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

Test Report No.	**: OT-213-RWD-050**
Reception No.	**: 2103001221**
Applicant	**: Samsung Electronics Co Ltd**
Address	**: 19 Chapin Rd., Building D, Pine Brook, New Jersey, 07058, United States**
Manufacturer	**: Samsung Electronics Co Ltd**
Address	**: 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do 16677, Korea**
Type of Equipment	**: WI-FI Transceiver**
FCC ID.	**: A3LWCA720M**
Model Name	**: WCA720M**
Serial number	**: N/A**
Total page of Report	**: 284 pages (including this page)**
Date of Incoming	**: March 12, 2021**
Date of issue	**: March 25, 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.

Tested by	Reviewed by	Approved by
Ju Yun Park / Assistant Manager	Tae-Ho, Kim / Senior Manager	Ki-Hong, Nam / General Manager
ONETECH Corp.	ONETECH Corp.	ONETECH Corp.

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

CONTENTS

PAGE

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

Revision History

Rev. No.	Issue Report No.	Issued Date	Revisions	Section Affected
0	OT-213-RWD-050	March 25, 2021	Initial Release	All

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1. VERIFICATION OF COMPLIANCE

Applicant : Samsung Electronics Co Ltd

Address : 19 Chapin Rd., Building D, Pine Brook, New Jersey, 07058, United States

Contact Person : Youngjoong Noh / Principal Engineer

Telephone No. : +82-31-277-0598

FCC ID : A3LWCA720M

Model Name : WCA720M

Brand Name :

Serial Number : N/A

Date : March 25, 2021

EQUIPMENT CLASS	Unlicensed National Information infrastructure(UNII)
E.U.T. DESCRIPTION	Modular Transmitter, WI-FI Transceiver
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.

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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	Met the Limit / PASS
15.407(h)	Dynamic frequency Selection	Met the Limit / PASS

2.2 Additions, deviations, exclusions from standards

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

2.3 Related Submittal(s) / Grant(s)

Original submittal only

2.4 Purpose of the test

To determine whether the equipment under test fulfills the requirements of the regulation stated in FCC PART 15 SUBPART E Section 15.407

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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3. GENERAL INFORMATION

3.1 Product Description

The Samsung Electronics Co Ltd, Model WCA720M (referred to as the EUT in this report) is a WI-FI Transceiver. The product specification described herein was obtained from product data sheet or user's manual.

DEVICE TYPE	WI-FI Transceiver	
Temperature Range	-10 °C ~ 70 °C	
OPERATING FREQUENCY	WLAN 2.4 GHz	2 412 MHz ~ 2 472 MHz (802.11b/g/n(HT20))
		2 422 MHz ~ 2 462 MHz (802.11n(HT40))
	5 150 MHz ~ 5 250 MHz Band	5 180 MHz ~ 5 240 MHz (802.11a/n(HT20)/ac(VHT20))
		5 190 MHz ~ 5 230 MHz (802.11n(HT40)/ac(VHT40))
		5 210 MHz (802.11ac(VHT80))
	5 250 MHz ~ 5 350 MHz Band	5 260 MHz ~ 5 320 MHz (802.11a/n(HT20)/ac(VHT20))
		5 270 MHz ~ 5 310 MHz (802.11n(HT40)/ac(VHT40))
		5 290 MHz (802.11ac(VHT80))
	5 470 MHz ~ 5 725 MHz Band	5 500 MHz ~ 5 700 MHz (802.11a/n(HT20)/ac(VHT20))
		5 510 MHz ~ 5 670 MHz (802.11n(HT40)/ac(VHT40))
		5 530 MHz (802.11ac(VHT80))
	5 725 MHz ~ 5 850 MHz Band	5 745 MHz ~ 5 825 MHz (802.11a/n(HT20)/ac(VHT20))
		5 755 MHz ~ 5 795 MHz (802.11n(HT40)/ac(VHT40))
		5 775 MHz (802.11ac(VHT80))
MODULATION TYPE	WLAN 2.4 GHz	802.11b: DSSS Modulation(DBPSK/DQPSK/CCK) 802.11g/n(HT20)/n(HT40): OFDM Modulation(BPSK/QPSK/16QAM/64QAM)
	WLAN 5 GHz	802.11a/n(HT20)/n(HT40)/ac(VHT80): OFDM Modulation(BPSK/QPSK/16QAM/64QAM)

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RF OUTPUT POWER	WLAN 2.4 GHz	Antenna 0	15.98 dBm(802.11b) 10.76 dBm(802.11g) 9.32 dBm(802.11n_HT20) 6.81 dBm(802.11n_HT40)
		Antenna 1	16.08 dBm(802.11b) 10.48 dBm(802.11g) 8.95 dBm(802.11n_HT20) 6.98 dBm(802.11n_HT40)
		Multiple Antenna	13.63 dBm(802.11g) 12.15 dBm(802.11n_HT20) 9.88 dBm(802.11n_HT40)
	5 150 MHz ~ 5 250 MHz Band	Antenna 0	12.25 dBm(802.11a) 12.15 dBm(802.11n_HT20) 12.91 dBm(802.11n_HT40) 10.24 dBm(802.11ac_VHT80)
		Antenna 1	12.27 dBm(802.11a) 11.94 dBm(802.11n_HT20) 12.95 dBm(802.11n_HT40) 10.80 dBm(802.11ac_VHT80)
		Multiple Antenna	15.20 dBm(802.11a) 15.06 dBm(802.11n_HT20) 15.94 dBm(802.11n_HT40) 13.54 dBm(802.11ac_VHT80)
	5 250 MHz ~ 5 350 MHz Band	Antenna 0	15.37 dBm(802.11a) 14.98 dBm(802.11n_HT20) 13.02 dBm(802.11n_HT40) 11.59 dBm(802.11ac_VHT80)
		Antenna 1	14.82 dBm(802.11a) 14.90 dBm(802.11n_HT20) 13.02 dBm(802.11n_HT40) 11.61 dBm(802.11ac_VHT80)
		Multiple Antenna	18.11 dBm(802.11a) 17.95 dBm(802.11n_HT20) 16.03 dBm(802.11n_HT40) 14.61 dBm(802.11ac_VHT80)

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RF OUTPUT POWER	5 470 MHz ~ 5 725 MHz Band	Antenna 0	15.00 dBm(802.11a) 14.62 dBm(802.11n_HT20) 12.84 dBm(802.11n_HT40) 11.51 dBm(802.11ac_VHT80)
		Antenna 0_Straddle	12.34 dBm(802.11a) 12.14 dBm(802.11n_HT20) 11.10 dBm(802.11n_HT40) 11.33 dBm(802.11ac_VHT80)
		Antenna 1	15.03 dBm(802.11a) 14.90 dBm(802.11n_HT20) 13.22 dBm(802.11n_HT40) 11.79 dBm(802.11ac_VHT80)
		Antenna 1_Straddle	13.32 dBm(802.11a) 13.27 dBm(802.11n_HT20) 12.30 dBm(802.11n_HT40) 13.71 dBm(802.11ac_VHT80)
		Multiple Antenna	18.02 dBm(802.11a) 17.76 dBm(802.11n_HT20) 15.95 dBm(802.11n_HT40) 14.66 dBm(802.11ac_VHT80)
		Multiple Antenna _Straddle	15.87 dBm(802.11a) 15.75 dBm(802.11n_HT20) 14.75 dBm(802.11n_HT40) 15.69 dBm(802.11ac_VHT80)

RF OUTPUT POWER	5 725 MHz ~ 5 850 MHz Band	Antenna 0	15.00 dBm(802.11a) 14.68 dBm(802.11n_HT20) 12.98 dBm(802.11n_HT40) 12.67 dBm(802.11ac_VHT80)
		Antenna 0_Straddle	4.41 dBm(802.11a) 4.51 dBm(802.11n_HT20) -1.21 dBm(802.11n_HT40) -3.73 dBm(802.11ac_VHT80)
		Antenna 1	15.20 dBm(802.11a) 14.76 dBm(802.11n_HT20) 12.72 dBm(802.11n_HT40) 12.60 dBm(802.11ac_VHT80)
		Antenna 1_Straddle	5.60 dBm(802.11a) 5.94 dBm(802.11n_HT20) 0.20 dBm(802.11n_HT40) -1.59 dBm(802.11ac_VHT80)
		Multiple Antenna	18.06 dBm(802.11a) 17.73 dBm(802.11n_HT20) 15.86 dBm(802.11n_HT40) 15.65 dBm(802.11ac_VHT80)
		Multiple Antenna _Straddle	8.06 dBm(802.11a) 8.29 dBm(802.11n_HT20) 2.56 dBm(802.11n_HT40) 0.48 dBm(802.11ac_VHT80)

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ANTENNA TYPE	Metal Antenna		
ANTENNA GAIN	WLAN 2.4 GHz	Antenna 0	0.50 dBi
		Antenna 1	0.00 dBi
		Multiple Antenna	3.27 dBi
	5 150 MHz ~ 5 250 MHz Band	Antenna 0	0.90 dBi
		Antenna 1	0.70 dBi
		Multiple Antenna	3.81 dBi
	5 250 MHz ~ 5 350 MHz Band	Antenna 0	0.50 dBi
		Antenna 1	-0.40 dBi
		Multiple Antenna	3.08 dBi
	5 470 MHz ~ 5 725 MHz Band	Antenna 0	0.10 dBi
		Antenna 1	-0.30 dBi
		Multiple Antenna	2.91 dBi
	5 725 MHz ~ 5 850 MHz Band	Antenna 0	-0.20 dBi
		Antenna 1	-0.30 dBi
		Multiple Antenna	2.76 dBi
List of each Osc. or crystal Freq.(Freq. >= 1 MHz)	40 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	Samsung Electronics Co Ltd	BN59-01XXXA	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
WCA720M	Samsung Electronics Co Ltd	WI-FI Transceiver (EUT)	
HP Probook 4540s	HP	Notebook PC	EUT
Series PPP009H	Hipro Electronics(Dongguan)Co., Ltd	AC Adapter	

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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

		Channel	Frequency
802.11a 802.11n 802.11ac(20 MHz)	Band 1	36	5 180
		44	5 220
		48	5 240
	Band 2A	52	5 260
		60	5 300
		64	5 320
	Band 2C	100	5 500
		116	5 580
		140	5 700
	Straddle	144	5 720
	Band 3	149	5 745
		157	5 785
		165	5 825
802.11n 802.11ac(40 MHz)	Band 1	38	5 190
		46	5 230
	Band 2A	54	5 270
		62	5 310
	Band 2C	102	5 510
		110	5 550
		134	5 670
	Straddle	142	5 710
	Band 3	151	5 755
		5 795	5 795
802.11ac(80 MHz)	Band 1	42	5 210
	Band 2A	58	5 290
	Band 2C	106	5 530
	Straddle	138	5 690
	Band 3	155	5 775

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UNII 1

Modulation	DATA RATE	OUTPUT POWER[dBm]	
		Antenna 0	Antenna 1
802.11 a (Middle Channel)	6 Mbps	12.05	12.27
	9 Mbps	11.83	12.03
	12 Mbps	11.69	11.89
	18 Mbps	11.27	11.49
	24 Mbps	10.96	11.15
	36 Mbps	10.63	10.79
	48 Mbps	9.67	9.82
	54 Mbps	8.91	9.04
HT 20 (Middle Channel)	6.5 Mbps	11.89	11.85
	13 Mbps	11.54	11.47
	19.5 Mbps	11.23	11.17
	26 Mbps	10.99	10.95
	39 Mbps	10.63	10.59
	52 Mbps	10.13	10.08
	58.5 Mbps	9.71	9.64
	65 Mbps	8.56	8.52
HT 40 (Low Channel)	13.5 Mbps	12.86	12.85
	27 Mbps	12.62	12.61
	40.5 Mbps	12.51	12.48
	54 Mbps	12.24	12.23
	81 Mbps	12.06	12.06
	108 Mbps	11.66	11.64
	121.5 Mbps	9.99	9.99
	135 Mbps	9.80	9.77

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VHT80 (Middle Channel)	29.3 Mbps	10.24	10.80
	58.5 Mbps	10.04	10.63
	87.8 Mbps	9.90	10.48
	117 Mbps	9.78	10.39
	175.5 Mbps	9.73	10.36
	234 Mbps	9.30	9.94
	263.3 Mbps	9.04	9.65
	292.5 Mbps	6.91	7.51
	351 Mbps	6.66	7.29
	390 Mbps	6.52	7.13

-. 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.

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UNII 2A

Modulation	DATA RATE	OUTPUT POWER[dBm]	
		Antenna 0	Antenna 1
802.11 a (Middle Channel)	6 Mbps	15.11	14.75
	9 Mbps	14.89	14.56
	12 Mbps	14.75	14.40
	18 Mbps	14.33	14.01
	24 Mbps	14.02	13.68
	36 Mbps	13.69	13.38
	48 Mbps	12.73	12.41
	54 Mbps	11.97	11.63
HT 20 (Middle Channel)	6.5 Mbps	14.72	14.76
	13 Mbps	14.37	14.38
	19.5 Mbps	14.06	14.06
	26 Mbps	13.82	13.85
	39 Mbps	13.46	13.50
	52 Mbps	12.96	13.01
	58.5 Mbps	12.54	12.62
	65 Mbps	11.39	11.45
HT 40 (Low Channel)	13.5 Mbps	13.02	12.88
	27 Mbps	12.78	12.65
	40.5 Mbps	12.67	12.54
	54 Mbps	12.40	12.29
	81 Mbps	12.22	12.09
	108 Mbps	11.82	11.68
	121.5 Mbps	10.15	10.02
	135 Mbps	9.96	9.85

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VHT80 (Middle Channel)	29.3 Mbps	11.59	11.61
	58.5 Mbps	11.39	11.38
	87.8 Mbps	11.25	11.23
	117 Mbps	11.13	11.14
	175.5 Mbps	11.08	11.08
	234 Mbps	10.65	10.63
	263.3 Mbps	10.39	10.35
	292.5 Mbps	8.26	8.24
	351 Mbps	8.01	8.02
	390 Mbps	7.87	7.91

-. 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	15.00	15.02
	9 Mbps	14.78	14.77
	12 Mbps	14.64	14.65
	18 Mbps	14.22	14.23
	24 Mbps	13.91	13.90
	36 Mbps	13.58	13.56
	48 Mbps	12.62	12.57
	54 Mbps	11.86	11.83
HT 20 (Middle Channel)	6.5 Mbps	14.55	14.90
	13 Mbps	14.20	14.54
	19.5 Mbps	13.89	14.22
	26 Mbps	13.65	14.01
	39 Mbps	13.29	13.63
	52 Mbps	12.79	13.12
	58.5 Mbps	12.37	12.69
	65 Mbps	11.22	11.53
HT 40 (Low Channel)	13.5 Mbps	12.84	12.82
	27 Mbps	12.60	12.57
	40.5 Mbps	12.49	12.46
	54 Mbps	12.22	12.17
	81 Mbps	12.04	11.99
	108 Mbps	11.64	11.56
	121.5 Mbps	9.97	9.92
	135 Mbps	9.78	9.75

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VHT80 (Middle Channel)	29.3 Mbps	11.51	11.79
	58.5 Mbps	11.31	11.62
	87.8 Mbps	11.17	11.47
	117 Mbps	11.05	11.32
	175.5 Mbps	11.00	11.25
	234 Mbps	10.57	10.81
	263.3 Mbps	10.31	10.57
	292.5 Mbps	8.18	8.41
	351 Mbps	7.93	8.16
	390 Mbps	7.79	8.01

-. 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.

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UNII 3

Modulation	DATA RATE	OUTPUT POWER[dBm]	
		Antenna 0	Antenna 1
802.11 a (Middle Channel)	6 Mbps	15.00	14.90
	9 Mbps	14.78	14.68
	12 Mbps	14.64	14.55
	18 Mbps	14.22	14.13
	24 Mbps	13.91	13.81
	36 Mbps	13.58	13.51
	48 Mbps	12.62	12.52
	54 Mbps	11.86	11.75
HT 20 (Middle Channel)	6.5 Mbps	14.55	14.46
	13 Mbps	14.20	14.10
	19.5 Mbps	13.89	13.82
	26 Mbps	13.65	13.60
	39 Mbps	13.29	13.25
	52 Mbps	12.79	12.73
	58.5 Mbps	12.37	12.34
	65 Mbps	11.22	11.22
HT 40 (Low Channel)	13.5 Mbps	12.74	12.55
	27 Mbps	12.50	12.28
	40.5 Mbps	12.39	12.17
	54 Mbps	12.12	11.92
	81 Mbps	11.94	11.73
	108 Mbps	11.54	11.36
	121.5 Mbps	9.87	9.67
	135 Mbps	9.68	9.50

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VHT80 (Middle Channel)	29.3 Mbps	12.67	12.60
	58.5 Mbps	12.47	12.43
	87.8 Mbps	12.33	12.30
	117 Mbps	12.21	12.21
	175.5 Mbps	12.16	12.15
	234 Mbps	11.73	11.69
	263.3 Mbps	11.47	11.44
	292.5 Mbps	9.34	9.28
	351 Mbps	9.09	9.02
	390 Mbps	8.95	8.89

-. 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	-	-	100.00	-
		802.11 HT 20	-	-	100.00	-
		802.11 HT 40	-	-	100.00	-
		802.11 VHT 80	-	-	100.00	-
	UNII 2A	802.11 a	-	-	100.00	-
		802.11 HT 20	-	-	100.00	-
		802.11 HT 40	-	-	100.00	-
		802.11 VHT 80	-	-	100.00	-
	UNII 2C	802.11 a	-	-	100.00	-
		802.11 HT 20	-	-	100.00	-
		802.11 HT 40	-	-	100.00	-
		802.11 VHT 80	-	-	100.00	-
	UNII 3	802.11 a	-	-	100.00	-
		802.11 HT 20	-	-	100.00	-
		802.11 HT 40	-	-	100.00	-
		802.11 VHT 80	-	-	100.00	-
Antenna 1	UNII 1	802.11 a	-	-	100.00	-
		802.11 HT 20	-	-	100.00	-
		802.11 HT 40	-	-	100.00	-
		802.11 VHT 80	-	-	100.00	-
	UNII 2A	802.11 a	-	-	100.00	-
		802.11 HT 20	-	-	100.00	-
		802.11 HT 40	-	-	100.00	-
		802.11 VHT 80	-	-	100.00	-
	UNII 2C	802.11 a	-	-	100.00	-
		802.11 HT 20	-	-	100.00	-
		802.11 HT 40	-	-	100.00	-
		802.11 VHT 80	-	-	100.00	-
	UNII 3	802.11 a	-	-	100.00	-
		802.11 HT 20	-	-	100.00	-
		802.11 HT 40	-	-	100.00	-
		802.11 VHT 80	-	-	100.00	-

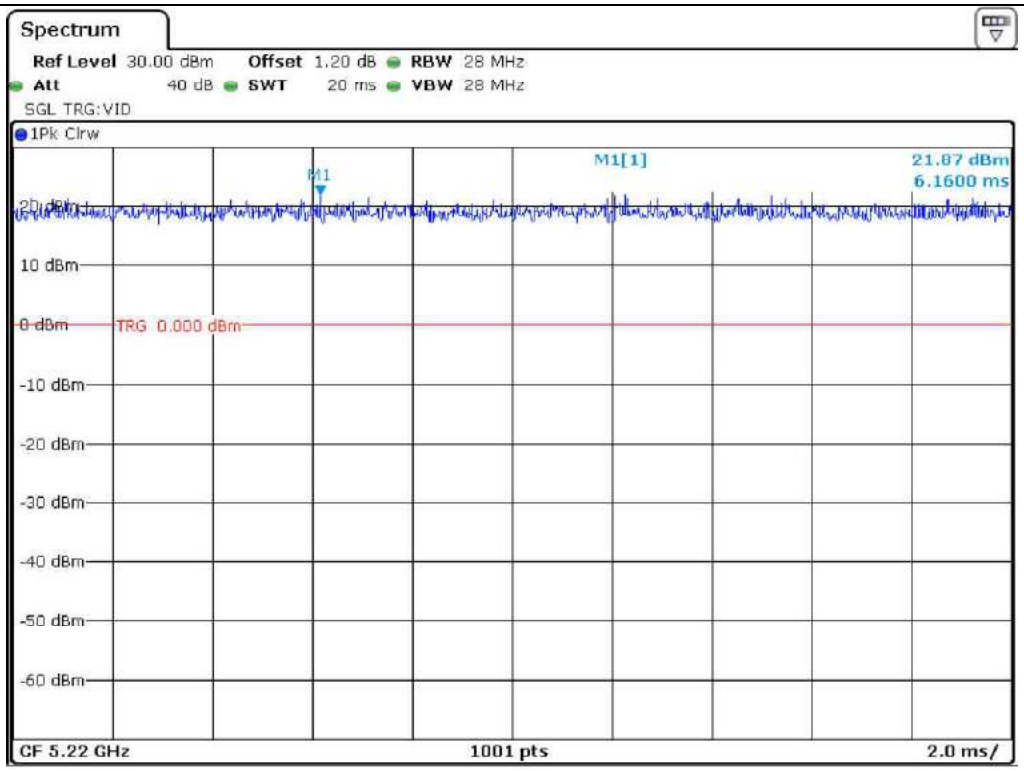
ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

	Mode	Tx On Time [ms]	Tx Off Time [ms]	Duty Cycle [%]	Correction Factor [dB]
Staddle	802.11 a	-	-	100.00	-
	802.11 HT 20	-	-	100.00	-
	802.11 HT 40	-	-	100.00	-
	802.11 VHT 80	-	-	100.00	-

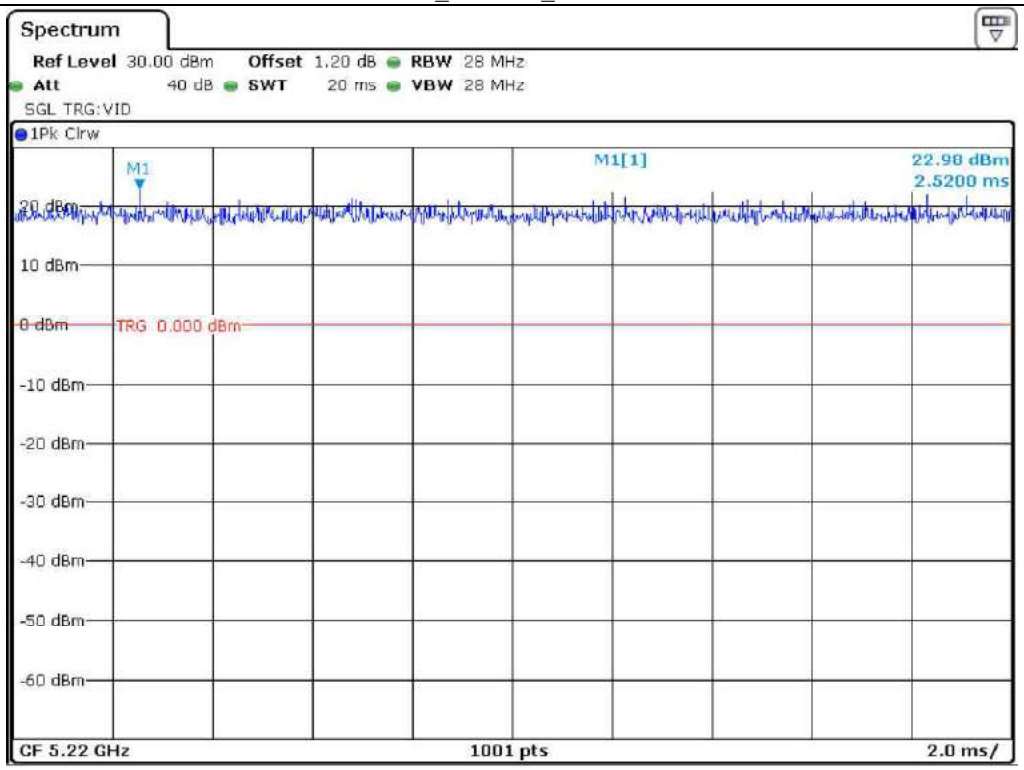
Note – Duty Cycle : (Tx On Time / (Tx On Time + Tx Off Time)) * 100

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

-. Test Plot

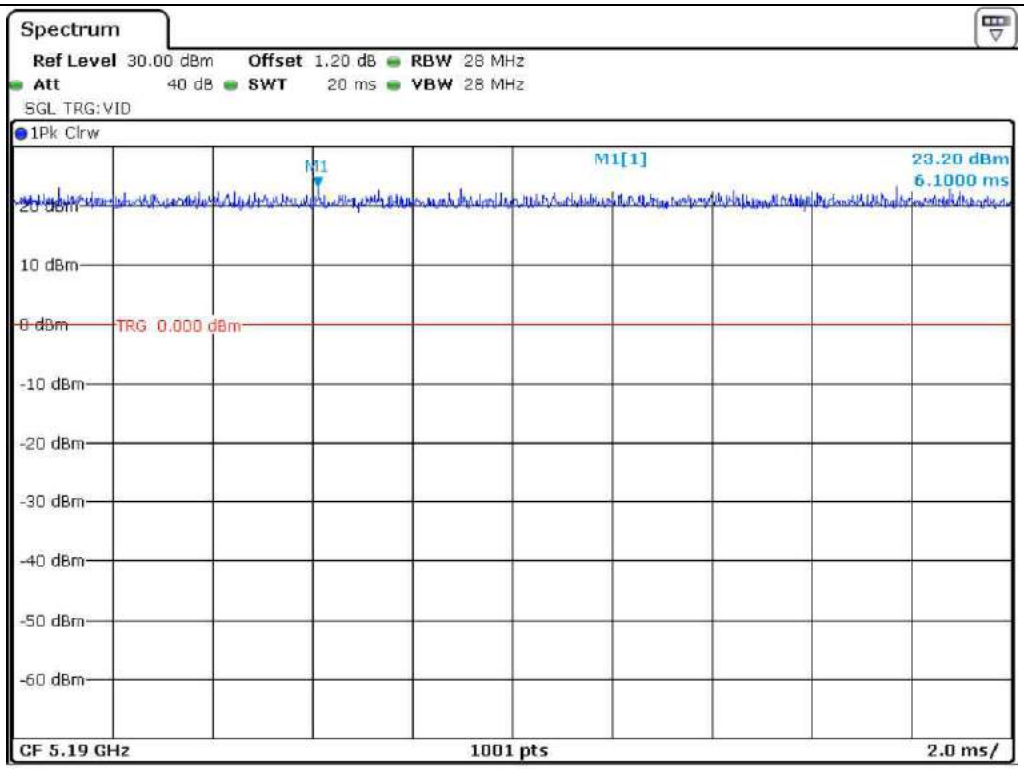


UNII 1_802.11 a_Antenna 0



UNII 1_802.11 HT 20_Antenna 0

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



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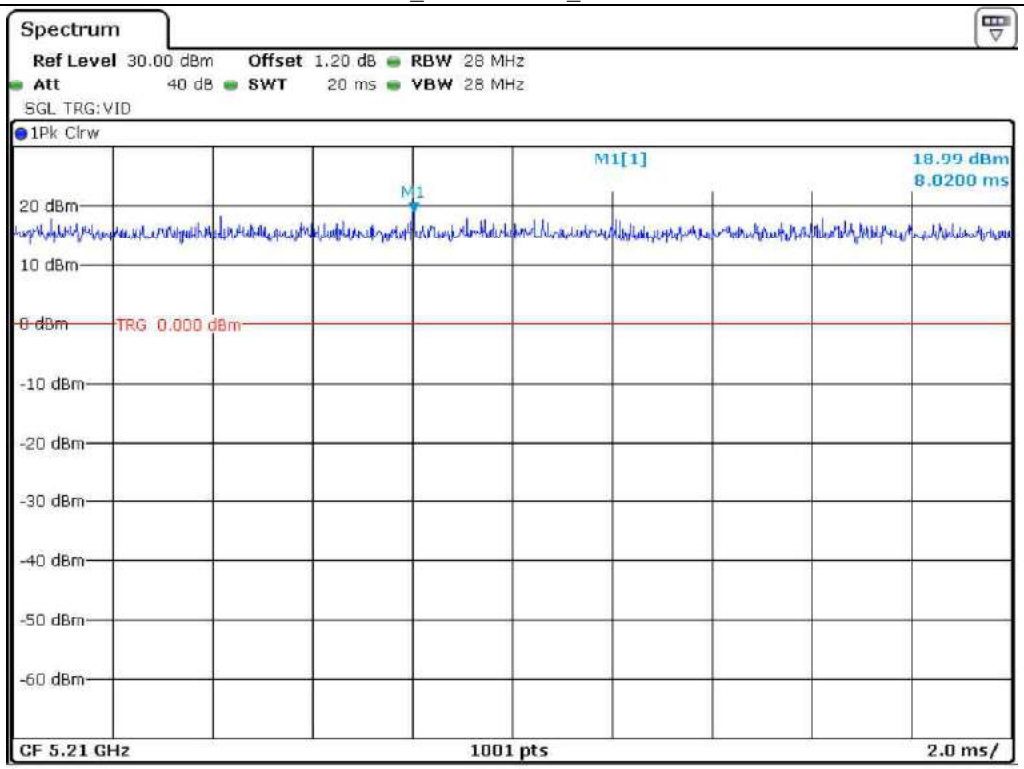
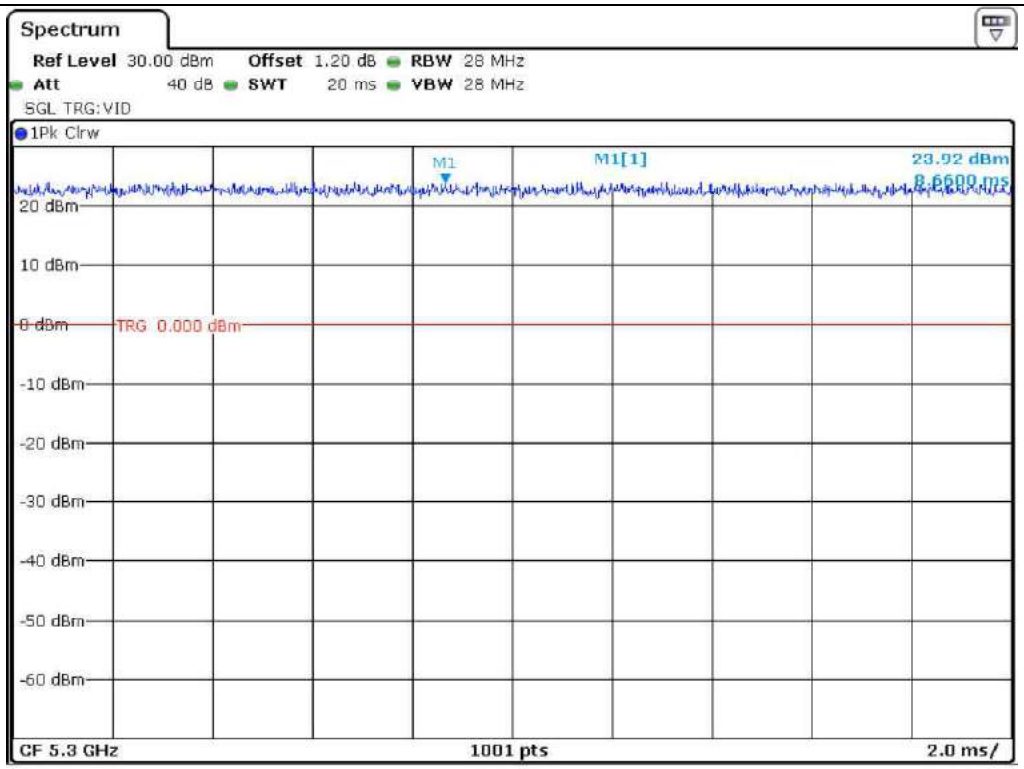


UNII 1_802.11 VHT 80_Antenna 0

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



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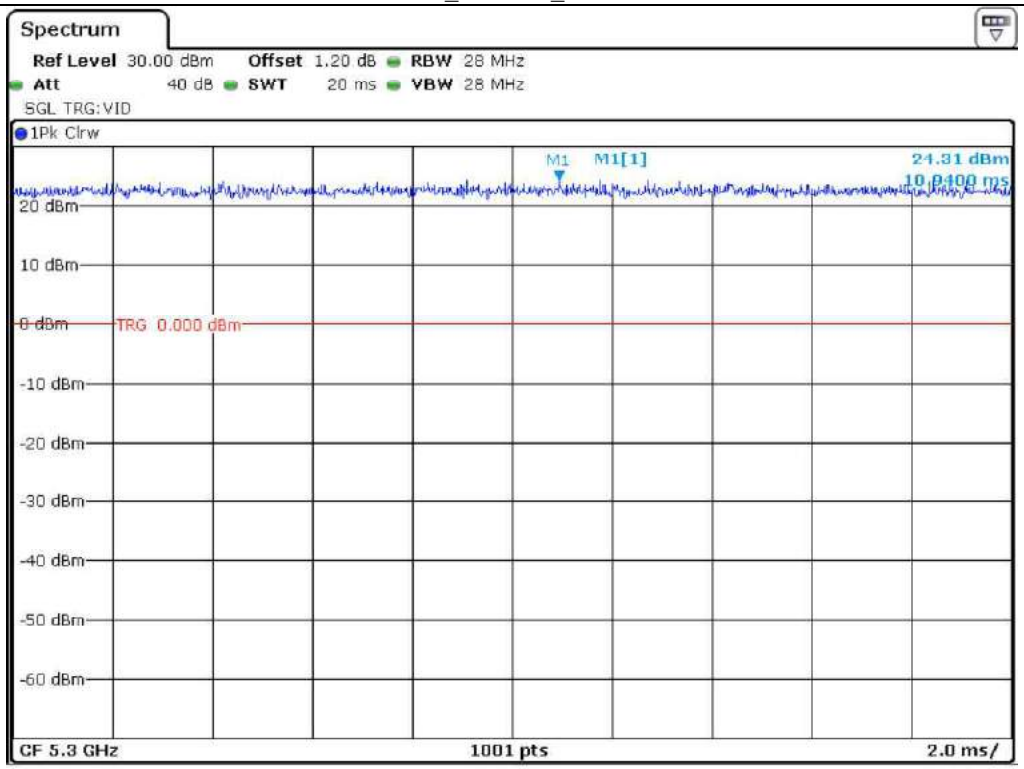
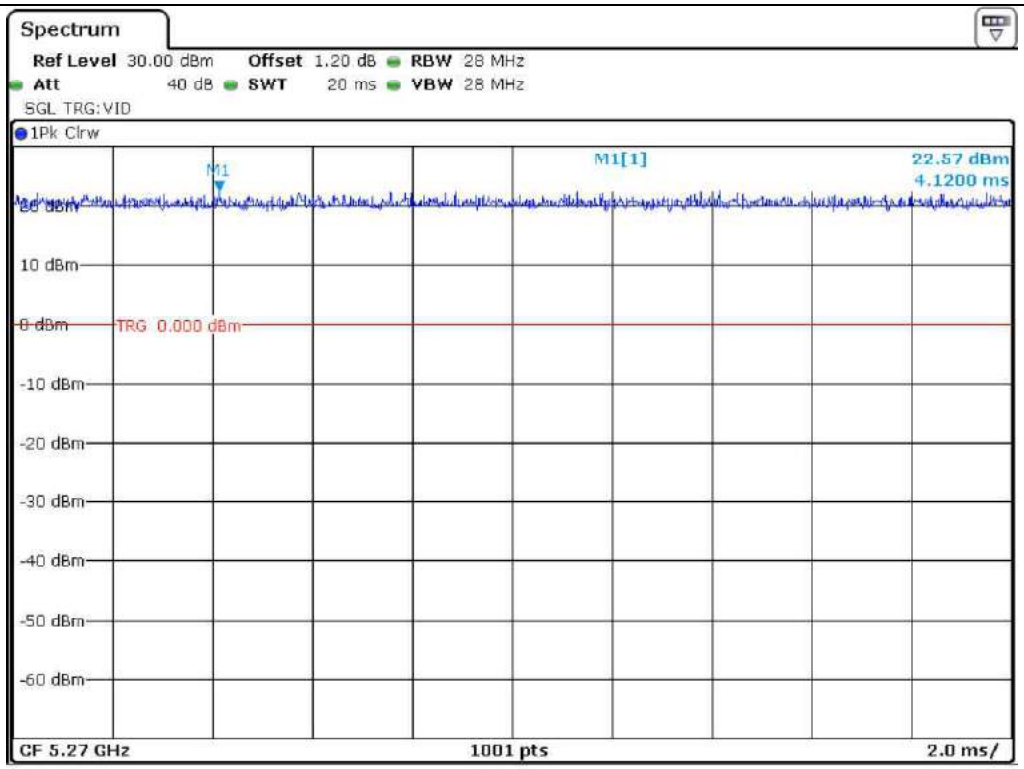


UNII 2A_802.11 HT 20_Antenna 0

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



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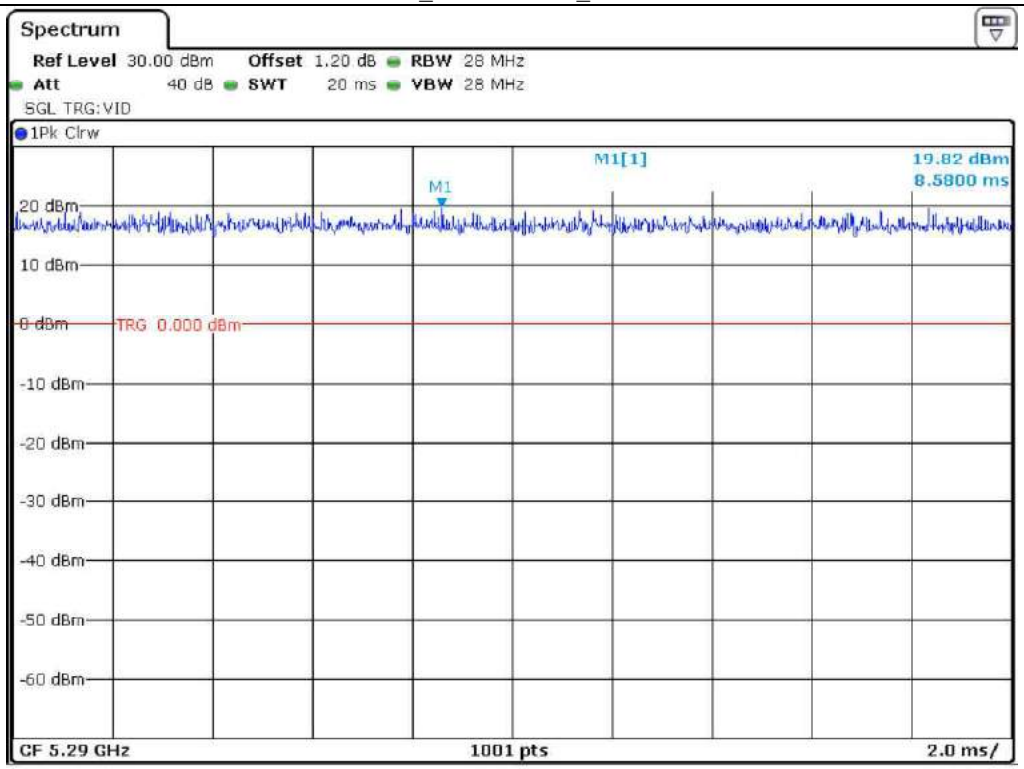
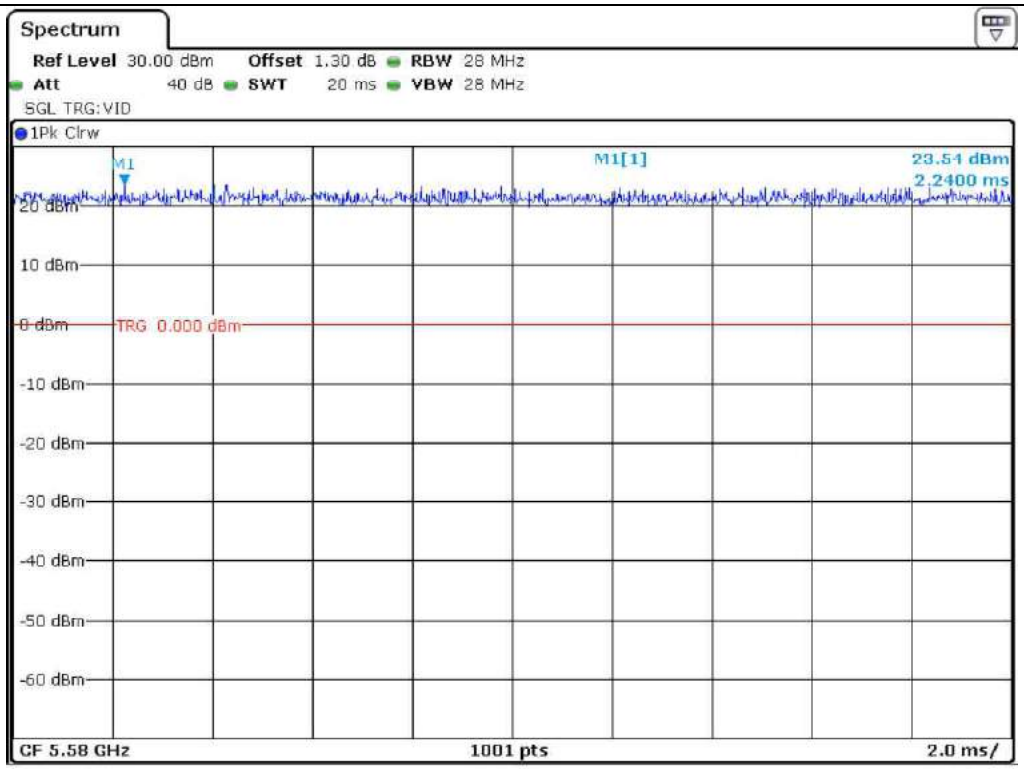
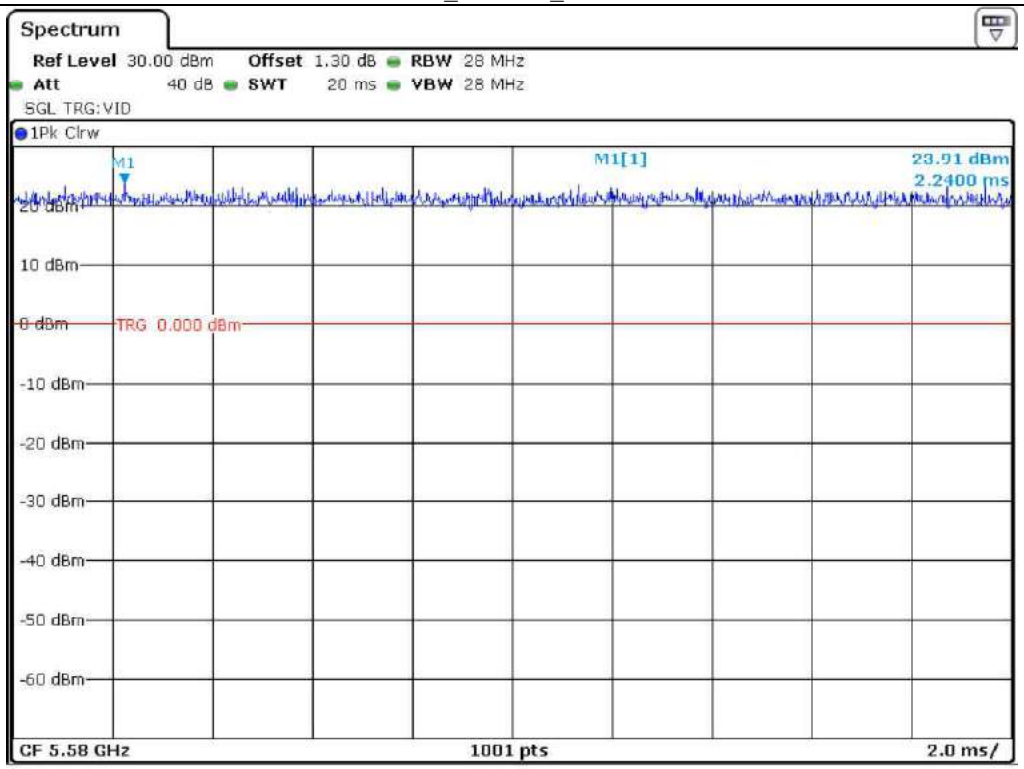


UNII 2A_802.11 VHT 80_Antenna 0

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

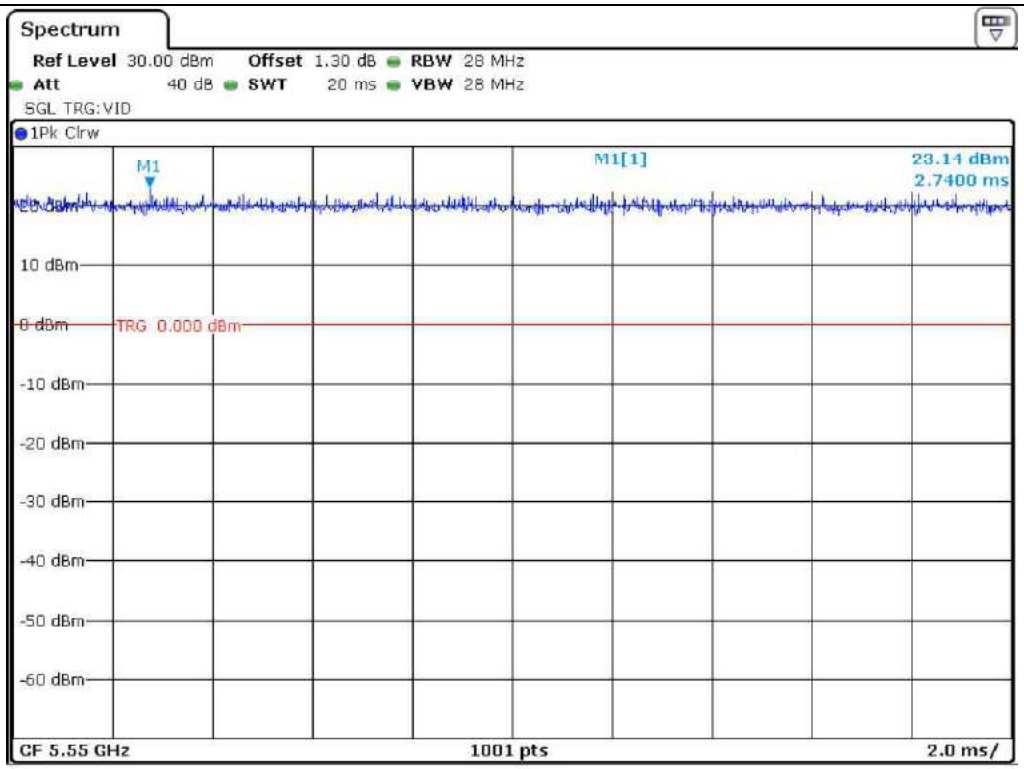


UNII 2C_802.11 a_Antenna 0



UNII 2C_802.11 HT 20_Antenna 0

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



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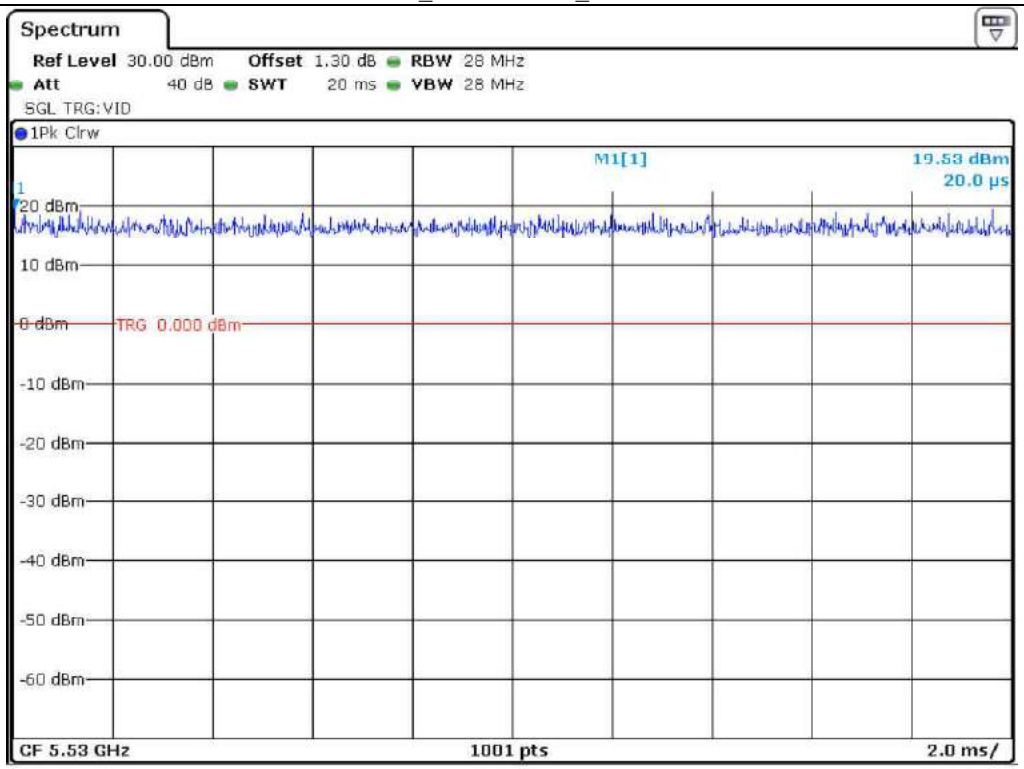

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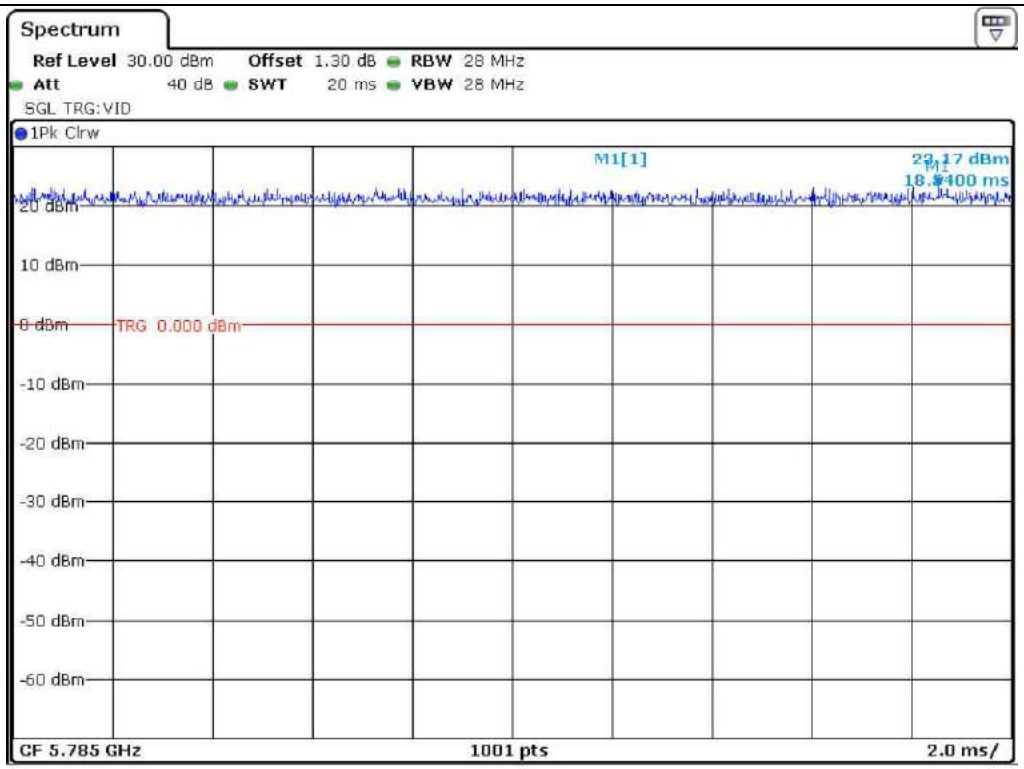
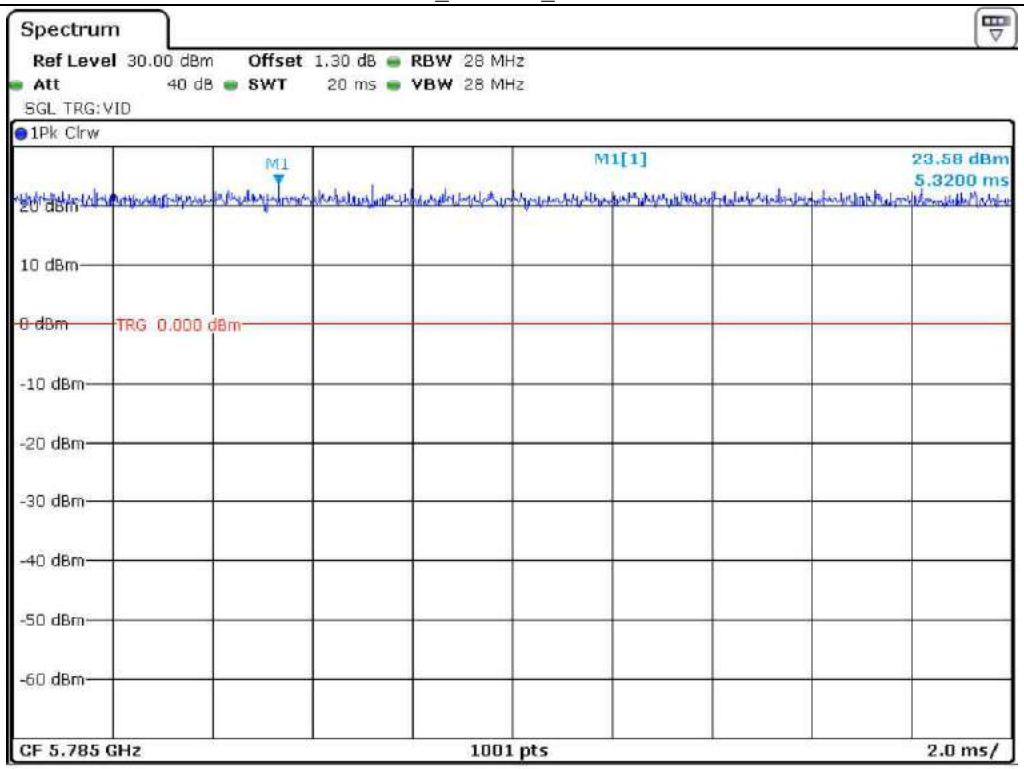


UNII 3_802.11 a_Antenna 0



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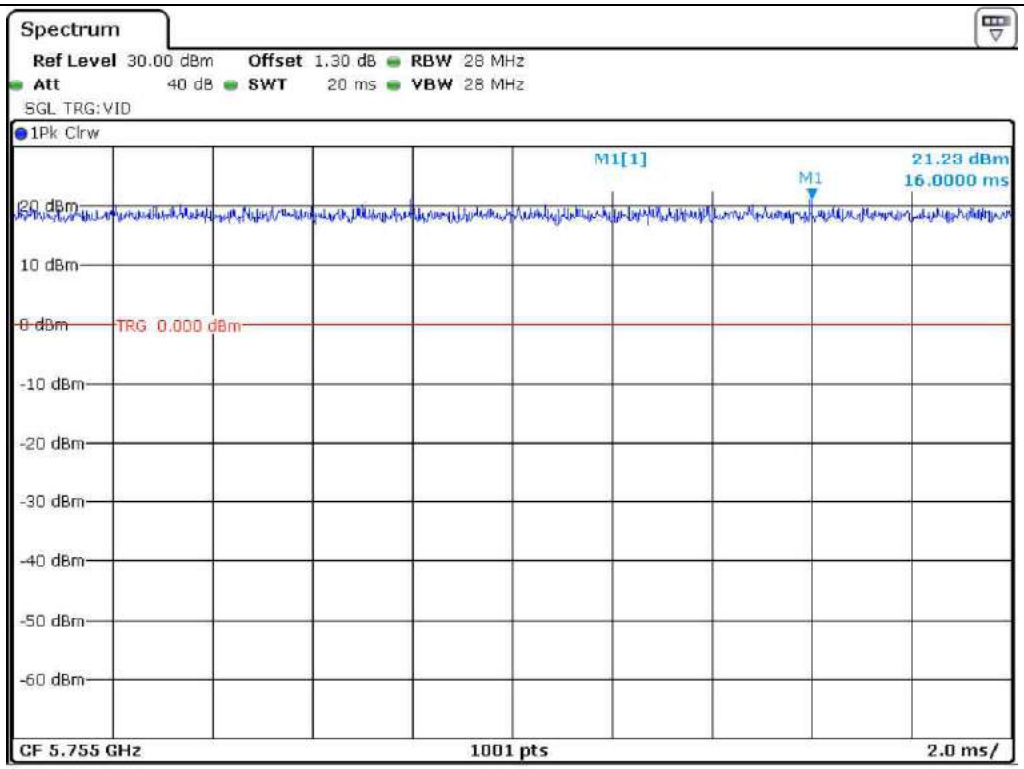

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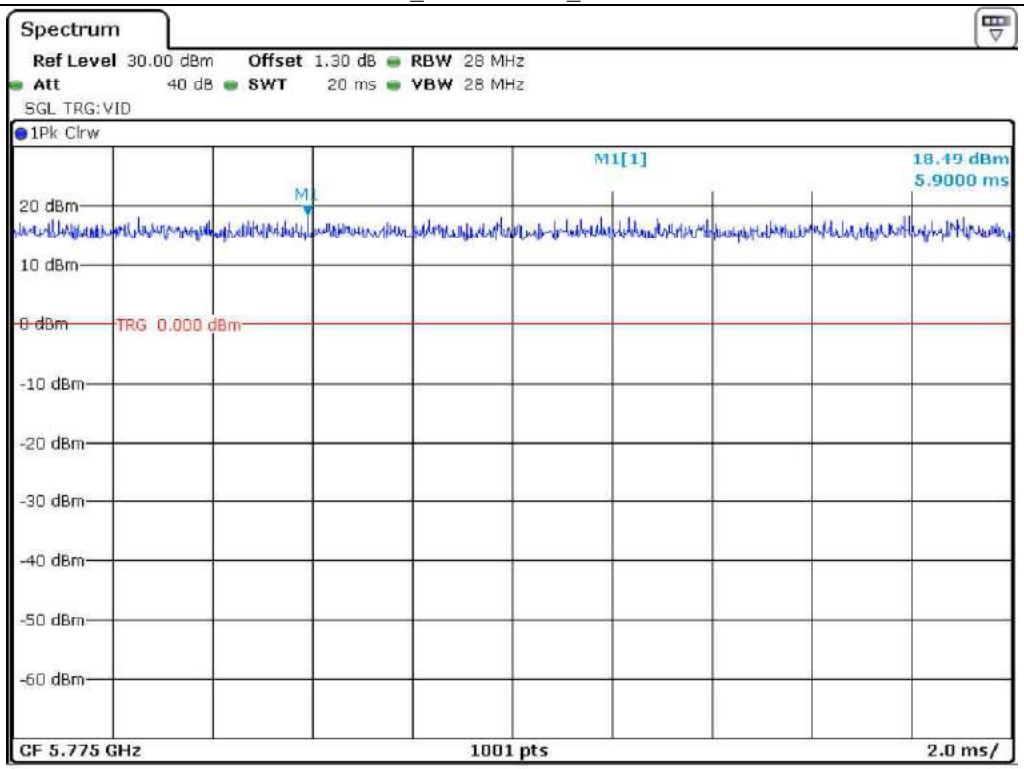
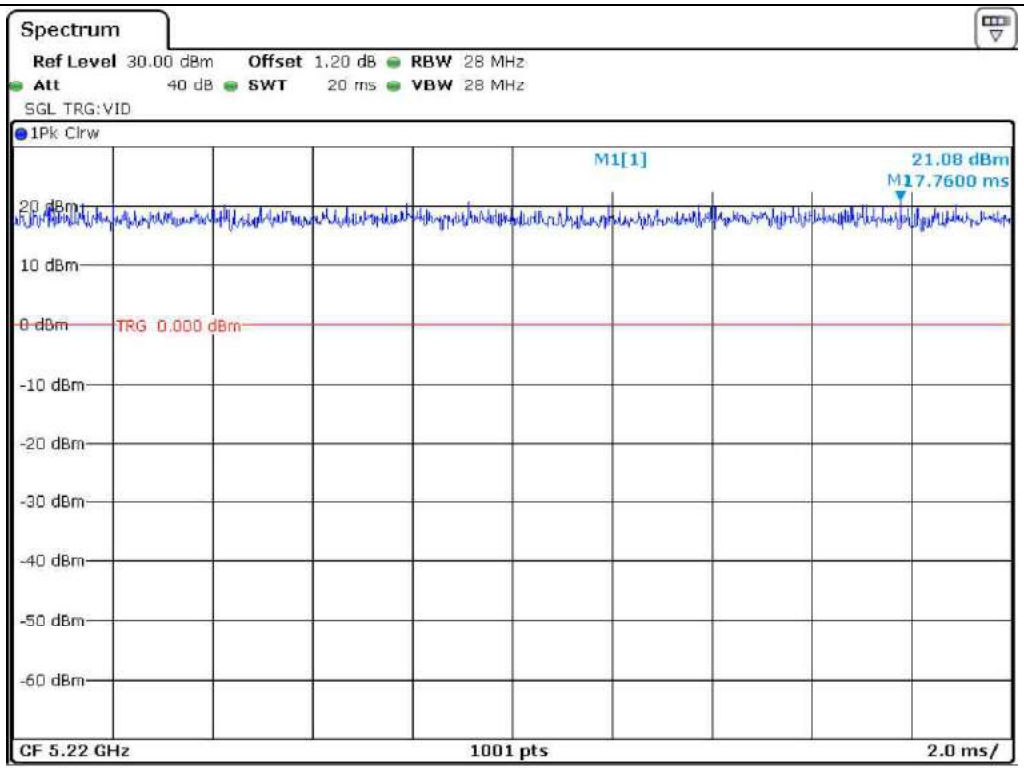


UNII 3_802.11 VHT 80_Antenna 0

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



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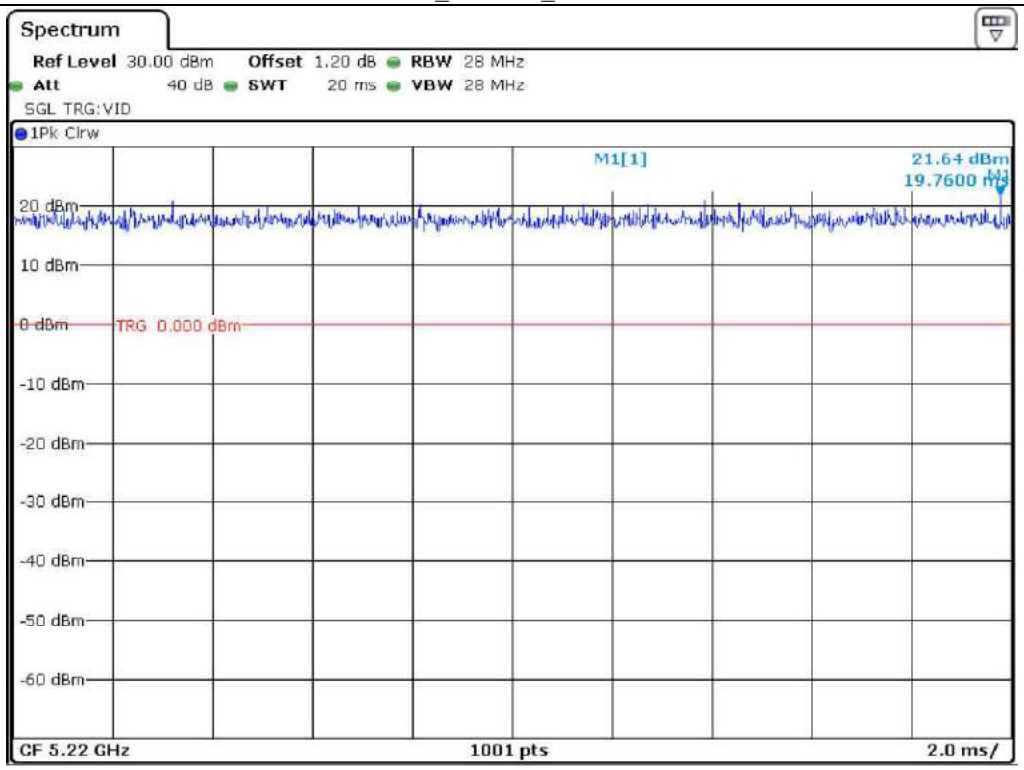
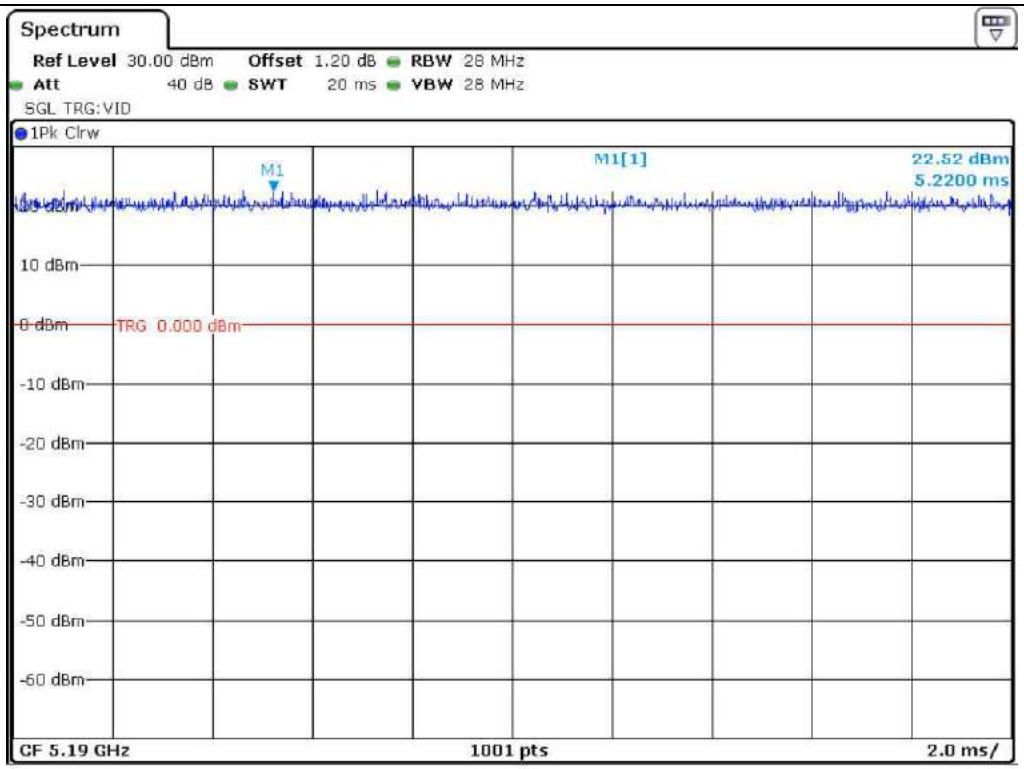


UNII 1_802.11 HT 20_Antenna 1

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



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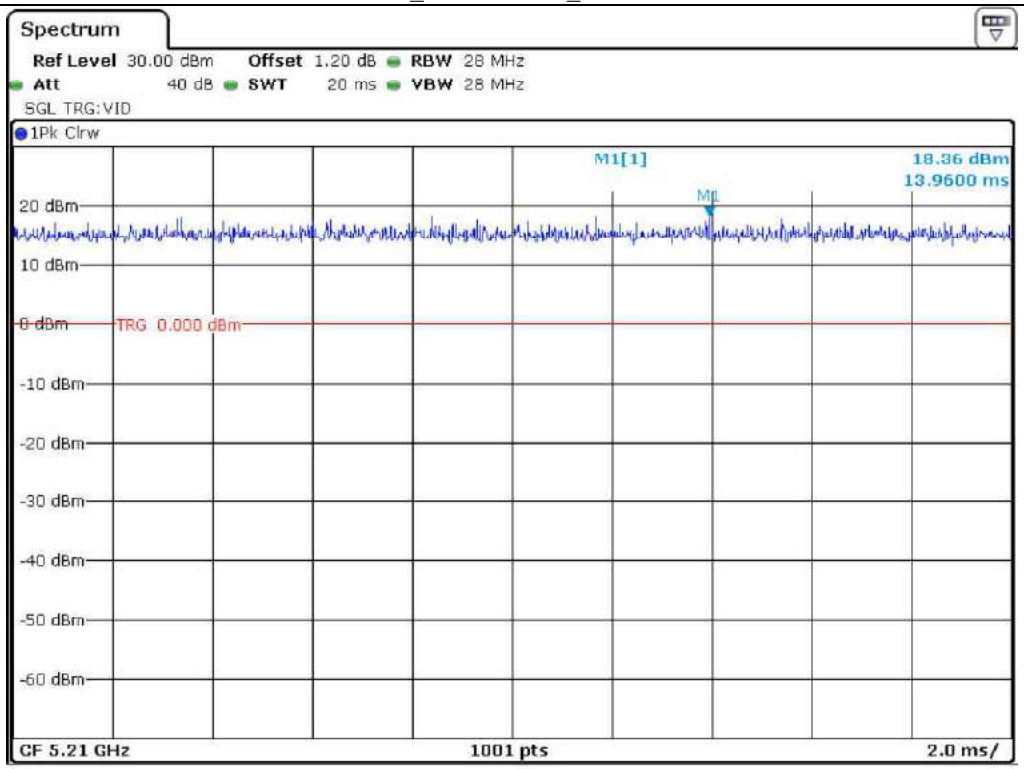
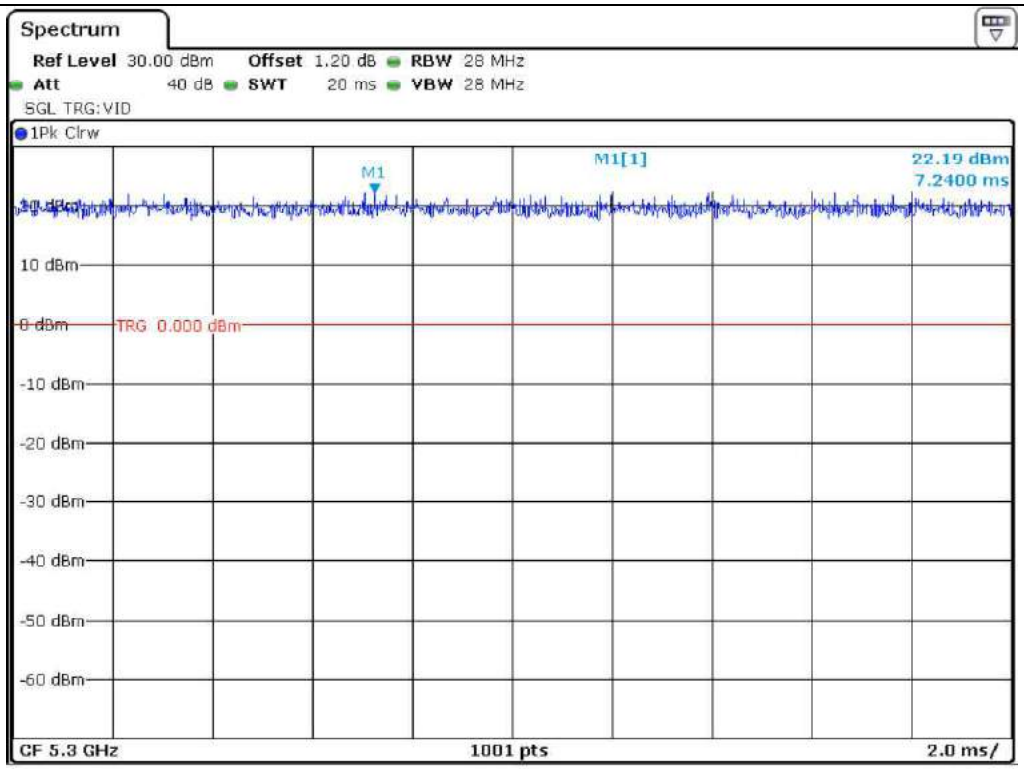


UNII 1_802.11 VHT 80_Antenna 1

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



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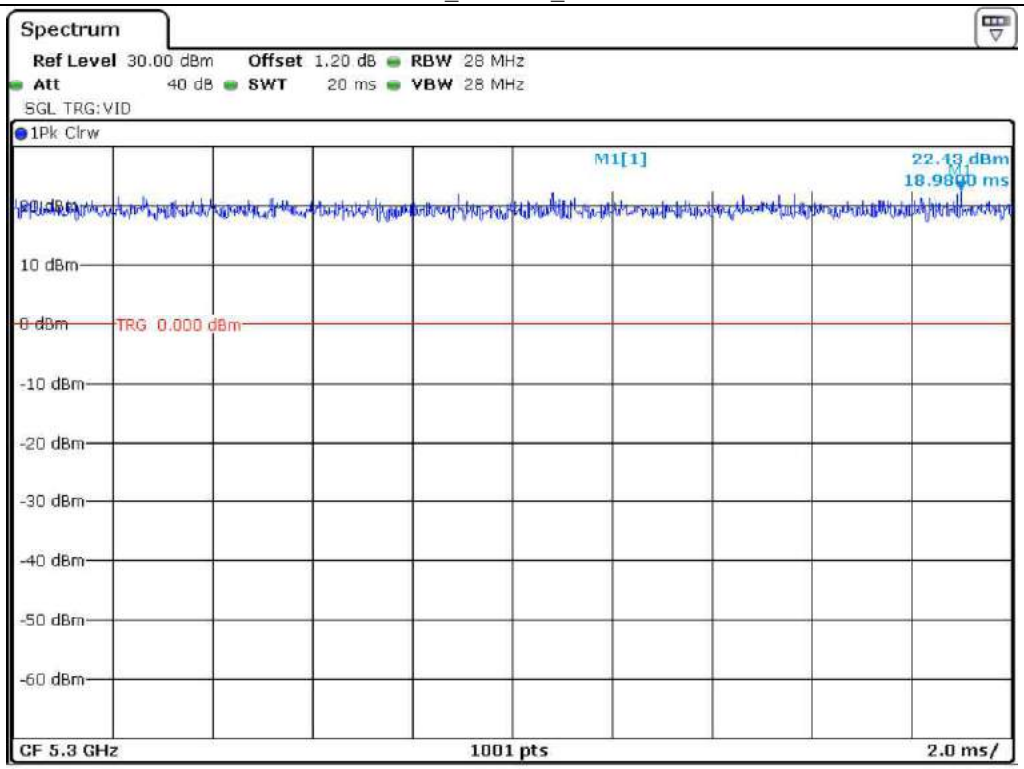

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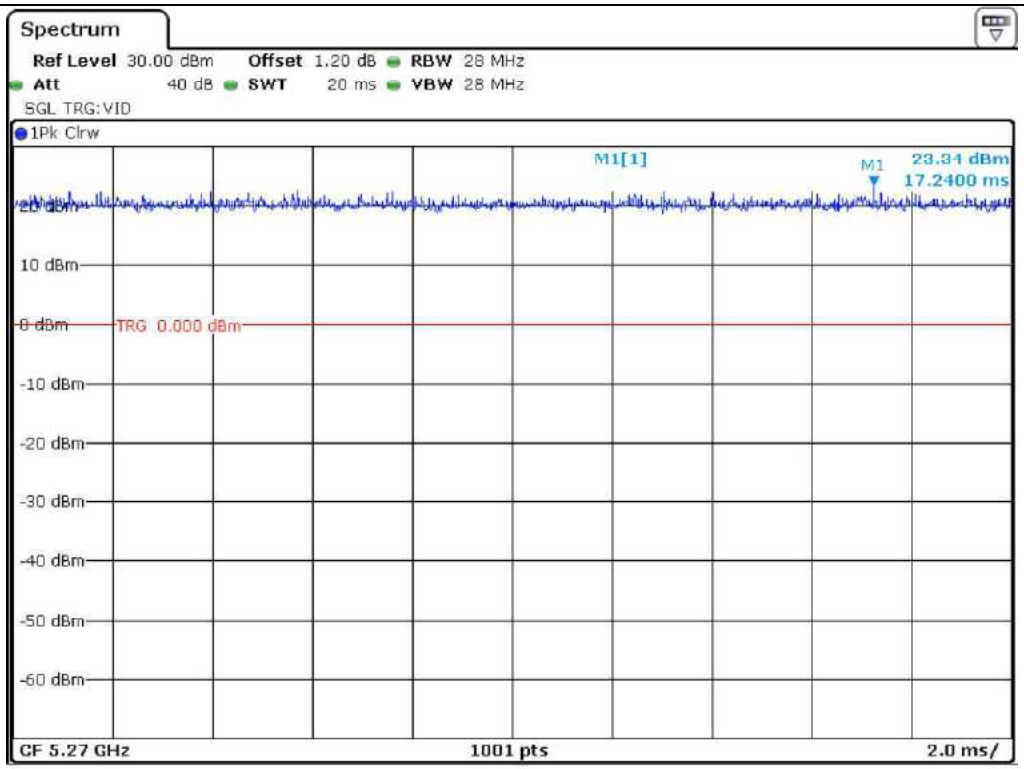
ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



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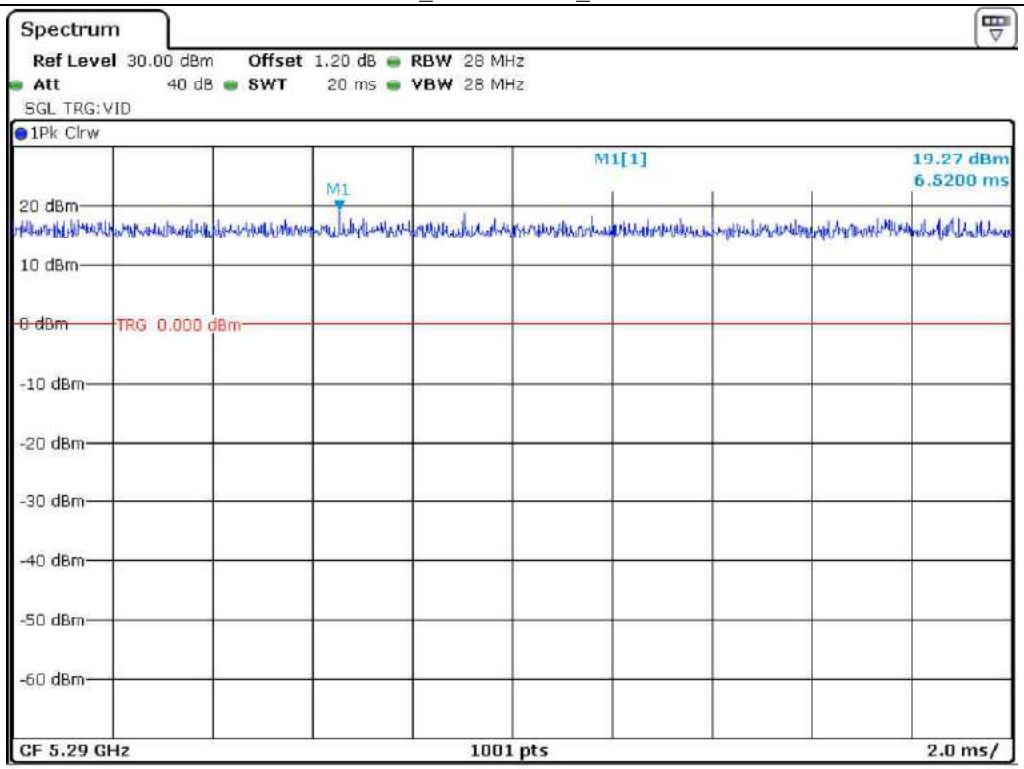
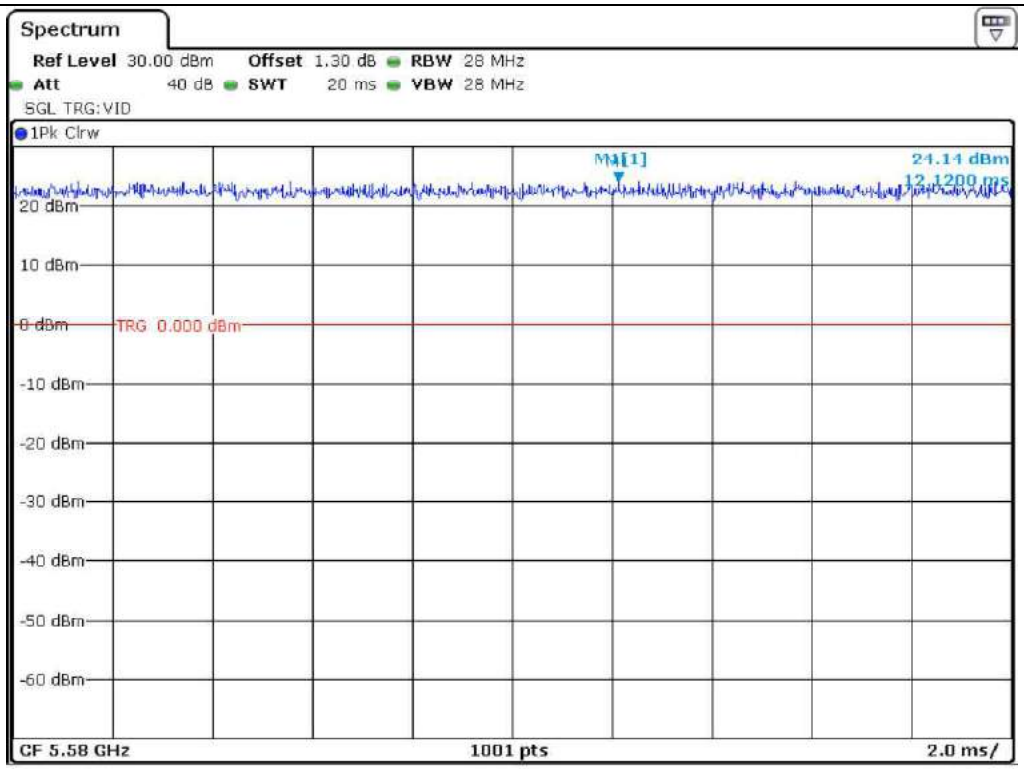


UNII 2A_802.11 VHT 80_Antenna 1

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



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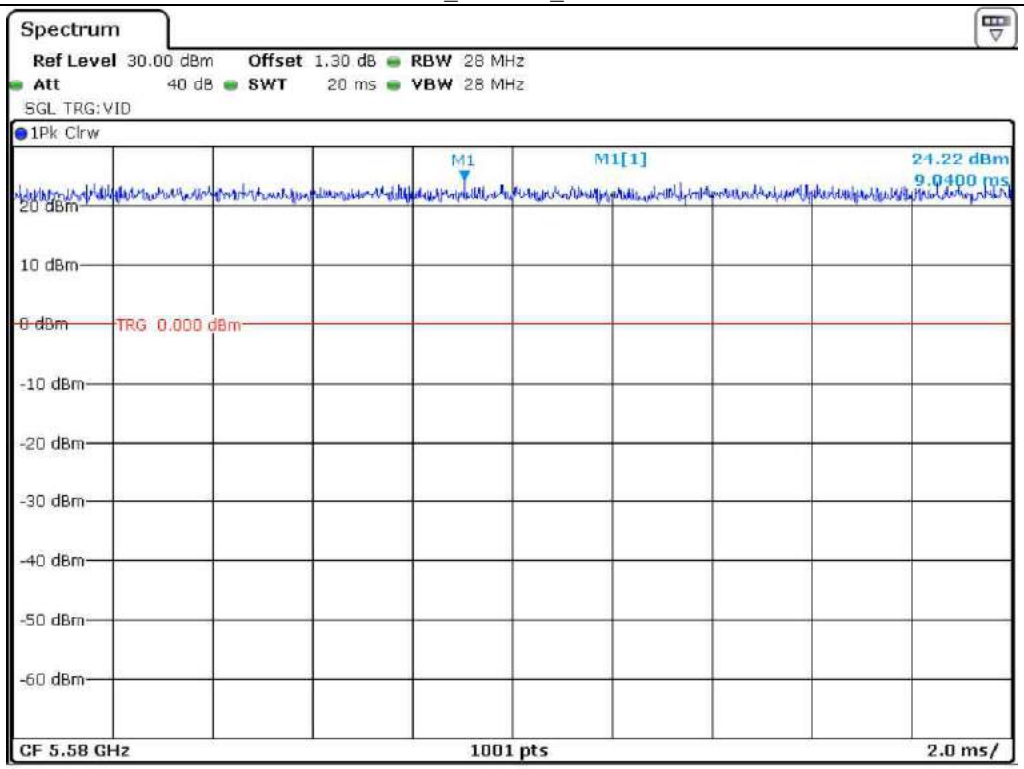

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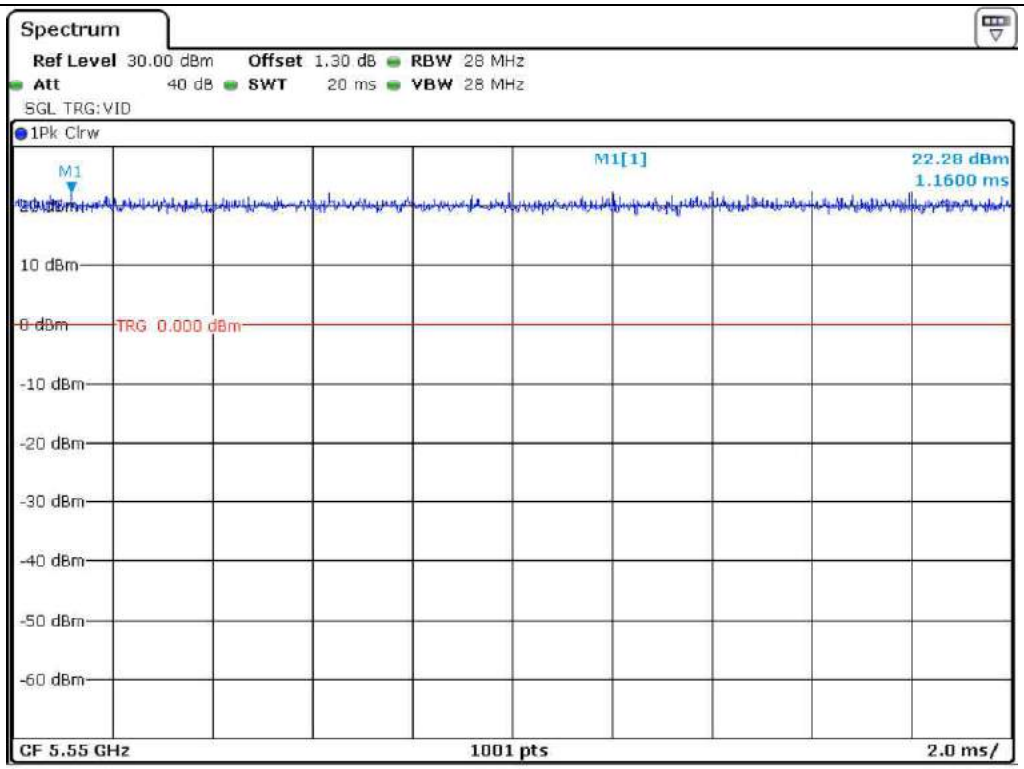
ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



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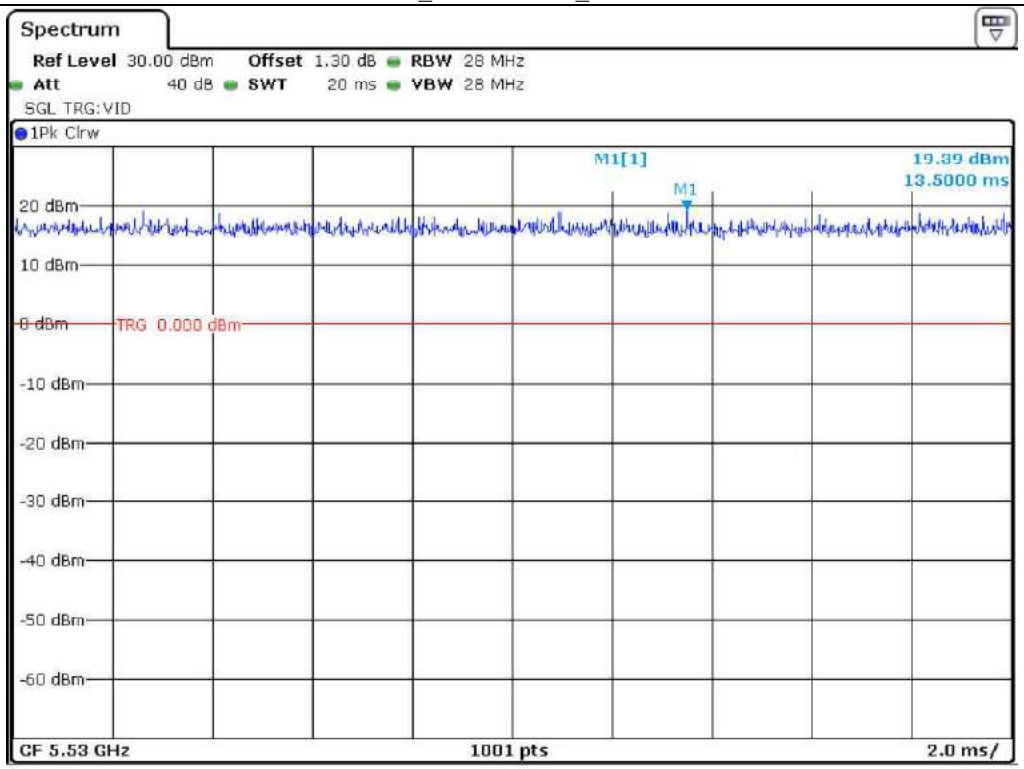
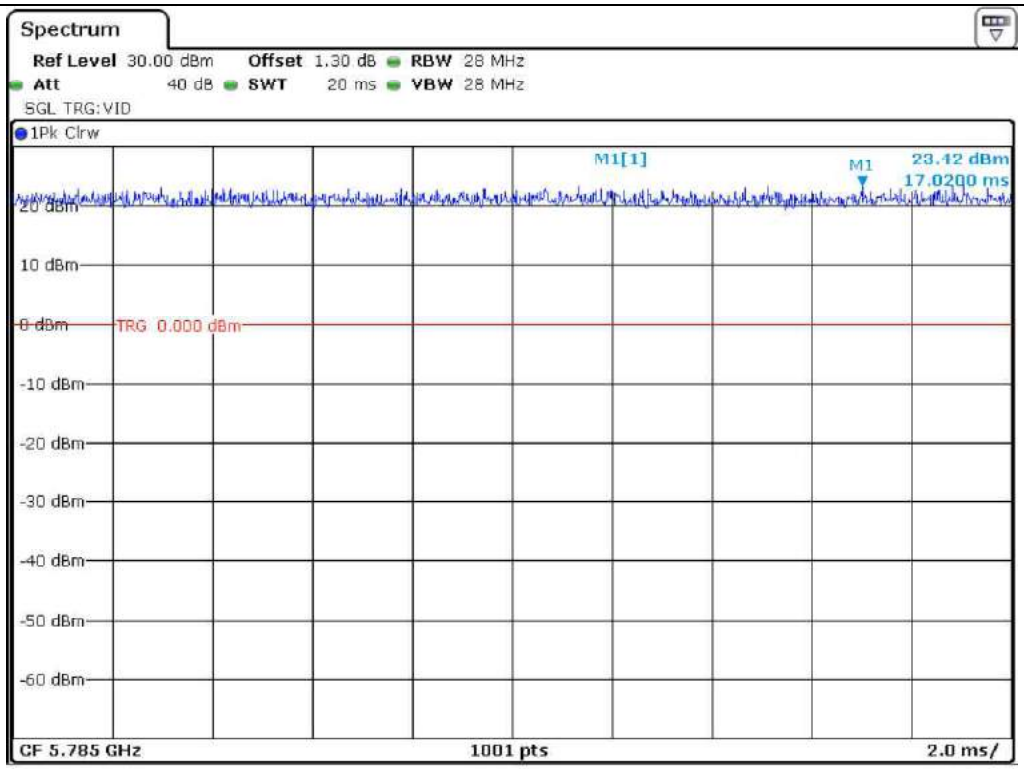
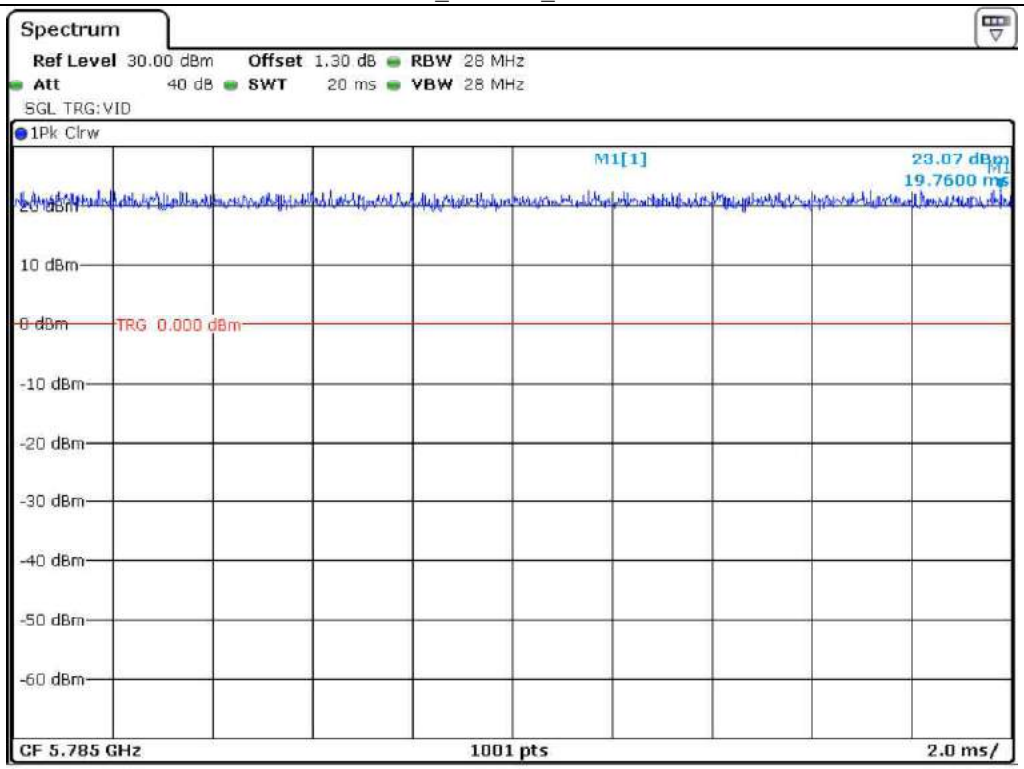


UNII 2C_802.11 VHT 80_Antenna 1

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



UNII 3_802.11 a_Antenna 1



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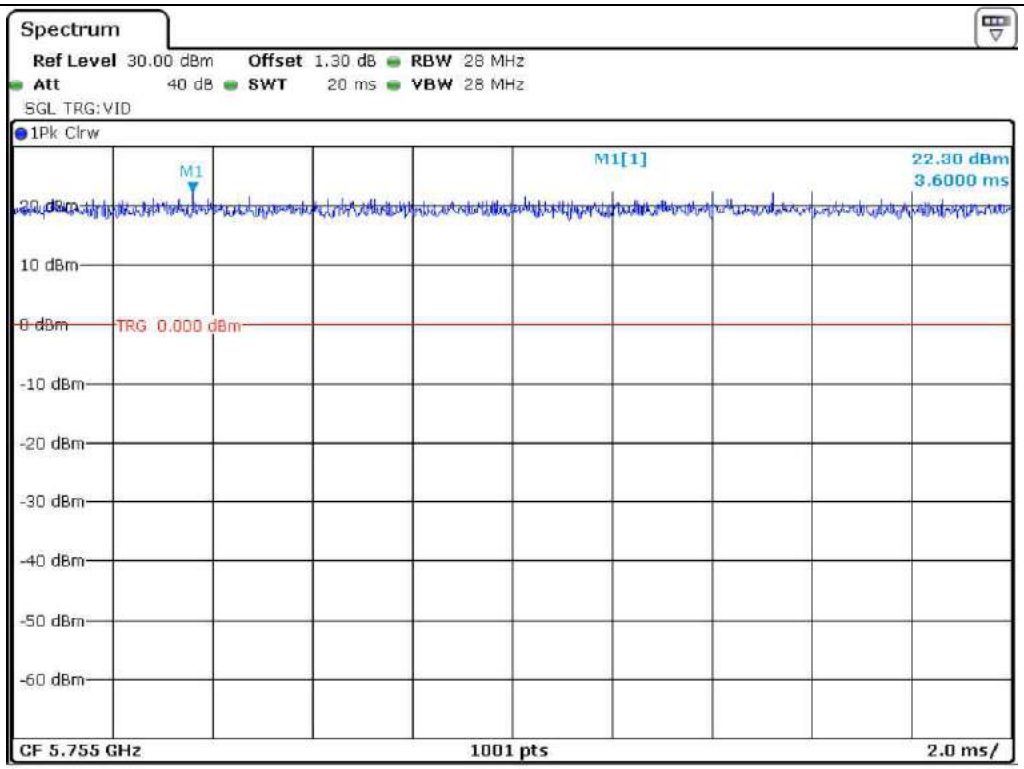
ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



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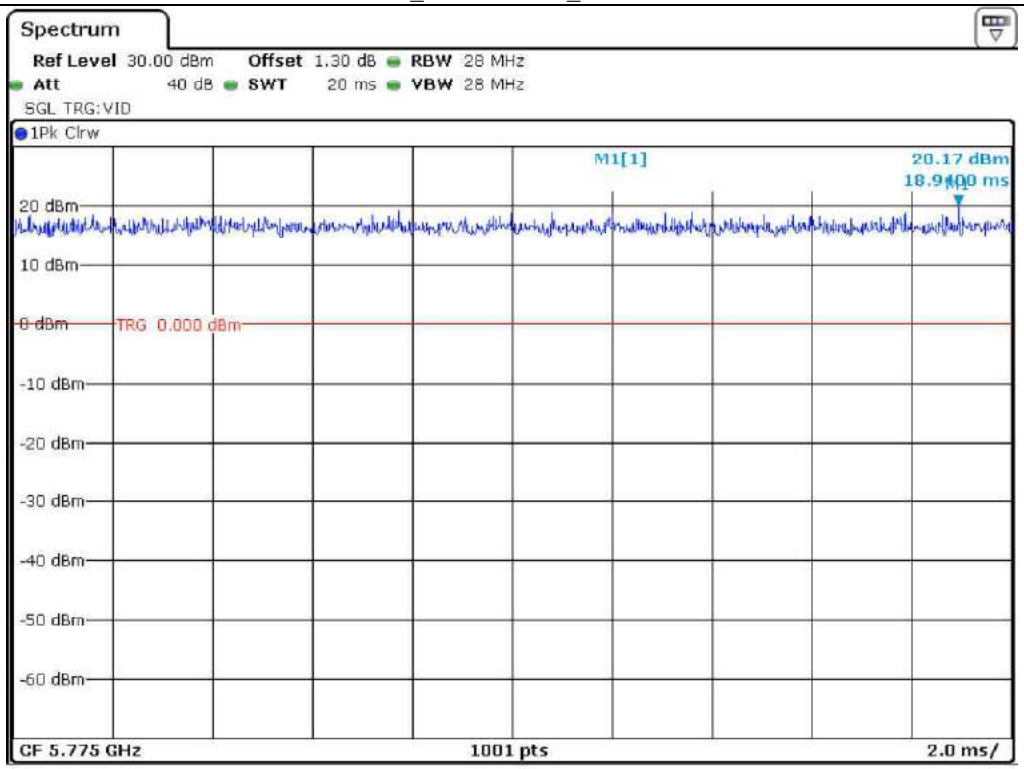
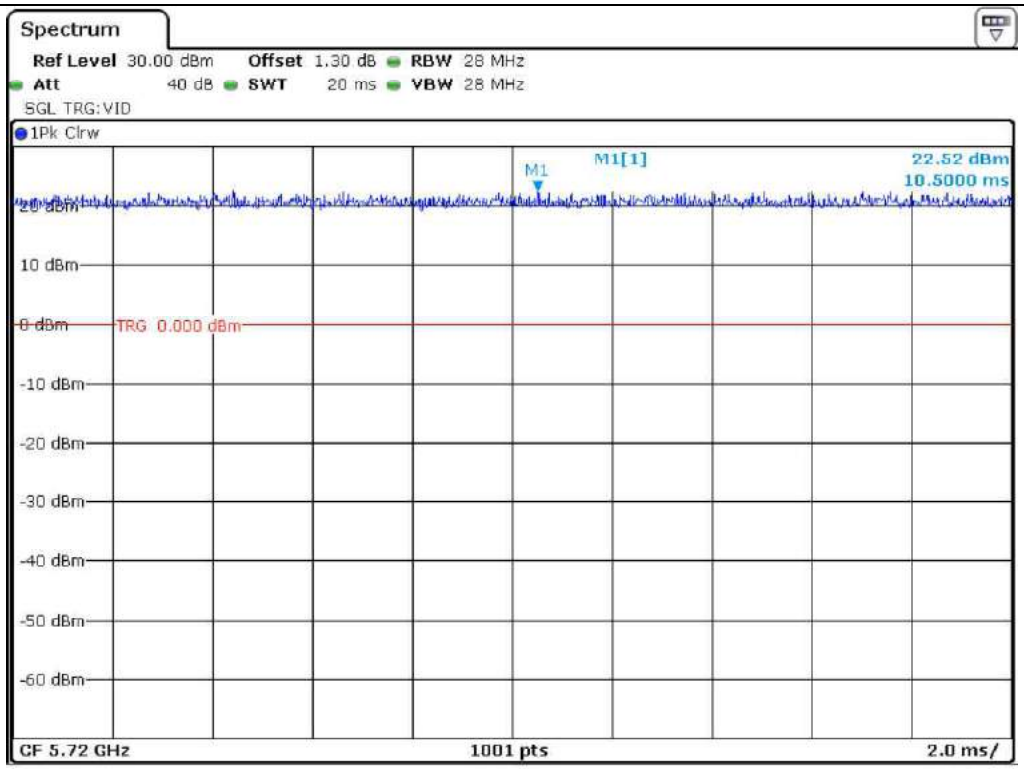
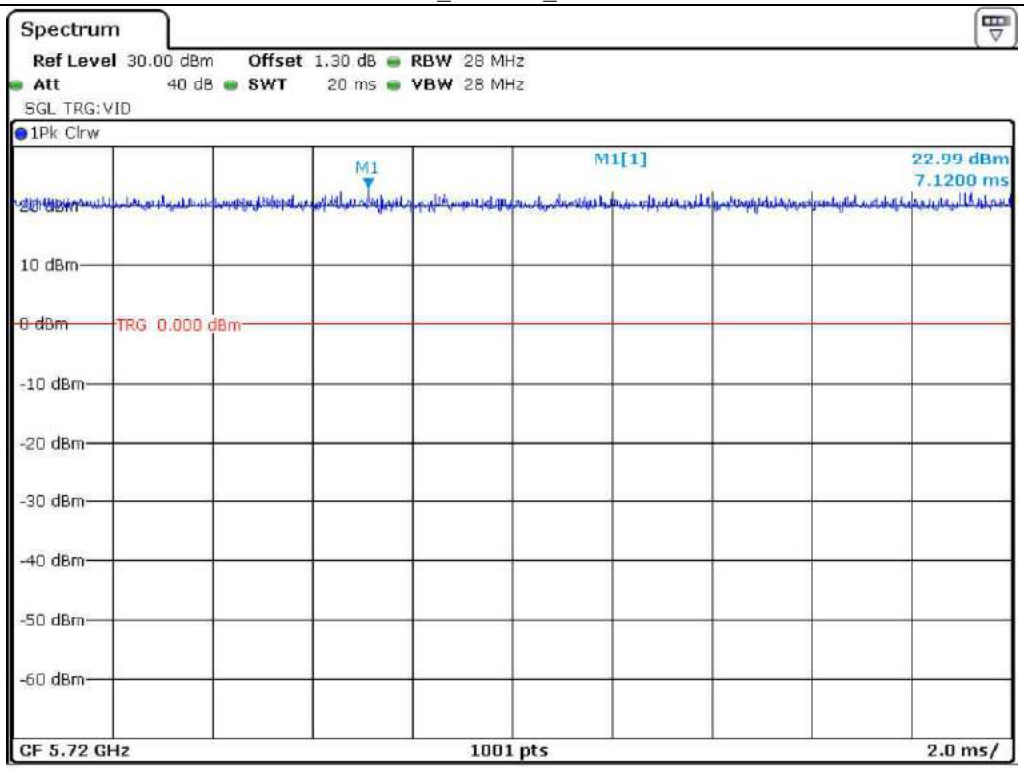


UNII 3_802.11 VHT 80_Antenna 1

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

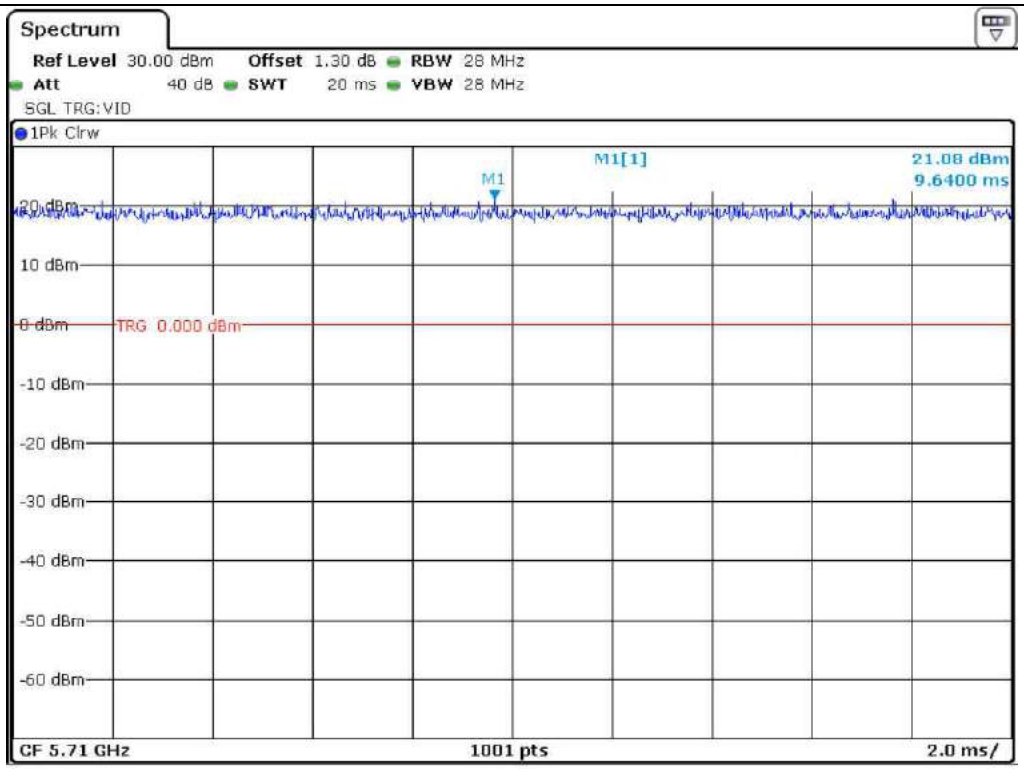


Staddle_802.11 a_Antenna 0

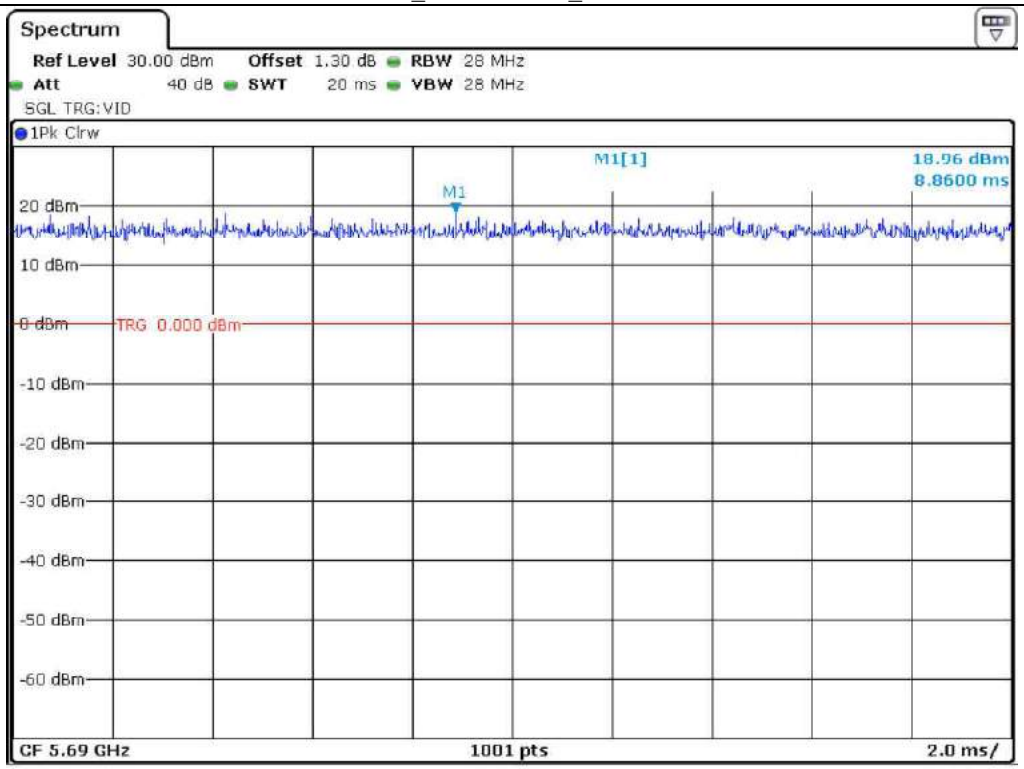


Staddle_802.11 HT 20_Antenna 0

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

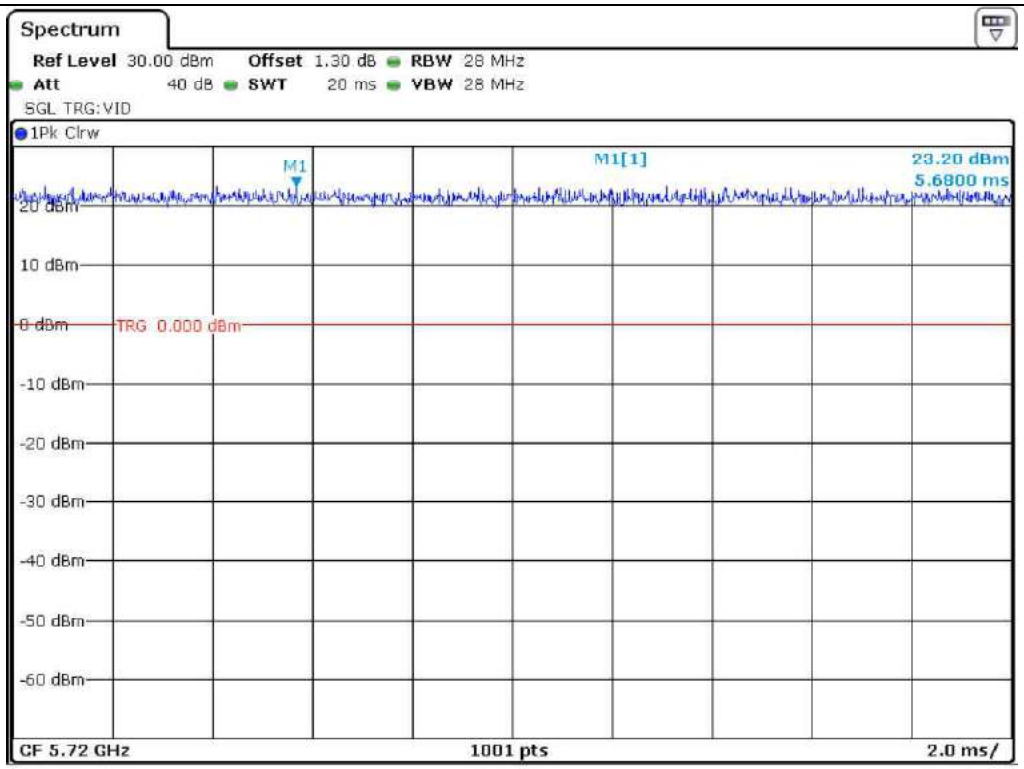


Staddle_802.11 HT40_Antenna 0

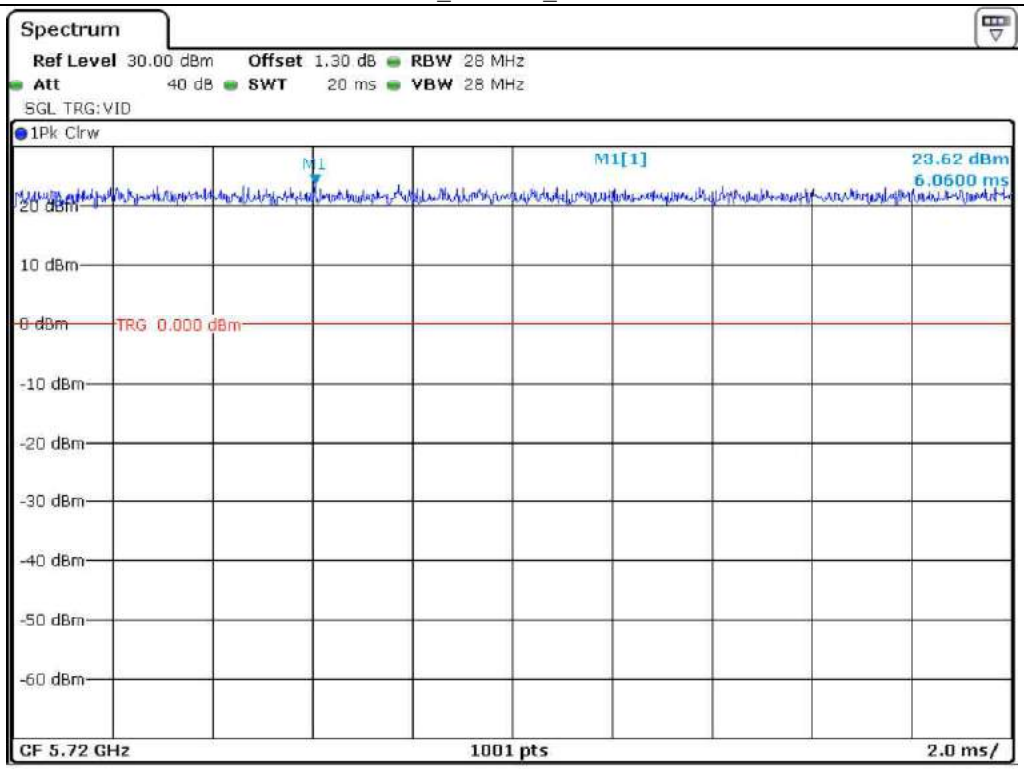


Staddle_802.11 VHT 80_Antenna 0

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

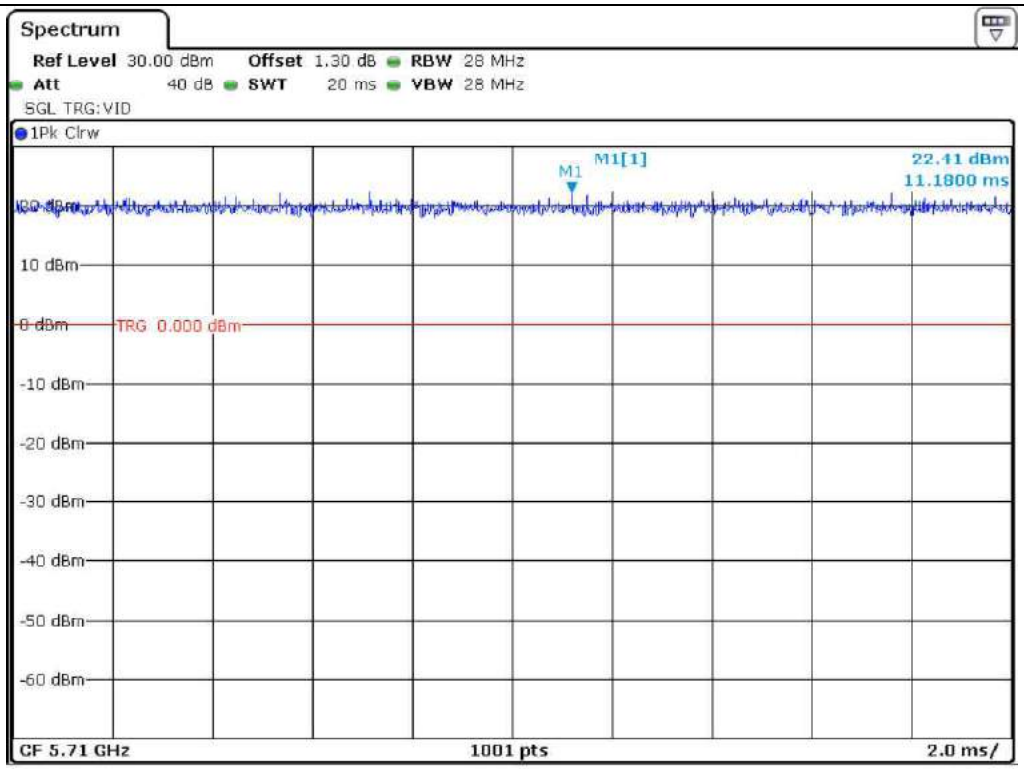


Staddle_802.11 a_Antenna 1

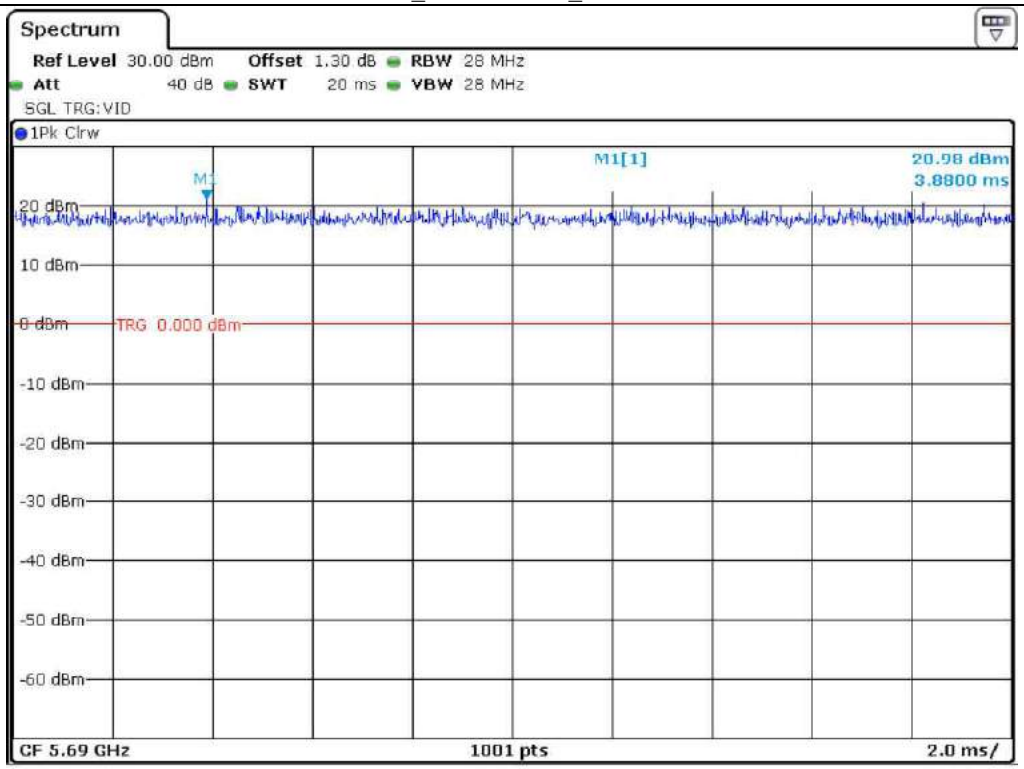


Staddle_802.11 HT 20_Antenna 1

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



Staddle_802.11 HT40_Antenna 1



Staddle_802.11 VHT 80_Antenna 1

5.4 Configuration of Test System

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

Radiated Emission Test: Preliminary radiated emissions test were conducted using the procedure in ANSI C63.10: 2013 to determine the worse operating conditions. Final radiated emission tests were conducted at 3 meter 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 Metal Antenna on the main board in the EUT, 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)
Transmitting Mode	X

6.2 General Radiated Emissions Tests

During Preliminary Test, the following operating mode was investigated.

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

7. MIMIMUM 26 dB BANDWIDTH

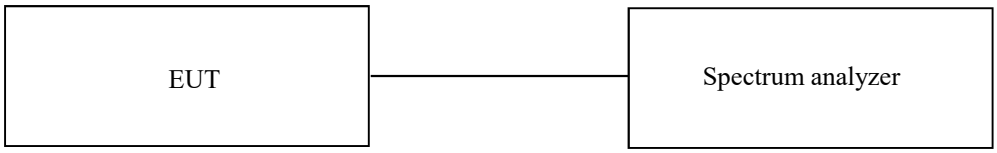
7.1 Operating environment

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 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

March 12, 2021 ~ March 22, 2021

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

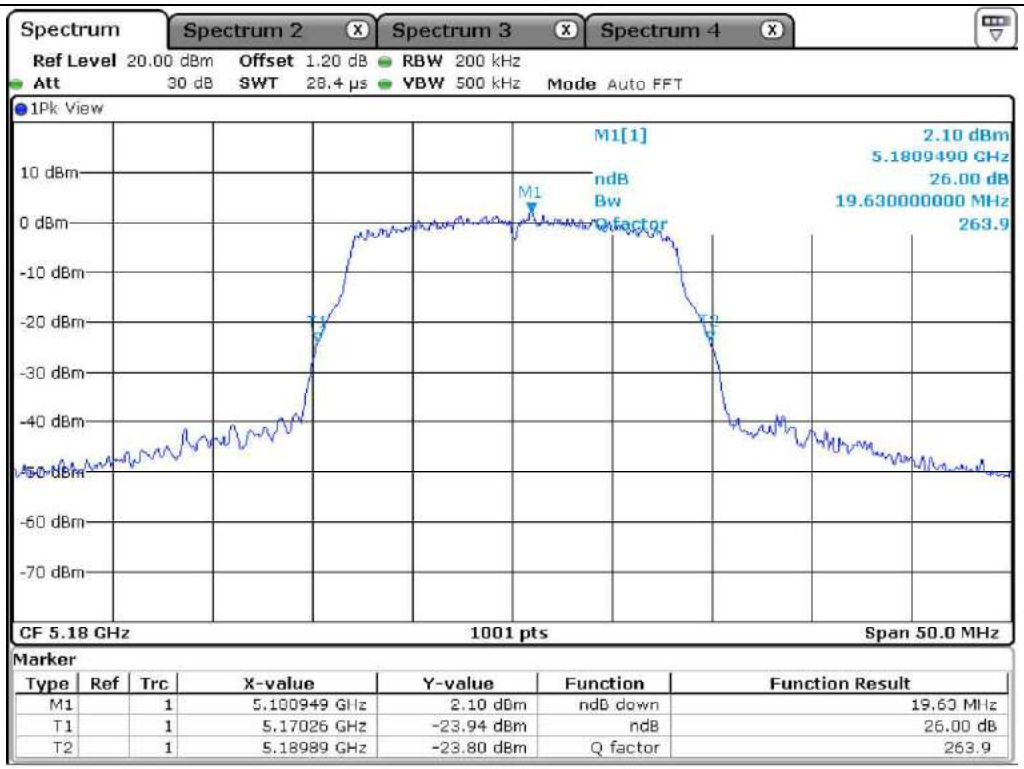
7.4 Test data for 802.11a RLAN Mode

7.4.1 Test data for Antenna 0

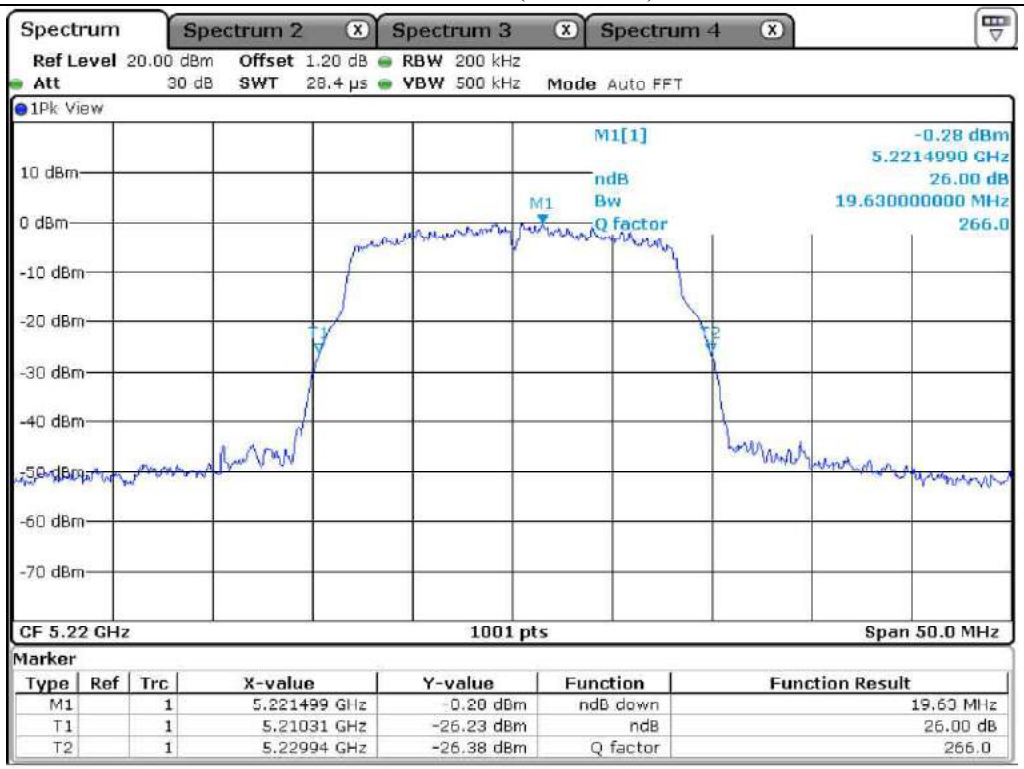
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180.00	19.63
	Middle	5 220.00	19.63
	High	5 240.00	19.63
5 250 ~ 5 350	Low	5 260.00	20.03
	Middle	5 300.00	19.88
	High	5 320.00	19.93
5 470 ~ 5 725	Low	5 500.00	19.98
	Middle	5 580.00	19.93
	High	5 700.00	19.83
5 725 ~ 5 850	Low	5 745.00	19.98
	Middle	5 785.00	19.93
	High	5 825.00	19.83

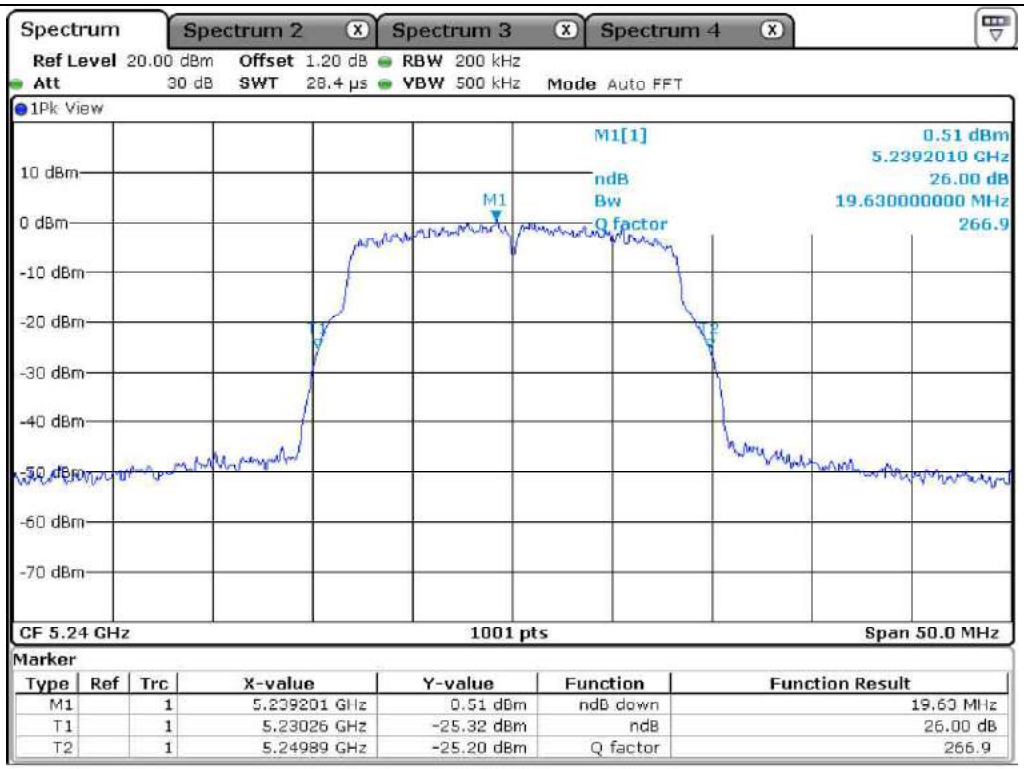
Remark: See next page for measurement data.



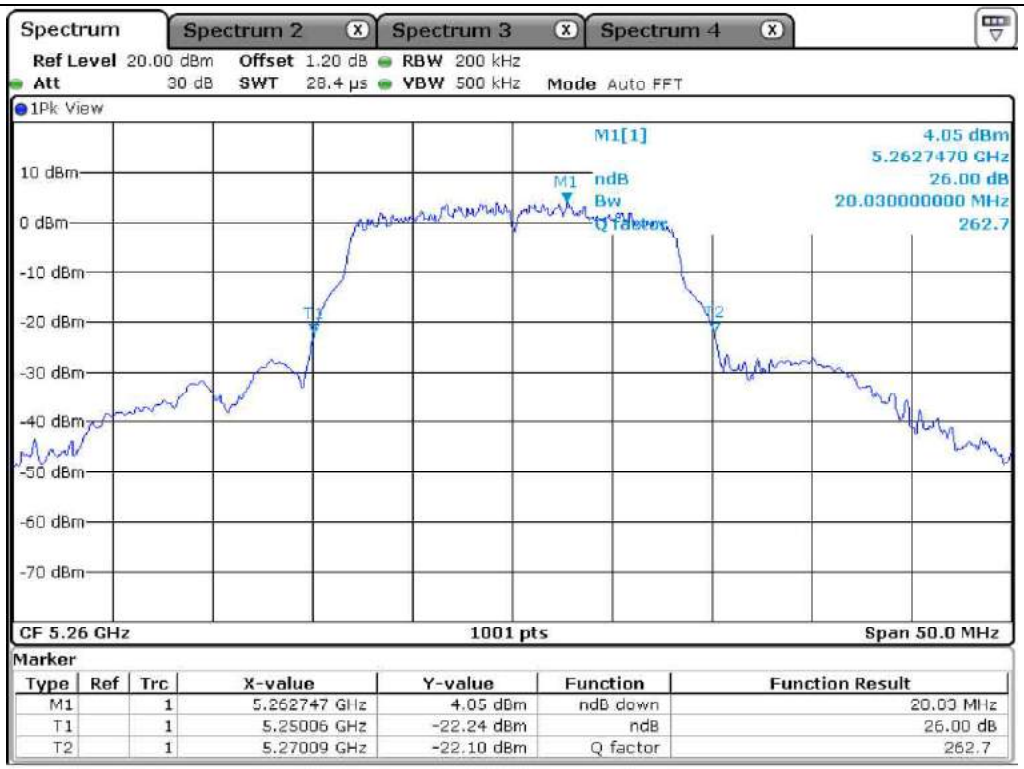
Low Channel (5 180 MHz)



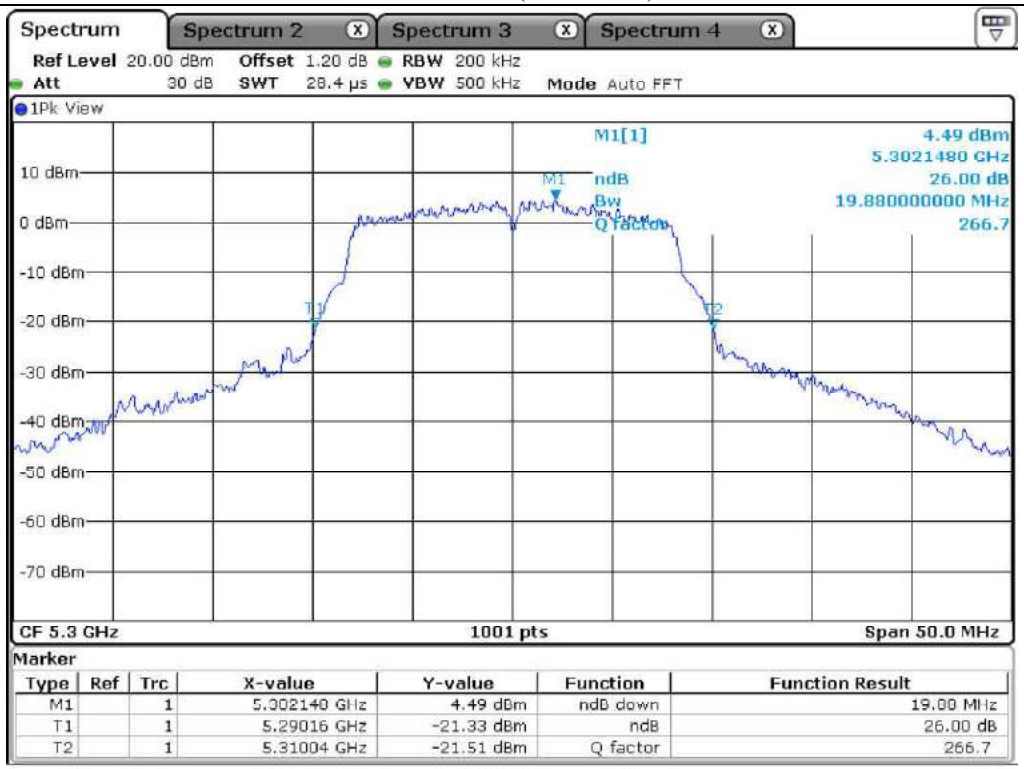
Middle Channel (5 220 MHz)



High Channel (5 240 MHz)

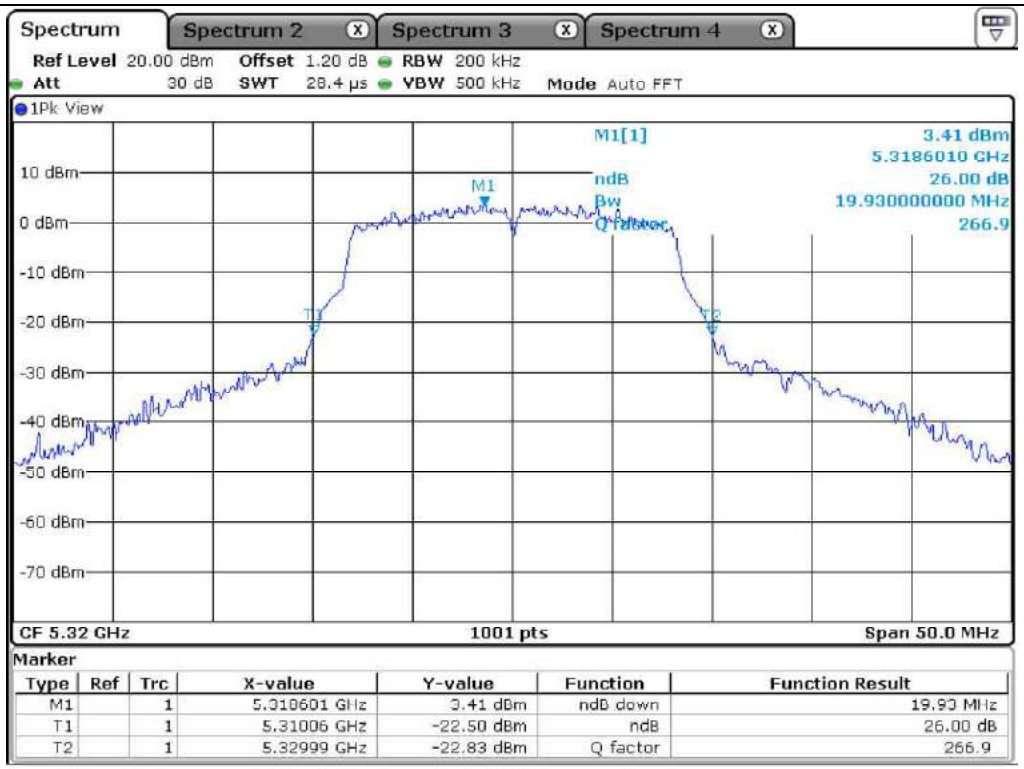


Low Channel (5 260 MHz)



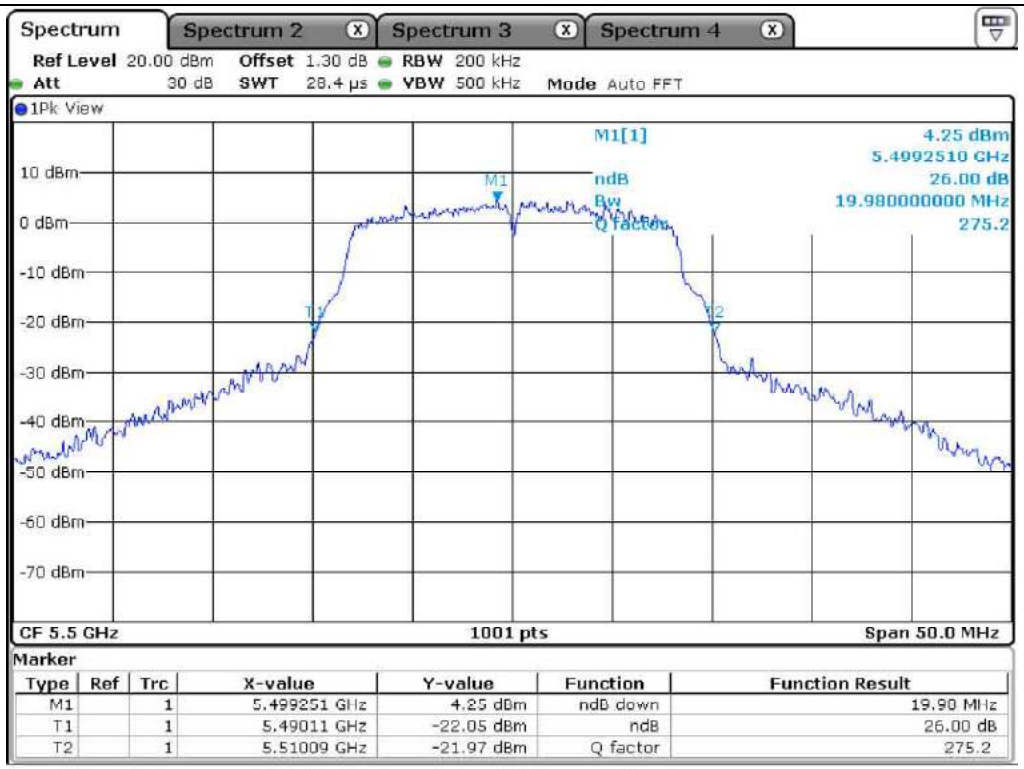
Middle Channel (5 300 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

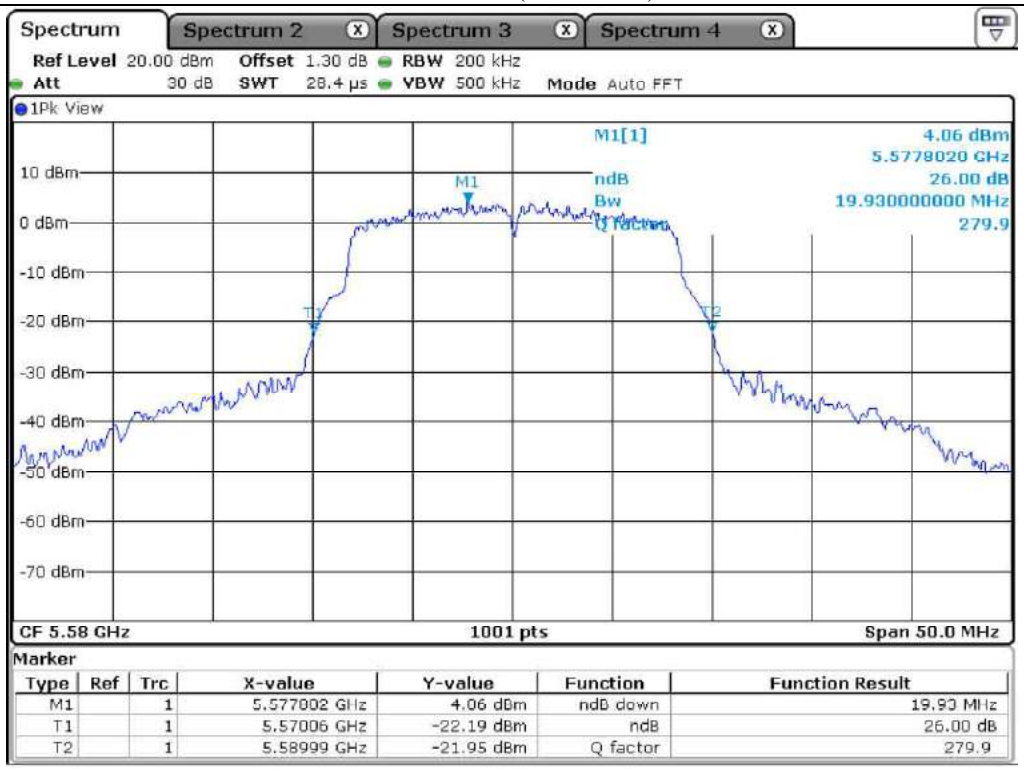


High Channel (5 320 MHz)

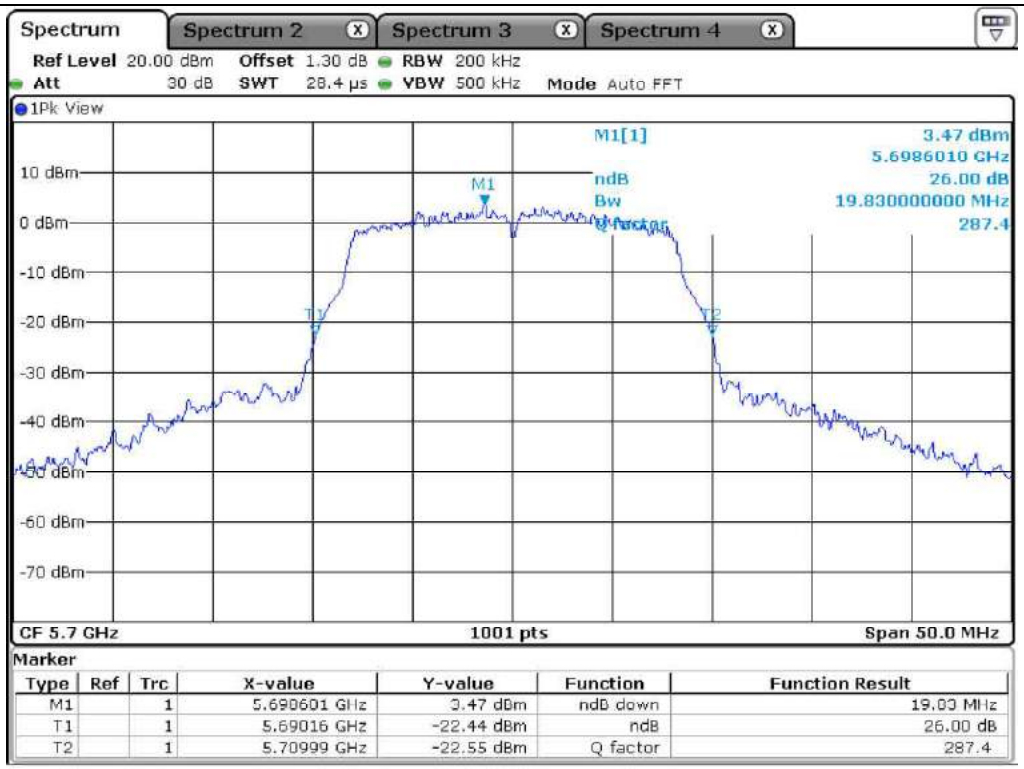
ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



Low Channel (5 500 MHz)

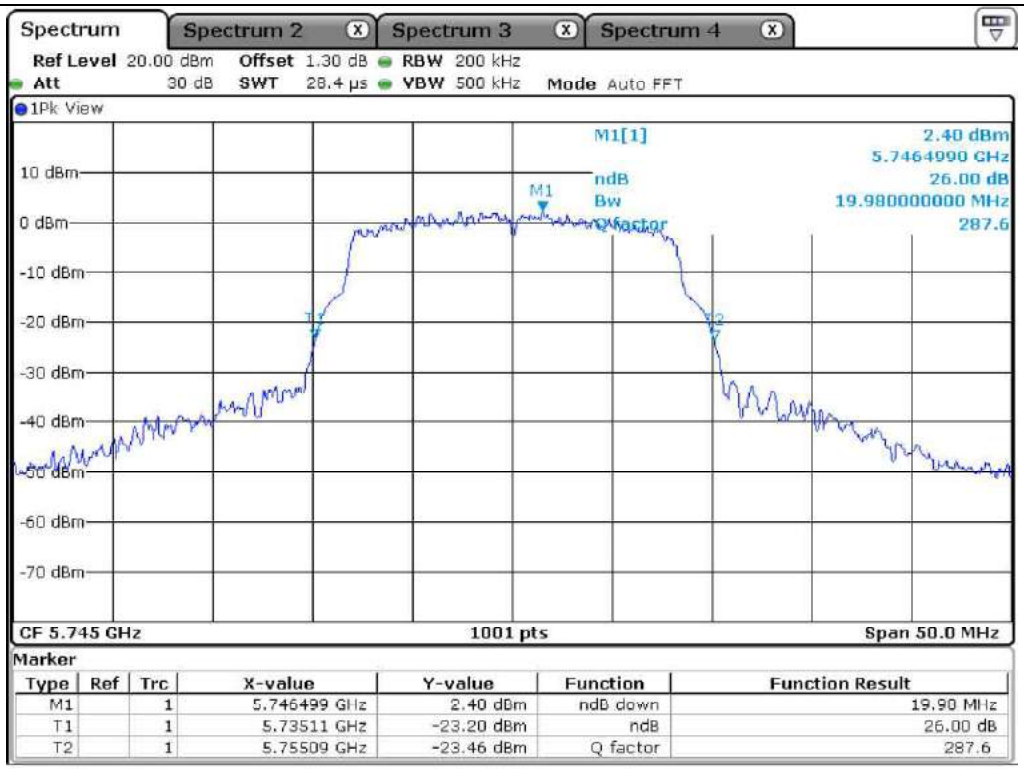


Middle Channel (5 580 MHz)

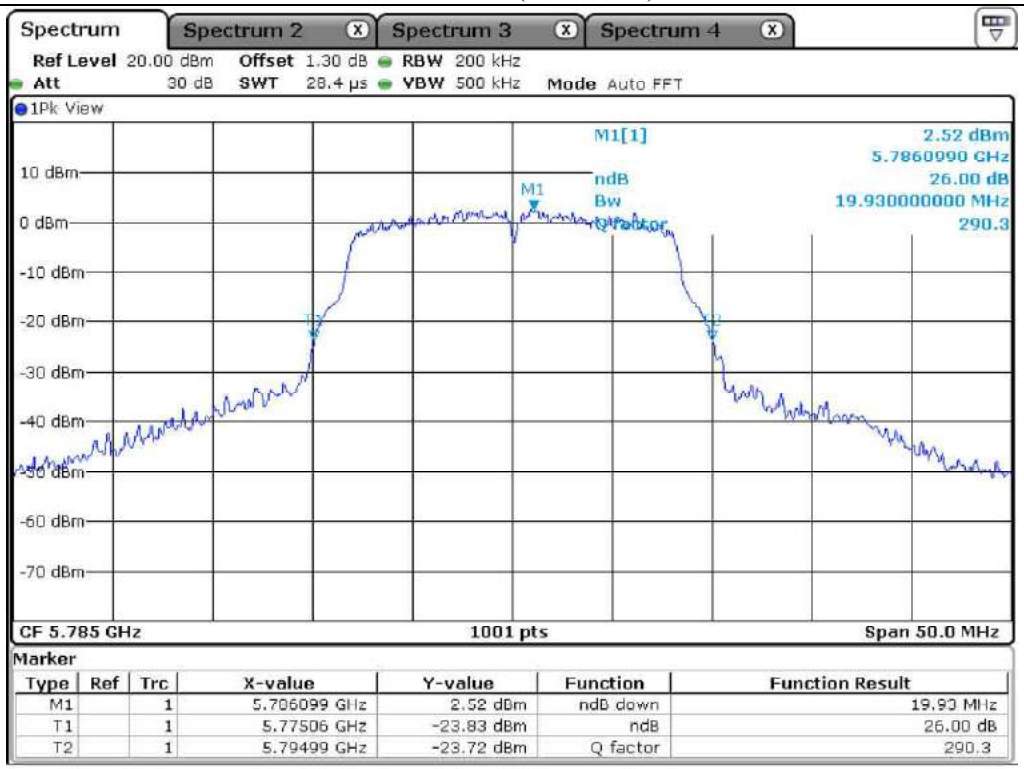


High Channel (5 700 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

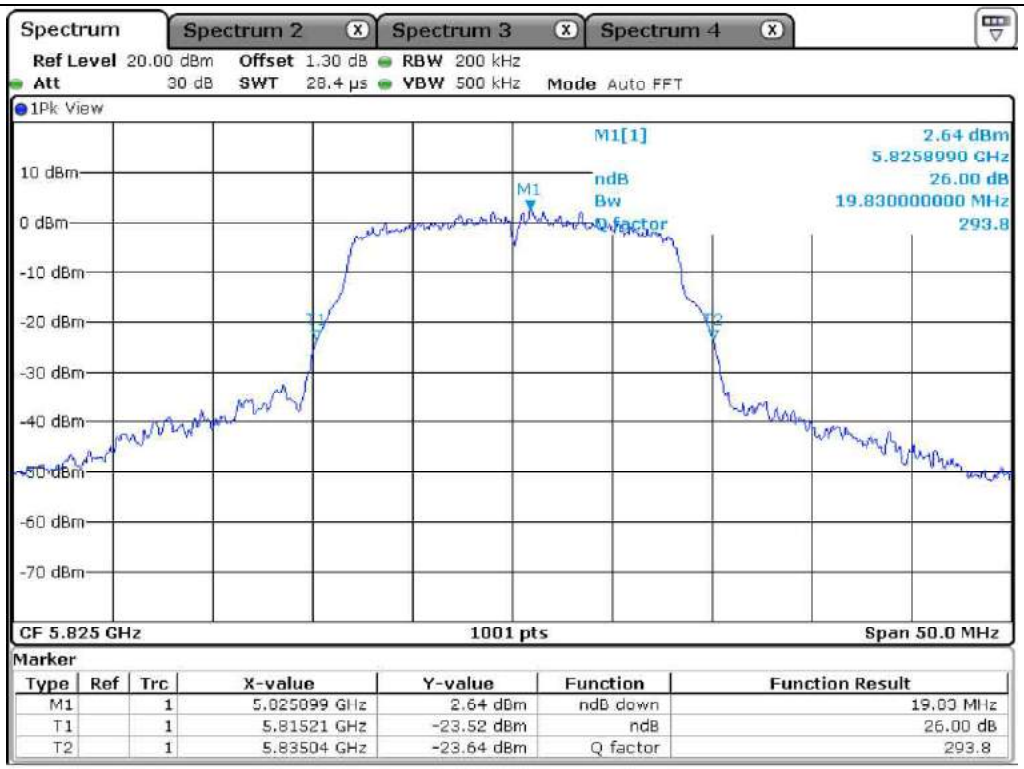


Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



High Channel (5 825 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

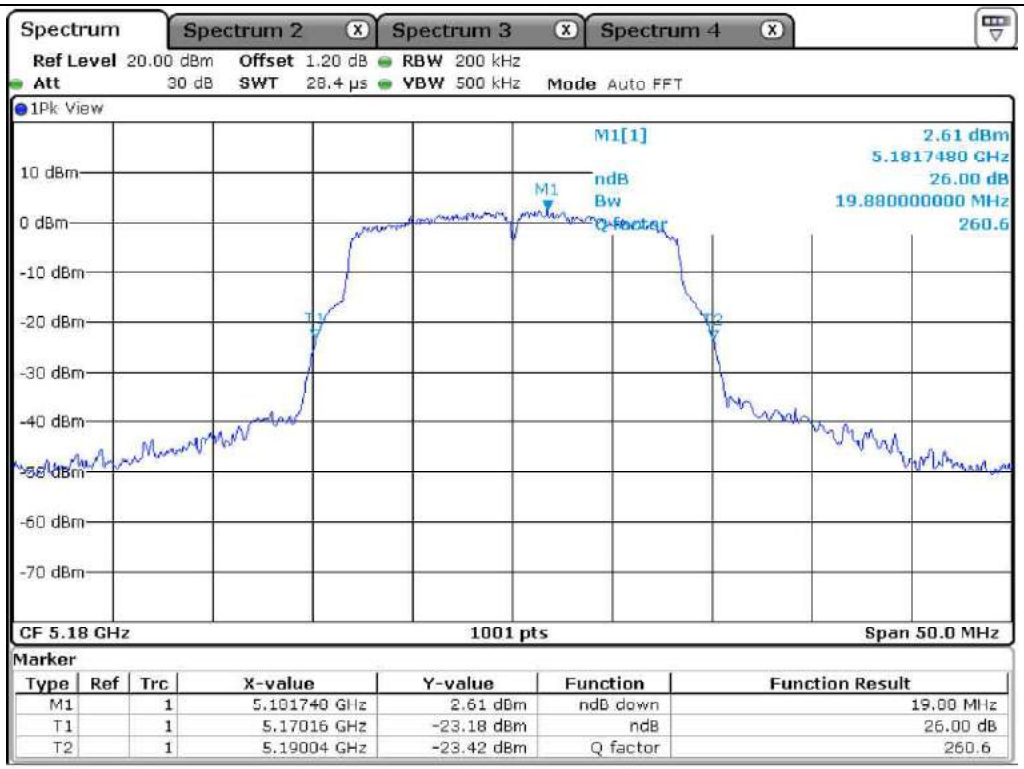
7.4.2 Test data for Antenna 1

-. Test Result : Pass

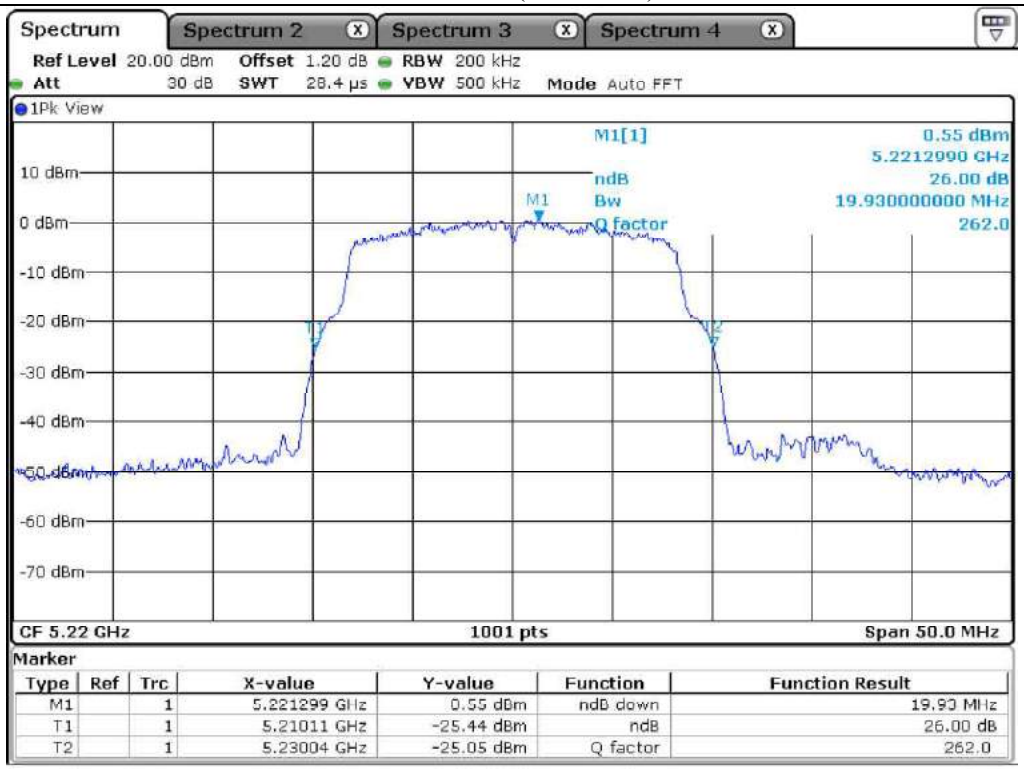
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180.00	19.88
	Middle	5 220.00	19.93
	High	5 240.00	19.78
5 250 ~ 5 350	Low	5 260.00	19.83
	Middle	5 300.00	19.83
	High	5 320.00	19.83
5 470 ~ 5 725	Low	5 500.00	19.73
	Middle	5 580.00	19.63
	High	5 700.00	19.93
5 725 ~ 5 850	Low	5 745.00	19.68
	Middle	5 785.00	19.78
	High	5 825.00	19.68

Remark: See next page for measurement data.

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

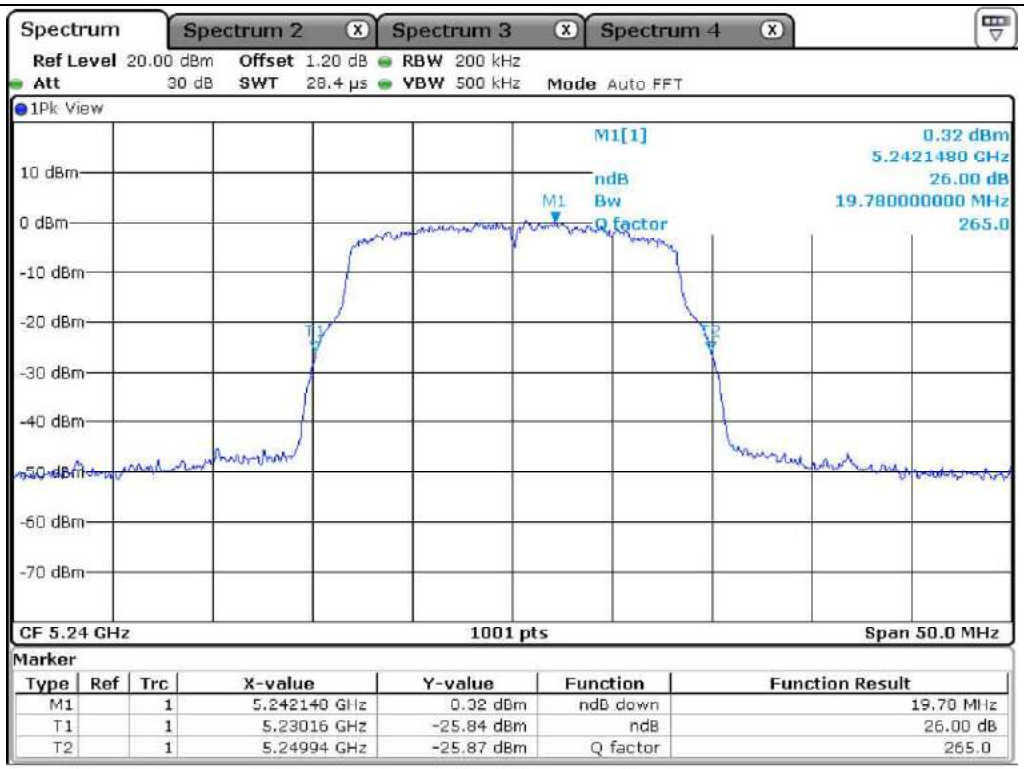


Low Channel (5 180 MHz)



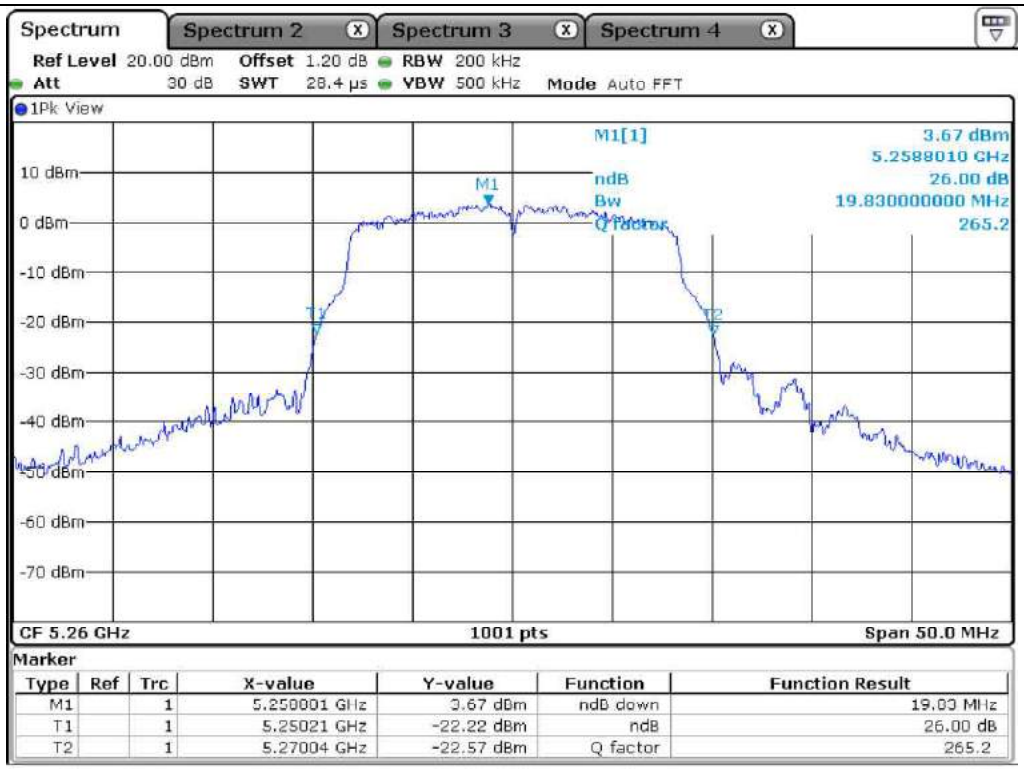
Middle Channel (5 220 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

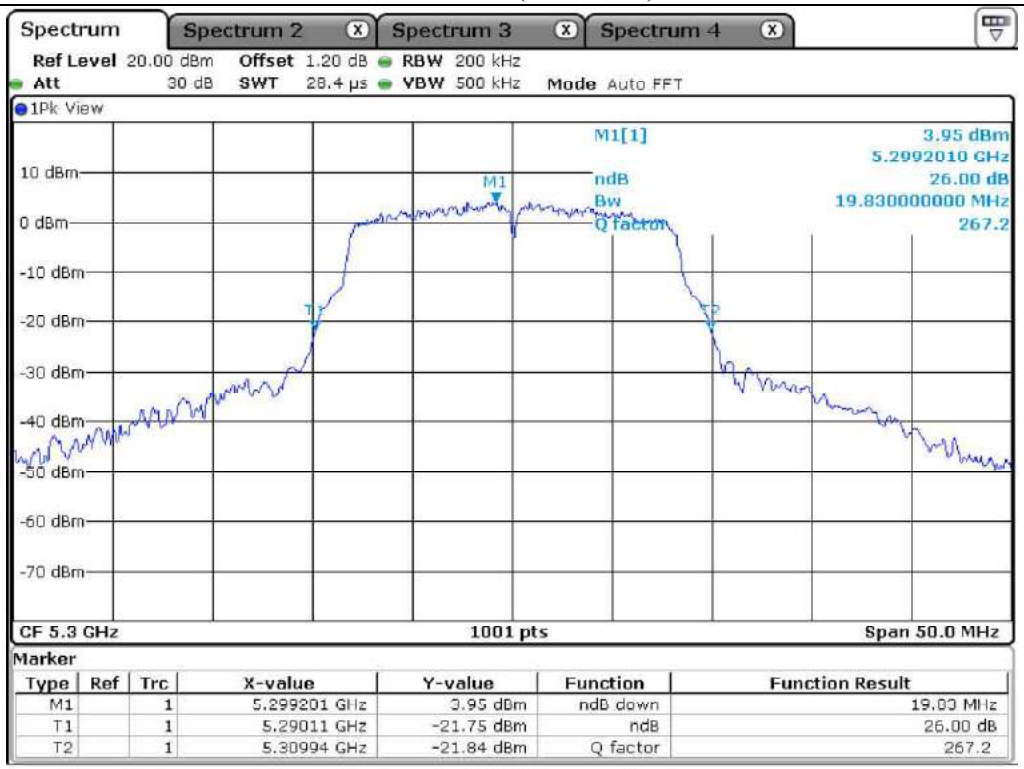


High Channel (5 240 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

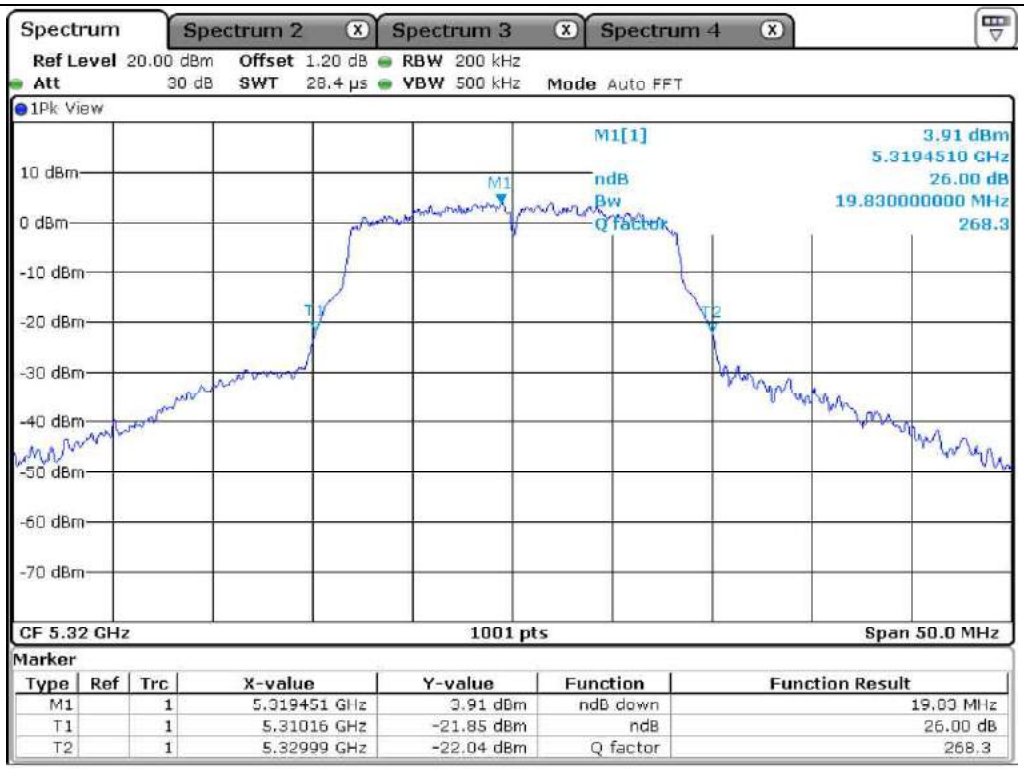


Low Channel (5 260 MHz)



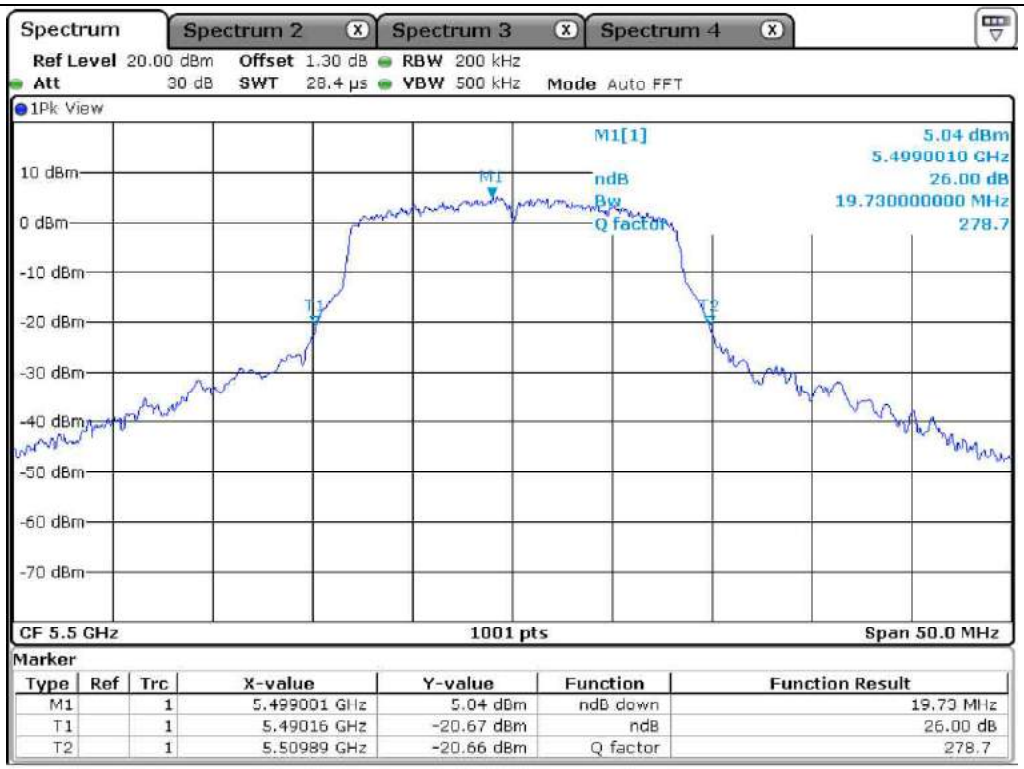
Middle Channel (5 300 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

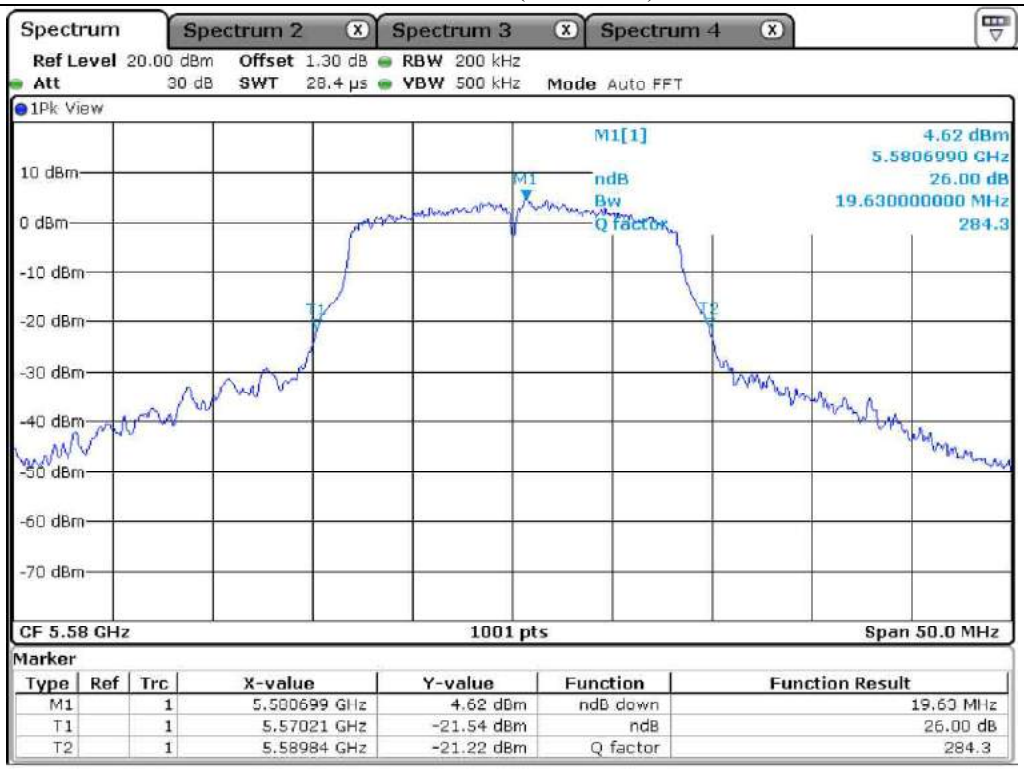


High Channel (5 320 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

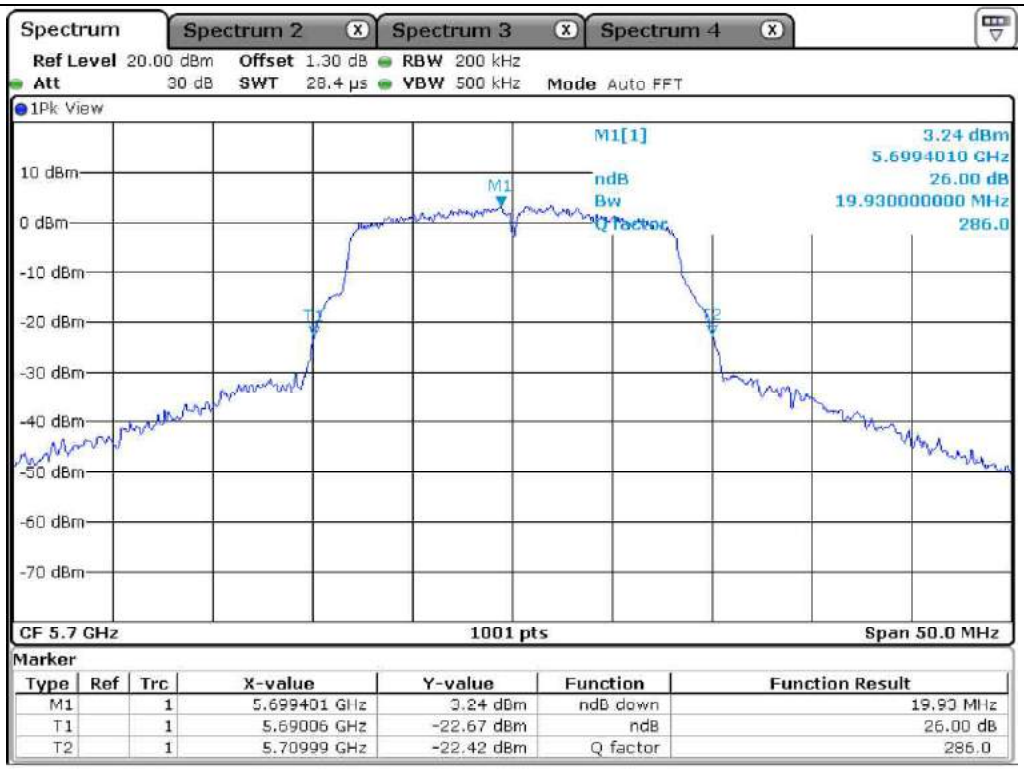


Low Channel (5 500 MHz)



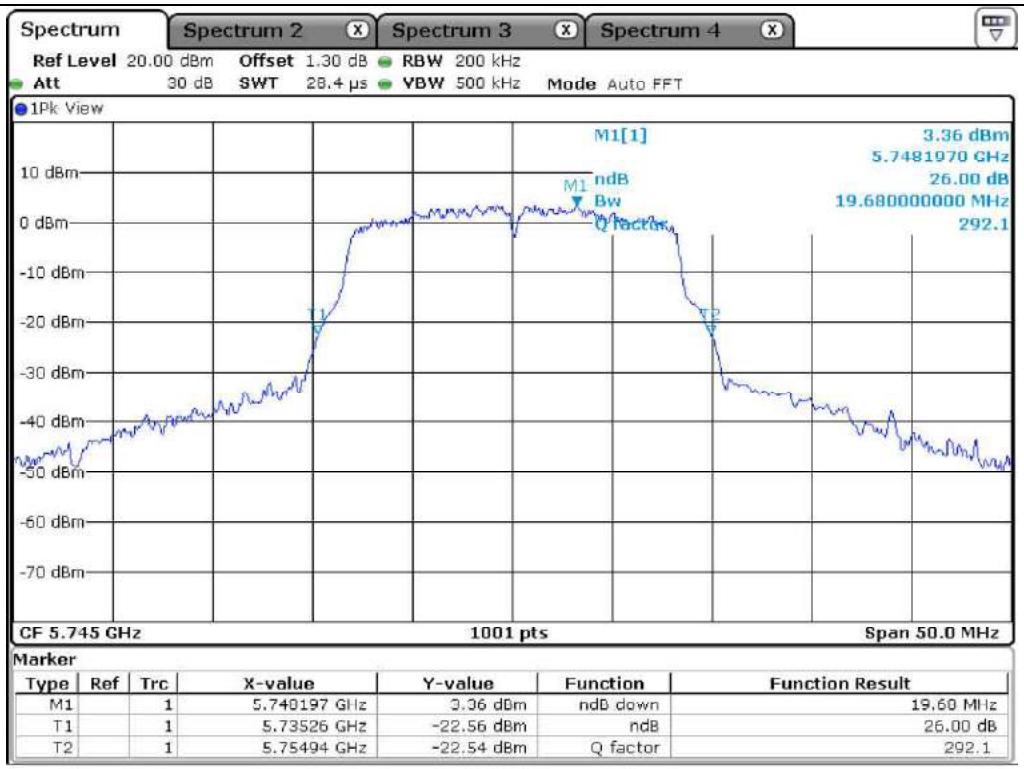
Middle Channel (5 580 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

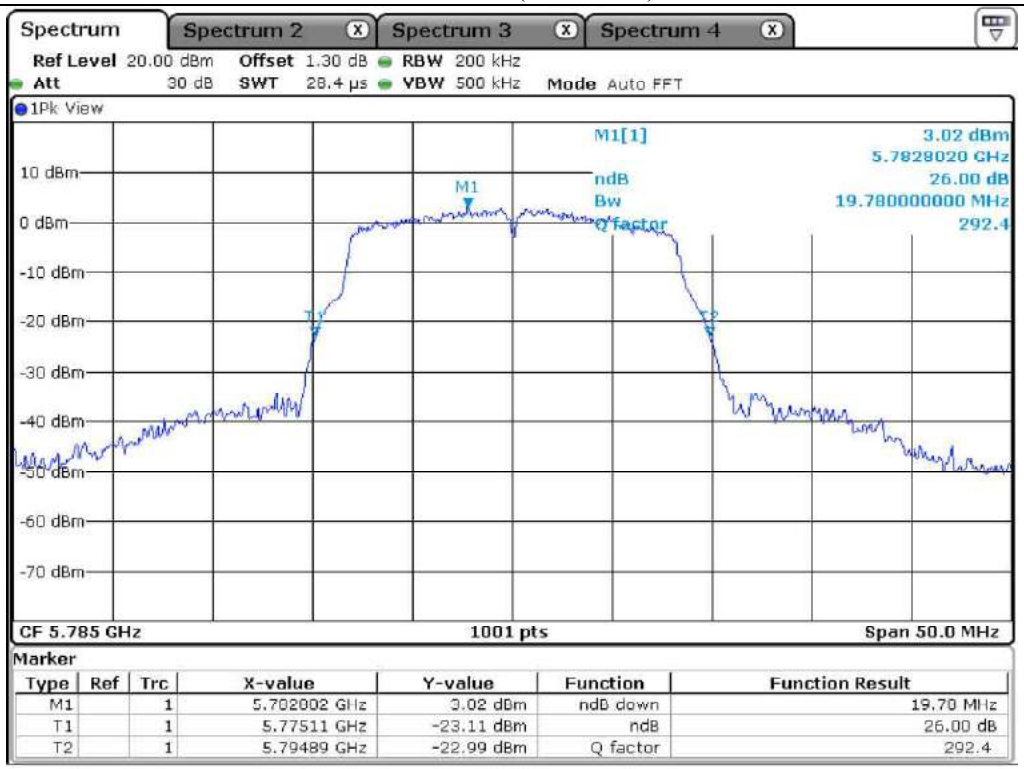


High Channel (5 700 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

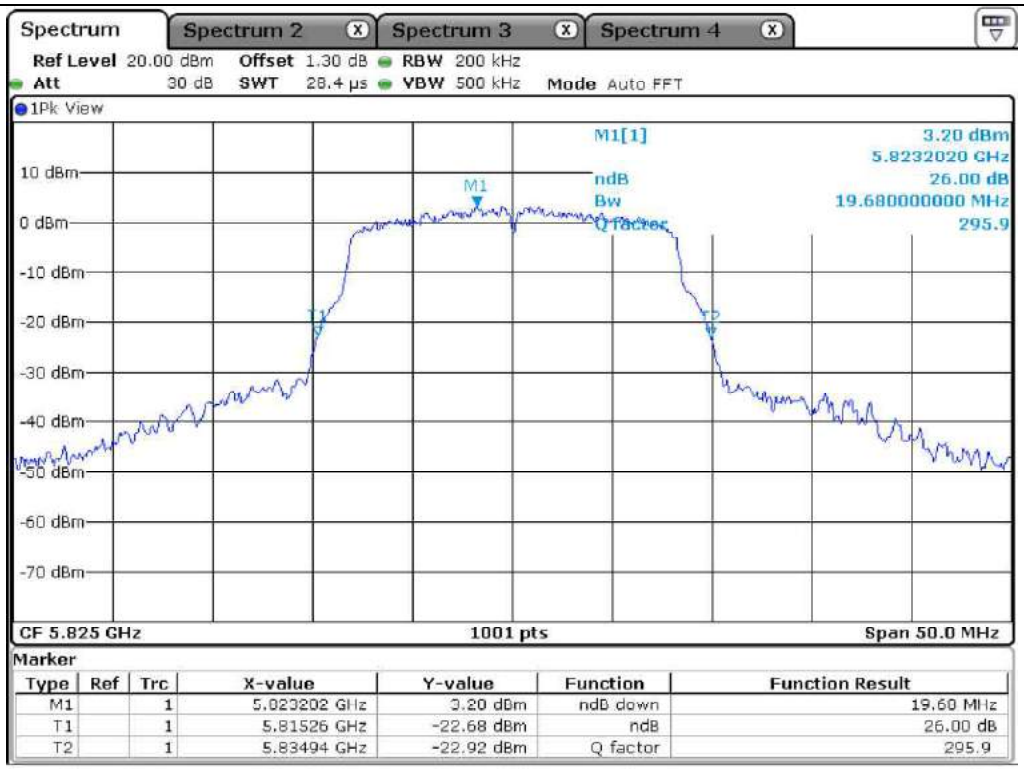


Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

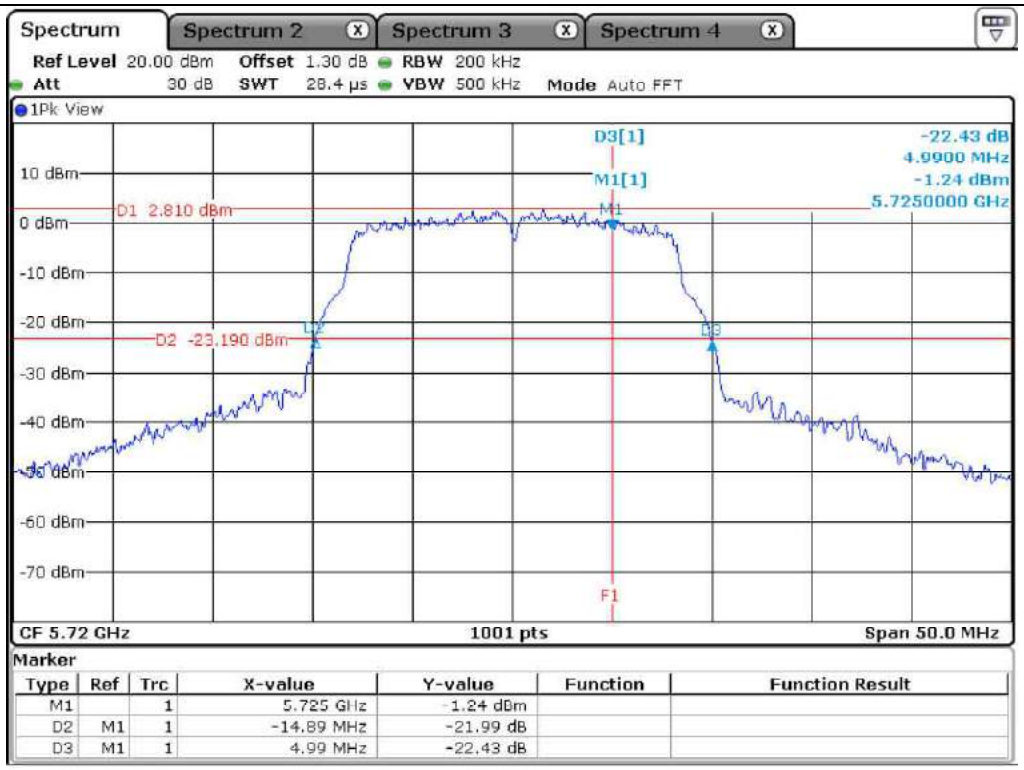


High Channel (5 825 MHz)

7.4.3 Test data for Staddle Channel_Antenna 0

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 720.00	14.89
5 725 ~ 5 850	5 720.00	4.99

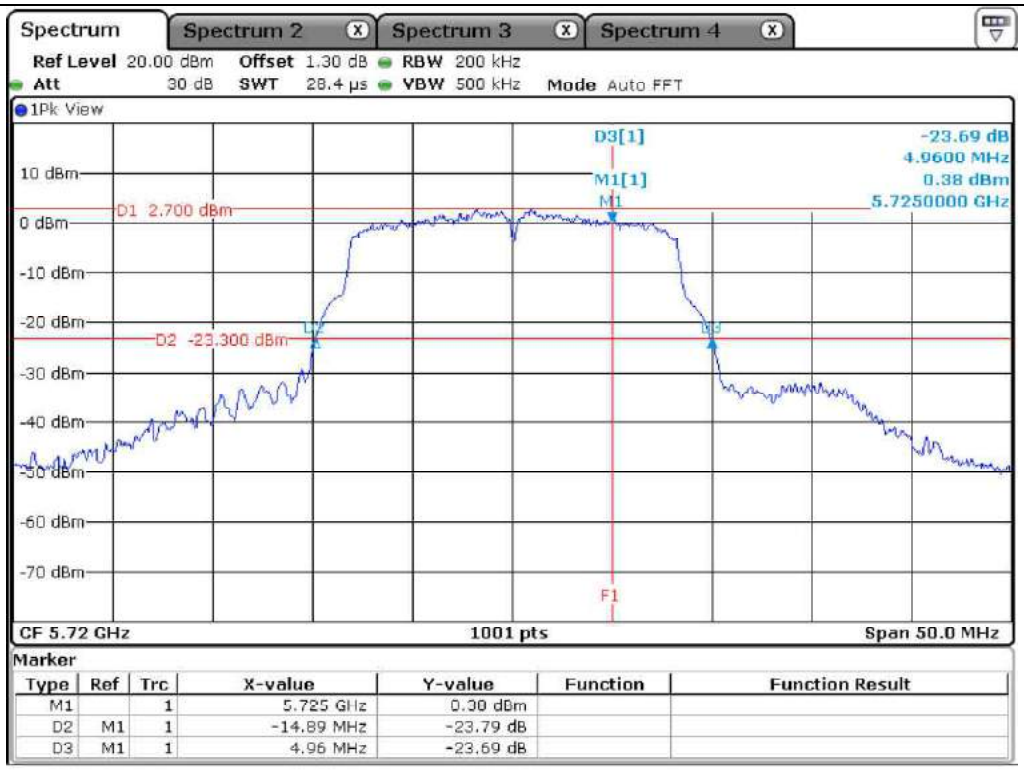


ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

7.4.4 Test data for Staddle Channel_Antenna 1

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 720.00	14.89
5 725 ~ 5 850	5 720.00	4.96



ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

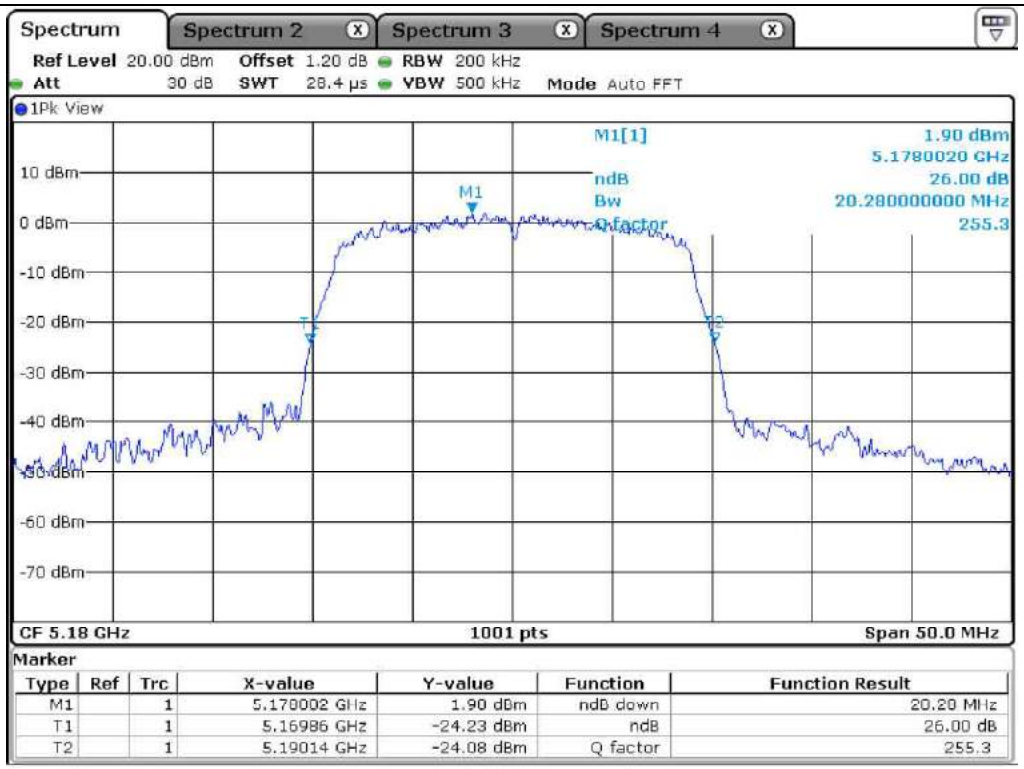
7.5 Test data for 802.11n_HT20 RLAN Mode

7.5.1 Test data for Antenna 0

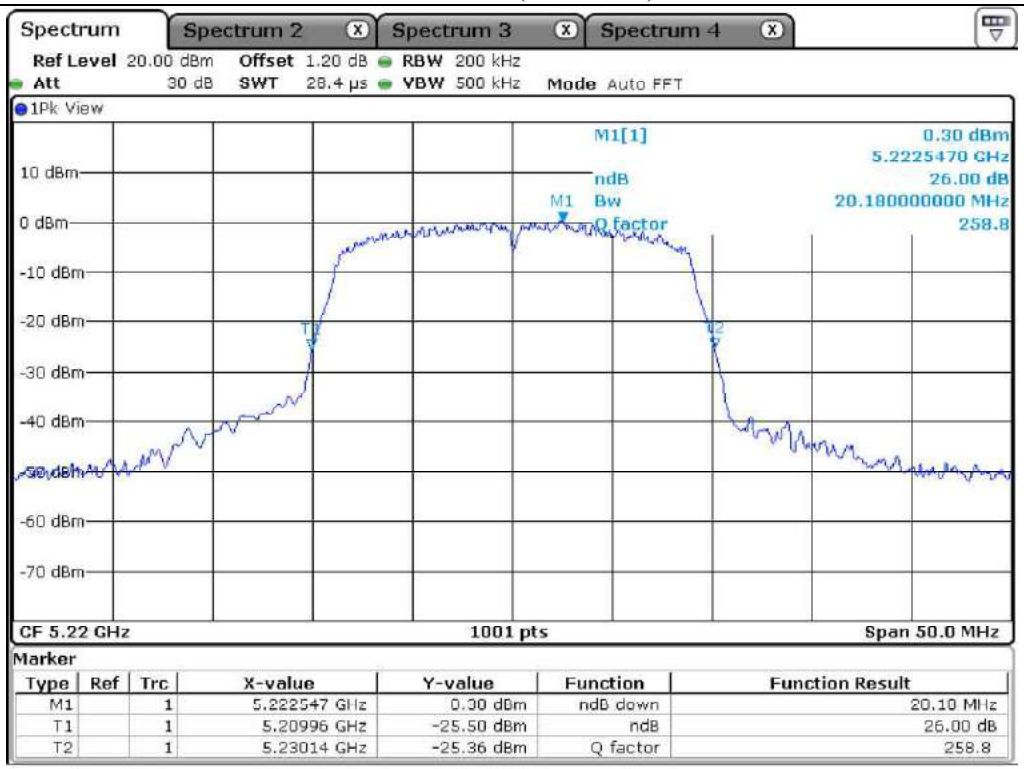
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180.00	20.28
	Middle	5 220.00	20.18
	High	5 240.00	20.18
5 250 ~ 5 350	Low	5 260.00	20.23
	Middle	5 300.00	20.28
	High	5 320.00	20.23
5 470 ~ 5 725	Low	5 500.00	20.28
	Middle	5 580.00	20.28
	High	5 700.00	20.23
5 725 ~ 5 850	Low	5 745.00	20.28
	Middle	5 785.00	20.18
	High	5 825.00	20.23

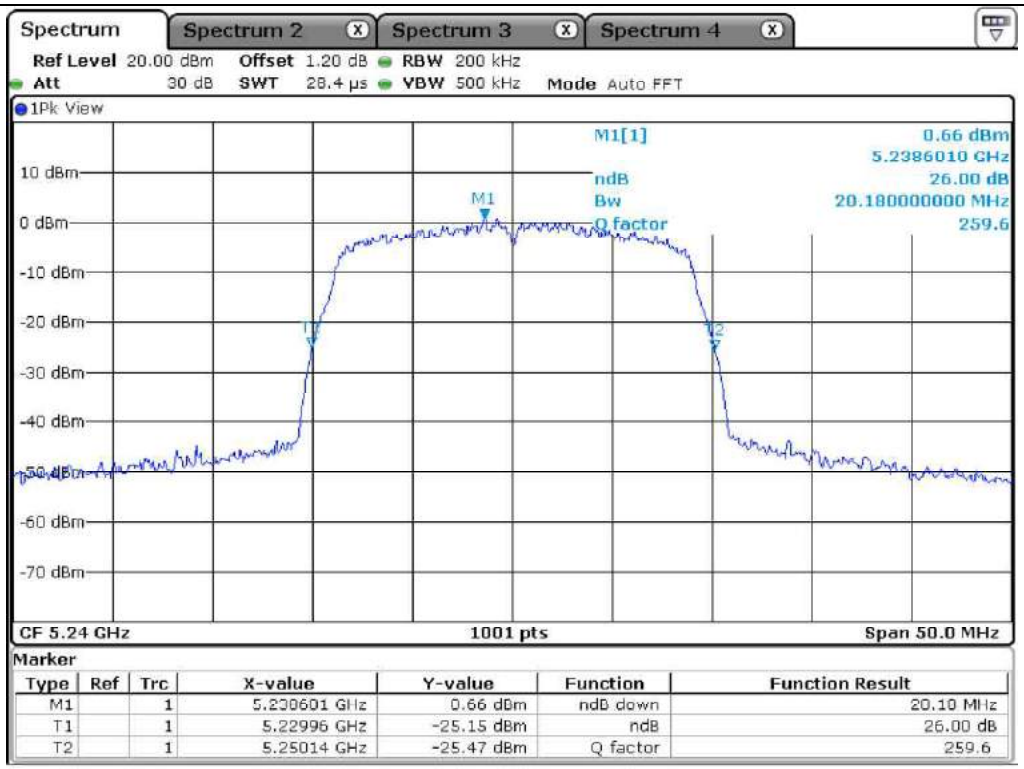
Remark: See next page for measurement data.



Low Channel (5 180 MHz)

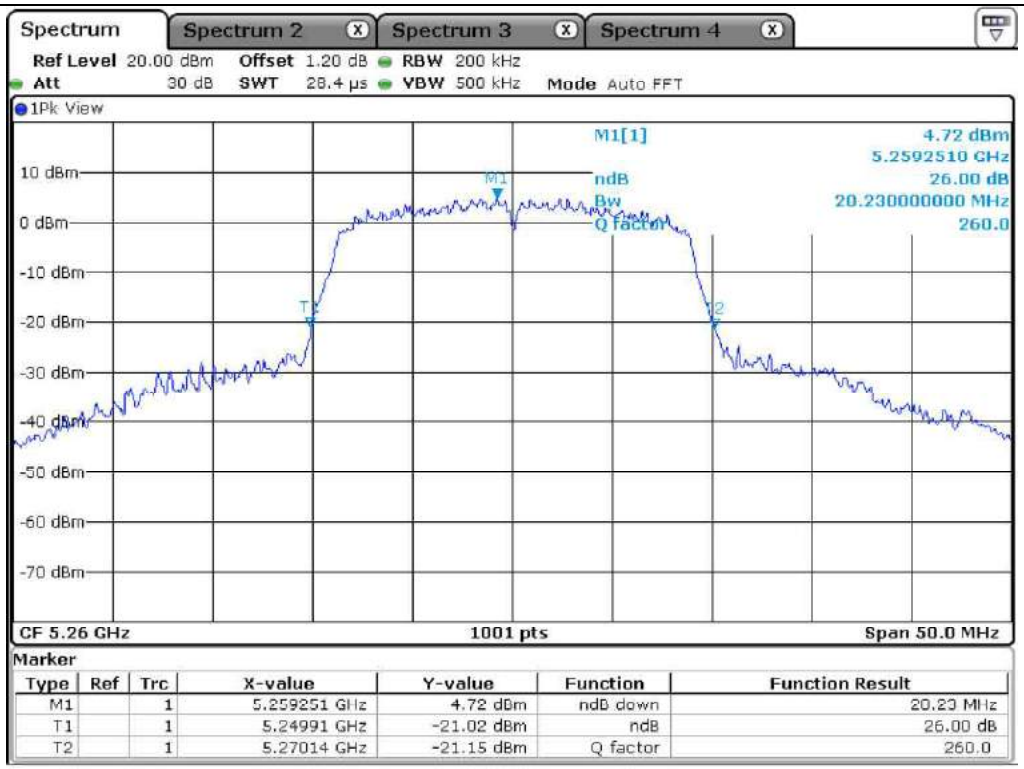


Middle Channel (5 220 MHz)

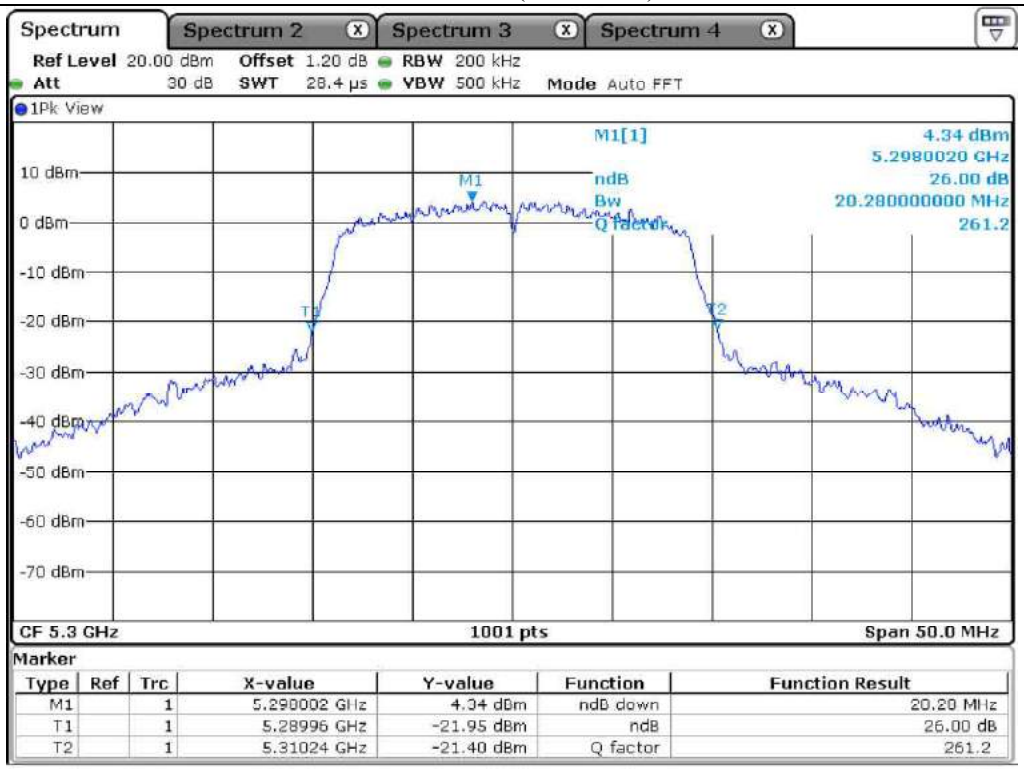


High Channel (5 240 MHz)

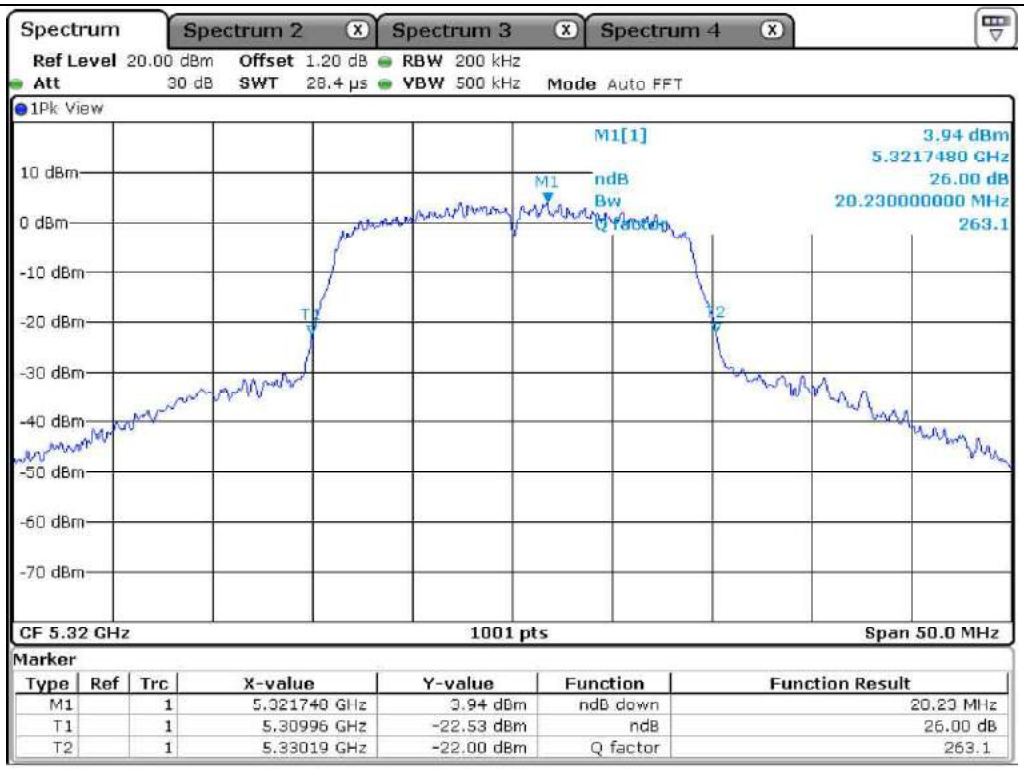
ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



Low Channel (5 260 MHz)

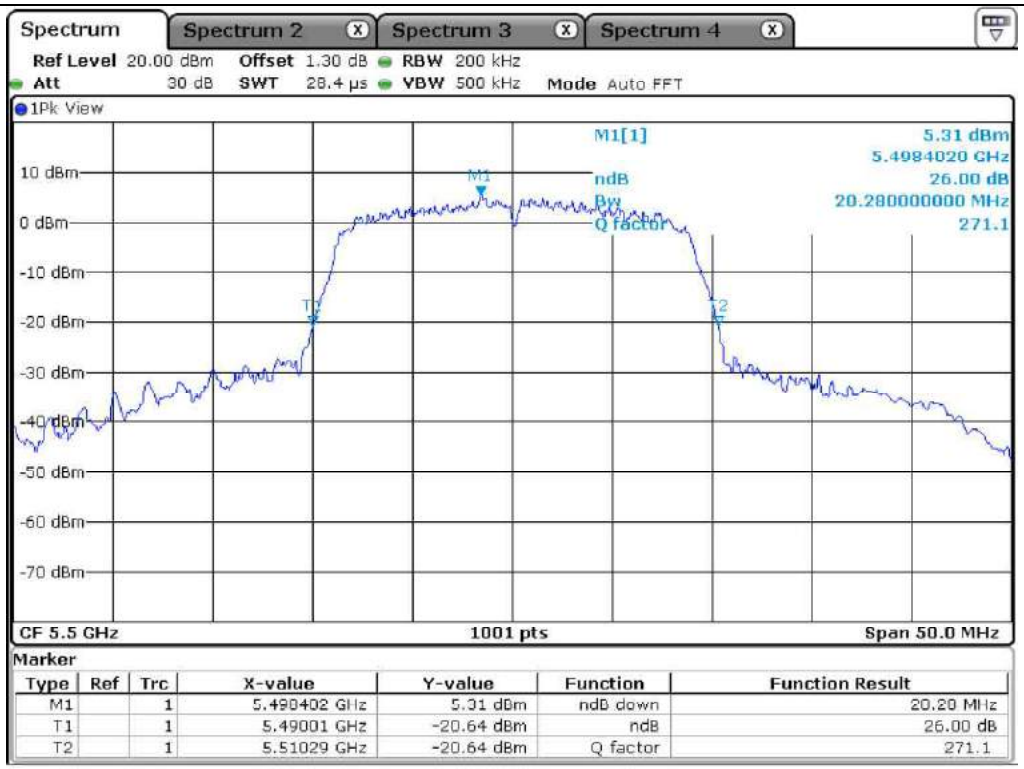


Middle Channel (5 300 MHz)

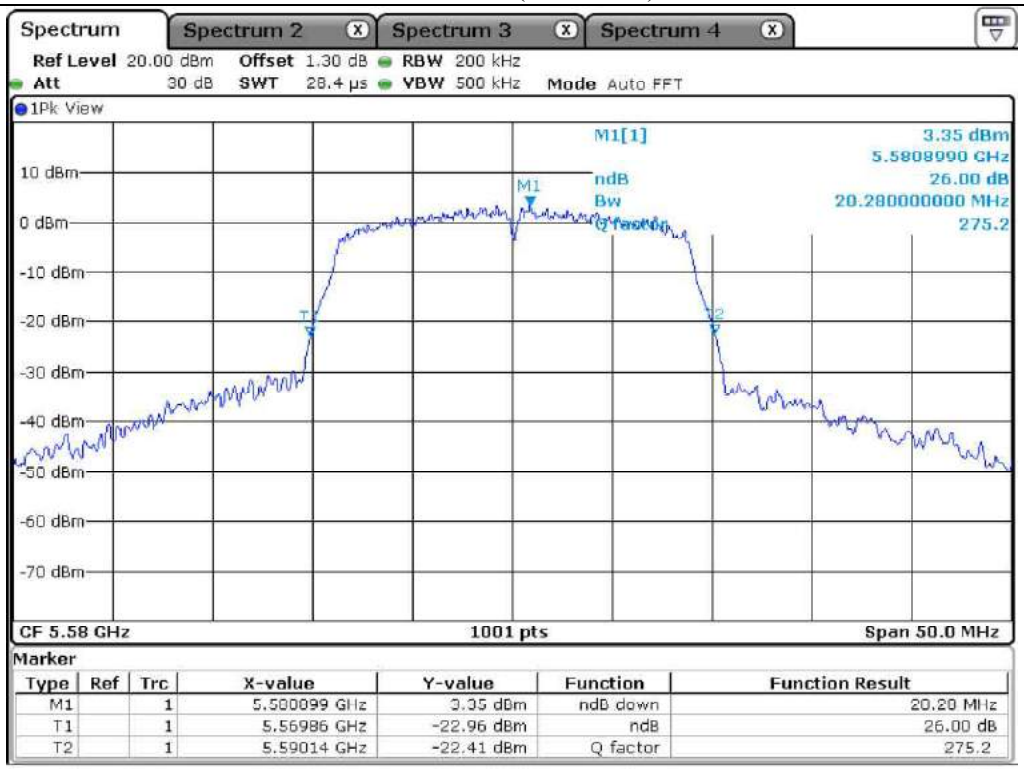


High Channel (5 320 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

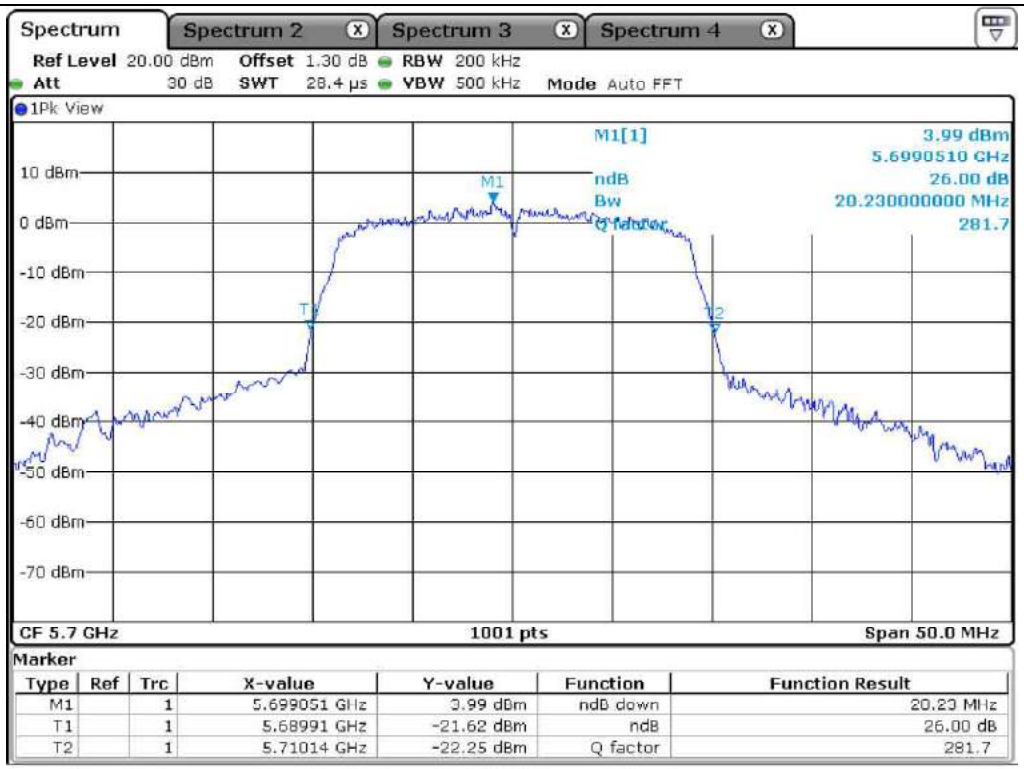


Low Channel (5 500 MHz)



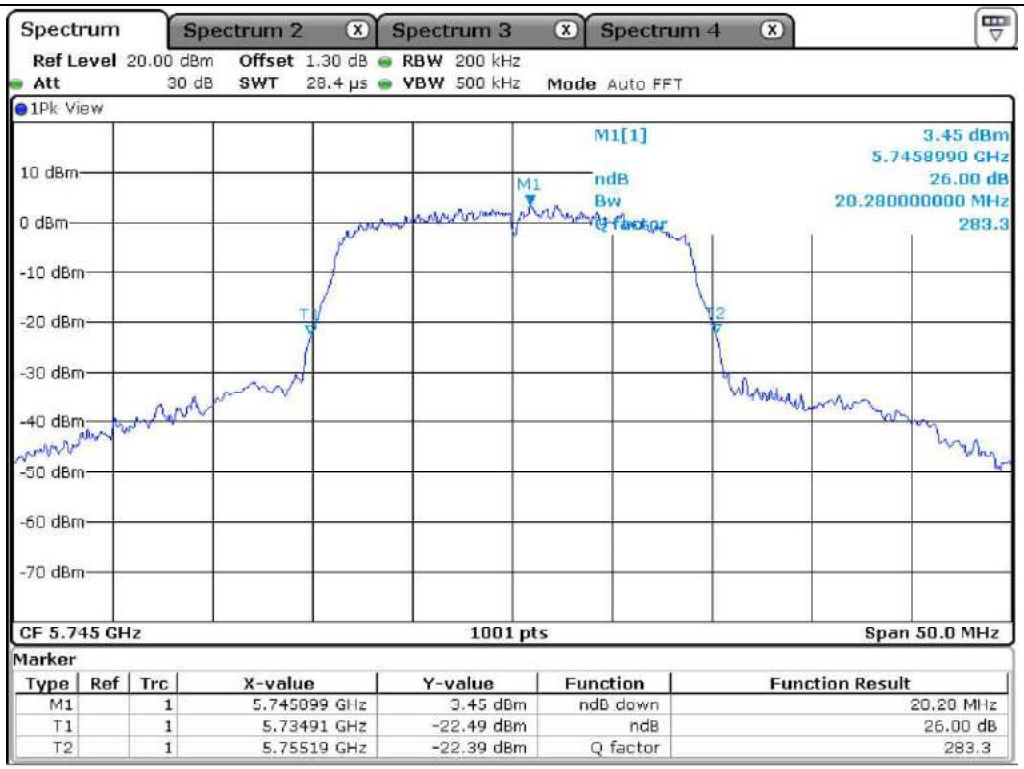
Middle Channel (5 580 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

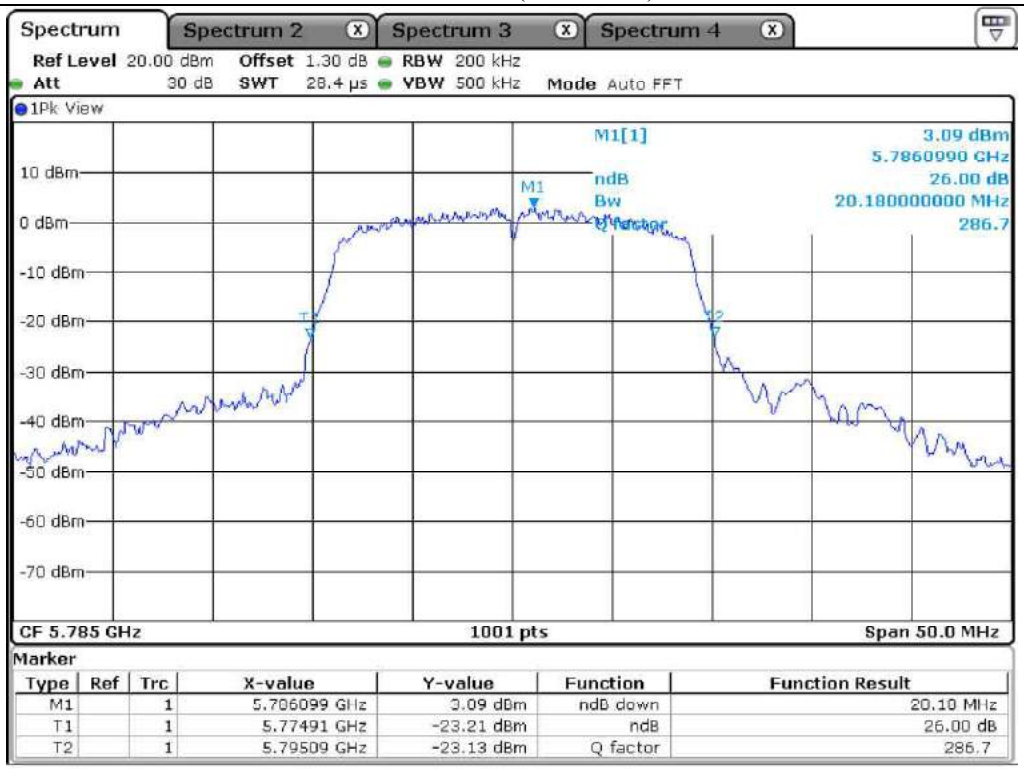


High Channel (5 700 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

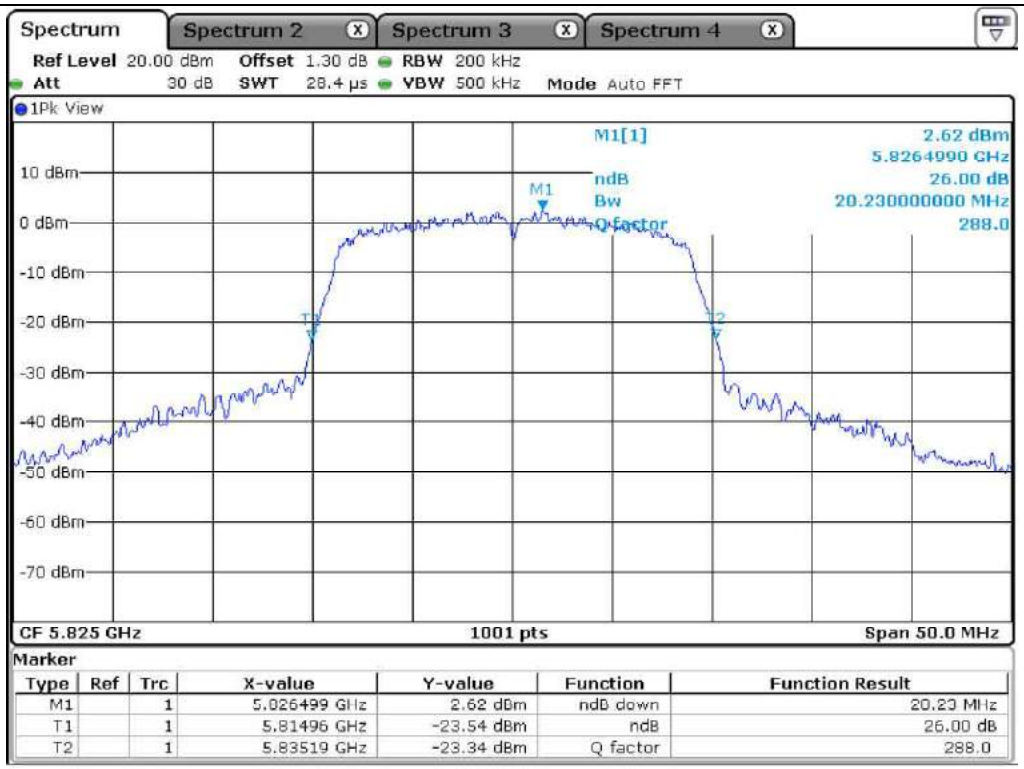


Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



High Channel (5 825 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

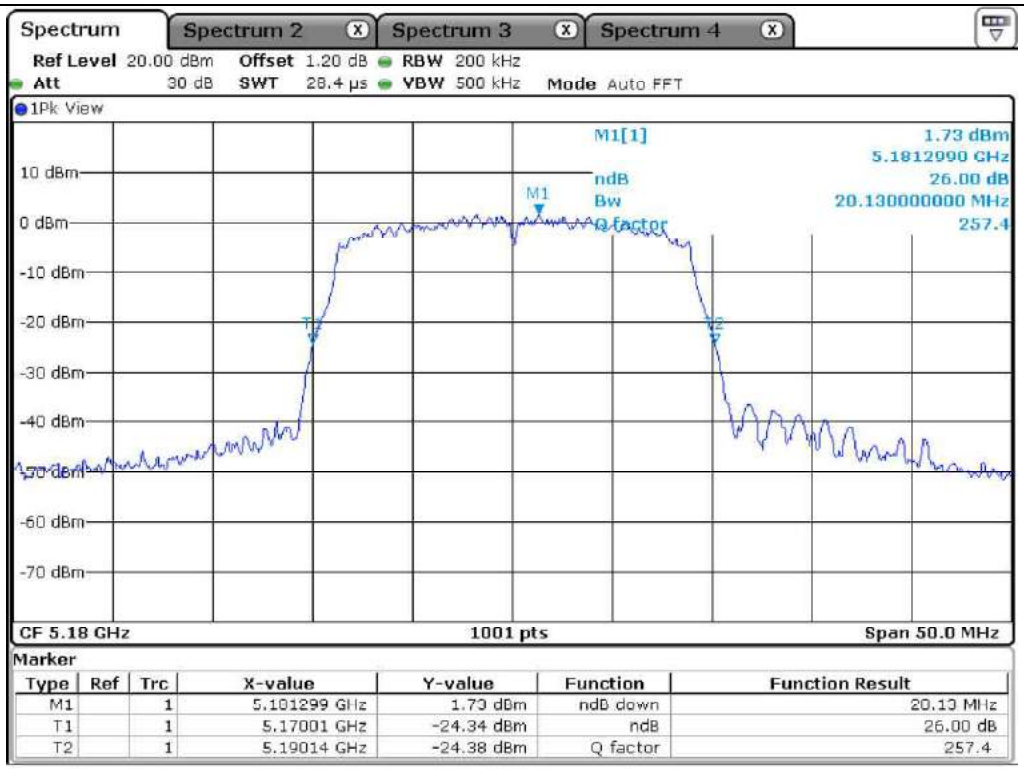
7.5.2 Test data for Antenna 1

-. Test Result : Pass

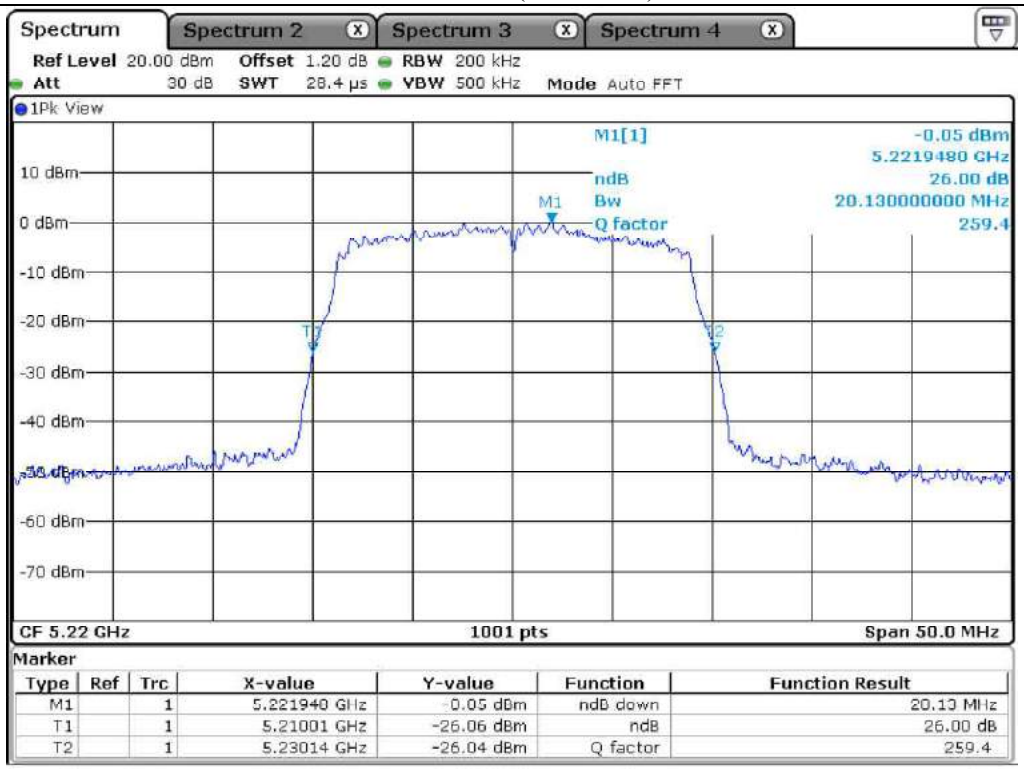
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180.00	20.13
	Middle	5 220.00	20.13
	High	5 240.00	20.23
5 250 ~ 5 350	Low	5 260.00	20.18
	Middle	5 300.00	20.18
	High	5 320.00	20.13
5 470 ~ 5 725	Low	5 500.00	20.03
	Middle	5 580.00	20.18
	High	5 700.00	20.08
5 725 ~ 5 850	Low	5 745.00	20.03
	Middle	5 785.00	20.13
	High	5 825.00	20.03

Remark: See next page for measurement data.

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

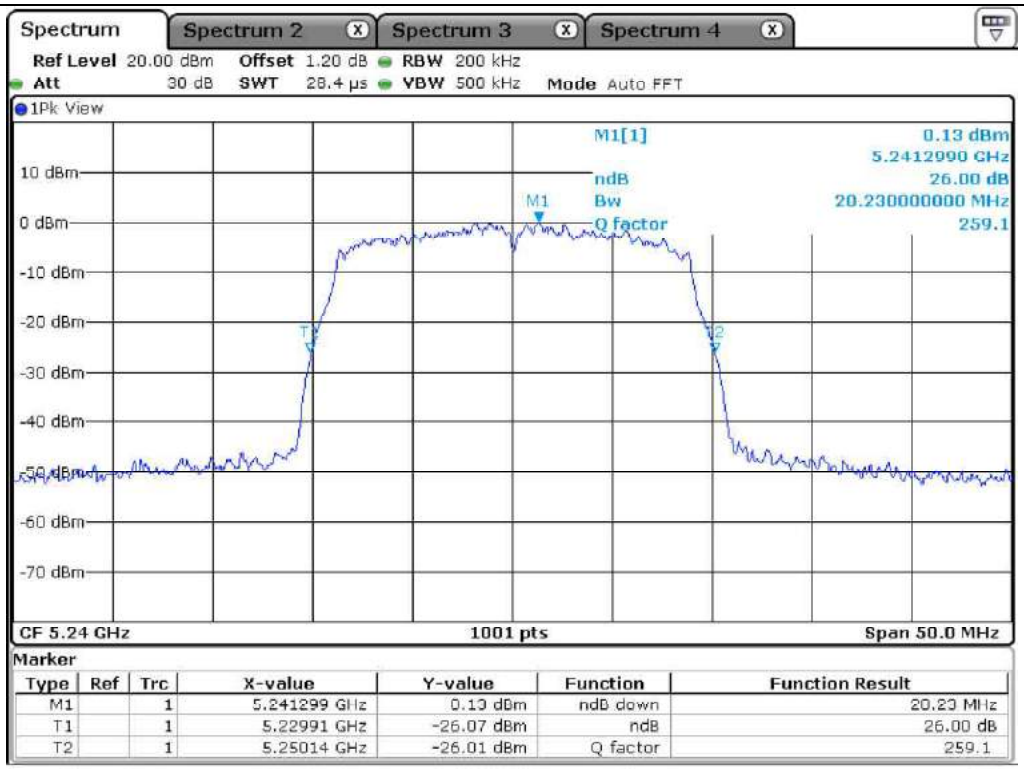


Low Channel (5 180 MHz)

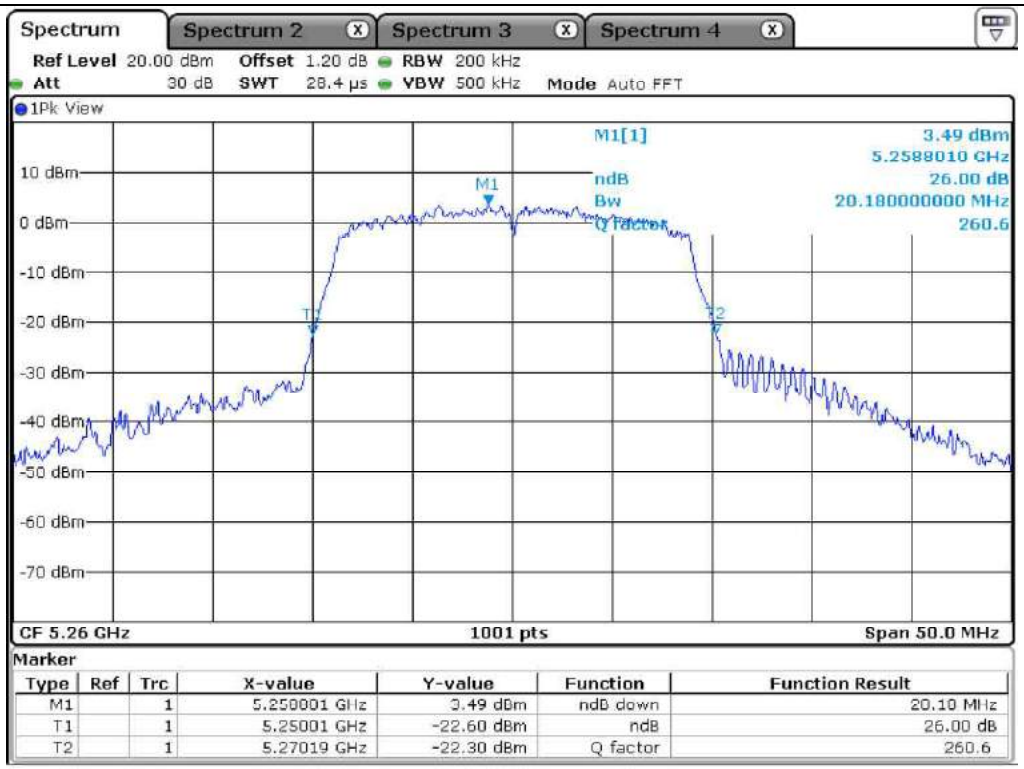


Middle Channel (5 220 MHz)

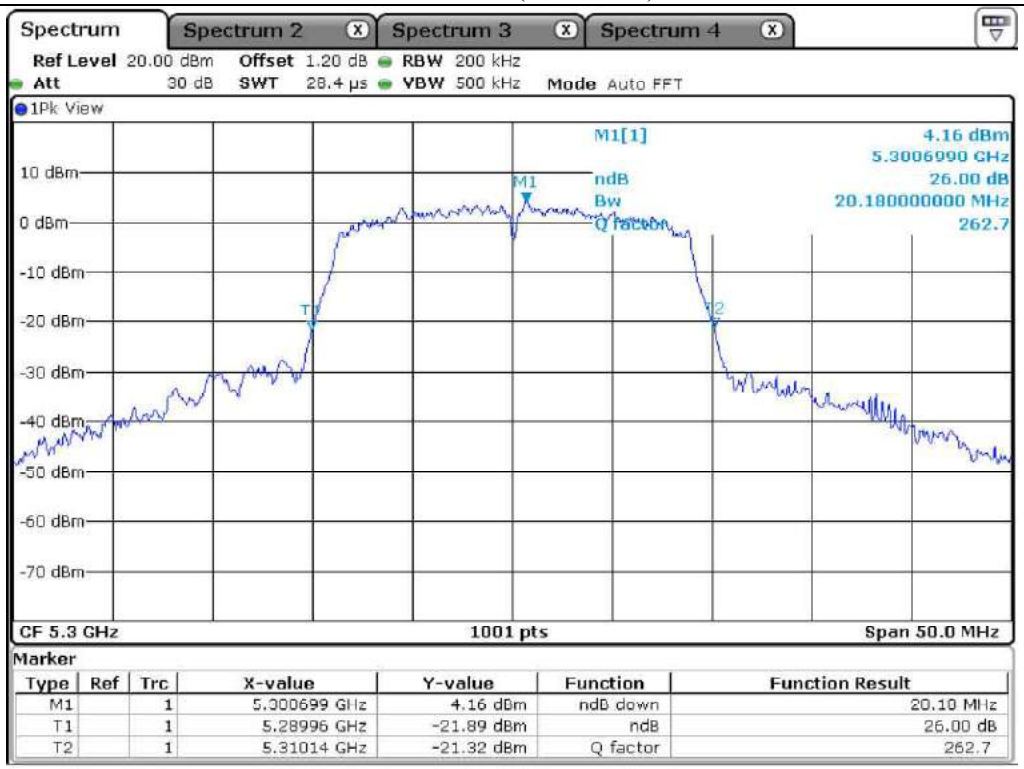
ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



High Channel (5 240 MHz)

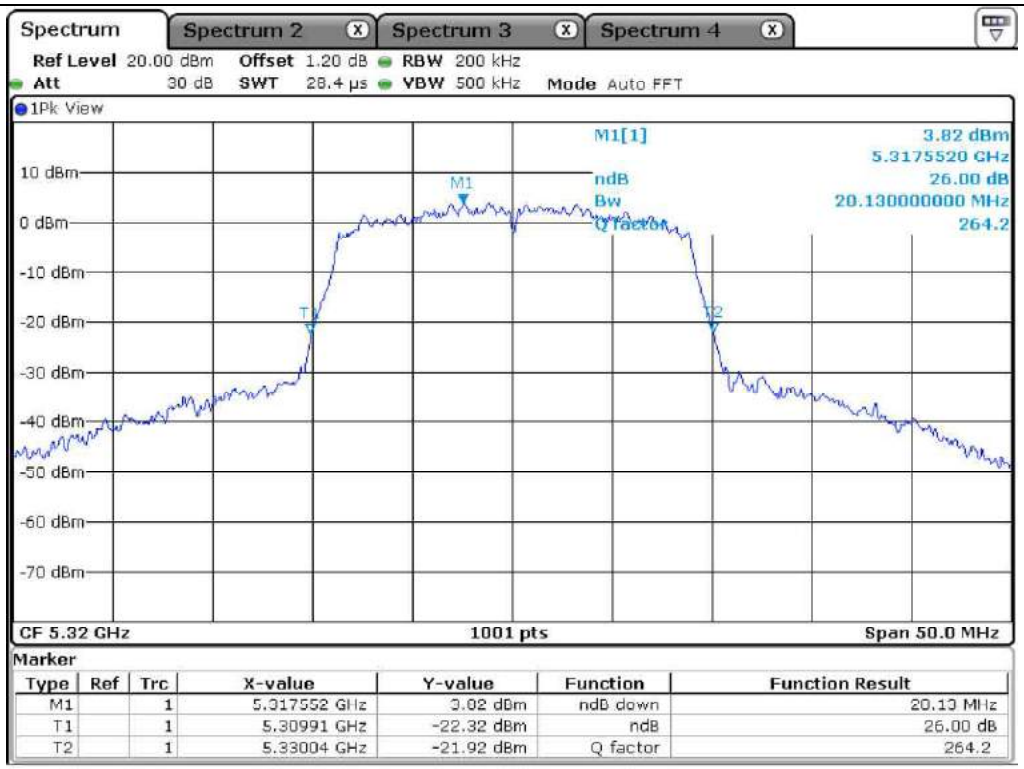


Low Channel (5 260 MHz)



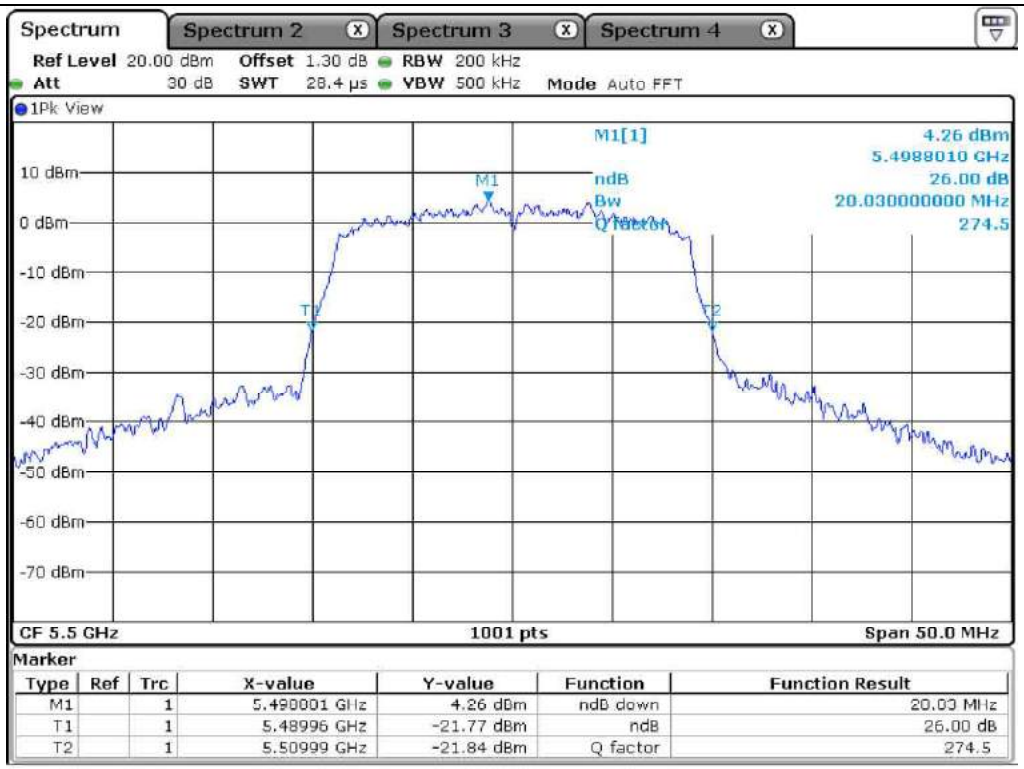
Middle Channel (5 300 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

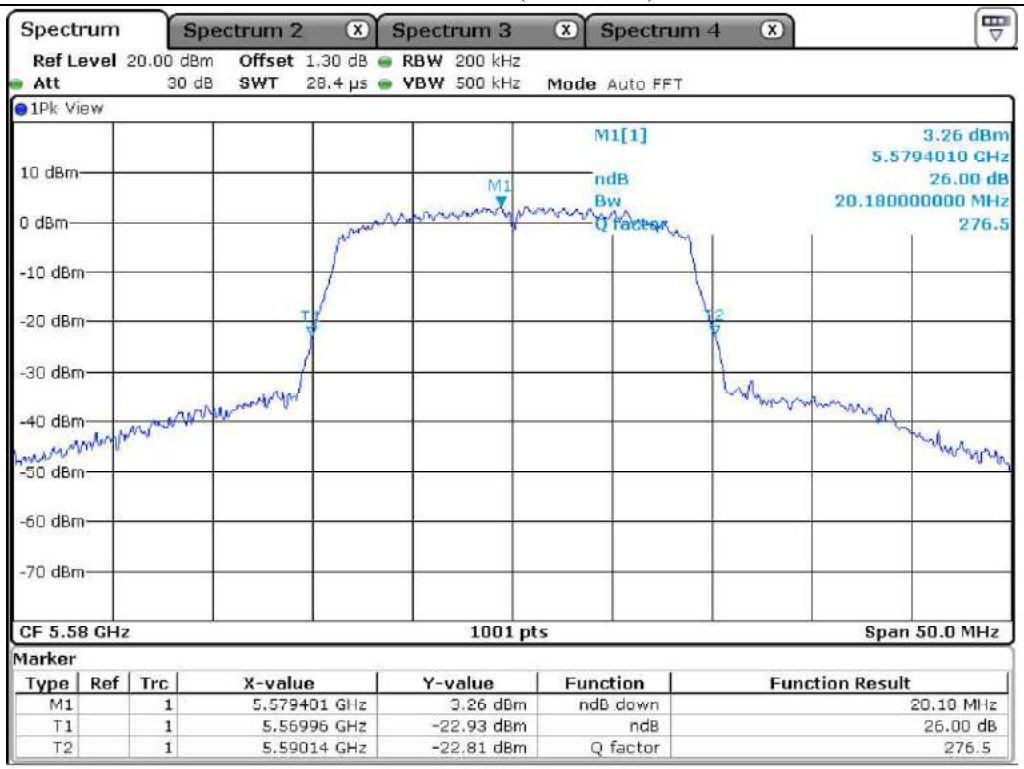


High Channel (5 320 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

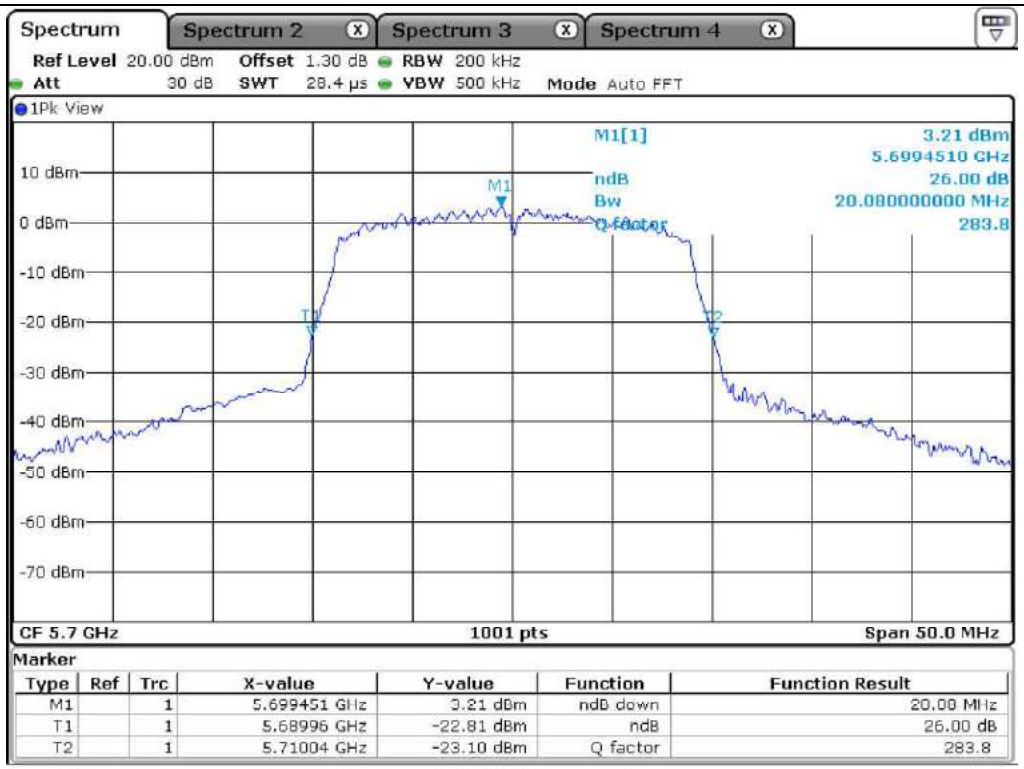


Low Channel (5 500 MHz)



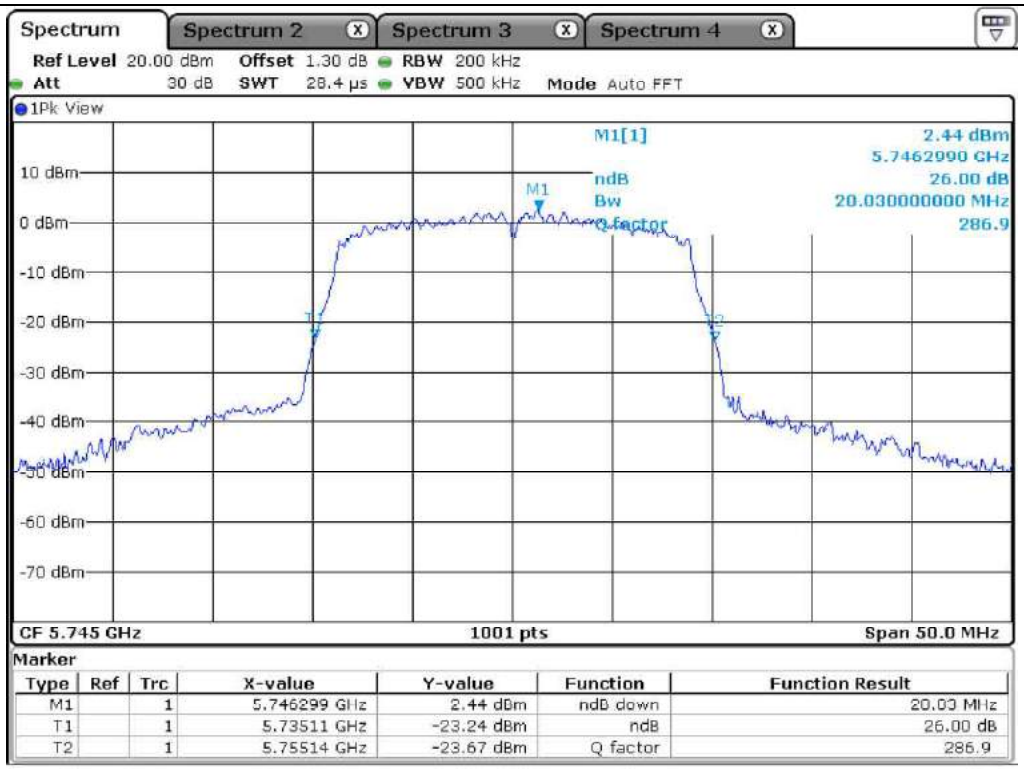
Middle Channel (5 580 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

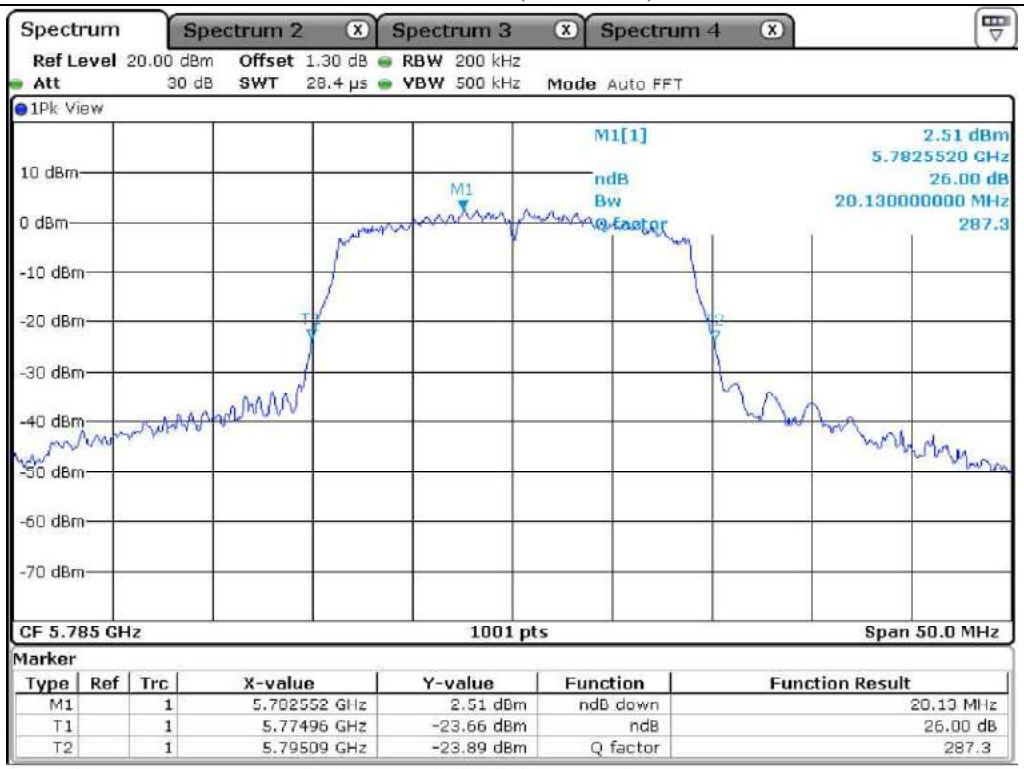


High Channel (5 700 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

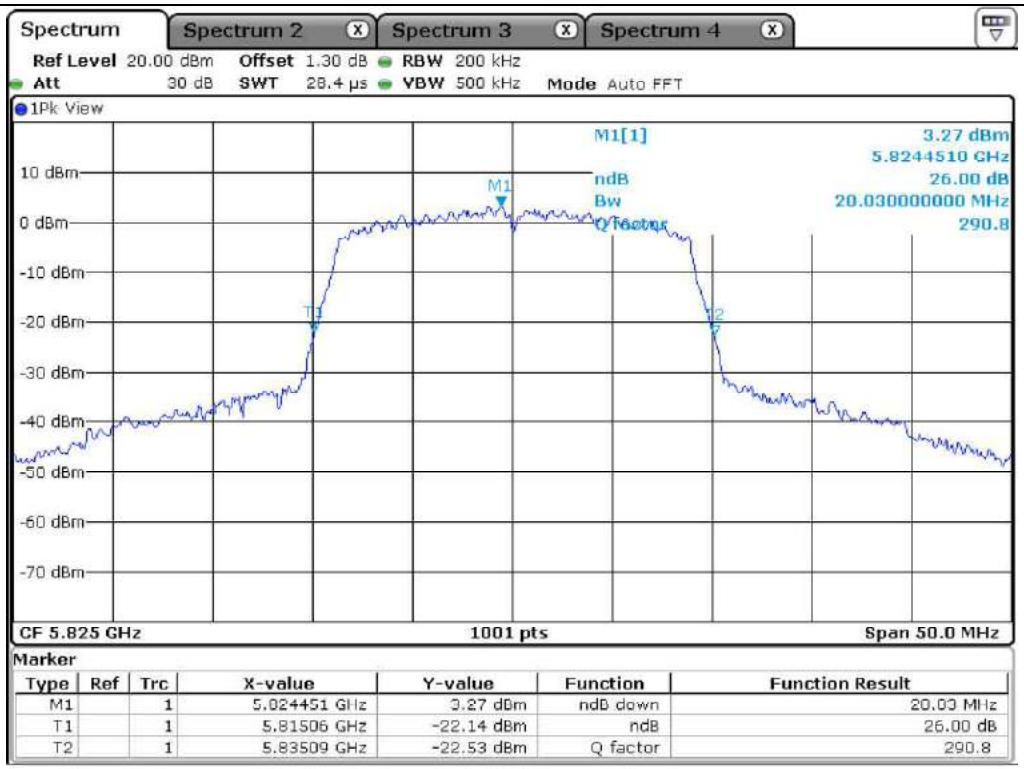


Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



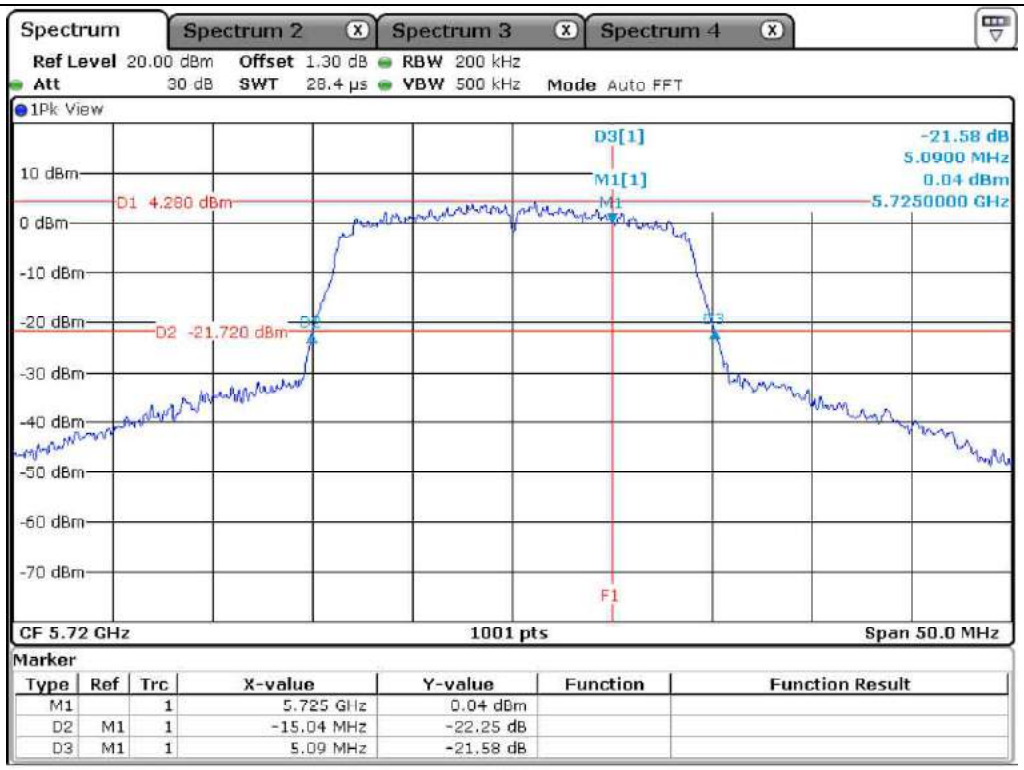
High Channel (5 825 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

7.4.3 Test data for Staddle Channel_Antenna 0

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 720.00	15.04
5 725 ~ 5 850	5 720.00	5.09

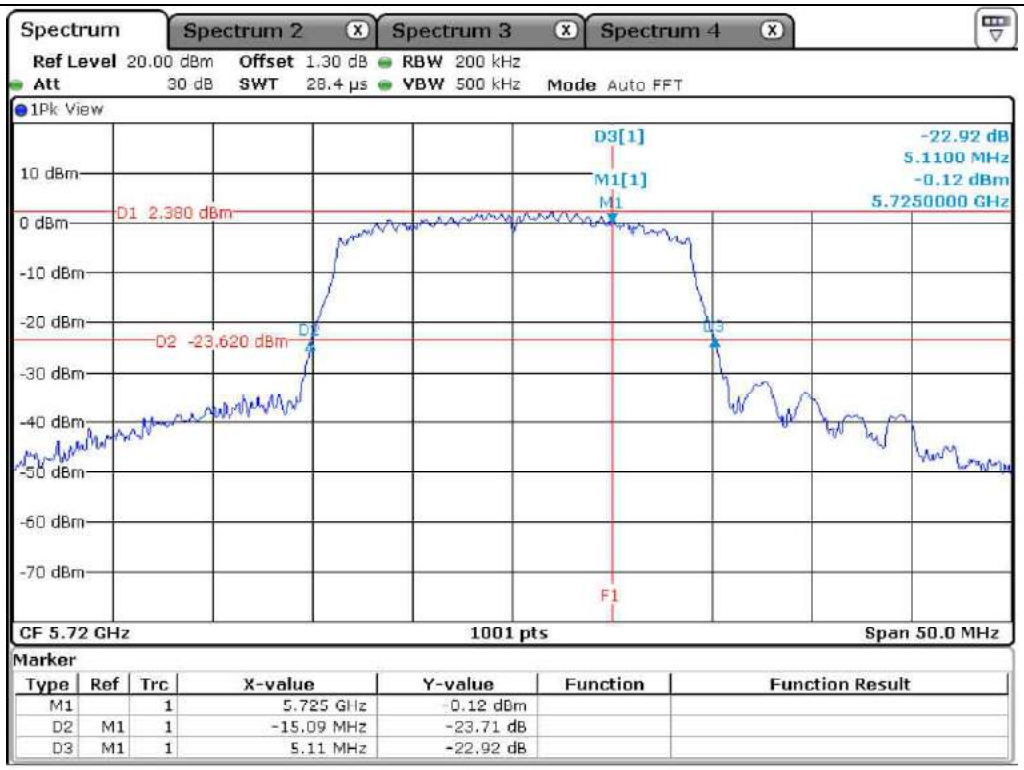


ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

7.4.4 Test data for Staddle Channel_Antenna 1

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 720.00	15.09
5 725 ~ 5 850	5 720.00	5.11



ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

7.6 Test data for 802.11n_HT40 RLAN Mode

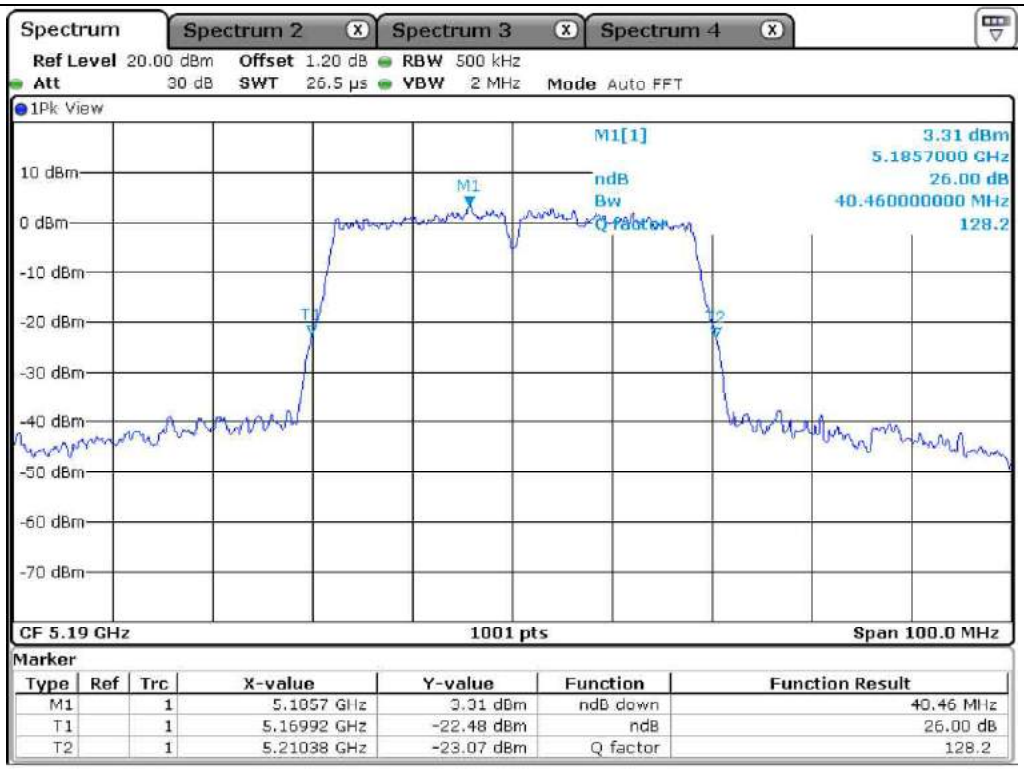
7.6.1 Test data for Antenna 0

-. Test Result : Pass

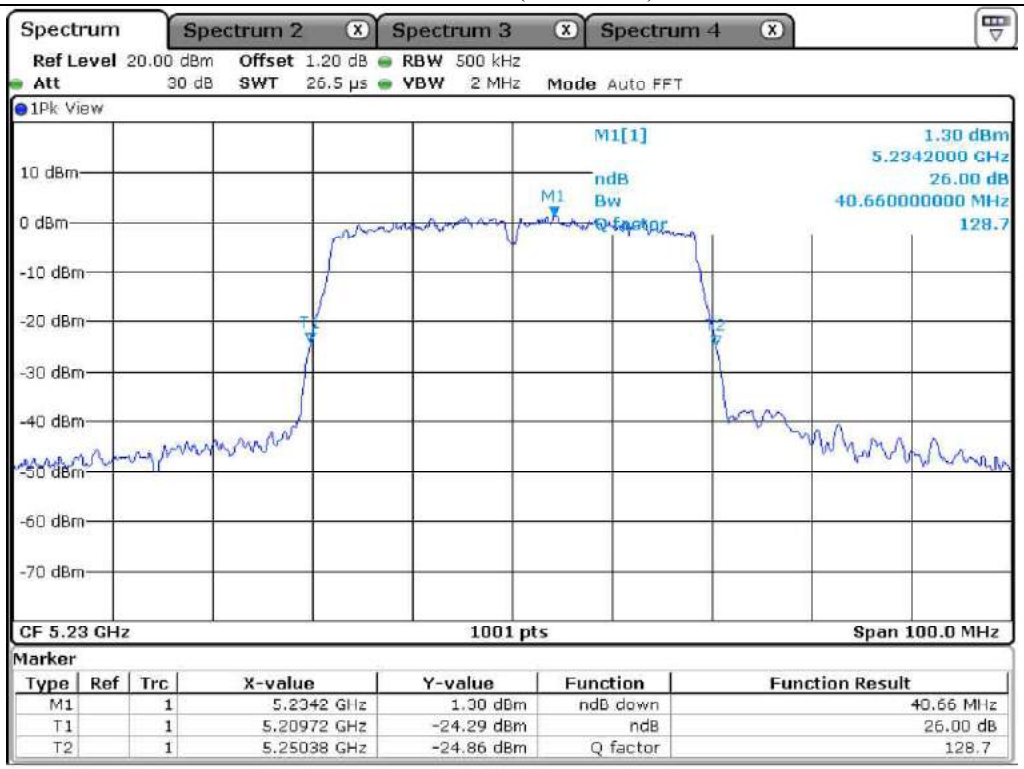
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 190.00	40.46
	High	5 230.00	40.66
5 250 ~ 5 350	Low	5 270.00	40.86
	High	5 310.00	40.96
5 470 ~ 5 725	Low	5 510.00	40.36
	Middle	5 550.00	40.46
	High	5 670.00	40.96
5 725 ~ 5 850	Low	5 755.00	40.76
	High	5 795.00	40.56

Remark: See next page for measurement data.

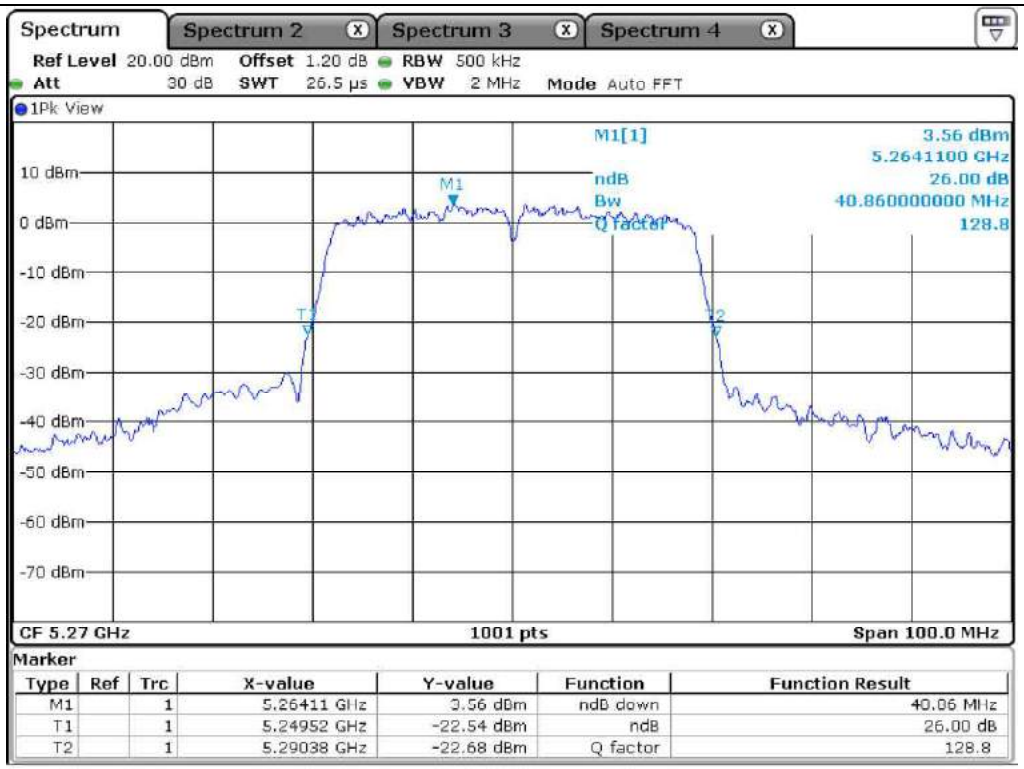
ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



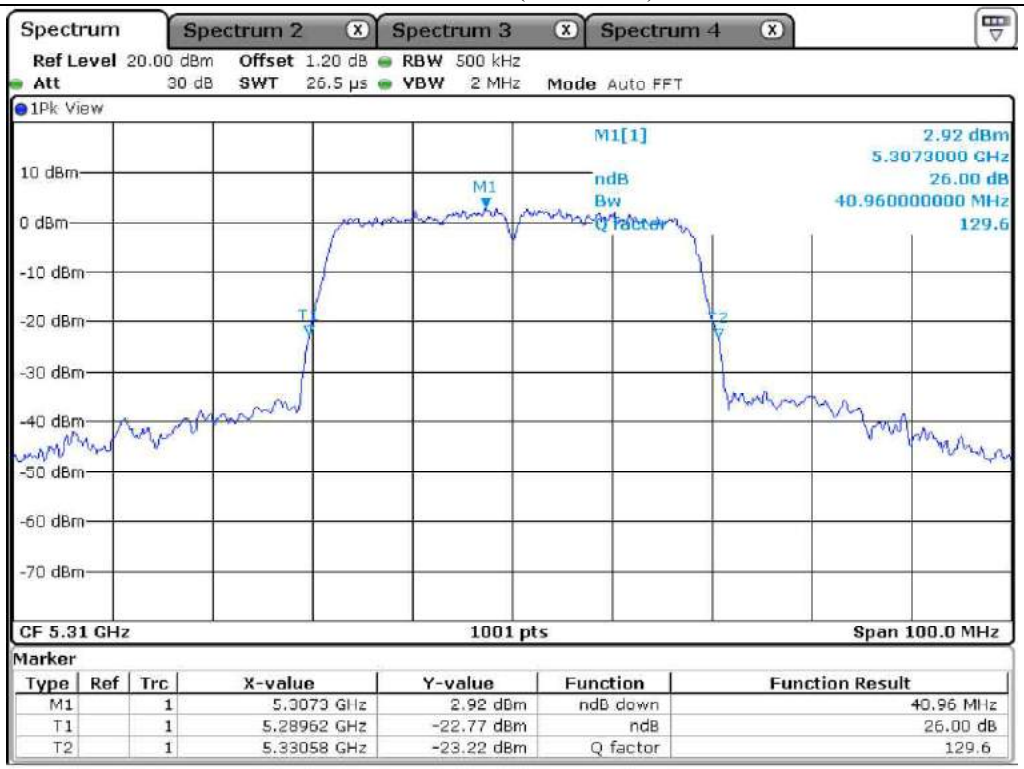
Low Channel (5 190 MHz)



High Channel (5 230 MHz)

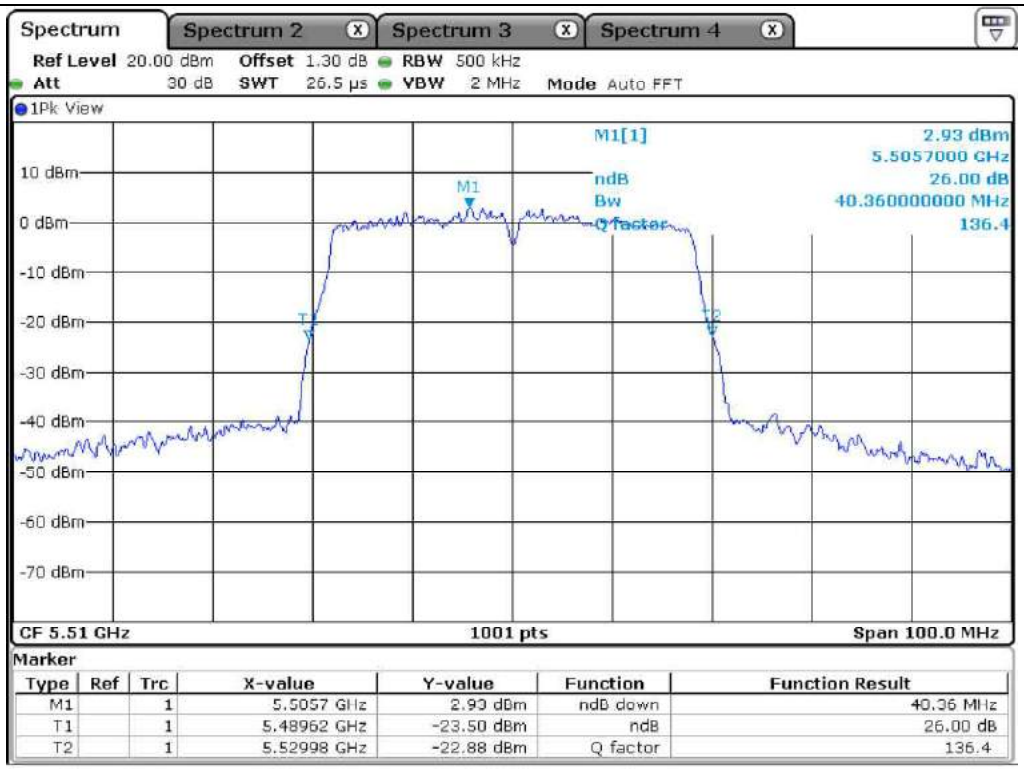


Low Channel (5 270 MHz)

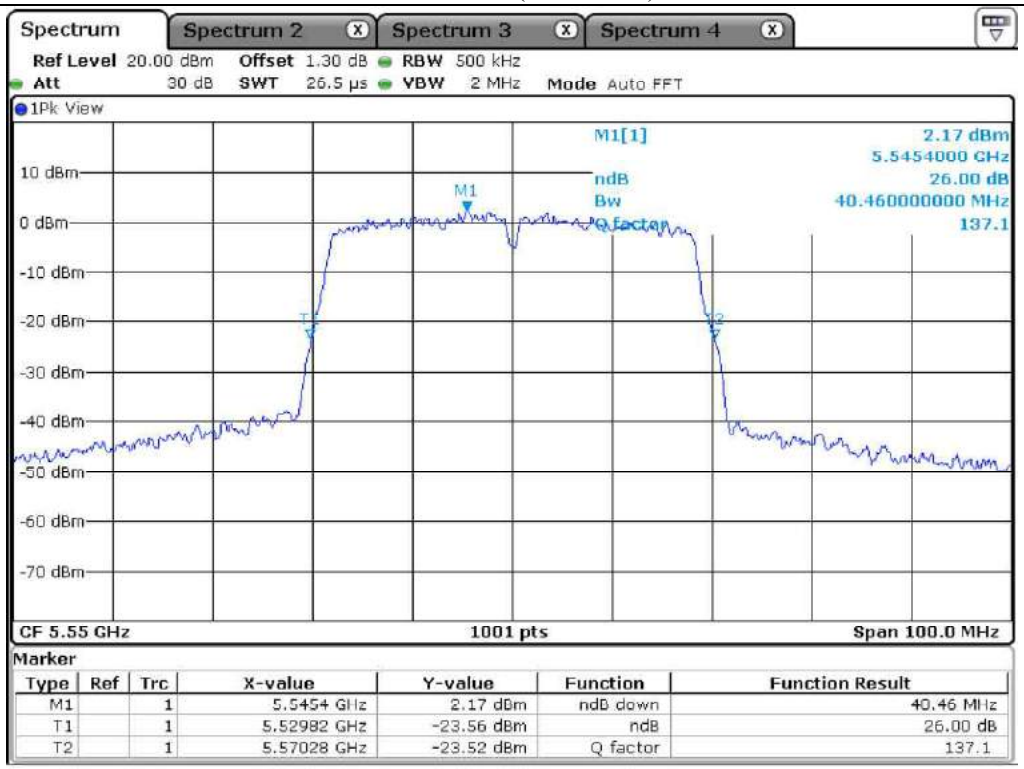


High Channel (5 310 MHz)

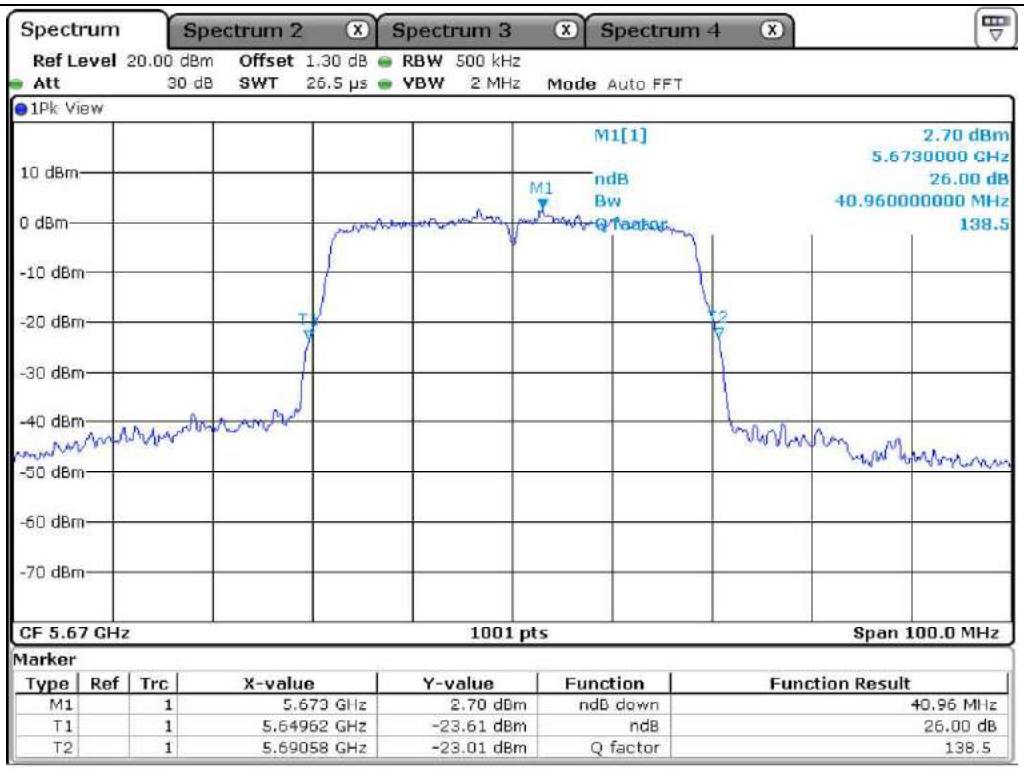
ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



Low Channel (5 510 MHz)

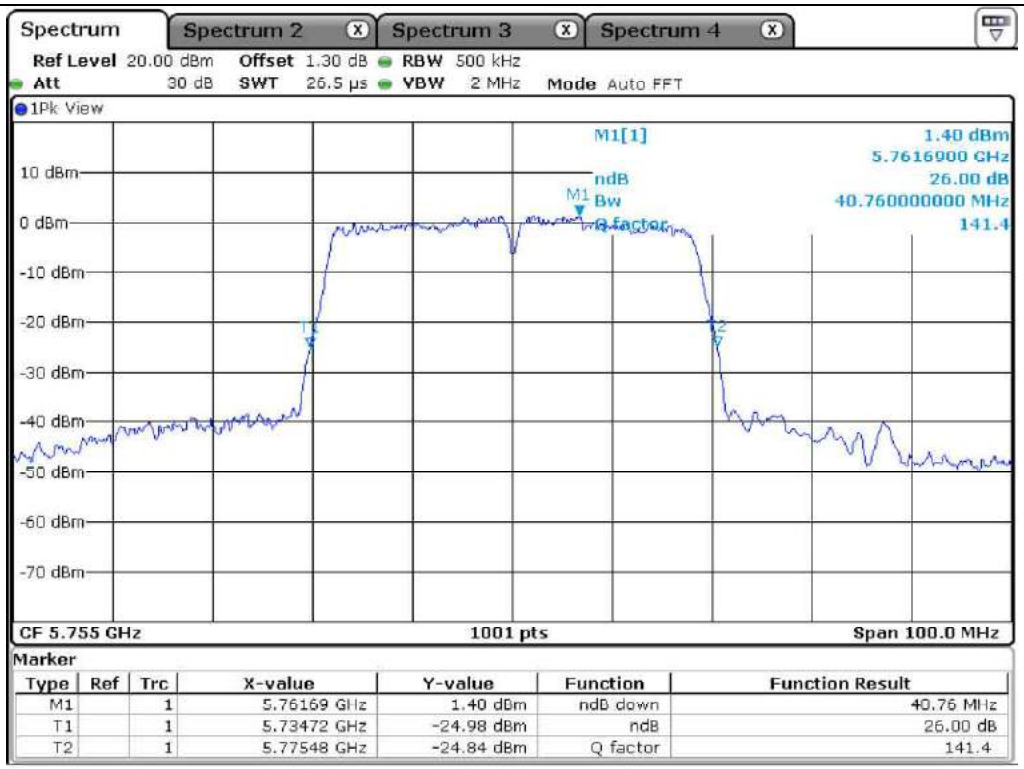


Middle Channel (5 550 MHz)

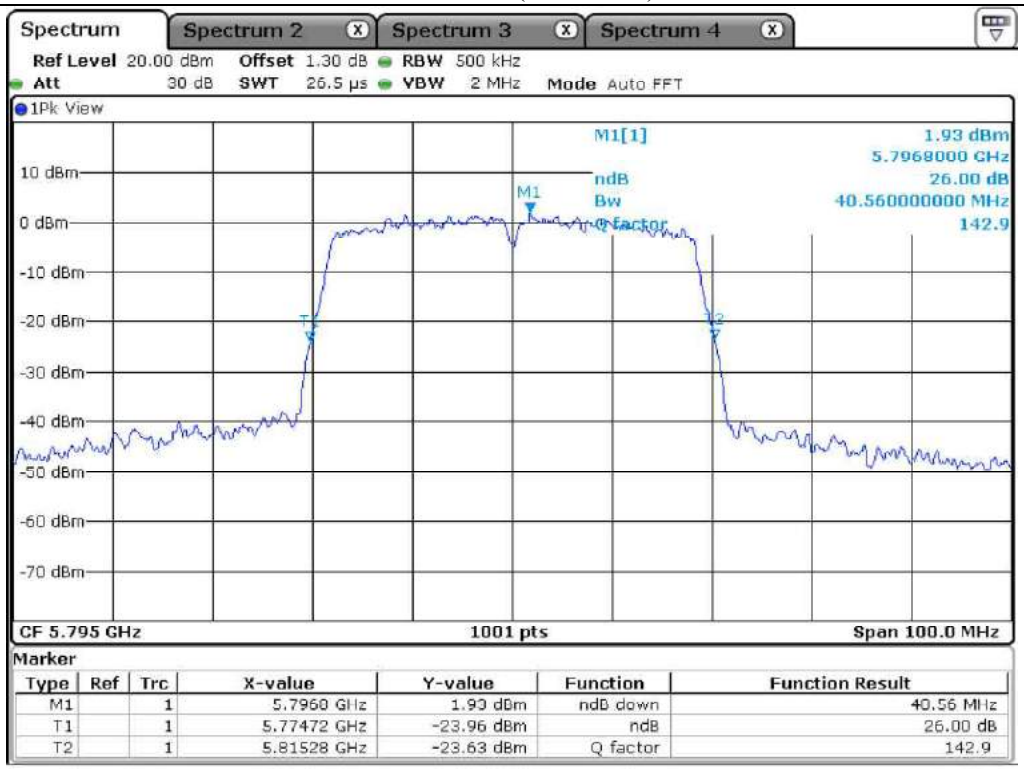


High Channel (5 670 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



Low Channel (5 755 MHz)



High Channel (5 795 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

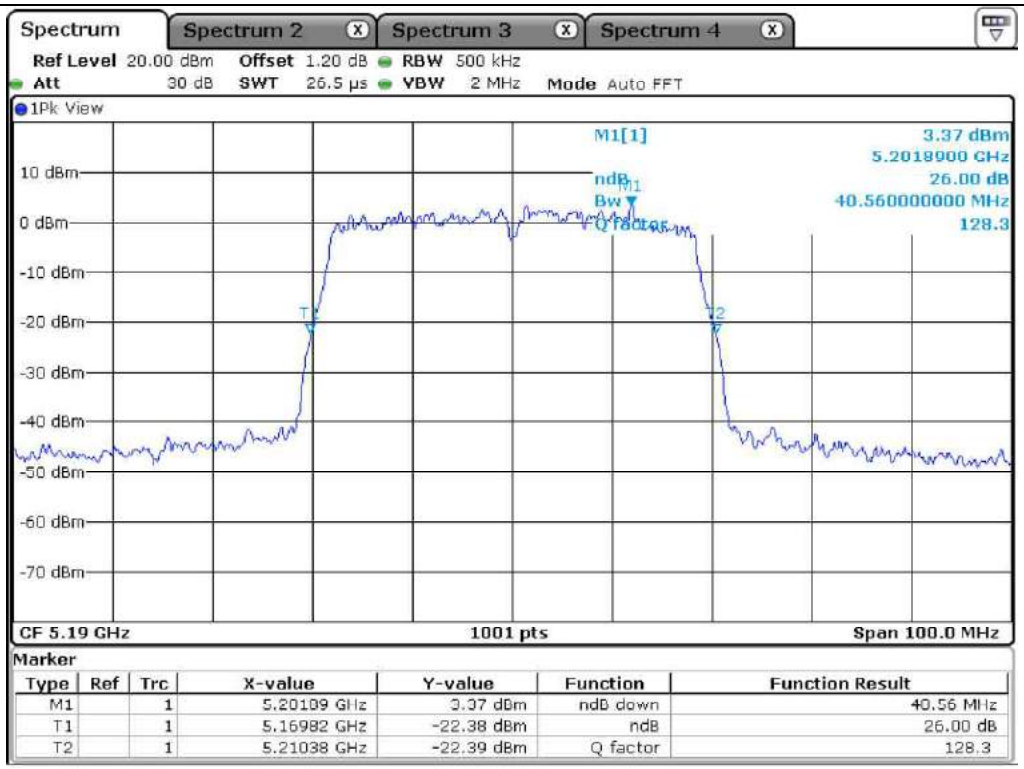
7.6.2 Test data for Antenna 1

-. Test Result : Pass

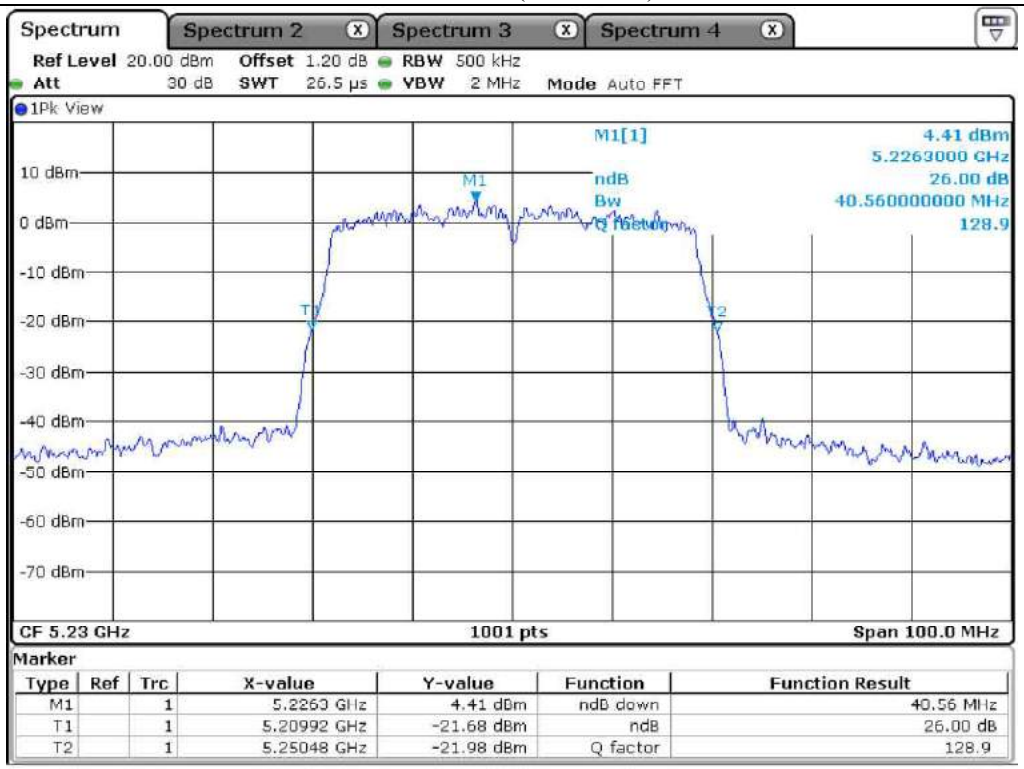
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 190.00	40.56
	High	5 230.00	40.56
5 250 ~ 5 350	Low	5 270.00	40.36
	High	5 310.00	40.26
5 470 ~ 5 725	Low	5 510.00	40.46
	Middle	5 550.00	40.06
	High	5 670.00	40.46
5 725 ~ 5 850	Low	5 755.00	40.26
	High	5 795.00	40.26

Remark: See next page for measurement data.

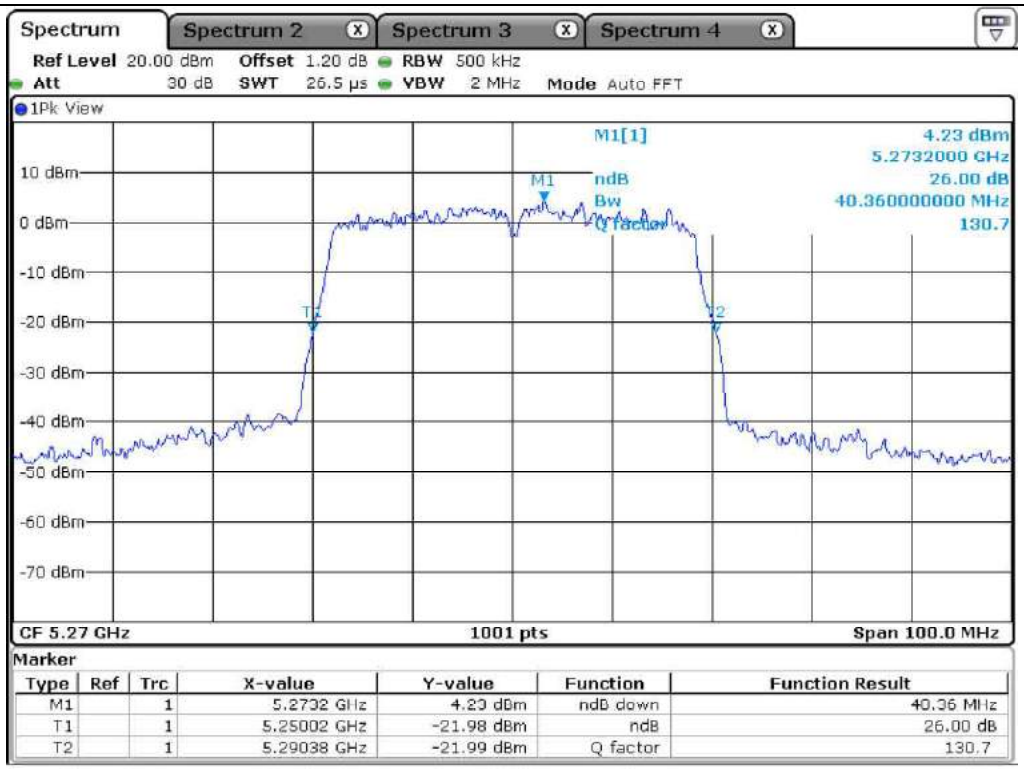
ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



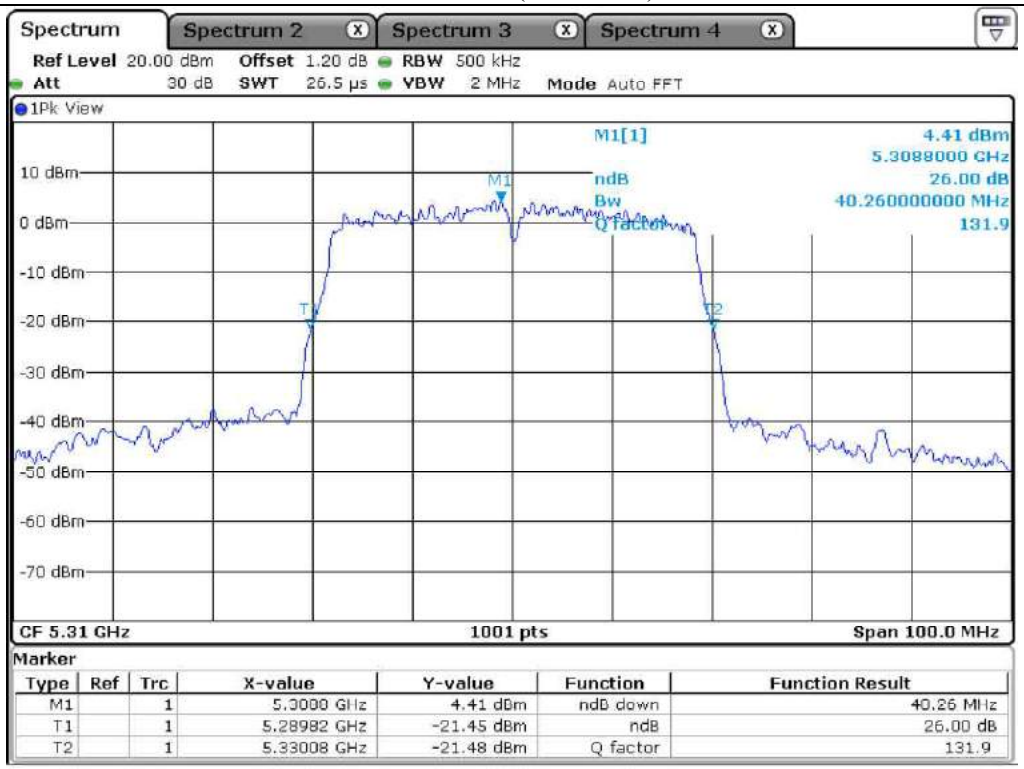
Low Channel (5 190 MHz)



High Channel (5 230 MHz)

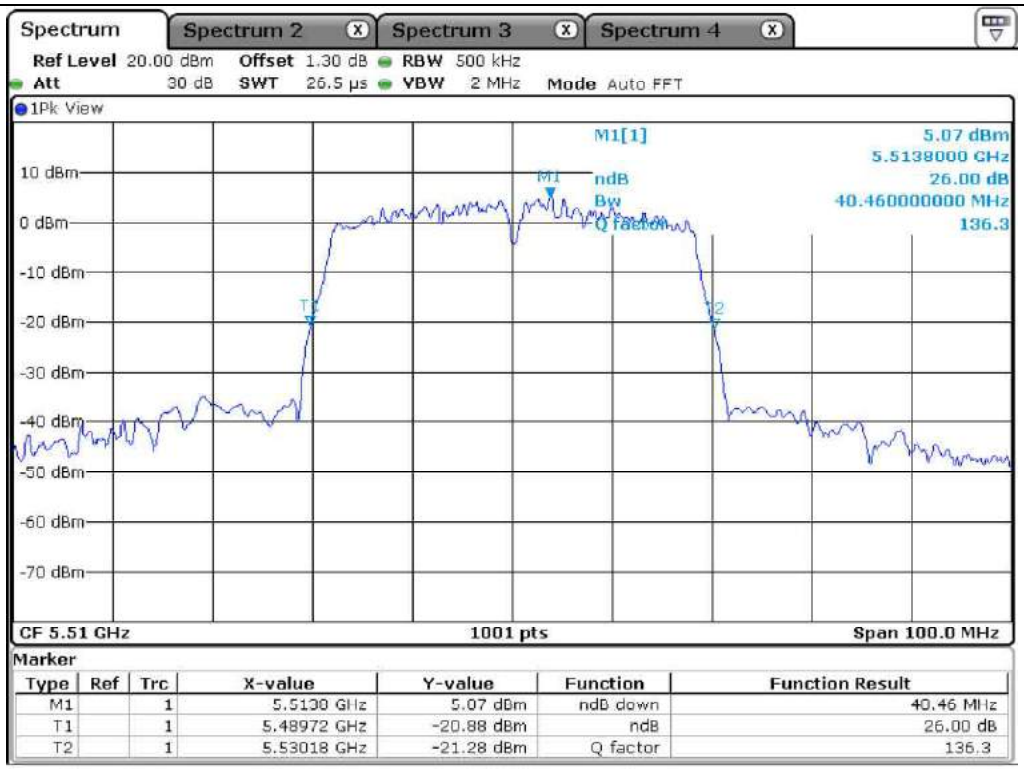


Low Channel (5 270 MHz)

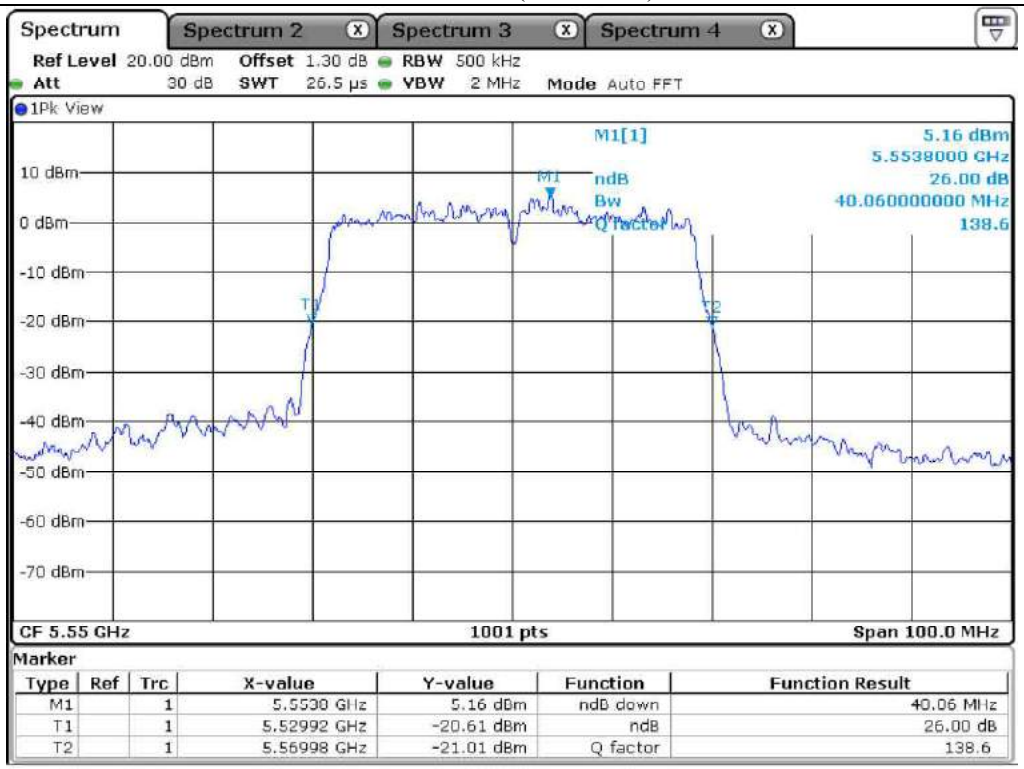


High Channel (5 310 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

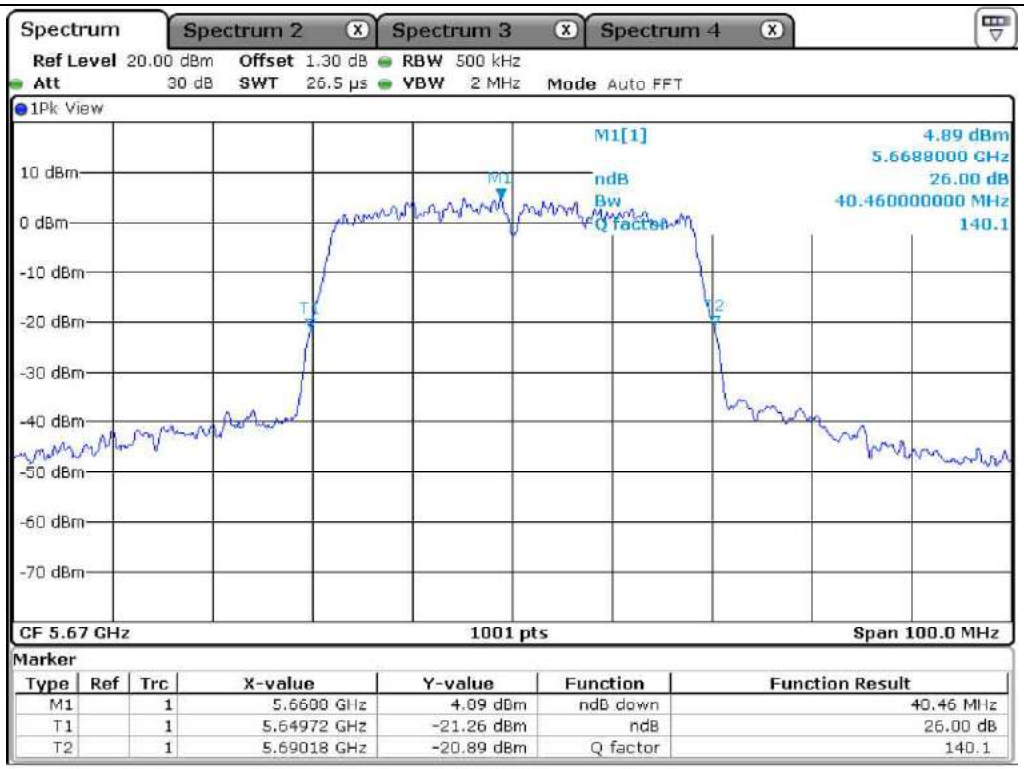


Low Channel (5 510 MHz)



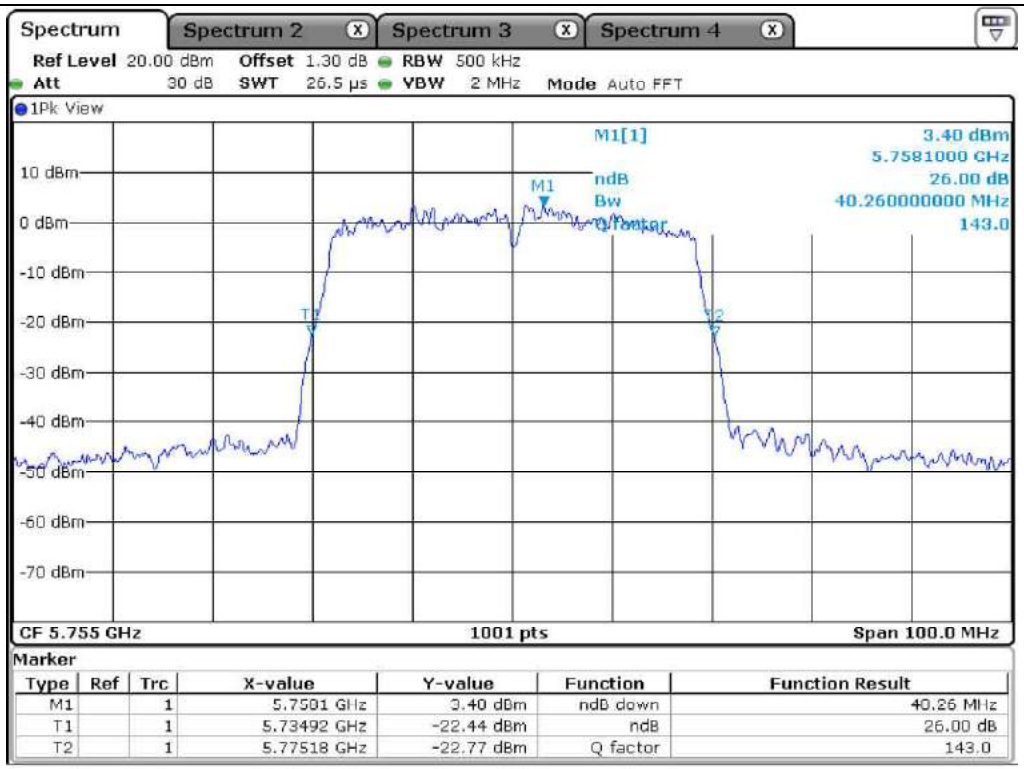
Middle Channel (5 550 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

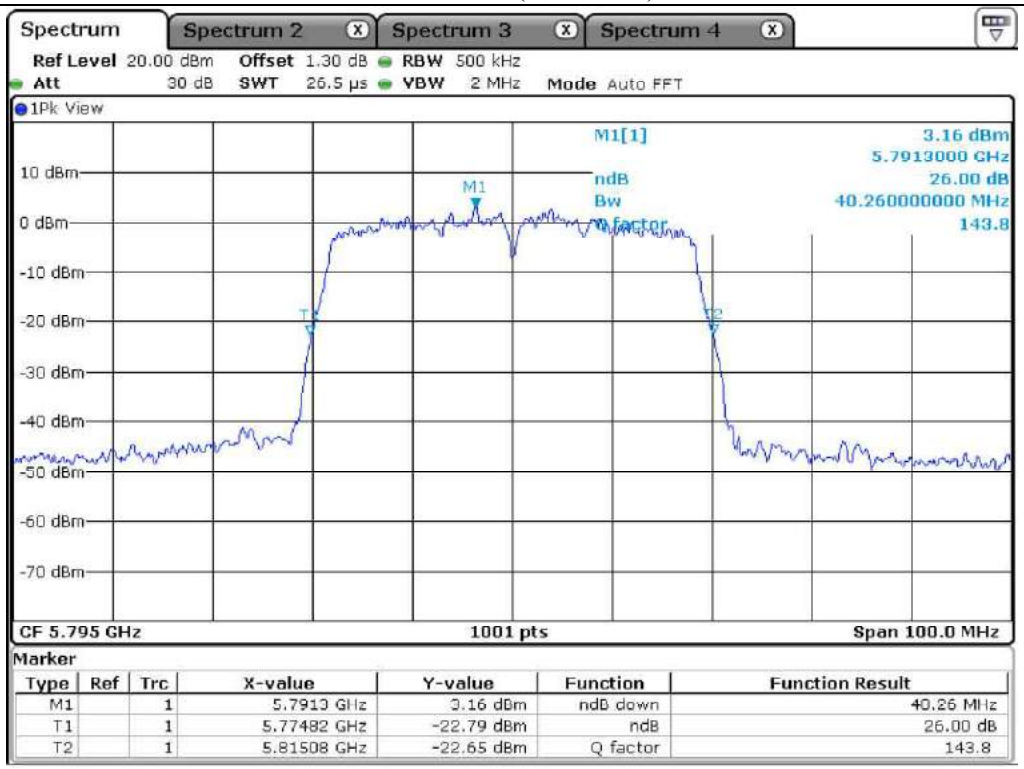


High Channel (5 670 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



Low Channel (5 755 MHz)



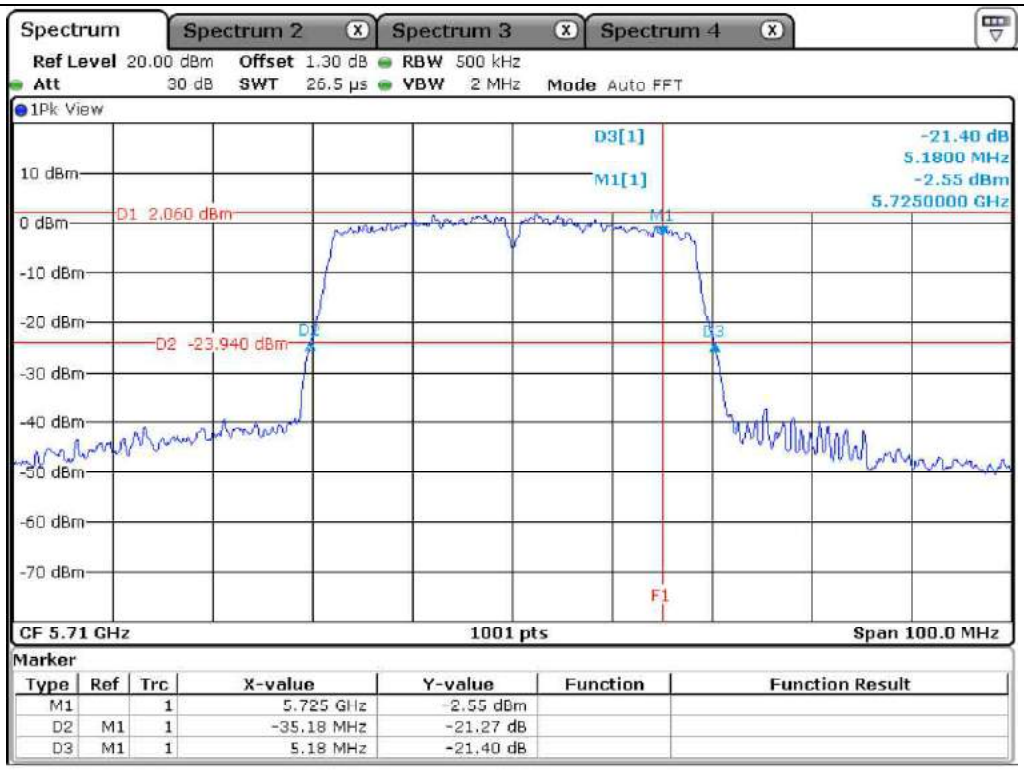
High Channel (5 795 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

7.6.3 Test data for Staddle Channel_Antenna 0

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 710.00	35.18
5 725 ~ 5 850	5 710.00	5.18

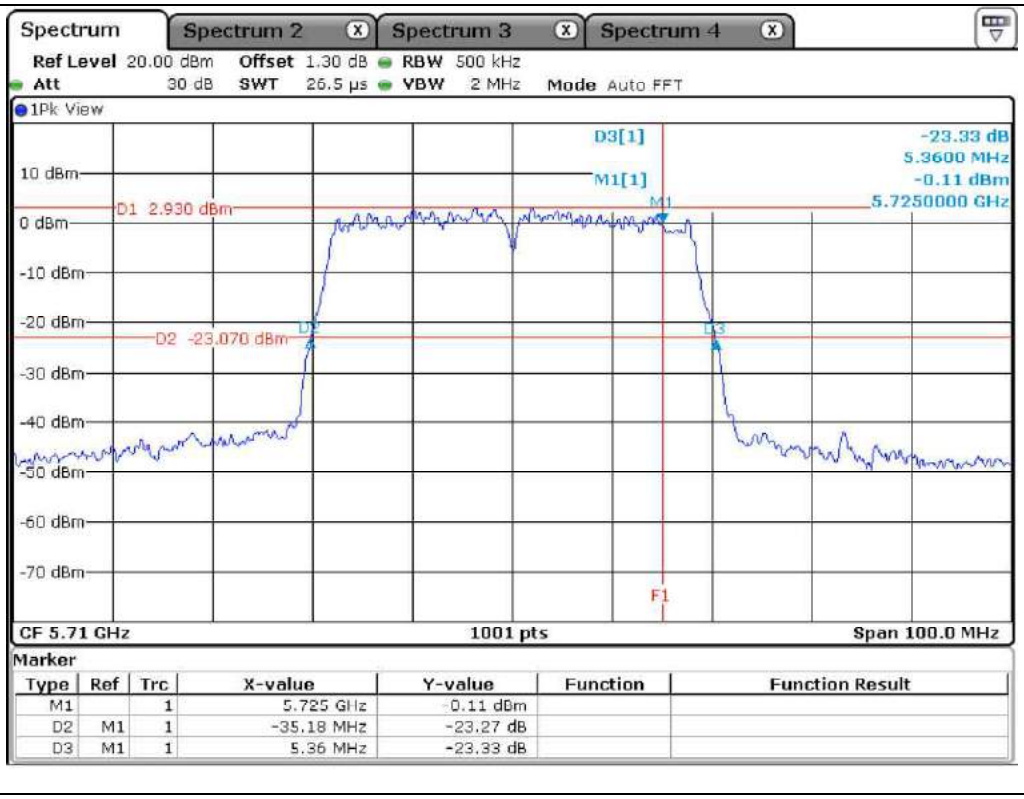


ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

7.6.4 Test data for Staddle Channel_Antenna 1

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 710.00	35.18
5 725 ~ 5 850	5 710.00	5.36



ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

7.7 Test data for 802.11ac_VHT80 RLAN Mode

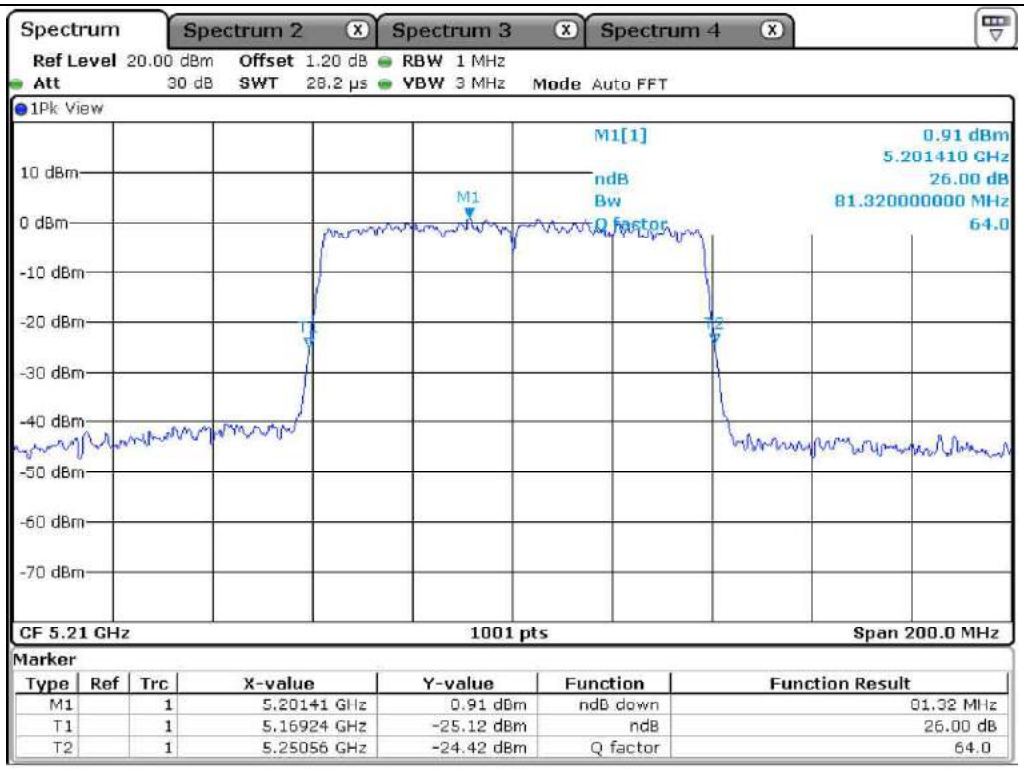
7.7.1 Test data for Antenna 0

-. Test Result : Pass

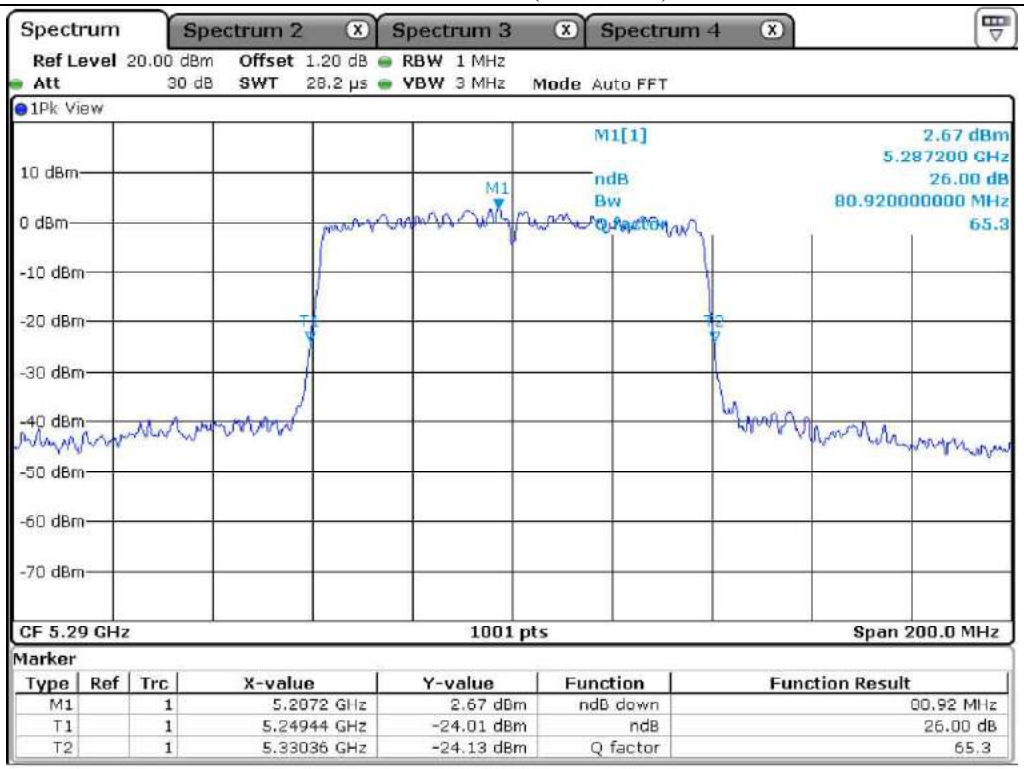
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Middle	5 210.00	81.32
5 250 ~ 5 350	Middle	5 290.00	81.12
5 470 ~ 5 725	Middle	5 530.00	80.72
5 725 ~ 5 850	Middle	5 775.00	80.72

Remark: See next page for measurement data.

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

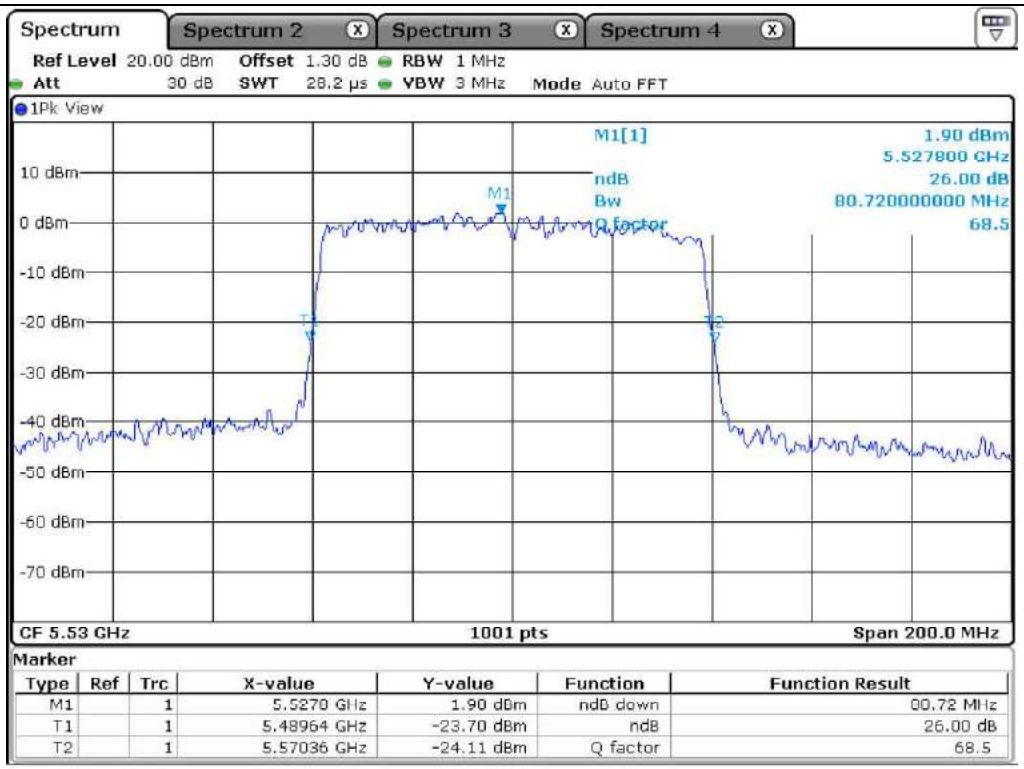


Middle Channel (5 210 MHz)

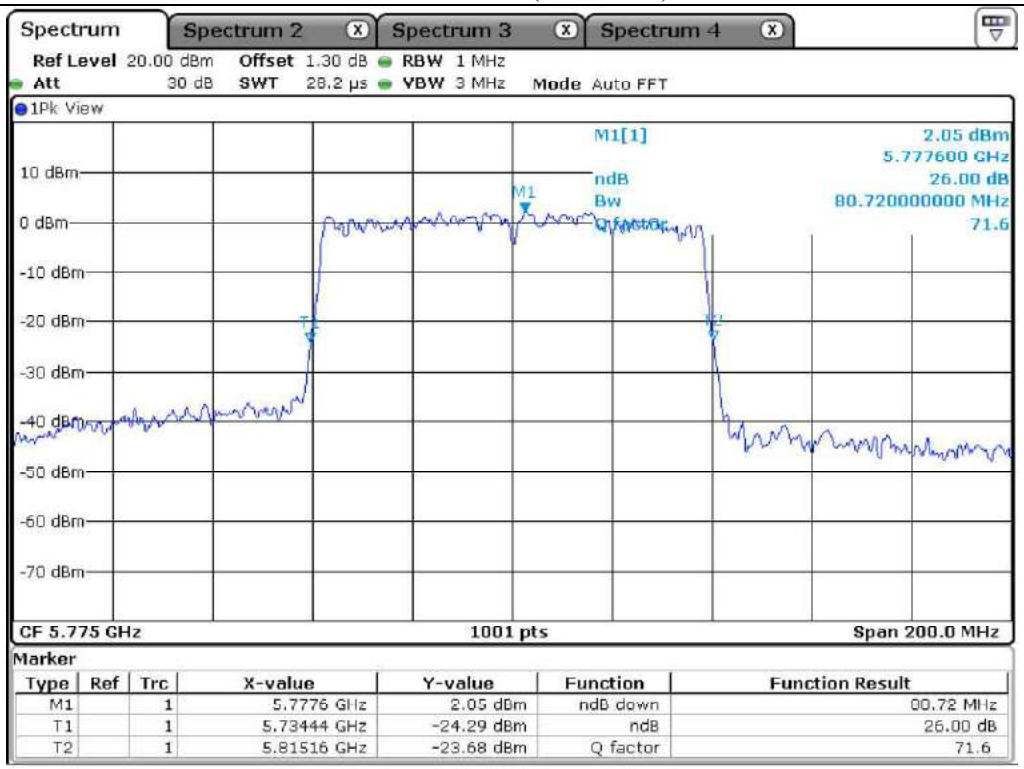


Middle Channel (5 290 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



Middle Channel (5 530 MHz)



Middle Channel (5 775 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

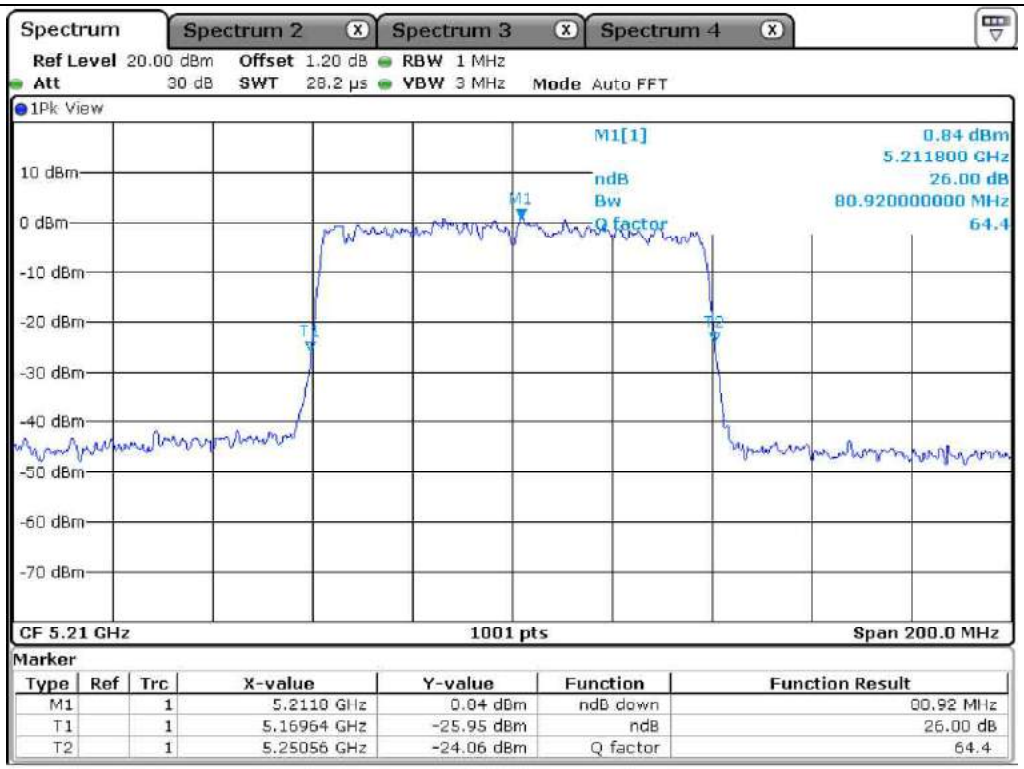
7.7.2 Test data for Antenna 1

-. Test Result : Pass

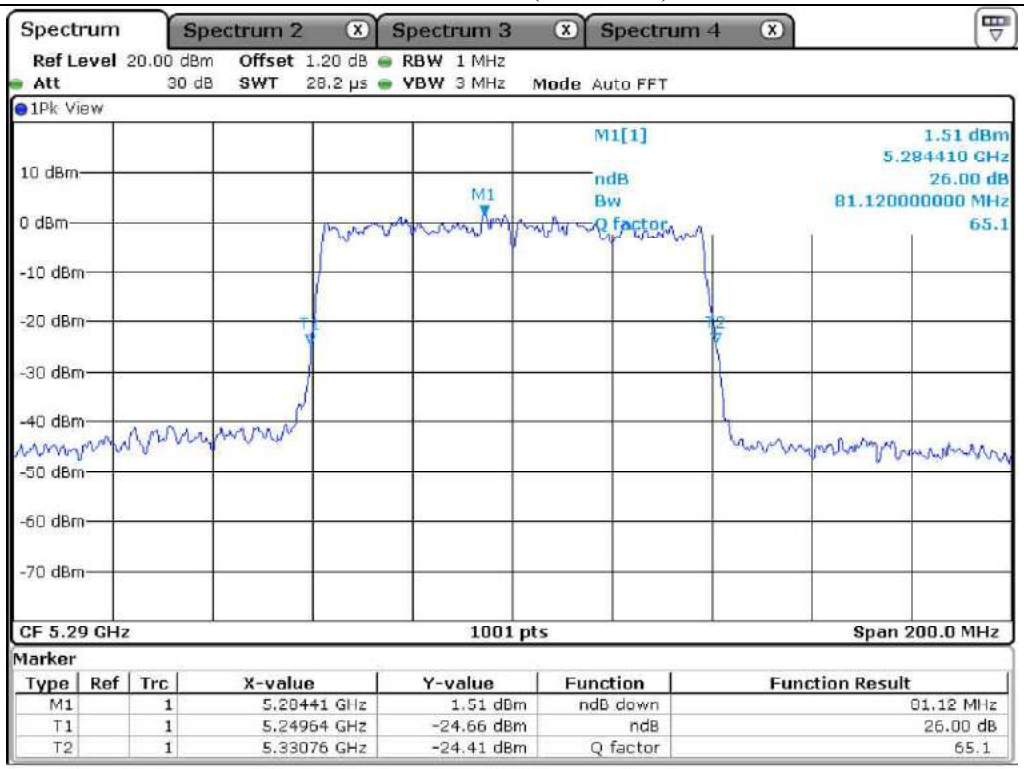
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Middle	5 210.00	80.92
5 250 ~ 5 350	Middle	5 290.00	81.12
5 470 ~ 5 725	Middle	5 530.00	81.12
5 725 ~ 5 850	Middle	5 775.00	81.12

Remark: See next page for measurement data.

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

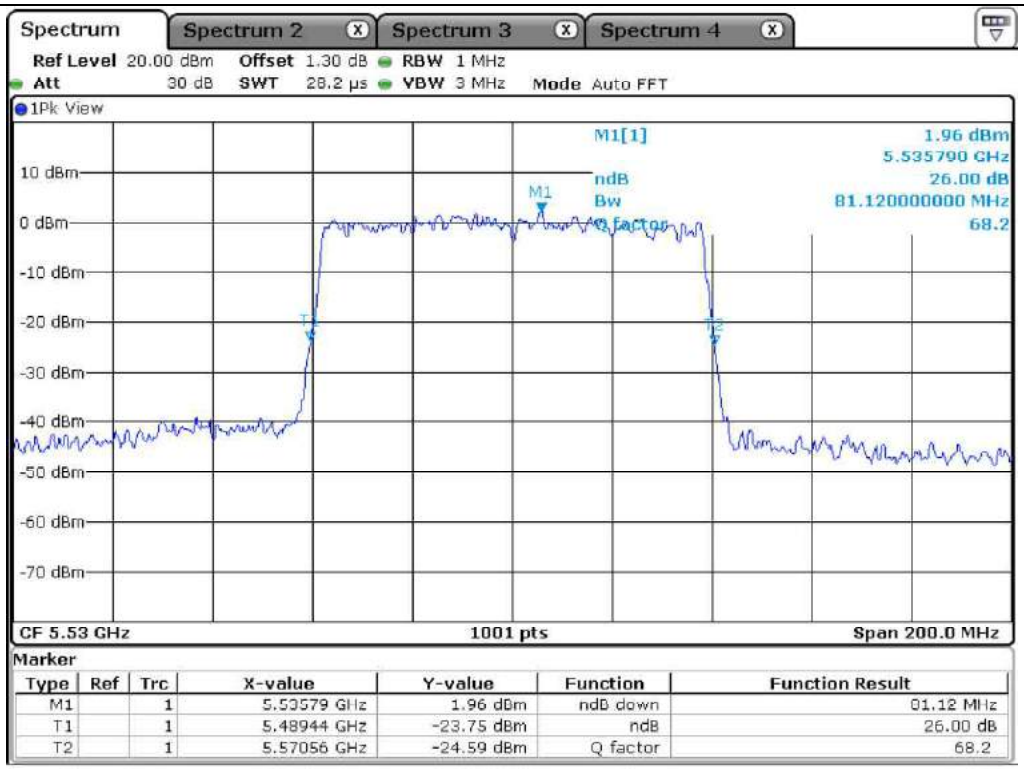


Middle Channel (5 210 MHz)

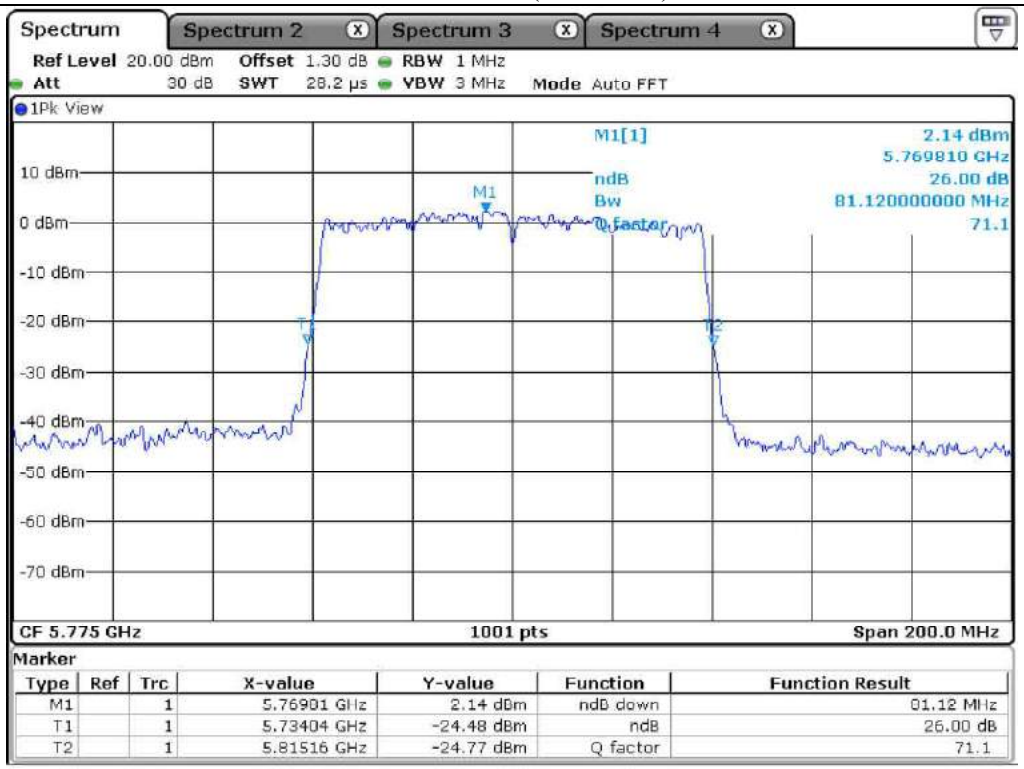


Middle Channel (5 290 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



Middle Channel (5 530 MHz)

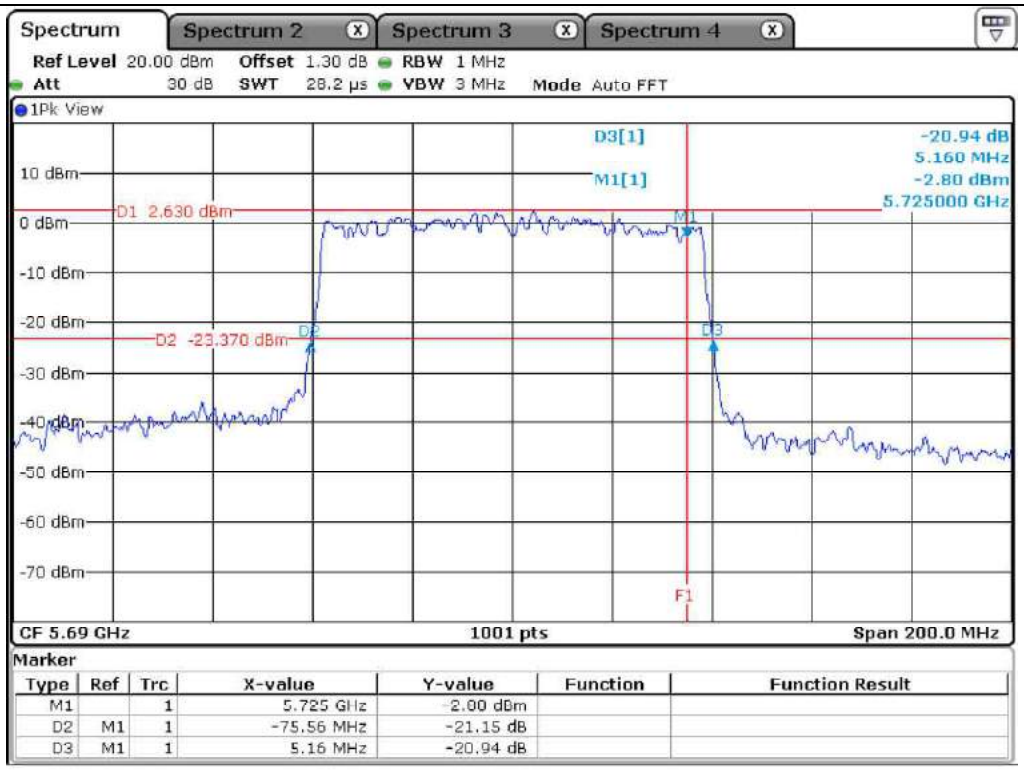


Middle Channel (5 775 MHz)

7.7.3 Test data for Staddle Channel_Antenna 0

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 690.00	75.56
5 725 ~ 5 850	5 690.00	5.16

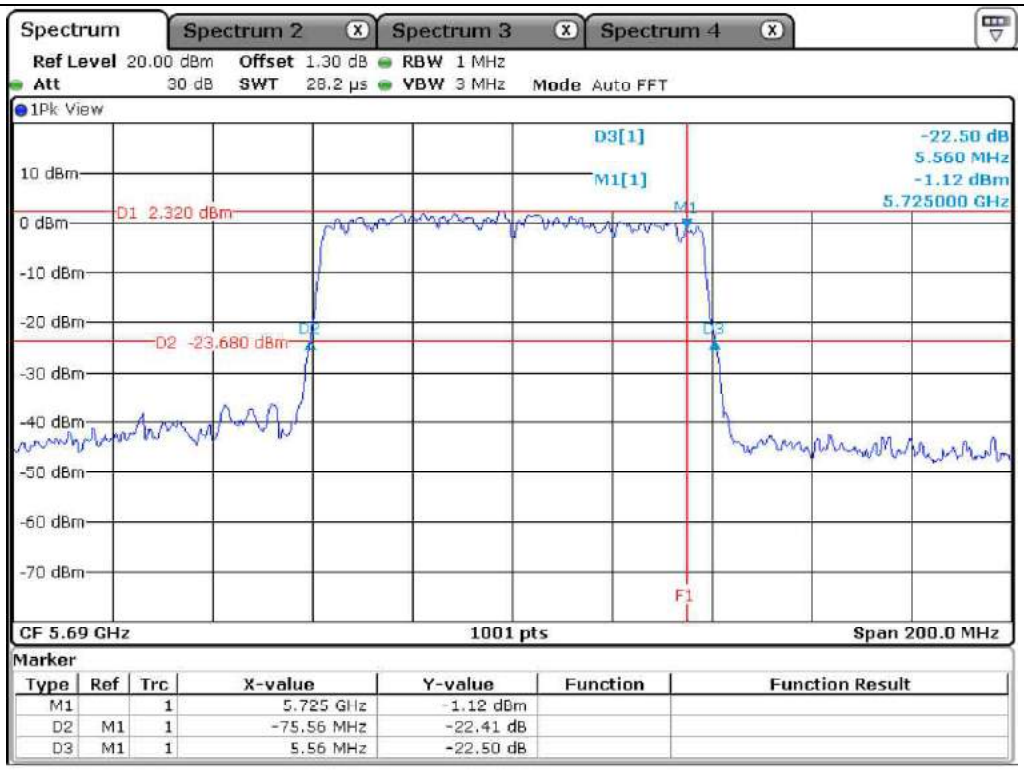


ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

7.7.4 Test data for Staddle Channel_Antenna 1

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 690.00	75.56
5 725 ~ 5 850	5 690.00	5.56



ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

8. 6 dB BANDWIDTH

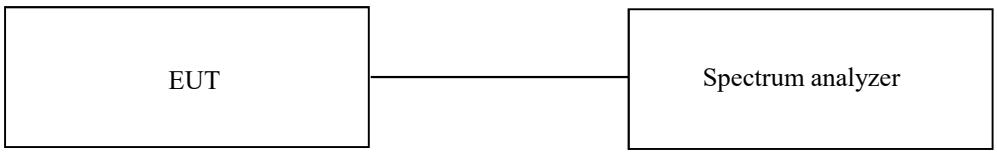
8.1 Operating environment

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

March 12, 2021 ~ March 22, 2021

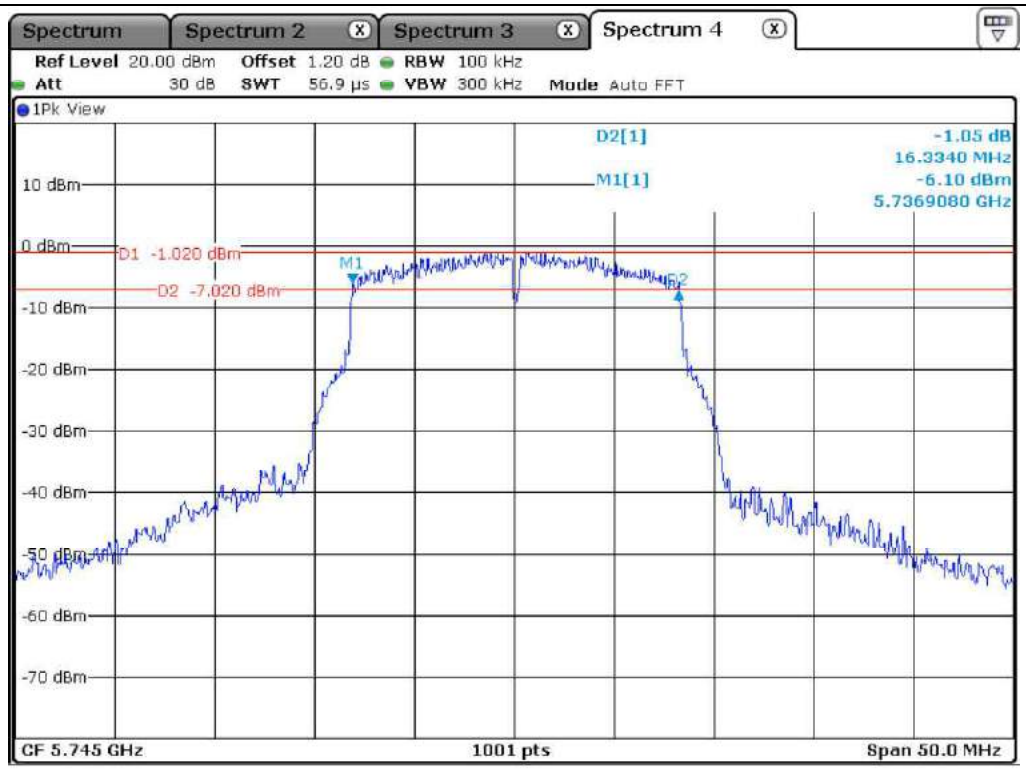
ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

8.4 Test data for 802.11a RLAN Mode

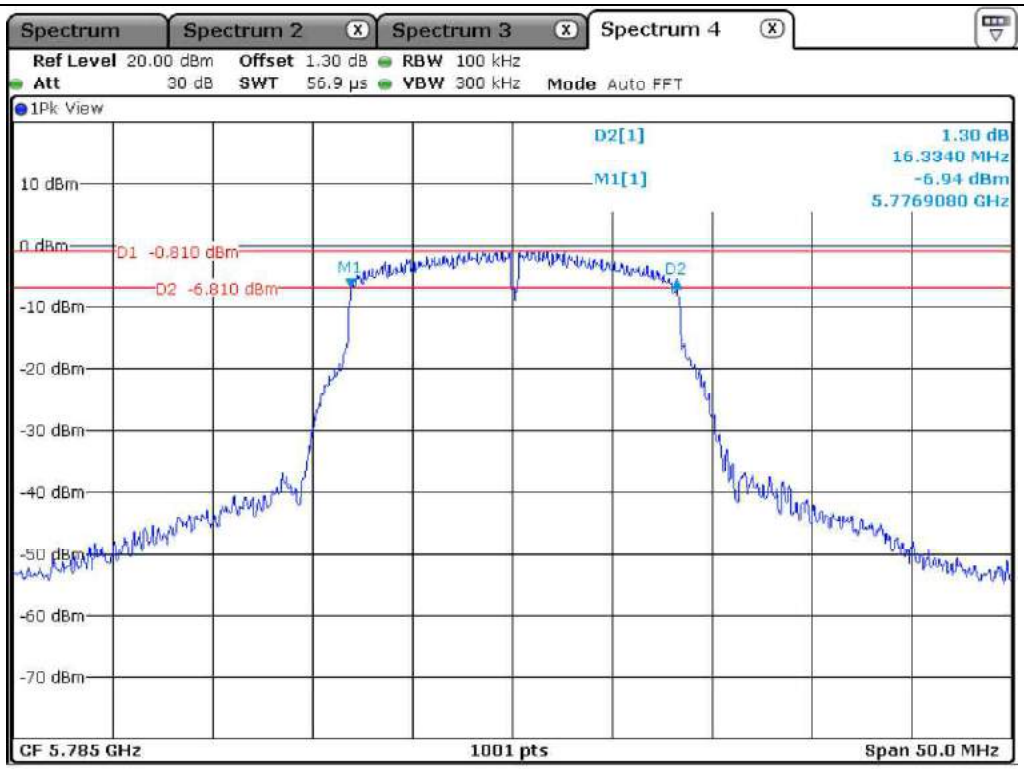
8.4.1 Test data for Antenna 0

-. Test Result : Pass

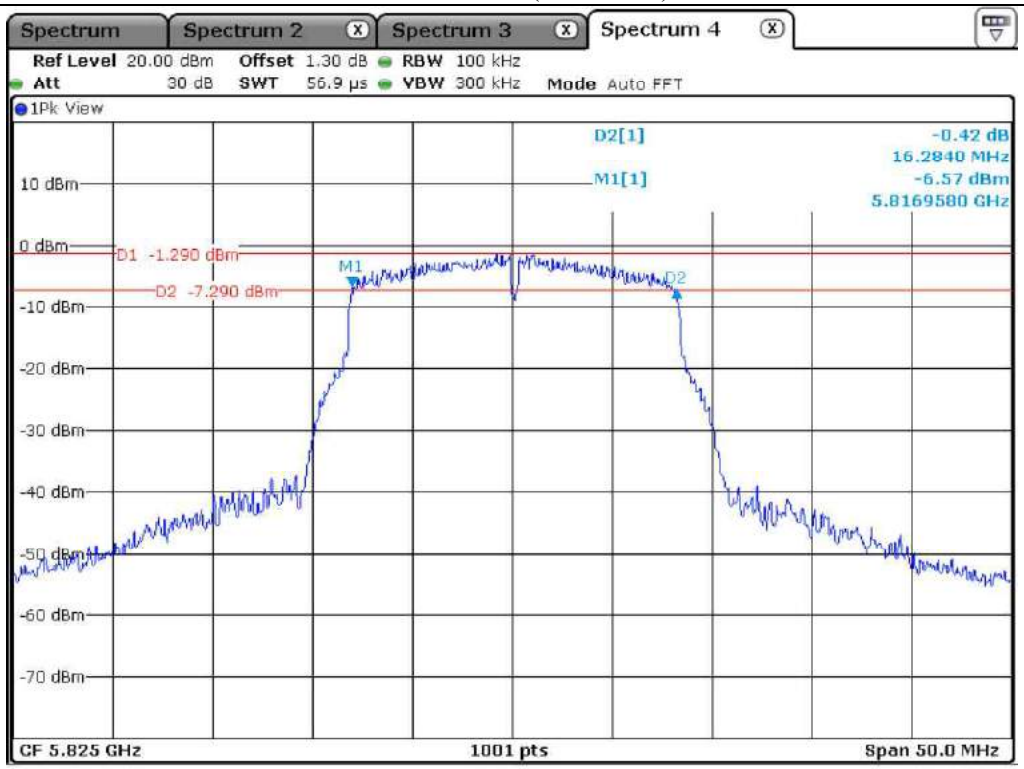
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 725 ~ 5 850	Low	5 745.00	16.33
	Middle	5 785.00	16.33
	High	5 825.00	16.28



Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)



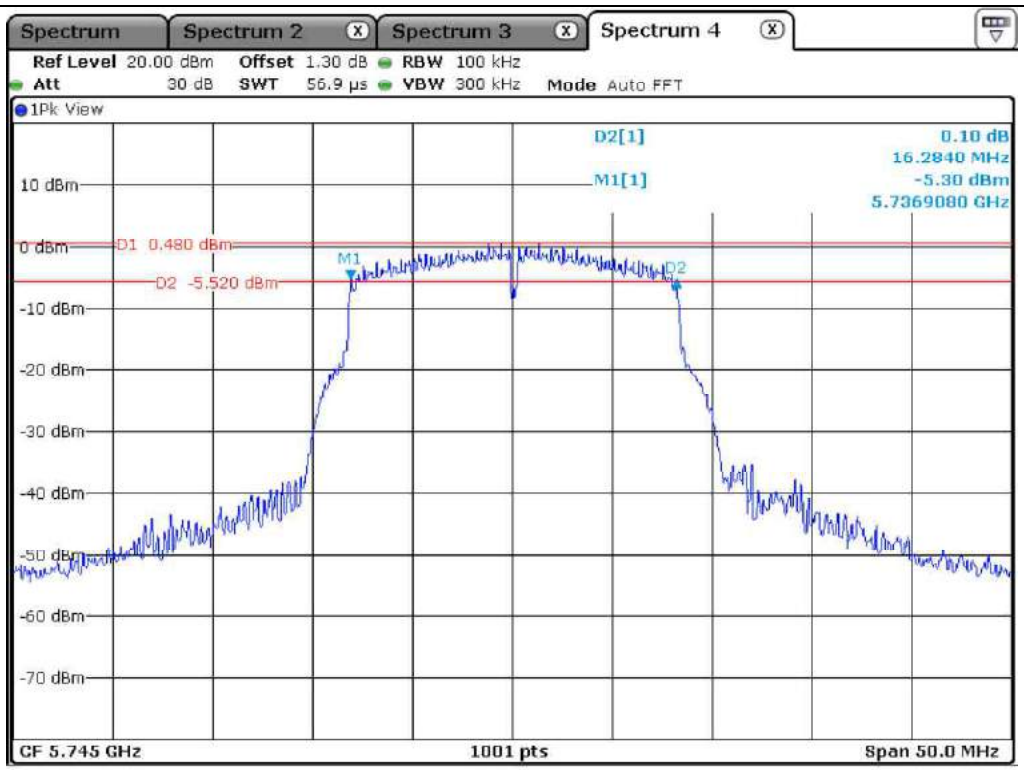
High Channel (5 825 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

8.4.2 Test data for Antenna 1

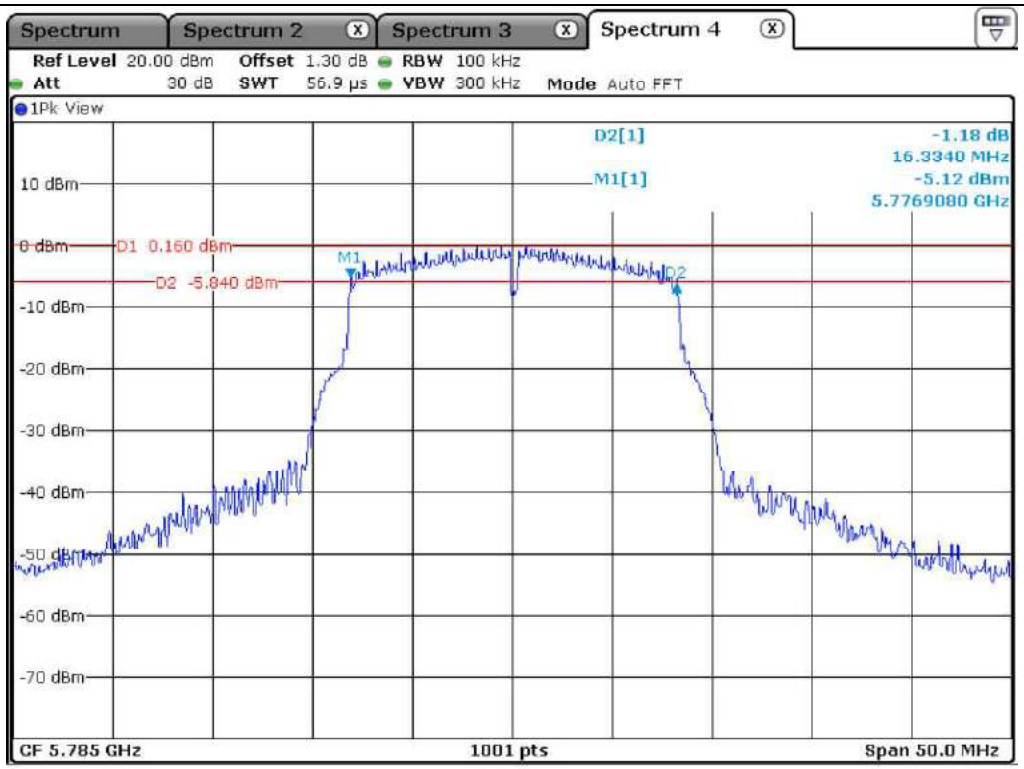
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 725 ~ 5 850	Low	5 745.00	16.28
	Middle	5 785.00	16.33
	High	5 825.00	16.33

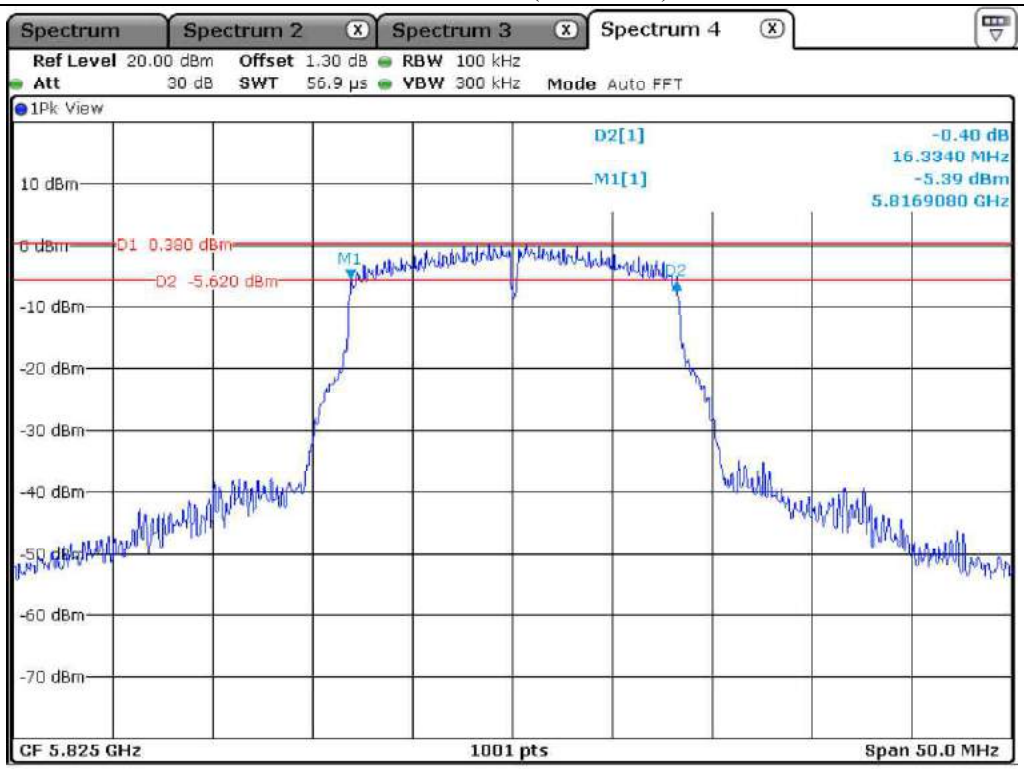


Low Channel (5 745 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



Middle Channel (5 785 MHz)

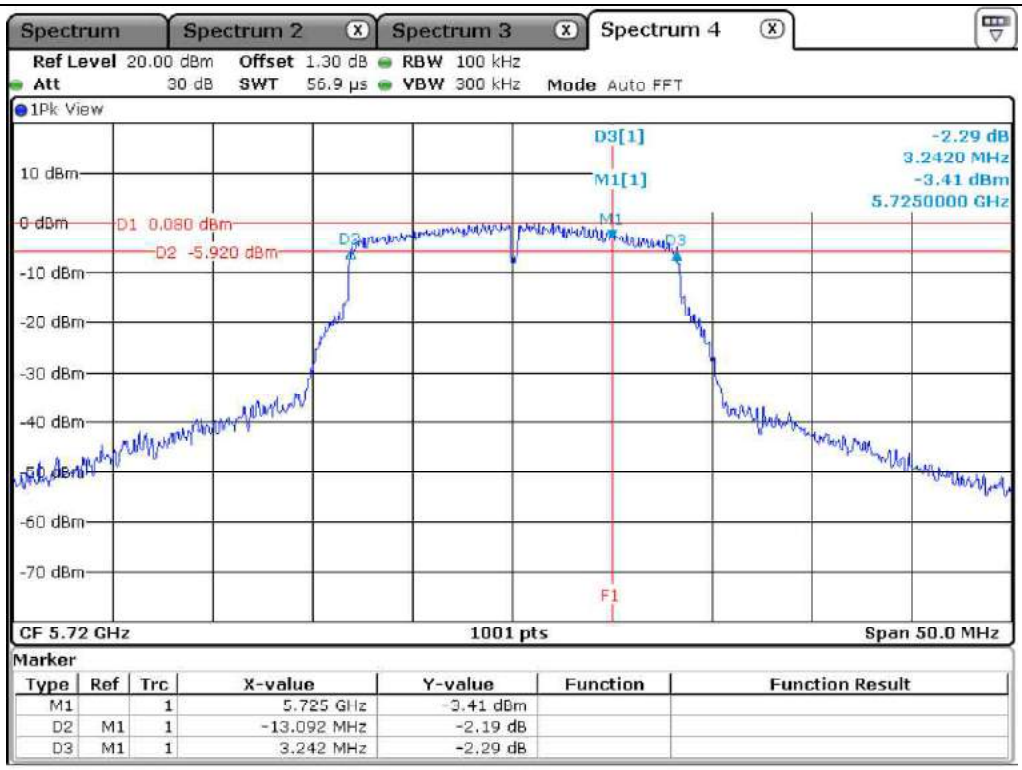


High Channel (5 825 MHz)

8.4.3 Test data for Staddle Channel_Antenna 0

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 470 ~ 5 725	5 720.00	13.09
5 725 ~ 5 850	5 720.00	3.24

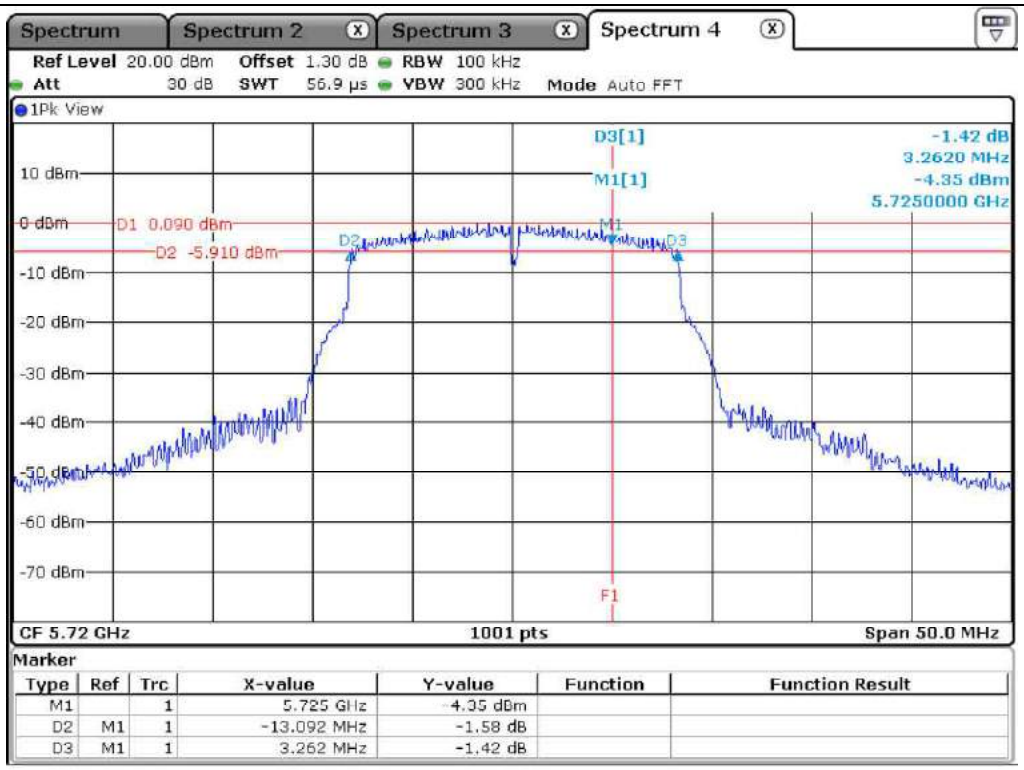


ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

8.4.4 Test data for Staddle Channel_Antenna 1

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 470 ~ 5 725	5 720.00	13.09
5 725 ~ 5 850	5 720.00	3.26



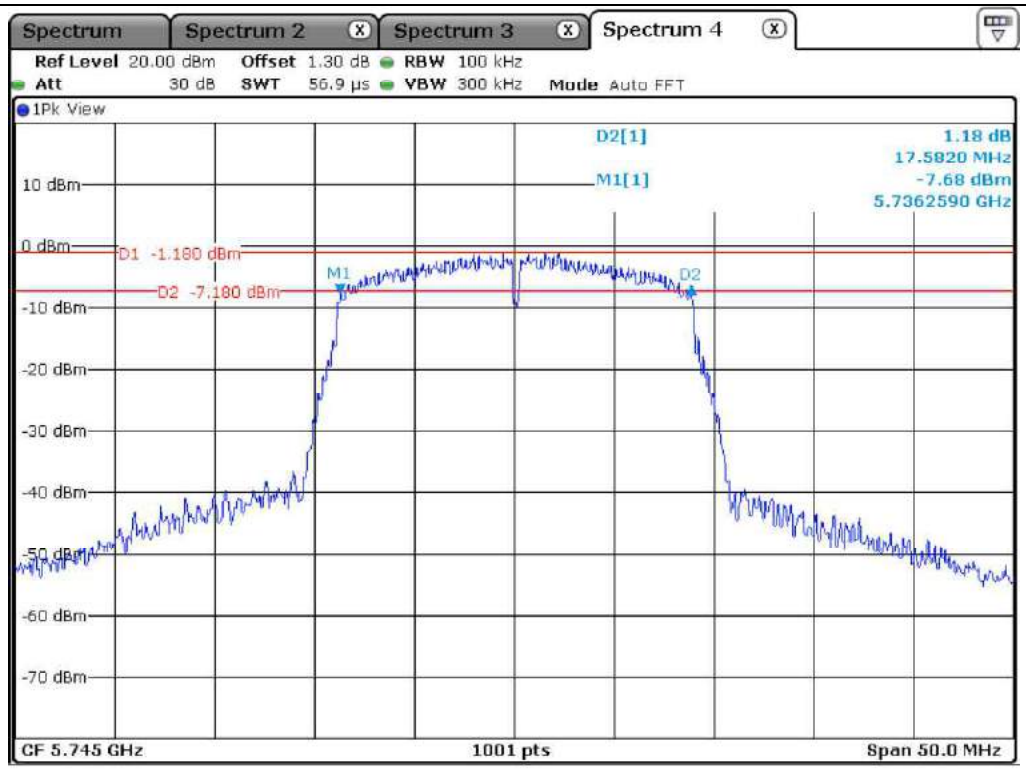
ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

8.5 Test data for 802.11n_HT20 RLAN Mode

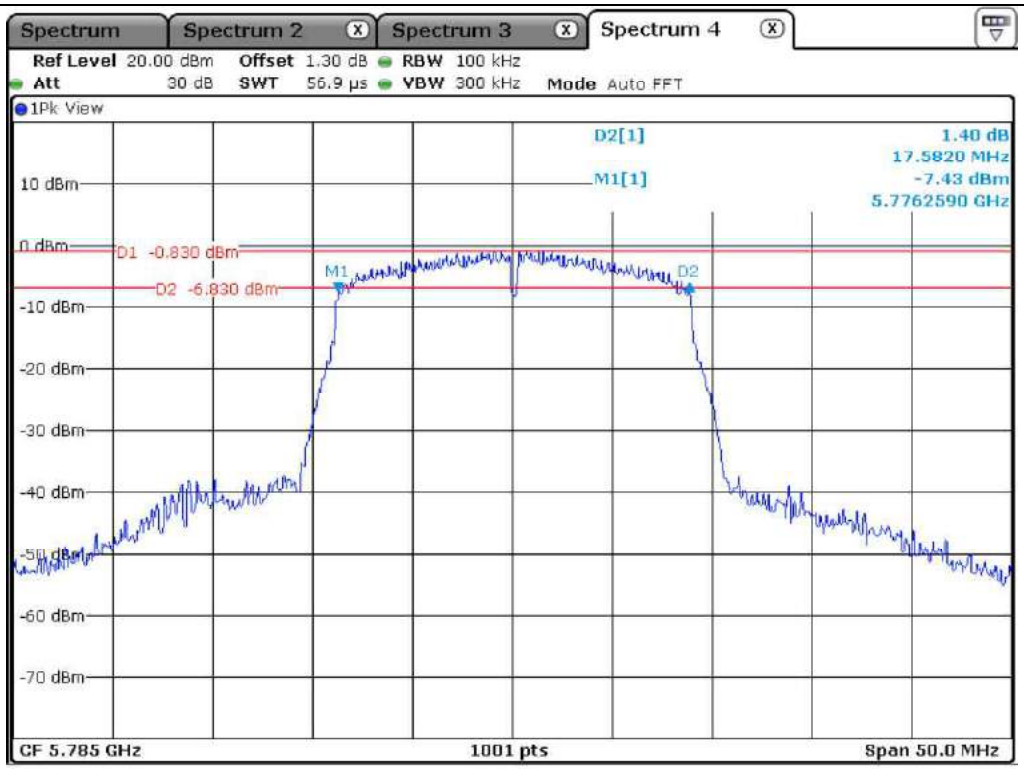
8.5.1 Test data for Antenna 0

-. Test Result : Pass

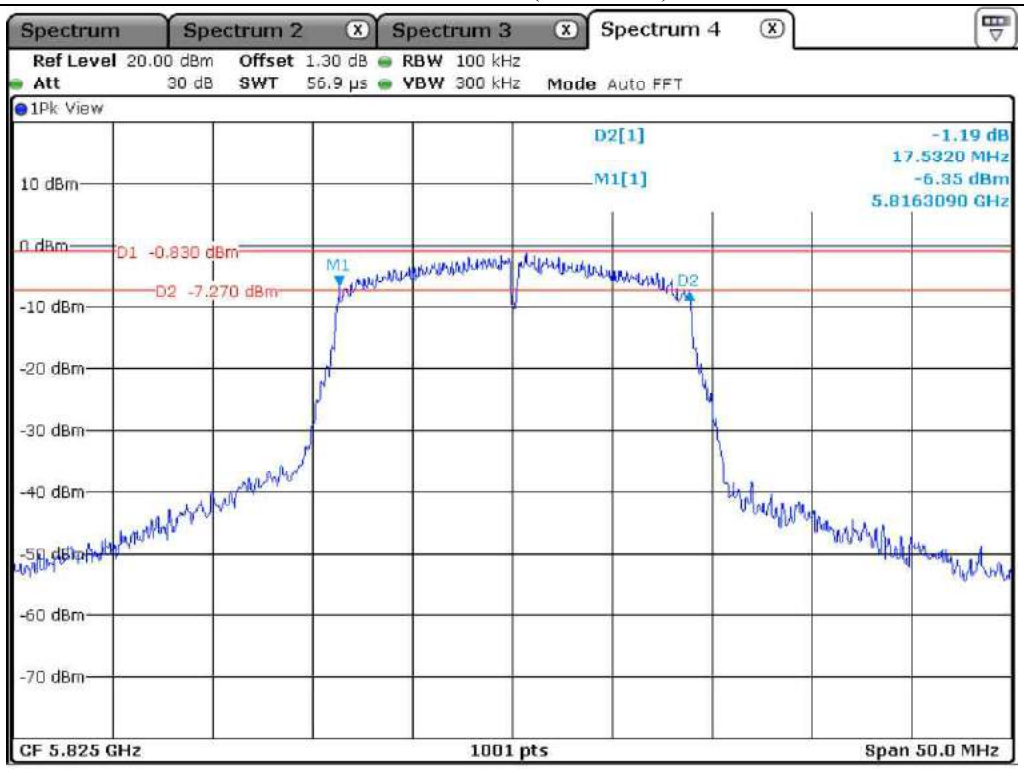
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 725 ~ 5 850	Low	5 745.00	17.58
	Middle	5 785.00	17.58
	High	5 825.00	17.53



Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)



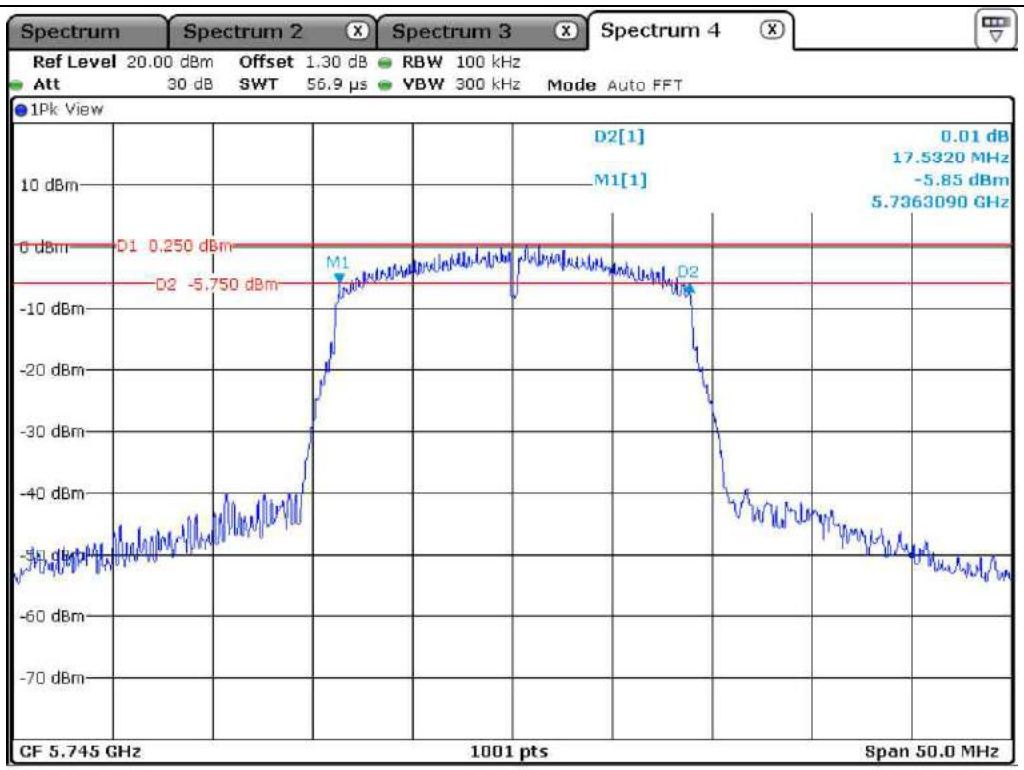
High Channel (5 825 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

8.5.2 Test data for Antenna 1

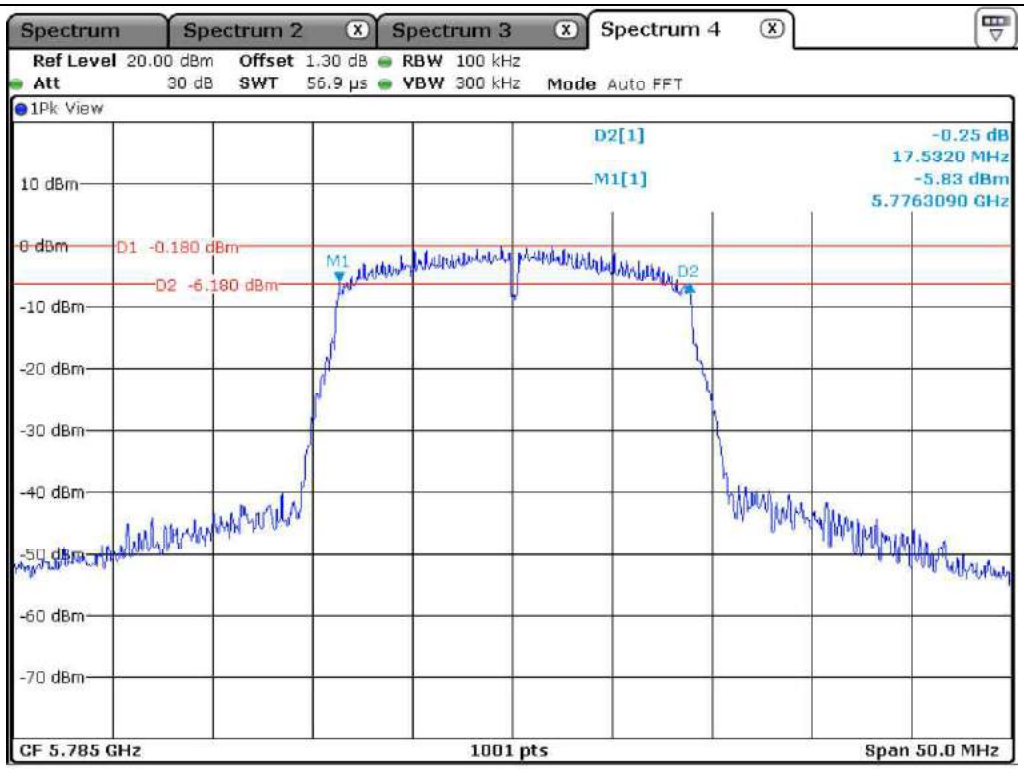
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 725 ~ 5 850	Low	5 745.00	17.53
	Middle	5 785.00	17.53
	High	5 825.00	17.53

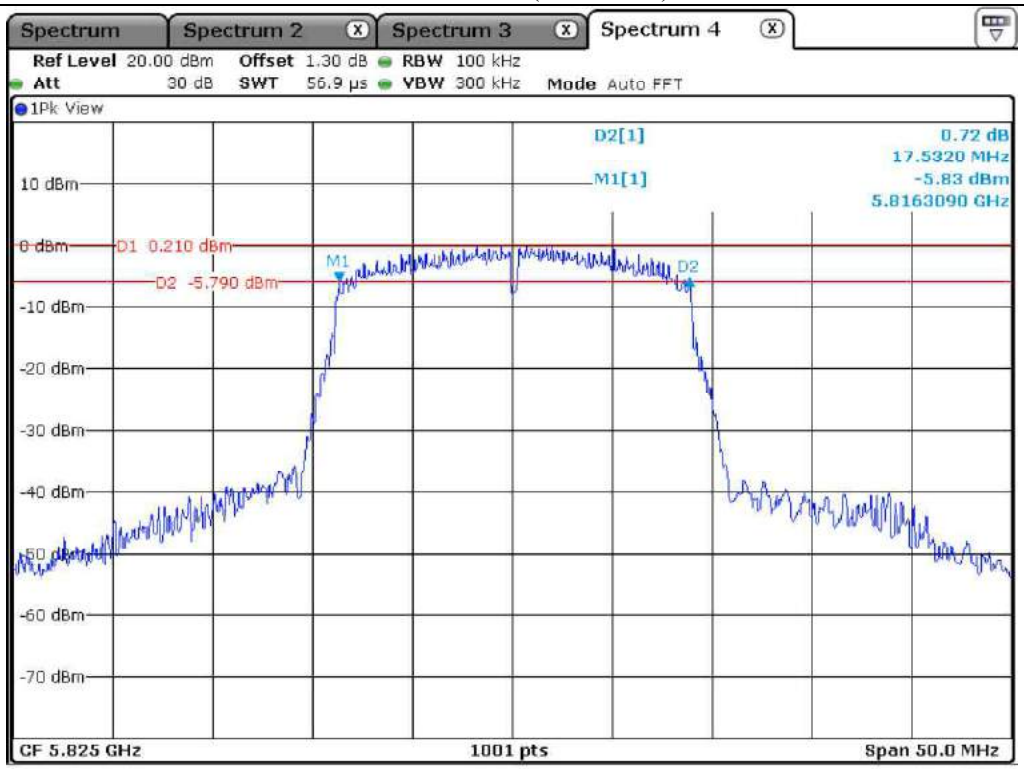


Low Channel (5 745 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



Middle Channel (5 785 MHz)

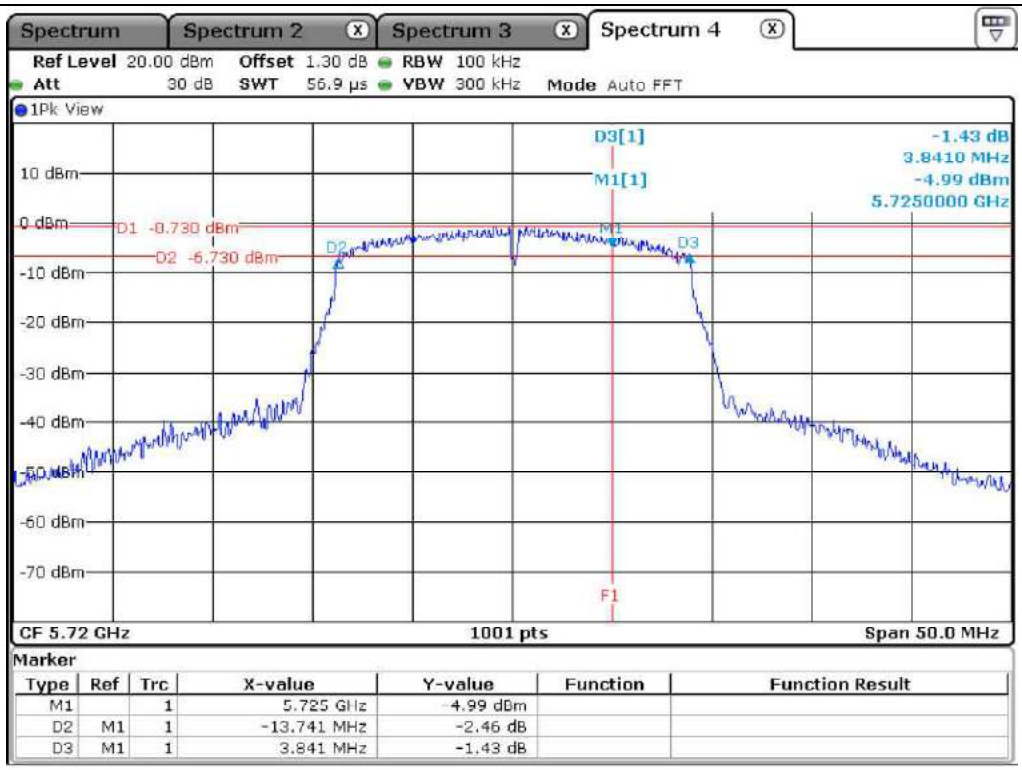


High Channel (5 825 MHz)

8.5.3 Test data for Staddle Channel_Antenna 0

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 470 ~ 5 725	5 720.00	13.74
5 725 ~ 5 850	5 720.00	3.84

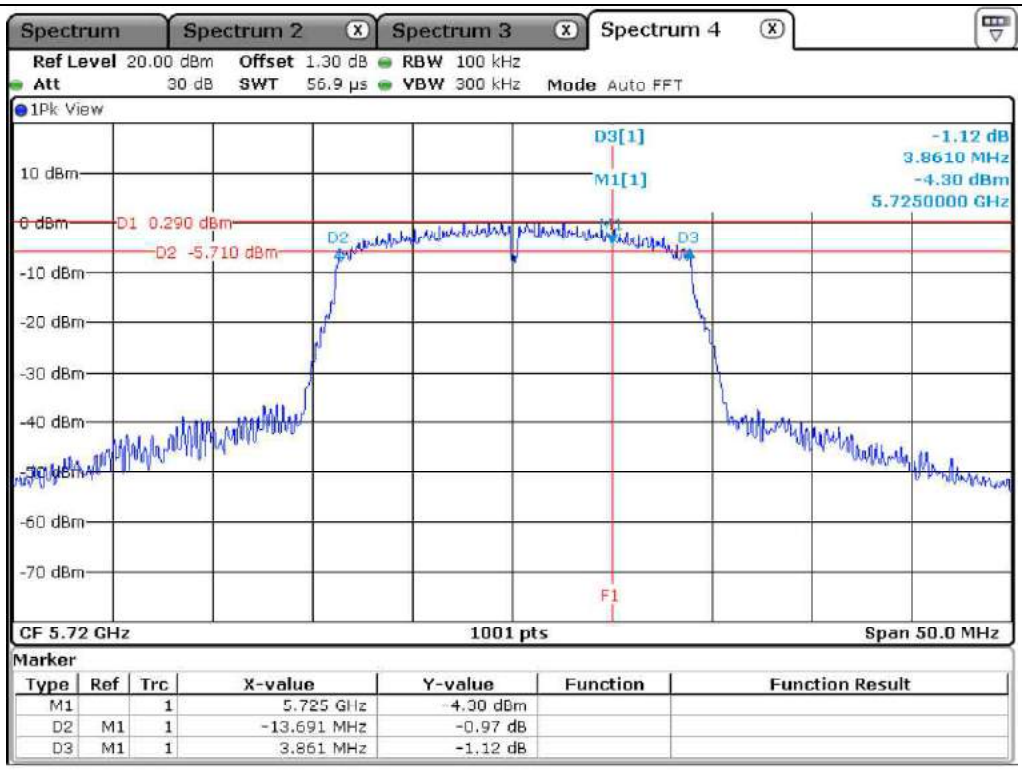


ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

8.5.4 Test data for Staddle Channel_Antenna 1

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 470 ~ 5 725	5 720.00	13.69
5 725 ~ 5 850	5 720.00	3.86



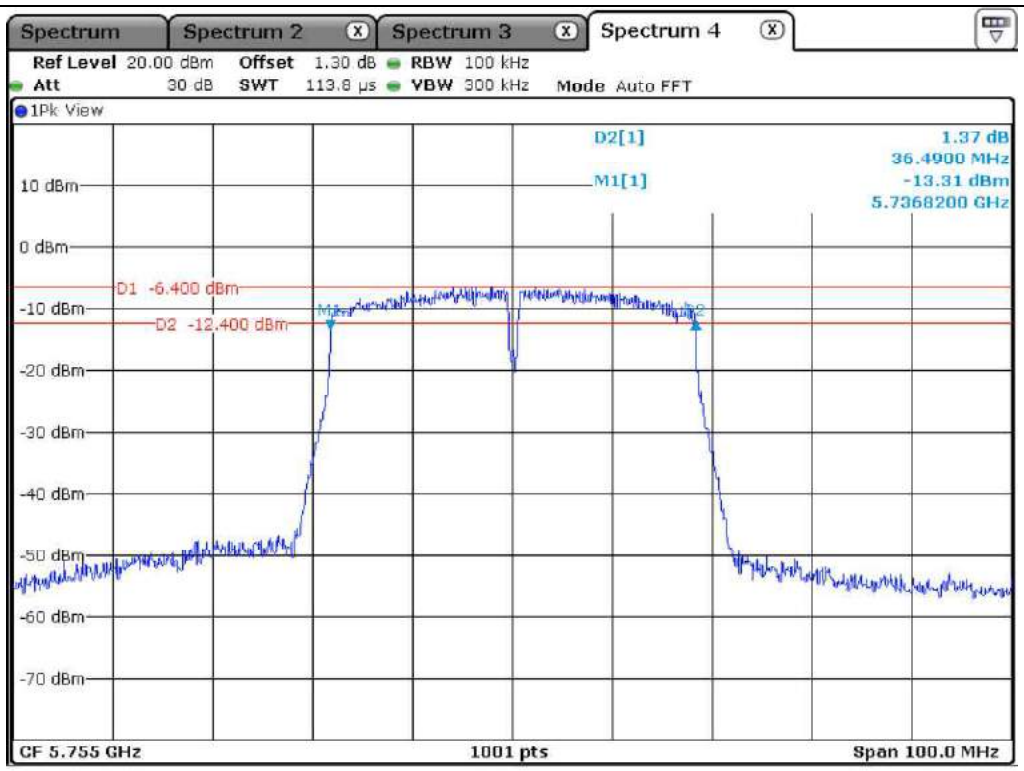
ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

8.6 Test data for 802.11n_HT40 RLAN Mode

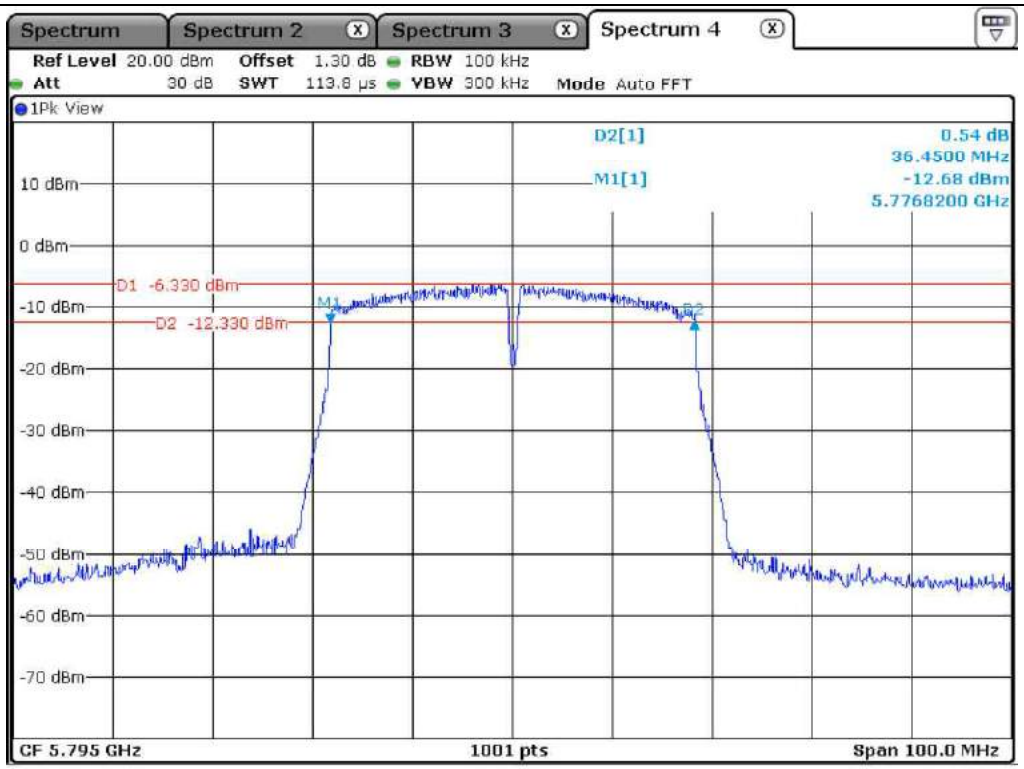
8.6.1 Test data for Antenna 0

-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 725 ~ 5 850	Low	5 755.00	36.49
	High	5 795.00	36.45



Low Channel (5 755 MHz)



High Channel (5 795 MHz)

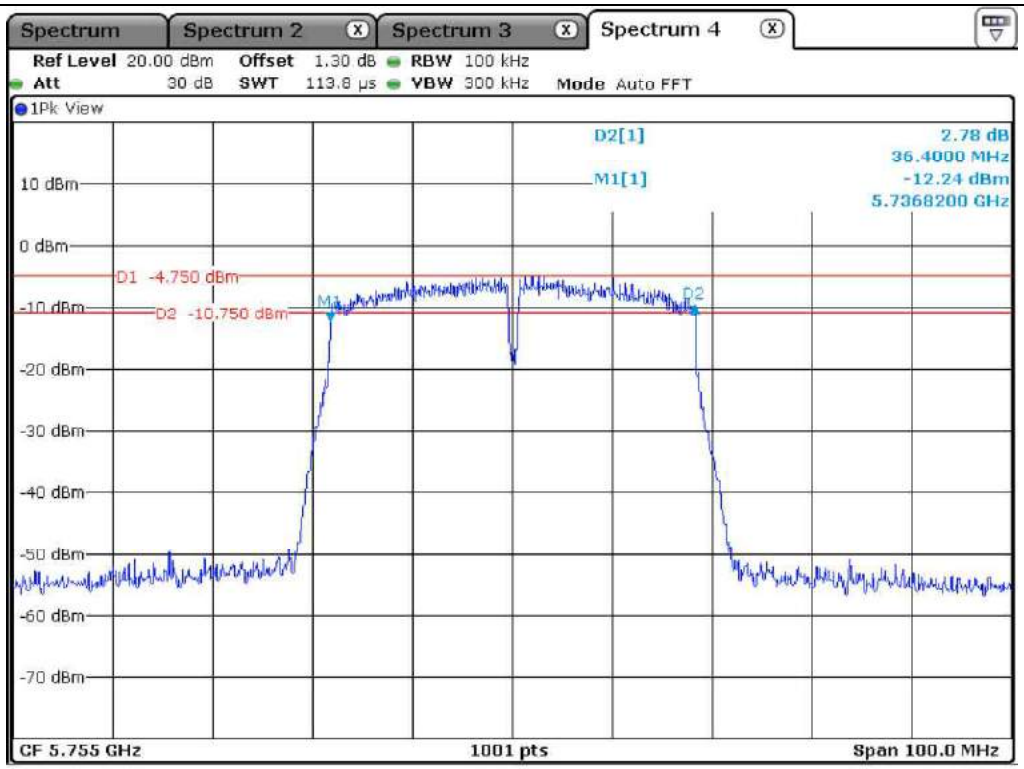
ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

8.6.2 Test data for Antenna 1

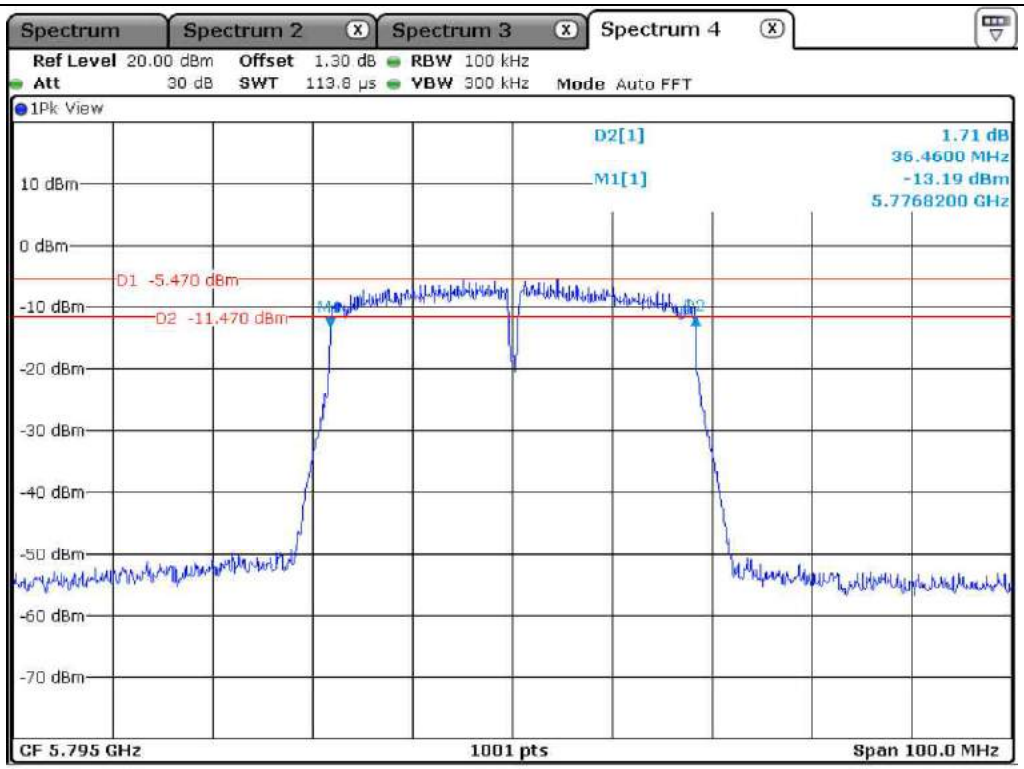
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 725 ~ 5 850	Low	5 755.00	36.40
	High	5 795.00	36.46

Remark: See next page for measurement data.



Low Channel (5 755 MHz)



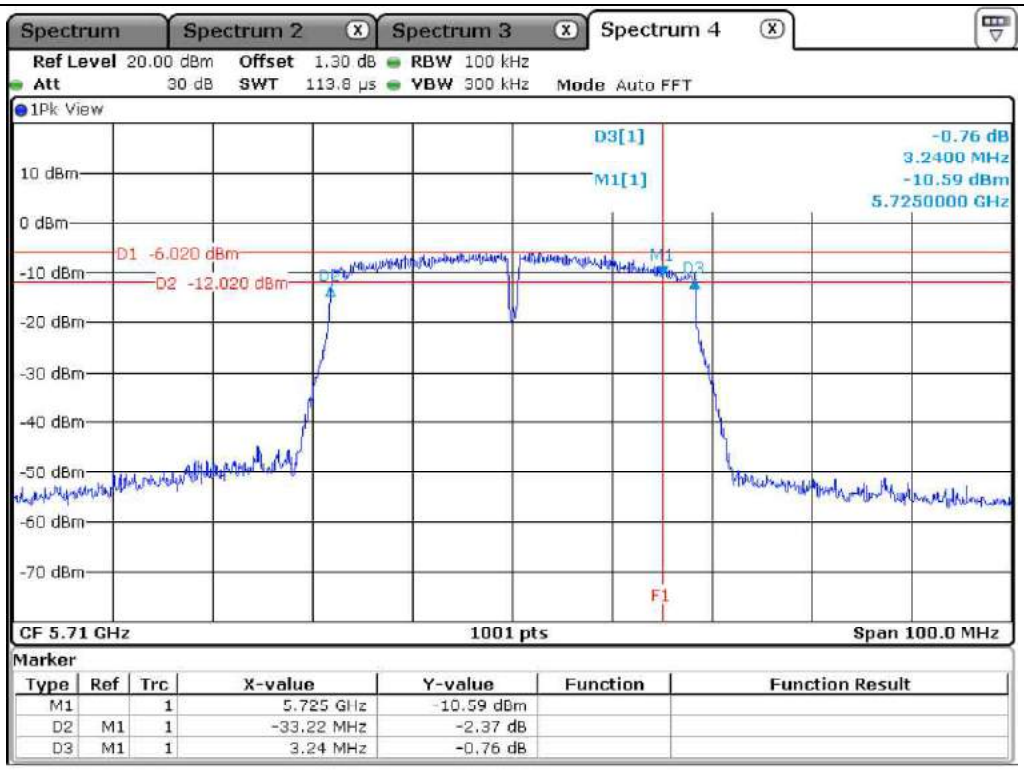
High Channel (5 795 MHz)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

8.6.3 Test data for Staddle Channel_Antenna 0

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 470 ~ 5 725	5 710.00	33.22
5 725 ~ 5 850	5 710.00	3.24

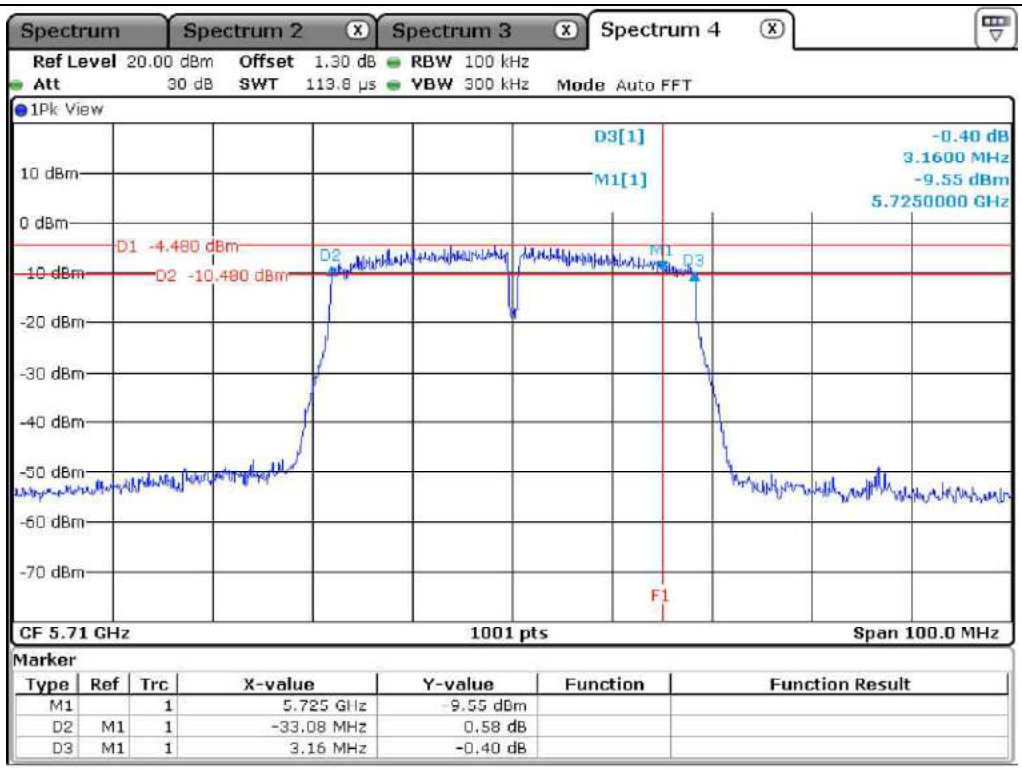


ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

8.6.4 Test data for Staddle Channel_Antenna 1

-. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 470 ~ 5 725	5 710.00	33.08
5 725 ~ 5 850	5 710.00	3.16



ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)