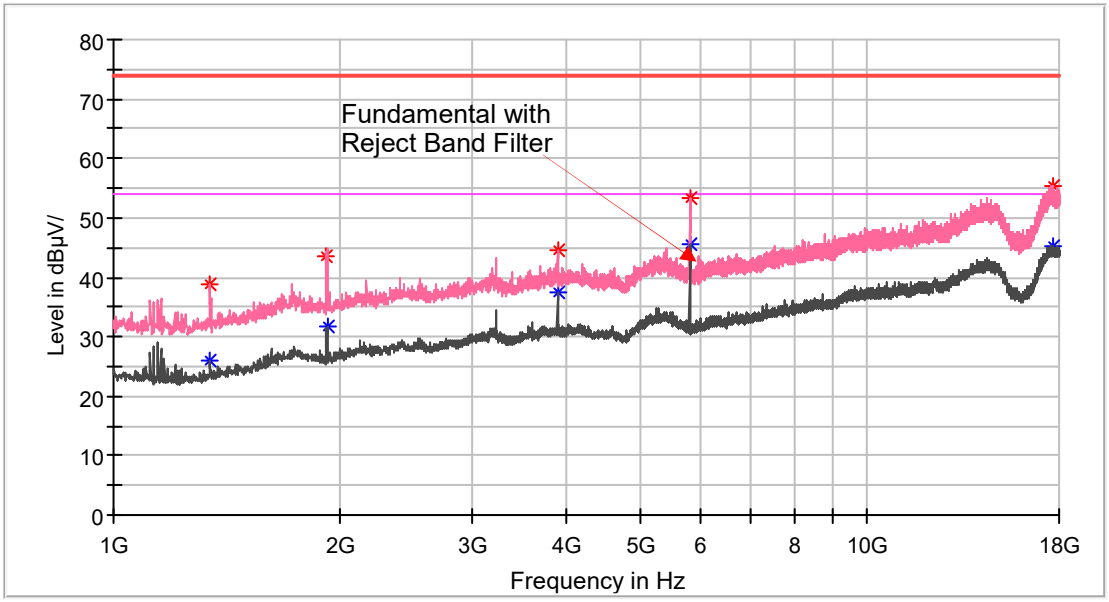
5825 MHz, Vertical

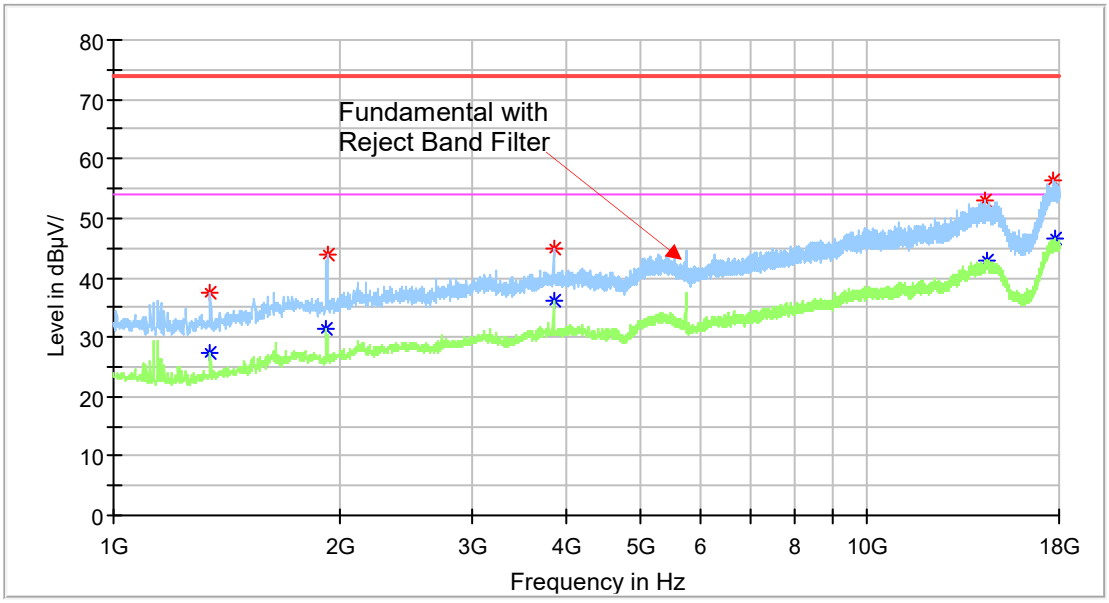


Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1343.400000	---	25.92	54.00	28.08	150.0	V	348.0	0.9
1343.400000	38.91	---	74.00	35.09	150.0	V	348.0	0.9
1918.000000	43.61	---	74.00	30.39	150.0	V	0.0	5.2
1921.400000	---	31.87	54.00	22.13	200.0	V	0.0	5.2
3883.200000	---	37.49	54.00	16.51	150.0	V	181.0	10.6
3883.200000	44.58	---	74.00	29.42	200.0	V	181.0	10.6
5819.500000	53.37	---	74.00	20.63	150.0	V	192.0	13.7
5819.500000	---	45.60	54.00	8.40	150.0	V	192.0	13.7
17648.100000	---	45.38	54.00	8.62	150.0	V	148.0	29.2
17688.900000	55.29	---	74.00	18.71	150.0	V	274.0	29.2

For 802.11n-HT40 mode

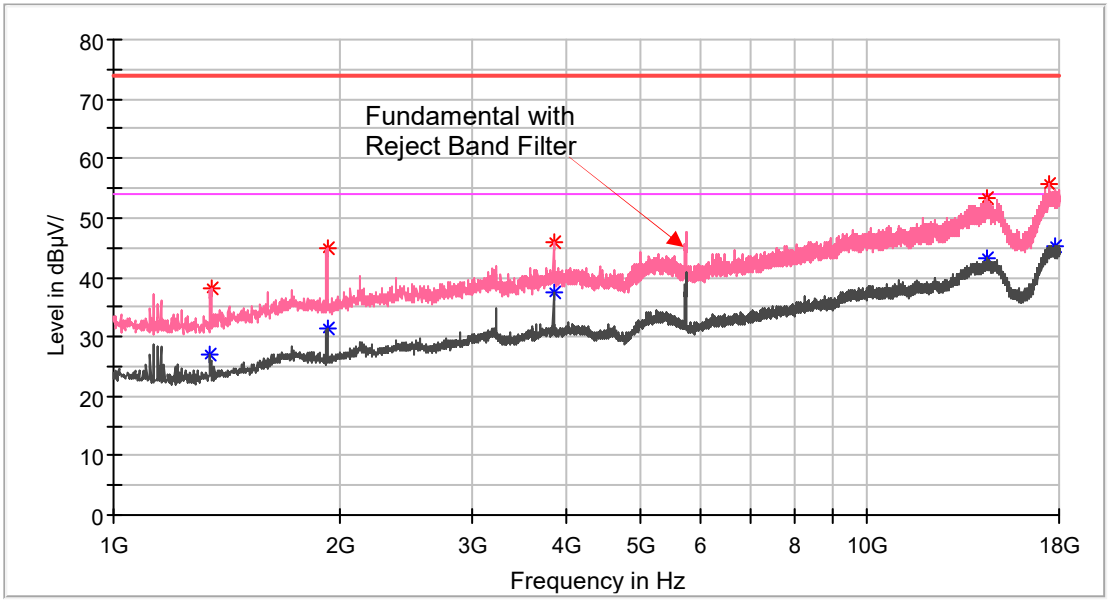
Chain 0 + Chain 1

5755 MHz, Horizontal



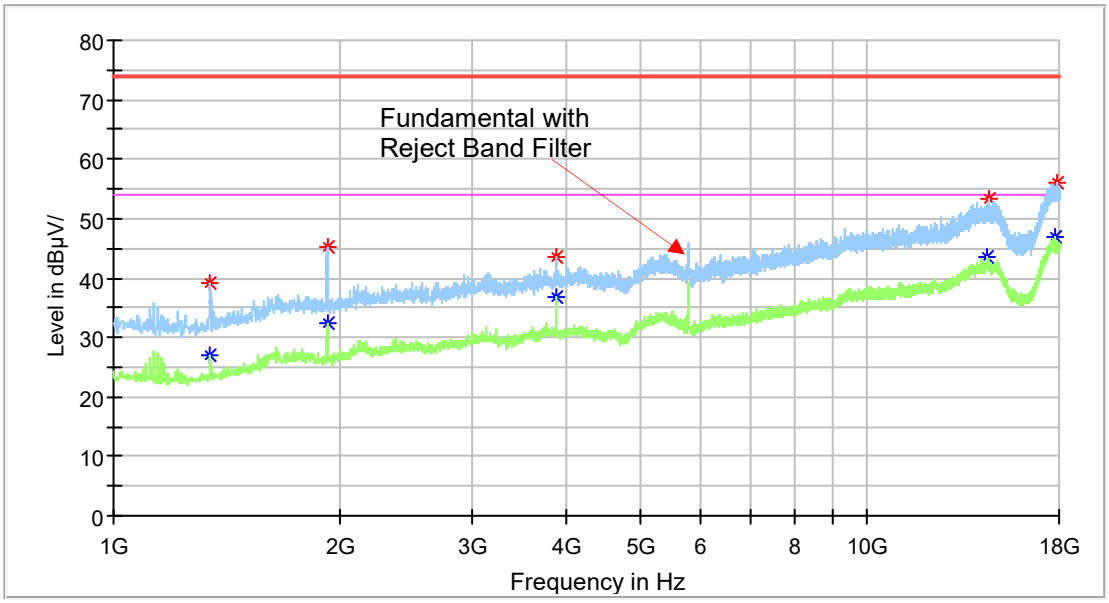
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1343.400000	---	27.45	54.00	26.55	150.0	H	38.0	0.9
1343.400000	37.53	---	74.00	36.47	200.0	H	38.0	0.9
1918.000000	---	31.37	54.00	22.63	150.0	H	126.0	5.2
1923.100000	43.75	---	74.00	30.25	150.0	H	126.0	5.3
3835.600000	---	36.28	54.00	17.72	200.0	H	126.0	10.5
3835.600000	44.98	---	74.00	29.02	150.0	H	126.0	10.5
14355.200000	52.97	---	74.00	21.03	150.0	H	148.0	25.4
14448.700000	---	42.95	54.00	11.05	200.0	H	289.0	25.5
17637.900000	56.33	---	74.00	17.67	150.0	H	71.0	29.2
17731.400000	---	46.42	54.00	7.58	150.0	H	126.0	29.2

5755 MHz, Vertical



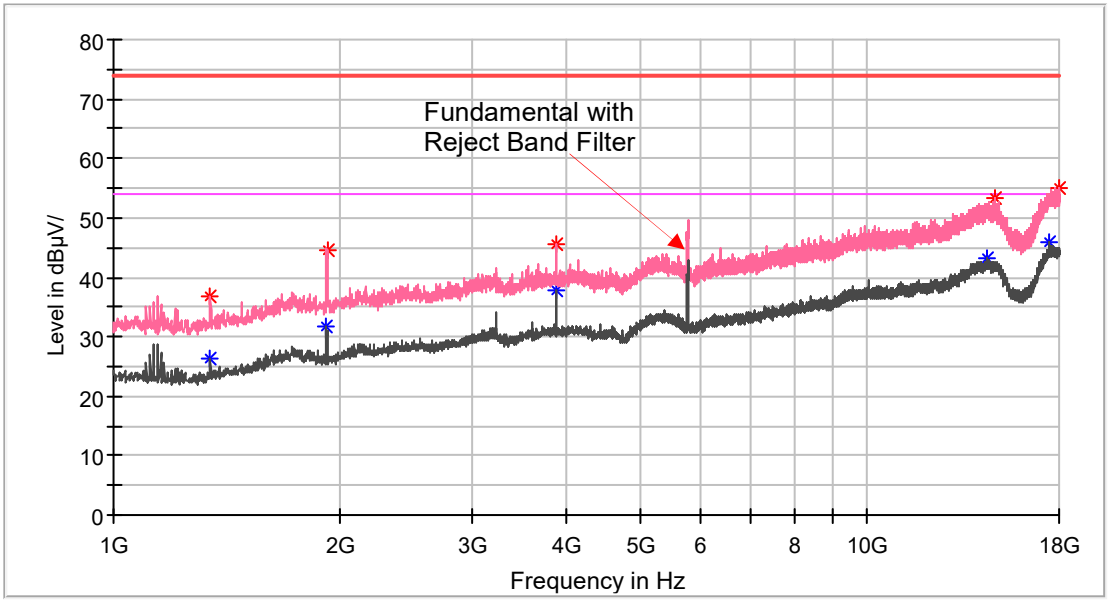
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1341.700000	---	26.92	54.00	27.08	150.0	V	334.0	0.9
1346.800000	38.18	---	74.00	35.82	200.0	V	334.0	0.9
1921.400000	44.97	---	74.00	29.03	150.0	V	0.0	5.2
1921.400000	---	31.39	54.00	22.61	150.0	V	0.0	5.2
3835.600000	---	37.33	54.00	16.67	200.0	V	182.0	10.5
3835.600000	46.00	---	74.00	28.00	150.0	V	182.0	10.5
14418.100000	53.39	---	74.00	20.61	150.0	V	204.0	25.5
14469.100000	---	43.30	54.00	10.70	200.0	V	279.0	25.5
17493.400000	55.60	---	74.00	18.40	150.0	V	258.0	29.2
17770.500000	---	45.24	54.00	8.76	150.0	V	334.0	29.2

5795 MHz, Horizontal



Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1345.100000	---	27.07	54.00	26.93	150.0	H	34.0	0.9
1345.100000	39.04	---	74.00	34.96	200.0	H	34.0	0.9
1921.400000	---	32.26	54.00	21.74	150.0	H	128.0	5.2
1921.400000	45.40	---	74.00	28.60	150.0	H	128.0	5.2
3862.800000	---	36.93	54.00	17.07	200.0	H	94.0	10.6
3862.800000	43.41	---	74.00	30.59	150.0	H	94.0	10.6
14477.600000	---	43.70	54.00	10.30	150.0	H	117.0	25.5
14547.300000	53.36	---	74.00	20.64	150.0	H	161.0	25.5
17809.600000	---	46.77	54.00	7.23	150.0	H	357.0	29.2
17923.500000	55.87	---	74.00	18.13	200.0	H	266.0	29.2

5795 MHz, Vertical

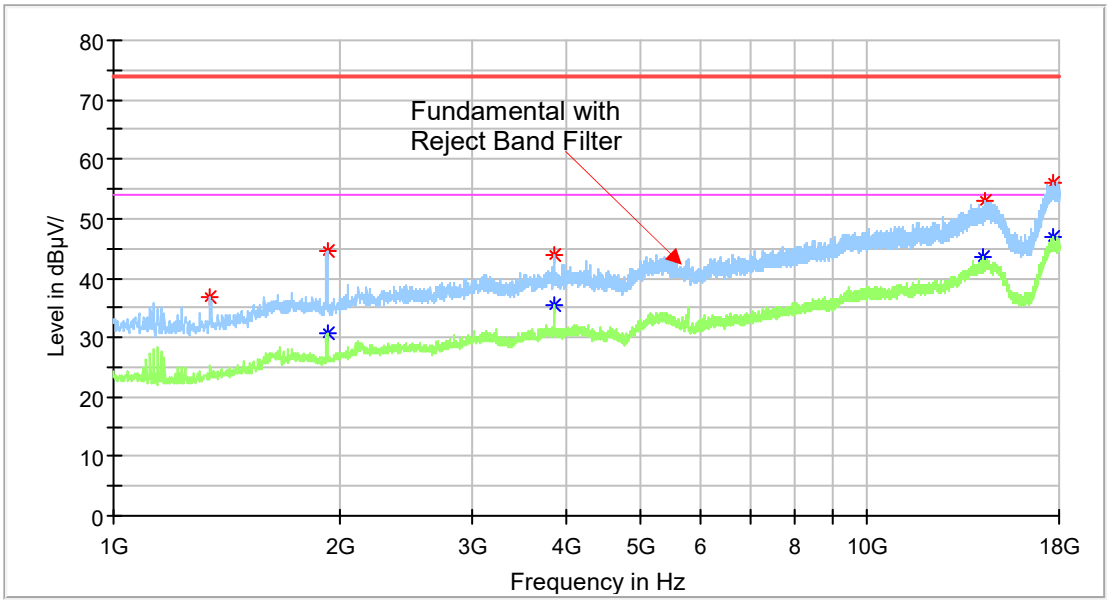


Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1345.100000	---	26.40	54.00	27.60	150.0	V	337.0	0.9
1345.100000	36.72	---	74.00	37.28	200.0	V	337.0	0.9
1918.000000	---	31.62	54.00	22.38	150.0	V	0.0	5.2
1921.400000	44.58	---	74.00	29.42	200.0	V	7.0	5.2
3862.800000	---	37.83	54.00	16.17	150.0	V	171.0	10.6
3862.800000	45.65	---	74.00	28.35	150.0	V	171.0	10.6
14475.900000	---	43.24	54.00	10.76	200.0	V	2.0	25.5
14783.600000	53.28	---	74.00	20.72	150.0	V	350.0	25.4
17507.000000	---	45.76	54.00	8.24	150.0	V	0.0	29.2
17998.300000	54.99	---	74.00	19.01	150.0	V	126.0	29.2

For 802.11ac80 mode

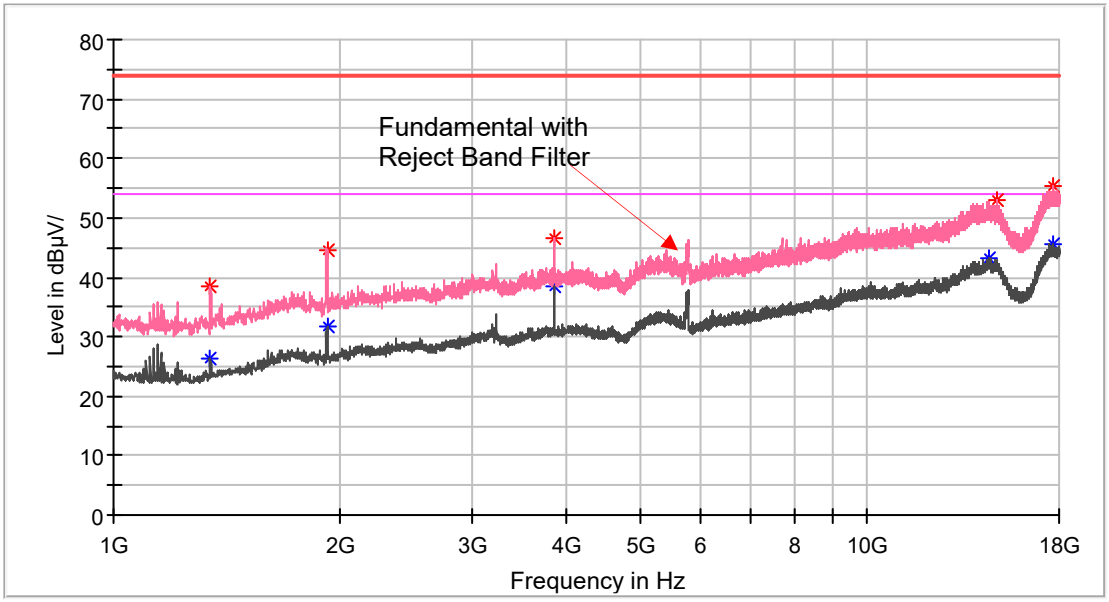
Chain 0 + Chain 1

5775 MHz, Horizontal



Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1343.400000	36.89	---	74.00	37.11	200.0	H	37.0	0.9
1921.400000	---	30.72	54.00	23.28	150.0	H	49.0	5.2
1921.400000	44.48	---	74.00	29.52	150.0	H	49.0	5.2
3849.200000	---	35.60	54.00	18.40	200.0	H	137.0	10.5
3849.200000	43.81	---	74.00	30.19	150.0	H	137.0	10.5
14270.200000	---	43.41	54.00	10.59	150.0	H	170.0	25.3
14360.300000	52.85	---	74.00	21.15	150.0	H	0.0	25.4
17675.300000	---	46.91	54.00	7.09	150.0	H	0.0	29.2
17705.900000	55.97	---	74.00	18.03	150.0	H	49.0	29.2

5775 MHz, Vertical



Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1345.100000	---	26.42	54.00	27.58	200.0	V	338.0	0.9
1345.100000	38.42	---	74.00	35.58	150.0	V	338.0	0.9
1921.400000	44.67	---	74.00	29.33	200.0	V	348.0	5.2
1921.400000	---	31.68	54.00	22.32	150.0	V	348.0	5.2
3849.200000	---	38.63	54.00	15.37	150.0	V	174.0	10.5
3849.200000	46.69	---	74.00	27.31	150.0	V	174.0	10.5
14499.700000	---	43.17	54.00	10.83	200.0	V	139.0	25.5
14870.300000	52.98	---	74.00	21.02	150.0	V	359.0	25.4
17631.100000	---	45.74	54.00	8.26	150.0	V	0.0	29.2
17651.500000	55.35	---	74.00	18.65	150.0	V	294.0	29.2

Band Edge Emission:

802.11a Mode

Chain 0

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
	Reading	Measurement	Polar	Factor					
MHz	dBµV	PK/AV	H/V	dB(1/m)	dB	dB	dBµV/m	dBµV/m	dB
Frequency: 5745 MHz									
5745	54.35	PK	V	34.15	5.00	0.00	93.50	N/A	N/A
5745	40.16	AV	V	34.15	5.00	0.00	79.31	N/A	N/A
5650	26.82	PK	V	34.17	4.94	0.00	65.93	68.20	2.27
5700	27.07	PK	V	34.16	4.97	0.00	66.20	105.20	39.00
5720	32.26	PK	V	34.16	4.98	0.00	71.40	110.80	39.40
5725	32.78	PK	V	34.16	4.99	0.00	71.93	122.20	50.27
Frequency: 5825 MHz									
5825	55.68	PK	V	34.14	5.05	0.00	94.87	N/A	N/A
5825	41.77	AV	V	34.14	5.05	0.00	80.96	N/A	N/A
5850	32.11	PK	V	34.13	5.06	0.00	71.30	122.20	50.90
5855	31.63	PK	V	34.13	5.06	0.00	70.82	110.80	39.98
5875	27.45	PK	V	34.13	5.08	0.00	66.66	105.20	38.54
5925	27.31	PK	V	34.12	5.11	0.00	66.54	68.20	1.66

Chain 1

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
	Reading	Measurement	Polar	Factor					
MHz	dBµV	PK/AV	H/V	dB(1/m)	dB	dB	dBµV/m	dBµV/m	dB
Frequency: 5745 MHz									
5745	54.16	PK	V	34.15	5.00	0.00	93.31	N/A	N/A
5745	40.44	AV	V	34.15	5.00	0.00	79.59	N/A	N/A
5650	26.26	PK	V	34.17	4.94	0.00	65.37	68.20	2.83
5700	26.8	PK	V	34.16	4.97	0.00	65.93	105.20	39.27
5720	33.03	PK	V	34.16	4.98	0.00	72.17	110.80	38.63
5725	33.16	PK	V	34.16	4.99	0.00	72.31	122.20	49.89
Frequency: 5825 MHz									
5825	56.41	PK	V	34.14	5.05	0.00	95.60	N/A	N/A
5825	42.11	AV	V	34.14	5.05	0.00	81.30	N/A	N/A
5850	31.13	PK	V	34.13	5.06	0.00	70.32	122.20	51.88
5855	31.88	PK	V	34.13	5.06	0.00	71.07	110.80	39.73
5875	26.51	PK	V	34.13	5.08	0.00	65.72	105.20	39.48
5925	26.73	PK	V	34.12	5.11	0.00	65.96	68.20	2.24

802.11n-HT20 Mode

Chain 0 + Chain 1

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
	Reading	Measurement	Polar	Factor					
MHz	dBµV	PK/AV	H/V	dB(1/m)	dB	dB	dBµV/m	dBµV/m	dB
Frequency: 5745 MHz									
5745	55.58	PK	V	34.15	5.00	0.00	94.73	N/A	N/A
5745	43.22	AV	V	34.15	5.00	0.00	82.37	N/A	N/A
5650	26.64	PK	V	34.17	4.94	0.00	65.75	68.20	2.45
5700	27.41	PK	V	34.16	4.97	0.00	66.54	105.20	38.66
5720	33.15	PK	V	34.16	4.98	0.00	72.29	110.80	38.51
5725	32.55	PK	V	34.16	4.99	0.00	71.70	122.20	50.50
Frequency: 5825 MHz									
5825	58.8	PK	V	34.14	5.05	0.00	97.99	N/A	N/A
5825	44.87	AV	V	34.14	5.05	0.00	84.06	N/A	N/A
5850	33.12	PK	V	34.13	5.06	0.00	72.31	122.20	49.89
5855	32.18	PK	V	34.13	5.06	0.00	71.37	110.80	39.43
5875	26.81	PK	V	34.13	5.08	0.00	66.02	105.20	39.18
5925	27.66	PK	V	34.12	5.11	0.00	66.89	68.20	1.31

802.11n-HT40 Mode

Chain 0 + Chain 1

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
	Reading	Measurement	Polar	Factor					
MHz	dBµV	PK/AV	H/V	dB(1/m)	dB	dB	dBµV/m	dBµV/m	dB
Frequency: 5755 MHz									
5755	54.55	PK	V	34.15	5.00	0.00	93.70	N/A	N/A
5755	42.22	AV	V	34.15	5.00	0.00	81.37	N/A	N/A
5650	27.94	PK	V	34.17	4.94	0.00	67.05	68.20	1.15
5700	26.89	PK	V	34.16	4.97	0.00	66.02	105.20	39.18
5720	29.18	PK	V	34.16	4.98	0.00	68.32	110.80	42.48
5725	31.05	PK	V	34.16	4.99	0.00	70.20	122.20	52.00
Frequency: 5795 MHz									
5795	54.78	PK	V	34.14	5.03	0.00	93.95	N/A	N/A
5795	42.4	AV	V	34.14	5.03	0.00	81.57	N/A	N/A
5850	30.15	PK	V	34.13	5.06	0.00	69.34	122.20	52.86
5855	29.51	PK	V	34.13	5.06	0.00	68.70	110.80	42.10
5875	27.88	PK	V	34.13	5.08	0.00	67.09	105.20	38.11
5925	26.46	PK	V	34.12	5.11	0.00	65.69	68.20	2.51

802.11ac80 Mode

Chain 0 + Chain 1

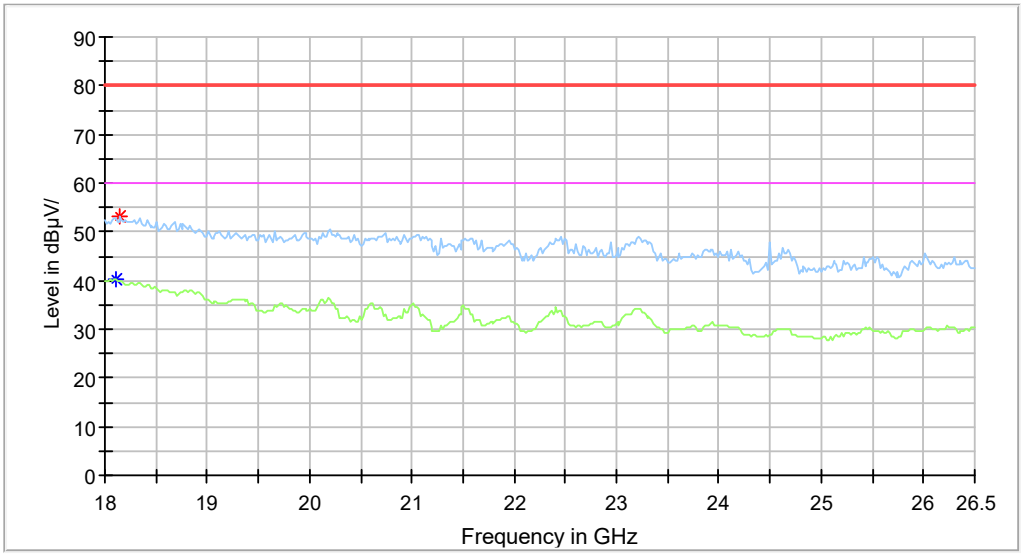
Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
	Reading	Measurement	Polar	Factor					
MHz	dBµV	PK/AV	H/V	dB(1/m)	dB	dB	dBµV/m	dBµV/m	dB
Frequency: 5775 MHz									
5775	49.75	PK	V	34.15	5.02	0.00	88.92	N/A	N/A
5775	33.62	AV	V	34.15	5.02	0.00	72.79	N/A	N/A
5650	27.55	PK	V	34.17	4.94	0.00	66.66	68.20	1.54
5700	27.25	PK	V	34.16	4.97	0.00	66.38	105.20	38.82
5720	29.38	PK	V	34.16	4.98	0.00	68.52	110.80	42.28
5725	27.88	PK	V	34.16	4.99	0.00	67.03	122.20	55.17
5850	26.97	PK	V	34.13	5.06	0.00	66.16	122.20	56.04
5855	27.18	PK	V	34.13	5.06	0.00	66.37	110.80	44.43
5875	26.72	PK	V	34.13	5.08	0.00	65.93	105.20	39.27
5925	26.83	PK	V	34.12	5.11	0.00	66.06	68.20	2.14

Note:

Corrected Amplitude = Corrected Factor + Reading
Corrected Factor=Antenna factor (RX) + Cable Loss – Amplifier Factor or Antenna factor (RX) + Cable Loss
Margin = Limit- Corr. Amplitude

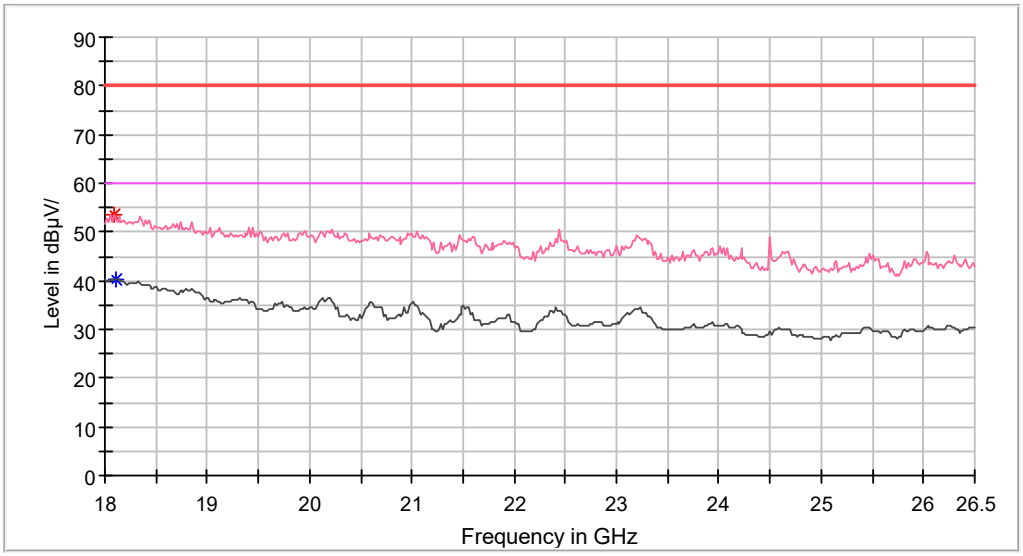
18 GHz to 26.5 GHz: 5150-5250 MHz band: 802.11n20-High channel - worst case

Horizontal



Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
18102.204409	---	40.15	60.00	19.85	100.0	H	82.0	7.9
18153.306613	53.05	---	80.00	26.95	100.0	H	236.0	7.9

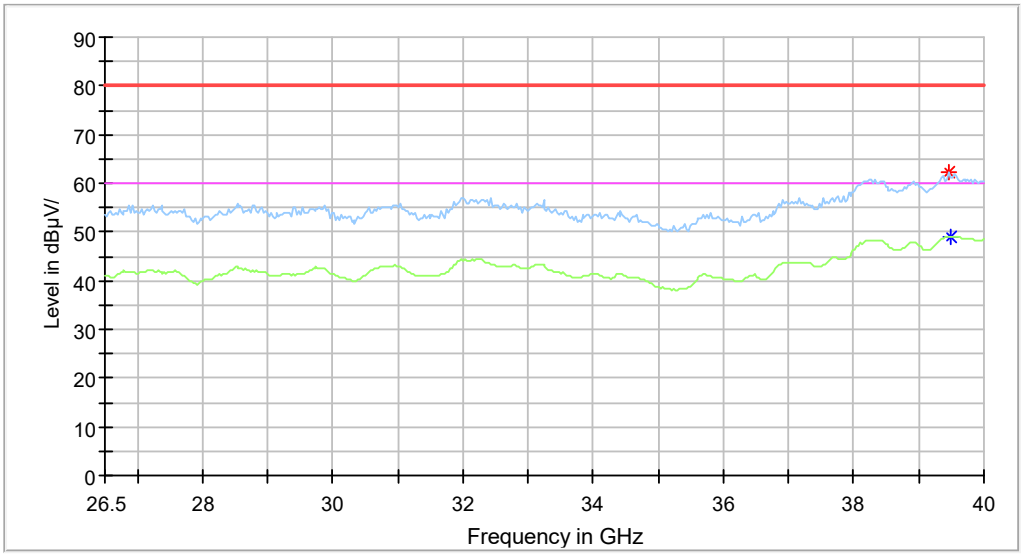
Vertical



Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
18085.170341	53.63	---	80.00	26.37	100.0	V	9.0	7.9
18102.204409	---	40.37	60.00	19.63	100.0	V	160.0	7.9

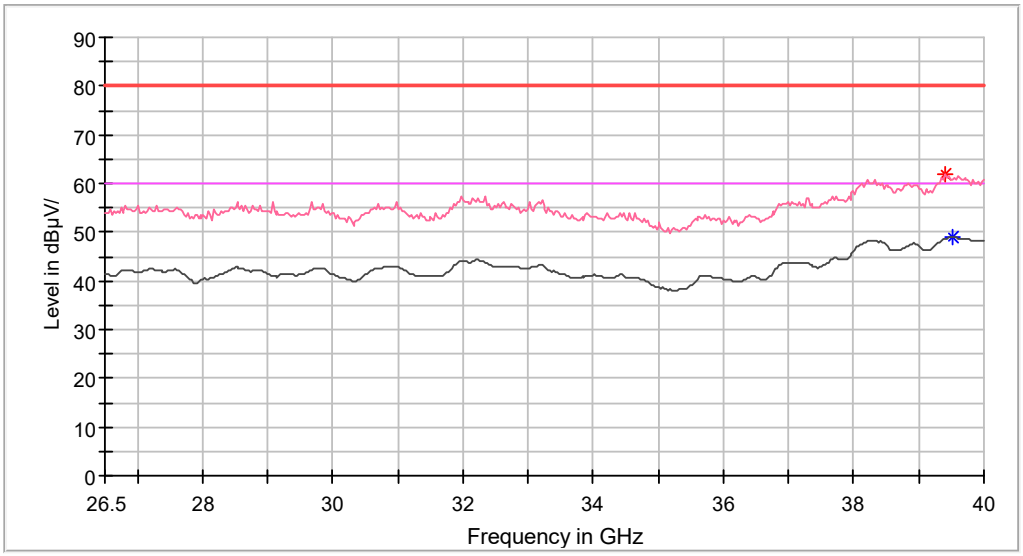
26.5 GHz to 40 GHz: 5150-5250MHz band: 802.11n20-High channel - worst case

Horizontal



Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
39458.917836	62.36	---	80.00	17.64	100.0	H	352.0	14.2
39485.971944	---	49.11	60.00	10.89	100.0	H	174.0	14.2

Vertical



Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
39404.809619	61.75	---	80.00	18.25	100.0	V	21.0	14.3
39513.026052	---	49.02	60.00	10.98	100.0	V	21.0	14.2

FCC §15.407(a) (5) & (e) – 26dB & 6dB BANDWIDTH

Applicable Standard

(a)(5) 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 are made over a reference bandwidth of 500 kHz or the 26 dB emission bandwidth of the device, whichever is less. 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.

(e) Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

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 it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.

3.

(A) 26dB Bandwidth

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

(B) 6dB Bandwidth

Set RBW = 100 kHz. Set the video bandwidth (VBW) ≥ 3 × RBW.
Detector = Peak. Trace mode = max hold. Sweep = auto couple. Allow the trace to stabilize. 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.

(C) 99% Occupied Bandwidth

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 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW ≥ 3 · RBW
5. Use the 99 % power bandwidth function of the instrument.

4. Repeat above procedures until all frequencies measured were complete.

Test Data

Environmental Conditions

Temperature:	24 °C	26 °C
Relative Humidity:	48 %	47 %
ATM Pressure:	95.8 kPa	95.8 kPa

The testing was performed by Winfred Wang on 2021-04-30 and 2021-05-07.

Test Result: Pass. Please refer to the following tables and plots.

Test mode: Transmitting

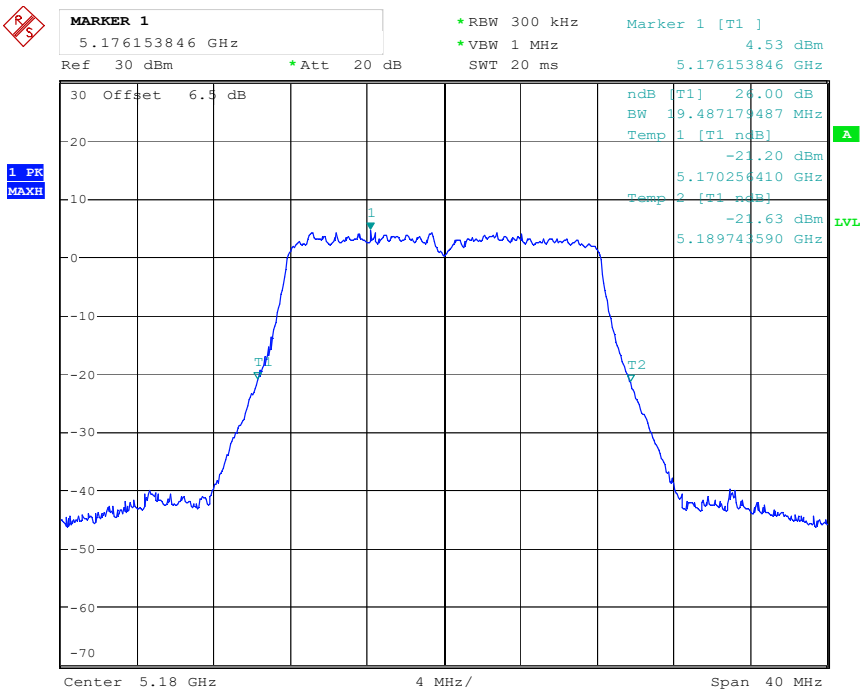
For 5150-5250 MHz:

Mode	Channel	Frequency (MHz)	26dB Bandwidth (MHz)		99% Occupied Bandwidth (MHz)	
			Chain 0	Chain 1	Chain 0	Chain 1
802.11a	Low	5180	19.49	19.55	16.54	16.54
	Middle	5200	19.62	19.42	16.54	16.54
	High	5240	19.49	19.42	16.54	16.54
802.11n-HT20	Low	5180	20.38	20.19	17.69	17.69
	Middle	5200	20.26	20.19	17.69	17.69
	High	5240	20.32	20.13	17.63	17.69
802.11n-HT40	Low	5190	38.97	39.23	36.03	35.90
	High	5230	38.85	39.10	35.90	35.90
802.11ac80	Middle	5210	81.41	81.57	76.12	75.96

Note: the 99% Occupied Bandwidth doesn’t extend U-NII-2A band 5250-5350MHz.

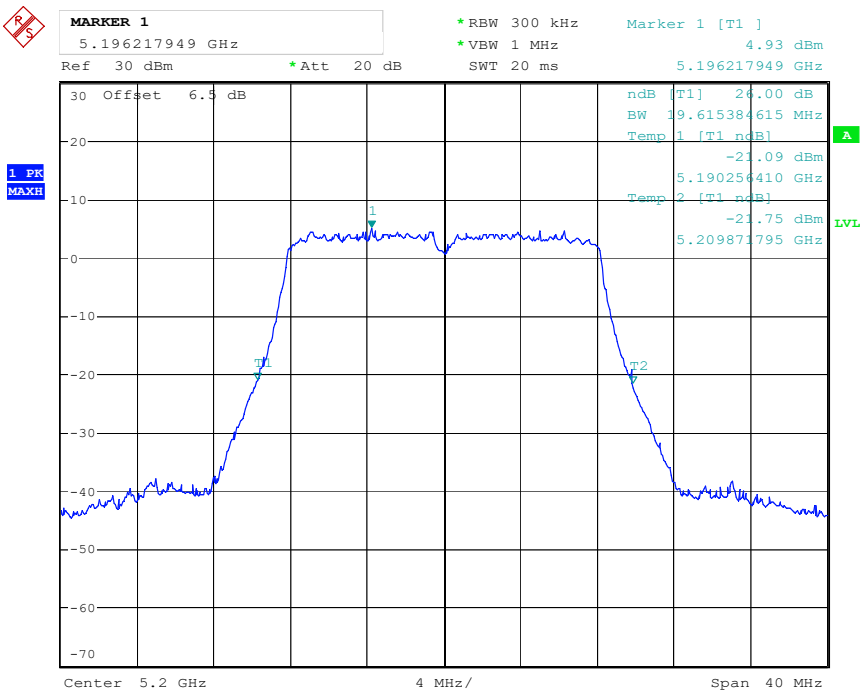
Chain 0

802.11a mode, 26 dB Bandwidth-5180 MHz



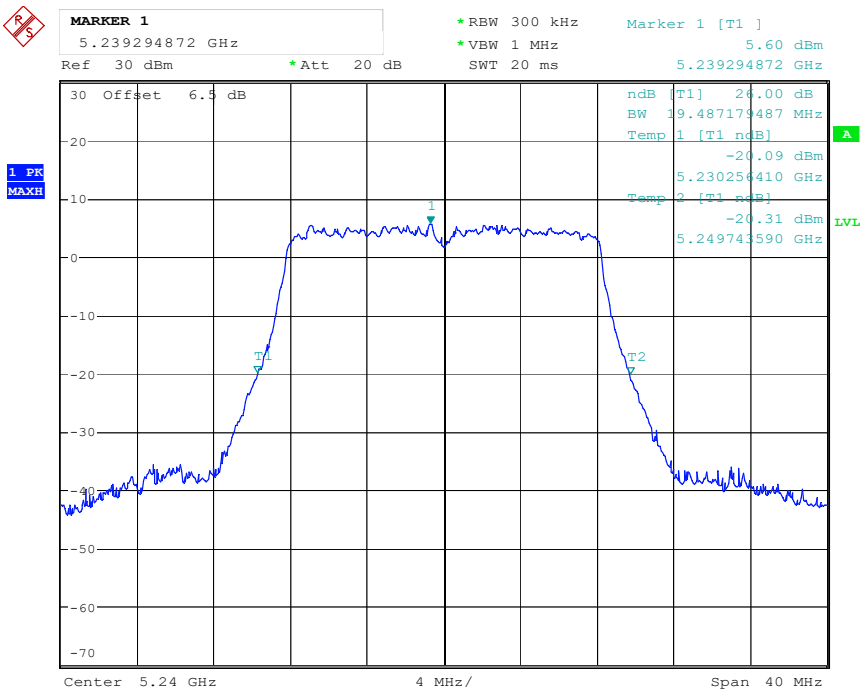
Date: 30.APR.2021 19:14:40

802.11a mode, 26 dB Bandwidth-5200 MHz



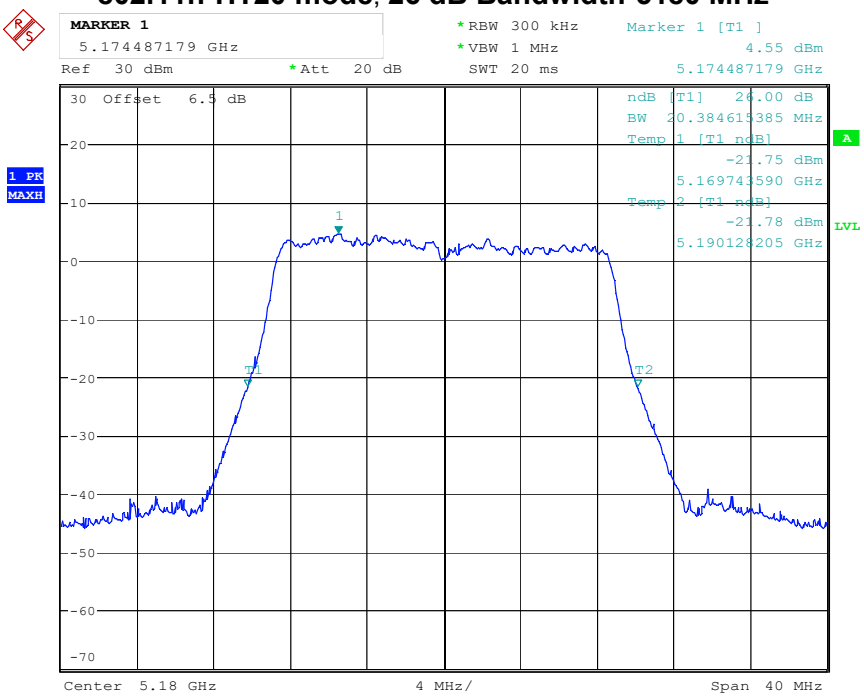
Date: 30.APR.2021 19:18:06

802.11a mode, 26 dB Bandwidth-5240 MHz



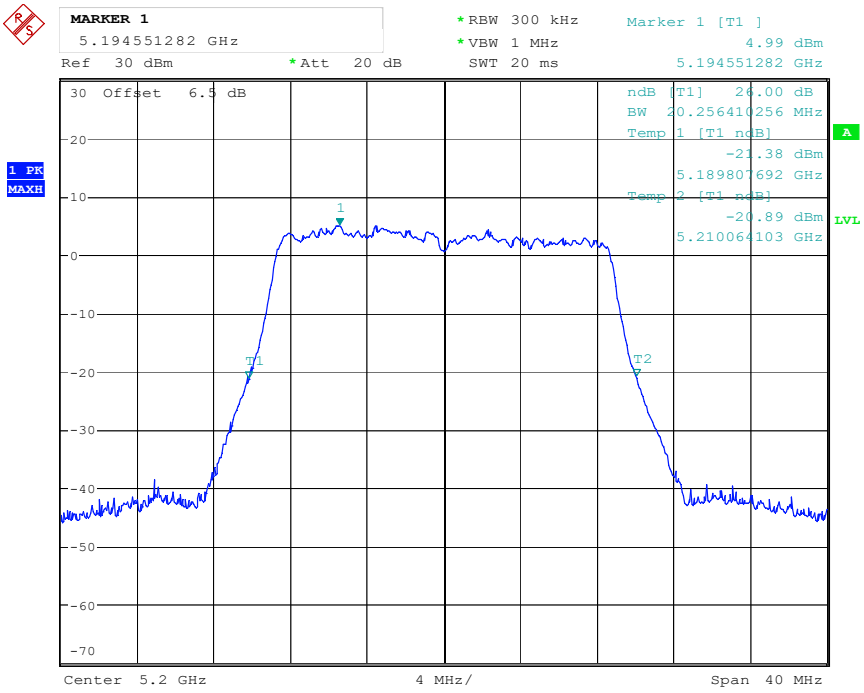
Date: 30.APR.2021 19:18:31

802.11n-HT20 mode, 26 dB Bandwidth-5180 MHz



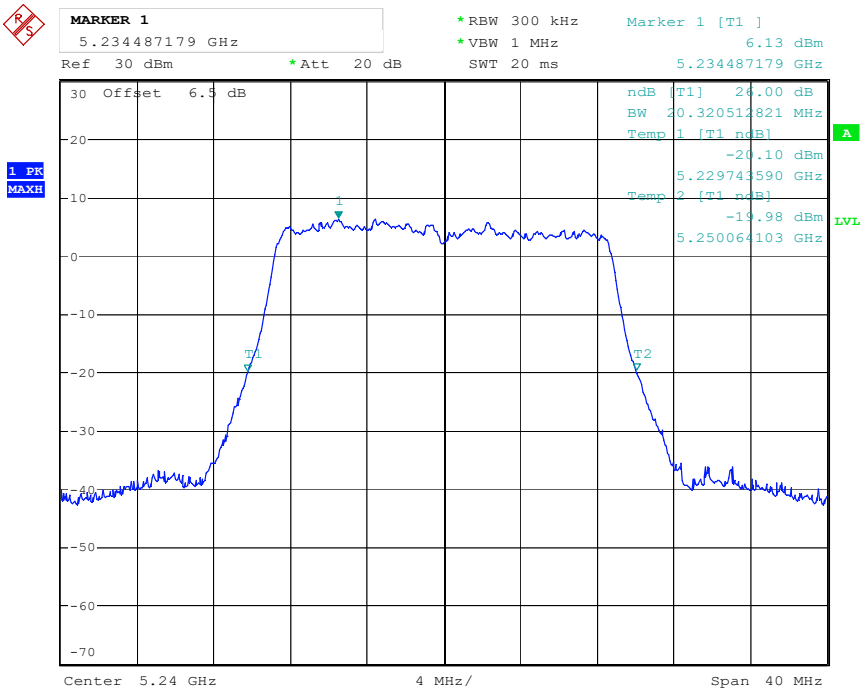
Date: 30.APR.2021 19:19:46

802.11n-HT20 mode, 26 dB Bandwidth-5200 MHz



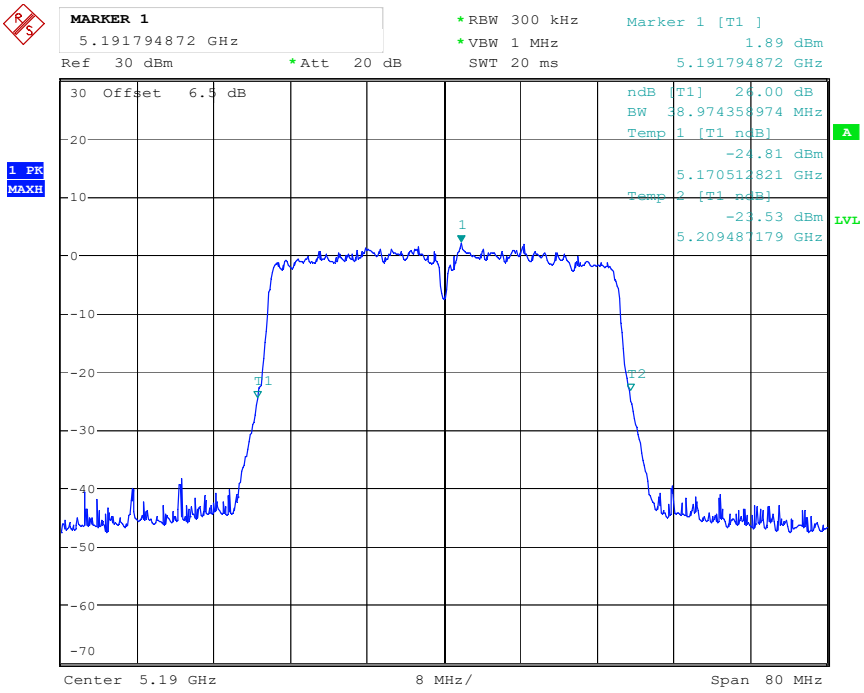
Date: 30.APR.2021 19:20:14

802.11n-HT20 mode, 26 dB Bandwidth-5240 MHz



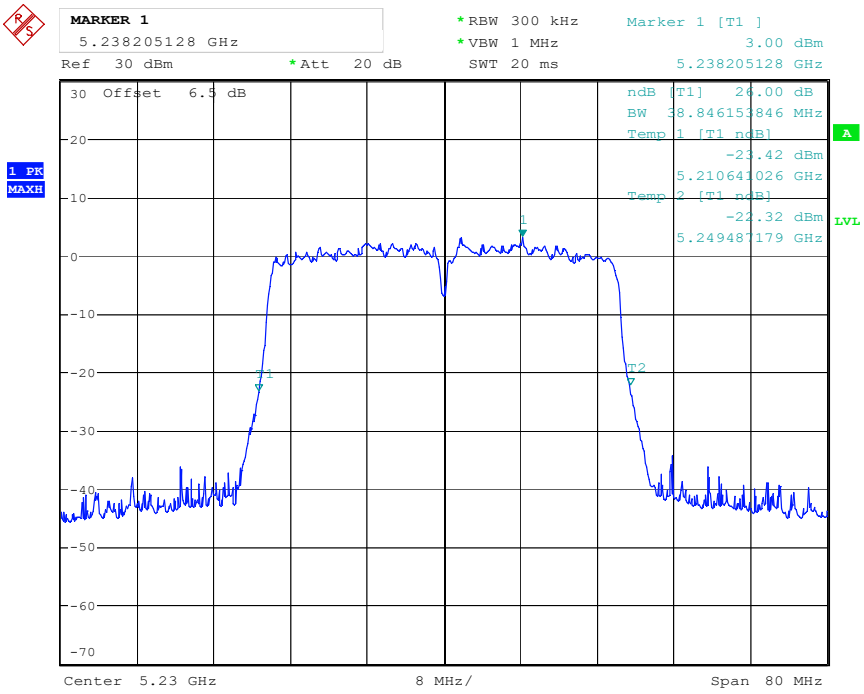
Date: 30.APR.2021 19:20:41

802.11n-HT40 mode, 26 dB Bandwidth-5190 MHz



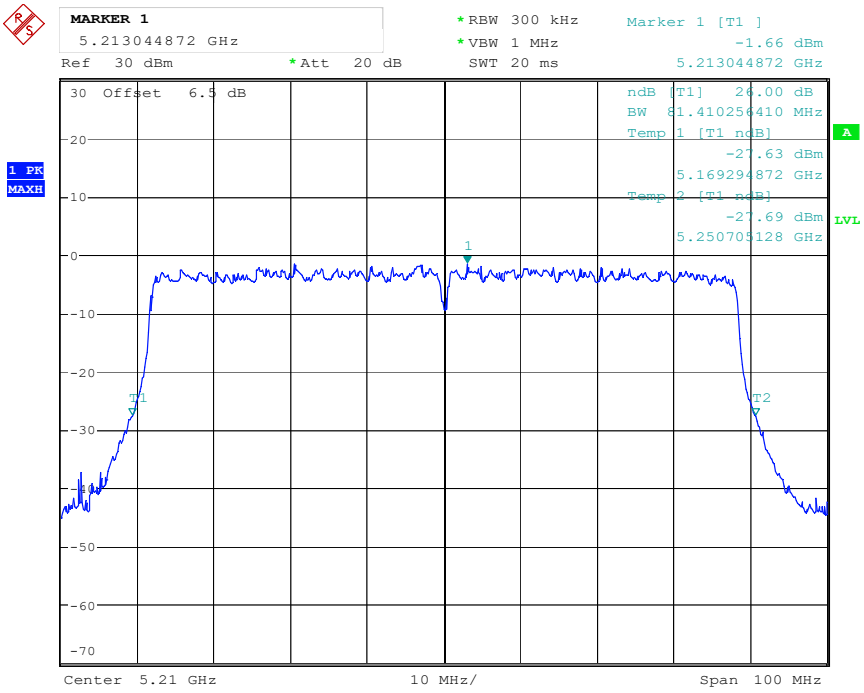
Date: 30.APR.2021 19:21:25

802.11n-HT40 mode, 26 dB Bandwidth-5230 MHz



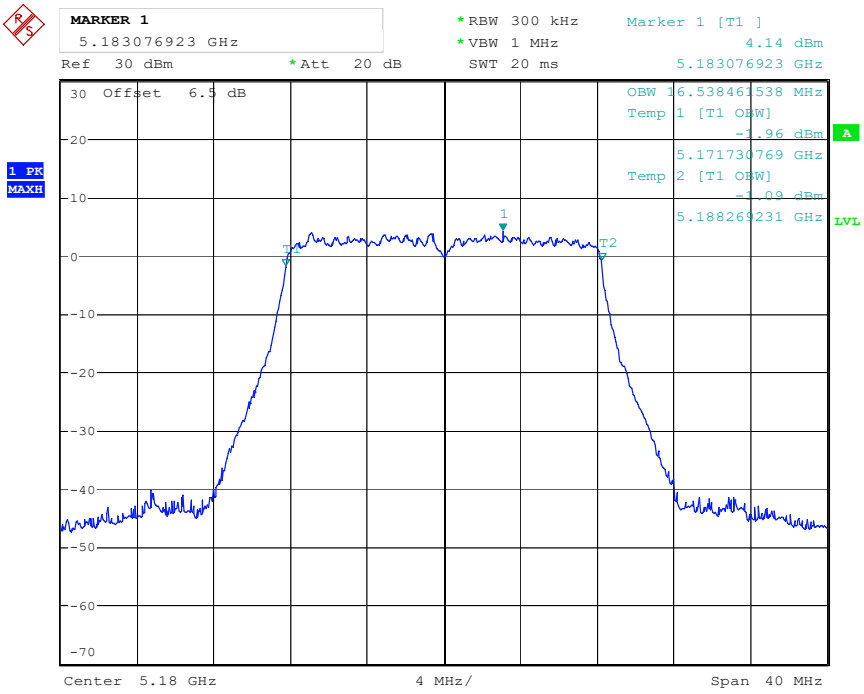
Date: 30.APR.2021 19:21:52

802.11ac80 mode, 26 dB Bandwidth-5210 MHz



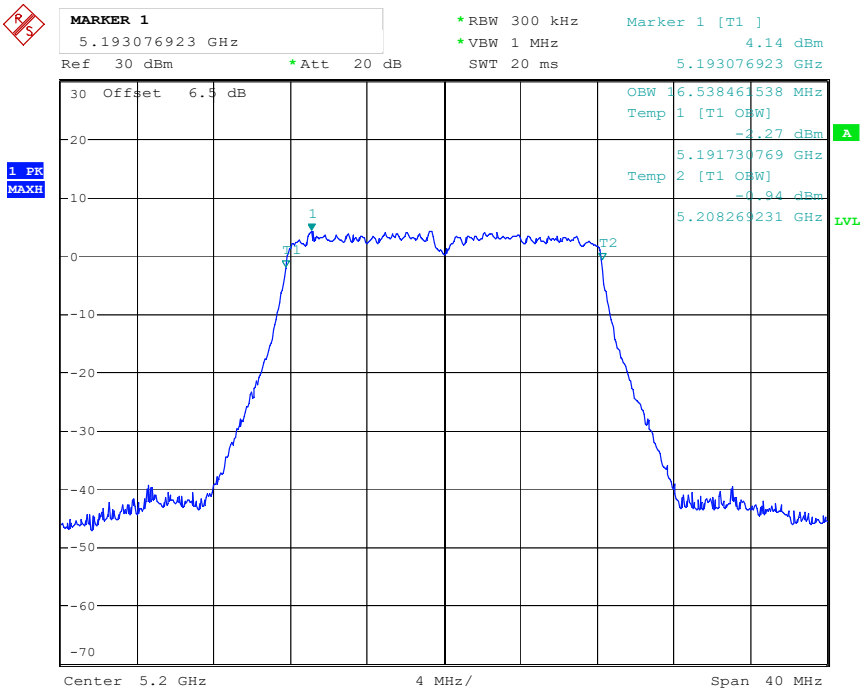
Date: 30.APR.2021 19:22:47

802.11a mode, 99% Occupied Bandwidth-5180 MHz



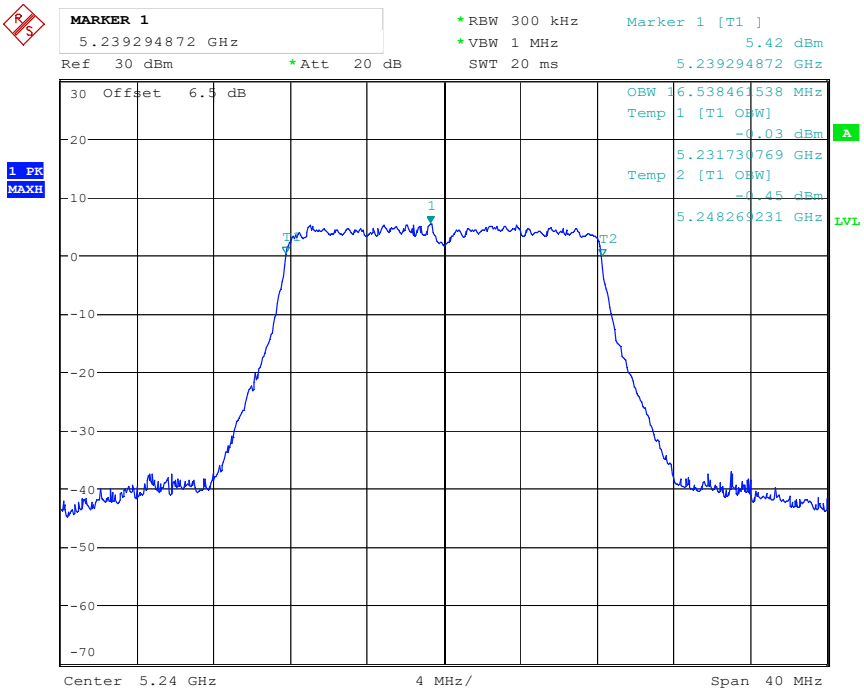
Date: 30.APR.2021 19:47:08

802.11a mode, 99% Occupied Bandwidth -5200 MHz



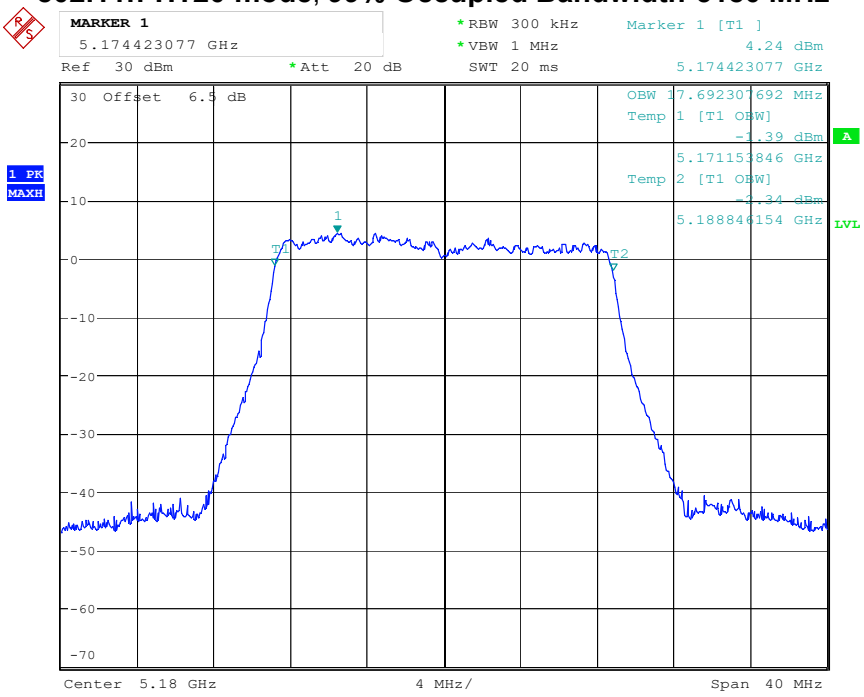
Date: 30.APR.2021 19:47:29

802.11a mode, 99% Occupied Bandwidth -5240 MHz



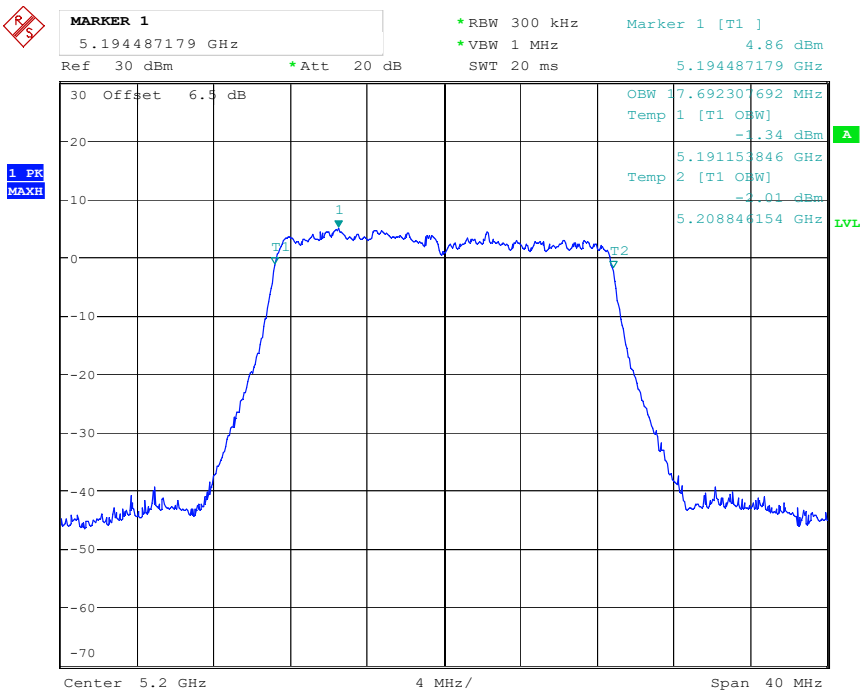
Date: 30.APR.2021 19:47:53

802.11n-HT20 mode, 99% Occupied Bandwidth-5180 MHz



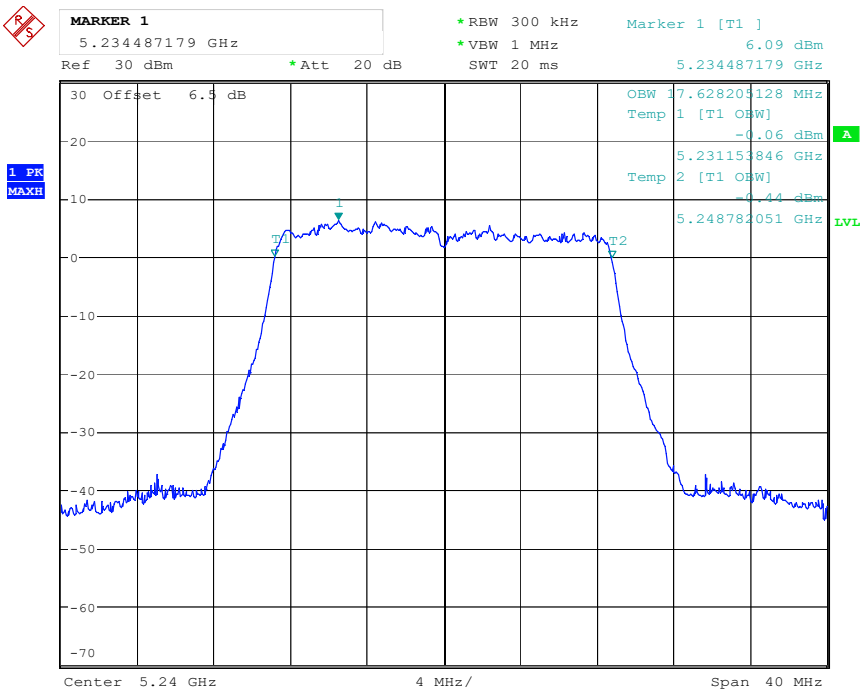
Date: 30.APR.2021 19:46:48

802.11n-HT20 mode, 99% Occupied Bandwidth -5200 MHz



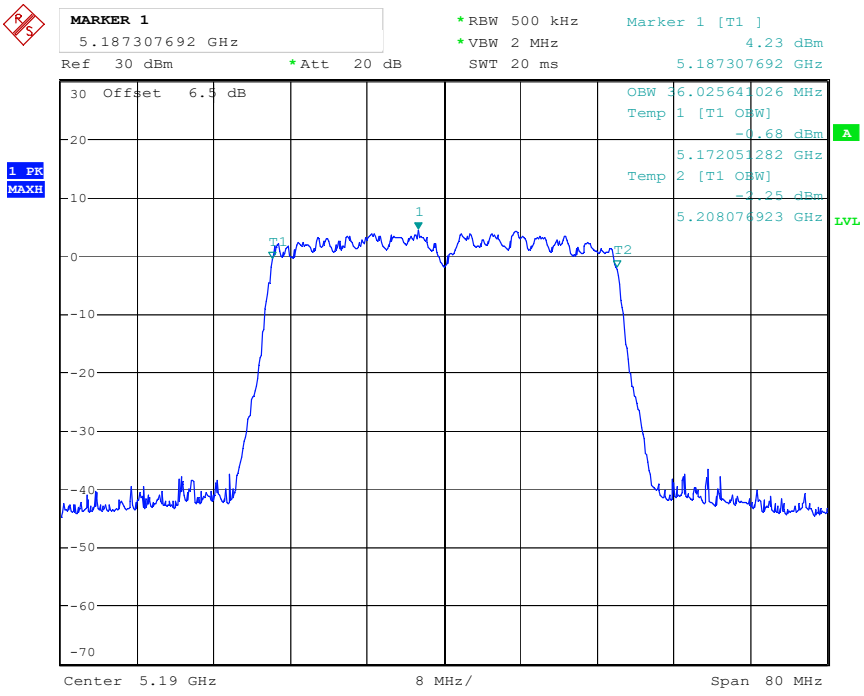
Date: 30.APR.2021 19:46:25

802.11n-HT20 mode, 99% Occupied Bandwidth -5240 MHz



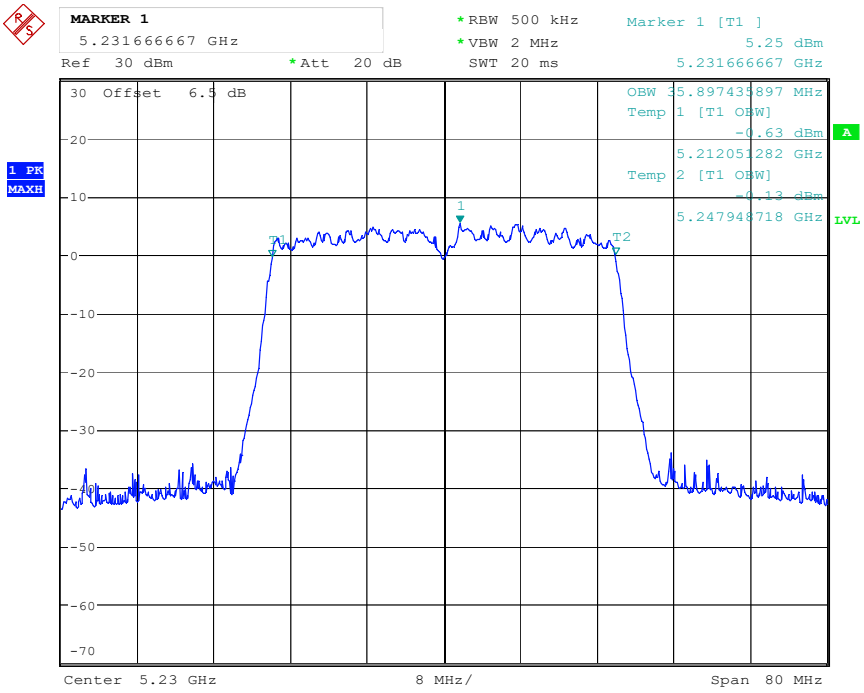
Date: 30.APR.2021 19:46:01

802.11n-HT40 mode, 99% Occupied Bandwidth-5190 MHz



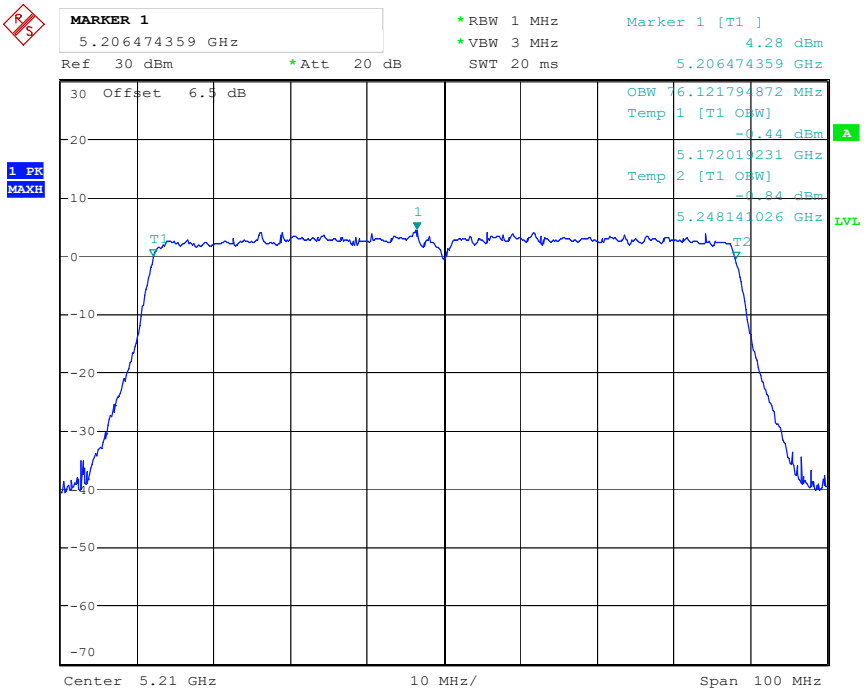
Date: 30.APR.2021 19:45:29

802.11n-HT40 mode, 99% Occupied Bandwidth-5230 MHz



Date: 30.APR.2021 19:45:03

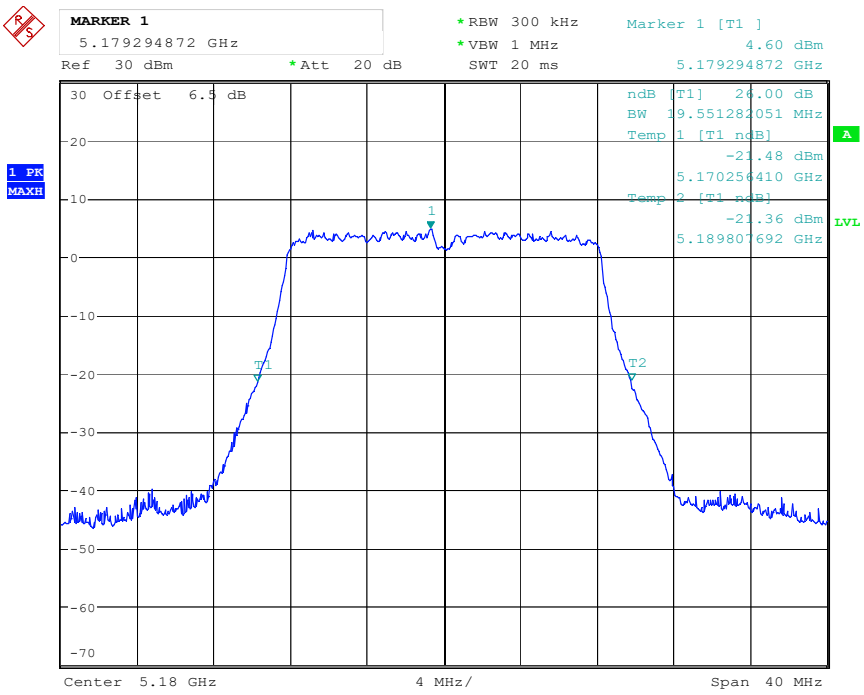
802.11ac80 mode, 99% Occupied Bandwidth-5210 MHz



Date: 30.APR.2021 19:44:29

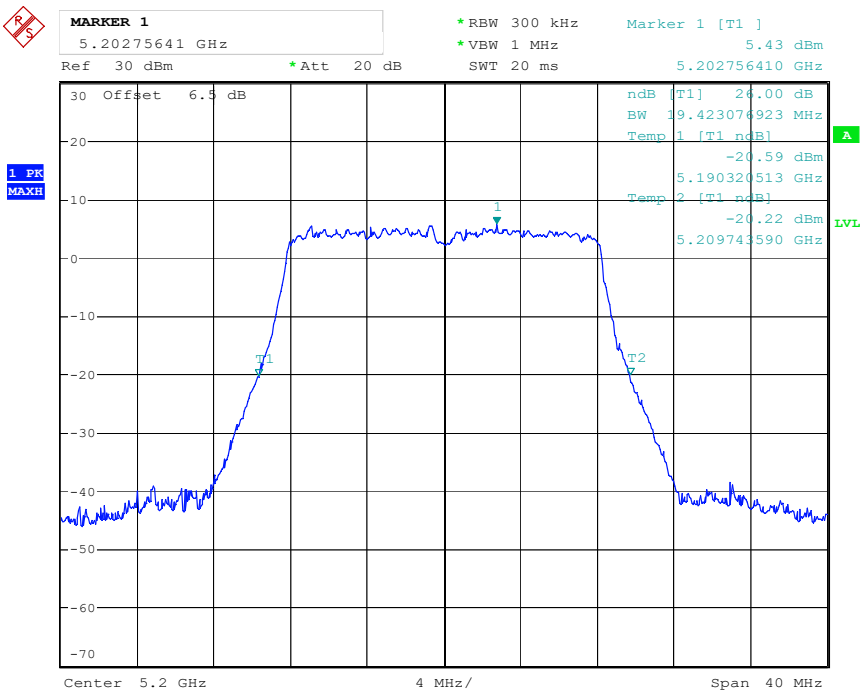
Chain 1

802.11a mode, 26 dB Bandwidth-5180 MHz



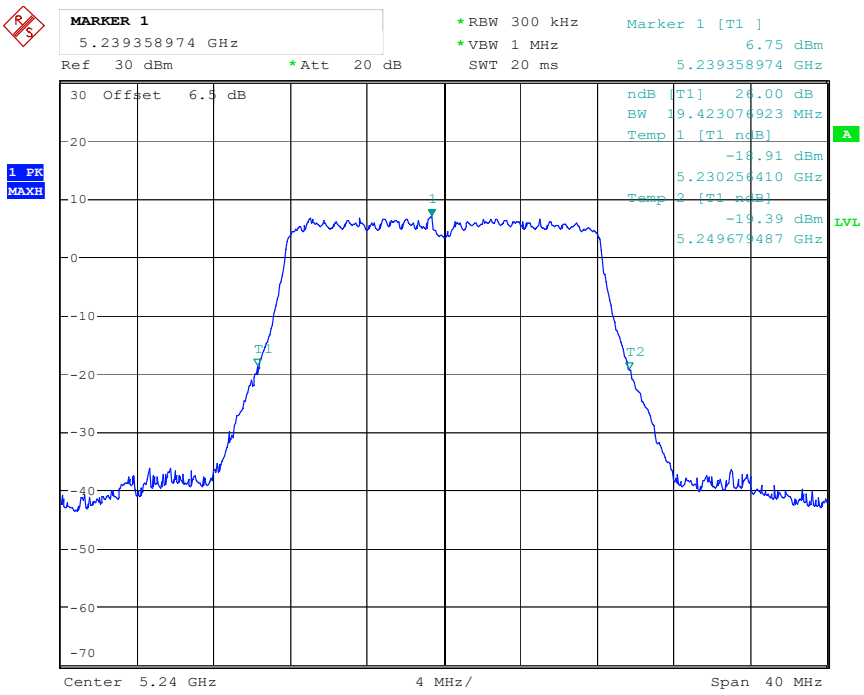
Date: 30.APR.2021 19:27:35

802.11a mode, 26 dB Bandwidth-5200 MHz



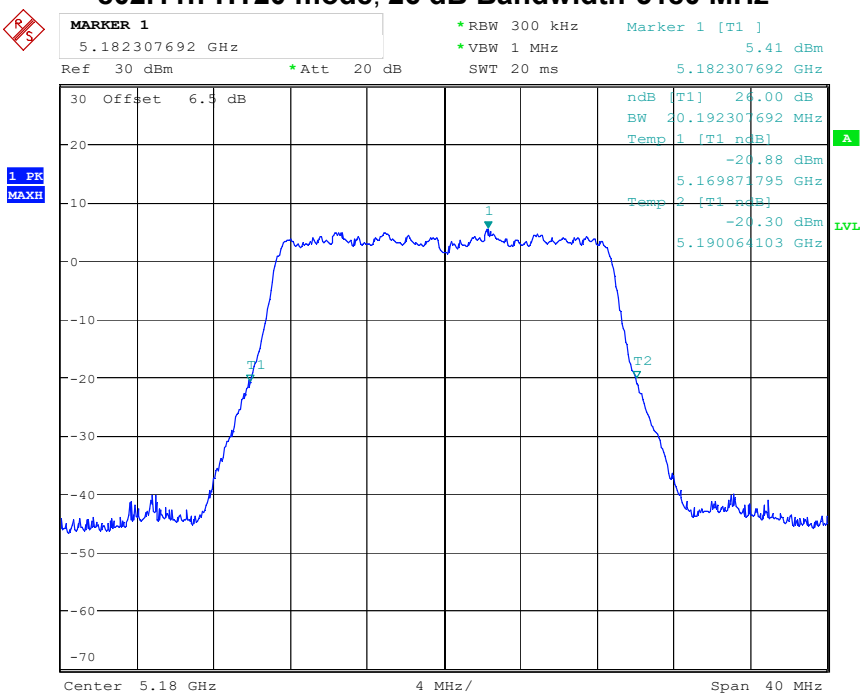
Date: 30.APR.2021 19:27:08

802.11a mode, 26 dB Bandwidth-5240 MHz



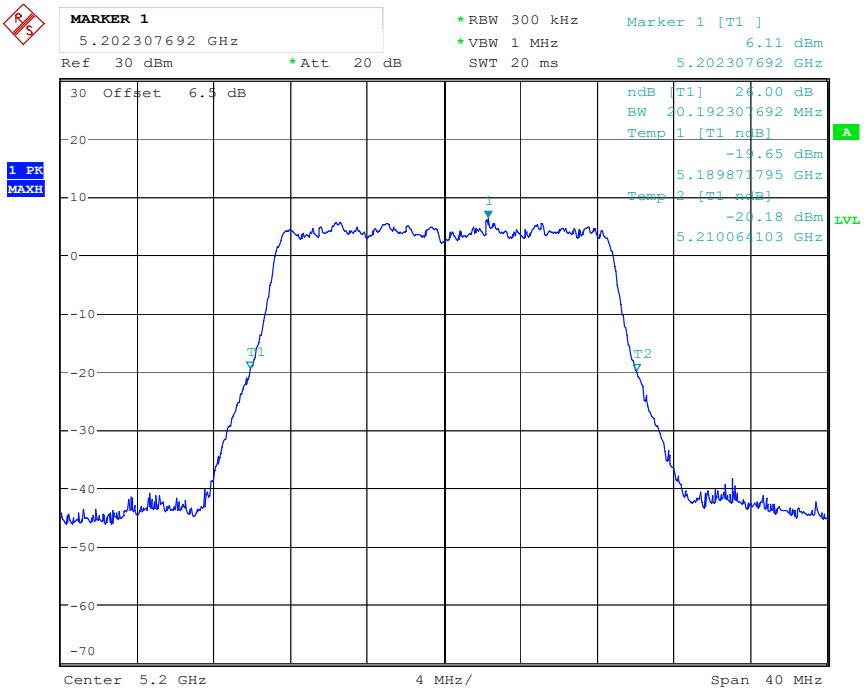
Date: 30.APR.2021 19:26:39

802.11n-HT20 mode, 26 dB Bandwidth-5180 MHz



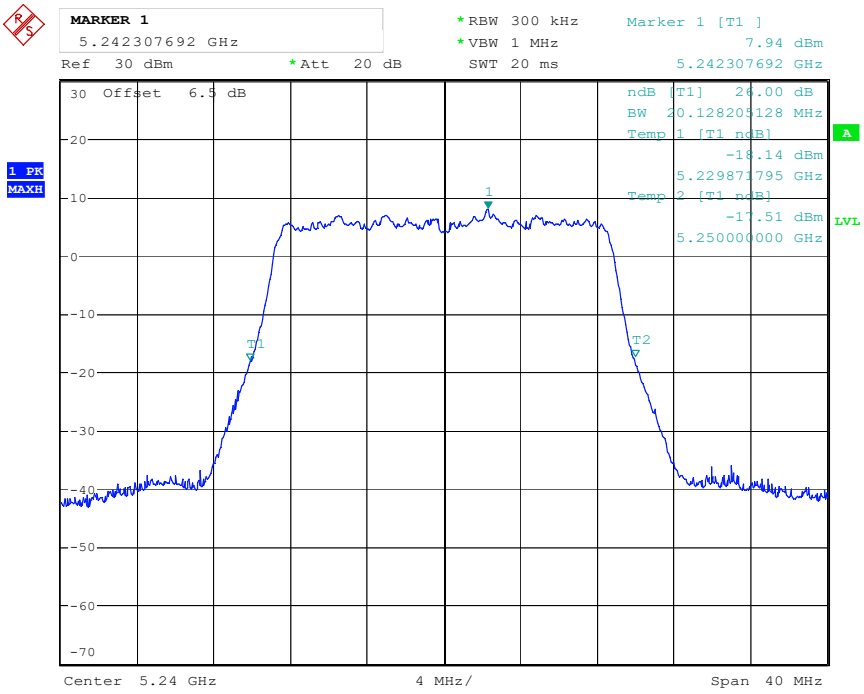
Date: 30.APR.2021 19:25:18

802.11n-HT20 mode, 26 dB Bandwidth-5200 MHz



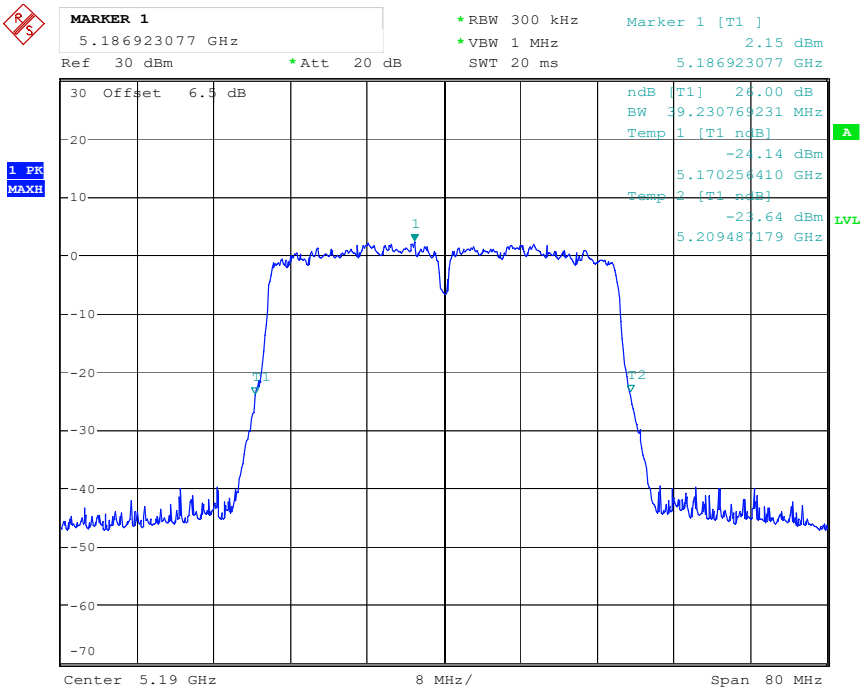
Date: 30.APR.2021 19:25:38

802.11n-HT20 mode, 26 dB Bandwidth-5240 MHz



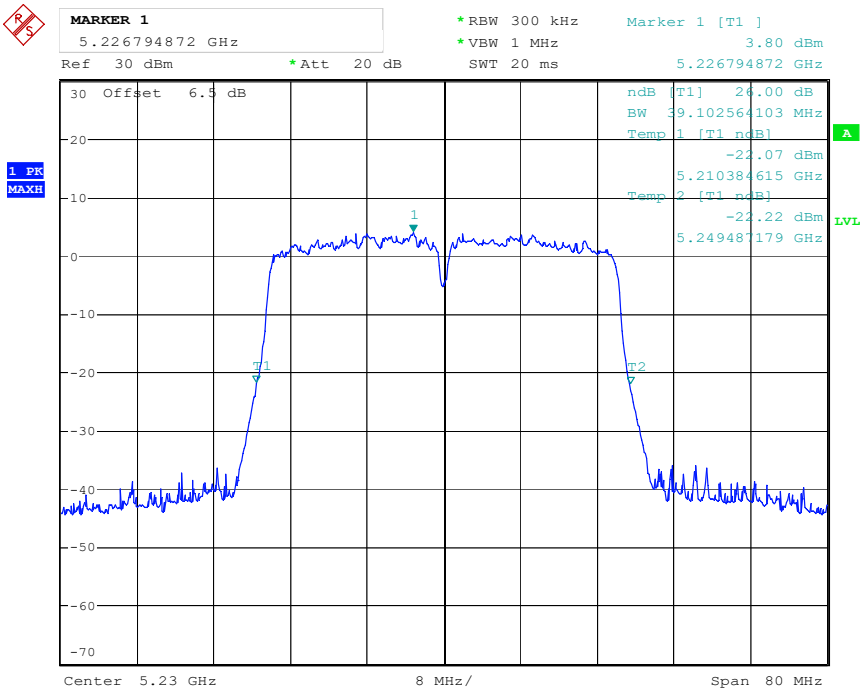
Date: 30.APR.2021 19:26:03

802.11n-HT40 mode, 26 dB Bandwidth-5190 MHz



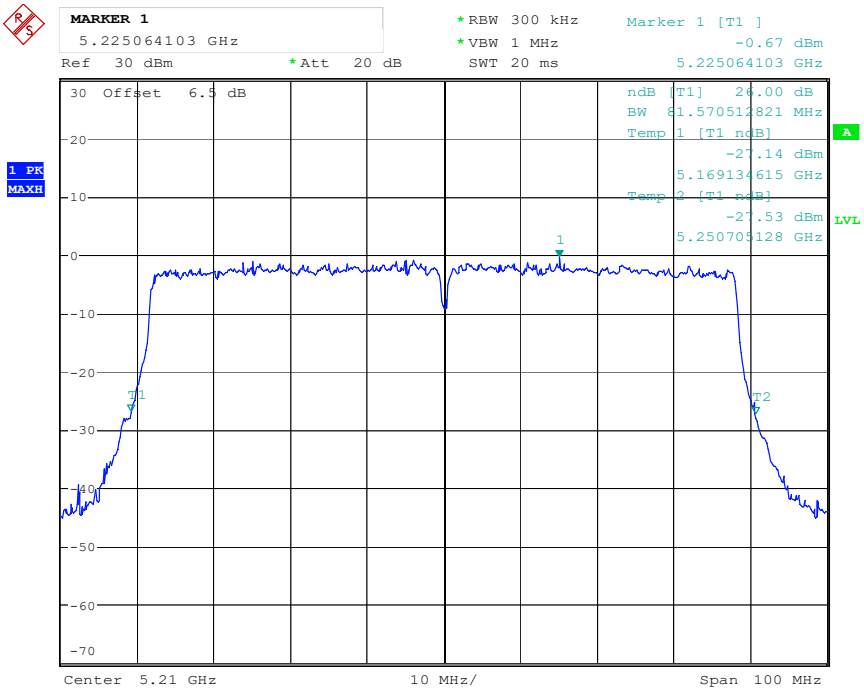
Date: 30.APR.2021 19:24:18

802.11n-HT40 mode, 26 dB Bandwidth-5230 MHz



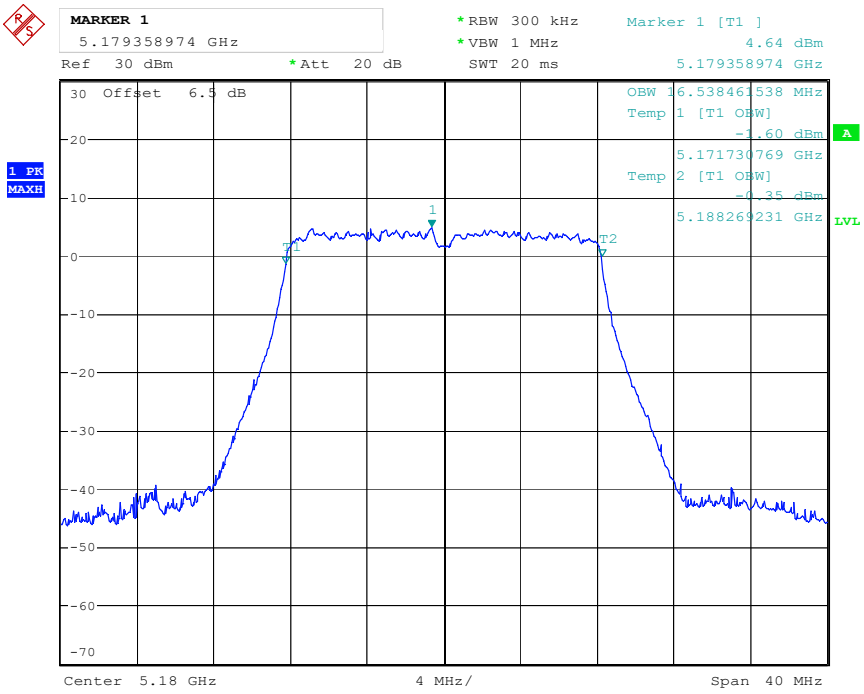
Date: 30.APR.2021 19:24:49

802.11ac80 mode, 26 dB Bandwidth-5210 MHz



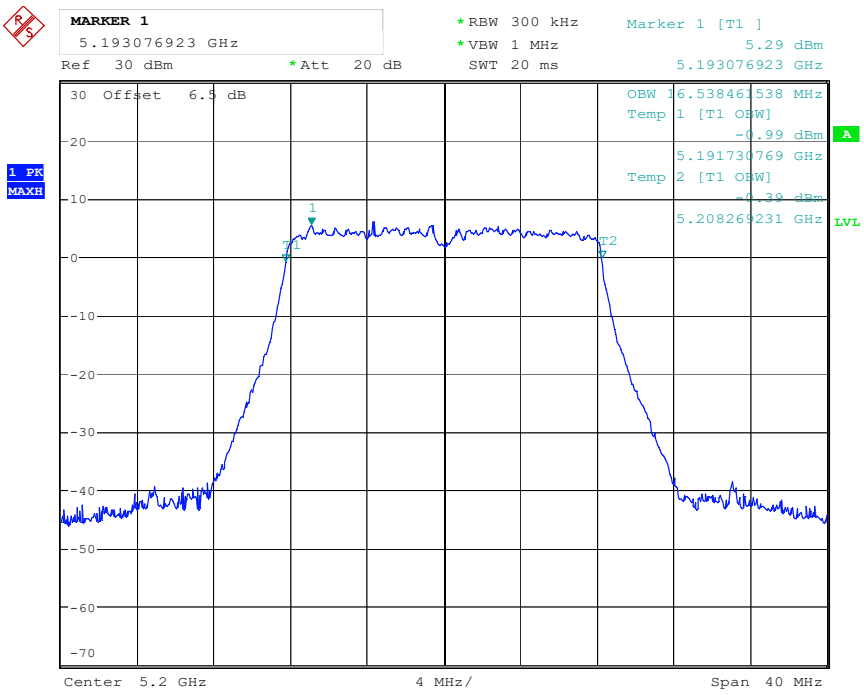
Date: 30.APR.2021 19:23:49

802.11a mode, 99% Occupied Bandwidth-5180 MHz



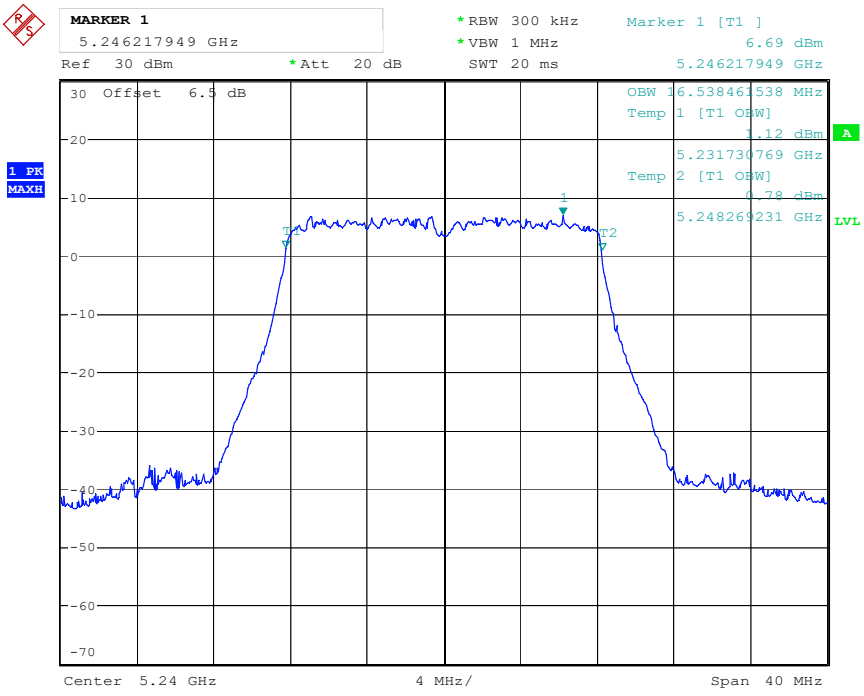
Date: 30.APR.2021 19:29:30

802.11a mode, 99% Occupied Bandwidth -5200 MHz



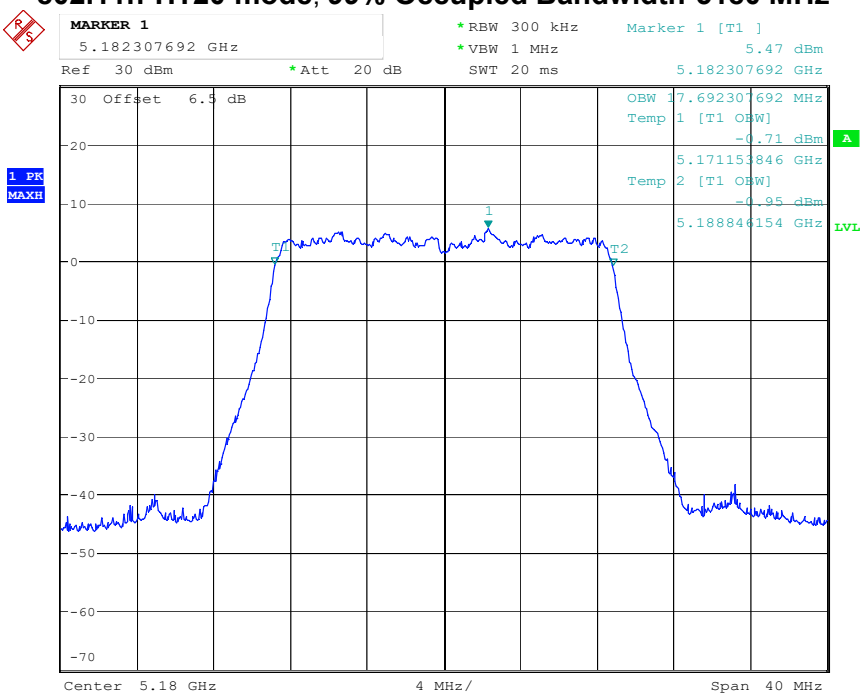
Date: 30.APR.2021 19:36:17

802.11a mode, 99% Occupied Bandwidth -5240 MHz



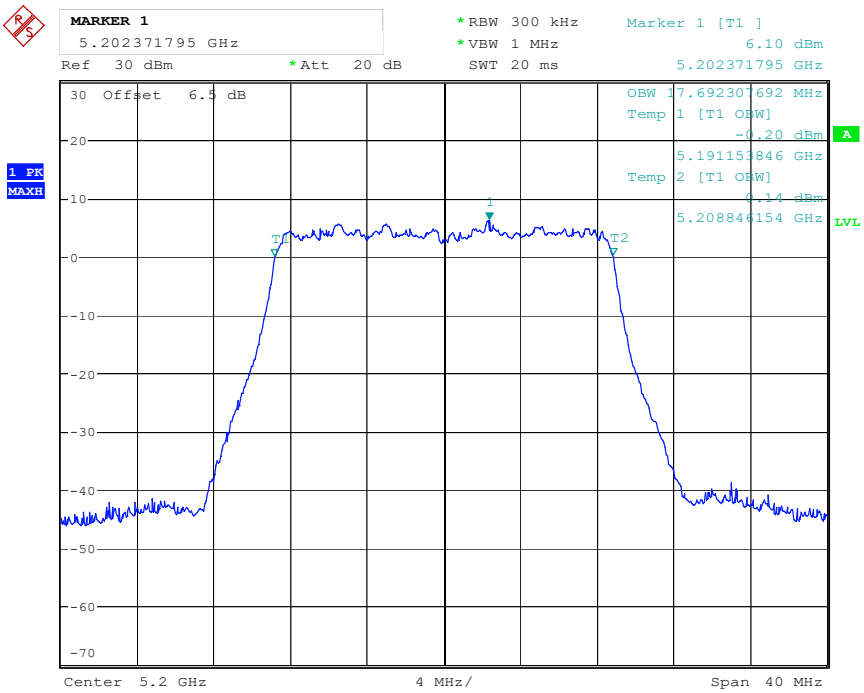
Date: 30.APR.2021 19:36:42

802.11n-HT20 mode, 99% Occupied Bandwidth-5180 MHz



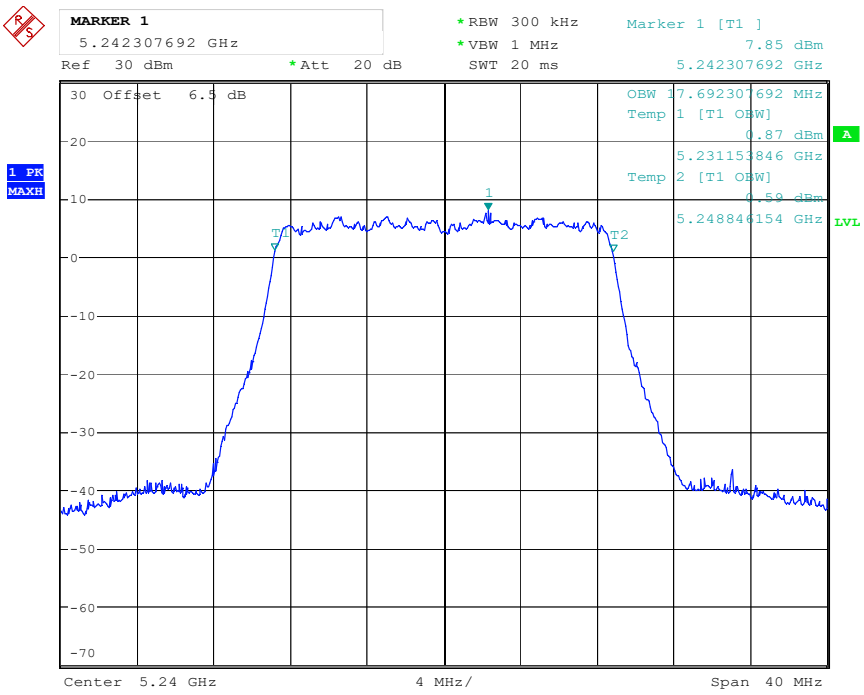
Date: 30.APR.2021 19:38:03

802.11n-HT20 mode, 99% Occupied Bandwidth -5200 MHz



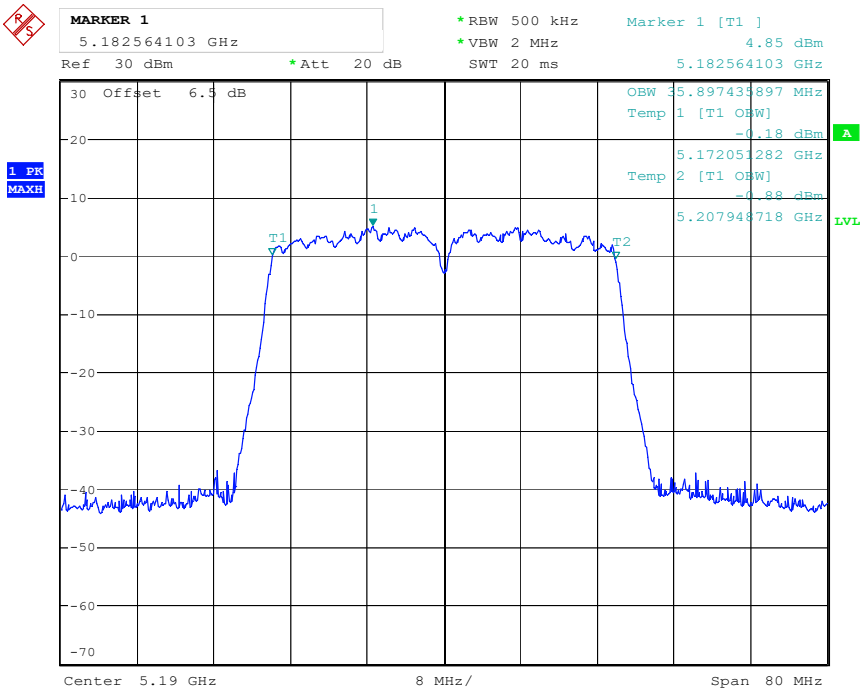
Date: 30.APR.2021 19:37:34

802.11n-HT20 mode, 99% Occupied Bandwidth -5240 MHz



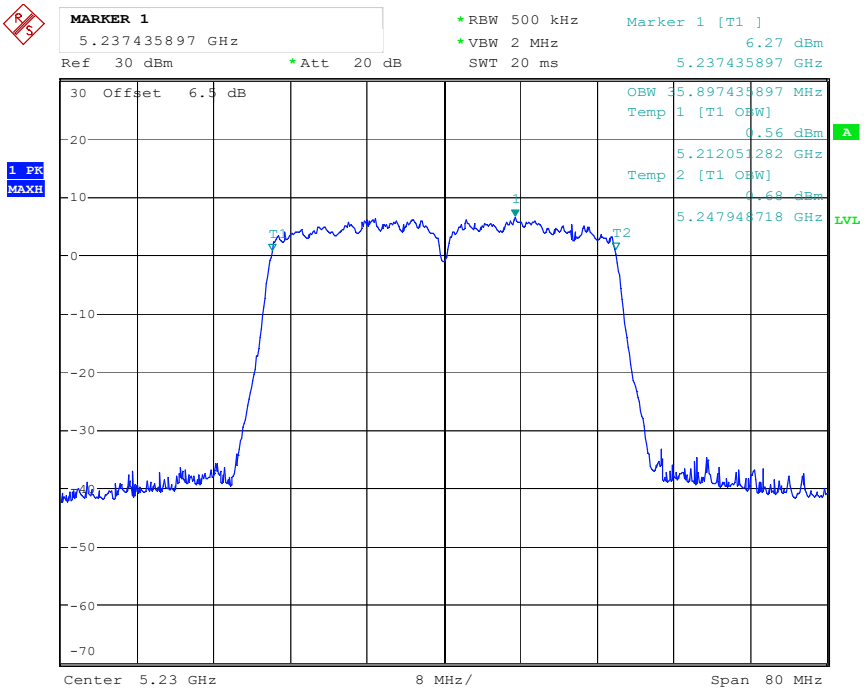
Date: 30.APR.2021 19:37:07

802.11n-HT40 mode, 99% Occupied Bandwidth-5190 MHz



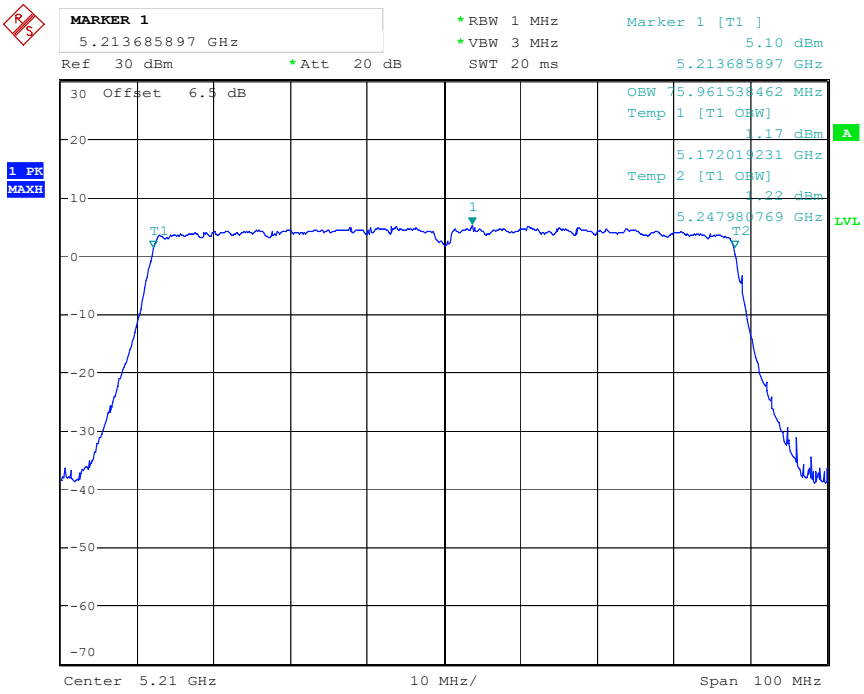
Date: 30.APR.2021 19:39:25

802.11n-HT40 mode, 99% Occupied Bandwidth-5230 MHz



Date: 30.APR.2021 19:40:00

802.11ac80 mode, 99% Occupied Bandwidth-5210 MHz



Date: 30.APR.2021 19:40:39

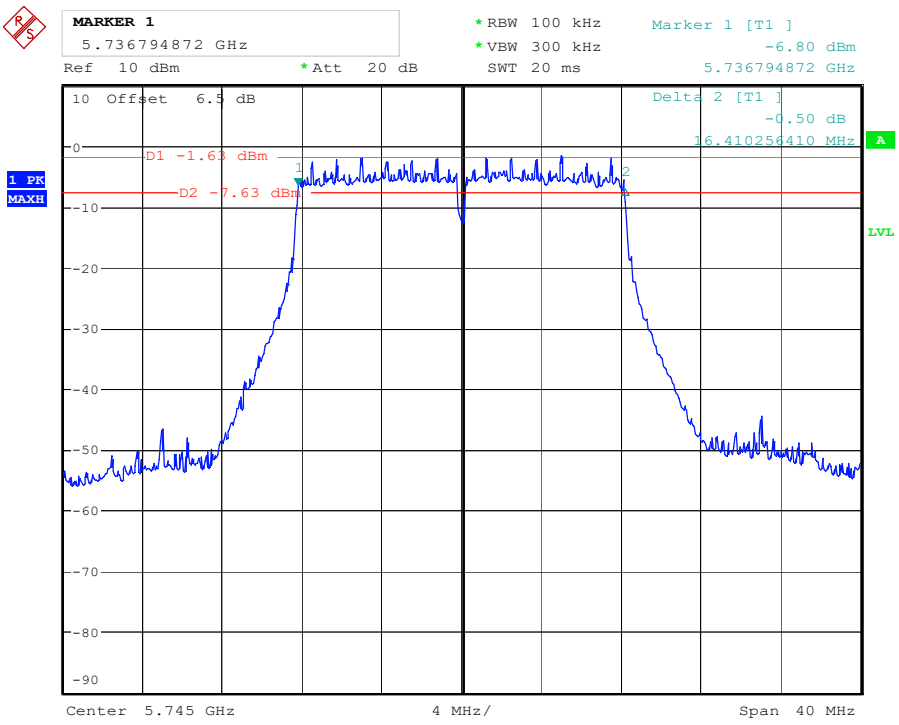
For 5725-5850 MHz:

Mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)		99% Occupied Bandwidth (MHz)		6dB Bandwidth Limit (MHz)
			Chain 0	Chain 1	Chain 0	Chain 1	
802.11a	Low	5745	16.41	16.47	16.54	16.54	≥0.50
	Middle	5785	16.41	16.47	16.54	16.54	≥0.50
	High	5825	16.41	16.41	16.54	16.54	≥0.50
802.11n-HT20	Low	5745	17.69	17.56	17.69	17.63	≥0.50
	Middle	5785	17.69	17.50	17.69	17.56	≥0.50
	High	5825	17.69	17.50	17.69	17.69	≥0.50
802.11n-HT40	Low	5755	35.90	35.90	36.03	36.03	≥0.50
	High	5795	35.64	35.77	36.03	36.03	≥0.50
802.11ac80	Middle	5775	76.57	76.44	76.15	75.90	≥0.50

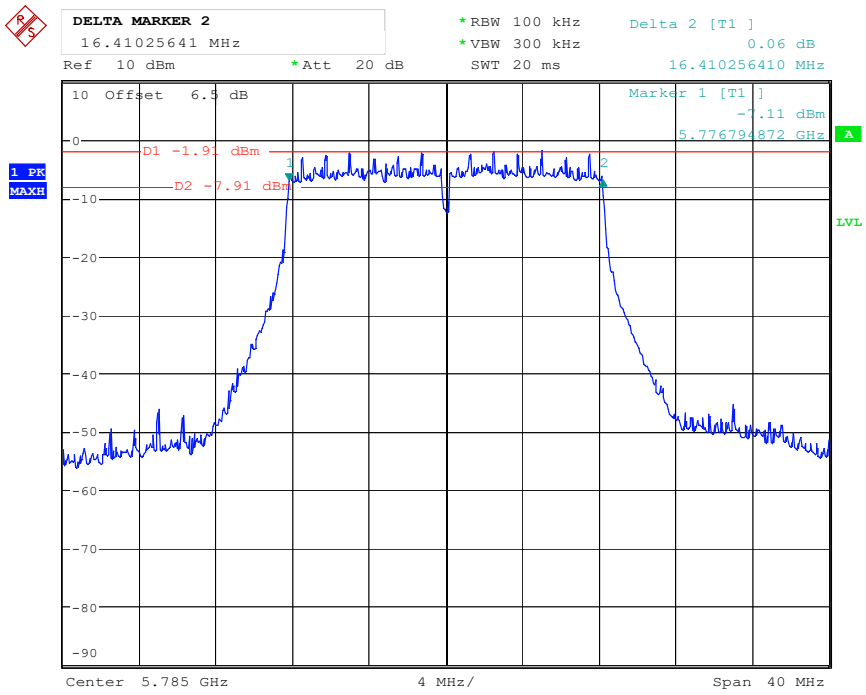
Note: The 99% Occupied Bandwidth doesn’t extend U-NII-2C band 5470-5725MHz.

Chain 0

802.11a mode, 6 dB Bandwidth-5745 MHz

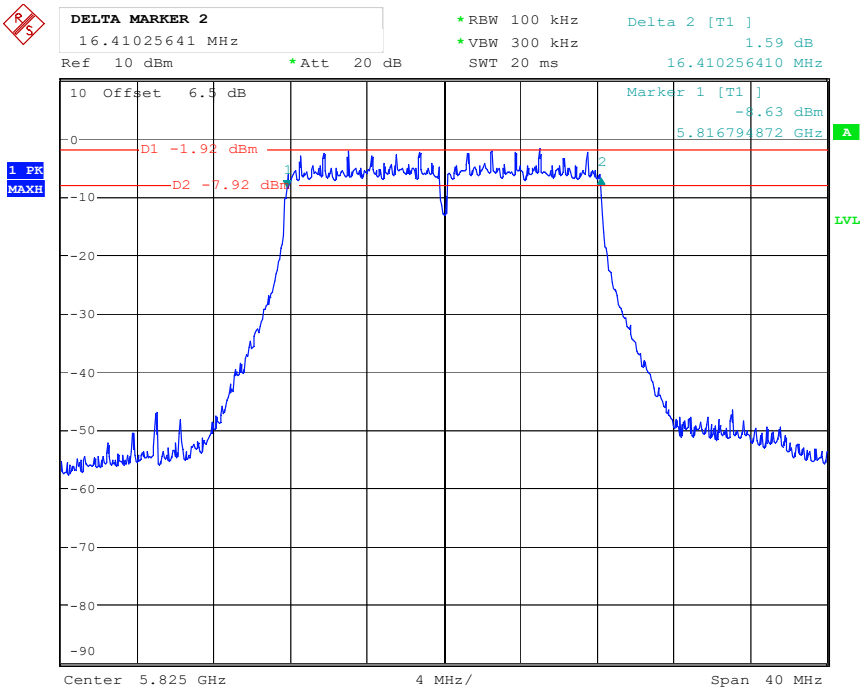


802.11a mode, 6 dB Bandwidth-5785 MHz



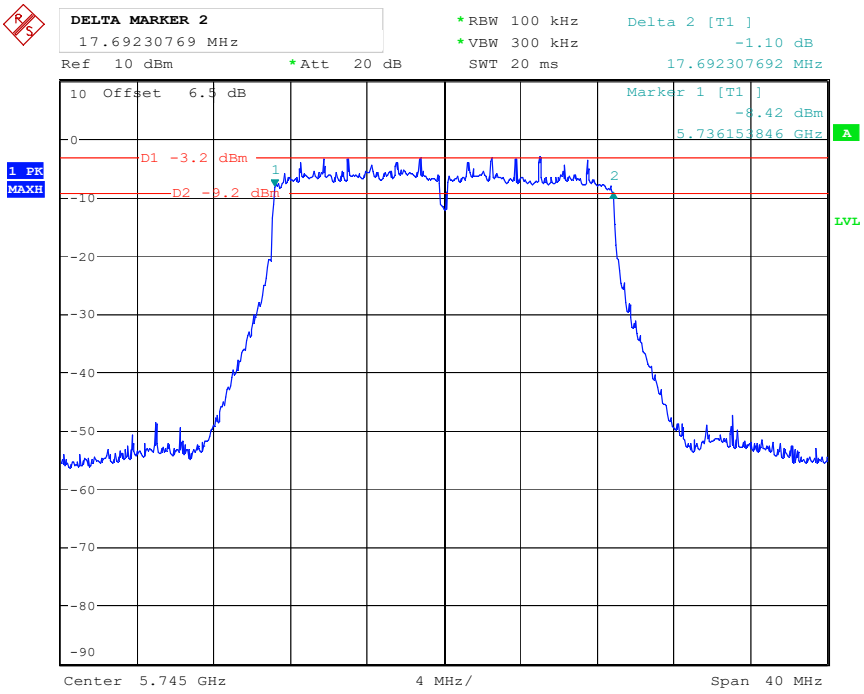
Date: 7.MAY.2021 09:03:21

802.11a mode, 6 dB Bandwidth-5825 MHz



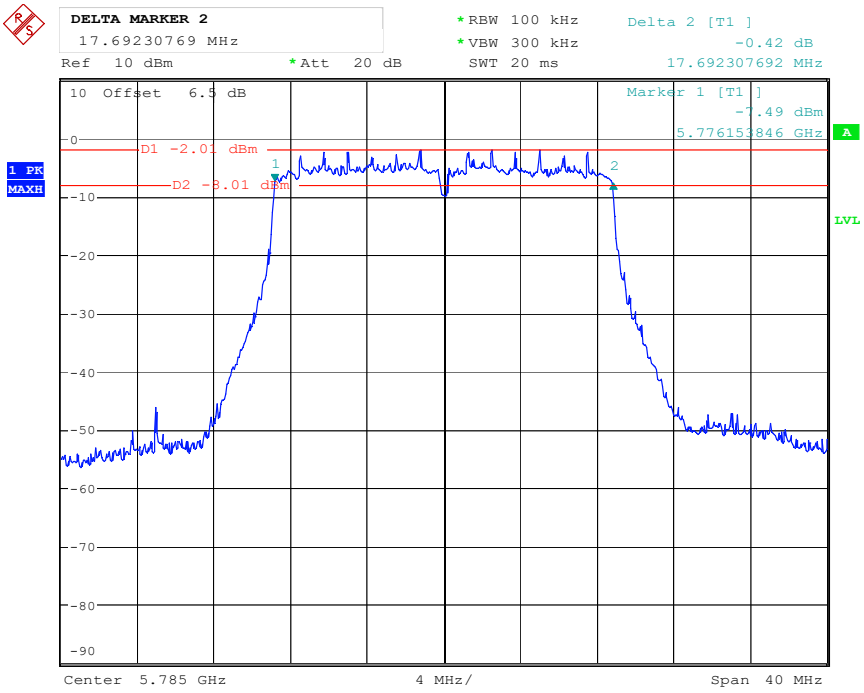
Date: 7.MAY.2021 09:04:29

802.11n-HT20 mode, 6 dB Bandwidth-5745 MHz



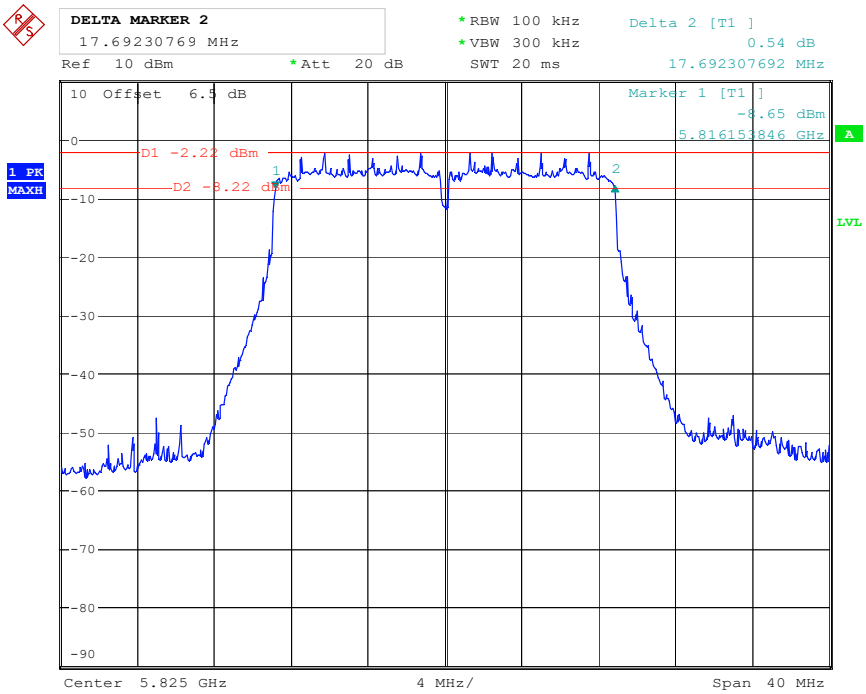
Date: 7.MAY.2021 09:06:53

802.11n-HT20 mode, 6 dB Bandwidth-5785 MHz



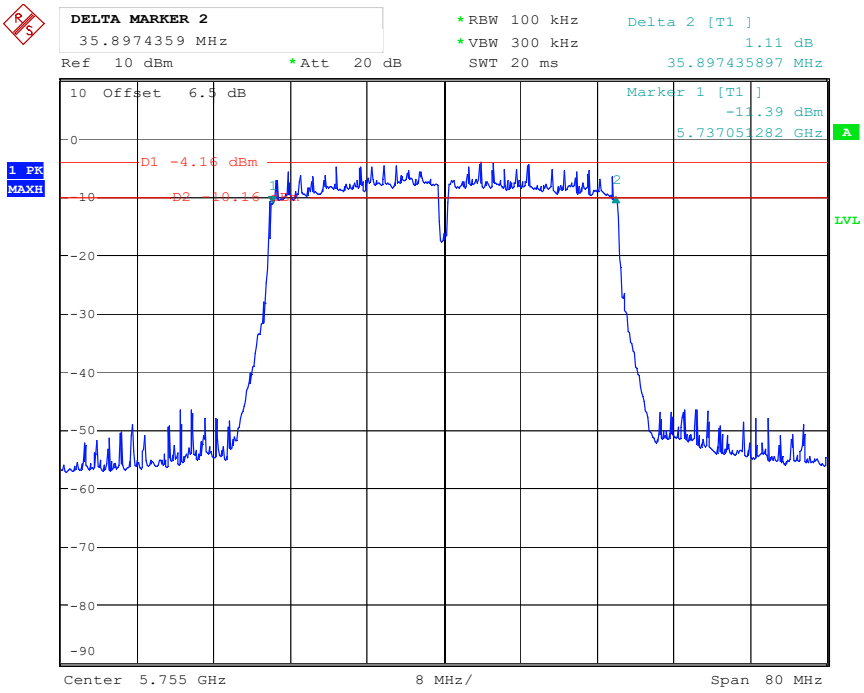
Date: 7.MAY.2021 09:07:50

802.11n-HT20 mode, 6 dB Bandwidth-5825 MHz



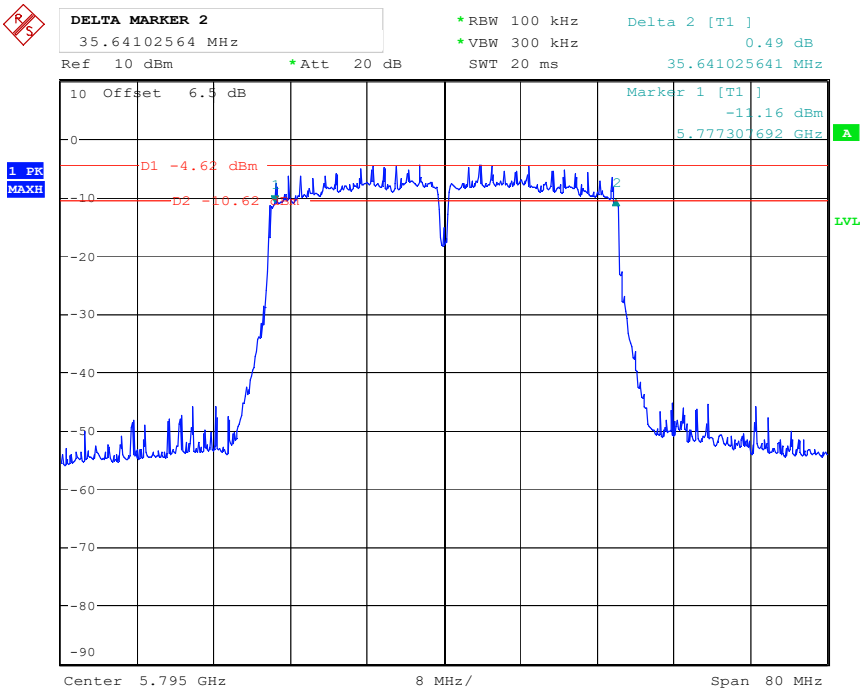
Date: 7.MAY.2021 09:08:47

802.11n-HT40 mode, 6 dB Bandwidth-5755 MHz



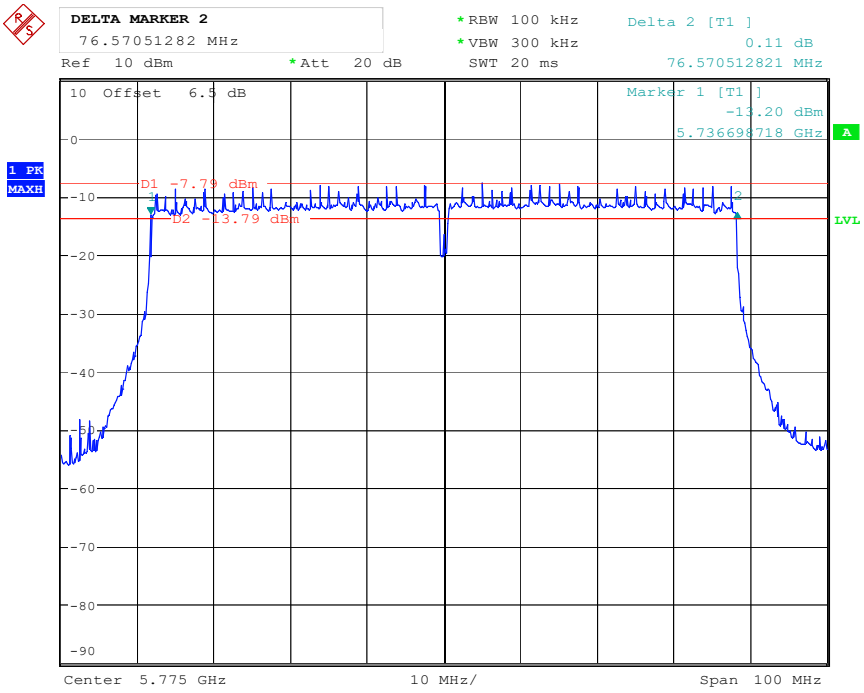
Date: 7.MAY.2021 09:10:05

802.11n-HT40 mode, 6 dB Bandwidth-5795 MHz



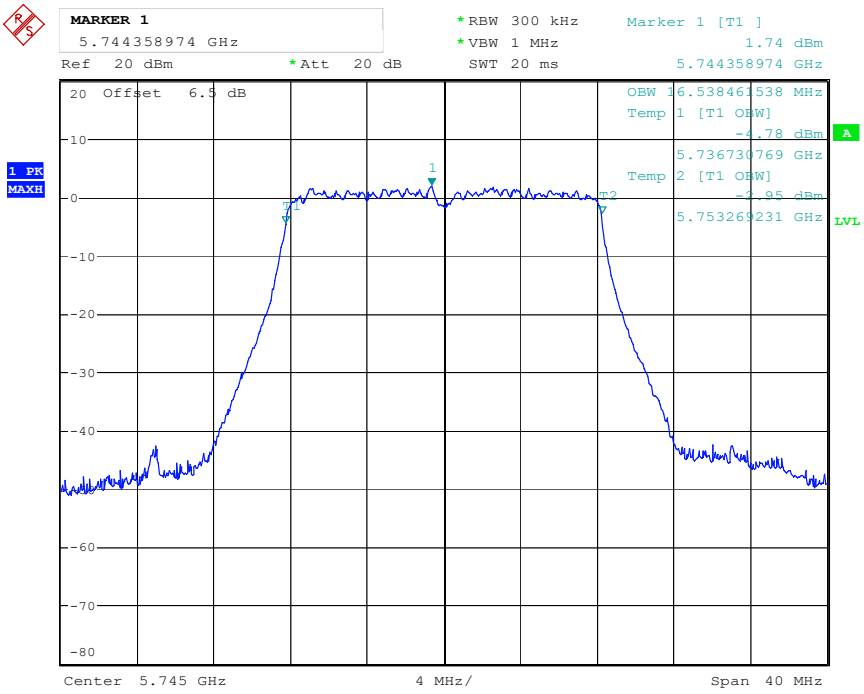
Date: 7.MAY.2021 09:11:07

802.11ac80 mode, 6 dB Bandwidth-5775 MHz



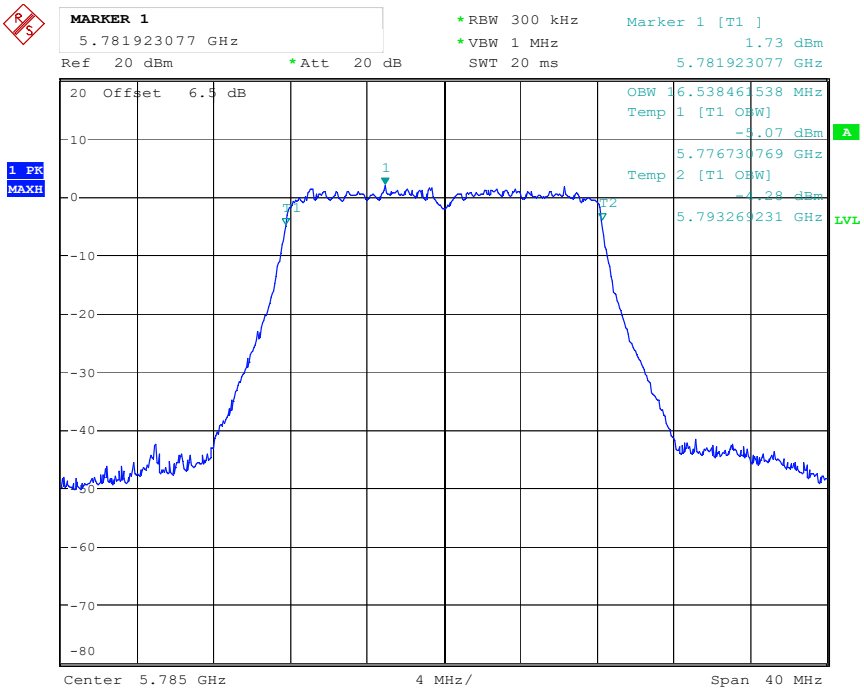
Date: 7.MAY.2021 09:12:55

802.11a mode, 99% Occupied Bandwidth-5745 MHz



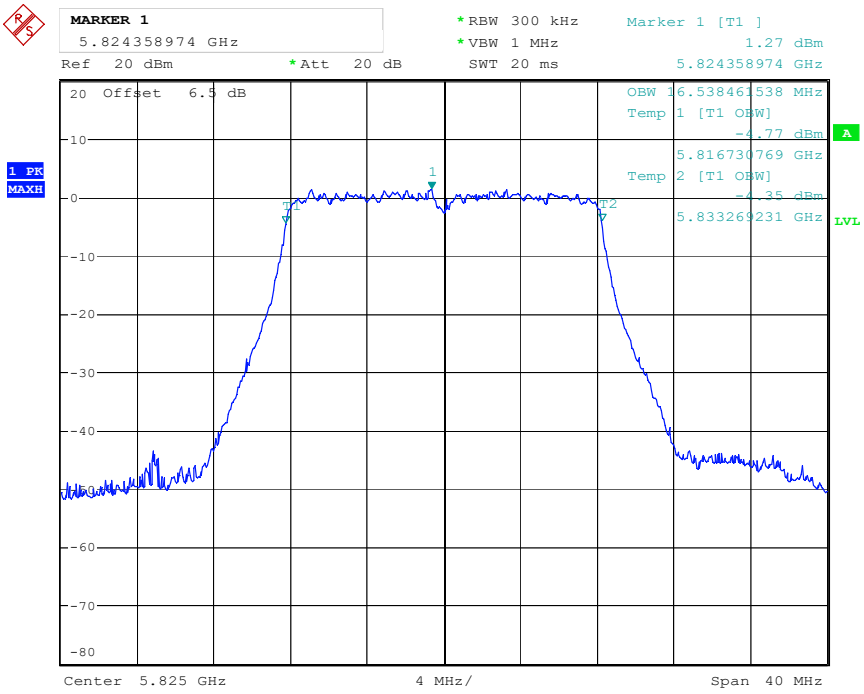
Date: 7.MAY.2021 12:50:37

802.11a mode, 99% Occupied Bandwidth -5785 MHz



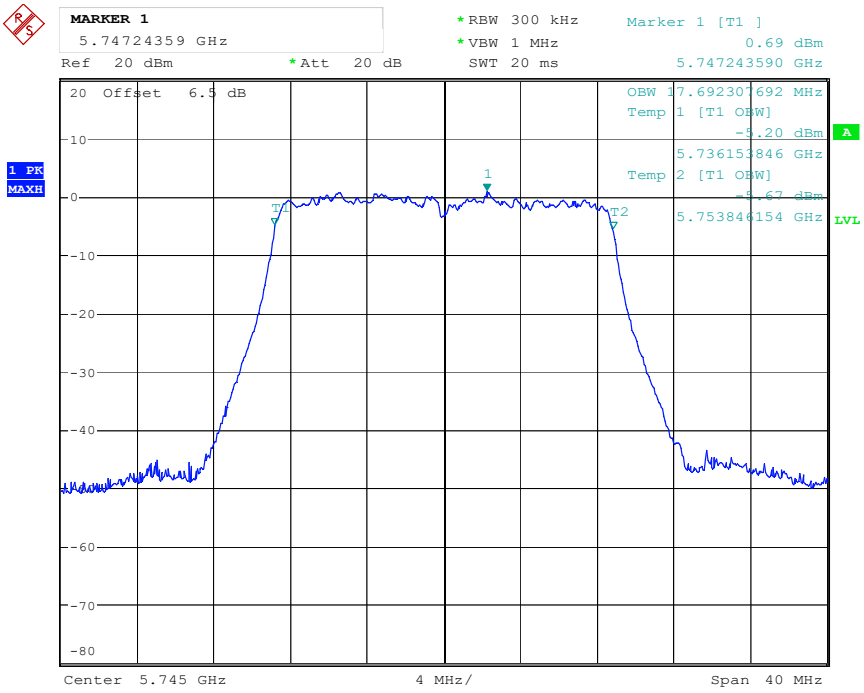
Date: 7.MAY.2021 12:51:06

802.11a mode, 99% Occupied Bandwidth -5825 MHz



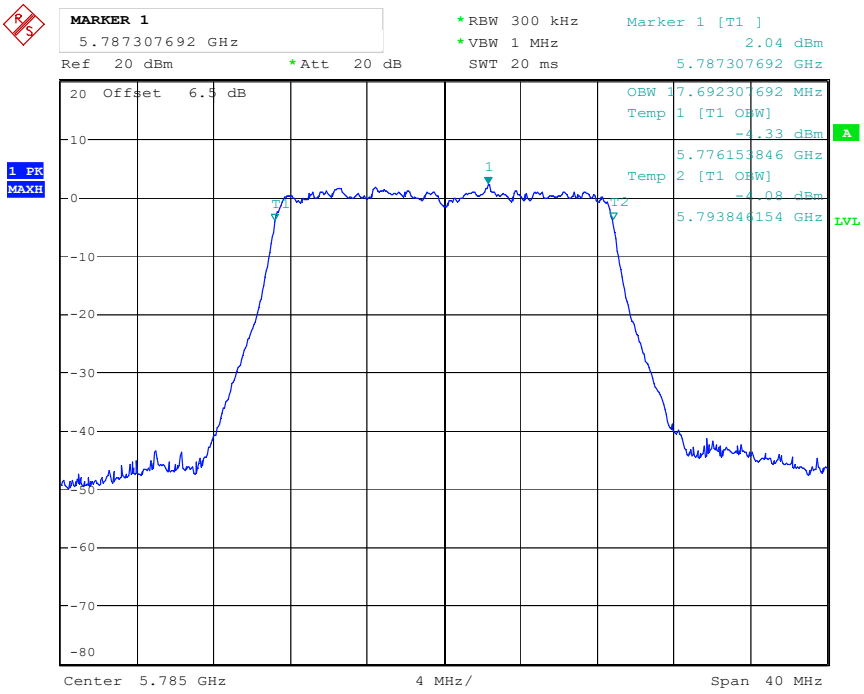
Date: 7.MAY.2021 12:51:38

802.11n-HT20 mode, 99% Occupied Bandwidth-5745 MHz



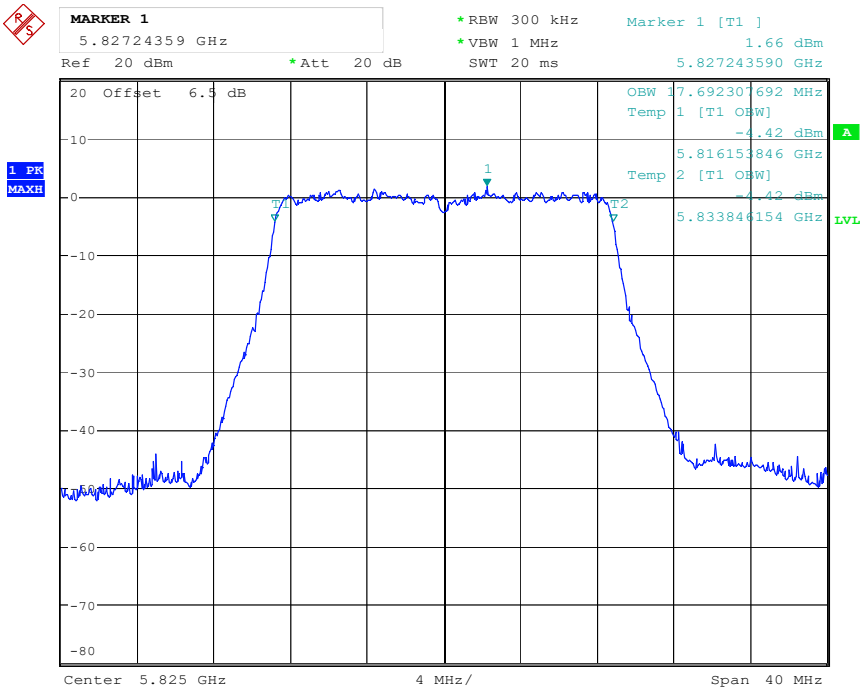
Date: 7.MAY.2021 12:52:08

802.11n-HT20 mode, 99% Occupied Bandwidth-5785 MHz



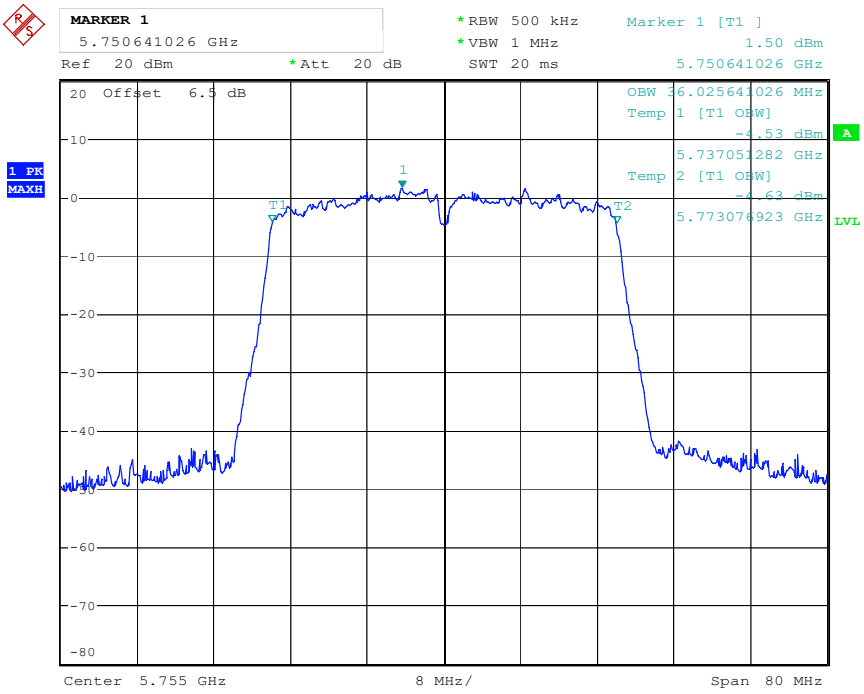
Date: 7.MAY.2021 12:52:48

802.11n-HT20 mode, 99% Occupied Bandwidth-5825 MHz



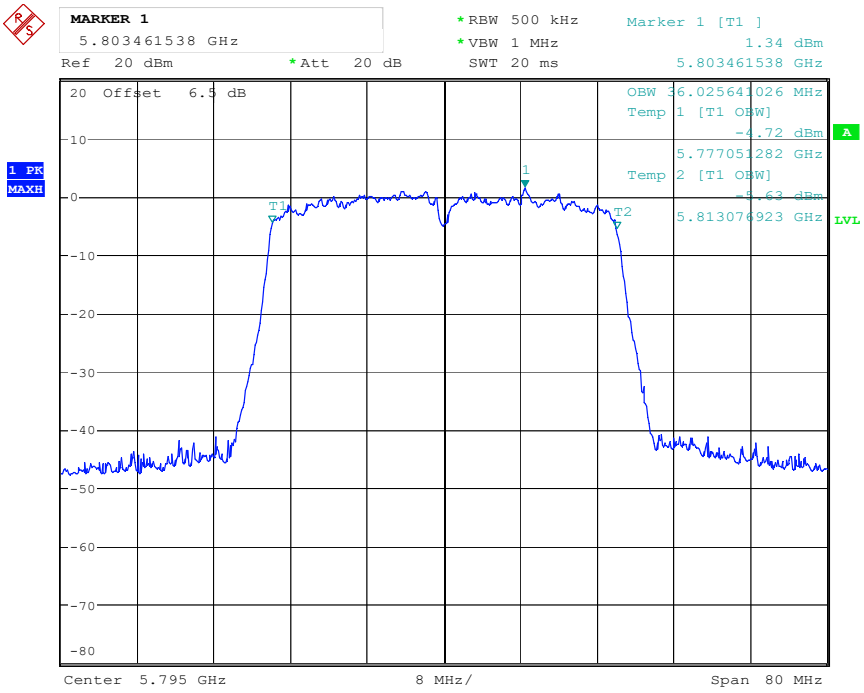
Date: 7.MAY.2021 12:53:25

802.11n-HT40 mode, 99% Occupied Bandwidth-5755 MHz



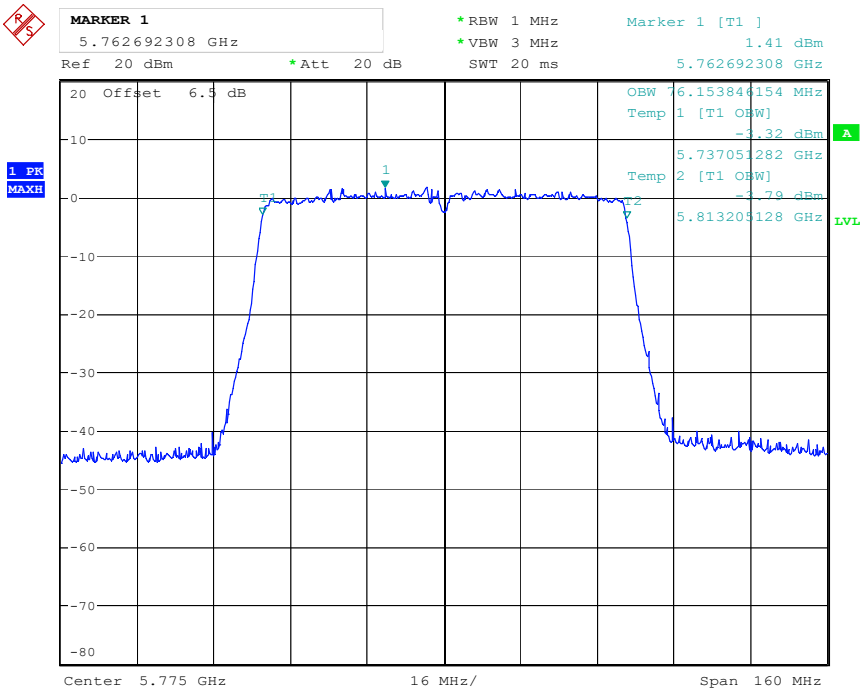
Date: 7.MAY.2021 12:54:04

802.11n-HT40 mode, 99% Occupied Bandwidth-5795 MHz



Date: 7.MAY.2021 12:54:46

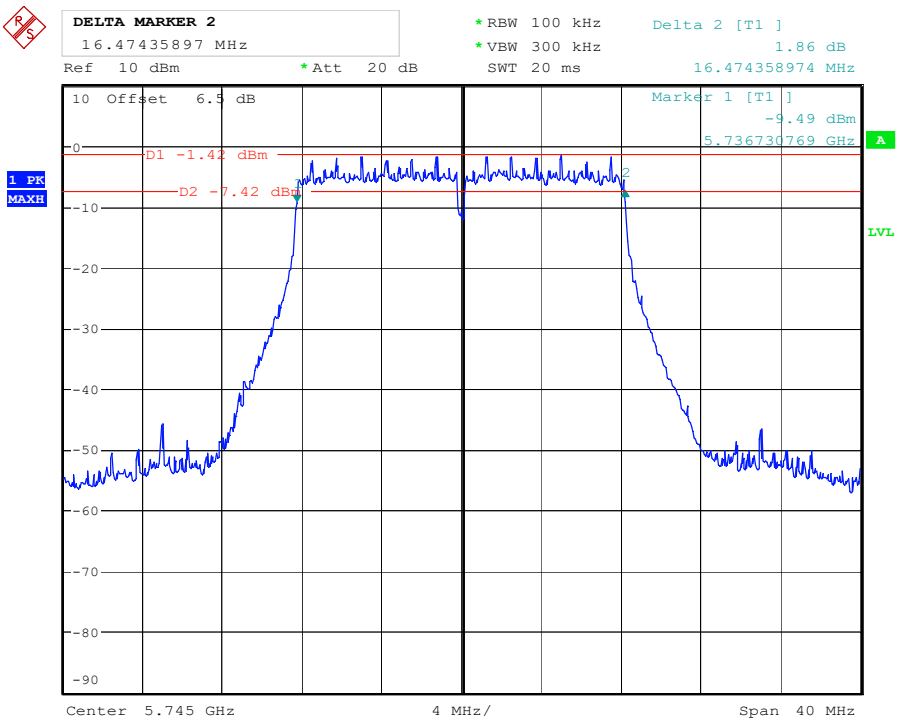
802.11ac80 mode, 99% Occupied Bandwidth-5775 MHz



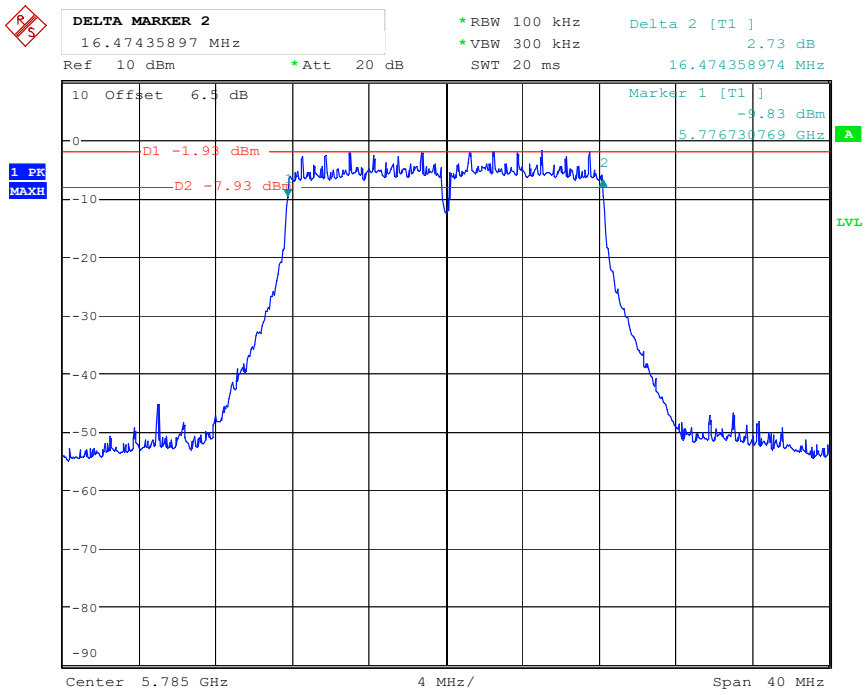
Date: 7.MAY.2021 12:55:43

Chain 1

802.11a mode, 6 dB Bandwidth-5745 MHz

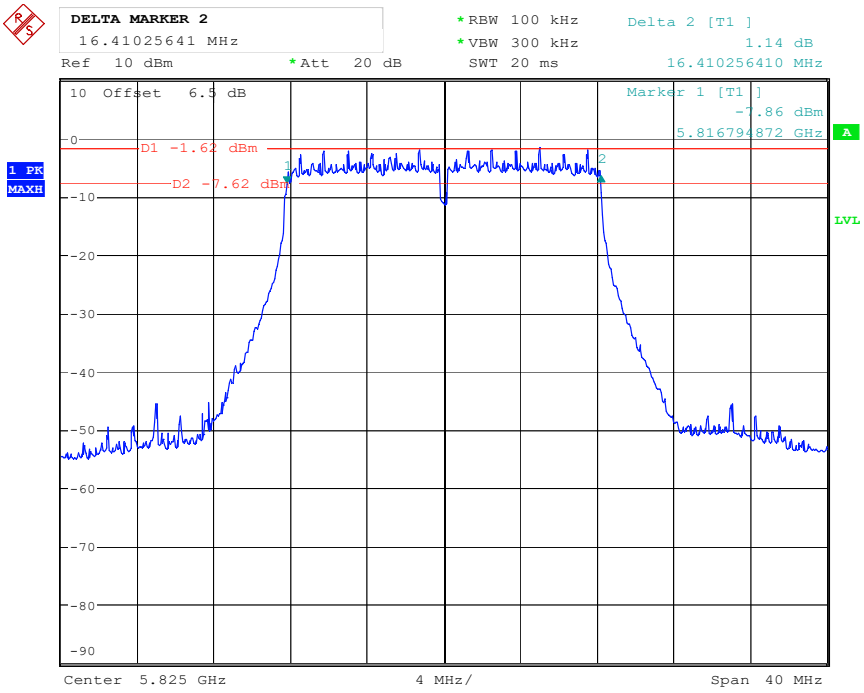


802.11a mode, 6 dB Bandwidth-5785 MHz



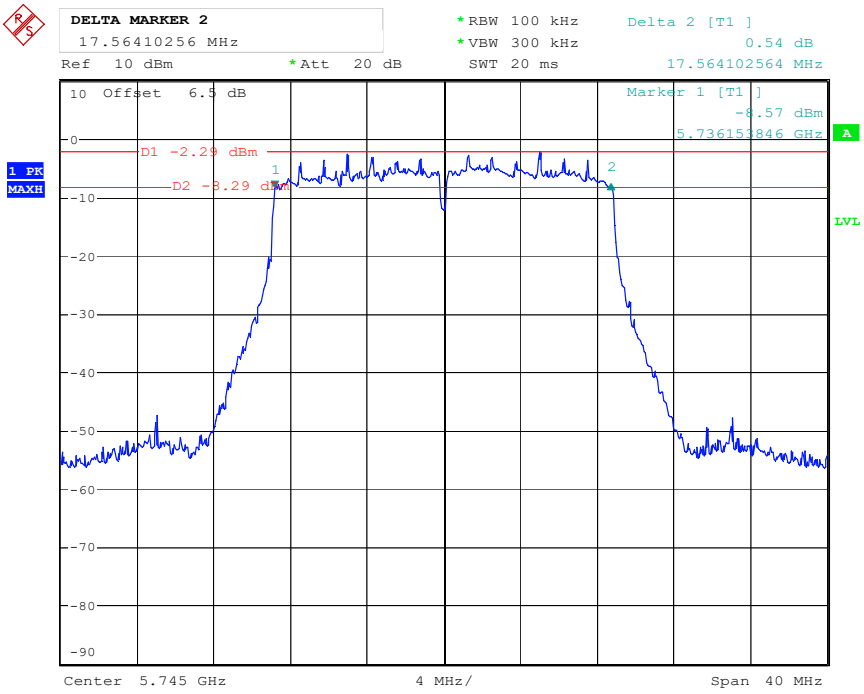
Date: 7.MAY.2021 09:27:42

802.11a mode, 6 dB Bandwidth-5825 MHz



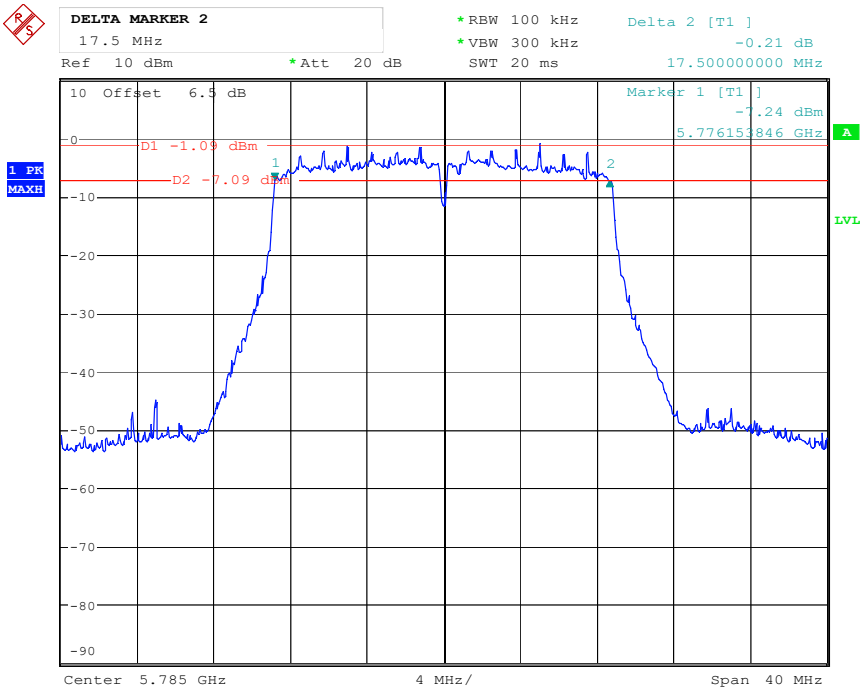
Date: 7.MAY.2021 09:49:54

802.11n-HT20 mode, 6 dB Bandwidth-5745 MHz



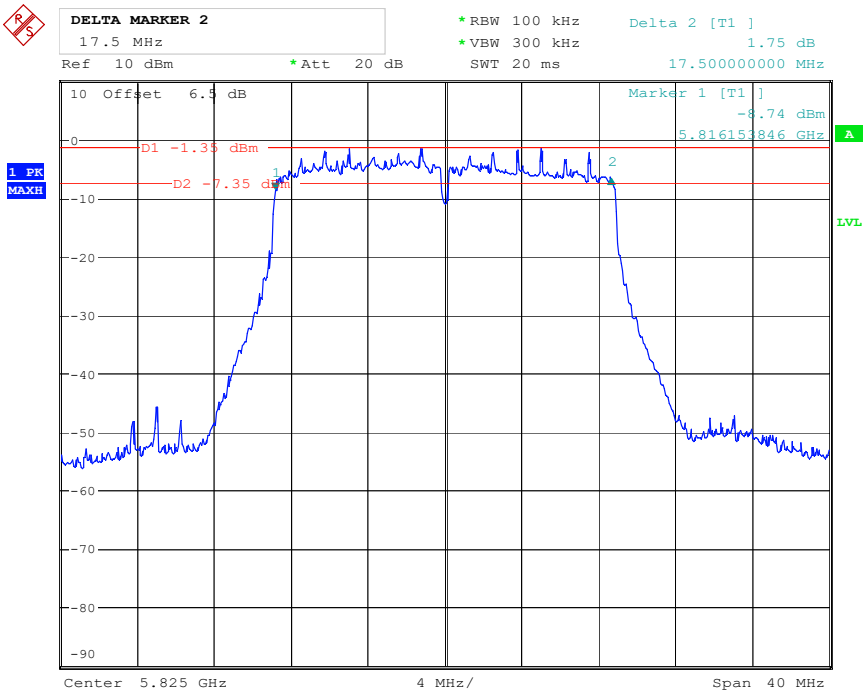
Date: 7.MAY.2021 10:11:51

802.11n-HT20 mode, 6 dB Bandwidth-5785 MHz



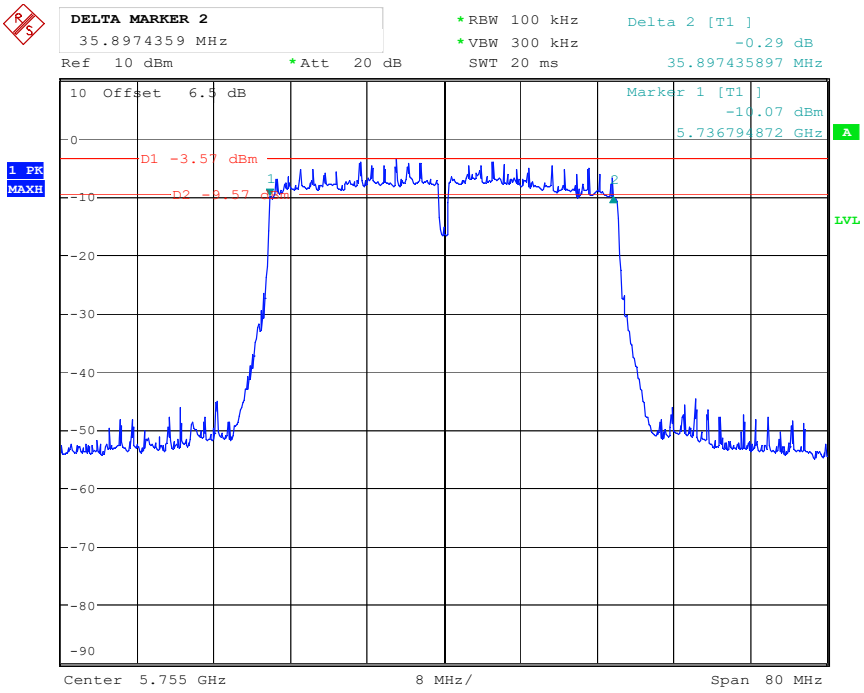
Date: 7.MAY.2021 10:44:48

802.11n-HT20 mode, 6 dB Bandwidth-5825 MHz



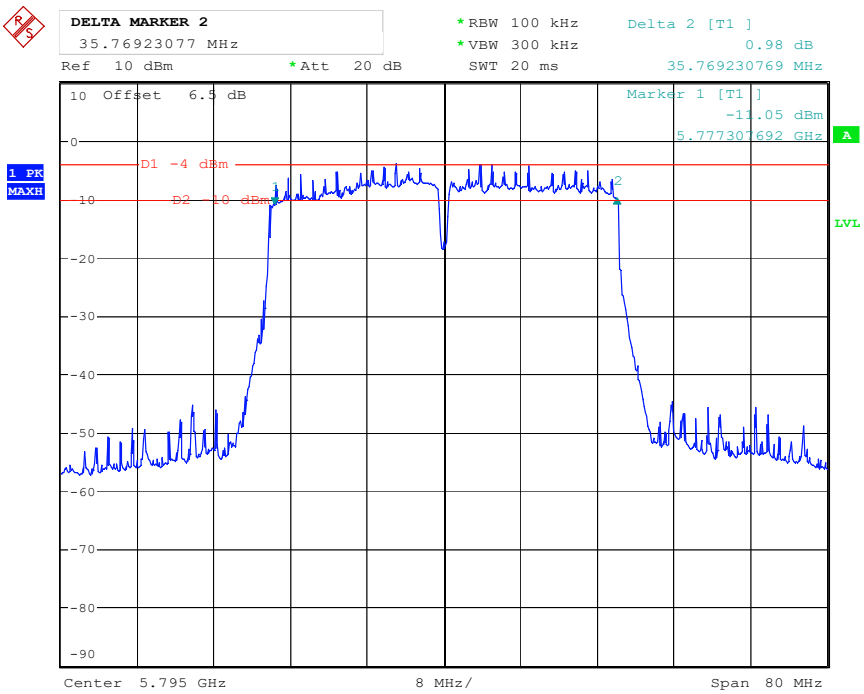
Date: 7.MAY.2021 12:15:23

802.11n-HT40 mode, 6 dB Bandwidth-5755 MHz



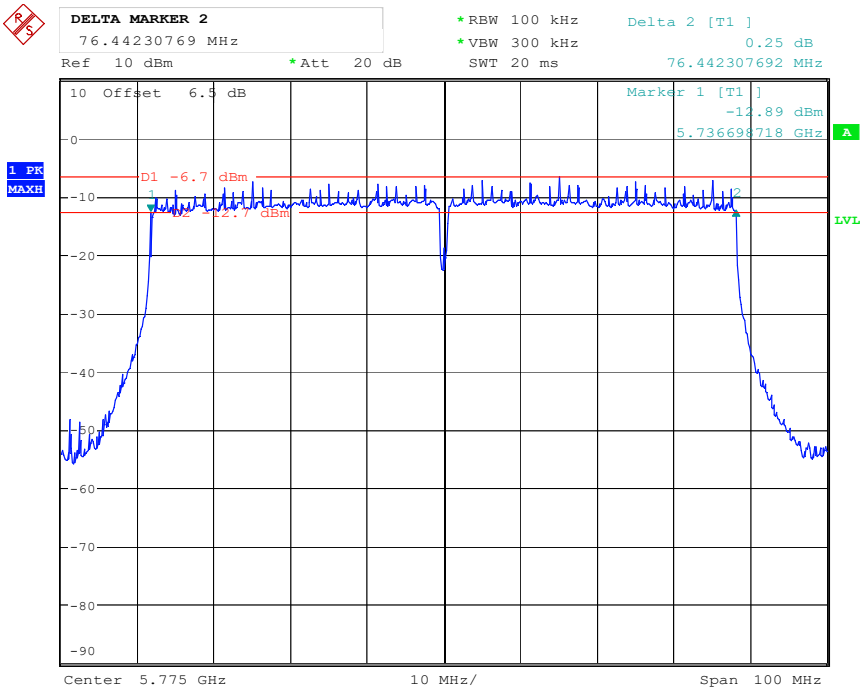
Date: 7.MAY.2021 12:18:24

802.11n-HT40 mode, 6 dB Bandwidth-5795 MHz



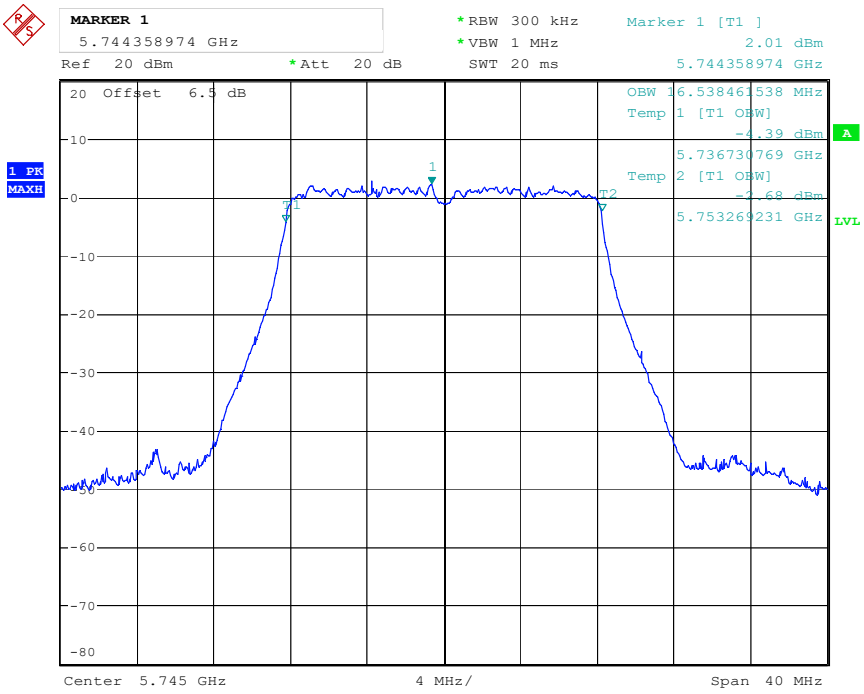
Date: 7.MAY.2021 12:20:49

802.11ac80 mode, 6 dB Bandwidth-5775 MHz



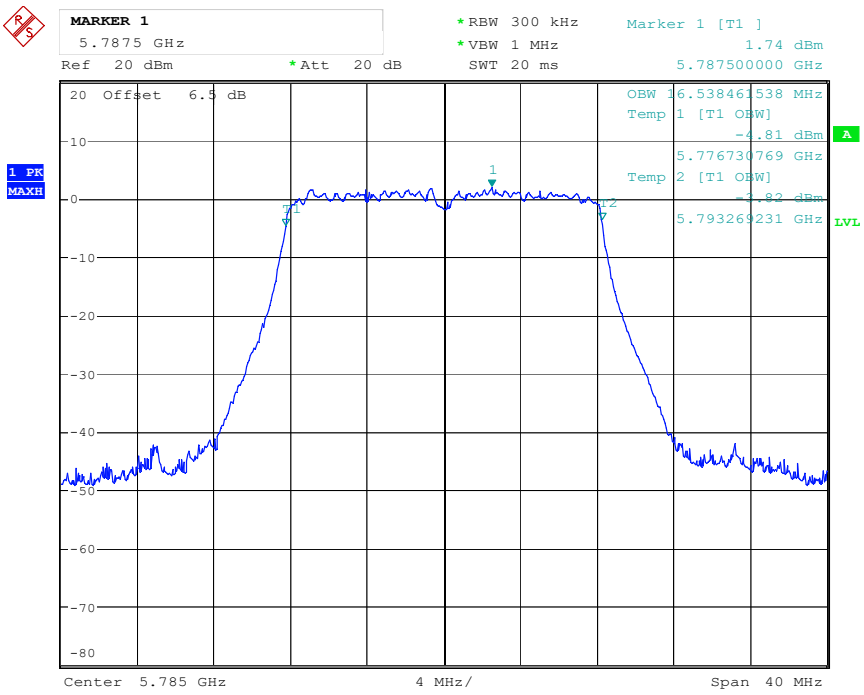
Date: 7.MAY.2021 12:38:32

802.11a mode, 99% Occupied Bandwidth-5745 MHz



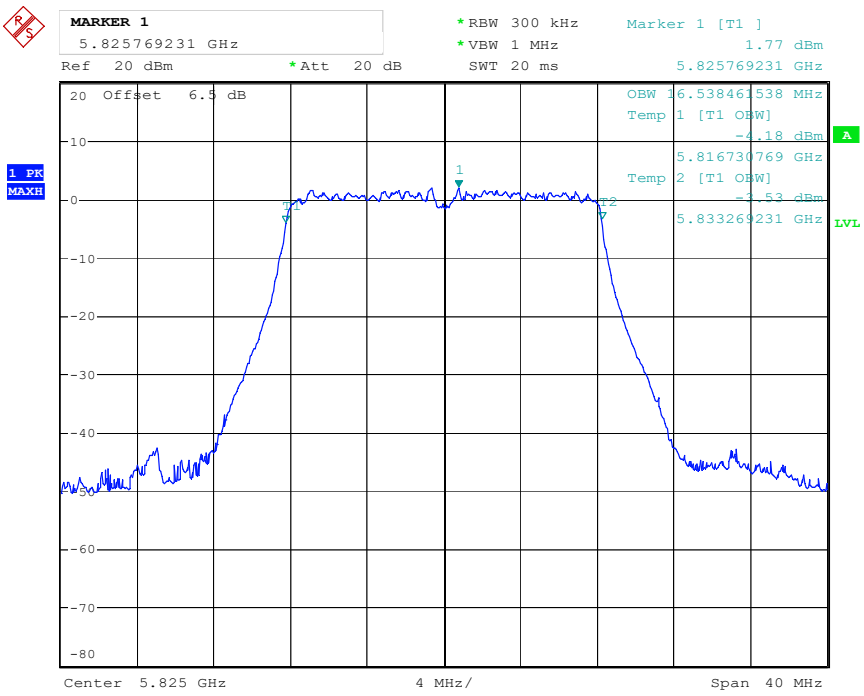
Date: 7.MAY.2021 12:40:43

802.11a mode, 99% Occupied Bandwidth -5785 MHz



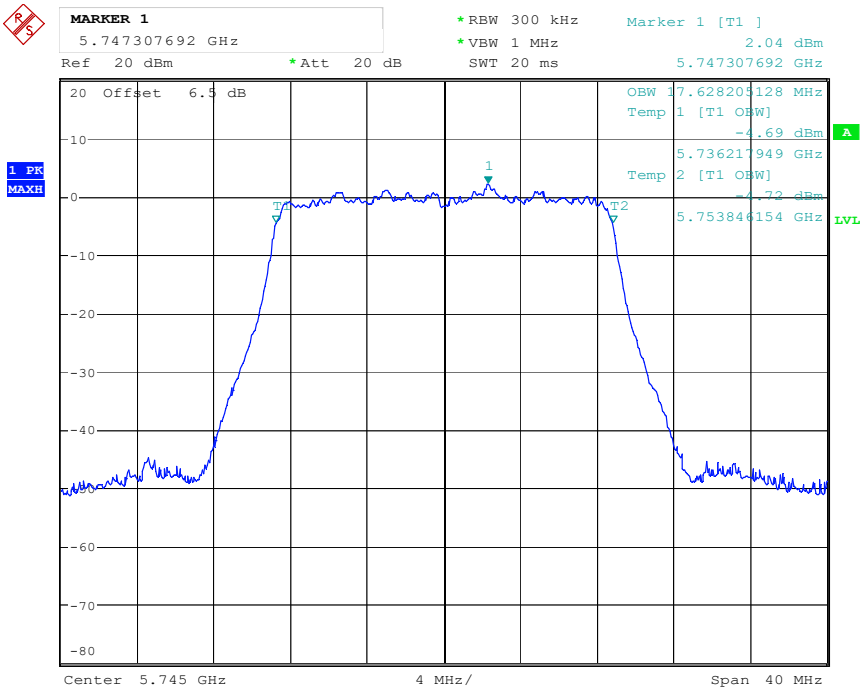
Date: 7.MAY.2021 12:41:57

802.11a mode, 99% Occupied Bandwidth -5825 MHz



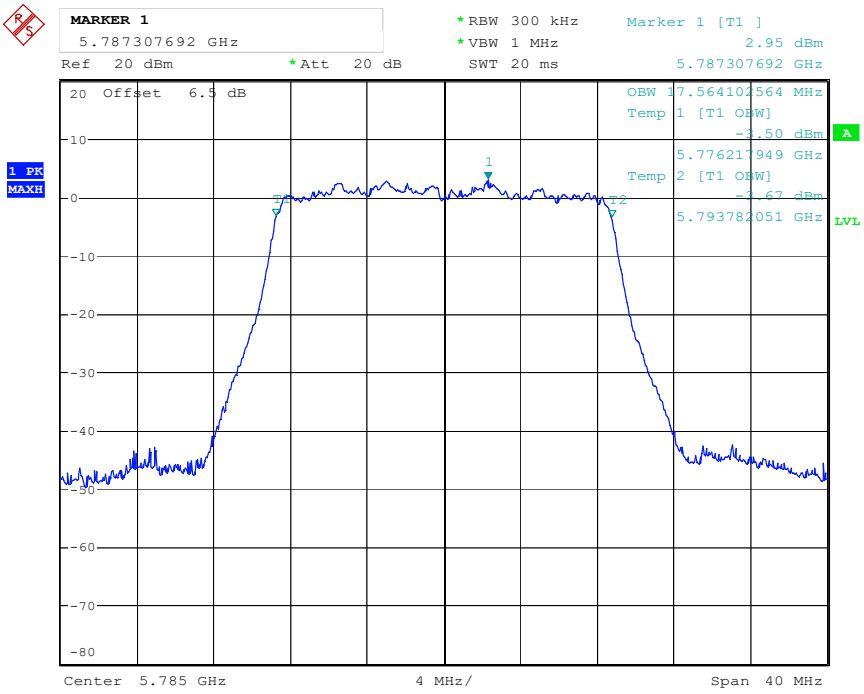
Date: 7.MAY.2021 12:42:44

802.11n-HT20 mode, 99% Occupied Bandwidth-5745 MHz



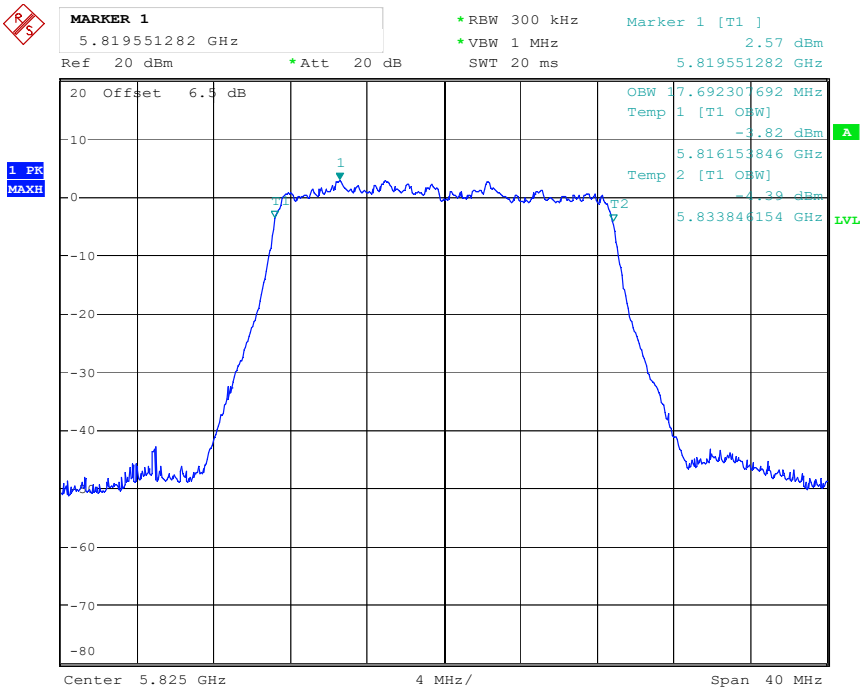
Date: 7.MAY.2021 12:43:26

802.11n-HT20 mode, 99% Occupied Bandwidth-5785 MHz



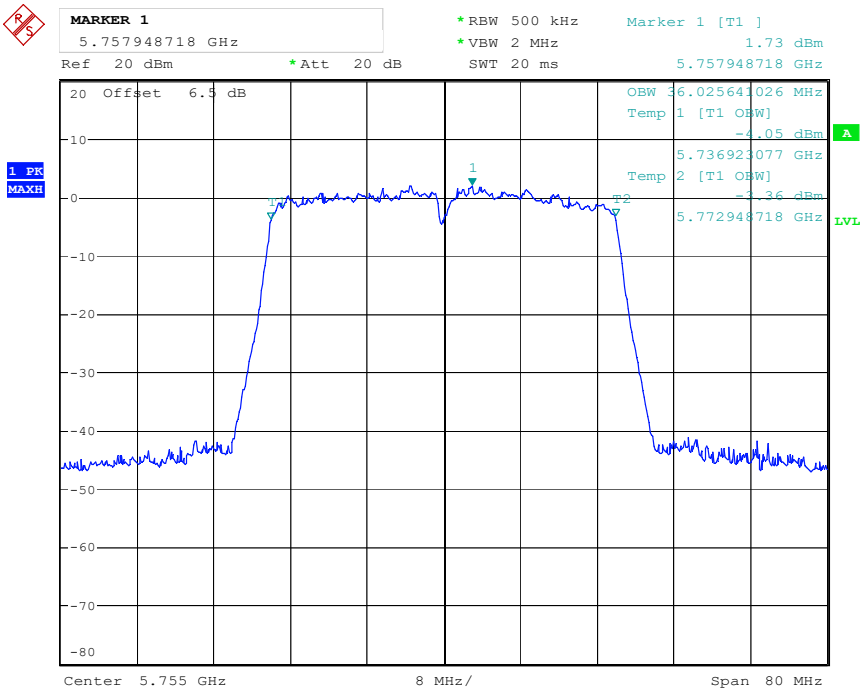
Date: 7.MAY.2021 12:43:57

802.11n-HT20 mode, 99% Occupied Bandwidth-5825 MHz



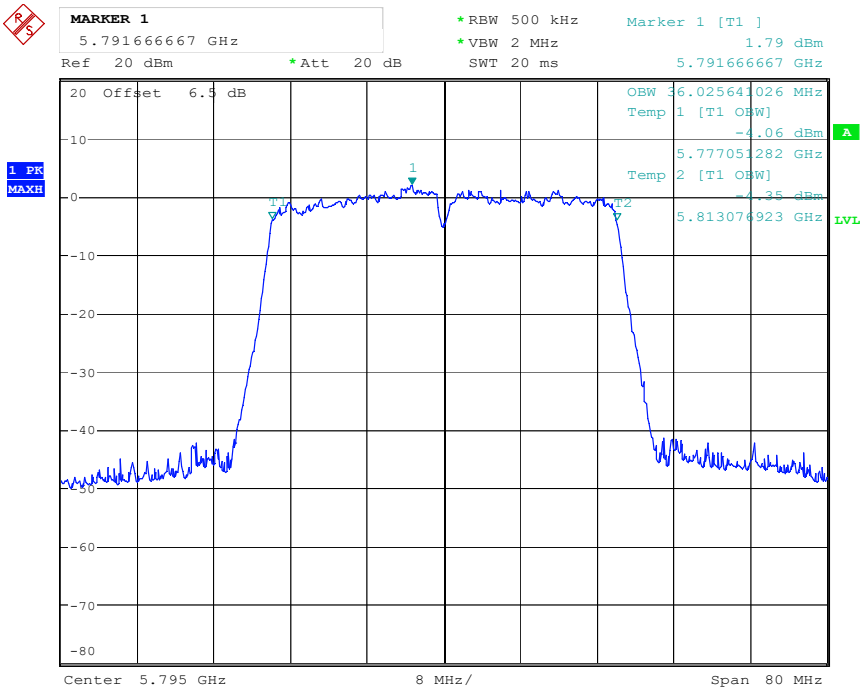
Date: 7.MAY.2021 12:44:31

802.11n-HT40 mode, 99% Occupied Bandwidth-5755 MHz



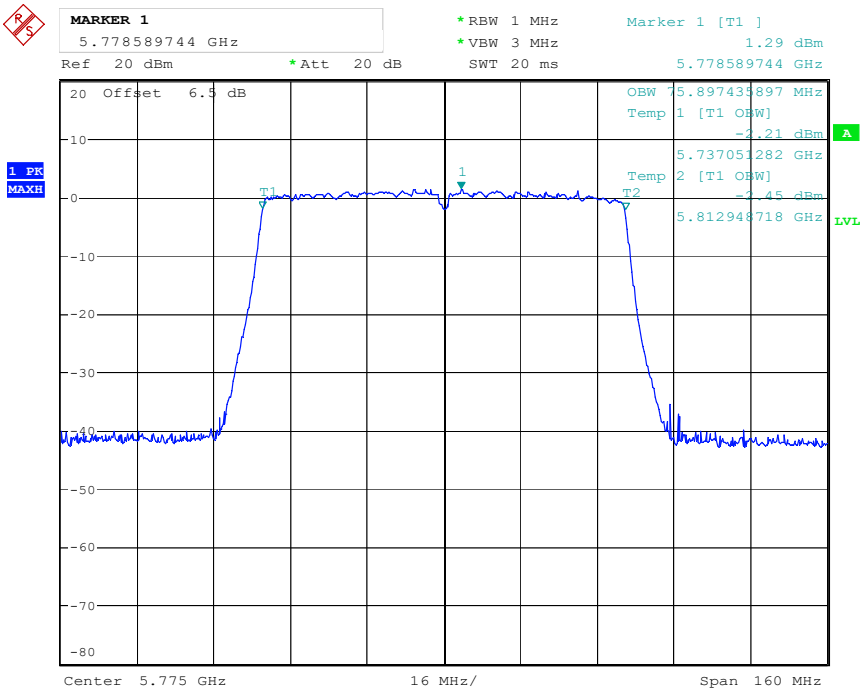
Date: 7.MAY.2021 12:45:30

802.11n-HT40 mode, 99% Occupied Bandwidth-5795 MHz



Date: 7.MAY.2021 12:46:58

802.11ac80 mode, 99% Occupied Bandwidth-5775 MHz



Date: 7.MAY.2021 12:48:30

FCC §15.407(a) (1)(IV), (3), (4) – CONDUCTED TRANSMITTER OUTPUT POWER

Applicable Standard

(a) Power limits:

(1) For the band 5.15-5.25 GHz.

(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.

(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 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.

NOTE TO PARAGRAPH (A)(3): The Commission strongly recommends that parties employing U-NII devices to provide critical communications services should determine if there are any nearby Government radar systems that could affect their operation.

(4) The maximum conducted output power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.

Test Procedure

According to 789033 D02 General UNII Test Procedures New Rules v02r01

Test Data

Environmental Conditions

Temperature:	26 °C
Relative Humidity:	47 %
ATM Pressure:	95.8 kPa

The testing was performed by Winfred Wang on 2021-05-07.

Test Mode: Transmitting

For 5150-5250 MHz:

Mode	Frequency (MHz)	Conducted Average Power (dBm)		Duty Cycle Factor	Corrected (dBm)		Limit (dBm)
		Chain 0	Chain 1	(dB)	Chain 0	Chain 1	
802.11a	5745	10.46	11.07	0.18	10.64	11.25	24.00
	5785	10.88	11.88	0.18	11.06	12.06	24.00
	5825	12.11	13.24	0.18	12.29	13.42	24.00

Mode	Channel	Frequency (MHz)	Conducted Average Power (dBm)		Duty Cycle Factor	Total (dBm)	Limit (dBm)
			Chain 0	Chain 1	(dB)		
802.11n-HT20	Low	5180	11.05	11.15	0.11	14.22	24.00
	Middle	5200	11.01	11.91	0.11	14.60	24.00
	High	5240	12.18	13.36	0.11	15.93	24.00
802.11n-HT40	Low	5190	10.64	11.44	0.13	14.20	24.00
	High	5230	11.63	12.85	0.13	15.42	24.00
802.11ac 80	Middle	5210	10.33	11.32	0.73	14.59	24.00

Note:
1. The max antenna gain is 0.21 dBi
2. The device employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power measurements on IEEE 802.11 devices:

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

So:

Directional gain = G_{ANT} + Array Gain = 0.21 < 6.0dBi.

No power limit reduced in MIMO mode.

For 5725-5850 MHz:

Mode	Frequency (MHz)	Conducted Average Power (dBm)		Duty Cycle Factor	Corrected (dBm)		Limit (dBm)
		Chain 0	Chain 1	(dB)	Chain 0	Chain 1	
802.11a	5745	7.84	7.69	0.18	8.02	7.87	30.00
	5785	7.47	7.30	0.18	7.65	7.48	30.00
	5825	7.19	7.11	0.18	7.37	7.29	30.00

Mode	Channel	Frequency (MHz)	Conducted Average Power (dBm)		Duty Cycle Factor	Total (dBm)	Limit (dBm)
			Chain 0	Chain 1	(dB)		
802.11n-HT20	Low	5745	6.57	6.58	0.11	9.70	30.00
	Middle	5785	7.59	7.66	0.11	10.75	30.00
	High	5825	7.18	7.34	0.11	10.38	30.00
802.11n-HT40	Low	5755	7.23	7.63	0.13	10.57	30.00
	High	5795	7.27	7.26	0.13	10.41	30.00
802.11ac 80	Middle	5775	6.74	6.81	0.73	10.52	30.00

Note:
1. The max antenna gain is 0.02 dBi
2. The device employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power measurements on IEEE 802.11 devices:

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

So:

Directional gain = G_{ANT} + Array Gain = 0.02 < 6.0dBi.

No power limit was reduced in MIMO mode.

FCC §15.407(a) (1) (iv) (3) (5) - POWER SPECTRAL DENSITY

Applicable Standard

(a) Power limits:

(1) For the band 5.15-5.25 GHz.

(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.

(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 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.

(5) 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 are made over a reference bandwidth of 500 kHz or the 26 dB emission bandwidth of the device, whichever is less. 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.

Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01

Test Data

Environmental Conditions

Temperature:	26 °C
Relative Humidity:	47 %
ATM Pressure:	95.8 kPa

The testing was performed by Winfred Wang on 2021-05-07.

Test Mode: Transmitting

For 5150-5250 MHz:

Mode	Frequency (MHz)	Power Spectral Density (dBm/MHz)		Limit (dBm/MHz)
		Chain 0	Chain 1	
802.11a	5180	2.31	2.52	11
	5200	2.66	3.32	11
	5240	3.90	4.71	11

Mode	Frequency (MHz)	Power Spectral Density (dBm/MHz)		Total (dBm/MHz)	Limit (dBm/MHz)
		Chain 0	Chain 1		
802.11n-HT20	5180	2.34	2.42	5.39	11
	5200	2.84	2.97	5.92	11
	5240	4.13	4.62	7.40	11
802.11n-HT40	5190	-0.32	0.31	3.02	11
	5230	0.49	1.59	4.09	11
802.11ac80	5210	-3.45	-2.68	-0.04	11

Note:
1. The max antenna gain is 0.21dBi.
2. The device employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power spectral density measurements on IEEE 802.11 devices:

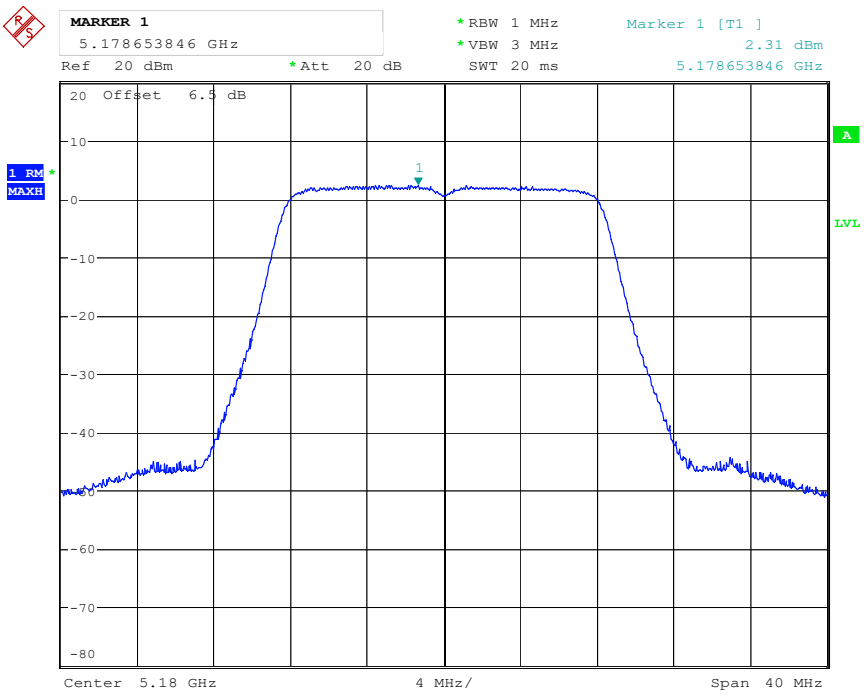
Array Gain = 10 x log(N_{ANT}/N_{SS})dB

So:

Directional gain = GANT + Array Gain = 0.21+10 x log(2)=3.22＜6dBi
No power density Limit reduced in MIMO mode.

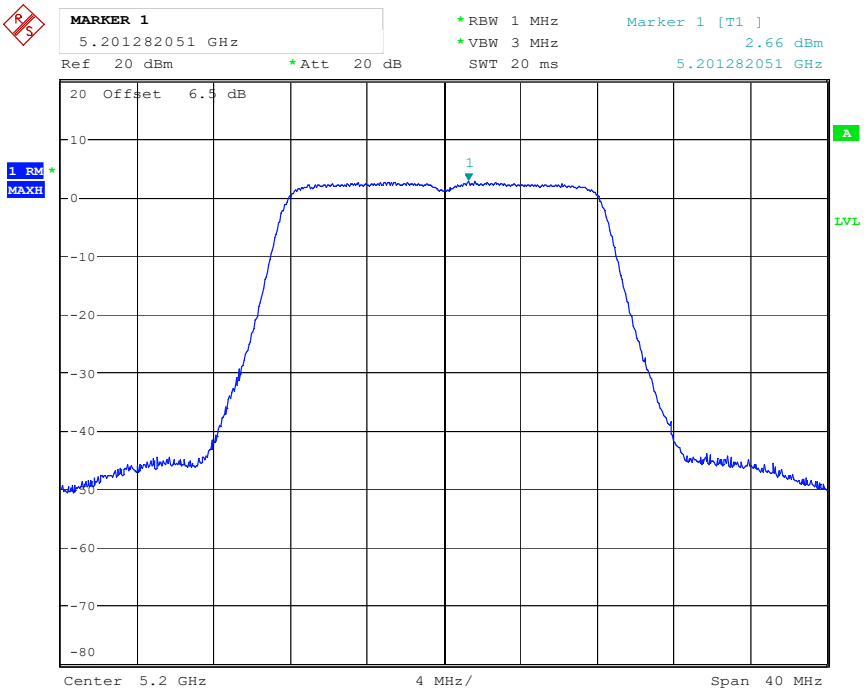
Chain 0

802.11a mode, Power Spectral Density-5180 MHz



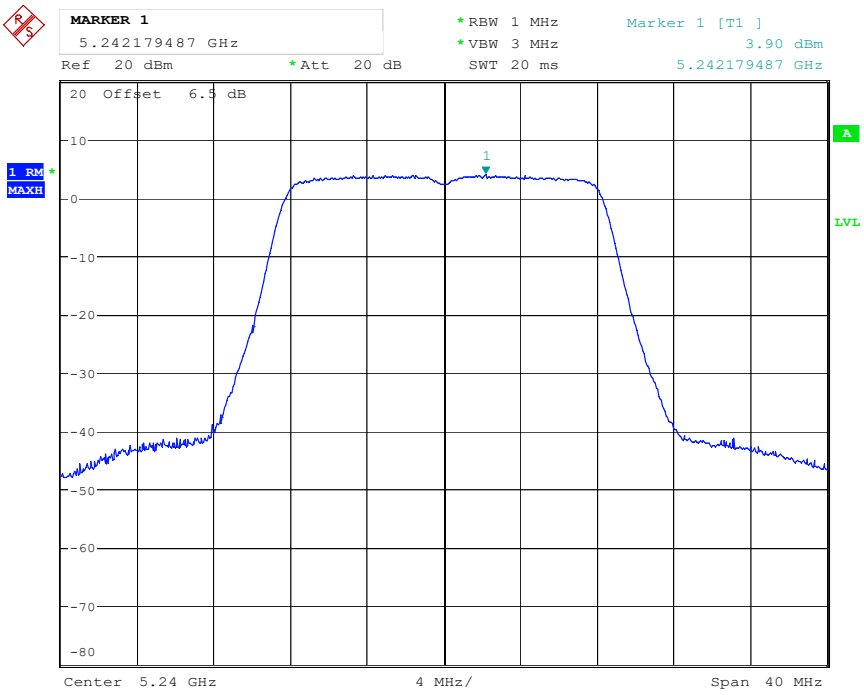
Date: 7.MAY.2021 13:09:33

802.11a mode, Power Spectral Density-5200 MHz



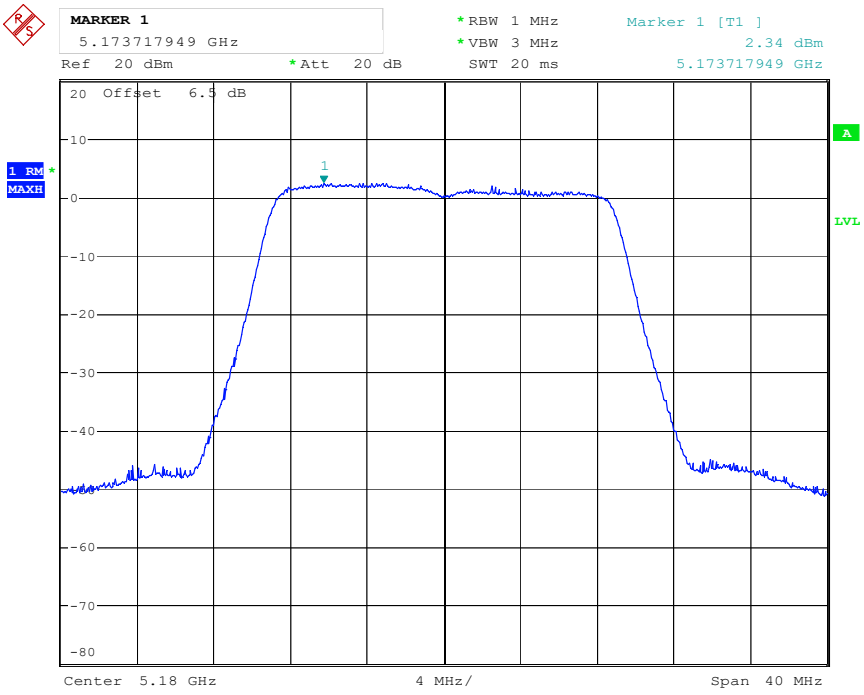
Date: 7.MAY.2021 13:10:09

802.11a mode, Power Spectral Density-5240 MHz



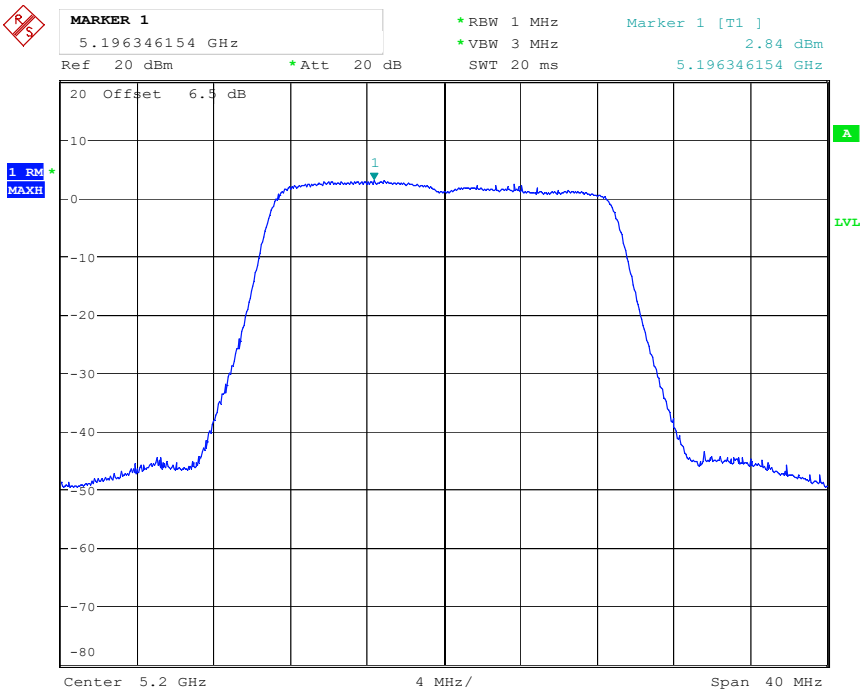
Date: 7.MAY.2021 13:10:22

802.11n-HT20 mode, Power Spectral Density-5180 MHz



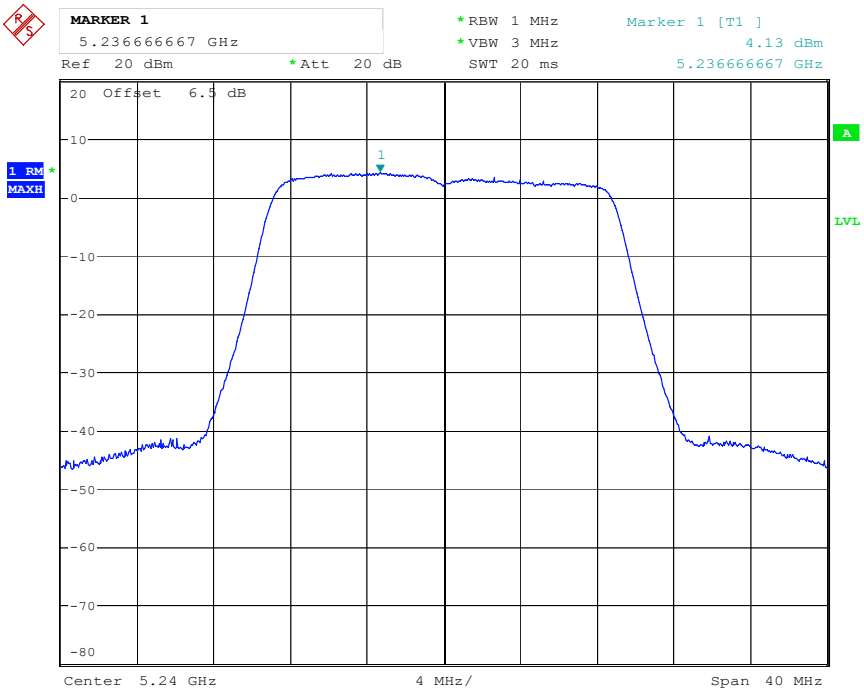
Date: 7.MAY.2021 13:10:49

802.11n-HT20 mode, Power Spectral Density-5200 MHz



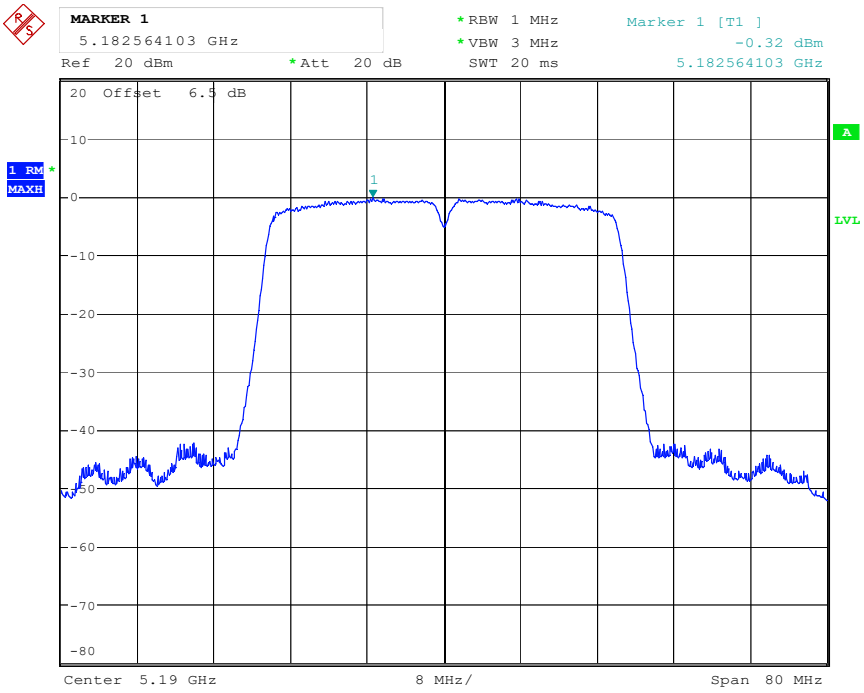
Date: 7.MAY.2021 13:11:13

802.11n-HT20 mode, Power Spectral Density-5240 MHz



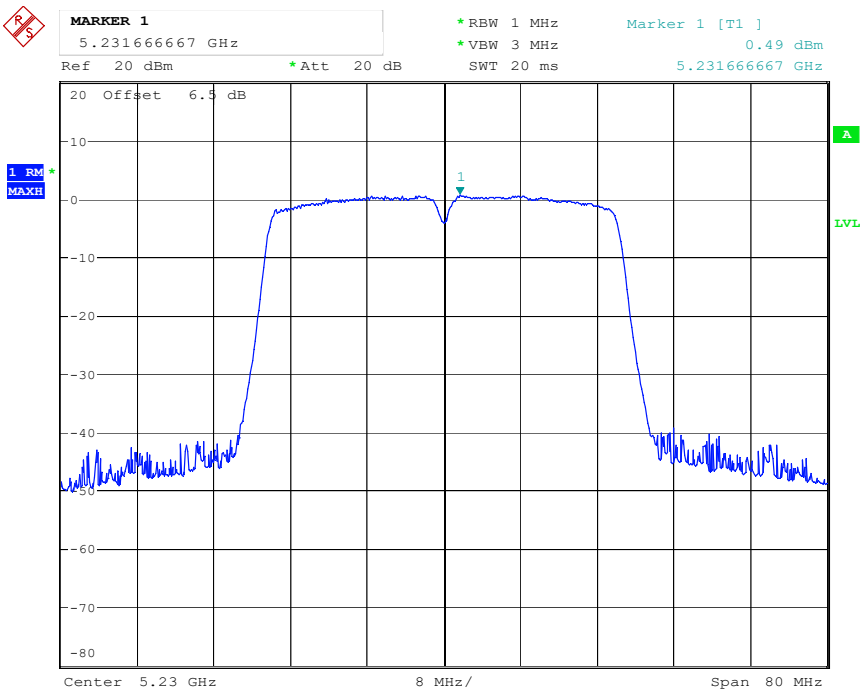
Date: 7.MAY.2021 13:12:04

802.11n-HT40 mode, Power Spectral Density-5190 MHz



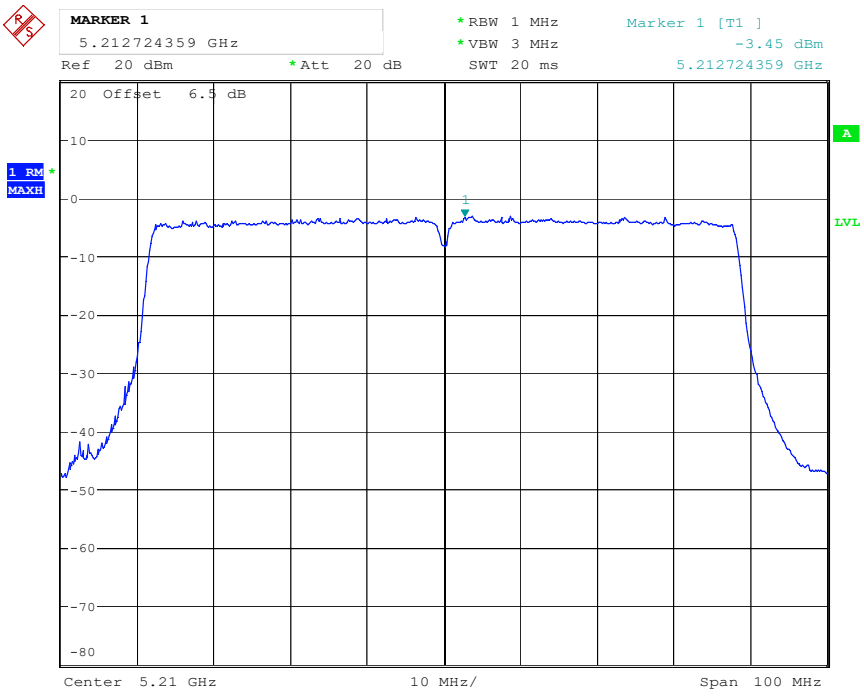
Date: 7.MAY.2021 13:13:31

802.11n-HT40 mode, Power Spectral Density-5230 MHz



Date: 7.MAY.2021 13:13:56

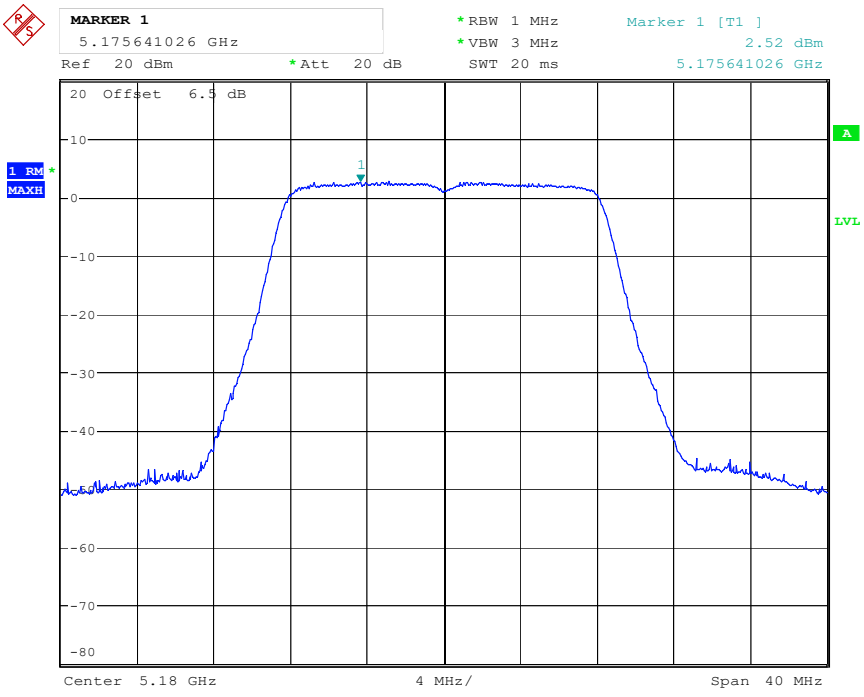
802.11ac 80 mode, Power Spectral Density-5210 MHz



Date: 7.MAY.2021 13:15:30

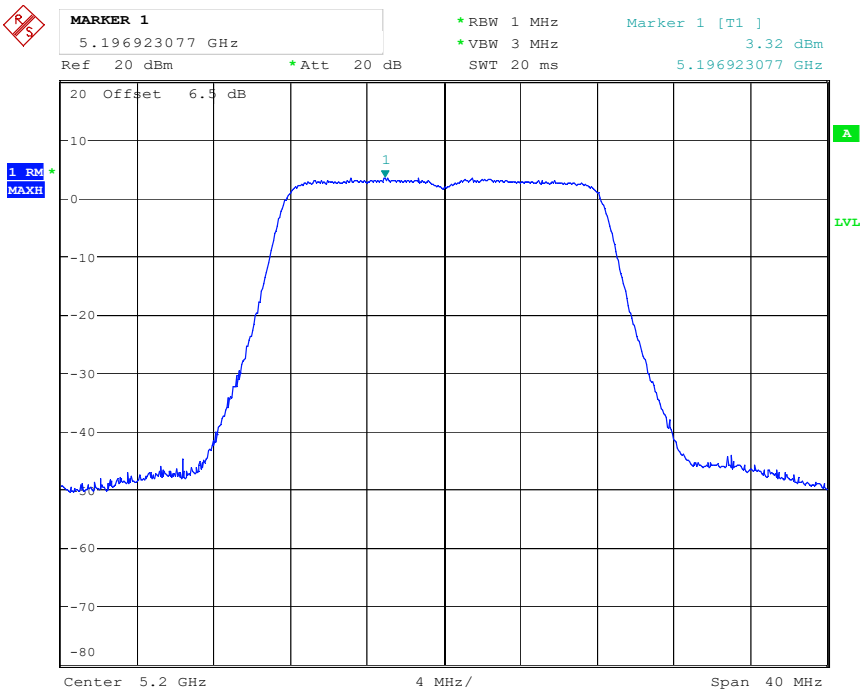
Chain 1

802.11a mode, Power Spectral Density-5180 MHz



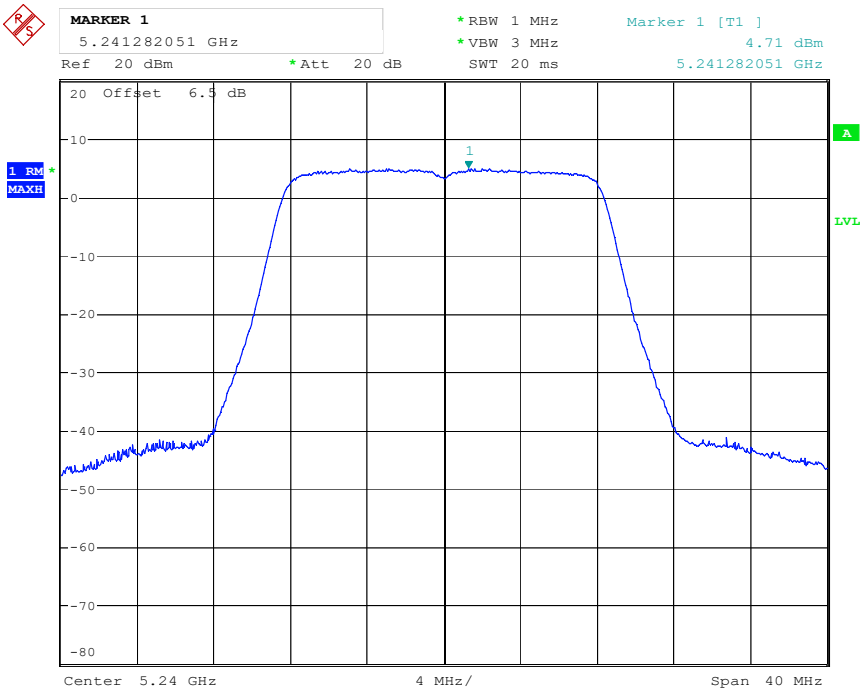
Date: 7.MAY.2021 13:19:55

802.11a mode, Power Spectral Density-5200 MHz



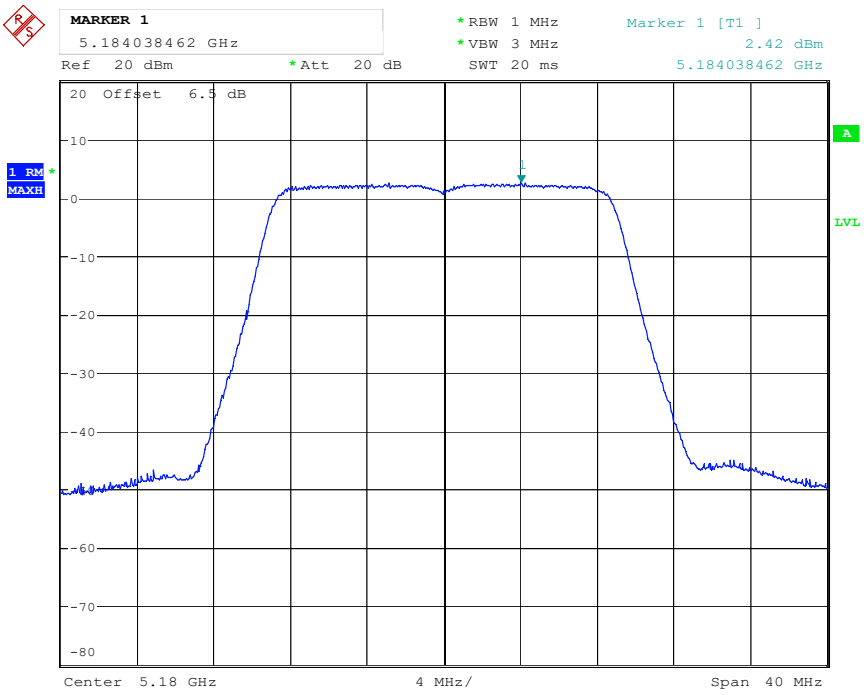
Date: 7.MAY.2021 13:19:38

802.11a mode, Power Spectral Density-5240 MHz



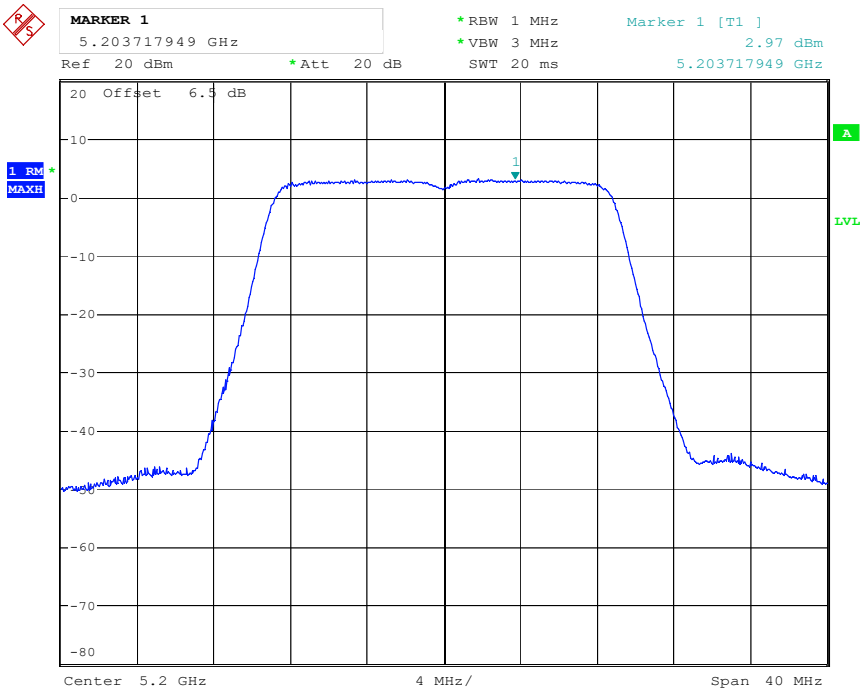
Date: 7.MAY.2021 13:19:17

802.11n-HT20 mode, Power Spectral Density-5180 MHz



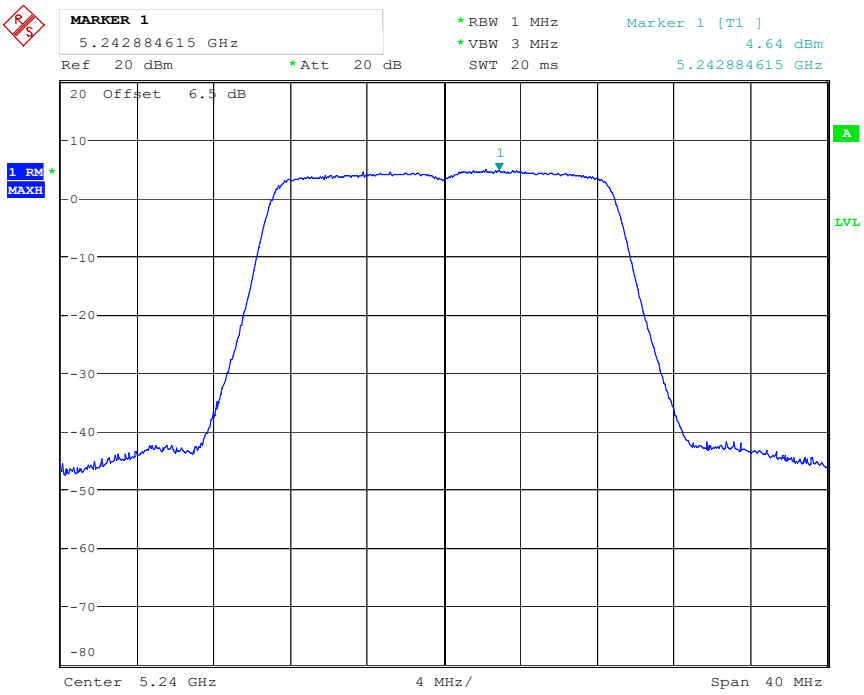
Date: 7.MAY.2021 13:18:00

802.11n-HT20 mode, Power Spectral Density-5200 MHz



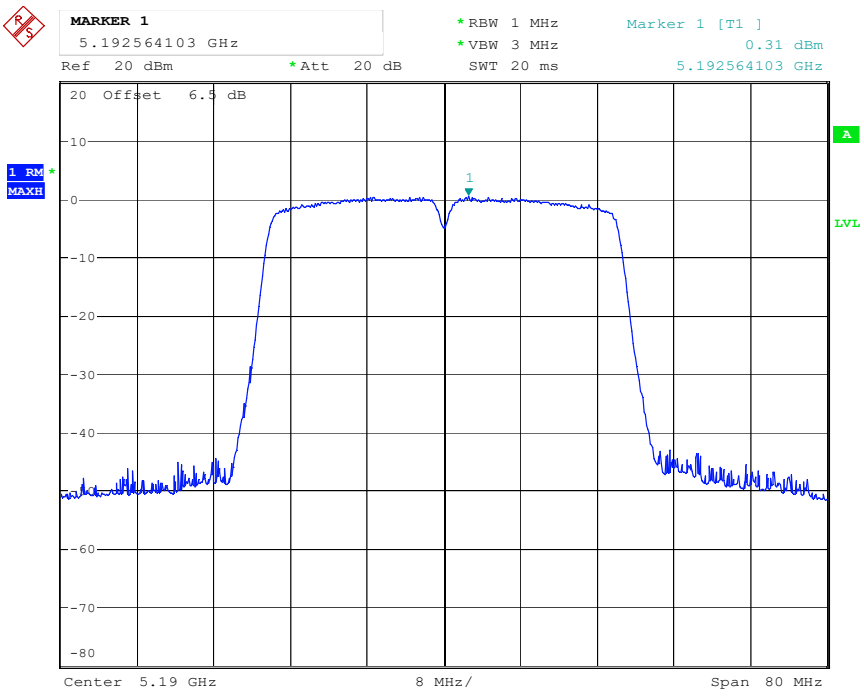
Date: 7.MAY.2021 13:18:29

802.11n-HT20 mode, Power Spectral Density-5240 MHz



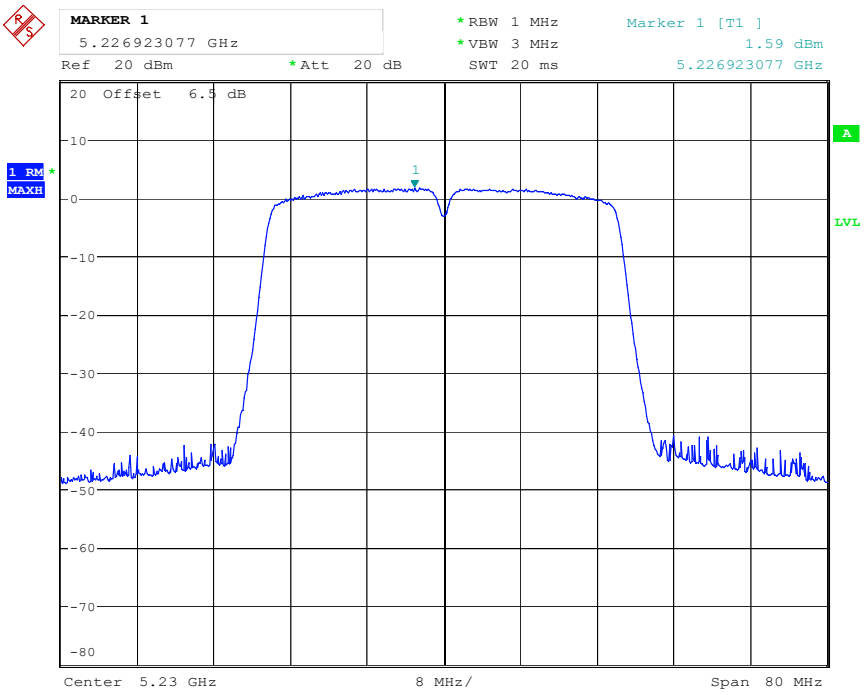
Date: 7.MAY.2021 13:18:49

802.11n-HT40 mode, Power Spectral Density-5190 MHz



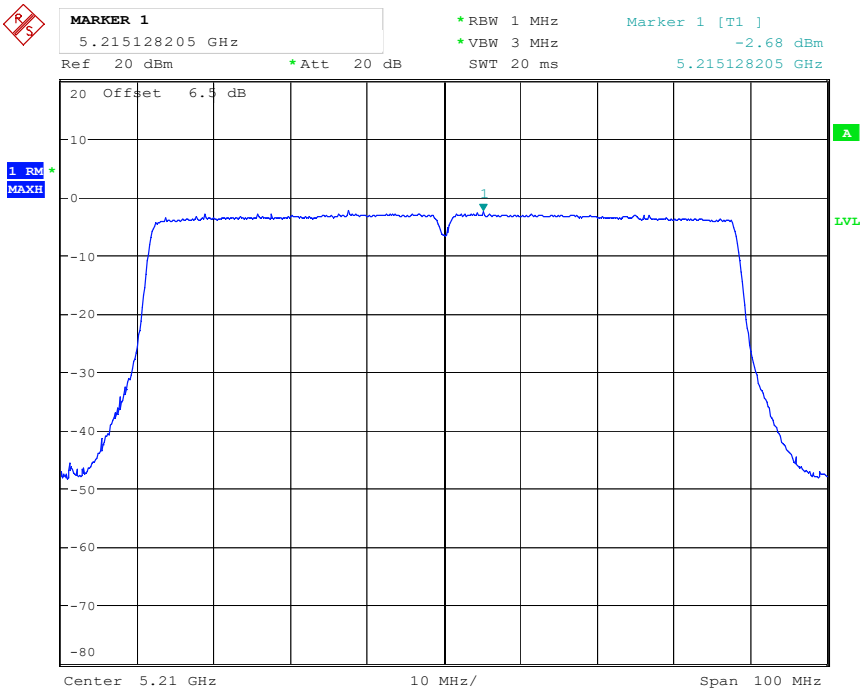
Date: 7.MAY.2021 13:17:13

802.11n-HT40 mode, Power Spectral Density-5230 MHz



Date: 7.MAY.2021 13:17:36

802.11ac 80 mode, Power Spectral Density-5210 MHz



Date: 7.MAY.2021 13:16:28

For 5725-5850 MHz:

Mode	Frequency (MHz)	Power Spectral Density (dBm/500kHz)		Limit (dBm/500kHz)
		Chain 0	Chain 1	
802.11a	5745	-2.95	-2.31	30
	5785	-3.30	-3.03	30
	5825	-3.23	-2.96	30

Mode	Frequency (MHz)	Power Spectral Density (dBm/500kHz)		Total (dBm/500kHz)	Limit (dBm/500kHz)
		Chain 0	Chain 1		
802.11n-HT20	5745	-4.21	-3.93	-1.06	30
	5785	-3.11	-2.77	0.07	30
	5825	-3.72	-2.49	-0.05	30
802.11n-HT40	5755	-6.15	-5.28	-2.68	30
	5795	-6.08	-5.89	-2.97	30
802.11ac80	5775	-9.94	-9.26	-6.58	30

Note:
1. The max antenna gain is 0.02dBi.
2. The device employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power spectral density measurements on IEEE 802.11 devices:

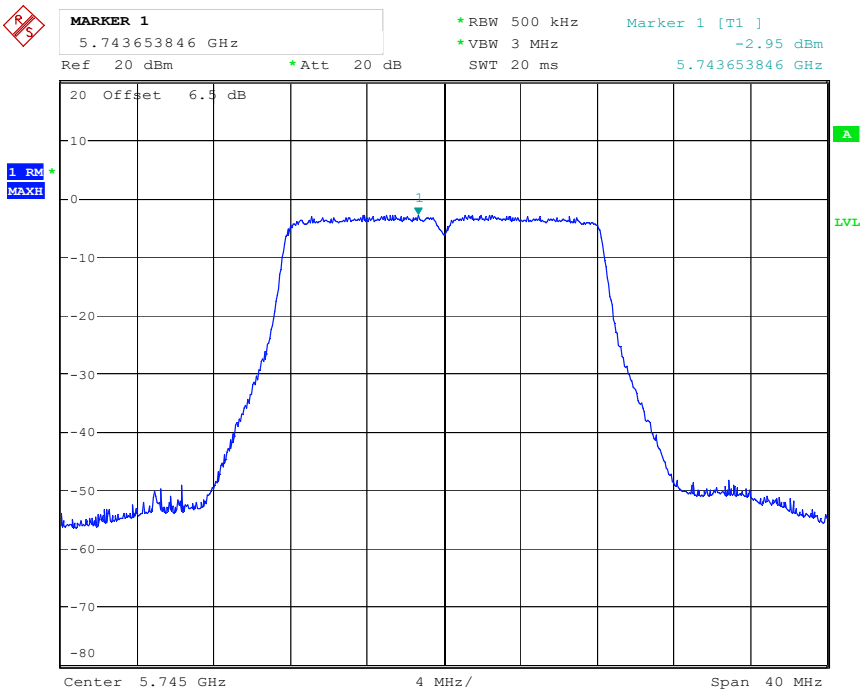
Array Gain = 10 x log(N_{ANT}/N_{SS})dB

So:

Directional gain = GANT + Array Gain = 0.02+10 x log(2)= 3.03＜6dBi
No power density Limit reduced in MIMO mode.

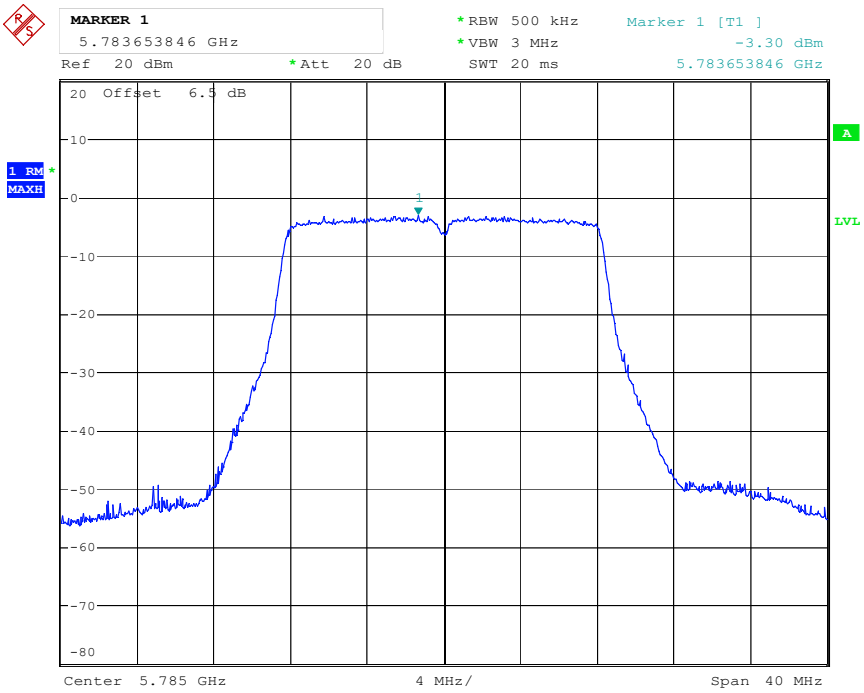
Chain 0

802.11a mode, Power Spectral Density-5745 MHz



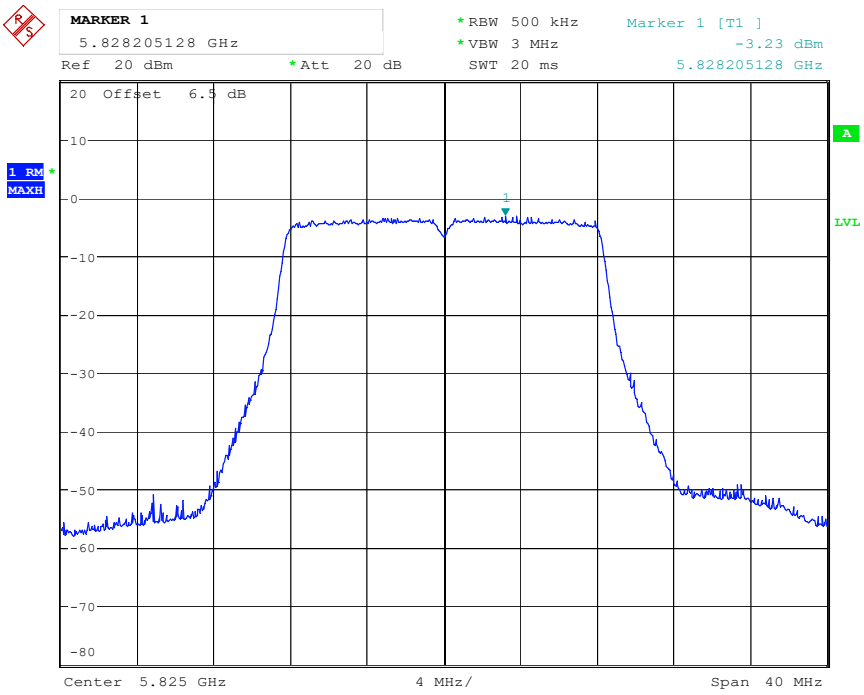
Date: 7.MAY.2021 13:34:04

802.11a mode, Power Spectral Density-5785 MHz



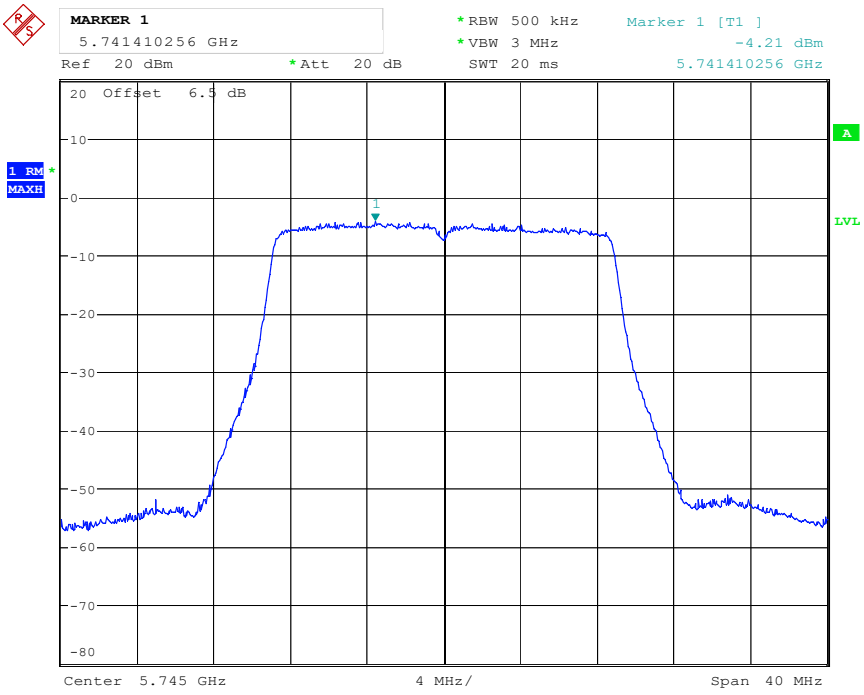
Date: 7.MAY.2021 13:32:53

802.11a mode, Power Spectral Density-5825 MHz



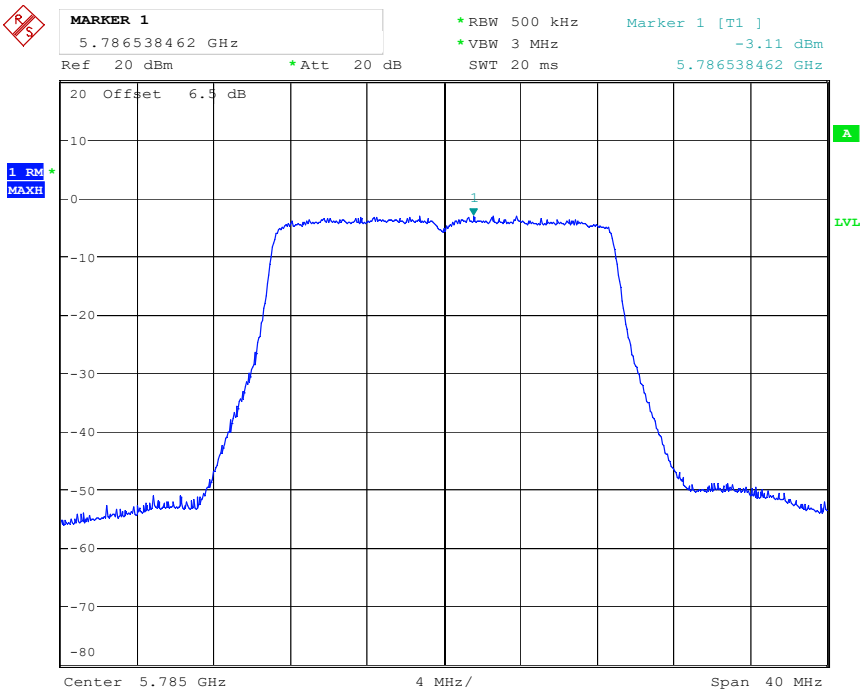
Date: 7.MAY.2021 13:32:31

802.11n-HT20 mode, Power Spectral Density-5745 MHz



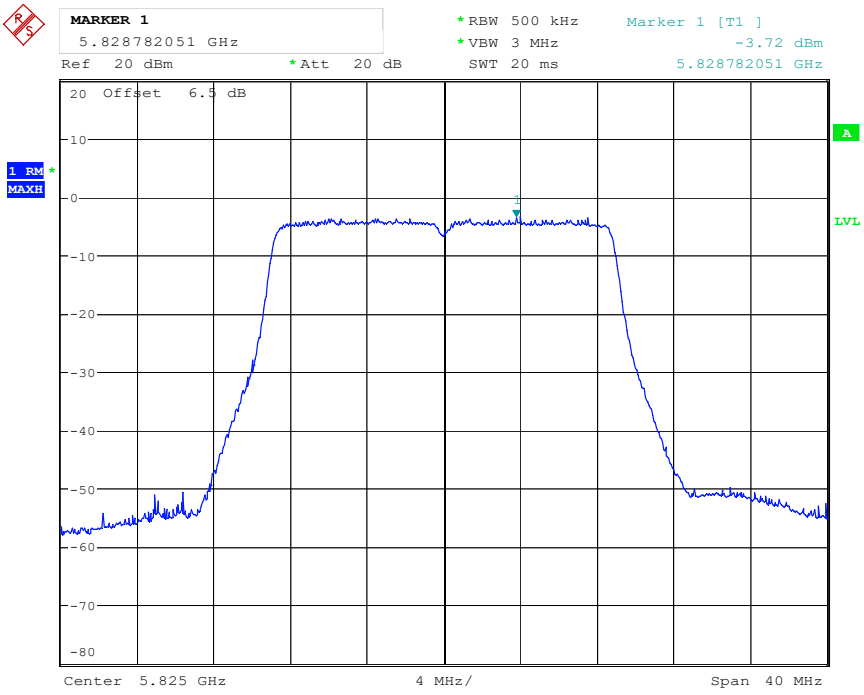
Date: 7.MAY.2021 13:31:22

802.11n-HT20 mode, Power Spectral Density-5785 MHz



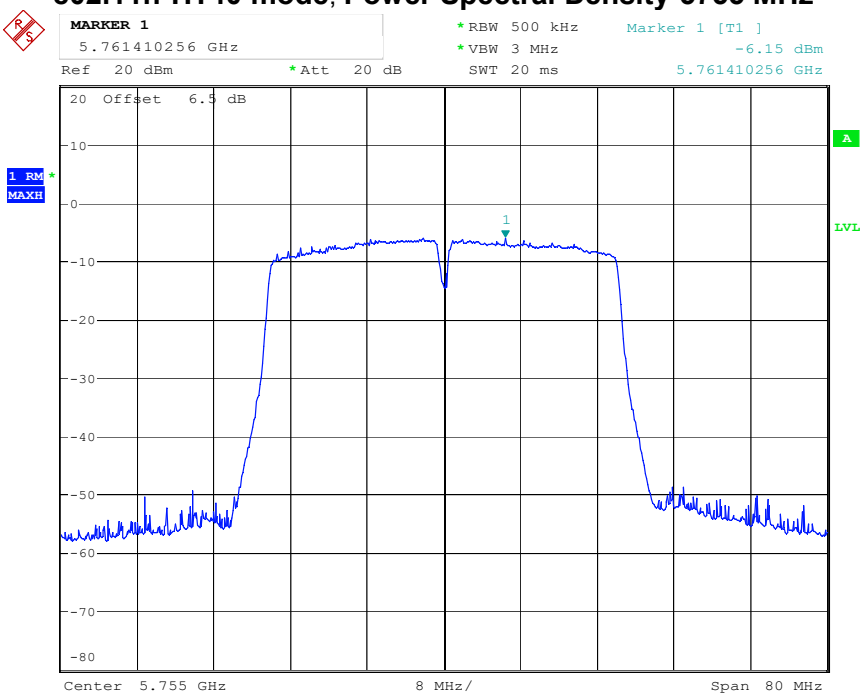
Date: 7.MAY.2021 13:31:47

802.11n-HT20 mode, Power Spectral Density-5825 MHz



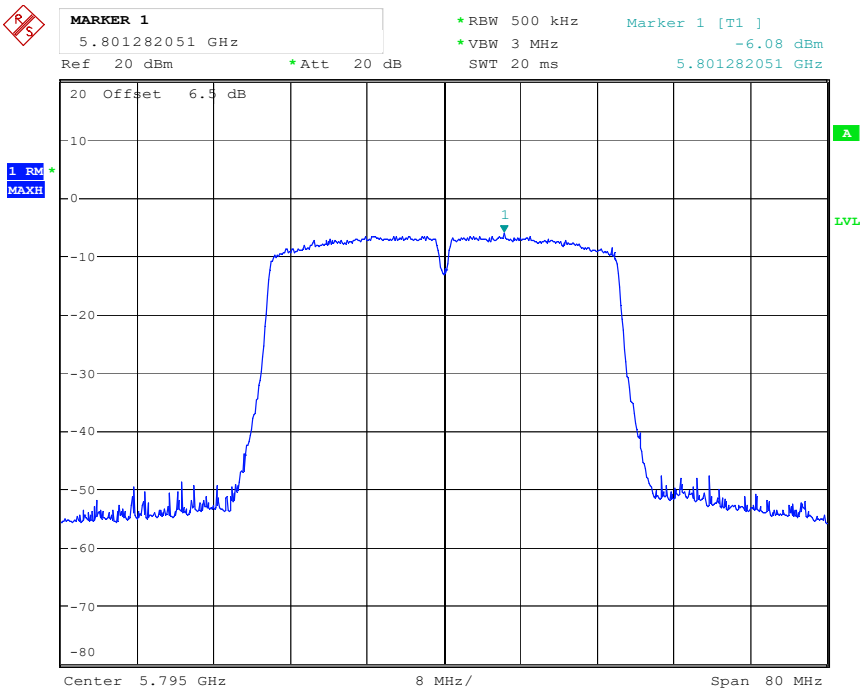
Date: 7.MAY.2021 13:32:07

802.11n-HT40 mode, Power Spectral Density-5755 MHz



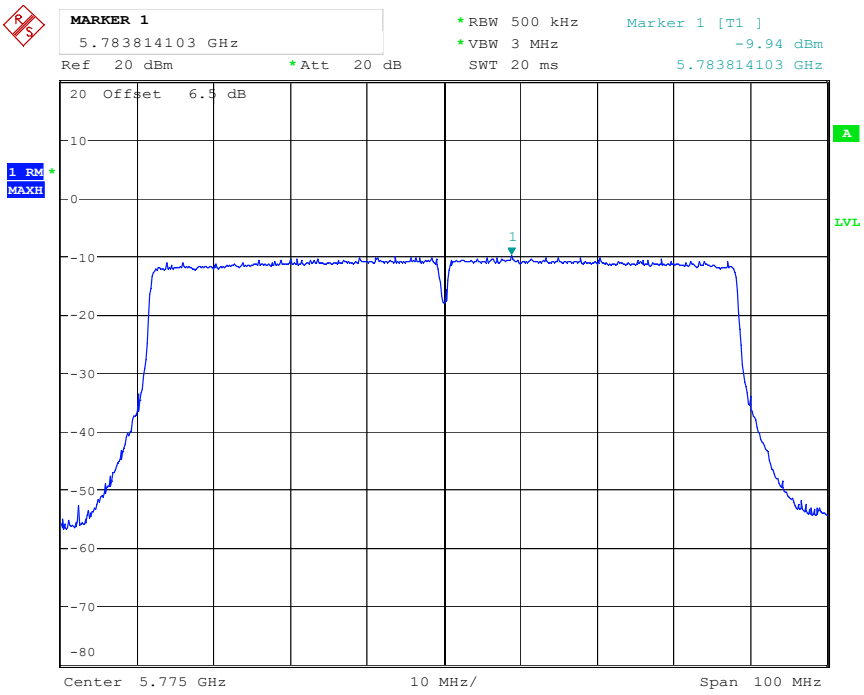
Date: 7.MAY.2021 13:30:34

802.11n-HT40 mode, Power Spectral Density-5795 MHz



Date: 7.MAY.2021 13:30:55

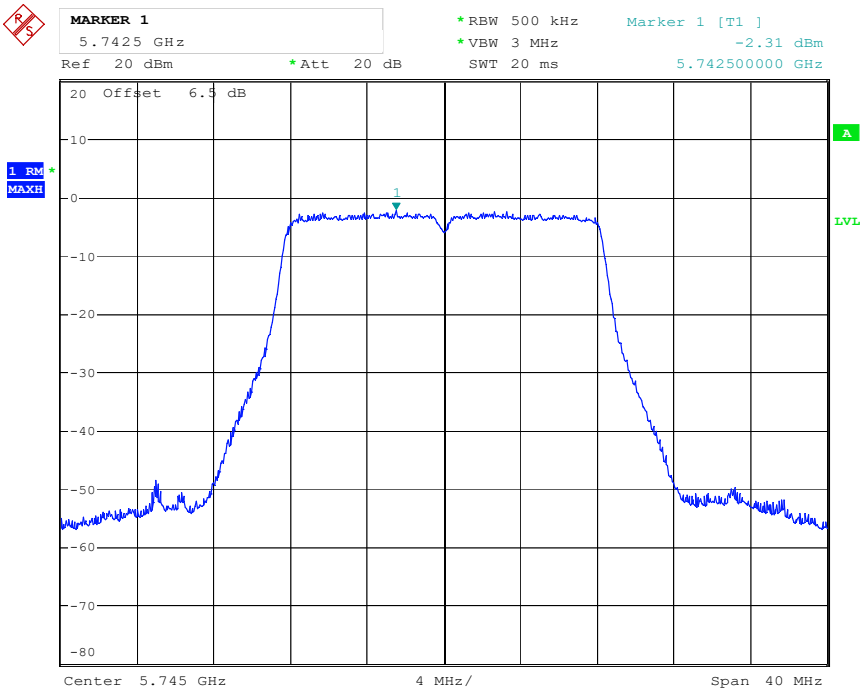
802.11ac80 mode, Power Spectral Density-5775 MHz



Date: 7.MAY.2021 13:29:25

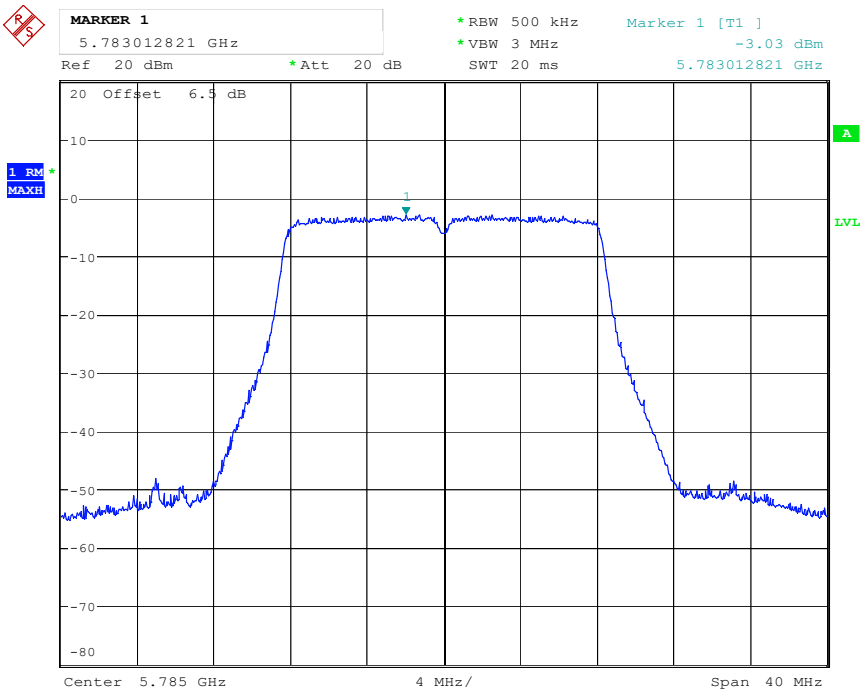
Chain 1

802.11a mode, Power Spectral Density-5745 MHz



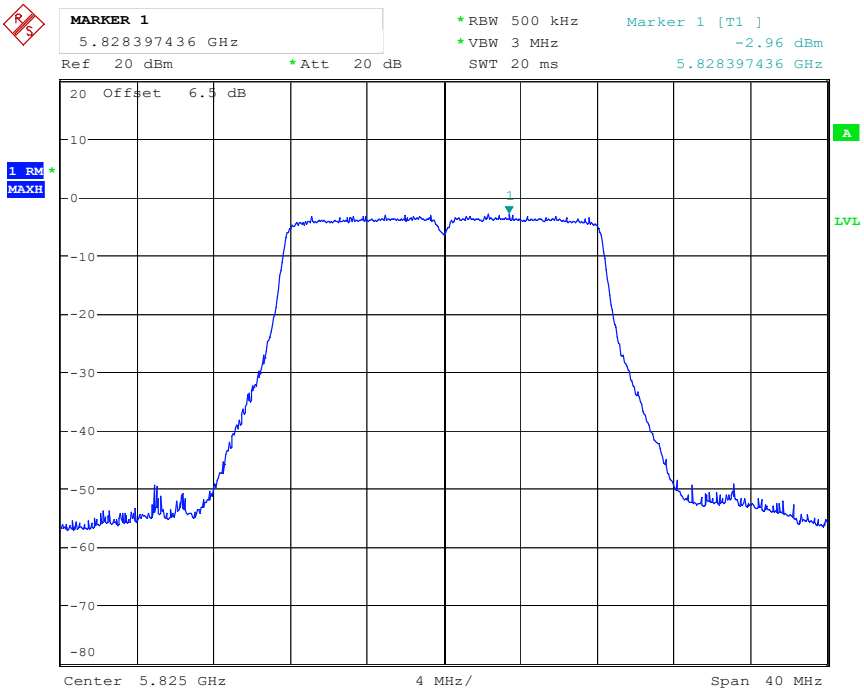
Date: 7.MAY.2021 13:23:24

802.11a mode, Power Spectral Density-5785 MHz



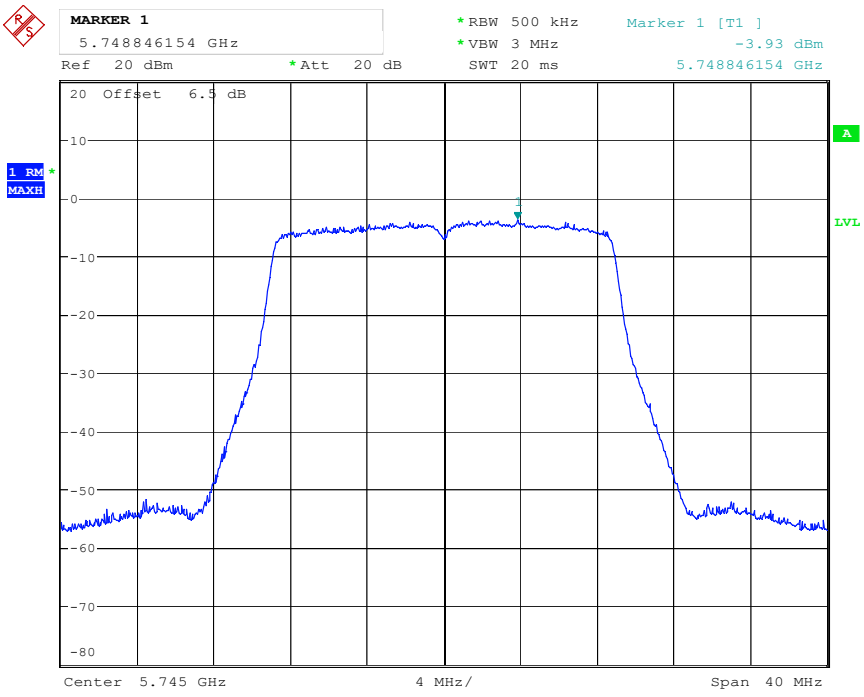
Date: 7.MAY.2021 13:24:18

802.11a mode, Power Spectral Density-5825 MHz



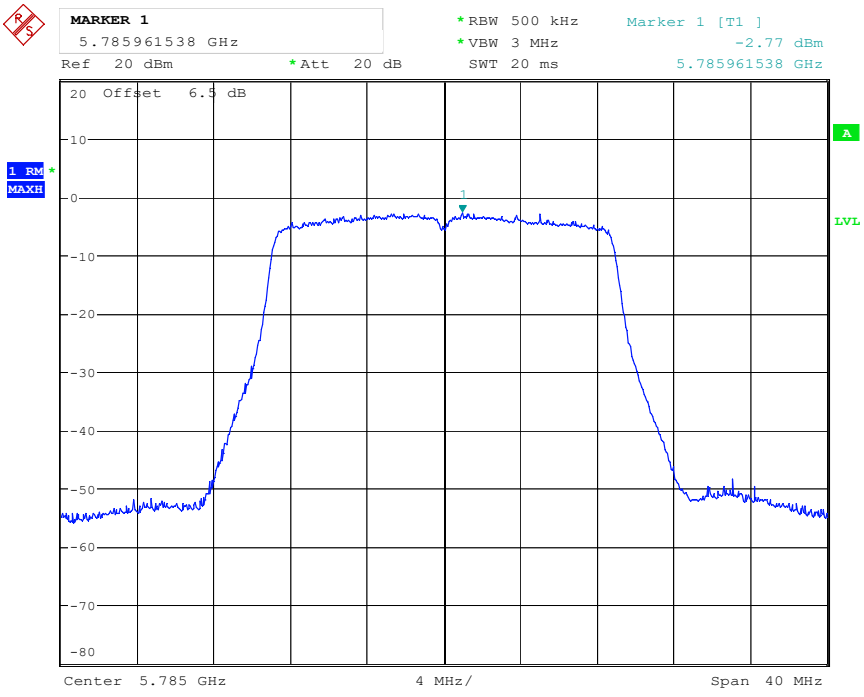
Date: 7.MAY.2021 13:24:49

802.11n-HT20 mode, Power Spectral Density-5745 MHz



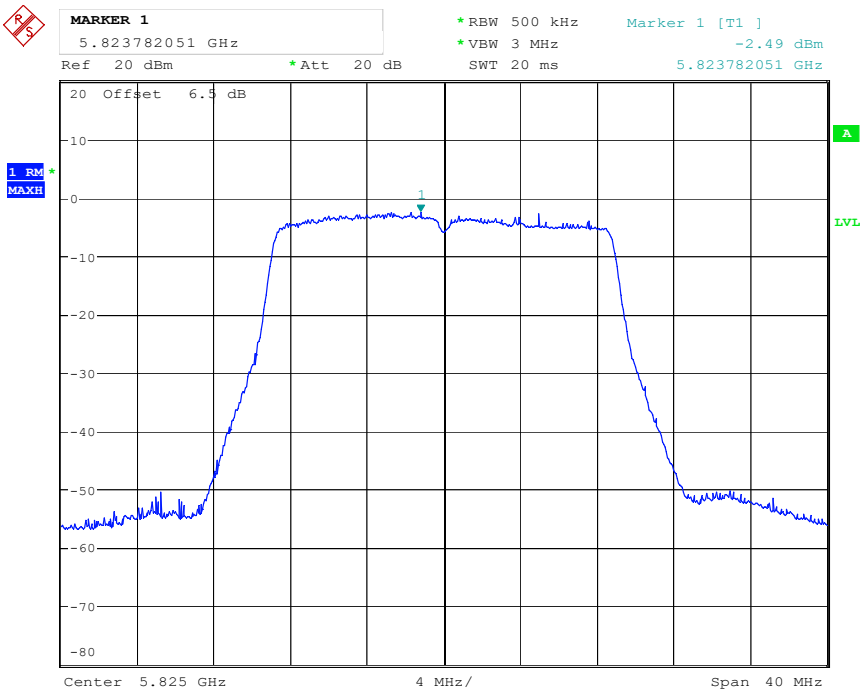
Date: 7.MAY.2021 13:25:20

802.11n-HT20 mode, Power Spectral Density-5785 MHz



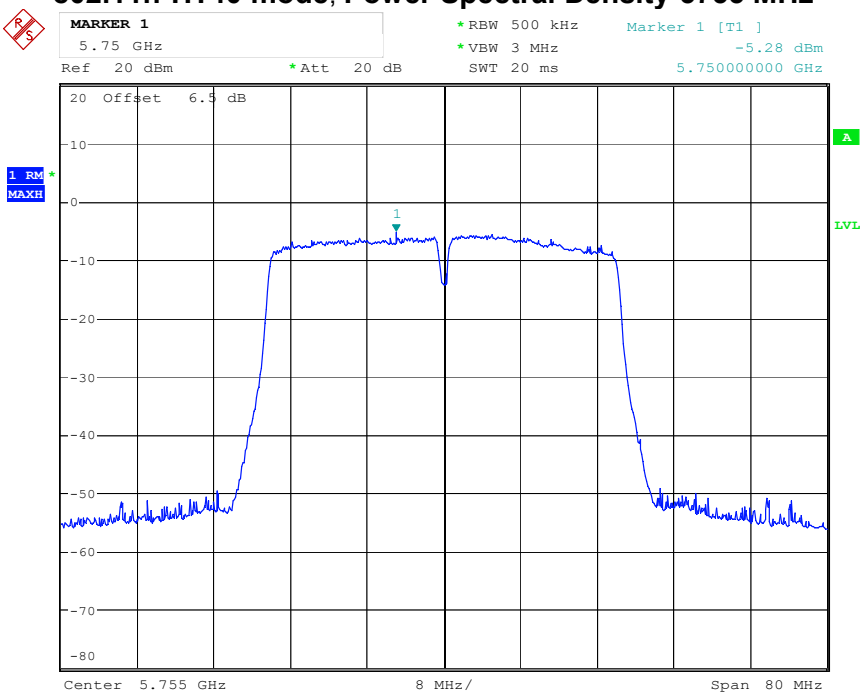
Date: 7.MAY.2021 13:25:41

802.11n-HT20 mode, Power Spectral Density-5825 MHz



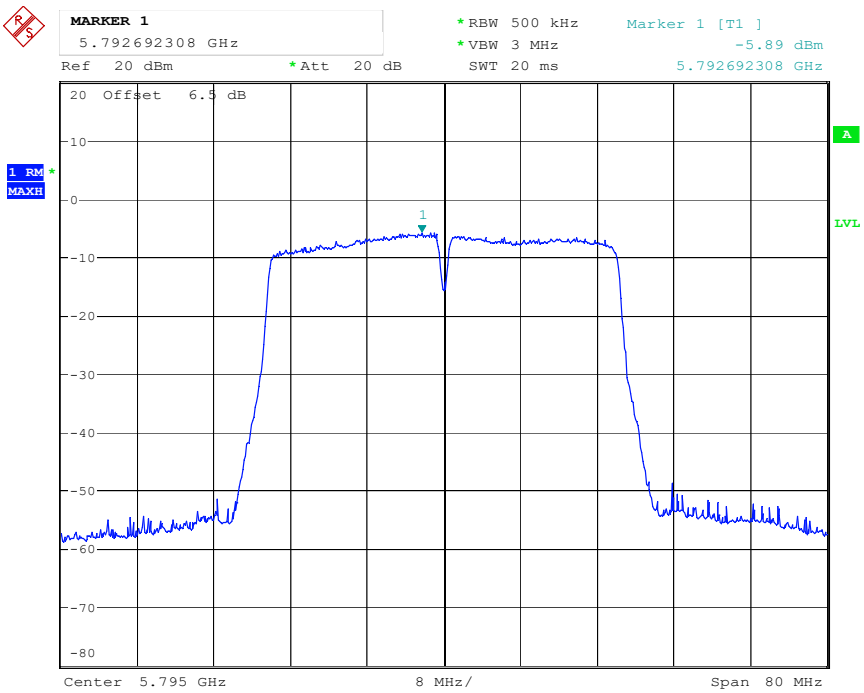
Date: 7.MAY.2021 13:26:17

802.11n-HT40 mode, Power Spectral Density-5755 MHz



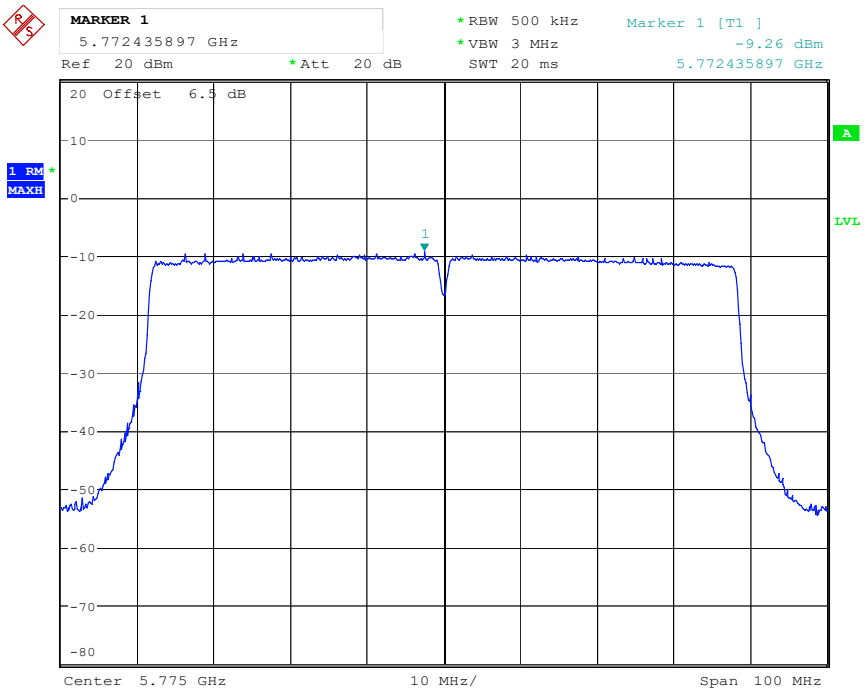
Date: 7.MAY.2021 13:27:09

802.11n-HT40 mode, Power Spectral Density-5795 MHz



Date: 7.MAY.2021 13:27:19

802.11ac80 mode, Power Spectral Density-5775 MHz



Date: 7.MAY.2021 13:28:31

END OF REPORT