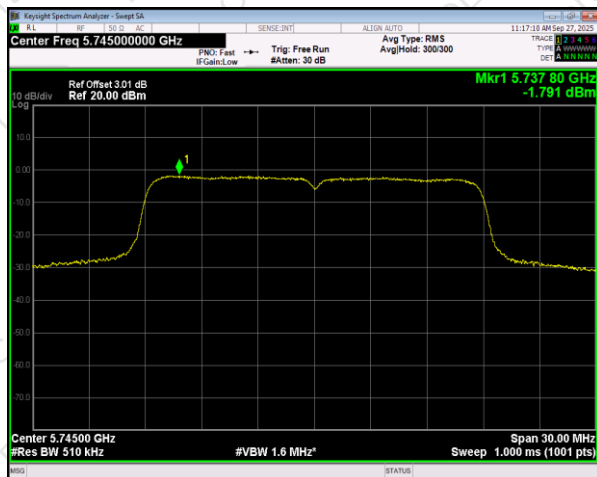




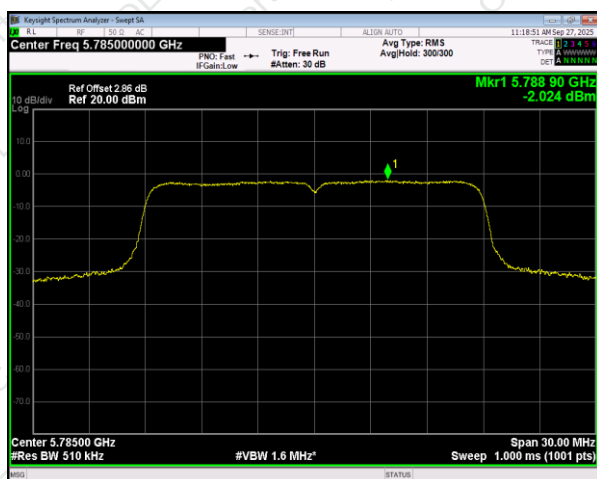
(802.11ac20) PSD plot on channel 149



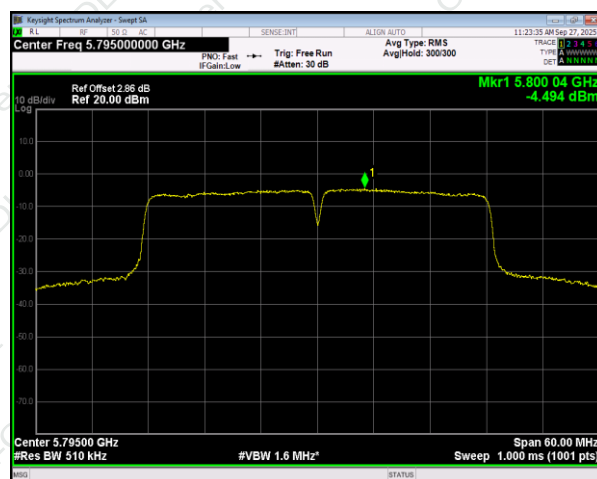
(802.11ac40) PSD plot on channel 151



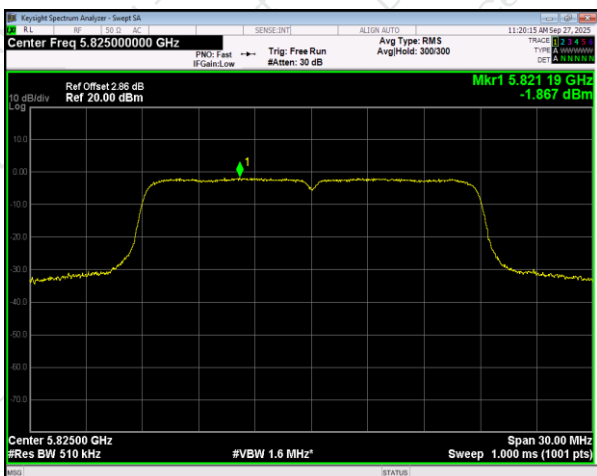
(802.11ac20) PSD plot on channel 157



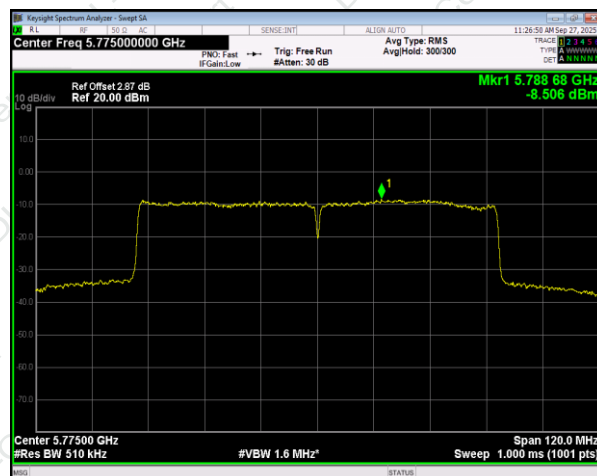
(802.11ac40) PSD plot on channel 159



(802.11ac20) PSD plot on channel 165



(802.11ac80) PSD plot on channel 155





6. 26DB EMISSION BANDWIDTH & 6DB OCCUPIED 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

The following procedure shall be used for measuring 6dB Occupied Bandwidth:

The procedure for this method is as follows:

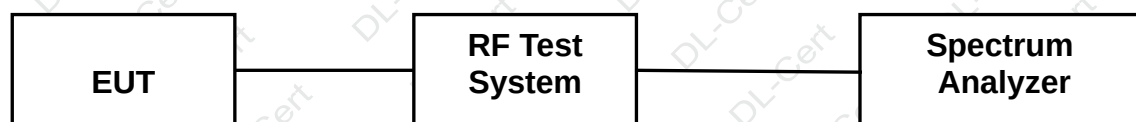
- Set RBW = 100KHz.
- Set the VBW > RBW.
- Detector = Peak.
- Trace mode = max hold.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

The following procedure shall be used for measuring 26dB Emission bandwidth:

The procedure for this method is as follows:

- Set RBW = approximately 1% of the emission bandwidth.
- Set the VBW > RBW.
- Detector = peak.
- Trace mode = max hold.
- Measure the maximum width of the emission that is 26 dB down from the peak of the emission.

Compare this with the RBW setting of the instrument. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.



6.3 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 6.2 Unless otherwise a special operating condition is specified in the follows during the testing.



6.4 TEST RESULTS

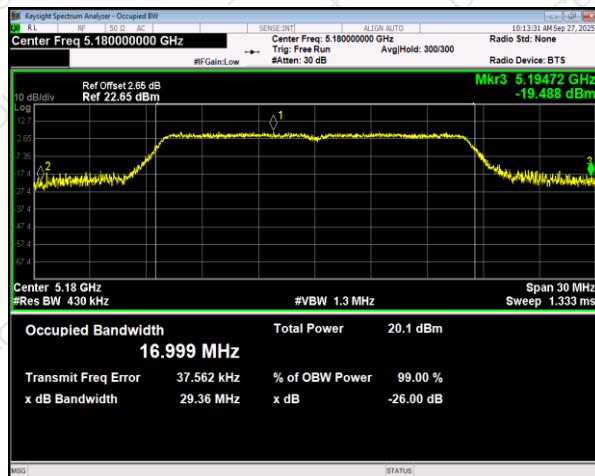
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	AC 120V/60Hz
Test Band :	5.2G		

5.2G				
Test Mode	Test Channel (MHz)	26dB Emission Bandwidth (MHz)	Limit(KHz)	Result
802.11a	5180	29.36	N/A	Pass
	5200	29.24		
	5240	29.45		
802.11n20	5180	29.71	N/A	Pass
	5200	28.79		
	5240	29.18		
802.11n40	5190	54.62	N/A	Pass
	5230	57.83		
802.11ac20	5180	29.2	N/A	Pass
	5200	28.82		
	5240	29.38		
802.11ac40	5190	54.87	N/A	Pass
	5230	54.47		
802.11ac80	5210	92.21	N/A	Pass

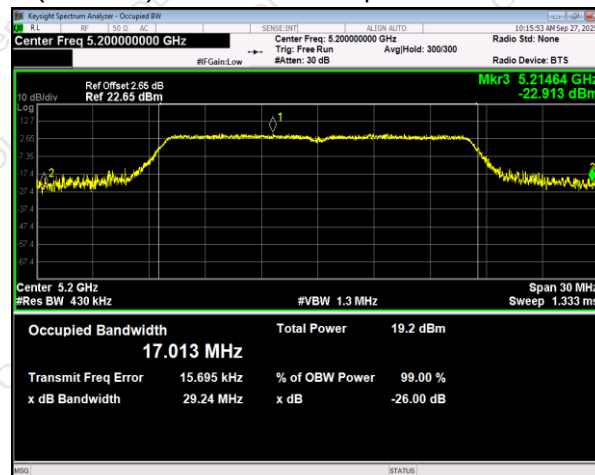


5.2G Test plot

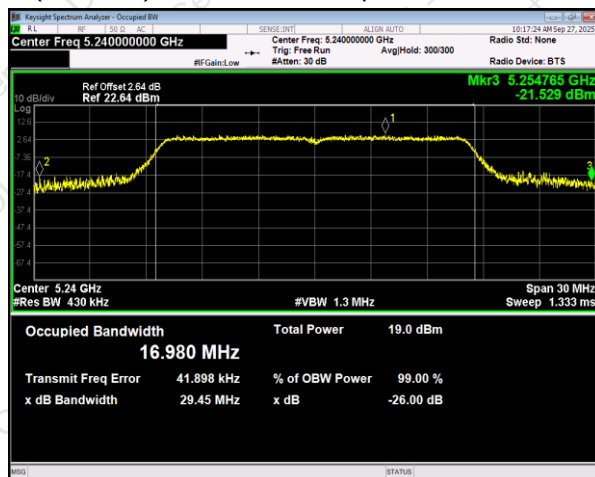
(802.11 a) 26dB Bandwidth plot on channel 36



(802.11 a) 26dB Bandwidth plot on channel 48



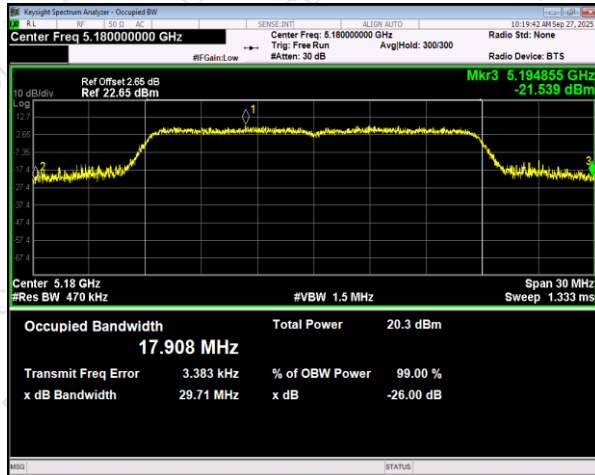
(802.11 a) 26dB Bandwidth plot on channel 48



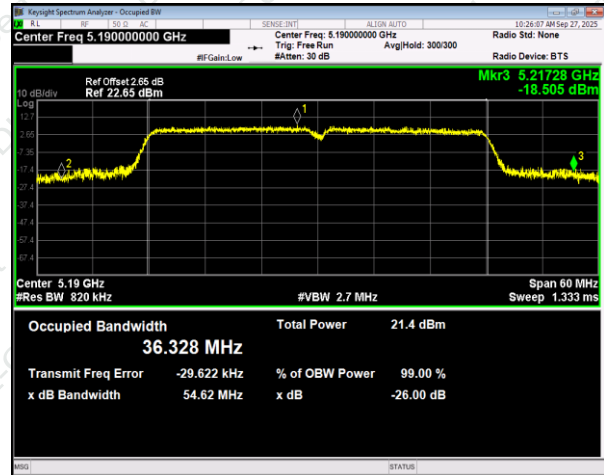


5.2G Test plot

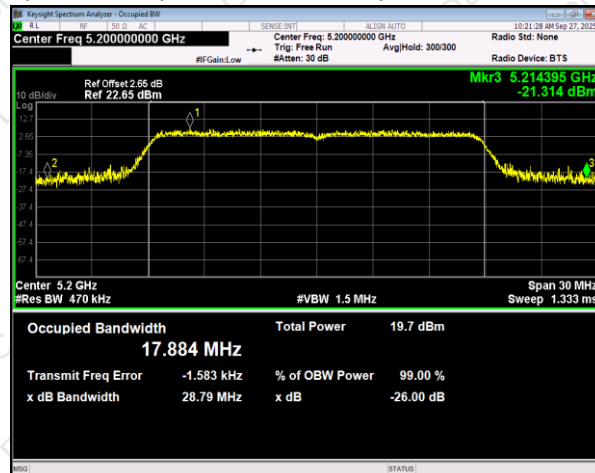
(802.11 n20) 26dB Bandwidth plot on channel 36



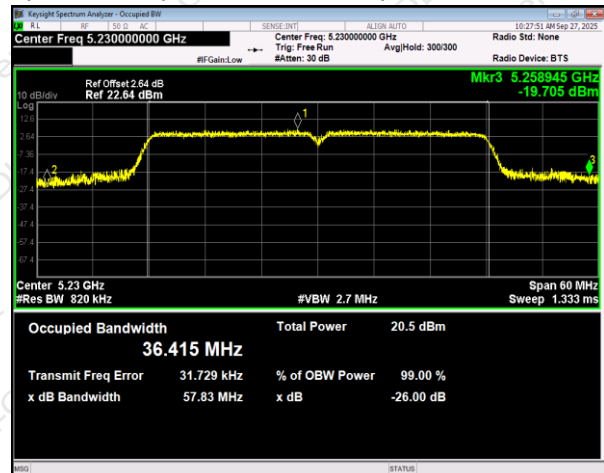
(802.11 n40) 26dB Bandwidth plot on channel 38



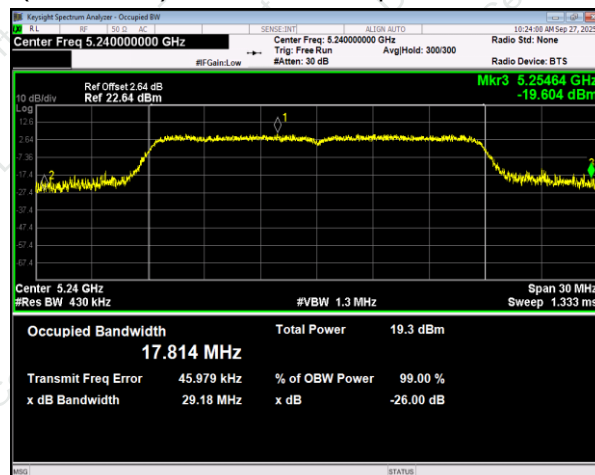
(802.11 n20) 26dB Bandwidth plot on channel 40



(802.11 n40) 26dB Bandwidth plot on channel 46



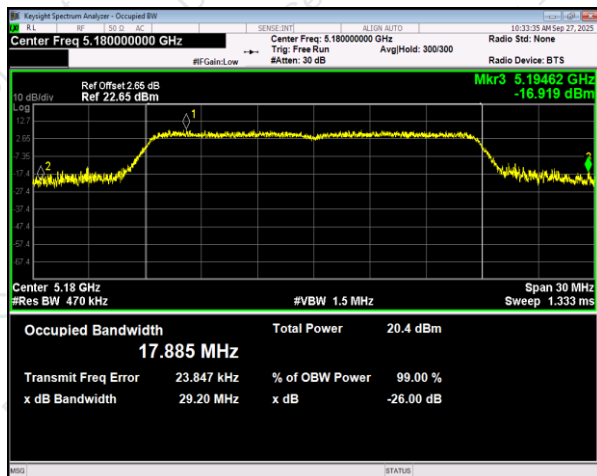
(802.11 n20) 26dB Bandwidth plot on channel 48



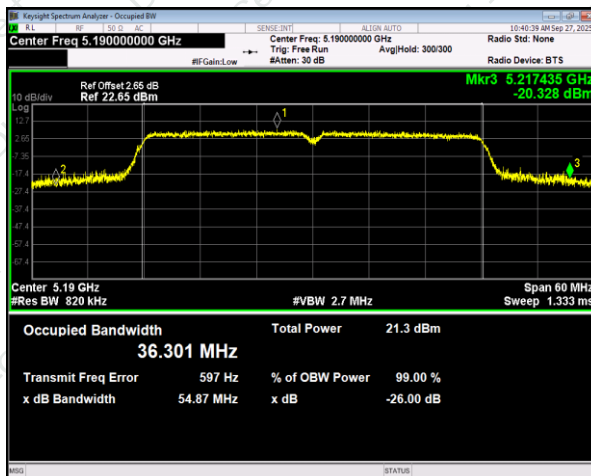


5.2G Test plot

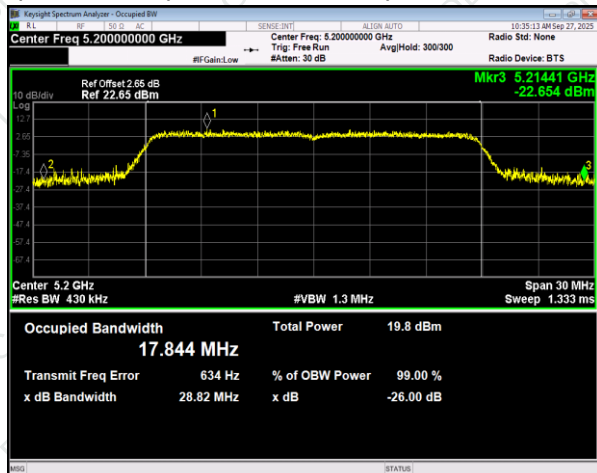
(802.11 ac20) 26dB Bandwidth plot on channel 36



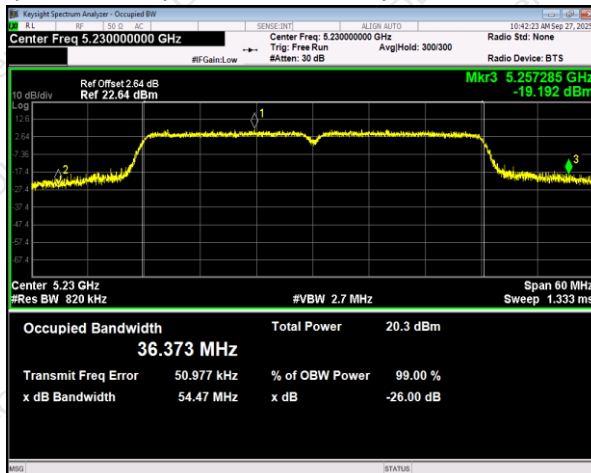
(802.11 ac40) 26dB Bandwidth plot on channel 38



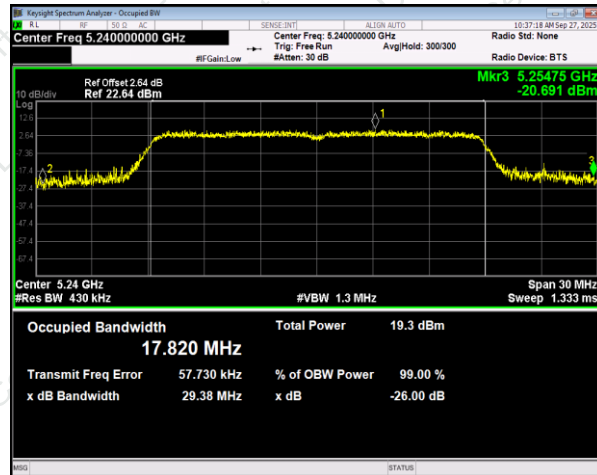
(802.11 ac20) 26dB Bandwidth plot on channel 40



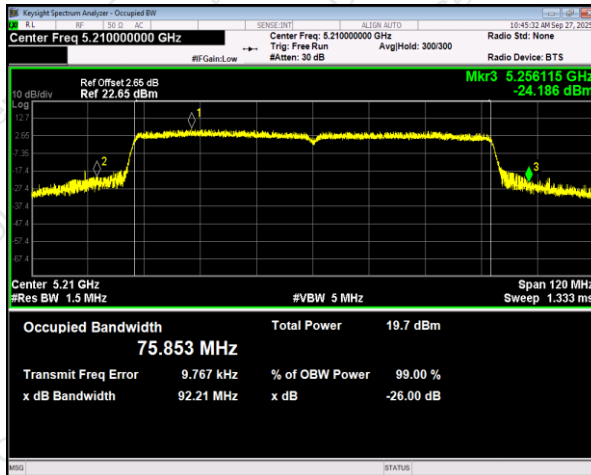
(802.11 ac40) 26dB Bandwidth plot on channel 46



(802.11 ac20) 26dB Bandwidth plot on channel 48



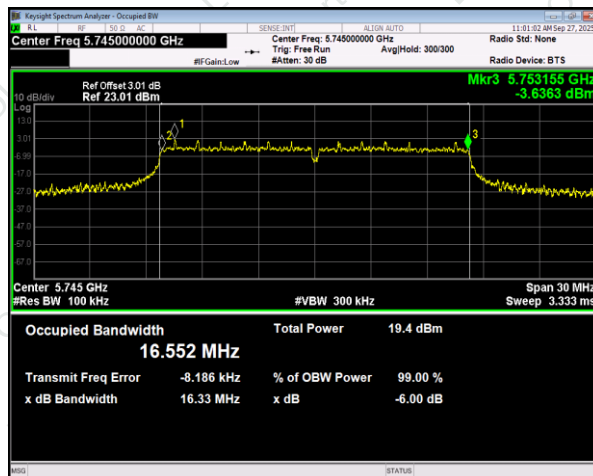
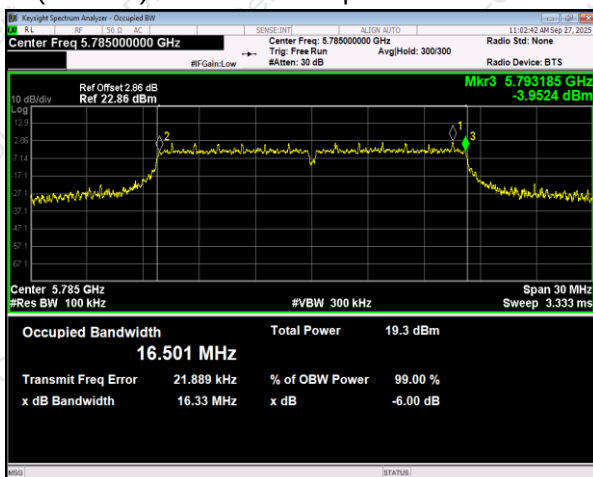
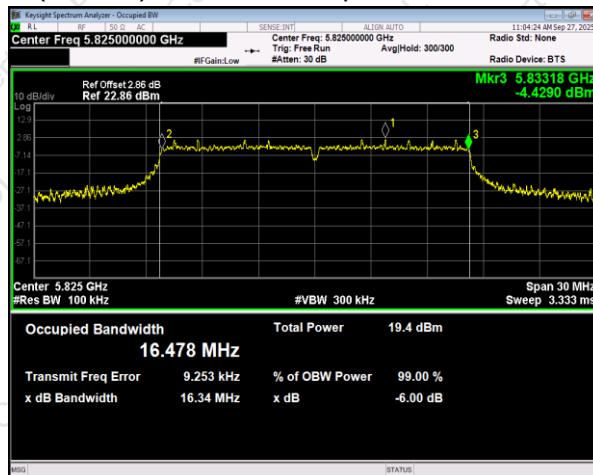
(802.11 ac80) 26dB Bandwidth plot on channel 42





Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	AC 120V/60Hz
Test Band :	5.8G		

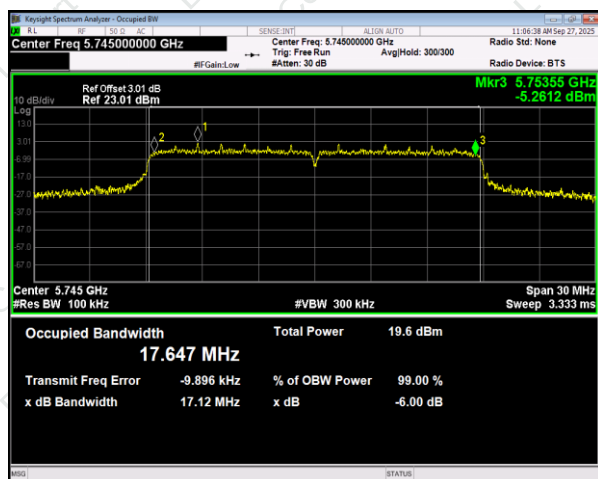
5.8G				
Test Mode	Test Channel (MHz)	6dB Occupied Bandwidth (MHz)	Limit(KHz)	Result
802.11a	5745	16.33	>500	Pass
	5785	16.33		
	5825	16.34		
802.11n20	5745	17.12	>500	Pass
	5785	17.21		
	5825	17.14		
802.11n40	5755	36.01	>500	Pass
	5795	35.56		
802.11ac20	5745	17.00	>500	Pass
	5785	17.21		
	5825	17.22		
802.11ac40	5755	35.75	>500	Pass
	5795	35.27		
802.11ac80	5775	75.54	>500	Pass

**5.8G Test plot****(802.11a) 6dB Bandwidth plot on channel 149****(802.11a) 6dB Bandwidth plot on channel 157****(802.11a) 6dB Bandwidth plot on channel 165**

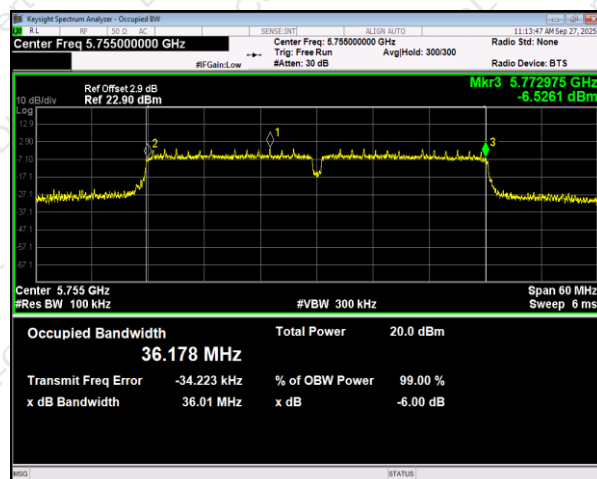


5.8G Test plot

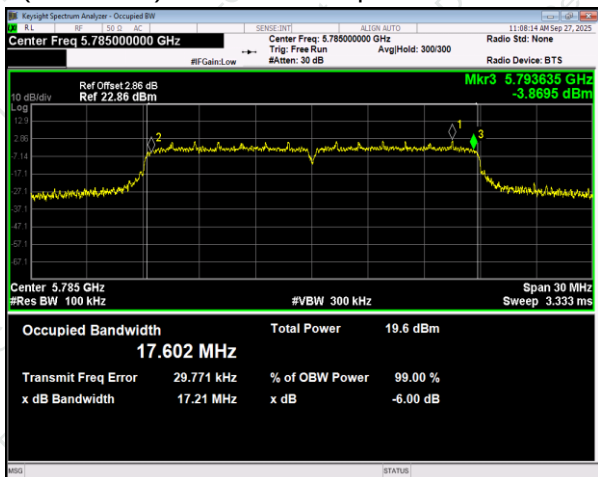
(802.11n20) 6dB Bandwidth plot on channel 149



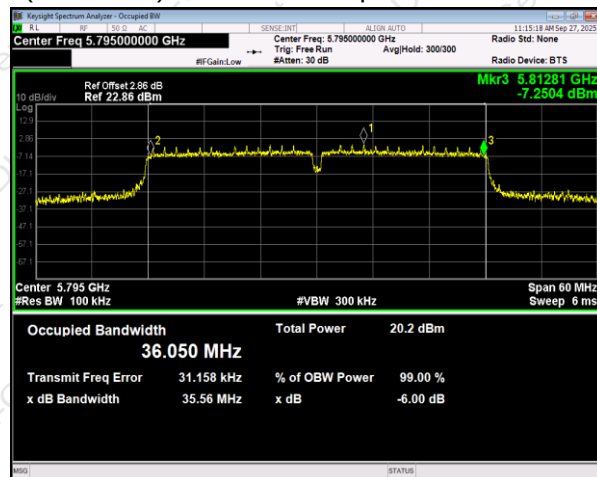
(802.11n40) 6dB Bandwidth plot on channel 151



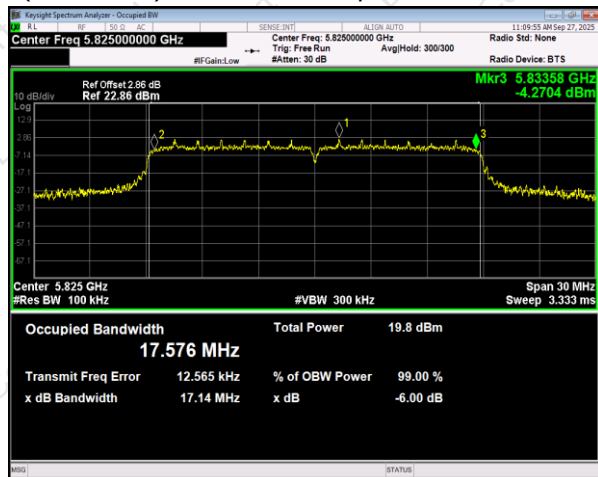
(802.11n20) 6dB Bandwidth plot on channel 157



(802.11n40) 6dB Bandwidth plot on channel 159



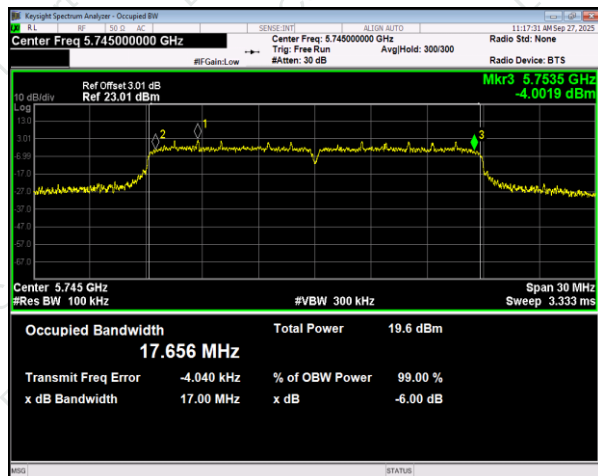
(802.11n20) 6dB Bandwidth plot on channel 165



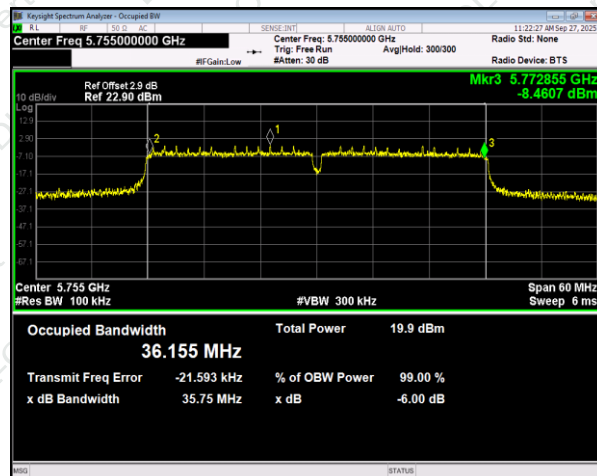


5.8G Test plot

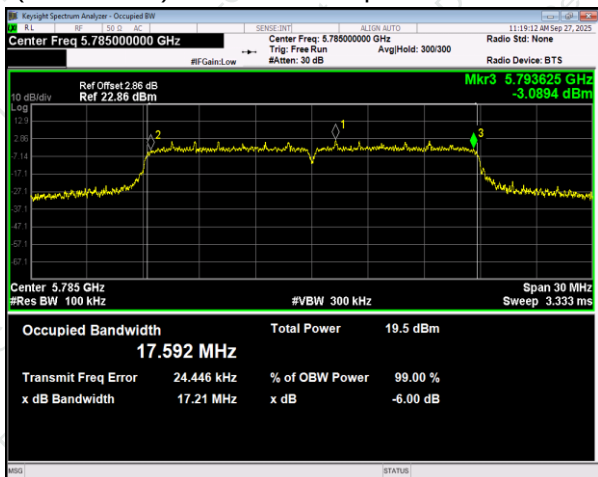
(802.11ac20) 6dB Bandwidth plot on channel 149



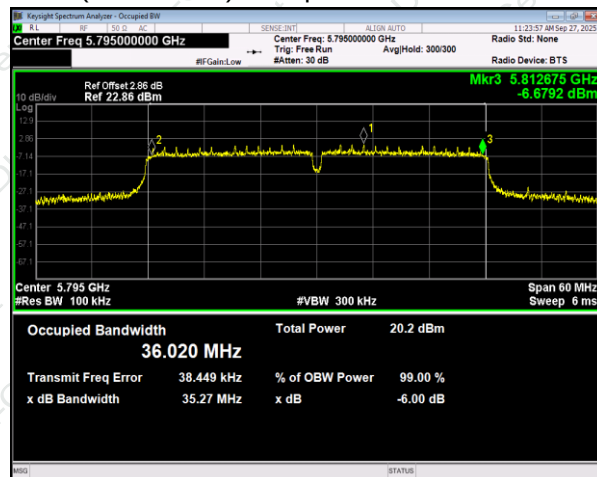
(802.11ac40) PSD plot on channel 151



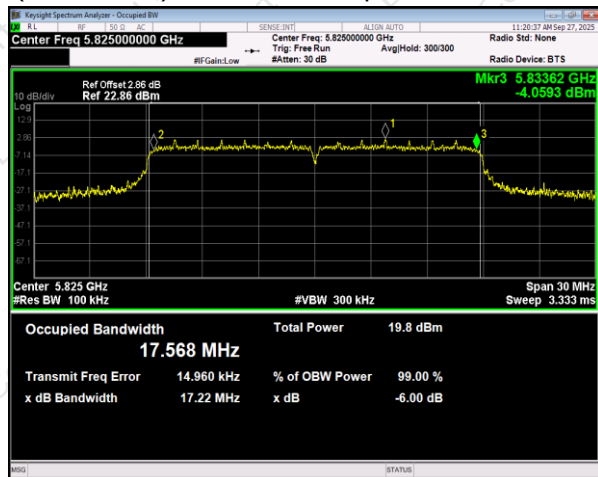
(802.11ac20) 6dB Bandwidth plot on channel 157



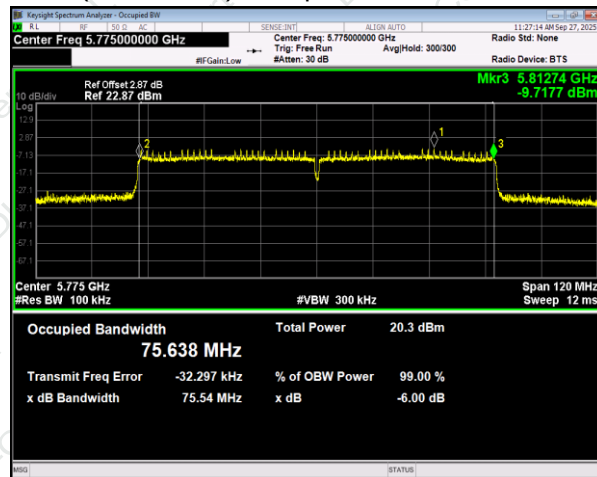
(802.11ac40) PSD plot on channel 159



(802.11ac20) 6dB Bandwidth plot on channel 165



(802.11ac80) PSD plot on channel 155





7. MAXIMUM CONDUCTED OUTPUT POWER

7.1 PPLIED PROCEDURES / LIMIT

According to FCC §15.407

The maximum conducted output power should not exceed:

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

7.2 TEST PROCEDURE

Method PM is Measurement using an RF average power meter. The procedure for this method is as follows:

- Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the following conditions are satisfied:
 - The EUT is configured to transmit continuously, or to transmit with a constant duty cycle.
 - At all times when the EUT is transmitting, it shall 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.
- If the transmitter does not transmit continuously, measure the duty cycle D of the transmitter output signal as described in 12.2.
- Measure the average power of the transmitter. This measurement is an average over both the ON and OFF periods of the transmitter.
- Correct the measurement in dBm by adding $[10 \log (1 / D)]$, where D is the duty cycle {e.g., $[10 \log (1 / 0.25)]$, if the duty cycle is 25%}.

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 7.4 Unless otherwise a special operating condition is specified in the follows during the testing.



7.6 TEST RESULTS

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1012 hPa	Test Voltage :	AC 120V/60Hz
Test Band :	5.2G		

802.11 a Mode						
Test Channel	Frequency (MHz)	Output power (dBm)	duty cycle Factor (dB)	Total power (dBm)	Limit (dBm)	Result
CH36	5180	13.54	0.43	13.97	23.98	Pass
CH40	5200	12.73	0.43	13.16	23.98	Pass
CH48	5240	12.09	0.43	12.52	23.98	Pass
802.11 n20 Mode						
Test Channel	Frequency (MHz)	Output power (dBm)	duty cycle Factor (dB)	Total power (dBm)	Limit (dBm)	Result
CH36	5180	13.33	0.63	13.96	23.98	Pass
CH40	5200	12.78	0.63	13.41	23.98	Pass
CH48	5240	12.45	0.63	13.08	23.98	Pass
802.11 n40 Mode						
Test Channel	Frequency (MHz)	Output power (dBm)	duty cycle Factor (dB)	Total power (dBm)	Limit (dBm)	Result
CH38	5190	13.43	1.01	14.44	23.98	Pass
CH46	5230	12.55	1.01	13.56	23.98	Pass
802.11 ac20 Mode						
Test Channel	Frequency (MHz)	Output power (dBm)	duty cycle Factor (dB)	Total power (dBm)	Limit (dBm)	Result
CH36	5180	13.53	0.53	14.06	23.98	Pass
CH40	5200	12.98	0.53	13.51	23.98	Pass
CH48	5240	12.45	0.53	12.98	23.98	Pass
802.11 ac40 Mode						
Test Channel	Frequency (MHz)	Output power (dBm)	duty cycle Factor (dB)	Total power (dBm)	Limit (dBm)	Result
CH38	5190	13.28	0.94	14.22	23.98	Pass
CH46	5230	12.33	0.94	13.27	23.98	Pass
802.11 ac80 Mode						
Test Channel	Frequency (MHz)	Output power (dBm)	duty cycle Factor (dB)	Total power (dBm)	Limit (dBm)	Result
CH42	5210	10.28	1.91	12.19	23.98	Pass
Note: duty cycle Factor see page 84						



Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1012 hPa	Test Voltage :	AC 120V/60Hz
Test Band :	5.8G		

802.11 a Mode						
Test Channel	Frequency (MHz)	Output power (dBm)	duty cycle Factor (dB)	Total power (dBm)	Limit (dBm)	Result
CH149	5745	12.57	0.45	13.02	30	Pass
CH157	5785	12.44	0.45	12.89	30	Pass
CH165	5825	12.67	0.45	13.12	30	Pass
802.11 n20 Mode						
Test Channel	Frequency (MHz)	Output power (dBm)	duty cycle Factor (dB)	Total power (dBm)	Limit (dBm)	Result
CH149	5745	12.40	0.53	12.93	30	Pass
CH157	5785	12.26	0.53	12.79	30	Pass
CH165	5825	12.46	0.53	12.99	30	Pass
802.11 n40 Mode						
Test Channel	Frequency (MHz)	Output power (dBm)	duty cycle Factor (dB)	Total power (dBm)	Limit (dBm)	Result
CH151	5755	12.02	0.95	12.97	30	Pass
CH159	5795	12.46	0.95	13.41	30	Pass
802.11 ac20 Mode						
Test Channel	Frequency (MHz)	Output power (dBm)	duty cycle Factor (dB)	Total power (dBm)	Limit (dBm)	Result
CH149	5745	12.35	0.53	12.88	30	Pass
CH157	5785	12.26	0.53	12.79	30	Pass
CH165	5825	12.49	0.53	13.02	30	Pass
802.11 ac40 Mode						
Test Channel	Frequency (MHz)	Output power (dBm)	duty cycle Factor (dB)	Total power (dBm)	Limit (dBm)	Result
CH151	5755	12.12	0.94	13.06	30	Pass
CH159	5795	12.37	0.94	13.31	30	Pass
802.11 ac80 Mode						
Test Channel	Frequency (MHz)	Output power (dBm)	duty cycle Factor (dB)	Total power (dBm)	Limit (dBm)	Result
CH155	5775	11.74	1.71	13.45	30	Pass
Note: duty cycle Factor see page 88						



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.

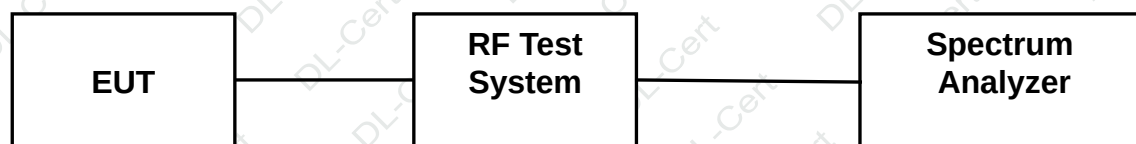
8.2 TEST PROCEDURE

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 8.4 Unless otherwise a special operating condition is specified in the follows during the testing.

8.6 TEST RESULTS



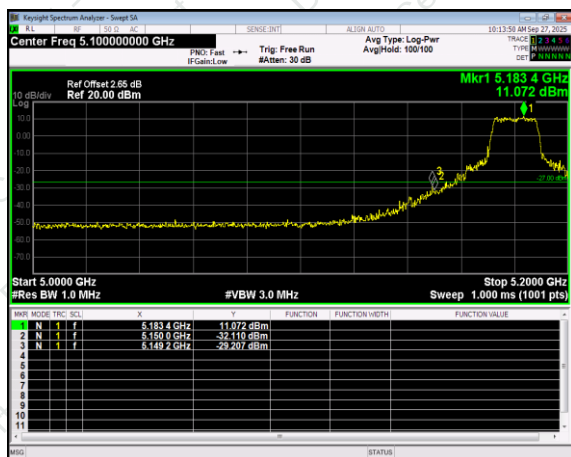
Shenzhen DL Testing Technology Co., Ltd.

Report No.: DLE-2509280013R

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	1012 hPa	Test Voltage:	AC 120V/60Hz
Test band:	5.2G	Antenna gain:	2.14dBi

5.180~5.240 GHz

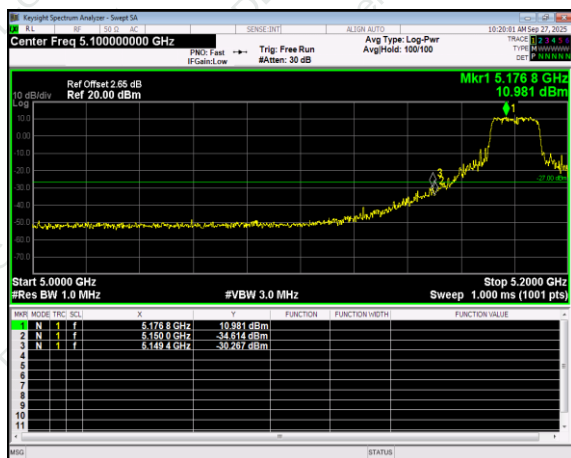
(802.11a) Band Edge, Left Side



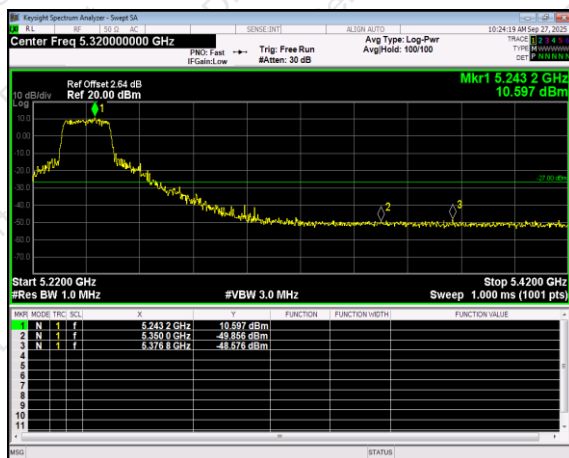
(802.11a) Band Edge, Right Side



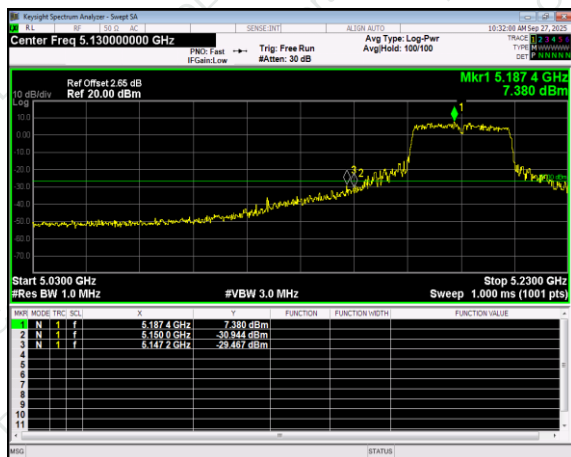
(802.11n20) Band Edge, Left Side



(802.11n20) Band Edge, Right Side



(802.11n40) Band Edge, Left Side

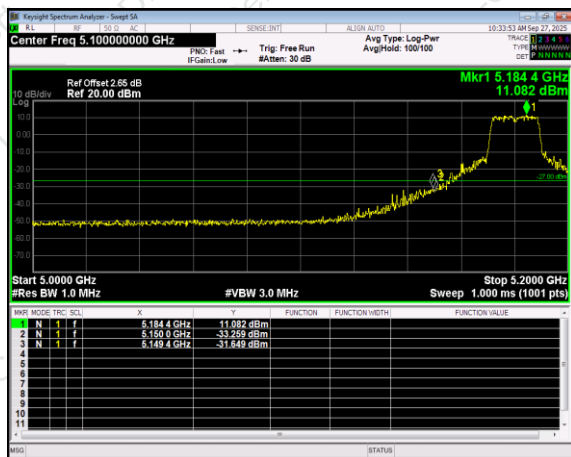


(802.11n40) Band Edge, Right Side





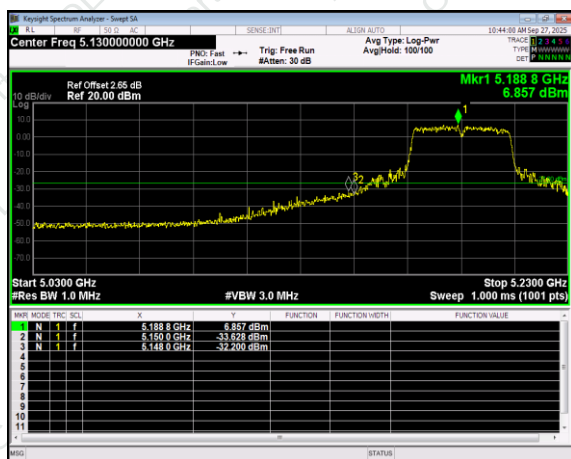
(802.11ac20) Band Edge, Left Side



(802.11ac20) Band Edge, Right Side



(802.11ac40) Band Edge, Left Side



(802.11ac40) Band Edge, Right Side



(802.11ac80) Band Edge

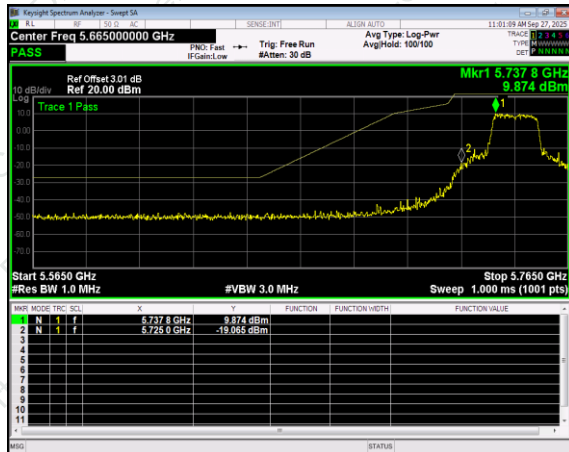




Temperature:	26°C	Relative Humidity:	54%
Pressure:	1012 hPa	Test Voltage:	AC 120V/60Hz
Test band:	5.8G	Antenna gain:	3.47dBi

5.745~5.825 GHz

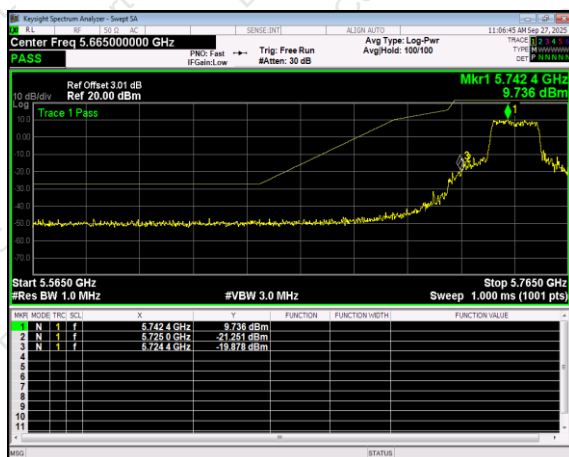
(802.11a) Band Edge, Left Side



(802.11a) Band Edge, Right Side



(802.11n20) Band Edge, Left Side



(802.11n20) Band Edge, Right Side



(802.11n40) Band Edge, Left Side

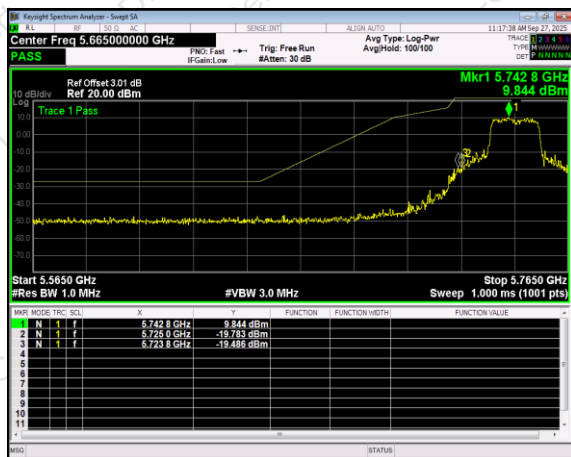


(802.11n40) Band Edge, Right Side





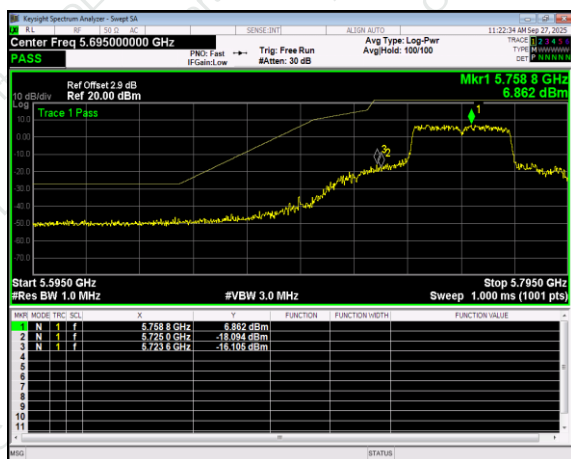
(802.11ac20) Band Edge, Left Side



(802.11ac20) Band Edge, Right Side



(802.11ac40) Band Edge, Left Side



(802.11ac40) Band Edge, Right Side



(802.11ac80) Band Edge





9.SPURIOUS RF CONDUCTED EMISSIONS

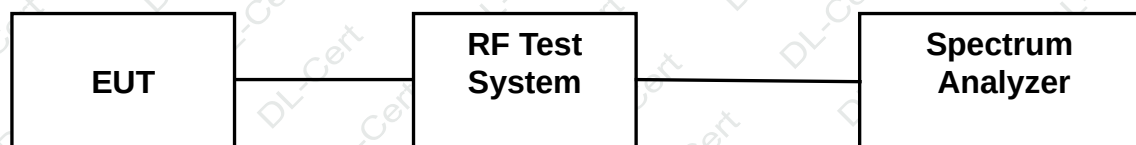
9.1 CONFORMANCE LIMIT

Frequency Band (MHz)	Limit
5150 - 5250	Outside of the 5.15-5.35 GHz band: e.i.r.p. -27 dBm
5250 - 5350	Outside of the 5.15-5.35 GHz band: e.i.r.p. -27 dBm
5470 - 5725	Outside of the 5.47-5.725 GHz band: e.i.r.p. -27 dBm
5725 - 5850	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.

9.2 MEASURING INSTRUMENTS

The Measuring equipment is listed in the section 9.3 of this test report.

9.3 TEST SETUP



9.4 TEST PROCEDURE

The Spurious RF conducted emissions compliance of RF radiated emission should be measured by following the guidance in ANSI C63.10-2020 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW=1MHz and VBW= 3MHz to measure the peak field strength, and measure frequency range from 30MHz to 26.5GHz.

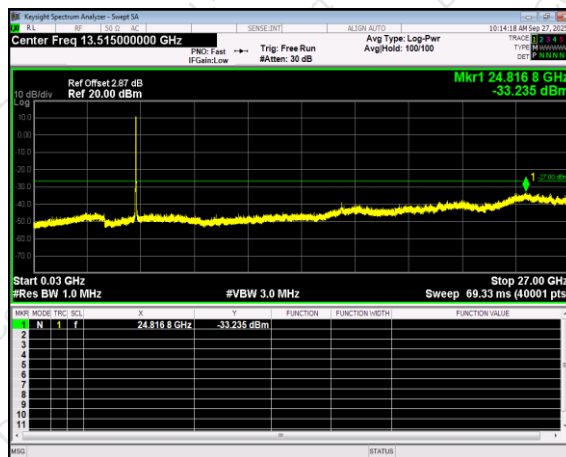
9.5 TEST RESULTS

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1012 hPa	Test Voltage :	AC 120V/60Hz
Test band :	5.2G & 5.8G		
Remark: The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. And above 26.5GHz of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported. The lowest, middle and highest channels are tested to verify the spurious emissions and band edge measurement data.			

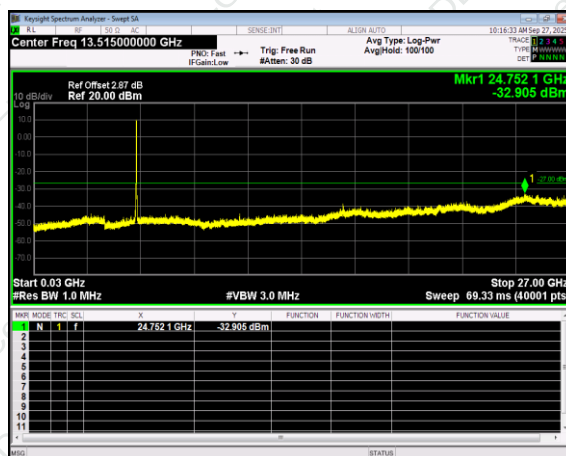


5.2G Test Plot

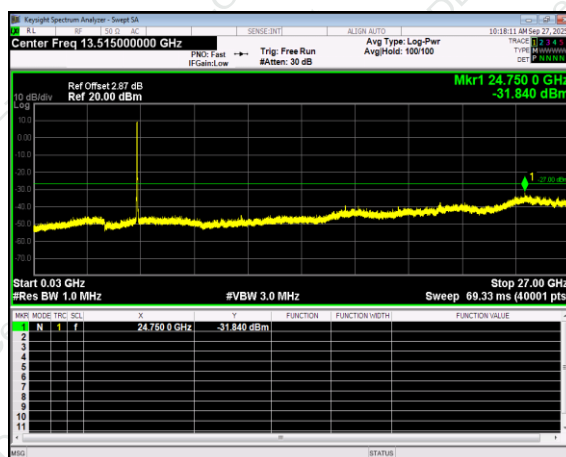
802.11a on channel 36



802.11a on channel 40



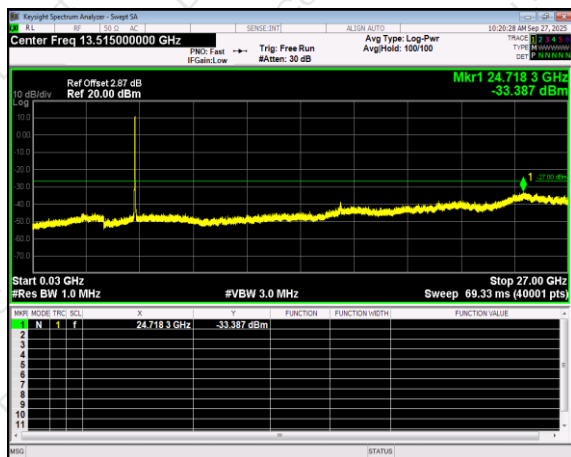
802.11a on channel 48



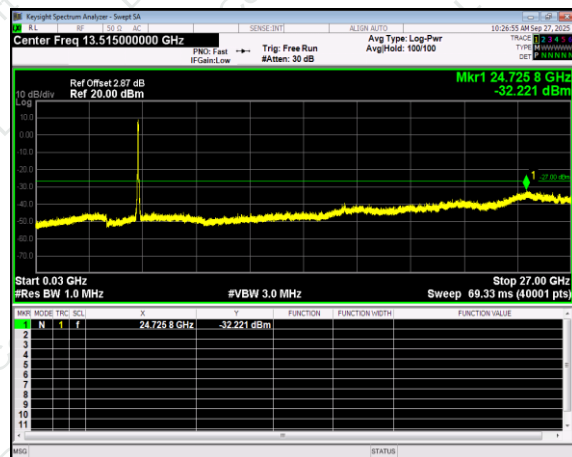


5.2G Test Plot

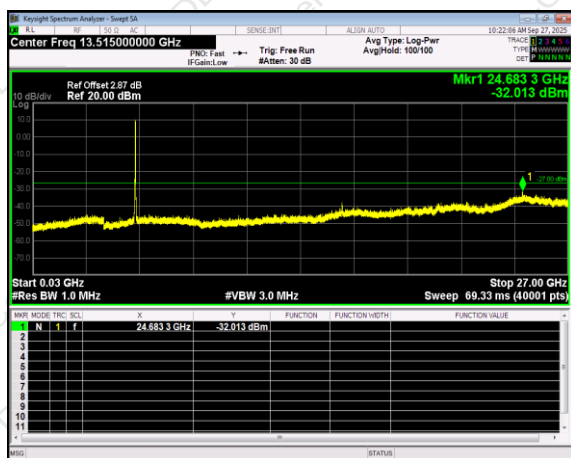
802.11n20 on channel 36



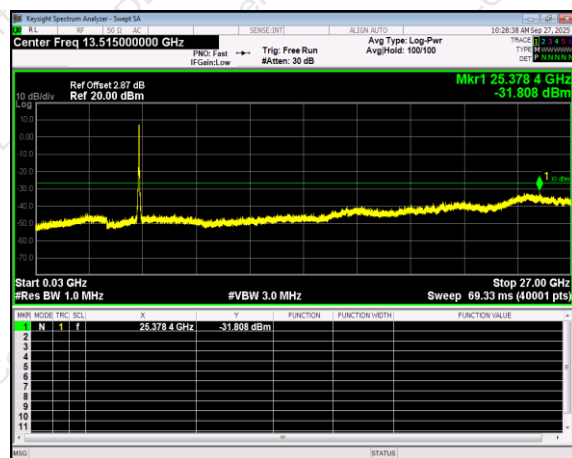
802.11n40 on channel 38



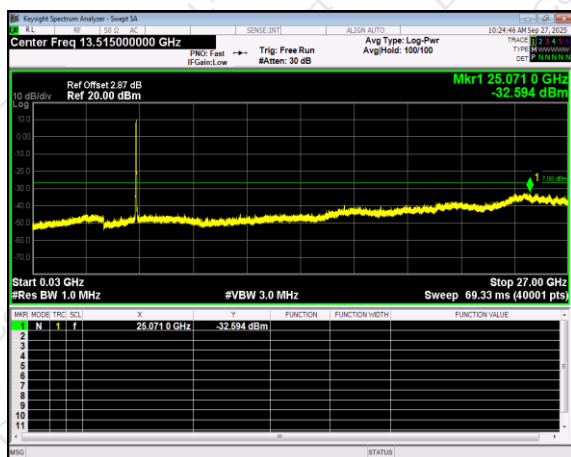
802.11n20 on channel 40



802.11n40 on channel 46



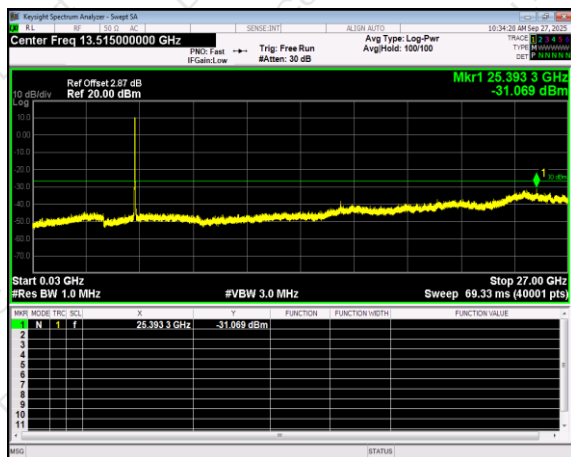
802.11n20 on channel 48



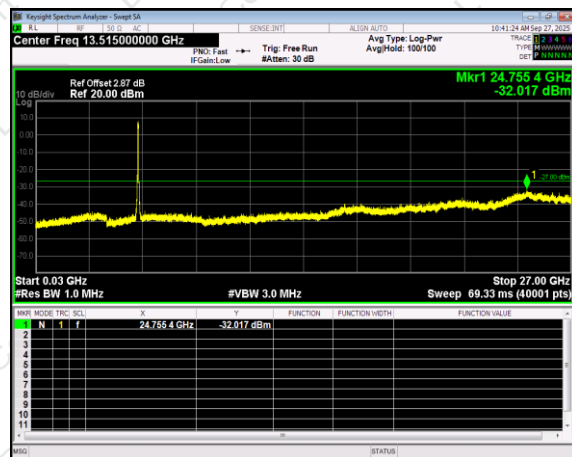


5.2G Test Plot

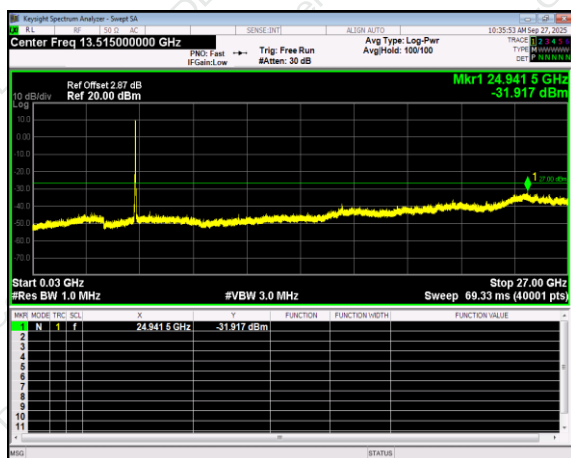
802.11ac20 on channel 36



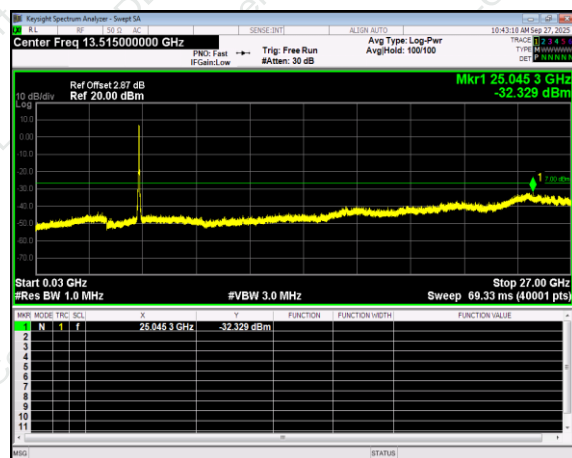
802.11ac40 on channel 46



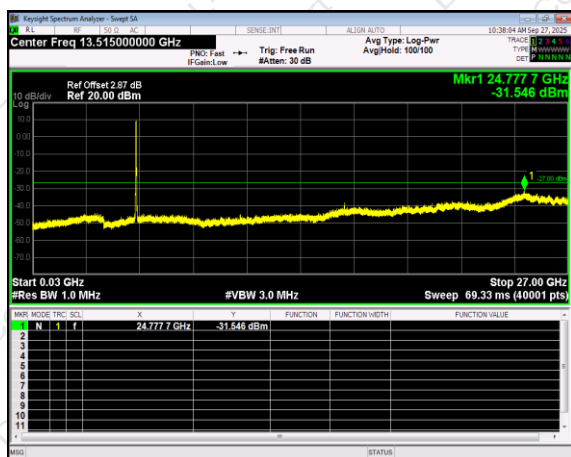
802.11ac20 on channel 40



802.11ac40 on channel 46



802.11ac20 on channel 48



802.11ac80 on channel 42

