

8.6 Test data for 802.11n_HT40 RLAN Mode

8.6.1 Test data for Antenna 0

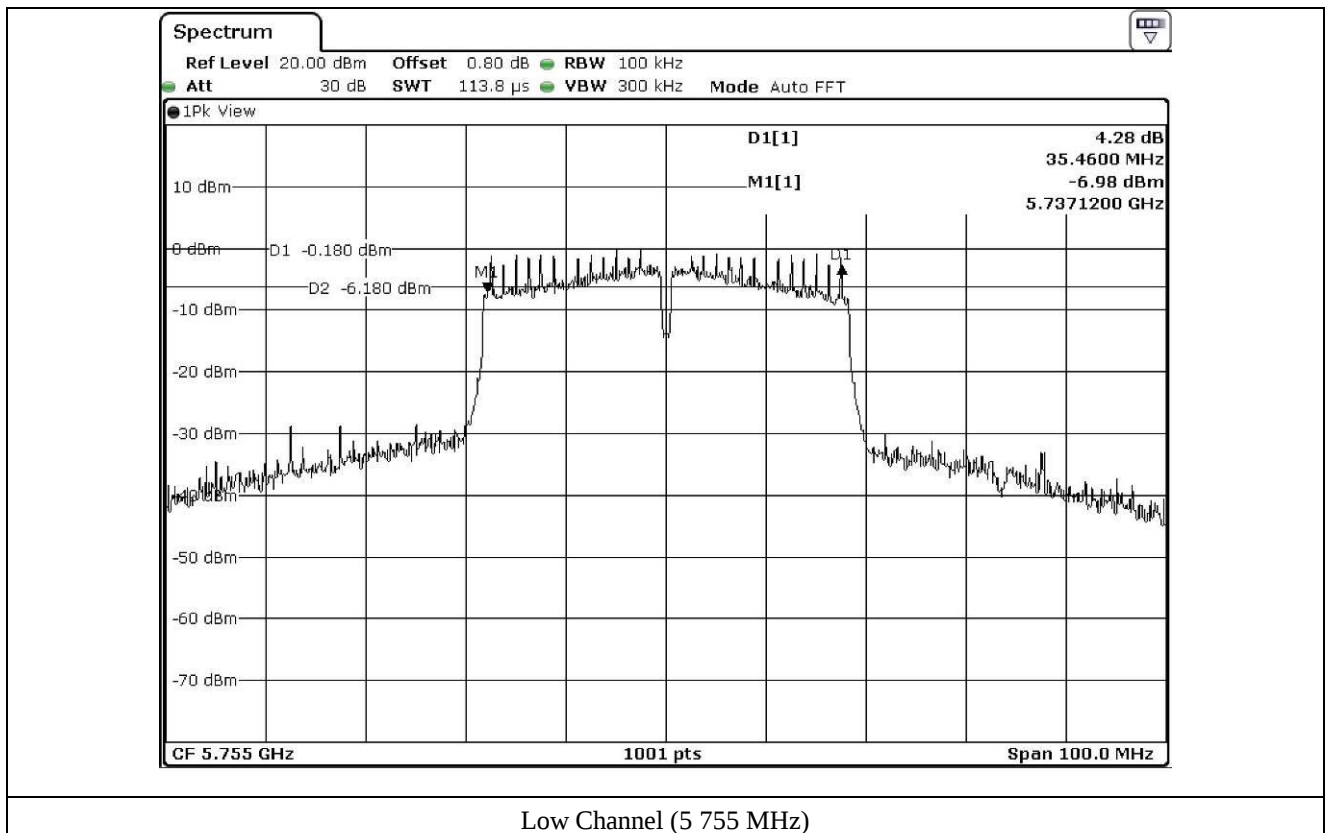
-. Test Date : May 10, 2018 ~ May 17, 2018

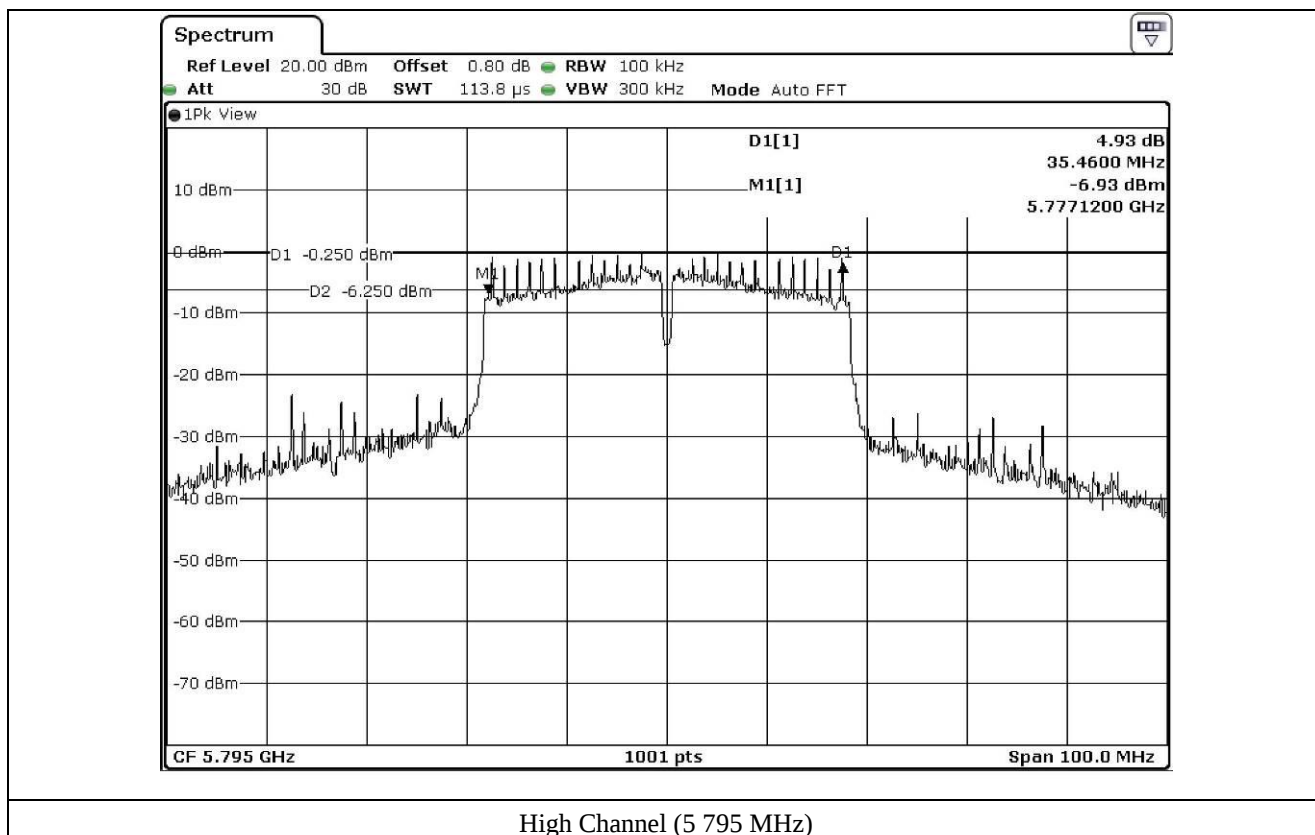
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 725 ~ 5 850	Low	5 755.00	35.46
	High	5 795.00	35.46



Tested by: Hyung-Kwon, Oh / Engineer





8.6.2 Test data for Antenna 1

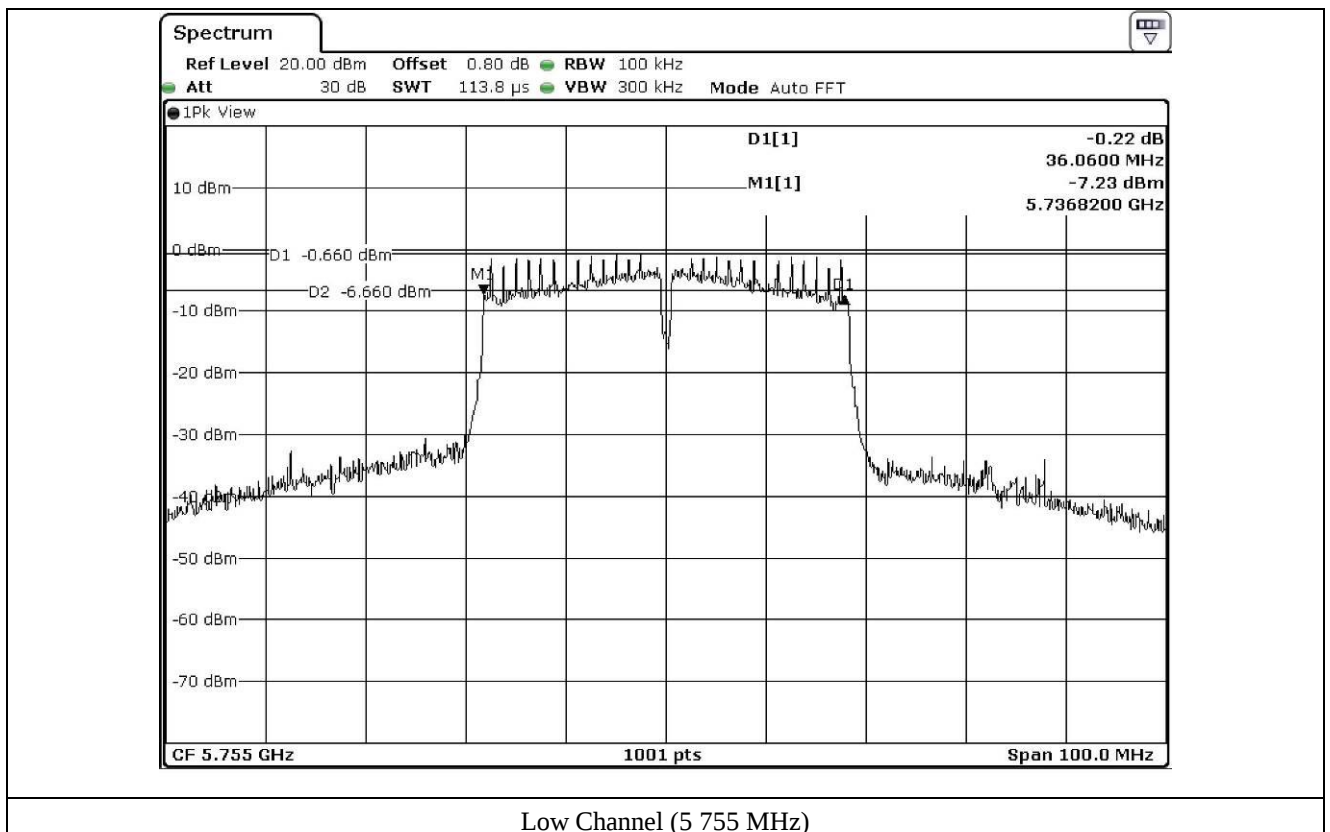
-. Test Date : May 10, 2018 ~ May 17, 2018

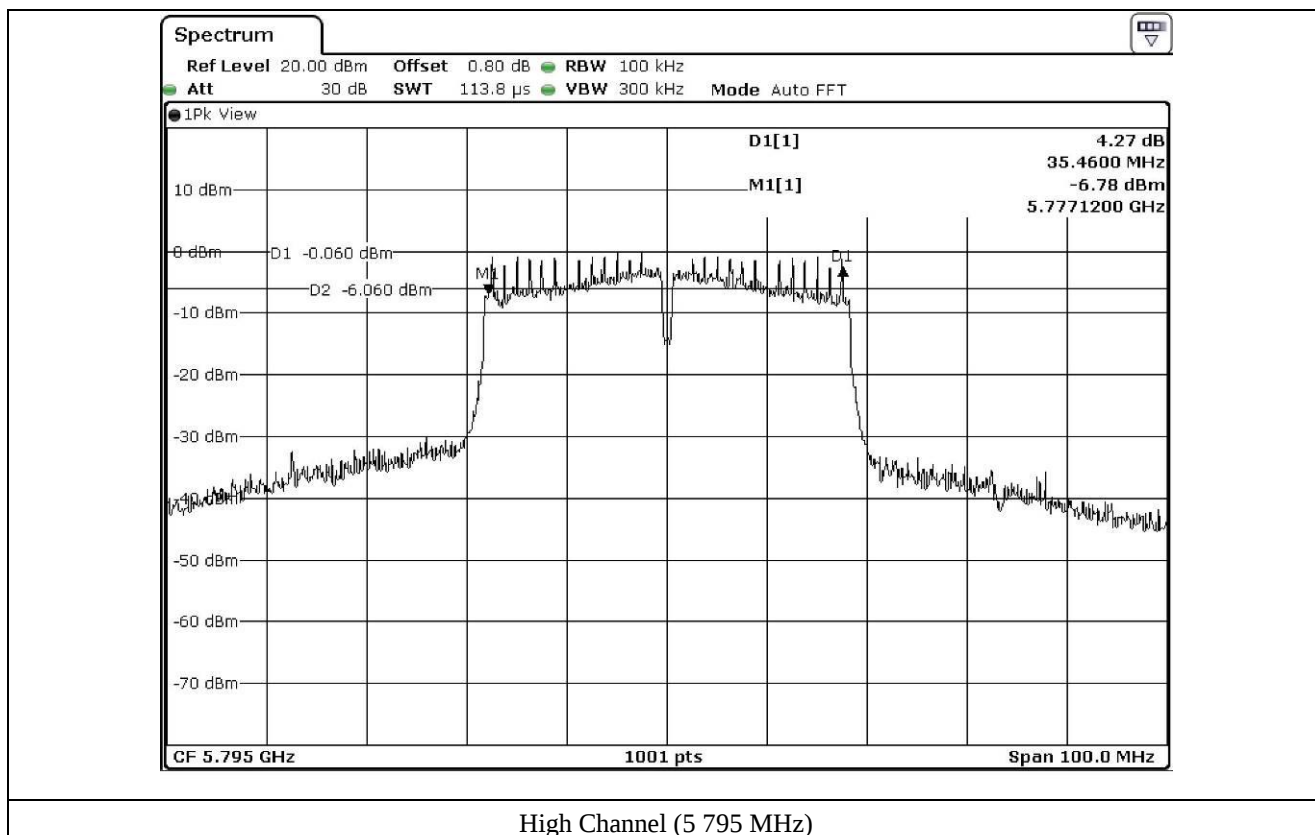
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 725 ~ 5 850	Low	5 755.00	36.06
	High	5 795.00	35.46



Tested by: Hyung-Kwon, Oh / Engineer





8.7 Test data for 802.11ac_VHT80 RLAN Mode

8.7.1 Test data for Antenna 0

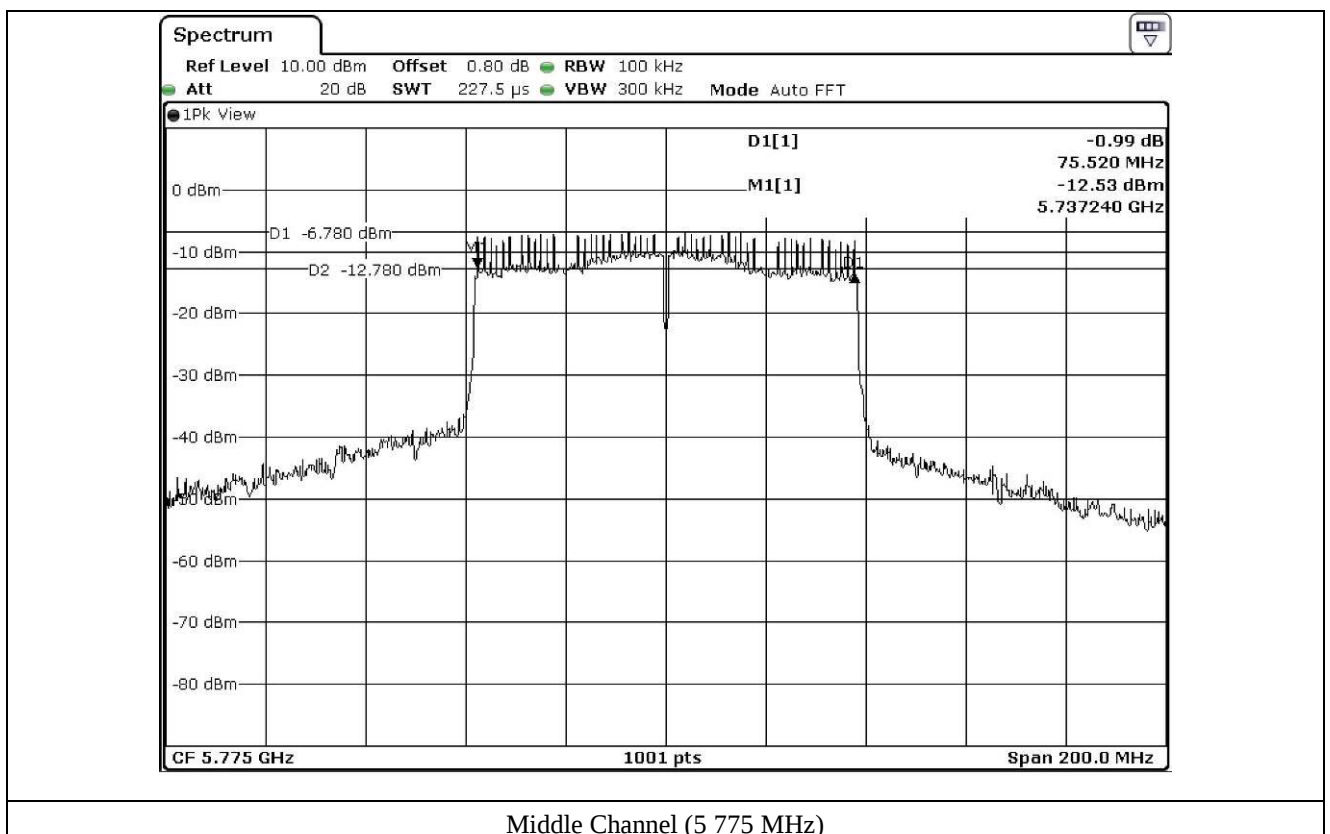
-. Test Date : May 10, 2018 ~ May 17, 2018

-. Test Result : Pass

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



Tested by: Hyung-Kwon, Oh / Assistant Manager



-, Test Result : Pass

Tested by: Hyung-Kwon, Oh / Assistant Manager



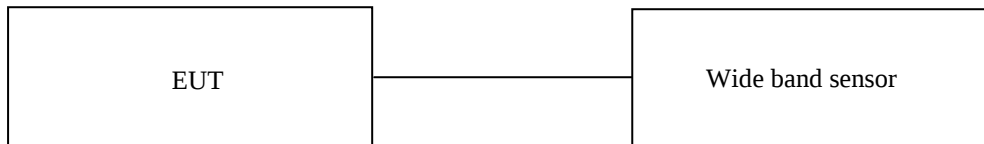
9. MAXIMUM PEAK OUTPUT POWER

9.1 Operating environment

Temperature : 22 °C
Relative humidity : 41 % R.H.

9.2 Test set-up

The maximum peak output power was measured with the wide band sensor connected to the antenna output of the EUT.
The Wide Band Sensor 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 v02r01).
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.
■ - NRP-Z81	Rohde & Schwarz	Wide band Sensor	101975	Mar. 15, 2018 (1Y)

All test equipment used is calibrated on a regular basis.

9.4 Test data for 802.11a RLAN Mode

9.4.1 Test data for Antenna 0

-. Test Date : May 10, 2018 ~ May 17, 2018

-. Test Result : Pass

-. Duty Cycle : > 98 %

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 180.00	12.76	24.00	11.24
	Middle	5 220.00	13.19	24.00	10.81
	High	5 240.00	12.95	24.00	11.05
5 725 ~ 5 850	Low	5 745.00	11.86	30.00	18.14
	Middle	5 785.00	12.52	30.00	17.48
	High	5 825.00	11.70	30.00	18.30

Remark : Margin = Limit – Measured Value (=Power Sensor Reading - Cable Loss)

9.4.2 Test data for Antenna 1

-. Test Date : May 10, 2018 ~ May 17, 2018

-. Test Result : Pass

-. Duty Cycle : > 98 %

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 180.00	13.67	24.00	10.33
	Middle	5 220.00	12.46	24.00	11.54
	High	5 240.00	13.84	24.00	10.16
5 725 ~ 5 850	Low	5 745.00	11.50	30.00	18.50
	Middle	5 785.00	12.56	30.00	17.44
	High	5 825.00	11.78	30.00	18.22

Remark : Margin = Limit – Measured Value (=Power Sensor Reading - Cable Loss)



Tested by: Hyung-Kwon, Oh / Assistant Manager

9.5 Test data for 802.11n_HT20 RLAN Mode

9.5.1 Test data for Antenna 0

-. Test Date : May 10, 2018 ~ May 17, 2018

-. Test Result : Pass

-. Duty Cycle : > 98 %

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 180.00	12.91	24.00	11.09
	Middle	5 220.00	12.43	24.00	11.57
	High	5 240.00	12.53	24.00	11.47
5 725 ~ 5 850	Low	5 745.00	11.98	30.00	18.02
	Middle	5 785.00	12.17	30.00	17.83
	High	5 825.00	11.57	30.00	18.43

Remark : Margin = Limit – Measured Value (=Power Sensor Reading - Cable Loss)

9.5.2 Test data for Antenna 1

-. Test Date : May 10, 2018 ~ May 17, 2018

-. Test Result : Pass

-. Duty Cycle : > 98 %

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 180.00	13.71	24.00	10.29
	Middle	5 220.00	12.91	24.00	11.09
	High	5 240.00	13.54	24.00	10.46
5 725 ~ 5 850	Low	5 745.00	11.35	30.00	18.65
	Middle	5 785.00	12.85	30.00	17.15
	High	5 825.00	11.56	30.00	18.44

Remark : Margin = Limit – Measured Value (=Power Sensor Reading - Cable Loss)



Tested by: Hyung-Kwon, Oh / Assistant Manager

9.5.3 Test data for Multiple Transmit

-. Test Date : May 10, 2018 ~ May 17, 2018

-. Test Result : Pass

-. Duty Cycle : > 98 %

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 180.00	16.34	24.00	7.66
	Middle	5 220.00	15.69	24.00	8.31
	High	5 240.00	16.07	24.00	7.93
5 725 ~ 5 850	Low	5 745.00	14.69	30.00	15.31
	Middle	5 785.00	15.53	30.00	14.47
	High	5 825.00	14.58	30.00	15.42

Remark 1: Margin = Limit – Measured Value (=Power Sensor Reading - Cable Loss)

Remark 2: Calculated Output Power= $10\log(10^{(\text{Antenna0 Output Power}/10)} + 10^{(\text{Antenna1 Output Power}/10)})$



Tested by: Hyung-Kwon, Oh / Assistant Manager

9.6 Test data for 802.11n_HT40 RLAN Mode

9.6.1 Test data for Antenna 0

-. Test Date : May 10, 2018 ~ May 17, 2018

-. Test Result : Pass

-. Duty Cycle : > 98 %

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 190.00	11.35	24.00	12.65
	High	5 230.00	11.45	24.00	12.55
5 725 ~ 5 850	Low	5 755.00	11.45	30.00	18.55
	High	5 795.00	11.93	30.00	18.07

Remark : Margin = Limit – Measured Value (=Power Sensor Reading - Cable Loss)

9.6.2 Test data for Antenna 1

-. Test Date : May 10, 2018 ~ May 17, 2018

-. Test Result : Pass

-. Duty Cycle : > 98 %

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 190.00	12.71	24.00	11.29
	High	5 230.00	12.25	24.00	11.75
5 725 ~ 5 850	Low	5 755.00	11.50	30.00	18.50
	High	5 795.00	11.87	30.00	18.13

Remark : Margin = Limit – Measured Value (=Power Sensor Reading - Cable Loss)



Tested by: Hyung-Kwon, Oh / Engineer

9.6.3 Test data for Multiple Transmit

-. Test Date : May 10, 2018 ~ May 17, 2018

-. Test Result : Pass

-. Duty Cycle : > 98 %

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 190.00	15.09	24.00	8.91
	High	5 230.00	14.88	24.00	9.12
5 725 ~ 5 850	Low	5 755.00	14.49	30.00	15.51
	High	5 795.00	14.91	30.00	15.09

Remark 1: Margin = Limit – Measured Value (=Power Sensor Reading - Cable Loss)

Remark 2: Calculated Output Power= $10\log(10^{(\text{Antenna0 Output Power}/10)} + 10^{(\text{Antenna1 Output Power}/10)})$



Tested by: Hyung-Kwon, Oh / Assistant Manager

9.7 Test data for 802.11ac_HT80 RLAN Mode

9.7.1 Test data for Antenna 0

-. Test Date : May 10, 2018 ~ May 17, 2018

-. Test Result : Pass

-. Duty Cycle : > 98 %

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Middle	5 210.00	6.48	24.00	17.52
5 725 ~ 5 850	Middle	5 775.00	8.36	30.00	21.64

Remark : Margin = Limit – Measured Value (=Power Sensor Reading - Cable Loss)

9.7.2 Test data for Antenna 1

-. Test Date : May 10, 2018 ~ May 17, 2018

-. Test Result : Pass

-. Duty Cycle : > 98 %

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Middle	5 210.00	7.16	24.00	16.84
5 725 ~ 5 850	Middle	5 775.00	7.14	30.00	22.86

Remark : Margin = Limit – Measured Value (=Power Sensor Reading - Cable Loss)



Tested by: Hyung-Kwon, Oh / Assistant Manager

9.7.3 Test data for Multiple Transmit

-. Test Date : May 10, 2018 ~ May 17, 2018

-. Test Result : Pass

-. Duty Cycle : > 98 %

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Middle	5 210.00	9.84	24.00	14.16
5 725 ~ 5 850	Middle	5 775.00	10.80	30.00	19.20

Remark 1: Margin = Limit – Measured Value (=Power Sensor Reading - Cable Loss)

Remark 2: Calculated Output Power= $10\log(10^{(\text{Antenna0 Output Power}/10)} + 10^{(\text{Antenna1 Output Power}/10)})$



Tested by: Hyung-Kwon, Oh / Assistant Manager

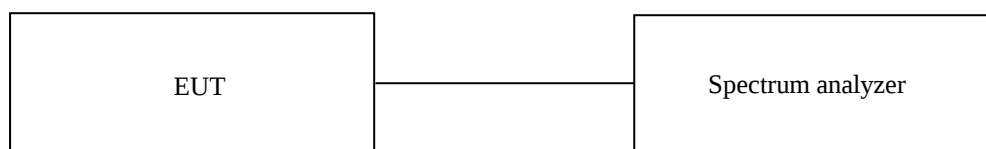
10. PEAK POWER SPECTRUL DENSITY

10.1 Operating environment

Temperature : 23 °C
Relative humidity : 41 % R.H.

10.2 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.



10.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ -	FSV40	Rohde & Schwarz	Signal Analyzer	101009	Mar. 14, 2018 (1Y)

All test equipment used is calibrated on a regular basis.

10.4 Test data for 802.11a RLAN Mode

10.4.1 Test data for Antenna 0

-. Test Date : May 10, 2018 ~ May 17, 2018

-. Operating condition : Highest Output Power Transmitting Mode

-. Test Result : Pass

FREQUEN CY RANGE (MHz)	CHANNEL	FREQUEN CY (MHz)	MEASURE D VALUE (dBm)	RBW Converted Value(dB)	Total (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 180.00	3.99		3.99	11.00	7.01
	Middle	5 220.00	3.54		3.54	11.00	7.46
	High	5 240.00	3.81		3.81	11.00	7.19
5 725 ~ 5 850	Low	5 745.00	10.01	3.01	7.00	30.00	23.00
	Middle	5 785.00	10.30	3.01	7.29	30.00	22.71
	High	5 825.00	9.88	3.01	6.87	30.00	23.13

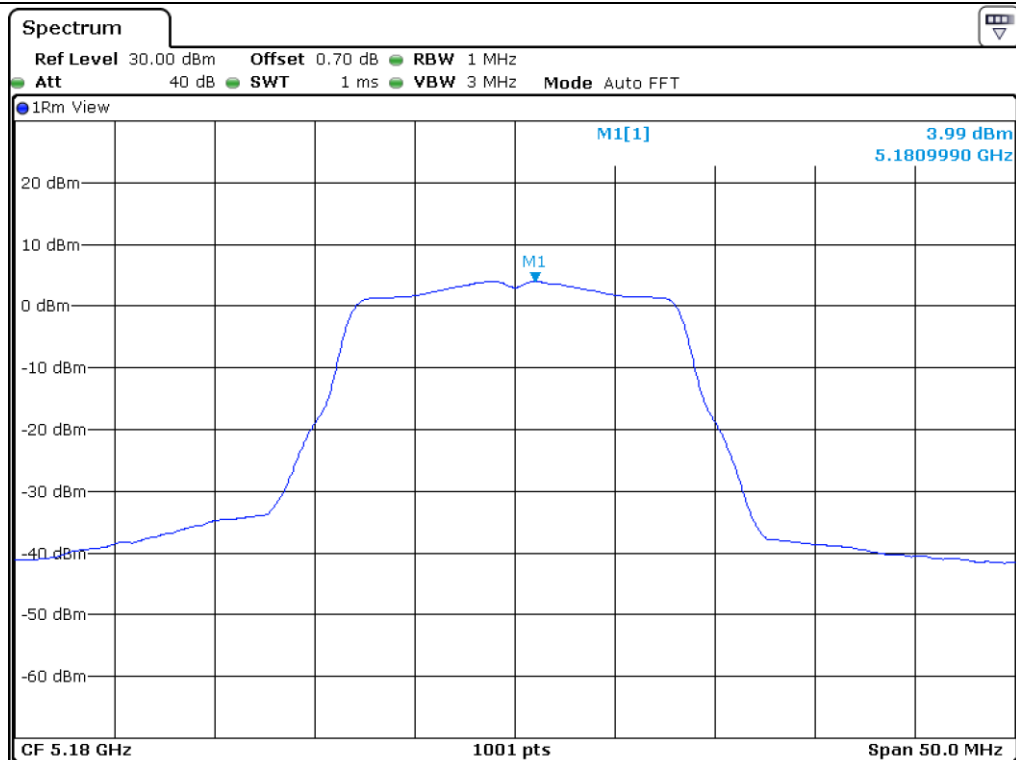
Remark 1: Calculated RBW Converted Value(dB)= 10Log(Measured RBW/Standard Set RBW)

Remark 2: Total(dBm) = MEASURED VALUE(dBm) – RBW Converted Value(dB)

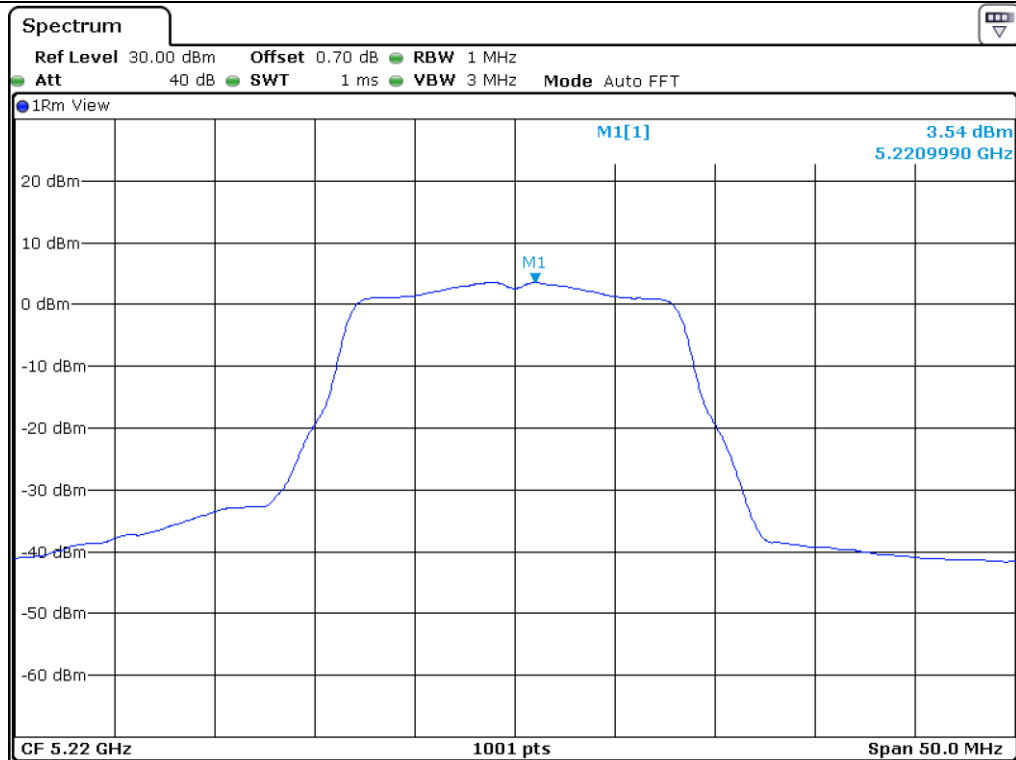
Remark 3: See next page for measurement data.



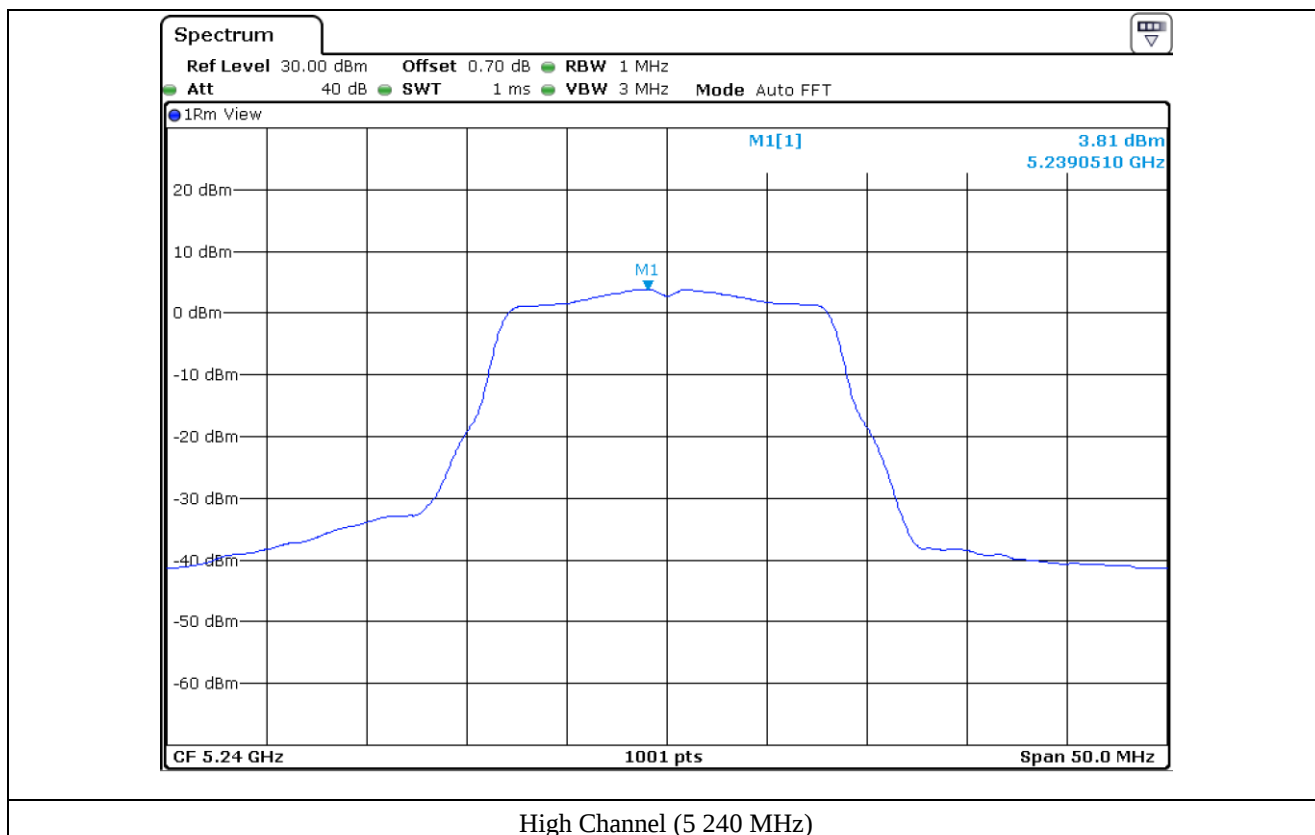
Tested by: Hyung-Kwon, Oh / Engineer

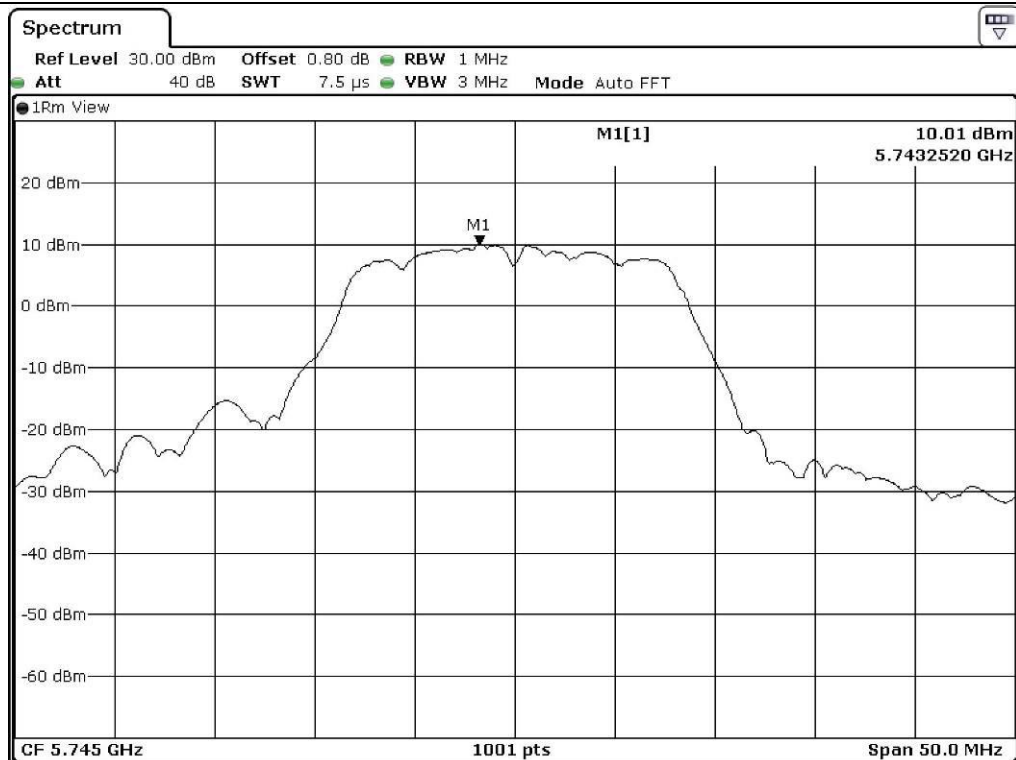


Low Channel (5 180 MHz)

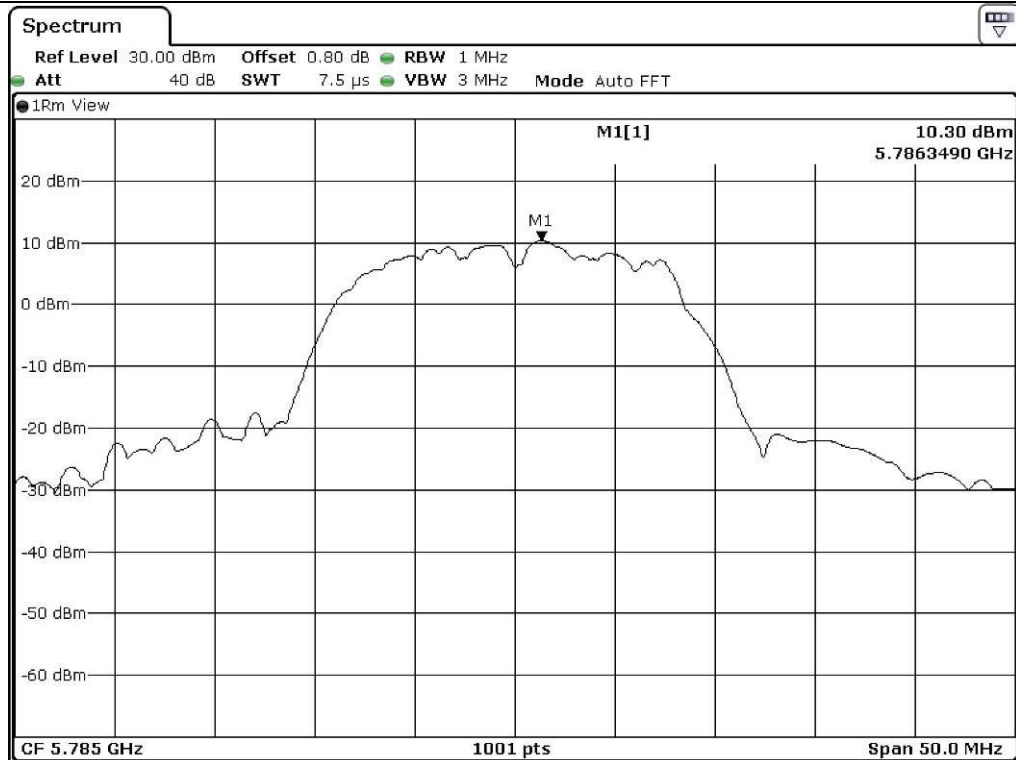


Middle Channel (5 220 MHz)

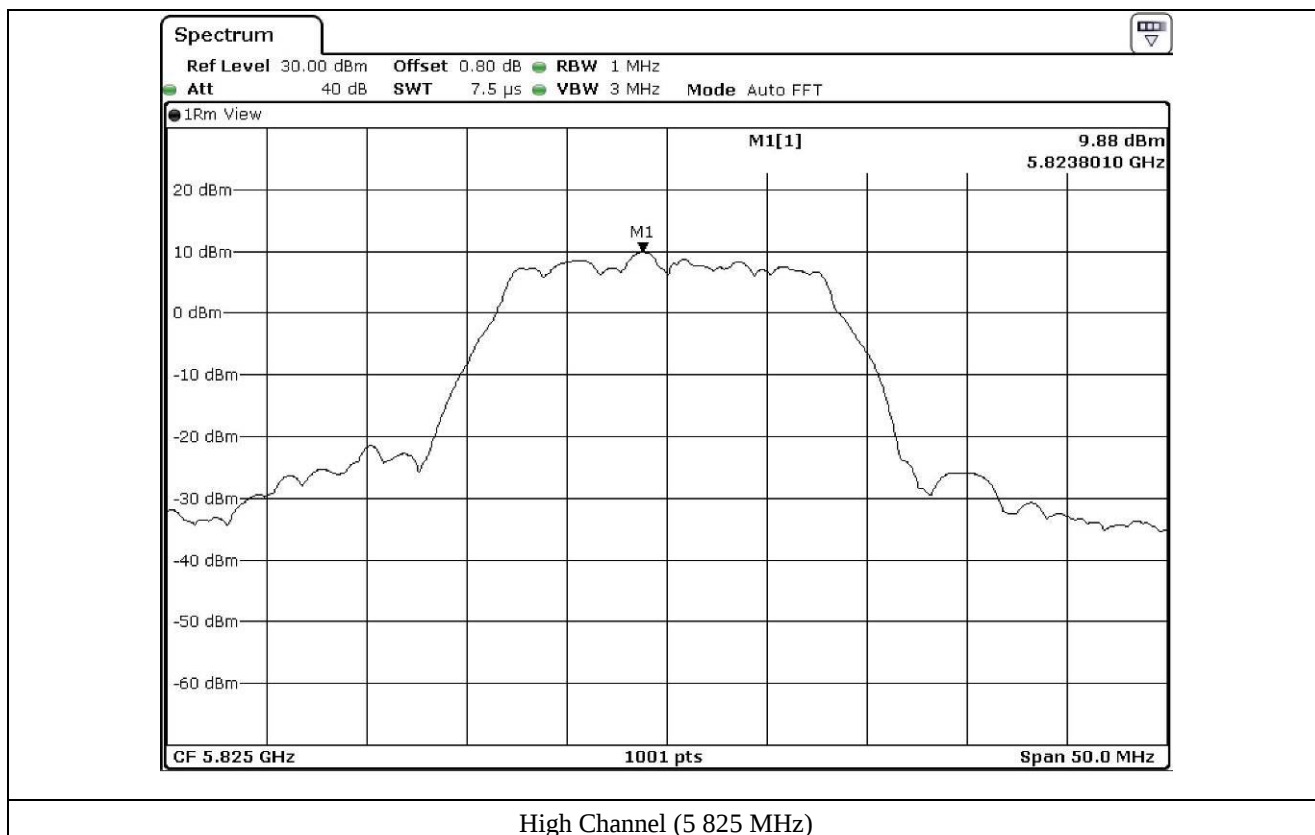




Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)



10.4.2 Test data for Antenna 1

-. Test Date : May 10, 2018 ~ May 17, 2018

-. Operating condition : Highest Output Power Transmitting Mode

-. Test Result : Pass

FREQUEN CY RANGE (MHz)	CHANNEL	FREQUEN CY (MHz)	MEASURE D VALUE (dBm)	RBW Converted Value(dB)	Total (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 180.00	4.75		4.75	11.00	6.25
	Middle	5 220.00	4.00		4.00	11.00	7.00
	High	5 240.00	4.32		4.32	11.00	6.68
5 725 ~ 5 850	Low	5 745.00	9.98	3.01	6.97	30.00	23.03
	Middle	5 785.00	10.36	3.01	7.35	30.00	22.65
	High	5 825.00	9.74	3.01	6.73	30.00	23.27

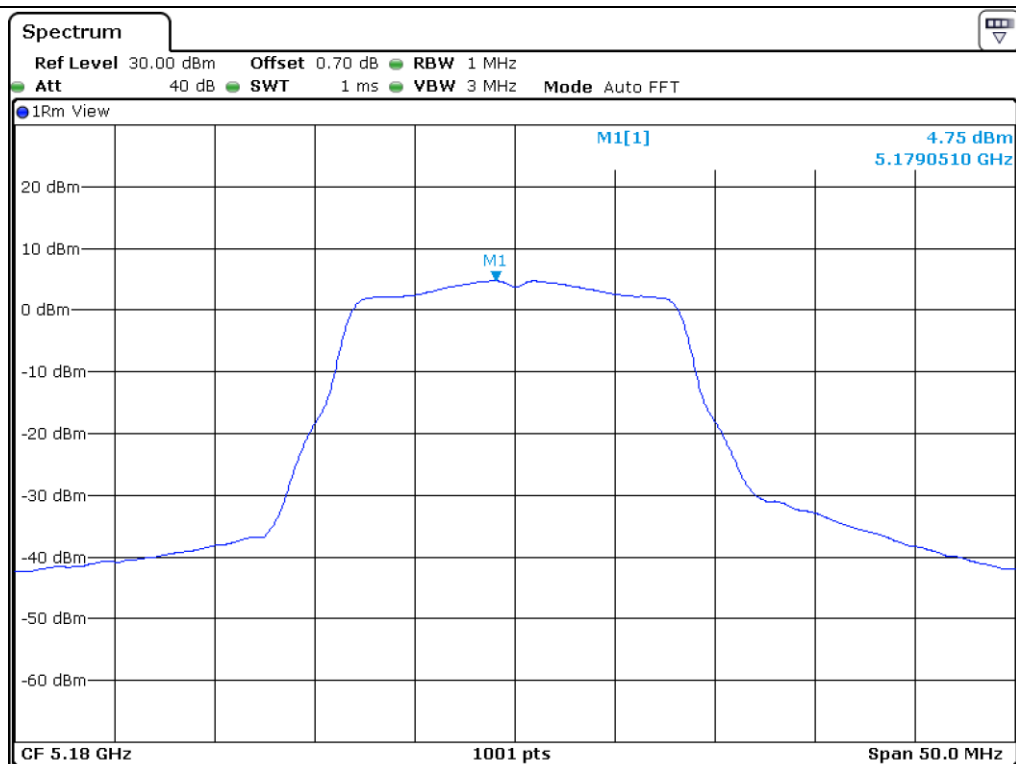
Remark 1: Calculated RBW Converted Value(dB)= 10Log(Measured RBW/Standard Set RBW)

Remark 2: Total(dBm) = MEASURED VALUE(dBm) – RBW Converted Value(dB)

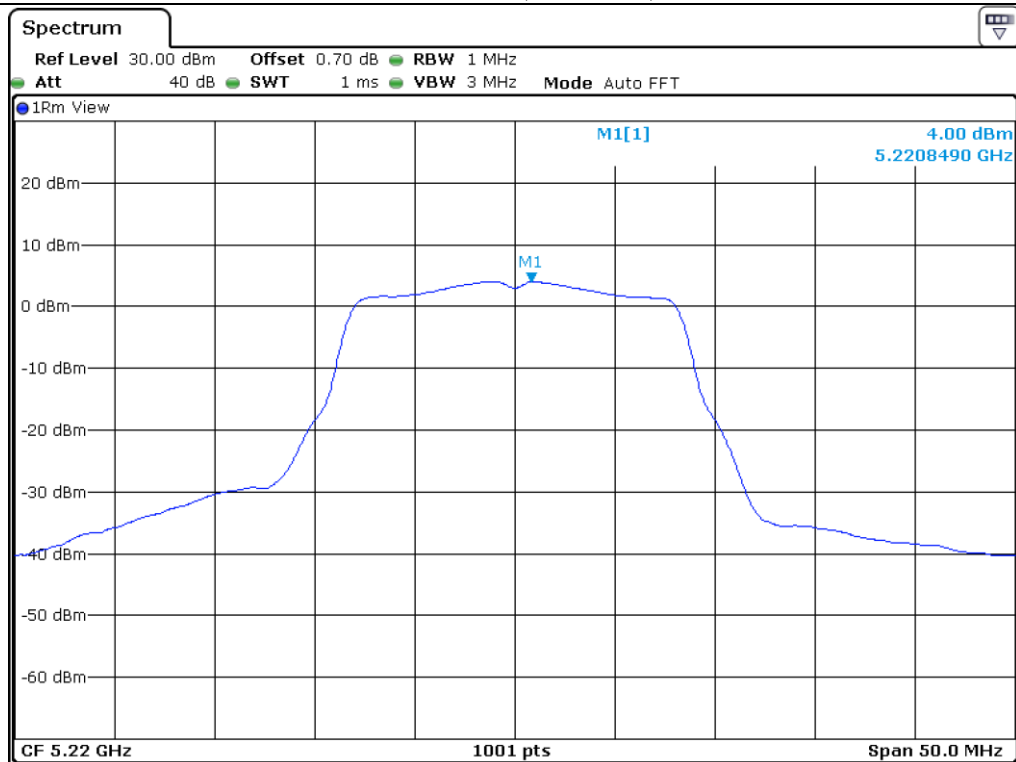
Remark 3: See next page for measurement data.



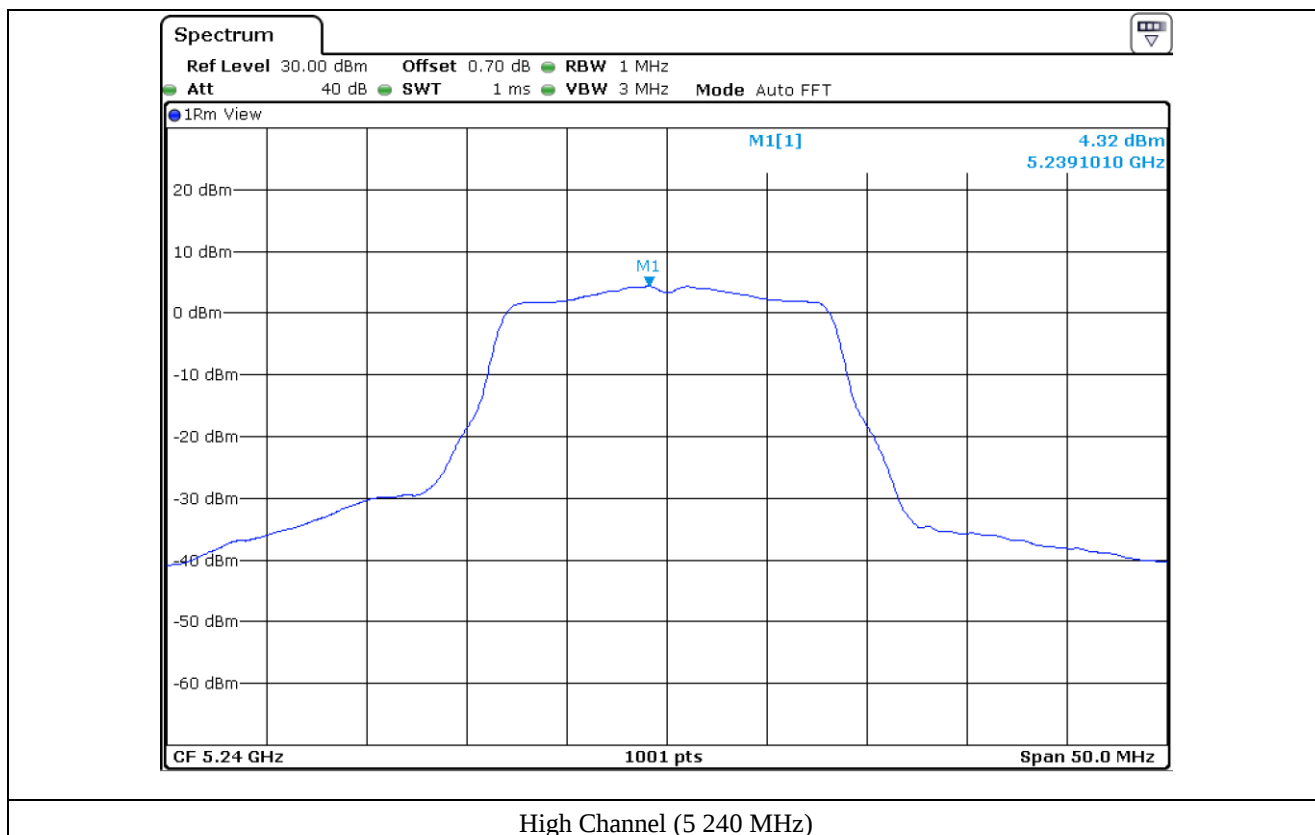
Tested by: Hyung-Kwon, Oh / Engineer

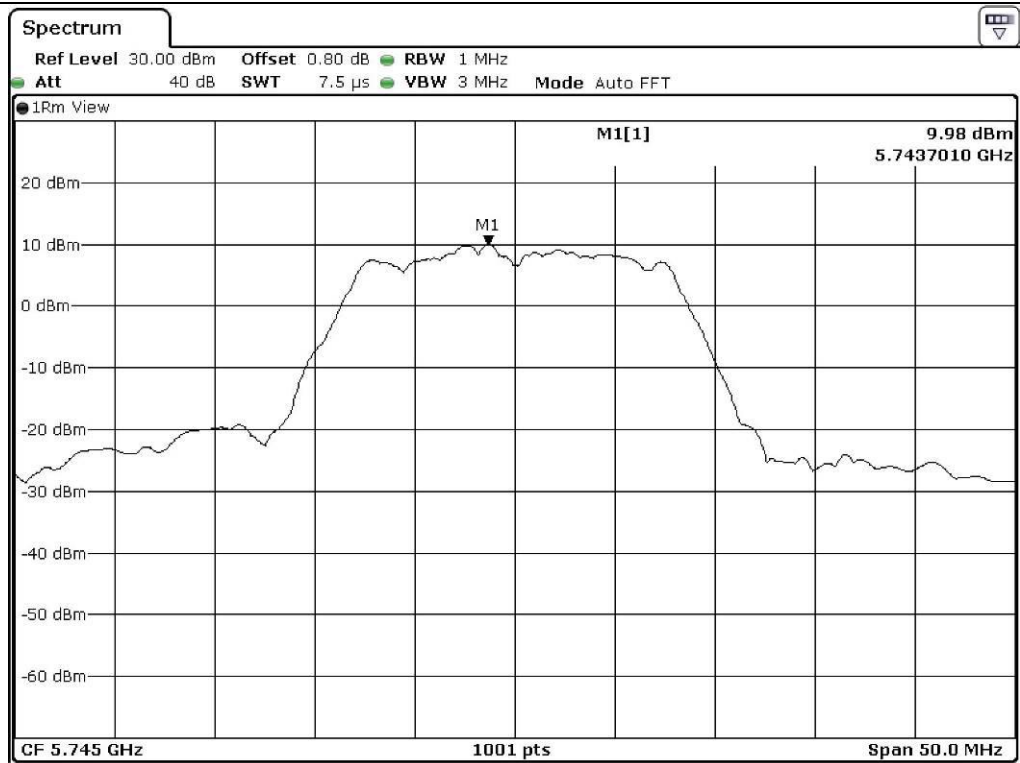


Low Channel (5 180 MHz)

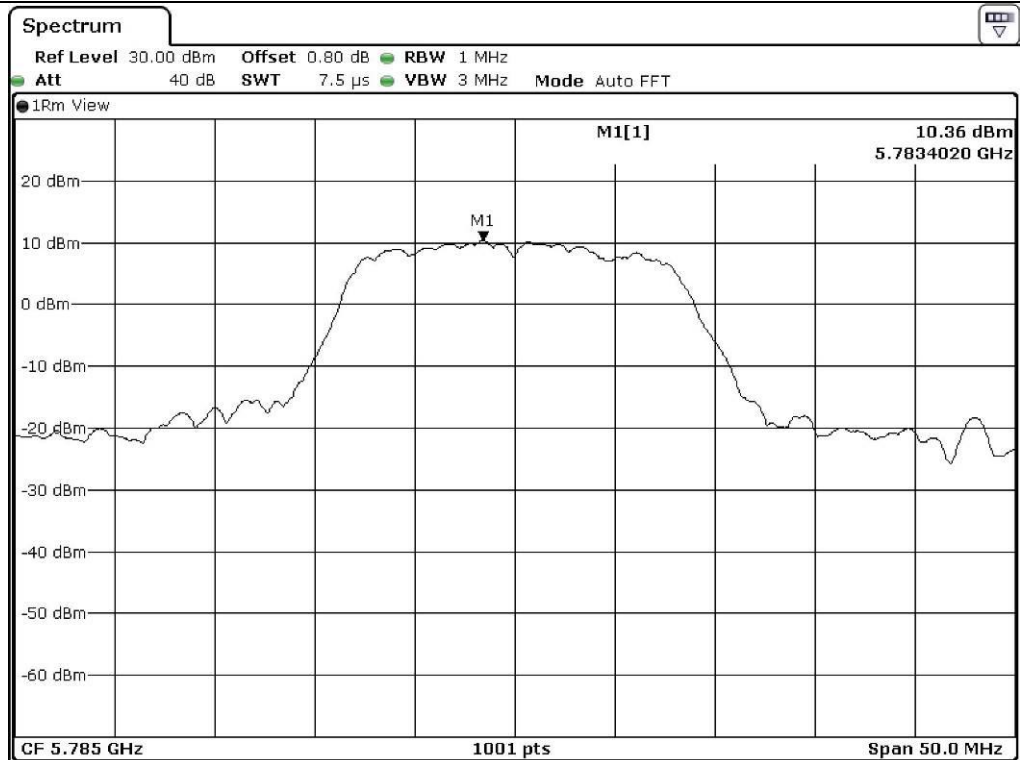


Middle Channel (5 220 MHz)

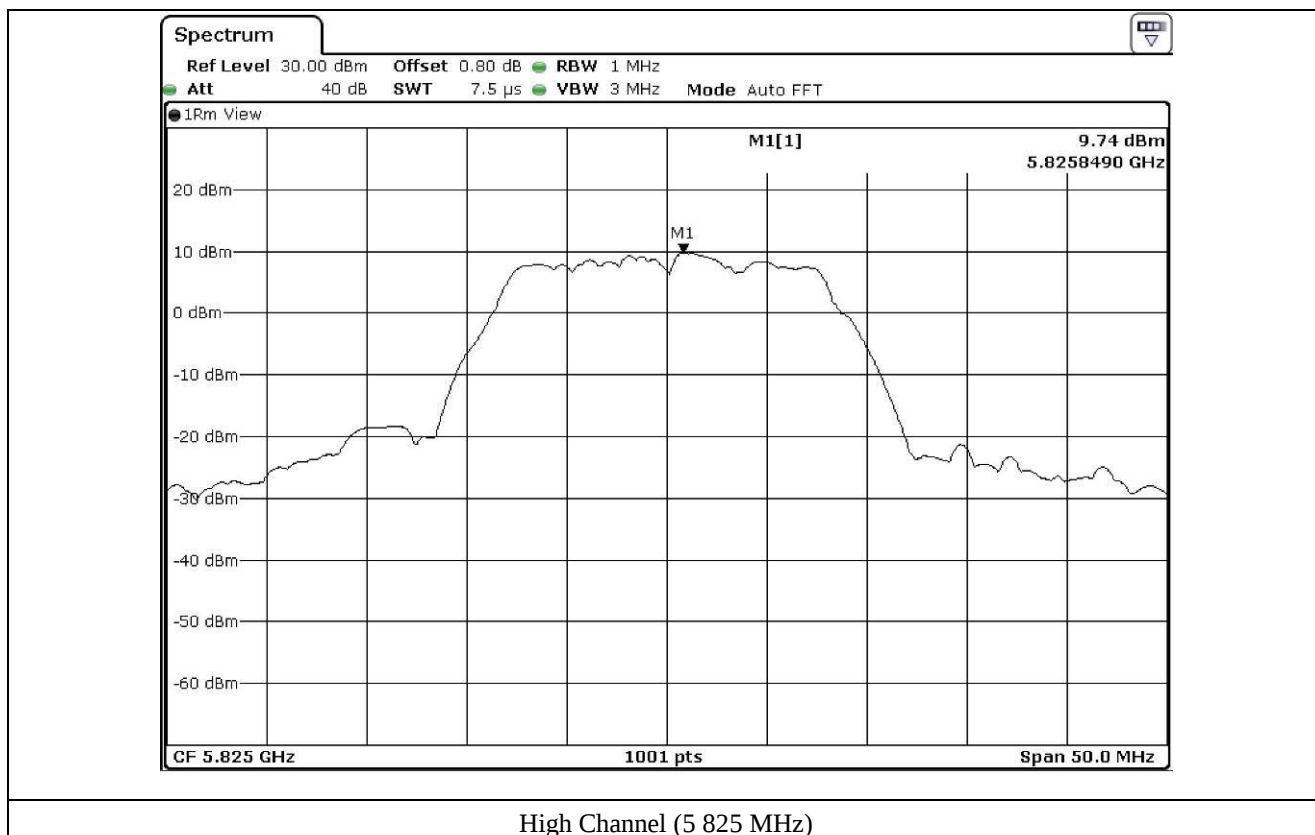




Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)



10.5 Test data for 802.11n_HT20 RLAN Mode

10.5.1 Test data for Antenna 0

-. Test Date : May 10, 2018 ~ May 17, 2018

-. Operating condition : Highest Output Power Transmitting Mode

-. Test Result : Pass

FREQUEN CY RANGE (MHz)	CHANNEL	FREQUEN CY (MHz)	MEASURE D VALUE (dBm)	RBW Converted Value(dB)	Total (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 180.00	3.56		3.56	11.00	7.44
	Middle	5 220.00	3.02		3.02	11.00	7.98
	High	5 240.00	3.29		3.29	11.00	7.71
5 725 ~ 5 850	Low	5 745.00	9.39	3.01	6.38	30.00	23.62
	Middle	5 785.00	8.96	3.01	5.95	30.00	24.05
	High	5 825.00	8.88	3.01	5.87	30.00	24.13

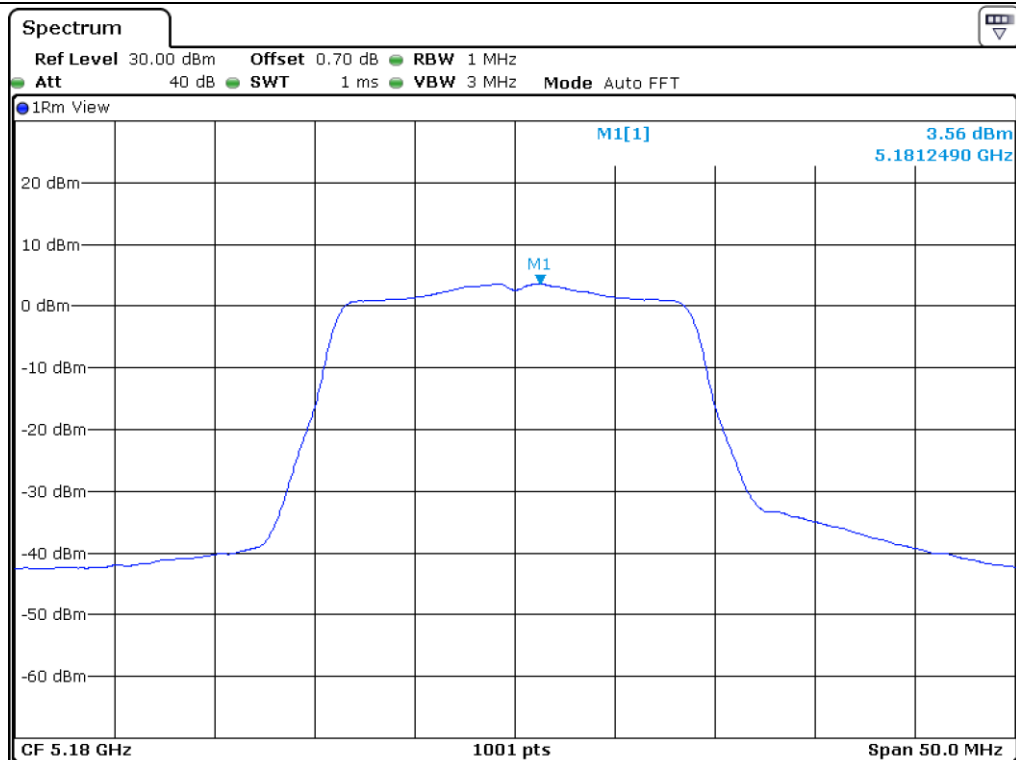
Remark 1: Calculated RBW Converted Value(dB)= 10Log(Measured RBW/Standard Set RBW)

Remark 2: Total(dBm) = MEASURED VALUE(dBm) – RBW Converted Value(dB)

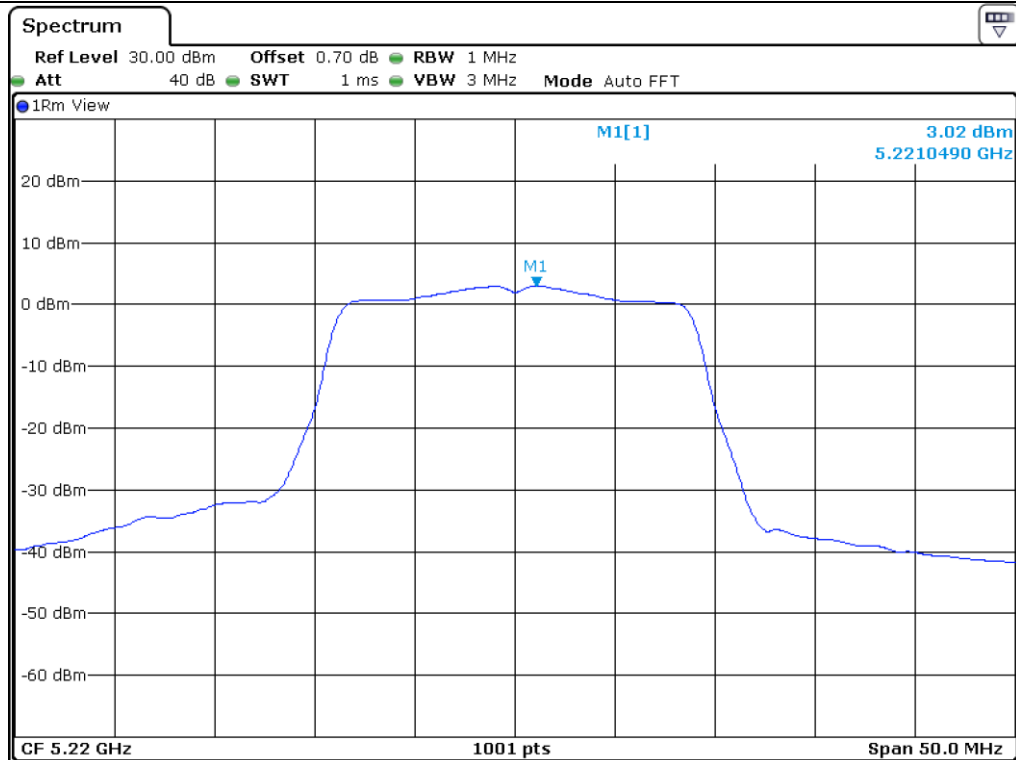
Remark 3: See next page for measurement data.



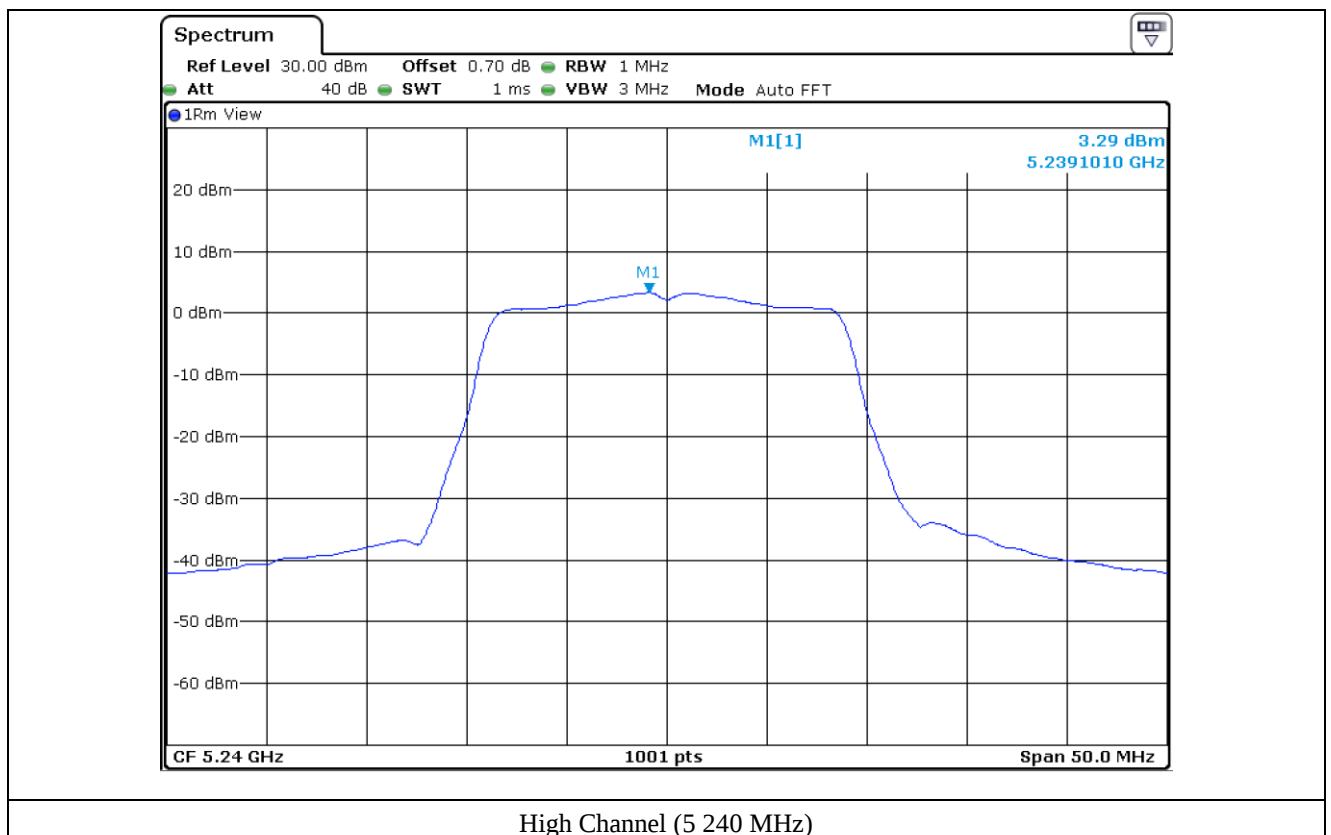
Tested by: Hyung-Kwon, Oh / Engineer

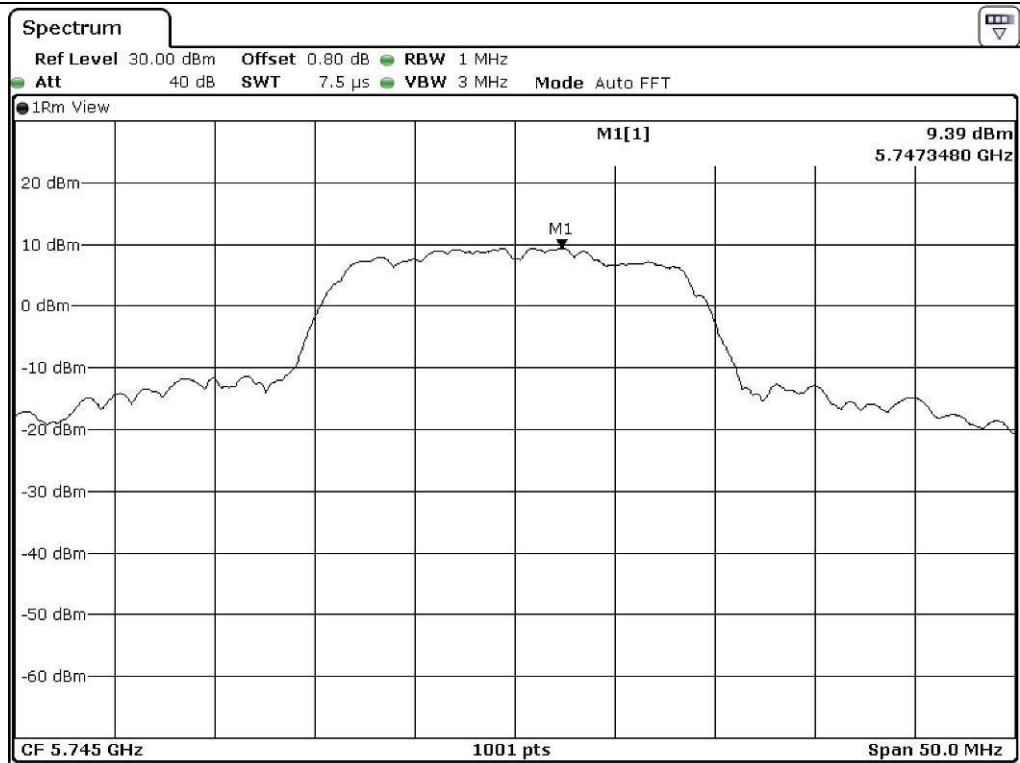


Low Channel (5 180 MHz)

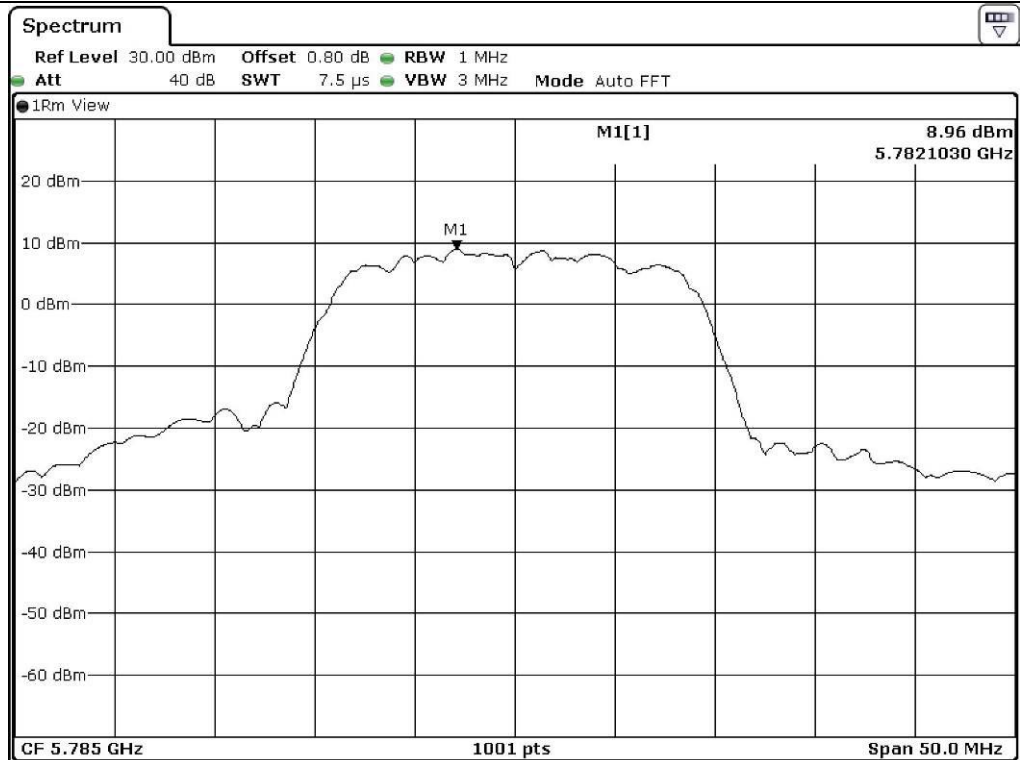


Middle Channel (5 220 MHz)

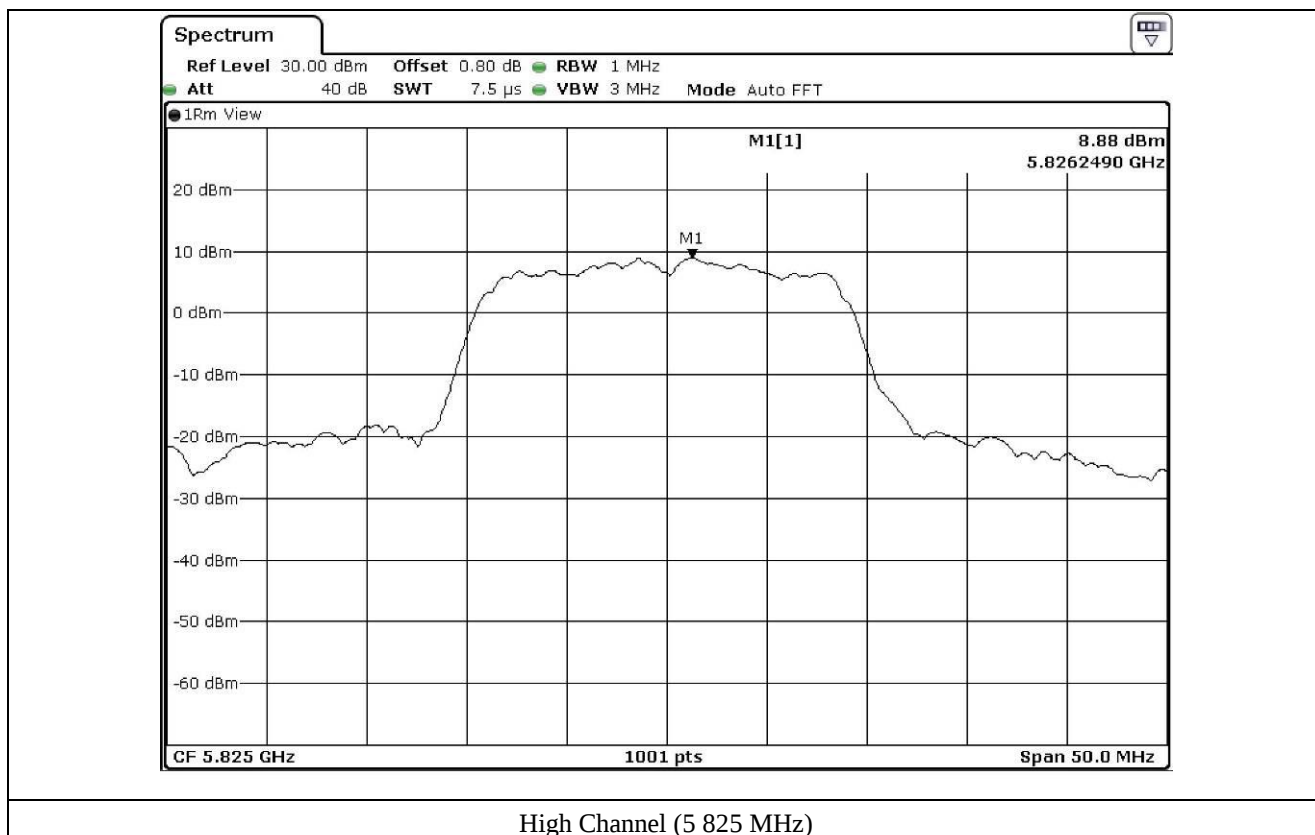




Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)



10.5.2 Test data for Antenna 1

- . Test Date : May 10, 2018 ~ May 17, 2018
- . Operating condition : Highest Output Power Transmitting Mode
- . Test Result : Pass

FREQUEN CY RANGE (MHz)	CHANNEL	FREQUEN CY (MHz)	MEASURE D VALUE (dBm)	RBW Converted Value(dB)	Total (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 180.00	4.51		4.51	11.00	6.49
	Middle	5 220.00	3.94		3.94	11.00	7.06
	High	5 240.00	3.90		3.90	11.00	7.10
5 725 ~ 5 850	Low	5 745.00	9.87	3.01	6.86	30.00	23.14
	Middle	5 785.00	9.60	3.01	6.59	30.00	23.41
	High	5 825.00	9.24	3.01	6.23	30.00	23.77

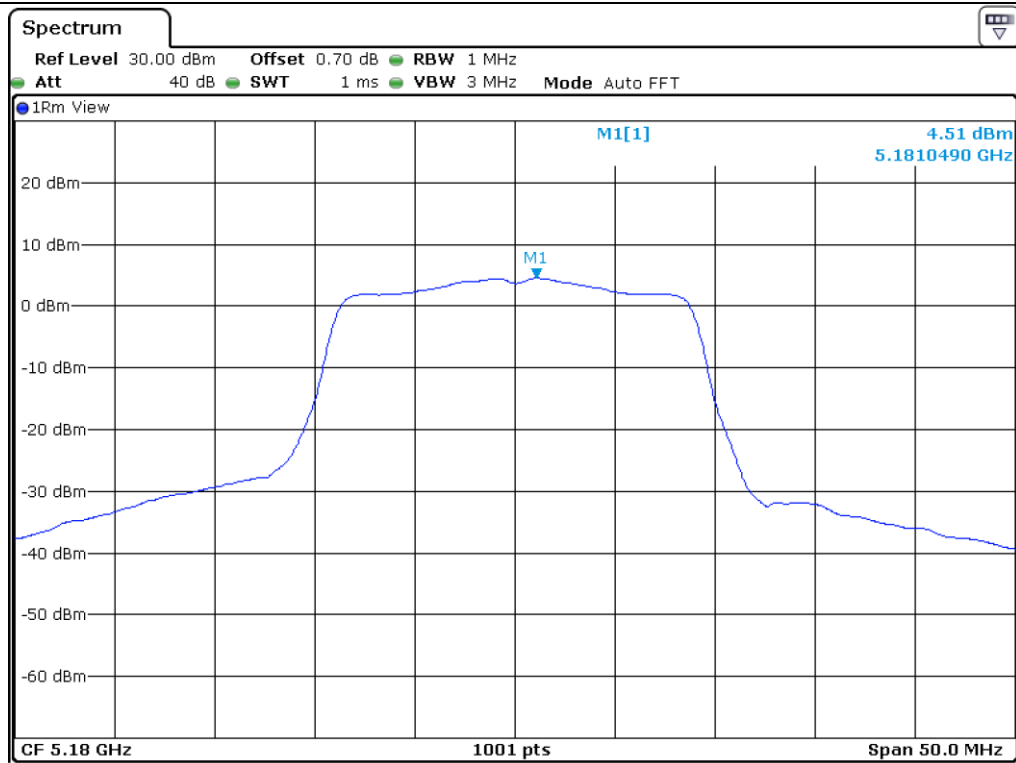
Remark 1: Calculated RBW Converted Value(dB)= 10Log(Measured RBW/Standard Set RBW)

Remark 2: Total(dBm) = MEASURED VALUE(dBm) – RBW Converted Value(dB)

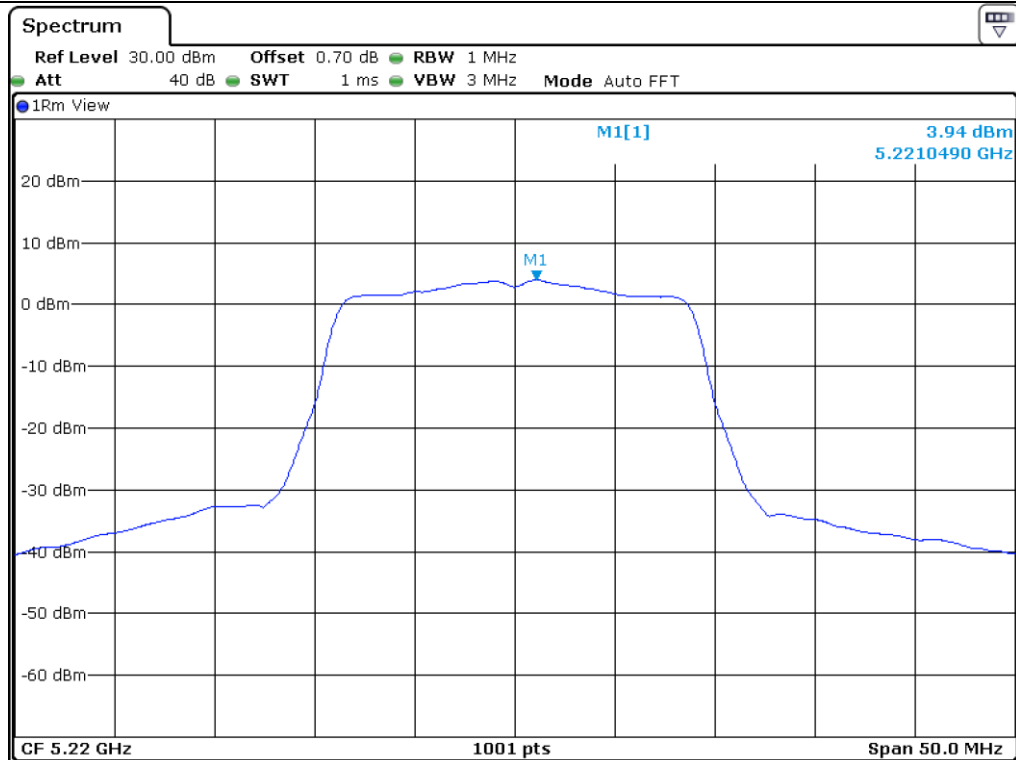
Remark 3: See next page for measurement data.



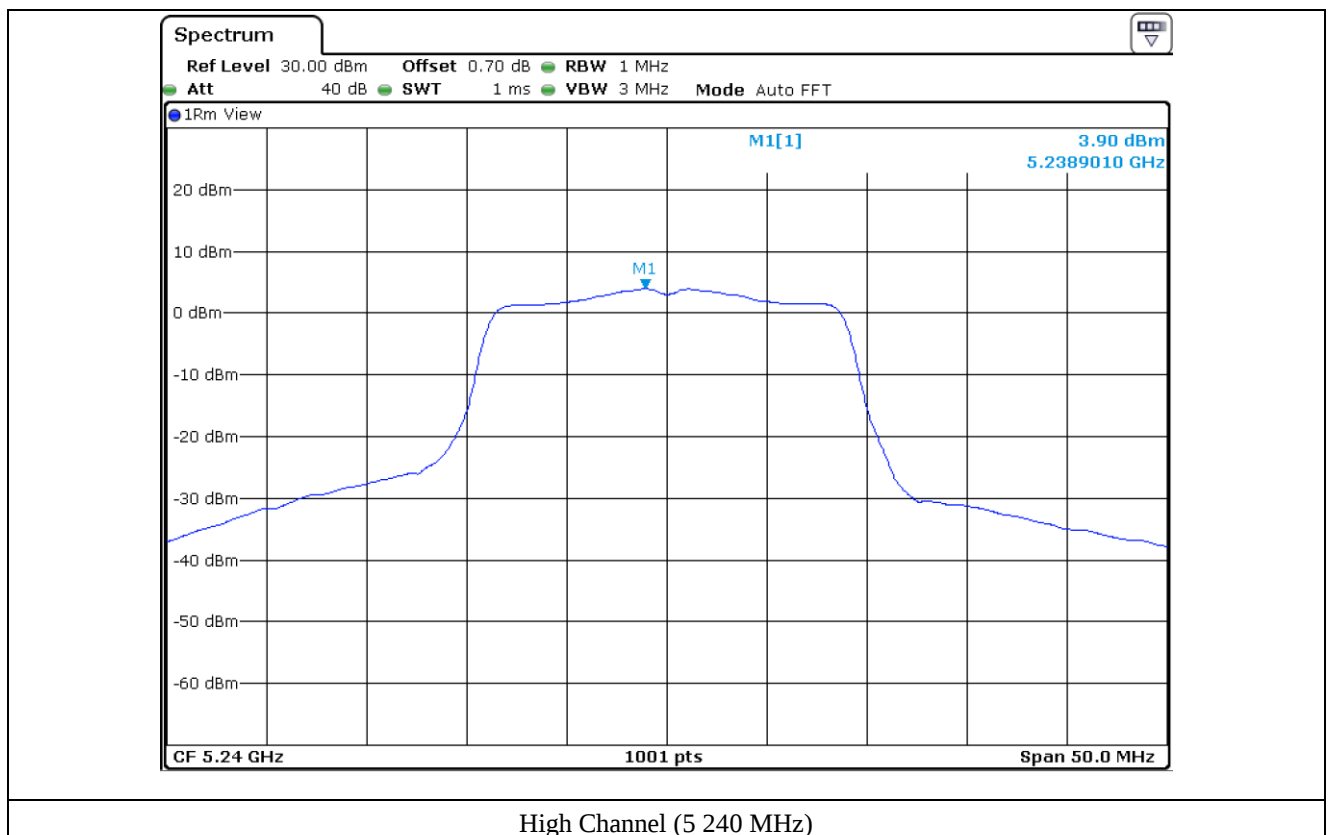
Tested by: Hyung-Kwon, Oh / Engineer

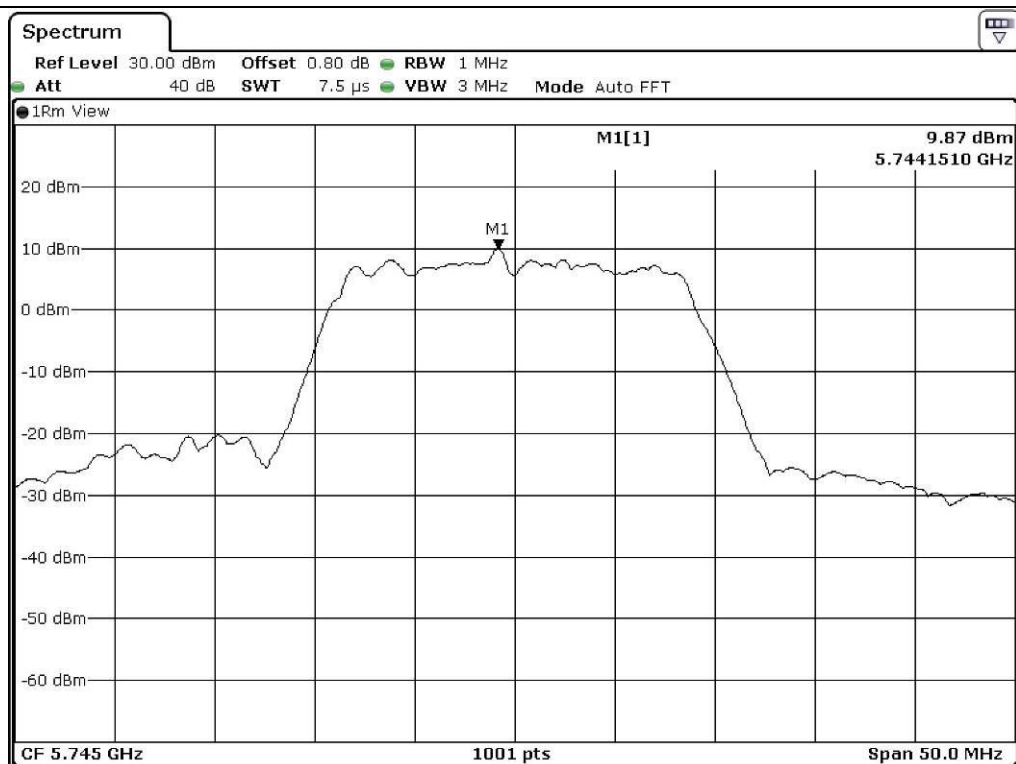


Low Channel (5 180 MHz)

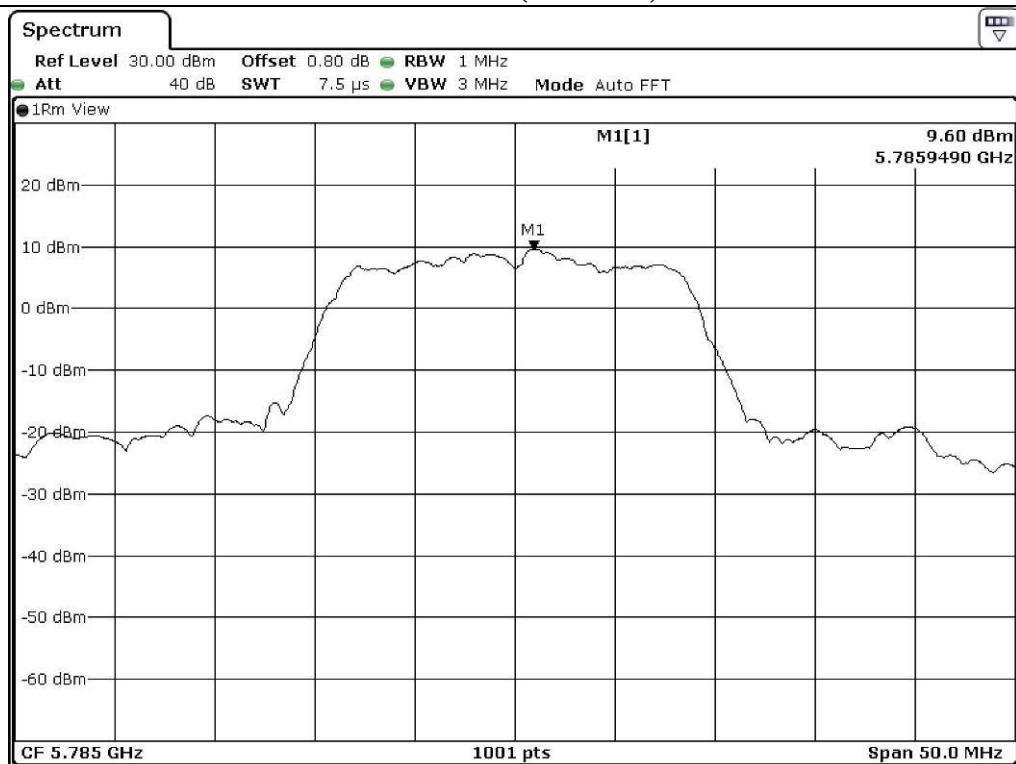


Middle Channel (5 220 MHz)

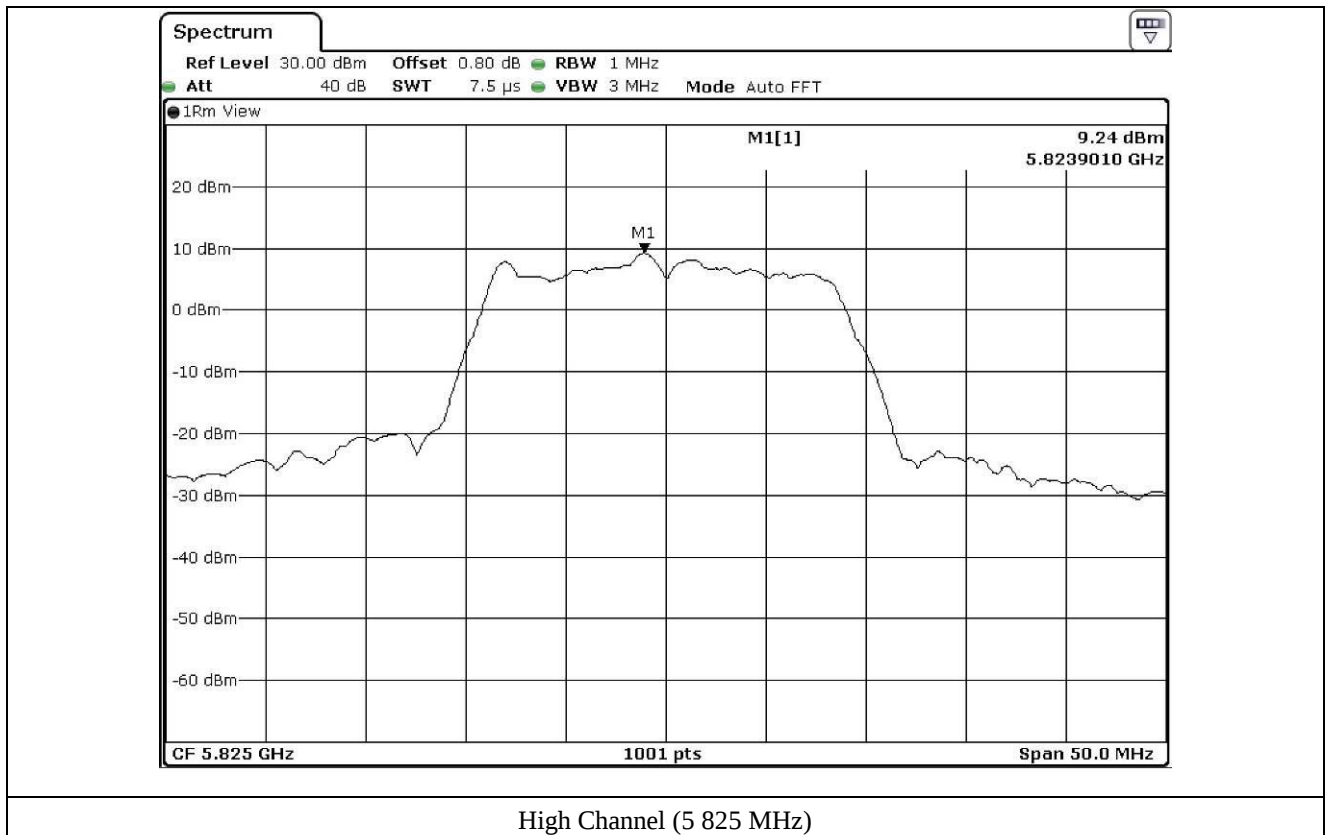




Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)



10.5.3 Test data for Multiple Transmit

- . Test Date : May 10, 2018 ~ May 17, 2018
- . Operating condition : Highest Output Power Transmitting Mode
- . Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 180.00	7.07	11.00	3.93
	Middle	5 220.00	6.51	11.00	4.49
	High	5 240.00	6.62	11.00	4.38
5 725 ~ 5 850	Low	5 745.00	9.64	30.00	20.36
	Middle	5 785.00	9.29	30.00	20.71
	High	5 825.00	9.06	30.00	20.94

Remark 1 : Margin = Limit – Measured value

Remark 2 : Calculated Power Density = $10\log(10^{(\text{Antenna0 Power Density}/10)} + 10^{(\text{Antenna1 Power Density}/10)})$



Tested by: Hyung-Kwon, Oh / Engineer

10.6 Test data for 802.11n_HT40 RLAN Mode

10.6.1 Test data for Antenna 0

-. Test Date : May 10, 2018 ~ May 17, 2018

-. Operating condition : Highest Output Power Transmitting Mode

-. Test Result : Pass

FREQUEN CY RANGE (MHz)	CHANNEL	FREQUEN CY (MHz)	MEASURE D VALUE (dBm)	RBW Converted Value(dB)	Total (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 190.00	0.50		0.50	11.00	10.50
	High	5 230.00	0.25		0.25	11.00	10.75
5 725 ~ 5 850	Low	5 755.00	6.72	3.01	3.71	30.00	26.29
	High	5 795.00	6.43	3.01	3.42	30.00	26.58

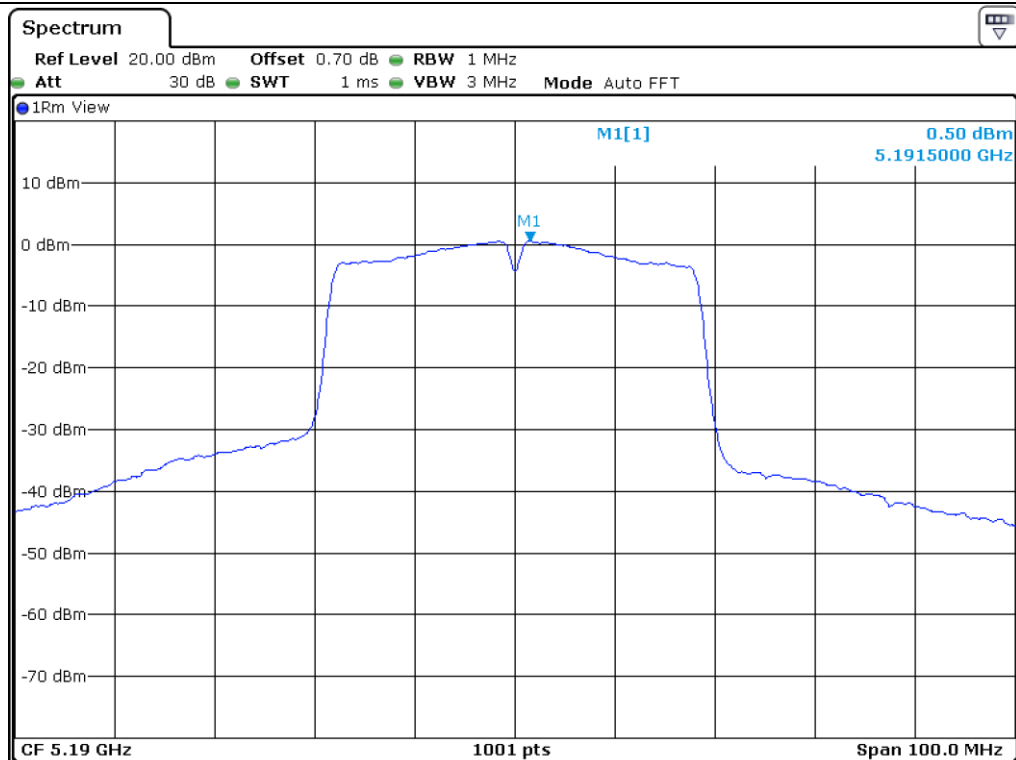
Remark 1: Calculated RBW Converted Value(dB)= 10Log(Measured RBW/Standard Set RBW)

Remark 2: Total(dBm) = MEASURED VALUE(dBm) – RBW Converted Value(dB)

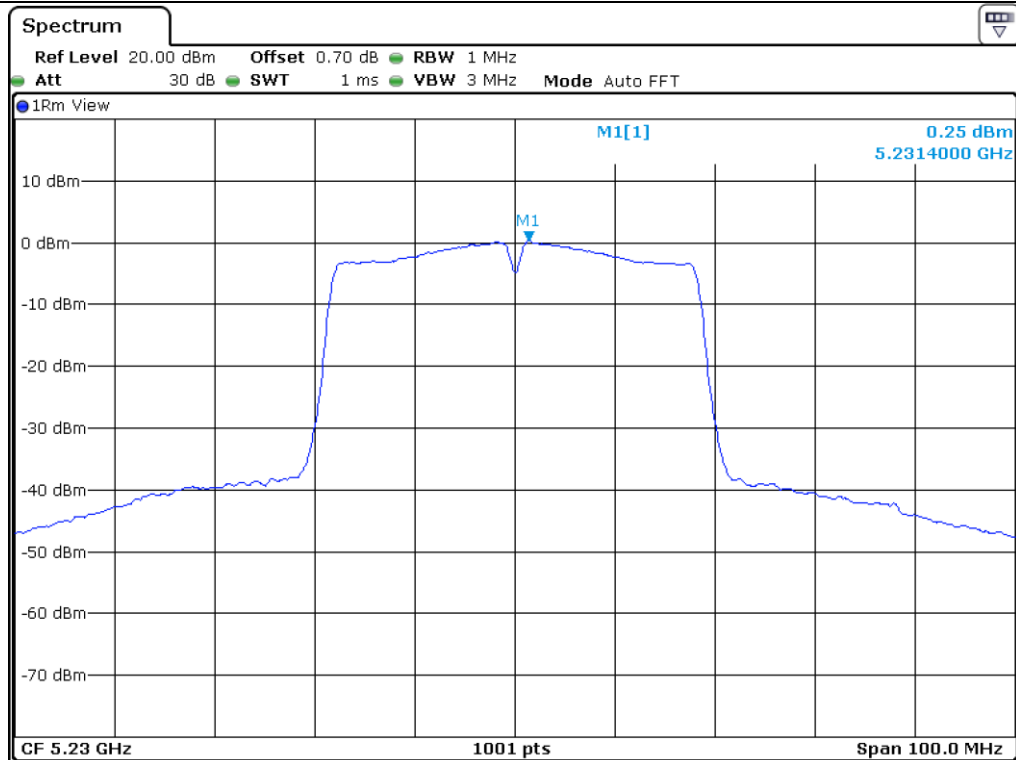
Remark 3: See next page for measurement data.



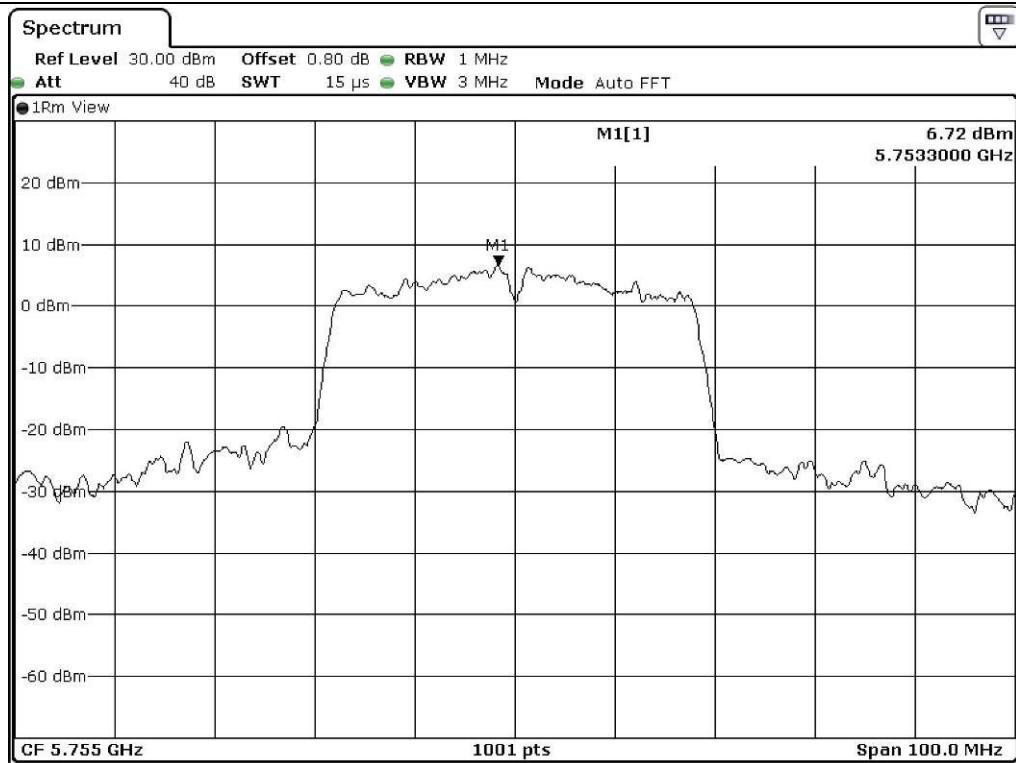
Tested by: Hyung-Kwon, Oh / Engineer



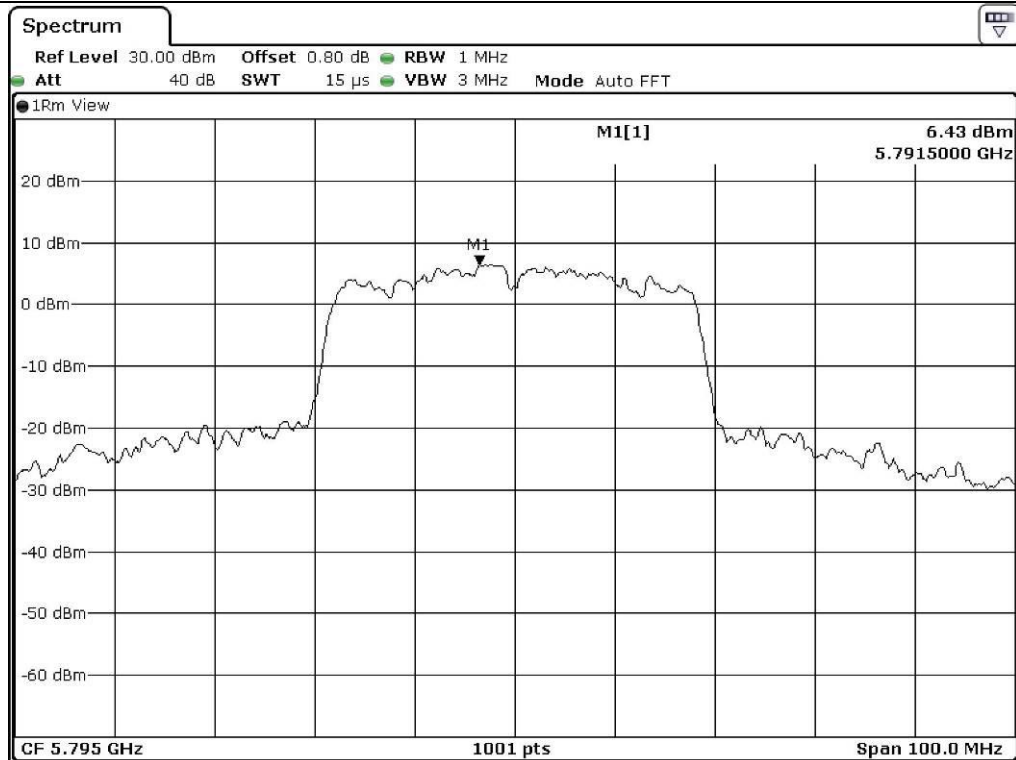
Low Channel (5 190 MHz)



High Channel (5 230 MHz)



Low Channel (5 755 MHz)



High Channel (5 795 MHz)

10.6.2 Test data for Antenna 1

- . Test Date : May 10, 2018 ~ May 17, 2018
- . Operating condition : Highest Output Power Transmitting Mode
- . Test Result : Pass

FREQUEN CY RANGE (MHz)	CHANNEL	FREQUEN CY (MHz)	MEASURE D VALUE (dBm)	RBW Converted Value(dB)	Total (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 190.00	0.85		0.85	11.00	10.15
	High	5 230.00	0.64		0.64	11.00	10.36
5 725 ~ 5 850	Low	5 755.00	7.17	3.01	4.16	30.00	25.84
	High	5 795.00	7.57	3.01	4.56	30.00	25.44

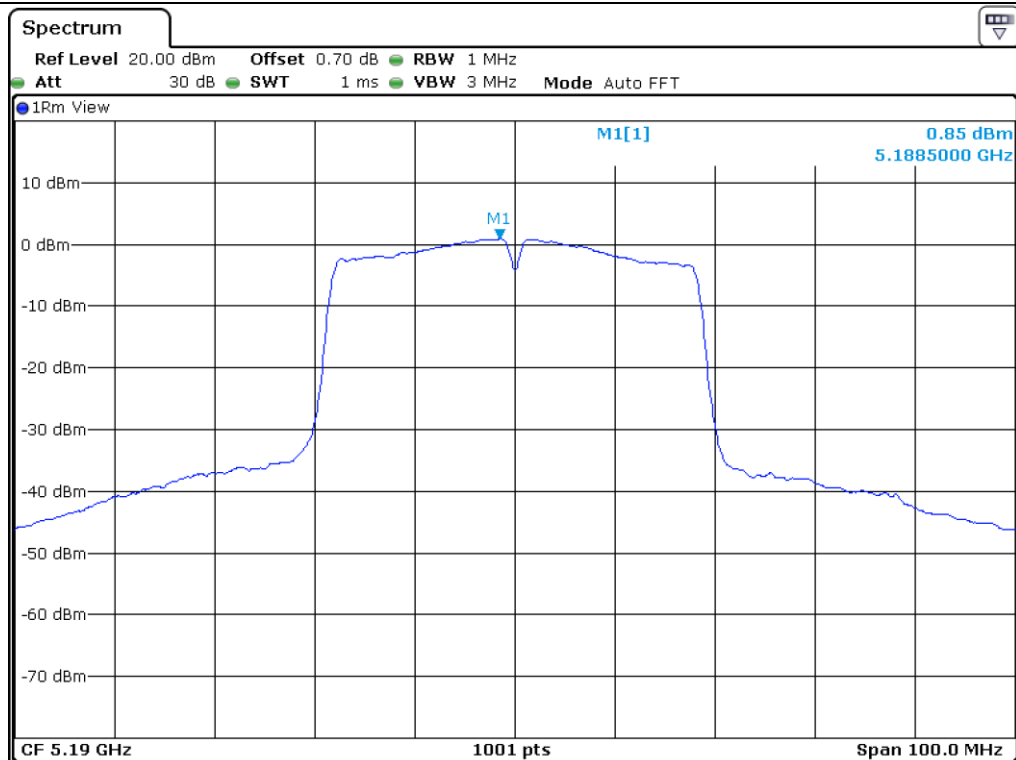
Remark 1: Calculated RBW Converted Value(dB)= 10Log(Measured RBW/Standard Set RBW)

Remark 2: Total(dBm) = MEASURED VALUE(dBm) – RBW Converted Value(dB)

Remark 3: See next page for measurement data.



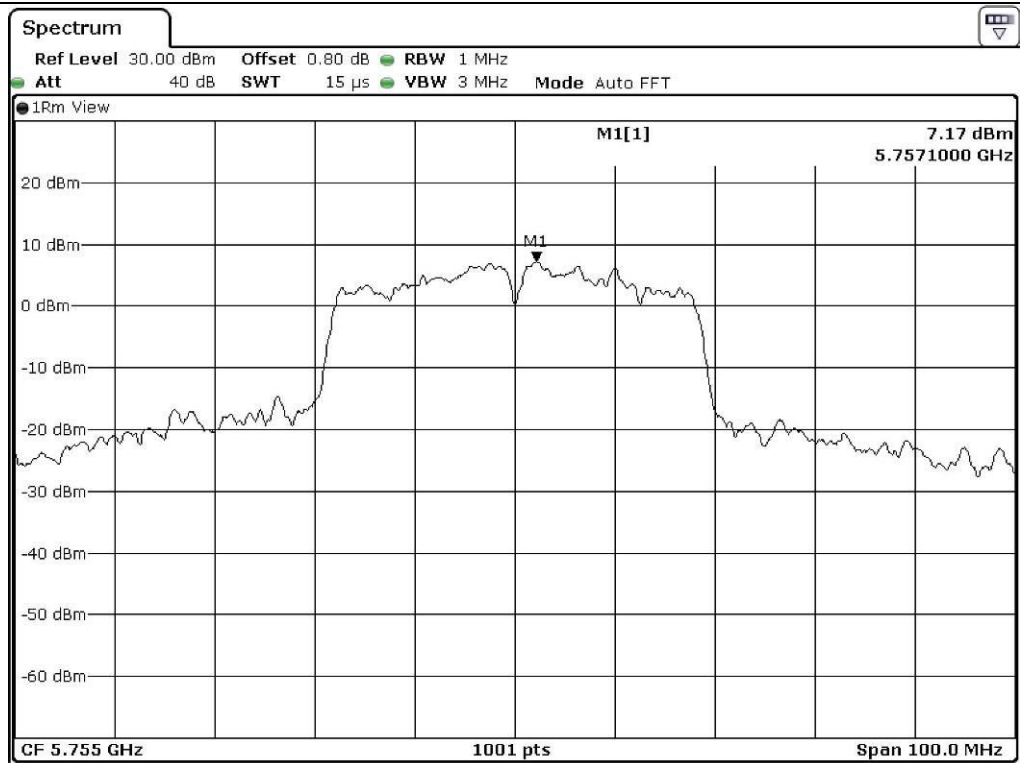
Tested by: Hyung-Kwon, Oh / Engineer



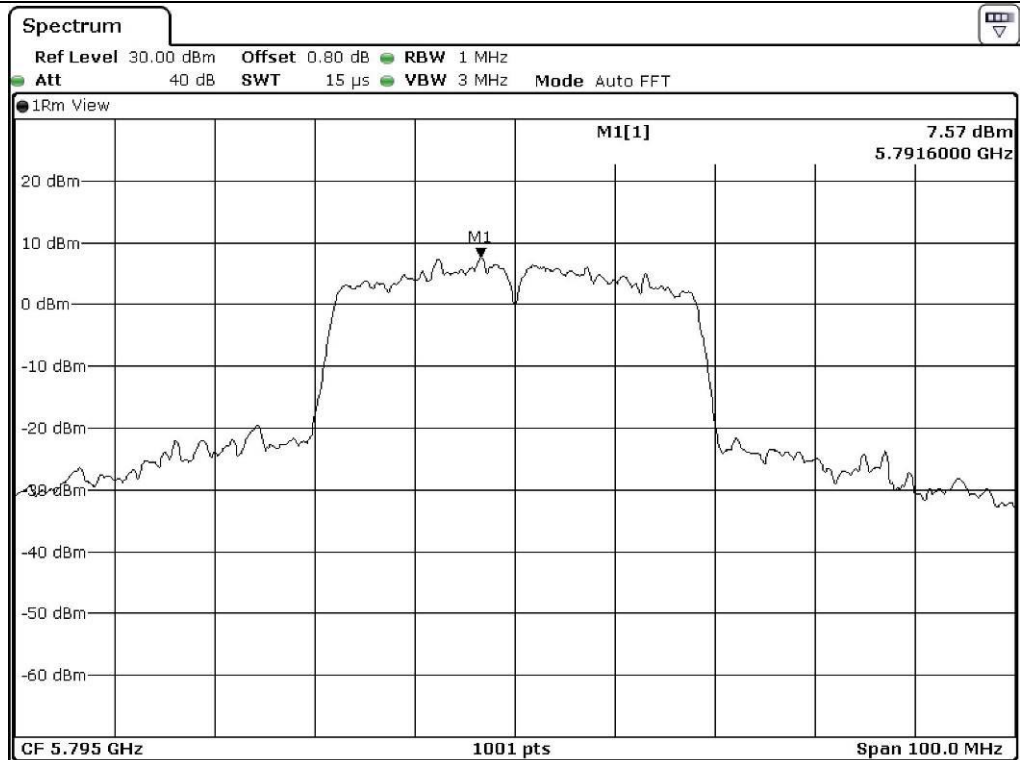
Low Channel (5 190 MHz)



High Channel (5 230 MHz)



Low Channel (5 755 MHz)



High Channel (5 795 MHz)

10.6.3 Test data for Multiple Transmit

- . Test Date : May 10, 2018 ~ May 17, 2018
- . Operating condition : Highest Output Power Transmitting Mode
- . Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 190.00	3.69	11.00	7.31
	High	5 230.00	3.46	11.00	7.54
5 725 ~ 5 850	Low	5 755.00	6.95	30.00	23.05
	High	5 795.00	7.04	30.00	22.96

Remark 1 : Margin = Limit – Measured value

Remark 2 : Calculated Power Density = $10\log(10^{(\text{Antenna0 Power Density}/10)} + 10^{(\text{Antenna1 Power Density}/10)})$



Tested by: Hyung-Kwon, Oh / Assistant Manager

10.7 Test data for 802.11ac_HT80 RLAN Mode

10.7.1 Test data for Antenna 0

-. Test Date : May 10, 2018 ~ May 17, 2018

-. Operating condition : Highest Output Power Transmitting Mode

-. Test Result : Pass

FREQUEN CY RANGE (MHz)	CHANNEL	FREQUEN CY (MHz)	MEASURE D VALUE (dBm)	RBW Converted Value(dB)	Total (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Middle	5 210.00	-7.52		-7.52	11.00	18.52
5 725 ~ 5 850	Middle	5 775.00	0.77	3.01	-2.24	30.00	32.24

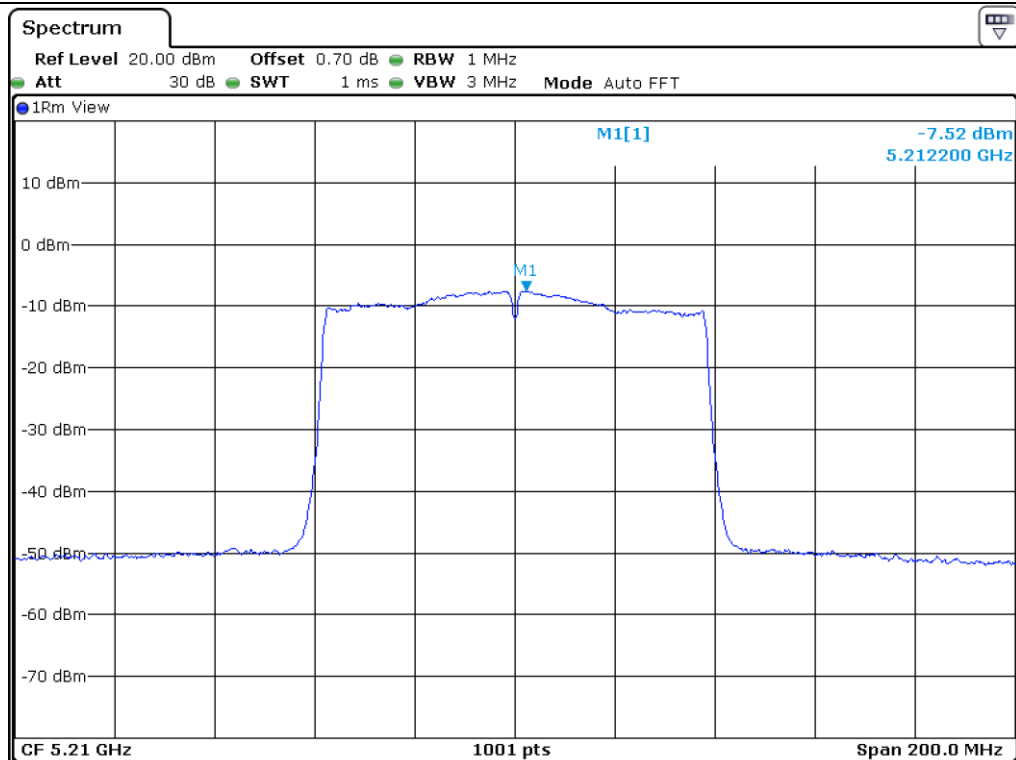
Remark 1: Calculated RBW Converted Value(dB)= 10Log(Measured RBW/Standard Set RBW)

Remark 2: Total(dBm) = MEASURED VALUE(dBm) – RBW Converted Value(dB)

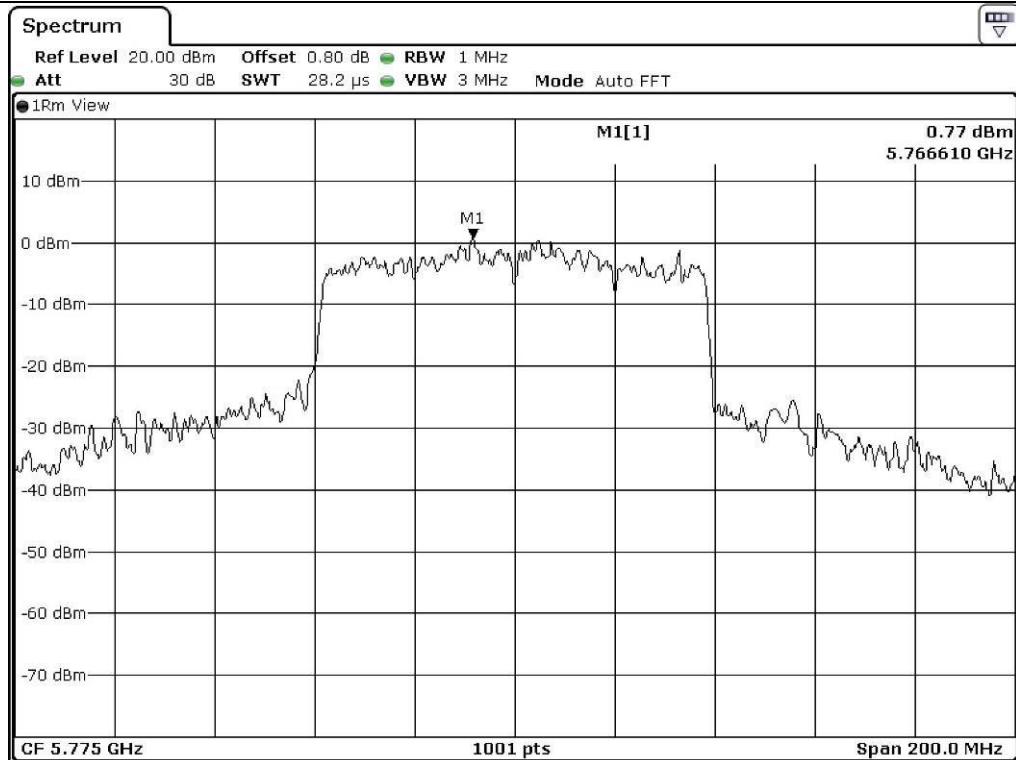
Remark 3: See next page for measurement data.



Tested by: Hyung-Kwon, Oh / Engineer



Middle Channel (5 210 MHz)



Middle Channel (5 775 MHz)

10.7.2 Test data for Antenna 1

- . Test Date : May 10, 2018 ~ May 17, 2018
- . Operating condition : Highest Output Power Transmitting Mode
- . Test Result : Pass

FREQUEN CY RANGE (MHz)	CHANNEL	FREQUEN CY (MHz)	MEASURE D VALUE (dBm)	RBW Converted Value(dB)	Total (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Middle	5 210.00	-5.80		-5.80	11.00	16.80
5 725 ~ 5 850	Middle	5 775.00	-0.24	3.01	-3.25	30.00	33.25

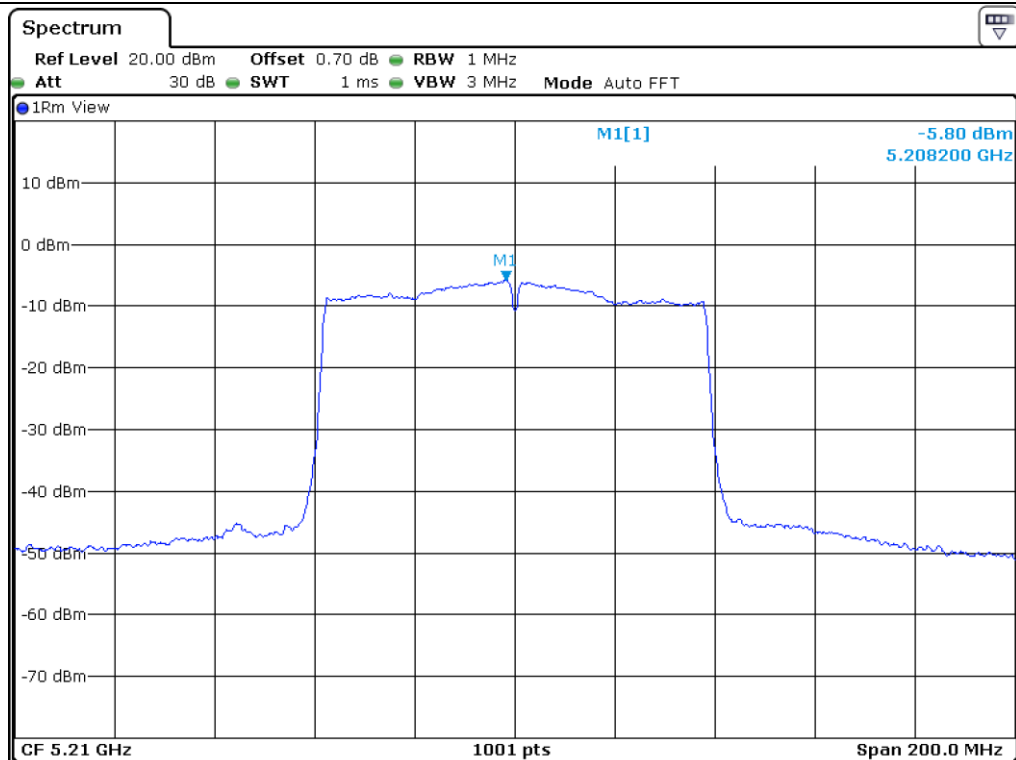
Remark 1: Calculated RBW Converted Value(dB)= 10Log(Measured RBW/Standard Set RBW)

Remark 2: Total(dBm) = MEASURED VALUE(dBm) – RBW Converted Value(dB)

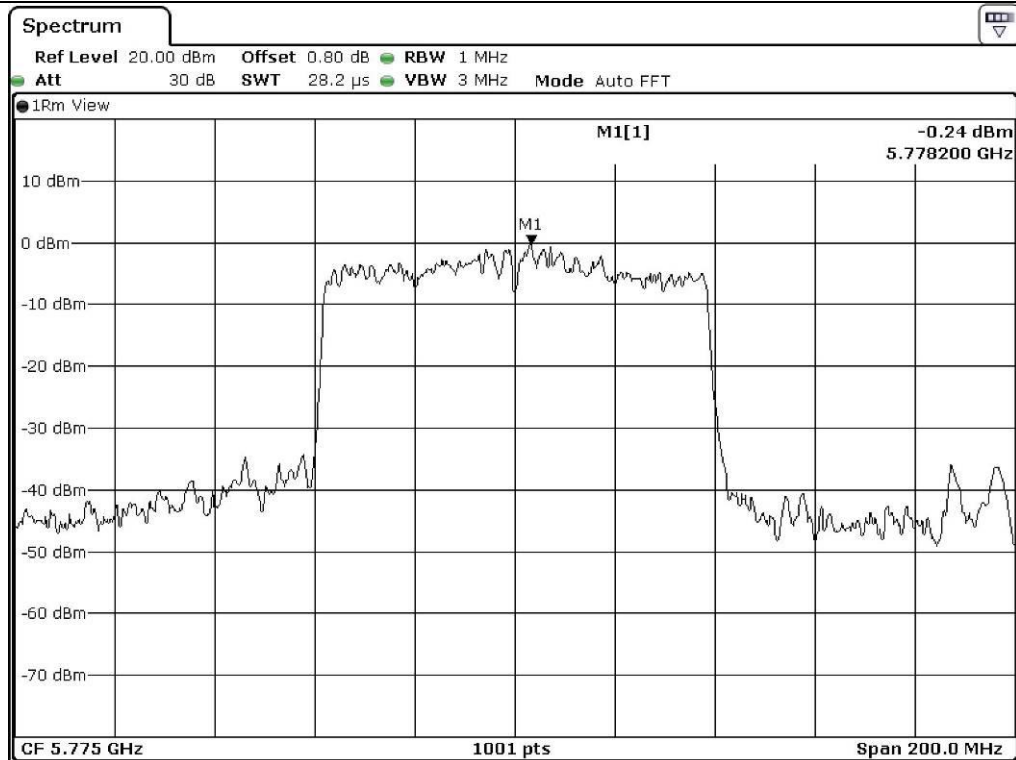
Remark 3: See next page for measurement data.



Tested by: Hyung-Kwon, Oh / Engineer



Middle Channel (5 210 MHz)



Middle Channel (5 775 MHz)

10.7.3 Test data for Multiple Transmit

- . Test Date : May 10, 2018 ~ May 17, 2018
- . Operating condition : Highest Output Power Transmitting Mode
- . Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Middle	5 210.00	-3.57	11.00	14.57
5 725 ~ 5 850	Middle	5 775.00	0.29	30.00	29.71

Remark 1 : Margin = Limit – Measured value

Remark 2 : Calculated Power Density = $10\log(10^{(\text{Antenna0 Power Density}/10)} + 10^{(\text{Antenna1 Power Density}/10)})$



Tested by: Hyung-Kwon, Oh / Engineer

11. FREQUENCY STABILITY WITH TEMPERATURE VARIATION

11.1 Operating environment

Temperature : 23 °C
Relative humidity : 41 % R.H.

11.2 Test set-up

Turn EUT off and set chamber temperature to -20 °C 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 °C step from -20 °C to +80 °C. Repeat above method for frequency measurements every 10 °C step and then record all measured frequencies on each temperature step.



11.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.(Interval)
■ -	FSV40	Rohde & Schwarz	Signal Analyzer	101009	Mar. 14, 2018 (1Y)
■ -	SSE-43CI-A	Samkun Tech	Humidity Chamber	60712	Feb. 23, 2018 (1Y)
■ -	DRP-305DN	DIGITAL Elec.	DC Power supply	4030195	Sep. 01, 2017 (1Y)

All test equipment used is calibrated on a regular basis.

11.4 Test Data for U-NII-1

-. Test Date : May 10, 2018 ~ May 17, 2018

-. Result : Pass

Temperature (°C)	Carrier Freq. (Hz)	Measured Freq. (Hz)	Frequency Error (kHz)
-20	5 180 000 000	5 179 982 921	-17.079
-10		5 179 981 669	-18.331
0		5 179 981 475	-18.525
10		5 179 980 642	-19.358
20		5 179 982 365	-17.635
30		5 179 981 990	-18.010
40		5 179 981 237	-18.763
50		5 179 980 717	-19.283
60		5 179 982 653	-17.347
70		5 179 981 564	-18.436
80		5 179 981 161	-18.839
-20	5 220 000 000	5 219 982 702	-17.298
-10		5 219 981 914	-18.086
0		5 219 981 437	-18.563
10		5 219 980 762	-19.238
20		5 219 982 624	-17.376
30		5 219 981 669	-18.331
40		5 219 981 009	-18.991
50		5 219 980 988	-19.012
60		5 219 982 802	-17.198
70		5 219 981 841	-18.159
80		5 219 981 448	-18.552

-20	5 240 000 000	5 239 982 253	-17.747
-10		5 239 981 742	-18.258
0		5 239 981 093	-18.907
10		5 239 980 625	-19.375
20		5 239 982 042	-17.958
30		5 239 981 877	-18.123
40		5 239 981 436	-18.564
50		5 239 980 798	-19.202
60		5 239 982 436	-17.564
70		5 239 981 716	-18.284
80		5 239 981 466	-18.534

Note : While maintaining a constant temperature inside the environmental chamber, turn the EUT ON and record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized.

Four measurements in total are made.(ANSI C63.10-2013)



Tested by: Hyung-Kwon, Oh / Assistant Manager

11.5 Test Data for U-NII-3

-. Test Date : May 10, 2018 ~ May 17, 2018

-. Result : Pass

Temperature (°C)	Carrier Freq. (Hz)	Measured Freq. (Hz)	Frequency Error (kHz)
-20	5 745 000 000	5 744 982 245	-17.755
-10		5 744 981 688	-18.312
0		5 744 981 279	-18.721
10		5 744 980 894	-19.106
20		5 744 982 704	-17.296
30		5 744 981 649	-18.351
40		5 744 981 244	-18.756
50		5 744 980 605	-19.395
60		5 744 982 056	-17.944
70		5 744 981 524	-18.476
80		5 744 981 377	-18.623
-20	5 785 000 000	5 784 982 760	-17.240
-10		5 784 981 619	-18.381
0		5 784 981 386	-18.614
10		5 784 980 863	-19.137
20		5 784 982 608	-17.392
30		5 784 981 788	-18.212
40		5 784 981 300	-18.700
50		5 784 980 833	-19.167
60		5 784 982 700	-17.300
70		5 784 981 753	-18.247
80		5 784 981 131	-18.869

-20	5 825 000 000	5 824 982 389	-17.611
-10		5 824 981 559	-18.441
0		5 824 981 442	-18.558
10		5 824 980 786	-19.214
20		5 824 982 998	-17.002
30		5 824 981 950	-18.050
40		5 824 981 369	-18.631
50		5 824 980 798	-19.202
60		5 824 982 196	-17.804
70		5 824 981 747	-18.253
80		5 824 981 495	-18.505

Note : While maintaining a constant temperature inside the environmental chamber, turn the EUT ON and record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized.

Four measurements in total are made.(ANSI C63.10-2013)



Tested by: Hyung-Kwon, Oh / Assistant Manager

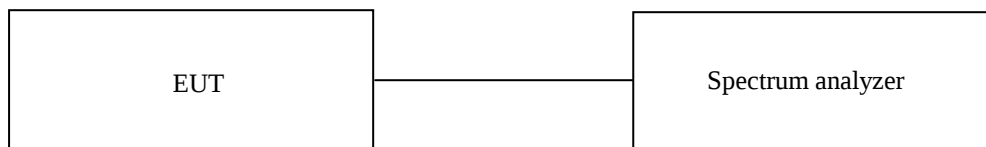
12. FREQUENCY STABILITY WITH VOLTAGE VARIATION

12.1 Operating environment

Temperature : 23 °C
Relative humidity : 41 % R.H.

12.2 Test set-up

An external DC power supply was connected to the input of the EUT. The voltage of EUT set to 108.3 % of the nominal value and then was reduced to 91.6 % of nominal voltage. The output frequency was recorded at each step.



12.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.(Interval)
■ -	FSV40	Rohde & Schwarz	Signal Analyzer	101009	Mar. 14, 2018 (1Y)
■ -	DRP-305DN	DIGITAL Elec.	DC Power supply	4030195	Sep. 01, 2017 (1Y)

All test equipment used is calibrated on a regular basis.

12.4 Test Data for U-NII-1

-. Test Date : May 10, 2018 ~ May 17, 2018

-. Result : Pass

Voltage (VDC)	Carrier Freq. (Hz)	Measured Freq. (Hz)	Frequency Error (kHz)
3.30	5 180 000 000	5 179 978 383	-21.617
3.60		5 179 977 519	-22.481
3.90		5 179 975 012	-24.988
3.30	5 220 000 000	5 219 978 574	-21.426
3.60		5 219 977 033	-22.967
3.90		5 219 976 074	-23.926
3.30	5 240 000 000	5 239 978 320	-21.680
3.60		5 239 977 907	-22.093
3.90		5 239 975 474	-24.526

12.5 Test Data for U-NII-3

-. Test Date : May 10, 2018 ~ May 17, 2018

-. Result : Pass

Voltage (VDC)	Carrier Freq. (Hz)	Measured Freq. (Hz)	Frequency Error (kHz)
3.30	5 745 000 000	5 744 979 965	-20.035
3.60		5 744 977 939	-22.061
3.90		5 744 975 335	-24.665
3.30	5 785 000 000	5 784 979 001	-20.999
3.60		5 784 977 844	-22.156
3.90		5 784 976 107	-23.893
3.30	5 825 000 000	5 824 978 721	-21.279
3.60		5 824 977 496	-22.504
3.90		5 824 975 941	-24.059



Tested by: Hyung-Kwon, Oh / Assistant Manager

13. RADIATED SPURIOUS EMISSIONS

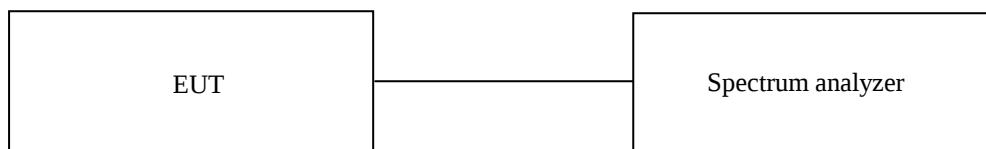
13.1 Operating environment

Temperature : 23 °C
Relative humidity : 41 % R.H.

13.2 Test set-up for conducted measurement

The radiated emissions measurements were on the 3 m semi anechoic chamber. The EUT and other support equipment were placed on a non-conductive turntable above the ground plane. The interconnecting cables from outside test site were inserted into ferrite clamps at the point where the cables reach the turntable.

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.



13.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.(Interval)
■ -	FSV40	Rohde & Schwarz	Signal Analyzer	101009	Mar. 14, 2018 (1Y)
■ -	ESU	Rohde & Schwarz	EMI Test Receiver	100261	Mar. 29, 2018 (1Y)
■ -	310N	Sonoma Instrument	Pre-Amplifier	312544	Mar. 28, 2018 (1Y)
■ -	BBV9718	Schwarzbeck	Amplifier	310	Mar. 30, 2018 (1Y)
■ -	DT3000-3t	Innco System	Turn Table	DT3000/093	N/A
■ -	MA-4000XPET	Innco System	Antenna Master	MA4000/509	N/A
■ -	VULB9163	Schwarzbeck	TRILOG Broadband Antenna	9163-419	Aug. 05, 2016 (2Y)
■ -	BBHA9120D	Schwarzbeck	Horn Antenna	BBHA9120D295	Aug. 16, 2017 (2Y)
■ -	BBHA9170	Schwarzbeck	Horn Antenna	BBHA9170179	Jul. 28, 2017 (2Y)
■ -	HFH2-Z2	Rohde & Schwarz	Loop Antenna	879285/26	Dec. 09, 2016 (2Y)
■ -	SCU40A	Rohde & Schwarz	Signal Conditioning unit	100436	Mar. 15, 2018 (1Y)

All test equipment used is calibrated on a regular basis.

13.4 Test data for Below 30 MHz

- . Test Date : May 10, 2018 ~ May 17, 2018
- . 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 (dB μ V)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dB μ V/m)	Limits (dB μ V/m)	Margin (dB)
It was not observed any emissions from the EUT.									



Tested by: Hyung-Kwon, Oh / Assistant Manager

13.5 Test data for 30 MHz ~ 1 000 MHz

13.5.1 Test data for Frequency U-NII-1

Humidity Level : 41 % R.H.

Temperature: 23 °C

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

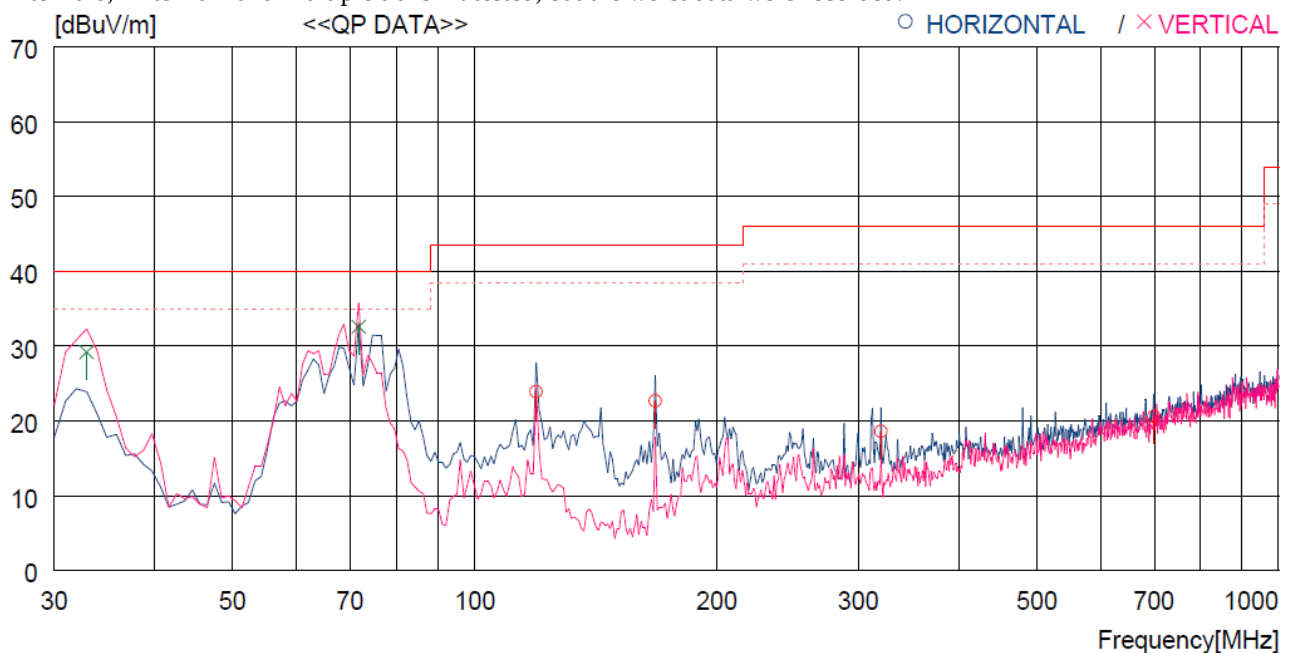
Result : PASSED

EUT : WLAN(802.11a/b/g/n/ac) 2x2 MIMO Module

Date: May 10, 2018 ~ May 17, 2018

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

-.Antenna 0, Antenna 1 and Multiple transmit tested, but the worst data were recorded.



No.	FREQ	READING	ANT	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	[dBuV]	FACTOR	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal -----										
1	119.240	43.8	10.2	2.9	33.0	23.9	43.5	19.6	400	199
2	167.740	43.5	8.8	3.4	33.0	22.7	43.5	20.8	400	199
3	320.030	33.4	13.6	4.7	33.1	18.6	46.0	27.4	400	168
4	699.295	27.3	19.8	7.0	33.5	20.6	46.0	25.4	400	208
----- Vertical -----										
5	32.910	48.9	11.9	1.5	33.1	29.2	40.0	10.8	400	206
6	71.710	54.3	9.2	2.2	33.1	32.6	40.0	7.4	400	222

Tested by: Hyung-Kwon, Oh / Assistant Manager

13.5.2 Test data for Frequency U-NII-3

Humidity Level : 41 % R.H.

Temperature: 23 °C

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

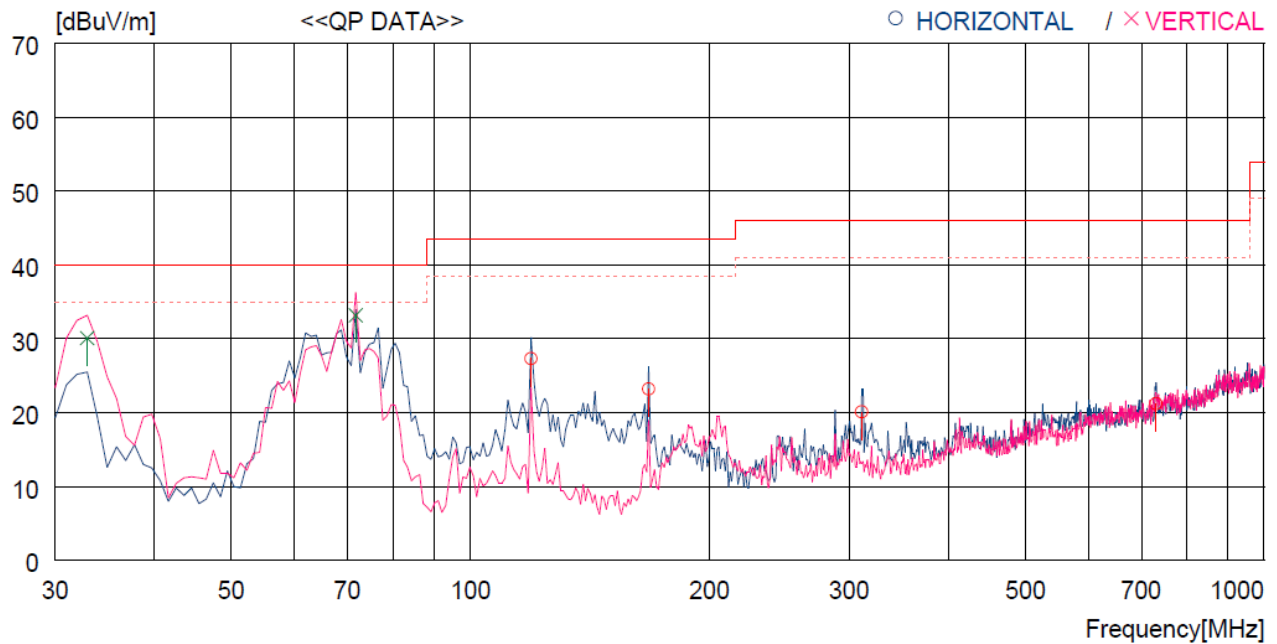
Result : PASSED

EUT : WLAN(802.11a/b/g/n/ac) 2x2 MIMO Module

Date: May 10, 2018 ~ May 17, 2018

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

-.Antenna 0, Antenna 1 and Multiple transmit tested, but the worst data were recorded.



No.	FREQ	READING	ANT	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	[dBuV]	FACTOR	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal -----										
1	119.240	46.5	10.5	3.4	33.1	27.3	43.5	16.2	400	239
2	167.740	43.8	9.0	3.4	33.0	23.2	43.5	20.3	400	208
3	311.300	34.7	13.7	4.7	33.0	20.1	46.0	25.9	400	239
4	730.334	27.3	20.0	7.4	33.5	21.2	46.0	24.8	400	239
----- Vertical -----										
5	32.910	48.5	12.9	1.7	33.0	30.1	40.0	9.9	400	207
6	71.710	55.0	9.0	2.3	33.1	33.2	40.0	6.8	400	207

Tested by: Hyung-Kwon, Oh / Assistant Manager

13.6 Test data for Above 1 GHz

13.6.1 Test data for Frequency U-NII-1

13.6.1.1 Test data for 802.11a RLAN Mode

13.6.1.1.1 Test data for Antenna 0

- . Test Date : May 10, 2018 ~ May 17, 2018
- . 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
- . Duty Cycle : > 98 %
- . Operating mode : Transmitting mode

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									
10 360.00	36.69	Peak	H	39.66	16.38	34.74	57.99	68.20	10.21
	36.59	Peak	V				57.89	68.20	10.31
Middle Channel									
10 440.00	37.37	Peak	H	39.84	16.74	34.76	59.19	68.20	9.01
	35.26	Peak	V				57.08	68.20	11.12
High Channel									
10 480.00	36.50	Peak	H	40.02	17.09	34.77	58.84	68.20	9.36
	36.71	Peak	V				59.05	68.20	9.15

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

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

Tested by: Hyung-Kwon, Oh / Assistant Manager

13.6.1.1.2 Test data for Antenna 1

- Test Date : May 10, 2018 ~ May 17, 2018
- 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
- Duty Cycle : > 98 %
- Operating mode : Transmitting mode

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									
10 360.00	36.95	Peak	H	39.66	16.38	34.74	58.25	68.20	9.95
	36.53	Peak	V				57.83	68.20	10.37
Middle Channel									
10 440.00	37.04	Peak	H	39.84	16.74	34.76	58.86	68.20	9.34
	36.64	Peak	V				58.46	68.20	9.74
High Channel									
10 480.00	37.68	Peak	H	40.02	17.09	34.77	60.02	68.20	8.18
	37.22	Peak	V				59.56	68.20	8.64

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

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


Tested by: Hyung-Kwon, Oh / Assistant Manager

13.6.1.2 Test data for 802.11n_HT20 RLAN Mode

13.6.1.2.1 Test data for Multiple Transmit

- . Test Date : May 10, 2018 ~ May 17, 2018
- . 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
- . Duty Cycle : > 98 %
- . Operating mode : Transmitting mode

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									
10 360.00	38.37	Peak	H	39.66	16.38	34.74	59.67	68.20	8.53
	38.04	Peak	V				59.34	68.20	8.86
Middle Channel									
10 400.00	36.68	Peak	H	39.84	16.74	34.76	58.50	68.20	9.70
	37.69	Peak	V				59.51	68.20	8.69
High Channel									
10 480.00	37.31	Peak	H	40.02	17.09	34.77	59.65	68.20	8.55
	36.60	Peak	V				58.94	68.20	9.26

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

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



Tested by: Hyung-Kwon, Oh / Assistant Manager

13.6.1.3 Test data for 802.11n_HT40 RLAN Mode

13.6.1.3.1 Test data for Multiple Transmit

- . Test Date : May 10, 2018 ~ May 17, 2018
- . 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
- . Duty Cycle : > 98 %
- . Operating mode : Transmitting mode

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									
10 380.00	36.53	Peak	H	39.93	16.88	34.74	58.60	68.20	9.60
	36.99	Peak	V				59.06	68.20	9.14
High Channel									
10 460.00	37.45	Peak	H	40.02	17.05	34.76	59.76	68.20	8.44
	37.14	Peak	V				59.44	68.20	8.76

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

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



Tested by: Hyung-Kwon, Oh / Assistant Manager

13.6.1.4 Test data for 802.11ac_HT80 RLAN Mode

13.6.1.4.1 Test data for Multiple Transmit

- . Test Date : May 10, 2018 ~ May 17, 2018
- . 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
- . Duty Cycle : > 98 %
- . Operating mode : Transmitting mode

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Middle Channel									
10 420.00	38.09	Peak	H	39.98	16.97	34.76	60.28	68.20	7.92
	37.64	Peak	V				59.83	68.20	8.37

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

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


Tested by: Hyung-Kwon, Oh / Assistant Manager

13.6.2 Test data for Frequency U-NII-3

13.6.2.1 Test data for 802.11a RLAN Mode

13.6.2.1.1 Test data for Antenna 0

- Test Date : May 10, 2018 ~ May 17, 2018
- 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
- Duty Cycle : > 98 %
- Operating mode : Transmitting mode

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									
11 490.00	37.56	Peak	H	40.07	18.32	33.75	62.20	74.00	11.80
	24.02	Average	H				48.66	54.00	5.34
	37.00	Peak	V				61.64	74.00	12.36
	24.50	Average	V				49.14	54.00	4.86
Middle Channel									
11 570.00	38.07	Peak	H	39.78	18.94	33.64	63.15	74.00	10.85
	24.64	Average	H				49.72	54.00	4.28
	38.64	Peak	V				63.72	74.00	10.28
	24.84	Average	V				49.92	54.00	4.08
High Channel									
11 650.00	37.15	Peak	H	39.49	19.56	33.61	62.59	74.00	11.41
	24.26	Average	H				49.70	54.00	4.30
	39.84	Peak	V				65.28	74.00	8.72
	24.05	Average	V				49.49	54.00	4.51

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

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

Tested by: Hyung-Kwon, Oh / Assistant Manager

13.6.2.1.2 Test data for Antenna 1

- Test Date : May 10, 2018 ~ May 17, 2018
- 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
- Duty Cycle : > 98 %
- Operating mode : Transmitting mode

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									
11 490.00	37.07	Peak	H	40.07	18.32	33.75	61.71	74.00	12.29
	24.31	Average	H				48.95	54.00	5.05
	36.06	Peak	V				60.70	74.00	13.30
	24.66	Average	V				49.30	54.00	4.70
Middle Channel									
11 570.00	38.31	Peak	H	39.78	18.94	33.64	63.39	74.00	10.61
	24.67	Average	H				49.75	54.00	4.25
	38.56	Peak	V				63.64	74.00	10.36
	24.87	Average	V				49.95	54.00	4.05
High Channel									
11 650.00	37.57	Peak	H	39.49	19.56	33.61	63.01	74.00	10.99
	24.39	Average	H				49.83	54.00	4.17
	36.36	Peak	V				61.80	74.00	12.20
	24.24	Average	V				49.68	54.00	4.32

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

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

Tested by: Hyung-Kwon, Oh / Assistant Manager

13.6.2.2 Test data for 802.11n_HT20 RLAN Mode

13.6.2.2.1 Test data for Multiple Transmit

- Test Date : May 10, 2018 ~ May 17, 2018
- 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
- Duty Cycle : > 98 %
- Operating mode : Transmitting mode

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									
11 490.00	37.64	Peak	H	40.07	18.32	33.75	62.28	74.00	11.72
	24.96	Average	H				49.60	54.00	4.40
	38.79	Peak	V				63.43	74.00	10.57
	24.51	Average	V				49.15	54.00	4.85
Middle Channel									
11 570.00	37.35	Peak	H	39.78	18.94	33.64	62.43	74.00	11.57
	24.74	Average	H				49.82	54.00	4.18
	38.90	Peak	V				63.98	74.00	10.02
	24.68	Average	V				49.76	54.00	4.24
High Channel									
11 650.00	38.06	Peak	H	39.49	19.56	33.61	63.50	74.00	10.50
	24.90	Average	H				50.34	54.00	3.66
	39.62	Peak	V				65.06	74.00	8.94
	24.25	Average	V				49.69	54.00	4.31

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

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

Tested by: Hyung-Kwon, Oh / Assistant Manager

13.6.2.3 Test data for 802.11n_HT40 RLAN Mode

13.6.2.3.1 Test data for Multiple Transmit

- Test Date : May 10, 2018 ~ May 17, 2018
- 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
- Duty Cycle : > 98 %
- Operating mode : Transmitting mode

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									
11 510.00	36.91	Peak	H	39.78	18.94	33.63	62.00	74.00	12.00
	24.00	Average	H				49.09	54.00	4.91
	38.11	Peak	V				63.20	74.00	10.80
	24.37	Average	V				49.46	54.00	4.54
High Channel									
11 590.00	36.65	Peak	H	39.66	19.19	33.62	61.88	74.00	12.12
	24.30	Average	H				49.53	54.00	4.47
	36.45	Peak	V				61.68	74.00	12.32
	24.97	Average	V				50.20	54.00	3.80

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

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

Tested by: Hyung-Kwon, Oh / Assistant Manager

13.6.2.4 Test data for 802.11ac_HT80 RLAN Mode

13.6.2.4.1 Test data for Multiple Transmit

- Test Date : May 10, 2018 ~ May 17, 2018
- 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
- Duty Cycle : > 98 %
- Operating mode : Transmitting mode

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Middle Channel									
11 550.00	37.50	Peak	H	39.78	18.94	33.63	62.59	74.00	11.41
	24.11	Average	H				49.20	54.00	4.80
	38.03	Peak	V				63.12	74.00	10.88
	24.66	Average	V				49.75	54.00	4.25

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

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



Tested by: Hyung-Kwon, Oh / Assistant Manager

14. RADIATED RESTRICTED BAND EDGE MEASUREMENTS

14.1 Operating environment

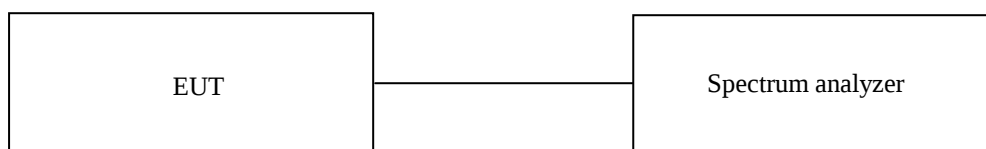
Temperature : 23 °C

Relative humidity : 41 % R.H.

14.2 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.



14.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.(Interval)
■ -	FSV40	Rohde & Schwarz	Signal Analyzer	101009	Mar. 14, 2018 (1Y)
■ -	ESU	Rohde & Schwarz	EMI Test Receiver	100261	Mar. 29, 2018 (1Y)
■ -	310N	Sonoma Instrument	Pre-Amplifier	312544	Mar. 28, 2018 (1Y)
■ -	BBV9718	Schwarzbeck	Amplifier	310	Mar. 30, 2018 (1Y)
■ -	DT3000-3t	Innco System	Turn Table	DT3000/093	N/A
■ -	MA-4000XPET	Innco System	Antenna Master	MA4000/509	N/A
■ -	VULB9163	Schwarzbeck	TRILOG Broadband Antenna	9163-419	Aug. 05, 2016 (2Y)
■ -	BBHA9120D	Schwarzbeck	Horn Antenna	BBHA9120D295	Aug. 16, 2017 (2Y)
■ -	BBHA9170	Schwarzbeck	Horn Antenna	BBHA9170179	Jul. 28, 2017 (2Y)

All test equipment used is calibrated on a regular basis.

14.4 Test data for Frequency U-NII-1

14.4.1 Test data for 802.11a RLAN Mode

14.4.1.1 Test data for Antenna 0

- Test Date : May 10, 2018 ~ May 17, 2018
- 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
- Duty Cycle : > 98 %
- 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)
4 786.69	47.15	Peak	H	31.28	12.65	36.01	55.07	74.00	18.93
5 063.31	38.00	Average	H				45.92	54.00	8.08
5 015.26	47.18	Peak	V				55.10	74.00	18.90
4 862.01	37.81	Average	V				45.73	54.00	8.27

Tabulated test data for Restricted Band

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

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



Tested by: Hyung-Kwon, Oh / Assistant Manager

14.4.1.2 Test data for Antenna 1

- . Test Date : May 10, 2018 ~ May 17, 2018
- . 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
- . Duty Cycle : > 98 %
- . 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)
5 050.32	47.11	Peak	H	31.28	12.65	36.01	55.03	74.00	18.97
4 822.40	38.14	Average	H				46.06	54.00	7.94
4 746.43	46.64	Peak	V				54.56	74.00	19.44
5 067.21	38.03	Average	V				45.95	54.00	8.05

Tabulated test data for Restricted Band

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

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



Tested by: Hyung-Kwon, Oh / Assistant Manager

14.4.2 Test data for 802.11n_HT20 RLAN Mode

14.4.2.1 Test data for Multiple Transmit

- Test Date : May 10, 2018 ~ May 17, 2018
- 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
- Duty Cycle : > 98 %
- 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)
5 134.74	46.79	Peak	H	31.28	12.65	36.01	54.71	74.00	19.29
4 807.47	38.05	Average	H				45.97	54.00	8.03
5 148.38	47.41	Peak	V				55.33	74.00	18.67
4 834.74	38.09	Average	V				46.01	54.00	7.99

Tabulated test data for Restricted Band

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

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



Tested by: Hyung-Kwon, Oh / Assistant Manager

14.4.3 Test data for 802.11n_HT40 RLAN Mode

14.4.3.1 Test data for Multiple Transmit

- . Test Date : May 10, 2018 ~ May 17, 2018
- . 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
- . Duty Cycle : > 98 %
- . 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)
5 037.99	47.17	Peak	H	31.28	12.65	36.01	55.09	74.00	18.91
4 863.31	37.86	Average	H				45.78	54.00	8.22
5 138.64	47.01	Peak	V				54.93	74.00	19.07
5 148.38	39.36	Average	V				47.28	54.00	6.72

Tabulated test data for Restricted Band

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

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



Tested by: Hyung-Kwon, Oh / Assistant Manager

14.4.4 Test data for 802.11ac_HT80 RLAN Mode

14.4.4.1 Test data for Multiple Transmit

- . Test Date : May 10, 2018 ~ May 17, 2018
- . 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
- . Duty Cycle : > 98 %
- . 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)
4 788.64	46.82	Peak	H	31.28	12.65	36.01	54.74	74.00	19.26
5 051.62	38.28	Average	H				46.20	54.00	7.80
4 762.01	47.38	Peak	V				55.30	74.00	18.70
4 973.70	37.94	Average	V				45.86	54.00	8.14

Tabulated test data for Restricted Band

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

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



Tested by: Hyung-Kwon, Oh / Assistant Manager

14.5 Test data for Frequency U-NII-3

14.5.1 Test data for 802.11a RLAN Mode

14.5.1.1 Test data for Antenna 0

- . Test Date : May 10, 2018 ~ May 17, 2018
- . 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
- . Duty Cycle : > 98 %
- . 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									
5 723.28	47.18	Peak	H	32.17	12.09	35.59	55.85	131.67	75.82
5 724.99	51.88	Peak	V				60.55	133.98	73.43
5 713.81	47.58	Peak	H				56.25	120.87	64.62
5 714.43	49.88	Peak	V				58.55	121.04	62.49
High Channel									
5 850.00	46.83	Peak	H	32.17	12.09	35.43	55.66	134.00	78.34
5 851.82	47.65	Peak	V				56.48	129.85	73.37
5 866.58	47.04	Peak	H				55.87	119.36	63.49
5 867.88	47.63	Peak	V				56.46	118.99	62.53

Tabulated test data for Restricted Band

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

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



Tested by: Hyung-Kwon, Oh / Assistant Manager

14.5.1.2 Test data for Antenna 1

- . Test Date : May 10, 2018 ~ May 17, 2018
- . 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
- . Duty Cycle : > 98 %
- . 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									
5 724.56	47.15	Peak	H	32.17	12.09	35.59	55.82	133.00	77.18
5 724.99	50.32	Peak	V				58.99	133.98	74.99
5 712.28	46.95	Peak	H				55.62	120.44	64.82
5 711.62	47.59	Peak	V				56.26	120.25	63.99
High Channel									
5 854.25	46.80	Peak	H	32.17	12.09	35.43	55.63	124.31	68.68
5 856.20	46.90	Peak	V				55.73	122.26	66.53
5 867.74	47.02	Peak	H				55.85	119.03	63.18
5 864.48	46.72	Peak	V				55.55	119.95	64.40

Tabulated test data for Restricted Band

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

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



Tested by: Hyung-Kwon, Oh / Assistant Manager

14.5.2 Test data for 802.11n_HT20 RLAN Mode

14.5.2.1 Test data for Multiple Transmit

- . Test Date : May 10, 2018 ~ May 17, 2018
- . 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
- . Duty Cycle : > 98 %
- . 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									
5 723.71	49.82	Peak	H	32.17	12.09	35.59	58.49	131.06	72.57
5 723.62	56.69	Peak	V				65.36	130.85	65.49
5 710.00	46.75	Peak	H				55.42	119.80	64.38
5 714.28	50.59	Peak	V				59.26	121.00	61.74
High Channel									
5 850.09	47.00	Peak	H	32.17	12.09	35.43	55.83	133.79	77.96
5 850.54	47.58	Peak	V				56.41	132.77	76.36
5 866.97	47.08	Peak	H				55.91	119.25	63.34
5 860.00	48.33	Peak	V				57.16	121.20	64.04

Tabulated test data for Restricted Band

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

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



Tested by: Hyung-Kwon, Oh / Assistant Manager

14.5.3 Test data for 802.11n_HT40 RLAN Mode

14.5.3.1 Test data for Multiple Transmit

- . Test Date : May 10, 2018 ~ May 17, 2018
- . 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
- . Duty Cycle : > 98 %
- . 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									
5 724.58	49.26	Peak	H	32.17	12.09	35.59	57.93	133.04	75.11
5 724.99	56.59	Peak	V				65.26	133.98	68.72
5 714.48	47.88	Peak	H				56.55	121.05	64.50
5 714.87	52.34	Peak	V				61.01	121.16	60.15
High Channel									
5 855.45	46.72	Peak	H	32.17	12.09	35.43	55.55	122.47	66.92
5 851.29	47.18	Peak	V				56.01	131.06	75.05
5 869.88	46.74	Peak	H				55.57	118.43	62.86
5 866.34	46.79	Peak	V				55.62	119.42	63.80

Tabulated test data for Restricted Band

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

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



Tested by: Hyung-Kwon, Oh / Assistant Manager

14.5.4 Test data for 802.11ac_HT80 RLAN Mode

14.5.4.1 Test data for Multiple Transmit

- Test Date : May 10, 2018 ~ May 17, 2018
- 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
- Duty Cycle : > 98 %
- 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)
Middle Channel									
5 716.16	47.36	Peak	H	32.17	12.09	35.59	56.03	121.52	65.49
5 718.41	50.81	Peak	V				59.48	122.15	62.67
5 714.33	47.04	Peak	H				55.71	121.01	65.30
5 710.00	48.93	Peak	V				57.60	119.80	62.20
5 854.43	46.50	Peak	H	32.17	12.09	35.43	55.33	123.90	68.57
5 851.62	47.17	Peak	V				56.00	130.31	74.31
5 864.08	46.77	Peak	H				55.60	120.06	64.46
5 862.93	46.53	Peak	V				55.36	120.38	65.02

Tabulated test data for Restricted Band

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

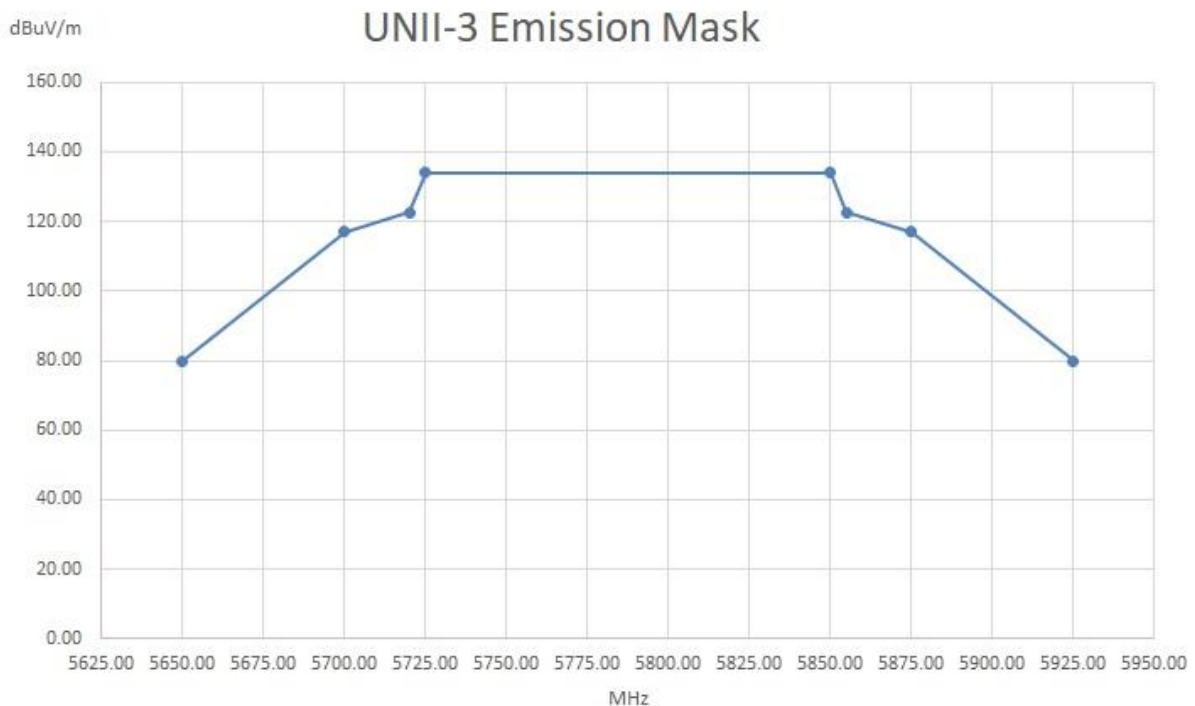
Margin (dB) = Limits (dBμV/m) - Emission Level (dBμV/m)



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14.5.5 U-NII-3 Emission Limits

14.5.5.1 Emission Mask Plots



Remark.

-. Title 47 → Part 15 → Subpart E—UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE DEVICES

§ 15.407 General technical requirements.

(4) For transmitters operating in the 5.725-5.85 GHz band:

(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

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15. CONDUCTED EMISSION TEST

15.1 Operating environment

Temperature : 23 °C
Relative humidity : 41 % R.H.

15.2 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 μ H + 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.

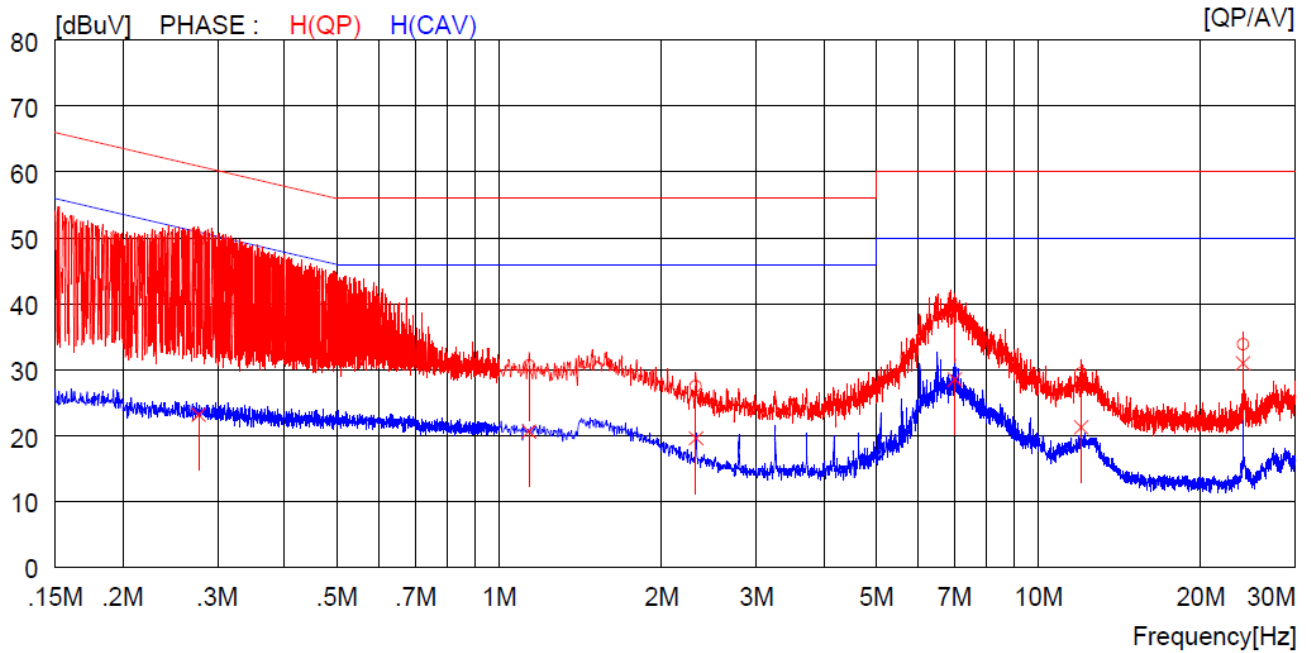
15.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal. (Interval)
■ -	ESPI	Rohde & Schwarz	Test Receiver	101012	Oct. 27, 2017 (1Y)
□ -	ESHS10	Rohde & Schwarz	Test Receiver	834467/007	Mar. 29, 2018 (1Y)
□ -	NSLK8128	Schwarzbeck	AMN	8128-216	Mar. 29, 2018 (1Y)
■ -	NSLK8126	Schwarzbeck	AMN	8126-404	Apr. 04, 2018 (1Y)
□ -	3825/2	EMCO	AMN	9109-1869	Apr. 11, 2018 (1Y)
■ -	3825/2	EMCO	AMN	9109-1867	Mar. 28, 2018 (1Y)

All test equipment used is calibrated on a regular basis.

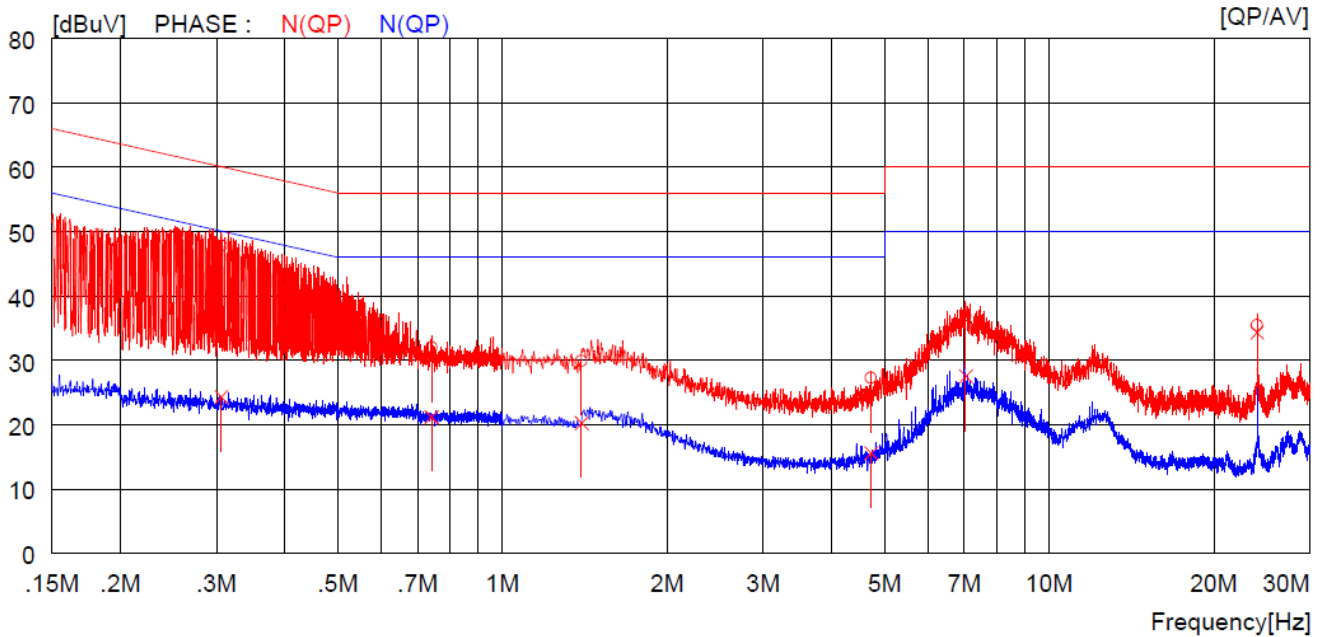
15.4 Test data for Frequency U-NII-1

- . Test Date : May 10, 2018 ~ May 17, 2018
- . Resolution bandwidth : 9 kHz
- . Frequency range : 0.15 MHz ~ 30 MHz
- . Tested Line : HOT LINE
- . Antenna 0, Antenna 1 and Multiple transmit tested, but the worst data were recorded.



NO	FREQ [MHz]	READING		C.FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	
1	0.27700	39.7	----	9.9	49.6	----	60.9	----	11.3	----	H (QP)
2	1.13600	20.6	----	10.0	30.6	----	56.0	----	25.4	----	H (QP)
3	2.31600	17.5	----	10.0	27.5	----	56.0	----	28.5	----	H (QP)
4	7.00000	29.2	----	10.3	39.5	----	60.0	----	20.5	----	H (QP)
5	12.00000	19.0	----	10.4	29.4	----	60.0	----	30.6	----	H (QP)
6	24.00000	23.0	----	10.8	33.8	----	60.0	----	26.2	----	H (QP)
7	0.27700	----	13.3	9.9	----	23.2	----	50.9	----	27.7	H (CAV)
8	1.13600	----	10.7	10.0	----	20.7	----	46.0	----	25.3	H (CAV)
9	2.31600	----	9.6	10.0	----	19.6	----	46.0	----	26.4	H (CAV)
10	7.00000	----	18.2	10.3	----	28.5	----	50.0	----	21.5	H (CAV)
11	12.00000	----	10.9	10.4	----	21.3	----	50.0	----	28.7	H (CAV)
12	24.00000	----	20.2	10.8	----	31.0	----	50.0	----	19.0	H (CAV)

-. Tested Line : NEUTRAL LINE



NO	FREQ [MHz]	READING		C.FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	
1	0.30600	37.9	----	9.9	47.8	----	60.1	----	12.3	----	N (QP)
2	0.74200	22.0	----	10.0	32.0	----	56.0	----	24.0	----	N (QP)
3	1.39600	19.9	----	10.0	29.9	----	56.0	----	26.1	----	N (QP)
4	4.72000	17.1	----	10.2	27.3	----	56.0	----	28.7	----	N (QP)
5	7.03500	26.7	----	10.3	37.0	----	60.0	----	23.0	----	N (QP)
6	24.00000	24.7	----	10.8	35.5	----	60.0	----	24.5	----	N (QP)
7	0.30600	----	14.4	9.9	----	24.3	----	50.1	----	25.8	N (CAV)
8	0.74200	----	11.2	10.0	----	21.2	----	46.0	----	24.8	N (CAV)
9	1.39600	----	10.3	10.0	----	20.3	----	46.0	----	25.7	N (CAV)
10	4.72000	----	5.4	10.2	----	15.6	----	46.0	----	30.4	N (CAV)
11	7.03500	----	17.2	10.3	----	27.5	----	50.0	----	22.5	N (CAV)
12	24.00000	----	23.5	10.8	----	34.3	----	50.0	----	15.7	N (CAV)

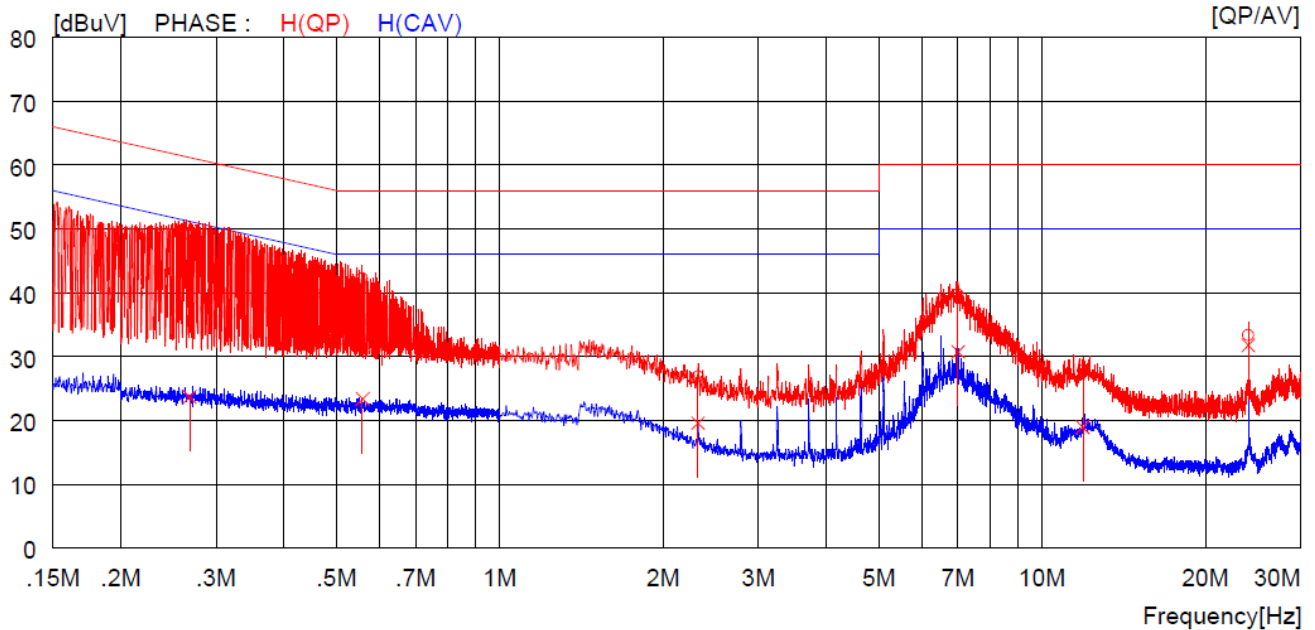
Remark: Margin (dB) = Limit – Level (Result)

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

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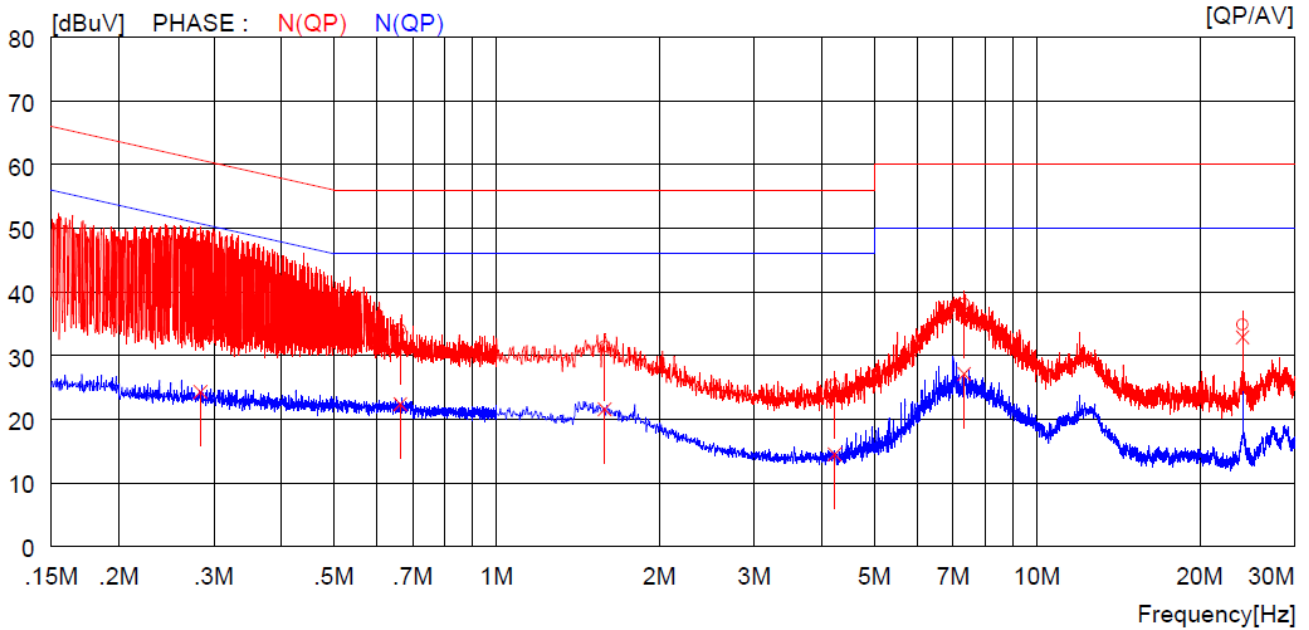
15.5 Test data for Frequency U-NII-3

- Test Date : May 10, 2018 ~ May 17, 2018
- Resolution bandwidth : 9 kHz
- Frequency range : 0.15 MHz ~ 30 MHz
- Tested Line : HOT LINE
- Antenna 0, Antenna 1 and Multiple transmit tested, but the worst data were recorded.



NO	FREQ [MHz]	READING		C.FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	
1	0.26800	39.2	----	9.9	49.1	----	61.2	----	12.1	----	H (QP)
2	0.55800	32.2	----	10.0	42.2	----	56.0	----	13.8	----	H (QP)
3	2.32000	16.9	----	10.0	26.9	----	56.0	----	29.1	----	H (QP)
4	7.00500	29.4	----	10.3	39.7	----	60.0	----	20.3	----	H (QP)
5	11.88000	17.4	----	10.4	27.8	----	60.0	----	32.2	----	H (QP)
6	24.00000	22.6	----	10.8	33.4	----	60.0	----	26.6	----	H (QP)
7	0.26800	----	13.8	9.9	----	23.7	----	51.2	----	27.5	H (CAV)
8	0.55800	----	13.4	10.0	----	23.4	----	46.0	----	22.6	H (CAV)
9	2.32000	----	9.6	10.0	----	19.6	----	46.0	----	26.4	H (CAV)
10	7.00500	----	20.5	10.3	----	30.8	----	50.0	----	19.2	H (CAV)
11	11.88000	----	8.5	10.4	----	18.9	----	50.0	----	31.1	H (CAV)
12	24.00000	----	21.0	10.8	----	31.8	----	50.0	----	18.2	H (CAV)

-. Tested Line : NEUTRAL LINE



NO	FREQ [MHz]	READING		C. FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	
1	0.28300	38.3	----	9.9	48.2	----	60.7	----	12.5	----	N (QP)
2	0.66300	24.0	----	10.0	34.0	----	56.0	----	22.0	----	N (QP)
3	1.58400	21.4	----	10.0	31.4	----	56.0	----	24.6	----	N (QP)
4	4.22000	15.2	----	10.2	25.4	----	56.0	----	30.6	----	N (QP)
5	7.33000	27.8	----	10.3	38.1	----	60.0	----	21.9	----	N (QP)
6	24.00000	24.1	----	10.8	34.9	----	60.0	----	25.1	----	N (QP)
7	0.28300	----	14.4	9.9	----	24.3	----	50.7	----	26.4	N (CAV)
8	0.66300	----	12.4	10.0	----	22.4	----	46.0	----	23.6	N (CAV)
9	1.58400	----	11.6	10.0	----	21.6	----	46.0	----	24.4	N (CAV)
10	4.22000	----	4.3	10.2	----	14.5	----	46.0	----	31.5	N (CAV)
11	7.33000	----	16.8	10.3	----	27.1	----	50.0	----	22.9	N (CAV)
12	24.00000	----	22.1	10.8	----	32.9	----	50.0	----	17.1	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.

Tested by: Hyung-Kwon, Oh / Assistant Manager