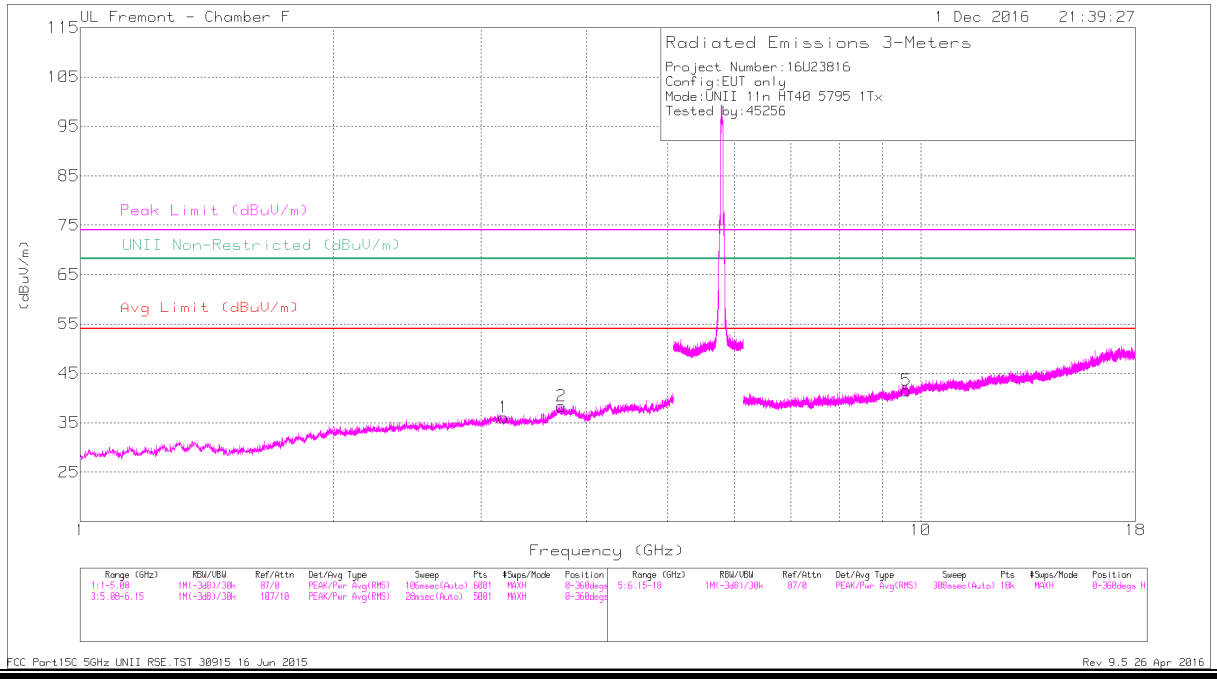
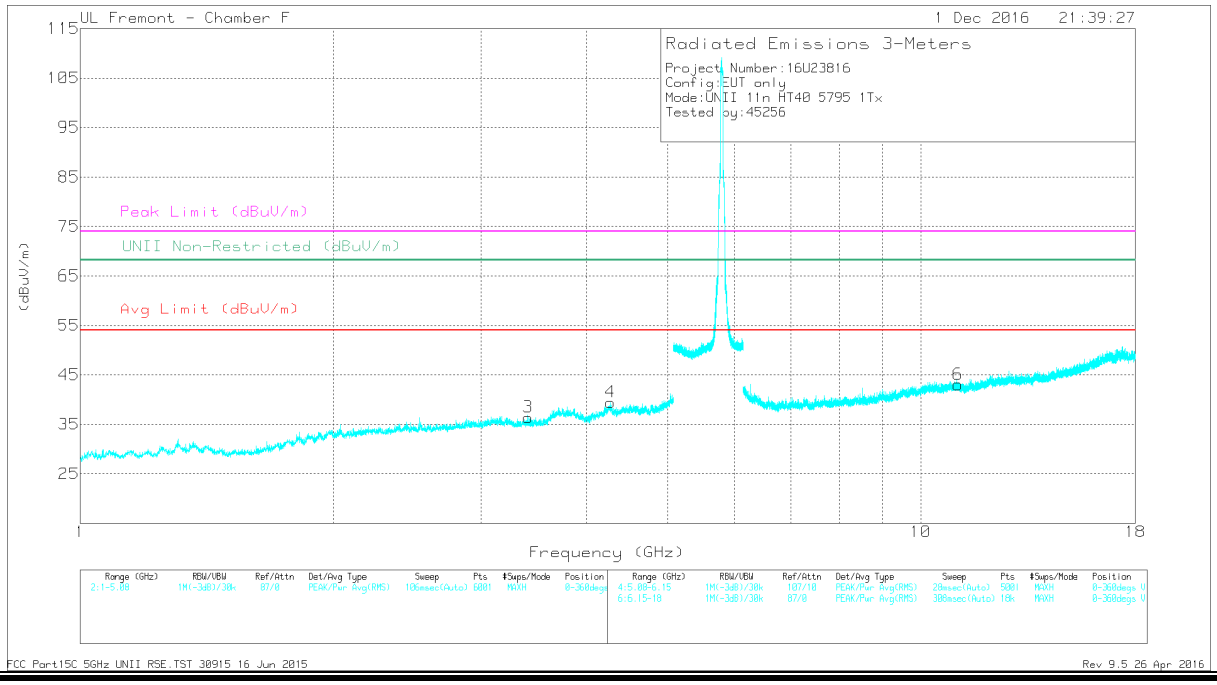
HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



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Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Cor r (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	3.189	39.88	PK-U	33.2	-30	0	43.08	-	-	-	-	68.2	-25.12	160	260	H
2	* 3.74	39.07	PK-U	33.4	-29.2	0	43.27	-	-	74	-30.73	-	-	212	400	H
	* 3.739	27.81	ADR	33.4	-29.2	.11	32.12	54	-21.88	-	-	-	-	212	400	H
3	3.409	39.2	PK-U	32.9	-29.3	0	42.8	-	-	-	-	68.2	-25.4	348	270	V
4	* 4.272	37.09	PK-U	33.7	-26.6	0	44.19	-	-	74	-29.81	-	-	317	334	V
	* 4.274	26.54	ADR	33.7	-26.6	.11	33.75	54	-20.25	-	-	-	-	317	334	V
5	9.615	35.01	PK-U	36.5	-22.3	0	49.21	-	-	-	-	68.2	-18.99	229	292	H
6	* 11.075	33.9	PK-U	37.9	-21.8	0	50	-	-	74	-24	-	-	306	152	V
	* 11.079	22.92	ADR	37.9	-21.8	.11	39.13	54	-14.87	-	-	-	-	306	152	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

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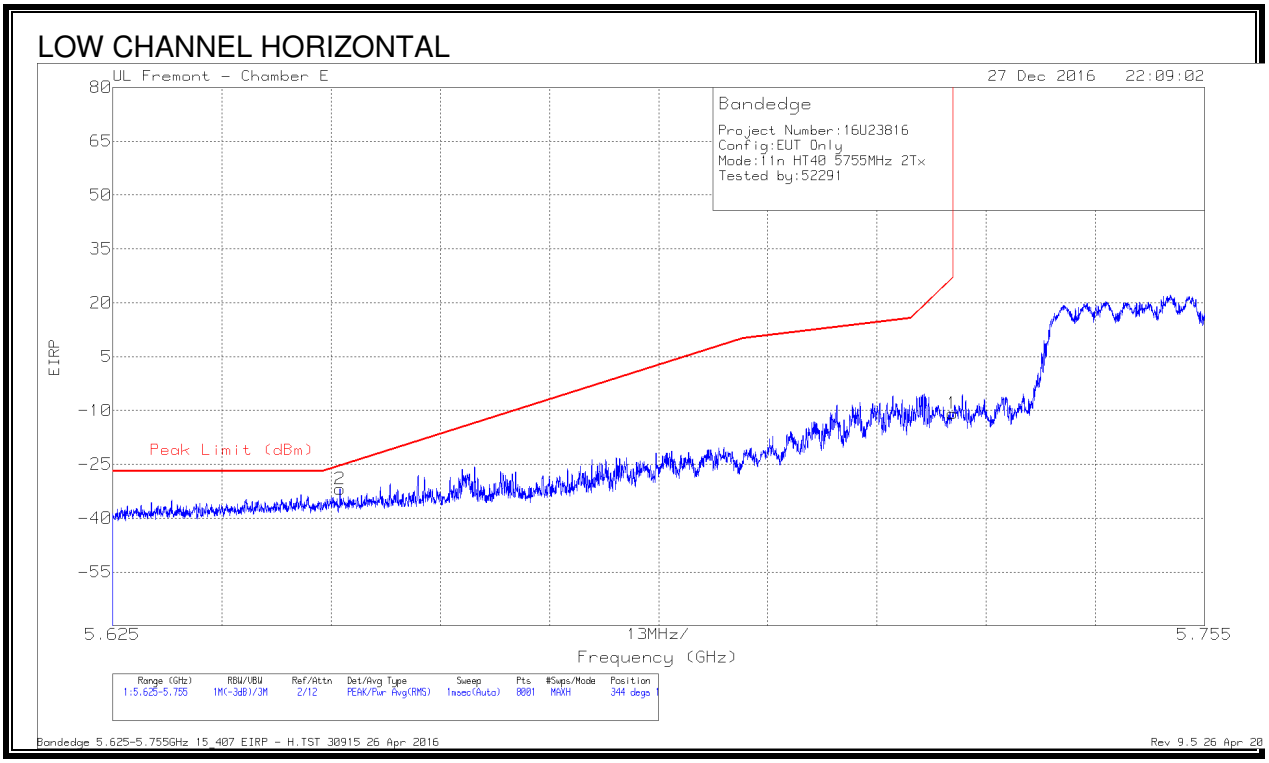
9.2.42. 11n HT40 2TX CDD MIMO MODE IN THE 5.8GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	-37.98	Pk	34.9	-19.6	11.8	0	-10.88	26.97	-37.85	344	165	H
2	5.652	-59.07	Pk	34.8	-19.4	11.8	0	-31.87	-25.47	-6.4	344	165	H

Pk - Peak detector

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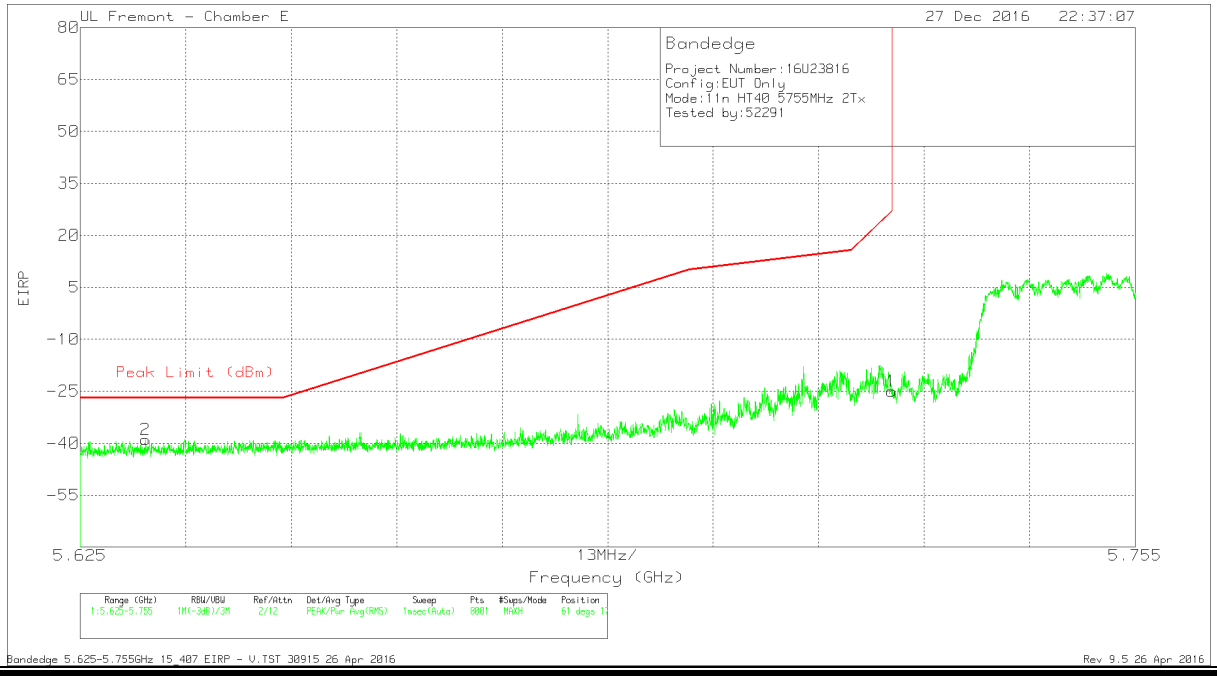
LOW CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	-52.12	Pk	34.9	-19.6	11.8	0	-25.02	26.97	-51.99	61	177	V
2	5.633	-66.07	Pk	34.8	-19.5	11.8	0	-38.97	-27	-11.97	61	177	V

Pk - Peak detector

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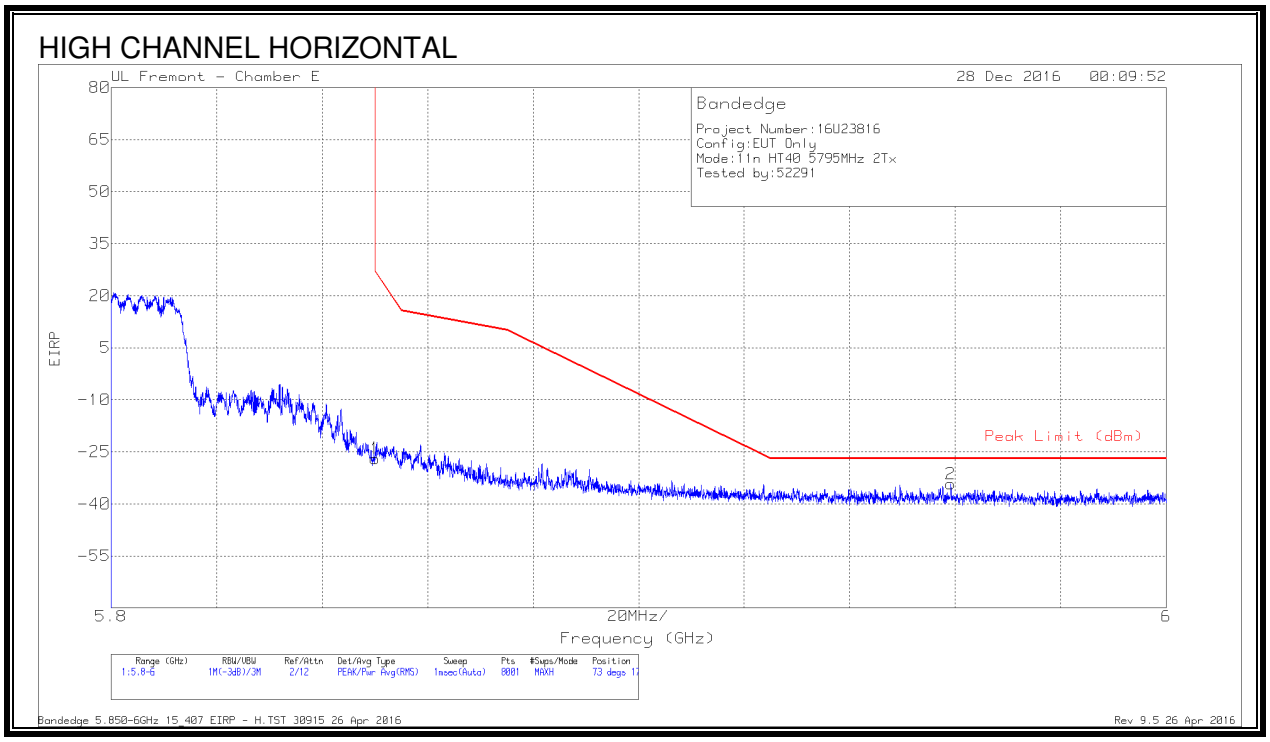
AUTHORIZED BANDEDGE (HIGH CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-54.17	Pk	34.9	-19.5	11.8	0	-26.97	26.94	-53.91	73	172	H
2	5.959	-62.07	Pk	35	-19	11.8	0	-34.27	-27	-7.27	73	172	H

Pk - Peak detector

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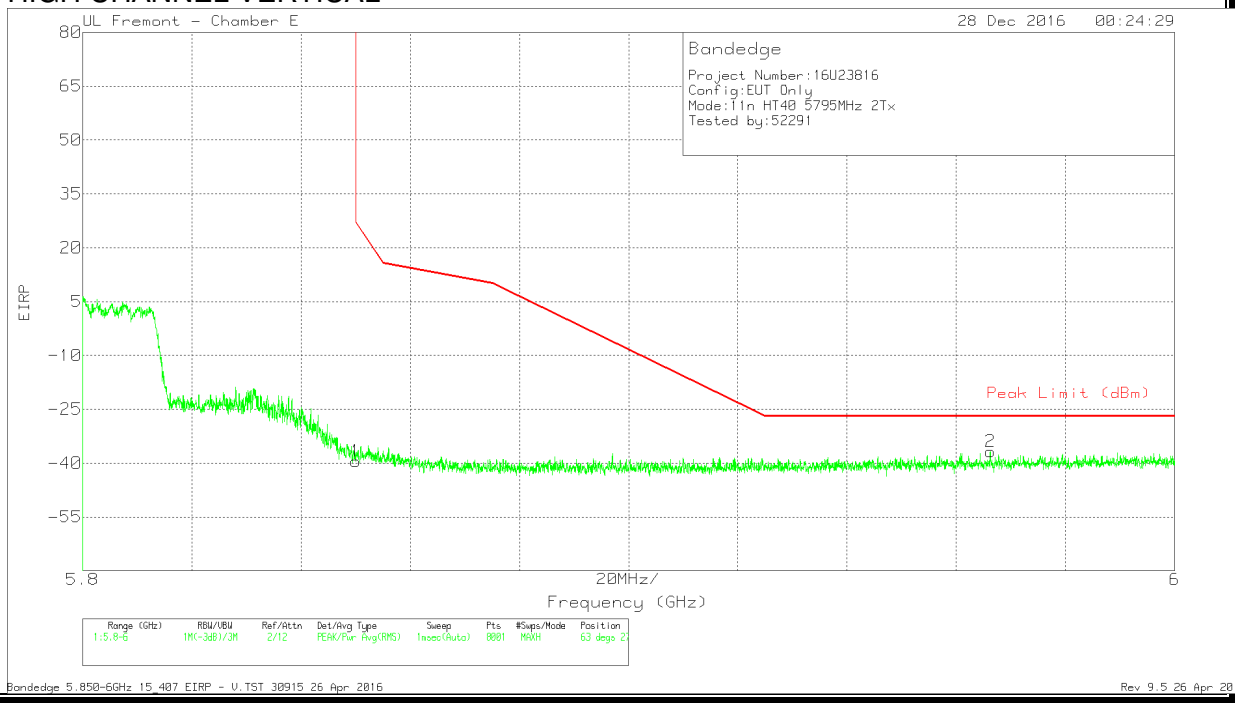
HIGH CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-66.74	Pk	34.9	-19.5	11.8	0	-39.54	26.94	-66.48	63	274	V
2	5.966	-64.63	Pk	35	-19	11.8	0	-36.83	-27	-9.83	63	274	V

Pk - Peak detector

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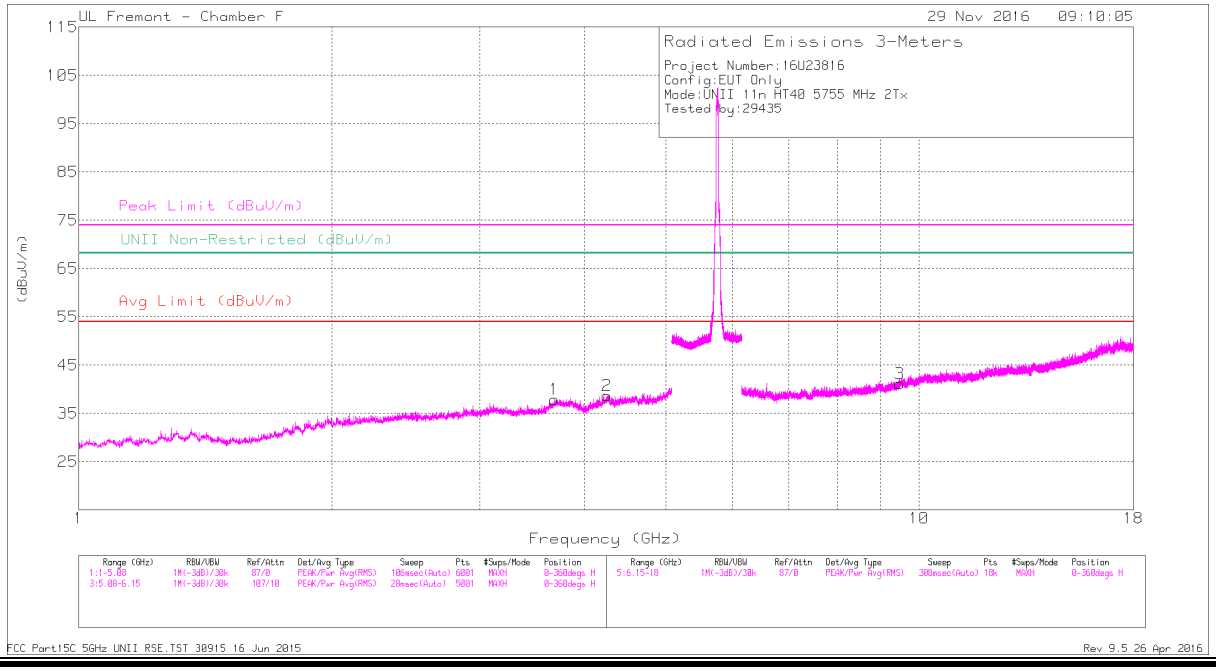
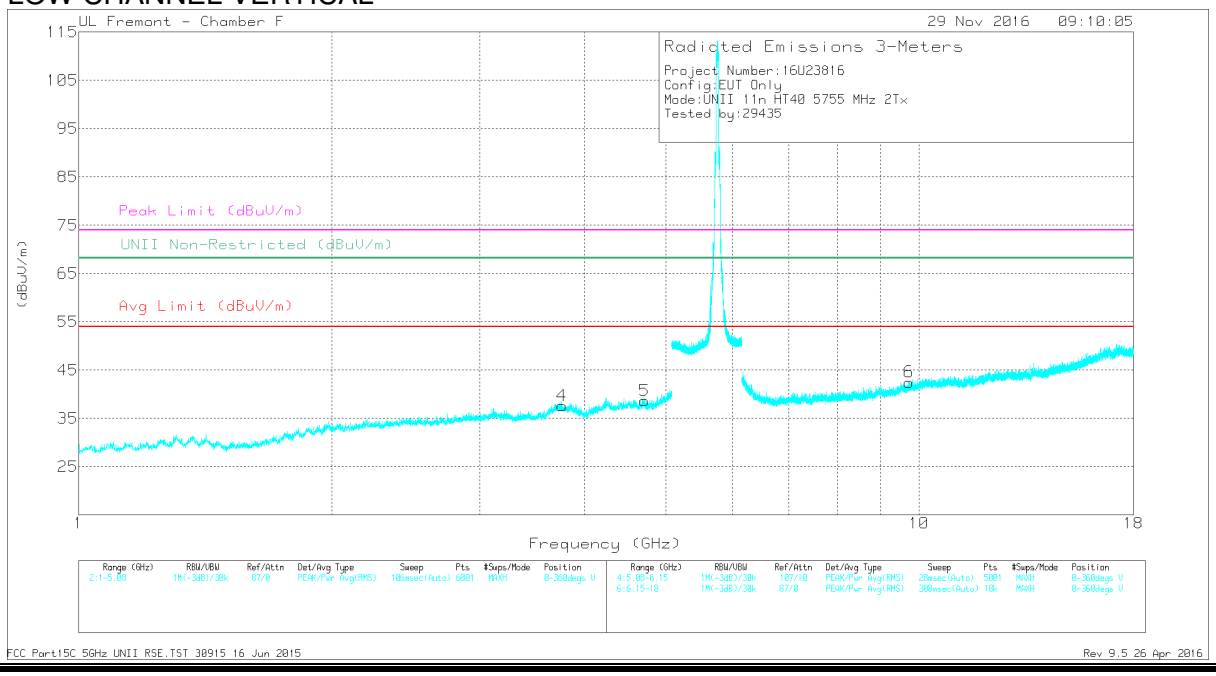
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



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Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Cor r (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	* 3.681	38.08	PK-U	33.3	-29	0	42.38	-	-	74	-31.62	-	-	320	367	H
	* 3.679	27.91	ADR	33.3	-29	.1	32.21	54	-21.79	-	-	-	-	320	367	H
2	* 4.249	37.22	PK-U	33.7	-26.5	0	44.42	-	-	74	-29.58	-	-	258	294	H
	* 4.249	26.34	ADR	33.7	-26.5	.1	33.54	54	-20.46	-	-	-	-	258	294	H
3	* 9.486	33.85	PK-U	36.5	-22	0	48.35	-	-	74	-25.65	-	-	278	205	H
	* 9.485	22.81	ADR	36.5	-22	.1	37.31	54	-16.69	-	-	-	-	278	205	H
4	* 3.762	38.87	PK-U	33.4	-29.3	0	42.97	-	-	74	-31.03	-	-	234	352	V
	* 3.763	27.97	ADR	33.4	-29.3	.1	32.07	54	-21.93	-	-	-	-	234	352	V
5	* 4.712	38.58	PK-U	34.2	-27.4	0	45.38	-	-	74	-28.62	-	-	342	359	V
	* 4.711	27.56	ADR	34.2	-27.4	.1	34.36	54	-19.64	-	-	-	-	342	359	V
6	9.734	27.72	Pk	36.7	-21.9	0	42.52	-	-	-	-	68.2	-25.68	0-360	100	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

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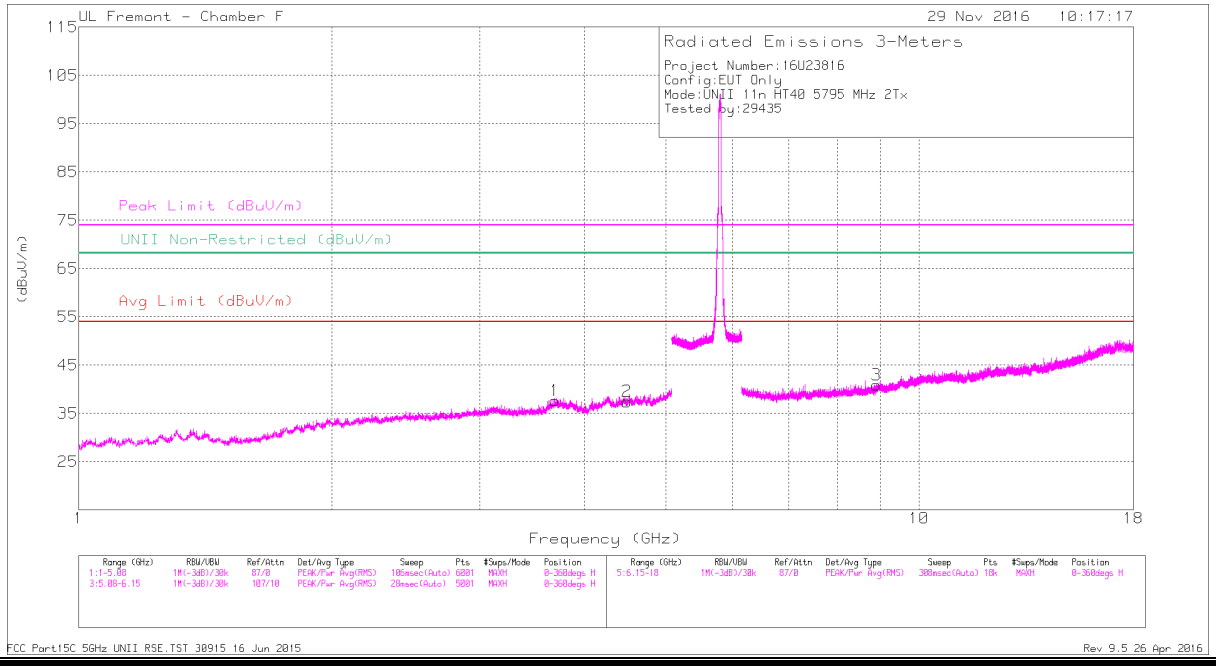
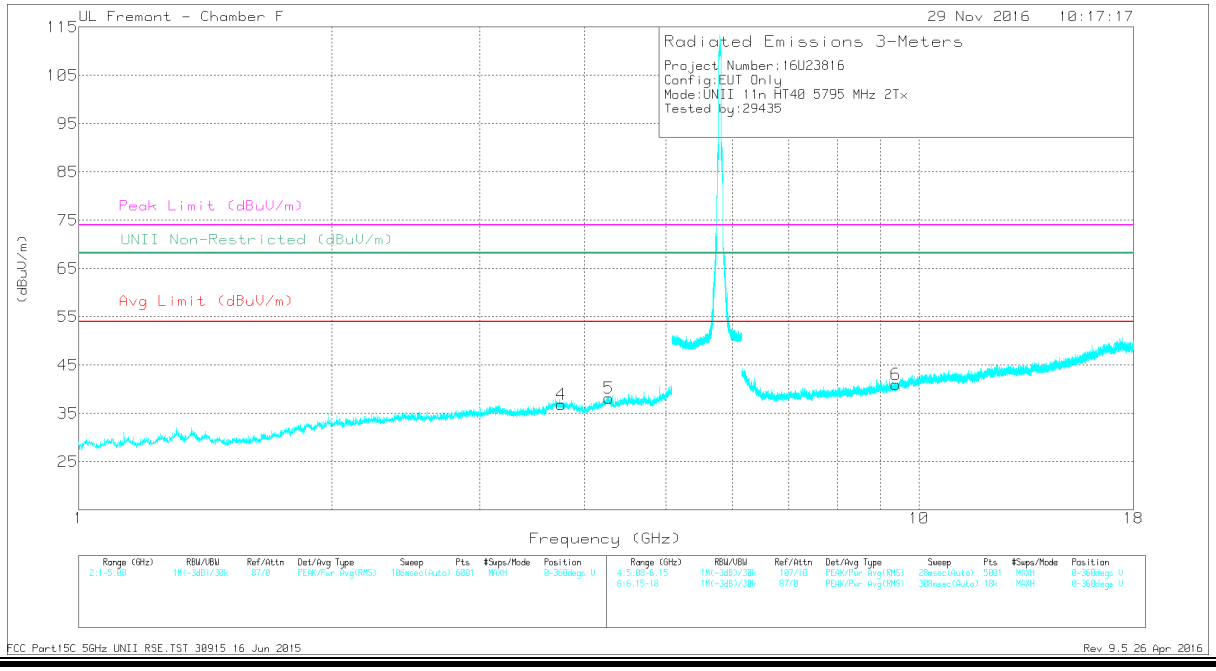
HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



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Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.692	38.77	PK-U	33.3	-28.9	0	43.17	-	-	74	-30.83	-	-	35	390	H
	* 3.689	27.86	ADR	33.3	-28.8	.1	32.36	54	-21.64	-	-	-	-	35	390	H
2	4.49	30.66	Pk	34	-27.2	0	37.46	-	-	-	-	68.2	-30.74	0-360	260	H
3	8.901	28.17	Pk	35.9	-23.2	0	40.87	-	-	-	-	68.2	-27.33	0-360	201	H
4	* 3.748	38.66	PK-U	33.4	-29.2	0	42.86	-	-	74	-31.14	-	-	60	141	V
	* 3.747	27.9	ADR	33.4	-29.2	.1	32.1	54	-21.9	-	-	-	-	60	141	V
5	* 4.272	37.48	PK-U	33.7	-26.6	0	44.58	-	-	74	-29.42	-	-	251	258	V
	* 4.271	26.63	ADR	33.7	-26.5	.1	33.83	54	-20.17	-	-	-	-	251	258	V
6	* 9.389	34.04	PK-U	36.4	-22.8	0	47.64	-	-	74	-26.36	-	-	13	399	V
	* 9.386	23.33	ADR	36.4	-22.7	.1	37.03	54	-16.97	-	-	-	-	13	399	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

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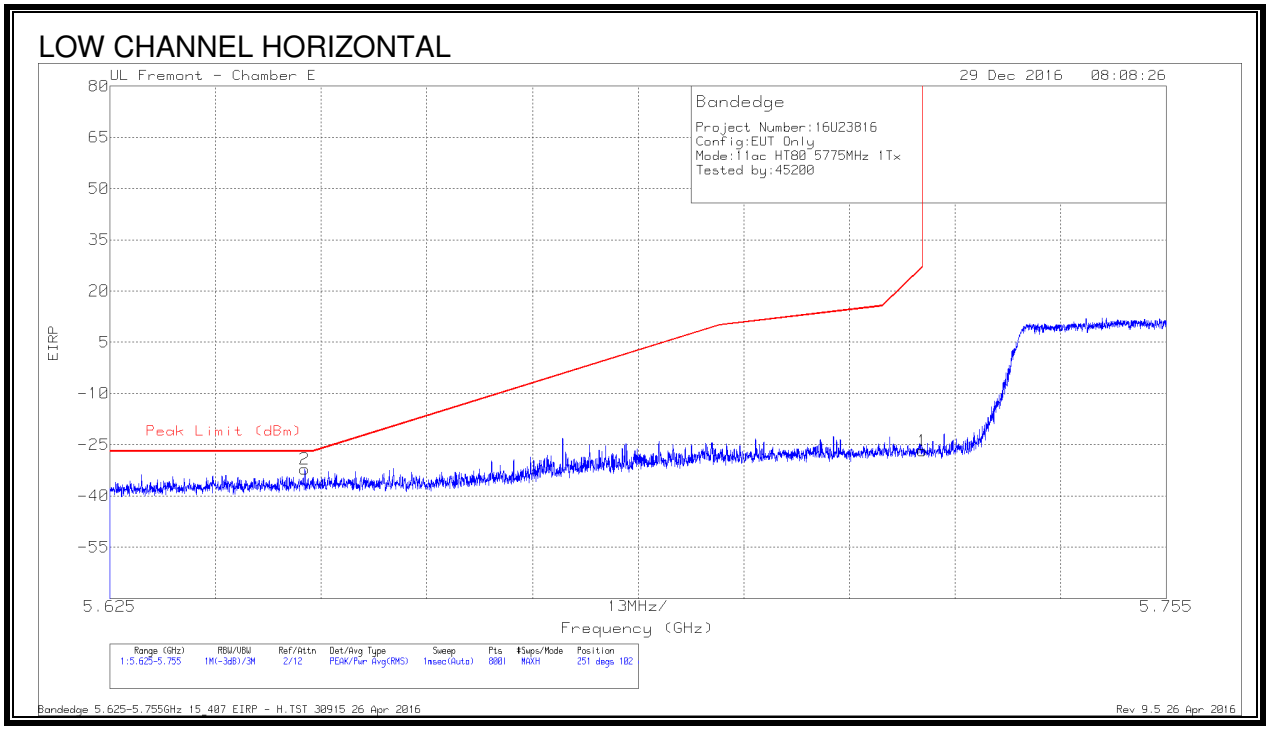
9.2.43. 11ac HT80 ANTENNA A SISO MODE IN THE 5.8GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	-53.84	Pk	34.9	-19.6	11.8	-26.74	26.97	-53.71	251	102	H
2	5.649	-59.29	Pk	34.8	-19.5	11.8	-32.19	-27	-5.19	251	102	H

Pk - Peak detector

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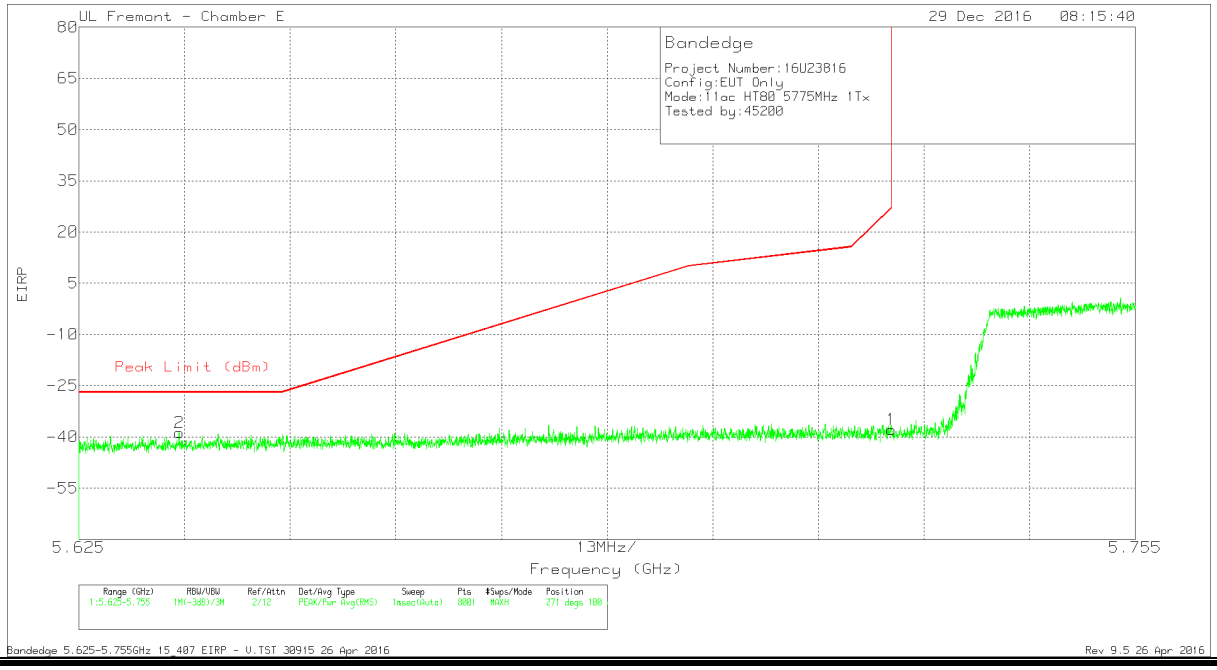
LOW CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	-64.99	Pk	34.9	-19.6	11.8	-37.89	26.97	-64.86	271	100	V
2	5.637	-65.81	Pk	34.8	-19.5	11.8	-38.71	-27	-11.71	271	100	V

Pk - Peak detector

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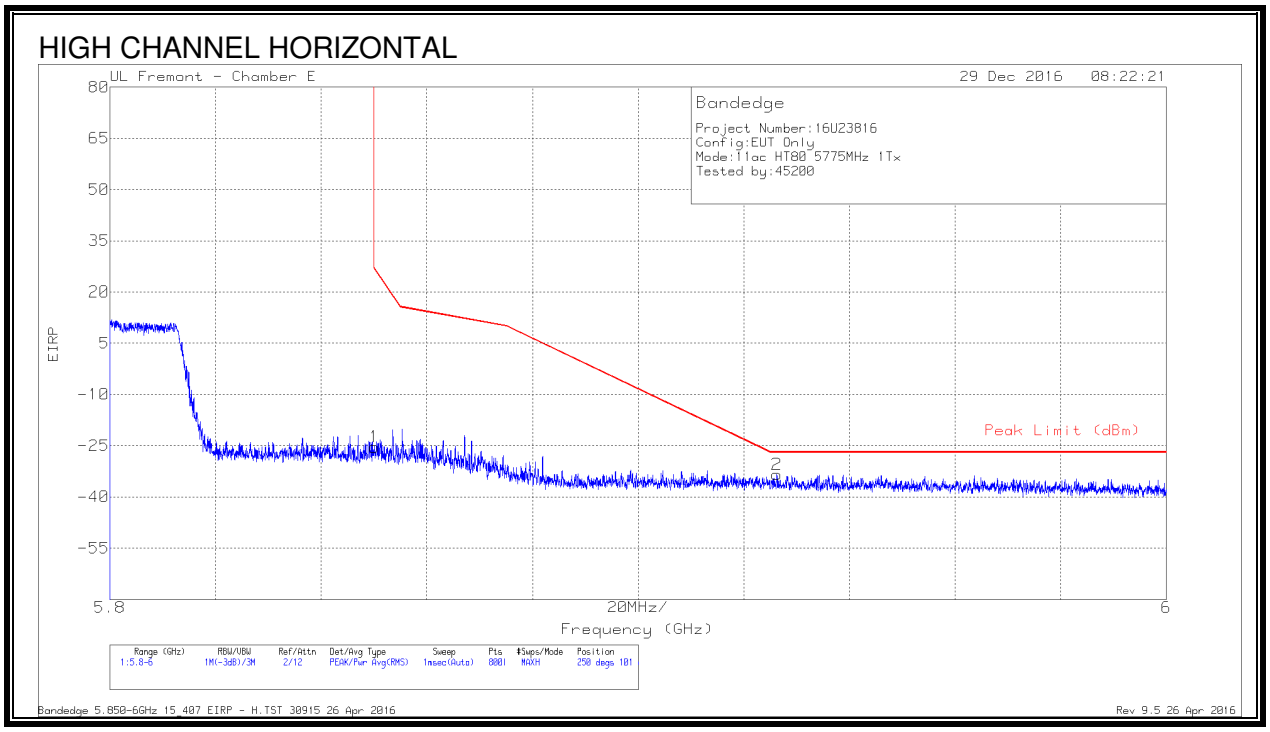
AUTHORIZED BANDEDGE (HIGH CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-52.61	Pk	34.9	-19.5	11.8	-25.41	26.94	-52.35	250	101	H
2	5.926	-61.05	Pk	35	-19.2	11.8	-33.45	-27	-6.45	250	101	H

Pk - Peak detector

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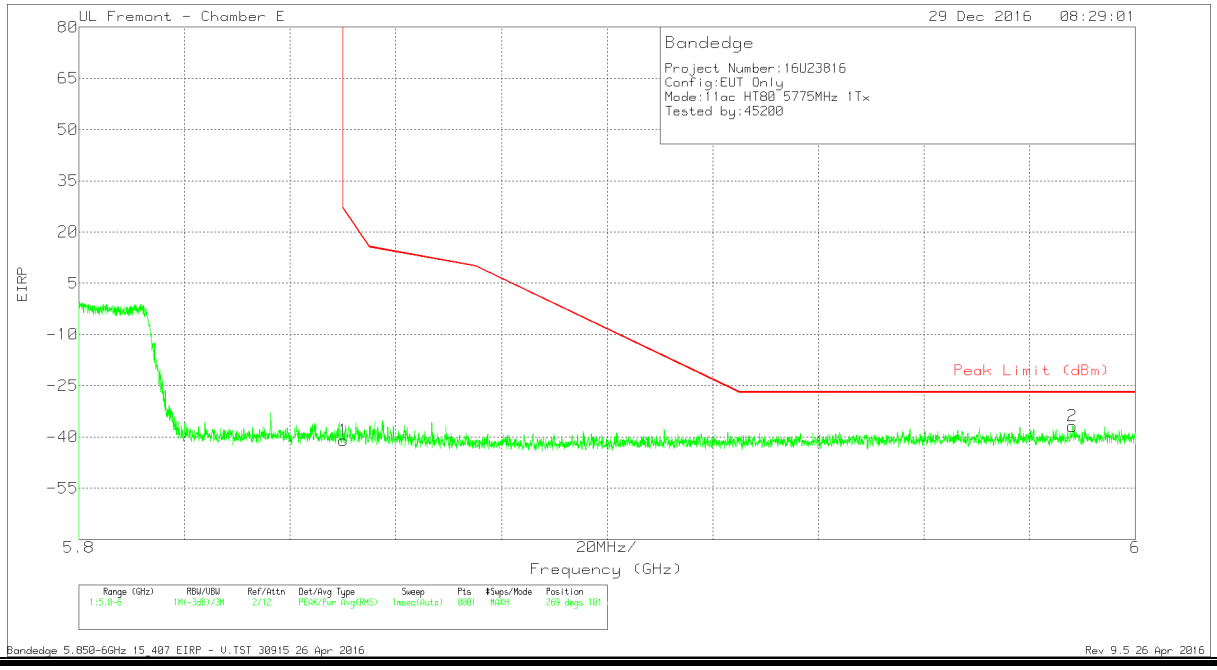
HIGH CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-68.22	Pk	34.9	-19.5	11.8	-41.02	26.94	-67.96	269	101	V
2	5.988	-64.83	Pk	35	-18.8	11.8	-36.83	-27	-9.83	269	101	V

Pk - Peak detector

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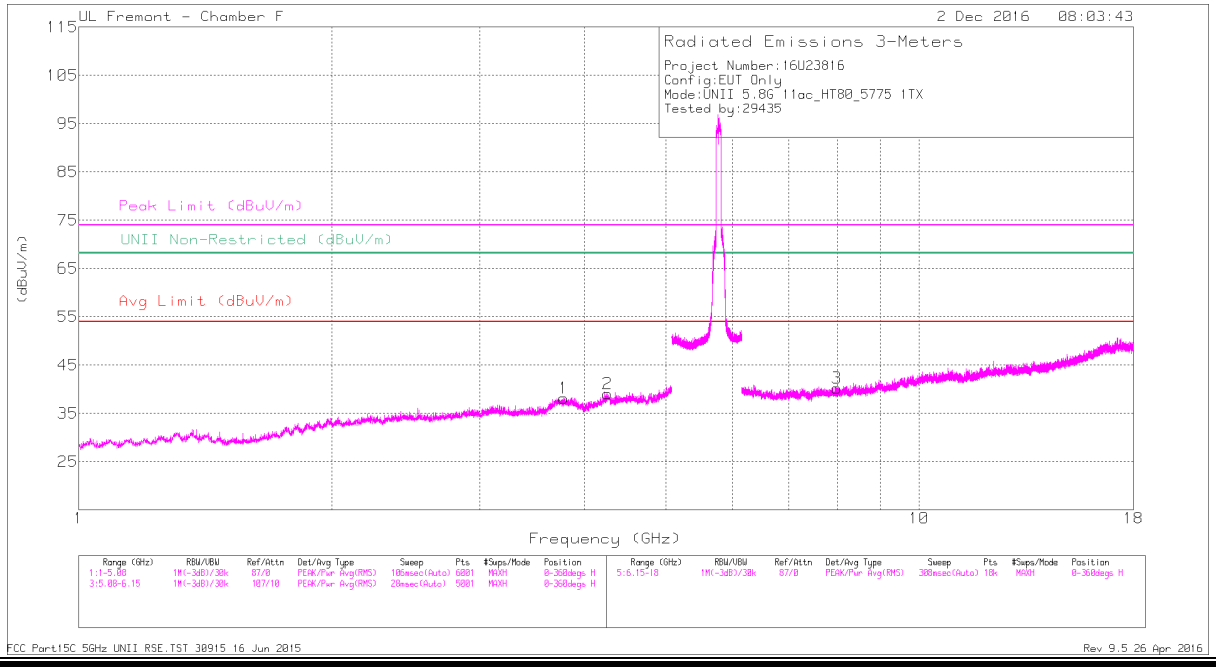
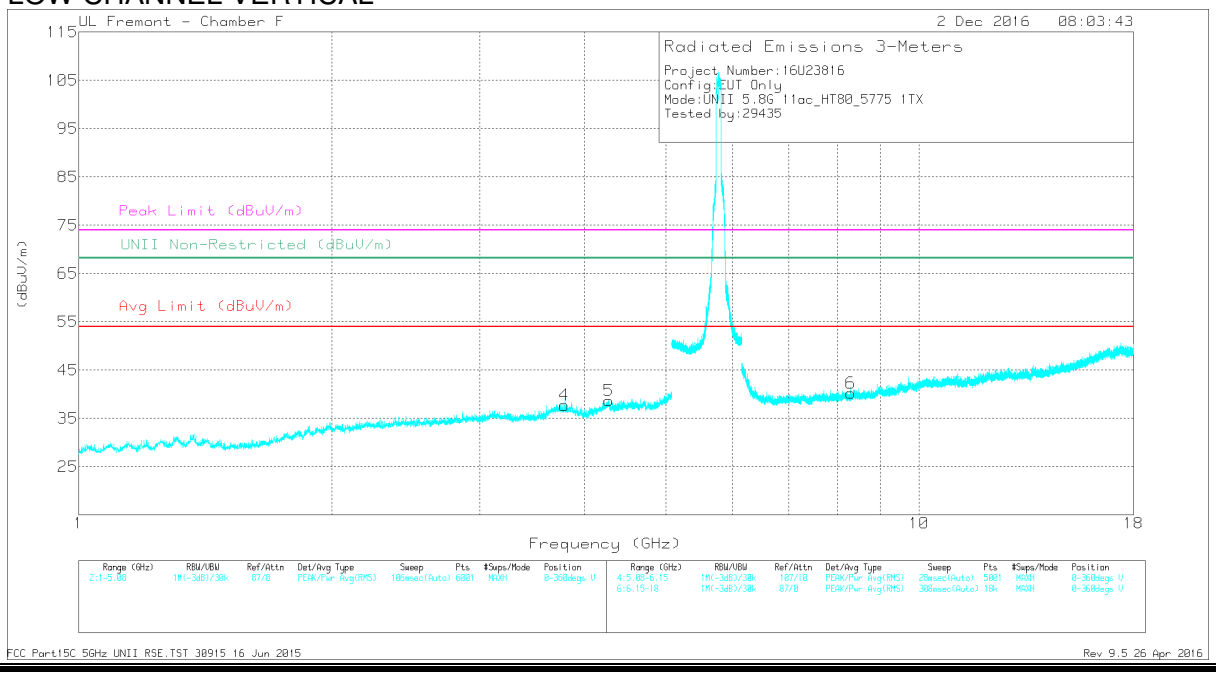
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



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Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.779	39.5	PK-U	33.4	-29.4	0	43.5	-	-	74	-30.5	-	-	218	298	H
	* 3.779	28.2	ADR	33.4	-29.4	.2	32.4	54	-21.6	-	-	-	-	218	298	H
2	* 4.26	37.55	PK-U	33.7	-26.5	0	44.75	-	-	74	-29.25	-	-	126	154	H
	* 4.262	26.77	ADR	33.7	-26.4	.2	34.27	54	-19.73	-	-	-	-	126	154	H
3	7.989	29.86	Pk	35.8	-25.4	0	40.26	-	-	-	-	68.2	-27.94	0-360	201	H
4	* 3.785	38.91	PK-U	33.4	-29.4	0	42.91	-	-	74	-31.09	-	-	252	209	V
	* 3.784	28.26	ADR	33.4	-29.4	.2	32.46	54	-21.54	-	-	-	-	252	209	V
5	* 4.28	37.14	PK-U	33.7	-26.8	0	44.04	-	-	74	-29.96	-	-	250	256	V
	* 4.276	27	ADR	33.7	-26.7	.2	34.2	54	-19.8	-	-	-	-	250	256	V
6	* 8.297	35.81	PK-U	35.7	-25	0	46.51	-	-	74	-27.49	-	-	172	280	V
	* 8.295	25.05	ADR	35.7	-24.9	.2	36.05	54	-17.95	-	-	-	-	172	280	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

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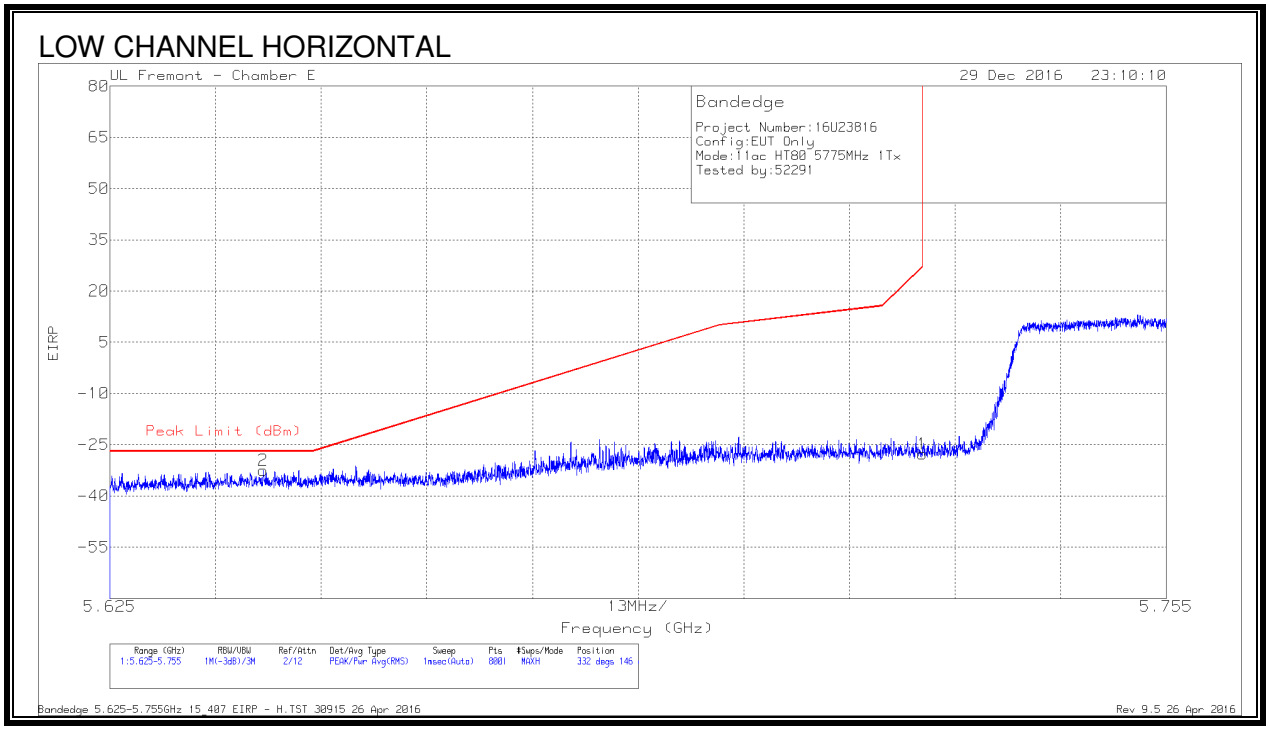
9.2.44. 11ac HT80 ANTENNA B SISO MODE IN THE 5.8GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	-54.88	Pk	34.9	-19.6	11.8	0	-27.78	26.97	-54.75	332	146	H
2	5.644	-59.54	Pk	34.8	-19.5	11.8	0	-32.44	-27	-5.44	332	146	H

Pk - Peak detector

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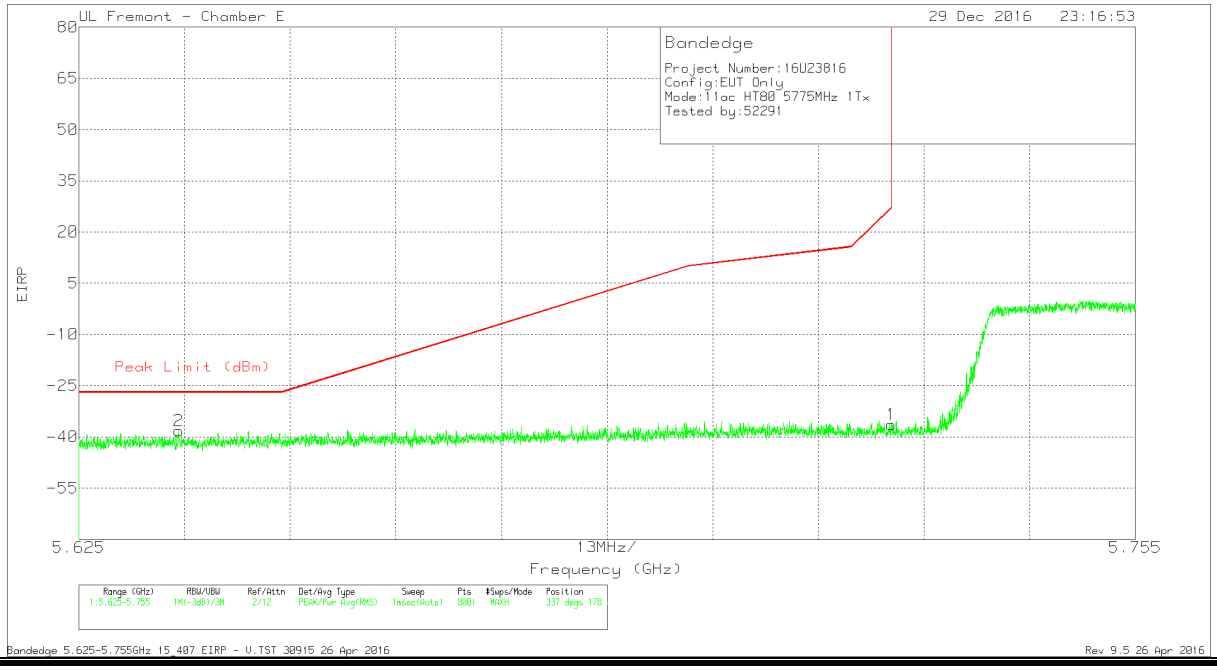
LOW CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	-63.51	Pk	34.9	-19.6	11.8	0	-36.41	26.97	-63.38	337	178	V
2	5.637	-65.36	Pk	34.8	-19.5	11.8	0	-38.26	-27	-11.26	337	178	V

Pk - Peak detector

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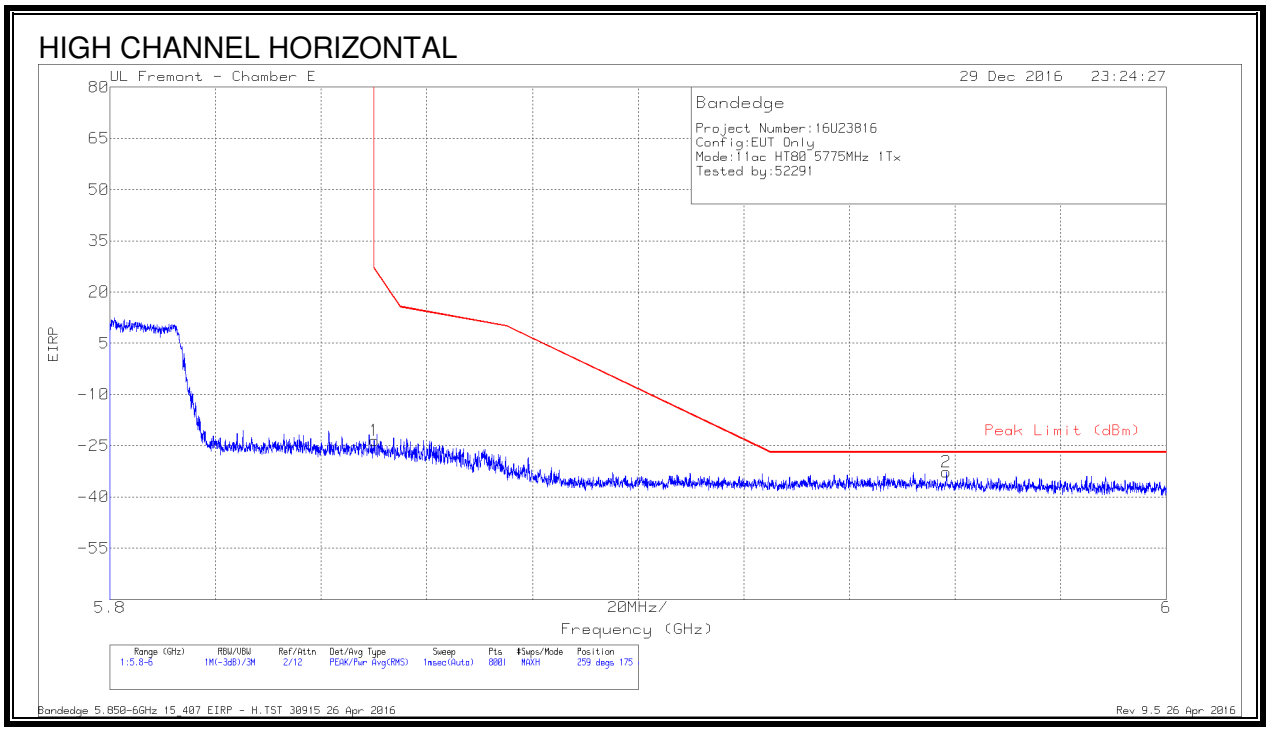
AUTHORIZED BANDEDGE (HIGH CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-50.72	Pk	34.9	-19.5	11.8	0	-23.52	26.94	-50.46	259	175	H
2	5.958	-60.51	Pk	35	-19	11.8	0	-32.71	-27	-5.71	259	175	H

Pk - Peak detector

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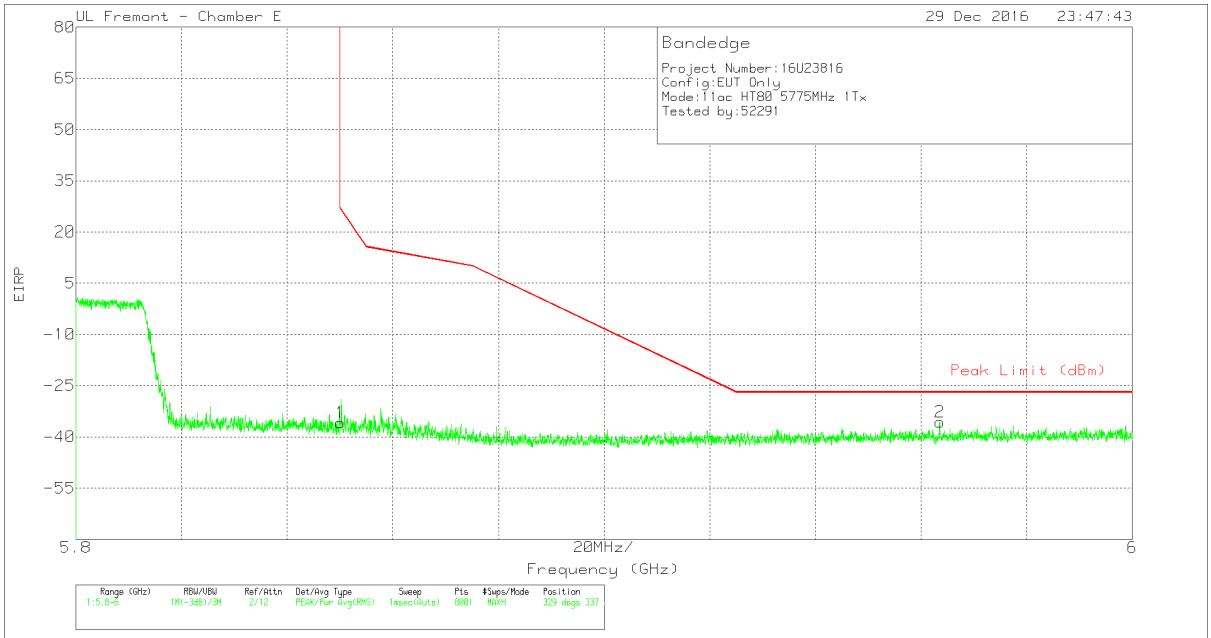
HIGH CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-63.07	Pk	34.9	-19.5	11.8	0	-35.87	26.94	-62.81	329	337	V
2	5.964	-63.43	Pk	35	-19	11.8	0	-35.63	-27	-8.63	329	337	V

Pk - Peak detector

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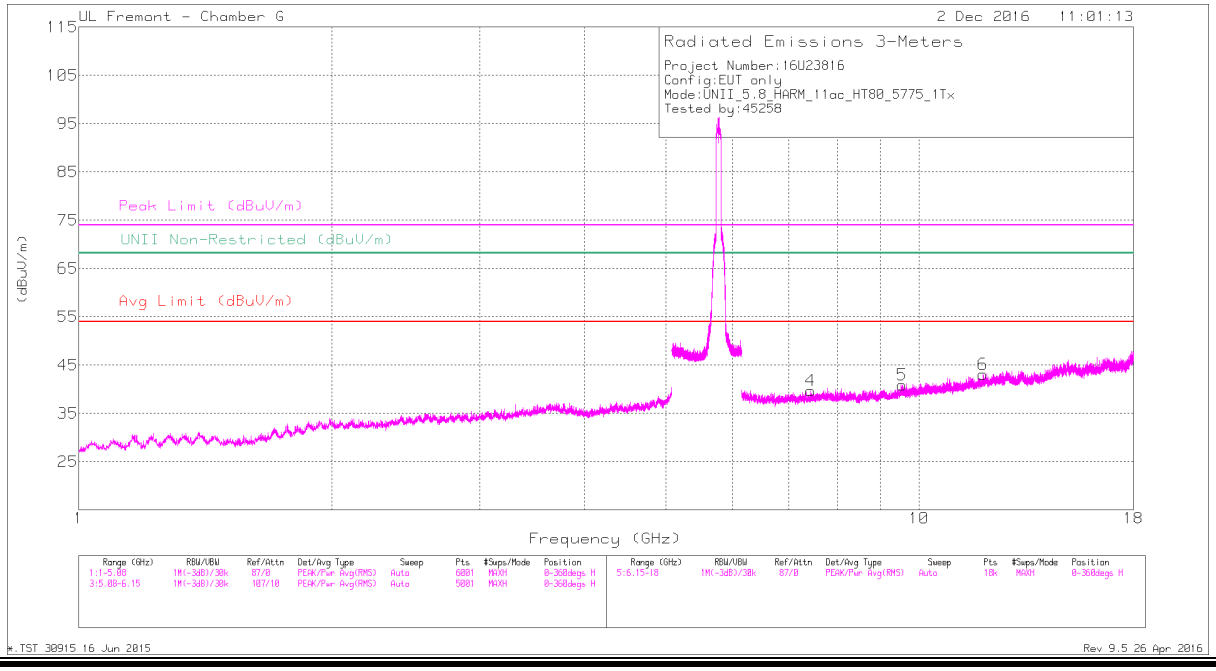
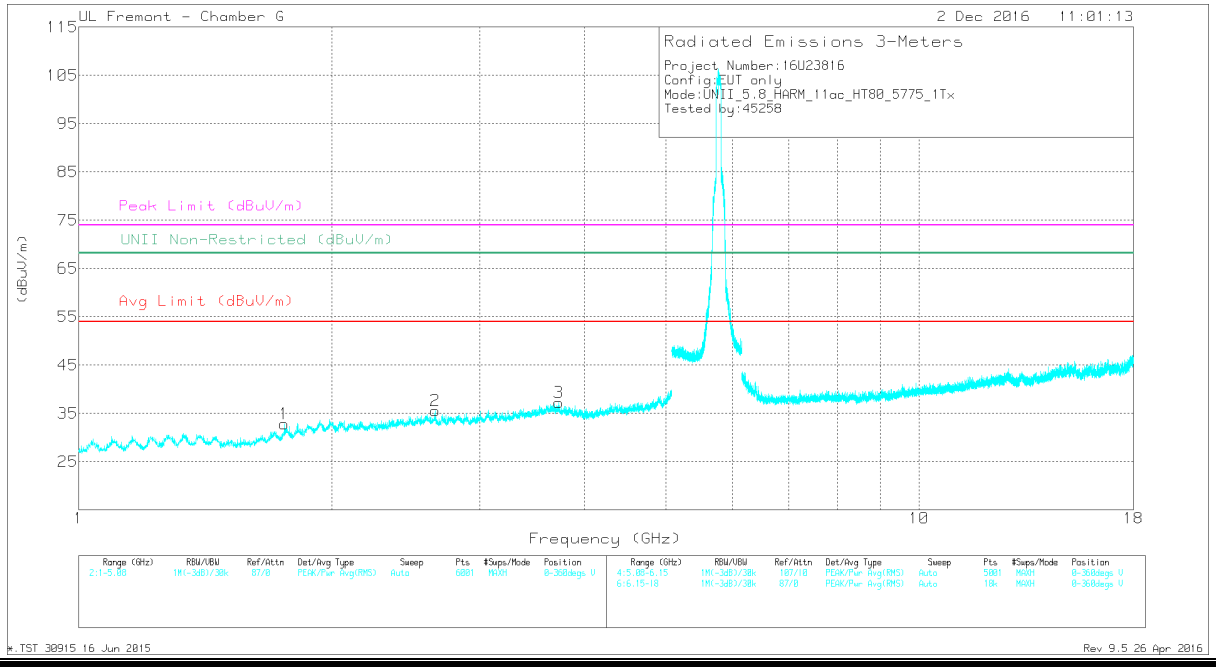
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



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Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Cor r (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	1.758	44.28	PK-U	29.9	-33.8	0	40.38	-	-	-	-	68.2	-27.82	338	398	V
2	* 2.656	42.88	PK-U	32.6	-33.1	0	42.38	-	-	74	-31.62	-	-	302	245	V
	* 2.658	32.02	ADR	32.6	-33.1	.2	31.72	54	-22.28	-	-	-	-	302	245	V
3	* 3.731	41.45	PK-U	34.2	-32.1	0	43.55	-	-	74	-30.45	-	-	154	272	V
	* 3.731	30.94	ADR	34.2	-32.1	.2	33.24	54	-20.76	-	-	-	-	154	272	V
4	9.549	37.53	PK-U	36.7	-27.3	0	46.93	-	-	-	-	68.2	-21.27	268	361	H
5	* 7.429	39.62	PK-U	35.9	-29.9	0	45.62	-	-	74	-28.38	-	-	112	296	H
	* 7.427	29.38	ADR	35.9	-29.9	.2	35.58	54	-18.42	-	-	-	-	112	296	H
6	* 11.916	36.51	PK-U	38.8	-25.8	0	49.51	-	-	74	-24.49	-	-	53	151	H
	* 11.915	25.4	ADR	38.8	-25.8	.2	38.6	54	-15.4	-	-	-	-	53	151	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

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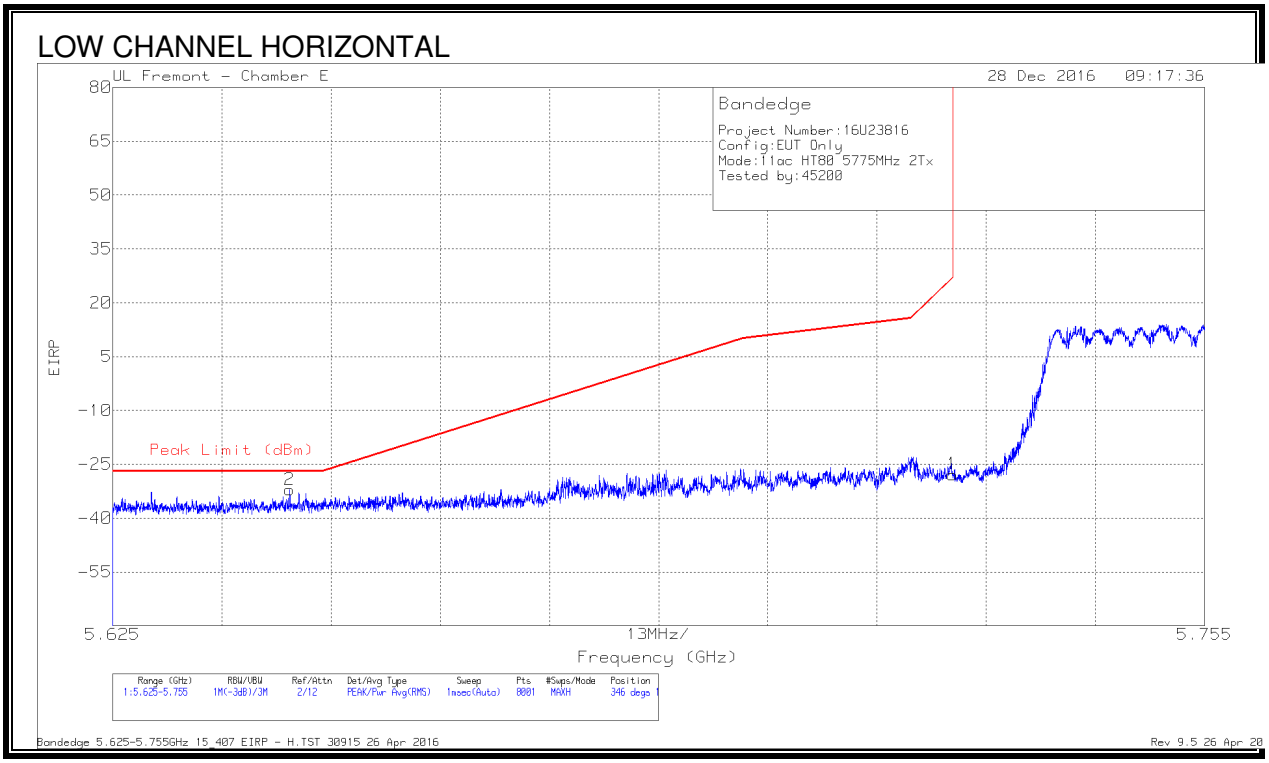
9.2.45. 11ac HT80 2TX CDD MIMO MODE IN THE 5.8GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T711 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	-54.91	Pk	34.9	-19.6	11.8	-27.81	26.97	-54.78	346	128	H
2	5.646	-59.2	Pk	34.8	-19.5	11.8	-32.1	-27	-5.1	346	128	H

Pk - Peak detector

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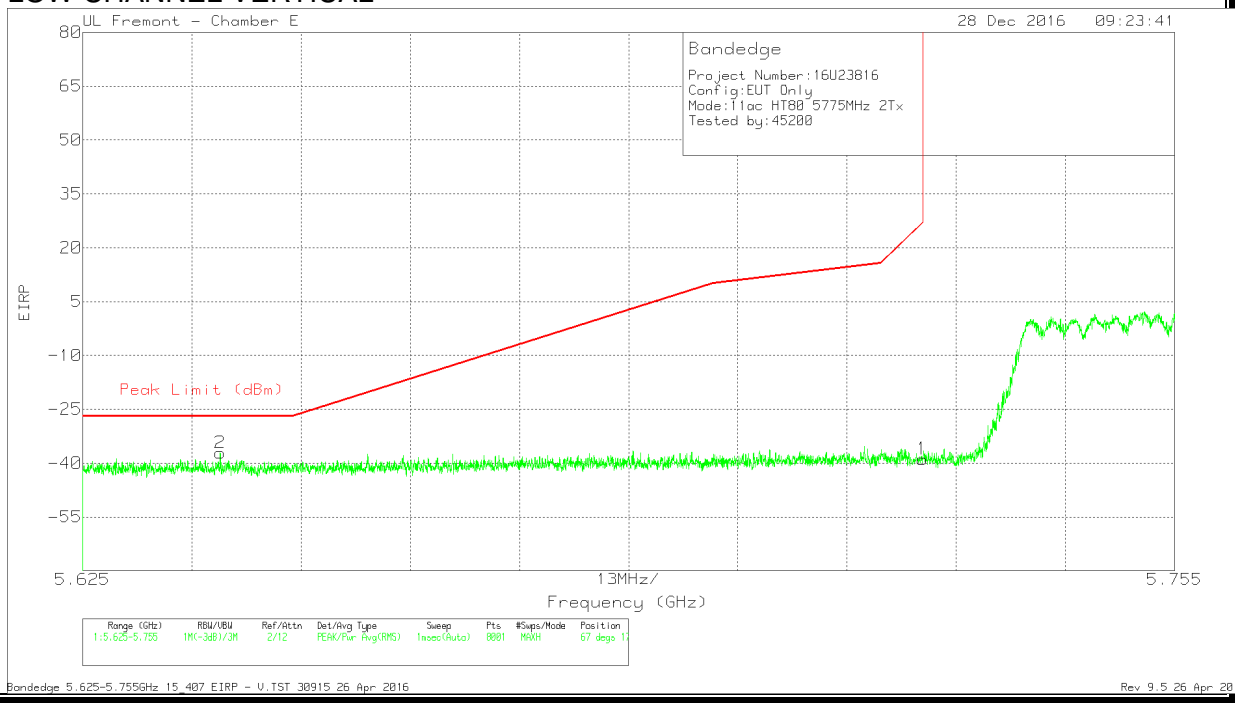
LOW CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	-65.98	Pk	34.9	-19.6	11.8	-38.88	26.97	-65.85	67	176	V
2	5.641	-64.27	Pk	34.8	-19.5	11.8	-37.17	-27	-10.17	67	176	V

Pk - Peak detector

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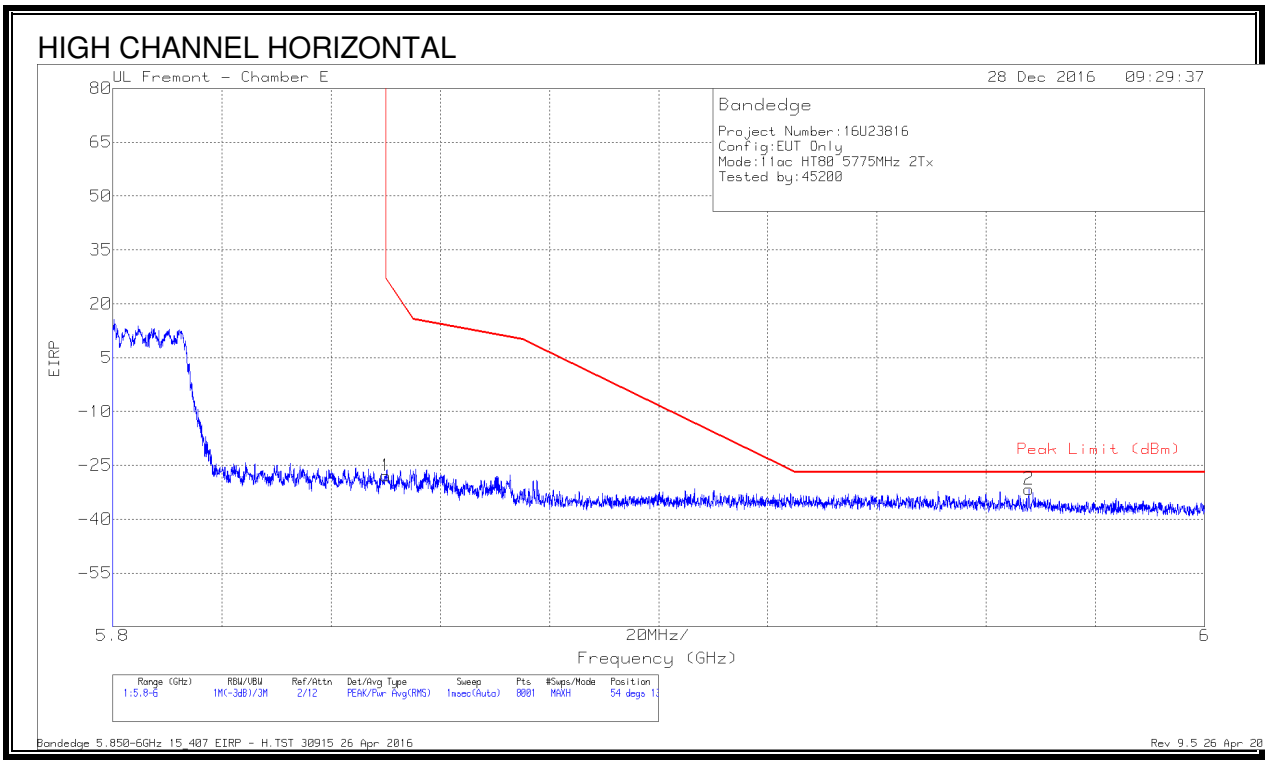
RESTRICTED BANDEDGE (HIGH CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-55.12	Pk	34.9	-19.5	11.8	-27.92	26.94	-54.86	54	134	H
2	5.968	-59.53	Pk	35	-18.9	11.8	-31.63	-27	-4.63	54	134	H

Pk - Peak detector

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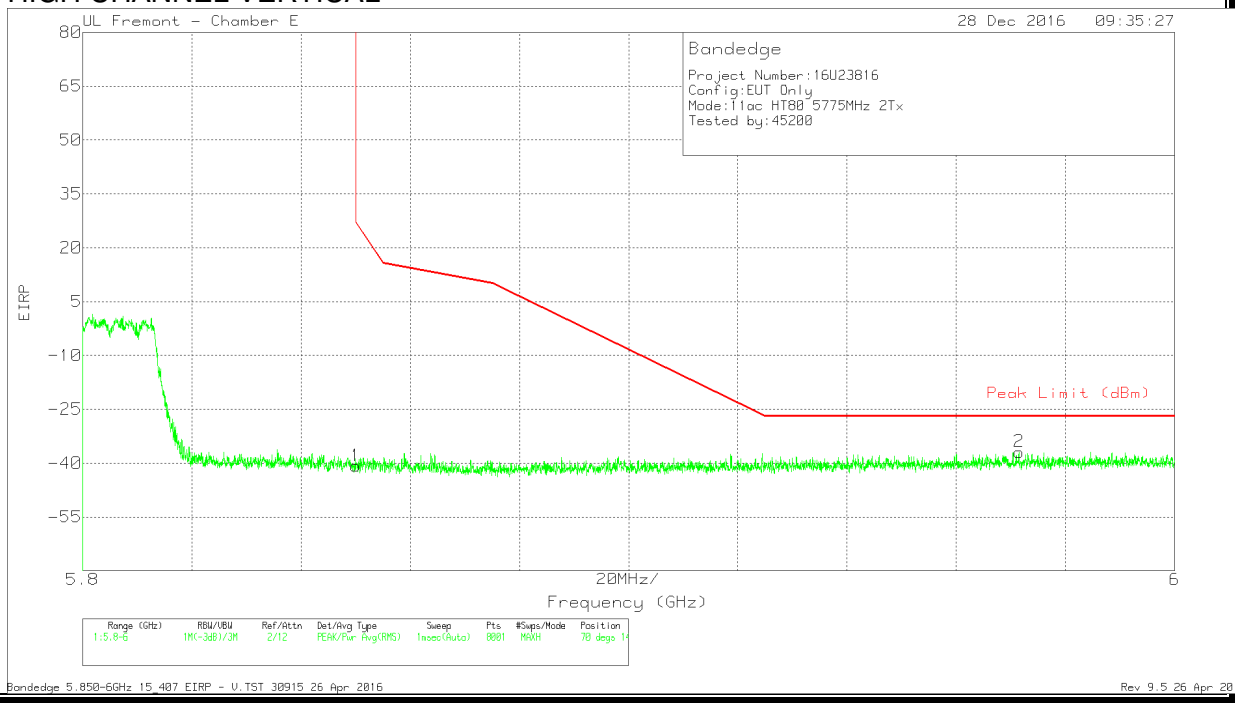
HIGH CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-68.02	Pk	34.9	-19.5	11.8	-40.82	26.94	-67.76	70	148	V
2	5.972	-64.68	Pk	35	-19	11.8	-36.88	-27	-9.88	70	148	V

Pk - Peak detector

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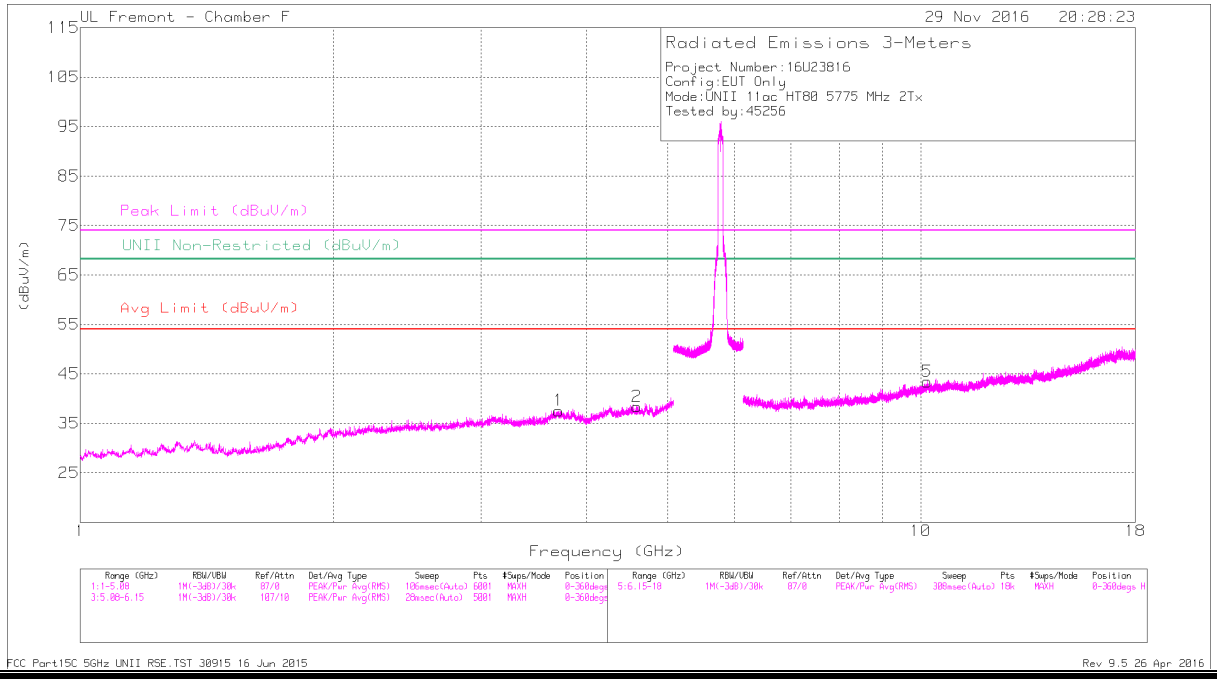
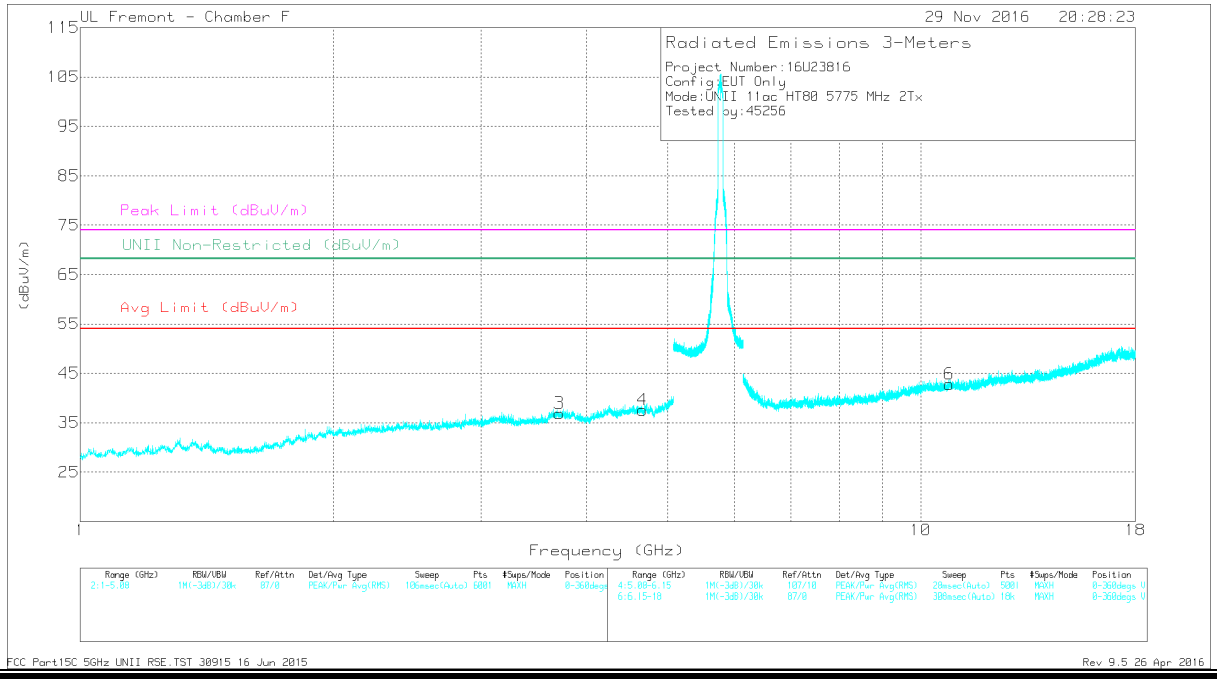
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



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Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.708	38.51	PK-U	33.3	-29	0	42.81	-	-	74	-31.19	-	-	244	150	H
	* 3.707	27.84	ADR	33.3	-29	.21	32.37	54	-21.65	-	-	-	-	244	150	H
2	* 4.594	38.3	PK-U	34.1	-27.8	0	44.6	-	-	74	-29.4	-	-	226	286	H
	* 4.592	27.46	ADR	34.1	-27.8	.21	33.99	54	-20.03	-	-	-	-	226	286	H
3	* 3.717	39.13	PK-U	33.4	-29	0	43.53	-	-	74	-30.47	-	-	228	368	V
	* 3.714	27.79	ADR	33.4	-29	.21	32.42	54	-21.6	-	-	-	-	228	368	V
4	* 4.667	37.85	PK-U	34.2	-27.3	0	44.75	-	-	74	-29.25	-	-	127	154	V
	* 4.665	27.19	ADR	34.2	-27.3	.21	34.32	54	-19.7	-	-	-	-	127	154	V
5	10.183	33.43	PK-U	37.2	-21.3	0	49.33	-	-	-	-	68.2	-18.87	308	163	H
6	* 10.806	33.9	PK-U	37.8	-21.9	0	49.8	-	-	74	-24.2	-	-	14	277	V
	* 10.808	22.99	ADR	37.8	-21.9	.21	39.12	54	-14.9	-	-	-	-	14	277	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

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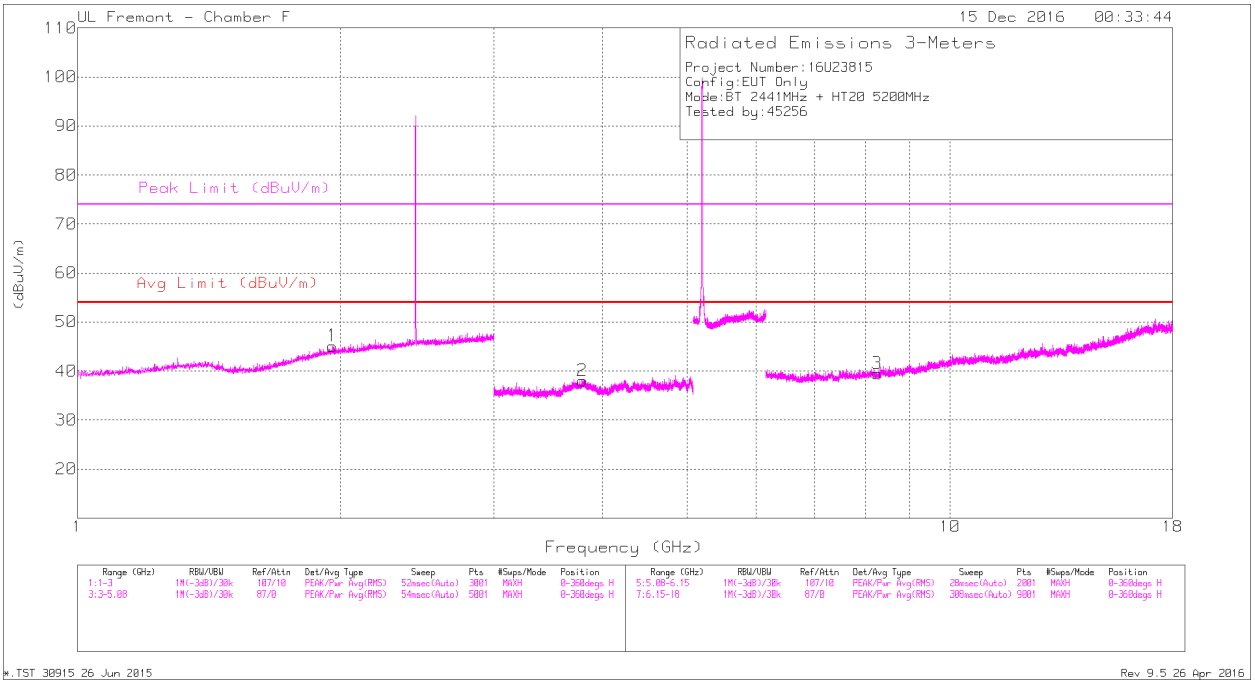
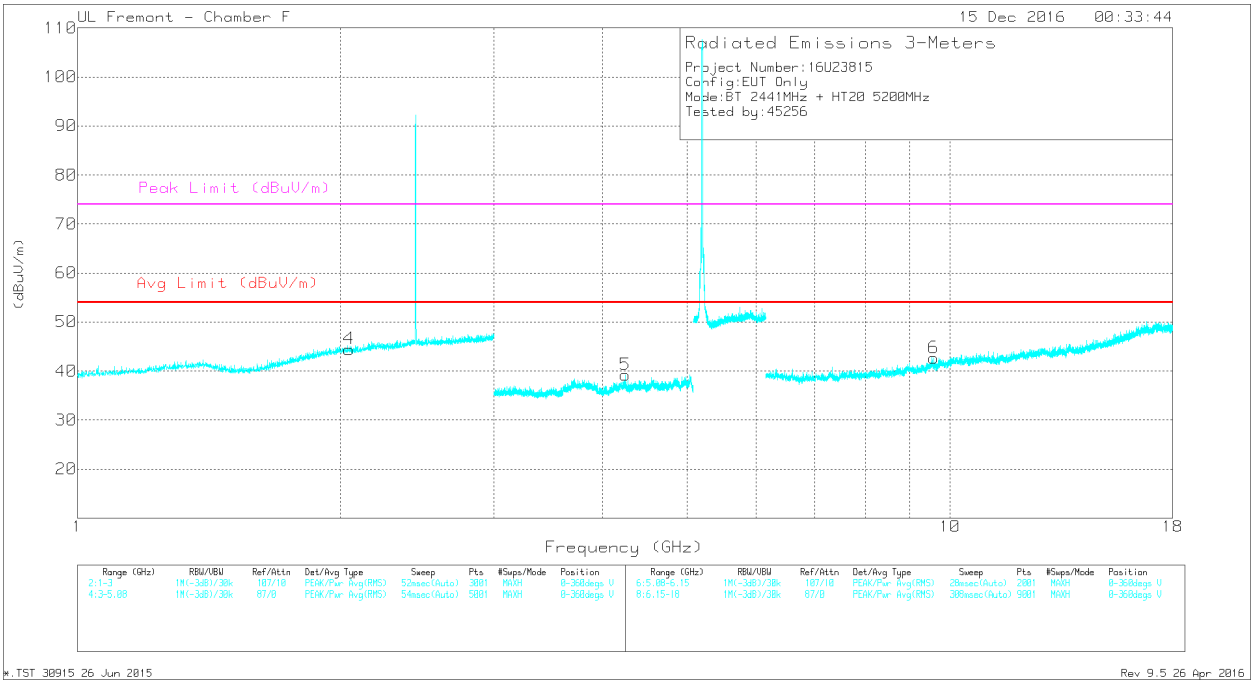
9.3. WORST-CASE CO-LOCATION

BLUETOOTH AND 802.11 HT20 2Tx CDD MODE IN THE 5.2GHz BAND

HORIZONTAL PLOT



VERTICAL PLOT



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DATA

Markers	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl /Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.963	41.4	PK-U	31.3	-21.4	0	51.3			74	-22.7	337	216	H
	1.962	30.44	ADR	31.3	-21.4	0	40.34	53.97	-13.63	-	-	337	216	H
2	* 3.788	38.54	PK-U	33.4	-28.8	0	43.14			74	-30.86	60	126	H
	* 3.789	27.84	ADR	33.4	-28.8	0	32.44	53.97	-21.53	-	-	60	126	H
3	* 8.257	35.07	PK-U	35.7	-24.5	0	46.27			74	-27.73	267	246	H
	* 8.26	24.47	ADR	35.7	-24.6	0	35.57	53.97	-18.4	-	-	267	246	H
4	2.049	41.76	PK-U	31.5	-21.4	0	51.86			74	-22.14	231	139	V
	2.05	30.44	ADR	31.5	-21.5	0	40.44	53.97	-13.53	-	-	231	139	V
5	* 4.247	38.65	PK-U	33.7	-28.1	0	44.25			74	-29.75	279	215	V
	* 4.247	27.63	ADR	33.7	-28.1	0	33.23	53.97	-20.74	-	-	279	215	V
6	9.579	34.06	PK-U	36.5	-21.7	0	48.86			74	-25.14	47	137	V
	9.581	22.97	ADR	36.5	-21.7	0	37.77	53.97	-16.20	-	-	47	137	V

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

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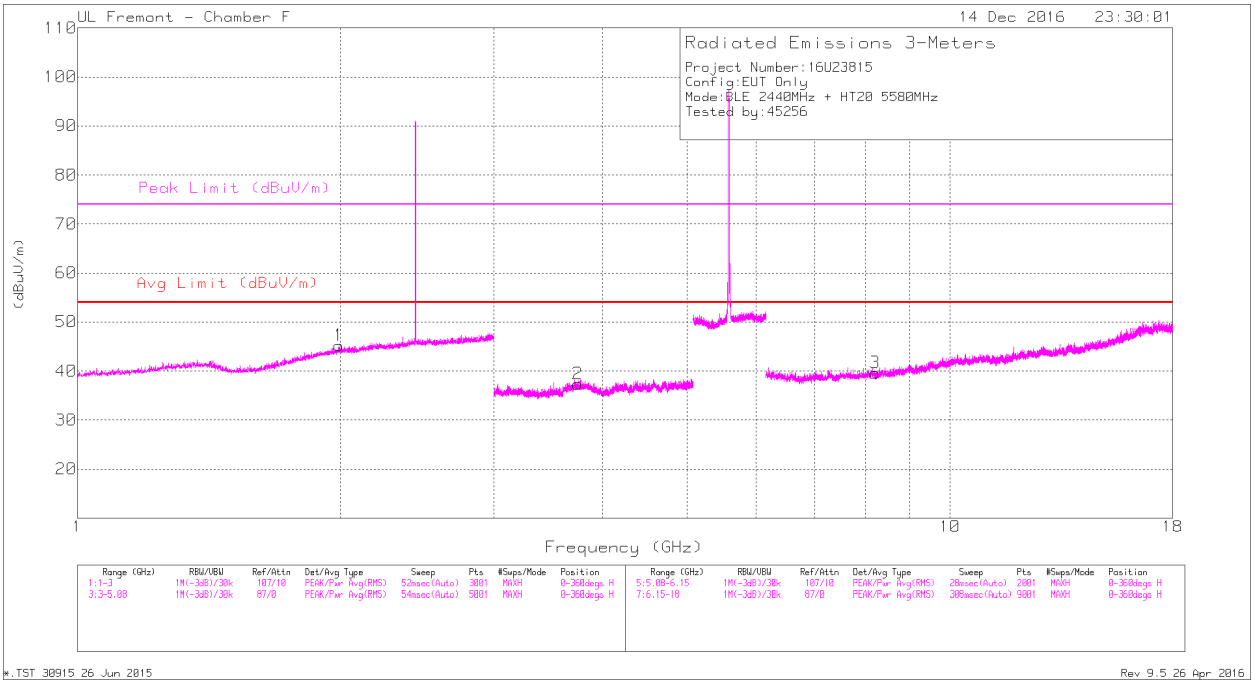
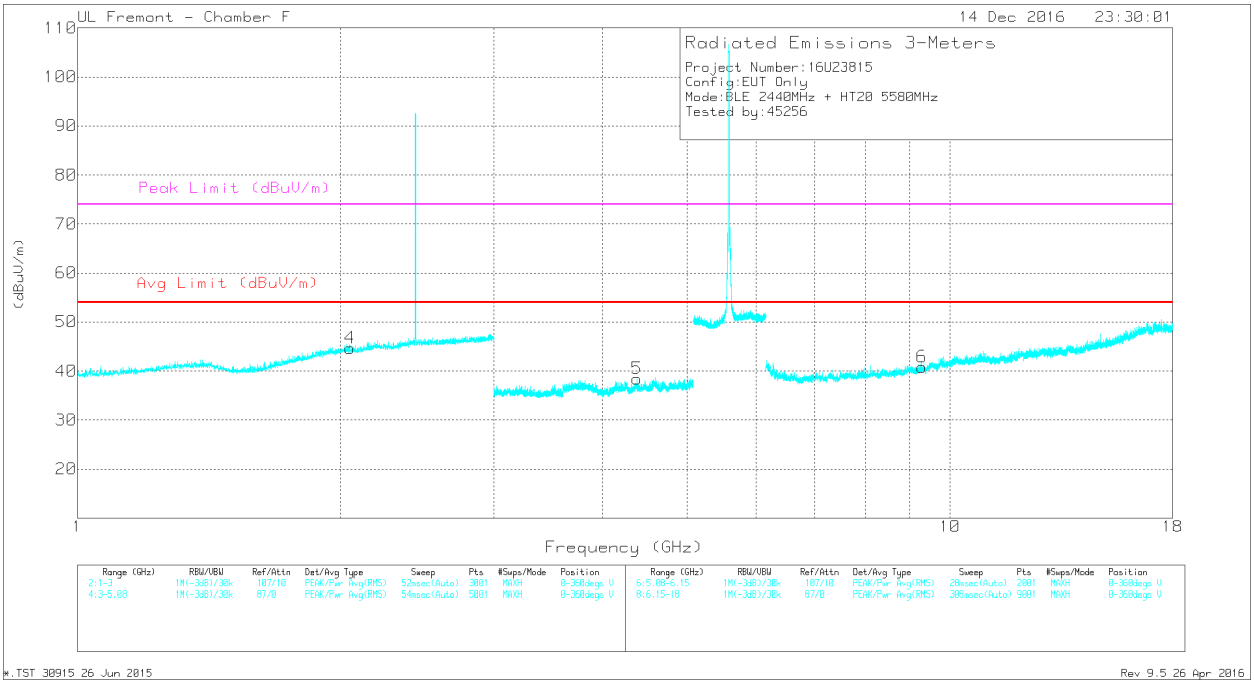
BLUETOOTH LOW ENERGY AND 802.11 HT20 2Tx CDD MODE IN THE 5.6GHz BAND

HORIZONTAL PLOT



VERTICAL PLOT



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DATA

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1.993	41.56	PK-U	31.5	-21.4	0	51.66			74	-22.34	148	200	H
1.992	30.44	ADR	31.5	-21.4	0	40.54	53.97	-13.43	-	-	148	200	H
2.053	42.44	PK-U	31.5	-21.4	0	52.54			74	-21.46	27	172	V
2.054	30.56	ADR	31.5	-21.4	0	40.66	53.97	-13.31	-	-	27	172	V
* 3.747	37.93	PK-U	33.4	-29.1	0	42.23			74	-31.77	167	301	H
* 3.746	27.75	ADR	33.4	-29.1	0	32.05	53.97	-21.92	-	-	167	301	H
* 4.38	38.94	PK-U	34	-28.9	0	44.04			74	-29.96	343	293	V
* 4.38	28.04	ADR	34	-28.9	0	33.14	53.97	-20.83	-	-	343	293	V
* 8.207	34.89	PK-U	35.8	-24.7	0	45.99			74	-28.01	39	254	H
* 8.205	24.69	ADR	35.8	-24.6	0	35.89	53.97	-18.08	-	-	39	254	H
9.29	34.28	PK-U	36.3	-22.6	0	47.98			74	-26.02	228	168	V
9.29	23.18	ADR	36.3	-22.6	0	36.88	53.97	-17.09	-	-	228	168	V

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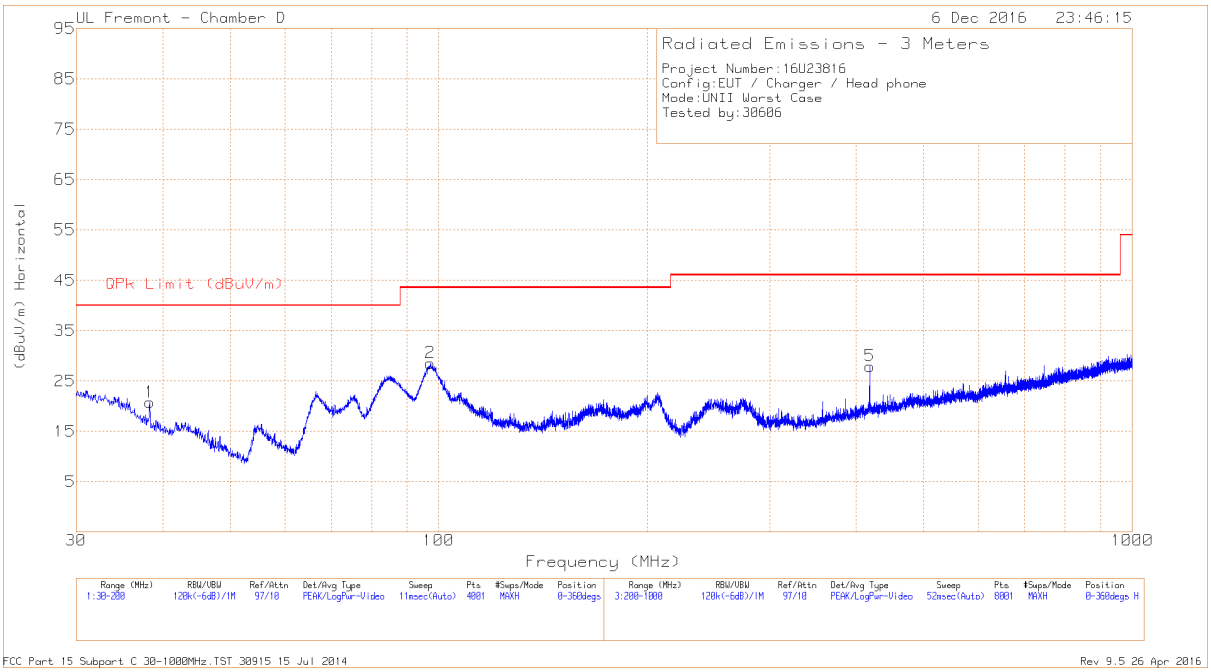
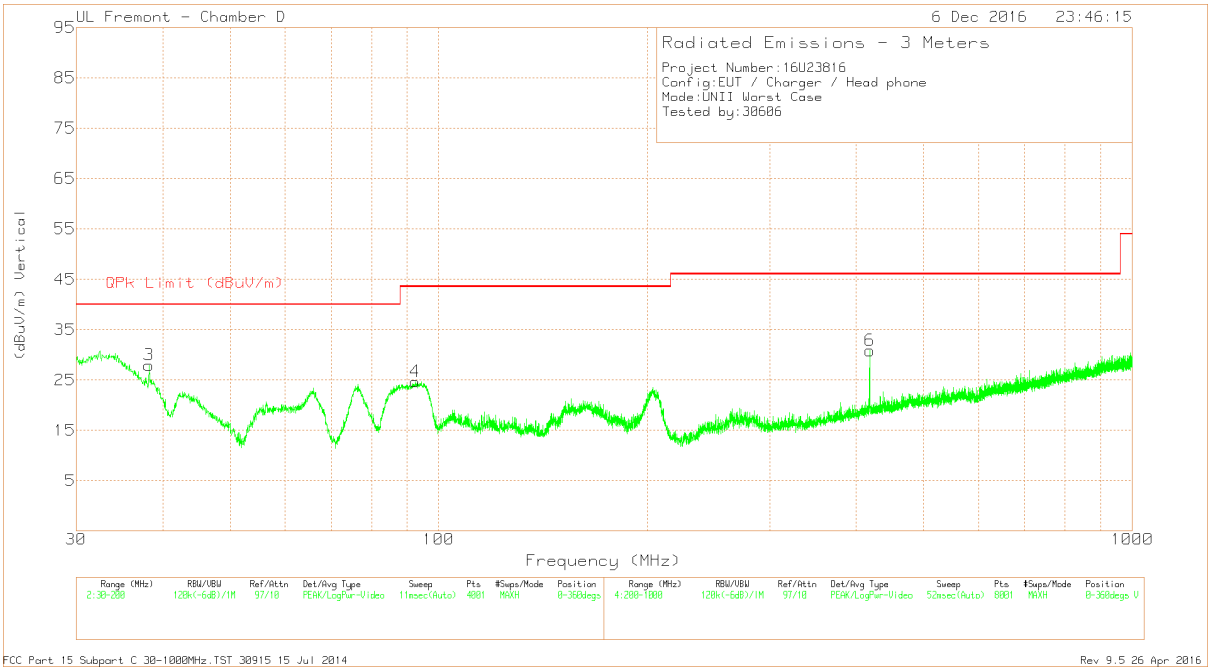
9.4. WORST-CASE BELOW 1 GHz

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

HORIZONTAL PLOT



VERTICAL PLOT



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DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T243 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 38.2025	40.56	Pk	19.2	-31.8	27.96	40	-12.04	0-360	100	V
1	38.2875	33.47	Pk	19.1	-31.8	20.77	40	-19.23	0-360	399	H
4	92.475	43.98	Pk	12.1	-31.4	24.68	43.52	-18.84	0-360	100	V
2	97.2775	46.59	Pk	13.4	-31.4	28.59	43.52	-14.93	0-360	299	H
5	418.3	37.46	Pk	20.4	-29.9	27.96	46.02	-18.06	0-360	299	H
6	418.4	40.35	Pk	20.4	-29.9	30.85	46.02	-15.17	0-360	101	V

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

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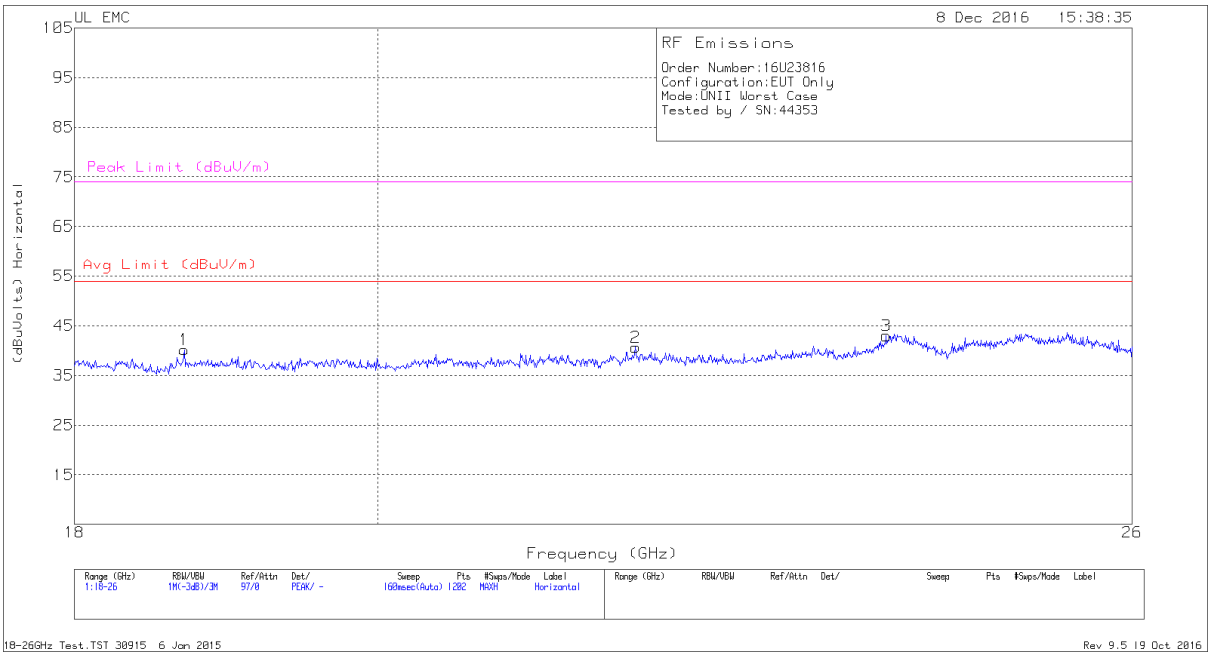
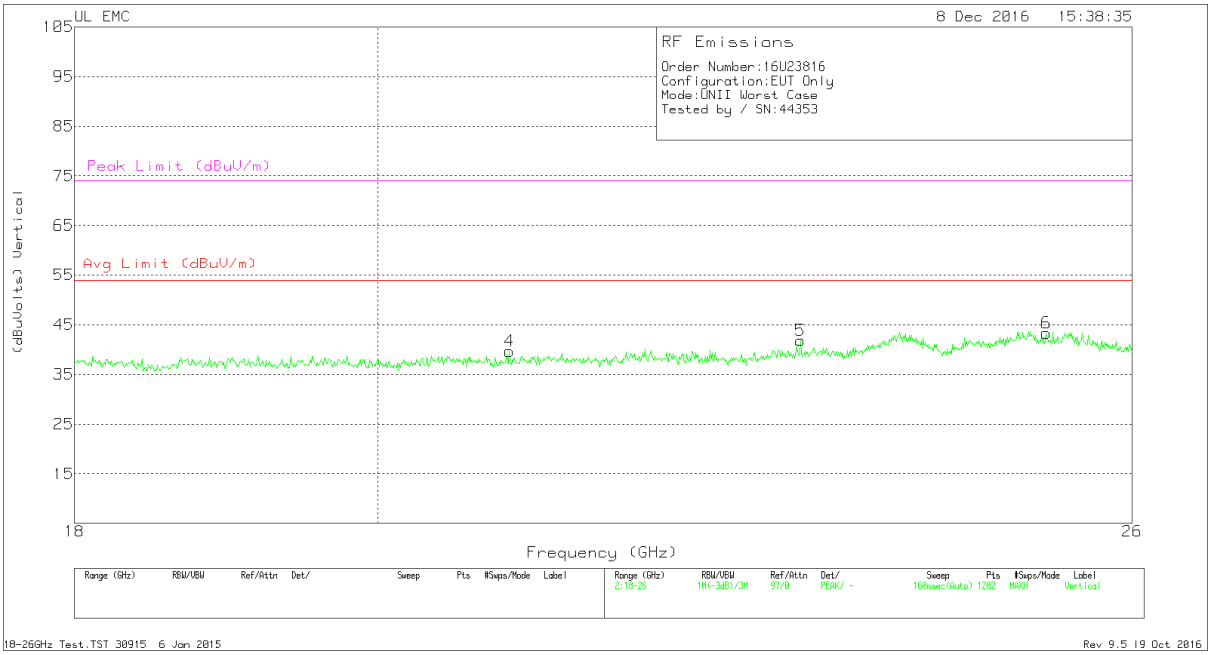
9.5. WORST-CASE 18 to 26 GHz

SPURIOUS EMISSIONS 18 TO 26 GHz (WORST-CASE CONFIGURATION, HORIZONTAL & VERTICAL)

HORIZONTAL PLOT



VERTICAL PLOT



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DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T449 (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	18.699	41.47	Pk	32.4	-24.2	-9.5	40.17	54	-13.83	74	-33.83
2	21.877	41.87	Pk	33.3	-25	-9.5	40.67	54	-13.33	74	-33.33
3	23.868	42.7	Pk	33.9	-24.1	-9.5	43	54	-11	74	-31
4	20.938	41.47	Pk	33.1	-25.4	-9.5	39.67	54	-14.33	74	-34.33
5	23.169	42.93	Pk	33.5	-25.1	-9.5	41.83	54	-12.17	74	-32.17
6	25.234	43.33	Pk	34.3	-24.8	-9.5	43.33	54	-10.67	74	-30.67

Pk - Peak detector

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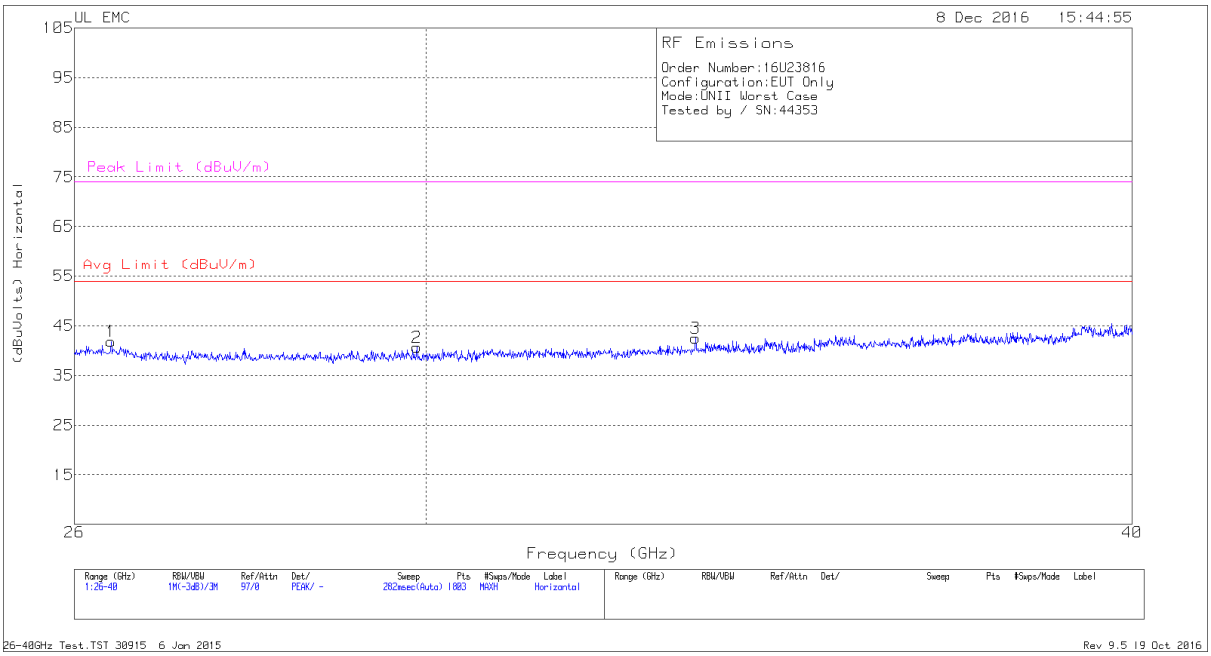
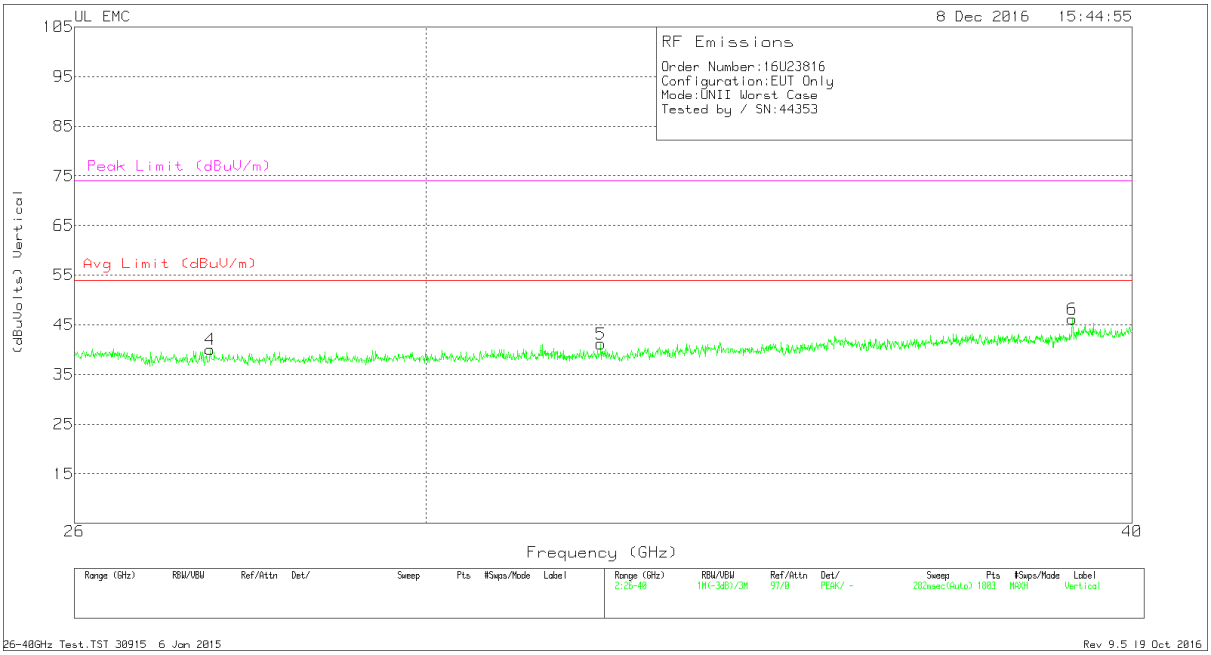
9.6. WORST-CASE 26 to 40 GHz

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

HORIZONTAL PLOT



VERTICAL PLOT



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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	26.388	47.03	Pk	35.5	-31.2	-9.5	41.83	54	-12.17	74	-32.17
2	29.892	47.17	Pk	36	-33	-9.5	40.67	54	-13.33	74	-33.33
3	33.482	48.3	Pk	37.1	-33.4	-9.5	42.5	54	-11.5	74	-31.5
4	27.476	45.6	Pk	35.7	-31.8	-9.5	40	54	-14	74	-34
5	32.215	47.67	Pk	36.4	-33.4	-9.5	41.17	54	-12.83	74	-32.83
6	39.037	51.07	Pk	37.4	-32.8	-9.5	46.17	54	-7.83	74	-27.83

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 (dBµV)	
	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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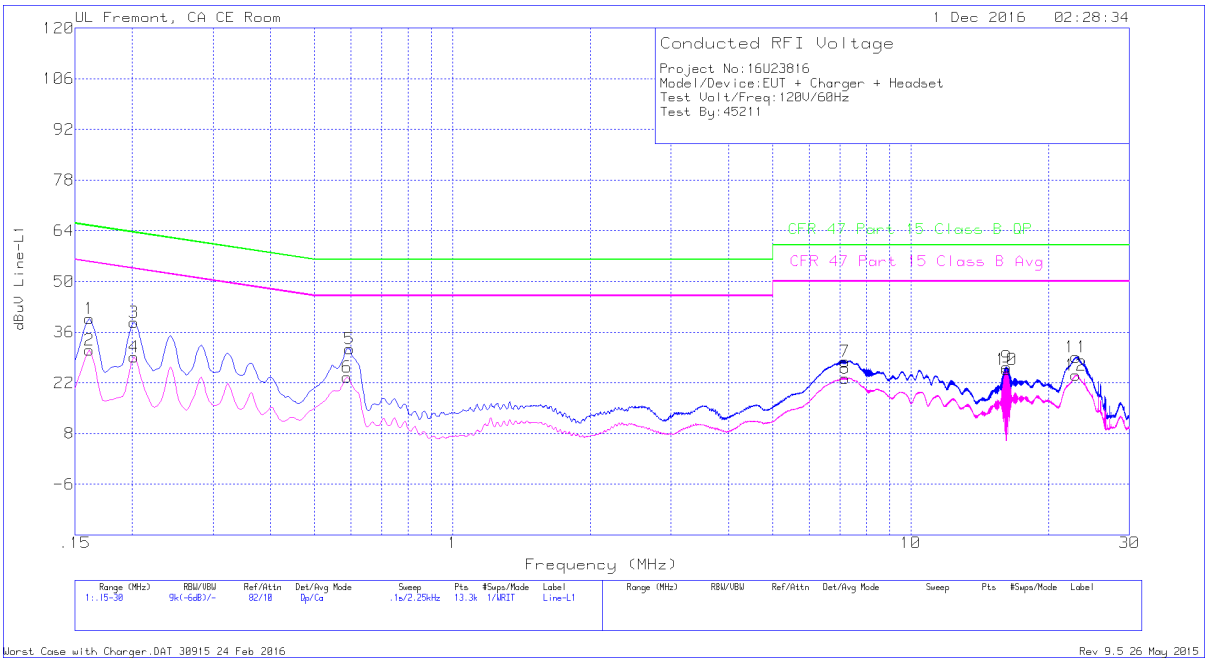
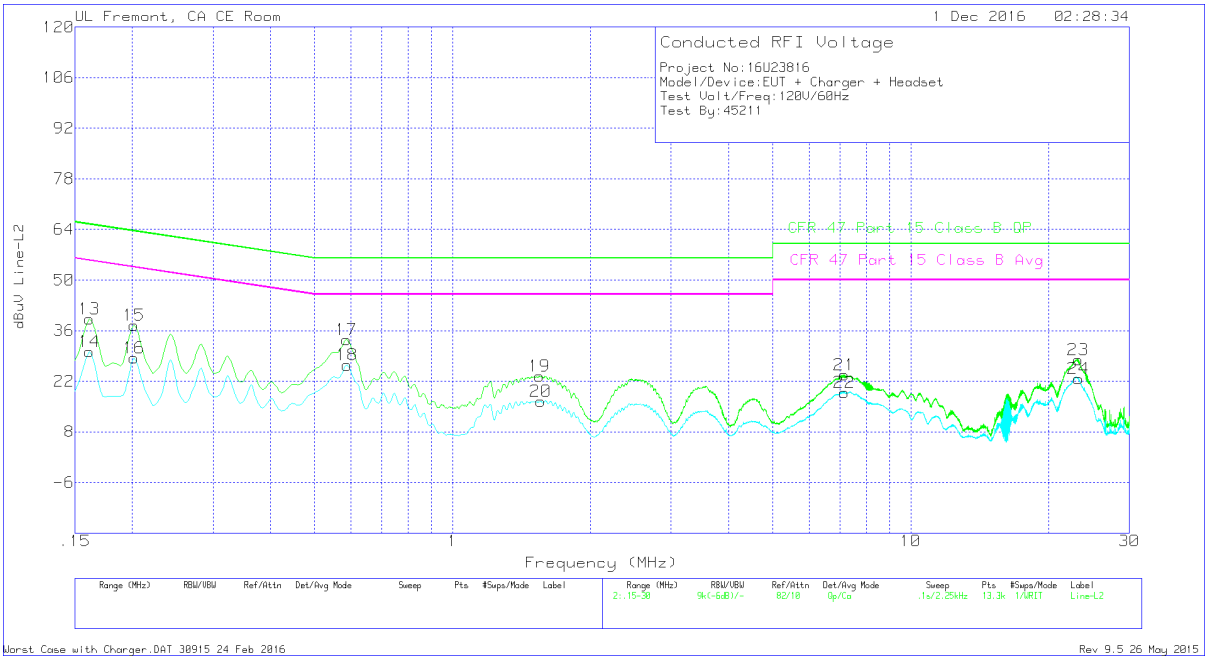
10.1. EUT POWERED BY AC/DC ADAPTER VIA USB CABLE

LINE RESULTS





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WORST EMISSIONS

Trace Markers

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN 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	.16125	29.65	Qp	0	0	10.1	39.75	65.4	-25.65	-	-
2	.16125	20.89	Ca	0	0	10.1	30.99	-	-	55.4	-24.41
3	.20175	28.57	Qp	0	0	10.1	38.67	63.54	-24.87	-	-
4	.20175	19.05	Ca	0	0	10.1	29.15	-	-	53.54	-24.39
5	.5955	21.34	Qp	0	0	10.1	31.44	56	-24.56	-	-
6	.58875	13.41	Ca	0	0	10.1	23.51	-	-	46	-22.49
7	7.19138	17.57	Qp	0	.1	10.2	27.87	60	-32.13	-	-
8	7.18575	12.95	Ca	0	.1	10.2	23.25	-	-	50	-26.75
9	16.1621	15.91	Qp	0	.2	10.3	26.41	60	-33.59	-	-
10	16.1621	15.16	Ca	0	.2	10.3	25.66	-	-	50	-24.34
11	22.9414	18.36	Qp	.1	.2	10.4	29.06	60	-30.94	-	-
12	22.9313	13.4	Ca	.1	.2	10.4	24.1	-	-	50	-25.9
Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN 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	.16125	29.19	Qp	0	0	10.1	39.29	65.4	-26.11	-	-
14	.16125	20.06	Ca	0	0	10.1	30.16	-	-	55.4	-25.24
15	.20175	27.42	Qp	0	0	10.1	37.52	63.54	-26.02	-	-
16	.20175	18.35	Ca	0	0	10.1	28.45	-	-	53.54	-25.09
17	.5865	23.45	Qp	0	0	10.1	33.55	56	-22.45	-	-
18	.58875	16.35	Ca	0	0	10.1	26.45	-	-	46	-19.55
19	1.5495	13.19	Qp	0	.1	10.1	23.39	56	-32.61	-	-
20	1.5585	6.27	Ca	0	.1	10.1	16.47	-	-	46	-29.53
21	7.16325	13.41	Qp	0	.1	10.2	23.71	60	-36.29	-	-
22	7.17	8.66	Ca	0	.1	10.2	18.96	-	-	50	-31.04
23	23.2283	17.28	Qp	.1	.2	10.4	27.98	60	-32.02	-	-
24	23.2328	12	Ca	.1	.2	10.4	22.7	-	-	50	-27.3

Qp - Quasi-Peak detector
Ca - CISPR average detection

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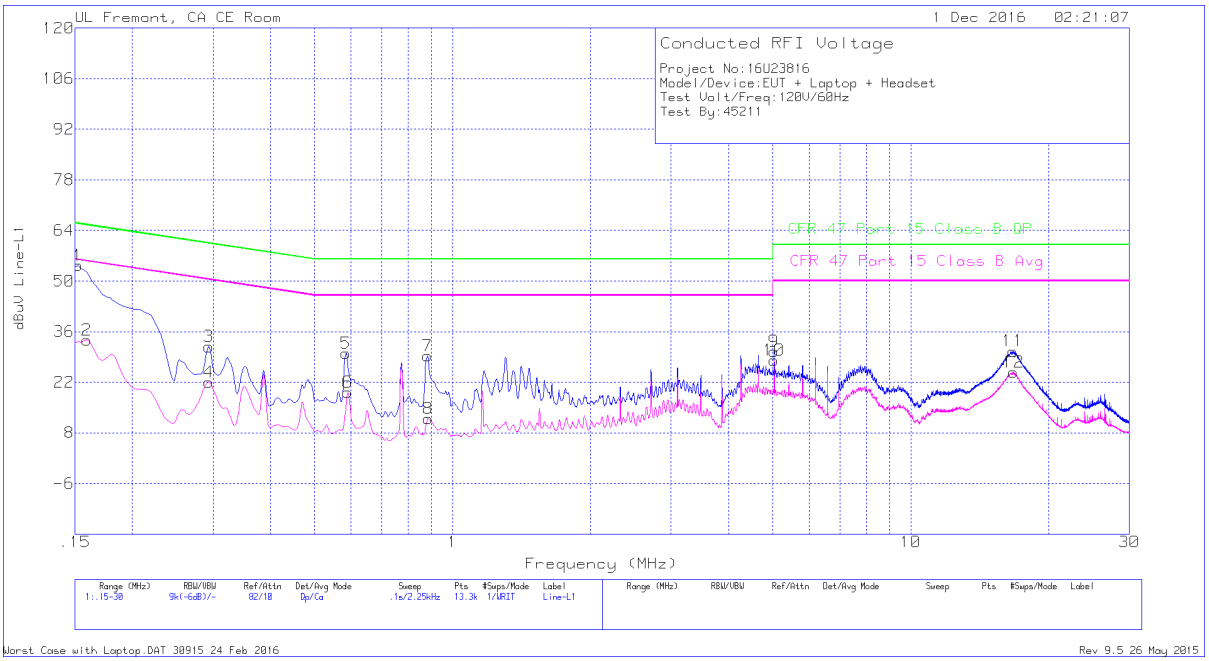
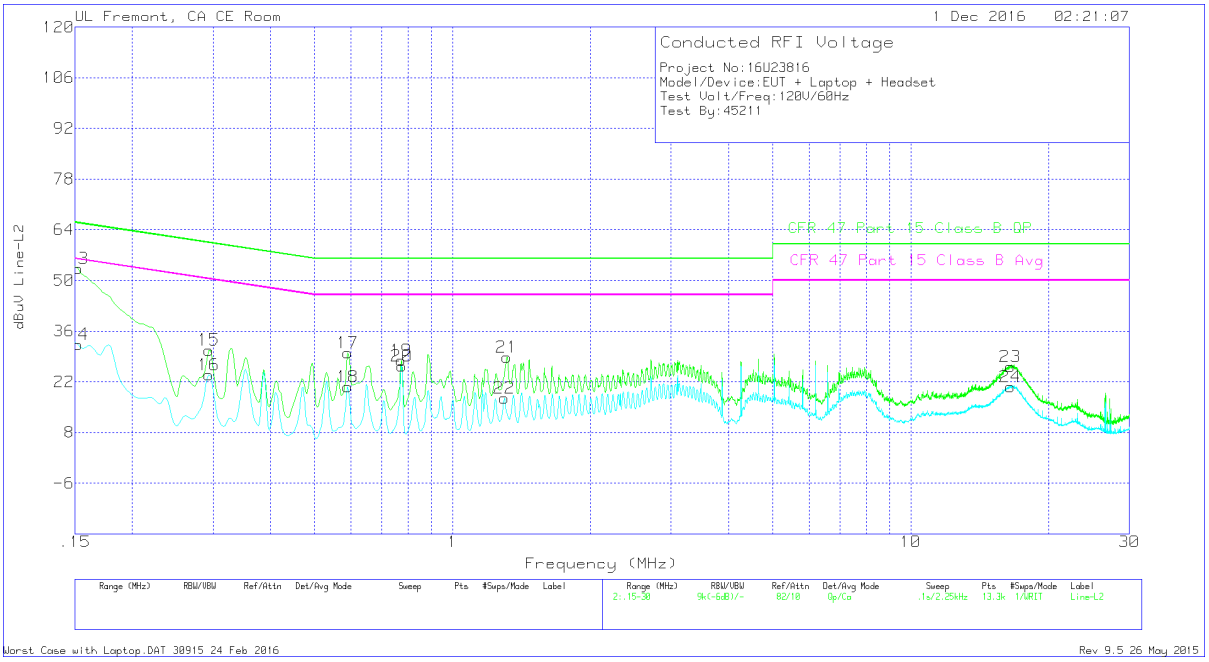
10.2. EUT POWERED BY HOST PC VIA USB CABLE

LINE RESULTS





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WORST EMISSIONS

Trace Markers

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN 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	44.08	Qp	.1	0	10.1	54.28	65.88	-11.6	-	-
2	.159	23.58	Ca	0	0	10.1	33.68	-	-	55.52	-21.84
3	.294	21.74	Qp	0	0	10.1	31.84	60.41	-28.57	-	-
4	.294	11.88	Ca	0	0	10.1	21.98	-	-	50.41	-28.43
5	.58425	19.92	Qp	0	0	10.1	30.02	56	-25.98	-	-
6	.591	9.18	Ca	0	0	10.1	19.28	-	-	46	-26.72
7	.8835	19.29	Qp	0	0	10.1	29.39	56	-26.61	-	-
8	.88575	1.82	Ca	0	0	10.1	11.92	-	-	46	-34.08
9	5.0325	20.34	Qp	0	.1	10.1	30.54	60	-29.46	-	-
10	5.0325	17.96	Ca	0	.1	10.1	28.16	-	-	50	-21.84
11	16.7258	20.12	Qp	0	.2	10.3	30.62	60	-29.38	-	-
12	16.7381	14.27	Ca	0	.2	10.3	24.77	-	-	50	-25.23
Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN 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	43.22	Qp	0	0	10.1	53.32	65.88	-12.56	-	-
14	.15225	22.25	Ca	0	0	10.1	32.35	-	-	55.88	-23.53
15	.294	20.69	Qp	0	0	10.1	30.79	60.41	-29.62	-	-
16	.294	13.9	Ca	0	0	10.1	24	-	-	50.41	-26.41
17	.591	19.84	Qp	0	0	10.1	29.94	56	-26.06	-	-
18	.591	10.6	Ca	0	0	10.1	20.7	-	-	46	-25.3
19	.77325	17.79	Qp	0	0	10.1	27.89	56	-28.11	-	-
20	.7755	16.23	Ca	0	0	10.1	26.33	-	-	46	-19.67
21	1.31325	18.6	Qp	0	.1	10.1	28.8	56	-27.2	-	-
22	1.2975	7.27	Ca	0	.1	10.1	17.47	-	-	46	-28.53
23	16.4715	15.73	Qp	0	.2	10.3	26.23	60	-33.77	-	-
24	16.4873	10.2	Ca	0	.2	10.3	20.7	-	-	50	-29.3

Qp - Quasi-Peak detector

Ca - CISPR average detection

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11. DYNAMIC FREQUENCY SELECTION

11.1. OVERVIEW

11.1.1. LIMITS

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”.

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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)
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All other tests	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.		

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

Maximum Transmit Power	Value (see notes)
E.I.R.P. ≥ 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
Non-occupancy period	30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds (See Note 1)
Channel Closing Transmission Time	200 milliseconds + approx. 60 milliseconds over remaining 10 second period. (See Notes 1 and 2)
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. (See Note 3)

Note 1: *Channel Move Time* and the *Channel Closing Transmission Time* should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.
Note 2: The *Channel Closing Transmission Time* is comprised of 200 milliseconds starting at the beginning of the *Channel Move Time* plus any additional intermittent control signals required to facilitate a *Channel* 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 *U-NII Detection Bandwidth* 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.

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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: $\{(1/360) \times (19 \times 10^6\ PRI_{usec})\}$	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 *Detection Bandwidth* test, *Channel Move Time*, and *Channel Closing Time* 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

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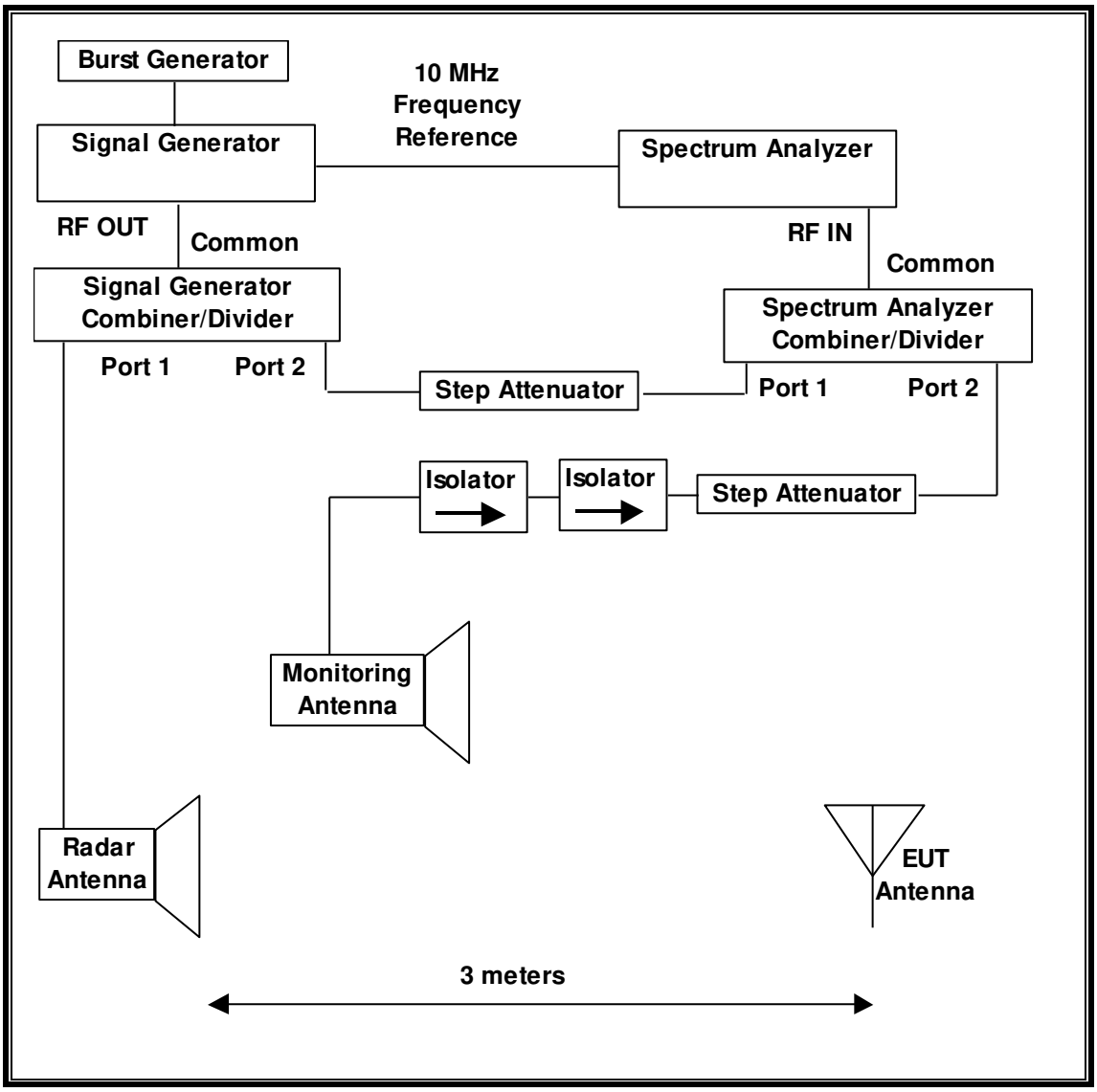
11.1.2. TEST AND MEASUREMENT SYSTEM

RADIATED METHOD SYSTEM BLOCK DIAGRAM



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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.

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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	N5172B	MY51350337	03/11/17

11.1.3. 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	3.0.0.9	Channel Loading and Aggregate Closing Time
PXA Read	3.0	Signal Generator Screen Capture
SGXProject.exe	1.7	Radar Waveform Generation and Download

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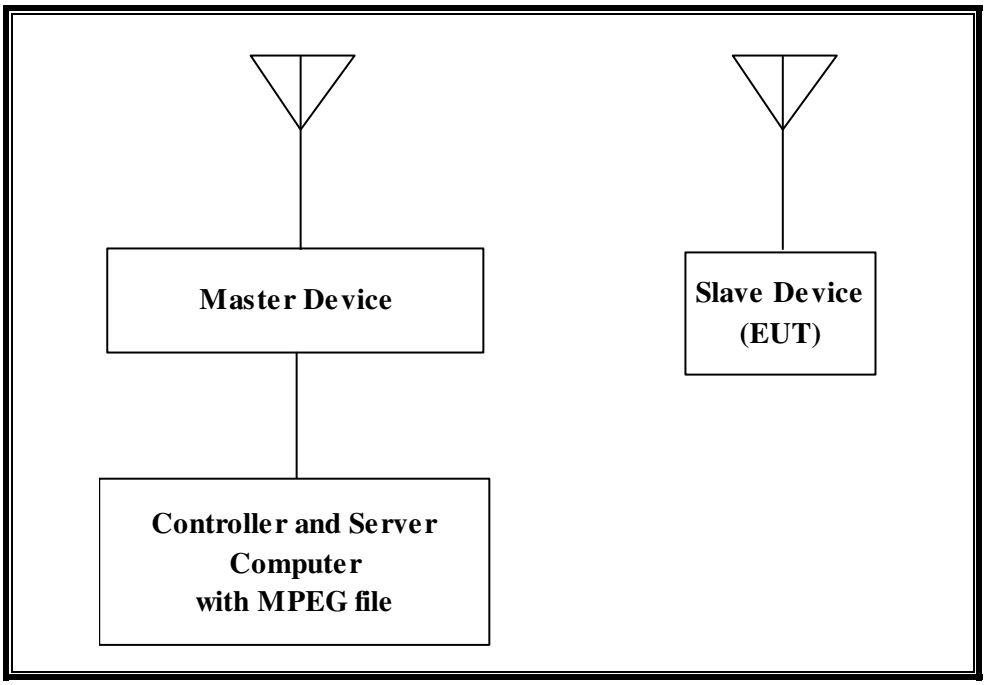
11.1.4. SETUP OF EUT (CLIENT MODE)

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	C86L3BA8FJ1R	BCGA1521
Notebook PC (Controller/Server)	Apple	A1181	4H629022WLV	DoC
AC Adapter (Controller/Server PC)	Delta Electronics	A1344	MV05104CNAL1A	DoC

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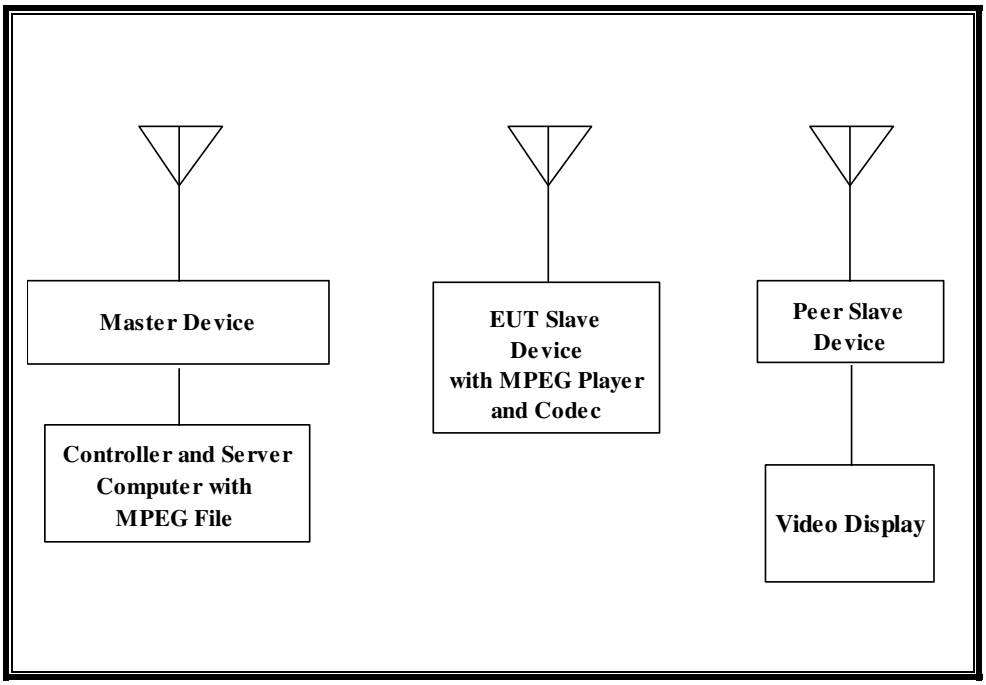
11.1.5. SETUP OF EUT (CLIENT-TO-CLIENT COMMUNICATIONS MODE)

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	C86L3BA8FJ1R	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

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11.1.6. 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 23.27dBm EIRP in the 5250-5350 MHz band and 23.41dBm EIRP in the 5470-5725 MHz band.

The only antenna assembly utilized with the EUT has a gain of 4.11dBi for antenna A & 3.36dBi for antenna B in the 5250-5350 MHz band and 5.41dBi for antenna A & 5.17dBi for antenna B 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, antenna A and antenna B, 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 version 10.3 (14E222).

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

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

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11.2. CLIENT MODE RESULTS FOR 20 MHz BANDWIDTH

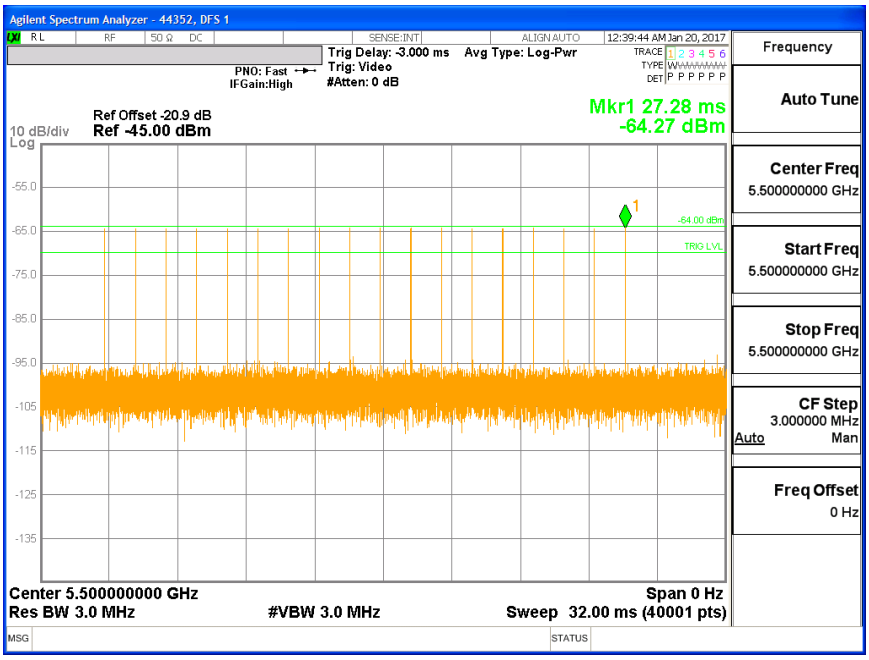
11.2.1. TEST CHANNEL

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

11.2.2. RADAR WAVEFORM AND TRAFFIC

RADAR WAVEFORM

SHORT PULSE RADAR TYPE 0 AT MASTER



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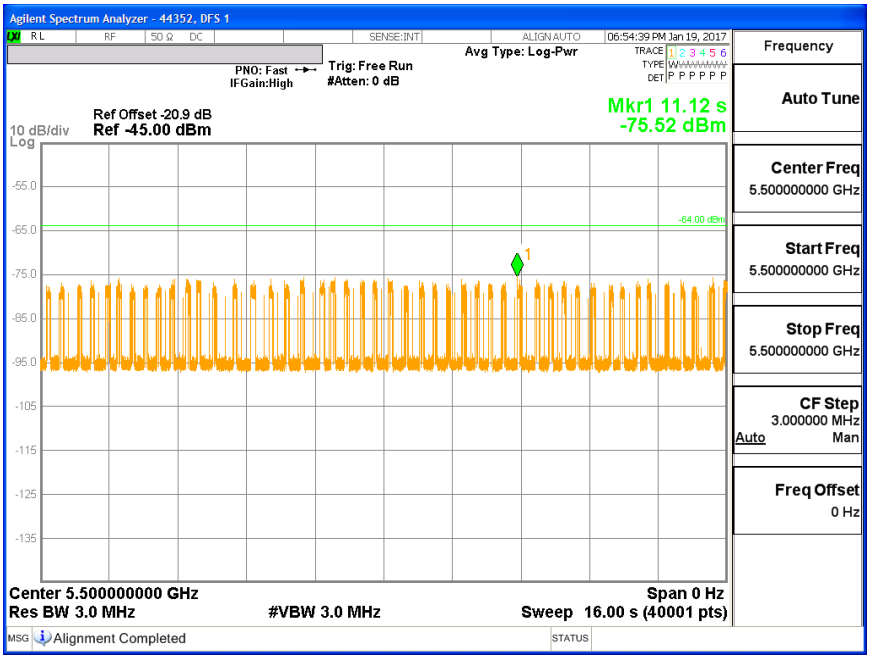
TRAFFIC

SLAVE TRAFFIC



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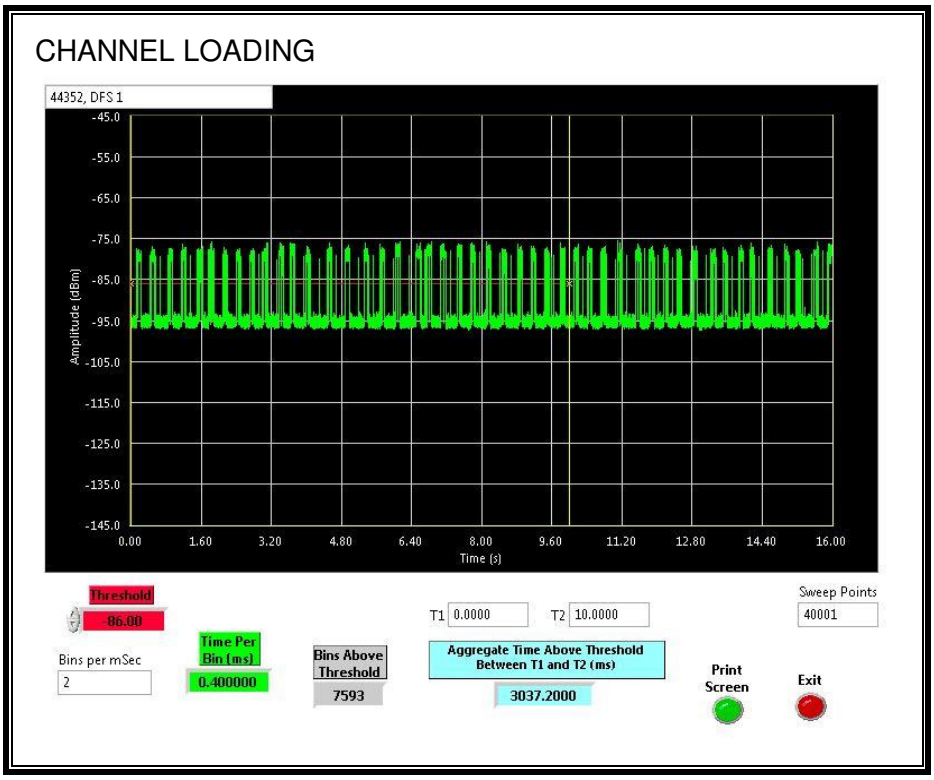
CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 30.372%

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11.2.3. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

11.2.4. 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)
0.1796	10

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

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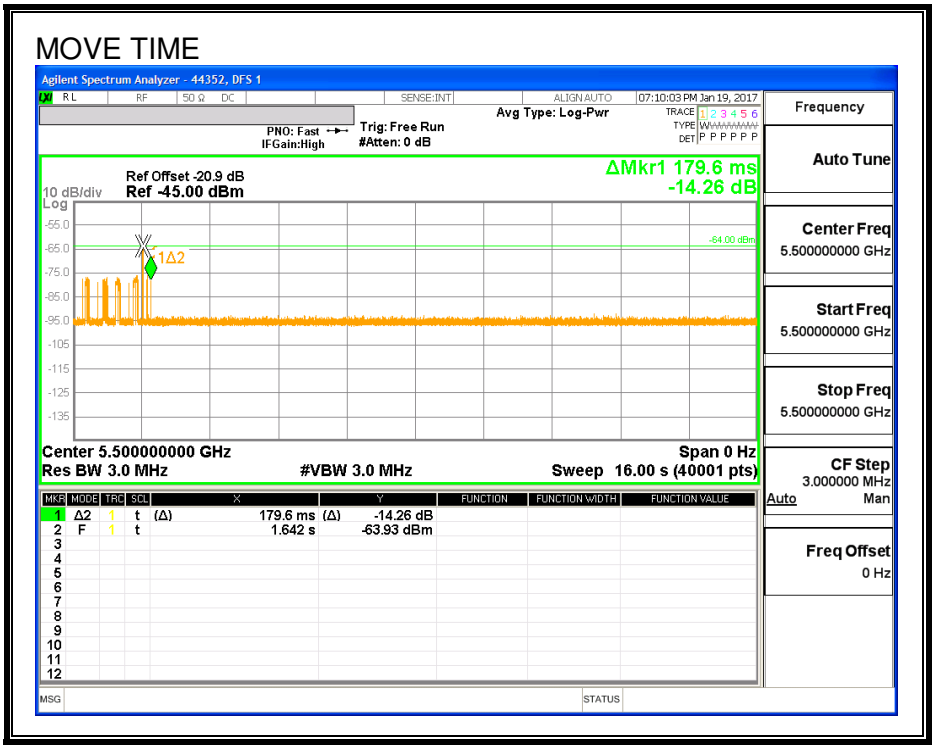
MOVE TIME



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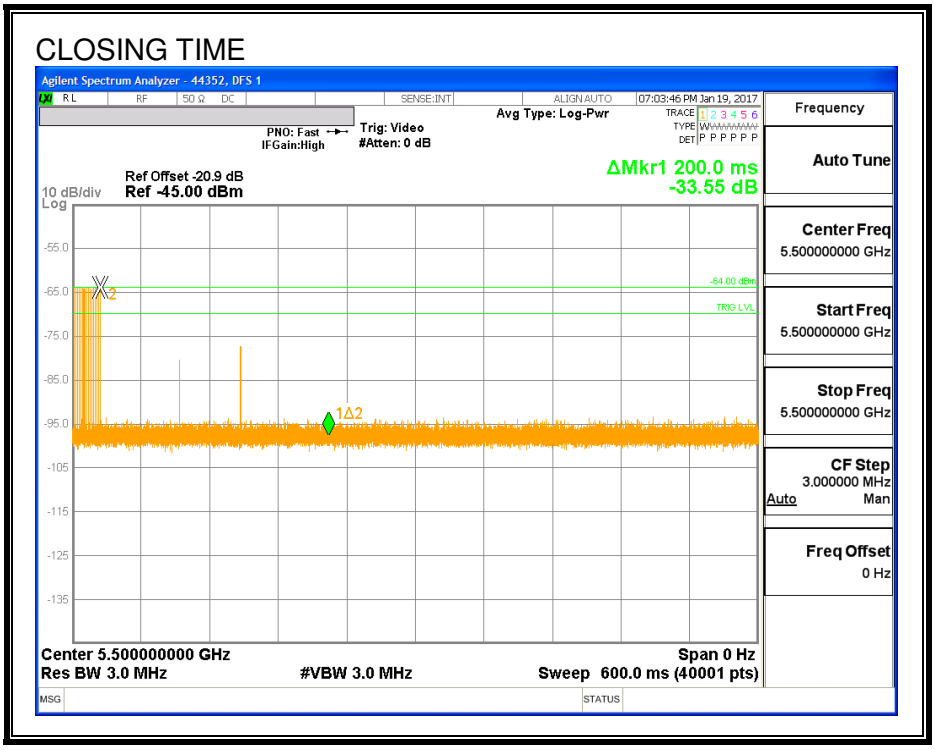
CHANNEL CLOSING TIME



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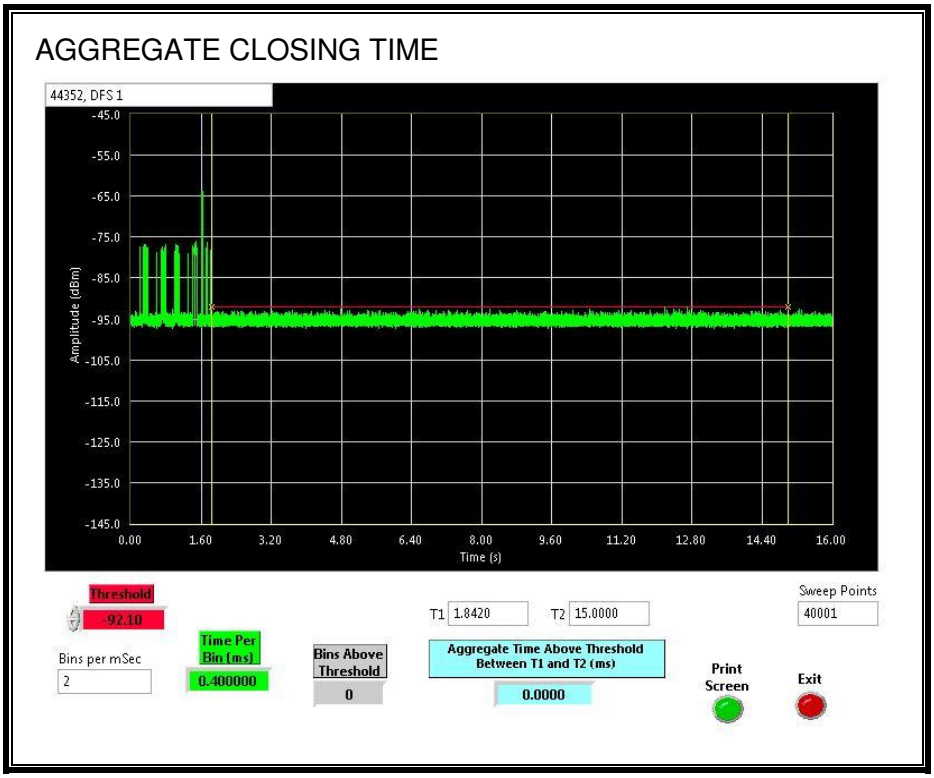
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the aggregate monitoring period.



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11.3. CLIENT MODE RESULTS FOR 40 MHz BANDWIDTH

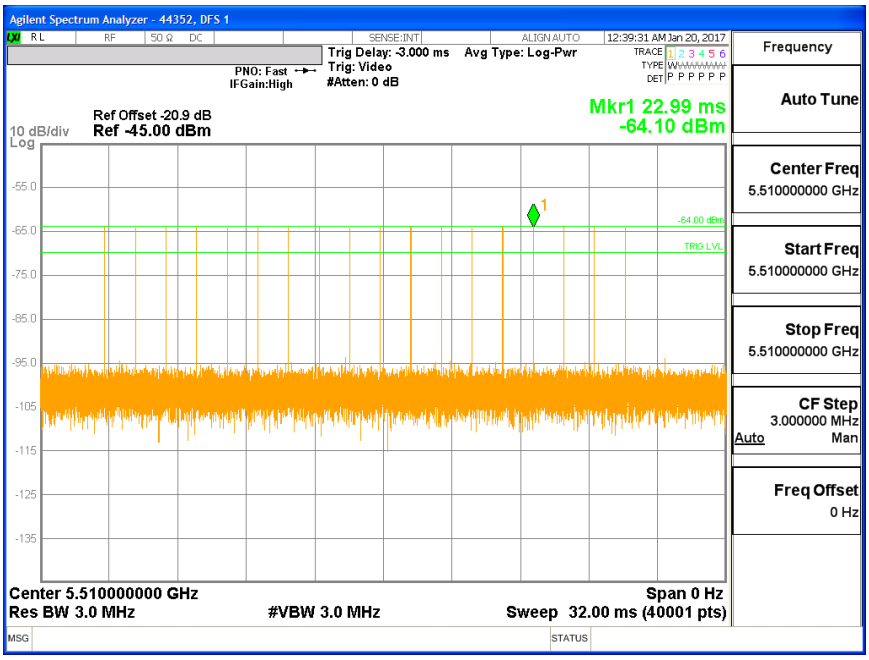
11.3.1. TEST CHANNEL

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

11.3.2. RADAR WAVEFORM AND TRAFFIC

RADAR WAVEFORM

SHORT PULSE RADAR TYPE 0 AT MASTER



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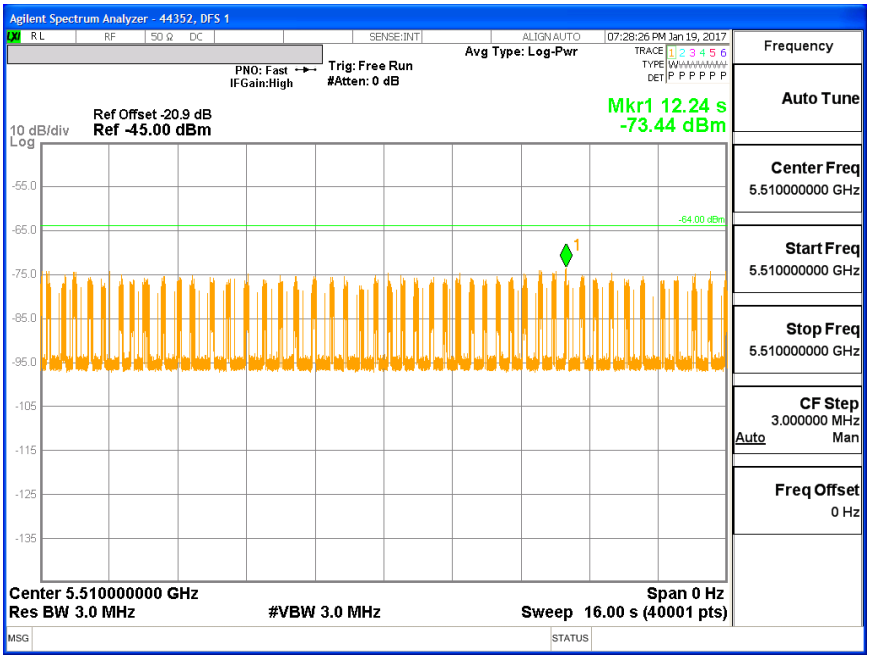
TRAFFIC

SLAVE TRAFFIC



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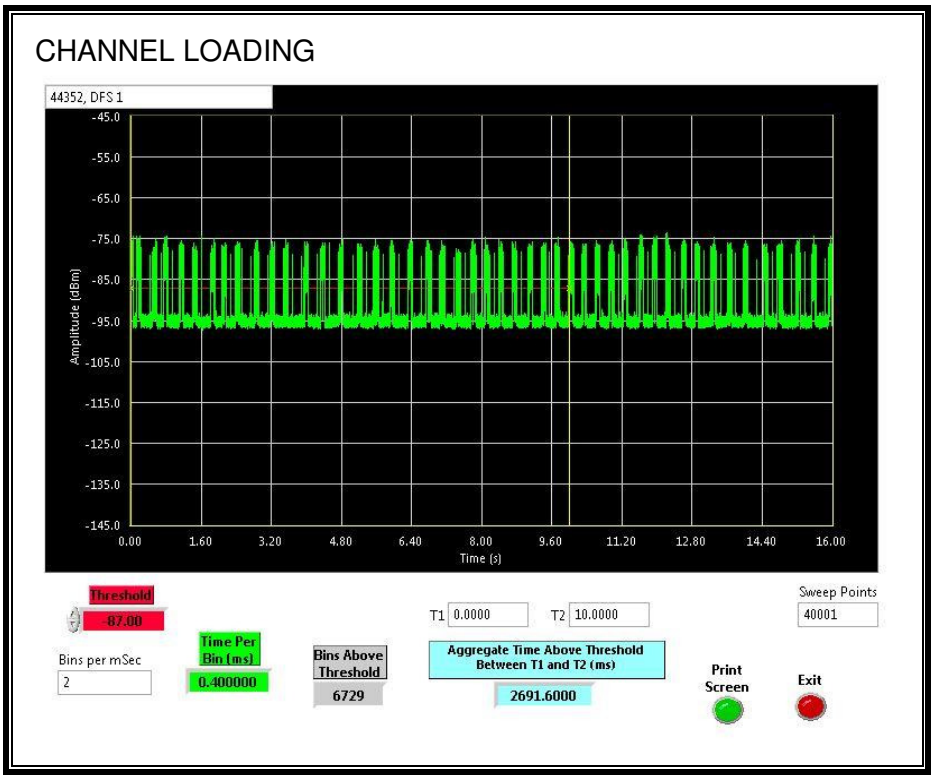
CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 26.916%

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11.3.3. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

11.3.4. 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)
0.0960	10

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

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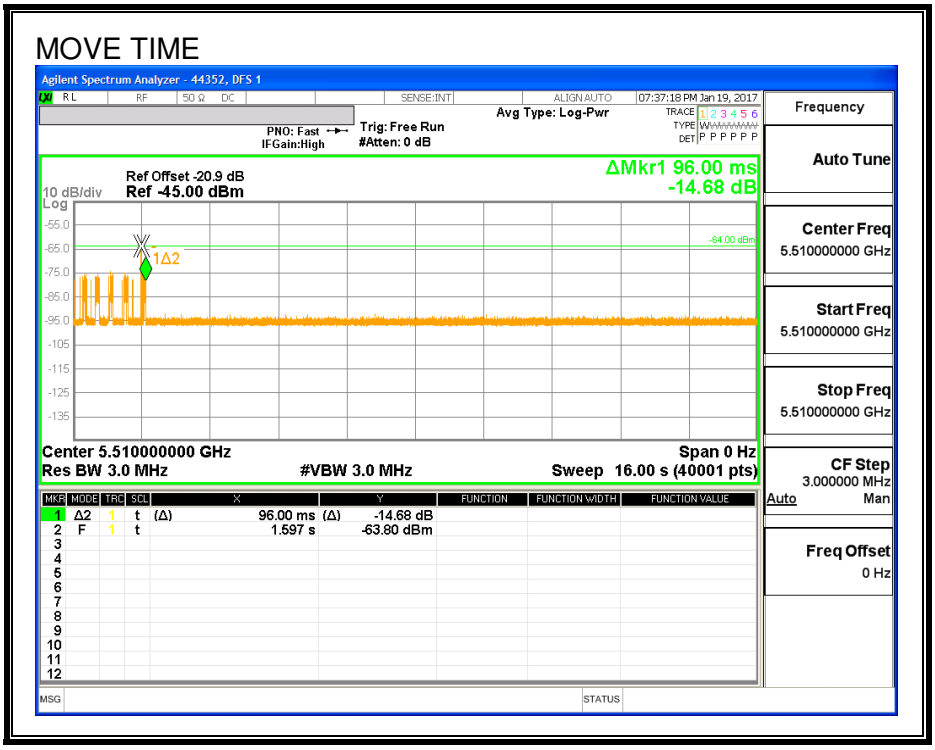
MOVE TIME



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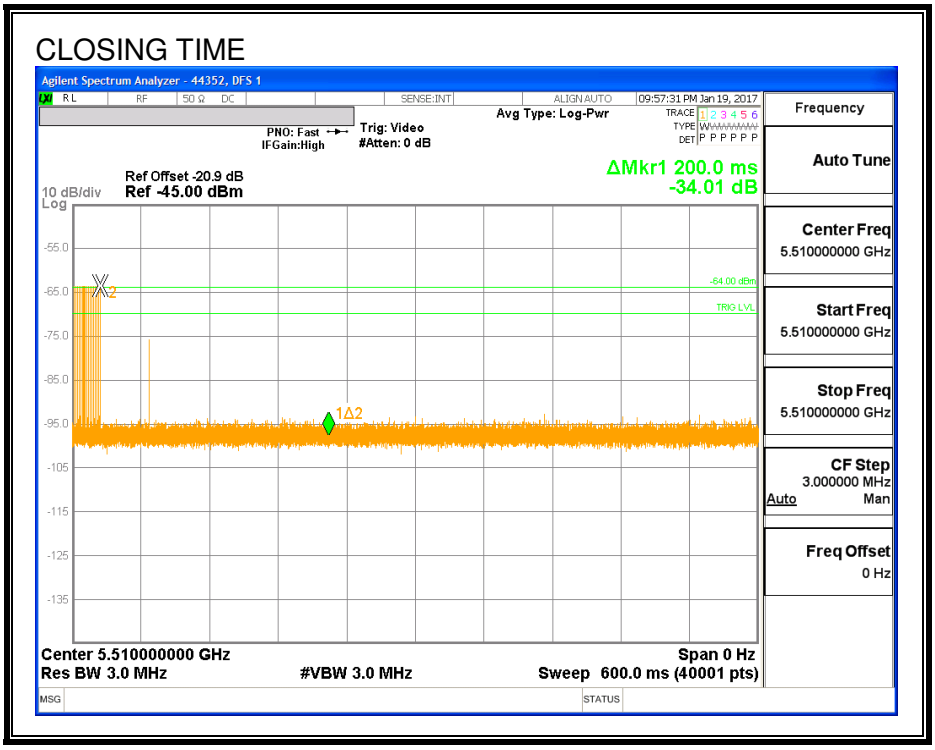
CHANNEL CLOSING TIME



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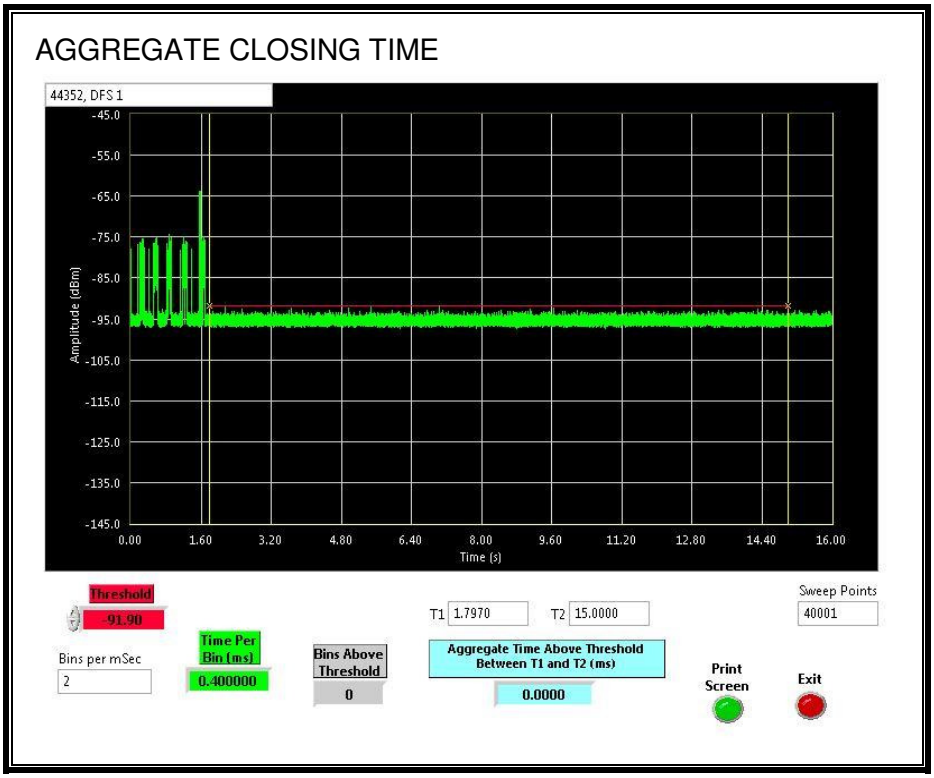
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the aggregate monitoring period.



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11.4. CLIENT MODE RESULTS FOR 80 MHz BANDWIDTH

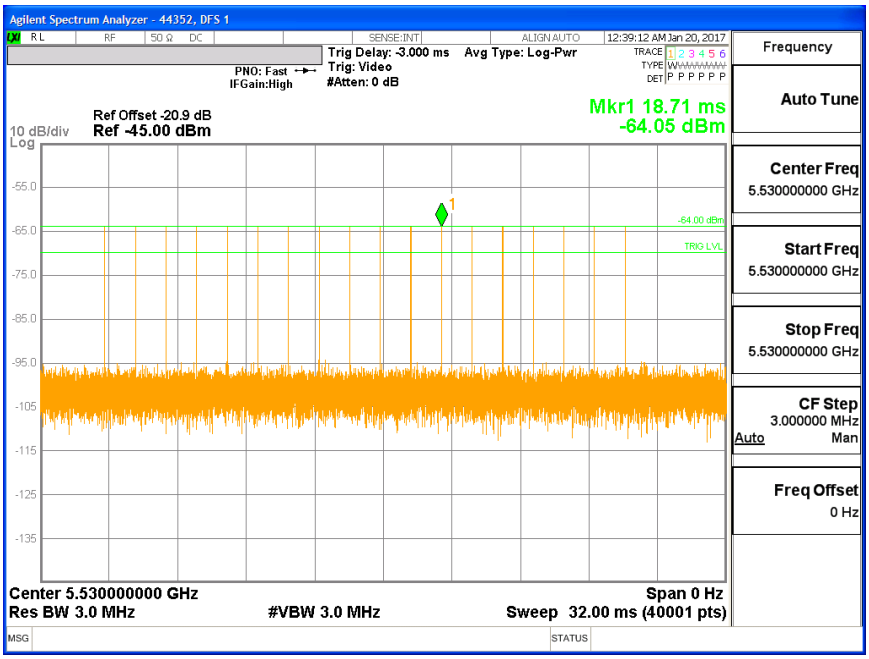
11.4.1. TEST CHANNEL

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

11.4.2. RADAR WAVEFORM AND TRAFFIC

RADAR WAVEFORM

SHORT PULSE RADAR TYPE 0 AT MASTER



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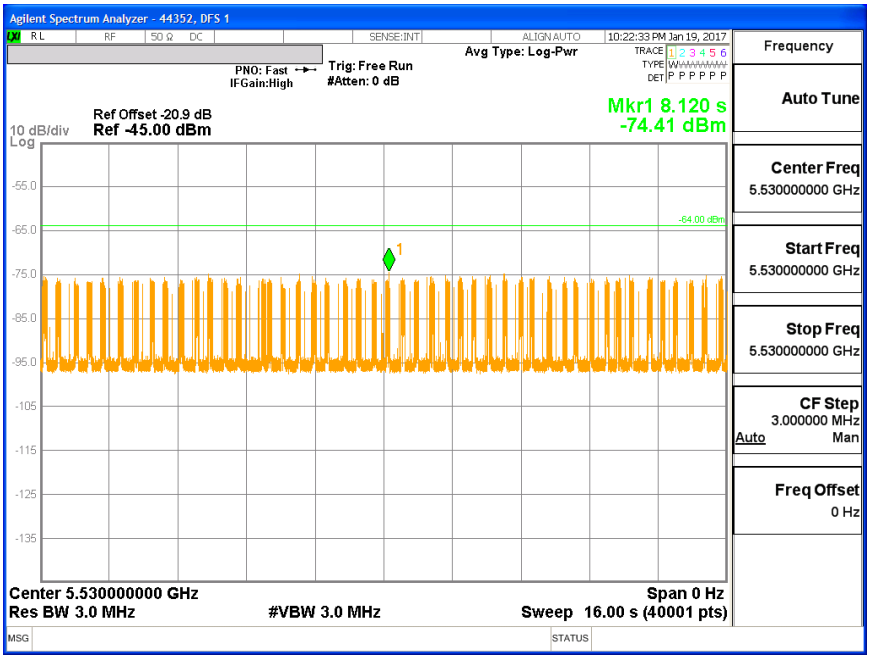
TRAFFIC

SLAVE TRAFFIC



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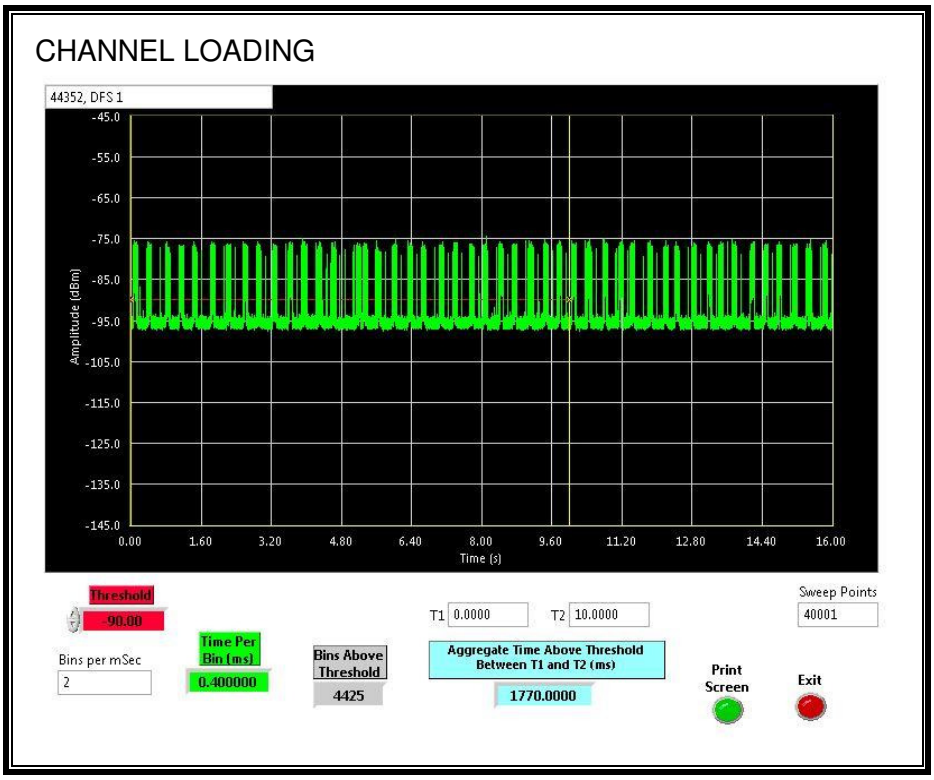
CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 17.7%

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11.4.3. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

11.4.4. 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)
0.0312	10

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

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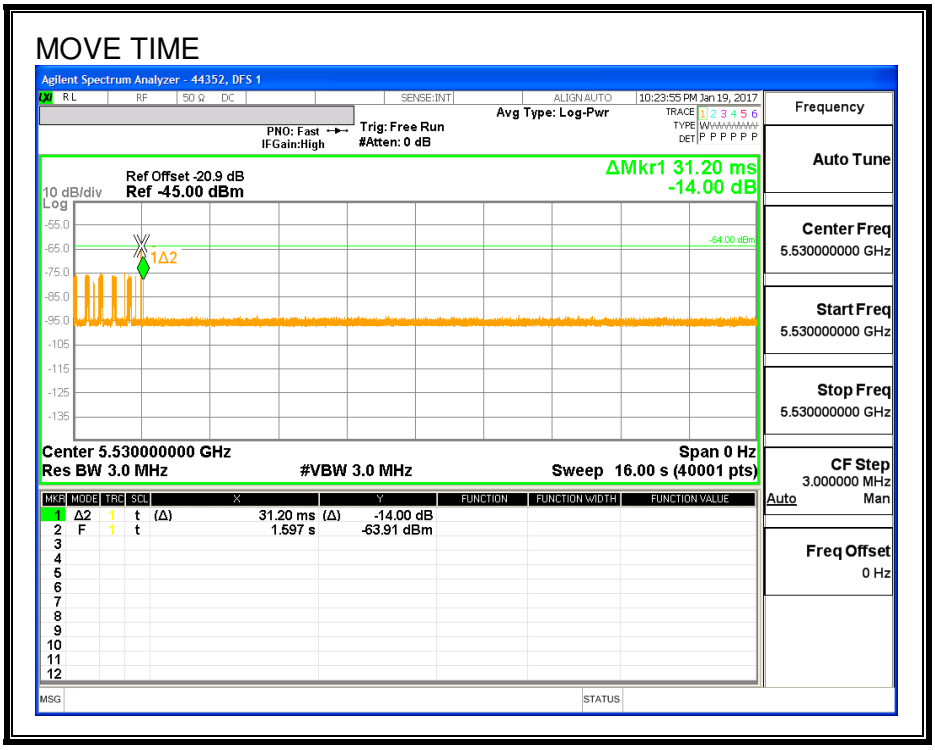
MOVE TIME



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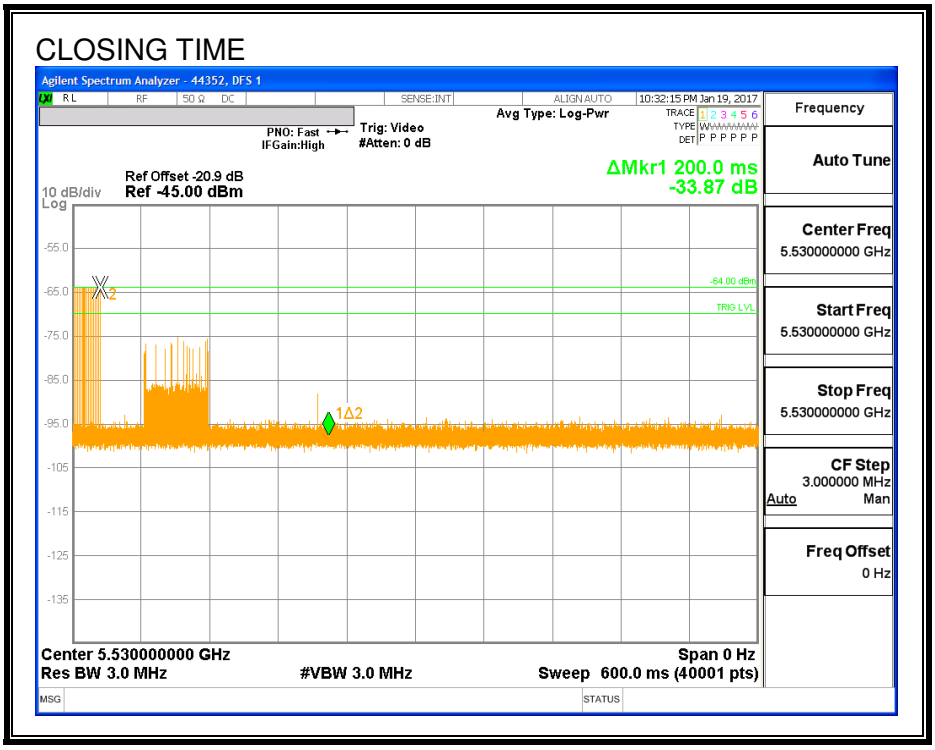
CHANNEL CLOSING TIME



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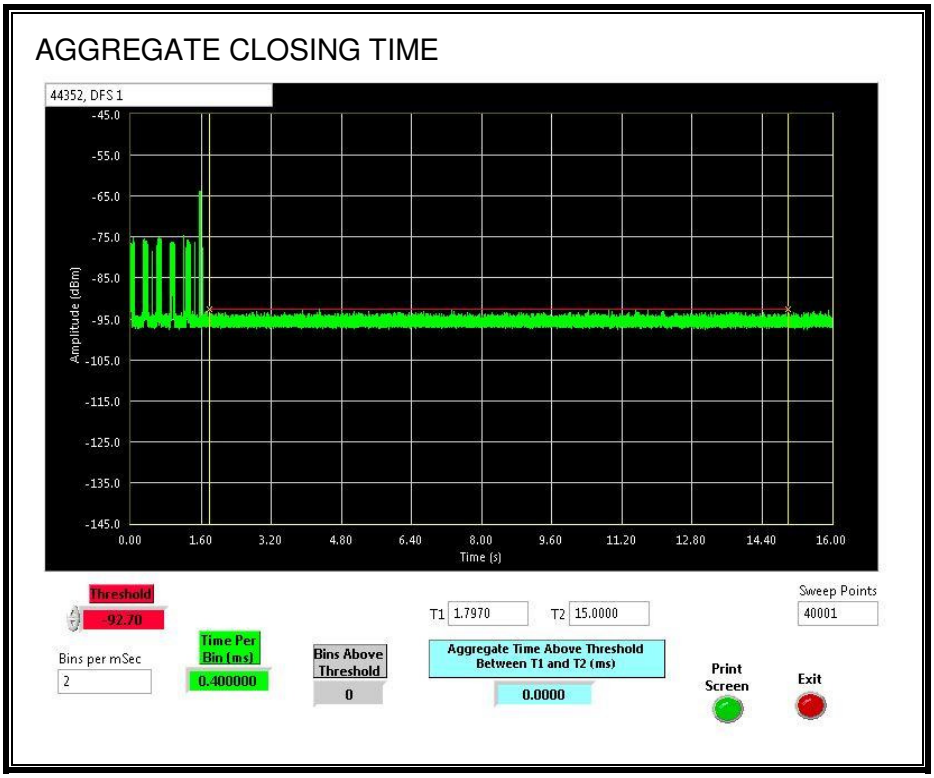
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the aggregate monitoring period.



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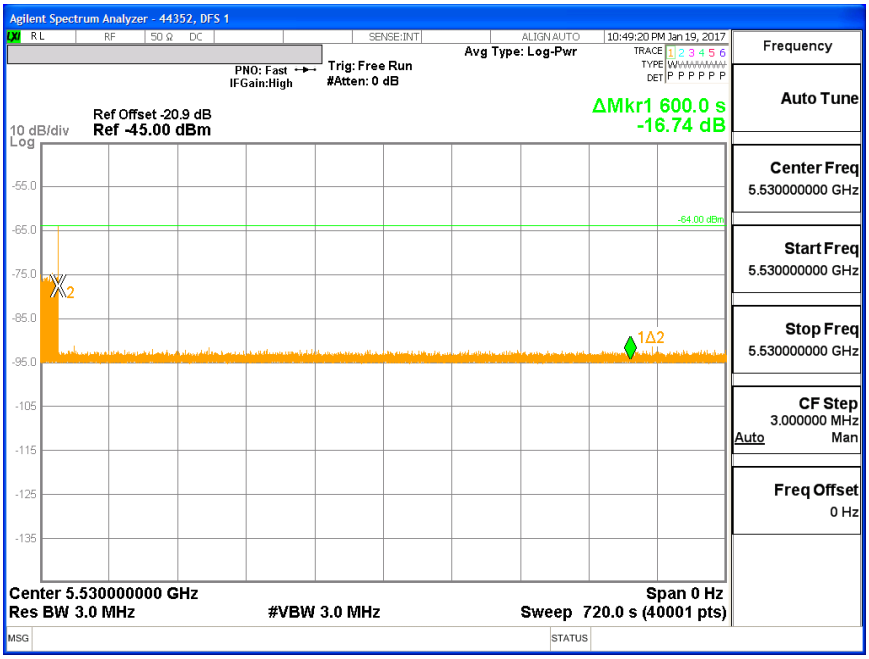
11.4.5. 10-MINUTE CLIENT Tx MONITORING PERIOD

RESULTS

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

10-MINUTE CLIENT Tx MONITORING PERIOD



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

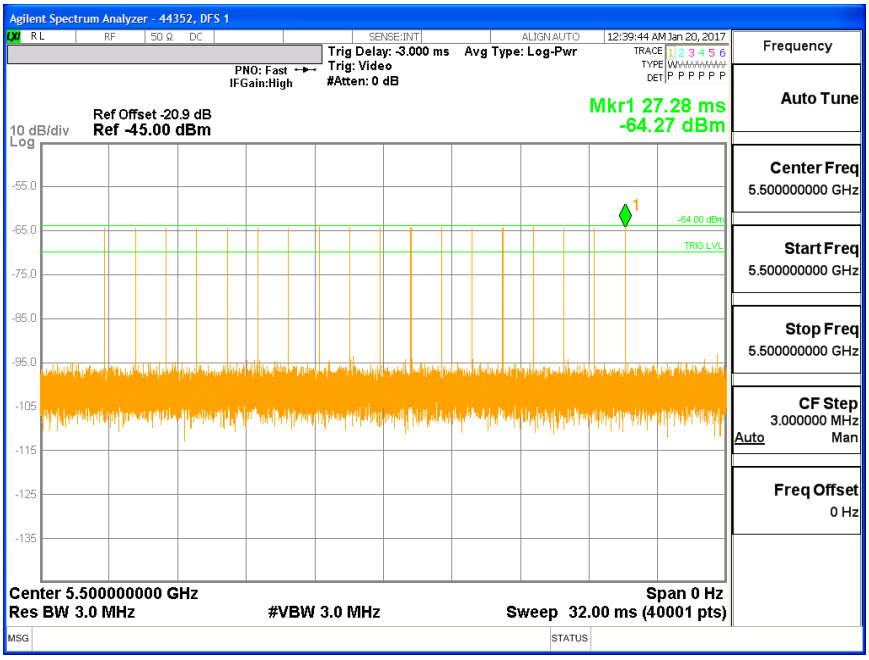
11.5.1. TEST CHANNEL

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

11.5.2. RADAR WAVEFORM AND TRAFFIC

RADAR WAVEFORM

SHORT PULSE RADAR TYPE 0 AT MASTER



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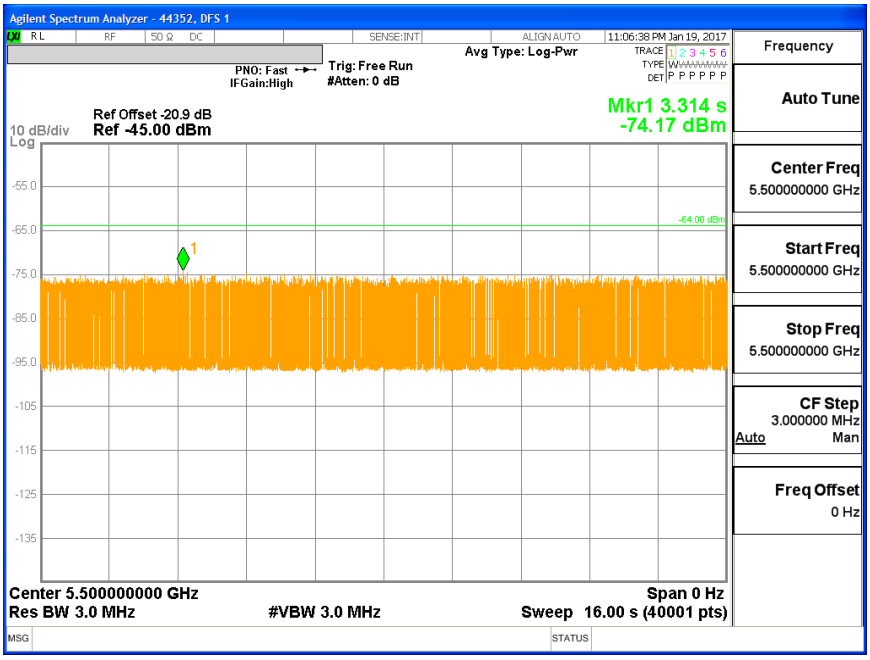
TRAFFIC

SLAVE TRAFFIC



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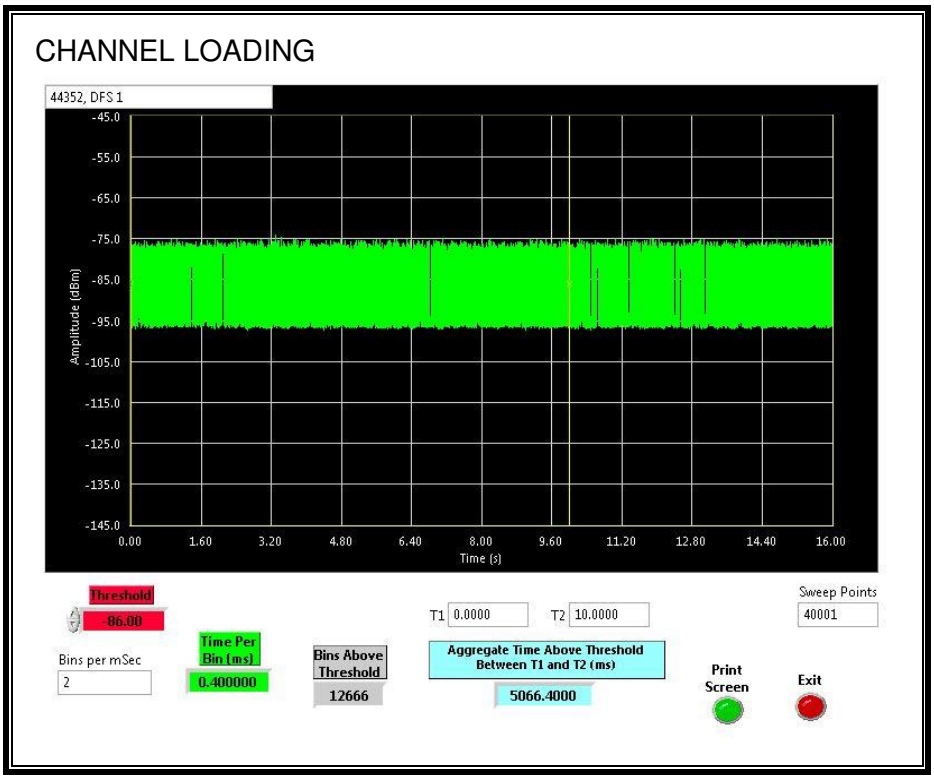
CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 50.664%

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11.5.3. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

11.5.4. 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)
0.102	10

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

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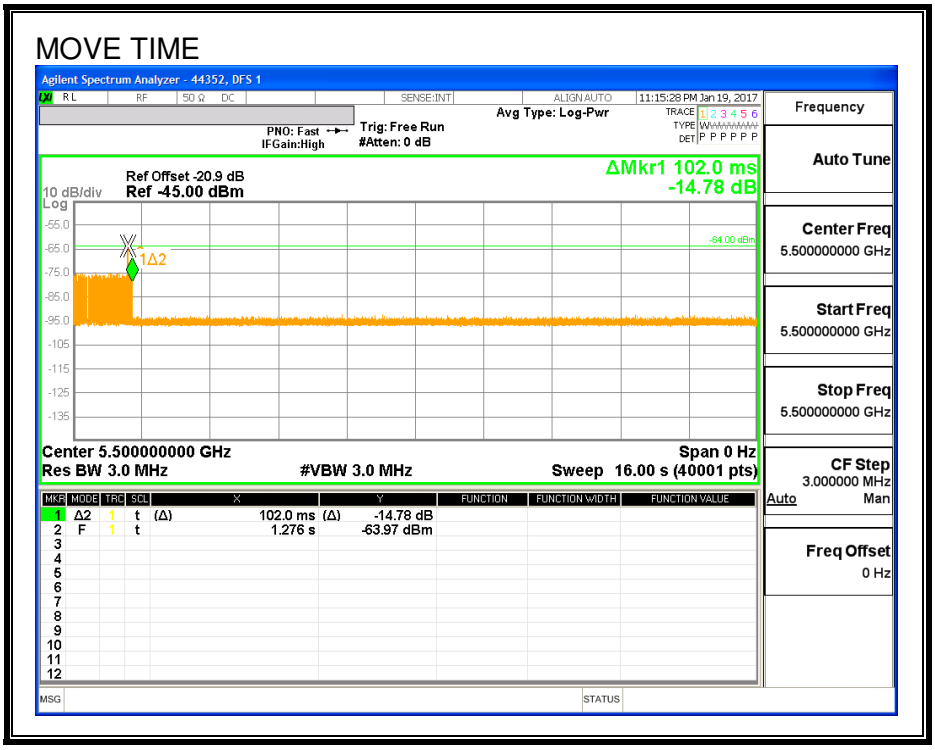
MOVE TIME



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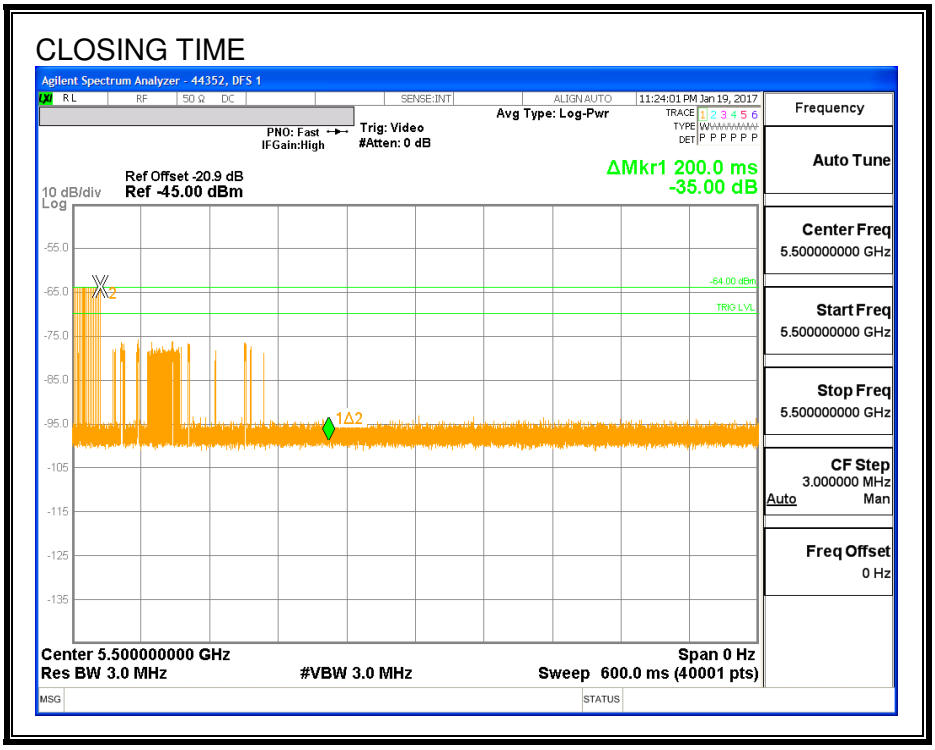
CHANNEL CLOSING TIME



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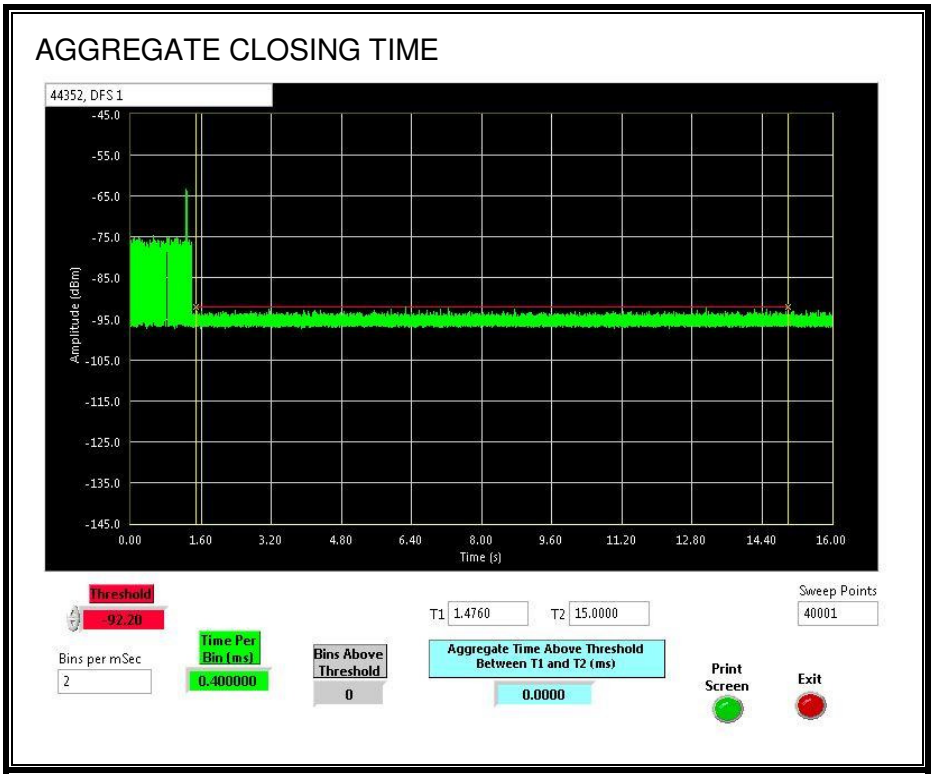
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the aggregate monitoring period.



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

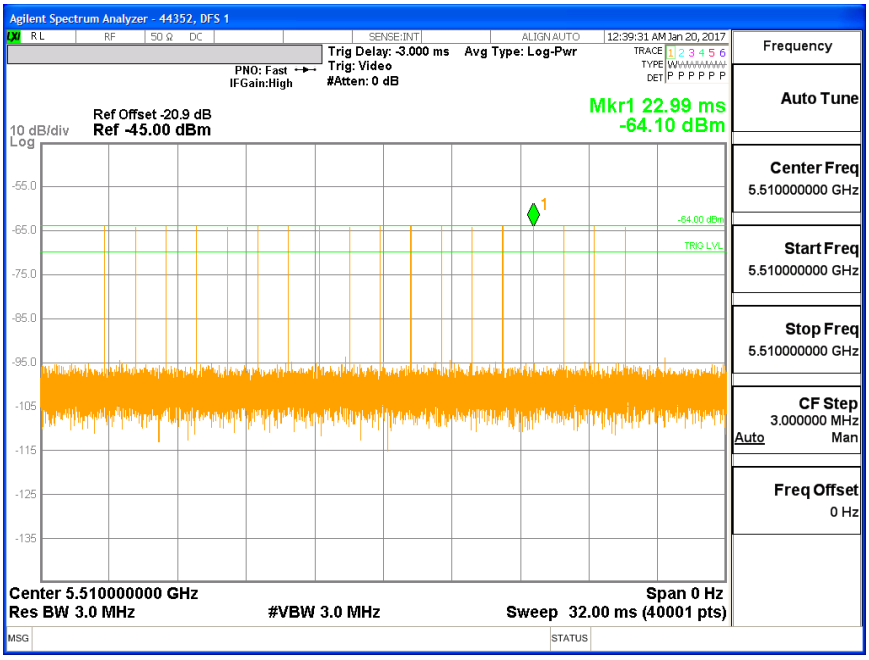
11.6.1. TEST CHANNEL

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

11.6.2. RADAR WAVEFORM AND TRAFFIC

RADAR WAVEFORM

SHORT PULSE RADAR TYPE 0 AT MASTER



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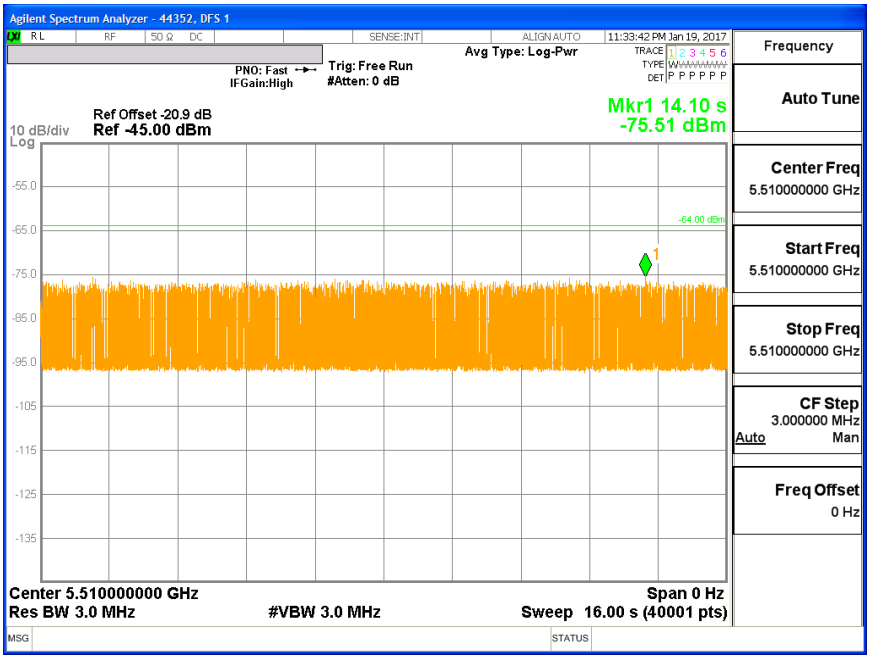
TRAFFIC

SLAVE TRAFFIC



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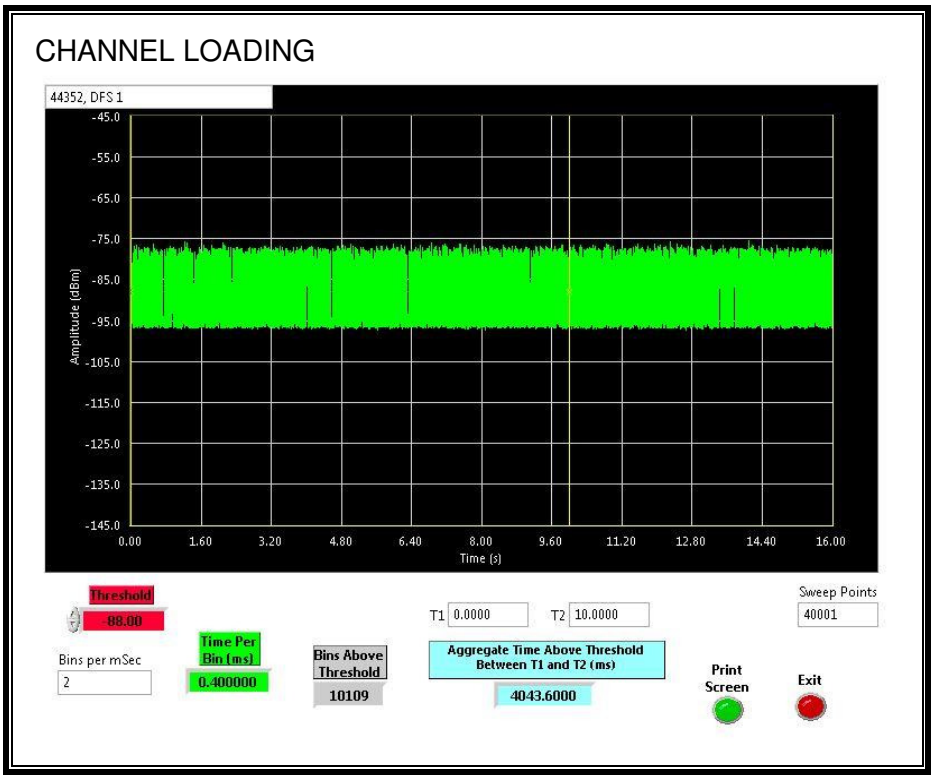
CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 40.436%

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11.6.3. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

11.6.4. 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)
0.1088	10

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

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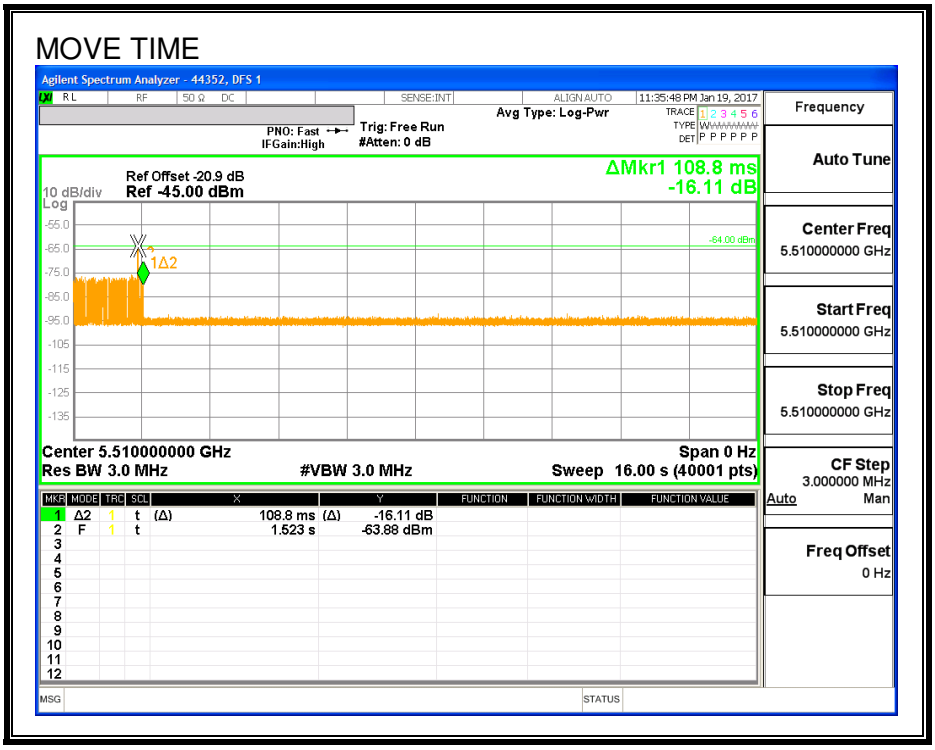
MOVE TIME



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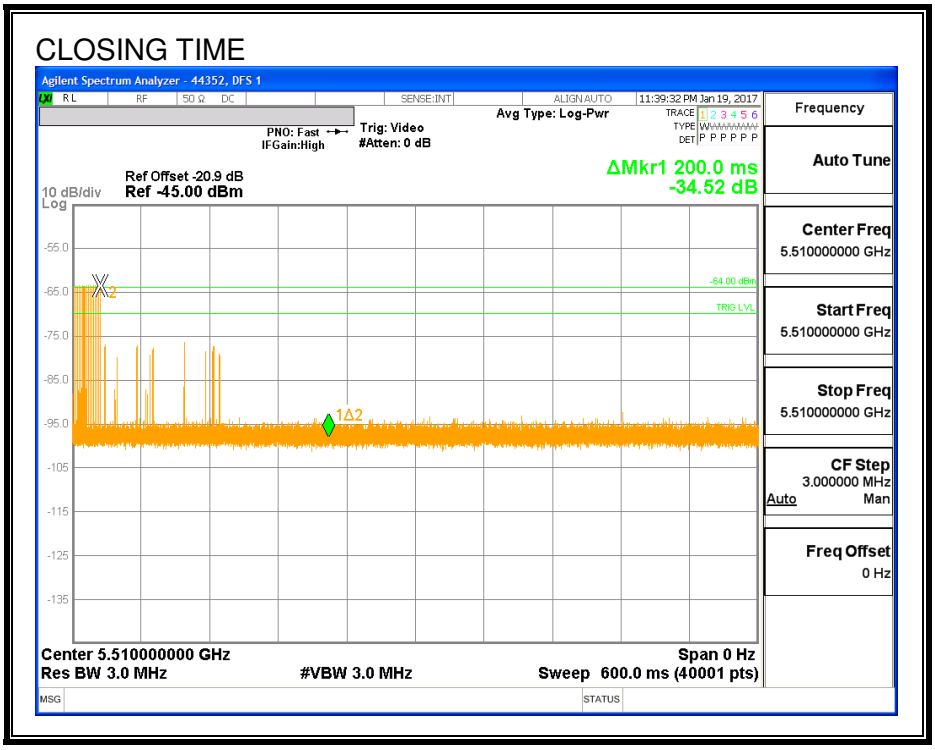
CHANNEL CLOSING TIME



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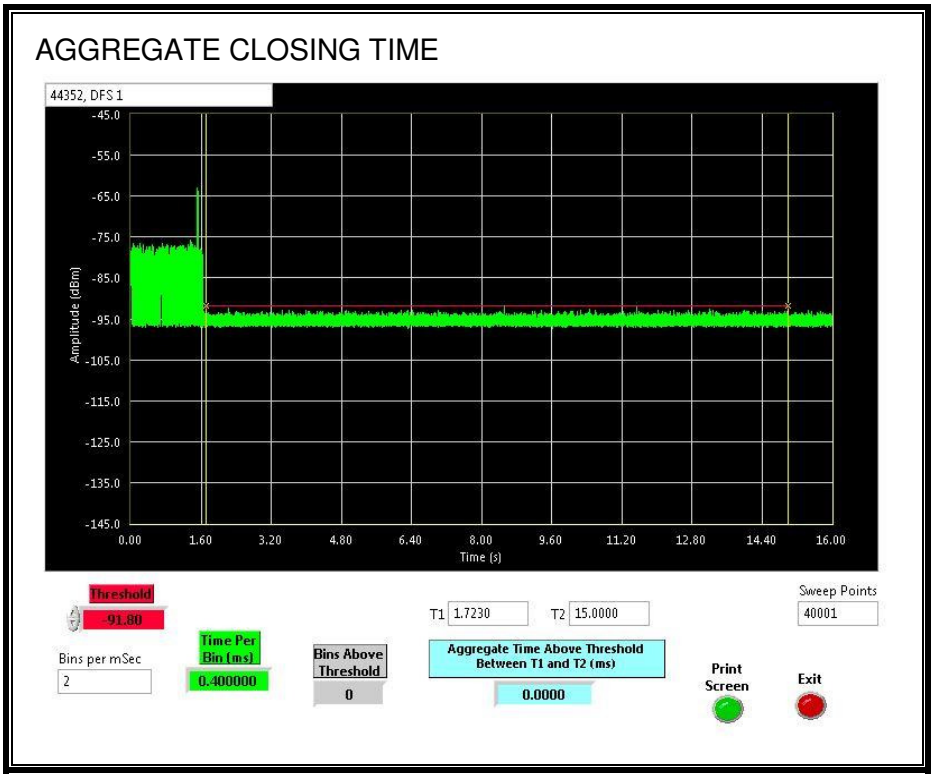
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the aggregate monitoring period.



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

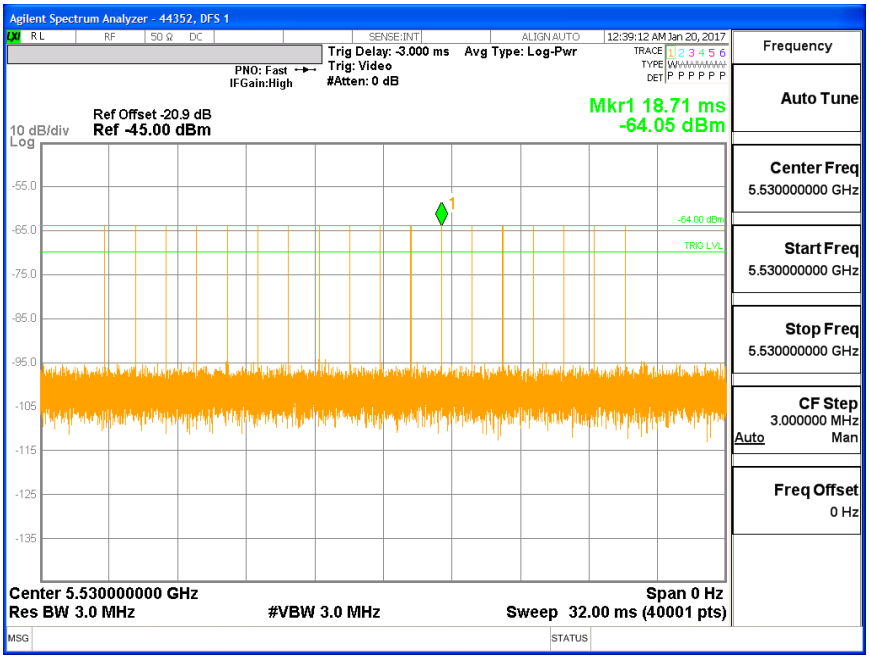
11.7.1. TEST CHANNEL

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

11.7.2. RADAR WAVEFORM AND TRAFFIC

RADAR WAVEFORM

SHORT PULSE RADAR TYPE 0 AT MASTER



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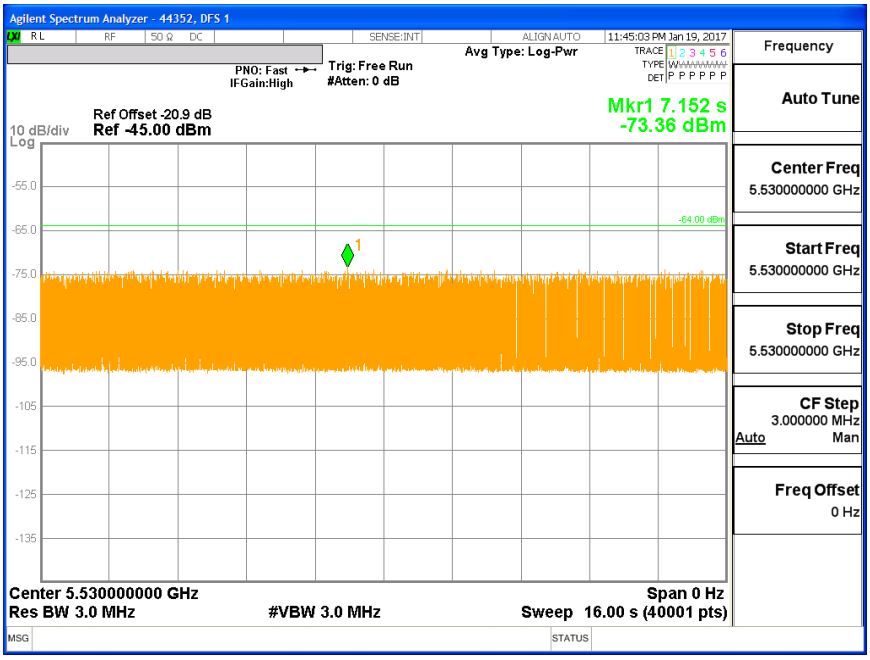
TRAFFIC

SLAVE TRAFFIC



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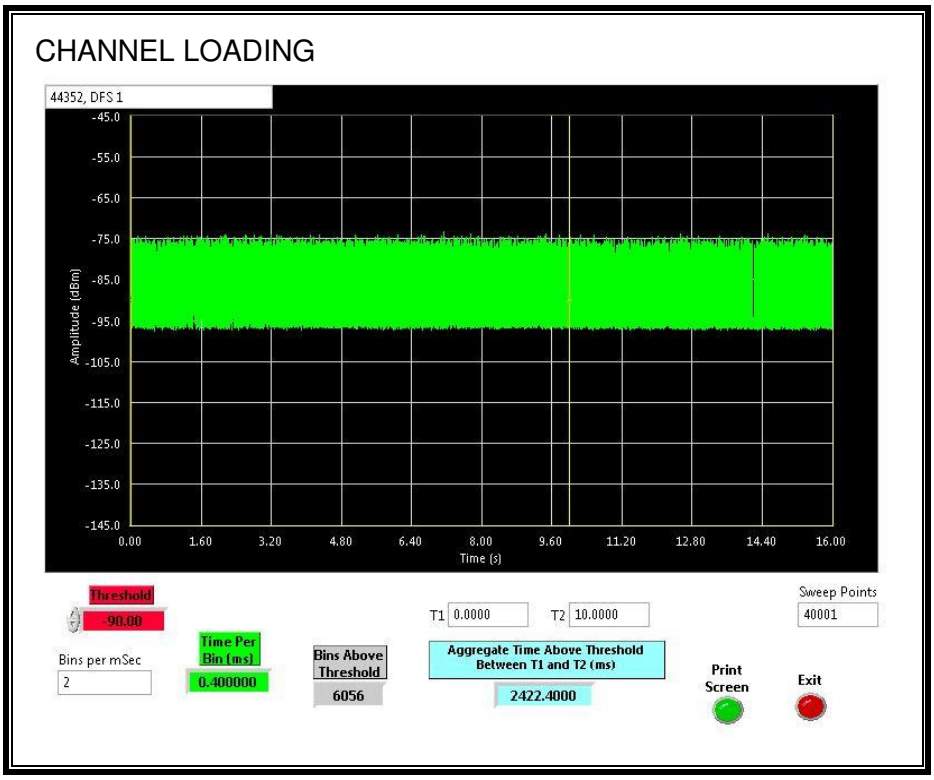
CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 24.224%

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11.7.3. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

11.7.4. 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)
0.1824	10

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

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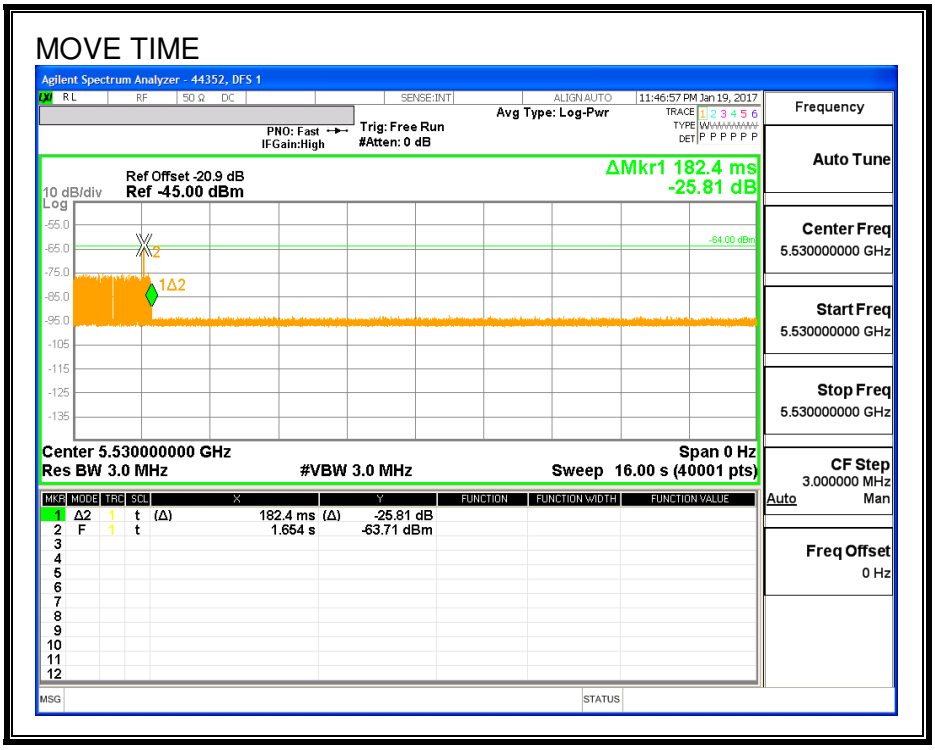
MOVE TIME



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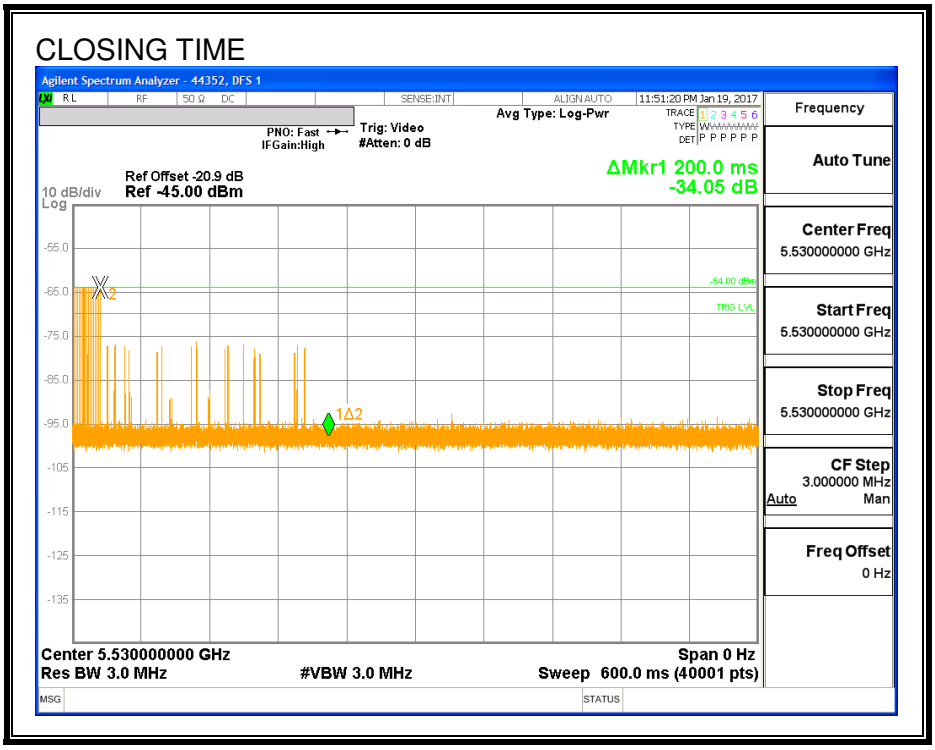
CHANNEL CLOSING TIME



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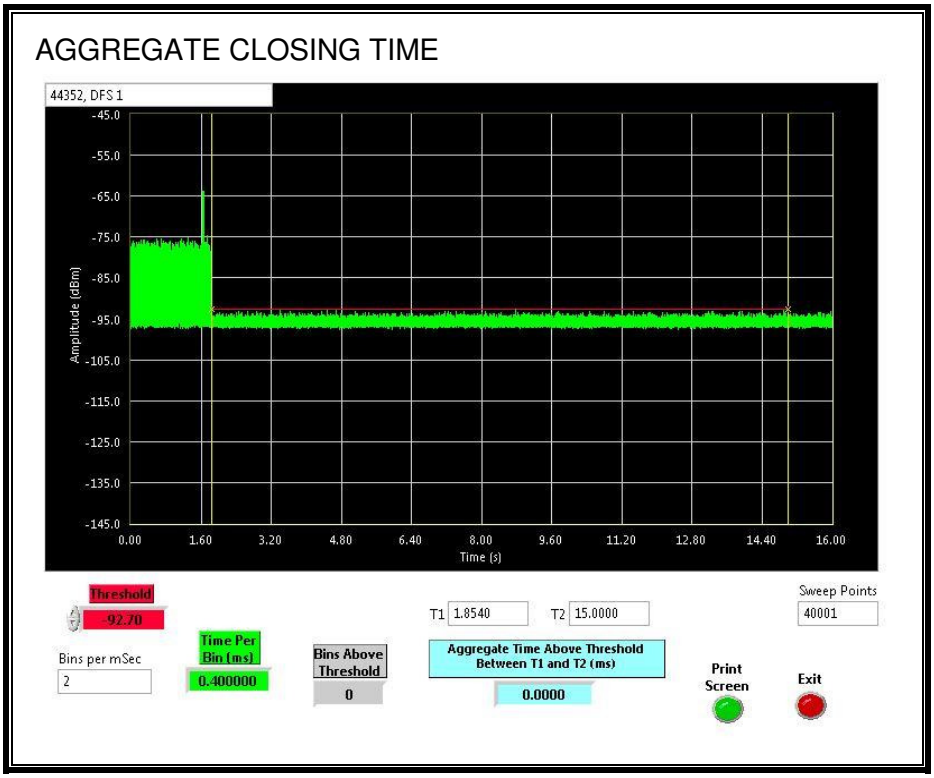
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

Only intermittent transmissions are observed during the aggregate monitoring period.



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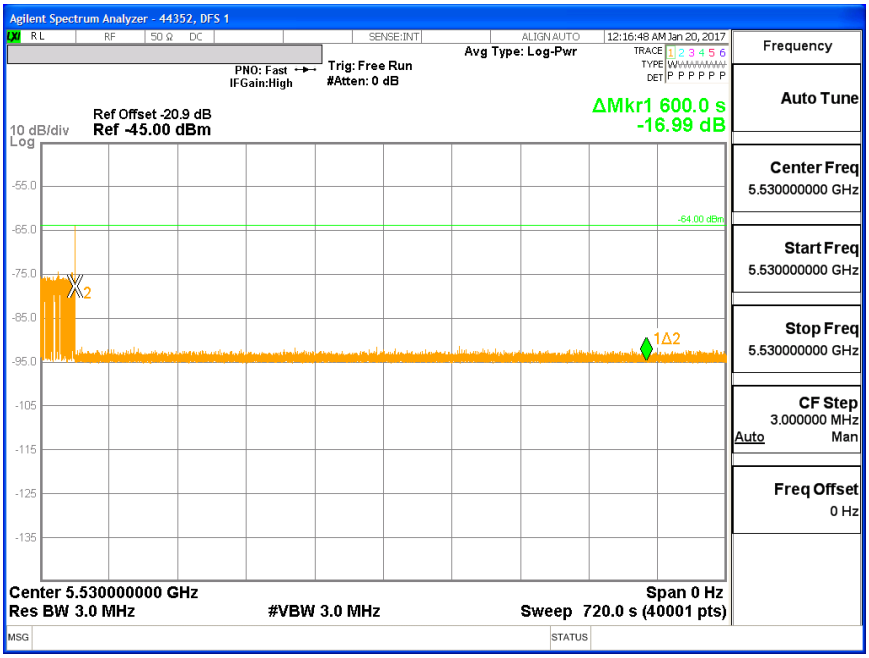
11.7.5. 10-MINUTE CLIENT Tx MONITORING PERIOD

RESULTS

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

10-MINUTE CLIENT Tx MONITORING PERIOD



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