6. 26DB & 6DB & 99% EMISSION BANDWIDTH

6.1 APPLIED PROCEDURES / LIMIT

The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band, the minimum bandwidth 6 dB bandwidth of U-NII devices shall be at least 500KHz. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth.

6.2 TEST PROCEDURE

a) Set RBW = 1000KHz.

b) Set the VBW > RBW.

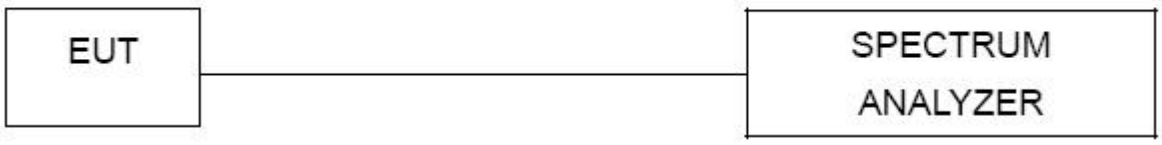
c) Detector = Peak.

d) Trace mode = max hold.

e) 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.

The following procedure shall be used for measuring (99 %) power bandwidth:

1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 3.3 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW ≥ 3 · RBW
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
6. Use the 99 % power bandwidth function of the instrument (if available).
7. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.



6.3 EUT OPERATION CONDITIONS

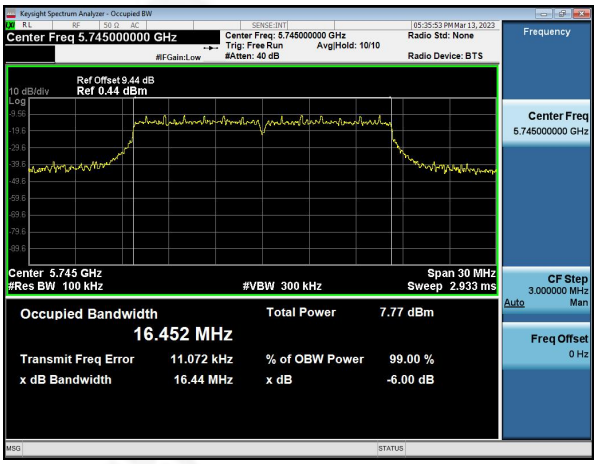
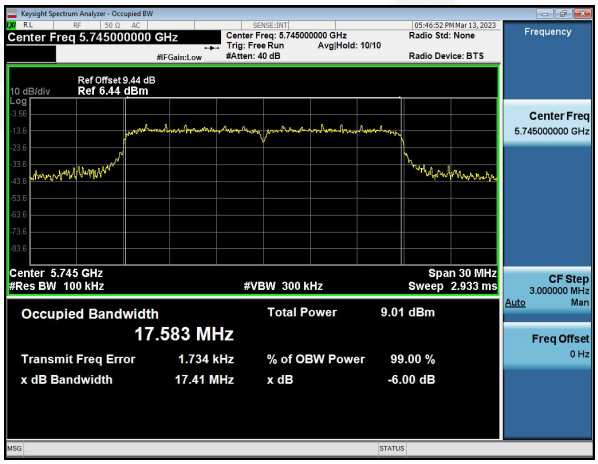
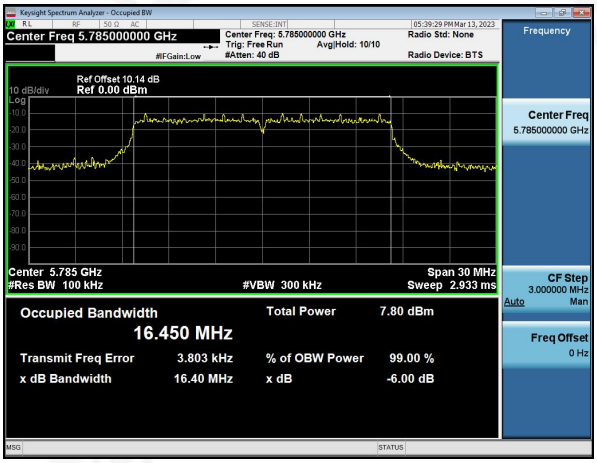
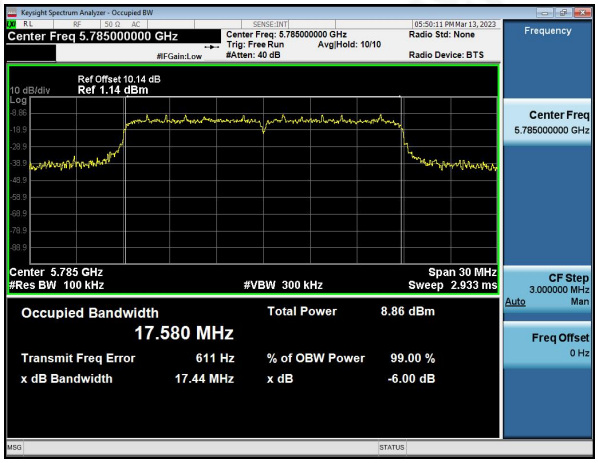
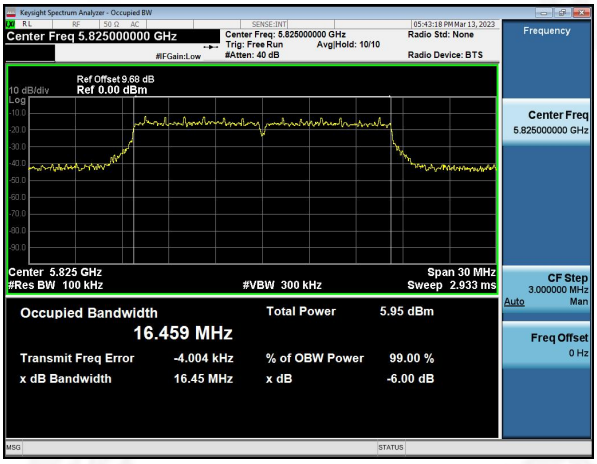
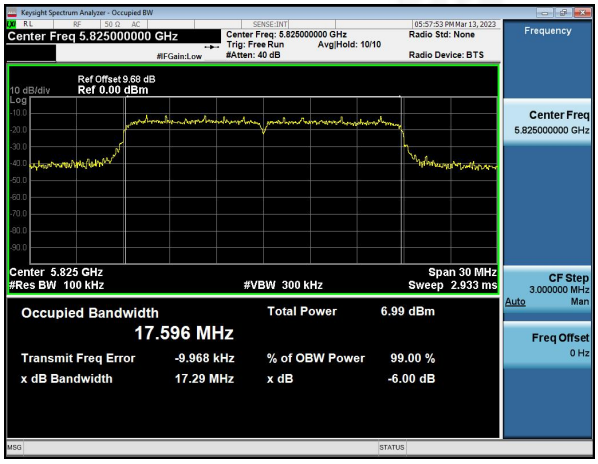
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

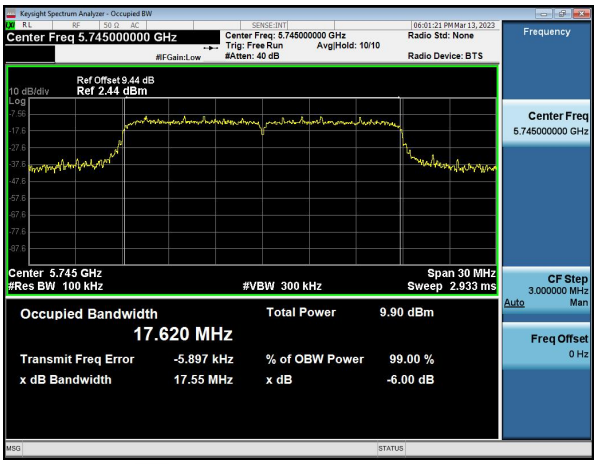
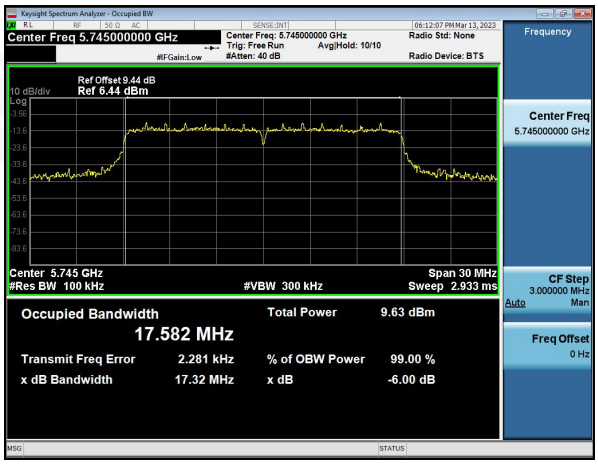
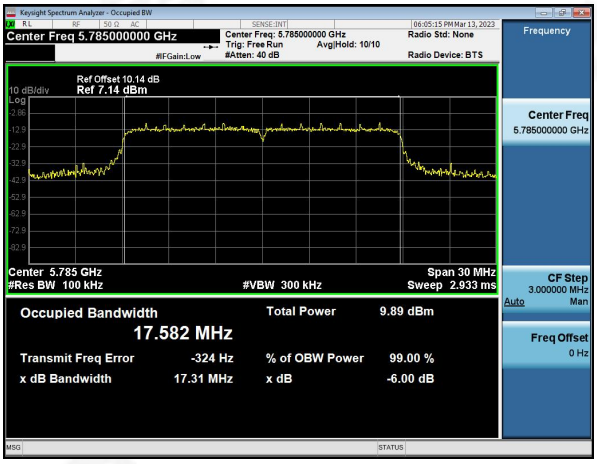
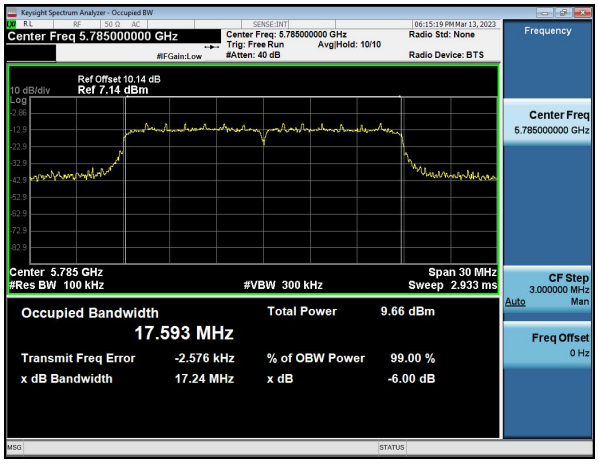
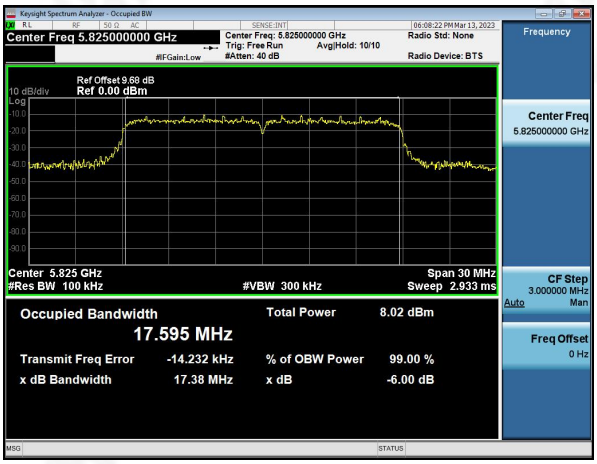
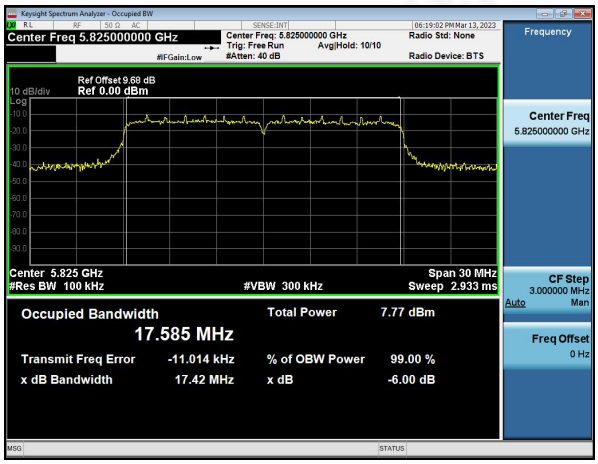
6.4 TEST RESULTS

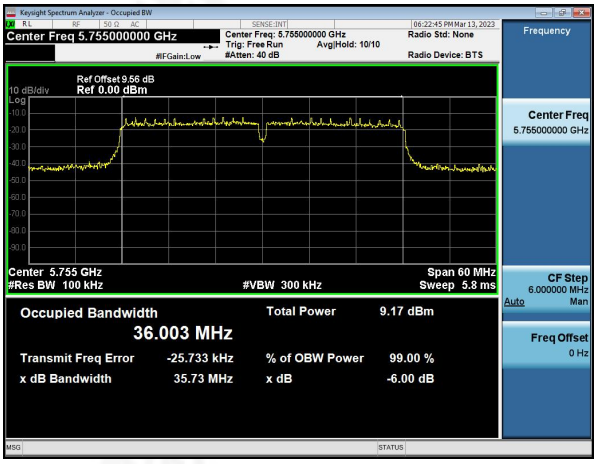
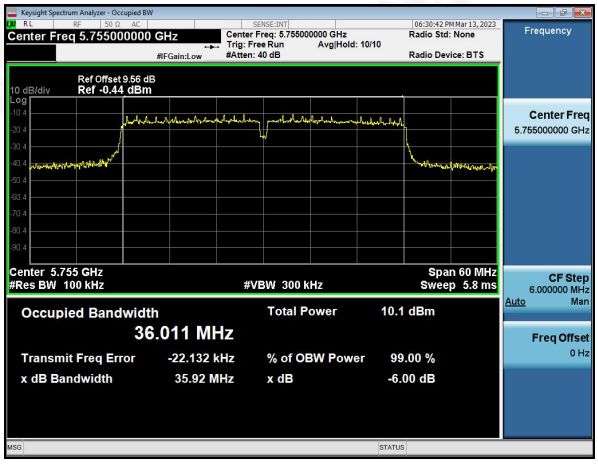
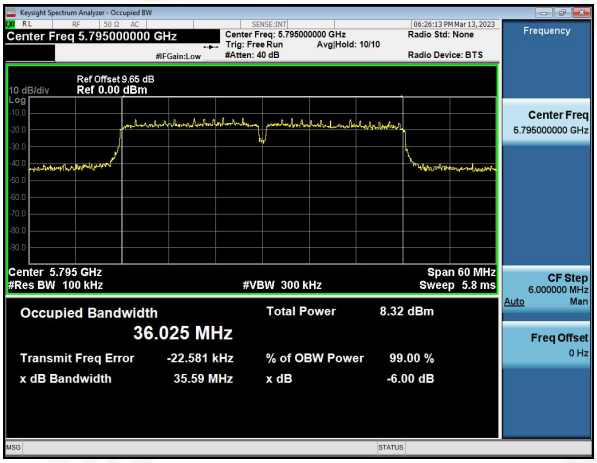
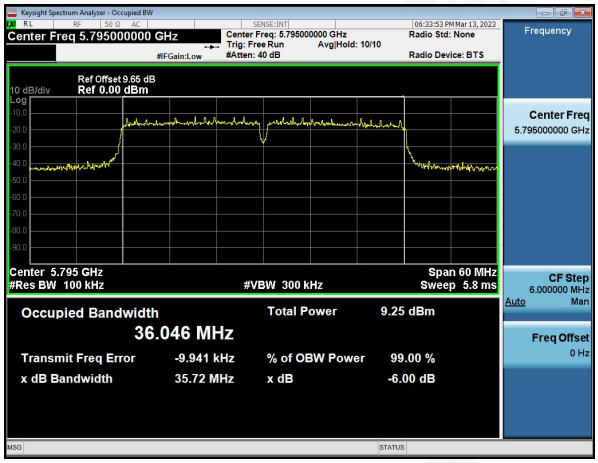
Temperature :	26 ℃	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX		

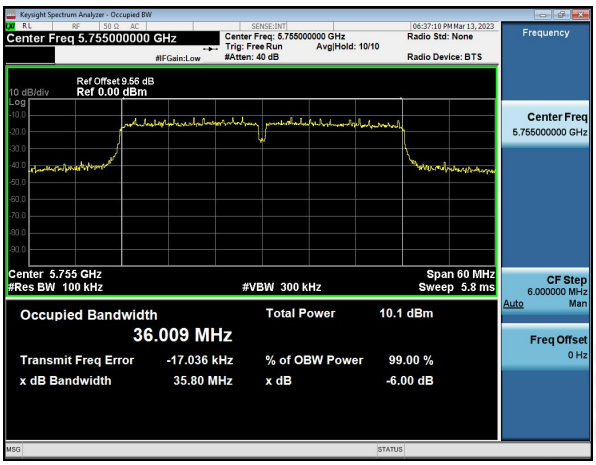
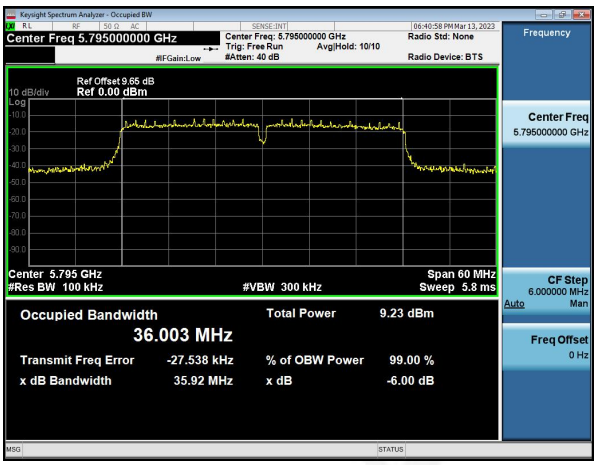
	Test Channel	6dB Bandwidth (MHz)		6dB Bandwidth Limit (MHz)	Result
		ANT 1	**ANT 2**		
802.11a	5745.00	16.435	16.393	>0.5	Pass
	5785.00	16.400	16.351	>0.5	Pass
	5825.00	16.448	16.356	>0.5	Pass
802.11n HT20	5745.00	17.406	17.260	>0.5	Pass
	5785.00	17.442	17.418	>0.5	Pass
	5825.00	17.286	17.420	>0.5	Pass
802.11ac VHT20	5745.00	17.547	17.557	>0.5	Pass
	5785.00	17.312	17.367	>0.5	Pass
	5825.00	17.382	17.309	>0.5	Pass
802.11ax HE20	5745.00	17.323	17.117	>0.5	Pass
	5785.00	17.242	17.177	>0.5	Pass
	5825.00	17.415	17.133	>0.5	Pass
802.11n HT40	5755.00	35.733	35.630	>0.5	Pass
	5795.00	35.588	35.706	>0.5	Pass
802.11ac VHT40	5755.00	35.918	35.618	>0.5	Pass
	5795.00	35.723	35.697	>0.5	Pass
802.11ax HE40	5755.00	35.802	35.640	>0.5	Pass
	5795.00	35.919	35.777	>0.5	Pass
802.11ac VHT80	5775.00	75.471	75.677	>0.5	Pass
802.11ax HE80	5775.00	75.543	75.586	>0.5	Pass

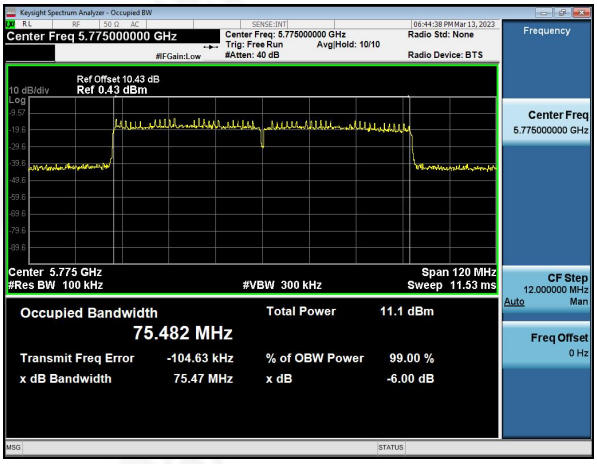
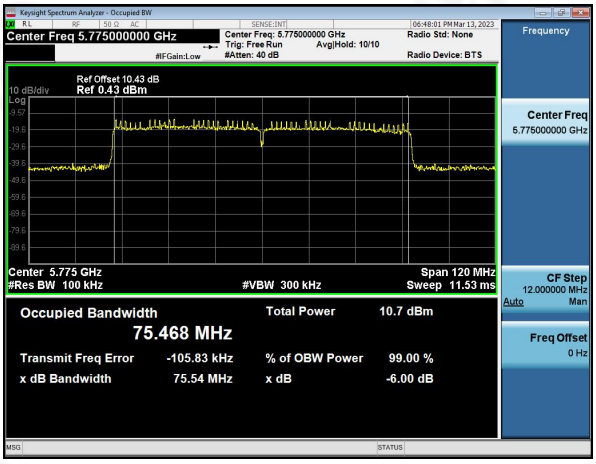
ANT 1

802.11a	802.11n HT20
	
5745MHz	5745MHz
	
5785MHz	5785MHz
	
5825MHz	5825MHz

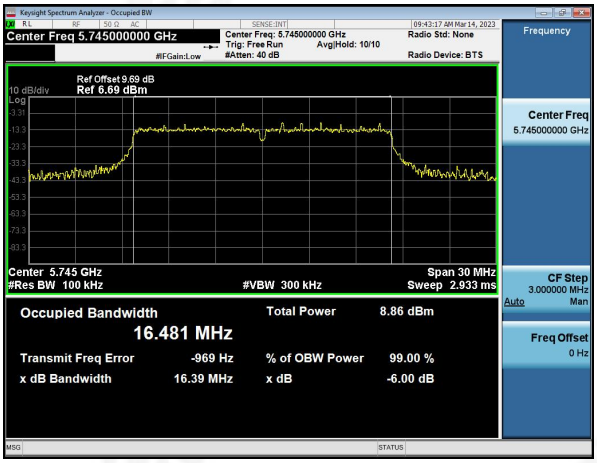
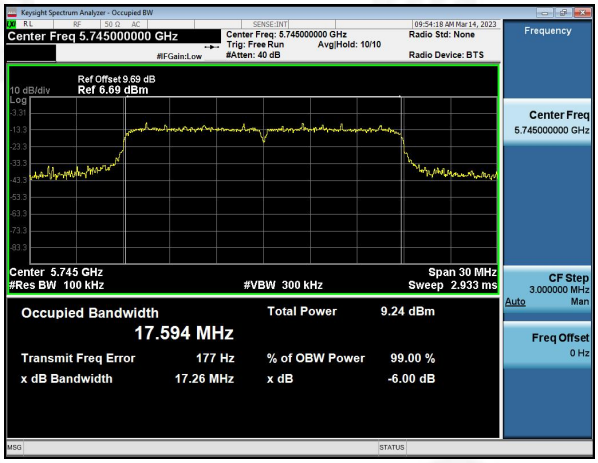
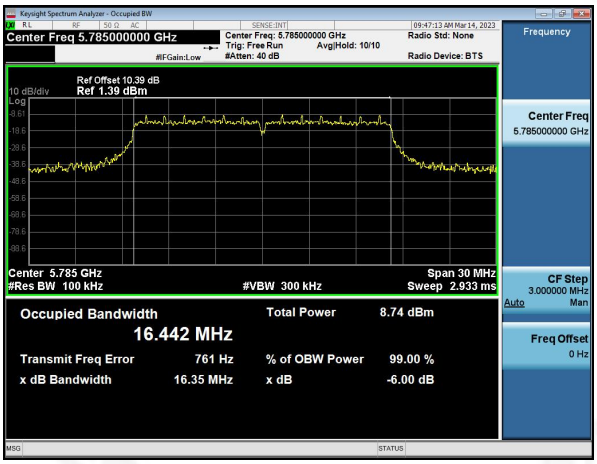
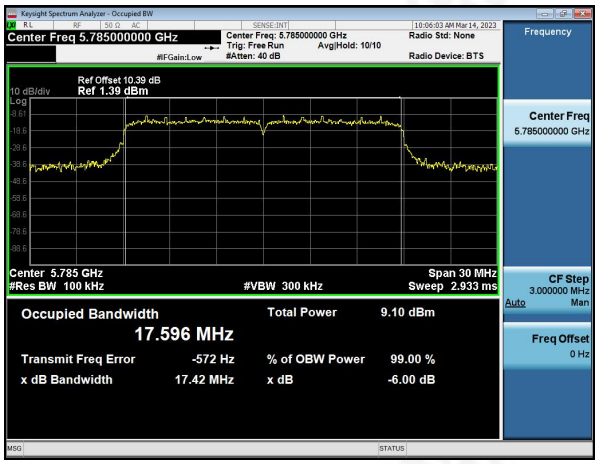
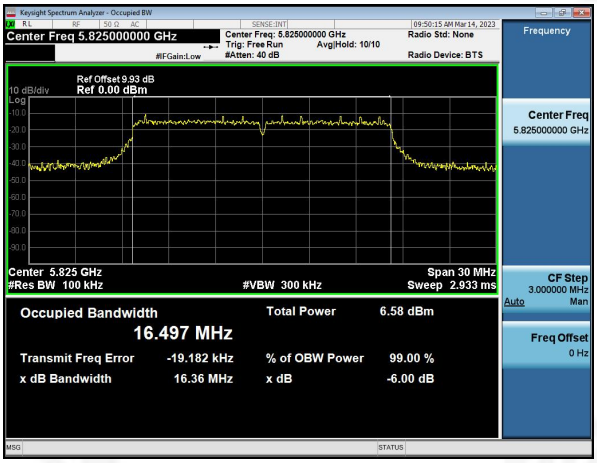
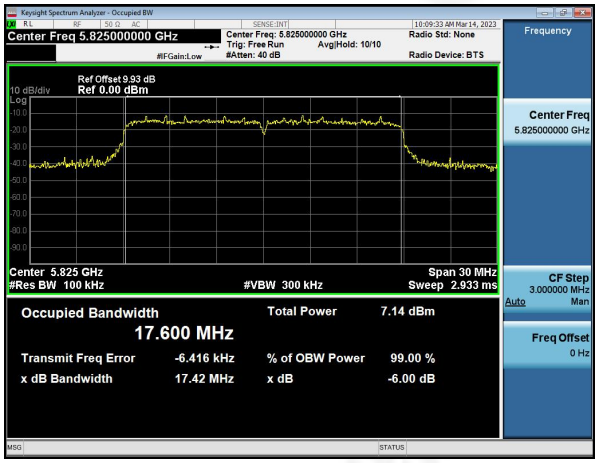
802.11ac HT20	802.11ax HE20
	
5745MHz	5745MHz
	
5785MHz	5785MHz
	
5825MHz	5825MHz

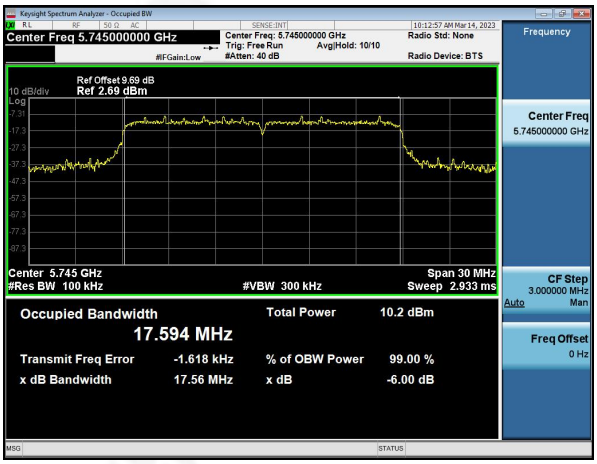
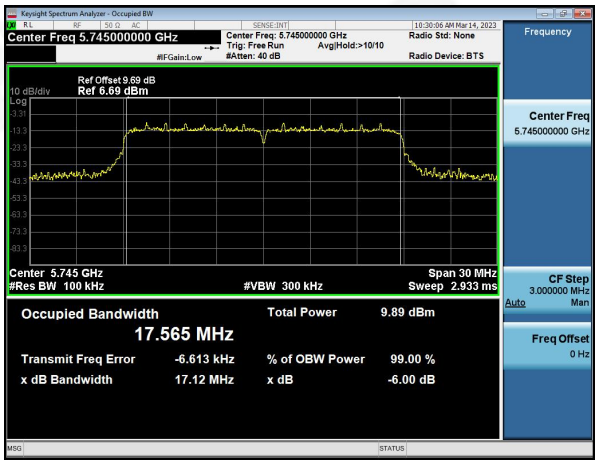
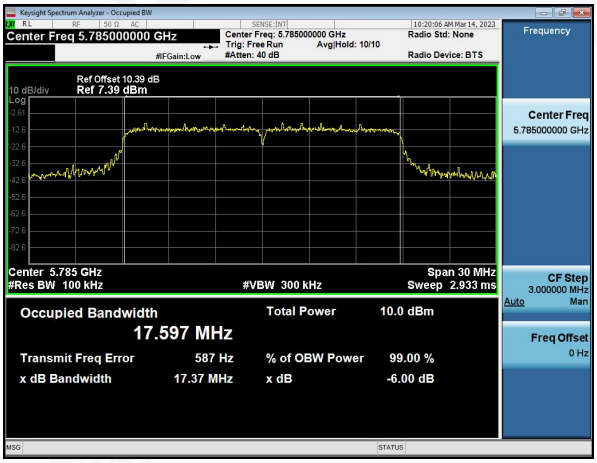
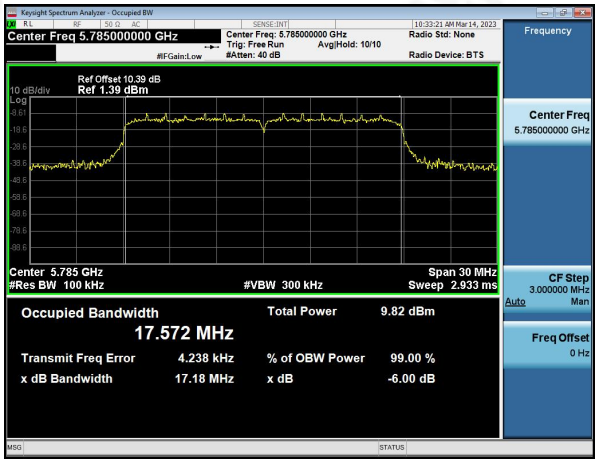
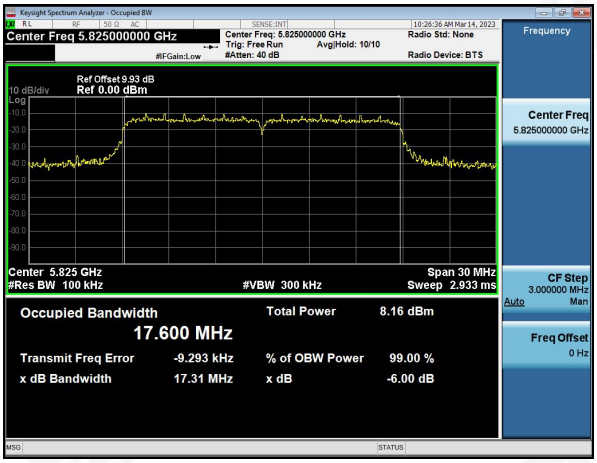
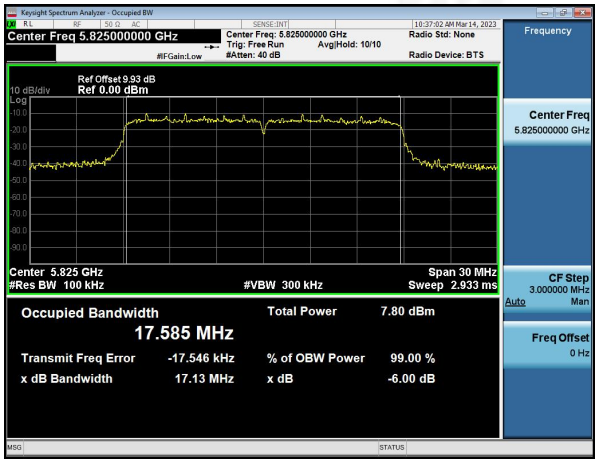
802.11n HT40	802.11ac HT40
	
5755MHz	5755MHz
	
5795MHz	5795MHz

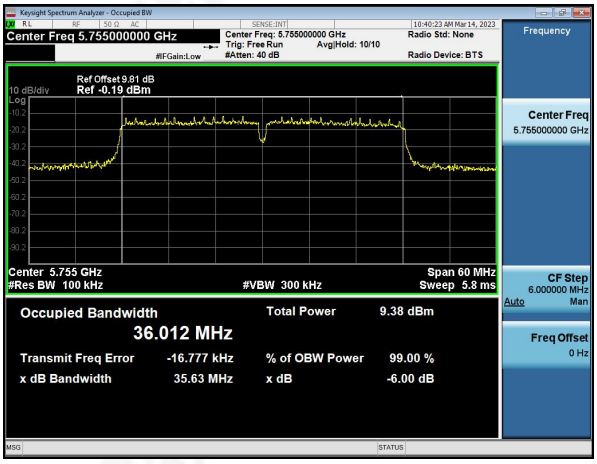
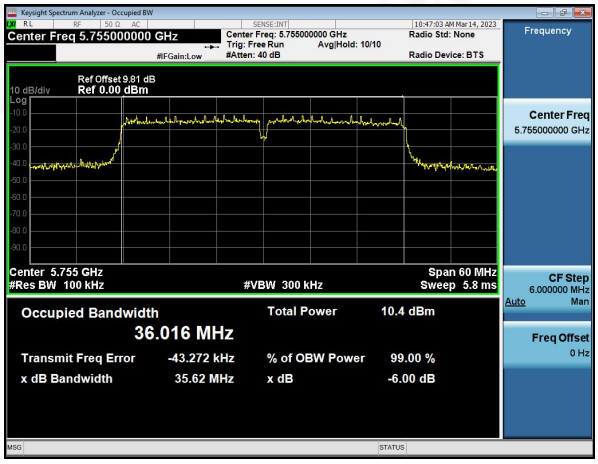
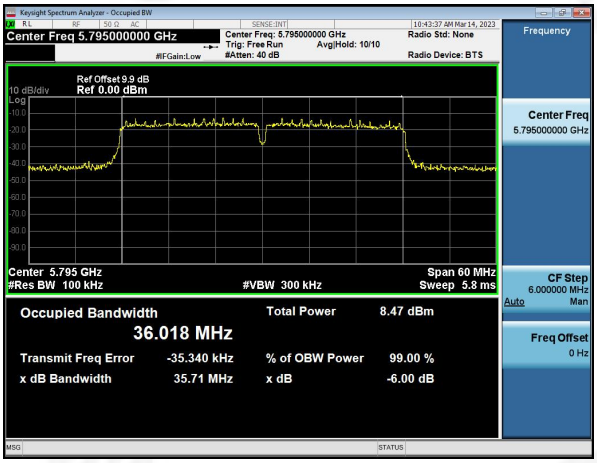
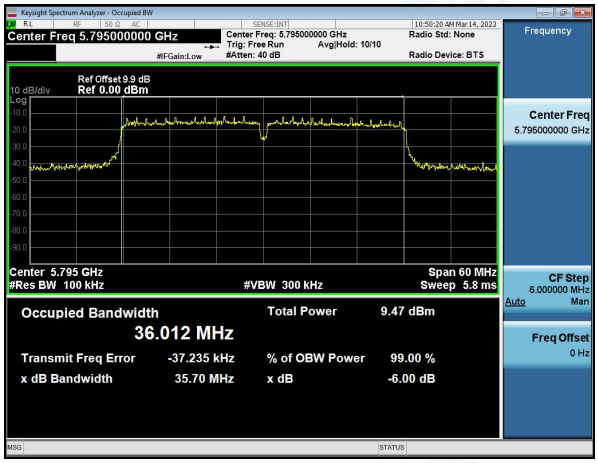
802.11ax HE40	802.11ax HE40
	
5755MHz	5795MHz

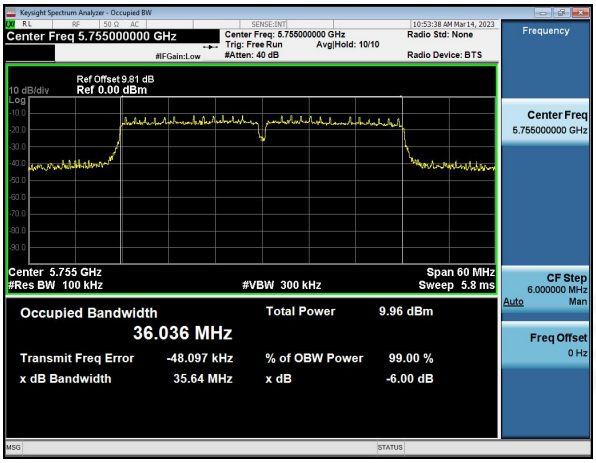
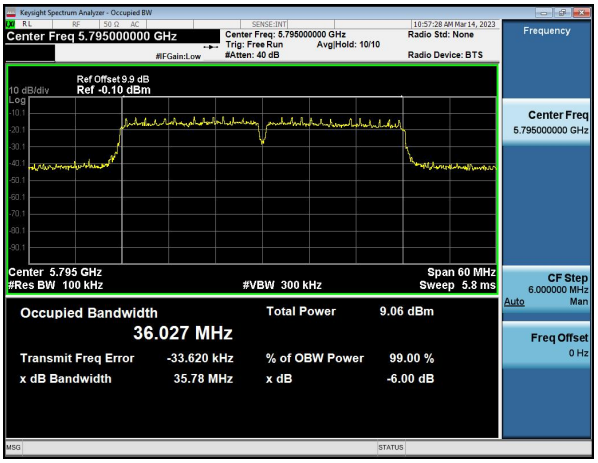
802.11ac HT80	802.11ax HE80
	
5775MHz	5775MHz

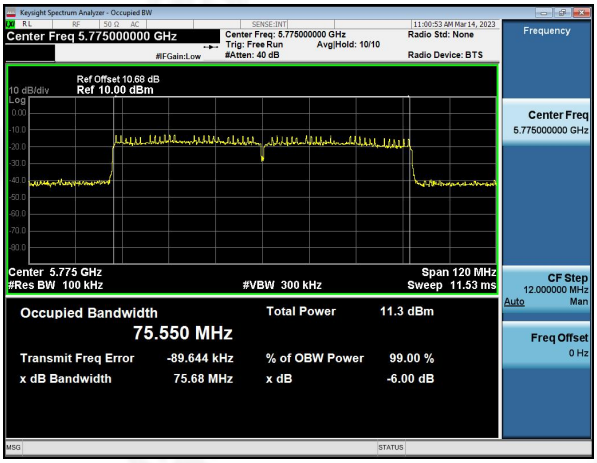
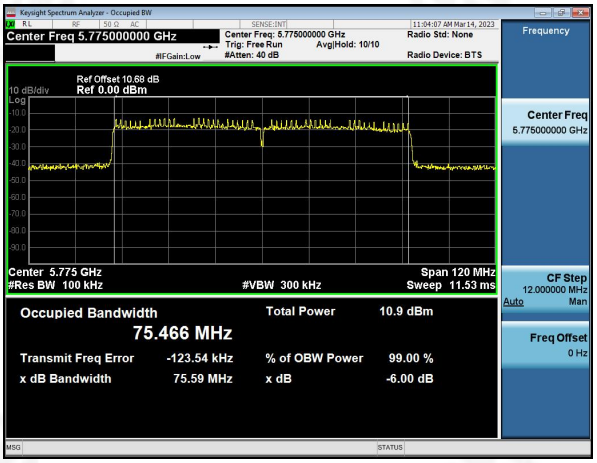
ANT 2

802.11a	802.11n HT20
	
5745MHz	5745MHz
	
5785MHz	5785MHz
	
5825MHz	5825MHz

802.11ac HT20	802.11ax HE20
	
5745MHz	5745MHz
	
5785MHz	5785MHz
	
5825MHz	5825MHz

802.11n HT40	802.11ac HT40
	
5755MHz	5755MHz
	
5795MHz	5795MHz

802.11ax HE40	802.11ax HE40
	
5755MHz	5795MHz

802.11ac HT80	802.11ax HE80
	
5775MHz	5775MHz

7.MAXIMUM CONDUCTED OUTPUT POWER

7.1 PPLIED PROCEDURES / LIMIT

According to FCC §15.407
The maximum conduced output power should not exceed:

Frequency Band(MHz)	Limit
5150~5250	250mW
5725~5850	1W

7.2 TEST PROCEDURE

The EUT was directly connected to the Power meter

1. Device Configuration
If possible, configure or modify the operation of the EUT so that it transmits continuously at its maximum power control level (see section II.B.).
a) The intent is to test at 100 percent duty cycle; however a small reduction in duty cycle (to no lower than 98 percent) is permitted if required by the EUT for amplitude control purposes. Manufacturers are expected to provide software to the test lab to permit such continuous operation.
b) If continuous transmission (or at least 98 percent duty cycle) cannot be achieved due to hardware limitations (e.g., overheating), the EUT shall be operated at its maximum power control level with the transmit duration as long as possible and the duty cycle as high as possible.

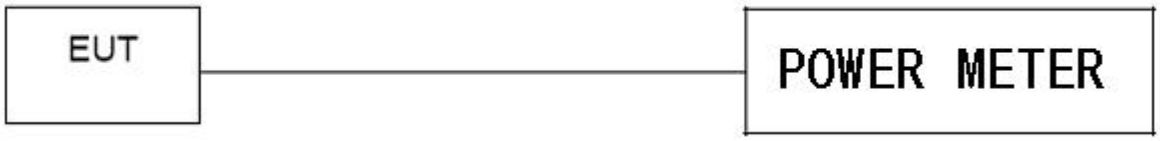
2. Measurement using a Spectrum Analyzer or EMI Receiver (SA)
Measurement of maximum conducted output power using a spectrum analyzer requires integrating the spectrum across a frequency span that encompasses, at a minimum, either the EBW or the 99-percent occupied bandwidth of the signal.1 However, the EBW must be used to determine bandwidth dependent limits on maximum conducted output power in accordance with § 15.407(a).
a) The test method shall be selected as follows: (i) Method SA-1 or SA-1 Alternative (averaging with the EUT transmitting at full power throughout each sweep) shall be applied if either of the following conditions can be satisfied:
• The EUT transmits continuously (or with a duty cycle ≥ 98 percent).
• Sweep triggering or gating can be implemented in a way that the device transmits at the maximum power control level throughout the duration of each of the instrument sweeps to be averaged. This condition can generally be achieved by triggering the instrument's sweep if the duration of the sweep (with the analyzer configured as in Method SA-1, below) is equal to or shorter than the duration T of each transmission from the EUT and if those transmissions exhibit full power throughout their durations.
(ii) Method SA-2 or SA-2 Alternative (averaging across on and off times of the EUT transmissions, followed by duty cycle correction) shall be applied if the conditions of (i) cannot be achieved and the transmissions exhibit a constant duty cycle during the measurement duration. Duty cycle will be considered to be constant if variations are less than ± 2 percent.
(iii) Method SA-3 (RMS detection with max hold) or SA-3 Alternative (reduced VBW with max hold) shall be applied if the conditions of (i) and (ii) cannot be achieved.
b) Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep): (i) Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.
(ii) Set RBW = 1 MHz.
(iii) Set VBW ≥ 3 MHz.
(iv) Number of points in sweep ≥ 2 Span / RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)
(v) Sweep time = auto.
(vi) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
(vii) If transmit duty cycle < 98 percent, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle ≥ 98 percent, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to "free run".
(viii) Trace average at least 100 traces in power averaging (i.e., RMS) mode.

(ix) 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

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



7.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

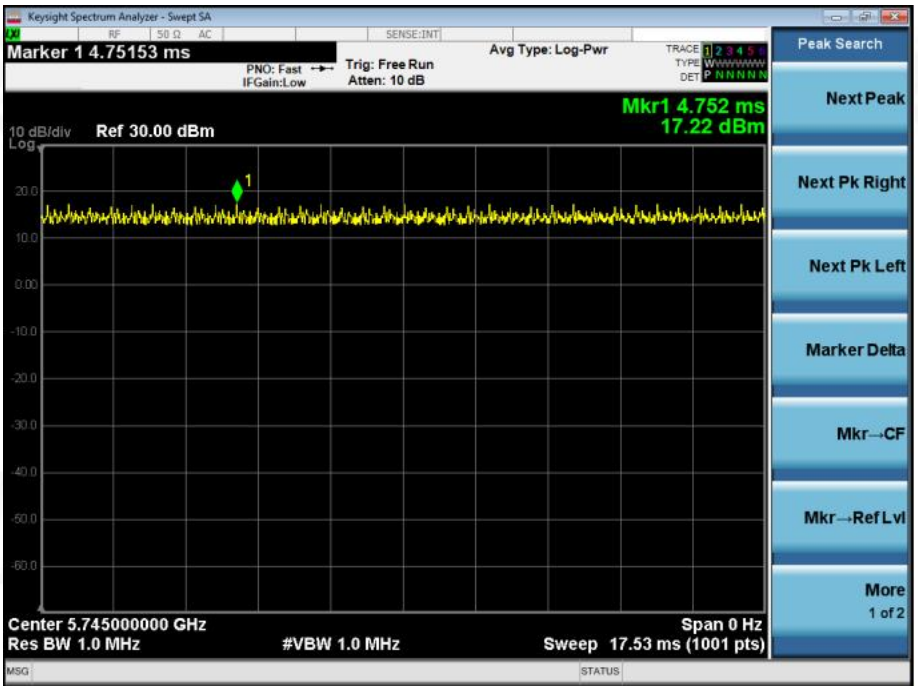
7.6 TEST RESULTS

Test Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)		Total power (dBm)	Limit (dBm)
		ANT 1	ANT 2		
TX 802.11a Mode					
CH149	5745	12.83	12.15	-	30.00
CH157	5785	12.16	13.94	-	30.00
CH165	5825	12.08	13.62	-	30.00
TX 802.11n(HT20) Mode					
CH149	5745	12.89	12.30	15.62	27.81
CH157	5785	12.19	11.98	15.10	27.81
CH165	5825	12.04	11.63	14.85	27.81
TX 802.11n(HT40) Mode					
CH151	5755	11.94	12.96	15.49	27.81
CH159	5795	11.71	11.15	14.45	27.81
TX 802.11ac(VHT20) Mode					
CH149	5745	10.75	11.22	14.00	27.81
CH157	5785	10.29	10.90	13.62	27.81
CH165	5825	10.86	10.63	13.76	27.81
TX 802.11ac(VHT40) Mode					
CH151	5755	13.23	11.36	15.41	27.81
CH159	5795	12.06	10.17	14.23	27.81
TX 802.11ac(VHT80) Mode					
CH155	5775	11.90	10.12	14.11	27.81
TX 802.11ax(HE20) Mode					
CH149	5745	12.32	11.53	14.95	27.81
CH157	5785	13.54	13.06	16.32	27.81
CH165	5825	12.30	11.73	15.03	27.81
TX 802.11ax(HE40) Mode					
CH151	5755	13.21	12.17	15.73	27.81
CH159	5795	12.07	11.62	14.86	27.81
TX 802.11ax(HE80) Mode					
CH155	5775	11.38	10.08	13.79	27.81

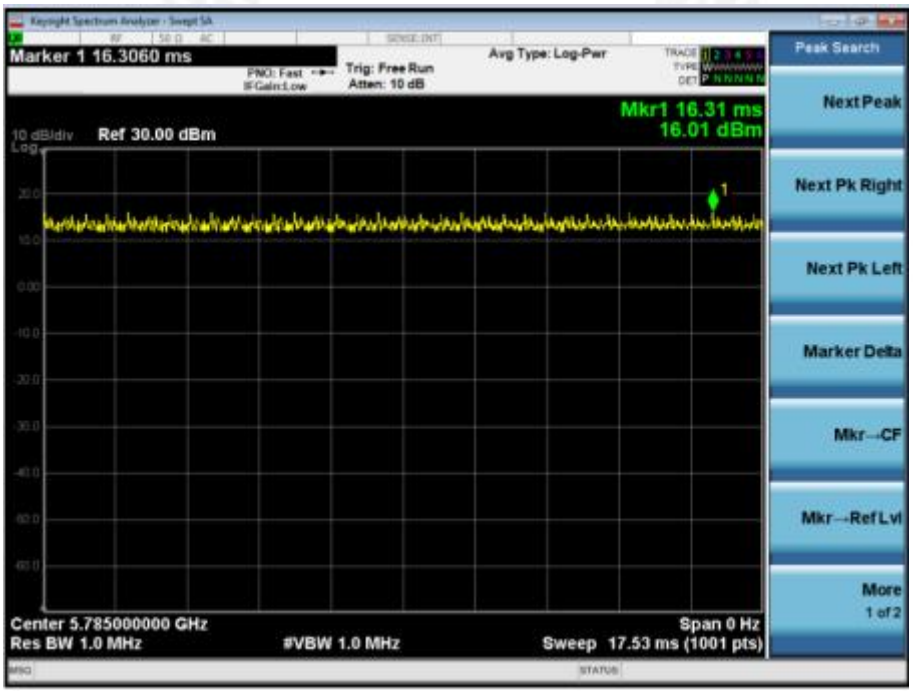
Remark: 1.the 802.11a mode, the ANT 1 and ANT 2 can't work at the same time;

2.Except the 802.11a mode, the other modes for the ANT 1 and ANT 2 can work at the same time

3. Directional gain=GANT +10log(N)dbi =5.09+10log2=8.19dbi;



802.11 a CH149



802.11 a CH57

802.11 a CH165

Note: All the mode have tested and recorded the 802.11a mode in the report.