

**7.6.2 Test data for Antenna 1**

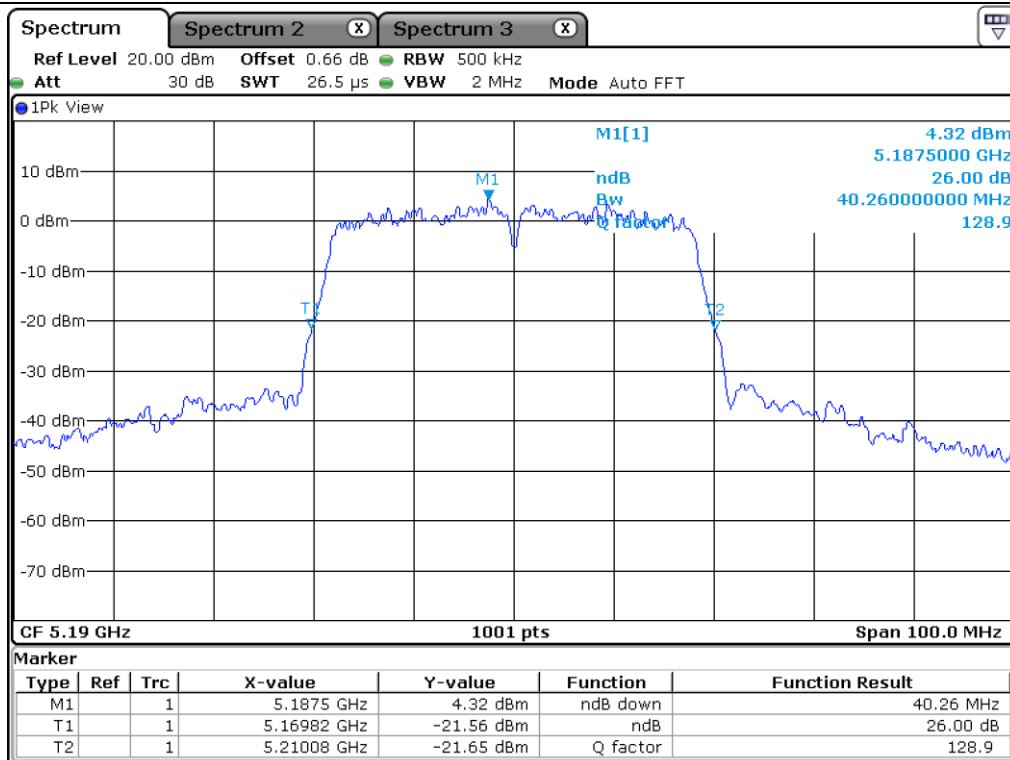
- Test Date : September 28, 2018 ~ October 24, 2018  
 - Test Result : Pass

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

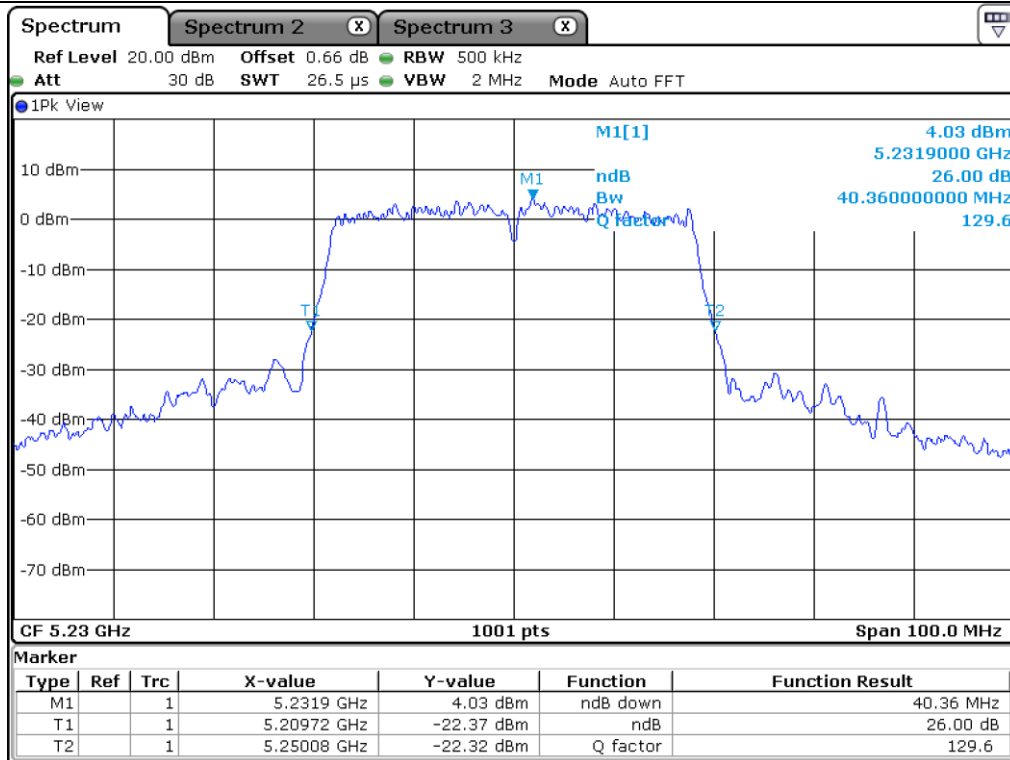
Remark: See next page for measurement data.



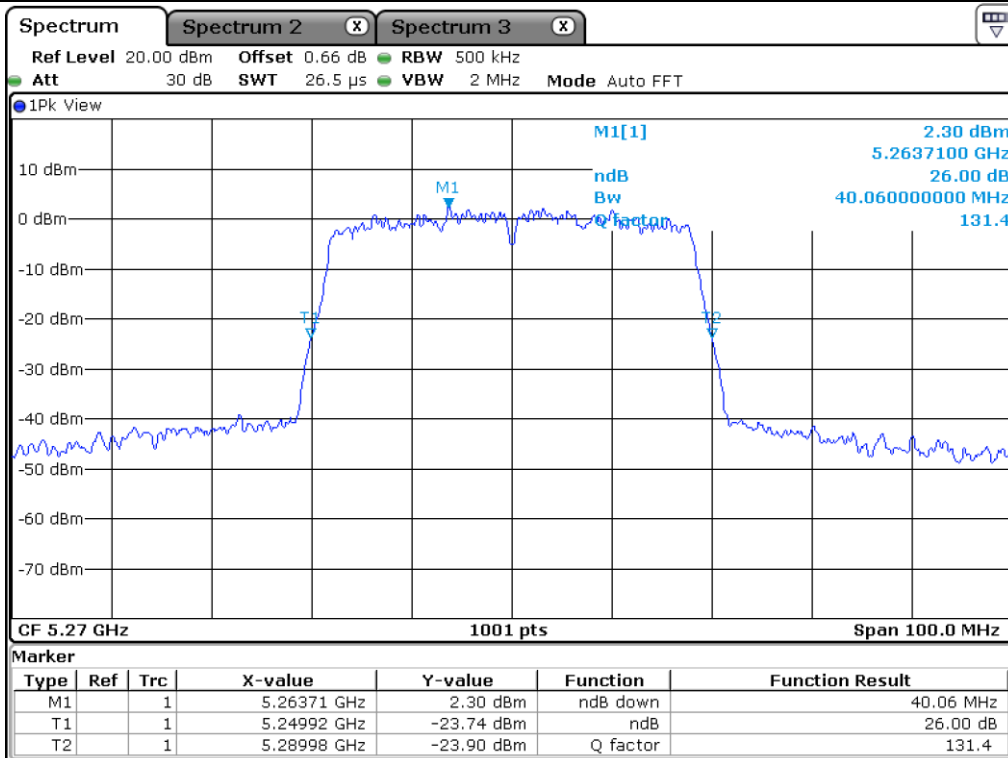
**Tested by: Tae-Ho, Kim / Senior Manager**



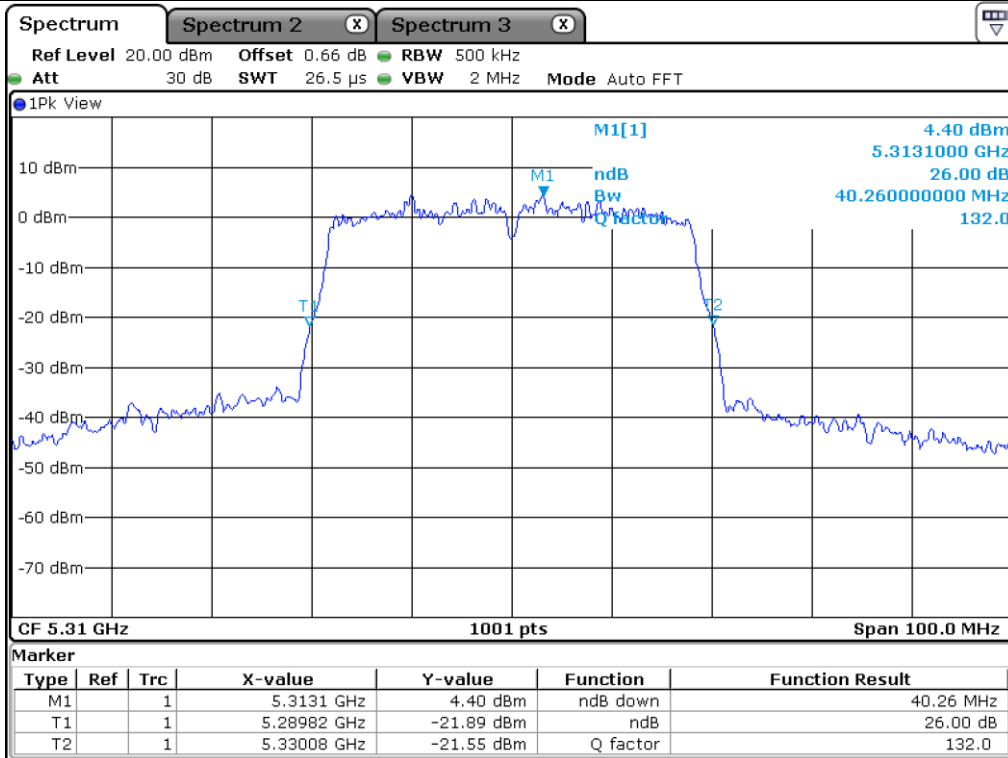
Low Channel (5 190 MHz)



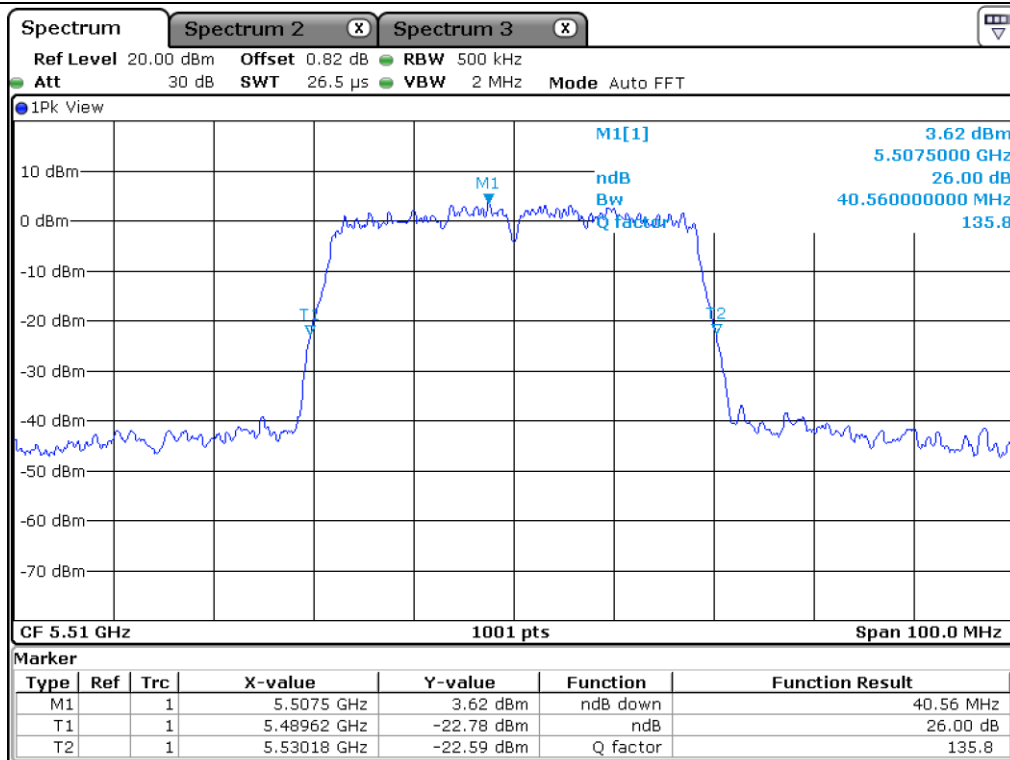
High Channel (5 230 MHz)



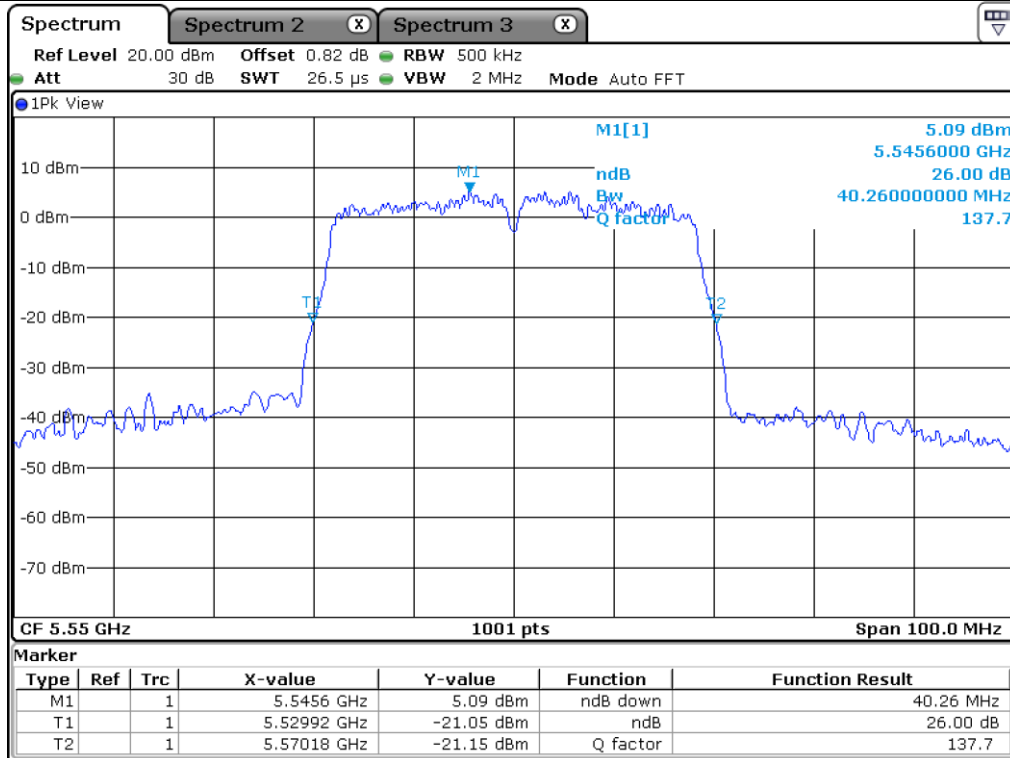
Low Channel (5 270 MHz)



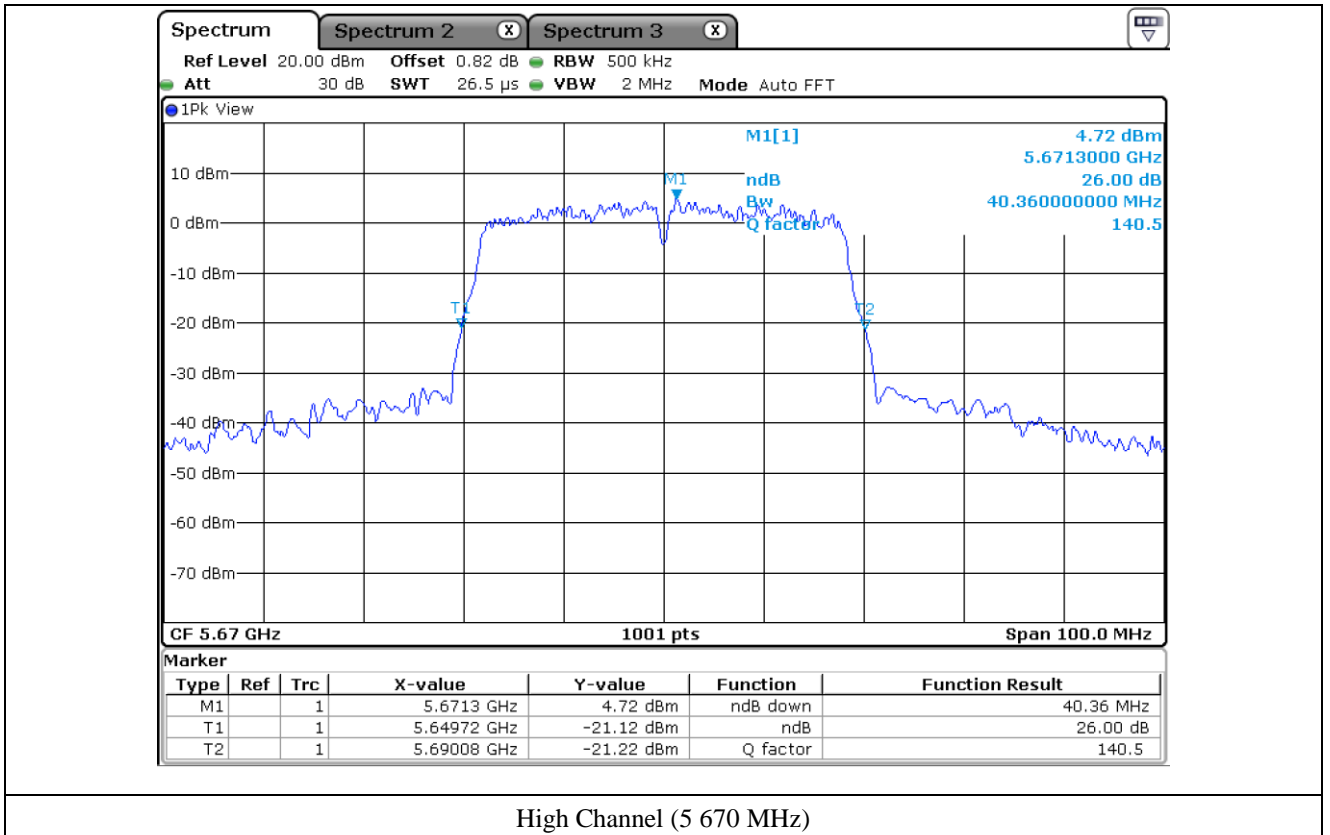
High Channel (5 310 MHz)

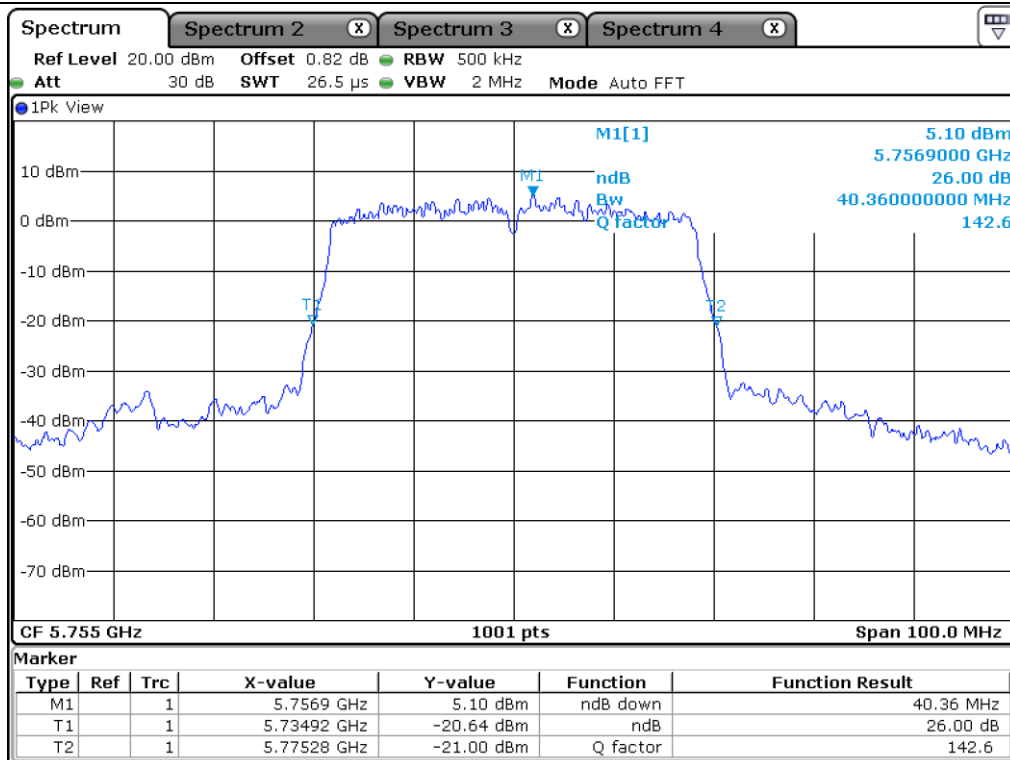


Low Channel (5 510 MHz)

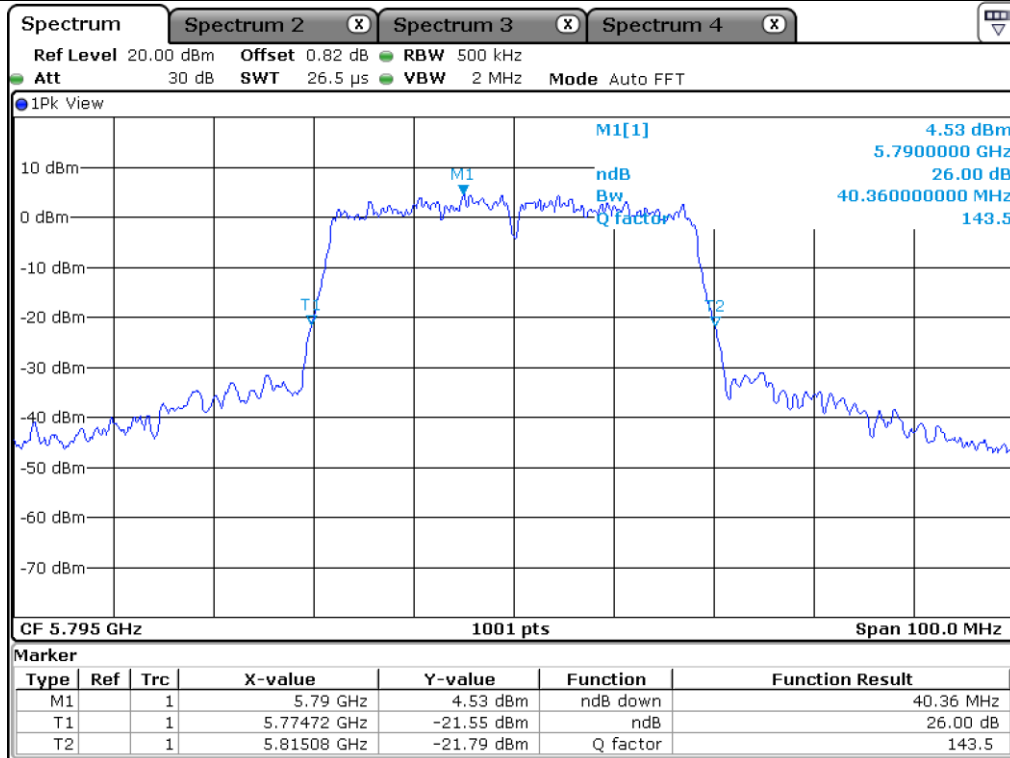


Middle Channel (5 550 MHz)





Low Channel (5 755 MHz)



High Channel (5 795 MHz)

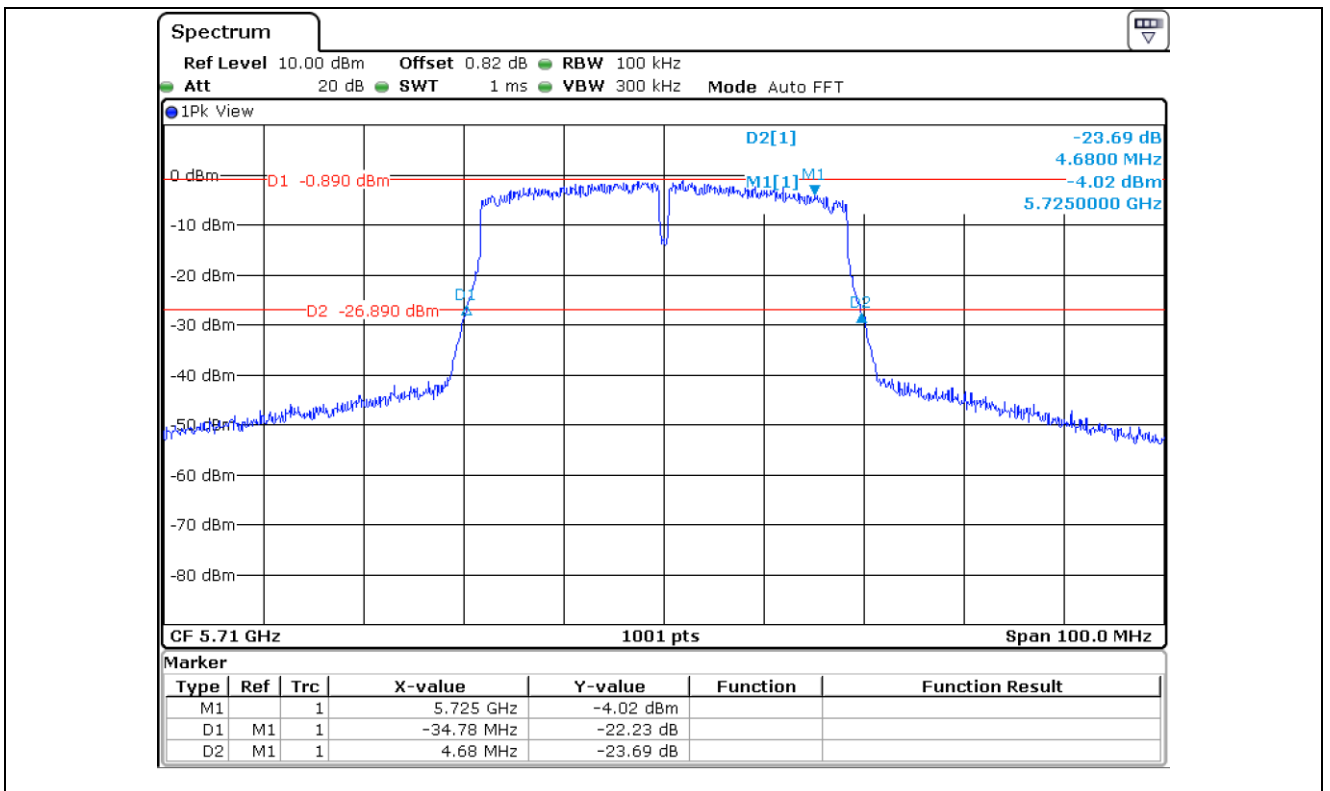
**7.6.3 Test data for Staddle Channel\_Antenna 0**

- Test Date : September 28, 2018 ~ October 24, 2018
- Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 710.00	34.78
5 725 ~ 5 850	5 710.00	4.68



Tested by: Tae-Ho, Kim / Senior Manager



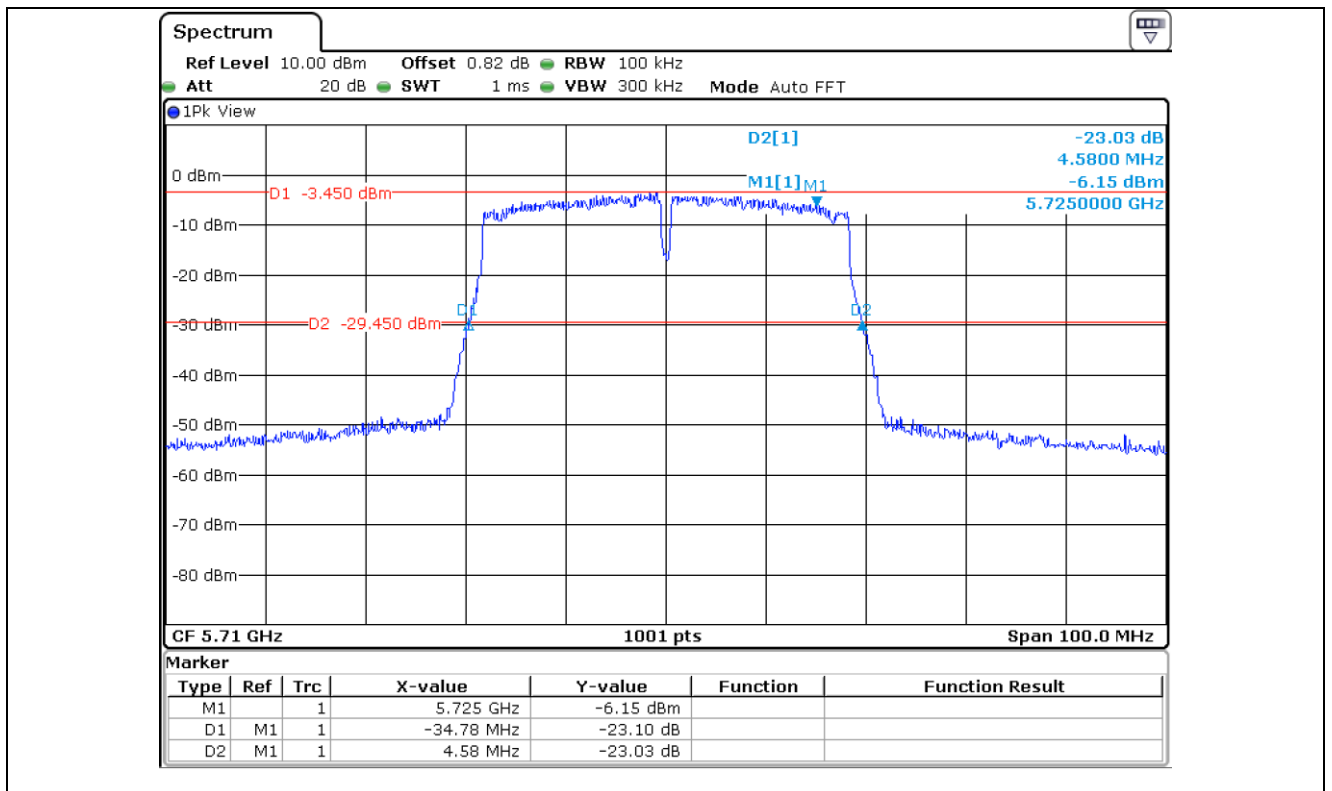
7.6.4 Test data for Staddle Channel\_Antenna 1

- Test Date : September 28, 2018 ~ October 24, 2018
- Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 710.00	34.78
5 725 ~ 5 850	5 710.00	4.58



Tested by: Tae-Ho, Kim / Senior Manager





**7.7 Test data for 802.11ac\_VHT80 RLAN Mode**

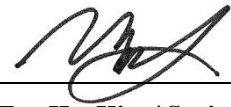
**7.7.1 Test data for Antenna 0**

-. Test Date : September 28, 2018 ~ October 24, 2018

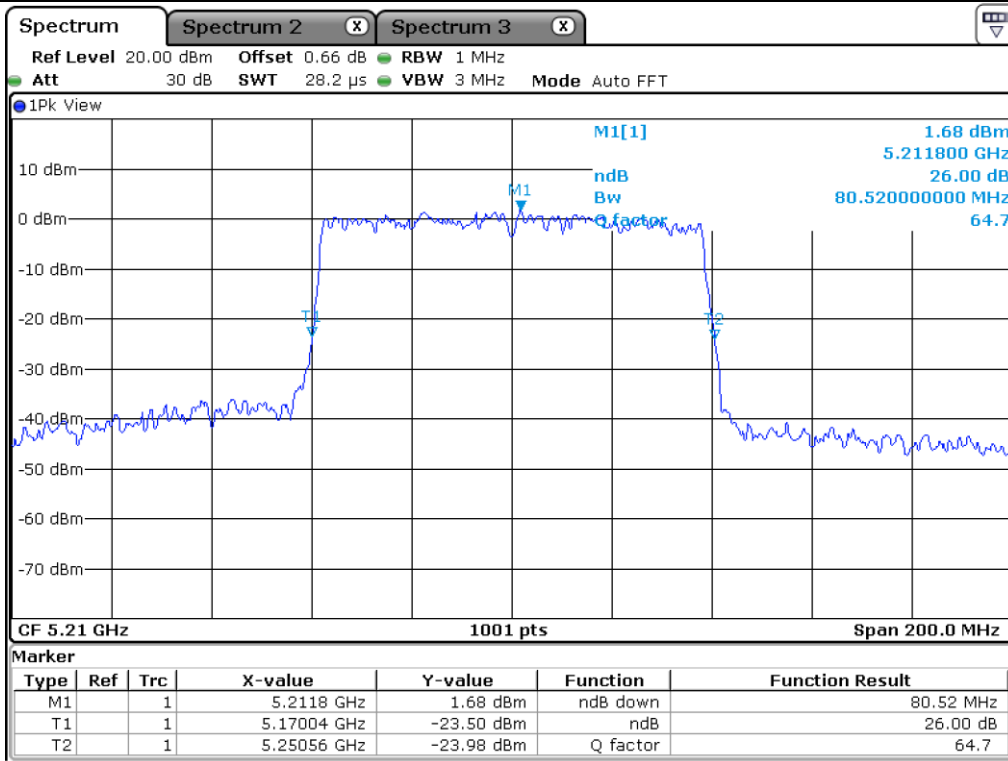
-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Middle	5 210.00	80.52
5 250 ~ 5 350	Middle	5 290.00	80.92
5 470 ~ 5 725	Middle	5 530.00	81.12
5 725 ~ 5 850	Middle	5 775.00	81.12

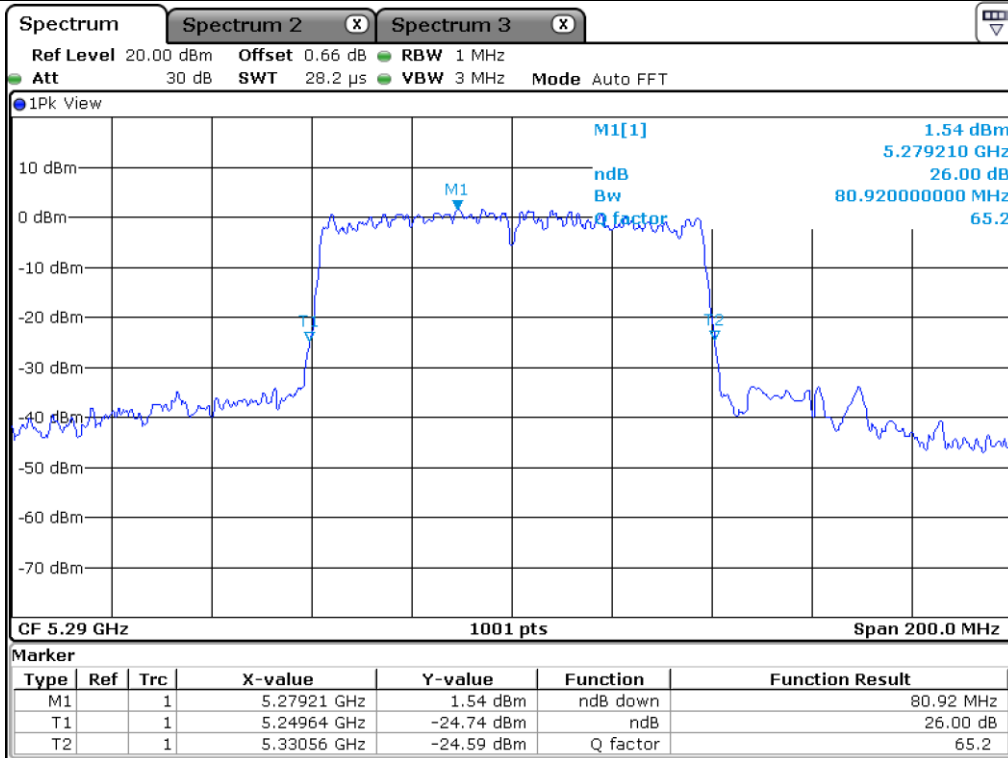
Remark: See next page for measurement data.



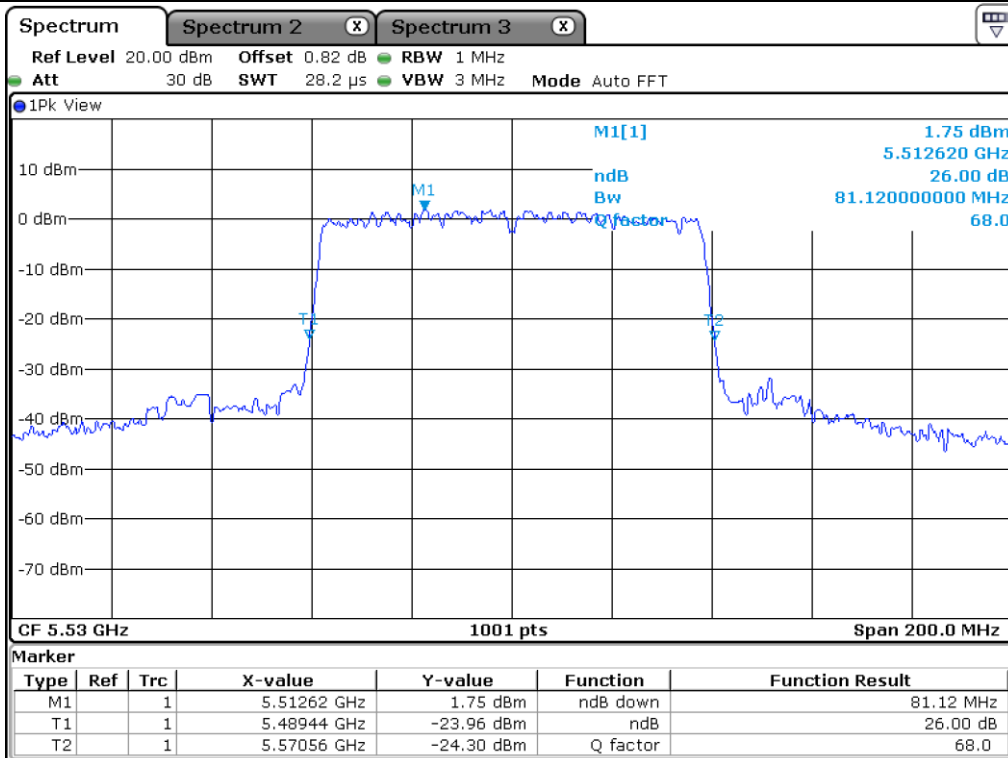
Tested by: **Tae-Ho, Kim / Senior Manager**



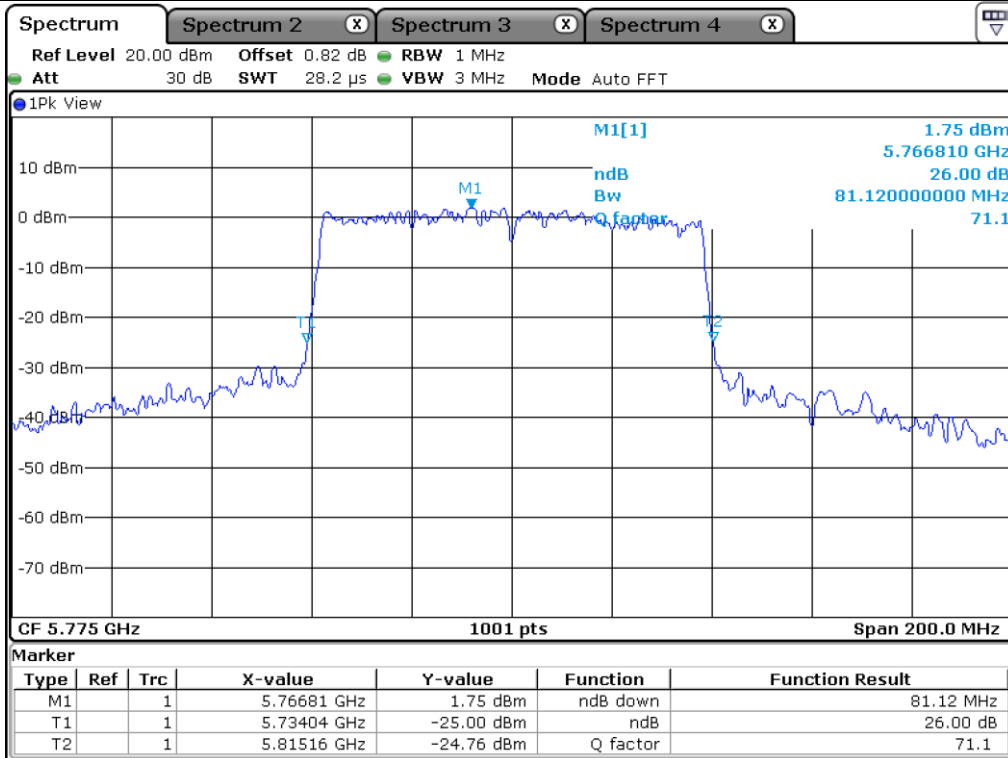
Middle Channel (5 210 MHz)



Middle Channel (5 290 MHz)



Middle Channel (5 530 MHz)



Middle Channel (5 775 MHz)

**7.7.2 Test data for Antenna 1**

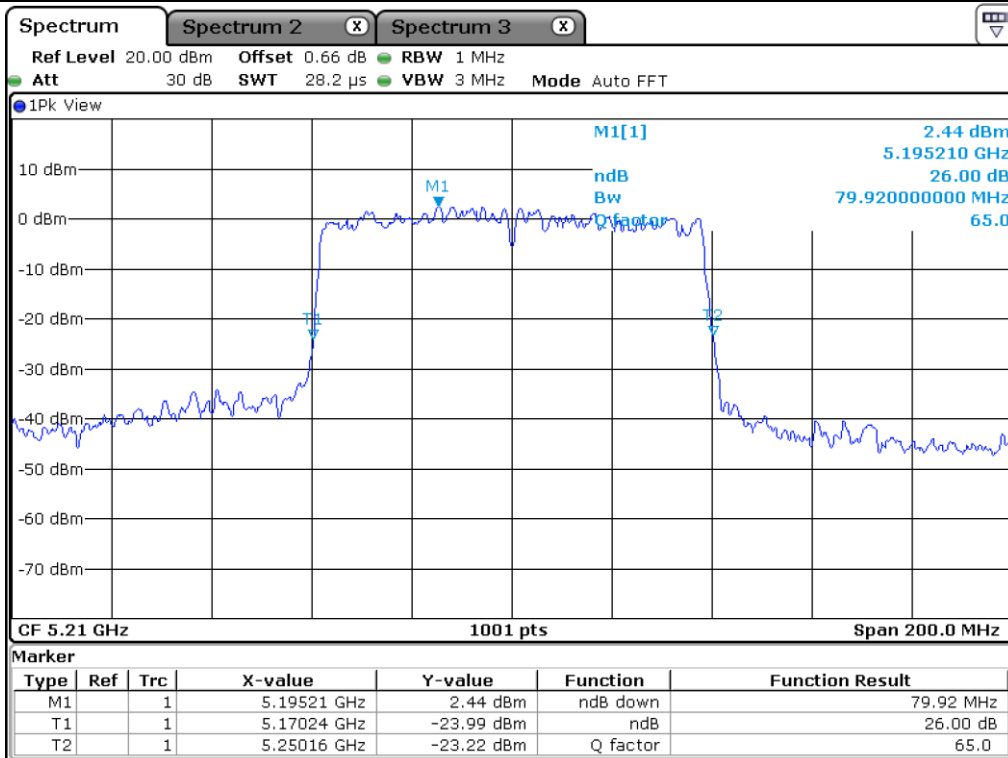
- Test Date : September 28, 2018 ~ October 24, 2018
- Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 150 ~ 5 250	Middle	5 210.00	79.92
5 250 ~ 5 350	Middle	5 290.00	80.92
5 470 ~ 5 725	Middle	5 530.00	80.12
5 725 ~ 5 850	Middle	5 775.00	80.92

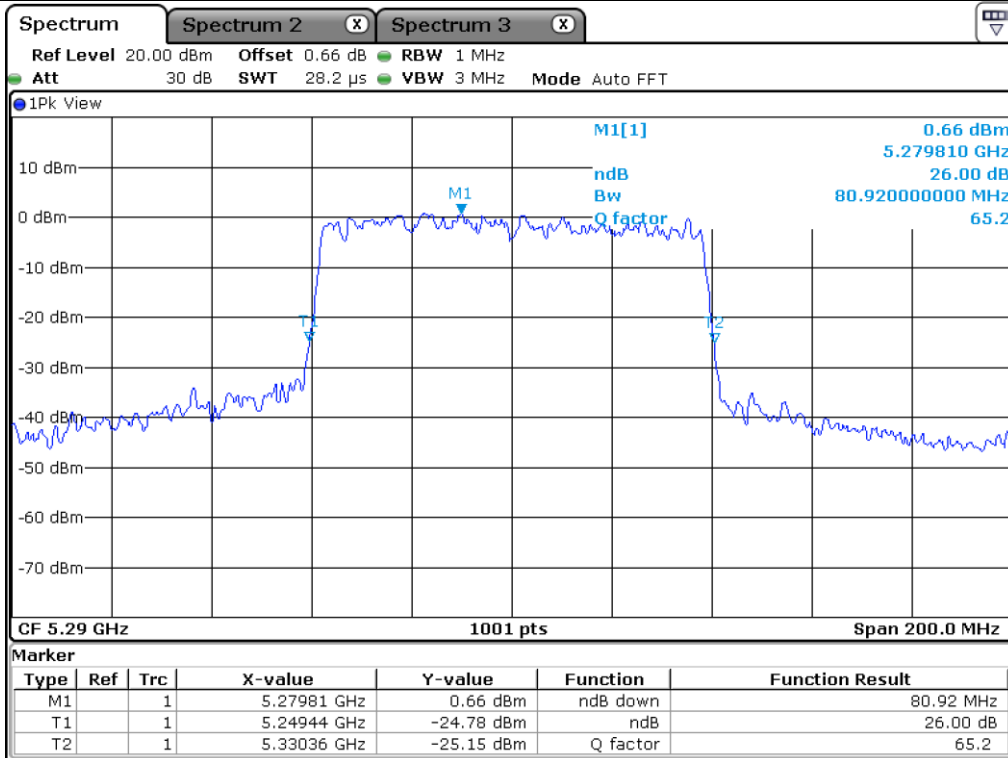
Remark: See next page for measurement data.



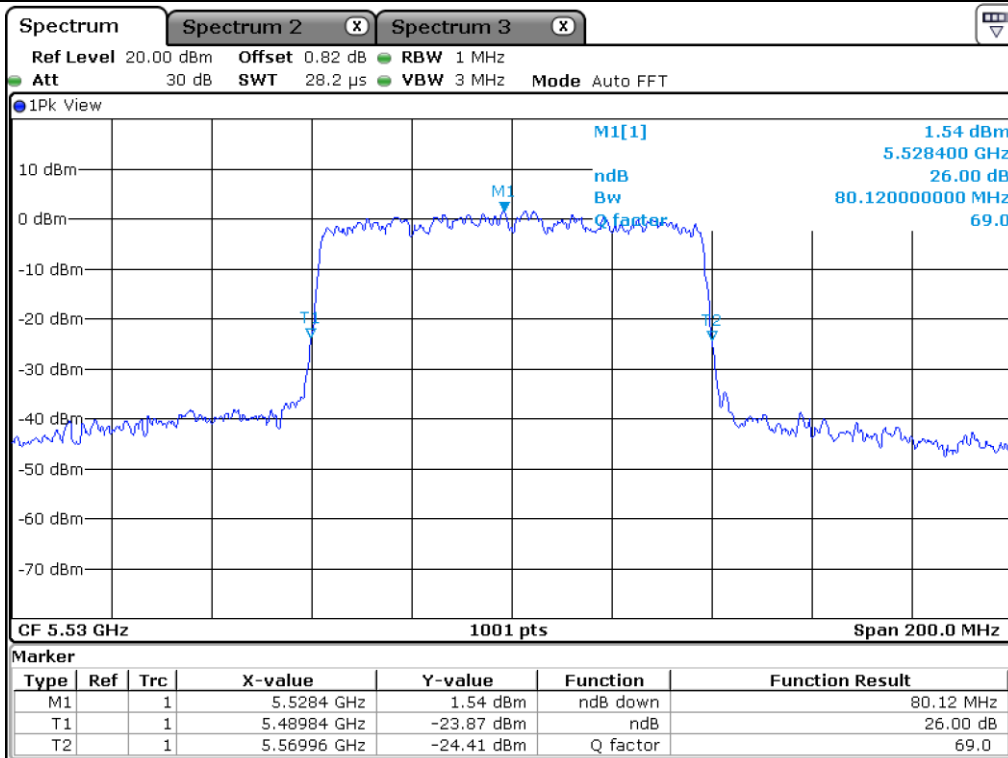
**Tested by: Tae-Ho, Kim / Senior Manager**



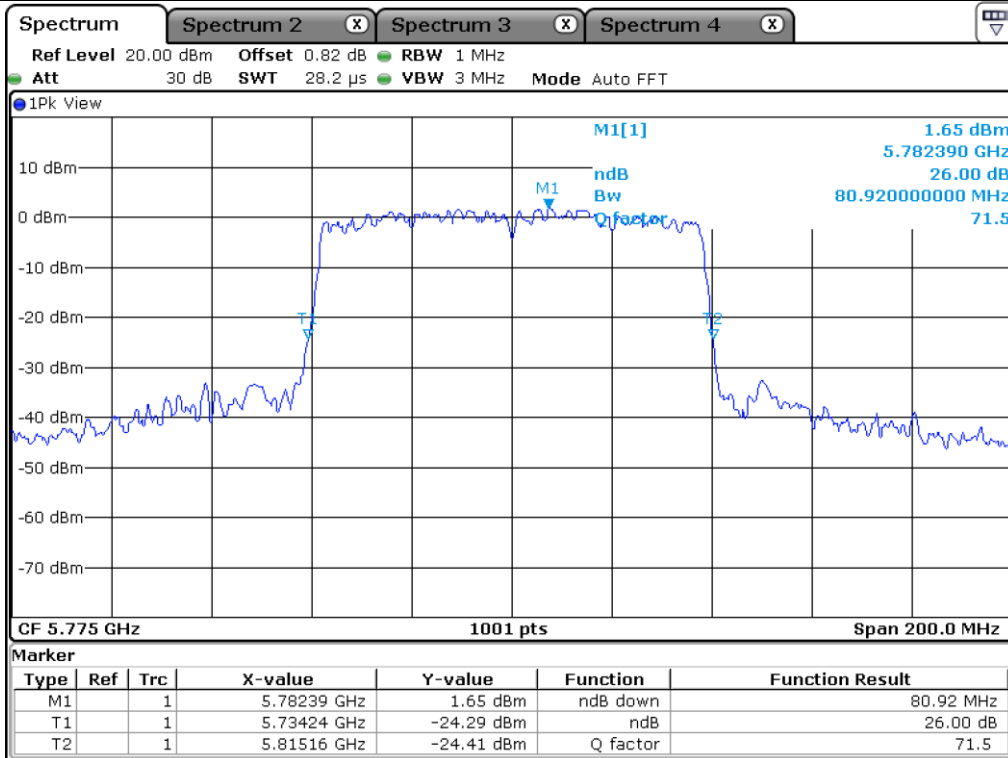
Middle Channel (5 210 MHz)



Middle Channel (5 290 MHz)



Middle Channel (5 530 MHz)



Middle Channel (5 775 MHz)

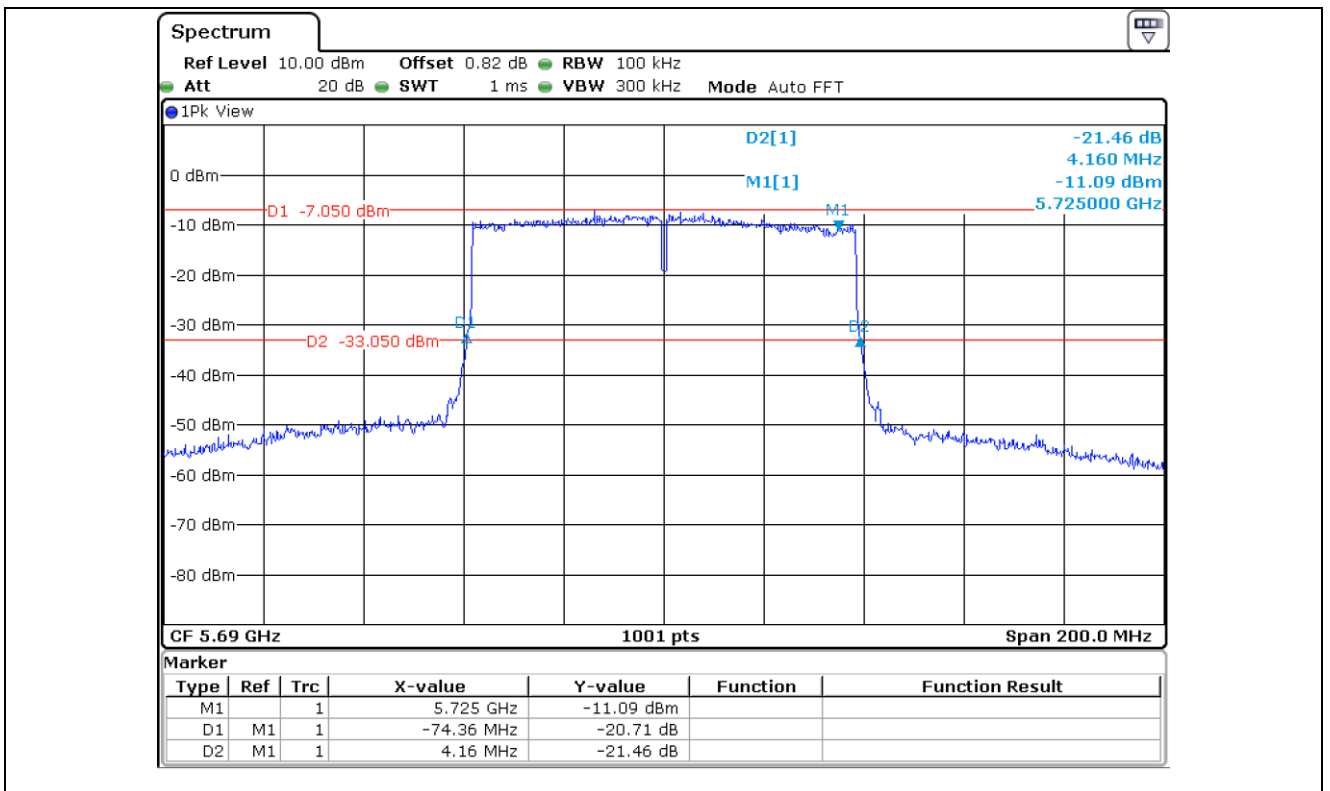
7.7.3 Test data for Staddle Channel\_Antenna 0

- Test Date : September 28, 2018 ~ October 24, 2018
- Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 690.00	74.36
5 725 ~ 5 850	5 690.00	4.16



Tested by: Tae-Ho, Kim / Senior Manager



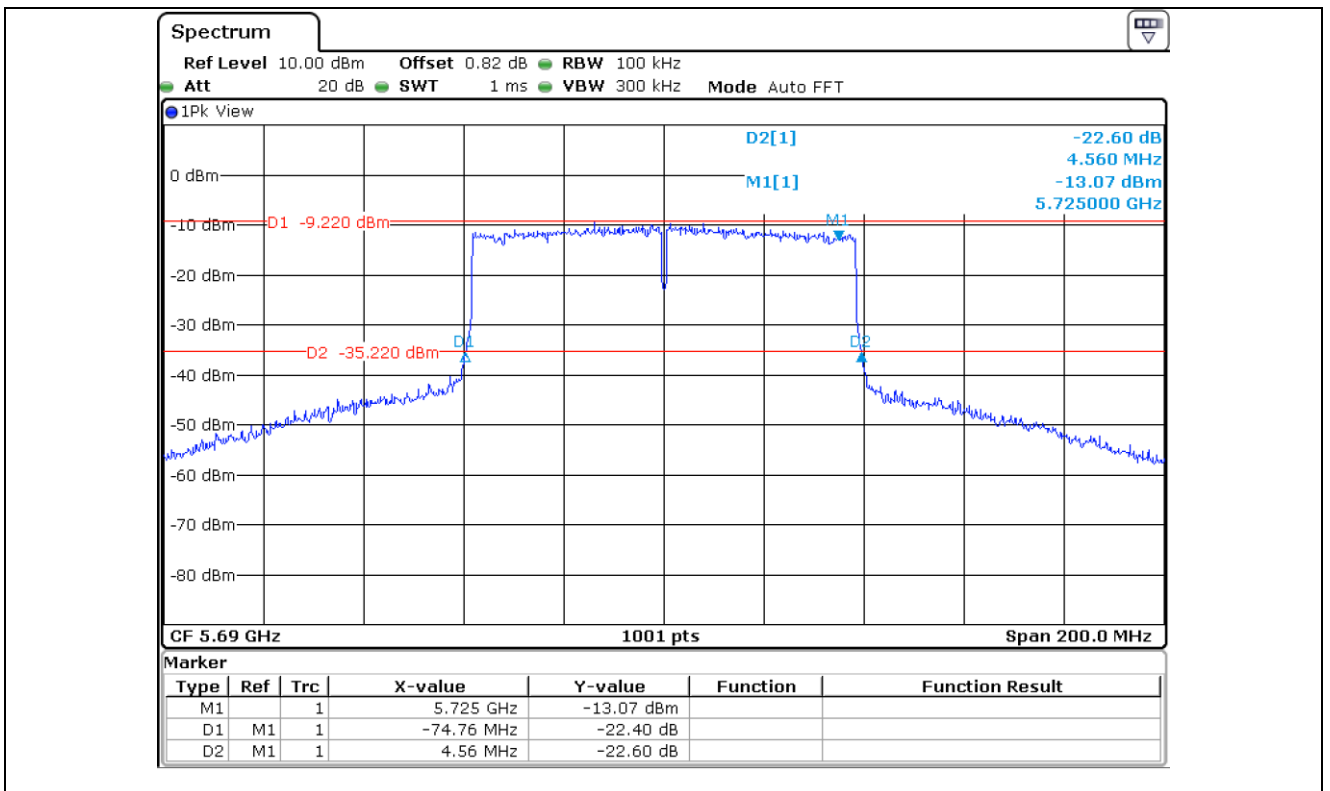
7.7.4 Test data for Staddle Channel\_Antenna 1

- Test Date : September 28, 2018 ~ October 24, 2018
- Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	26 dB Bandwidth (MHz)
5 470 ~ 5 725	5 690.00	74.76
5 725 ~ 5 850	5 690.00	4.56



Tested by: Tae-Ho, Kim / Senior Manager





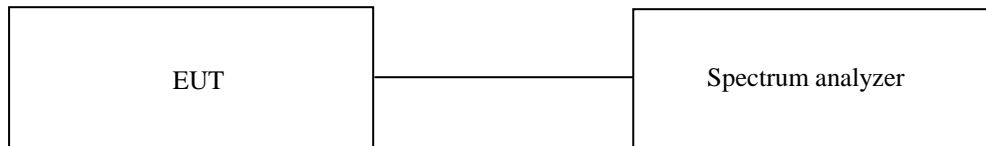
## 8. 6 dB BANDWIDTH

### 8.1 Operating environment

Temperature : 25 °C  
 Relative humidity : 46 % R.H.

### 8.2 Test set-up

The antenna output of the EUT was connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz, and peak detection was used. The 6 dB bandwidth is defined as the total spectrum over which the power is higher than the peak power minus 6 dB.



### 8.3 Test equipment used

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

All test equipment used is calibrated on a regular basis.

8.4 Test data for 802.11a RLAN Mode

8.4.1 Test data for Antenna 0

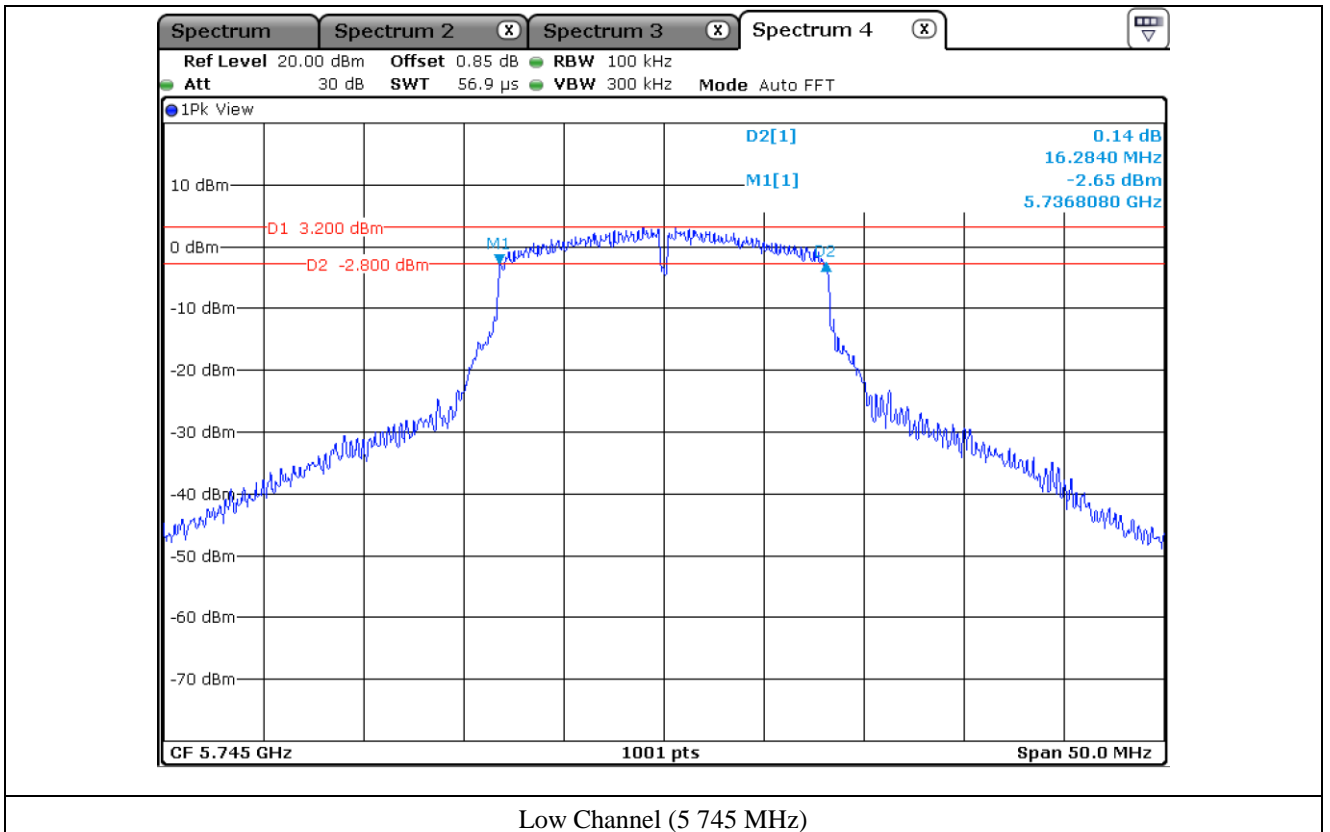
- Test Date : September 28, 2018 ~ October 24, 2018
- Test Result : Pass

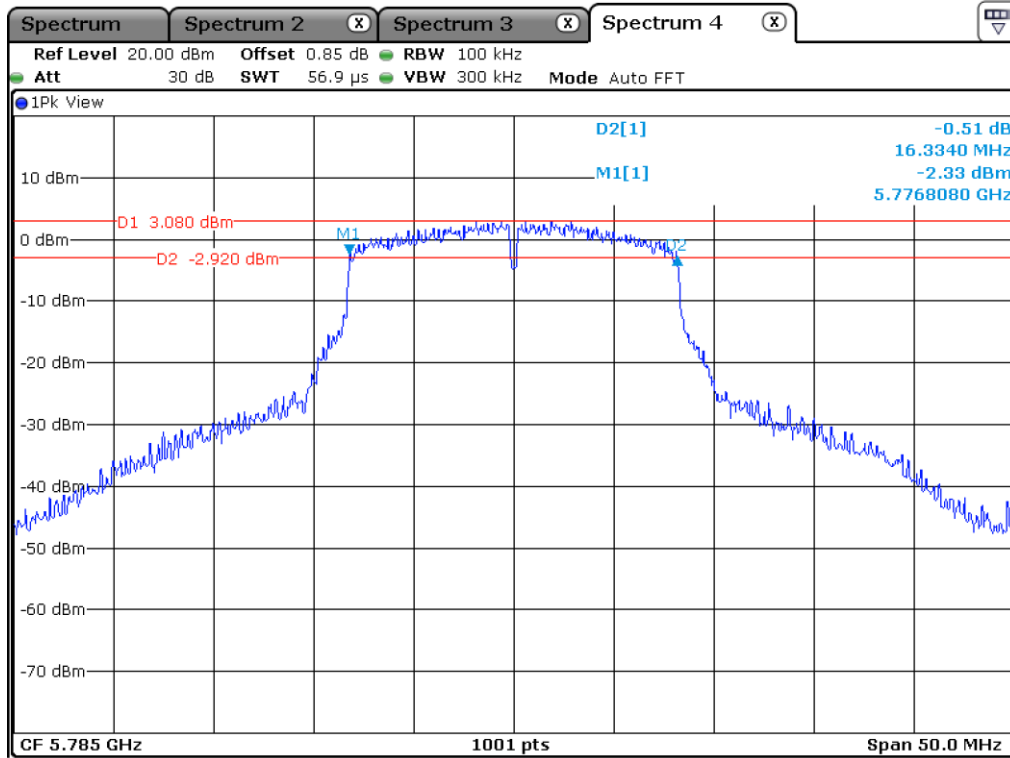
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 725 ~ 5 850	Low	5 745.00	16.28
	Middle	5 785.00	16.33
	High	5 825.00	16.28

Remark: See next page for measurement data.

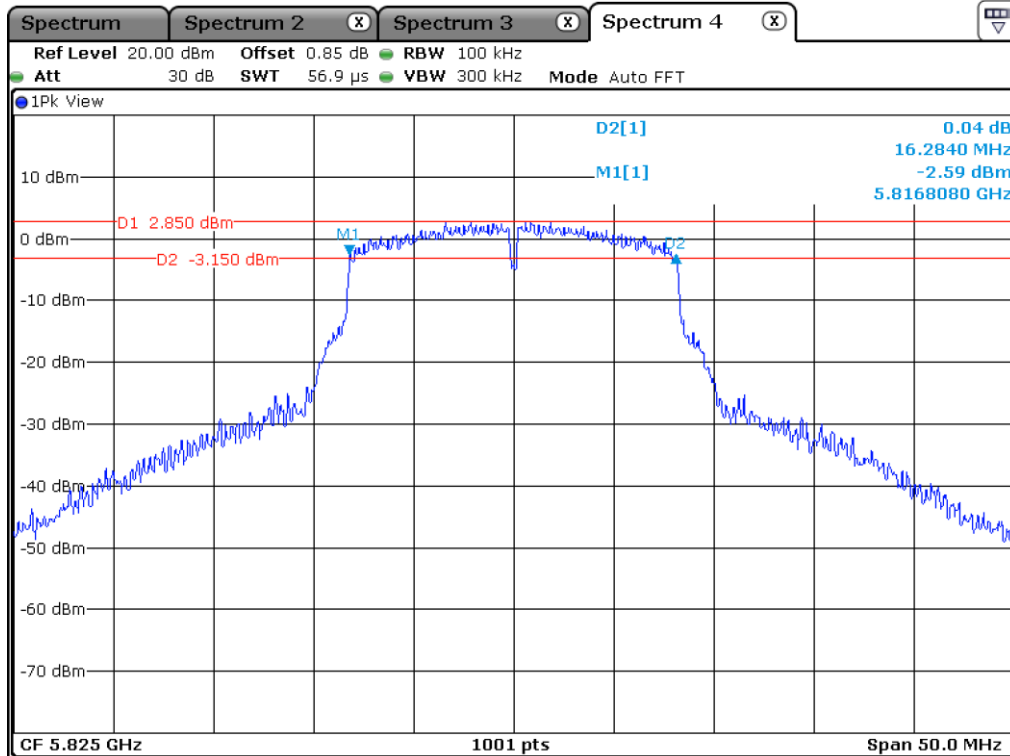


Tested by: Tae-Ho, Kim / Senior Manager





Middle Channel (5 785 MHz)



High Channel (5 825 MHz)

**8.4.2 Test data for Antenna 1**

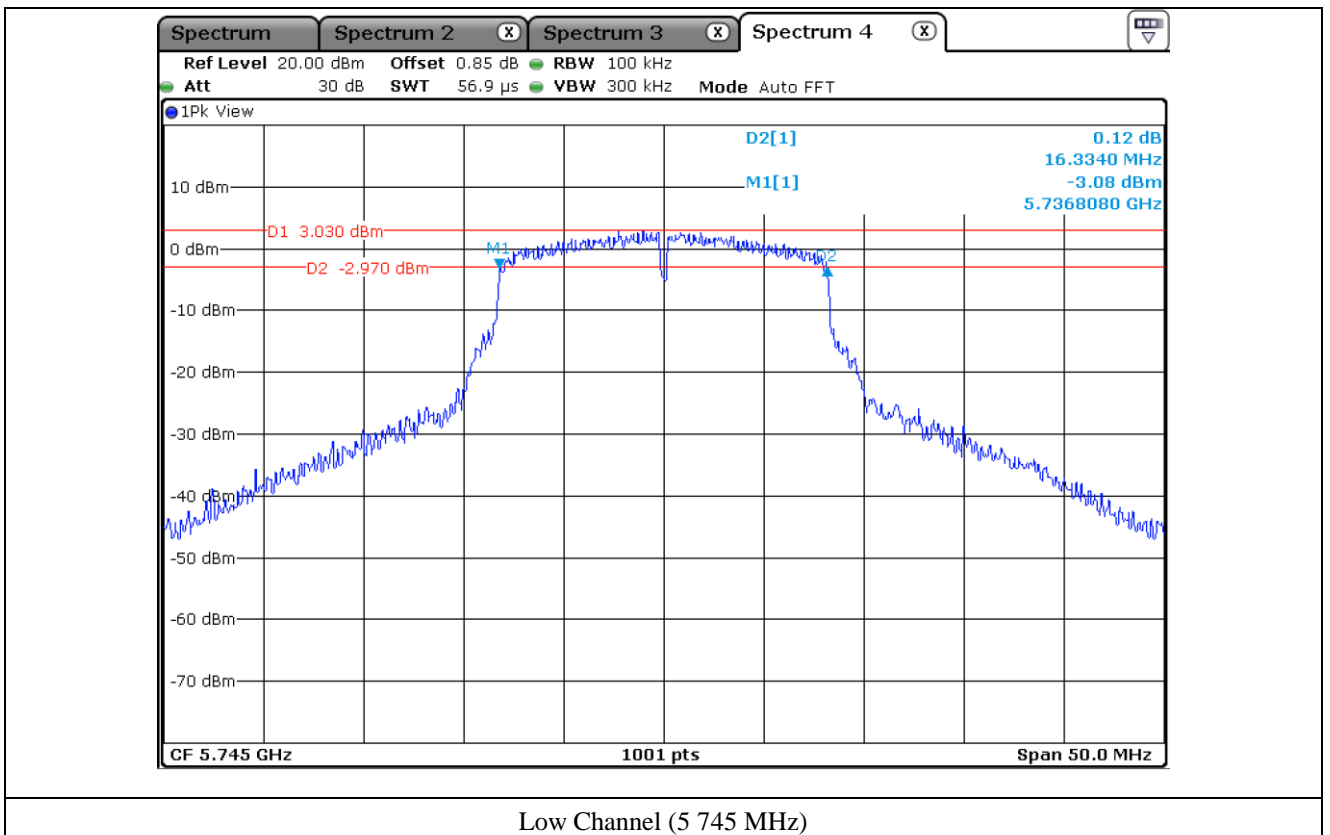
- Test Date : September 28, 2018 ~ October 24, 2018
- Test Result : Pass

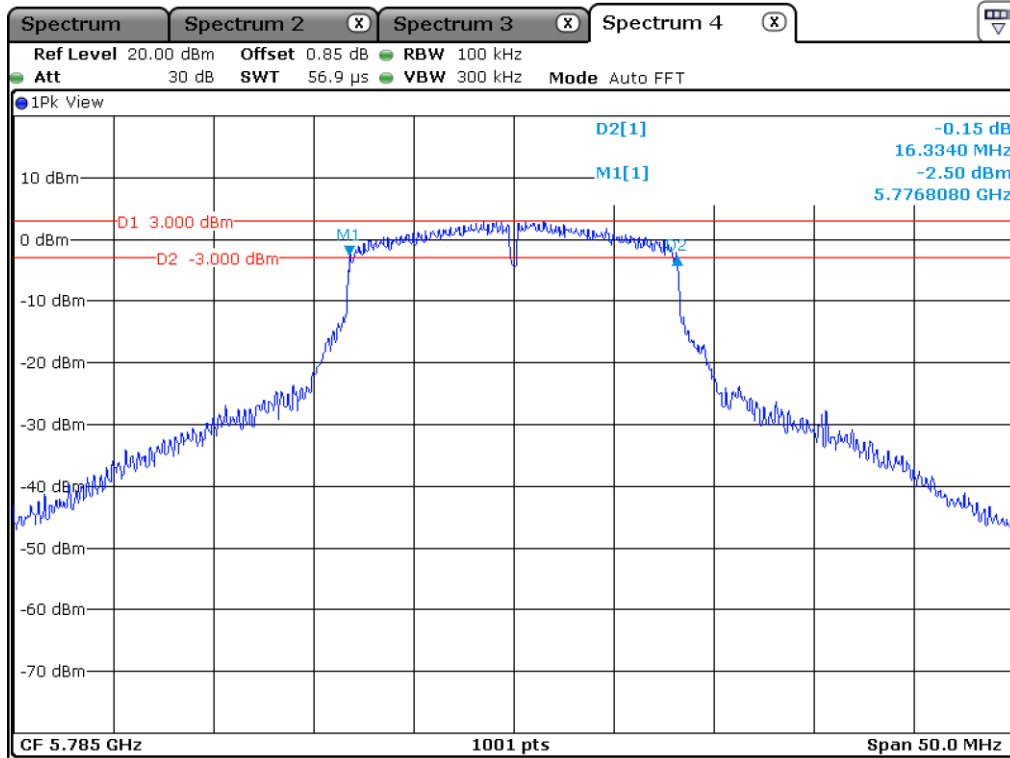
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 725 ~ 5 850	Low	5 745.00	16.33
	Middle	5 785.00	16.33
	High	5 825.00	16.23

Remark: See next page for measurement data.

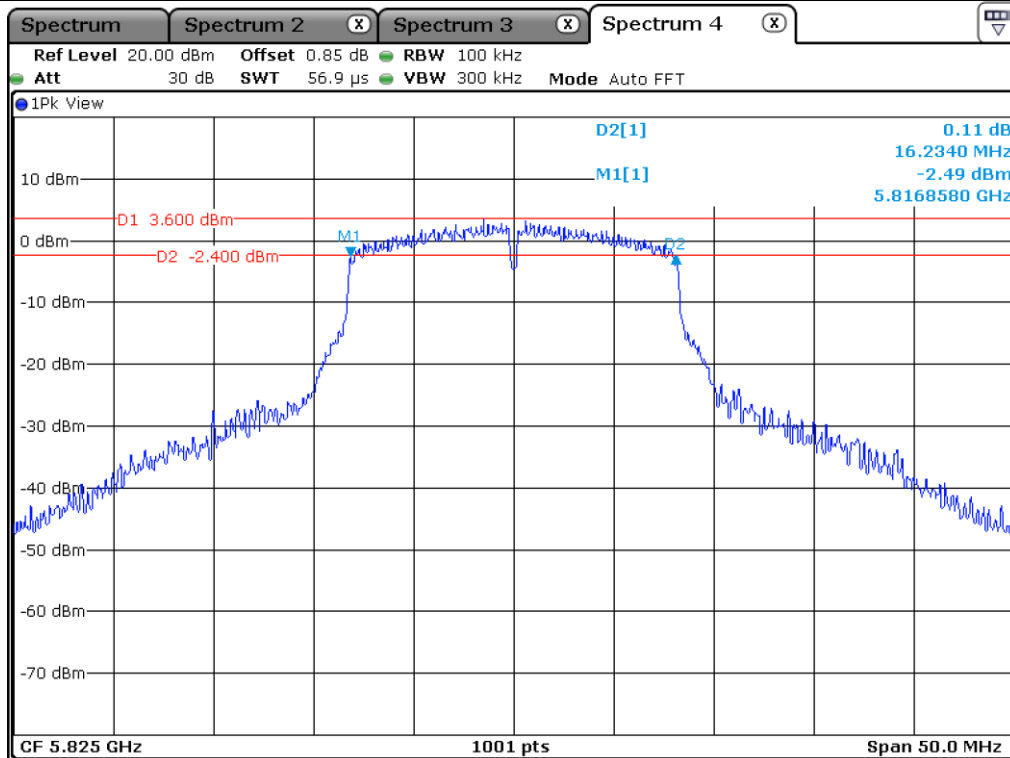


Tested by: Tae-Ho, Kim / Senior Manager





Middle Channel (5 785 MHz)



High Channel (5 825 MHz)

8.5 Test data for 802.11n\_HT20 RLAN Mode

8.5.1 Test data for Antenna 0

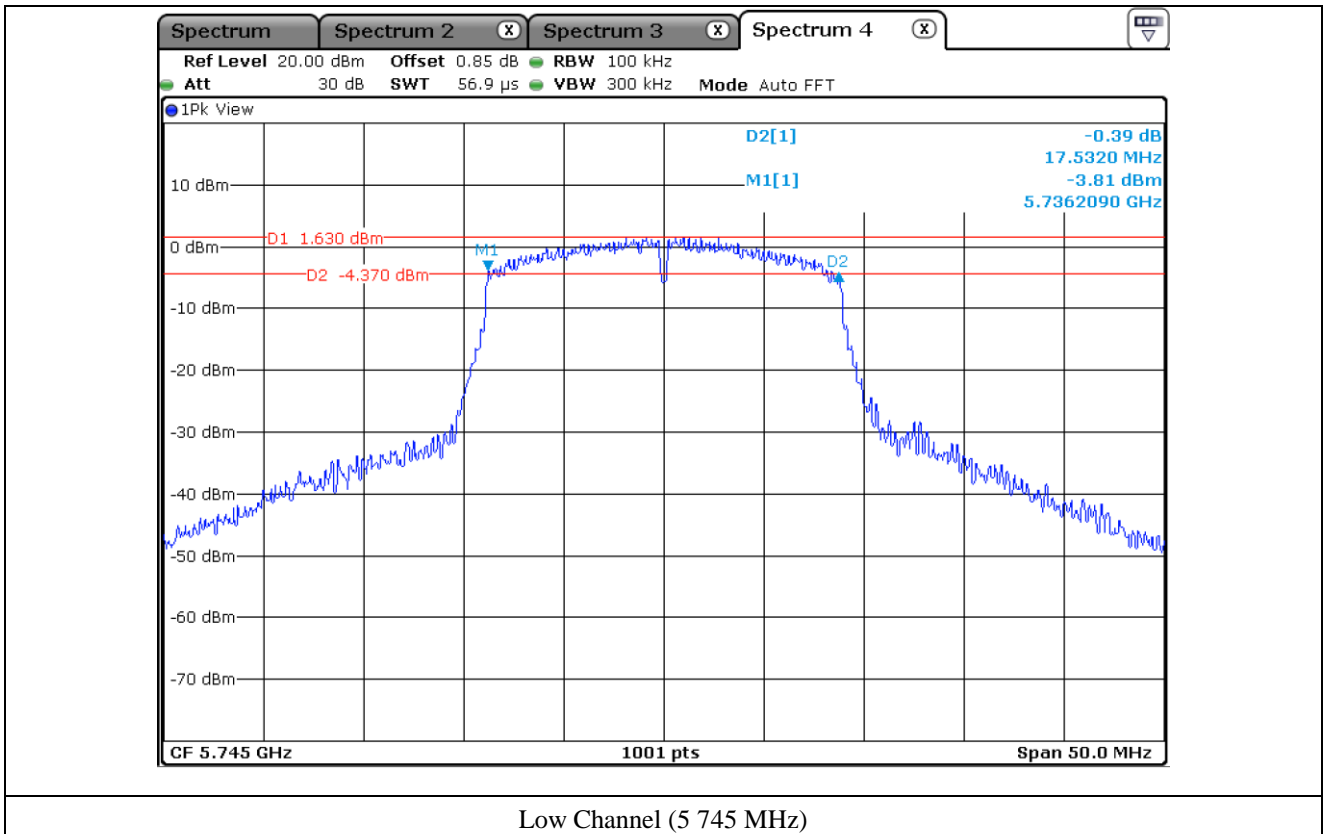
- Test Date : September 28, 2018 ~ October 24, 2018
- Test Result : Pass

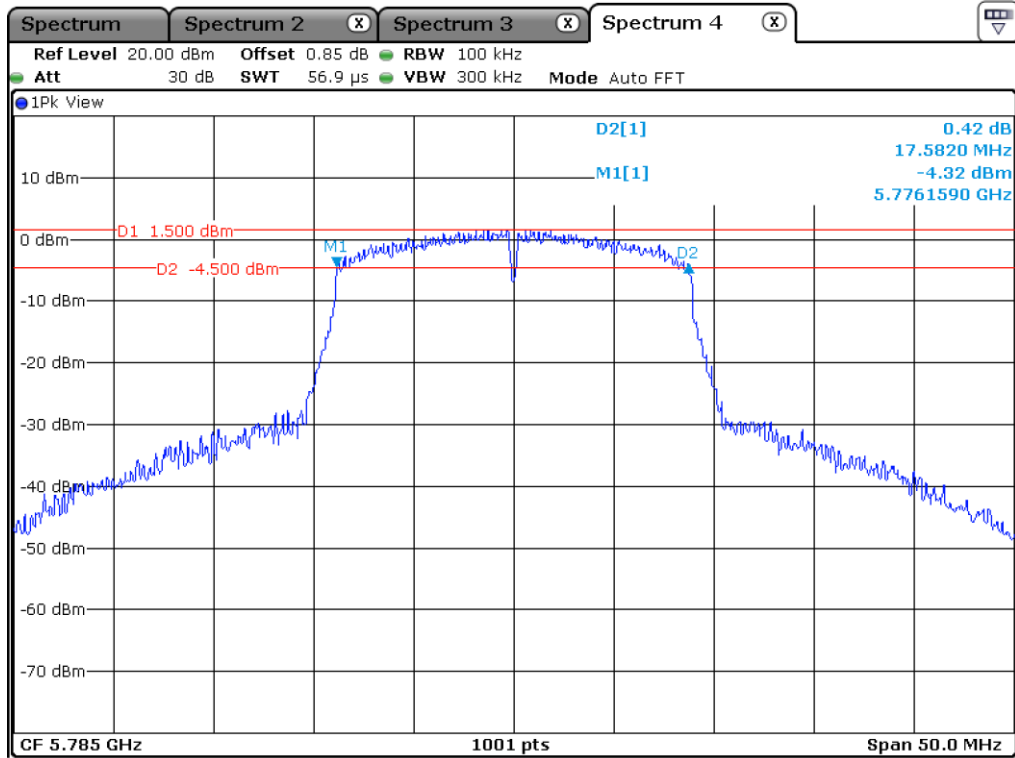
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 725 ~ 5 850	Low	5 745.00	17.53
	Middle	5 785.00	17.58
	High	5 825.00	17.53

Remark: See next page for measurement data.

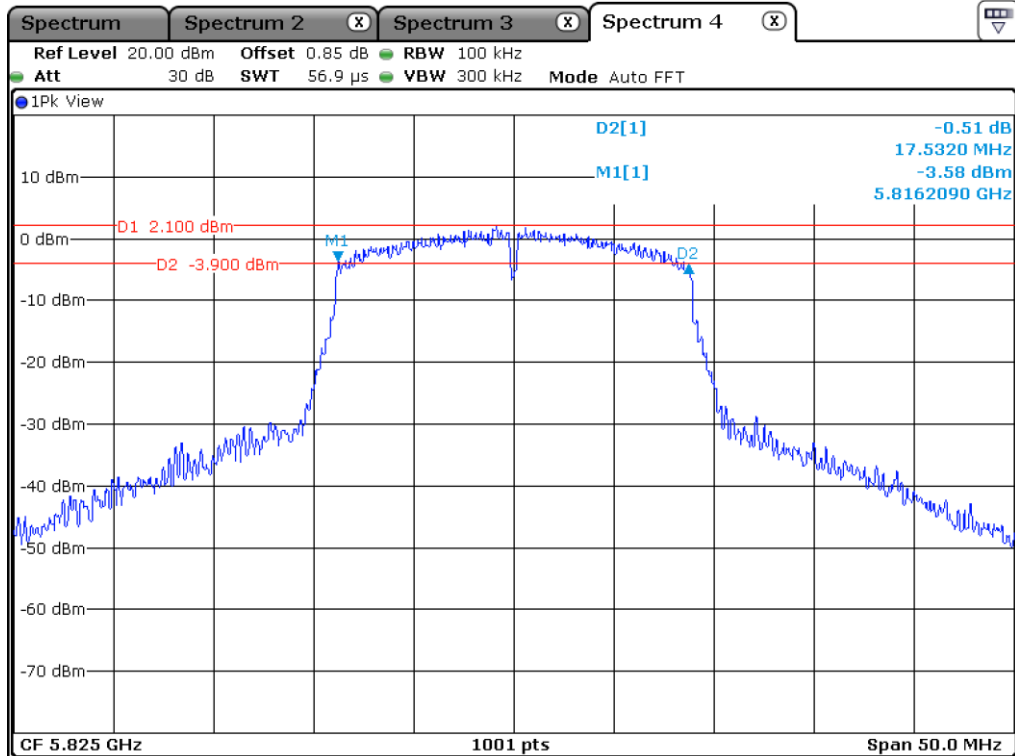


Tested by: Tae-Ho, Kim / Senior Manager





Middle Channel (5 785 MHz)



High Channel (5 825 MHz)

**8.5.2 Test data for Antenna 1**

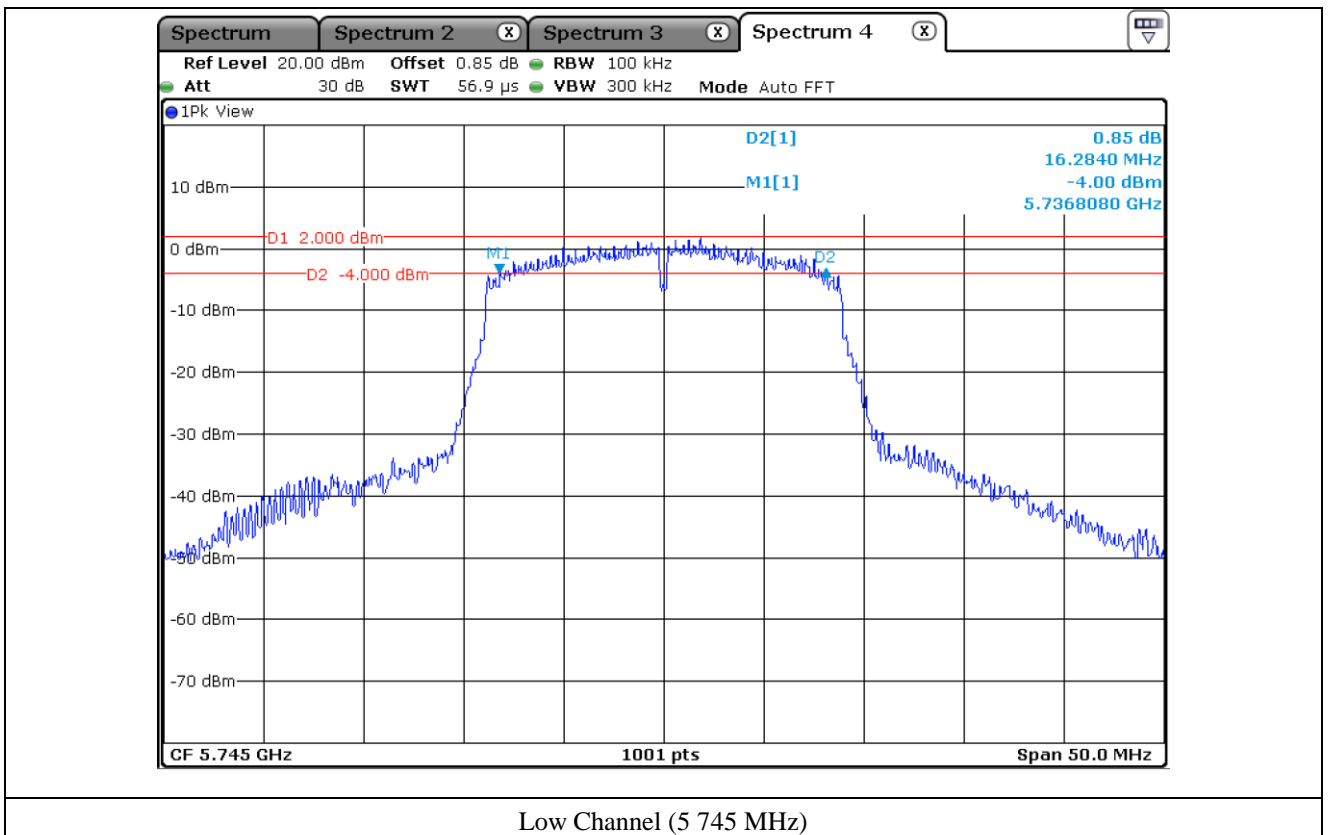
- Test Date : September 28, 2018 ~ October 24, 2018  
 - Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 725 ~ 5 850	Low	5 745.00	16.28
	Middle	5 785.00	17.58
	High	5 825.00	16.93

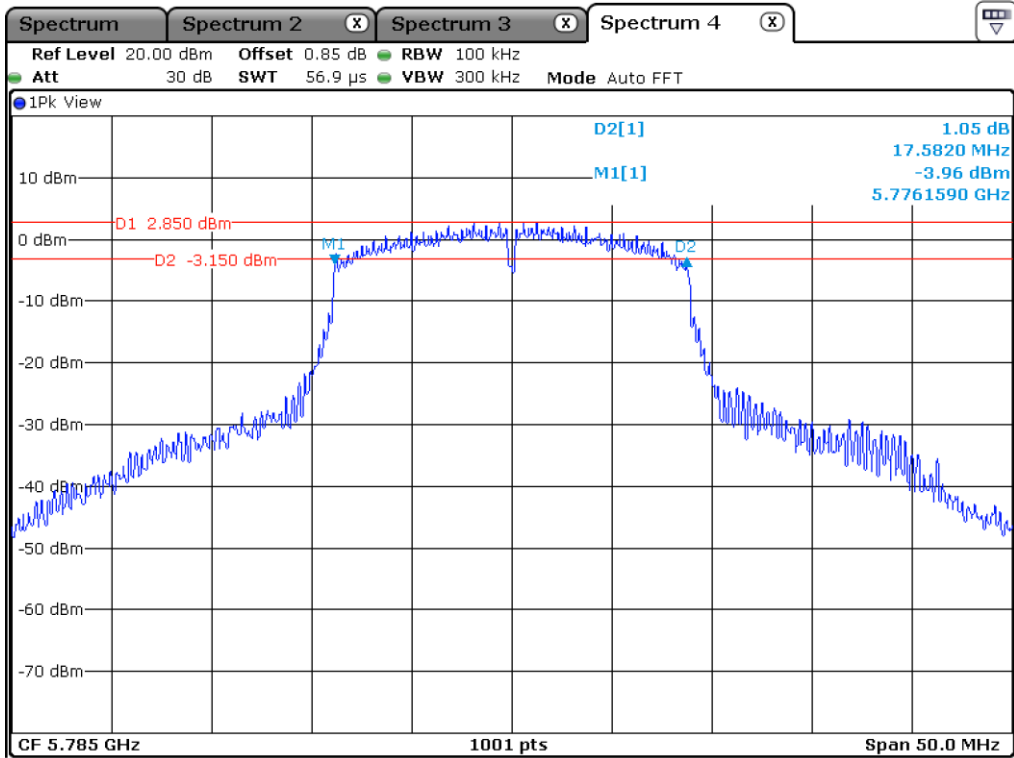
Remark: See next page for measurement data.



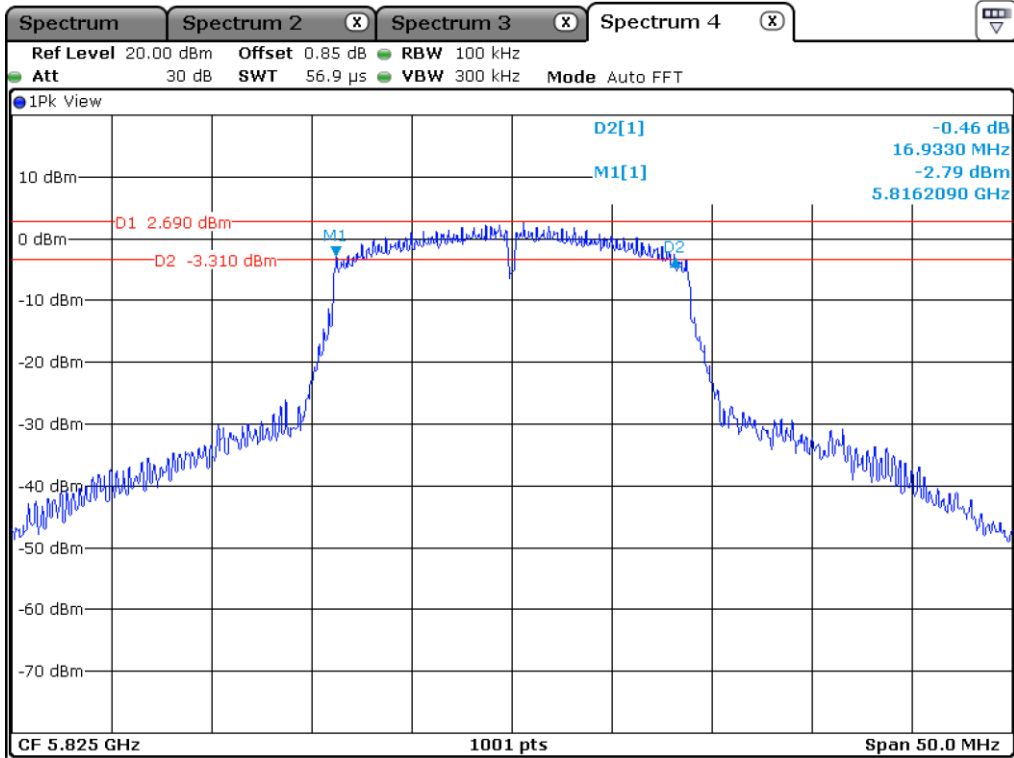
Tested by: Tae-Ho, Kim / Senior Manager







Middle Channel (5 785 MHz)



High Channel (5 825 MHz)

8.6 Test data for 802.11n\_HT40 RLAN Mode

8.6.1 Test data for Antenna 0

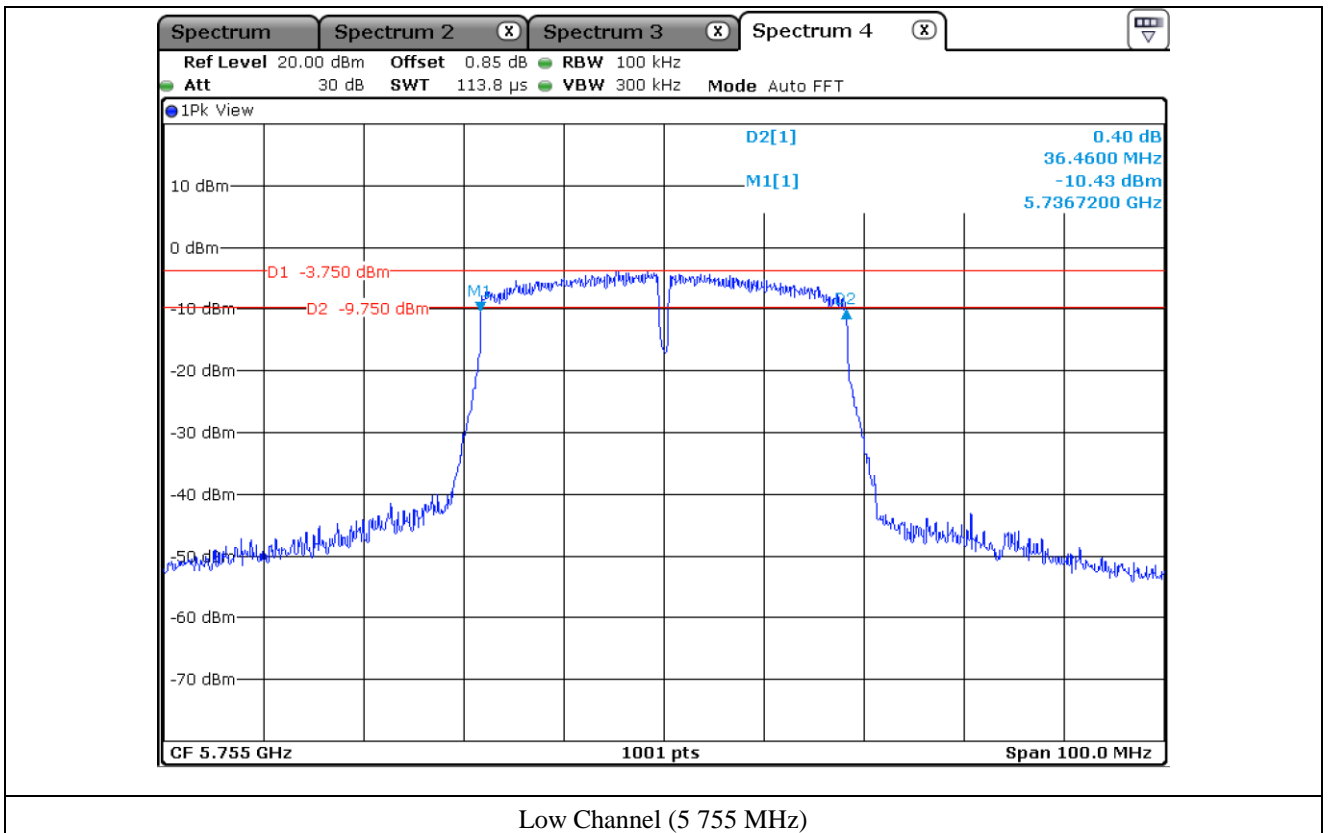
- Test Date : September 28, 2018 ~ October 24, 2018
- Test Result : Pass

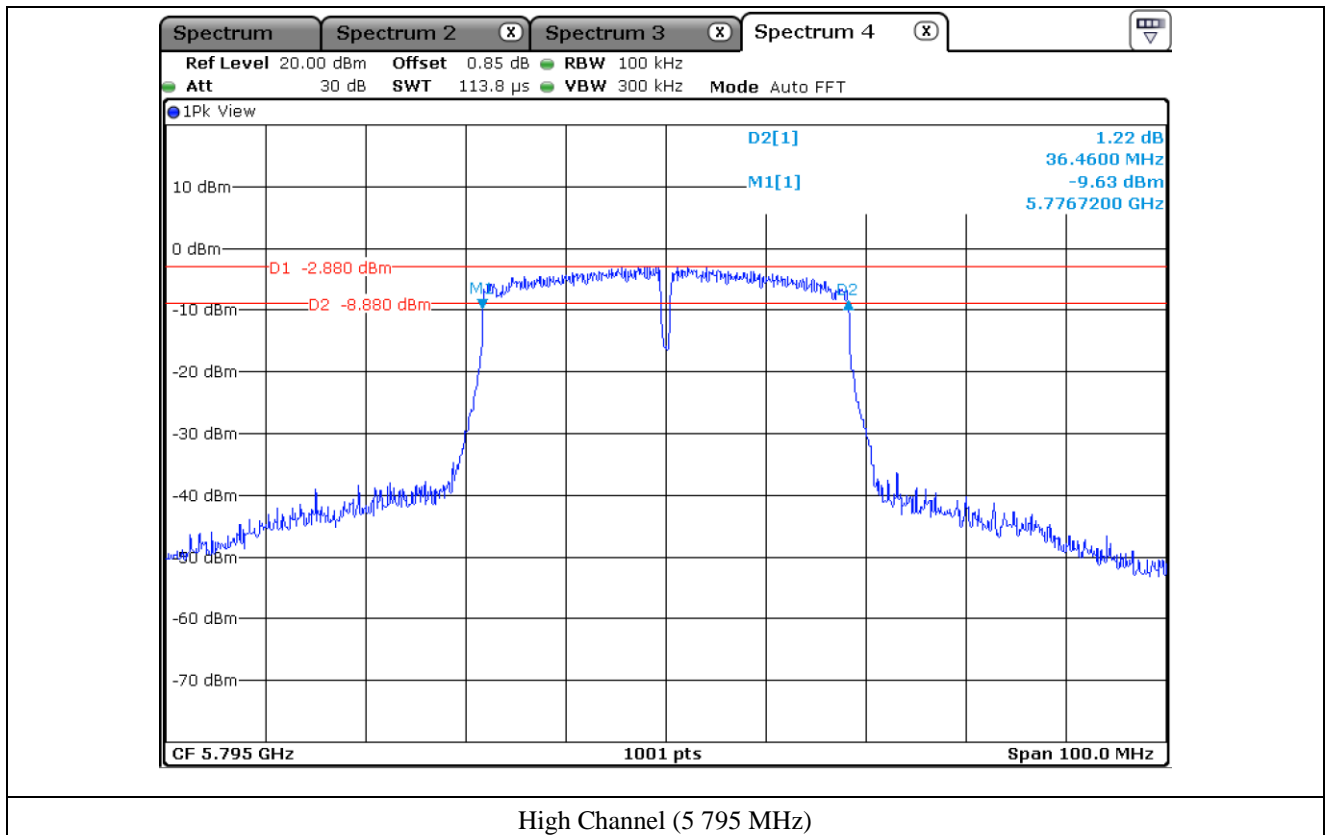
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)
5 725 ~ 5 850	Low	5 755.00	36.46
	High	5 795.00	36.46

Remark: See next page for measurement data.



Tested by: Tae-Ho, Kim / Senior Manager





High Channel (5 795 MHz)

**8.6.2 Test data for Antenna 1**

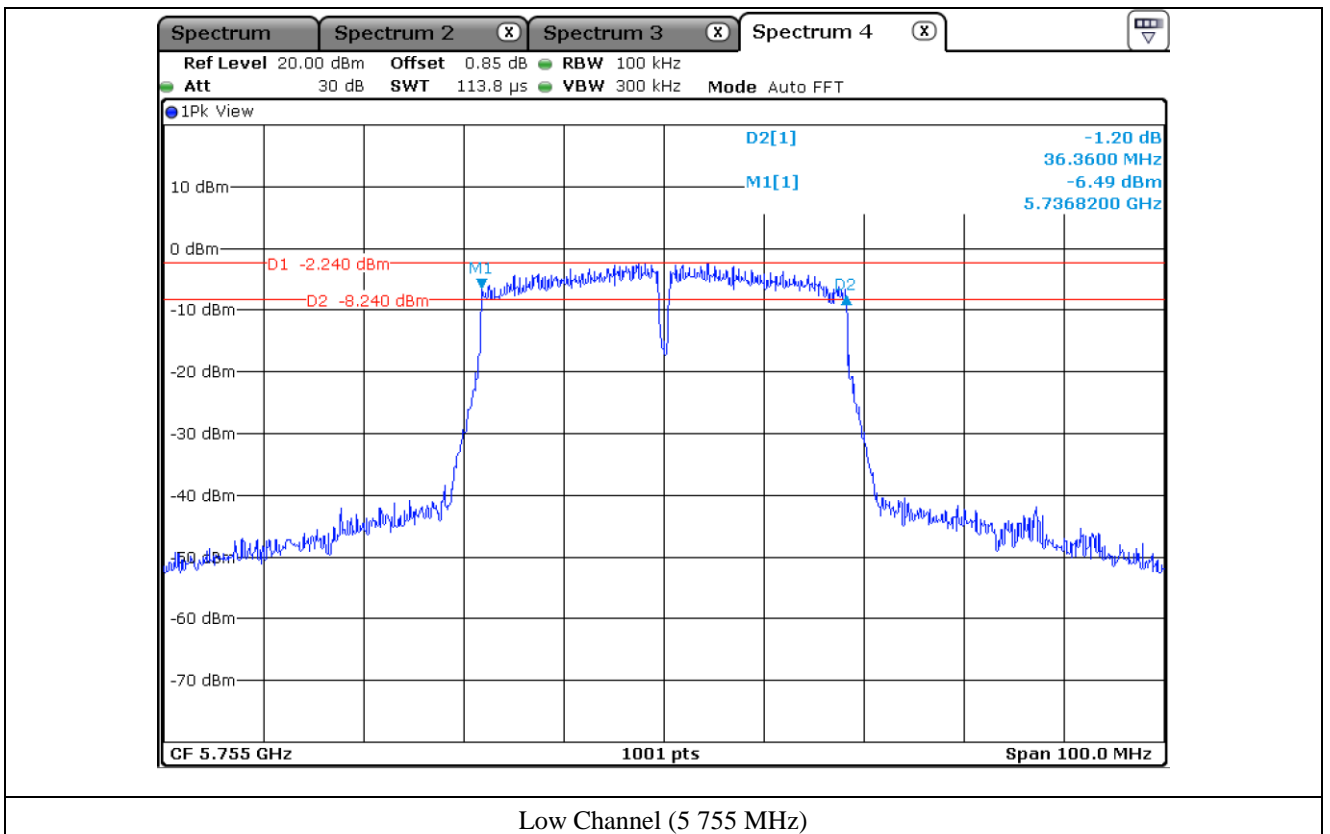
- Test Date : September 28, 2018 ~ October 24, 2018
- Test Result : Pass

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

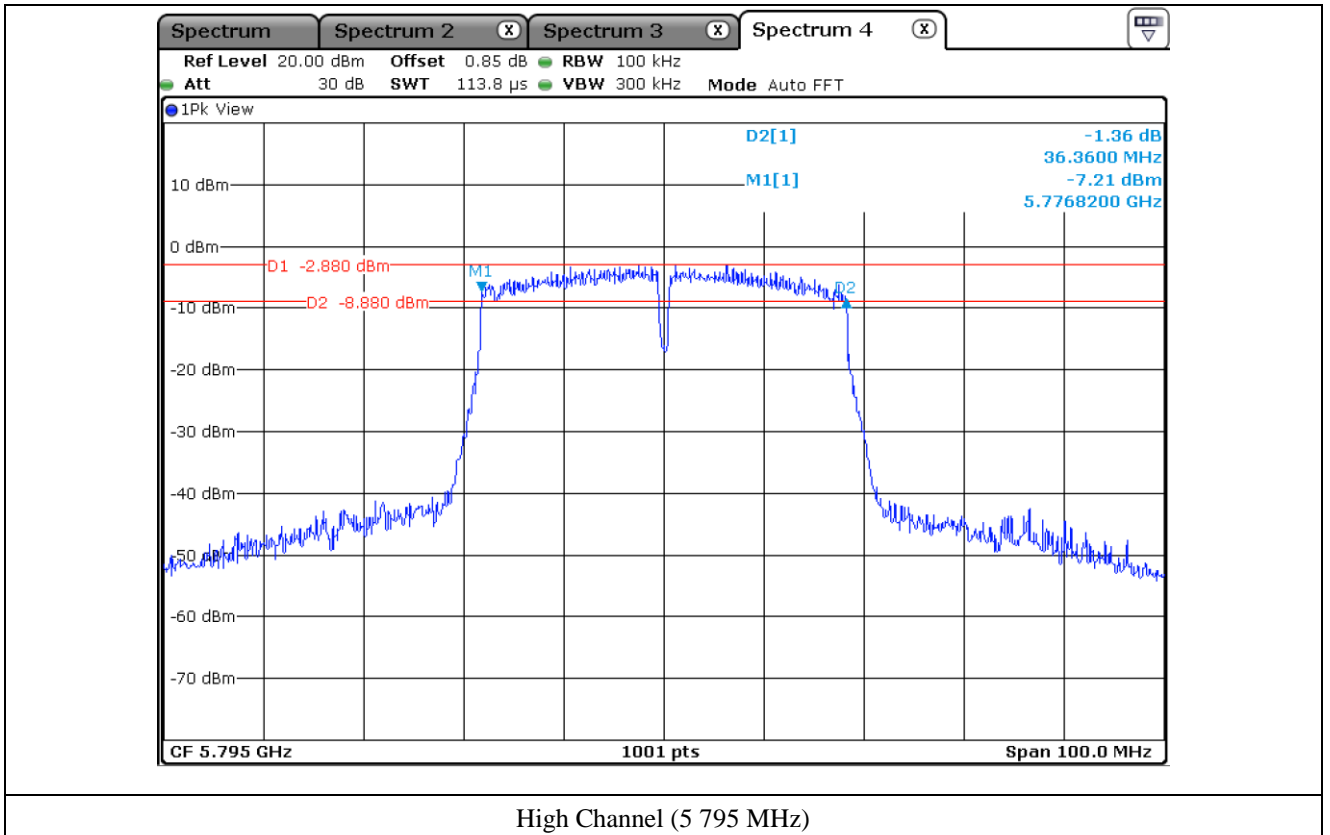
Remark: See next page for measurement data.



Tested by: Tae-Ho, Kim / Senior Manager



Low Channel (5 755 MHz)



8.7 Test data for 802.11ac\_VHT80 RLAN Mode

8.7.1 Test data for Antenna 0

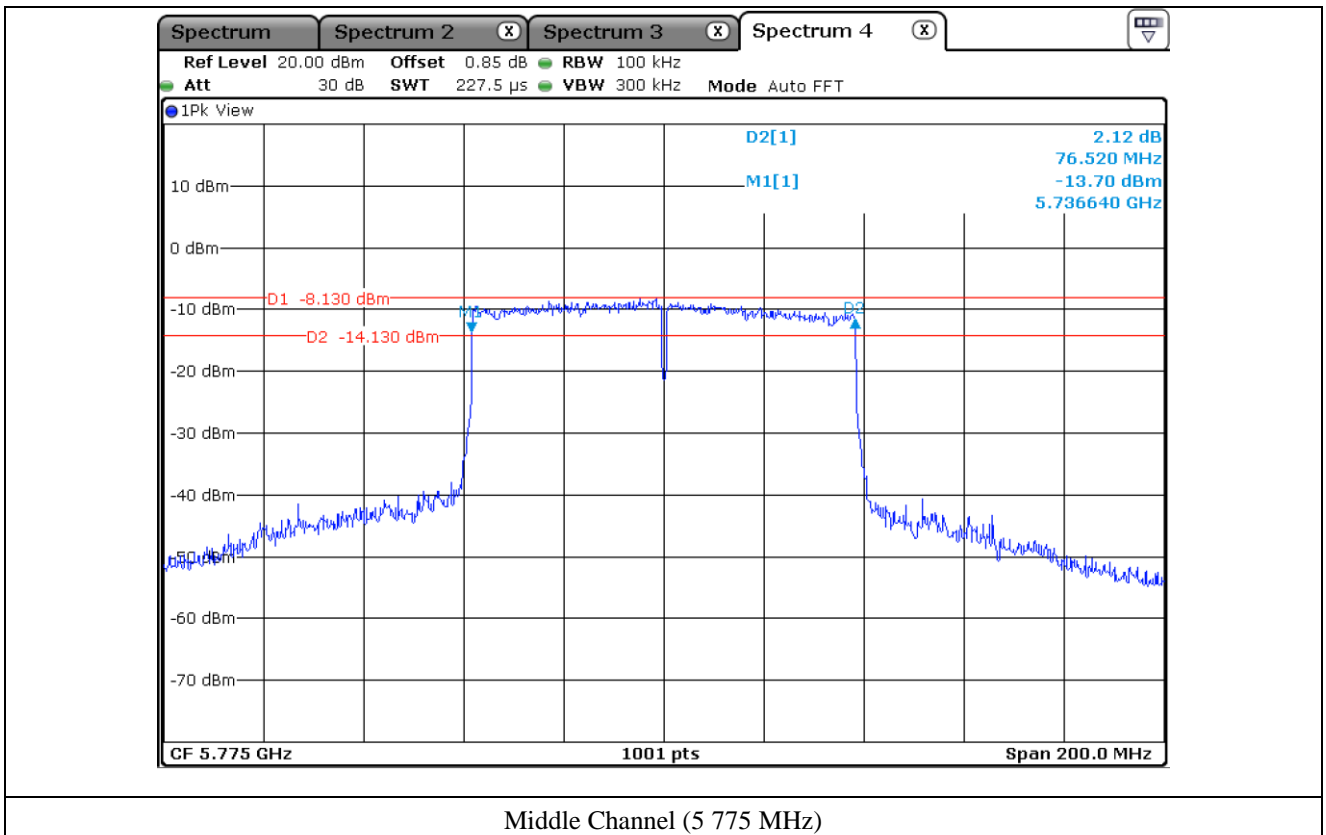
- Test Date : September 28, 2018 ~ October 24, 2018
- Test Result : Pass

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

Remark: See next page for measurement data.



Tested by: Tae-Ho, Kim / Senior Manager



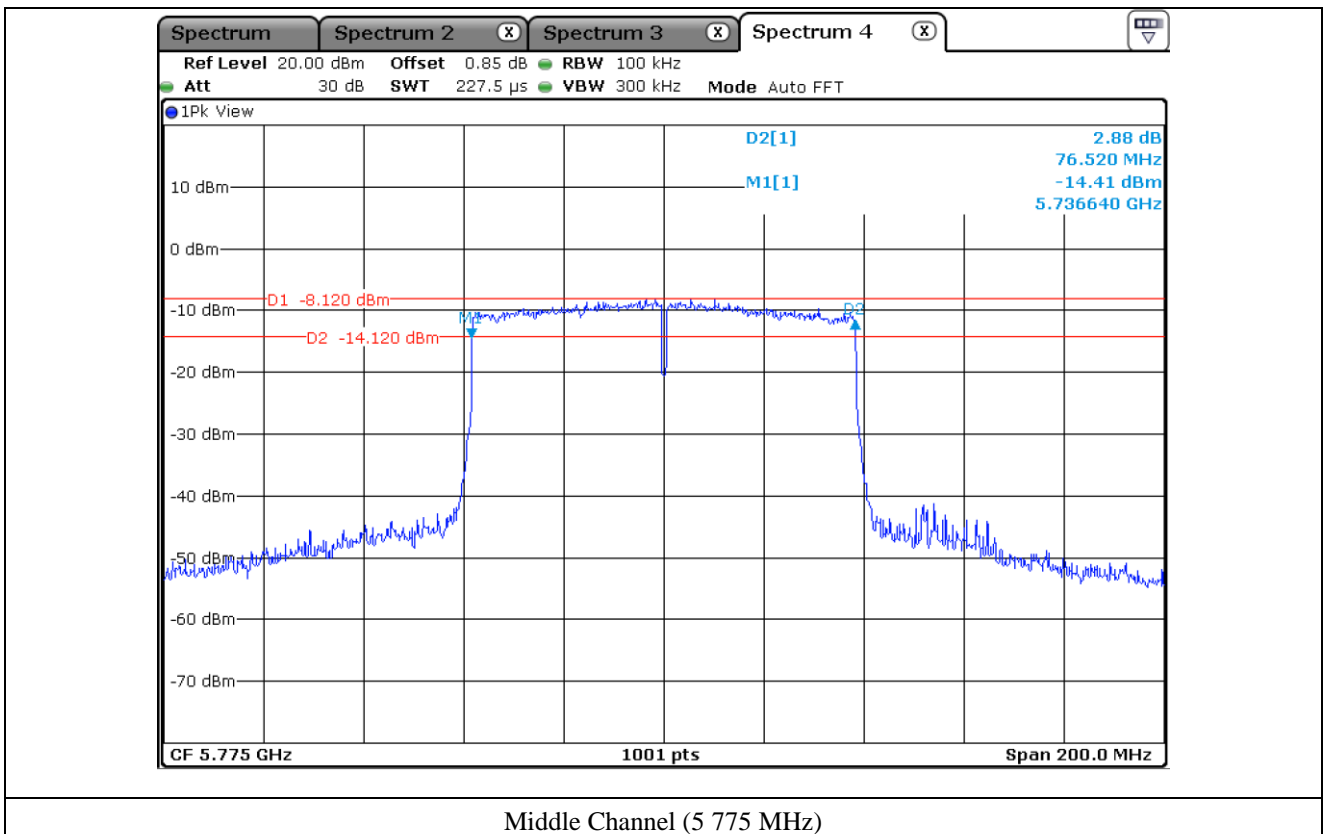
**8.7.2 Test data for Antenna 1**

- Test Date : September 28, 2018 ~ October 24, 2018
- Test Result : Pass

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

Remark: See next page for measurement data.

*(Signature)*  
 Tested by: Tae-Ho, Kim / Senior Manager



Middle Channel (5 775 MHz)

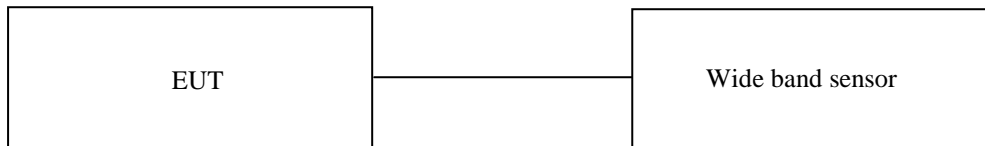
## 9. MAXIMUM PEAK OUTPUT POWER

### 9.1 Operating environment

Temperature : 25 °C  
 Relative humidity : 46 % 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 : September 28, 2018 ~ October 24, 2018

-. Test Result : Pass

-. Duty Cycle : > 98 %

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 180.00	15.42	24.00	8.58
	Middle	5 220.00	15.82	24.00	8.18
	High	5 240.00	15.71	24.00	8.29
5 250 ~ 5 350	Low	5 260.00	15.84	24.00	8.16
	Middle	5 300.00	15.79	24.00	8.21
	High	5 320.00	16.01	24.00	7.99
5 470 ~ 5 725	Low	5 500.00	16.08	24.00	7.92
	Middle	5 580.00	16.35	24.00	7.65
	High	5 700.00	15.83	24.00	8.17
5 725 ~ 5 850	Low	5 745.00	15.71	30.00	14.29
	Middle	5 785.00	16.11	30.00	13.89
	High	5 825.00	16.73	30.00	13.27

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



**Tested by: Tae-Ho, Kim / Senior Manager**

**9.4.2 Test data for Antenna 1**

- Test Date : September 28, 2018 ~ October 24, 2018
- Test Result : Pass
- Duty Cycle : > 98 %

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 180.00	15.58	24.00	8.42
	Middle	5 220.00	16.06	24.00	7.94
	High	5 240.00	15.91	24.00	8.09
5 250 ~ 5 350	Low	5 260.00	15.75	24.00	8.25
	Middle	5 300.00	15.53	24.00	8.47
	High	5 320.00	15.89	24.00	8.11
5 470 ~ 5 725	Low	5 500.00	15.32	24.00	8.68
	Middle	5 580.00	15.53	24.00	8.47
	High	5 700.00	16.02	24.00	7.98
5 725 ~ 5 850	Low	5 745.00	16.13	30.00	13.87
	Middle	5 785.00	16.23	30.00	13.77
	High	5 825.00	15.75	30.00	14.25

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



**Tested by: Tae-Ho, Kim / Senior Manager**

**9.4.3 Test data for Multiple Transmit**

- Test Date : September 28, 2018 ~ October 24, 2018
- Test Result : Pass
- Duty Cycle : > 98 %

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 180.00	18.51	23.76	5.25
	Middle	5 220.00	18.95	23.76	4.81
	High	5 240.00	18.82	23.76	4.94
5 250 ~ 5 350	Low	5 260.00	18.81	24.00	5.19
	Middle	5 300.00	18.67	24.00	5.33
	High	5 320.00	18.96	24.00	5.04
5 470 ~ 5 725	Low	5 500.00	18.73	24.00	5.27
	Middle	5 580.00	18.97	24.00	5.03
	High	5 700.00	18.94	24.00	5.06
5 725 ~ 5 850	Low	5 745.00	18.94	30.00	11.06
	Middle	5 785.00	19.18	30.00	10.82
	High	5 825.00	19.28	30.00	10.72

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: Tae-Ho, Kim / Senior Manager**

**9.4.4 Test data for Staddle Channel\_Antenna 0**

-. Test Date : September 28, 2018 ~ October 24, 2018  
 -. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 470 ~ 5 725	5 720.00	13.45	24.00	10.55
5 725 ~ 5 825	5 720.00	6.27	30.00	23.73

**9.4.5 Test data for Staddle Channel\_Antenna 1**

-. Test Date : September 28, 2018 ~ October 24, 2018  
 -. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 470 ~ 5 725	5 720.00	15.91	24.00	8.09
5 725 ~ 5 825	5 720.00	8.42	30.00	21.58

**9.4.6 Test data for Staddle Channel\_Multiple Transmit**

-. Test Date : September 28, 2018 ~ October 24, 2018  
 -. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 470 ~ 5 725	5 720.00	17.86	24.00	6.14
5 725 ~ 5 825	5 720.00	10.49	30.00	19.51

Remark 1 : Margin = Limit – Measured Value (=Receiver Reading + Cable Loss)

Remark 2 : Calculated Output Power=  $10\log (10^{(\text{Antenna1 Output Power}/10)}+10^{(\text{Antenna2 Output Power}/10)})$



**Tested by: Tae-Ho, Kim / Senior Manager**

**9.5 Test data for 802.11n\_HT20 RLAN Mode**

**9.5.1 Test data for Antenna 0**

-. Test Date : September 28, 2018 ~ October 24, 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	14.21	24.00	9.79
	Middle	5 220.00	14.53	24.00	9.47
	High	5 240.00	14.61	24.00	9.39
5 250 ~ 5 350	Low	5 260.00	14.46	24.00	9.54
	Middle	5 300.00	14.93	24.00	9.07
	High	5 320.00	14.89	24.00	9.11
5 470 ~ 5 725	Low	5 500.00	15.01	24.00	8.99
	Middle	5 580.00	15.41	24.00	8.59
	High	5 700.00	15.03	24.00	8.97
5 725 ~ 5 850	Low	5 745.00	15.33	30.00	14.67
	Middle	5 785.00	15.41	30.00	14.59
	High	5 825.00	15.18	30.00	14.82

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




**Tested by: Tae-Ho, Kim / Senior Manager**

**9.5.2 Test data for Antenna 1**

- Test Date : September 28, 2018 ~ October 24, 2018
- Test Result : Pass
- Duty Cycle : > 98 %

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 180.00	14.61	24.00	9.39
	Middle	5 220.00	15.02	24.00	8.98
	High	5 240.00	14.85	24.00	9.15
5 250 ~ 5 350	Low	5 260.00	14.68	24.00	9.32
	Middle	5 300.00	14.88	24.00	9.12
	High	5 320.00	14.87	24.00	9.13
5 470 ~ 5 725	Low	5 500.00	14.24	24.00	9.76
	Middle	5 580.00	14.64	24.00	9.36
	High	5 700.00	15.08	24.00	8.92
5 725 ~ 5 850	Low	5 745.00	15.15	30.00	14.85
	Middle	5 785.00	14.85	30.00	15.15
	High	5 825.00	14.82	30.00	15.18

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



Tested by: **Tae-Ho, Kim / Senior Manager**

**9.5.3 Test data for Multiple Transmit**

- Test Date : September 28, 2018 ~ October 24, 2018
- Test Result : Pass
- Duty Cycle : > 98 %

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 180.00	17.42	23.76	6.34
	Middle	5 220.00	17.79	23.76	5.97
	High	5 240.00	17.74	23.76	6.02
5 250 ~ 5 350	Low	5 260.00	17.58	24.00	6.42
	Middle	5 300.00	17.92	24.00	6.08
	High	5 320.00	17.89	24.00	6.11
5 470 ~ 5 725	Low	5 500.00	17.65	24.00	6.35
	Middle	5 580.00	18.05	24.00	5.95
	High	5 700.00	18.07	24.00	5.93
5 725 ~ 5 850	Low	5 745.00	18.25	30.00	11.75
	Middle	5 785.00	18.15	30.00	11.85
	High	5 825.00	18.01	30.00	11.99

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: Tae-Ho, Kim / Senior Manager**

**9.5.4 Test data for Staddle Channel\_Antenna 0**

-. Test Date : September 28, 2018 ~ October 24, 2018  
 -. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 470 ~ 5 725	5 720.00	11.83	24.00	12.17
5 725 ~ 5 825	5 720.00	4.77	30.00	25.23

**9.5.5 Test data for Staddle Channel\_Antenna 1**

-. Test Date : September 28, 2018 ~ October 24, 2018  
 -. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 470 ~ 5 725	5 720.00	13.40	24.00	10.60
5 725 ~ 5 825	5 720.00	6.12	30.00	23.88

**9.5.6 Test data for Staddle Channel\_Multiple Transmit**

-. Test Date : September 28, 2018 ~ October 24, 2018  
 -. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 470 ~ 5 725	5 720.00	15.70	24.00	8.30
5 725 ~ 5 825	5 720.00	8.51	30.00	21.49

Remark 1 : Margin = Limit – Measured Value (=Receiver Reading + Cable Loss)

Remark 2 : Calculated Output Power=  $10\log (10^{(\text{Antenna1 Output Power}/10)}+10^{(\text{Antenna2 Output Power}/10)})$



**Tested by: Tae-Ho, Kim / Senior Manager**



**9.6 Test data for 802.11n\_HT40 RLAN Mode**

**9.6.1 Test data for Antenna 0**

-. Test Date : September 28, 2018 ~ October 24, 2018

-. Test Result : Pass

-. Duty Cycle : > 98 %

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 190.00	12.78	24.00	11.22
	High	5 230.00	13.23	24.00	10.77
5 250 ~ 5 350	Low	5 270.00	13.05	24.00	10.95
	High	5 310.00	13.31	24.00	10.69
5 470 ~ 5 725	Low	5 510.00	13.42	24.00	10.58
	Middle	5 550.00	13.71	24.00	10.29
	High	5 670.00	13.81	24.00	10.19
5 725 ~ 5 850	Low	5 755.00	13.51	30.00	16.49
	High	5 795.00	13.58	30.00	16.42

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




**Tested by: Tae-Ho, Kim / Senior Manager**

**9.6.2 Test data for Antenna 1**

- Test Date : September 28, 2018 ~ October 24, 2018
- Test Result : Pass
- Duty Cycle : > 98 %

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 190.00	13.23	24.00	10.77
	High	5 230.00	13.42	24.00	10.58
5 250 ~ 5 350	Low	5 270.00	13.08	24.00	10.92
	High	5 310.00	13.08	24.00	10.92
5 470 ~ 5 725	Low	5 510.00	12.61	24.00	11.39
	Middle	5 550.00	12.84	24.00	11.16
	High	5 670.00	13.06	24.00	10.94
5 725 ~ 5 850	Low	5 755.00	13.41	30.00	16.59
	High	5 795.00	13.33	30.00	16.67

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




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**Tested by: Tae-Ho, Kim / Senior Manager**

**9.6.3 Test data for Multiple Transmit**

- Test Date : September 28, 2018 ~ October 24, 2018
- Test Result : Pass
- Duty Cycle : > 98 %

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 190.00	16.02	23.76	7.74
	High	5 230.00	16.34	23.76	7.42
5 250 ~ 5 350	Low	5 270.00	16.08	24.00	7.92
	High	5 310.00	16.21	24.00	7.79
5 470 ~ 5 725	Low	5 510.00	16.04	24.00	7.96
	Middle	5 550.00	16.31	24.00	7.69
	High	5 670.00	16.46	24.00	7.54
5 725 ~ 5 850	Low	5 755.00	16.47	30.00	13.53
	High	5 795.00	16.47	30.00	13.53

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: Tae-Ho, Kim / Senior Manager**

**9.6.4 Test data for Staddle Channel\_Antenna 0**

-. Test Date : September 28, 2018 ~ October 24, 2018  
 -. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 470 ~ 5 725	5 710.00	12.06	24.00	11.94
5 725 ~ 5 825	5 710.00	0.75	30.00	29.25

**9.6.5 Test data for Staddle Channel\_Antenna 1**

-. Test Date : September 28, 2018 ~ October 24, 2018  
 -. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 470 ~ 5 725	5 710.00	14.56	24.00	9.44
5 725 ~ 5 825	5 710.00	2.50	30.00	27.50

**9.6.6 Test data for Staddle Channel\_Multiple Transmit**

-. Test Date : September 28, 2018 ~ October 24, 2018  
 -. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 470 ~ 5 725	5 710.00	16.50	24.00	7.50
5 725 ~ 5 825	5 710.00	4.72	30.00	25.28

Remark 1 : Margin = Limit – Measured Value (=Receiver Reading + Cable Loss)

Remark 2 : Calculated Output Power=  $10\log (10^{(\text{Antenna1 Output Power}/10)}+10^{(\text{Antenna2 Output Power}/10)})$



**Tested by: Tae-Ho, Kim / Senior Manager**

**9.7 Test data for 802.11ac\_HT80 RLAN Mode**

**9.7.1 Test data for Antenna 0**

- . Test Date : September 28, 2018 ~ October 24, 2018
- . Test Result : Pass
- . Duty Cycle : > 98 %

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 210.00	10.86	24.00	13.14
5 250 ~ 5 350	Low	5 290.00	11.24	24.00	12.76
5 470 ~ 5 725	Low	5 530.00	11.57	24.00	12.43
5 725 ~ 5 850	Low	5 775.00	11.53	30.00	18.47


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

**9.7.2 Test data for Antenna 1**

- . Test Date : September 28, 2018 ~ October 24, 2018
- . Test Result : Pass
- . Duty Cycle : > 98 %

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 210.00	10.89	24.00	13.11
5 250 ~ 5 350	Low	5 290.00	10.58	24.00	13.42
5 470 ~ 5 725	Low	5 530.00	10.82	24.00	13.18
5 725 ~ 5 850	Low	5 775.00	11.63	30.00	18.37

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

  
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**Tested by: Tae-Ho, Kim / Senior Manager**

**9.7.3 Test data for Multiple Transmit**

- Test Date : September 28, 2018 ~ October 24, 2018
- Test Result : Pass
- Duty Cycle : > 98 %

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 210.00	13.89	23.76	9.87
5 250 ~ 5 350	Low	5 290.00	13.93	24.00	10.07
5 470 ~ 5 725	Low	5 530.00	14.22	24.00	9.78
5 725 ~ 5 850	Low	5 775.00	14.59	30.00	15.41

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: Tae-Ho, Kim / Senior Manager**

**9.7.4 Test data for Staddle Channel\_Antenna 0**

-. Test Date : September 28, 2018 ~ October 24, 2018  
 -. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 470 ~ 5 725	5 690.00	8.96	24.00	15.04
5 725 ~ 5 825	5 690.00	-4.27	30.00	34.27

**9.7.5 Test data for Staddle Channel\_Antenna 1**

-. Test Date : September 28, 2018 ~ October 24, 2018  
 -. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 470 ~ 5 725	5 690.00	11.00	24.00	13.00
5 725 ~ 5 825	5 690.00	-3.16	30.00	33.16

**9.7.6 Test data for Staddle Channel\_Multiple Transmit**

-. Test Date : September 28, 2018 ~ October 24, 2018  
 -. Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 470 ~ 5 725	5 690.00	13.11	24.00	10.89
5 725 ~ 5 825	5 690.00	-0.67	30.00	30.67

Remark 1 : Margin = Limit – Measured Value (=Receiver Reading + Cable Loss)

Remark 2 : Calculated Output Power=  $10\log (10^{(\text{Antenna1 Output Power}/10)}+10^{(\text{Antenna2 Output Power}/10)})$



**Tested by: Tae-Ho, Kim / Senior Manager**

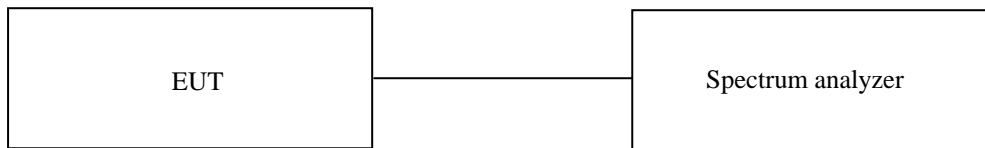
## 10. PEAK POWER SPECTRUL DENSITY

### 10.1 Operating environment

Temperature : 25 °C  
 Relative humidity : 46 % 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 : September 28, 2018 ~ October 24, 2018
- Operating condition : Highest Output Power Transmitting Mode
- Test Result : Pass

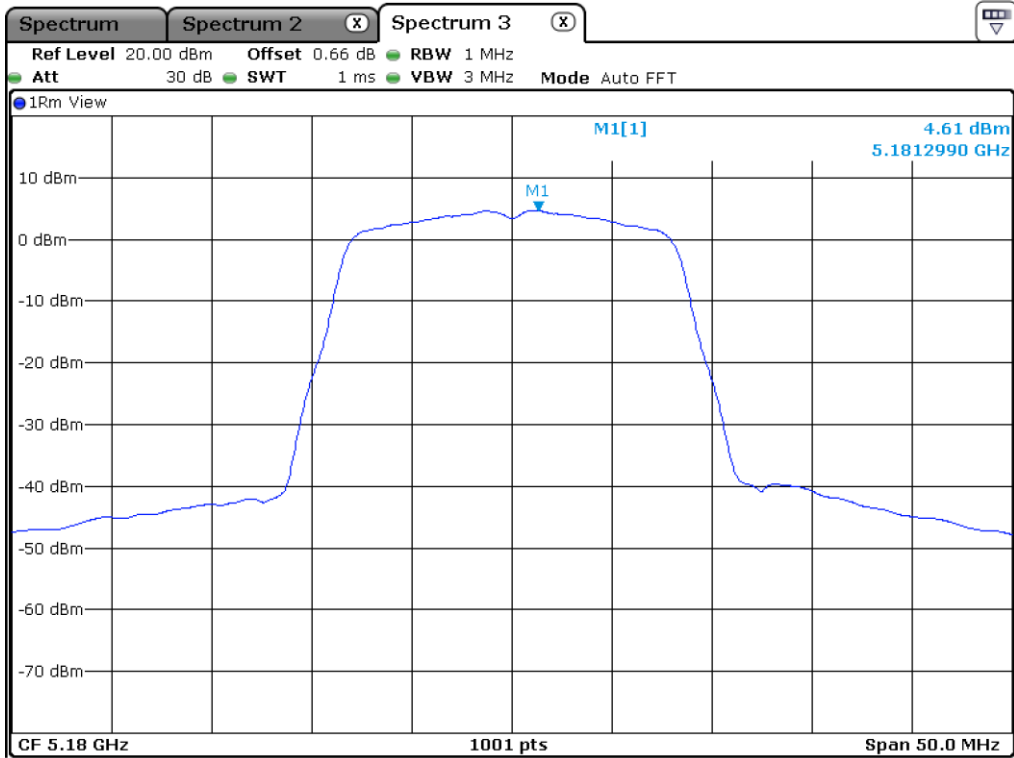
FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 180.00	4.61	11.00	6.39
	Middle	5 220.00	4.58	11.00	6.42
	High	5 240.00	4.61	11.00	6.39
5 250 ~ 5 350	Low	5 260.00	5.81	11.00	5.19
	Middle	5 300.00	5.52	11.00	5.48
	High	5 320.00	5.62	11.00	5.38
5 470 ~ 5 725	Low	5 500.00	5.43	11.00	5.57
	Middle	5 580.00	6.15	11.00	4.85
	High	5 700.00	5.72	11.00	5.28
5 725 ~ 5 850	Low	5 745.00	5.66	30.00	24.34
	Middle	5 785.00	5.79	30.00	24.21
	High	5 825.00	5.70	30.00	24.30

Remark: See next page for measurement data.

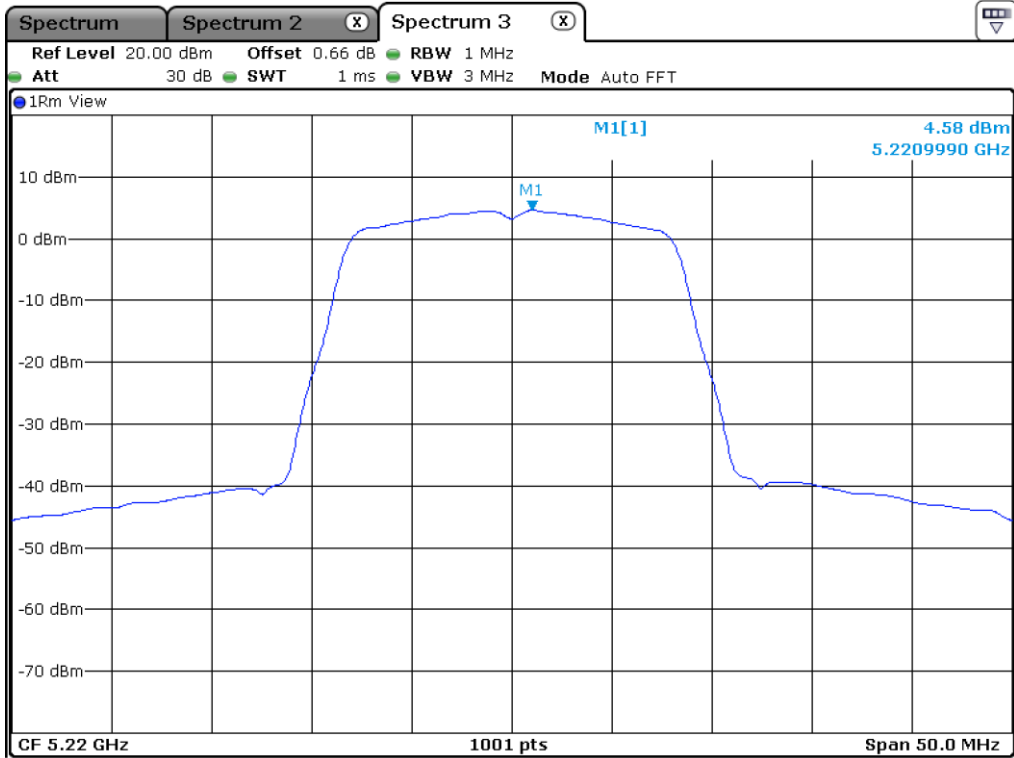



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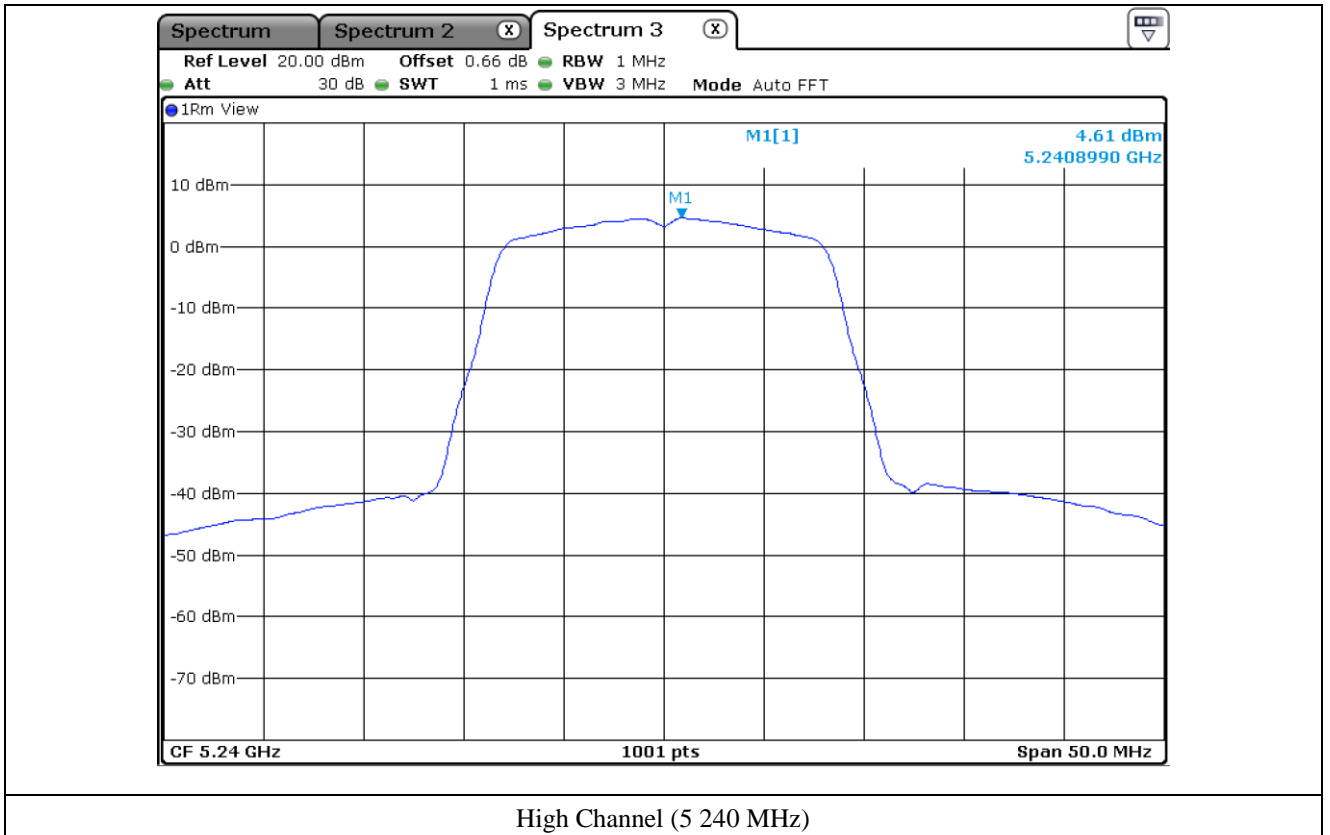
**Tested by: Tae-Ho, Kim / Senior Manager**

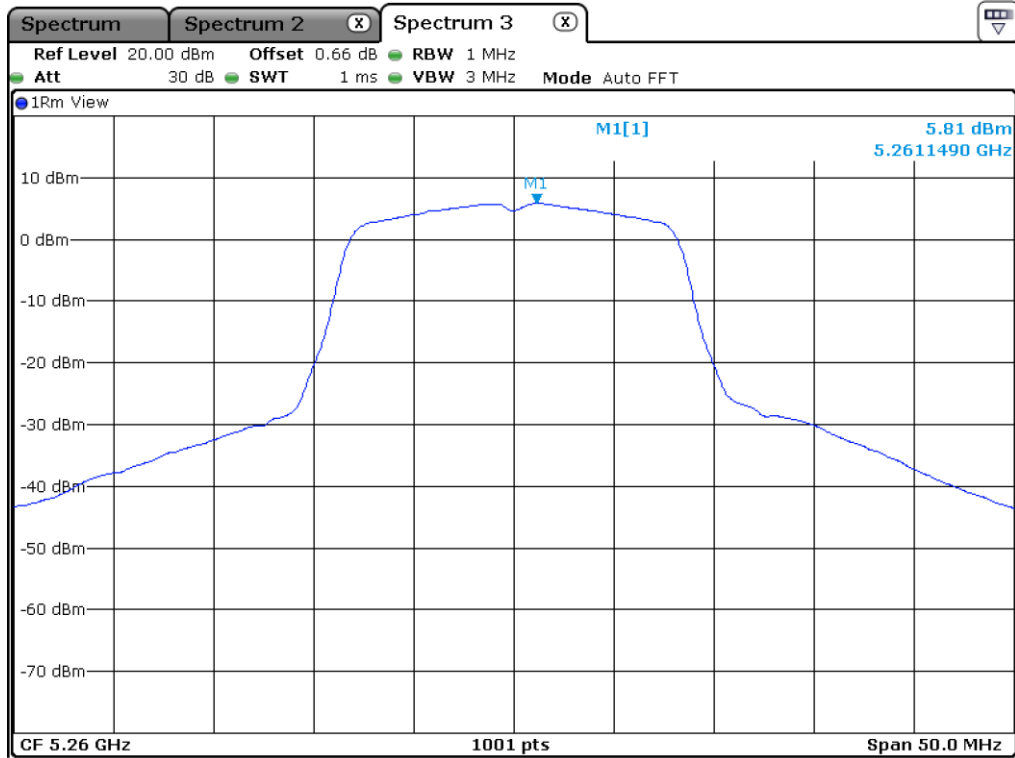


Low Channel (5 180 MHz)

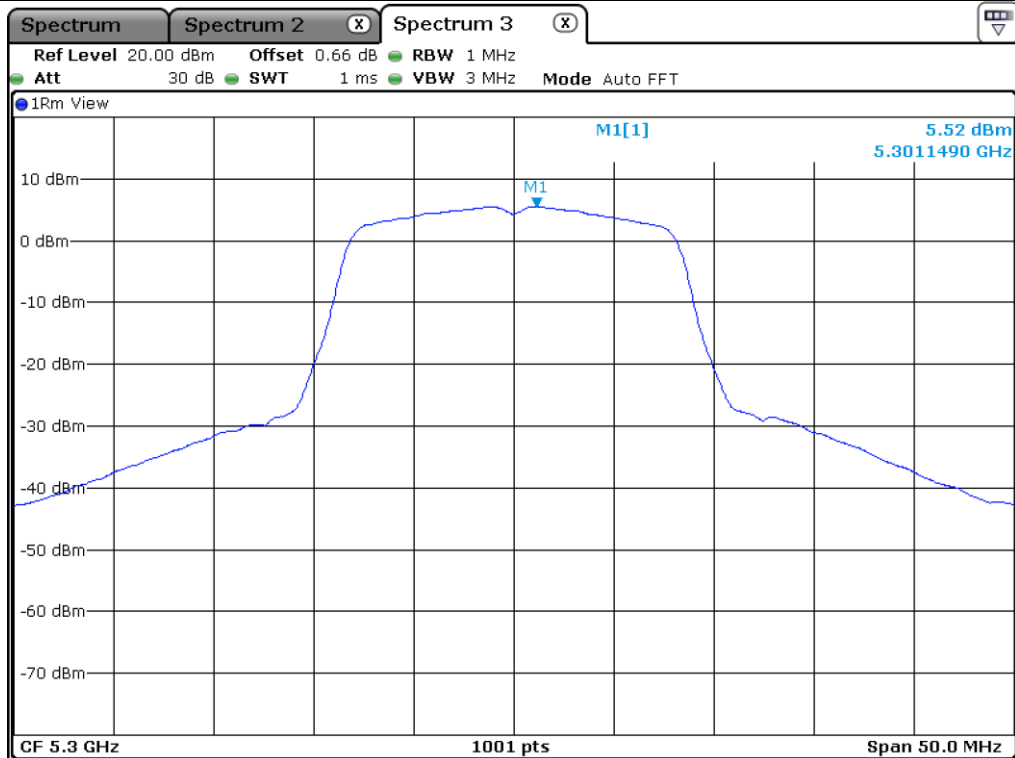


Middle Channel (5 220 MHz)

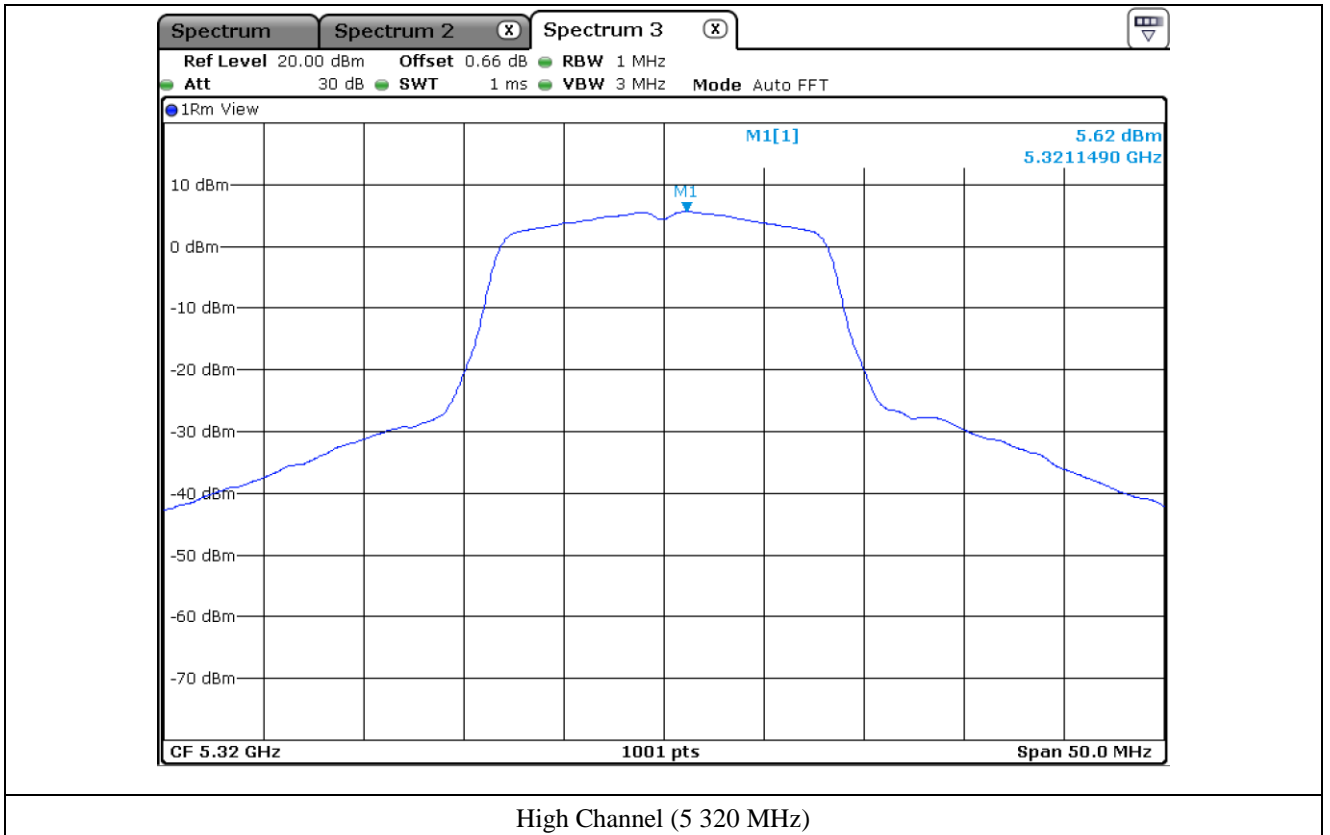


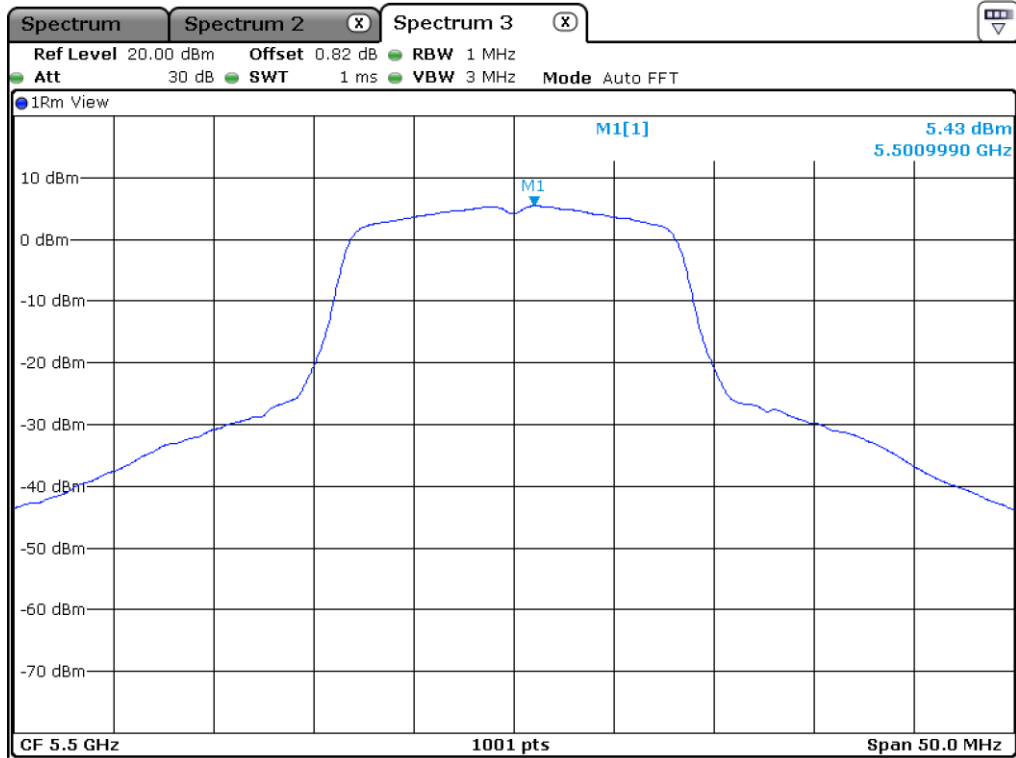


Low Channel (5 260 MHz)

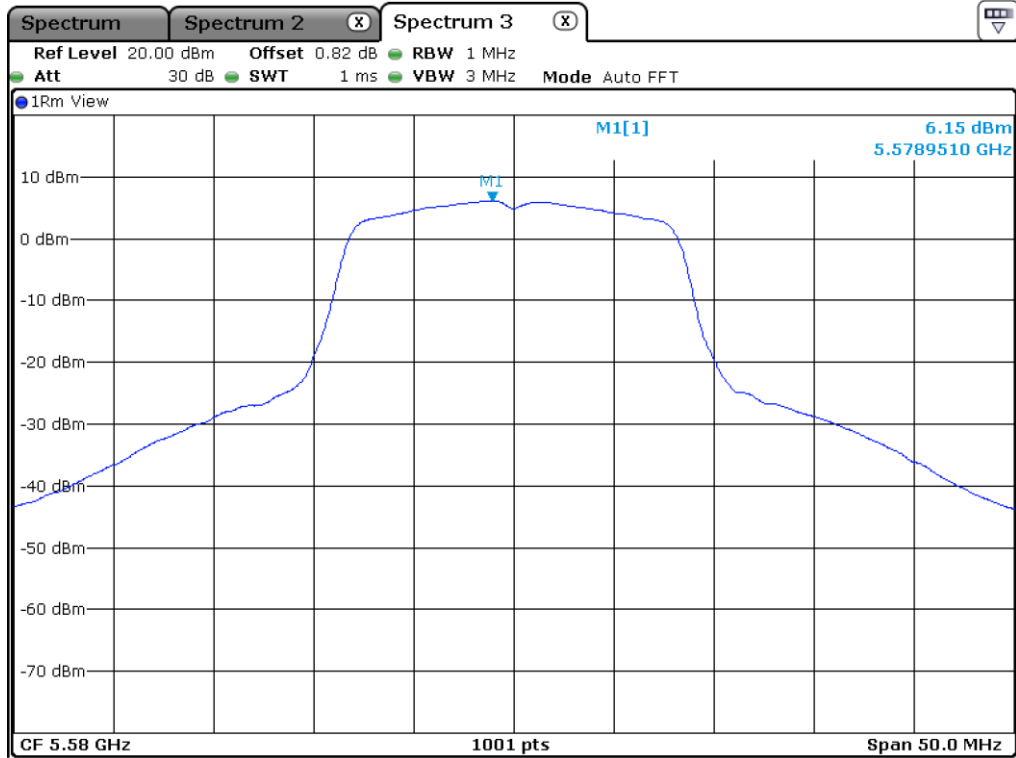


Middle Channel (5 300 MHz)

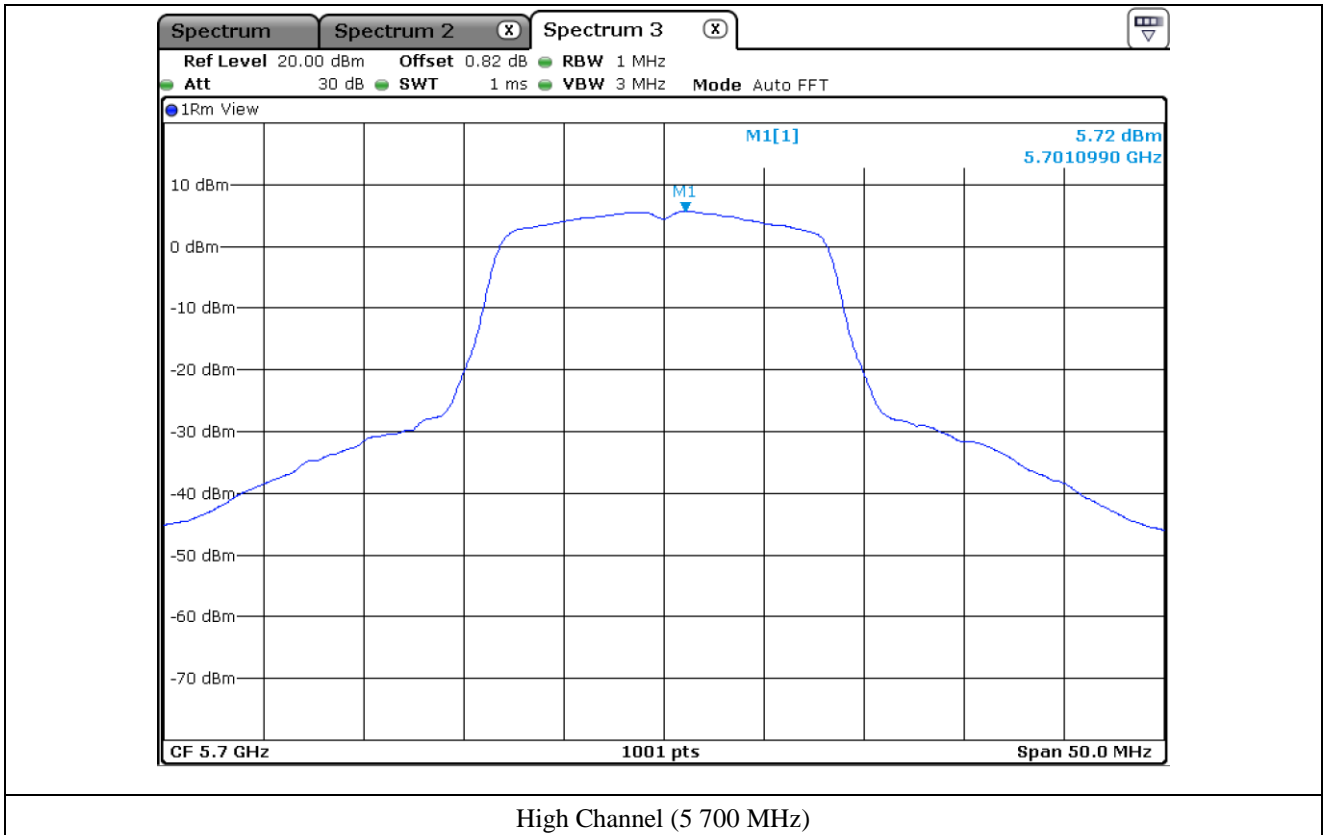


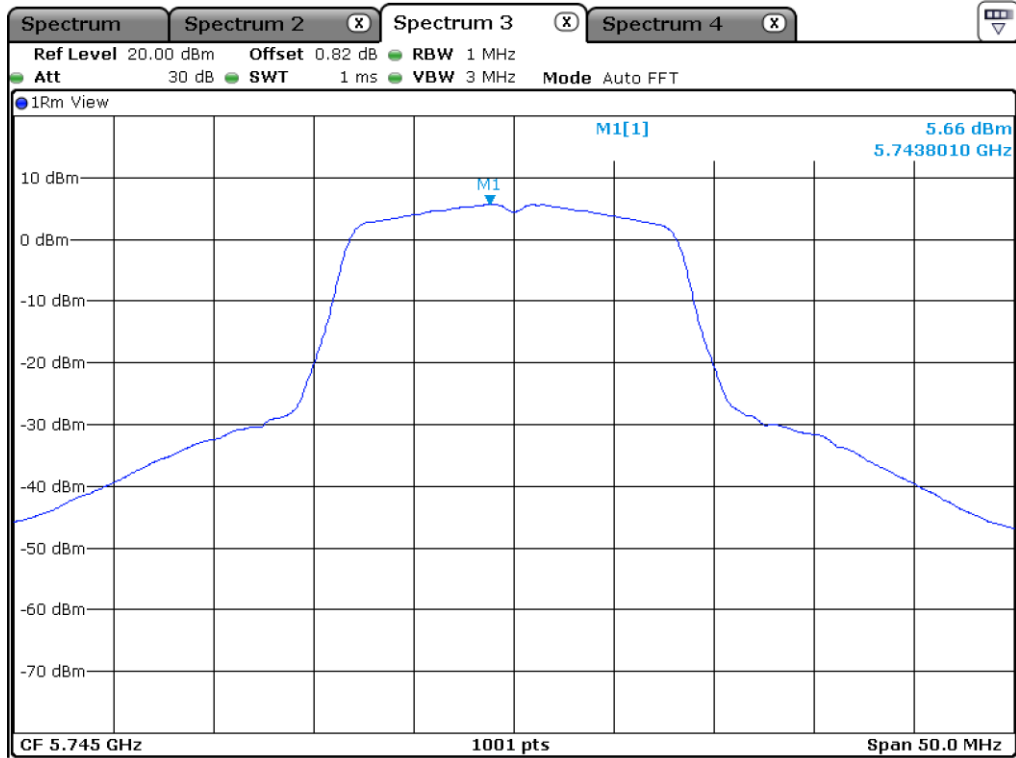


Low Channel (5 500 MHz)

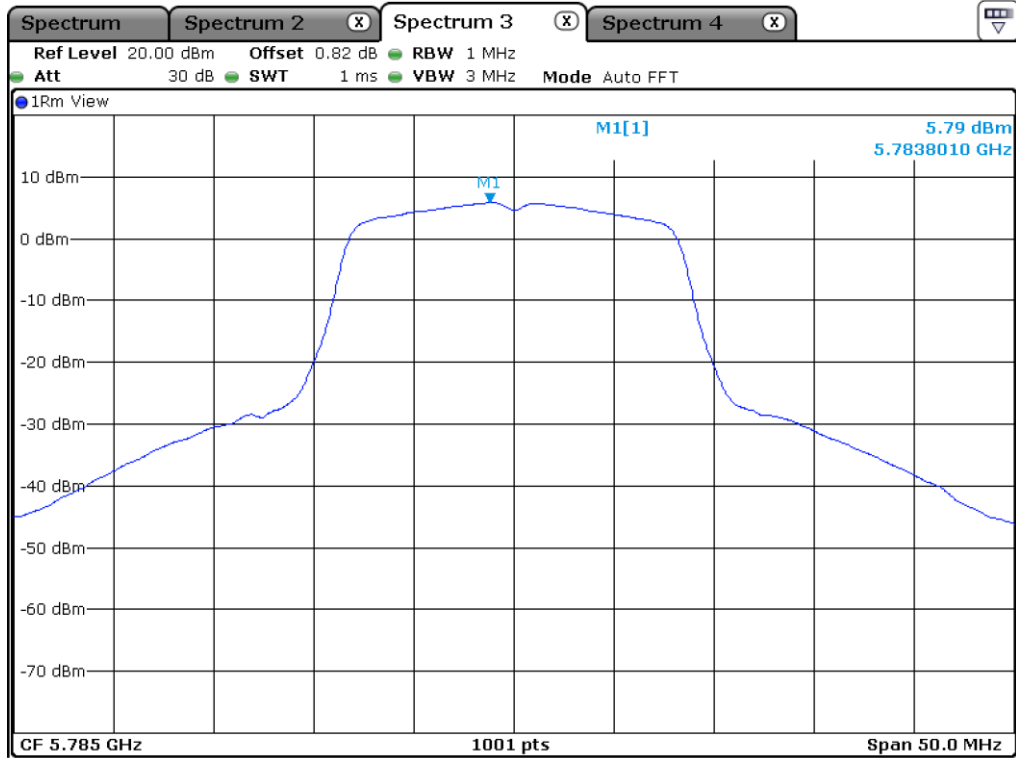


Middle Channel (5 580 MHz)



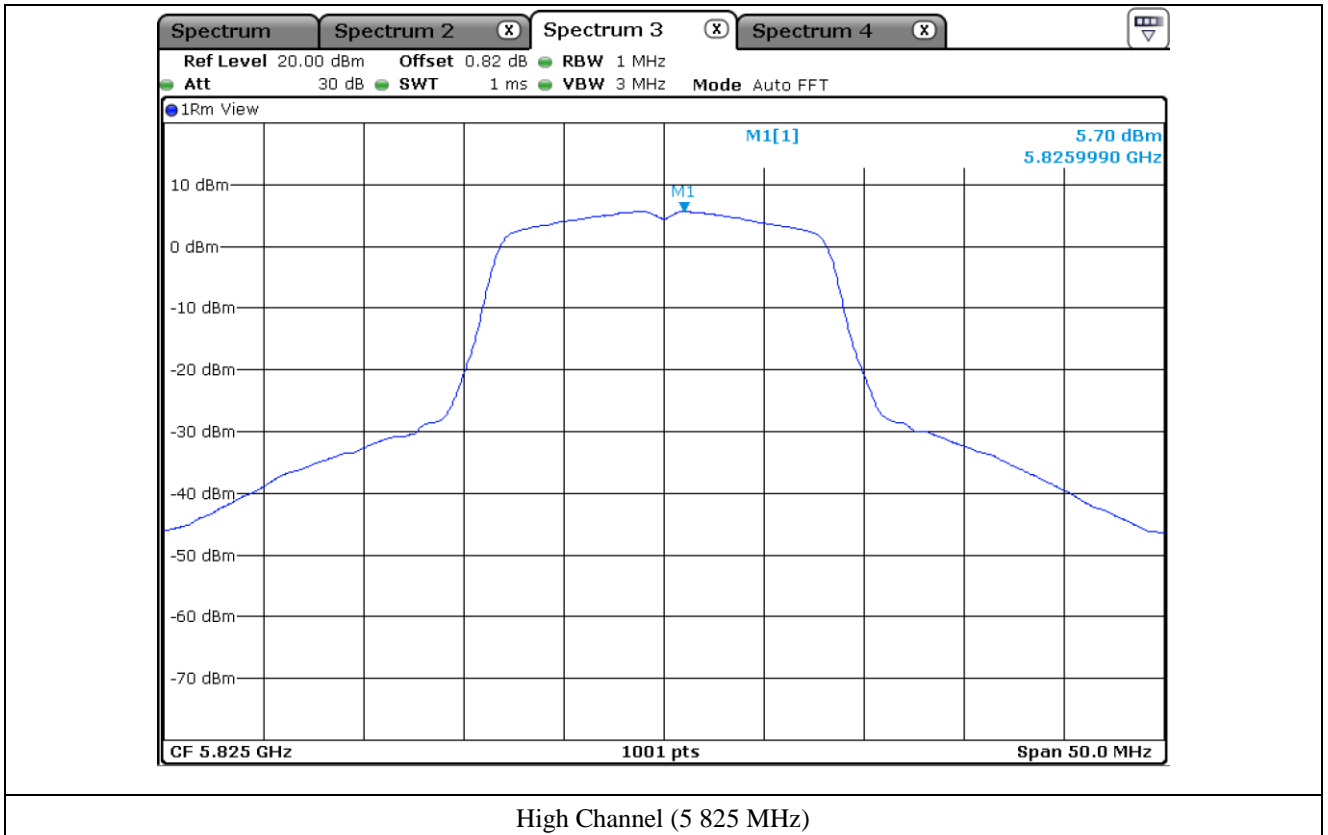


Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)





**10.4.2 Test data for Antenna 1**

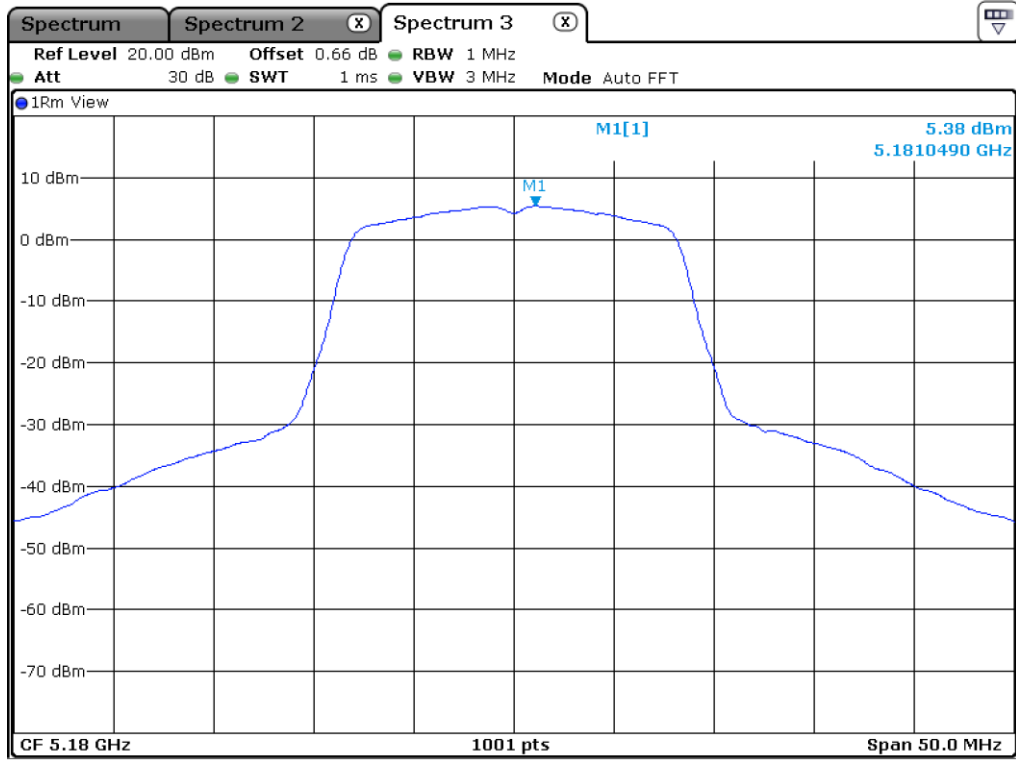
- Test Date : September 28, 2018 ~ October 24, 2018
- Operating condition : Highest Output Power Transmitting Mode
- Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 180.00	5.38	11.00	5.62
	Middle	5 220.00	5.24	11.00	5.76
	High	5 240.00	5.20	11.00	5.80
5 250 ~ 5 350	Low	5 260.00	4.20	11.00	6.80
	Middle	5 300.00	4.61	11.00	6.39
	High	5 320.00	4.09	11.00	6.91
5 470 ~ 5 725	Low	5 500.00	4.84	11.00	6.16
	Middle	5 580.00	5.39	11.00	5.61
	High	5 700.00	5.92	11.00	5.08
5 725 ~ 5 850	Low	5 745.00	5.87	30.00	24.13
	Middle	5 785.00	5.85	30.00	24.15
	High	5 825.00	5.81	30.00	24.19

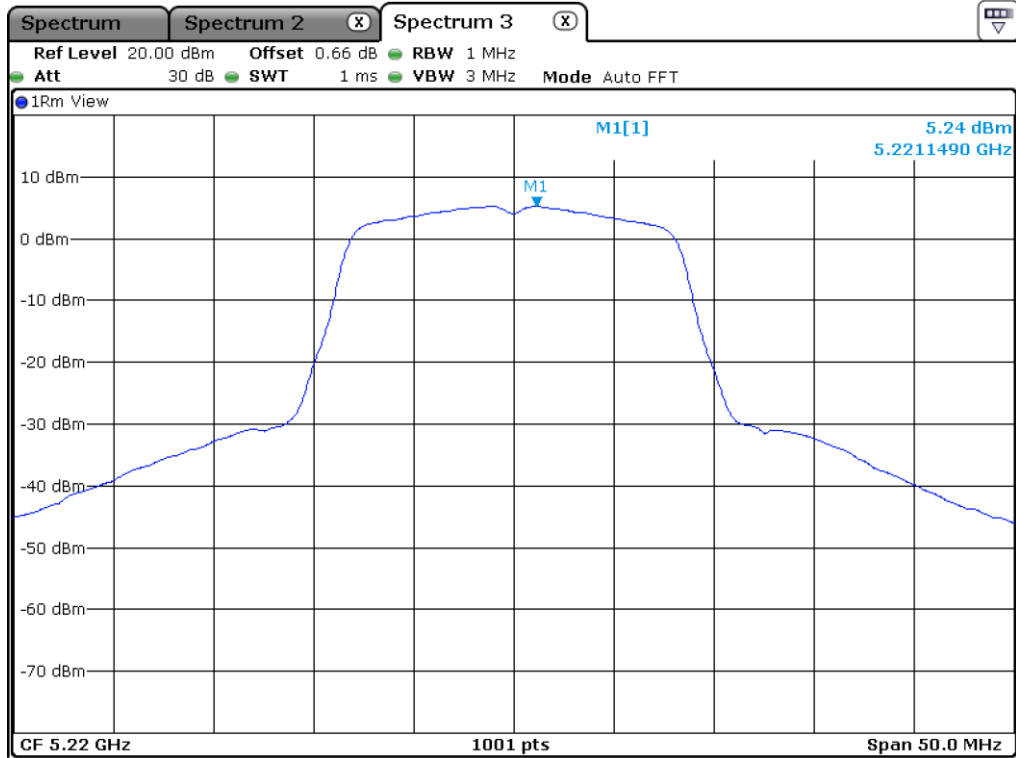
Remark: See next page for measurement data.



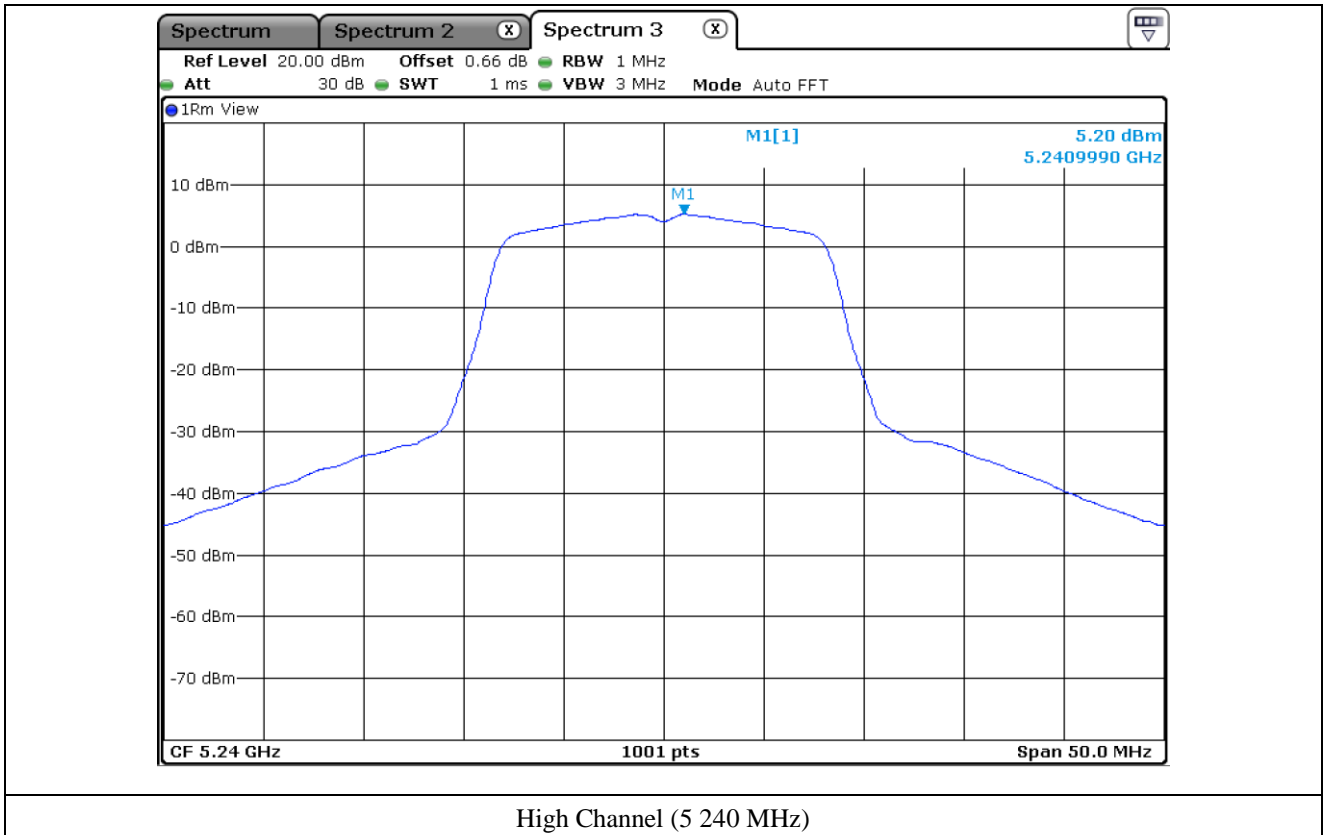
**Tested by: Tae-Ho, Kim / Senior Manager**

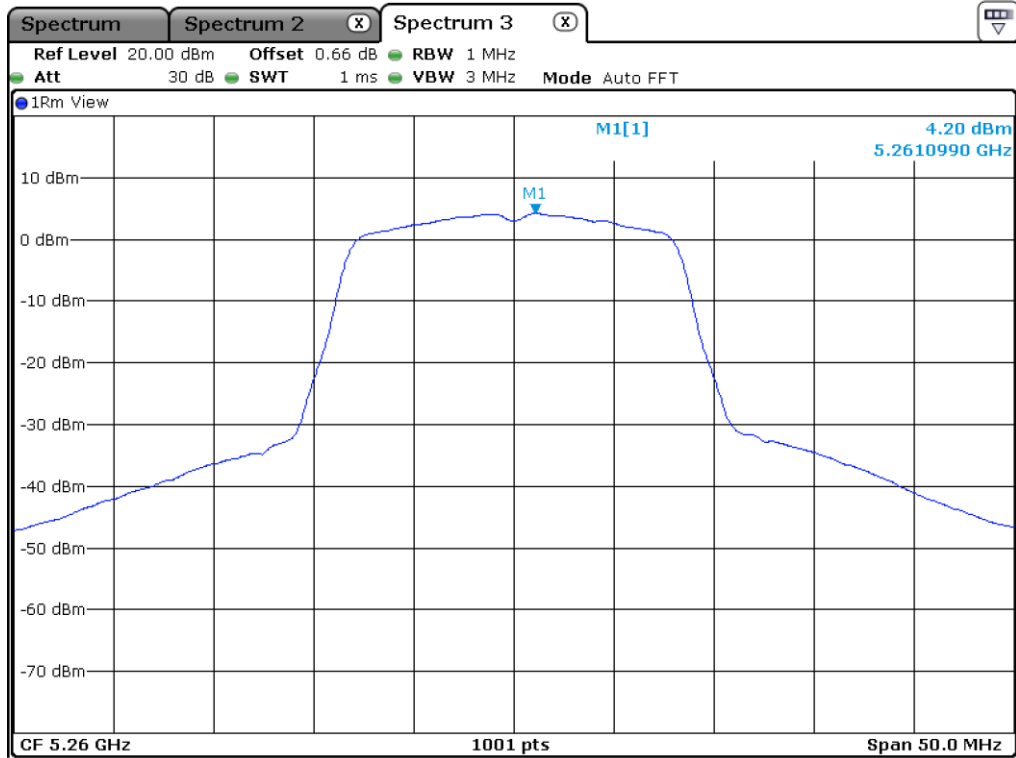


Low Channel (5 180 MHz)

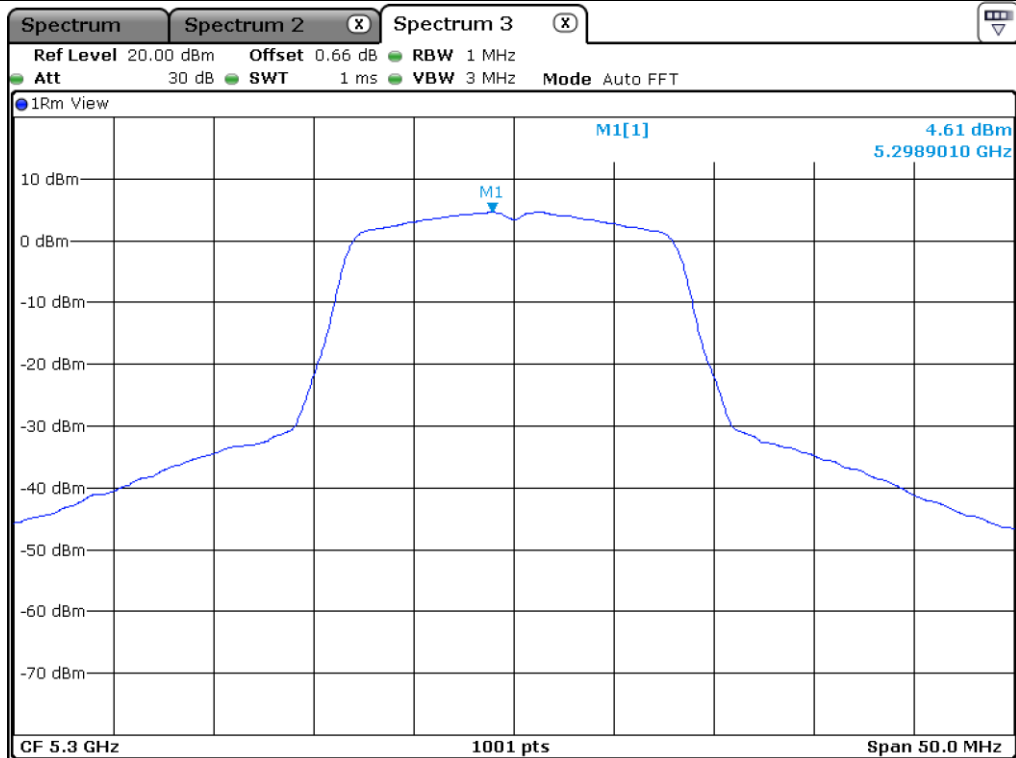


Middle Channel (5 220 MHz)

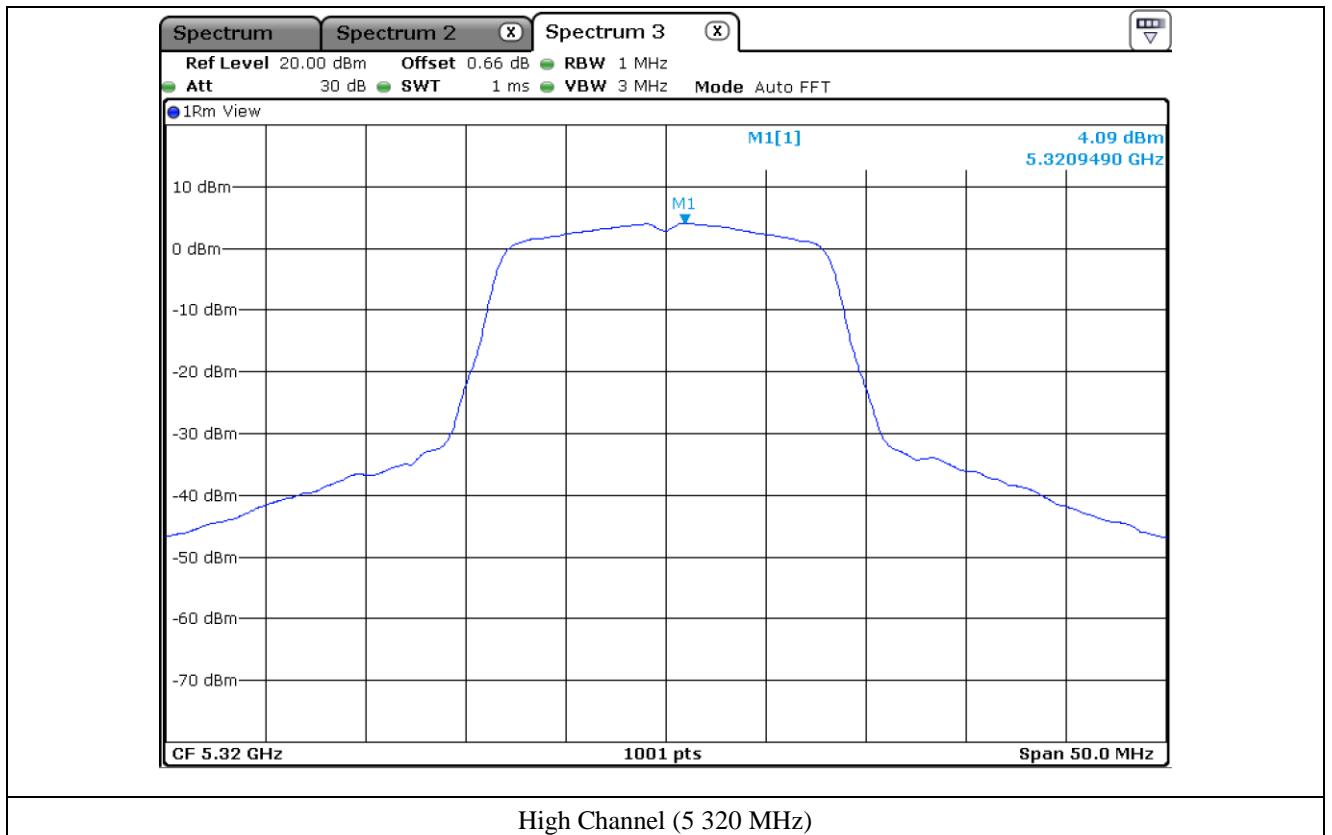


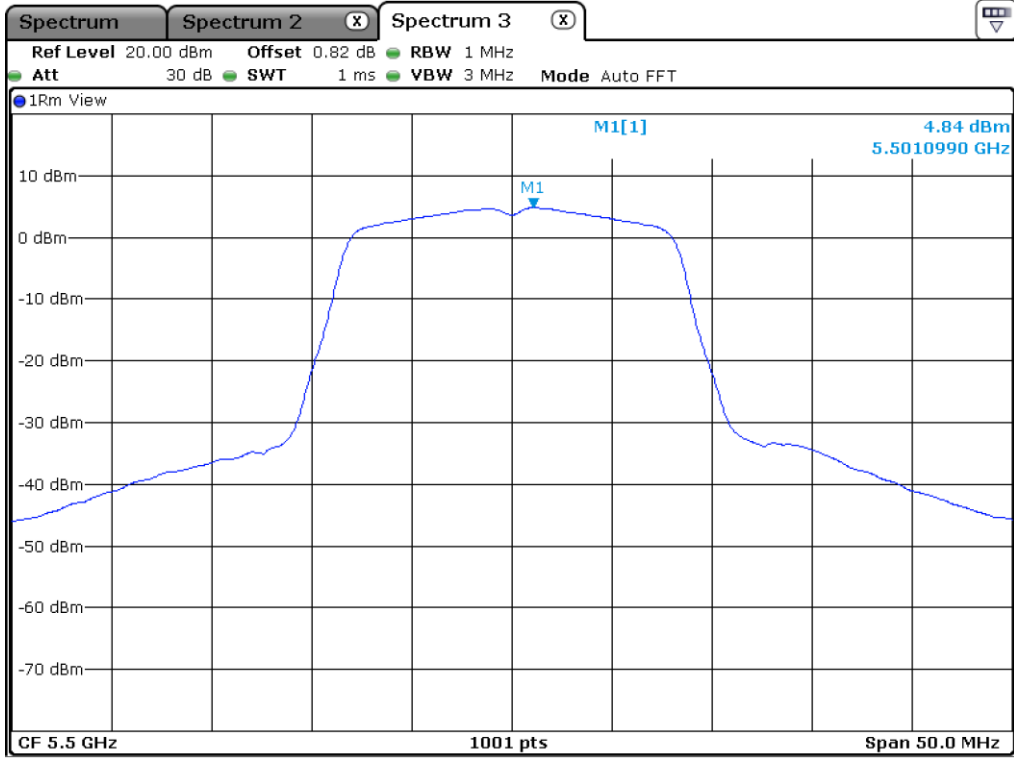


Low Channel (5 260 MHz)

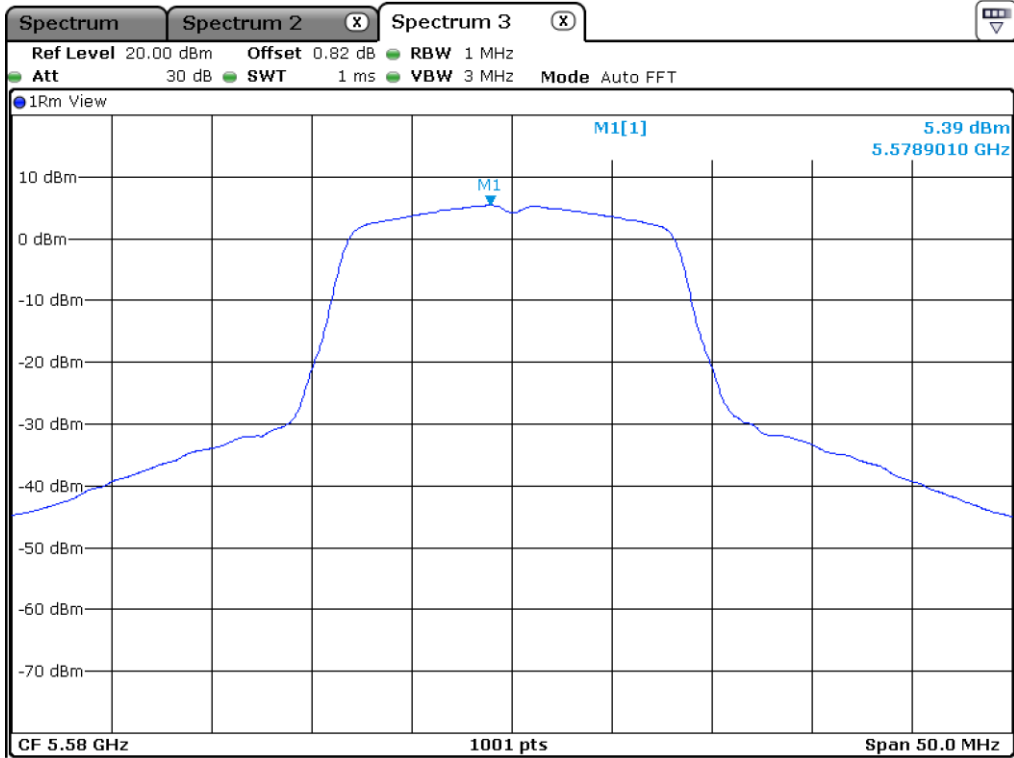


Middle Channel (5 300 MHz)

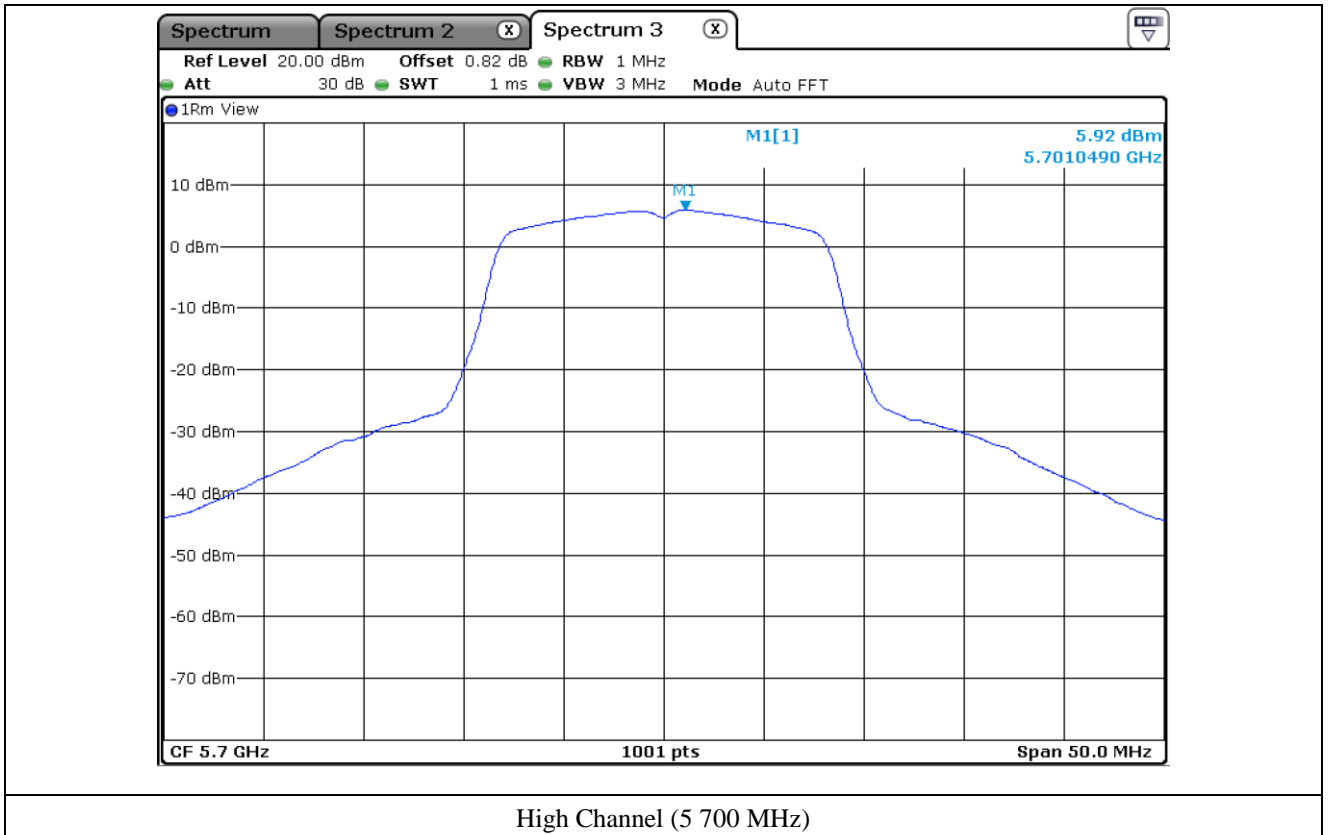




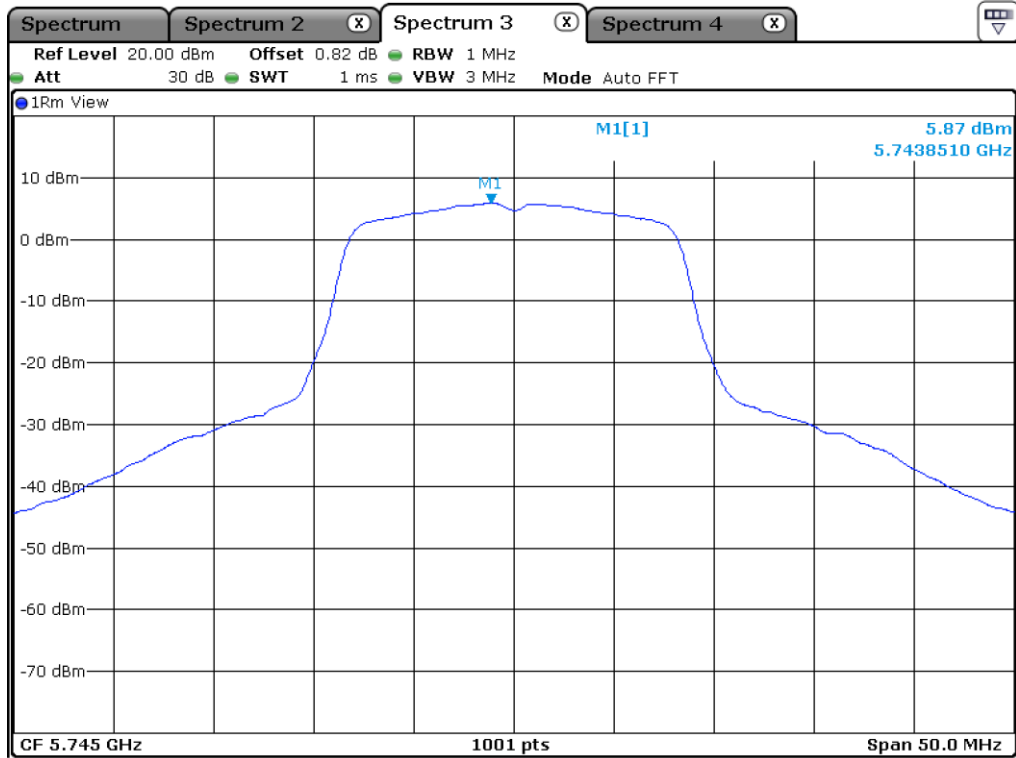
Low Channel (5 500 MHz)



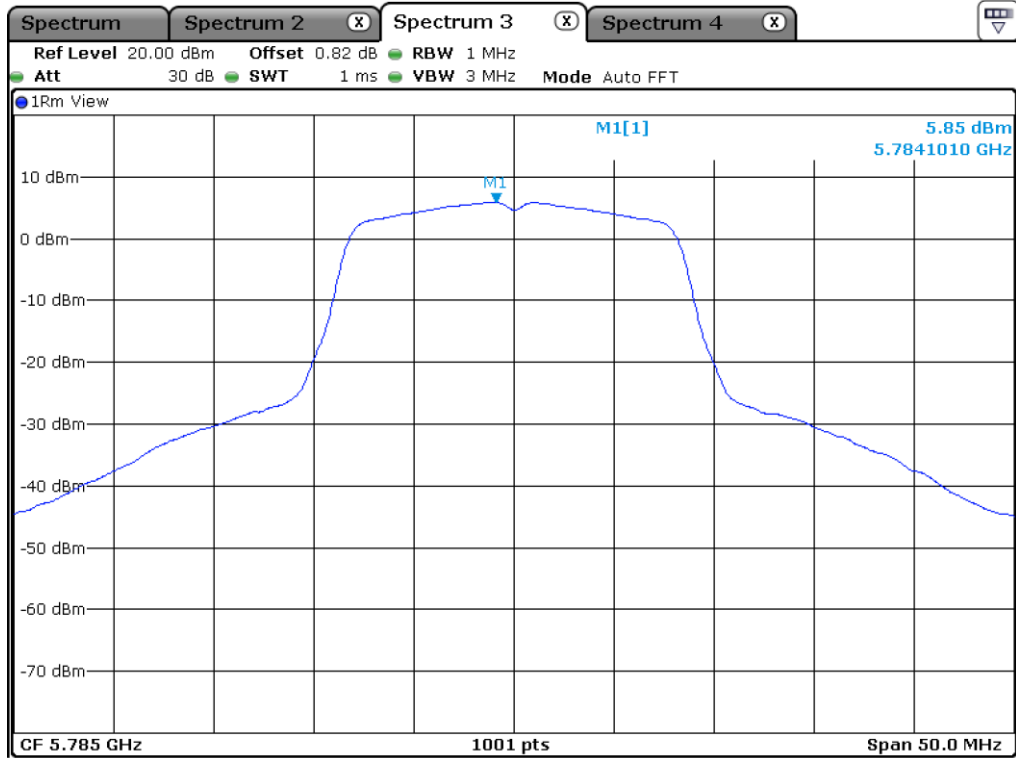
Middle Channel (5 580 MHz)



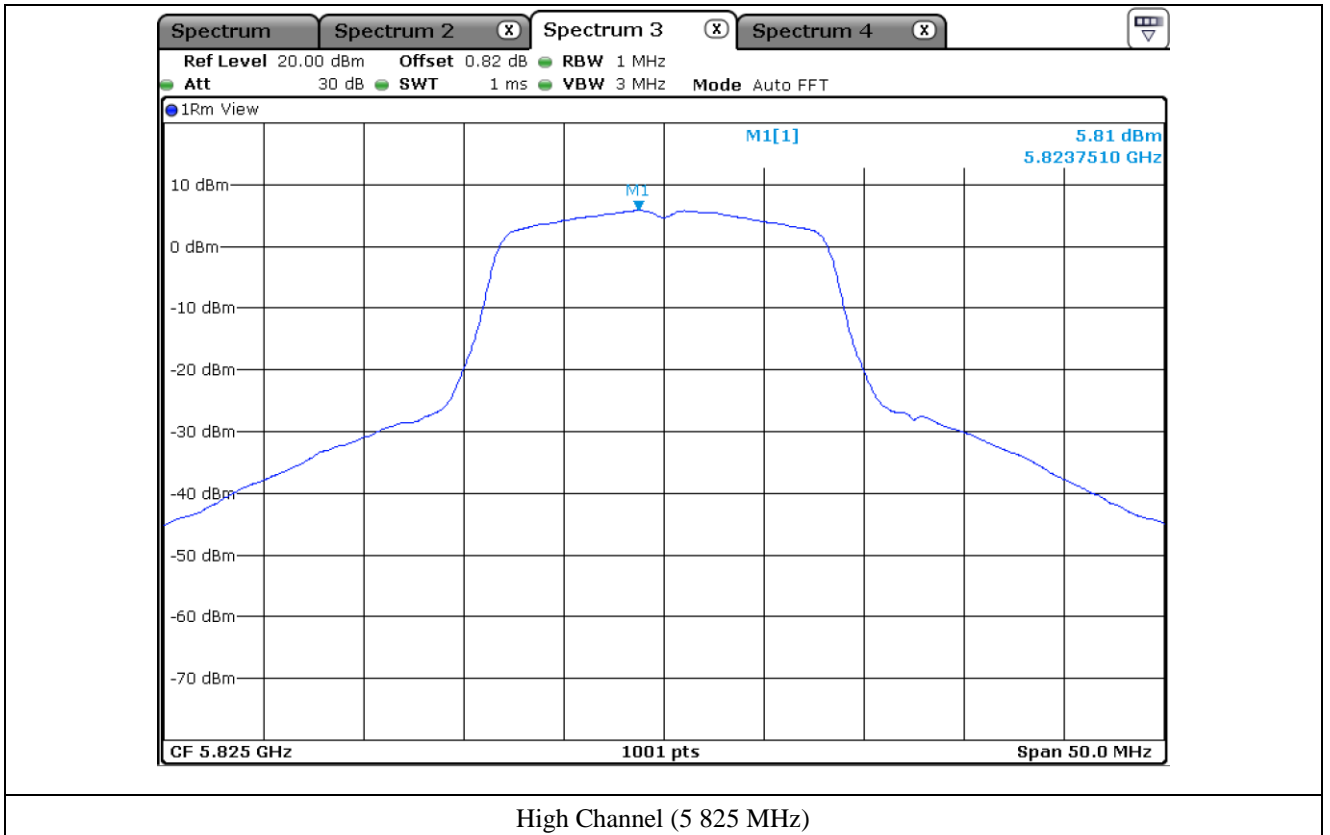




Low Channel (5 745 MHz)



Middle Channel (5 785 MHz)



**10.4.3 Test data for Multiple Transmit**

- Test Date : September 28, 2018 ~ October 24, 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	8.02	10.76	2.74
	Middle	5 220.00	7.93	10.76	2.83
	High	5 240.00	7.93	10.76	2.83
5 250 ~ 5 350	Low	5 260.00	8.09	11.00	2.91
	Middle	5 300.00	8.10	11.00	2.90
	High	5 320.00	7.93	11.00	3.07
5 470 ~ 5 725	Low	5 500.00	8.16	11.00	2.84
	Middle	5 580.00	8.80	11.00	2.20
	High	5 700.00	8.83	11.00	2.17
5 725 ~ 5 850	Low	5 745.00	8.78	30.00	21.22
	Middle	5 785.00	8.83	30.00	21.17
	High	5 825.00	8.77	30.00	21.23



**Tested by: Tae-Ho, Kim / Senior Manager**

**10.4.4 Test data for Staddle Channel\_Antenna 0**

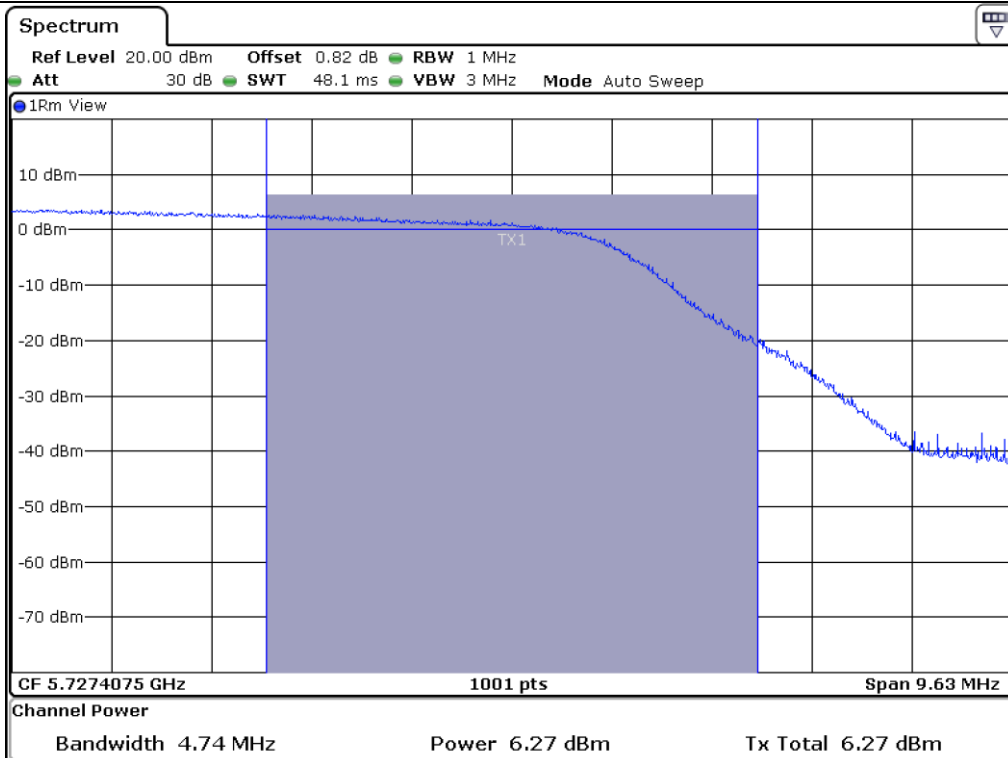
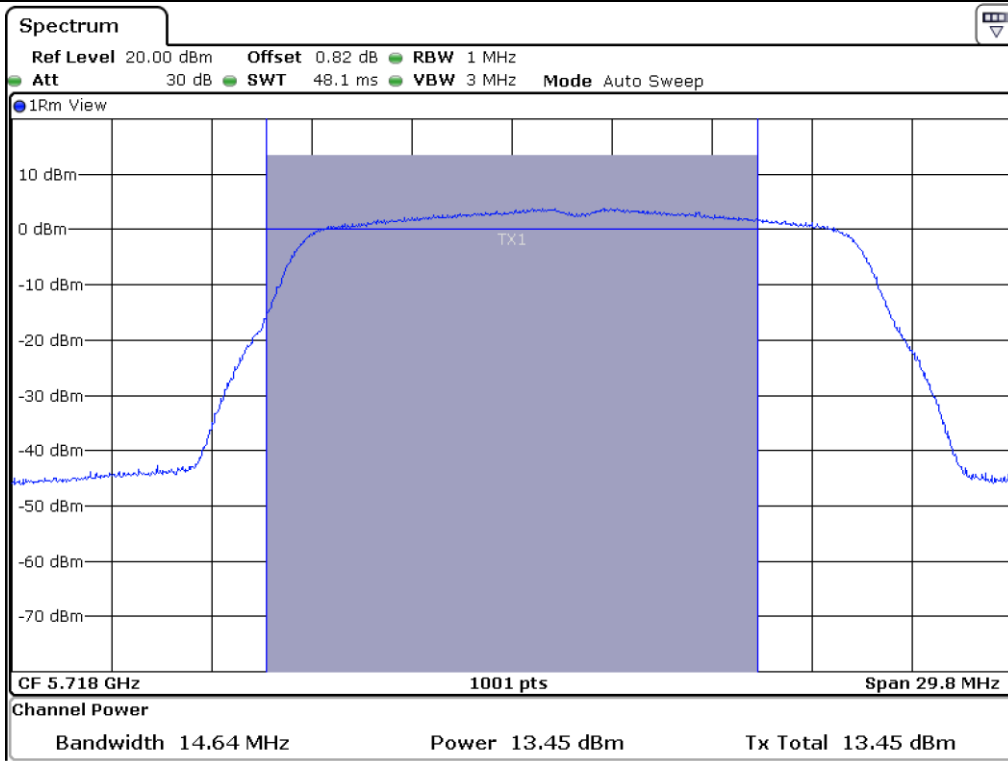
- Test Date : September 28, 2018 ~ October 24, 2018
- Operating condition : Highest Output Power Transmitting Mode
- Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 470 ~ 5 725	5 720.00	2.36	11.00	8.64
5 725 ~ 5 850	5 720.00	-2.12	30.00	32.12

Remark: See next page for measurement data.



**Tested by: Tae-Ho, Kim / Senior Manager**



**10.4.5 Test data for Staddle Channel\_Antenna 1**

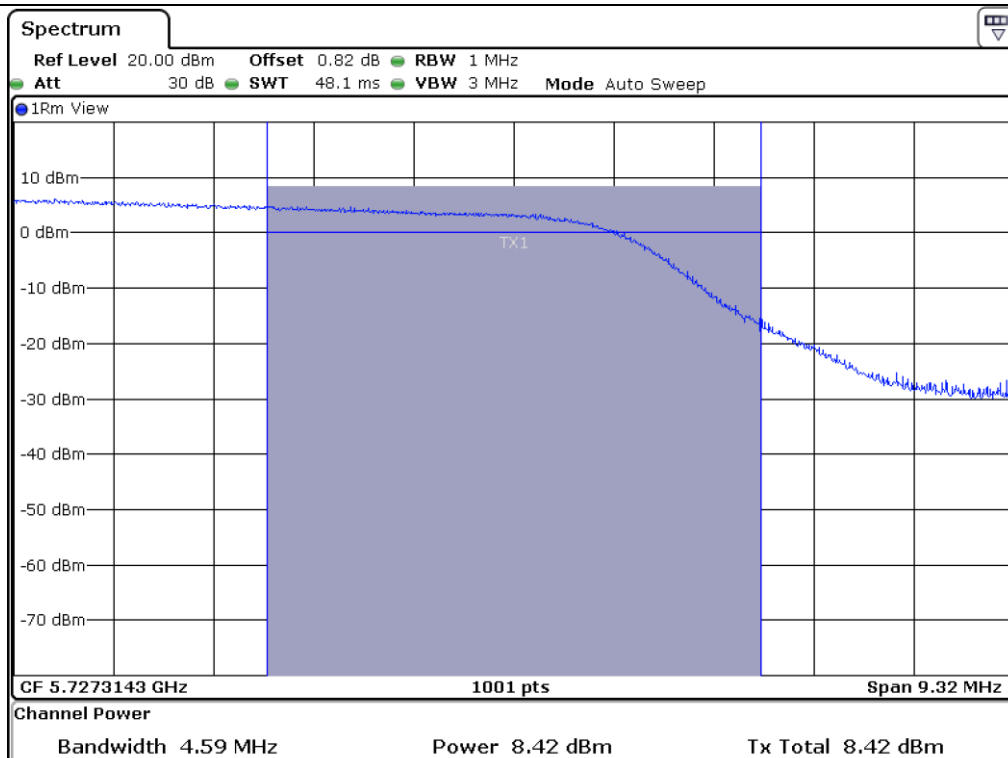
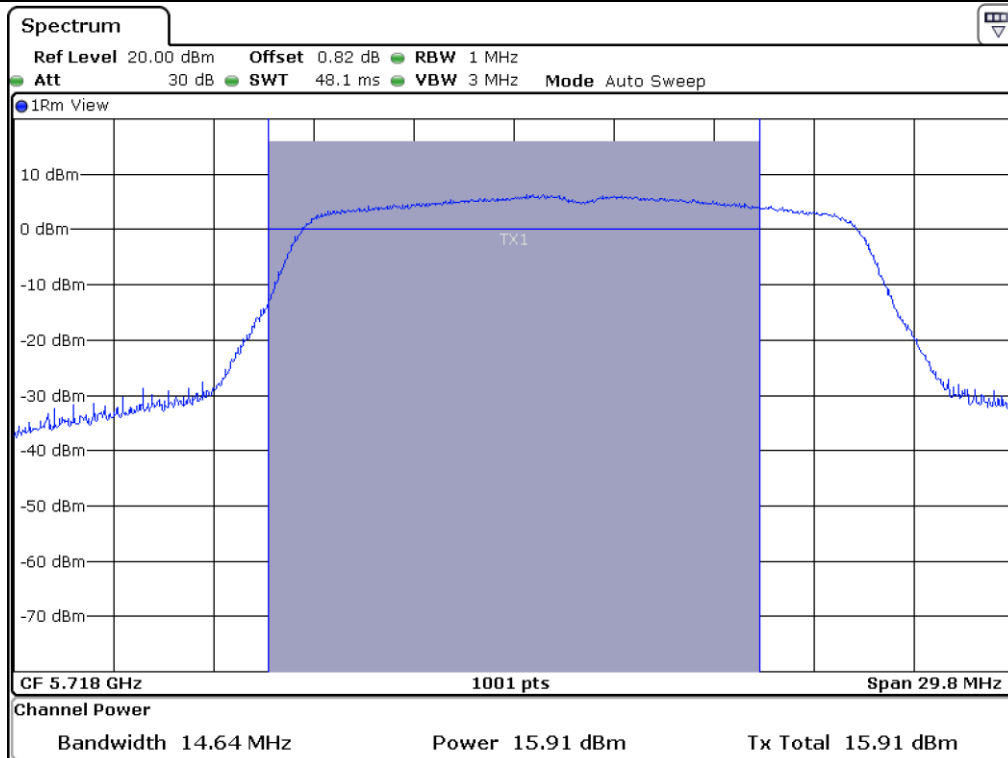
- Test Date : September 28, 2018 ~ October 24, 2018
- Operating condition : Highest Output Power Transmitting Mode
- Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 470 ~ 5 725	5 720.00	4.14	11.00	6.86
5 725 ~ 5 850	5 720.00	-0.89	30.00	30.89

Remark: See next page for measurement data.



**Tested by: Tae-Ho, Kim / Senior Manager**



**10.4.6 Test data for Staddle Channel\_Multiple Transmit**

- Test Date : September 28, 2018 ~ October 24, 2018
- Operating condition : Highest Output Power Transmitting Mode
- Test Result : Pass

FREQUENCY RANGE (MHz)	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 470 ~ 5 725	5 720.00	6.35	11.00	4.65
5 725 ~ 5 850	5 720.00	1.55	30.00	28.45




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**Tested by: Tae-Ho, Kim / Senior Manager**