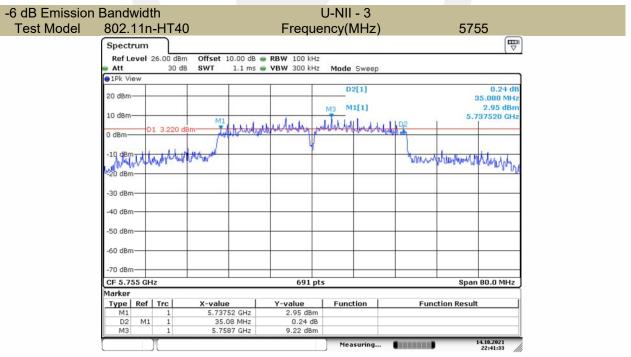
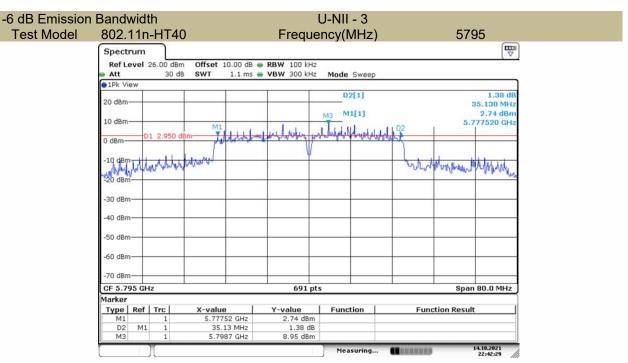


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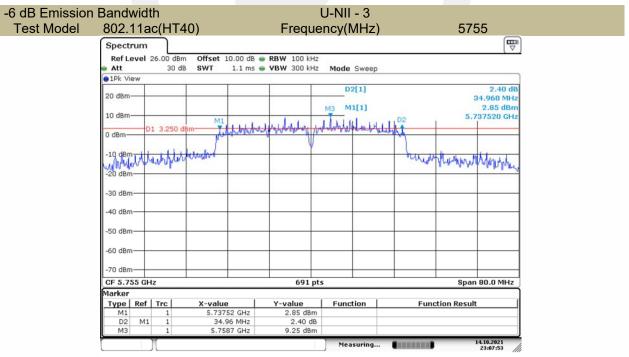


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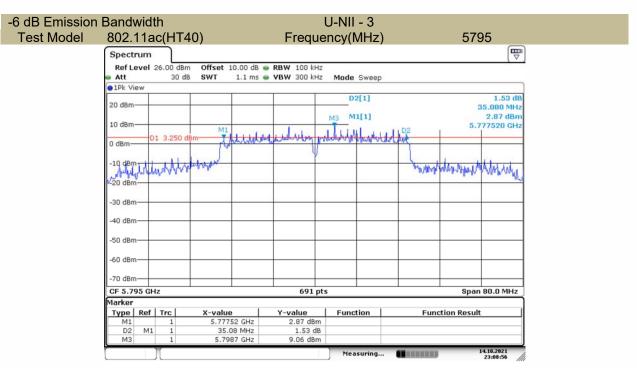


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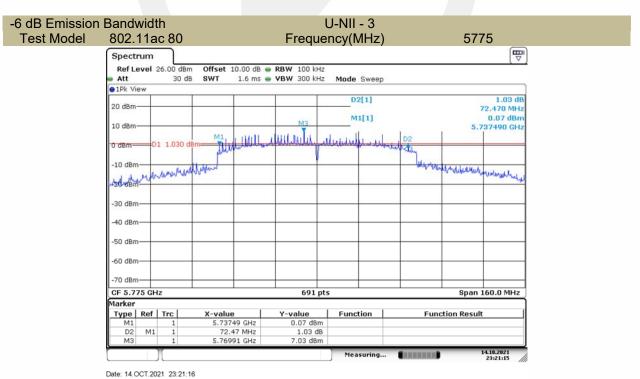


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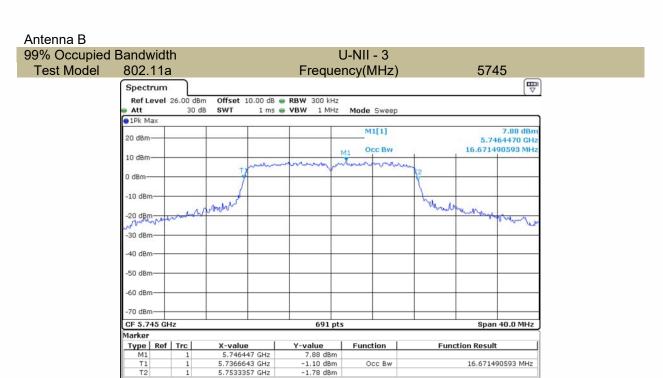




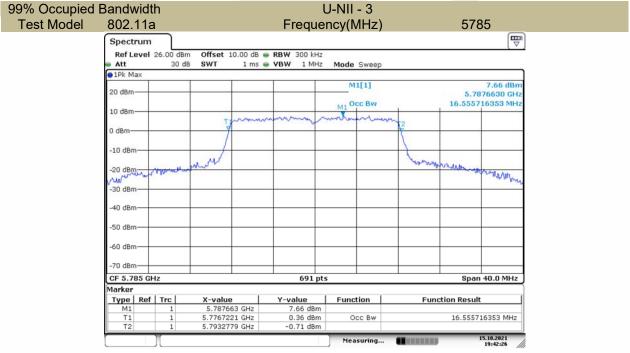
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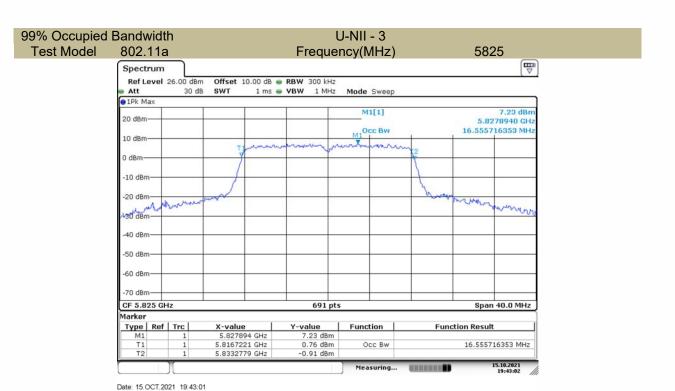


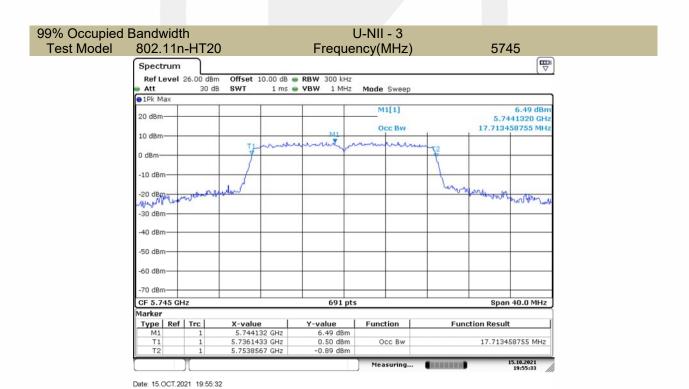
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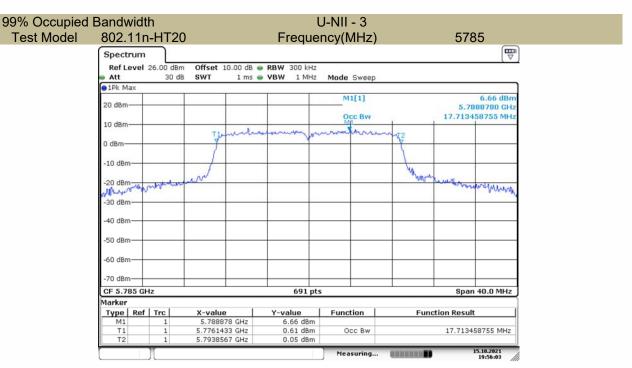






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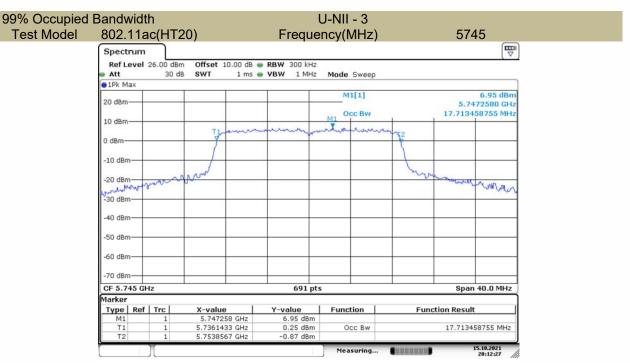


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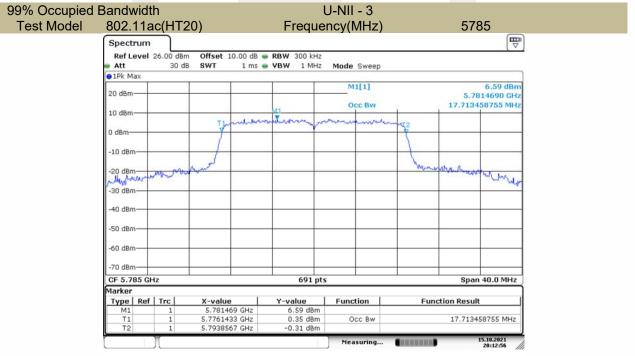


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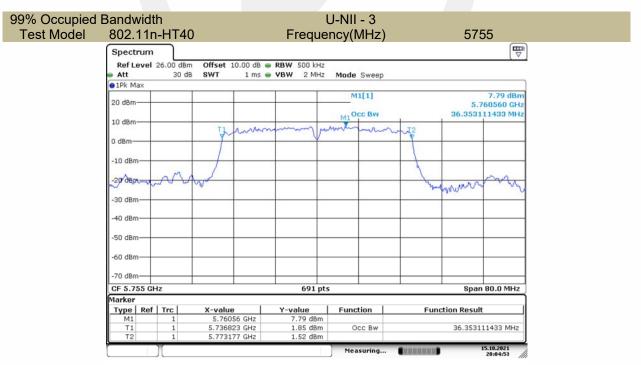


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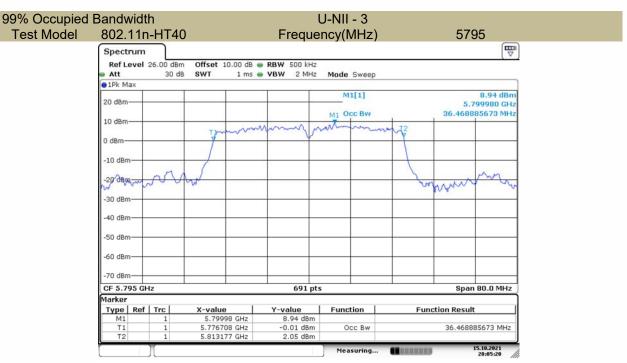




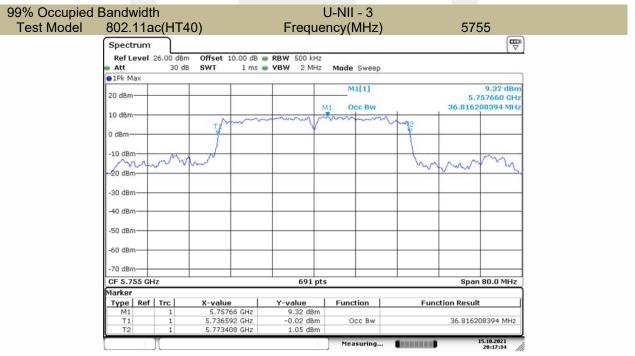


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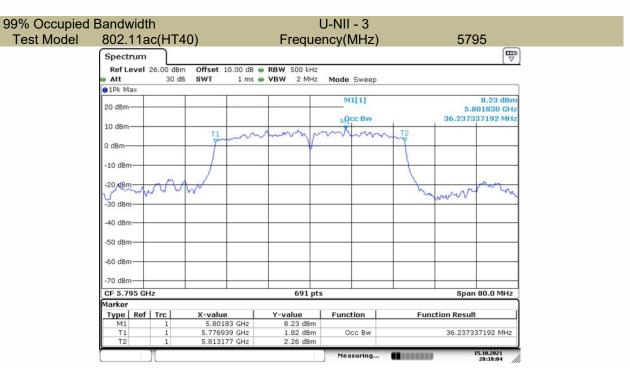


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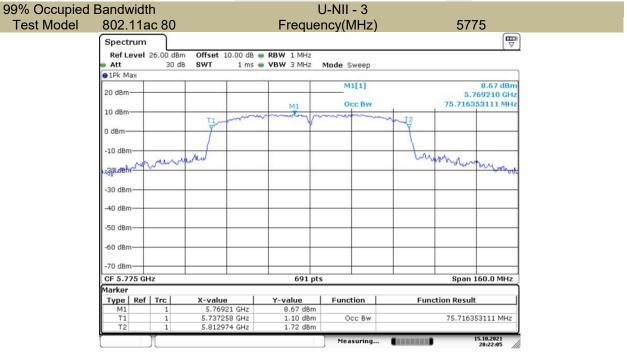


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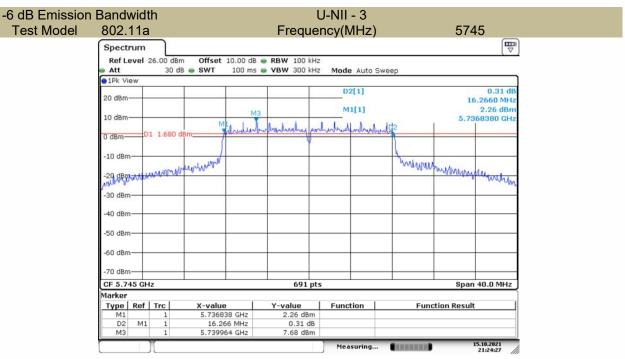


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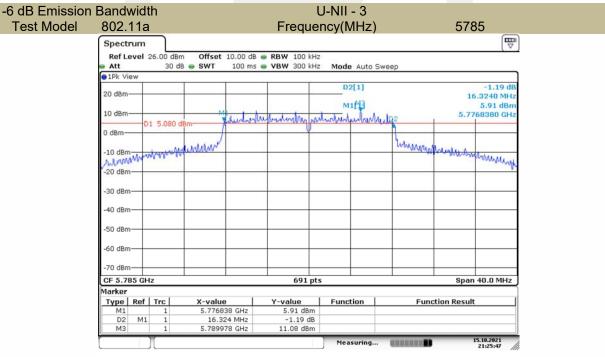


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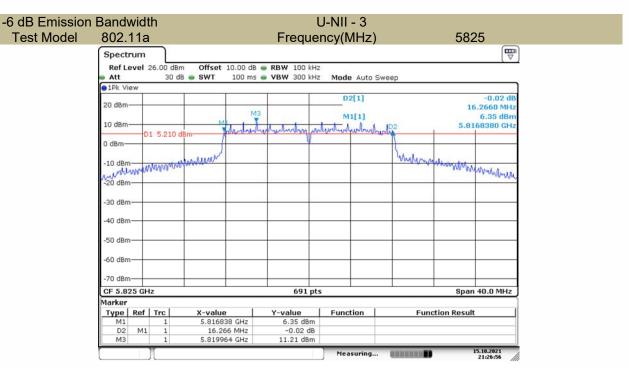


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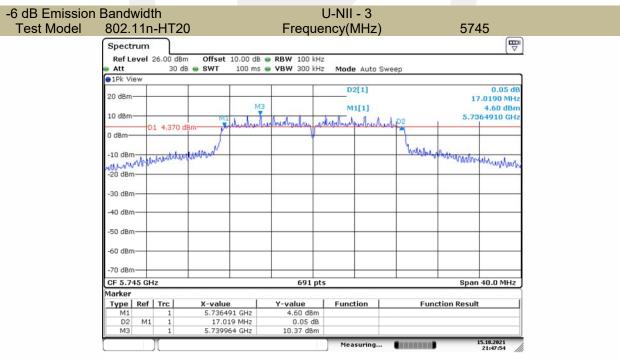


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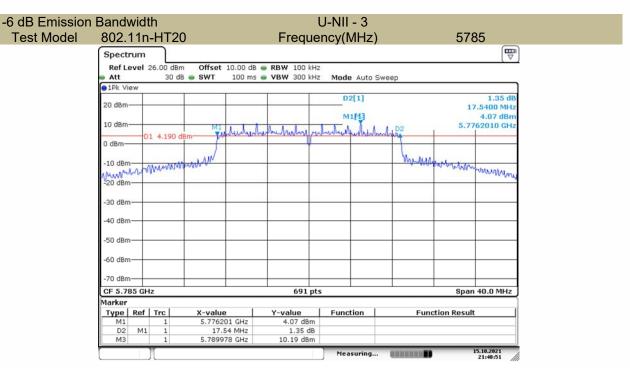


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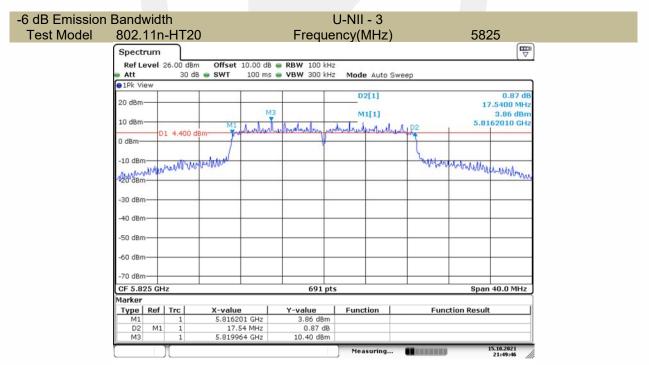


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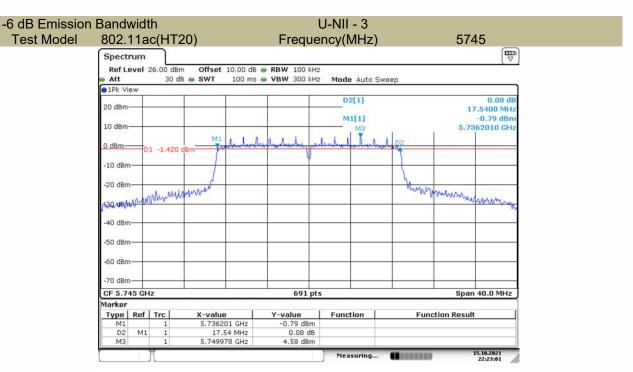




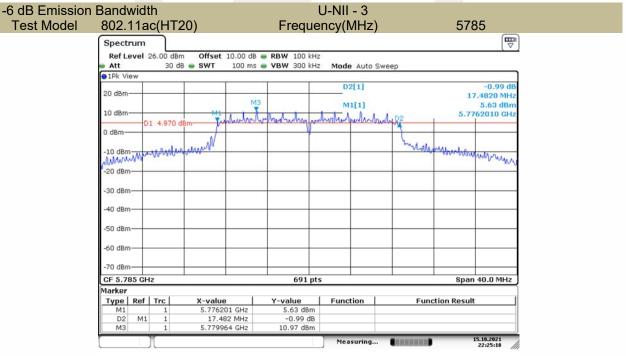


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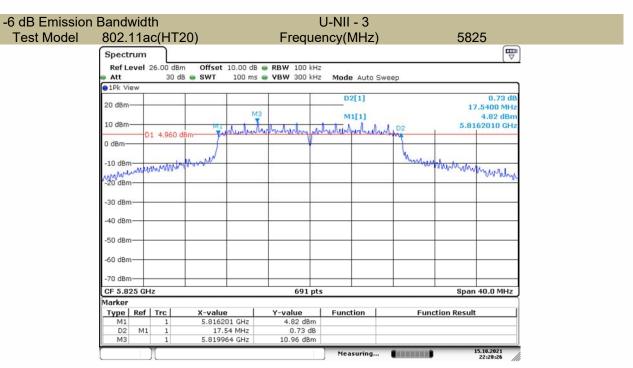


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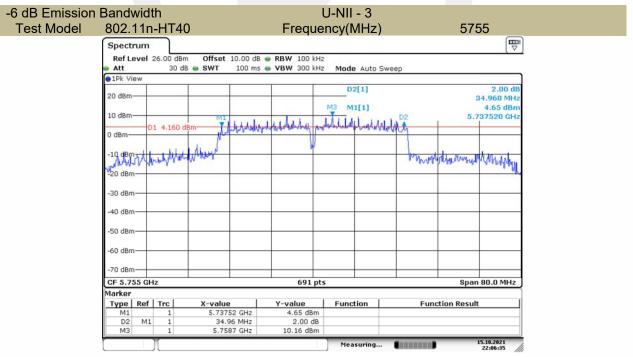


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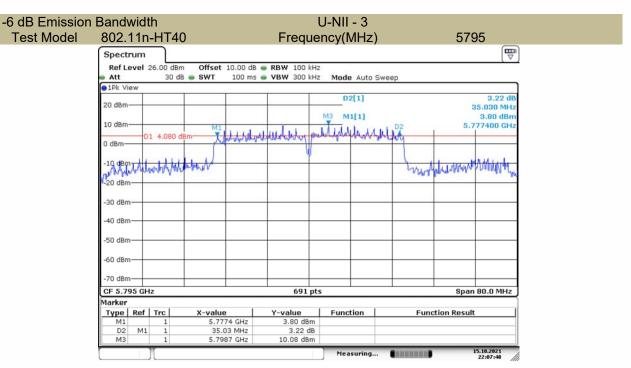


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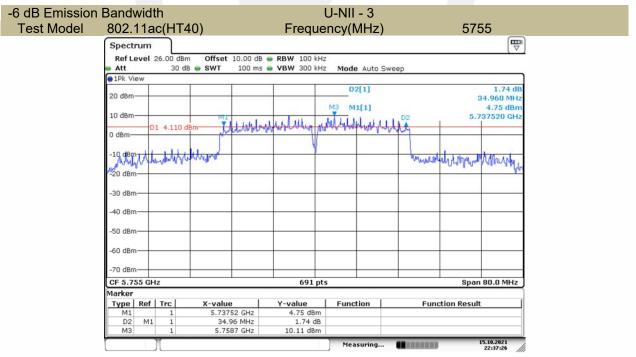


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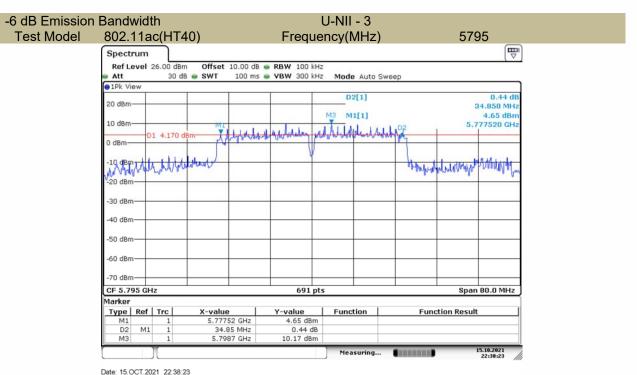


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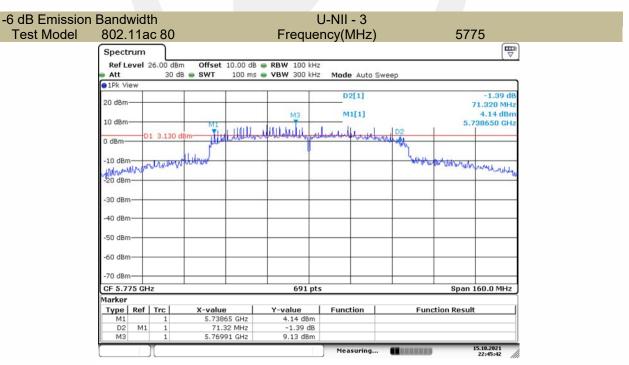


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8.2 MAXIMUM CONDUCTED OUTPUT POWER

8.2.1 Applicable Standard

According to FCC Part 15.407(a)(1) for UNII Band I
According to FCC Part 15.407(a)(2) for UNII Band II-A and UNII Band II-C
According to FCC Part 15.407(a)(3) for UNII Band III
According to 789033 D02 Section II(E)

8.2.2 Conformance Limit

■ For the band 5.15-5.25 GHz.

- (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 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).
- (a) (1) (ii) For an indoor 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.
- (a) (1) (iii) For fixed point-to-point access points 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. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. 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.
- (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 dBi. In addition, the maximum power spectral density shall not exceed 11 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.

■ For the 5.25-5.35 GHz and 5.47-5.725 GHz bands

(a) (2) The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 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.

■ For the band 5.725-5.85 GHz

(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

Report No. ENS2108180105W00303R



dBm in any 500-kHz 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. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi 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

8.2.3 Test Configuration

Test according to clause 6.1 radio frequency test setup

8.2.4 Test Procedure

The maximum average conducted output power can be measured using Method PM-G (Measurement using a gated RF average power meter):

Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

- a. The Transmitter output (antenna port) was connected to the power meter.
- b. Turn on the EUT and power meter and then record the power value.
- c. Repeat above procedures on all channels needed to be tested.

8.2.5 Test Results



For 1T1R

Band	Operating mode	Channel Number	Channel Freq.		ed Output (dBm)	Limit (dBm)	Verdict
		Number	(MHz)	Antenna 1	Antenna 2	(dbiii)	
		CH36	5180	17.49	17.79	24	Pass
	802.11a	CH40	5200	17.82	18.29	24	Pass
		CH48	5240	18.05	18.59	24	Pass
		CH36	5180	14.89	14.39	24	Pass
	802.11n-HT20	CH40	5200	14.56	14.93	24	Pass
		CH48	5240	14.73	15.26	24	Pass
U-NII – 1		CH36	5180	14.68	14.59	24	Pass
U-INII — I	802.11ac(HT20)	CH40	5200	15.05	15.28	24	Pass
		CH48	5240	14.51	15.84	24	Pass
	802.11n-HT40	CH38	5190	14.33	14.84	24	Pass
	802.11N-H140	CH46	5230	14.57	15.39	24	Pass
	000 11 (1) (1)	CH38	5190	14.18	14.60	24	Pass
	802.11ac(HT40)	CH46	5230	14.43	14.91	24	Pass
	802.11ac(HT80)	CH42	5210	16.61	14.82	24	Pass



Band	Operating mode	Channel Number	Channel Freq.		ed Output (dBm)	Limit	Verdict
	5 p 3 3 3 3 3 5 5 6		(MHz)	Antenna 1	Antenna 2	(dBm)	
		CH52	5260	18.26	18.94	24	Pass
	802.11a	CH56	5280	18.43	19.26	24	Pass
		CH64	5320	19.00	19.20	24	Pass
		CH52	5260	16.59	17.27	24	Pass
	802.11n-HT20	CH56	5280	17.00	17.83	24	Pass
		CH64	5320	17.54	17.95	24	Pass
U-NII –		CH52	5260	16.45	18.45	24	Pass
2A	802.11ac(HT20)	CH56	5280	17.53	18.81	24	Pass
		CH64	5320	17.52	18.38	24	Pass
	802.11n-HT40	CH54	5270	17.18	17.08	24	Pass
	802.11n-H140	CH62	5310	17.84	17.37	24	Pass
	802.11ac(HT40)	CH54	5270	16.01	16.69	24	Pass
	002.11ac(Π140)	CH62	5310	17.47	17.15	24	Pass
	802.11ac(HT80)	CH58	5290	17.40	15.41	24	Pass



Band	Operating mode	Channel	Channel Freq.		ed Output (dBm)	Limit	Verdict
		Number	(MHz)	Antenna 1	Antenna 2	(dBm)	
		CH100	5500	18.96	19.19	24	Pass
	802.11a	CH116	5580	18.59	19.04	24	Pass
		CH140	5700	18.82	18.93	24	Pass
		CH100	5500	17.54	18.09	24	Pass
	802.11n-HT20	CH116	5580	17.67	18.28	24	Pass
		CH140	5700	17.88	17.83	24	Pass
U-NII –		CH100	5500	17.48	18.11	24	Pass
2C	802.11ac(HT20)	CH116	5580	17.02	18.42	24	Pass
		CH140	5700	16.52	16.43	24	Pass
	902 11n UT40	CH102	5510	16.63	17.84	24	Pass
	802.11n-HT40	CH134	5670	17.17	18.31	24	Pass
	000 44 (LIT40)	CH102	5510	17.22	17.62	24	Pass
	802.11ac(HT40)	CH134	5670	16.77	17.93	24	Pass
	802.11ac(HT80)	CH106	5530	18.75	17.71	24	Pass



Band	Operating mode	Channel Number	Channel Freq. (MHz)		ed Output (dBm) Antenna 2	Limit (dBm)	Verdict
		CH149	5745	20.63	21.26	30	Pass
	802.11a	CH157	5785	20.60	21.27	30	Pass
		CH165	5825	20.84	21.50	30	Pass
		CH149	5745	19.91	21.10	30	Pass
	802.11n-HT20	CH157	5785	20.10	21.28	30	Pass
		CH165	5825	20.37	21.25	30	Pass
U-NII – 3		CH149	5745	20.59	21.34	30	Pass
U-INII — 3	802.11ac(HT20)	CH157	5785	20.46	21.29	30	Pass
		CH165	5825	20.95	21.52	30	Pass
	802.11n-HT40	CH151	5755	18.65	19.51	30	Pass
	802.11n-H140	CH159	5795	18.57	19.54	30	Pass
	000 44 - (UT40)	CH151	5755	18.14	19.07	30	Pass
	802.11ac(HT40)	CH159	5795	18.20	19.06	30	Pass
	802.11ac(HT80)	CH155	5775	19.62	19.44	30	Pass



For 2T2R

Band	Operating mode	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
		CH36	5180	17.66	24	Pass
	802.11n-HT20	CH40	5200	17.76	24	Pass
		CH48	5240	18.01	24	Pass
		CH36	5180	17.65	24	Pass
	802.11ac(HT20)	CH40	5200	18.18	24	Pass
U-NII – 1		CH48	5240	18.24	24	Pass
	000 44= LIT40	CH38	5190	17.60	24	Pass
	802.11n-HT40	CH46	5230	18.01	24	Pass
	000 44(UT40)	CH38	5190	17.41	24	Pass
	802.11ac(HT40)	CH46	5230	17.69	24	Pass
	802.11ac(HT80)	CH42	5210	18.82	24	Pass



Band	Operating mode	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
		CH52	5260	19.95	24	Pass
	802.11n-HT20	CH56	5280	20.45	24	Pass
		CH64	5320	20.76	24	Pass
		CH52	5260	20.57	24	Pass
	802.11ac(HT20)	CH56	5280	21.23	24	Pass
U-NII – 2A		CH64	5320	20.98	24	Pass
	002 44= UT40	CH54	5270	20.14	24	Pass
	802.11n-HT40	CH62	5310	20.62	24	Pass
	802.11ac(HT40)	CH54	5270	19.37	24	Pass
		CH62	5310	20.32	24	Pass
	802.11ac(HT80)	CH58	5290	19.53	24	Pass



Band	Operating mode	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
		CH100	5500	20.83	24	Pass
	802.11n-HT20	CH116	5580	21	24	Pass
		CH140	5700	20.87	24	Pass
		CH100	5500	20.82	24	Pass
	802.11ac(HT20)	CH116	5580	20.79	24	Pass
U-NII – 2C		CH140	5700	19.49	24	Pass
	000 445 11740	CH102	5510	20.29	24	Pass
	802.11n-HT40	CH134	5670	20.79	24	Pass
	802.11ac(HT40)	CH102	5510	20.43	24	Pass
		CH134	5670	20.4	24	Pass
	802.11ac(HT80)	CH106	5530	21.27	24	Pass



Band	Operating mode	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
		CH149	5745	23.56	30	Pass
	802.11n-HT20	CH157	5785	23.74	30	Pass
		CH165	5825	23.84	30	Pass
	802.11ac(HT20)	CH149	5745	23.99	30	Pass
		CH157	5785	23.91	30	Pass
U-NII – 3		CH165	5825	24.52	30	Pass
	002 445 11740	CH151	5755	22.11	30	Pass
	802.11n-HT40	CH159	5795	22.09	30	Pass
	802.11ac(HT40)	CH151	5755	21.64	30	Pass
		CH159	5795	21.66	30	Pass
	802.11ac(HT80)	CH155	5775	22.54	30	Pass



8.3 MAXIMUM PEAK POWER DENSITY

8.3.1 Applicable Standard

According to FCC Part 15.407(a)(1) for UNII Band I
According to FCC Part 15.407(a)(2) for UNII Band II-A and UNII Band II-C
According to FCC Part 15.407(a)(3) for UNII Band III
According to 789033 D02 Section II(F)

8.3.2 Conformance Limit

■ For the band 5.15-5.25 GHz.

- (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 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).
- (a) (1) (ii) For an indoor 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.
- (a) (1) (iii) For fixed point-to-point access points 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. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. 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.
- (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 dBi. In addition, the maximum power spectral density shall not exceed 11 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.

■ For the 5.25-5.35 GHz and 5.47-5.725 GHz bands

(b) (2) The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 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.

■ For the band 5.725-5.85 GHz

(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

Report No. ENS2108180105W00303R



dBm in any 500-kHz 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. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi 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

8.3.3 Test Configuration

Test according to clause 6.1 radio frequency test setup

8.3.4 Test Procedure

Methods refer to FCC KDB 789033

For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, "provided that the measured power is integrated over the full reference bandwidth" to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 KHz bandwidth, the following adjustments to the procedures apply:

- a) Set RBW $\geq 1/T$, where T is defined in section II.B.l.a).
- b) Set VBW ≥ 3 RBW.
- c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10log(500kHz/RBW) to the measured result, whereas RBW (< 500 KHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
- d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add 10log(1MHz/RBW) to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.
- e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100 KHz for the sections

5.c) and 5.d) above, since RBW=100 KHZ is available on nearly all spectrum analyzers.



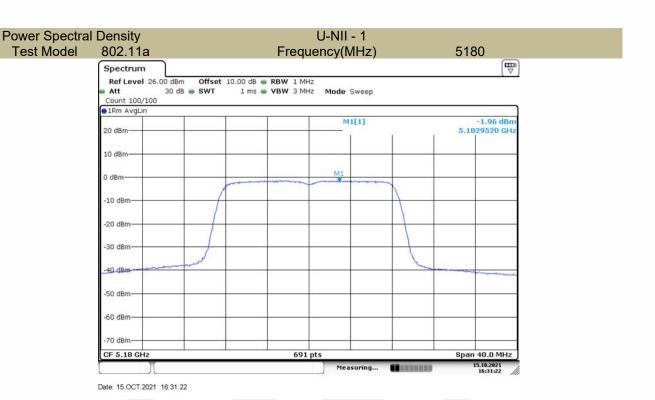
8.3.5 Test Results

For 1T1R-Antenna 1

5150-5250MHz

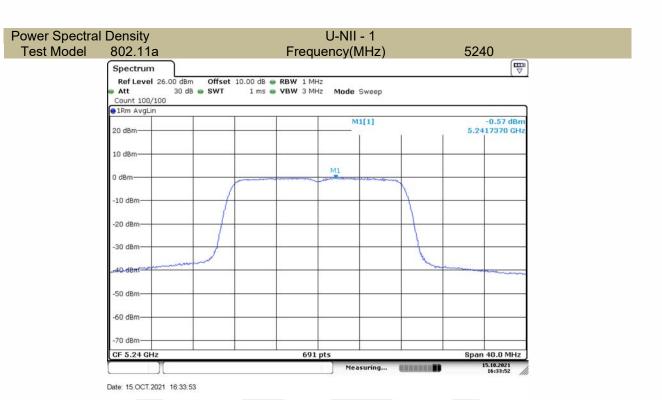
Operating mode	Test Channel	Power Spectral Density dBm/MHz	Limit (dBm/MHz)
	5180	-1.96	11
802.11a	5200	-1.66	11
	5240	-0.57	11
	5180	-2.01	11
802.11n-HT20	5200	-3.39	11
	5240	-3.41	11
	5180	-2.82	11
802.11ac(HT20)	5200	-3.66	11
	5240	-3.04	11
000 445 11740	5190	-0.89	11
802.11n-HT40	5230	-0.16	11
900 44 cs/UT40\	5190	-9.36	11
802.11ac(HT40)	5230	-8.63	11
802.11ac(HT80)	5210	-2.95	11





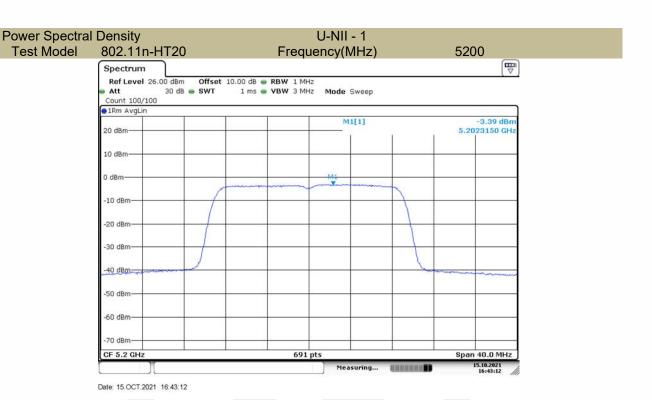


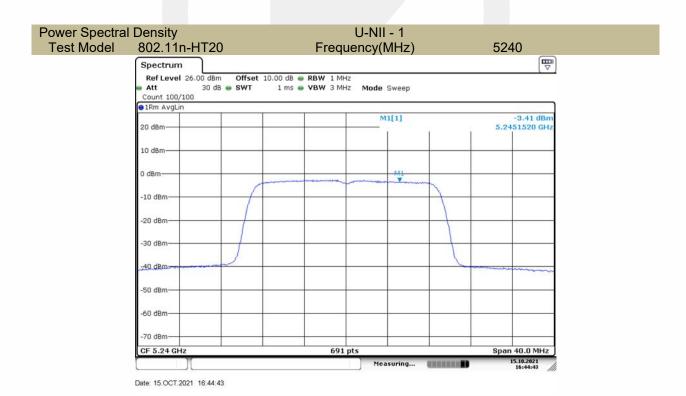










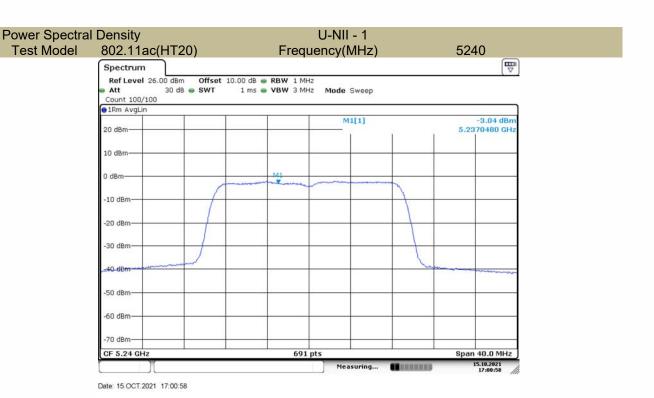


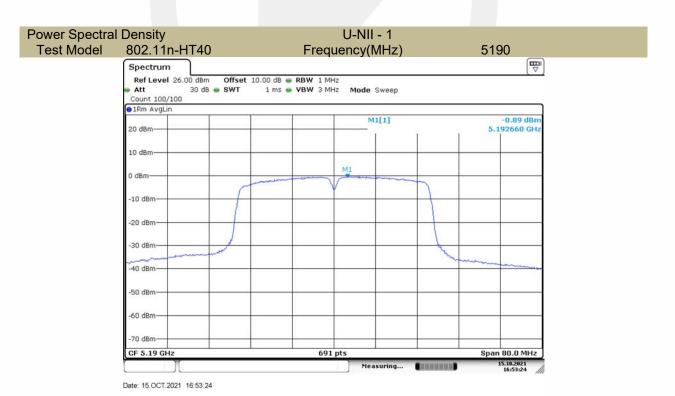




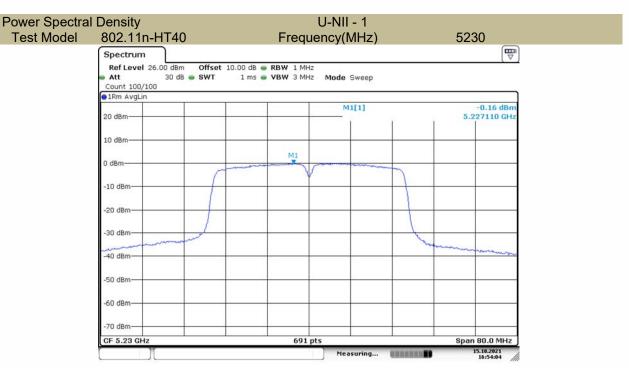




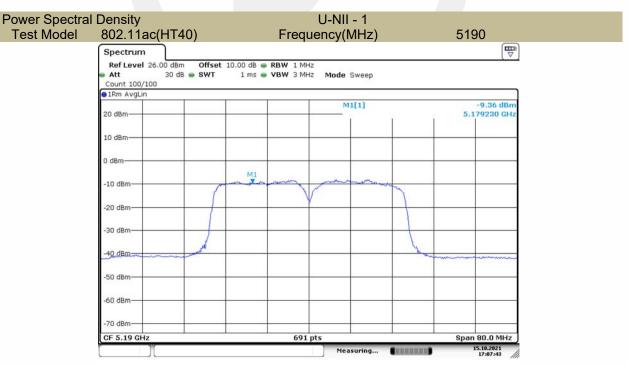






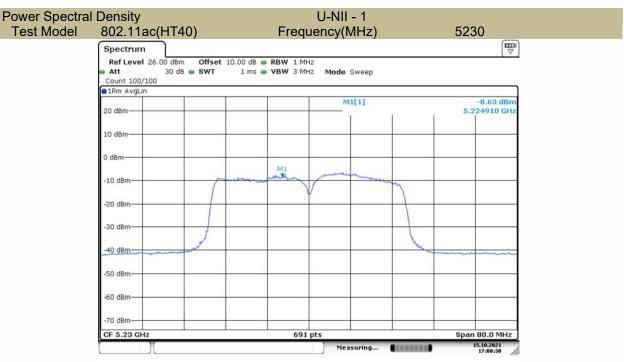




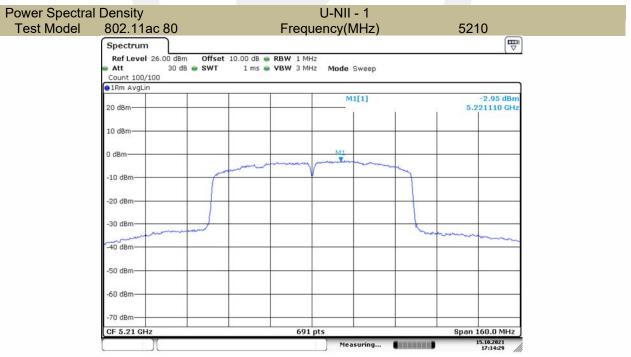


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5250-5350MHz

Operating mode	Test Channel	Power Spectral Density dBm/MHz	Limit (dBm/MHz)
	5260	-0.08	11
802.11a	5280	0.07	11
	5320	0.39	11
	5260	-2.09	11
802.11n-HT20	5280	-2.87	11
	5320	-2.60	11
	5260	-2.18	11
802.11ac(HT20)	5280	-2.85	11
	5320	-1.98	11
000 445 11740	5270	-0.74	11
802.11n-HT40	5310	0.34	11
000 44(UT40)	5270	-8.40	11
802.11ac(HT40)	5310	-8.11	11
802.11ac(HT80)	5290	-2.92	11



