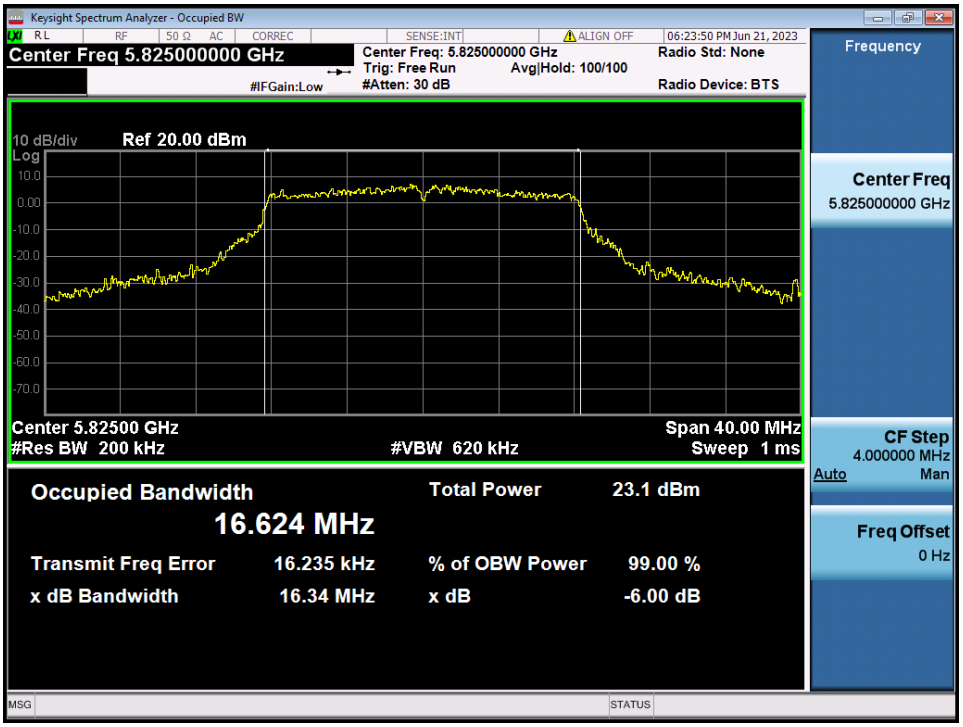
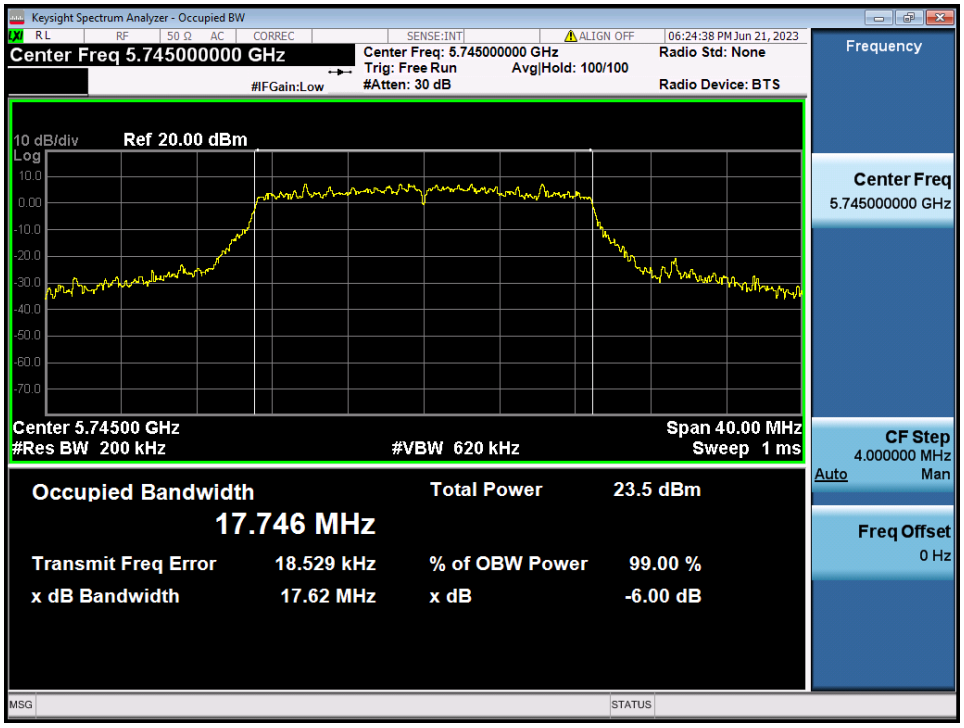
Occupied Bandwidth

Test Mode: TM 1 & ANT 2 & Ch.165



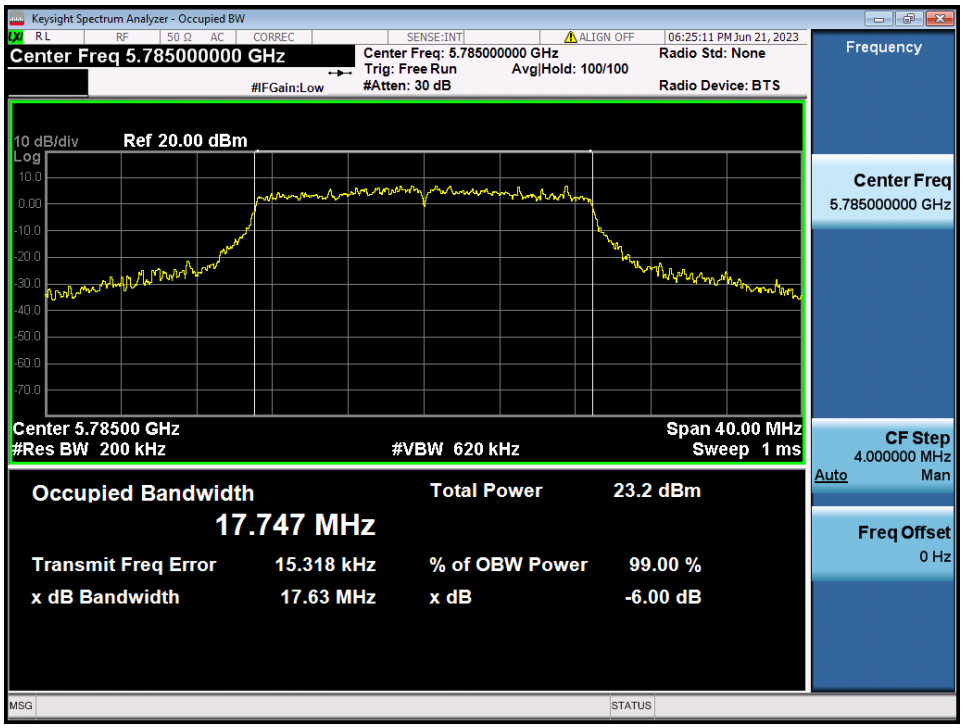
Occupied Bandwidth

Test Mode: TM 2 & ANT 2 & Ch.149



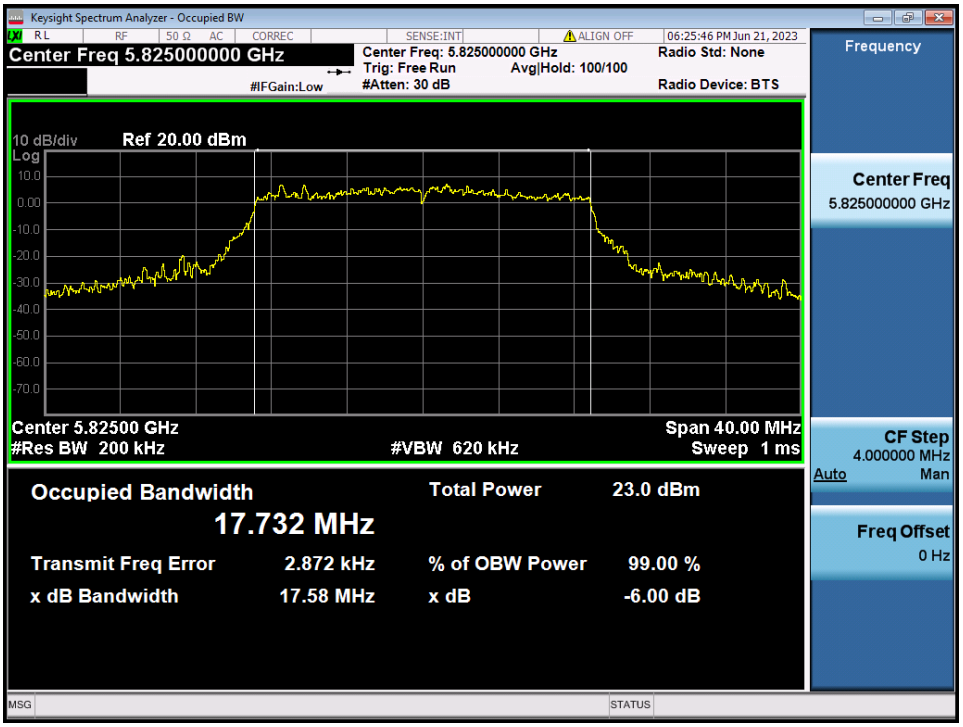
Occupied Bandwidth

Test Mode: TM 2 & ANT 2 & Ch.157



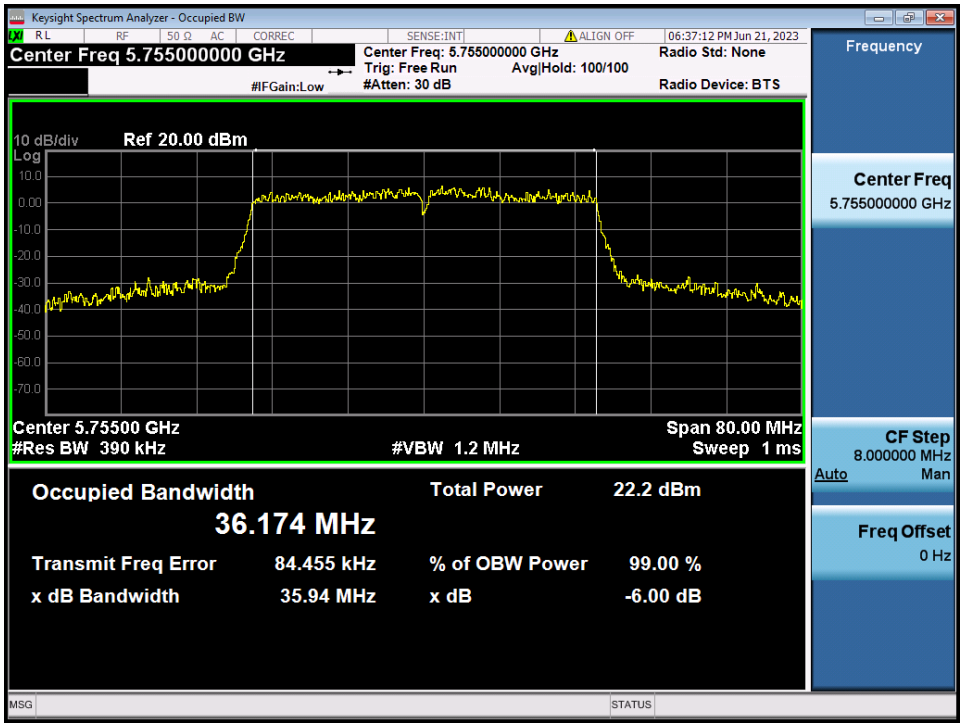
Occupied Bandwidth

Test Mode: TM 2 & ANT 2 & Ch.165



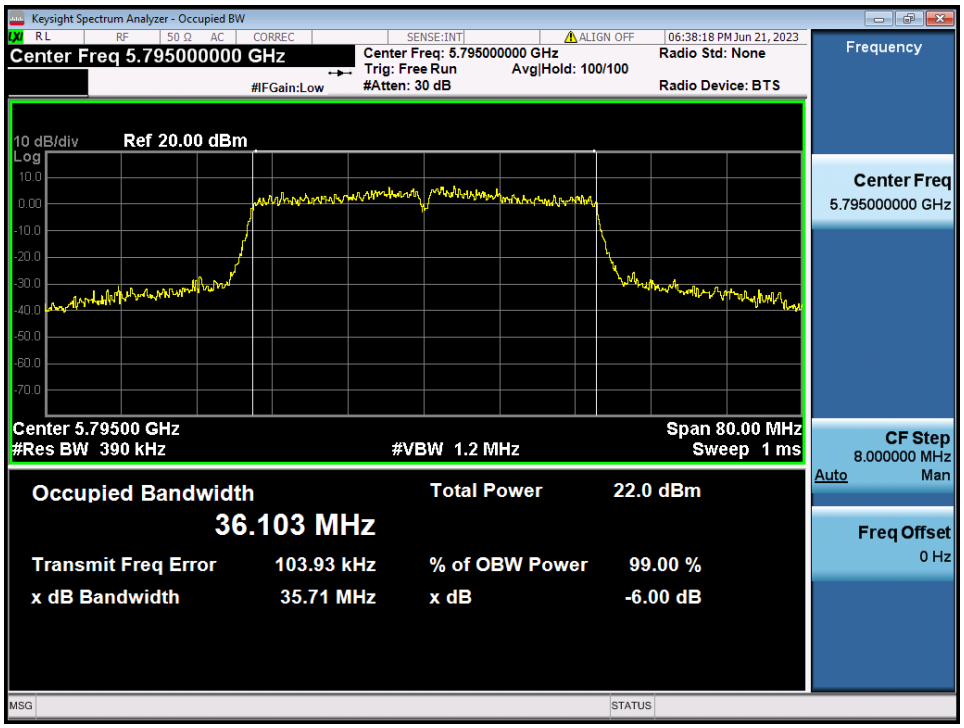
Occupied Bandwidth

Test Mode: TM 3 & ANT 2 & Ch.151



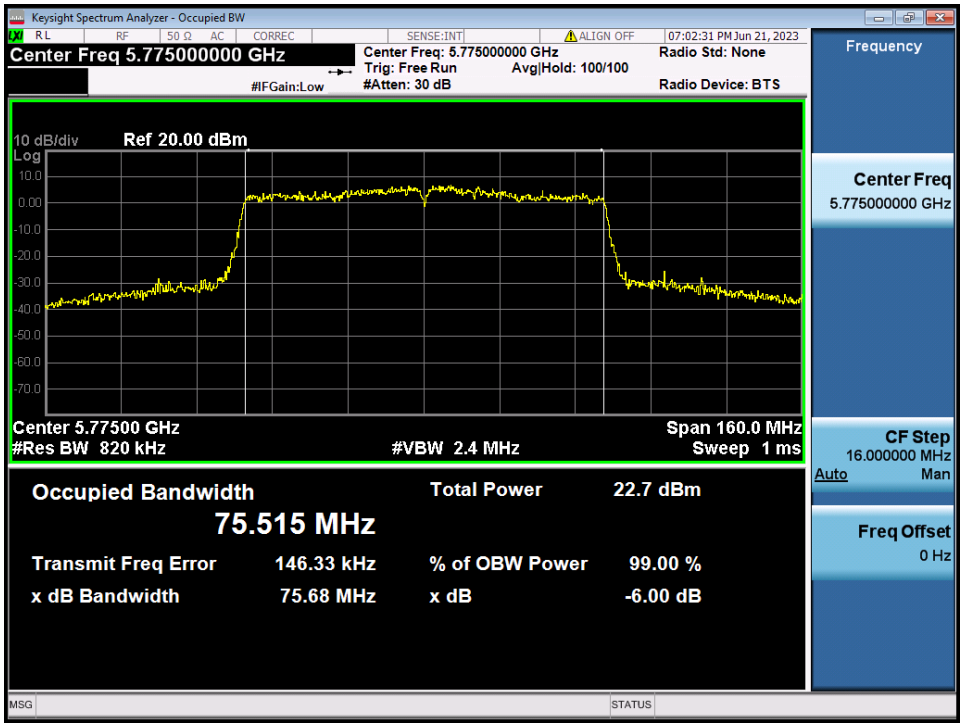
Occupied Bandwidth

Test Mode: TM 3 & ANT 2 & Ch.159



Occupied Bandwidth

Test Mode: TM 4 & ANT 2 & Ch.155



5.3 Maximum Conducted Output Power

▣ Test Requirements

Part. 15.407(a)

(1) For the band 5.15 GHz - 5.25 GHz.

(i) For an outdoor access point operating in the band 5.15 GHz - 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. 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).
(ii) For an indoor access point operating in the band 5.15 GHz - 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. 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.
(iii) For fixed point-to-point access points operating in the band 5.15 GHz - 5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. 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.
(iv) For mobile and portable client devices in the 5.15 GHz - 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. 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.

(2) **For the 5.25 GHz - 5.35 GHz and 5.47 GHz - 5.725 GHz bands, 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.** 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 GHz - 5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W**. 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.

RSS-247[6.2]

(1) For band 5 150 MHz – 5 250 MHz

For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed 30 mW or 1.76 + 10 log10B, dBm, whichever is less. Devices shall implement transmitter power control (TPC) in order to have the capability to operate at least 3 dB below the maximum permitted e.i.r.p. of 30 mW.
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.

(2) For band 5 250 MHz – 5 350 MHz

For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed 30 mW or 1.76 + 10 log10B, dBm, whichever is less. Devices shall implement TPC in order to have the capability to operate at least 3 dB below the maximum permitted e.i.r.p. of 30 mW.
Devices, other than devices installed in vehicles, shall comply with the following:
a) The maximum conducted output power shall not exceed 250 mW or 11 + 10 log10B, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band;
b) The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log10B, dBm, whichever is less. B is the 99 % emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

(3) For band 5 470 MHz – 5 600 MHz and 5 650 MHz – 5 725 MHz

The maximum conducted output power shall not exceed 250 mW or 11 + 10 log10B, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.
The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log10B, dBm, whichever is less. B is the 99 % emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than
500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

(4) For band 5 725 MHz – 5 850 MHz

The maximum conducted output power shall not exceed 1 W. The output 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 output power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

▣ Test Configuration

Method PM-G

▣ Test Procedure

Method PM-G of KDB789033 D02v02r01

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.

▣ **Test Results: Comply**

- Summed Output Power: CDD

Mode	Band	Channel	Frequency (MHz)	Conducted Output Power(dBm)			Antenna Gain(dBi)	e.i.r.p[Note1] (dBm)
				ANT 1	ANT 2	ANT1+ANT2 (CDD)		
802.11a	U-NII 1	36	5 180	11.67	11.55	14.62	3.28	17.90
		40	5 200	11.66	11.56	14.62	3.28	17.90
		48	5 240	11.69	11.69	14.70	3.28	17.98
	U-NII 2A	52	5 260	15.47	15.49	18.49	2.24	20.73
		60	5 300	15.43	15.45	18.45	2.24	20.69
		64	5 320	15.45	15.47	18.47	2.24	20.71
	U-NII 2C	100	5 500	15.40	15.49	18.46	3.54	22.00
		116	5 580	15.08	15.48	18.29	3.54	21.83
		144	5 720	15.09	15.47	18.29	3.54	21.83
	U-NII 3	149	5 745	15.78	15.99	18.90	2.75	21.65
		157	5 785	15.61	15.97	18.80	2.75	21.55
		165	5 825	15.77	15.96	18.88	2.75	21.63
802.11n (HT20)	U-NII 1	36	5 180	11.20	10.84	14.03	3.28	17.31
		40	5 200	11.22	10.89	14.07	3.28	17.35
		48	5 240	11.09	11.11	14.11	3.28	17.39
	U-NII 2A	52	5 260	14.90	15.32	18.13	2.24	20.37
		60	5 300	14.85	15.36	18.12	2.24	20.36
		64	5 320	14.79	15.18	18.00	2.24	20.24
	U-NII 2C	100	5 500	14.96	15.45	18.22	3.54	21.76
		116	5 580	14.87	15.46	18.19	3.54	21.73
		144	5 720	14.54	15.05	17.81	3.54	21.35
	U-NII 3	149	5 745	14.95	15.63	18.31	2.75	21.06
		157	5 785	15.18	15.51	18.36	2.75	21.11
		165	5 825	15.29	15.41	18.36	2.75	21.11
802.11ac (VHT20)	U-NII 1	36	5 180	11.18	10.89	14.05	3.28	17.33
		40	5 200	11.22	10.92	14.08	3.28	17.36
		48	5 240	10.99	11.16	14.09	3.28	17.37
	U-NII 2A	52	5 260	14.73	15.21	17.99	2.24	20.23
		60	5 300	14.81	15.33	18.09	2.24	20.33
		64	5 320	14.87	15.25	18.07	2.24	20.31
	U-NII 2C	100	5 500	14.95	15.51	18.25	3.54	21.79
		116	5 580	14.65	15.47	18.09	3.54	21.63
		144	5 720	14.54	15.08	17.83	3.54	21.37
	U-NII 3	149	5 745	14.96	15.58	18.29	2.75	21.04
		157	5 785	15.23	15.42	18.34	2.75	21.09
		165	5 825	15.13	15.30	18.23	2.75	20.98

Note 1: e.i.r.p= Conducted Output Power + Antenna Gain

Mode	Band	Channel	Frequency (MHz)	Conducted Output Power(dBm)			Antenna Gain(dBi)	e.i.r.p[Note1] (dBm)
				ANT 1	ANT 2	ANT1+ANT2 (CDD)		
802.11n (HT40)	U-NII 1	38	5 190	14.40	14.48	17.45	3.28	20.73
		46	5 230	14.17	14.58	17.39	3.28	20.67
	U-NII 2A	54	5 270	14.24	14.60	17.43	2.24	19.67
		62	5 310	13.98	14.61	17.32	2.24	19.56
	U-NII 2C	102	5 510	14.16	14.86	17.53	3.54	21.07
		110	5 550	14.11	14.94	17.56	3.54	21.10
		142	5 710	14.03	14.55	17.31	3.54	20.85
	U-NII 3	151	5 755	13.48	13.99	16.75	2.75	19.50
		159	5 795	13.41	14.01	16.73	2.75	19.48
802.11ac (VHT40)	U-NII 1	38	5 190	14.24	14.30	17.28	3.28	20.56
		46	5 230	14.17	14.53	17.36	3.28	20.64
	U-NII 2A	54	5 270	14.12	14.65	17.40	2.24	19.64
		62	5 310	14.25	14.68	17.48	2.24	19.72
	U-NII 2C	102	5 510	14.20	14.83	17.54	3.54	21.08
		110	5 550	14.08	14.87	17.50	3.54	21.04
		142	5 710	13.94	14.45	17.21	3.54	20.75
	U-NII 3	151	5 755	13.52	14.15	16.86	2.75	19.61
		159	5 795	13.37	14.07	16.74	2.75	19.49
802.11ac (VHT80)	U-NII 1	42	5 210	13.02	13.08	16.06	3.28	19.34
	U-NII 2A	58	5 290	12.77	13.21	16.01	2.24	18.25
	U-NII 2C	106	5 530	13.31	13.57	16.45	3.54	19.99
		138	5 690	12.58	13.19	15.91	3.54	19.45
	U-NII 3	155	5 775	13.21	13.73	16.49	2.75	19.24

Note 1: e.i.r.p= Conducted Output Power + Antenna Gain

- Summed Output Power: SDM

Mode	Band	Channel	Frequency (MHz)	Conducted Output Power(dBm)			Antenna Gain(dBi)	e.i.r.p[Note1] (dBm)
				ANT 1	ANT 2	ANT1+ANT2 (CDD)		
802.11n (HT20)	U-NII 1	36	5 180	10.81	10.77	13.80	0.28	14.08
		40	5 200	10.85	10.83	13.85	0.28	14.13
		48	5 240	11.06	11.10	14.09	0.28	14.37
	U-NII 2A	52	5 260	14.26	14.86	17.58	-0.74	16.84
		60	5 300	14.22	14.74	17.50	-0.74	16.76
		64	5 320	14.55	14.77	17.67	-0.74	16.93
	U-NII 2C	100	5 500	14.31	15.03	17.70	0.55	18.25
		116	5 580	14.03	14.99	17.55	0.55	18.10
		144	5 720	13.97	14.62	17.32	0.55	17.87
	U-NII 3	149	5 745	14.32	14.84	17.60	-0.25	17.35
		157	5 785	14.44	14.75	17.61	-0.25	17.36
		165	5 825	14.33	14.72	17.54	-0.25	17.29
802.11ac (VHT20)	U-NII 1	36	5 180	10.85	10.86	13.87	0.28	14.15
		40	5 200	10.90	10.85	13.89	0.28	14.17
		48	5 240	11.13	11.13	14.14	0.28	14.42
	U-NII 2A	52	5 260	14.04	14.59	17.33	-0.74	16.59
		60	5 300	14.08	14.62	17.37	-0.74	16.63
		64	5 320	14.05	14.67	17.38	-0.74	16.64
	U-NII 2C	100	5 500	14.25	15.18	17.75	0.55	18.30
		116	5 580	14.09	15.23	17.71	0.55	18.26
		144	5 720	14.15	14.89	17.55	0.55	18.10
	U-NII 3	149	5 745	14.17	14.61	17.41	-0.25	17.16
		157	5 785	14.42	14.85	17.65	-0.25	17.40
		165	5 825	14.33	14.68	17.52	-0.25	17.27

Note 1: e.i.r.p= Conducted Output Power + Antenna Gain

Mode	Band	Channel	Frequency (MHz)	Conducted Output Power(dBm)			Antenna Gain(dBi)	e.i.r.p[Note1] (dBm)
				ANT 1	ANT 2	ANT1+ANT2 (CDD)		
802.11n (HT40)	U-NII 1	38	5 190	14.24	14.24	17.25	0.28	17.53
		46	5 230	14.10	14.22	17.17	0.28	17.45
	U-NII 2A	54	5 270	14.13	14.18	17.17	-0.74	16.43
		62	5 310	14.10	14.16	17.14	-0.74	16.40
	U-NII 2C	102	5 510	14.11	14.19	17.16	0.55	17.71
		110	5 550	14.05	14.15	17.11	0.55	17.66
		142	5 710	14.07	14.13	17.11	0.55	17.66
	U-NII 3	151	5 755	14.11	14.08	17.11	-0.25	16.86
		159	5 795	14.13	14.13	17.14	-0.25	16.89
802.11ac (VHT40)	U-NII 1	38	5 190	14.10	14.16	17.14	0.28	17.42
		46	5 230	14.13	14.18	17.17	0.28	17.45
	U-NII 2A	54	5 270	14.12	14.15	17.15	-0.74	16.41
		62	5 310	14.17	14.14	17.17	-0.74	16.43
	U-NII 2C	102	5 510	14.05	14.13	17.10	0.55	17.65
		110	5 550	14.11	14.11	17.12	0.55	17.67
		142	5 710	14.08	14.12	17.11	0.55	17.66
	U-NII 3	151	5 755	14.07	14.08	17.09	-0.25	16.84
		159	5 795	14.20	14.11	17.17	-0.25	16.92
802.11ac (VHT80)	U-NII 1	42	5 210	13.23	13.24	16.25	0.28	16.53
	U-NII 2A	58	5 290	13.24	13.18	16.22	-0.74	15.48
	U-NII 2C	106	5 530	13.19	13.21	16.21	0.55	16.76
		138	5 690	13.14	13.17	16.17	0.55	16.72
	U-NII 3	155	5 775	13.21	13.22	16.23	-0.25	15.98

Note 1: e.i.r.p= Conducted Output Power + Antenna Gain

5.4 Maximum Power Spectral Density

▣ Test requirements

Part. 15.407(a)

(1) For the band 5.15 GHz - 5.25 GHz.

(i) For an outdoor access point operating in the band 5.15 GHz - 5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 MHz band. **note1**

(ii) For an indoor access point operating in the band 5.15 GHz - 5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 MHz band. note1

(iii) For fixed point-to-point access points operating in the band 5.15 GHz - 5.25 GHz, transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi.

(iv) For mobile and portable client devices in the 5.15 GHz - 5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 MHz band. note1

(2) For the 5.25 GHz - 5.35 GHz and 5.47 GHz - 5.725 GHz bands, the peak power spectral density shall not exceed 11 dBm in any 1 MHz band. note1

(3) For the band 5.725 GHz - 5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500 kHz band.note1,note2

Note1: If transmitting antennas of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Note2: 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.

RSS-247[6.2]

(1) For band 5 150 MHz – 5 250 MHz

For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed 30 mW or 1.76 + 10 log10B, dBm, whichever is less. Devices shall implement transmitter power control (TPC) in order to have the capability to operate at least 3 dB below the maximum permitted e.i.r.p. of 30 mW.
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.

(2) For band 5 250 MHz – 5 350 MHz

For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed 30 mW or 1.76 + 10 log10B, dBm, whichever is less. Devices shall implement TPC in order to have the capability to operate at least 3 dB below the maximum permitted e.i.r.p. of 30 mW.
Devices, other than devices installed in vehicles, shall comply with the following:
a) The maximum conducted output power shall not exceed 250 mW or 11 + 10 log10B, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band;
b) The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log10B, dBm, whichever is less. B is the 99 % emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

(3) For band 5 470 MHz – 5 600 MHz and 5 650 MHz – 5 725 MHz

The maximum conducted output power shall not exceed 250 mW or 11 + 10 log10B, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.
The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log10B, dBm, whichever is less. B is the 99 % emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than
500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

(4) For band 5 725 MHz – 5 850 MHz

The maximum conducted output power shall not exceed 1 W. The output 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 output power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

▣ Test Configuration

Refer to the APPENDIX I.

▣ Test Procedure

Maximum Power Spectral Density is measured using Measurement Procedure **of KDB789033 D02v02r01**

1) Create an average power spectrum for the EUT operating mode being tested by following the instructions in section II.E.2. for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA - 1, SA - 2, SA - 3, or alternatives to each) and apply it up to, but not including, the step labeled, “Compute power…”. (This procedure is required even if the maximum conducted output power measurement was performed using a power meter, method PM.)

2) Use the peak search function on the instrument to find the peak of the spectrum and record its value.

3) Make the following adjustments to the peak value of the spectrum, if applicable:
a) If Method SA - 2 or SA - 2 Alternative was used, add 10 log(1 / x), where x is the duty cycle, to the peak of the spectrum.
b) If Method SA - 3 Alternative was used and the linear mode was used in step II.E.2.g (viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging.

4) The result is the Maximum PSD over 1 MHz reference bandwidth.

5) For devices operating in the bands 5.15 GHz - 5.25 GHz, 5.25 GHz - 5.35 GHz, and 5.47 GHz - 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). For devices operating in the band 5.725 GHz - 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 ≥ 1 / T, where T is defined in section II.B.1.a). (Refer to Appendix II)
b) Set VBW ≥ 3 RBW.
c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10 log(500 kHz / 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 10 log(1 MHz / 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.

▣ **Test Results: Comply**

Test Mode	Band	Channel	Frequency (MHz)	Reading (dBm)		TF Note 1 (dB)	Power Spectral Density(dBm)	Antenna Gain(dBi)	e.i.r.p Spectral Density (dBm)
				ANT 1	ANT 2		ANT1+ANT2 (CDD)		
TM 1	U-NII 1	36	5 180	1.46	2.13	0.20	5.02	3.28	8.30
		40	5 200	1.43	2.31	0.20	5.10	3.28	8.38
		48	5 240	1.25	2.11	0.20	4.91	3.28	8.19
	U-NII 2A	52	5 260	5.99	6.72	0.20	9.58	2.24	11.82
		60	5 300	5.53	7.12	0.20	9.61	2.24	11.85
		64	5 320	5.77	7.12	0.20	9.71	2.24	11.95
	U-NII 2C	100	5 500	5.72	7.54	0.20	9.93	3.54	13.47
		116	5 580	5.86	7.27	0.20	9.83	3.54	13.37
		144	5 720	5.38	7.36	0.20	9.69	3.54	13.23
TM 2	U-NII 1	36	5 180	0.88	2.13	0.22	4.78	3.28	8.06
		40	5 200	1.12	1.96	0.22	4.79	3.28	8.07
		48	5 240	0.90	2.17	0.22	4.81	3.28	8.09
	U-NII 2A	52	5 260	5.31	6.67	0.22	9.27	2.24	11.51
		60	5 300	5.25	6.63	0.22	9.22	2.24	11.46
		64	5 320	5.35	6.64	0.22	9.27	2.24	11.51
	U-NII 2C	100	5 500	5.78	7.30	0.22	9.84	3.54	13.38
		116	5 580	5.53	7.02	0.22	9.57	3.54	13.11
		144	5 720	4.76	6.92	0.22	9.20	3.54	12.74
TM 3	U-NII 1	38	5 190	1.40	2.41	0.43	5.37	3.28	8.65
		46	5 230	1.56	2.94	0.43	5.74	3.28	9.02
	U-NII 2A	54	5 270	1.55	2.99	0.43	5.77	2.24	8.01
		62	5 310	1.31	2.77	0.43	5.54	2.24	7.78
	U-NII 2C	102	5 510	1.47	3.25	0.43	5.89	3.54	9.43
		110	5 550	2.16	3.32	0.43	6.22	3.54	9.76
		142	5 710	1.20	3.14	0.43	5.72	3.54	9.26
TM 4	U-NII 1	42	5 210	-3.50	-2.08	1.14	1.42	3.28	4.70
	U-NII 2A	58	5 290	-3.78	-2.39	1.14	1.12	2.24	3.36
	U-NII 2C	106	5 530	-3.21	-1.84	1.14	1.68	3.54	5.22
		138	5 690	-3.58	-1.78	1.14	1.56	2.75	4.31

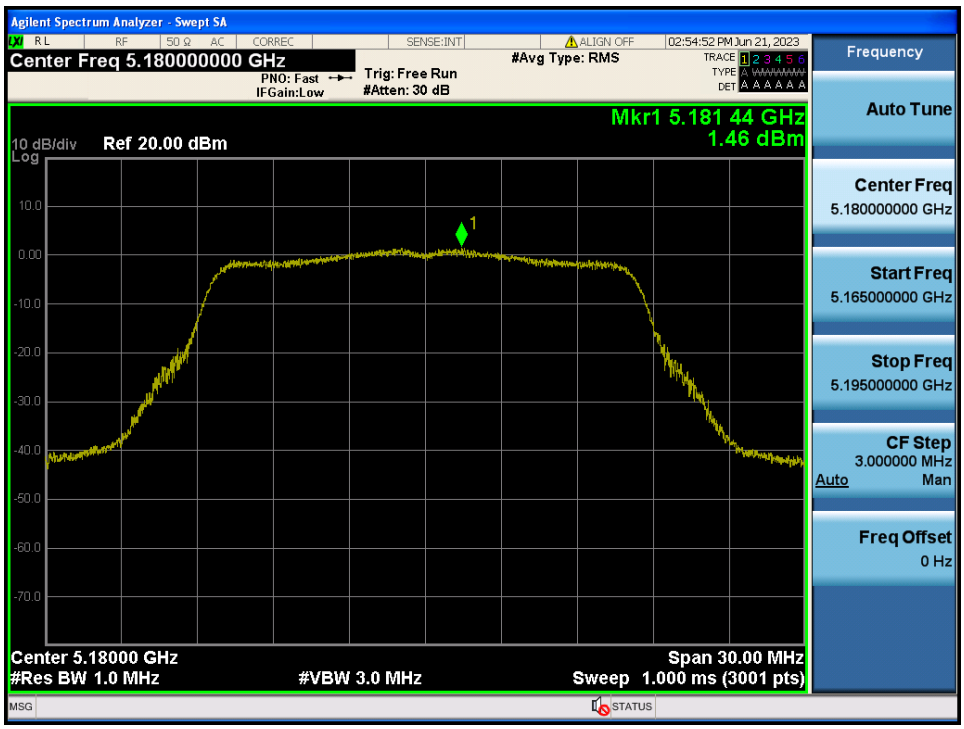
Note 1: Power Spectral Density = Reading(Measurement Data) + TF
Note 2: e.i.r.p Spectral Density= Power spectral density + EUT Antenna Gain
Note 3: "U-NII 1, 2A, 2C [TF] = DCCF"
"U-NII 3 [TF] = 10*LOG(500 kHz/100 kHz) + DCCF"
Where, TF = Total Factor, DCCF = Duty Cycle Correction Factor
For DCCF(Duty Cycle Correction Factor) please refer to appendix II.

Test Mode	Band	Channel	Frequency (MHz)	Reading (dBm/100kHz)		TF Note 1 (dB)	Power Spectral Density (dBm/500kHz)	Antenna Gain(dBi)	e.i.r.p Spectral Density (dBm/500kHz)
				ANT 1	ANT 2		ANT1+ANT2 (CDD)		
TM 1	U-NII 3	149	5 745	-3.48	-1.35	7.19	7.91	2.75	10.66
		157	5 785	-3.14	-1.08	7.19	8.21	2.75	10.96
		165	5 825	-2.19	-1.52	7.19	8.36	2.75	11.11
TM 2	U-NII 3	149	5 745	-3.70	-1.24	7.21	7.92	2.75	10.67
		157	5 785	-3.34	-1.11	7.21	8.14	2.75	10.89
		165	5 825	-3.31	-1.63	7.21	7.83	2.75	10.58
TM 3	U-NII 3	151	5 755	-8.36	-6.83	7.42	2.90	2.75	5.65
		159	5 795	-8.30	-6.60	7.42	3.06	2.75	5.81
TM 4	U-NII 3	155	5 775	-12.20	-9.83	8.13	0.28	2.75	3.03

Note 1: Power Spectral Density = Reading(Measurement Data) + TF
Note 2: e.i.r.p Spectral Density= Power spectral density + EUT Antenna Gain
Note 3: "U-NII 1, 2A, 2C [TF] = DCCF"
"U-NII 3 [TF] = 10*LOG(500 kHz/100 kHz) + DCCF"
Where, TF = Total Factor, DCCF = Duty Cycle Correction Factor
For DCCF(Duty Cycle Correction Factor) please refer to appendix II.

Maximum Power Spectral Density

Test Mode: TM 1 & ANT 1 & Ch.36

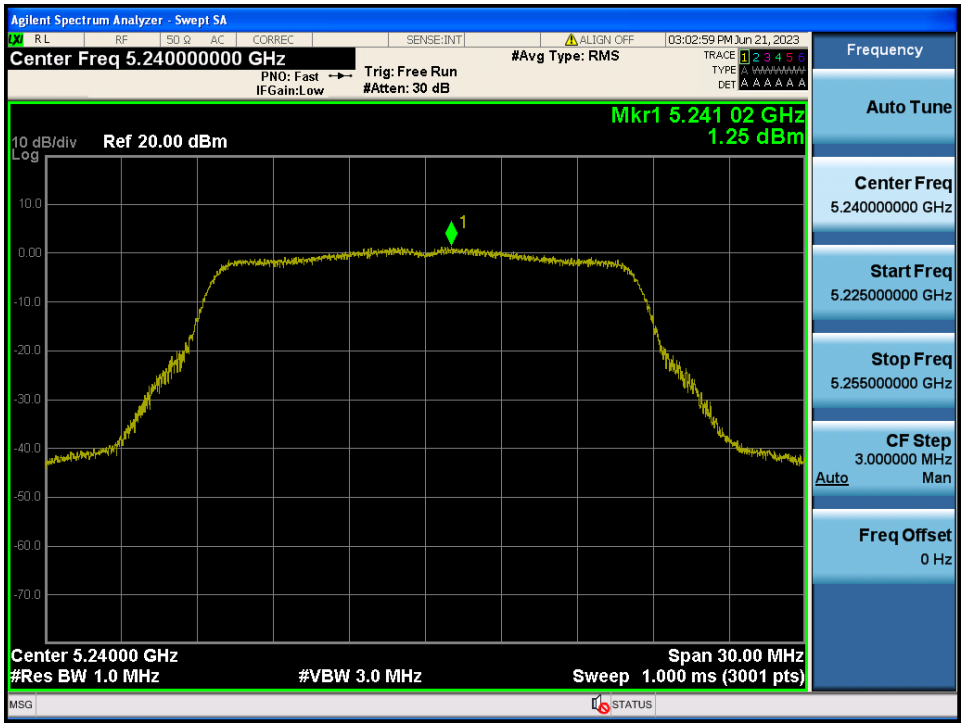


Maximum Power Spectral Density

Test Mode: TM 1 & ANT 1 & Ch.40

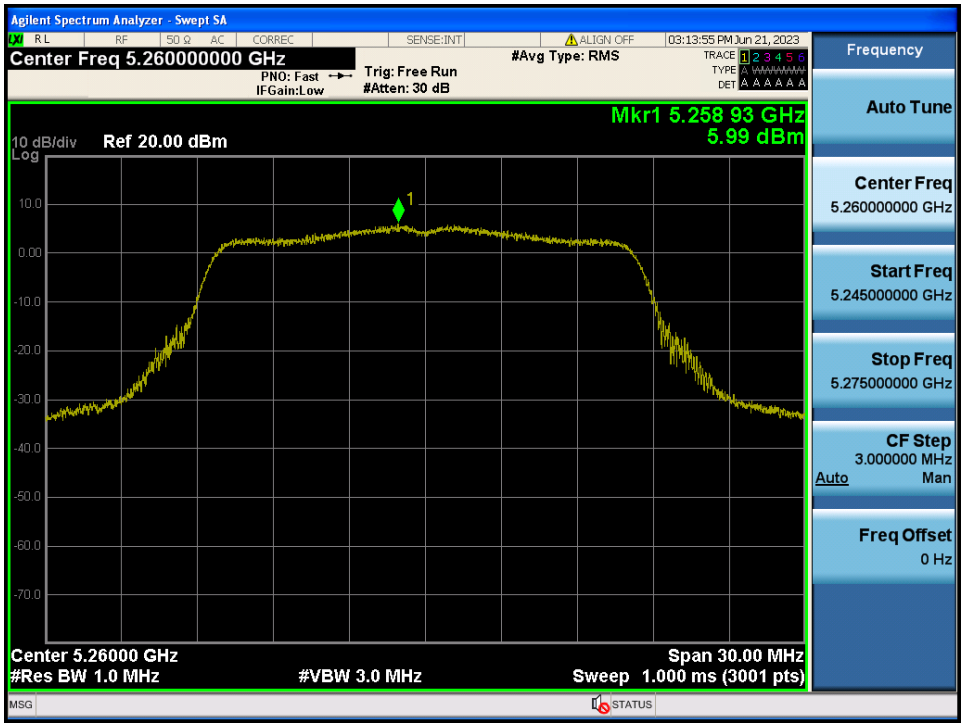
Maximum Power Spectral Density

Test Mode: TM 1 & ANT 1 & Ch.48



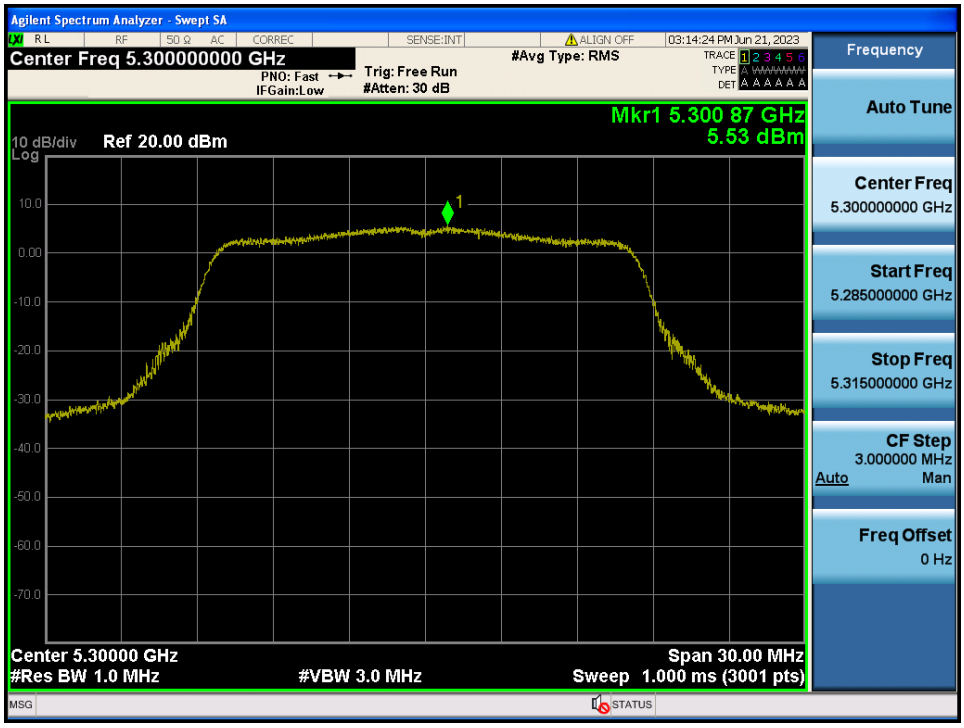
Maximum Power Spectral Density

Test Mode: TM 1 & ANT 1 & Ch.52



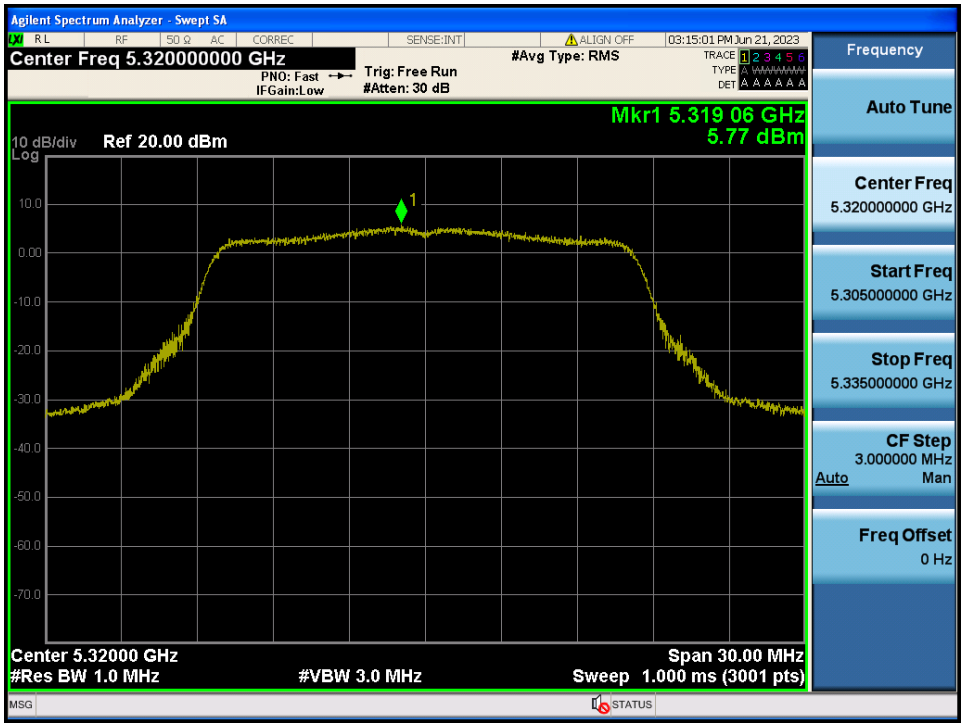
Maximum Power Spectral Density

Test Mode: TM 1 & ANT 1 & Ch.60



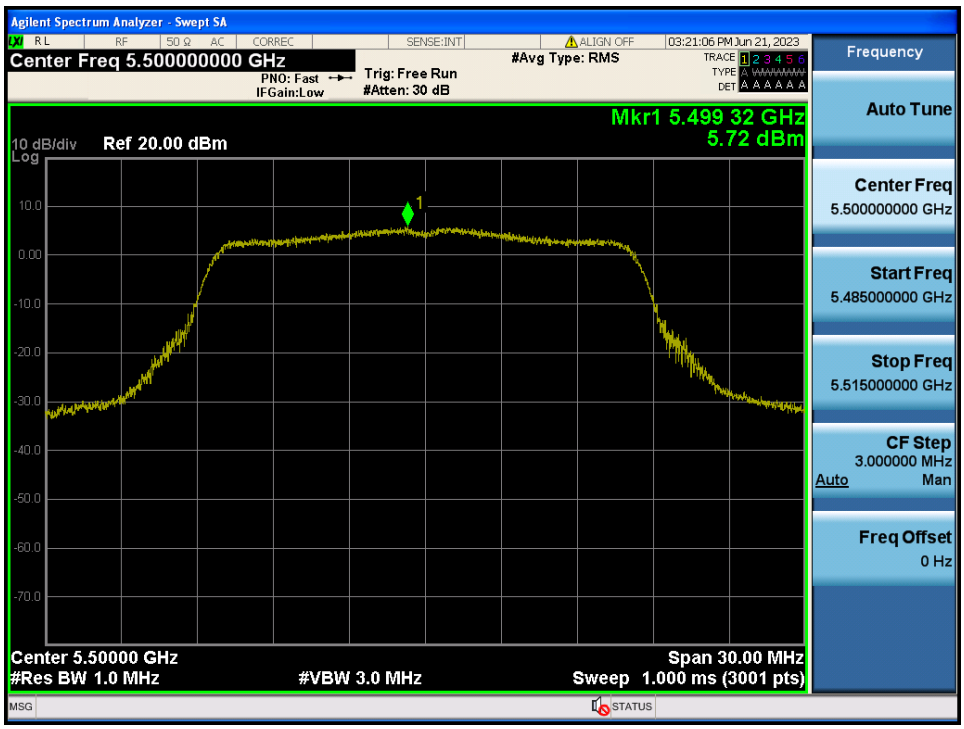
Maximum Power Spectral Density

Test Mode: TM 1 & ANT 1 & Ch.64



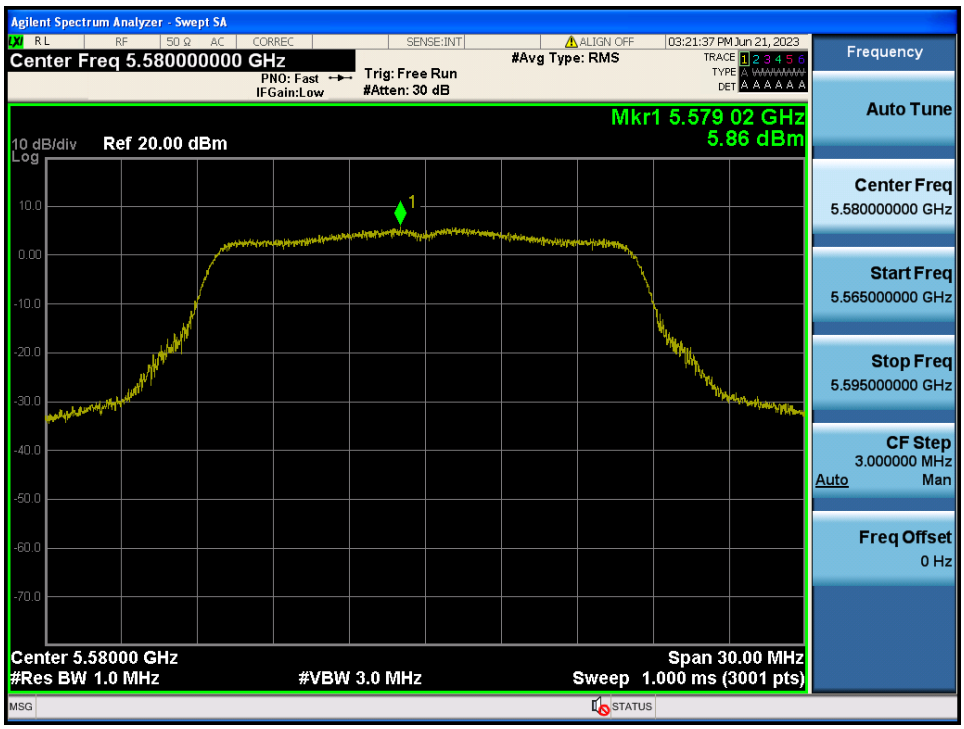
Maximum Power Spectral Density

Test Mode: TM 1 & ANT 1 & Ch.100



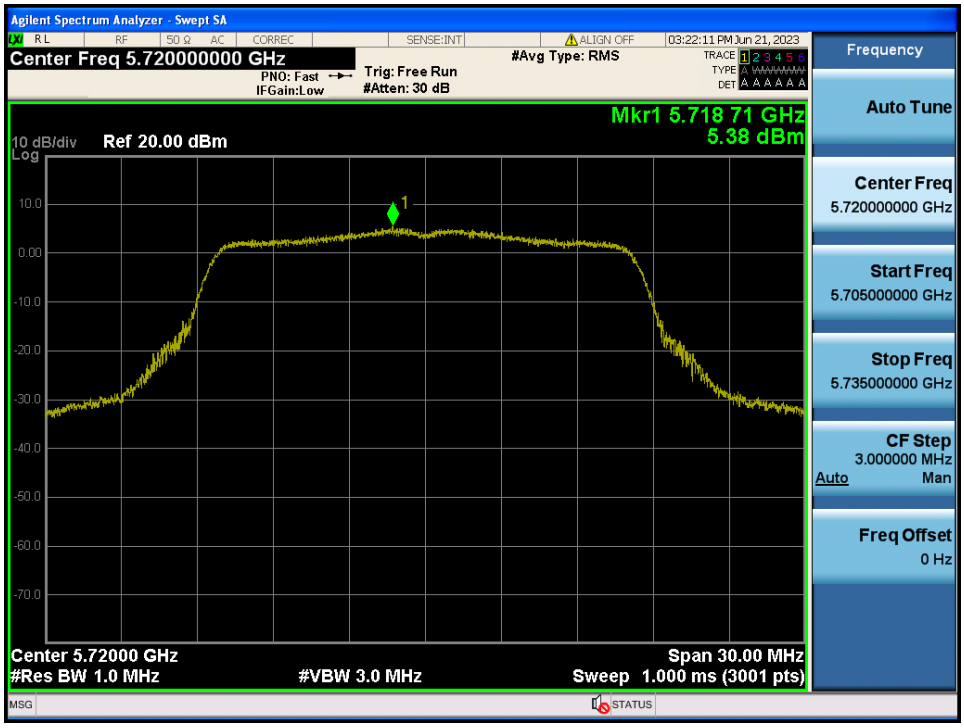
Maximum Power Spectral Density

Test Mode: TM 1 & ANT 1 & Ch.116



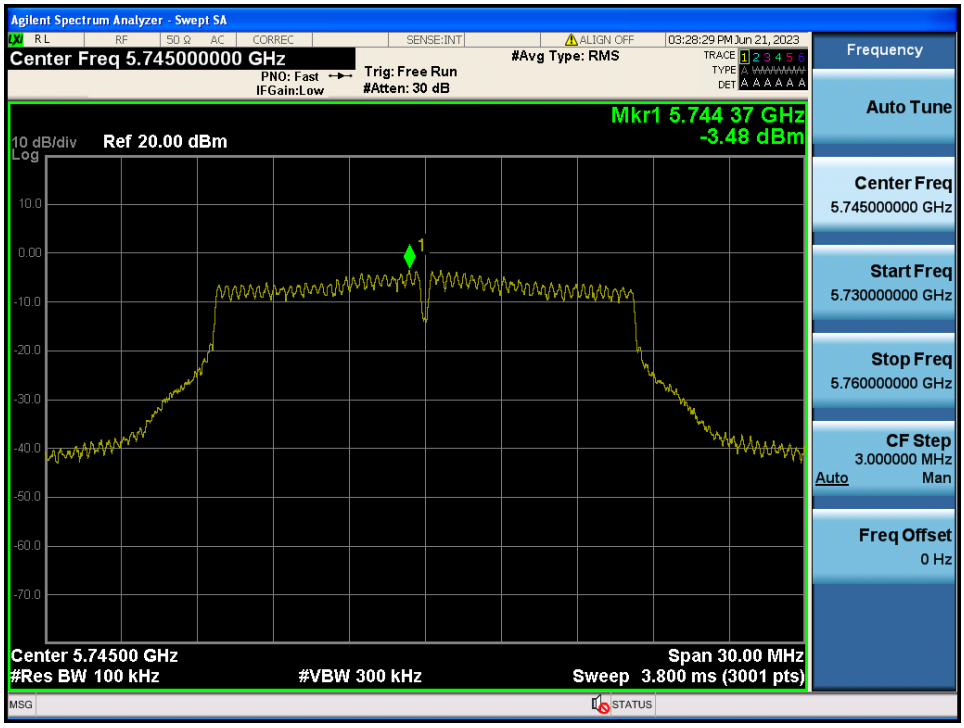
Maximum Power Spectral Density

Test Mode: TM 1 & ANT 1 & Ch.144



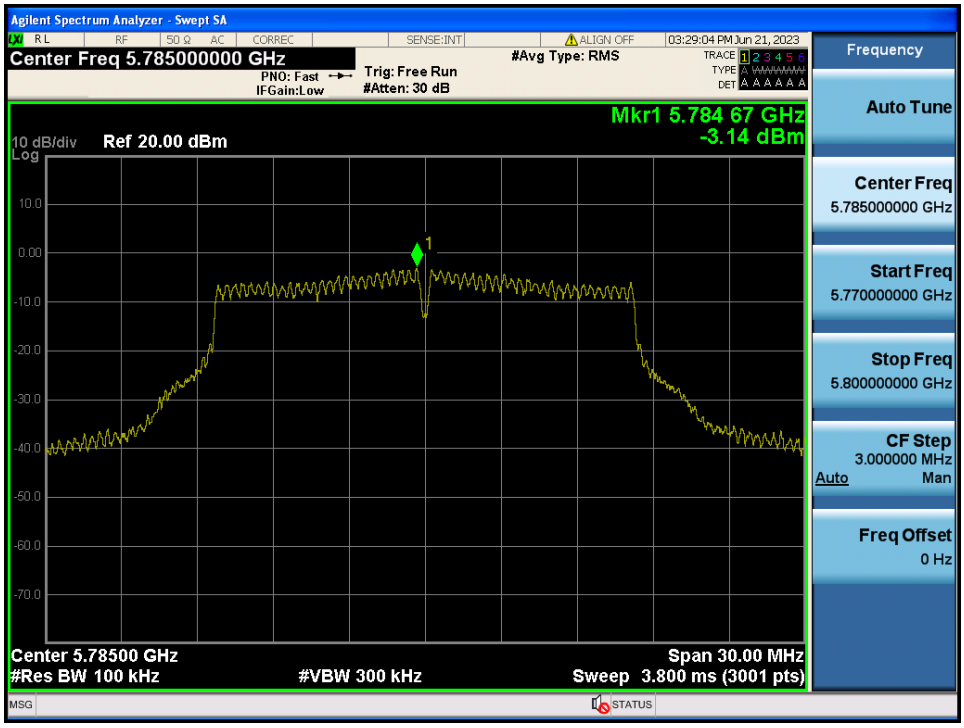
Maximum Power Spectral Density

Test Mode: TM 1 & ANT 1 & Ch.149



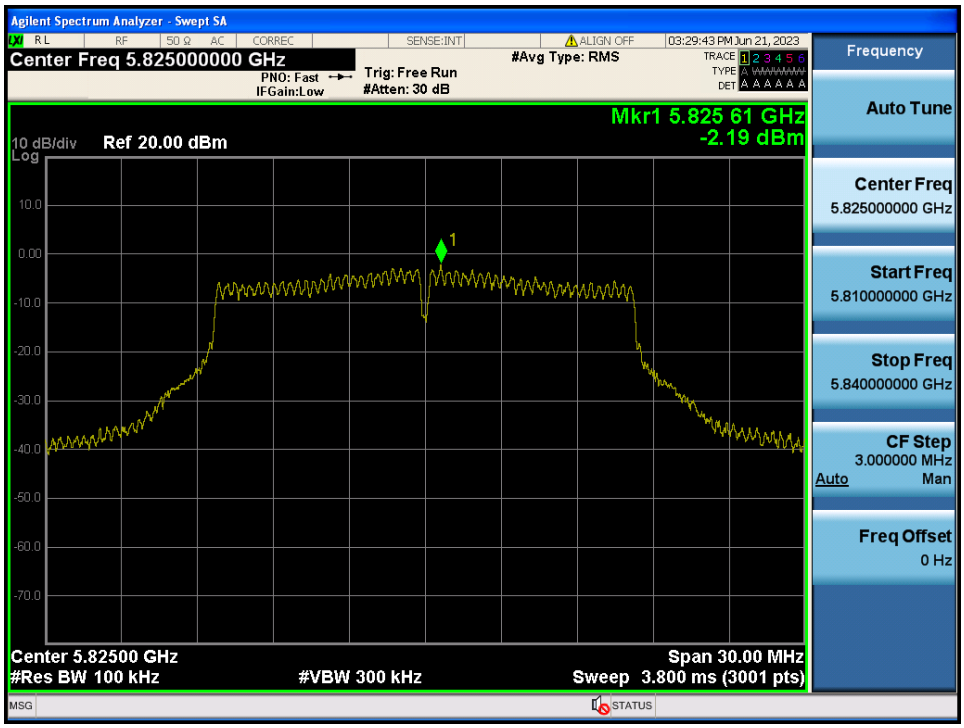
Maximum Power Spectral Density

Test Mode: TM 1 & ANT 1 & Ch.157



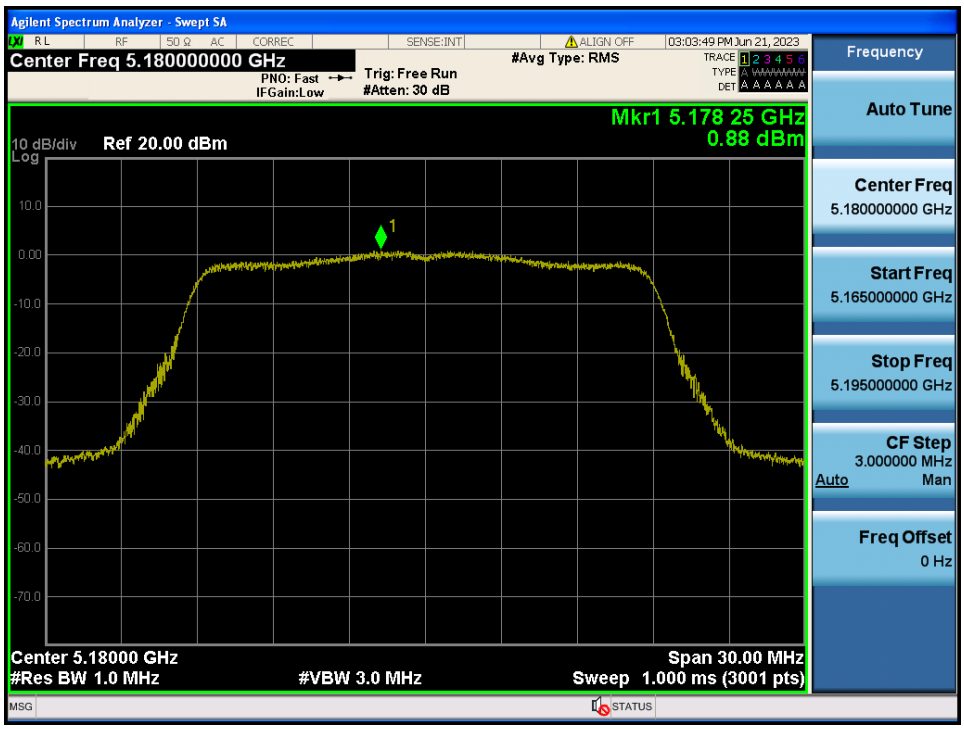
Maximum Power Spectral Density

Test Mode: TM 1 & ANT 1 & Ch.165



Maximum Power Spectral Density

Test Mode: TM 2 & ANT 1 & Ch.36

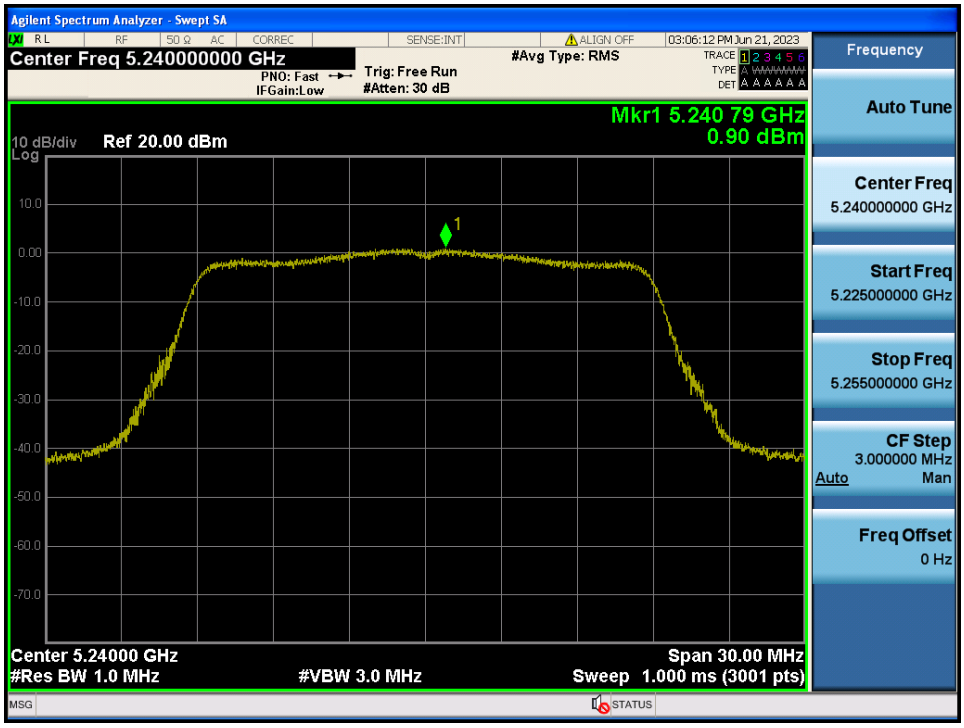


Maximum Power Spectral Density

Test Mode: TM 2 & ANT 1 & Ch.40

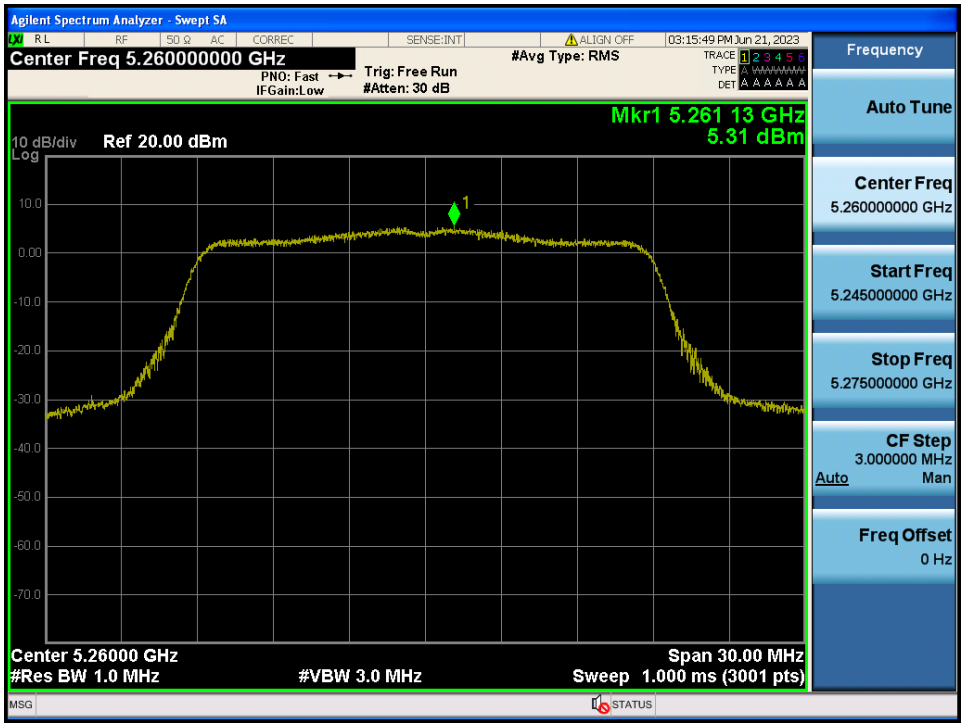
Maximum Power Spectral Density

Test Mode: TM 2 & ANT 1 & Ch.48



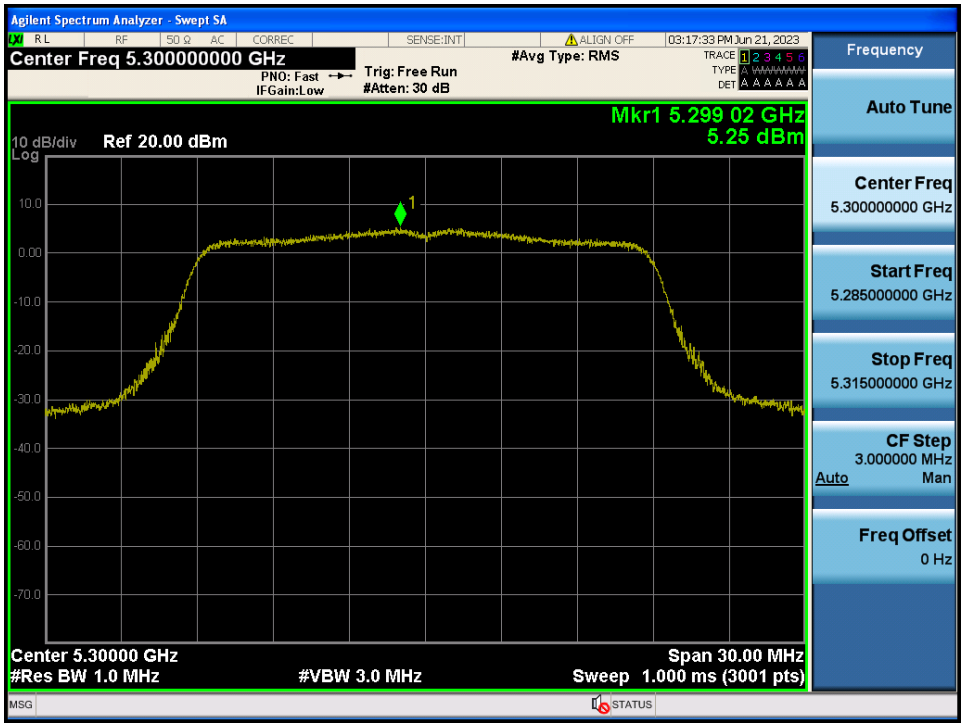
Maximum Power Spectral Density

Test Mode: TM 2 & ANT 1 & Ch.52



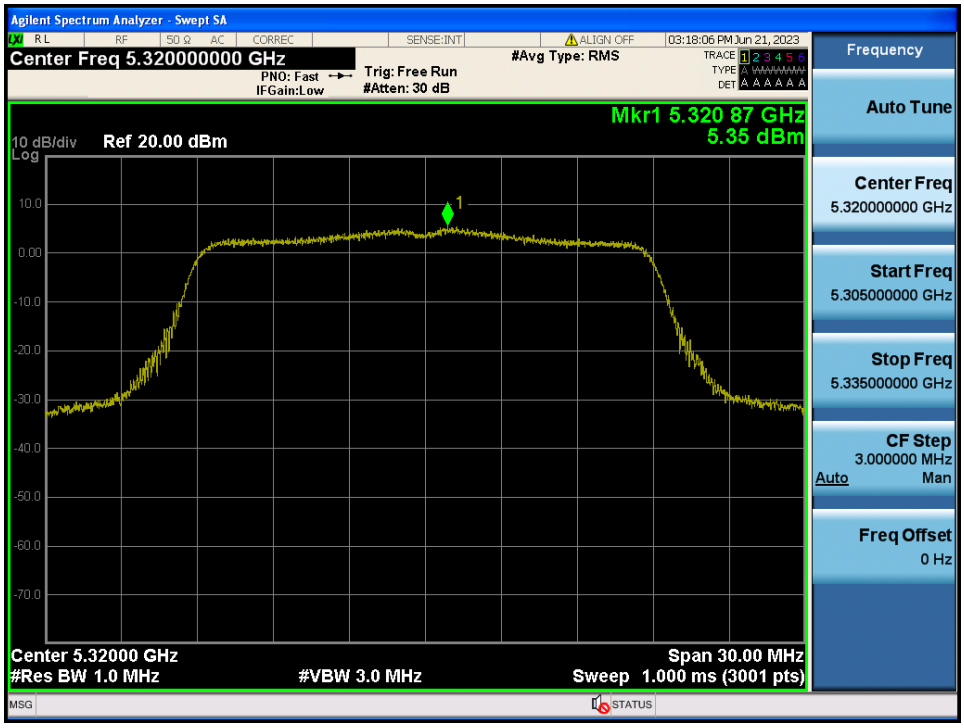
Maximum Power Spectral Density

Test Mode: TM 2 & ANT 1 & Ch.60



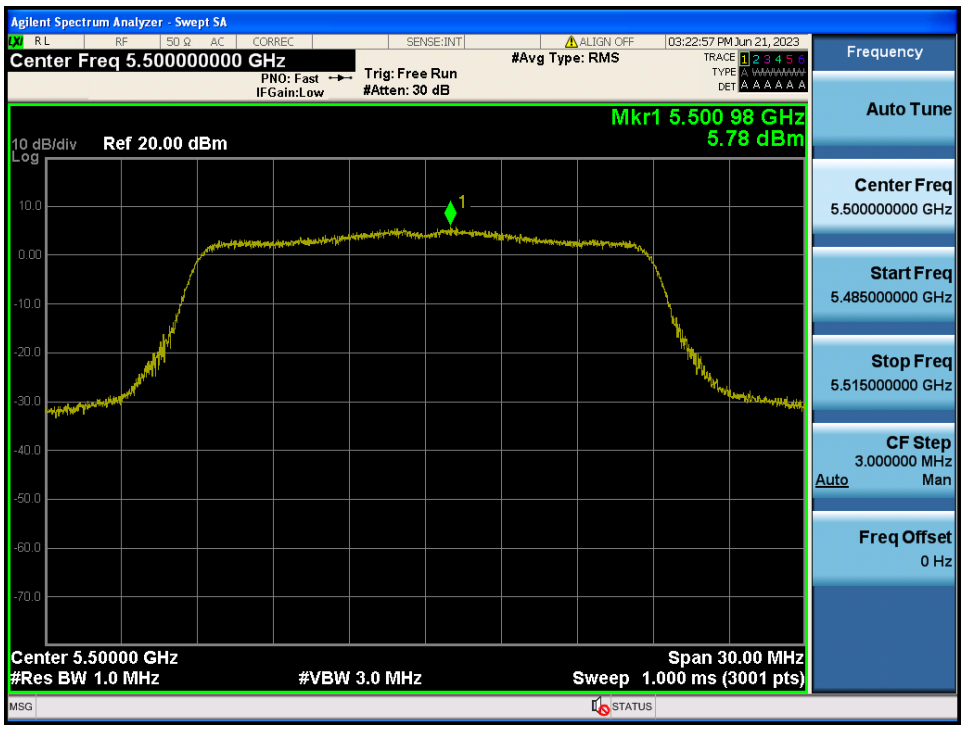
Maximum Power Spectral Density

Test Mode: TM 2 & ANT 1 & Ch.64



Maximum Power Spectral Density

Test Mode: TM 2 & ANT 1 & Ch.100



Maximum Power Spectral Density

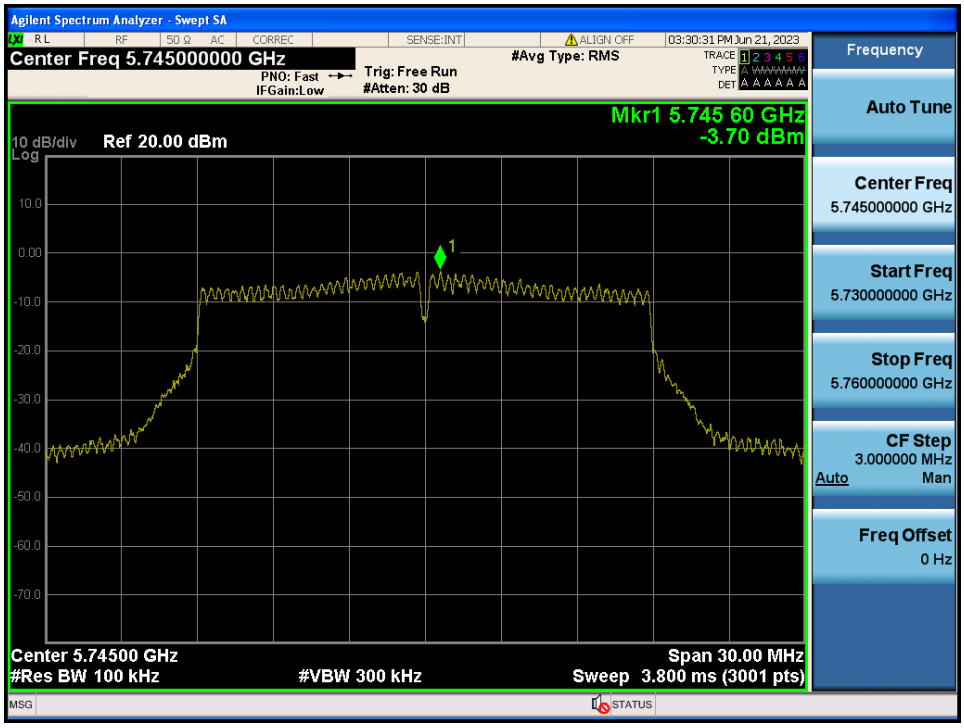
Test Mode: TM 2 & ANT 1 & Ch.116

Maximum Power Spectral Density

Test Mode: TM 2 & ANT 1 & Ch.144

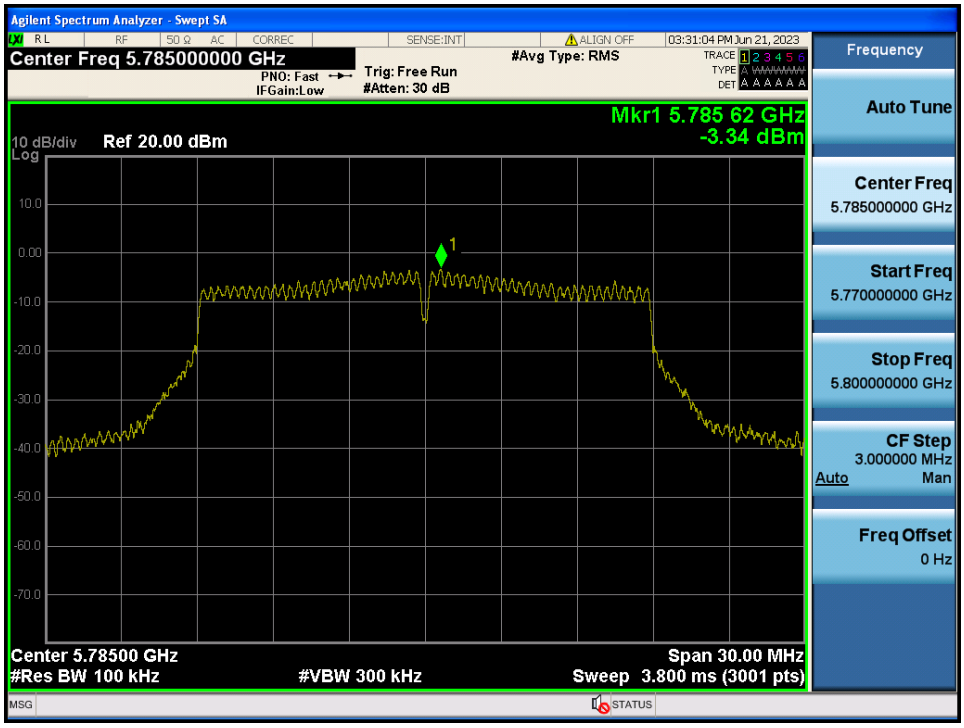
Maximum Power Spectral Density

Test Mode: TM 2 & ANT 1 & Ch.149



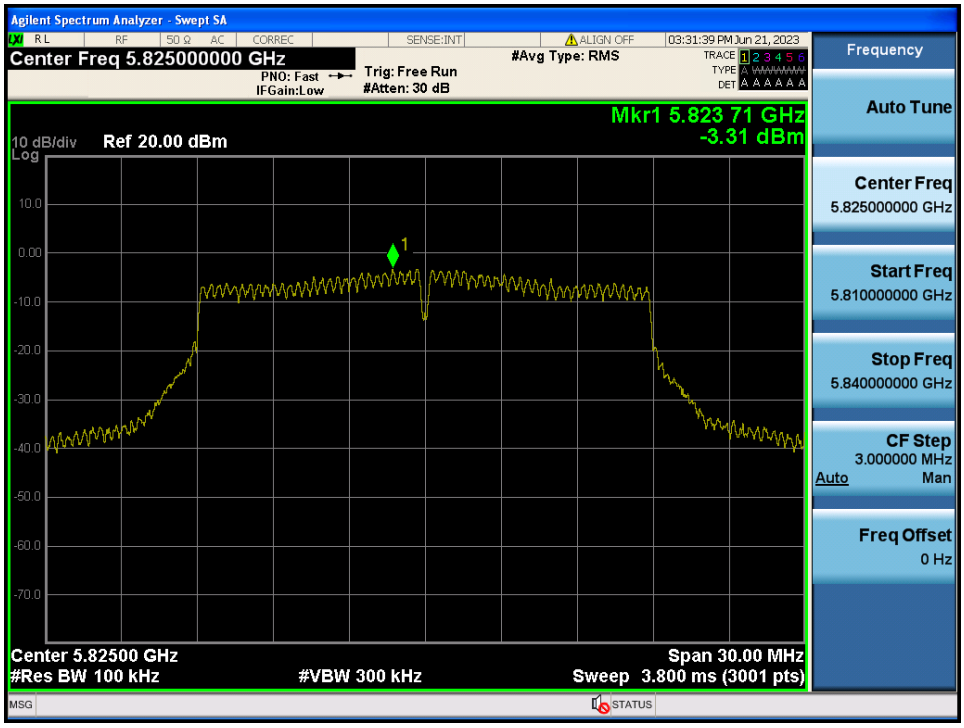
Maximum Power Spectral Density

Test Mode: TM 2 & ANT 1 & Ch.157



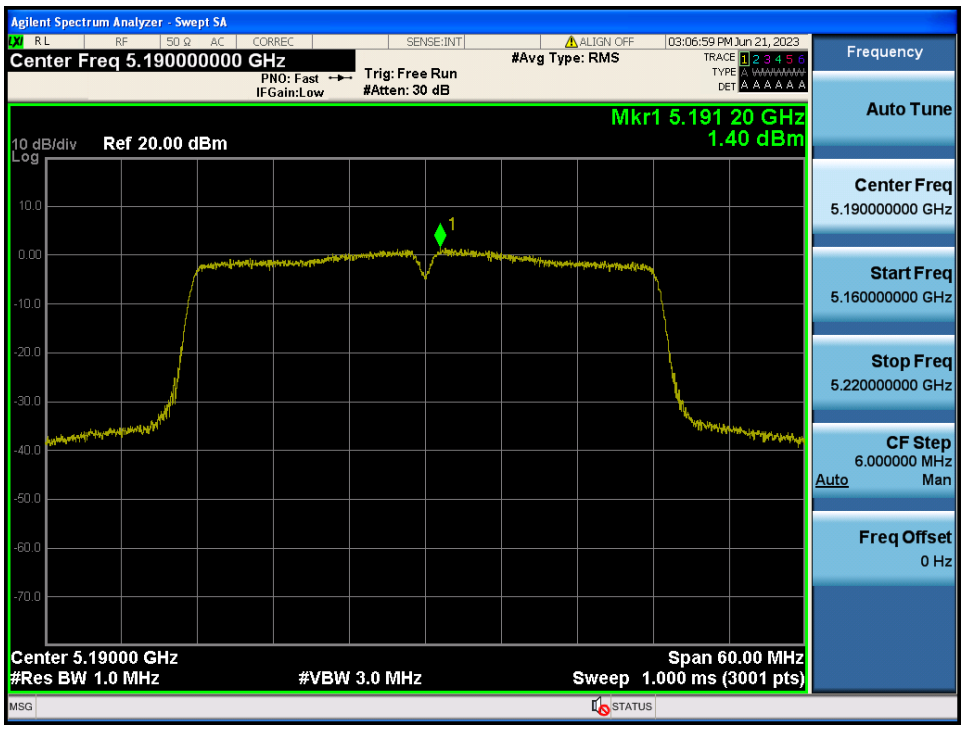
Maximum Power Spectral Density

Test Mode: TM 2 & ANT 1 & Ch.165



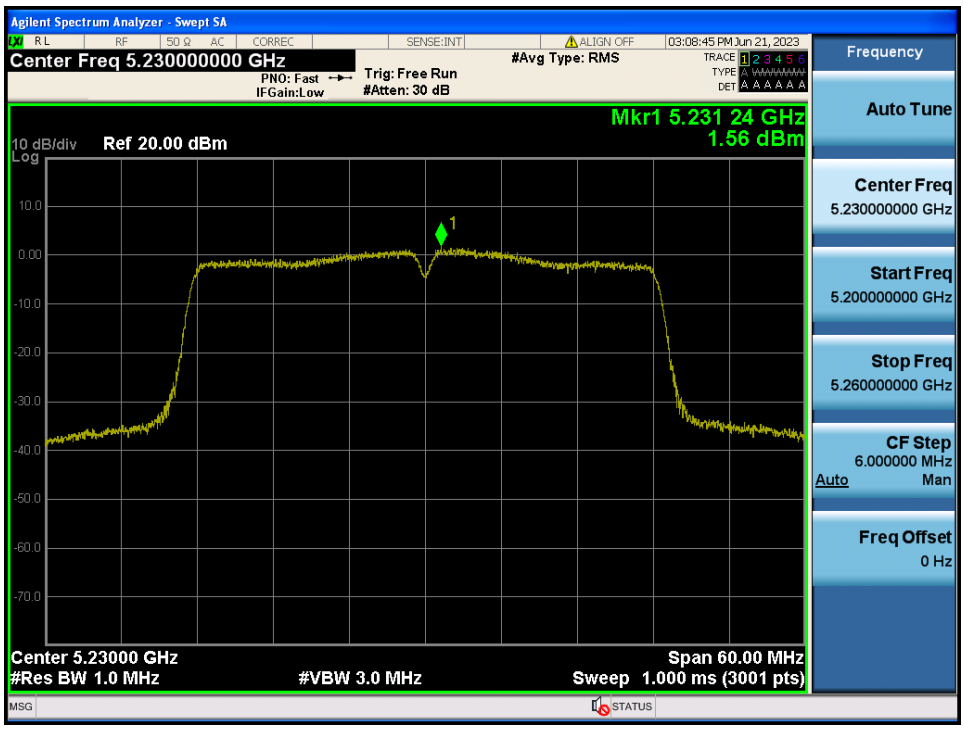
Maximum Power Spectral Density

Test Mode: TM 3 & ANT 1 & Ch.38



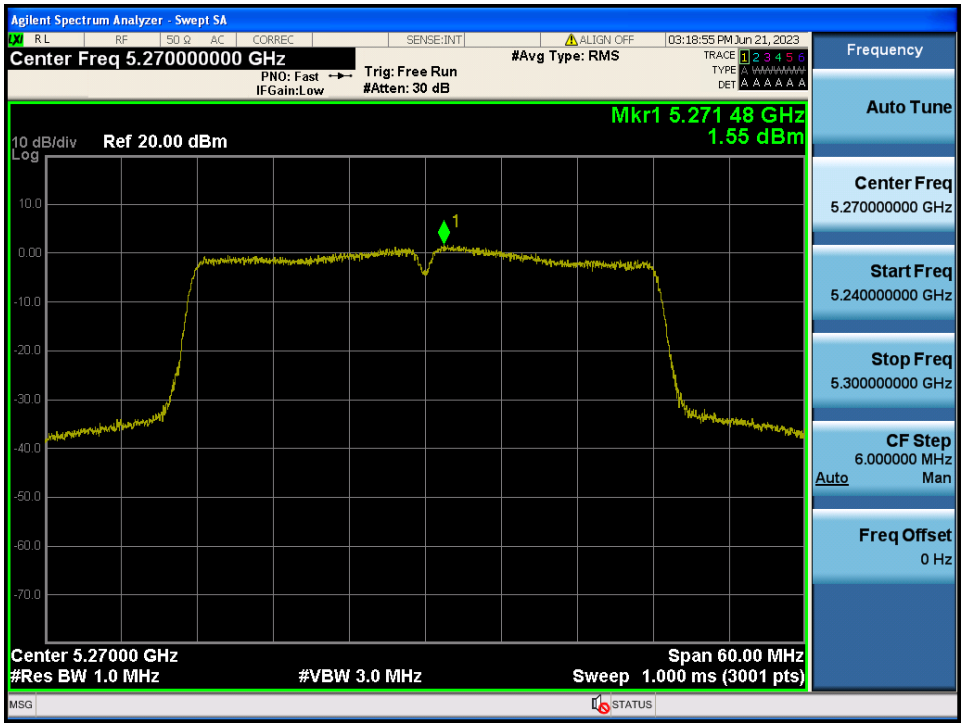
Maximum Power Spectral Density

Test Mode: TM 3 & ANT 1 & Ch.46



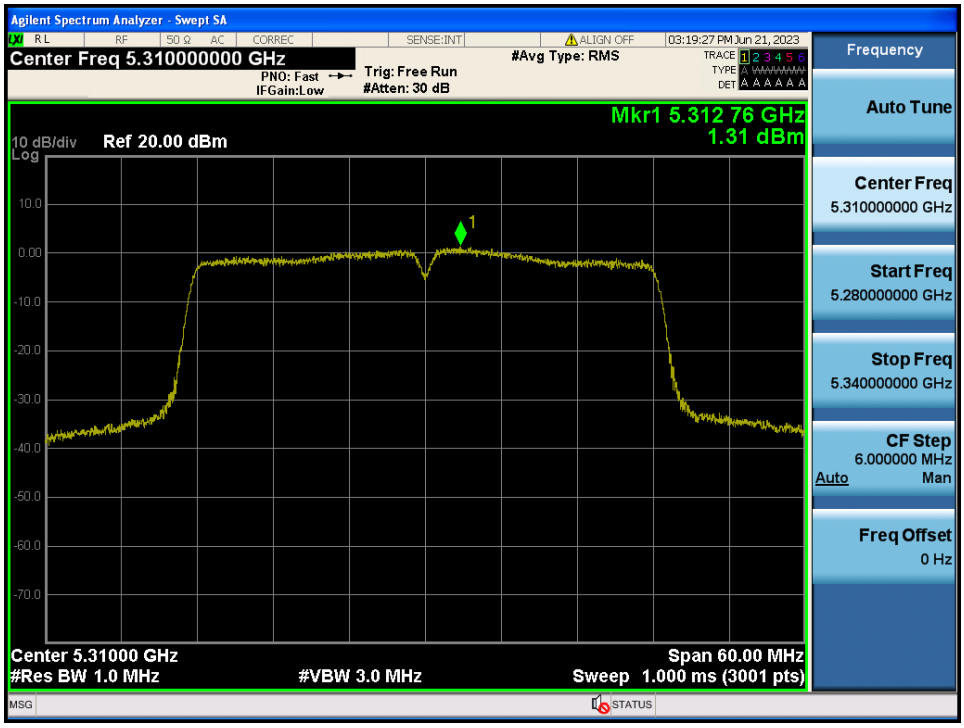
Maximum Power Spectral Density

Test Mode: TM 3 & ANT 1 & Ch.54



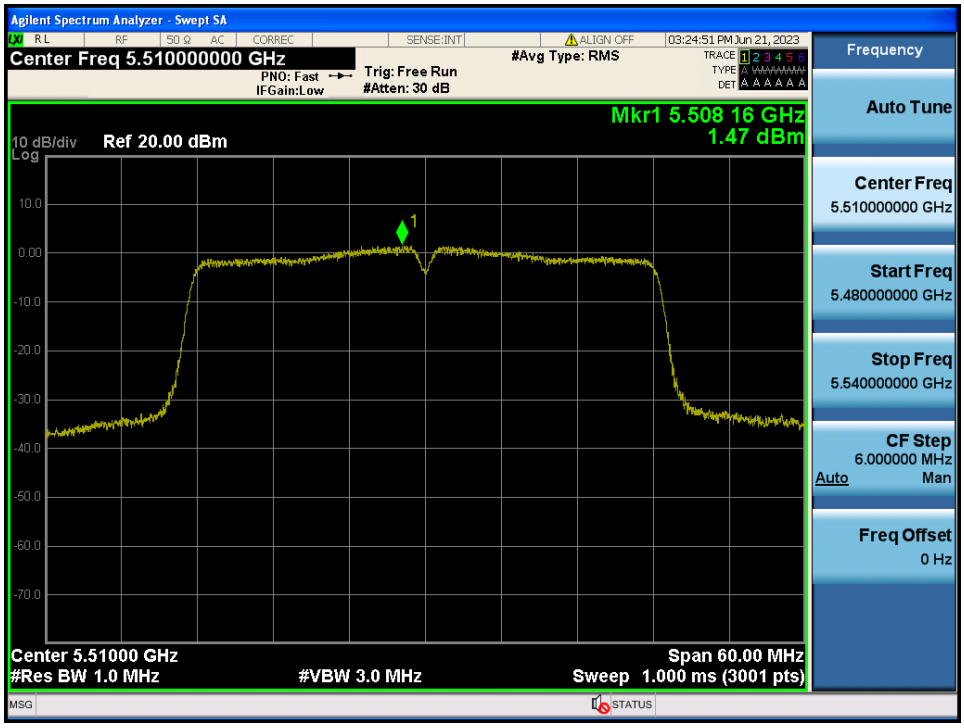
Maximum Power Spectral Density

Test Mode: TM 3 & ANT 1 & Ch.62



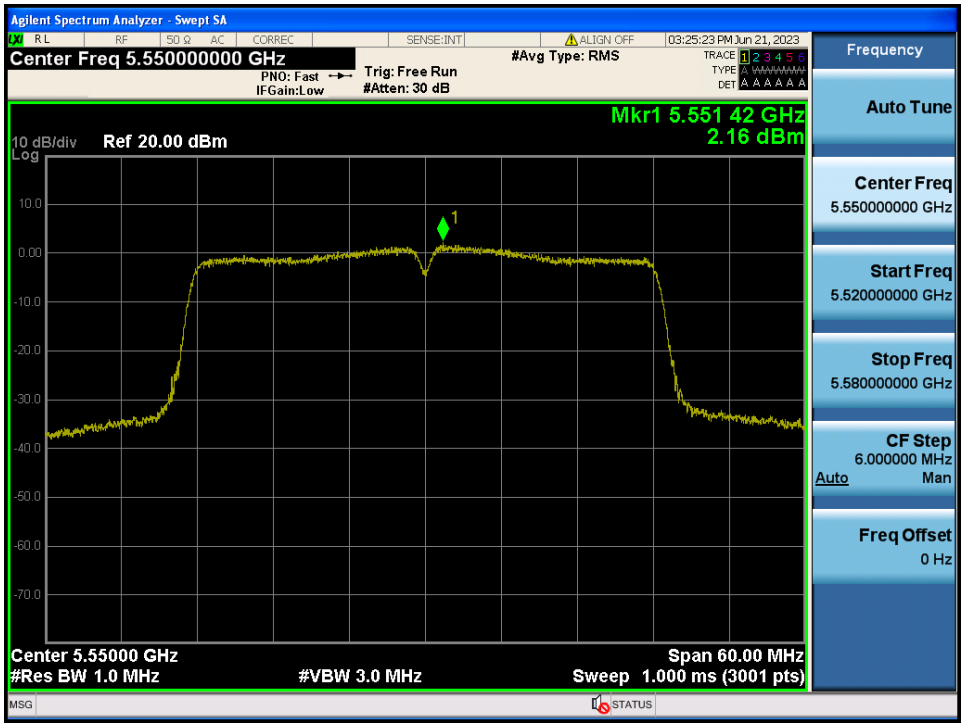
Maximum Power Spectral Density

Test Mode: TM 3 & ANT 1 & Ch.102

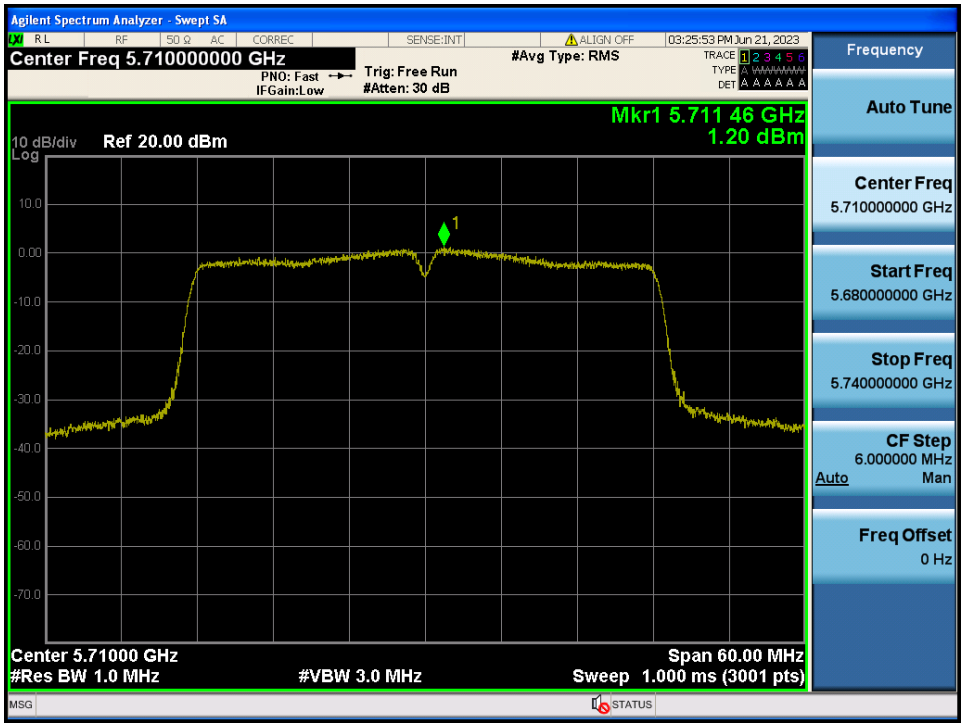


Maximum Power Spectral Density

Test Mode: TM 3 & ANT 1 & Ch.110

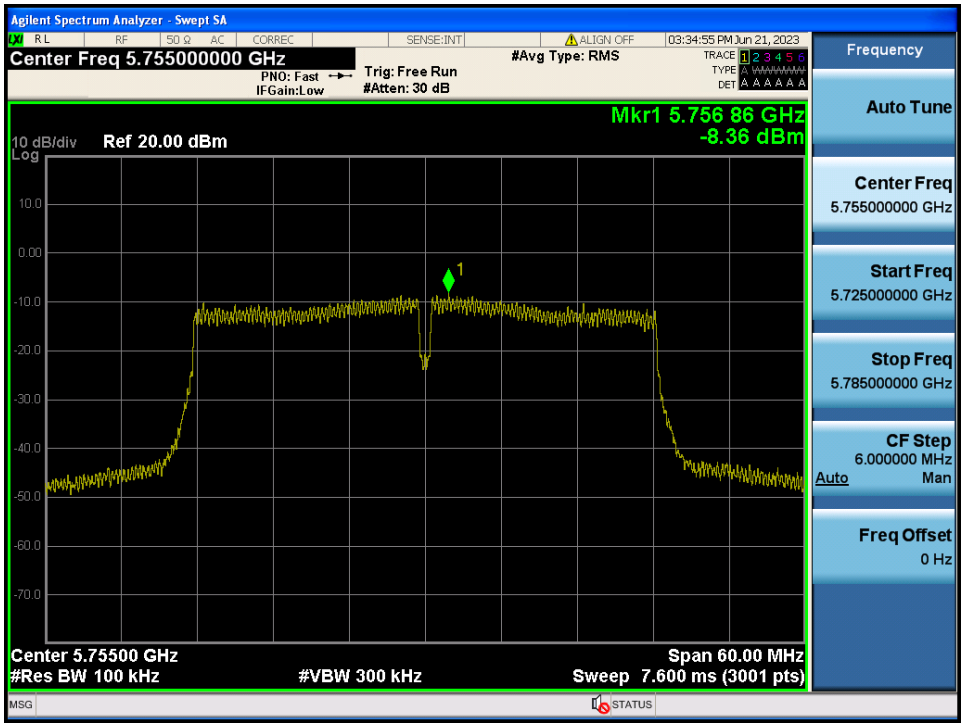


Maximum Power Spectral Density Test Mode: TM 3 & ANT 1 & Ch.142



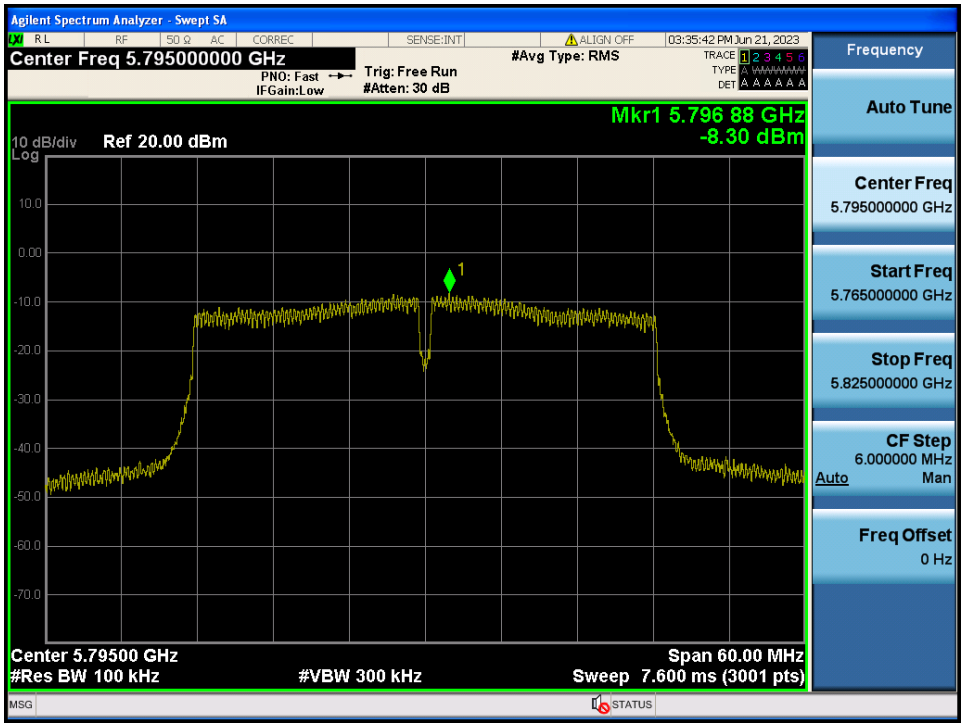
Maximum Power Spectral Density

Test Mode: TM 3 & ANT 1 & Ch.151



Maximum Power Spectral Density

Test Mode: TM 3 & ANT 1 & Ch.159



Maximum Power Spectral Density

Test Mode: TM 4 & ANT 1 & Ch.42

Maximum Power Spectral Density

Test Mode: TM 4 & ANT 1 & Ch.58

Maximum Power Spectral Density

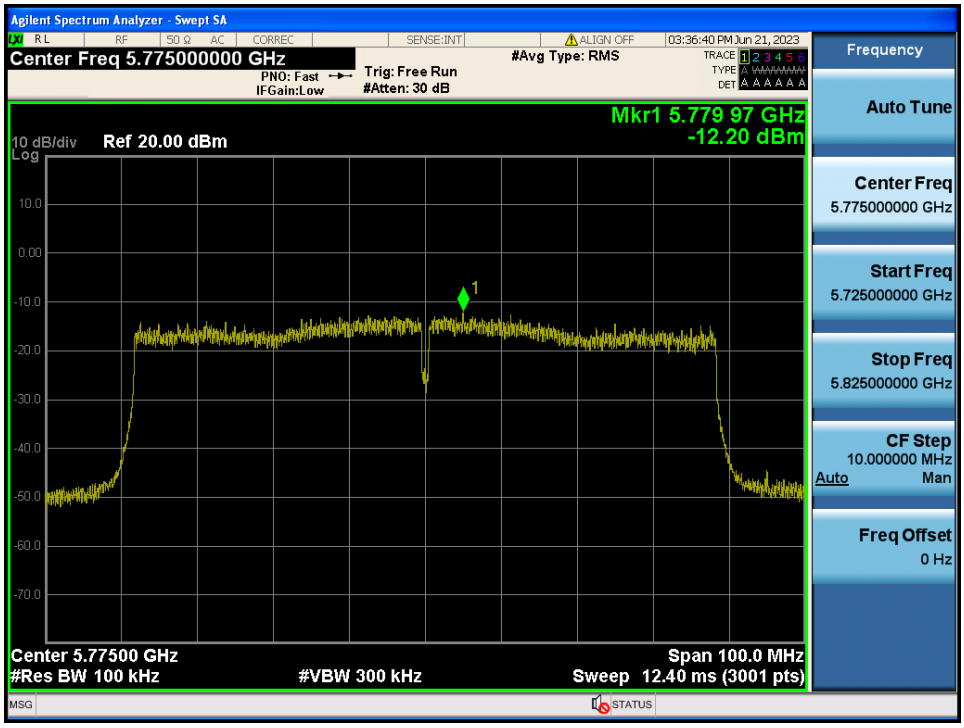
Test Mode: TM 4 & ANT 1 & Ch.106

Maximum Power Spectral Density

Test Mode: TM 4 & ANT 1 & Ch.138

Maximum Power Spectral Density

Test Mode: TM 4 & ANT 1 & Ch.155



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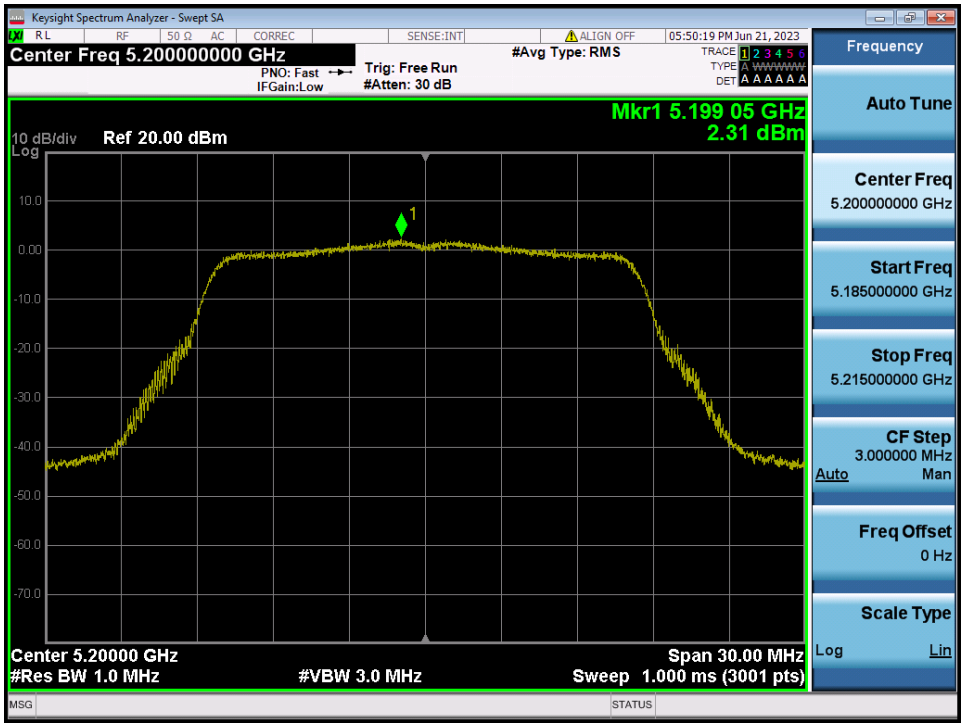
Maximum Power Spectral Density

Test Mode: TM 1 & ANT 2 & Ch.36

Maximum Power Spectral Density

Test Mode: TM 1 & ANT 2 & Ch.40



Maximum Power Spectral Density

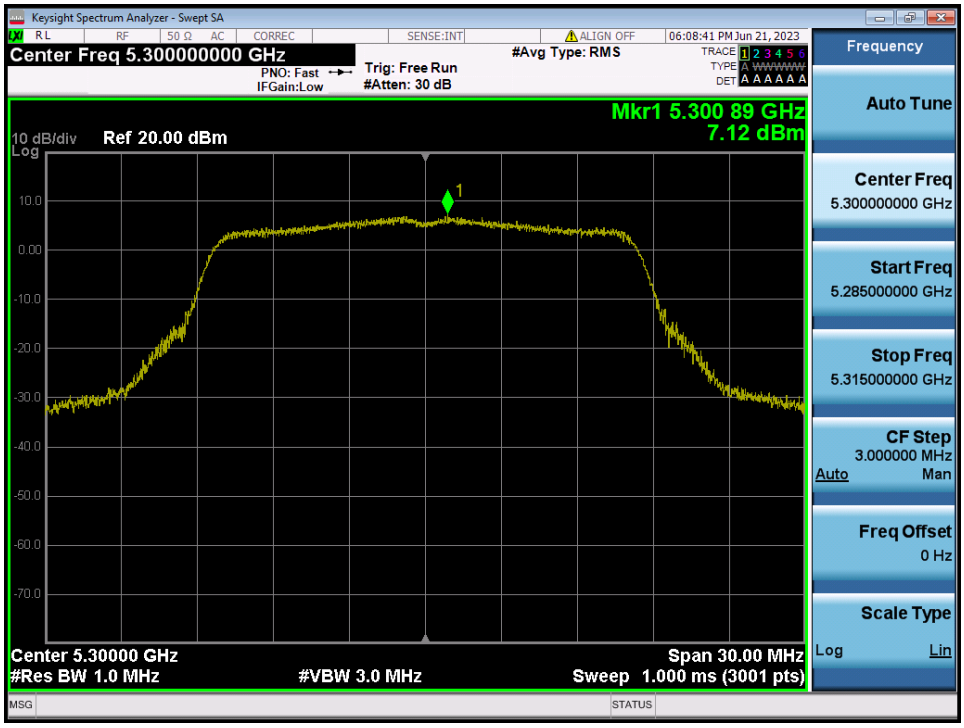
Test Mode: TM 1 & ANT 2 & Ch.48

Maximum Power Spectral Density

Test Mode: TM 1 & ANT 2 & Ch.52

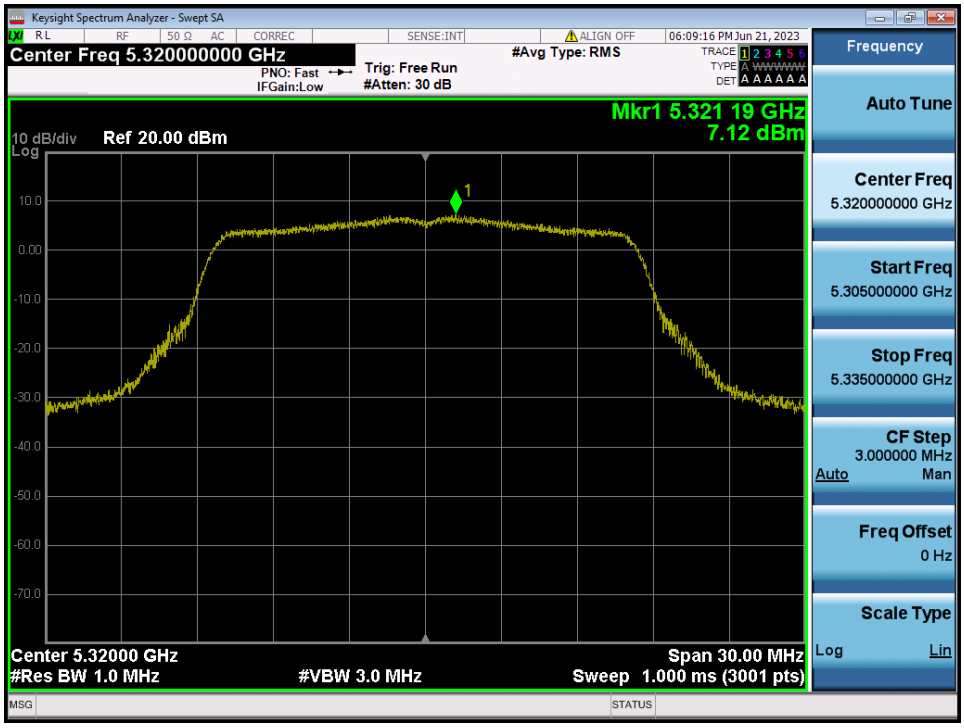
Maximum Power Spectral Density

Test Mode: TM 1 & ANT 2 & Ch.60



Maximum Power Spectral Density

Test Mode: TM 1 & ANT 2 & Ch.64



Maximum Power Spectral Density

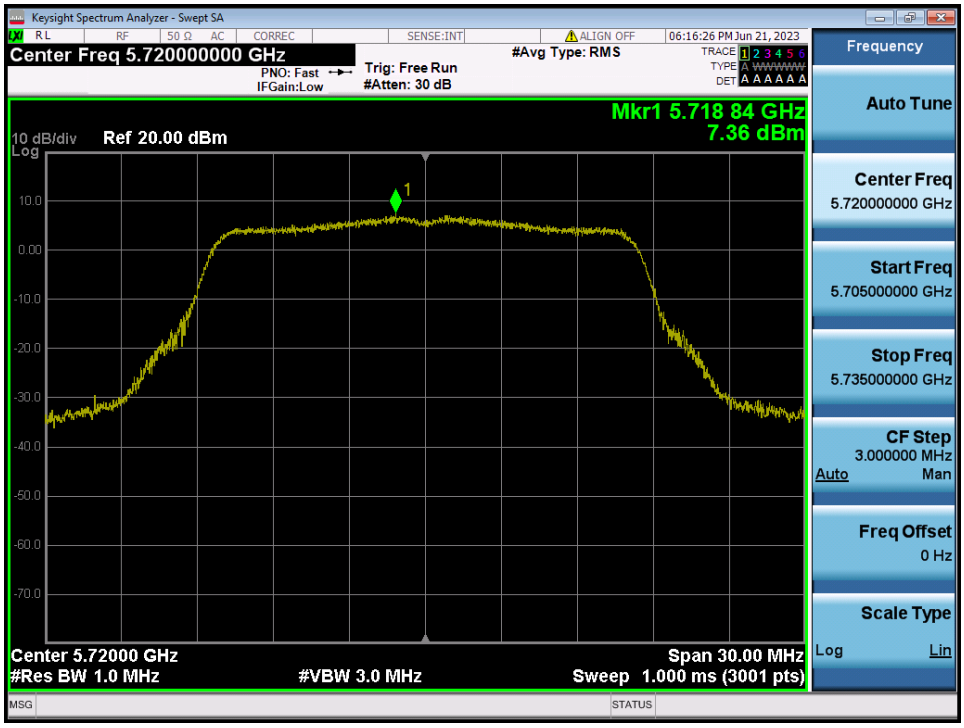
Test Mode: TM 1 & ANT 2 & Ch.100

Maximum Power Spectral Density

Test Mode: TM 1 & ANT 2 & Ch.116

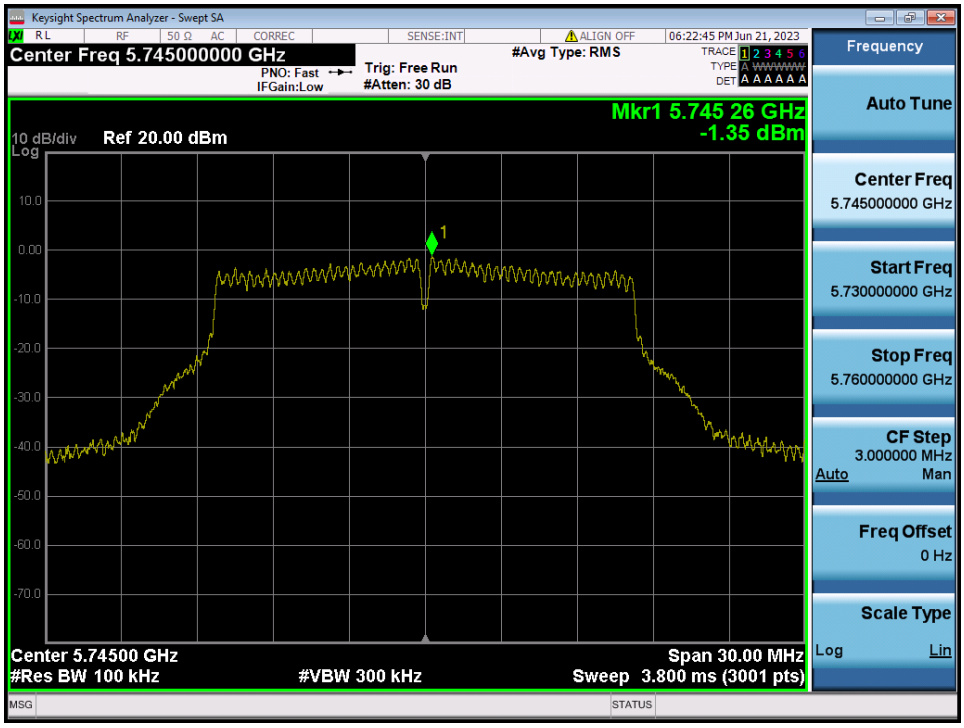
Maximum Power Spectral Density

Test Mode: TM 1 & ANT 2 & Ch.144



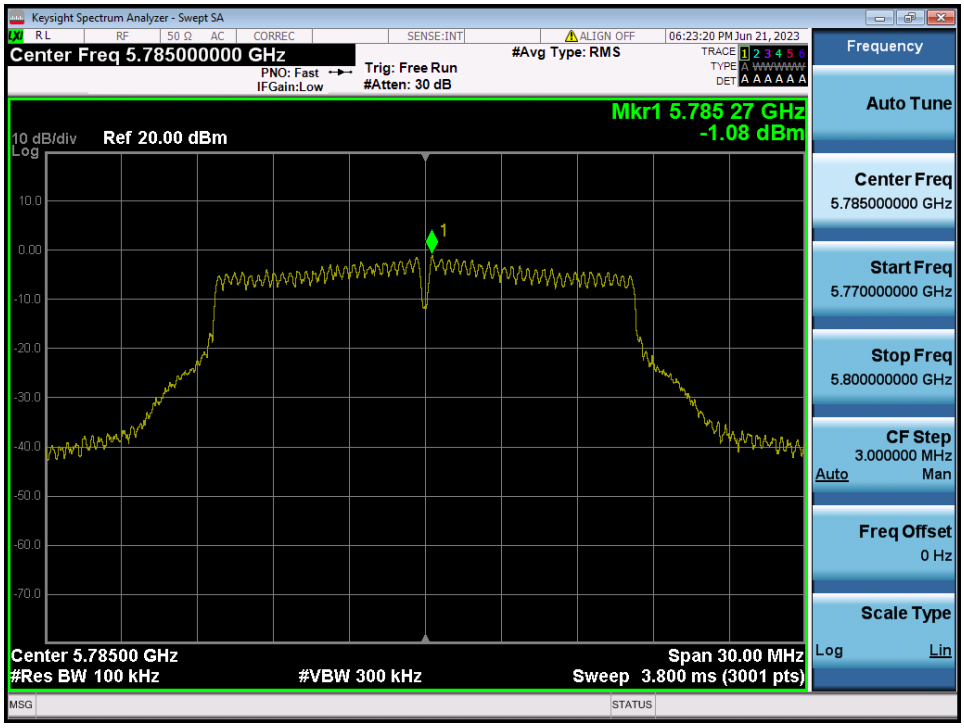
Maximum Power Spectral Density

Test Mode: TM 1 & ANT 2 & Ch.149



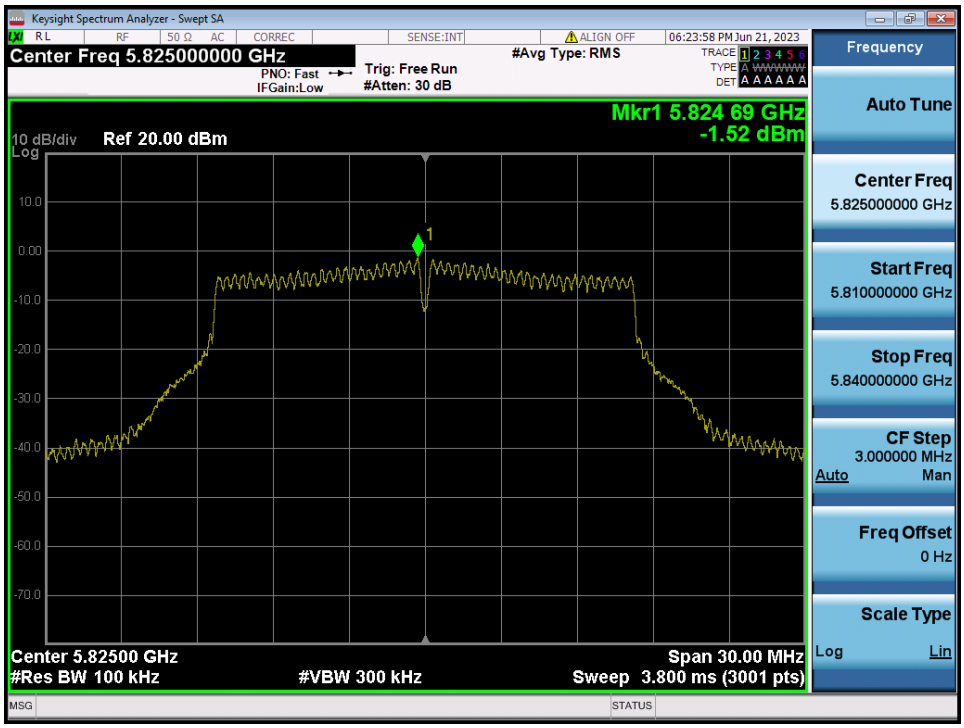
Maximum Power Spectral Density

Test Mode: TM 1 & ANT 2 & Ch.157



Maximum Power Spectral Density

Test Mode: TM 1 & ANT 2 & Ch.165



Maximum Power Spectral Density

Test Mode: TM 2 & ANT 2 & Ch.36

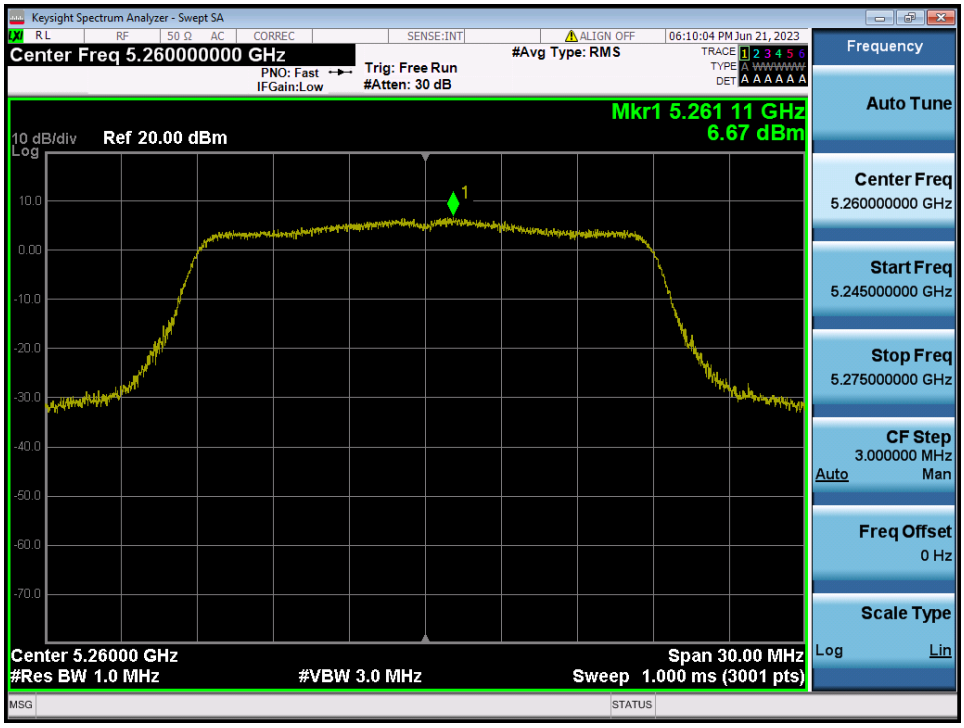
Maximum Power Spectral Density

Test Mode: TM 2 & ANT 2 & Ch.40

Maximum Power Spectral Density Test Mode: TM 2 & ANT 2 & Ch.48

Maximum Power Spectral Density

Test Mode: TM 2 & ANT 2 & Ch.52

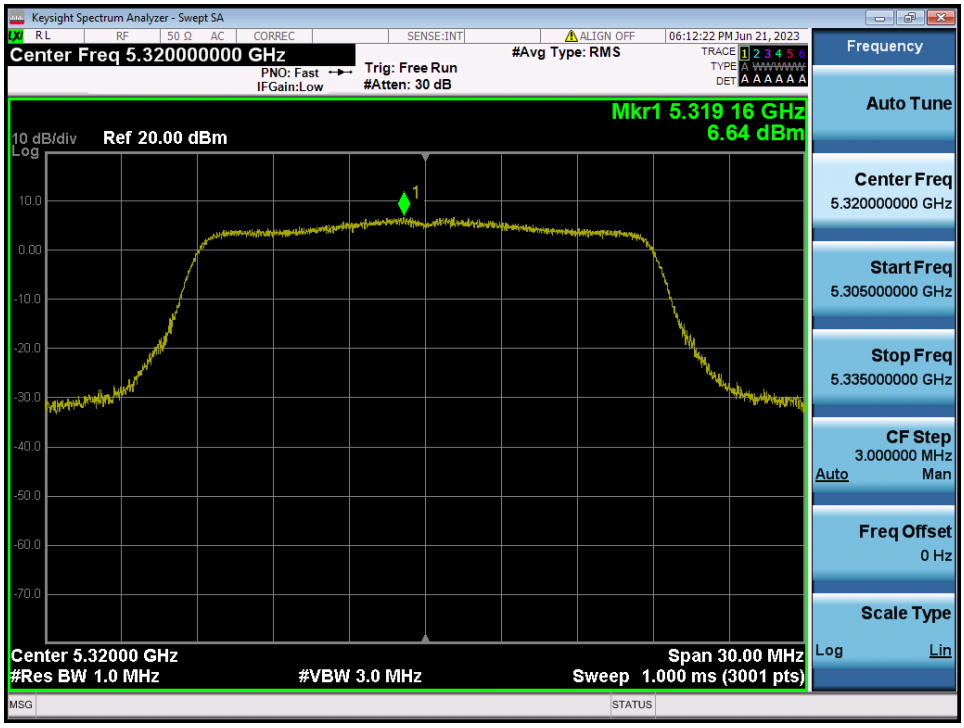


Maximum Power Spectral Density

Test Mode: TM 2 & ANT 2 & Ch.60

Maximum Power Spectral Density

Test Mode: TM 2 & ANT 2 & Ch.64



Maximum Power Spectral Density

Test Mode: TM 2 & ANT 2 & Ch.100

Maximum Power Spectral Density

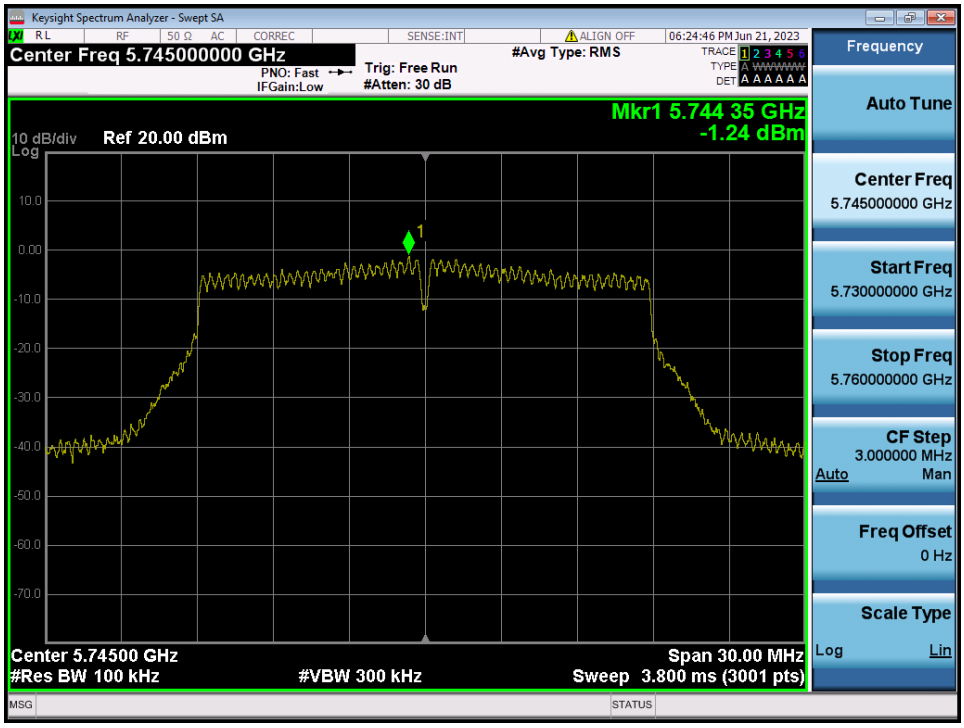
Test Mode: TM 2 & ANT 2 & Ch.116

Maximum Power Spectral Density

Test Mode: TM 2 & ANT 2 & Ch.144

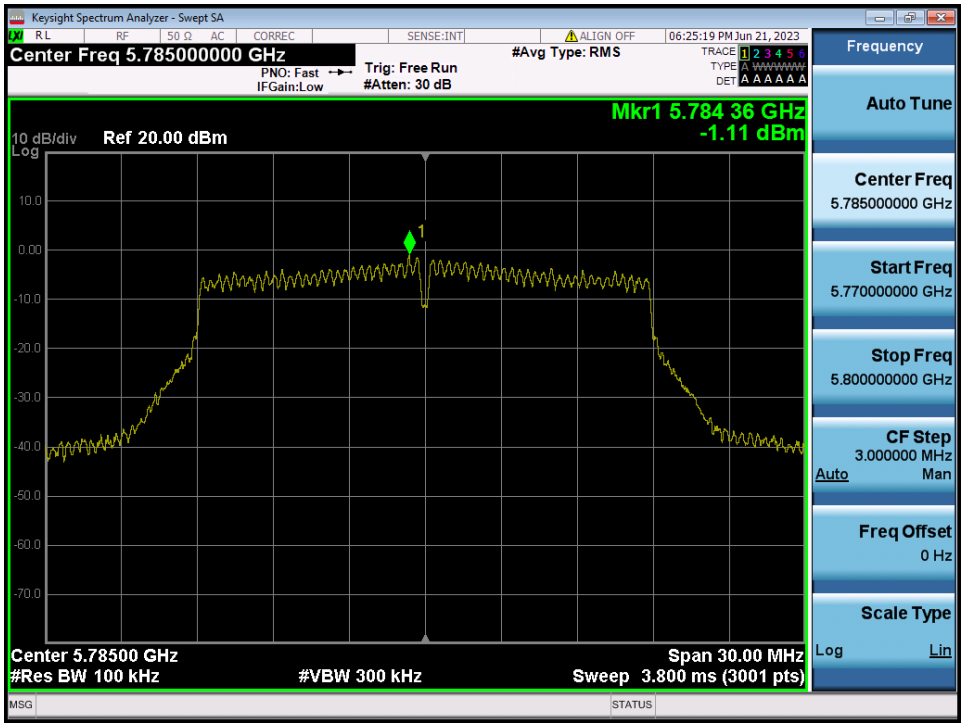
Maximum Power Spectral Density

Test Mode: TM 2 & ANT 2 & Ch.149

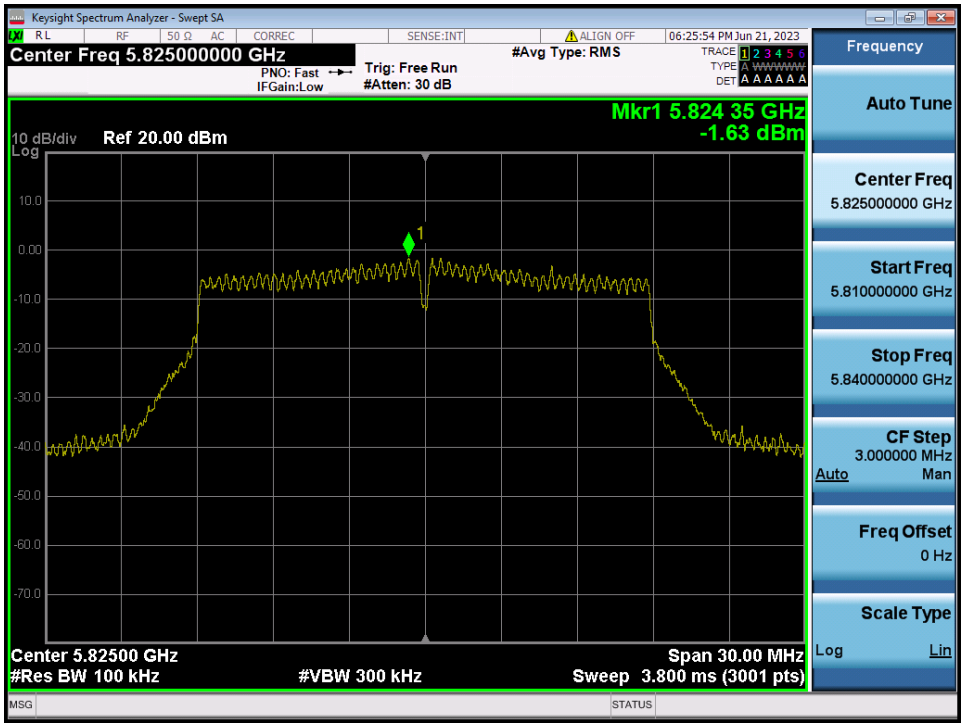


Maximum Power Spectral Density

Test Mode: TM 2 & ANT 2 & Ch.157



Maximum Power Spectral Density Test Mode: TM 2 & ANT 2 & Ch.165



Maximum Power Spectral Density

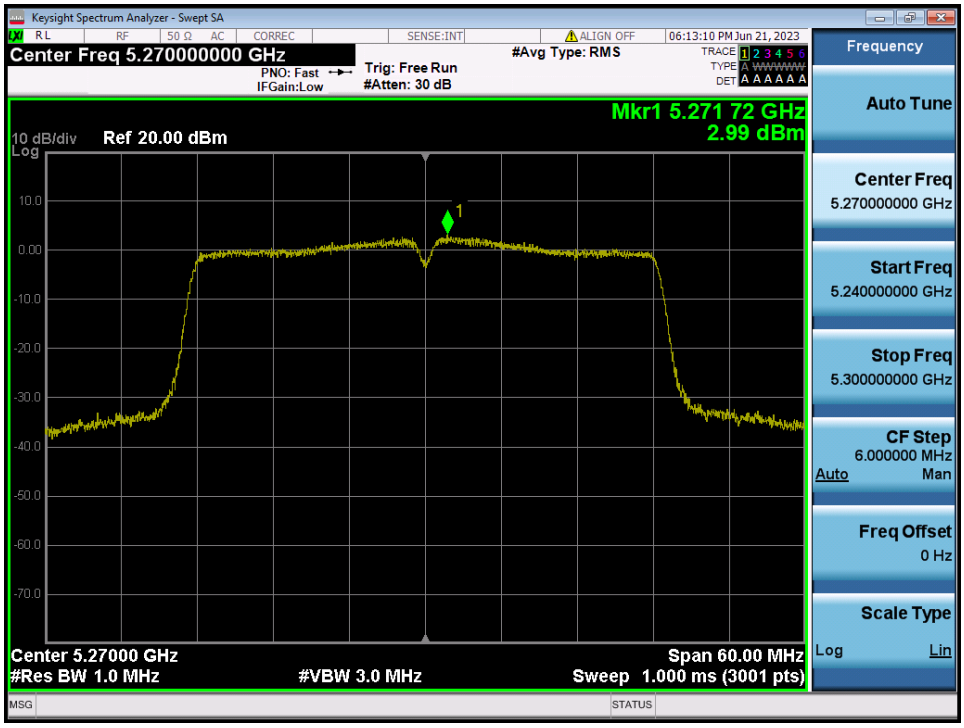
Test Mode: TM 3 & ANT 2 & Ch.38

Maximum Power Spectral Density

Test Mode: TM 3 & ANT 2 & Ch.46

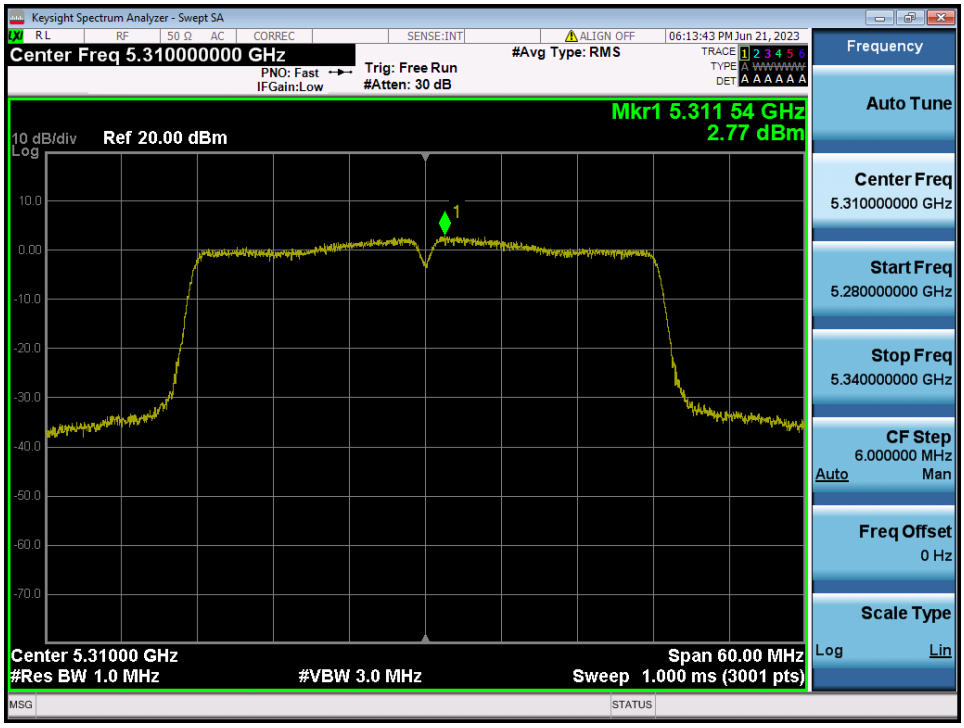
Maximum Power Spectral Density

Test Mode: TM 3 & ANT 2 & Ch.54



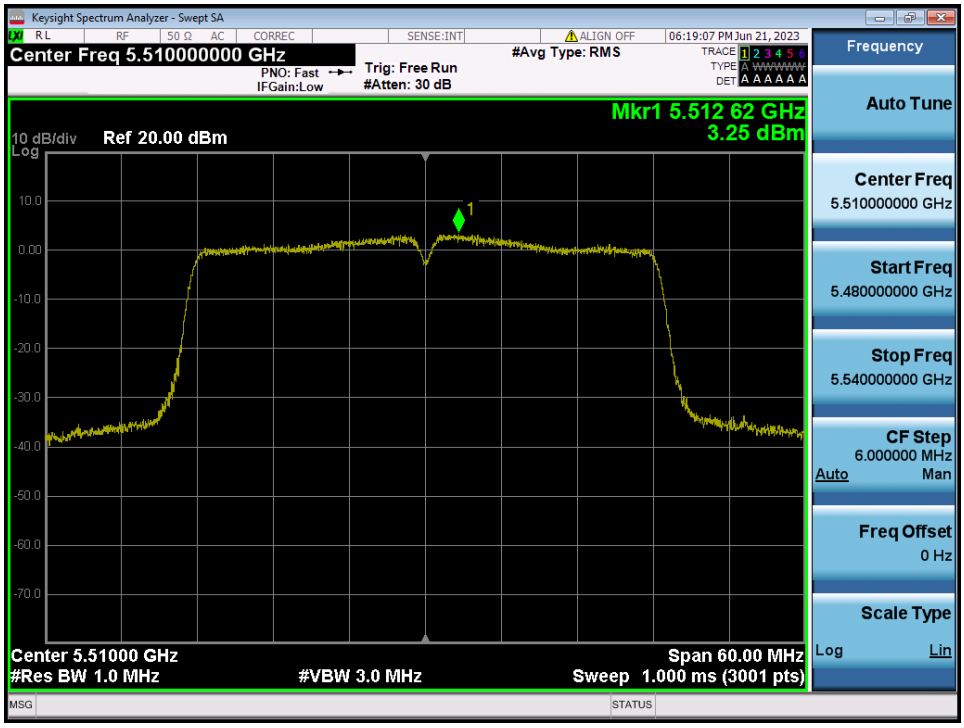
Maximum Power Spectral Density

Test Mode: TM 3 & ANT 2 & Ch.62



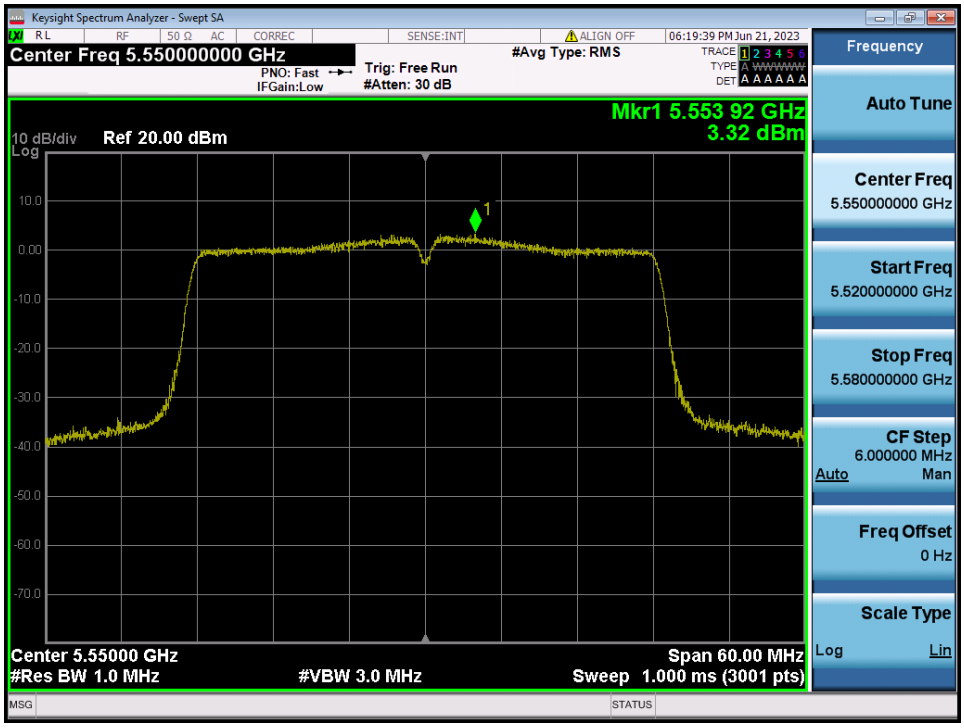
Maximum Power Spectral Density

Test Mode: TM 3 & ANT 2 & Ch.102



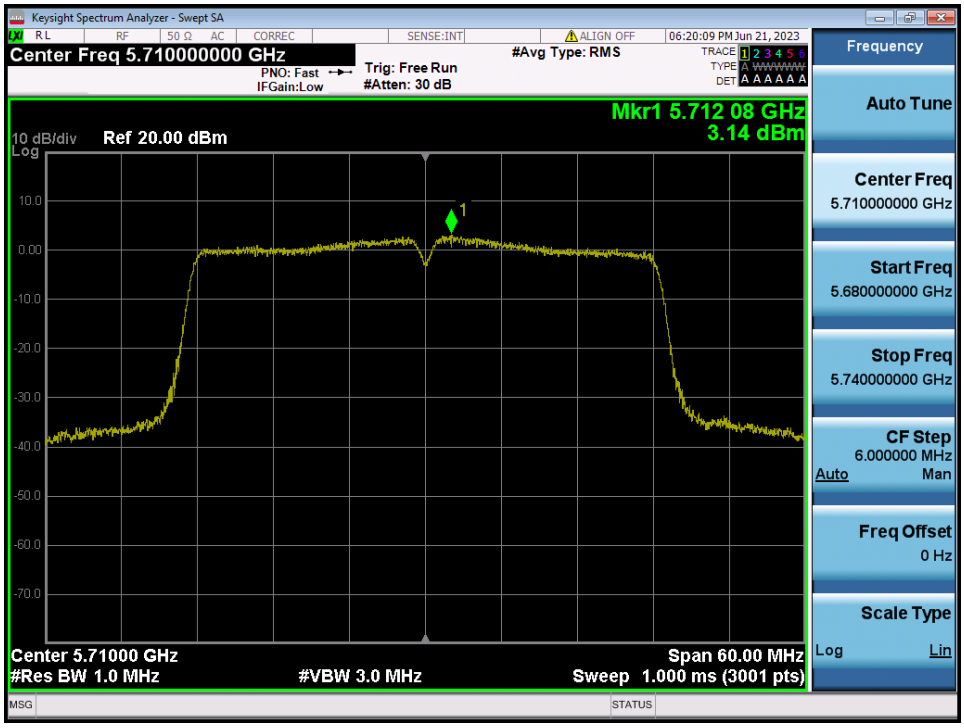
Maximum Power Spectral Density

Test Mode: TM 3 & ANT 2 & Ch.110



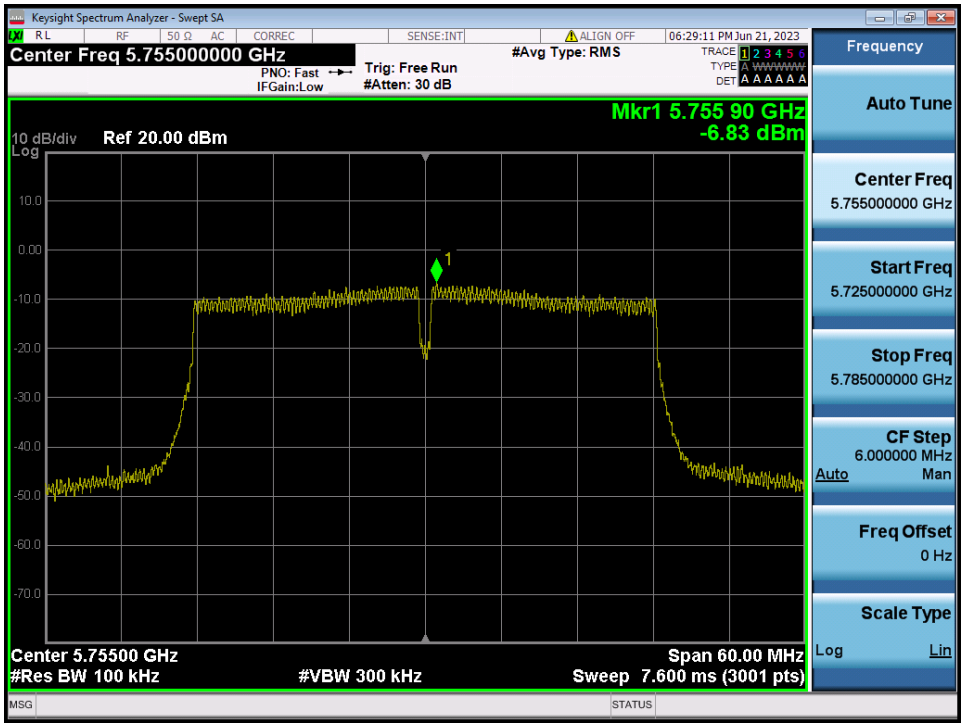
Maximum Power Spectral Density

Test Mode: TM 3 & ANT 2 & Ch.142



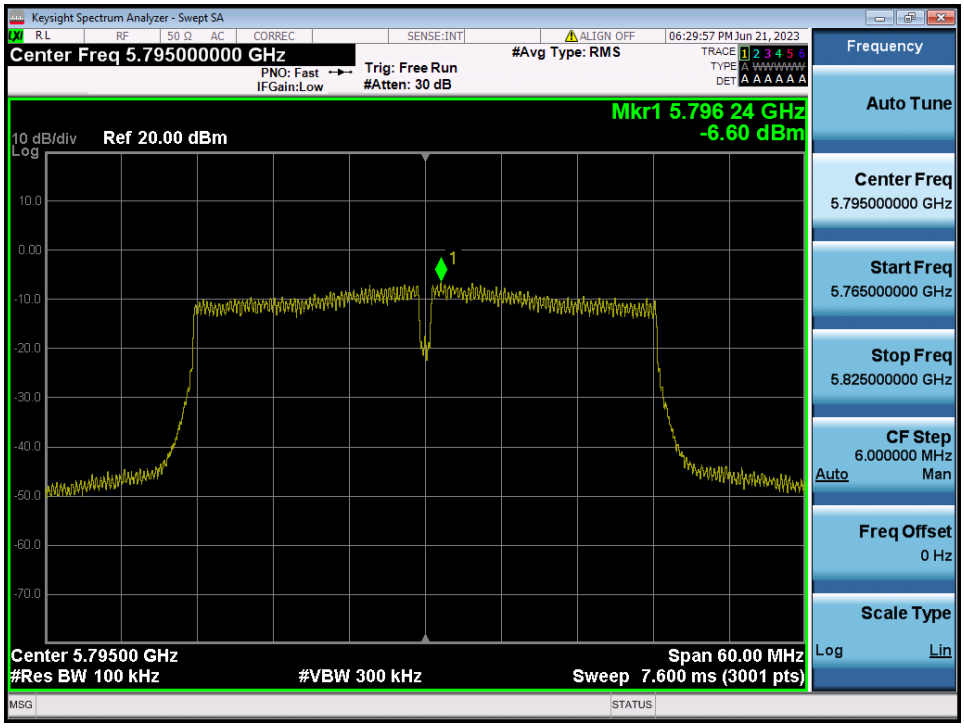
Maximum Power Spectral Density

Test Mode: TM 3 & ANT 2 & Ch.151



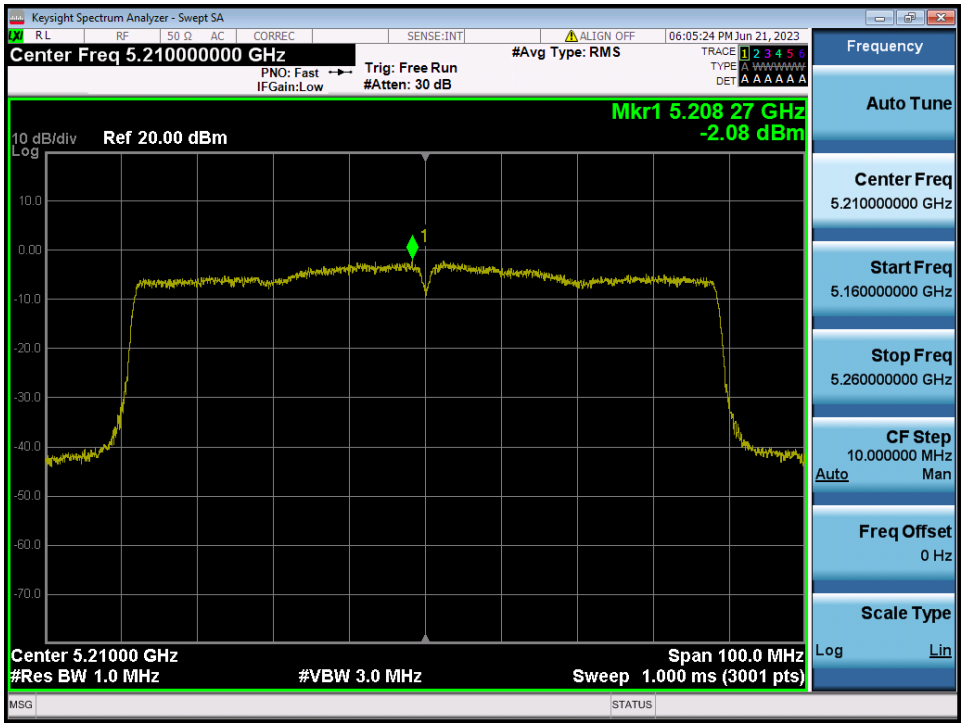
Maximum Power Spectral Density

Test Mode: TM 3 & ANT 2 & Ch.159



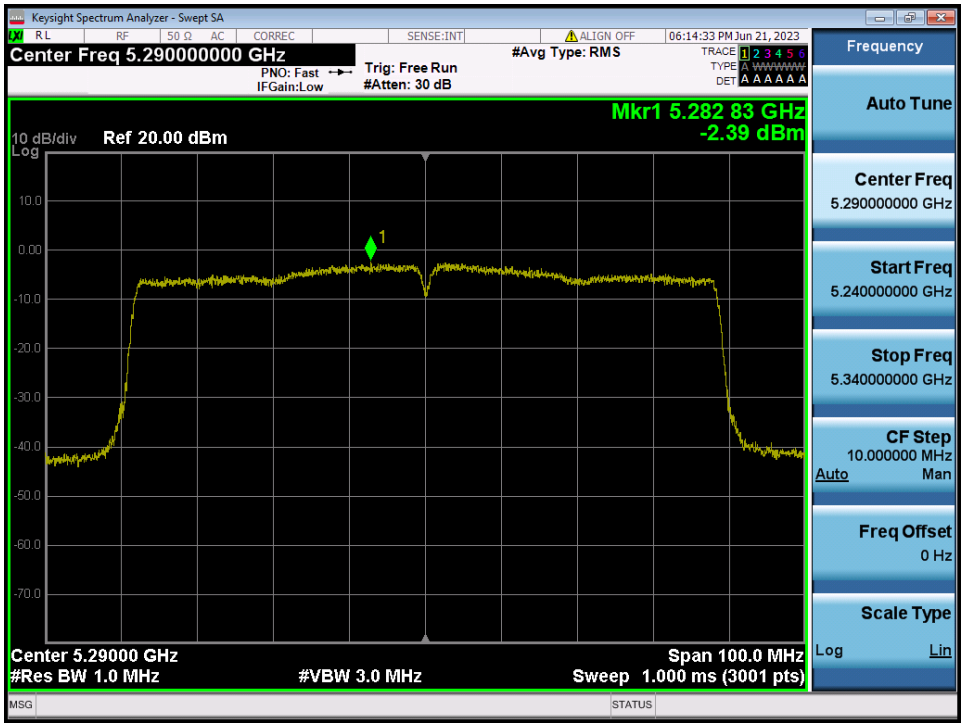
Maximum Power Spectral Density

Test Mode: TM 4 & ANT 2 & Ch.42



Maximum Power Spectral Density

Test Mode: TM 4 & ANT 2 & Ch.58



Maximum Power Spectral Density

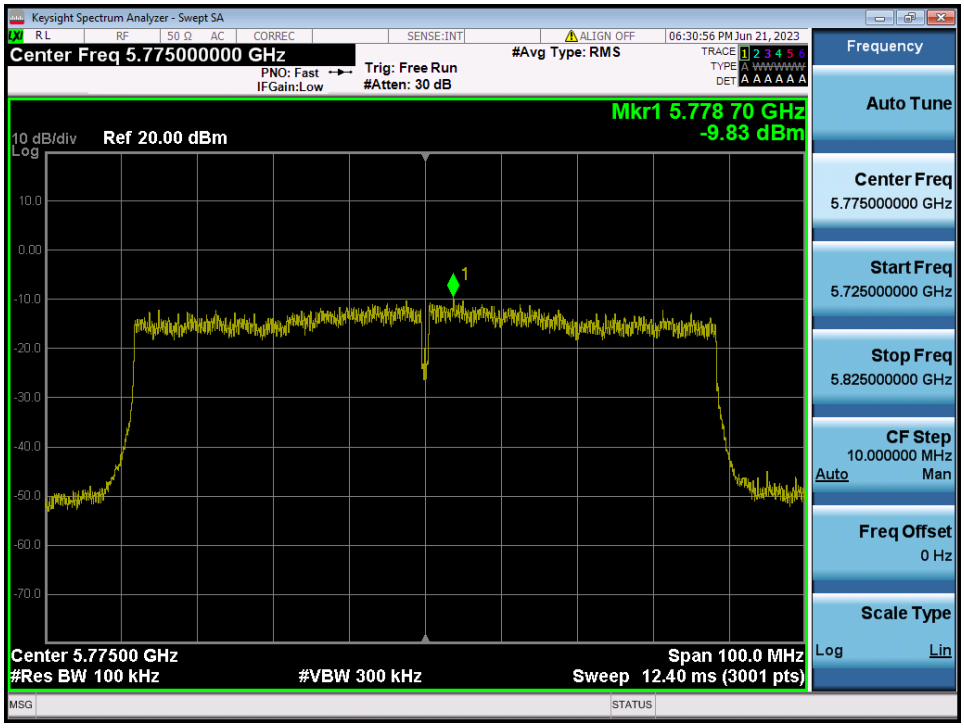
Test Mode: TM 4 & ANT 2 & Ch.106

Maximum Power Spectral Density

Test Mode: TM 4 & ANT 2 & Ch.138

Maximum Power Spectral Density

Test Mode: TM 4 & ANT 2 & Ch.155



5.5 Unwanted Emissions

▣ Test Requirements

- Part 15.407(b) & RSS-Gen[6.2]

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

(1) For transmitters operating in the **5.15 GHz - 5.25 GHz band**: all emissions outside of the **5.15 GHz - 5.35 GHz band** shall not exceed an **EIRP of -27 dBm/MHz**.

(2) For transmitters operating in the **5.25 GHz - 5.35 GHz band**: all emissions outside of the **5.15 GHz - 5.35 GHz band** shall not exceed an **EIRP of -27 dBm/MHz**.

(3) For transmitters operating in the **5.47 GHz - 5.725 GHz band**: all emissions outside of the **5.47 GHz - 5.725 GHz band** shall not exceed an **EIRP of -27 dBm/MHz.**

(4) For transmitters operating in the **5.725 GHz - 5.85 GHz band**: (i) All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge. The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

(5) Unwanted emissions **below 1 GHz** must comply with the general field strength limits set forth in **Section 15.209**.
Further, any U-NII devices using an **AC power line** are required to comply also with the conducted limits set forth in **Section 15.207**.

- Part 15.209 & RSS-247[8.9]: General requirements

Frequency (MHz)	FCC Limit (uV/m)	IC Limit (μA/m)	Measurement Distance (m)
0.009 – 0.490	2 400 / F (kHz)	6.37/F (F in kHz)	300
0.490 – 1.705	24 000 / F (kHz)	63.7/F (F in kHz)	30
1.705 – 30.0	30	0.08	30

Frequency (MHz)	FCC Limit (uV/m)	IC Limit (uV/m)	Measurement Distance (m)
30 ~ 88	100 **	100	3
88 ~ 216	150 **	150	3
216 ~ 960	200 **	200	3
Above 960	500	500	3

**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§15.231 and 15.241.