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 CH	-26dB Channel Bandwidth (MHz)			Limit(KHz)	Result
	802.11a	802.11n(HT20)	802.11n(HT40)		
Lowest	22.10	23.56	42.09	N/A	Pass
Middle	21.70	23.56			
Highest	23.00	23.16	40.79		

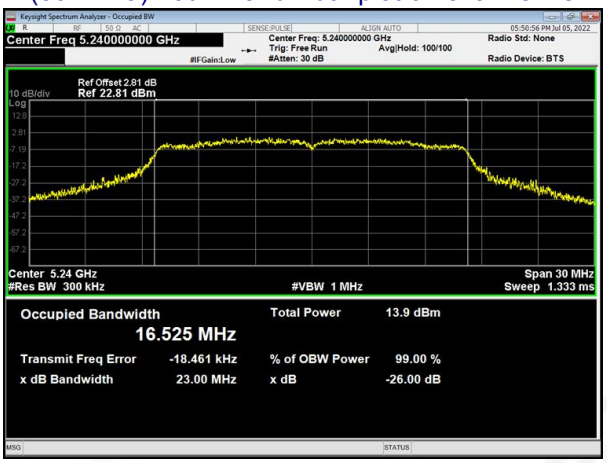
Test CH	-26dB Channel Bandwidth (MHz)			Limit(KHz)	Result
	802.11ac(HT20)	802.11ac(HT40)	802.11ac(HT80)		
Lowest	22.68	41.51		N/A	Pass
Middle	22.76		81.60		
Highest	22.25	42.41			

Test plot

(802.11 a) 26dB Bandwidth plot on channel 36

(802.11 a) 26dB Bandwidth plot on channel 40

(802.11 a) 26dB Bandwidth plot on channel 48



Test plot

(802.11 n20) 26dB Bandwidth plot on channel 36

(802.11 n40) 26dBBandwidth plot on channel 38

(802.11 n20) 26dB Bandwidth plot on channel 40

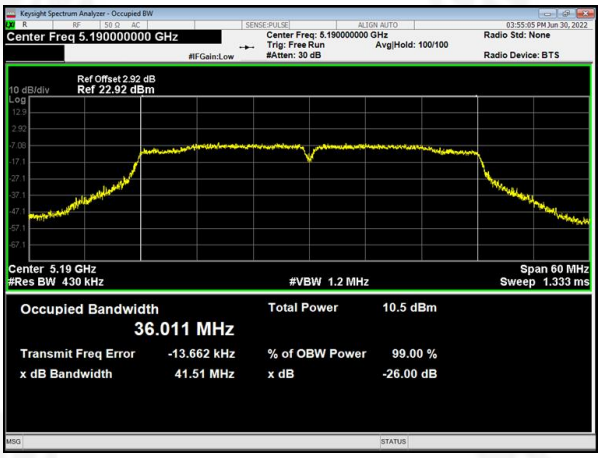
(802.11 n40) 26dB Bandwidth plot on channel 46

(802.11 n20) 26dB Bandwidth plot on channel 48

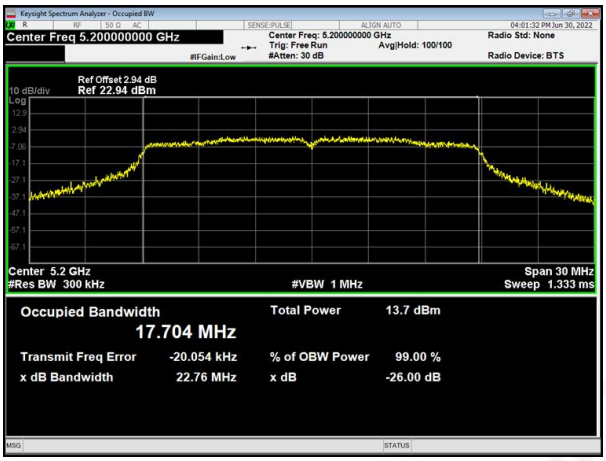
Test plot

(802.11ac20) 99%Bandwidth plot on channel 36

(802.11 ac40) 99% Bandwidth plot on channel 42

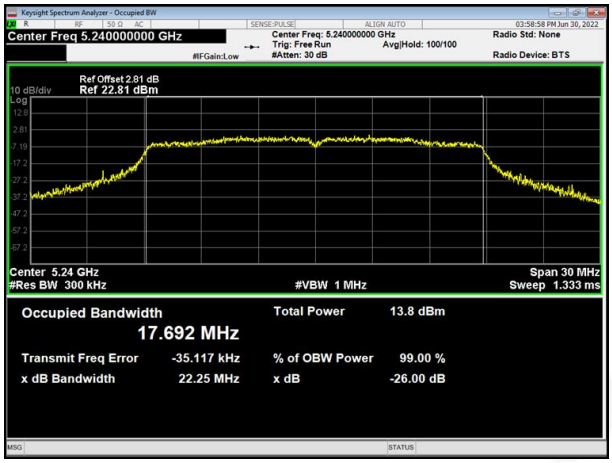


(802.11ac20) 99%Bandwidth plot on channel 40

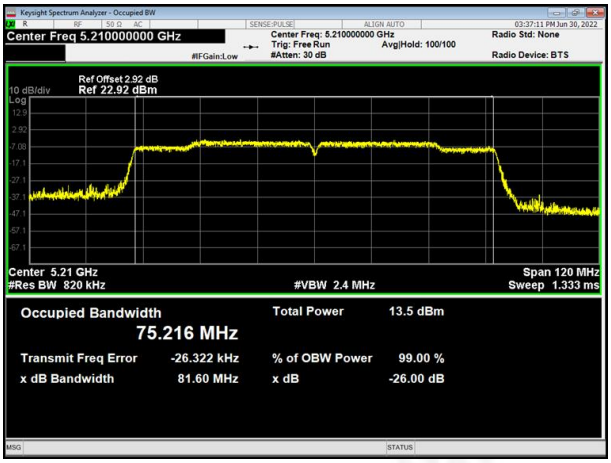


(802.11 ac40) 99% Bandwidth plot on channel 42

(802.11ac20) 99%Bandwidth plot on channel 48



(802.11 ac80) 26dB Bandwidth plot on channel 42

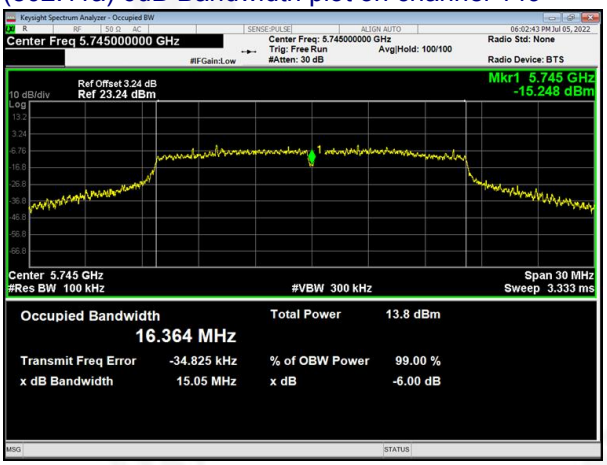


Test CH	-6dB Channel Bandwidth (MHz)			Limit(KHz)	Result
	802.11a	802.11n(HT20)	802.11n(HT40)		
Lowest	15.05	11.96	35.08	>500	Pass
Middle	14.01	13.84			
Highest	14.09	13.72	33.83		

Test CH	-6dB Channel Bandwidth (MHz)			Limit(KHz)	Result
	802.11ac(HT20)	802.11ac(HT40)	802.11ac(HT80)		
Lowest	13.06	33.80		>500	Pass
Middle	15.09		68.81		
Highest	15.06	33.83			

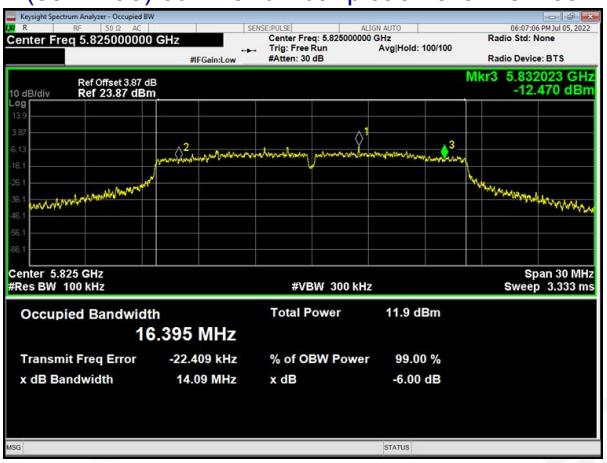
Test plot

(802.11a) 6dB Bandwidth plot on channel 149



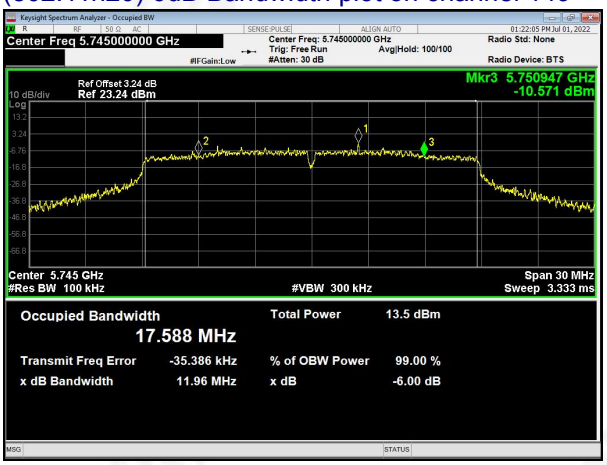
(802.11a) 6dB Bandwidth plot on channel 157

(802.11a0) 6dB Bandwidth plot on channel 165



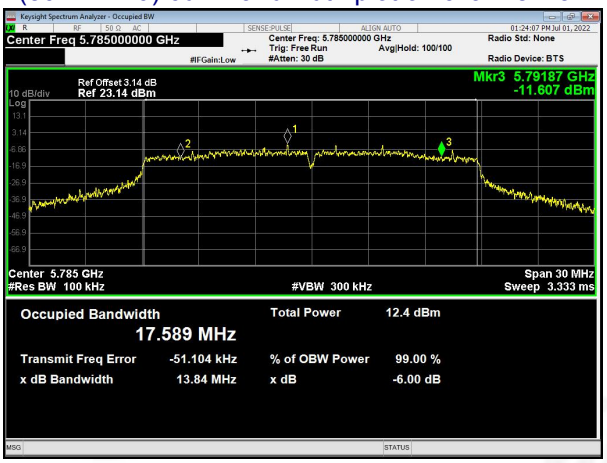
Test plot

(802.11n20) 6dB Bandwidth plot on channel 149

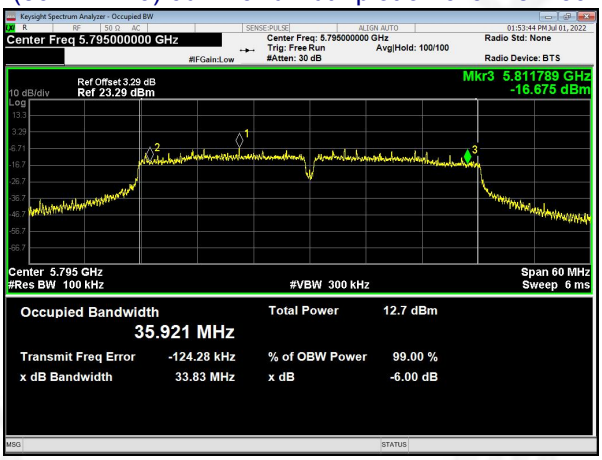


(802.11 n40) 6dB Bandwidth plot on channel 151

(802.11n20) 6dB Bandwidth plot on channel 157



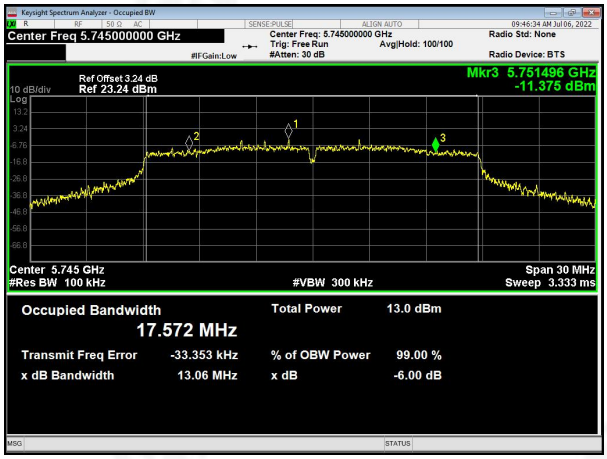
(802.11 n40) 6dB Bandwidth plot on channel 159



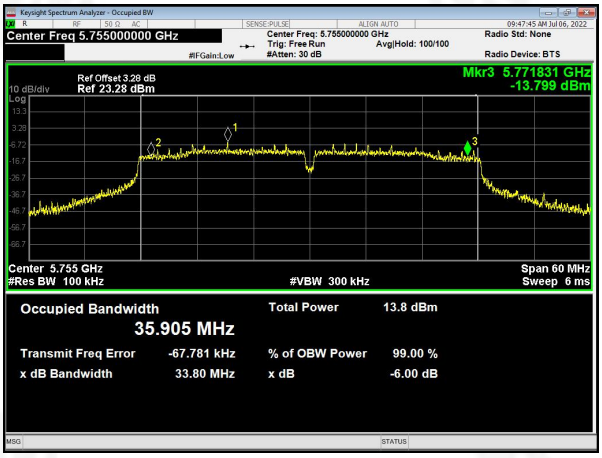
(802.11n20) 6dB Bandwidth plot on channel 165

Test plot

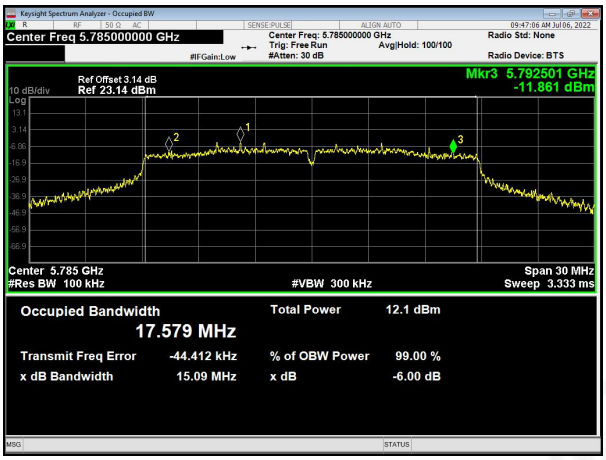
(802.11ac20) 6dB Bandwidth plot on channel 149



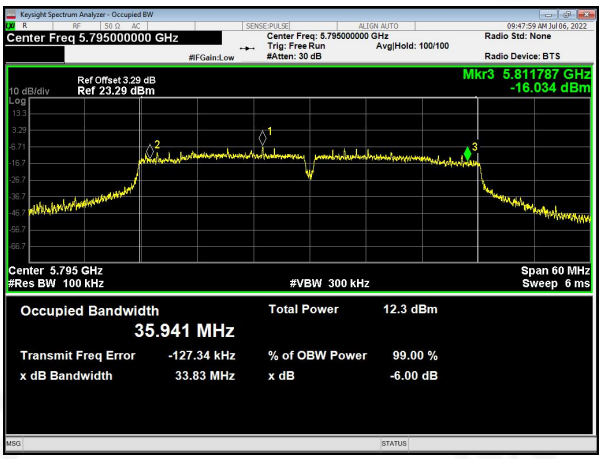
(802.11 ac40) 6dB Bandwidth plot on channel 151



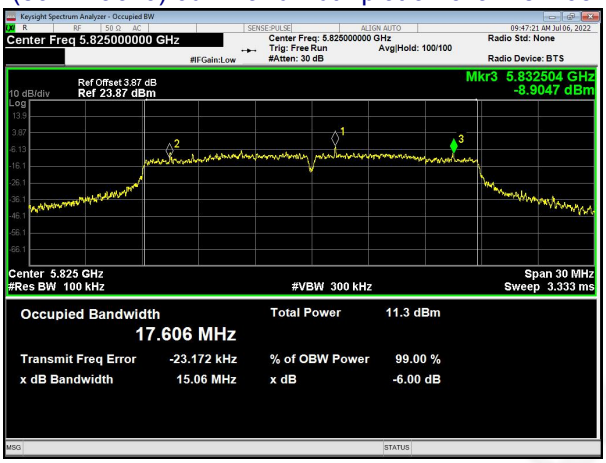
(802.11ac20) 6dB Bandwidth plot on channel 157



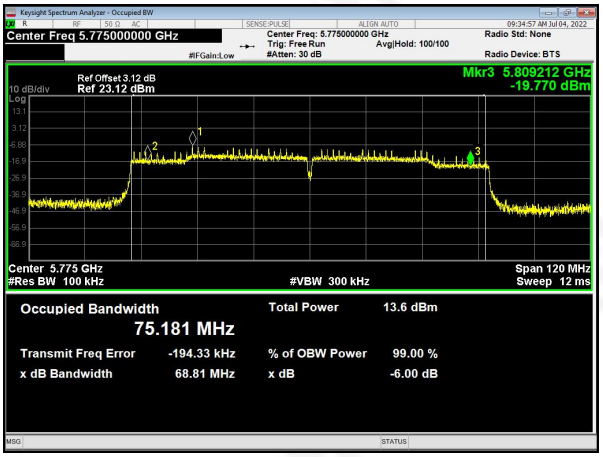
(802.11 ac40) 6dB Bandwidth plot on channel 159



(802.11ac20) 6dB Bandwidth plot on channel 165



(802.11 ac80) 6dB Bandwidth plot on channel 155



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.

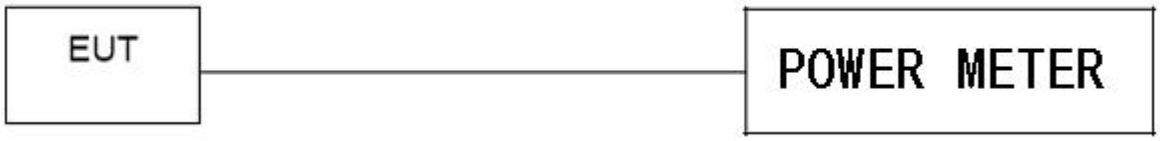
2. Measurement using a Spectrum Analyzer or EMI Receiver (SA)
Measurement of maximum conducted output power using a spectrum analyzer requires integrating the spectrum across a frequency span that encompasses, at a minimum, either the EBW or the 99-percent occupied bandwidth of the signal.1 However, 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

Temperature :	26 ℃	Relative Humidity :	54%
Pressure :	1012 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX		

Test Channel	Frequency	Maximum output power			LIMIT	Result
	(MHz)	(dBm)			dBm	
TX 802.11 a Mode		ANT1	ANT2	Total		
CH36	5180	6.133	7.290	\	23.98	Pass
CH40	5200	8.079	8.413	\	23.98	Pass
CH48	5240	7.971	8.047	\	23.98	Pass
TX 802.11 n20M Mode						
CH36	5180	8.050	6.681	10.43	23.98	Pass
CH40	5200	8.350	8.243	11.31	23.98	Pass
CH48	5240	8.299	8.089	11.21	23.98	Pass
TX 802.11 n40M Mode						
CH38	5190	4.986	4.939	7.97	23.98	Pass
CH46	5230	9.432	9.552	12.50	23.98	Pass
TX 802.11 ac20M Mode						
CH36	5180	7.397	7.318	10.37	23.98	Pass
CH40	5200	8.372	8.207	11.30	23.98	Pass
CH48	5240	7.766	8.001	10.90	23.98	Pass
TX 802.11 ac40M Mode						
CH38	5190	4.952	5.111	8.04	23.98	Pass
CH46	5230	9.281	9.504	12.40	23.98	Pass
TX 802.11 ac80M Mode						
CH42	5210	6.408	6.826	9.63	23.98	Pass

Test Channel	Frequency	Maximum output power.			LIMIT	Result
	(MHz)	(dBm)			dBm	
TX 802.11 a Mode		ANT1	ANT2	Total		
CH149	5745	6.769	7.485	\	30	Pass
CH157	5785	6.515	6.428	\	30	Pass
CH165	5825	5.991	6.087	\	30	Pass
TX 802.11 n20M Mode						
CH149	5745	7.668	8.004	10.85	30	Pass
CH157	5785	6.422	6.79	9.62	30	Pass
CH165	5825	6.177	6.017	9.11	30	Pass
TX 802.11 n40M Mode						
CH151	5755	8.377	7.654	11.04	30	Pass
CH159	5795	6.540	6.364	9.46	30	Pass
TX 802.11 ac20M Mode						
CH149	5745	7.886	7.705	10.81	30	Pass
CH157	5785	6.712	6.788	9.76	30	Pass
CH165	5825	6.577	6.048	9.33	30	Pass
TX 802.11 ac40M Mode						
CH151	5755	8.006	8.266	11.15	30	Pass
CH159	5795	6.580	6.41	9.51	30	Pass
TX 802.11 AC80M Mode						
CH155	5775	7.020	7.292	10.17	30	Pass

8.OUT OF BAND EMISSIONS

8.1 APPLICABLE STANDARD

According to FCC §15.407(b)

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(2)

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

8.2 TEST PROCEDURE

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

8.3 DEVIATION FROM STANDARD

No deviation.

8.4 TEST SETUP

8.5 EUT OPERATION CONDITIONS

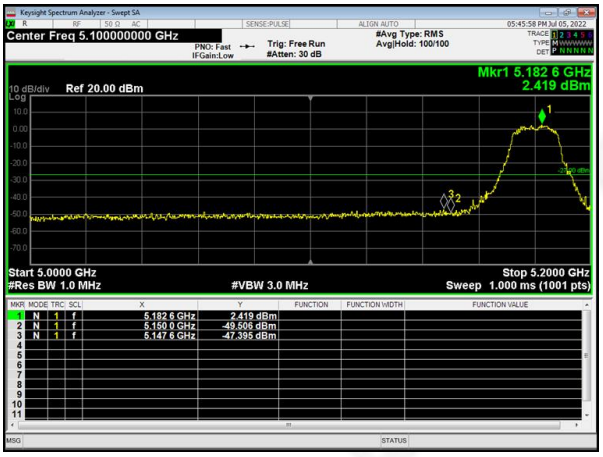
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

8.6 TEST RESULTS

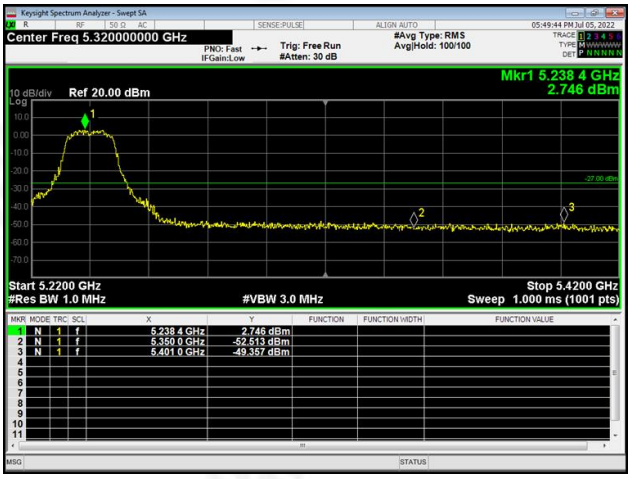
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1012 hPa	Test Voltage ：	AC 120V/60Hz

5.180~5.240 GHz

(802.11a) Band Edge, Left Side

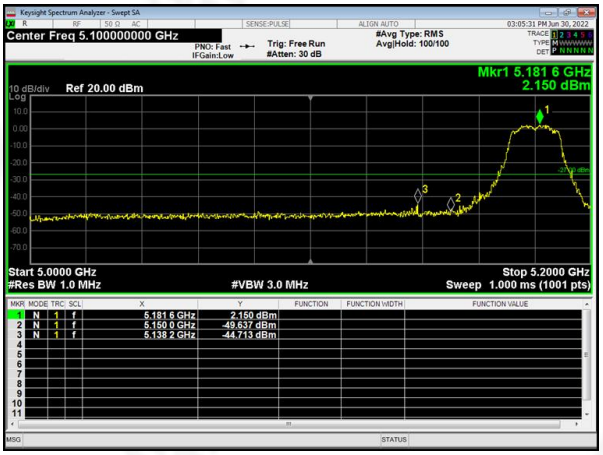


(802.11a) Band Edge, Left Side

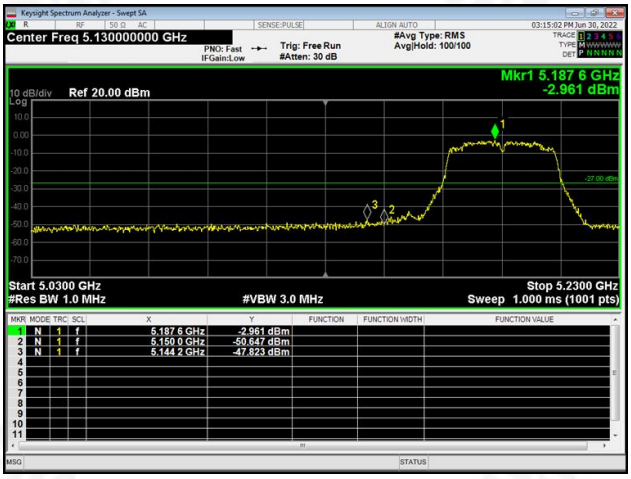


5.180~5.240 GHz

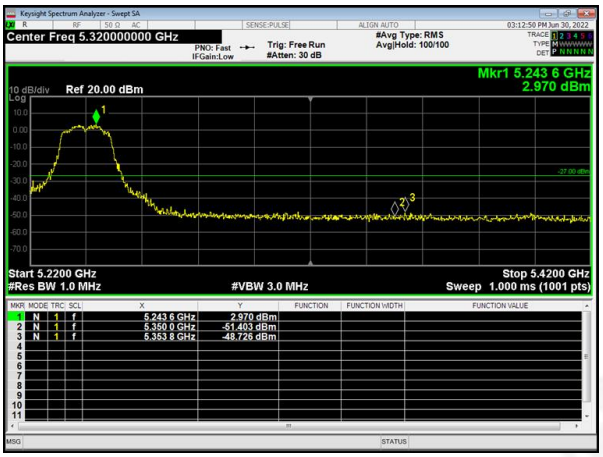
(802.11n20) Band Edge, Left Side



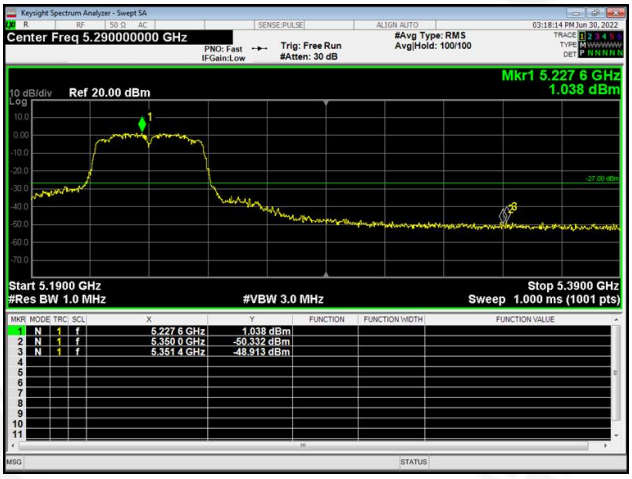
(802.11n40) Band Edge, Left Side



(802.11 n20) Band Edge, Right Side

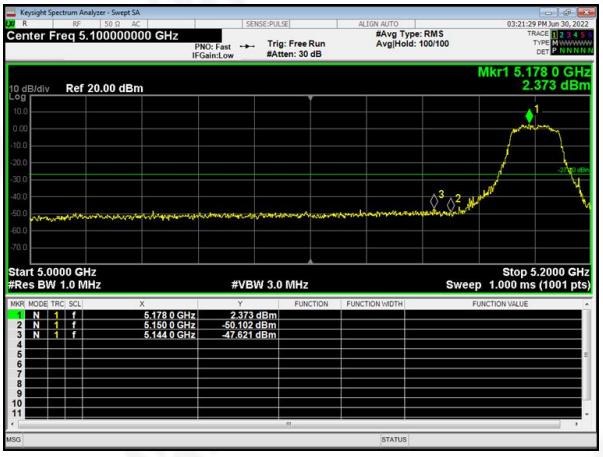


(802.11n40) Band Edge, Right Side

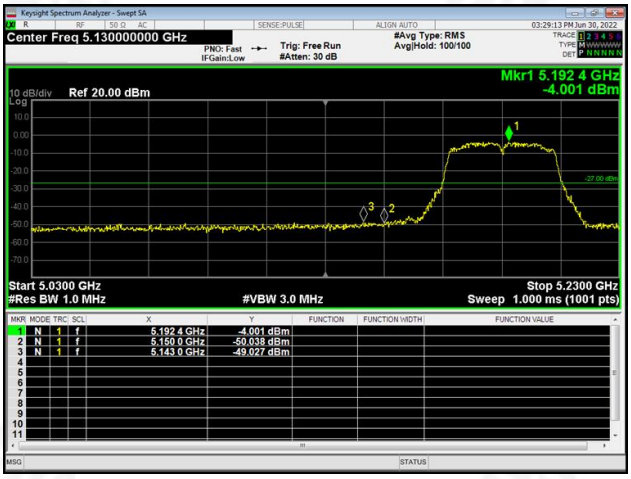


5.180~5.240 GHz

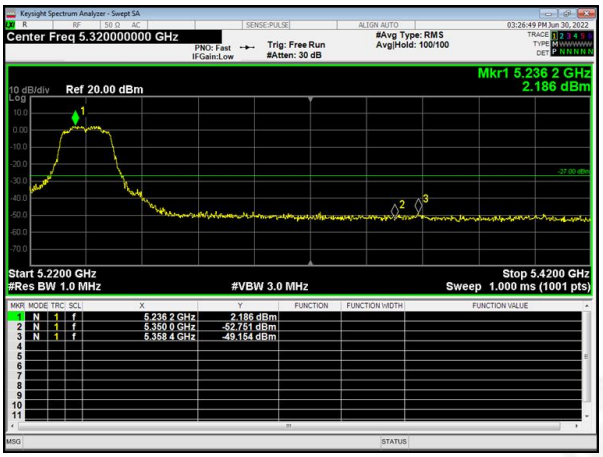
(802.1ac20) Band Edge, Left Side



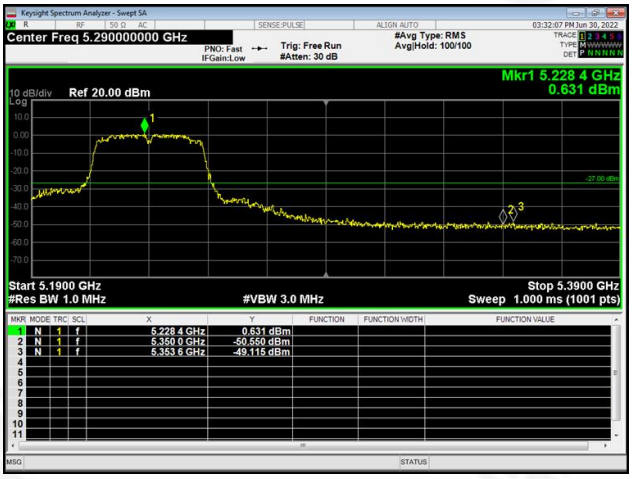
(802.11ac40) Band Edge, Left Side



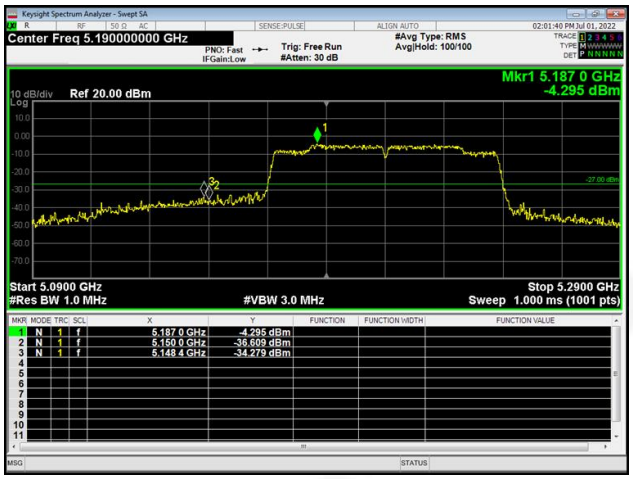
(802.11ac20) Band Edge, Right Side



(802.11ac40) Band Edge, Right Side

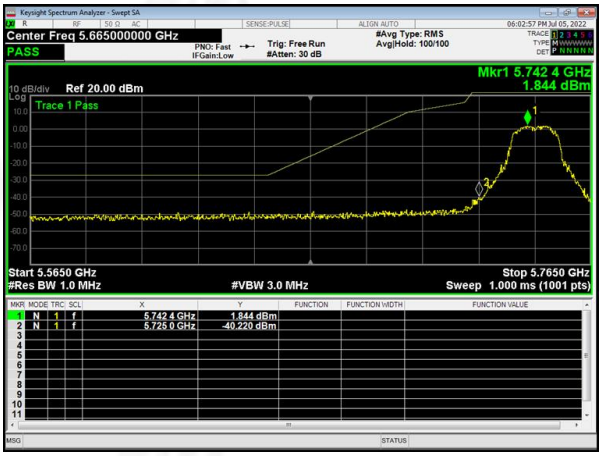


(802.11ac80) Band Edge



5.745~5.825 GHz

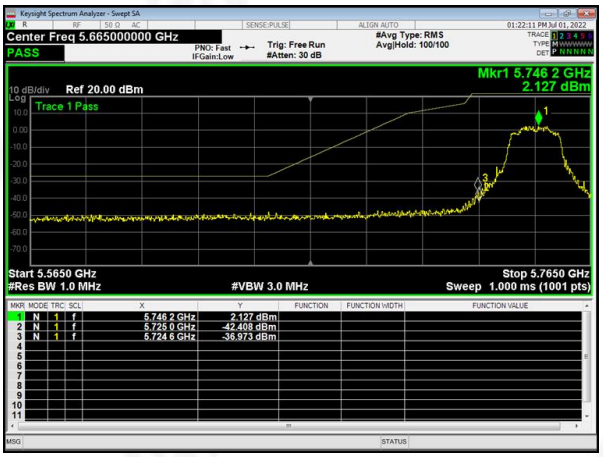
(802.11a) Band Edge, Left Side



(802.11a) Band Edge, Right Side

5.745~5.825 GHz

(802.11n20) Band Edge, Left Side



(802.11n40) Band Edge, Left Side

(802.11n20) Band Edge, Right Side

(802.11n40) Band Edge, Right Side