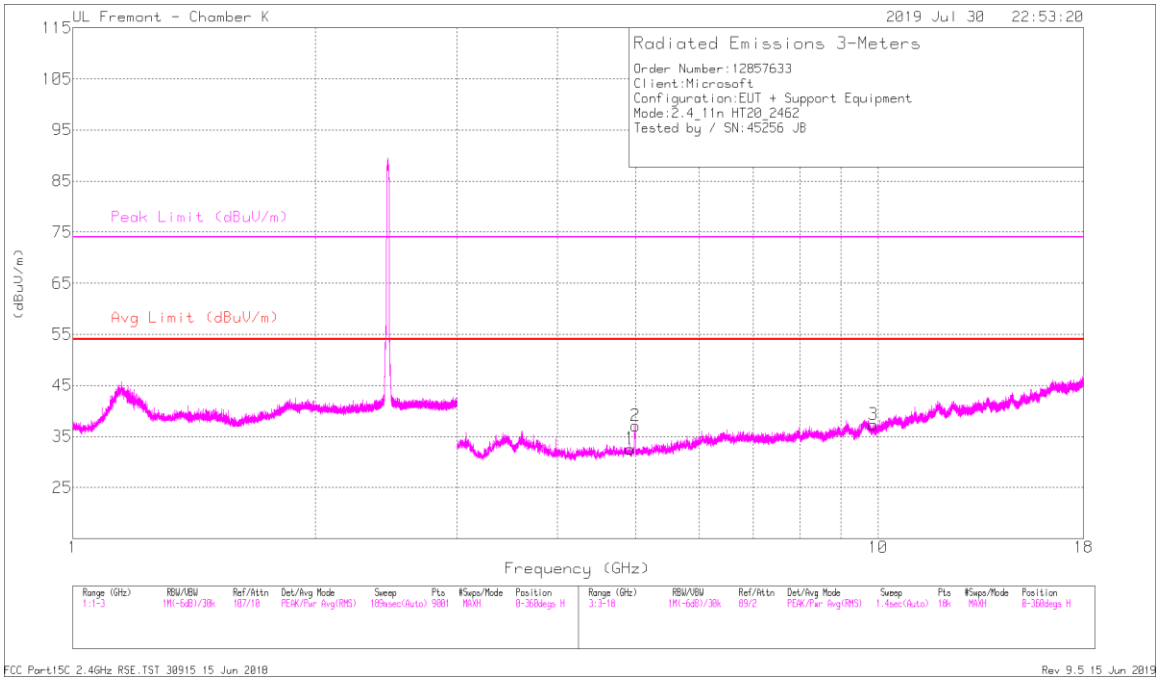
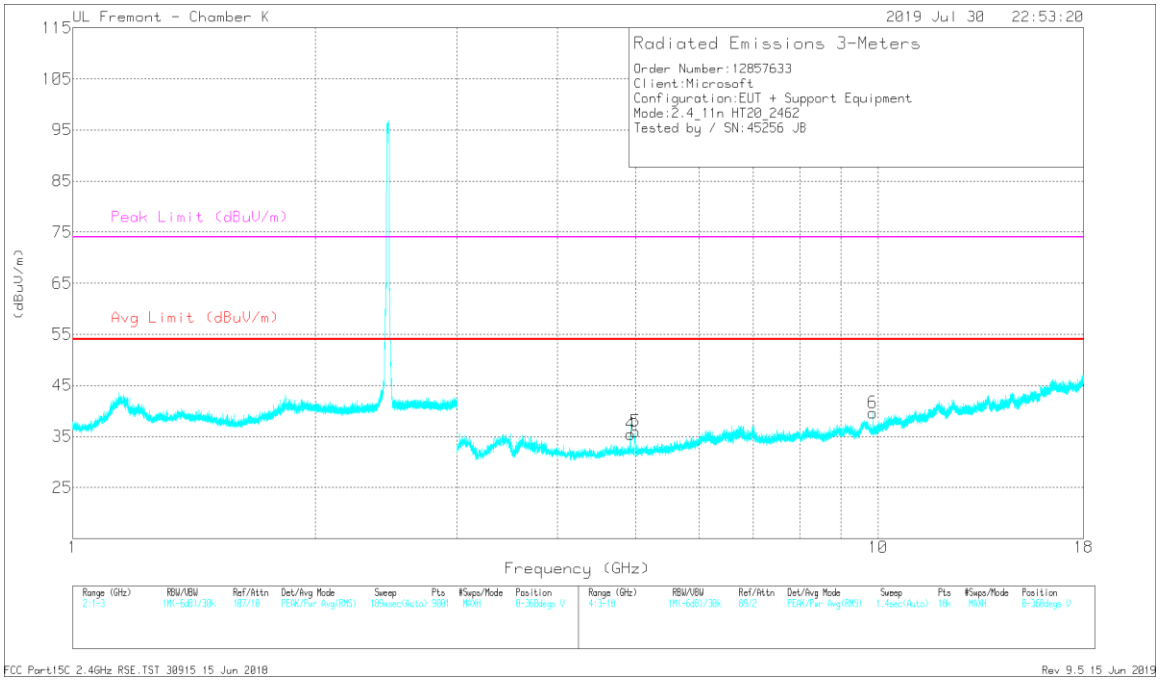
HIGH CHANNEL, CH 11 RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF EMC4294 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.91687	37.25	PK2	34.1	-30.6	0	40.75	-	-	74	-33.25	321	321	H
	* 4.91906	27.36	MAv1	34.1	-30.6	0.24	31.1	54	-22.9	-	-	321	321	H
2	* 4.99561	44.6	PK2	34.1	-30.4	0	48.3	-	-	74	-25.7	242	128	H
	* 4.9982	29.5	MAv1	34.1	-30.4	0.24	33.44	54	-20.56	-	-	242	128	H
4	* 4.92489	40.25	PK2	34.1	-30.6	0	43.75	-	-	74	-30.25	326	259	V
	* 4.92417	31.69	MAv1	34.1	-30.6	0.24	35.43	54	-18.57	-	-	326	259	V
5	* 4.99923	43.69	PK2	34.2	-30.4	0	47.49	-	-	74	-26.51	53	229	V
	* 4.99892	26.75	MAv1	34.2	-30.4	0.24	30.79	54	-23.21	-	-	53	229	V
3	9.87039	23.3	Pk	37.1	-23	0	37.4	-	-	-	-	0-360	200	H
6	9.84788	25.86	Pk	37	-23.2	0	39.66	-	-	-	-	0-360	200	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

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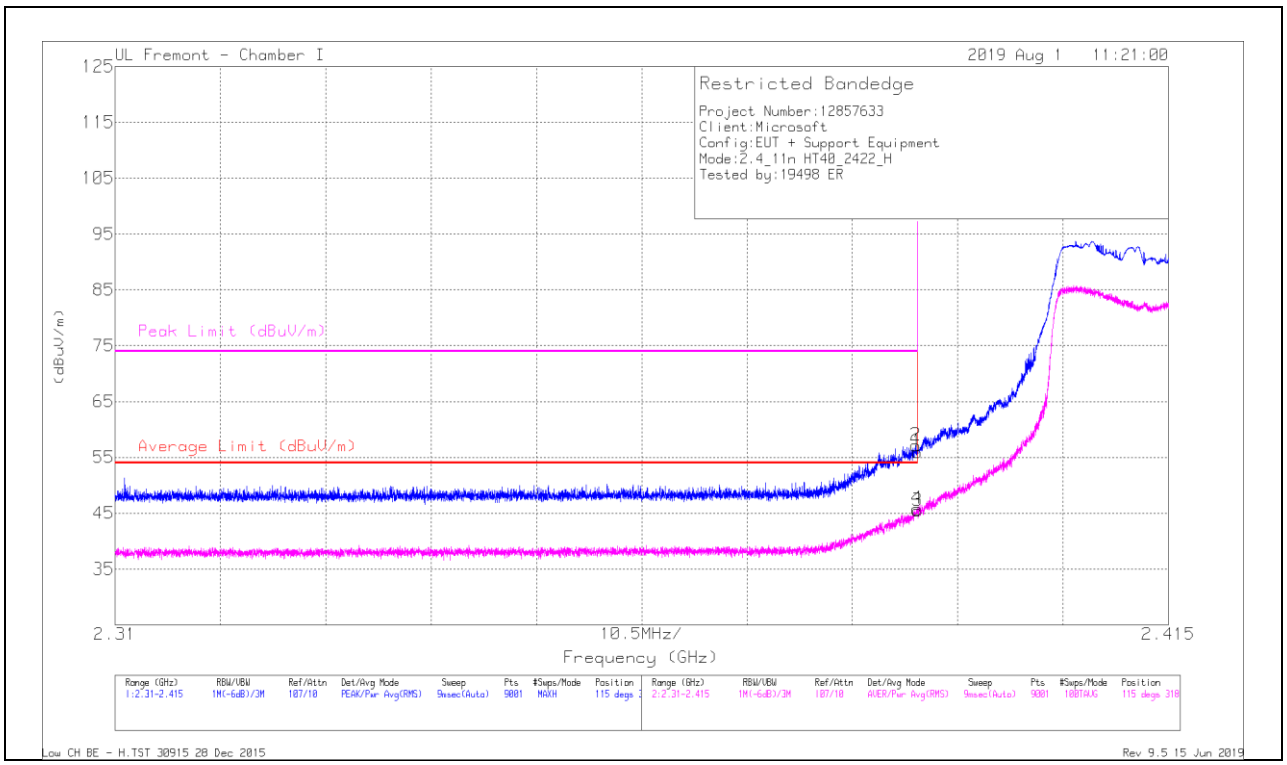
9.1.4. TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 2.4 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

BANDEDGE (LOW CHANNEL, CH 3)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (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	2.38999	45.67	Pk	31.9	-21.6	0	55.97	-	-	74	-18.03	115	318	H
2	2.38981	46.83	Pk	31.9	-21.6	0	57.13	-	-	74	-16.87	115	318	H
3	2.38999	34.68	RMS	31.9	-21.6	.47	45.45	54	-8.55	-	-	115	318	H
4	2.38995	34.99	RMS	31.9	-21.6	.47	45.76	54	-8.24	-	-	115	318	H

Pk - Peak detector
RMS - RMS detection

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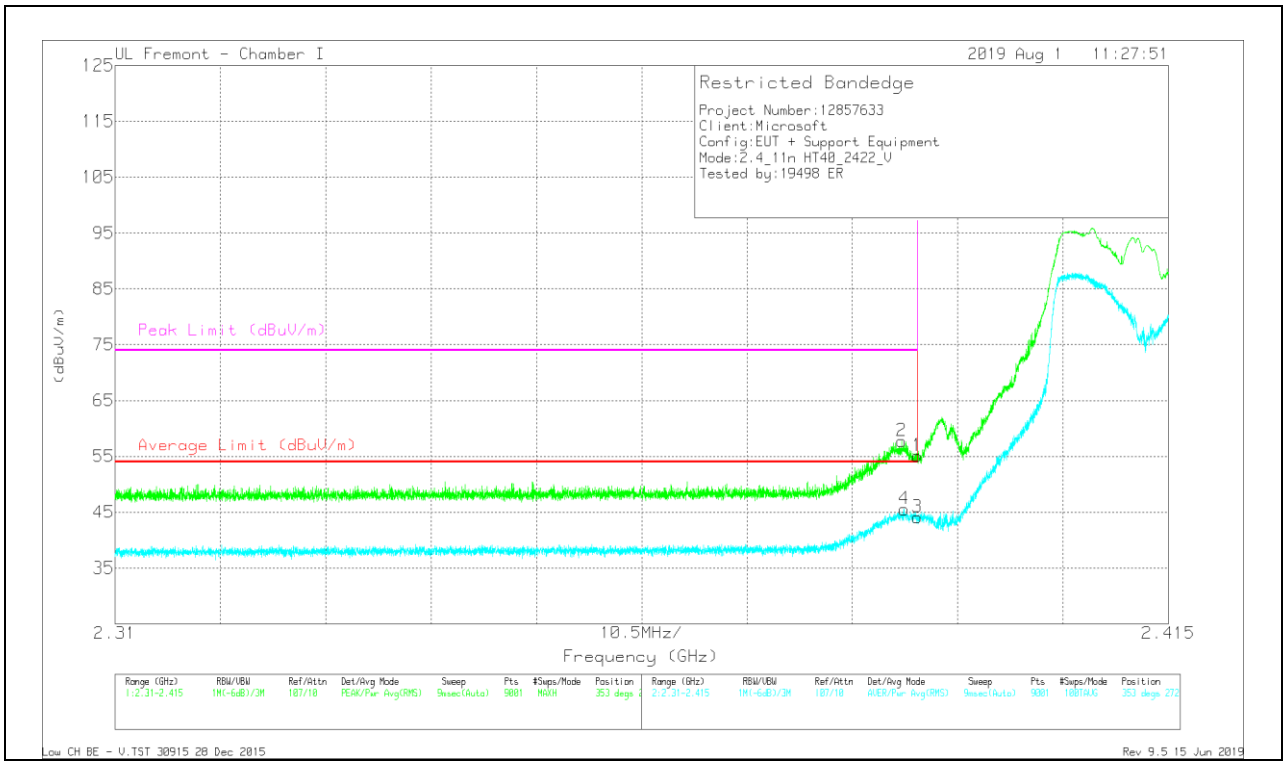
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (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	2.38999	44.77	Pk	31.9	-21.6	0	55.07	-	-	74	-18.93	353	272	V
2	2.38843	47.43	Pk	31.9	-21.6	0	57.73	-	-	74	-16.27	353	272	V
3	2.38999	33.34	RMS	31.9	-21.6	.47	44.11	54	-9.89	-	-	353	272	V
4	2.38865	34.75	RMS	31.9	-21.6	.47	45.52	54	-8.48	-	-	353	272	V

Pk - Peak detector
RMS - RMS detection

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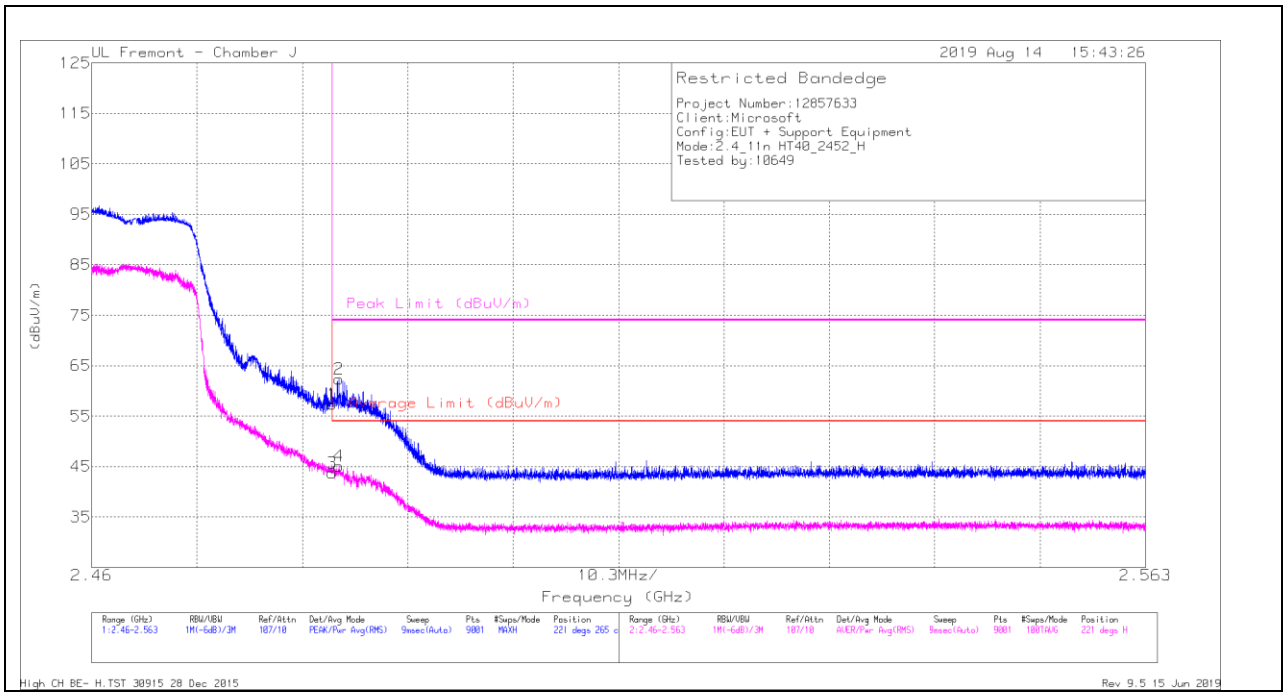
BANDEDGE (HIGH CHANNEL, CH 9)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0189055 (dB/m)	Amp/Cbl/Filtr/Pad (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	* 2.48351	53.02	Pk	29.9	-25.5	0	57.42	-	-	74	-16.58	221	265	H
2	* 2.48416	57.92	Pk	29.9	-25.5	0	62.32	-	-	74	-11.68	221	265	H
3	* 2.48351	39.28	RMS	29.9	-25.5	.47	44.15	54	-9.85	-	-	221	265	H
4	* 2.48415	40.73	RMS	29.9	-25.5	.47	45.6	54	-8.4	-	-	221	265	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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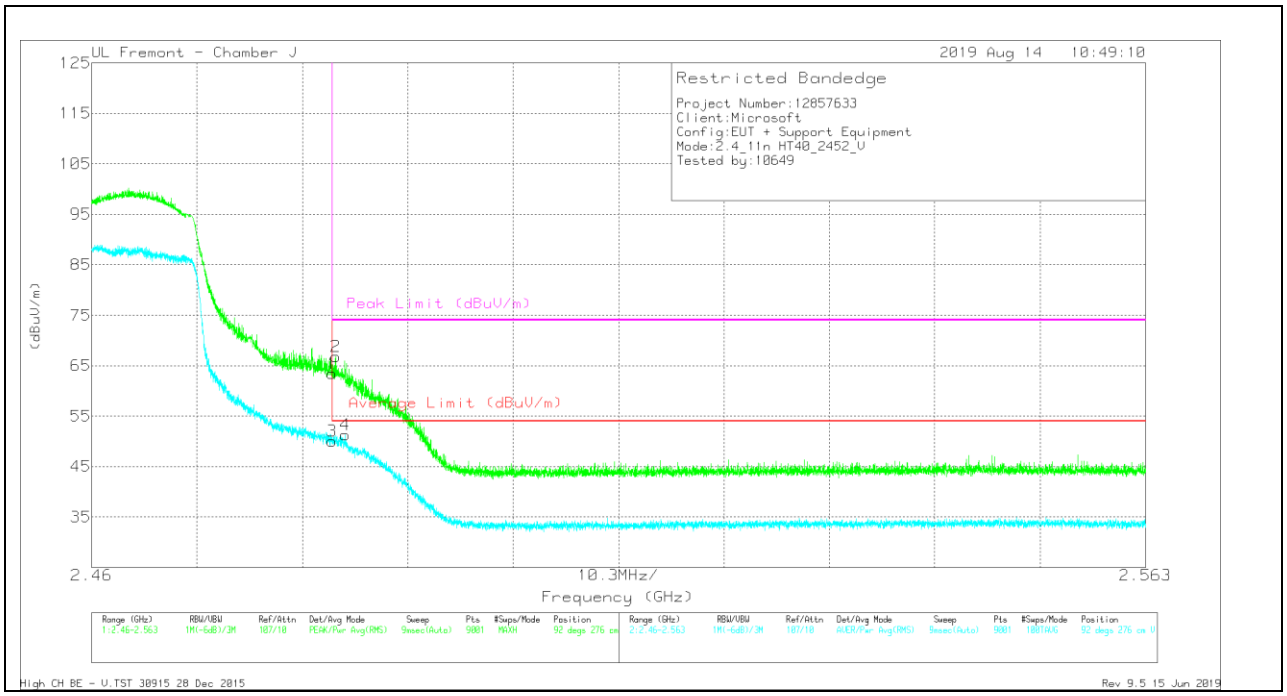
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0189055 (dB/m)	Amp/Cbl/Flt r/Pad (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	* 2.48351	59.03	Pk	29.9	-25.5	0	63.43	-	-	74	-10.57	92	276	V
2	* 2.48384	62.43	Pk	29.9	-25.5	0	66.83	-	-	74	-7.17	92	276	V
3	* 2.48351	45.68	RMS	29.9	-25.5	.47	50.55	54	-3.45	-	-	92	276	V
4	* 2.48478	46.94	RMS	29.9	-25.5	.47	51.82	54	-2.18	-	-	92	276	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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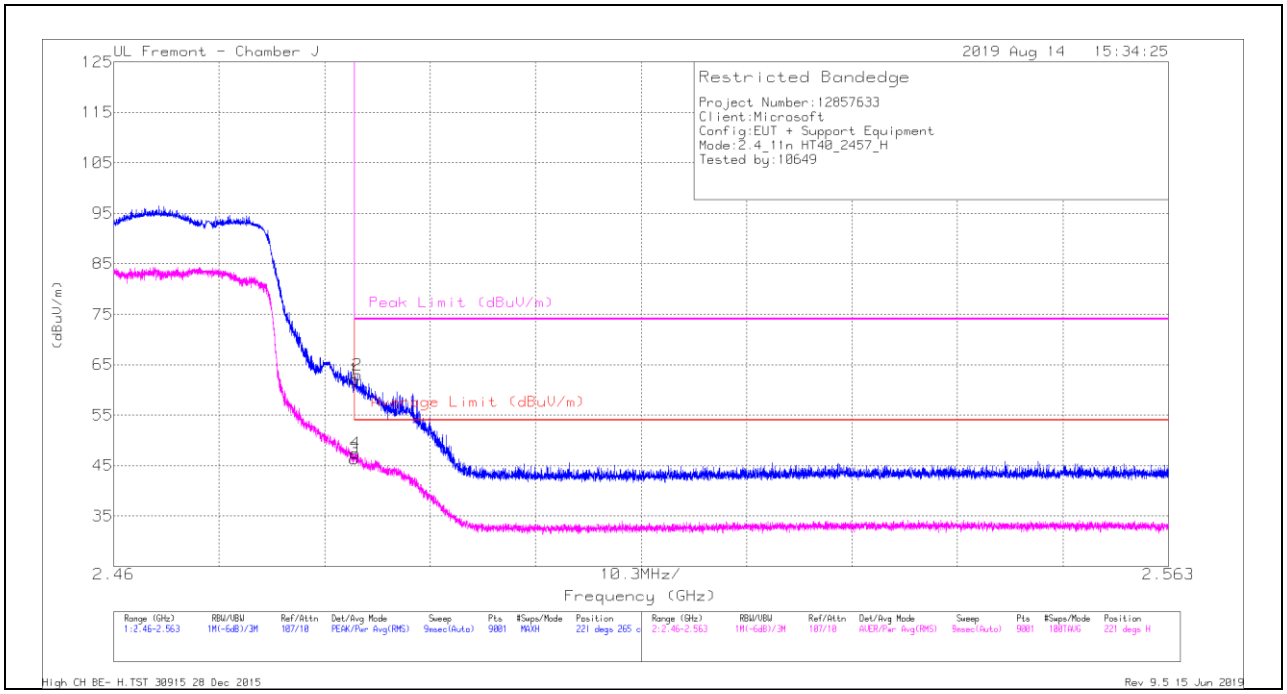
BANDEDGE (HIGH CHANNEL, CH 10)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0189055 (dB/m)	Amp/Cbl/Fltr/Pad (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	* 2.48351	57.7	Pk	29.9	-25.5	0	62.1	-	-	74	-11.9	221	265	H
2	* 2.48382	58.59	Pk	29.9	-25.5	0	62.99	-	-	74	-11.01	221	265	H
3	* 2.48351	41.97	RMS	29.9	-25.5	.47	46.84	54	-7.16	-	-	221	265	H
4	* 2.4836	43.05	RMS	29.9	-25.5	.47	47.92	54	-6.08	-	-	221	265	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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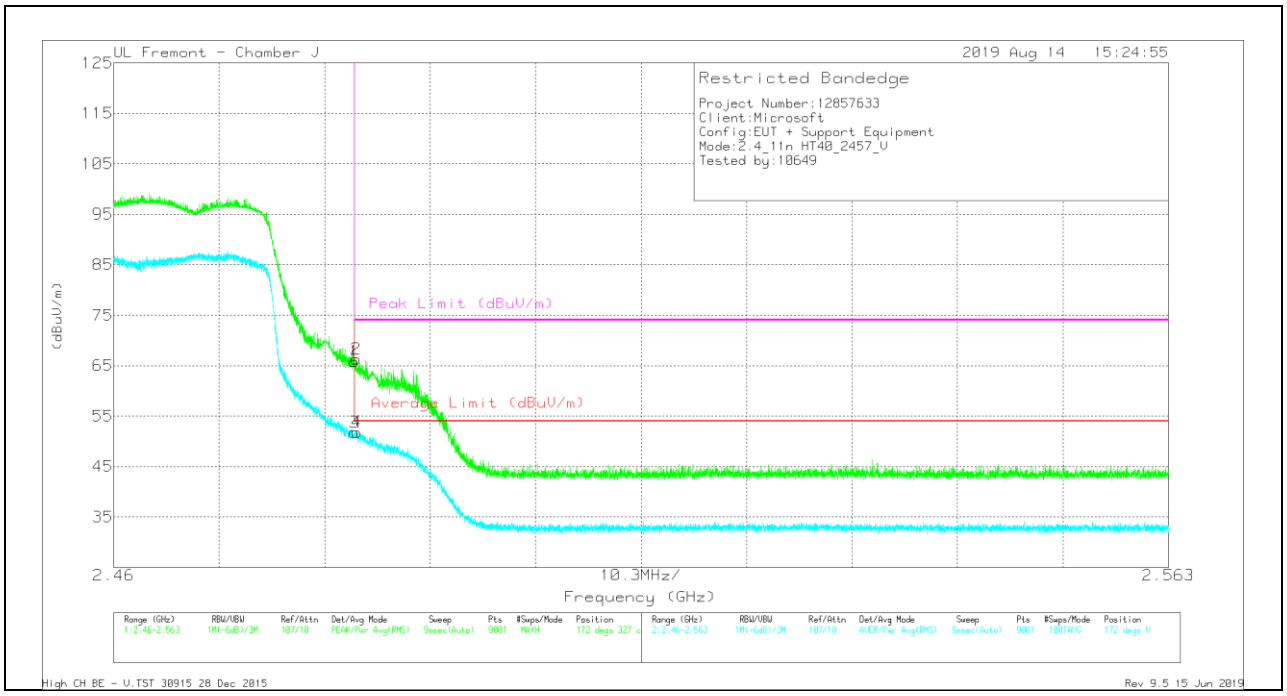
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0189055 (dB/m)	Amp/Cbl/Flt r/Pad (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	* 2.48351	61.41	Pk	29.9	-25.5	0	65.81	-	-	74	-8.19	172	327	V
2	* 2.48366	61.86	Pk	29.9	-25.5	0	66.26	-	-	74	-7.74	172	327	V
3	* 2.48351	47.33	RMS	29.9	-25.5	.47	52.2	54	-1.8	-	-	172	327	V
4	* 2.48374	47.44	RMS	29.9	-25.5	.47	52.31	54	-1.69	-	-	172	327	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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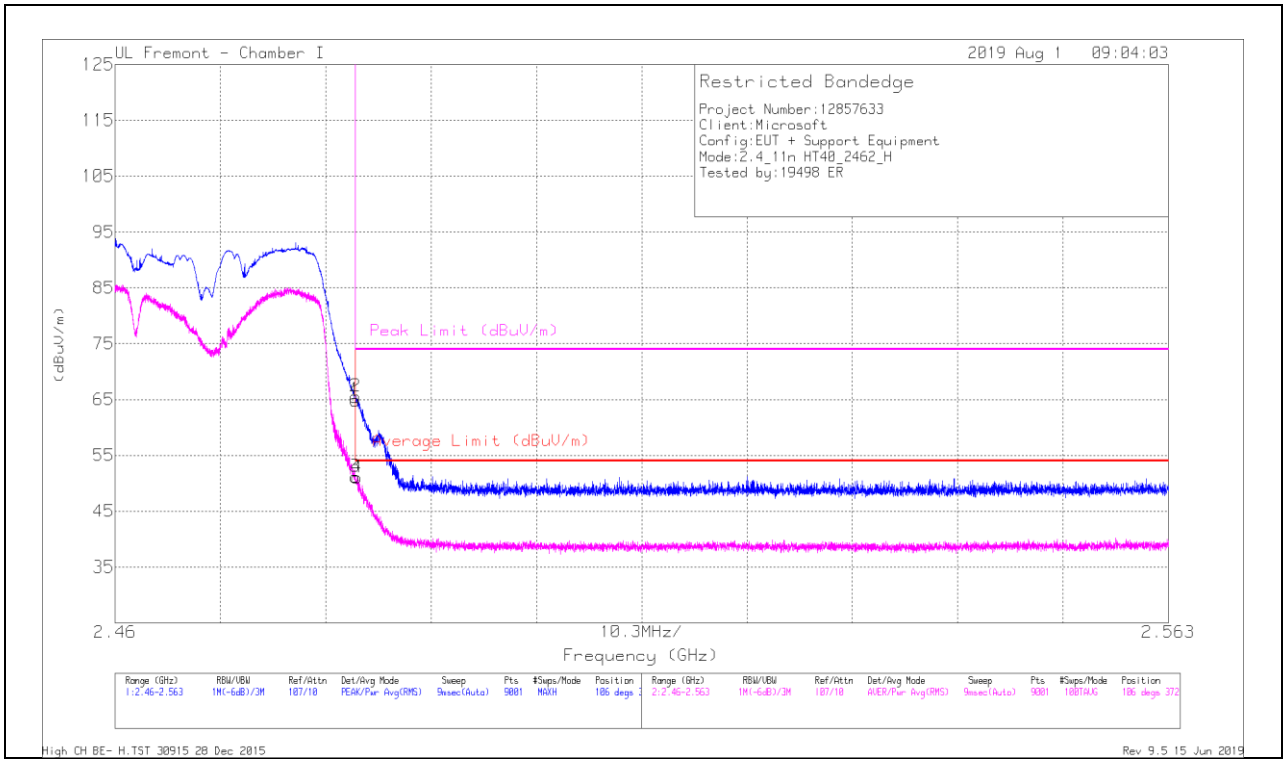
BANDEDGE (HIGH CHANNEL, CH 11)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (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	2.48351	54.2	Pk	32.4	-21.7	0	64.9	-	-	74	-9.1	106	372	H
2	2.48352	54.8	Pk	32.4	-21.7	0	65.5	-	-	74	-8.5	106	372	H
3	2.48351	39.99	RMS	32.4	-21.7	.47	51.16	54	-2.84	-	-	106	372	H
4	2.48364	39.86	RMS	32.4	-21.7	.47	51.03	54	-2.97	-	-	106	372	H

Pk - Peak detector
RMS - RMS detection

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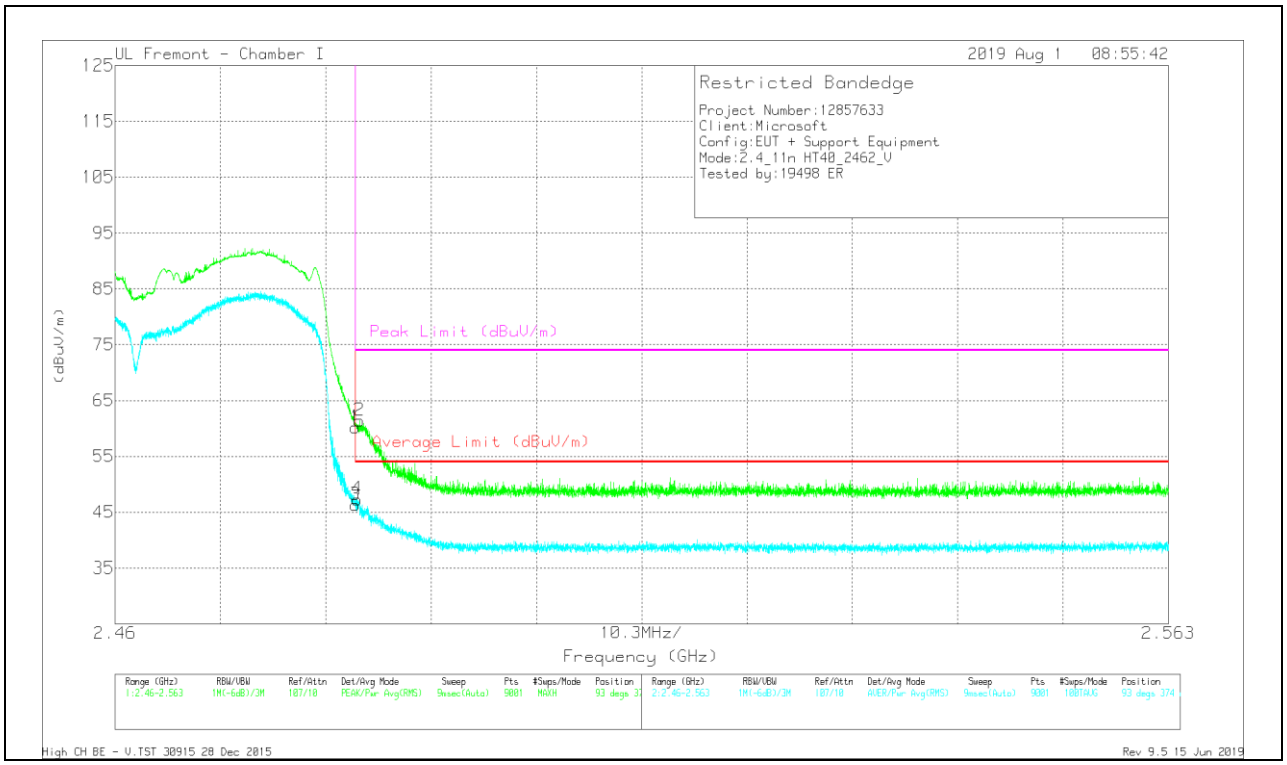
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (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	2.48351	49.47	Pk	32.4	-21.7	0	60.17	-	-	74	-13.83	93	374	V
2	2.48388	50.68	Pk	32.4	-21.7	0	61.38	-	-	74	-12.62	93	374	V
3	2.48351	35.13	RMS	32.4	-21.7	.47	46.3	54	-7.7	-	-	93	374	V
4	2.48369	36.12	RMS	32.4	-21.7	.47	47.29	54	-6.71	-	-	93	374	V

Pk - Peak detector
RMS - RMS detection

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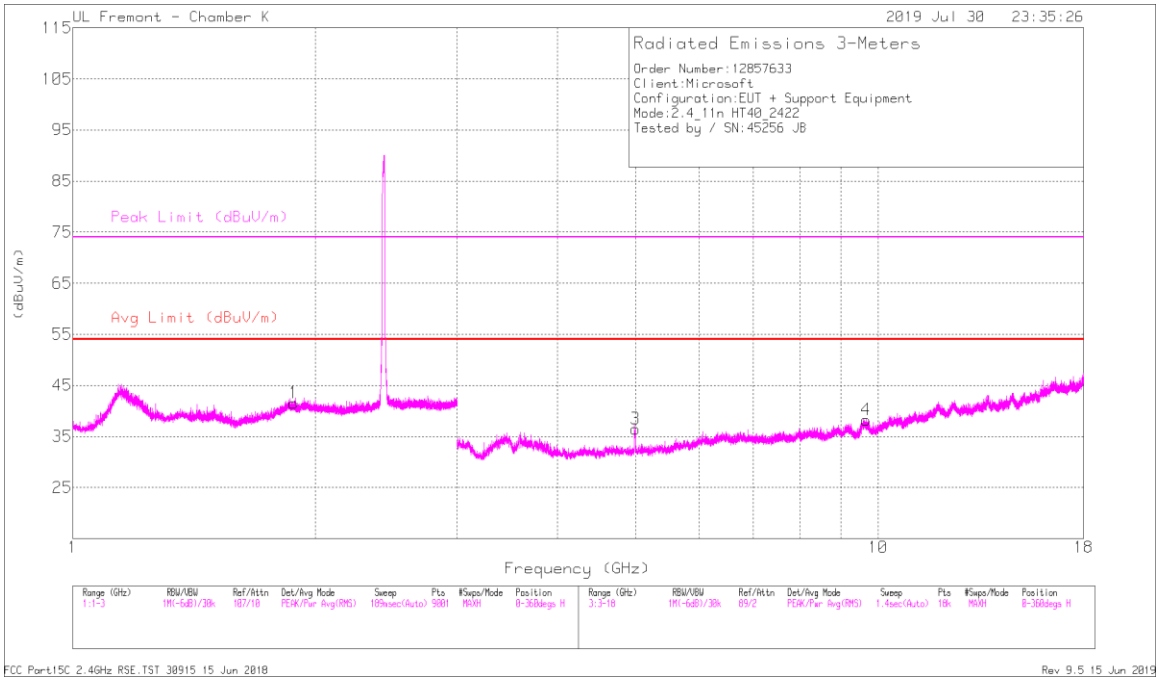
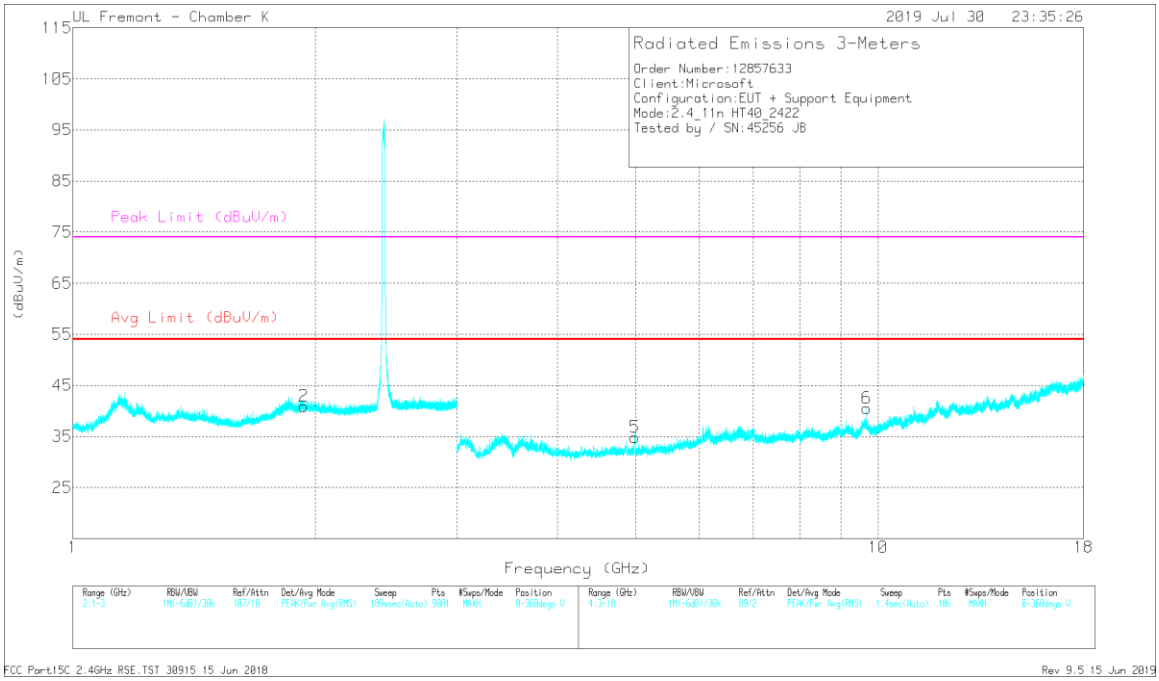
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL, CH 3 RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF EMC4294 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.88067	34.71	Pk	30.9	-24.1	0	41.51	-	-	-	-	0-360	200	H
2	1.936	33.96	Pk	31.1	-24.1	0	40.96	-	-	-	-	0-360	200	V
3	* 4.99712	45.09	PK2	34.1	-30.4	0	48.79	-	-	74	-25.21	249	211	H
	* 4.99812	29.02	MAv1	34.1	-30.4	.47	33.19	54	-20.81	-	-	249	211	H
4	9.66121	24.52	Pk	37.1	-23.4	0	38.22	-	-	-	-	0-360	101	H
5	* 4.9852	42.92	PK2	34.1	-30.4	0	46.62	-	-	74	-27.38	49	199	V
	* 4.98609	28.55	MAv1	34.1	-30.4	.47	32.72	54	-21.28	-	-	49	199	V
6	9.68788	26.99	Pk	37.1	-23.6	0	40.49	-	-	-	-	0-360	200	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

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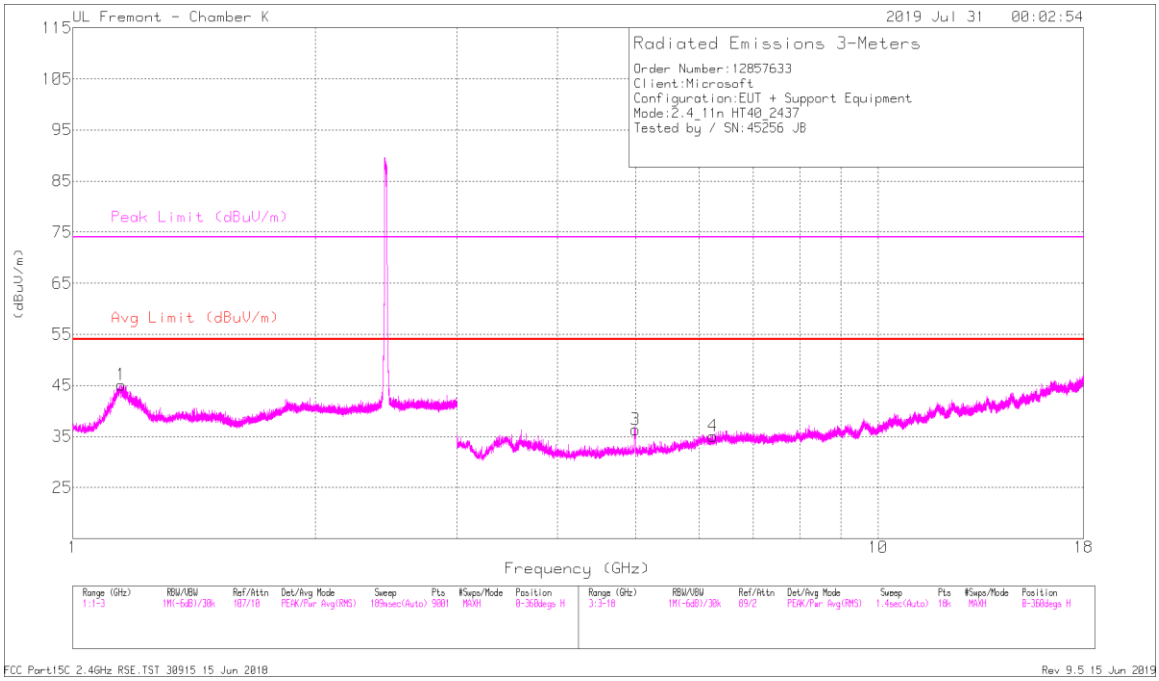
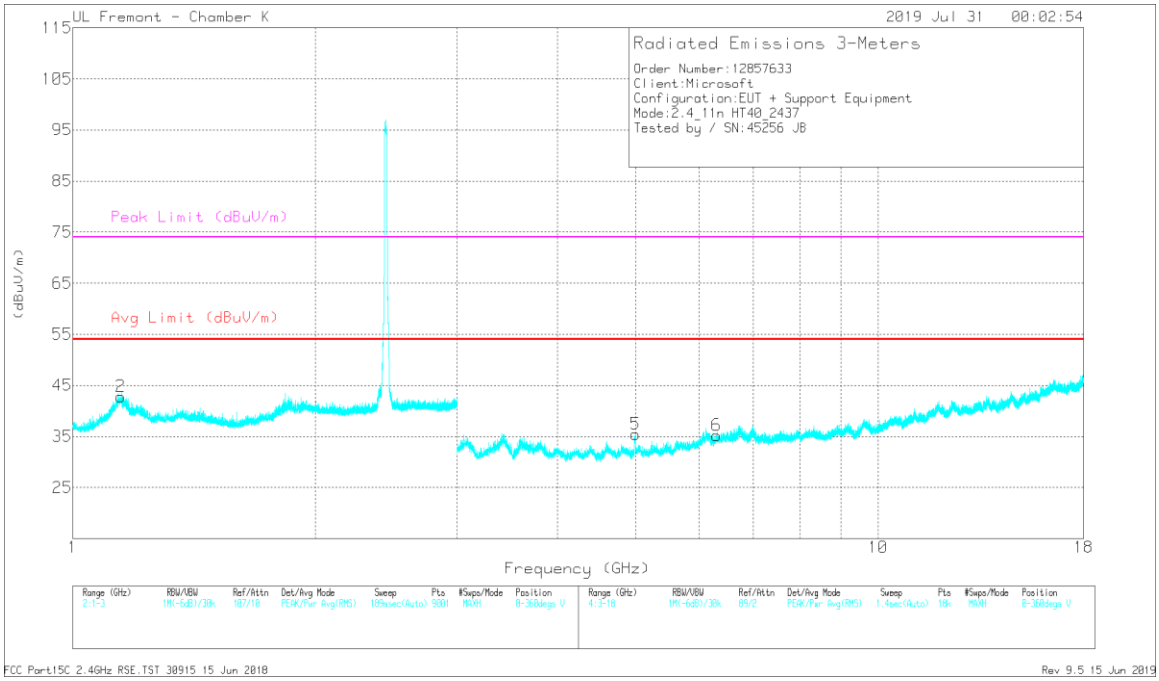
MID CHANNEL, CH 6 RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF EMC4294 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.14987	51.36	PK2	27.6	-23.8	0	55.16	-	-	74	-18.84	252	136	H
	* 1.14903	41.23	MAv1	27.6	-23.8	.47	45.5	54	-8.5	-	-	252	136	H
2	* 1.14571	48.38	PK2	27.6	-23.9	0	52.08	-	-	74	-21.92	44	275	V
	* 1.14543	37.97	MAv1	27.6	-23.9	.47	42.14	54	-11.86	-	-	44	275	V
3	* 4.9994	45.86	PK2	34.2	-30.4	0	49.66	-	-	74	-24.34	245	108	H
	* 4.9973	30.13	MAv1	34.1	-30.4	.47	34.3	54	-19.7	-	-	245	108	H
5	* 4.99567	42.91	PK2	34.1	-30.4	0	46.61	-	-	74	-27.39	272	219	V
	* 4.99844	28.27	MAv1	34.2	-30.4	.47	32.54	54	-21.46	-	-	272	219	V
4	6.23351	27.4	Pk	35.7	-28	0	35.1	-	-	-	-	0-360	101	H
6	6.30269	27.24	Pk	35.8	-27.8	0	35.24	-	-	-	-	0-360	200	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

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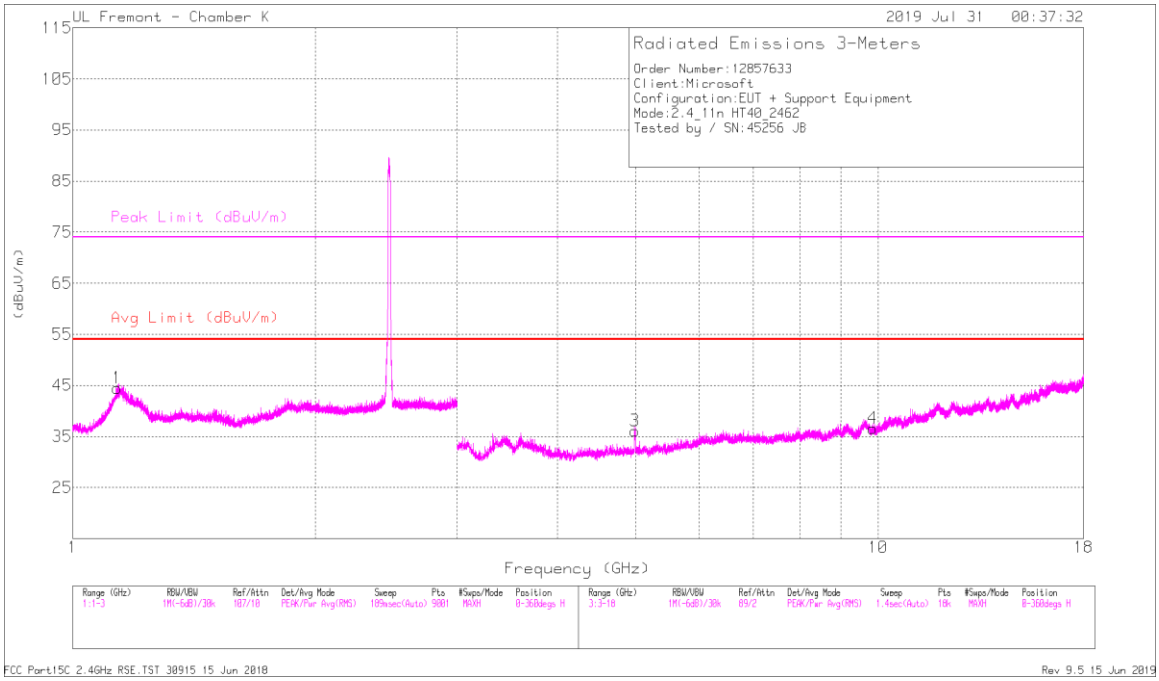
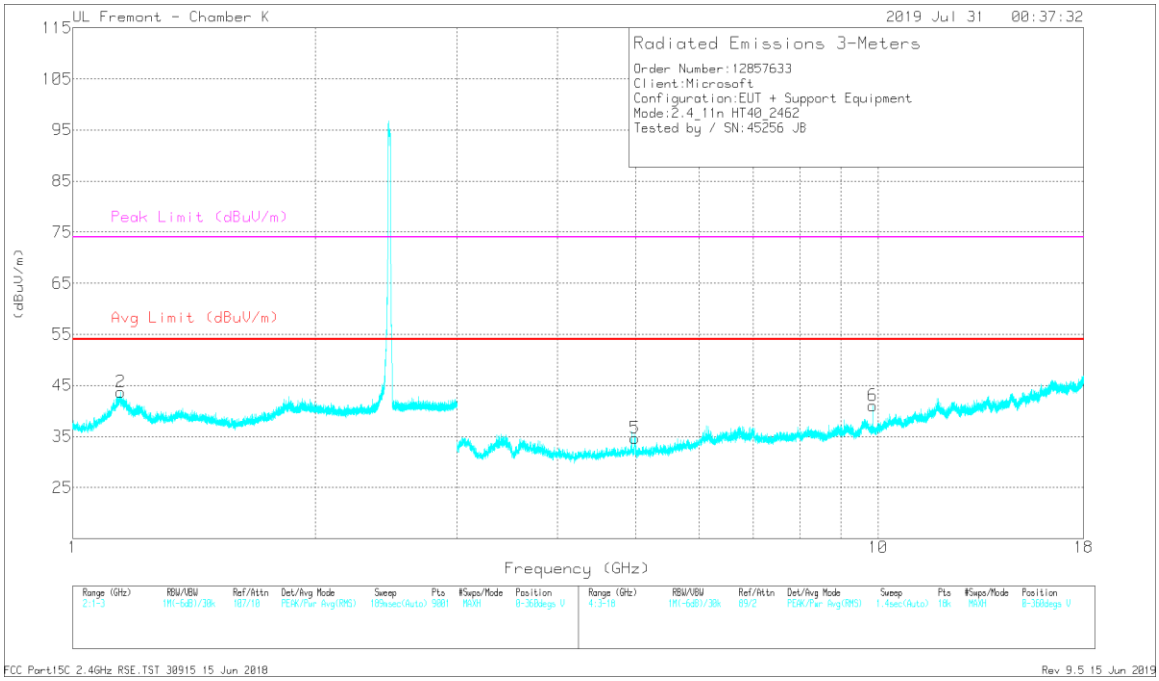
HIGH CHANNEL, CH 11 RESULTS



HORIZONTAL



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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF EMC4294 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.1346	49.66	PK2	27.6	-23.9	0	53.36	-	-	74	-20.64	234	139	H
	* 1.13799	39.64	MAv1	27.6	-23.8	.47	43.91	54	-10.09	-	-	234	139	H
2	* 1.14767	47.08	PK2	27.6	-23.9	0	50.78	-	-	74	-23.22	276	207	V
	* 1.14931	37.94	MAv1	27.6	-23.8	.47	42.21	54	-11.79	-	-	276	207	V
3	* 4.99139	46.39	PK2	34.1	-30.4	0	50.09	-	-	74	-23.91	246	110	H
	* 4.99244	29.77	MAv1	34.1	-30.4	.47	33.94	54	-20.06	-	-	246	110	H
5	* 4.99346	44.46	PK2	34.1	-30.4	0	48.16	-	-	74	-25.84	53	256	V
	* 4.99246	29.17	MAv1	34.1	-30.4	.47	33.34	54	-20.66	-	-	53	256	V
4	9.85413	22.64	Pk	37.1	-23.1	0	36.64	-	-	-	-	0-360	200	H
6	9.84788	27.21	Pk	37	-23.2	0	41.01	-	-	-	-	0-360	200	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

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9.2. SPURIOUS EMISSIONS FOR COLLOCATION

TEST-CASE CONDITIONS

Test Case #	Antenna	Mode	Frequency (MHz)
1	Antenna 1	BT, 8PSK	2441
	Antenna 2	WLAN 2.4GHz, 11g	2437
2	Antenna 1	BLE	2440
	Antenna 2	WLAN 2.4GHz, 11g	2437

For simultaneous transmission of any BT 8PSK (2.4GHz) and WLAN (2.4 GHz) bands, and BLE (2.4GHz) and WLAN (2.4GHz) bands, investigation has been performed and no noticeable new emission was found.

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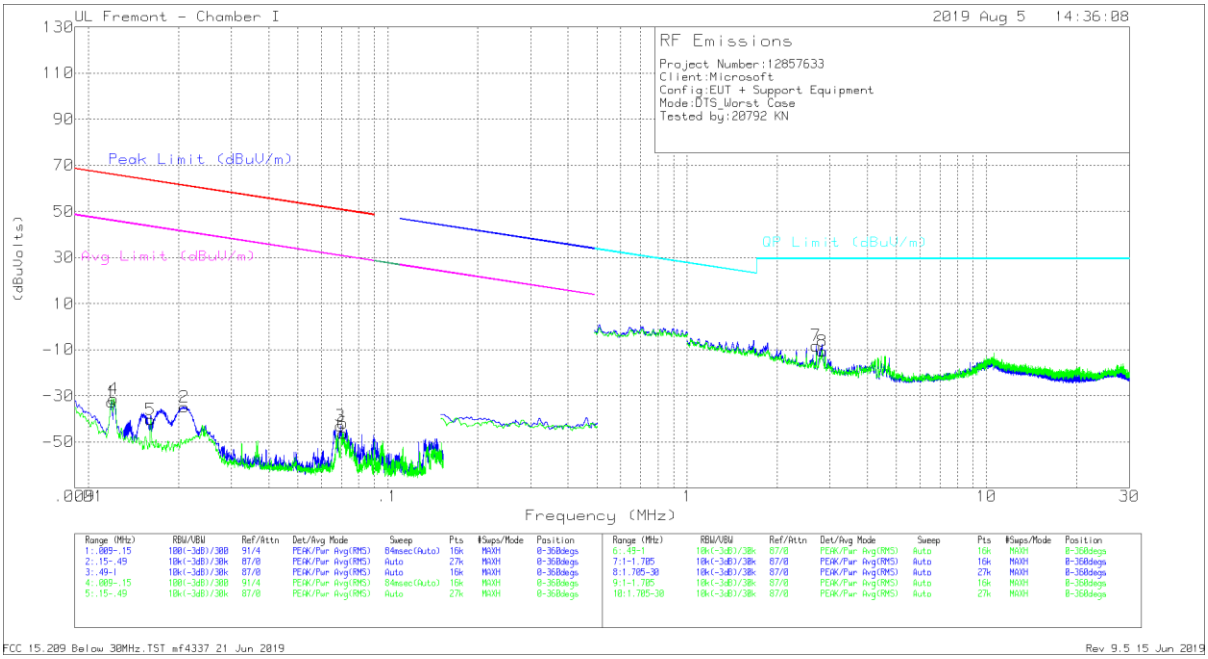
9.3. WORST CASE BELOW 30MHZ

SPURIOUS EMISSIONS BELOW 30 MHz (WORST-CASE CONFIGURATION)



ANTENNA- TWO ORIENTATIONS FACE ON/FACE OFF

Below 30MHz Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (ACF)	Cables w/ PRE0180175 (dB)	Dist Corr 300m	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.01196	19.72	Pk	59.9	-32.4	-80	-32.78	66.03	-98.81	46.03	-78.81	0-360
2	.02093	18.77	Pk	58.7	-32.3	-80	-34.83	61.17	-96	41.17	-76	0-360
3	.06954	13.14	Pk	55.8	-32	-80	-43.06	50.74	-93.8	30.74	-73.8	0-360
4	.01215	21.11	Pk	59.9	-32.4	-80	-31.39	65.89	-97.28	45.89	-77.28	0-360
5	.01614	12.87	Pk	59.3	-32.4	-80	-40.23	63.43	-103.66	43.43	-83.66	0-360
6	.07095	10.06	Pk	55.8	-32	-80	-46.14	50.57	-96.71	30.57	-76.71	0-360

Pk - Peak detector

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (ACF)	Cables w/ PRE0180175 (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuVolts)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
7	2.69536	23.7	Pk	39.7	-31.7	-40	-8.3	29.5	-37.8	0-360
8	2.82217	21.68	Pk	39.3	-31.7	-40	-10.72	29.5	-40.22	0-360

Pk - Peak detector

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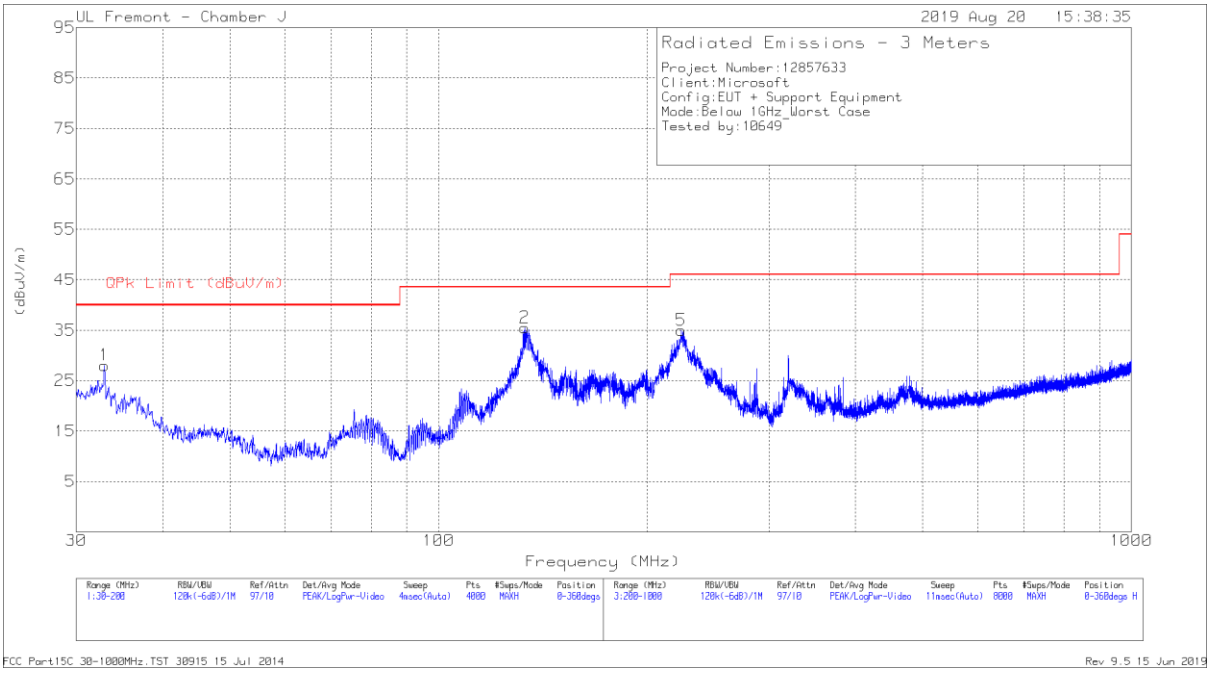
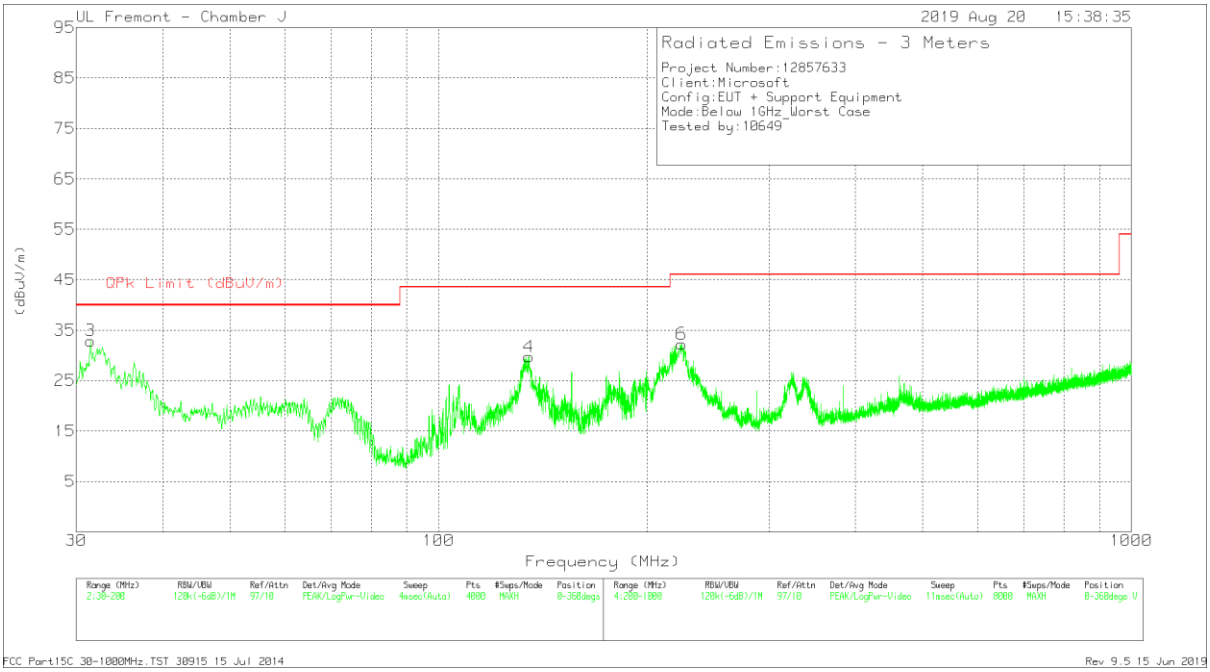
9.4. WORST CASE BELOW 1 GHZ



HORIZONTAL



VERTICAL

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Below 1GHz DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF PRE0184971 (dB/m)	Amp Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	32.9333	34.95	Pk	24.7	-31.6	28.05	40	-11.95	0-360	298	H
2	* 133.1742	46.91	Pk	19.4	-30.8	35.51	43.52	-8.01	0-360	198	H
3	31.4454	38.7	Pk	25.8	-31.6	32.9	40	-7.1	0-360	101	V
	32.9817	35.52	Qp	24.6	-31.6	28.52	40	-11.48	142	119	V
4	* 135.0447	41.23	Pk	19.3	-30.8	29.73	43.52	-13.79	0-360	101	V
5	224.0031	48.67	Pk	16.7	-30.4	34.97	46.02	-11.05	0-360	101	H
6	224.4032	45.95	Pk	16.7	-30.4	32.25	46.02	-13.77	0-360	198	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
Qp - Quasi-Peak detector

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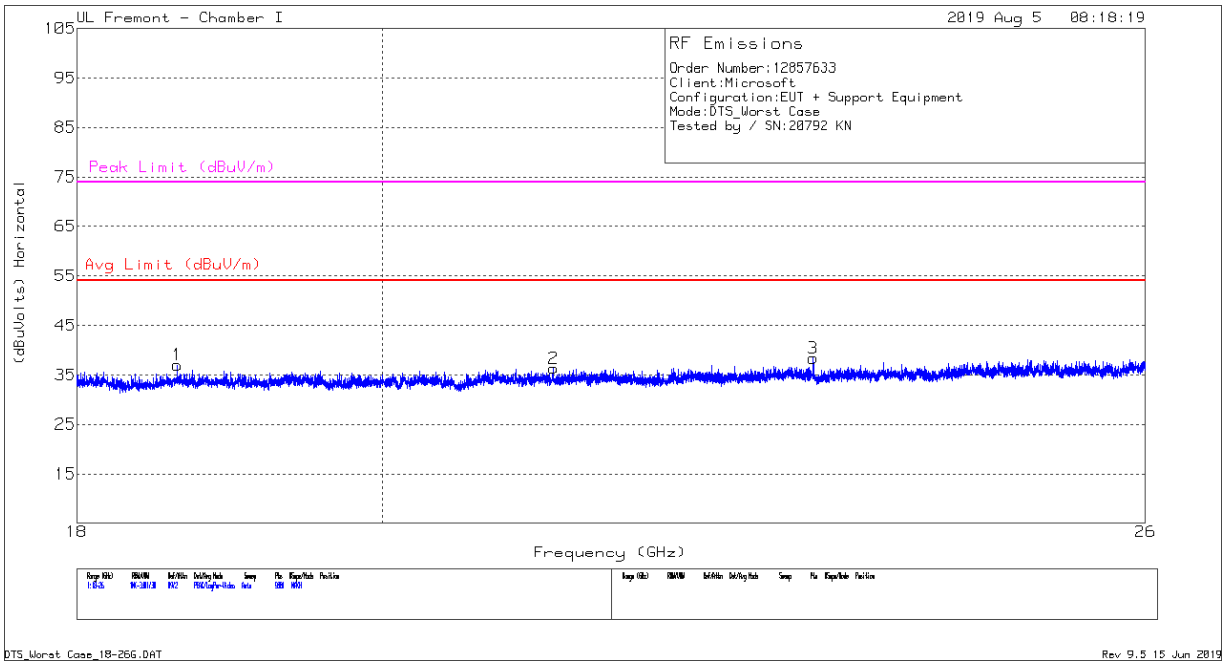
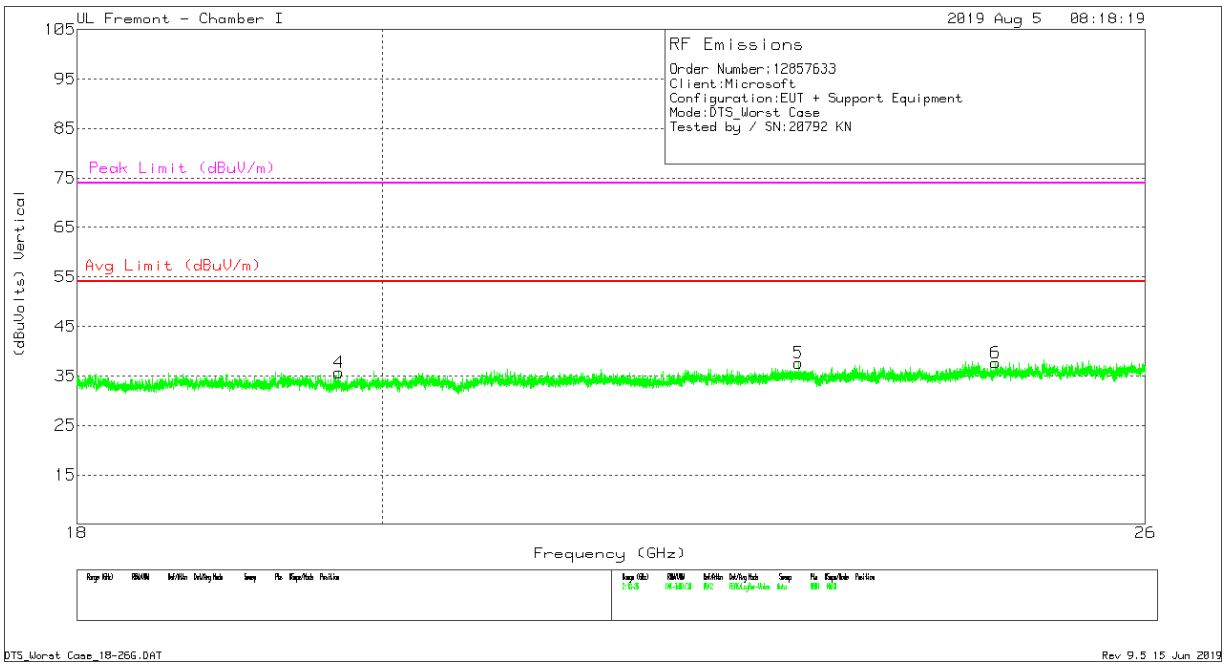
9.5. WORST CASE 18-26 GHZ



HORIZONTAL



VERTICAL

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18 – 26GHz DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0182188 (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	18.63467	72.28	Pk	32.9	-58.7	-9.5	36.98	54	-17.02	74	-37.02
2	21.20889	69.41	Pk	33.6	-57.2	-9.5	36.31	54	-17.69	74	-37.69
3	23.18845	70.55	Pk	34.4	-57.1	-9.5	38.35	54	-15.65	74	-35.65
4	19.69956	68.28	Pk	33.4	-56.5	-9.5	35.68	54	-18.32	74	-38.32
5	23.07378	70.13	Pk	34.3	-57.3	-9.5	37.63	54	-16.37	74	-36.37
6	24.69333	67.98	Pk	34.8	-55.6	-9.5	37.68	54	-16.32	74	-36.32

Pk - Peak detector

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10. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

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

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

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

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

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

RESULTS

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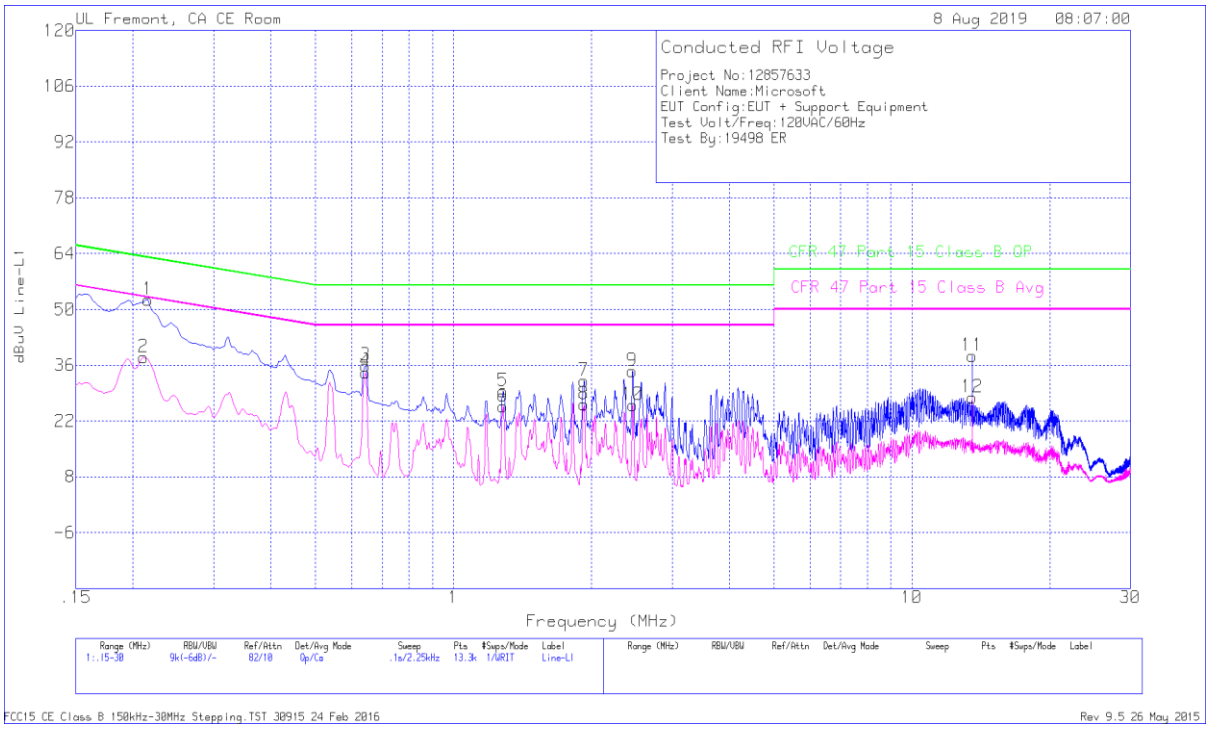
10.1.1. AC Power Line Norm

LINE 1 RESULTS



Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L1	LC Cables C1&C3	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	.21525	42.36	Qp	0	0	10.1	52.46	63	-10.54	-	-
2	.21075	27.91	Ca	0	0	10.1	38.01	-	-	53.18	-15.17
3	.64275	25.87	Qp	0	0	10.1	35.97	56	-20.03	-	-
4	.64275	24.17	Ca	0	0	10.1	34.27	-	-	46	-11.73
5	1.284	19.28	Qp	0	.1	10.1	29.48	56	-26.52	-	-
6	1.284	15.49	Ca	0	.1	10.1	25.69	-	-	46	-20.31
7	1.9275	21.85	Qp	0	.1	10.1	32.05	56	-23.95	-	-
8	1.9275	15.97	Ca	0	.1	10.1	26.17	-	-	46	-19.83
9	2.4585	24.35	Qp	0	.1	10.1	34.55	56	-21.45	-	-
10	2.46075	15.74	Ca	0	.1	10.1	25.94	-	-	46	-20.06
11	13.56	27.89	Qp	.1	.2	10.2	38.39	60	-21.61	-	-
12	13.56	17.43	Ca	.1	.2	10.2	27.93	-	-	50	-22.07

Qp - Quasi-Peak detector
Ca - CISPR average detection
NOTE: Markers 11 and 12, 13.56MHz is an external NFC signal unrelated to the EUT.

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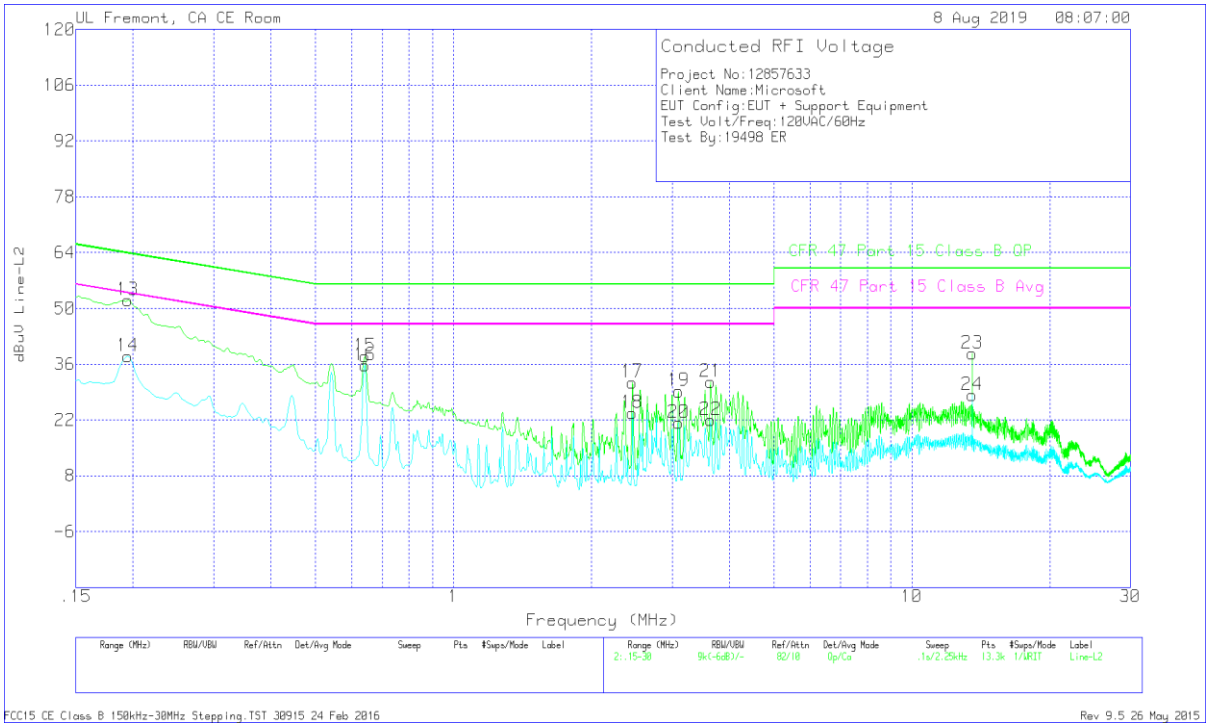
LINE 2 RESULTS



Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L2	LC Cables C2&C3	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	.195	41.92	Qp	0	0	10.1	52.02	63.82	-11.8	-	-
14	.195	27.96	Ca	0	0	10.1	38.06	-	-	53.82	-15.76
15	.6405	27.84	Qp	0	0	10.1	37.94	56	-18.06	-	-
16	.6405	25.63	Ca	0	0	10.1	35.73	-	-	46	-10.27
17	2.4585	21.28	Qp	0	.1	10.1	31.48	56	-24.52	-	-
18	2.4585	13.62	Ca	0	.1	10.1	23.82	-	-	46	-22.18
19	3.0975	19.03	Qp	0	.1	10.1	29.23	56	-26.77	-	-
20	3.09975	11.1	Ca	0	.1	10.1	21.3	-	-	46	-24.7
21	3.63975	21.34	Qp	0	.1	10.1	31.54	56	-24.46	-	-
22	3.6375	11.88	Ca	0	.1	10.1	22.08	-	-	46	-23.92
23	13.56	28.13	Qp	.1	.2	10.2	38.63	60	-21.37	-	-
24	13.56	17.77	Ca	.1	.2	10.2	28.27	-	-	50	-21.73

Qp - Quasi-Peak detector
Ca - CISPR average detection
NOTE: Markers 23 and 24, 13.56MHz is an external NFC signal unrelated to the EUT.

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