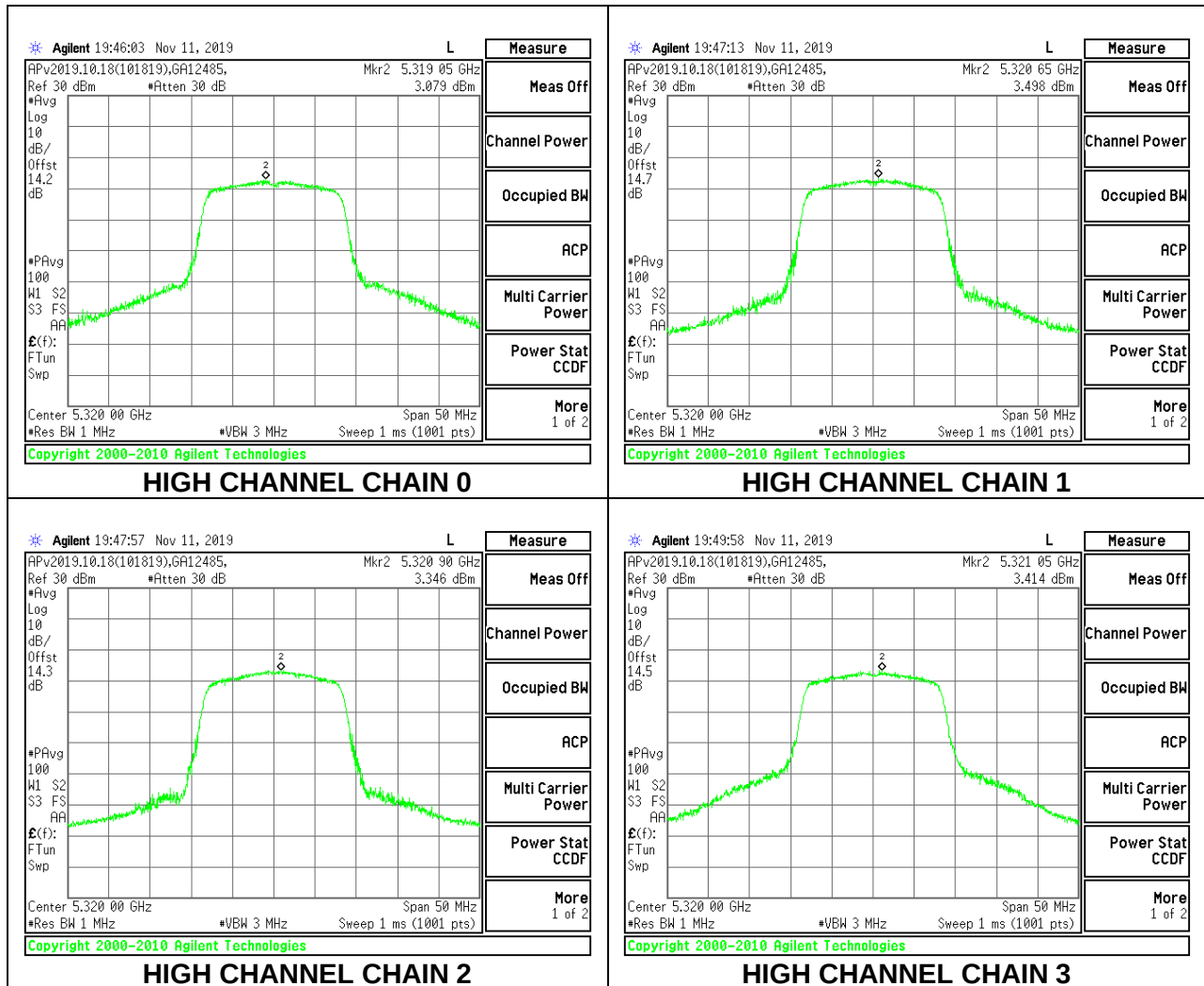


HIGH CHANNEL



8.5.4. 802.11n HT20 MODE IN THE 5.3 GHz BAND

4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE (FCC+IC)

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directiona Gain for Power (dBi)	Direction Gain for PPSP (dBi)
Low	5260	20.80	17.686	4.23	7.22
Mid	5300	21.15	17.768	4.23	7.22
High	5320	20.45	17.489	4.23	7.22

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PPSP Limit (dBm)	IC PPSP Limit (dBm)	PPSP Limit (dBm)
Low	5260	24.00	23.48	29.48	23.48	9.78	11.00	9.78
Mid	5300	24.00	23.50	29.50	23.50	9.78	11.00	9.78
High	5320	24.00	23.43	29.43	23.43	9.78	11.00	9.78

Duty Cycle CF (dB)	0.10	Included in Calculations of Corr'd PPSP
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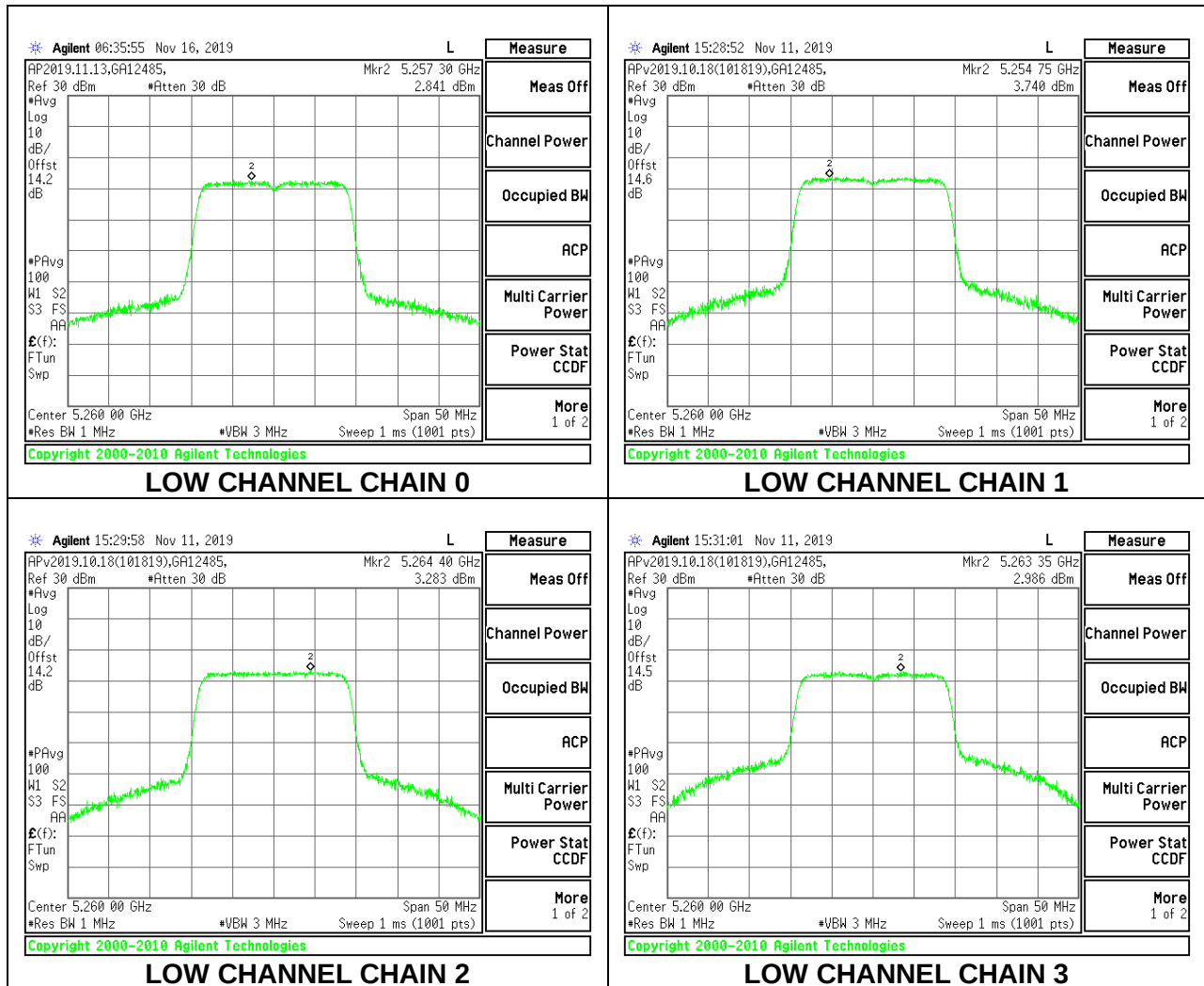
Output Power Results

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)
Low	5260	12.65	12.71	12.76	12.54	18.69	23.48	-4.79
Mid	5300	12.52	12.61	12.73	12.48	18.61	23.50	-4.89
High	5320	11.58	11.64	11.79	11.44	17.63	23.43	-5.79

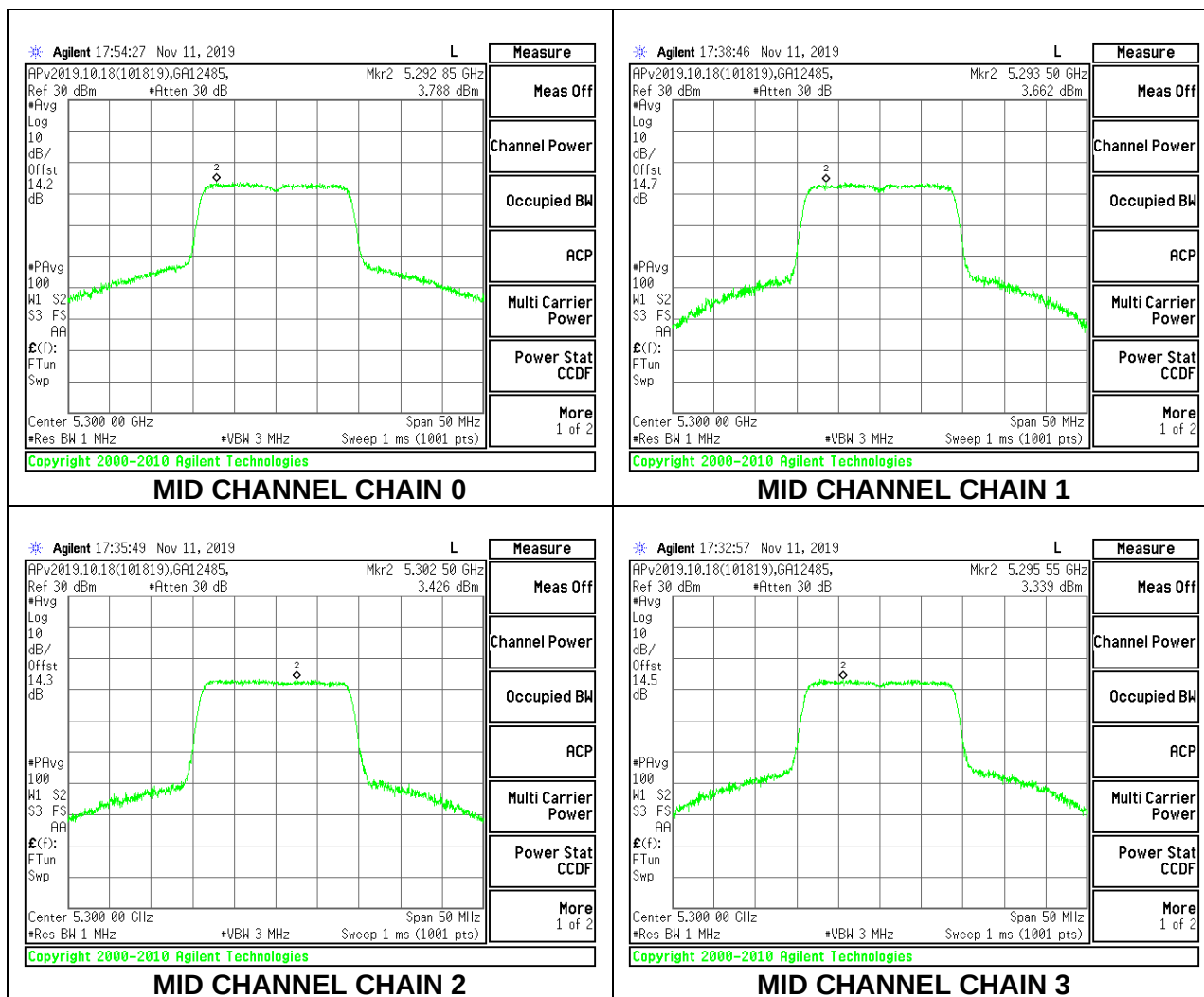
PPSP Results

Channel	Frequency (MHz)	Chain 0 Meas PPSP (dBm/ 1MHz)	Chain 1 Meas PPSP (dBm/ 1MHz)	Chain 2 Meas PPSP (dBm/ 1MHz)	Chain 3 Meas PPSP (dBm/ 1MHz)	Total Corr'd PPSP (dBm/ 1MHz)	PPSP Limit (dBm/ 1MHz)	PPSP Margin (dB)
Low	5260	2.84	3.74	3.28	2.99	9.35	9.78	-0.43
Mid	5300	3.79	3.66	3.43	3.34	9.68	9.78	-0.10
High	5320	3.04	3.84	3.56	3.47	9.61	9.78	-0.17

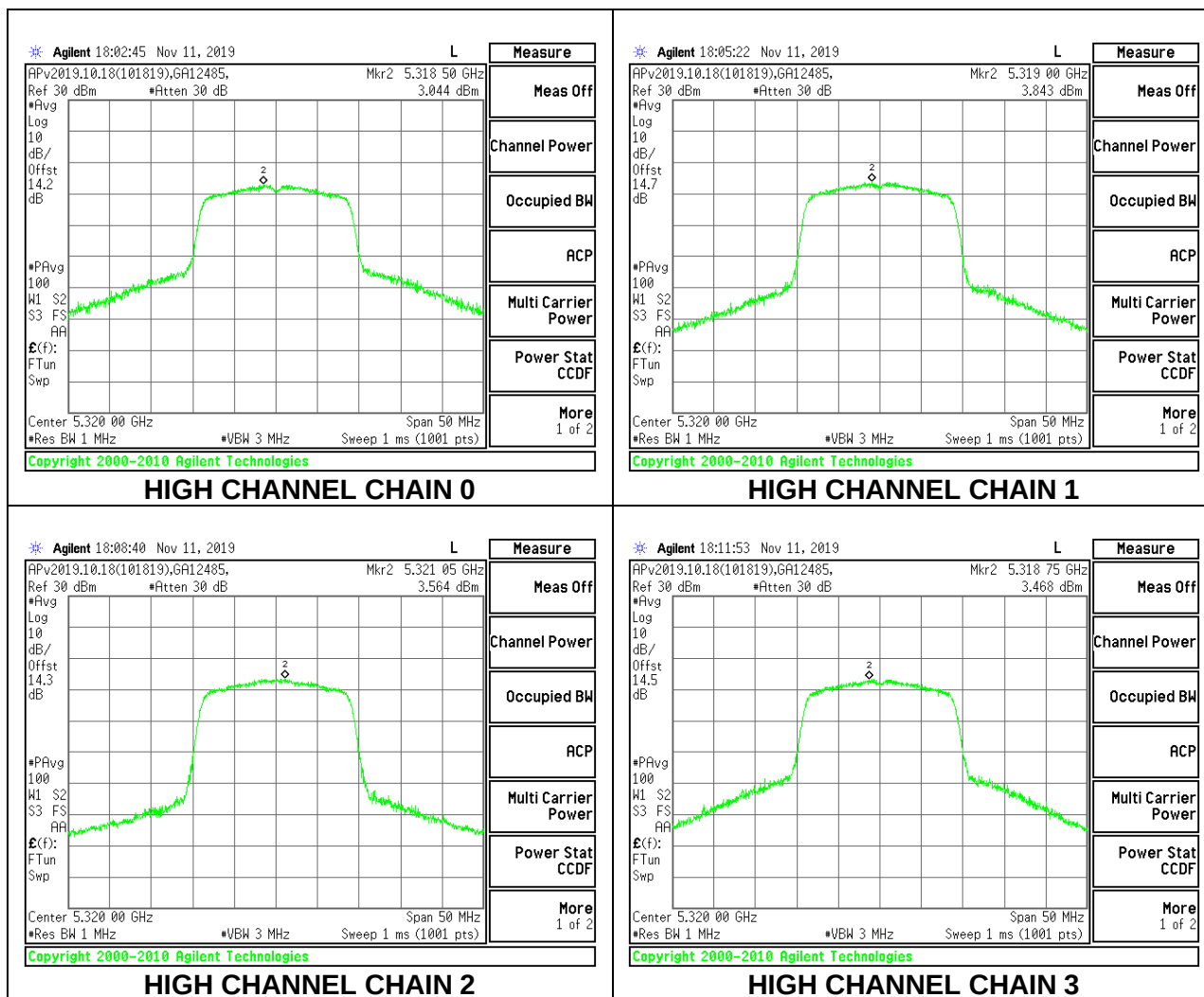
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



8.5.5. 802.11a MODE IN THE 5.6 GHz BAND

4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE (FCC+IC)

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)
Low	5500	20.050	16.371	4.23	7.22
Mid	5580	20.450	16.523	4.23	7.22
High	5700	20.150	16.334	4.23	7.22

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm/1MHz)	ISED PSD Limit (dBm/1MHz)	PSD Limit (dBm/1MHz)
Low	5500	24.00	23.14	29.14	23.14	9.78	11.00	9.78
Mid	5580	24.00	23.18	29.18	23.18	9.78	11.00	9.78
High	5700	24.00	23.13	29.13	23.13	9.78	11.00	9.78

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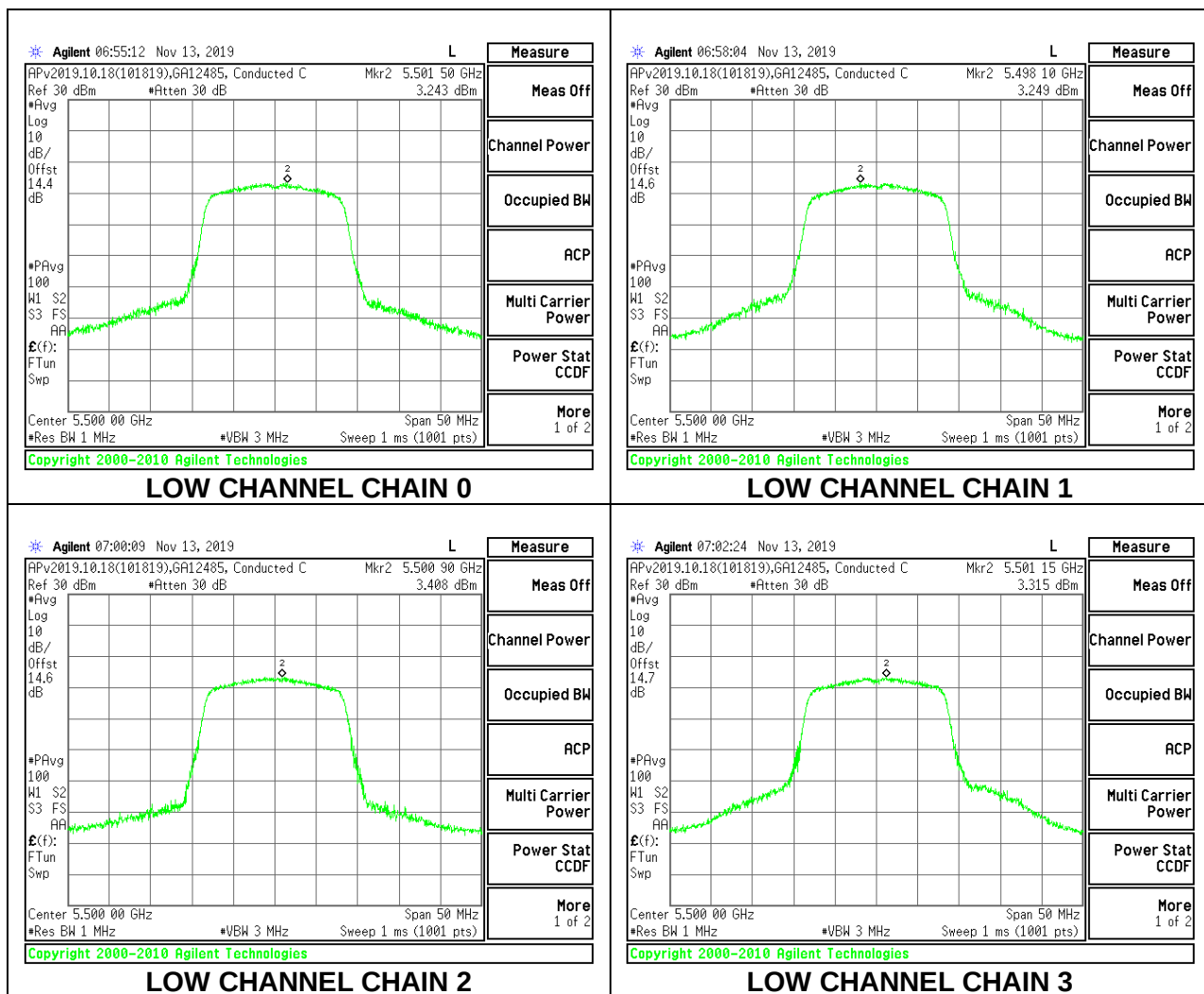
Output Power Results

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)
Low	5500	11.17	11.22	11.31	10.99	17.19	23.14	-5.95
Mid	5580	12.39	12.29	12.41	12.17	18.34	23.18	-4.84
High	5700	11.26	11.45	11.42	11.12	17.34	23.13	-5.80

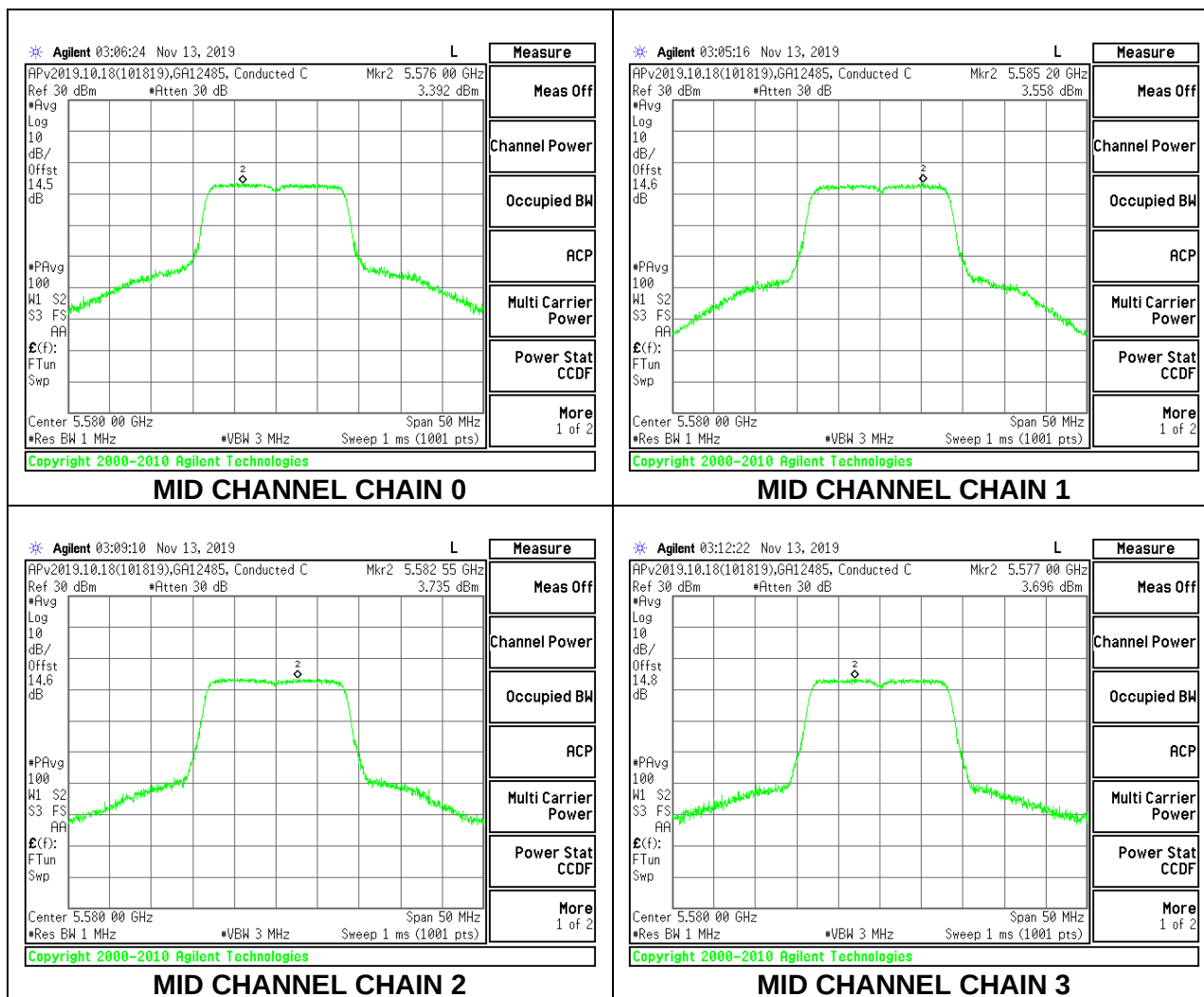
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm/ 1MHz)	Chain 1 Meas PSD (dBm/ 1MHz)	Chain 2 Meas PSD (dBm/ 1MHz)	Chain 3 Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5500	3.243	3.249	3.408	3.315	9.325	9.78	-0.46
Mid	5580	3.392	3.558	3.735	3.696	9.618	9.78	-0.16
High	5700	3.026	3.509	3.468	3.685	9.449	9.78	-0.33

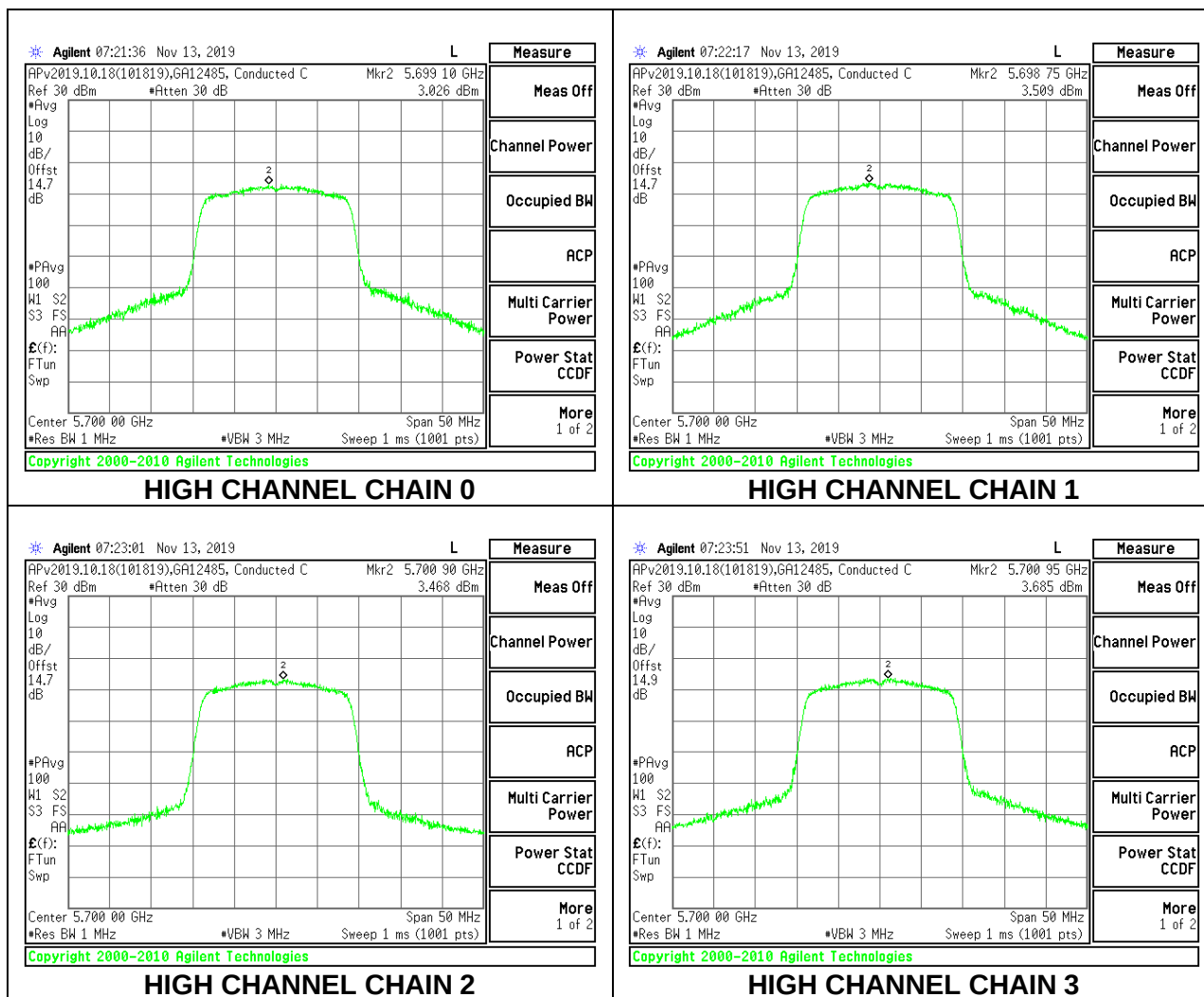
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



8.5.6. 802.11n HT20 MODE IN THE 5.6 GHz BAND

4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE (FCC+IC)

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)
Low	5500	20.400	17.476	4.23	7.22
Mid	5580	20.850	17.741	4.23	7.22
High	5700	20.400	17.513	4.23	7.22

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm/ 1MHz)	ISED PSD Limit (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)
Low	5500	24.00	23.42	29.42	23.42	9.78	11.00	9.78
Mid	5580	24.00	23.49	29.49	23.49	9.78	11.00	9.78
High	5700	24.00	23.43	29.43	23.43	9.78	11.00	9.78

Duty Cycle CF (dB)	0.10	Included in Calculations of Corr'd Power & PSD
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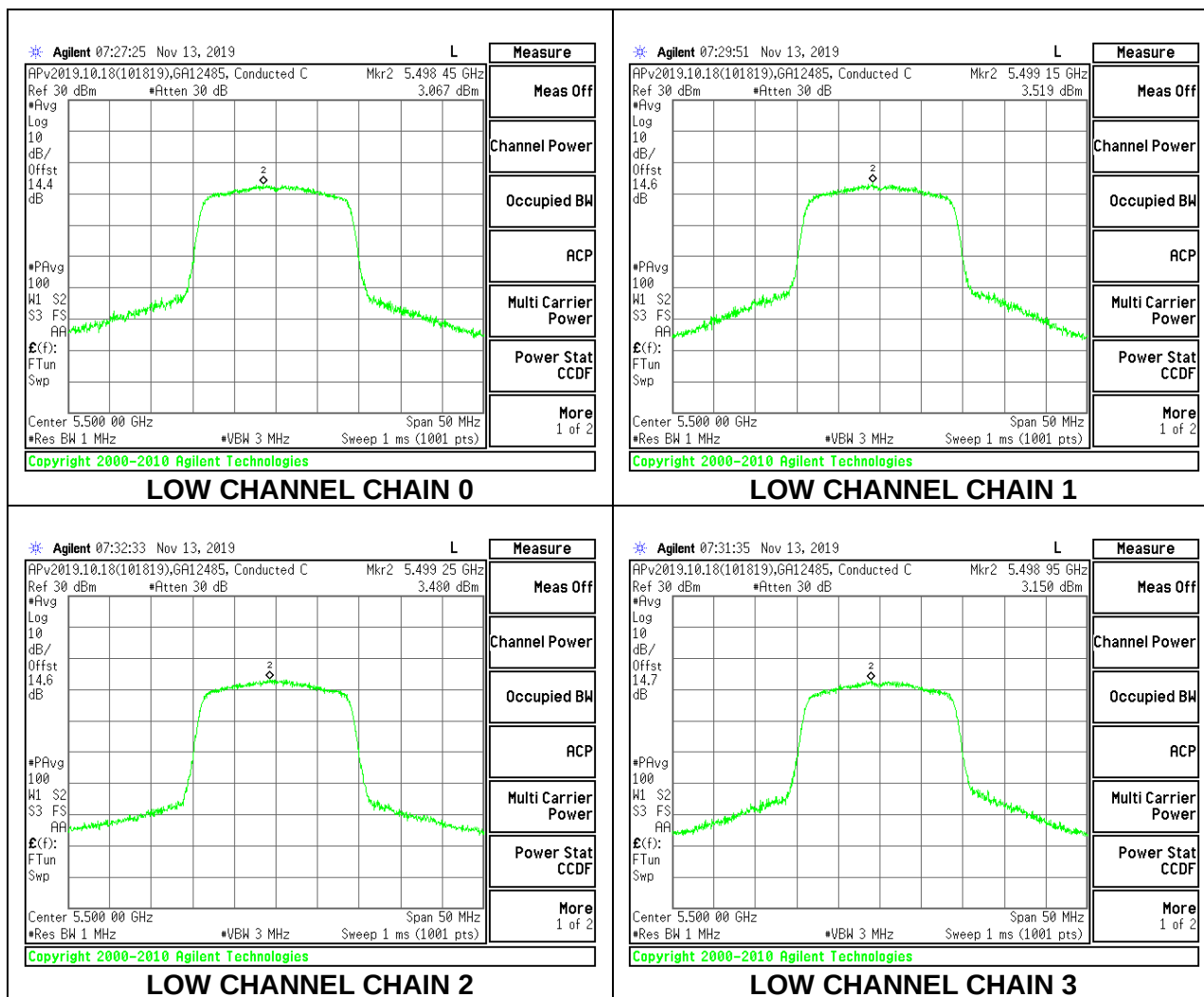
Output Power Results

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)
Low	5500	11.22	11.33	11.32	11.02	17.24	23.42	-6.18
Mid	5580	12.42	12.39	12.38	12.02	18.33	23.49	-5.16
High	5700	11.39	11.31	11.35	11.21	17.34	23.43	-6.10

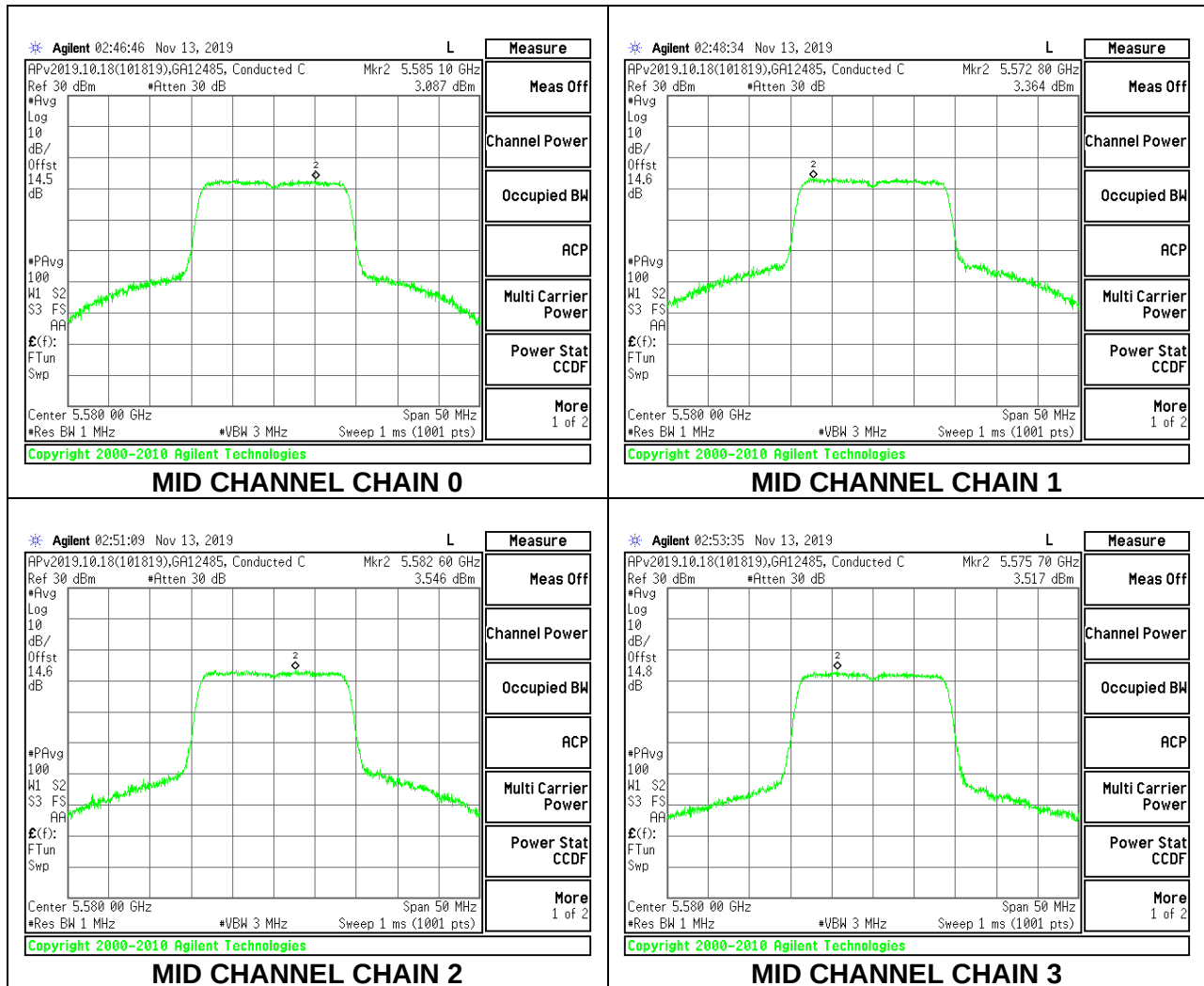
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm/ 1MHz)	Chain 1 Meas PSD (dBm/ 1MHz)	Chain 2 Meas PSD (dBm/ 1MHz)	Chain 3 Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5500	3.067	3.519	3.480	3.150	9.429	9.78	-0.35
Mid	5580	3.087	3.364	3.546	3.517	9.503	9.78	-0.28
High	5700	3.253	3.438	3.147	3.384	9.428	9.78	-0.35

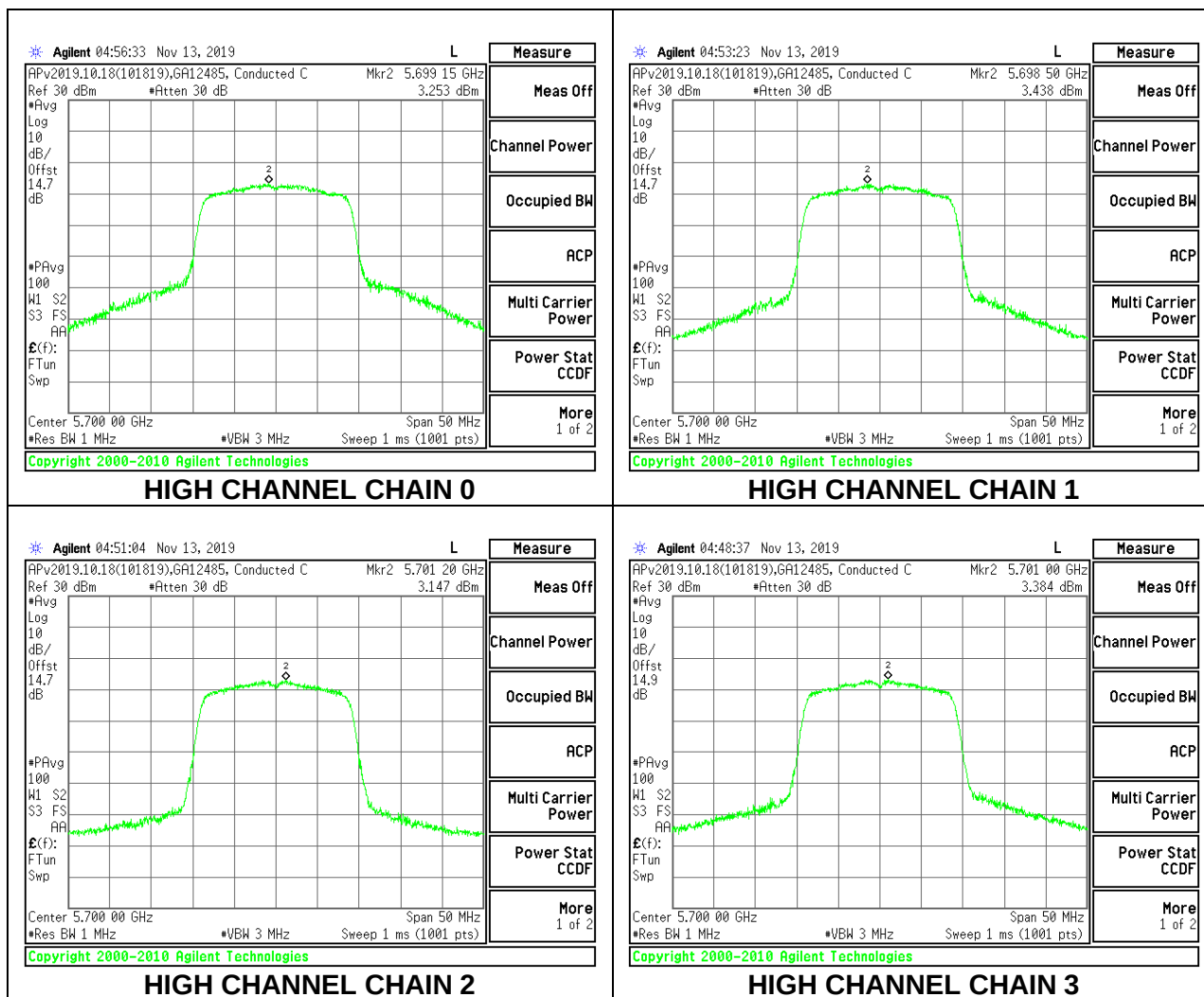
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



8.5.7. 802.11a MODE IN THE 5.8 GHz BAND

4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE (FCC+IC)

Antenna Gain and Limit

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBm)	FCC/ISED Power Limit (dBm)	FCC/ISED PSD Limit (dBm/ 500KHz)
Low	5745	4.23	7.22	30.00	28.78
Mid	5785	4.23	7.22	30.00	28.78
High	5825	4.23	7.22	30.00	28.78

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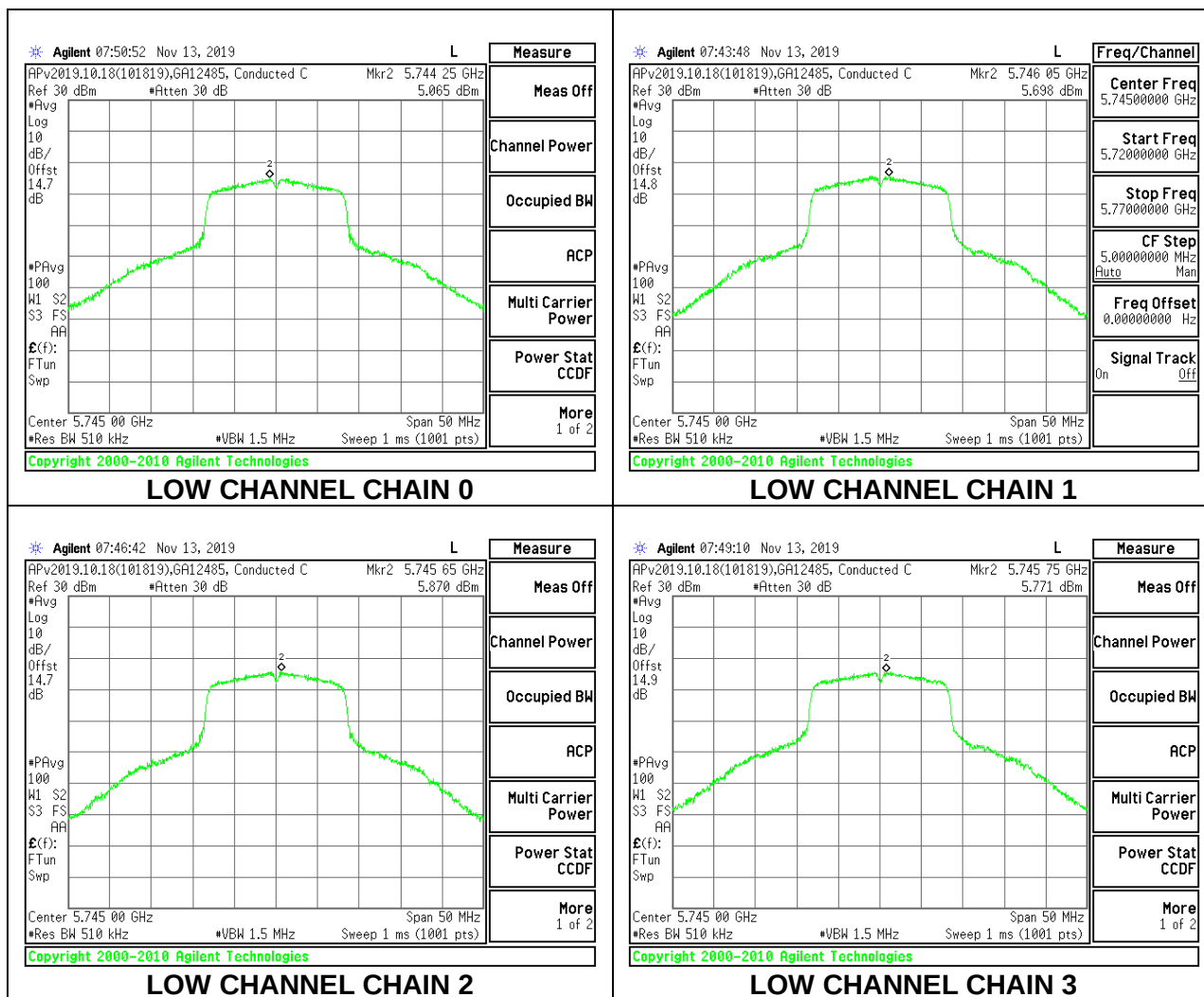
Output Power Results

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)
Low	5745	16.41	16.39	16.24	16.21	22.33	30.00	-7.67
Mid	5785	16.19	16.24	16.17	16.12	22.20	30.00	-7.80
High	5825	16.22	16.39	16.17	16.20	22.27	30.00	-7.73

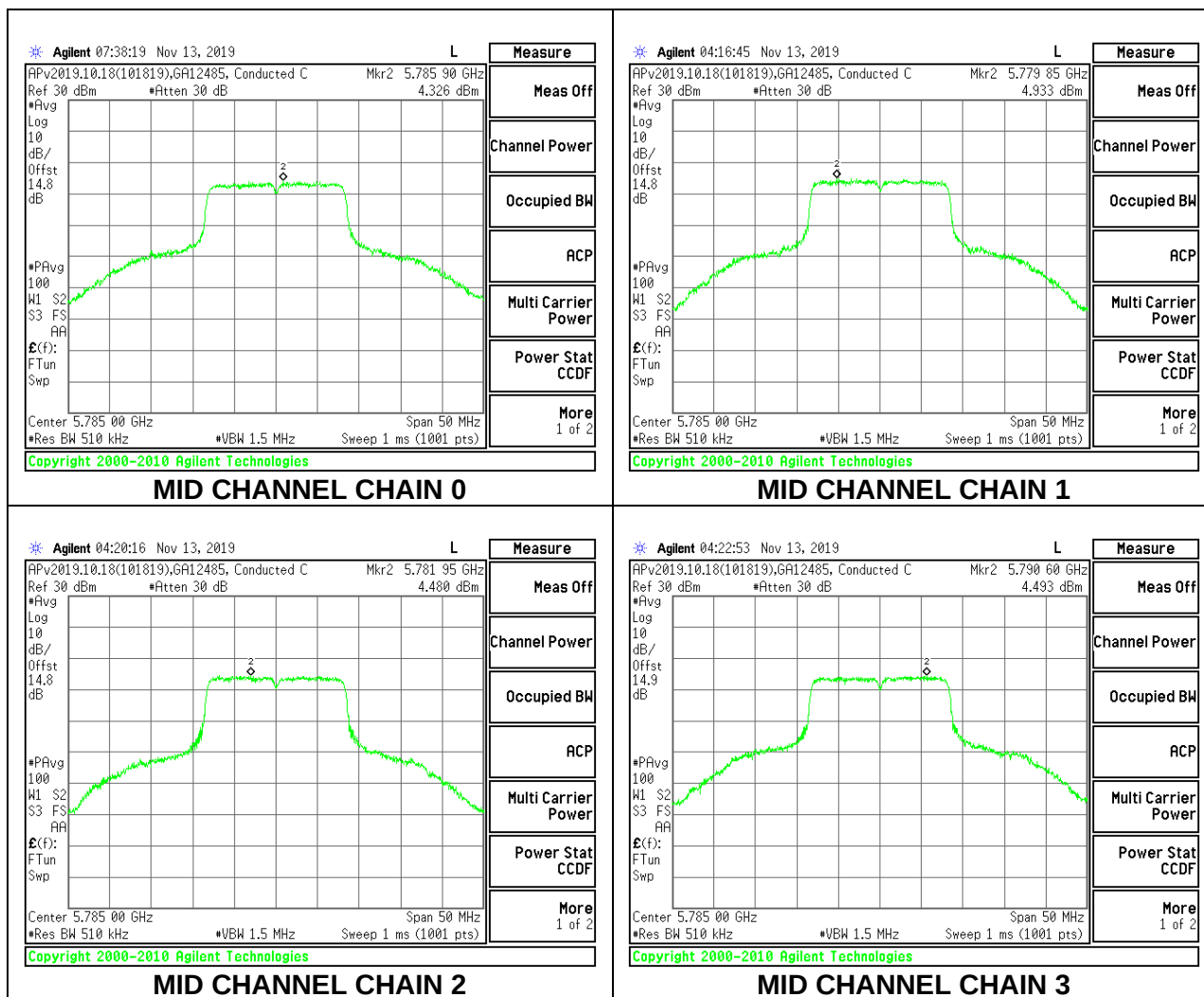
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm/ 500kHz)	Chain 1 Meas PSD (dBm/ 500kHz)	Chain 2 Meas PSD (dBm/ 500kHz)	Chain 3 Meas PSD (dBm/ 500kHz)	Total Corr'd PSD (dBm/ 500kHz)	PSD Limit (dBm/ 500kHz)	PSD Margin (dB)
Low	5745	5.065	5.698	5.870	5.771	11.633	28.78	-17.15
Mid	5785	4.326	4.933	4.480	4.493	10.585	28.78	-18.20
High	5825	5.696	6.156	5.719	5.766	11.859	28.78	-16.92

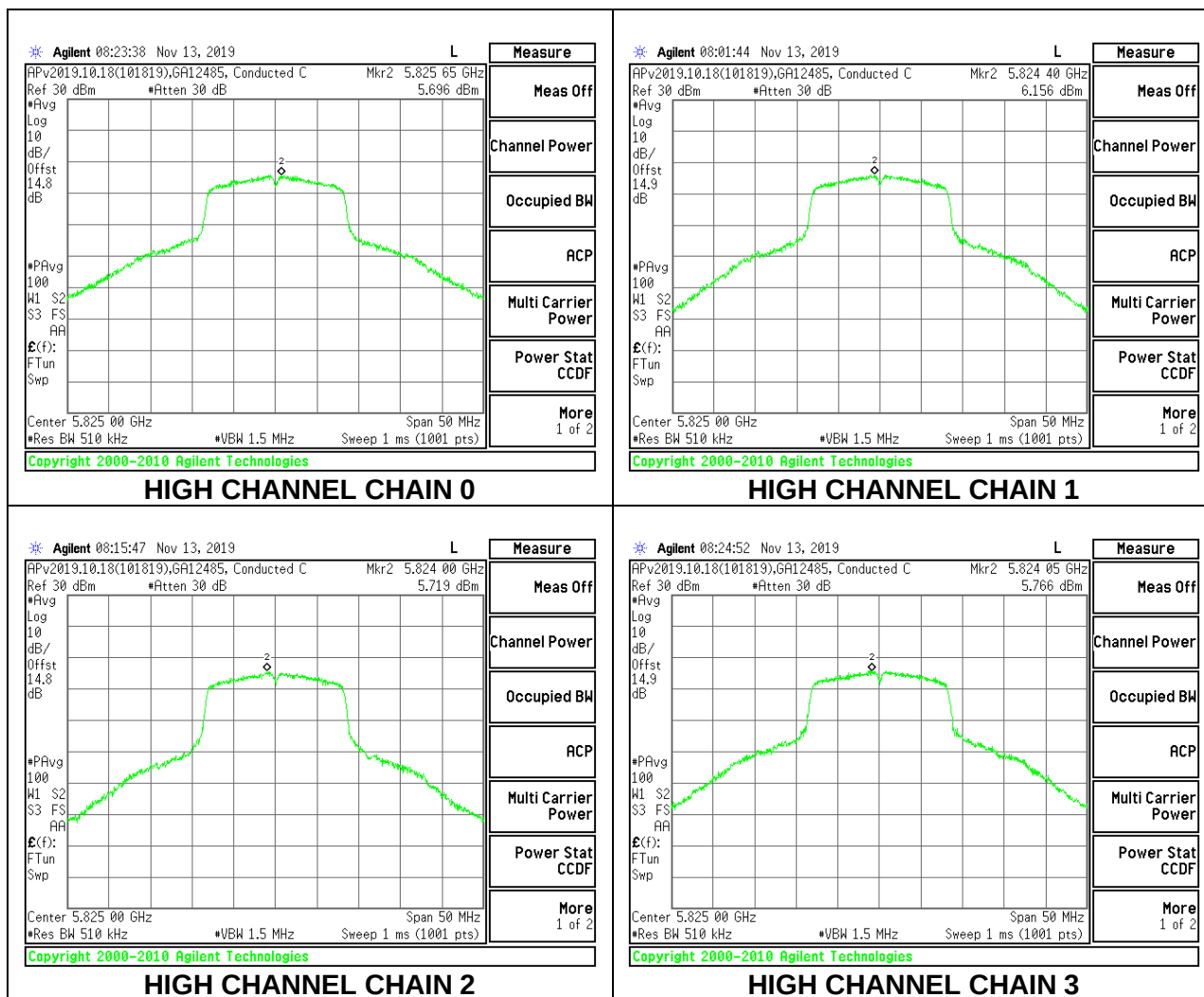
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



8.5.8. 802.11n HT20 MODE IN THE 5.8 GHz BAND

4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE (FCC+IC)

Antenna Gain and Limit

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBm)	FCC/ISED Power Limit (dBm)	FCC/ISED PSD Limit (dBm/ 500KHz)
Low	5745	4.23	7.22	30.00	28.78
Mid	5785	4.23	7.22	30.00	28.78
High	5825	4.23	7.22	30.00	28.78

Duty Cycle CF (dB)	0.10	Included in Calculations of Corr'd Power & PSD
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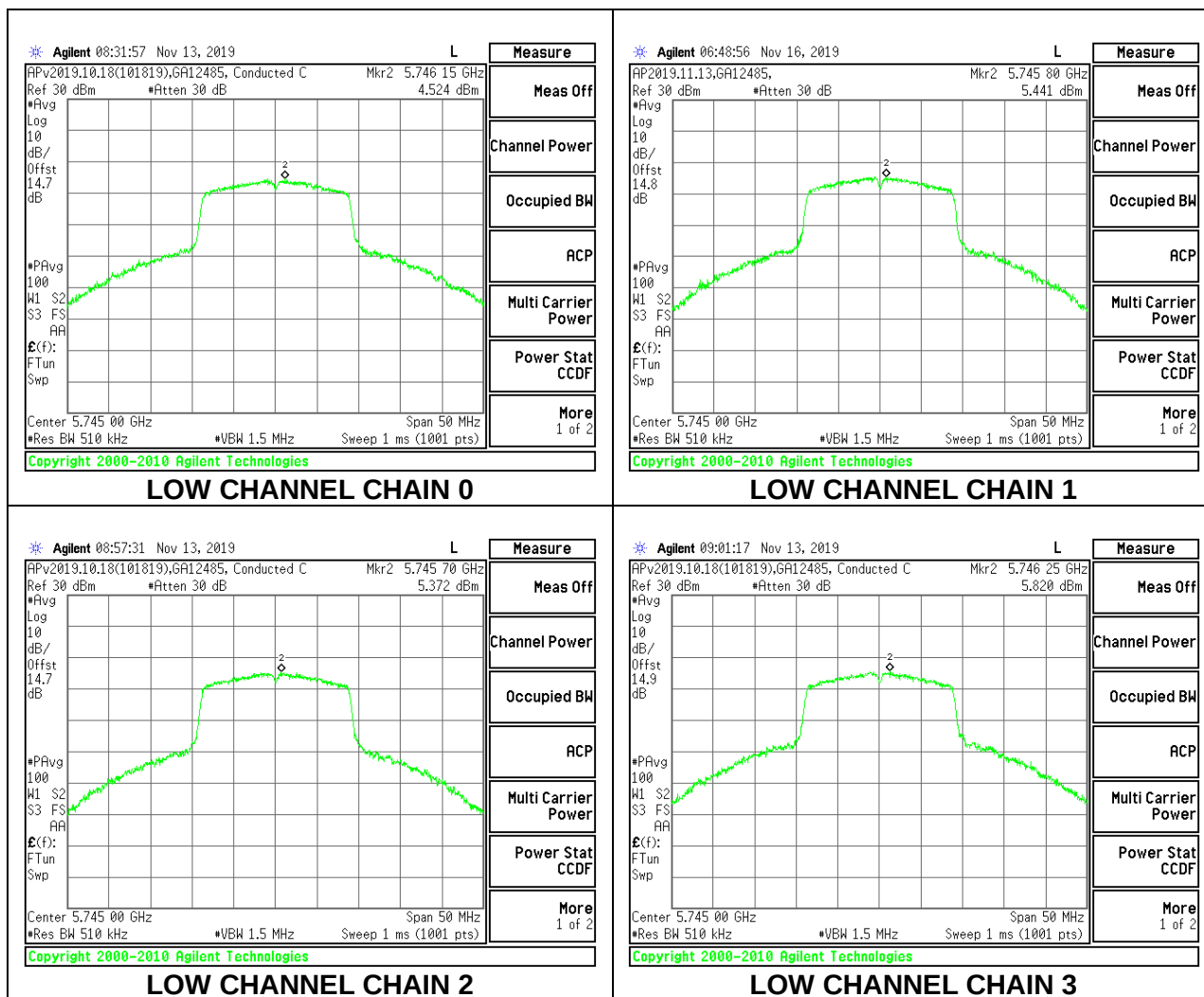
Output Power Results

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)
Low	5745	16.42	16.32	16.52	16.12	22.37	30.00	-7.63
Mid	5785	16.32	16.29	16.44	16.12	22.31	30.00	-7.69
High	5825	16.31	16.49	16.53	16.16	22.40	30.00	-7.60

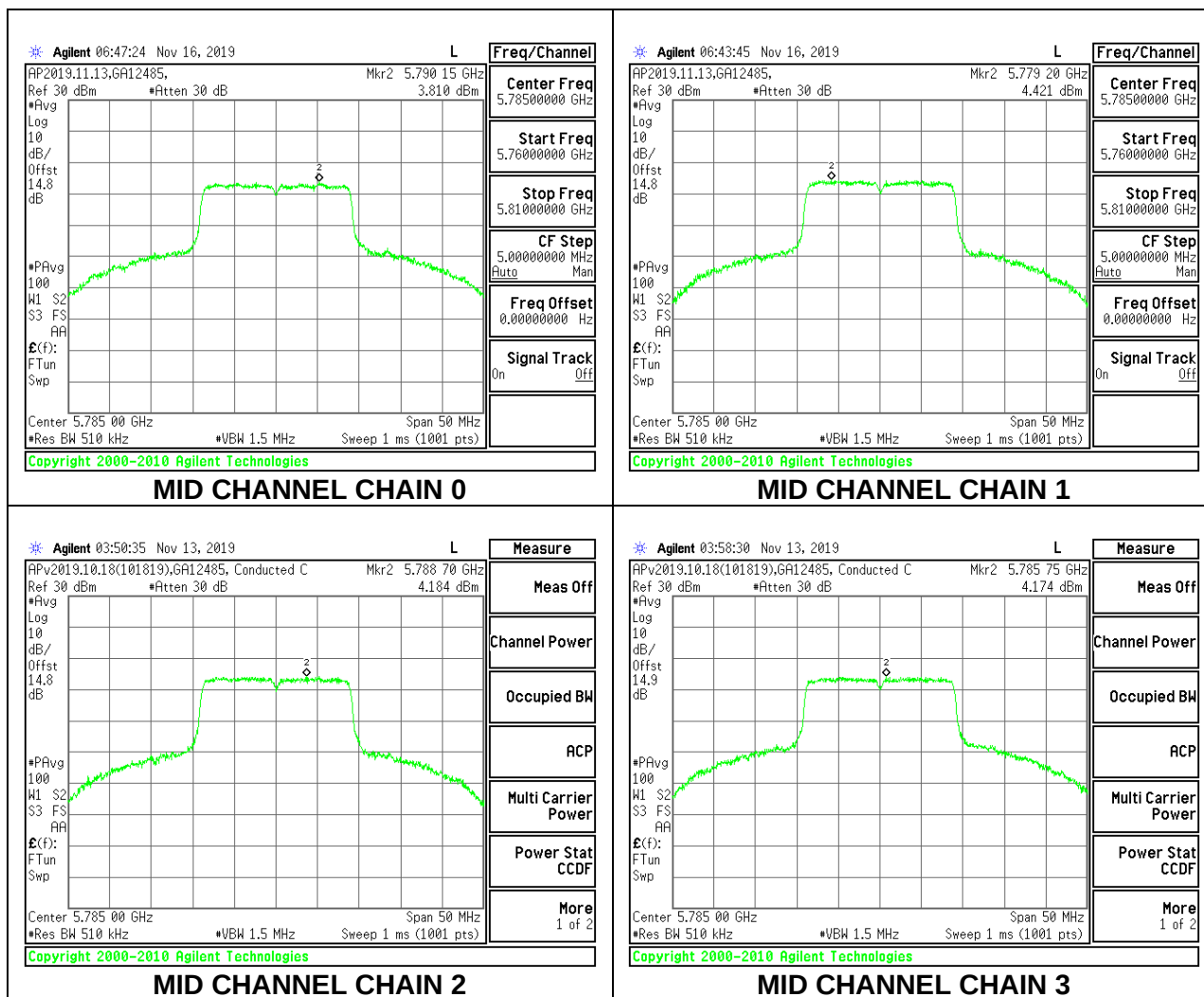
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm/ 500kHz)	Chain 1 Meas PSD (dBm/ 500kHz)	Chain 2 Meas PSD (dBm/ 500kHz)	Chain 3 Meas PSD (dBm/ 500kHz)	Total Corr'd PSD (dBm/ 500kHz)	PSD Limit (dBm/ 500kHz)	PSD Margin (dB)
Low	5745	4.524	5.441	5.372	5.820	11.435	28.78	-17.34
Mid	5785	3.810	4.421	4.184	4.174	10.273	28.78	-18.51
High	5825	5.014	5.925	5.279	5.762	11.631	28.78	-17.15

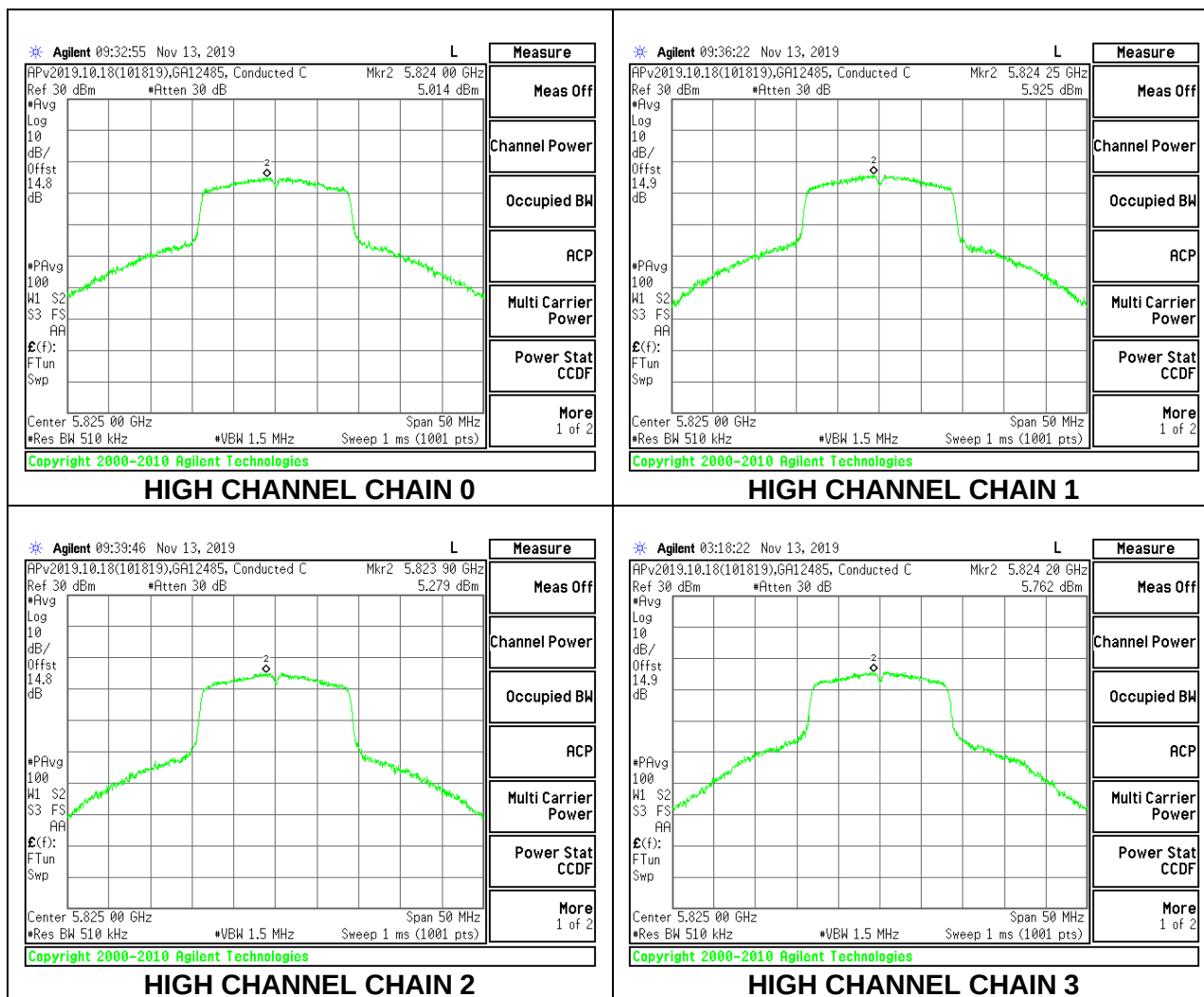
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



9. RADIATED TEST RESULTS

LIMITS

FCC §15.205 and §15.209 -Restricted bands

FCC §15.407(b)(1-3) -Un-Restricted bands

After January 01, 2019 for Outside of the Restricted Bands Emissions

RSS 247 Issue 2 Sections

6.2.1.2 (for 5150-5250 MHz band)

6.2.2.2 (for 5250-5350 MHz band)

6.2.3.2 (for 5470-5600 MHz and 5650-5725 MHz bands)

6.2.4.2 (for 5725-5850 MHz band)

NCC LP0002 §2.7 and §2.8

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 measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

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 pre-scans above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 KHz for peak measurements.

For final 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 1GHz and 18GHz to 40 GHz is investigated with the transmitter set to transmit at the channel with highest output power as worst-case scenario. 1GHz to 18GHz was set to the lowest, middle, and highest channels in the 5 GHz bands.

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.

2D antenna use - For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel), parallel and perpendicular are the worst orientations, therefore testing was performed on these two orientations only.

3D antenna use - For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel).

KDB 414788 Open Field Site(OFS) and Chamber Correlation Justification

Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

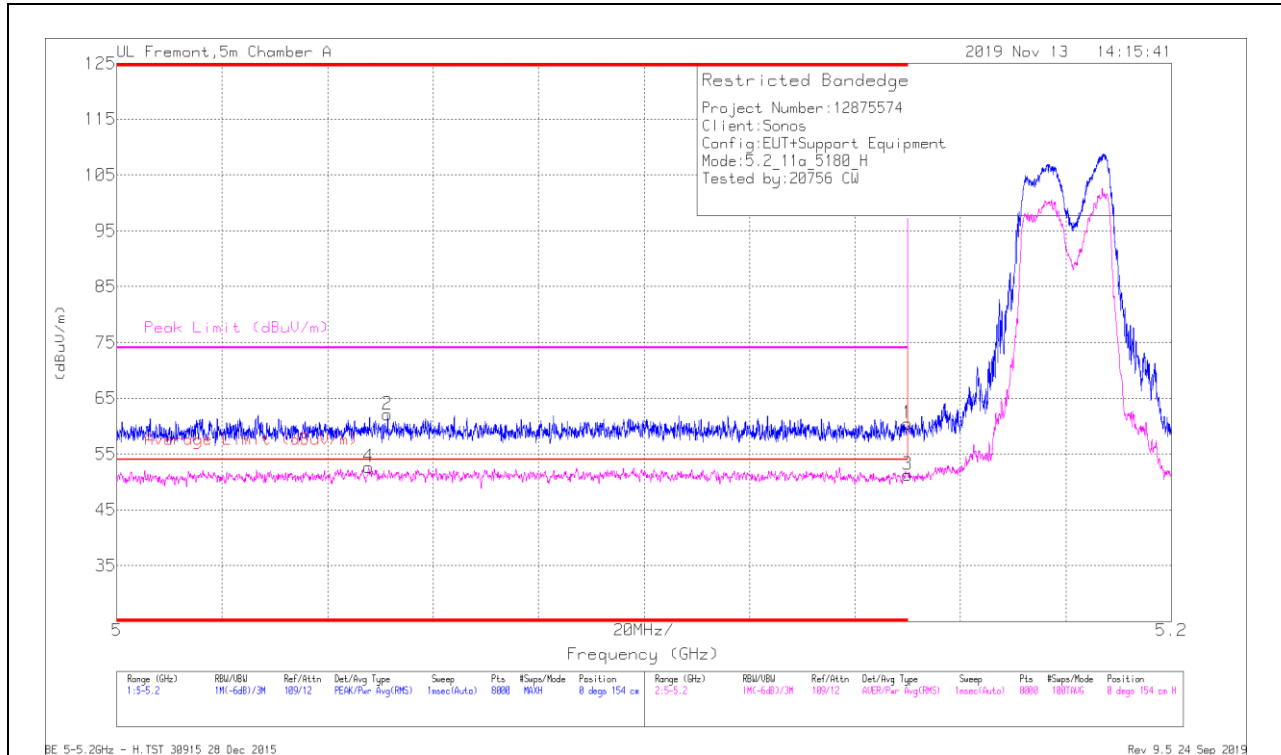
9.1. TRANSMITTER ABOVE 1 GHz

9.1.1. TX ABOVE 1 GHz 802.11a MODE IN THE 5.2 GHz BAND

4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



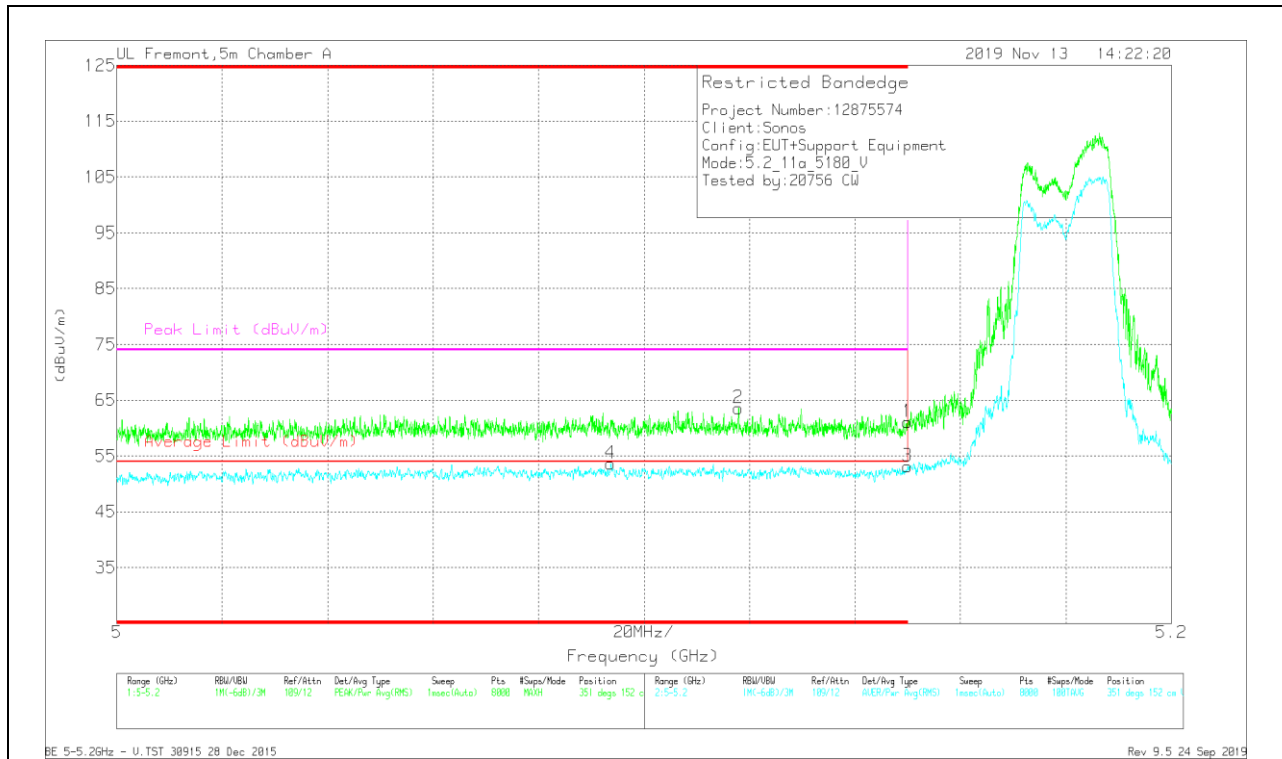
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.14999	40.69	Pk	34.6	-14.8	60.49	-	-	74	-13.51	0	154	H
2	* 5.05136	42.45	Pk	34.3	-14.7	62.05	-	-	74	-11.95	0	154	H
3	* 5.14999	31.51	RMS	34.6	-14.8	51.31	54	-2.69	-	-	0	154	H
4	* 5.04778	32.96	RMS	34.4	-14.7	52.66	54	-1.34	-	-	0	154	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.14999	41.27	Pk	34.6	-14.8	61.07	-	-	74	-12.93	351	152	V
2	* 5.11791	44.1	Pk	34.5	-15	63.6	-	-	74	-10.4	351	152	V
3	* 5.14999	33.35	RMS	34.6	-14.8	53.15	54	-85	-	-	351	152	V
4	* 5.09369	33.89	RMS	34.5	-14.8	53.59	54	-41	-	-	351	152	V

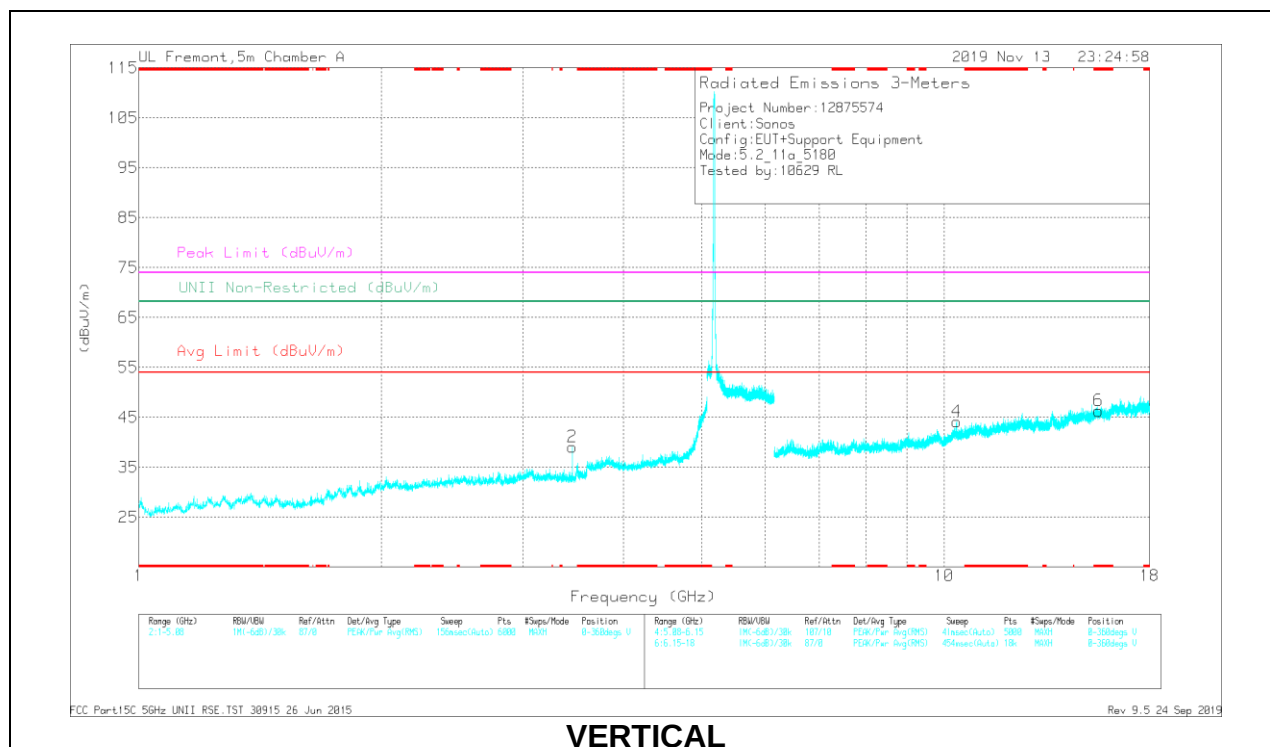
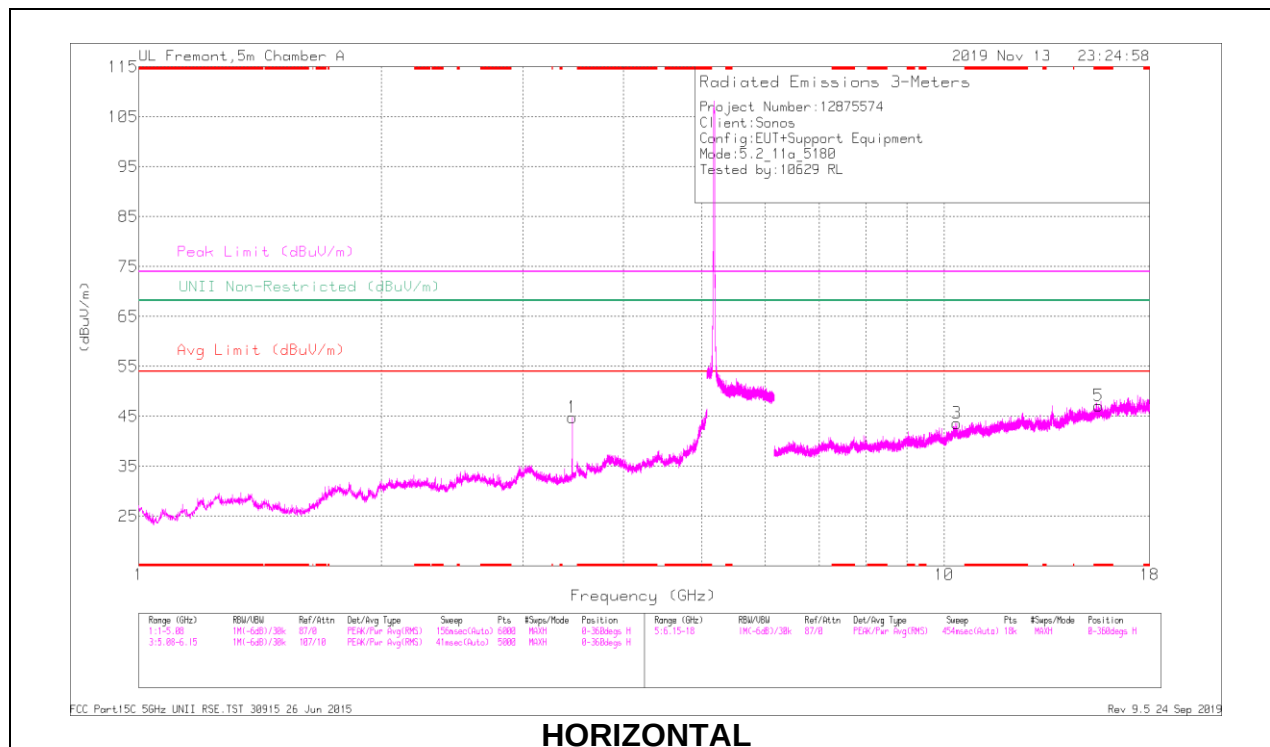
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



RADIATED EMISSIONS

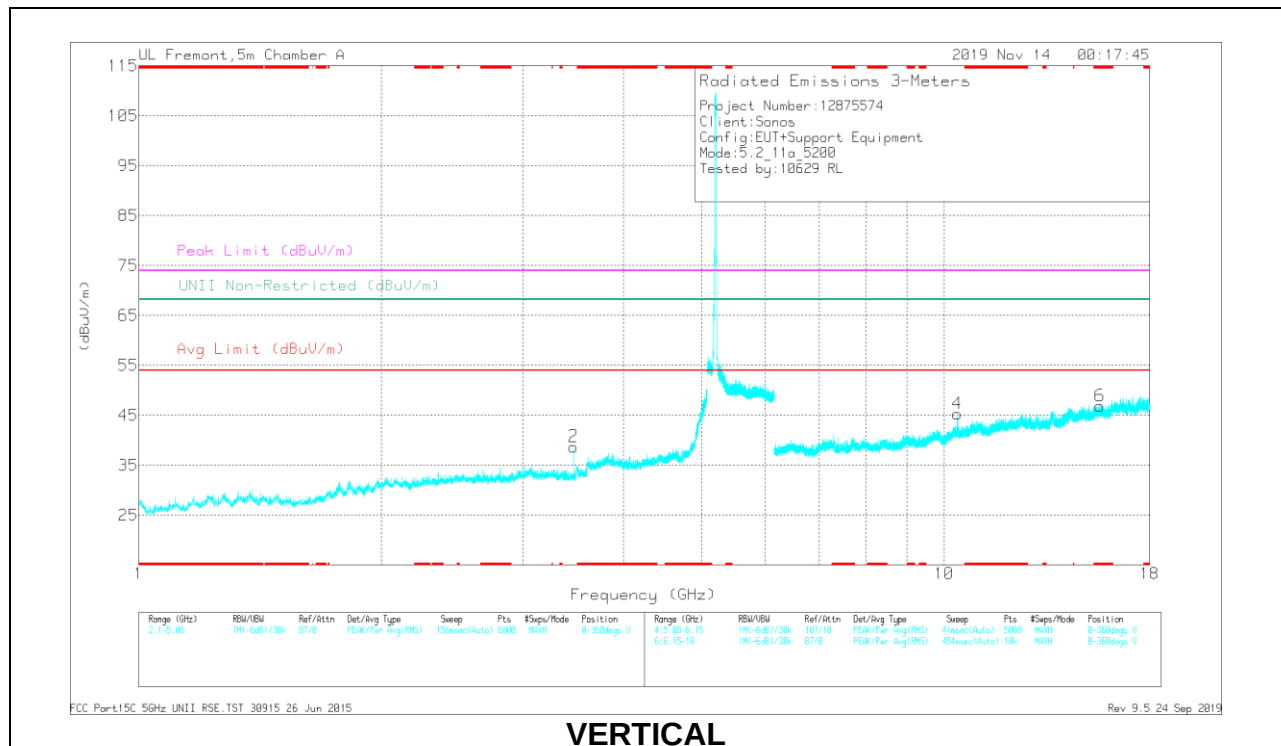
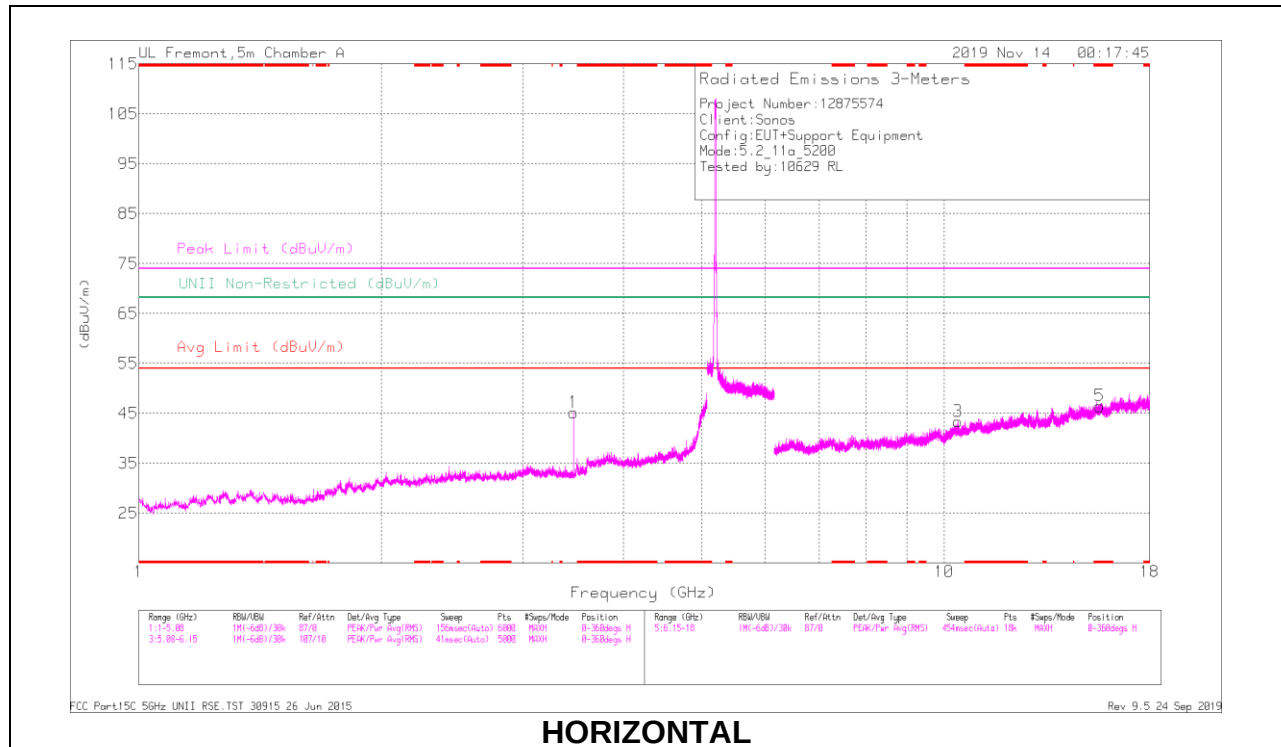
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dBm)	Amplifier/FIR/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 15.53429	33.82	PK-U	40.4	-20	54.22	-	-	74	-19.78	-	-	64	102	H
* 15.54098	21.67	ADR	40.8	-20.1	41.97	54	-12.03	-	-	-	-	64	102	H
* 15.54377	32.45	PK-U	40.5	-20.1	52.35	-	-	74	-21.15	-	-	264	264	V
* 15.54246	21.47	ADR	40.5	-20.1	41.87	54	-12.13	-	-	-	-	264	264	V
3.45322	46.31	PK-U	32.8	-30.6	48.51	-	-	-	-	68.2	-19.69	5	145	H
3.4533	41.74	PK-U	32.8	-30.6	43.94	-	-	-	-	68.2	-24.26	113	101	V
10.35586	36.48	PK-U	37.4	-21.2	52.68	-	-	-	-	68.2	-15.52	300	191	V
10.36228	36.14	PK-U	37.5	-21.1	52.54	-	-	-	-	68.2	-15.66	236	116	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

MID CHANNEL RESULTS



RADIATED EMISSIONS

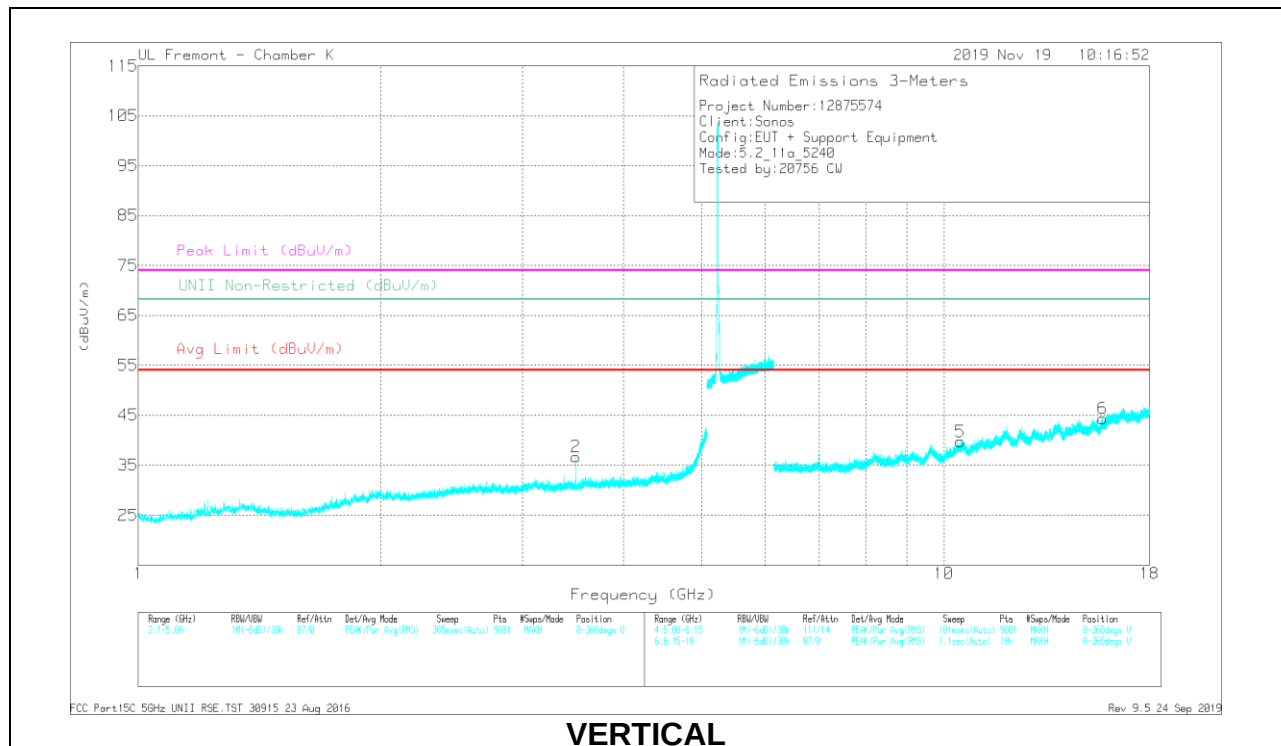
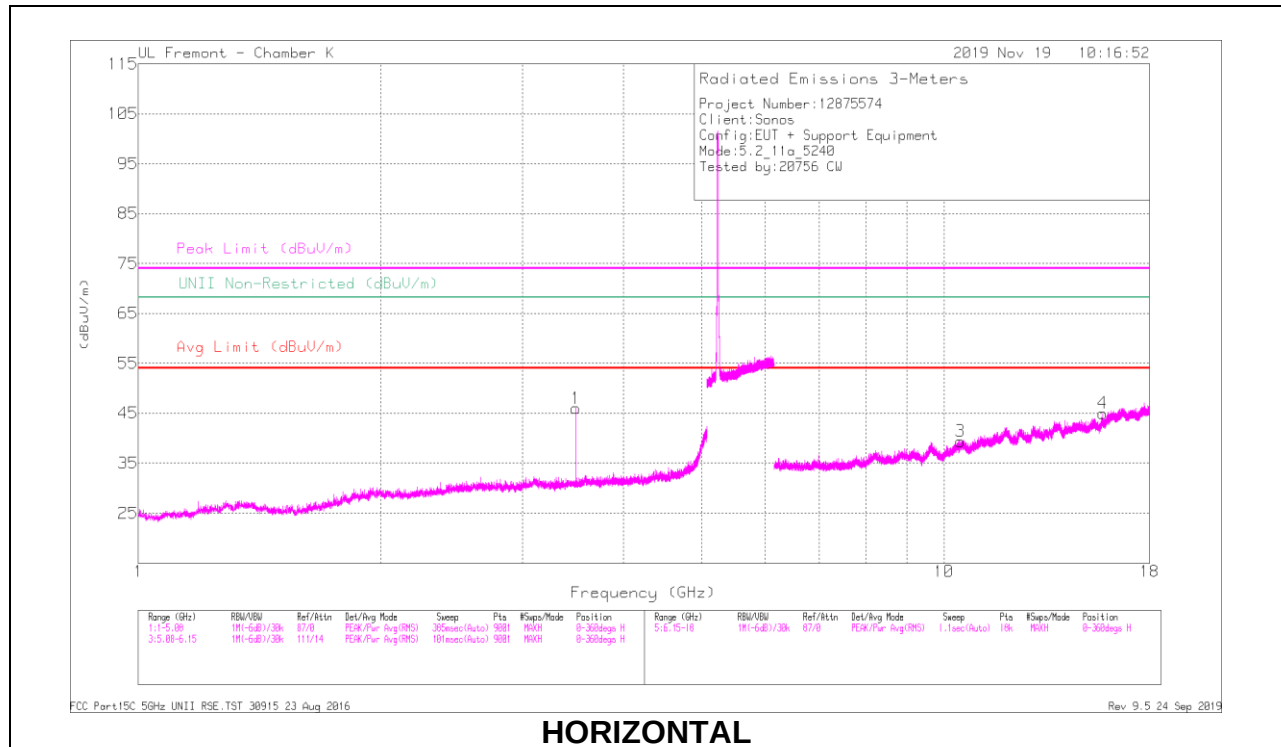
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dBm)	Amp/Cable/Port/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Unit Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 15.60955	32.43	PK-U	40.5	-20.3	52.63	-	-	74	-21.37	-	-	233	184	H
* 15.60988	21.86	ADR	40.5	-20.3	42.06	54	-11.94	-	-	-	-	233	184	H
* 15.62277	32.14	PK-U	40.4	-20.1	52.44	-	-	74	-21.56	-	-	144	242	V
* 15.62022	21.53	ADR	40.4	-20.2	41.73	54	-12.27	-	-	-	-	144	242	V
3.46664	46.83	PK-U	32.8	-30.6	49.03	-	-	-	-	68.2	-19.17	4	142	H
3.46669	42.55	PK-U	32.8	-30.6	44.75	-	-	-	-	68.2	-23.45	111	101	V
10.39817	35.79	PK-U	37.6	-21.4	51.99	-	-	-	-	68.2	-16.21	353	103	V
10.40562	35.38	PK-U	37.5	-21.5	51.38	-	-	-	-	68.2	-16.82	236	122	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

HIGH CHANNEL RESULTS



RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF EMC4294 (dBm)	Amp/Cable/Fit/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	ULRI Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	3.4933	47.92	PK-U	33	-32.7	48.22	-	-	-	-	68.2	-19.98	163	141	H
2	3.49334	42.29	PK-U	33	-32.7	42.59	-	-	-	-	68.2	-25.61	30	391	V
3	10.47323	32.06	PK-U	32.6	-22.9	46.76	-	-	-	-	68.2	-21.44	303	307	H
4	* 15.73263	27.64	PK-U	40	-17.8	49.54	-	-	74	-24.16	-	-	136	121	H
	* 15.73303	18.46	ADR	40	-17.8	40.66	54	-13.34	-	-	-	-	136	121	H
5	10.47833	33.11	PK-U	37.7	-22.9	47.91	-	-	-	-	68.2	-20.29	101	198	V
6	* 15.73724	28.78	PK-U	40	-17.9	50.88	-	-	74	-23.12	-	-	58	177	V
	* 15.73763	18.37	ADR	40	-17.9	40.47	54	-13.53	-	-	-	-	58	177	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK-U - U-NII: Maximum Peak

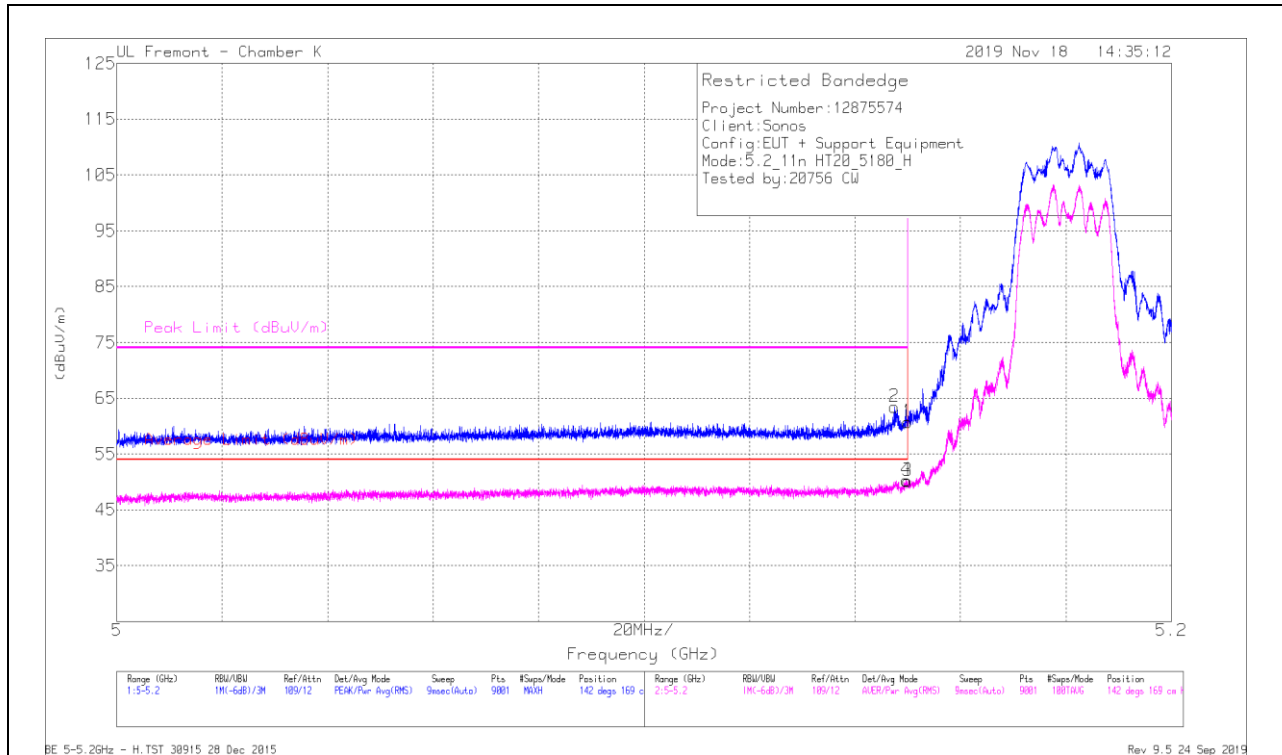
ADR - U-NII AD primary method, RMS average

9.1.2. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.2 GHz BAND

4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBu/m)	Det	AF EMC4234 (dBm)	Amp/CM/FIR/Pad (dB)	DC Corr (dB)	Corrected Reading (dBu/m)	Average Limit (dBu/m)	Margin (dB)	Peak Limit (dBu/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	34.58	Pk	34.2	-8.1	0	60.68	-	-	74	-13.32	142	169	H
2	* 5.14742	37.4	Pk	34.2	-8.1	0	63.5	-	-	74	-10.5	142	169	H
3	* 5.15	24.02	RMS	34.2	-8.1	0.1	50.22	54	-3.78	-	-	142	169	H
4	* 5.14973	24.22	RMS	34.2	-8.1	0.1	50.42	54	-3.58	-	-	142	169	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

UL Fremont - Chamber K

2019 Nov 18 14:23:14

Restricted Bandedge

Project Number: 12875574

Client: Sonos

Config: EUT + Support Equipment

Mode: 5.2_11n HT20_5180_U

Tested by: 20756 CW

Peak Limit (dBuV/m)

20MHz/80

dBuV/m

Frequency (GHz)

Range (GHz)	RBW/ABW	Ref/Attn	Det/Avg Mode	Sweep	Pls	#Seps/Mode	Position	Range (GHz)	RBW/ABW	Ref/Attn	Det/Avg Mode	Sweep	Pls	#Seps/Mode	Position
1:5:5.2	11n-6dB/3M	189/12	PEAK/Fac Avg(RMS)	9msc(Rate)	9801	180/1	152 degs 215 cc	2:5:5.2	11n-6dB/3M	189/12	PEAK/Fac Avg(RMS)	9msc(Rate)	9801	180/1	152 degs 215 cc

BE 5-5.2GHz - U.TST 38915 28 Dec 2015

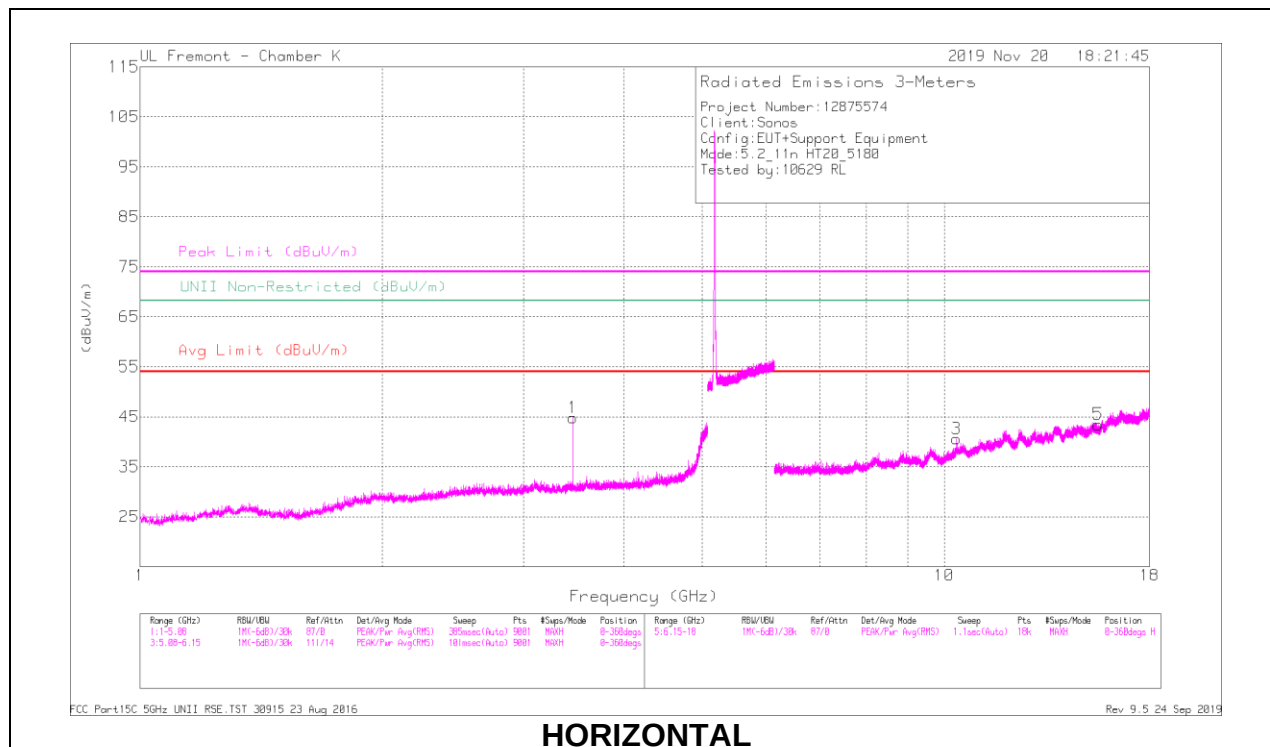
Rev 9.5 24 Sep 2019

Marker	Frequency (GHz)	Mez Reading (dBuV)	Det	AF EMC4294 (dBm)	Amp(CMftrPad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (Dbs)	Peak Limit (dBuV/m)	PK Margin (Dbs)	Azimuth (Degs)	Height (cm)	Polarizn
1	* 5.15	26.97	PK	34.2	-8.1	0	65.07	-	-	74	-8.93	162	215	V
2	* 5.14819	40.32	PK	34.2	-8.1	0	67.02	-	-	74	-9.98	162	215	V
3	* 5.15	24.98	RMS	34.2	-8.1	0.1	51.18	54	-2.82	-	-	162	215	V
4	* 5.14824	26.97	RMS	34.2	-8.1	0.1	53.17	54	-1.83	-	-	162	215	V

Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



RADIATED EMISSIONS

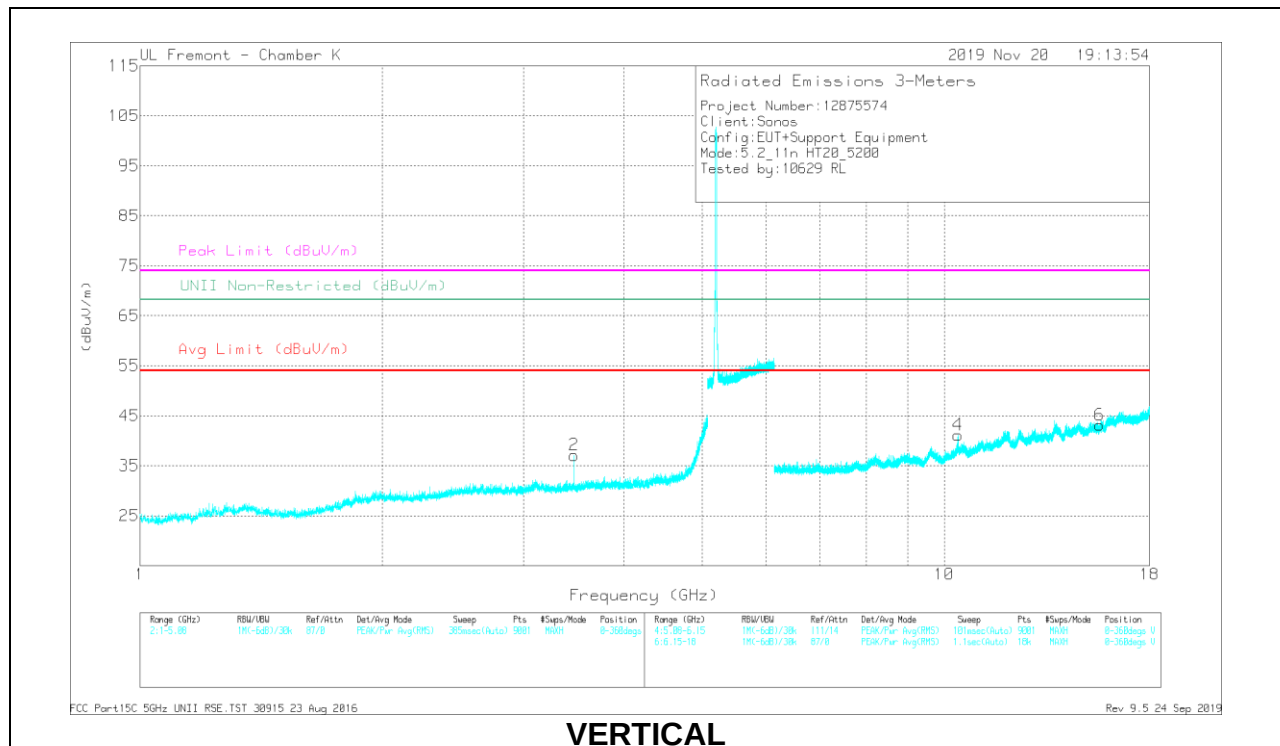
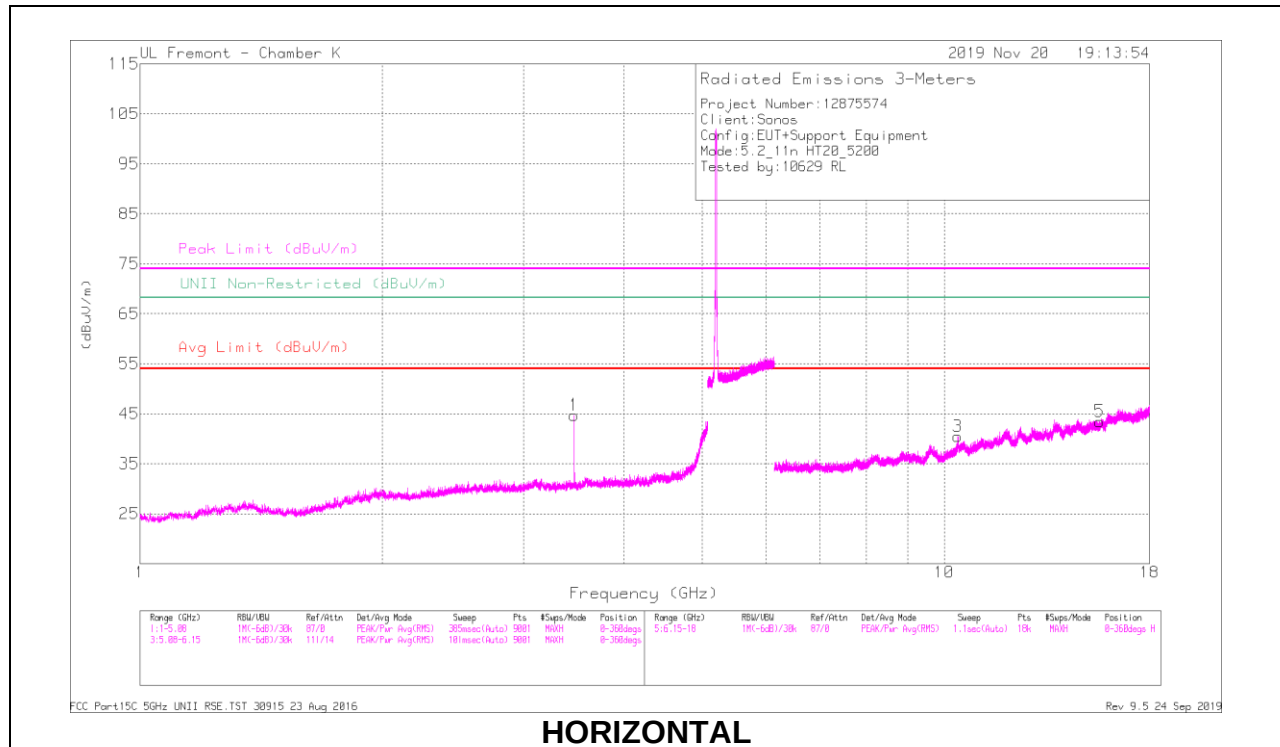
Frequency (MHz)	Meas Reading (dBm)	Det	AF EMC424 (dBm)	Amplified (dB)	DC Corr (dB)	Corrected Reading (dBm)	Avg Limit (dBm)	Margin (dB)	Peak Limit (dBm)	PK Margin (dB)	Limit Non-Restricted (dBm)	PK Margin (dB)	Altitude (ft)	Height (m)	Polarity
3.45221	46.16	PK-U	33.1	-32.9	0	46.36	-	-	-	-	69.2	-21.84	161	138	H
3.45319	42.06	PK-U	33.1	-32.9	0	42.26	-	-	-	-	69.2	-26.94	206	102	V
10.35887	37.16	PK-U	37.5	-23	0	51.66	-	-	-	-	69.2	-16.54	251	210	H
* 15.52761	31	PK-U	40.1	-18.5	0	52.6	-	-	74	-21.4	-	-	241	220	H
* 15.5375	19.36	ADR	40	-18.6	1	40.46	54	-13.54	-	-	-	-	241	220	H
10.36608	38.18	PK-U	37.5	-23.1	0	52.58	-	-	-	-	69.2	-15.62	127	196	V
* 15.53942	29.93	PK-U	40	-18.6	0	51.33	-	-	74	-22.67	-	-	344	222	V
* 15.53112	19.11	ADR	40.1	-18.5	1	40.61	54	-13.19	-	-	-	-	344	222	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

MID CHANNEL RESULTS



RADIATED EMISSIONS

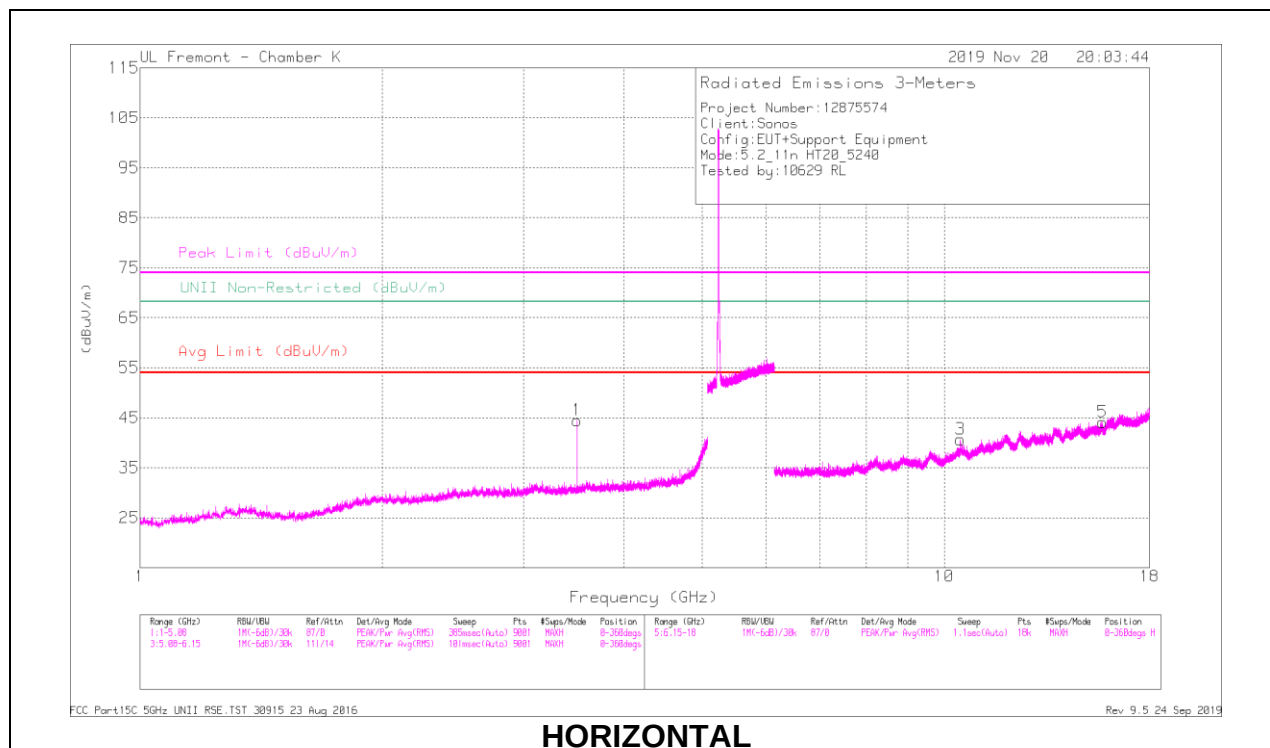
Frequency (MHz)	Meas Reading (dBm)	Det	AF EMC424 (dBm)	Amplified (dB)	DC Corr (dB)	Corrected Reading (dBm)	Avg Limit (dBm)	Margin (dB)	Peak Limit (dBm)	PK Margin (dB)	Limit Non-Restricted (dBm)	PK Margin (dB)	Altitude (Feet)	Height (m)	Polarity
3.46664	46.01	PK-U	33.1	-32.9	0	47.11	-	-	-	-	68.2	-21.09	155	140	H
3.46665	41.81	PK-U	33.1	-32.9	0	42.01	-	-	-	-	68.2	-26.19	261	101	V
10.39322	37.28	PK-U	37.5	-23	0	51.78	-	-	-	-	68.2	-16.42	204	105	H
* 15.5973	30	PK-U	40.1	-18.6	0	51.5	-	-	74	-22.5	-	-	119	330	H
* 15.59964	19.75	ADR	40.1	-18.6	1	40.35	54	-13.65	-	-	-	-	119	330	H
10.39203	38.31	PK-U	37.5	-23	0	52.81	-	-	-	-	68.2	-15.39	129	195	V
* 15.59025	29.59	PK-U	40.1	-18.6	0	51.09	-	-	74	-22.91	-	-	25	137	V
* 15.59912	18.19	ADR	40.1	-18.6	1	39.79	54	-14.21	-	-	-	-	25	137	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

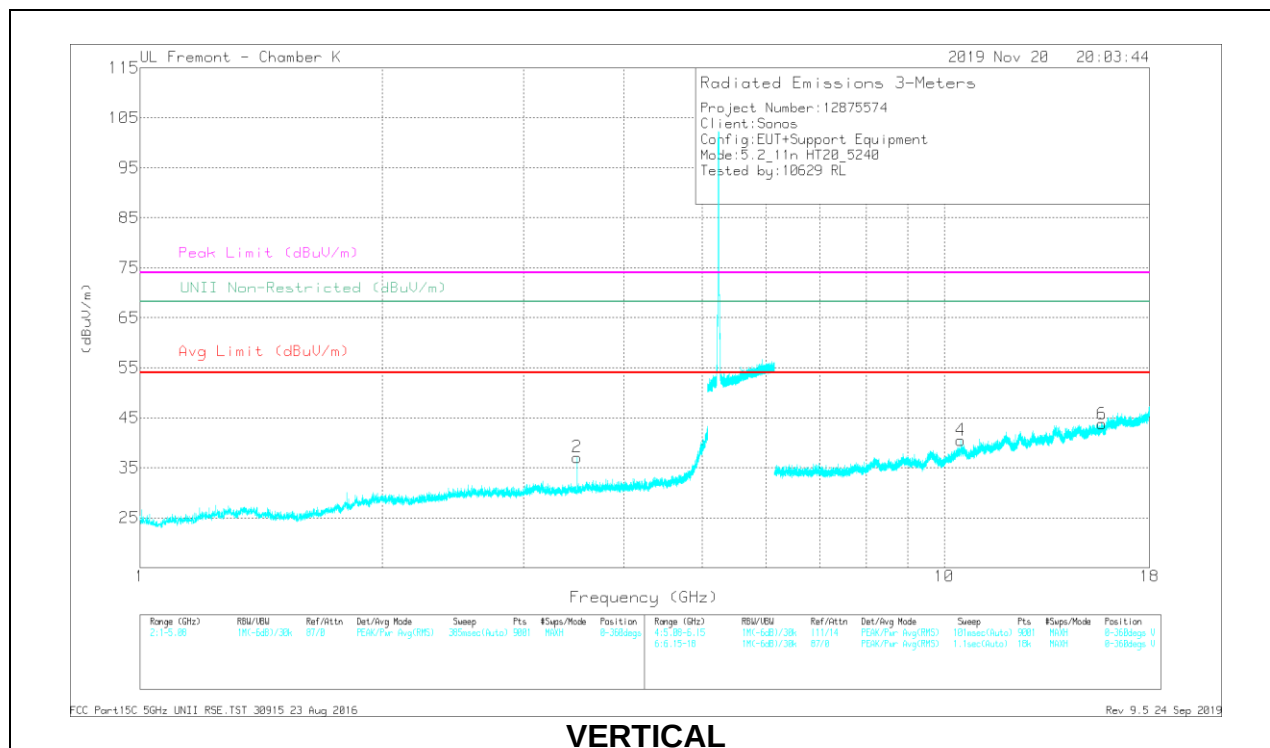
PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Frequency (MHz)	Meas Reading (dBuV)	Det	AF EMC424 (dBm)	Amplified (dB)	DC Corr (dB)	Corrected Reading (dBuV)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Limit Non-Restricted (dBuV/m)	PK Margin (dB)	Altitude (Feet)	Height (m)	Polarity
3.49229	47.17	PK-U	33	-32.7	0	47.47	-	-	-	-	69.2	-20.73	161	138	H
3.49333	42.4	PK-U	33	-32.7	0	42.7	-	-	-	-	69.2	-25.5	256	101	V
10.47674	35.15	PK-U	37.6	-22.9	0	49.85	-	-	-	-	69.2	-18.35	318	347	H
* 15.71736	30.04	PK-U	40	-17.8	0	52.24	-	-	74	-21.76	-	-	122	222	H
* 15.70037	19.54	ADR	40.1	-19.1	1	40.54	54	-13.06	-	-	-	-	122	222	H
10.48177	35.78	PK-U	37.7	-22.9	0	50.58	-	-	-	-	69.2	-17.62	54	201	V
* 15.73301	30.28	PK-U	40	-17.8	0	52.48	-	-	74	-21.52	-	-	279	295	V
* 15.72722	18.97	ADR	40	-17.7	.1	41.37	54	-12.63	-	-	-	-	279	295	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK-U - U-NII: Maximum Peak

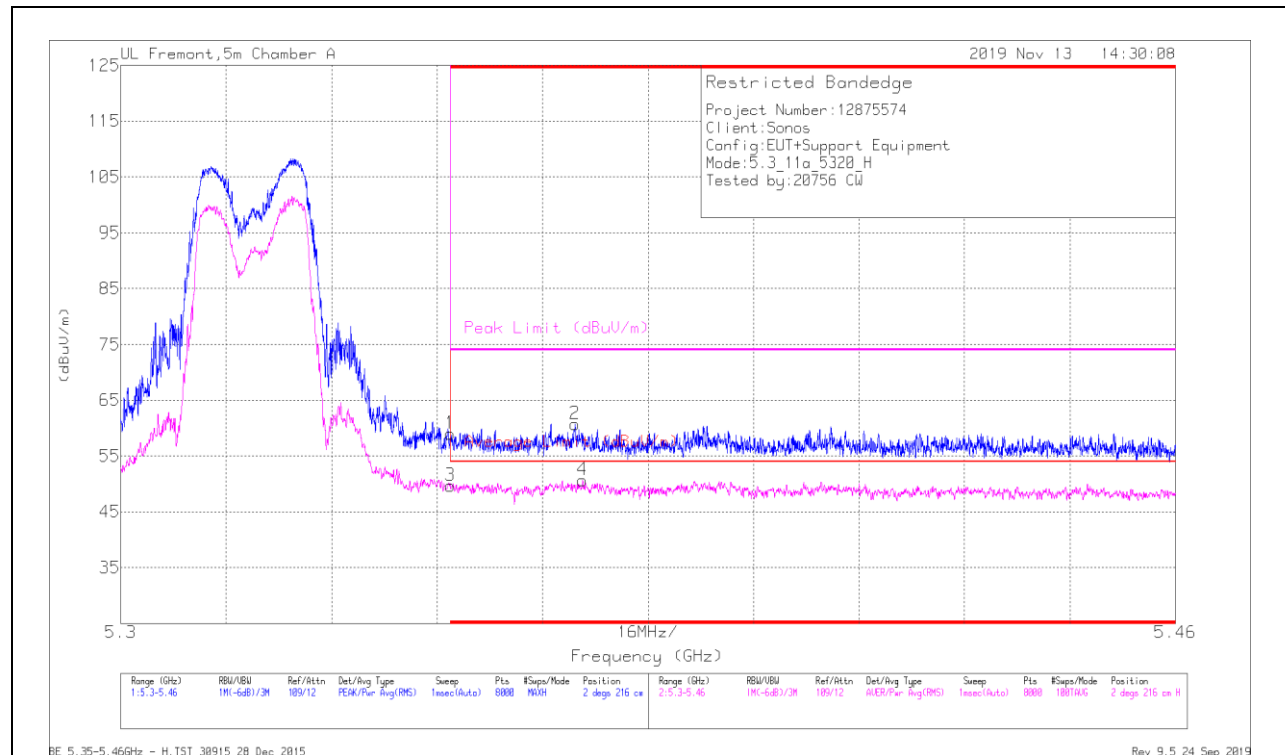
ADR - U-NII AD primary method, RMS average

9.1.3. TX ABOVE 1 GHz 802.11a MODE IN THE 5.3 GHz BAND

4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



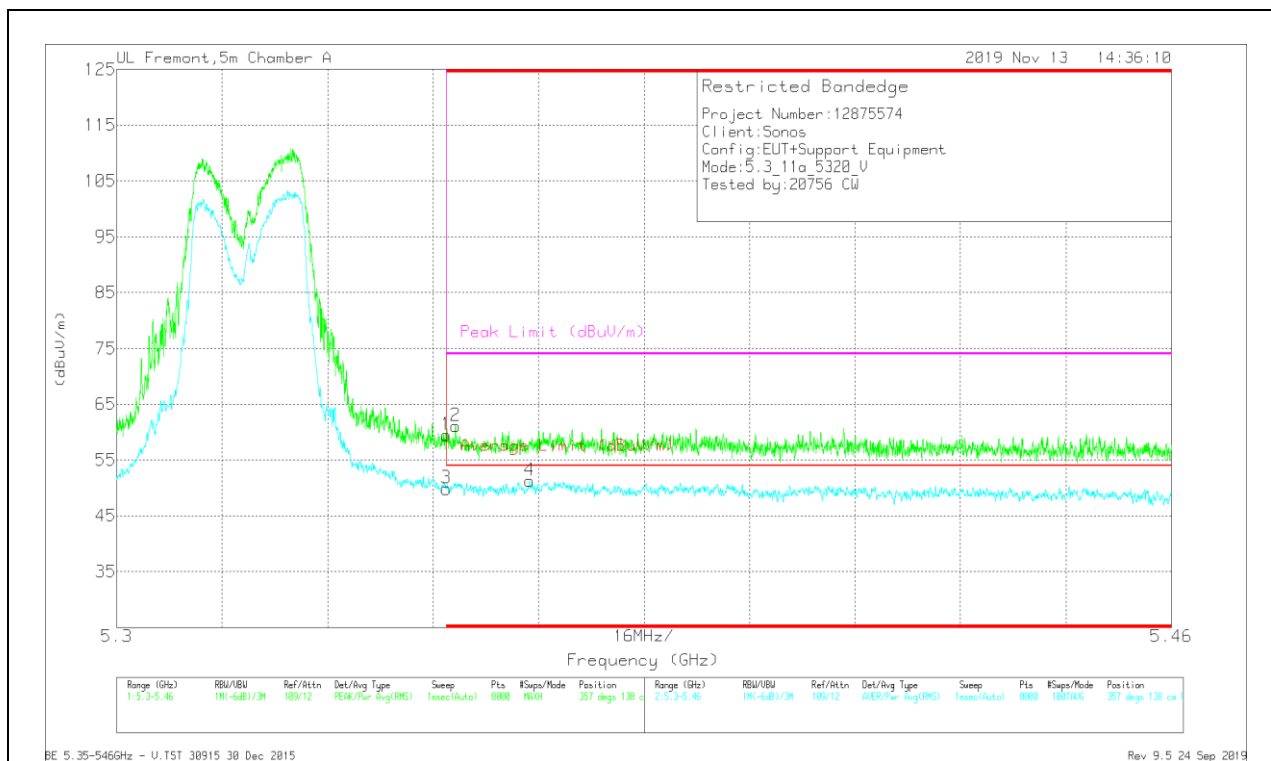
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fktr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.35001	39.24	Pk	35	-15.3	58.94	-	-	74	-15.06	2	216	H
2	* 5.36891	41.65	Pk	35	-15.9	60.75	-	-	74	-13.25	2	216	H
3	* 5.35001	29.93	RMS	35	-15.3	49.63	54	-4.37	-	-	2	216	H
4	* 5.37007	31.53	RMS	35	-15.9	50.63	54	-3.37	-	-	2	216	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.35001	39.8	Pk	35	-15.3	59.5	-	-	74	-14.5	357	138	V
2	* 5.35139	41.87	Pk	35	-15.8	61.07	-	-	74	-12.93	357	138	V
3	* 5.35001	30.16	RMS	35	-15.3	49.86	54	-4.14	-	-	357	138	V
4	* 5.36263	31.98	RMS	35	-15.7	51.28	54	-2.72	-	-	357	138	V

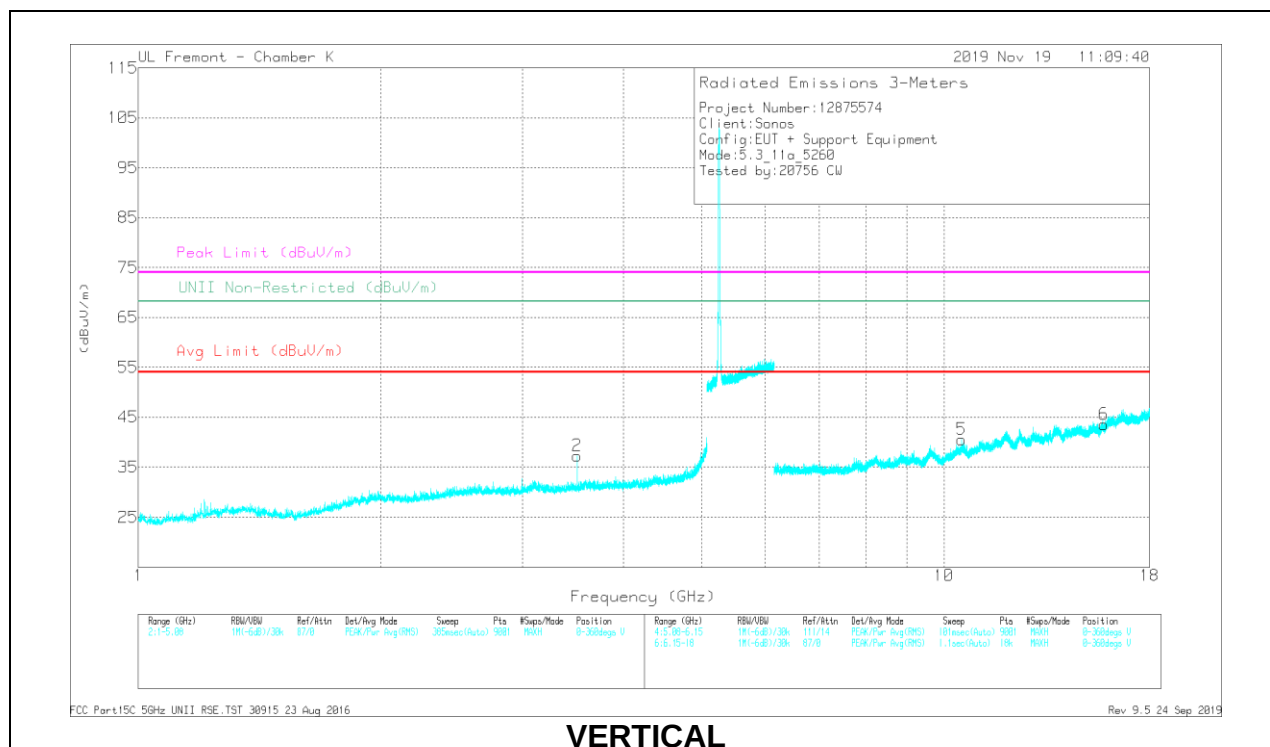
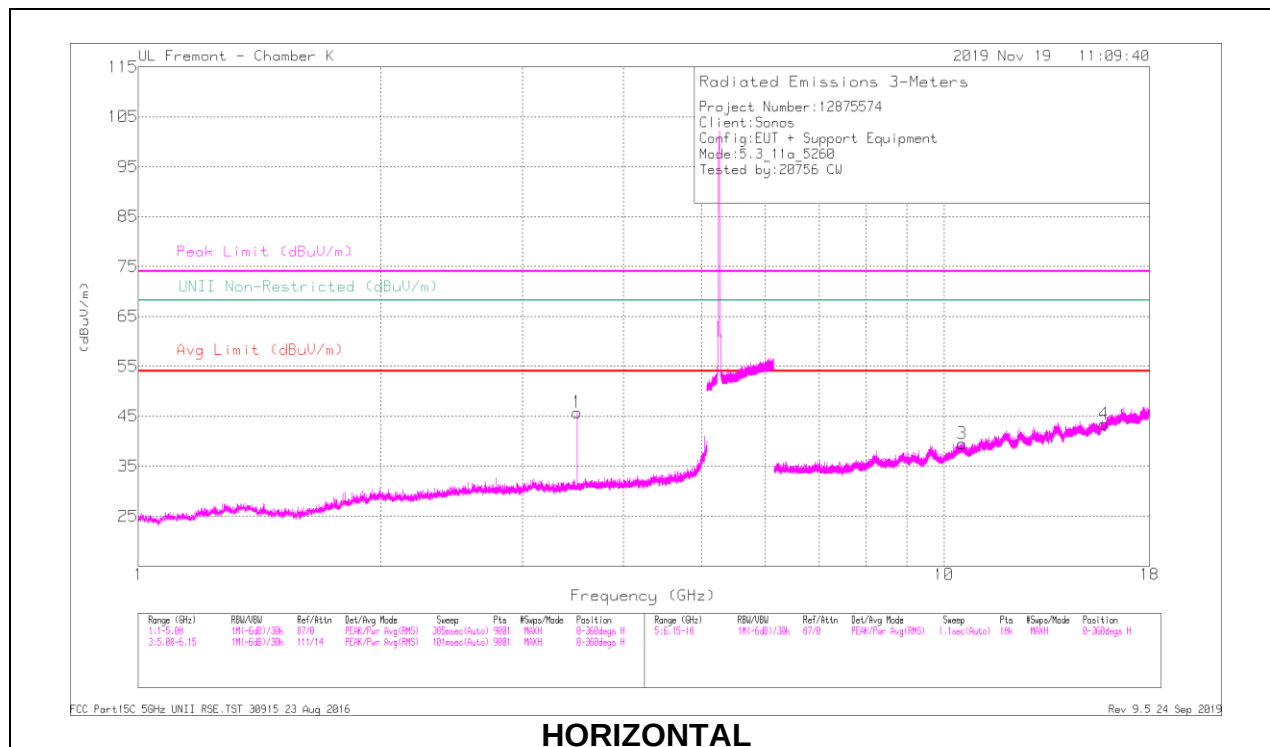
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



RADIATED EMISSIONS

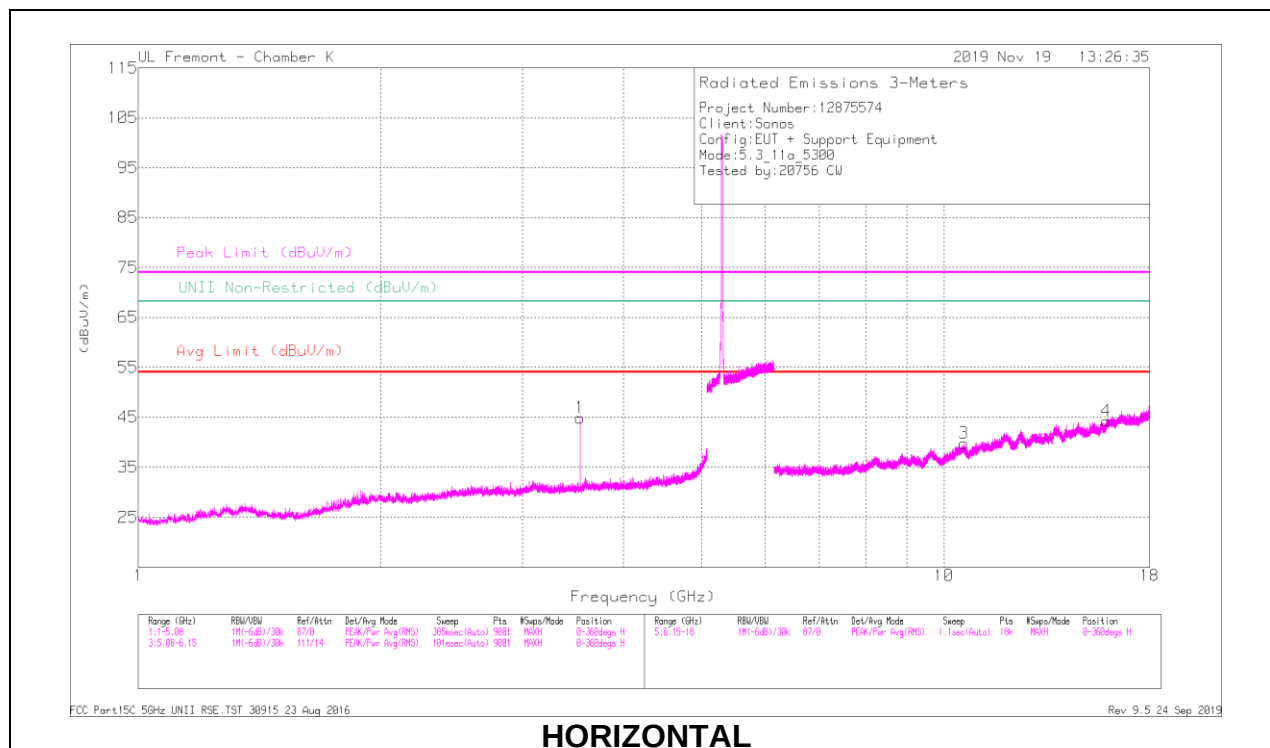
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF EMC4294 (dBm)	Amp/CA/Flt/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Unli Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.50666	48.21	PK-U	33.1	-32.8	48.51	-	-	74	-25.49	-	-	162	123	H
2	* 3.5067	42.26	PK-U	33.1	-32.8	42.56	-	-	74	-31.44	-	-	32	111	V
3	10.53384	31.91	PK-U	37.8	-22.4	47.51	-	-	-	-	68.2	-20.89	187	155	H
4	* 15.79269	29.28	PK-U	40.1	-18	51.38	-	-	74	-22.62	-	-	136	314	H
	* 15.79254	18.49	ADR	40.1	-18	40.59	54	-13.41	-	-	-	-	136	314	H
5	10.51654	31.88	PK-U	37.7	-22.5	47.08	-	-	-	-	68.2	-21.12	189	170	V
6	* 15.79542	28.96	PK-U	40.1	-18	51.06	-	-	74	-22.94	-	-	119	327	V
	* 15.79517	18.56	ADR	40.1	-18	40.66	54	-13.34	-	-	-	-	119	327	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

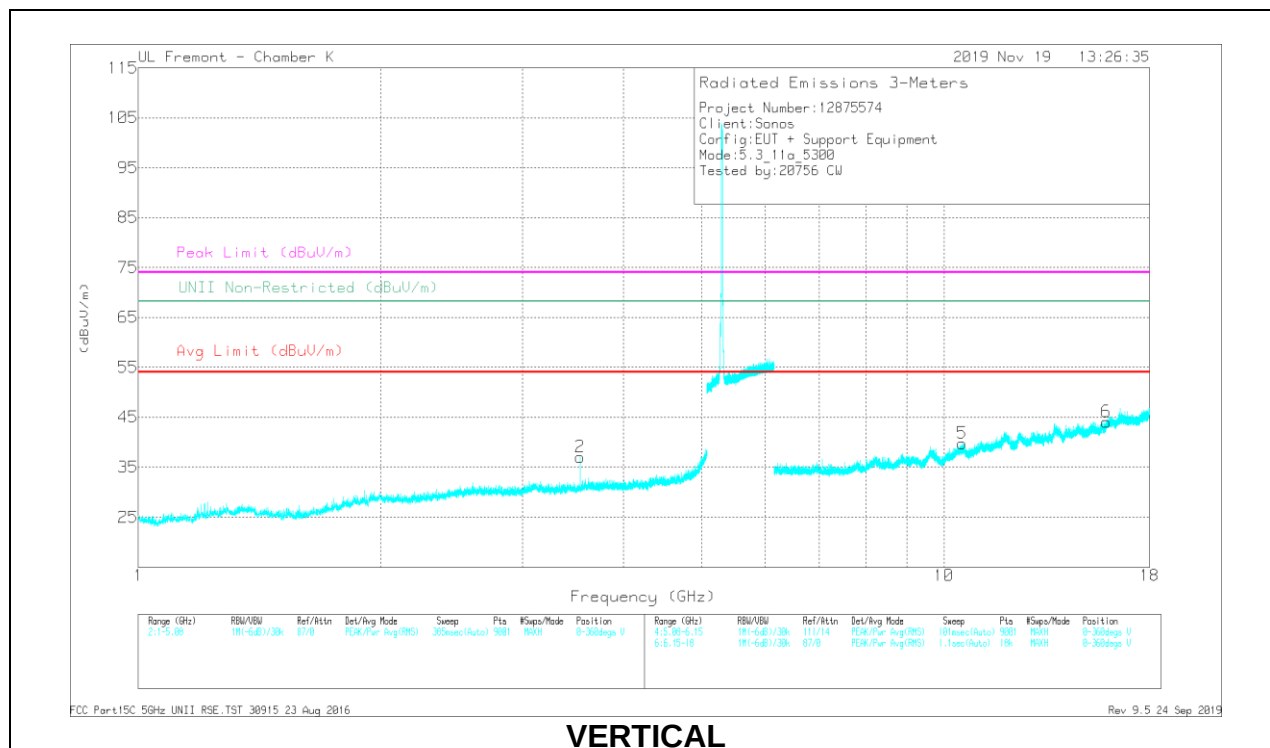
PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

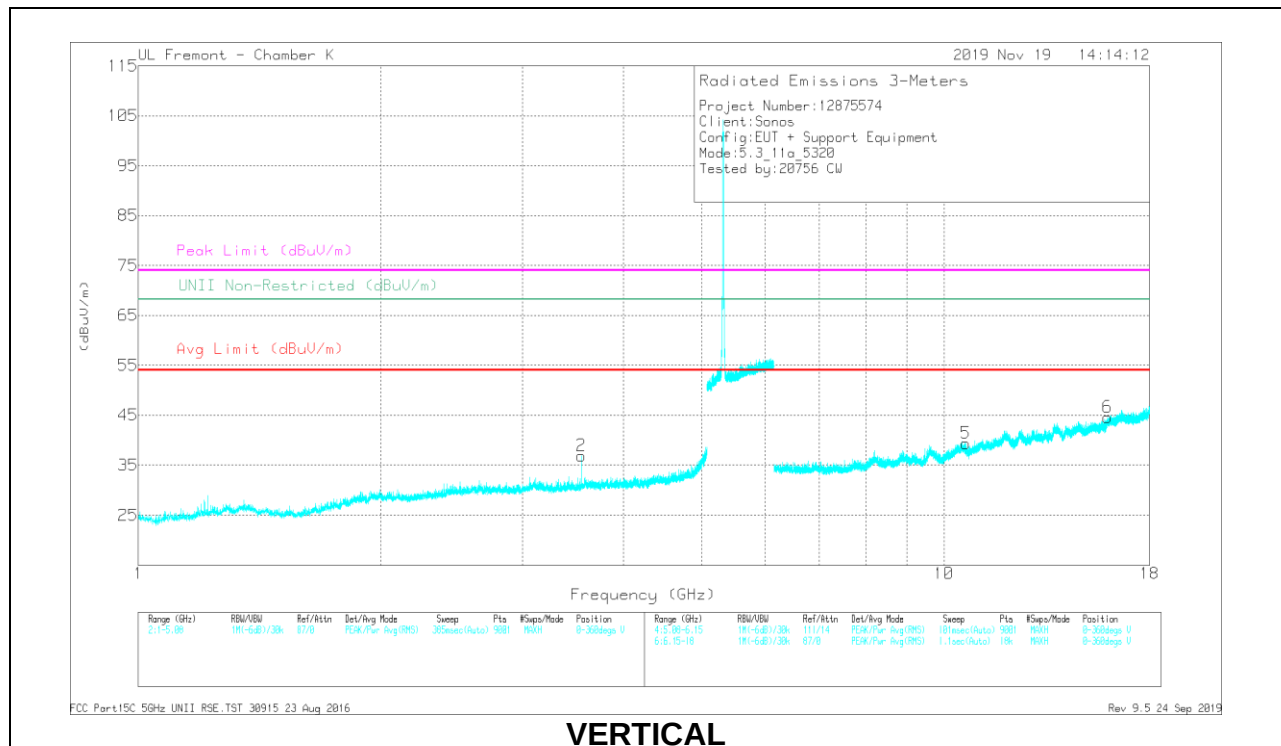
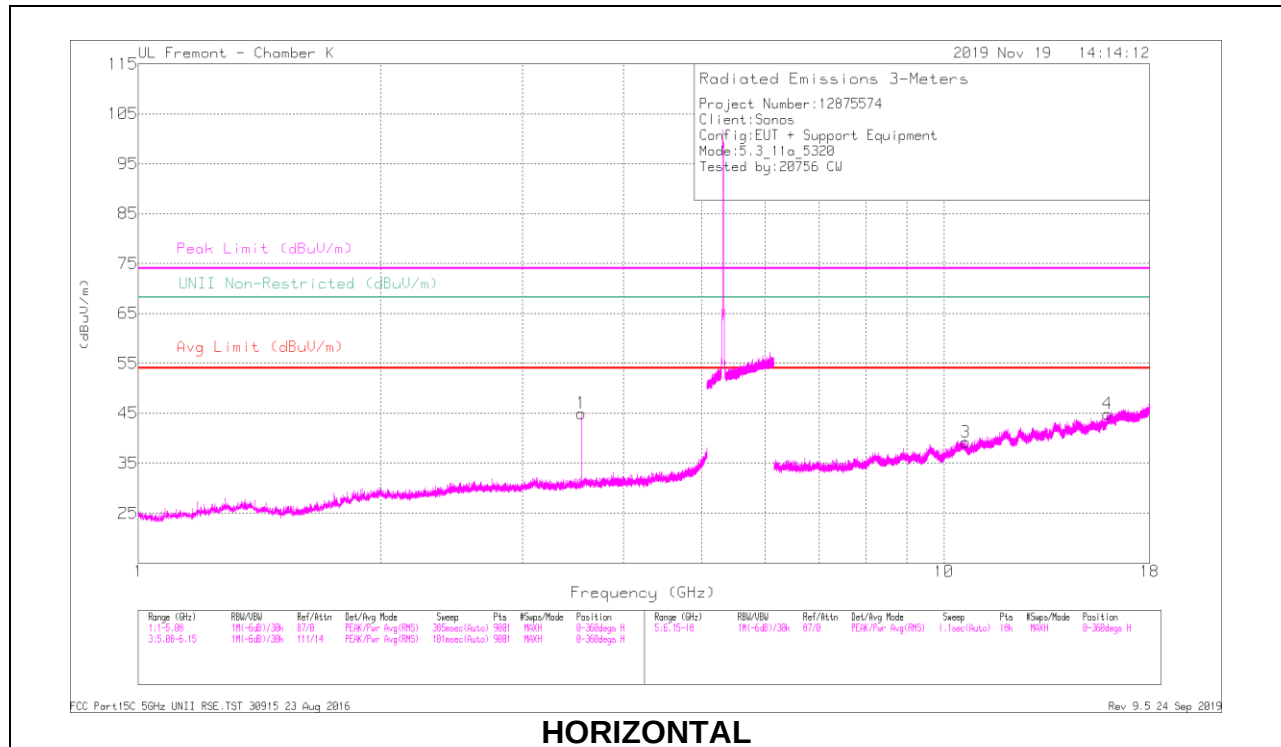
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF EMC4294 (dBm)	Amp/Cable/Fit/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	ULRI Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.53332	47.85	PK-U	33.1	-32.6	48.35	-	-	74	-25.65	-	-	164	137	H
	* 3.53331	45.27	ADR	33.1	-32.6	45.77	54	-8.23	-	-	-	-	164	137	H
2	* 3.53334	41.41	PK-U	33.1	-32.6	41.91	-	-	74	-32.09	-	-	30	110	V
	* 3.53333	35.62	ADR	33.1	-32.6	36.12	54	-17.88	-	-	-	-	30	110	V
3	10.58736	31.6	PK-U	37.8	-22.3	47.1	-	-	-	-	68.2	-21.1	337	171	H
4	* 15.9005	28.55	PK-U	40.2	-17.8	50.95	-	-	74	-23.05	-	-	21	144	H
	* 15.90089	18.72	ADR	40.2	-17.8	41.12	54	-12.88	-	-	-	-	21	144	H
5	10.53395	30.96	PK-U	37.7	-22.4	46.26	-	-	-	-	68.2	-21.94	275	171	V
6	* 15.90602	28.18	PK-U	40.2	-17.8	50.98	-	-	74	-23.42	-	-	135	245	V
	* 15.90576	18.29	ADR	40.2	-17.8	40.69	54	-13.31	-	-	-	-	135	245	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

HIGH CHANNEL RESULTS



RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF EMC4294 (dBm)	Amp/Cable/Fit/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	ULRI Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.54665	47.49	PK-U	33.2	-32.5	48.19	-	-	74	-25.81	-	-	164	133	H
	* 3.54664	45.06	ADR	33.2	-32.5	45.76	54	-8.24	-	-	-	-	164	133	H
2	* 3.54668	42.31	PK-U	33.2	-32.5	43.01	-	-	74	-30.99	-	-	98	208	V
	* 3.54665	35.15	ADR	33.2	-32.5	35.85	54	-18.15	-	-	-	-	98	208	V
3	* 10.64232	31.26	PK-U	37.9	-22.8	46.36	-	-	74	-27.64	-	-	161	196	H
	* 10.64166	20.46	ADR	37.9	-22.8	35.56	54	-18.44	-	-	-	-	161	196	H
4	* 15.95917	28.68	PK-U	40.3	-17.9	51.08	-	-	74	-22.92	-	-	133	270	H
	* 15.95948	18.32	ADR	40.3	-17.9	40.72	54	-13.28	-	-	-	-	133	270	H
5	* 10.64048	30.84	PK-U	37.9	-22.8	46.04	-	-	74	-27.96	-	-	138	266	V
	* 10.64019	20.91	ADR	37.9	-22.8	36.01	-	-17.99	-	-	-	-	138	266	V
6	* 15.96172	28.44	PK-U	40.4	-17.9	50.94	-	-	74	-23.06	-	-	320	349	V
	* 15.96172	18.51	ADR	40.4	-17.9	41.01	54	-12.99	-	-	-	-	320	349	V

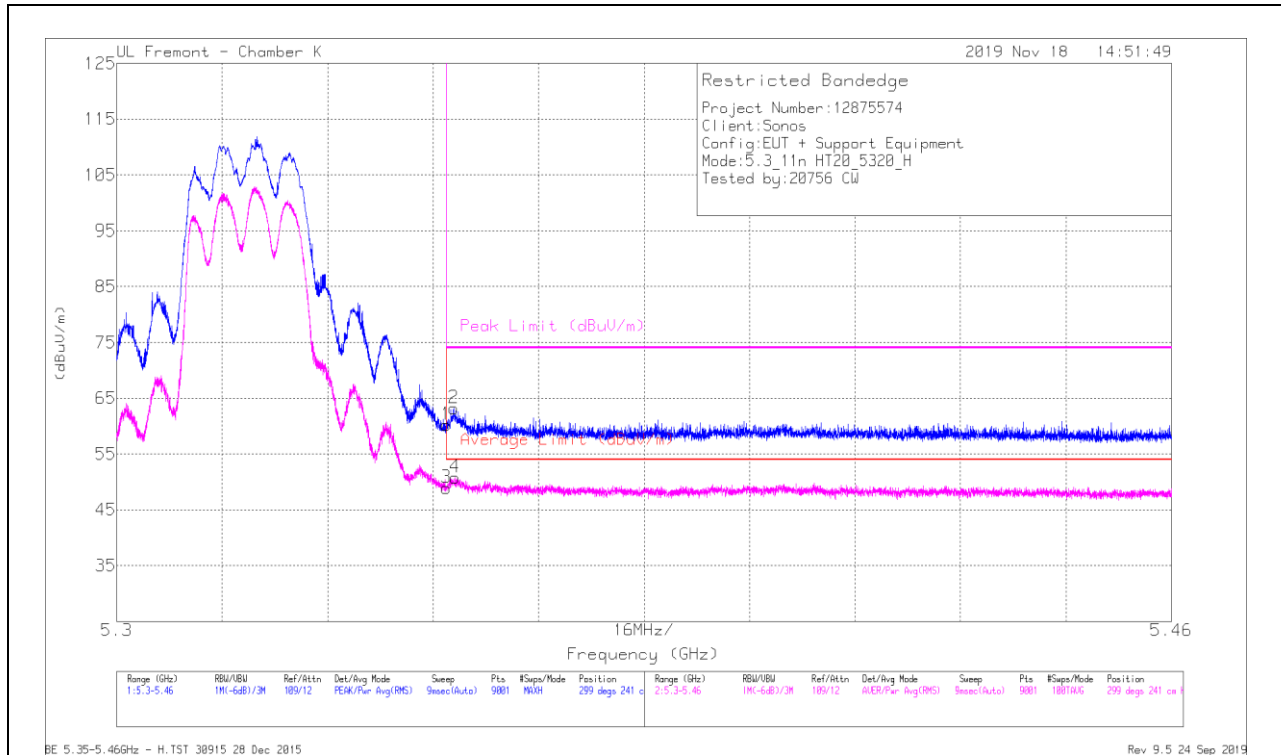
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

9.1.4. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.3 GHz BAND

4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



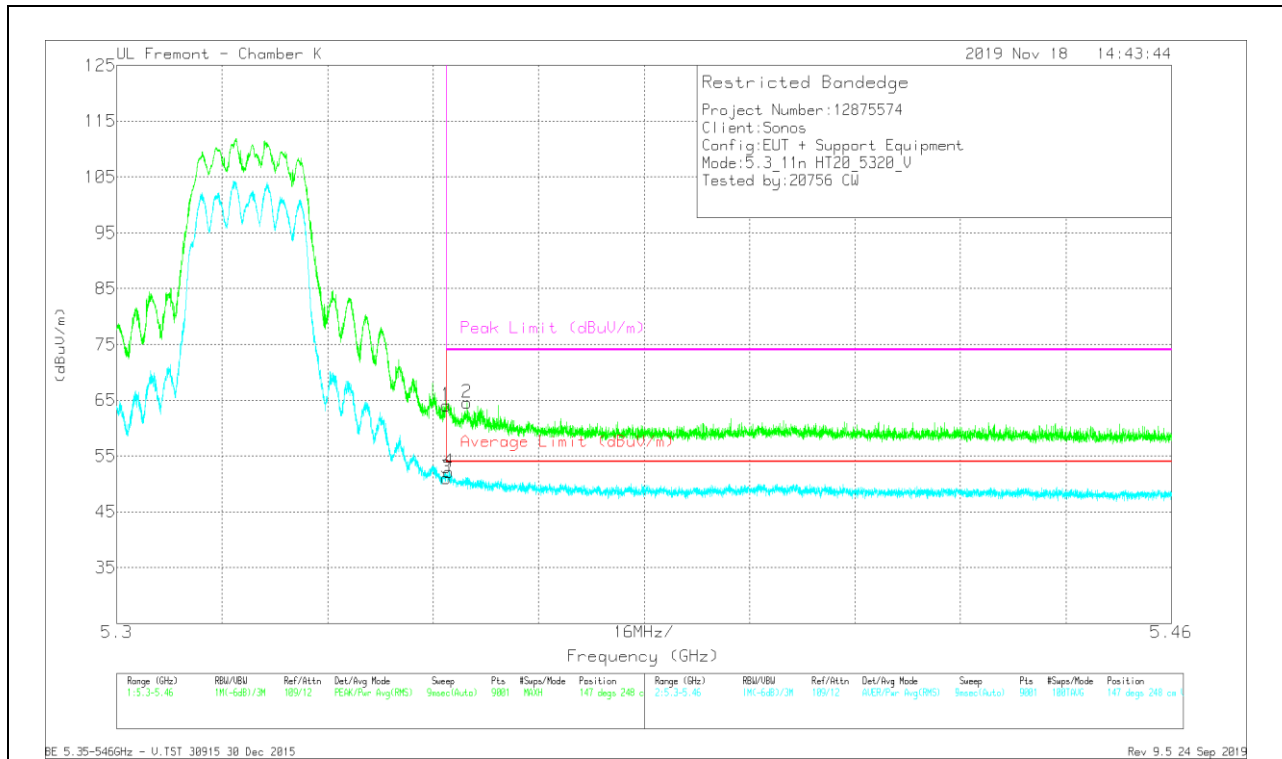
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF EMC254 (dBm)	Ampl CMF/InPad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.35001	33.69	Pk	34.4	-7.9	0	60.19	-	-	74	-13.81	299	241	H
2	* 5.35109	36.71	Pk	34.4	-7.9	0	63.21	-	-	74	-10.79	299	241	H
3	* 5.35001	22.3	RMS	34.4	-7.9	.1	48.9	54	-5.1	-	-	299	241	H
4	* 5.35136	24.19	RMS	34.4	-7.9	.1	50.79	54	-3.21	-	-	299	241	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF EMC4294 (dBm)	Amp CMFIR/Pat (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.35001	37.6	PK	34.4	-7.9	0	64.1	-	-	74	-9.9	147	248	V
2	* 5.35312	38.05	PK	34.4	-7.9	0	64.55	-	-	74	-9.45	147	248	V
3	* 5.35001	24.4	RMS	34.4	-7.9	.1	51	54	-3	-	-	147	248	V
4	* 5.35038	25.61	RMS	34.4	-7.9	.1	52.21	54	-1.79	-	-	147	248	V

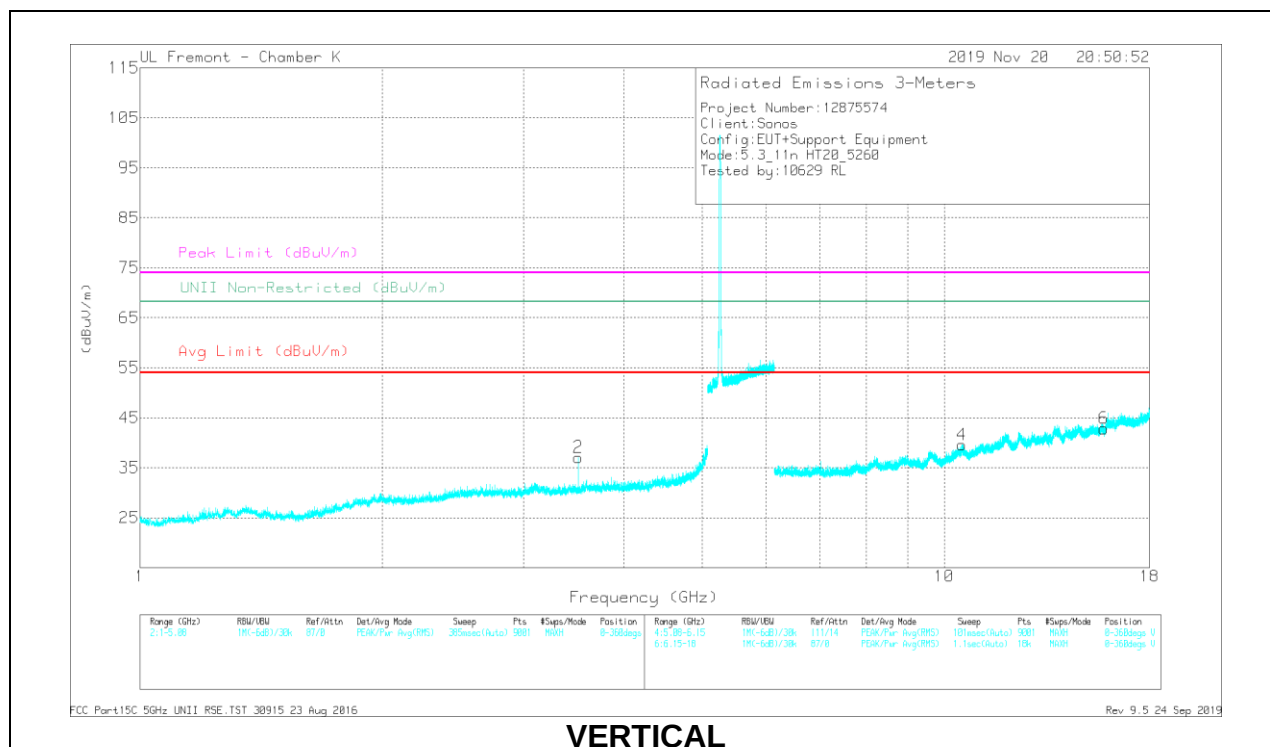
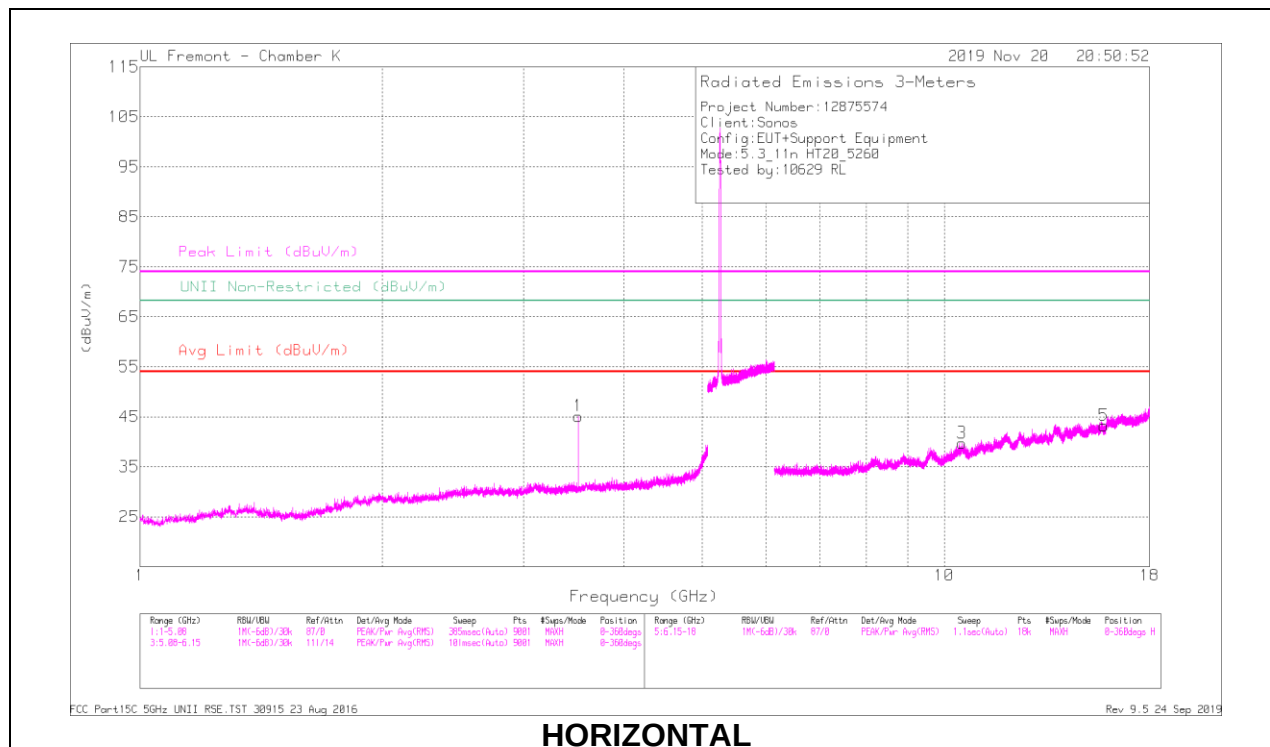
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK - Peak detector

RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



RADIATED EMISSIONS

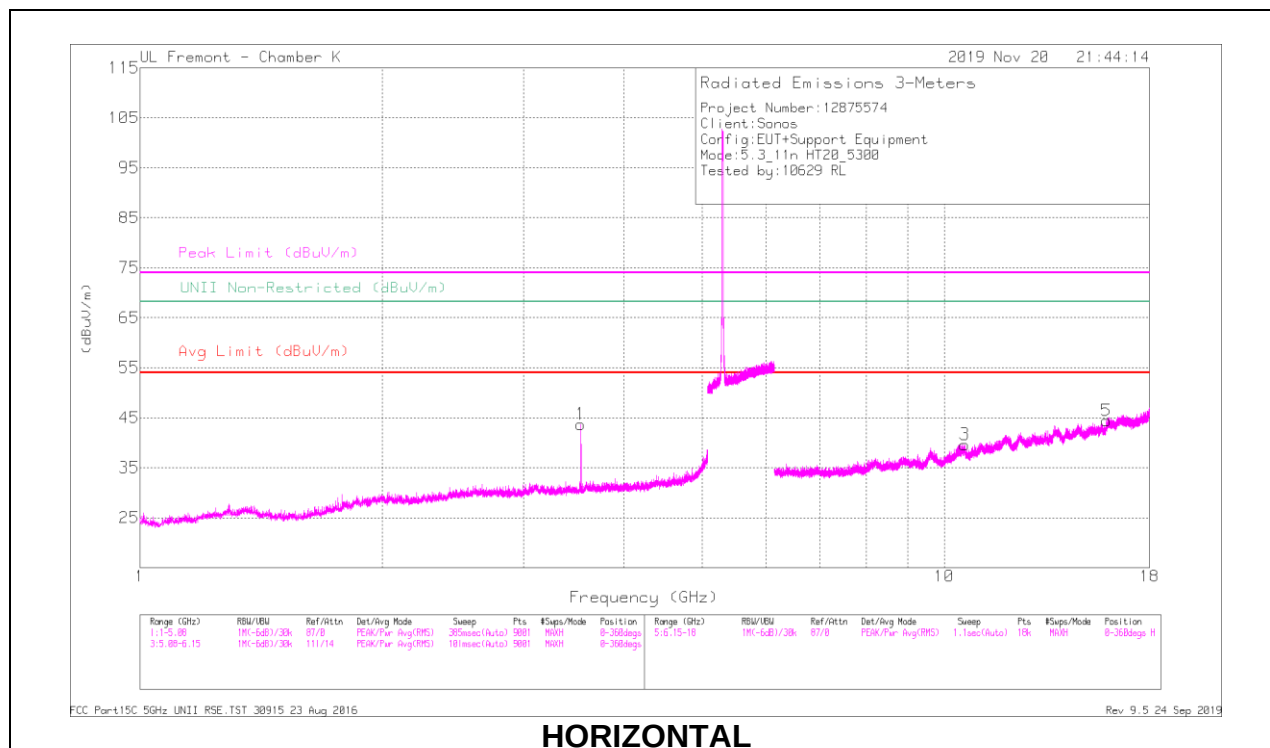
Frequency (MHz)	Meas Reading (dBm)	Det	AF EMC424 (dBm)	Amplifier/Pwr (dB)	DC Corr (dB)	Corrected Reading (dBm)	Avg Limit (dBm)	Margin (dB)	Peak Limit (dBm)	PK Margin (dB)	Limit Non-Restricted (dBm)	PK Margin (dB)	Altitude (Feet)	Height (m)	Polarity
* 3.50665	46.59	PK-U	33.1	-32.8	0	47.29	-	-	74	-26.71	-	-	154	133	H
* 3.50664	44.59	ADR	33.1	-32.8	1	44.99	54	-9.01	-	-	-	-	154	133	H
* 3.50661	41.39	PK-U	33.1	-32.8	0	41.68	-	-	74	-32.32	-	-	31	110	V
* 3.50663	35.98	ADR	33.1	-32.8	1	36.38	54	-17.62	-	-	-	-	31	110	V
10.51573	34.33	PK-U	37.7	-22.5	0	49.53	-	-	-	-	68.2	-18.67	355	108	H
* 15.78423	30.27	PK-U	40.1	-18	0	52.37	-	-	74	-21.63	-	-	236	291	H
* 15.79241	19.39	ADR	40.1	-18	1	41.59	54	-12.41	-	-	-	-	236	291	H
10.51146	33.99	PK-U	37.8	-22.6	0	49.19	-	-	-	-	68.2	-19.01	84	321	V
* 15.79121	30.75	PK-U	40.1	-18	0	52.83	-	-	74	-21.17	-	-	139	206	V
* 15.78626	19.23	ADR	40.1	-18	1	41.43	54	-12.57	-	-	-	-	139	206	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

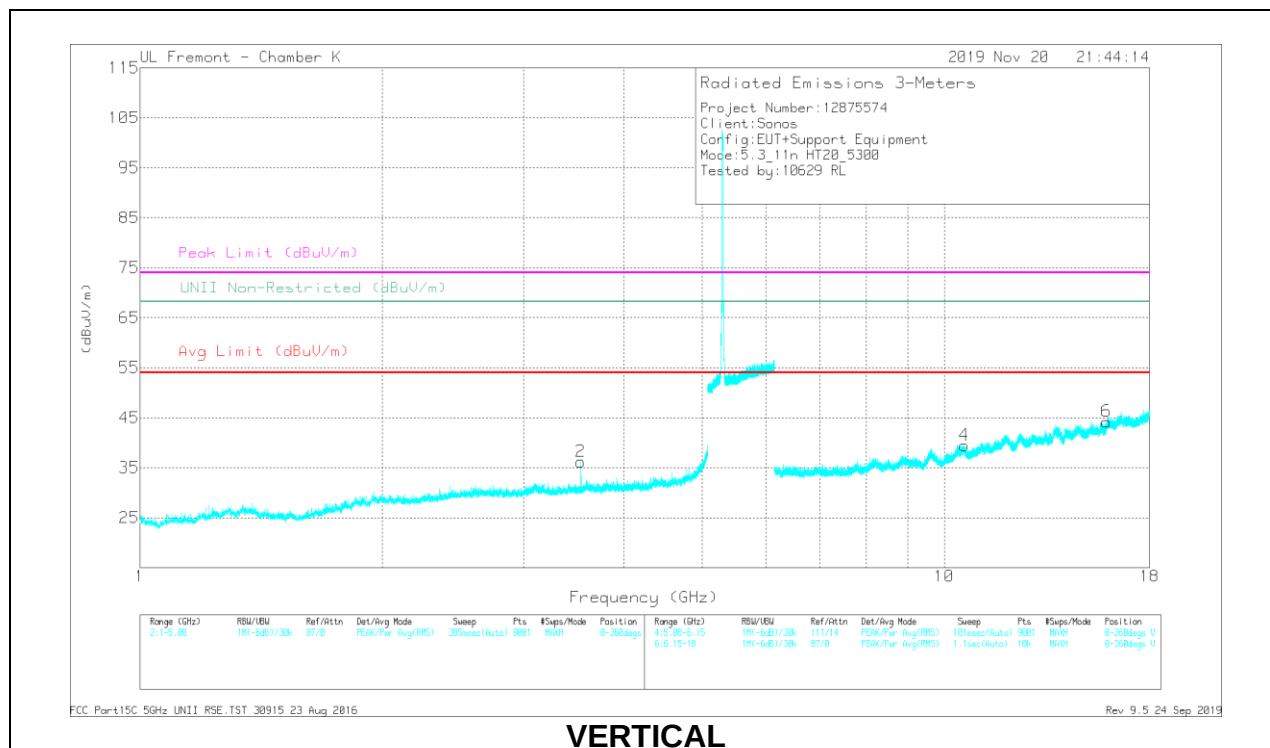
PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

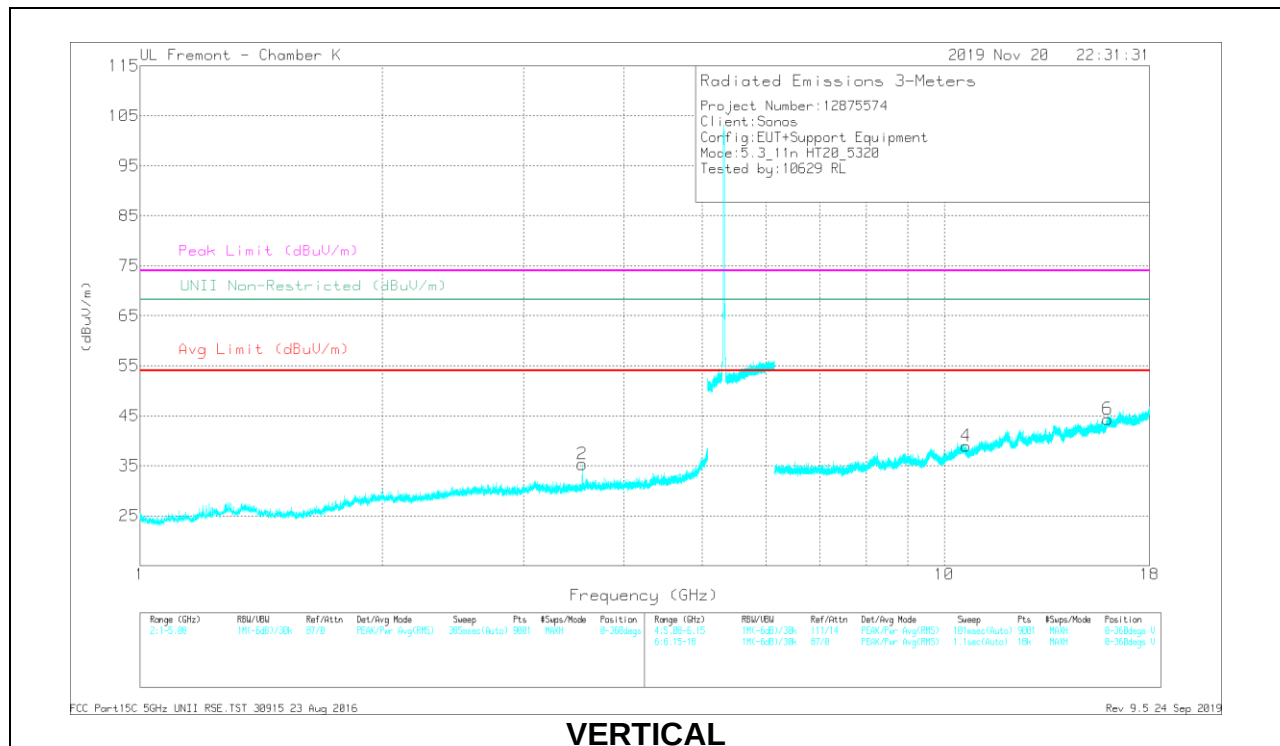
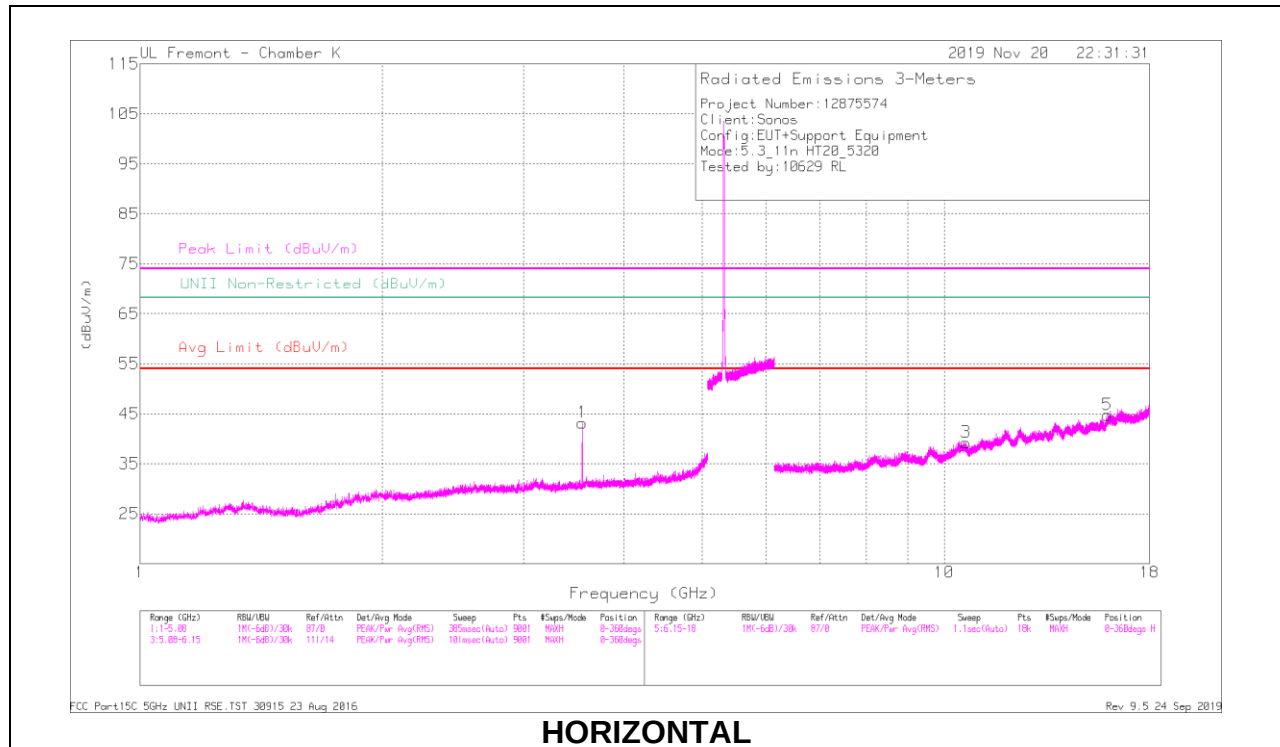
Frequency (MHz)	Meas Reading (dBm)	Det	AF EMC424 (dBm)	Amplifier/Pwr (dB)	DC Corr (dB)	Corrected Reading (dBm)	Avg Limit (dBm)	Margin (dB)	Peak Limit (dBm)	PK Margin (dB)	Limit Non-Restricted (dBm)	PK Margin (dB)	Altitude (Feet)	Height (m)	Polarity
* 3.53324	46.53	PK-U	33.1	-32.6	0	47.03	-	-	74	-26.97	-	-	159	135	H
* 3.53331	43.63	ADR	33.1	-32.6	1	44.23	54	-9.77	-	-	-	-	159	135	H
* 3.53336	41.05	PK-U	33.1	-32.6	0	41.55	-	-	74	-32.45	-	-	26	98	V
* 3.53331	34.72	ADR	33.1	-32.6	1	35.32	54	-18.68	-	-	-	-	26	98	V
10.59517	33.79	PK-U	37.7	-22.4	0	39.09	-	-	-	-	65.2	-19.11	350	103	H
* 15.90784	31.1	PK-U	40.2	-17.8	0	53.5	-	-	74	-20.5	-	-	290	330	H
* 15.90221	19.42	ADR	40.2	-17.7	1	42.02	54	-11.98	-	-	-	-	290	330	H
10.5995	32.93	PK-U	37.8	-22.5	0	48.23	-	-	-	-	65.2	-19.97	128	245	V
* 15.92501	30.19	PK-U	40.5	-17.9	0	52.59	-	-	74	-21.41	-	-	217	102	V
* 15.90897	19.25	ADR	40.2	-17.8	1	41.75	54	-12.25	-	-	-	-	217	102	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

HIGH CHANNEL RESULTS



RADIATED EMISSIONS

Frequency (MHz)	Meas Reading (dBuV)	Det	AF EMC424 (dBm)	Amplified (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Limit Non-Restricted (dBuV/m)	PK Margin (dB)	Altitude (Feet)	Height (m)	Polarity
* 3.54667	45.55	PK-U	33.2	-32.5	0	46.35	-	-	74	-27.65	-	-	161	134	H
* 3.54665	42.62	ADR	33.2	-32.5	1	43.42	54	-10.58	-	-	-	-	161	134	H
* 3.54655	41.75	PK-U	33.2	-32.5	0	42.45	-	-	74	-31.55	-	-	30	106	V
* 3.54666	34.32	ADR	33.2	-32.5	1	35.12	54	-18.88	-	-	-	-	30	106	V
* 10.64106	34.54	PK-U	37.9	-22.8	0	39.14	-	-	74	-24.86	-	-	333	368	H
* 10.64043	22.72	ADR	37.9	-22.8	1	37.92	54	-16.08	-	-	-	-	333	368	H
* 15.93862	30.74	PK-U	40.3	-17.9	0	53.14	-	-	74	-20.86	-	-	66	293	H
* 15.95735	19.38	ADR	40.3	-17.9	1	41.88	54	-12.12	-	-	-	-	66	293	H
* 10.63973	33.86	PK-U	37.9	-22.8	0	49.06	-	-	74	-24.94	-	-	94	230	V
* 10.63979	22.71	ADR	37.9	-22.8	1	37.91	54	-16.09	-	-	-	-	94	230	V
* 15.95981	30.41	PK-U	40.3	-17.9	0	52.81	-	-	74	-21.19	-	-	138	265	V
* 15.96925	18.94	ADR	40.4	-17.9	1	41.54	54	-12.46	-	-	-	-	138	265	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK-U - U-NII: Maximum Peak

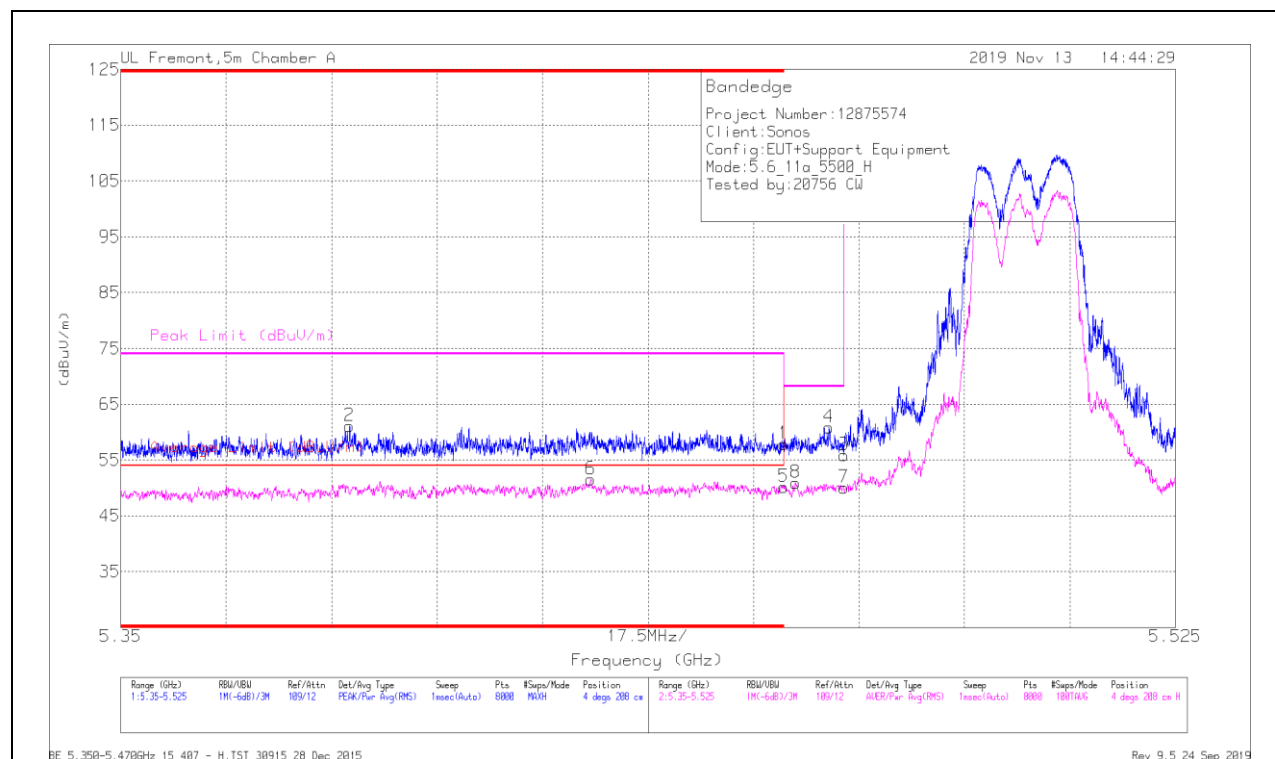
ADR - U-NII AD primary method, RMS average

9.1.5. TX ABOVE 1 GHz 802.11a MODE IN THE 5.6 GHz BAND

4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fktr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.45998	38.75	Pk	34.9	-15.8	57.85	-	-	74	-16.15	4	208	H
2	* 5.38798	42.49	Pk	34.9	-16.3	61.09	-	-	74	-12.91	4	208	H
5	* 5.45998	31.11	RMS	34.9	-15.8	50.21	54	-3.79	-	-	4	208	H
6	* 5.42802	32.6	RMS	34.9	-16	51.5	54	-2.5	-	-	4	208	H
8	5.46195	31.76	RMS	34.9	-15.8	50.86	-	-	-	-	4	208	H
4	5.46751	42.17	Pk	34.9	-16.2	60.87	-	-	68.2	-7.33	4	208	H
3	5.46998	37.5	Pk	34.9	-16.5	55.9	-	-	68.2	-12.3	4	208	H
7	5.46998	31.62	RMS	34.9	-16.5	50.02	-	-	-	-	4	208	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection