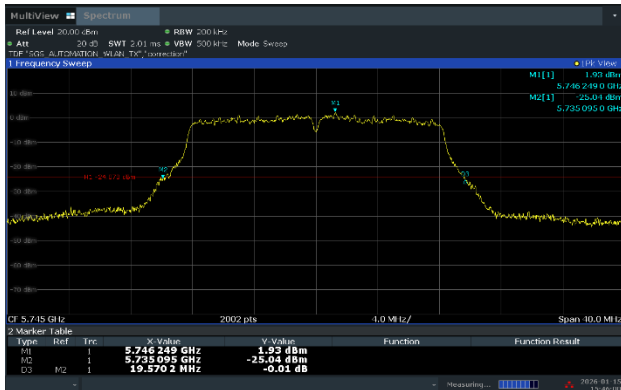
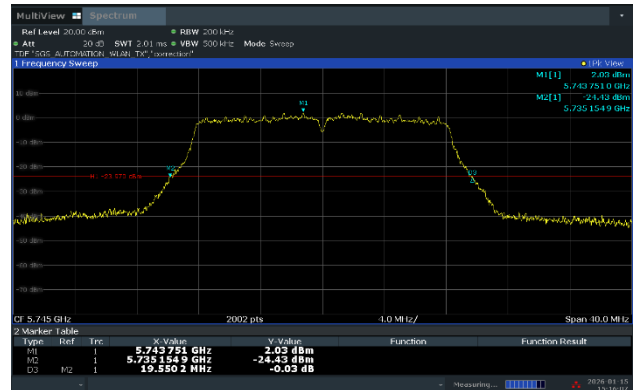


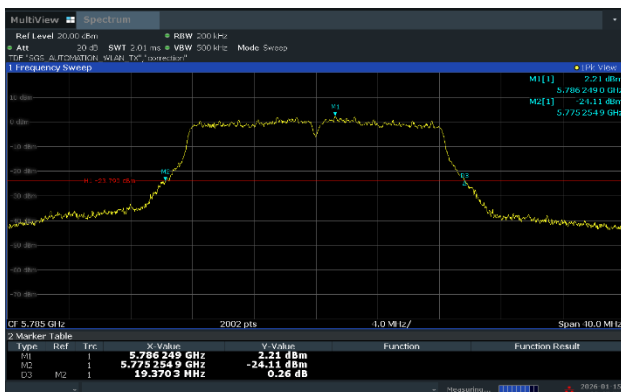
11a (Band 3)



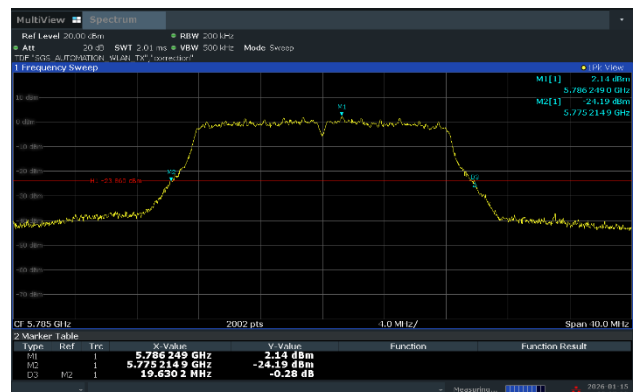
Port 1_Low Channel (5 745 MHz)



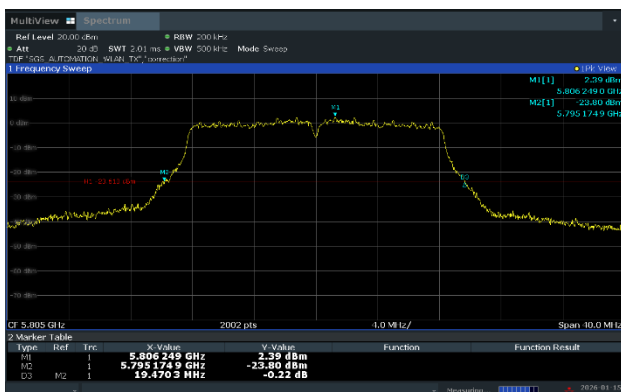
Port 3_Low Channel (5 745 MHz)



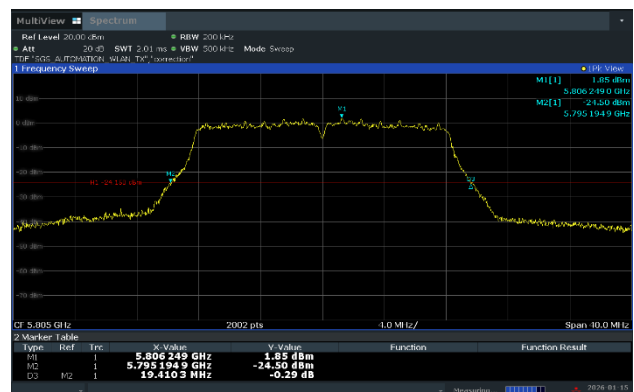
Port 1_Middle Channel (5 785 MHz)



Port 3_Middle Channel (5 785 MHz)

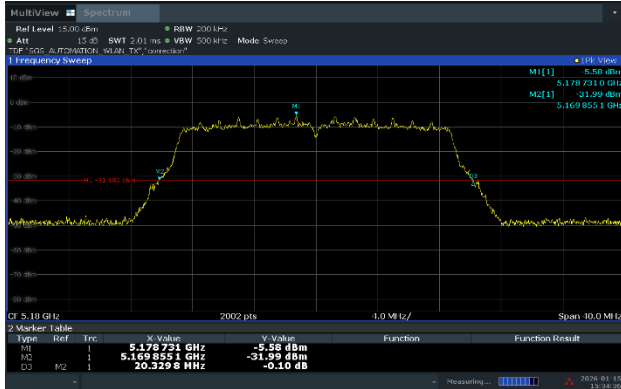


Port 1_High Channel (5 805 MHz)

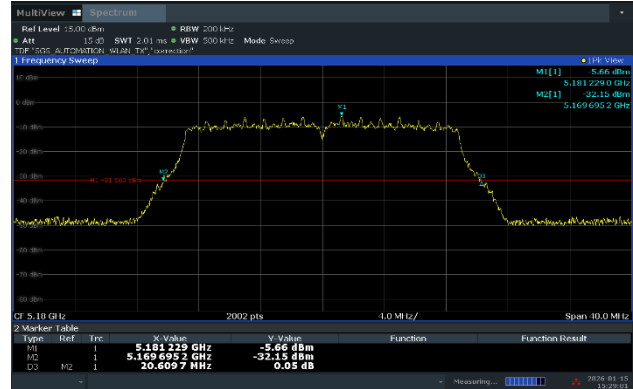


Port 3_High Channel (5 805 MHz)

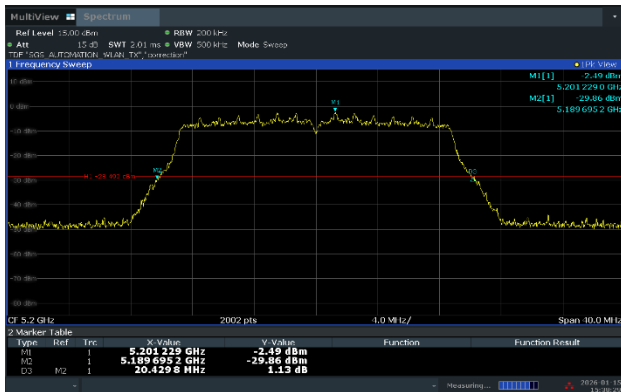
11ac_VHT20 (Band 1)



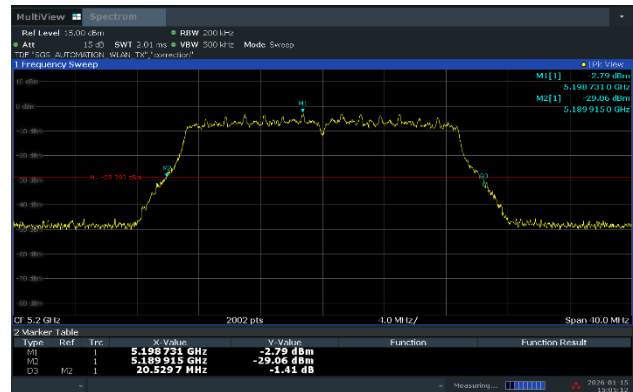
Port 1_Low Channel -1 (5 180 MHz)



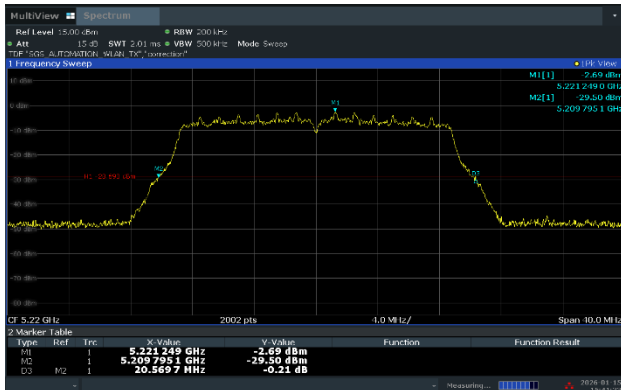
Port 3_Low Channel -1 (5 180 MHz)



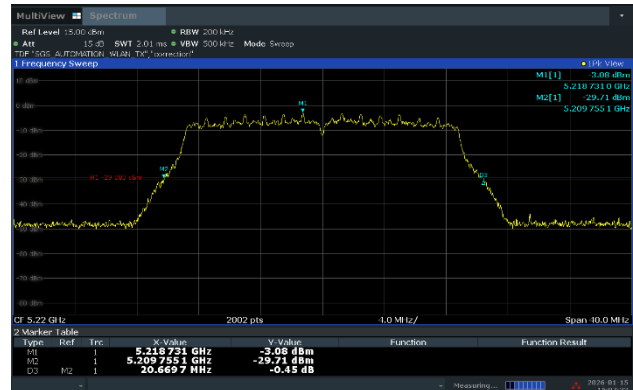
Port 1_Low Channel -2 (5 200 MHz)



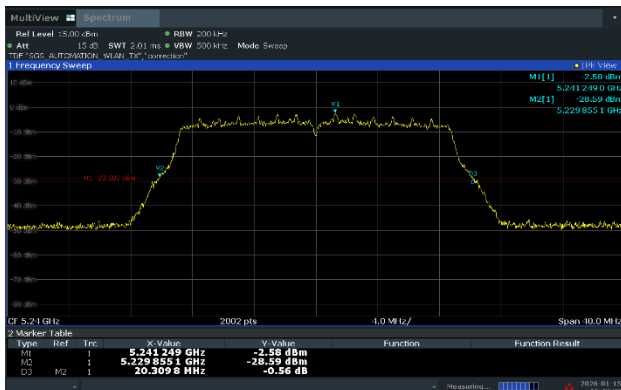
Port 3_Low Channel -2 (5 200 MHz)



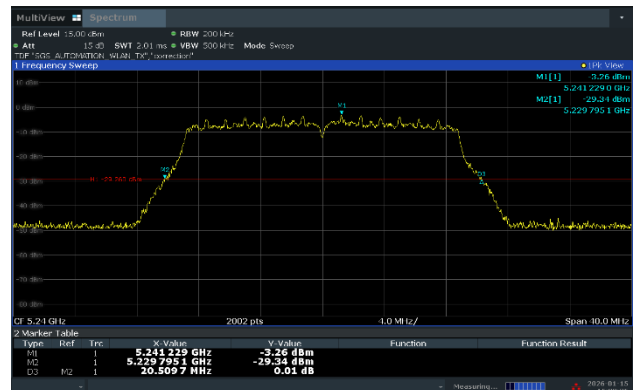
Port 1_Middle Channel (5 220 MHz)



Port 3_Middle Channel (5 220 MHz)

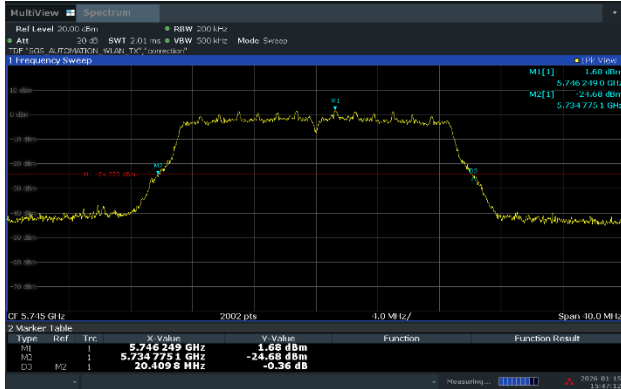


Port 1_High Channel (5 240 MHz)

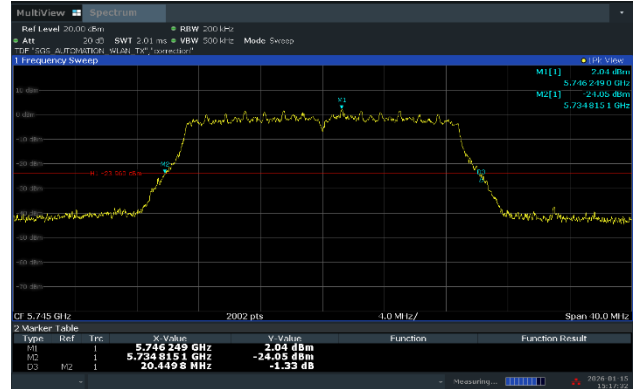


Port 3_High Channel (5 240 MHz)

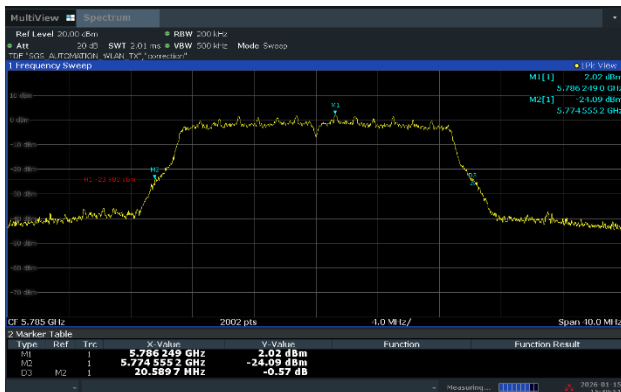
11ac_VHT20 (Band 3)



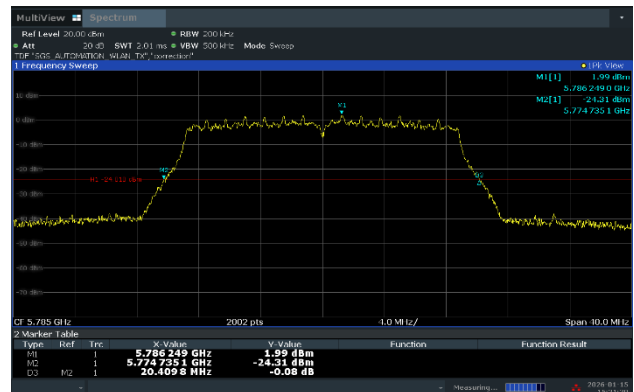
Port 1_Low Channel (5 745 MHz)



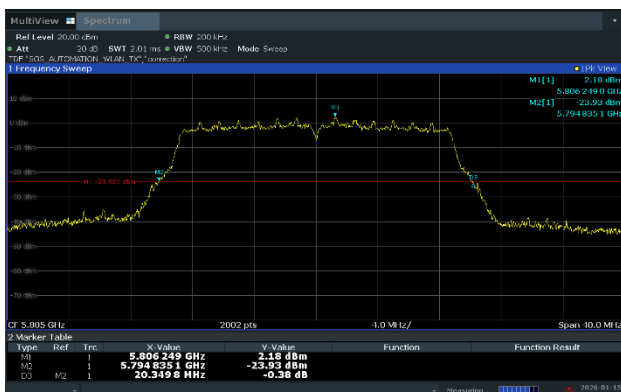
Port 3_Low Channel (5 745 MHz)



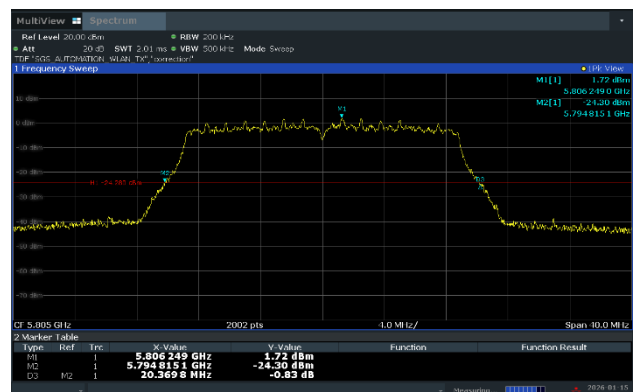
Port 1_Middle Channel (5 785 MHz)



Port 3_Middle Channel (5 785 MHz)

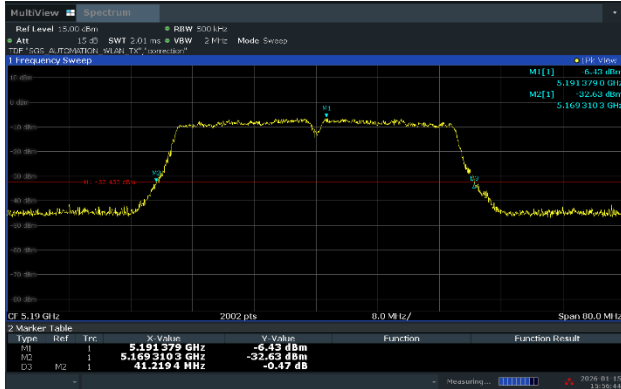


Port 1_High Channel (5 805 MHz)

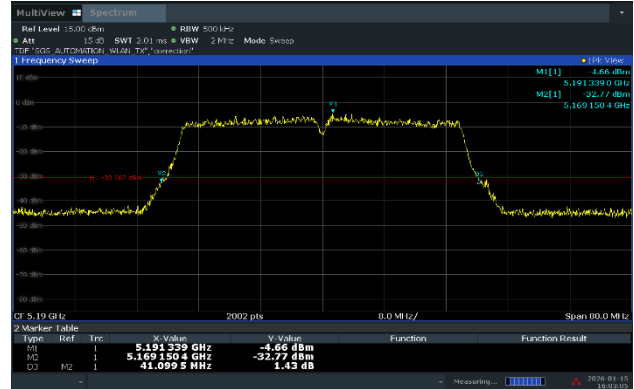


Port 3_High Channel (5 805 MHz)

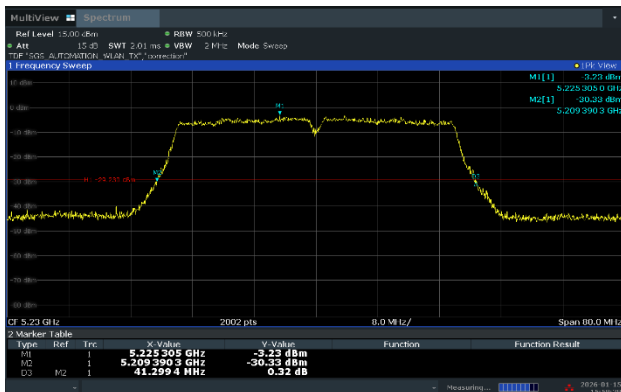
11ac_VHT40 (Band 1)



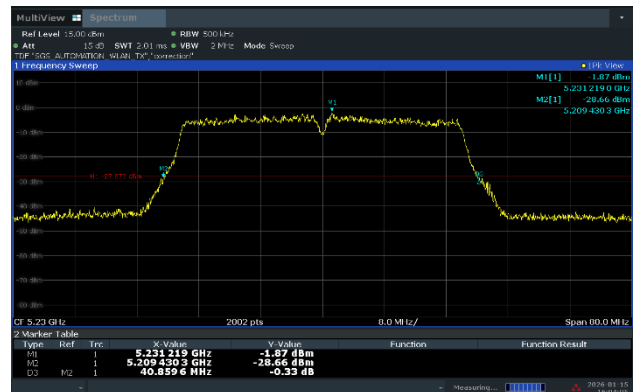
Port 1_Low Channel (5 190 MHz)



Port 3_Low Channel (5 190 MHz)

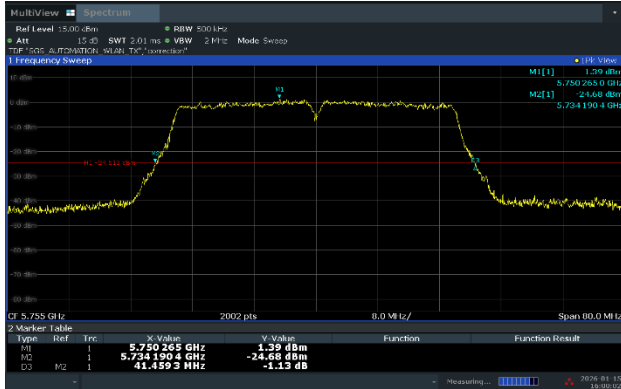


Port 1_High Channel (5 230 MHz)

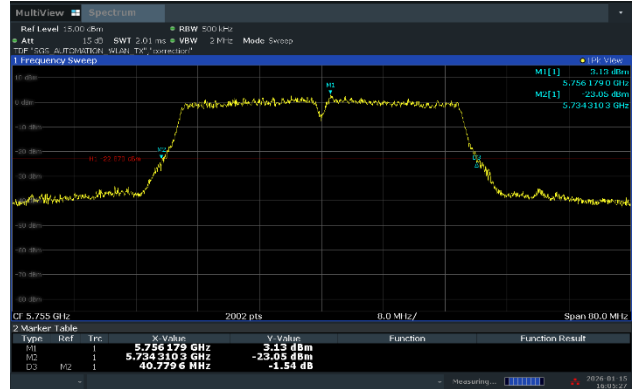


Port 3_High Channel (5 230 MHz)

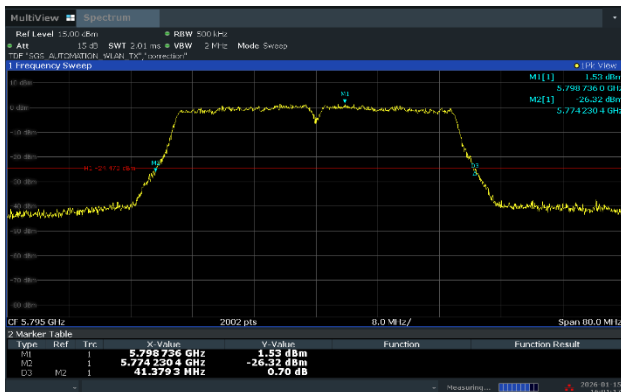
11ac_VHT40 (Band 3)



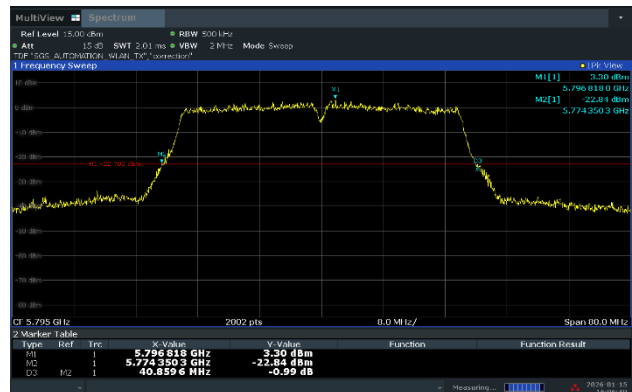
Port 1_Low Channel (5 755 MHz)



Port 3_Low Channel (5 755 MHz)

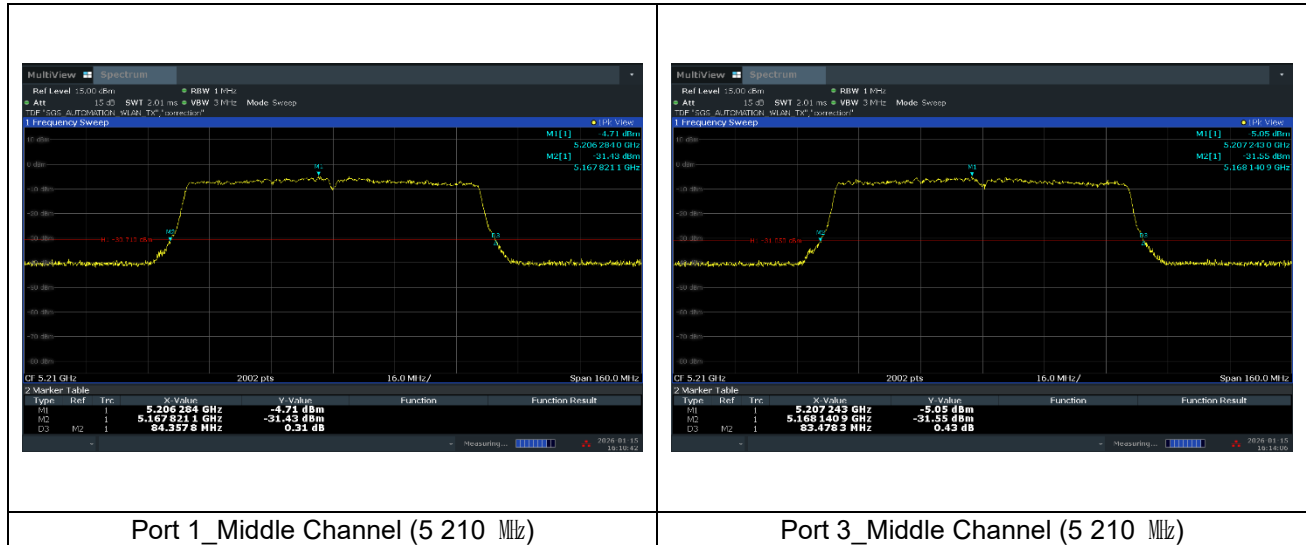


Port 1_High Channel (5 795 MHz)

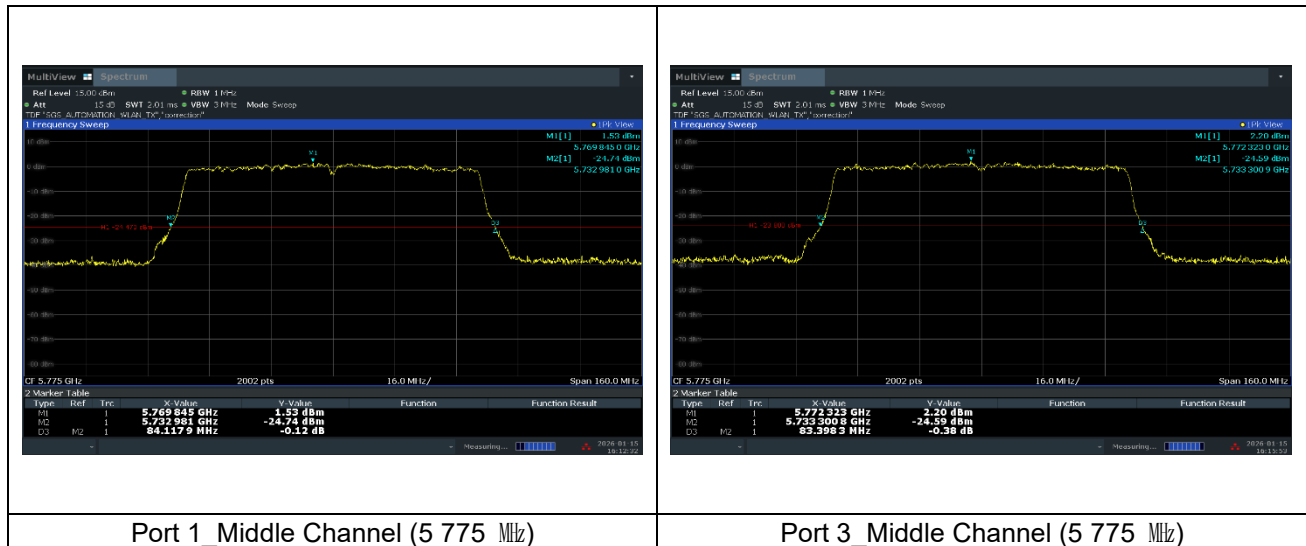


Port 3_High Channel (5 795 MHz)

11ac_VHT80 (Band 1)

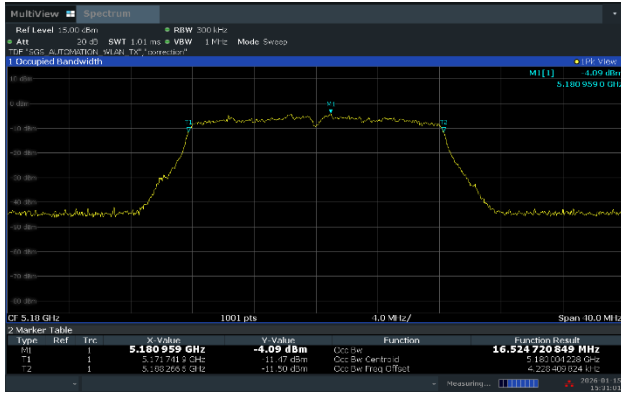


11ac_VHT80 (Band 3)

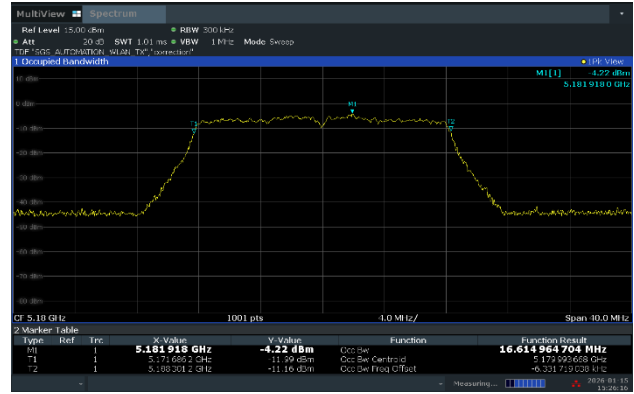


99 % Bandwidth

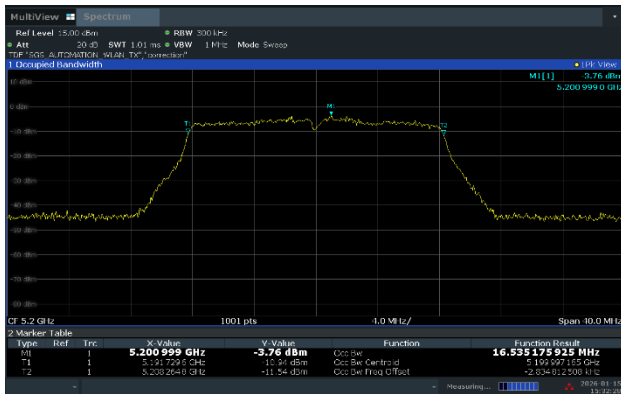
11a (Band 1)



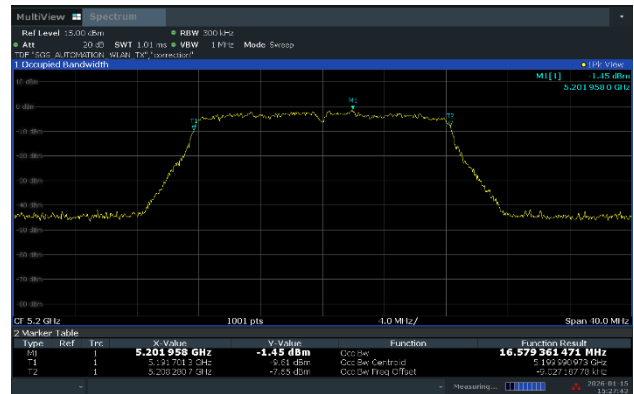
Port 1_Low Channel -1 (5 180 MHz)



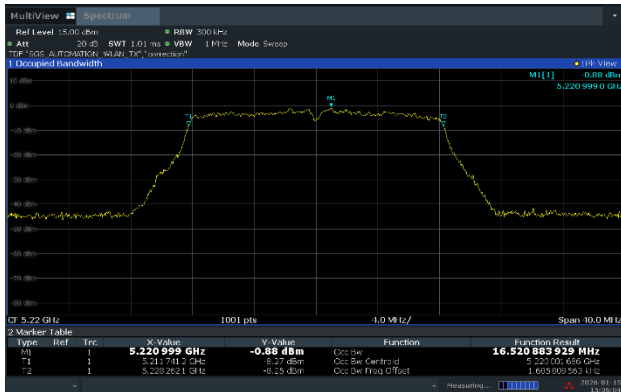
Port 3_Low Channel -1 (5 180 MHz)



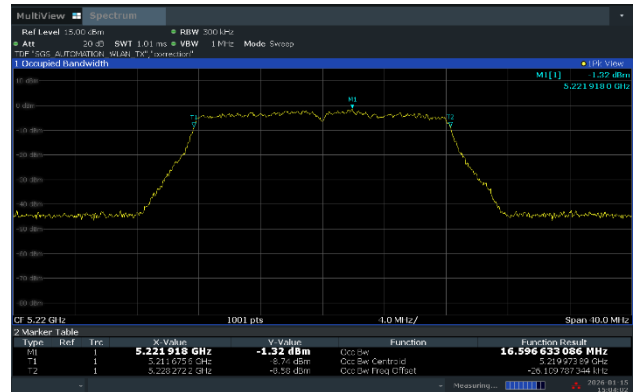
Port 1_Low Channel -2 (5 200 MHz)



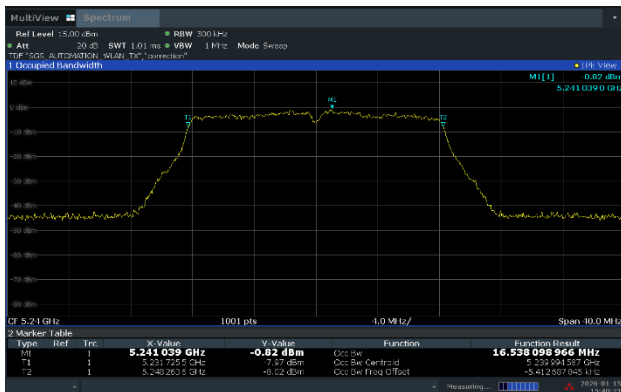
Port 3_Low Channel -2 (5 200 MHz)



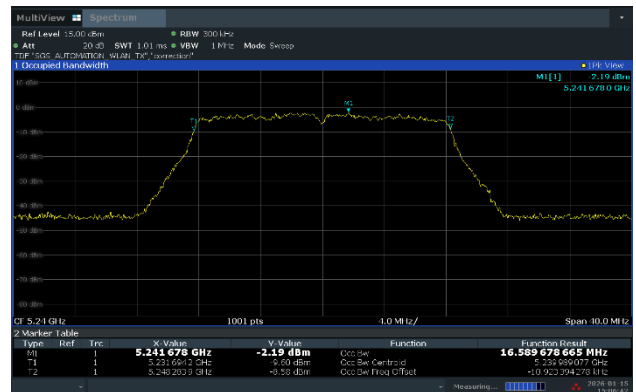
Port 1_Middle Channel (5 220 MHz)



Port 3_Middle Channel (5 220 MHz)

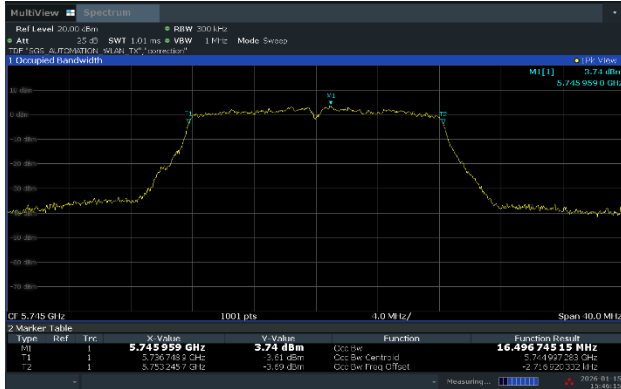


Port 1_High Channel (5 240 MHz)

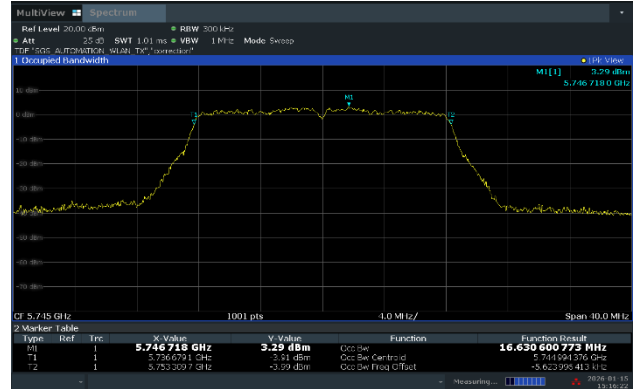


Port 3_High Channel (5 240 MHz)

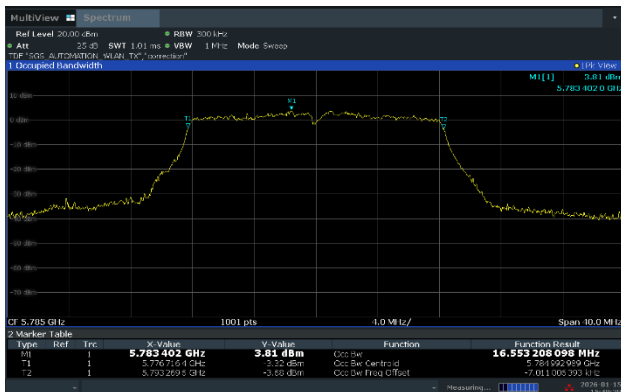
11a (Band 3)



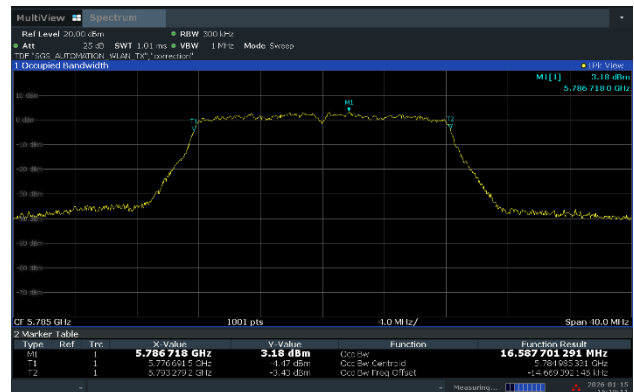
Port 1_Low Channel (5 745 MHz)



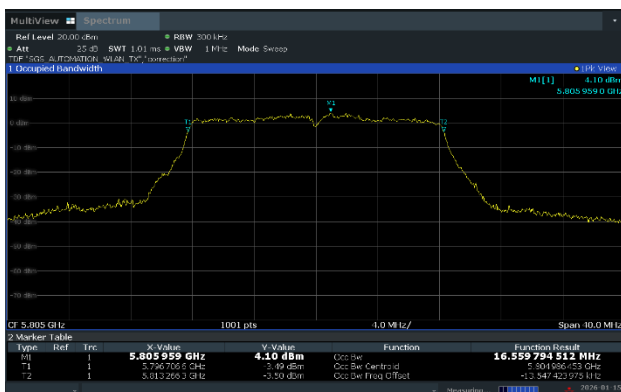
Port 3_Low Channel (5 745 MHz)



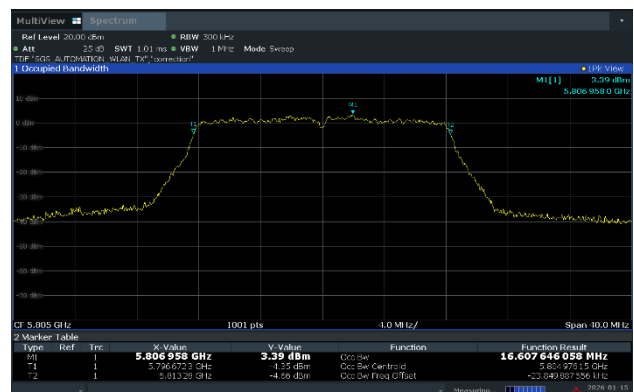
Port 1_Middle Channel (5 785 MHz)



Port 3_Middle Channel (5 785 MHz)

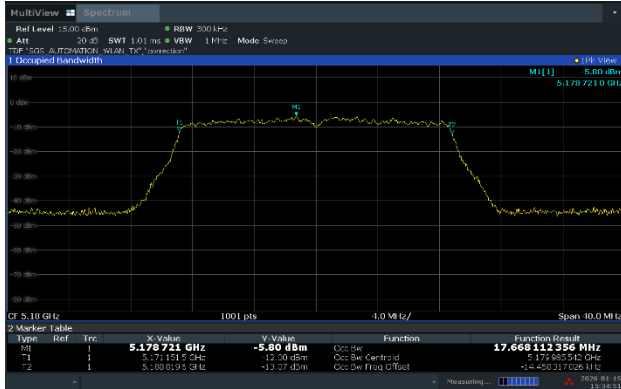


Port 1_High Channel (5 805 MHz)

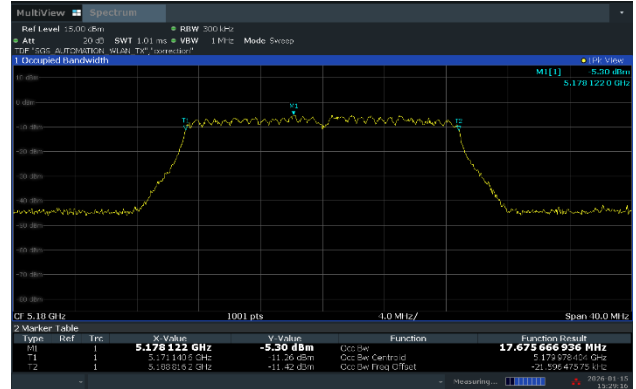


Port 3_High Channel (5 805 MHz)

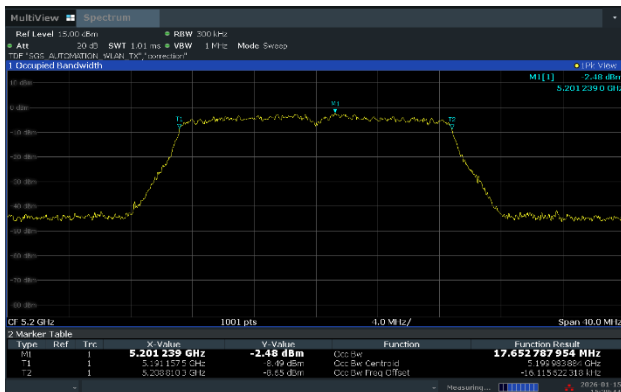
11ac_VHT20 (Band 1)



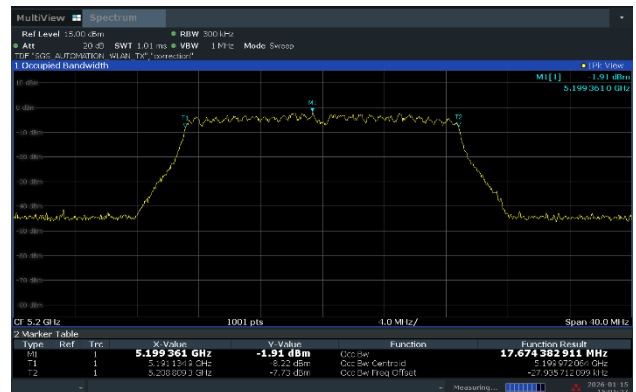
Port 1_Low Channel -1 (5 180 MHz)



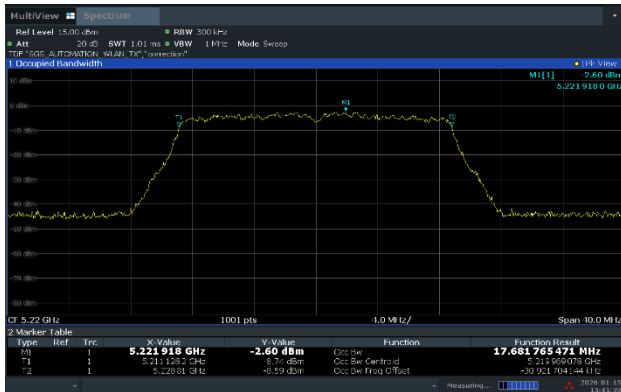
Port 3_Low Channel -1 (5 180 MHz)



Port 1_Low Channel -2 (5 200 MHz)



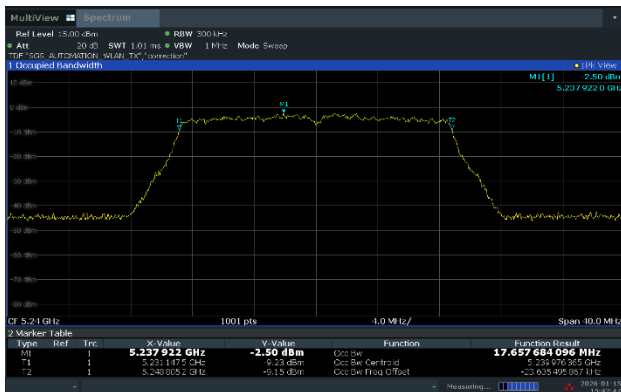
Port 3_Low Channel -2 (5 200 MHz)



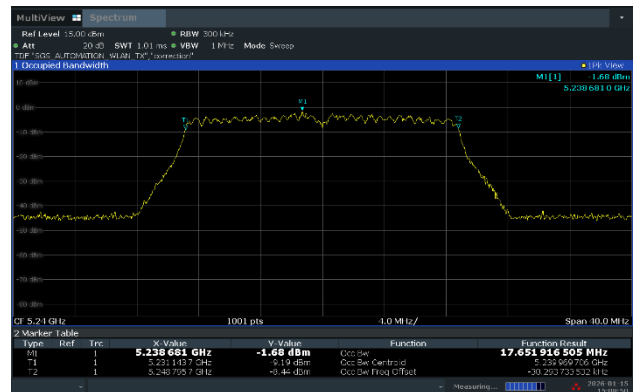
Port 1_Middle Channel (5 220 MHz)



Port 3_Middle Channel (5 220 MHz)

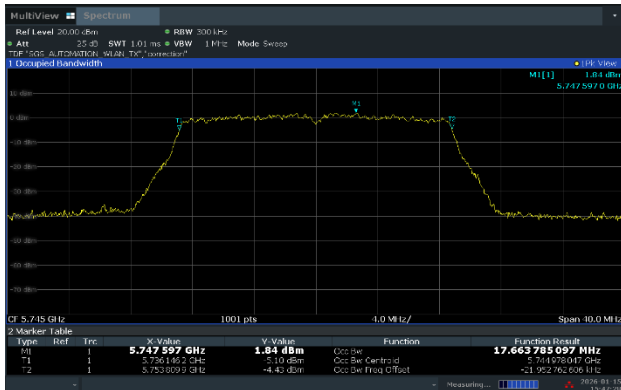


Port 1_High Channel (5 240 MHz)

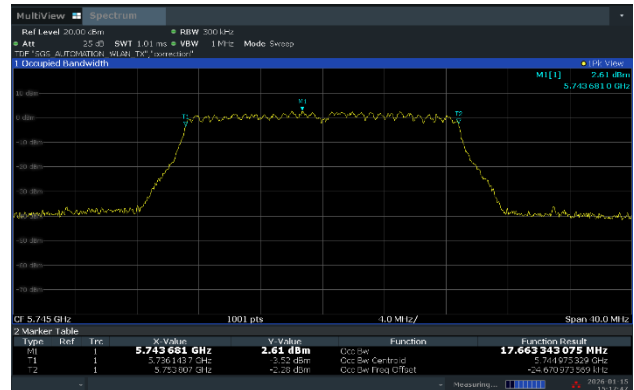


Port 3_High Channel (5 240 MHz)

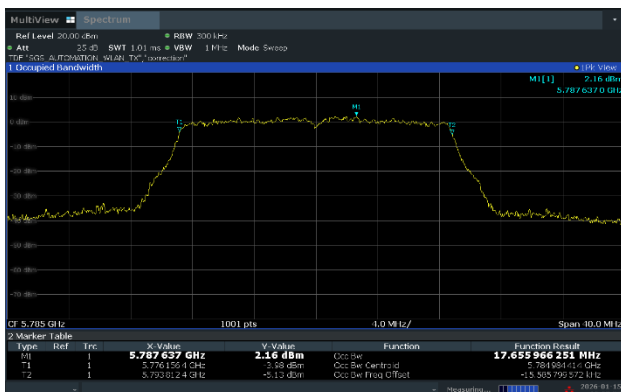
11ac_VHT20 (Band 3)



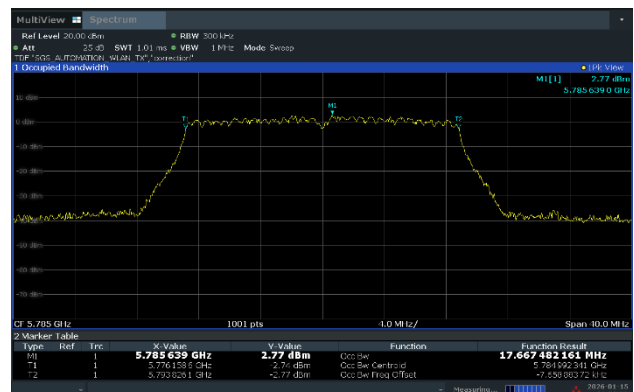
Port 1_Low Channel (5 745 MHz)



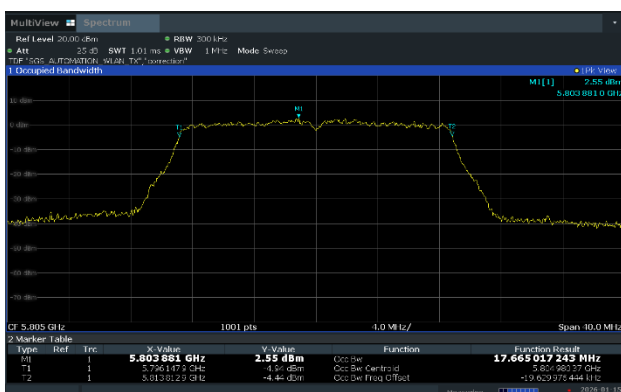
Port 3_Low Channel (5 745 MHz)



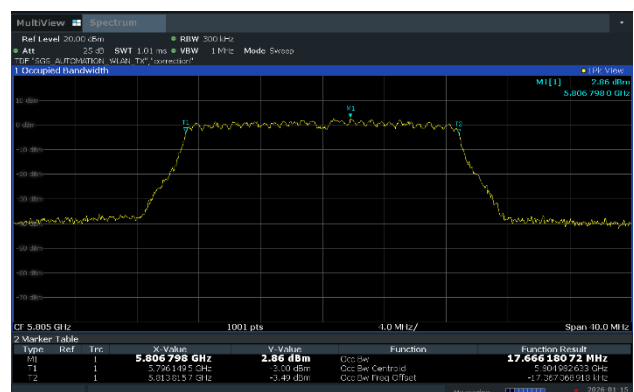
Port 1_Middle Channel (5 785 MHz)



Port 3_Middle Channel (5 785 MHz)

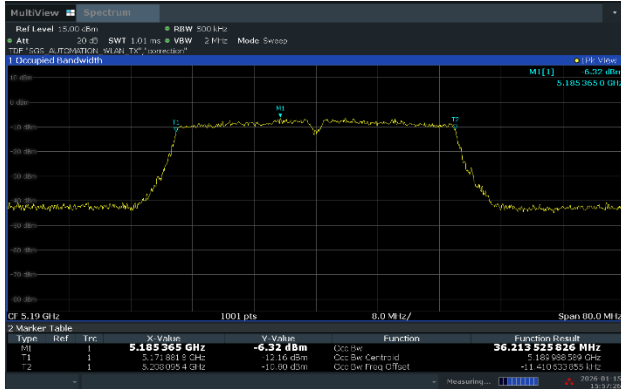


Port 1_High Channel (5 805 MHz)

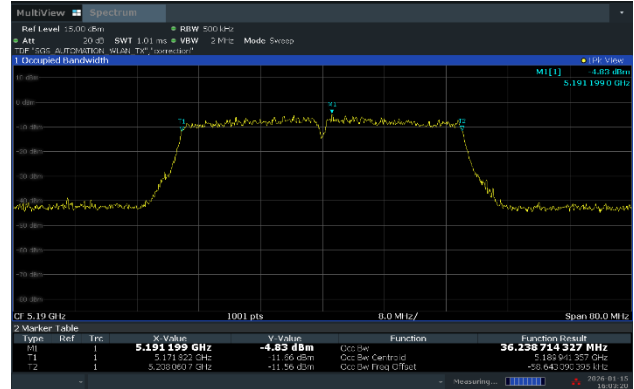


Port 3_High Channel (5 805 MHz)

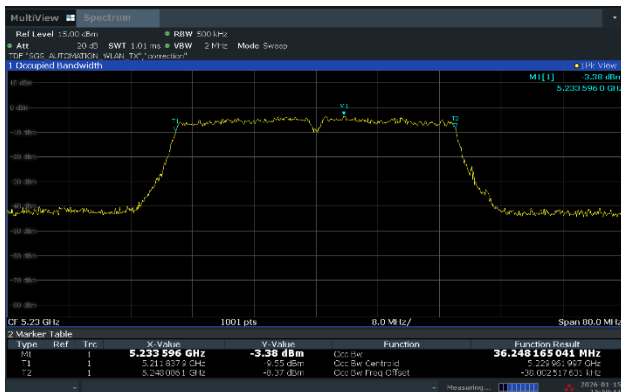
11ac_VHT40 (Band 1)



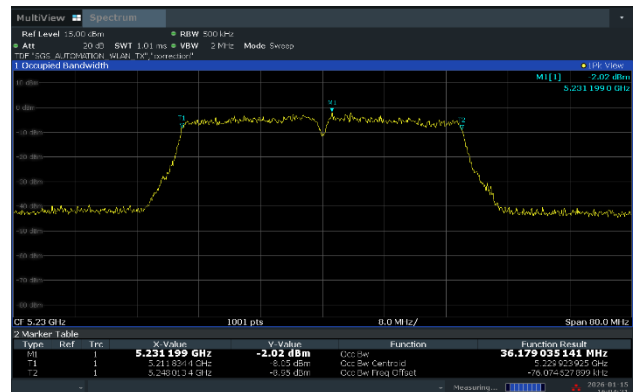
Port 1_Low Channel (5 190 MHz)



Port 3_Low Channel (5 190 MHz)

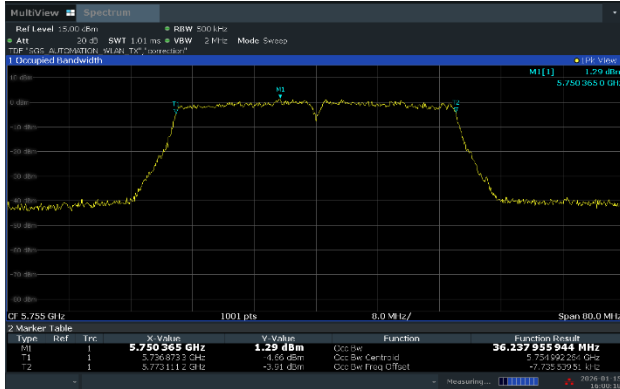


Port 1_High Channel (5 230 MHz)

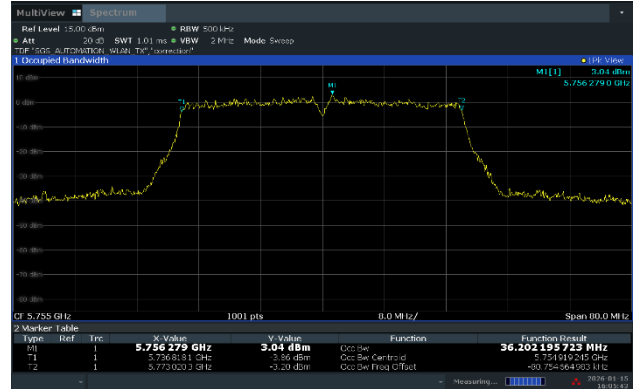


Port 3_High Channel (5 230 MHz)

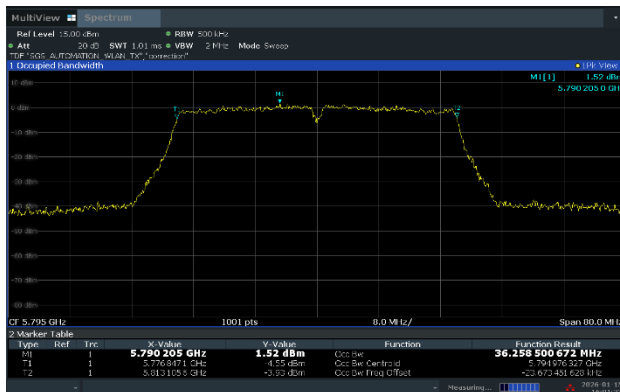
11ac_VHT40 (Band 3)



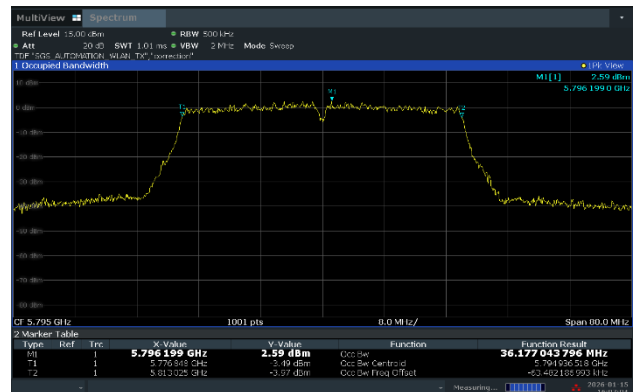
Port 1_Low Channel (5 755 MHz)



Port 3_Low Channel (5 755 MHz)

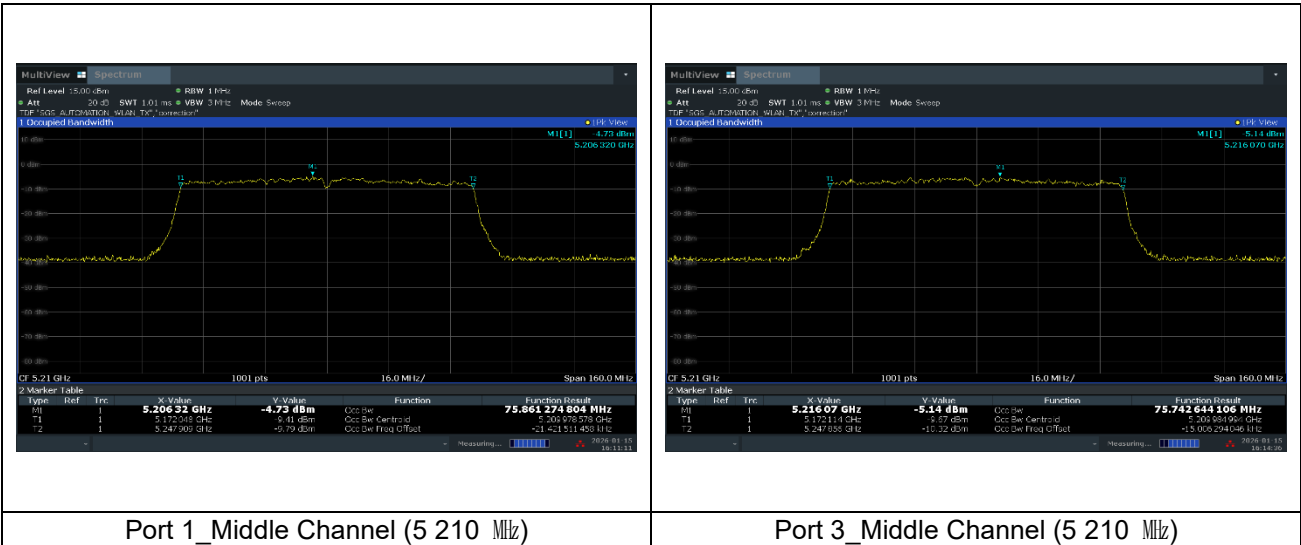


Port 1_High Channel (5 795 MHz)

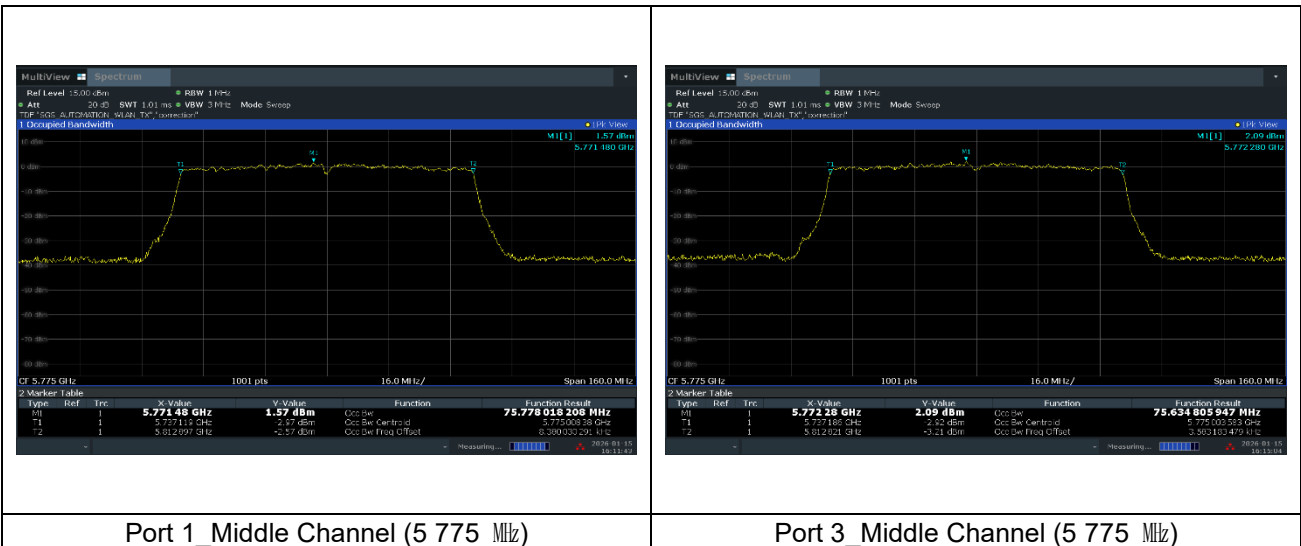


Port 3_High Channel (5 795 MHz)

11ac_VHT80 (Band 1)

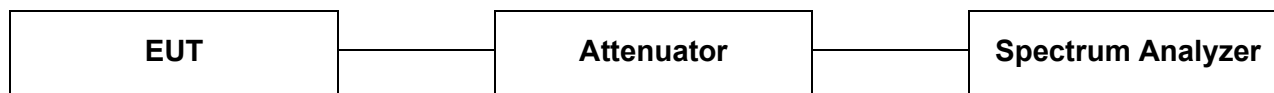


11ac_VHT80 (Band 3)



4. 6 dB Bandwidth

4.1. Test Setup



4.2. Limit

4.2.1. FCC

According to §15.407(e), within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

4.2.2. IC

According to RSS-247 Issue 4, 7.3.4.2, for equipment operating in the band 5 725-5 850 MHz, the 6 dB bandwidth shall be at least 500 kHz.

4.3. Test Procedure

1. This measurement settings are specified in section II.C.2 of KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
2. Set RBW = 100 kHz.
3. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
4. Detector = Peak.
5. Trace mode = max hold.
6. Sweep = auto couple.
7. Allow the trace to stabilize.
8. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

4.4. Test Result

Ambient temperature : (23 ± 1) °C

Relative humidity : 47 %

- Ant. 1 + Ant. 2

Band	Mode	Frequency (MHz)	Ch.	Data Rate	6 dB Bandwidth (MHz)		Minimum Bandwidth (kHz)
					Port 1	Port 2	
U-NII 3	11a	5 745	149	18 Mbps	15.692	16.132	500
		5 785	157		16.012	15.732	
		5 805	161		15.712	16.112	
	11ac_VHT20	5 745	149	MCS0	16.052	16.852	
		5 785	157		16.332	16.932	
		5 805	161		15.712	16.932	
	11ac_VHT40	5 755	151	MCS0	35.782	35.182	
		5 795	159		35.782	35.182	
	11ac_VHT80	5 775	155	MCS0	75.242	75.322	

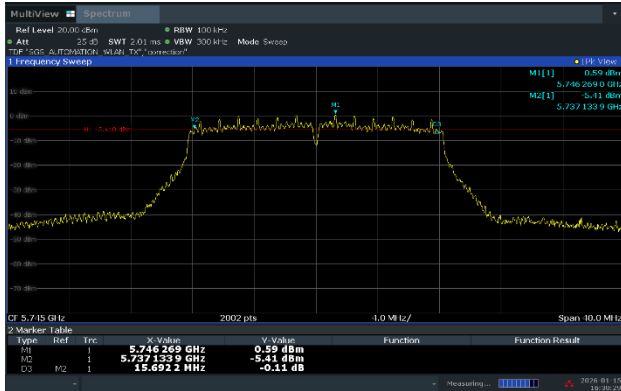
- Ant. 1 + Ant. 3

Band	Mode	Frequency (MHz)	Ch.	Data Rate	6 dB Bandwidth (MHz)		Minimum Bandwidth (kHz)
					Port 1	Port 3	
U-NII 3	11a	5 745	149	18 Mbps	15.472	15.972	500
		5 785	157		15.712	15.712	
		5 805	161		15.732	16.332	
	11ac_VHT20	5 745	149	MCS0	16.072	17.171	
		5 785	157		15.712	16.932	
		5 805	161		15.692	16.812	
	11ac_VHT40	5 755	151	MCS0	36.022	35.782	
		5 795	159		35.262	35.182	
	11ac_VHT80	5 775	155	MCS0	75.322	75.242	

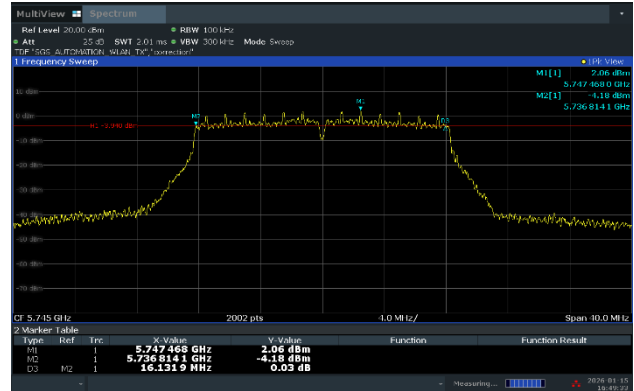
Test plots

- Ant. 1 + Ant. 2

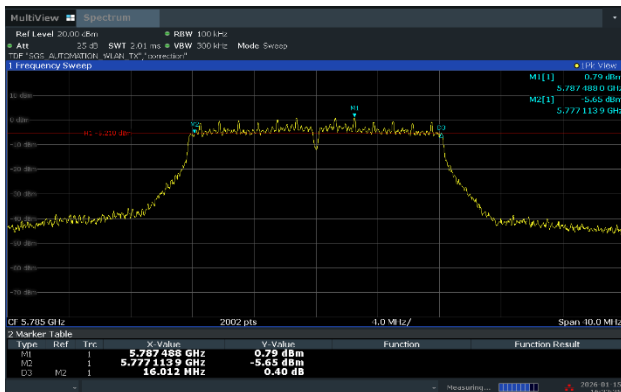
11a (Band 3)



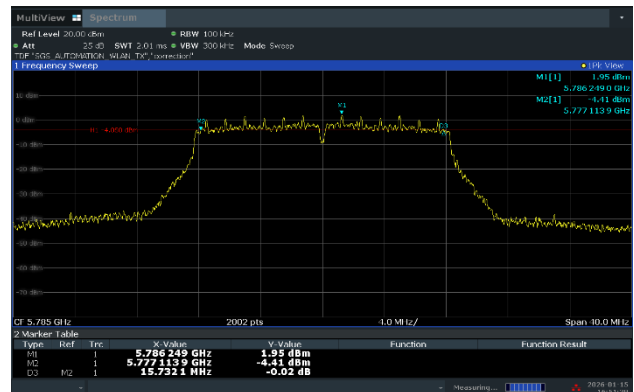
Port 1_Low Channel (5 745 MHz)



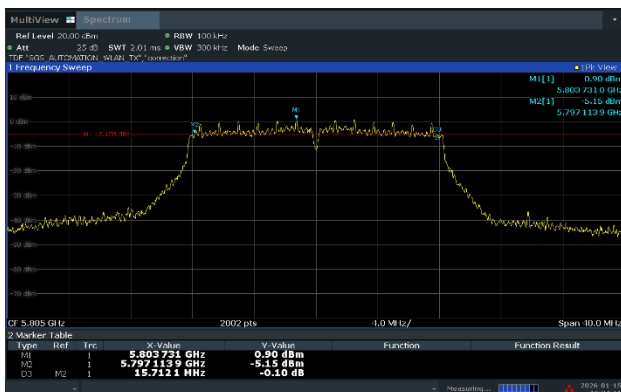
Port 2_Low Channel (5 745 MHz)



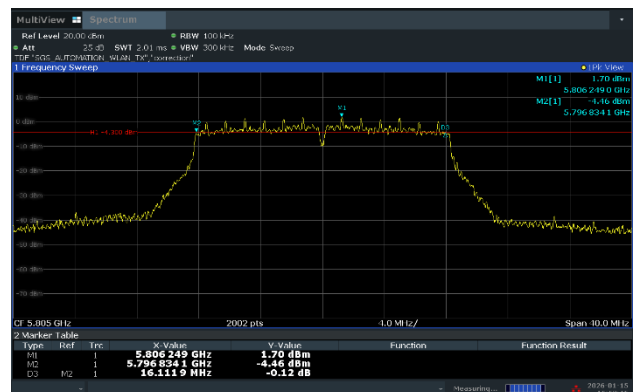
Port 1_Middle Channel (5 785 MHz)



Port 2_Middle Channel (5 785 MHz)

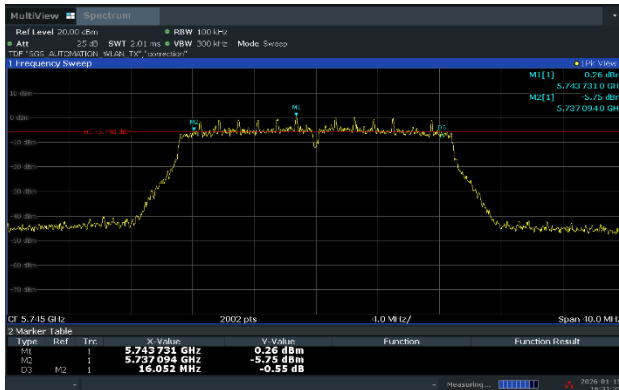


Port 1_High Channel (5 805 MHz)

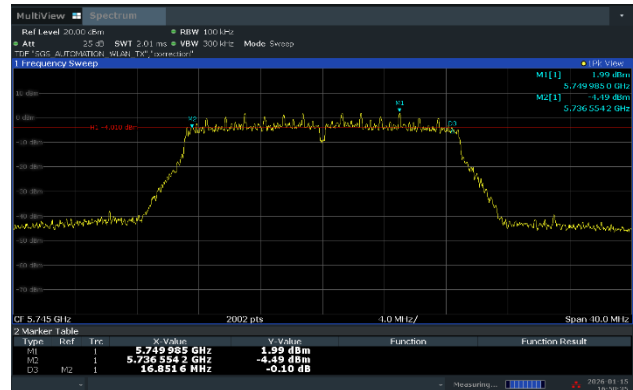


Port 2_High Channel (5 805 MHz)

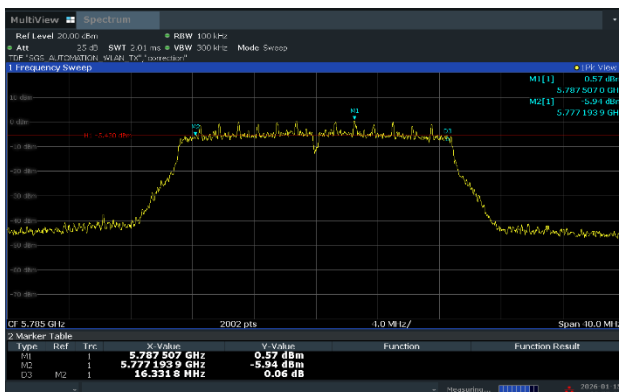
11ac_VHT20 (Band 3)



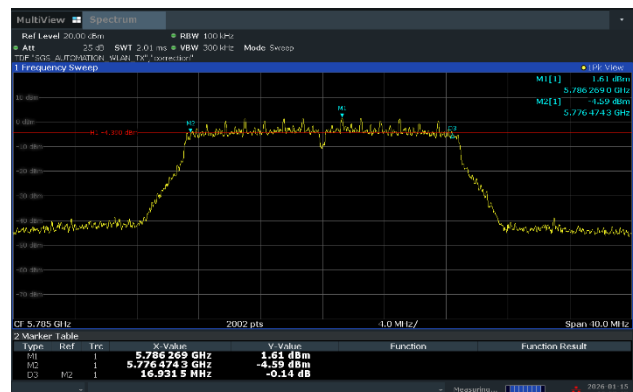
Port 1_Low Channel (5 745 MHz)



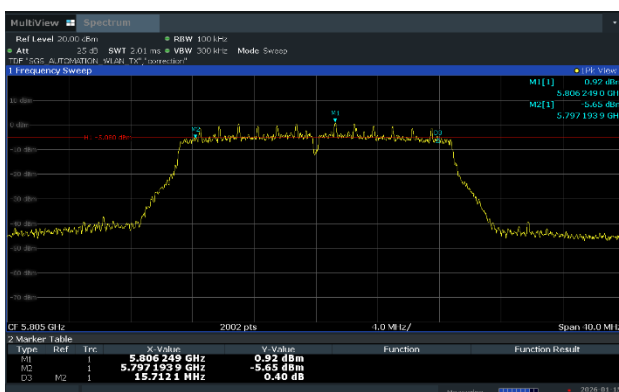
Port 2_Low Channel (5 745 MHz)



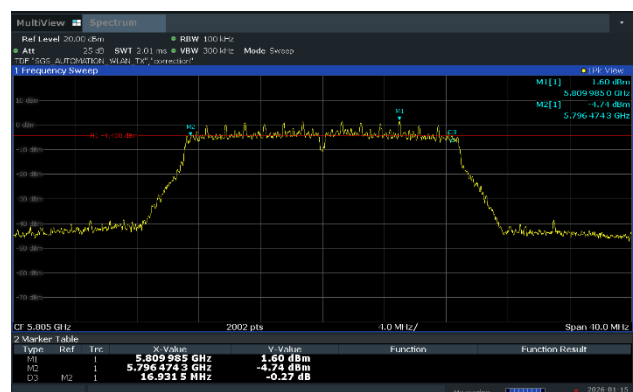
Port 1_Middle Channel (5 785 MHz)



Port 2_Middle Channel (5 785 MHz)

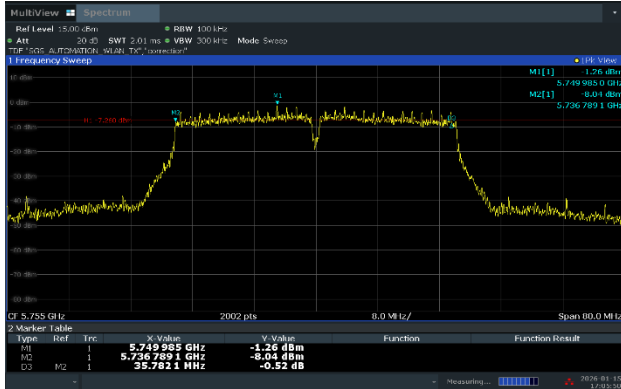


Port 1_High Channel (5 805 MHz)

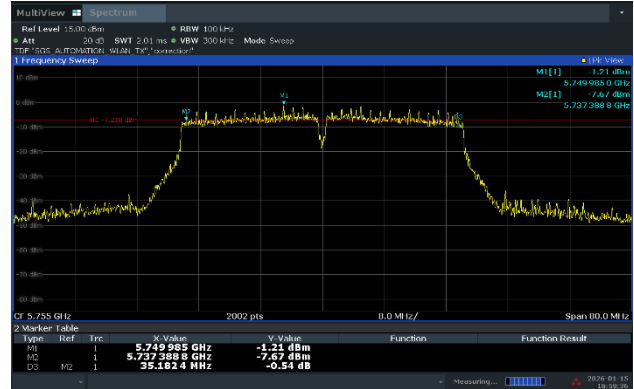


Port 2_High Channel (5 805 MHz)

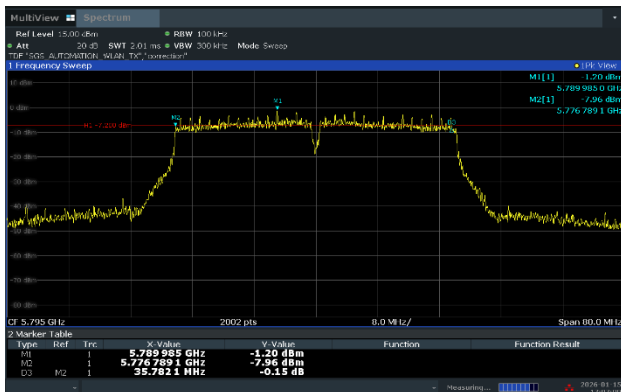
11ac_VHT40 (Band 3)



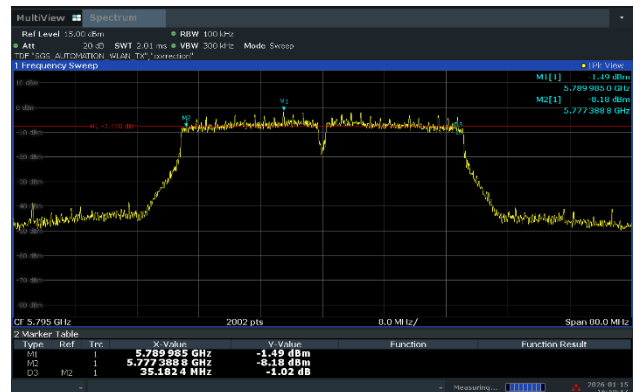
Port 1_Low Channel (5 755 MHz)



Port 2_Low Channel (5 755 MHz)

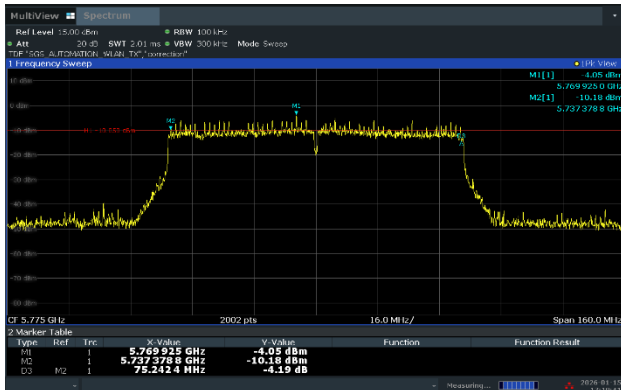


Port 1_High Channel (5 795 MHz)

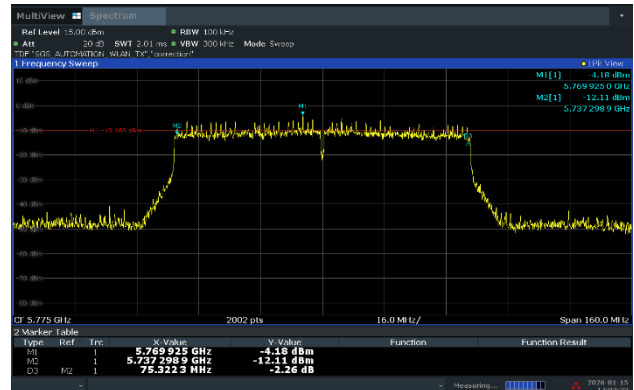


Port 2_High Channel (5 795 MHz)

11ac_VHT80 (Band 3)



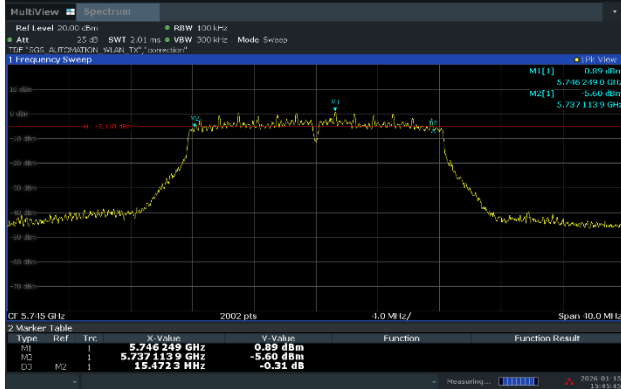
Port 1_Middle Channel (5 775 MHz)



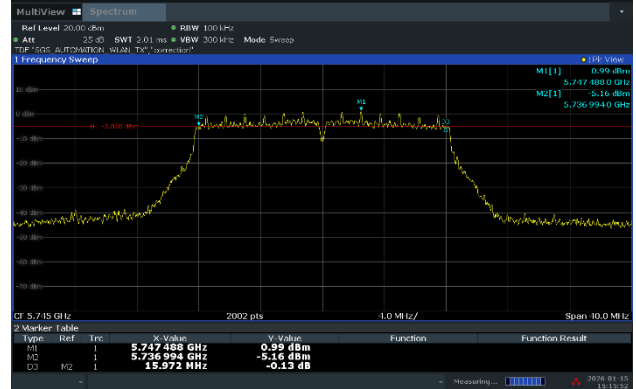
Port 2_Middle Channel (5 775 MHz)

- Ant. 1 + Ant. 3

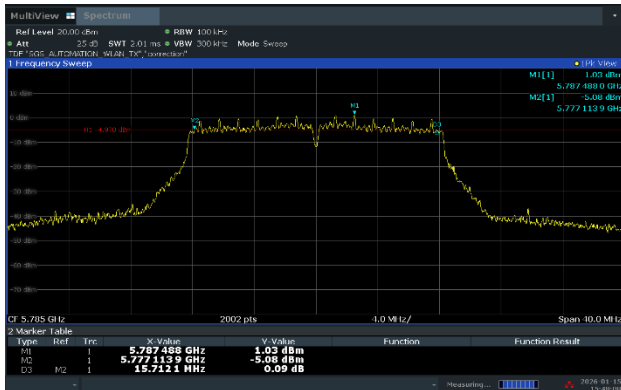
11a (Band 3)



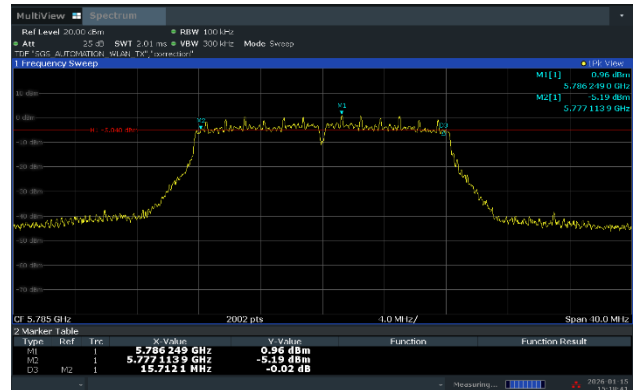
Port 1_Low Channel (5 745 MHz)



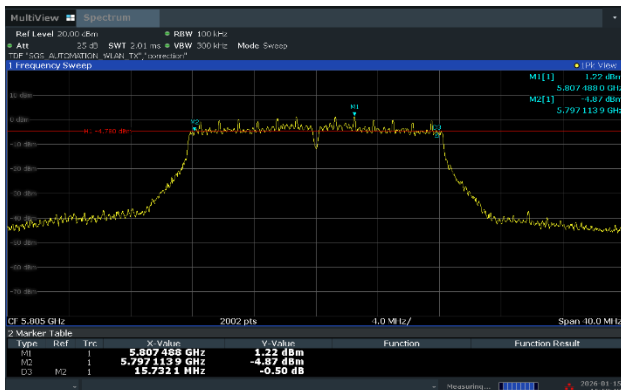
Port 3_Low Channel (5 745 MHz)



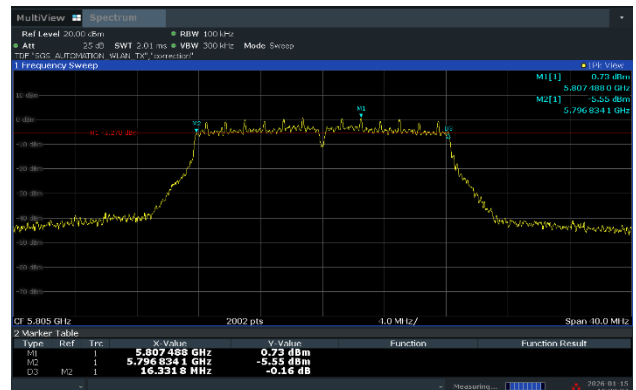
Port 1_Middle Channel (5 785 MHz)



Port 3_Middle Channel (5 785 MHz)

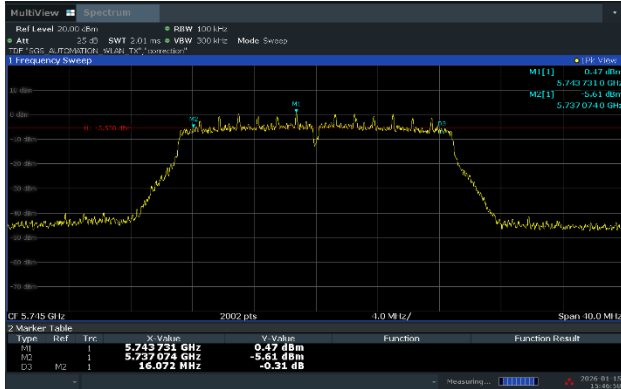


Port 1_High Channel (5 805 MHz)

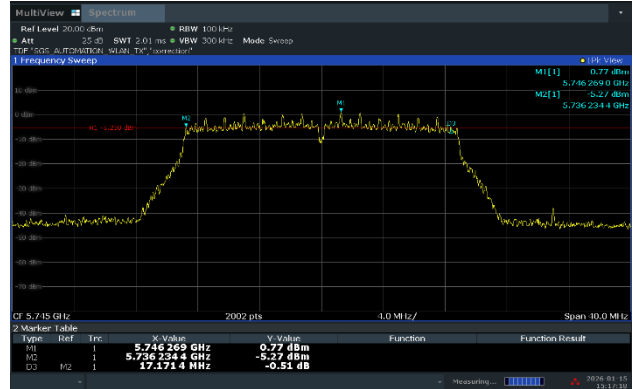


Port 3_High Channel (5 805 MHz)

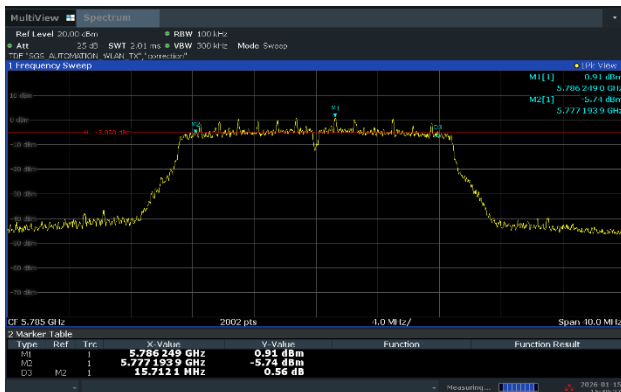
11ac_VHT20 (Band 3)



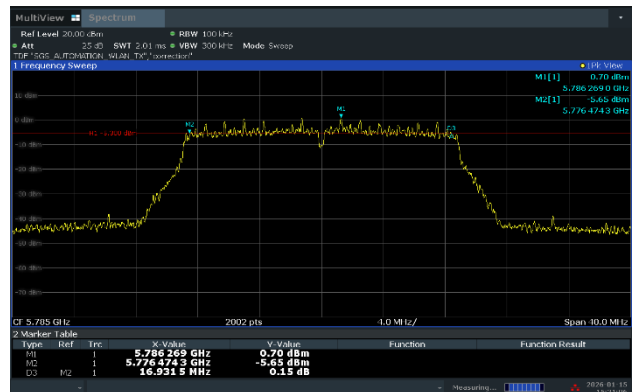
Port 1_Low Channel (5 745 MHz)



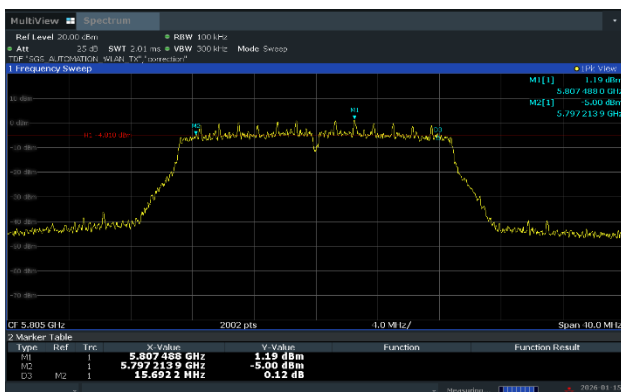
Port 3_Low Channel (5 745 MHz)



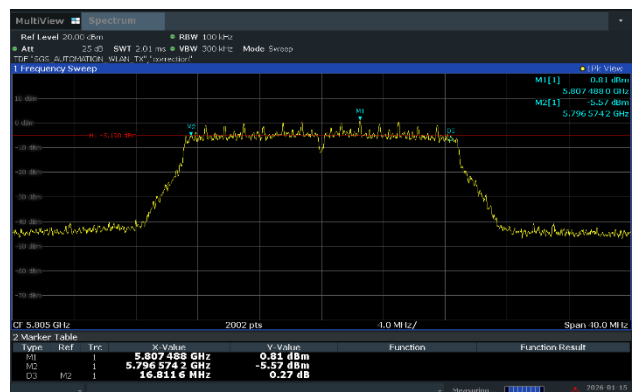
Port 1_Middle Channel (5 785 MHz)



Port 3_Middle Channel (5 785 MHz)

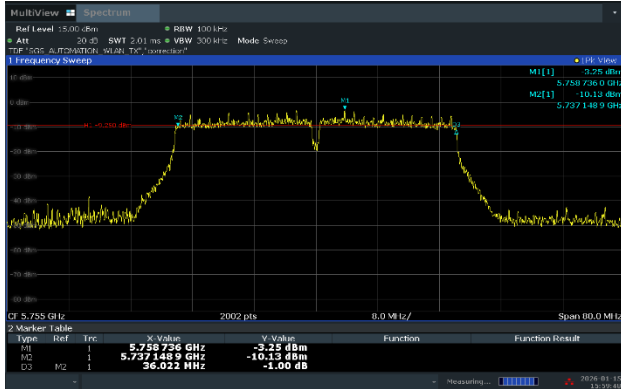


Port 1_High Channel (5 805 MHz)

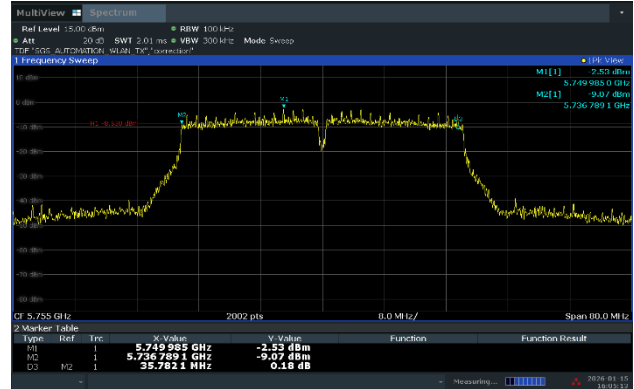


Port 3_High Channel (5 805 MHz)

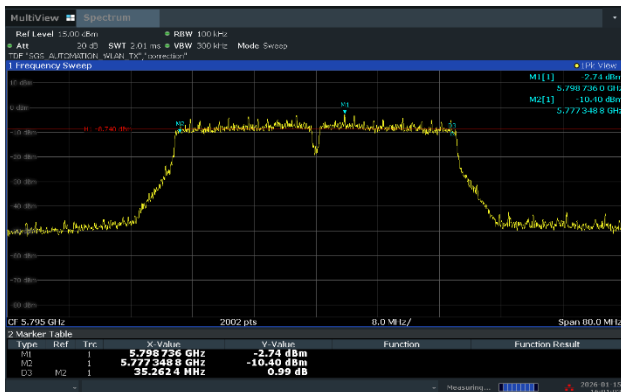
11ac_VHT40 (Band 3)



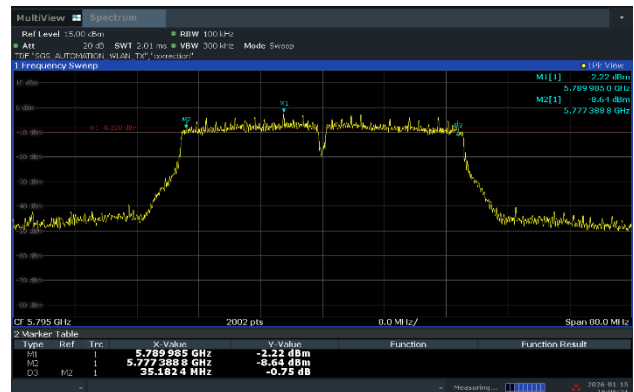
Port 1_Low Channel (5 755 MHz)



Port 3_Low Channel (5 755 MHz)

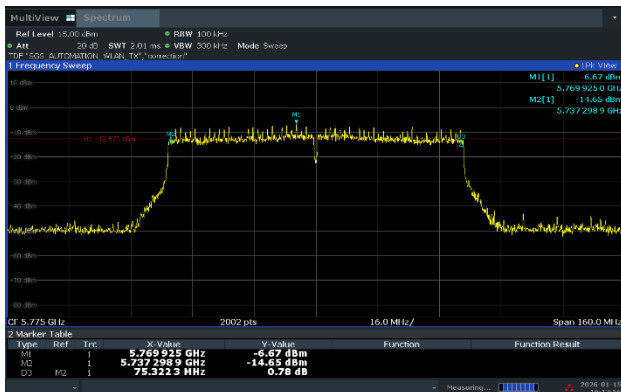


Port 1_High Channel (5 795 MHz)

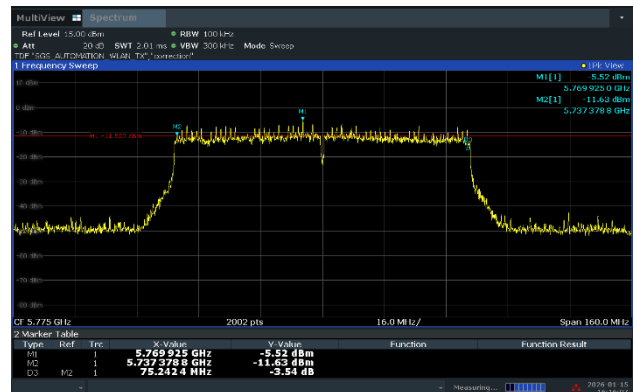


Port 3_High Channel (5 795 MHz)

11ac_VHT80 (Band 3)



Port 1_Middle Channel (5 775 MHz)

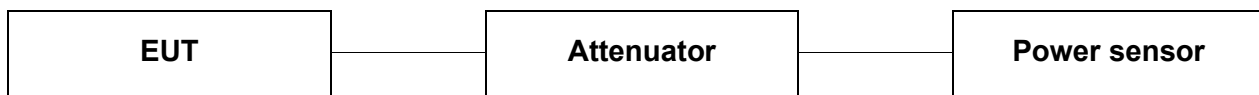


Port 3_Middle Channel (5 775 MHz)

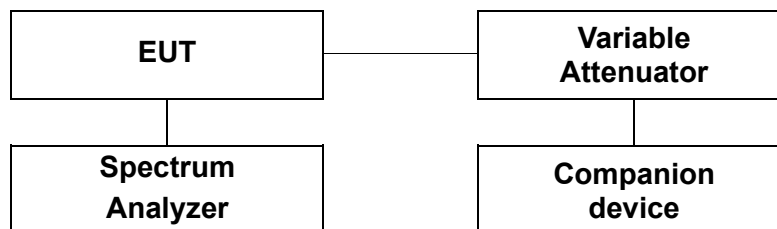
5. Maximum Conducted Output Power

5.1. Test Setup

5.1.1 RF Output Power



5.1.2 Transmit Power Control (TPC)



5.2. Limit

5.2.1. FCC

According to 15.407(a)(1)(i)

For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dB i. In addition, the maximum power spectral density shall not exceed 17 dB m in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dB i are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dB i. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dB m).

According to 15.407(a)(1)(iv)

For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dB i. In addition, the maximum power spectral density shall not exceed 11 dB m in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dB i are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dB i.

According to 15.407(a)(3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dB m in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dB i are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dB i. However, fixed point-to point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dB i without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

5.2.2. IC

According to RSS-247 Issue 4,

7.3.1.2 Frequency band 5 150-5 250 MHz

For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed the lesser of:

- a. 30 mW; or
- b. $1.76 + 10 \log_{10} B$, dB m.

OEM devices installed in vehicles with a maximum e.i.r.p. greater than 15 mW shall implement TPC in order to have the capability to operate at least 3 dB below the maximum permitted e.i.r.p. of 30 mW.

For all other devices the maximum e.i.r.p. spectral density shall not exceed 10 dB m/MHz. The maximum e.i.r.p. shall not exceed the lesser of:

- a. 200 mW; or
- b. $10 + 10 \log_{10} B$, dB m.

7.3.4.3 Frequency band 5 725-5 850 MHz

Equipment operating in the band 5 725-5 850 shall comply with the following power limits:

- a. the maximum conducted output power shall not exceed 1 W; and
- b. the maximum output power spectral density shall not exceed 30 dB m/500 kHz.

When using transmitting antennas with a directional gain exceeding 6 dB i, the maximum conducted output power and the output power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dB i.

However, FFTP devices operating in this band may employ transmitting antennas with directional gain greater than 6 dB i without any corresponding reduction in transmitter maximum conducted output power and the power spectral density. FFTP operations exclude the use of PTMP systems, omnidirectional applications and multiple collocated transmitters transmitting the same information. However, remote stations of PTMP systems shall be permitted to operate at e.i.r.p. greater than 4 W under the same conditions as for FFTP systems.

5.3. Test Procedure

5.3.1 RF Output Power

1. This measurement settings are specified in section II.E.3.a of KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
2. Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the conditions listed below are satisfied:
 - The EUT is configured to transmit continuously or to transmit with a consistent duty cycle.
 - At all times when the EUT is transmitting, it must be transmitting at its maximum power control level.
 - The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.
3. If the transmitter does not transmit continuously, measure the duty cycle, x , of the transmitter output signal as described in section II.B.
4. Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
5. Adjust the measurement in dBm by adding $10 \log (1/x)$ where x is the duty cycle (e.g., $10 \log (1/0.25)$ if the duty cycle is 25 %).

5.3.2 Transmit Power Control

1. This measurement settings are specified in section II.E.2.f of KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
2. Set span to encompass the entire EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.
3. Set sweep trigger to "free run."
4. Set RBW = 1 MHz
5. Set VBW $\geq$ 3 MHz
6. Number of points in sweep $\geq 2 \times \text{span} / \text{RBW}$. (This ensures that bin-to-bin spacing is $\leq \text{RBW}/2$, so that narrowband signals are not lost between frequency bins.)
7. Sweep time $\leq (\text{number of points in sweep}) \times T$, where T is defined in II.B.1.a).
Note: If this results in a sweep time less than the auto sweep time of the analyzer, Method SA-3 Alternative shall not be used. (The purpose of this step is to ensure that averaging time in each bin is less than or equal to the minimum time of a transmission.)
8. Detector = power averaging (rms).
9. Trace mode = max hold.
10. Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.
11. Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum.

5.4. Test Result

Ambient temperature : (23 ± 1) °C
Relative humidity : 47 %

- Ant. 1 + Ant. 2

Test mode: 11a

Band	Frequency (MHz)	Data Rate	Port 1 Average Power (dB m)	Port 2 Average Power (dB m)	MIMO Average Power (dB m)
U-NII 1	5 180	18 Mbps	0.99	3.27	5.29
	5 200		4.74	5.89	8.36
	5 220		4.26	5.78	8.10
	5 240		4.70	5.98	8.40
U-NII 3	5 745		10.22	12.06	14.25
	5 785		10.52	12.06	14.37
	5 805		10.63	11.72	14.22
Band	Frequency (MHz)	Data Rate	MIMO Average Power (dB m)	Duty Cycle Correction Factor (dB)	MIMO Average Power Result (dB m)
U-NII 1	5 180	18 Mbps	5.29	0.27	5.56
	5 200		8.36		8.63
	5 220		8.10		8.37
	5 240		8.40		8.67
U-NII 3	5 745		14.25		14.52
	5 785		14.37		14.64
	5 805		14.22		14.49
Band	Frequency (MHz)	Data Rate	MIMO Average Power Result (dB m)	Directional Antenna Gain (dB i)	MIMO E.I.R.P. (dB m)
U-NII 1	5 180	18 Mbps	5.56	5.00	10.56
	5 200		8.63		13.63
	5 220		8.37		13.37
	5 240		8.67		13.67
U-NII 3	5 745		14.52	5.54	20.06
	5 785		14.64		20.18
	5 805		14.49		20.03

Band	FCC Limit								
	Frequency (MHz)	Fixed Limit (dB m)		Min. 26 dB BW (MHz)	11+10LogB (dB m)	Directional Antenna Gain (dB i)	Limit (dB m)		
		Client	Access Point				Client	Access Point	
							Cond.	Cond.	E.I.R.P.
U-NII 1	5 180	23.98	30			5.00	23.98	30	20.97
	5 200								
	5 220								
	5 240								
U-NII 3	5 745	30				5.54	30		-
	5 785								
	5 805								

Band	IC Limit					
	Frequency (MHz)	Fixed Limit (dB m)	Min. 99 % BW (MHz)	1.76+10LogB (dB m)	Directional Antenna Gain (dB i)	Limit (dB m)
U-NII 1	5 180	14.77	16.499	13.93	5.00	13.93
	5 200					
	5 220					
	5 240					
U-NII 3	5 745	30			5.54	30
	5 785					
	5 805					

Remark;

- According to KDB 662911, Average power of each port and antenna gain was combined by using below calculation.
 - Average power: $10 \log \{10^{(\text{Port 1 power} / 10)} + 10^{(\text{Port 2 power} / 10)}\}$
 - Unequal antenna gains, with equal transmit powers. For antenna gains given by $G_1, G_2, \dots, G_N$ dB i
 - If transmit signals are correlated, then
 Directional gain = $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2 / N_{\text{ANT}}]$ dB i [Note the "20"s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]
- Average Power Result (dB m) = Average Power (dB m) + Duty Cycle Correction Factor (dB)
- E.I.R.P. (dB m) = Average Power Result (dB m) + Directional Antenna Gain (dB i)

Test mode: 11ac_VHT20

Band	Frequency (MHz)	Data Rate	Port 1 Average Power (dB m)	Port 2 Average Power (dB m)	MIMO Average Power (dB m)
U-NII 1	5 180	18 Mbps	-1.34	1.45	3.29
	5 200		2.74	4.18	6.53
	5 220		2.58	3.96	6.33
	5 240		2.71	4.25	6.56
U-NII 3	5 745		8.32	10.30	12.43
	5 785		8.75	10.30	12.60
	5 805		8.80	10.09	12.50
Band	Frequency (MHz)	Data Rate	MIMO Average Power (dB m)	Duty Cycle Correction Factor (dB)	MIMO Average Power Result (dB m)
U-NII 1	5 180	18 Mbps	3.29	1.18	4.47
	5 200		6.53		7.71
	5 220		6.33		7.51
	5 240		6.56		7.74
U-NII 3	5 745		12.43		13.61
	5 785		12.60		13.78
	5 805		12.50		13.68
Band	Frequency (MHz)	Data Rate	MIMO Average Power Result (dB m)	Directional Antenna Gain (dB i)	MIMO E.I.R.P. (dB m)
U-NII 1	5 180	18 Mbps	4.47	5.00	9.47
	5 200		7.71		12.71
	5 220		7.51		12.51
	5 240		7.74		12.74
U-NII 3	5 745		13.61	5.54	19.15
	5 785		13.78		19.32
	5 805		13.68		19.22

Band	FCC Limit								
	Frequency (MHz)	Fixed Limit (dB m)		Min. 26 dB BW (MHz)	11+10LogB (dB m)	Directional Antenna Gain (dB i)	Limit (dB m)		
		Client	Access Point				Client	Access Point	
							Cond.	Cond.	E.I.R.P.
U-NII 1	5 180	23.98	30			5.00	23.98	30	20.97
	5 200								
	5 220								
	5 240								
U-NII 3	5 745	30				5.54	30		-
	5 785								
	5 805								

Band	IC Limit					
	Frequency (MHz)	Fixed Limit (dB m)	Min. 99 % BW (MHz)	1.76+10LogB (dB m)	Directional Antenna Gain (dB i)	Limit (dB m)
U-NII 1	5 180	14.77	17.650	14.23	5.00	14.23
	5 200					
	5 220					
	5 240					
U-NII 3	5 745	30			5.54	30
	5 785					
	5 805					

Remark;

- According to KDB 662911, Average power of each port and antenna gain was combined by using below calculation.
 - Average power: $10 \log \{10^{(\text{Port 1 power} / 10)} + 10^{(\text{Port 2 power} / 10)}\}$
 - Unequal antenna gains, with equal transmit powers. For antenna gains given by $G_1, G_2, \dots, G_N$ dB i
 - If transmit signals are correlated, then
 Directional gain = $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2 / N_{\text{ANT}}]$ dB i [Note the "20"s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]
- Average Power Result (dB m) = Average Power (dB m) + Duty Cycle Correction Factor (dB)
- E.I.R.P. (dB m) = Average Power Result (dB m) + Directional Antenna Gain (dB i)

Test mode: 11ac_VHT40

Band	Frequency (MHz)	Data Rate	Port 1 Average Power (dB m)	Port 2 Average Power (dB m)	MIMO Average Power (dB m)
U-NII 1	5 190	MCS0	-2.09	0.57	2.45
	5 230		1.57	3.34	5.55
U-NII 3	5 755		7.68	9.40	11.63
	5 795		8.03	9.29	11.72
Band	Frequency (MHz)	Data Rate	Port 1 + Port 2 Average Power (dB m)	Duty Cycle Correction Factor (dB)	MIMO Average Power Result (dB m)
U-NII 1	5 190	MCS0	2.45	2.16	4.61
	5 230		5.55		7.71
U-NII 3	5 755		11.63		13.79
	5 795		11.72		13.88
Band	Frequency (MHz)	Data Rate	MIMO Average Power Result (dB m)	Directional Antenna Gain (dB i)	MIMO E.I.R.P. (dB m)
U-NII 1	5 190	MCS0	4.61	5.00	9.61
	5 230		7.71		12.71
U-NII 3	5 755		13.79	5.54	19.33
	5 795		13.88		19.42

Band	FCC Limit							
	Frequency (MHz)	Fixed Limit (dB m)		Min. 26 dB BW (MHz)	11+10LogB (dB m)	Directional Antenna Gain (dB i)	Limit (dB m)	
		Client	Access Point				Client	Access Point
							Cond.	Cond.
U-NII 1	5 190	23.98	30		5.00	23.98	30	20.97
	5 230							
U-NII 3	5 755	30			5.54	30		-
	5 795							

Band	IC Limit					
	Frequency (MHz)	Fixed Limit (dB m)	Min. 99 % BW (MHz)	1.76+10LogB (dB m)	Directional Antenna Gain (dB i)	Limit (dB m)
U-NII 1	5 190	14.77	36.178	17.34	5.00	14.77
	5 230					
U-NII 3	5 755	30			5.54	30
	5 795					

Remark;

1. According to KDB 662911, Average power of each port and antenna gain was combined by using below calculation.

- Average power: $10 \log \{10^{(\text{Port 1 power} / 10)} + 10^{(\text{Port 2 power} / 10)}\}$

- Unequal antenna gains, with equal transmit powers. For antenna gains given by $G_1, G_2, \dots, G_N$ dB i

(i) If transmit signals are correlated, then

Directional gain = $10 \log [(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2 / N_{\text{ANT}}]$ dB i [Note the "20"s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]

2. Average Power Result (dB m) = Average Power (dB m) + Duty Cycle Correction Factor (dB)
3. E.I.R.P. (dB m) = Average Power Result (dB m) + Directional Antenna Gain (dB i)

Test mode: 11ac_VHT80

Band	Frequency (MHz)	Data Rate	Port 1 Average Power (dB m)	Port 2 Average Power (dB m)	MIMO Average Power (dB m)
U-NII 1	5 210	MCS0	-2.98	-1.13	1.05
U-NII 3	5 775		5.48	6.47	9.01
Band	Frequency (MHz)	Data Rate	MIMO Average Power (dB m)	Duty Cycle Correction Factor (dB)	MIMO Average Power Result (dB m)
U-NII 1	5 210	MCS0	1.05	3.51	4.56
U-NII 3	5 775		9.01		12.52
Band	Frequency (MHz)	Data Rate	MIMO Average Power Result (dB m)	Directional Antenna Gain (dB i)	MIMO E.I.R.P. (dB m)
U-NII 1	5 210	MCS0	4.56	5.00	9.56
U-NII 3	5 775		12.52	5.54	18.06

Band	FCC Limit								
	Frequency (MHz)	Fixed Limit (dB m)		Min. 26 dB BW (MHz)	11+10LogB (dB m)	Directional Antenna Gain (dB i)	Limit (dB m)		
		Client	Access Point				Client	Access Point	
							Cond.	Cond.	E.I.R.P.
U-NII 1	5 210	23.98	30		5.00	23.98	30	20.97	
U-NII 3	5 775	30			5.54	30		-	

Band	IC Limit					
	Frequency (MHz)	Fixed Limit (dB m)	Min. 99 % BW (MHz)	1.76+10LogB (dB m)	Directional Antenna Gain (dB i)	Limit (dB m)
U-NII 1	5 210	14.77	75.743	20.55	5.00	14.77
U-NII 3	5 775	30			5.54	30

Remark;

- According to KDB 662911, Average power of each port and antenna gain was combined by using below calculation.
 - Average power: $10 \log \{10^{(\text{Port 1 power} / 10)} + 10^{(\text{Port 2 power} / 10)}\}$
 - Unequal antenna gains, with equal transmit powers. For antenna gains given by $G_1, G_2, \dots, G_N$ dB i
 - If transmit signals are correlated, then
 Directional gain = $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2 / N_{\text{ANT}}]$ dB i [Note the "20"s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]
- Average Power Result (dB m) = Average Power (dB m) + Duty Cycle Correction Factor (dB)
- E.I.R.P. (dB m) = Average Power Result (dB m) + Directional Antenna Gain (dB i)

- Ant. 1 + Ant. 3

Test mode: 11a

Band	Frequency (MHz)	Data Rate	Port 1 Average Power (dB m)	Port 3 Average Power (dB m)	MIMO Average Power (dB m)
U-NII 1	5 180	18 Mbps	1.46	2.15	4.83
	5 200		4.93	5.87	8.44
	5 220		4.82	5.75	8.32
	5 240		4.89	5.53	8.23
U-NII 3	5 745		10.23	11.37	13.85
	5 785		10.58	11.42	14.03
	5 805		10.62	11.26	13.96
Band	Frequency (MHz)	Data Rate	MIMO Average Power (dB m)	Duty Cycle Correction Factor (dB)	MIMO Average Power Result (dB m)
U-NII 1	5 180	18 Mbps	4.83	0.27	5.10
	5 200		8.44		8.71
	5 220		8.32		8.59
	5 240		8.23		8.50
U-NII 3	5 745		13.85		14.12
	5 785		14.03		14.30
	5 805		13.96		14.23
Band	Frequency (MHz)	Data Rate	MIMO Average Power Result (dB m)	Directional Antenna Gain (dB i)	MIMO E.I.R.P. (dB m)
U-NII 1	5 180	18 Mbps	5.10	3.80	8.90
	5 200		8.71		12.51
	5 220		8.59		12.39
	5 240		8.50		12.30
U-NII 3	5 745		14.12	3.38	17.50
	5 785		14.30		17.68
	5 805		14.23		17.61

Band	FCC Limit								
	Frequency (MHz)	Fixed Limit (dB m)		Min. 26 dB BW (MHz)	11+10LogB (dB m)	Directional Antenna Gain (dB i)	Limit (dB m)		
		Client	Access Point				Client	Access Point	
							Cond.	Cond.	E.I.R.P.
U-NII 1	5 180	23.98	30			3.80	23.98	30	20.97
U-NII 3	5 745	30				3.38	30		-

Band	IC Limit					
	Frequency (MHz)	Fixed Limit (dB m)	Min. 99 % BW (MHz)	1.76+10LogB (dB m)	Directional Antenna Gain (dB i)	Limit (dB m)
U-NII 1	5 180	14.77	16.521	13.94	3.80	13.94
	5 200					
	5 220					
	5 240					
U-NII 3	5 745	30			3.38	30
	5 785					
	5 805					

Remark;

- According to KDB 662911, Average power of each port and antenna gain was combined by using below calculation.
 - Average power: $10 \log \{10^{(\text{Port 1 power} / 10)} + 10^{(\text{Port 3 power} / 10)}\}$
 - Unequal antenna gains, with equal transmit powers. For antenna gains given by $G_1, G_2, \dots, G_N$ dB i
 (i) If transmit signals are correlated, then
 Directional gain = $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2 / N_{\text{ANT}}]$ dB i [Note the "20"s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]
- Average Power Result (dB m) = Average Power (dB m) + Duty Cycle Correction Factor (dB)
- E.I.R.P. (dB m) = Average Power Result (dB m) + Directional Antenna Gain (dB i)

Test mode: 11ac_VHT20

Band	Frequency (MHz)	Data Rate	Port 1 Average Power (dB m)	Port 3 Average Power (dB m)	MIMO Average Power (dB m)
U-NII 1	5 180	18 Mbps	-0.65	0.96	3.24
	5 200		2.94	4.14	6.59
	5 220		2.82	4.13	6.53
	5 240		3.02	3.74	6.41
U-NII 3	5 745		8.40	9.67	12.09
	5 785		8.77	9.62	12.23
	5 805		8.81	9.49	12.17
Band	Frequency (MHz)	Data Rate	MIMO Average Power (dB m)	Duty Cycle Correction Factor (dB)	MIMO Average Power Result (dB m)
U-NII 1	5 180	18 Mbps	3.24	1.18	4.42
	5 200		6.59		7.77
	5 220		6.53		7.71
	5 240		6.41		7.59
U-NII 3	5 745		12.09		13.27
	5 785		12.23		13.41
	5 805		12.17		13.35
Band	Frequency (MHz)	Data Rate	MIMO Average Power Result (dB m)	Directional Antenna Gain (dB i)	MIMO E.I.R.P. (dB m)
U-NII 1	5 180	18 Mbps	4.42	3.80	8.22
	5 200		7.77		11.57
	5 220		7.71		11.51
	5 240		7.59		11.39
U-NII 3	5 745		13.27	3.38	16.65
	5 785		13.41		16.79
	5 805		13.35		16.73

Band	FCC Limit								
	Frequency (MHz)	Fixed Limit (dB m)		Min. 26 dB BW (MHz)	11+10LogB (dB m)	Directional Antenna Gain (dB i)	Limit (dB m)		
		Client	Access Point				Client	Access Point	
							Cond.	Cond.	E.I.R.P.
U-NII 1	5 180	23.98	30			3.80	23.98	30	20.97
	5 200								
	5 220								
	5 240								
U-NII 3	5 745	30				3.38	30		-
	5 785								
	5 805								

Band	IC Limit					
	Frequency (MHz)	Fixed Limit (dB m)	Min. 99 % BW (MHz)	1.76+10LogB (dB m)	Directional Antenna Gain (dB i)	Limit (dB m)
U-NII 1	5 180	14.77	17.652	14.23	3.80	14.23
	5 200					
	5 220					
	5 240					
U-NII 3	5 745	30			3.38	30
	5 785					
	5 805					

Remark;

- According to KDB 662911, Average power of each port and antenna gain was combined by using below calculation.
 - Average power: $10 \log \{10^{(\text{Port 1 power} / 10)} + 10^{(\text{Port 3 power} / 10)}\}$
 - Unequal antenna gains, with equal transmit powers. For antenna gains given by $G_1, G_2, \dots, G_N$ dB i
 - If transmit signals are correlated, then
 Directional gain = $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2 / N_{\text{ANT}}]$ dB i [Note the "20"s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]
- Average Power Result (dB m) = Average Power (dB m) + Duty Cycle Correction Factor (dB)
- E.I.R.P. (dB m) = Average Power Result (dB m) + Directional Antenna Gain (dB i)

Test mode: 11ac_VHT40

Band	Frequency (MHz)	Data Rate	Port 1 Average Power (dB m)	Port 3 Average Power (dB m)	MIMO Average Power (dB m)
U-NII 1	5 190	MCS0	-1.59	0.28	2.46
	5 230		1.96	3.09	5.57
U-NII 3	5 755		7.69	8.75	11.26
	5 795		8.02	8.83	11.45
Band	Frequency (MHz)	Data Rate	MIMO Average Power (dB m)	Duty Cycle Correction Factor (dB)	MIMO Average Power Result (dB m)
U-NII 1	5 190	MCS0	2.46	2.16	4.62
	5 230		5.57		7.73
U-NII 3	5 755		11.26		13.42
	5 795		11.45		13.61
Band	Frequency (MHz)	Data Rate	MIMO Average Power Result (dB m)	Directional Antenna Gain (dB i)	MIMO E.I.R.P. (dB m)
U-NII 1	5 190	MCS0	4.62	3.80	8.42
	5 230		7.73		11.53
U-NII 3	5 755		13.42	3.38	16.80
	5 795		13.61		16.99

Band	FCC Limit							
	Frequency (MHz)	Fixed Limit (dB m)		Min. 26 dB BW (MHz)	11+10LogB (dB m)	Directional Antenna Gain (dB i)	Limit (dB m)	
		Client	Access Point				Client	Access Point
							Cond.	Cond.
U-NII 1	5 190	23.98	30		3.80	23.98	30	20.97
	5 230							
U-NII 3	5 755	30			3.38	30	-	
	5 795							

Band	IC Limit					
	Frequency (MHz)	Fixed Limit (dB m)	Min. 99 % BW (MHz)	1.76+10LogB (dB m)	Directional Antenna Gain (dB i)	Limit (dB m)
U-NII 1	5 190	14.77	36.179	17.34	3.80	14.77
	5 230					
U-NII 3	5 755	30			3.38	30
	5 795					

Remark;

1. According to KDB 662911, Average power of each port and antenna gain was combined by using below calculation.

- Average power: $10 \log \{10^{(\text{Port 1 power} / 10)} + 10^{(\text{Port 3 power} / 10)}\}$

- Unequal antenna gains, with equal transmit powers. For antenna gains given by $G_1, G_2, \dots, G_N$ dB i

(i) If transmit signals are correlated, then

Directional gain = $10 \log [(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2 / N_{\text{ANT}}]$ dB i [Note the "20"s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]

2. Average Power Result (dB m) = Average Power (dB m) + Duty Cycle Correction Factor (dB)
3. E.I.R.P. (dB m) = Average Power Result (dB m) + Directional Antenna Gain (dB i)

Test mode: 11ac_VHT80

Band	Frequency (MHz)	Data Rate	Port 1 Average Power (dB m)	Port 3 Average Power (dB m)	MIMO Average Power (dB m)
U-NII 1	5 210	MCS0	-3.38	-1.52	0.66
U-NII 3	5 775		5.05	6.26	8.71
Band	Frequency (MHz)	Data Rate	MIMO Average Power (dB m)	Duty Cycle Correction Factor (dB)	MIMO Average Power Result (dB m)
U-NII 1	5 210	MCS0	0.66	3.51	4.17
U-NII 3	5 775		8.71		12.22
Band	Frequency (MHz)	Data Rate	MIMO Average Power Result (dB m)	Directional Antenna Gain (dB i)	MIMO E.I.R.P. (dB m)
U-NII 1	5 210	MCS0	4.17	3.80	7.97
U-NII 3	5 775		12.22	3.38	15.60

Band	FCC Limit								
	Frequency (MHz)	Fixed Limit (dB m)		Min. 26 dB BW (MHz)	11+10LogB (dB m)	Directional Antenna Gain (dB i)	Limit (dB m)		
		Client	Access Point				Client	Access Point	
							Cond.	Cond.	E.I.R.P.
U-NII 1	5 210	23.98	30			3.80	23.98	30	20.97
U-NII 3	5 775	30				3.38	30		-

Band	IC Limit					
	Frequency (MHz)	Fixed Limit (dB m)	Min. 99 % BW (MHz)	1.76+10LogB (dB m)	Directional Antenna Gain (dB i)	Limit (dB m)
U-NII 1	5 210	14.77	75.743	20.55	3.80	14.77
U-NII 3	5 775	30			3.38	30

Remark;

- According to KDB 662911, Average power of each port and antenna gain was combined by using below calculation.
 - Average power: $10 \log \{10^{(\text{Port 1 power} / 10)} + 10^{(\text{Port 3 power} / 10)}\}$
 - Unequal antenna gains, with equal transmit powers. For antenna gains given by $G_1, G_2, \dots, G_N$ dB i
 - If transmit signals are correlated, then
 Directional gain = $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2 / N_{\text{ANT}}]$ dB i [Note the "20"s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]
- Average Power Result (dB m) = Average Power (dB m) + Duty Cycle Correction Factor (dB)
- E.I.R.P. (dB m) = Average Power Result (dB m) + Directional Antenna Gain (dB i)

- TPC

Ant. 1 + Ant. 2

Mode	Band width (MHz)	Frequency (MHz)	Port 1 Average Power (dB m)	Port 2 Average Power (dB m)	MIMO Average Power (dB m)	Directional Antenna Gain (dB i)	MIMO E.I.R.P. (dB m)	Limit
11a	20	5 180	0.80	1.42	4.13	5.00	9.13	11.77
		5 200	3.29	3.81	6.57		11.57	
		5 220	3.52	3.62	6.58		11.58	
		5 240	3.79	3.61	6.71		11.71	
11n_HT20 11ac_VTH20	20	5 180	0.64	1.70	4.21		9.21	
		5 200	3.07	2.95	6.02		11.02	
		5 220	3.34	2.83	6.10		11.10	
		5 240	3.72	3.36	6.55		11.55	
11n_HT40 11ac_VTH40	40	5 190	1.34	2.38	4.90		9.90	
		5 230	3.63	3.10	6.38		11.38	
11ac_VTH80	80	5 210	4.22	2.36	6.40		11.40	

Ant. 1 + Ant. 3

Mode	Band width (MHz)	Frequency (MHz)	Port 1 Average Power (dB m)	Port 3 Average Power (dB m)	MIMO Average Power (dB m)	Directional Antenna Gain (dB i)	MIMO E.I.R.P. (dB m)	Limit
11a	20	5 180	0.75	1.61	4.21	3.80	8.01	11.77
		5 200	3.45	3.36	6.42		10.22	
		5 220	3.68	3.54	6.62		10.42	
		5 240	4.16	3.80	6.99		10.79	
11n_HT20 11ac_VTH20	20	5 180	0.55	1.02	3.80		7.60	
		5 200	3.15	3.54	6.36		10.16	
		5 220	3.27	3.68	6.49		10.29	
		5 240	3.62	3.85	6.75		10.55	
11n_HT40 11ac_VTH40	40	5 190	1.12	0.79	3.97		7.77	
		5 230	3.48	2.77	6.15		9.95	
11ac_VTH80	80	5 210	3.77	3.53	6.66		10.46	

Remark;

- According to KDB 662911, Average power of each port and antenna gain was combined by using below calculation.

- Average power: $10 \log \{10^{(\text{Port 1 power} / 10)} + 10^{(\text{Port 2 or 3 power} / 10)}\}$

- Unequal antenna gains, with equal transmit powers. For antenna gains given by $G_1, G_2, \dots, G_N$ dB i

(i) If transmit signals are correlated, then

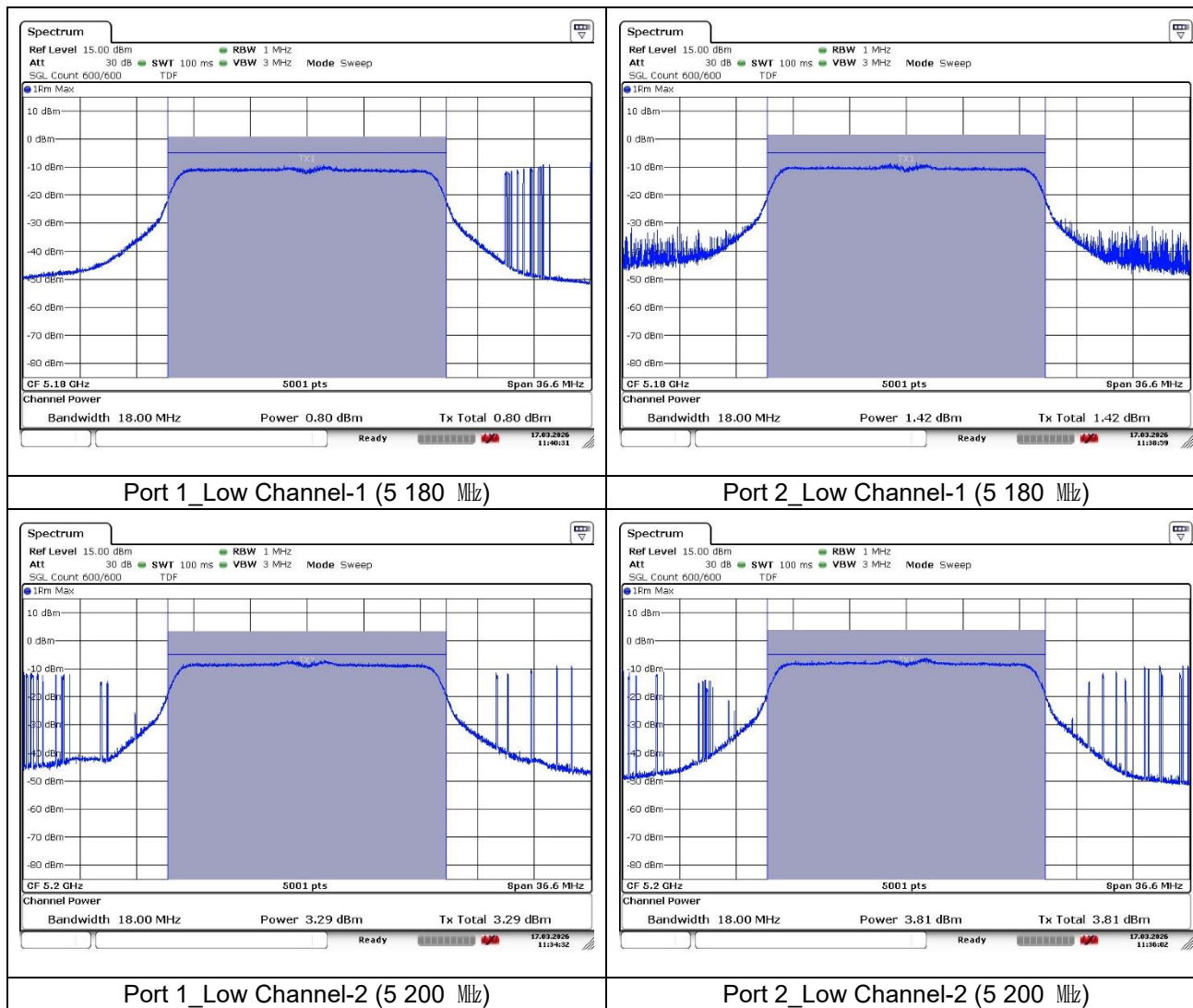
Directional gain = $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2 / N_{\text{ANT}}]$ dB i [Note the "20"s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]

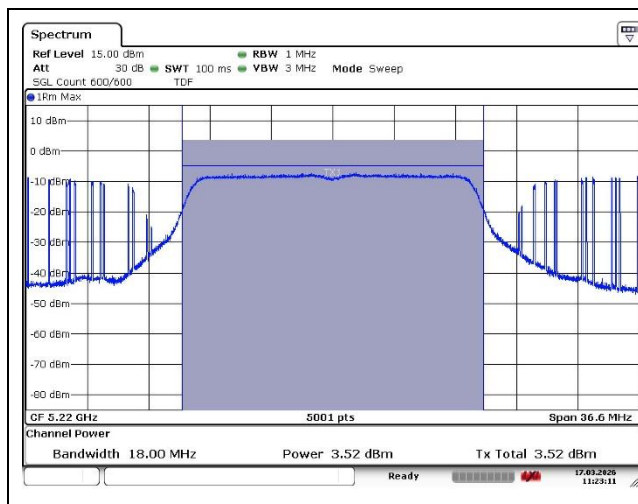
- E.I.R.P. (dB m) = Average Power Result (dB m) + Directional Antenna Gain (dB i)

Test plots

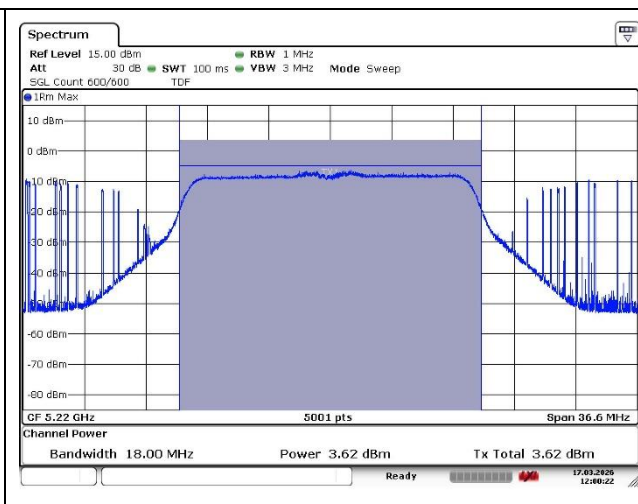
- Ant. 1 + Ant. 2

11a

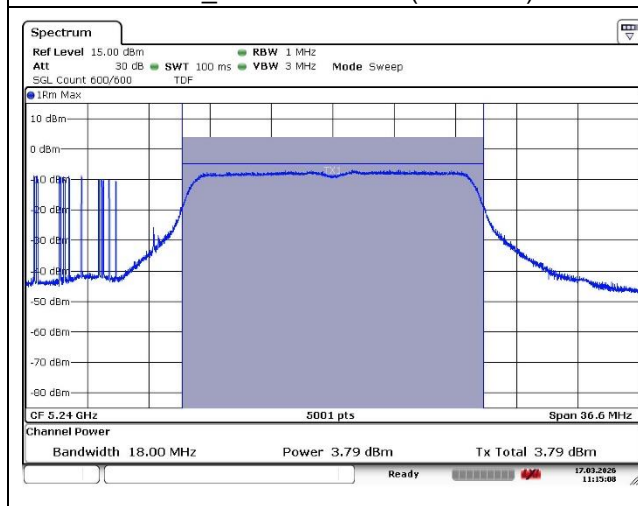




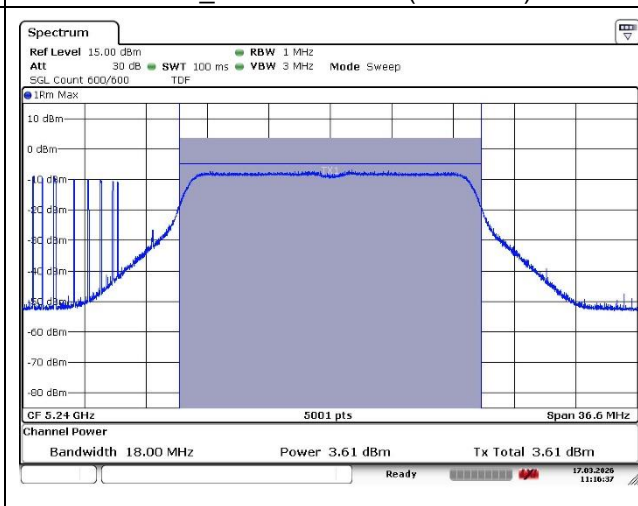
Port 1_Middle Channel (5 220 MHz)



Port 2_Middle Channel (5 220 MHz)



Port 1_High Channel (5 240 MHz)



Port 2_High Channel (5 240 MHz)

11n/ac_20 MHz

