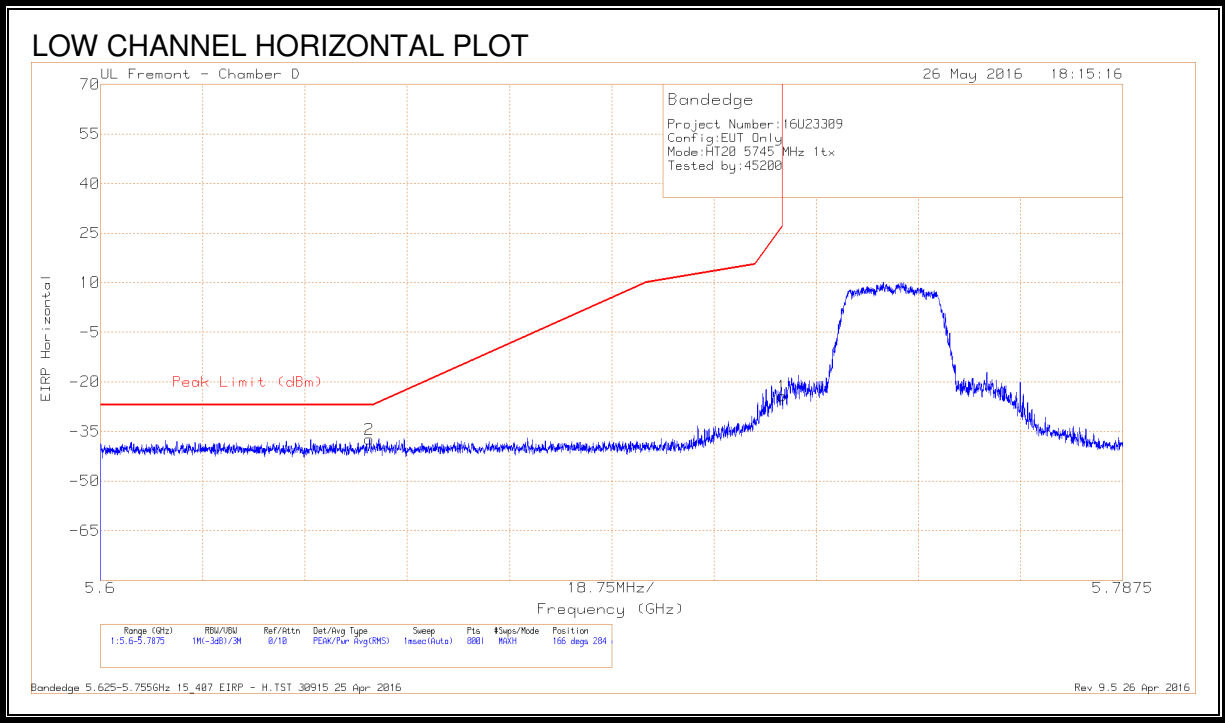


8.24. 802.11n HT20 1Tx MODE IN THE 5.8 GHz BAND

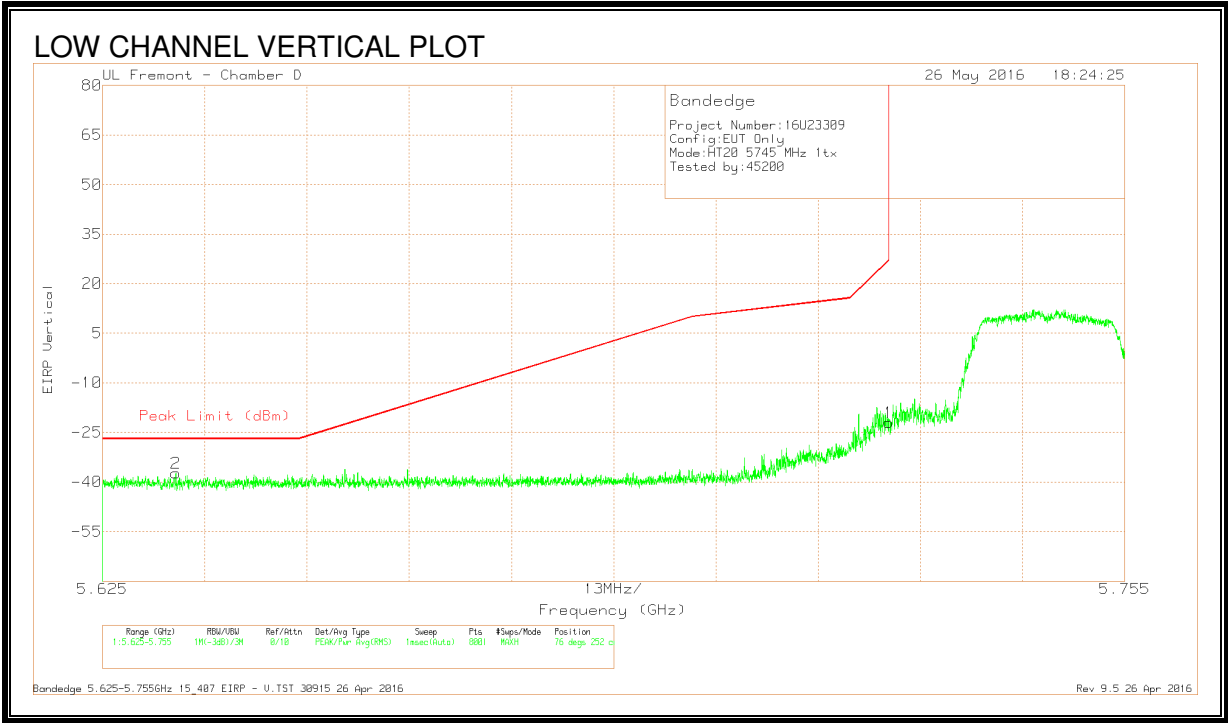
RESTRICTED BANDEDGE, CHAIN 0 (LOW CHANNEL)



DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.649	-66.45	Pk	34.6	-17.3	11.8	-37.35	-27	-10.35	166	284	H
1	5.725	-53.51	Pk	34.8	-17.3	11.8	-24.21	26.99	-51.2	166	284	H

Pk - Peak detector

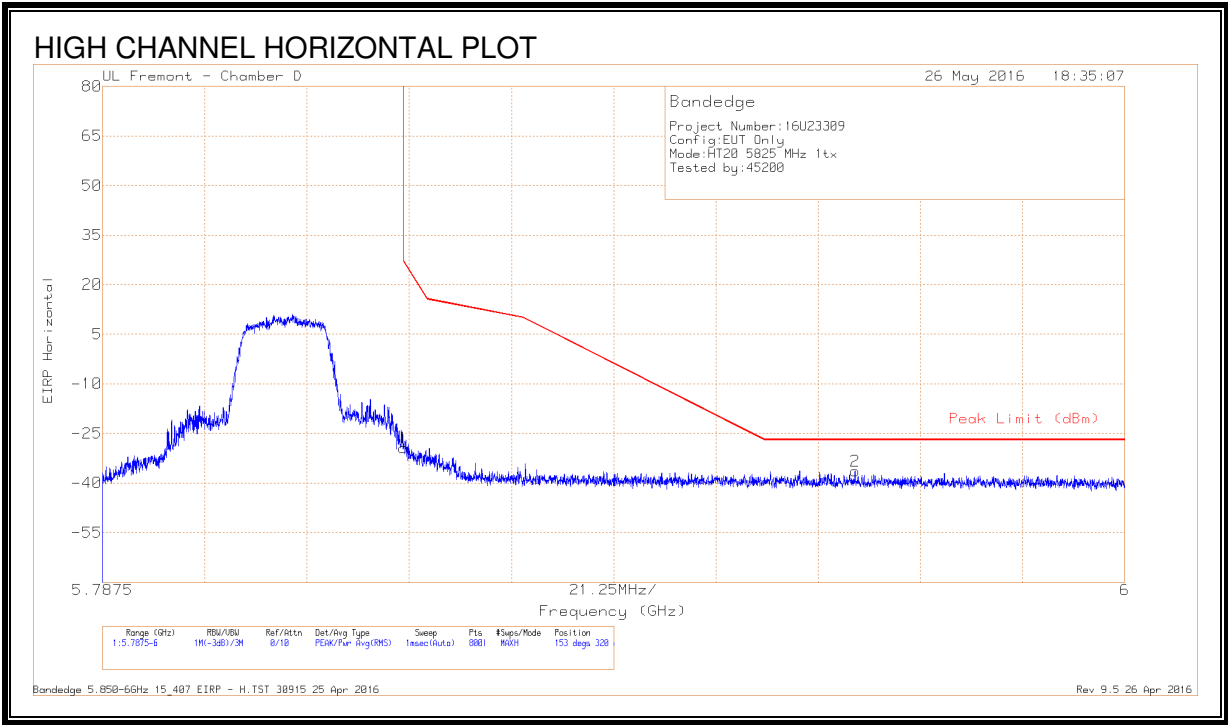


DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.634	-66.4	Pk	34.6	-17.3	11.8	-37.3	-27	-10.3	76	252	V
1	5.725	-51.3	Pk	34.8	-17.3	11.8	-22	26.97	-48.97	76	252	V

Pk - Peak detector

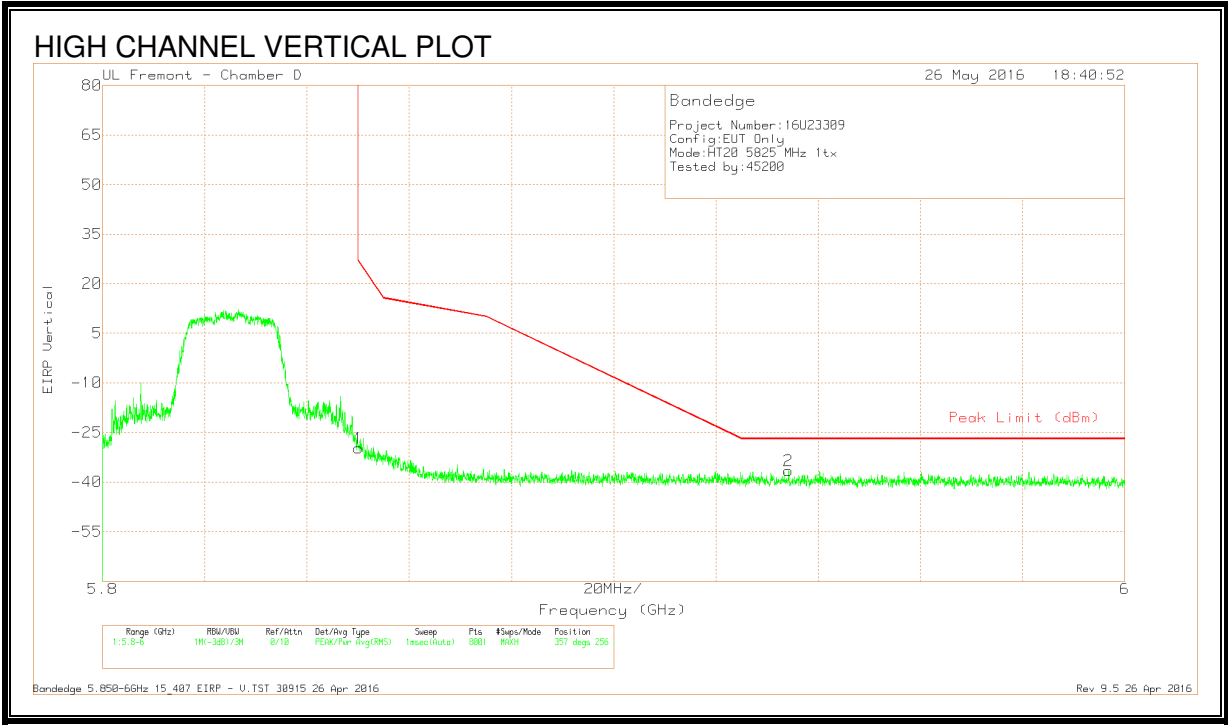
RESTRICTED BANDEDGE, CHAIN 0 (HIGH CHANNEL)



DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Filtr/Par d (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-58.82	Pk	34.9	-17.3	11.8	-29.42	26.99	-56.41	153	320	H
2	5.944	-65.91	Pk	35	-17.2	11.8	-36.31	-27	-9.31	153	320	H

Pk - Peak detector

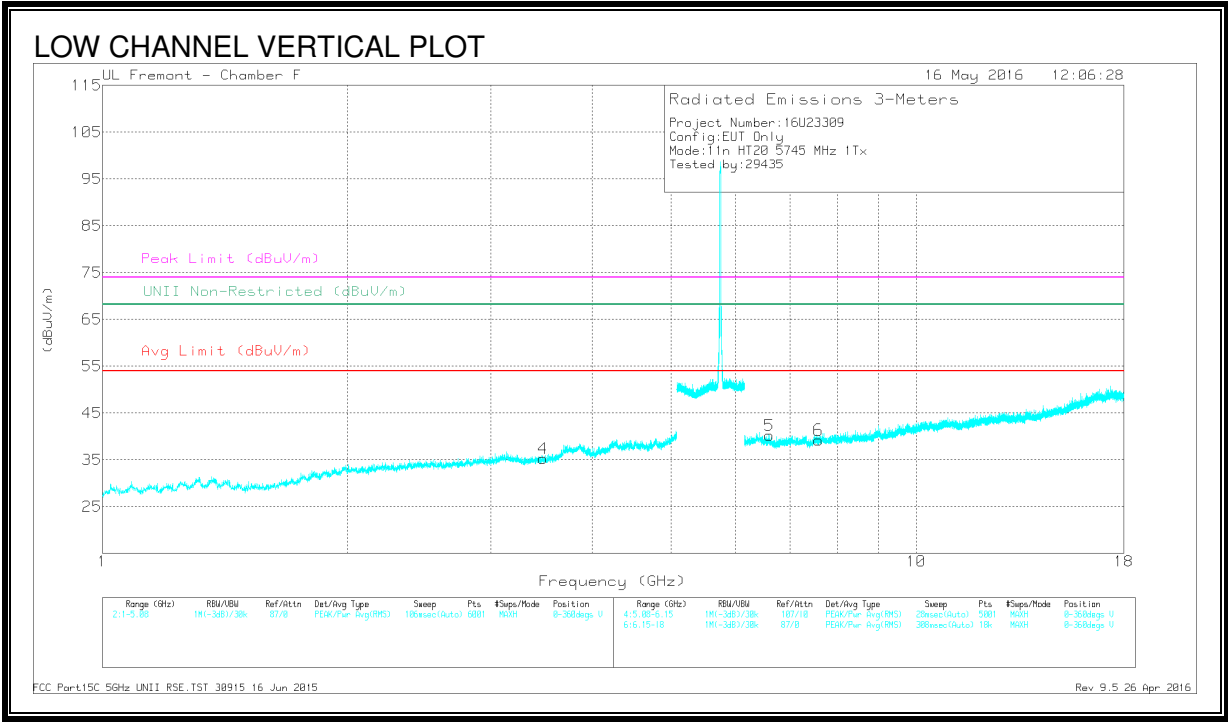
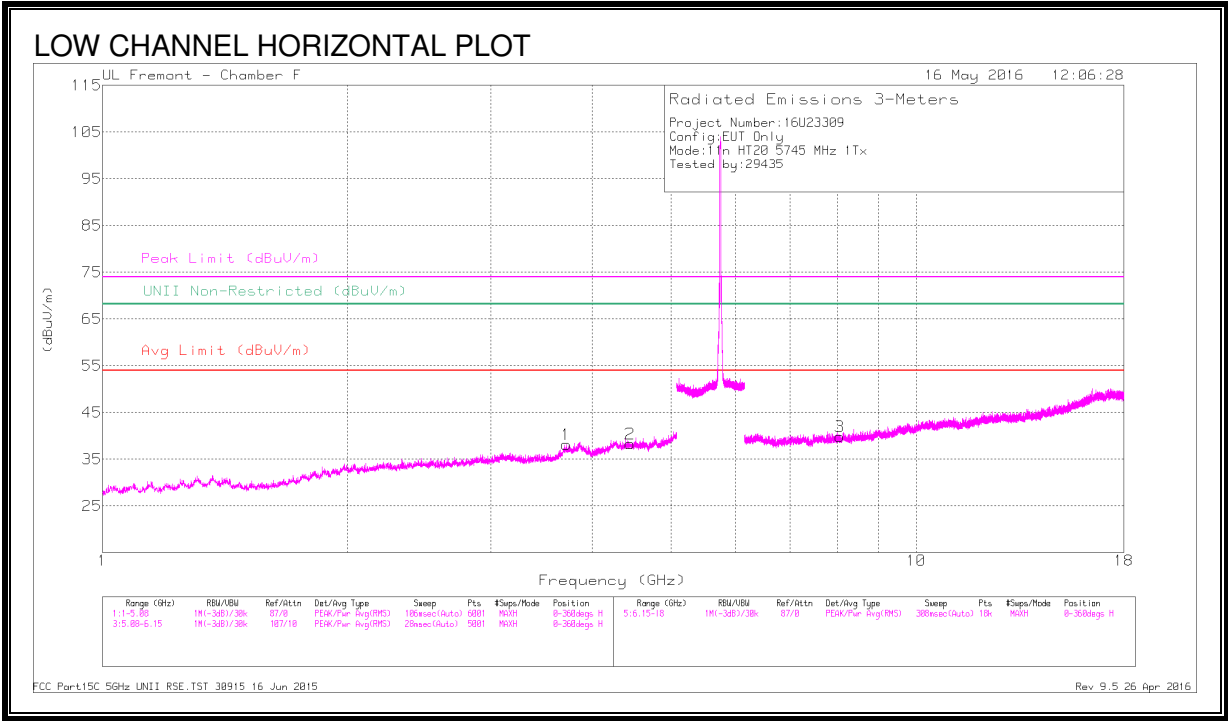


DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Fitr/Power (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-59.06	Pk	34.9	-17.3	11.8	-29.66	26.94	-56.6	357	256	V
2	5.934	-66.22	Pk	35	-17.1	11.8	-36.52	-27	-9.52	357	256	V

Pk - Peak detector

LOW CHANNEL HARMONICS AND SPURIOUS EMISSIONS



DATA

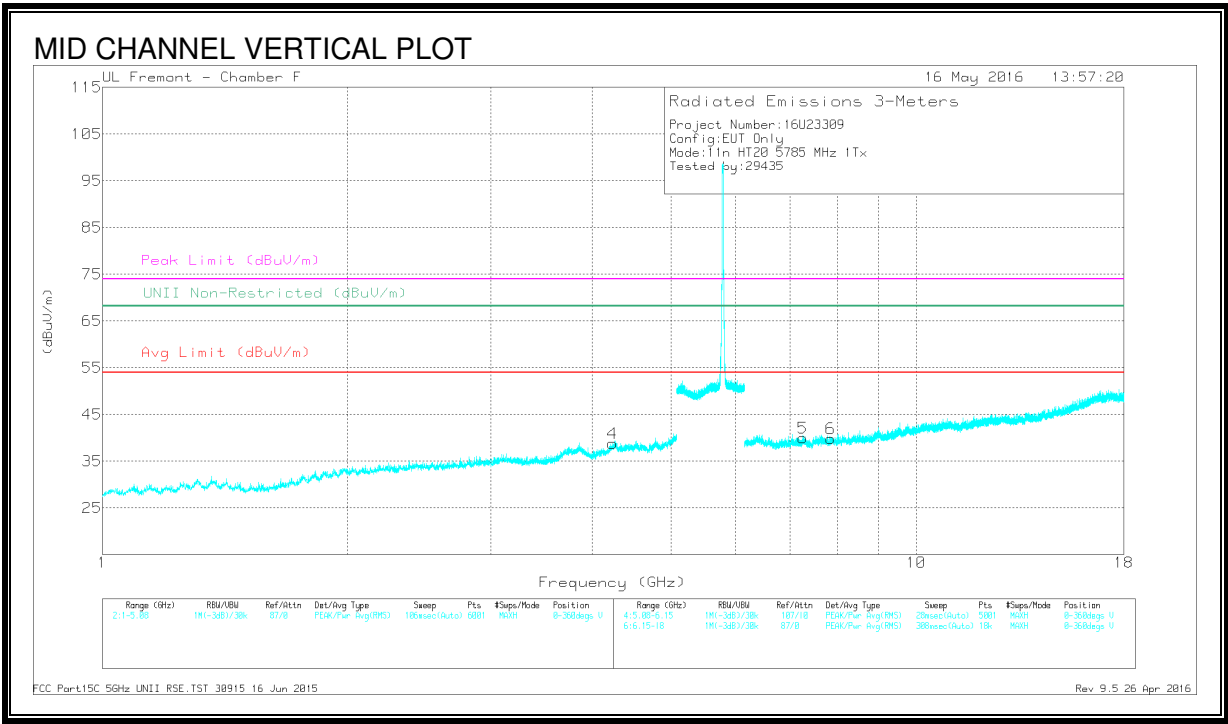
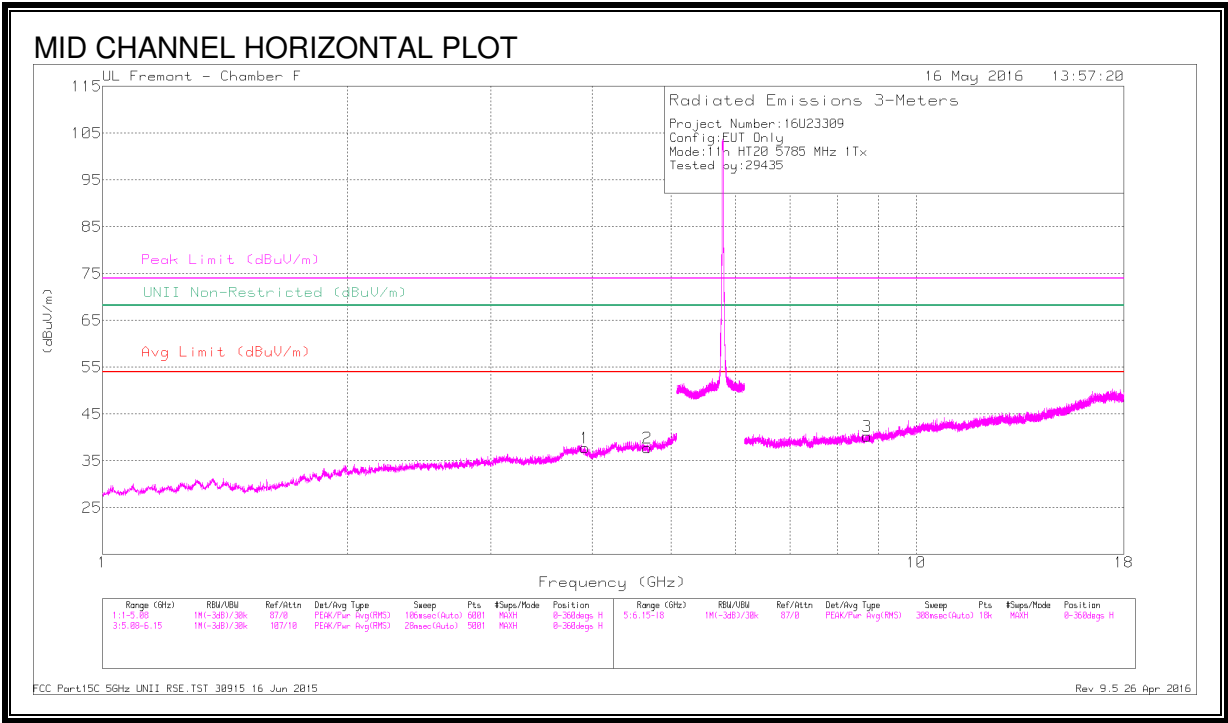
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cb/Filt/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.719	37.98	PK-U	33.4	-29.1	42.28	-	-	74	-31.72	-	-	150	111	H
	* 3.715	28.11	ADR	33.4	-29	32.51	54	-21.49	-	-	-	-	150	111	H
2	4.45	36.84	PK-U	34	-27.3	43.54	-	-	-	-	68.2	-24.66	175	120	H
	4.45	27.09	ADR	34	-27.3	33.79	-	-	-	-	-	-	175	120	H
4	3.477	39.63	PK-U	32.9	-29.6	42.93	-	-	-	-	68.2	-25.27	214	138	V
	3.479	28.9	ADR	32.9	-29.7	32.1	-	-	-	-	-	-	214	138	V
3	* 8.057	36.19	PK-U	35.7	-25.1	46.79	-	-	74	-27.21	-	-	247	173	H
	* 8.059	25.43	ADR	35.7	-25	36.13	54	-17.87	-	-	-	-	247	173	H
5	6.602	35.87	PK-U	35.4	-25.4	45.87	-	-	-	-	68.2	-22.33	308	228	V
	6.601	25.8	ADR	35.4	-25.4	35.8	-	-	-	-	-	-	308	228	V
6	* 7.586	35.04	PK-U	35.7	-25.1	45.64	-	-	74	-28.36	-	-	260	188	V
	* 7.588	25.37	ADR	35.7	-25.2	35.87	54	-18.13	-	-	-	-	260	188	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 HARMONICS AND SPURIOUS EMISSIONS



DATA

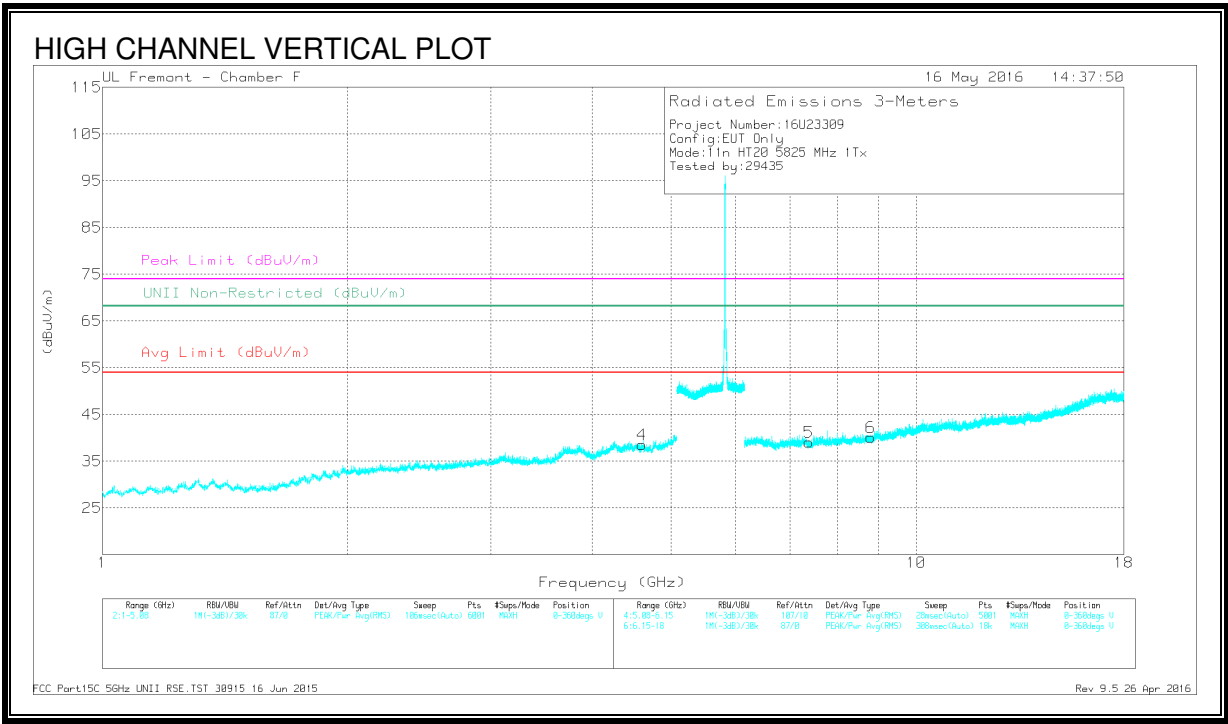
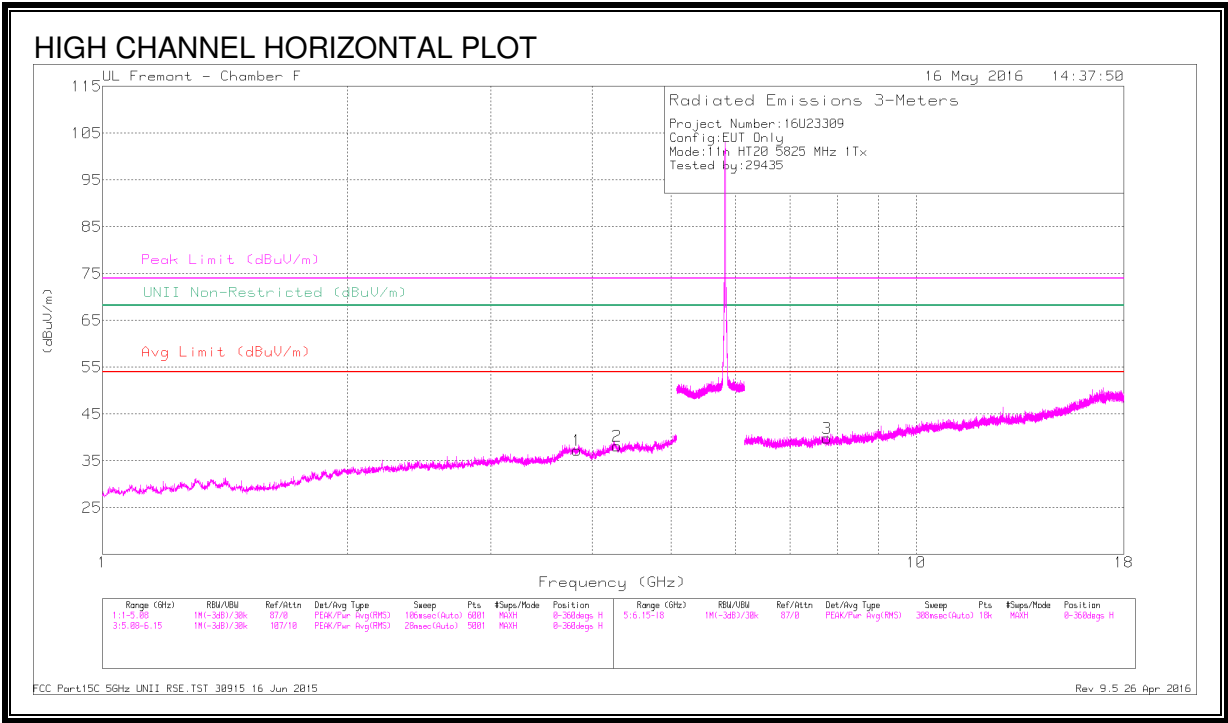
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Ch/Filt/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.915	38.62	PK-U	33.4	-29.3	42.72	-	-	74	-31.28	-	-	301	111	H
	* 3.912	28.39	ADR	33.4	-29.3	32.49	54	-21.51	-	-	-	-	301	111	H
2	* 4.673	37.53	PK-U	34.2	-27.3	44.43	-	-	74	-29.57	-	-	267	131	H
	* 4.672	27.44	ADR	34.2	-27.3	34.34	54	-19.66	-	-	-	-	267	131	H
4	* 4.233	36.95	PK-U	33.7	-27	43.65	-	-	74	-30.35	-	-	260	150	V
	* 4.236	26.92	ADR	33.7	-26.9	33.72	54	-20.28	-	-	-	-	260	150	V
3	8.703	35.44	PK-U	35.9	-23.8	47.54	-	-	-	-	68.2	-20.66	212	169	H
	8.701	24.93	ADR	35.9	-23.8	37.03	-	-	-	-	-	-	212	169	H
5	* 7.255	36.49	PK-U	35.5	-25.5	46.49	-	-	74	-27.51	-	-	239	190	V
	* 7.256	26.62	ADR	35.5	-25.5	36.62	54	-17.38	-	-	-	-	239	190	V
6	7.852	35.73	PK-U	35.8	-25.3	46.23	-	-	-	-	68.2	-21.97	165	296	V
	7.853	25.76	ADR	35.8	-25.4	36.16	-	-	-	-	-	-	165	296	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 HARMONICS AND SPURIOUS EMISSIONS



DATA

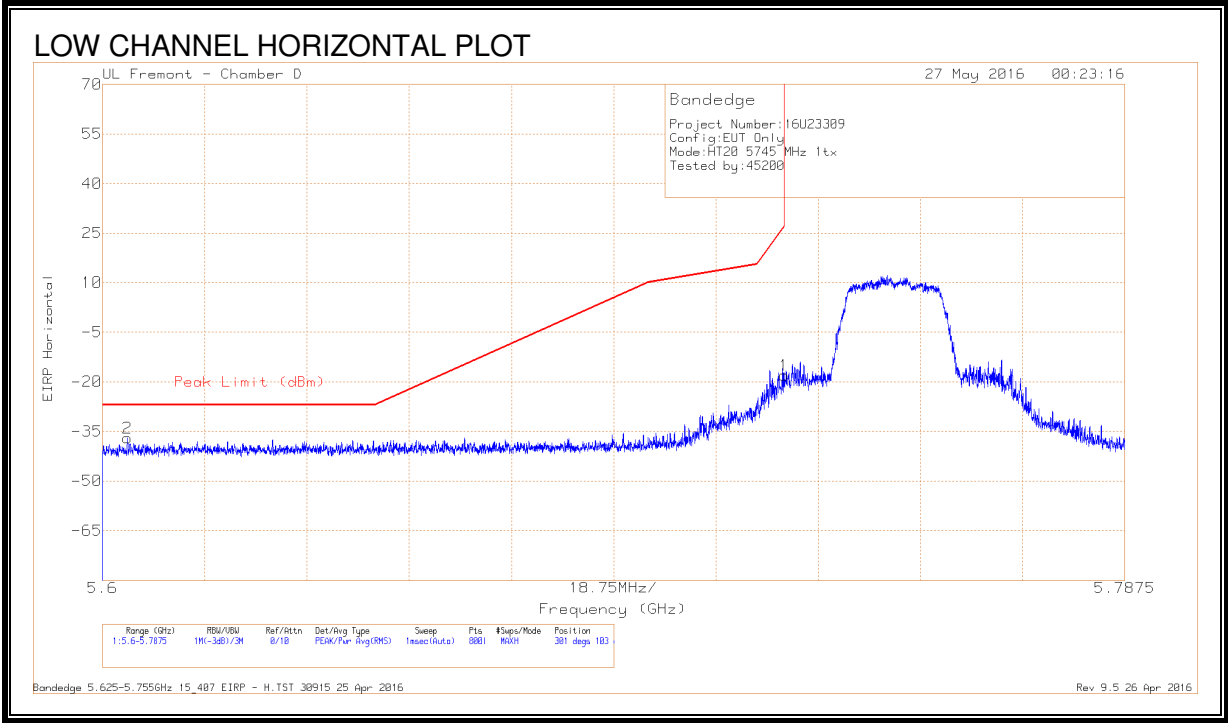
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AFT344 (dB/m)	Amp/Cb/Filt/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Acimuth (Degs)	Height (cm)	Polarity
1	* 3.832	38.35	PK-U	33.4	-28.8	42.95	-	-	74	-31.05	-	-	80	122	H
	* 3.834	27.99	ADR	33.4	-28.8	32.59	54	-21.41	-	-	-	-	80	122	H
2	* 4.288	36.55	PK-U	33.7	-27.1	43.15	-	-	74	-30.85	-	-	111	158	H
	* 4.286	27.01	ADR	33.7	-27.1	33.61	54	-20.39	-	-	-	-	111	158	H
4	* 4.601	37.59	PK-U	34.1	-27.6	44.09	-	-	74	-29.91	-	-	147	190	V
	* 4.603	27.68	ADR	34.1	-27.5	34.28	54	-19.72	-	-	-	-	147	190	V
3	7.769	36.96	PK-U	35.7	-25.5	47.16	-	-	-	-	68.2	-21.04	164	223	H
	7.77	26.1	ADR	35.7	-25.5	36.3	-	-	-	-	-	-	164	223	H
5	* 7.38	36.35	PK-U	35.6	-26.2	45.75	-	-	74	-28.25	-	-	200	253	V
	* 7.382	26.58	ADR	35.6	-26.2	35.98	54	-18.02	-	-	-	-	200	253	V
6	8.791	34.45	PK-U	35.9	-23.5	46.85	-	-	-	-	68.2	-21.35	170	267	V
	8.792	24.6	ADR	35.9	-23.5	37	-	-	-	-	-	-	170	267	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

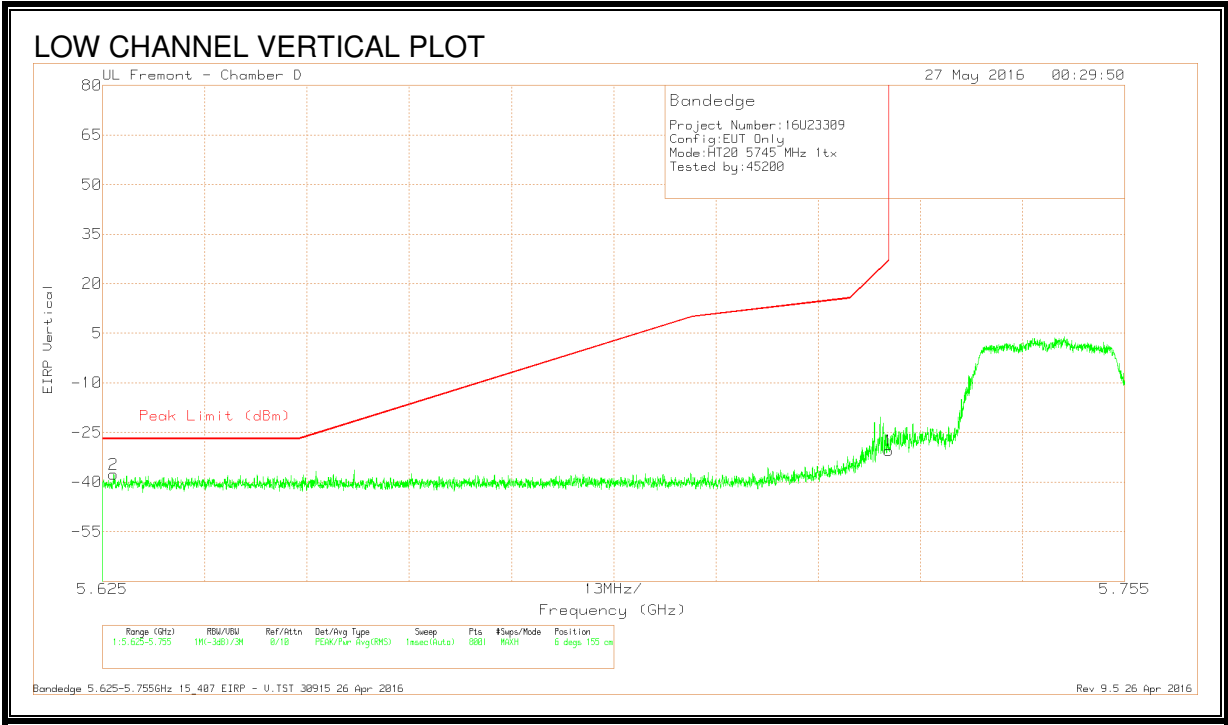
RESTRICTED BANDEDGE, CHAIN 1 (LOW CHANNEL)



DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Fitr/Par d (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.605	-65.79	Pk	34.5	-17.5	11.8	-36.99	-27	-9.99	301	103	H
1	5.725	-47.31	Pk	34.8	-17.3	11.8	-18.01	26.99	-45	301	103	H

Pk - Peak detector

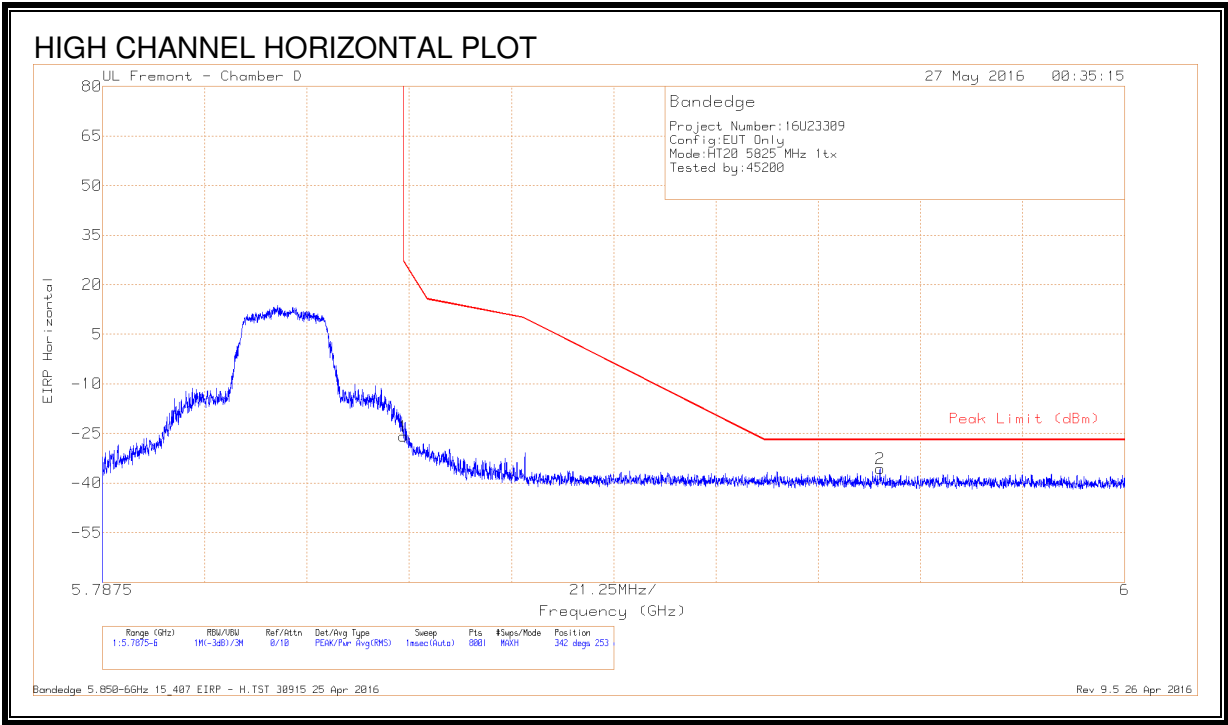


DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.626	-66.73	Pk	34.6	-17.4	11.8	-37.73	-27	-10.73	6	155	V
1	5.725	-59.84	Pk	34.8	-17.3	11.8	-30.54	26.97	-57.51	6	155	V

Pk - Peak detector

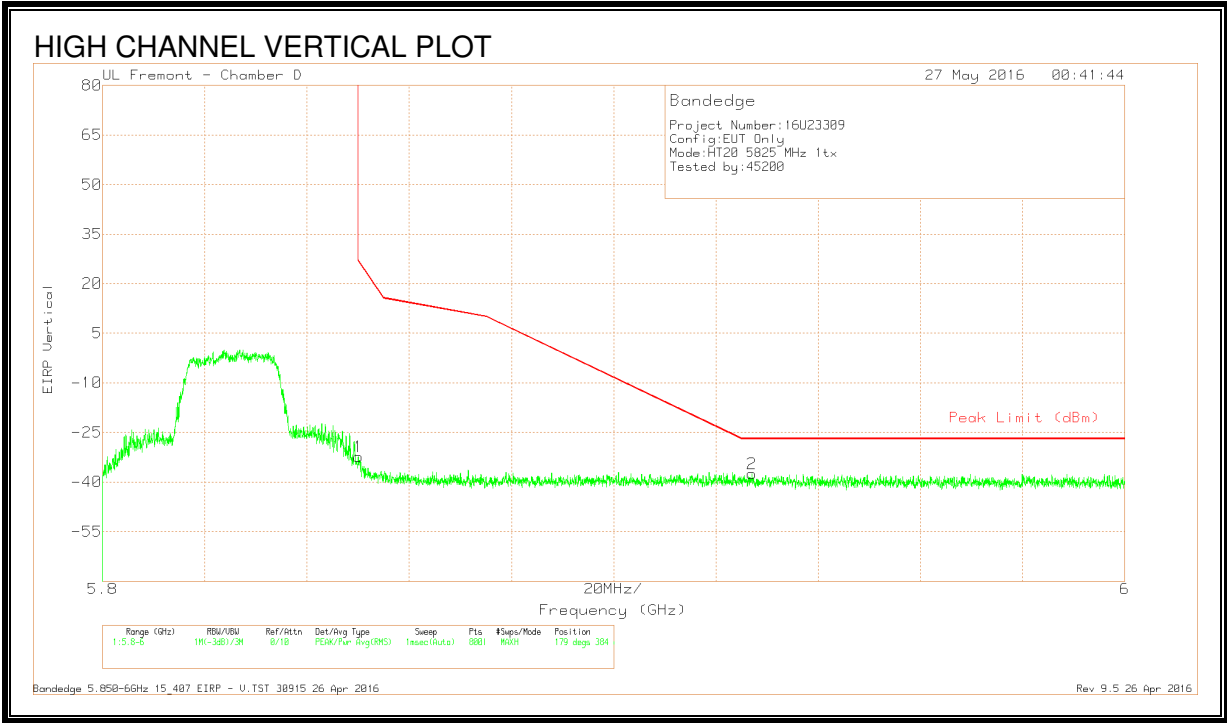
RESTRICTED BANDEDGE, CHAIN 1 (HIGH CHANNEL)



DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Filtr/Par d (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-55.2	Pk	34.9	-17.3	11.8	-25.8	26.99	-52.79	342	253	H
2	5.949	-65.37	Pk	35	-17.1	11.8	-35.67	-27	-8.67	342	253	H

Pk - Peak detector

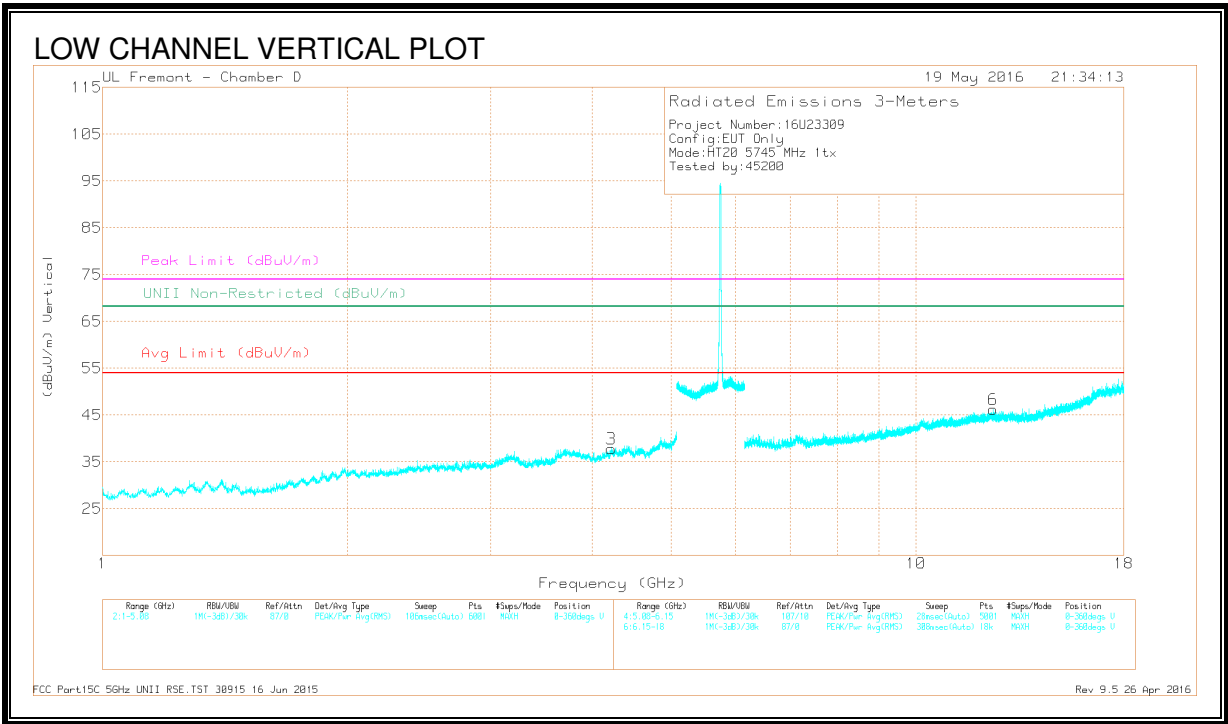
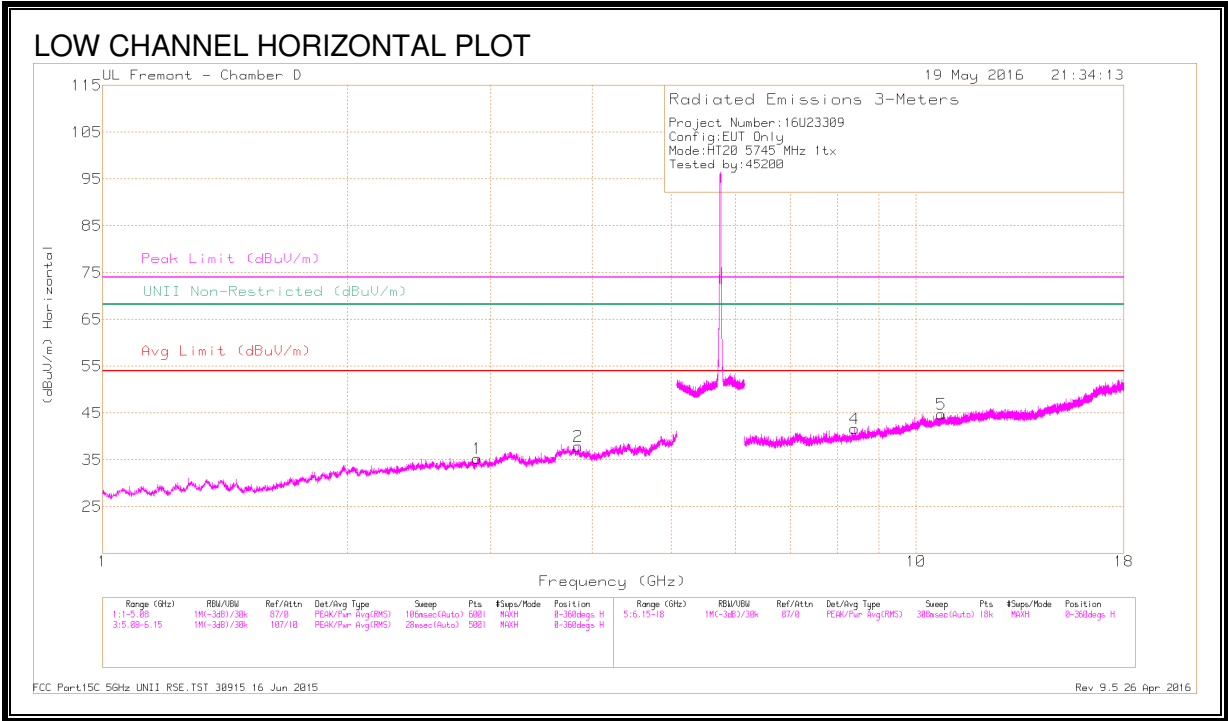


DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-61.67	Pk	34.9	-17.3	11.8	-32.27	26.94	-59.21	179	384	V
2	5.927	-67.19	Pk	35	-17.1	11.8	-37.49	-27	-10.49	179	384	V

Pk - Peak detector

LOW CHANNEL HARMONICS AND SPURIOUS EMISSIONS



DATA

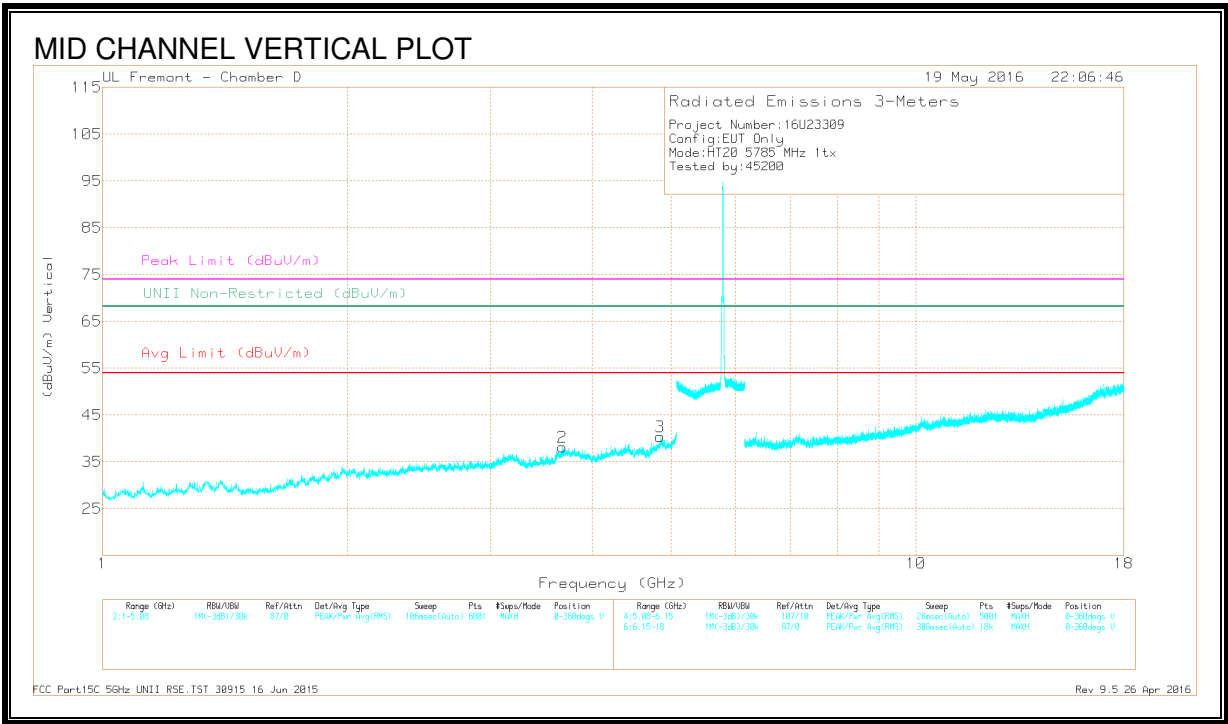
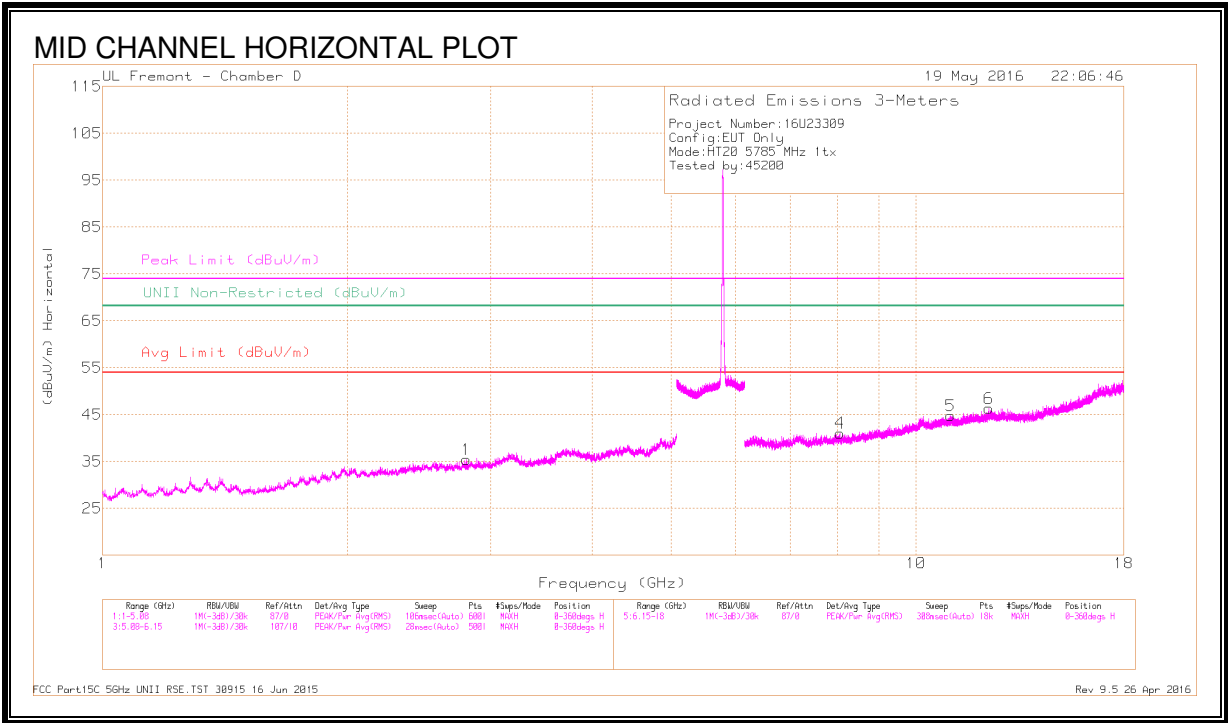
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Ch/Filt/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.889	38.99	PK-U	32.3	-29.1	42.19	-	-	74	-31.81	-	-	271	132	H
	* 2.889	28.09	ADR	32.3	-29.1	31.29	54	-22.71	-	-	-	-	271	132	H
2	* 3.839	38.64	PK-U	33.5	-28.5	43.64	-	-	74	-30.36	-	-	60	242	H
	* 3.842	28.26	ADR	33.5	-28.6	33.16	54	-20.84	-	-	-	-	60	242	H
3	* 4.221	37.65	PK-U	33.5	-27.5	43.65	-	-	74	-30.35	-	-	211	338	V
	* 4.218	27.09	ADR	33.5	-27.5	33.09	54	-20.91	-	-	-	-	211	338	V
4	* 8.402	35.03	PK-U	35.8	-23.5	47.33	-	-	74	-26.67	-	-	211	303	H
	* 8.404	24.78	ADR	35.8	-23.6	36.98	54	-17.02	-	-	-	-	211	303	H
5	* 10.739	33.78	PK-U	37.9	-21.1	50.58	-	-	74	-23.42	-	-	108	390	H
	* 10.74	23.61	ADR	37.9	-21.1	40.41	54	-13.59	-	-	-	-	108	390	H
6	* 12.441	34.22	PK-U	39.1	-21.2	52.12	-	-	74	-21.88	-	-	245	124	V
	* 12.444	23.94	ADR	39.1	-21.1	41.94	54	-12.06	-	-	-	-	245	124	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 HARMONICS AND SPURIOUS EMISSIONS



DATA

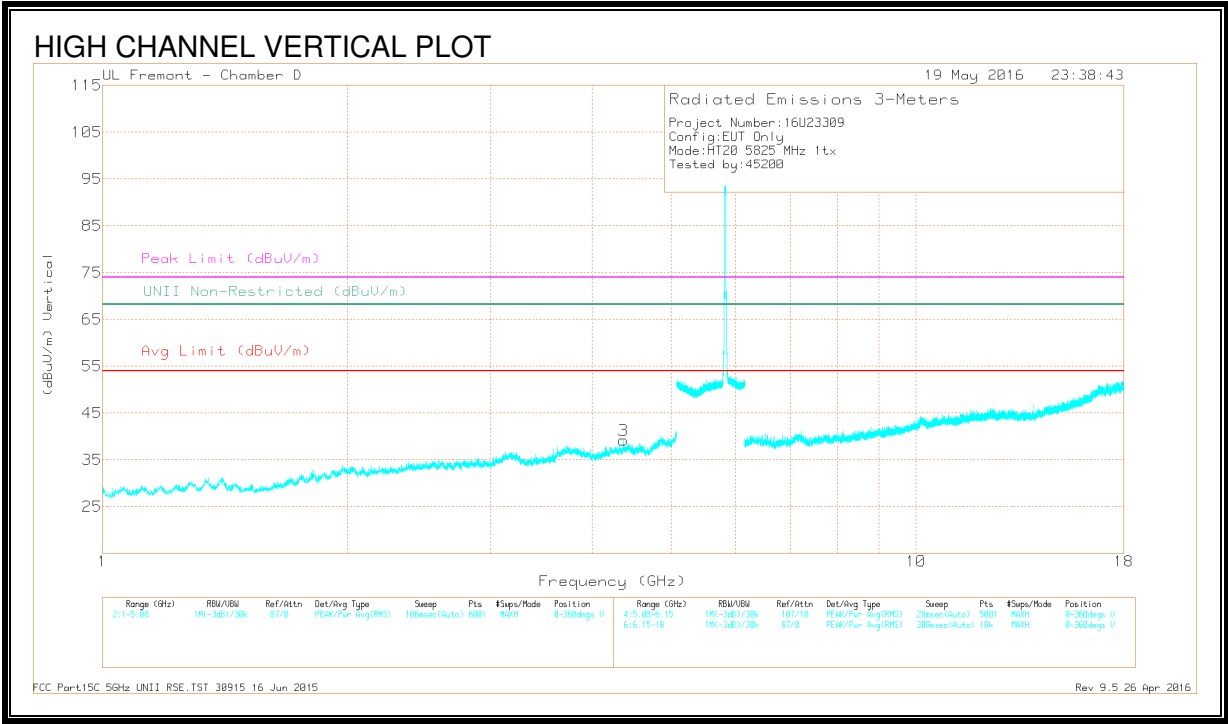
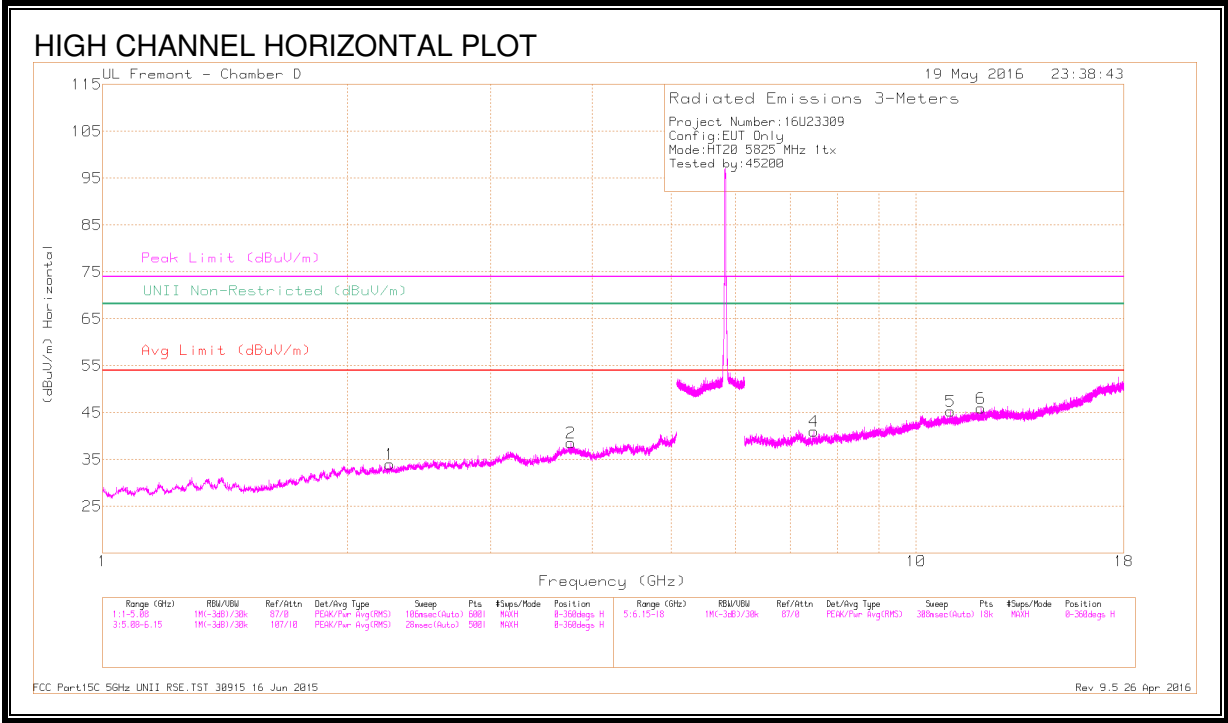
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Ch/Filt/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.801	39.03	PK-U	32.3	-29.4	41.93	-	-	74	-32.07	-	-	260	350	H
	* 2.802	27.95	ADR	32.3	-29.4	30.85	54	-23.15	-	-	-	-	260	350	H
2	* 3.674	38.2	PK-U	33.5	-29	42.7	-	-	74	-31.3	-	-	354	144	V
	* 3.677	28.06	ADR	33.5	-28.9	32.66	54	-21.34	-	-	-	-	354	144	V
3	* 4.852	37.68	PK-U	34.1	-25.4	46.38	-	-	74	-27.62	-	-	238	107	V
	* 4.851	26.61	ADR	34.1	-25.5	35.21	54	-18.79	-	-	-	-	238	107	V
4	* 8.061	36.22	PK-U	35.8	-24	48.02	-	-	74	-25.98	-	-	215	254	H
	* 8.061	25.27	ADR	35.8	-24	37.07	54	-16.93	-	-	-	-	215	254	H
5	* 11.018	34.14	PK-U	38	-20.9	51.24	-	-	74	-22.76	-	-	319	224	H
	* 11.018	23.47	ADR	38	-20.9	40.57	54	-13.43	-	-	-	-	319	224	H
6	* 12.289	33.73	PK-U	39	-21.4	51.33	-	-	74	-22.67	-	-	276	395	H
	* 12.287	24.08	ADR	39	-21.4	41.68	54	-12.32	-	-	-	-	276	395	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 HARMONICS AND SPURIOUS EMISSIONS



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Ch/Filt/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	* 2.255	39.54	PK-U	31.5	-30.7	40.34	-	-	74	-33.66	-	-	232	104	H
	* 2.255	29.3	ADR	31.5	-30.7	30.1	54	-23.9	-	-	-	-	232	104	H
2	* 3.768	37.65	PK-U	33.5	-28.6	42.55	-	-	74	-31.45	-	-	48	384	H
	* 3.767	27.54	ADR	33.5	-28.6	32.44	54	-21.56	-	-	-	-	48	384	H
3	* 4.367	37.65	PK-U	33.8	-27.8	43.65	-	-	74	-30.35	-	-	210	175	V
	* 4.367	27.47	ADR	33.8	-27.8	33.47	54	-20.53	-	-	-	-	210	175	V
4	* 7.484	34.91	PK-U	35.7	-24.1	46.51	-	-	74	-27.49	-	-	196	157	H
	* 7.482	24.77	ADR	35.7	-24.1	36.37	54	-17.63	-	-	-	-	196	157	H
5	* 11.028	34.4	PK-U	38	-21	51.4	-	-	74	-22.6	-	-	136	215	H
	* 11.028	23.72	ADR	38	-21	40.72	54	-13.28	-	-	-	-	136	215	H
6	* 12.02	33.98	PK-U	38.9	-21.1	51.78	-	-	74	-22.22	-	-	201	112	H
	* 12.022	23.79	ADR	38.9	-21.1	41.59	54	-12.41	-	-	-	-	201	112	H

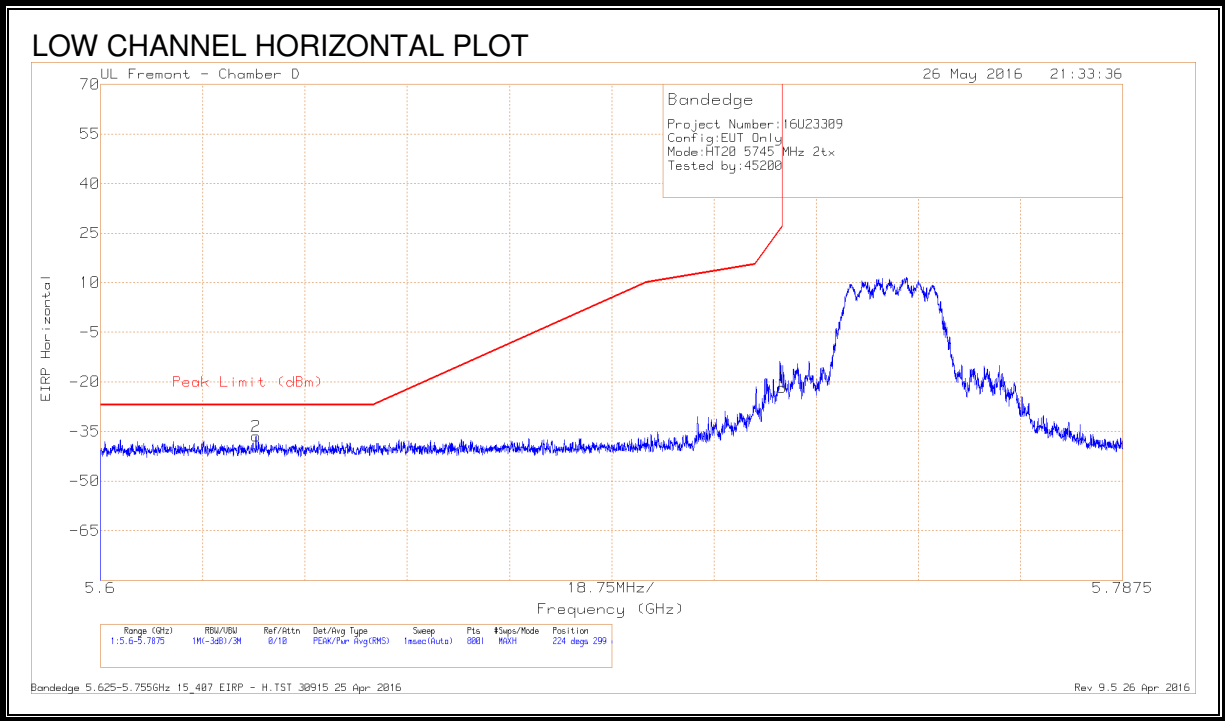
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

8.25. 802.11n HT20 2Tx CDD MODE IN THE 5.8 GHz BAND

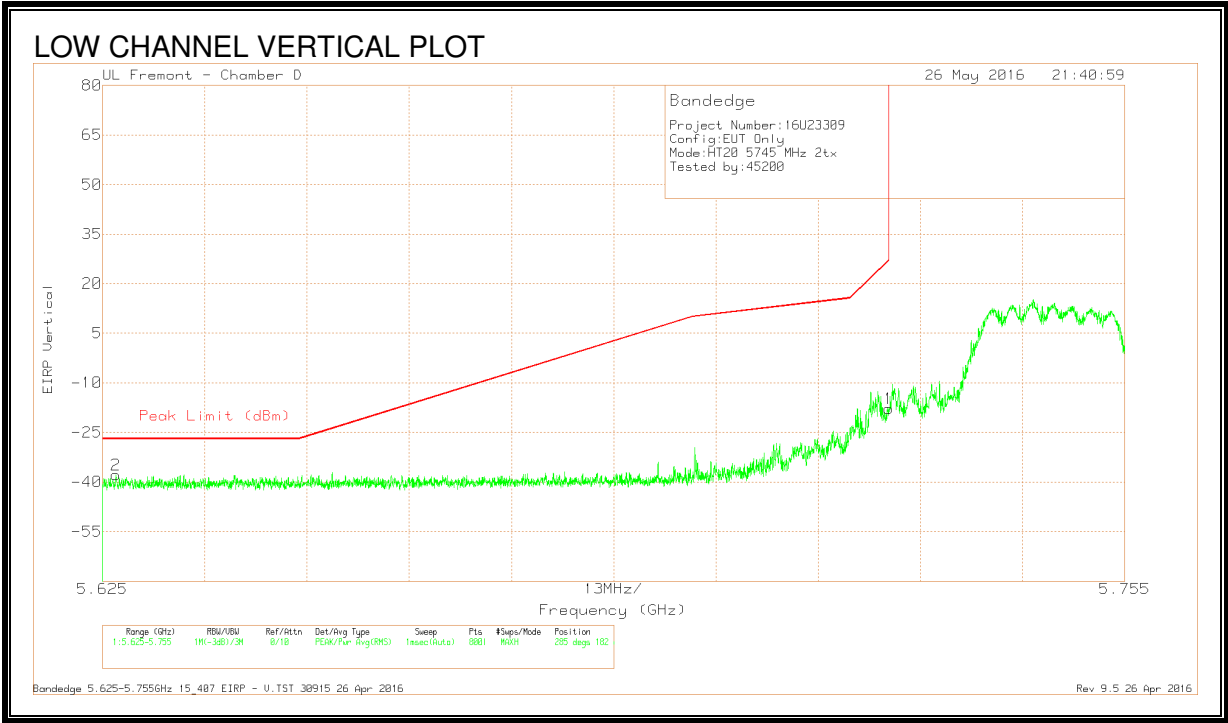
RESTRICTED BANDEDGE (LOW CHANNEL)



DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.629	-65.41	Pk	34.6	-17.4	11.8	-36.41	-27	-9.41	224	299	H
1	5.725	-50.93	Pk	34.8	-17.3	11.8	-21.63	26.99	-48.62	224	299	H

Pk - Peak detector

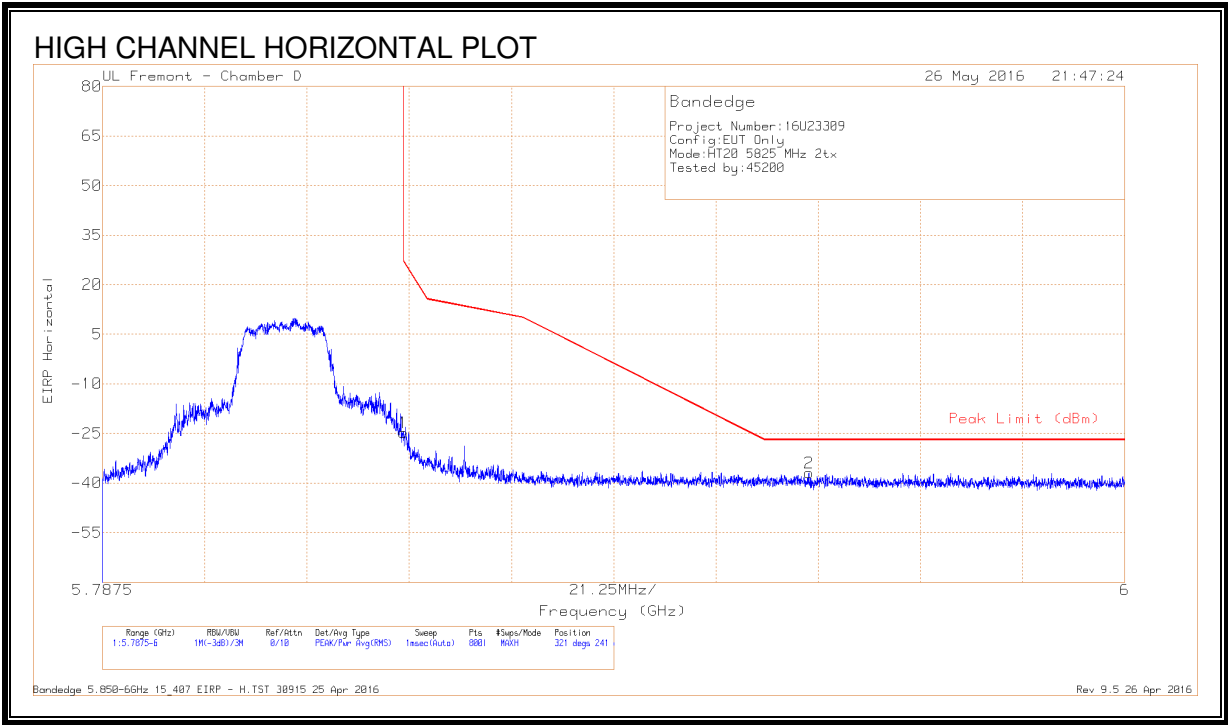


DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.627	-66.79	Pk	34.6	-17.4	11.8	-37.79	-27	-10.79	285	182	V
1	5.725	-47.02	Pk	34.8	-17.3	11.8	-17.72	26.97	-44.69	285	182	V

Pk - Peak detector

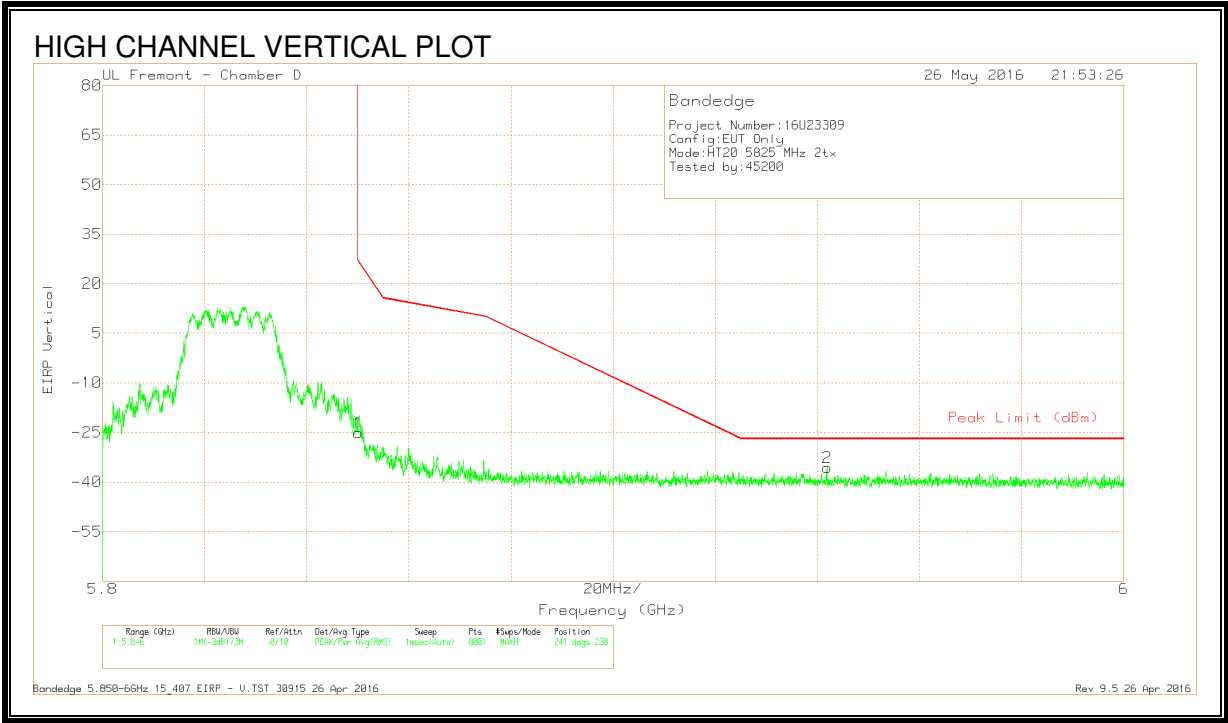
RESTRICTED BANDEDGE (HIGH CHANNEL)



DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Filtr/Par d (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-54.09	Pk	34.9	-17.3	11.8	-24.69	26.99	-51.68	321	241	H
2	5.934	-66.71	Pk	35	-17.1	11.8	-37.01	-27	-10.01	321	241	H

Pk - Peak detector

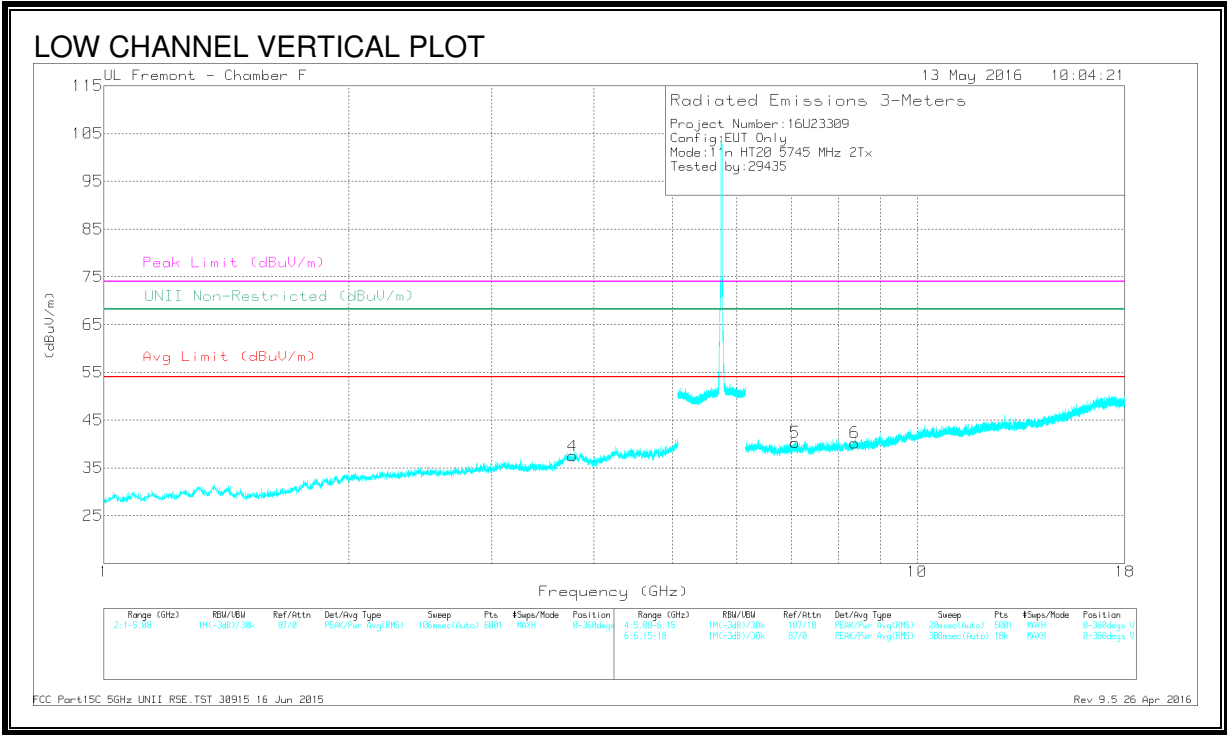
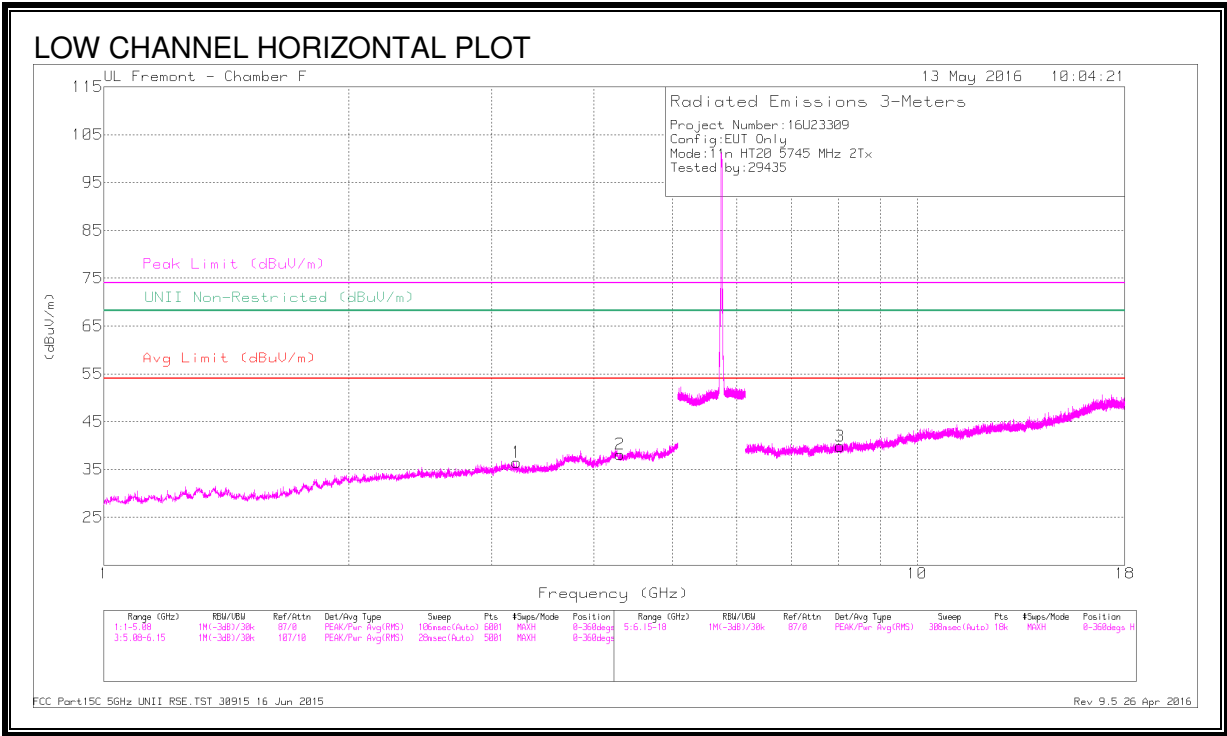


DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cb1/Filtr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-54.46	Pk	34.9	-17.3	11.8	-25.06	26.94	-52	241	238	V
2	5.942	-65.26	Pk	35	-17.2	11.8	-35.66	-27	-8.66	241	238	V

Pk - Peak detector

LOW CHANNEL HARMONICS AND SPURIOUS EMISSIONS



DATA

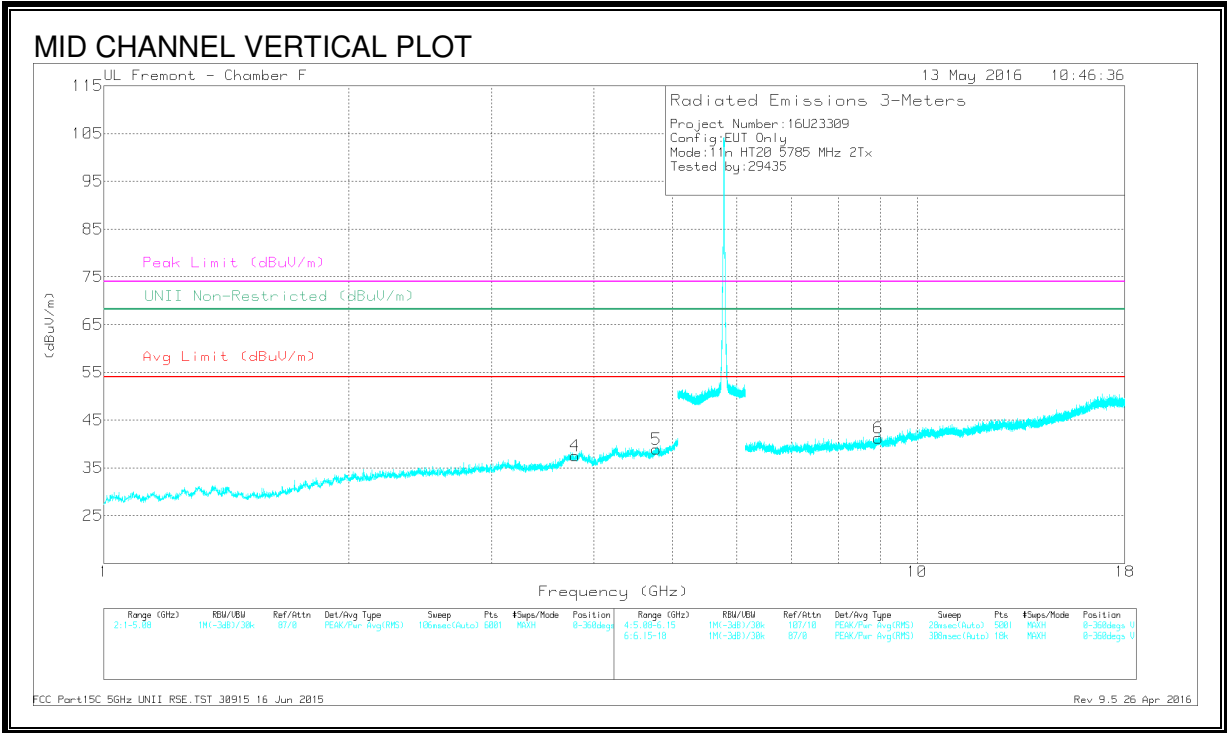
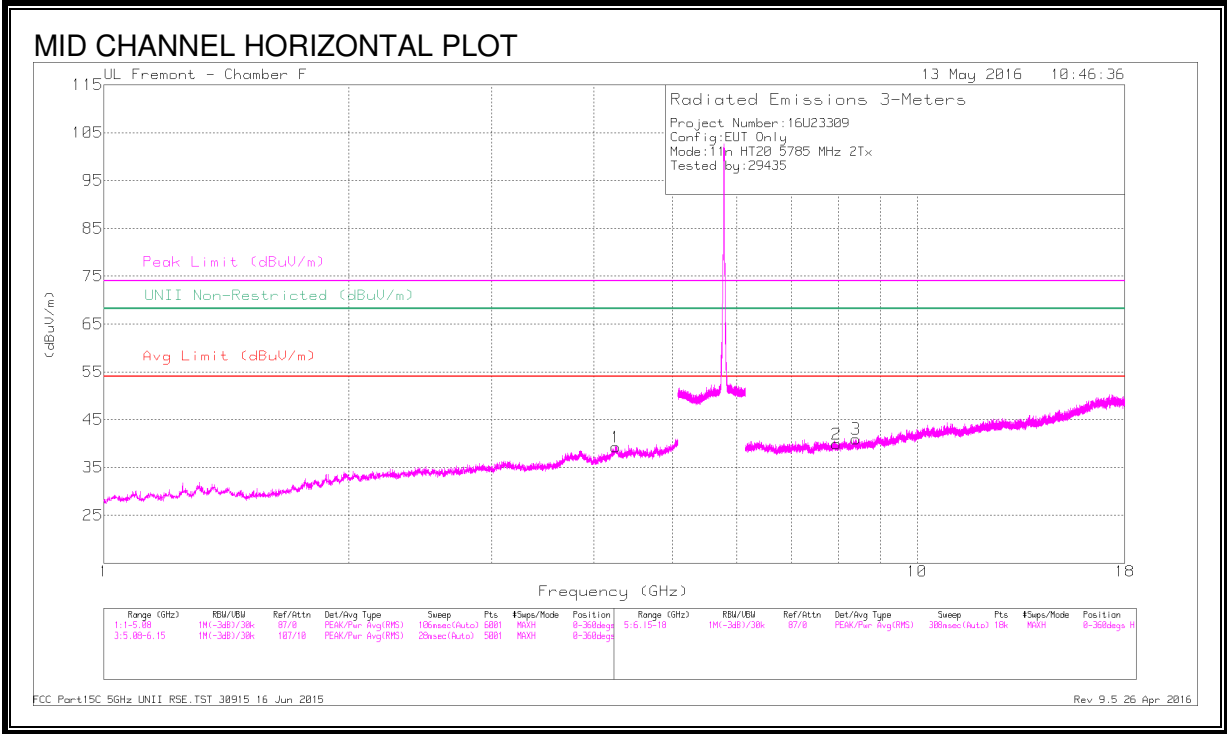
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Ch/Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	3.218	39.72	PK-U	33.1	-29.8	43.02	-	-	-	-	68.2	-25.18	46	220	H
	3.219	28.84	ADR	33.1	-29.8	32.14	-	-	-	-	-	-	46	220	H
2	* 4.311	38.25	PK-U	33.8	-28.1	43.95	-	-	74	-30.05	-	-	79	241	H
	* 4.313	27.61	ADR	33.8	-28.1	33.31	54	-20.69	-	-	-	-	79	241	H
4	* 3.769	38.43	PK-U	33.4	-29.4	42.43	-	-	74	-31.57	-	-	122	267	V
	* 3.77	28.17	ADR	33.4	-29.4	32.17	54	-21.83	-	-	-	-	122	267	V
3	* 8.039	35.79	PK-U	35.8	-24.9	46.69	-	-	74	-27.31	-	-	141	283	H
	* 8.041	25.76	ADR	35.8	-24.9	36.66	54	-17.34	-	-	-	-	141	283	H
5	7.081	37.12	PK-U	35.6	-26	46.72	-	-	-	-	68.2	-21.48	130	263	V
	7.079	26.3	ADR	35.6	-26	35.9	-	-	-	-	-	-	130	263	V
6	* 8.375	35.23	PK-U	35.7	-24.1	46.83	-	-	74	-27.17	-	-	87	242	V
	* 8.375	25.12	ADR	35.7	-24.1	36.72	54	-17.28	-	-	-	-	87	242	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 HARMONICS AND SPURIOUS EMISSIONS



DATA

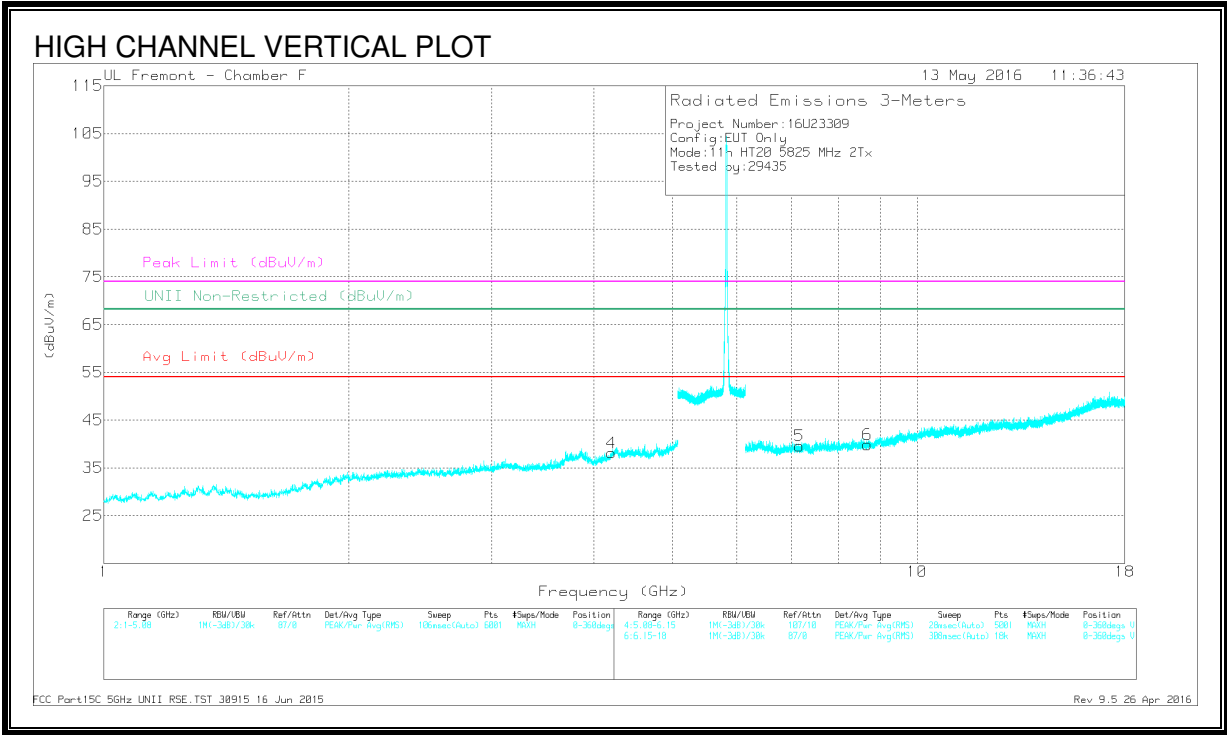
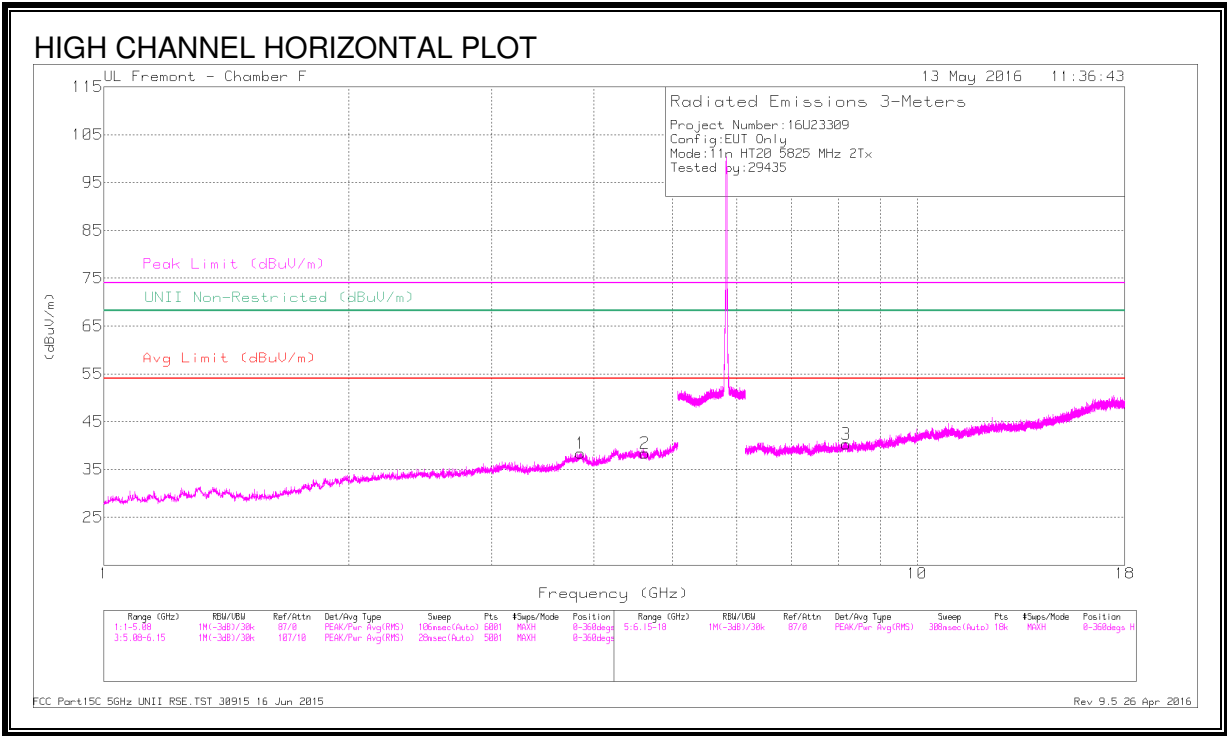
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Ch/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.261	37.12	PK-U	33.7	-26.5	44.32	-	-	74	-29.68	-	-	60	100	H
	* 4.26	27.19	ADR	33.7	-26.5	34.39	54	-19.61	-	-	-	-	60	100	H
4	* 3.797	38.56	PK-U	33.4	-29.3	42.66	-	-	74	-31.34	-	-	92	151	V
	* 3.794	28.81	ADR	33.4	-29.3	32.91	54	-21.09	-	-	-	-	92	151	V
5	* 4.781	37.8	PK-U	34	-27.4	44.4	-	-	74	-29.6	-	-	114	179	V
	* 4.782	28.02	ADR	34	-27.5	34.52	54	-19.48	-	-	-	-	114	179	V
2	7.954	36.39	PK-U	35.8	-25.4	46.79	-	-	-	-	68.2	-21.41	146	214	H
	7.954	26.11	ADR	35.8	-25.4	36.51	-	-	-	-	-	-	146	214	H
3	* 8.409	34.76	PK-U	35.7	-23.9	46.56	-	-	74	-27.44	-	-	170	201	H
	* 8.41	24.67	ADR	35.7	-23.9	36.47	54	-17.53	-	-	-	-	170	201	H
6	8.962	35.22	PK-U	35.9	-22.9	48.22	-	-	-	-	68.2	-19.98	202	232	V
	8.964	24.29	ADR	35.9	-22.9	37.29	-	-	-	-	-	-	202	232	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 HARMONICS AND SPURIOUS EMISSIONS



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Ch/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	* 3.856	38.8	PK-U	33.4	-28.4	43.8	-	-	74	-30.2	-	-	301	122	H
	* 3.855	28.34	ADR	33.4	-28.5	33.24	54	-20.76	-	-	-	-	301	122	H
2	* 4.627	37.69	PK-U	34.1	-27.5	44.29	-	-	74	-29.71	-	-	242	138	H
	* 4.623	27.34	ADR	34.1	-27.4	34.04	54	-19.96	-	-	-	-	242	138	H
4	* 4.209	37.86	PK-U	33.7	-28	43.56	-	-	74	-30.44	-	-	259	164	V
	* 4.208	28	ADR	33.7	-28.1	33.6	54	-20.4	-	-	-	-	259	164	V
3	* 8.18	35.79	PK-U	35.8	-24.3	47.29	-	-	74	-26.71	-	-	293	195	H
	* 8.182	25.27	ADR	35.8	-24.3	36.77	54	-17.23	-	-	-	-	293	195	H
5	7.165	37.03	PK-U	35.6	-26.5	46.13	-	-	-	-	68.2	-22.07	256	220	V
	7.163	26.67	ADR	35.6	-26.5	35.77	-	-	-	-	-	-	256	220	V
6	8.69	34.76	PK-U	35.9	-23.8	46.86	-	-	-	-	68.2	-21.34	176	236	V
	8.689	24.83	ADR	35.9	-23.8	36.93	-	-	-	-	-	-	176	236	V

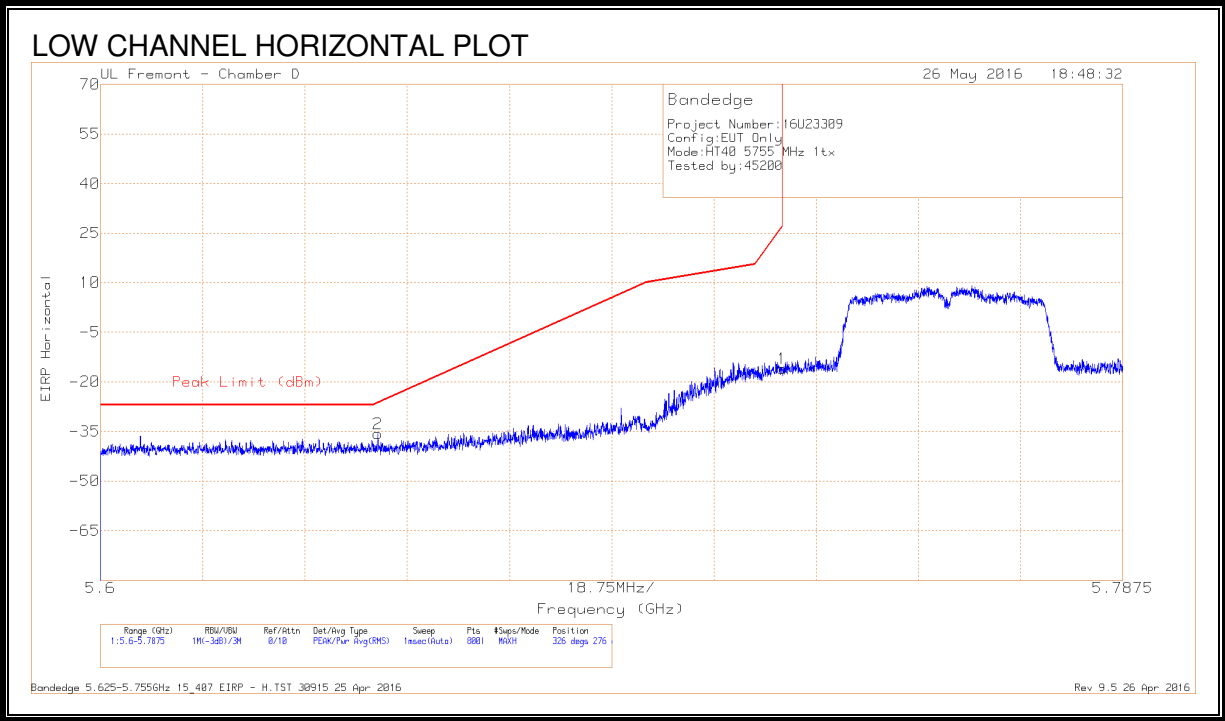
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

8.26. 802.11n HT40 1Tx MODE IN THE 5.8 GHz BAND

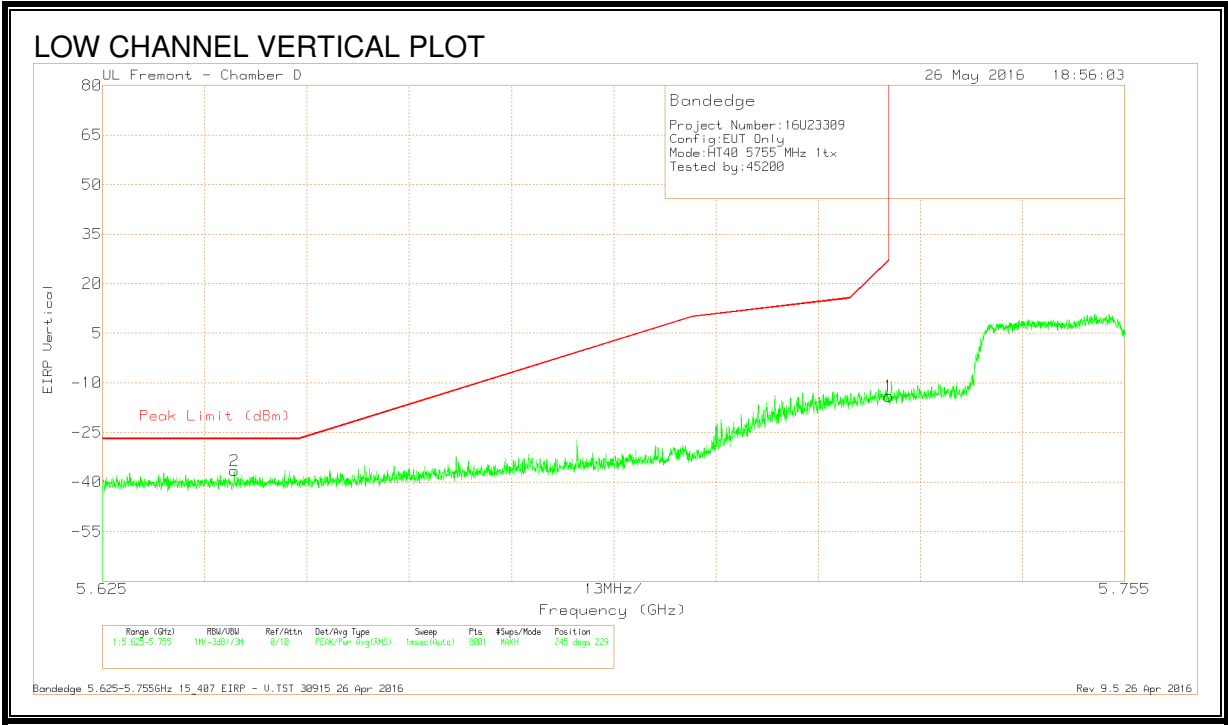
RESTRICTED BANDEDGE, CHAIN 0 (LOW CHANNEL)



DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.651	-64.76	Pk	34.6	-17.3	11.8	-35.66	-26.36	-9.3	326	276	H
1	5.725	-45.22	Pk	34.8	-17.3	11.8	-15.92	26.99	-42.91	326	276	H

Pk - Peak detector

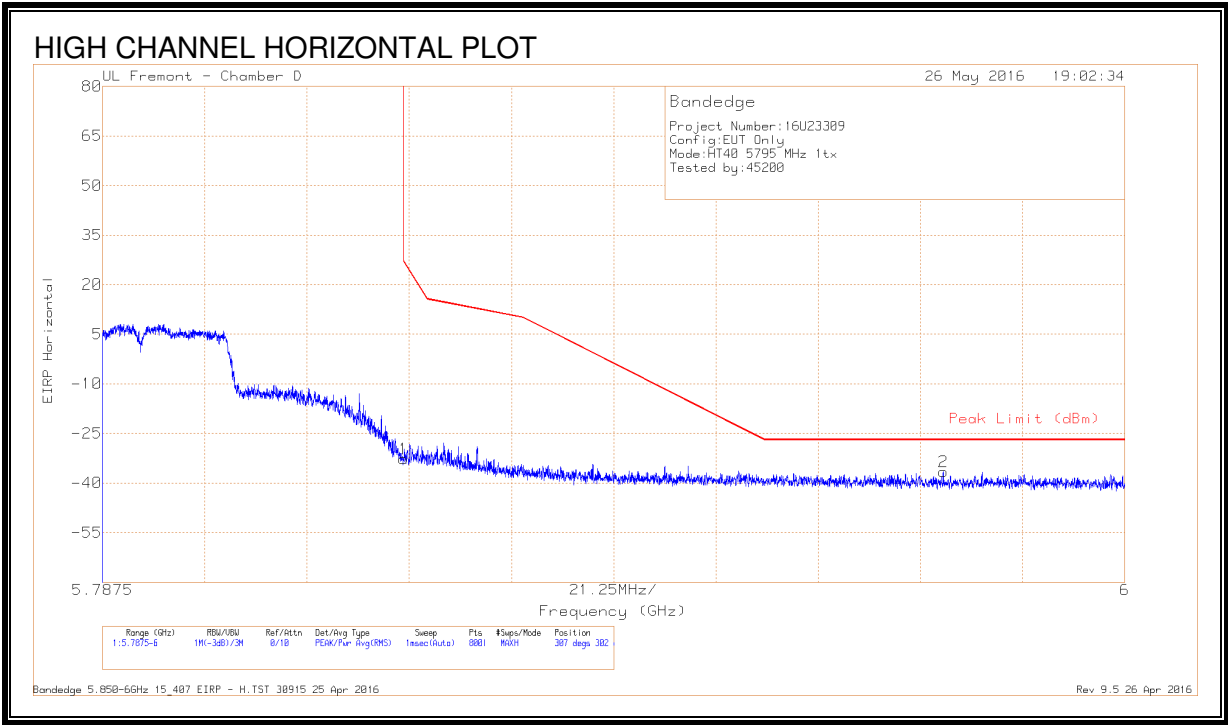


DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.642	-65.55	Pk	34.6	-17.4	11.8	-36.55	-27	-9.55	245	229	V
1	5.725	-43.29	Pk	34.8	-17.3	11.8	-13.99	26.97	-40.96	245	229	V

Pk - Peak detector

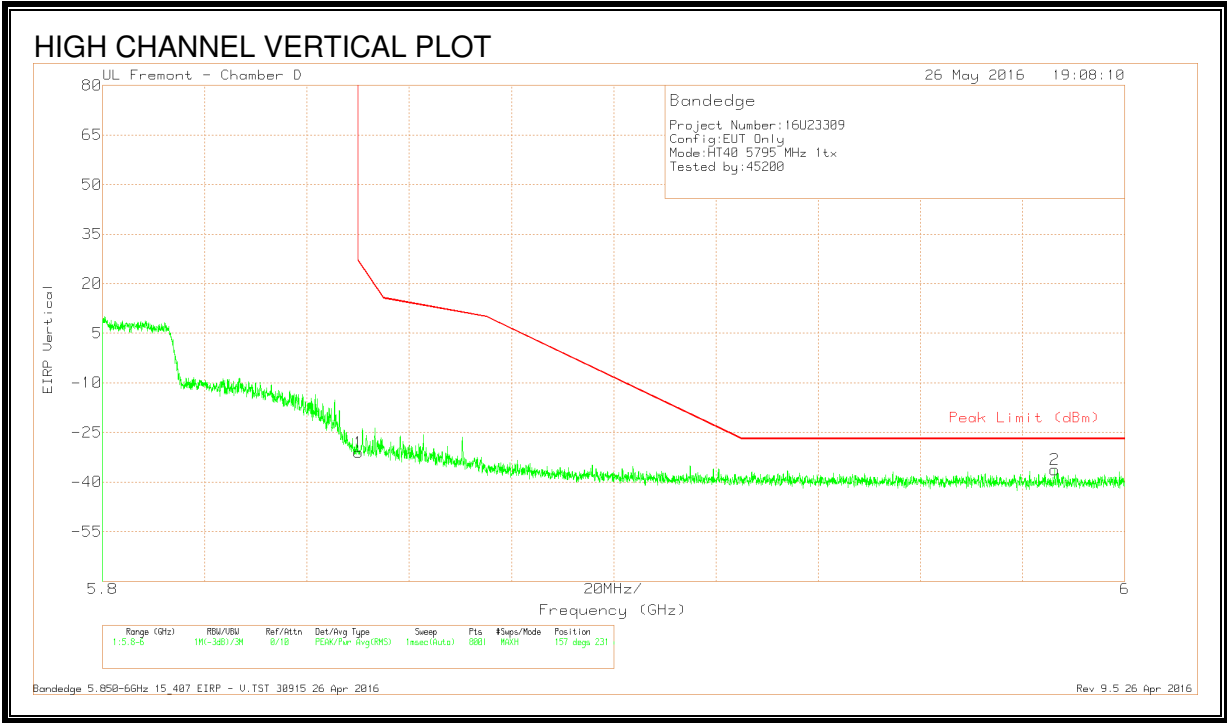
RESTRICTED BANDEDGE, CHAIN 0 (HIGH CHANNEL)



DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-62.05	Pk	34.9	-17.3	11.8	-32.65	26.99	-59.64	307	302	H
2	5.962	-66.2	Pk	35	-17.2	11.8	-36.6	-27	-9.6	307	302	H

Pk - Peak detector

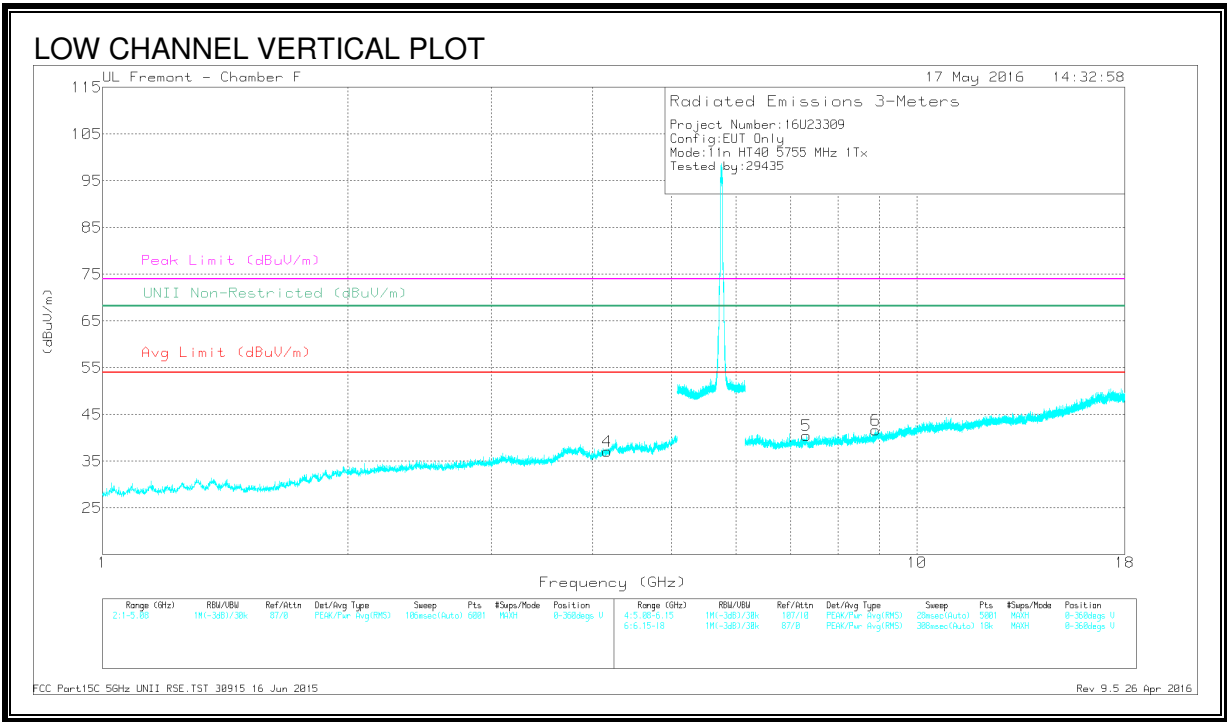
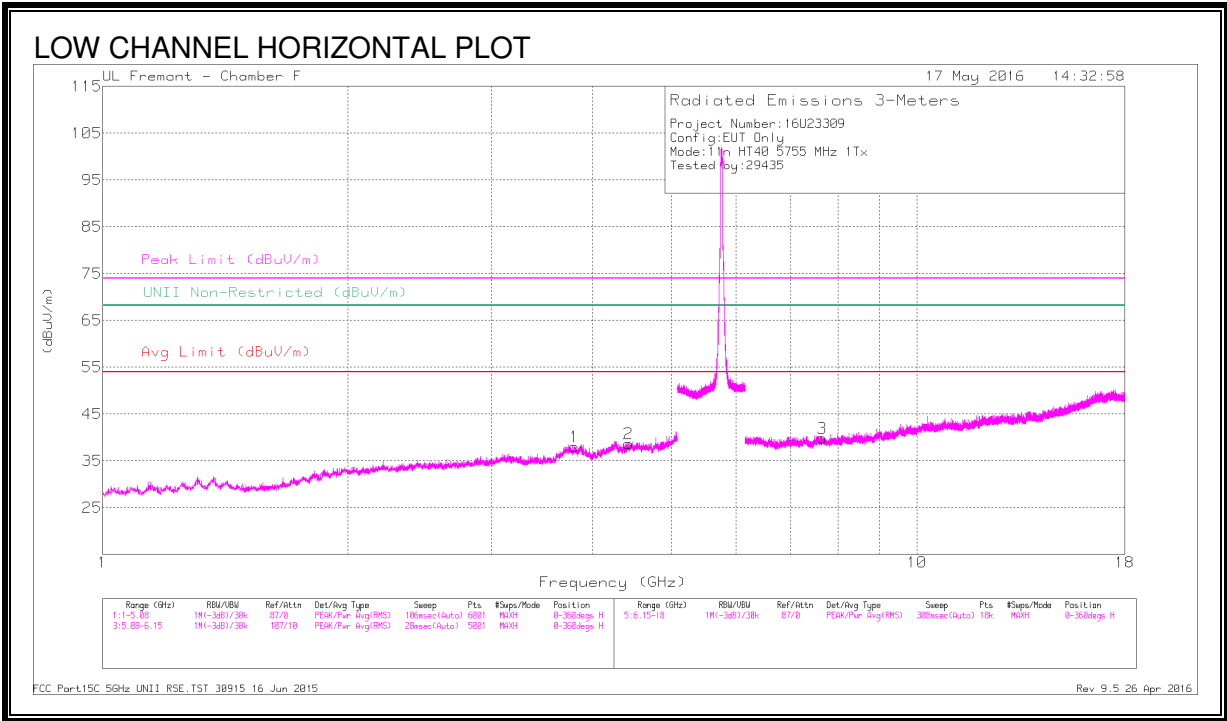


DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-60.4	Pk	34.9	-17.3	11.8	-31	26.94	-57.94	157	231	V
2	5.986	-65.98	Pk	35.1	-17.2	11.8	-36.28	-27	-9.28	157	231	V

Pk - Peak detector

LOW CHANNEL HARMONICS AND SPURIOUS EMISSIONS



DATA

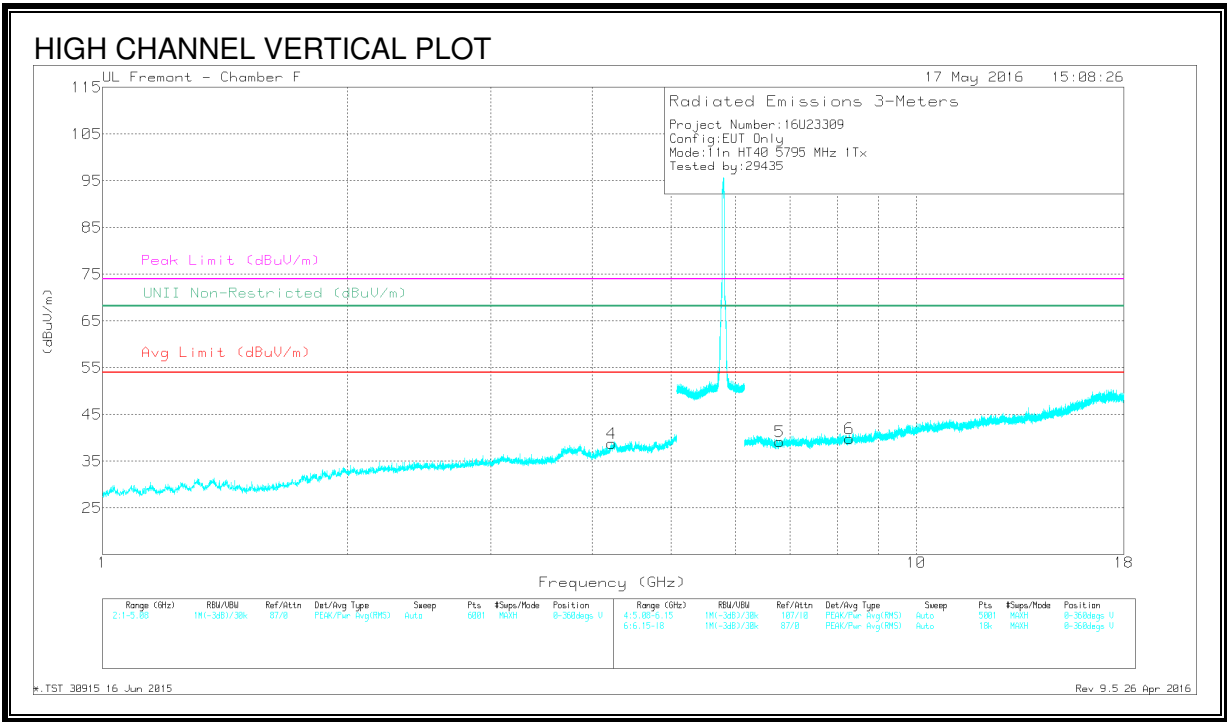
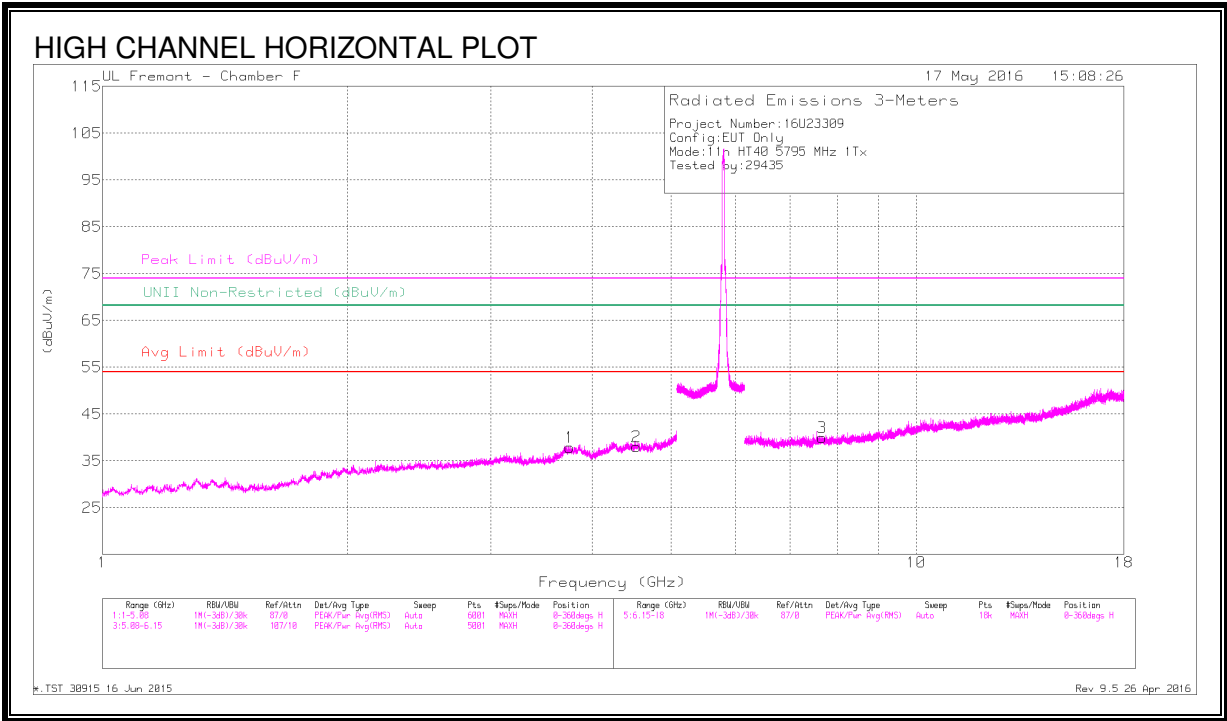
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cb/Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.795	38.56	PK-U	33.4	-29.3	42.66	-	-	74	-31.34	-	-	55	116	H
	* 3.795	28.72	ADR	33.4	-29.3	32.82	54	-21.18	-	-	-	-	55	116	H
2	4.426	38.26	PK-U	34	-27.8	44.46	-	-	-	-	68.2	-23.74	85	131	H
	4.425	27.68	ADR	34	-27.9	33.78	-	-	-	-	-	-	85	131	H
4	* 4.168	38.51	PK-U	33.7	-29.2	43.01	-	-	74	-30.99	-	-	106	155	V
	* 4.17	28.74	ADR	33.7	-29.2	33.24	54	-20.76	-	-	-	-	106	155	V
3	* 7.651	36.68	PK-U	35.7	-25.2	47.18	-	-	74	-26.82	-	-	115	189	H
	* 7.653	25.73	ADR	35.7	-25.2	36.23	54	-17.77	-	-	-	-	115	189	H
5	* 7.314	36.49	PK-U	35.5	-25.1	46.89	-	-	74	-27.11	-	-	98	208	V
	* 7.313	26.09	ADR	35.5	-25.2	36.39	54	-17.61	-	-	-	-	98	208	V
6	8.898	34.91	PK-U	35.9	-23.3	47.51	-	-	-	-	68.2	-20.69	145	238	V
	8.897	24.57	ADR	35.9	-23.3	37.17	-	-	-	-	-	-	145	238	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 HARMONICS AND SPURIOUS EMISSIONS



DATA

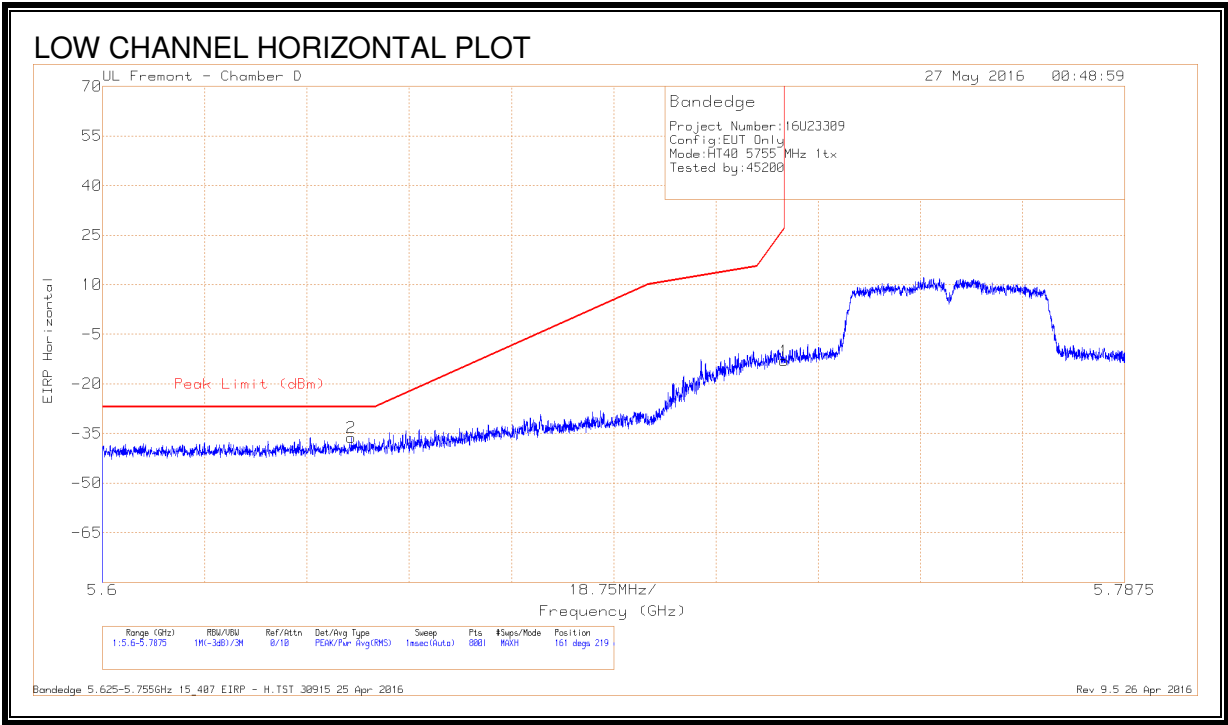
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Ch/Filt/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.751	38.31	PK-U	33.4	-29.2	42.51	-	-	74	-31.49	-	-	75	214	H
	* 3.75	28.82	ADR	33.4	-29.2	33.02	54	-20.98	-	-	-	-	75	214	H
2	* 4.534	37.8	PK-U	34	-27.8	44	-	-	74	-30	-	-	115	241	H
	* 4.534	27.94	ADR	34	-27.7	34.24	54	-19.76	-	-	-	-	115	241	H
4	* 4.223	37.94	PK-U	33.7	-27.4	44.24	-	-	74	-29.76	-	-	136	261	V
	* 4.224	27.4	ADR	33.7	-27.3	33.8	54	-20.2	-	-	-	-	136	261	V
3	* 7.668	35.97	PK-U	35.7	-25.1	46.57	-	-	74	-27.43	-	-	142	247	H
	* 7.667	26.2	ADR	35.7	-25.1	36.8	54	-17.2	-	-	-	-	142	247	H
5	6.797	38.31	PK-U	35.4	-26.3	47.41	-	-	-	-	68.2	-20.79	170	280	V
	6.797	26.68	ADR	35.4	-26.3	35.78	-	-	-	-	-	-	170	280	V
6	* 8.279	35.57	PK-U	35.7	-24.8	46.47	-	-	74	-27.53	-	-	126	271	V
	* 8.277	25.62	ADR	35.7	-24.8	36.52	54	-17.48	-	-	-	-	126	271	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

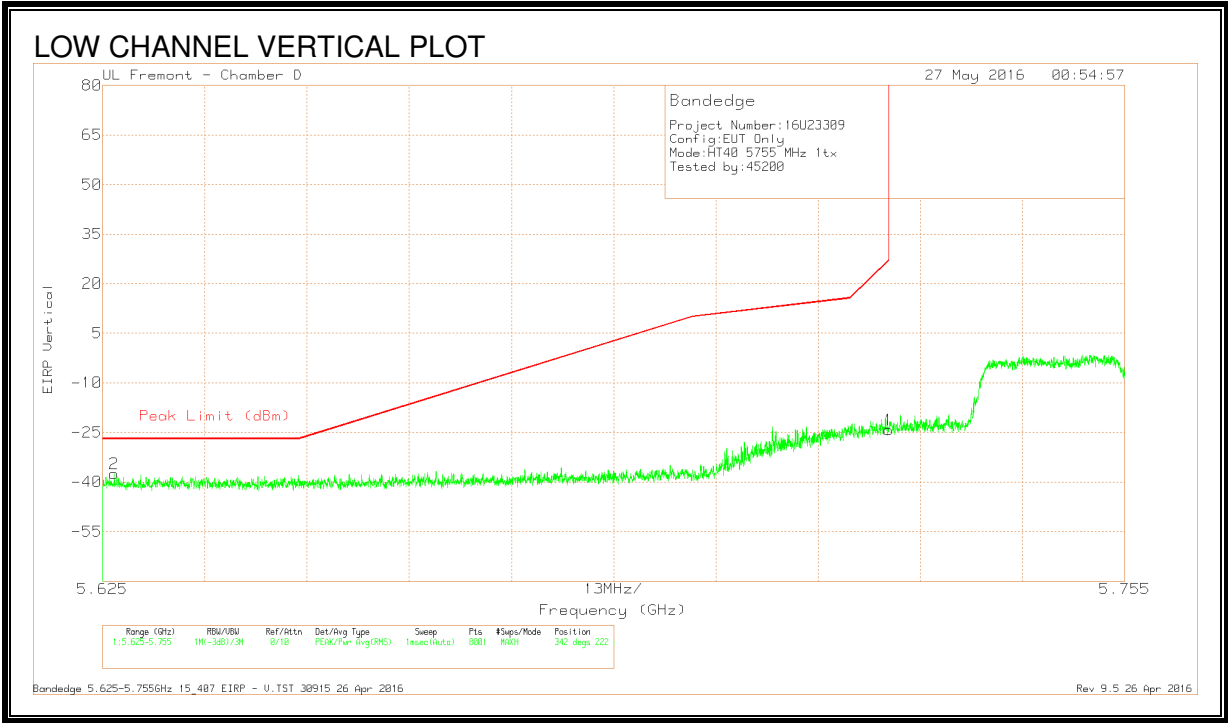
RESTRICTED BANDEDGE, CHAIN 1 (LOW CHANNEL)



DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Filtr/Par d (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.646	-65.17	Pk	34.6	-17.4	11.8	-36.17	-27	-9.17	161	219	H
1	5.725	-42.4	Pk	34.8	-17.3	11.8	-13.1	26.99	-40.09	161	219	H

Pk - Peak detector

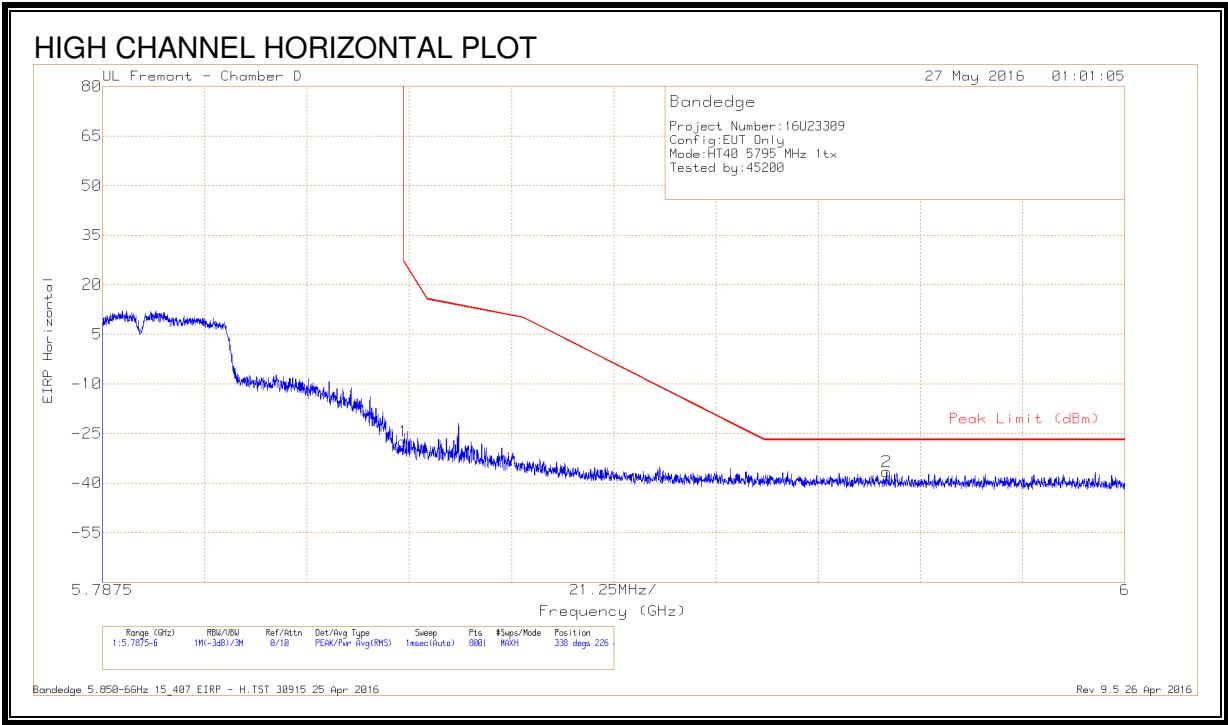


DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.626	-66.52	Pk	34.6	-17.4	11.8	-37.52	-27	-10.52	342	222	V
1	5.725	-53.55	Pk	34.8	-17.3	11.8	-24.25	26.97	-51.22	342	222	V

Pk - Peak detector

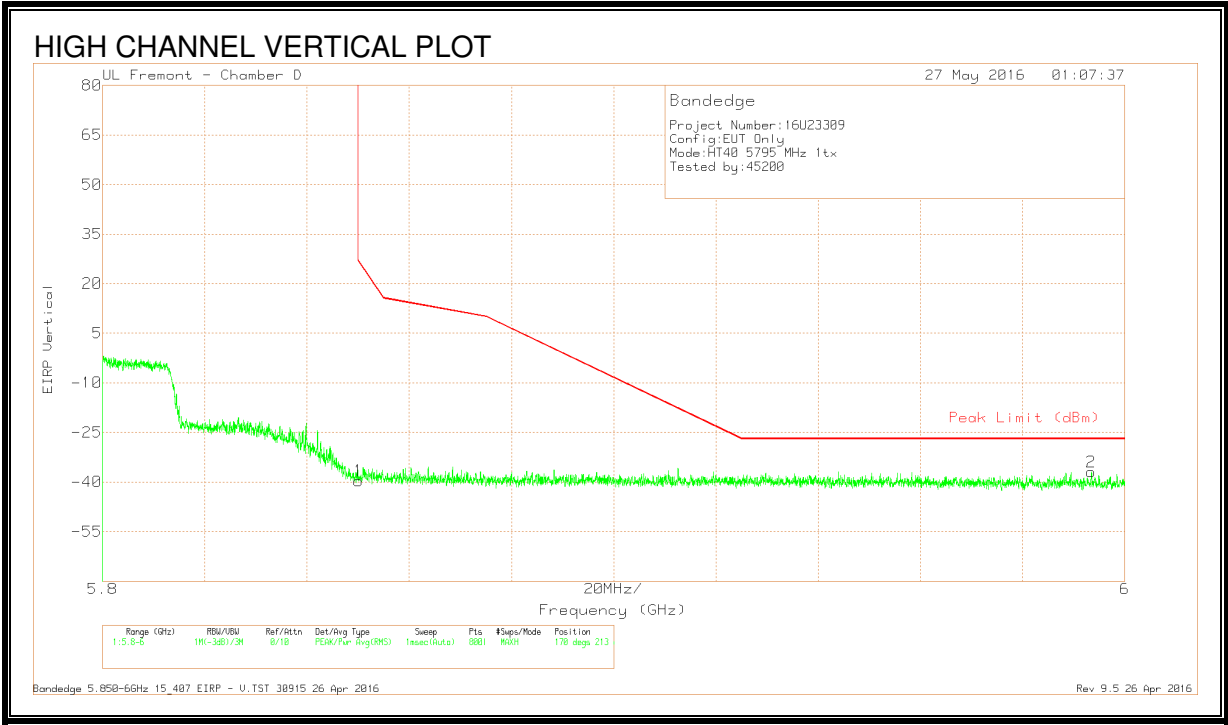
RESTRICTED BANDEDGE, CHAIN 1 (HIGH CHANNEL)



DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Filtr/Par d (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-56.8	Pk	34.9	-17.3	11.8	-27.4	26.99	-54.39	338	226	H
2	5.95	-66.28	Pk	35	-17.1	11.8	-36.58	-27	-9.58	338	226	H

Pk - Peak detector

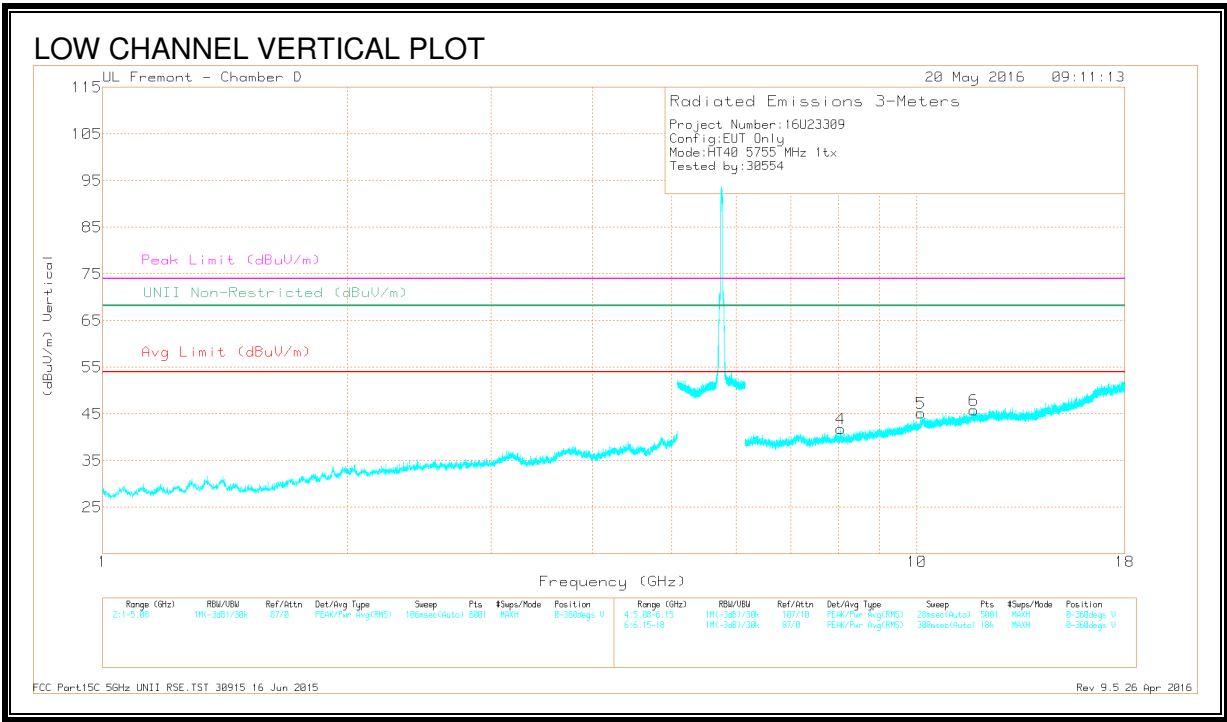
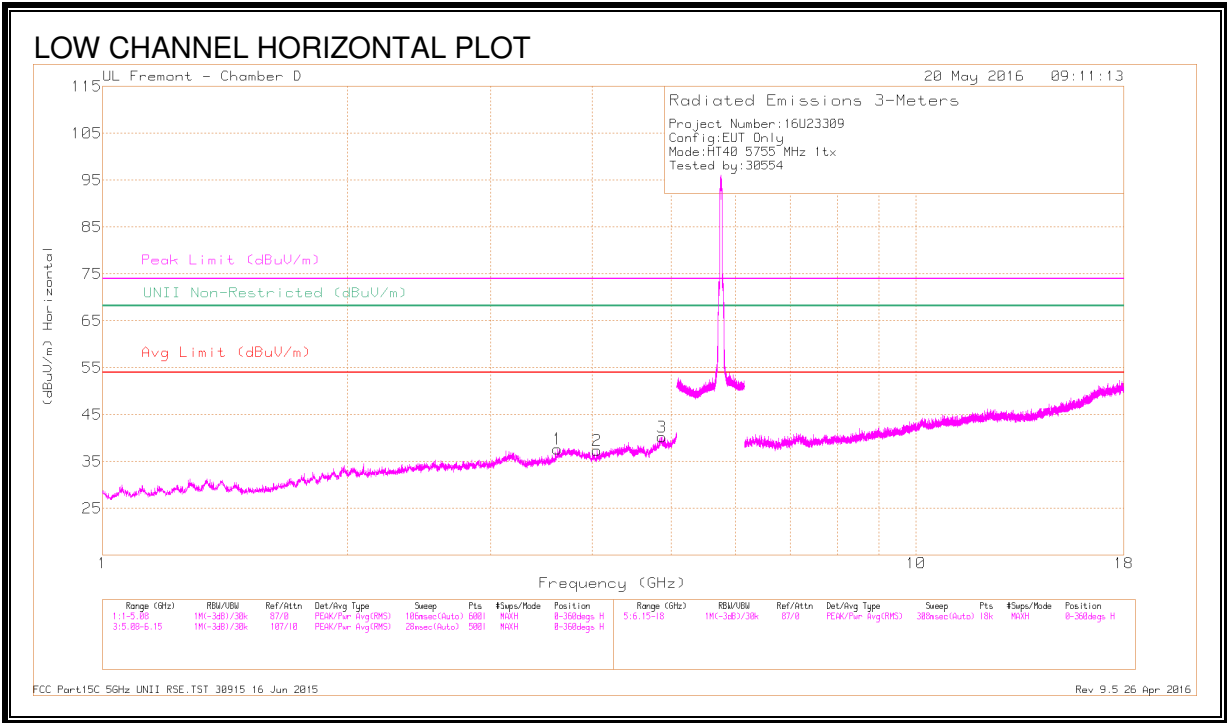


DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-69	Pk	34.9	-17.3	11.8	-39.6	26.94	-66.54	170	213	V
2	5.993	-66.36	Pk	35.1	-17.4	11.8	-36.86	-27	-9.86	170	213	V

Pk - Peak detector

LOW CHANNEL HARMONICS AND SPURIOUS EMISSIONS



DATA

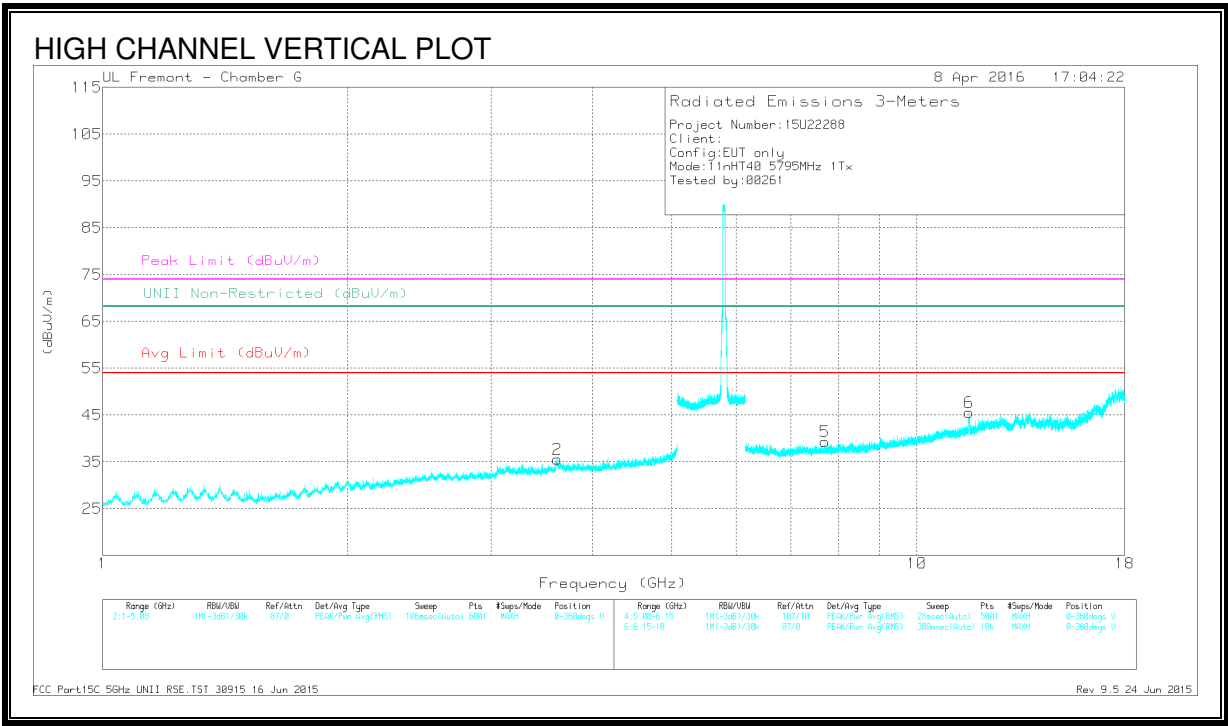
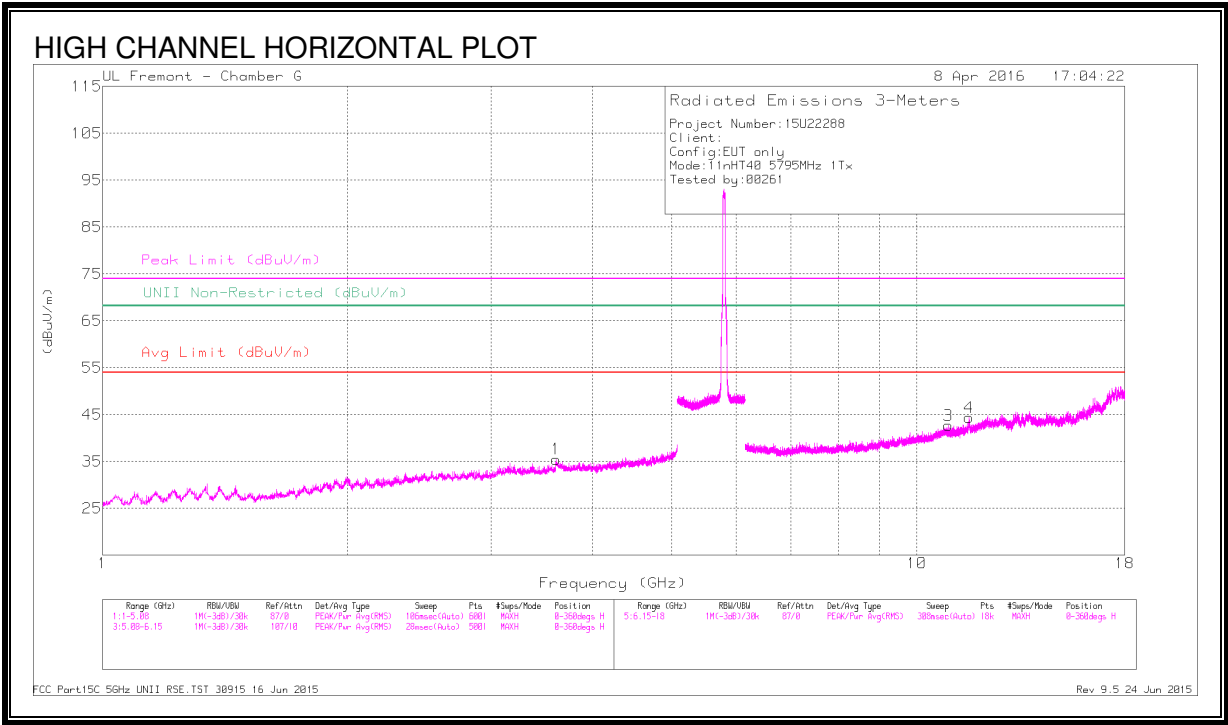
Markers	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Ch/Filt/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.623	37.96	PK-U	33.4	-28.8	42.56	-	-	74	-31.44	-	-	36	226	H
	* 3.622	28.29	ADR	33.3	-28.8	32.79	54	-21.21	-	-	-	-	36	226	H
2	* 4.057	38.32	PK-U	33.5	-28.6	43.22	-	-	74	-30.78	-	-	264	187	H
	* 4.055	27.66	ADR	33.5	-28.6	32.56	54	-21.44	-	-	-	-	264	187	H
3	* 4.869	36.59	PK-U	34.1	-25.2	45.49	-	-	74	-28.51	-	-	165	235	H
	* 4.866	26.32	ADR	34.1	-25.2	35.22	54	-18.78	-	-	-	-	165	235	H
4	* 8.057	35.24	PK-U	35.8	-24.1	46.94	-	-	74	-27.06	-	-	115	245	V
	* 8.055	25.45	ADR	35.8	-24.1	37.15	54	-16.85	-	-	-	-	115	245	V
6	* 11.738	33.4	PK-U	38.7	-20.7	51.4	-	-	74	-22.6	-	-	225	157	V
	* 11.737	23.43	ADR	38.7	-20.7	41.43	54	-12.57	-	-	-	-	225	157	V
5	10.11	33.78	PK-U	37.4	-20.7	50.48	-	-	-	-	68.2	-17.72	45	168	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 HARMONICS AND SPURIOUS EMISSIONS



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fitter/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	* 3.606	41.61	PK-U	33.1	-32.8	41.91	-	-	74	-32.09	-	-	298	194	H
	* 3.607	29.85	ADR	33.1	-32.8	30.15	54	-23.85	-	-	-	-	298	194	H
2	* 3.617	41.48	PK-U	33.1	-32.9	41.68	-	-	74	-32.32	-	-	181	144	V
	* 3.618	29.85	ADR	33.1	-32.9	30.05	54	-23.95	-	-	-	-	181	144	V
3	* 10.929	36.96	PK-U	37.9	-26.8	48.06	-	-	74	-25.94	-	-	253	195	H
	* 10.929	25.61	ADR	37.9	-26.7	36.81	54	-17.19	-	-	-	-	253	195	H
4	* 11.591	40.98	PK-U	38.3	-26.5	52.78	-	-	74	-21.22	-	-	165	184	H
	* 11.59	28.18	ADR	38.3	-26.5	39.98	54	-14.02	-	-	-	-	165	184	H
5	* 7.708	39.76	PK-U	35.6	-30	45.36	-	-	74	-28.64	-	-	0	264	V
	* 7.711	28.41	ADR	35.6	-30.1	33.91	54	-20.09	-	-	-	-	0	264	V
6	* 11.59	38.03	PK-U	38.3	-26.5	49.83	-	-	74	-24.17	-	-	0	264	V
	* 11.59	26.82	ADR	38.3	-26.5	38.62	54	-15.38	-	-	-	-	0	264	V

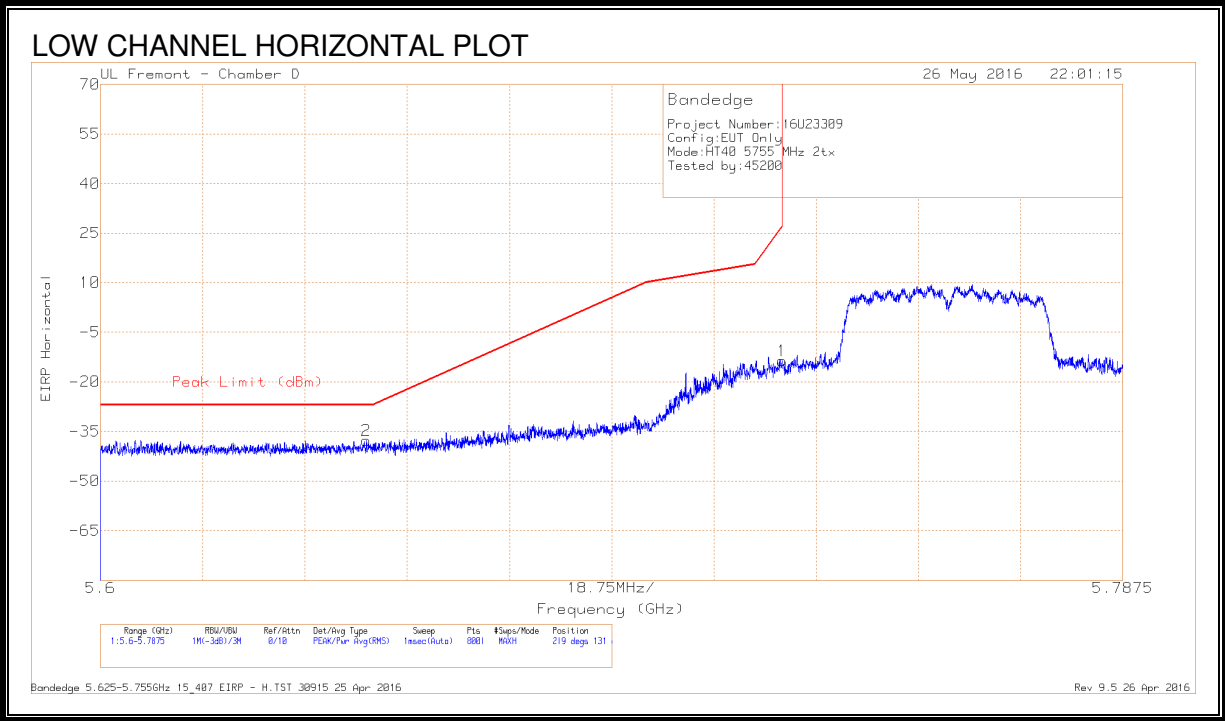
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

8.27. 802.11n HT40 2Tx CDD MODE IN THE 5.8 GHz BAND

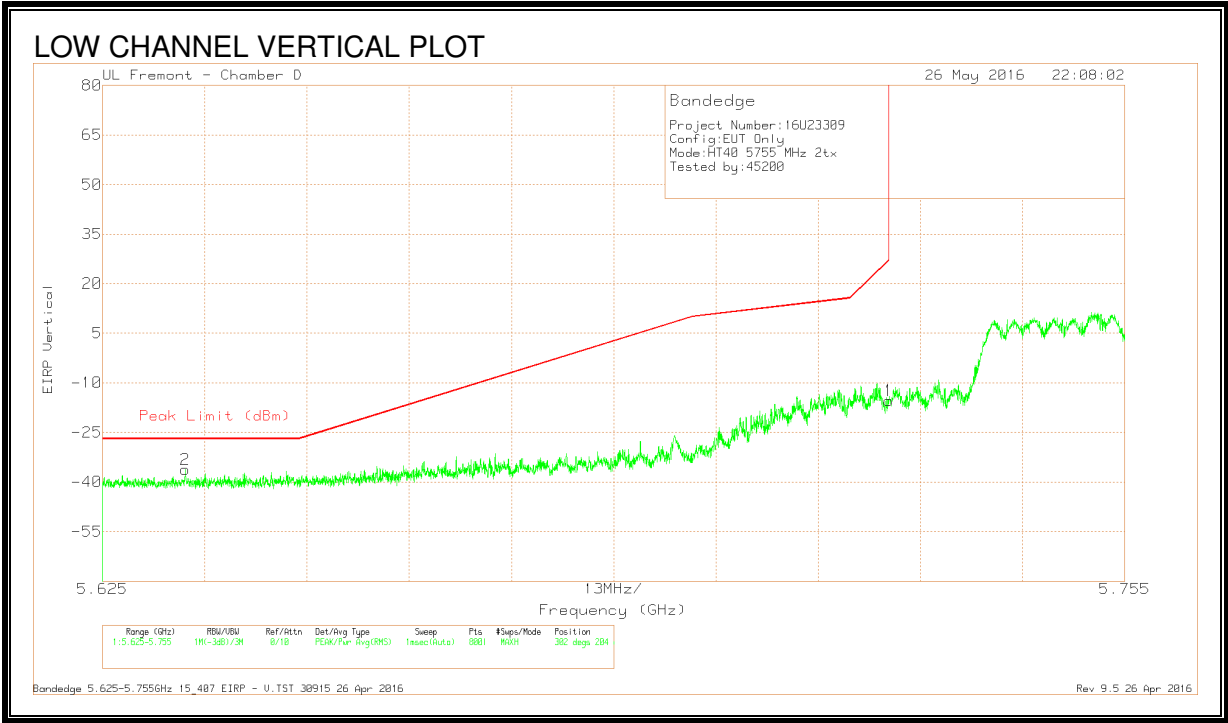
RESTRICTED BANDEDGE (LOW CHANNEL)



DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.649	-66.75	Pk	34.6	-17.3	11.8	-37.65	-27	-10.65	219	131	H
1	5.725	-42.91	Pk	34.8	-17.3	11.8	-13.61	26.99	-40.6	219	131	H

Pk - Peak detector

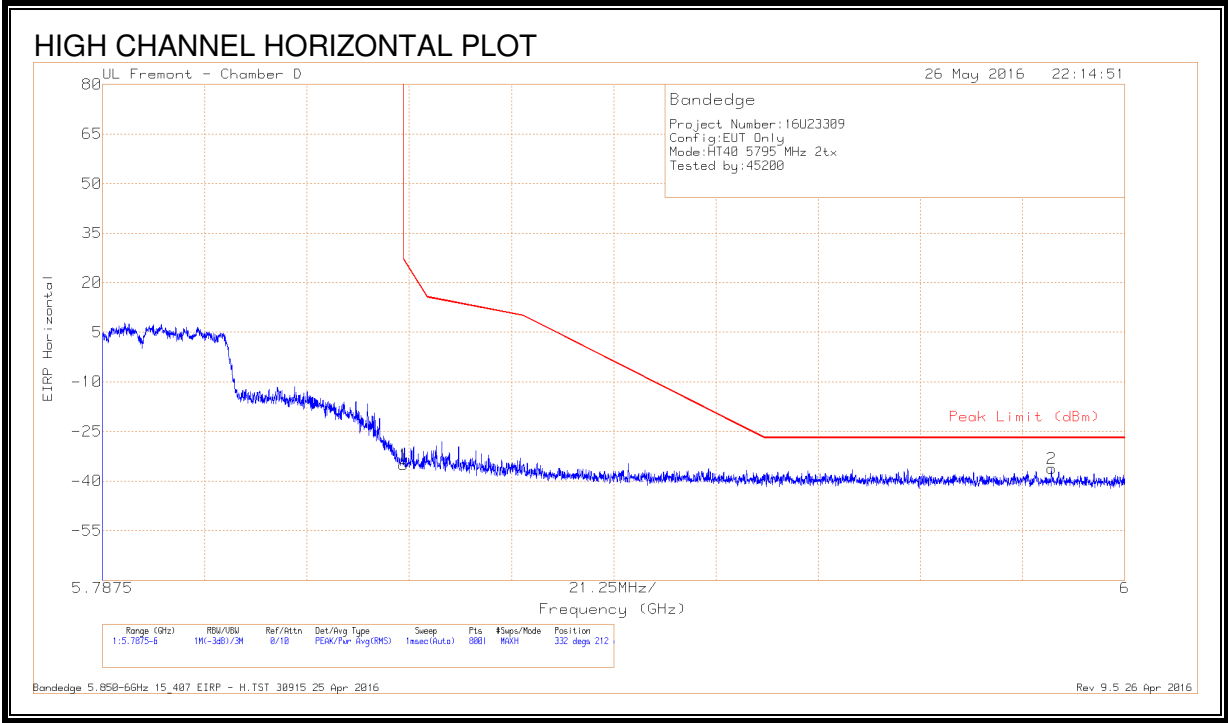


DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.636	-65.36	Pk	34.6	-17.3	11.8	-36.26	-27	-9.26	302	204	V
1	5.725	-44.59	Pk	34.8	-17.3	11.8	-15.29	26.97	-42.26	302	204	V

Pk - Peak detector

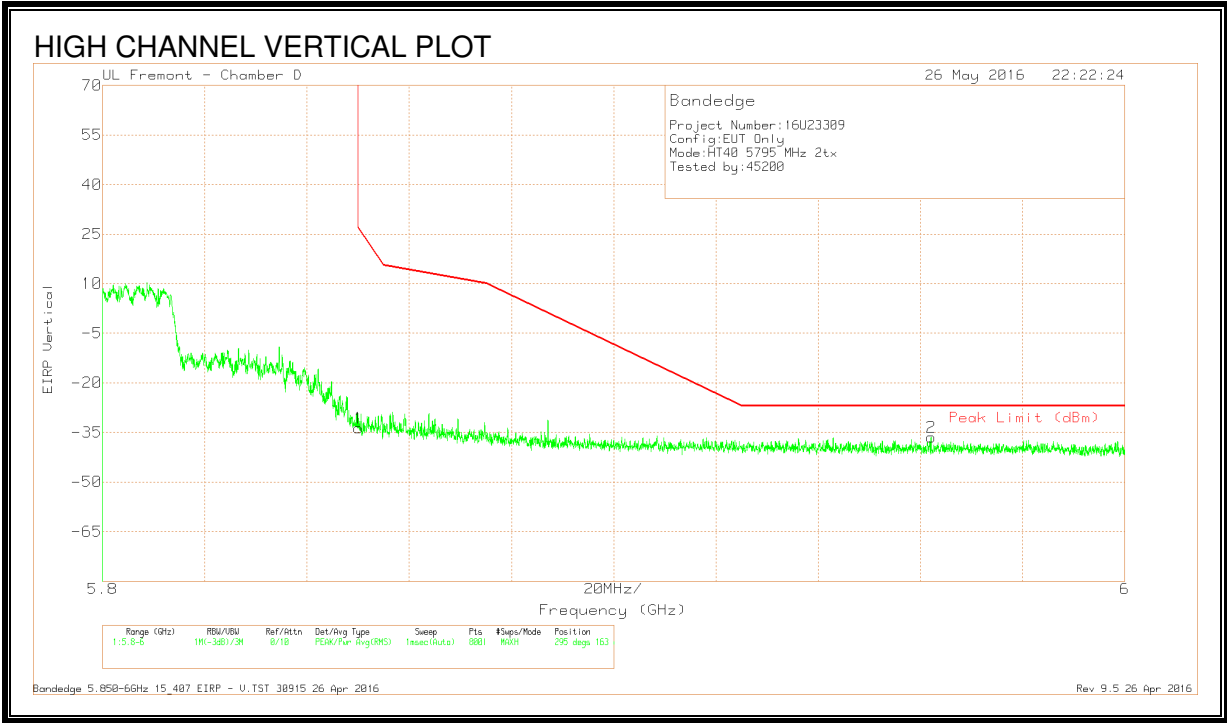
RESTRICTED BANDEDGE (HIGH CHANNEL)



DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Filtr/Par d (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-64.45	Pk	34.9	-17.3	11.8	-35.05	26.99	-62.04	332	212	H
2	5.985	-65.87	Pk	35.1	-17.2	11.8	-36.17	-27	-9.17	332	212	H

Pk - Peak detector

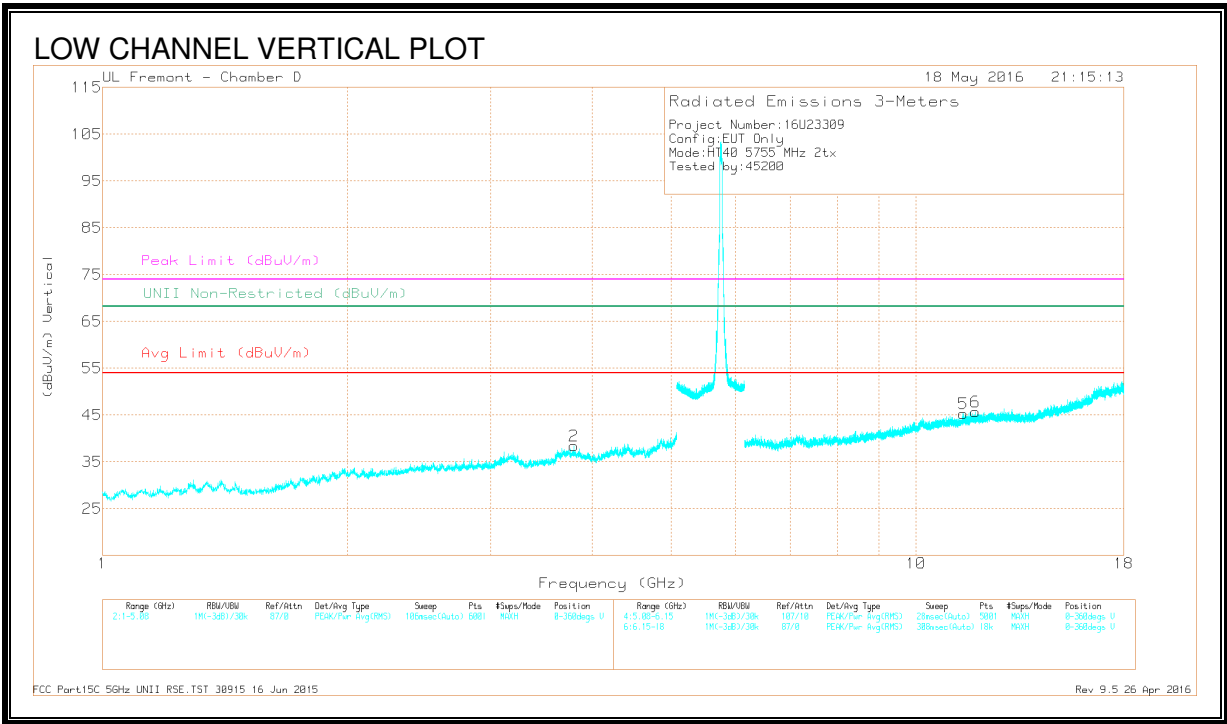
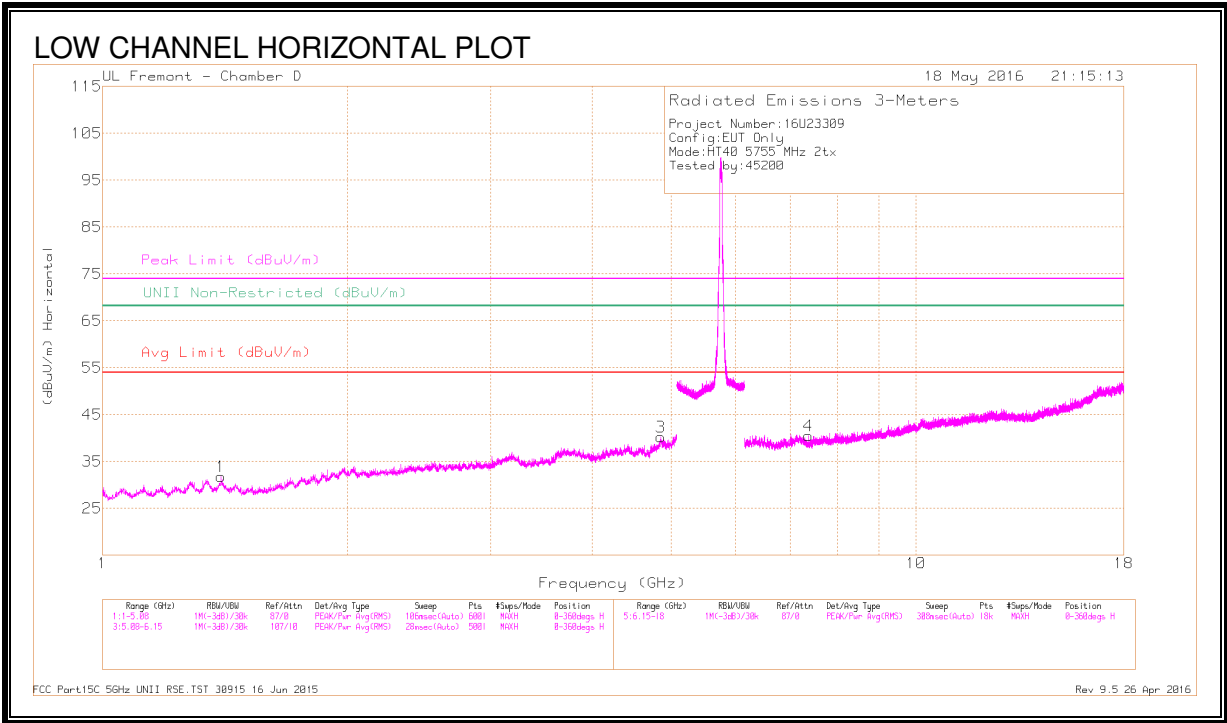


DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-63.1	Pk	34.9	-17.3	11.8	-33.7	26.94	-60.64	295	163	V
2	5.962	-66.08	Pk	35	-17.2	11.8	-36.48	-27	-9.48	295	163	V

Pk - Peak detector

LOW CHANNEL HARMONICS AND SPURIOUS EMISSIONS



DATA

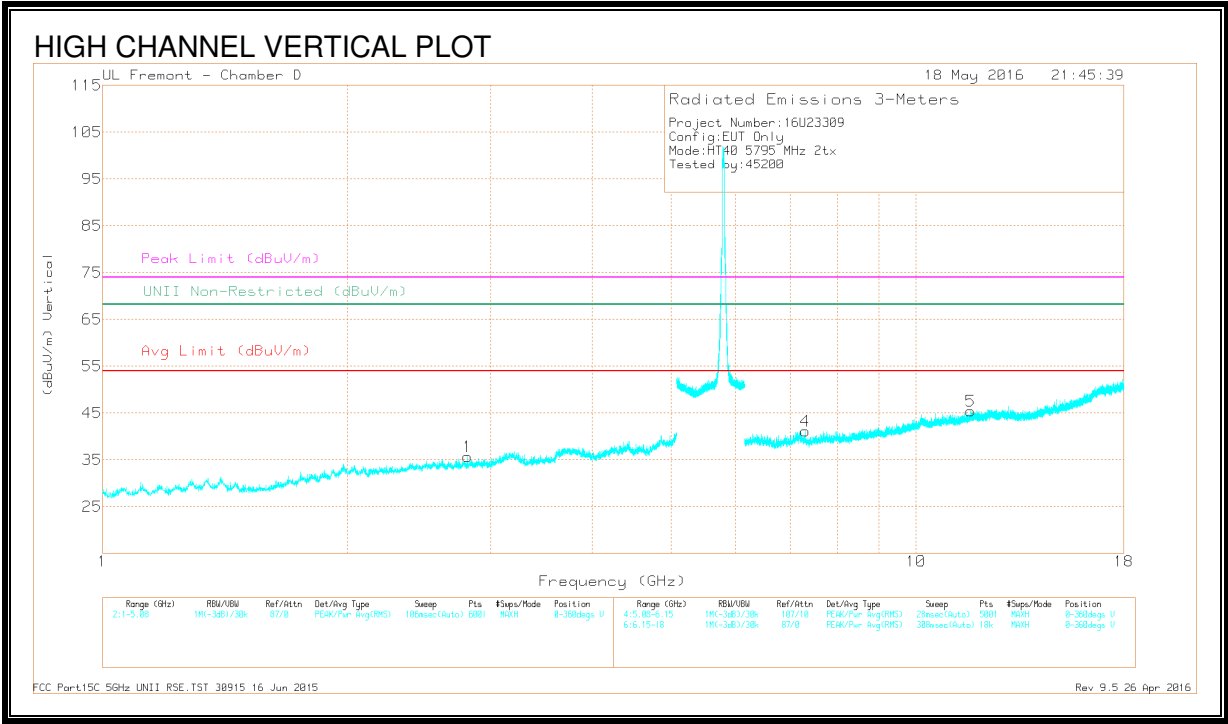
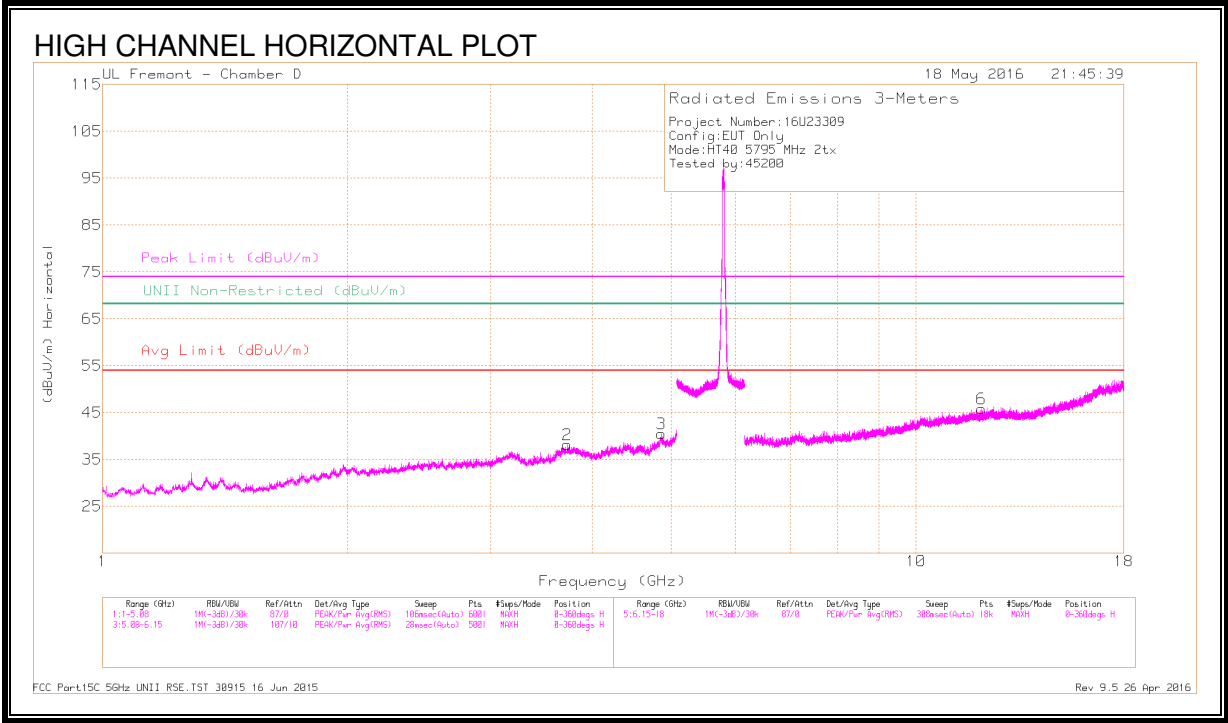
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Ch/Filt/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.4	40.53	PK-U	29	-31.2	38.33	-	-	74	-35.67	-	-	206	251	H
	* 1.399	30	ADR	29	-31.2	27.8	54	-26.2	-	-	-	-	206	251	H
3	* 4.852	37.17	PK-U	34.1	-25.4	45.87	-	-	74	-28.13	-	-	90	116	H
	* 4.852	26.52	ADR	34.1	-25.4	35.22	54	-18.78	-	-	-	-	90	116	H
2	* 3.796	38.52	PK-U	33.6	-28.4	43.72	-	-	74	-30.28	-	-	298	339	V
	* 3.794	27.88	ADR	33.6	-28.5	32.98	54	-21.02	-	-	-	-	298	339	V
4	* 7.377	36.43	PK-U	35.6	-25.1	46.93	-	-	74	-27.07	-	-	342	158	H
	* 7.376	25.21	ADR	35.6	-25.1	35.71	54	-18.29	-	-	-	-	342	158	H
5	* 11.429	33.45	PK-U	38.3	-20.9	50.85	-	-	74	-23.15	-	-	11	308	V
	* 11.43	23.54	ADR	38.3	-20.9	40.94	54	-13.06	-	-	-	-	11	308	V
6	* 11.823	33.68	PK-U	38.7	-21.2	51.18	-	-	74	-22.82	-	-	228	154	V
	* 11.823	23.71	ADR	38.7	-21.2	41.21	54	-12.79	-	-	-	-	228	154	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 HARMONICS AND SPURIOUS EMISSIONS



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Ch/Filt/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
2	* 3.728	38.36	PK-U	33.5	-28.9	42.96	-	-	74	-31.04	-	-	189	150	H
	* 3.727	27.52	ADR	33.5	-28.9	32.12	54	-21.88	-	-	-	-	189	150	H
3	* 4.86	36.51	PK-U	34.1	-25.2	45.41	-	-	74	-28.59	-	-	88	235	H
	* 4.861	25.9	ADR	34.1	-25.2	34.8	54	-19.2	-	-	-	-	88	235	H
1	* 2.811	39.74	PK-U	32.3	-29.3	42.74	-	-	74	-31.26	-	-	219	175	V
	* 2.811	27.43	ADR	32.3	-29.3	30.43	54	-23.57	-	-	-	-	219	175	V
6	* 12.028	33.72	PK-U	38.9	-21.2	51.42	-	-	74	-22.58	-	-	273	281	H
	* 12.03	23.14	ADR	38.9	-21.2	40.84	54	-13.16	-	-	-	-	273	281	H
4	* 7.305	36.27	PK-U	35.7	-25.2	46.77	-	-	74	-27.23	-	-	235	267	V
	* 7.304	25.54	ADR	35.7	-25.2	36.04	54	-17.96	-	-	-	-	235	267	V
5	* 11.673	33.25	PK-U	38.6	-20.5	51.35	-	-	74	-22.65	-	-	13	127	V
	* 11.671	22.78	ADR	38.6	-20.5	40.88	54	-13.12	-	-	-	-	13	127	V

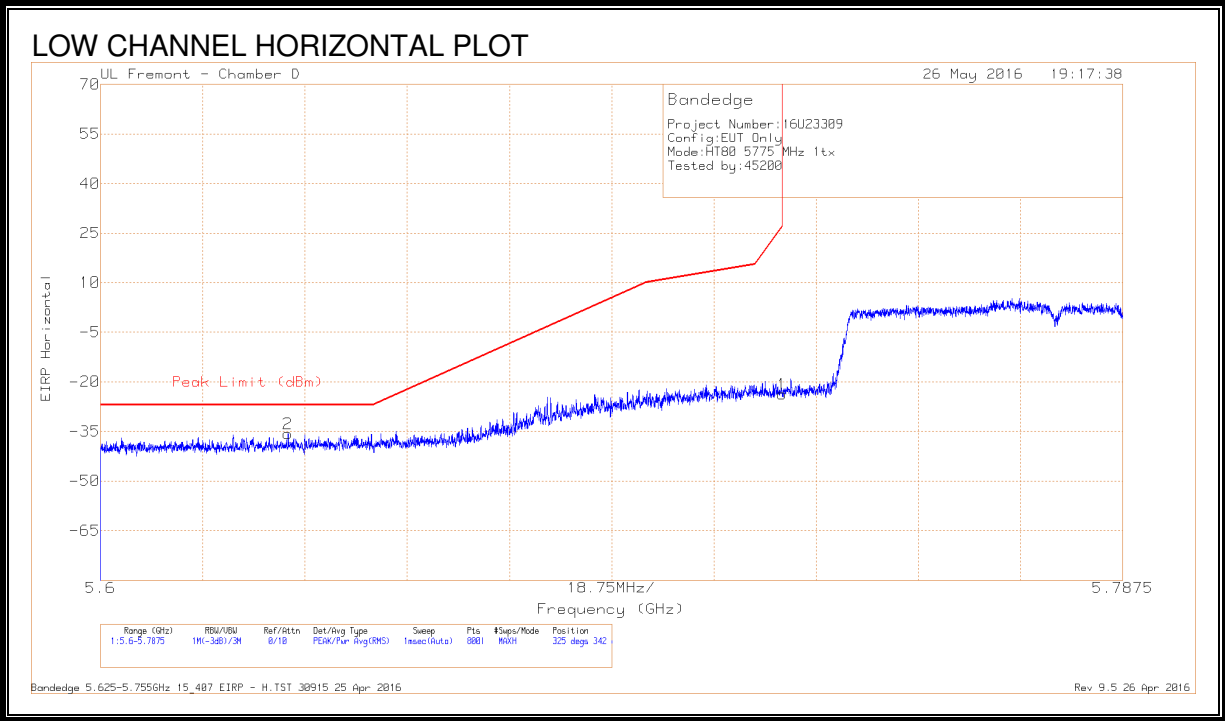
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

8.28. 802.11ac VHT80 1Tx MODE IN THE 5.8 GHz BAND

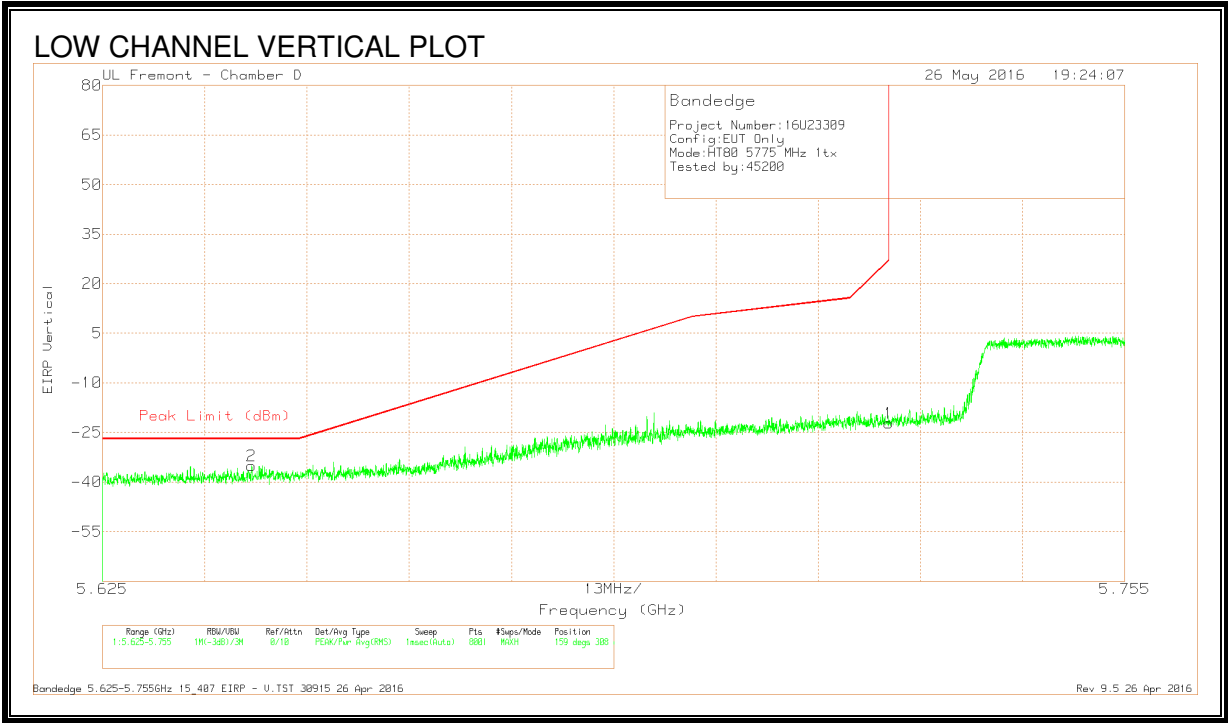
RESTRICTED BANDEDGE, CHAIN 0 (LOW)



DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.634	-64.73	Pk	34.6	-17.3	11.8	-35.63	-27	-8.63	325	342	H
1	5.725	-52.98	Pk	34.8	-17.3	11.8	-23.68	26.99	-50.67	325	342	H

Pk - Peak detector

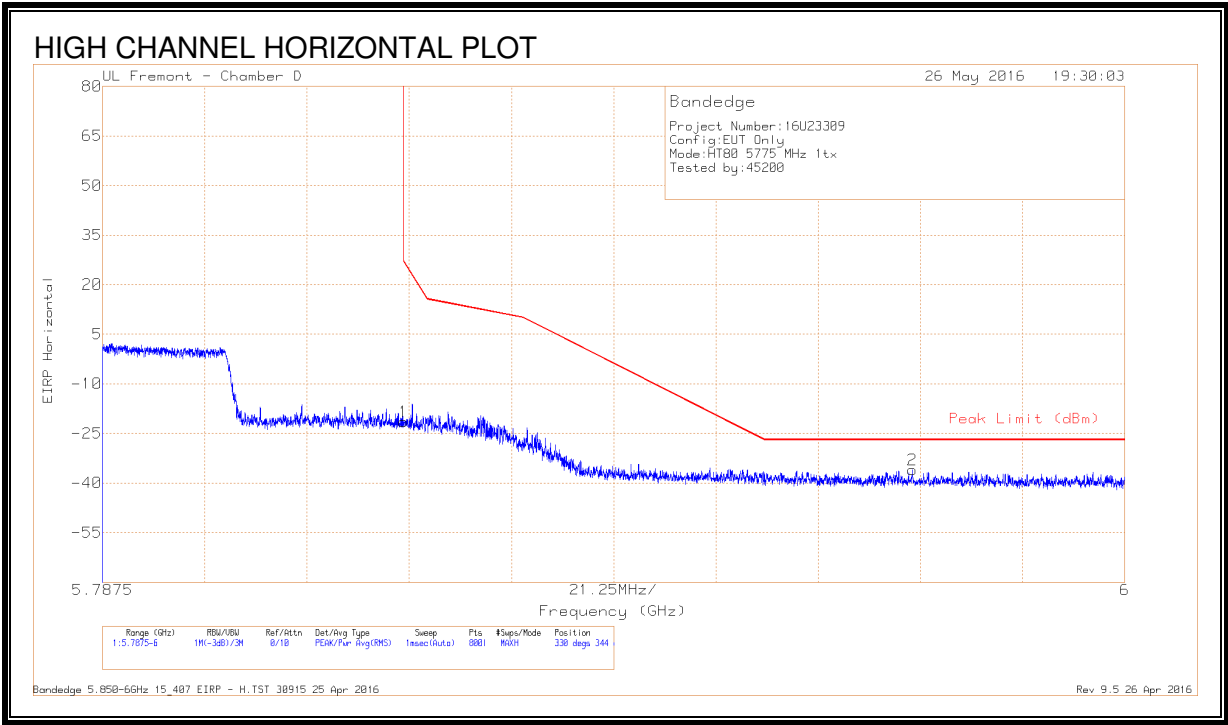


DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Fitr/Par d (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.644	-64.01	Pk	34.6	-17.4	11.8	-35.01	-27	-8.01	159	308	V
1	5.725	-51.56	Pk	34.8	-17.3	11.8	-22.26	26.97	-49.23	159	308	V

Pk - Peak detector

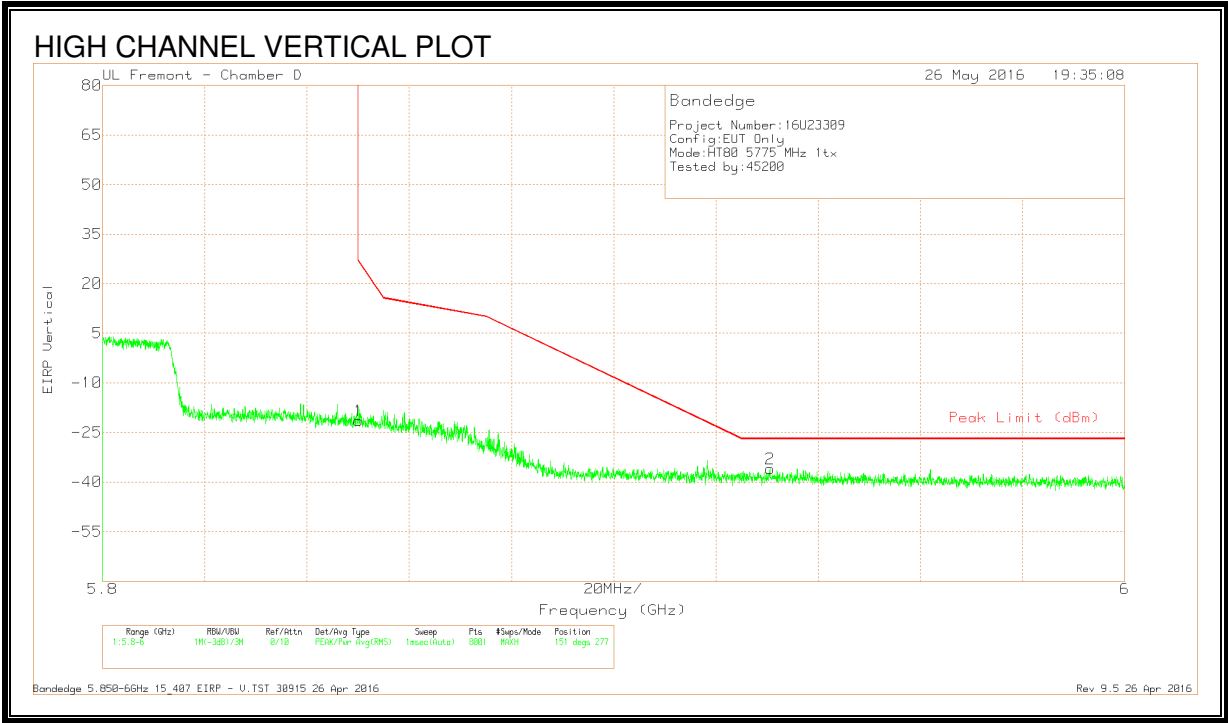
RESTRICTED BANDEDGE, CHAIN 0 (HIGH)



DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-50.89	Pk	34.9	-17.3	11.8	-21.49	26.99	-48.48	330	344	H
2	5.956	-65.55	Pk	35	-17.2	11.8	-35.95	-27	-8.95	330	344	H

Pk - Peak detector

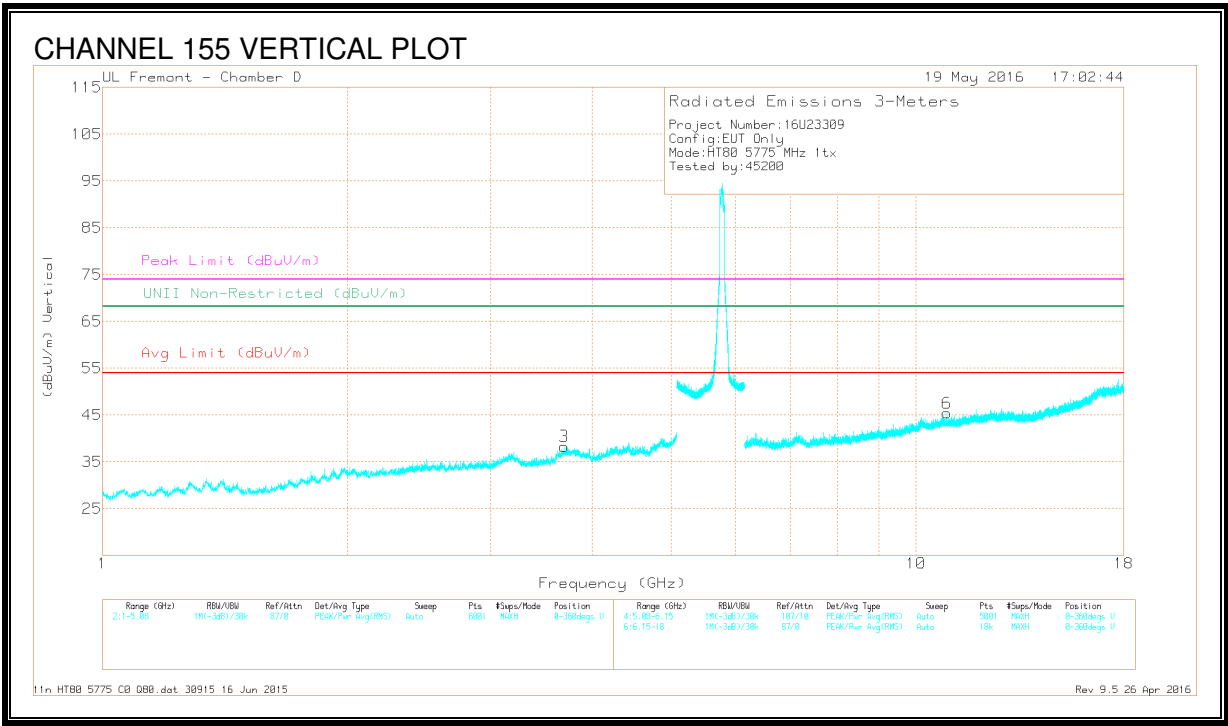
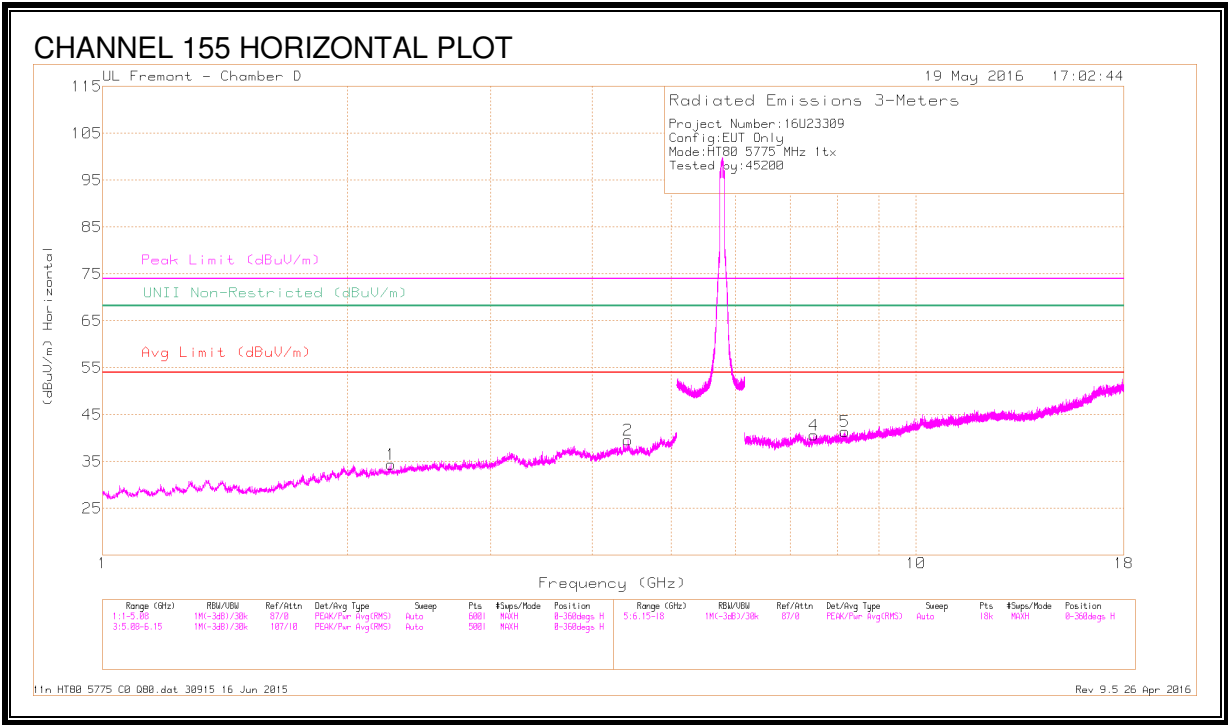


DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-50.86	Pk	34.9	-17.3	11.8	-21.46	26.94	-48.4	151	277	V
2	5.931	-65.65	Pk	35	-17.1	11.8	-35.95	-27	-8.95	151	277	V

Pk - Peak detector

CHANNEL 155 HARMONICS AND SPURIOUS EMISSIONS



DATA

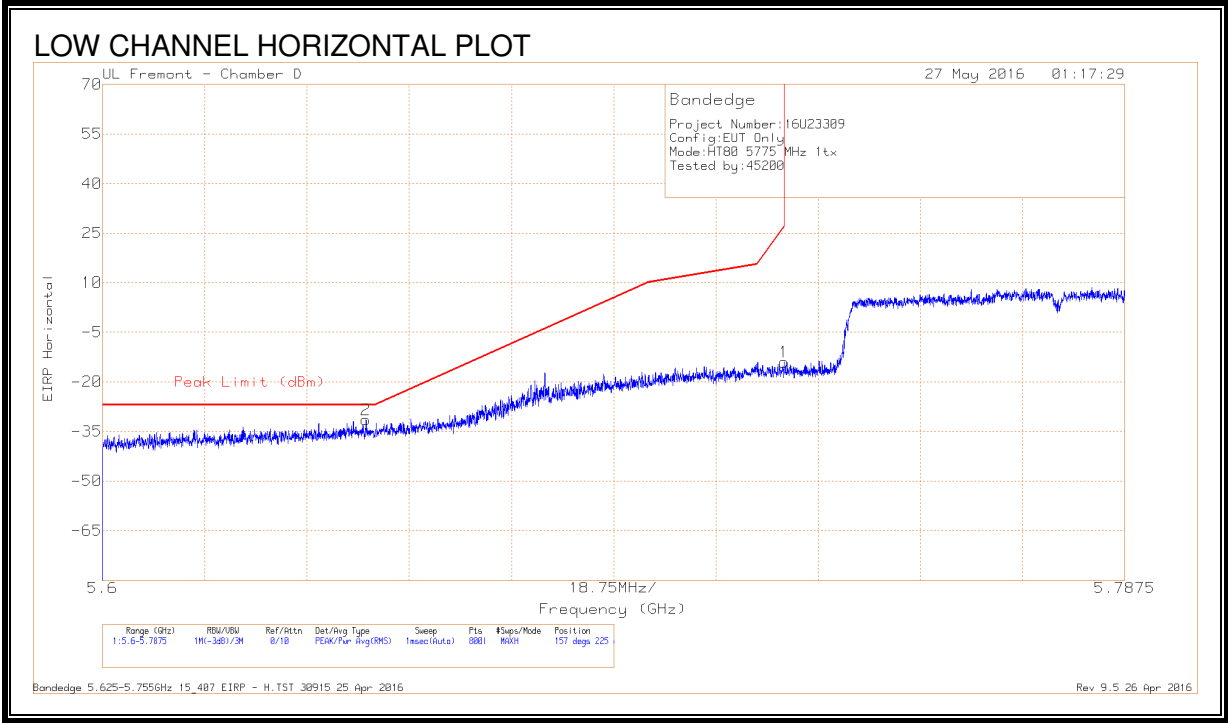
Markers	Frequency (GHz)	Meter Reading (dBm)	Det	AFT112 (dB/m)	Amp/CM/F1tr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBm/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Limit Non-Restricted (dBuV/m)	PK Margin (dB)	Altitude (Degs)	Height (cm)	Polarity
1	* 2.263	39.34	PK-U	31.5	-30.6	0	40.24	-	-	74	-33.76	-	-	245	385	H
	* 2.262	29.16	ADR	31.5	-30.6	.15	30.21	54	-23.79	-	-	-	-	245	385	H
3	* 3.692	38.67	PK-U	33.5	-29	0	43.17	-	-	74	-30.83	-	-	308	147	V
	* 3.693	28.19	ADR	33.5	-29	.15	32.84	54	-21.16	-	-	-	-	308	147	V
4	* 7.489	35.06	PK-U	35.7	-24.1	0	46.66	-	-	74	-27.34	-	-	127	223	H
	* 7.49	24.92	ADR	35.7	-24.2	.15	36.57	54	-17.43	-	-	-	-	127	223	H
5	* 8.17	35.36	PK-U	35.8	-23.9	0	47.26	-	-	74	-26.74	-	-	354	375	H
	* 8.172	25.02	ADR	35.8	-23.9	.15	37.07	54	-16.93	-	-	-	-	354	375	H
6	* 10.918	34.46	PK-U	38	-21.2	0	51.26	-	-	74	-22.74	-	-	10	176	V
	* 10.916	23.47	ADR	38	-21.1	.15	40.52	54	-13.48	-	-	-	-	10	176	V
2	4.424	36.79	PK-U	33.9	-27.1	0	43.59	-	-	-	-	68.2	-24.61	12	147	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

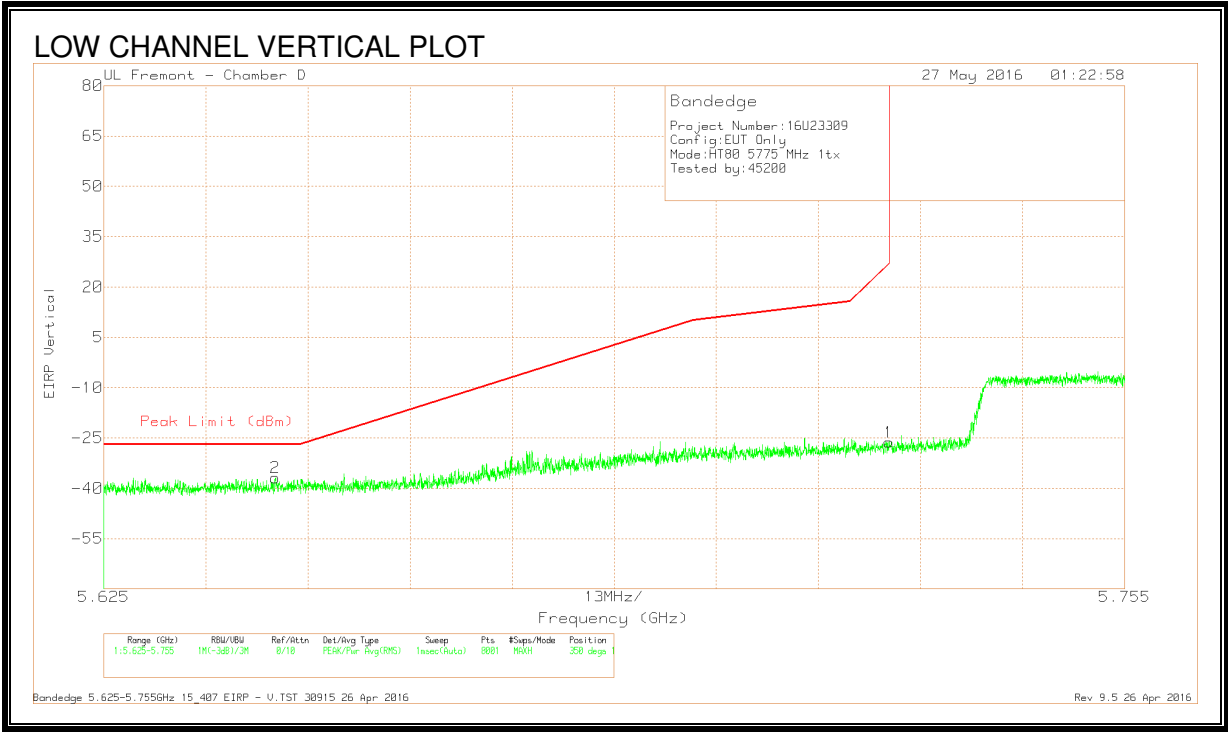
RESTRICTED BANDEDGE, CHAIN 1 (LOW)



DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.648	-60.61	Pk	34.6	-17.3	11.8	-31.51	-27	-4.51	157	225	H
1	5.725	-43.34	Pk	34.8	-17.3	11.8	-14.04	26.99	-41.03	157	225	H

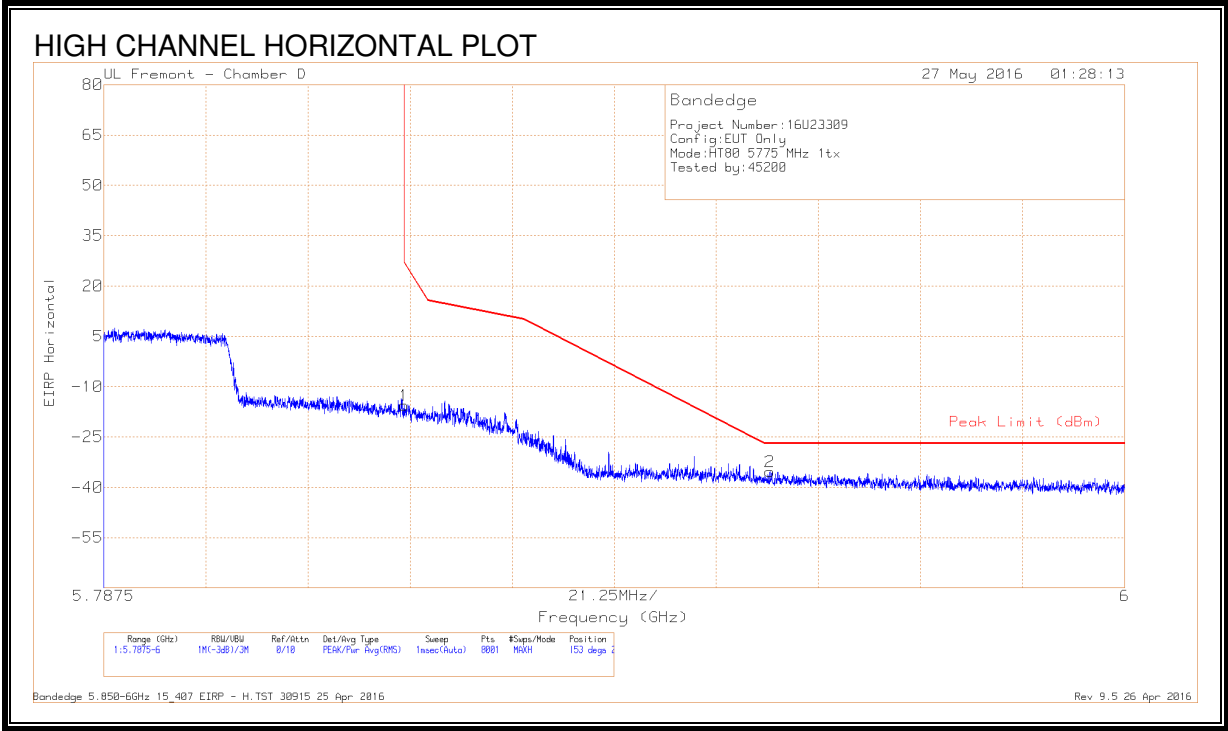
Pk - Peak detector



DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.647	-65.86	Pk	34.6	-17.4	11.8	-36.86	-27	-9.86	350	195	V
1	5.725	-55.55	Pk	34.8	-17.3	11.8	-26.25	26.97	-53.22	350	195	V

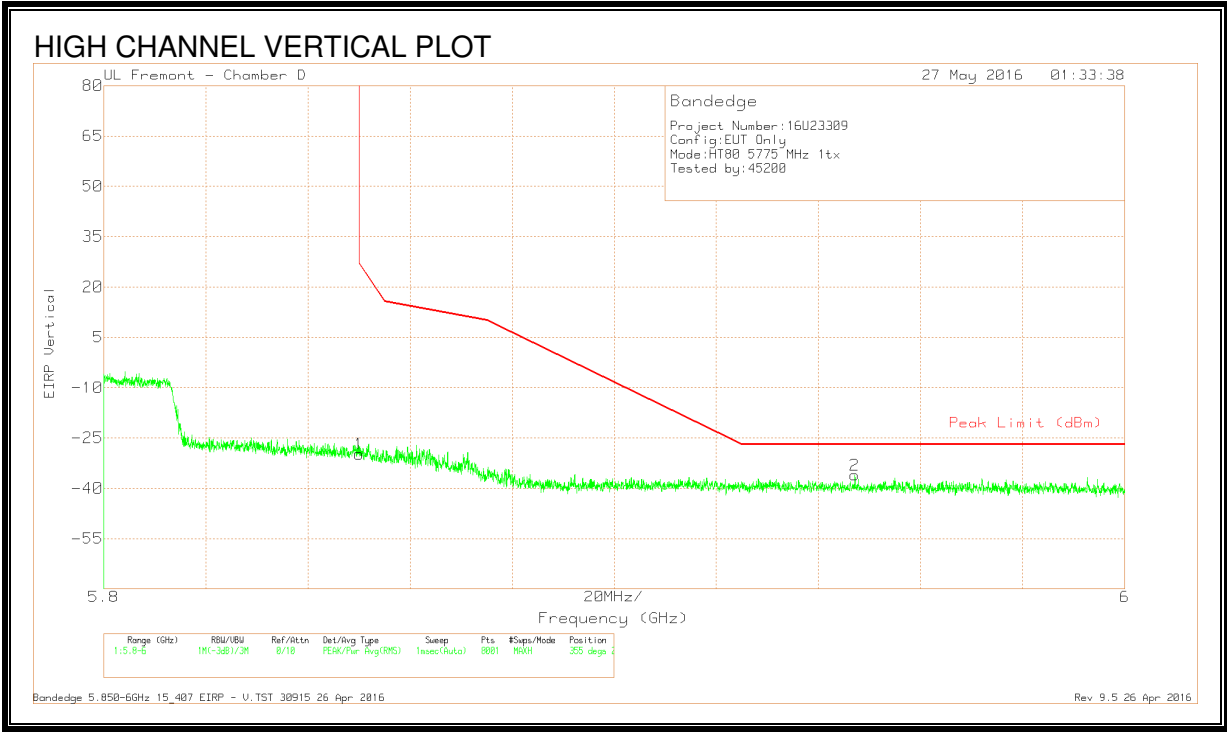
RESTRICTED BANDEDGE, CHAIN 1 (HIGH)



DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Fitr/Pa d (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-44.96	Pk	34.9	-17.3	11.8	-15.56	26.99	-42.55	153	238	H
2	5.926	-65.07	Pk	35	-17.1	11.8	-35.37	-27	-8.37	153	238	H

Pk - Peak detector

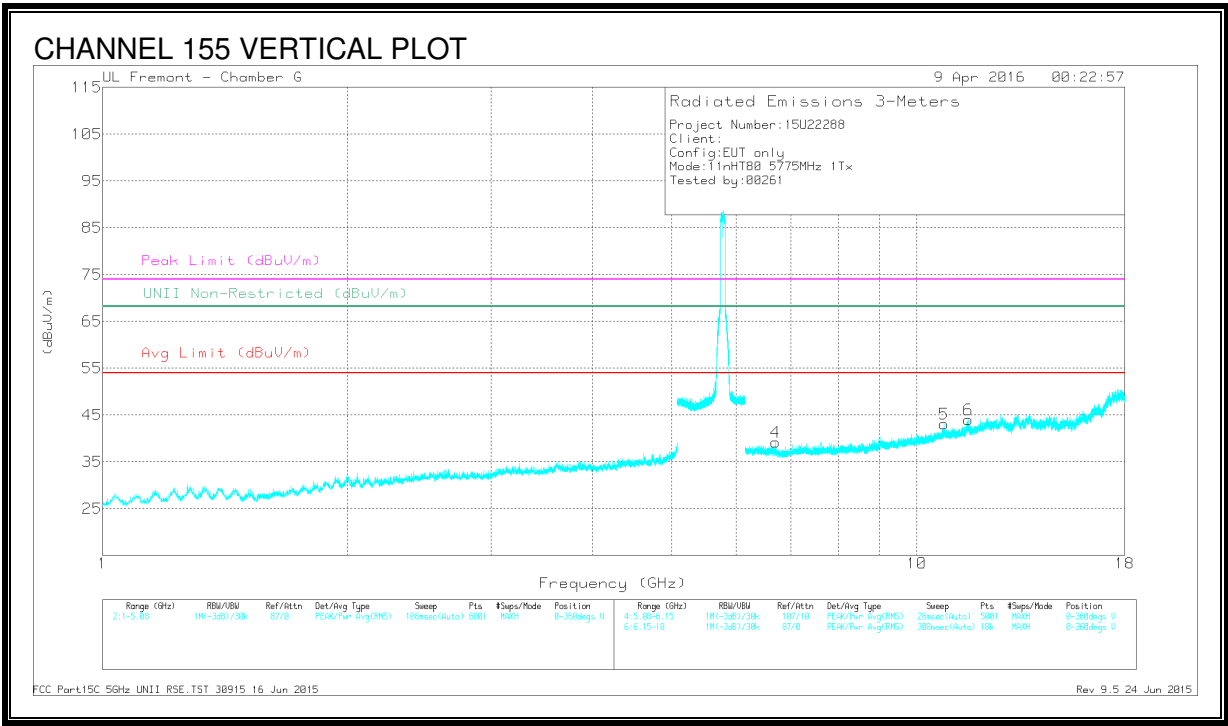
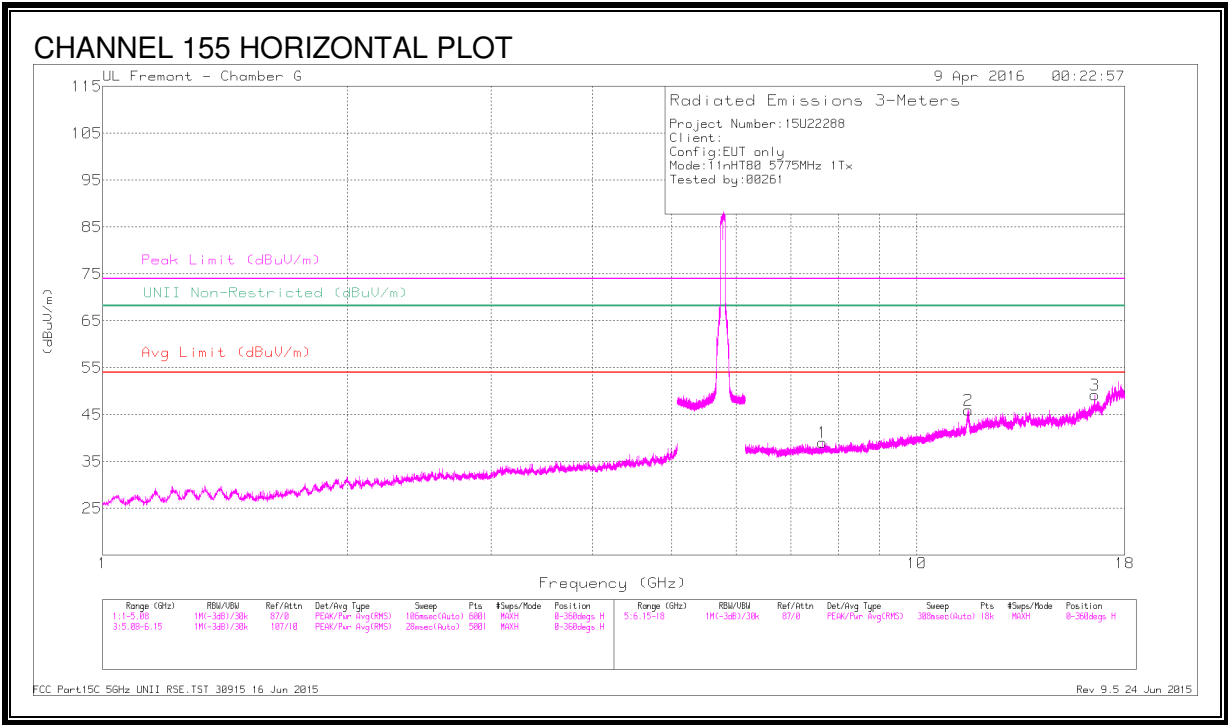


DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-59.18	Pk	34.9	-17.3	11.8	-29.78	26.94	-56.72	355	220	V
2	5.947	-65.79	Pk	35	-17.1	11.8	-36.09	-27	-9.09	355	220	V

Pk - Peak detector

CHANNEL 155 HARMONICS AND SPURIOUS EMISSIONS



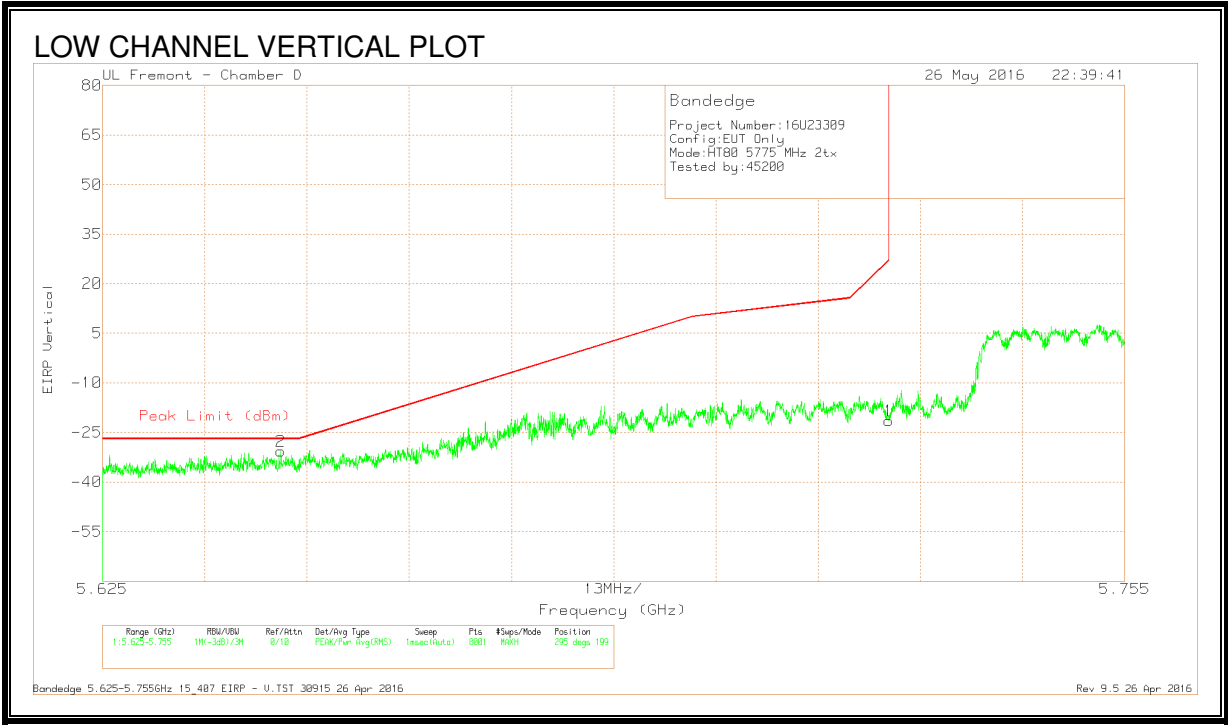
DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fl tr/Pad (dB)	DC Corr (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	* 7.654	40.46	PK-U	35.6	-30.1	0	45.96	-	-	74	-28.04	-	-	352	170	H
	* 7.657	28.26	ADR	35.6	-30.1	.15	33.91	54	-20.09	-	-	-	-	352	170	H
2	* 11.557	42.41	PK-U	38.3	-26.2	0	54.51	-	-	74	-19.49	-	-	7	146	H
	* 11.561	30.03	ADR	38.3	-26.2	.15	42.28	54	-11.72	-	-	-	-	7	146	H
5	* 10.795	37.3	PK-U	38	-26.3	0	49	-	-	74	-25	-	-	258	265	V
	* 10.796	25.57	ADR	38	-26.3	.15	37.42	54	-16.58	-	-	-	-	258	265	V
6	* 11.56	40.14	PK-U	38.3	-26.2	0	52.24	-	-	74	-21.76	-	-	340	186	V
	* 11.559	28.01	ADR	38.3	-26.2	.15	40.26	54	-13.74	-	-	-	-	340	186	V
4	6.711	41.12	PK-U	35.6	-31.4	0	45.32	-	-	-	-	68.2	-22.88	94	224	V
3	16.532	37.54	PK-U	41.2	-23.4	0	55.34	-	-	-	-	68.2	-12.86	56	179	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

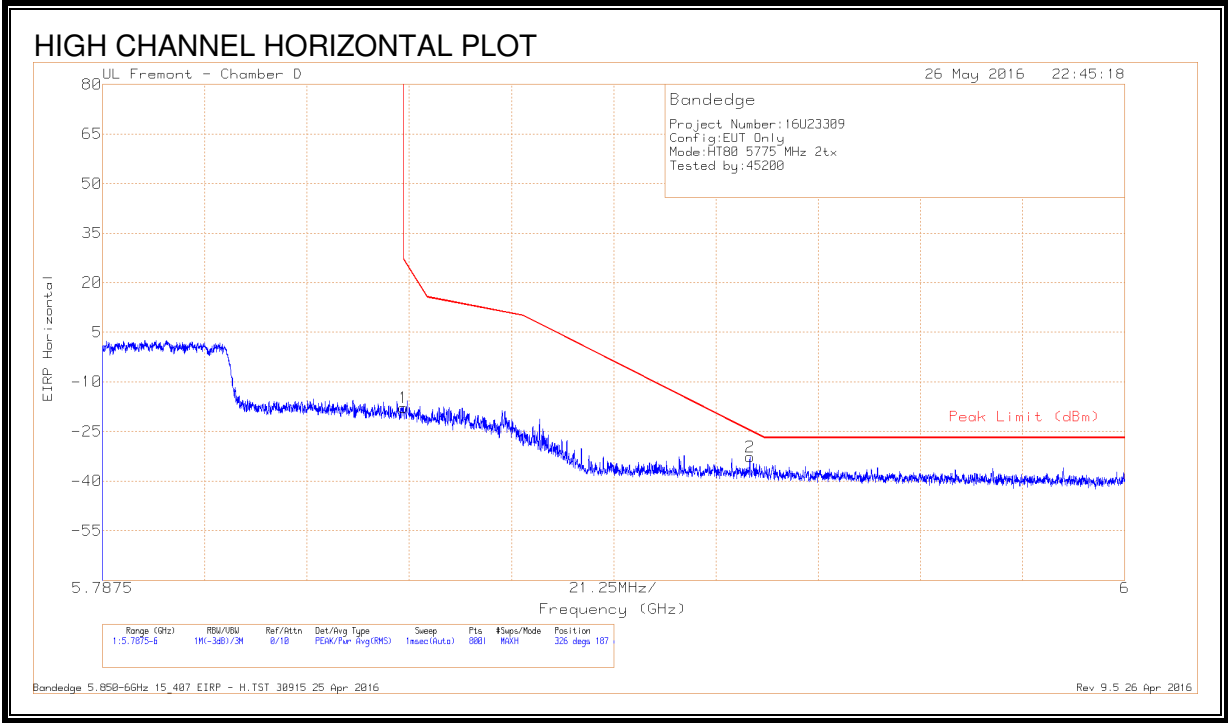


DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.648	-59.7	Pk	34.6	-17.3	11.8	-30.6	-27	-3.6	295	199	V
1	5.725	-50.79	Pk	34.8	-17.3	11.8	-21.49	26.97	-48.46	295	199	V

Pk - Peak detector

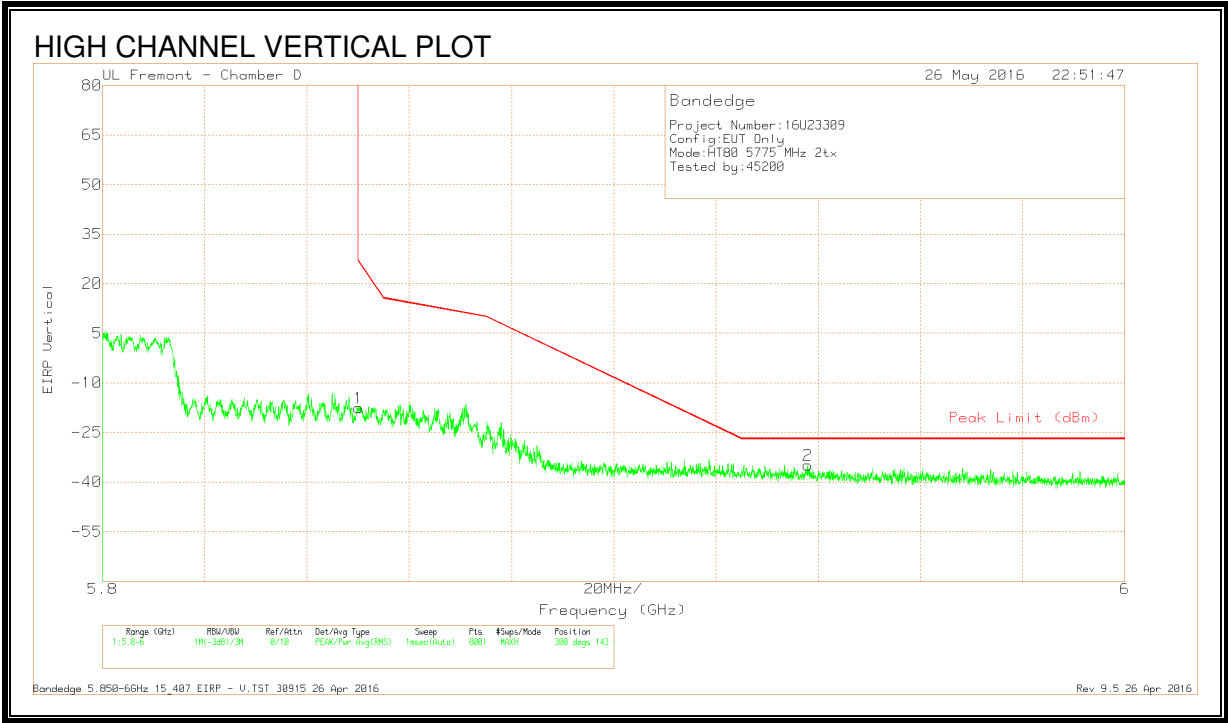
RESTRICTED BANDEDGE (HIGH)



DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-47.19	Pk	34.9	-17.3	11.8	-17.79	26.99	-44.78	326	187	H
2	5.922	-62.36	Pk	35	-17.1	11.8	-32.66	-24.85	-7.81	326	187	H

Pk - Peak detector

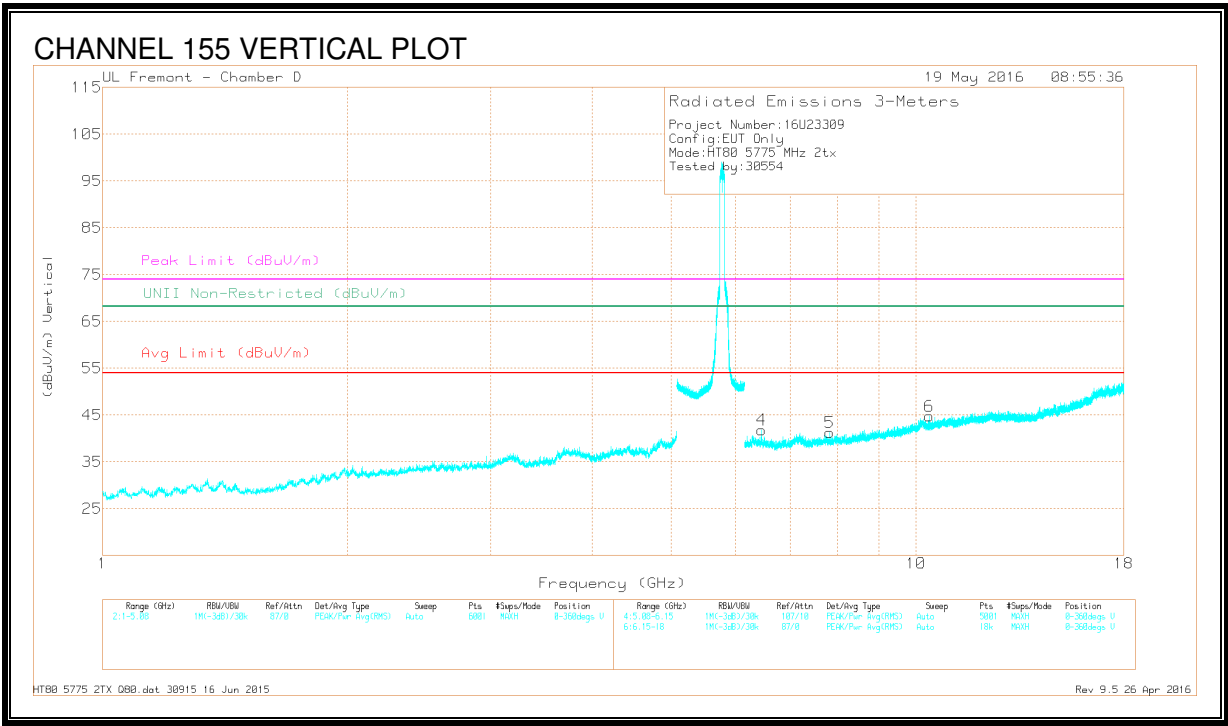
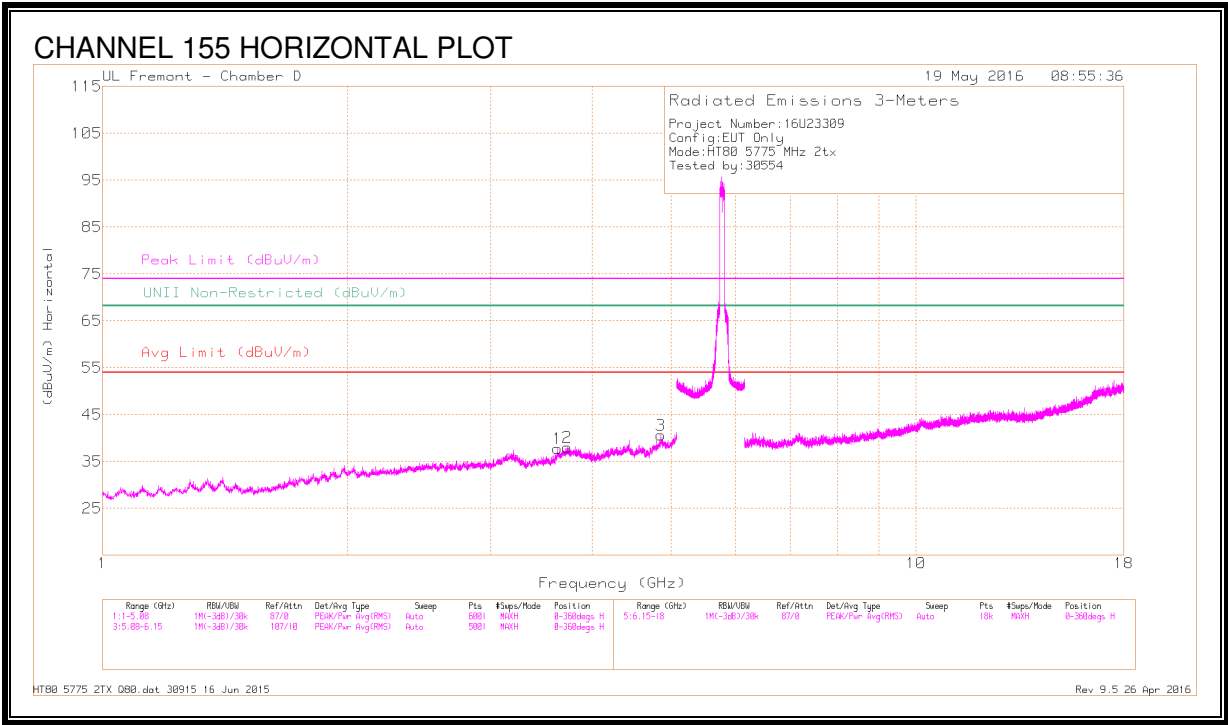


DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T712 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-47.04	Pk	34.9	-17.3	11.8	-17.64	26.94	-44.58	300	143	V
2	5.938	-64.46	Pk	35	-17.2	11.8	-34.86	-27	-7.86	300	143	V

Pk - Peak detector

CHANNEL 155 HARMONICS AND SPURIOUS EMISSIONS



DATA

Markers	Frequency (GHz)	Meter Reading (dBm)	Det	AF 1712 (dB/m)	Amp/Cb/Hz/Pad (dB)	DC Corr (dB)	Corrected Reading (dBm)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Unli Non-Restricted (dBuV/m)	PK Margin (dB)	Asimuth (Degs)	Height (cm)	Polarity
1	* 3.624	38.43	PK-U	33.4	-28.8	0	43.03	-	-	74	-30.97	-	-	133	221	H
	* 3.624	27.96	ADR	33.4	-28.8	.19	32.75	54	-21.25	-	-	-	-	133	221	H
2	* 3.726	38.15	PK-U	33.5	-28.9	0	42.75	-	-	74	-31.25	-	-	185	254	H
	* 3.726	28.17	ADR	33.5	-28.9	.19	32.96	54	-21.04	-	-	-	-	185	254	H
3	* 4.853	37.89	PK-U	34.1	-25.4	0	46.59	-	-	74	-27.41	-	-	144	321	H
	* 4.854	26.9	ADR	34.1	-25.4	.19	35.79	54	-18.21	-	-	-	-	144	321	H
4	6.462	36.23	PK-U	35.6	-25.4	0	46.43	-	-	-	-	68.2	-21.77	36	189	V
5	7.829	35.77	PK-U	35.9	-24.4	0	47.27	-	-	-	-	68.2	-20.93	65	174	V
6	10.377	33.23	PK-U	37.6	-21.3	0	49.53	-	-	-	-	68.2	-18.67	78	185	V

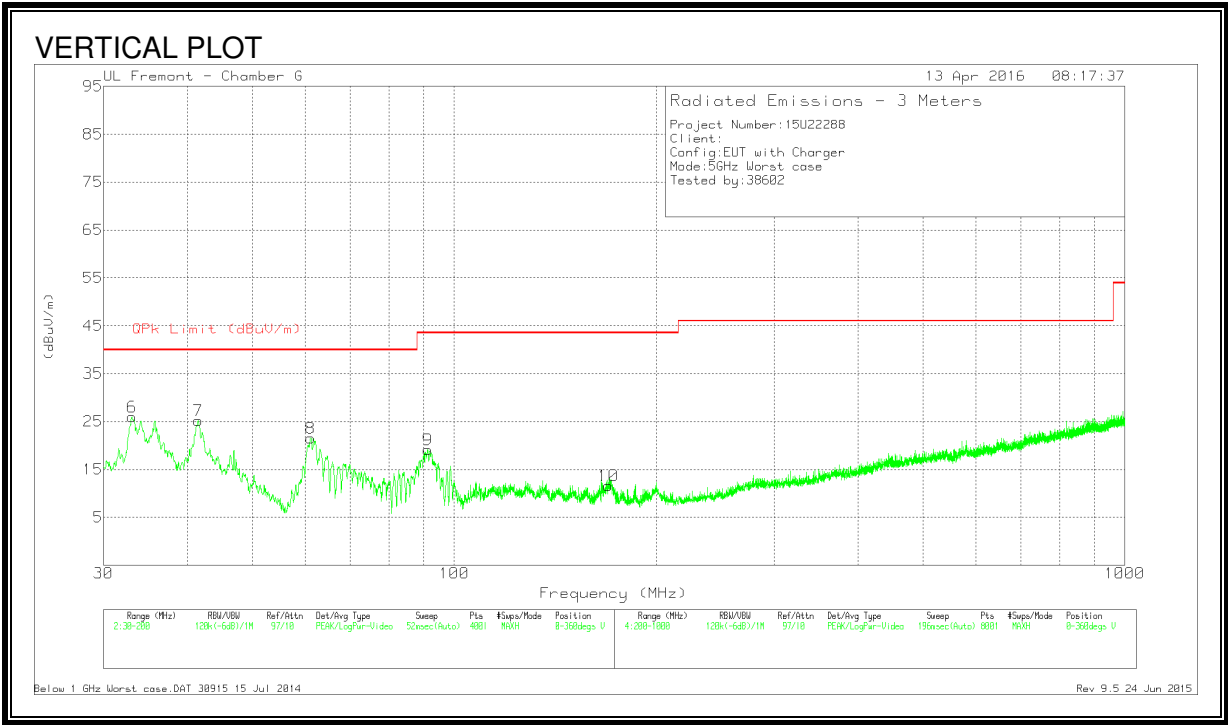
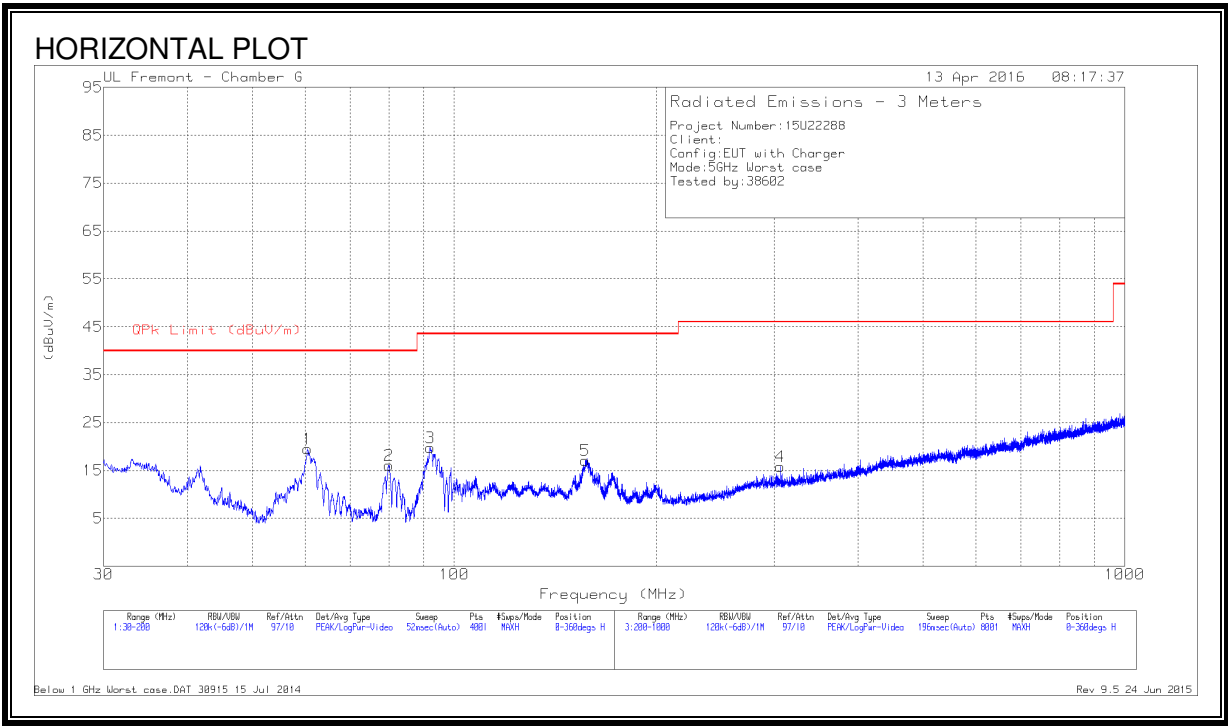
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

8.30. WORST-CASE BELOW 1 GHz

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



HORIZONTAL AND VERTICAL DATA

Trace Markers

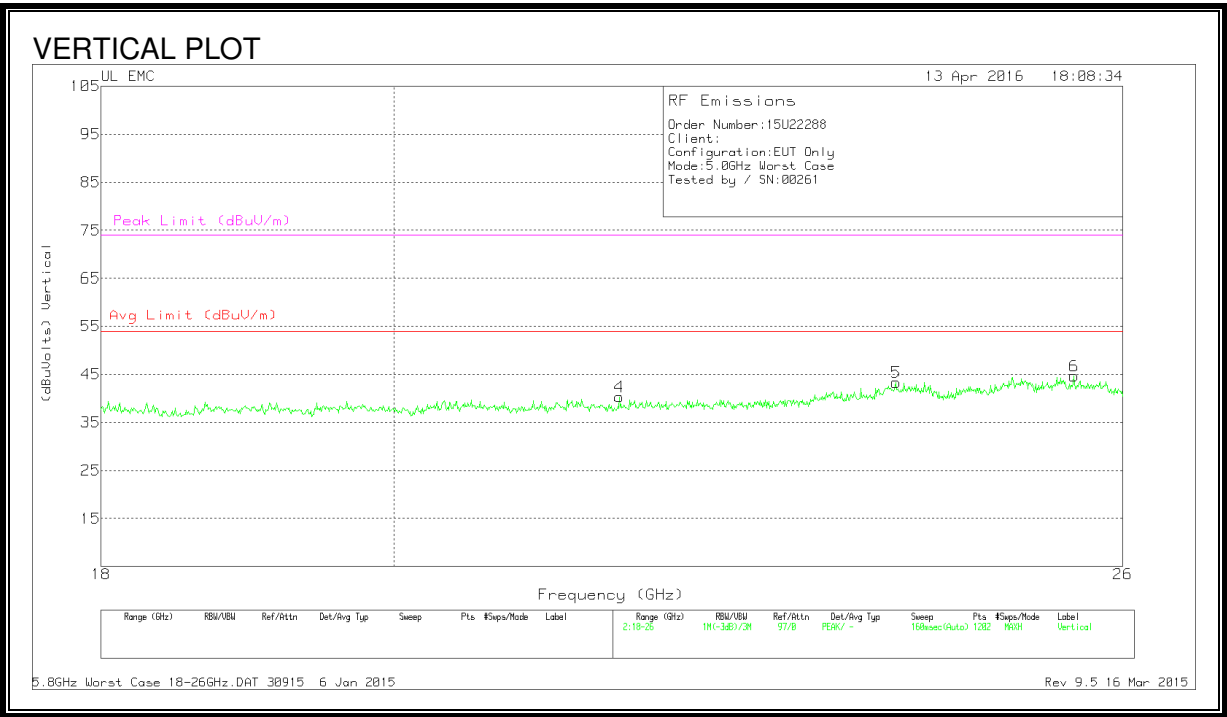
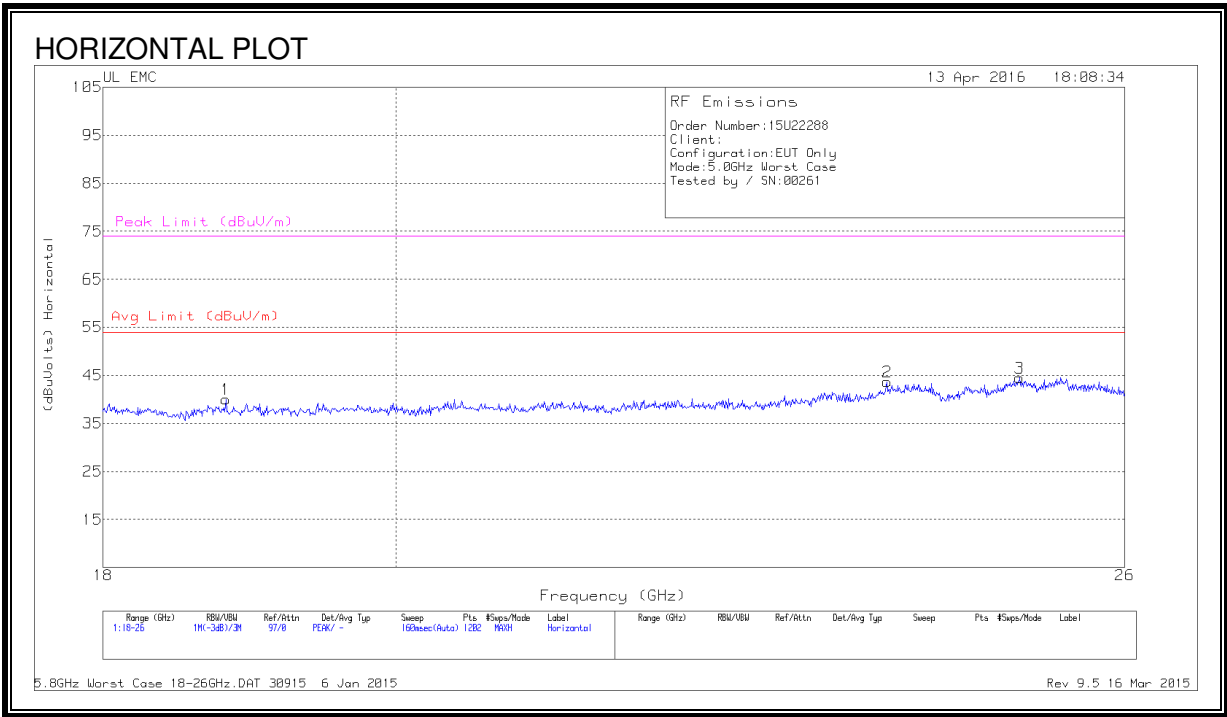
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T899 (dB/m)	Amp Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	* 156.7775	34.92	Pk	12.1	-29.9	17.12	43.52	-26.4	0-360	201	H
10	* 169.825	29.57	Pk	12	-29.9	11.67	43.52	-31.85	0-360	100	V
6	33.06	37.74	Pk	19.5	-31.3	25.94	40	-14.06	0-360	100	V
7	41.5175	43.15	Pk	13.3	-31.2	25.25	40	-14.75	0-360	100	V
1	60.43	42.35	Pk	8	-30.9	19.45	40	-20.55	0-360	401	H
8	61.0675	44.36	Pk	8.1	-30.9	21.56	40	-18.44	0-360	100	V
2	80.0225	39.17	Pk	7.6	-30.7	16.07	40	-23.93	0-360	301	H
9	91.285	41.57	Pk	8.1	-30.5	19.17	43.52	-24.35	0-360	100	V
3	92.135	42.01	Pk	8.2	-30.5	19.71	43.52	-23.81	0-360	201	H
4	306.5	31.27	Pk	13.5	-28.9	15.87	46.02	-30.15	0-360	100	H

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

Pk - Peak detector

8.31. WORST-CASE ABOVE 18 GHz

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

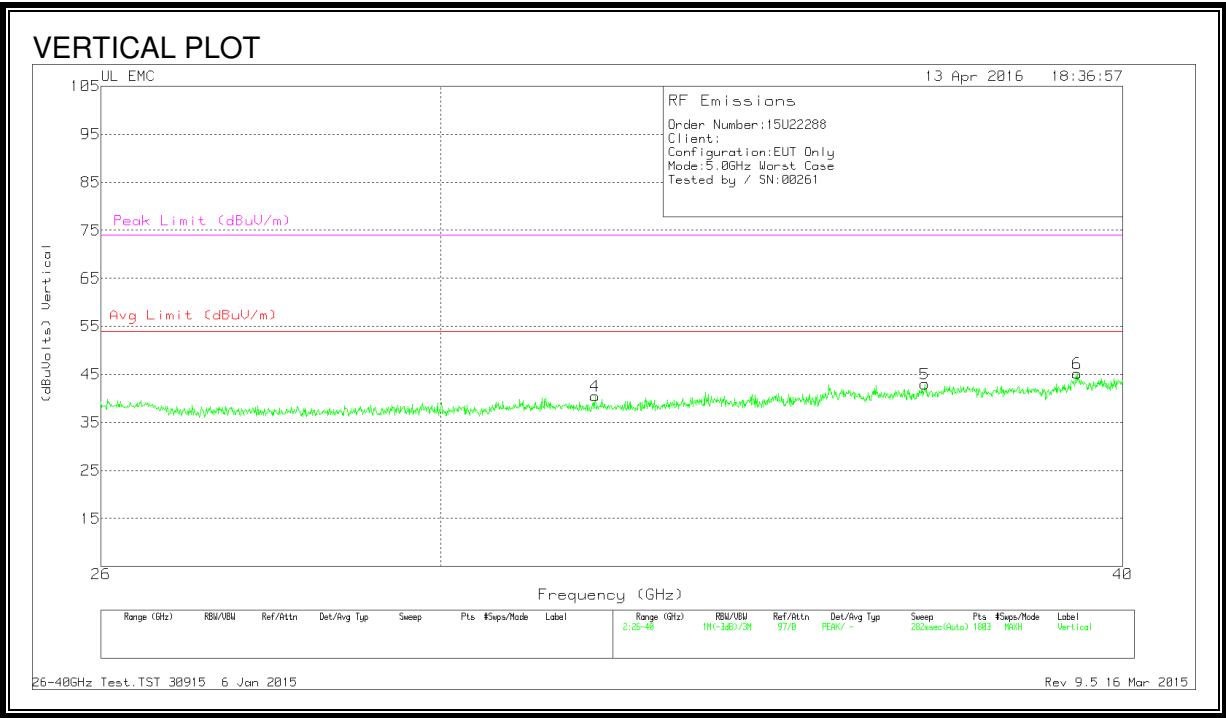
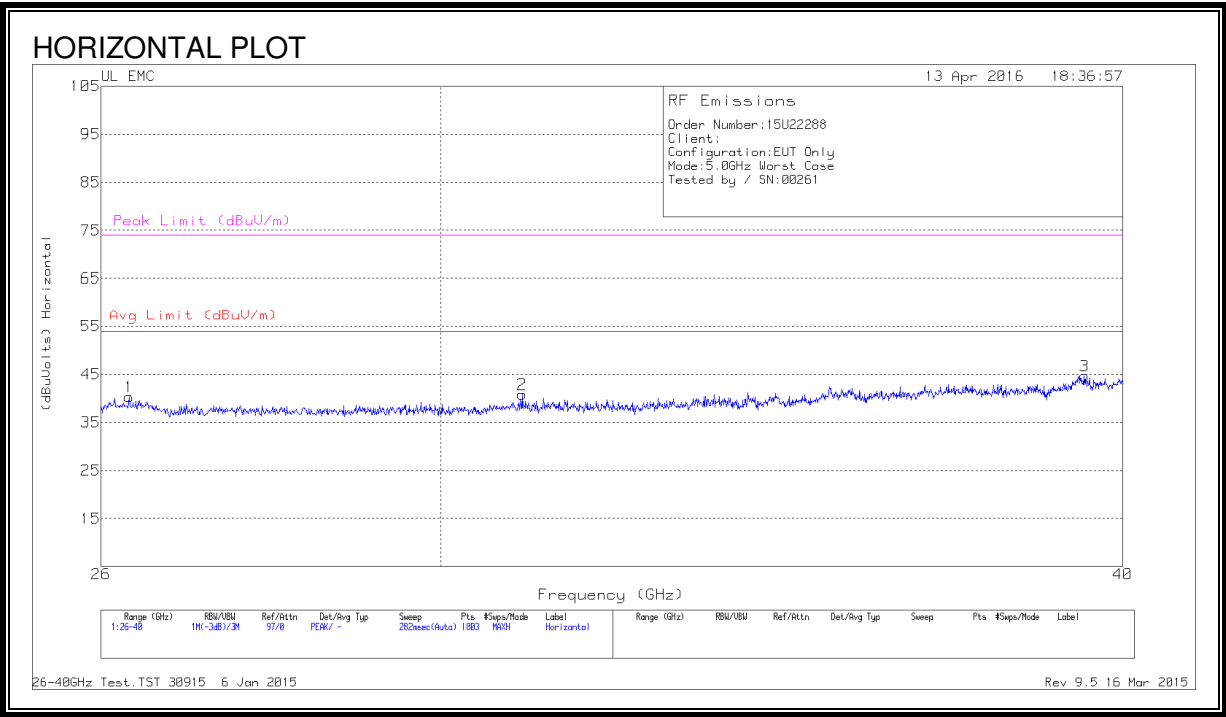


HORIZONTAL AND VERTICAL DATA

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	18.813	42.1	Pk	32.3	-24.9	-9.5	40	54	-14	74	-34
2	23.868	43.57	Pk	33.7	-24.1	-9.5	43.66666 66667	54	- 10.33333 33333	74	- 30.33333 33333
3	25.034	44.7	Pk	34.1	-24.8	-9.5	44.5	54	-9.5	74	-29.5
4	21.69	41.43	Pk	33	-24.6	-9.5	40.33333 33333	54	- 13.66666 66667	74	- 33.66666 66667
5	23.962	43.43	Pk	33.6	-24.2	-9.5	43.33333 33333	54	- 10.66666 66667	74	- 30.66666 66667
6	25.547	44.67	Pk	34.3	-24.8	-9.5	44.66666 66667	54	- 9.333333 33333	74	- 29.33333 33333

Pk - Peak detector

SPURIOUS EMISSIONS 26000 TO 40000 MHz (WORST-CASE CONFIGURATION)



HORIZONTAL AND 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	26.311	45.33	Pk	35.6	-31.1	-9.5	40.33333 33333	54	- 13.66666 66667	74	- 33.66666 66667
2	31.05	47.73	Pk	35.9	-33.3	-9.5	40.83333 33333	54	- 13.16666 66667	74	- 33.16666 66667
3	39.355	48.37	Pk	38.1	-32.3	-9.5	44.66666 66667	54	- 9.333333 33333	74	- 29.33333 33333
4	32.021	47.2	Pk	36.2	-33.4	-9.5	40.5	54	-13.5	74	-33.5
5	36.799	50	Pk	37.1	-34.6	-9.5	43	54	-11	74	-31
6	39.239	48.57	Pk	38.5	-32.4	-9.5	45.16666 66667	54	- 8.833333 33333	74	- 28.83333 33333

Pk - Peak detector

9. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
	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.

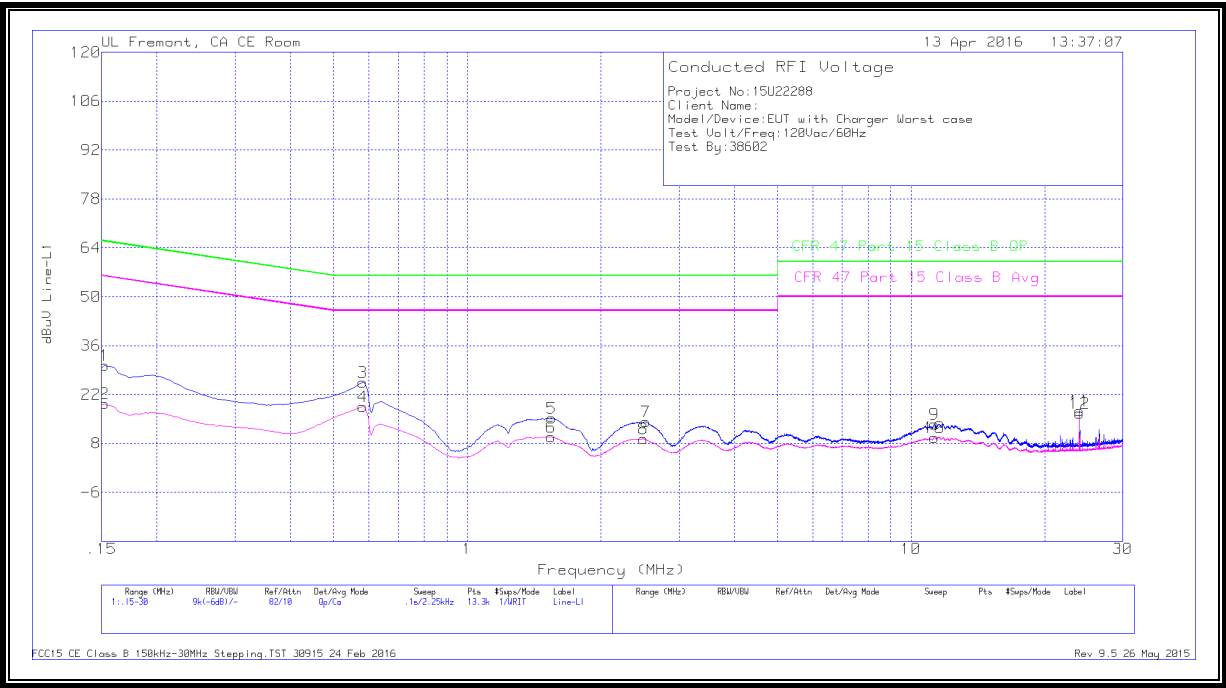
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

9.1.EUT POWERED BY AC/DC ADAPTER VIA USB CABLE

LINE 1 RESULTS

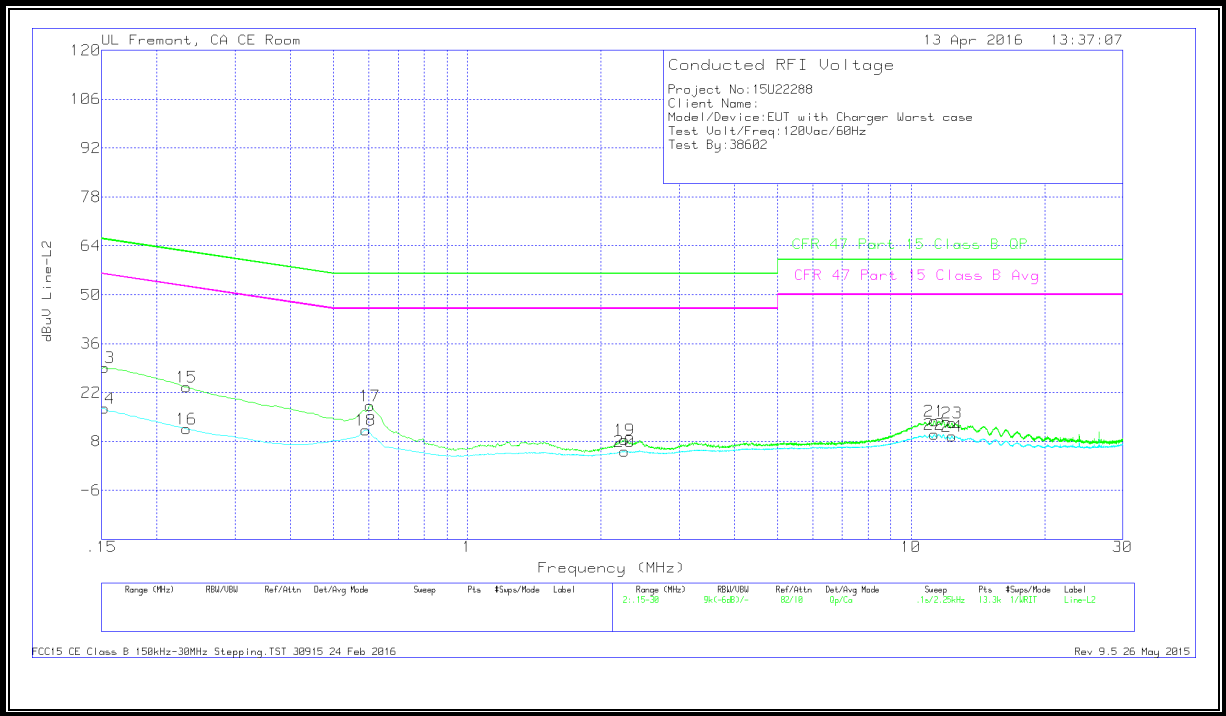


WORST EMISSIONS

Range 1: Line-L1 .15 - 30MHz											
Mark er	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Limiter (dB)	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	.15225	18.84	Qp	1.4	0	10.1	30.34	65.88	-35.54	-	-
2	.15225	7.95	Ca	1.4	0	10.1	19.45	-	-	55.88	-36.43
3	.582	15.1	Qp	.3	0	10.1	25.5	56	-30.5	-	-
4	.582	8.07	Ca	.3	0	10.1	18.47	-	-	46	-27.53
5	1.54725	4.82	Qp	.2	.1	10.1	15.22	56	-40.78	-	-
6	1.545	-.51	Ca	.2	.1	10.1	9.89	-	-	46	-36.11
7	2.52825	3.83	Qp	.2	.1	10.1	14.23	56	-41.77	-	-
8	2.4945	-1.05	Ca	.2	.1	10.1	9.35	-	-	46	-36.65
9	11.27625	2.96	Qp	.2	.2	10.2	13.56	60	-46.44	-	-
10	11.27625	-.86	Ca	.2	.2	10.2	9.74	-	-	50	-40.26
11	24.0045	6.34	Qp	.3	.2	10.5	17.34	60	-42.66	-	-
12	24.0045	5.64	Ca	.3	.2	10.5	16.64	-	-	50	-33.36

Qp - Quasi-Peak detector
Ca - CISPR average detection

LINE 2 RESULTS



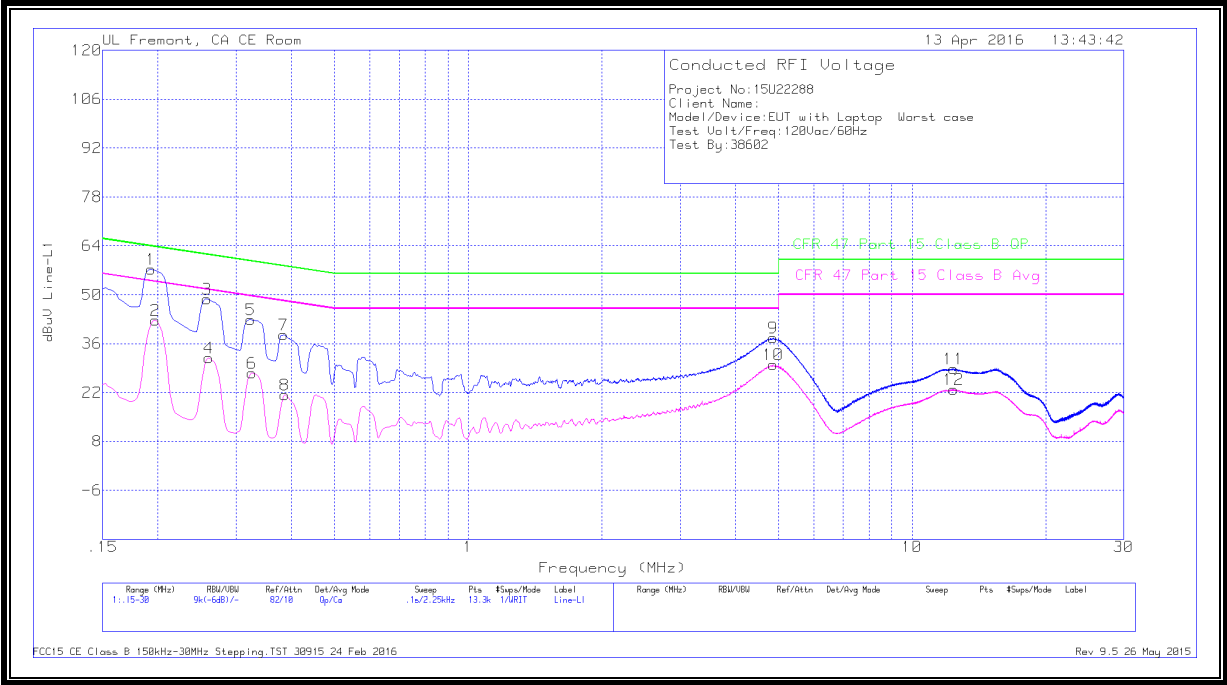
WORST EMISSIONS

Range 2: Line-L2 .15 - 30MHz											
Mark er	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR)Margin (dB)
13	.15225	17.57	Qp	1.5	0	10.1	29.17	65.88	-36.71	-	-
14	.15225	5.85	Ca	1.5	0	10.1	17.45	-	-	55.88	-38.43
15	.23325	12.61	Qp	.8	0	10.1	23.51	62.33	-38.82	-	-
16	.23325	.75	Ca	.8	0	10.1	11.65	-	-	52.33	-40.68
17	.6045	7.8	Qp	.3	0	10.1	18.2	56	-37.8	-	-
18	.591	.83	Ca	.3	0	10.1	11.23	-	-	46	-34.77
19	2.26275	-1.87	Qp	.2	.1	10.1	8.53	56	-47.47	-	-
20	2.2605	-5.27	Ca	.2	.1	10.1	5.13	-	-	46	-40.87
21	11.28075	3.29	Qp	.2	.2	10.2	13.89	60	-46.11	-	-
22	11.28413	-.63	Ca	.2	.2	10.2	9.97	-	-	50	-40.03
23	12.36525	2.7	Qp	.2	.2	10.2	13.3	60	-46.7	-	-
24	12.36413	-1.08	Ca	.2	.2	10.2	9.52	-	-	50	-40.48

Qp - Quasi-Peak detector
Ca - CISPR average detection

9.2.EUT POWERED BY HOST PC VIA USB CABLE

LINE 1 RESULTS

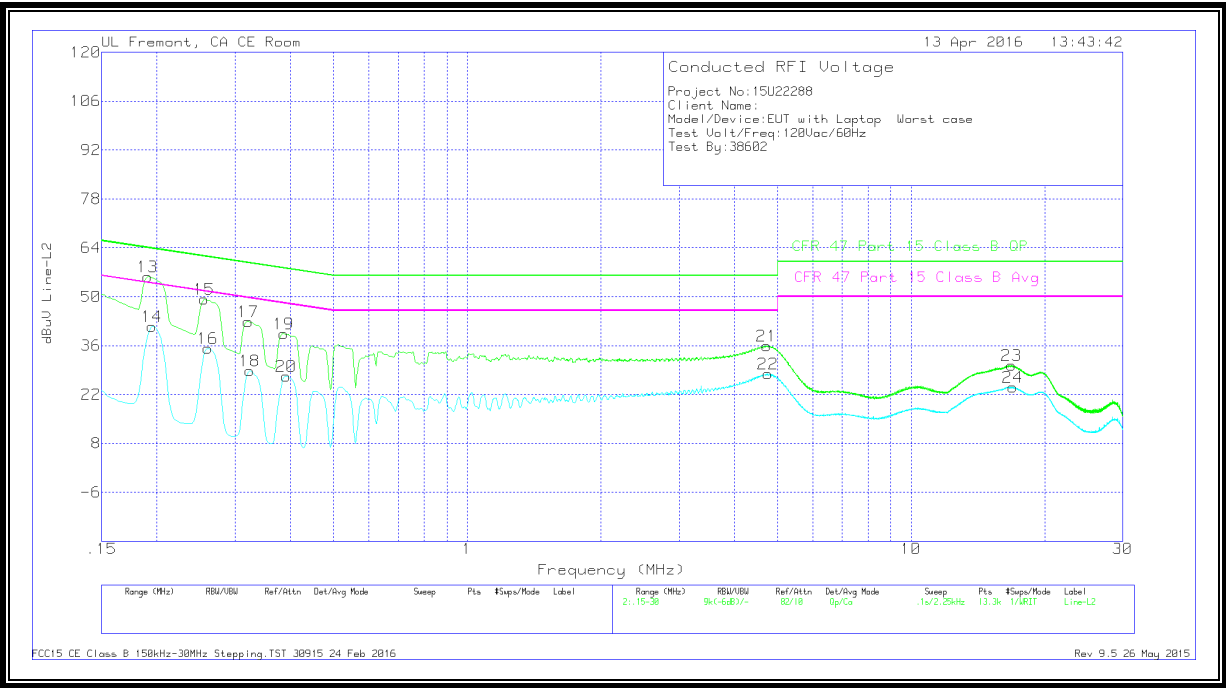


WORST EMISSIONS

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Limiter (dB)	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	.19275	46.14	Qp	1	0	10.1	57.24	63.92	-6.68	-	-
2	.19725	31.59	Ca	1	0	10.1	42.69	-	-	53.73	-11.04
3	.258	38.04	Qp	.7	0	10.1	48.84	61.5	-12.66	-	-
4	.26025	21.07	Ca	.7	0	10.1	31.87	-	-	51.42	-19.55
5	.32325	32.34	Qp	.5	0	10.1	42.94	59.62	-16.68	-	-
6	.3255	16.94	Ca	.5	0	10.1	27.54	-	-	49.57	-22.03
7	.384	28	Qp	.4	0	10.1	38.5	58.19	-19.69	-	-
8	.38625	10.78	Ca	.4	0	10.1	21.28	-	-	48.14	-26.86
9	4.866	27.23	Qp	.2	.1	10.1	37.63	56	-18.37	-	-
10	4.86375	19.58	Ca	.2	.1	10.1	29.98	-	-	46	-16.02
11	12.41475	18.19	Qp	.2	.2	10.2	28.79	60	-31.21	-	-
12	12.41475	12.3	Ca	.2	.2	10.2	22.9	-	-	50	-27.1

Qp - Quasi-Peak detector
Ca - CISPR average detection

LINE 2 RESULTS



WORST EMISSIONS

Range 2: Line-L2 .15 - 30MHz											
Marker	Frequenc y (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR)Margin (dB)
13	.1905	44.57	Qp	1.1	0	10.1	55.77	64.01	-8.24	-	-
14	.195	30.43	Ca	1	0	10.1	41.53	-	-	53.82	-12.29
15	.25575	38.48	Qp	.7	0	10.1	49.28	61.57	-12.29	-	-
16	.26025	24.45	Ca	.7	0	10.1	35.25	-	-	51.42	-16.17
17	.321	32.31	Qp	.5	0	10.1	42.91	59.68	-16.77	-	-
18	.32325	18.14	Ca	.5	0	10.1	28.74	-	-	49.62	-20.88
19	.38625	28.84	Qp	.4	0	10.1	39.34	58.14	-18.8	-	-
20	.39075	16.74	Ca	.4	0	10.1	27.24	-	-	48.05	-20.81
21	4.7265	25.58	Qp	.2	.1	10.1	35.98	56	-20.02	-	-
22	4.75463	17.54	Ca	.2	.1	10.1	27.94	-	-	46	-18.06
23	16.836	19.63	Qp	.3	.2	10.3	30.43	60	-29.57	-	-
24	16.962	13.35	Ca	.3	.2	10.3	24.15	-	-	50	-25.85

Qp - Quasi-Peak detector
Ca - CISPR average detection

10. DYNAMIC FREQUENCY SELECTION

10.1. OVERVIEW

10.1.1. LIMITS

INDUSTRY CANADA

IC RSS-247 is closely harmonized with FCC Part 15 DFS rules. The deviations are as follows:

RSS-247 Issue 1

Note: For the band 5600–5650 MHz, no operation is permitted.

Until further notice, devices subject to this annex shall not be capable of transmitting in the band 5600–5650 MHz. This restriction is for the protection of Environment Canada weather radars operating in this band.

FCC

§15.407 (h), FCC KDB 905462 D02 “COMPLIANCE MEASUREMENT PROCEDURES FOR UNLICENSED-NATIONAL INFORMATION INFRASTRUCTURE DEVICES OPERATING IN THE 5250-5350 MHz AND 5470-5725 MHz BANDS INCORPORATING DYNAMIC FREQUENCY SELECTION” and KDB 905462 D03 “U-NII CLIENT DEVICES WITHOUT RADAR DETECTION CAPABILITY”.

Table 1: Applicability of DFS requirements prior to use of a channel

Requirement	Operational Mode		
	Master	Client (without radar detection)	Client (with radar detection)
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

Table 2: Applicability of DFS requirements during normal operation

Requirement	Operational Mode		
	Master	Client (without DFS)	Client (with DFS)
DFS Detection Threshold	Yes	Not required	Yes
Channel Closing Transmission Time	Yes	Yes	Yes
Channel Move Time	Yes	Yes	Yes
U-NII Detection Bandwidth	Yes	Not required	Yes

Additional requirements for devices with multiple bandwidth modes	Master Device or Client with Radar DFS	Client (without DFS)
<i>U-NII Detection Bandwidth and Statistical Performance Check</i>	All BW modes must be tested	Not required
<i>Channel Move Time and Channel Closing Transmission Time</i>	Test using widest BW mode available	Test using the widest BW mode available for the link
<i>All other tests</i>	Any single BW mode	Not required
Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in all 20 MHz channel blocks and a null frequency between the bonded 20 MHz channel blocks.		

Table 3: Interference Threshold values, Master or Client incorporating In-Service Monitoring

Maximum Transmit Power	Value (see notes)
E.I.R.P. $\geq$ 200 milliwatt	-64 dBm
E.I.R.P. < 200 milliwatt and power spectral density < 10 dBm/MHz	-62 dBm
E.I.R.P. < 200 milliwatt that do not meet power spectral density requirement	-64 dBm
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response. Note 3: E.I.R.P. is based on the highest antenna gain. For MIMO devices refer to KDB publication 662911 D01.	

Table 4: DFS Response requirement values

Parameter	Value
<i>Non-occupancy period</i>	30 minutes
<i>Channel Availability Check Time</i>	60 seconds
<i>Channel Move Time</i>	10 seconds (See Note 1)
<i>Channel Closing Transmission Time</i>	200 milliseconds + approx. 60 milliseconds over remaining 10 second period. (See Notes 1 and 2)
<i>U-NII Detection Bandwidth</i>	Minimum 100% of the U-NII 99% transmission power bandwidth. (See Note 3)
Note 1: <i>Channel Move Time</i> and the <i>Channel Closing Transmission Time</i> should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst. Note 2: The <i>Channel Closing Transmission Time</i> is comprised of 200 milliseconds starting at the beginning of the <i>Channel Move Time</i> plus any additional intermittent control signals required to facilitate a <i>Channel</i> move (an aggregate of 60 milliseconds) during the remainder of the 10-second period. The aggregate duration of control signals will not count quiet periods in between transmissions. Note 3: During the <i>U-NII Detection Bandwidth</i> detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.	

Table 5 – Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (usec)	PRI (usec)	Pulses	Minimum Percentage of Successful Detection	Minimum Trials
0	1	1428	18	See Note 1	See Note 1
1	1	Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in table 5a	Roundup: $\{(1/360) \times (19 \times 10^6 \text{ PRI}_{\text{usec}})\}$	60%	30
		Test B: 15 unique PRI values randomly selected within the range of 518-3066 usec. With a minimum increment of 1 usec, excluding PRI values selected in Test A			
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120
Note 1: Short Pulse Radar Type 0 should be used for the <i>Detection Bandwidth</i> test, <i>Channel Move Time</i> , and <i>Channel Closing Time</i> tests.					

Table 6 – Long Pulse Radar Test Signal

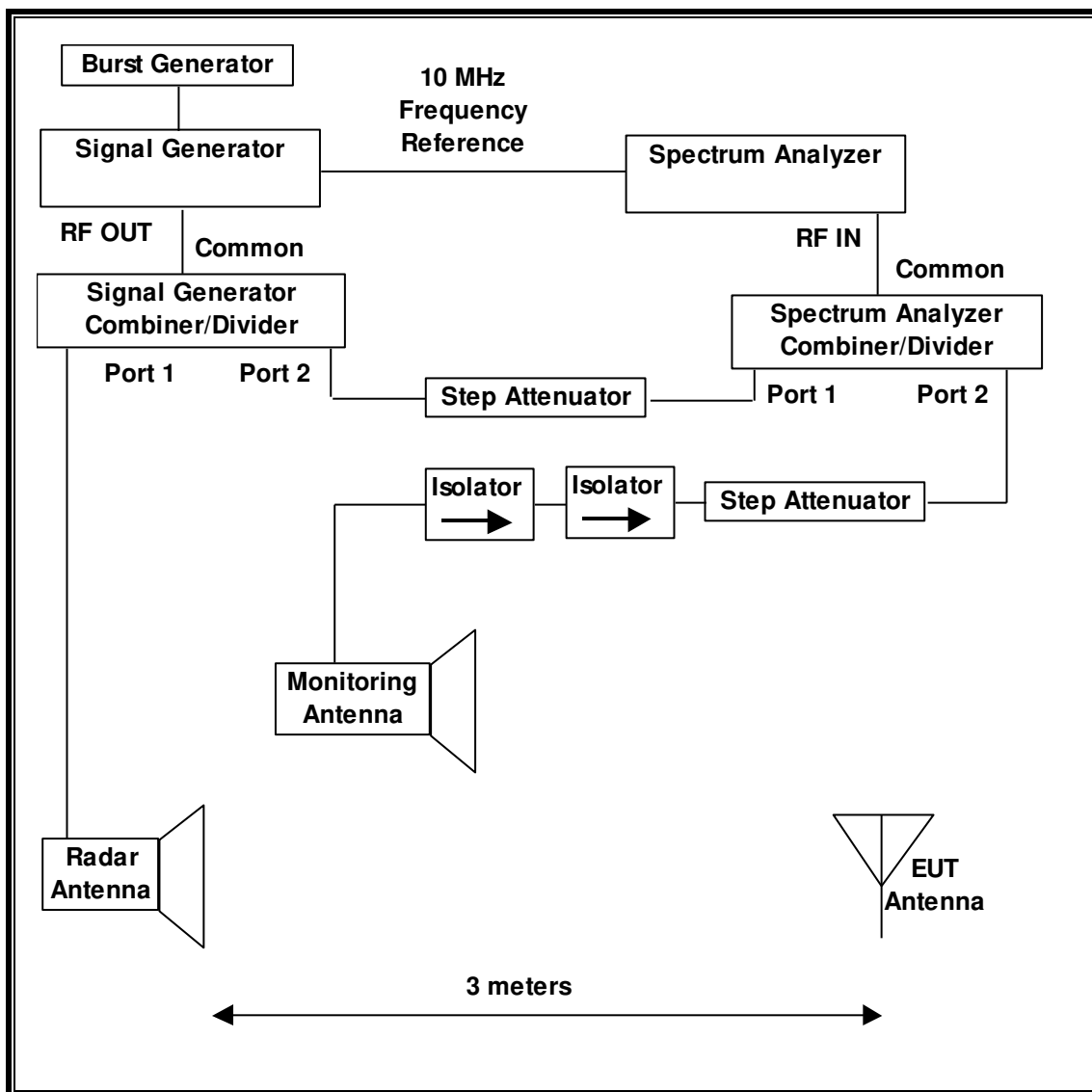
Radar Waveform Type	Pulse Width (μsec)	Chirp Width (MHz)	PRI (μsec)	Pulses per Burst	Number of Bursts	Minimum Percentage of Successful Detection	Minimum Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

Table 7 – Frequency Hopping Radar Test Signal

Radar Waveform Type	Pulse Width (μsec)	PRI (μsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Trials
6	1	333	9	0.333	300	70%	30

10.1.2. TEST AND MEASUREMENT SYSTEM

RADIATED METHOD SYSTEM BLOCK DIAGRAM



SYSTEM OVERVIEW

The short pulse and long pulse signal generating system utilizes the NTIA software. The Vector Signal Generator has been validated by the NTIA. The hopping signal generating system utilizes the CCS simulated hopping method and system, which has been validated by the DoD, FCC and NTIA. The software selects waveform parameters from within the bounds of the signal type on a random basis using uniform distribution.

The short pulse types 2, 3 and 4, and the long pulse type 5 parameters are randomized at run-time.

The hopping type 6 pulse parameters are fixed while the hopping sequence is based on the August 2005 NTIA Hopping Frequency List. The initial starting point randomized at run-time and each subsequent starting point is incremented by 475. Each frequency in the 100-length segment is compared to the boundaries of the EUT Detection Bandwidth and the software creates a hopping burst pattern in accordance with Section 7.4.1.3 Method #2 Simulated Frequency Hopping Radar Waveform Generating Subsystem of KDB 905462 D02. The frequency of the signal generator is incremented in 1 MHz steps from F_L to F_H for each successive trial. This incremental sequence is repeated as required to generate a minimum of 30 total trials and to maintain a uniform frequency distribution over the entire Detection Bandwidth.

The signal monitoring equipment consists of a spectrum analyzer. The aggregate ON time is calculated by multiplying the number of bins above a threshold during a particular observation period by the dwell time per bin, with the analyzer set to peak detection and max hold.

SYSTEM CALIBRATION

A 50-ohm load is connected in place of the spectrum analyzer, and the spectrum analyzer is connected to a horn antenna via a coaxial cable, with the reference level offset set to (horn antenna gain – coaxial cable loss). The signal generator is set to CW mode. The amplitude of the signal generator is adjusted to yield a level of –64 dBm as measured on the spectrum analyzer.

Without changing any of the instrument settings, the spectrum analyzer is reconnected to the Common port of the Spectrum Analyzer Combiner/Divider. The Reference Level Offset of the spectrum analyzer is adjusted so that the displayed amplitude of the signal is –64 dBm.

The spectrum analyzer displays the level of the signal generator as received at the antenna ports of the Master Device. The interference detection threshold may be varied from the calibrated value of –64 dBm and the spectrum analyzer will still indicate the level as received by the Master Device.

ADJUSTMENT OF DISPLAYED TRAFFIC LEVEL

A link is established between the Master and Slave and the distance between the units is adjusted as needed to provide a suitable received level at the Master and Slave devices. The video test file is streamed to generate WLAN traffic. The monitoring antenna is adjusted so that the WLAN traffic level, as displayed on the spectrum analyzer, is at lower amplitude than the radar detection threshold.

TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the DFS tests documented in this report:

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	Asset Number	Cal Due
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight	N9030A	US51350187	06/13/17
Signal Generator, MXG X-Series RF Vector	Agilent	N5182B	MY51350337	03/11/17

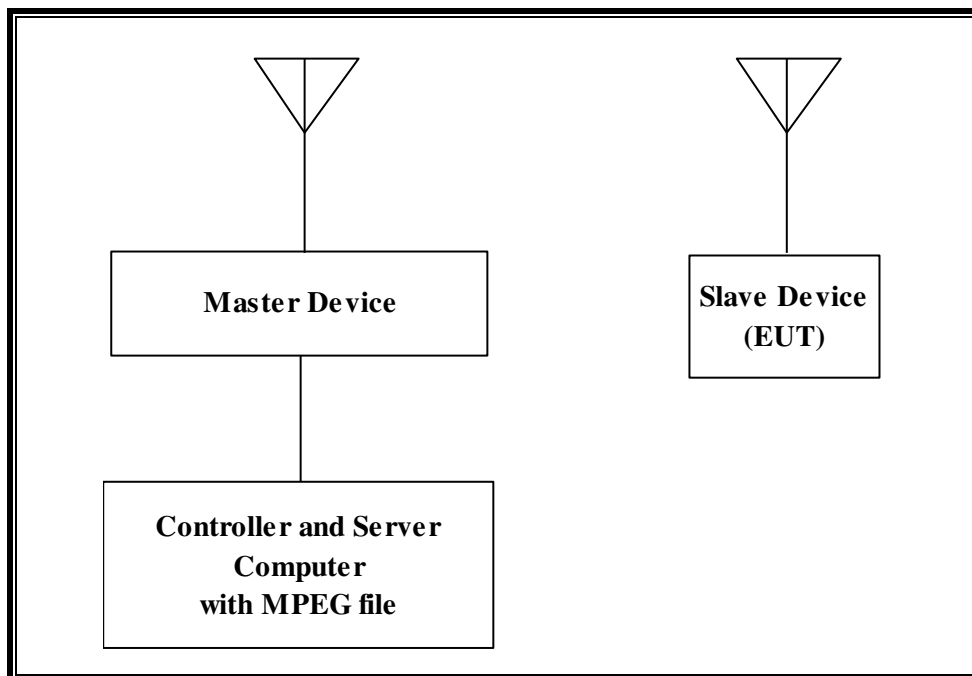
10.1.3. TEST AND MEASUREMENT SOFTWARE

The following test and measurement software was utilized for the tests documented in this report:

TEST SOFTWARE LIST		
Name	Version	Test / Function
Aggregate Time-PXA	2.0.0.6	Channel Loading and Aggregate Closing Time
PXA Read	3.0.0.7	Signal Generator Screen Capture
SGXProject.exe	2	Radar Waveform Generation and Download

10.1.4. SETUP OF EUT (CLIENT MODE)

RADIATED METHOD EUT TEST SETUP



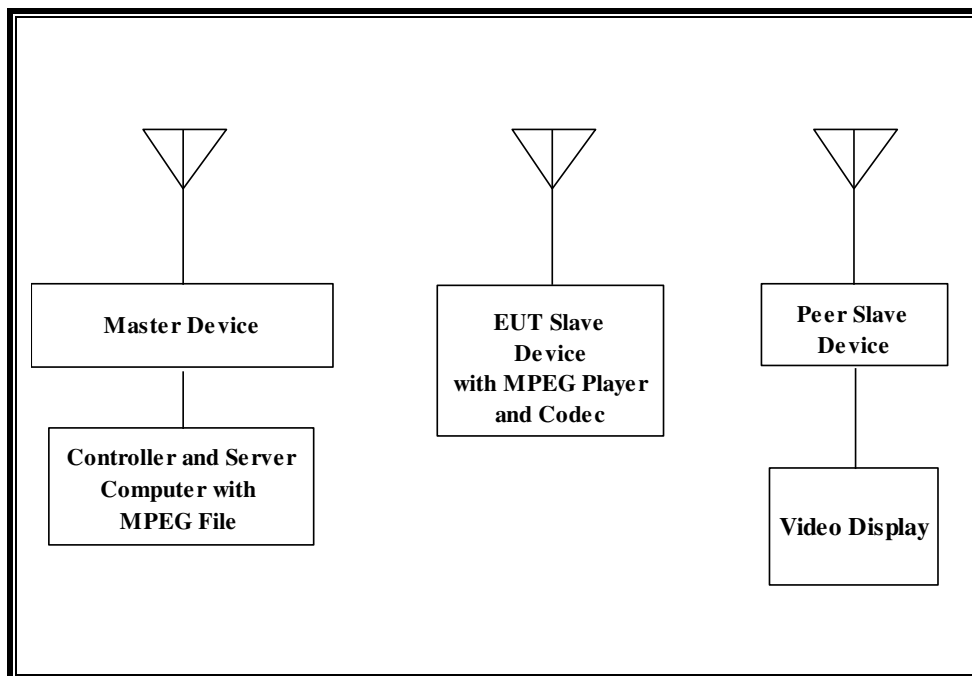
SUPPORT EQUIPMENT

The following support equipment was utilized for the DFS tests documented in this report:

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
3x3 MIMO Base Station (Master Device)	Apple	A1521	C86PJ60JFJ1R	BCGA1521
Notebook PC (Controller/Server)	Apple	A1181	4H629022WLV	DoC
AC Adapter (Controller/Server PC)	Delta Electronics	A1344	MV05104CNAL1A	DoC

10.1.5. SETUP OF EUT (CLIENT-TO-CLIENT COMMUNICATIONS MODE)

RADIATED METHOD EUT TEST SETUP



SUPPORT EQUIPMENT

The following support equipment was utilized for the DFS tests documented in this report:

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
3x3 MIMO Base Station (Master Device)	Apple	A1521	C86PJ60JFJ1R	BCGA1521
Notebook PC (Controller/Server)	Apple	A1181	4H629022WLV	DoC
AC Adapter (Controller/Server PC)	Delta Electronics	A1344	MV05104CNAL1A	DoC
Apple TV (Peer Slave Device)	Apple	A1625	C07PR001GPWK	BCGA1625
Video Display	Polaroid	TLX-01511C	02006	DoC

10.1.6. DESCRIPTION OF EUT

For FCC the EUT operates over the 5250-5350 MHz and 5470-5725 MHz ranges.

For IC the EUT operates over the 5250-5350 MHz and 5470-5725 MHz ranges, excluding the 5600-5650 MHz range.

The EUT is a Slave Device without Radar Detection.

The highest power level within these bands is 15.18 dBm EIRP in the 5250-5350 MHz band and 18.62 dBm EIRP in the 5470-5725 MHz band.

The only antenna assembly utilized with the EUT has a gain of -5 and -4.6 dBi in the 5250-5350 MHz band and -3.6 and -3.1 dBi in the 5470-5725 MHz band.

The rated output power of the Master unit is > 23dBm (EIRP). Therefore the required interference threshold level is -64 dBm. After correction for procedural adjustments, the required radiated threshold at the antenna port is $-64 + 1 = -63$ dBm.

The calibrated radiated DFS Detection Threshold level is set to -64 dBm. The tested level is lower than the required level hence it provides a margin to the limit.

The EUT uses two transmitter/receiver chains connected to an antenna to perform radiated tests.

In standard client mode WLAN traffic that meets or exceeds the minimum required loading was generated by streaming the compressed version of the video test file "6 ½ Magic Hours" from the Master to the Slave

In client to client mode WLAN traffic is generated by streaming the compressed version of the video test file "6 ½ Magic Hours" from the Master to the Slave and then on to the peer slave device in full motion video mode using QuickTime media player and embedded proprietary AirPlay software.

TPC is not required since the maximum EIRP is less than 500 mW (27 dBm).

The EUT utilizes the 802.11ac architecture. Three nominal channel bandwidths are implemented: 20 MHz, 40 MHz and 80 MHz.

The software installed in the EUT is 14A200.

The software installed in the access point is 7.7.2d0 dev.

UNIFORM CHANNEL SPREADING

This function is not applicable Slave Devices.

OVERVIEW OF MASTER DEVICE WITH RESPECT TO §15.407 (h) REQUIREMENTS

The Master Device is an Apple, Inc. Access Point, FCC ID: BCGA1521. The minimum antenna gain for the Master Device is 1.4 dBi.

The rated output power of the Master unit is $> 23\text{dBm}$ (EIRP). Therefore the required interference threshold level is -64 dBm . After correction for procedural adjustments, the required radiated threshold at the antenna port is $-64 + 1 = -63\text{ dBm}$.

The calibrated radiated DFS Detection Threshold level is set to -64 dBm . The tested level is lower than the required level hence it provides a margin to the limit.

The software installed in the access point is 7.7.2d0 dev.

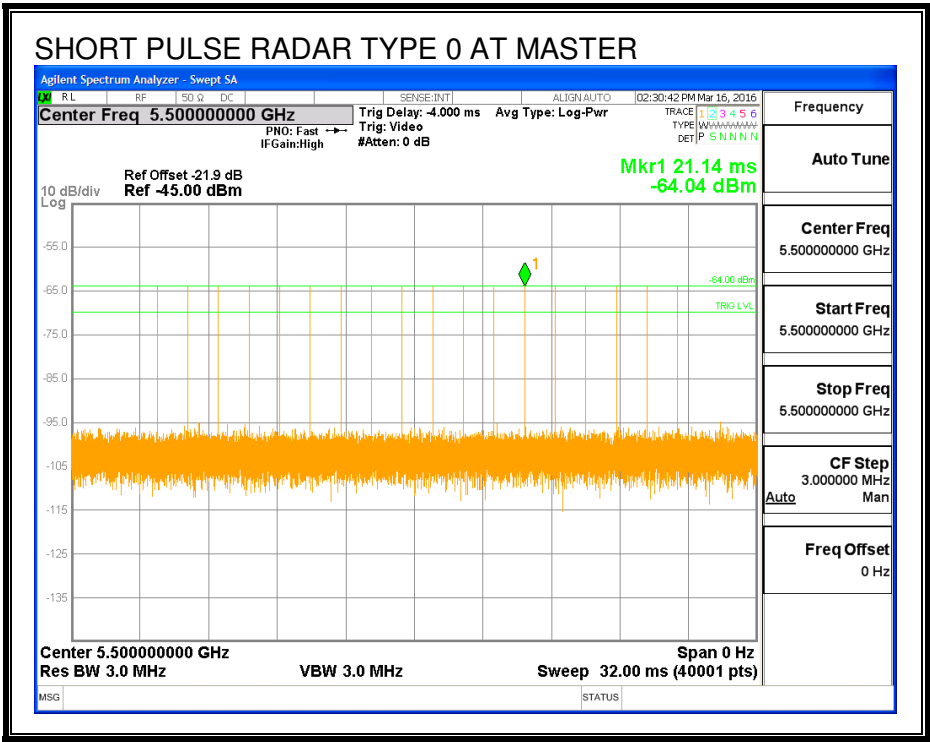
10.2. CLIENT MODE RESULTS FOR 20 MHz BANDWIDTH

10.2.1. TEST CHANNEL

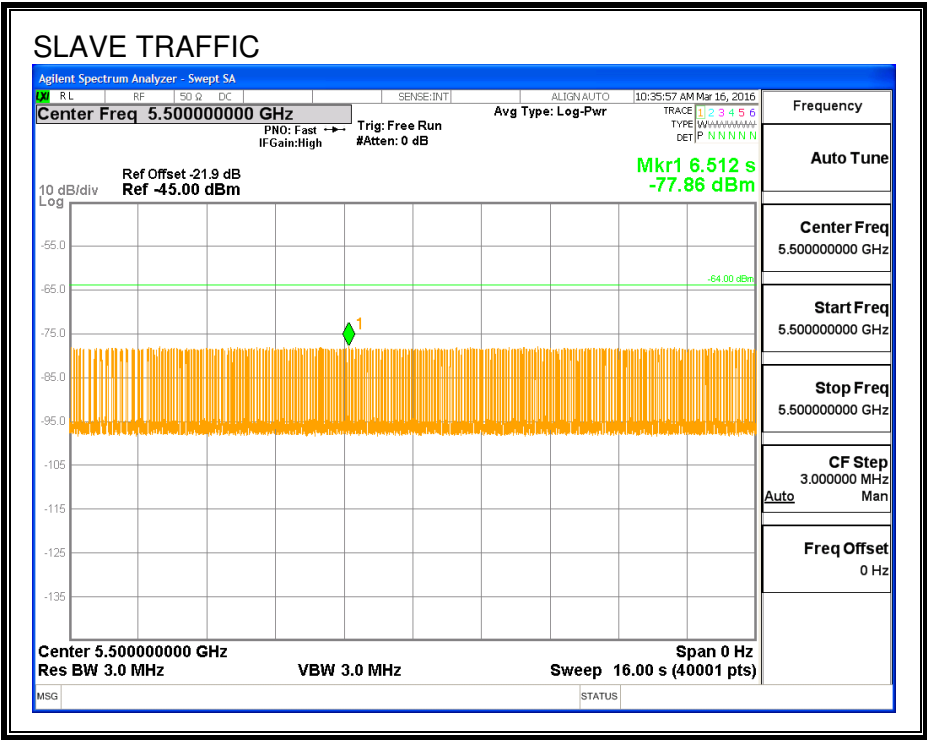
All tests were performed at a channel center frequency of 5500 MHz.

10.2.2. RADAR WAVEFORM AND TRAFFIC

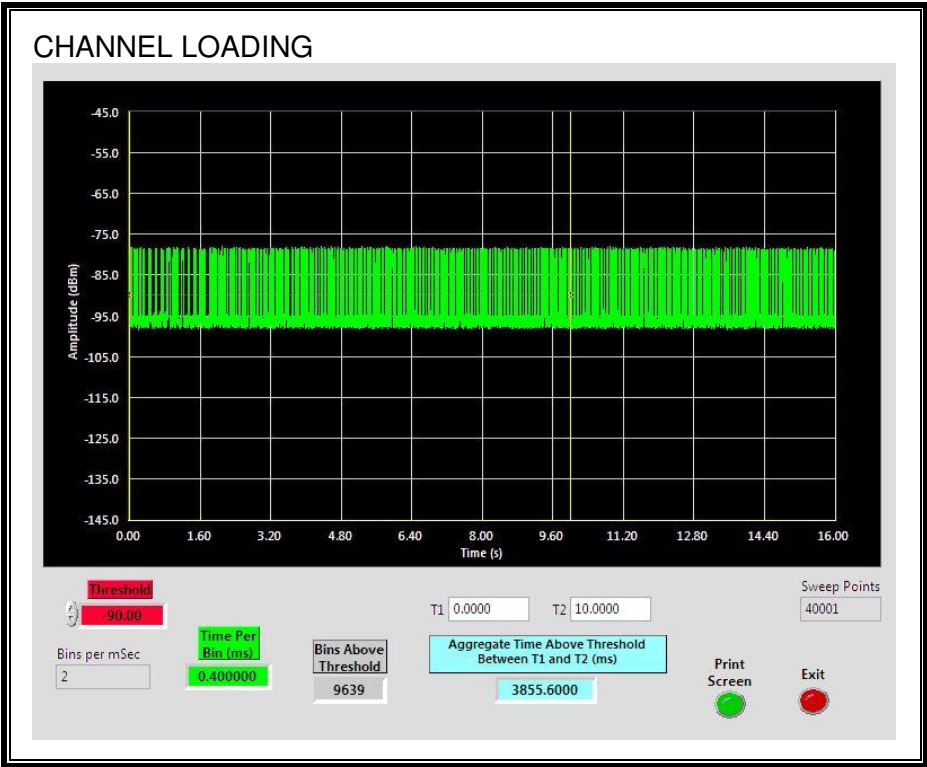
RADAR WAVEFORM



TRAFFIC



CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 38.55%

10.2.3. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

10.2.4. MOVE AND CLOSING TIME

REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time =
(Number of analyzer bins showing transmission) * (dwell time per bin)

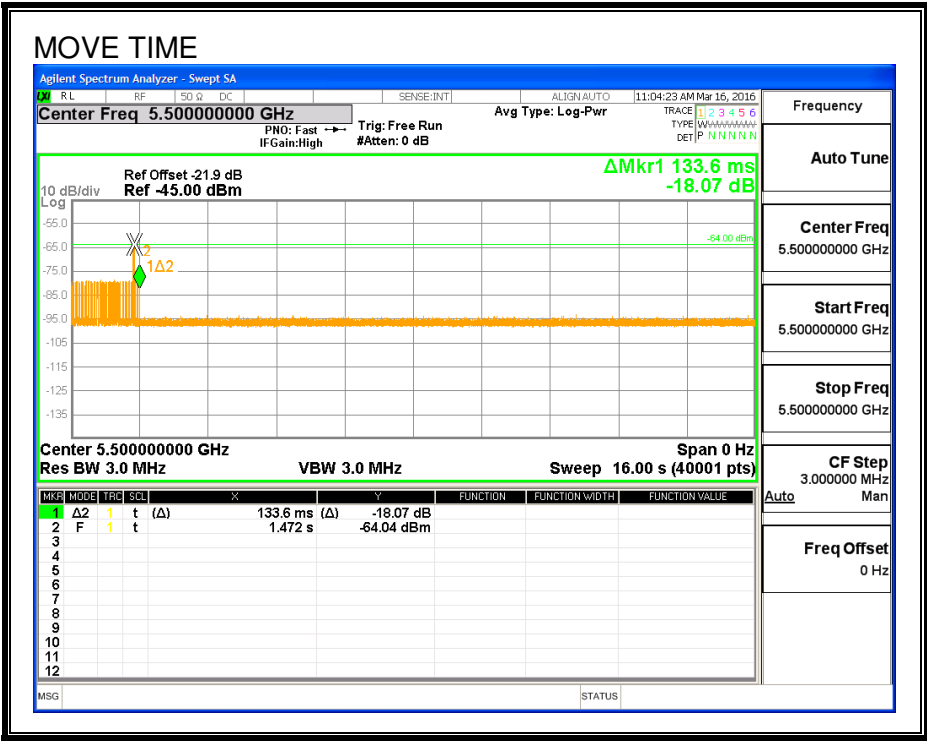
The observation period over which the aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

RESULTS

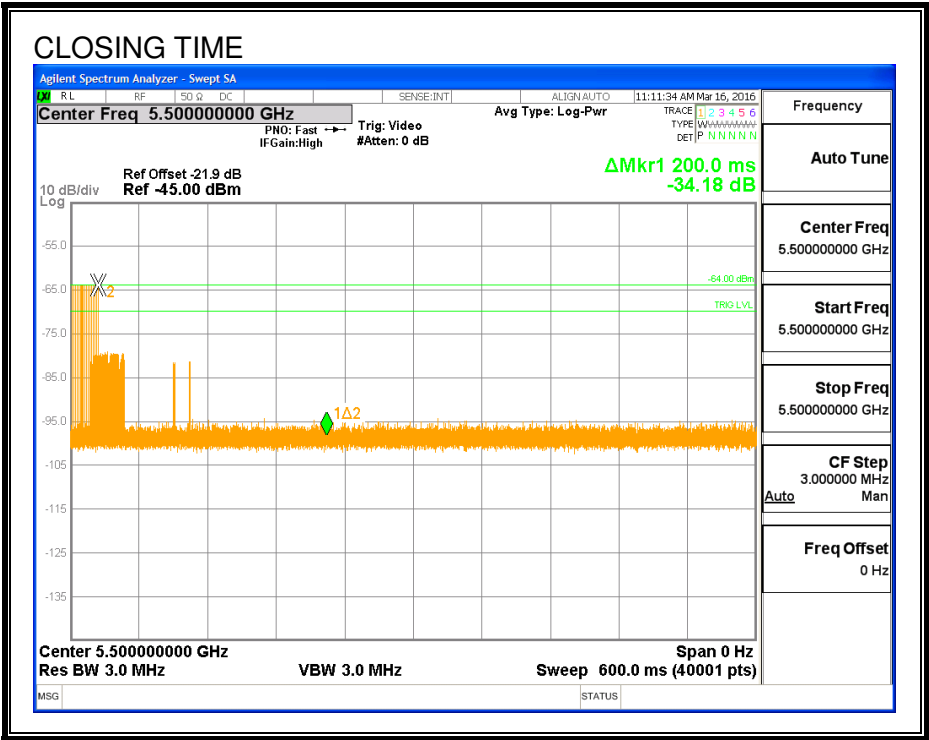
Channel Move Time (sec)	Limit (sec)
0.1336	10

Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
0.0	60

MOVE TIME



CHANNEL CLOSING TIME



AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the aggregate monitoring period.



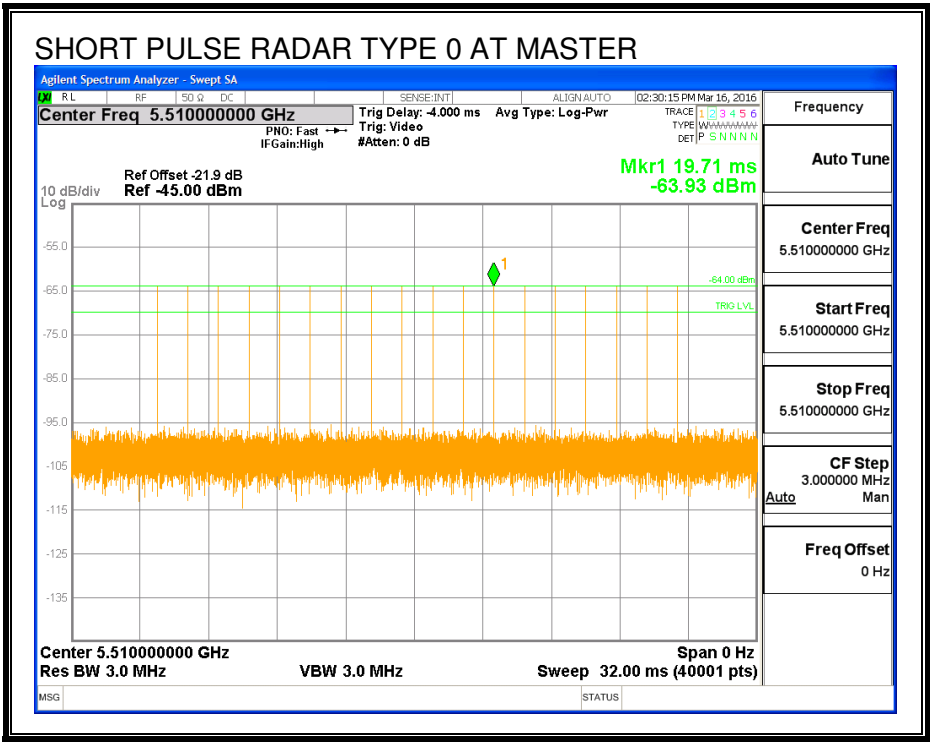
10.3. CLIENT MODE RESULTS FOR 40 MHz BANDWIDTH

10.3.1. TEST CHANNEL

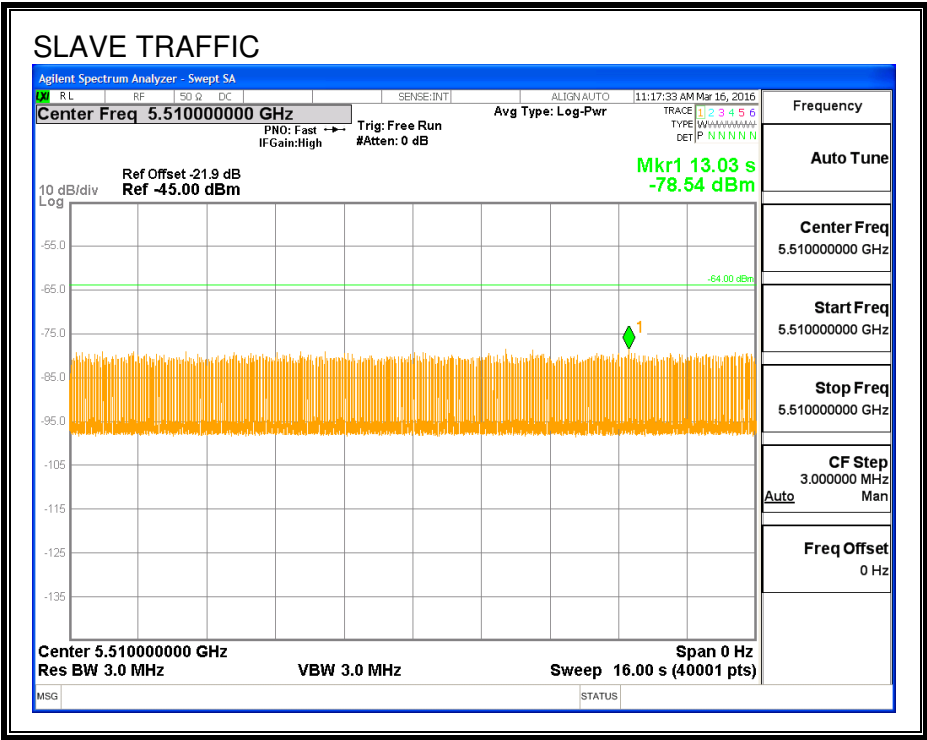
All tests were performed at a channel center frequency of 5510 MHz.

10.3.2. RADAR WAVEFORM AND TRAFFIC

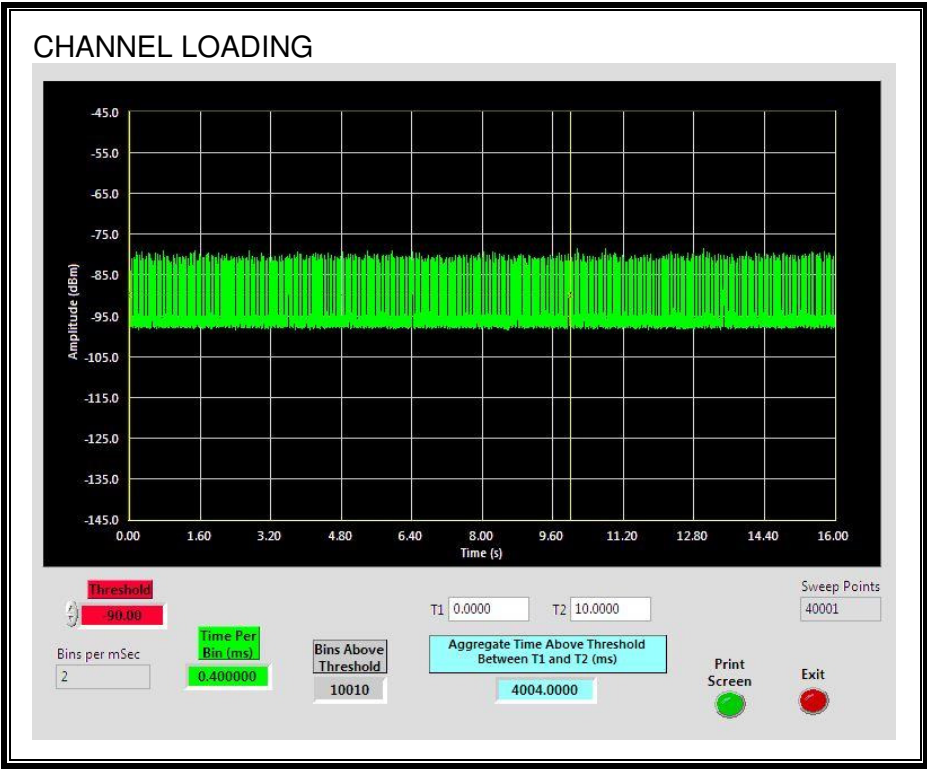
RADAR WAVEFORM



TRAFFIC



CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 40.04%

10.3.3. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

10.3.4. MOVE AND CLOSING TIME

REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time =
(Number of analyzer bins showing transmission) * (dwell time per bin)

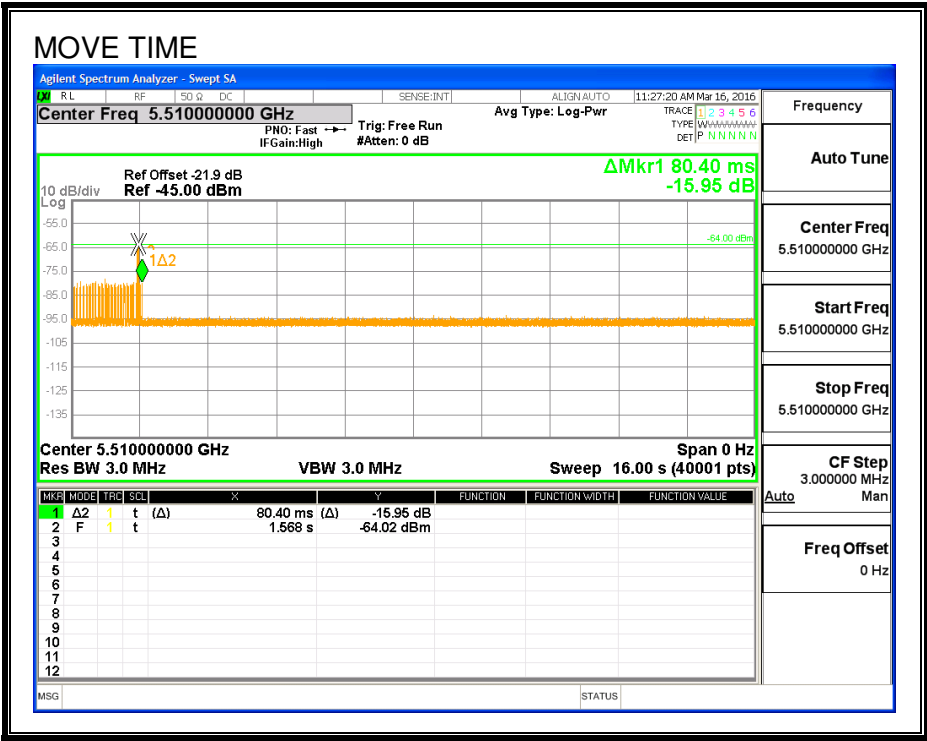
The observation period over which the aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

RESULTS

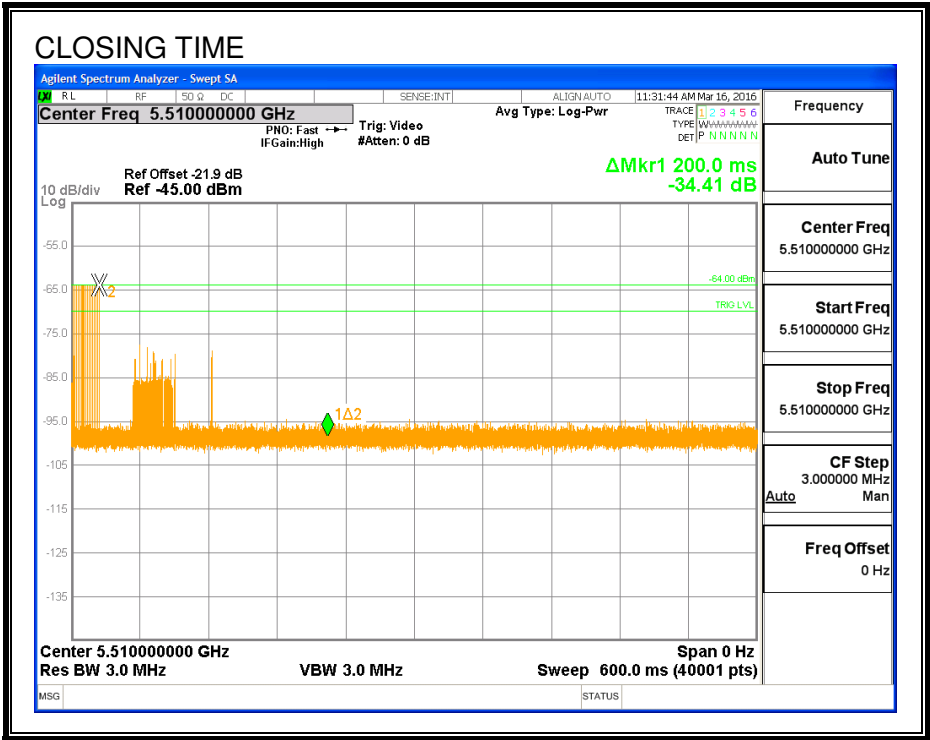
Channel Move Time (sec)	Limit (sec)
0.0804	10

Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
0.0	60

MOVE TIME



CHANNEL CLOSING TIME



AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

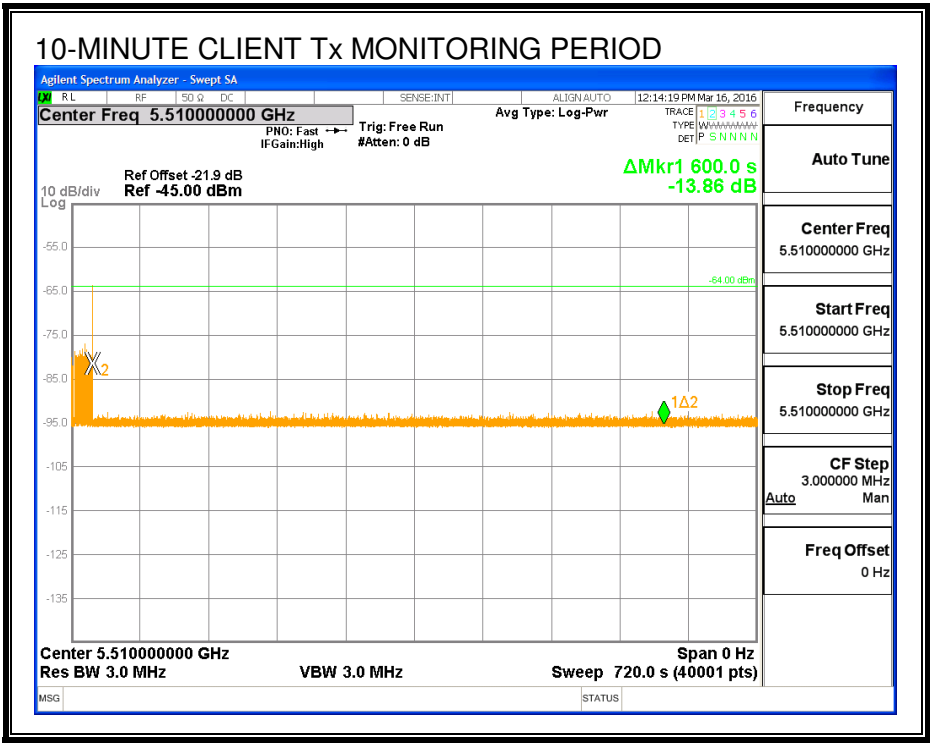
No transmissions are observed during the aggregate monitoring period.



10.3.1. 10-MINUTE CLIENT Tx MONITORING PERIOD

RESULTS

No EUT transmissions were observed on the test channel during the 10-minute observation time.



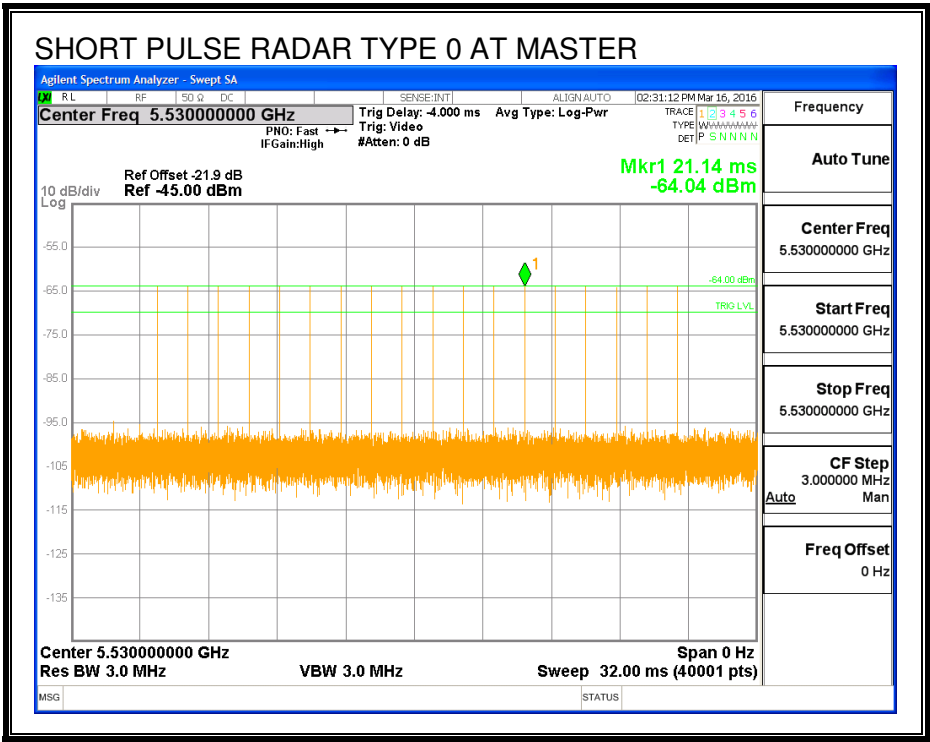
10.4. CLIENT MODE RESULTS FOR 80 MHz BANDWIDTH

10.4.1. TEST CHANNEL

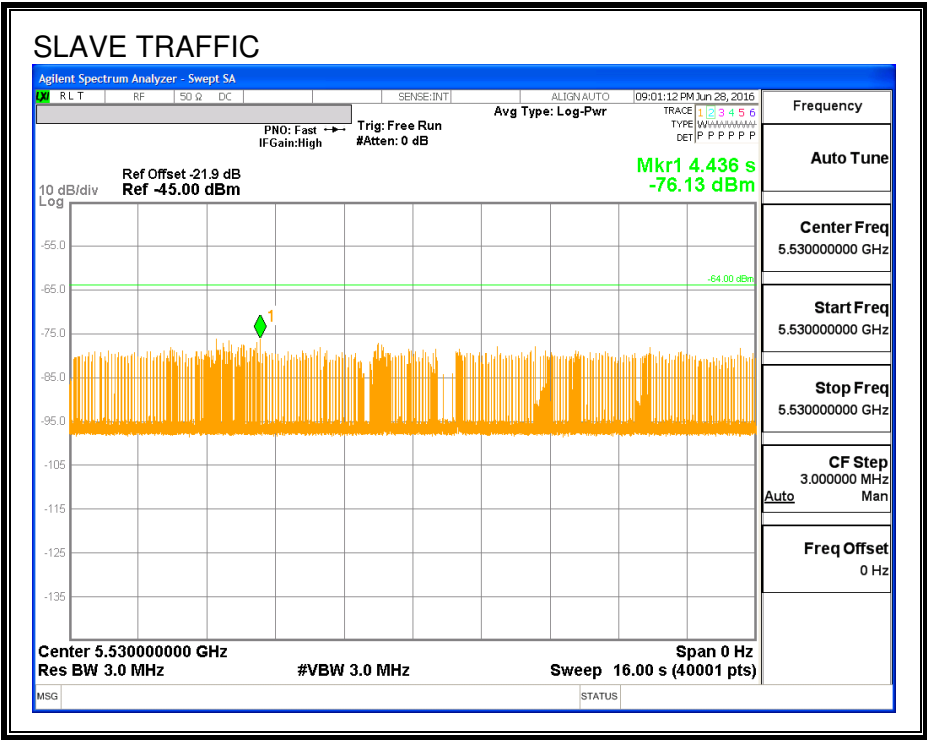
All tests were performed at a channel center frequency of 5530 MHz.

10.4.2. RADAR WAVEFORM AND TRAFFIC

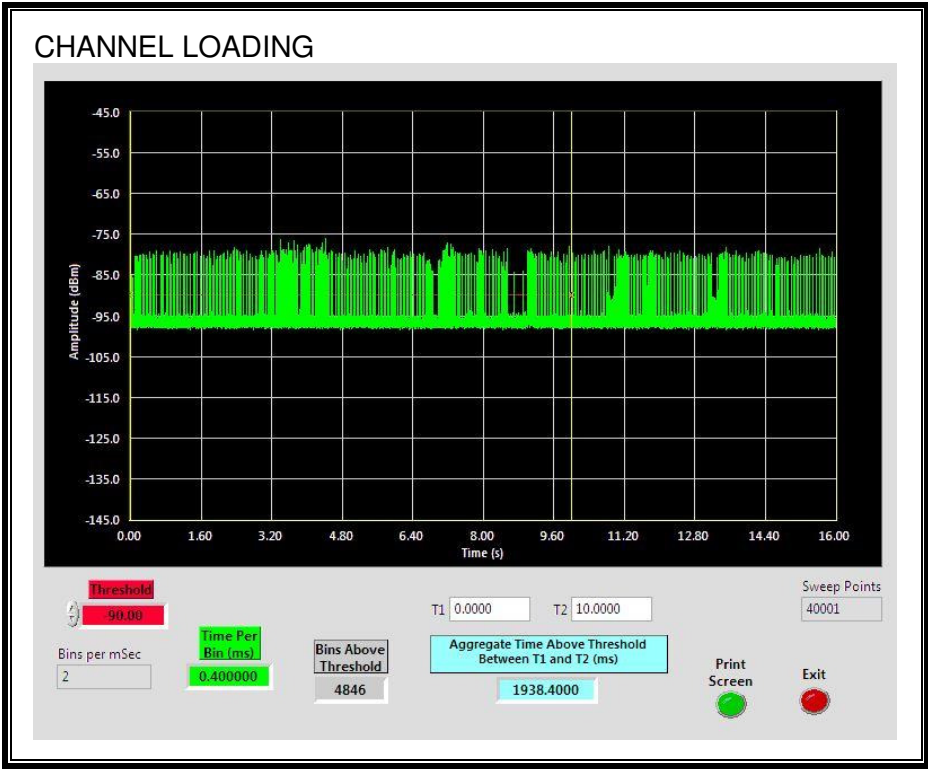
RADAR WAVEFORM



TRAFFIC



CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 19.384%

10.4.3. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

10.4.4. MOVE AND CLOSING TIME

REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time =
(Number of analyzer bins showing transmission) * (dwell time per bin)

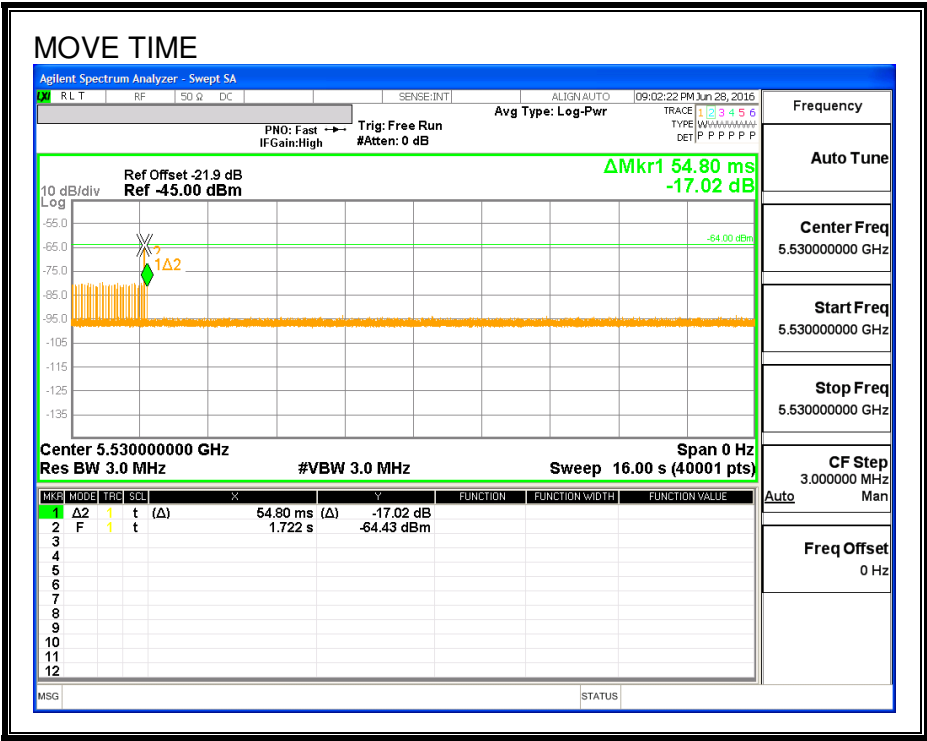
The observation period over which the aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

RESULTS

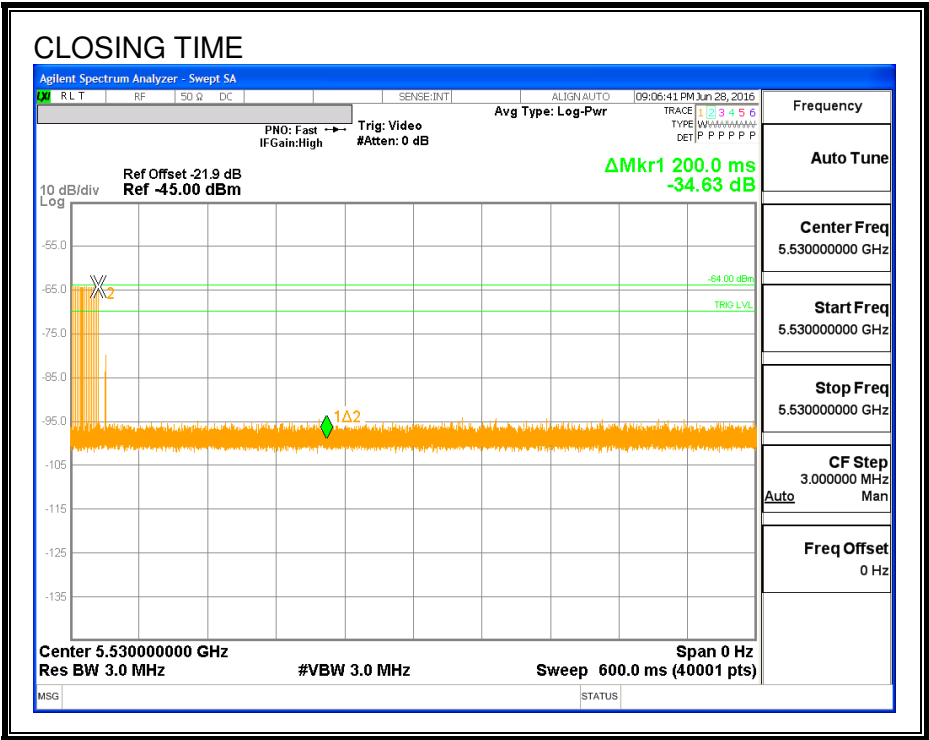
Channel Move Time (sec)	Limit (sec)
0.055	10

Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
0.0	60

MOVE TIME



CHANNEL CLOSING TIME



AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

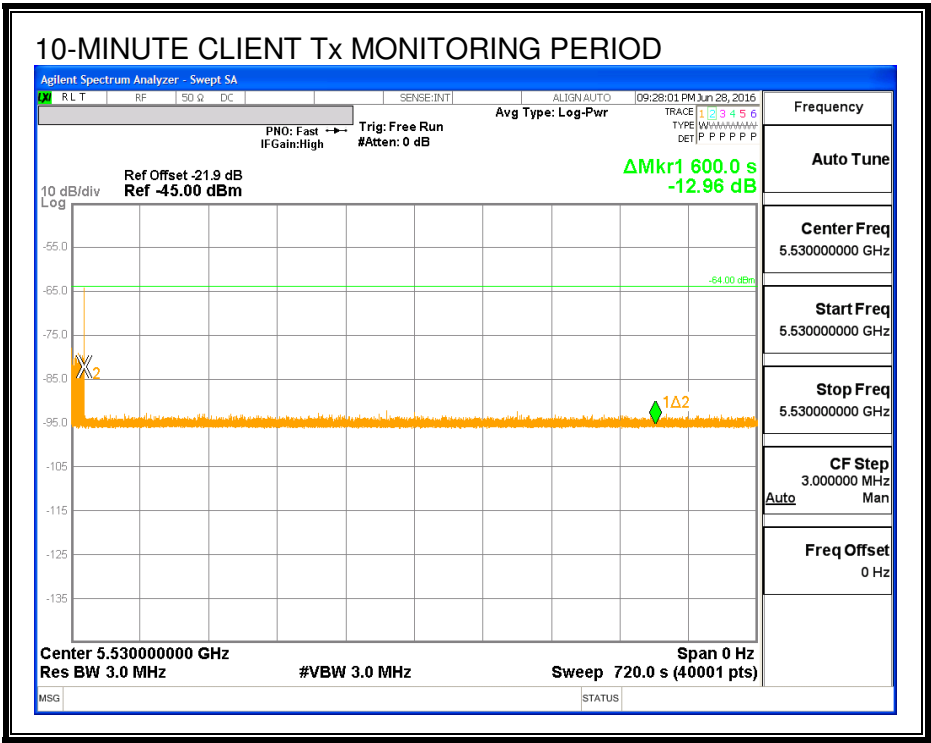
No transmissions are observed during the aggregate monitoring period.



10.4.5. 10-MINUTE CLIENT Tx MONITORING PERIOD

RESULTS

No EUT transmissions were observed on the test channel during the 10-minute observation time.



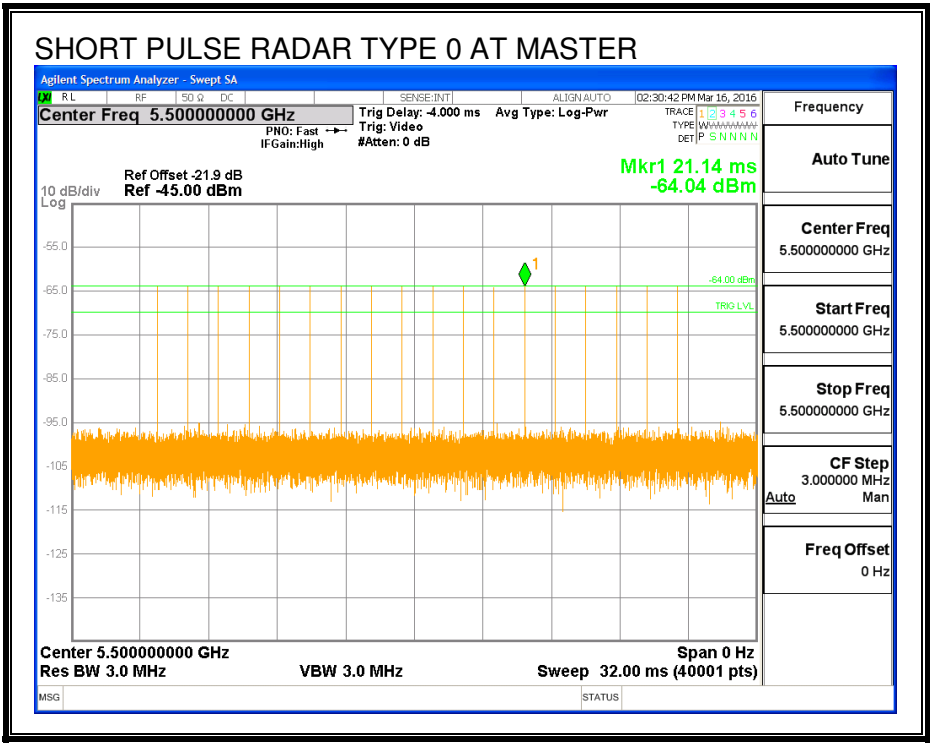
10.5. CLIENT-TO-CLIENT COMMUNICATIONS MODE RESULTS FOR 20 MHz BANDWIDTH

10.5.1. TEST CHANNEL

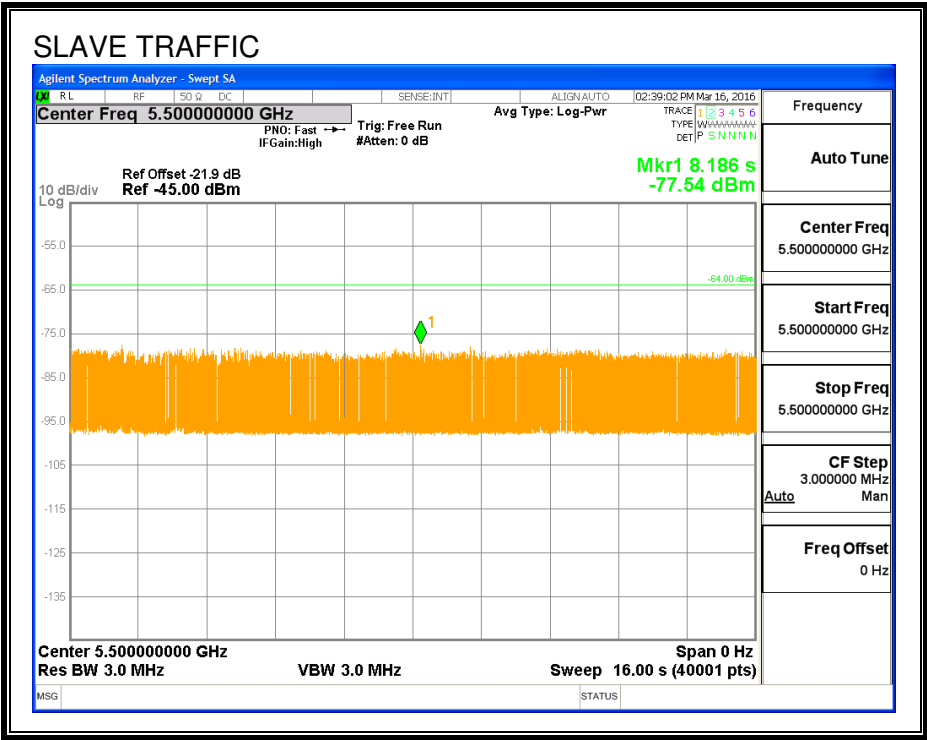
All tests were performed at a channel center frequency of 5500 MHz.

10.5.2. RADAR WAVEFORM AND TRAFFIC

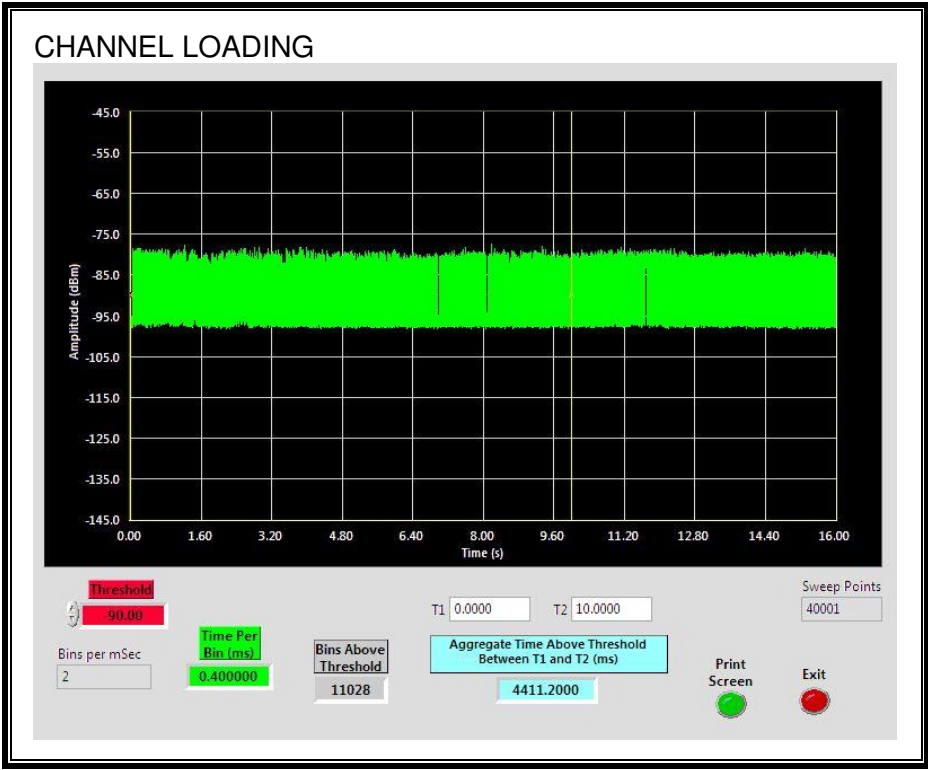
RADAR WAVEFORM



TRAFFIC



CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 44.11%

10.5.3. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

10.5.4. MOVE AND CLOSING TIME

REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time =
(Number of analyzer bins showing transmission) * (dwell time per bin)

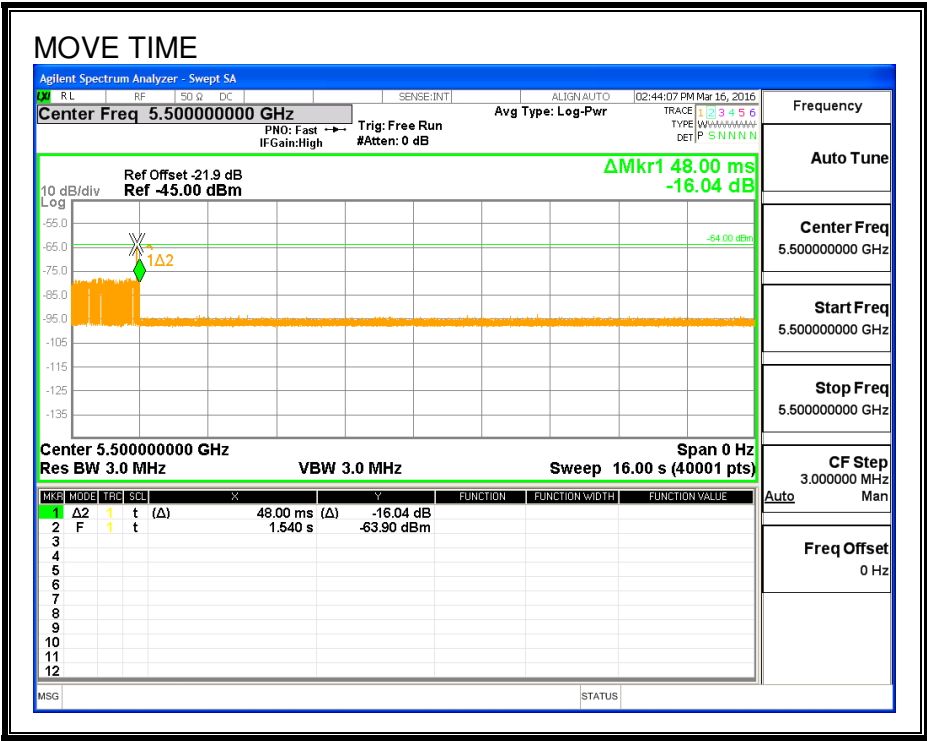
The observation period over which the aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

RESULTS

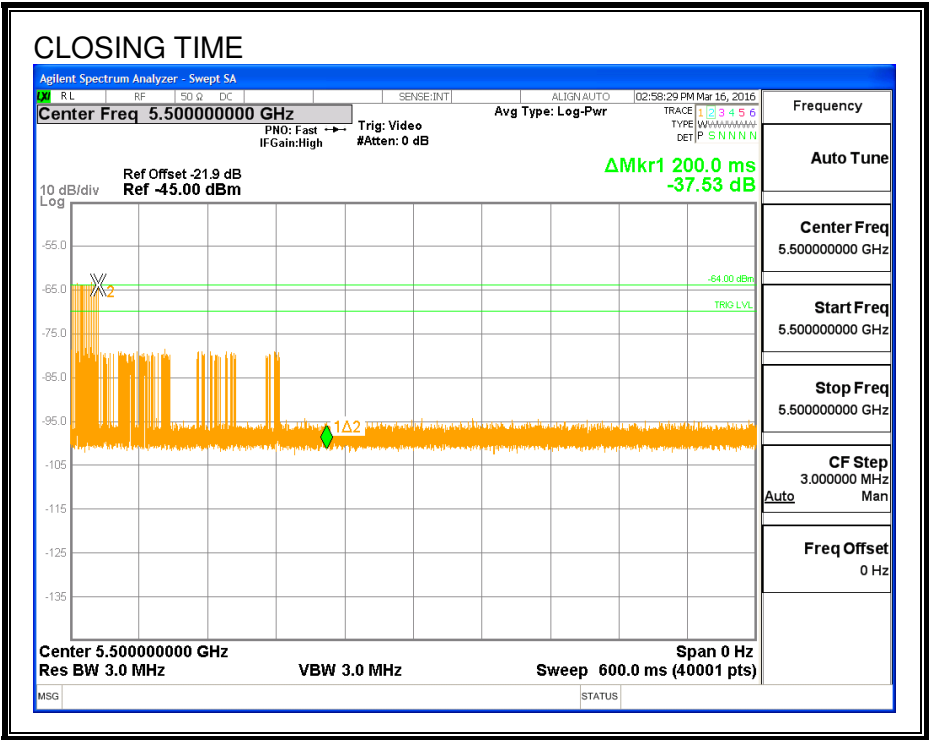
Channel Move Time (sec)	Limit (sec)
0.048	10

Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
0.0	60

MOVE TIME



CHANNEL CLOSING TIME



AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the aggregate monitoring period.



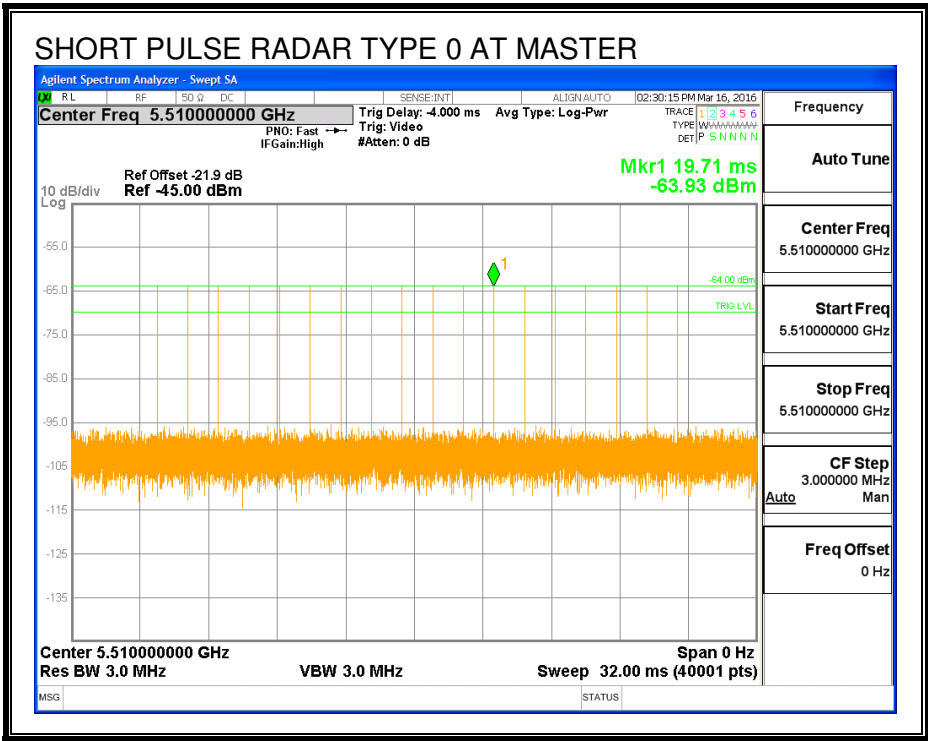
10.6. CLIENT-TO-CLIENT COMMUNICATIONS MODE RESULTS FOR 40 MHz BANDWIDTH

10.6.1. TEST CHANNEL

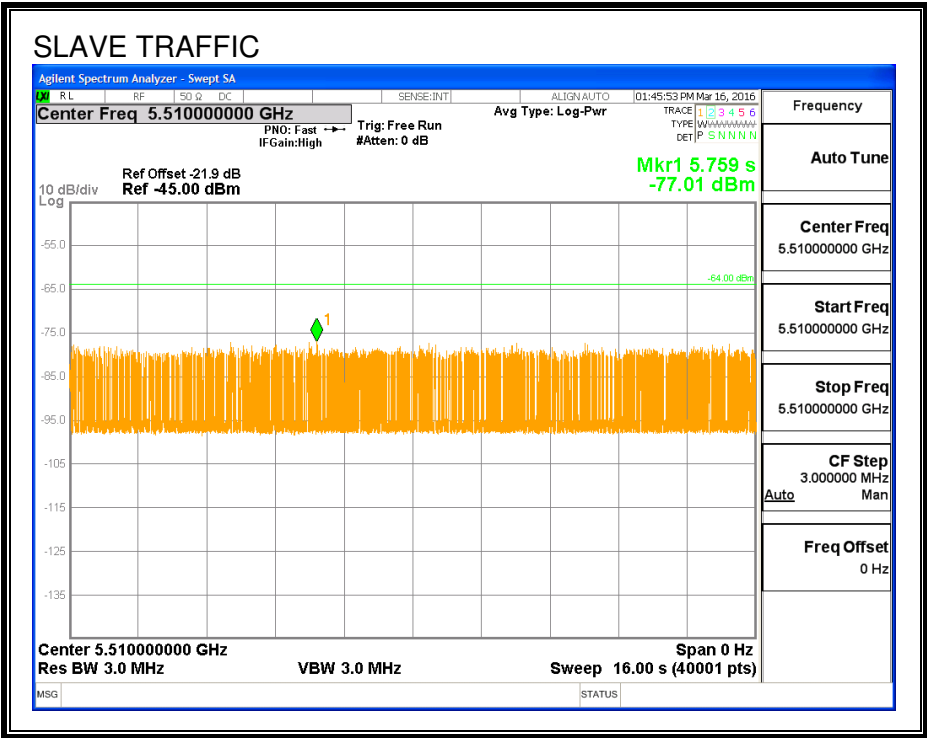
All tests were performed at a channel center frequency of 5510 MHz.

10.6.2. RADAR WAVEFORM AND TRAFFIC

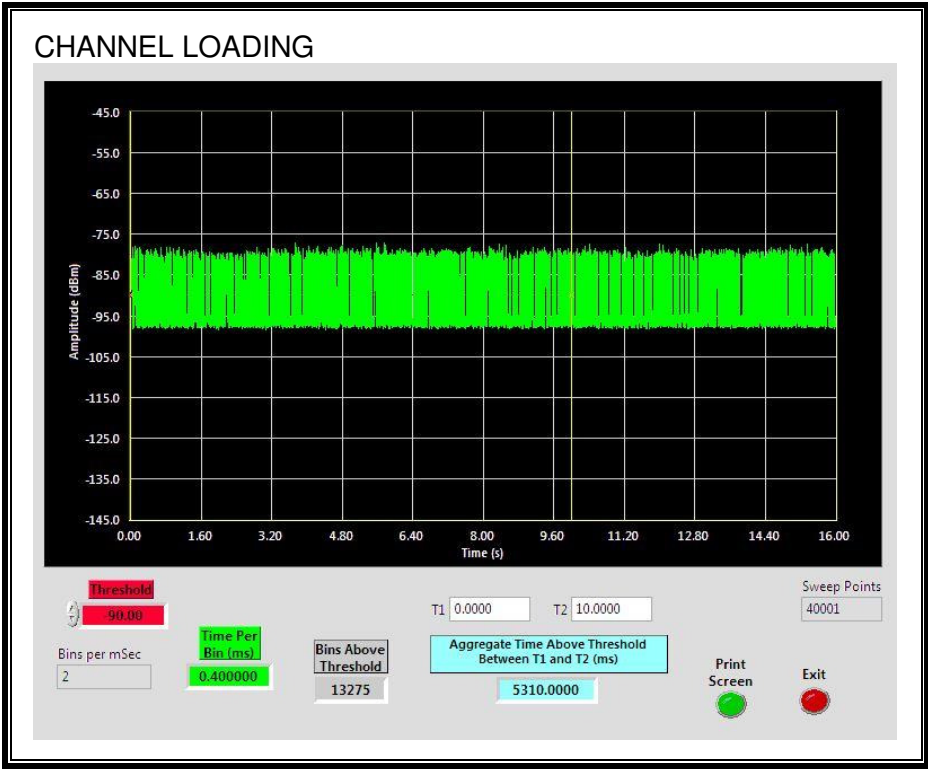
RADAR WAVEFORM



TRAFFIC



CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 53.1%

10.6.3. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

10.6.4. MOVE AND CLOSING TIME

REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time =
(Number of analyzer bins showing transmission) * (dwell time per bin)

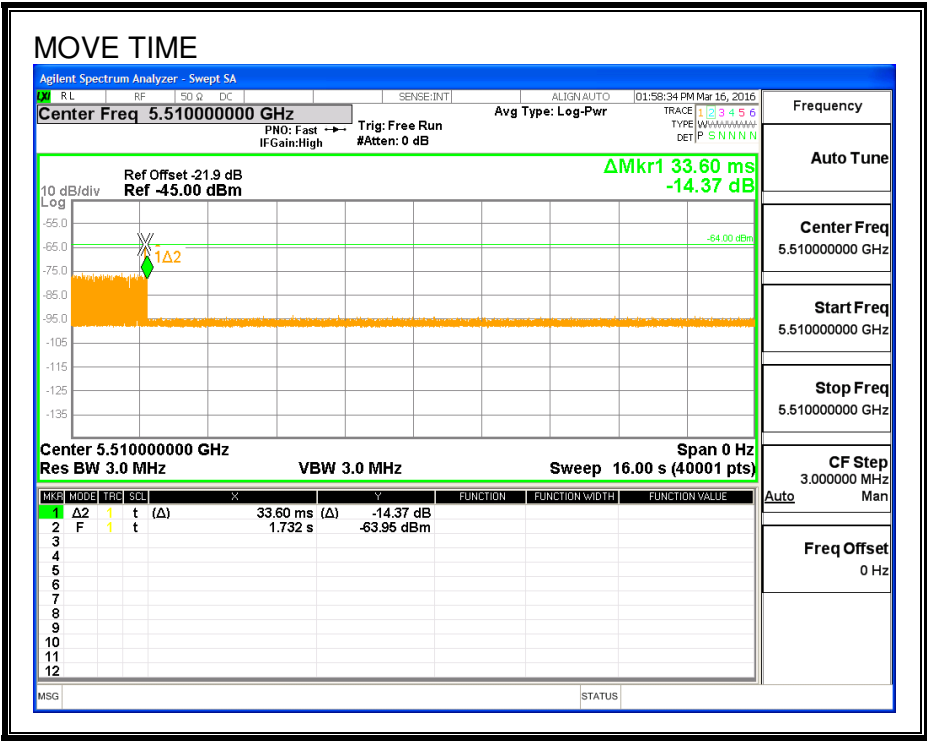
The observation period over which the aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

RESULTS

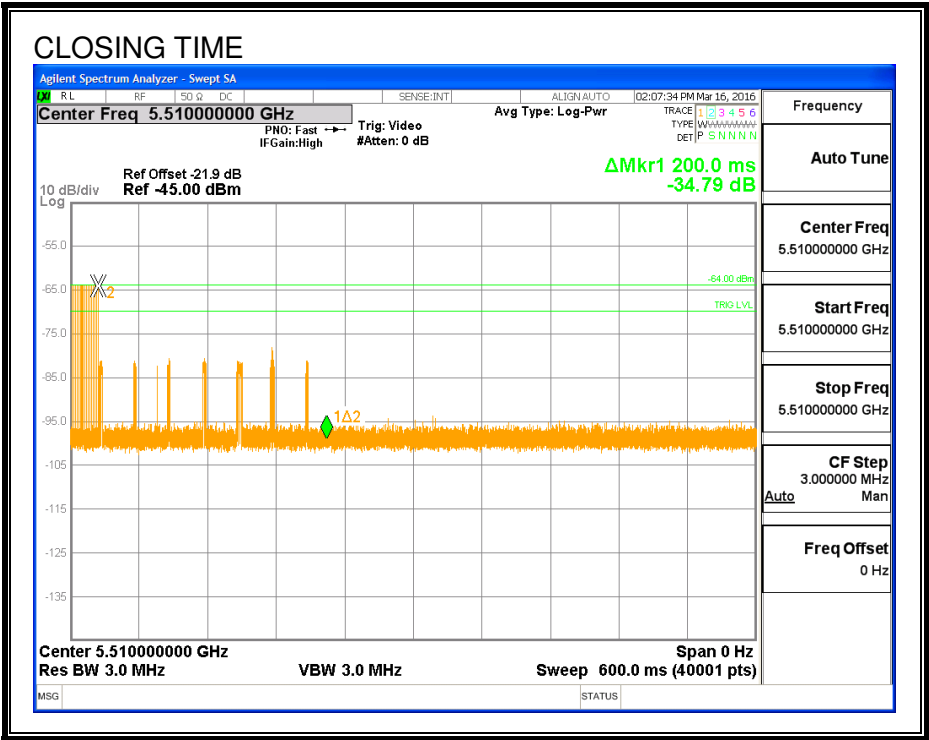
Channel Move Time (sec)	Limit (sec)
0.0336	10

Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
0.0	60

MOVE TIME



CHANNEL CLOSING TIME



AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

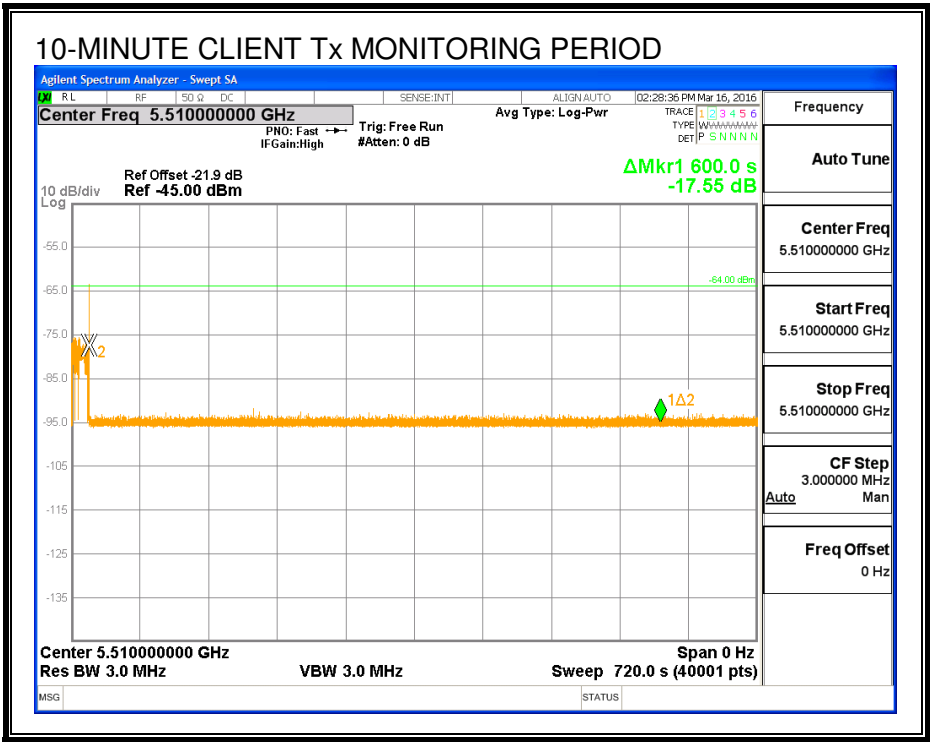
No transmissions are observed during the aggregate monitoring period.



10.6.5. 10-MINUTE CLIENT Tx MONITORING PERIOD

RESULTS

No EUT transmissions were observed on the test channel during the 10-minute observation time.



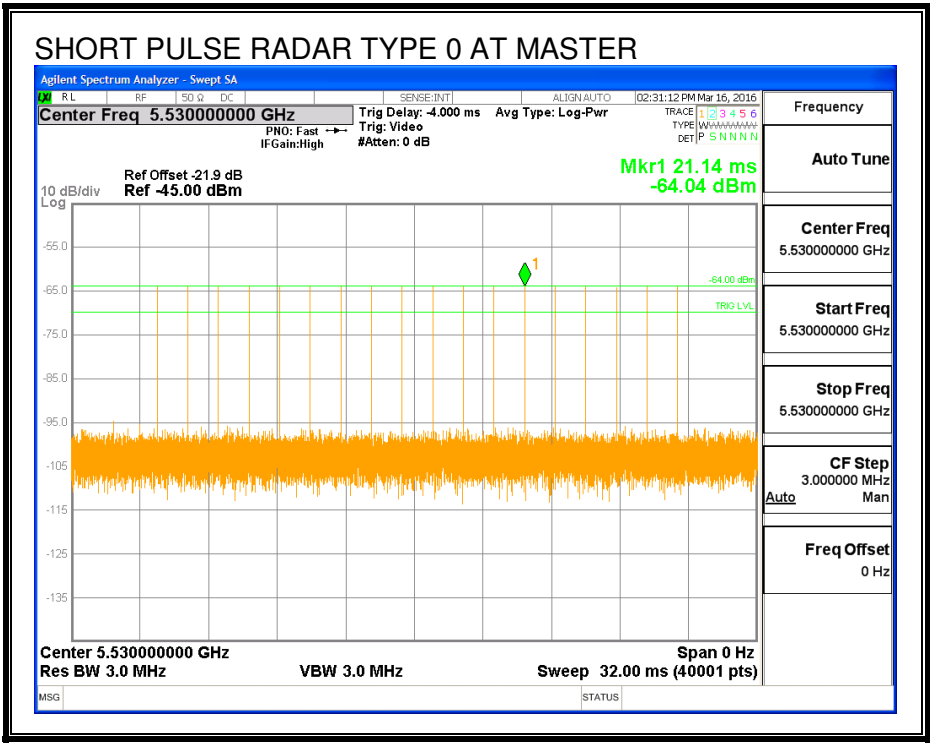
10.7. CLIENT-TO-CLIENT COMMUNICATIONS MODE RESULTS FOR 80 MHz BANDWIDTH

10.7.1. TEST CHANNEL

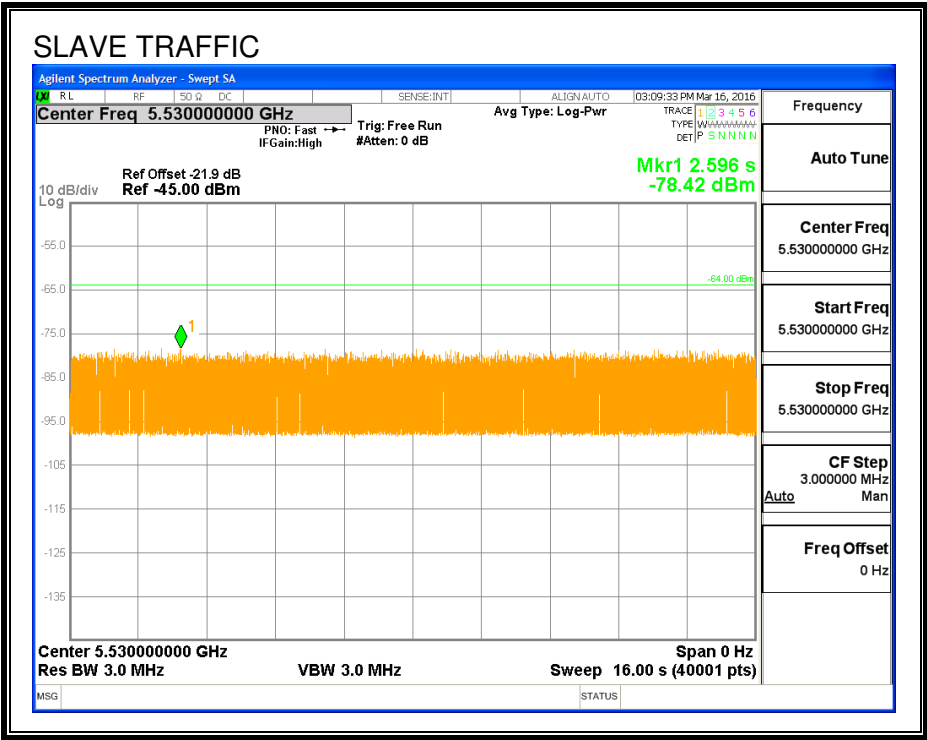
All tests were performed at a channel center frequency of 5530 MHz.

10.7.2. RADAR WAVEFORM AND TRAFFIC

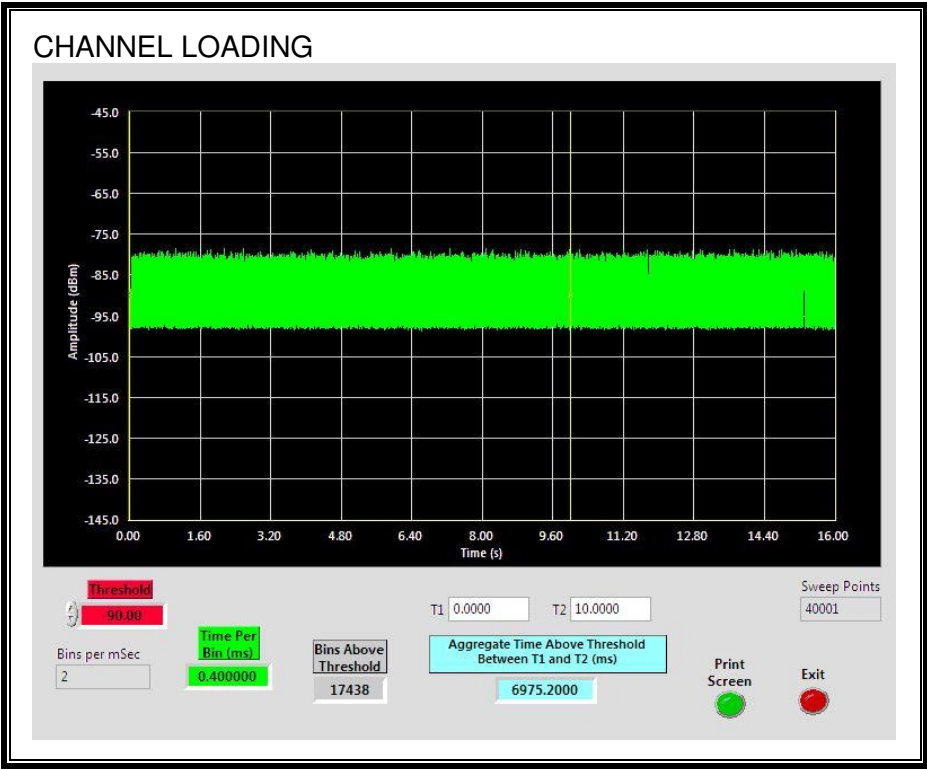
RADAR WAVEFORM



TRAFFIC



CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 69.75%

10.7.3. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

10.7.4. MOVE AND CLOSING TIME

REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time =
(Number of analyzer bins showing transmission) * (dwell time per bin)

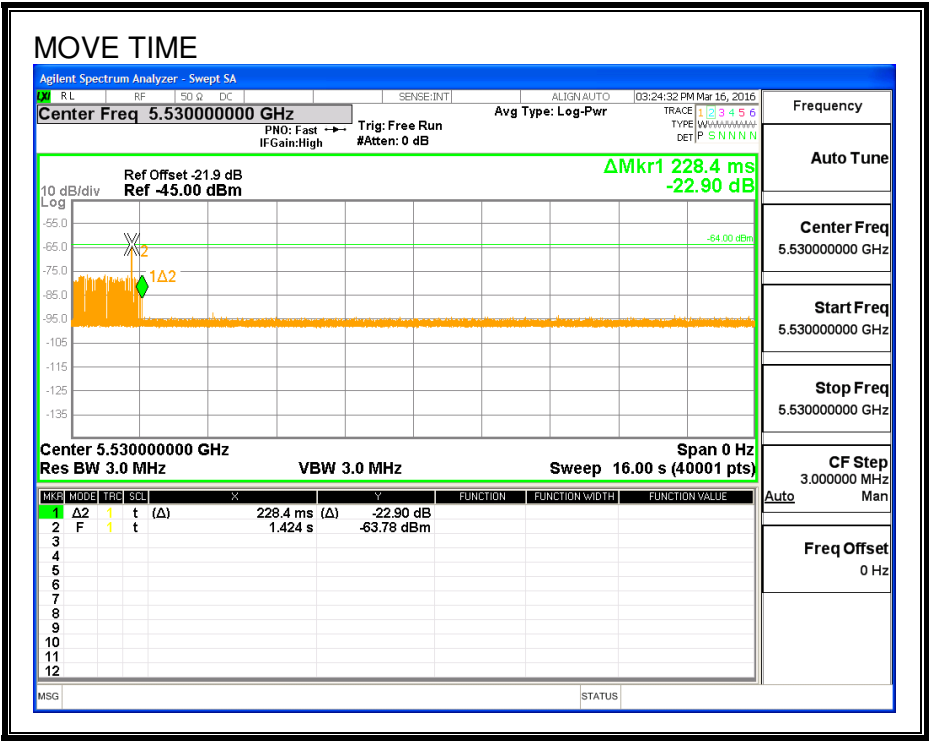
The observation period over which the aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

RESULTS

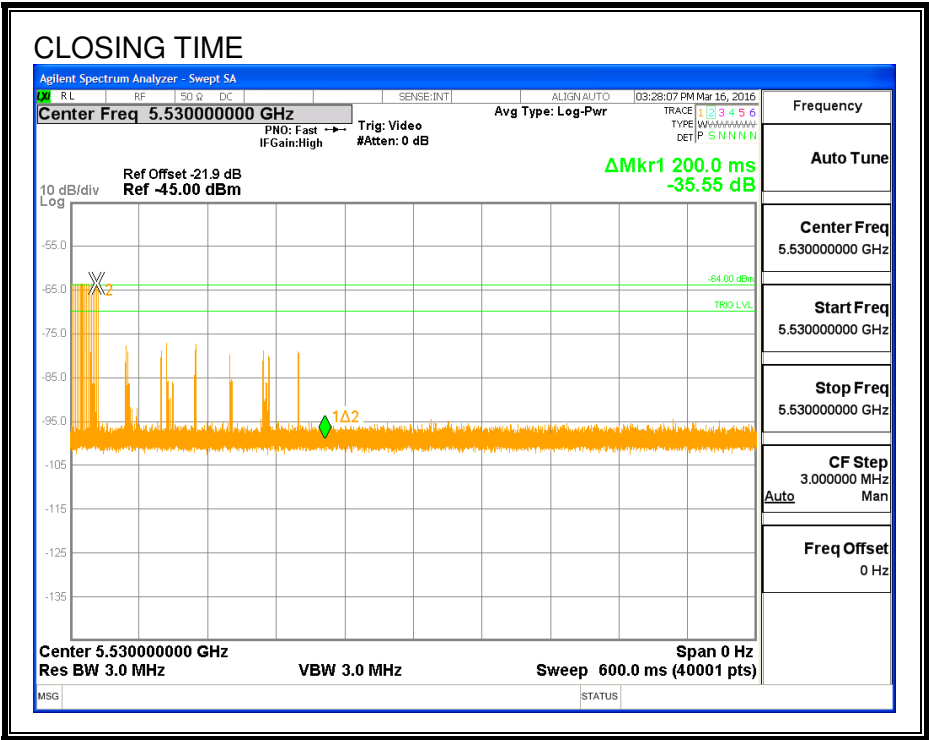
Channel Move Time (sec)	Limit (sec)
0.2284	10

Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
2.4	60

MOVE TIME



CHANNEL CLOSING TIME



AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

Only intermittent transmissions are observed during the aggregate monitoring period.



10.7.5. 10-MINUTE CLIENT Tx MONITORING PERIOD

RESULTS

No EUT transmissions were observed on the test channel during the 10-minute observation time.

