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

Test Report No.	**: W16NR-D019**
AGR No.	**: A16OA-174**
Applicant	**: CREMOTECH Co., Ltd.**
Address	**: 401 202 Yemiji Bldg, 31, Hwangsaeul-ro 258beon-gil, Bundang-gu, Gyeonggi-do, Seongnam-si, South Korea**
Manufacturer	**: CREMOTECH Co., Ltd.**
Address	**: 401 202 Yemiji Bldg, 31, Hwangsaeul-ro 258beon-gil, Bundang-gu, Gyeonggi-do, Seongnam-si, South Korea**
Type of Equipment	**: Laser Beam Pro**
FCC ID.	**: 2AEQF-CLB2-UHXW**
Model Name	**: CLB2-UHXW**
Serial number	**: N/A**
Total page of Report	**: 65 pages (including this page)**
Date of Incoming	**: October 31, 2016**
Date of issue	**: November 18, 2016**

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: Ki-Hong, Nam / Asst, Chief Engineer, ONETECH Corp.

Approved by: Keun-Young, Choi / Vice President, 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)

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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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Revision History

Issued Report No.	Issued Date	Revisions	Effect Section
W16NR-D019	November 18, 2016	Initial Issue	All

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1. VERIFICATION OF COMPLIANCE

Applicant	: CREMOTECH Co., Ltd.
Address	: 401 202 Yemiji Bldg, 31, Hwangsaeul-ro 258beon-gil, Bundang-gu, Gyeonggi-do, Seongnam-si, South Korea
Contact Person	: Yoon-Ho, Lee / Director
Telephone No.	: +82-10-8650-9543
FCC ID	: 2AEQF-CLB2-UHXW
Model Name	: CLB2-UHXW
Serial Number	: N/A
Date	: November 18, 2016

EQUIPMENT CLASS	Unlicensed National Information infrastructure(UNII)
E.U.T. DESCRIPTION	Laser Beam Pro
THIS REPORT CONCERNS	Original Grant
MEASUREMENT PROCEDURES	ANSI C63.10: 2013
TYPE OF EQUIPMENT TESTED	Pre-Production
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	Certification
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	FCC PART 15 SUBPART E Section 15.407
Modifications on the Equipment to Achieve Compliance	None
Final Test was Conducted On	3 m, Semi Anechoic Chamber

-. The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

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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(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 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-4112/ C-4617/ 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 CREMOTECH Co., Ltd., Model CLB2-UHXW (referred to as the EUT in this report) is a Laser Beam Pro. Product specification information described herein was obtained from product data sheet or user's manual.

DEVICE TYPE	Laser Beam Pro		
FREQUENCY RANGE	Bluetooth LE	2 402 MHz ~ 2 480 MHz	
	Bluetooth	2 402 MHz ~ 2 480 MHz	
	WLAN 2.4 GHz Band	2 412 MHz ~ 2 462 MHz (802.11b/g/n(HT20))	
	WLAN 5 GHz Band	5 150 MHz ~ 5 250 MHz Band	5 180 MHz ~ 5 240 MHz (802.11n(HT20))
		5 725 MHz ~ 5 850 MHz Band	5 745 MHz ~ 5 825 MHz (802.11n(HT20))
MAX. RF OUTPUT POWER	Bluetooth LE	7.62 dBm	
	Bluetooth	1 Mbps	11.62 dBm
		2 Mbps	10.75 dBm
		3 Mbps	11.11 dBm
	WLAN 2.4 GHz Band	Wi-Fi 802.11b (15.39 dBm) Wi-Fi 802.11g (14.75 dBm) Wi-Fi 802.11n_20 MHz (13.86 dBm)	
	WLAN 5 GHz Band	5 150 MHz ~ 5 250 MHz Band	Wi-Fi 802.11a (9.96 dBm) Wi-Fi 802.11n_20 MHz (8.67 dBm)
		5 725 MHz ~ 5 850 MHz Band	Wi-Fi 802.11a (10.02 dBm) Wi-Fi 802.11n_20 MHz (8.70 dBm)
MODULATION TYPE	Bluetooth	GFSK for 1 Mbps, DQPSK for 2 Mbps, 8-DPSK for 3 Mbps	
	Bluetooth LE	GFSK	
	WLAN 2.4 GHz Band	DSSS Modulation(DBPSK/DQPSK/CCK)	
	WLAN 5 GHz Band	OFDM Modulation(BPSK/QPSK/16QAM/64QAM)	
Antenna Gain	Bluetooth Bluetooth LE WLAN 2.4 GHz Band	1.28 dBi	
	WLAN 5 GHz Band	5 150 MHz ~ 5 250 MHz Band	3.59 dBi
		5 725 MHz ~ 5 850 MHz Band	-0.1 dBi
List of each Osc. or crystal Freq.(Freq. >= 1 MHz)	32.768 kHz, 12 MHz, 24 MHz, 26 MHz		

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

-. None

4. EUT MODIFICATIONS

-. None

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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	CREMOTECH Co., Ltd.	C100_R0R1_MAIN_REV0.4	N/A
Sub Board (1)	N/A	C100SUB_VER0.5	N/A
Sub Board (2)	Cremotech Co., Ltd.	LD 20160929	N/A
Speaker	N/A	N/A	N/A
Battery	N/A	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
CLB2-UHXW	CREMOTECH Co., Ltd.	Laser Beam Pro (EUT)	-
CW0504000	ShenZhen Cenwell Technology Co., Ltd.	Adapter	EUT

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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.

5 150 MHz ~ 5 250 MHz Band

Modulation & Channel selected	DATA RATE	OUTPUT POWER
802.11 a (Low Channel)	6 Mbps	9.75
	9 Mbps	9.51
	12 Mbps	9.42
	18 Mbps	9.28
	24 Mbps	9.22
	36 Mbps	9.06
	48 Mbps	8.88
	54 Mbps	8.79
HT 20 (Low Channel)	6.5 Mbps	8.32
	13 Mbps	8.18
	19.5 Mbps	8.09
	26 Mbps	7.95
	39 Mbps	7.72
	52 Mbps	7.57
	58.5 Mbps	7.49
	65 Mbps	7.35

The worse case data rate for each modulation is determined 6 Mbps for IEEE 802.11a, 6.5 Mbps for HT20.

- 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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5 725 MHz ~ 5 850 MHz Band

Modulation & Channel selected	DATA RATE	OUTPUT POWER
802.11 a (Low Channel)	6 Mbps	10.02
	9 Mbps	9.89
	12 Mbps	9.78
	18 Mbps	9.58
	24 Mbps	9.49
	36 Mbps	9.37
	48 Mbps	9.15
	54 Mbps	9.07
HT 20 (Low Channel)	6.5 Mbps	8.6
	13 Mbps	8.44
	19.5 Mbps	8.28
	26 Mbps	8.2
	39 Mbps	8.01
	52 Mbps	7.83
	58.5 Mbps	7.75
	65 Mbps	7.63

The worse case data rate for each modulation is determined 6 Mbps for IEEE 802.11a, 6.5 Mbps for HT20.

- 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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5.4 Configuration of Test System

Line Conducted Test: The jig board of 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.

5.5 Antenna Requirement

For intentional device, according to section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

Antenna Construction:

The transmitter antenna of the EUT is 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

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

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7. MIMIMUM 26 dB BANDWIDTH

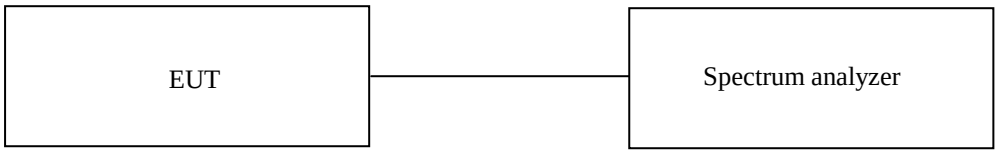
7.1 Operating environment

Temperature : 21.8 ℃

Relative humidity : 44.0 % 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.
■ -	FSV40	Rohde & Schwarz	Signal Analyzer	101009	May. 31, 2016 (1Y)

All test equipment used is calibrated on a regular basis.

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7.4.1 Test data for 802.11a RLAN Mode

-. Test Date : November 07, 2016

-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180.00	18.58
	Middle	5 200.00	18.38
	High	5 240.00	18.53
5 725 ~ 5 850	Low	5 745.00	20.03
	Middle	5 785.00	19.73
	High	5 825.00	20.08

Tested by: Tae-Ho, Kim / Senior Engineer

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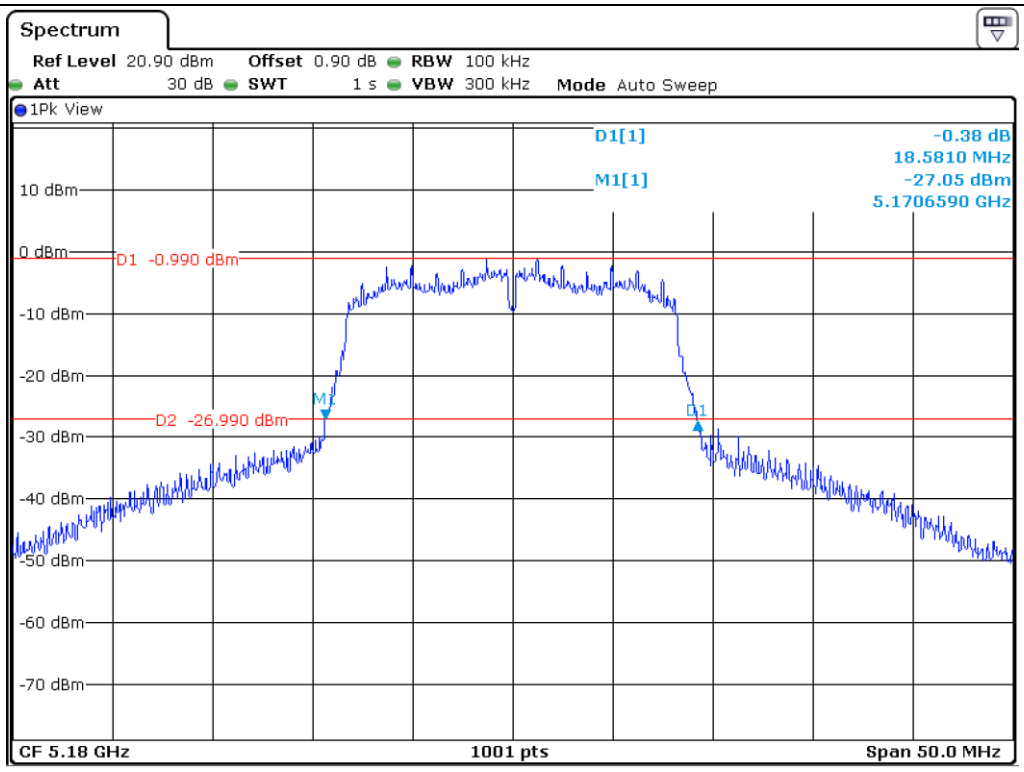
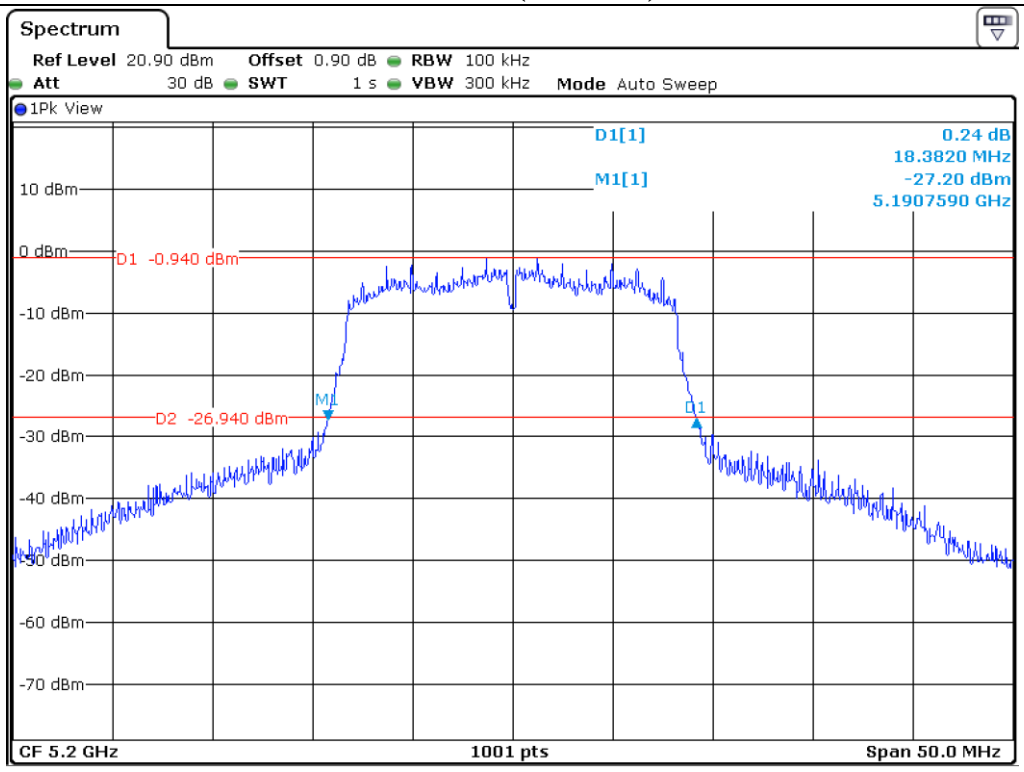


Low Channel (5 180 MHz)



Middle Channel (5 200 MHz)

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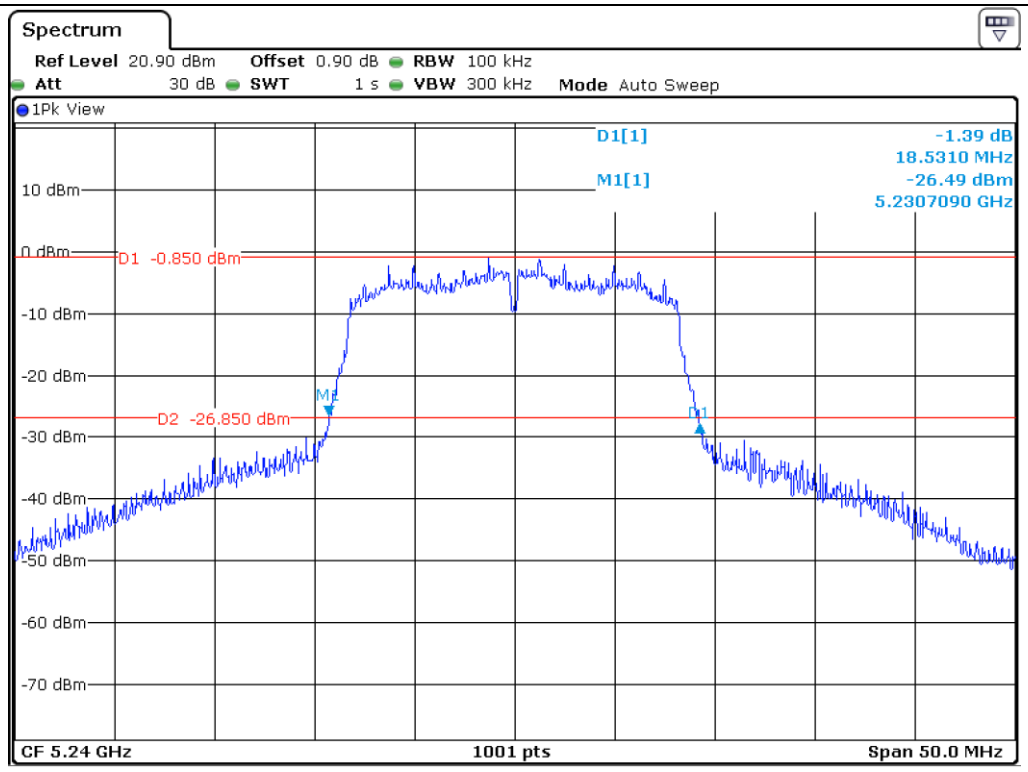
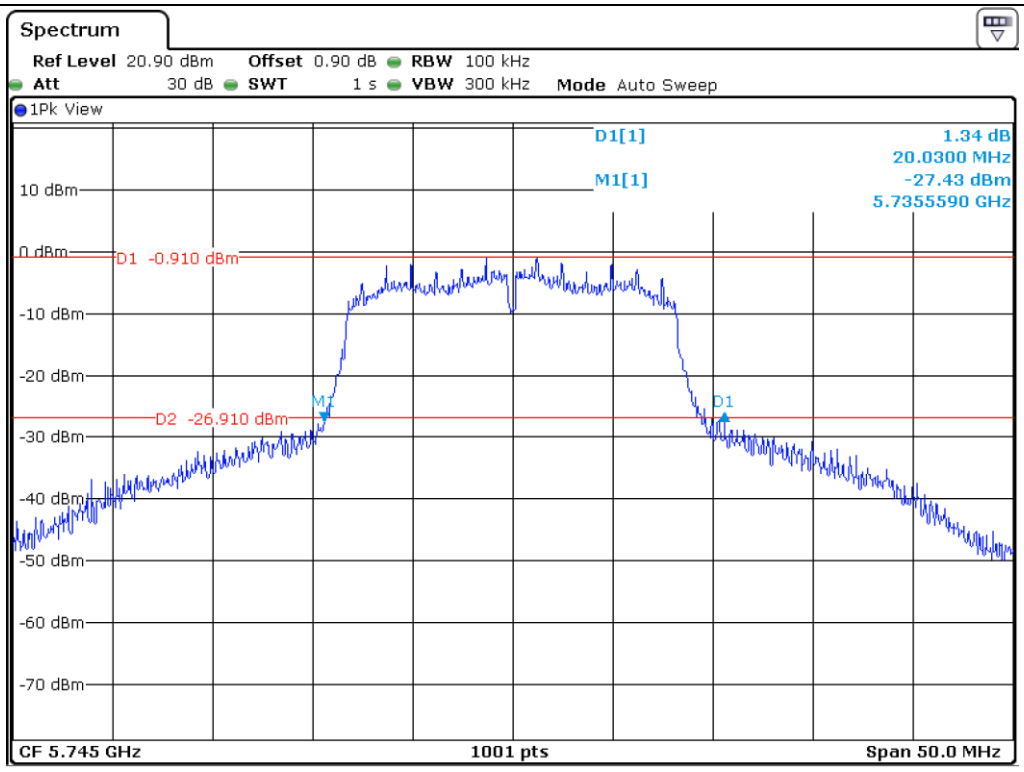
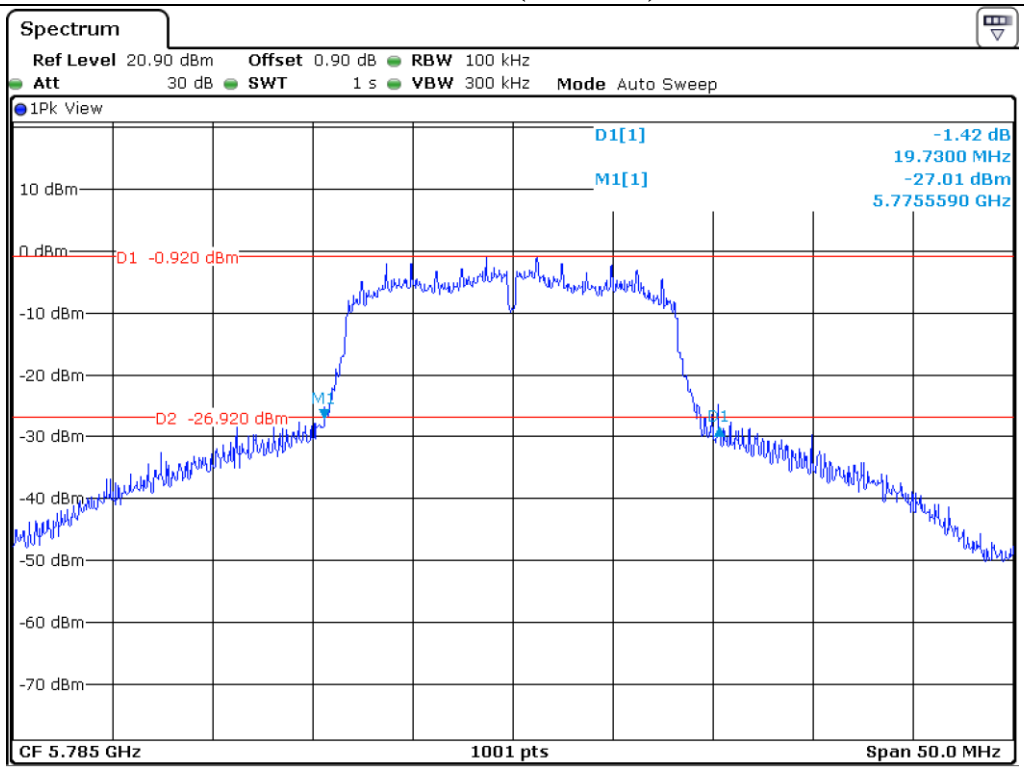


High Channel (5 240 MHz)



Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)

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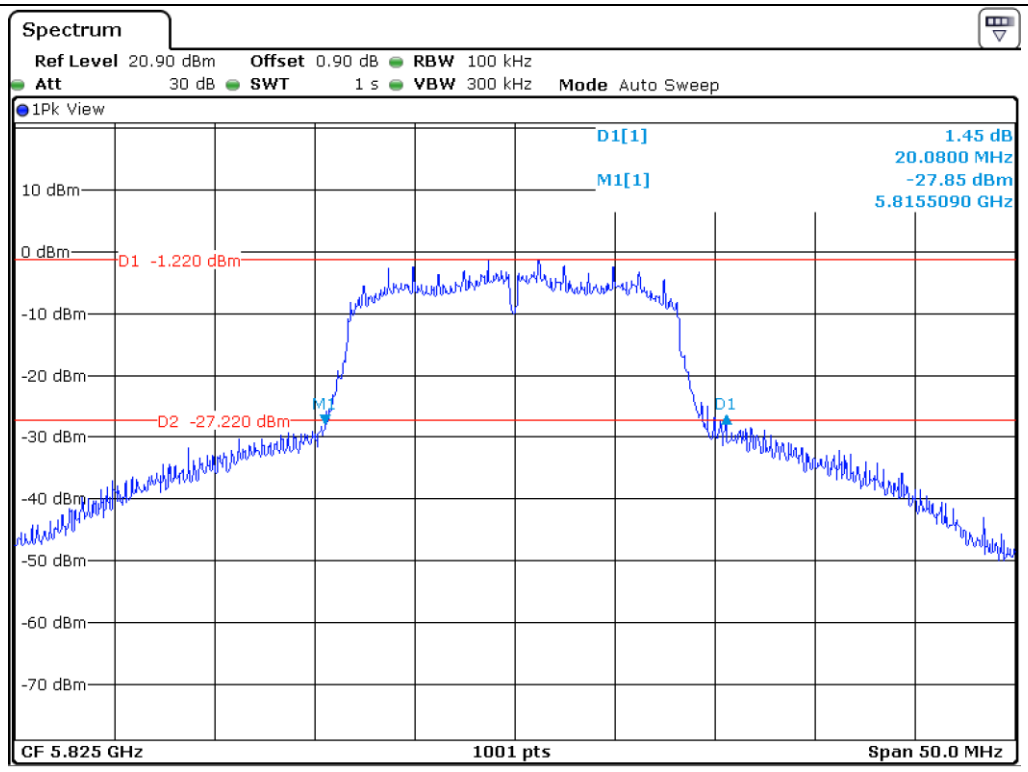

High Channel (5 825 MHz)

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7.4.2 Test data for 802.11n_HT20 RLAN Mode

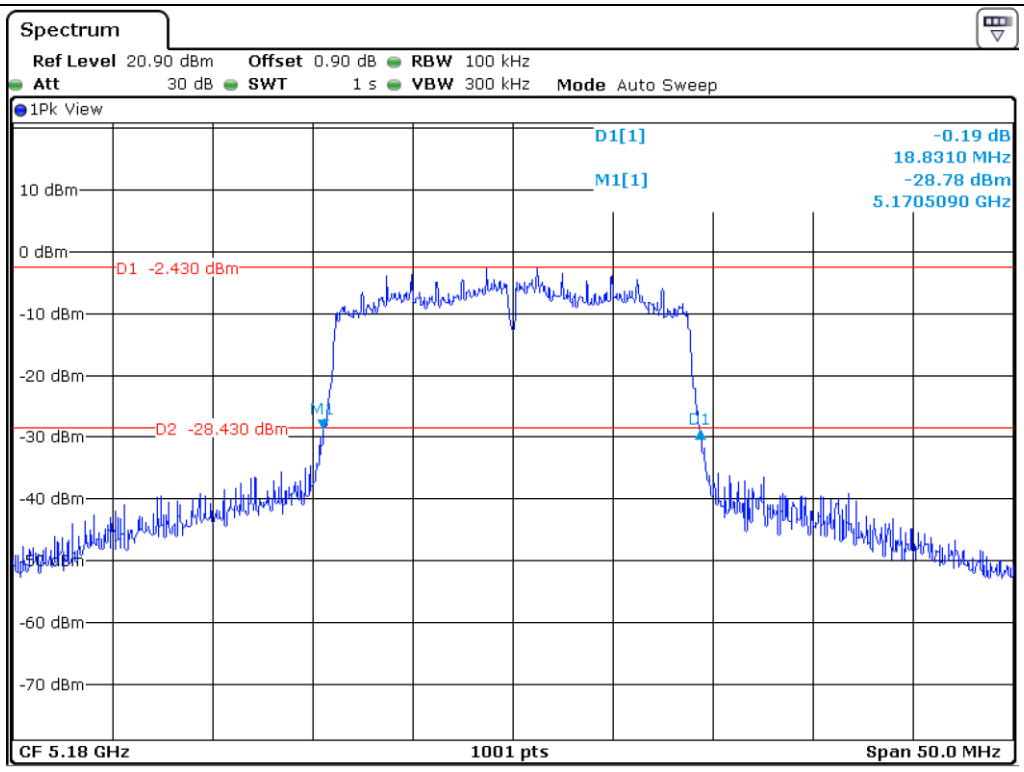
-. Test Date : November 07, 2016

-. Test Result : Pass

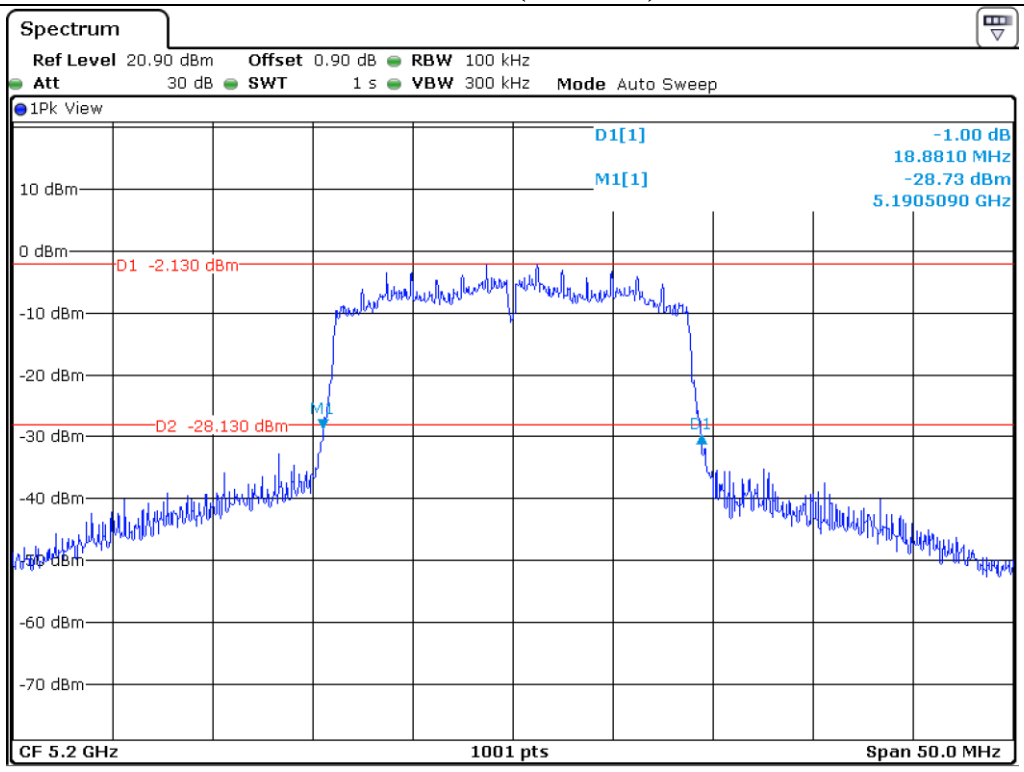
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Low	5 180.00	18.83
	Middle	5 200.00	18.88
	High	5 240.00	18.78
5 725 ~ 5 850	Low	5 745.00	19.73
	Middle	5 785.00	19.53
	High	5 825.00	19.23

Tested by: Tae-Ho, Kim / Senior Engineer

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 (5 200 MHz)

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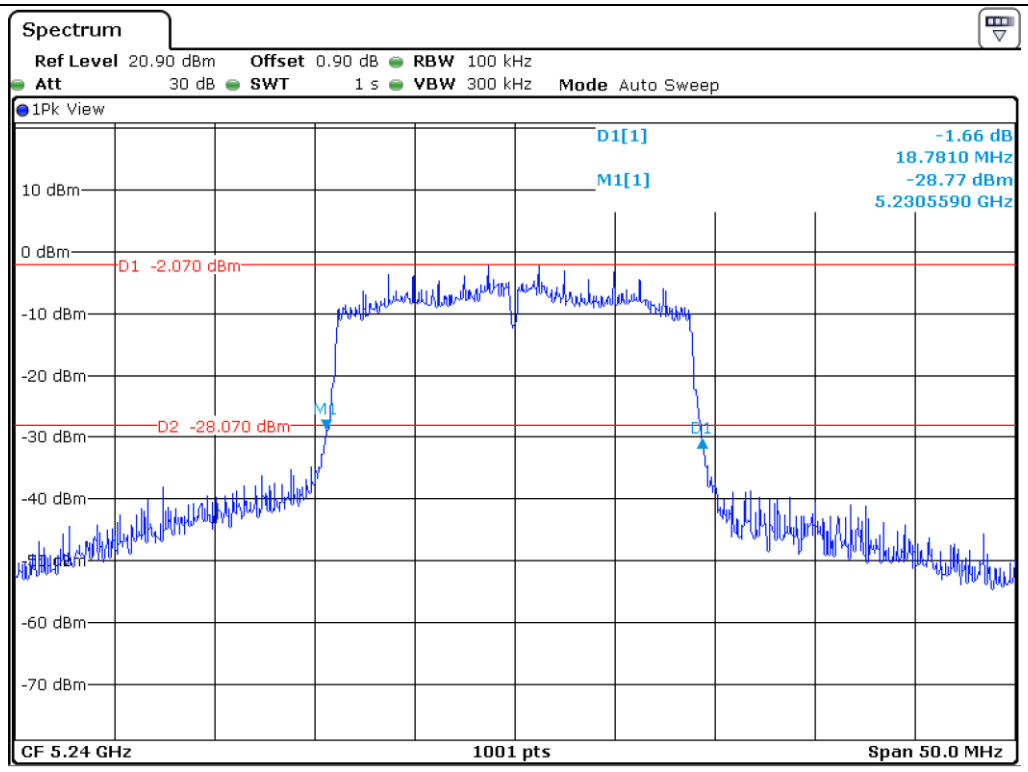

High Channel (5 240 MHz)

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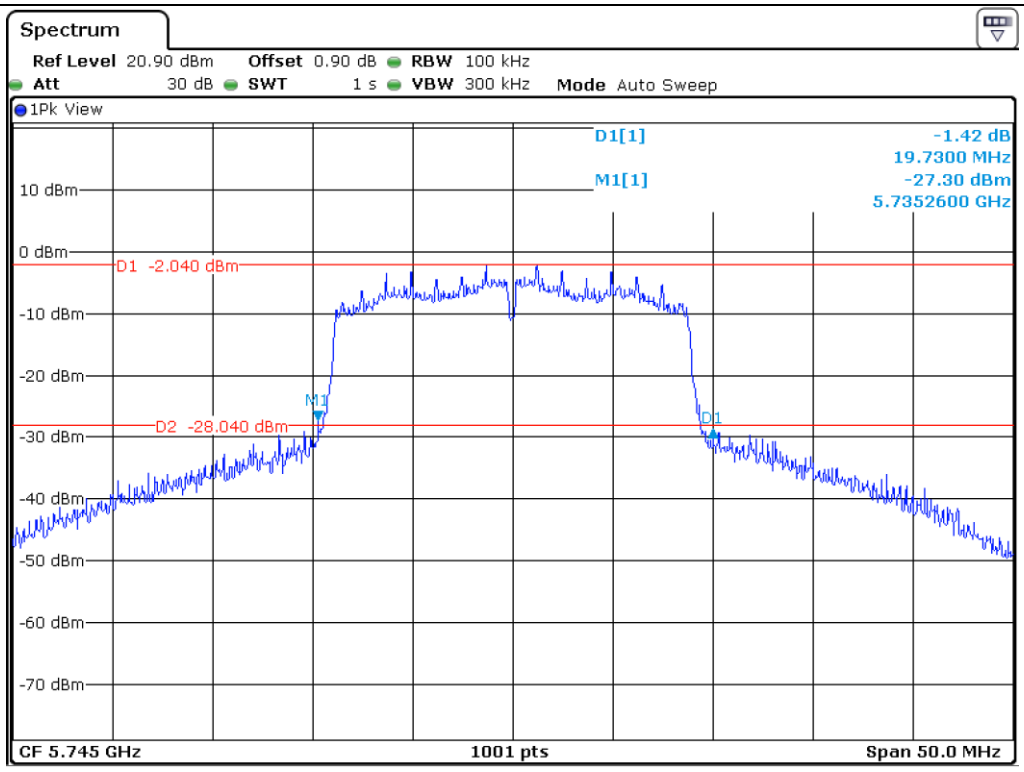
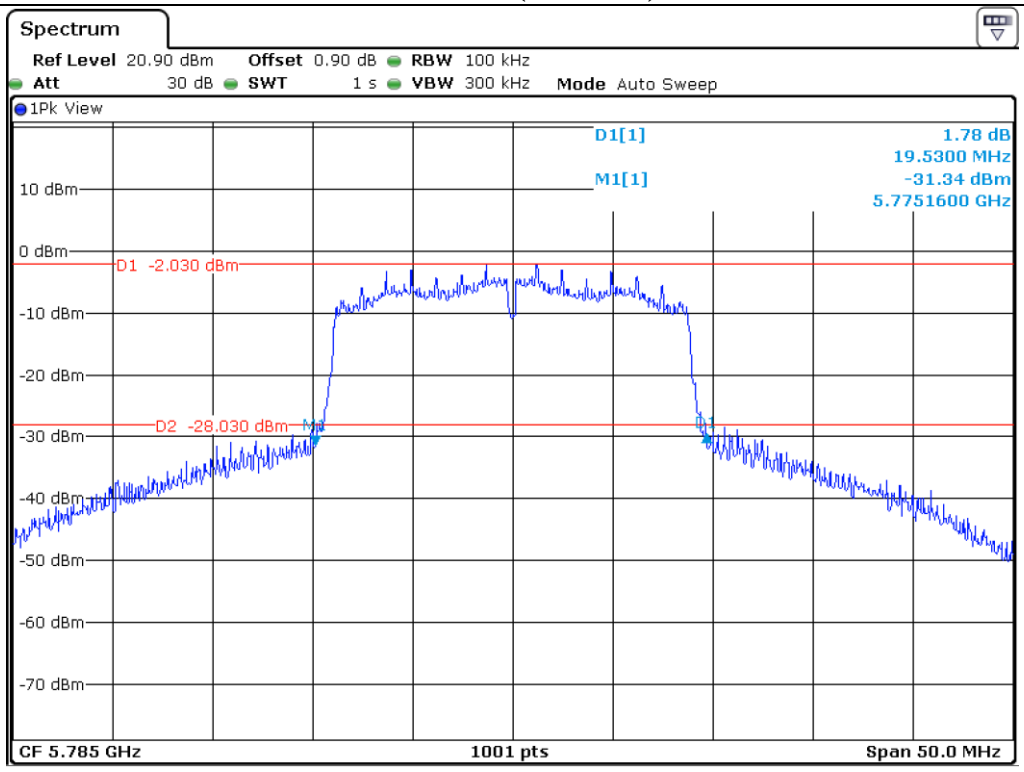


Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)

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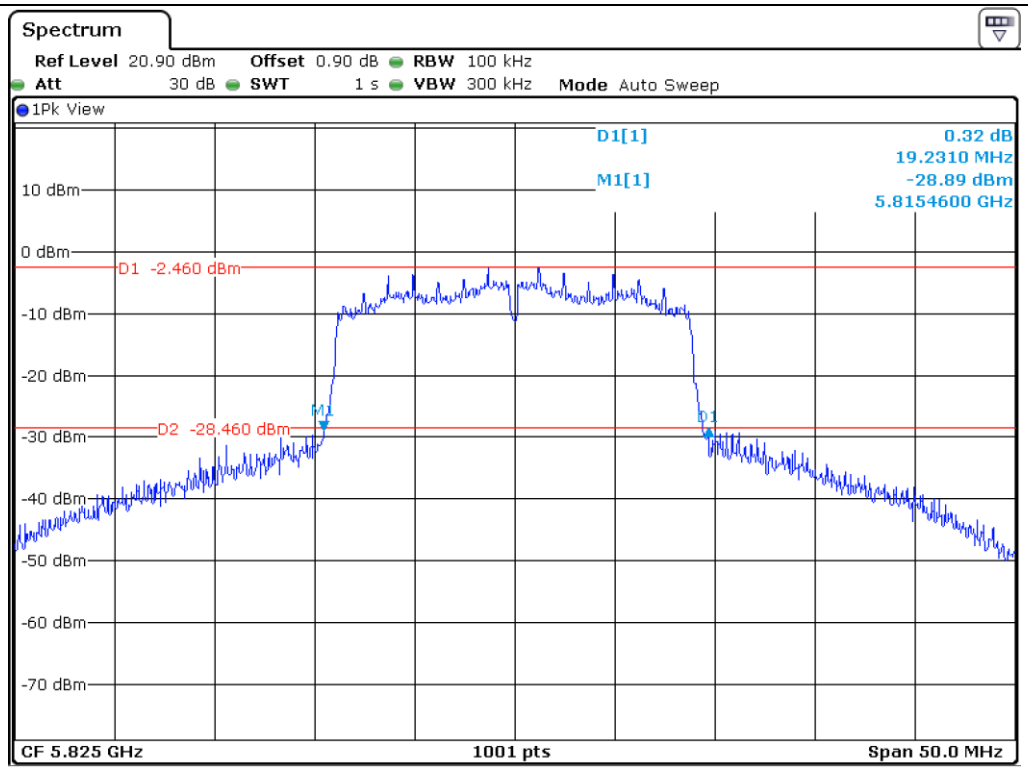

High Channel (5 825 MHz)

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8. MAXIMUM PEAK OUTPUT POWER

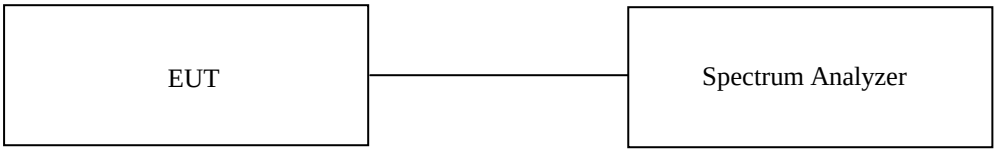
8.1 Operating environment

Temperature : 21.8 ℃

Relative humidity : 44.0 % R.H.

8.2 Test set-up

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



8.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ -	FSV40	Rohde & Schwarz	Signal Analyzer	101009	May. 31, 2016 (1Y)

All test equipment used is calibrated on a regular basis.

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8.4 Test data for 802.11a RLAN Mode

-. Test Date : November 07, 2016

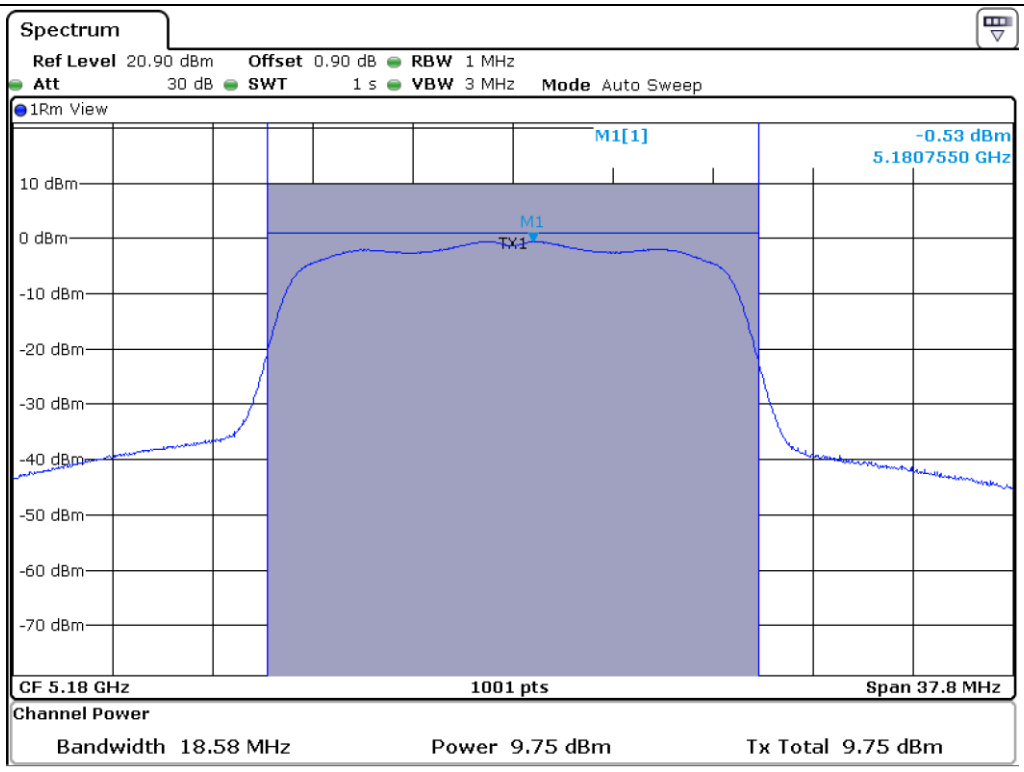
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 180.00	18.58	9.75	23.98	14.23
	Middle	5 200.00	18.38	9.91	23.98	14.07
	High	5 240.00	18.53	9.96	23.98	14.02
5 725 ~ 5 850	Low	5 745.00	20.03	10.02	23.98	13.96
	Middle	5 785.00	19.73	9.80	23.98	14.18
	High	5 825.00	20.08	9.51	23.98	14.47

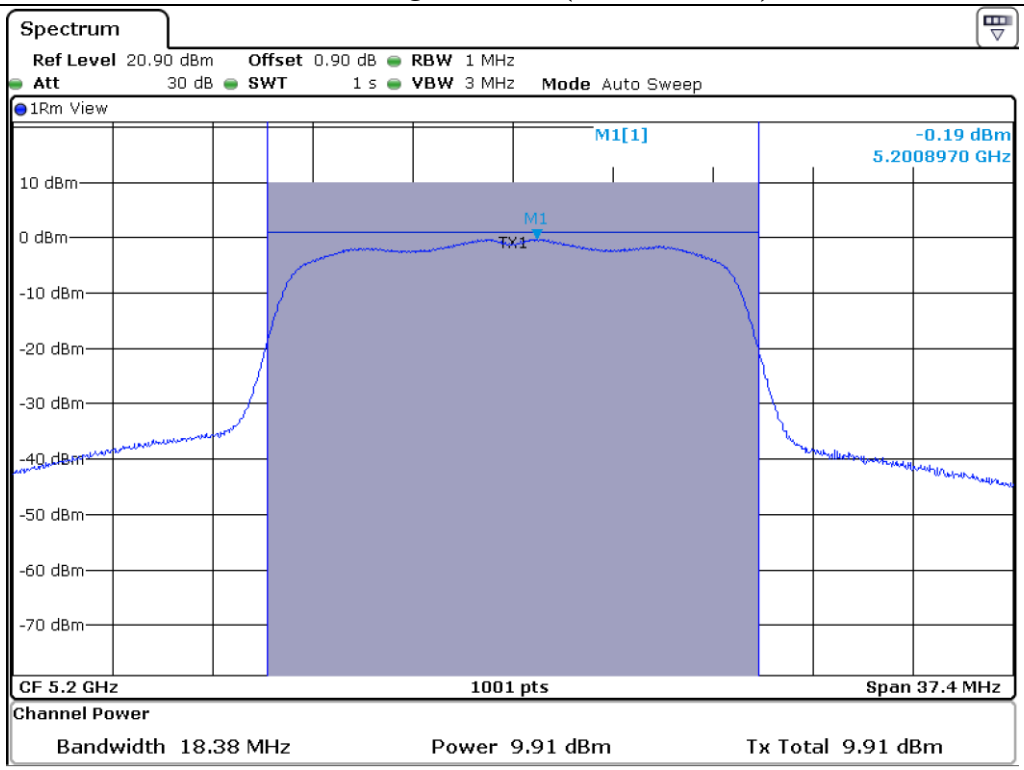
Remark: See next page for measurement data.

Tested by: Tae-Ho, Kim / Senior Engineer

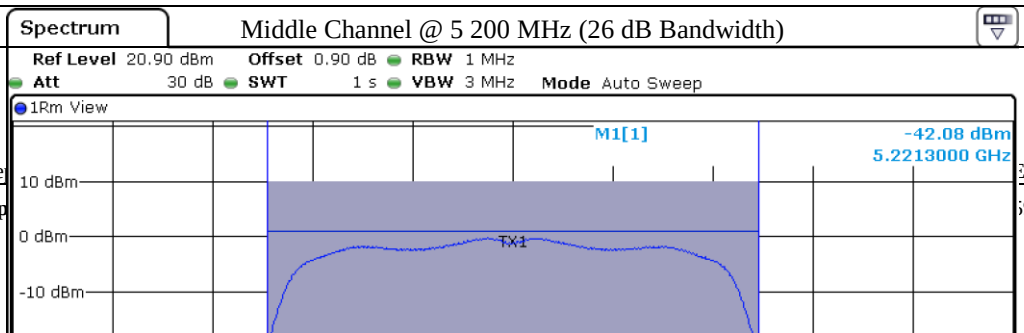
ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

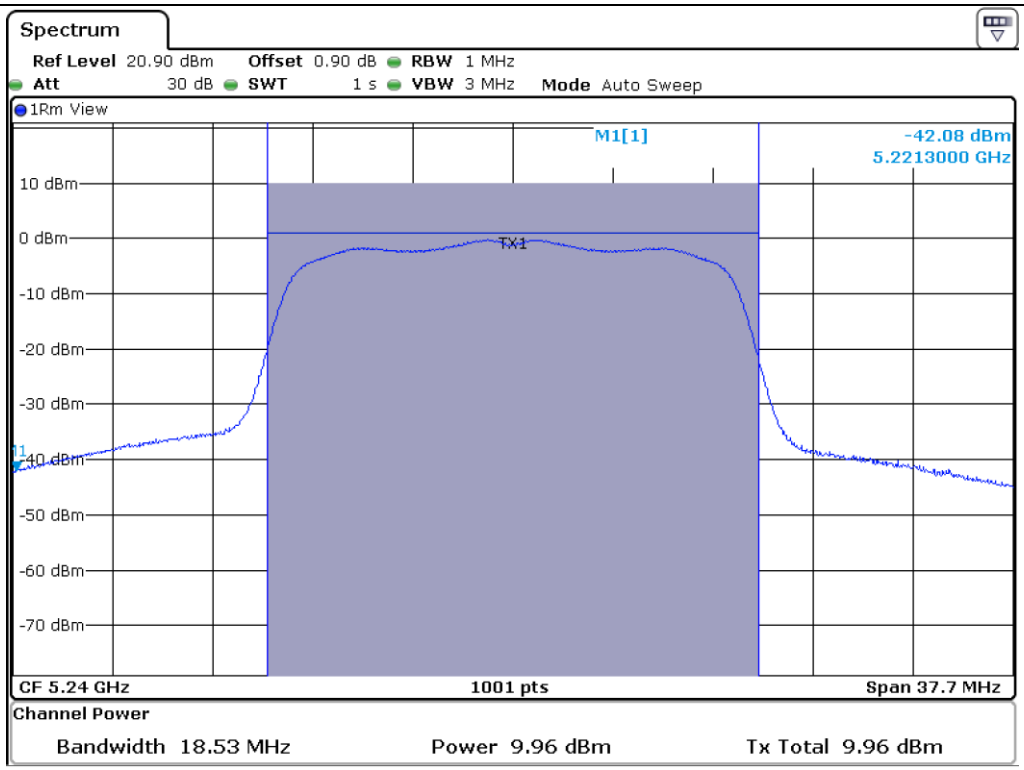


Low Channel @ 5 180 MHz (26 dB Bandwidth)

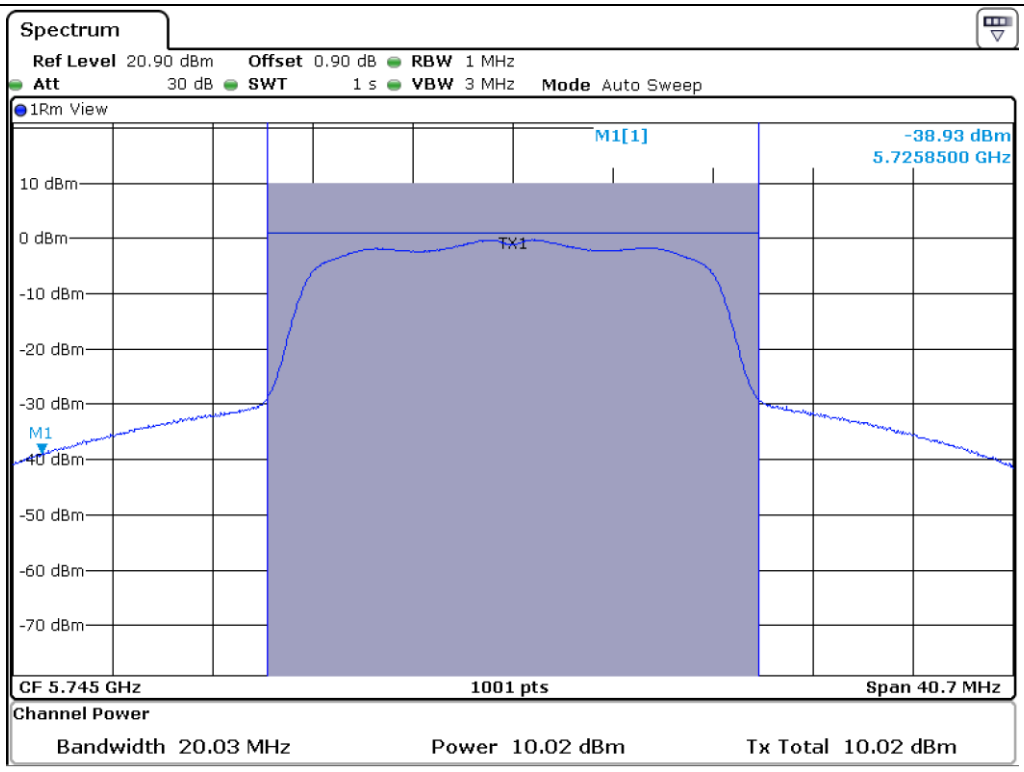


Middle Channel @ 5 200 MHz (26 dB Bandwidth)

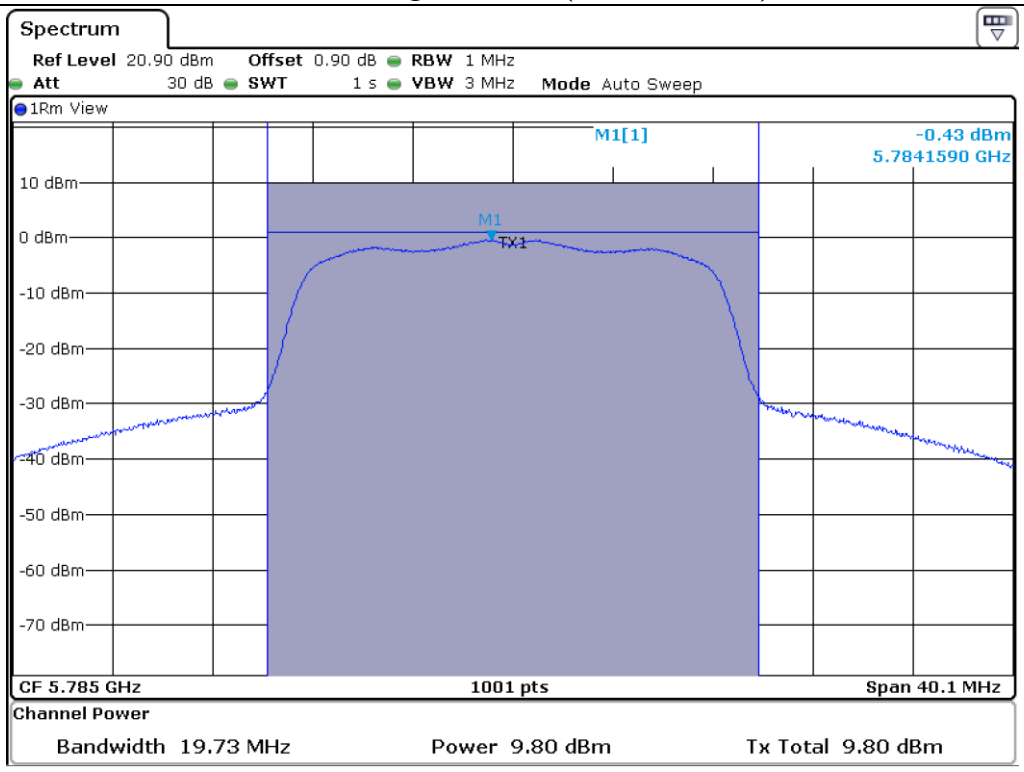




High Channel @ 5 240 MHz (26 dB Bandwidth)

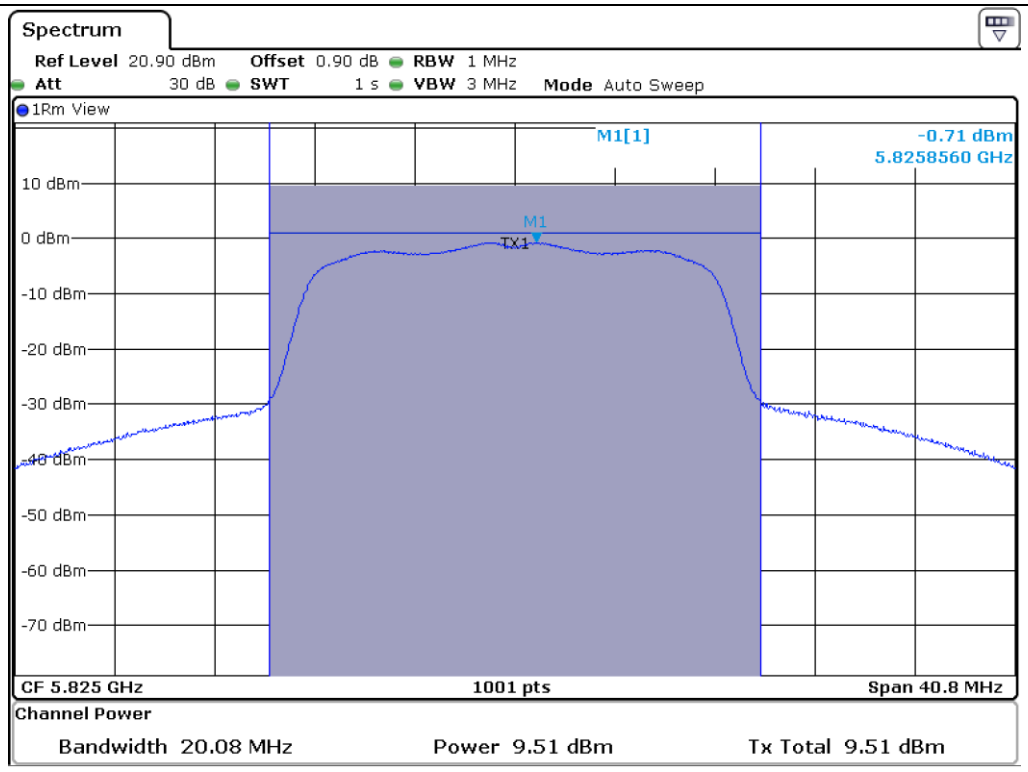


Low Channel @ 5 745 MHz (26 dB Bandwidth)



Middle Channel @ 5 785 MHz (26 dB Bandwidth)

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 (26 dB Bandwidth)

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

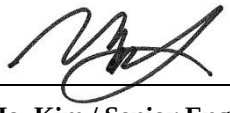
8.5 Test data for 802.11n_HT20 RLAN Mode

-. Test Date : November 07, 2016

-. Test Result : Pass

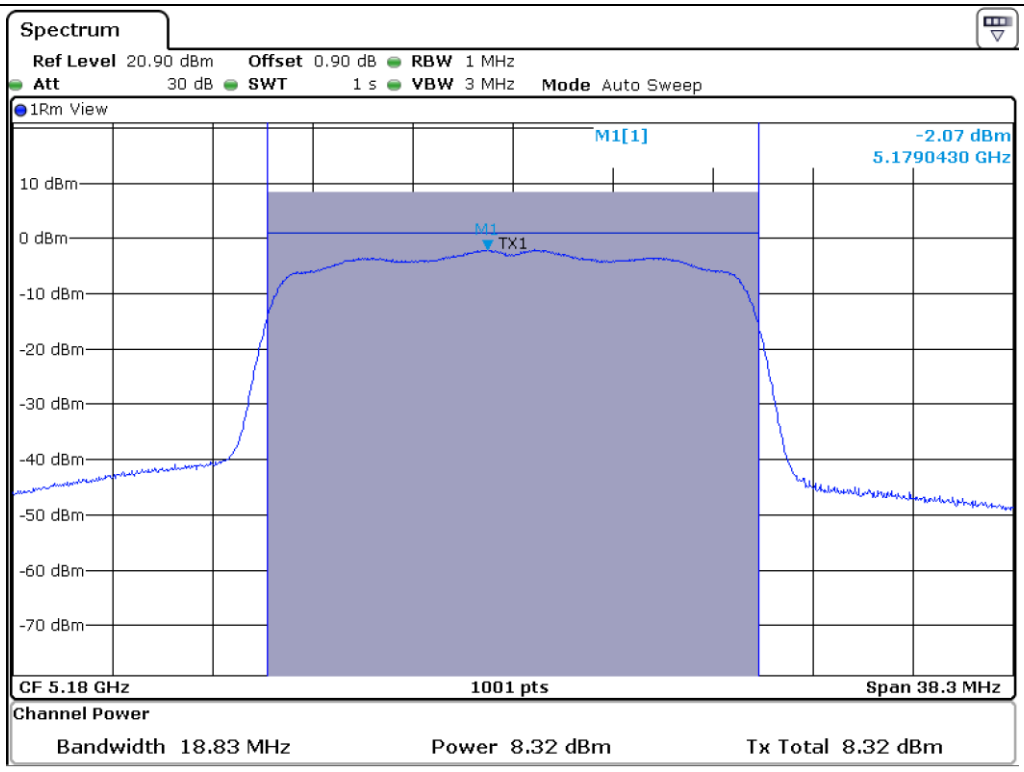
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 180.00	18.83	8.32	30.00	21.68
	Middle	5 200.00	18.88	8.67	30.00	21.33
	High	5 240.00	18.78	8.67	30.00	21.33
5 725 ~ 5 850	Low	5 745.00	19.73	8.60	30.00	21.40
	Middle	5 785.00	19.53	8.70	30.00	21.30
	High	5 825.00	19.23	8.21	30.00	21.79

Remark: See next page for measurement data.

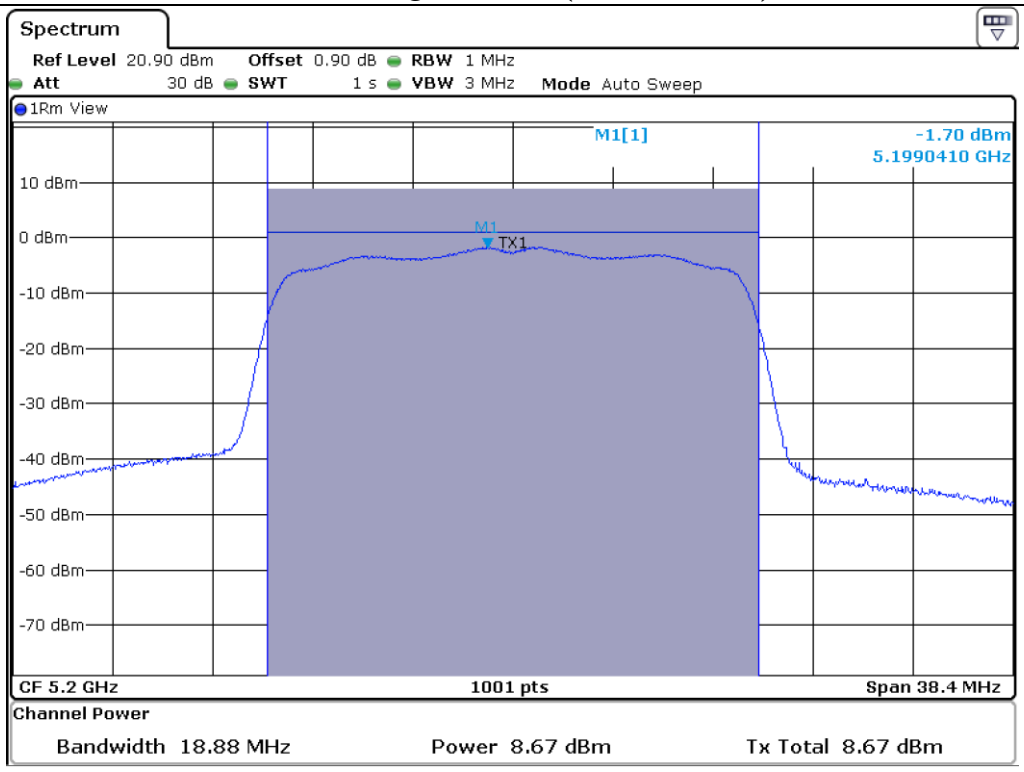


Tested by: Tae-Ho, Kim / Senior Engineer

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

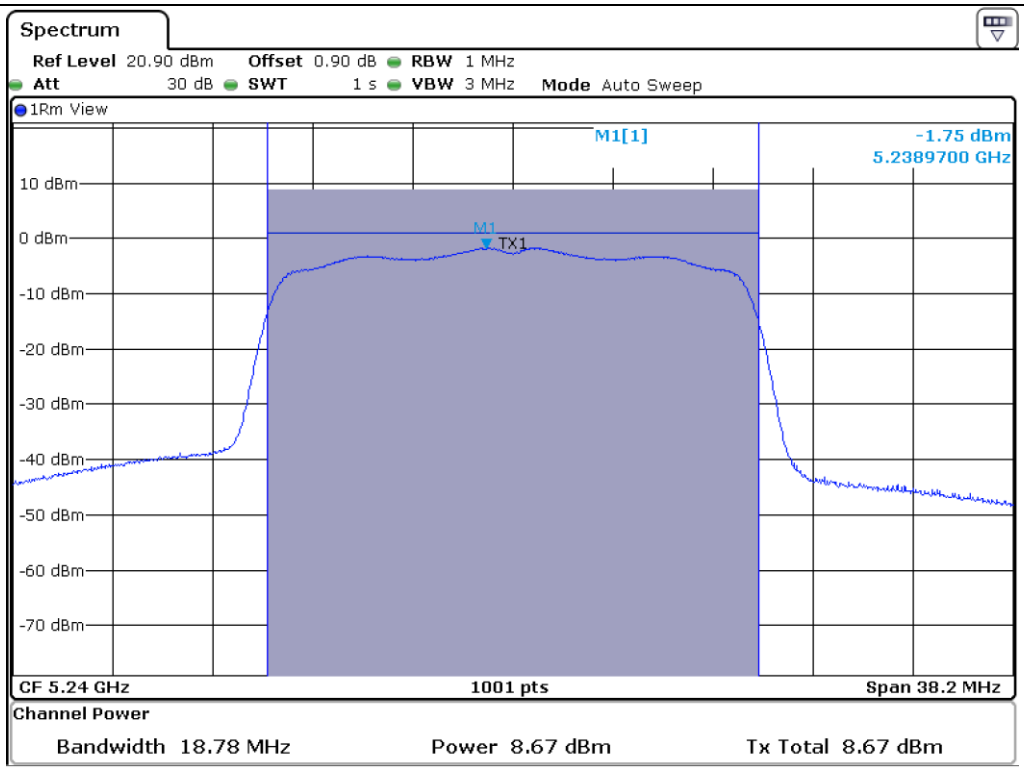


Low Channel @ 5 180 MHz (26 dB Bandwidth)



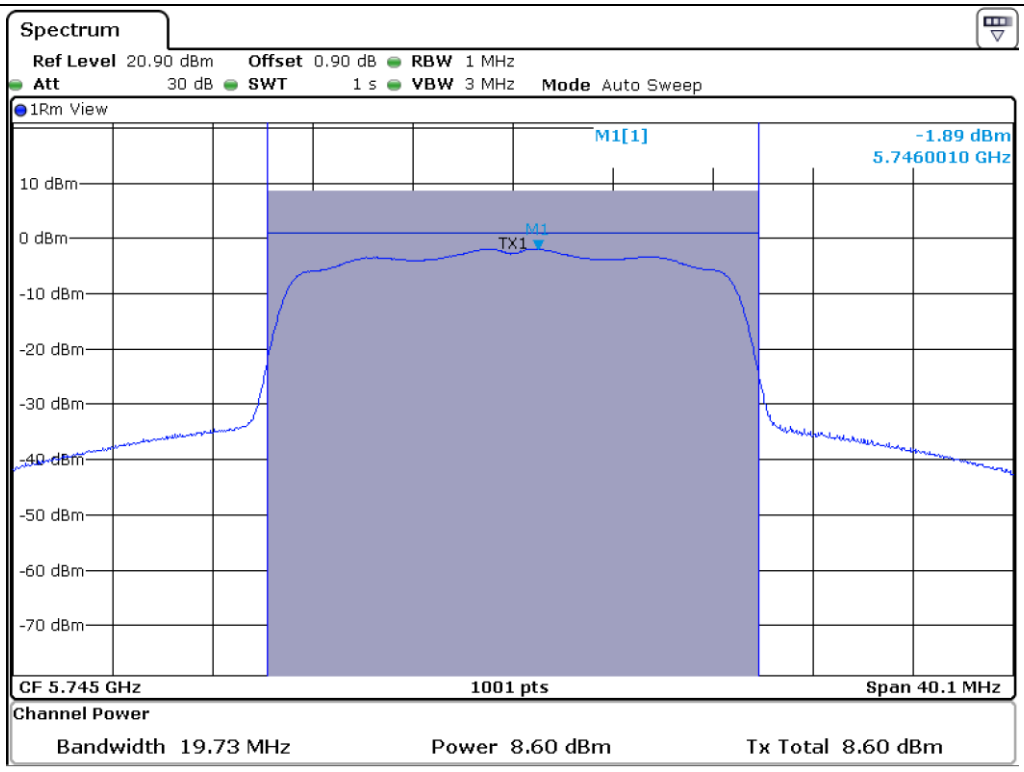
Middle Channel @ 5 200 MHz (26 dB Bandwidth)

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

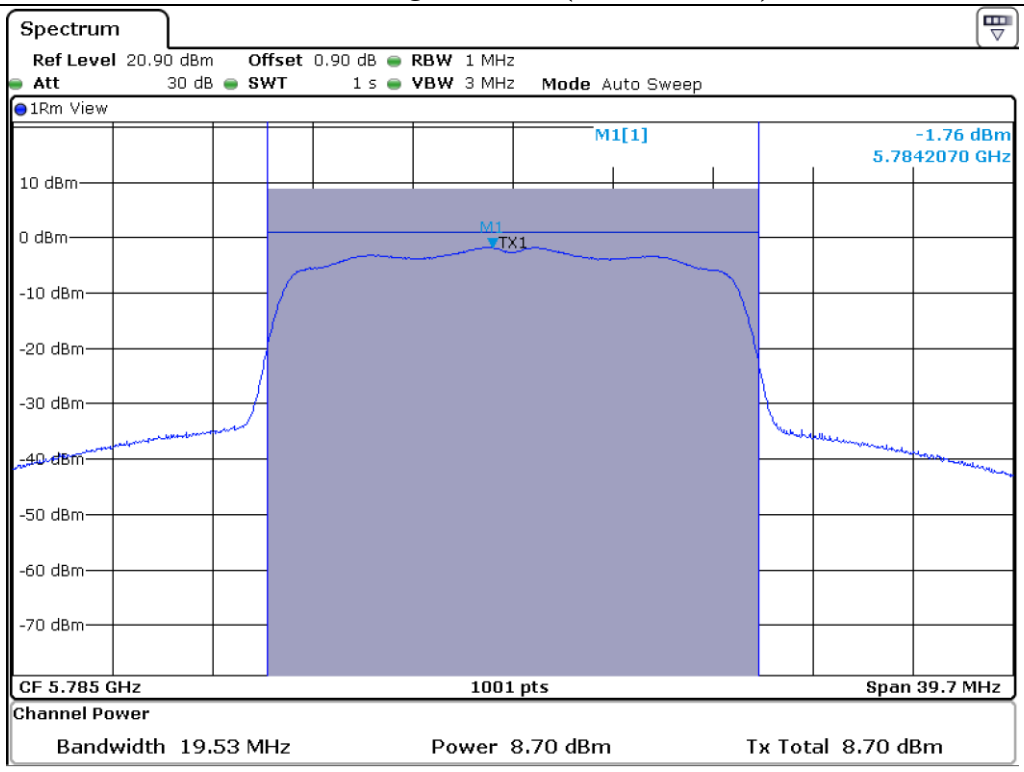


High Channel @ 5 240 MHz (26 dB Bandwidth)

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

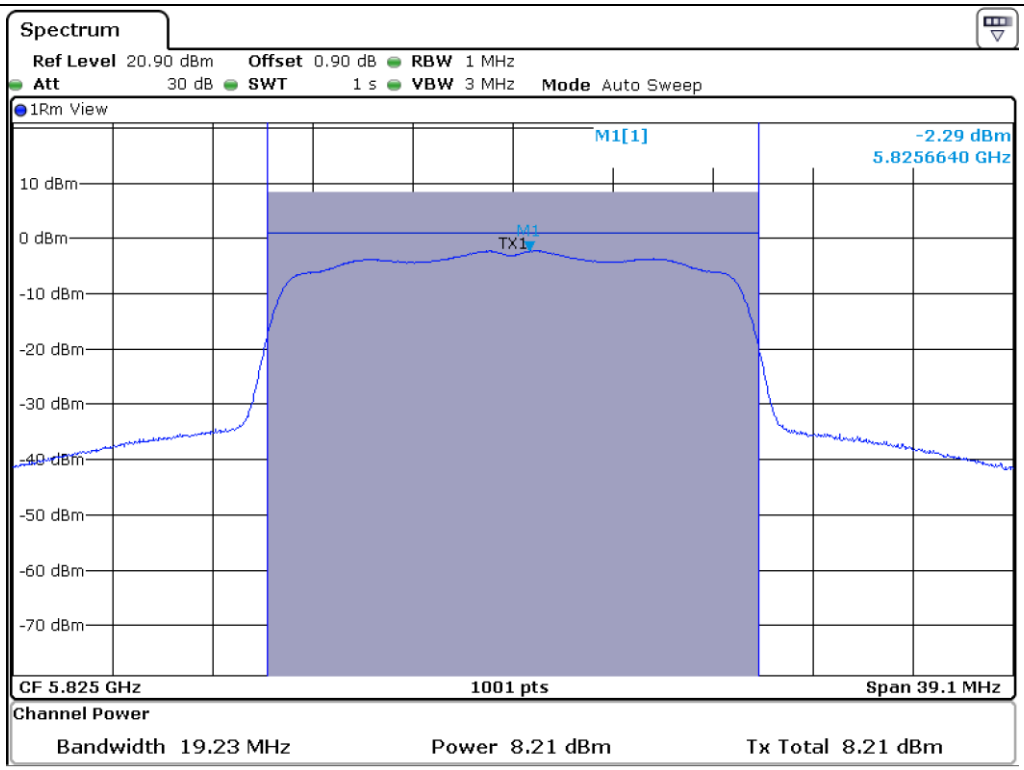


Low Channel @ 5 745 MHz (26 dB Bandwidth)



Middle Channel @ 5 785 MHz (26 dB Bandwidth)

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 (26 dB Bandwidth)

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

9. PEAK POWER SPECTRUL DENSITY

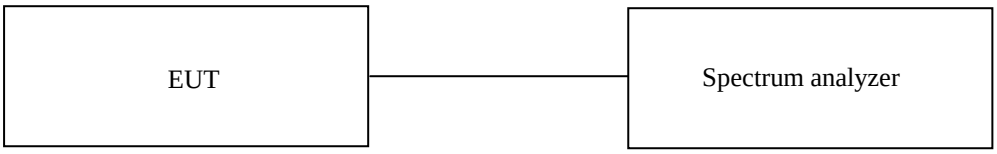
9.1 Operating environment

Temperature : 21.8 ℃

Relative humidity : 44.0 % R.H.

9.2 Test set-up

The antenna output of the EUT was connected to the spectrum analyzer. The resolution bandwidth is set to 1 MHz, the video bandwidth is set to 3 times the resolution bandwidth. The maximum level form the EUT in 1 MHz bandwidth was measured with above condition.



9.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ -	FSV40	Rohde & Schwarz	Signal Analyzer	101009	May. 31, 2016 (1Y)

All test equipment used is calibrated on a regular basis.

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

9.4 Test data for 802.11a RLAN Mode

-. Test Date : November 07, 2016

-. Operating condition : Highest Output Power Transmitting Mode

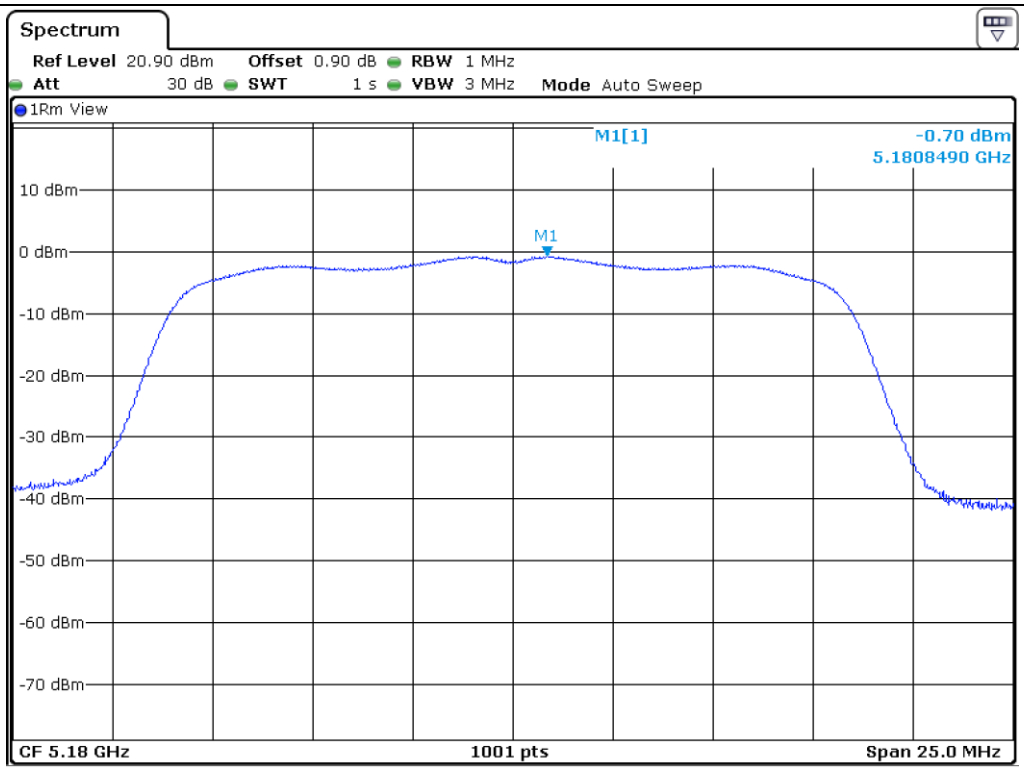
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 180.00	-0.70	10.00	10.70
	Middle	5 200.00	-0.34	10.00	10.34
	High	5 240.00	-0.09	10.00	10.09
5 725 ~ 5 850	Low	5 745.00	-0.34	10.00	10.34
	Middle	5 785.00	-0.50	10.00	10.50
	High	5 825.00	-0.68	10.00	10.68

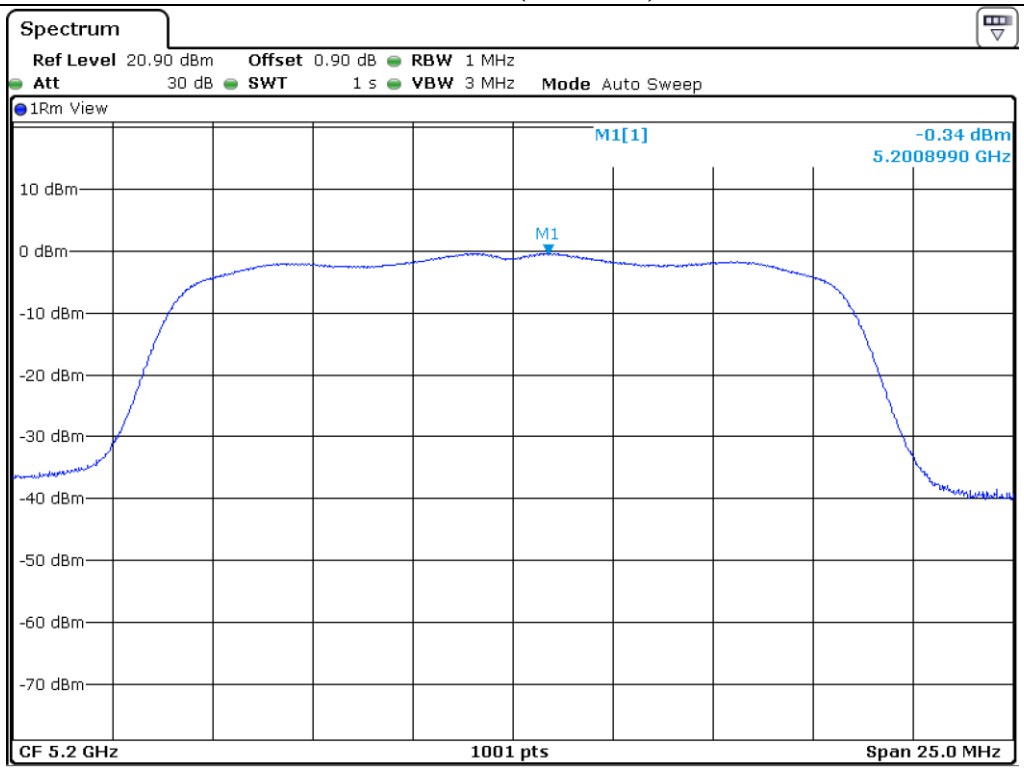
Remark: See next page for measurement data.

Tested by: Tae-Ho, Kim / Senior Engineer

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

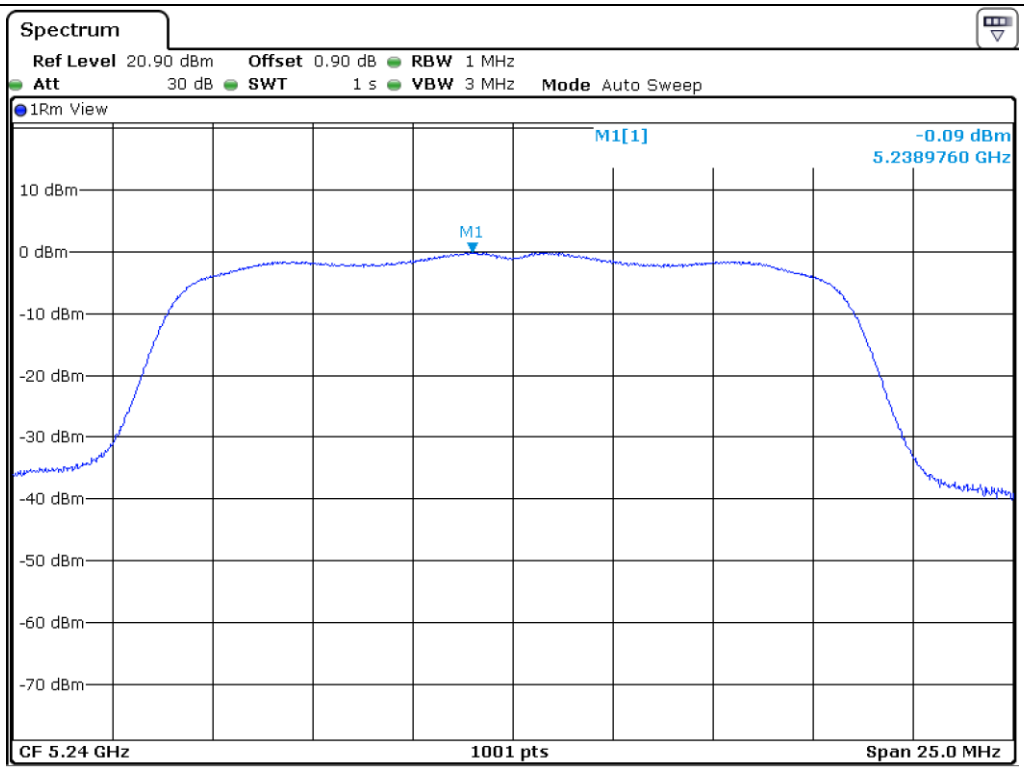


Low Channel (5 180 MHz)



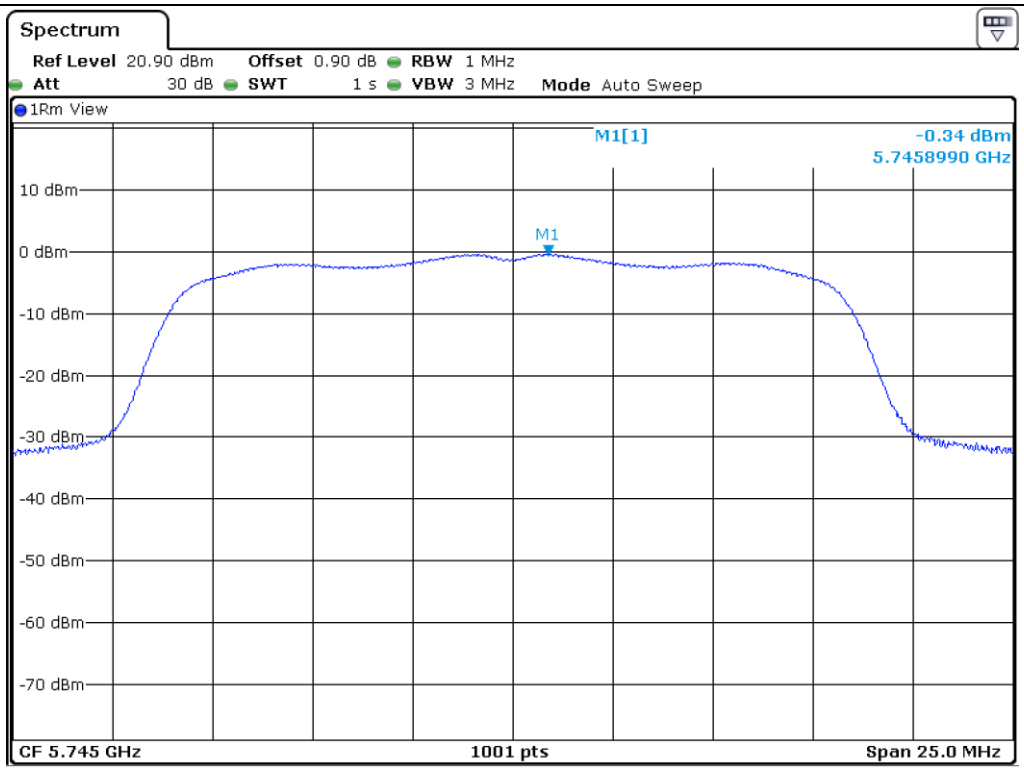
Middle Channel (5 200 MHz)

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

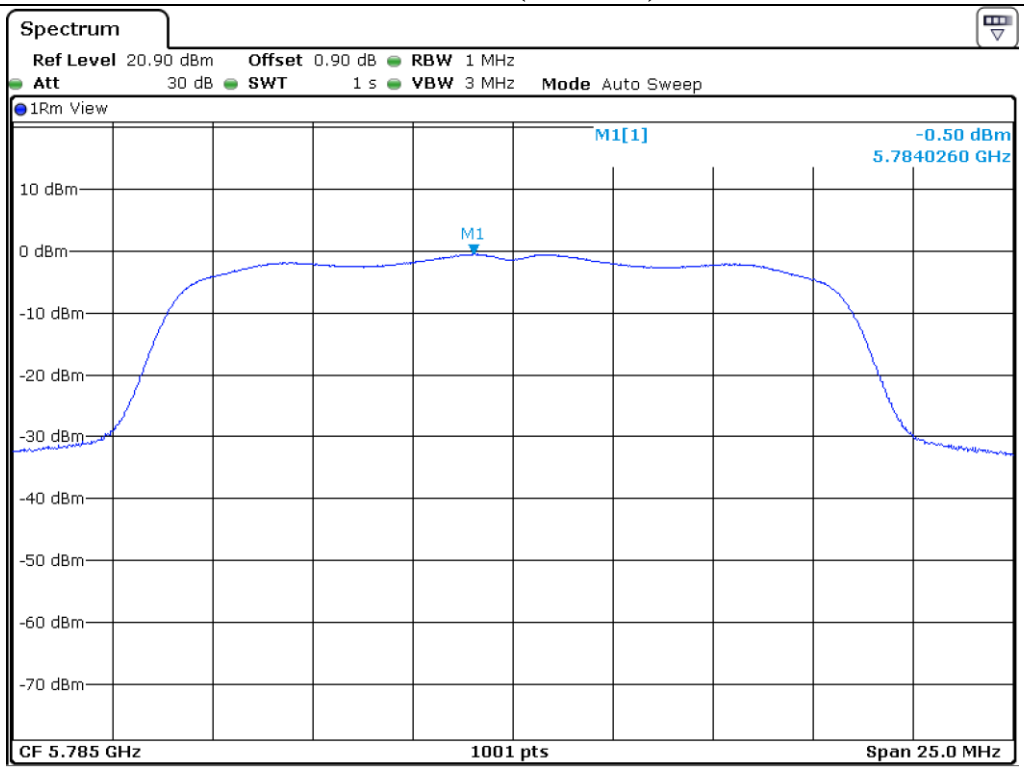


High Channel (5 240 MHz)

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

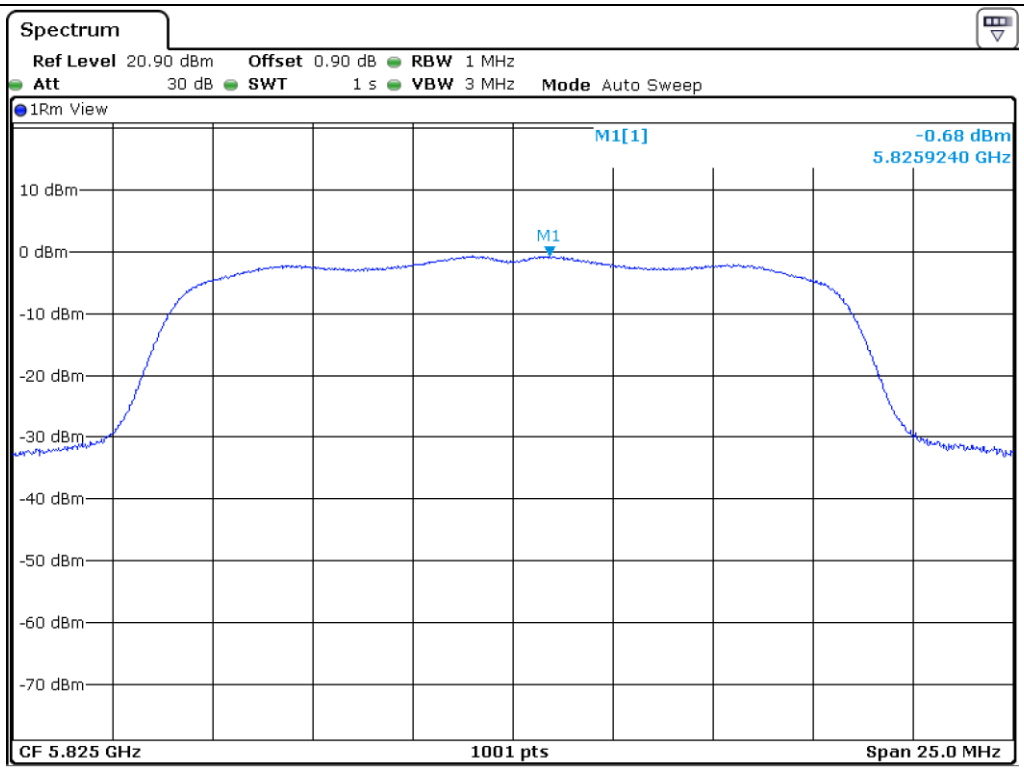


Low Channel (5 745 MHz)



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)

9.5 Test data for 802.11n_HT20 RLAN Mode

-. Test Date : November 07, 2016

-. Operating condition : Highest Output Power Transmitting Mode

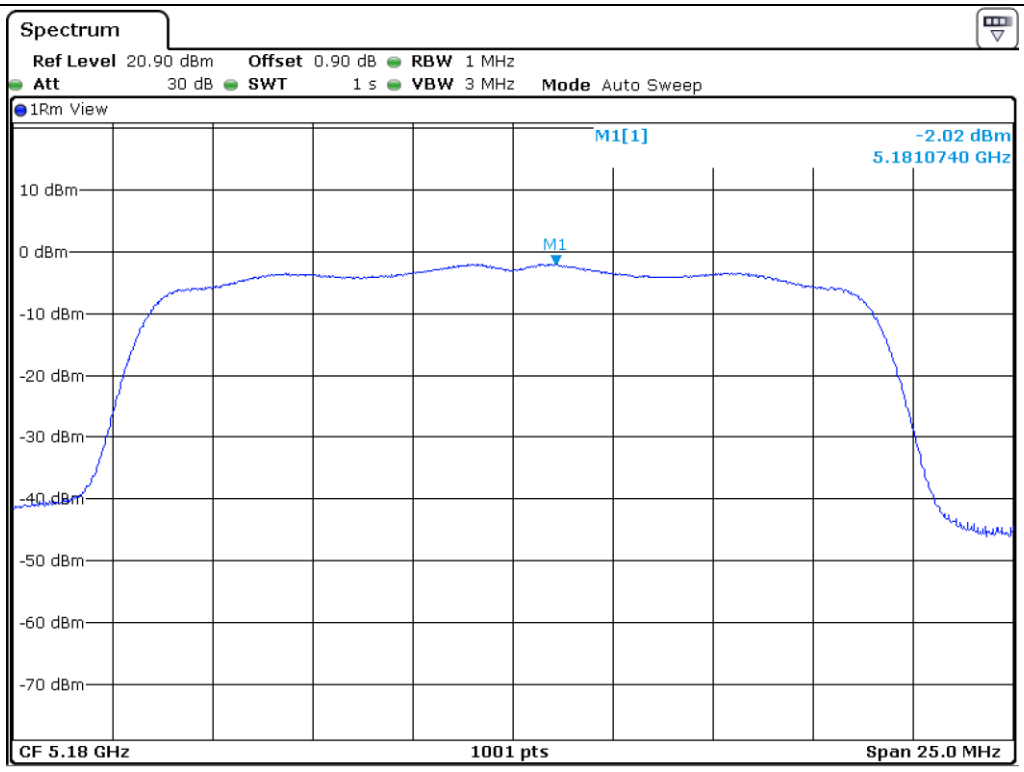
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 180.00	-2.02	10.00	12.02
	Middle	5 200.00	-1.72	10.00	11.72
	High	5 240.00	-1.72	10.00	11.72
5 725 ~ 5 850	Low	5 745.00	-1.81	10.00	11.81
	Middle	5 785.00	-1.57	10.00	11.57
	High	5 825.00	-2.06	10.00	12.06

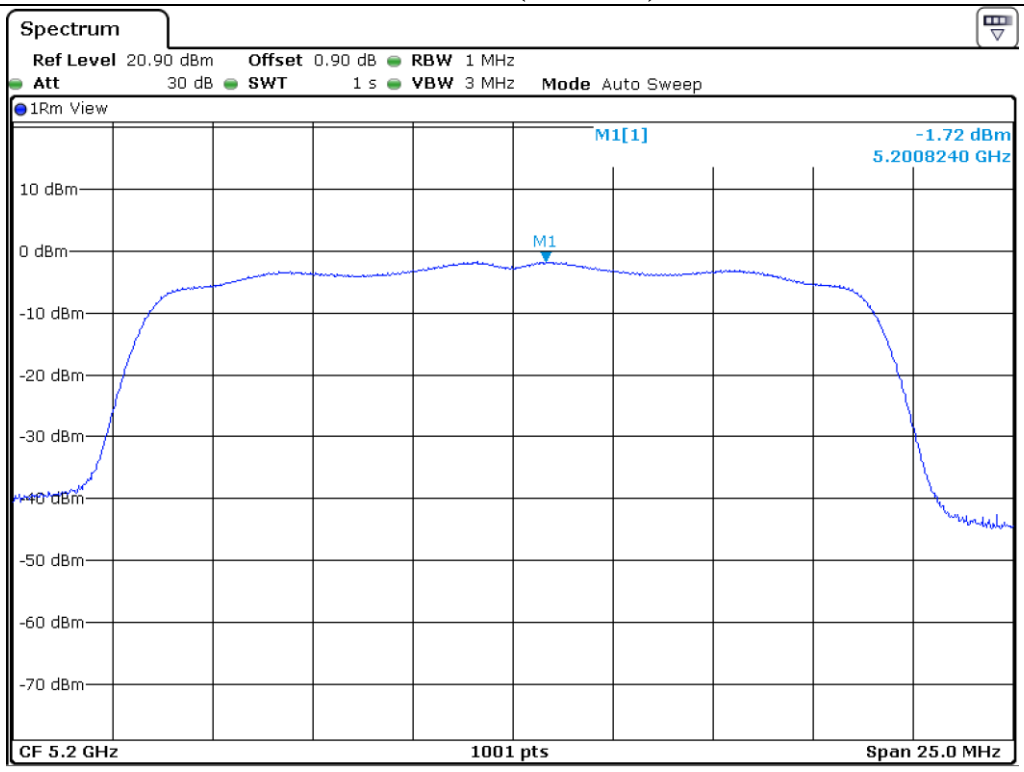
Remark: See next page for measurement data.

Tested by: Tae-Ho, Kim / Senior Engineer

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

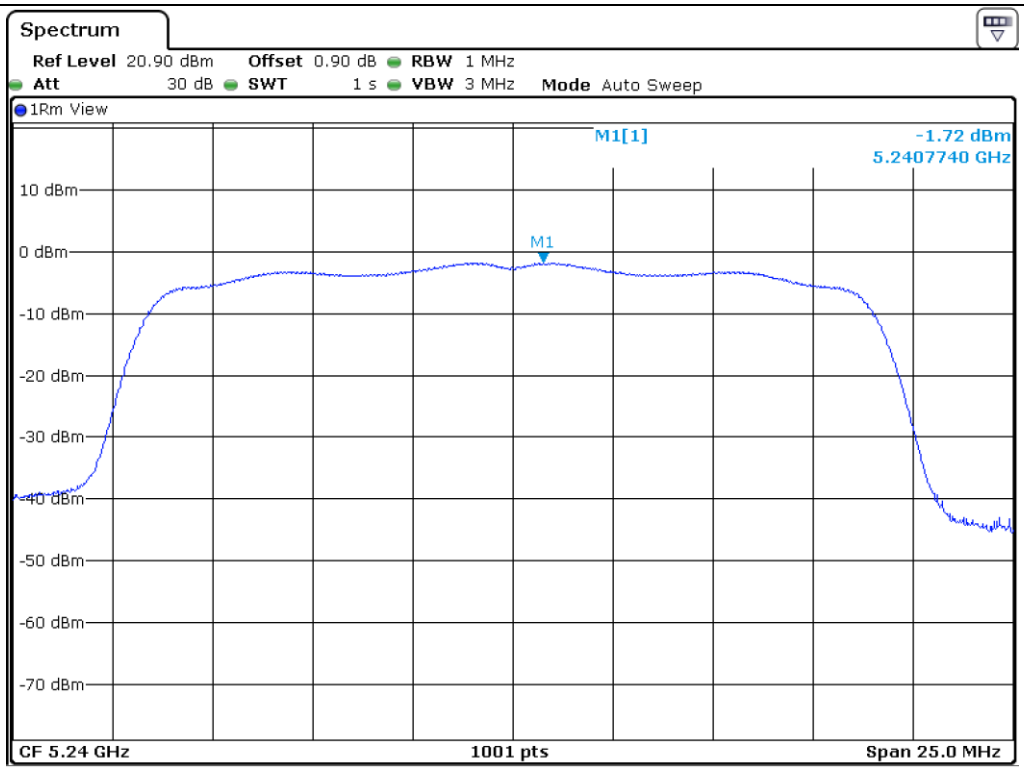


Low Channel (5 180 MHz)



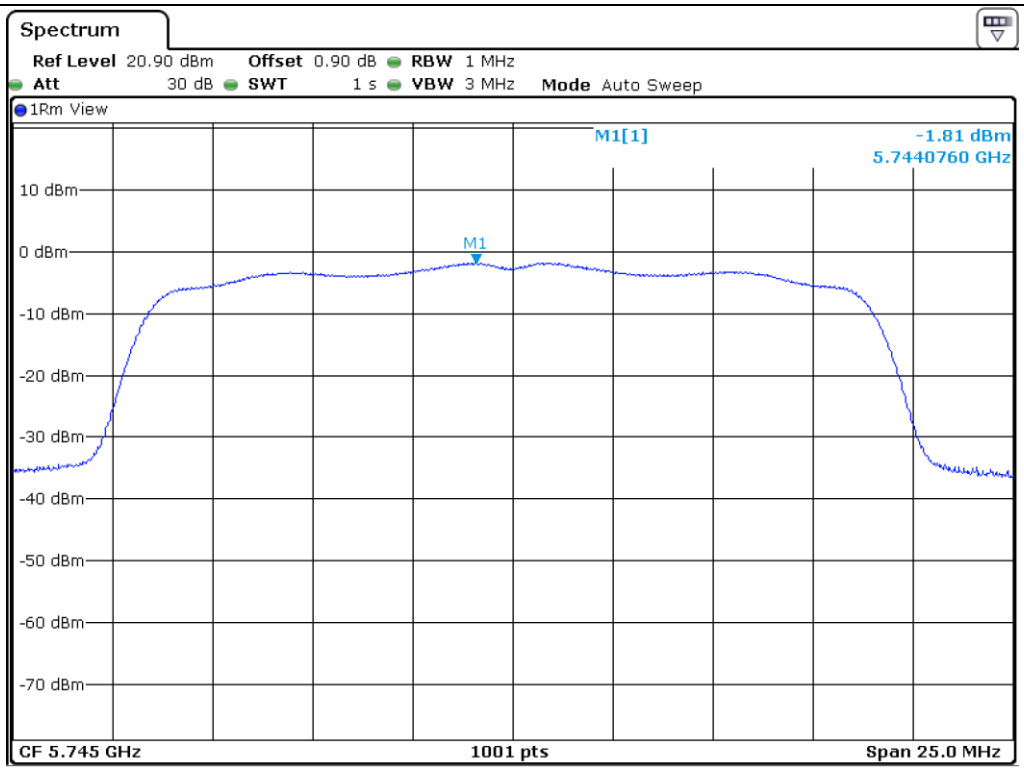
Middle Channel (5 200 MHz)

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

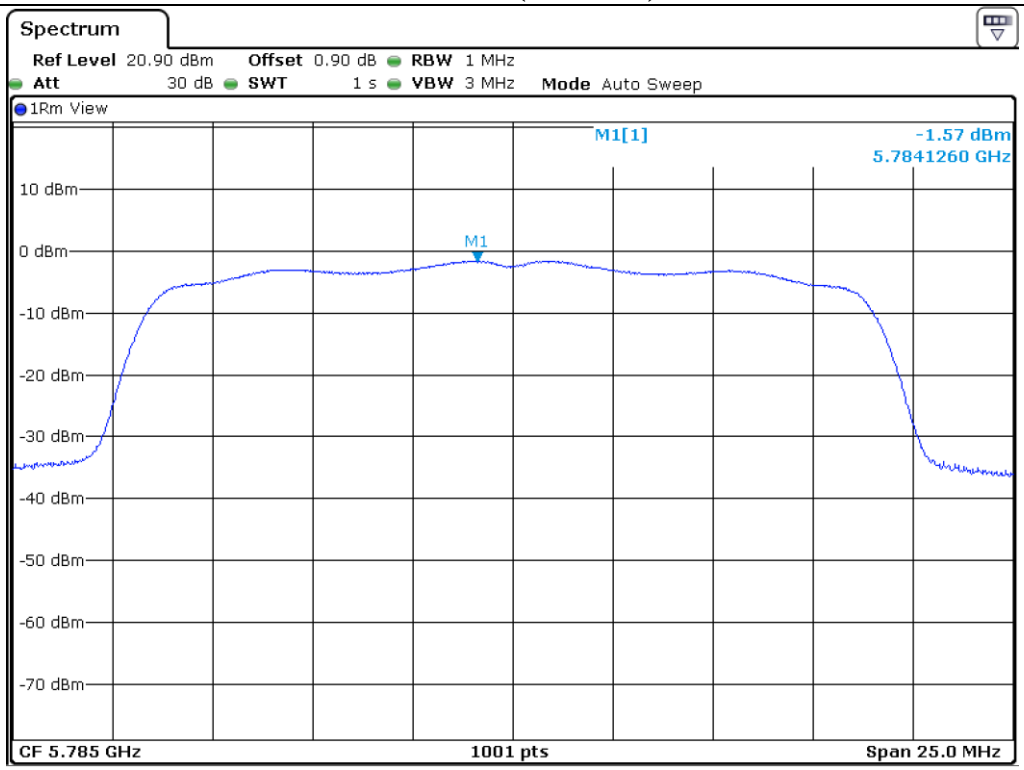


High Channel (5 240 MHz)

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

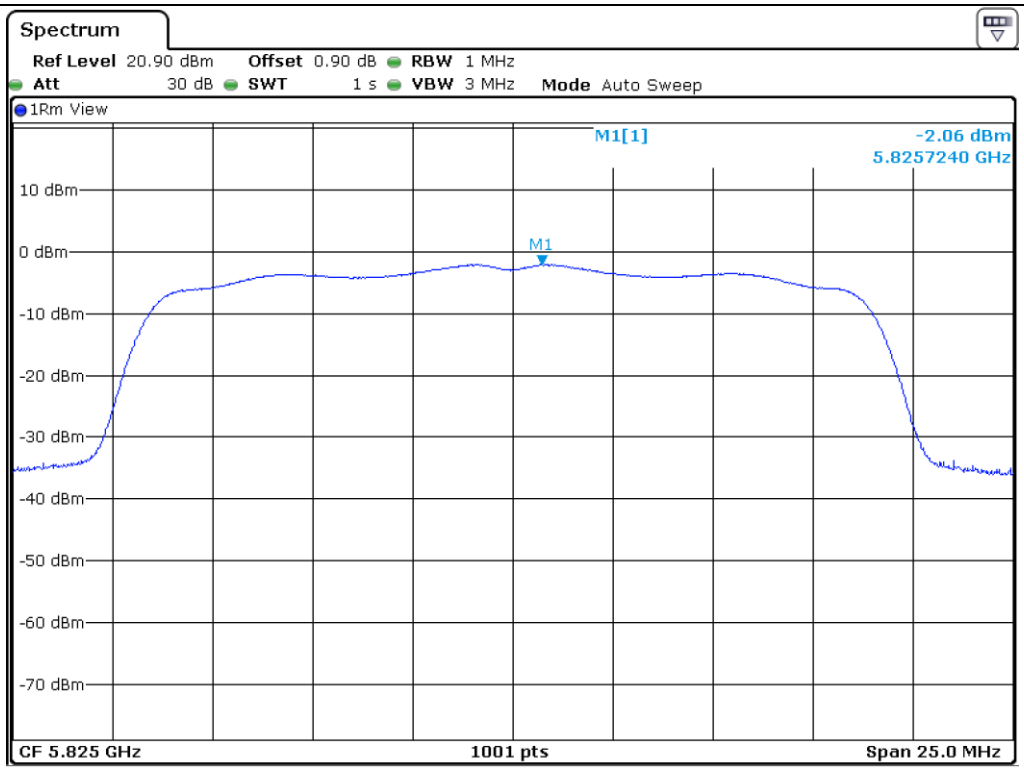


Low Channel (5 745 MHz)



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)

10. FREQUENCY STABILITY WITH TEMPERATURE VARIATION

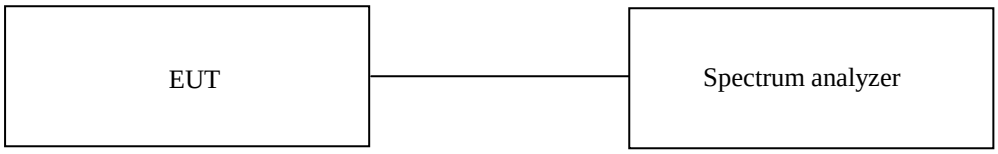
10.1 Operating environment

Temperature : 22.6 ℃

Relative humidity : 43.8 % R.H.

10.2 Test set-up

Turn EUT off and set chamber temperature to -30 ℃ and then allow sufficient time (approximately 20 min to 30 min after chamber reach the assigned temperature) for EUT to stabilize. Turn on the EUT and measure the EUT operating frequency and then turn off the EUT after the measurement. The temperature in the chamber was raised 10 ℃ step from 0 ℃ to +65 ℃. Repeat above method for frequency measurements every 10 ℃ step and then record all measured frequencies on each temperature step.



10.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.(Interval)
■ -	FSV40	Rohde & Schwarz	Signal Analyzer	101009	May 31, 2016 (1Y)
■ -	SSE-43CI-A	Samkun Tech	Humidity Chamber	60712	Apr. 11, 2016 (1Y)
■ -	DRP-305DN	DIGITAL Elec.	DC Power supply	4030195	Sep. 02, 2016 (1Y)

All test equipment used is calibrated on a regular basis.

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

10.4 Test Data for 5 150 MHz ~ 5 250 MHz Band

-. Test Date : November 08, 2016

-. Result : Pass

Temperature (˚C)	Carrier Freq. (Hz)	Measured Freq. (Hz)	Freequency Error (kHz)
0	5 180 000 000	5 179 940 266	-59.734
10		5 179 940 241	-59.759
20		5 179 940 624	-59.376
30		5 179 940 955	-59.045
40		5 179 941 220	-58.780
50		5 179 940 126	-59.874
60		5 179 940 886	-59.114
0	5 200 000 000	5 199 940 166	-59.834
10		5 199 940 086	-59.914
20		5 199 940 024	-59.976
30		5 199 940 512	-59.488
40		5 199 940 335	-59.665
50		5 199 941 672	-58.328
60		5 199 941 284	-58.716
0	5 240 000 000	5 239 939 884	-60.116
10		5 239 939 622	-60.378
20		5 239 939 417	-60.583
30		5 239 939 497	-60.503
40		5 239 938 032	-61.968
50		5 239 938 581	-61.419
60		5 239 938 661	-61.339

Tested by: Tae-Ho, Kim / Senior Engineer

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

10.5 Test Data for 5 725 MHz ~ 5 850 MHz Band

-. Test Date : November 08, 2016

-. Result : Pass

Temperature (˚C)	Carrier Freq. (Hz)	Measured Freq. (Hz)	Freequency Error (kHz)
0	5 745 000 000	5 744 934 225	-65.775
10		5 744 933 954	-66.046
20		5 744 933 412	-66.588
30		5 744 933 331	-66.669
40		5 744 933 064	-66.936
50		5 744 934 011	-65.989
60		5 744 934 223	-65.777
65	5 785 000 000	5 744 935 312	-64.688
0		5 784 932 894	-67.106
10		5 784 933 018	-66.982
20		5 784 932 826	-67.174
30		5 784 932 228	-67.772
40		5 784 931 988	-68.012
50		5 784 933 155	-66.845
60	5 825 000 000	5 784 933 947	-66.053
65		5 784 934 084	-65.916
0		5 824 933 374	-66.626
10		5 824 933 994	-66.006
20		5 824 932 485	-67.515
30		5 824 931 184	-68.816
40		5 824 934 881	-65.119

Tested by: Tae-Ho, Kim / Senior Engineer

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

11. FREQUENCY STABILITY WITH VOLTAGE VARIATION

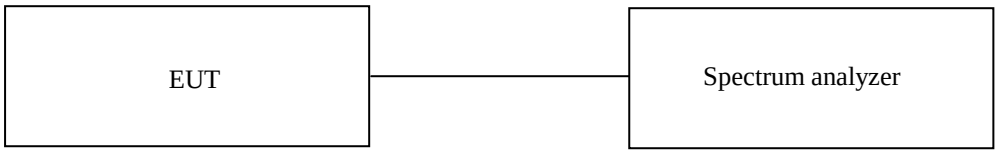
11.1 Operating environment

Temperature : 22.6 ℃

Relative humidity : 43.8 % R.H.

11.2 Test set-up

An external DC power supply was connected to the input of the EUT. The voltage of EUT set to 115 % of the nominal value and then was reduced to 85 % of nominal voltage. The output frequency was recorded at each step.



11.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.(Interval)
■ -	FSV40	Rohde & Schwarz	Signal Analyzer	101009	May 31, 2016 (1Y)
■ -	DRP-305DN	DIGITAL Elec.	DC Power supply	4030195	Sep. 02, 2016 (1Y)

All test equipment used is calibrated on a regular basis.

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

11.4 Test Data for 5 150 MHz ~ 5 250 MHz Band

-. Test Date : November 08, 2016

-. Result : Pass

Voltage (Vdc)	Carrier Freq. (Hz)	Measured Freq. (Hz)	Freequency Error (kHz)
5.75	5 180 000 000	5 179 940 324	-59.676
5.00		5 179 940 241	-59.759
4.25		5 179 940 094	-59.906
5.75	5 200 000 000	5 199 940 116	-59.884
5.00		5 199 940 024	-59.976
4.25		5 199 940 237	-59.763
5.75	5 240 000 000	5 239 939 569	-60.431
5.00		5 239 939 417	-60.583
4.25		5 239 939 399	-60.601

11.6 Test Data for 5 725 MHz ~ 5 850 MHz Band

-. Test Date : November 08, 2016

-. Result : Pass

Voltage (Vdc)	Carrier Freq. (Hz)	Measured Freq. (Hz)	Freequency Error (kHz)
5.75	5 745 000 000	5 744 934 054	-65.946
5.00		5 744 933 412	-66.588
4.25		5 744 933 489	-66.511
5.75	5 785 000 000	5 784 932 955	-67.045
5.00		5 784 932 826	-67.174
4.25		5 784 932 993	-67.007
5.75	5 825 000 000	5 824 932 106	-67.894
5.00		5 824 932 485	-67.515
4.25		5 824 933 022	-66.978

Tested by: Tae-Ho, Kim / Senior Engineer

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

12. RADIATED SPURIOUS EMISSIONS

12.1 Operating environment

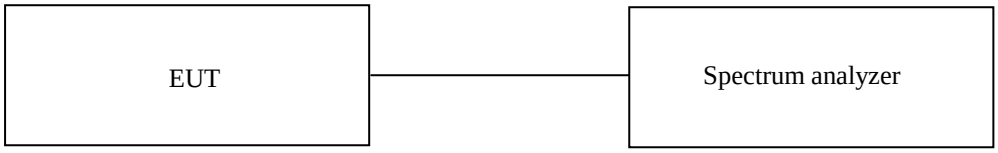
Temperature : 22.6 ℃

Relative humidity : 43.8 % R.H.

12.2 Test set-up for conducted measurement

The radiated emissions measurements were performed on the 3 m, open-field test site. The EUT was placed on a non-conductive turntable above the ground plane.

The frequency spectrum from 30 MHz to 40 GHz was scanned and maximum emission levels at each frequency recorded. The system was rotated 360°, and the antenna was varied in the height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for horizontal and vertical polarization of the receiving antenna.



12.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.(Interval)
■ -	FSV40	Rohde & Schwarz	Signal Analyzer	101009	May 31, 2016 (1Y)
■ -	ESCI	Rohde & Schwarz	Test Receiver	101012	Apr. 06, 2016 (1Y)
■ -	310N	Sonoma Instrument	Pre-Amplifier	312544	Apr. 05, 2016 (1Y)
■ -	SCU-18	Rohde & Schwarz	Pre-Amplifier	10041	Nov. 23, 2015 (1Y)
■ -	DT3000	Innco System	Turn Table	930611	N/A
■ -	MA4000-EP	Innco System	Antenna Master	3320611	N/A
■ -	VULB9163	Schwarzbeck	TRILOG Broadband Antenna	9163-421	Apr. 15, 2016 (1Y)
■ -	BBHA9120D	Schwarzbeck	Horn Antenna	BBHA9120D295	Aug. 31, 2015 (2Y)
■ -	BBHA9170	Schwarzbeck	Horn Antenna	BBHA9170178	Aug. 31, 2015 (2Y)

All test equipment used is calibrated on a regular basis.

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

12.4 Test data for 802.11a RLAN Mode

12.4.1 Test data for 30 MHz ~ 1 000 MHz

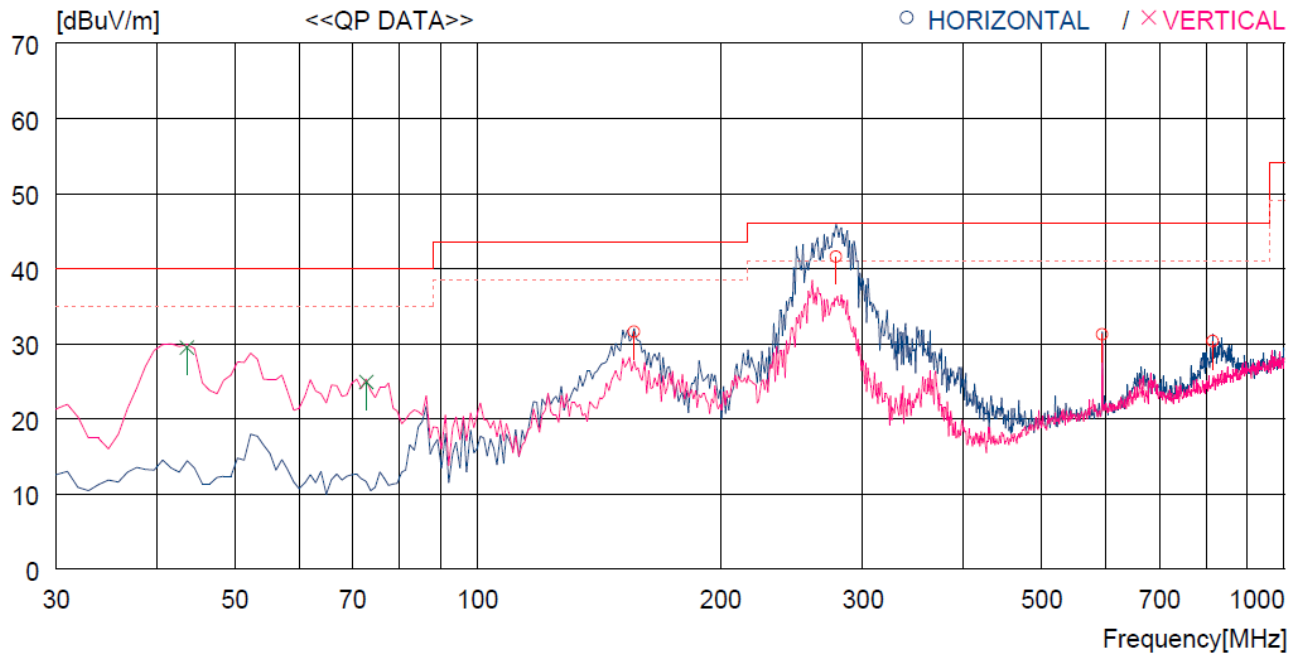
Humidity Level : 43.0 % R.H. Temperature: 21.6 ℃

Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.247

Result : PASSED

EUT : Laser Beam Pro Date: January 20, 2016

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)



No.	FREQ	READING QP	ANT FACTOR	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	[dBuV]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal ------										
1	278.320	57.2	13.0	4.4	33.0	41.6	46.0	4.4	100	359
2	156.100	52.7	8.6	3.3	33.0	31.6	43.5	11.9	200	0
3	594.538	38.7	19.2	6.6	33.3	31.2	46.0	14.8	300	359
4	814.721	34.6	20.9	8.1	33.3	30.3	46.0	15.7	100	44
----- Vertical ------										
5	43.580	46.1	14.4	1.9	32.9	29.5	40.0	10.5	100	200
6	72.680	46.9	8.8	2.3	33.1	24.9	40.0	15.1	100	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)

12.4.2 Test data for Below 30 MHz

-. Test Date : November 08, 2016

-. Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)

-. Frequency range : 9 kHz ~ 30 MHz

-. Measurement distance : 3 m

-.Operating mode : Transmitting mode

Frequency (MHz)	Reading (dBµV)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBµV/m)	Limits (dBµV/m)	Margin (dB)
It was not observed any emissions from the EUT.									

12.4.3 Test data for above 1 GHz

-. Test Date : November 08, 2016

-. Resolution bandwidth : 1 MHz for Peak and Average Mode

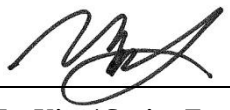
-. Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode

-. Frequency range : 1 GHz ~ 40 GHz

-. Measurement distance : 3 m

-.Operating mode : Transmitting mode

Frequency (MHz)	Reading (dBµV)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBµV/m)	Limits (dBµV/m)	Margin (dB)
It was not observed any emissions from the EUT.									



Tested by: Tae-Ho, Kim / Senior Engineer

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

12.5 Test data for 802.11n_HT20 RLAN Mode

12.5.1 Test data for 30 MHz ~ 1 000 MHz

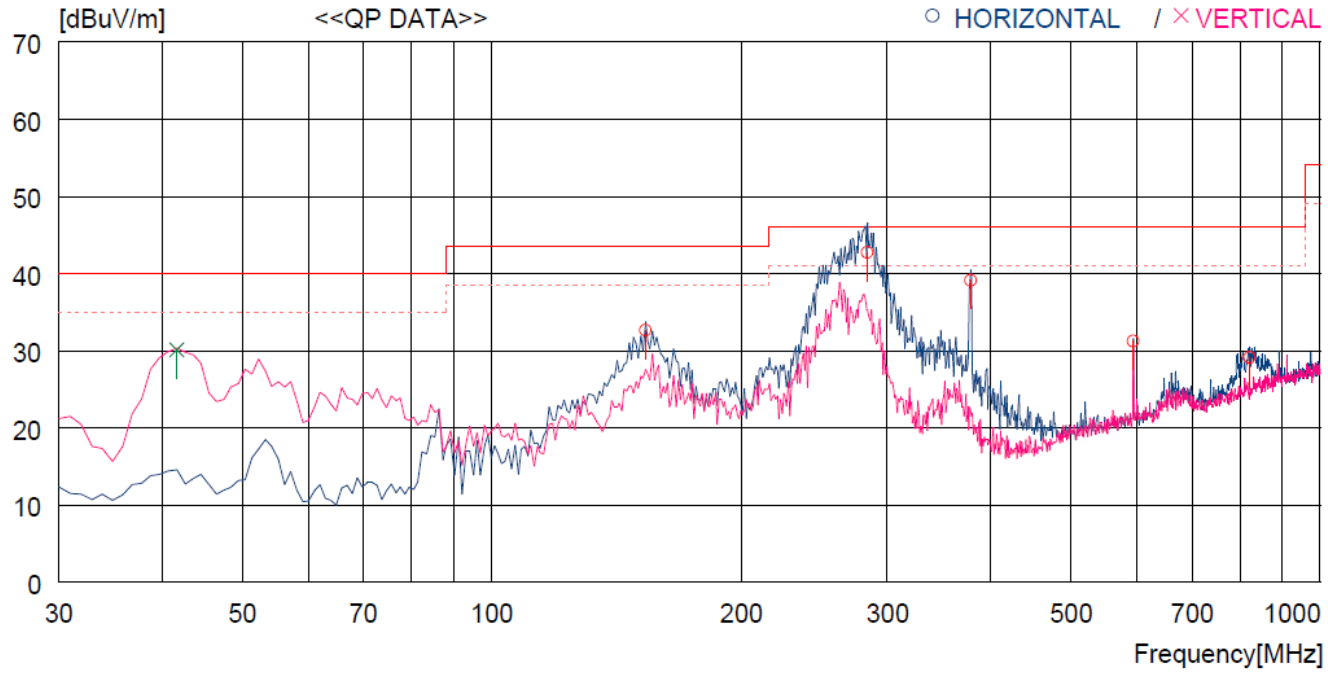
Humidity Level : 43.0 % R.H. Temperature: 21.6 ℃

Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.247

Result : PASSED

EUT : Laser Beam Pro Date: January 20, 2016

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)



No.	FREQ	READING QP	ANT FACTOR	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	[dBuV]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal ------										
1	284.140	58.2	13.1	4.4	33.0	42.7	46.0	3.3	100	359
2	153.190	53.7	8.6	3.3	33.0	32.6	43.5	10.9	200	0
3	378.230	51.2	15.4	5.2	32.7	39.1	46.0	6.9	100	359
4	594.538	38.7	19.2	6.6	33.3	31.2	46.0	14.8	100	202
5	821.511	33.4	21.0	8.1	33.4	29.1	46.0	16.9	100	359
----- Vertical ------										
6	41.640	46.8	14.3	1.9	32.9	30.1	40.0	9.9	100	162

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12.5.2 Test data for Below 30 MHz

-. Test Date : November 08, 2016

-. Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)

-. Frequency range : 9 kHz ~ 30 MHz

-. Measurement distance : 3 m

-.Operating mode : Transmitting mode

Frequency (MHz)	Reading (dBµV)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBµV/m)	Limits (dBµV/m)	Margin (dB)
It was not observed any emissions from the EUT.									

12.5.3 Test data for above 1 GHz

-. Test Date : November 08, 2016

-. Resolution bandwidth : 1 MHz for Peak and Average Mode

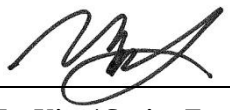
-. Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode

-. Frequency range : 1 GHz ~ 40 GHz

-. Measurement distance : 3 m

-.Operating mode : Transmitting mode

Frequency (MHz)	Reading (dBµV)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBµV/m)	Limits (dBµV/m)	Margin (dB)
It was not observed any emissions from the EUT.									



Tested by: Tae-Ho, Kim / Senior Engineer

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

13. RADIATED RESTRICTED BAND EDGE MEASUREMENTS

13.1 Operating environment

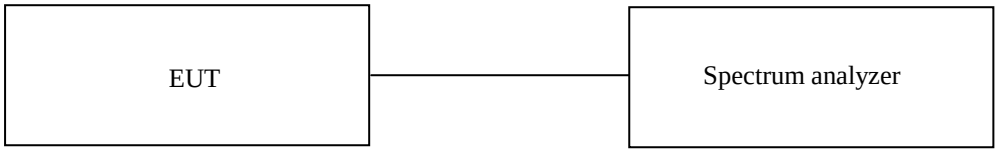
Temperature : 22.6 ℃

Relative humidity : 43.8 % R.H.

13.2 Test set-up for conducted measurement

The radiated emissions measurements were performed on the 3 m, open-field test site. The EUT was placed on a non-conductive turntable above the ground plane.

The system was rotated 360°, and the antenna was varied in the height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for horizontal and vertical polarization of the receiving antenna.



13.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.(Interval)
■ -	FSV40	Rohde & Schwarz	Signal Analyzer	101009	May 31, 2016 (1Y)
■ -	ESCI	Rohde & Schwarz	Test Receiver	101012	Apr. 06, 2016 (1Y)
■ -	310N	Sonoma Instrument	Pre-Amplifier	312544	Apr. 05, 2016 (1Y)
■ -	SCU-18	Rohde & Schwarz	Pre-Amplifier	10041	Nov. 23, 2015 (1Y)
■ -	DT3000	Innco System	Turn Table	930611	N/A
■ -	MA4000-EP	Innco System	Antenna Master	3320611	N/A
■ -	VULB9163	Schwarzbeck	TRILOG Broadband Antenna	9163-421	Apr. 15, 2016 (1Y)
■ -	BBHA9120D	Schwarzbeck	Horn Antenna	BBHA9120D295	Aug. 31, 2015 (2Y)
■ -	BBHA9170	Schwarzbeck	Horn Antenna	BBHA9170178	Aug. 31, 2015 (2Y)

All test equipment used is calibrated on a regular basis.

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

13.4 Test data for Frequency 5 150 band

13.4.1 Test data for 802.11a RLAN Mode

-. Test Date : November 08, 2016

-. Resolution bandwidth : 1 MHz for Peak and Average Mode for the emissions fall in restricted band,
100 kHz for Peak Mode for the emissions outside restricted band

-. Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode

-. Measurement distance : 3 m

-. Result : Pass

Frequency (MHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
5 150.00	44.75	Peak	H	31.20	16.80	40.70	52.05	74.00	21.95
	34.88	Average	H				42.18	54.00	11.82
	45.15	Peak	V				52.45	74.00	21.55
	34.92	Average	V				42.22	54.00	11.78

Tabulated test data for Restricted Band

Remark - “H”: Horizontal, “V”: Vertical

Margin (dB) = Limits (dBµV/m) - Emission Level (dBµV/m)

Tested by: Tae-Ho, Kim / Senior Engineer

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

13.4.2 Test data for 802.11n_HT20 RLAN Mode

-. Test Date : November 08, 2016

-. Resolution bandwidth : 1 MHz for Peak and Average Mode for the emissions fall in restricted band,
100 kHz for Peak Mode for the emissions outside restricted band

-. Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode

-. Measurement distance : 3 m

-. Result : Pass

Frequency (MHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
5 150.00	42.61	Peak	H	31.20	16.80	40.70	49.91	74.00	24.09
	31.09	Average	H				38.39	54.00	15.61
	43.48	Peak	V				50.78	74.00	23.22
	31.51	Average	V				38.81	54.00	15.19

Tabulated test data for Restricted Band

Remark - "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dBµV/m) - Emission Level (dBµV/m)

Tested by: Tae-Ho, Kim / Senior Engineer

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

13.5 Test data for Frequency 5 725 MHz Band

13.5.1 Test data for 802.11a RLAN Mode

-. Test Date : November 08, 2016

-. Resolution bandwidth : 1 MHz for Peak and Average Mode for the emissions fall in restricted band,
100 kHz for Peak Mode for the emissions outside restricted band

-. Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode

-. Measurement distance : 3 m

-. Result : Pass

Frequency (MHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
Low Channel									
5 725.00	46.21	Peak	H	31.30	16.90	40.70	53.71	74.00	20.29
	37.88	Average	H				45.38	54.00	8.62
	48.84	Peak	V				56.34	74.00	17.66
	38.35	Average	V				45.85	54.00	8.15
High Channel									
5 850.00	44.94	Peak	H	31.30	16.90	40.70	52.44	74.00	21.56
	34.51	Average	H				42.01	54.00	11.99
	46.21	Peak	V				53.71	74.00	20.29
	35.25	Average	V				42.75	54.00	11.25

Tabulated test data for Restricted Band

Remark - "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dBµV/m) - Emission Level (dBµV/m)

Tested by: Tae-Ho, Kim / Senior Engineer

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

15.5.2 Test data for 802.11n_HT20 RLAN Mode

-. Test Date : November 08, 2016

-. Resolution bandwidth : 1 MHz for Peak and Average Mode for the emissions fall in restricted band,
100 kHz for Peak Mode for the emissions outside restricted band

-. Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode

-. Measurement distance : 3 m

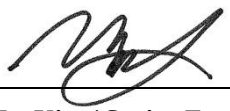
-. Result : Pass

Frequency (MHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
Low Channel									
5 725.00	47.68	Peak	H	31.30	16.90	40.70	55.18	74.00	18.82
	38.74	Average	H				46.24	54.00	7.76
	48.95	Peak	V				56.45	74.00	17.55
	39.21	Average	V				46.71	54.00	7.29
High Channel									
5 850.00	46.22	Peak	H	31.30	16.90	40.70	53.72	74.00	20.28
	36.84	Average	H				44.34	54.00	9.66
	47.51	Peak	V				55.01	74.00	18.99
	36.82	Average	V				44.32	54.00	9.68

Tabulated test data for Restricted Band

Remark - “H”: Horizontal, “V”: Vertical

Margin (dB) = Limits (dBµV/m) - Emission Level (dBµV/m)



Tested by: Tae-Ho, Kim / Senior Engineer

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

14. CONDUCTED EMISSION TEST

14.1 Operating environment

Temperature : 22.6 ℃

Relative humidity : 43.8 % R.H.

14.2 Test set-up

The EUT was placed on a wooden table, 0.8 m height above the floor. Power was fed to the EUT through a 50 Ω / 50 μH + 5 Ω Artificial Mains Network (AMN). The ground plane was electrically bonded to the reference ground system and all power lines were filtered from ambient.

14.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal. (Interval)
■ -	ESPI	Rohde & Schwarz	Test Receiver	101012	Nov. 01, 2016 (1Y)
■ -	NSLK8126	Schwarzbeck	AMN	8126-404	Apr. 05, 2016 (1Y)
■ -	3825/2	EMCO	AMN	9109-1867	Apr. 06, 2016 (1Y)

All test equipment used is calibrated on a regular basis.

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

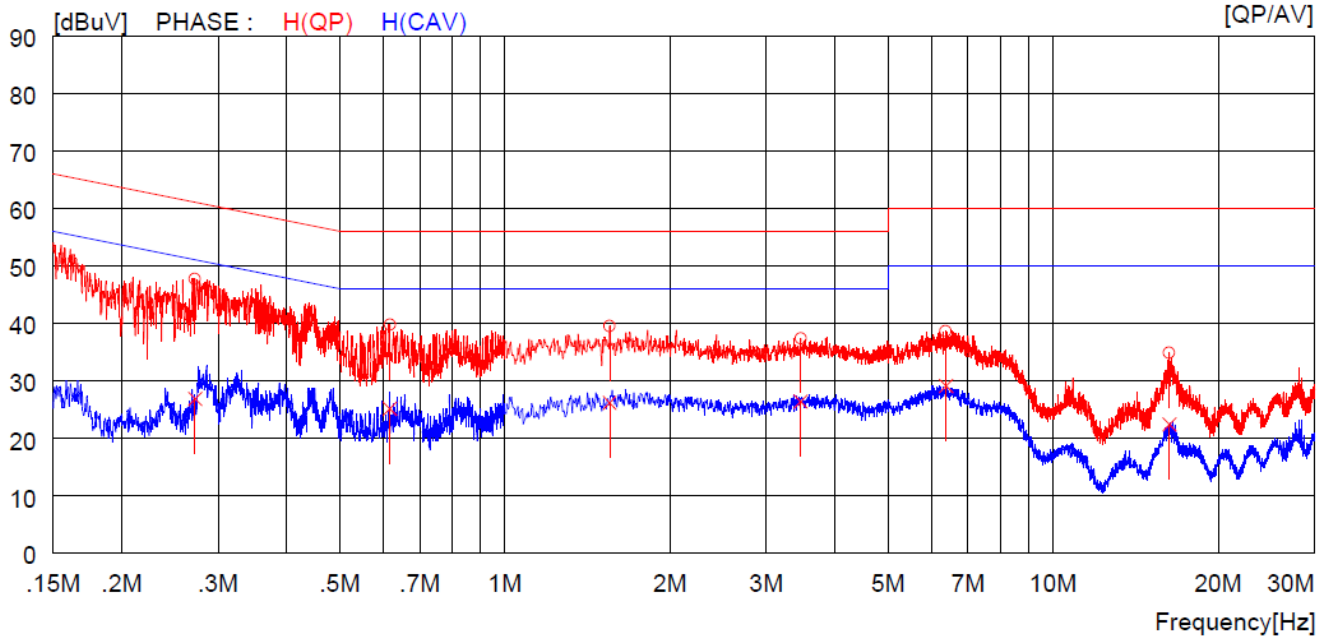
14.4 Test data

-. Test Date : November 08, 2016

-. Resolution bandwidth : 9 kHz

-. Frequency range : 0.15 MHz ~ 30 MHz

-. Tested Line : HOT LINE



NO	FREQ [MHz]	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.27200	47.7	----	0.1	47.8	----	61.1	----	13.3	----	H(QP)
2	0.61700	39.7	----	0.1	39.8	----	56.0	----	16.2	----	H(QP)
3	1.55200	39.4	----	0.1	39.5	----	56.0	----	16.5	----	H(QP)
4	3.46400	37.2	----	0.2	37.4	----	56.0	----	18.6	----	H(QP)
5	6.37000	38.3	----	0.3	38.6	----	60.0	----	21.4	----	H(QP)
6	16.30000	34.3	----	0.6	34.9	----	60.0	----	25.1	----	H(QP)
7	0.27200	----	26.8	0.1	----	26.9	----	51.1	----	24.2	H(CAV)
8	0.61700	----	25.1	0.1	----	25.2	----	46.0	----	20.8	H(CAV)
9	1.55200	----	26.1	0.1	----	26.2	----	46.0	----	19.8	H(CAV)
10	3.46400	----	26.2	0.2	----	26.4	----	46.0	----	19.6	H(CAV)
11	6.37000	----	28.8	0.3	----	29.1	----	50.0	----	20.9	H(CAV)
12	16.30000	----	21.8	0.6	----	22.4	----	50.0	----	27.6	H(CAV)

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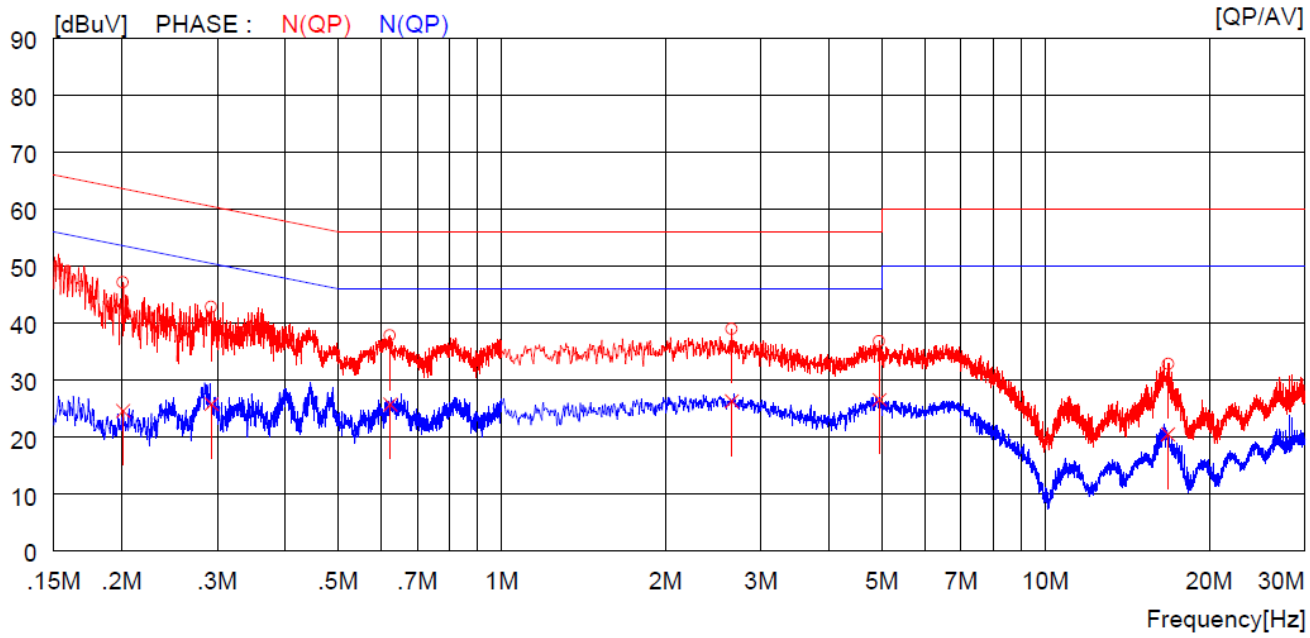
-. Tested Line : NEUTRAL LINE



NO	FREQ [MHz]	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.20100	47.1	----	0.1	47.2	----	63.6	----	16.4	----	N(QP)
2	0.29200	42.7	----	0.1	42.8	----	60.5	----	17.7	----	N(QP)
3	0.62300	37.7	----	0.1	37.8	----	56.0	----	18.2	----	N(QP)
4	2.64800	38.8	----	0.2	39.0	----	56.0	----	17.0	----	N(QP)
5	4.95200	36.6	----	0.2	36.8	----	56.0	----	19.2	----	N(QP)
6	16.82000	32.2	----	0.7	32.9	----	60.0	----	27.1	----	N(QP)
7	0.20100	----	24.5	0.1	----	24.6	----	53.6	----	29.0	N(CAV)
8	0.29200	----	25.7	0.1	----	25.8	----	50.5	----	24.7	N(CAV)
9	0.62300	----	25.6	0.1	----	25.7	----	46.0	----	20.3	N(CAV)
10	2.64800	----	26.1	0.2	----	26.3	----	46.0	----	19.7	N(CAV)
11	4.95200	----	26.4	0.2	----	26.6	----	46.0	----	19.4	N(CAV)
12	16.82000	----	19.8	0.7	----	20.5	----	50.0	----	29.5	N(CAV)

Remark: Margin (dB) = Limit – Level (Result)

The emission level in above table is included the transducer factor that means insertion loss (LISN), cable loss and attenuator.

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