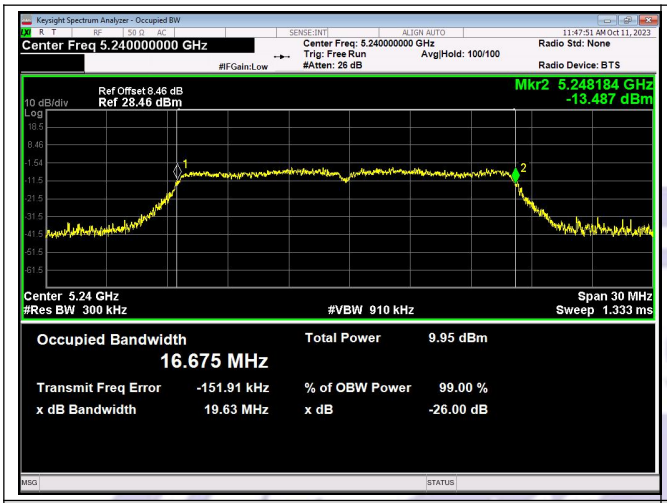
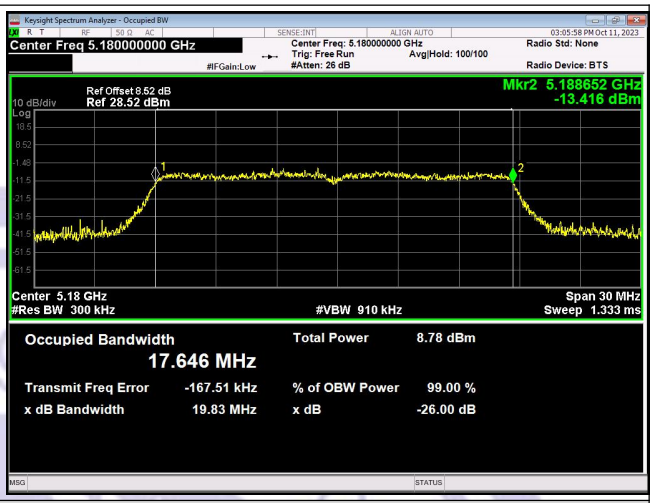


IEEE 802.11a_Channel 48_20MHz_Antenna 0



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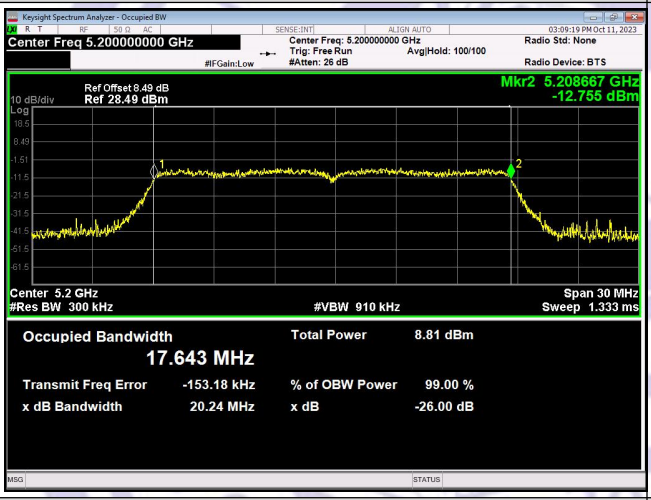

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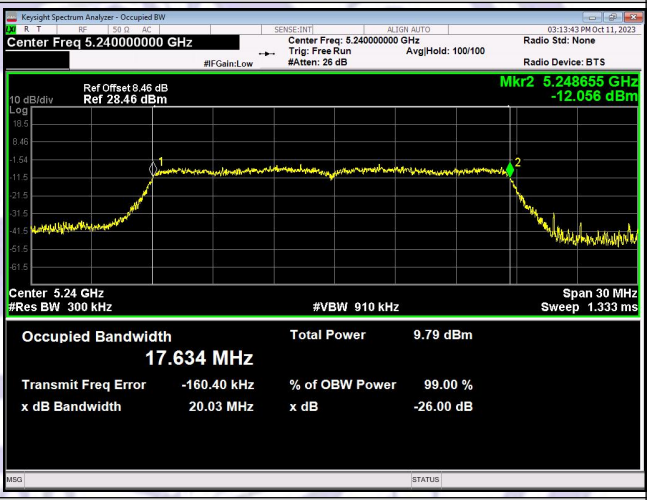

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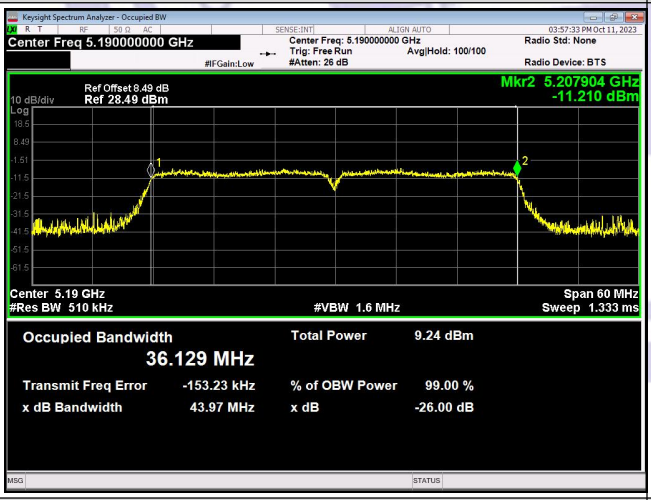

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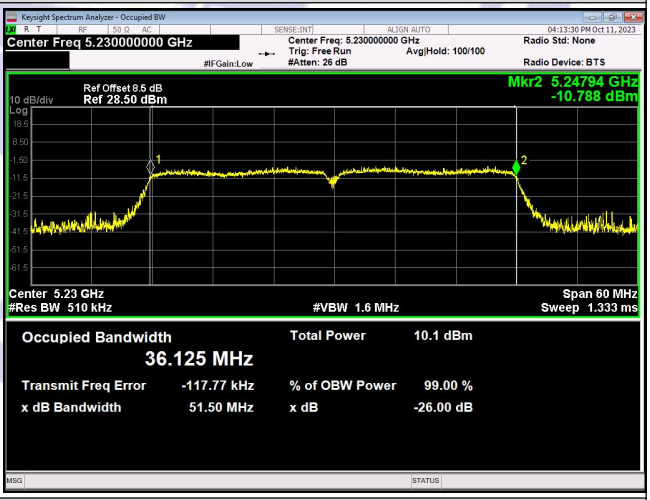

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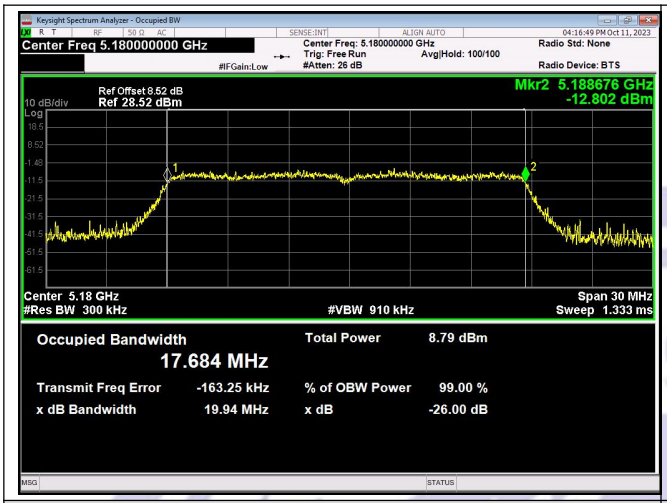

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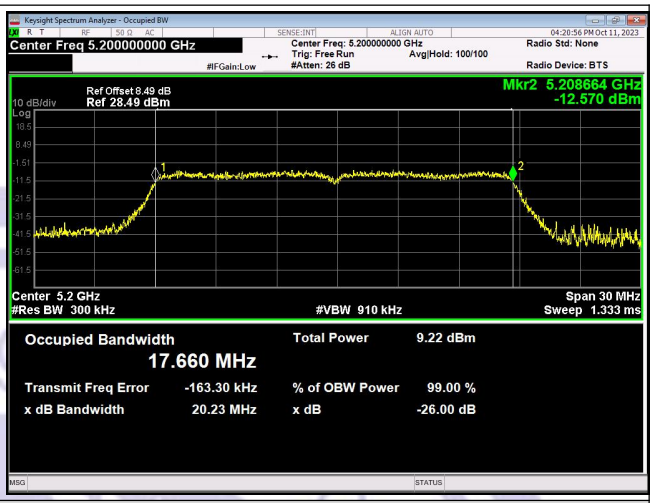

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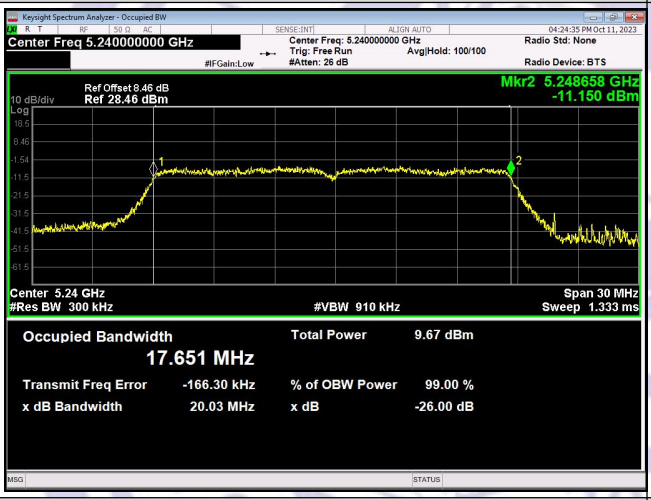

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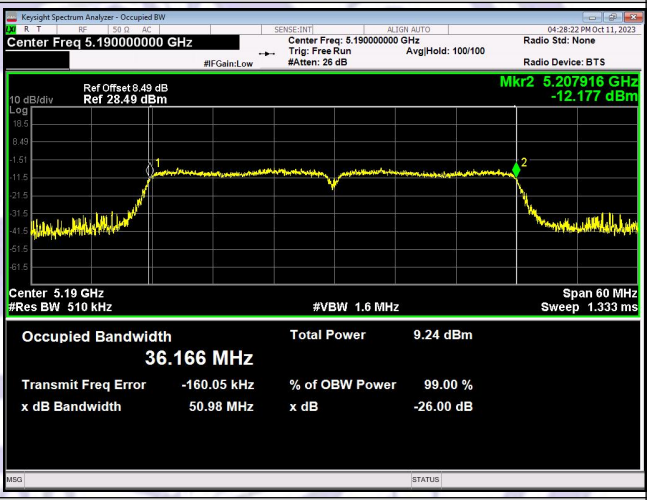

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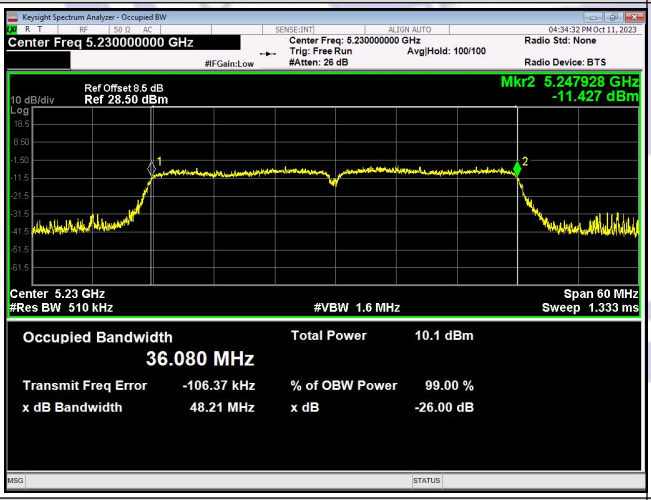

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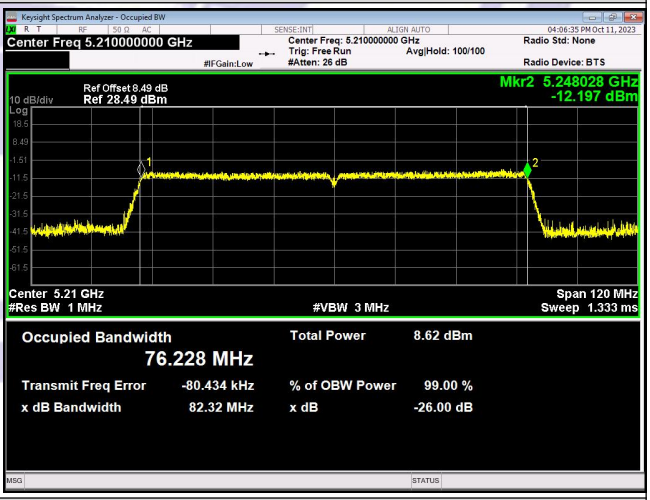

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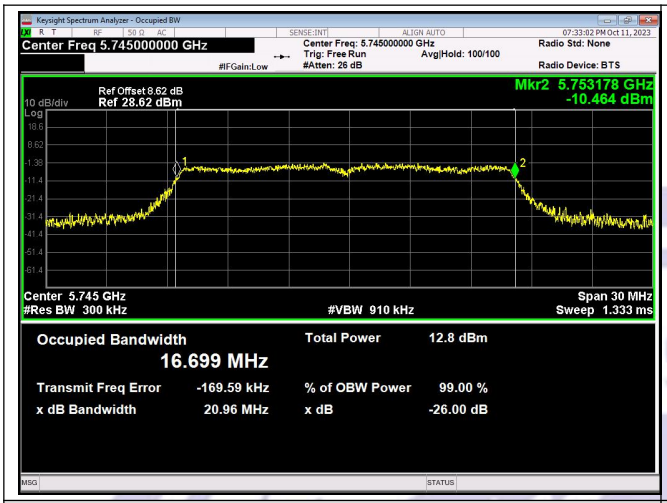

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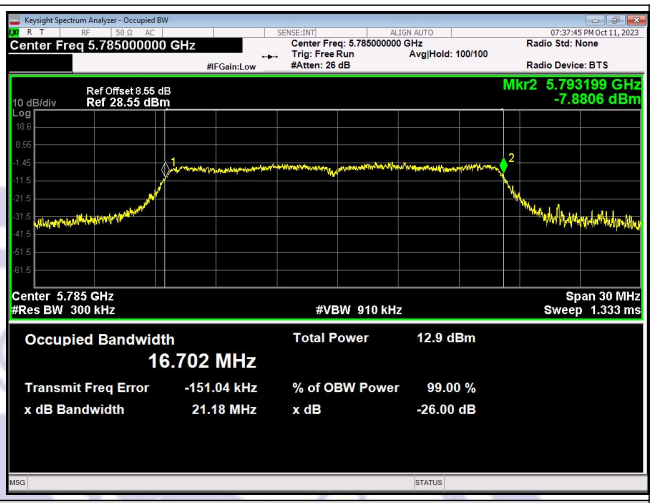

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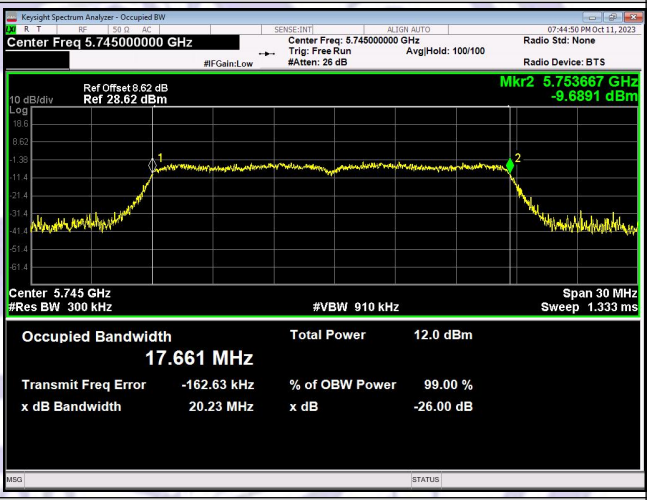

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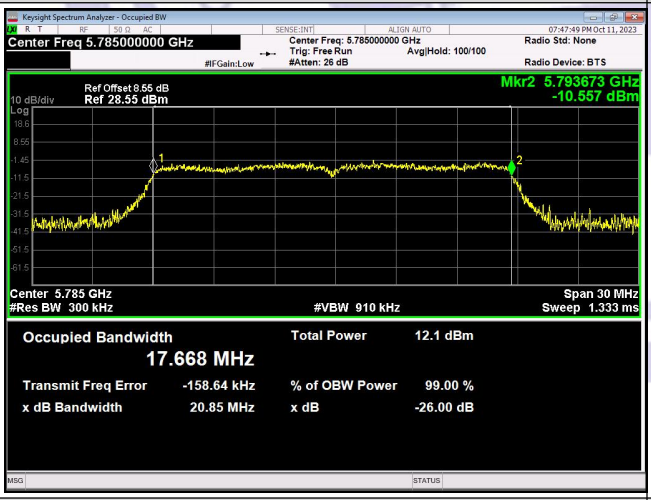

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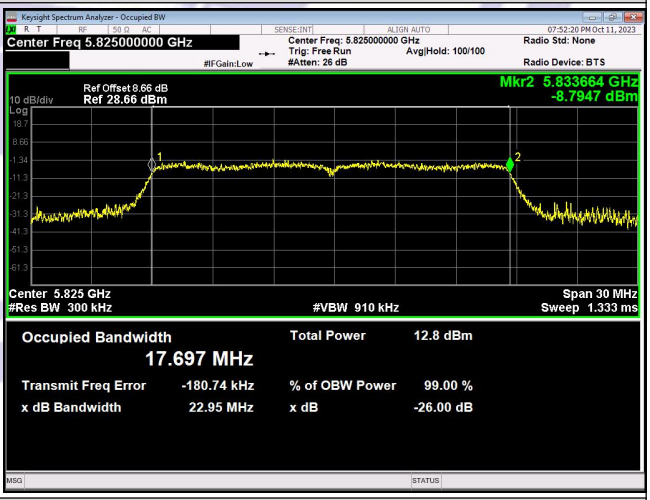

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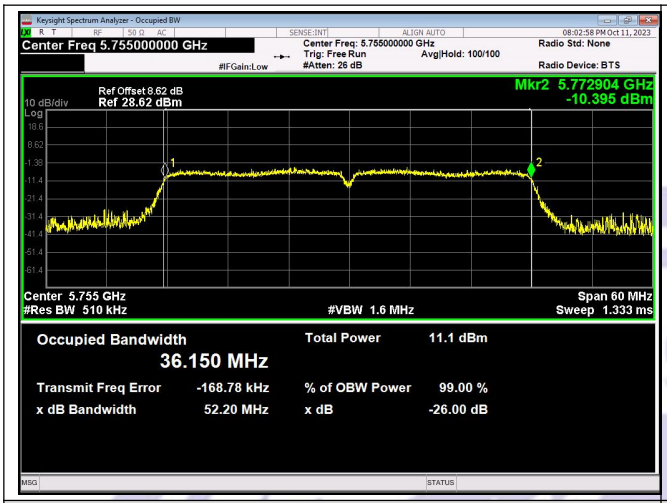

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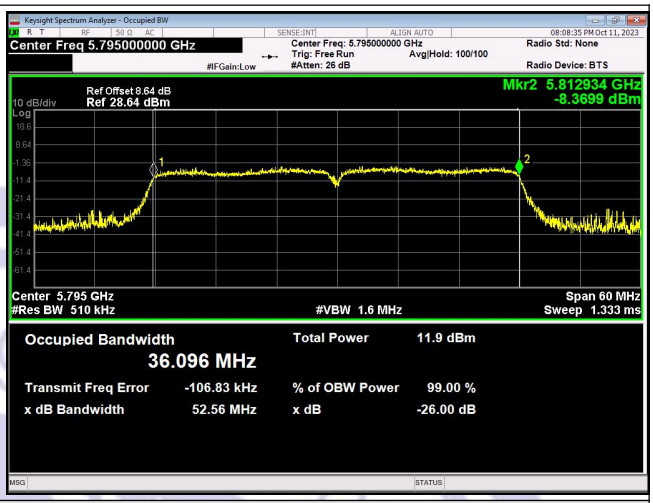

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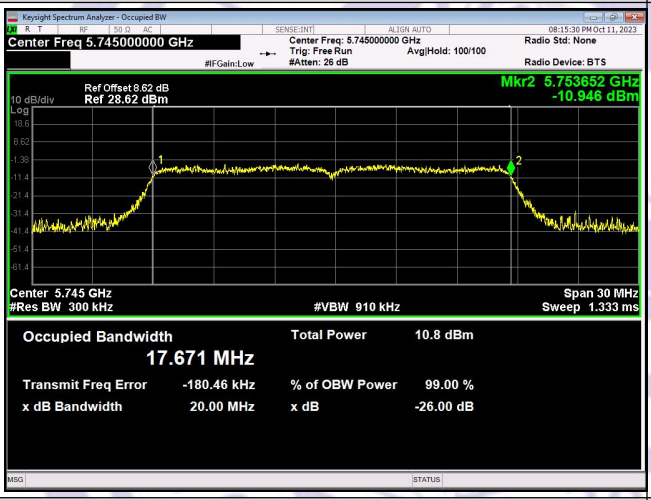

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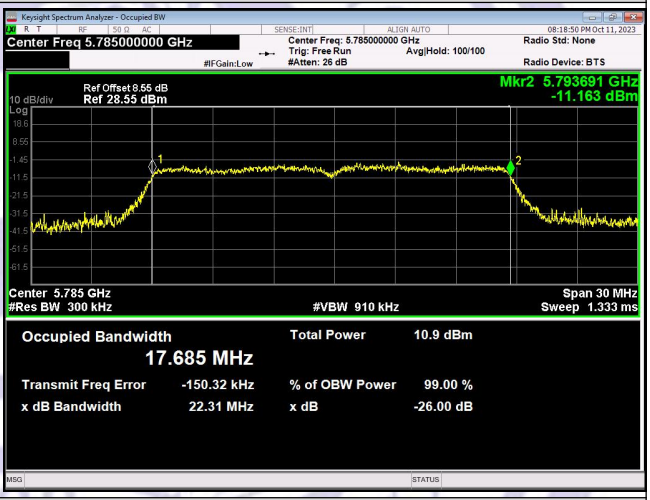

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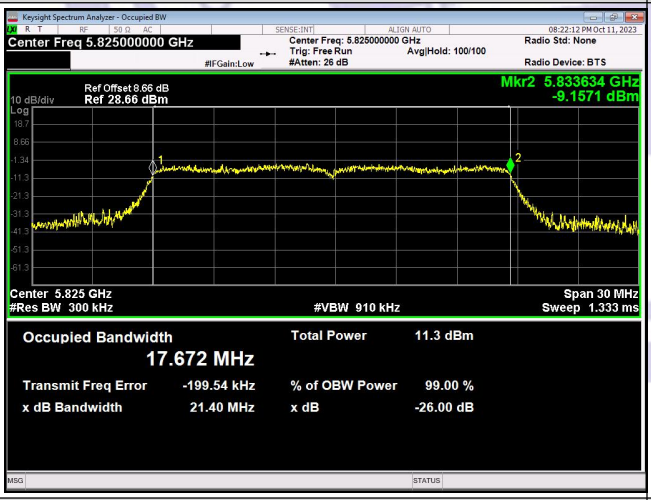

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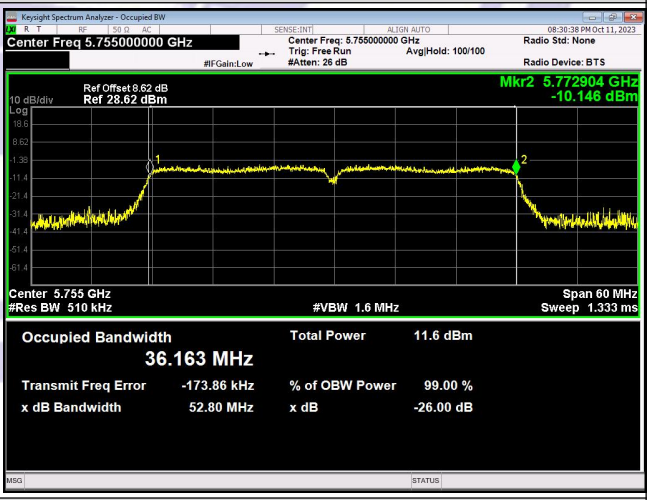

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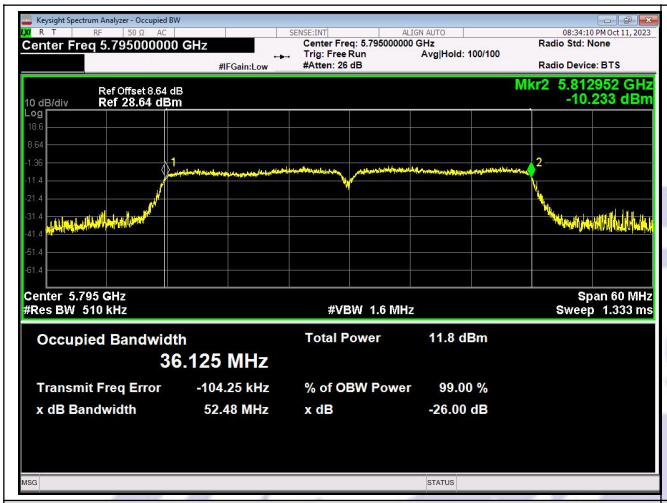

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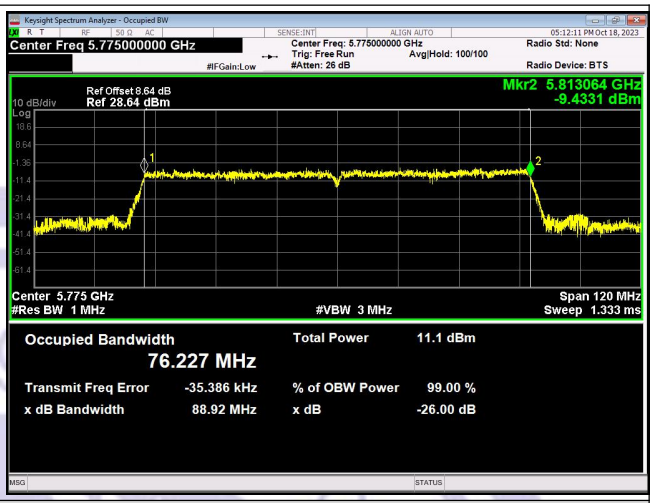


IEEE 802.11ac_Channel 155_80MHz_Antenna 0

10 Maximum Conducted Output Power

10.1 Test Standard and Limit

According to FCC §15.407

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 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi 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 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

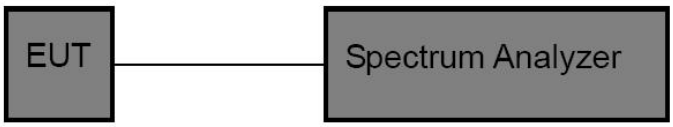
For the band 5.725–5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

According to RSS-247 6.2

For other devices, the maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10B, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

10.2 Test Setup



10.3Test 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.).

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

10.4 Test Data

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	1012 hPa	Test Voltage ：	DC 22V

Band	Mode	Test Channel	Output Power(dBm)	Antenna gain (dBi)	EIRP Output Power(dB)	IC LIMIT (dBm)	FCC LIMIT (dBm)
Band 1	802.11a	Low	3.648	5.9	7.68	24	30
		Middle	3.162		7.19	24	30
		High	4.392		8.42	24	30
	802.11n HT20	Low	6.411		10.13	24	30
		Middle	6.858		10.58	24	30
		High	7.751		11.47	24	30
	802.11n HT40	Low	3.058		3.42	24	30
		High	4.066		4.43	24	30
	802.11ac HT20	Low	3.253		3.44	24	30
		Middle	3.284		3.47	24	30
		High	4.325		4.51	24	30
	802.11ac HT40	Low	2.914		3.28	24	30
		High	4.033		4.4	24	30
	802.11ac HT80	Middle	1.071		1.07	24	30

Note: For power test the duty cycle is 100% in continous transmitting mode

Band	Mode	Test Channel	Output Power(dBm)	LIMIT (dBm)
Band 1	802.11a	Low	7.68	23.01
		Middle	7.19	23.01
		High	8.42	23.01
	802.11n HT20	Low	10.13	23.01
		Middle	10.58	23.01
		High	11.47	23.01
	802.11n HT40	Low	3.42	23.01
		High	4.43	23.01
	802.11ac HT20	Low	3.44	23.01
		Middle	3.47	23.01
		High	4.51	23.01
	802.11ac HT40	Low	3.28	23.01
		High	4.4	23.01
	802.11ac HT80	Middle	1.07	23.01

Note: For power test the duty cycle is 100% in continous transmitting mode

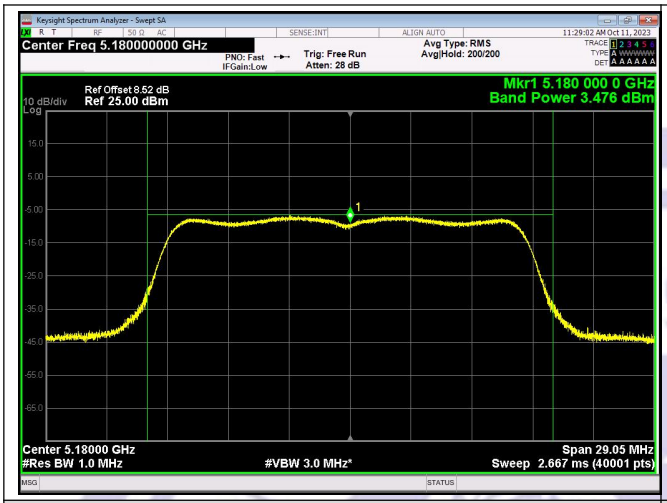
Band	Mode	Test Channel	Output Power(dBm)	Antenna gain (dBi)	EIRP Output Power(dB)	IC LIMIT (dBm)	FCC LIMIT (dBm)
Band 4	802.11a	Low	7.310	5.9	11.37	24	30
		Middle	7.442		11.5	24	30
		High	7.536		11.59	24	30
	802.11n HT20	Low	6.397		6.58	24	30
		Middle	6.272		6.46	24	30
		High	7.059		7.24	24	30
	802.11n HT40	Low	5.110		5.11	24	30
		High	5.367		5.37	24	30
	802.11ac HT20	Low	4.817		5.0	24	30
		Middle	4.946		5.13	24	30
		High	5.343		5.53	24	30
	802.11ac HT40	Low	10.696		17.67	24	30
		High	10.900		17.87	24	30
	802.11ac HT80	Middle	5.316		1.52	24	30

Note: For power test the duty cycle is 100% in continous transmitting mode

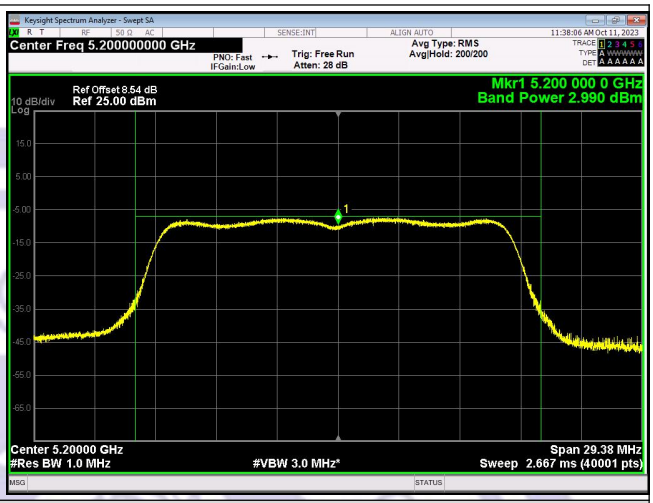
Band	Mode	Test Channel	Output Power(dBm)	LIMIT (dBm)
Band 4	802.11a	Low	11.37	36.02
		Middle	11.5	36.02
		High	11.59	36.02
	802.11n HT20	Low	6.58	36.02
		Middle	6.46	36.02
		High	7.24	36.02
	802.11n HT40	Low	5.11	36.02
		High	5.37	36.02
	802.11ac HT20	Low	5.0	36.02
		Middle	5.13	36.02
		High	5.53	36.02
	802.11ac HT40	Low	17.67	36.02
		High	17.87	36.02
	802.11ac HT80	Middle	1.52	36.02

Note: For power test the duty cycle is 100% in continous transmitting mode

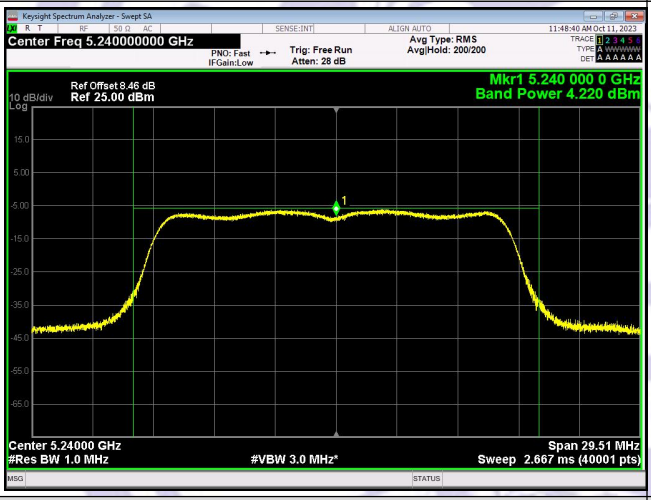
802.11 a CH36



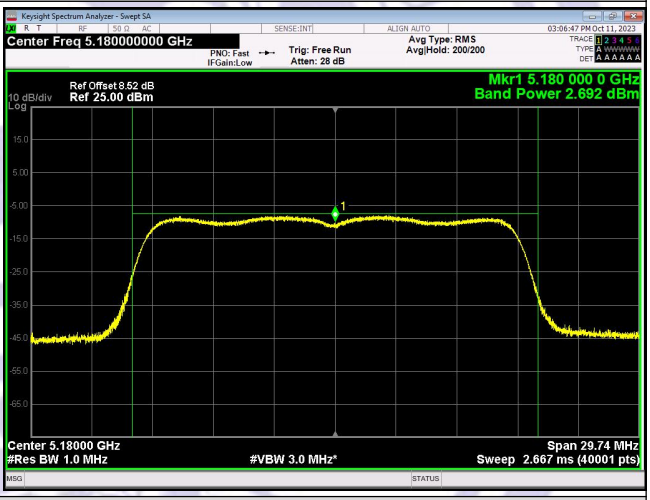
Conducted AVG output power
IEEE 802.11a_Channel 36_Antenna 0



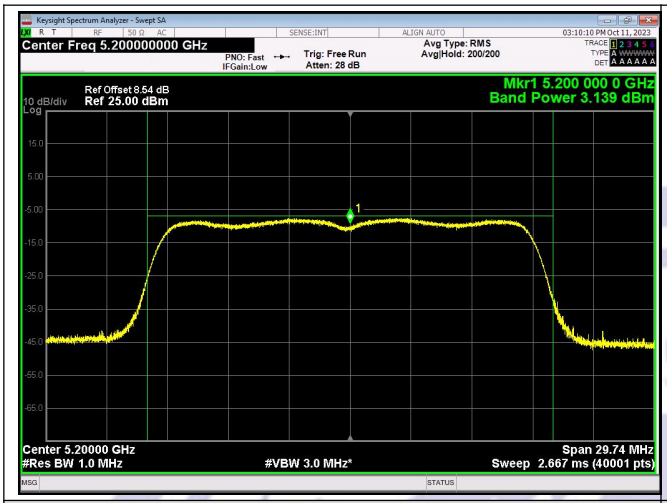
Conducted AVG output power
IEEE 802.11a_Channel 40_Antenna 0



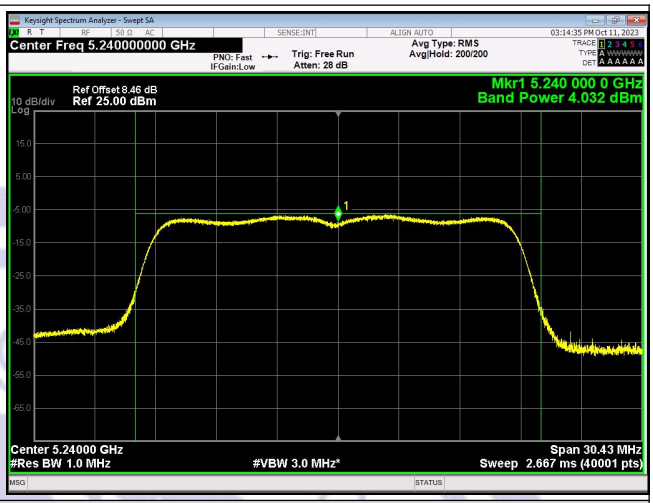
Conducted AVG output power
IEEE 802.11a_Channel 48_Antenna 0



Conducted AVG output power
IEEE 802.11n_20_Channel 36_Antenna 0



Conducted AVG output power
IEEE 802.11n_20_Channel 40_Antenna 0



Conducted AVG output power
IEEE 802.11n_20_Channel 48_Antenna 0

Conducted AVG output power
IEEE 802.11n_40_Channel 38_Antenna 0

Conducted AVG output power
IEEE 802.11n_40_Channel 46_Antenna 0