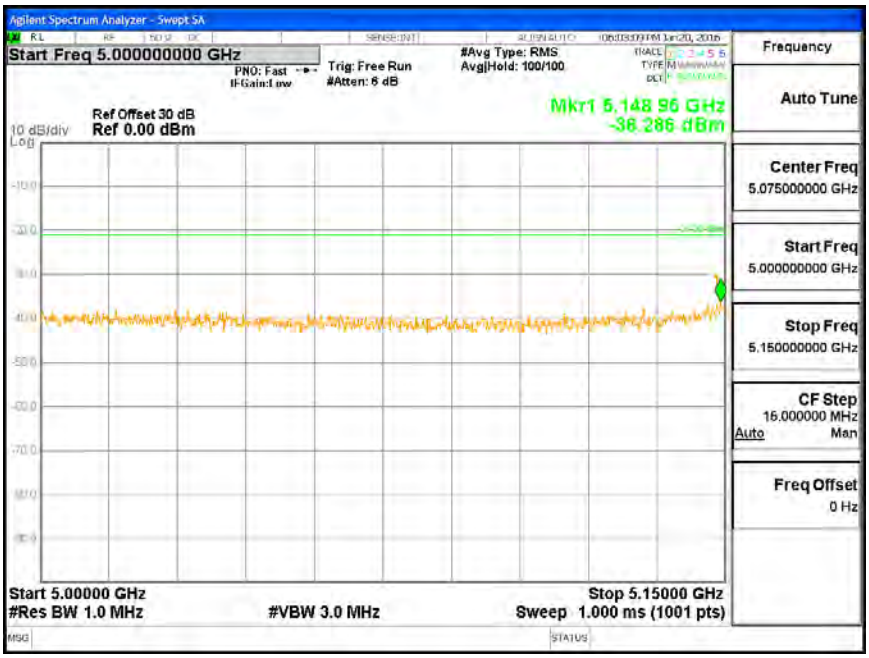
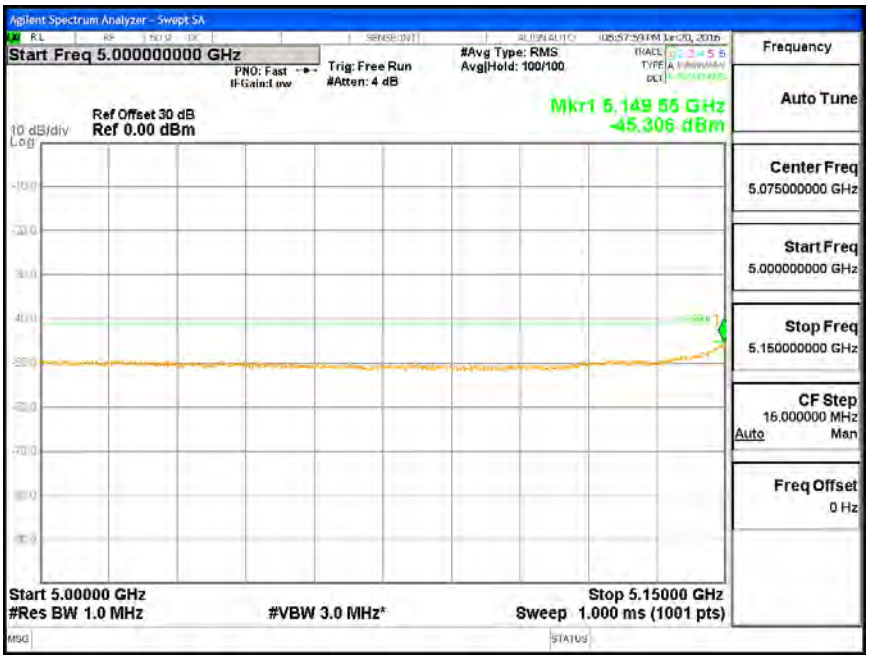
LOW CHANNEL BANDEDGE (5165 MHz), Chain 3

AUTHORIZED BAND EDGE Chain 3 LOW CH PEAK



AUTHORIZED BAND EDGE Chain 3 LOW CH AVERAGE



DATA

Peak

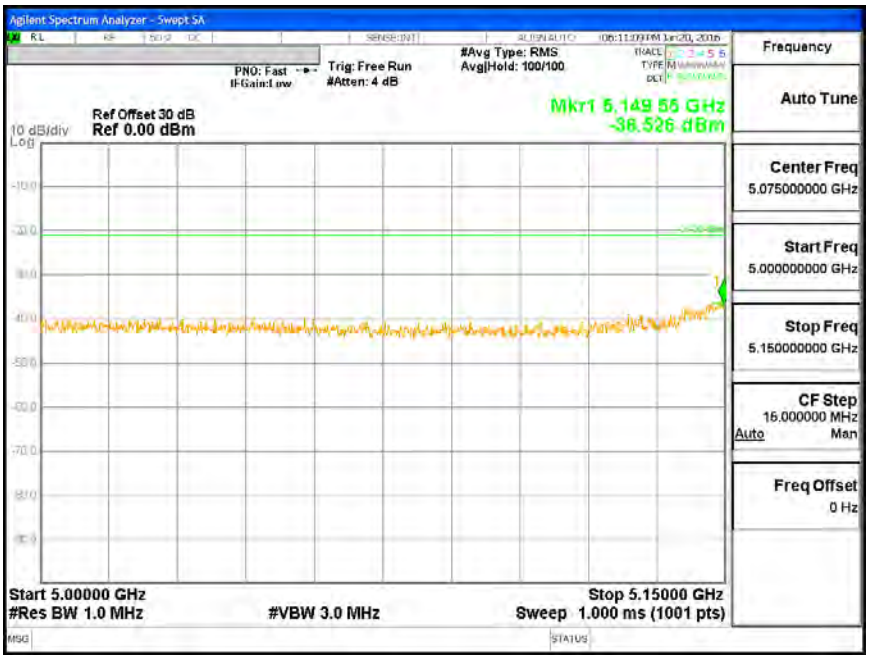
Frequency Range (MHz)	BW (MHz)	Polarity	Power, Chain 0 (dBm)	Power, Chain 2 (dBm)	Corrected (dBm)	Limit	Margin
5165	20	Horizontal	-36.41	-35.48	-34.39	-21.20	-13.19
		Polarity	**Power, Chain 1 (dBm)**	**Power, Chain 3 (dBm)**	**Corrected (dBm)**	**Limit**	**Margin**
		Vertical	-35.92	-36.29	-34.59	-21.20	-13.39

Average

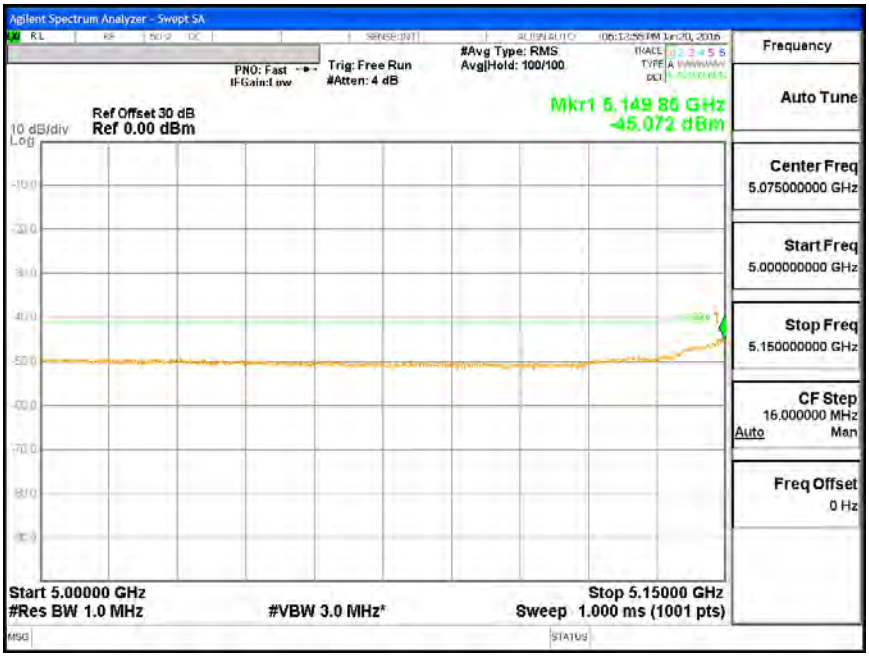
Frequency Range (MHz)	BW (MHz)	Polarity	Power, Chain 0 (dBm)	Power, Chain 2 (dBm)	Corrected (dBm)	Limit	Margin
5165	20	Horizontal	-45.44	-44.61	-43.48	-41.20	-2.28
		Polarity	**Power, Chain 1 (dBm)**	**Power, Chain 3 (dBm)**	**Corrected (dBm)**	**Limit**	**Margin**
		Vertical	-45.47	-45.31	-43.88	-41.20	-2.68

LOW CHANNEL BANDEDGE (5170 MHz), Chain 0

AUTHORIZED BAND EDGE Chain 0 LOW CH PEAK

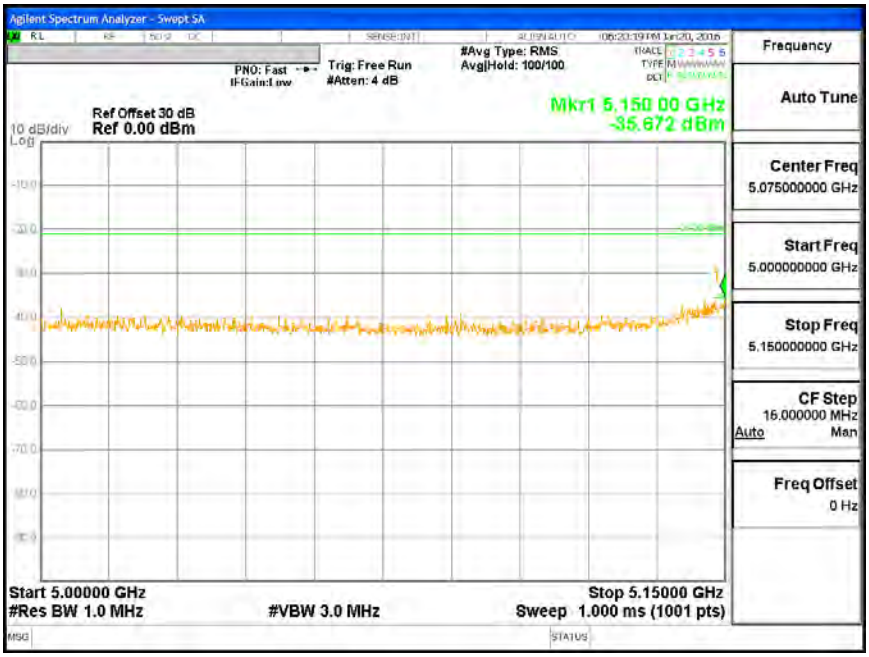


AUTHORIZED BAND EDGE Chain 0 LOW CH AVERAGE

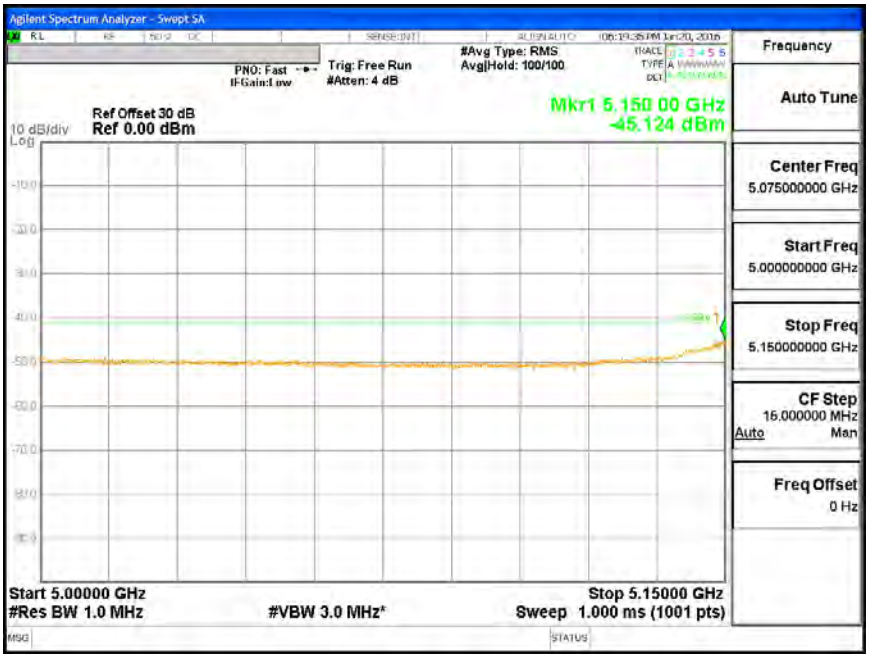


LOW CHANNEL BANDEDGE (5170 MHz), Chain 1

AUTHORIZED BAND EDGE Chain 1 LOW CH PEAK

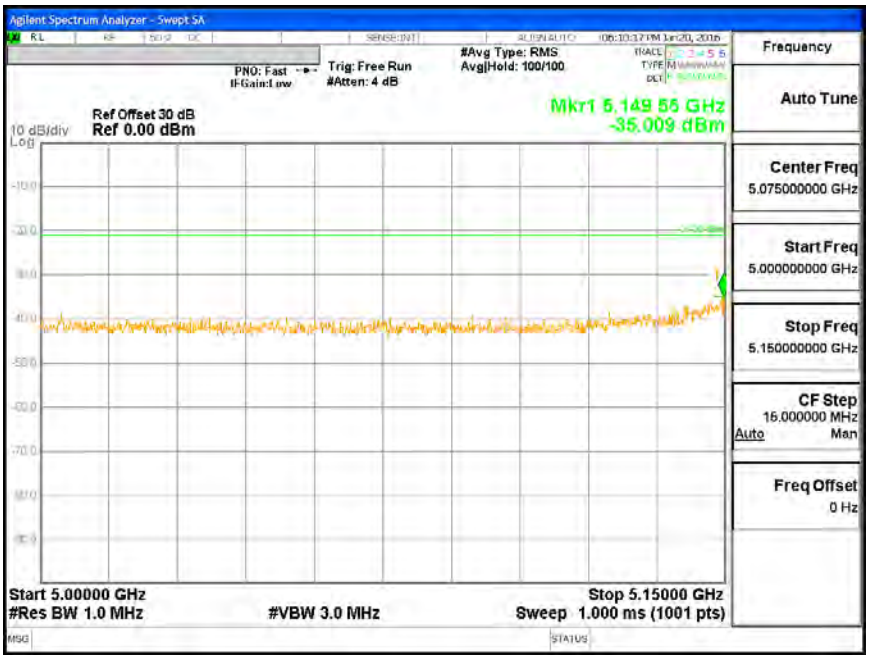


AUTHORIZED BAND EDGE Chain 1 LOW CH AVERAGE

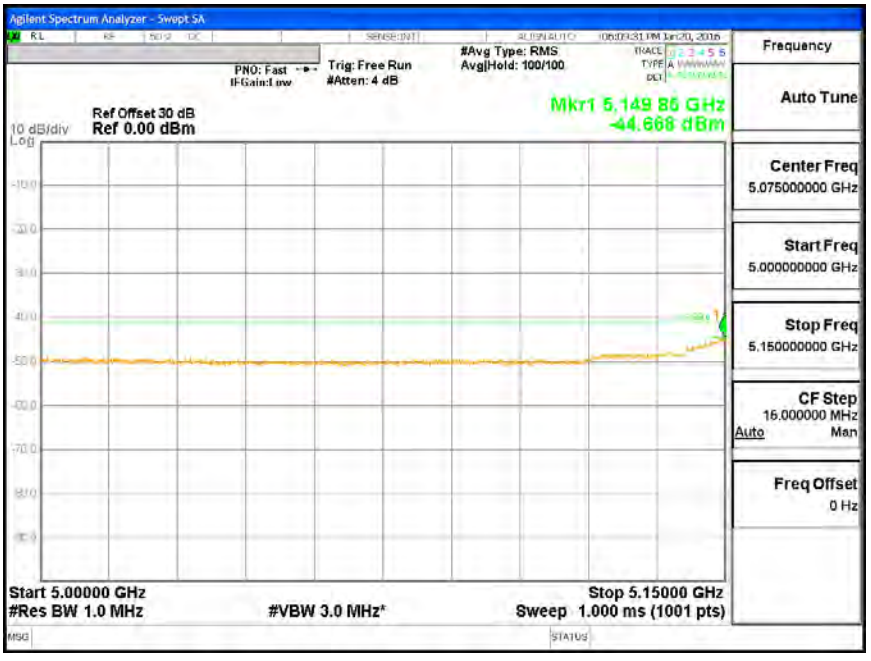


LOW CHANNEL BANDEDGE (5170 MHz), Chain 2

AUTHORIZED BAND EDGE Chain 2 LOW CH PEAK

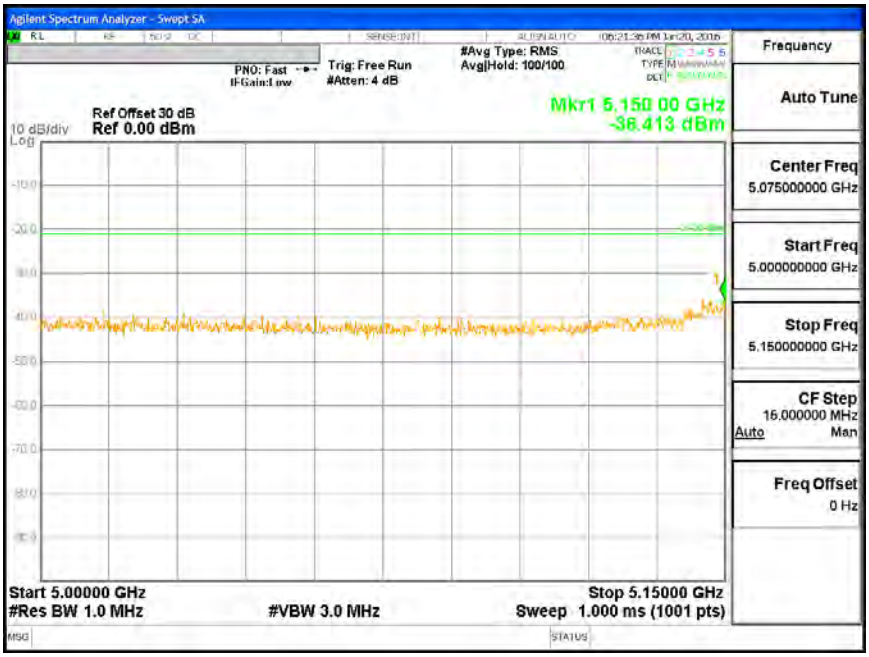


AUTHORIZED BAND EDGE Chain 2 LOW CH AVERAGE

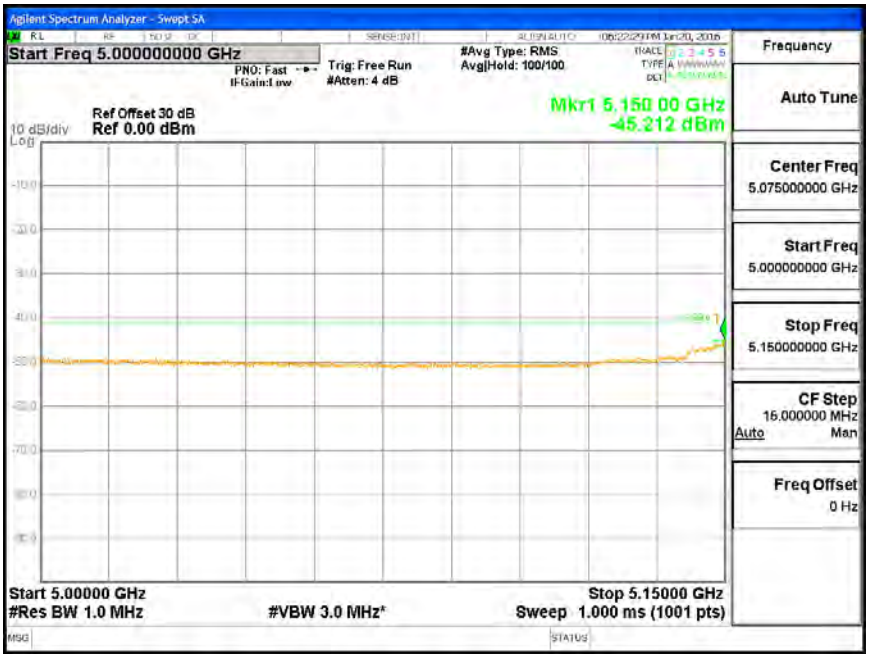


LOW CHANNEL BANDEDGE (5170 MHz), Chain 3

AUTHORIZED BAND EDGE Chain 3 LOW CH PEAK



AUTHORIZED BAND EDGE Chain 3 LOW CH AVERAGE



DATA

Peak

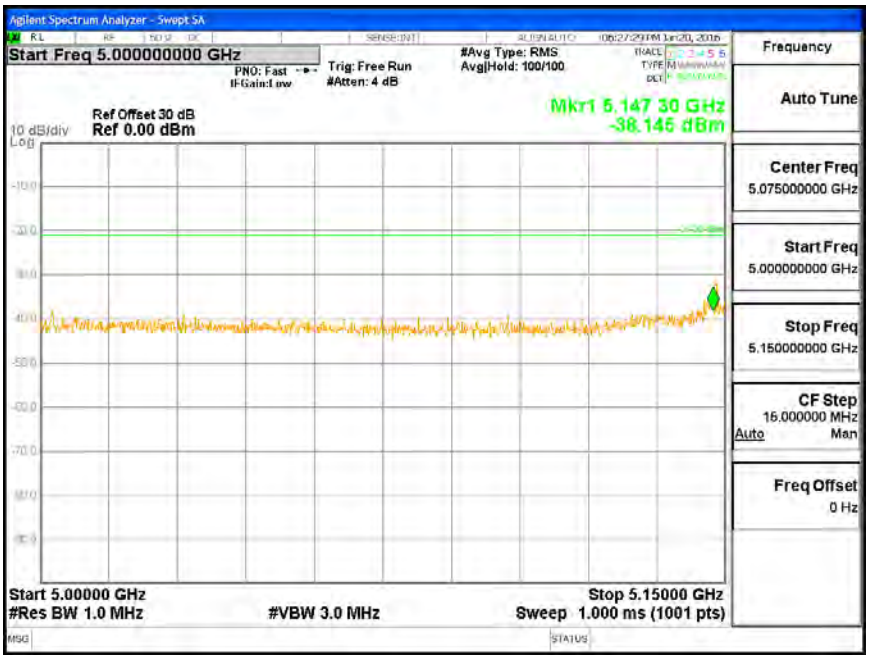
Frequency Range (MHz)	BW (MHz)	Polarity	Power, Chain 0 (dBm)	Power, Chain 2 (dBm)	Corrected (dBm)	Limit	Margin
5170	20	Horizontal	-36.53	-35.01	-34.13	-21.20	-12.93
		Polarity	**Power, Chain 1 (dBm)**	**Power, Chain 3 (dBm)**	**Corrected (dBm)**	**Limit**	**Margin**
		Vertical	-35.67	-36.41	-34.51	-21.20	-13.31

Average

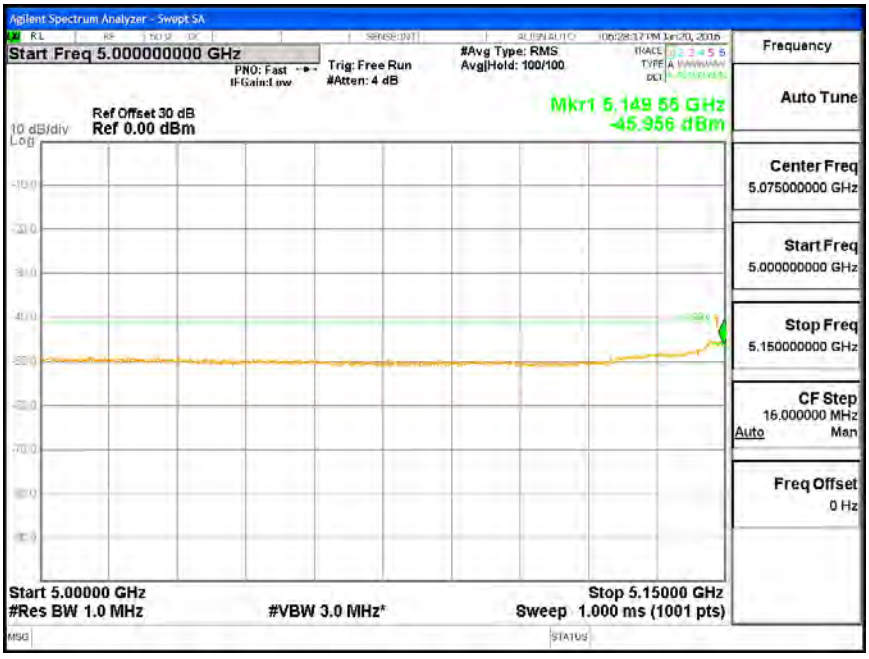
Frequency Range (MHz)	BW (MHz)	Polarity	Power, Chain 0 (dBm)	Power, Chain 2 (dBm)	Corrected (dBm)	Limit	Margin
5170	20	Horizontal	-45.07	-44.67	-43.36	-41.20	-2.16
		Polarity	**Power, Chain 1 (dBm)**	**Power, Chain 3 (dBm)**	**Corrected (dBm)**	**Limit**	**Margin**
		Vertical	-45.12	-45.21	-43.66	-41.20	-2.46

LOW CHANNEL BANDEDGE (5175 MHz), Chain 0

AUTHORIZED BAND EDGE Chain 0 LOW CH PEAK

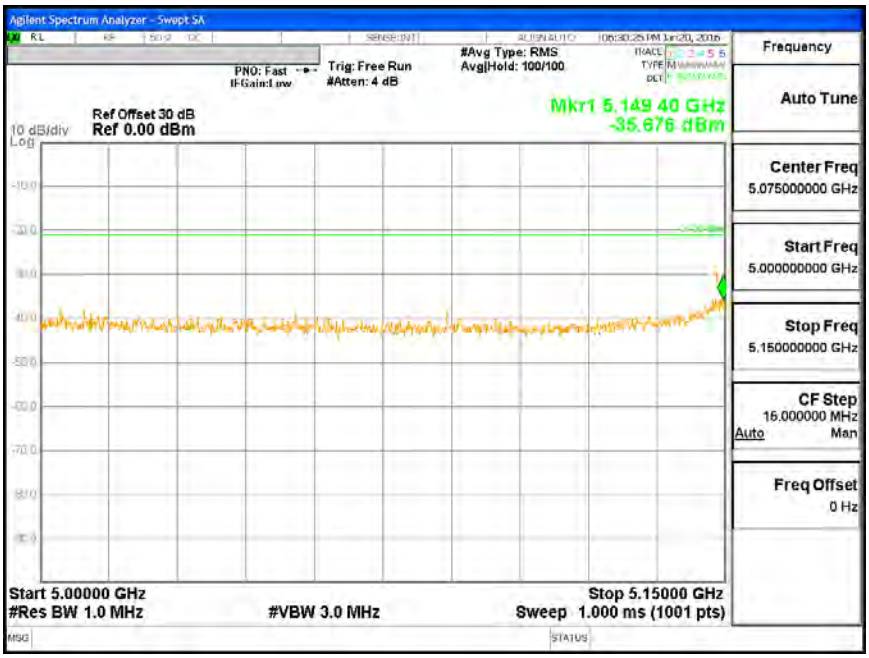


AUTHORIZED BAND EDGE Chain 0 LOW CH AVERAGE

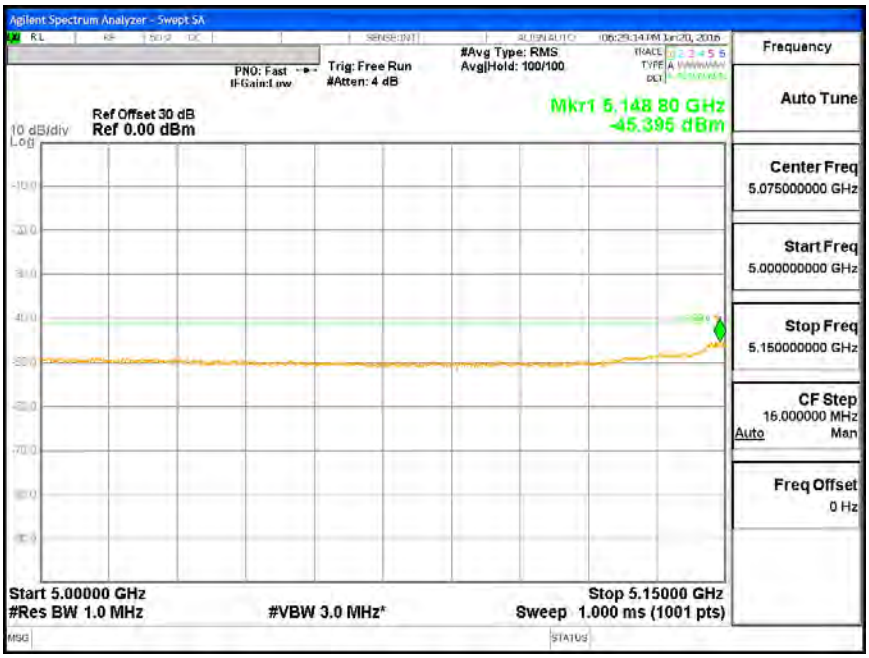


LOW CHANNEL BANDEDGE (5175 MHz), Chain 1

AUTHORIZED BAND EDGE Chain 1 LOW CH PEAK

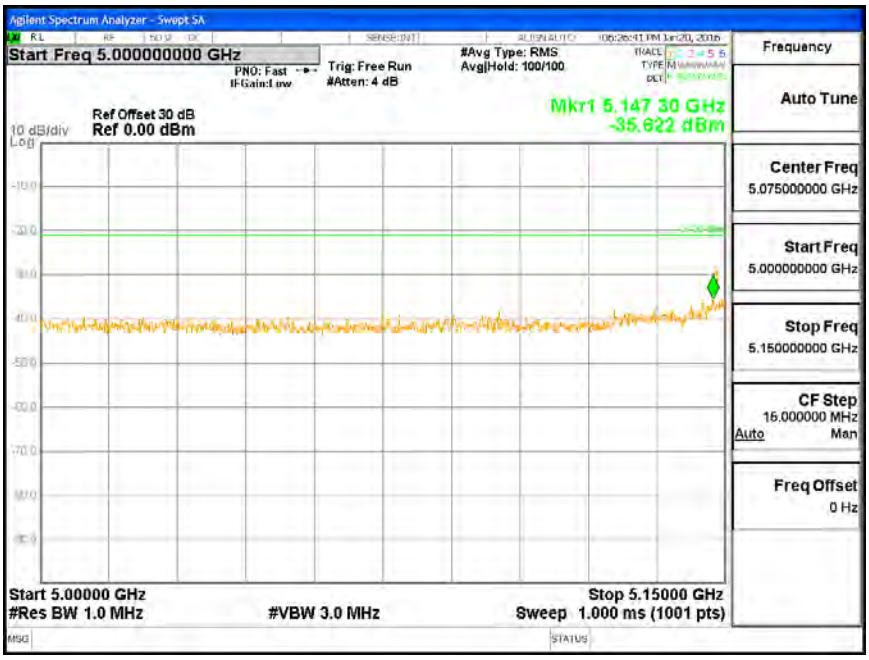


AUTHORIZED BAND EDGE Chain 1 LOW CH AVERAGE

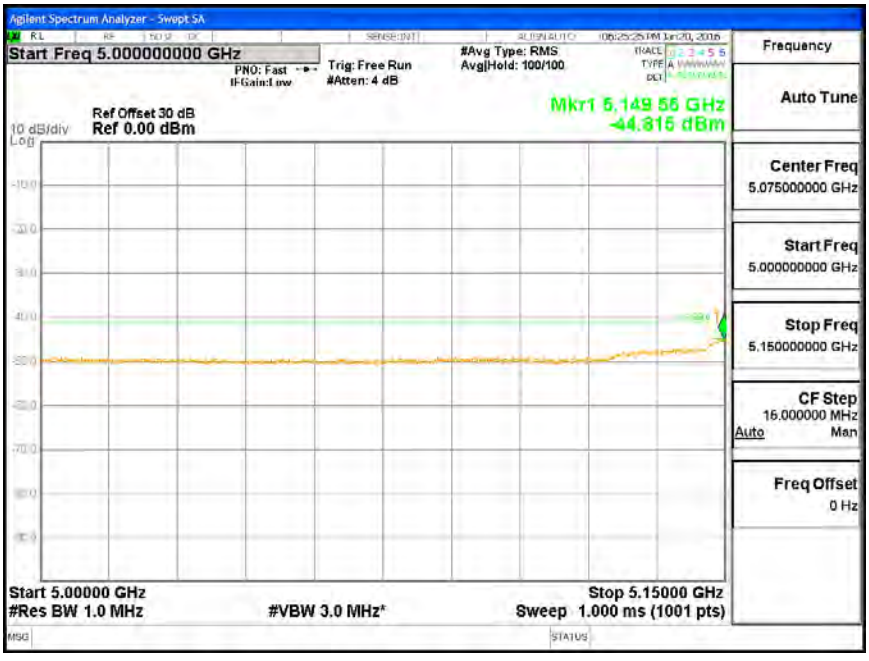


LOW CHANNEL BANDEDGE (5175 MHz), Chain 2

AUTHORIZED BAND EDGE Chain 2 LOW CH PEAK

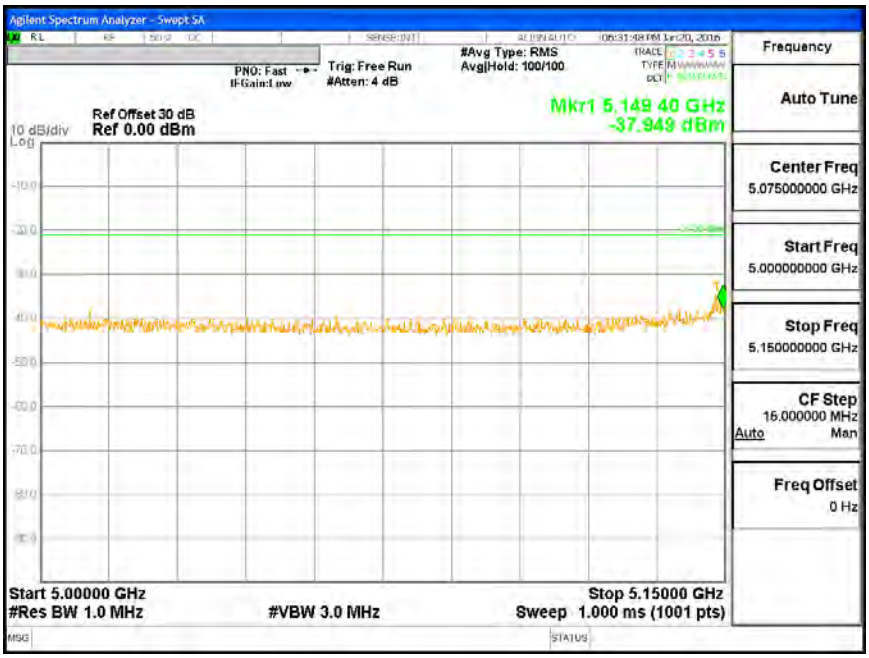


AUTHORIZED BAND EDGE Chain 2 LOW CH AVERAGE

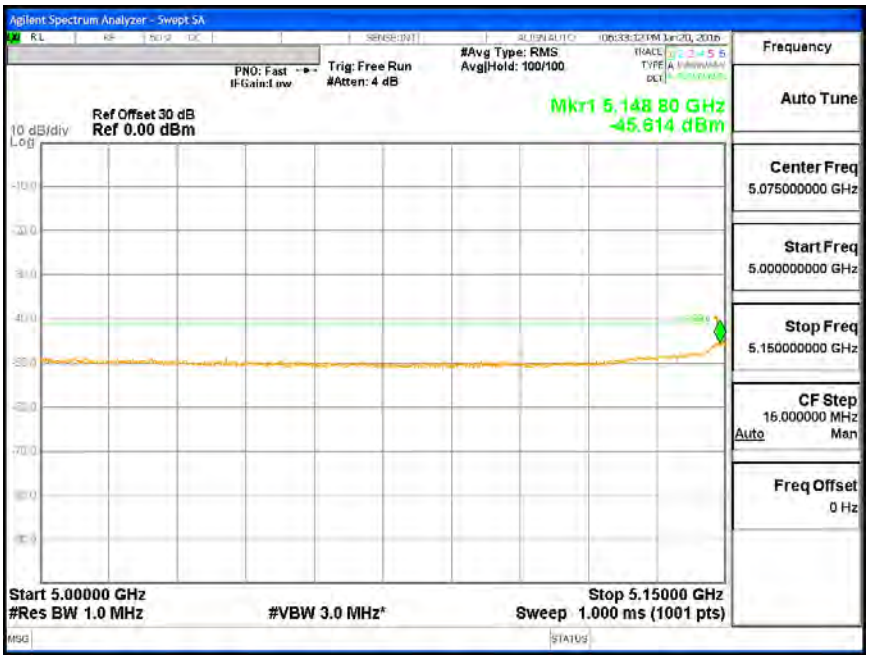


LOW CHANNEL BANDEDGE (5175 MHz), Chain 3

AUTHORIZED BAND EDGE Chain 3 LOW CH PEAK



AUTHORIZED BAND EDGE Chain 3 LOW CH AVERAGE



DATA

Peak

Frequency Range (MHz)	BW (MHz)	Polarity	Power, Chain 0 (dBm)	Power, Chain 2 (dBm)	Corrected (dBm)	Limit	Margin
5175	20	Horizontal	-38.15	-35.62	-35.03	-21.20	-13.83
		Polarity	**Power, Chain 1 (dBm)**	**Power, Chain 3 (dBm)**	**Corrected (dBm)**	**Limit**	**Margin**
		Vertical	-35.68	-37.95	-35.02	-21.20	-13.82

Average

Frequency Range (MHz)	BW (MHz)	Polarity	Power, Chain 0 (dBm)	Power, Chain 2 (dBm)	Corrected (dBm)	Limit	Margin
5175	20	Horizontal	-45.96	-44.82	-43.81	-41.20	-2.61
		Polarity	**Power, Chain 1 (dBm)**	**Power, Chain 3 (dBm)**	**Corrected (dBm)**	**Limit**	**Margin**
		Vertical	-45.40	-45.61	-44.00	-41.20	-2.80

8.4. 40MHz BW, 4TX MODE IN THE 5.2 GHz BAND

8.4.1. 26 dB BANDWIDTH

LIMITS

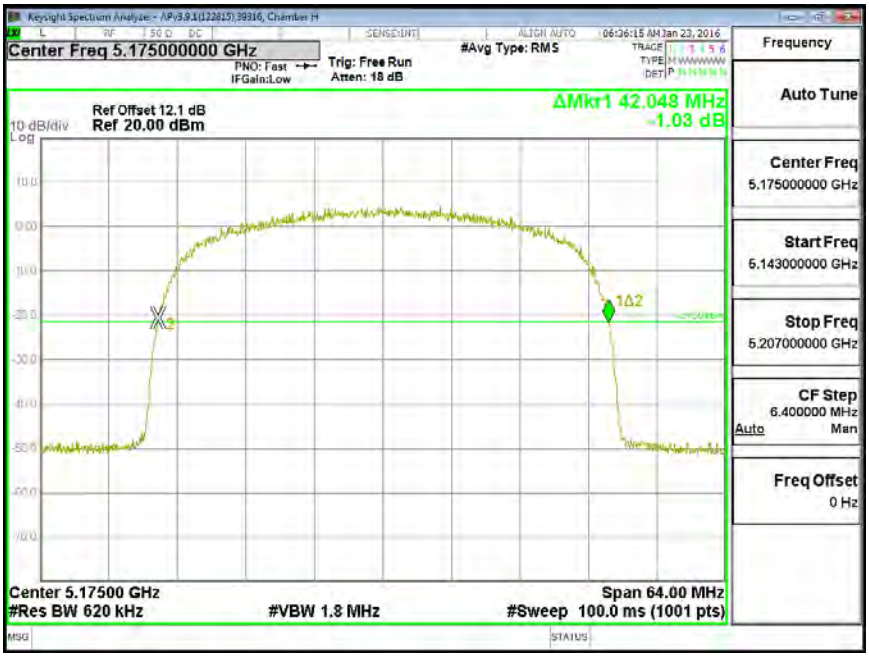
None; for reporting purposes only.

RESULTS

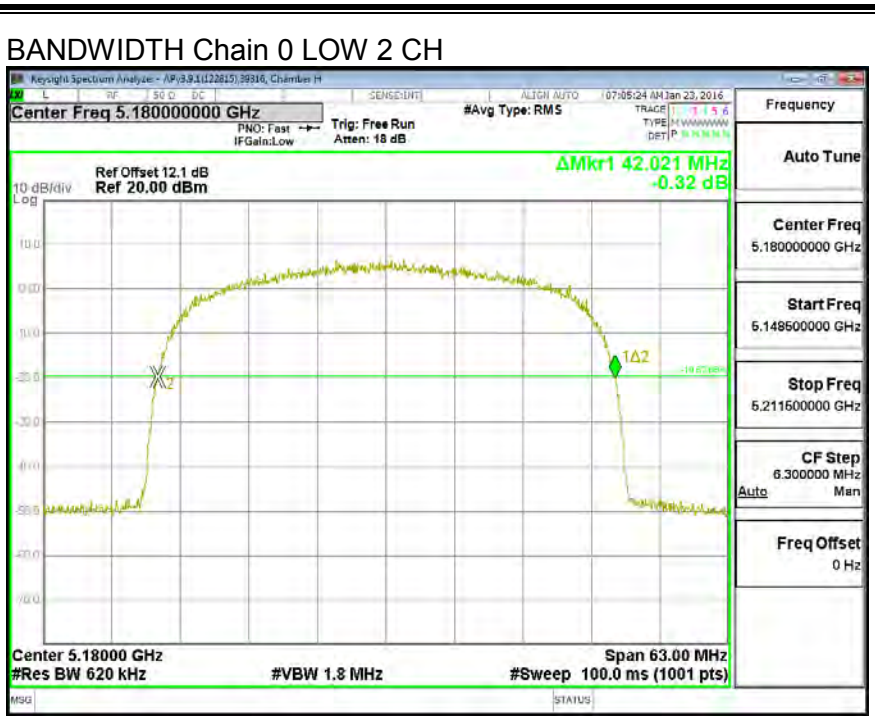
Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)	26 dB BW Chain 3 (MHz)
Low 1	5175	42.05	41.90	42.05	41.96
Low 2	5180	42.02	41.96	42.05	41.96
Low 3	5185	41.96	41.96	41.90	41.83
Mid	5195	42.18	42.11	42.24	42.18
High 1	5205	42.90	43.03	43.03	43.03
High 2	5225	42.97	42.97	42.97	42.97

26 dB BANDWIDTH, Chain 0

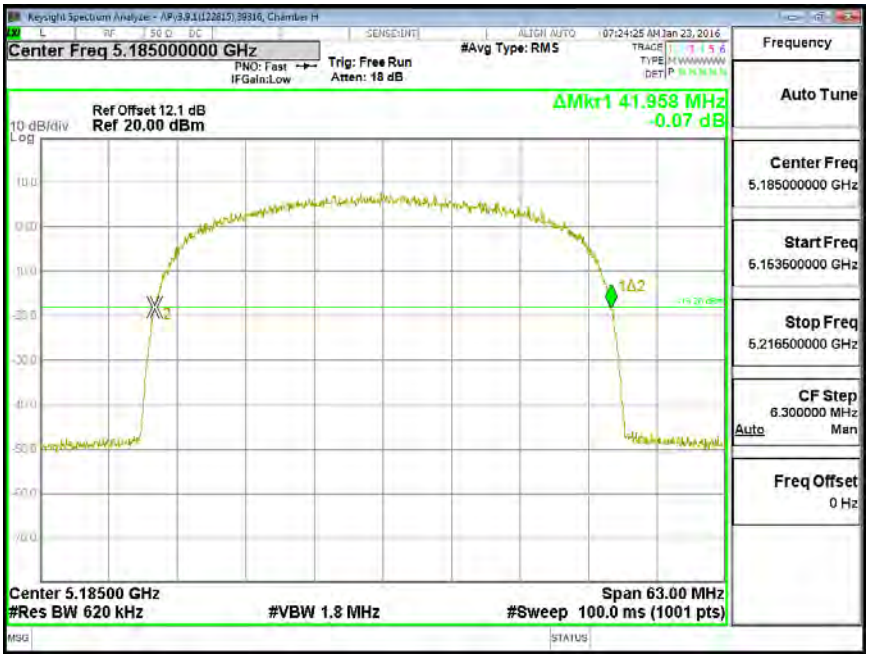
BANDWIDTH Chain 0 LOW 1 CH



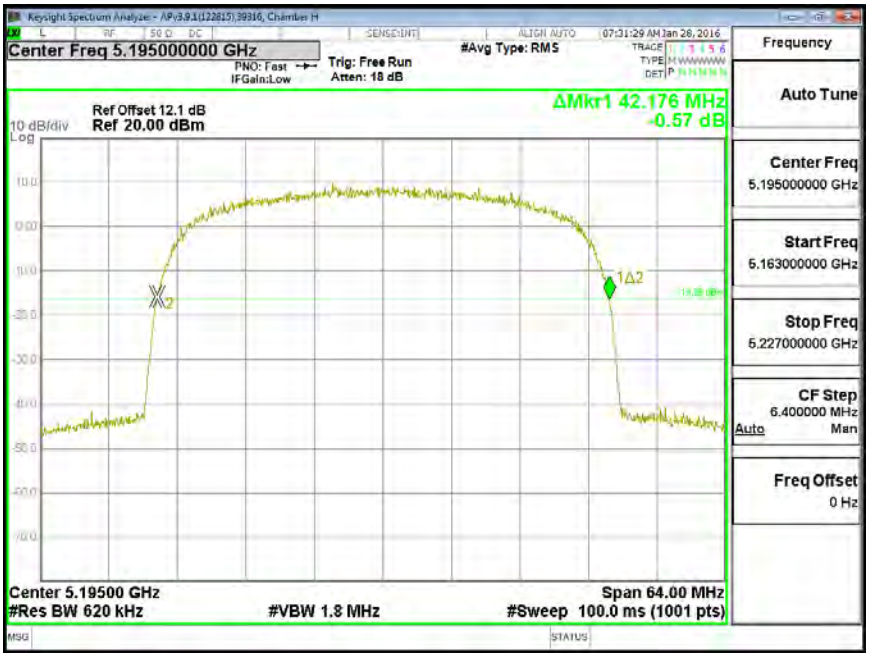
BANDWIDTH Chain 0 LOW 2 CH



BANDWIDTH Chain 0 LOW 3 CH



BANDWIDTH Chain 0 MID CH

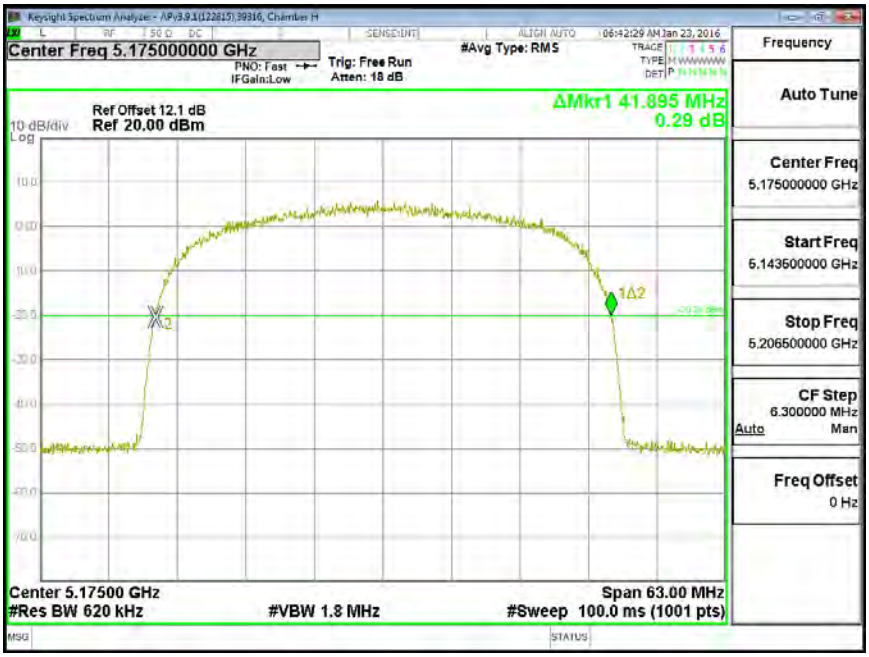


BANDWIDTH Chain 0 HIGH 1 CH

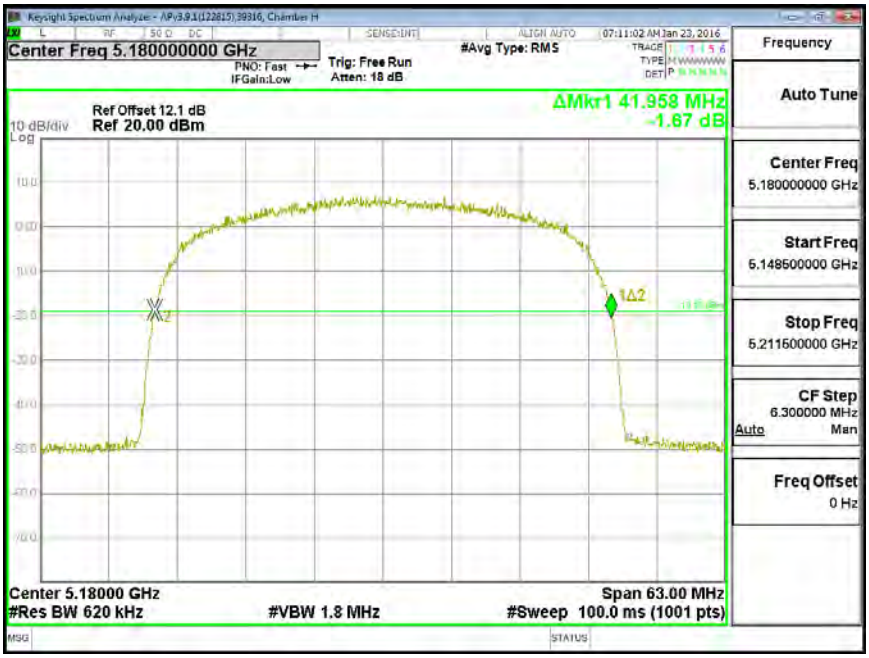
BANDWIDTH Chain 0 HIGH 2 CH

26 dB BANDWIDTH, Chain 1

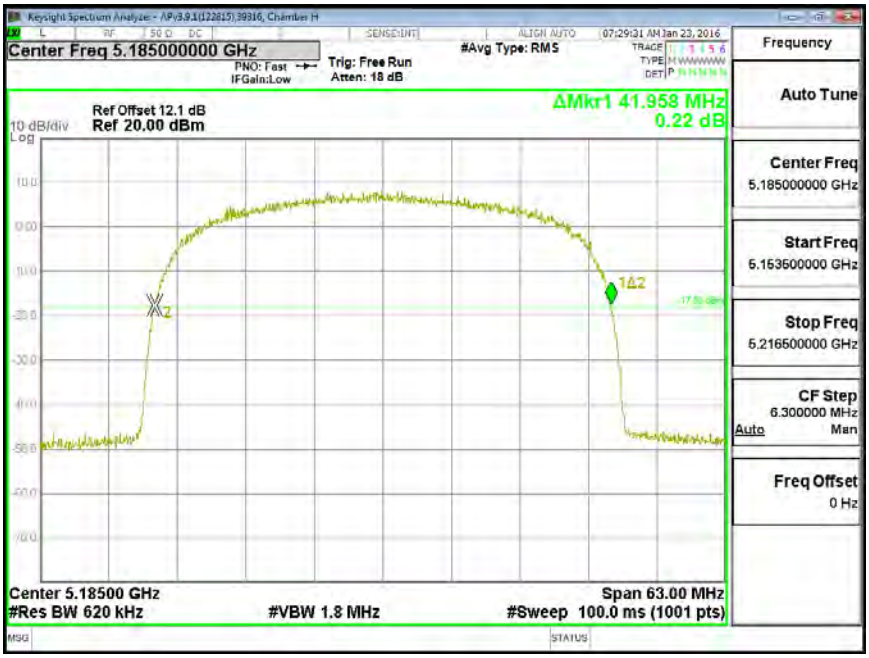
BANDWIDTH Chain 1 LOW 1 CH



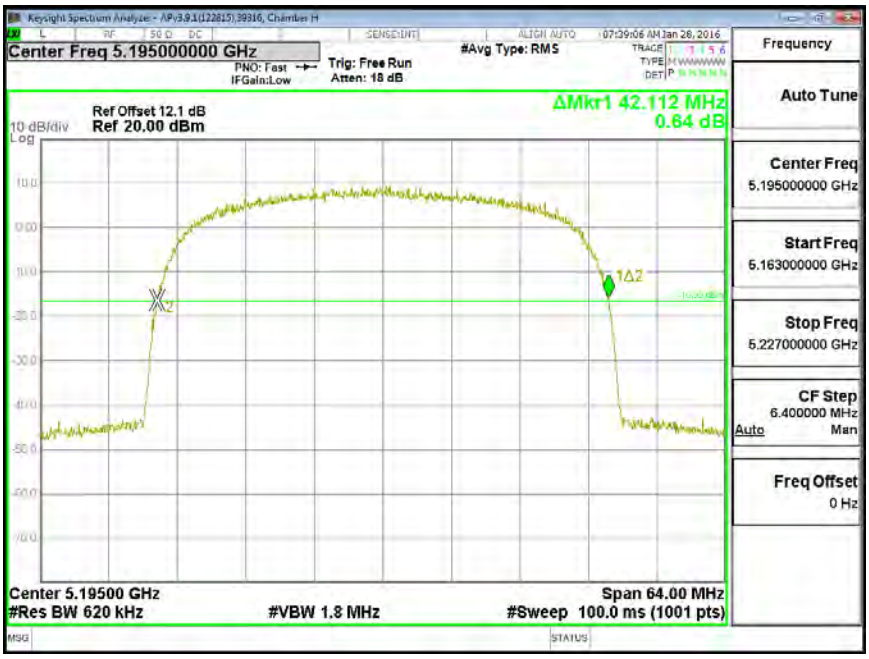
BANDWIDTH Chain 1 LOW 2 CH



BANDWIDTH Chain 1 LOW 3 CH

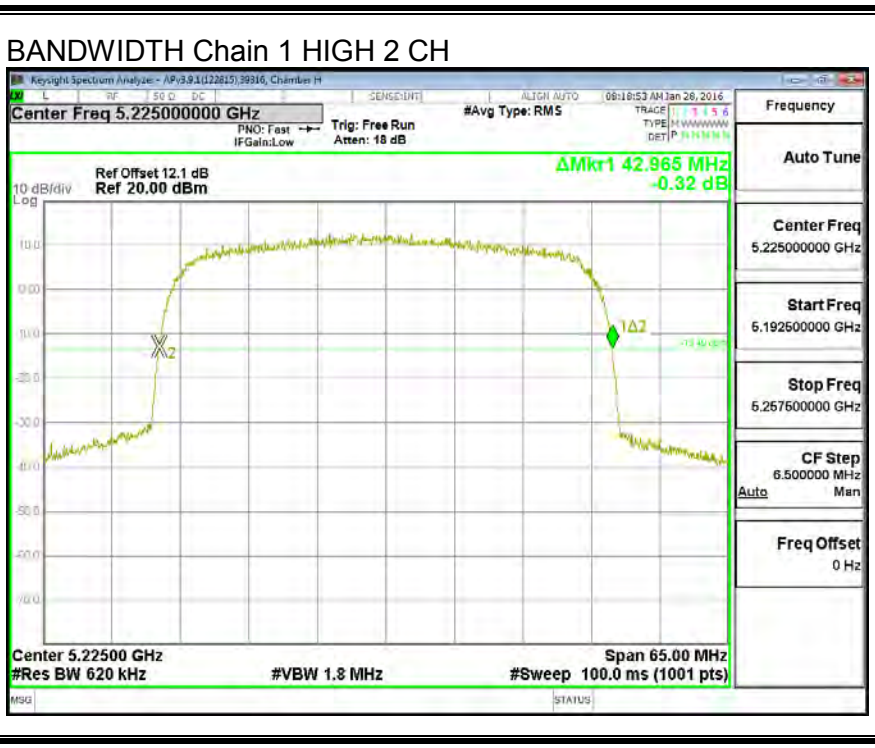


BANDWIDTH Chain 1 MID CH



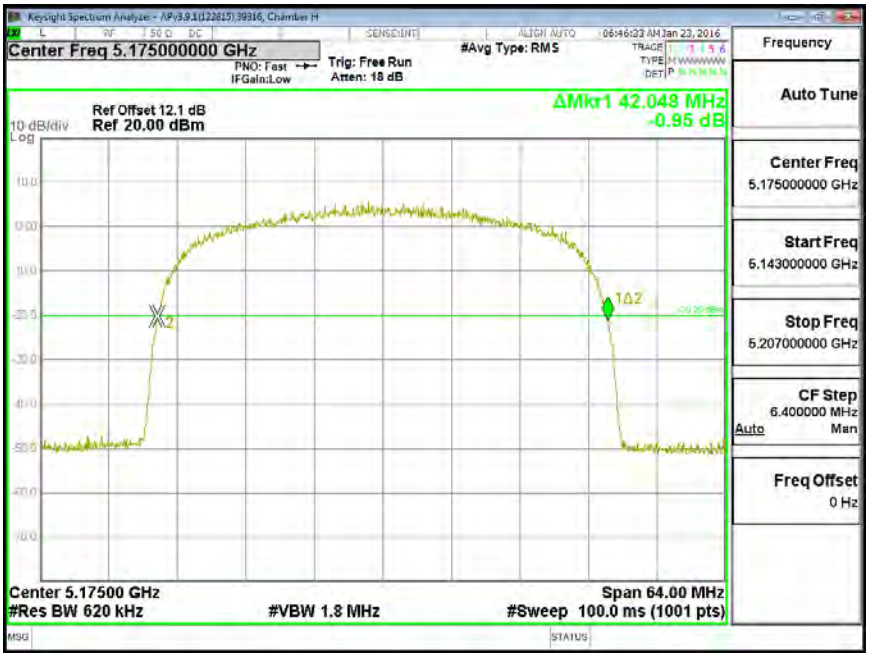
BANDWIDTH Chain 1 HIGH 1 CH

BANDWIDTH Chain 1 HIGH 2 CH

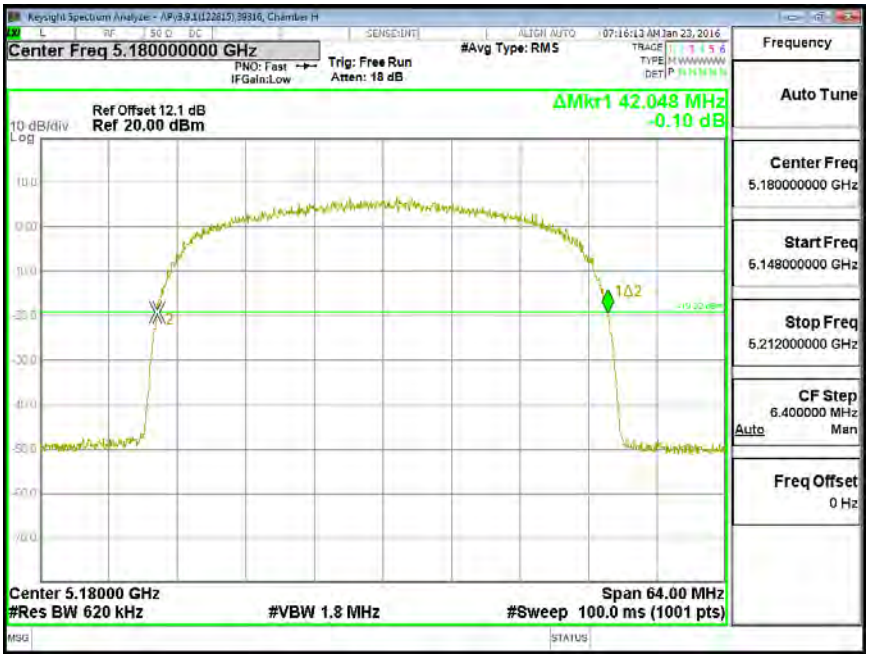


26 dB BANDWIDTH, Chain 2

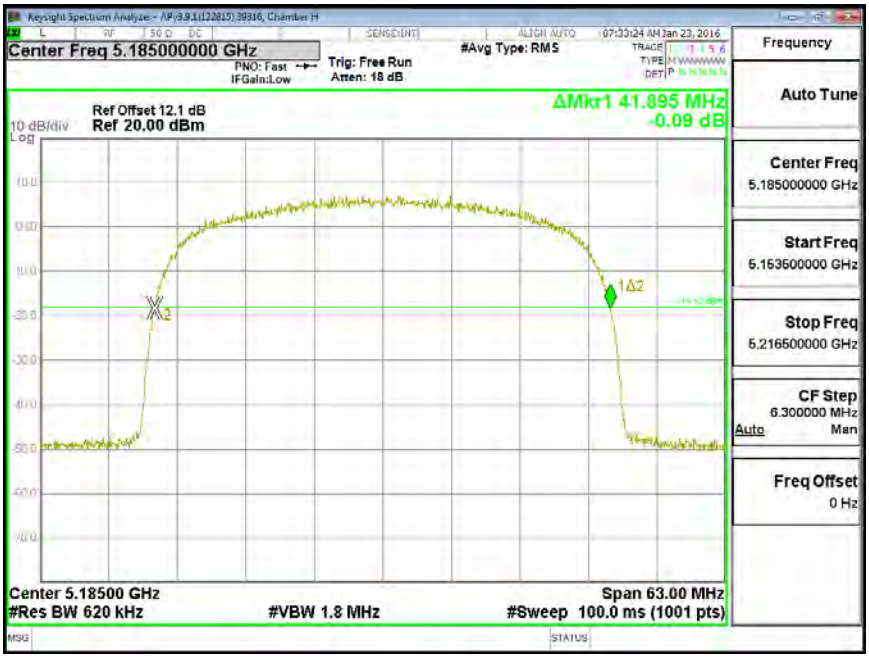
BANDWIDTH Chain 2 LOW 1 CH



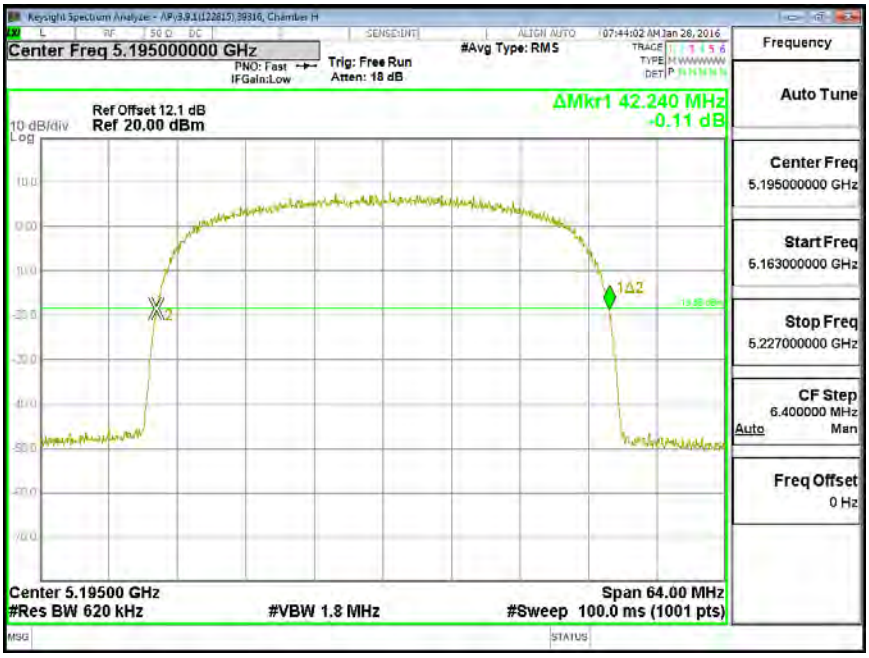
BANDWIDTH Chain 2 LOW 2 CH



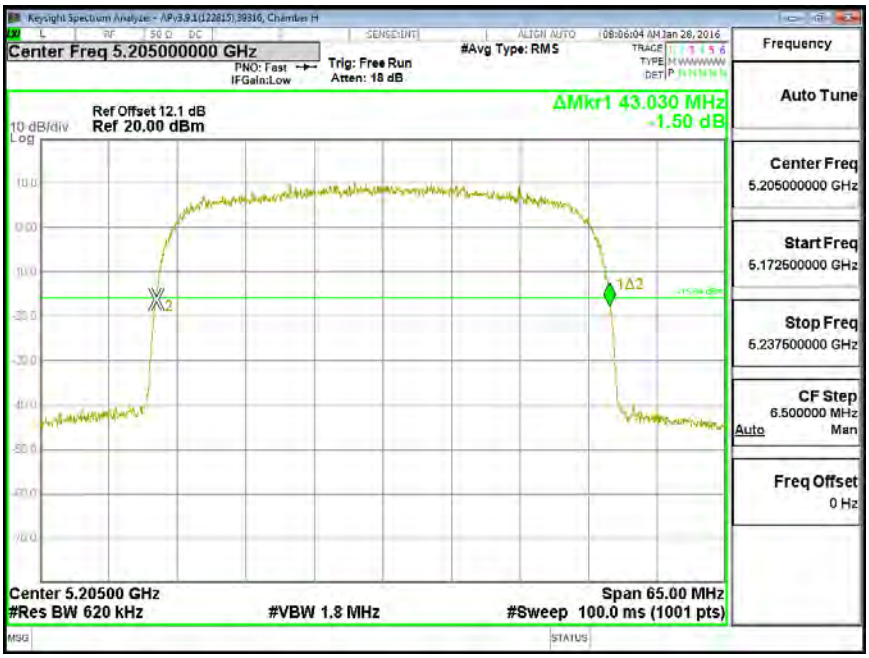
BANDWIDTH Chain 2 LOW 3 CH



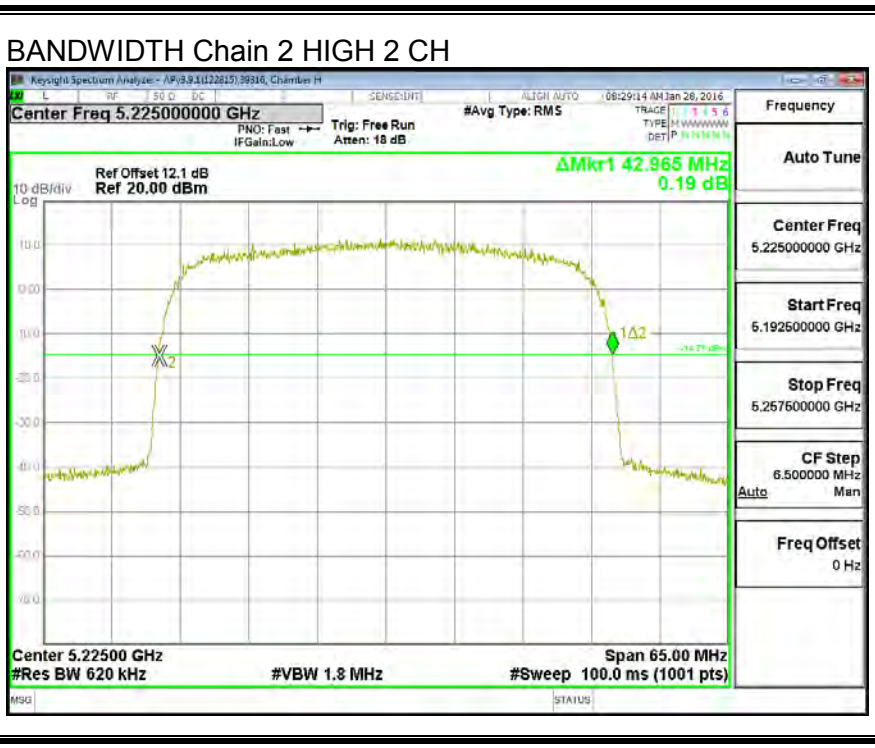
BANDWIDTH Chain 2 MID CH



BANDWIDTH Chain 2 HIGH 1 CH

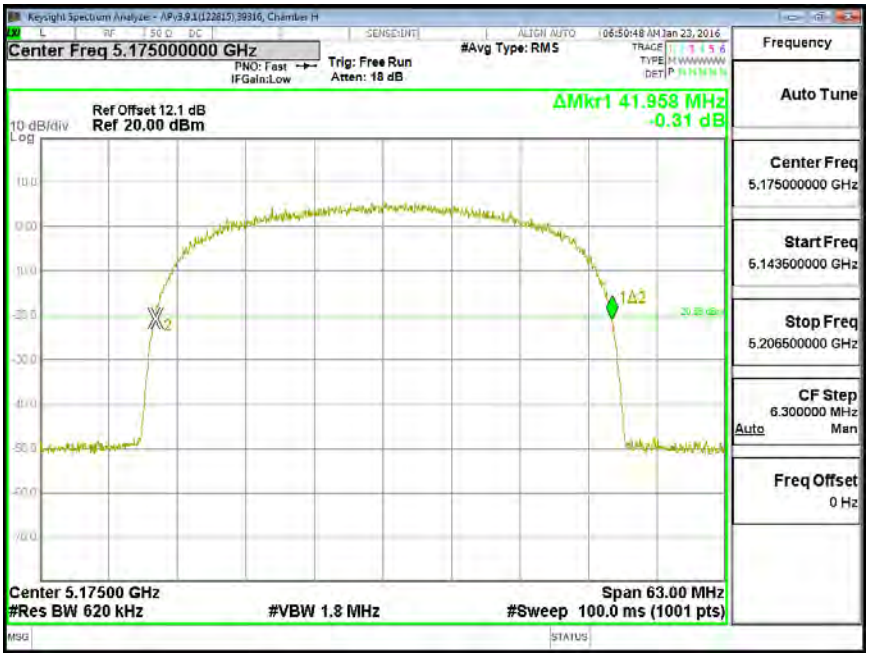


BANDWIDTH Chain 2 HIGH 2 CH

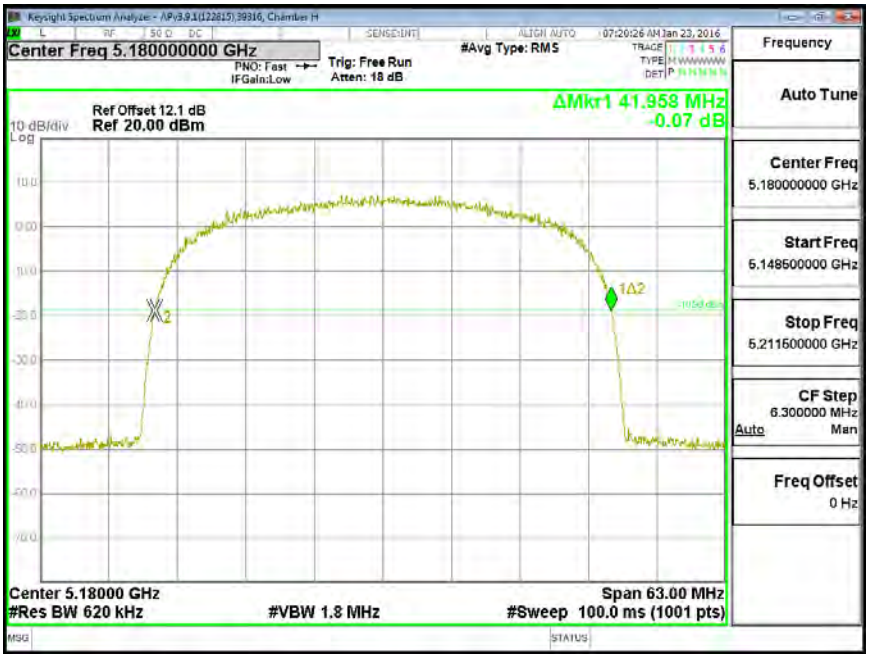


26 dB BANDWIDTH, Chain 3

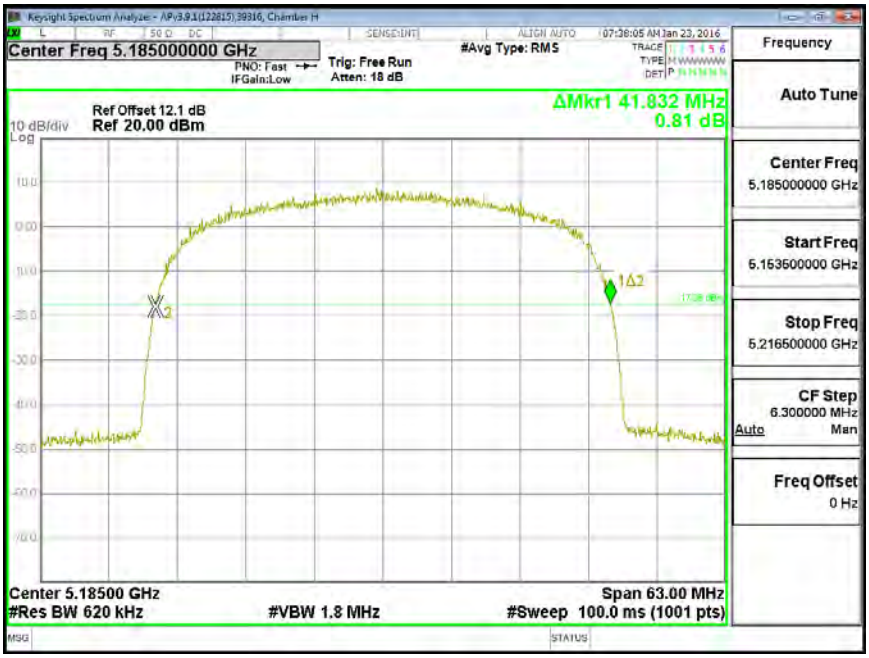
BANDWIDTH Chain 3 LOW 1 CH



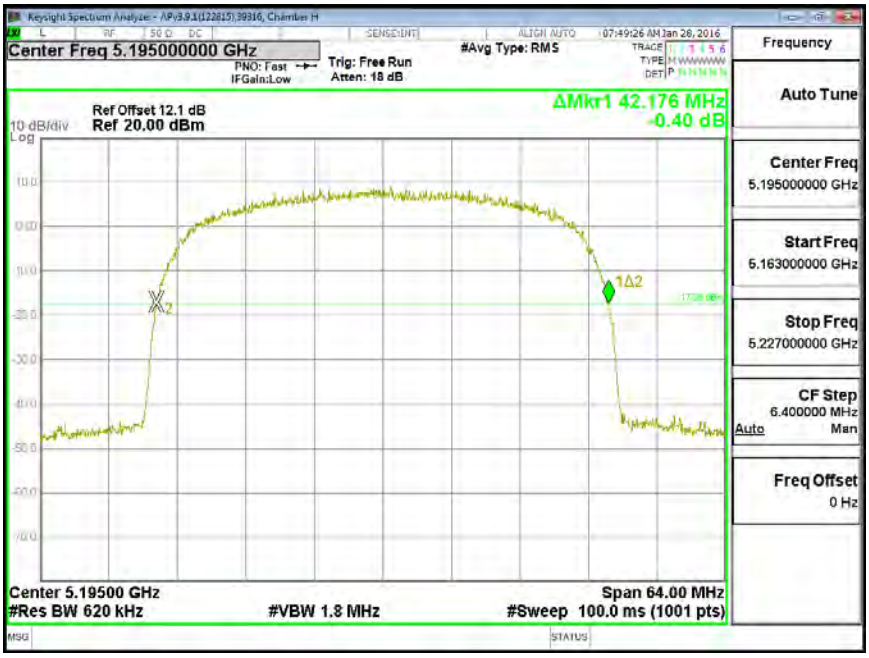
BANDWIDTH Chain 3 LOW 2 CH



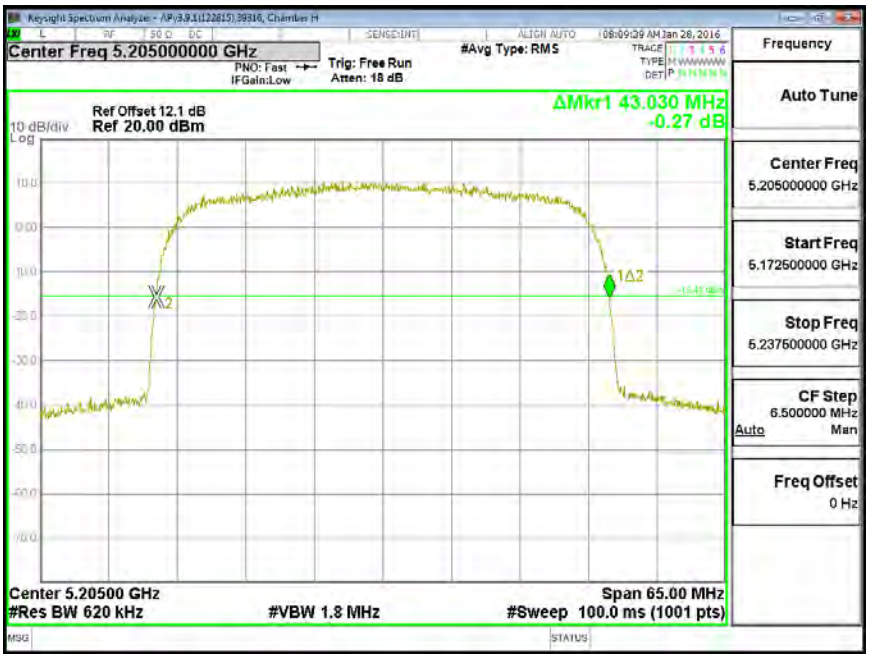
BANDWIDTH Chain 3 LOW 3 CH



BANDWIDTH Chain 3 MID CH



BANDWIDTH Chain 3 HIGH 1 CH



BANDWIDTH Chain 3 HIGH 2 CH

8.4.2. OUTPUT POWER AND PSD

LIMITS

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. 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 5.15-5.25 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.

DIRECTIONAL ANTENNA GAIN

There are a total of four antennas; two horizontal antennas (chains 0 and 2) and two vertical antennas (chains 1 and 3). Horizontal antennas are cross polarized with respect to vertical antennas

Two TX chains are correlated and two others are uncorrelated and the antenna gain is the same for each chain. The directional gain is;.

Antenna Gain (dBi)	10 * Log (2 chains) (dB)	Correlated Chains Directional Gain (dBi)
15.00	3.01	18.01

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low1	5175	18.01	18.01	30.00	17.00
Low2	5180	18.01	18.01	30.00	17.00
Low3	5185	18.01	18.01	30.00	17.00
Mid	5195	18.01	18.01	30.00	17.00
High1	5205	18.01	18.01	30.00	17.00
High2	5225	18.01	18.01	30.00	17.00

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power & PSD

Output Power Results

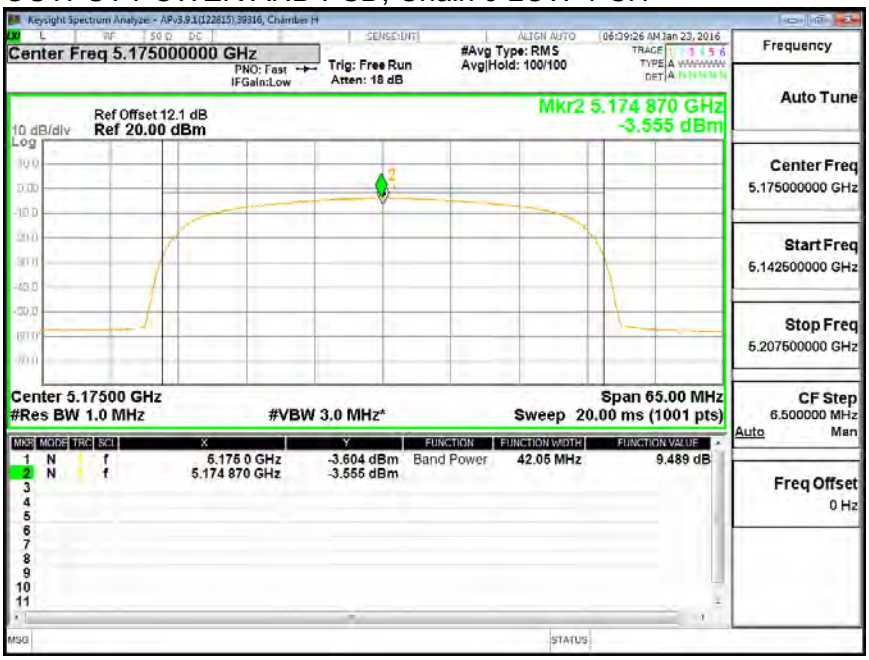
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Chain 3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low1	5175	9.49	10.23	9.85	10.55	16.07	30.00	-13.93
Low2	5180	11.06	11.74	11.35	12.03	17.58	30.00	-12.42
Low3	5185	12.35	12.88	12.14	12.98	18.62	30.00	-11.38
Mid	5195	13.28	13.25	13.05	13.76	19.36	30.00	-10.64
High1	5205	15.10	16.01	15.54	15.81	21.65	30.00	-8.35
High2	5225	17.10	17.55	17.55	17.53	23.46	30.00	-6.54

PSD Results

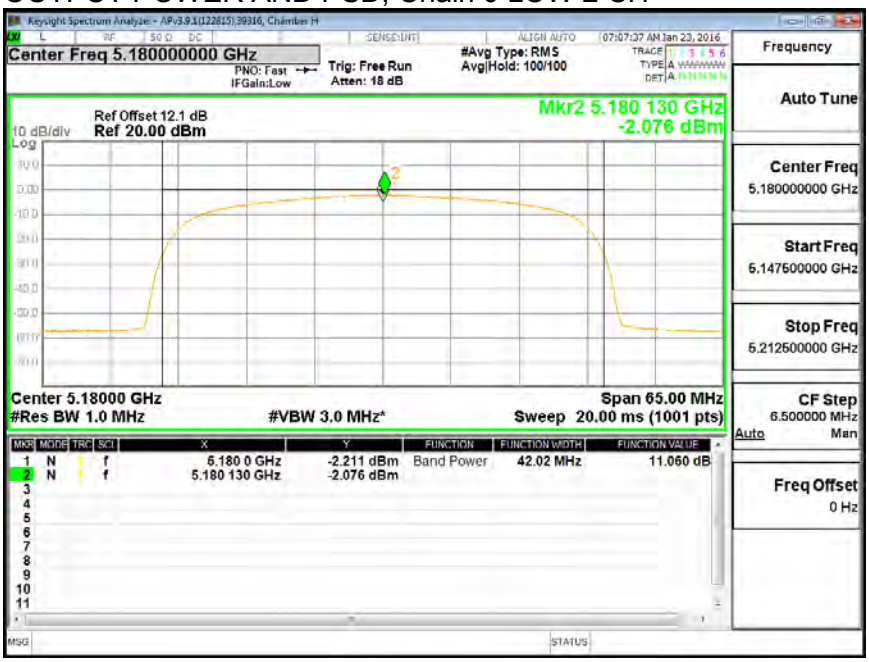
Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Chain 3 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low1	5175	-3.56	-2.85	-3.29	-2.58	2.97	17.00	-14.03
Low2	5180	-2.08	-1.36	-1.77	-1.05	4.48	17.00	-12.52
Low3	5185	-0.77	-0.19	-1.08	-0.14	5.49	17.00	-11.51
Mid	5195	-0.22	-0.08	-0.58	0.32	5.89	17.00	-11.11
High1	5205	1.13	2.23	1.47	1.90	7.72	17.00	-9.28
High2	5225	3.23	3.73	3.44	3.72	9.55	17.00	-7.45

OUTPUT POWER AND PSD, Chain 0

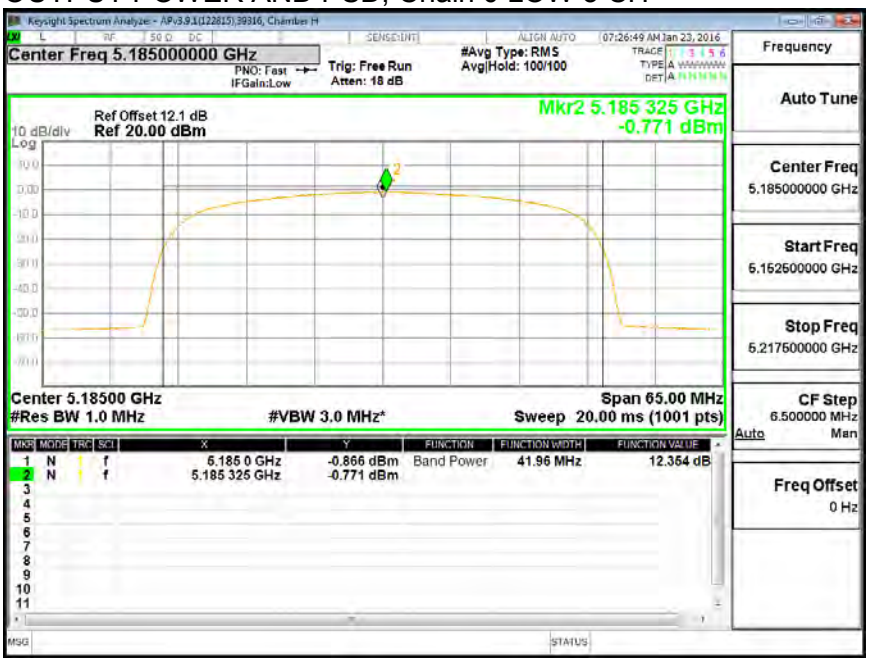
OUTPUT POWER AND PSD, Chain 0 LOW 1 CH



OUTPUT POWER AND PSD, Chain 0 LOW 2 CH



OUTPUT POWER AND PSD, Chain 0 LOW 3 CH



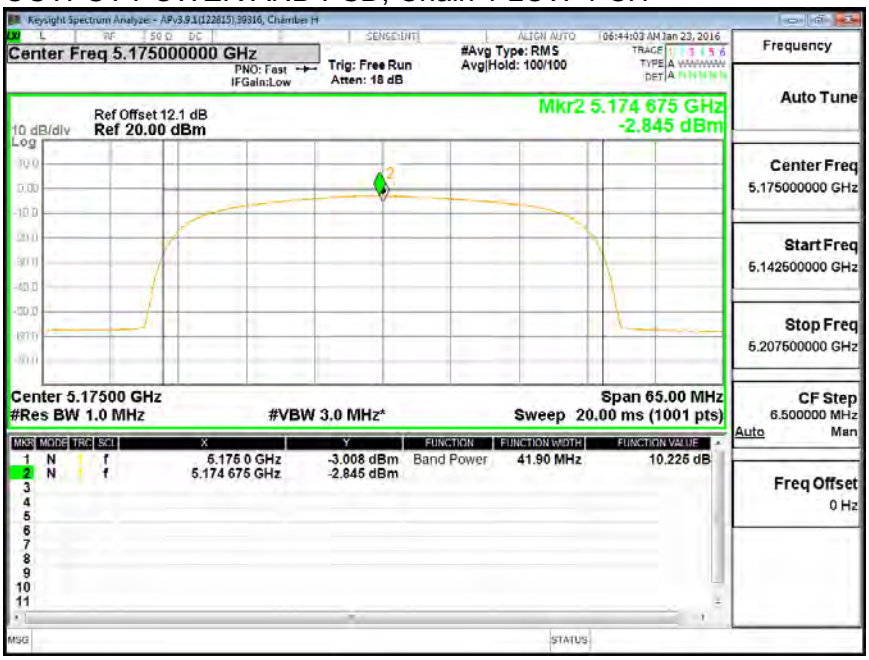
OUTPUT POWER AND PSD, Chain 0 MID CH

OUTPUT POWER AND PSD, Chain 0 HIGH 1 CH

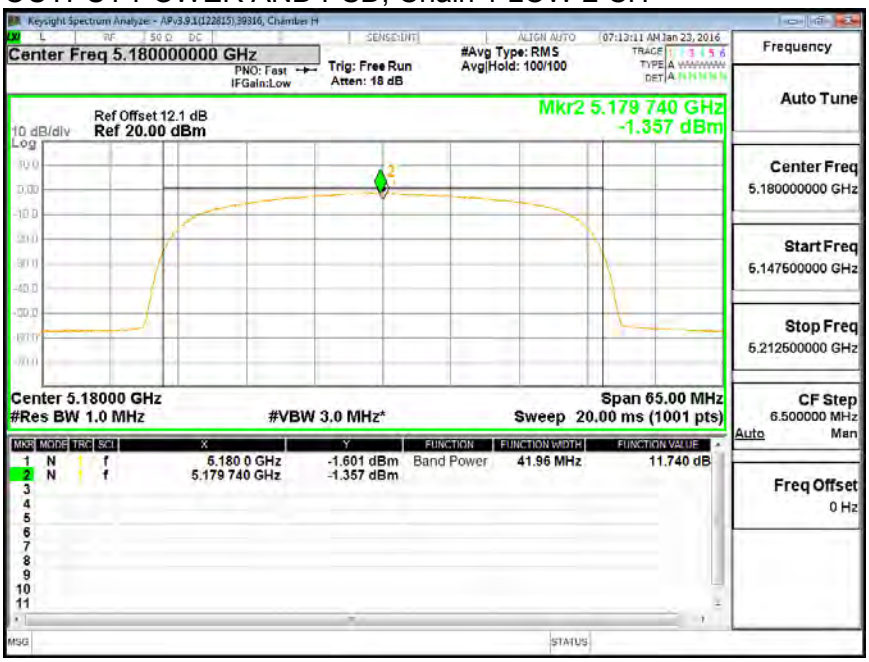
OUTPUT POWER AND PSD, Chain 0 HIGH 2 CH

OUTPUT POWER AND PSD, Chain 1

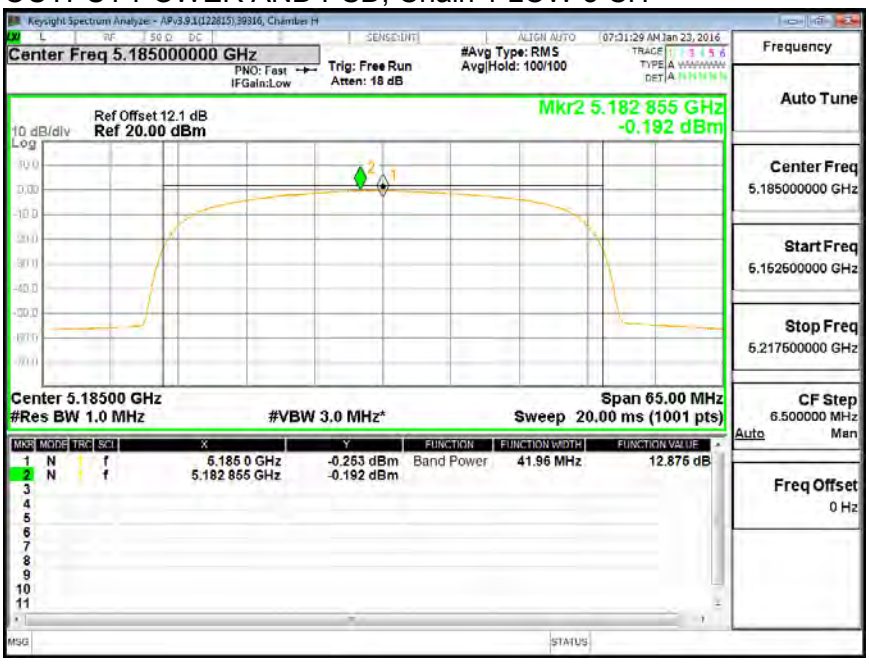
OUTPUT POWER AND PSD, Chain 1 LOW 1 CH



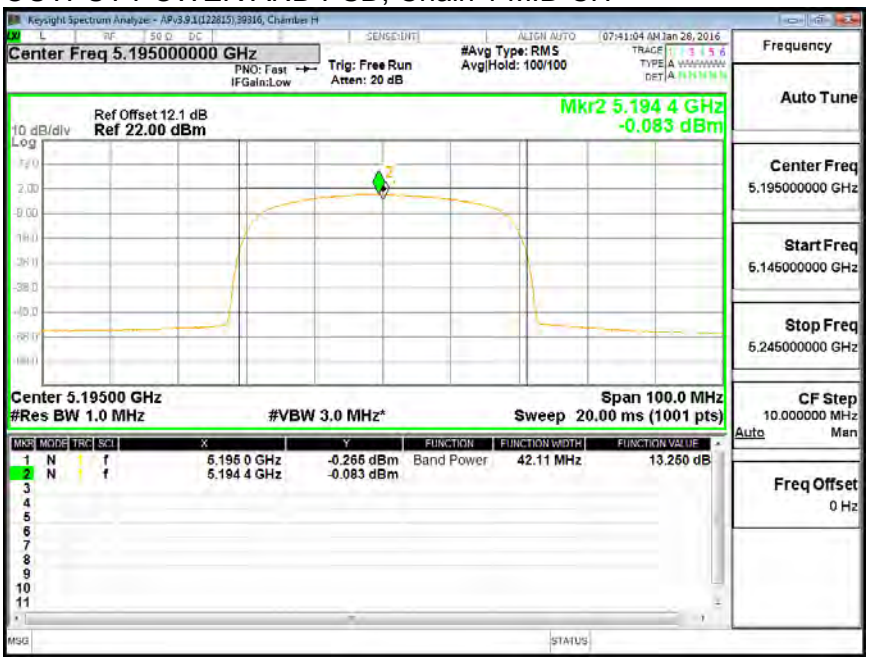
OUTPUT POWER AND PSD, Chain 1 LOW 2 CH



OUTPUT POWER AND PSD, Chain 1 LOW 3 CH



OUTPUT POWER AND PSD, Chain 1 MID CH

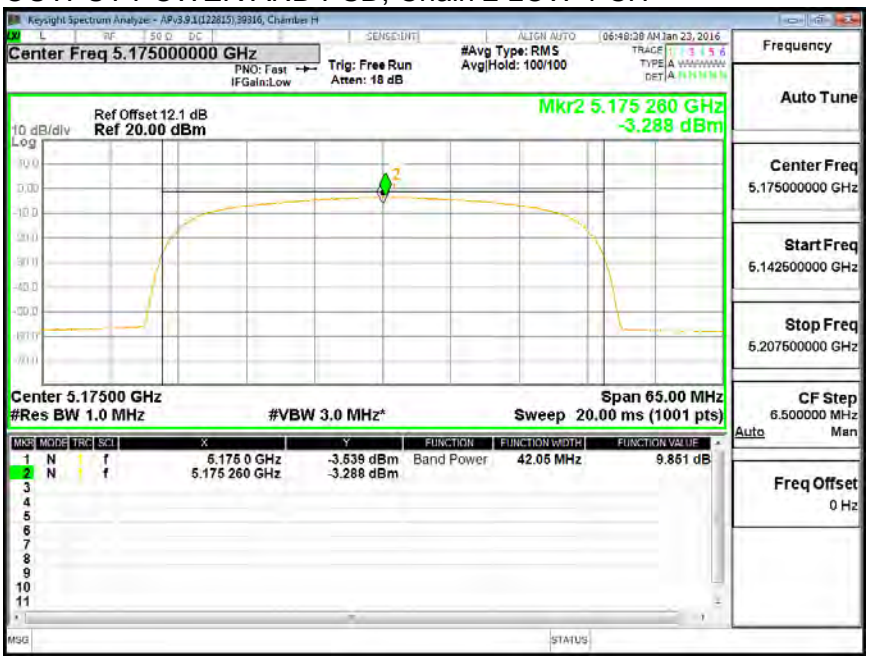


OUTPUT POWER AND PSD, Chain 1 HIGH 1 CH

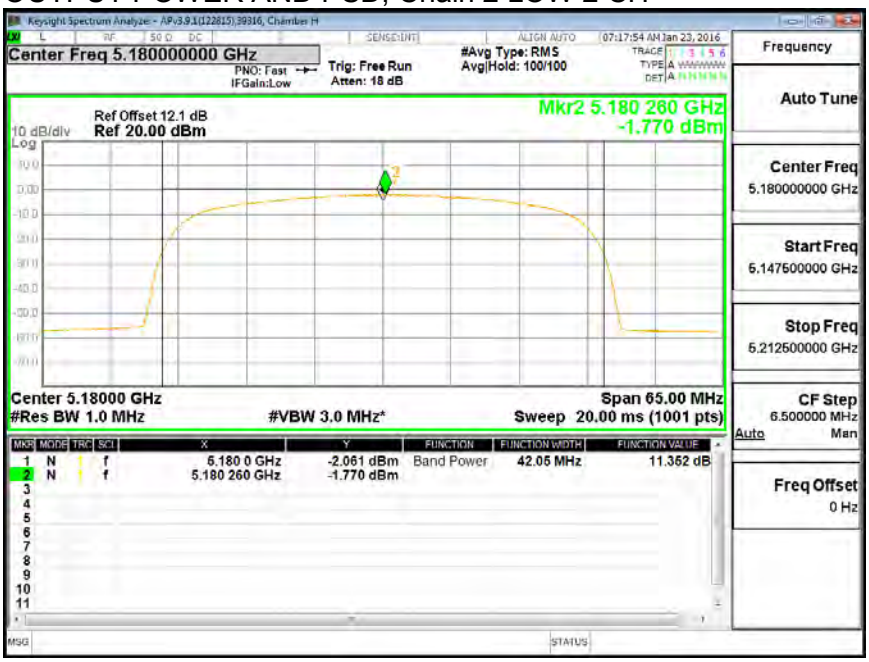
OUTPUT POWER AND PSD, Chain 1 HIGH 2 CH

OUTPUT POWER AND PSD, Chain 2

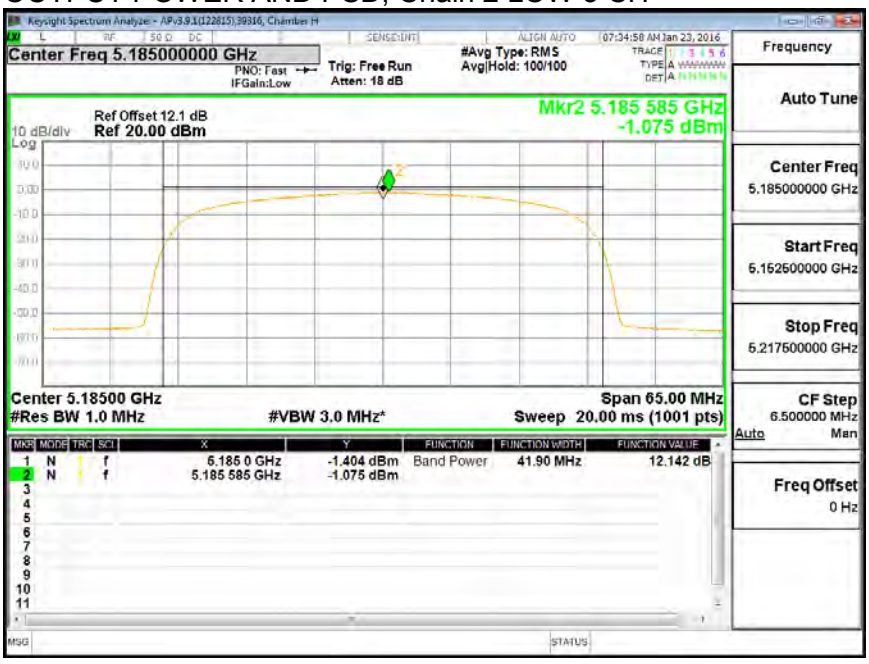
OUTPUT POWER AND PSD, Chain 2 LOW 1 CH



OUTPUT POWER AND PSD, Chain 2 LOW 2 CH



OUTPUT POWER AND PSD, Chain 2 LOW 3 CH



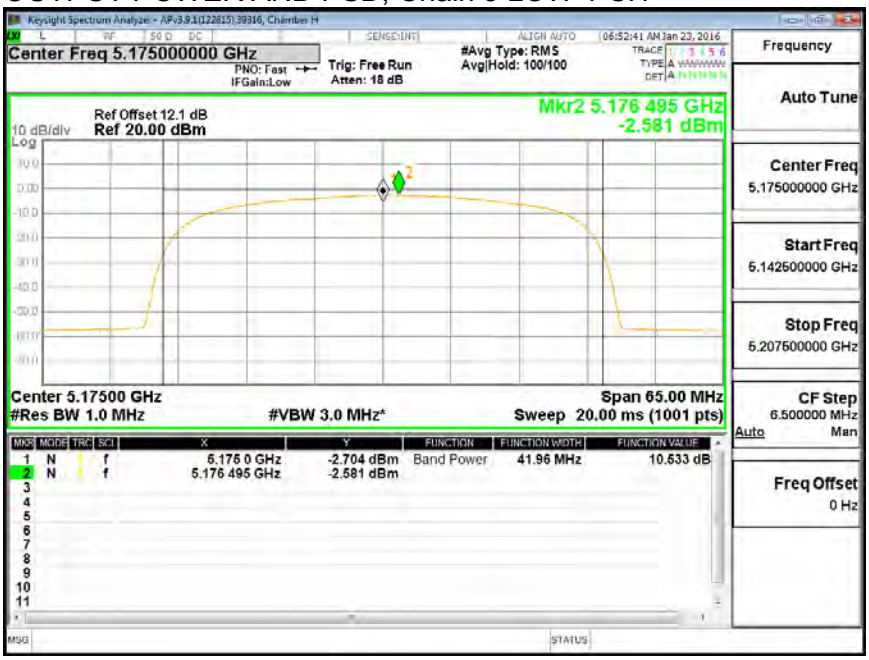
OUTPUT POWER AND PSD, Chain 2 MID CH

OUTPUT POWER AND PSD, Chain 2 HIGH 1 CH

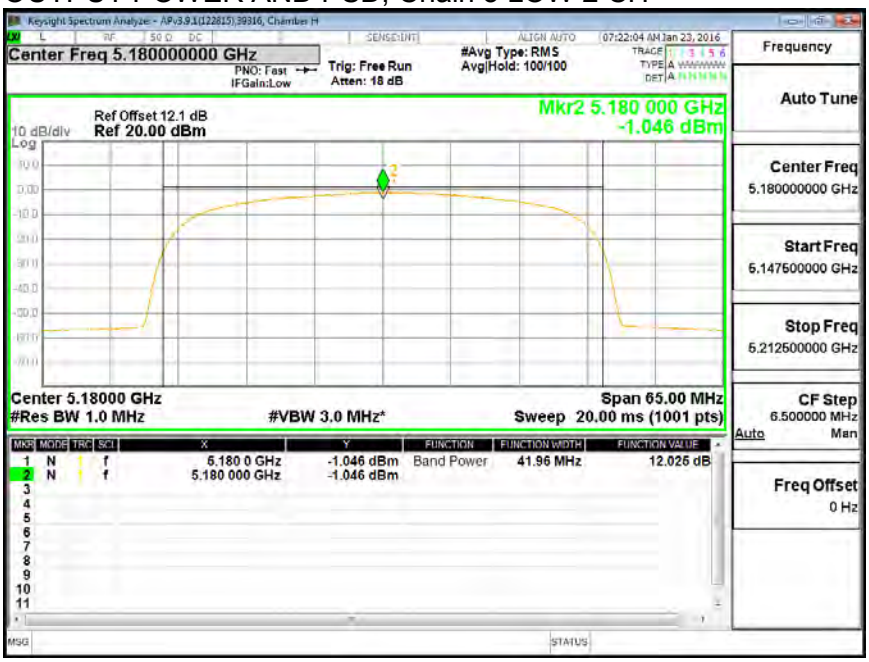
OUTPUT POWER AND PSD, Chain 2 HIGH 2 CH

OUTPUT POWER AND PSD, Chain 3

OUTPUT POWER AND PSD, Chain 3 LOW 1 CH

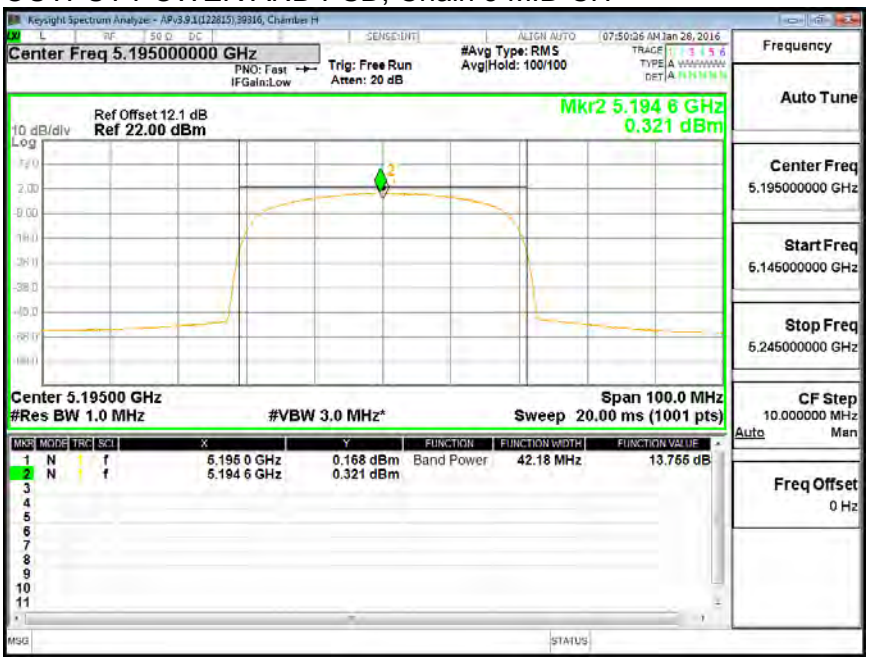


OUTPUT POWER AND PSD, Chain 3 LOW 2 CH



OUTPUT POWER AND PSD, Chain 3 LOW 3 CH

OUTPUT POWER AND PSD, Chain 3 MID CH



OUTPUT POWER AND PSD, Chain 3 HIGH 1 CH

OUTPUT POWER AND PSD, Chain 3 HIGH 2 CH

8.4.3. OUT-OF-BAND EMISSIONS

LIMITS

FCC §15.205 and §15.209

PART 15, SUBPART E

Radiated LIMIT:
(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

Procedure

KDB 789033 D02 General UNII Test Procedures New Rules v01, Section II, G5

Conducted measurements are being used to demonstrate compliance with the spurious limits in the restricted band (all other spurious emissions are measured using the radiated test method with the antennas connected). The limits are 54dBuV/m average and 74dBuV/m peak, which are equivalent to EIRP of -41.2 dBm and -21.2dBm respectively. The plots include an offset to account for the EUT antenna gain and external attenuation between EUT antenna port and spectrum analyzer.

There are a total of four antenna chains; two horizontal antennas (chains 0 and 2) and two vertical antennas (chains 1 and 3). As two antennas chains(horizontal Pol.) feed cross polarized with respect to two other antennas(vertical Pol.), the two sets of chains are treated independently, and thus the emissions do not need to be summed for all four chains. However, there is a summation for the two horizontal antennas and two vertical chains separately.

The summation is noted as below:

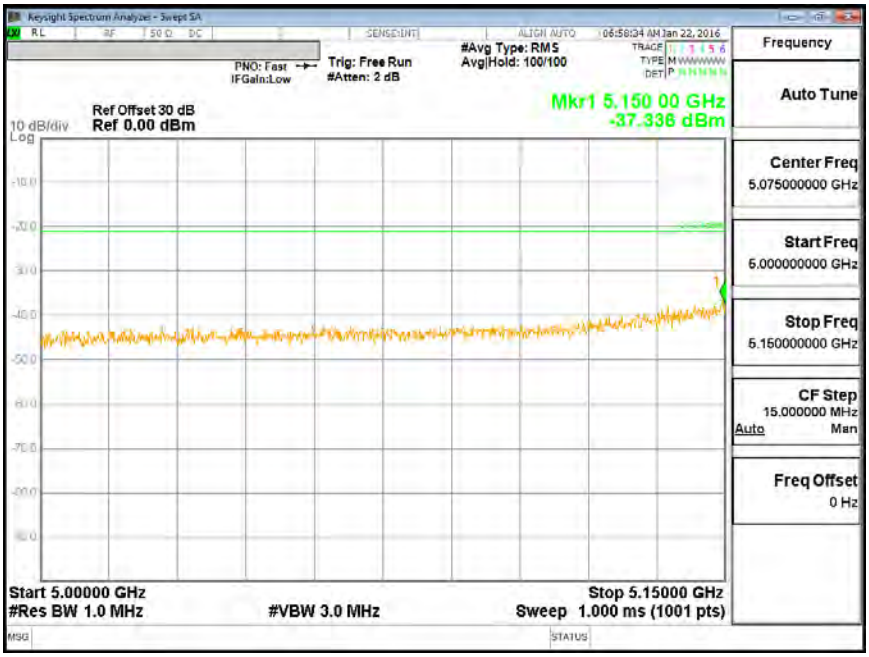
KDB 662911 D01 Multiple Transmitter Output v02r01

3(a)(i) Measure and sum the spectra across the outputs as described in section E)2)a). Note that the summation must be performed in linear power units, or the equivalent. For example, if measurement units are microvolts or microvolts/meter, the values shall be squared before summing, and then a square root shall be applied to the sum in order to achieve the equivalent of summing in power units.

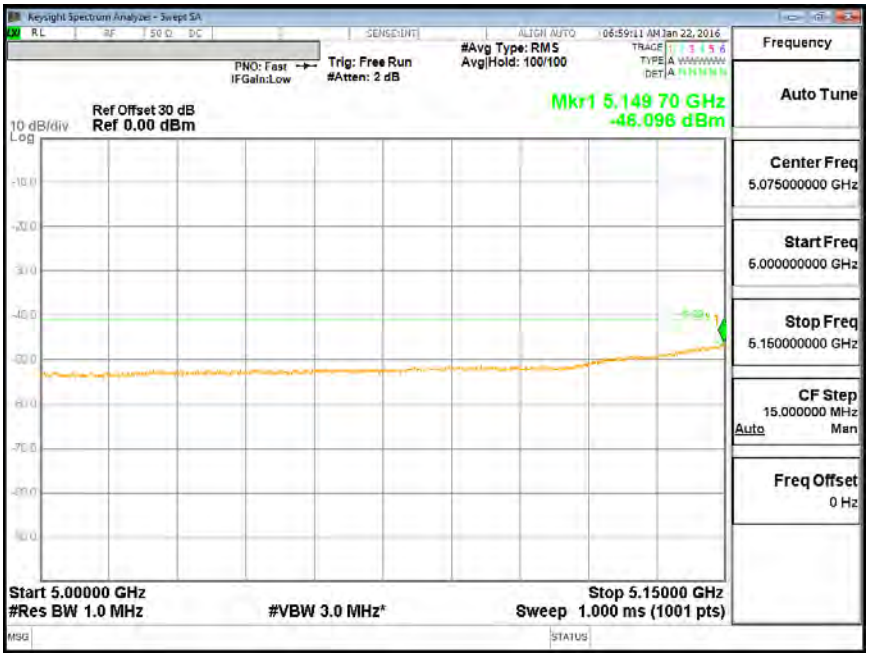
RESULTS

LOW CHANNEL BANDEDGE (5175 MHz), Chain 0

AUTHORIZED BAND EDGE Chain 0 LOW CH PEAK

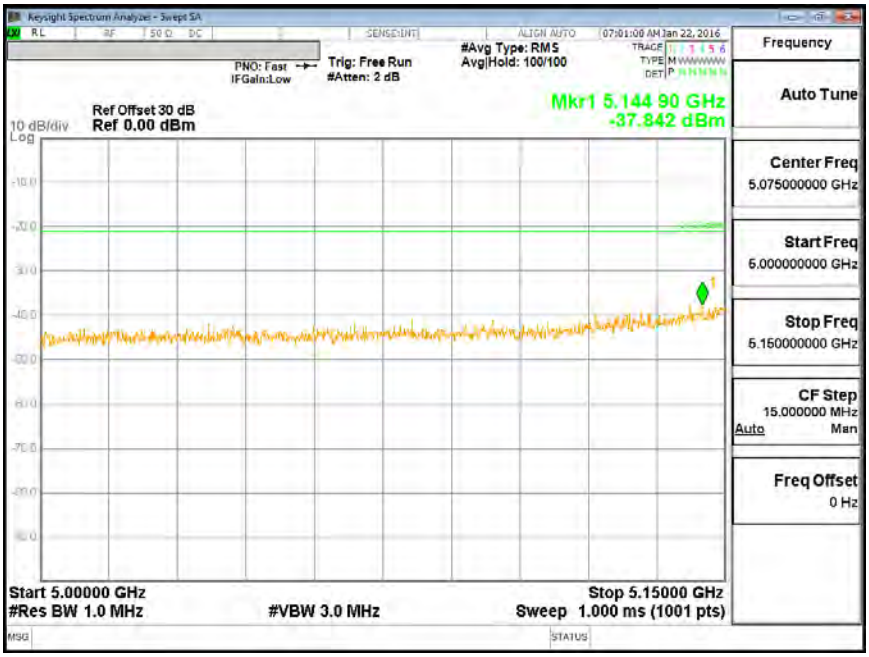


AUTHORIZED BAND EDGE Chain 0 LOW CH AVERAGE

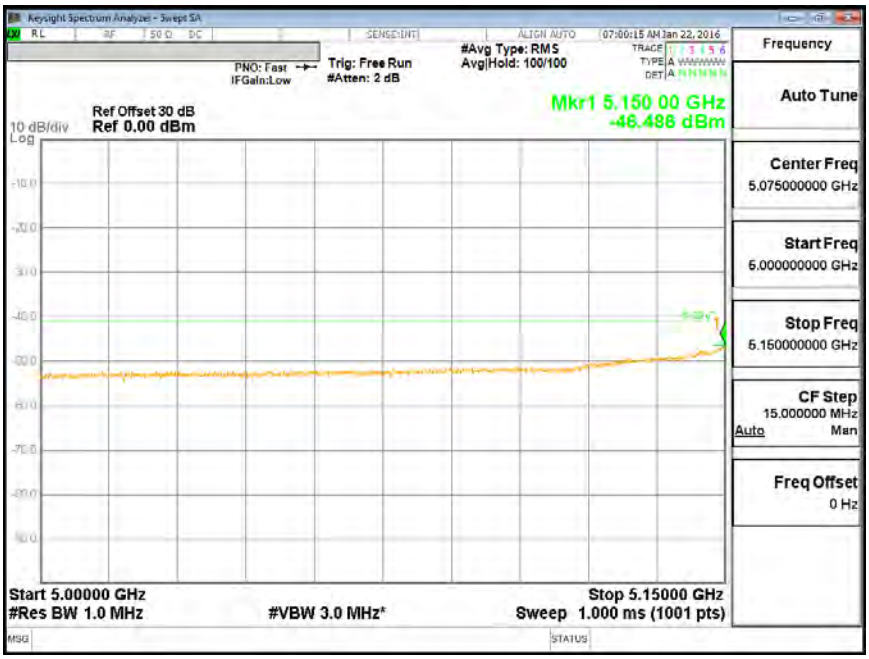


LOW CHANNEL BANDEDGE (5175 MHz), Chain 1

AUTHORIZED BAND EDGE Chain 1 LOW CH PEAK

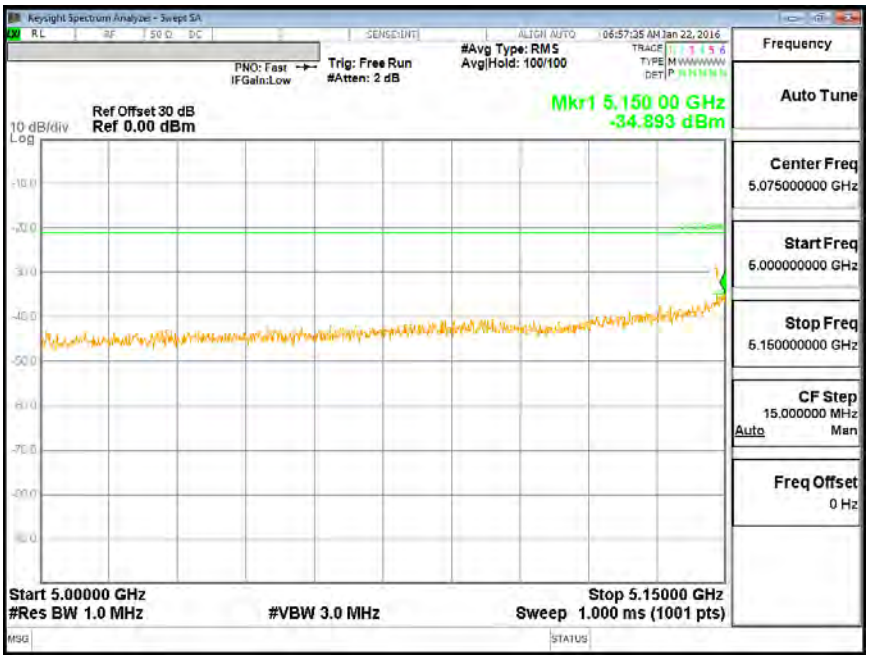


AUTHORIZED BAND EDGE Chain 1 LOW CH AVERAGE

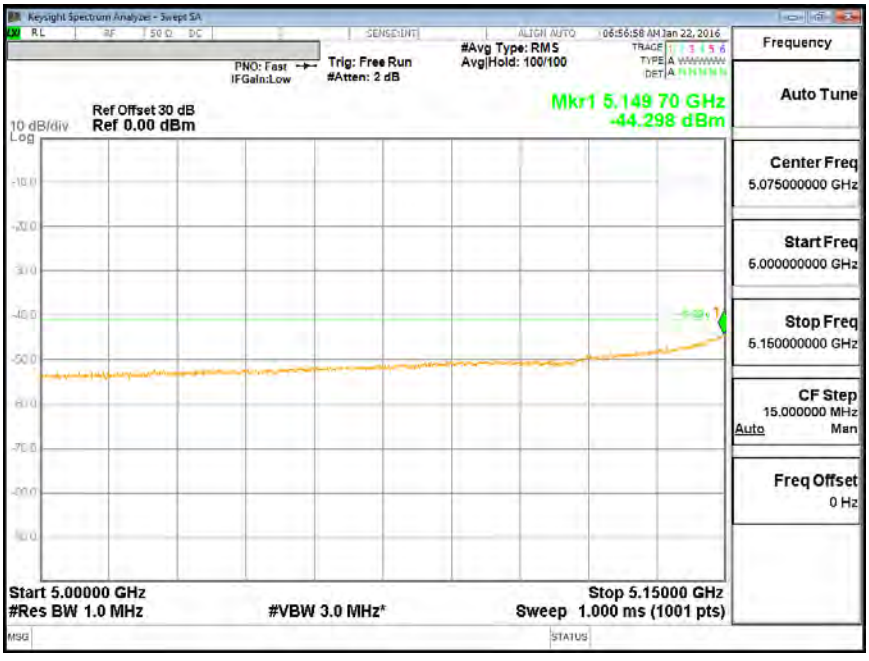


LOW CHANNEL BANDEDGE (5175 MHz), Chain 2

AUTHORIZED BAND EDGE Chain 2 LOW CH PEAK

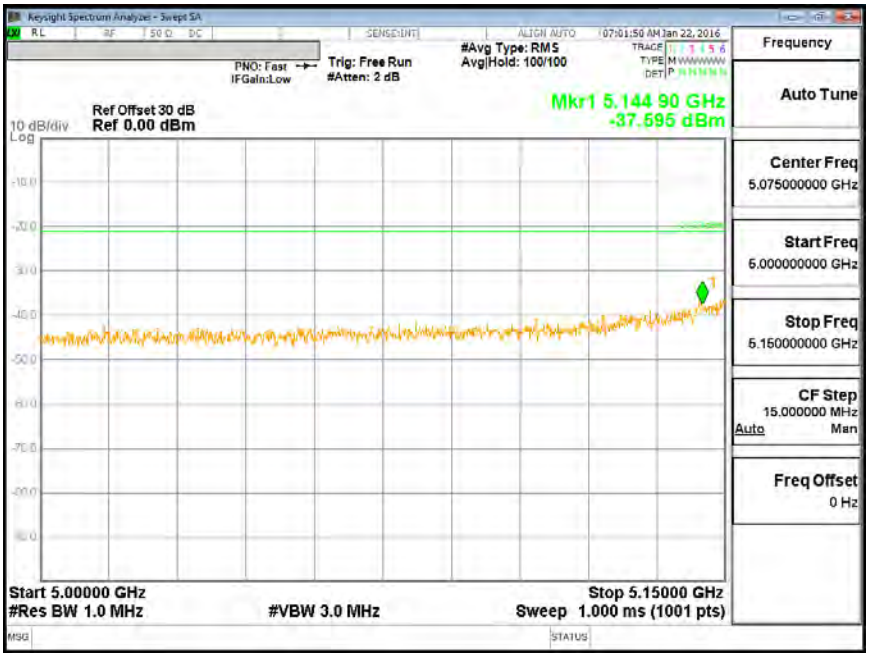


AUTHORIZED BAND EDGE Chain 2 LOW CH AVERAGE

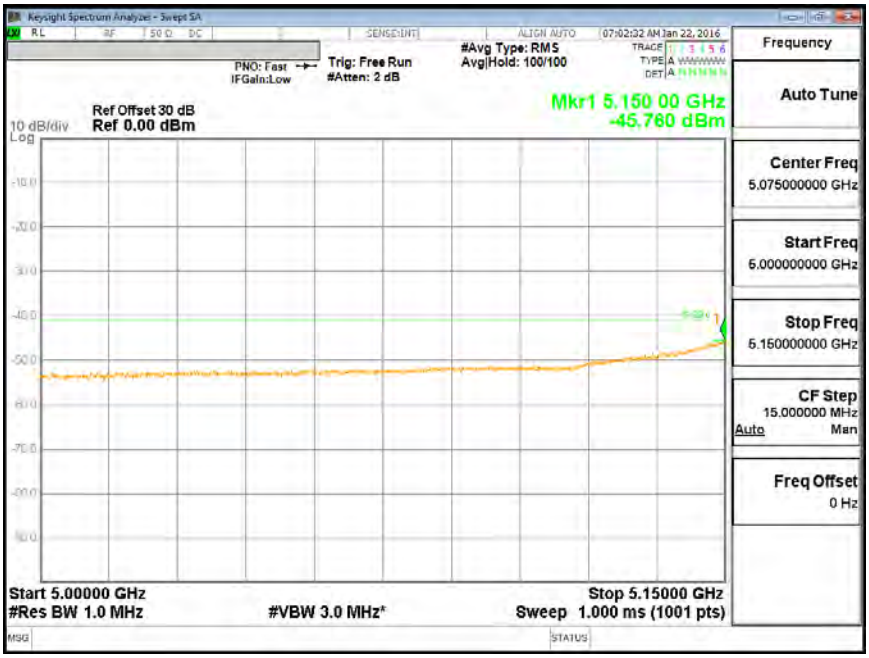


LOW CHANNEL BANDEDGE (5175 MHz), Chain 3

AUTHORIZED BAND EDGE Chain 3 LOW CH PEAK



AUTHORIZED BAND EDGE Chain 3 LOW CH AVERAGE



DATA

Peak

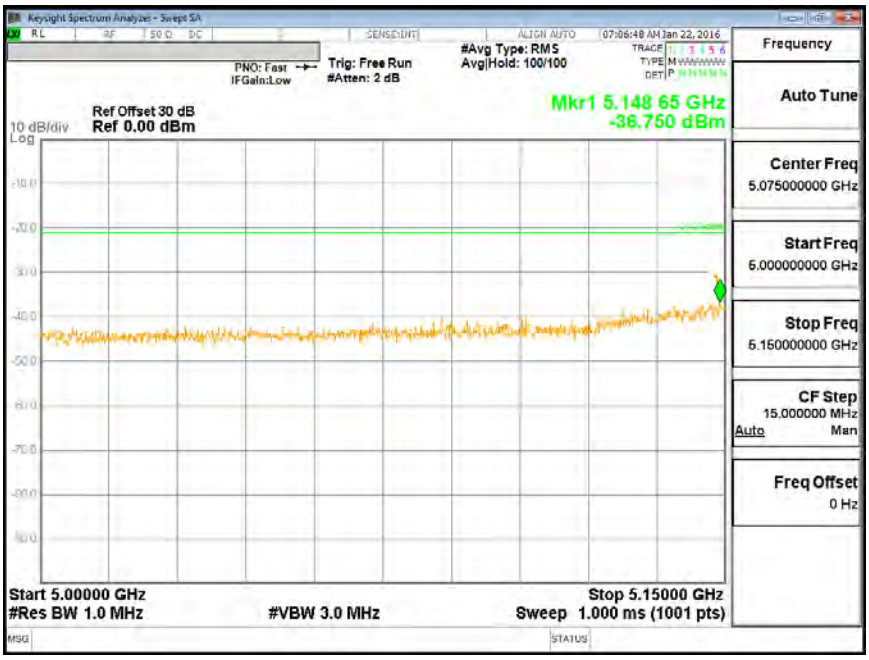
Frequency Range (MHz)	BW (MHz)	Polarity	Power, Chain 0 (dBm)	Power, Chain 2 (dBm)	Corrected (dBm)	Limit	Margin
5175	40	Horizontal	-37.34	-34.89	-34.28	-21.20	-13.08
		Polarity	**Power, Chain 1 (dBm)**	**Power, Chain 3 (dBm)**	**Corrected (dBm)**	**Limit**	**Margin**
		Vertical	-37.84	-37.60	-36.21	-21.20	-15.01

Average

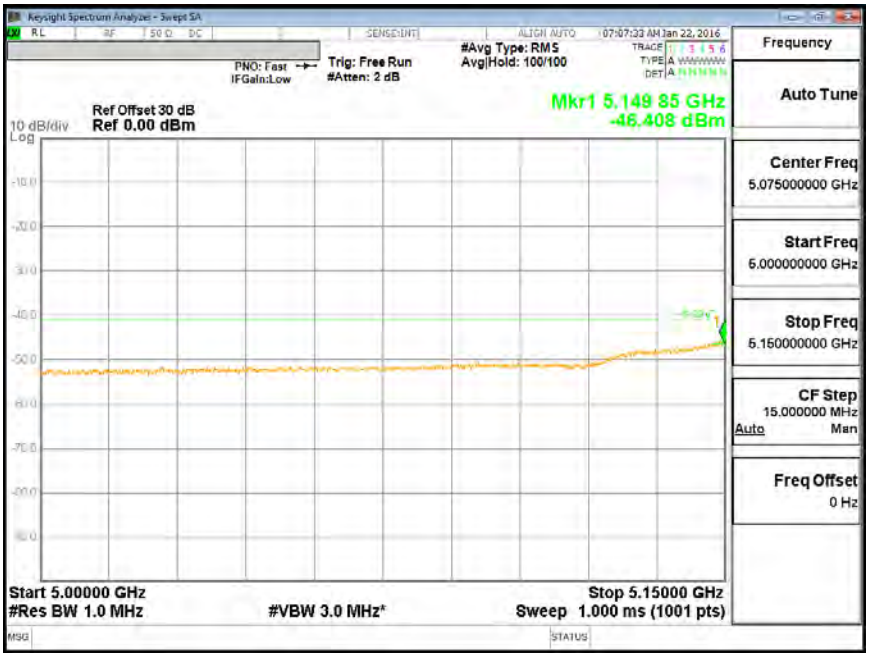
Frequency Range (MHz)	BW (MHz)	Polarity	Power, Chain 0 (dBm)	Power, Chain 2 (dBm)	Corrected (dBm)	Limit	Margin
5175	40	Horizontal	-46.10	-44.30	-43.51	-41.20	-2.31
		Polarity	**Power, Chain 1 (dBm)**	**Power, Chain 3 (dBm)**	**Corrected (dBm)**	**Limit**	**Margin**
		Vertical	-46.49	-45.76	-44.59	-41.20	-3.39

LOW CHANNEL BANDEDGE (5180 MHz), Chain 0

AUTHORIZED BAND EDGE Chain 0 LOW CH PEAK

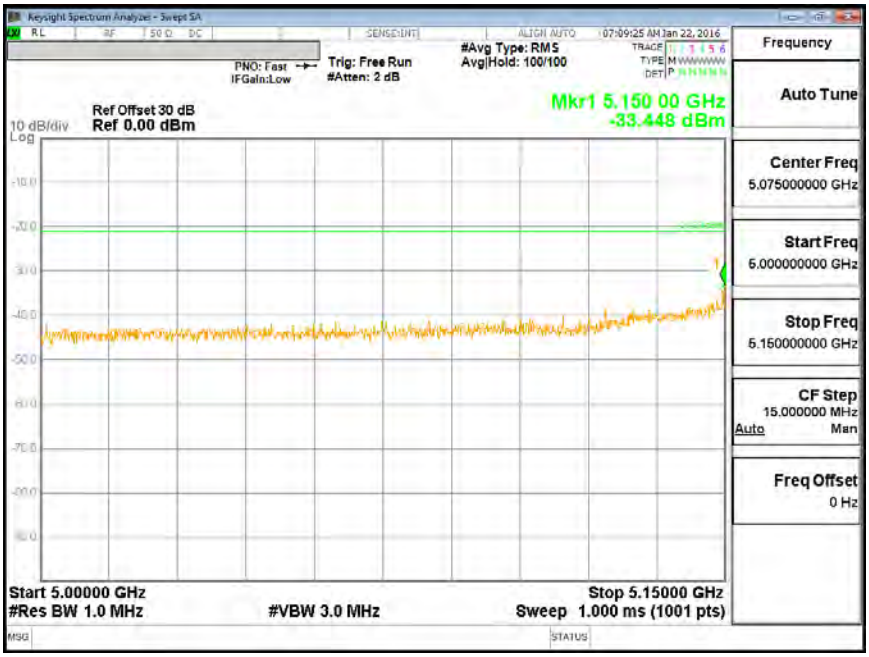


AUTHORIZED BAND EDGE Chain 0 LOW CH AVERAGE

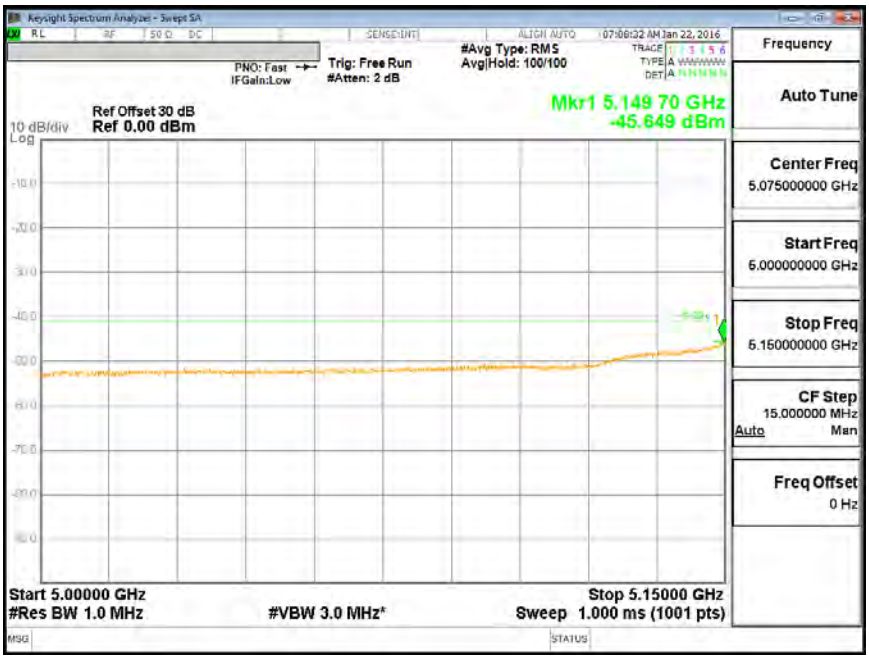


LOW CHANNEL BANDEDGE (5180 MHz), Chain 1

AUTHORIZED BAND EDGE Chain 1 LOW CH PEAK

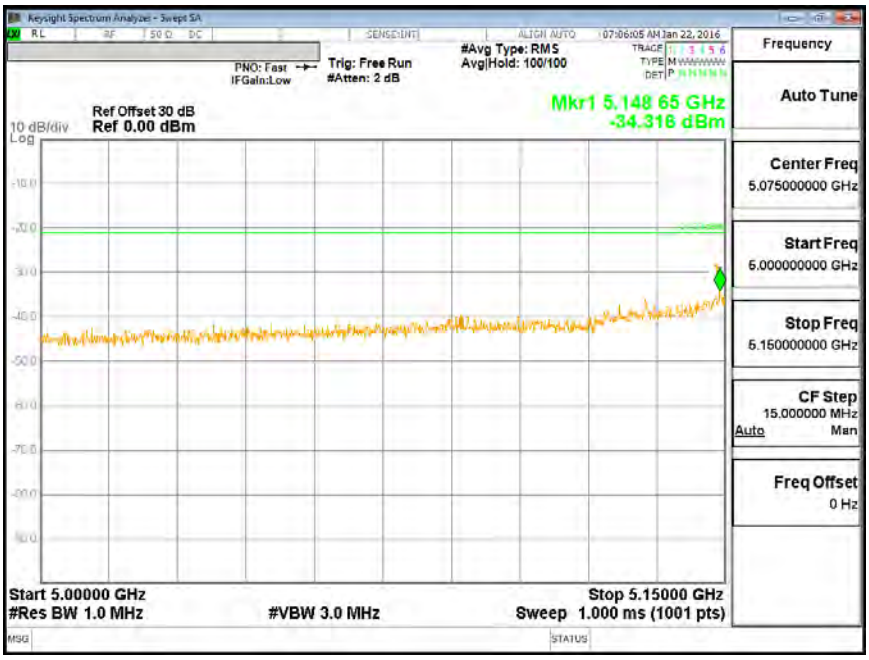


AUTHORIZED BAND EDGE Chain 1 LOW CH AVERAGE

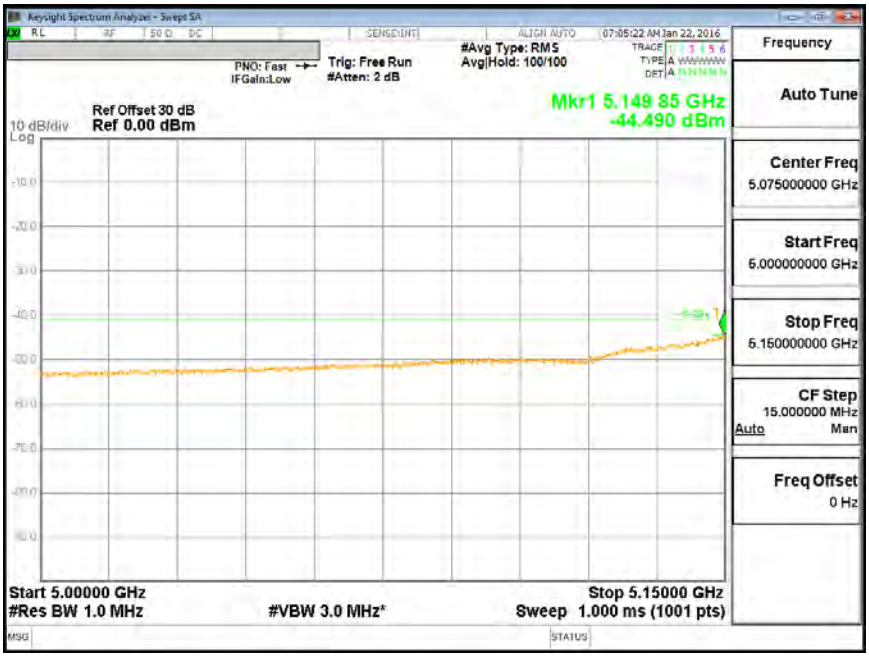


LOW CHANNEL BANDEDGE (5180 MHz), Chain 2

AUTHORIZED BAND EDGE Chain 2 LOW CH PEAK

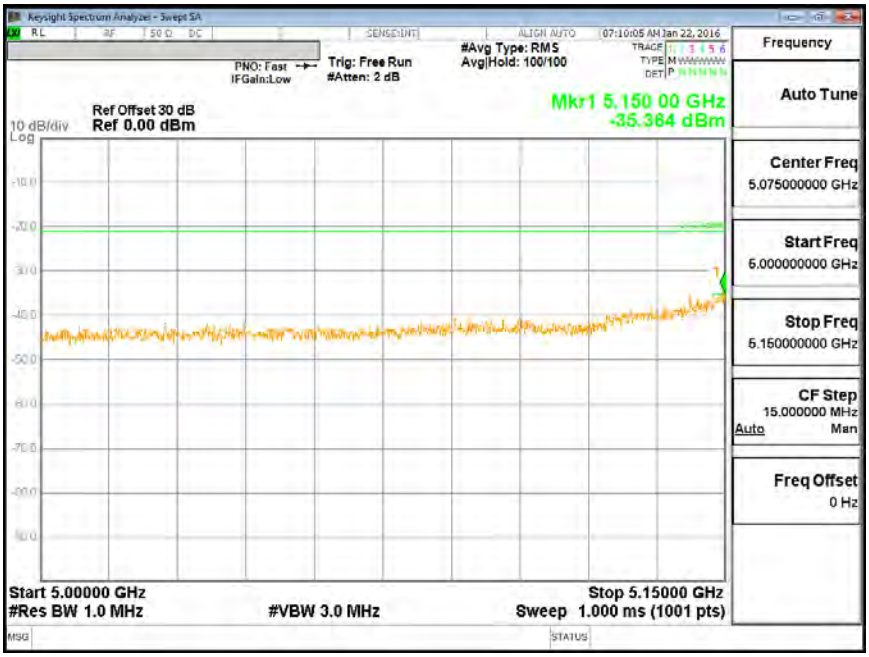


AUTHORIZED BAND EDGE Chain 2 LOW CH AVERAGE

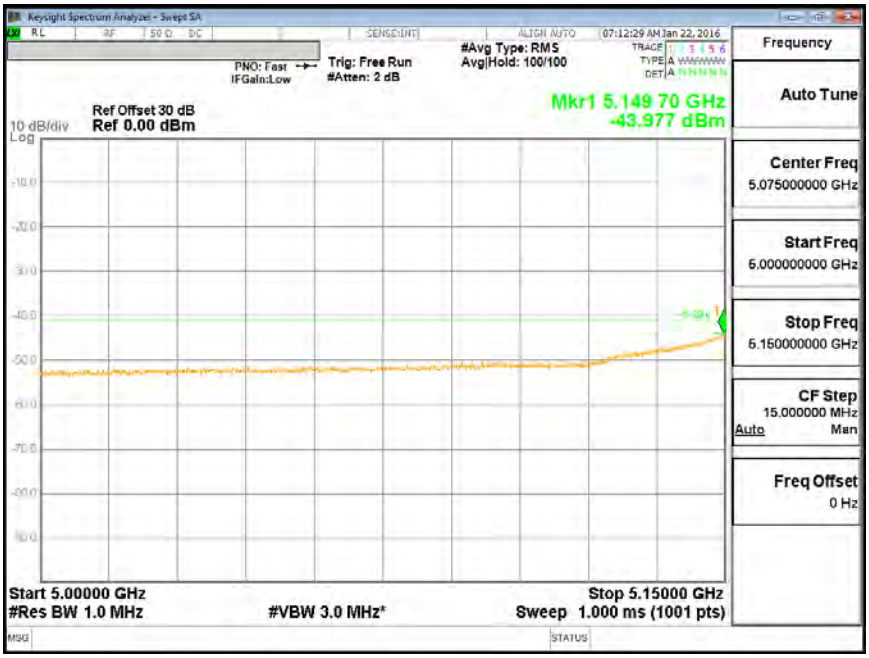


LOW CHANNEL BANDEDGE (5180 MHz), Chain 3

AUTHORIZED BAND EDGE Chain 3 LOW CH PEAK



AUTHORIZED BAND EDGE Chain 3 LOW CH AVERAGE



DATA

Peak

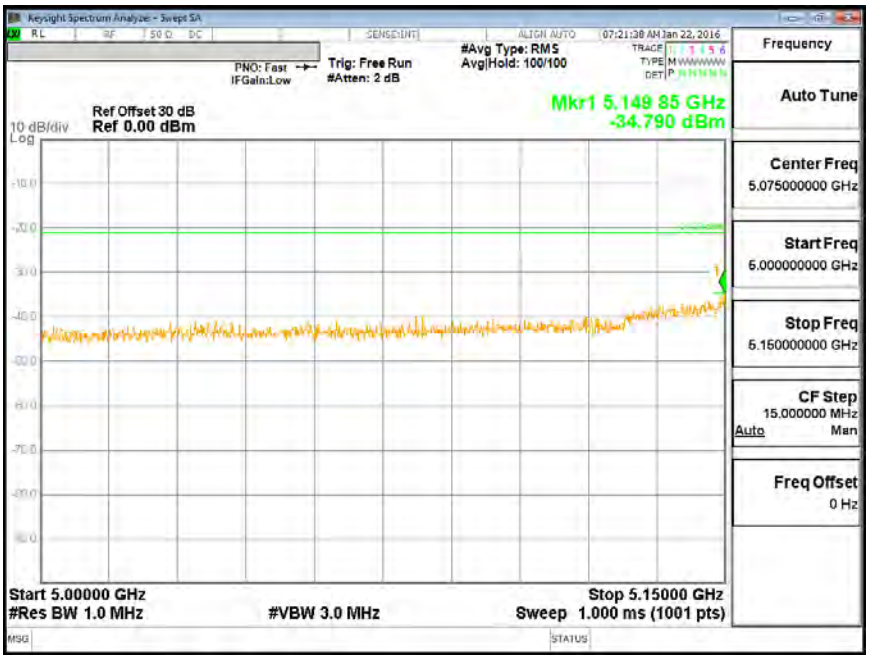
Frequency Range (MHz)	BW (MHz)	Polarity	Power, Chain 0 (dBm)	Power, Chain 2 (dBm)	Corrected (dBm)	Limit	Margin
5180	40	Horizontal	-36.75	-34.32	-33.70	-21.20	-12.50
		Polarity	**Power, Chain 1 (dBm)**	**Power, Chain 3 (dBm)**	**Corrected (dBm)**	**Limit**	**Margin**
		Vertical	-33.45	-35.36	-32.70	-21.20	-11.50

Average

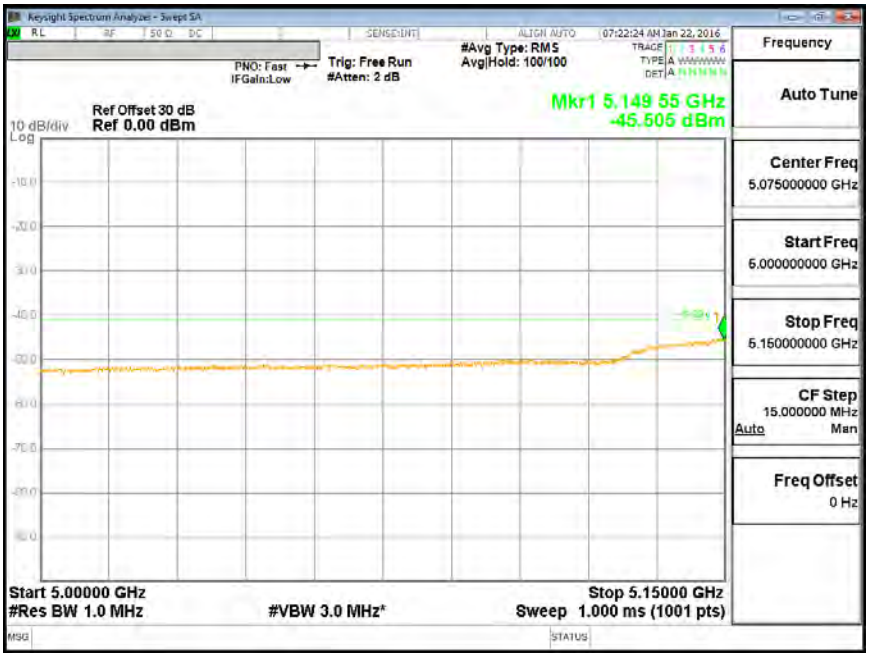
Frequency Range (MHz)	BW (MHz)	Polarity	Power, Chain 0 (dBm)	Power, Chain 2 (dBm)	Corrected (dBm)	Limit	Margin
5180	40	Horizontal	-46.41	-44.49	-43.74	-41.20	-2.54
		Polarity	**Power, Chain 1 (dBm)**	**Power, Chain 3 (dBm)**	**Corrected (dBm)**	**Limit**	**Margin**
		Vertical	-45.65	-43.98	-43.15	-41.20	-1.95

LOW CHANNEL BANDEDGE (5185 MHz), Chain 0

AUTHORIZED BAND EDGE Chain 0 LOW CH PEAK

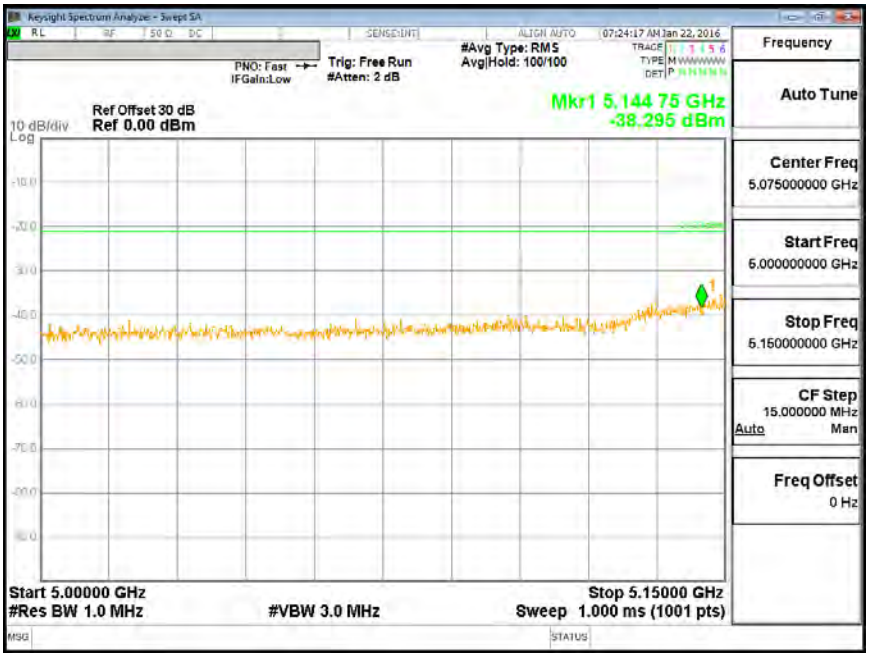


AUTHORIZED BAND EDGE Chain 0 LOW CH AVERAGE

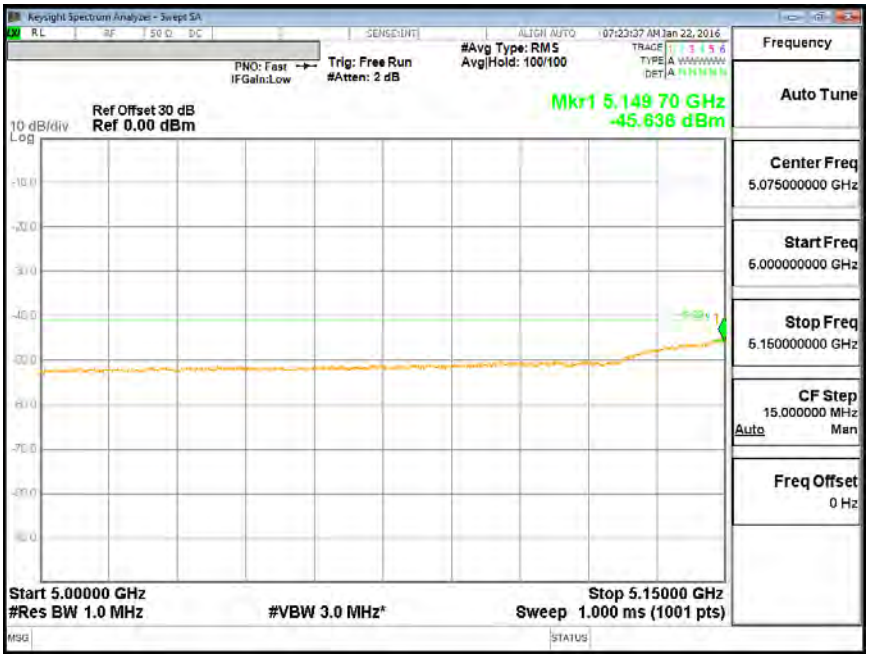


LOW CHANNEL BANDEDGE (5185 MHz), Chain 1

AUTHORIZED BAND EDGE Chain 1 LOW CH PEAK

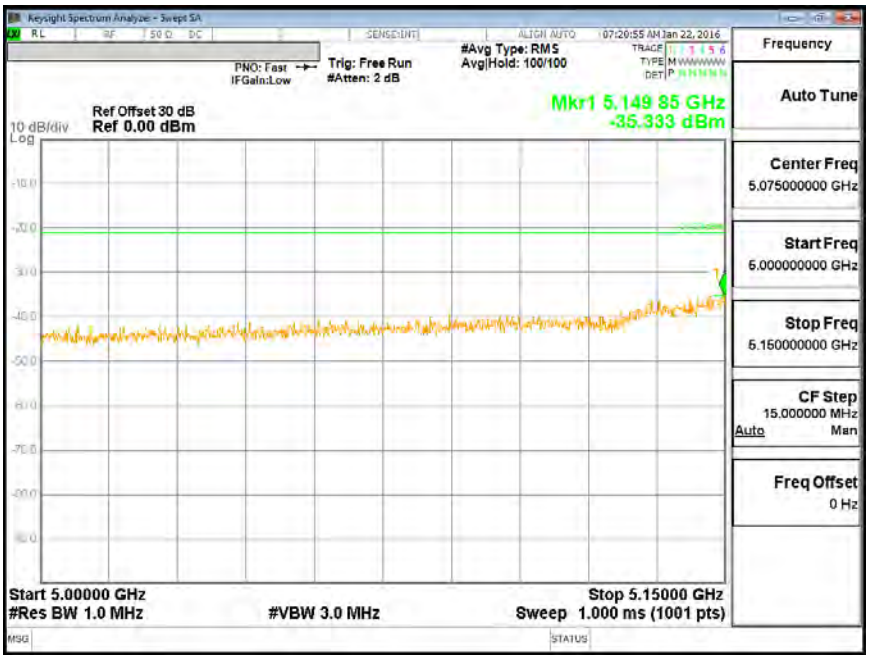


AUTHORIZED BAND EDGE Chain 1 LOW CH AVERAGE

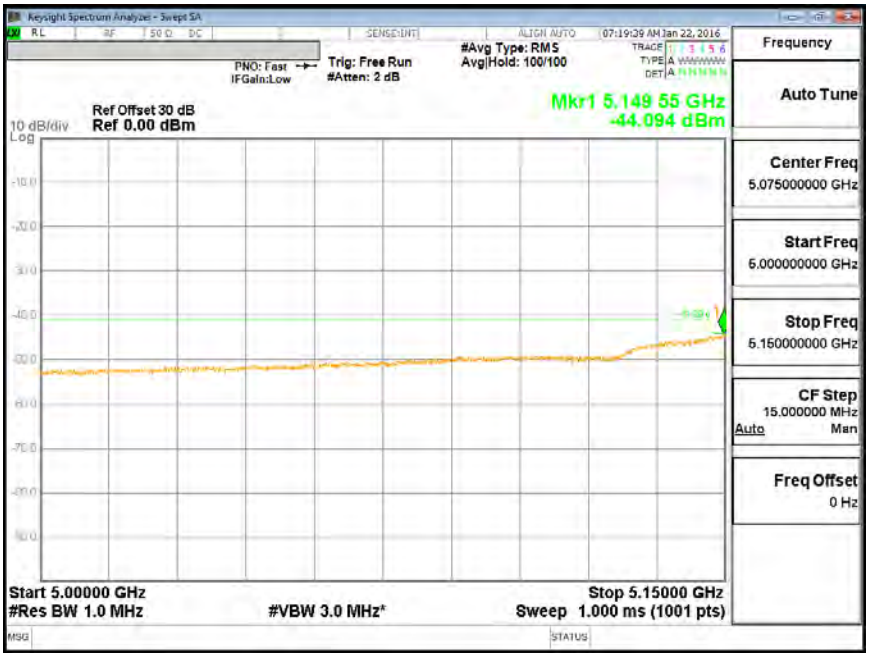


LOW CHANNEL BANDEDGE (5185 MHz), Chain 2

AUTHORIZED BAND EDGE Chain 2 LOW CH PEAK

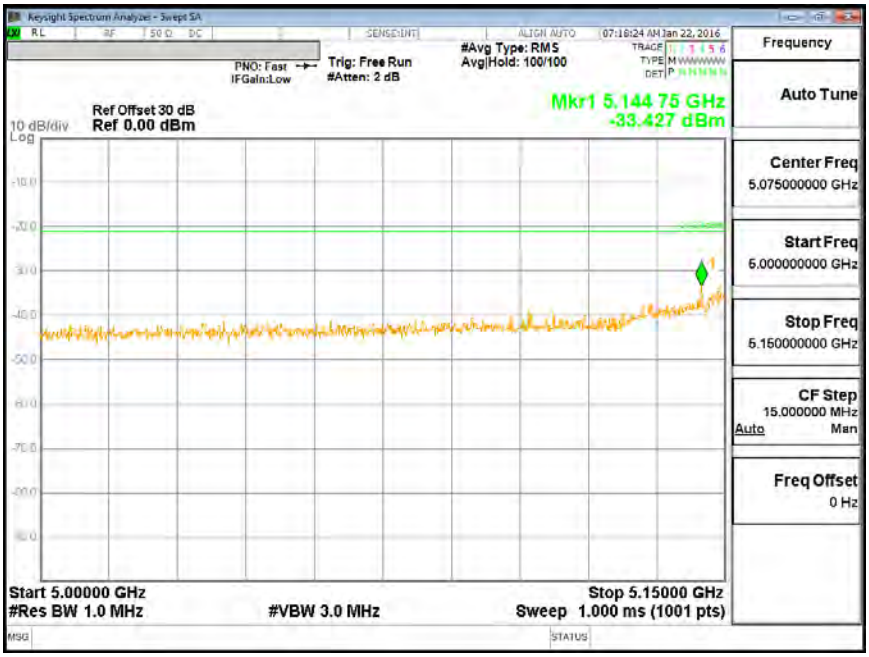


AUTHORIZED BAND EDGE Chain 2 LOW CH AVERAGE

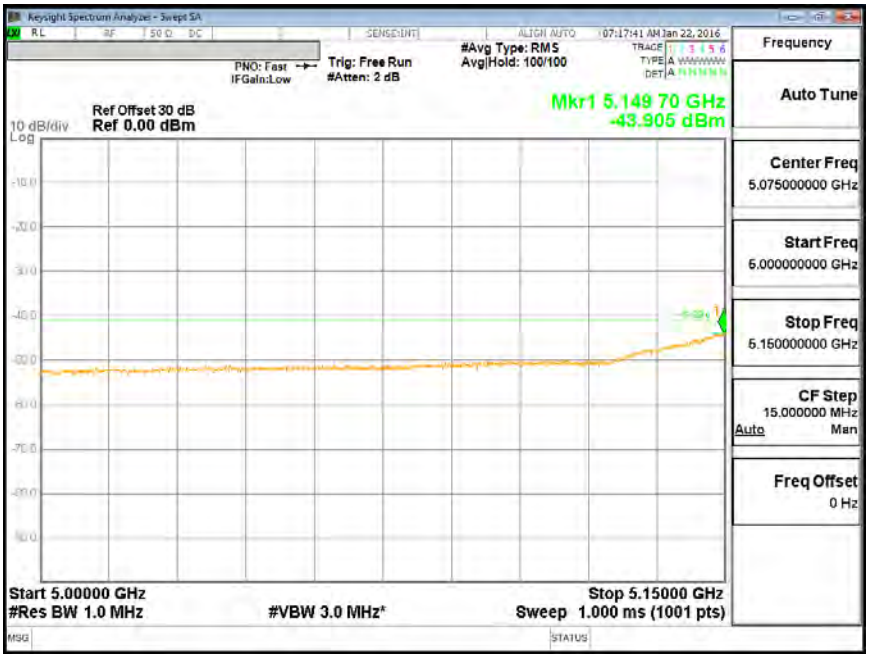


LOW CHANNEL BANDEDGE (5185 MHz), Chain 3

AUTHORIZED BAND EDGE Chain 3 LOW CH PEAK



AUTHORIZED BAND EDGE Chain 3 LOW CH AVERAGE



DATA

Peak

Frequency Range (MHz)	BW (MHz)	Polarity	Power, Chain 0 (dBm)	Power, Chain 2 (dBm)	Corrected (dBm)	Limit	Margin
5185	40	Horizontal	-34.79	-35.33	-33.54	-21.20	-12.34
		Polarity	**Power, Chain 1 (dBm)**	**Power, Chain 3 (dBm)**	**Corrected (dBm)**	**Limit**	**Margin**
		Vertical	-38.30	-33.43	-33.21	-21.20	-12.01

Average

Frequency Range (MHz)	BW (MHz)	Polarity	Power, Chain 0 (dBm)	Power, Chain 2 (dBm)	Corrected (dBm)	Limit	Margin
5185	40	Horizontal	-45.51	-44.09	-43.18	-41.20	-1.98
		Polarity	**Power, Chain 1 (dBm)**	**Power, Chain 3 (dBm)**	**Corrected (dBm)**	**Limit**	**Margin**
		Vertical	-45.64	-43.91	-43.10	-41.20	-1.90

9. RADIATED TEST RESULTS

9.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1GHz and 150 cm for above 1GHz. The antenna to EUT distance is 3 meters.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and as applicable for average measurements.

The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

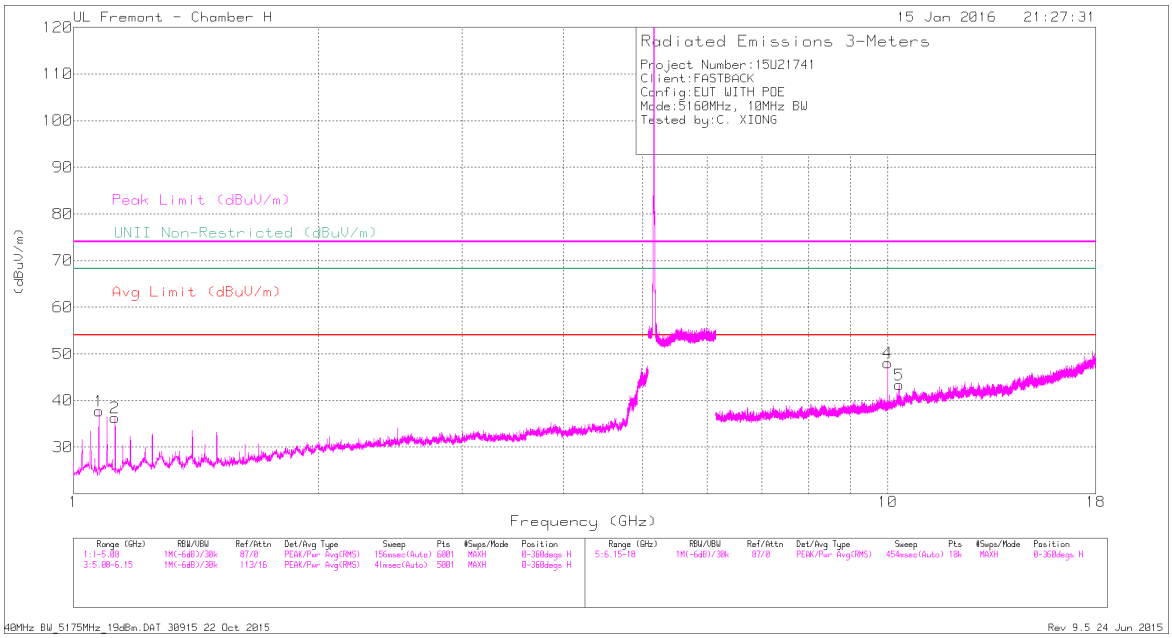
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

9.2. TRANSMITTER ABOVE 1 GHz

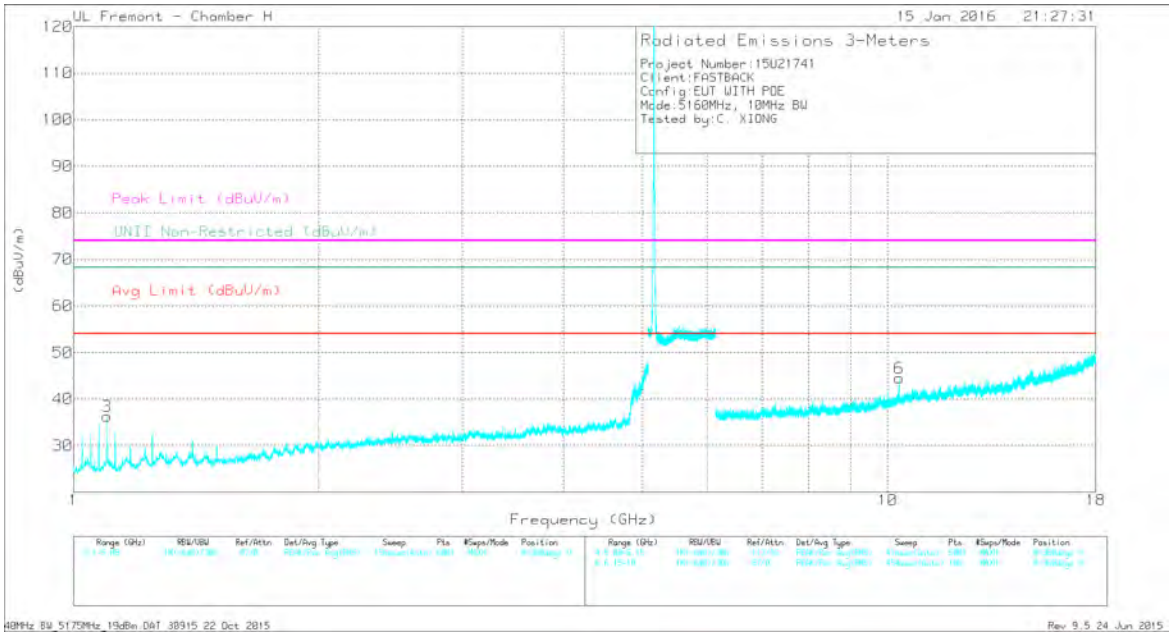
9.2.1. TX ABOVE 1 GHz 10MHz BW 4TX MODE IN THE 5.2 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL PLOT



LOW CHANNEL VERTICAL PLOT



DATA

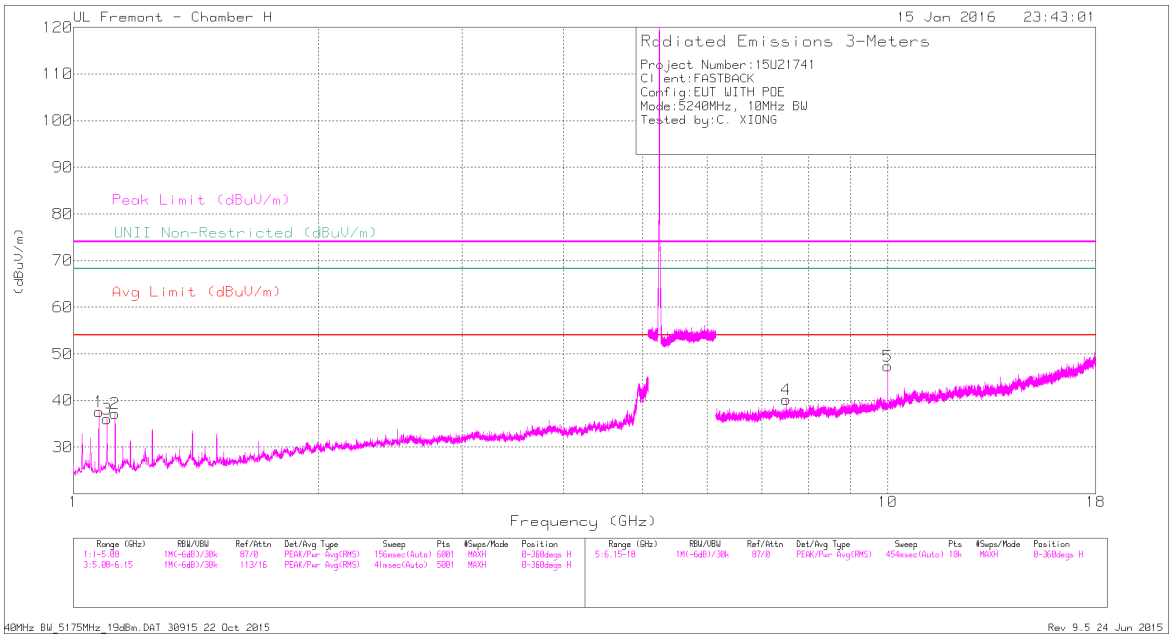
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.075	49.38	PK-U	27.1	-34.3	42.18	-	-	74	-31.82	-	-	98	199	H
	* 1.075	44.32	ADR	27.1	-34.3	37.12	54	-16.88	-	-	-	-	98	199	H
2	* 1.125	47.56	PK-U	27.4	-34.4	40.56	-	-	74	-33.44	-	-	102	225	H
	* 1.125	40.39	ADR	27.4	-34.4	33.39	54	-20.61	-	-	-	-	102	225	H
3	* 1.1	48.6	PK-U	27.1	-34.4	41.3	-	-	74	-32.7	-	-	65	193	V
	* 1.1	42.12	ADR	27.1	-34.4	34.82	54	-19.18	-	-	-	-	65	193	V
4	10	41.54	PK-U	36.9	-24.1	54.34	-	-	-	-	68.2	-13.86	79	137	H
5	10.32	36.54	PK-U	37.2	-22.9	50.84	-	-	-	-	68.2	-17.36	214	199	H
6	10.32	38.24	PK-U	37.2	-22.9	52.54	-	-	-	-	68.2	-15.66	228	107	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

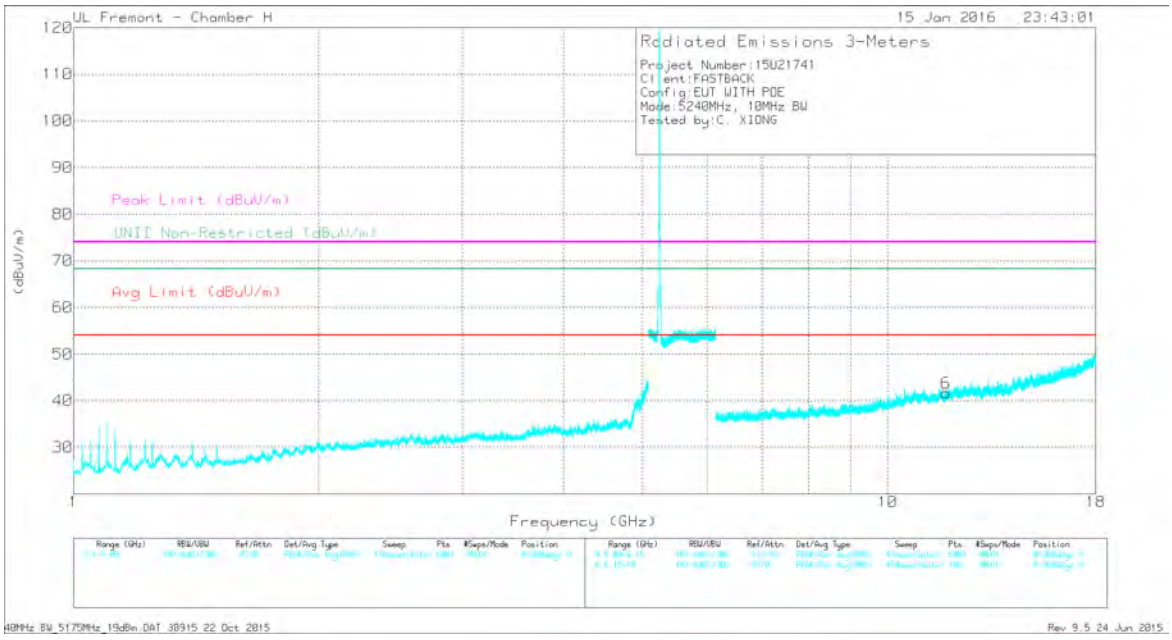
PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

HIGH CHANNEL HORIZONTAL PLOT



HIGH CHANNEL VERTICAL PLOT



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.075	49.38	PK-U	27.1	-34.3	42.18	-	-	74	-31.82	-	-	90	100	H
	* 1.075	44.18	ADR	27.1	-34.3	36.98	54	-17.02	-	-	-	-	90	100	H
2	* 1.125	48.99	PK-U	27.4	-34.4	41.99	-	-	74	-32.01	-	-	101	100	H
	* 1.125	42.17	ADR	27.4	-34.4	35.17	54	-18.83	-	-	-	-	101	100	H
3	* 1.1	48.25	PK-U	27.1	-34.4	40.95	-	-	74	-33.05	-	-	86	194	H
	* 1.1	41.54	ADR	27.1	-34.4	34.24	54	-19.76	-	-	-	-	86	194	H
4	* 7.5	38.23	PK-U	36	-26.2	48.03	-	-	74	-25.97	-	-	35	151	H
	* 7.5	27.35	ADR	36	-26.2	37.15	54	-16.85	-	-	-	-	35	151	H
6	* 11.789	35.93	PK-U	38.3	-23.4	50.83	-	-	74	-23.17	-	-	78	114	V
	* 11.791	23.66	ADR	38.3	-23.4	38.56	54	-15.44	-	-	-	-	78	114	V
5	10	41.55	PK-U	36.9	-24.1	54.35	-	-	-	-	68.2	-13.85	78	114	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

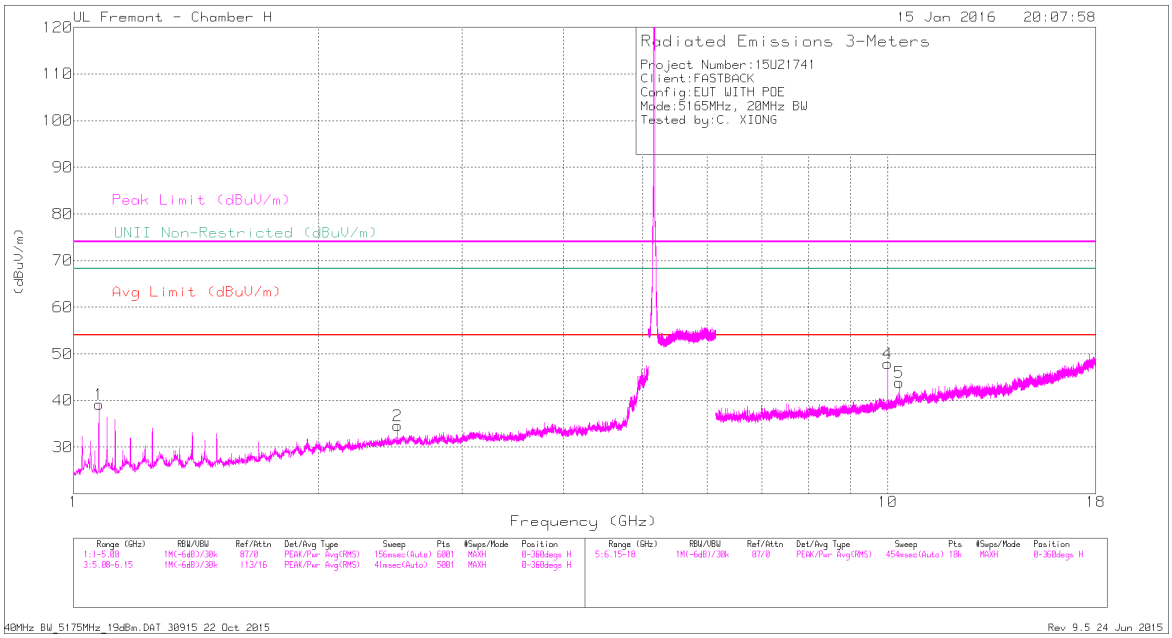
PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

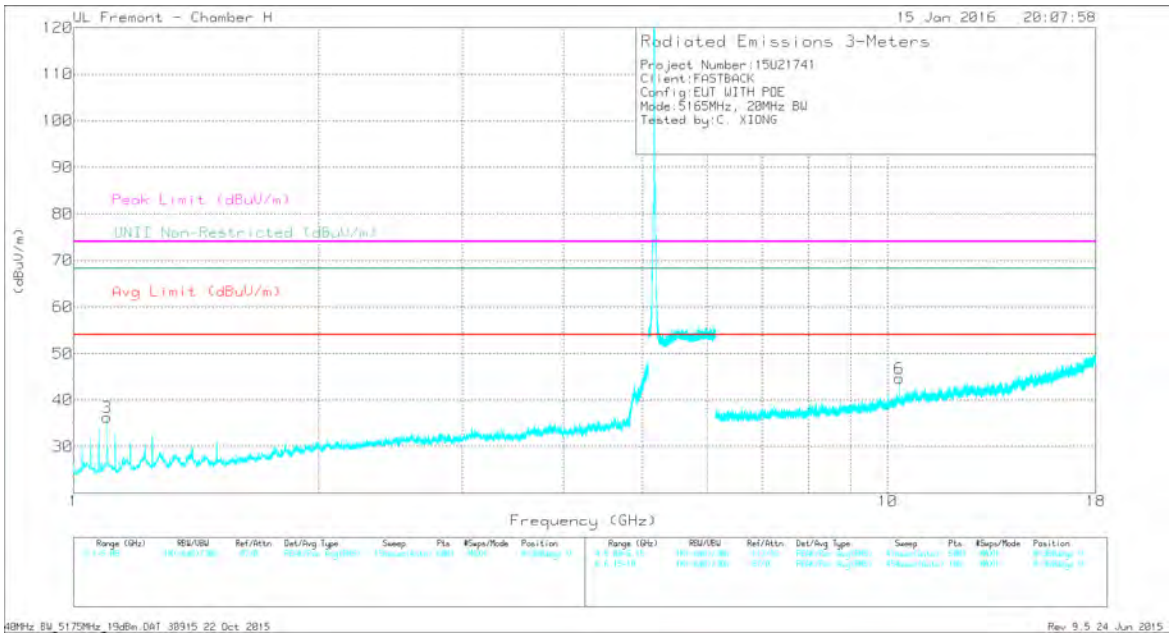
9.2.2. TX ABOVE 1 GHz 20MHz BW 4TX MODE IN THE 5.2 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL PLOT



LOW CHANNEL VERTICAL PLOT



DATA

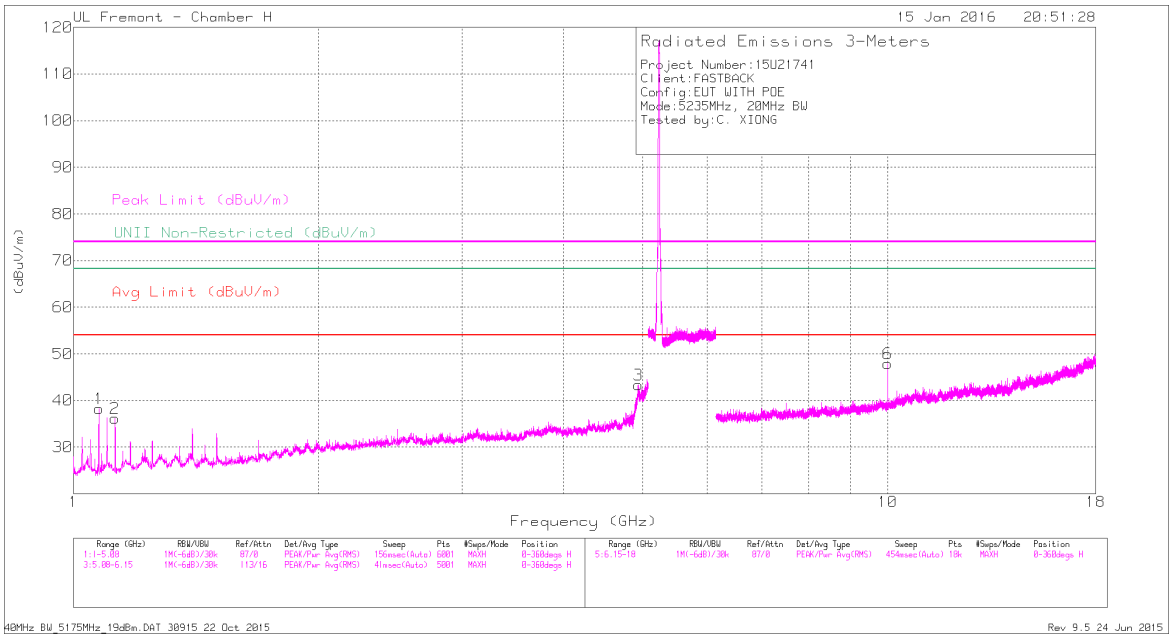
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.075	49.77	PK-U	27.1	-34.3	42.57	-	-	74	-31.43	-	-	93	100	H
	* 1.075	44.78	ADR	27.1	-34.3	37.58	54	-16.42	-	-	-	-	93	100	H
2	* 2.5	43.46	PK-U	32.5	-33.3	42.66	-	-	74	-31.34	-	-	91	102	H
	* 2.5	34.04	ADR	32.5	-33.3	33.24	54	-20.76	-	-	-	-	91	102	H
3	* 1.1	48.47	PK-U	27.1	-34.4	41.17	-	-	74	-32.83	-	-	67	186	V
	* 1.1	41.79	ADR	27.1	-34.4	34.49	54	-19.51	-	-	-	-	67	186	V
4	10	41.32	PK-U	36.9	-24.1	54.12	-	-	-	-	68.2	-14.08	76	100	H
5	10.33	38.23	PK-U	37.2	-22.8	52.63	-	-	-	-	68.2	-15.57	197	215	H
6	10.33	37.58	PK-U	37.2	-22.8	51.98	-	-	-	-	68.2	-16.22	221	100	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

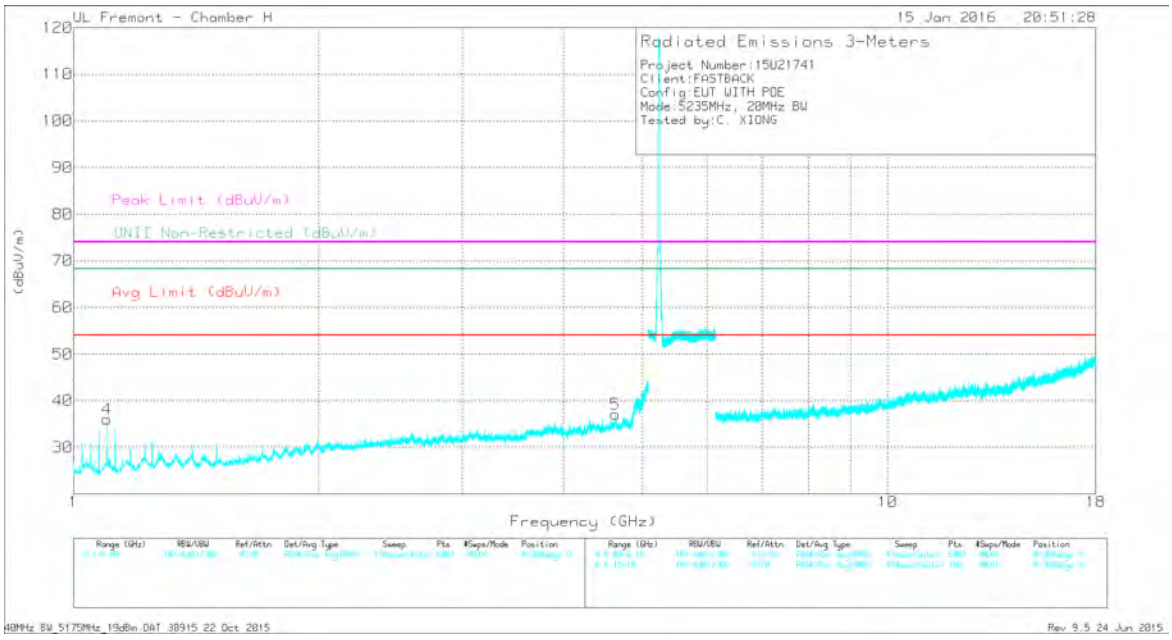
PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

HIGH CHANNEL HORIZONTAL PLOT



HIGH CHANNEL VERTICAL PLOT



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.075	49.4	PK-U	27.1	-34.3	42.2	-	-	74	-31.8	-	-	97	202	H
	* 1.075	44.48	ADR	27.1	-34.3	37.28	54	-16.72	-	-	-	-	97	202	H
2	* 1.125	48.43	PK-U	27.4	-34.4	41.43	-	-	74	-32.57	-	-	101	225	H
	* 1.125	41.34	ADR	27.4	-34.4	34.34	54	-19.66	-	-	-	-	101	225	H
3	* 4.939	47.99	PK-U	34.2	-28.7	53.49	-	-	74	-20.51	-	-	242	206	H
	* 4.939	36.12	ADR	34.2	-28.7	41.62	54	-12.38	-	-	-	-	242	206	H
4	* 1.1	48.76	PK-U	27.1	-34.4	41.46	-	-	74	-32.54	-	-	65	193	V
	* 1.1	42.54	ADR	27.1	-34.4	35.24	54	-18.76	-	-	-	-	65	193	V
5	* 4.629	40.36	PK-U	34.1	-29.7	44.76	-	-	74	-29.24	-	-	158	173	V
	* 4.63	27.99	ADR	34.1	-29.7	32.39	54	-21.61	-	-	-	-	158	173	V
6	10	41.74	PK-U	36.9	-24.1	54.54	-	-	-	-	68.2	-13.66	77	106	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

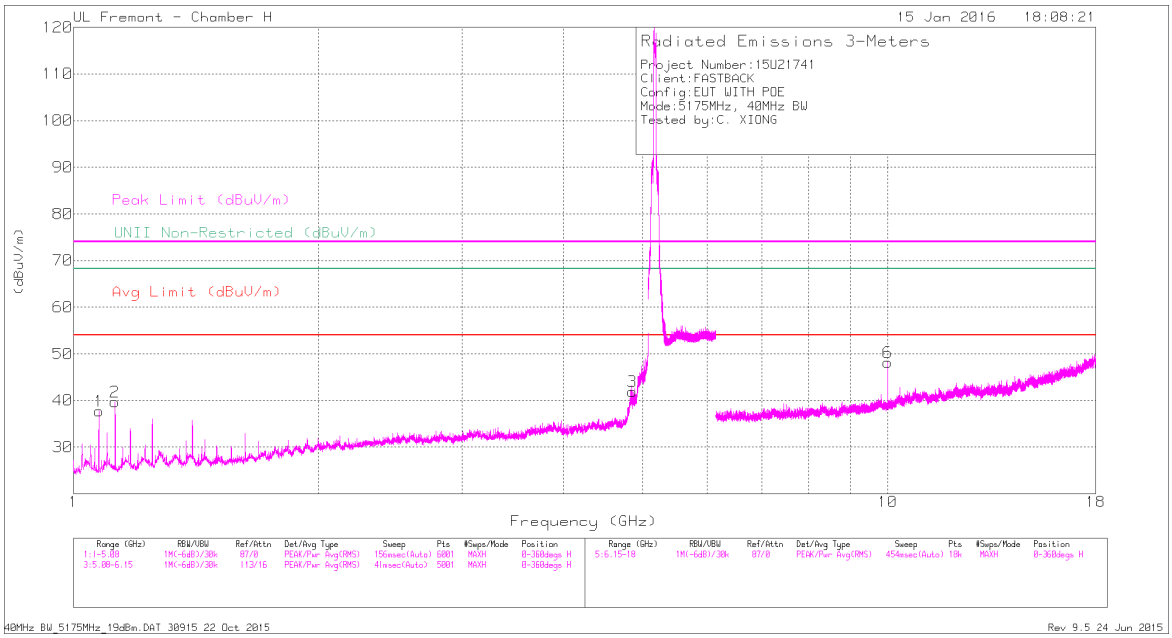
PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

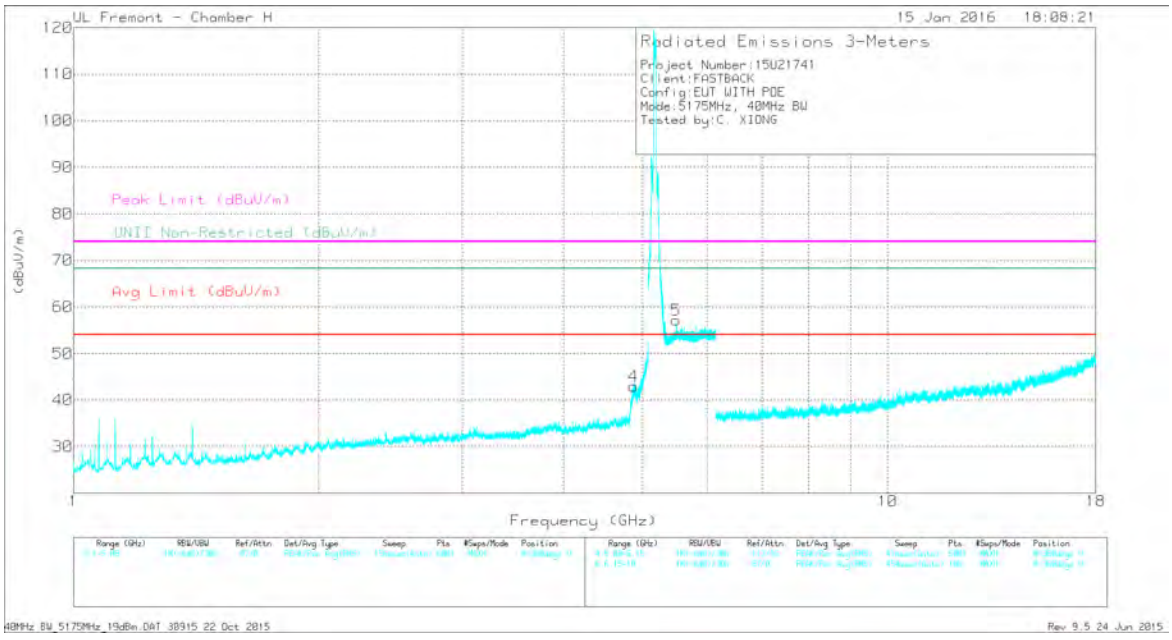
9.2.3. TX ABOVE 1 GHz 40MHz BW 4TX MODE IN THE 5.2 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL PLOT



LOW CHANNEL VERTICAL PLOT



DATA

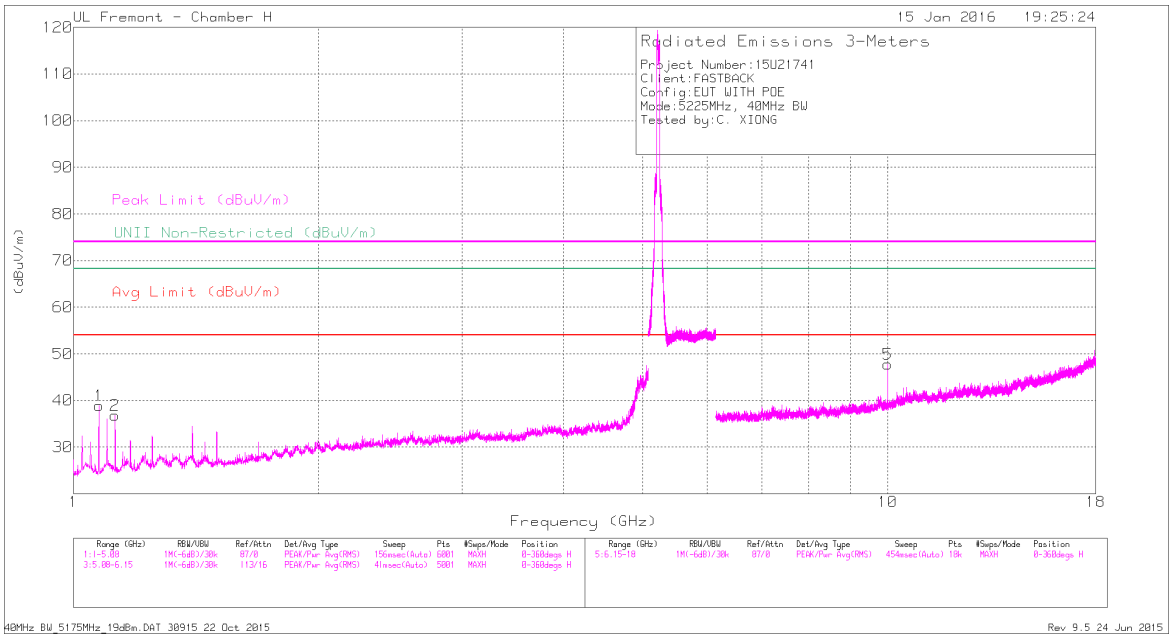
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.075	49.88	PK-U	27.1	-34.3	42.68	-	-	74	-31.32	-	-	95	201	H
	* 1.075	44.71	ADR	27.1	-34.3	37.51	54	-16.49	-	-	-	-	95	201	H
2	* 1.125	49.28	PK-U	27.4	-34.4	42.28	-	-	74	-31.72	-	-	99	226	H
	* 1.125	42.51	ADR	27.4	-34.4	35.51	54	-18.49	-	-	-	-	99	226	H
3	* 4.858	45.55	PK-U	34.2	-29.2	50.55	-	-	74	-23.45	-	-	246	215	H
	* 4.859	33.48	ADR	34.2	-29.2	38.48	54	-15.52	-	-	-	-	246	215	H
4	* 4.876	47.52	PK-U	34.2	-28.9	52.82	-	-	74	-21.18	-	-	238	238	V
	* 4.876	35.53	ADR	34.2	-28.9	40.83	54	-13.17	-	-	-	-	238	238	V
5	5.5	46.47	PK-U	35.5	-18.7	63.27	-	-	-	-	68.2	-4.93	89	118	V
6	10	41.4	PK-U	36.9	-24.1	54.2	-	-	-	-	68.2	-14	79	121	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

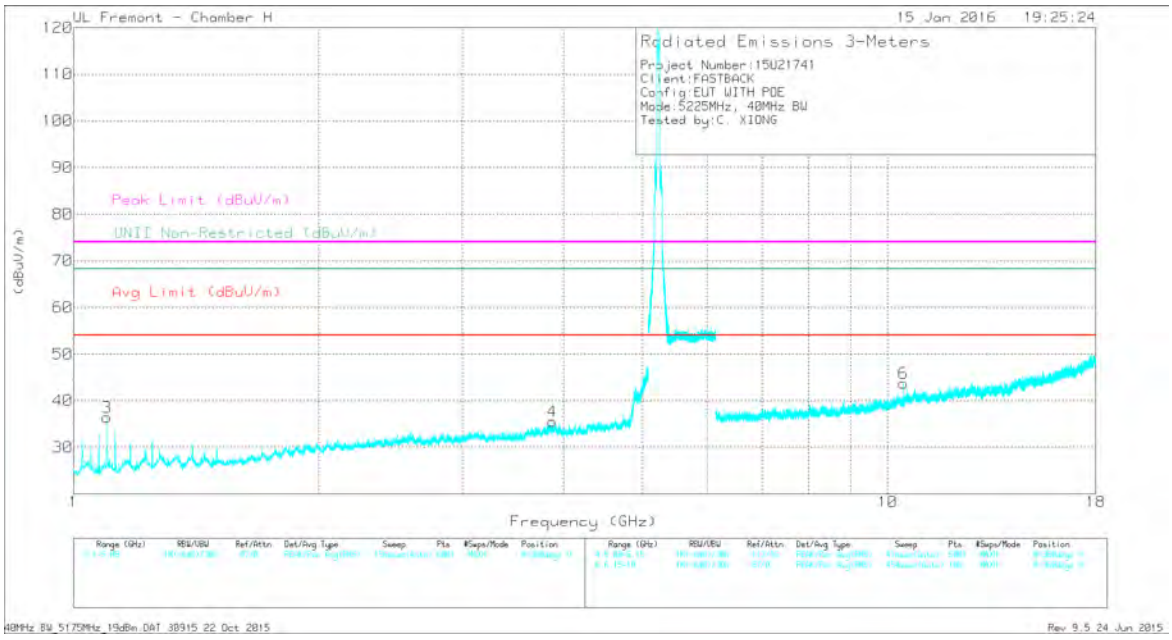
PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

HIGH CHANNEL HORIZONTAL PLOT



HIGH CHANNEL VERTICAL PLOT



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.075	49.24	PK-U	27.1	-34.3	42.04	-	-	74	-31.96	-	-	97	199	H
	* 1.075	44.45	ADR	27.1	-34.3	37.25	54	-16.75	-	-	-	-	97	199	H
2	* 1.125	48.98	PK-U	27.4	-34.4	41.98	-	-	74	-32.02	-	-	99	225	H
	* 1.125	42.23	ADR	27.4	-34.4	35.23	54	-18.77	-	-	-	-	99	225	H
3	* 1.1	48.53	PK-U	27.1	-34.4	41.23	-	-	74	-32.77	-	-	63	194	V
	* 1.1	41.98	ADR	27.1	-34.4	34.68	54	-19.32	-	-	-	-	63	194	V
4	* 3.874	39.63	PK-U	33.6	-30.4	42.83	-	-	74	-31.17	-	-	63	194	V
	* 3.875	28.47	ADR	33.6	-30.4	31.67	54	-22.33	-	-	-	-	63	194	V
5	10	41.52	PK-U	36.9	-24.1	54.32	-	-	-	-	68.2	-13.88	79	113	H
6	10.45	37.84	PK-U	37.4	-23.4	51.84	-	-	-	-	68.2	-16.36	92	102	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK-U - U-NII: Maximum Peak

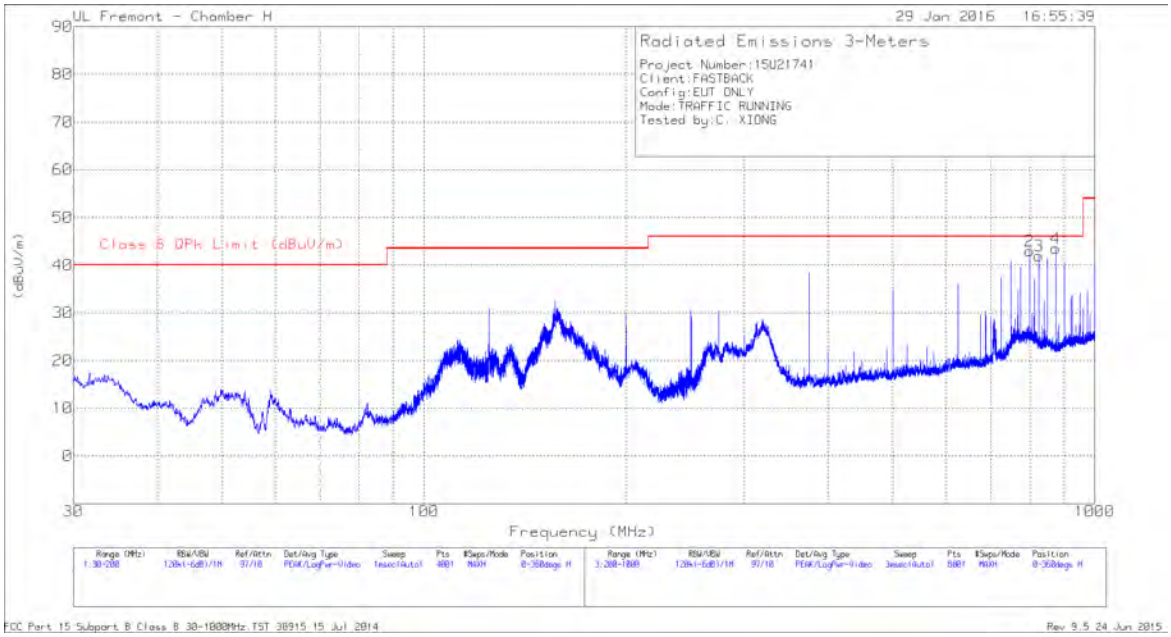
ADR - U-NII AD primary method, RMS average

9.3. WORST-CASE BELOW 1 GHz

PoE setup:

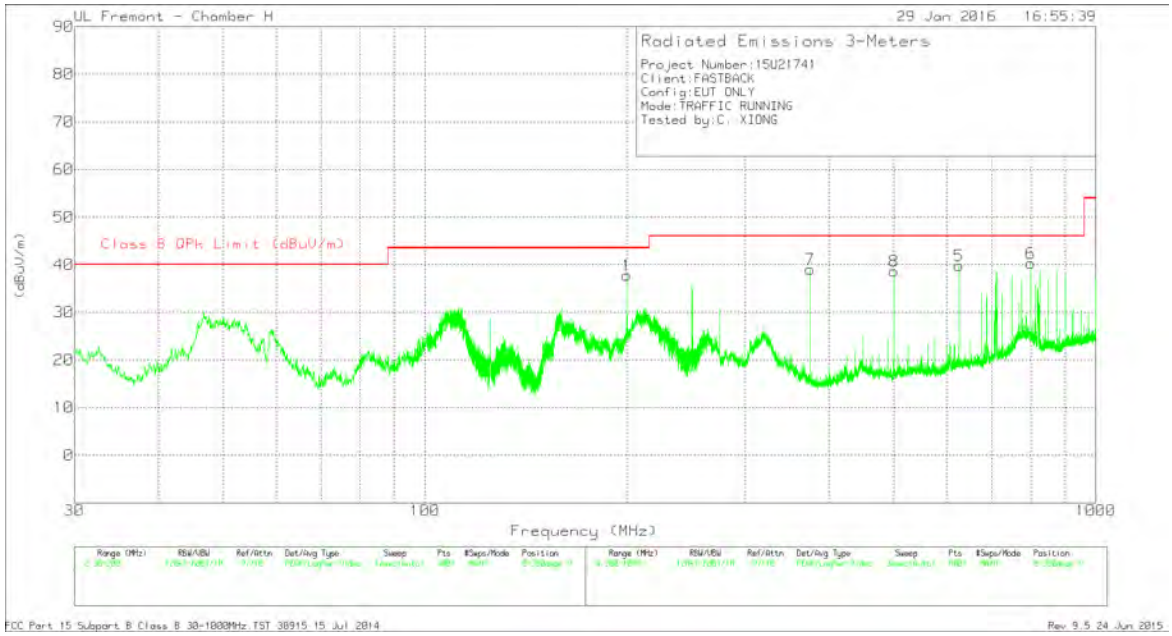
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)

VERTICAL PLOT



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T900 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	Class B QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	199.993	48	Qp	12.4	-29.8	30.6	43.52	-12.92	331	116	V
7	375	52.52	Pk	15.3	-28.8	39.02	46.02	-7	0-360	100	V
8	500	49.45	Pk	17.5	-28.3	38.65	46.02	-7.37	0-360	100	V
5	625	48.12	Pk	19.6	-27.9	39.82	46.02	-6.2	0-360	100	V
2	800.004	49.47	Qp	21.4	-27.4	43.47	46.02	-2.55	24	104	H
6	800.016	45.58	Qp	21.4	-27.4	39.58	46.02	-6.44	76	100	V
3	825.002	47.08	Qp	21.4	-27.1	41.38	46.02	-4.64	24	103	H
4	875.007	48.41	Qp	21.3	-26.7	43.01	46.02	-3.01	34	170	H

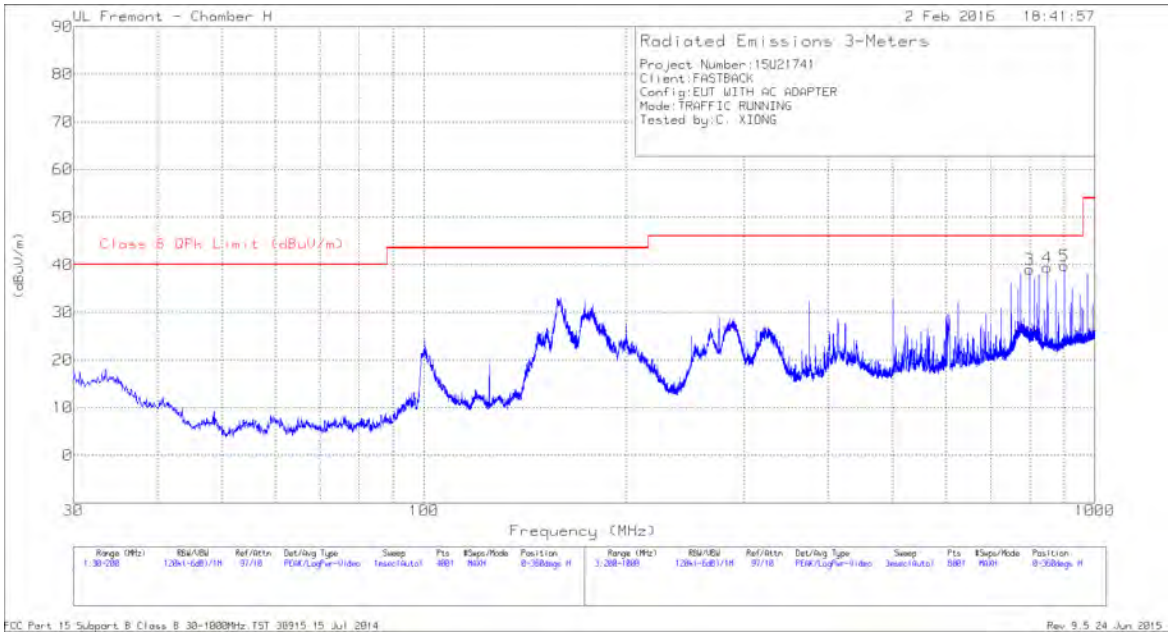
Pk - Peak detector

Qp - Quasi-Peak detector

AC mains setup:

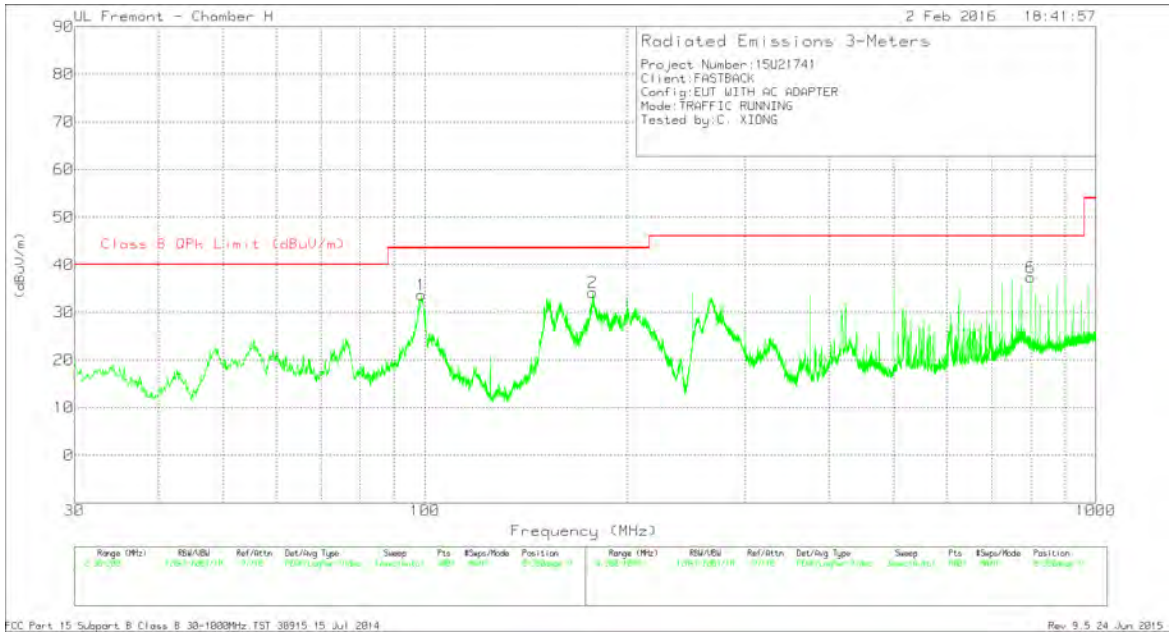
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)

VERTICAL PLOT



DATA

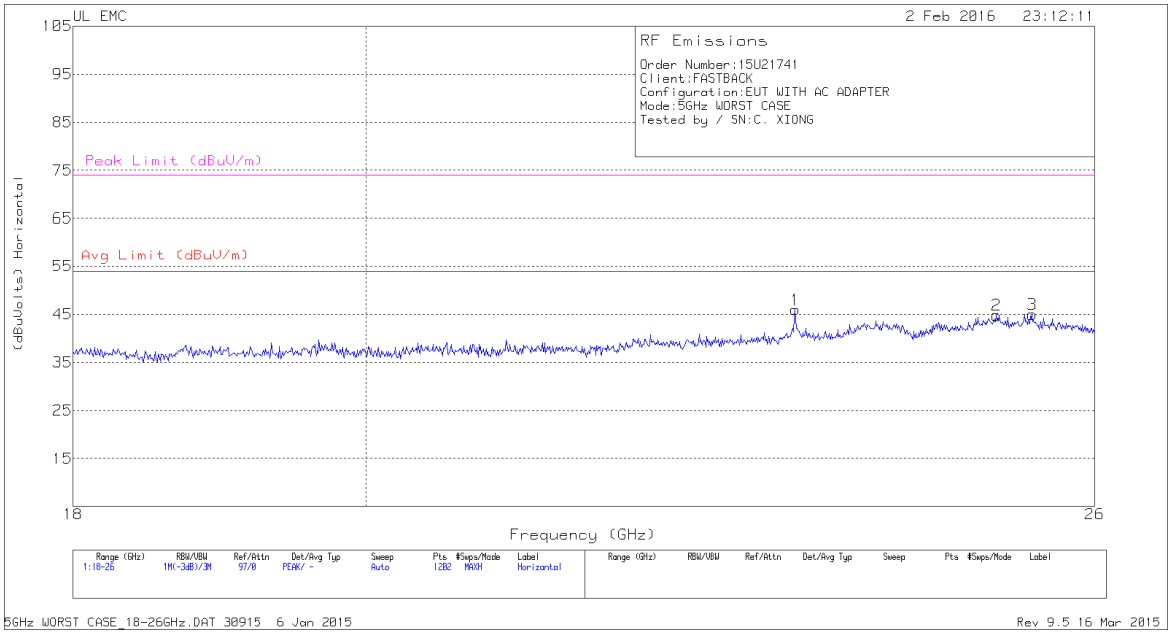
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T900 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	Class B QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	98.7225	54.34	Pk	9.8	-30.5	33.64	43.52	-9.88	0-360	100	V
2	177.985	52.54	Pk	11.5	-29.9	34.14	43.52	-9.38	0-360	100	V
3	800.3	44.96	Pk	21.4	-27.3	39.06	46.02	-6.96	0-360	201	H
6	800.3	43.25	Pk	21.4	-27.3	37.35	46.02	-8.67	0-360	100	V
4	850.3	44.37	Pk	22	-26.9	39.47	46.02	-6.55	0-360	201	H
5	900.3	44.02	Pk	22.3	-26.5	39.82	46.02	-6.2	0-360	100	H

Pk - Peak detector

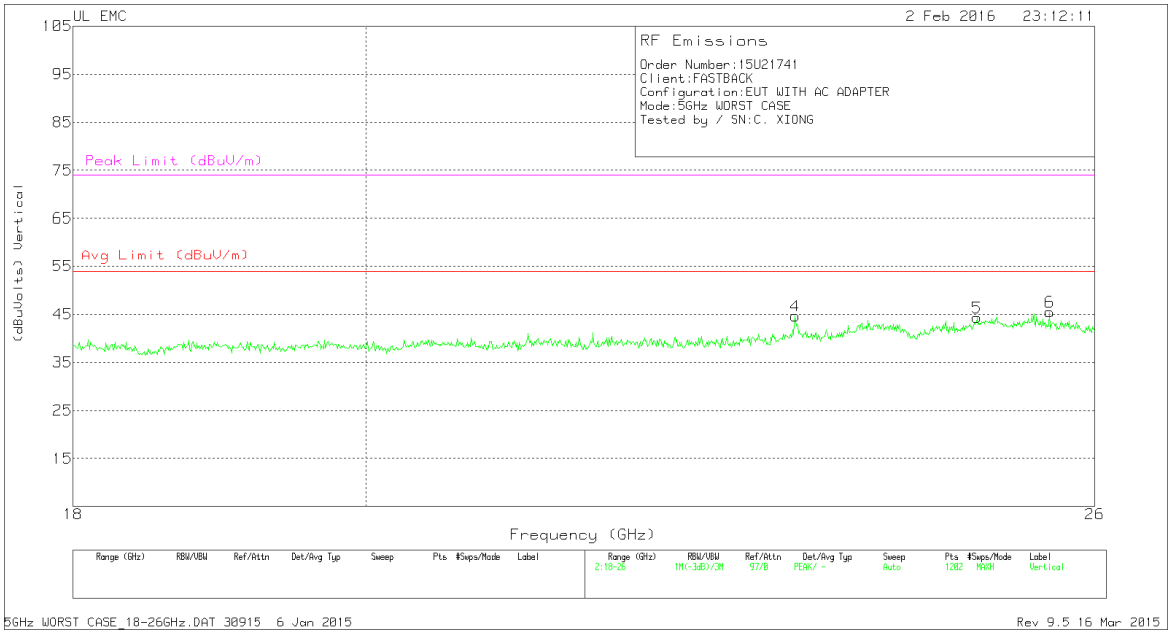
9.4. WORST-CASE 18 to 26 GHz

SPURIOUS EMISSIONS 18000 TO 26000 MHz (WORST-CASE CONFIGURATION)

HORIZONTAL PLOT



VERTICAL PLOT



HORIZONTAL & VERTICAL DATA

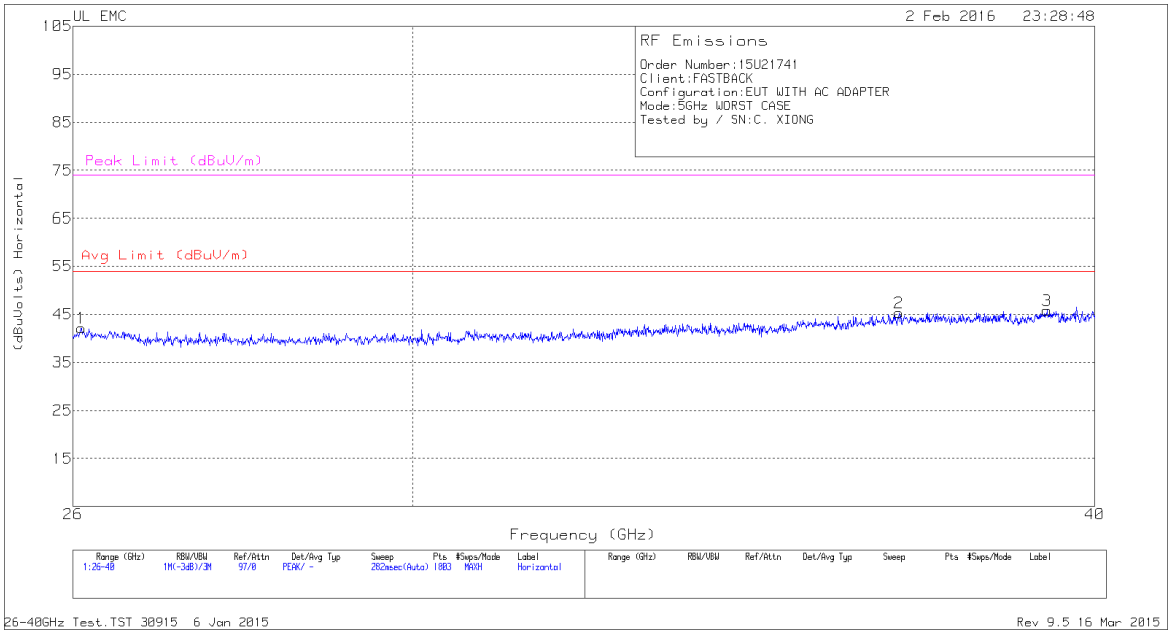
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	T477 AF (dB/m)	Amp/Cbl (dB)	Dist Corr (dB)	Corrected Reading (dBuVolts)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)
1	23.342	46.7	Pk	33.7	-24.9	-9.5	46	54	-8	74	-28
2	25.094	44.63	Pk	34.2	-24.5	-9.5	44.83	54	-9.166	74	-29.16
3	25.42	44.6	Pk	34.2	-24.3	-9.5	45	54	-9	74	-29
4	23.342	45.37	Pk	33.7	-24.9	-9.5	44.66	54	-9.33	74	-29.33
5	24.921	44.03	Pk	34	-24.2	-9.5	44.33	54	-9.66	74	-29.66
6	25.58	45.8	Pk	34.3	-25.1	-9.5	45.5	54	-8.5	74	-28.5

Pk - Peak detector

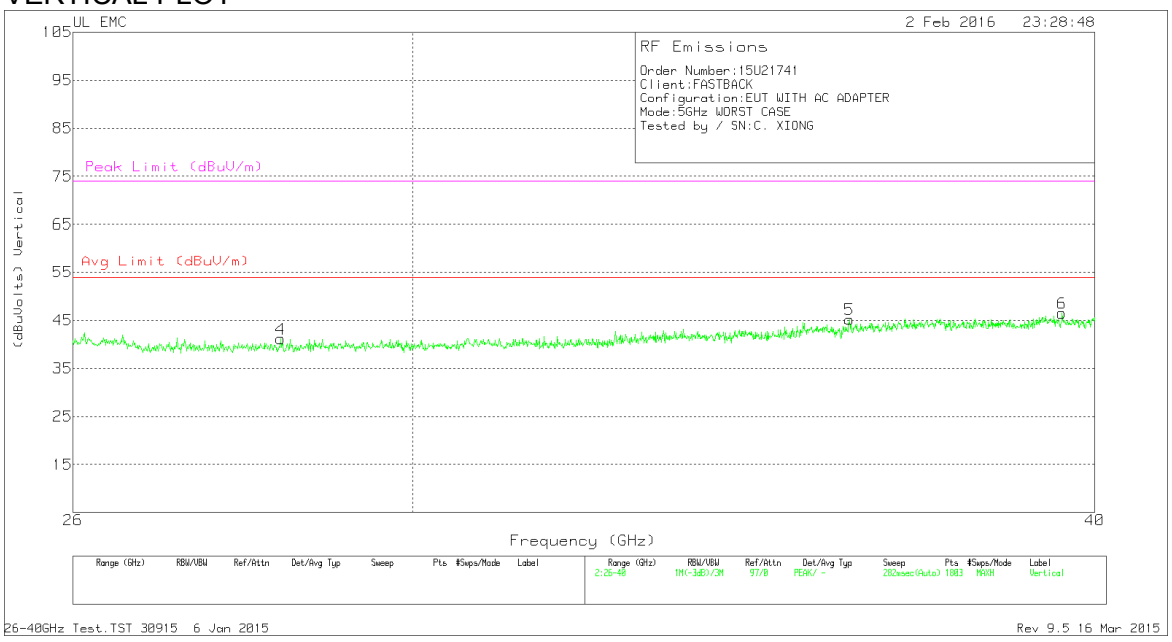
9.5. WORST-CASE 26 to 40 GHz

SPURIOUS EMISSIONS 26 TO 40 GHz (WORST-CASE CONFIGURATION)

HORIZONTAL PLOT



VERTICAL PLOT



HORIZONTAL & VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	T90 AF (dB/m)	Amp/Cbl (dB)	Dist Corr (dB)	Corrected Reading (dBuVolts)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)
1	26.089	46.27	Pk	35.6	-30.2	-9.5	42.166	54	-11.833	74	-31.833
2	36.83	50.63	Pk	37.1	-32.9	-9.5	45.333	54	-8.666	74	-28.666
3	39.2	49.23	Pk	38.3	-32.2	-9.5	45.833	54	-8.166	74	-28.166
4	28.377	46.47	Pk	35.8	-31.6	-9.5	41.166	54	-12.833	74	-32.833
5	36.069	50.57	Pk	37.2	-33.1	-9.5	45.166	54	-8.833	74	-28.833
6	39.448	50.1	Pk	37.6	-31.7	-9.5	46.5	54	-7.5	74	-27.5

Pk - Peak detector

10. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

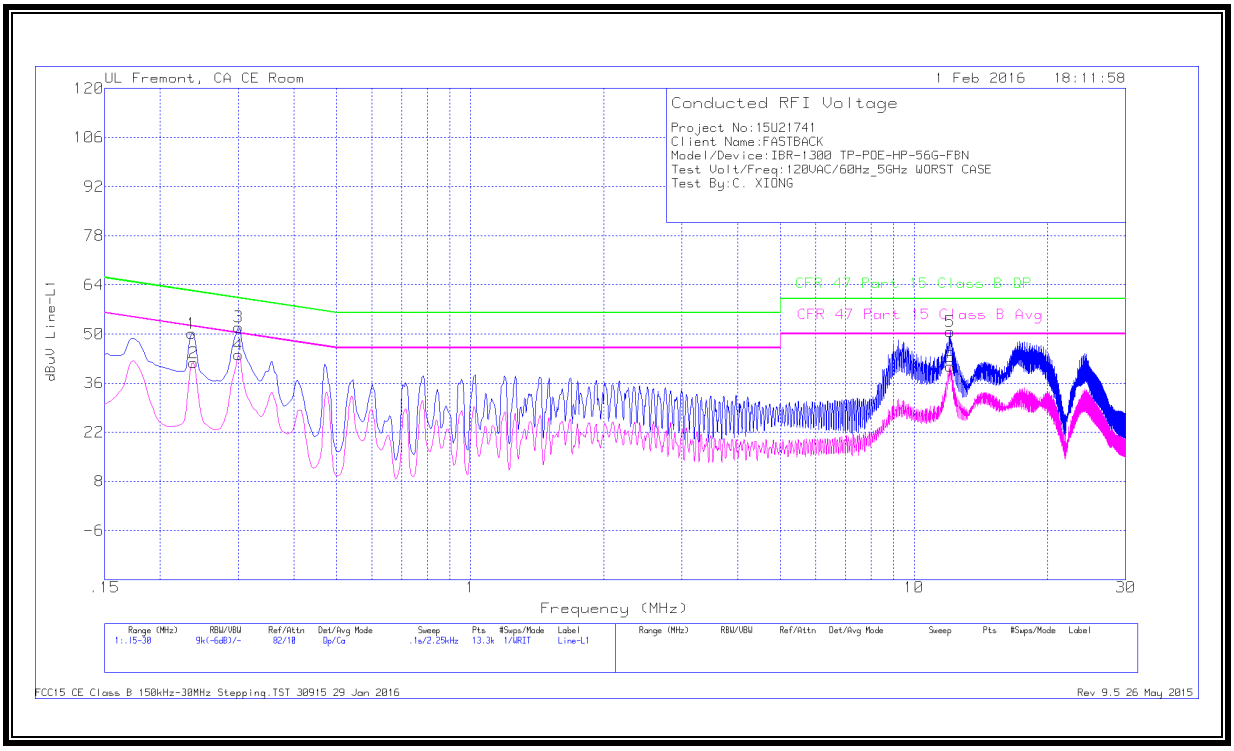
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines

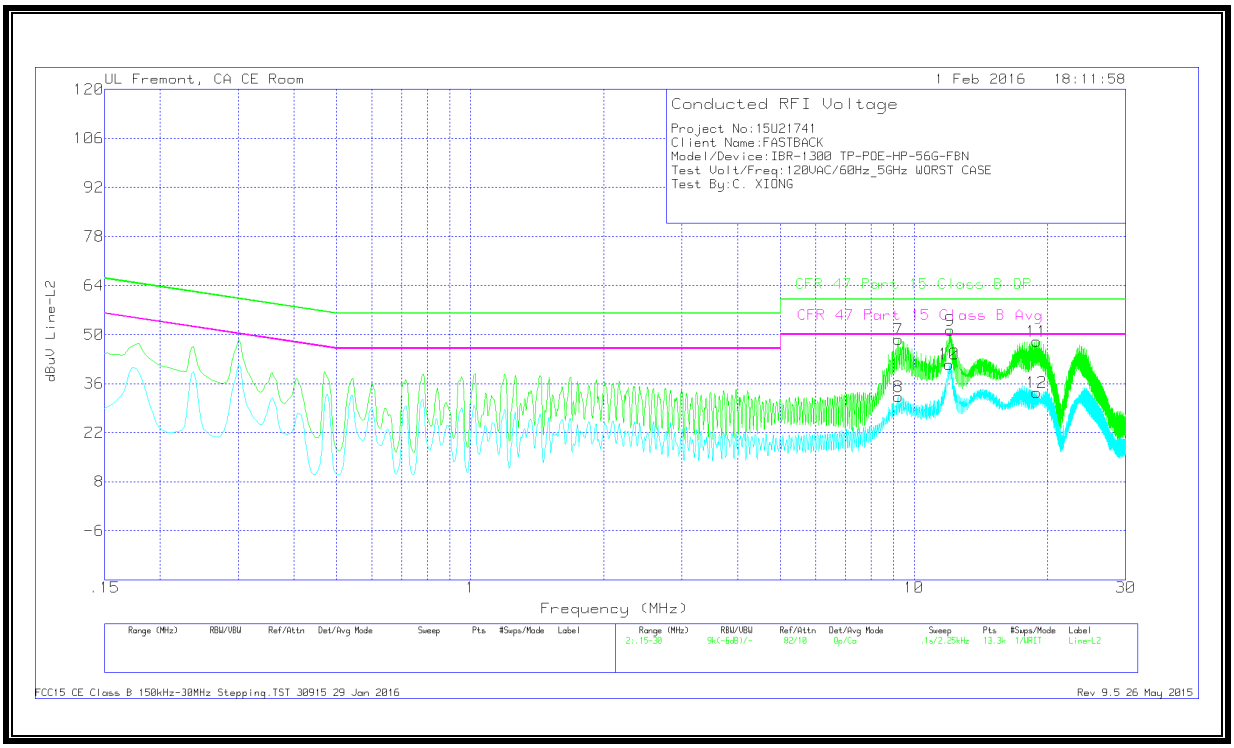
RESULTS

Model IBR-1300-NA (PoE Option) setup:

LINE 1 RESULTS



LINE 2 RESULTS



DATA

Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T1310 IL L1	LC Cables 1&3	10dB Pad	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR) Margin (dB)
1	.2355	40.21	Qp	0	0	10	50.21	62.25	-12.04	-	-
2	.23775	31.77	Ca	0	0	10	41.77	-	-	52.17	-10.4
3	.30075	42	Qp	0	0	10	52	60.22	-8.22	-	-
4	.30075	34.05	Ca	0	0	10	44.05	-	-	50.22	-6.17
5	12.066	40.32	Qp	.1	.2	10	50.62	60	-9.38	-	-
6	12.066	30.48	Ca	.1	.2	10	40.78	-	-	50	-9.22

Range 2: Line-L2 .15 - 30MHz

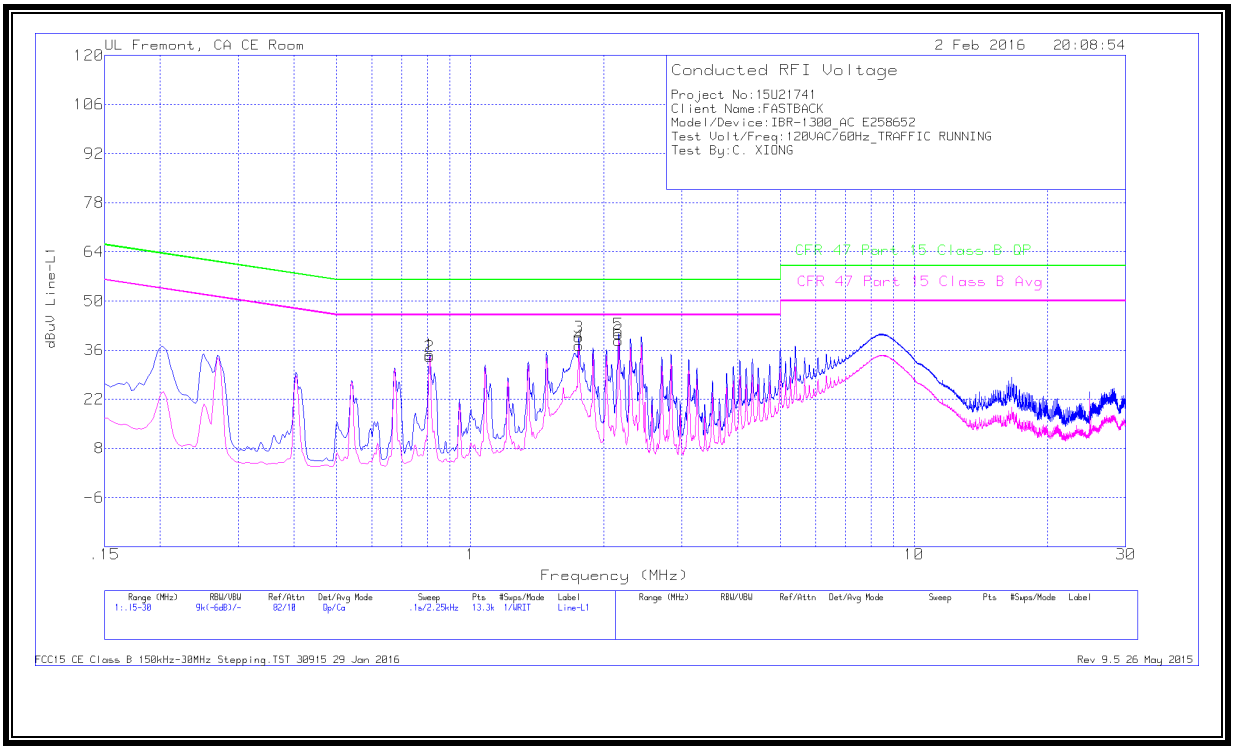
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T1310 IL L2	LC Cables 2&3	10dB Pad	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR) Margin (dB)
7	9.231	38.45	Qp	0	.1	10	48.55	60	-11.45	-	-
8	9.22875	22.18	Ca	0	.1	10	32.28	-	-	50	-17.72
9	12.06375	40.98	Qp	0	.2	10	51.18	60	-8.82	-	-
10	11.994	31.37	Ca	0	.2	10	41.57	-	-	50	-8.43
11	18.88125	37.87	Qp	0	.2	10	48.07	60	-11.93	-	-
12	18.88125	23.32	Ca	0	.2	10	33.52	-	-	50	-16.48

Qp - Quasi-Peak detector

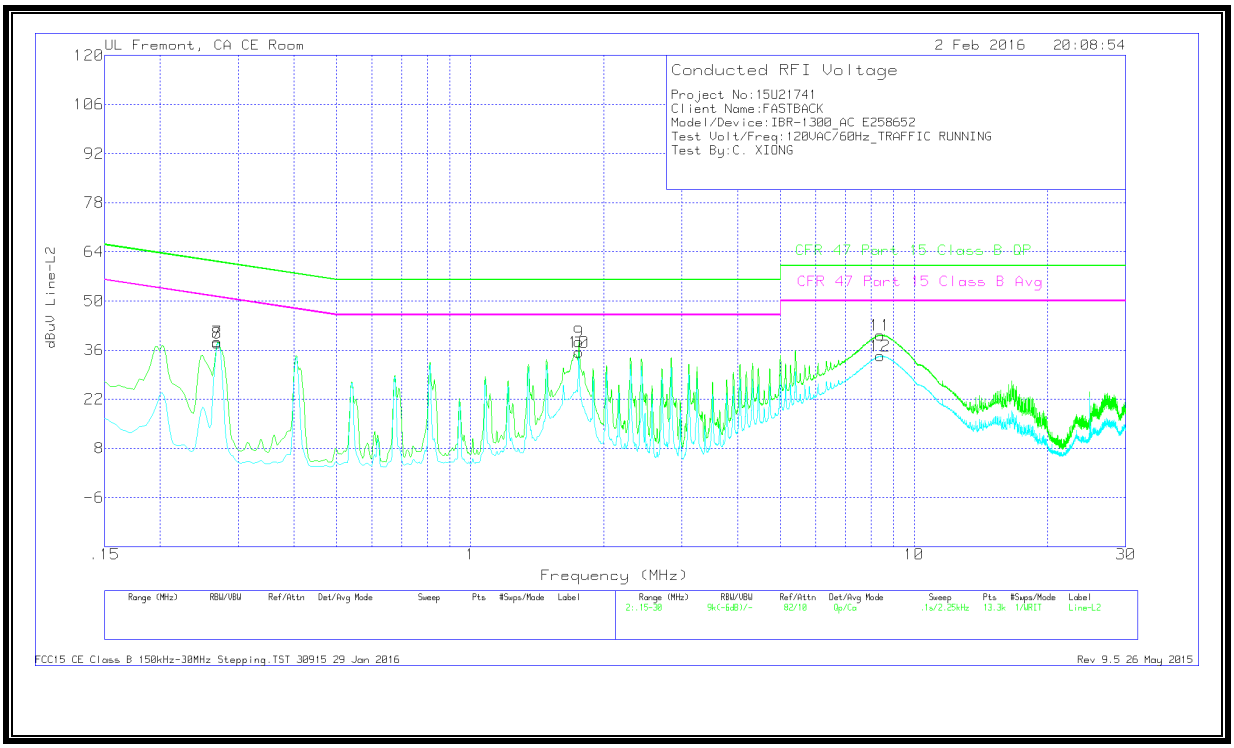
Ca - CISPR average detection

Model IBR-1301-NA (AC Option) setup:

LINE 1 RESULTS



LINE 2 RESULTS



DATA

Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T1310 IL L1	LC Cables 1&3	10dB Pad	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR) Margin (dB)
1	.80925	24.7	Qp	0	0	10	34.7	56	-21.3	-	-
2	.80925	24.19	Ca	0	0	10	34.19	-	-	46	-11.81
3	1.7565	29.58	Qp	0	.1	10	39.68	56	-16.32	-	-
4	1.75425	27.18	Ca	0	.1	10	37.28	-	-	46	-8.72
5	2.15925	30.51	Qp	0	.1	10	40.61	56	-15.39	-	-
6	2.15925	28.59	Ca	0	.1	10	38.69	-	-	46	-7.31

Qp - Quasi-Peak detector

Ca - CISPR average detection

Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T1310 IL L2	LC Cables 2&3	10dB Pad	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR) Margin (dB)
7	.26925	28.41	Qp	0	0	10	38.41	61.14	-22.73	-	-
8	.26925	27.95	Ca	0	0	10	37.95	-	-	51.14	-13.19
9	1.7565	28.21	Qp	0	.1	10	38.31	56	-17.69	-	-
10	1.7565	25.32	Ca	0	.1	10	35.42	-	-	46	-10.58
11	8.39625	30.21	Qp	0	.1	10	40.31	60	-19.69	-	-
12	8.385	24.22	Ca	0	.1	10	34.32	-	-	50	-15.68

Qp - Quasi-Peak detector

Ca - CISPR average detection

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