

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

Test Report No. : OT-211-RWD-002

Reception No. : 2012005224

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 : BT(V4.2) + WLAN(802.11a/b/g/n/ac) 2x2 MIMO Module

FCC ID. : YZP-RBHPB216C1

Model Name : RBHP-B216C

Serial number : N/A

Total page of Report : 251 pages (including this page)

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Date of issue : January 04, 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.

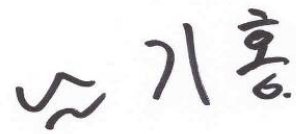
It is not a generally valid assessment of the features of the respective products of the mass-production.



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Revision History

Rev. No.	Issue Report No.	Issued Date	Revisions	Section Affected
0	OT-211-RWD-002	January 04, 2021	Initial Release	All

1. VERIFICATION OF COMPLIANCE

Applicant : LG Innotek Co., Ltd.

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FCC ID : YZP-RBHPB216C1

Model Name : RBHP-B216C

Brand Name : LG Innotek Co., Ltd.

Serial Number : N/A

Date : January 04, 2021

EQUIPMENT CLASS	Unlicensed National Information infrastructure(UNII)
E.U.T. DESCRIPTION	Modular Transmitter, BT(V4.2) + WLAN(802.11a/b/g/n/ac) 2x2 MIMO 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
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(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)
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-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

3. GENERAL INFORMATION

3.1 Product Description

The LG Innotek Co., Ltd., Model RBHP-B216C (referred to as the EUT in this report) is a BT(V4.2) + WLAN(802.11a/b/g/n/ac) 2x2 MIMO Module. The product specification described herein was obtained from product data sheet or user's manual.

DEVICE TYPE	BT(V4.2) + WLAN(802.11a/b/g/n/ac) 2x2 MIMO Module	
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 (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 1 Mbps, $\pi/4$ -DQPSK for 2 Mbps, 8-DPSK for 3 Mbps
	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	5.44 dBm
	Bluetooth	1 Mbps	4.05 dBm
		2 Mbps	1.45 dBm
		3 Mbps	2.02 dBm
	WLAN 2.4 GHz	Wi-Fi 802.11b (16.40 dBm) Wi-Fi 802.11g (15.84 dBm) Wi-Fi 802.11n(HT20) (15.05 dBm)	
	5 150 MHz ~ 5 250 MHz Band	Antenna 0	Wi-Fi 802.11a (13.96 dBm) Wi-Fi 802.11n(HT20) (11.80 dBm) Wi-Fi 802.11n(HT40) (10.14 dBm) Wi-Fi 802.11ac(HT80) (12.61 dBm)
		Antenna 1	Wi-Fi 802.11a (13.92 dBm) Wi-Fi 802.11n(HT20) (10.62 dBm) Wi-Fi 802.11n(HT40) (10.54 dBm) Wi-Fi 802.11ac(HT80) (12.66 dBm)
		Multiple Antenna	Wi-Fi 802.11n(HT20) (14.24 dBm) Wi-Fi 802.11n(HT40) (13.29 dBm) Wi-Fi 802.11ac(HT80) (12.96 dBm)
	5 250 MHz ~ 5 350 MHz Band	Antenna 0	Wi-Fi 802.11a (14.42 dBm) Wi-Fi 802.11n(HT20) (14.61 dBm) Wi-Fi 802.11n(HT40) (14.10 dBm) Wi-Fi 802.11ac(HT80) (12.51 dBm)
		Antenna 1	Wi-Fi 802.11a (14.41 dBm) Wi-Fi 802.11n(HT20) (14.54 dBm) Wi-Fi 802.11n(HT40) (13.56 dBm) Wi-Fi 802.11ac(HT80) (13.21 dBm)
		Multiple Antenna	Wi-Fi 802.11n(HT20) (17.59 dBm) Wi-Fi 802.11n(HT40) (16.85 dBm) Wi-Fi 802.11ac(HT80) (15.88 dBm)

RF OUTPUT POWER	5 470 MHz ~ 5 725 MHz Band	Antenna 0	Wi-Fi 802.11a (14.91 dBm) Wi-Fi 802.11n(HT20) (14.94 dBm) Wi-Fi 802.11n(HT40) (14.81 dBm) Wi-Fi 802.11ac(HT80) (12.99 dBm)
		Antenna 1	Wi-Fi 802.11a (14.62 dBm) Wi-Fi 802.11n(HT20) (14.97 dBm) Wi-Fi 802.11n(HT40) (14.32 dBm) Wi-Fi 802.11ac(HT80) (13.44dBm)
		Multiple Antenna	Wi-Fi 802.11n(HT20) (17.88 dBm) Wi-Fi 802.11n(HT40) (17.58 dBm) Wi-Fi 802.11ac(HT80) (16.23 dBm)
	5 725 MHz ~ 5 850 MHz Band	Antenna 0	Wi-Fi 802.11a (14.58 dBm) Wi-Fi 802.11n(HT20) (14.27 dBm) Wi-Fi 802.11n(HT40) (13.88 dBm) Wi-Fi 802.11ac(HT80) (12.80 dBm)
		Antenna 1	Wi-Fi 802.11a (14.74 dBm) Wi-Fi 802.11n(HT20) (14.84 dBm) Wi-Fi 802.11n(HT40) (14.69 dBm) Wi-Fi 802.11ac(HT80) (13.88 dBm)
		Multiple Antenna	Wi-Fi 802.11n(HT20) (17.57 dBm) Wi-Fi 802.11n(HT40) (17.31 dBm) Wi-Fi 802.11ac(HT80) (16.38 dBm)

ANTENNA TYPE	WLAN 2.4 GHz Band & WLAN 5 GHz Band		PCB Antenna
	Bluetooth & WLAN 5 GHz Band		PIFA antenna
ANTENNA GAIN	Bluetooth LE	2.20 dBi	
	Bluetooth	2.20 dBi	
	WLAN 2.4 GHz	4.80 dBi	
	5 150 MHz ~ 5 250 MHz Band	Antenna 0	5.40 dBi
		Antenna 1	5.70 dBi
		Multiple Antenna	8.56 dBi
	5 250 MHz ~ 5 350 MHz Band	Antenna 0	5.60 dBi
		Antenna 1	4.80 dBi
		Multiple Antenna	8.23 dBi
	5 470 MHz ~ 5 725 MHz Band	Antenna 0	5.70 dBi
		Antenna 1	5.30 dBi
		Multiple Antenna	8.51 dBi
	5 725 MHz ~ 5 850 MHz Band	Antenna 0	5.20 dBi
		Antenna 1	5.40 dBi
		Multiple Antenna	8.31 dBi
List of each Osc. or crystal Freq.(Freq. >= 1 MHz)		37.4 MHz	
DFS FUNCTION		Slave without radar detection	

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.	RBHA-B2168_RDK_Rev0.1	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
RBHP-B216C	LG Innotek Co., Ltd.	BT(V4.2) + WLAN(802.11a/b/g/n/ac) 2x2 MIMO Module (EUT)	Notebook PC
PP11L	DELL	Notebook PC	EUT
WEA504i	Samsung Electronics Co Ltd	WLAN Access Point (FCC ID.: A3LWEA504I)	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.

UNII 1

Modulation	DATA RATE	OUTPUT POWER[dBm]	
		Ant 0	Ant 1
802.11 a	6 Mbps	13.96	13.92
	9 Mbps	13.72	13.57
	12 Mbps	13.46	13.27
	18 Mbps	13.34	12.93
	24 Mbps	13.11	12.62
	36 Mbps	12.92	12.48
	48 Mbps	12.54	12.33
	54 Mbps	12.25	12.01
HT 20	6.5 Mbps	11.80	10.62
	13 Mbps	11.61	10.24
	19.5 Mbps	11.33	10.14
	26 Mbps	11.21	9.87
	39 Mbps	11.06	9.63
	52 Mbps	10.67	9.43
	58.5 Mbps	10.52	9.15
	65 Mbps	10.42	8.97
HT 40	13.5 Mbps	10.14	10.54
	27 Mbps	9.82	10.43
	40.5 Mbps	9.63	10.26
	54 Mbps	9.41	10.06
	81 Mbps	9.30	9.88
	108 Mbps	9.20	9.72
	121.5 Mbps	9.02	9.39
	135 Mbps	8.76	9.20

VHT80	29.3 Mbps	12.61	12.66
	58.5 Mbps	12.41	12.54
	87.8 Mbps	12.21	12.42
	117 Mbps	11.89	12.18
	175.5 Mbps	11.65	11.78
	234 Mbps	11.45	11.46
	263.3 Mbps	11.21	11.12
	292.5 Mbps	10.86	10.76
	351 Mbps	10.68	10.39
	390 Mbps	10.51	10.22

- . 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]	
		Ant 0	Ant 1
802.11 a	6 Mbps	14.42	14.41
	9 Mbps	14.30	14.20
	12 Mbps	14.14	13.85
	18 Mbps	13.78	13.45
	24 Mbps	13.68	13.24
	36 Mbps	13.42	13.02
	48 Mbps	13.03	12.70
	54 Mbps	12.69	12.44
HT 20	6.5 Mbps	14.61	14.54
	13 Mbps	14.37	14.16
	19.5 Mbps	14.18	13.79
	26 Mbps	13.78	13.51
	39 Mbps	13.50	13.14
	52 Mbps	13.34	13.01
	58.5 Mbps	13.17	12.88
	65 Mbps	12.82	12.68
HT 40	13.5 Mbps	14.10	13.56
	27 Mbps	13.82	13.34
	40.5 Mbps	13.67	12.95
	54 Mbps	13.39	12.59
	81 Mbps	13.04	12.25
	108 Mbps	12.92	12.05
	121.5 Mbps	12.79	11.68
	135 Mbps	12.47	11.38

VHT80	29.3 Mbps	12.51	13.21
	58.5 Mbps	12.31	12.81
	87.8 Mbps	12.06	12.52
	117 Mbps	11.73	12.24
	175.5 Mbps	11.55	11.93
	234 Mbps	11.20	11.57
	263.3 Mbps	11.04	11.38
	292.5 Mbps	10.66	11.01
	351 Mbps	10.46	10.91
	390 Mbps	10.09	10.57

- 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]	
		Ant 0	Ant 1
802.11 a	6 Mbps	14.91	14.62
	9 Mbps	14.58	14.27
	12 Mbps	14.23	13.99
	18 Mbps	13.90	13.80
	24 Mbps	13.68	13.54
	36 Mbps	13.35	13.26
	48 Mbps	12.95	12.96
	54 Mbps	12.79	12.69
HT 20	6.5 Mbps	14.94	14.97
	13 Mbps	14.63	14.72
	19.5 Mbps	14.38	14.62
	26 Mbps	14.17	14.25
	39 Mbps	14.00	13.95
	52 Mbps	13.65	13.69
	58.5 Mbps	13.34	13.43
	65 Mbps	13.18	13.10
HT 40	13.5 Mbps	14.81	14.32
	27 Mbps	14.50	14.04
	40.5 Mbps	14.16	13.88
	54 Mbps	13.96	13.62
	81 Mbps	13.84	13.37
	108 Mbps	13.45	13.16
	121.5 Mbps	13.13	12.77
	135 Mbps	12.81	12.49

VHT80	29.3 Mbps	12.99	13.44
	58.5 Mbps	12.73	13.15
	87.8 Mbps	12.40	12.83
	117 Mbps	12.09	12.72
	175.5 Mbps	11.87	12.56
	234 Mbps	11.53	12.44
	263.3 Mbps	11.18	12.14
	292.5 Mbps	10.93	11.87
	351 Mbps	10.61	11.73
	390 Mbps	10.27	11.61

- . 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]	
		Ant 0	Ant 1
802.11 a	6 Mbps	14.58	14.74
	9 Mbps	14.23	14.54
	12 Mbps	14.11	14.30
	18 Mbps	13.92	13.98
	24 Mbps	13.53	13.68
	36 Mbps	13.41	13.47
	48 Mbps	13.03	13.13
	54 Mbps	12.71	13.02
HT 20	6.5 Mbps	14.27	14.84
	13 Mbps	14.08	14.55
	19.5 Mbps	13.84	14.43
	26 Mbps	13.63	14.19
	39 Mbps	13.33	13.86
	52 Mbps	13.16	13.73
	58.5 Mbps	12.85	13.43
	65 Mbps	12.65	13.12
HT 40	13.5 Mbps	13.88	14.69
	27 Mbps	13.65	14.35
	40.5 Mbps	13.28	14.08
	54 Mbps	13.04	13.89
	81 Mbps	12.73	13.59
	108 Mbps	12.58	13.36
	121.5 Mbps	12.33	13.26
	135 Mbps	12.04	13.16

VHT80	29.3 Mbps	12.80	13.88
	58.5 Mbps	12.47	13.63
	87.8 Mbps	12.18	13.53
	117 Mbps	12.06	13.27
	175.5 Mbps	11.71	12.93
	234 Mbps	11.49	12.64
	263.3 Mbps	11.34	12.38
	292.5 Mbps	11.11	12.14
	351 Mbps	10.90	11.77
	390 Mbps	10.79	11.52

- . 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.

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 transmitter antenna of the EUT is WLAN 2.4 GHz Band & WLAN 5 GHz Band is PCB antenna and Bluetooth & Bluetooth LE & WLAN 5 GHz Band is PIFA antenna.

It consists of the FAKRA Type RF cable between the EUT and the antenna, and the connector is molded so that it cannot be replaced 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 approximately 1% of the emission bandwidth, 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

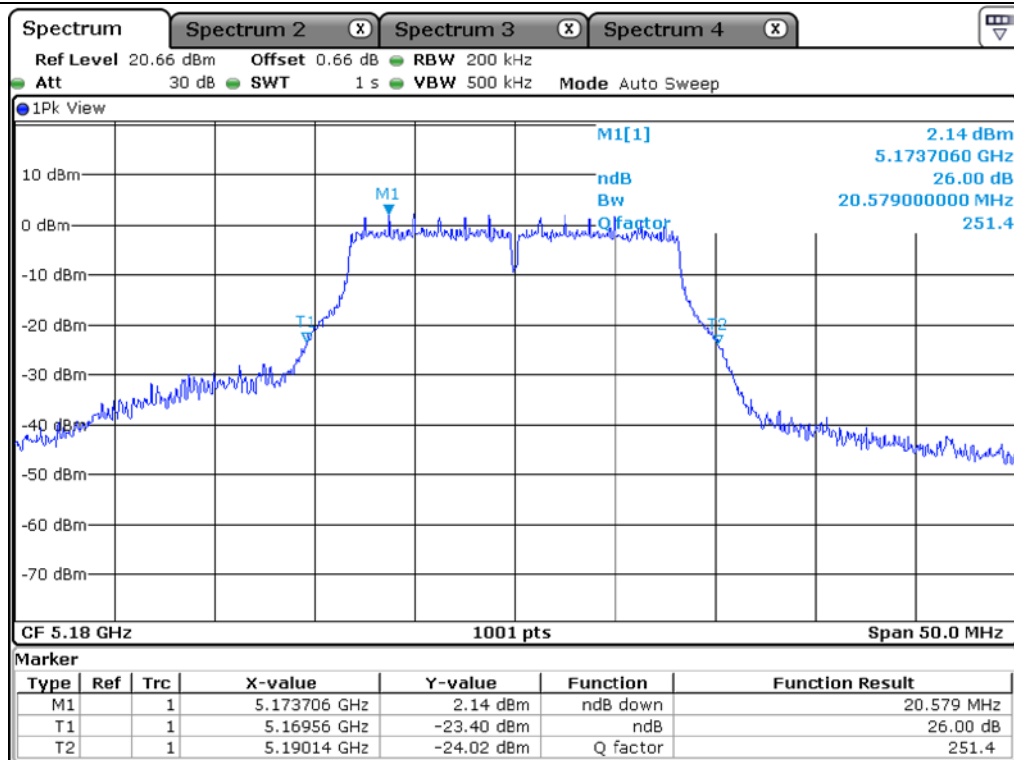
December 03, 2020 ~ December 09, 2020

7.4 Test data for 802.11a RLAN Mode

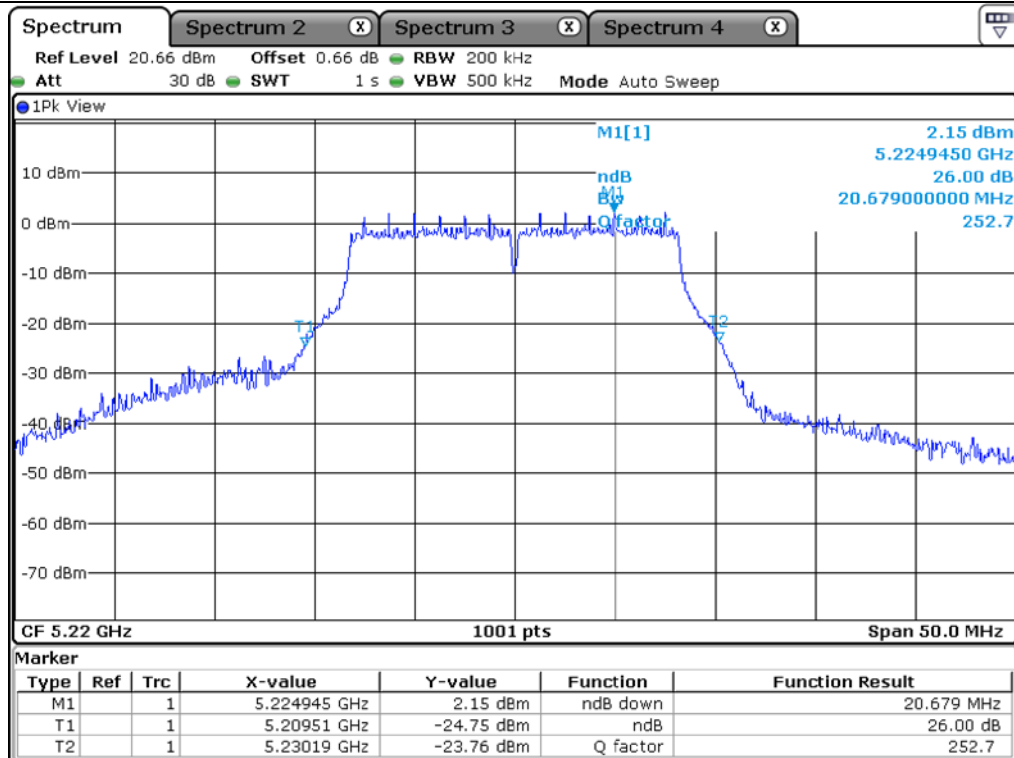
7.4.1 Test data for Antenna 0

-. Test Result : Pass

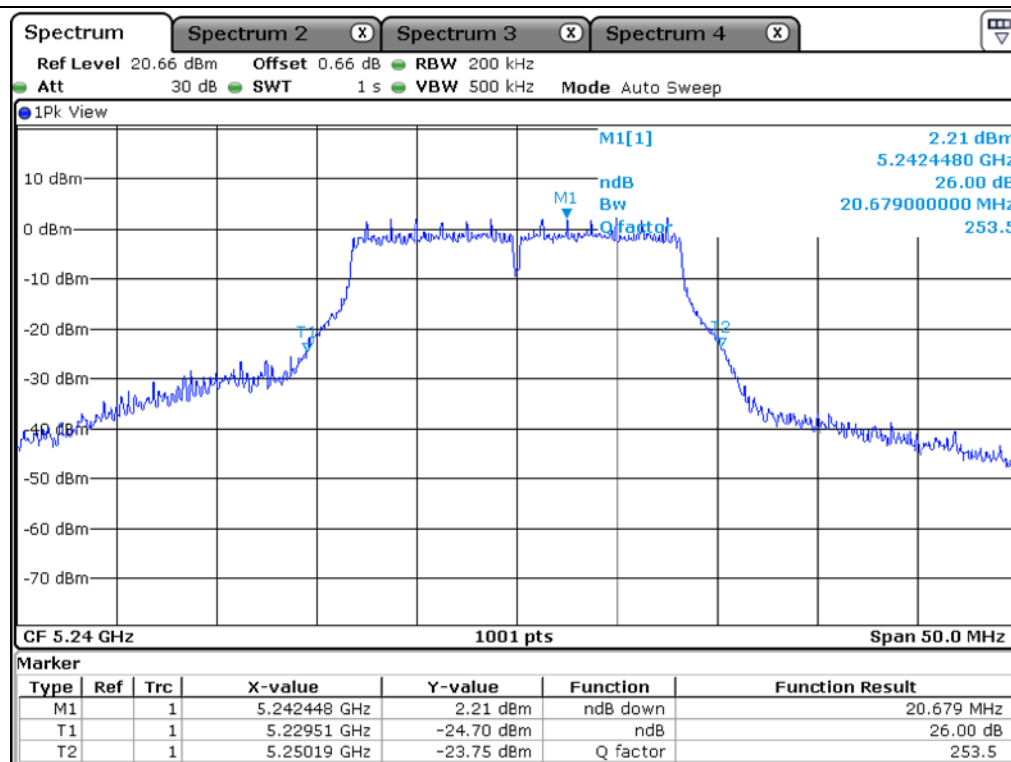
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180.00	20.58
	Middle	5 220.00	20.68
	High	5 240.00	20.68
5 250 ~ 5 350	Low	5 260.00	20.68
	Middle	5 300.00	20.68
	High	5 320.00	20.68
5 470 ~ 5 725	Low	5 500.00	20.68
	Middle	5 560.00	20.78
	High	5 700.00	20.68



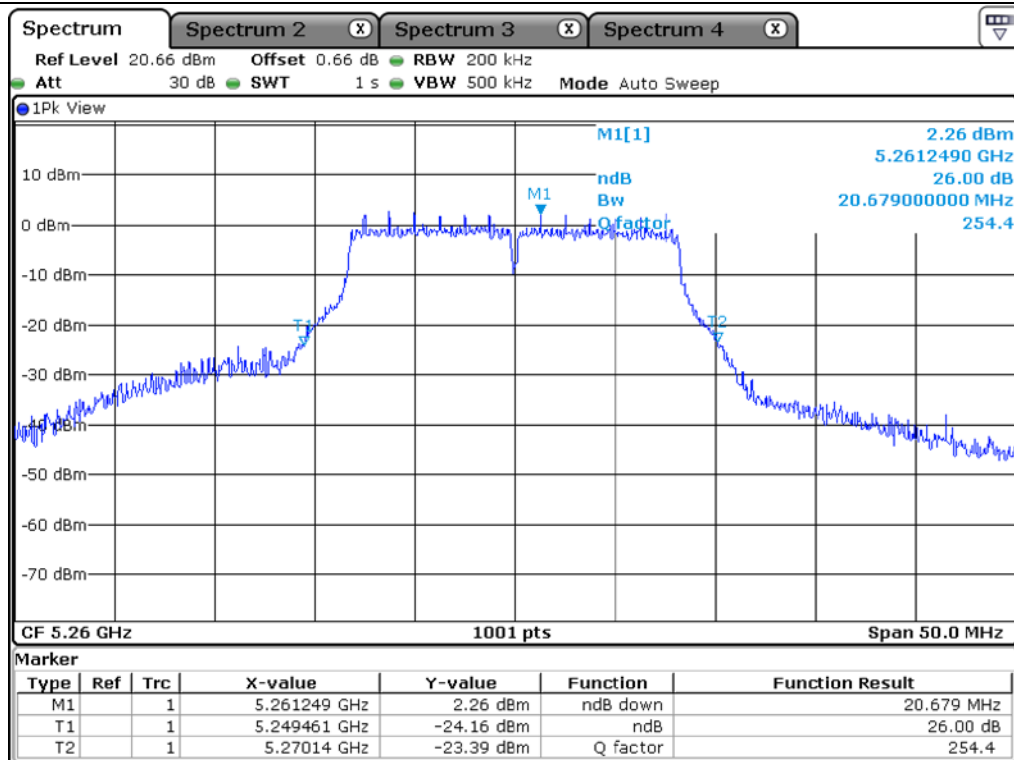
Low Channel (5 180 MHz)



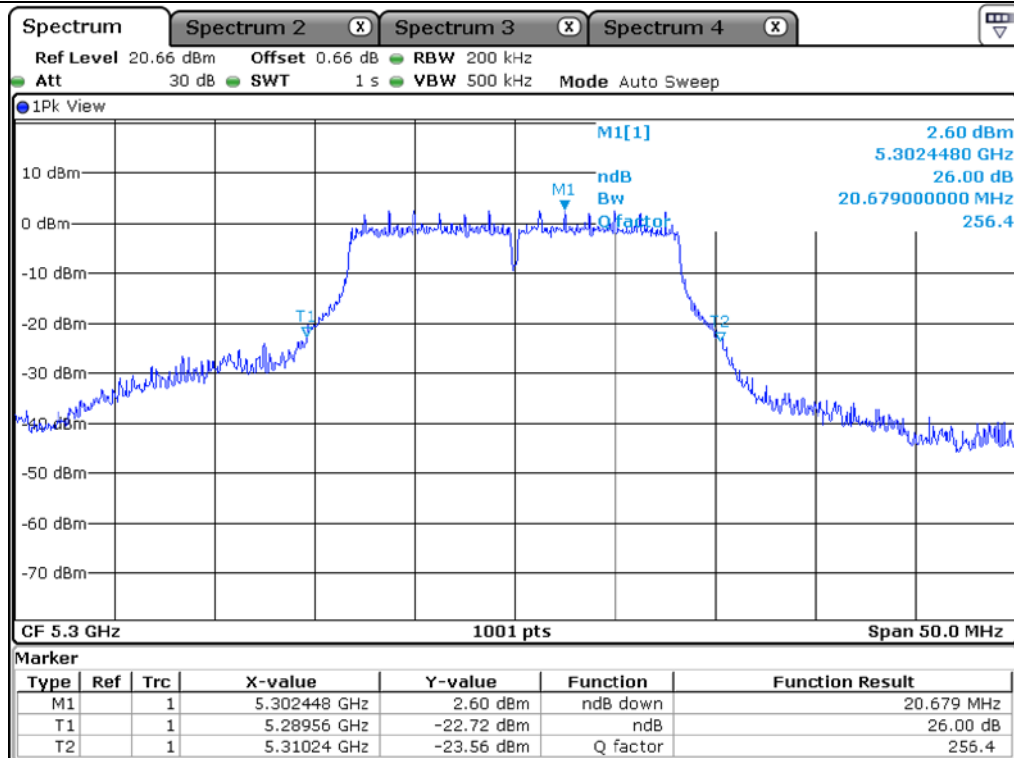
Middle Channel (5 220 MHz)



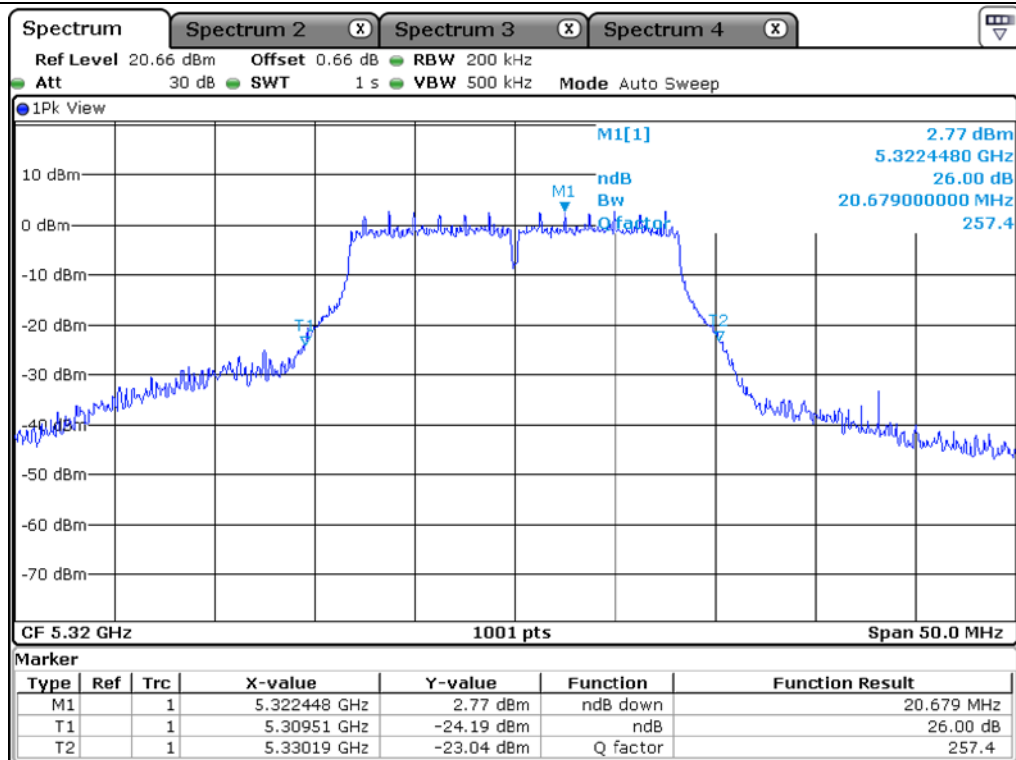
High Channel (5 240 MHz)



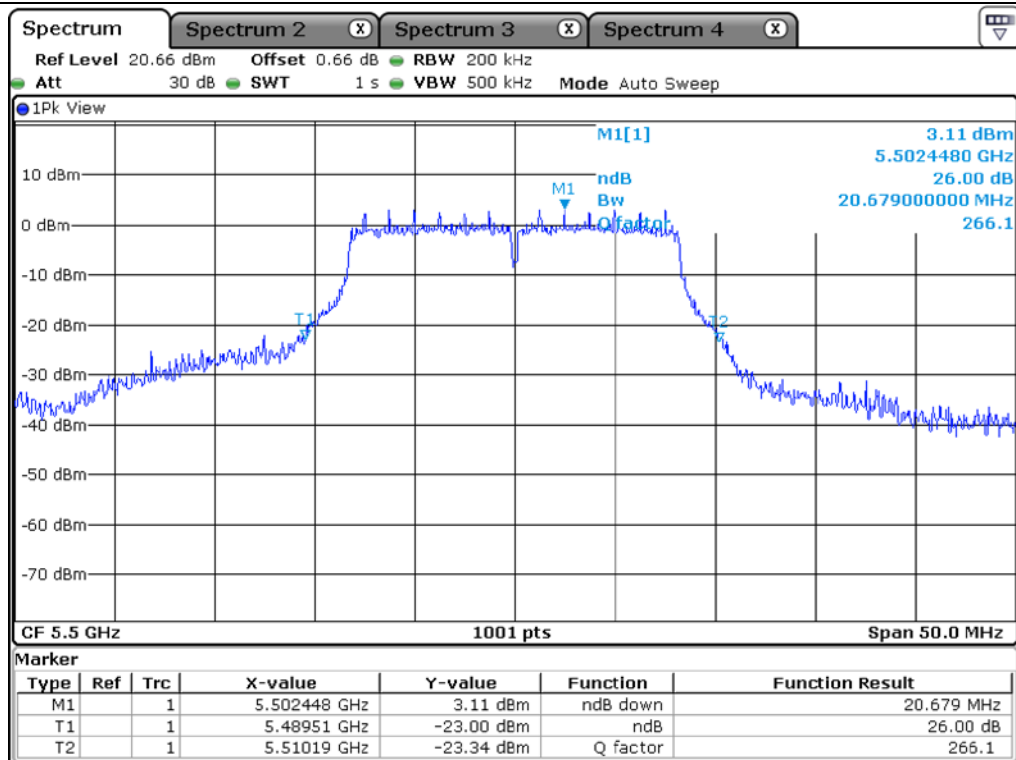
Low Channel (5 260 MHz)



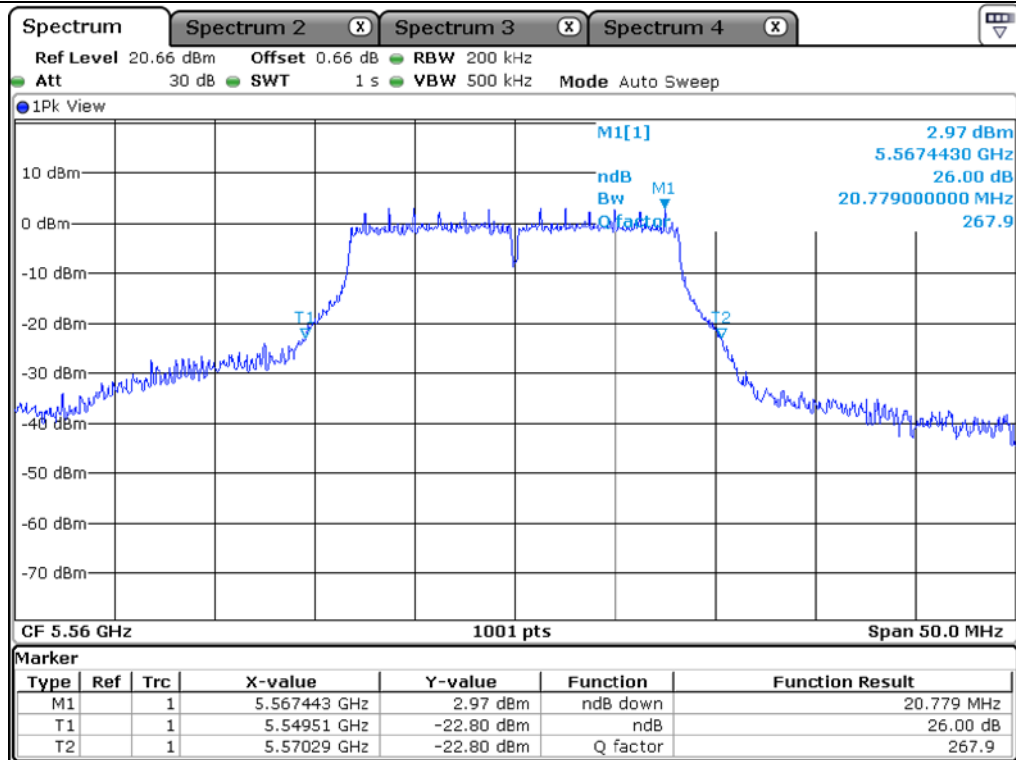
Middle Channel (5 300 MHz)



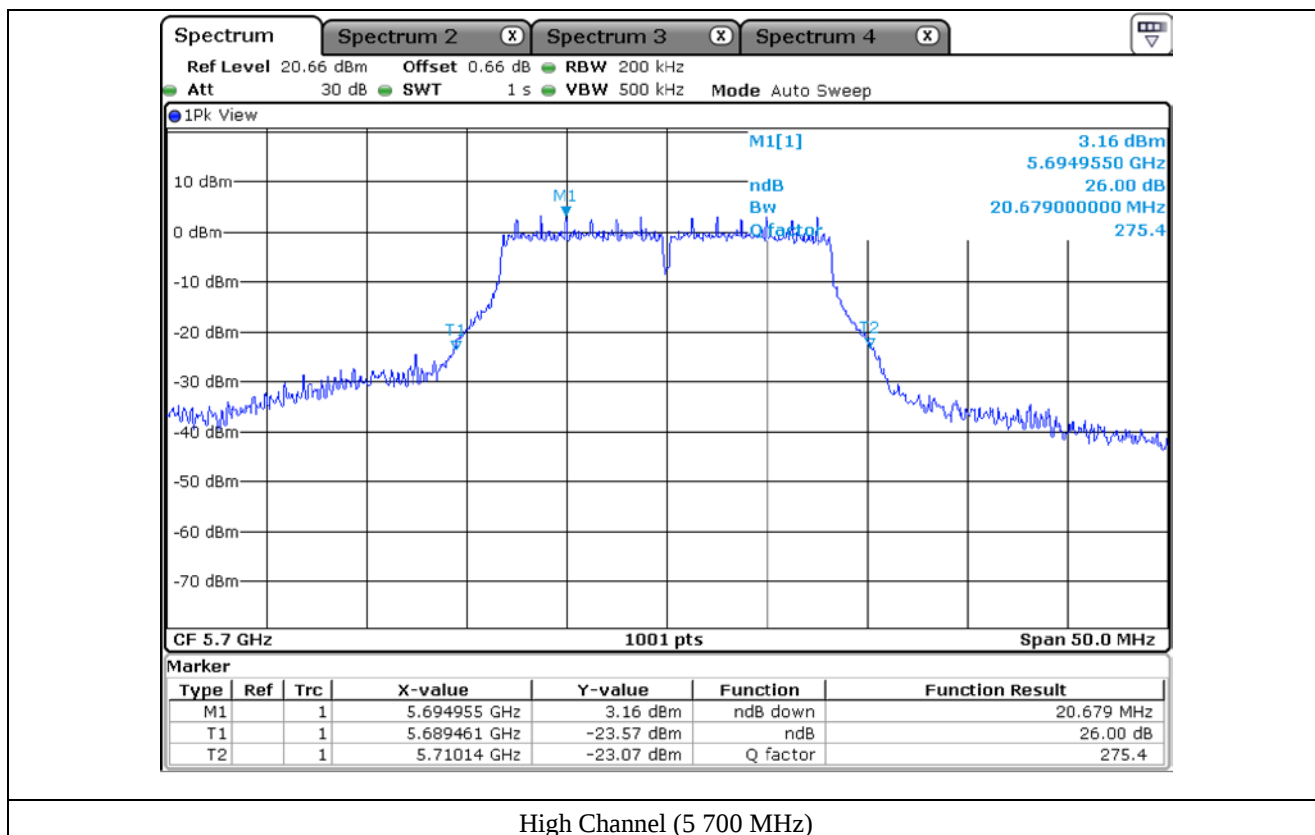
High Channel (5 320 MHz)



Low Channel (5 500 MHz)



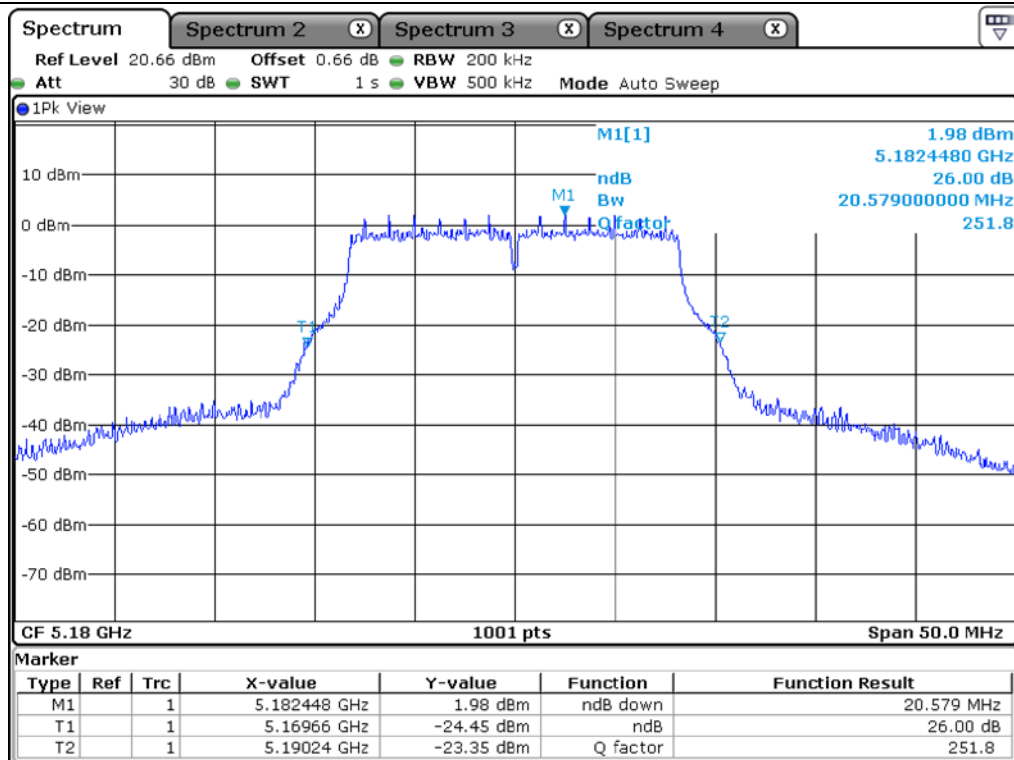
Middle Channel (5 560 MHz)



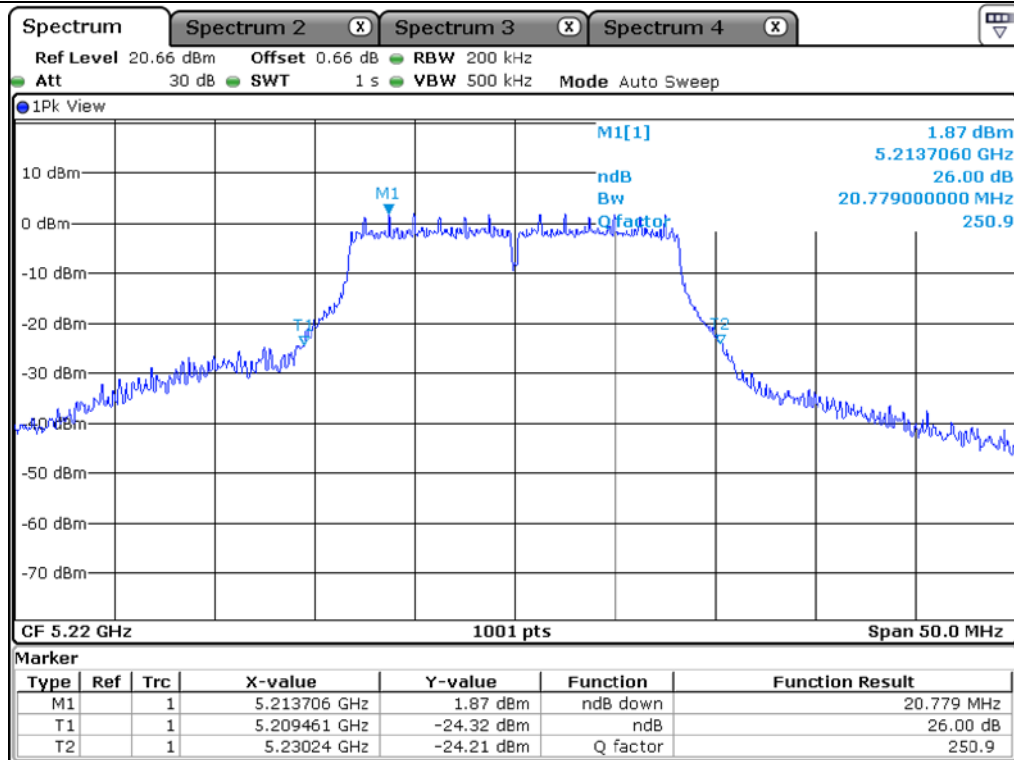
7.4.2 Test data for Antenna 1

-. Test Result : Pass

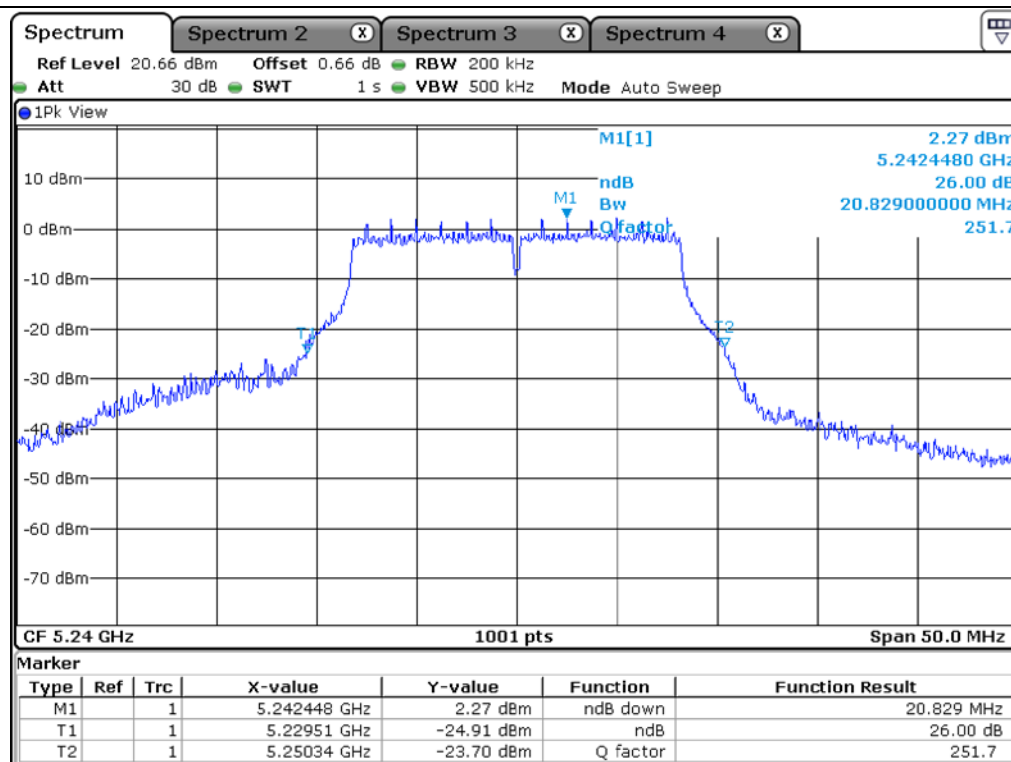
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180.00	20.58
	Middle	5 220.00	20.82
	High	5 240.00	20.82
5 250 ~ 5 350	Low	5 260.00	20.73
	Middle	5 300.00	20.63
	High	5 320.00	20.58
5 470 ~ 5 725	Low	5 500.00	20.68
	Middle	5 560.00	20.88
	High	5 700.00	20.68



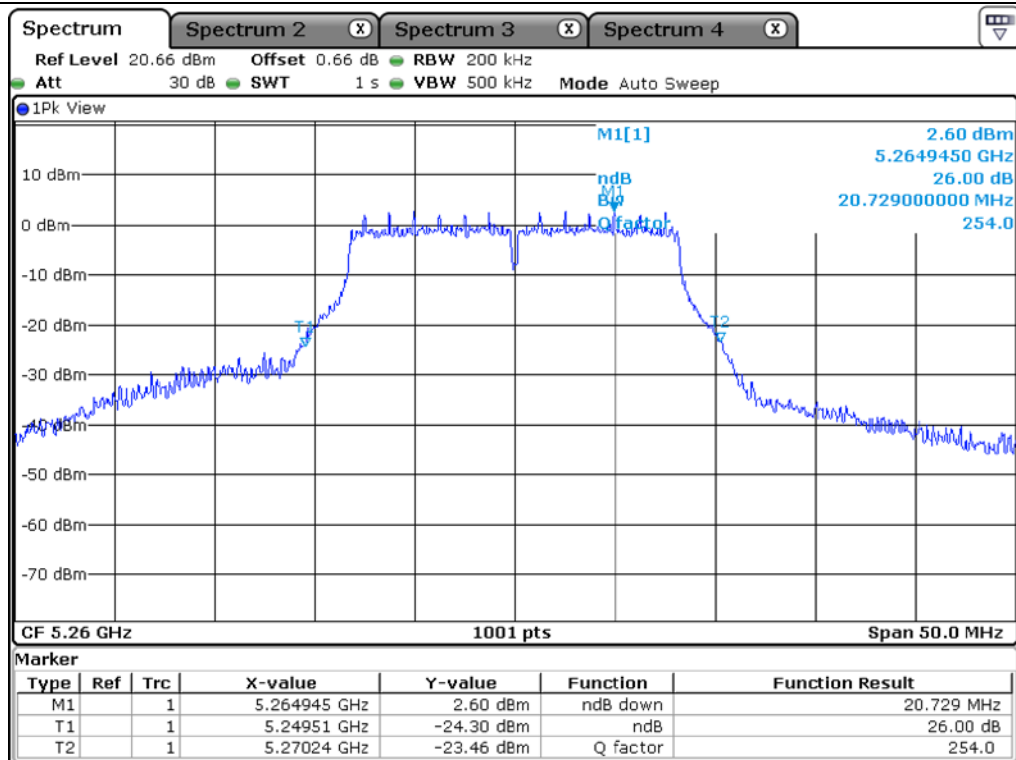
Low Channel (5 180 MHz)



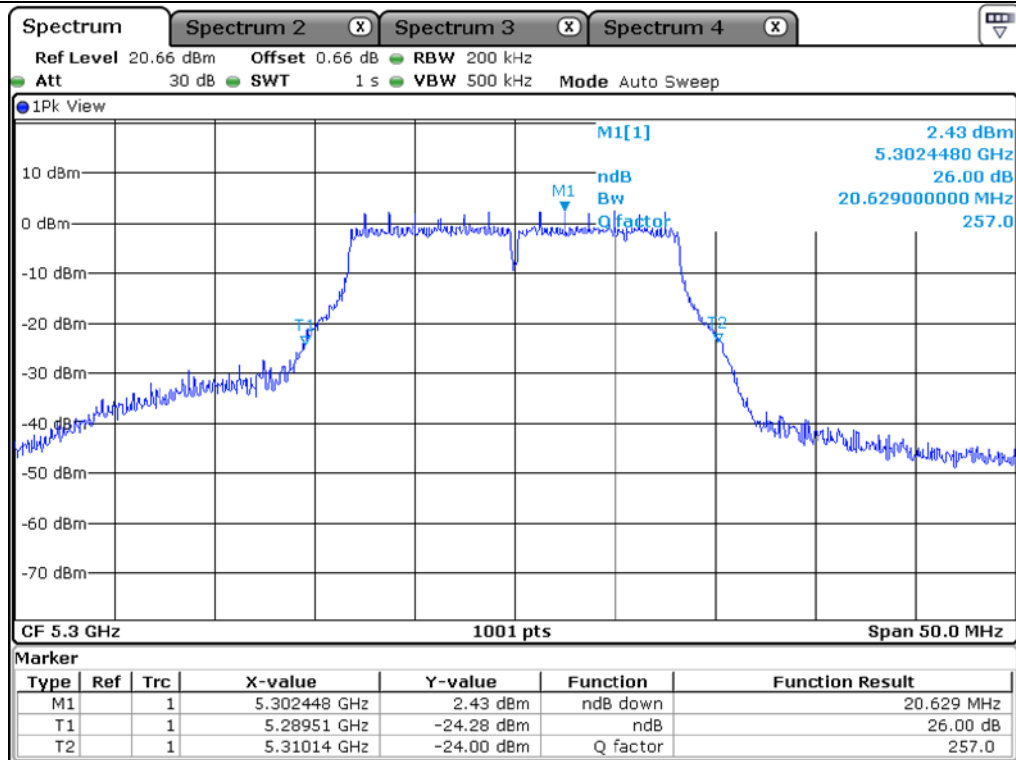
Middle Channel (5 220 MHz)



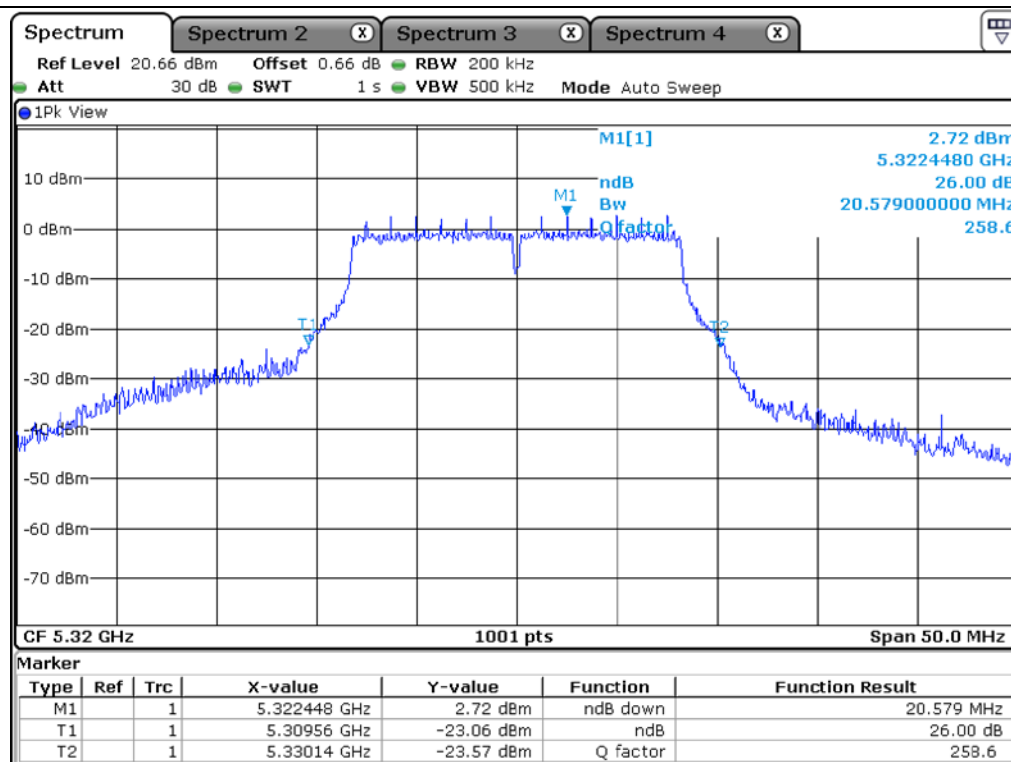
High Channel (5 240 MHz)



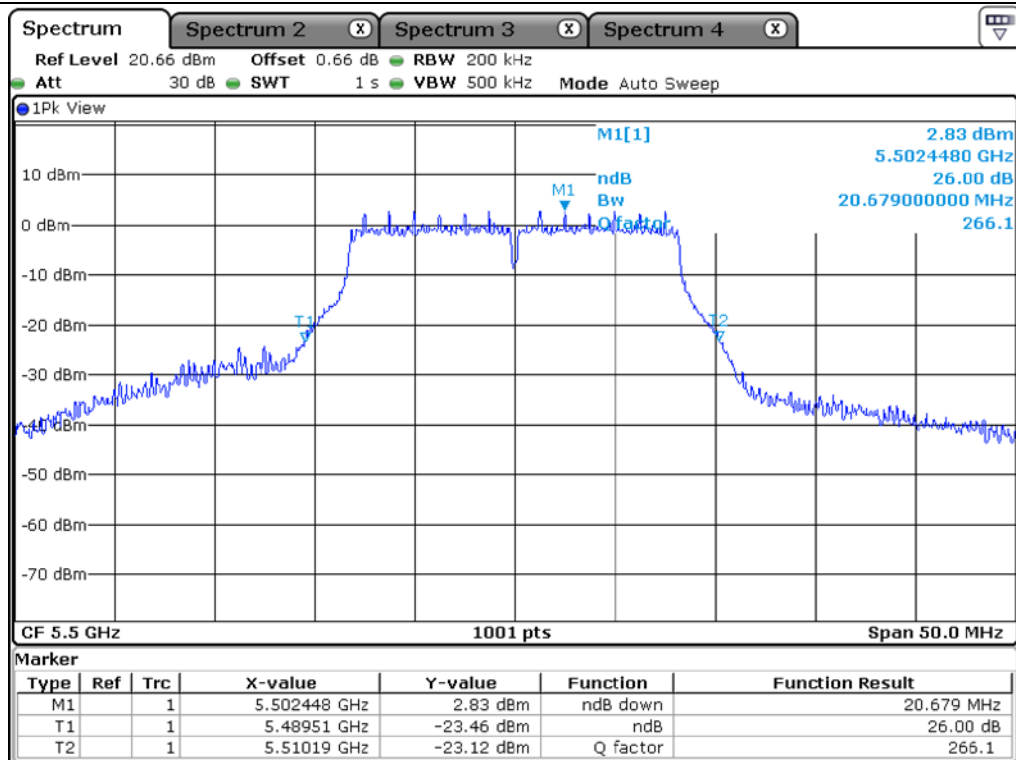
Low Channel (5 260 MHz)



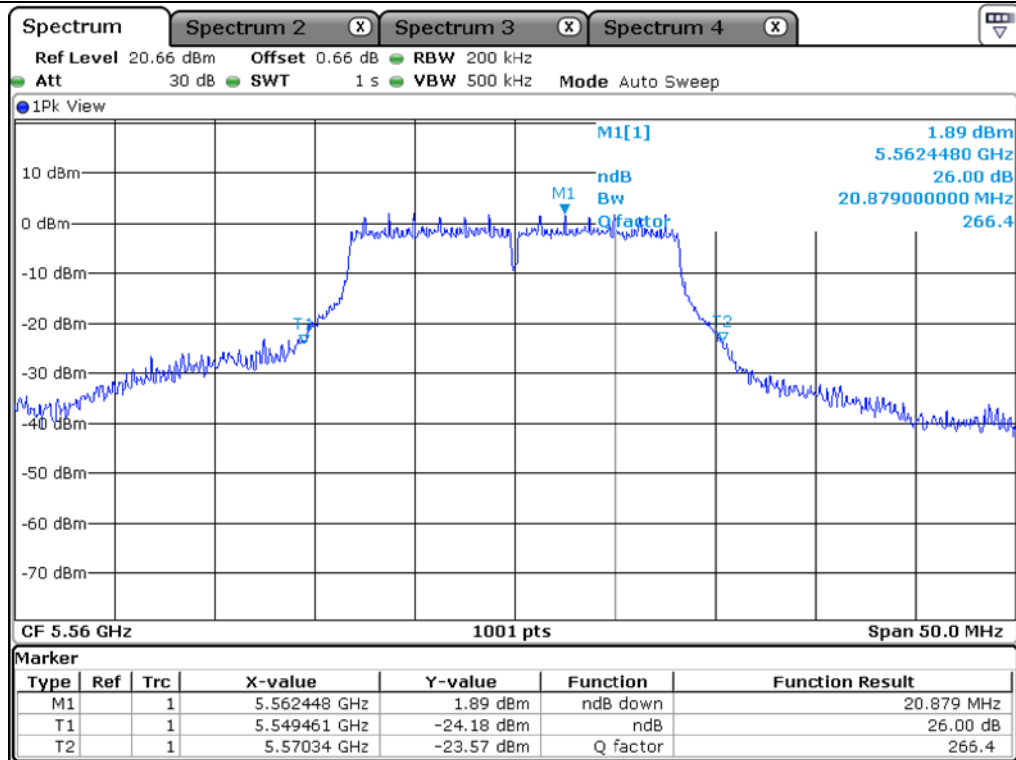
Middle Channel (5 300 MHz)



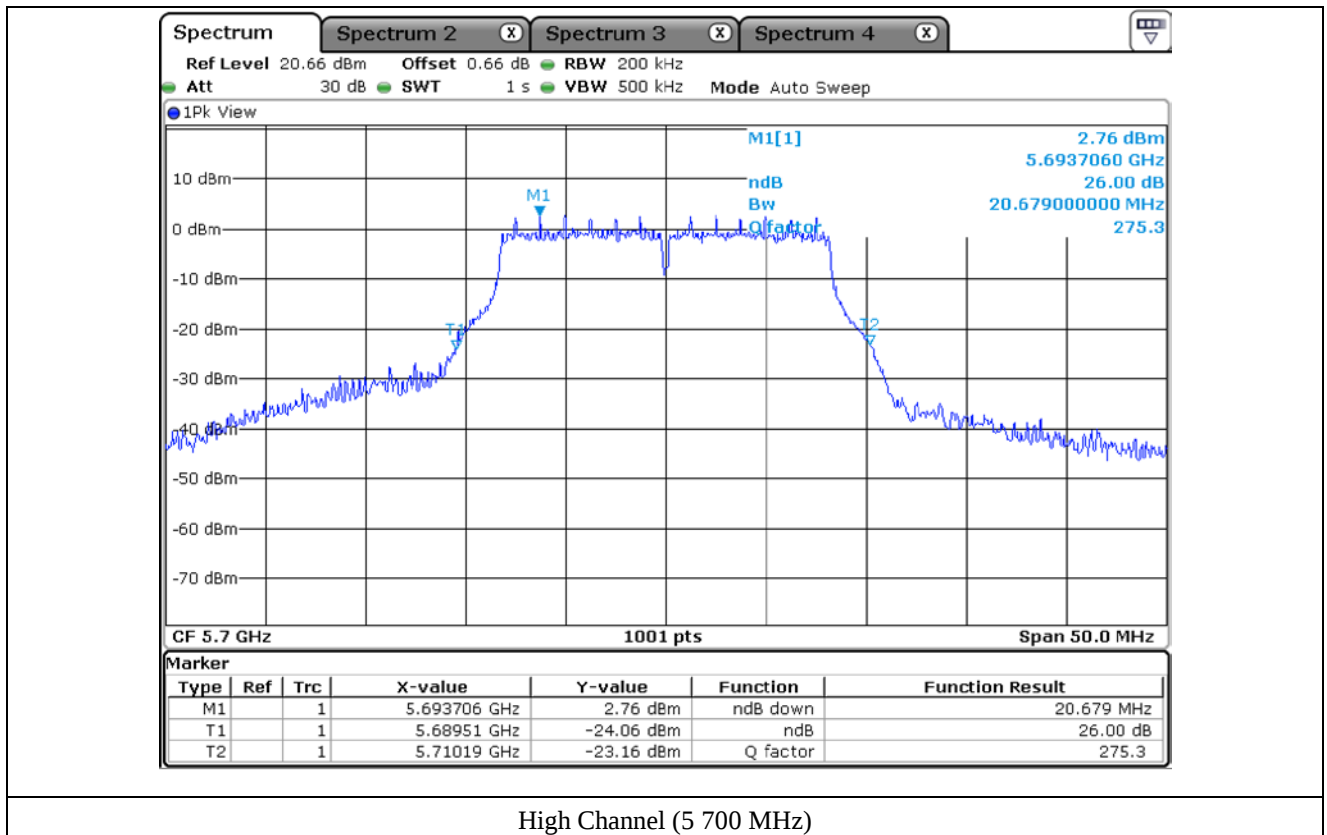
High Channel (5 320 MHz)



Low Channel (5 500 MHz)



Middle Channel (5 560 MHz)

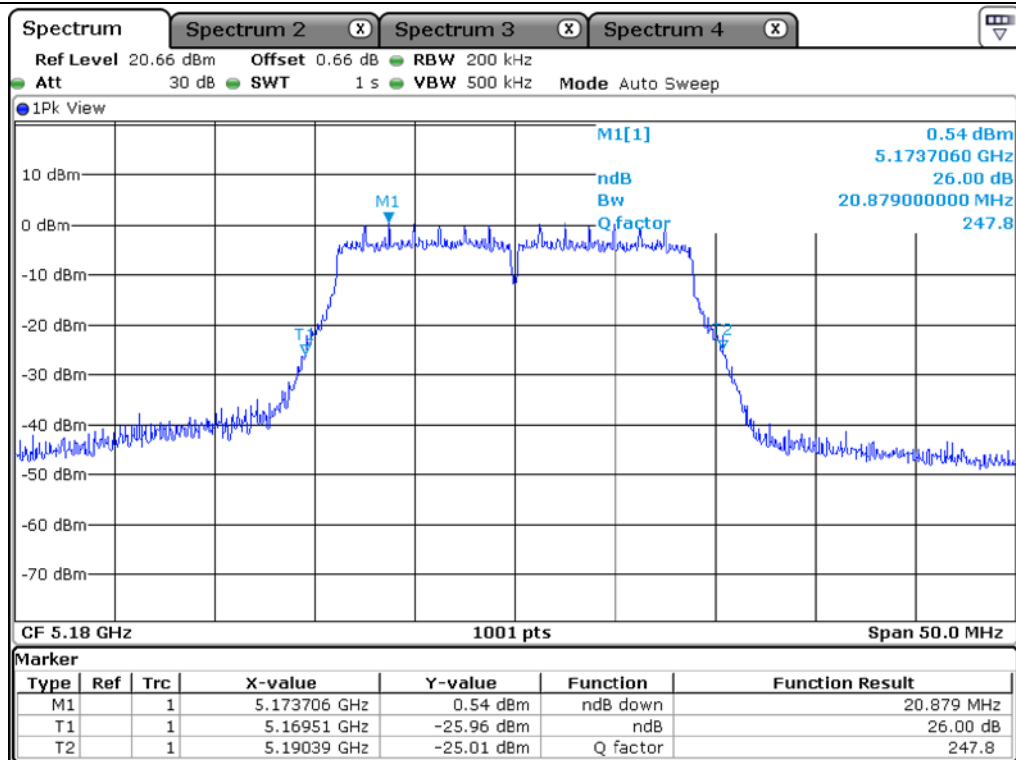


7.5 Test data for 802.11n_HT20 RLAN Mode

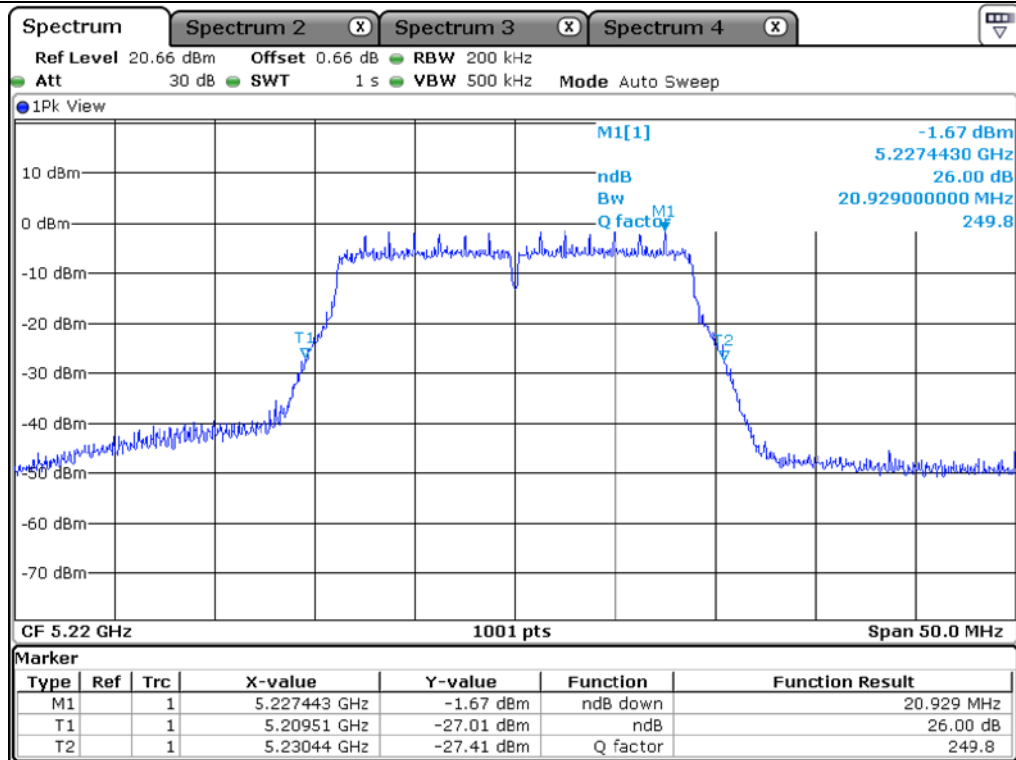
7.5.1 Test data for Antenna 0

-. Test Result : Pass

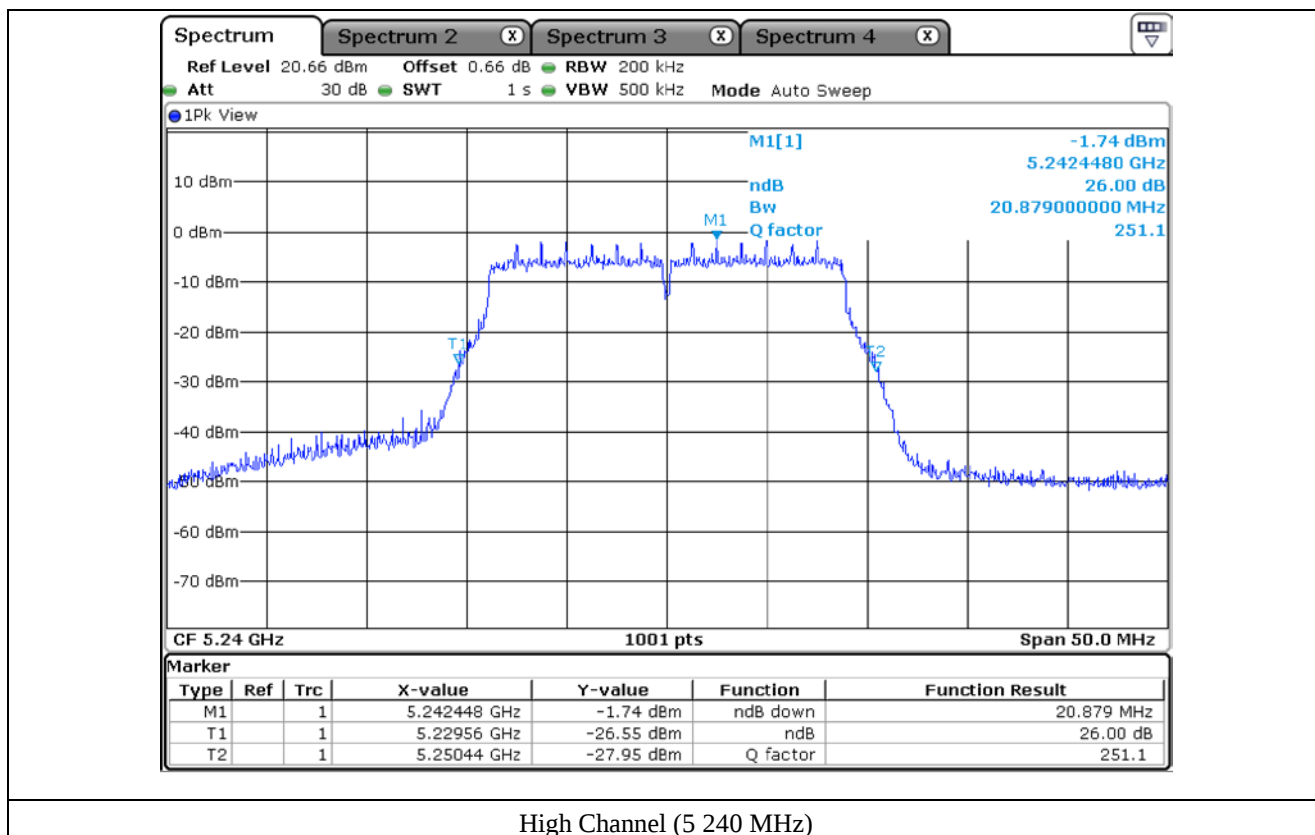
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180.00	20.88
	Middle	5 220.00	20.93
	High	5 240.00	20.88
5 250 ~ 5 350	Low	5 260.00	21.18
	Middle	5 300.00	21.18
	High	5 320.00	21.18
5 470 ~ 5 725	Low	5 500.00	21.18
	Middle	5 560.00	21.23
	High	5 700.00	21.18

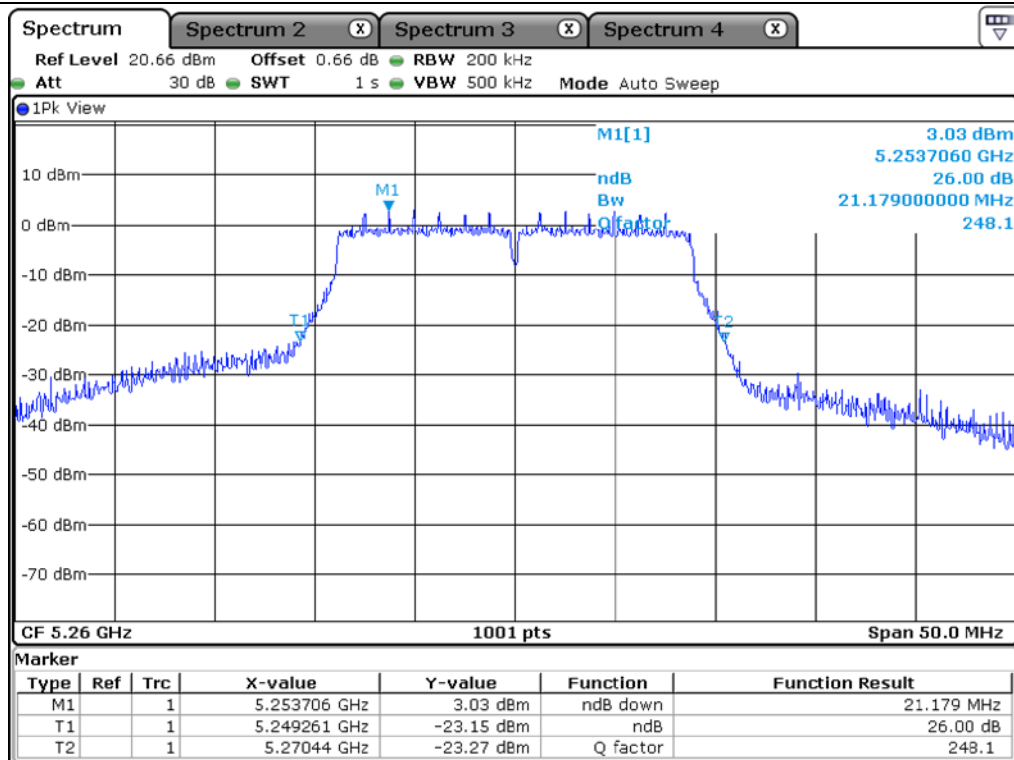


Low Channel (5 180 MHz)

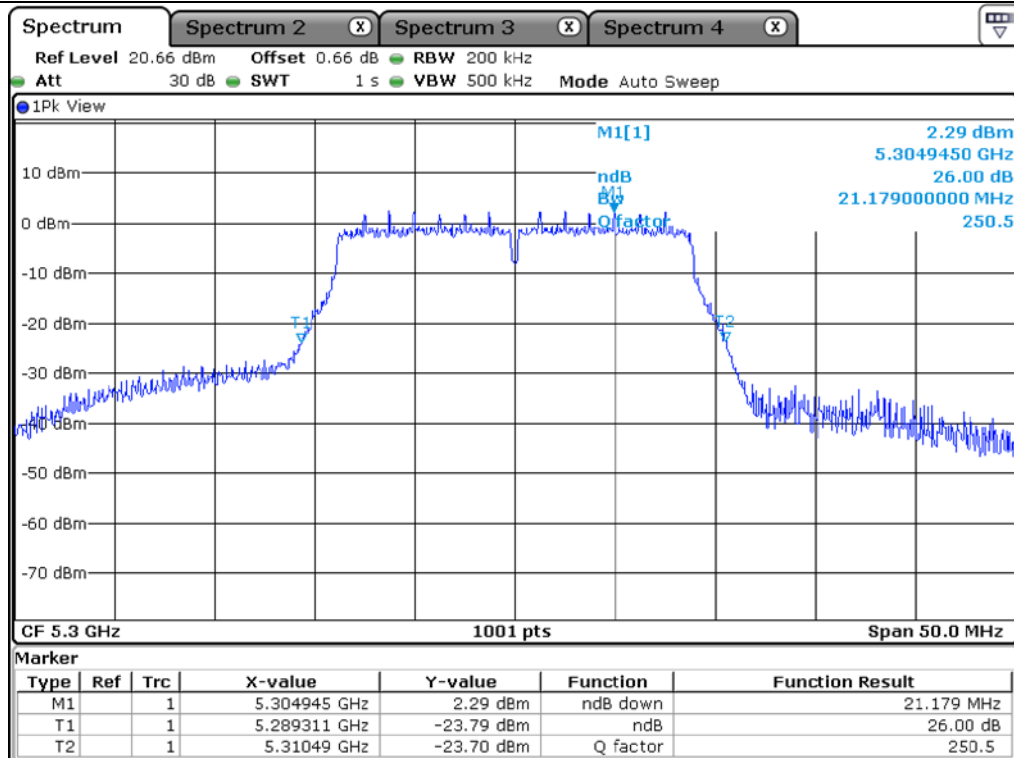


Middle Channel (5 220 MHz)

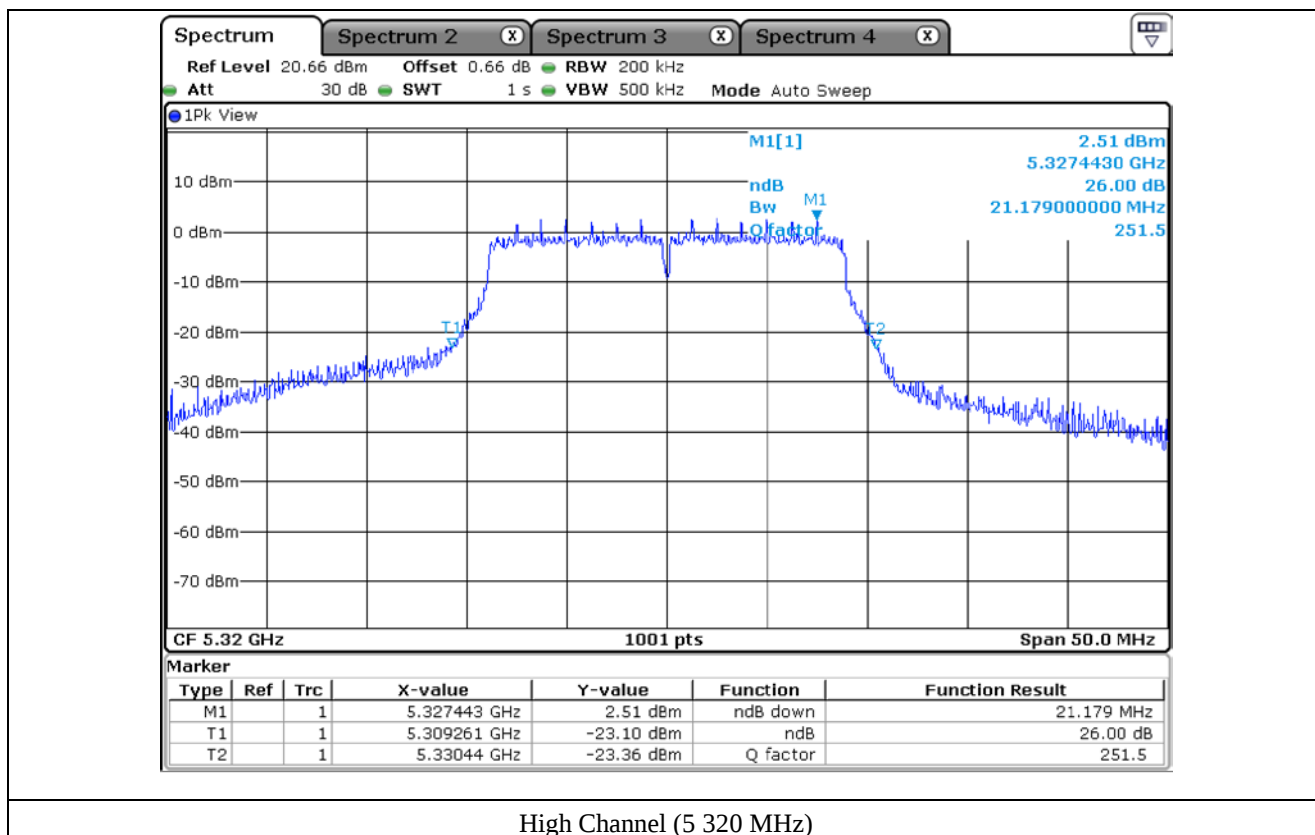


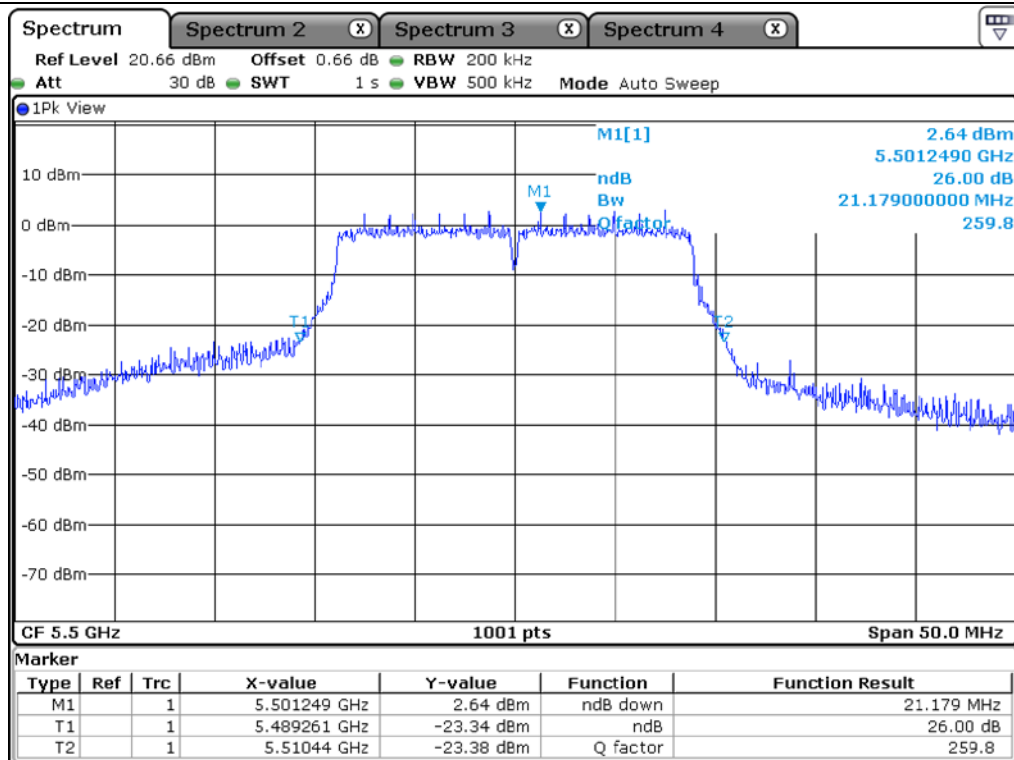


Low Channel (5 260 MHz)

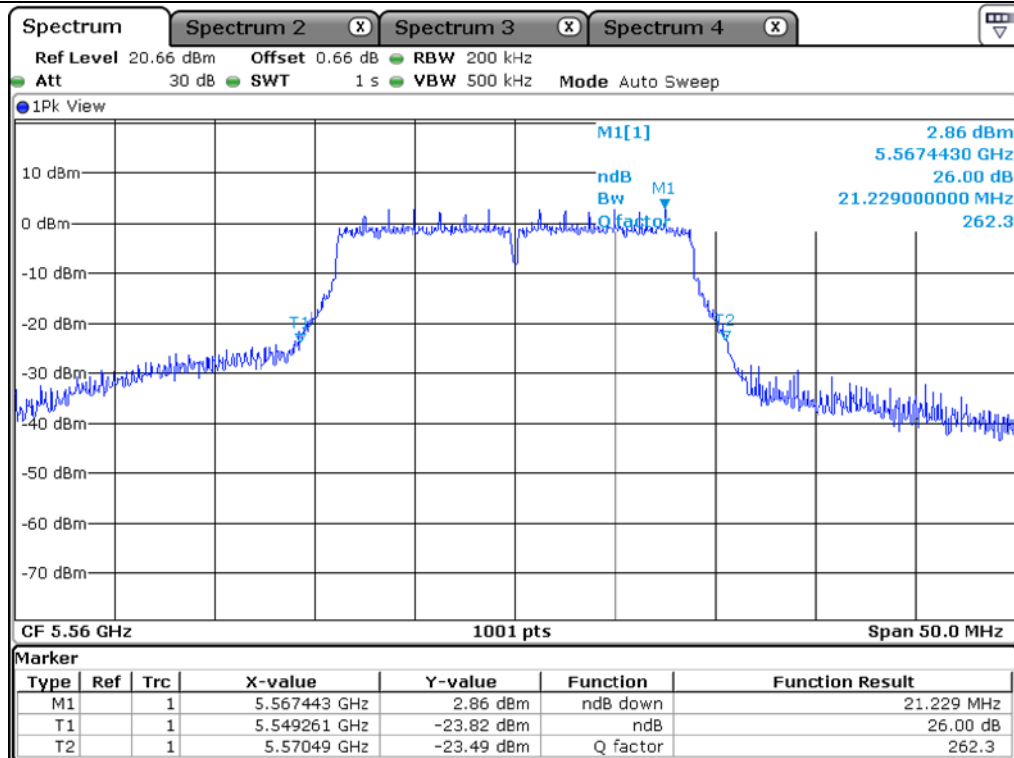


Middle Channel (5 300 MHz)

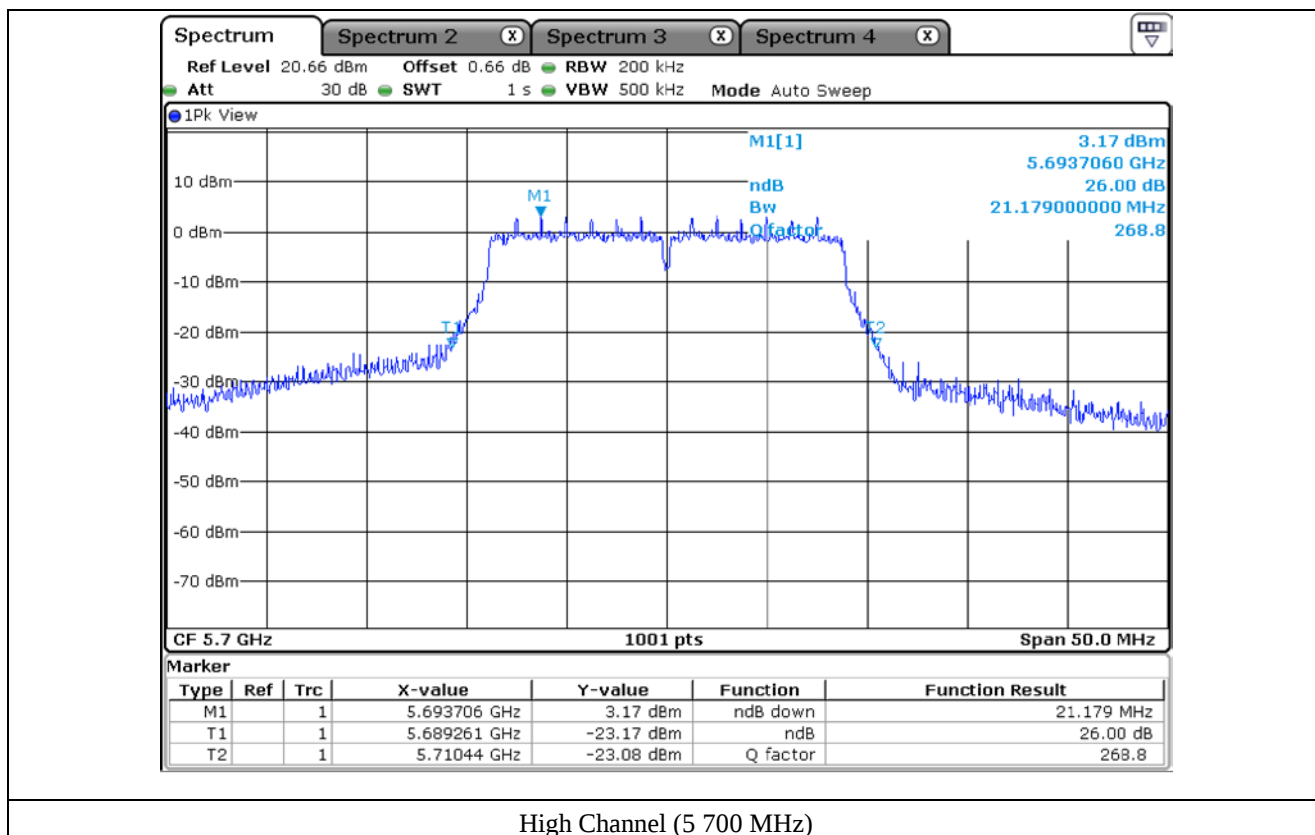




Low Channel (5 500 MHz)



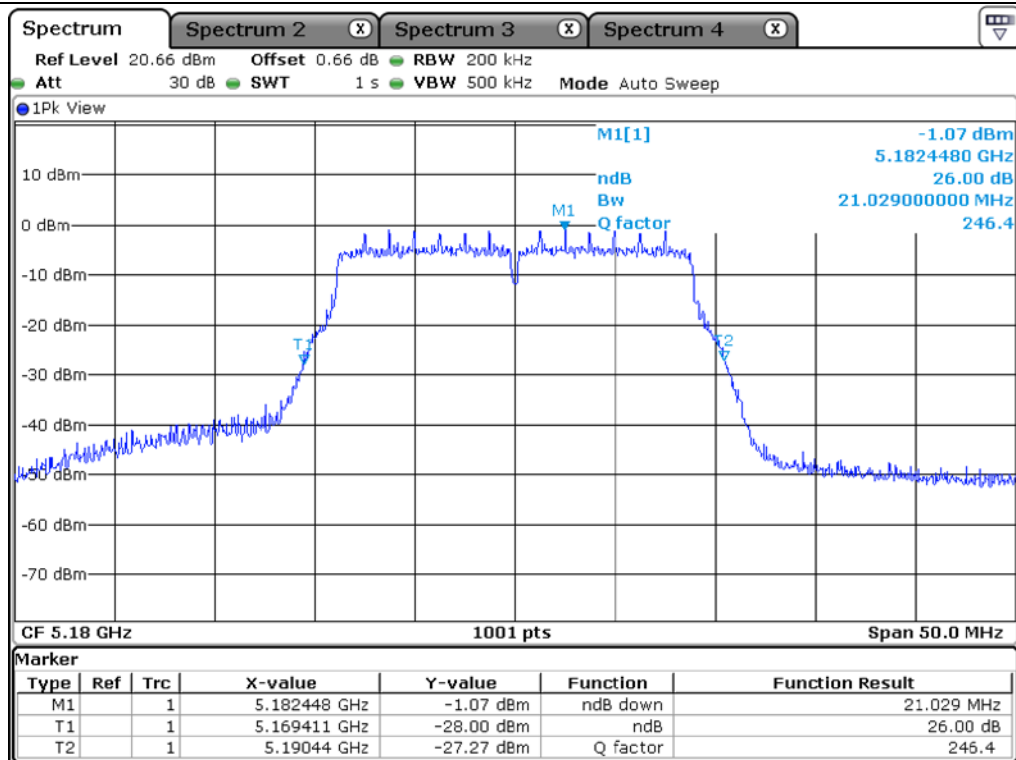
Middle Channel (5 560 MHz)



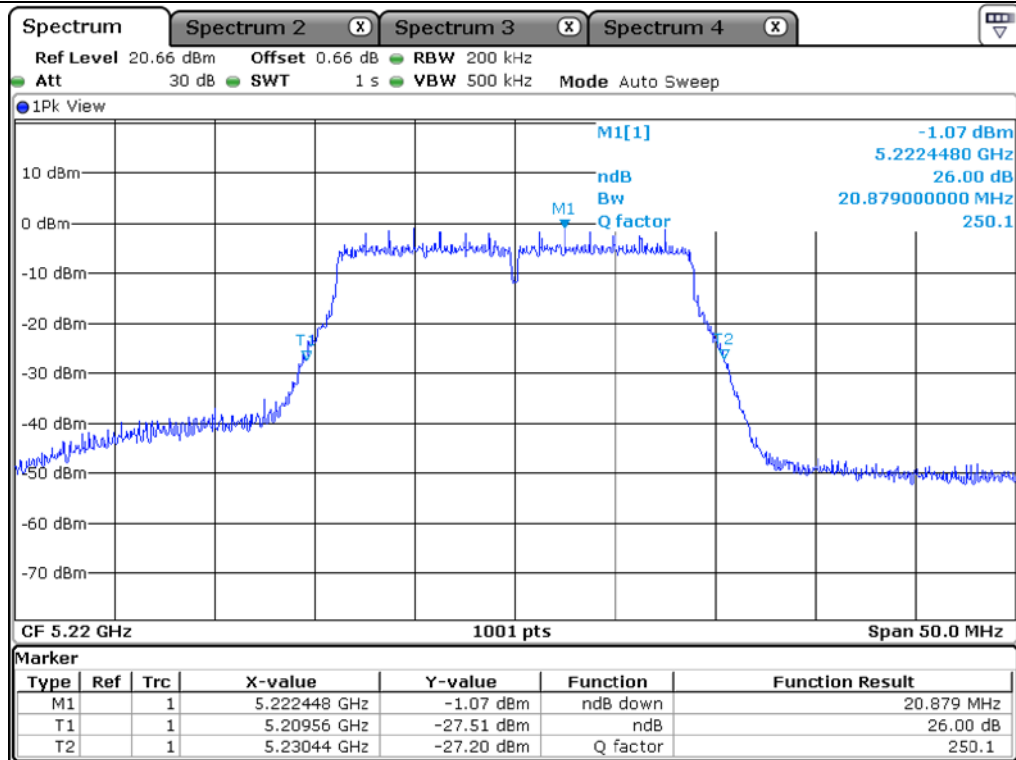
7.5.2 Test data for Antenna 1

-. Test Result : Pass

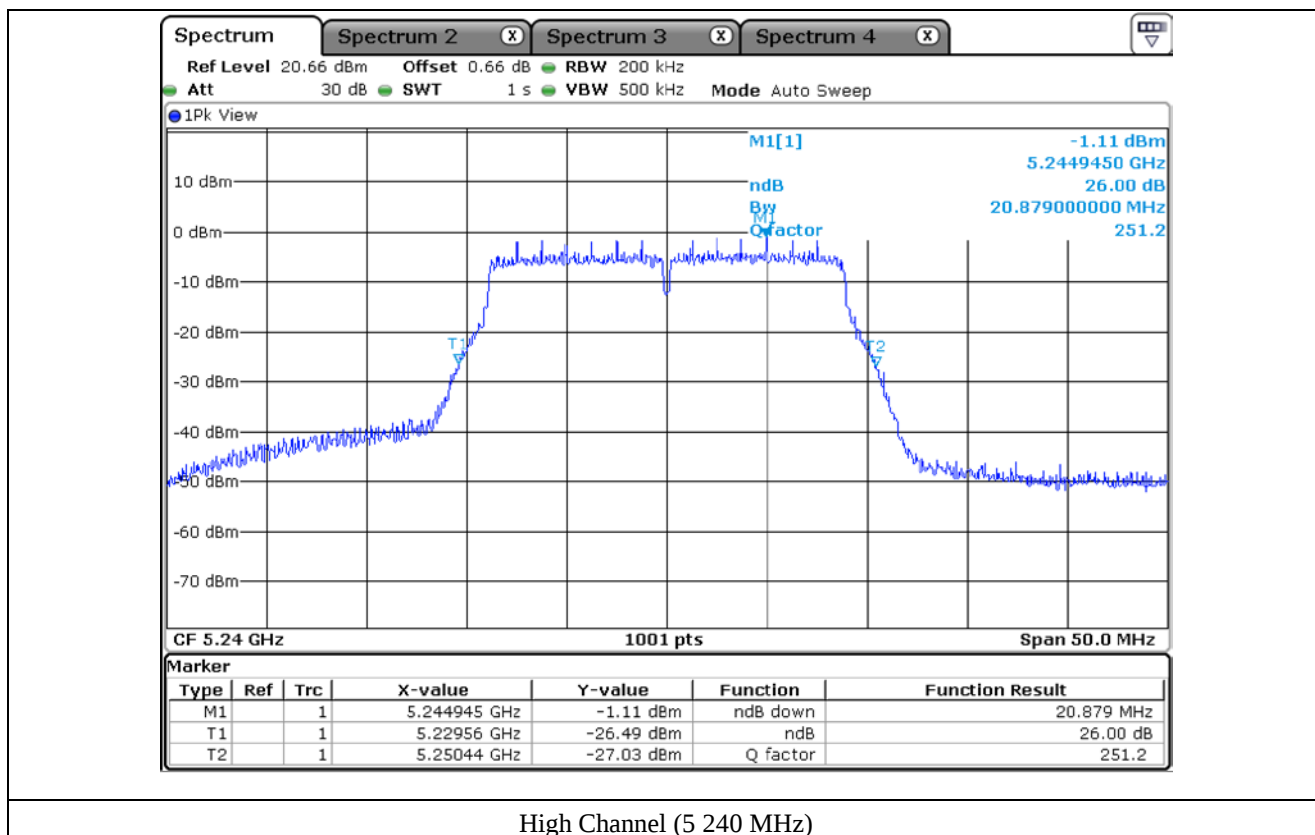
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180.00	21.03
	Middle	5 220.00	20.88
	High	5 240.00	20.88
5 250 ~ 5 350	Low	5 260.00	21.08
	Middle	5 300.00	21.13
	High	5 320.00	21.18
5 470 ~ 5 725	Low	5 500.00	21.23
	Middle	5 560.00	20.98
	High	5 700.00	21.13

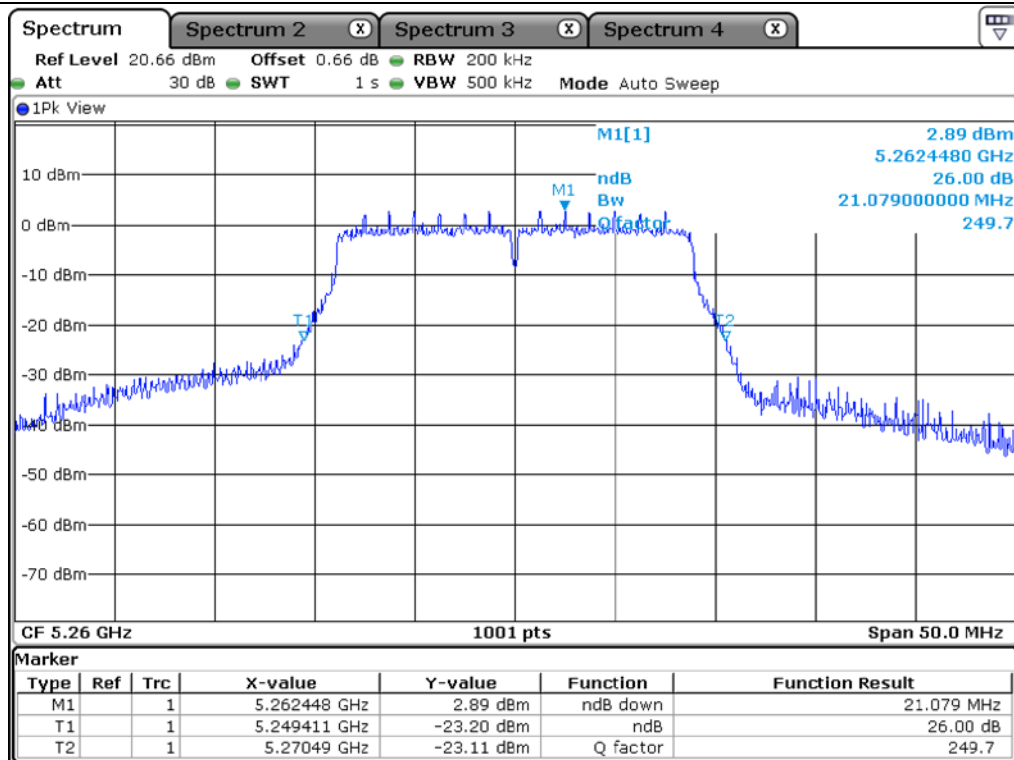


Low Channel (5 180 MHz)

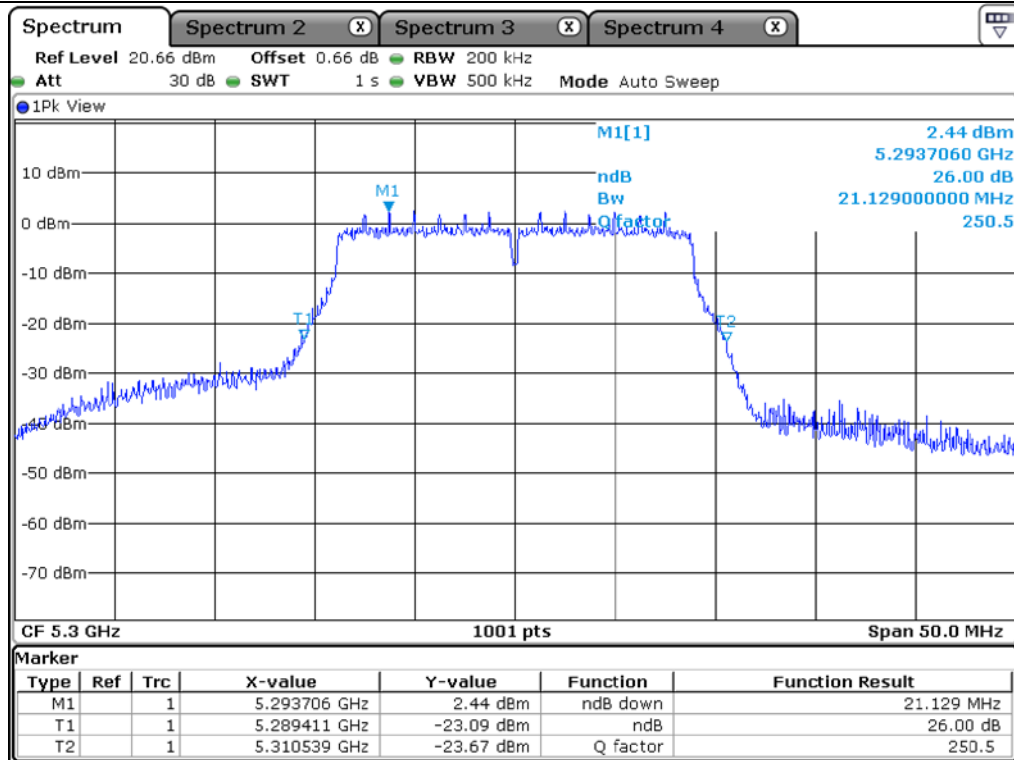


Middle Channel (5 220 MHz)

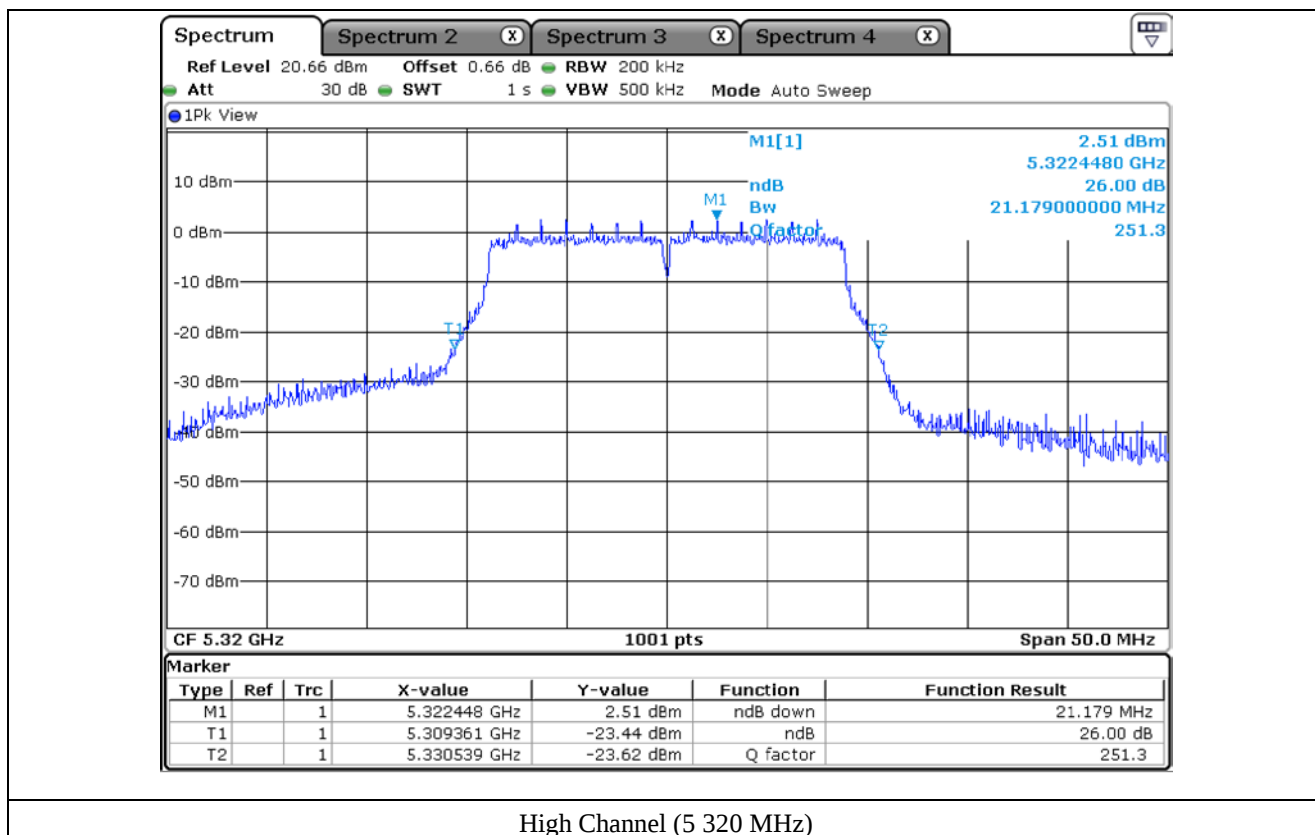


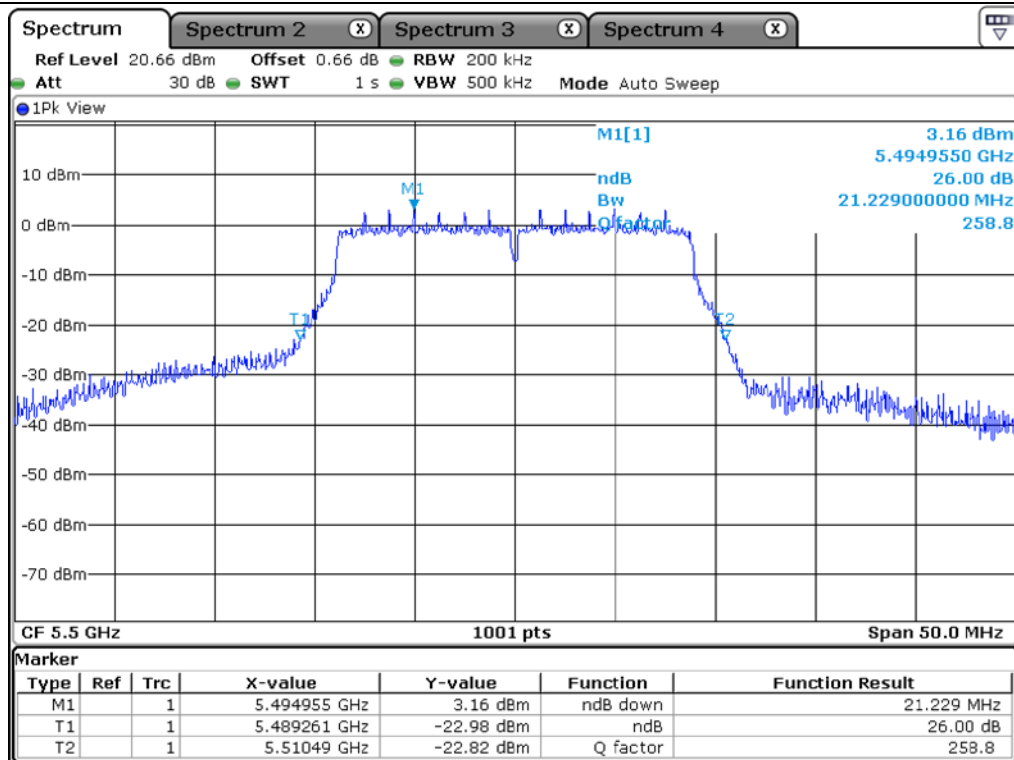


Low Channel (5 260 MHz)

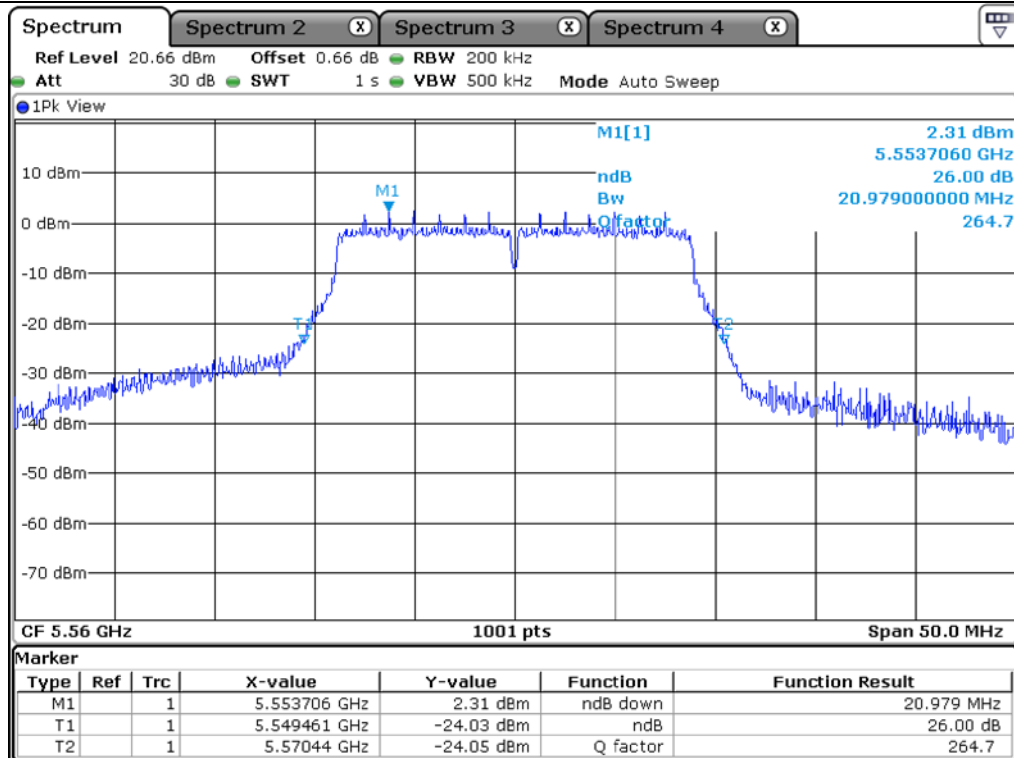


Middle Channel (5 300 MHz)

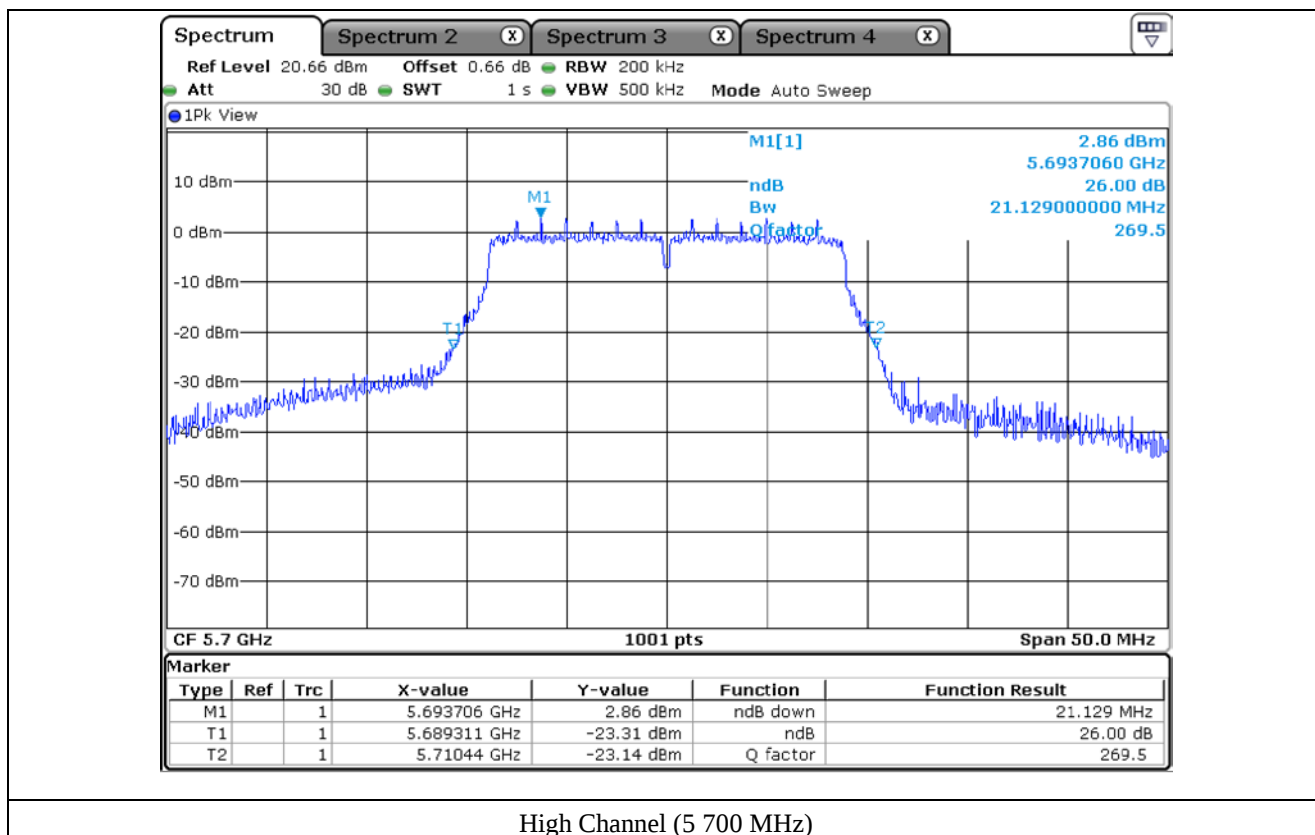




Low Channel (5 500 MHz)



Middle Channel (5 560 MHz)

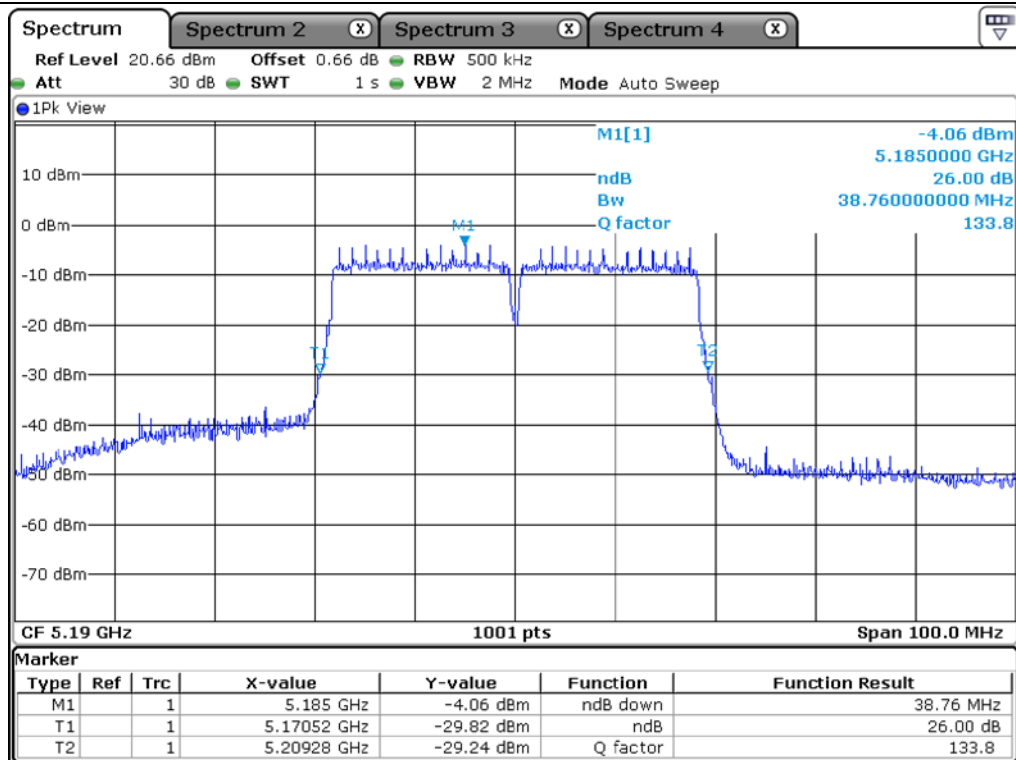


7.6 Test data for 802.11n_HT40 RLAN Mode

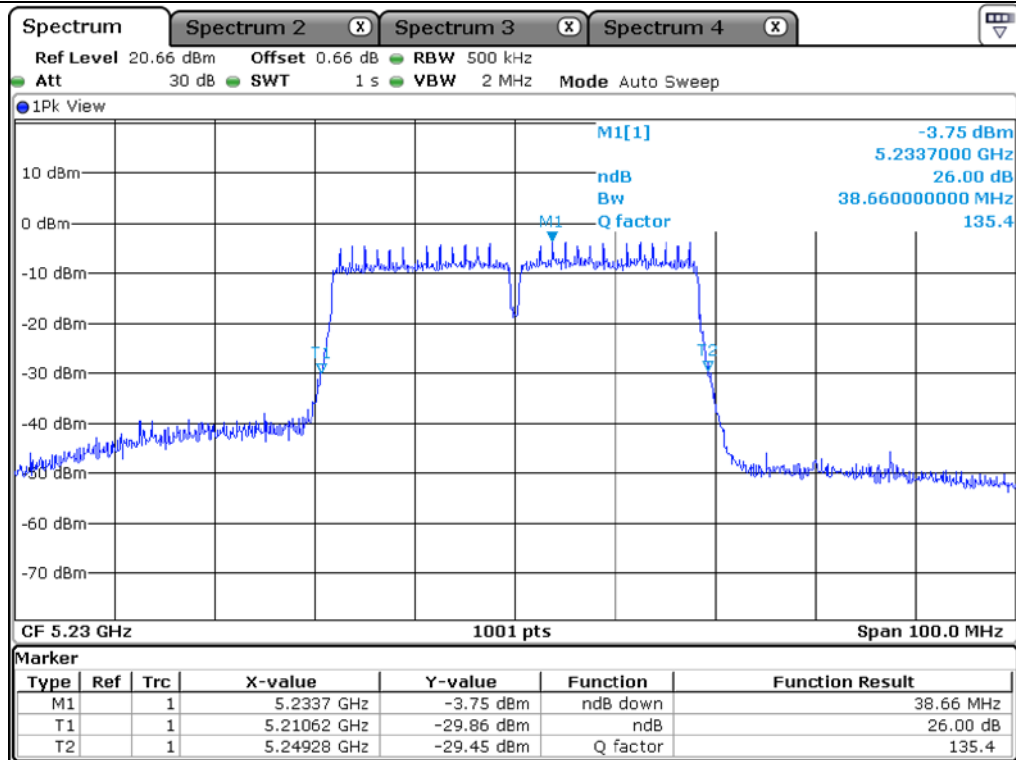
7.6.1 Test data for Antenna 0

-. Test Result : Pass

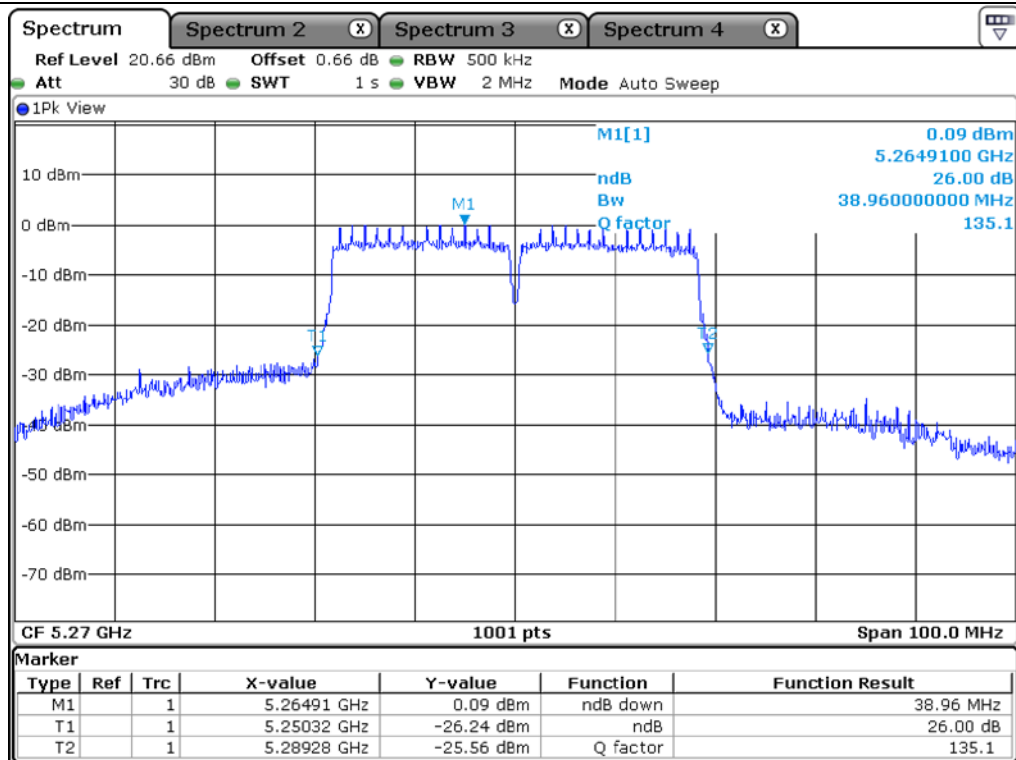
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 190.00	38.76
	High	5 230.00	38.66
5 250 ~ 5 350	Low	5 270.00	38.96
	High	5 310.00	38.96
5 470 ~ 5 725	Low	5 510.00	38.96
	Middle	5 550.00	39.16
	High	5 670.00	39.06



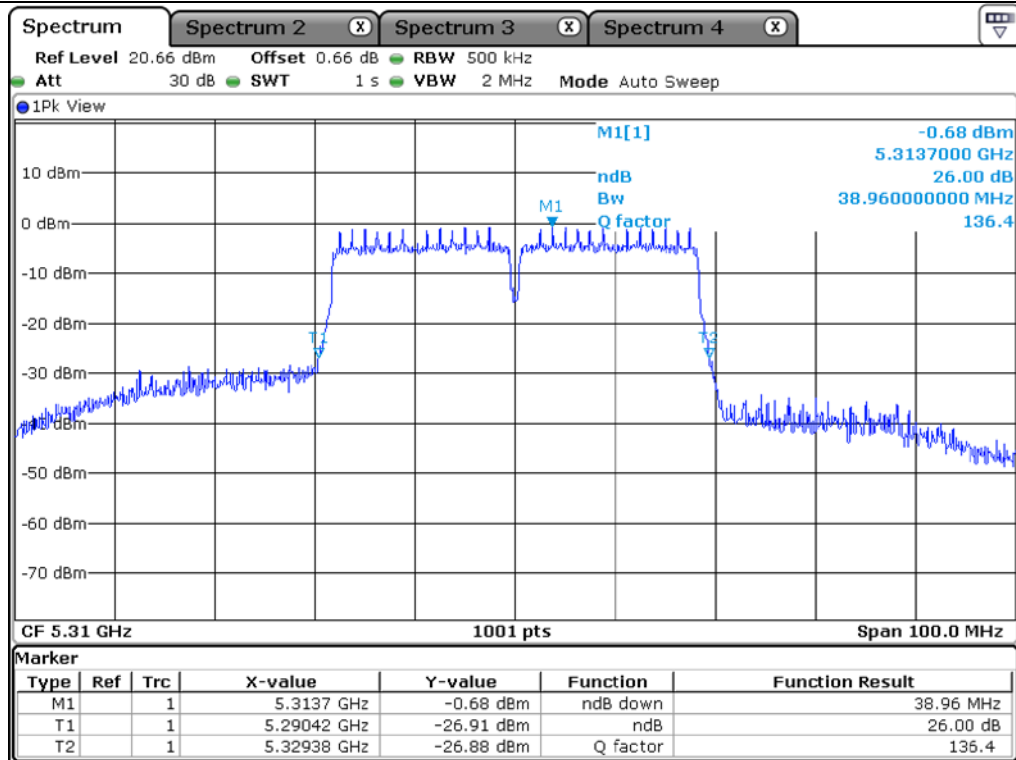
Low Channel (5 190 MHz)



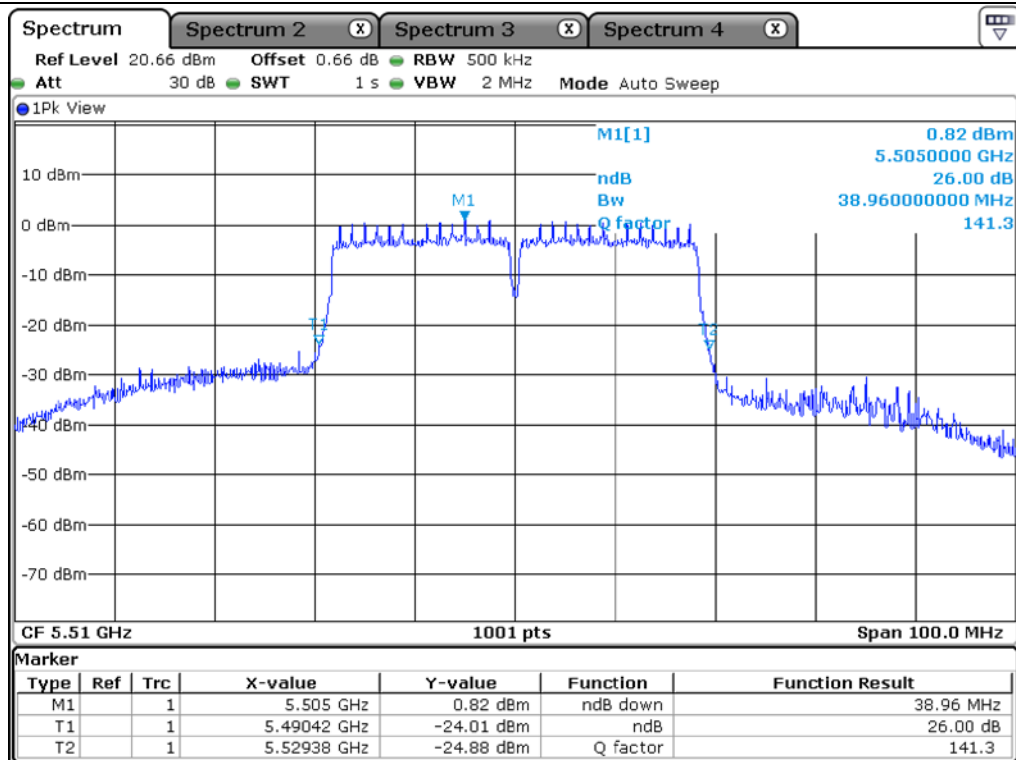
High Channel (5 230 MHz)



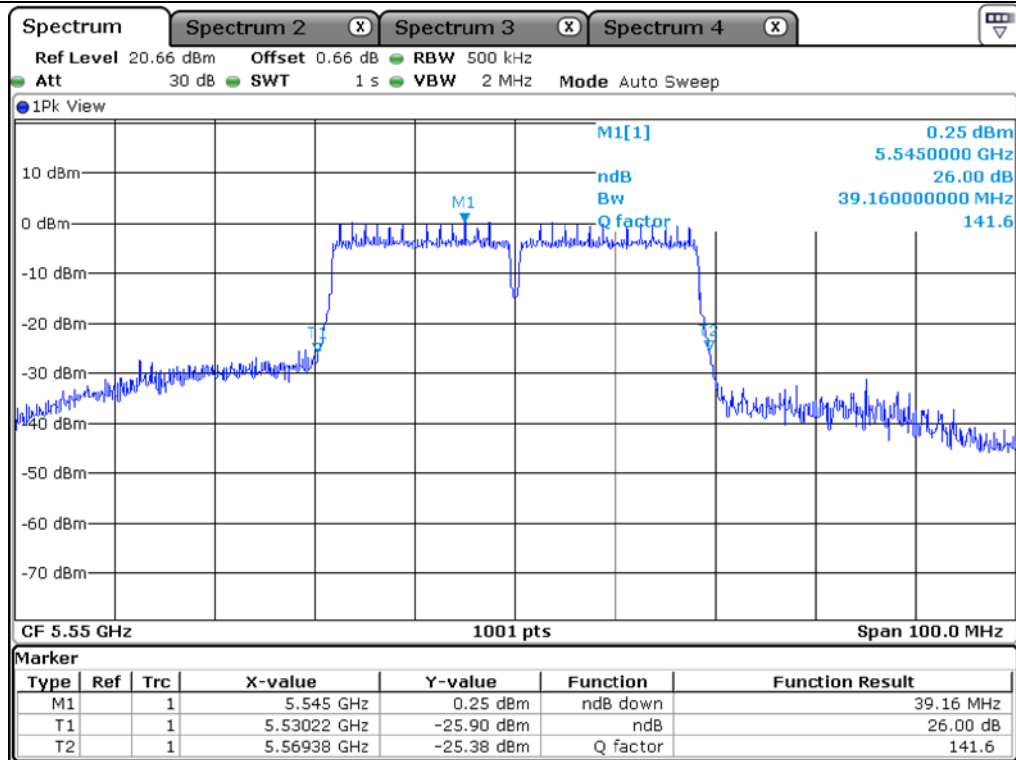
Low Channel (5 270 MHz)



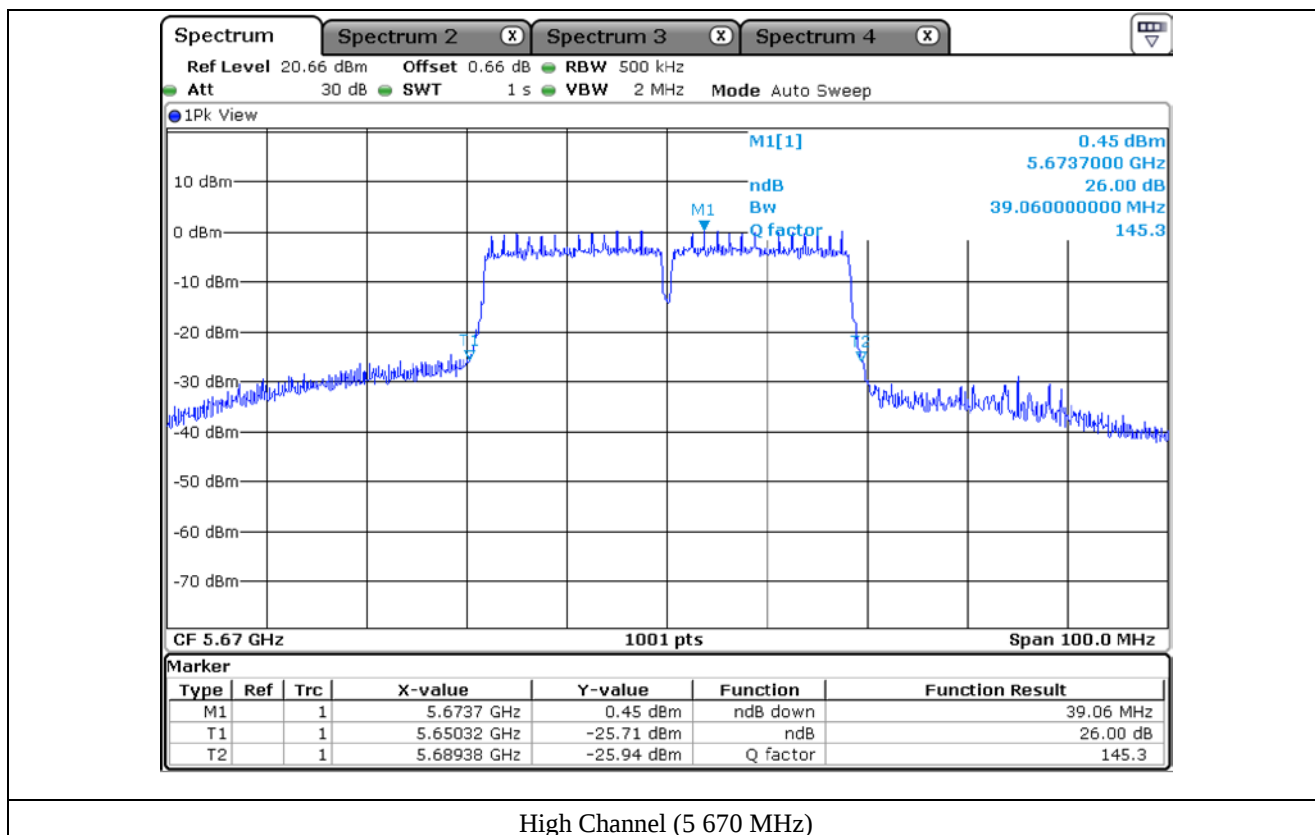
High Channel (5 310 MHz)



Low Channel (5 510 MHz)



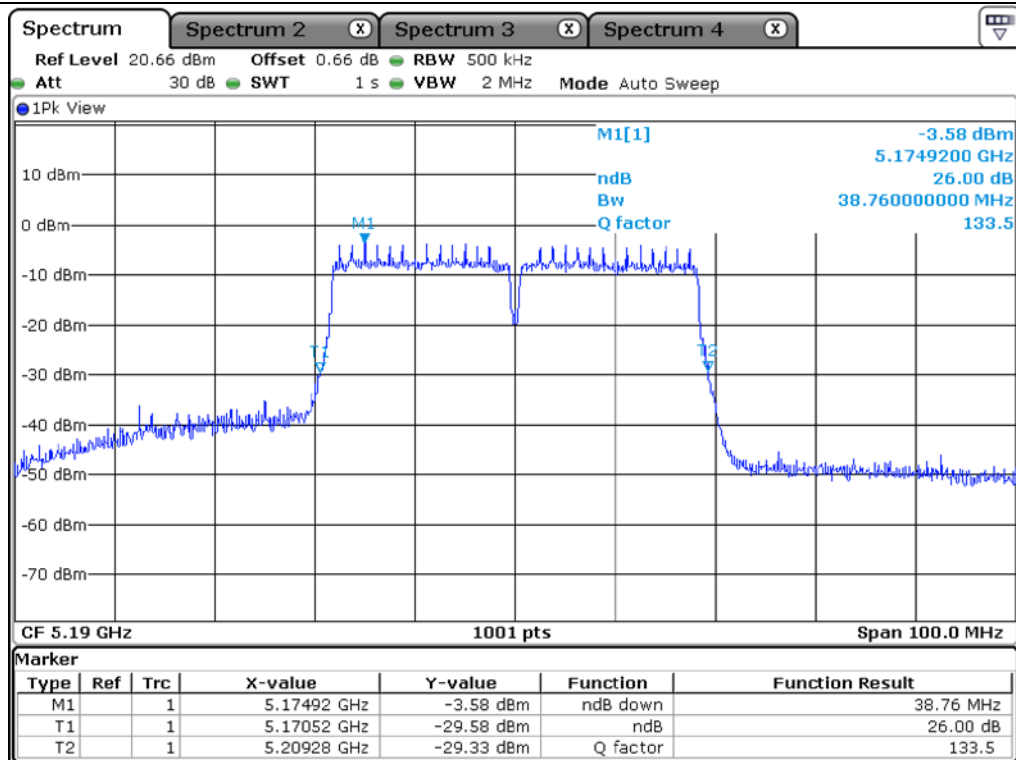
Middle Channel (5 550 MHz)



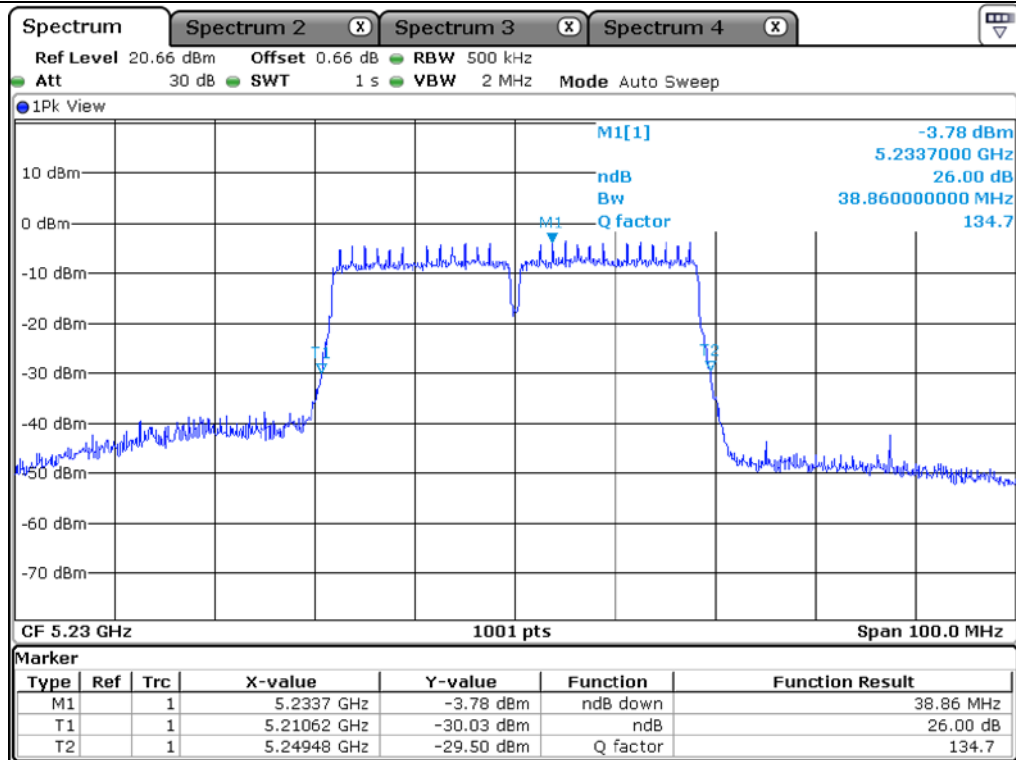
7.6.2 Test data for Antenna 1

-. Test Result : Pass

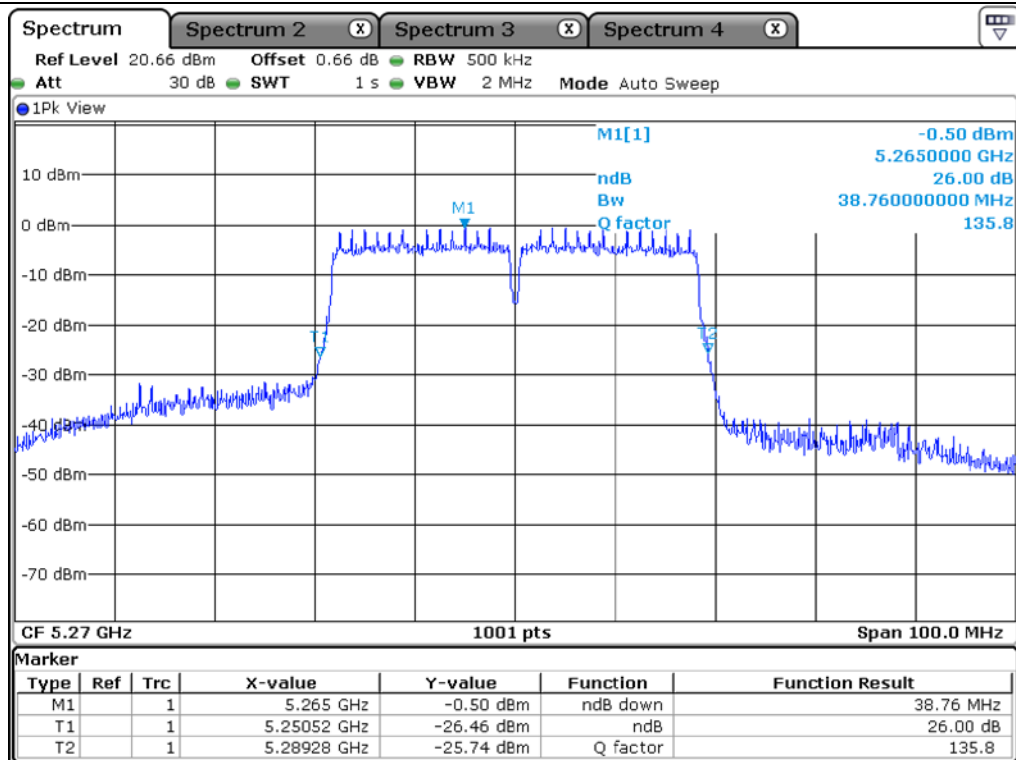
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 190.00	38.76
	High	5 230.00	38.86
5 250 ~ 5 350	Low	5 270.00	38.76
	High	5 310.00	39.06
5 470 ~ 5 725	Low	5 510.00	38.96
	Middle	5 550.00	38.96
	High	5 670.00	39.16



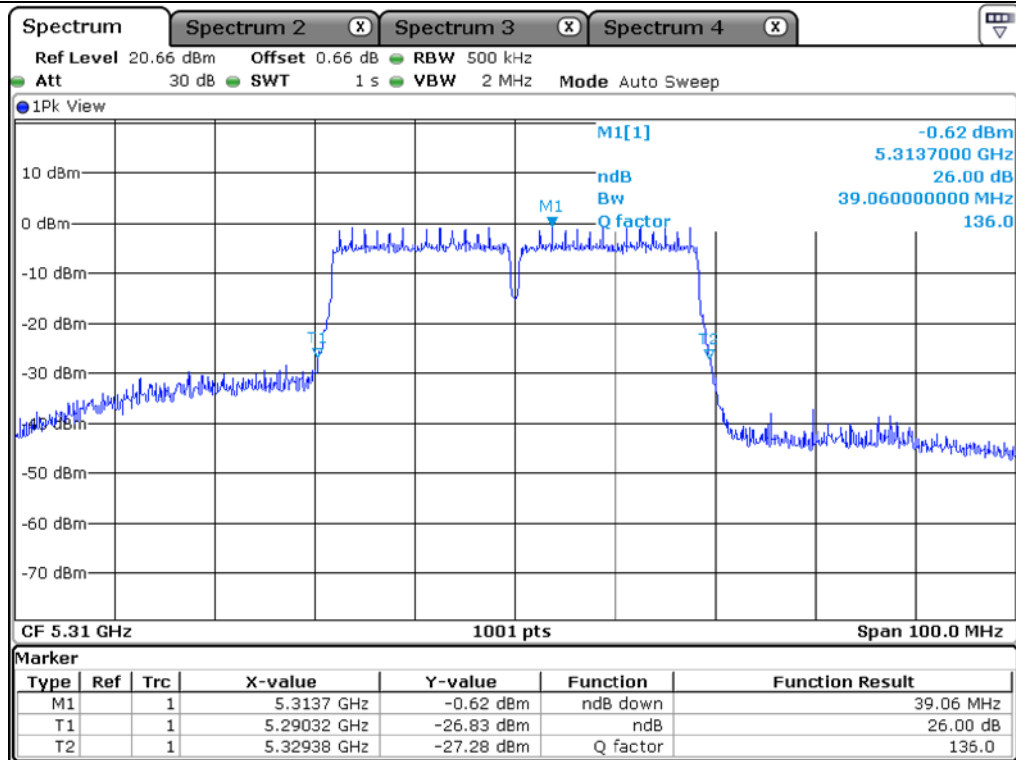
Low Channel (5 190 MHz)



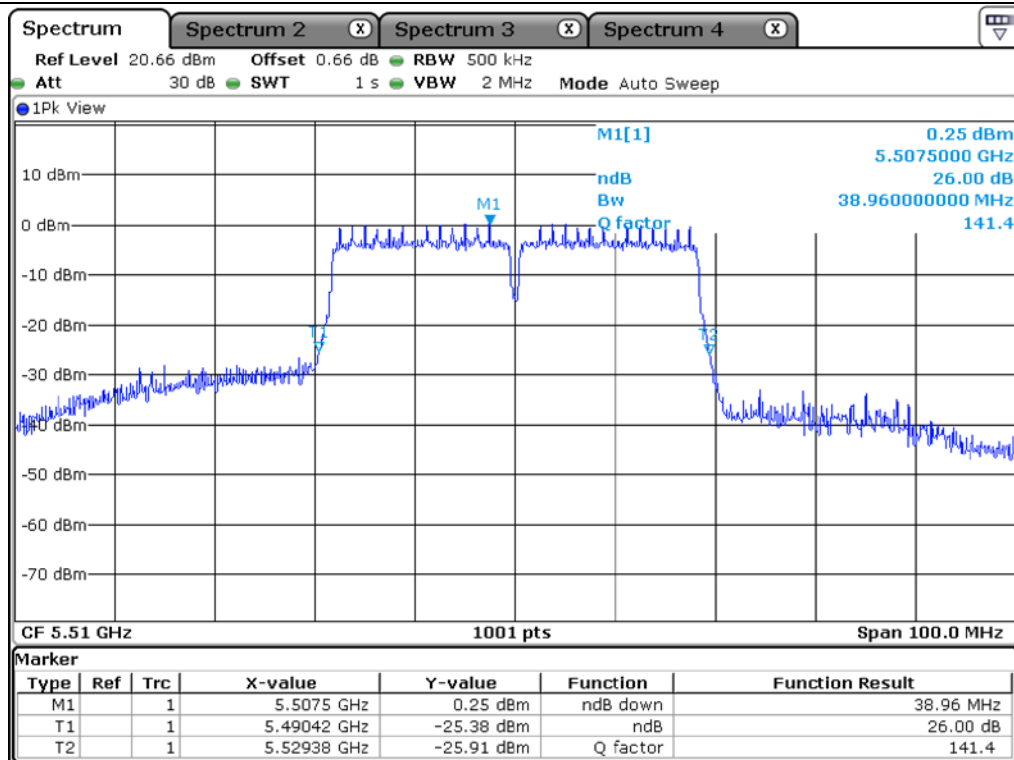
High Channel (5 230 MHz)



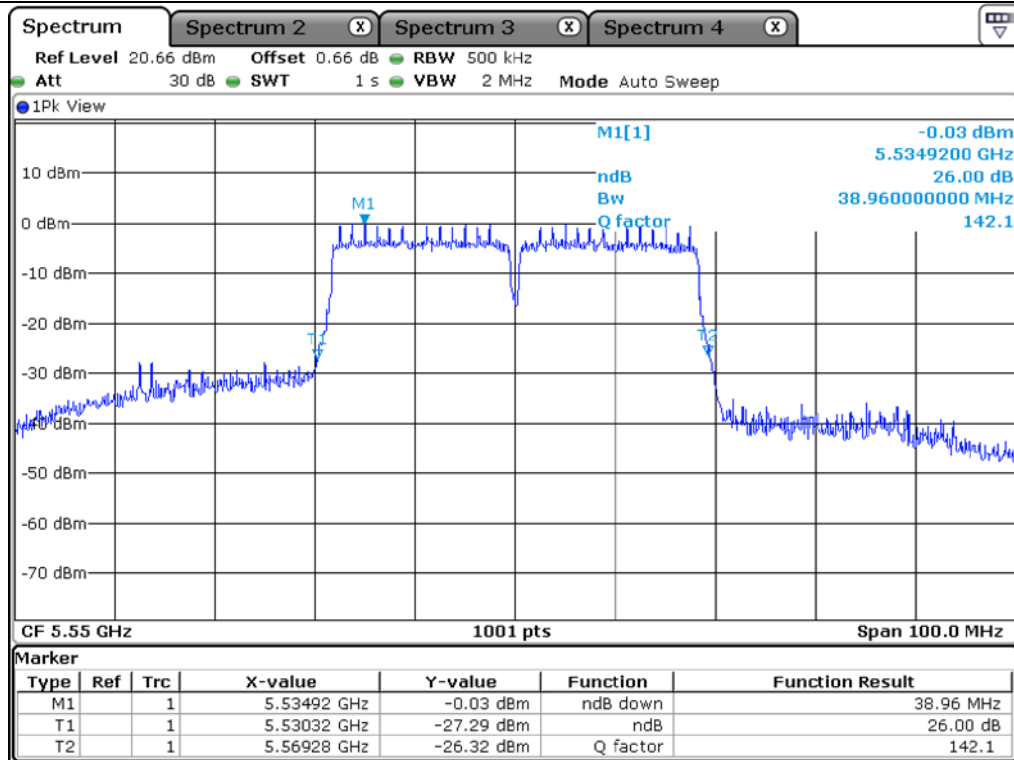
Low Channel (5 270 MHz)



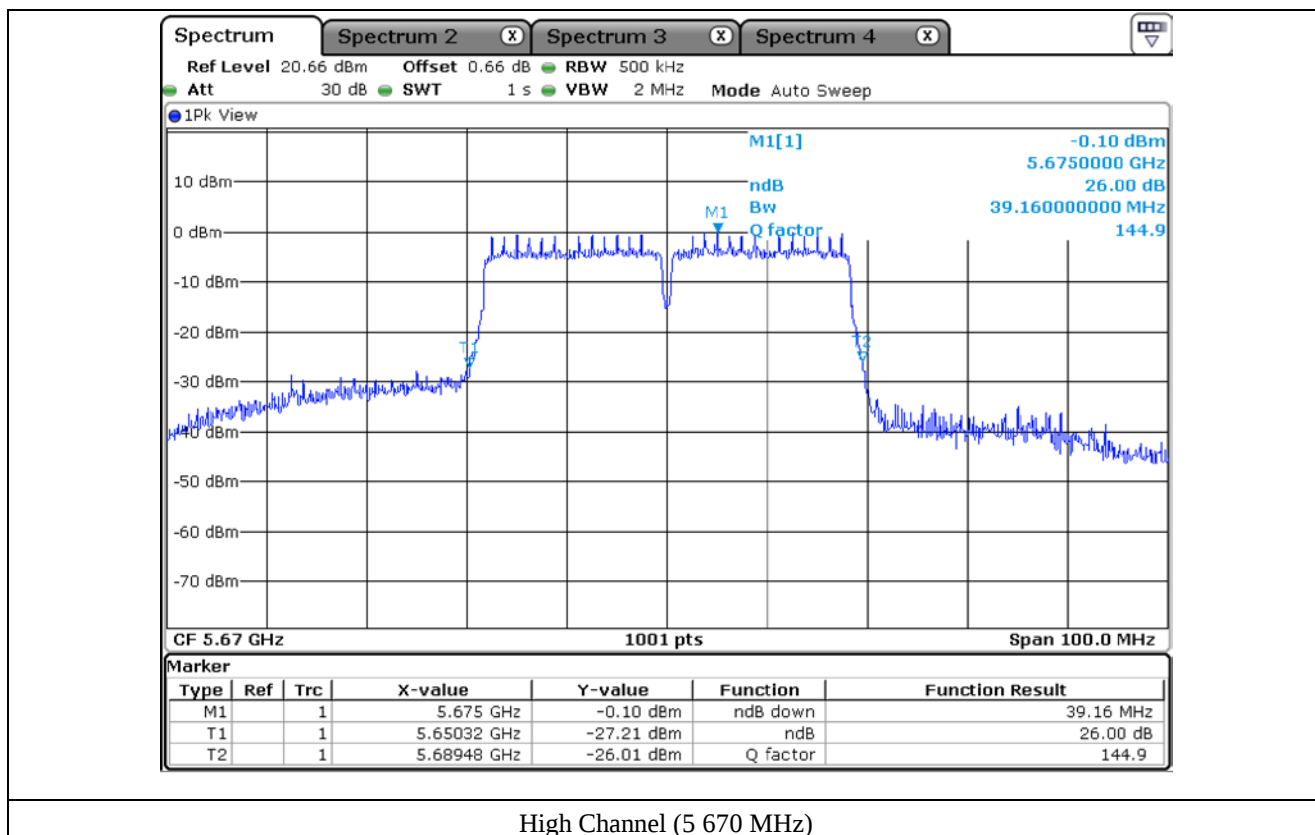
High Channel (5 310 MHz)



Low Channel (5 510 MHz)



Middle Channel (5 550 MHz)

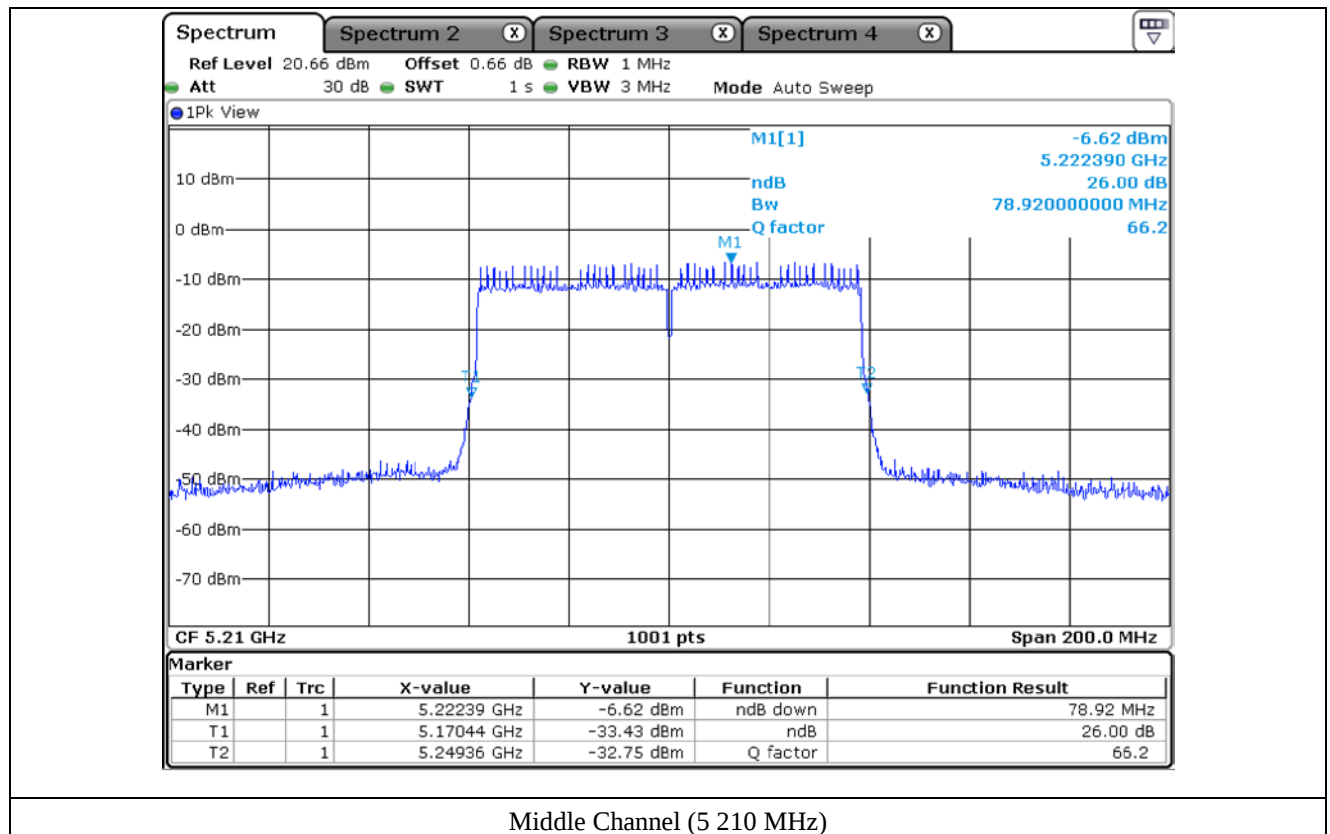


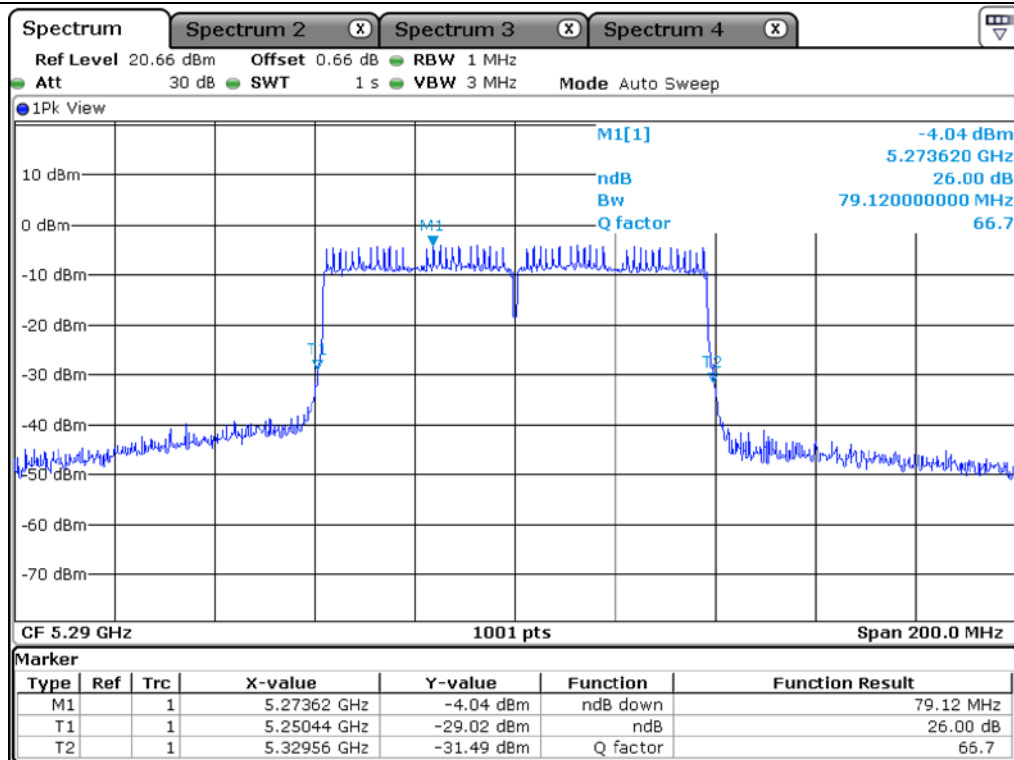
7.7 Test data for 802.11ac_VHT80 RLAN Mode

7.7.1 Test data for Antenna 0

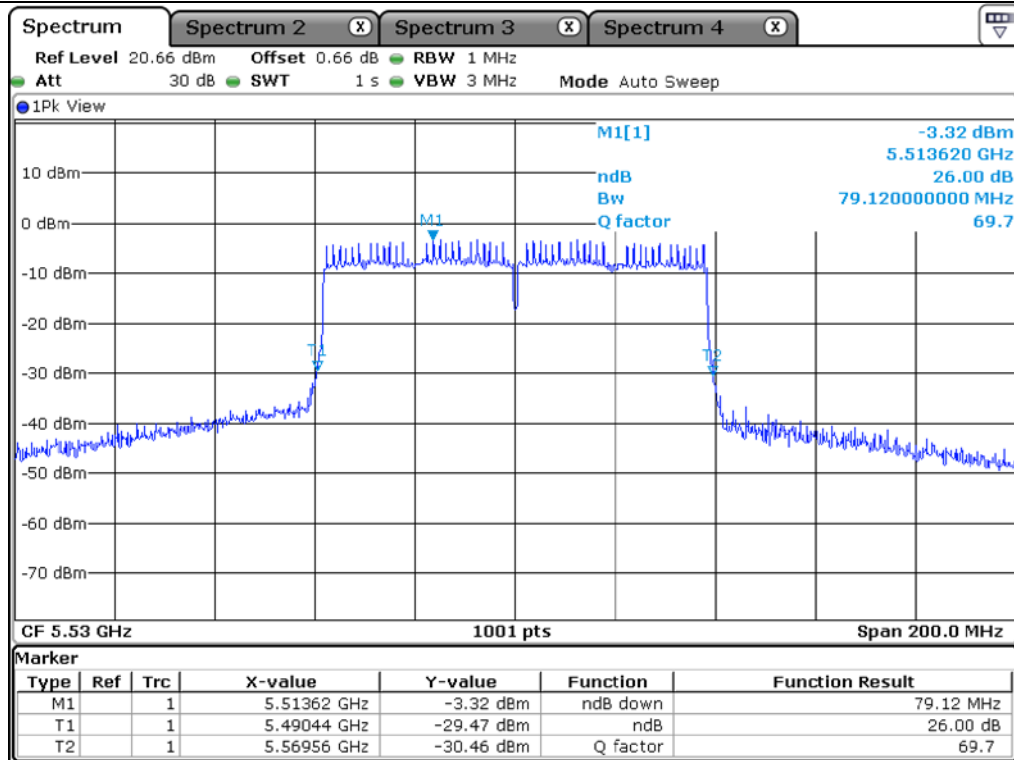
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Middle	5 210.00	78.92
5 250 ~ 5 350	Middle	5 290.00	79.12
5 470 ~ 5 725	Middle	5 530.00	79.12





Middle Channel (5 290 MHz)

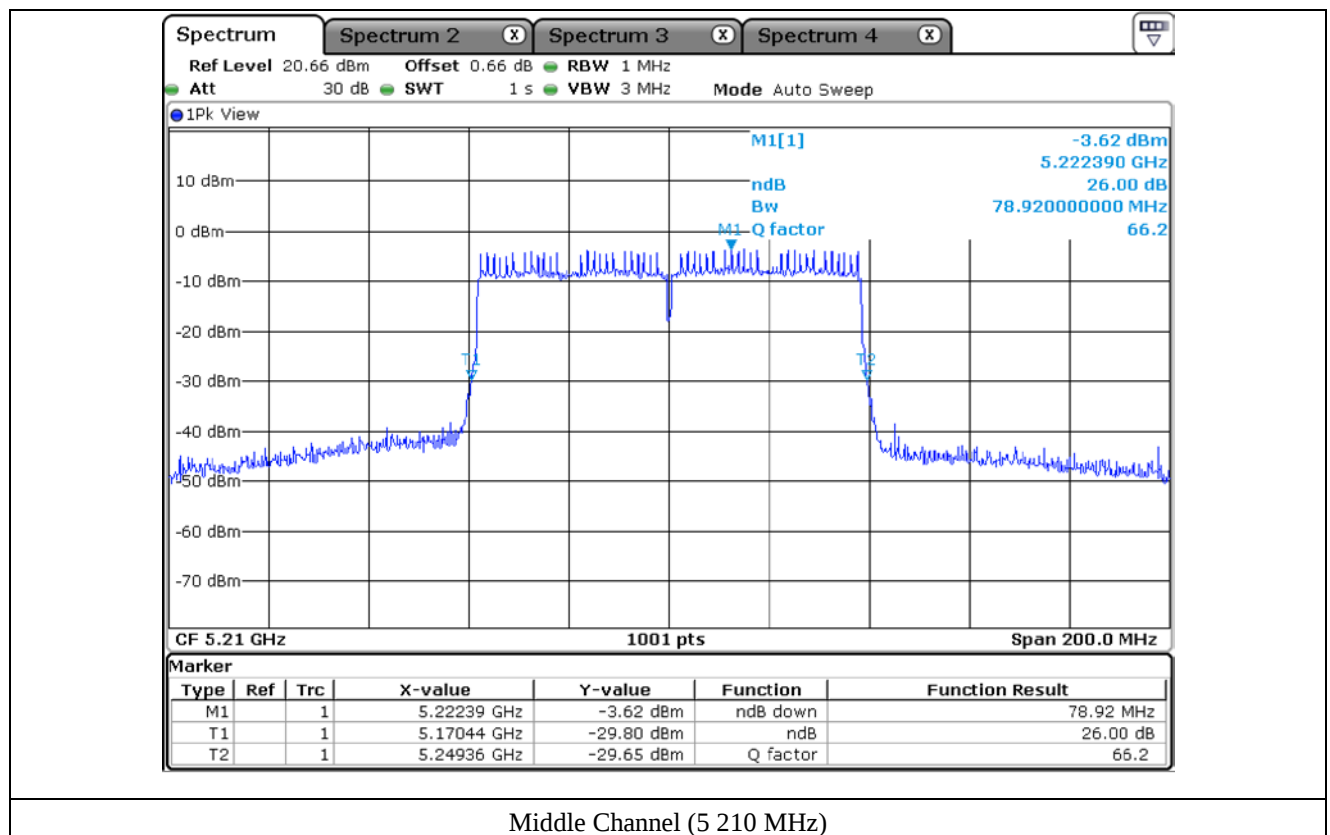


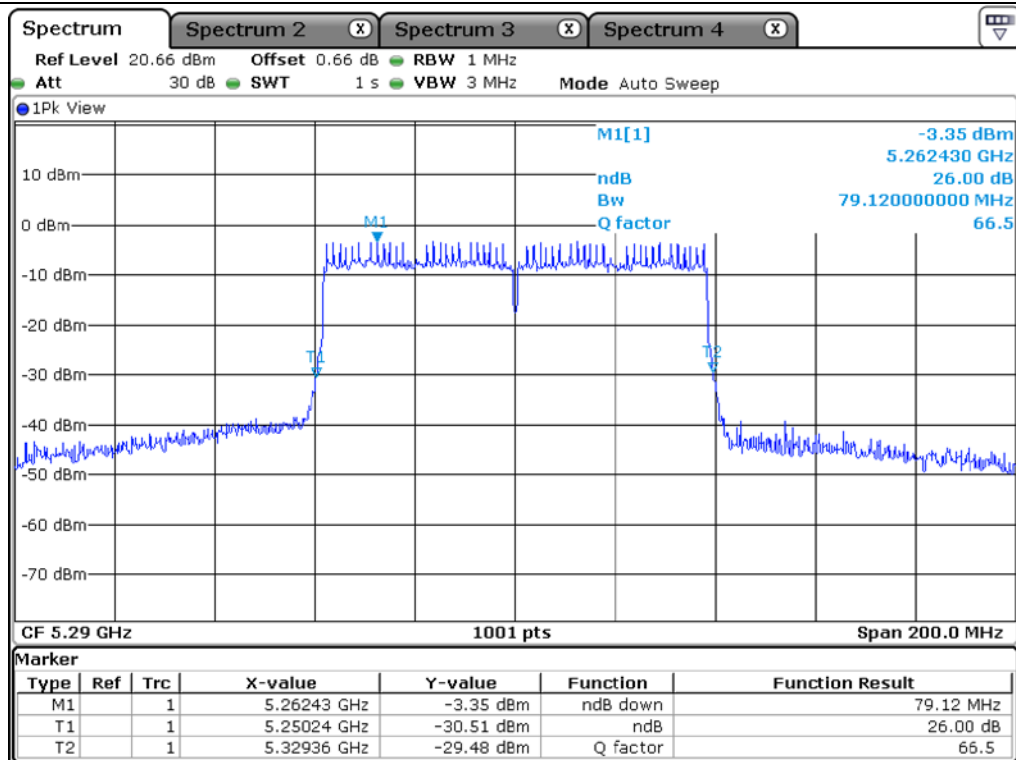
Middle Channel (5 530 MHz)

7.7.2 Test data for Antenna 1

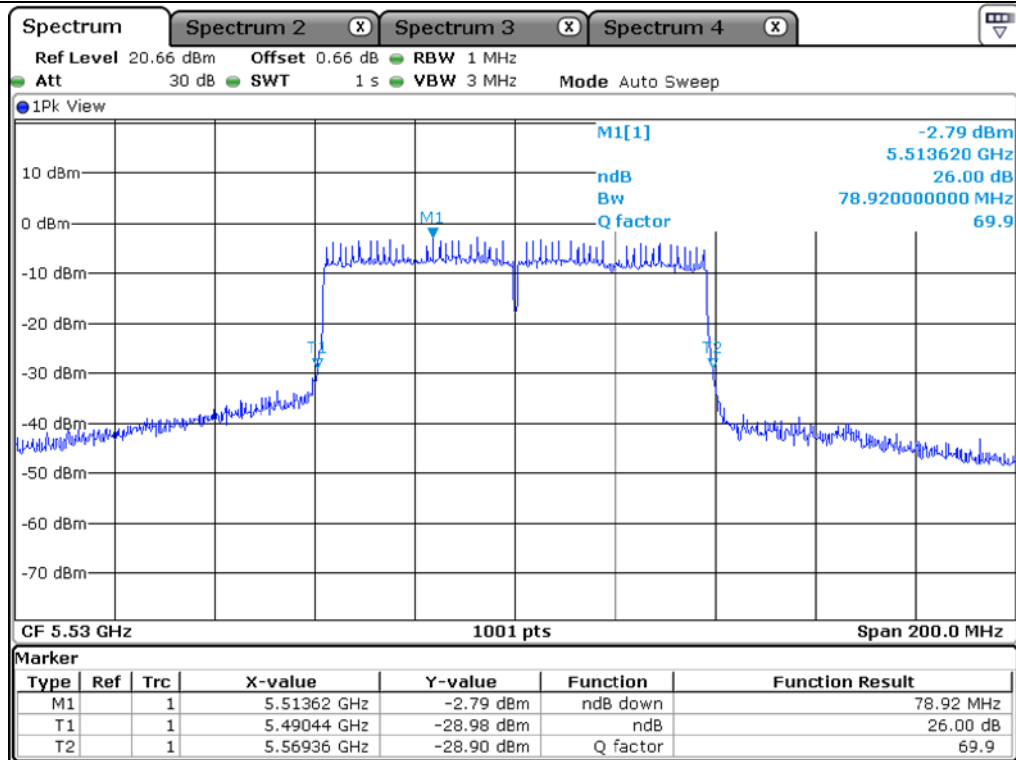
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Middle	5 210.00	78.92
5 250 ~ 5 350	Middle	5 290.00	79.12
5 470 ~ 5 725	Middle	5 530.00	78.92





Middle Channel (5 290 MHz)



Middle Channel (5 530 MHz)

8. 6 dB BANDWIDTH

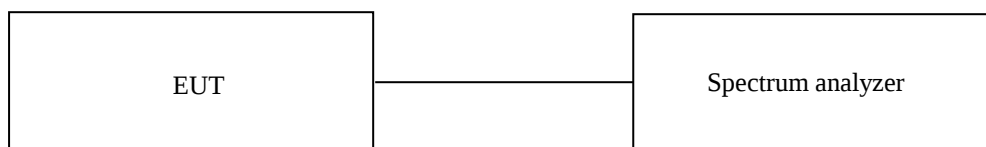
8.1 Operating environment

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



8.3 Test Date

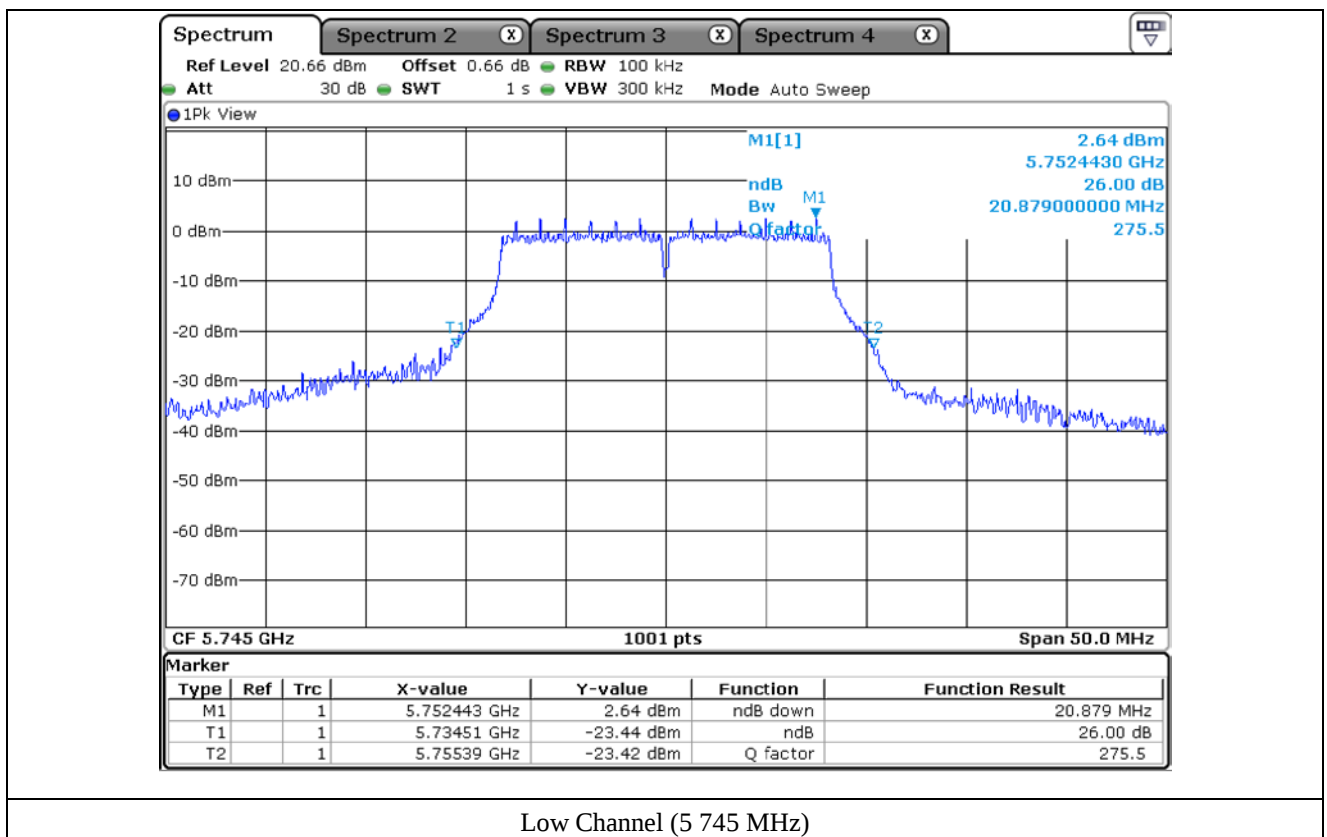
December 03, 2020 ~ December 09, 2020

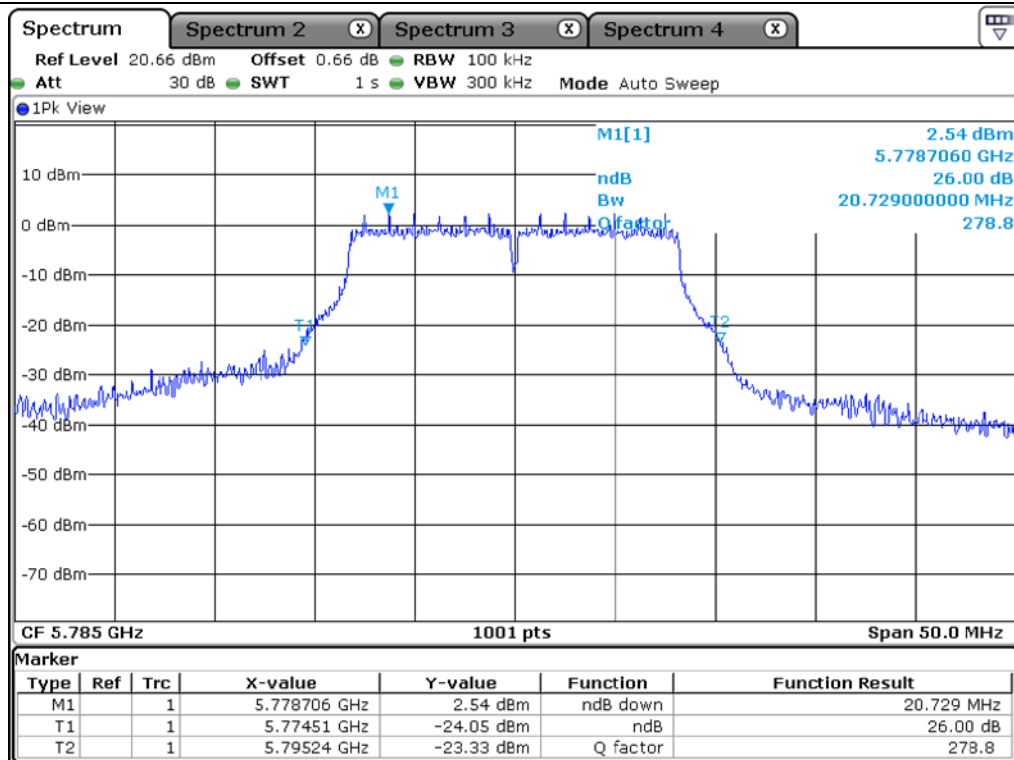
8.4 Test data for 802.11a RLAN Mode

8.4.1 Test data for Antenna 0

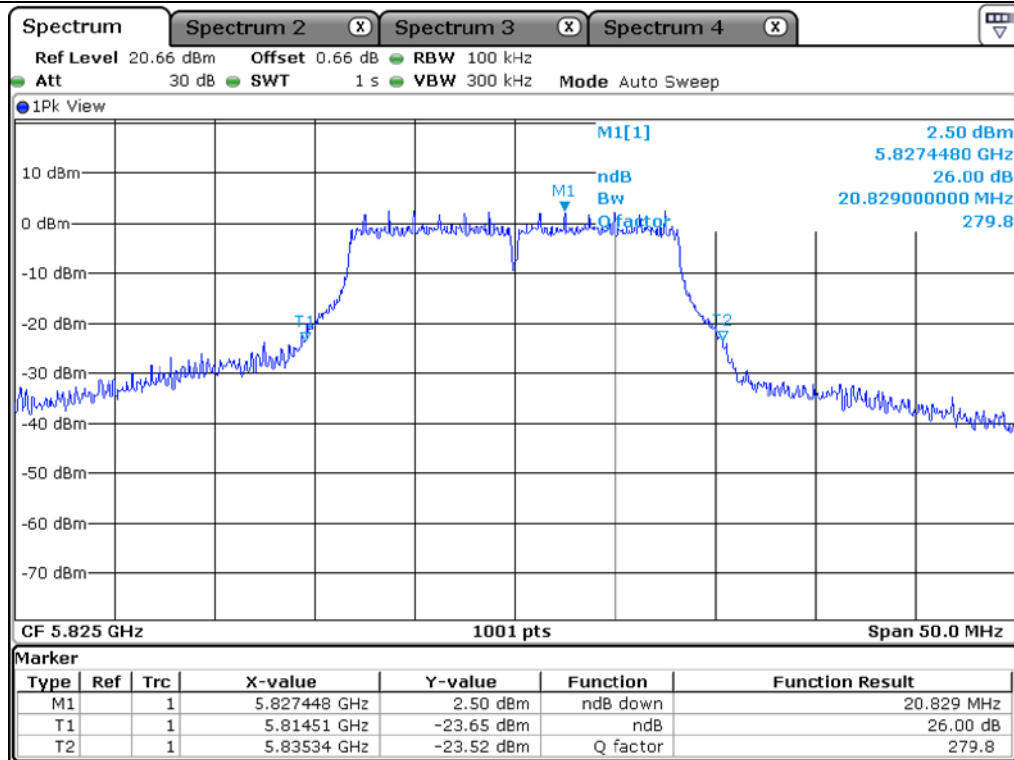
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 725 ~ 5 850	Low	5 745.00	20.88
	Middle	5 785.00	20.73
	High	5 825.00	20.82





Middle Channel (5.785 MHz)

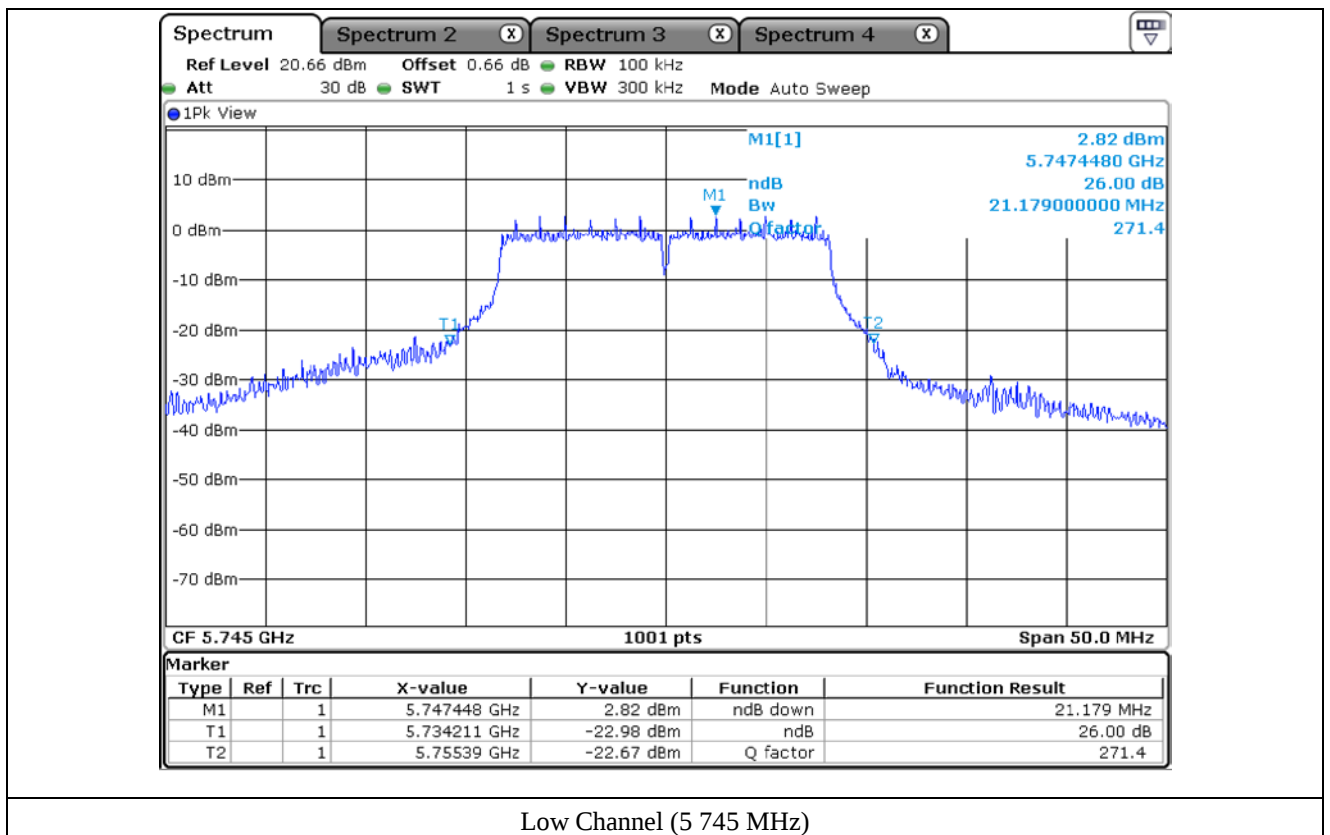


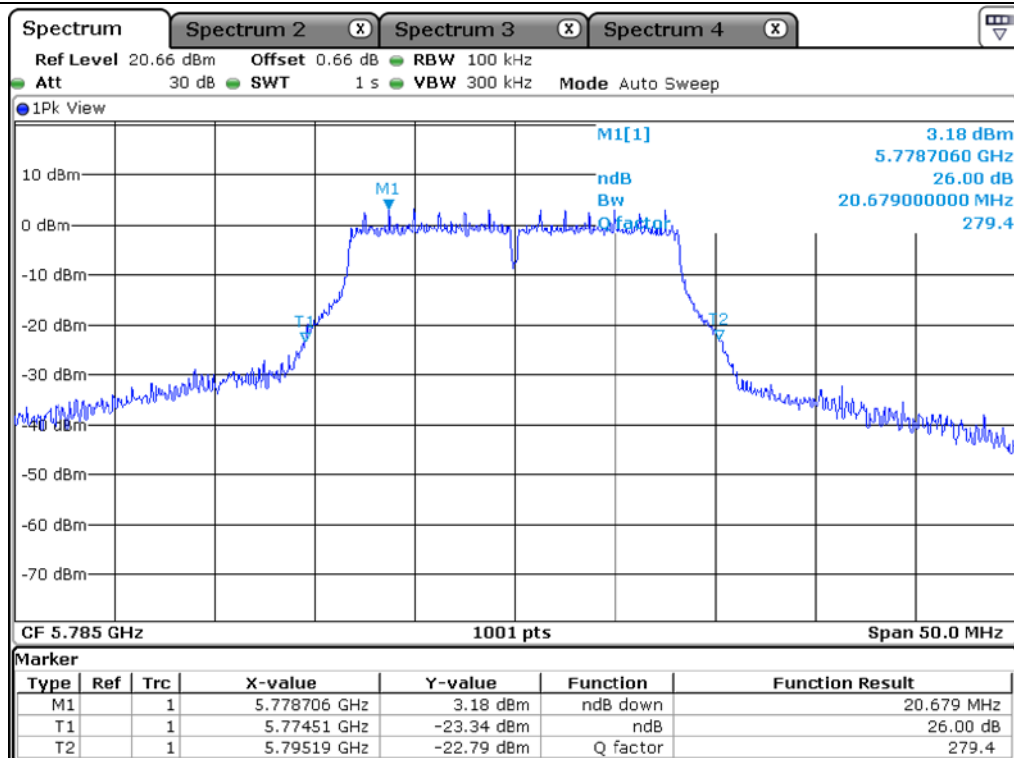
High Channel (5.825 MHz)

8.4.2 Test data for Antenna 1

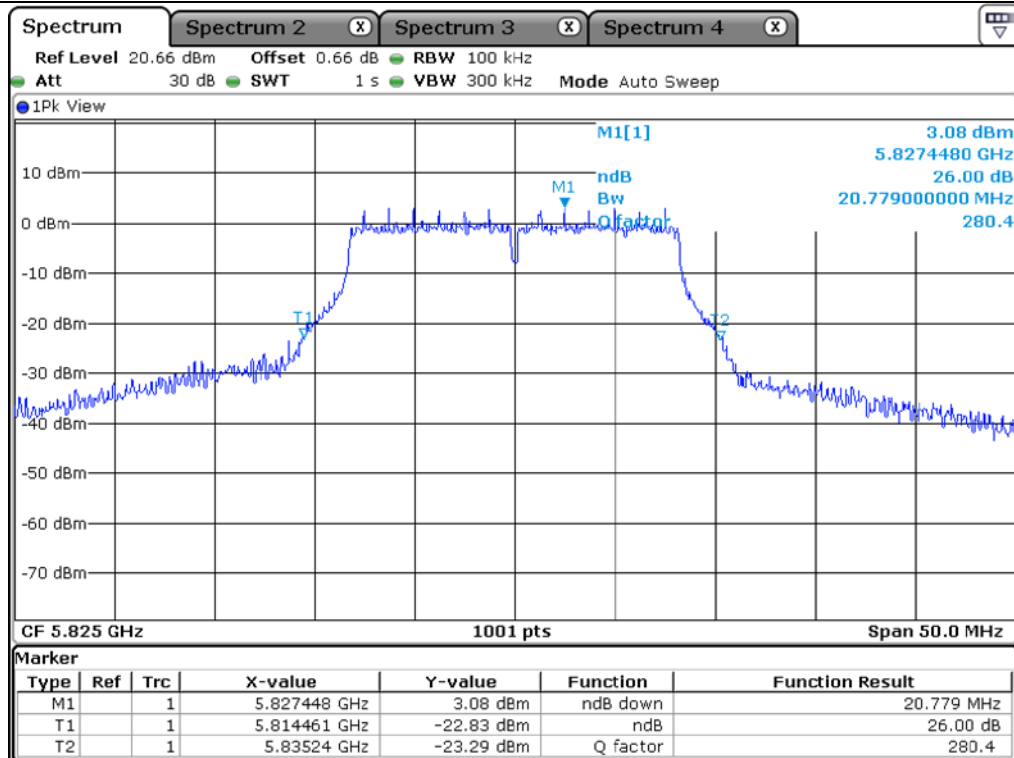
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 725 ~ 5 850	Low	5 745.00	21.18
	Middle	5 785.00	20.68
	High	5 825.00	20.78





Middle Channel (5 785 MHz)



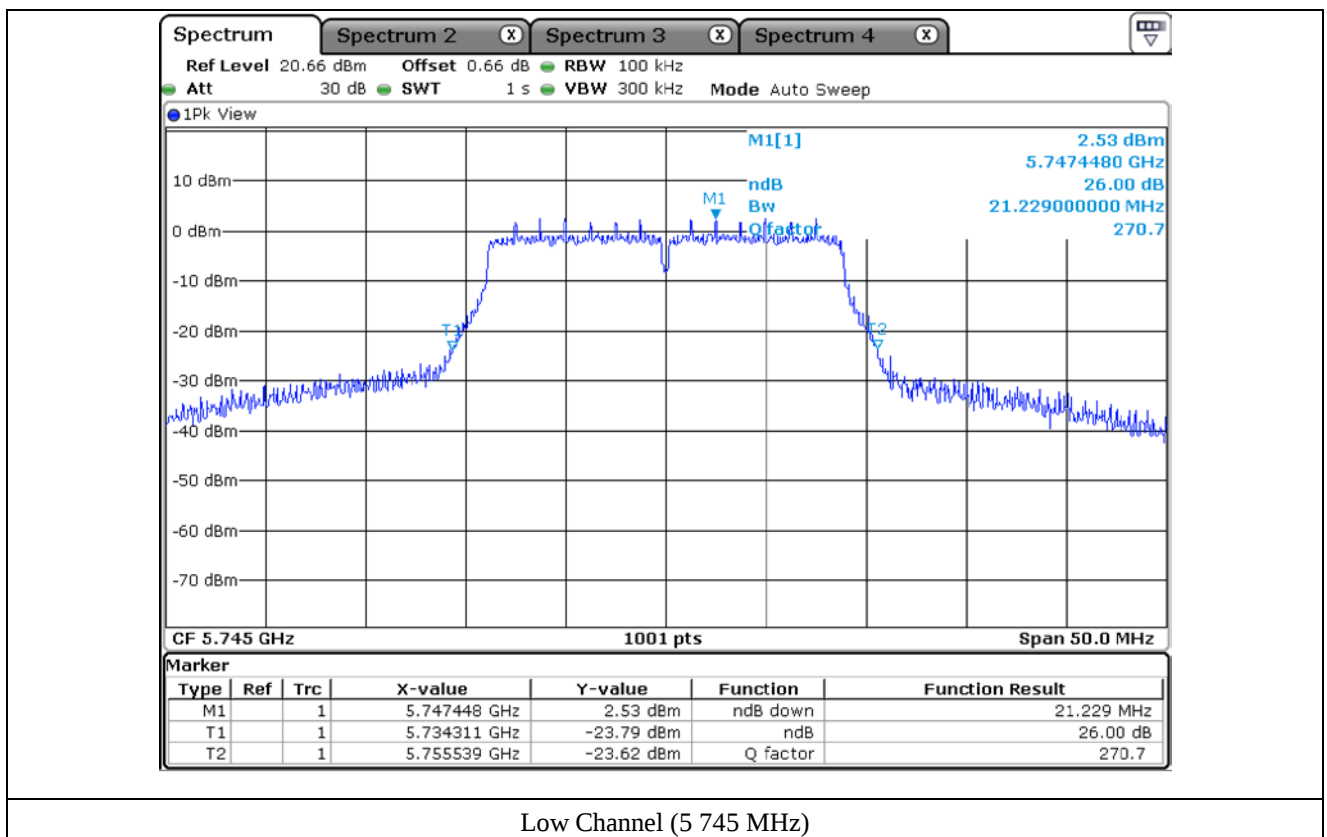
High Channel (5 825 MHz)

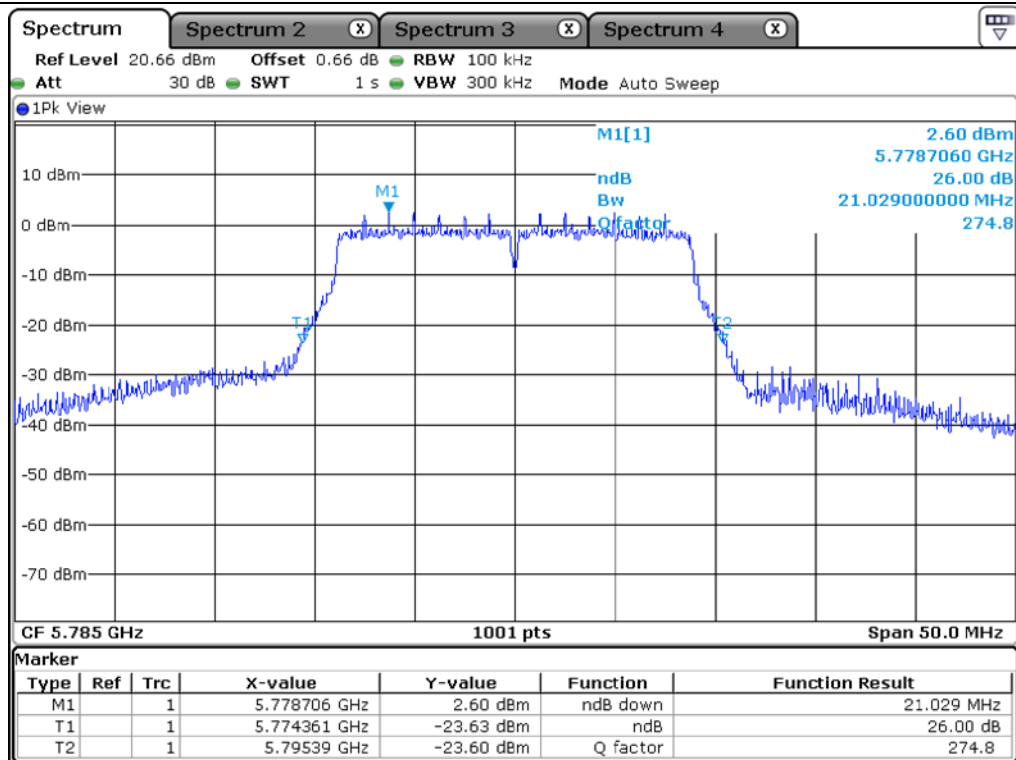
8.5 Test data for 802.11n_HT20 RLAN Mode

8.5.1 Test data for Antenna 0

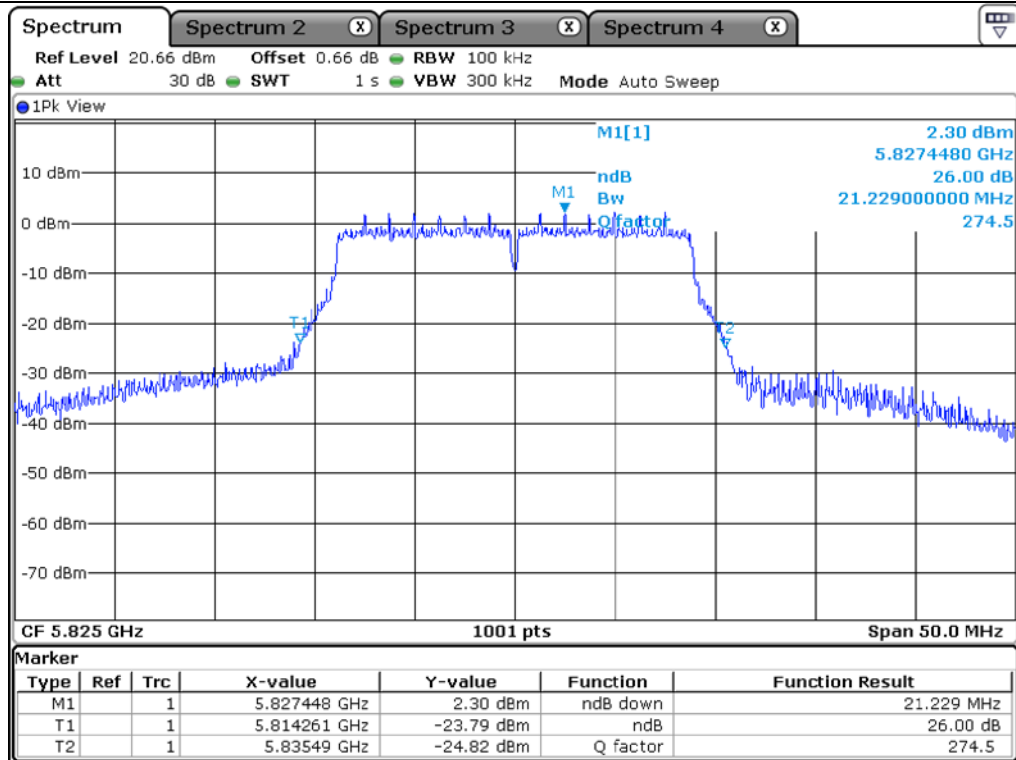
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 725 ~ 5 850	Low	5 745.00	21.23
	Middle	5 785.00	21.23
	High	5 825.00	21.23





Middle Channel (5 785 MHz)

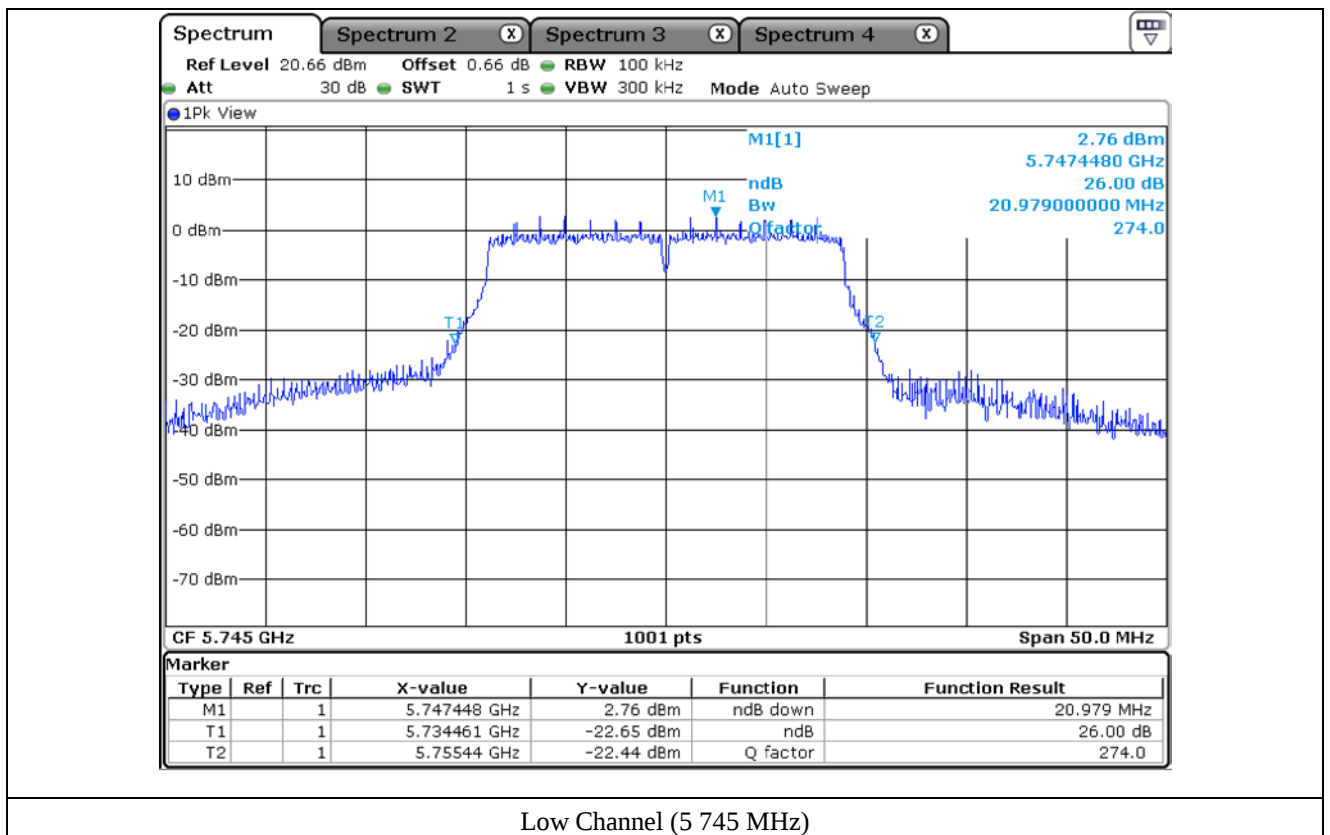


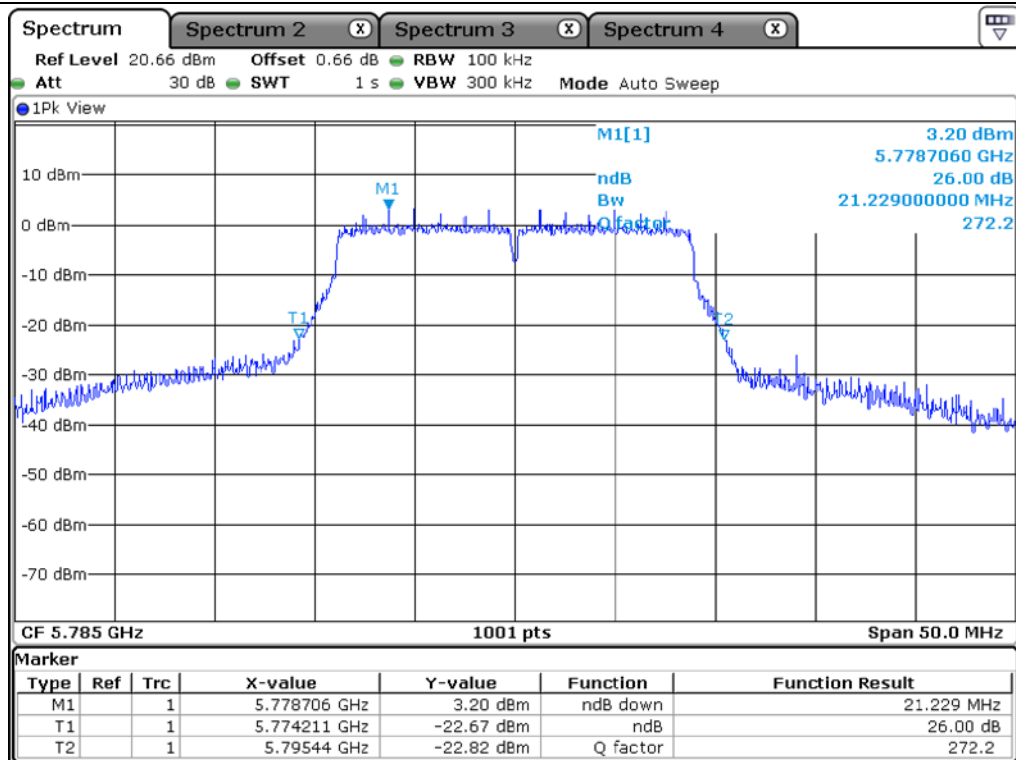
High Channel (5 825 MHz)

8.5.2 Test data for Antenna 1

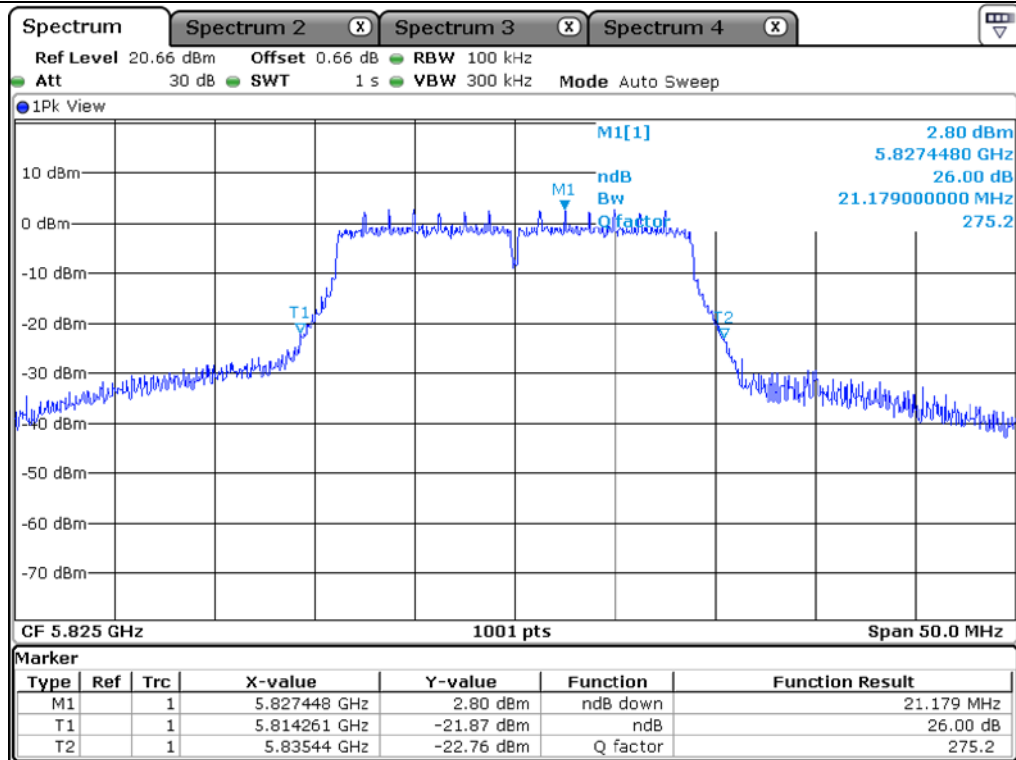
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 725 ~ 5 850	Low	5 745.00	20.98
	Middle	5 785.00	21.23
	High	5 825.00	21.18





Middle Channel (5 785 MHz)



High Channel (5 825 MHz)