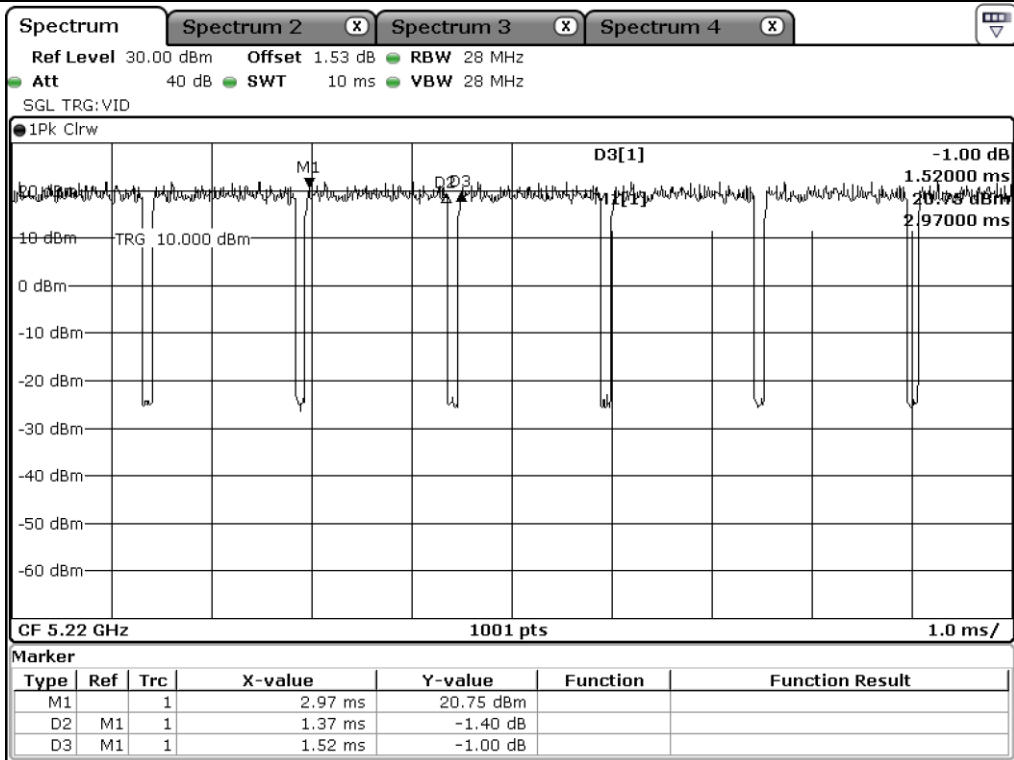
UNII 3_802.11n(HT40)_Antenna 0



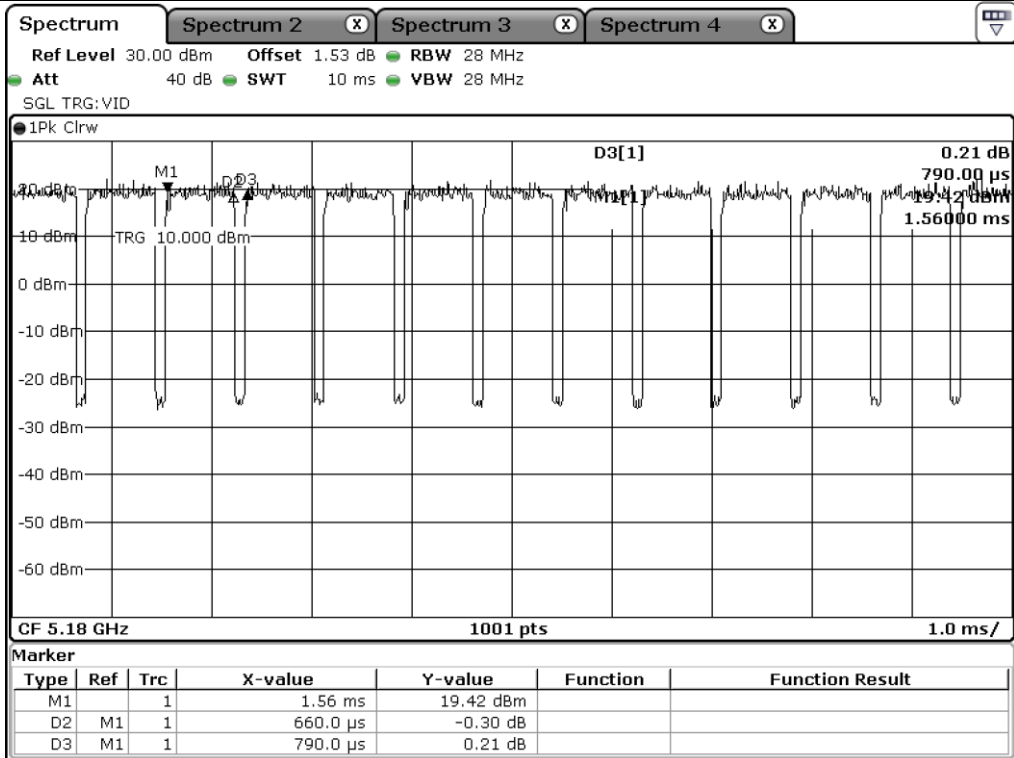
UNII 3_802.11ac(VHT40)_Antenna 0



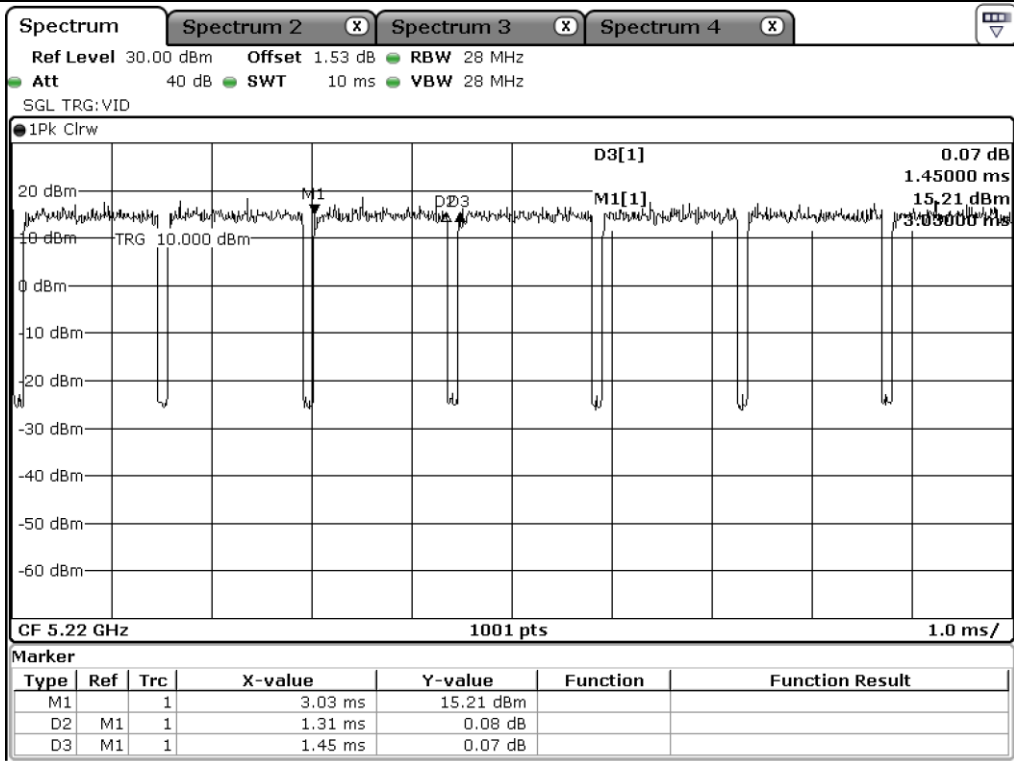
UNII 3_802.11ac(VHT80)_Antenna 0



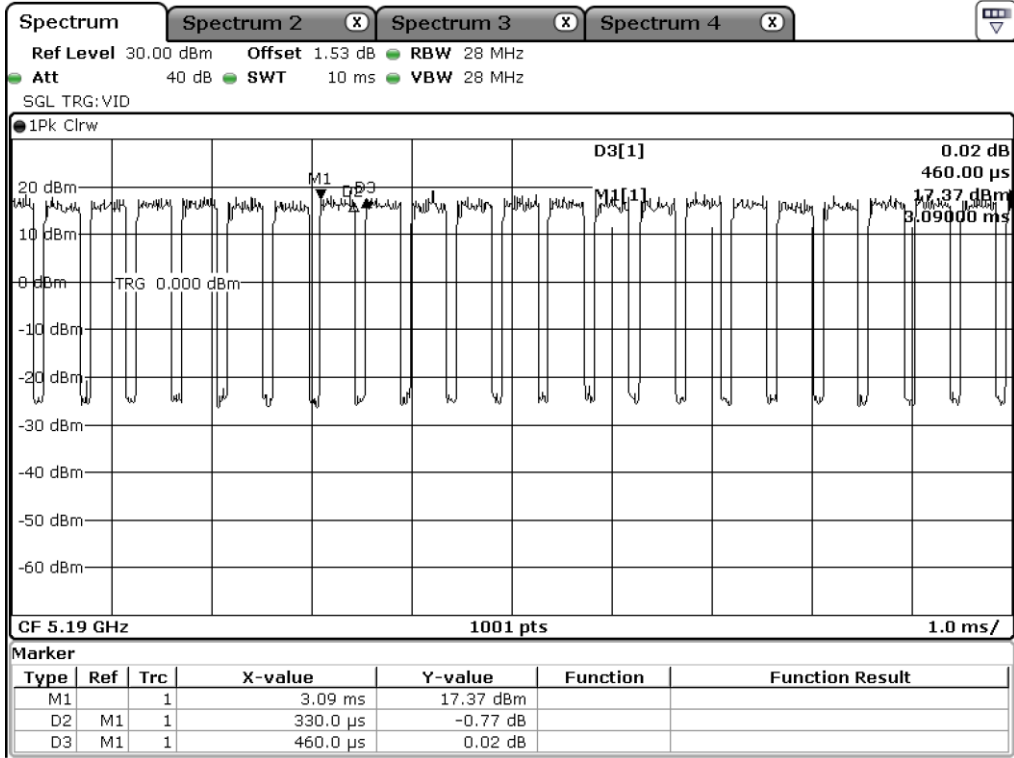
UNII 1_802.11a_Antenna 1



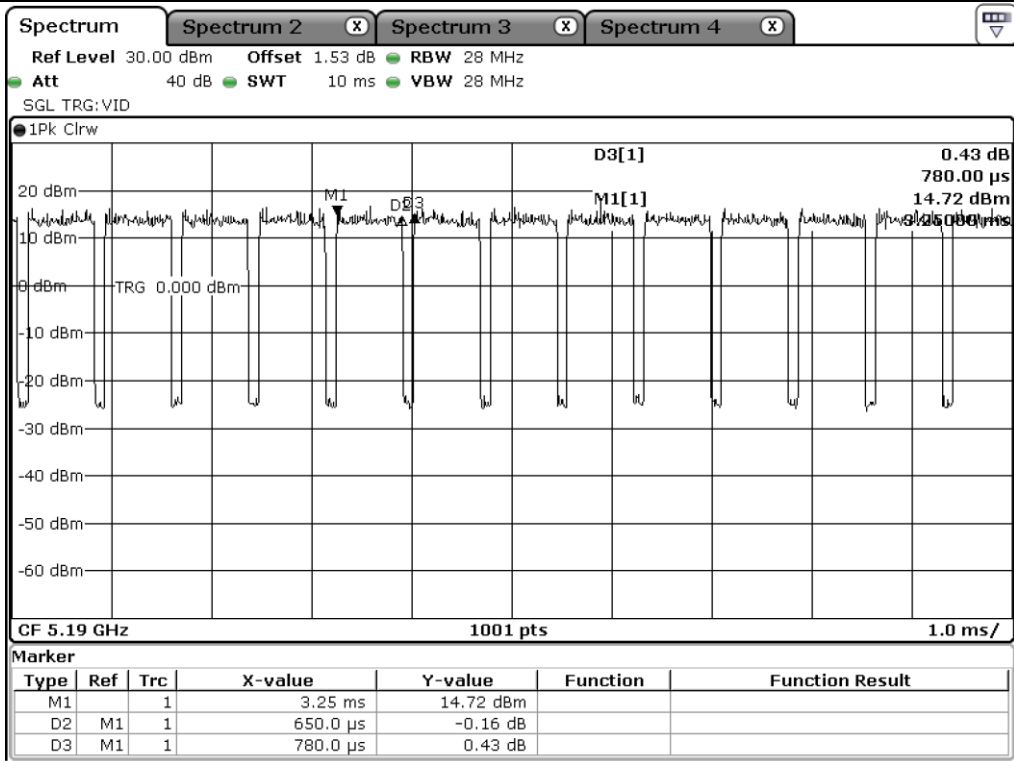
UNII 1_802.11n(HT20)_Antenna 1



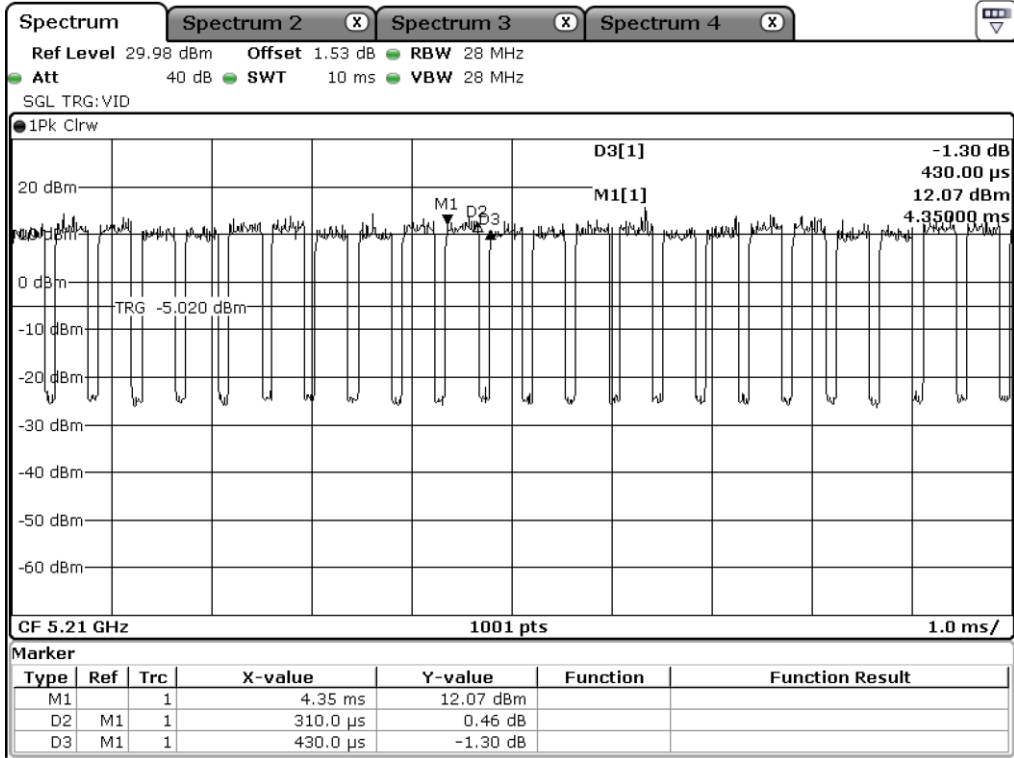
UNII 1_802.11ac(VHT20)_Antenna 1



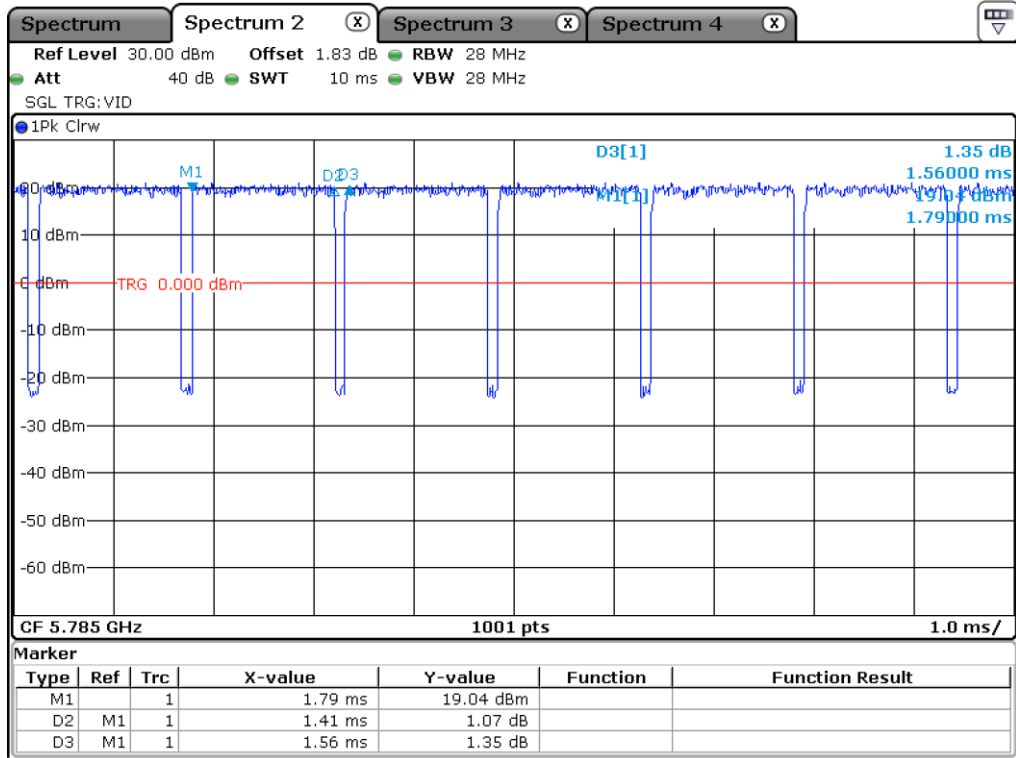
UNII 1_802.11n(HT40)_Antenna 1



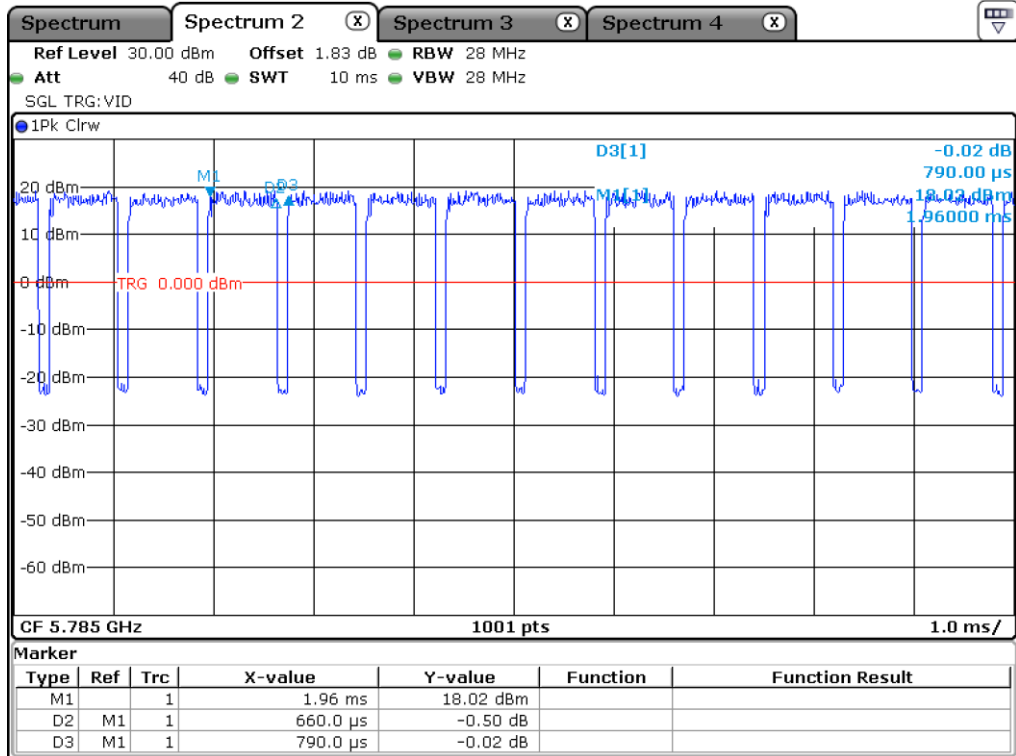
UNII 1_802.11ac(VHT40)_Antenna 1



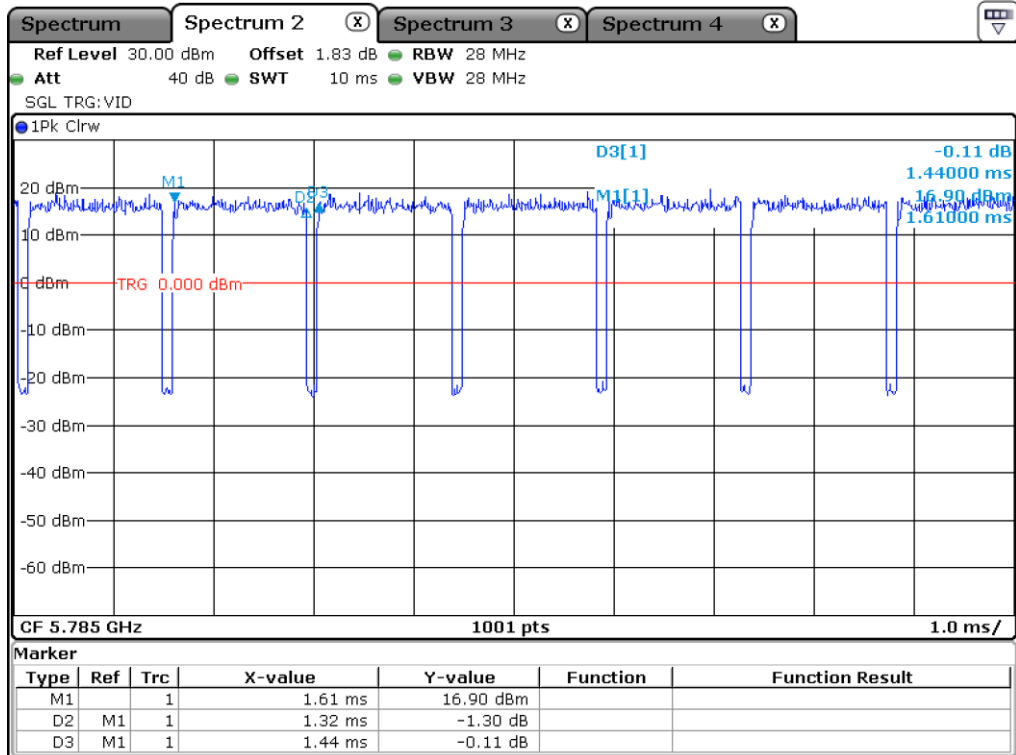
UNII 1_802.11ac(VHT80)_Antenna 1



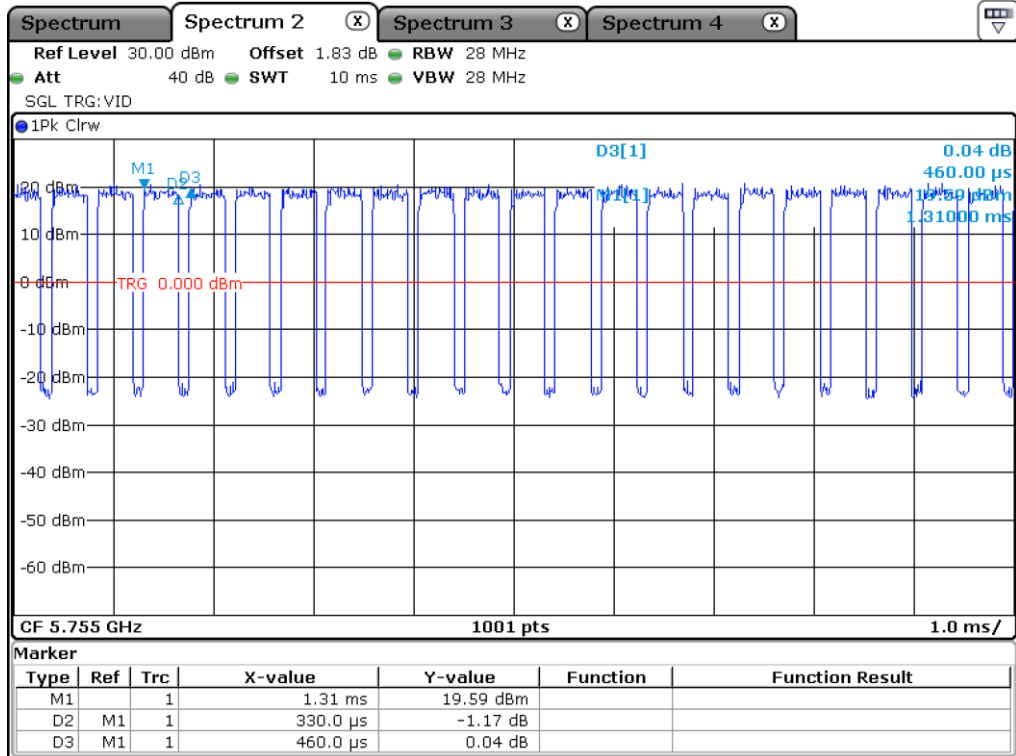
UNII 3_802.11a_Antenna 1



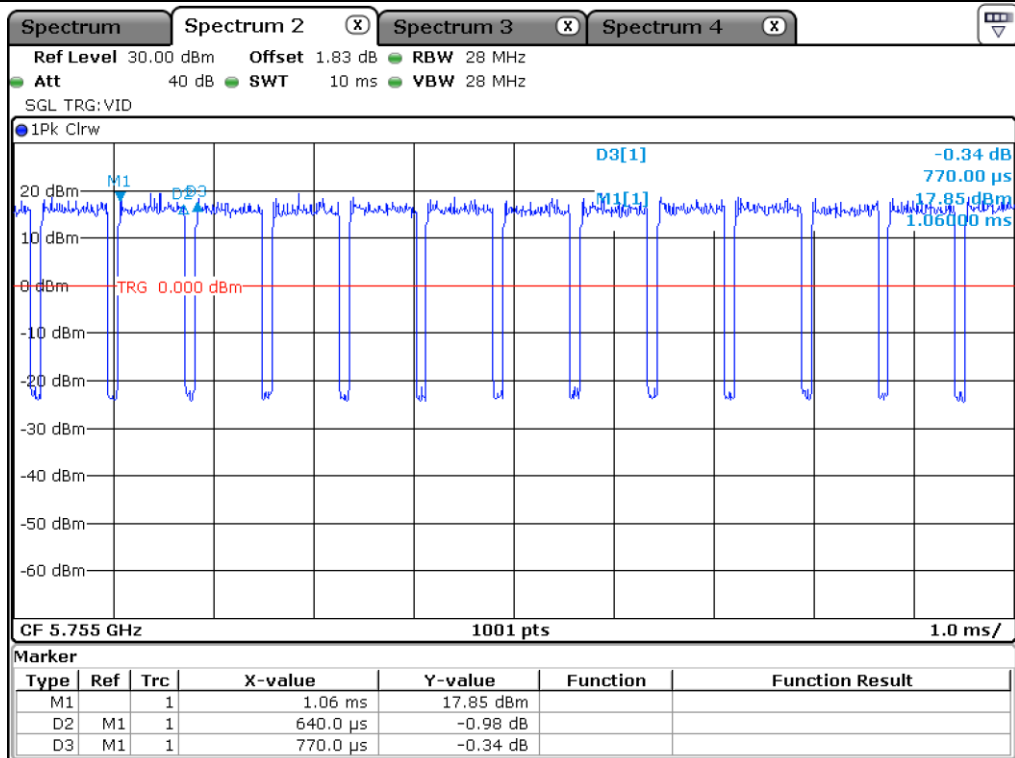
UNII 3_802.11n(HT20)_Antenna 1



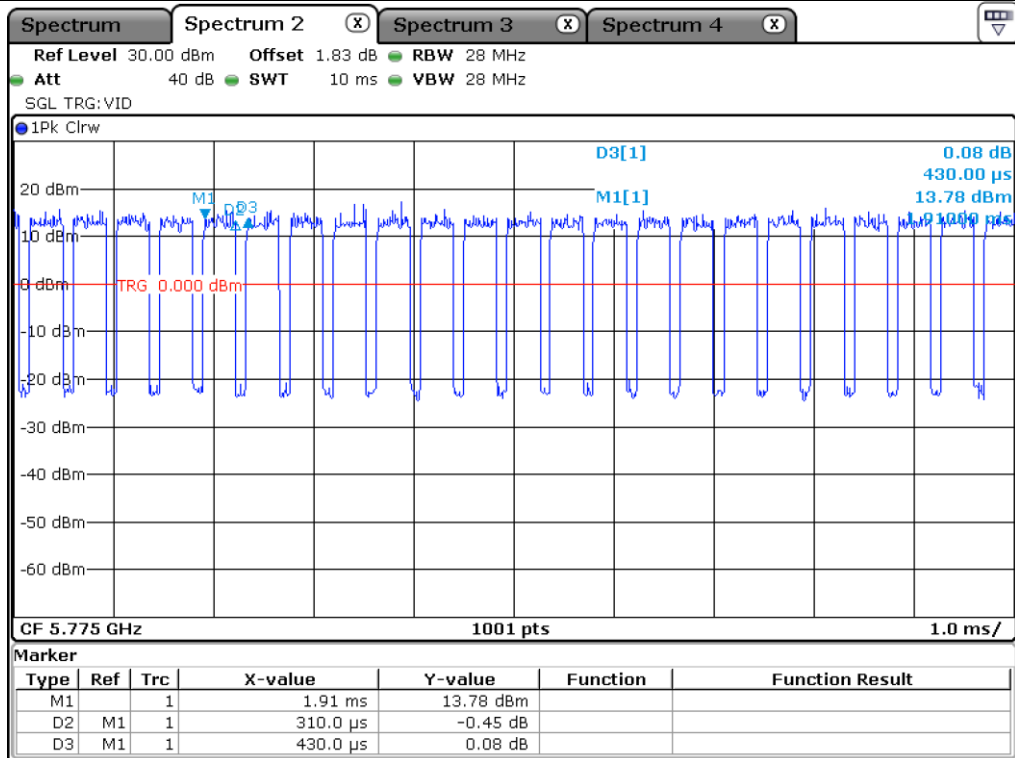
UNII 3_802.11ac(VHT20)_Antenna 1



UNII 3_802.11n(HT40)_Antenna 1



UNII 3_802.11ac(VHT40)_Antenna 1



UNII 3_802.11ac(VHT80)_Antenna 1

5.4 Configuration of Test System

Line Conducted Test: As This product is only using DC power, AC conducted emission test has not been performed

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 Left & Right sides PCB Antenna of the EUT is located the in the EUT internally, so no consideration of replacement by the user.

6. PRELIMINARY TEST

6.1 AC Power line Conducted Emissions Tests

As This product is only using DC power, AC conducted emission test has not been performed

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

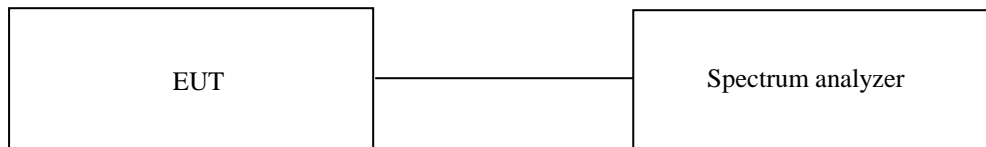
7. MIMIMUM 26 dB Bandwidth & 99 % Occupied Bandwidth

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 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 Date

January 07, 2021 ~ January 28, 2021

7.4 Test data for 802.11a RLAN Mode

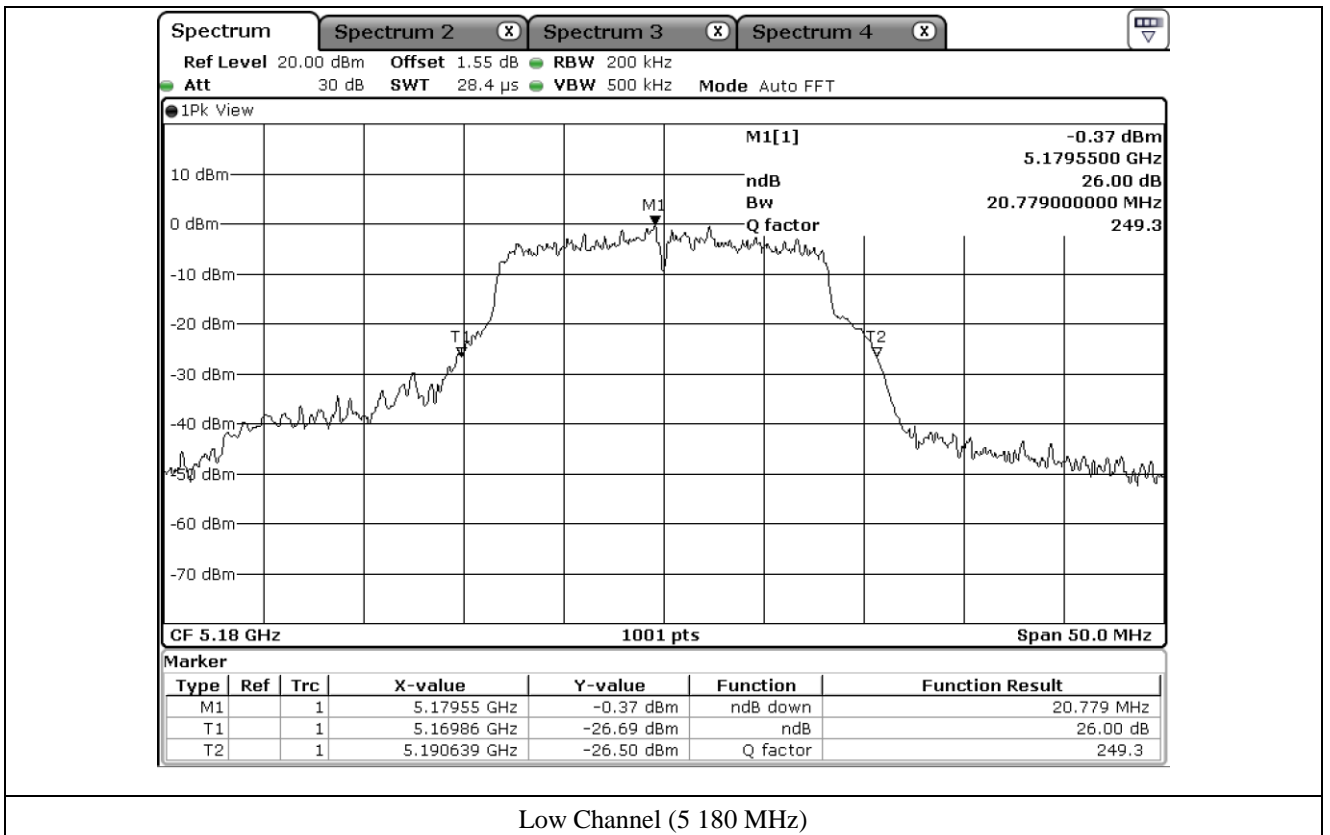
7.4.1 Test data for Antenna 0

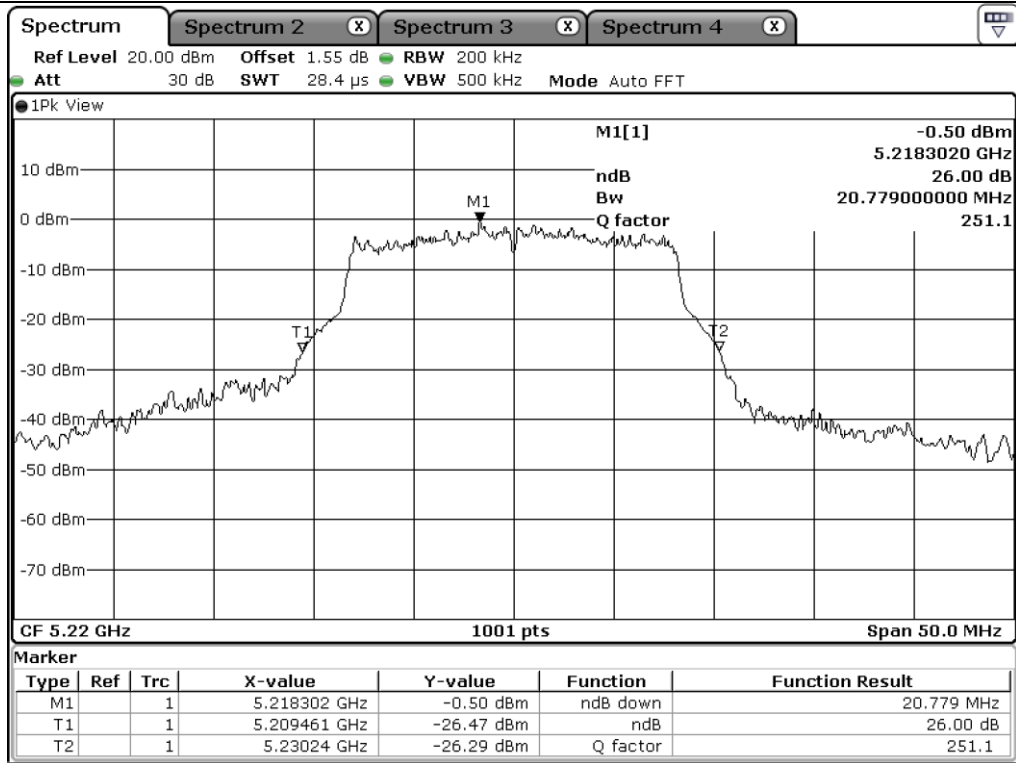
7.4.1.1 MINIMUM 26 dB BANDWIDTH

-. Test Result : Pass

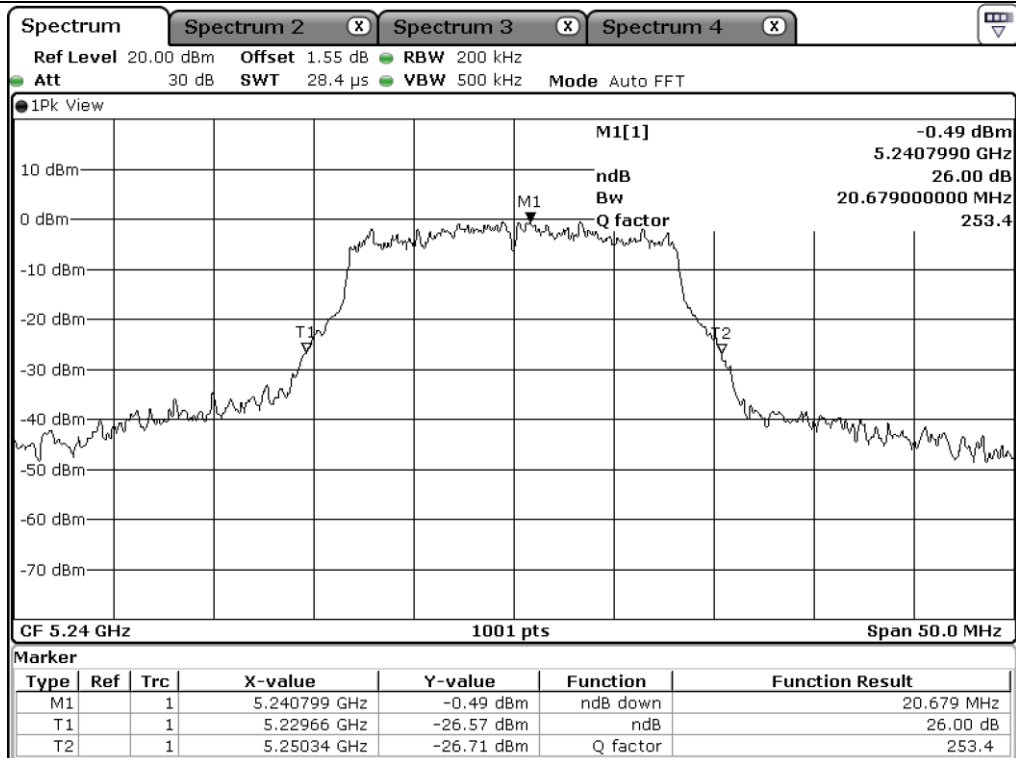
Frequency Range (MHz)	Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180.00	20.78
	Middle	5 220.00	20.78
	High	5 240.00	20.68
5 725 ~ 5 850	Low	5 745.00	21.08
	Middle	5 785.00	20.68
	High	5 825.00	20.73

Remark: See next page for measurement data.

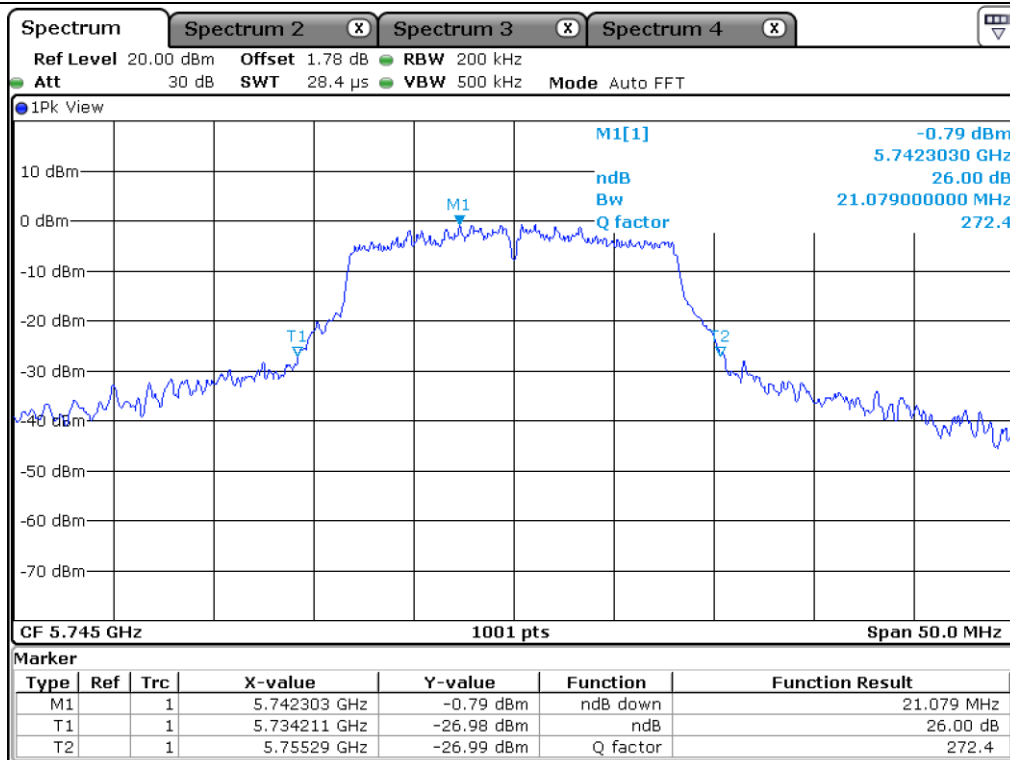




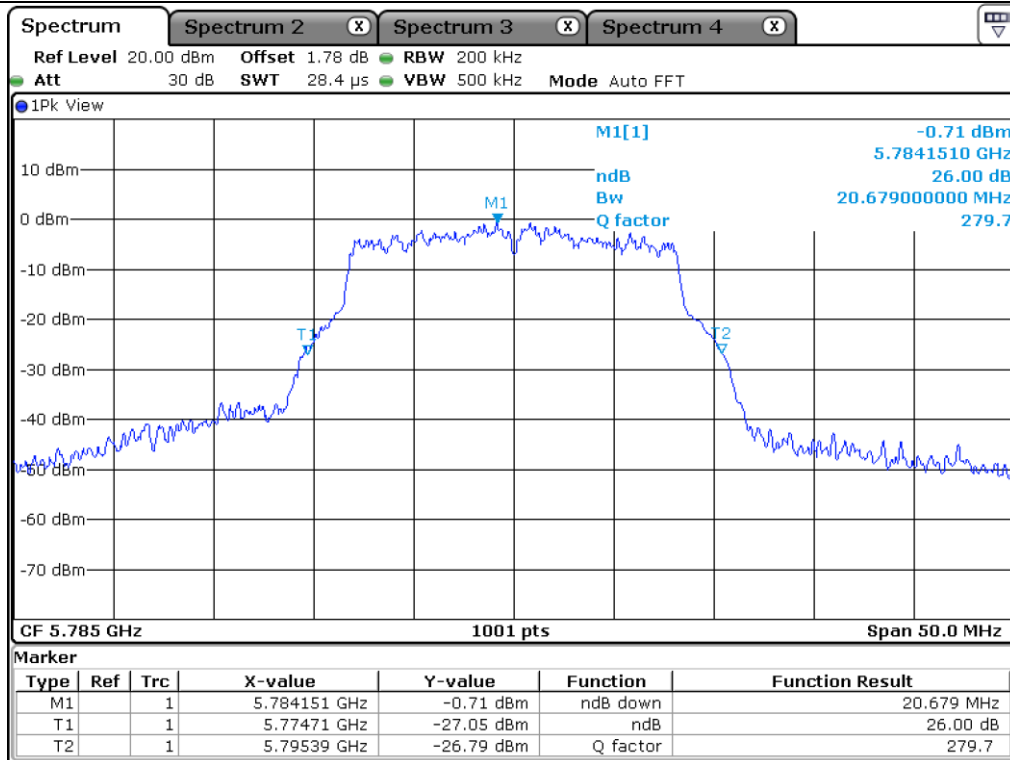
Middle Channel (5 220 MHz)



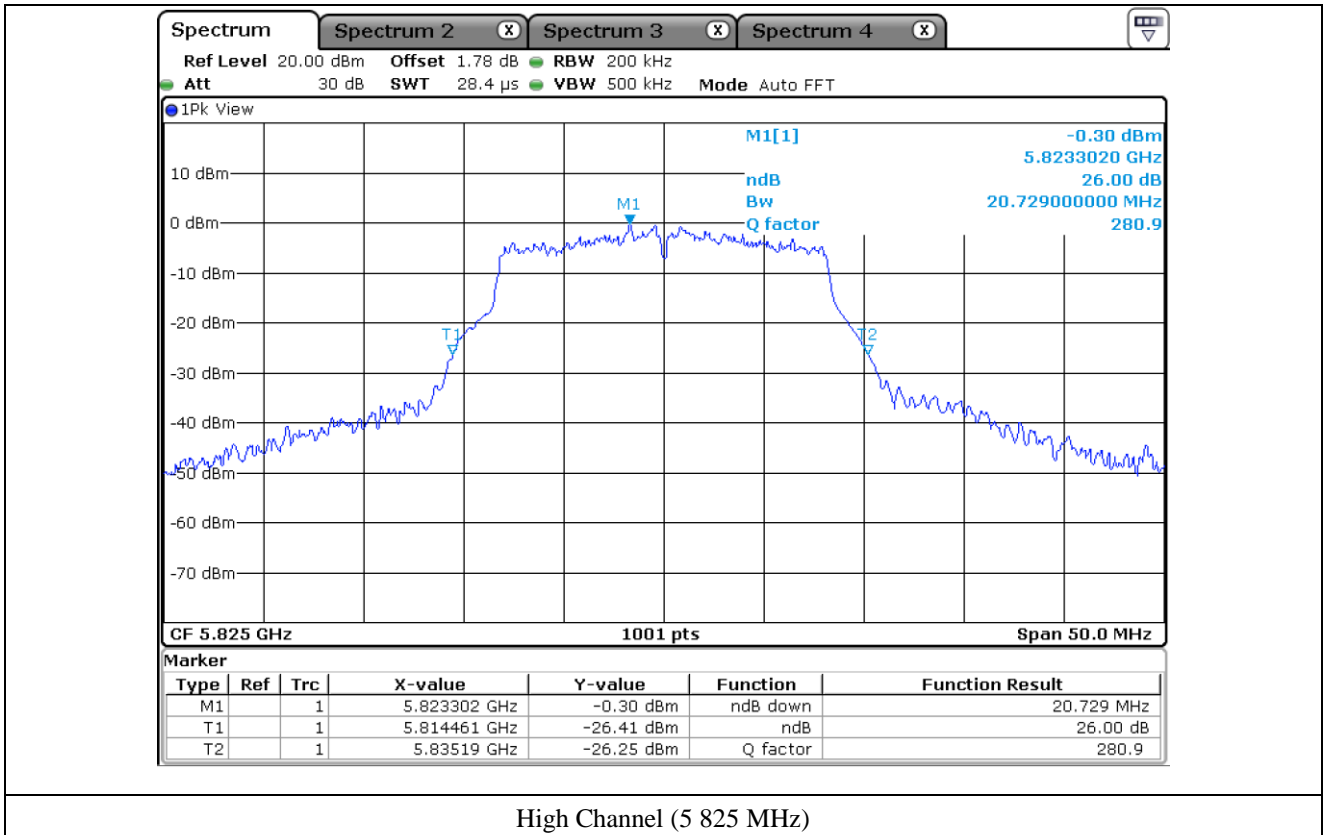
High Channel (5 240 MHz)



Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)

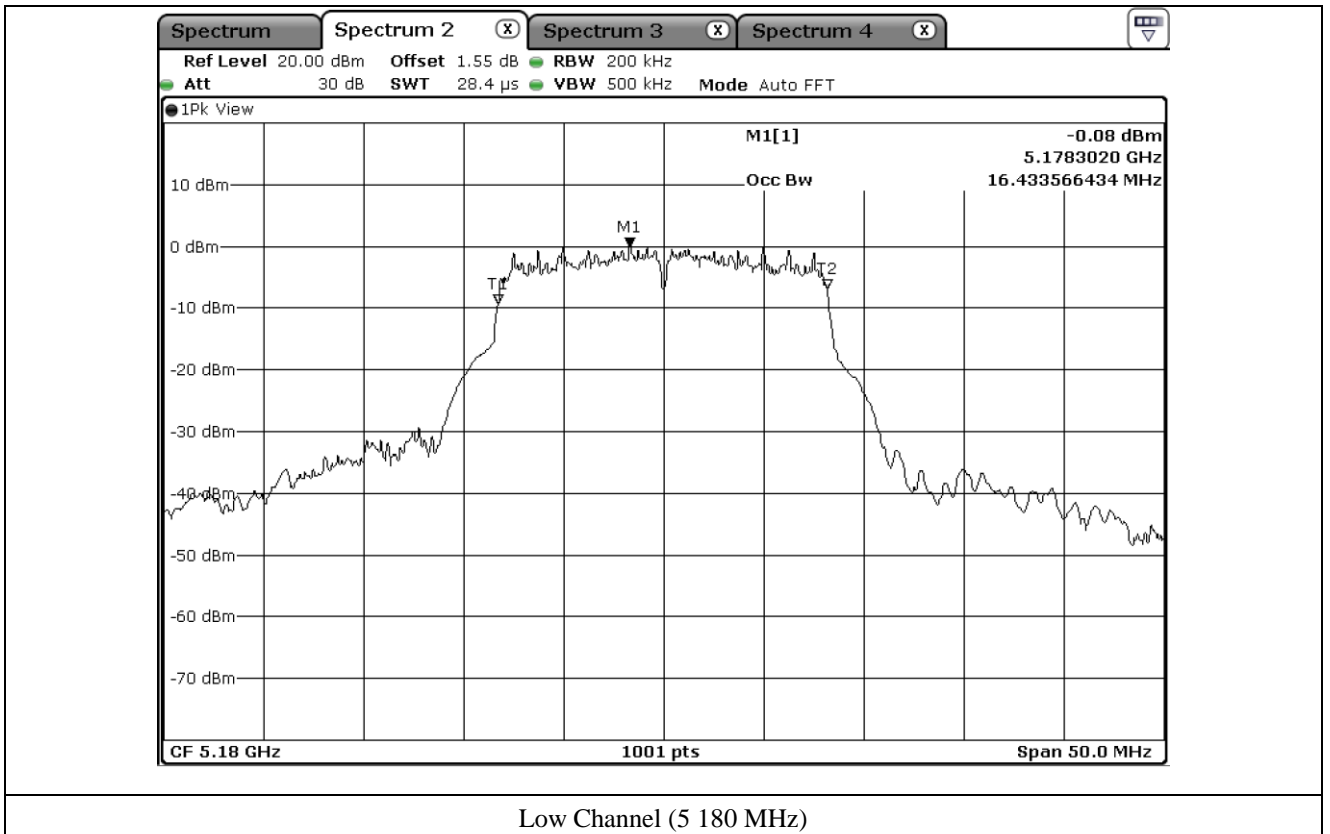


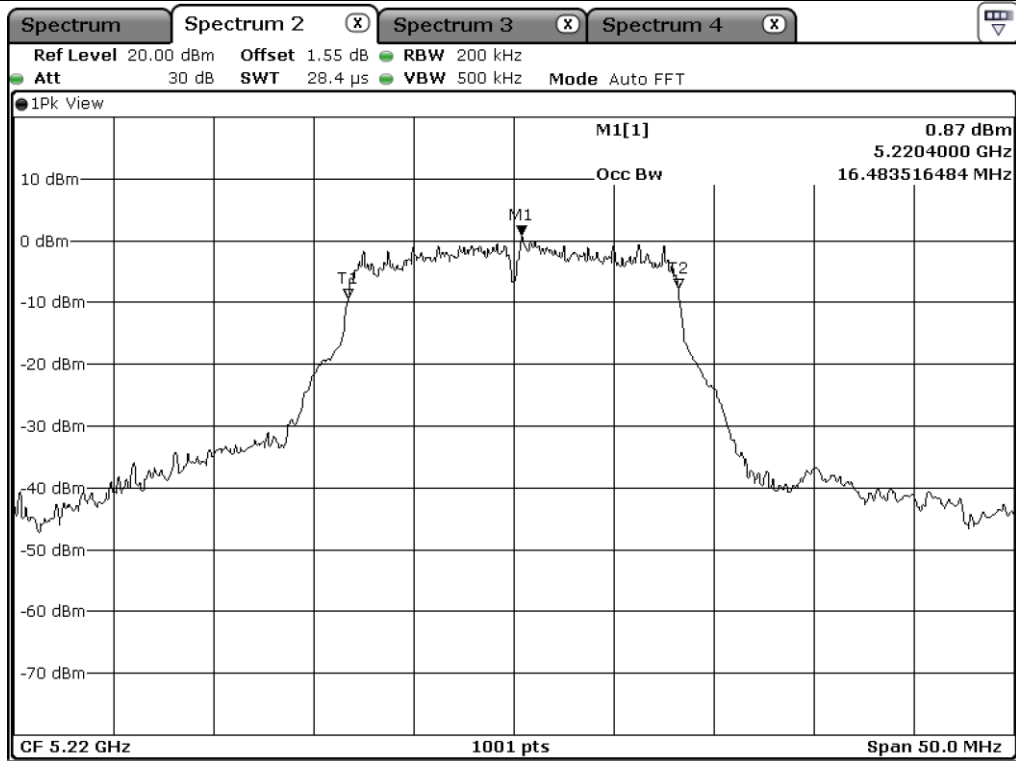
7.4.1.2 99 % OCCUPIED BANDWIDTH

-. Test Result : Pass

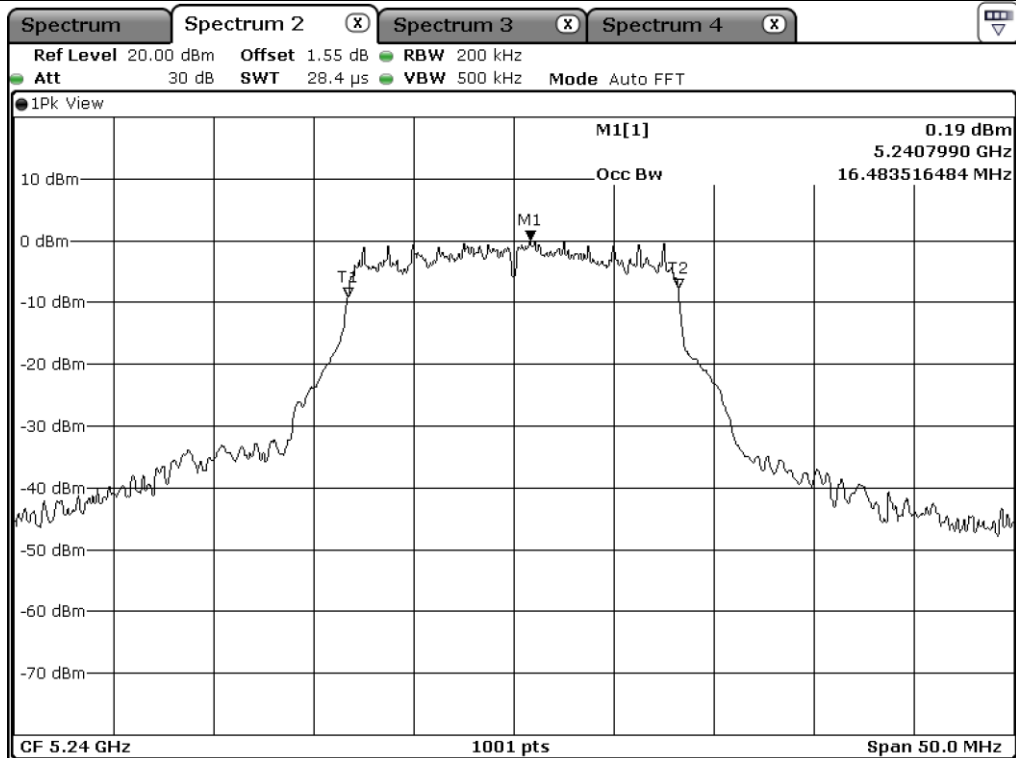
Frequency Range (MHz)	Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180.00	16.43
	Middle	5 220.00	16.48
	High	5 240.00	16.48
5 725 ~ 5 850	Low	5 745.00	16.43
	Middle	5 785.00	16.48
	High	5 825.00	16.43

Remark: See next page for measurement data.

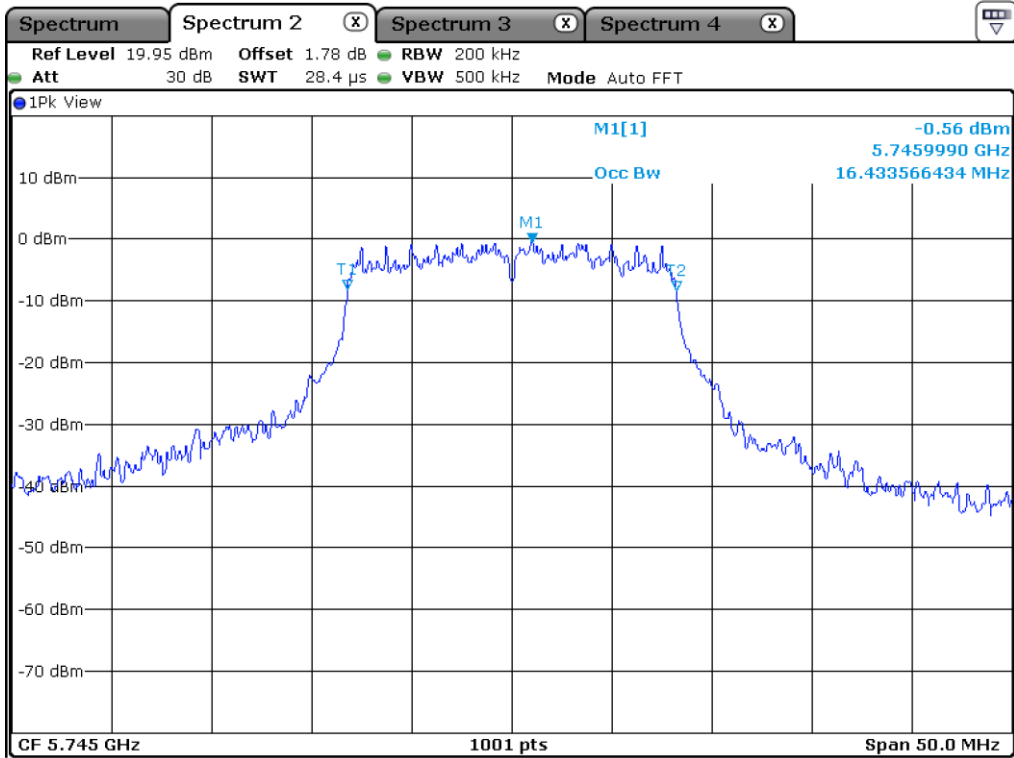




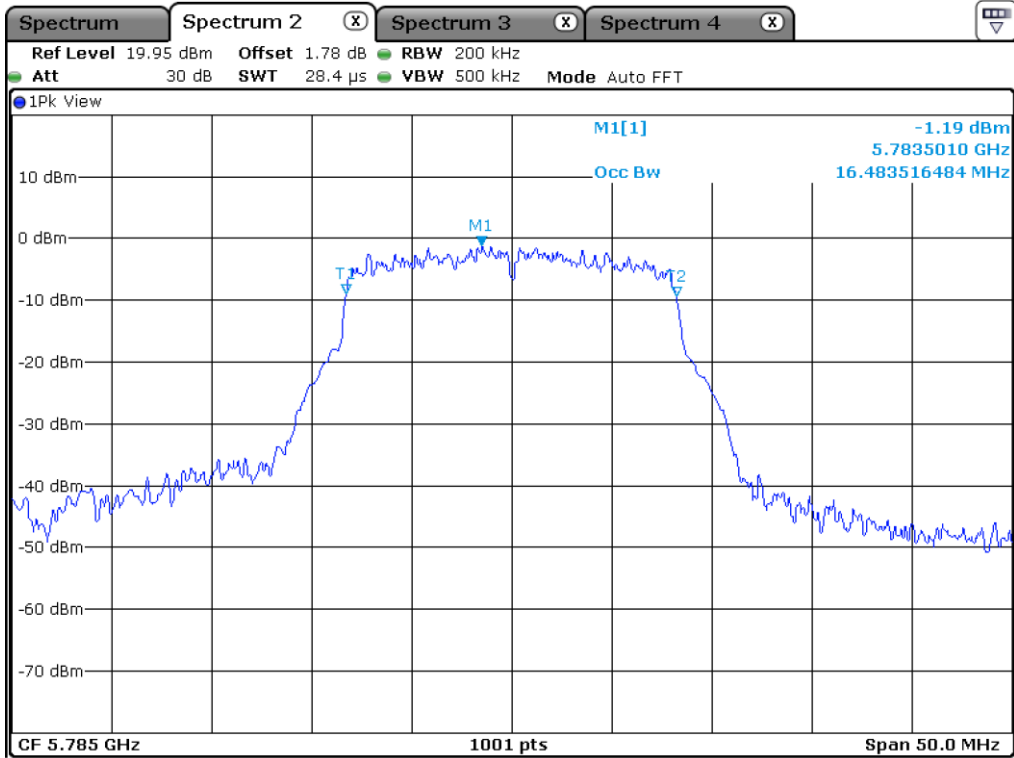
Middle Channel (5 220 MHz)



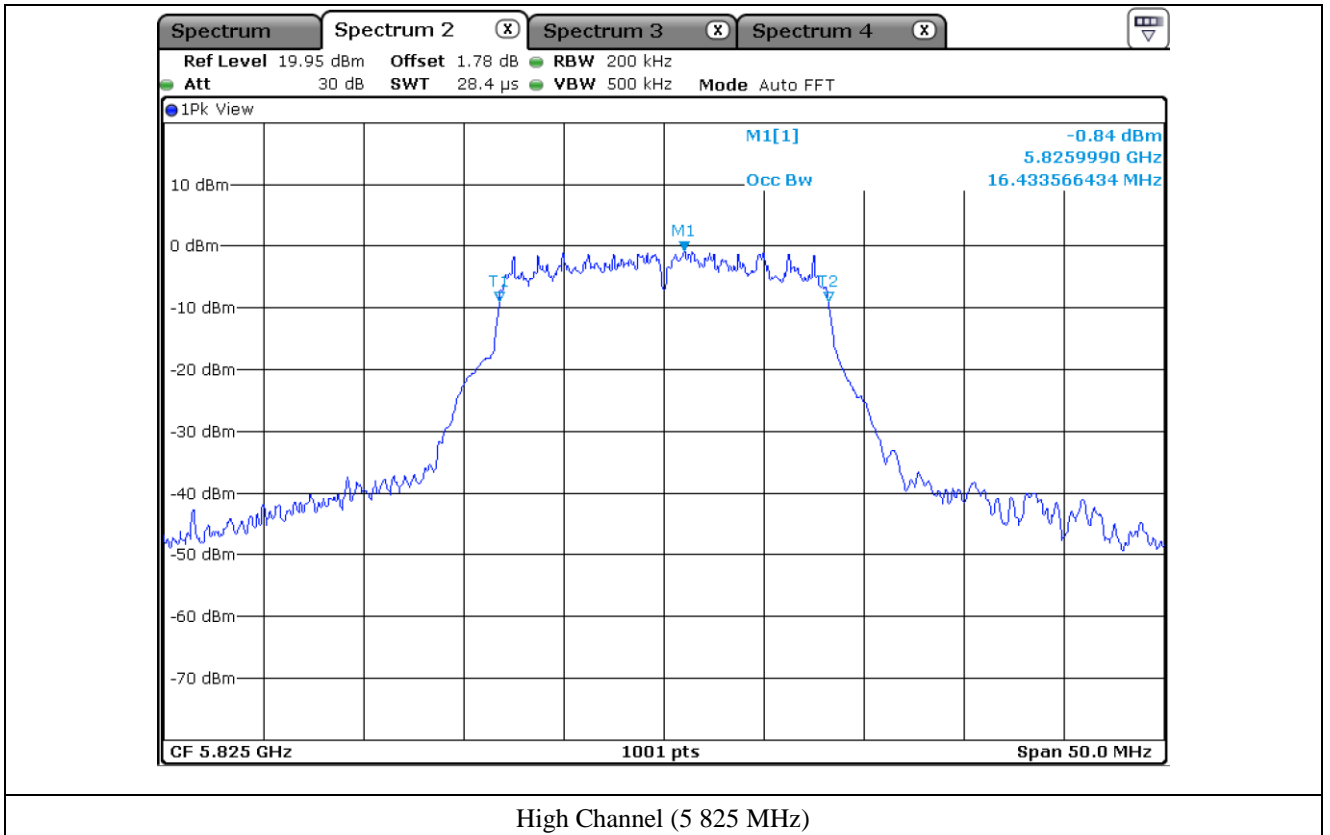
High Channel (5 240 MHz)



Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)



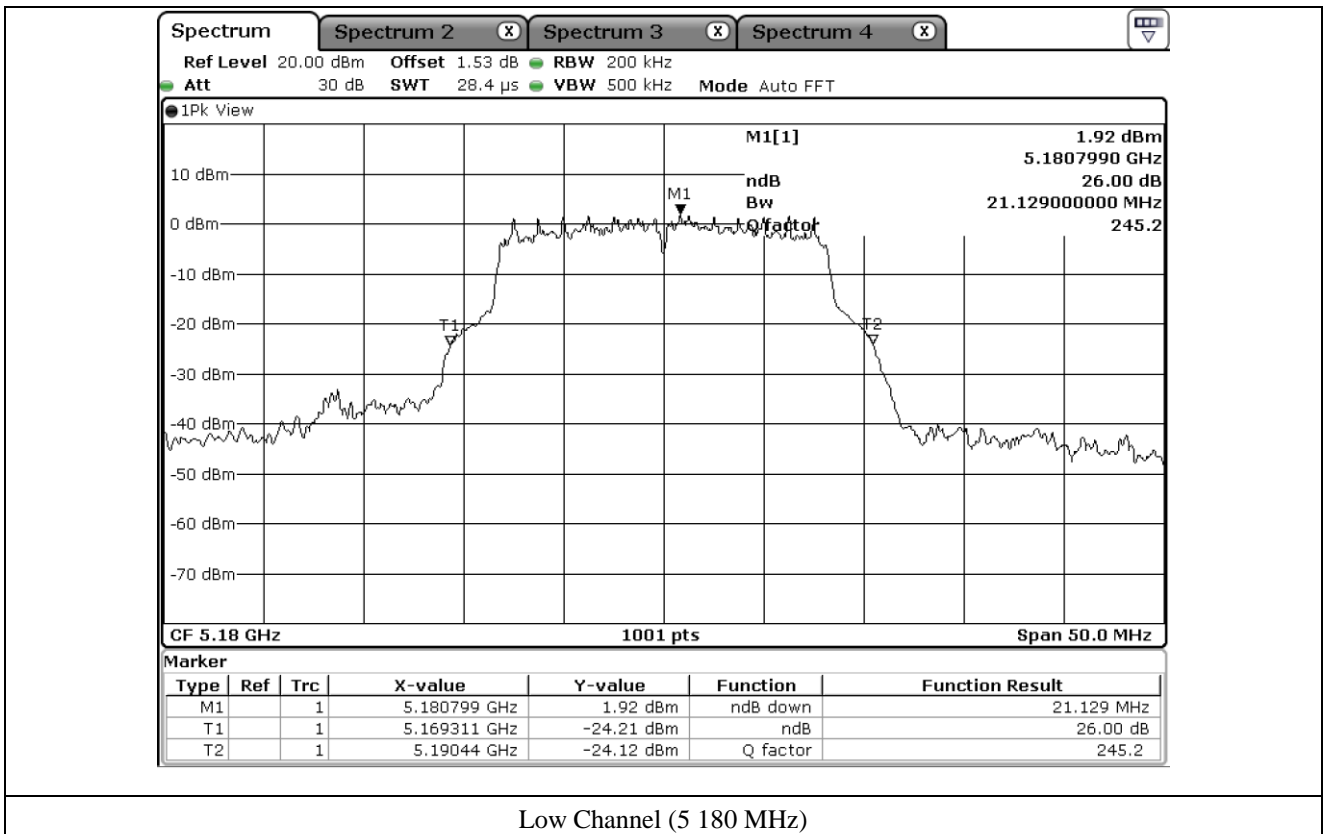
7.4.2 Test data for Antenna 1

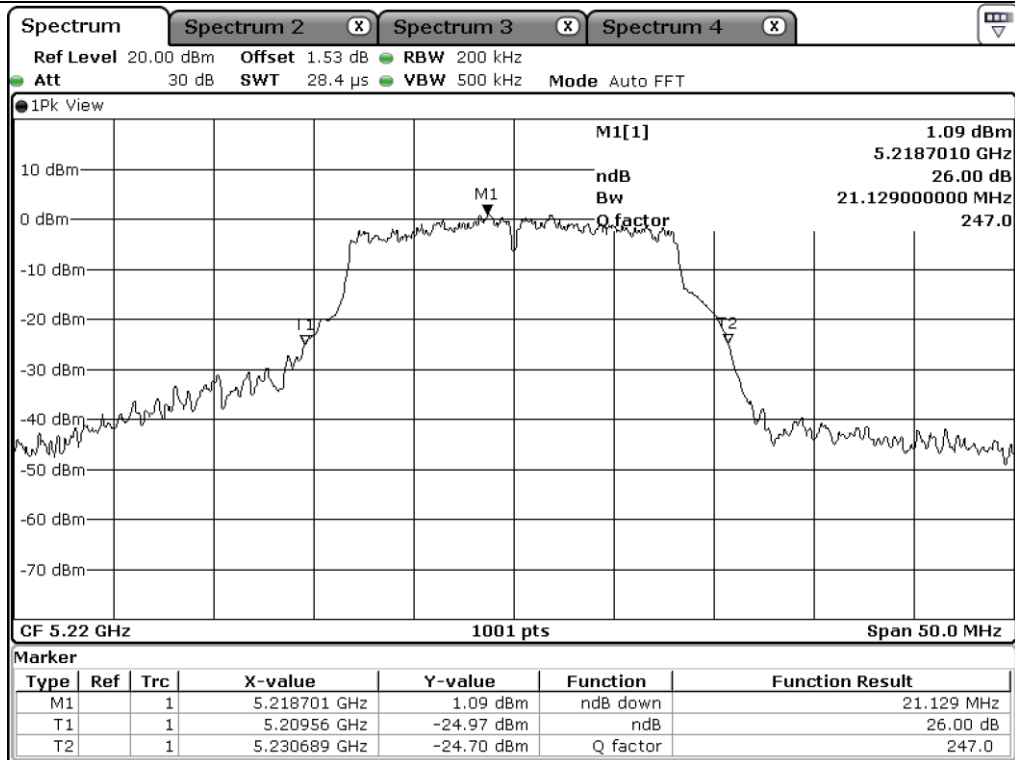
7.4.2.1 MINIMUM 26 dB BANDWIDTH

-. Test Result : Pass

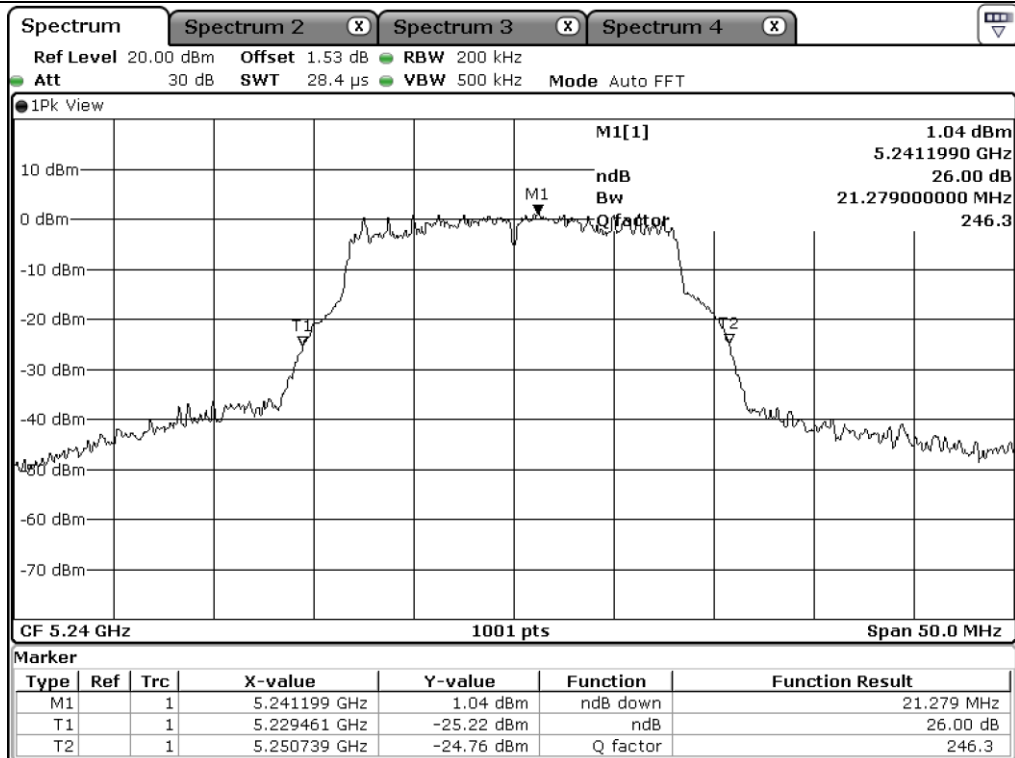
Frequency Range (MHz)	Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180.00	21.13
	Middle	5 220.00	21.13
	High	5 240.00	21.28
5 725 ~ 5 850	Low	5 745.00	21.18
	Middle	5 785.00	20.73
	High	5 825.00	21.18

Remark: See next page for measurement data.

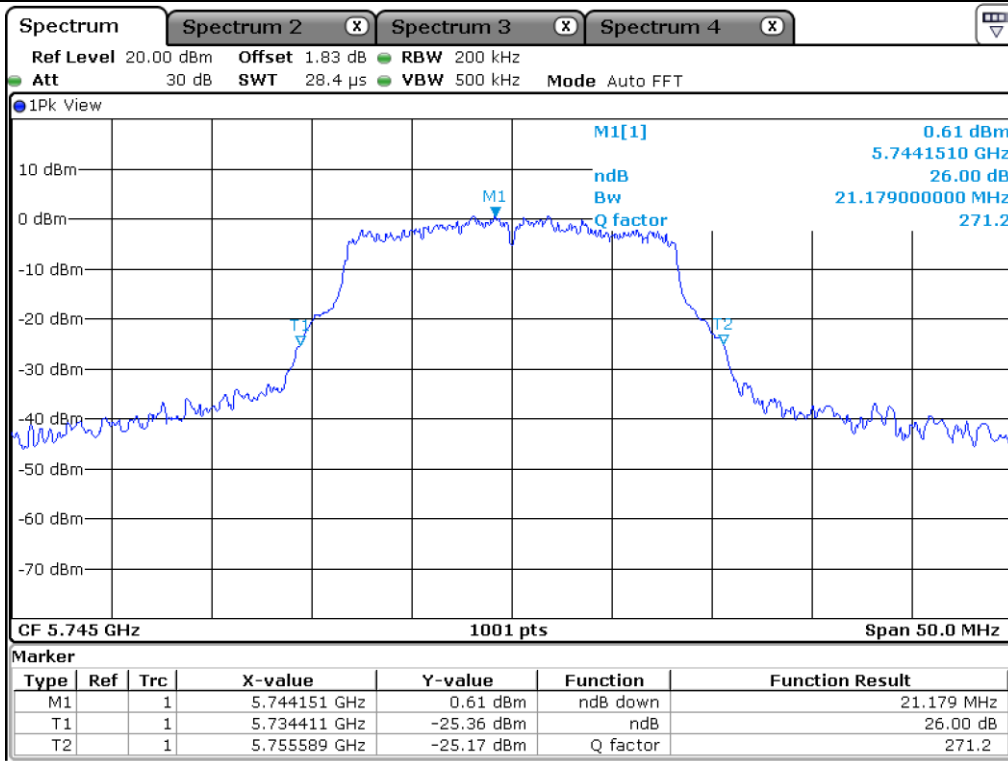




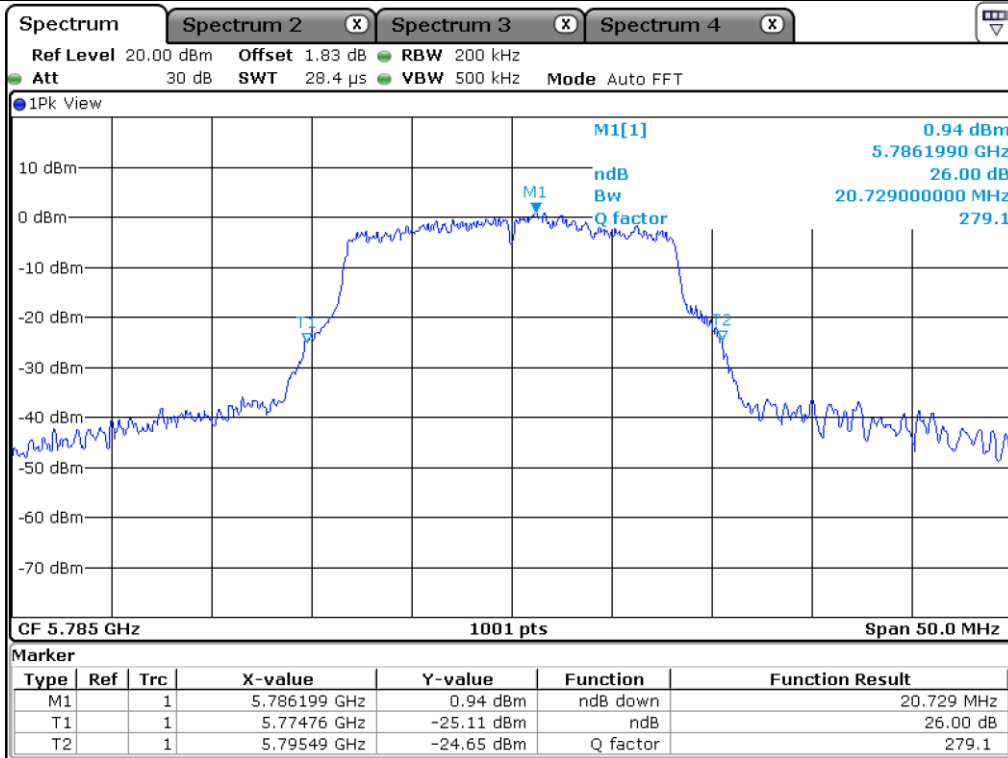
Middle Channel (5 220 MHz)



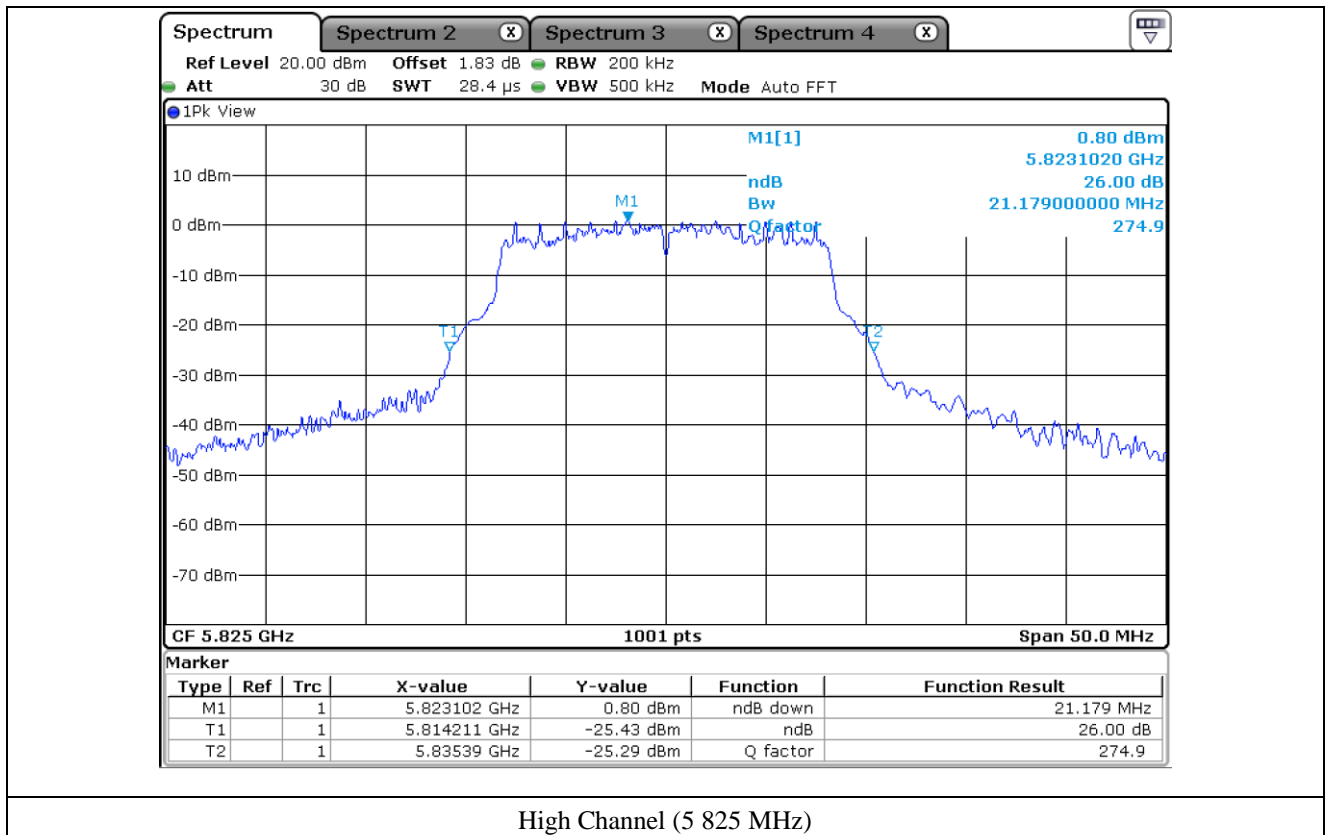
High Channel (5 240 MHz)



Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)

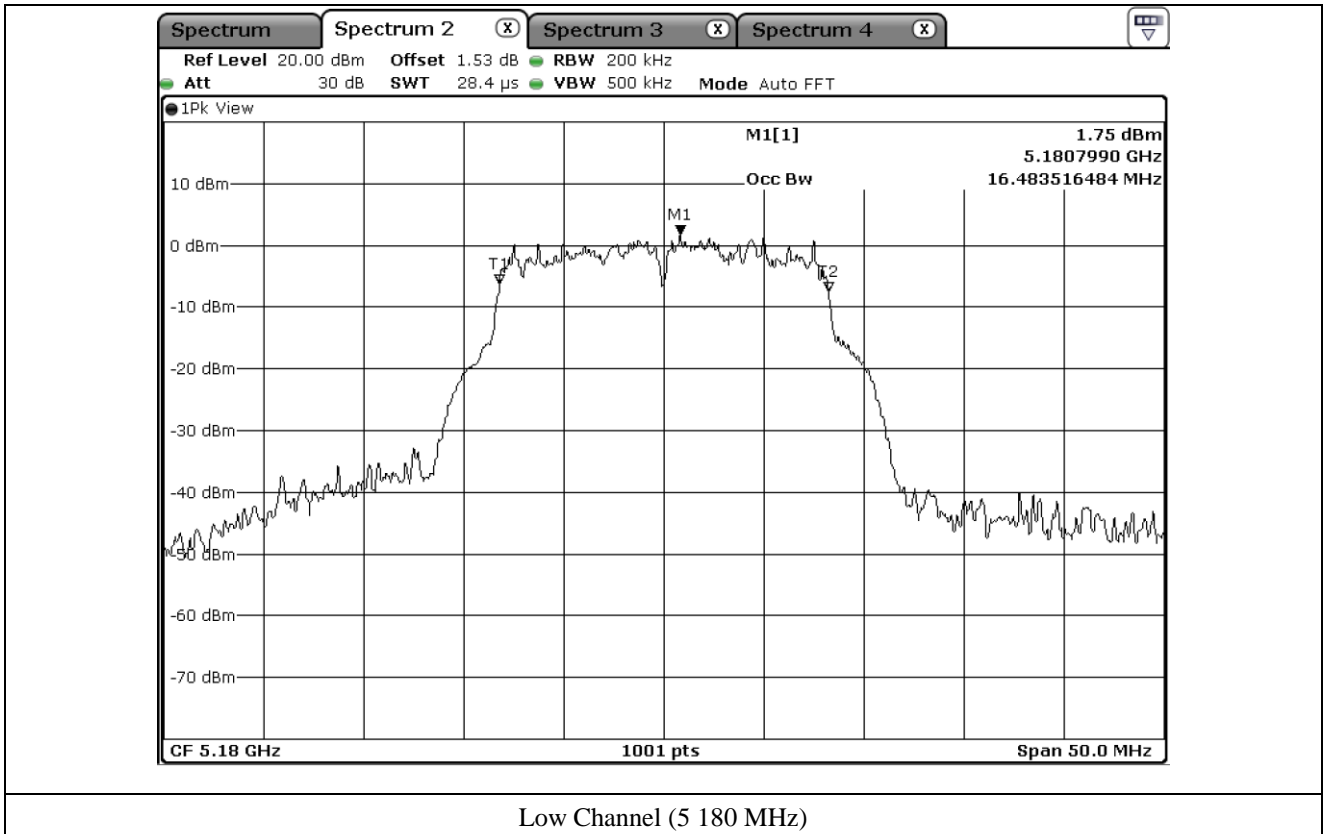


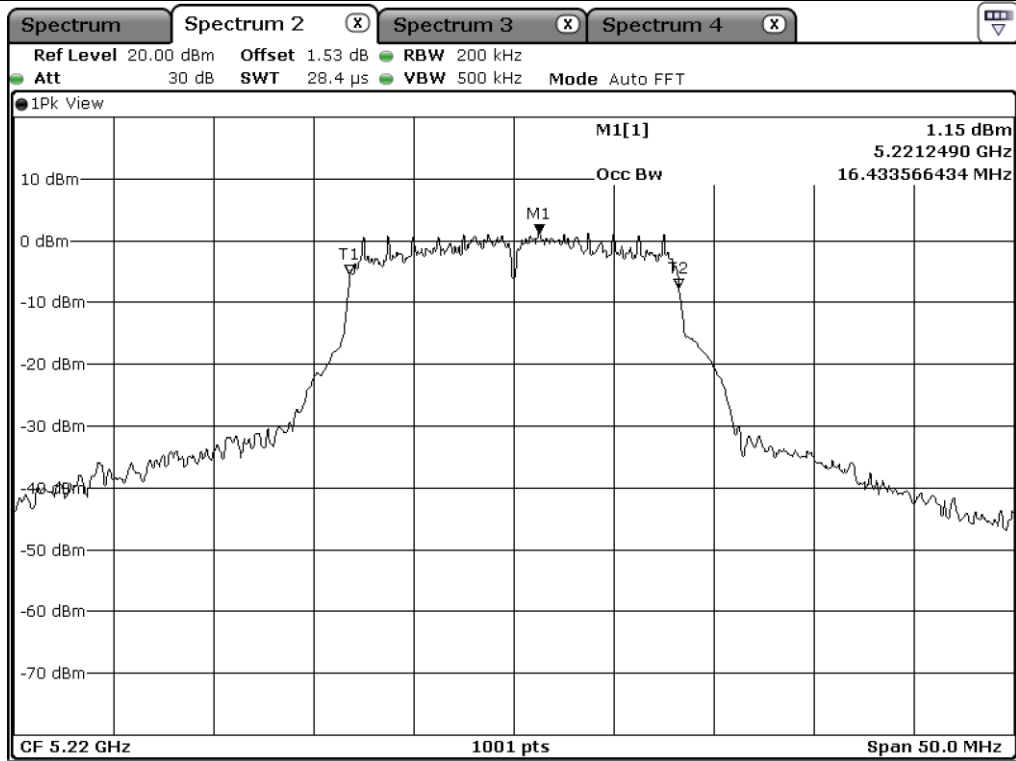
7.4.2.1 99 % OCCUPIED BANDWIDTH

- Test Result : Pass

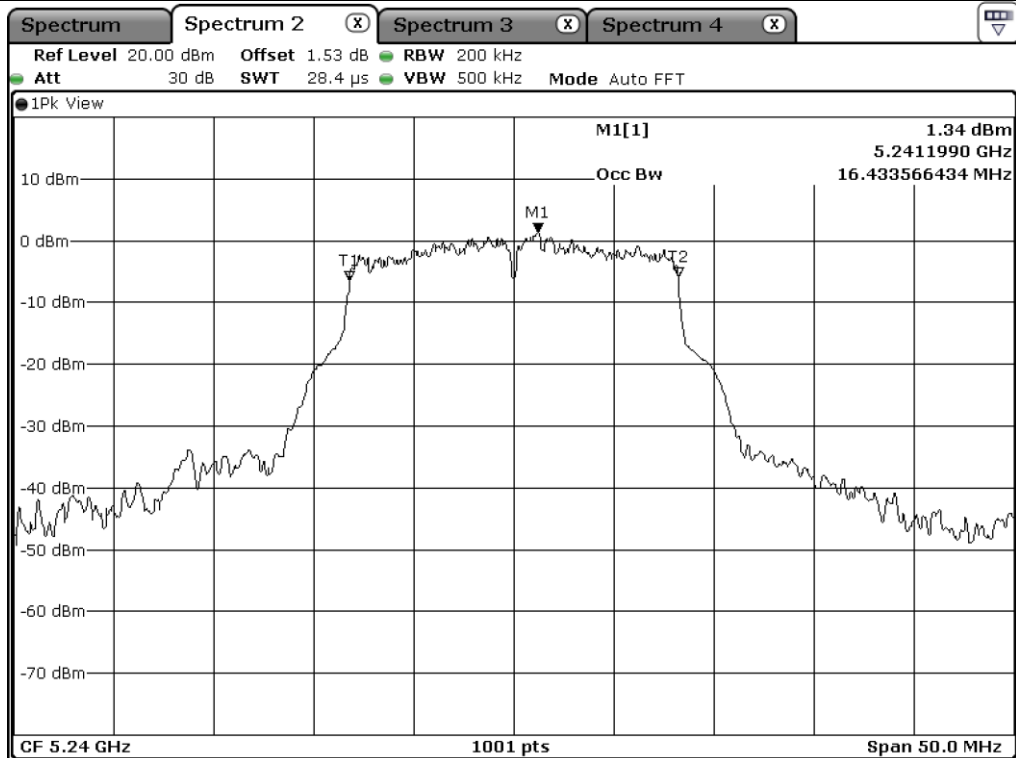
Frequency Range (MHz)	Channel	Frequency (MHz)	99 % OCCUPIED BANDWIDTH (MHz)
5 150 ~ 5 250	Low	5 180.00	16.48
	Middle	5 220.00	16.43
	High	5 240.00	16.43
5 725 ~ 5 850	Low	5 745.00	16.43
	Middle	5 785.00	16.43
	High	5 825.00	16.43

Remark: See next page for measurement data.

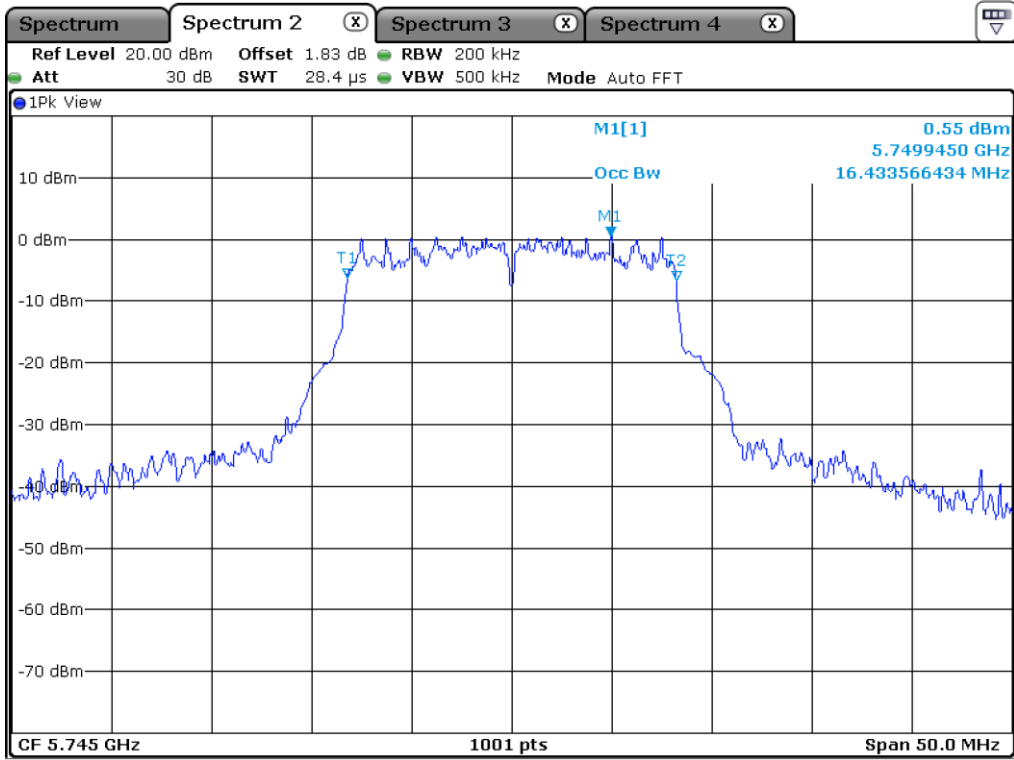




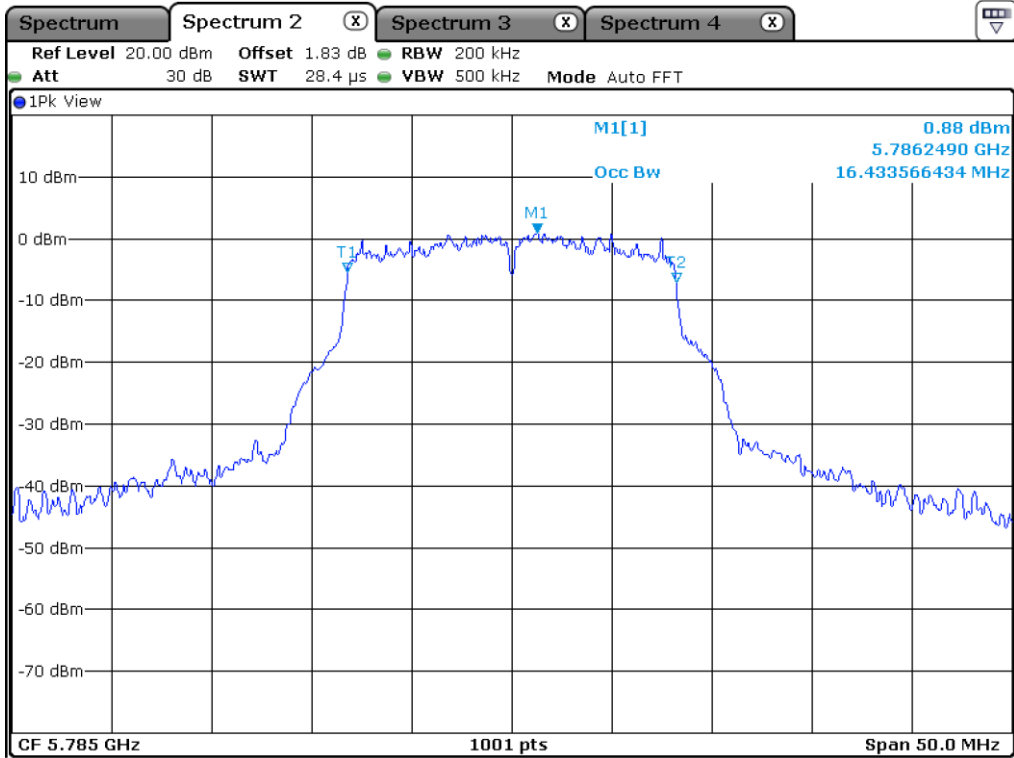
Middle Channel (5 220 MHz)



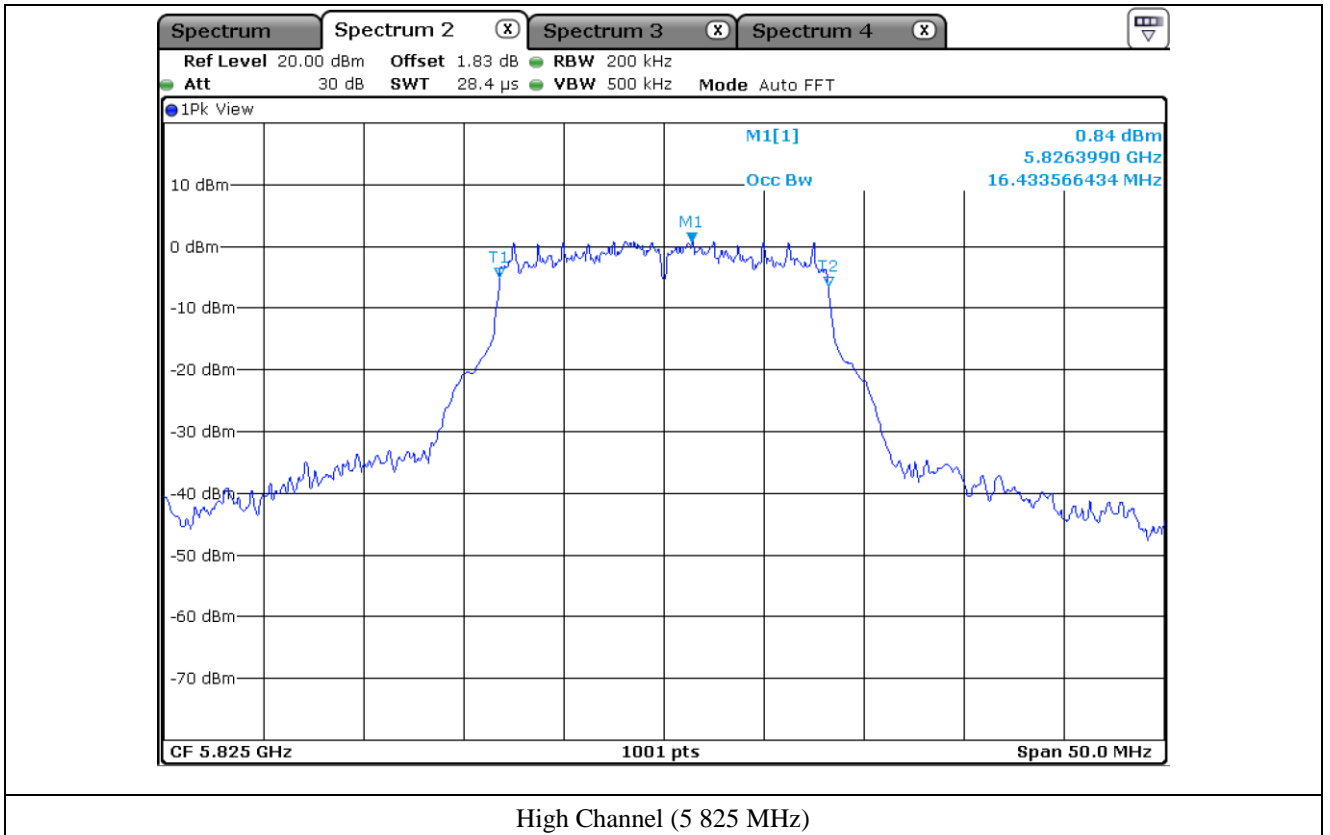
High Channel (5 240 MHz)



Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)



7.5 Test data for 802.11n_HT20 RLAN Mode

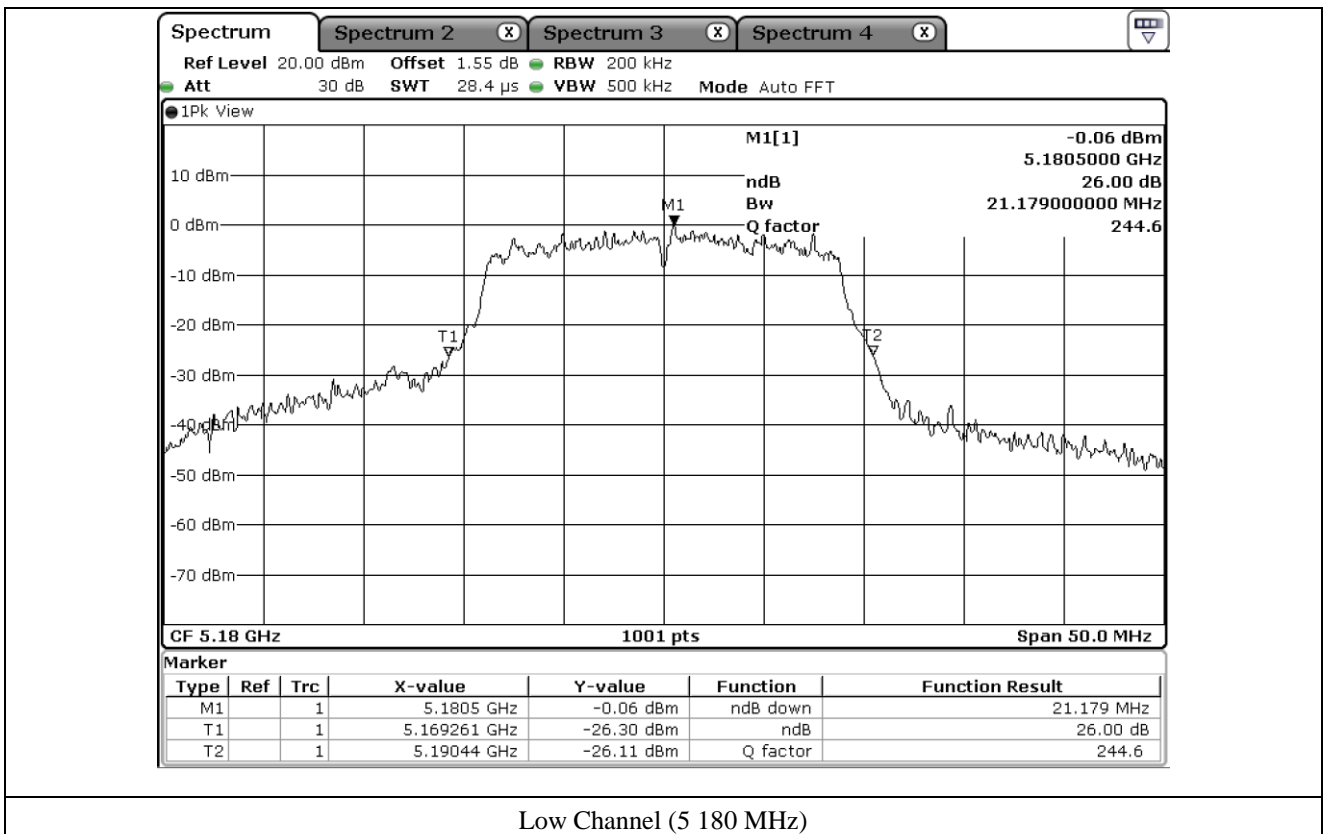
7.5.1 Test data for Antenna 0

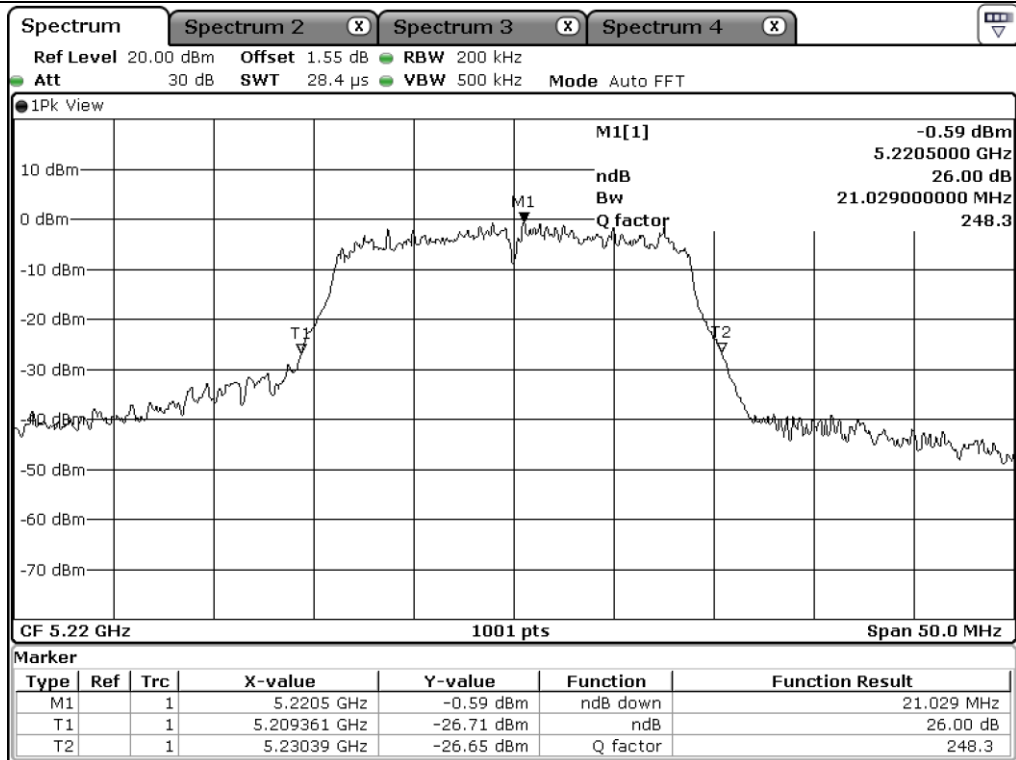
7.5.1.1 MINIMUM 26 dB BANDWIDTH

-. Test Result : Pass

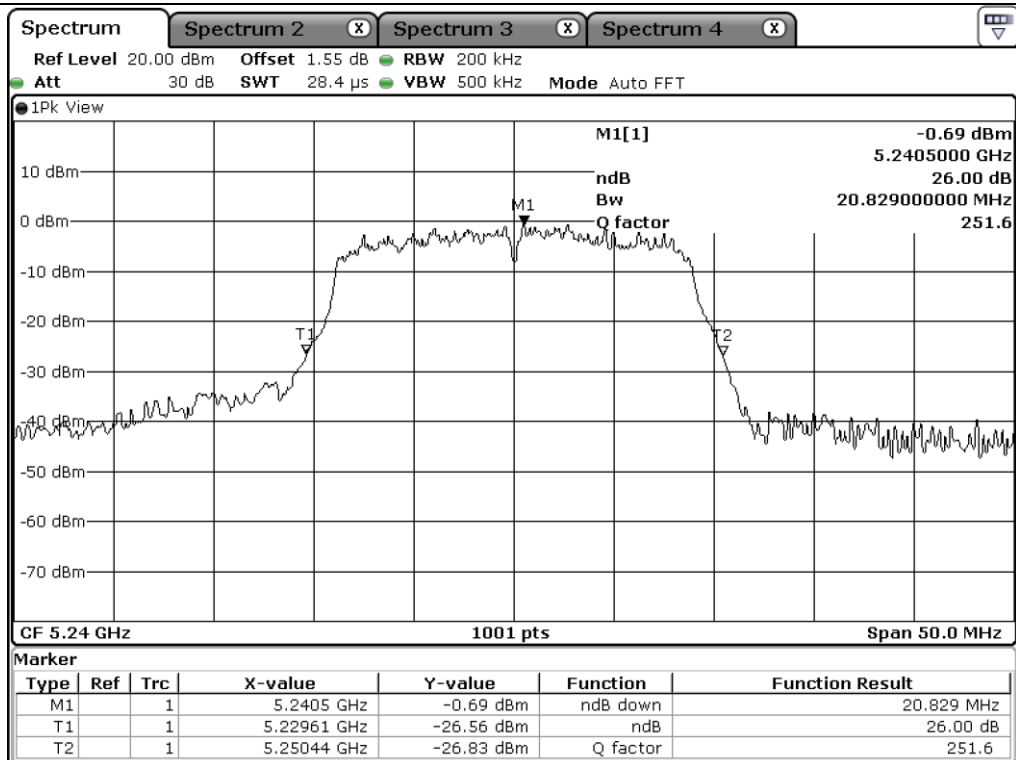
Frequency Range (MHz)	Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180.00	21.18
	Middle	5 220.00	21.03
	High	5 240.00	20.83
5 725 ~ 5 850	Low	5 745.00	20.88
	Middle	5 785.00	21.18
	High	5 825.00	20.73

Remark: See next page for measurement data.

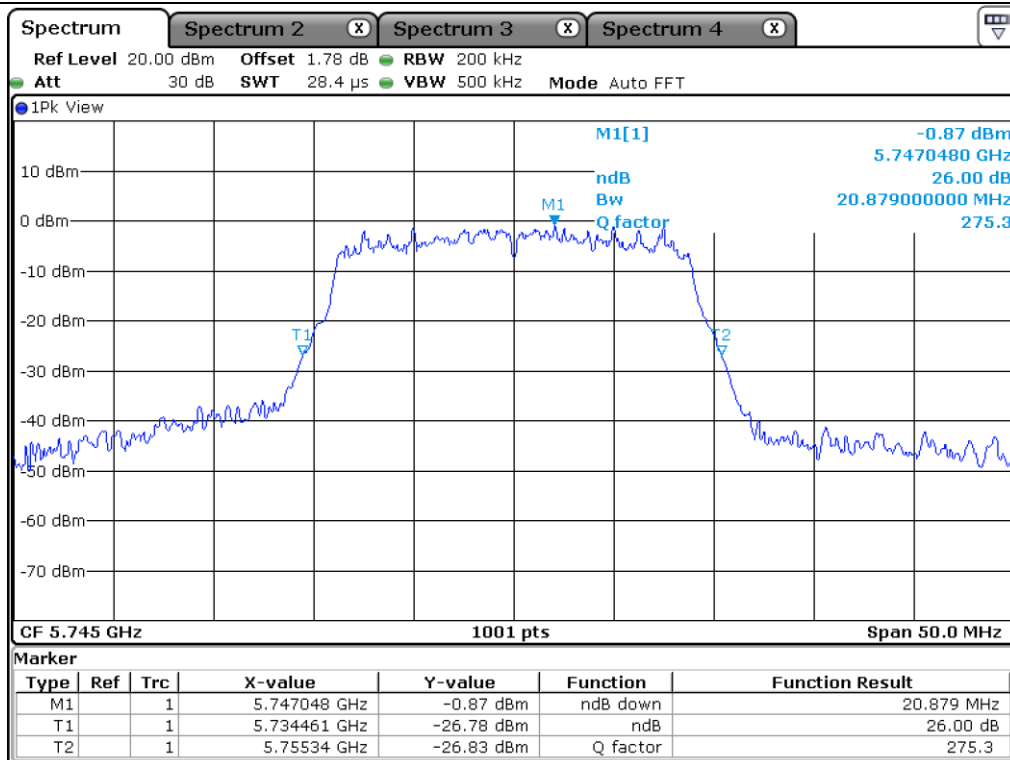




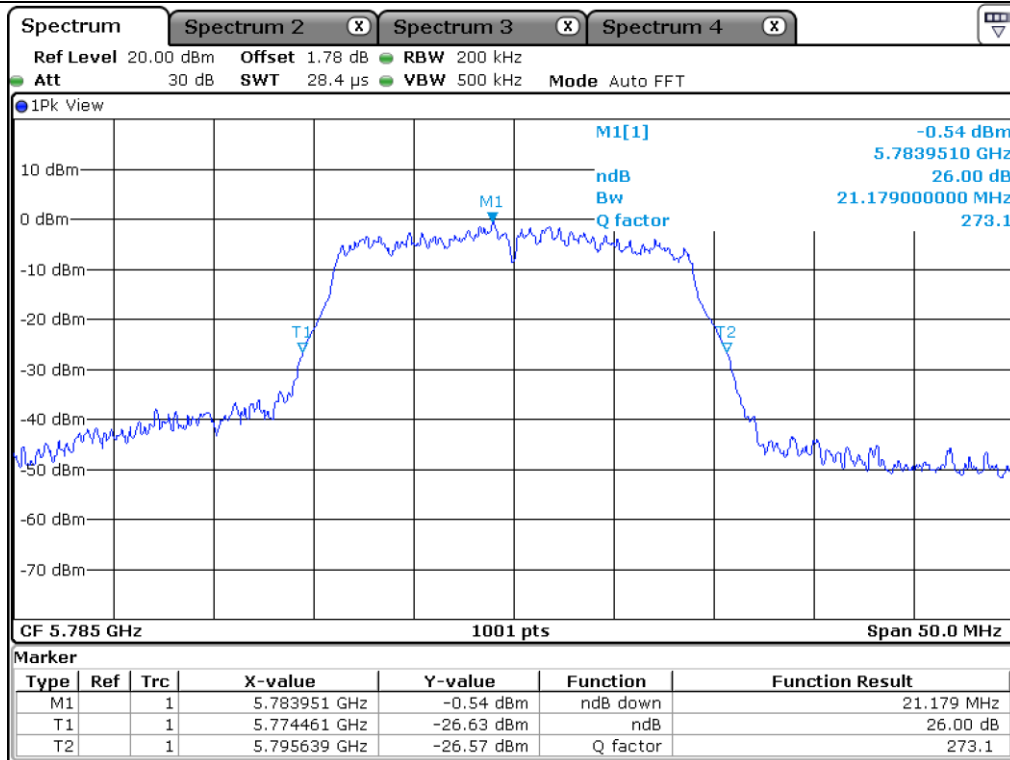
Middle Channel (5 220 MHz)



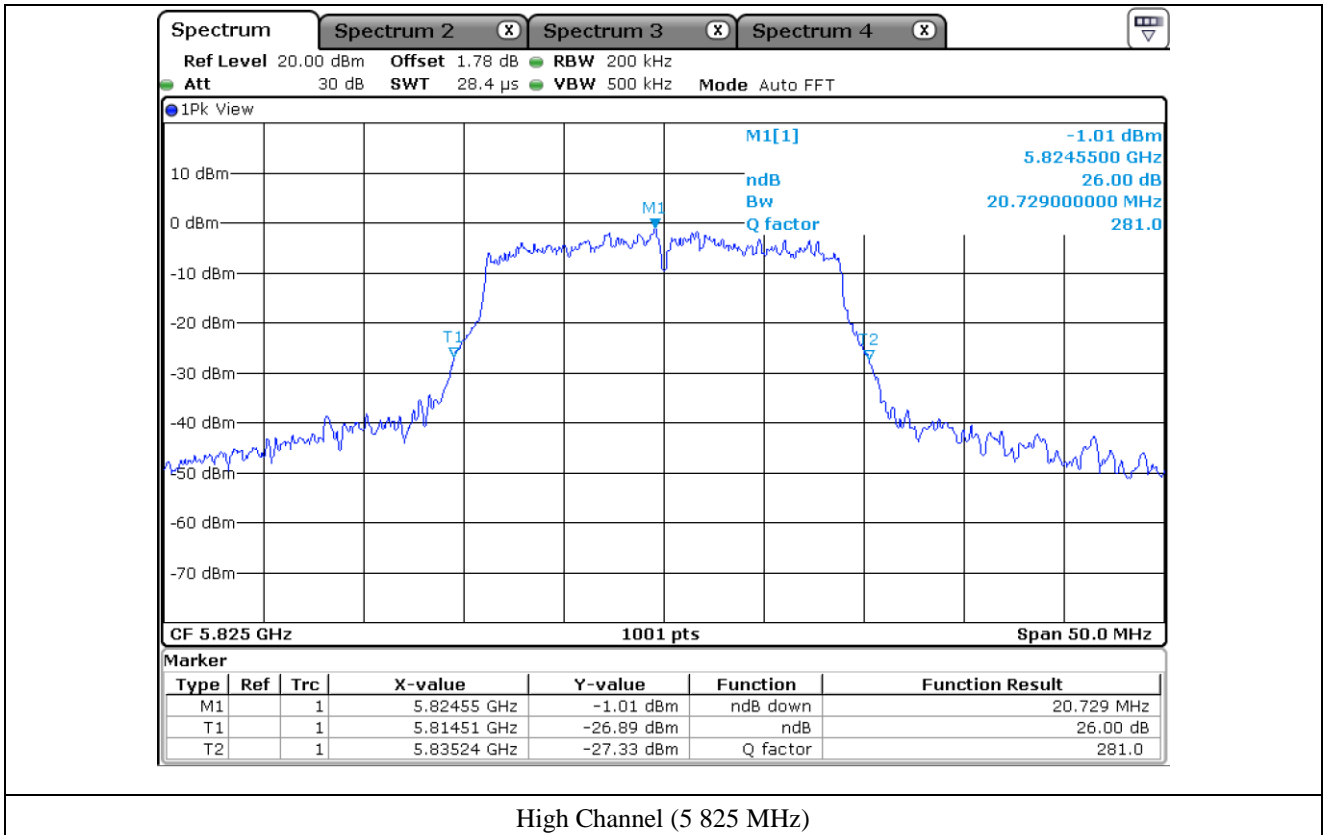
High Channel (5 240 MHz)



Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)



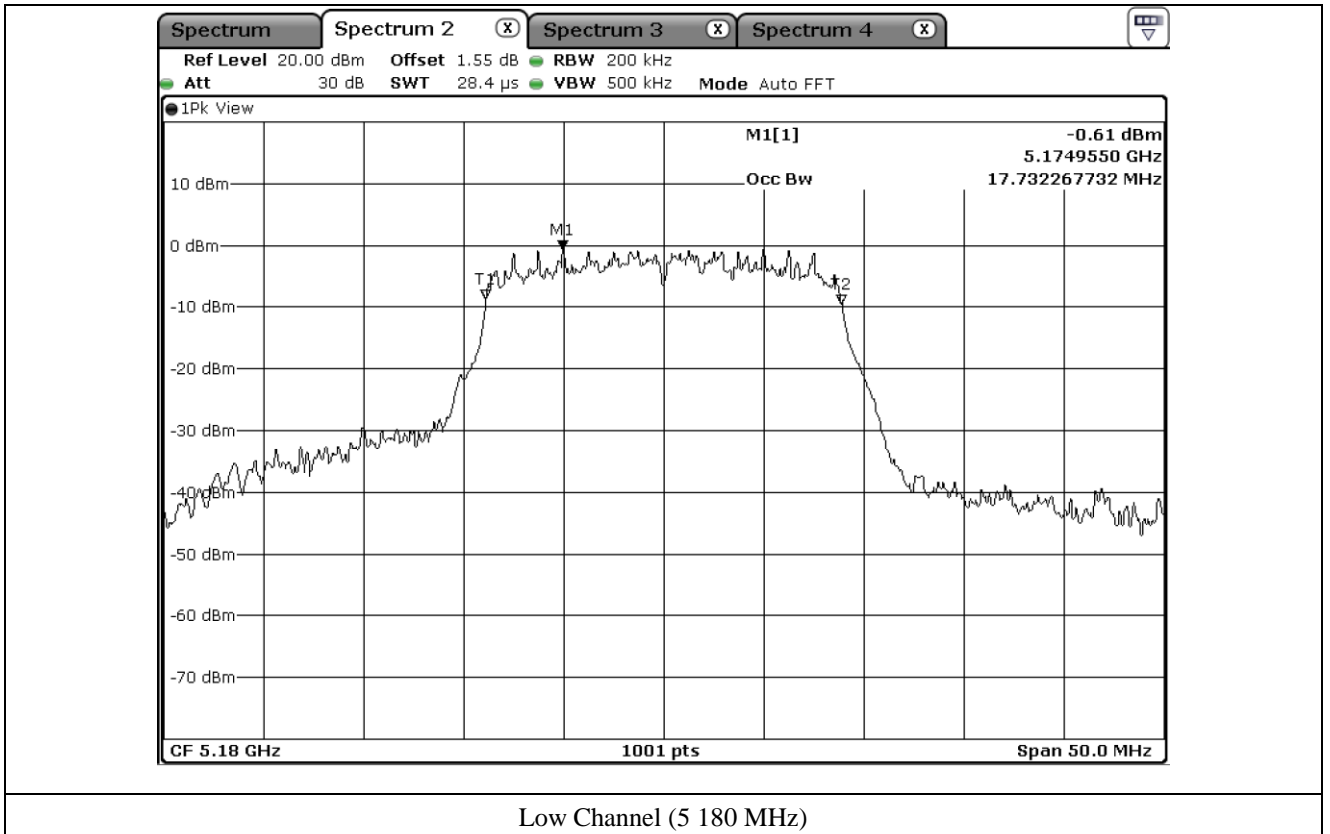
High Channel (5 825 MHz)

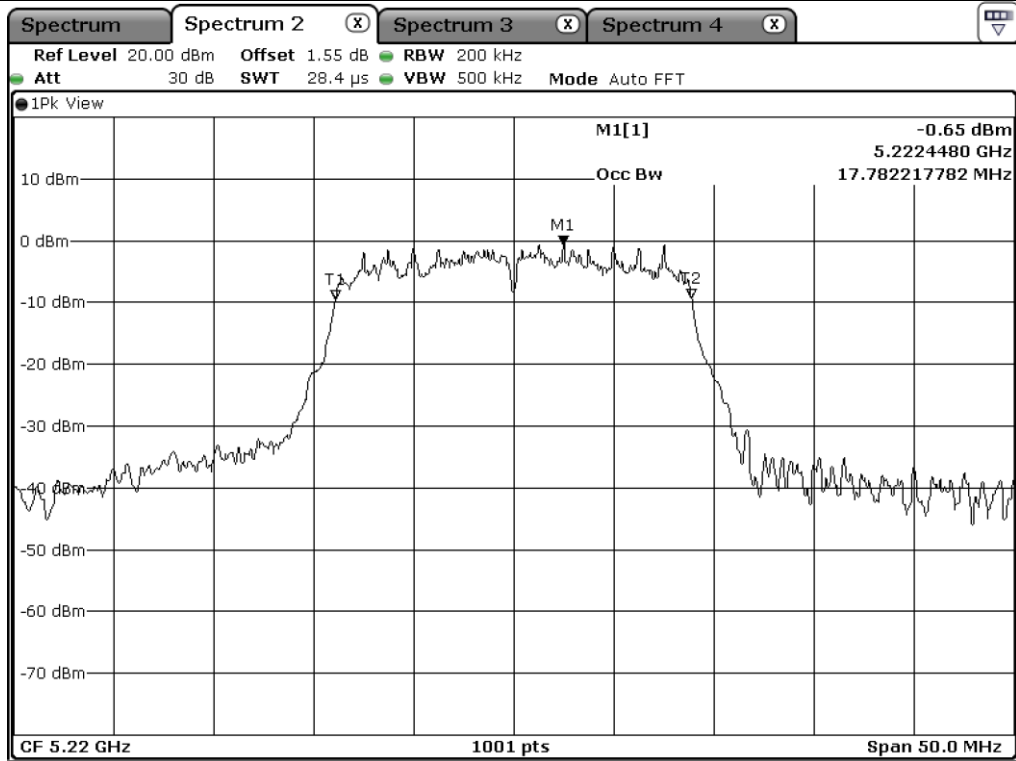
7.5.1.2 99 % OCCUPIED BANDWIDTH

-. Test Result : Pass

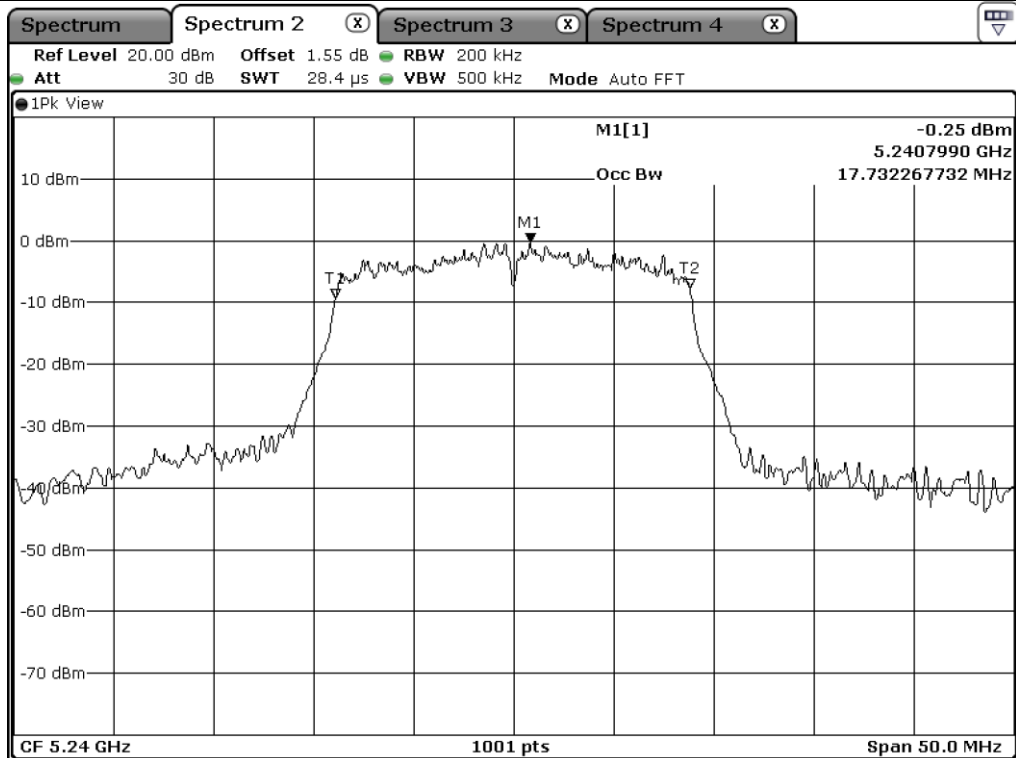
Frequency Range (MHz)	Channel	Frequency (MHz)	99 % OCCUPIED BANDWIDTH (MHz)
5 150 ~ 5 250	Low	5 180.00	17.73
	Middle	5 220.00	17.78
	High	5 240.00	17.73
5 725 ~ 5 850	Low	5 745.00	17.73
	Middle	5 785.00	17.78
	High	5 825.00	17.73

Remark: See next page for measurement data.

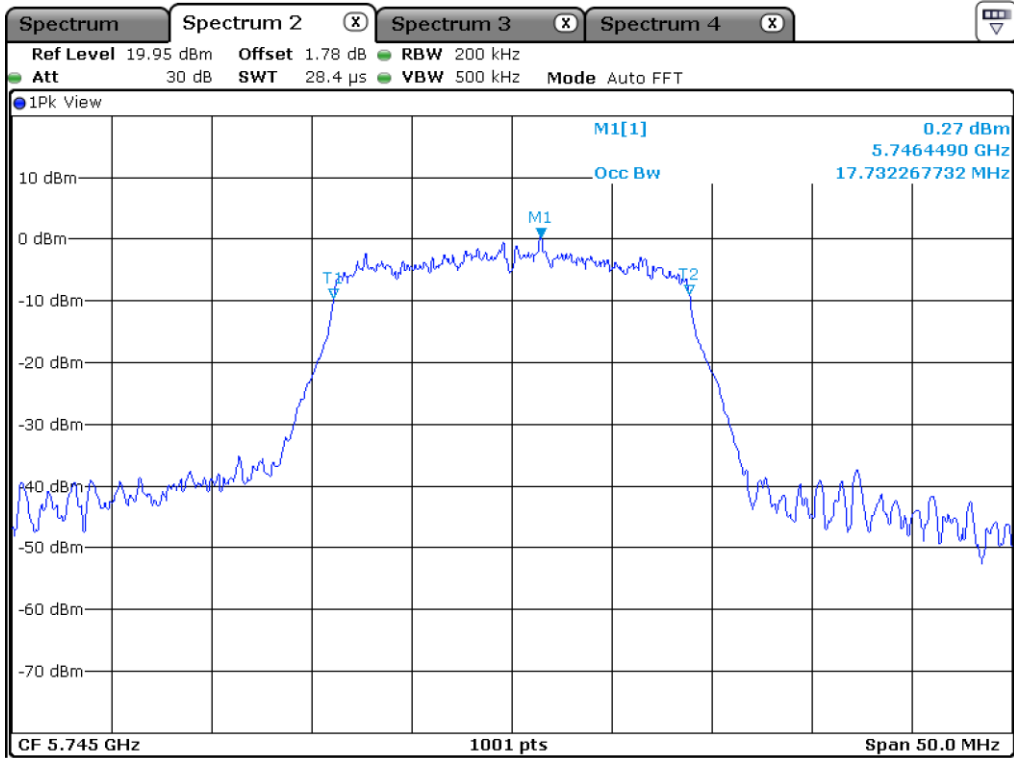




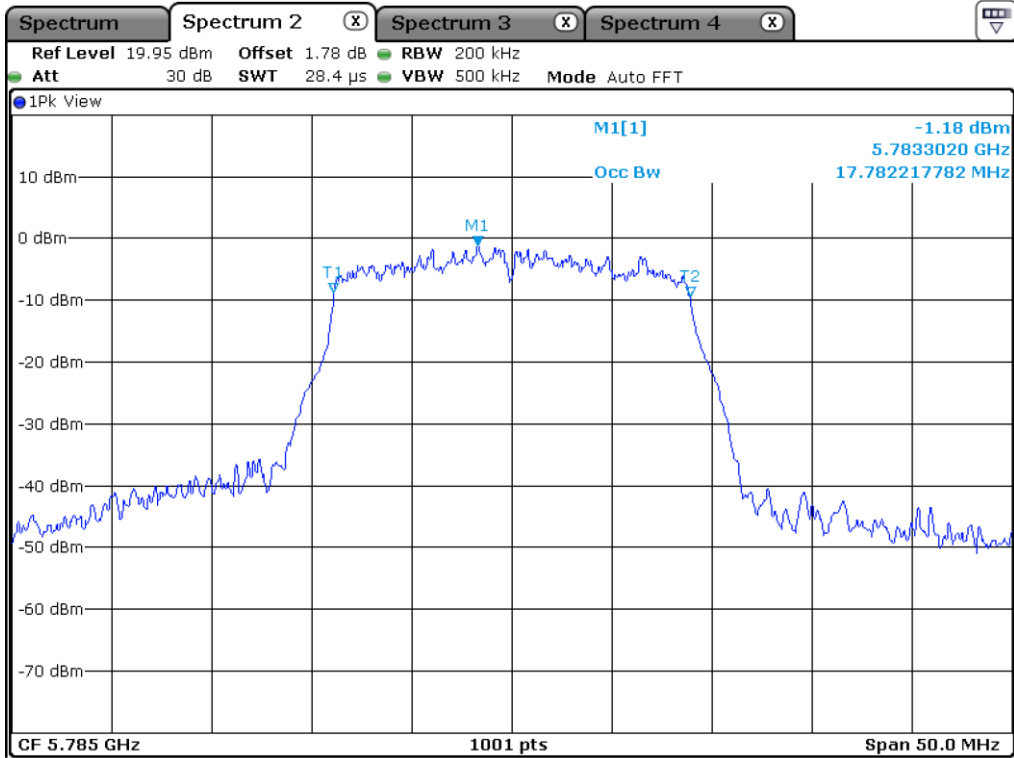
Middle Channel (5 220 MHz)



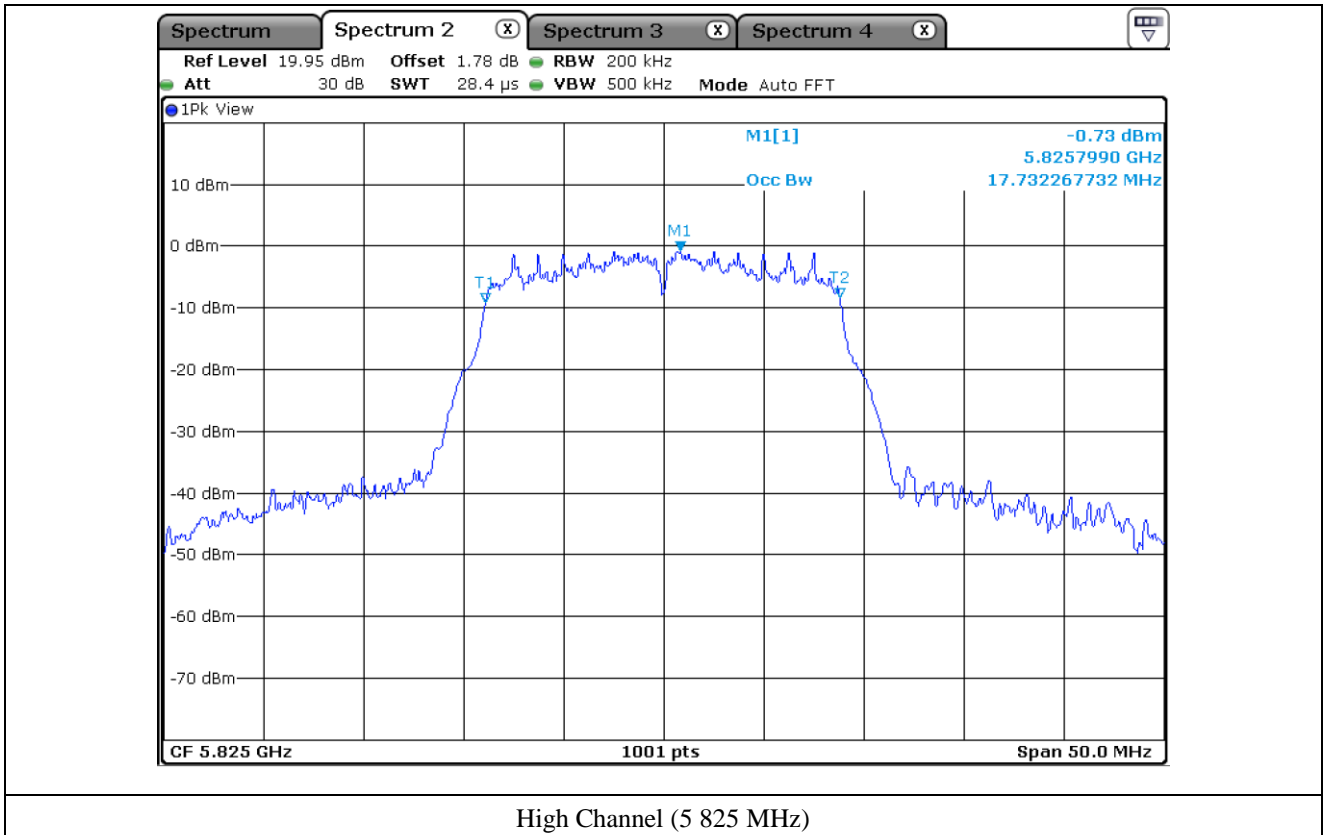
High Channel (5 240 MHz)



Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)



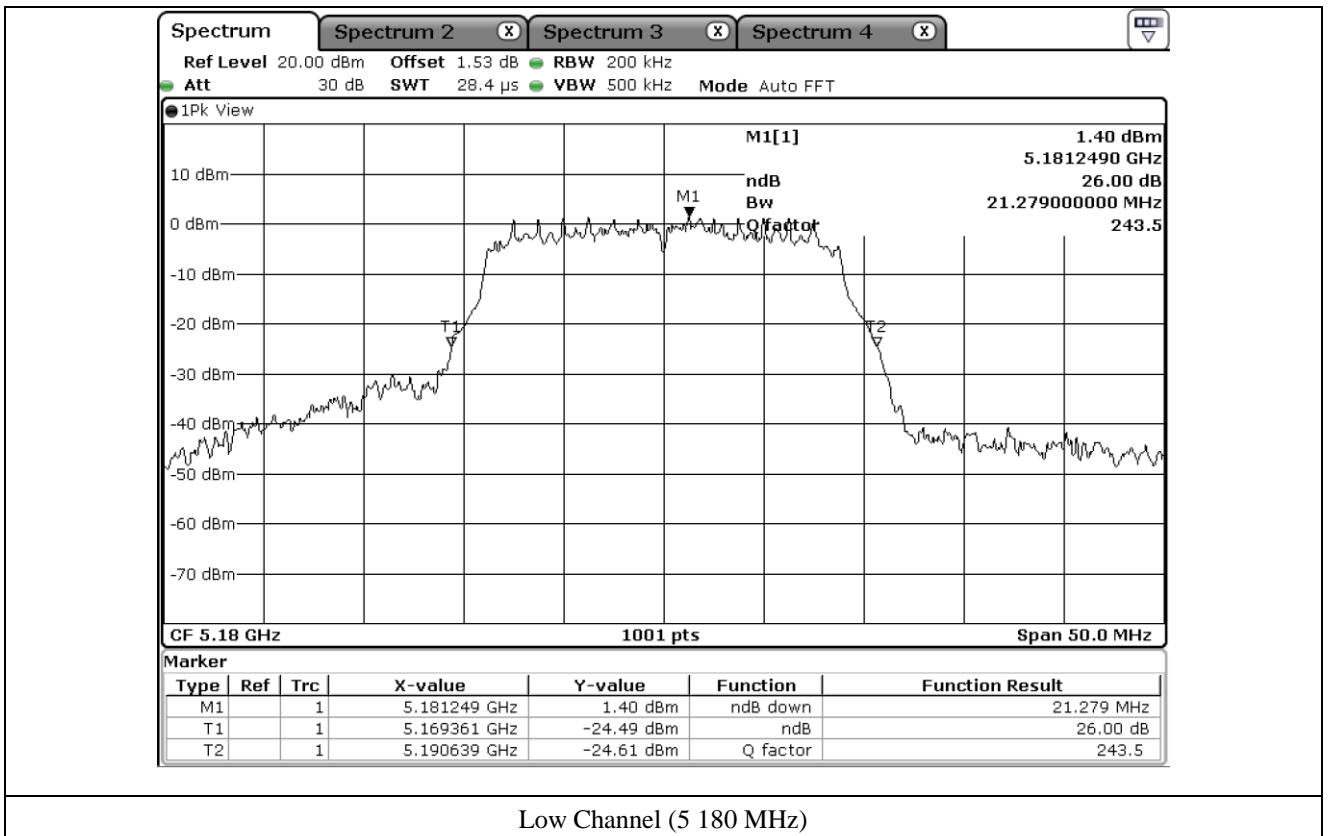
7.5.2 Test data for Antenna 1

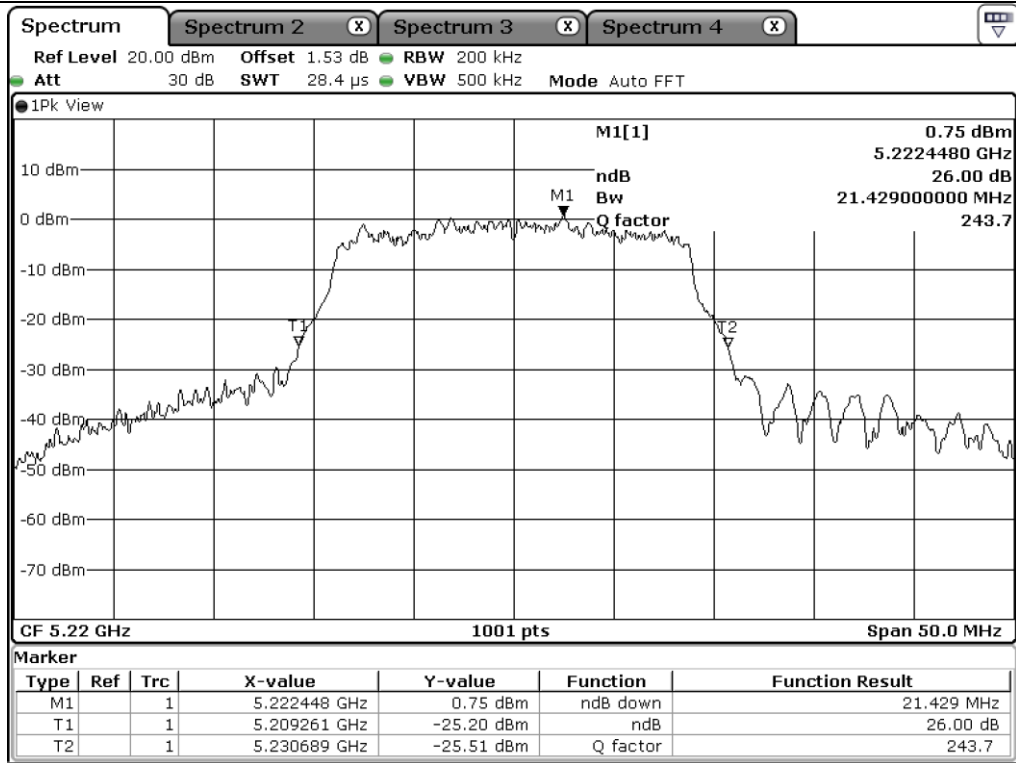
7.5.2.1 MINIMUM 26 dB BANDWIDTH

-. Test Result : Pass

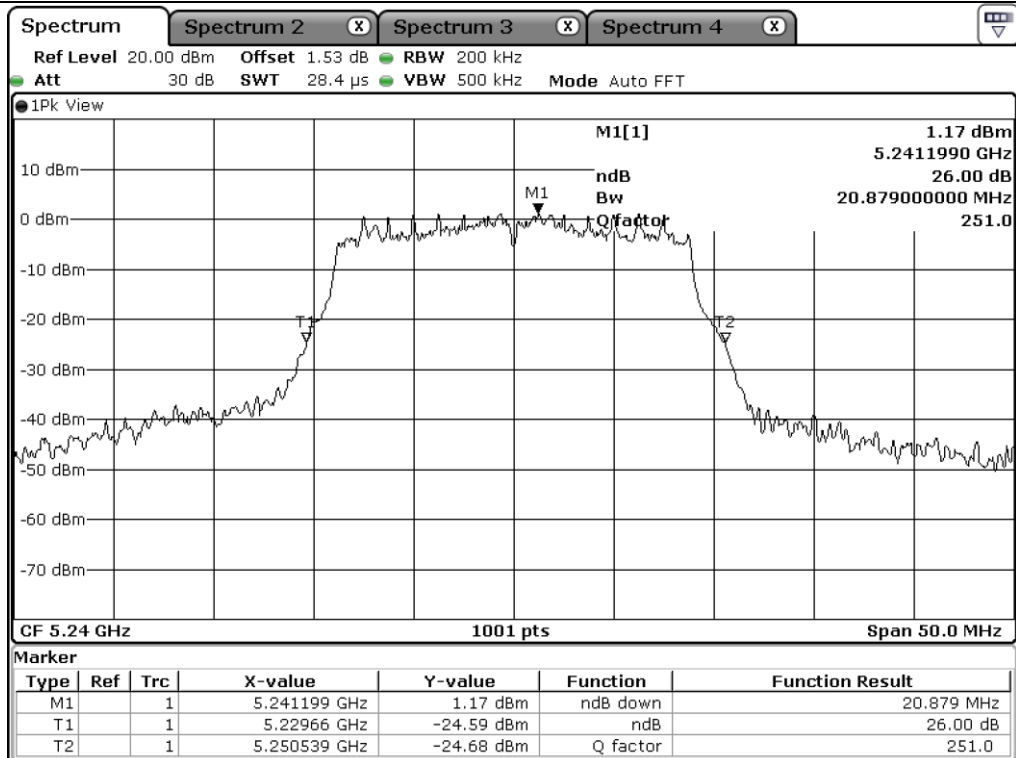
Frequency Range (MHz)	Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180.00	21.28
	Middle	5 220.00	21.43
	High	5 240.00	20.88
5 725 ~ 5 850	Low	5 745.00	21.18
	Middle	5 785.00	21.03
	High	5 825.00	21.48

Remark: See next page for measurement data.

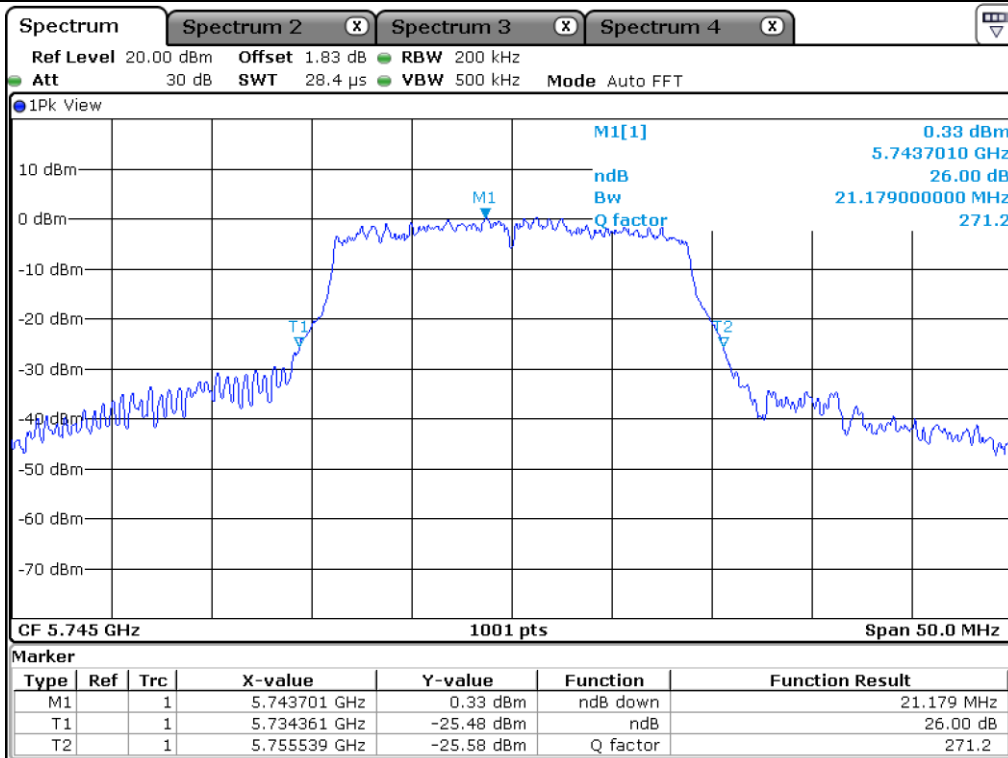




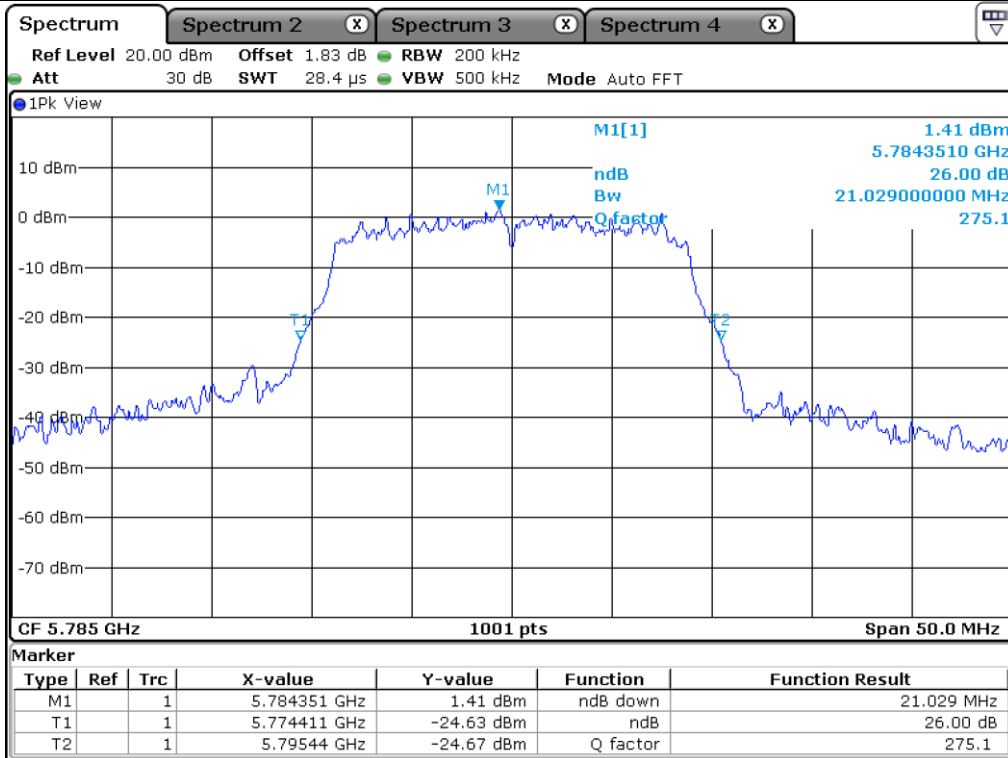
Middle Channel (5 220 MHz)



High Channel (5 240 MHz)



Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)