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

Test Report No.	**: OT-197-RWD-047**
AGR No.	**: A193A-241**
Applicant	**: LG Electronics USA**
Address	**: 1000 Sylvan Avenue, Englewood Cliffs, New Jersey, United States, 07632**
Manufacturer	**: LG Electronics Inc.**
Address	**: 222 LG-ro, Jinwi-Myeon, Pyeongtaek -Si, Gyeonggi-Do, 451-713, Korea**
Type of Equipment	**: Car Navigation**
FCC ID.	**: BEJ-MEBICAS3**
Model Name	**: MEB ICAS3**
Serial number	**: N/A**
Total page of Report	**: 177 pages (including this page)**
Date of Incoming	**: May 20, 2019**
Date of issue	**: July 19, 2019**

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.

Reviewed by: Ha-Ram Lee / Assistant Manager, ONETECH Corp.

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

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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)

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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REVISION HISTORY

Issued Report No.	Issued Date	Revisions	Effect Section
OT-197-RWD-047	July 19, 2019	Initial Issue	All

1. VERIFICATION OF COMPLIANCE

Applicant : LG Electronics USA

Address : 1000 Sylvan Avenue, Englewood Cliffs, New Jersey, United States, 07632

Contact Person : Kyung-Su Han / Director

Telephone No. : (201) 266-2215

FCC ID : BEJ-MEBICAS3

Model Name : MEB ICAS3

Brand Name : LG, Volkswagen, SKODA, SEAT

Serial Number : N/A

Date : July 19, 2019

EQUIPMENT CLASS	NII - Unlicensed National Information Infrastructure(UNII)
E.U.T. DESCRIPTION	Car Navigation
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 KDB 789033 D01 General UNII Test Procedures
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.

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

2. TEST SUMMARY

2.1 Test items and results

SECTION	TEST ITEMS	RESULTS
15.407(a)	26 dB Bandwidth	PASS
	99 % Occupied Bandwidth	PASS
15.407(a)	Maximum Conducted Output Power	Met the Limit / PASS
15.407(a)	Peak Power Spectral Density	Met the Limit / PASS
15.407(a)	Peak Excursion	Met the Limit / PASS
15.407(g)	Frequency Stability	Met the Limit / PASS
15.407(b)	Undesirable Emissions	Met the Limit / PASS
15.205, 15.407(b)	General Field Strength Limits (Restricted Bandsand Radiated Emission Limits)	Met the Limit / PASS
15.207	AC Conducted Emissions	N / A

2.2 Additions, deviations, exclusions from standards

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

2.3 Related Submittal(s) / Grant(s)

Original submittal only

2.4 Purpose of the test

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

2.5 Test Methodology

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

2.6 Test Facility

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

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

-. Site Filing:

VCCI (Voluntary Control Council for Interference) – Registration No. R-4112/ C-14617/ G-10666 / T-1842

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

-. Site Accreditation:

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

FCC (Federal Communications Commission) - Accreditation No. KR0013

RRA (Radio Research Agency) – Designation No. KR0013

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3. GENERAL INFORMATION

3.1 Product Description

The LG Electronics USA, Model MEB ICAS3 (referred to as the EUT in this report) is a Car Navigation. Product specification information described herein was obtained from product data sheet or user's manual.

<table>
<tr><td>DEVICE TYPE</td><td colspan="5">Car Navigation</td></tr>
<tr><td rowspan="9">FREQUENCY RANGE</td><td>Bluetooth</td><td colspan="4">2 402 MHz ~ 2 480 MHz</td></tr>
<tr><td>WLAN
2.4 GHz Band</td><td colspan="4">2 412 MHz ~ 2 462 MHz (802.11b/g/n(HT20))</td></tr>
<tr><td rowspan="6">WLAN
5 GHz Band</td><td rowspan="3">5 150 MHz ~
5 250 MHz Band</td><td colspan="3">5 180 MHz ~ 5 240 MHz (802.11a/n/ac(HT20))</td></tr>
<tr><td colspan="3">5 190 MHz ~ 5 230 MHz (802.11n/ac(HT40))</td></tr>
<tr><td colspan="3">5 210 MHz (802.11ac(VHT80))</td></tr>
<tr><td rowspan="3">5 725 MHz ~
5 850 MHz Band</td><td colspan="3">5 745 MHz ~ 5 825 MHz (802.11a/n/ac(HT20))</td></tr>
<tr><td colspan="3">5 755 MHz ~ 5 795 MHz (802.11n/ac(HT40))</td></tr>
<tr><td colspan="3">5 775 MHz (802.11ac(VHT80))</td></tr>
<tr><td rowspan="12">MAX. RF OUTPUT POWER</td><td rowspan="3">Bluetooth</td><td>1 Mbps</td><td colspan="3">-1.56 dBm</td></tr>
<tr><td>2 Mbps</td><td colspan="3">-0.88 dBm</td></tr>
<tr><td>3 Mbps</td><td colspan="3">-0.54 dBm</td></tr>
<tr><td>WLAN
2.4 GHz Band</td><td colspan="4">Wi-Fi 802.11b (10.63 dBm)
Wi-Fi 802.11g (11.85 dBm)
Wi-Fi 802.11n(HT20) (10.93 dBm)</td></tr>
<tr><td rowspan="9">WLAN
5 GHz Band</td><td rowspan="9">5 150 MHz ~
5 250 MHz Band</td><td rowspan="3">Antenna 0</td><td rowspan="3">Wi-Fi 802.11a (10.97 dBm)
Wi-Fi 802.11n(HT20) (10.86 dBm)
Wi-Fi 802.11n(HT40) (8.64 dBm)
Wi-Fi 802.11ac(VHT80) (8.05 dBm)</td></tr>
<tr></tr>
<tr></tr>
<tr><td rowspan="3">Antenna 1</td><td rowspan="3">Wi-Fi 802.11a (10.03 dBm)
Wi-Fi 802.11n(HT20) (9.74 dBm)
Wi-Fi 802.11n(HT40) (7.92 dBm)
Wi-Fi 802.11ac(VHT80) (7.09 dBm)</td></tr>
<tr></tr>
<tr></tr>
<tr><td rowspan="3">Multiple transmit</td><td rowspan="3">Wi-Fi 802.11n(HT20) (13.34 dBm)
Wi-Fi 802.11n(HT40) (11.31 dBm)
Wi-Fi 802.11ac(VHT80) (10.61 dBm)</td></tr>
<tr></tr>
<tr></tr>
</table>

<table>
<tr><td rowspan="3">MAX. RF OUTPUT POWER</td><td rowspan="3">WLAN
5 GHz Band</td><td rowspan="3">5 725 MHz ~
5 850 MHz Band</td><td>Antenna 0</td><td colspan="3">Wi-Fi 802.11a (10.62 dBm)
Wi-Fi 802.11n(HT20) (10.53 dBm)
Wi-Fi 802.11n(HT40) (8.31 dBm)
Wi-Fi 802.11ac(VHT80) (7.63 dBm)</td></tr>
<tr><td>Antenna 1</td><td colspan="3">Wi-Fi 802.11a (9.48 dBm)
Wi-Fi 802.11n(HT20) (9.86 dBm)
Wi-Fi 802.11n(HT40) (8.07 dBm)
Wi-Fi 802.11ac(VHT80) (6.99 dBm)</td></tr>
<tr><td>Multiple transmit</td><td colspan="3">Wi-Fi 802.11n(HT20) (13.15 dBm)
Wi-Fi 802.11n(HT40) (11.20 dBm)
Wi-Fi 802.11ac(VHT80) (10.33 dBm)</td></tr>
<tr><td rowspan="3">MODULATION TYPE</td><td colspan="3">Bluetooth</td><td colspan="3">GFSK for 1 Mbps, π/4-DQPSK for 2 Mbps, 8-DPSK for 3 Mbps</td></tr>
<tr><td colspan="3">WLAN
2.4 GHz Band</td><td colspan="3">DSSS Modulation(DBPSK/DQPSK/CCK)
OFDM Modulation(BPSK/QPSK/16QAM/64QAM)</td></tr>
<tr><td colspan="3">WLAN
5 GHz Band</td><td colspan="3">OFDM Modulation(BPSK/QPSK/16QAM/64QAM)</td></tr>
<tr><td rowspan="4">ANTENNA TYPE</td><td colspan="3">Bluetooth</td><td colspan="3">PCB Antenna</td></tr>
<tr><td colspan="3">WLAN (2.4GHz Band)</td><td colspan="3">Chip Antenna</td></tr>
<tr><td rowspan="2">WLAN (5GHz Band)</td><td>Antenna 0</td><td colspan="3">PCB Antenna</td></tr>
<tr><td>Antenna 1</td><td colspan="3">Chip Antenna</td></tr>
<tr><td rowspan="6">ANTENNA GAIN</td><td colspan="3">Bluetooth</td><td colspan="3">2.5 dBi</td></tr>
<tr><td colspan="3">WLAN
2.4 GHz Band</td><td colspan="3">3.8 dBi</td></tr>
<tr><td rowspan="4">WLAN
5 GHz Band</td><td rowspan="2">5 150 MHz ~
5 250 MHz</td><td>ANT0</td><td>3.8 dBi</td></tr>
<tr><td>ANT1</td><td>1.6 dBi</td></tr>
<tr><td rowspan="2">5 725 MHz ~
5 850 MHz</td><td>ANT0</td><td>5.5 dBi</td></tr>
<tr><td>ANT1</td><td>2.4 dBi</td></tr>
<tr><td rowspan="2">5 GHz Band (ANT 0 + 1)</td><td>5 150 MHz ~
5 250 MHz</td><td colspan="2">5.78 dBi</td></tr>
<tr><td>5 725 MHz ~
5 850 MHz</td><td colspan="2">7.10 dBi</td></tr>
<tr><td colspan="3">List of each Osc. or crystal Freq.(Freq. >= 1 MHz)</td><td colspan="3">31.25 MHz, 28.63636 MHz</td></tr>
<tr><td colspan="3">RATED SUPPLY VOLTAGE</td><td colspan="3">DC 12.0 V</td></tr>
</table>

- Directional Gain Calculations

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

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

-. The following lists consist of the added config and their differences:

Brand	Model	Feature	VW P/N	LG P/N	ABT (FPD-LINK)	FPK (FPD-LINK)	USB NO.	BT +WIFI	CAN NO.	ETH 1Gb/s	FM Always PD+BGS	A2B	DAB (MRC+BGS	AR-HUD	Tuner IC	Tested
LG VW, SKODA, SEAT	MEB ICAS3	Nav	(10A.035. 820)	NE9VW1-N2E	X	X	2	X	2	X	X	X	X		Mercury + Titan	☑
		AR HUD + Nav	(10A.035. 816)	NE9VW1-A2E	X	X	2	X	2	X	X	X	X	X	Mercury + Titan	□
		Nav	(10A.035. 842)	NE0VW1-N2N	X	X	2	X	2	X	X	X			Mercury + SDARS	□
		AR HUD + Nav	(10A.035. 877)	NE0VW1-A2N	X	X	2	X	2	X	X	X		X	Mercury + SDARS	□
		Nav	(5LA.035. 820)	NE0SK1-N4E	X	X	2	X	2	X	X	X	X		Mercury + Titan	□
		AR HUD + Nav	(5LA.035. 816)	NE0SK1-A4E	X	X	2	X	2	X	X	X	X	X	Mercury + Titan	□
		Nav	(10E.035. 820)	NE0SE1-N3E	X	X	2	X	2	X	X	X	X		Mercury + Titan	□
		AR HUD + Nav	(10E.035. 816)	NE0SE1-A3E	X	X	2	X	2	X	X	X	X	X	Mercury + Titan	□

Note: 1. Applicants must delegate only the models with all feautres applied to be tested, Therefore, this test report only guarantees the unit tested.

2. The Applicant/manufacturer is responsible for the compliance of all configs.

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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	N/A	N/A	-

5.2 Peripheral equipment

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

Model	Manufacturer	Description	Connected to
G6-1121TV	HP	Notebook PC	EUT, AC/DC Adapter
PPP009C	HP	AC/DC Adapter	Notebook PC

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5.3 Configuration of Test System

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

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

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

5.4 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 PCB Antenna and Chip Antenna, so no consideration of replacement by the user.

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6. PRELIMINARY TEST

6.1 AC Power line Conducted Emissions Tests

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

6.2 General Radiated Emissions Tests

During Preliminary Test, the following operating mode was investigated.

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

7. MINIMUM 26 dB BANDWIDTH

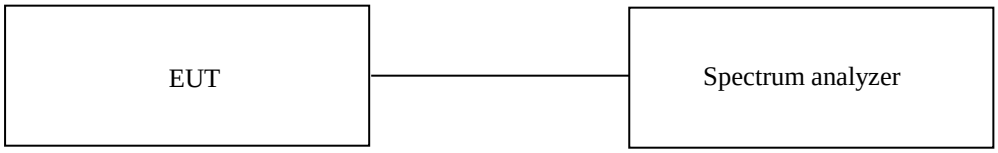
7.1 Operating environment

Temperature : 24 ℃

Relative humidity : 48 % R.H.

7.2 Test set-up

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



7.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ -	FSV30	Rohde & Schwarz	Signal Analyzer	101200	Aug. 23, 2018 (1Y)

All test equipment used is calibrated on a regular basis.

7.4 Test data for 802.11a WLAN Mode

7.4.1 Test data for Antenna 0

-. Test Date : May 23, 2019 ~ July 09, 2019

-. 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	20.53
	High	5 240.00	20.68
5 725 ~ 5 850	Low	5 745.00	20.58
	Middle	5 785.00	20.48
	High	5 825.00	20.63

Remark: See next page for measurement data.

Tested by: Sieon Lee / Assistant Manager

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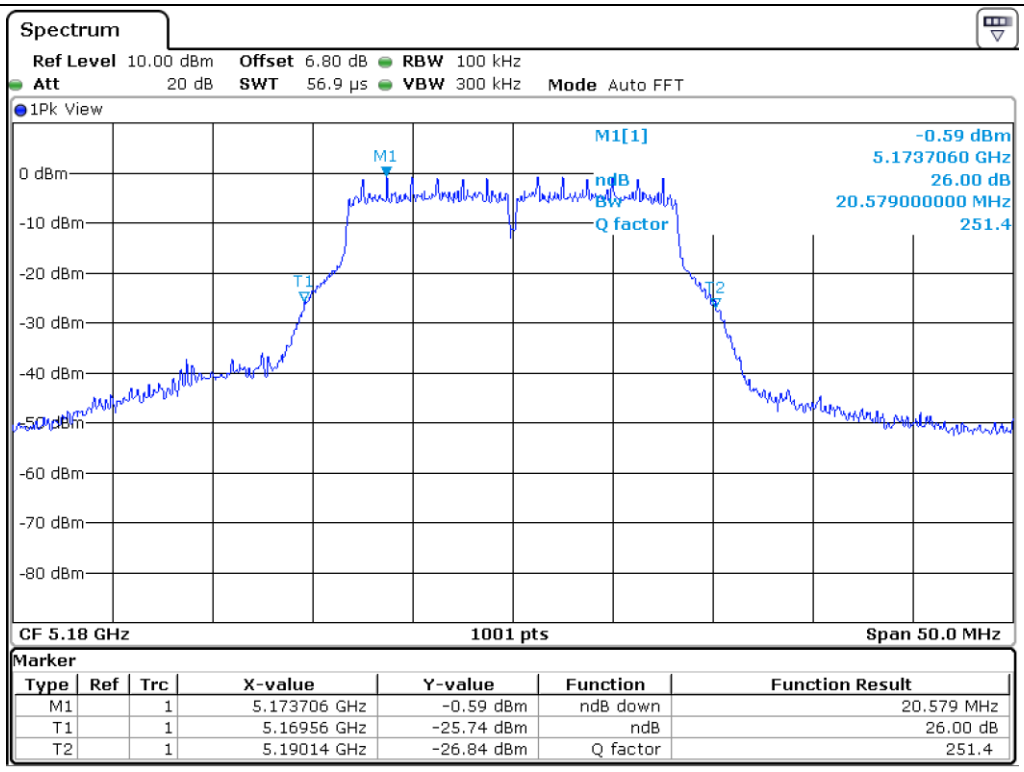
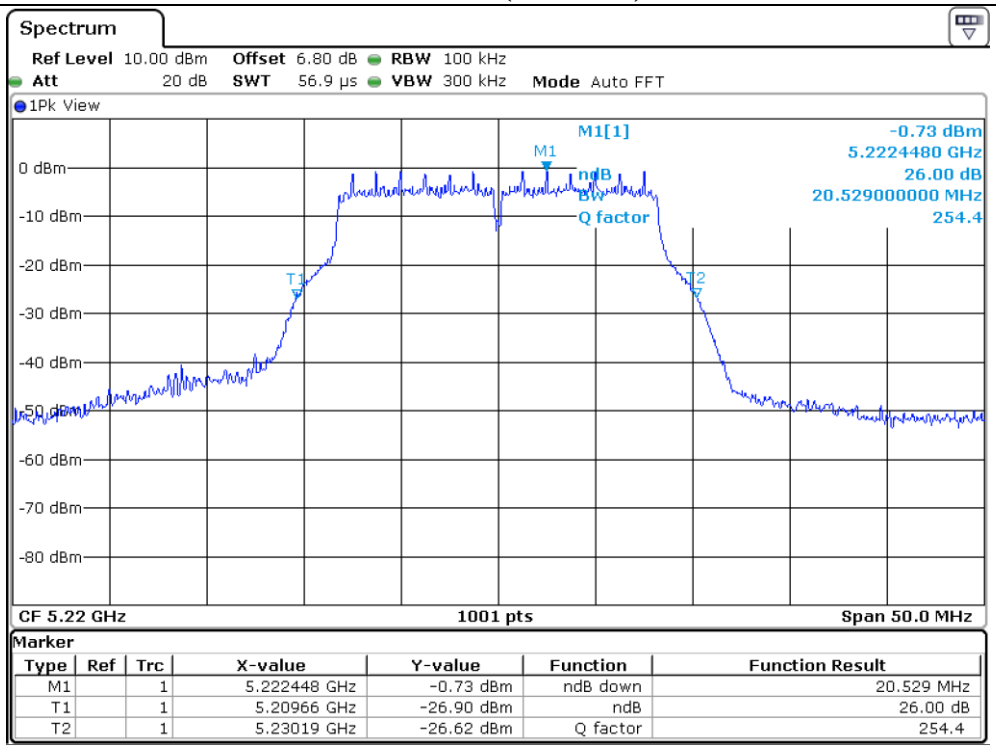


Low Channel (5 180 MHz)



Middle Channel (5 220 MHz)

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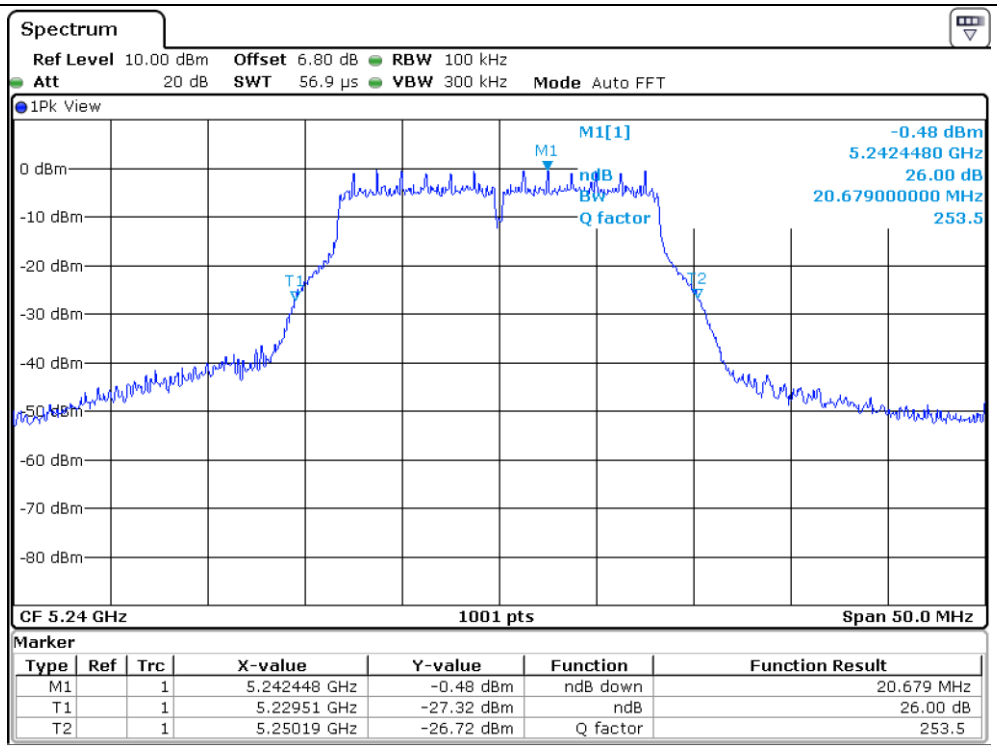
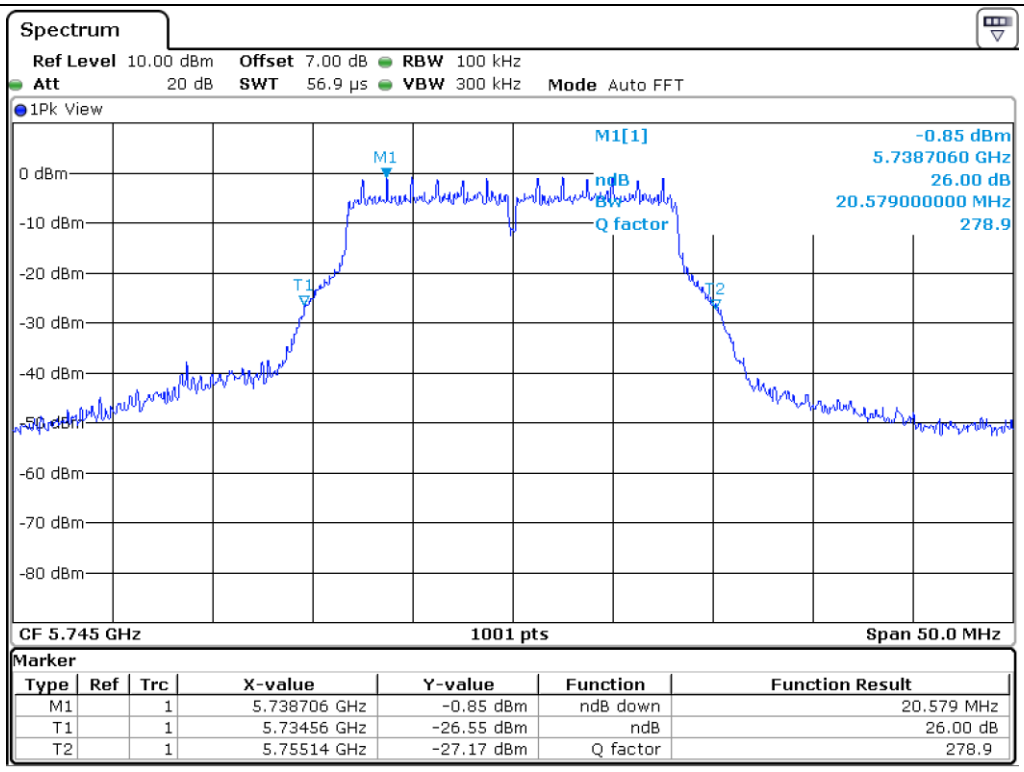
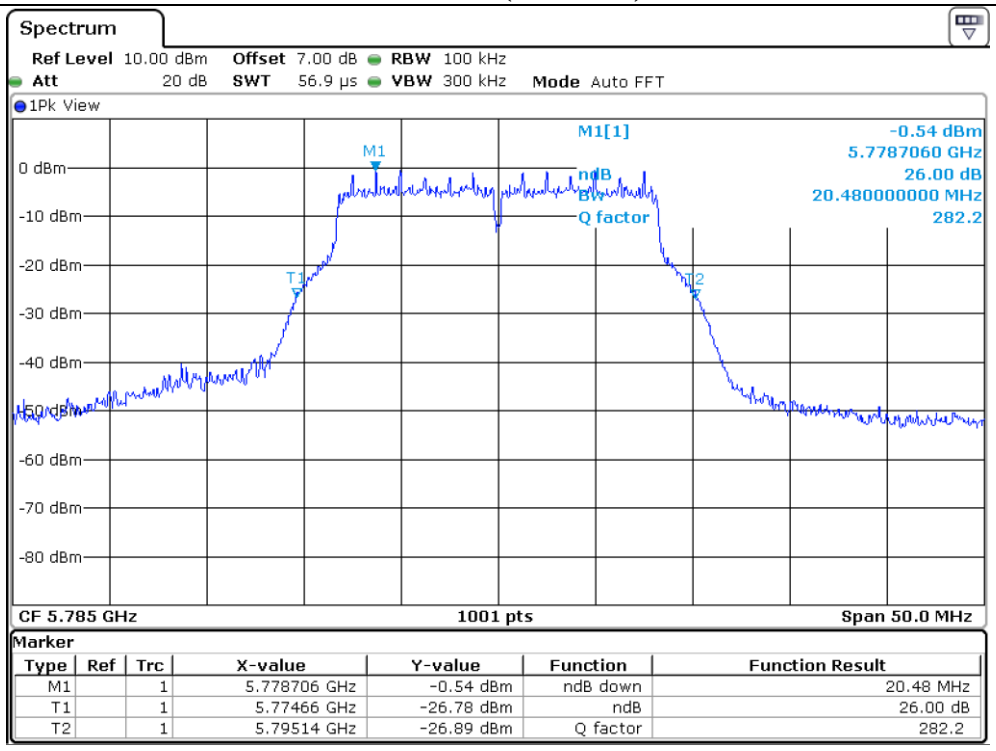


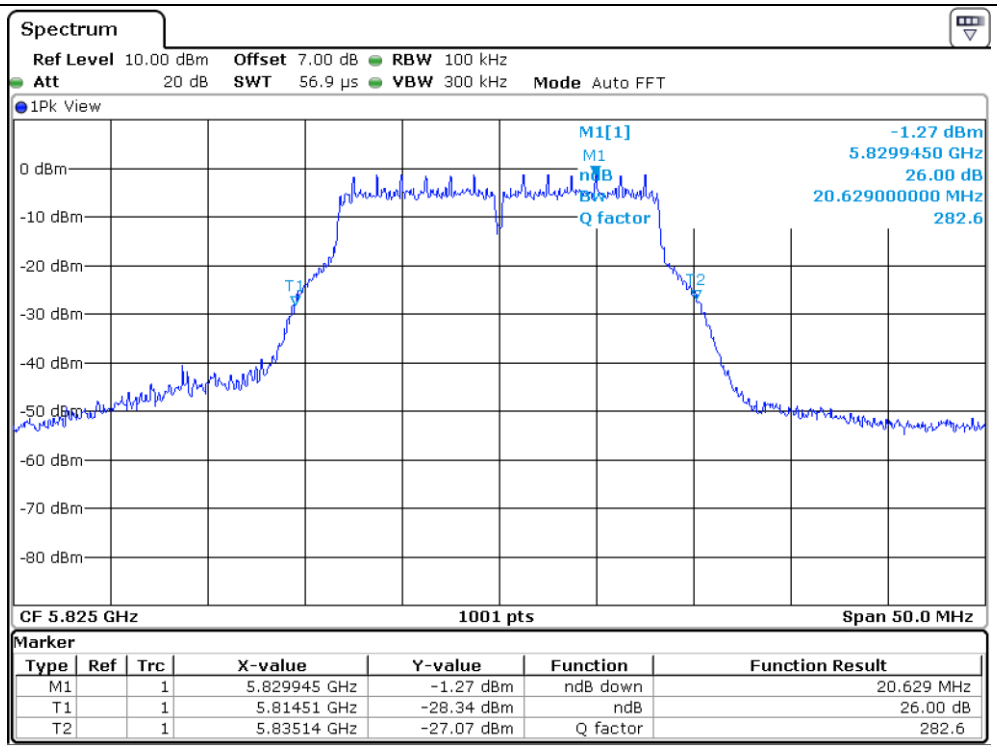
High Channel (5 240 MHz)



Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)



High Channel (5 825 MHz)

7.4.2 Test data for Antenna 1

-. Test Date : May 23, 2019 ~ July 09, 2019

-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180.00	20.63
	Middle	5 220.00	20.43
	High	5 240.00	20.43
5 725 ~ 5 850	Low	5 745.00	20.43
	Middle	5 785.00	20.68
	High	5 825.00	20.73

Remark: See next page for measurement data.

Tested by: Sieon Lee / Assistant Manager

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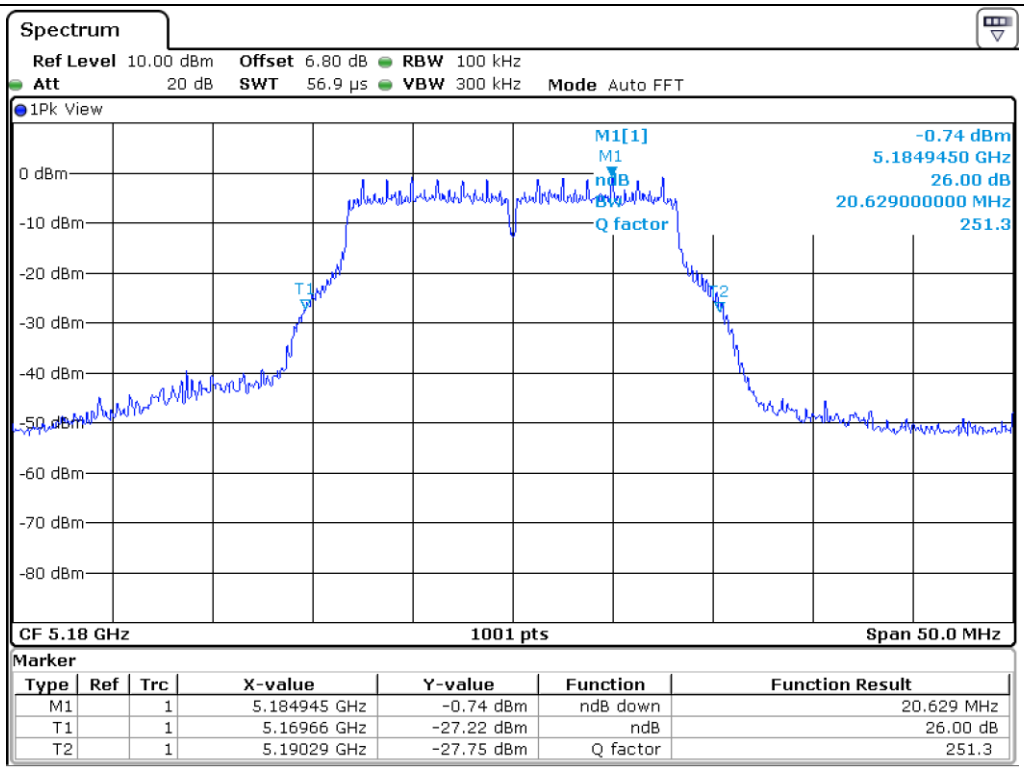
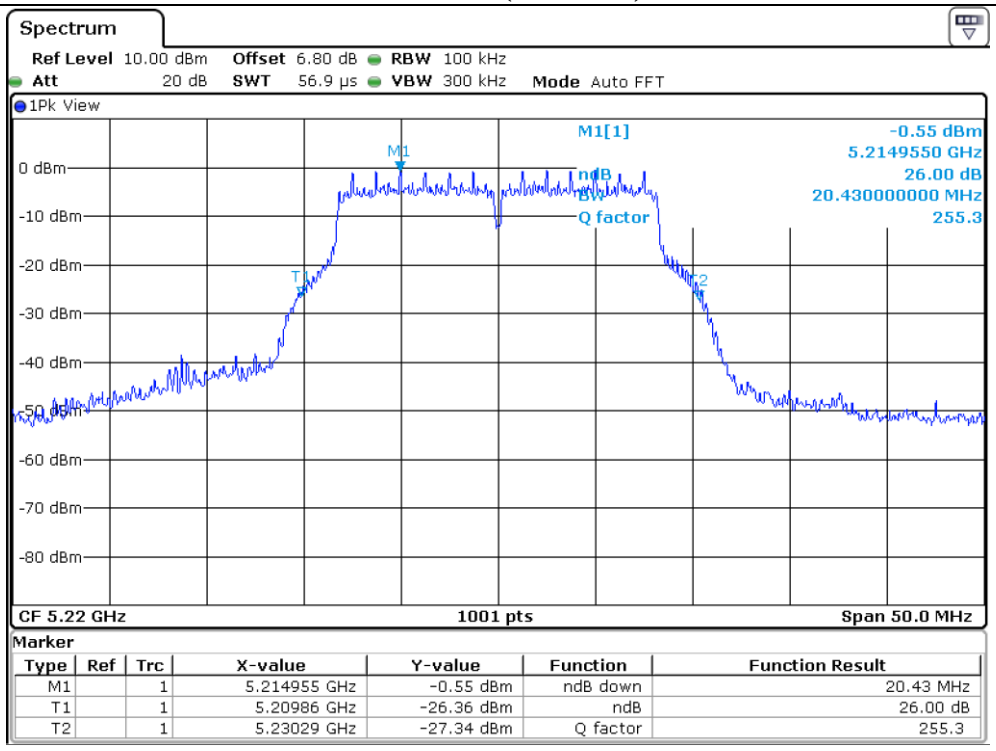


Low Channel (5 180 MHz)



Middle Channel (5 220 MHz)

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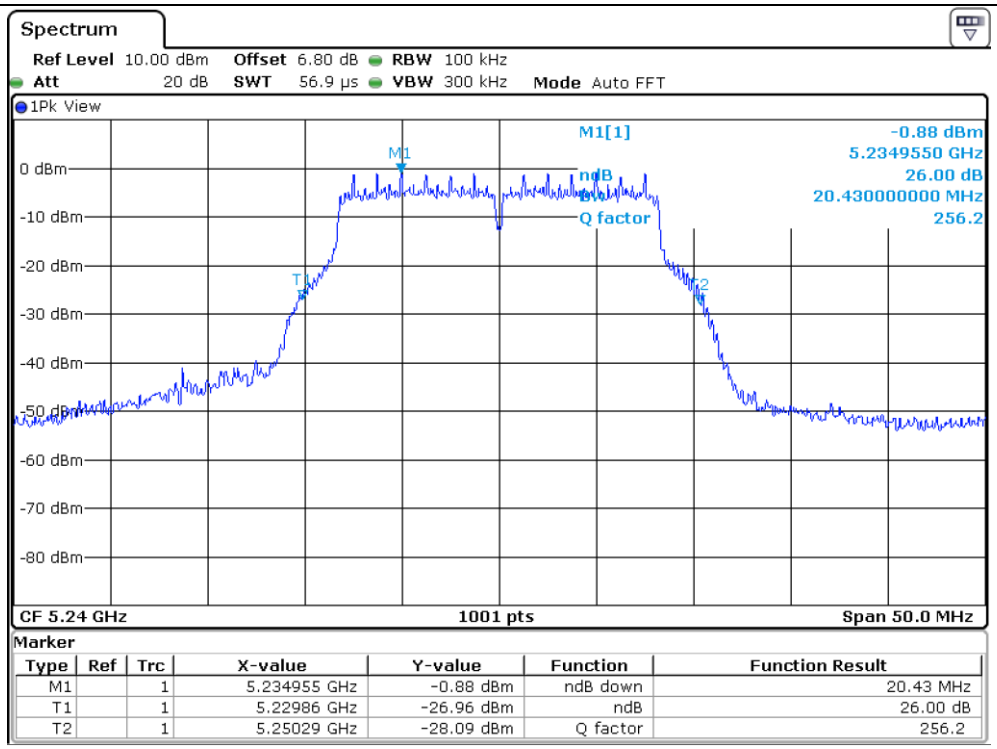

High Channel (5 240 MHz)

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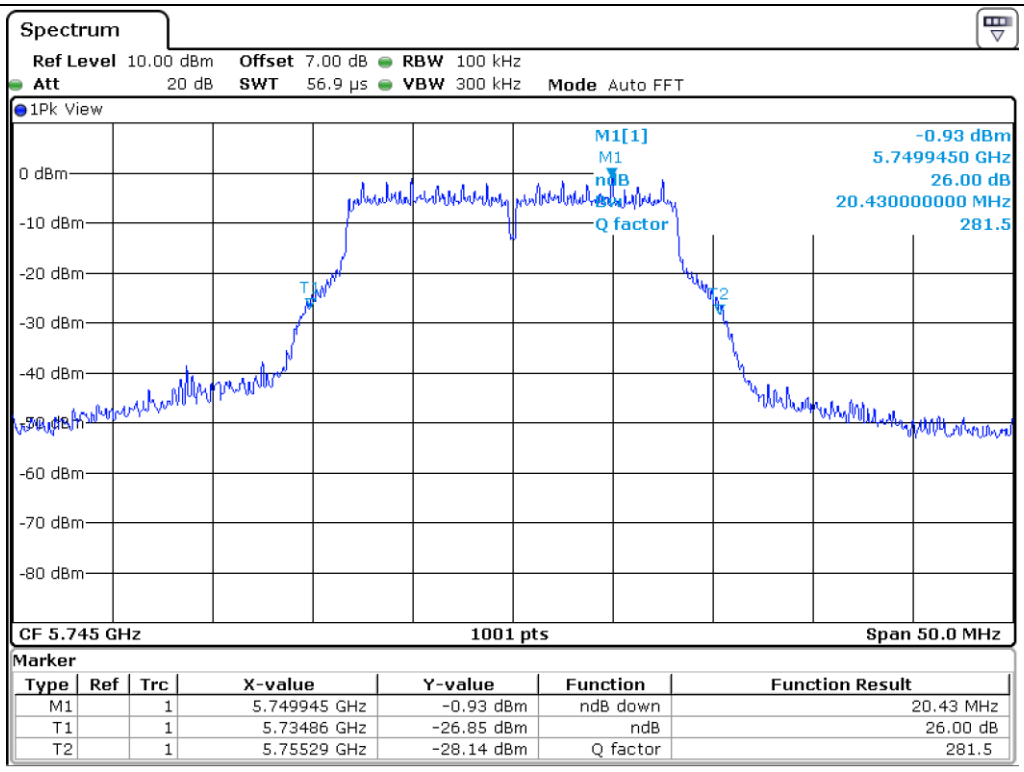
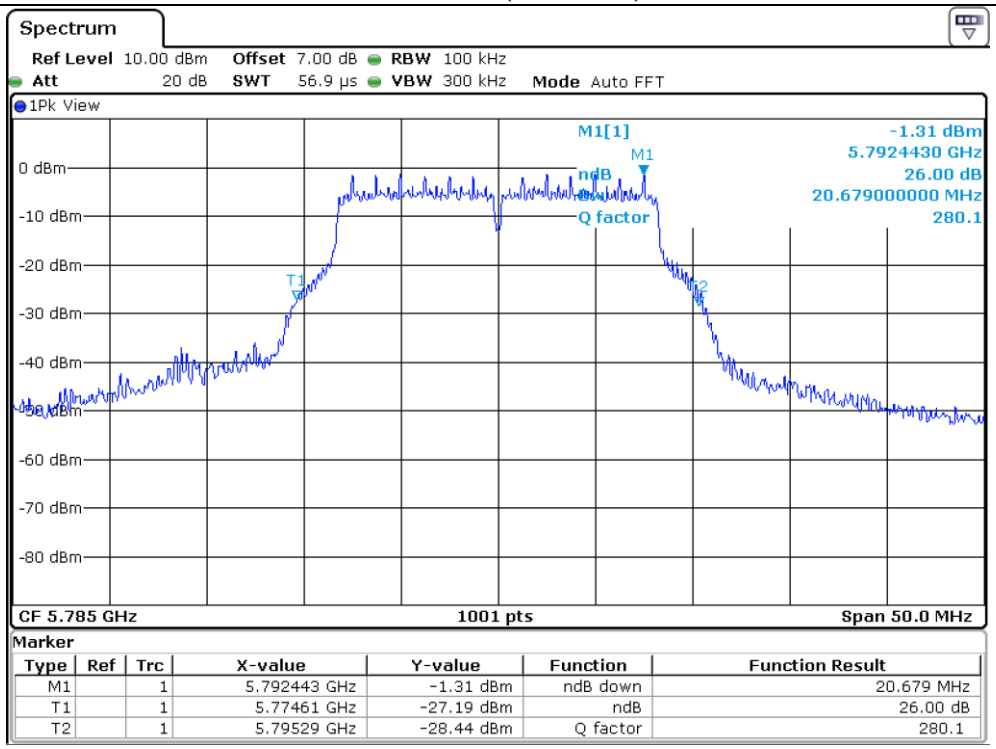


Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)

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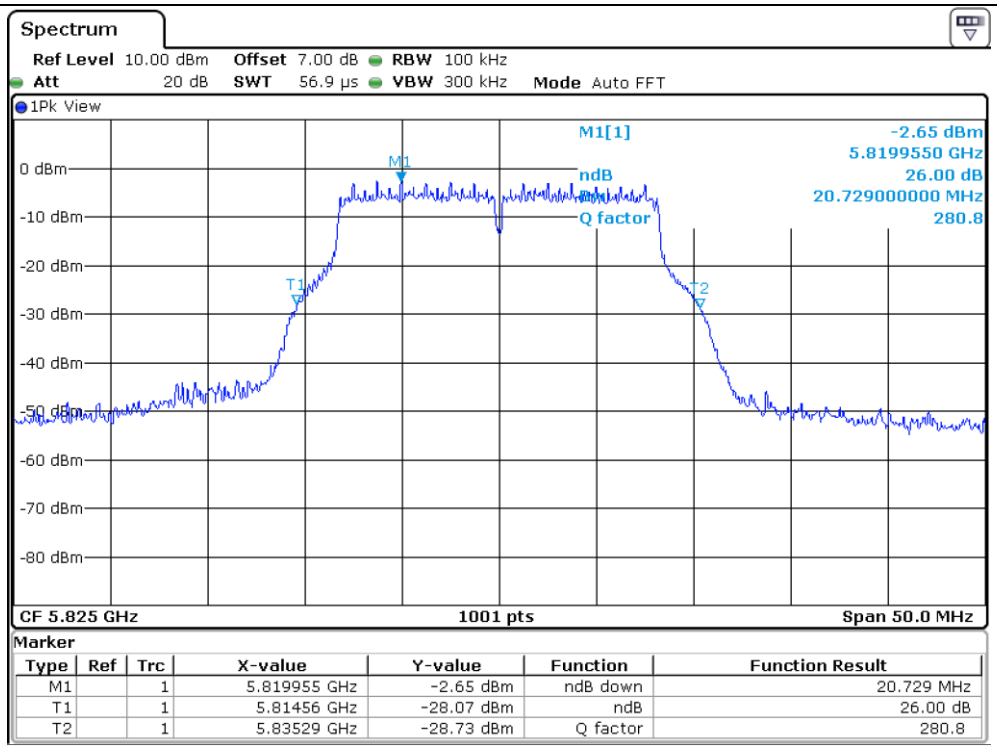


High Channel (5 825 MHz)

7.5 Test data for 802.11n (HT 20) WLAN Mode

7.5.1 Test data for Antenna 0

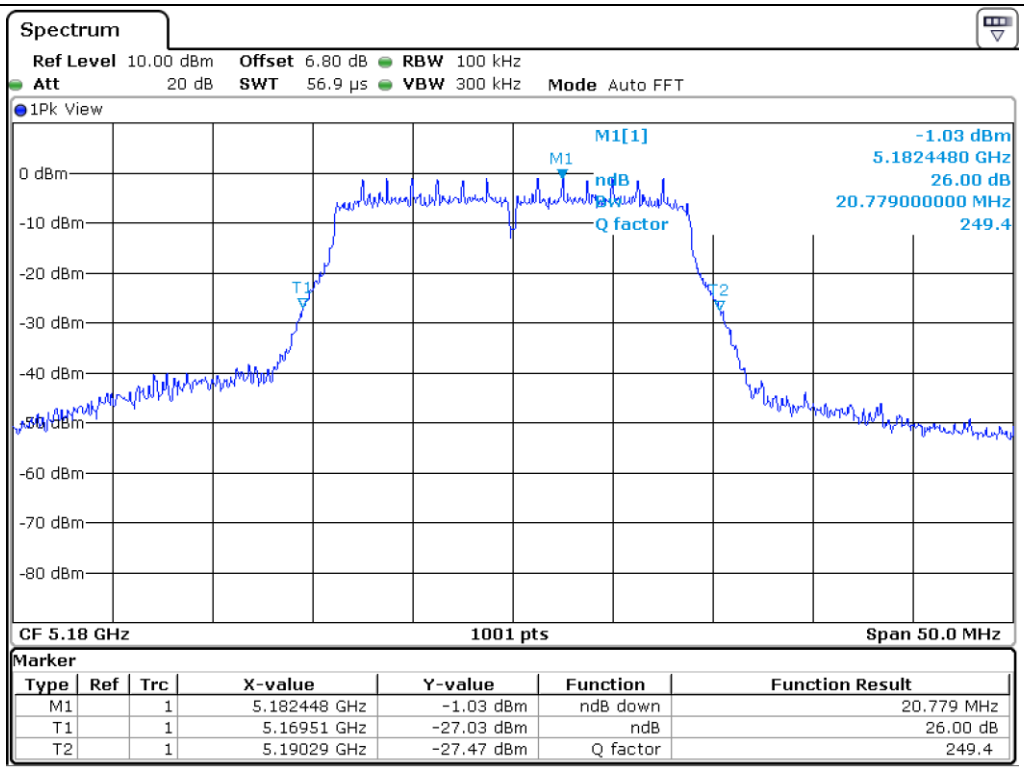
-. Test Date : May 23, 2019 ~ July 09, 2019

-. Test Result : Pass

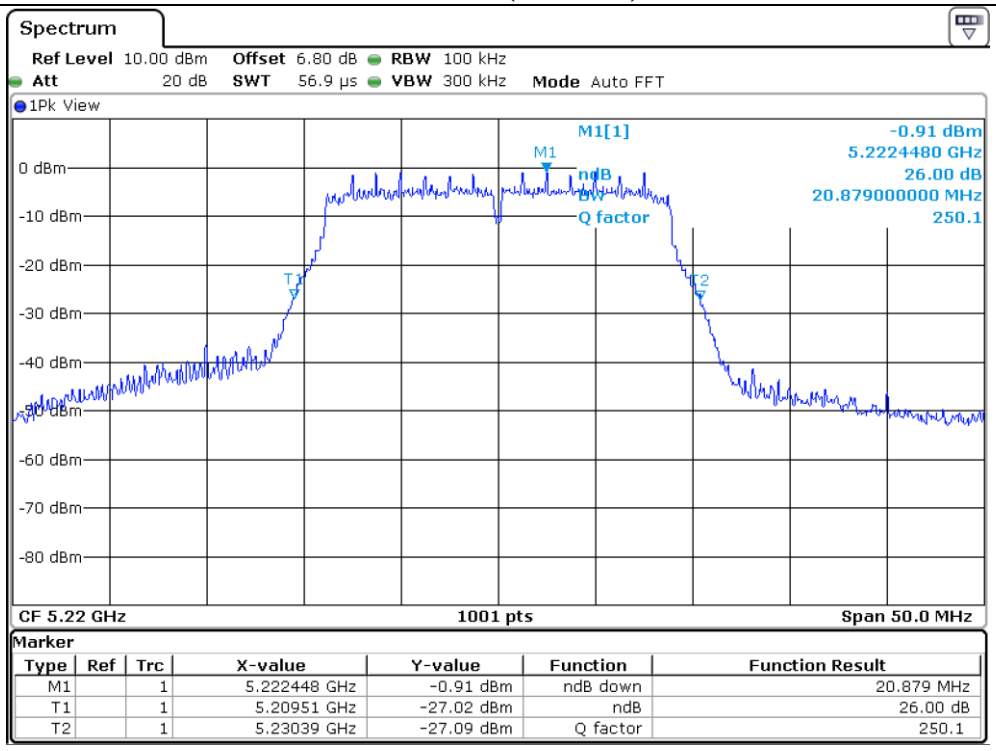
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180.00	20.78
	Middle	5 220.00	20.88
	High	5 240.00	20.73
5 725 ~ 5 850	Low	5 745.00	20.93
	Middle	5 785.00	20.93
	High	5 825.00	20.88

Remark: See next page for measurement data.

Tested by: Sieon Lee / Assistant Manager

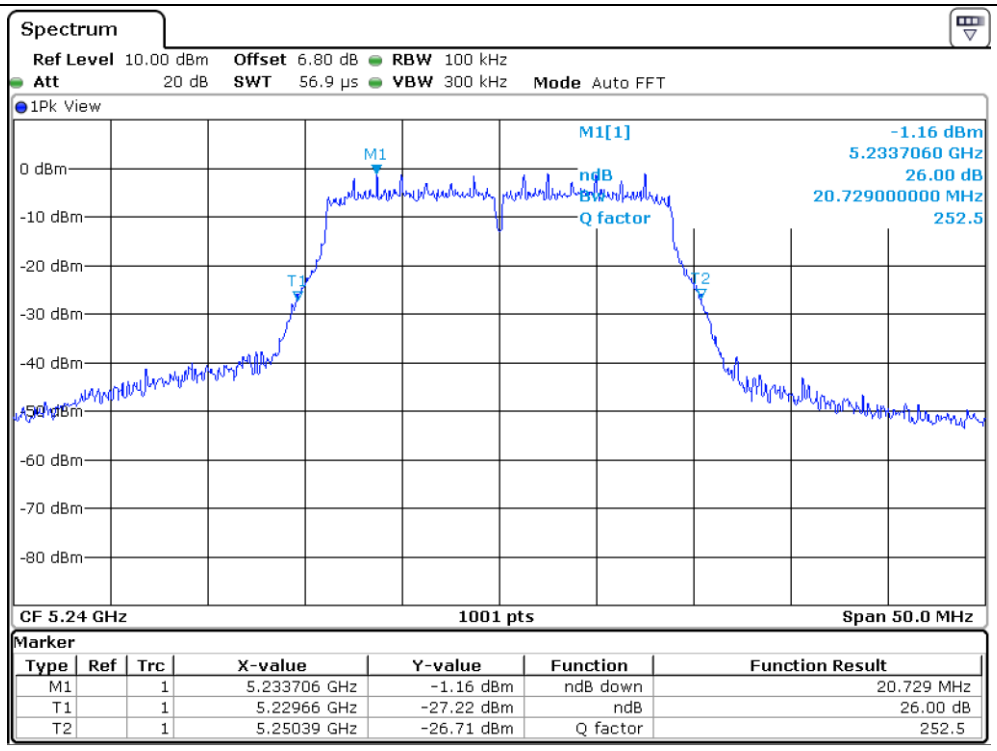


Low Channel (5 180MHz)



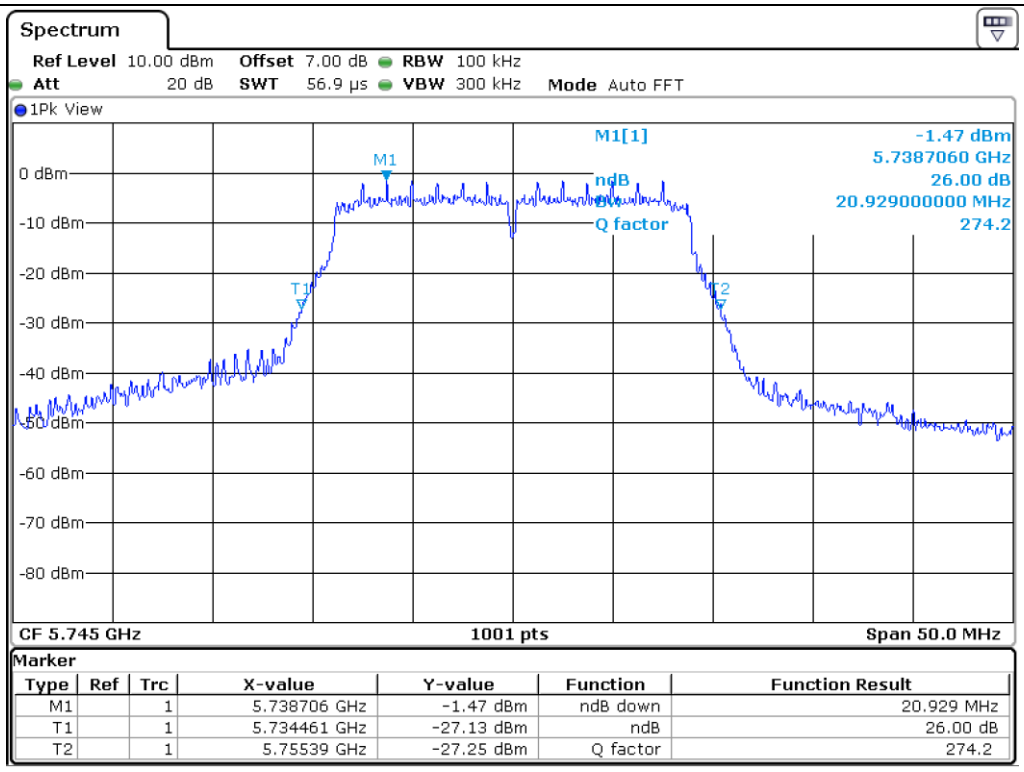
Middle Channel (5 220 MHz)

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

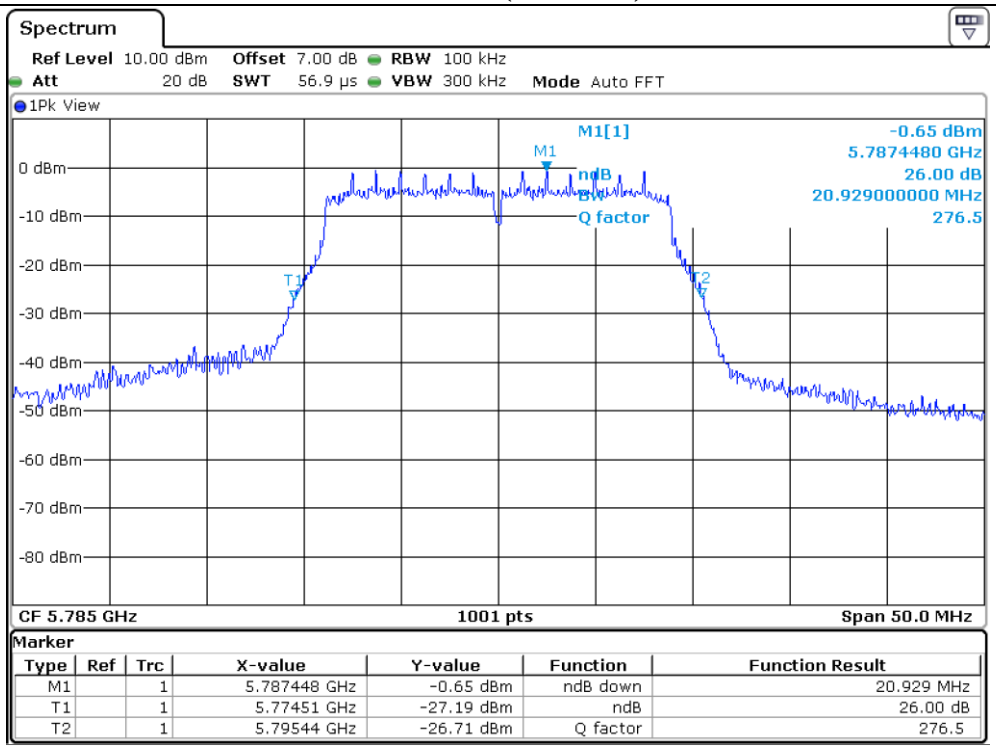


High Channel (5 240 MHz)

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

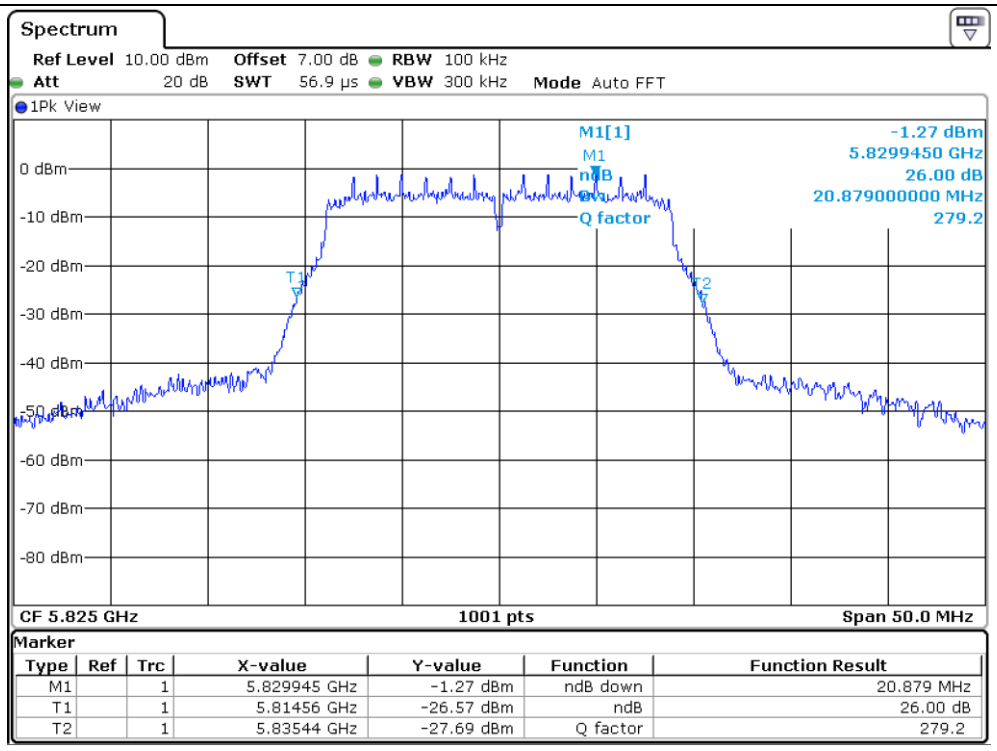


Low Channel (5 745 MHz)



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

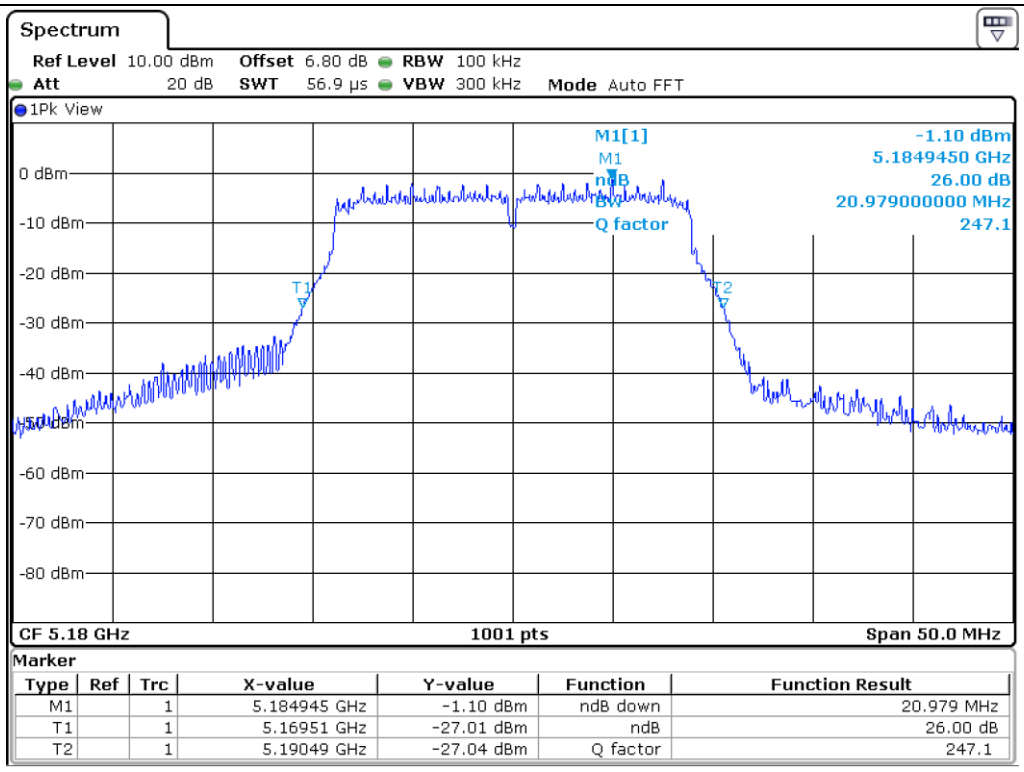
-. Test Date : May 23, 2019 ~ July 09, 2019

-. Test Result : Pass

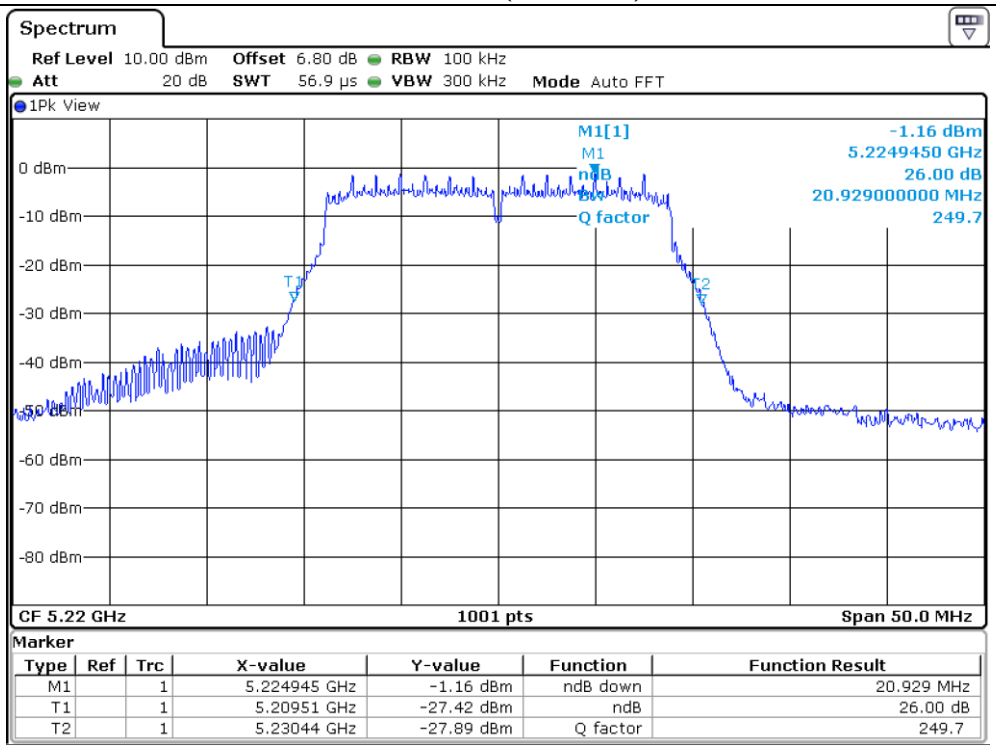
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180.00	20.98
	Middle	5 220.00	20.93
	High	5 240.00	20.88
5 725 ~ 5 850	Low	5 745.00	20.88
	Middle	5 785.00	20.93
	High	5 825.00	20.93

Remark: See next page for measurement data.

Tested by: Sieon Lee / Assistant Manager

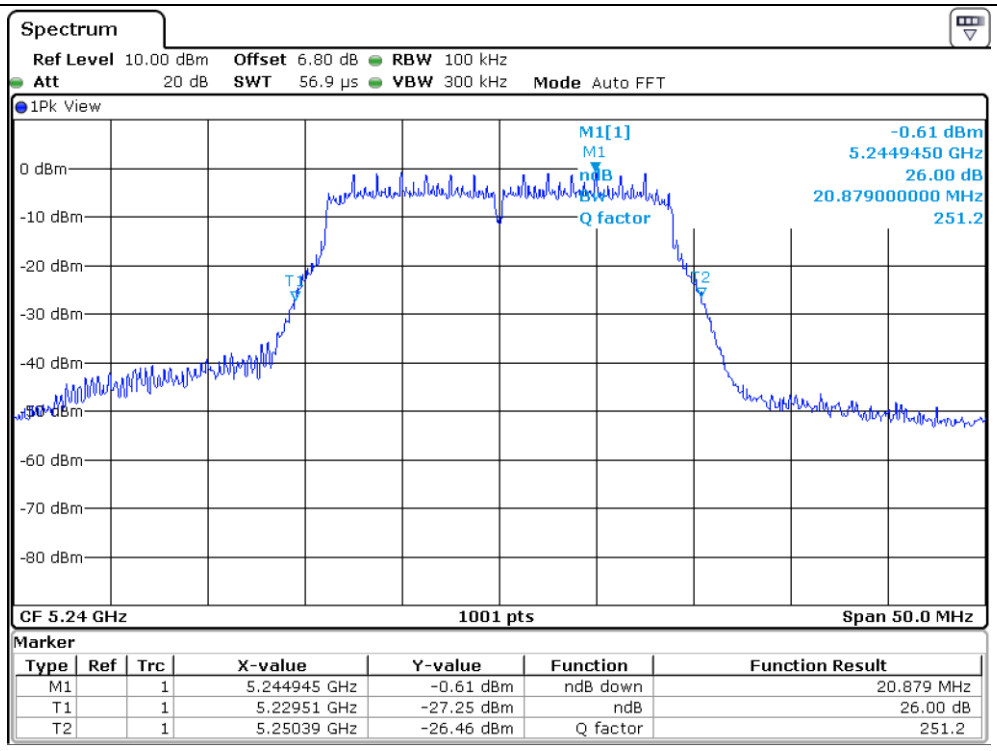


Low Channel (5 180 MHz)



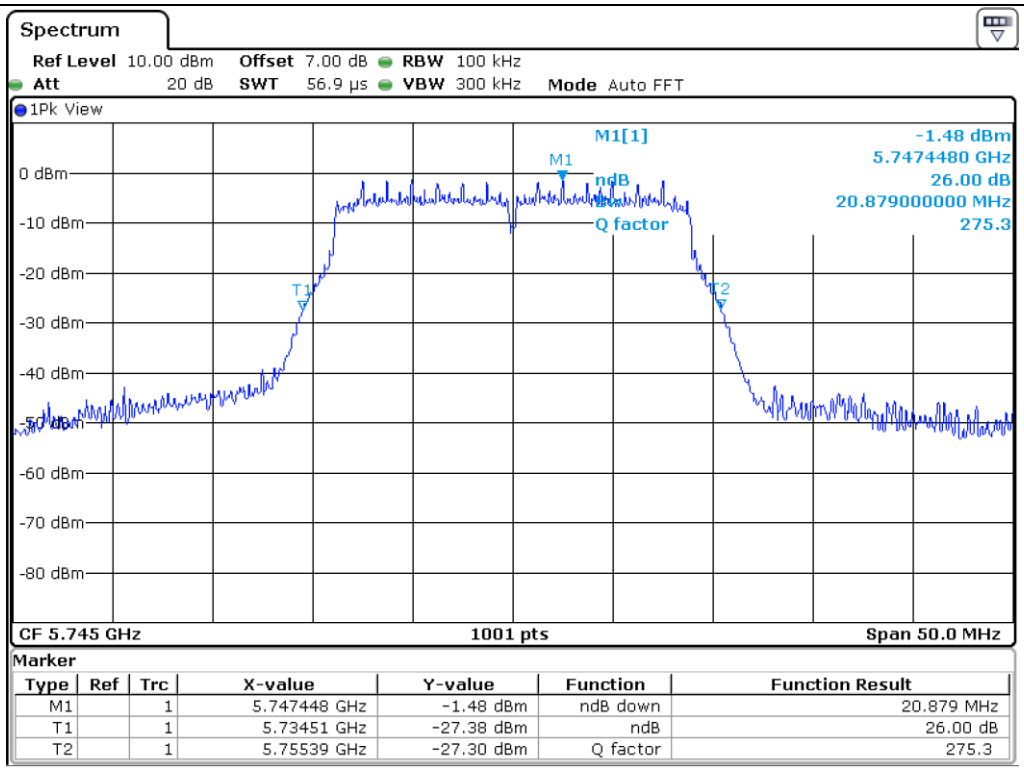
Middle Channel (5 220 MHz)

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

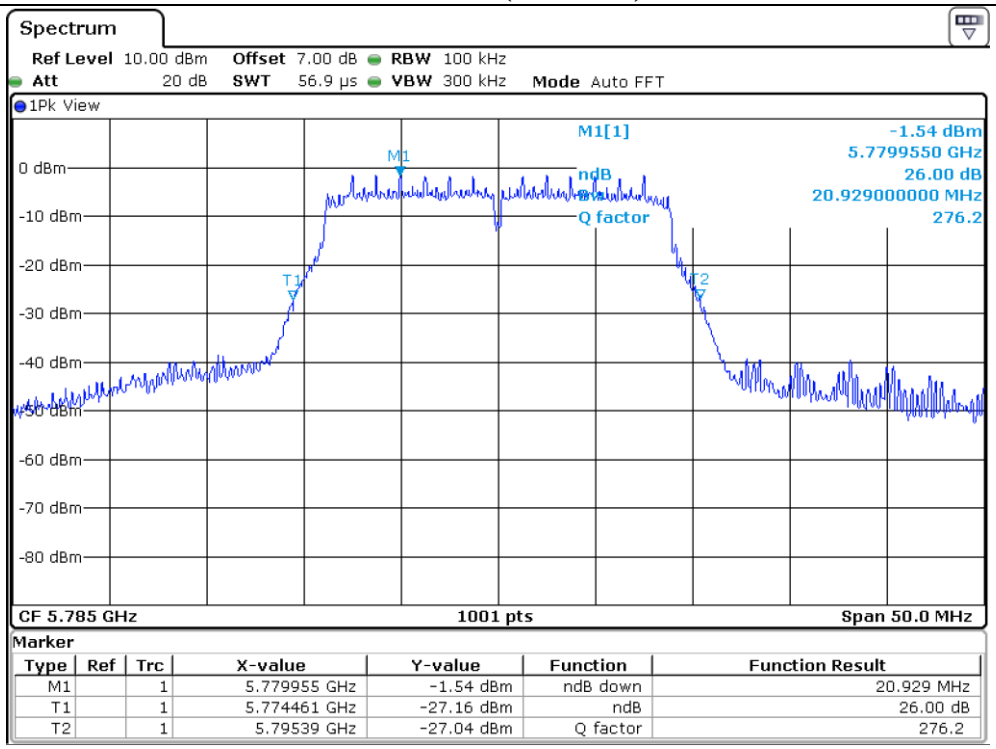


High Channel (5 240 MHz)

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

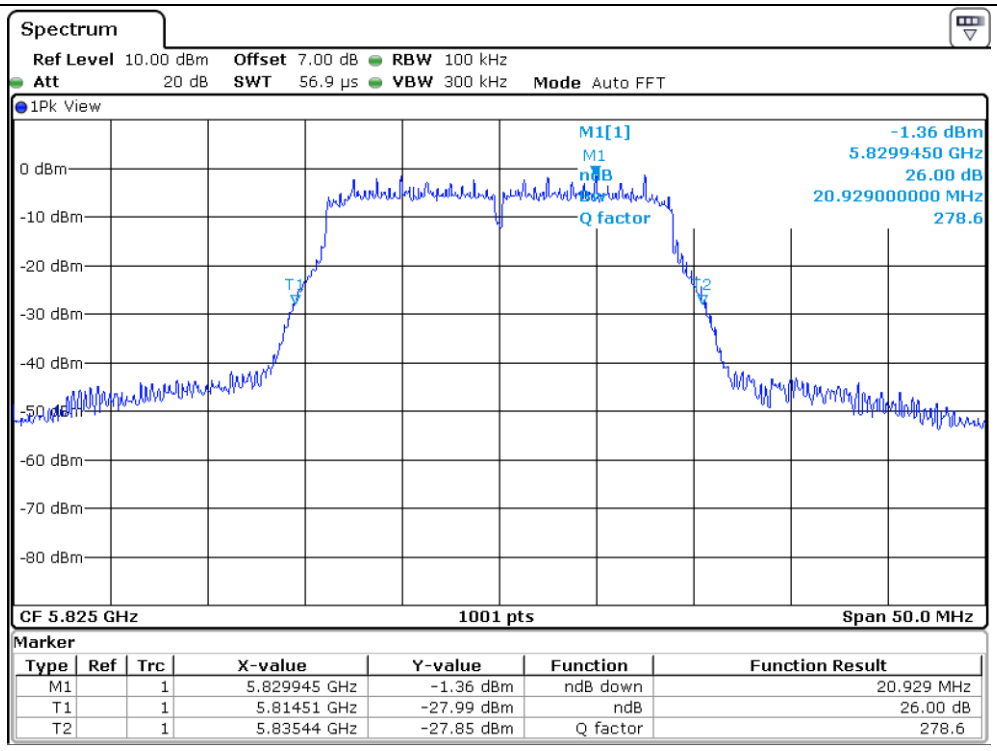


Low Channel (5 745 MHz)



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)

7.6 Test data for 802.11n (HT 40) WLAN Mode

7.6.1 Test data for Antenna 0

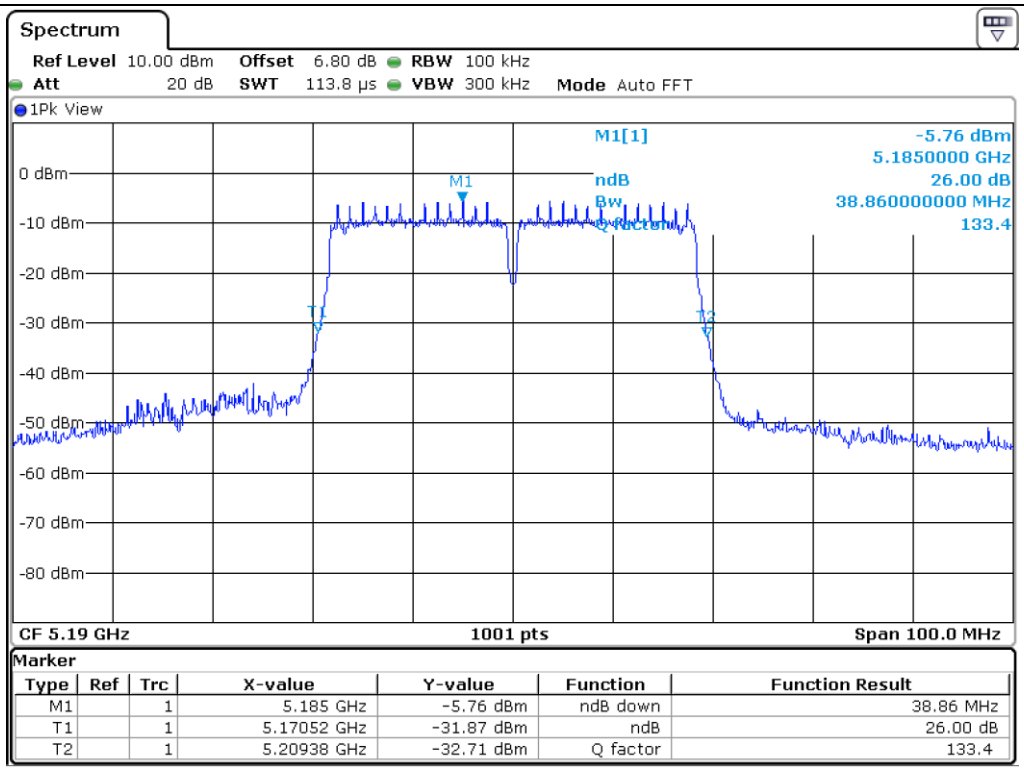
-. Test Date : May 23, 2019 ~ July 09, 2019

-. Test Result : Pass

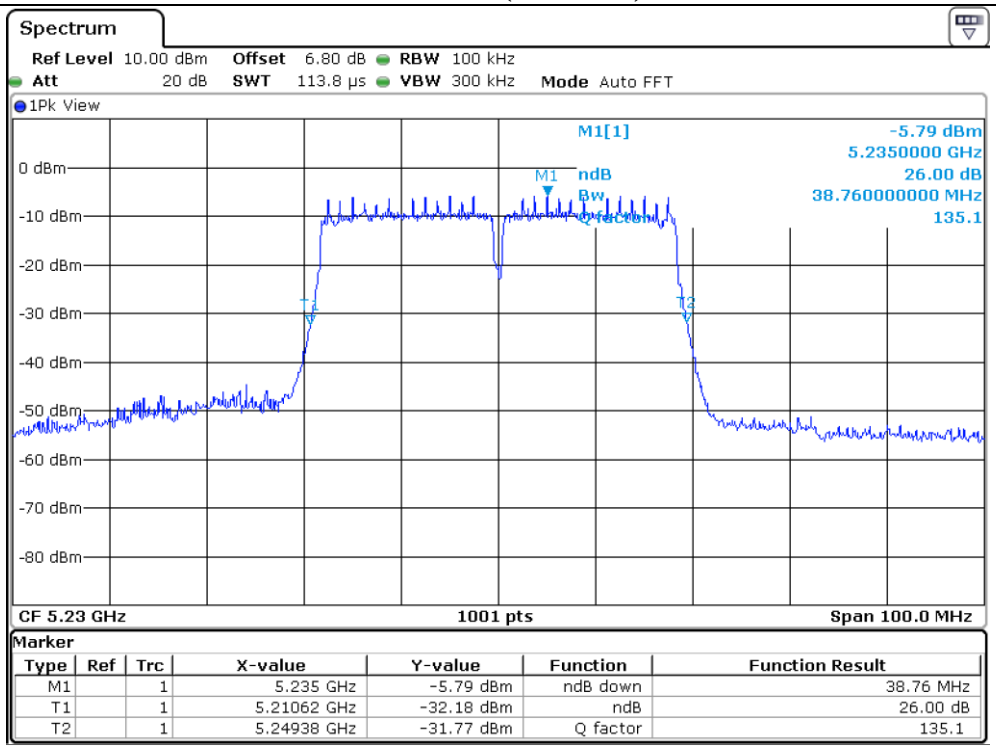
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 190.00	38.86
	High	5 230.00	38.76
5 725 ~ 5 850	Low	5 755.00	38.86
	High	5 795.00	38.86

Remark: See next page for measurement data.

Tested by: Sieon Lee / Assistant Manager

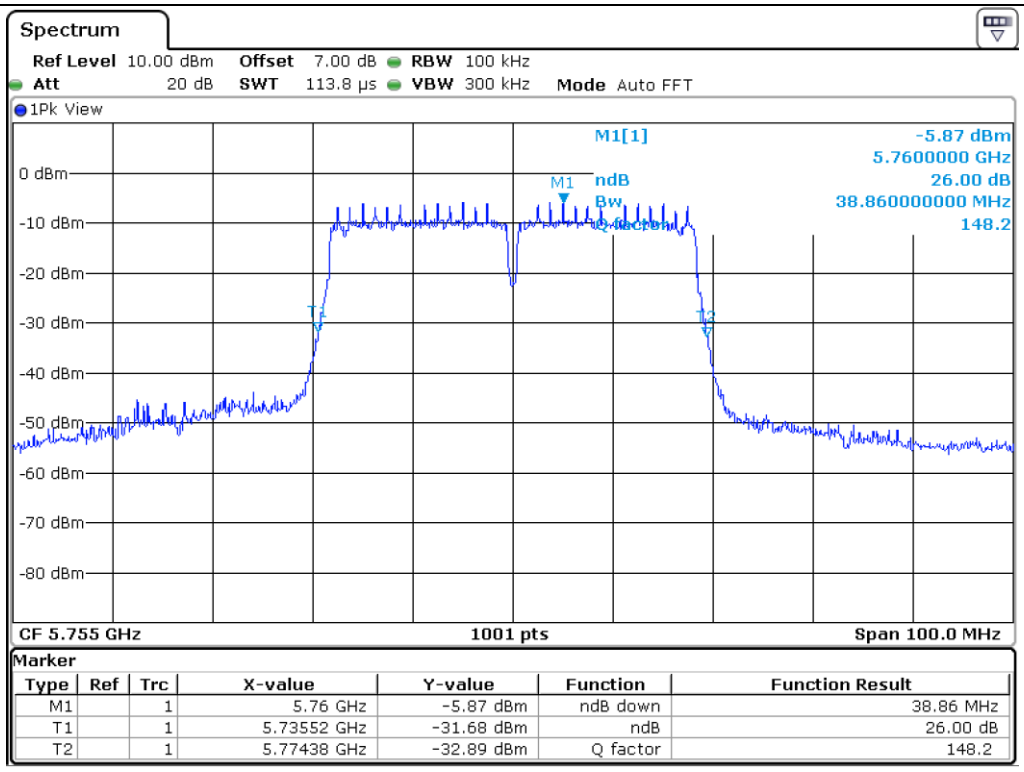


Low Channel (5 190 MHz)

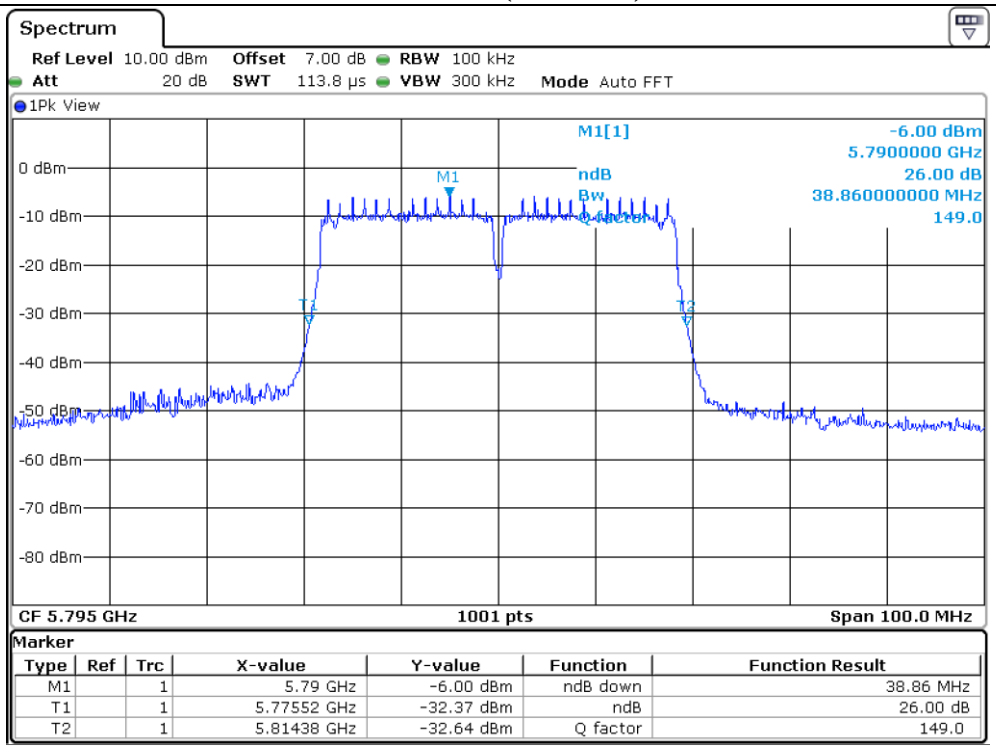


High Channel (5 230 MHz)

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

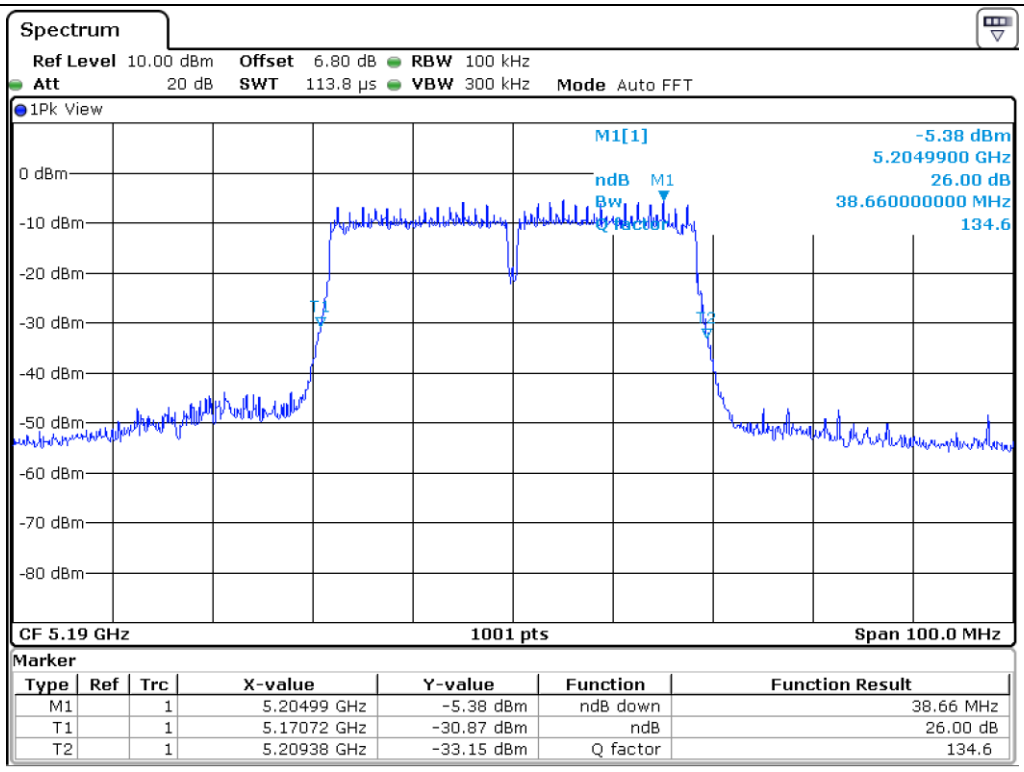
-. Test Date : May 23, 2019 ~ July 09, 2019

-. Test Result : Pass

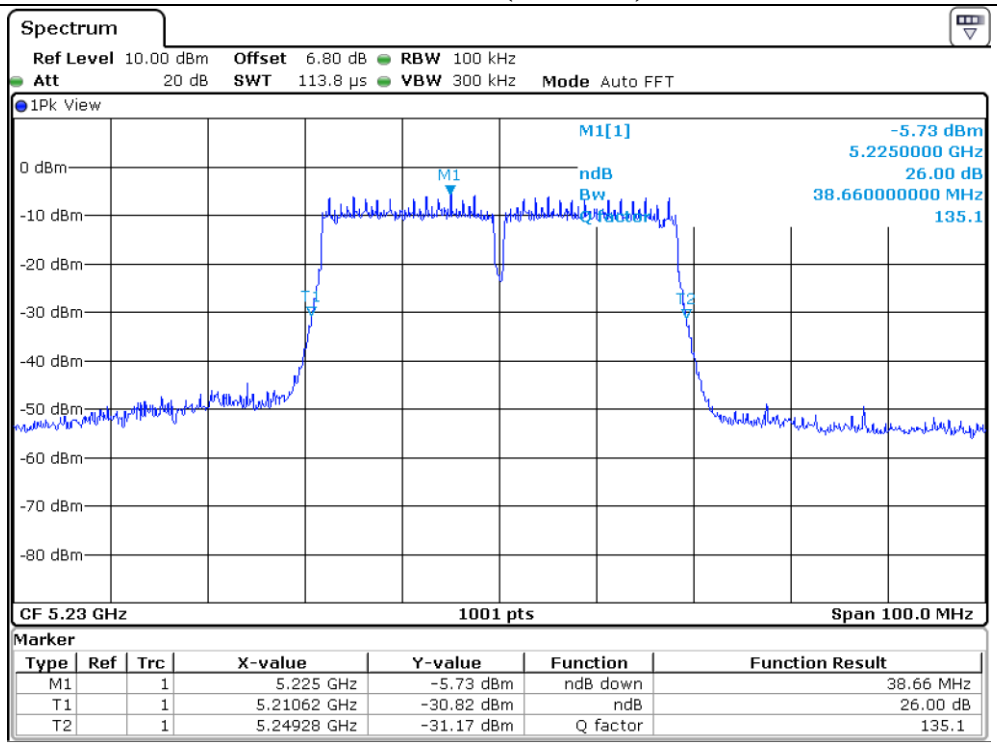
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 190.00	38.66
	High	5 230.00	38.66
5 725 ~ 5 850	Low	5 755.00	38.66
	High	5 795.00	38.66

Remark: See next page for measurement data.

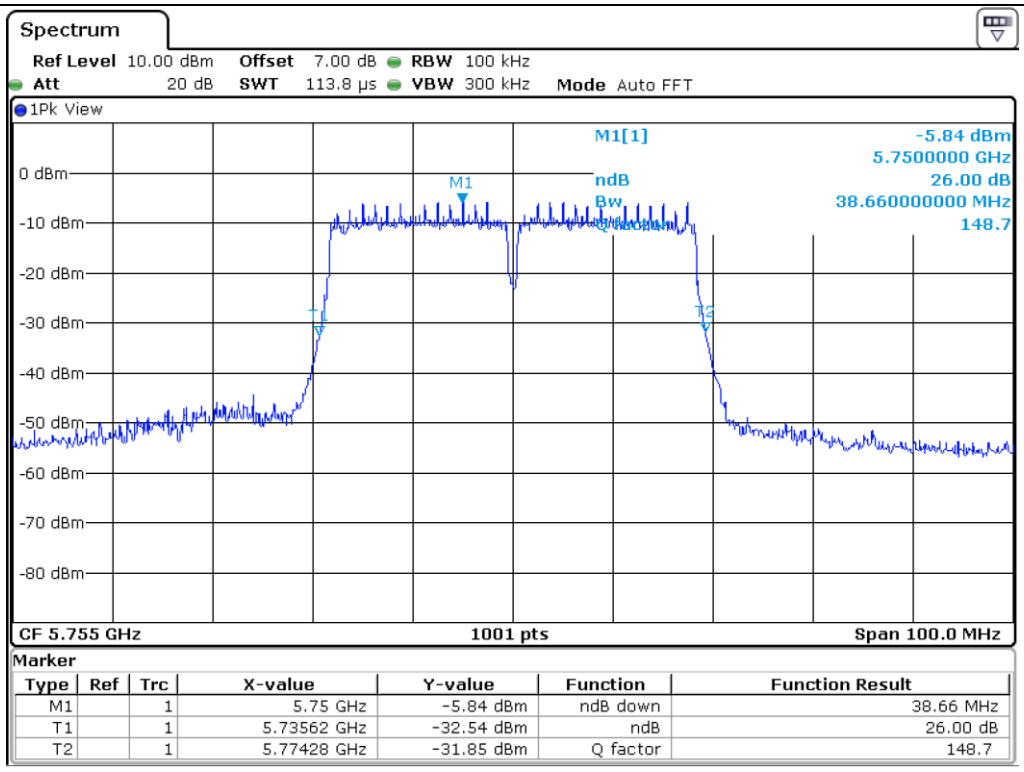
Tested by: Sieon Lee / Assistant Manager



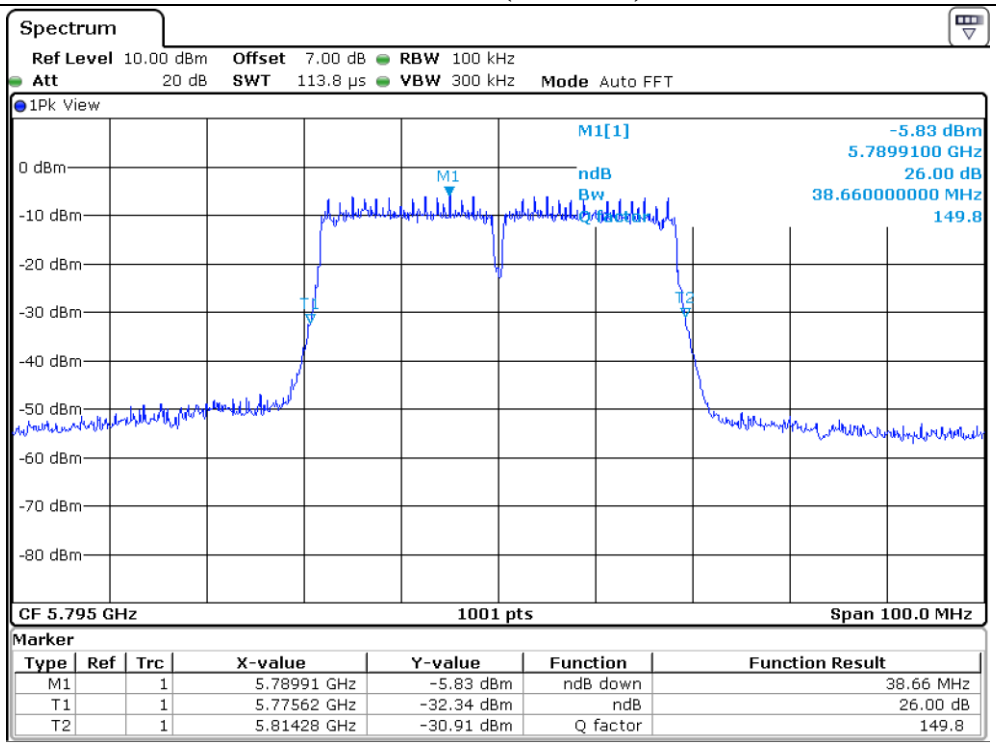
Low Channel (5 190 MHz)



High Channel (5 230 MHz)



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)

7.7 Test data for 802.11ac (HT 80) WLAN Mode

7.7.1 Test data for Antenna 0

-. Test Date : May 23, 2019 ~ July 09, 2019

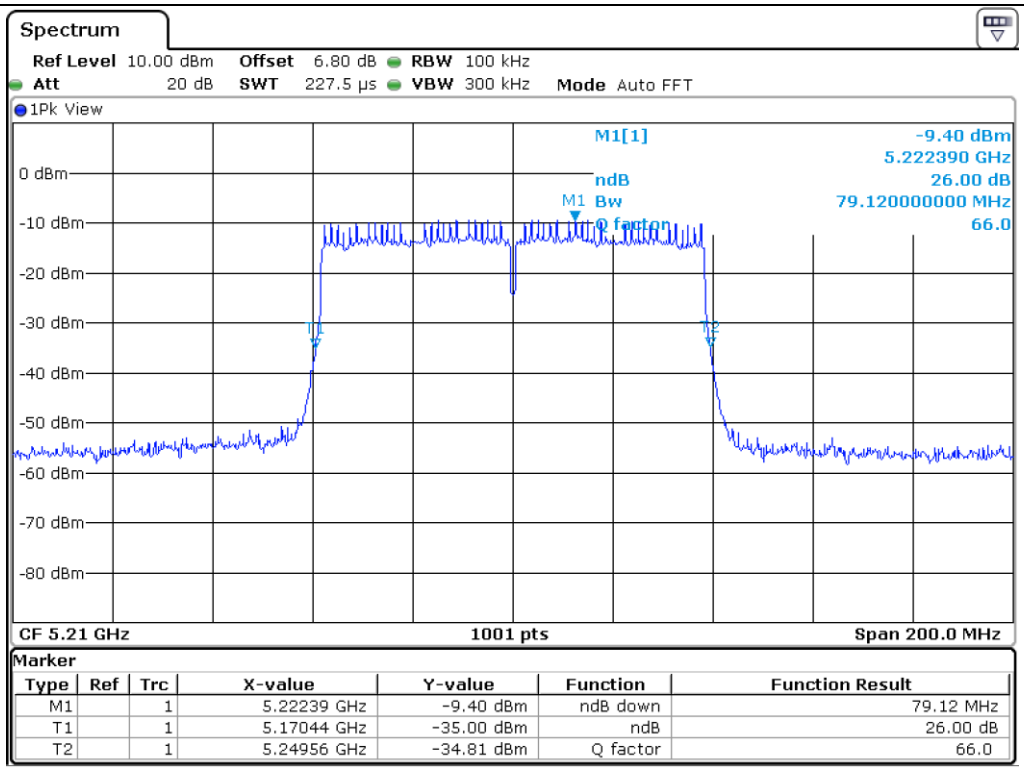
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 210.00	79.12
5 725 ~ 5 850	Low	5 775.00	76.32

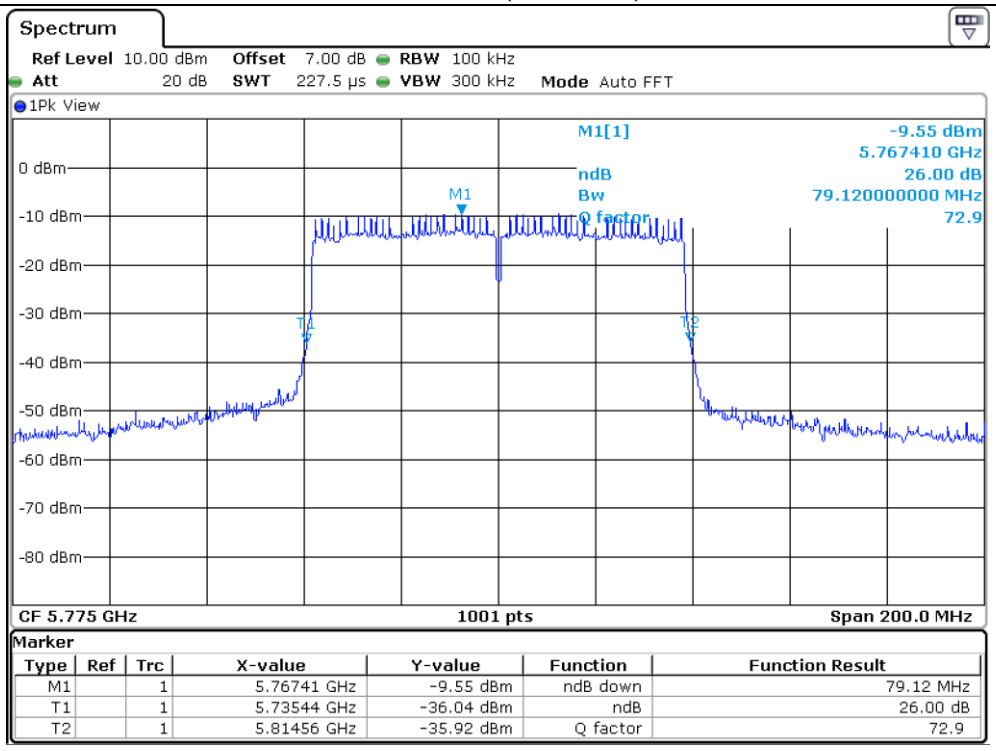
Remark: See next page for measurement data.

Tested by: Sieon Lee / Assistant Manager

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 (5 210 MHz)



Low Channel (5 775 MHz)

7.7.2 Test data for Antenna 1

-. Test Date : May 23, 2019 ~ July 09, 2019

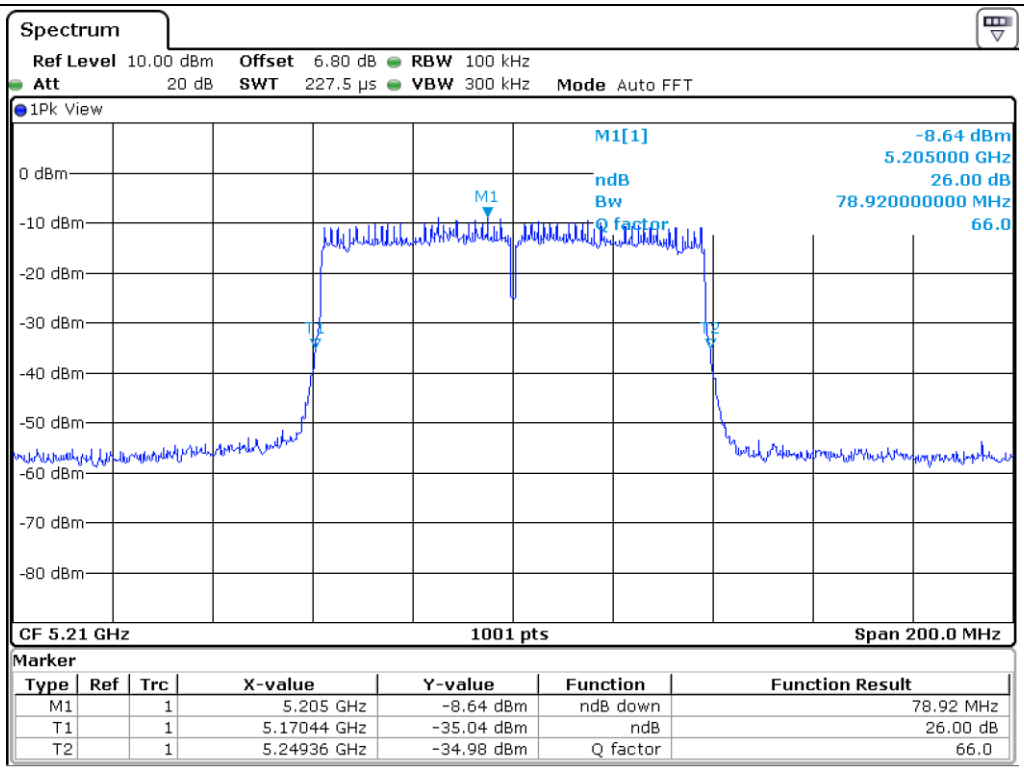
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5210.00	78.92
5 725 ~ 5 850	Low	5775.00	78.72

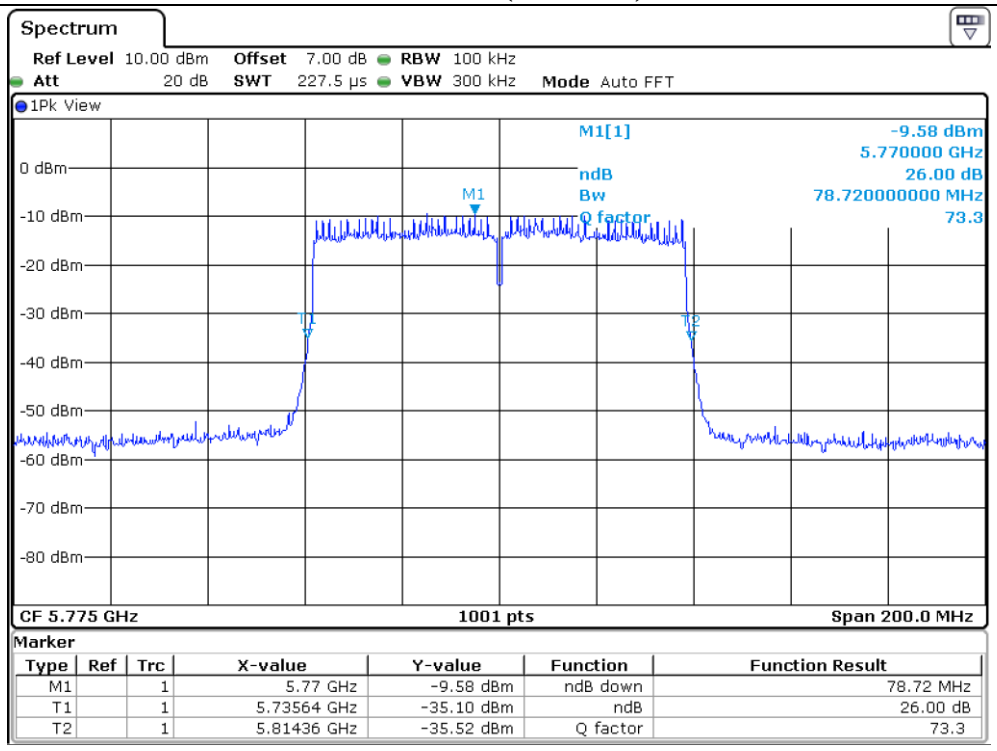
Remark: See next page for measurement data.

Tested by: Sieon Lee / Assistant Manager

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 (5 210 MHz)



Low Channel (5 775 MHz)

8. 6 dB BANDWIDTH

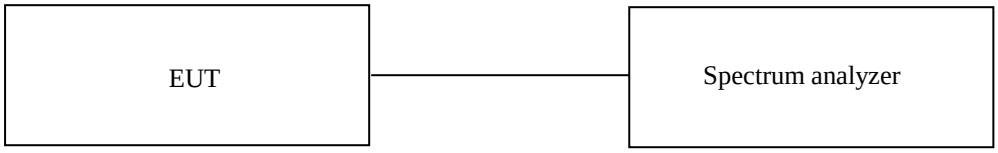
8.1 Operating environment

Temperature : 24 ℃

Relative humidity : 48 % 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 equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ -	FSV30	Rohde & Schwarz	Signal Analyzer	101200	Aug. 23, 2018 (1Y)

All test equipment used is calibrated on a regular basis.

8.4 Test data for 802.11a WLAN Mode

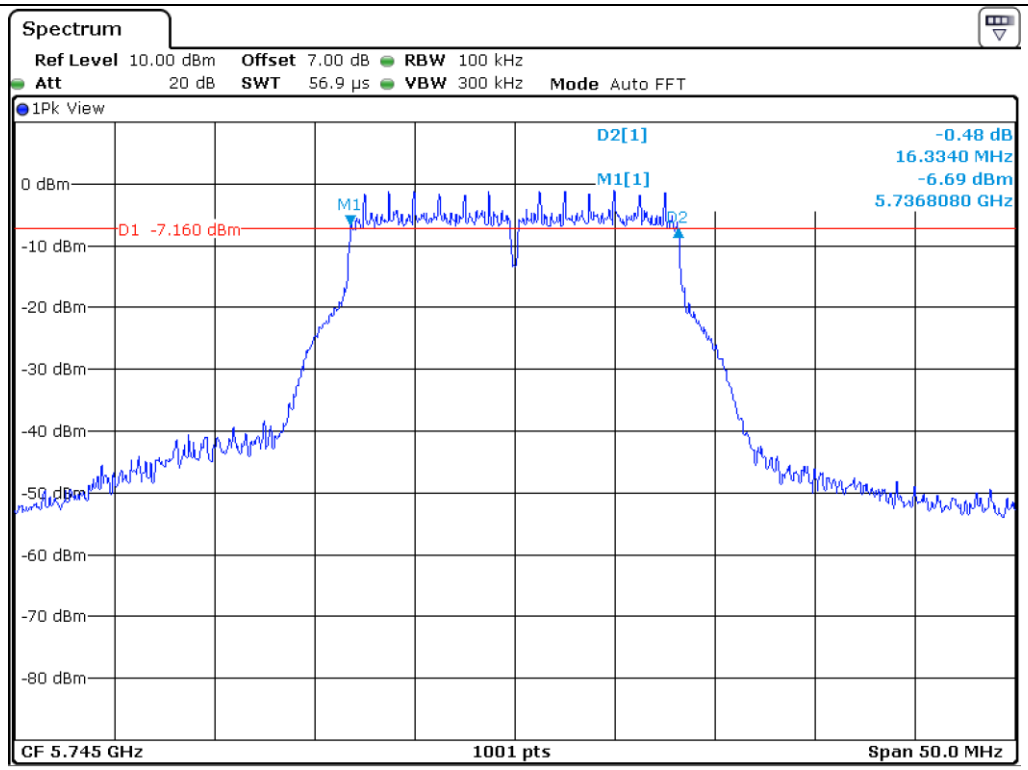
8.4.1 Test data for Antenna 0

-. Test Date : May 23, 2019 ~ July 09, 2019

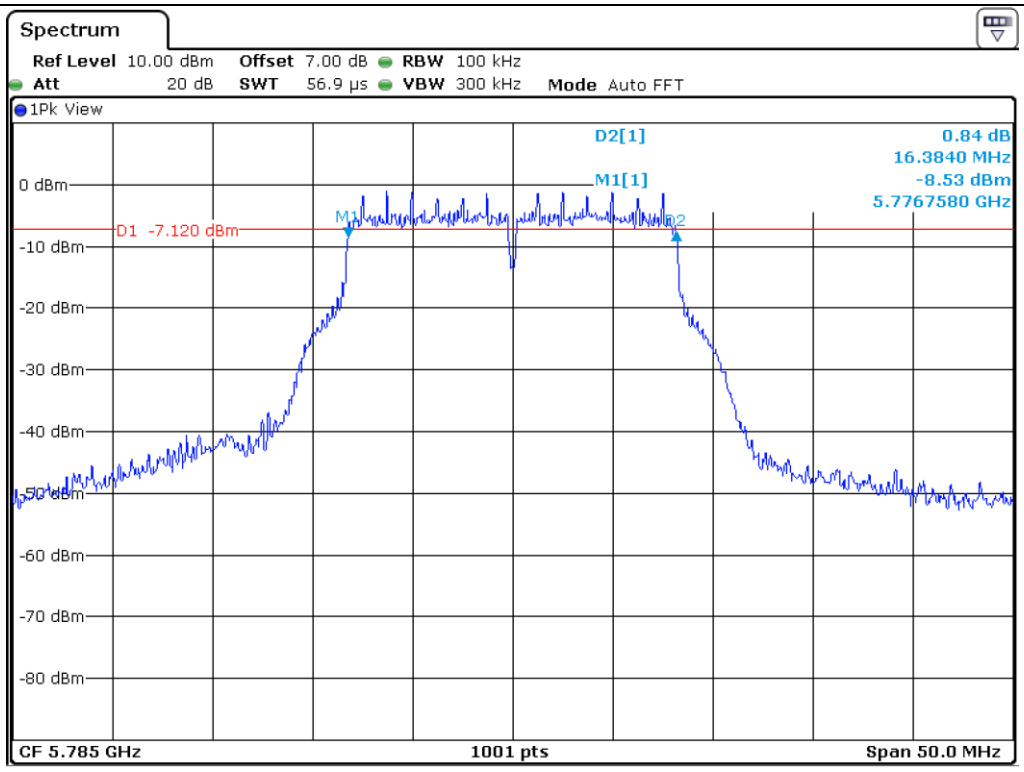
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 725 ~ 5 850	Low	5 745.00	16.33
	Middle	5 785.00	16.38
	High	5 825.00	16.43

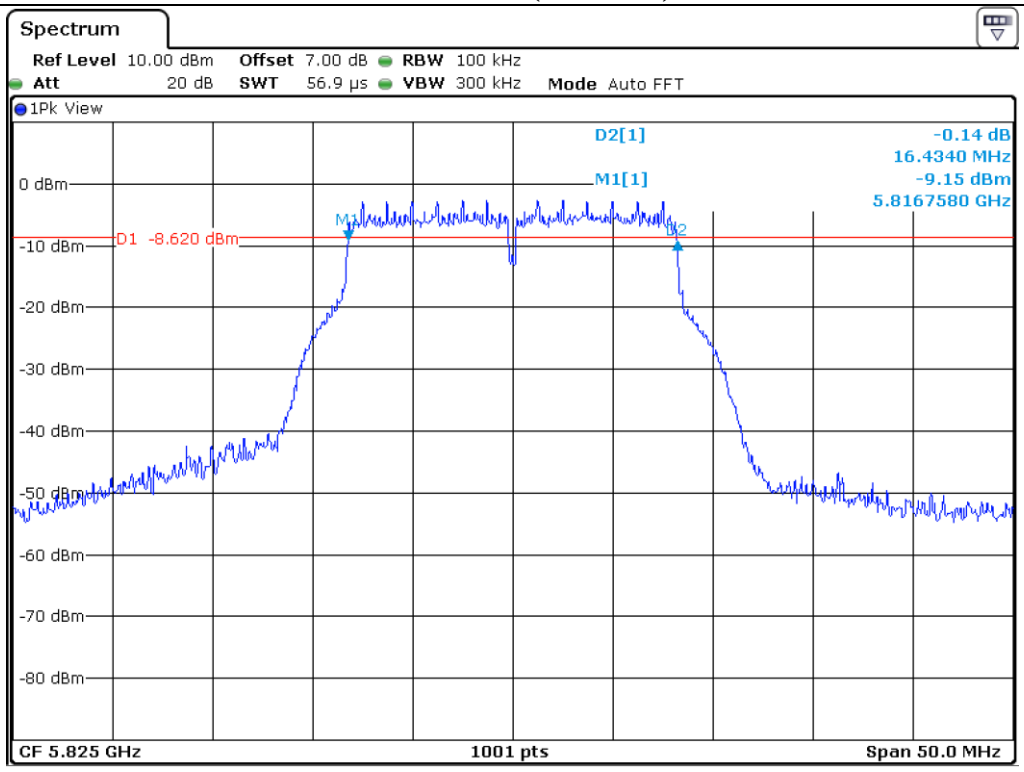
Tested by: Sieon Lee / Assistant Manager



Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)



High Channel (5 825 MHz)

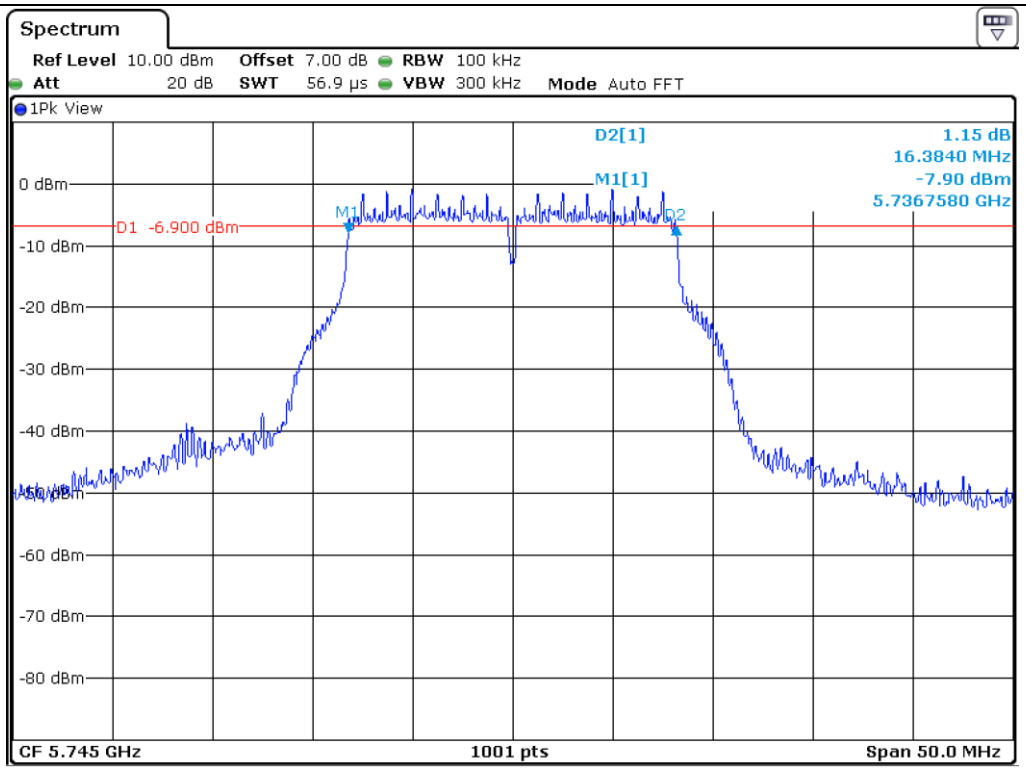
8.4.2 Test data for Antenna 1

-. Test Date : May 23, 2019 ~ July 09, 2019

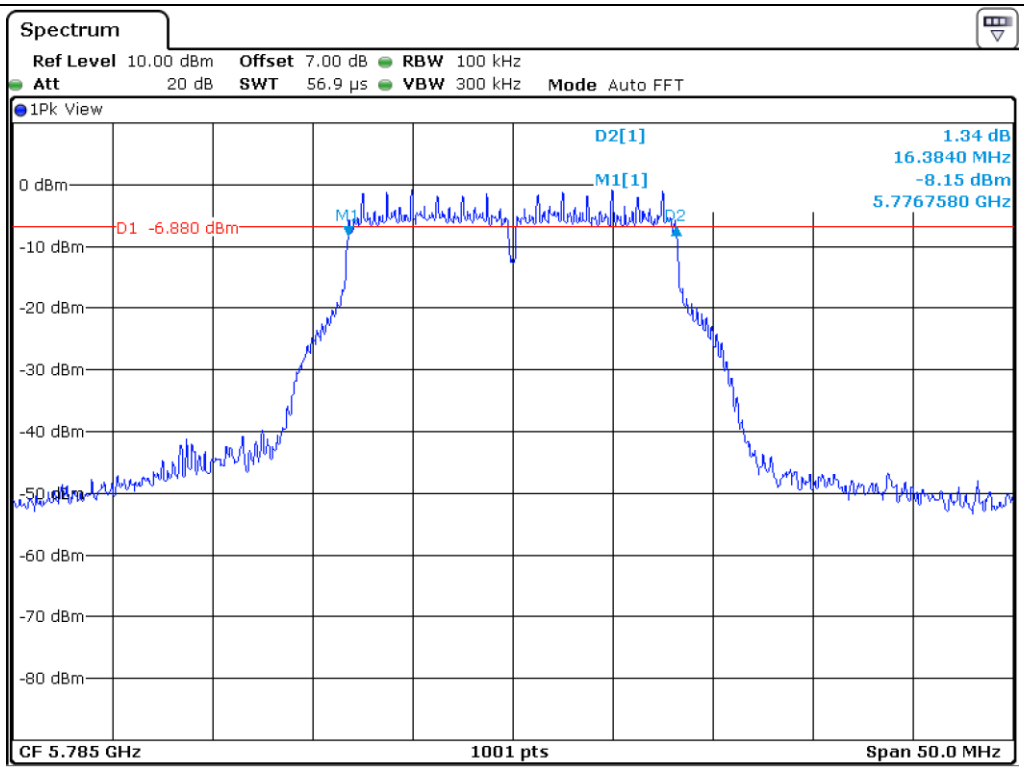
-. Test Result : Pass

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

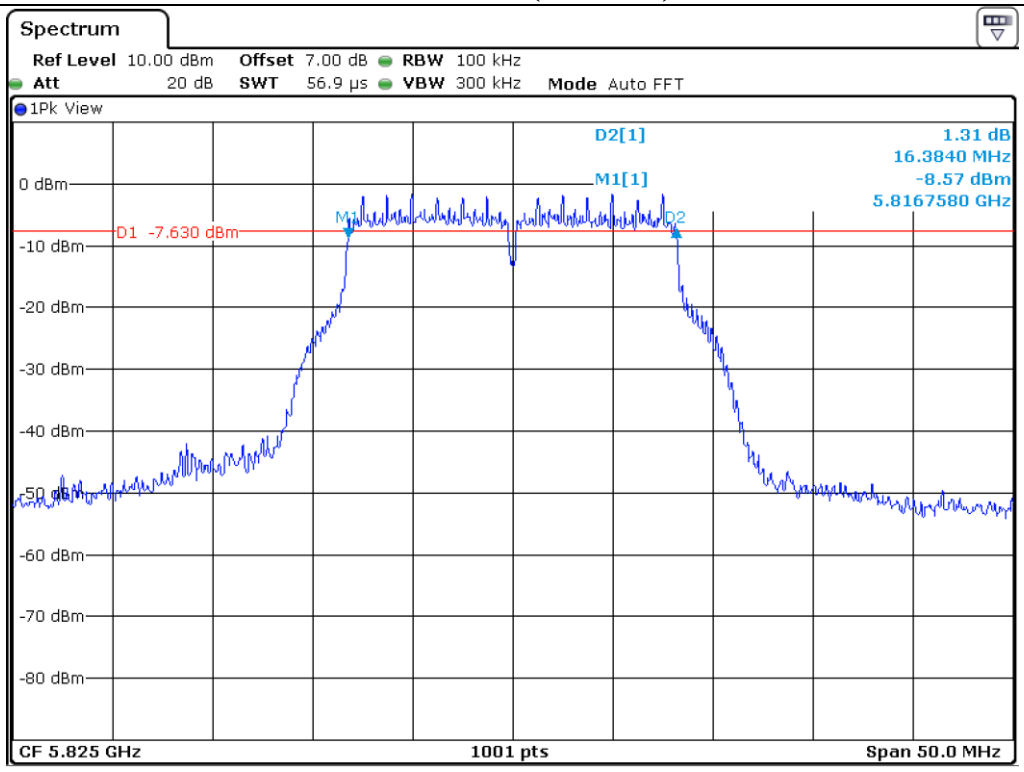
Tested by: Sieon Lee / Assistant Manager



Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)



High Channel (5 825 MHz)

8.5 Test data for 802.11n (HT20) WLAN Mode

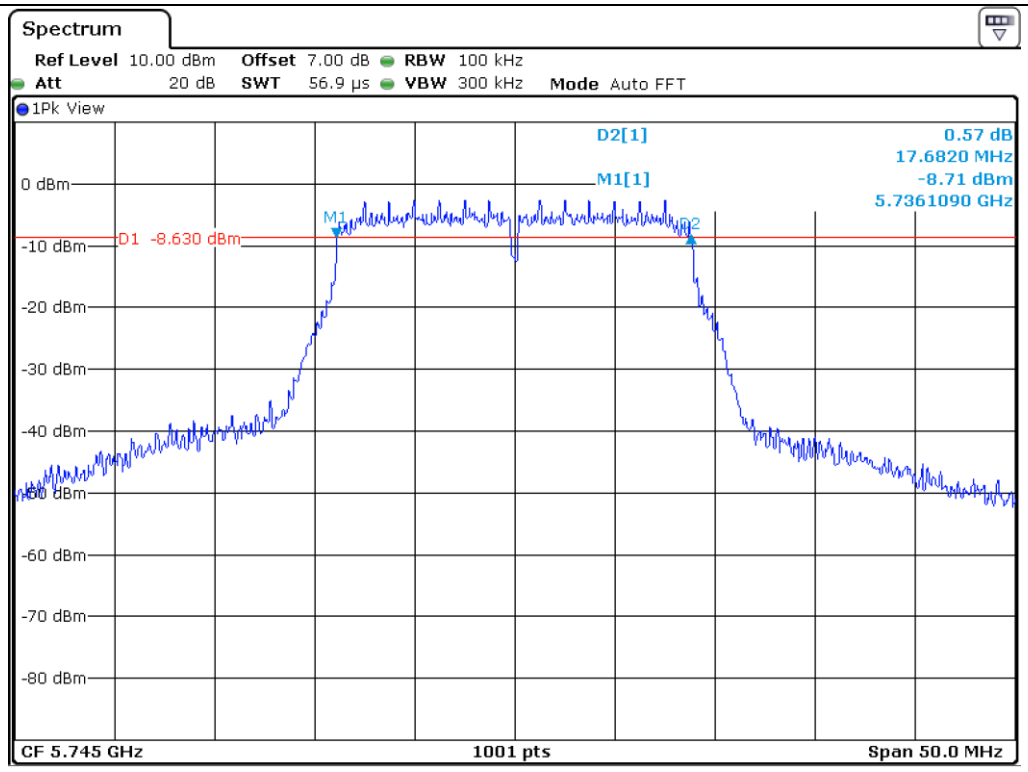
8.5.1 Test data for Antenna 0

-. Test Date : May 23, 2019 ~ July 09, 2019

-. Test Result : Pass

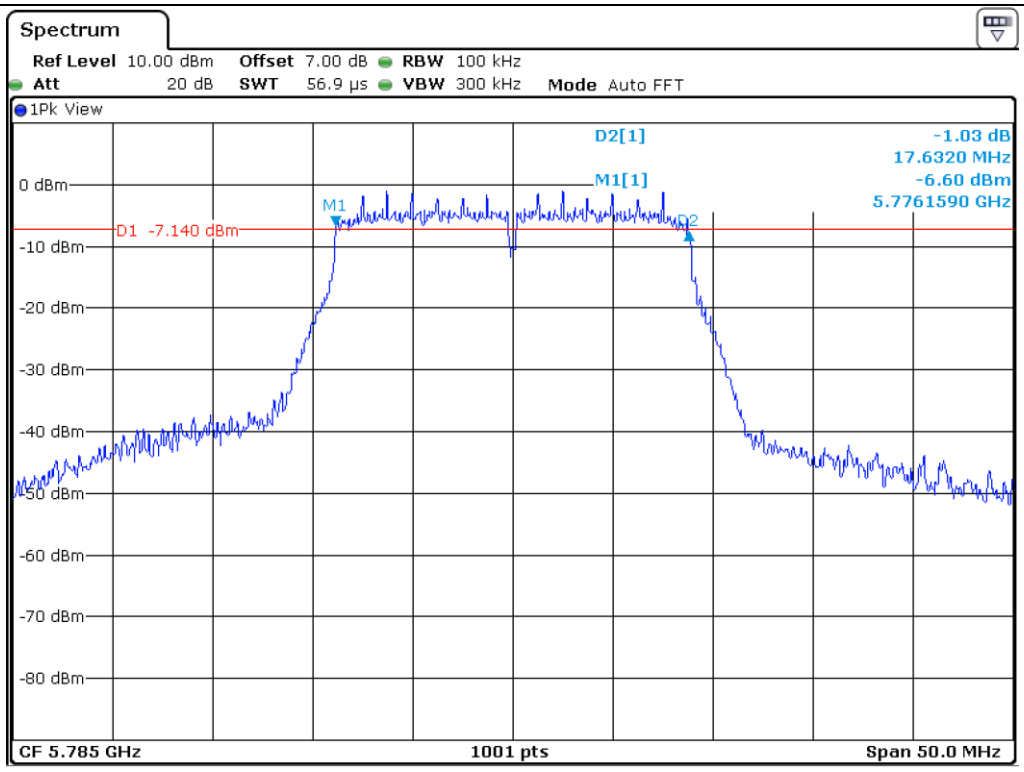
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 725 ~ 5 850	Low	5 745.00	17.68
	Middle	5 785.00	17.63
	High	5 825.00	17.58

Tested by: Sieon Lee / Assistant Manager

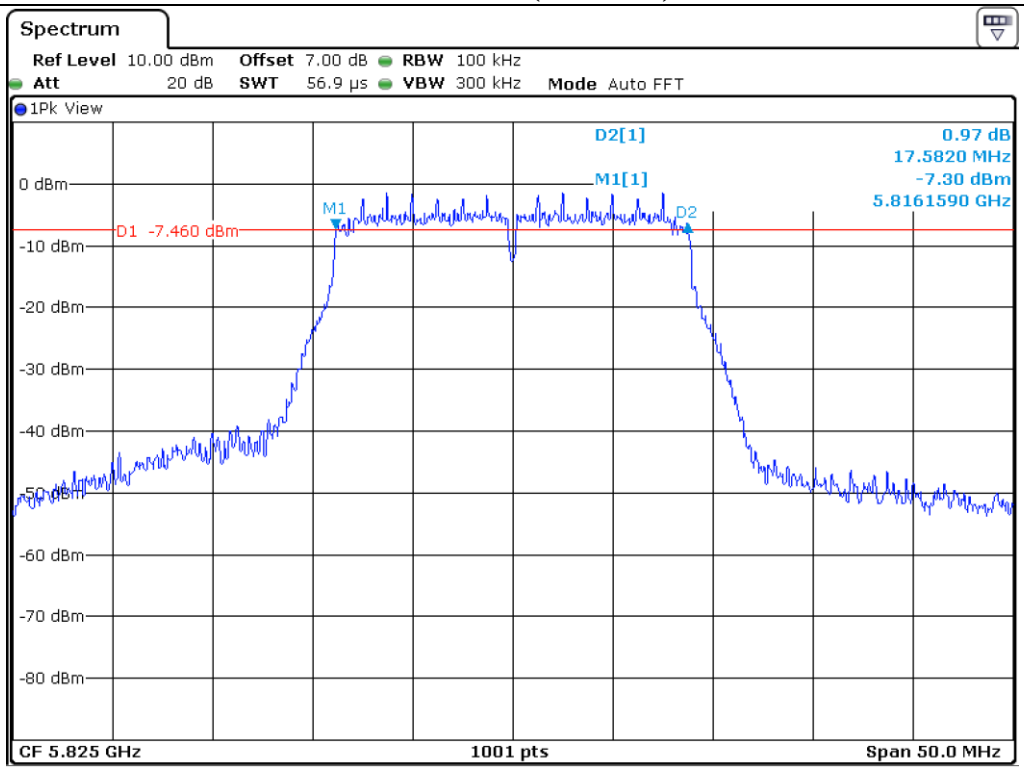


Low Channel (5 745 MHz)

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)

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

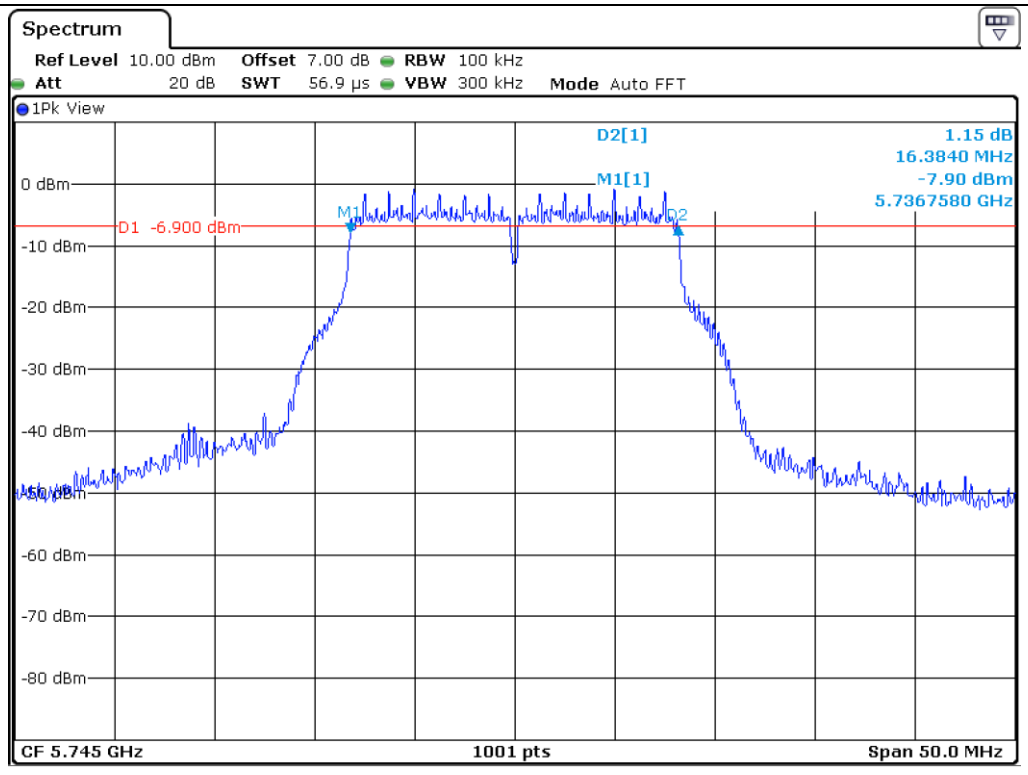
8.5.2 Test data for Antenna 1

-. Test Date : May 23, 2019 ~ July 09, 2019

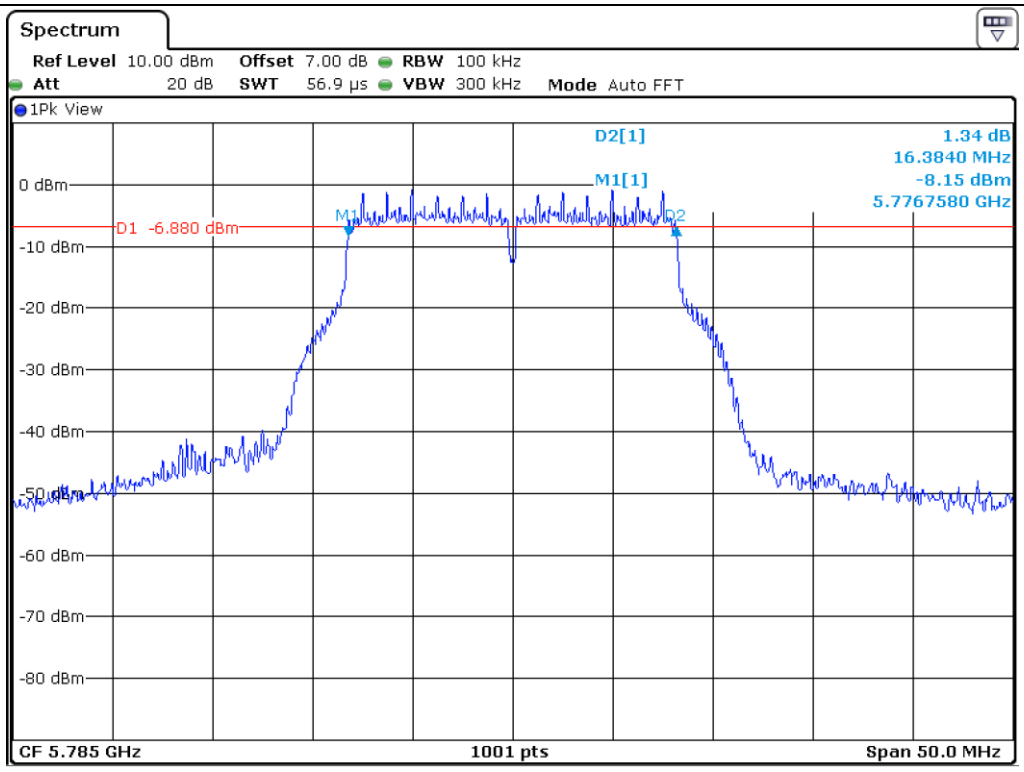
-. Test Result : Pass

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

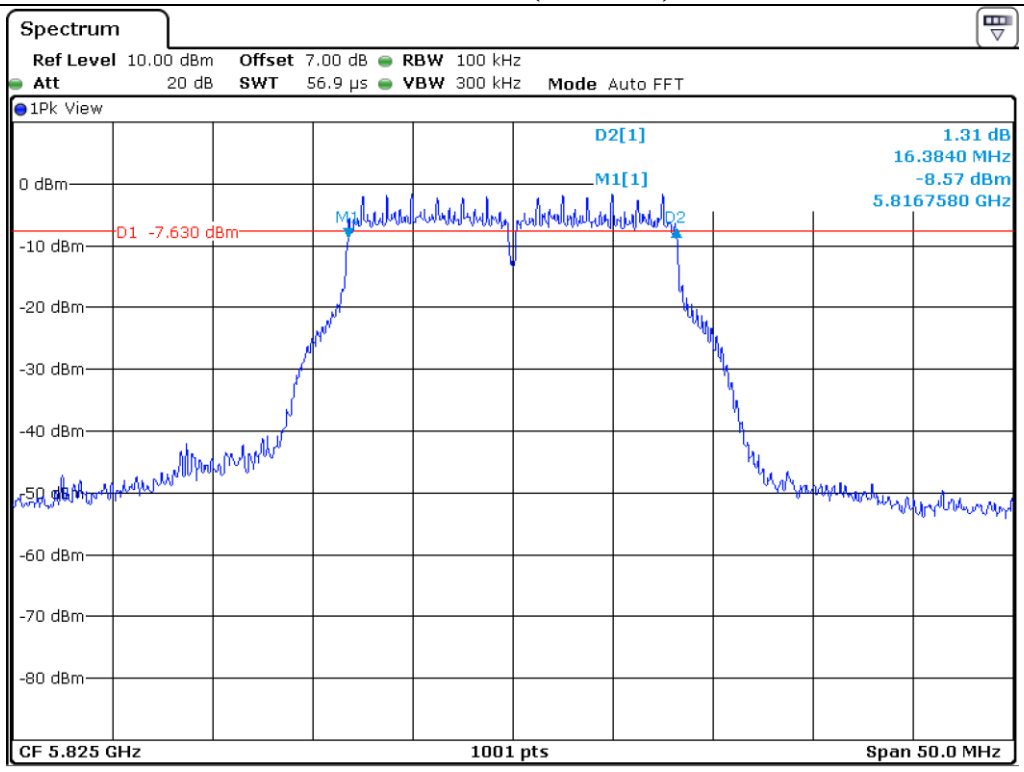
Tested by: Sieon Lee / Assistant Manager



Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)



High Channel (5 825 MHz)

8.6 Test data for 802.11n (HT40) WLAN Mode

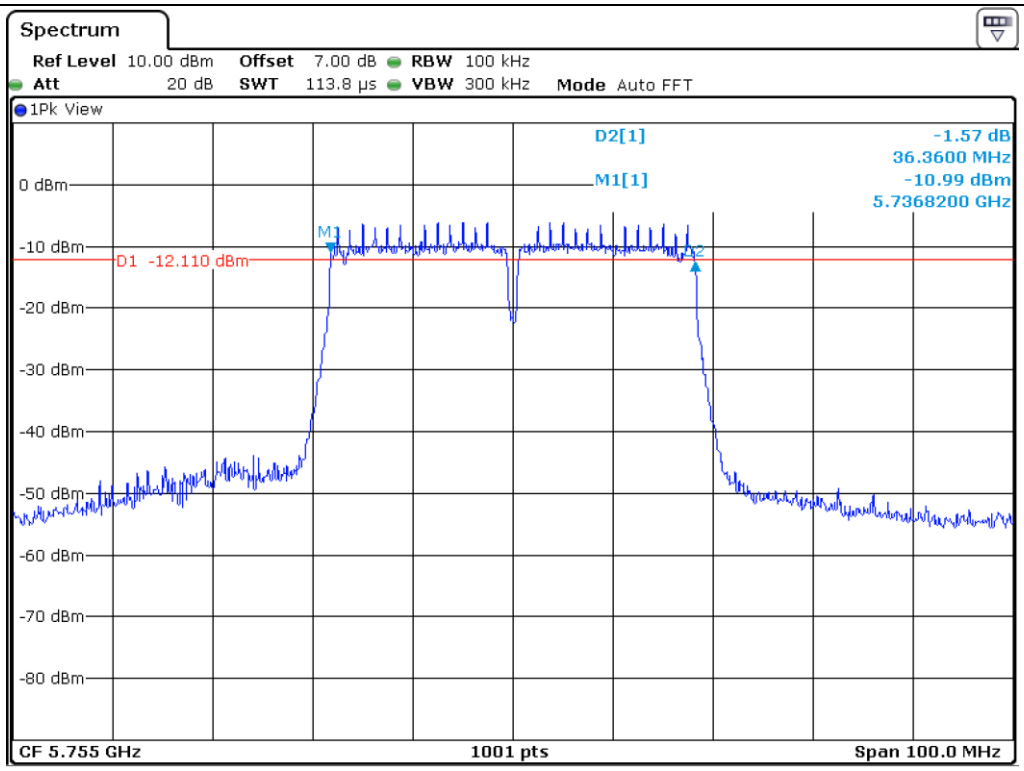
8.6.1 Test data for Antenna 0

-. Test Date : May 23, 2019 ~ July 09, 2019

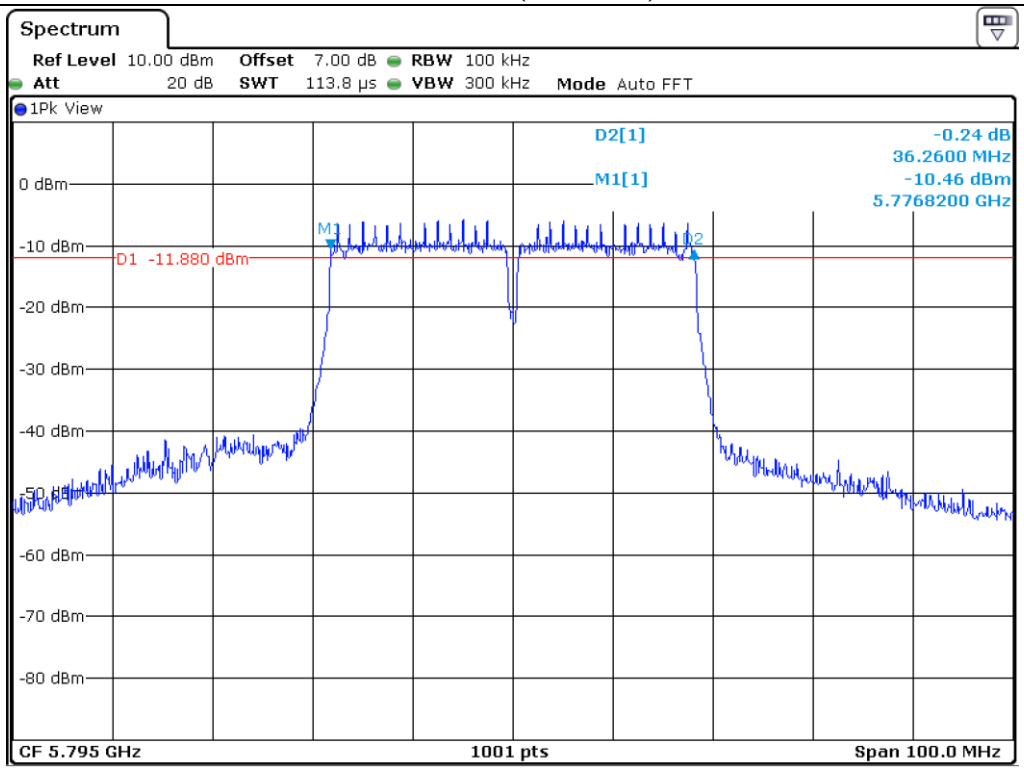
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 725 ~ 5 850	Low	5 755.00	36.36
	High	5 795.00	36.26

Tested by: Sieon Lee / Assistant Manager



Low Channel (5 755 MHz)



High Channel (5 795 MHz)

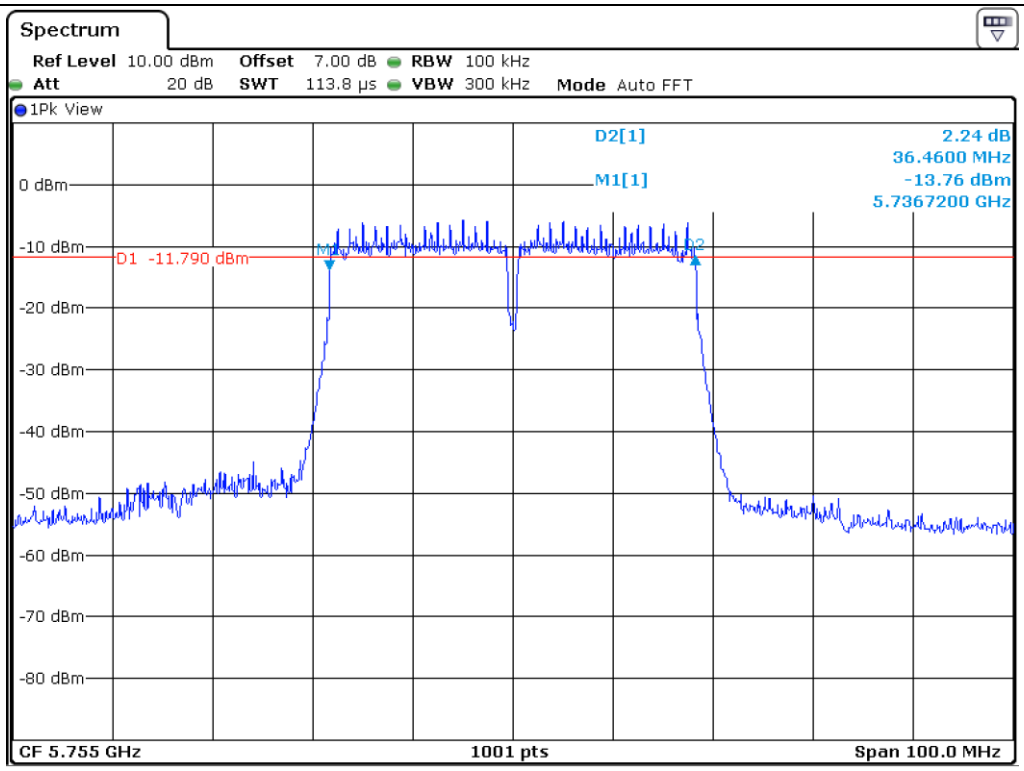
8.6.2 Test data for Antenna 1

-. Test Date : May 23, 2019 ~ July 09, 2019

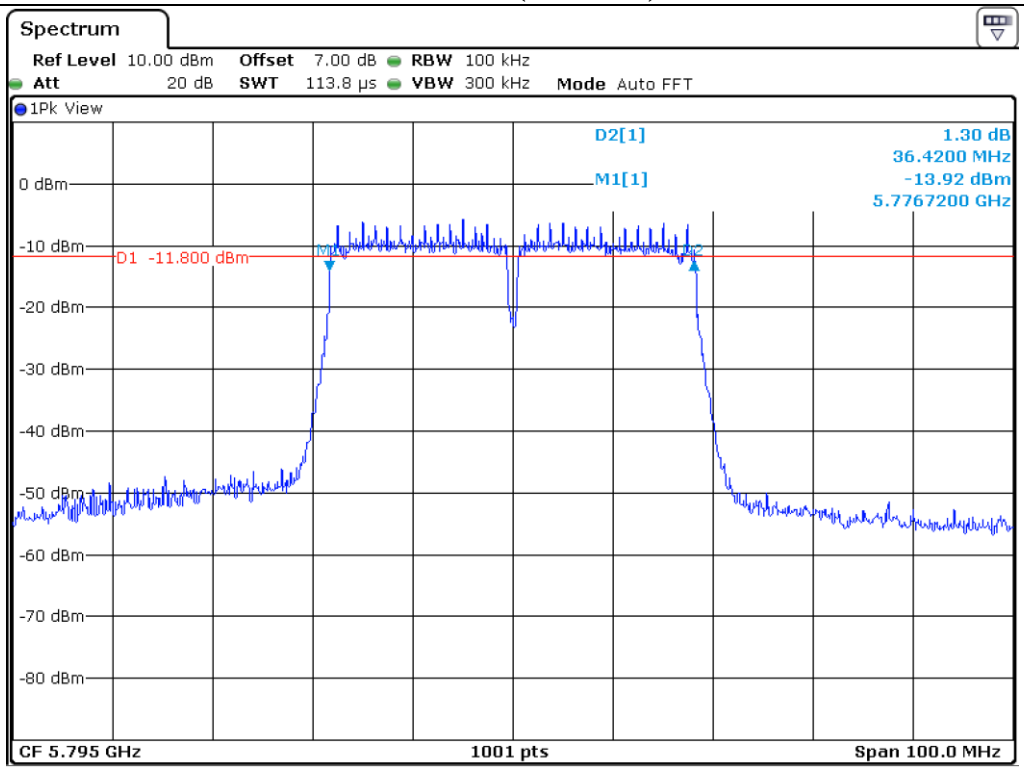
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 725 ~ 5 850	Low	5 755.00	36.46
	High	5 795.00	36.42

Tested by: Sieon Lee / Assistant Manager



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)

8.7 Test data for 802.11ac (HT80) WLAN Mode

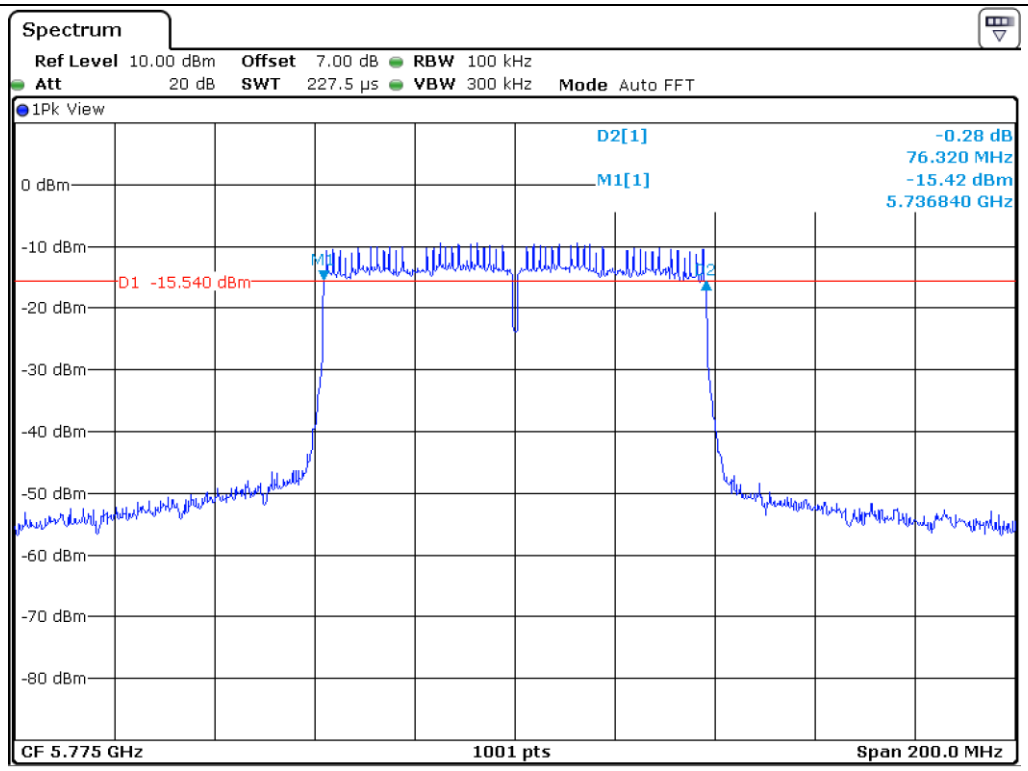
8.7.1 Test data for Antenna 0

-. Test Date : May 23, 2019 ~ July 09, 2019

-. Test Result : Pass

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

Tested by: Sieon Lee / Assistant Manager



Low Channel (5 775 MHz)

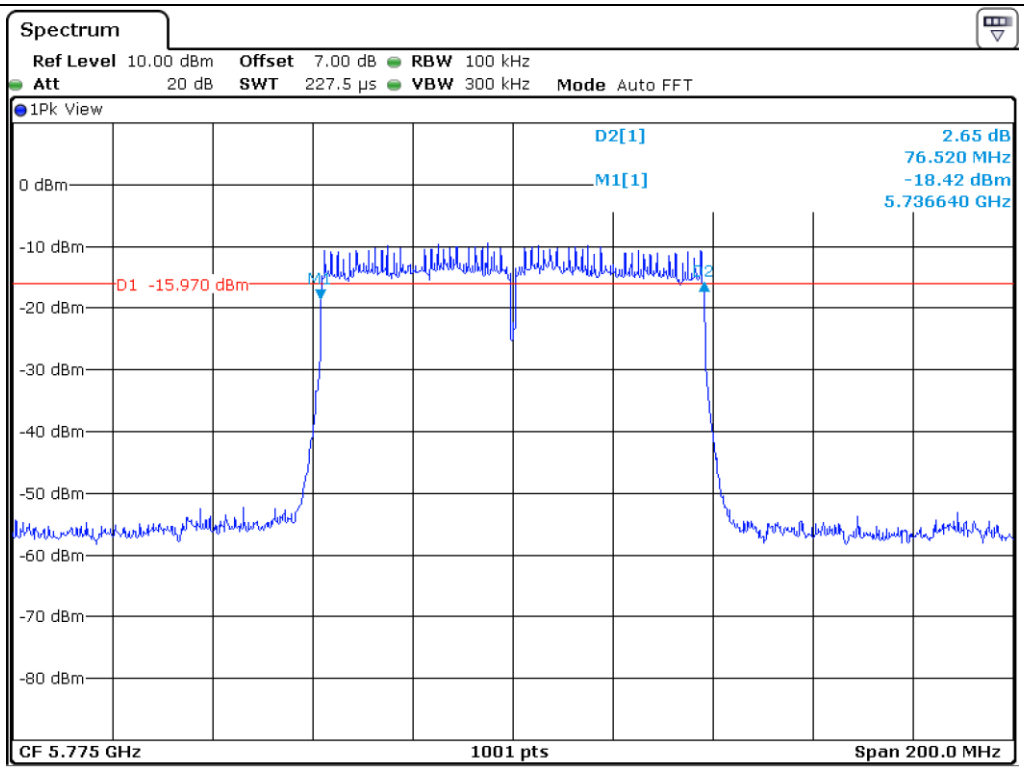
8.7.2 Test data for Antenna 1

-. Test Date : May 23, 2019 ~ July 09, 2019

-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 725 ~ 5 850	Middle	5 775.00	76.52

Tested by: Sieon Lee / Assistant Manager



Low Channel (5 775 MHz)

9. MAXIMUM PEAK OUTPUT POWER

9.1 Operating environment

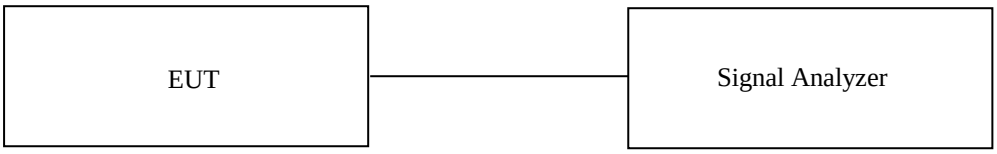
Temperature : 24 ℃

Relative humidity : 48 % R.H.

9.2 Test set-up

The maximum peak output power was measured with the Signal Analyzer connected to the antenna output of the EUT. The Signal Analyzer is measured when the EUT is transmitting at the appropriate center frequency its maximum power control level as described in Section E. 3. (KDB 789033 D02 General UNII Test Procedures New Rules v01r04).

Since this measurement is made only during the ON time of the transmitter, no duty cycle correction is required.



9.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ -	FSV30	Rohde & Schwarz	Signal Analyzer	101200	Aug. 23, 2018 (1Y)

All test equipment used is calibrated on a regular basis.

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9.4 Test data for 802.11a WLAN Mode

9.4.1 Test data for Antenna 0

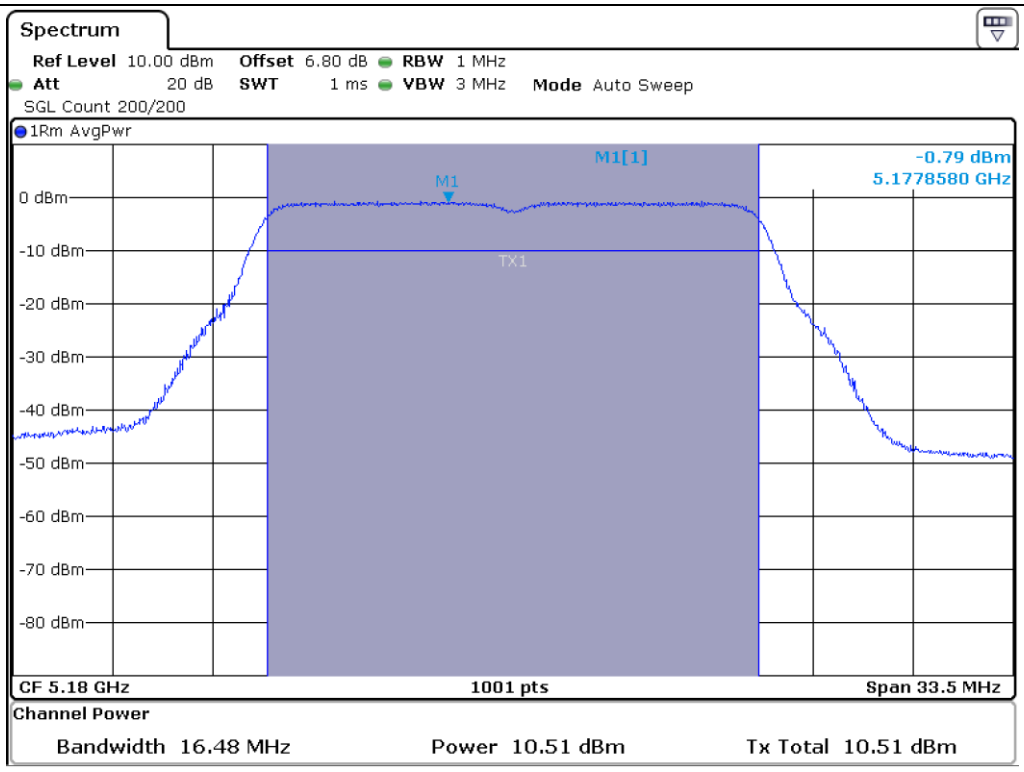
-. Test Date : May 23, 2019 ~ July 09, 2019

-. Test Result : Pass

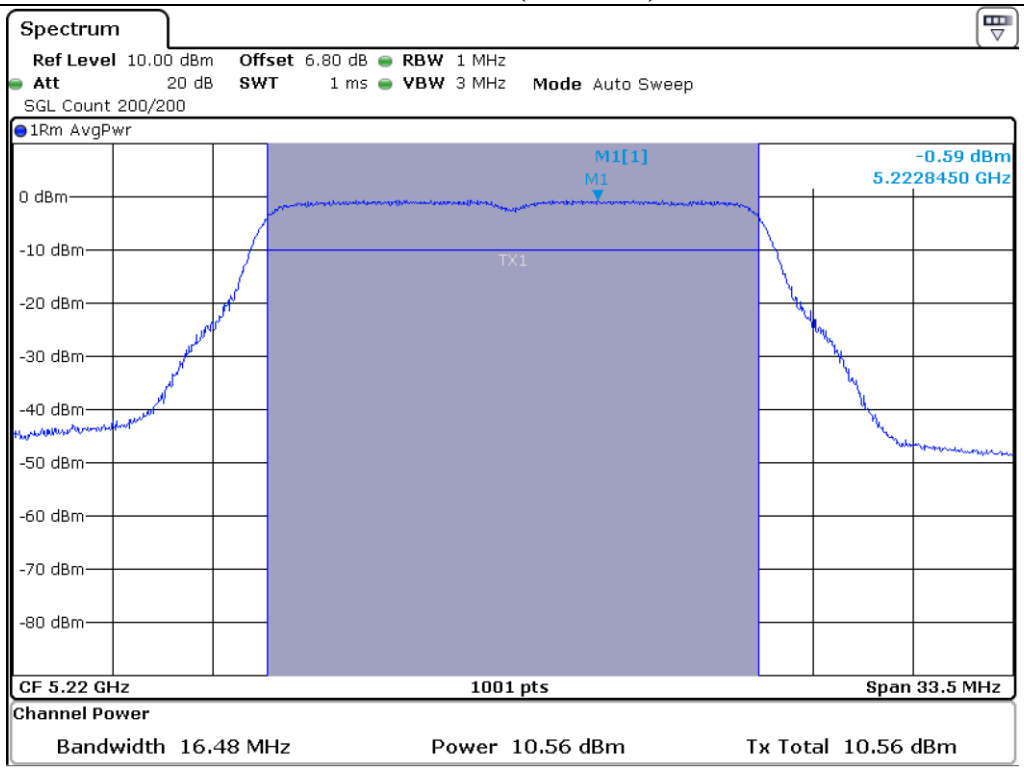
Frequency Range (MHz)	Channel	Frequency (MHz)	Measured Value (dBm)	Duty Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)
5 150 ~ 5 250	Low	5 180.00	10.51	0.33	10.84	24.00	13.16
	Middle	5 220.00	10.56	0.33	10.89	24.00	13.11
	High	5 240.00	10.64	0.33	10.97	24.00	13.03
5 725 ~ 5 850	Low	5 745.00	10.29	0.33	10.62	30.00	19.38
	Middle	5 785.00	10.29	0.33	10.62	30.00	19.38
	High	5 825.00	10.05	0.33	10.38	30.00	19.62

Remark : Result = Measured Value + Duty Fator

Tested by: Sieon Lee / Assistant Manager



Low Channel (5 180 MHz)



Middle Channel (5 220 MHz)

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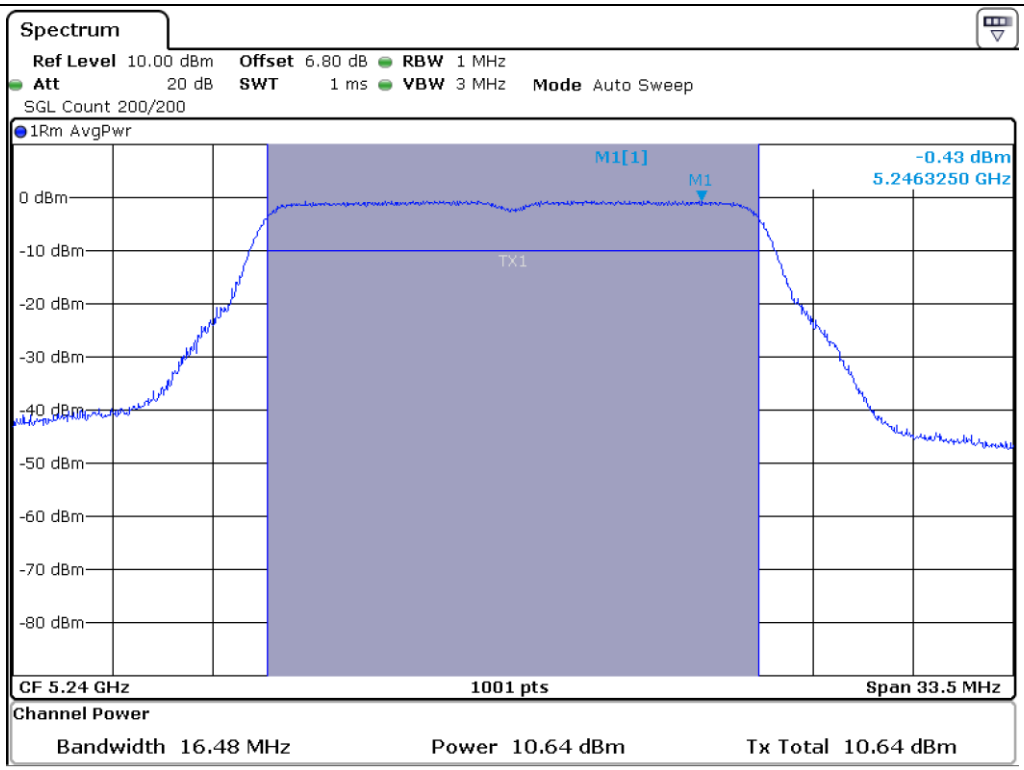
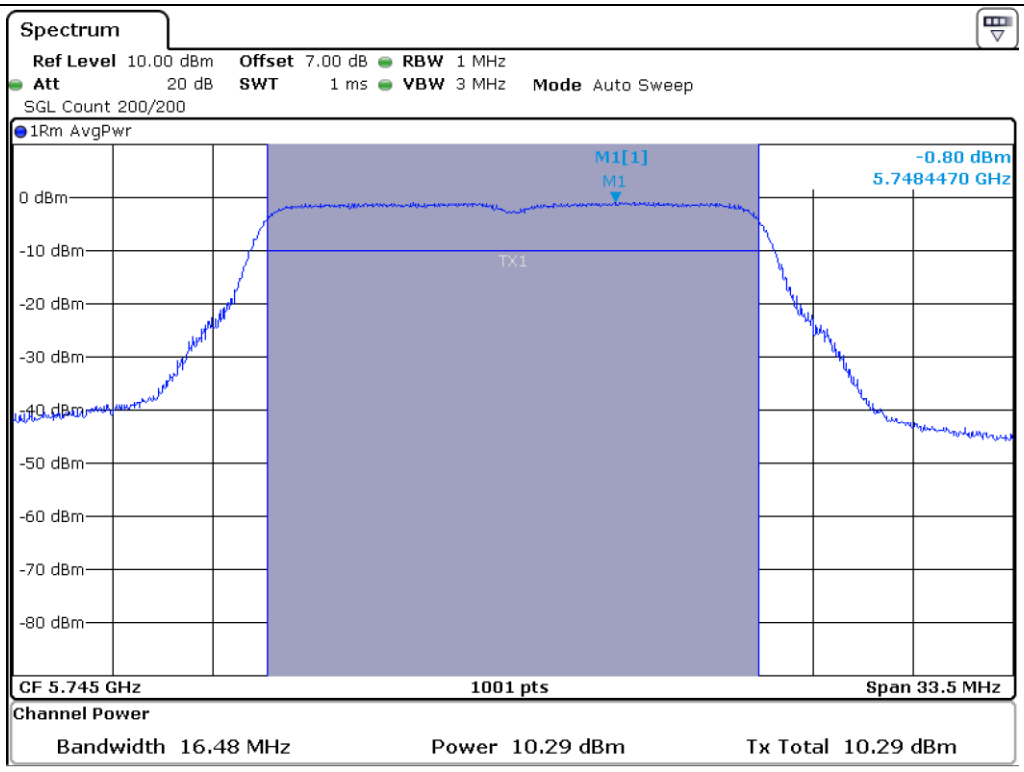
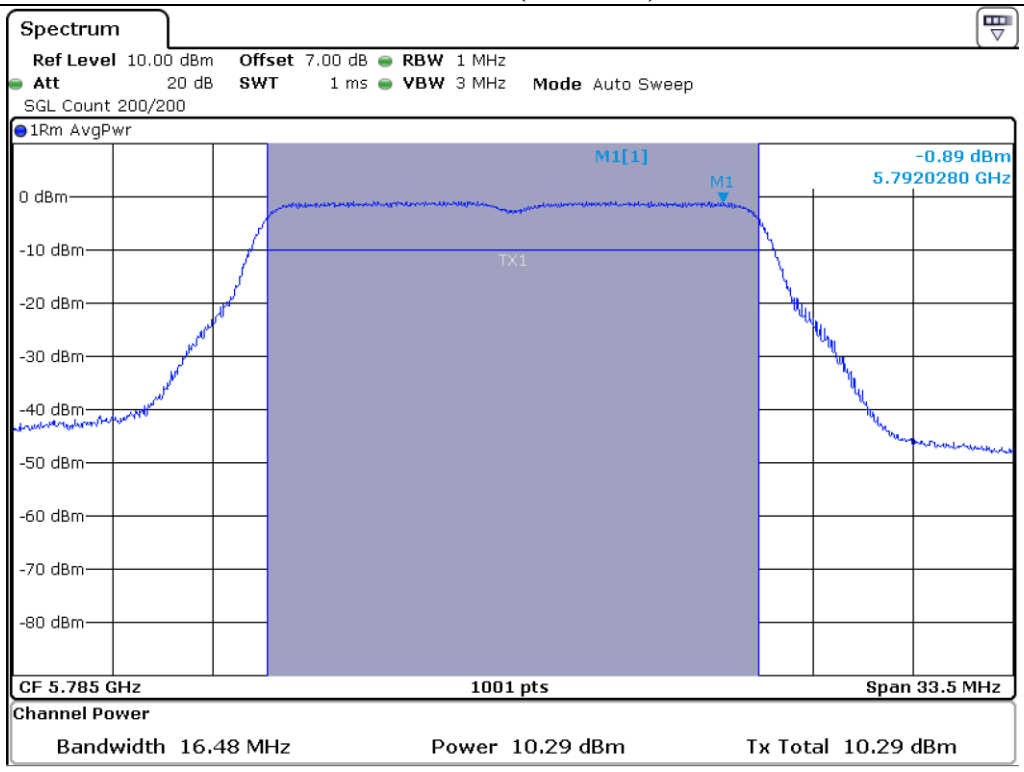


High Channel (5 240 MHz)



Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)

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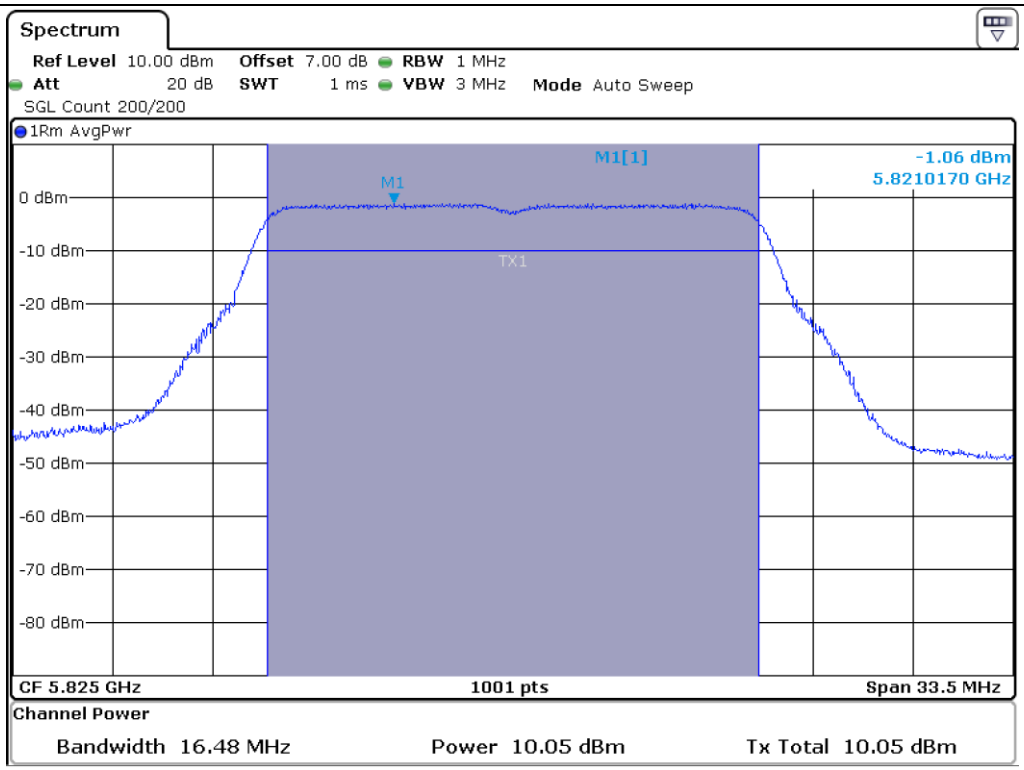


High Channel (5 825 MHz)

9.4.2 Test data for Antenna 1

-. Test Date : May 23, 2019 ~ July 09, 2019

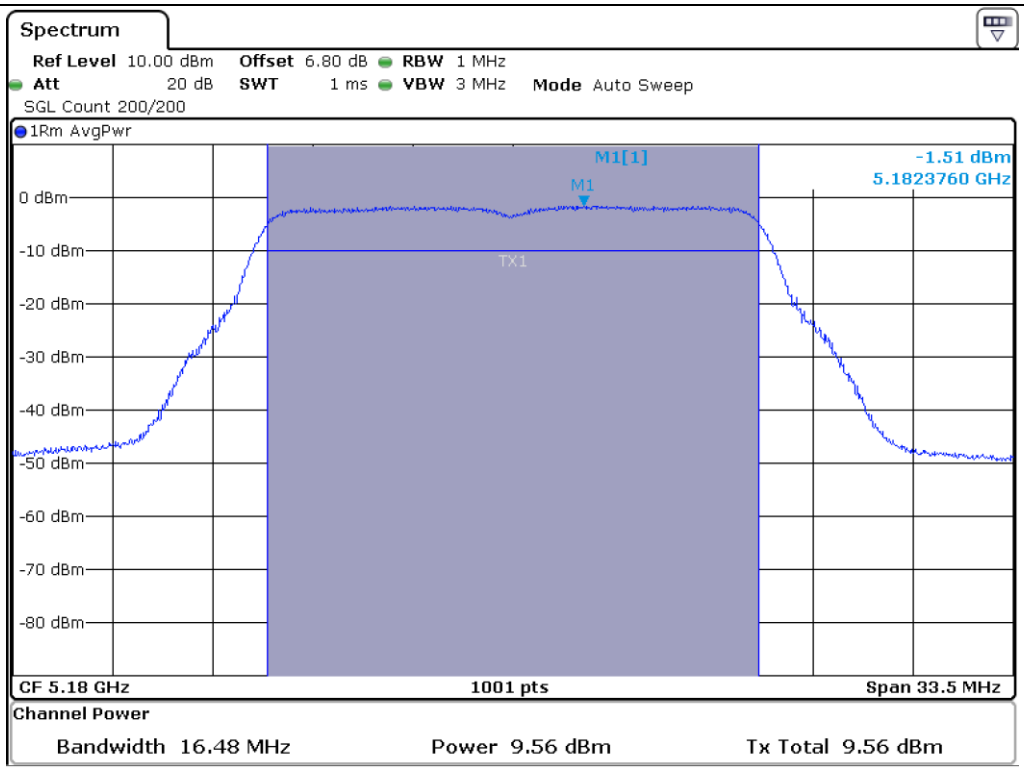
-. Test Result : Pass

Frequency Range (MHz)	Channel	Frequency (MHz)	Measured Value (dBm)	Duty Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)
5 150 ~ 5 250	Low	5 180.00	9.56	0.33	9.89	24.00	14.11
	Middle	5 220.00	9.68	0.33	10.01	24.00	13.99
	High	5 240.00	9.70	0.33	10.03	24.00	13.97
5 725 ~ 5 850	Low	5 745.00	8.95	0.33	9.28	30.00	20.72
	Middle	5 785.00	8.65	0.33	8.98	30.00	21.02
	High	5 825.00	9.15	0.33	9.48	30.00	20.52

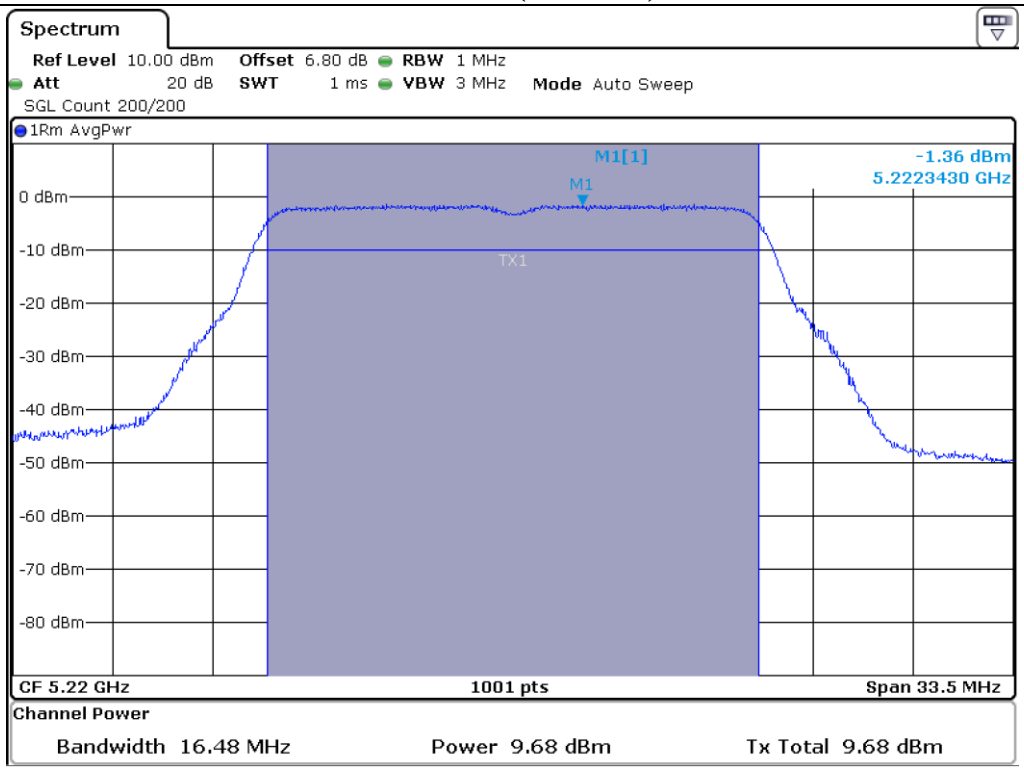
Remark : Result = Measured Value + Duty Fator

Tested by: Sieon Lee / Assistant Manager

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

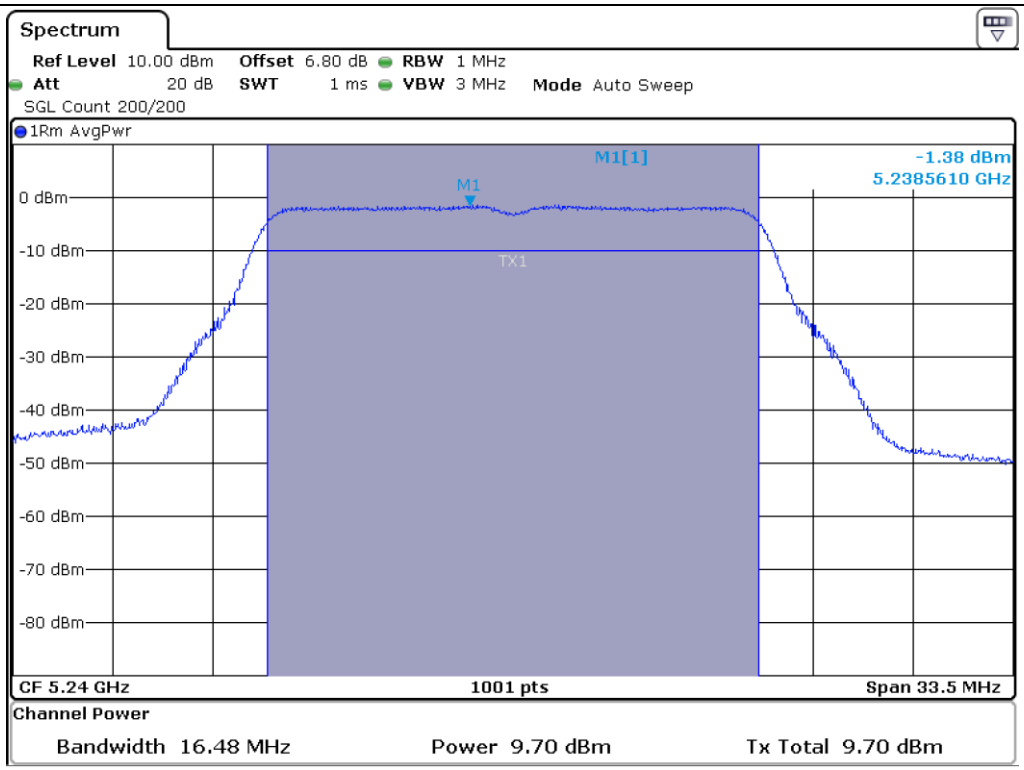


Low Channel (5 180 MHz)

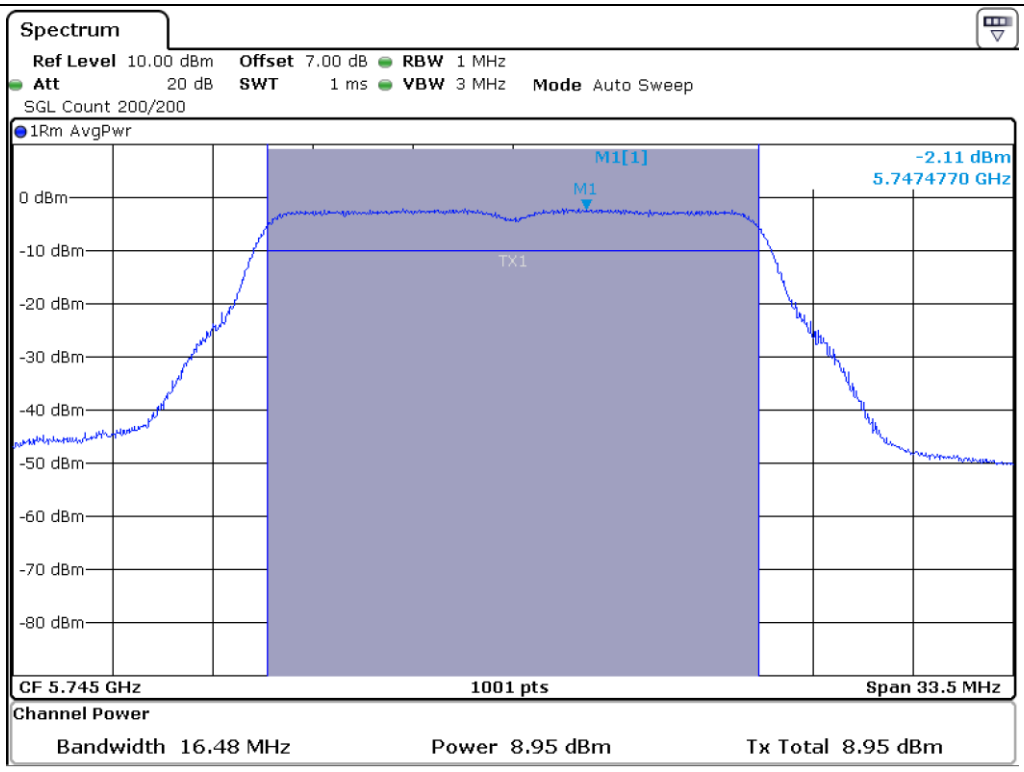


Middle Channel (5 220 MHz)

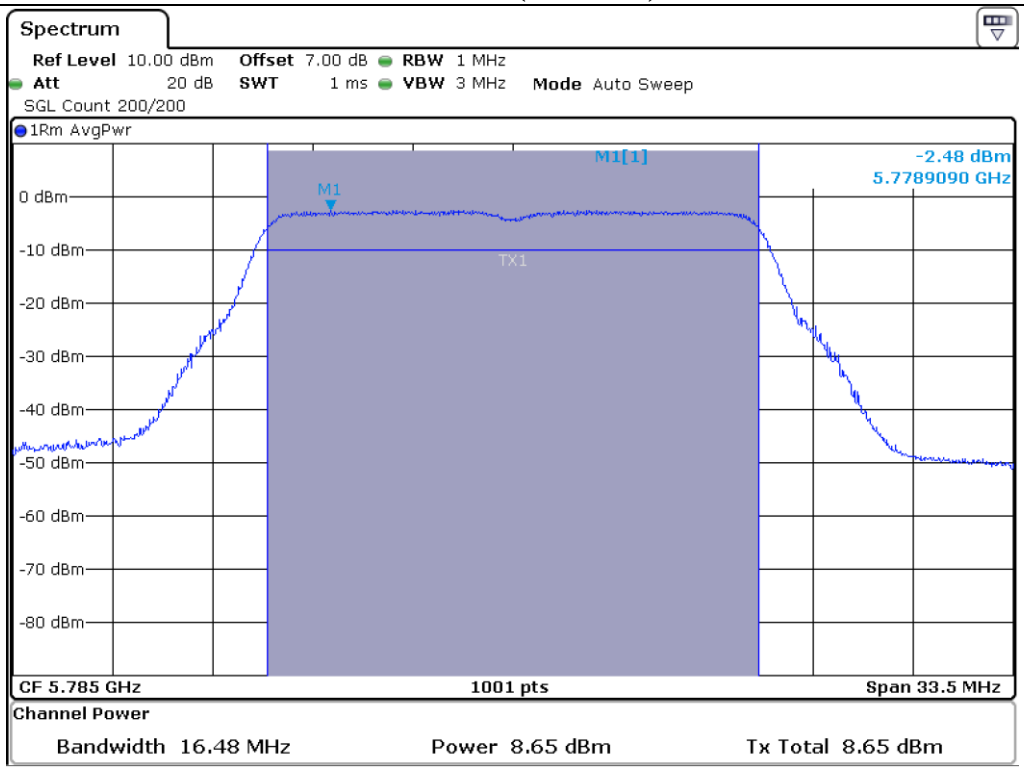
ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



High Channel (5 240 MHz)



Low Channel (5 745 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)