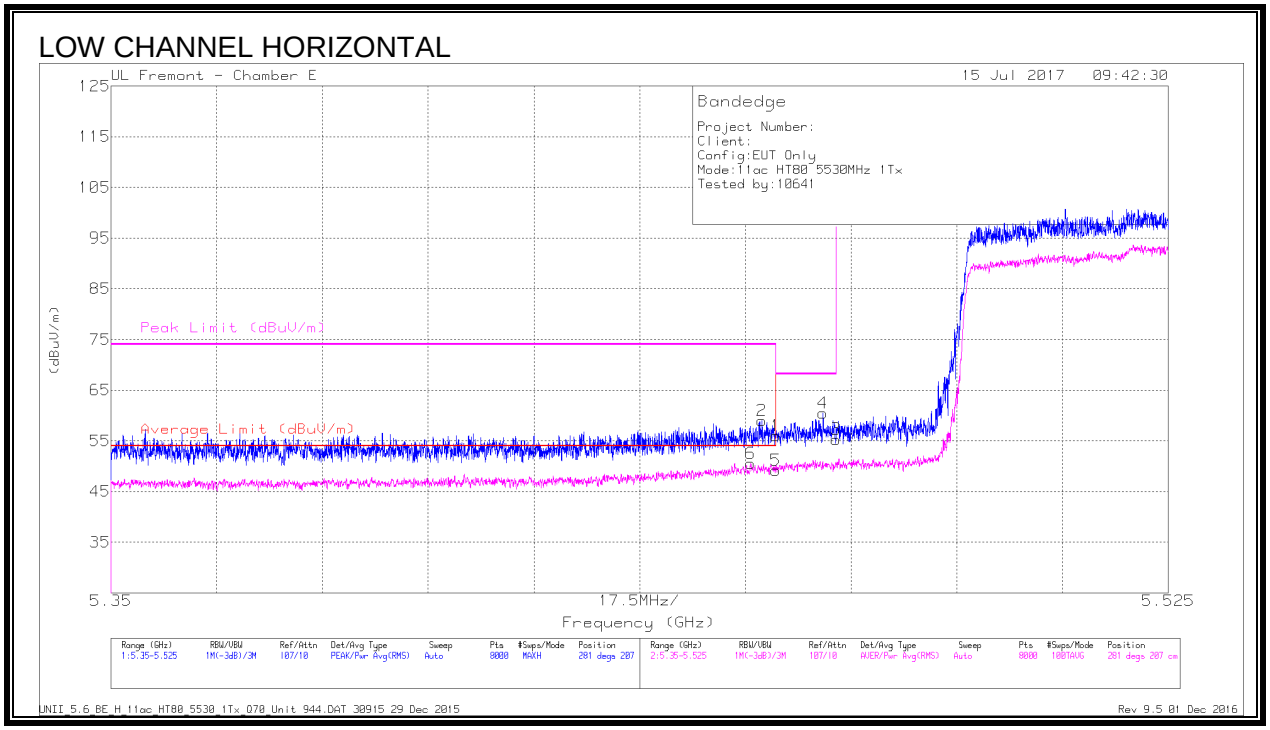
9.1.27. 11ac HT80 UAT 2 SISO MODE IN THE 5.6GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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	* 5.46	40.95	Pk	35.1	-20	0	56.05	-	-	74	-17.95	281	207	H
2	* 5.458	43.85	Pk	35.1	-20	0	58.95	-	-	74	-15.05	281	207	H
5	* 5.46	33.89	RMS	35.1	-20	.19	49.18	54	-4.82	-	-	281	207	H
6	* 5.456	35.26	RMS	35.1	-20	.19	50.55	54	-3.45	-	-	281	207	H
4	5.468	45.23	Pk	35.1	-19.9	0	60.43	-	-	68.2	-7.77	281	207	H
3	5.47	40.12	Pk	35.1	-19.9	0	55.32	-	-	68.2	-12.88	281	207	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection
UNII_5.6_BE_H_11ac_HT80_5530_1Tx_Q70_Unit 944.DAT 30915 29 Dec 2015
Rev 9.5 01 Dec 2016

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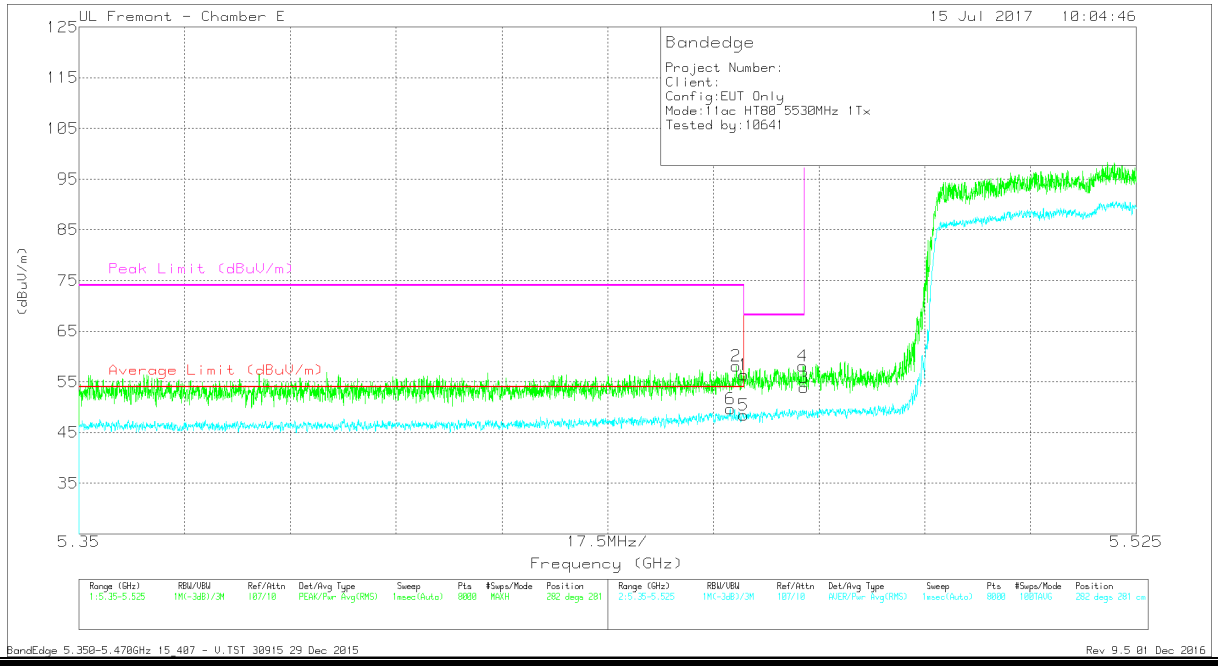
LOW CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl /Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.46	41.33	Pk	35.1	-20	56.43	-	-	74	-17.57	282	281	V
2	* 5.459	43	Pk	35.1	-20	58.1	-	-	74	-15.9	282	281	V
5	* 5.46	33.28	RMS	35.1	-20	48.38	54	-5.62	-	-	282	281	V
6	* 5.458	34.54	RMS	35.1	-20	49.64	54	-4.36	-	-	282	281	V
3	5.47	38.67	Pk	35.1	-19.9	53.87	-	-	68.2	-14.33	282	281	V
4	5.47	42.94	Pk	35.1	-19.9	58.14	-	-	68.2	-10.06	282	281	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection
BandEdge 5.350-5.470GHz 15_407 - V.TST 30915 29 Dec 2015
Rev 9.5 01 Dec 2016

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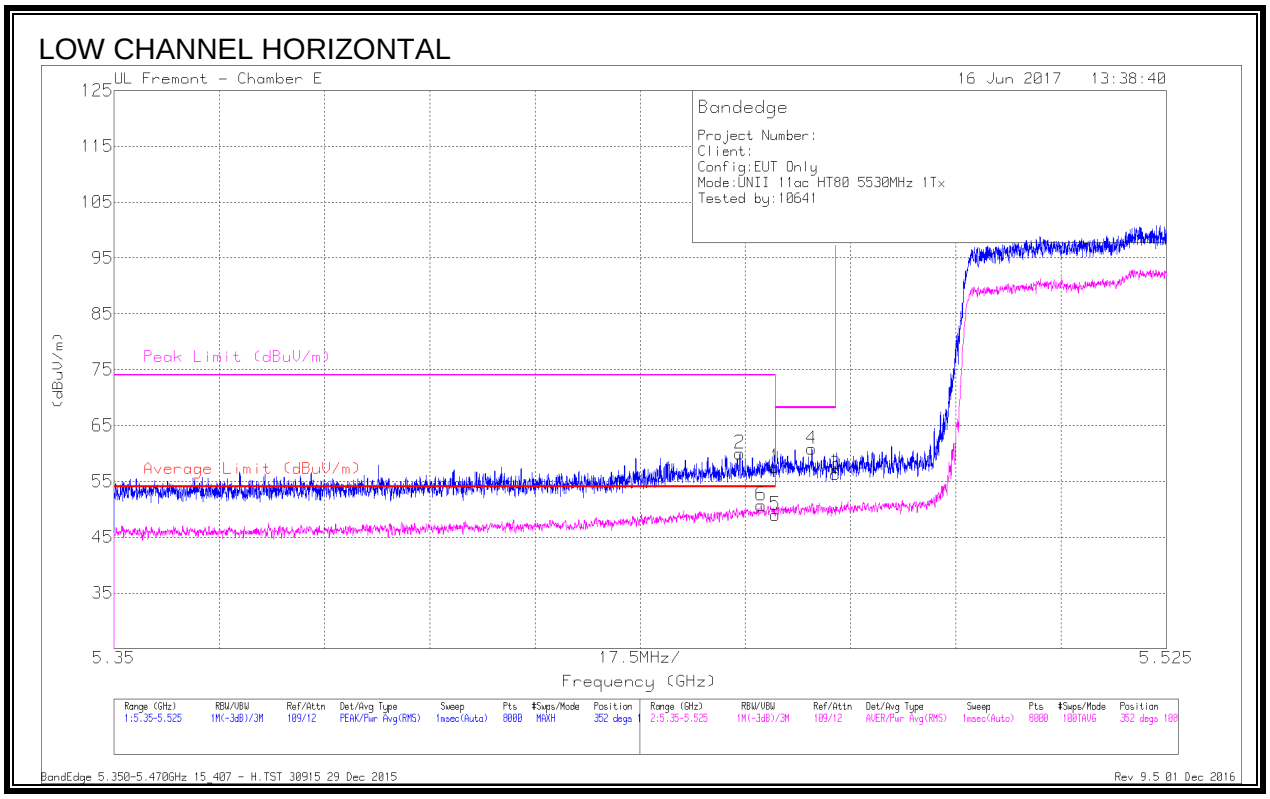
9.1.28. 11ac HT80 LAT 3 SISO MODE IN THE 5.6GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (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
2	* 5.454	44.21	Pk	35.1	-19.3	0	60.01	-	-	74	-13.99	352	108	H
6	* 5.458	34.74	RMS	35.2	-19.4	.19	50.73	54	-3.27	-	-	352	108	H
1	* 5.46	41.65	Pk	35.2	-19.3	0	57.55	-	-	74	-16.45	352	108	H
5	* 5.46	32.94	RMS	35.2	-19.3	.19	49.03	54	-4.97	-	-	352	108	H
4	5.466	45.04	Pk	35.2	-19.4	0	60.84	-	-	68.2	-7.36	352	108	H
3	5.47	40.48	Pk	35.2	-19.4	0	56.28	-	-	68.2	-11.92	352	108	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection
BandEdge 5.350-5.470GHz 15_407 - H.TST 30915 29 Dec 2015
Rev 9.5 01 Dec 2016

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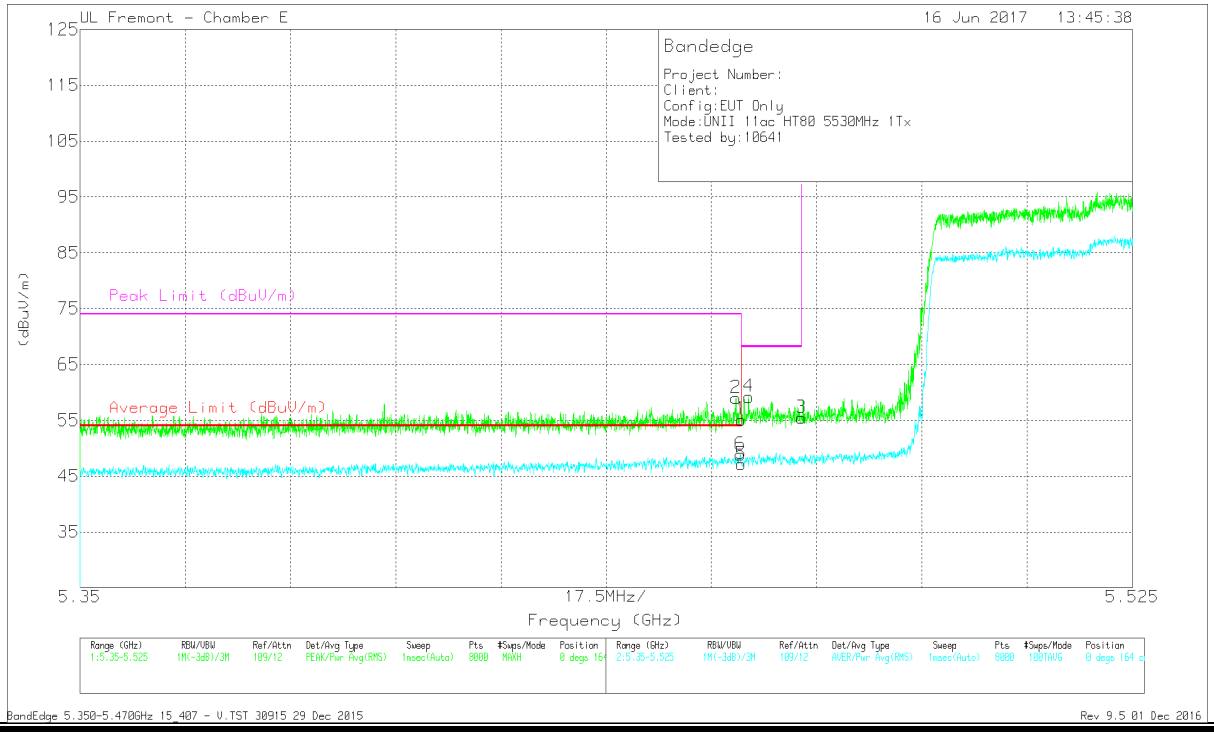
LOW CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (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
2	* 5.459	43.1	Pk	35.2	-19.3	0	59	-	-	74	-15	0	164	V
1	* 5.46	39.24	Pk	35.2	-19.3	0	55.14	-	-	74	-18.86	0	164	V
5	* 5.46	31.04	RMS	35.2	-19.3	.19	47.13	54	-6.87	-	-	0	164	V
6	* 5.46	32.74	RMS	35.2	-19.3	.19	48.83	54	-5.17	-	-	0	164	V
4	5.461	43.3	Pk	35.2	-19.3	0	59.2	-	-	68.2	-9	0	164	V
3	5.47	39.64	Pk	35.2	-19.4	0	55.44	-	-	68.2	-12.76	0	164	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection
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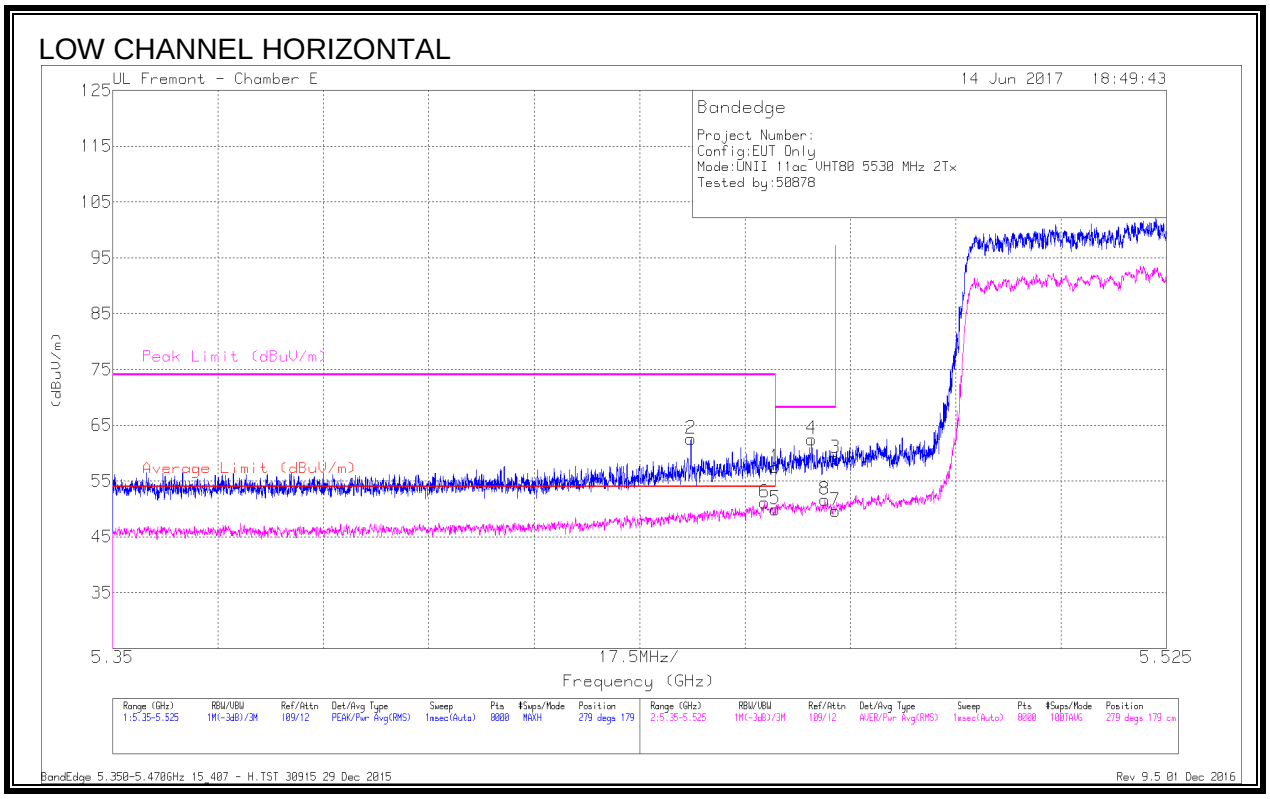
9.1.29. 11ac HT80 2TX CDD MIMO MODE IN THE 5.6GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (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
2	* 5.446	46.82	Pk	35.1	-19.3	0	62.62	-	-	74	-11.38	279	179	H
6	* 5.458	35.33	RMS	35.1	-19.3	.19	51.32	54	-2.68	-	-	279	179	H
1	* 5.46	41.66	Pk	35.1	-19.3	0	57.46	-	-	74	-16.54	279	179	H
5	* 5.46	34.18	RMS	35.1	-19.3	.19	50.17	54	-3.83	-	-	279	179	H
4	5.466	46.82	Pk	35.1	-19.4	0	62.52	-	-	68.2	-5.68	279	179	H
3	5.47	43.41	Pk	35.1	-19.4	0	59.11	-	-	68.2	-9.09	279	179	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection
BandEdge 5.350-5.470GHz 15_407 - H.TST 30915 29 Dec 2015
Rev 9.5 01 Dec 2016

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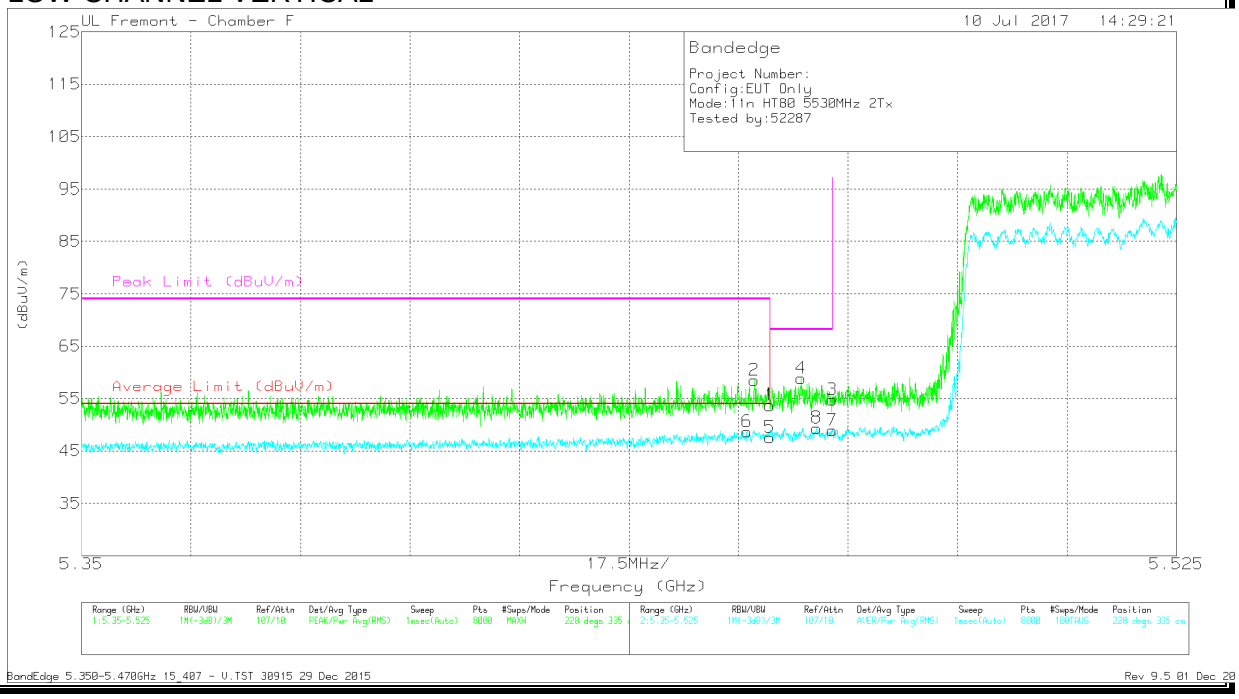
LOW CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	* 5.46	37.61	Pk	34.8	-18.7	0	53.71	-	-	74	-20.29	228	335	V
2	* 5.458	42.53	Pk	34.8	-18.8	0	58.53	-	-	74	-15.47	228	335	V
3	5.47	38.69	Pk	34.8	-18.7	0	54.79	-	-	68.2	-13.41	228	335	V
4	5.465	42.77	Pk	34.8	-18.7	0	58.87	-	-	68.2	-9.33	228	335	V
5	* 5.46	31.45	RMS	34.8	-18.7	.19	47.74	54	-6.26	-	-	228	335	V
6	* 5.456	32.57	RMS	34.8	-18.7	.19	48.86	54	-5.14	-	-	228	335	V
7	5.47	32.79	RMS	34.8	-18.7	.19	49.08	-	-	-	-	228	335	V
8	5.467	33.36	RMS	34.8	-18.8	.19	49.55	-	-	-	-	228	335	V

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

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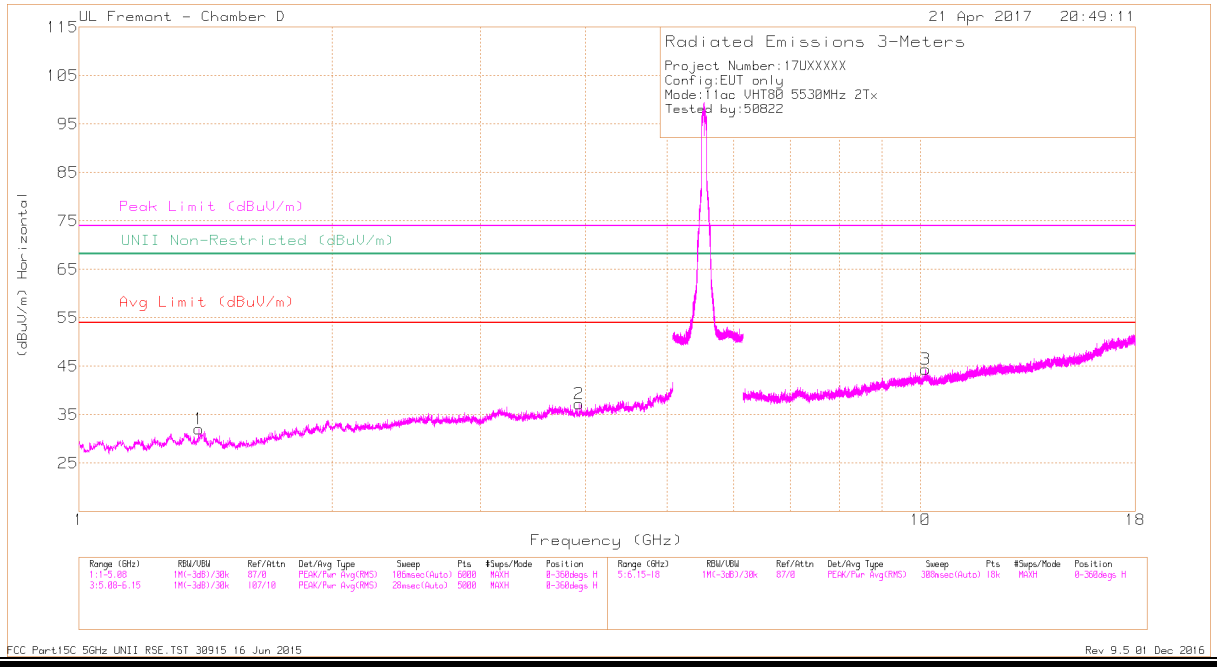
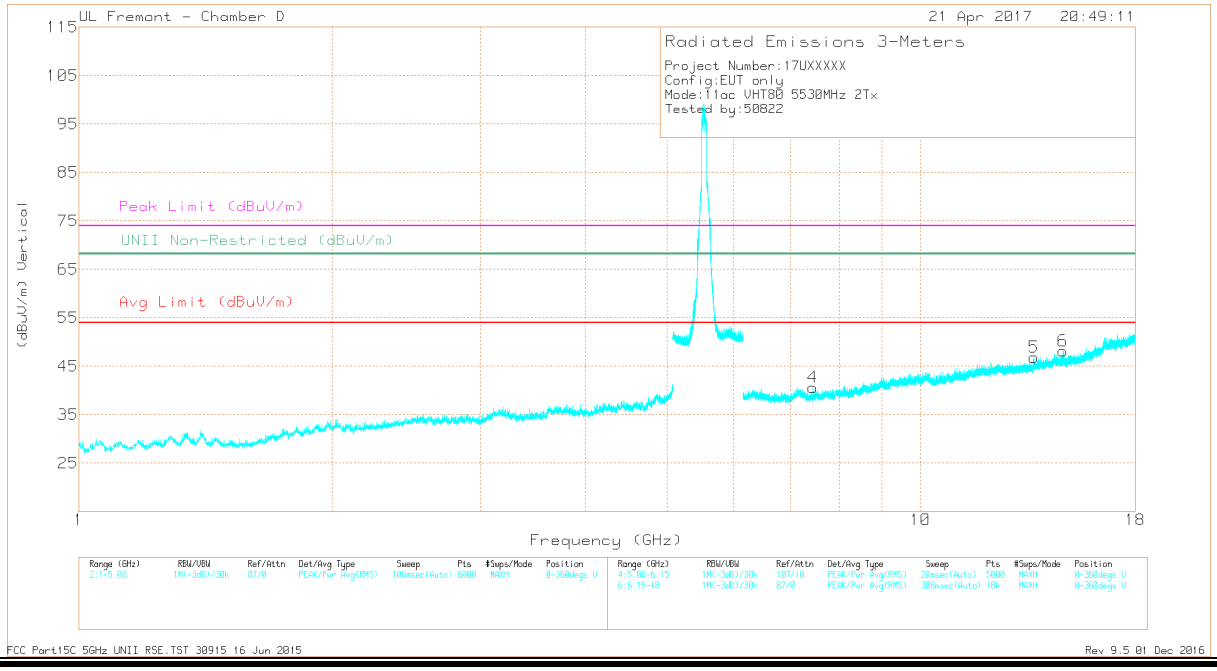
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



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Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.388	40.29	PK-U	29.2	-31.4	38.09	-	-	74	-35.91	-	-	206	197	H
	* 1.39	28.41	ADR	29.2	-31.3	26.31	54	-27.69	-	-	-	-	206	197	H
2	* 3.928	38.05	PK-U	33.2	-28.5	42.75	-	-	74	-31.25	-	-	338	322	H
	* 3.928	26.68	ADR	33.2	-28.5	31.38	54	-22.62	-	-	-	-	338	322	H
4	* 7.447	35.62	PK-U	35.6	-24.8	46.42	-	-	74	-27.58	-	-	275	345	V
	* 7.449	23.95	ADR	35.6	-24.8	34.75	54	-19.25	-	-	-	-	275	345	V
3	10.14	34.06	PK-U	37.2	-20.4	50.86	-	-	-	-	68.2	-17.34	277	345	H
	10.141	22.27	ADR	37.2	-20.4	39.07	-	-	-	-	-	-	277	345	H
5	13.643	24.35	ADR	39.3	-22.3	41.35	-	-	-	-	-	-	160	315	V
	13.645	35.92	PK-U	39.3	-22.3	52.92	-	-	-	-	68.2	-15.28	160	315	V
6	14.77	35.26	PK-U	40	-21.6	53.66	-	-	-	-	68.2	-14.54	103	231	V
	14.772	24.04	ADR	40	-21.7	42.34	-	-	-	-	-	-	103	231	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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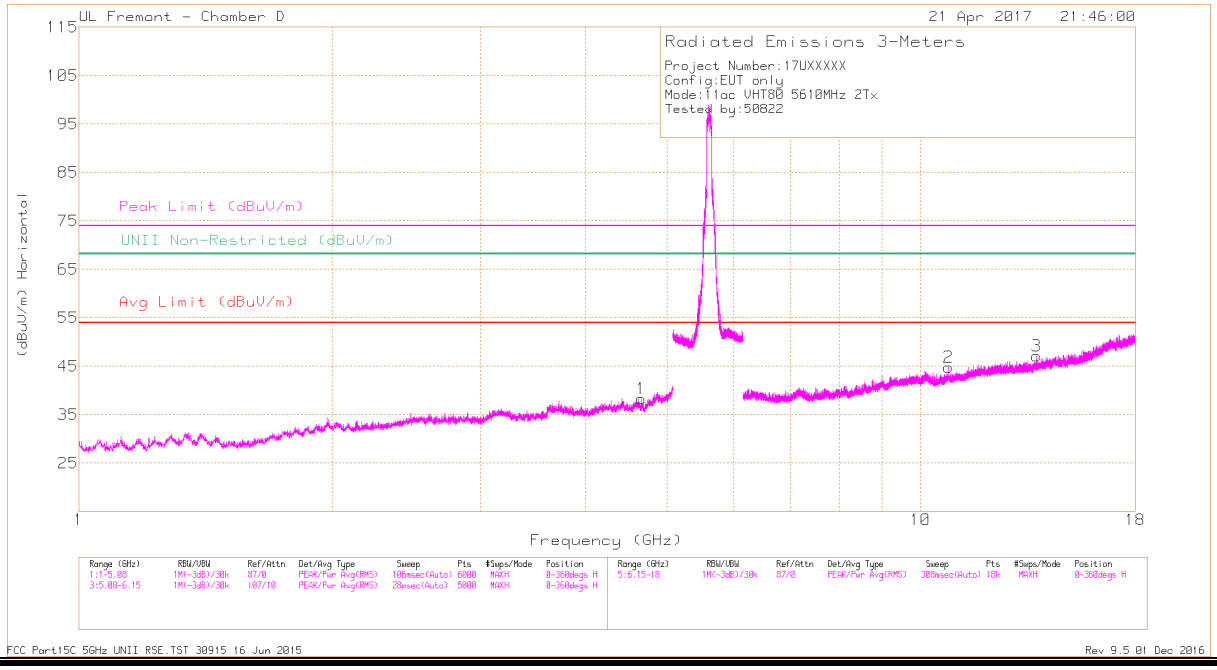
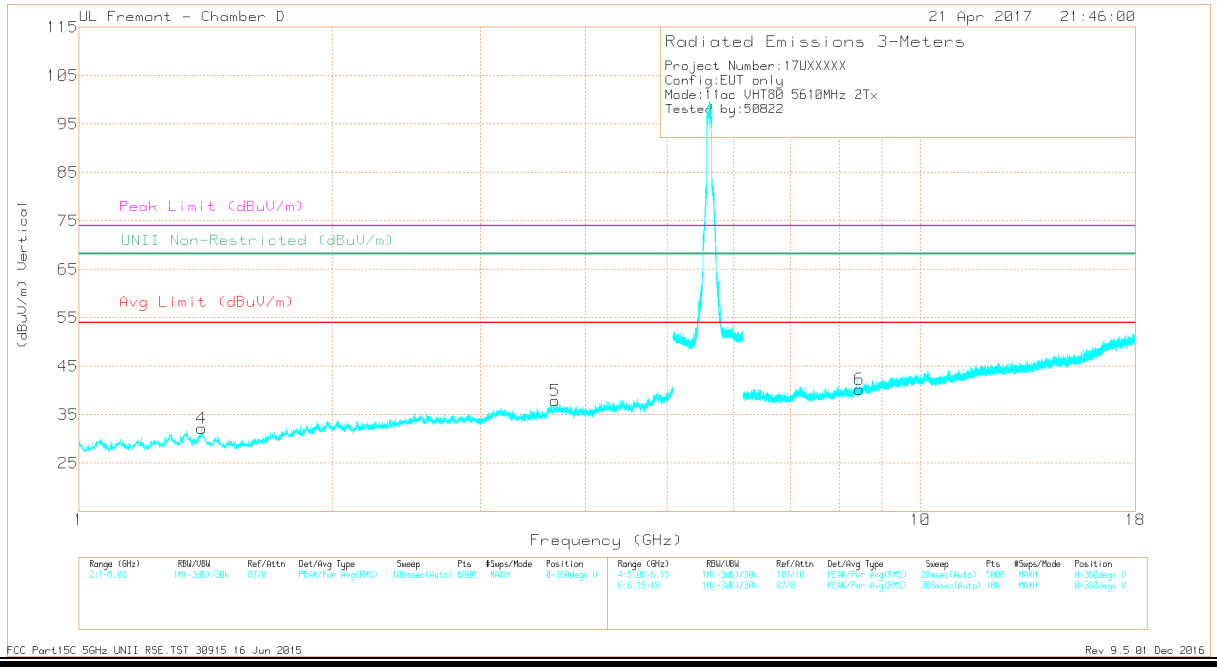
HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



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Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.659	38.33	PK-U	34	-27.6	44.73	-	-	74	-29.27	-	-	40	243	H
	* 4.662	26.72	ADR	34	-27.6	33.12	54	-20.88	-	-	-	-	40	243	H
4	* 1.399	41.36	PK-U	29.2	-31.4	39.16	-	-	74	-34.84	-	-	146	105	V
	* 1.4	29.05	ADR	29.2	-31.4	26.85	54	-27.15	-	-	-	-	146	105	V
5	* 3.681	38.64	PK-U	33.2	-29	42.84	-	-	74	-31.16	-	-	125	131	V
	* 3.683	27.2	ADR	33.2	-28.9	31.5	54	-22.5	-	-	-	-	125	131	V
2	* 10.802	33.64	PK-U	37.3	-20.6	50.34	-	-	74	-23.66	-	-	283	117	H
	* 10.802	22.15	ADR	37.3	-20.6	38.85	54	-15.15	-	-	-	-	283	117	H
6	* 8.458	35.74	PK-U	36	-24.4	47.34	-	-	74	-26.66	-	-	57	212	V
	* 8.458	24.36	ADR	36	-24.4	35.96	54	-18.04	-	-	-	-	57	212	V
3	13.743	35.9	PK-U	39.3	-22.4	52.8	-	-	-	-	68.2	-15.4	245	324	H
	13.744	24.25	ADR	39.3	-22.4	41.15	-	-	-	-	-	-	245	324	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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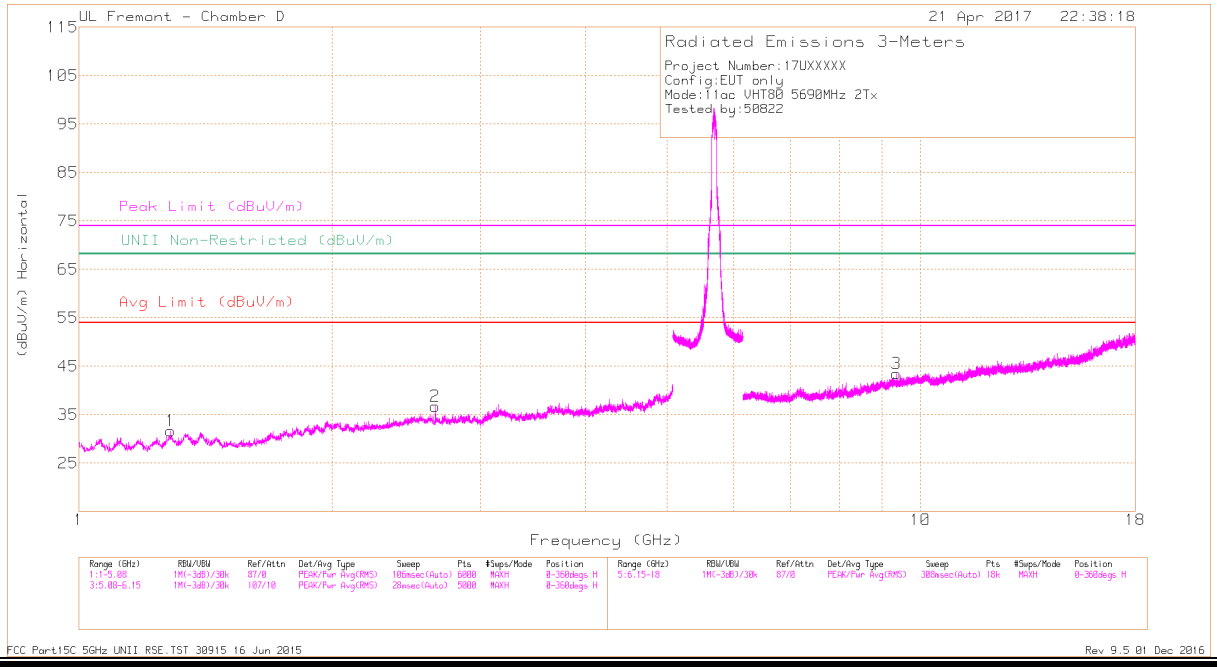
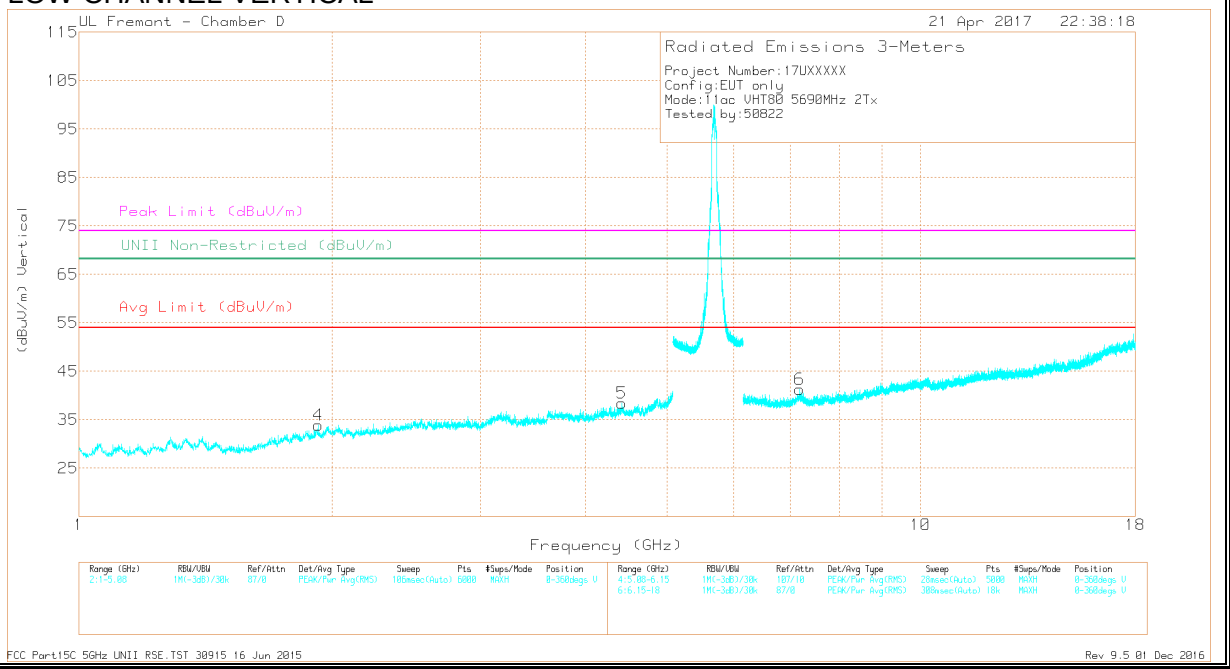
9.1.30. 11ac HT80 2TX CDD MIMO STRADDLE CHANNEL 138

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



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DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (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	* 1.285	41.17	PK-U	29.2	-31.8		38.57	-	-	74	-35.43	-	-	102	392	H
	* 1.286	29.16	ADR	29.2	-31.8	.19	26.75	54	-27.25	-	-	-	-	102	392	H
3	* 9.363	35.07	PK-U	37	-22.1		49.97	-	-	74	-24.03	-	-	356	392	H
	* 9.362	22.81	ADR	37	-22.1	.19	37.9	54	-16.1	-	-	-	-	356	392	H
4	1.922	40.58	PK-U	31.2	-31.3		40.48	-	-	-	-	68.2	-27.72	345	269	V
	1.922	28.61	ADR	31.2	-31.3		28.51	-	-	-	-	-	-	345	269	V
2	2.651	39.65	PK-U	32.5	-30.4		41.75	-	-	-	-	68.2	-26.45	150	265	H
	2.654	27.75	ADR	32.5	-30.4		29.85	-	-	-	-	-	-	150	265	H
5	4.418	38.1	PK-U	33.9	-27.3		44.7	-	-	-	-	68.2	-23.5	62	337	V
	4.42	26.31	ADR	33.9	-27.3		32.91	-	-	-	-	-	-	62	337	V
6	7.18	36.02	PK-U	35.7	-24		47.72	-	-	-	-	68.2	-20.48	161	163	V
	7.182	24.13	ADR	35.7	-24		35.83	-	-	-	-	-	-	161	163	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

FCC Part15C 5GHz UNII RSE.TST 30915 16 Jun 2015

Rev 9.5 01 Dec 2016

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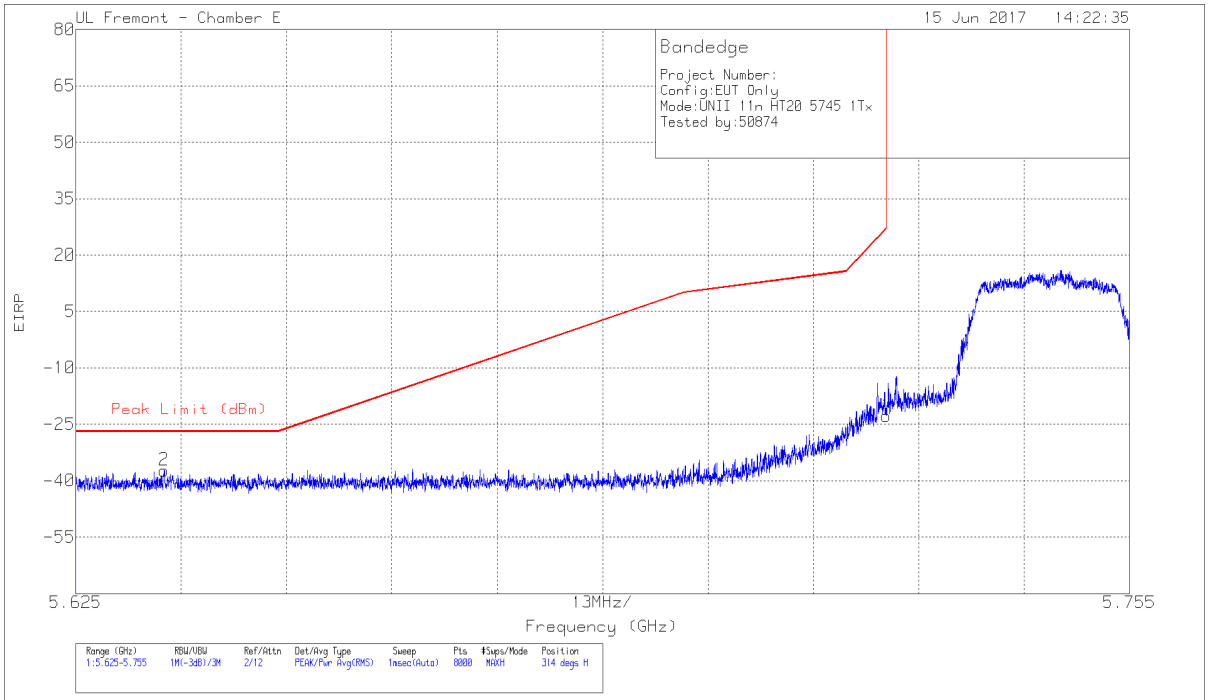
9.1.31. 11n HT20 UAT 2 SISO MODE IN THE 5.8GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

LOW CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T136 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.636	-64.35	Pk	34.9	-19.6	11.8	-37.25	-27	-10.25	314	237	H
1	5.725	-49.8	Pk	34.9	-19.6	11.8	-22.7	27	-49.7	314	237	H

Pk - Peak detector

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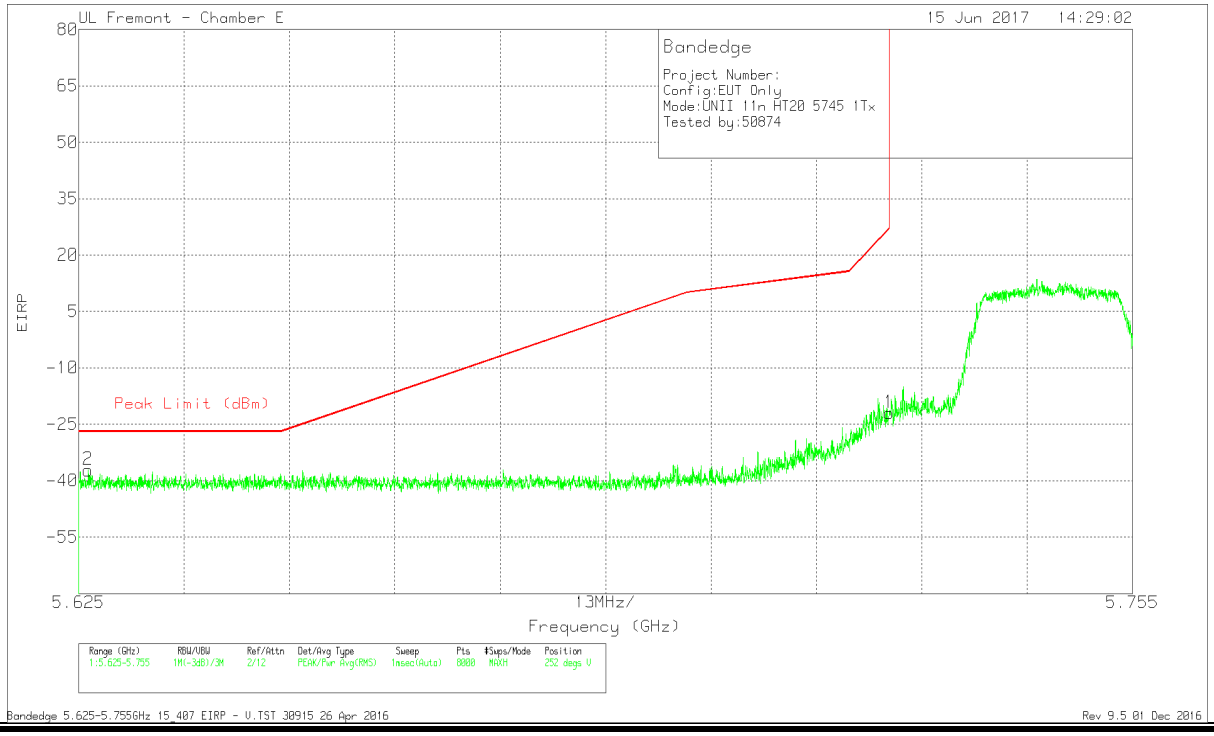
LOW CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T136 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.626	-64.4	Pk	34.9	-19.5	11.8	-37.2	-27	-10.2	252	283	V
1	5.725	-49.07	Pk	34.9	-19.6	11.8	-21.97	27	-48.97	252	283	V

Pk - Peak detector

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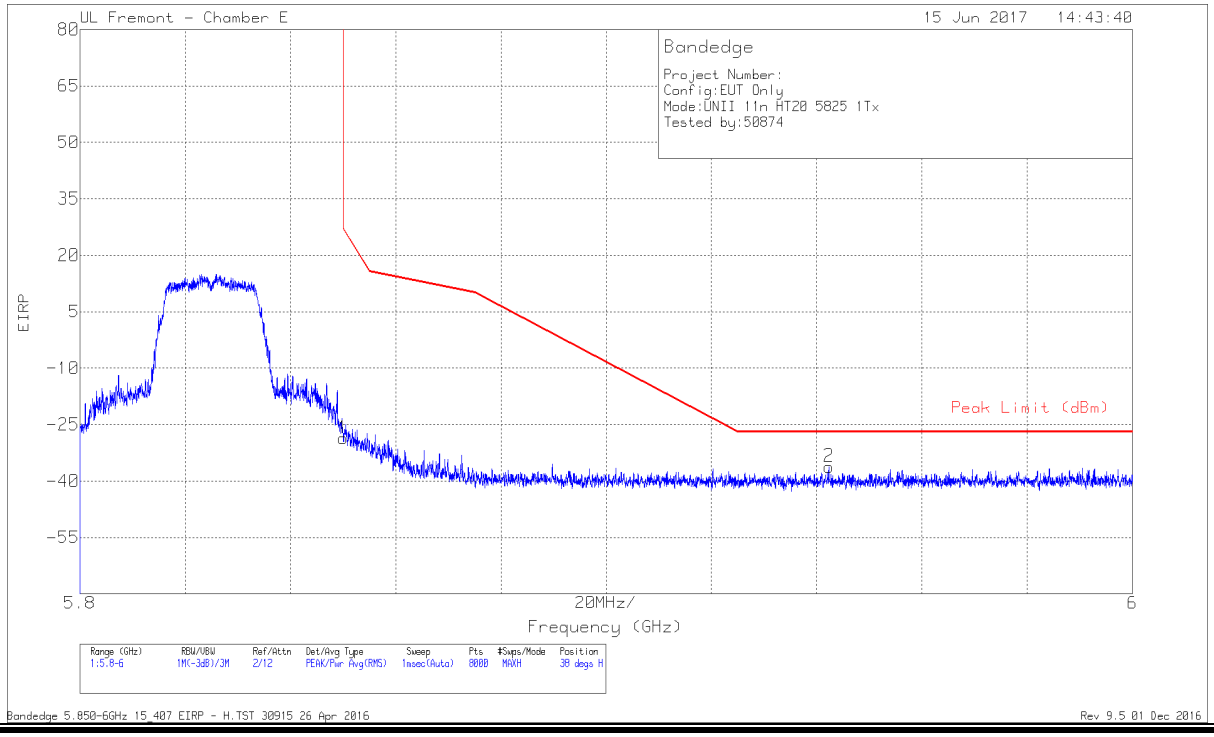
AUTHORIZED BANDEDGE (HIGH CHANNEL)

HIGH CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T136 (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	-56.42	Pk	35.5	-19.5	11.8	-28.62	26.99	-55.61	38	162	H
2	5.942	-64.31	Pk	35.6	-19.3	11.8	-36.21	-27	-9.21	38	162	H

Pk - Peak detector

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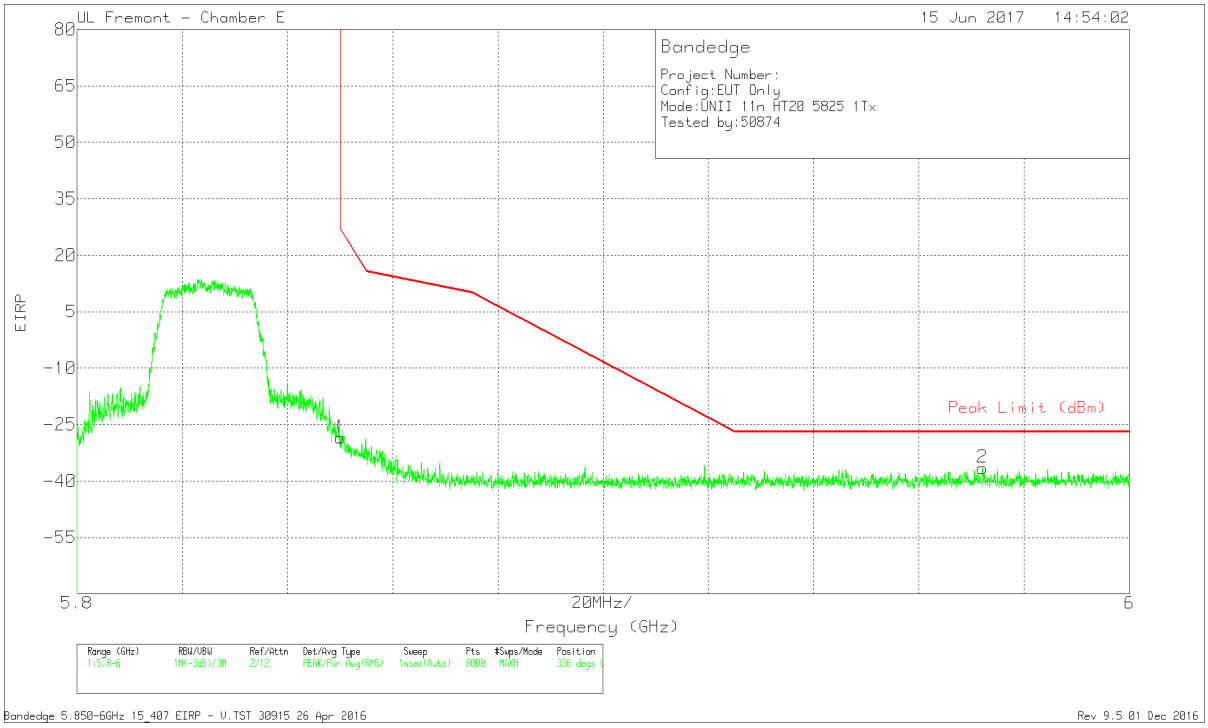
HIGH CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T136 (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	-56.27	Pk	35.5	-19.5	11.8	-28.47	26.99	-55.46	336	385	V
2	5.972	-64.91	Pk	35.6	-19	11.8	-36.51	-27	-9.51	336	385	V

Pk - Peak detector

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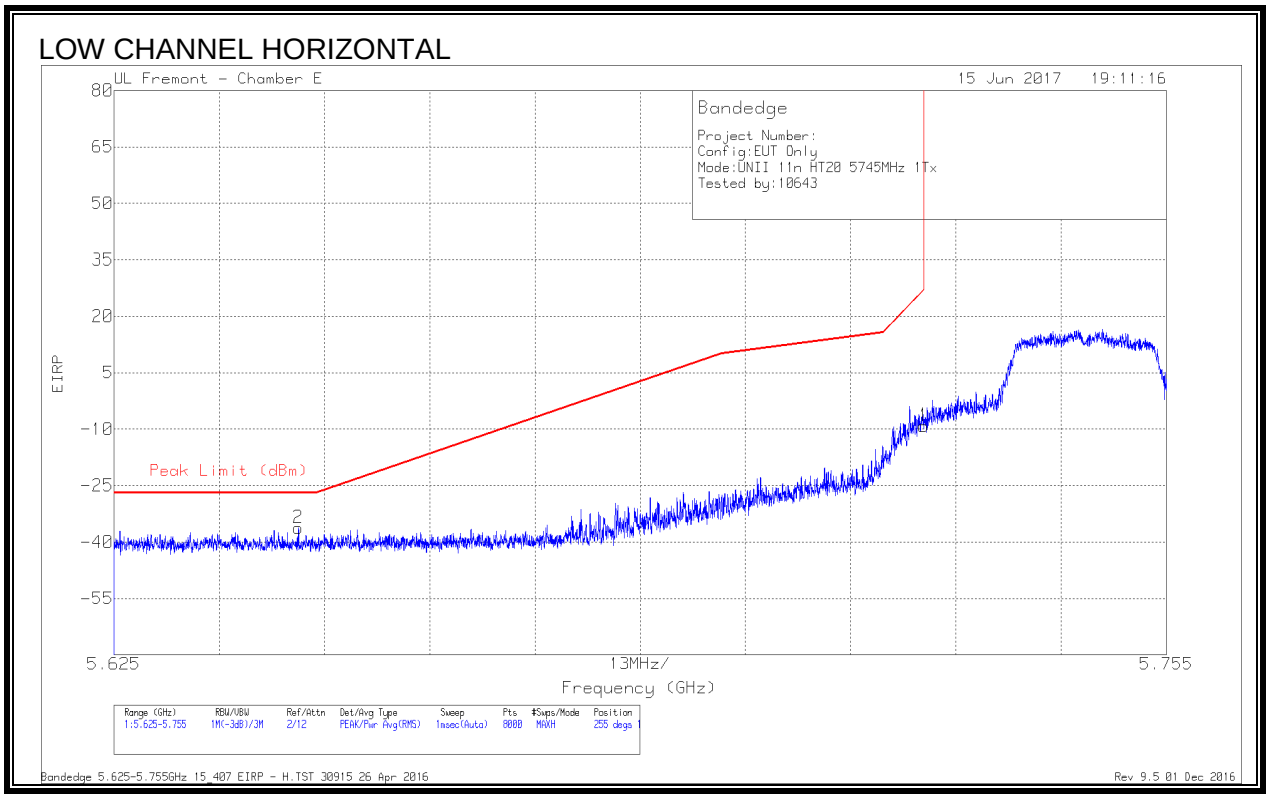
9.1.32. 11n HT20 LAT 3 SISO MODE IN THE 5.8GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T136 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.648	-63.45	Pk	34.9	-19.5	11.8	-36.25	-27	-9.25	255	104	H
1	5.725	-36.3	Pk	34.9	-19.6	11.8	-9.2	27	-36.2	255	104	H

Pk - Peak detector

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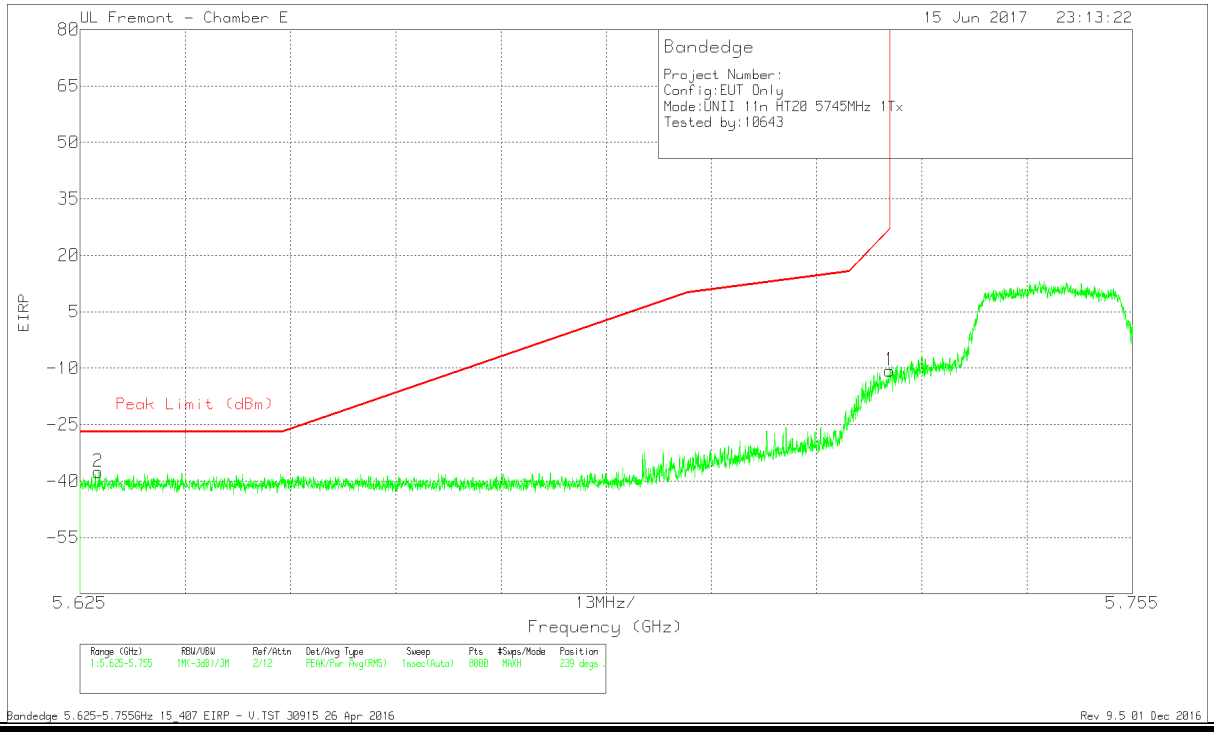
LOW CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T136 (dB/m)	Amp/Cbl /Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.627	-64.67	Pk	34.9	-19.6	11.8	-37.57	-27	-10.57	239	398	V
1	5.725	-37.72	Pk	34.9	-19.6	11.8	-10.62	27	-37.62	239	398	V

Pk - Peak detector

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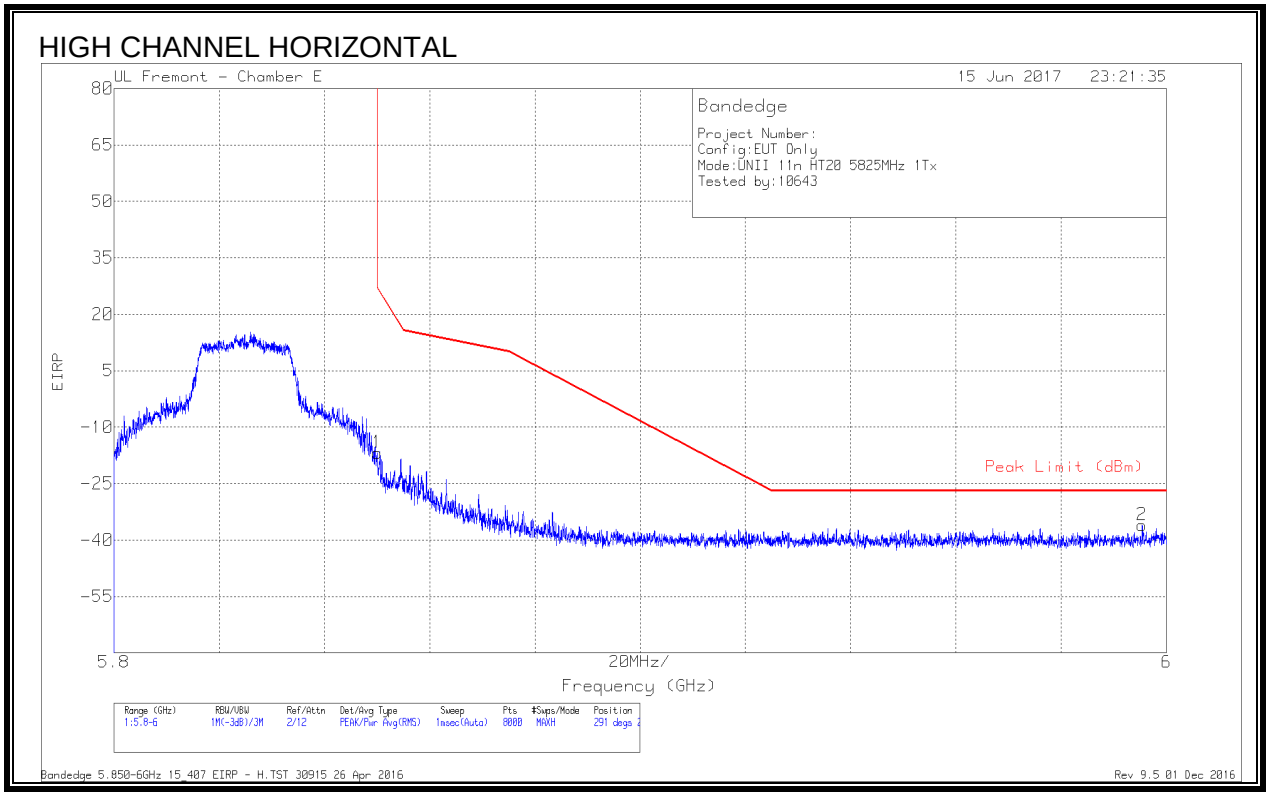
AUTHORIZED BANDEDGE (HIGH CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T136 (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	-44.63	Pk	35.5	-19.5	11.8	-16.83	26.99	-43.82	291	205	H
2	5.995	-64.65	Pk	35.6	-18.8	11.8	-36.05	-27	-9.05	291	205	H

Pk - Peak detector

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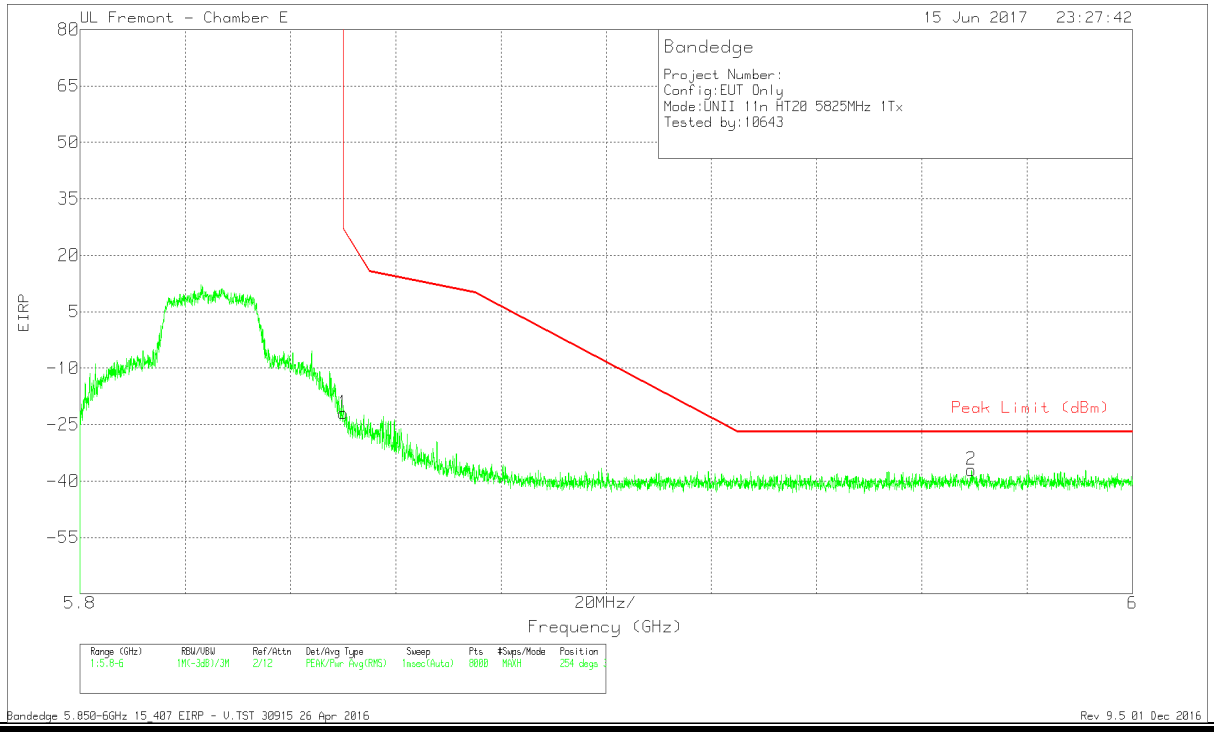
HIGH CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T136 (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	-49.7	Pk	35.5	-19.5	11.8	-21.9	26.99	-48.89	254	339	V
2	5.969	-65.54	Pk	35.6	-18.9	11.8	-37.04	-27	-10.04	254	339	V

Pk - Peak detector

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701J
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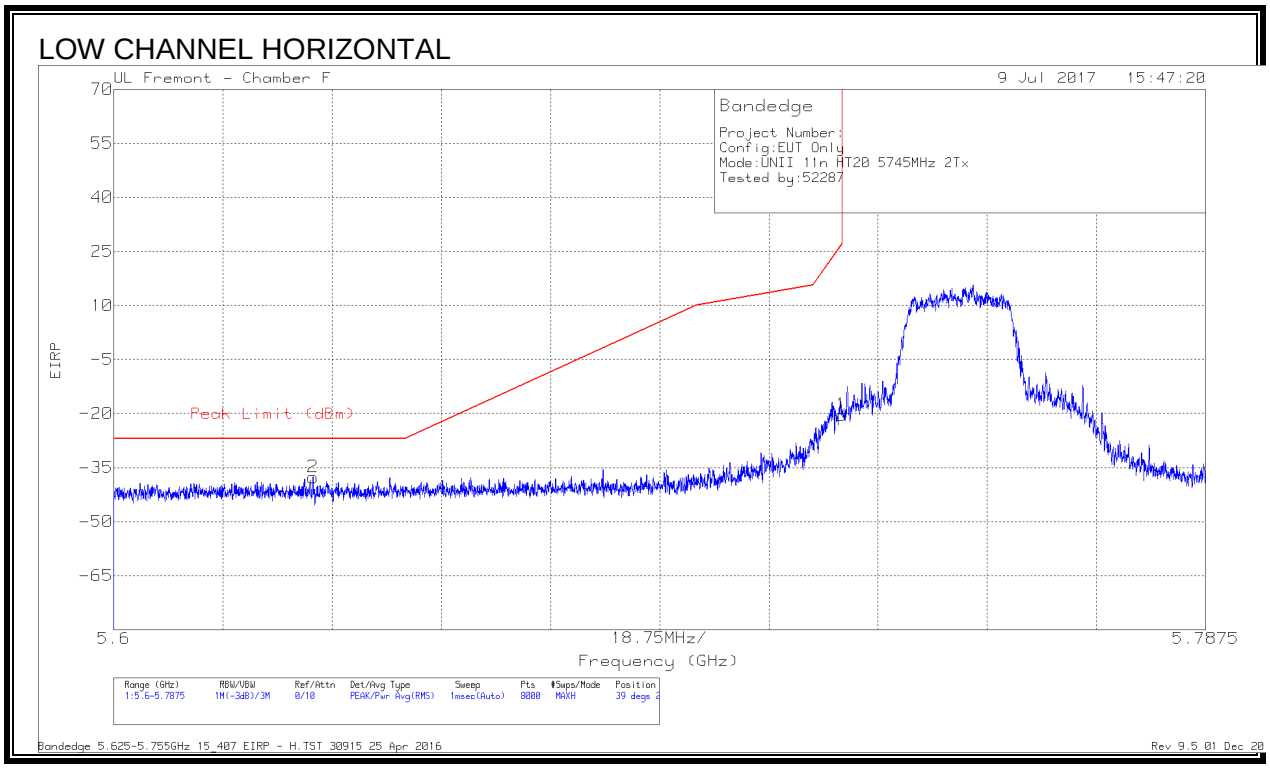
9.1.33. 11n HT20 2TX CDD MIMO MODE IN THE 5.8GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T119 (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	-49.24	Pk	35	-18	11.8	-20.44	26.96	-47.4	39	247	H
2	5.634	-66.18	Pk	34.9	-18.2	11.8	-37.68	-27	-10.68	39	247	H

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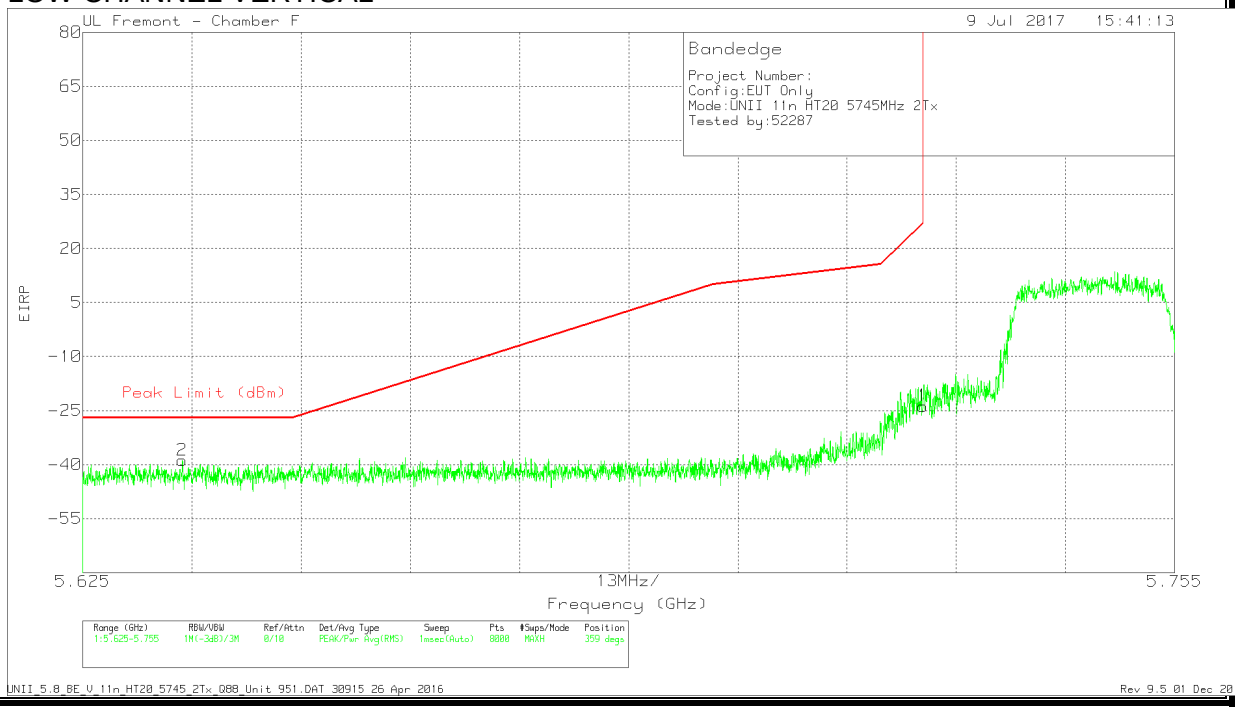
LOW CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T119 (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	-52.54	Pk	35	-18	11.8	-23.74	27	-50.74	359	362	V
2	5.637	-67.36	Pk	34.9	-18.2	11.8	-38.86	-27	-11.86	359	362	V

Pk - Peak detector

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701J
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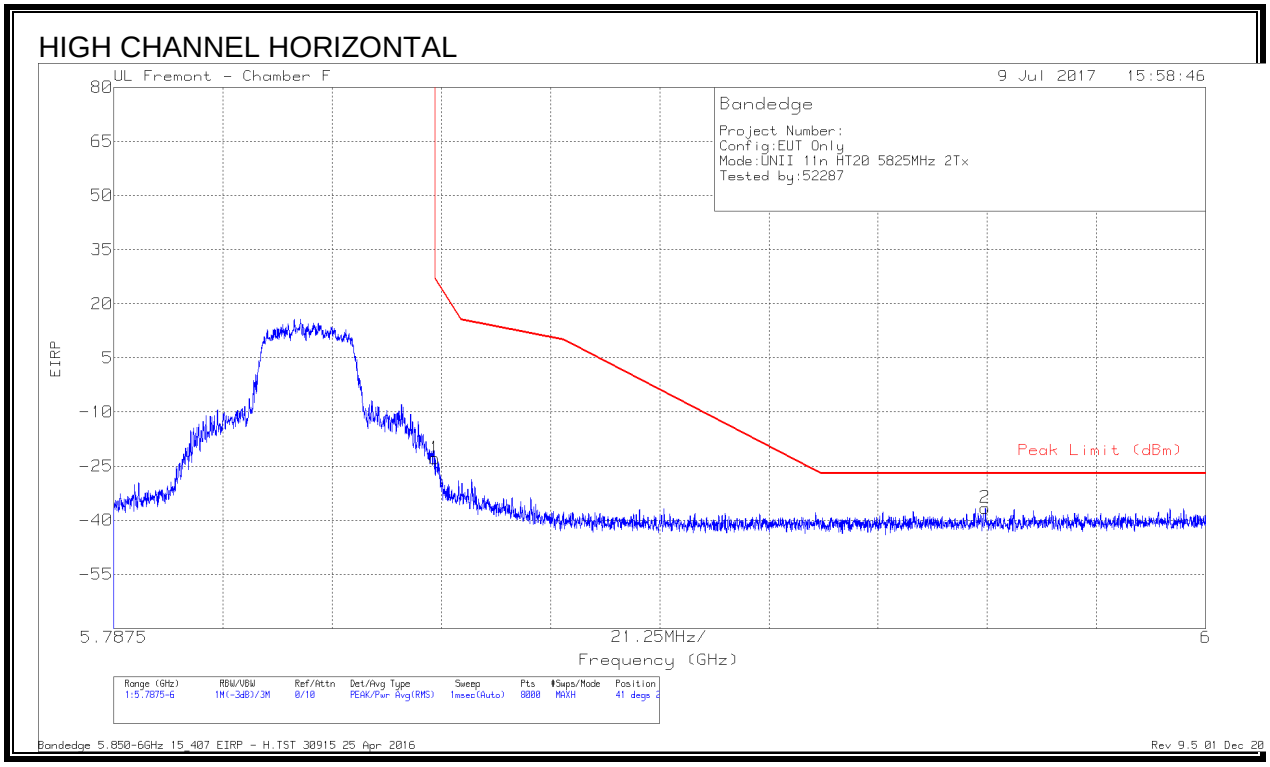
AUTHORIZED BANDEDGE (HIGH CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T119 (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	-51.63	Pk	35.1	-18.1	11.8	-22.83	26.98	-49.81	41	232	H
2	5.957	-65.38	Pk	35.2	-18.2	11.8	-36.58	-27	-9.58	41	232	H

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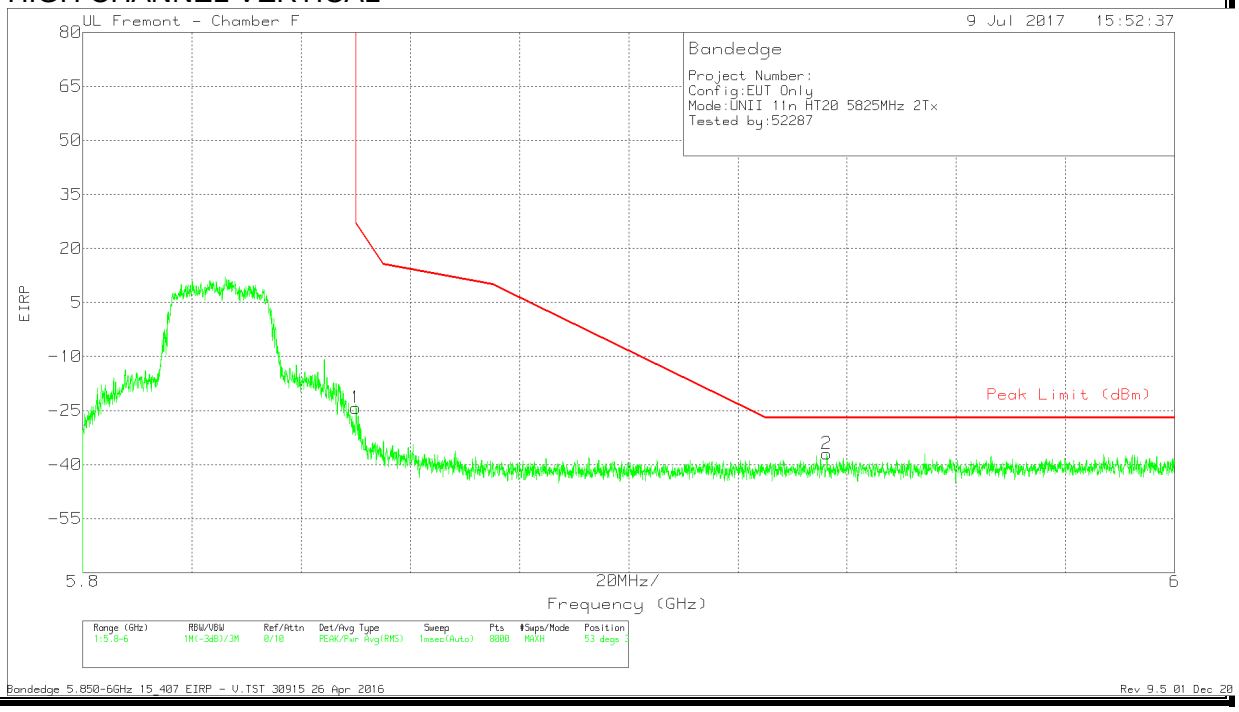
HIGH CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T119 (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	-53.05	Pk	35.1	-18.1	11.8	-24.25	26.99	-51.24	53	317	V
2	5.936	-65.71	Pk	35.2	-18.3	11.8	-37.01	-27	-10.01	53	317	V

Pk - Peak detector

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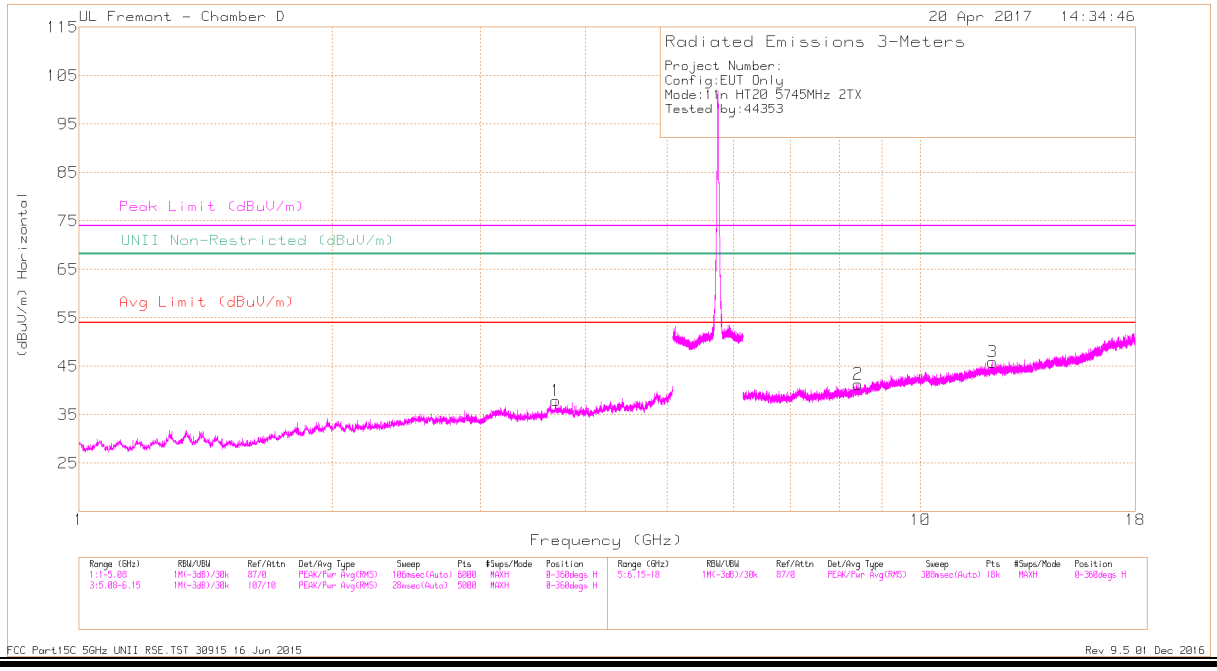
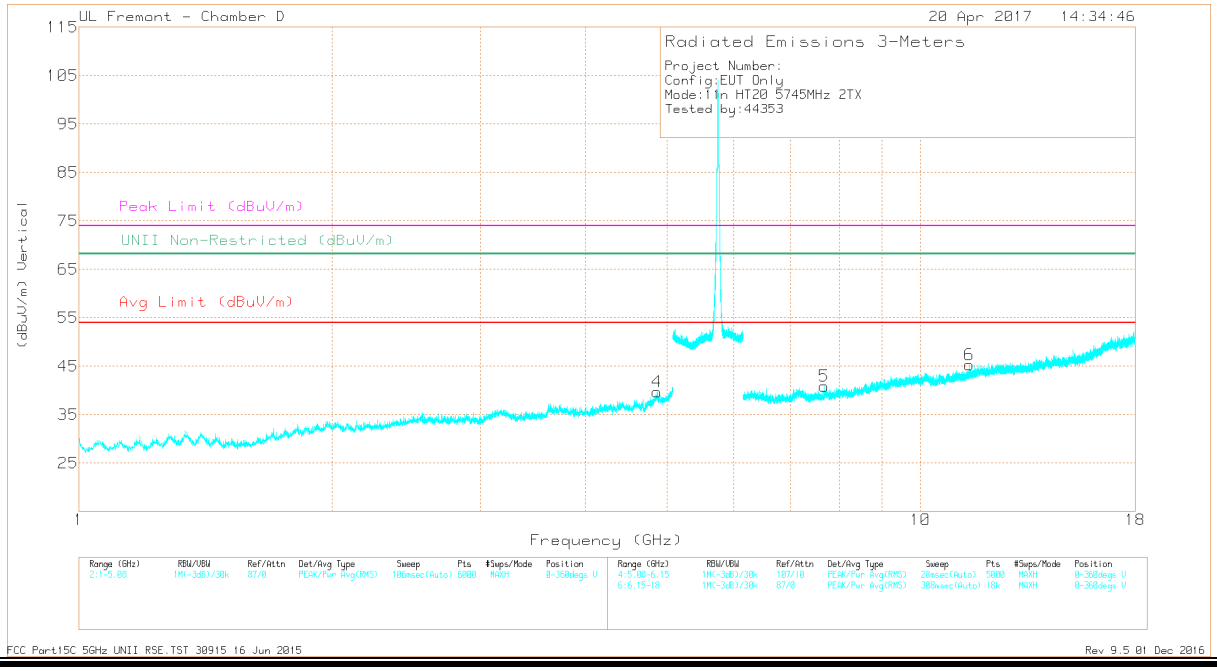
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



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DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.685	38.75	PK-U	33.2	-29	42.95	-	-	74	-31.05	-	-	233	132	H
	* 3.687	27.5	ADR	33.2	-29	31.7	54	-22.3	-	-	-	-	233	132	H
4	* 4.864	37.88	PK-U	34.1	-25.4	46.58	-	-	74	-27.42	-	-	305	261	V
	* 4.864	25.85	ADR	34.1	-25.4	34.55	54	-19.45	-	-	-	-	305	261	V
2	* 8.425	35.54	PK-U	36	-24.1	47.44	-	-	74	-26.56	-	-	157	103	H
	* 8.425	24.27	ADR	36	-24.1	36.17	54	-17.83	-	-	-	-	157	103	H
3	* 12.187	34.75	PK-U	39	-21.8	51.95	-	-	74	-22.05	-	-	224	186	H
	* 12.184	23.65	ADR	39	-21.8	40.85	54	-13.15	-	-	-	-	224	186	H
5	* 7.686	36.04	PK-U	35.8	-25.1	46.74	-	-	74	-27.26	-	-	92	176	V
	* 7.689	25.1	ADR	35.8	-25.1	35.8	54	-18.2	-	-	-	-	92	176	V
6	* 11.435	34.13	PK-U	38.2	-21.2	51.13	-	-	74	-22.87	-	-	285	109	V
	* 11.437	23.07	ADR	38.2	-21.2	40.07	54	-13.93	-	-	-	-	285	109	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

FCC Part15C 5GHz UNII RSE.TST 30915 16 Jun 2015
Rev 9.5 01 Dec 2016

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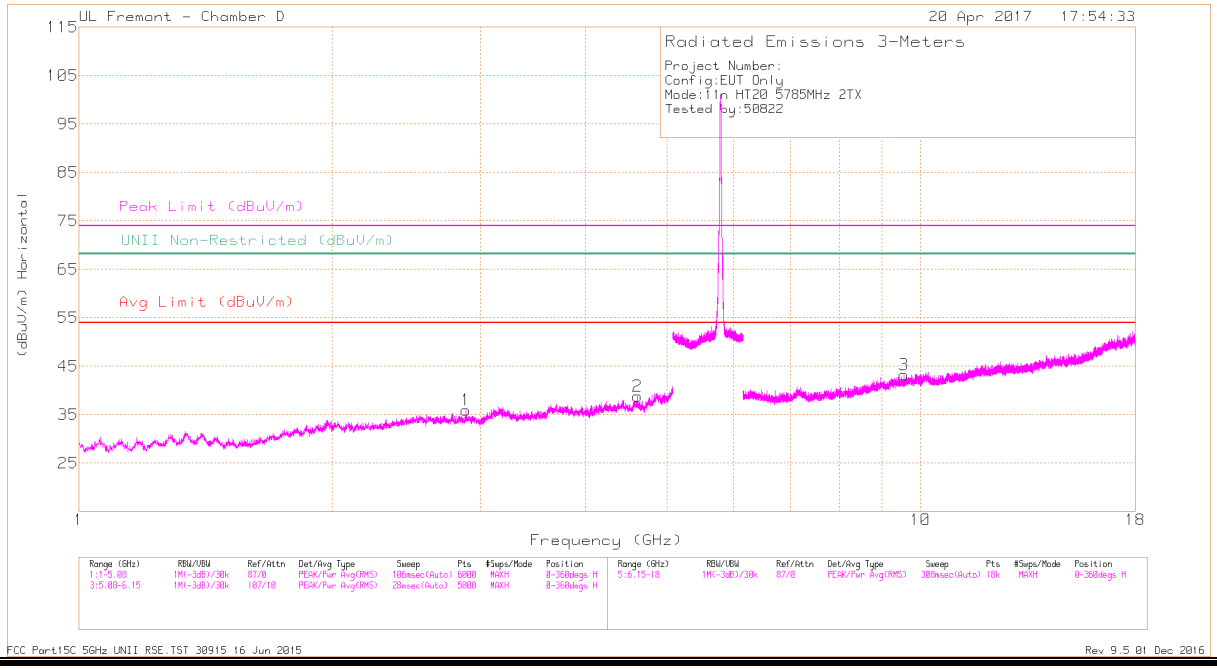
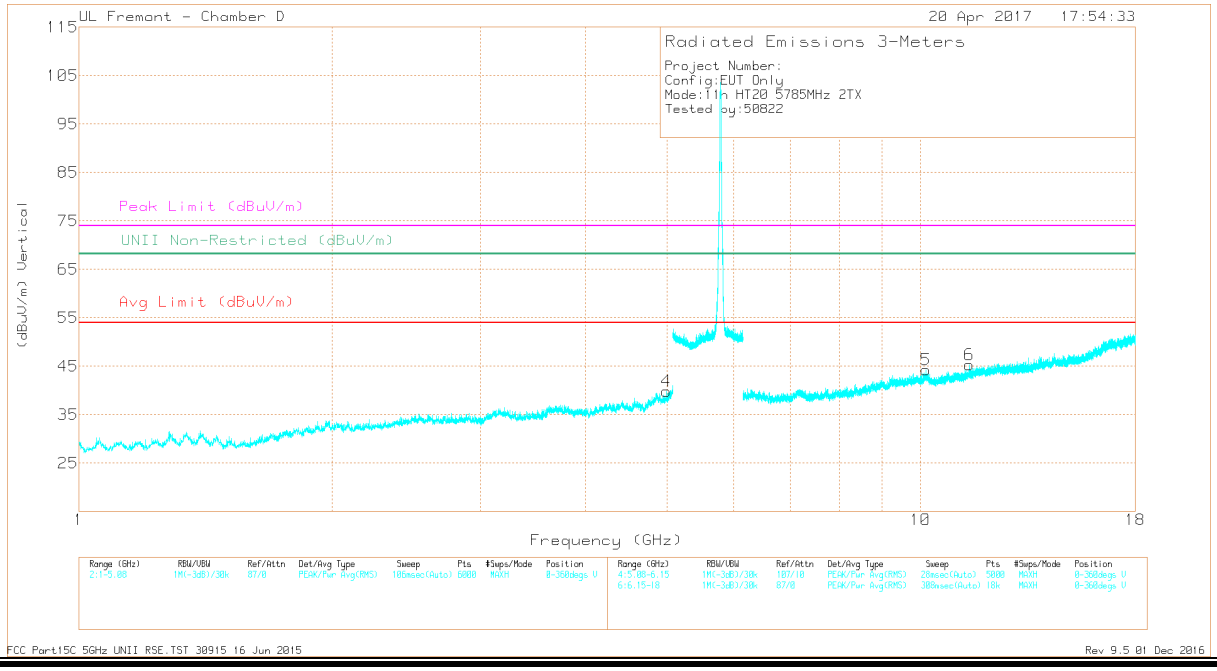
MID CHANNEL HORIZONTAL



MID CHANNEL VERTICAL



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DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.884**	38.98	PK-U	32.4	-29.1	42.28	-	-	74	-31.72	-	-	334	312	H
	* 2.886	27.23	ADR	32.4	-29	30.63	54	-23.37	-	-	-	-	334	312	H
2	* 4.609	37.76	PK-U	34.1	-26.6	45.26	-	-	74	-28.74	-	-	15	184	H
	* 4.61	25.84	ADR	34.1	-26.6	33.34	54	-20.66	-	-	-	-	15	184	H
4	* 4.99	38.45	PK-U	34.3	-26.9	45.85	-	-	74	-28.15	-	-	212	214	V
	* 4.988	26.64	ADR	34.3	-26.8	34.14	54	-19.86	-	-	-	-	212	214	V
6	* 11.423	34.04	PK-U	38.2	-21.3	50.94	-	-	74	-23.06	-	-	276	163	V
	* 11.425	22.53	ADR	38.2	-21.3	39.43	54	-14.57	-	-	-	-	276	163	V
3	9.564	22.46	ADR	37	-21.7	37.76	-	-	-	-	-	-	159	238	H
	9.565	34.01	PK-U	37	-21.8	49.21	-	-	-	-	68.2	-18.99	159	238	H
5	10.145	34	PK-U	37.2	-20.4	50.8	-	-	-	-	68.2	-17.4	4	288	V
	10.145	22.25	ADR	37.2	-20.4	39.05	-	-	-	-	-	-	4	288	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

FCC Part15C 5GHz UNII RSE.TST 30915 16 Jun 2015
Rev 9.5 01 Dec 2016

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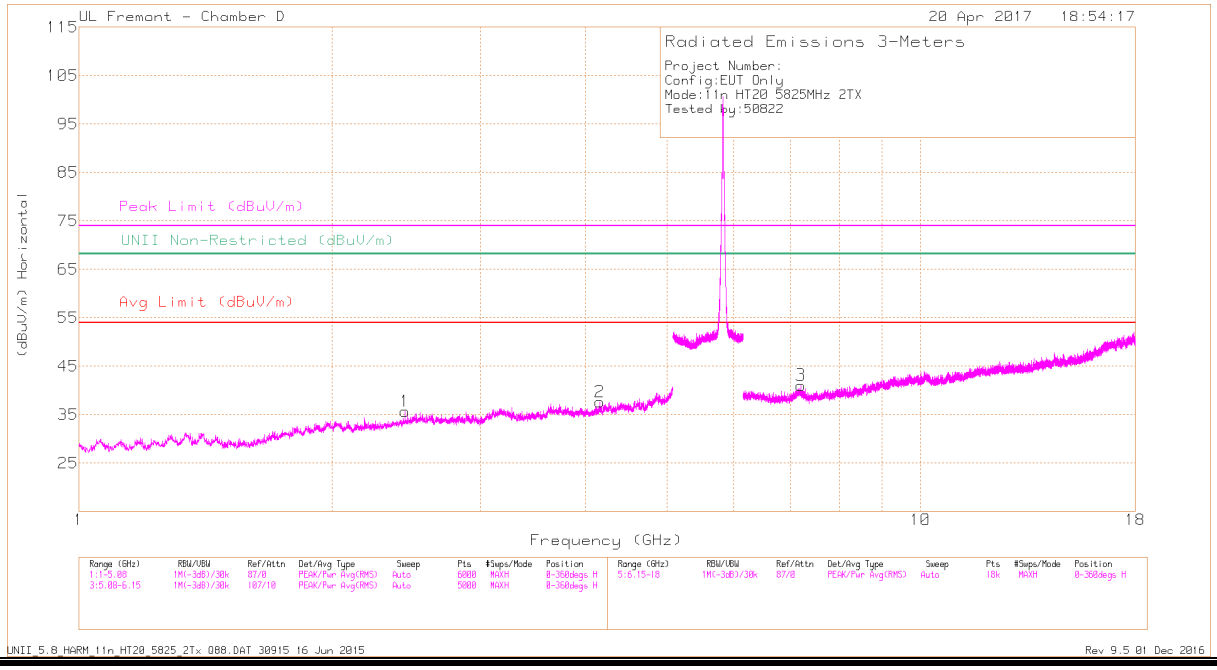
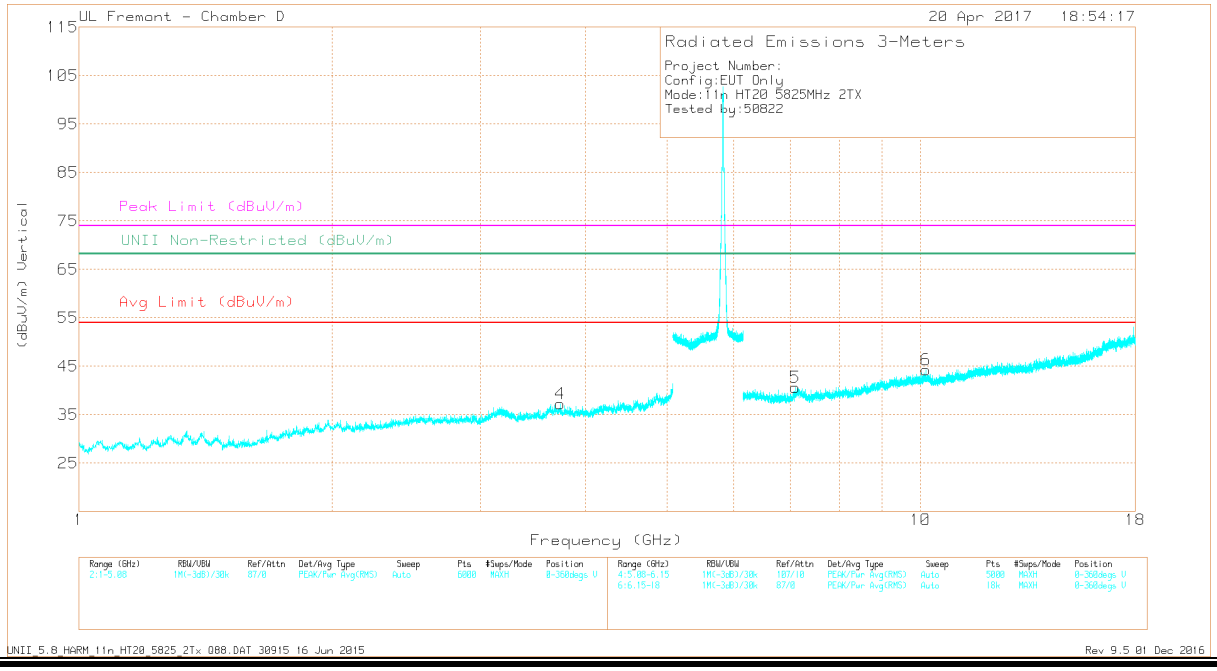
HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



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DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 4.157	38.44	PK-U	33.5	-28.3	43.64	-	-	74	-30.36	-	-	212	266	H
	* 4.158	26.62	ADR	33.5	-28.3	31.82	54	-22.18	-	-	-	-	212	266	H
4	* 3.731	38.7	PK-U	33.2	-29	42.9	-	-	74	-31.1	-	-	35	110	V
	* 3.73	27.1	ADR	33.2	-29	31.3	54	-22.7	-	-	-	-	35	110	V
1	2.438	28.1	ADR	32.3	-30.7	29.7	-	-	-	-	-	-	302	243	H
	2.441	40.06	PK-U	32.3	-30.6	41.76	-	-	-	-	68.2	-26.44	302	243	H
5	7.097	24.73	ADR	35.6	-25.1	35.23	-	-	-	-	-	-	182	308	V
	7.098	36.84	PK-U	35.6	-25.1	47.34	-	-	-	-	68.2	-20.86	182	308	V
3	7.203	35.52	PK-U	35.8	-24	47.32	-	-	-	-	68.2	-20.88	133	154	H
	7.203	23.77	ADR	35.8	-24	35.57	-	-	-	-	-	-	133	154	H
6	10.143	35.08	PK-U	37.2	-20.4	51.88	-	-	-	-	68.2	-16.32	71	350	V
	10.143	22.2	ADR	37.2	-20.3	39.1	-	-	-	-	-	-	71	350	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

UNII_5.8_HARM_11n_HT20_5825_2Tx Q88.DAT 30915 16 Jun 2015
Rev 9.5 01 Dec 2016

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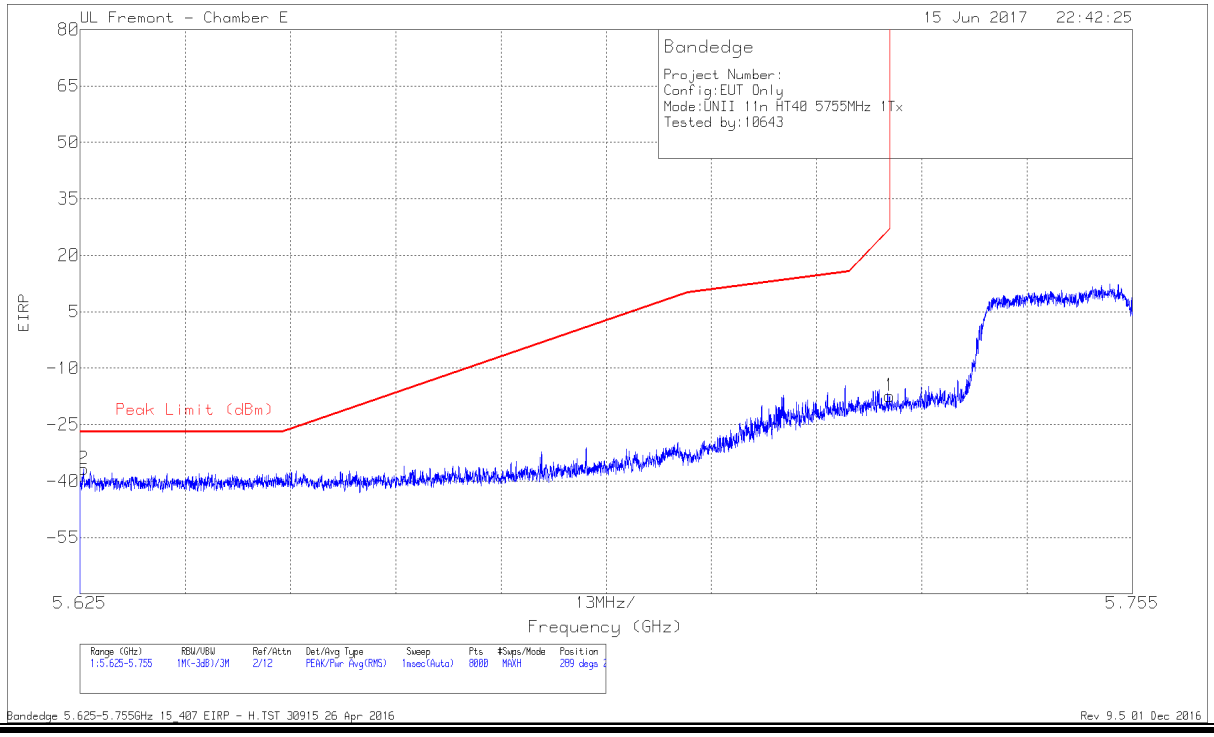
9.1.34. 11n HT40 UAT 2 SISO MODE IN THE 5.8GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

LOW CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T136 (dB/m)	Amp/Cbl /Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.625	-64.02	Pk	34.9	-19.5	11.8	-36.82	-27	-9.82	289	218	H
1	5.725	-44.53	Pk	34.9	-19.6	11.8	-17.43	27	-44.43	289	218	H

Pk - Peak detector

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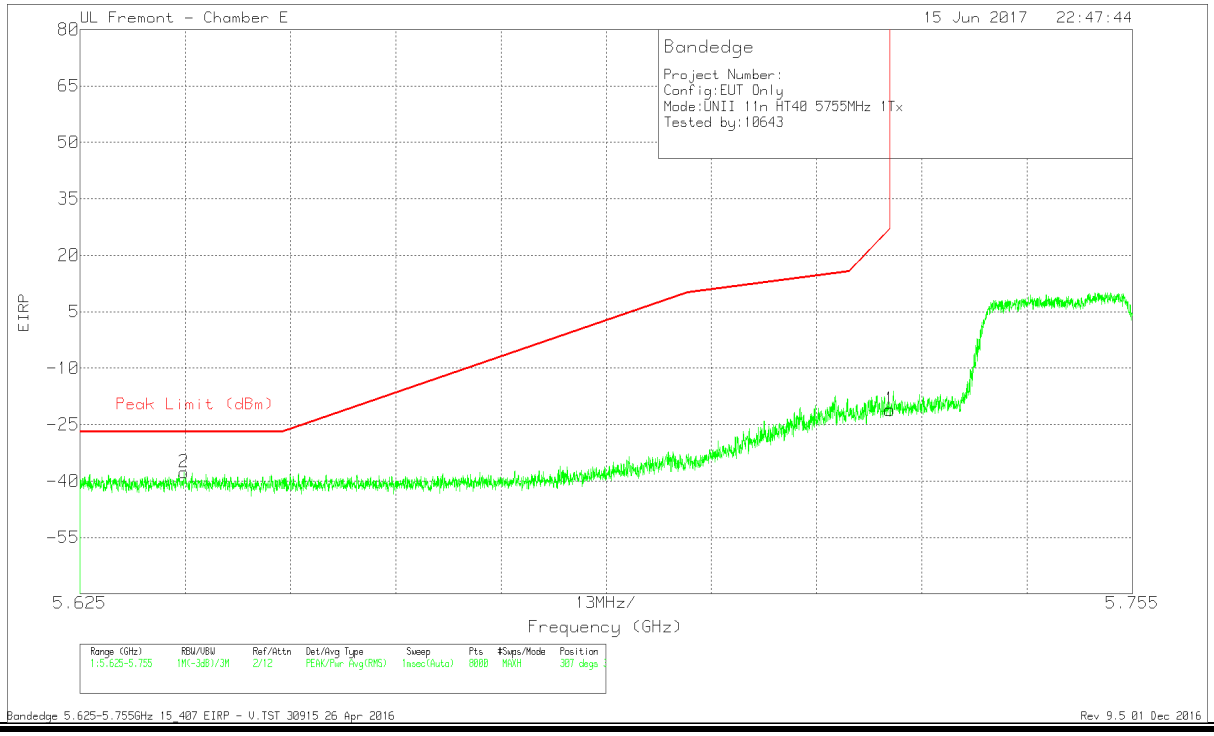
LOW CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T136 (dB/m)	Amp/Cbl /Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.638	-64.93	Pk	34.9	-19.5	11.8	-37.73	-27	-10.73	307	351	V
1	5.725	-48.17	Pk	34.9	-19.6	11.8	-21.07	27	-48.07	307	351	V

Pk - Peak detector

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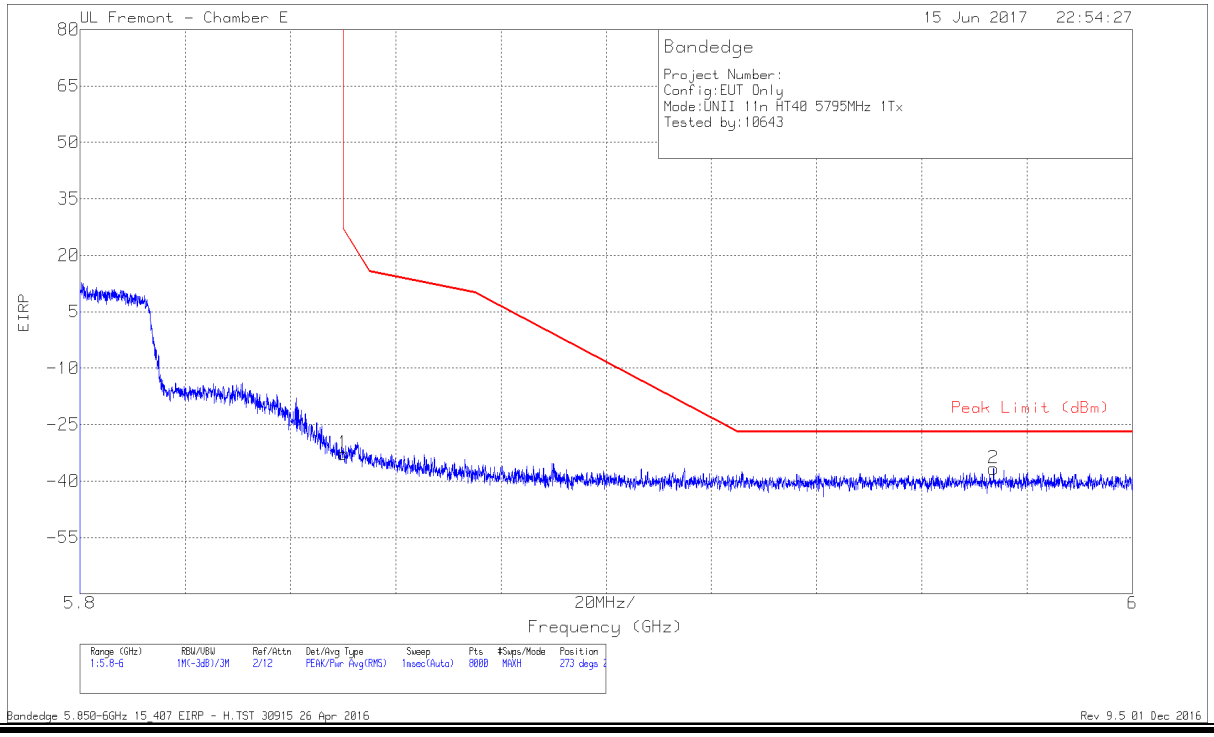
AUTHORIZED BANDEDGE (HIGH CHANNEL)

HIGH CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T136 (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	-60.56	Pk	35.5	-19.5	11.8	-32.76	26.99	-59.75	273	214	H
2	5.974	-65.06	Pk	35.6	-19	11.8	-36.66	-27	-9.66	273	214	H

Pk - Peak detector

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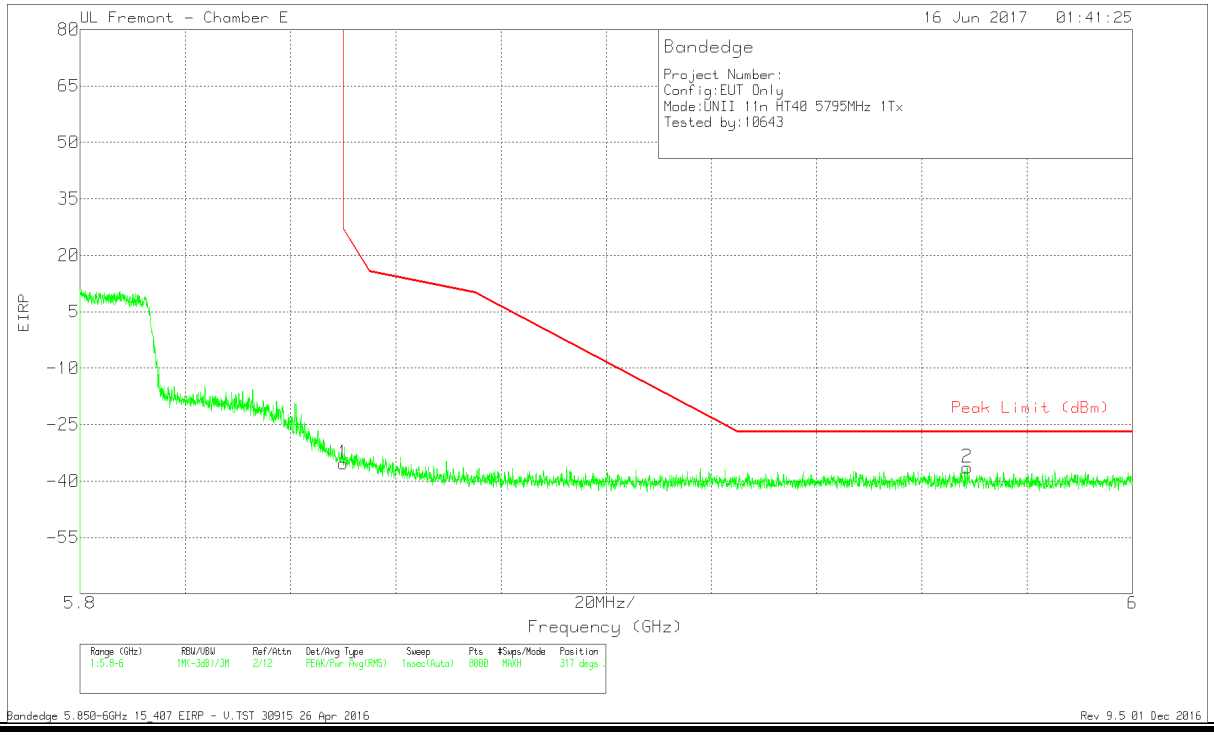
HIGH CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T136 (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	-63.05	Pk	35.5	-19.5	11.8	-35.25	26.99	-62.24	317	385	V
2	5.969	-64.85	Pk	35.6	-18.9	11.8	-36.35	-27	-9.35	317	385	V

Pk - Peak detector

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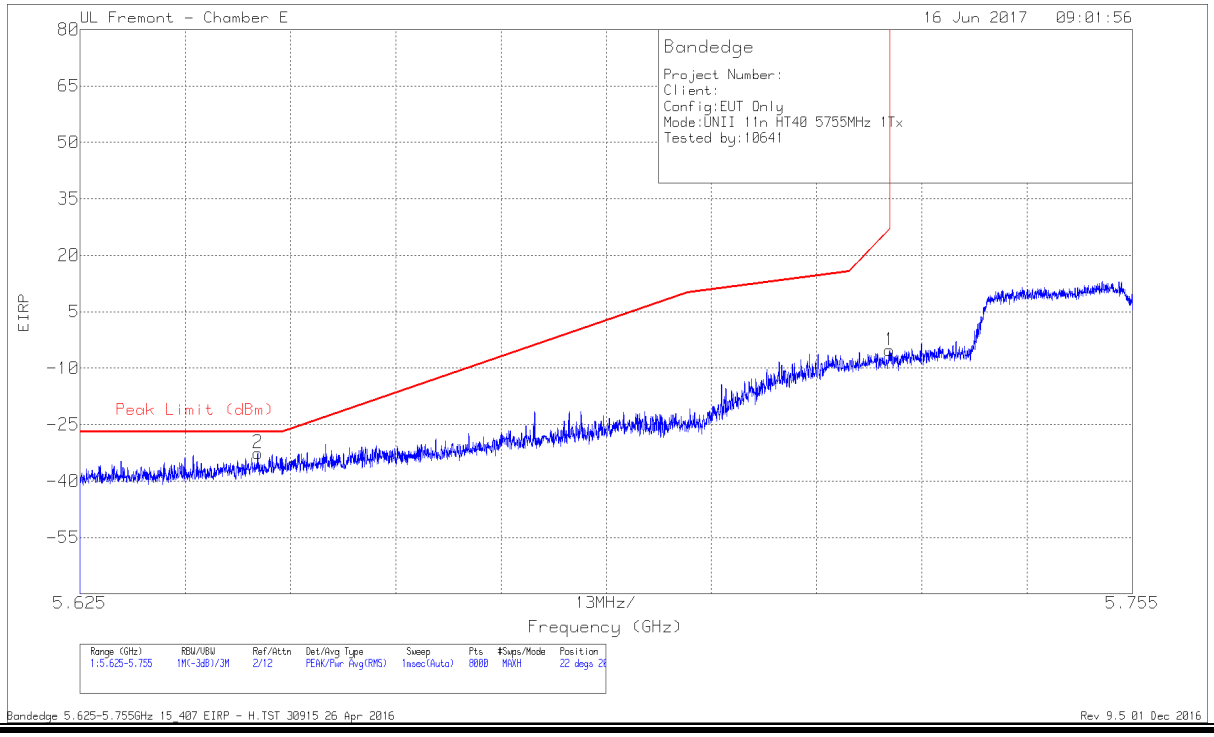
9.1.35. 11n HT40 LAT 3 SISO MODE IN THE 5.8GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

LOW CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T863 (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
2	5.647	-60.17	Pk	35.3	-19.5	11.8	0	-32.57	-27	-5.57	22	205	H
1	5.725	-32.46	Pk	35	-19.6	11.8	0	-5.26	27	-32.26	22	205	H

Pk - Peak detector

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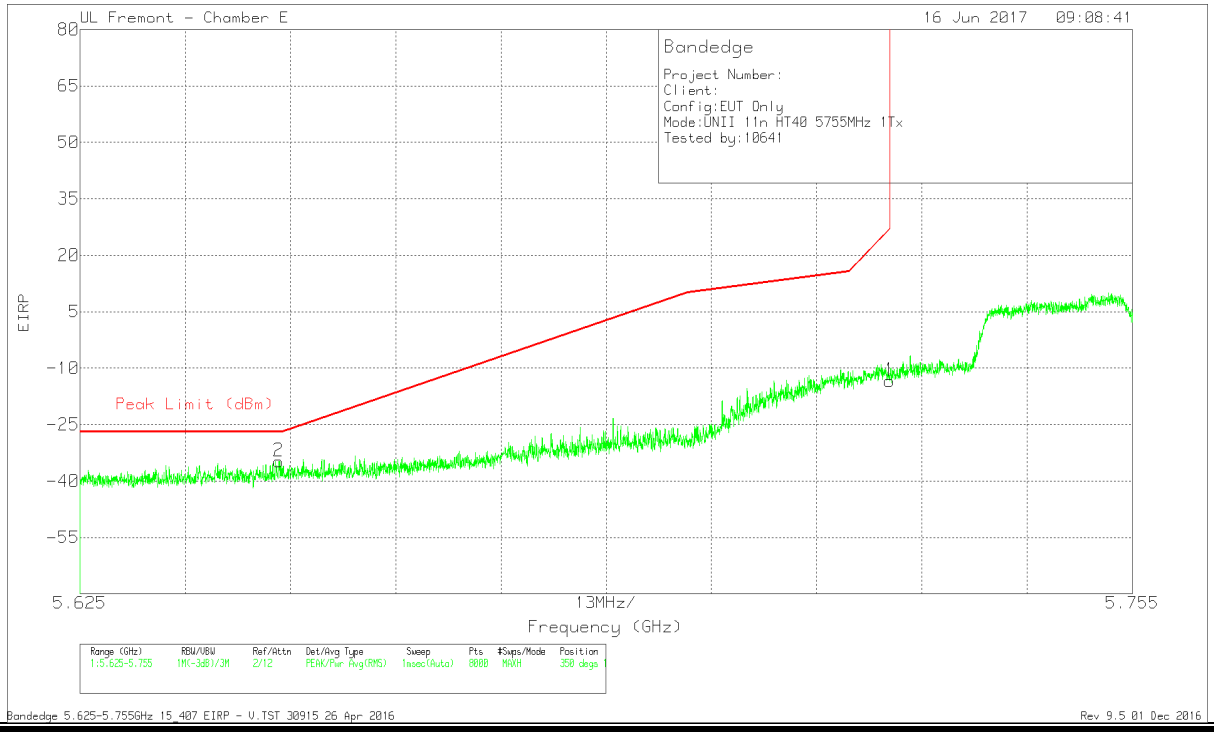
LOW CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T863 (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
2	5.65	-62.21	Pk	35.2	-19.5	11.8	0	-34.71	-27	-7.71	350	176	V
1	5.725	-40.53	Pk	35	-19.6	11.8	0	-13.33	27	-40.33	350	176	V

Pk - Peak detector

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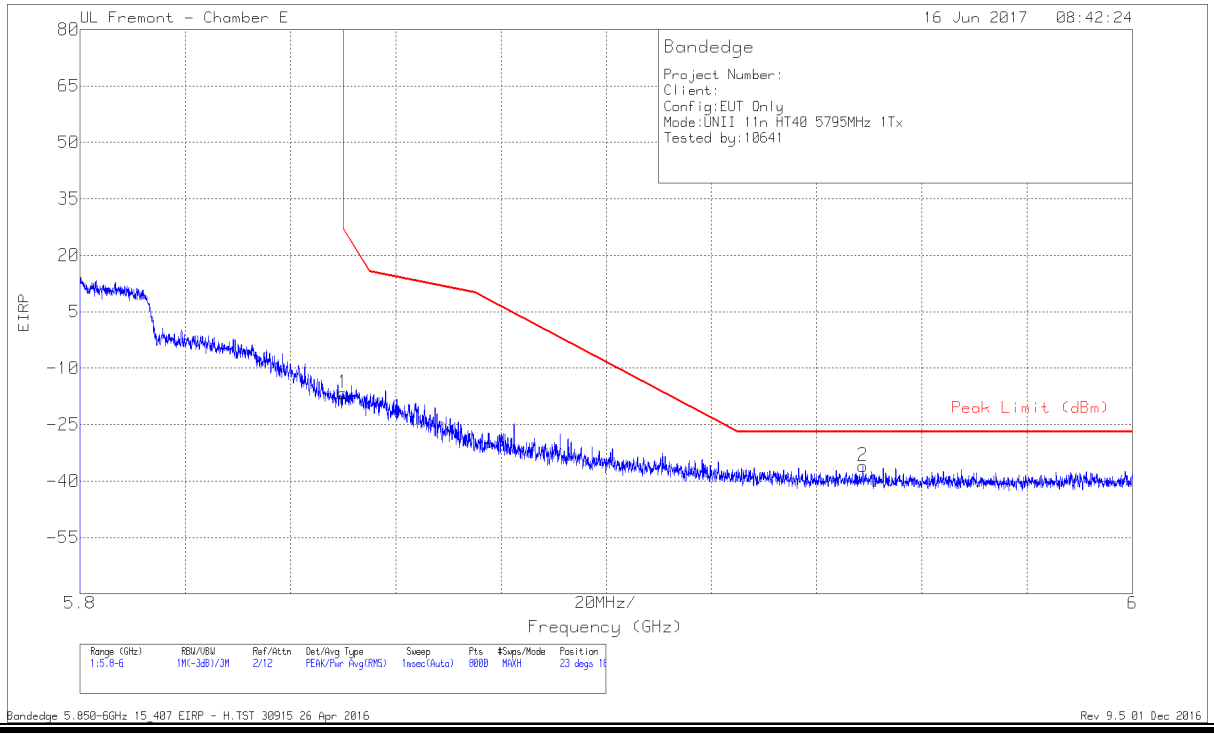
AUTHORIZED BANDEDGE (HIGH CHANNEL)

HIGH CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T863 (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	-44.01	Pk	35.1	-19.5	11.8	0	-16.61	26.99	-43.6	23	184	H
2	5.949	-63.9	Pk	35.2	-19.1	11.8	0	-36	-27	-9	23	184	H

Pk - Peak detector

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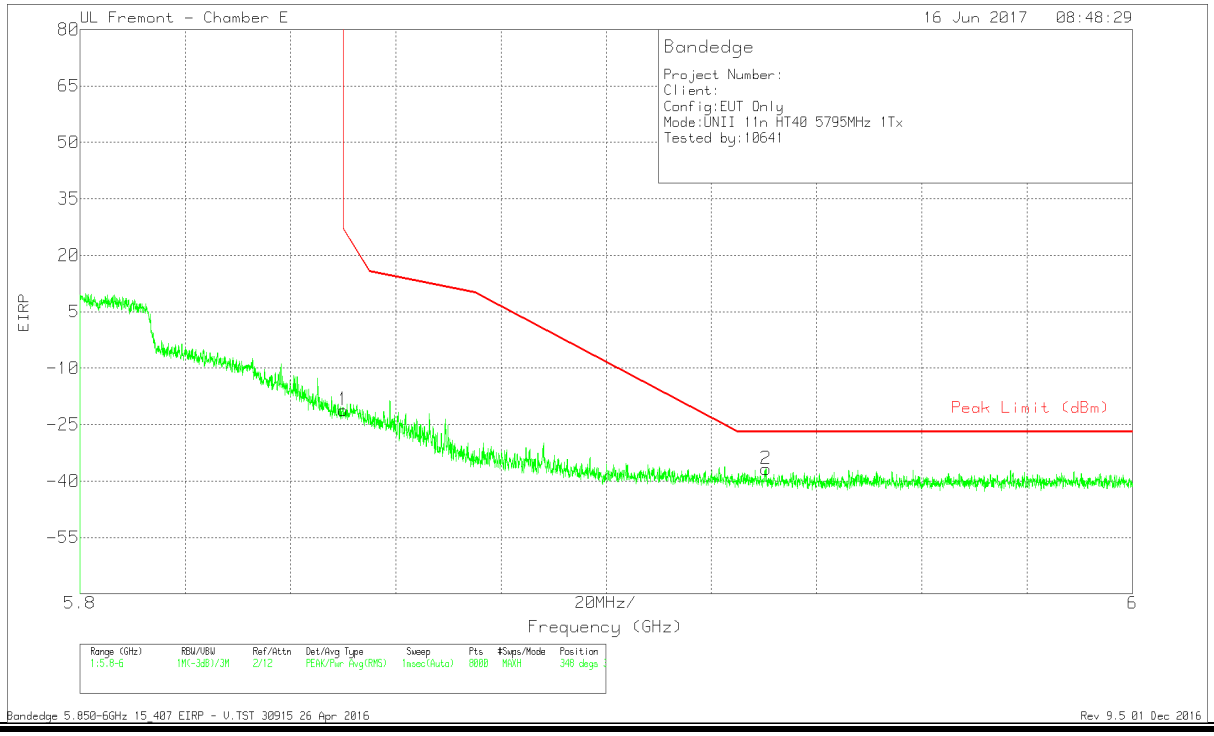
HIGH CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T863 (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	-48.56	Pk	35.1	-19.5	11.8	0	-21.16	26.99	-48.15	348	330	V
2	5.93	-64.47	Pk	35.2	-19.3	11.8	0	-36.77	-27	-9.77	348	330	V

Pk - Peak detector

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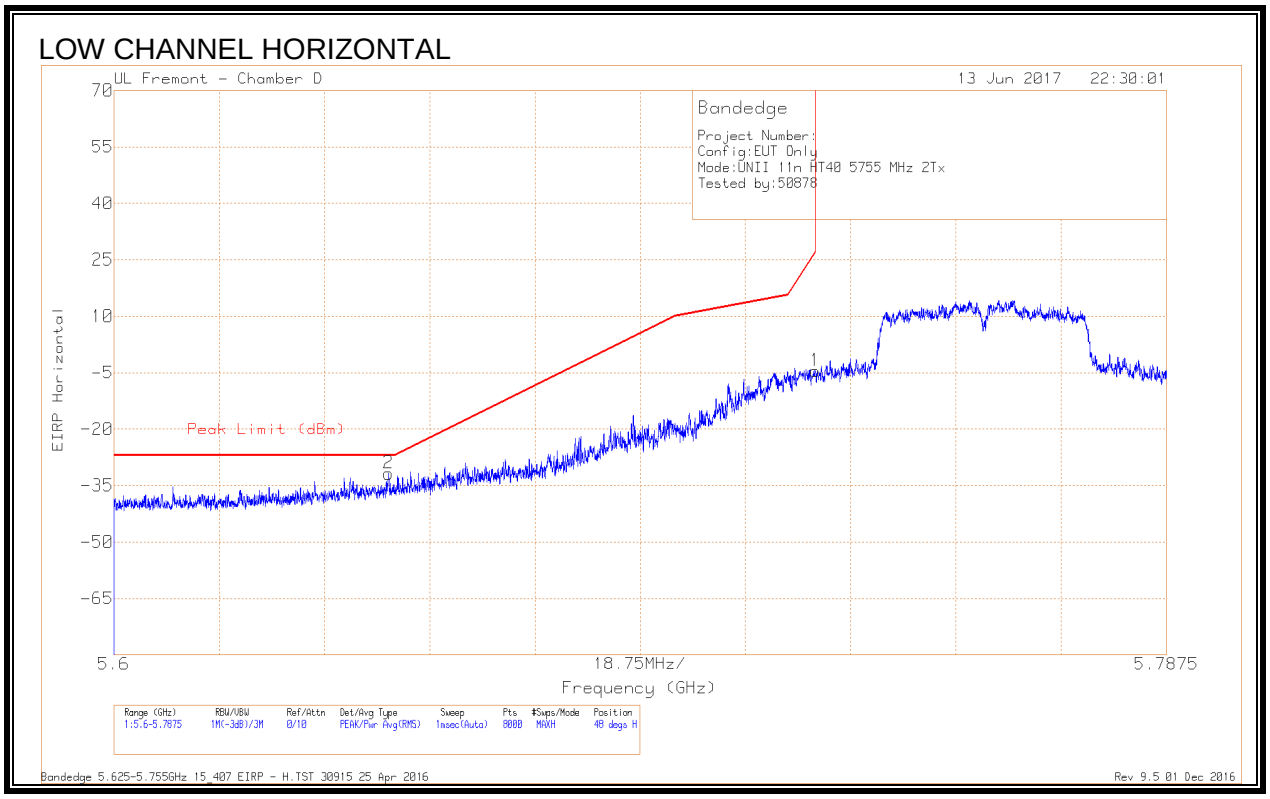
9.1.36. 11n HT40 2TX CDD MIMO MODE IN THE 5.8GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T120 (dB/m)	Amp/Cbl /Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.649	-60.69	Pk	34.6	-17.5	11.8	-31.79	-27	-4.79	48	289	H
1	5.725	-33.44	Pk	34.6	-17.5	11.8	-4.54	26.96	-31.5	48	289	H

Pk - Peak detector

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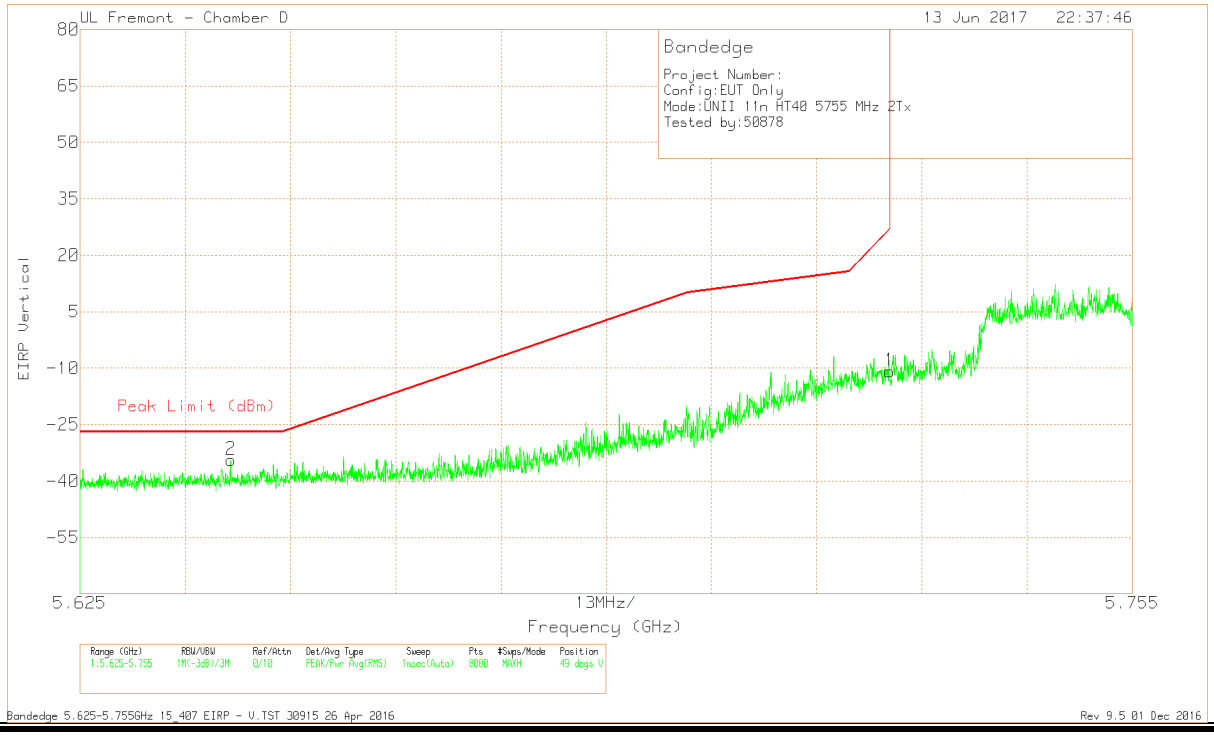
LOW CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T120 (dB/m)	Amp/Cbl /Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.644	-63.16	Pk	34.6	-17.6	11.8	-34.36	-27	-7.36	49	202	V
1	5.725	-39.68	Pk	34.6	-17.5	11.8	-10.78	27	-37.78	49	202	V

Pk - Peak detector

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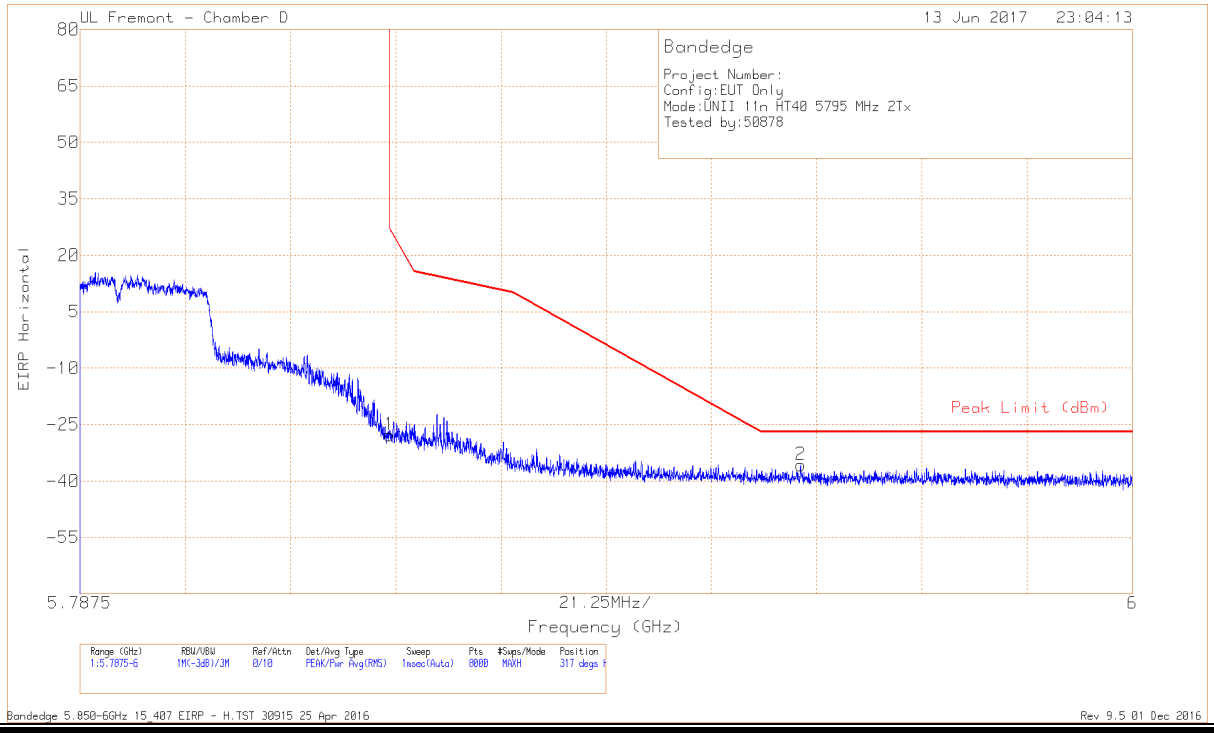
AUTHORIZED BANDEDGE (HIGH CHANNEL)

HIGH CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T120 (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	-57.07	Pk	35	-17.5	11.8	-27.77	26.98	-54.75	317	179	H
2	5.933	-65.25	Pk	35	-17.3	11.8	-35.75	-27	-8.75	317	179	H

Pk - Peak detector

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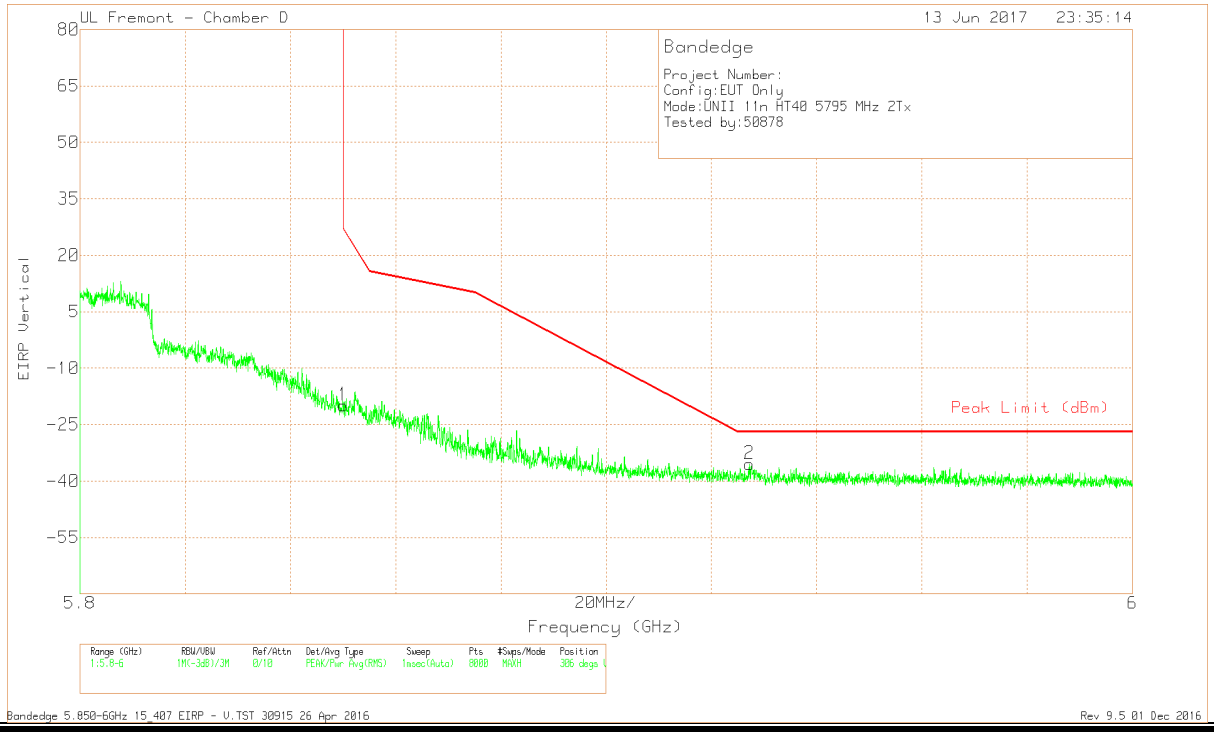
HIGH CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T120 (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	-49.19	Pk	35	-17.5	11.8	-19.89	26.99	-46.88	306	104	V
2	5.927	-64.84	Pk	35	-17.4	11.8	-35.44	-27	-8.44	306	104	V

Pk - Peak detector

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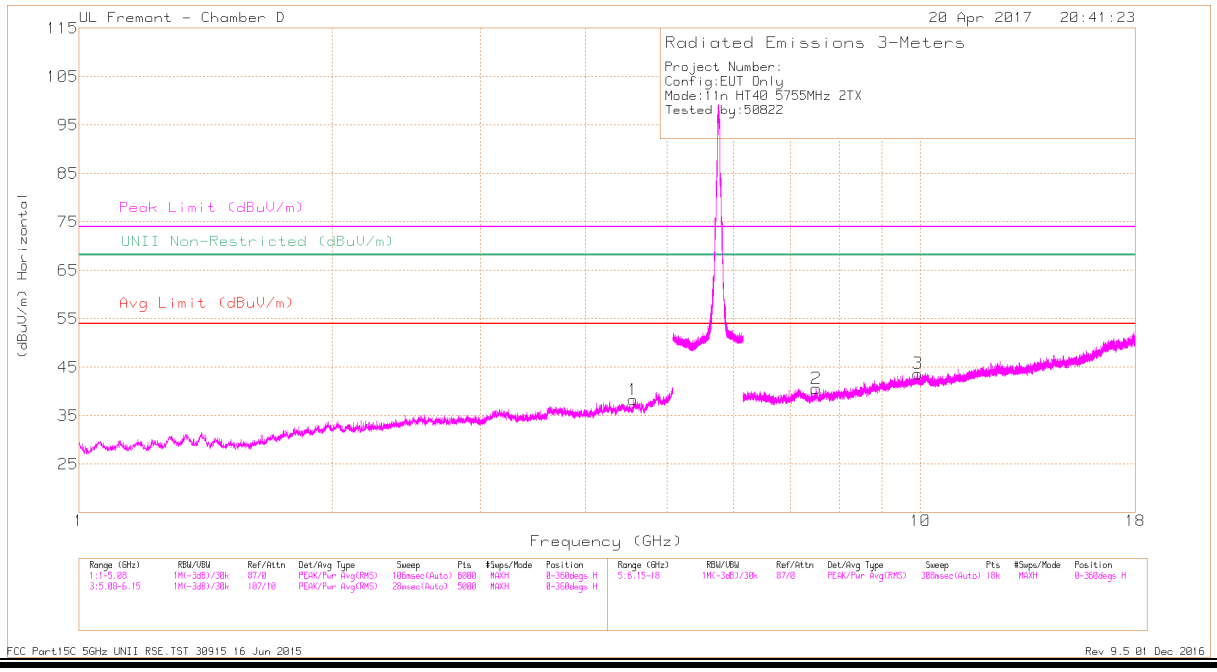
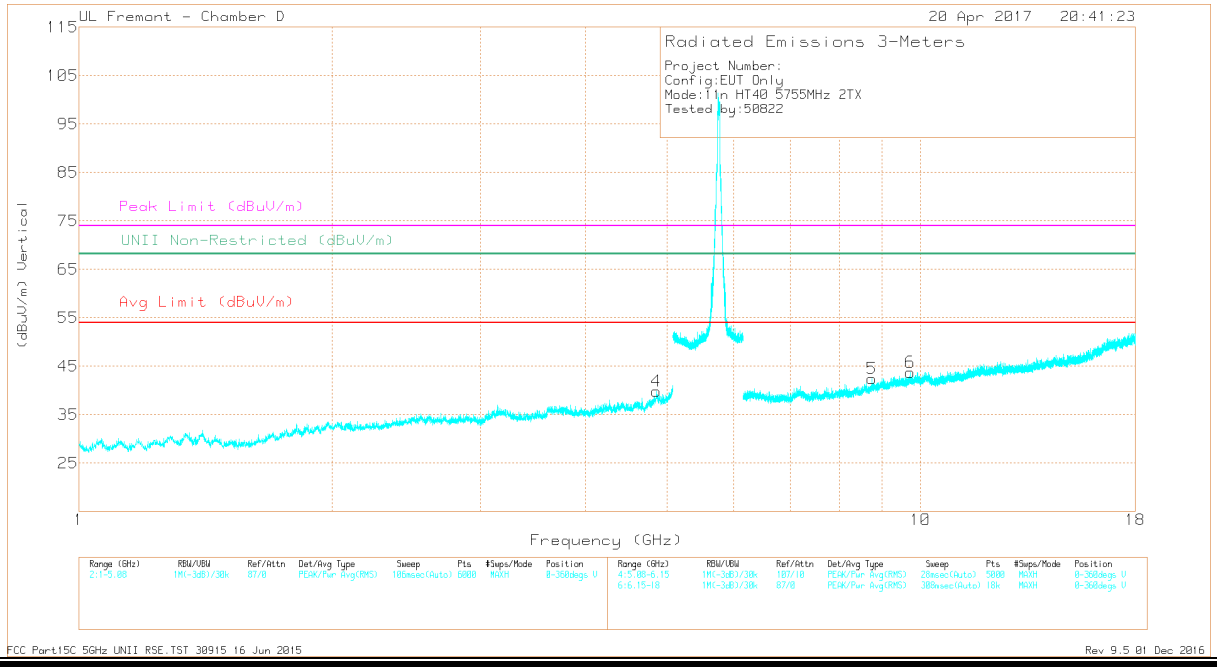
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



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DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (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	* 4.555	38.16	PK-U	33.9	-27.6		44.46	-	-	74	-29.54	-	-	108	210	H
	* 4.555	26.35	ADR	33.9	-27.5	.19	32.94	54	-21.06	-	-	-	-	108	210	H
4	* 4.851	38.12	PK-U	34.1	-25.8		46.42	-	-	74	-27.58	-	-	217	314	V
	* 4.852	25.65	ADR	34.1	-25.8	.19	33.76	54	-19.86	-	-	-	-	217	314	V
2	* 7.52	36.11	PK-U	35.7	-24.9		46.91	-	-	74	-27.09	-	-	161	172	H
	* 7.52	24.13	ADR	35.7	-24.9	.19	35.12	54	-18.88	-	-	-	-	161	172	H
5	8.752	34.77	PK-U	36.3	-22.5		48.57	-	-	-	-	68.2	-19.63	151	240	V
	8.754	23.25	ADR	36.3	-22.6		36.95	-	-	-	-	-	-	151	240	V
6	9.727	34.35	PK-U	37.1	-21.8		49.65	-	-	-	-	68.2	-18.55	98	386	V
	9.729	22.99	ADR	37.1	-21.8		38.29	-	-	-	-	-	-	98	386	V
3	9.924	33.91	PK-U	37.1	-20.9		50.11	-	-	-	-	68.2	-18.09	187	278	H
	9.924	22.24	ADR	37.1	-20.9		38.44	-	-	-	-	-	-	187	278	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

FCC Part15C 5GHz UNII RSE.TST 30915 16 Jun 2015
Rev 9.5 01 Dec 2016

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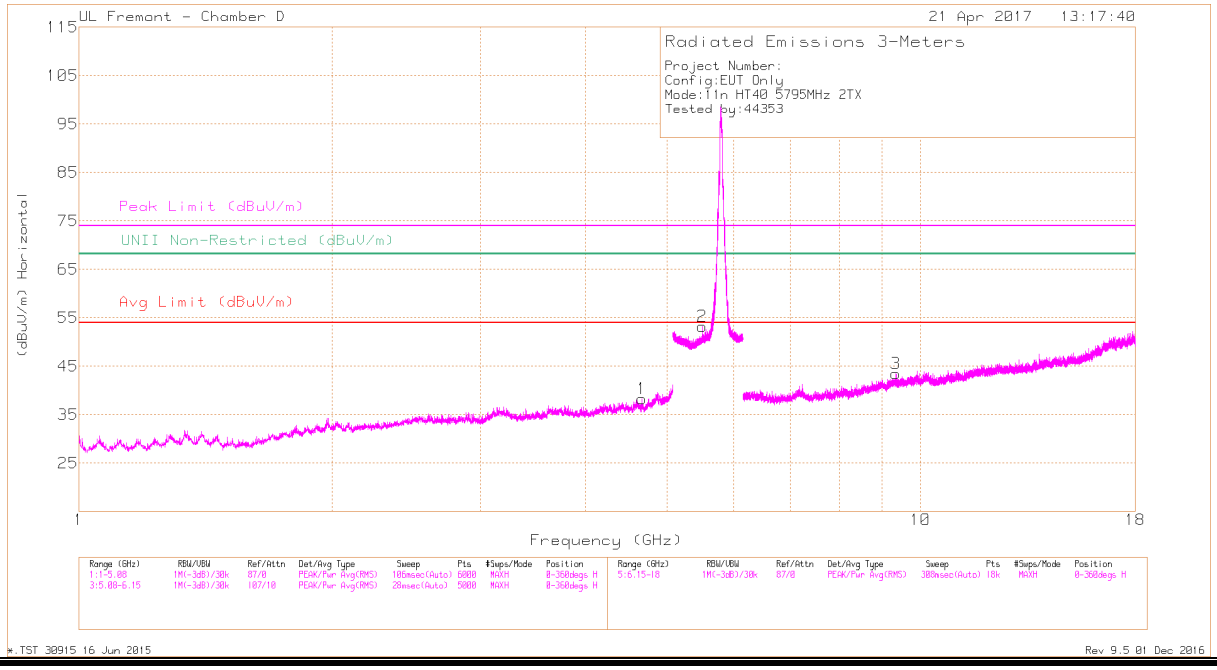
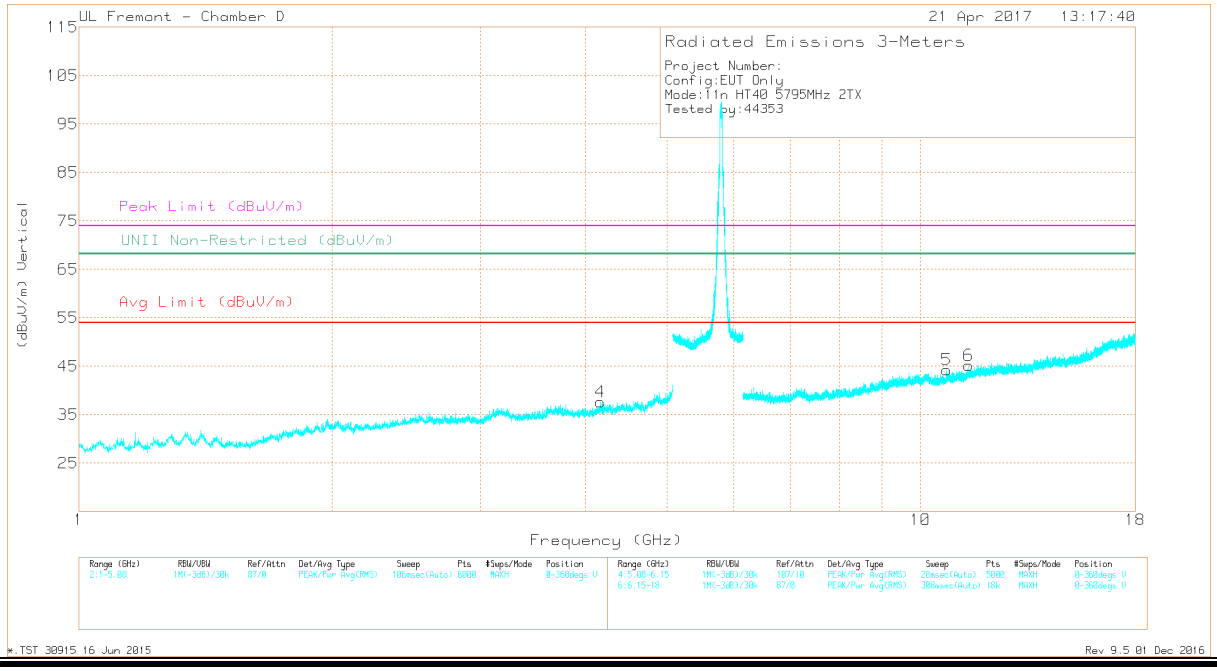
HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



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DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (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	* 4.667	38.68	PK-U	34	-27.9	0	44.78	-	-	74	-29.22	-	-	230	166	H
	* 4.667	27.56	ADR	34	-27.9	.09	33.75	54	-20.25	-	-	-	-	230	166	H
4	* 4.162	38.76	PK-U	33.5	-28.3	0	43.96	-	-	74	-30.04	-	-	168	201	V
	* 4.162	27.32	ADR	33.5	-28.3	.09	32.61	54	-21.39	-	-	-	-	168	201	V
3	* 9.345	35.01	PK-U	37	-22.1	0	49.91	-	-	74	-24.09	-	-	230	256	H
	* 9.345	23.27	ADR	37	-22.1	.09	38.26	54	-15.74	-	-	-	-	230	256	H
5	* 10.75	34.93	PK-U	37.2	-21.1	0	51.03	-	-	74	-22.97	-	-	108	102	V
	* 10.75	22.92	ADR	37.2	-21.1	.09	39.11	54	-14.89	-	-	-	-	108	102	V
6	* 11.409	34.31	PK-U	38.2	-21.4	0	51.11	-	-	74	-22.89	-	-	332	199	V
	* 11.411	23.38	ADR	38.2	-21.4	.09	40.27	54	-13.73	-	-	-	-	332	199	V
2	5.498	41.53	PK-U	34.9	-17.8	0	58.63	-	-	-	-	68.2	-9.57	22	118	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

*.TST 30915 16 Jun 2015

Rev 9.5 01 Dec 2016

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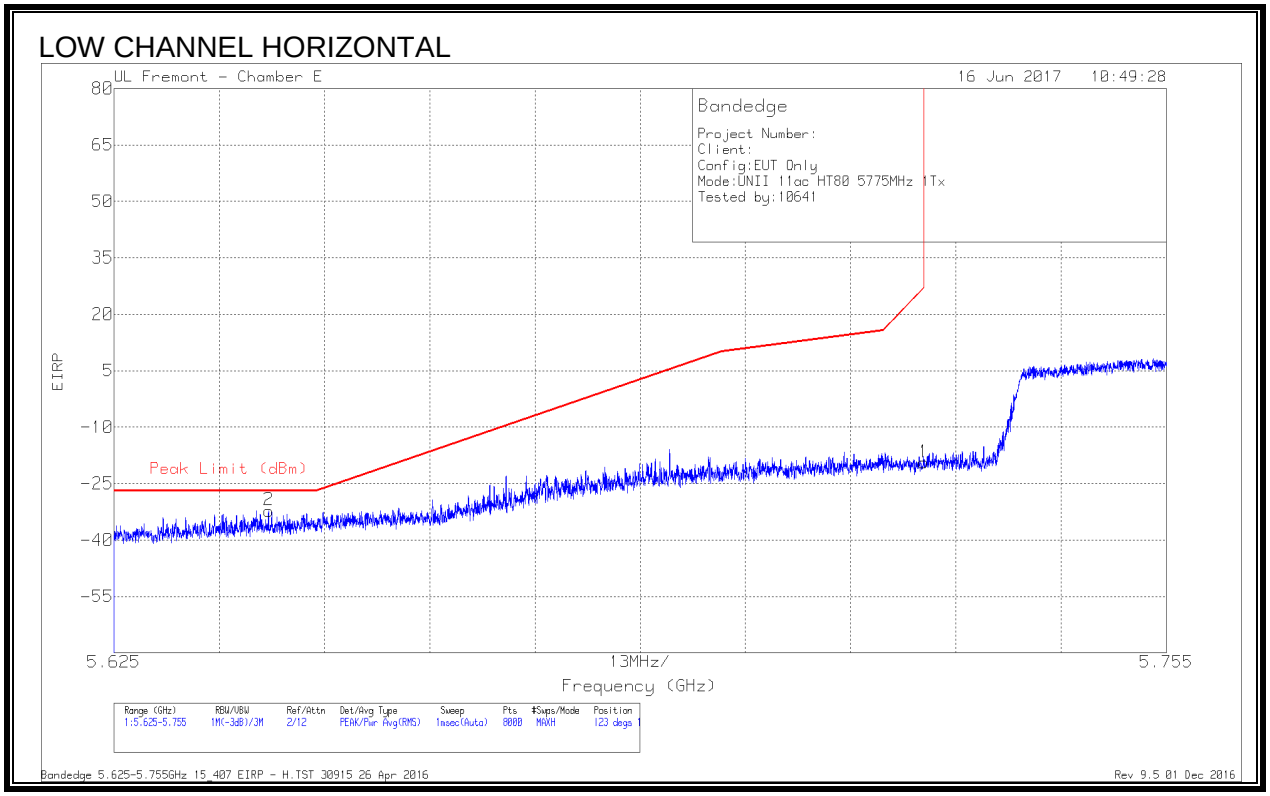
9.1.37. 11ac HT80 UAT 2 SISO MODE IN THE 5.8GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T863 (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
2	5.644	-59.76	Pk	35.3	-19.5	11.8	0	-32.16	-27	-5.16	123	160	H
1	5.725	-46.62	Pk	35	-19.6	11.8	0	-19.42	27	-46.42	123	160	H

Pk - Peak detector

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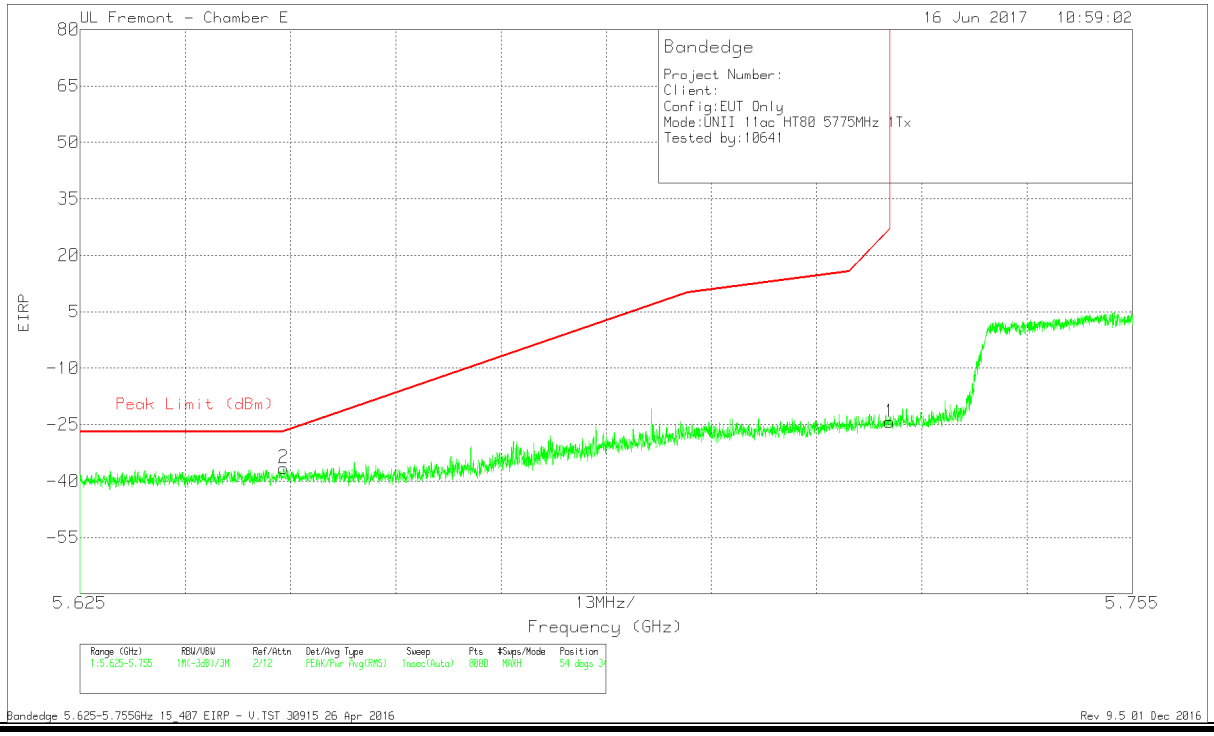
LOW CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T863 (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
2	5.65	-64.04	Pk	35.2	-19.5	11.8	0	-36.54	-26.87	-9.67	54	345	V
1	5.725	-51.46	Pk	35	-19.6	11.8	0	-24.26	27	-51.26	54	345	V

Pk - Peak detector

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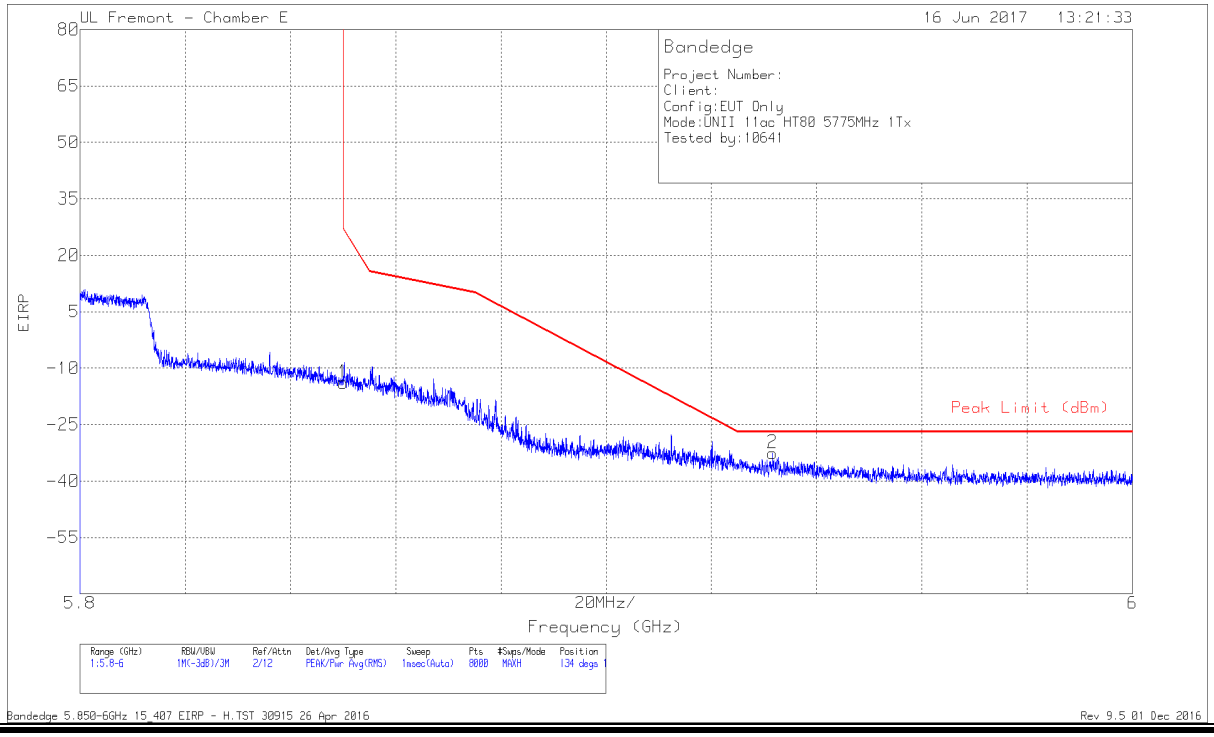
AUTHORIZED BANDEDGE (HIGH CHANNEL)

LOW CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T863 (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	-41.23	Pk	35.1	-19.5	11.8	0	-13.83	26.99	-40.82	134	122	H
2	5.932	-60.35	Pk	35.2	-19.2	11.8	0	-32.55	-27	-5.55	134	122	H

Pk - Peak detector

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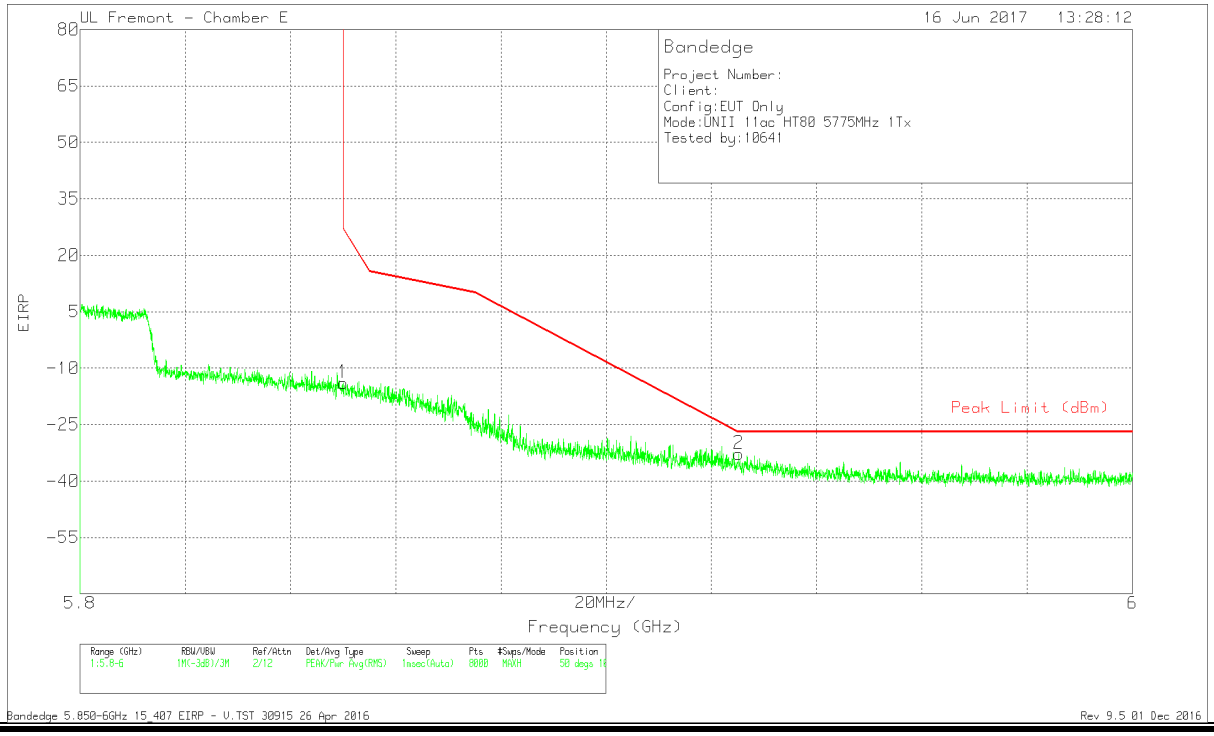
LOW CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T863 (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	-41.28	Pk	35.1	-19.5	11.8	0	-13.88	26.99	-40.87	50	102	V
2	5.925	-60.54	Pk	35.2	-19.2	11.8	0	-32.74	-27	-5.74	50	102	V

Pk - Peak detector

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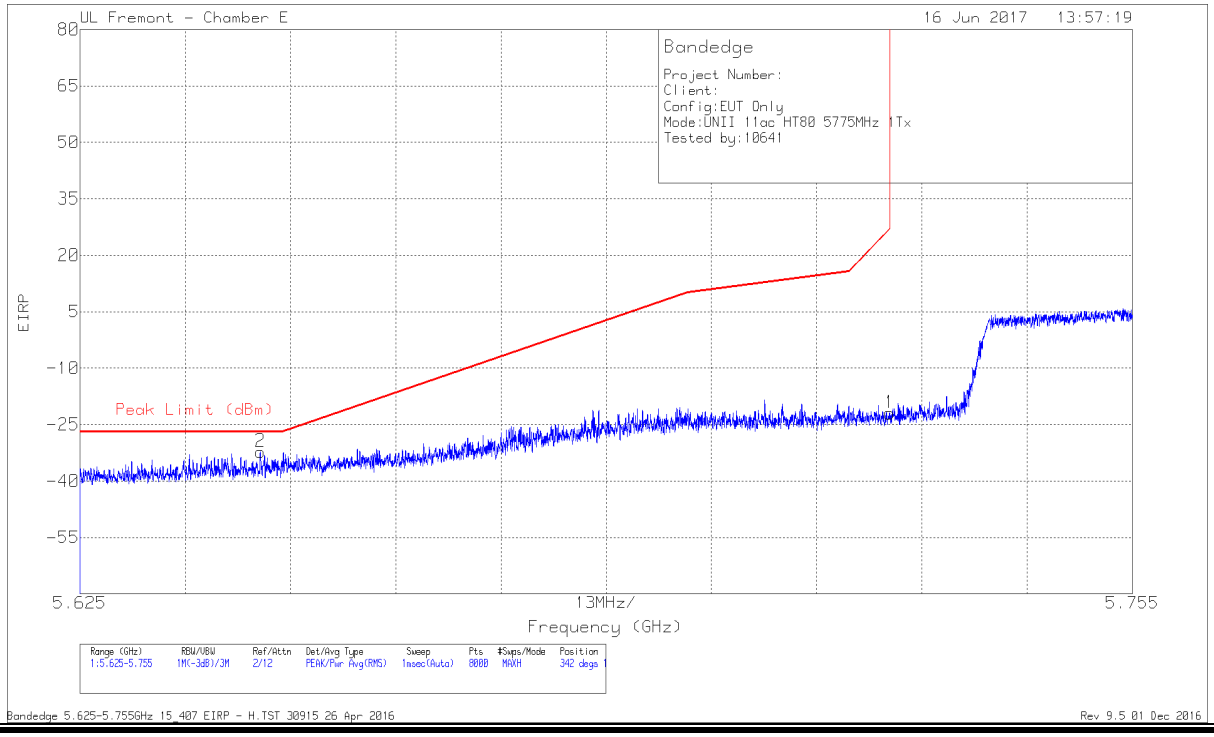
9.1.38. 11ac HT80 LAT 3 SISO MODE IN THE 5.8GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

LOW CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T863 (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
2	5.647	-59.82	Pk	35.3	-19.5	11.8	0	-32.22	-27	-5.22	342	126	H
1	5.725	-49.19	Pk	35	-19.6	11.8	0	-21.99	27	-48.99	342	126	H

Pk - Peak detector

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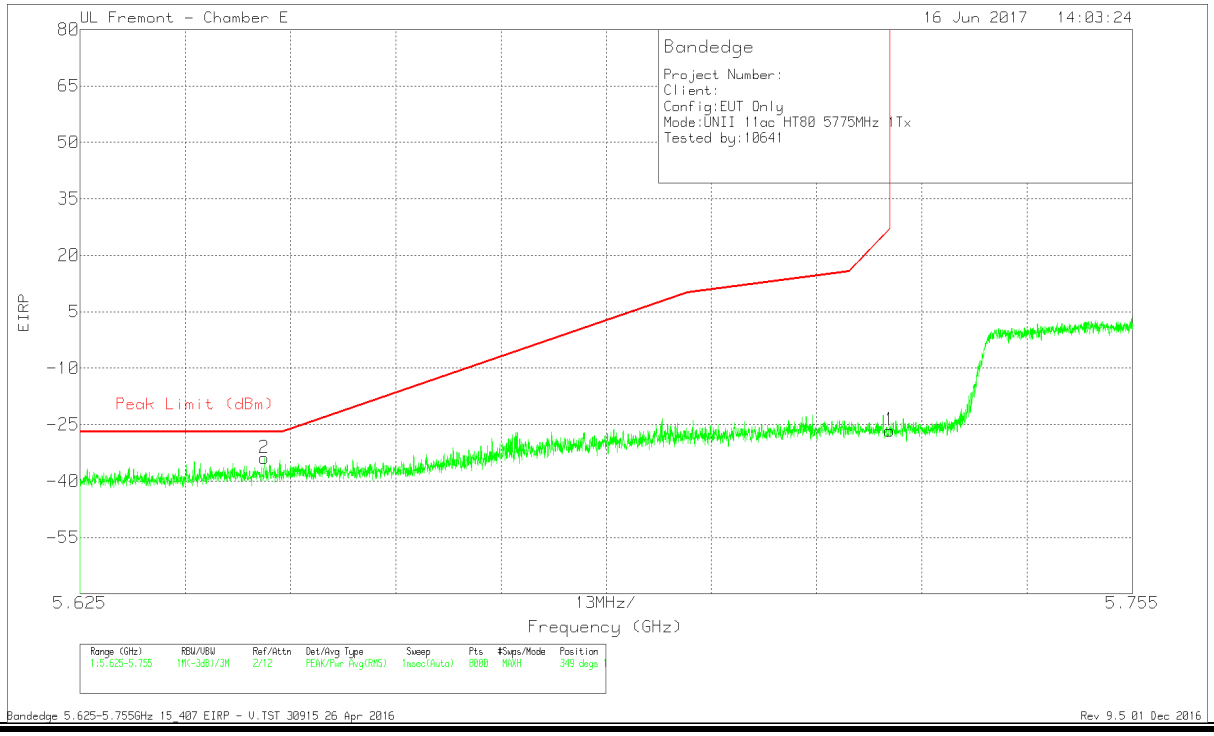
LOW CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T863 (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
2	5.648	-61.4	Pk	35.2	-19.5	11.8	0	-33.9	-27	-6.9	349	186	V
1	5.725	-53.78	Pk	35	-19.6	11.8	0	-26.58	27	-53.58	349	186	V

Pk - Peak detector

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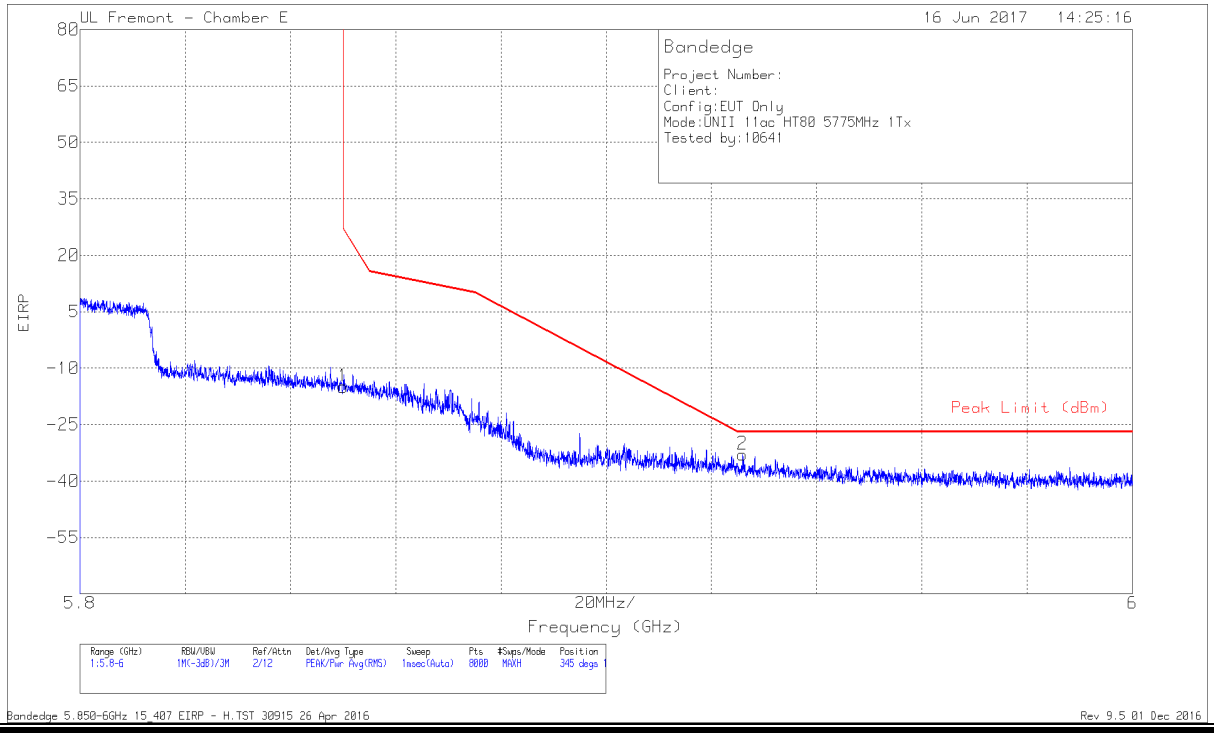
AUTHORIZED BANDEDGE (HIGH CHANNEL)

LOW CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T863 (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	-42.32	Pk	35.1	-19.5	11.8	0	-14.92	26.99	-41.91	345	112	H
2	5.926	-60.72	Pk	35.2	-19.2	11.8	0	-32.92	-27	-5.92	345	112	H

Pk - Peak detector

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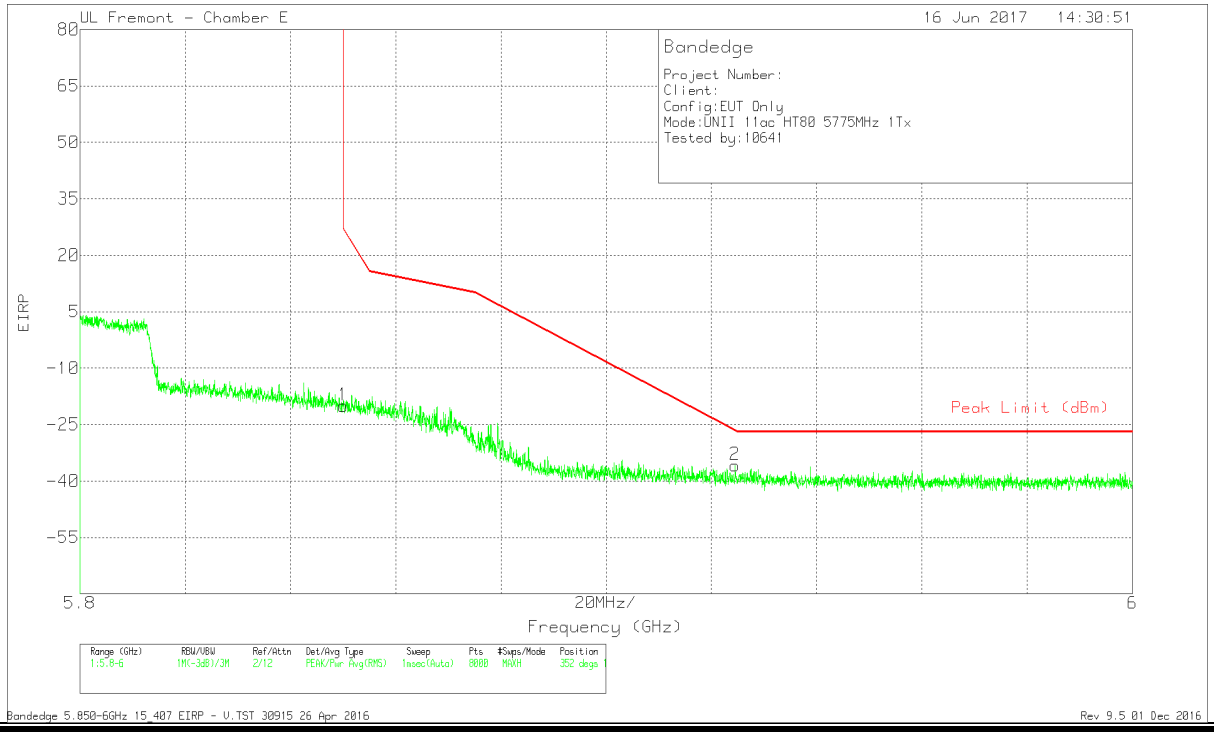
LOW CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T863 (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	-47.4	Pk	35.1	-19.5	11.8	0	-20	26.99	-46.99	352	181	V
2	5.924	-63.58	Pk	35.2	-19.2	11.8	0	-35.78	-26.6	-9.18	352	181	V

Pk - Peak detector

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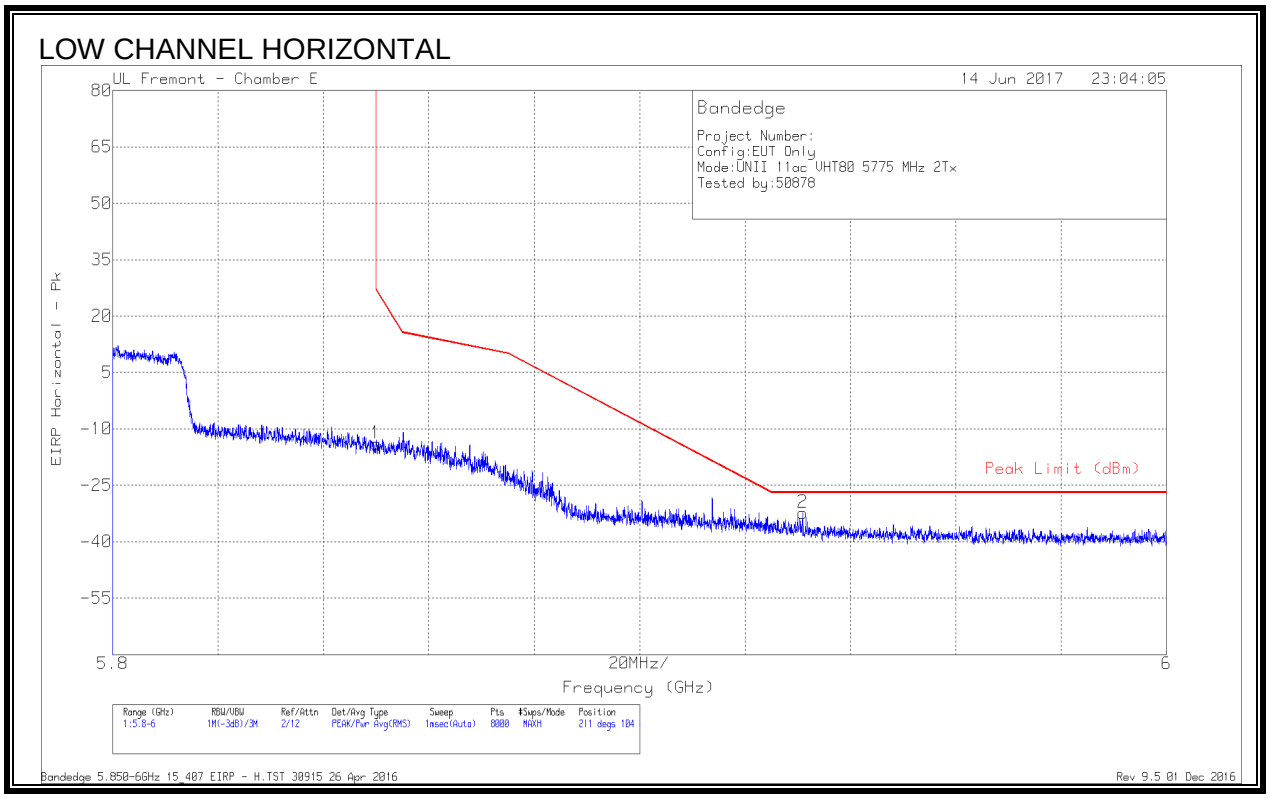
9.1.39. 11ac HT80 2TX CDD MIMO MODE IN THE 5.8GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T136 (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	-41.63	Pk	35.5	-19.5	11.8	-13.83	26.99	-40.82	211	104	H
2	5.931	-60.43	Pk	35.6	-19.3	11.8	-32.33	-27	-5.33	211	104	H

Pk - Peak detector

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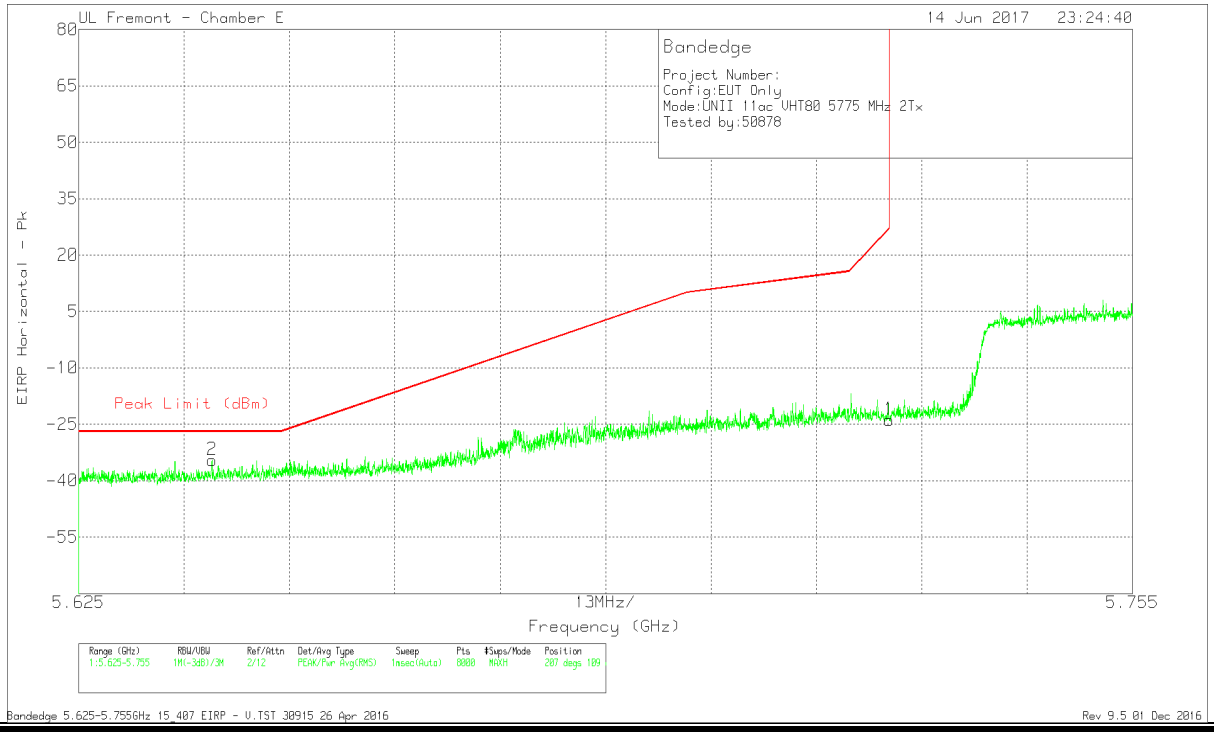
LOW CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T136 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.641	-61.7	Pk	34.9	-19.5	11.8	-34.5	-27	-7.5	207	109	V
1	5.725	-50.99	Pk	34.9	-19.6	11.8	-23.89	27	-50.89	207	109	V

Pk - Peak detector

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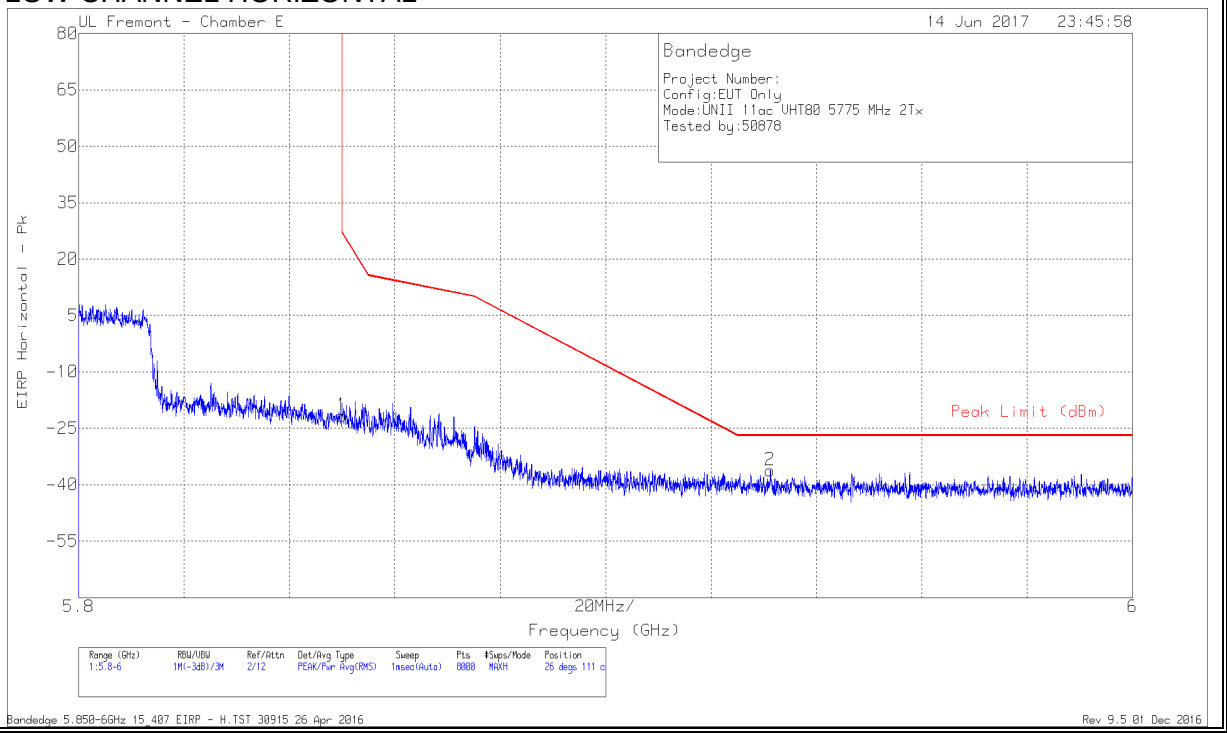
AUTHORIZED BANDEDGE (HIGH CHANNEL)

LOW CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T136 (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	-49.5	Pk	35.5	-19.5	11.8	-21.7	26.99	-48.69	26	111	H
2	5.931	-64.23	Pk	35.6	-19.3	11.8	-36.13	-27	-9.13	26	111	H

Pk - Peak detector

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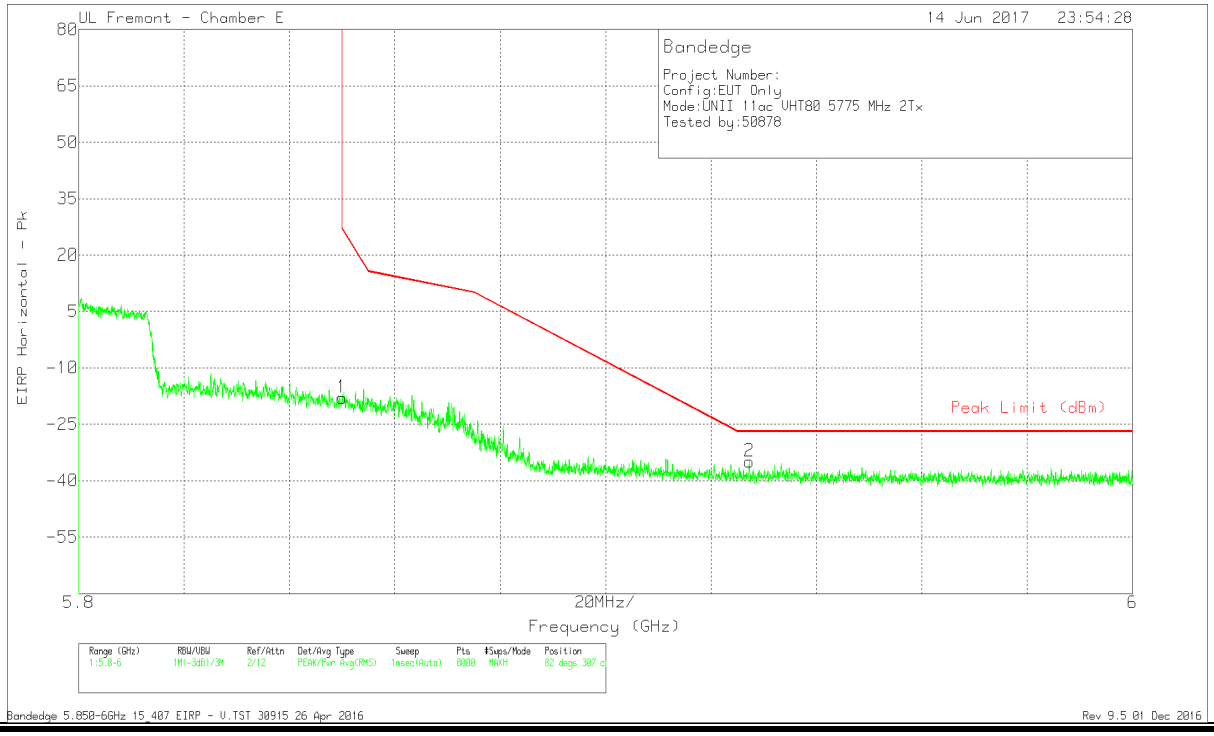
LOW CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T136 (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	-45.71	Pk	35.5	-19.5	11.8	-17.91	26.99	-44.9	82	307	V
2	5.927	-63.07	Pk	35.6	-19.2	11.8	-34.87	-27	-7.87	82	307	V

Pk - Peak detector

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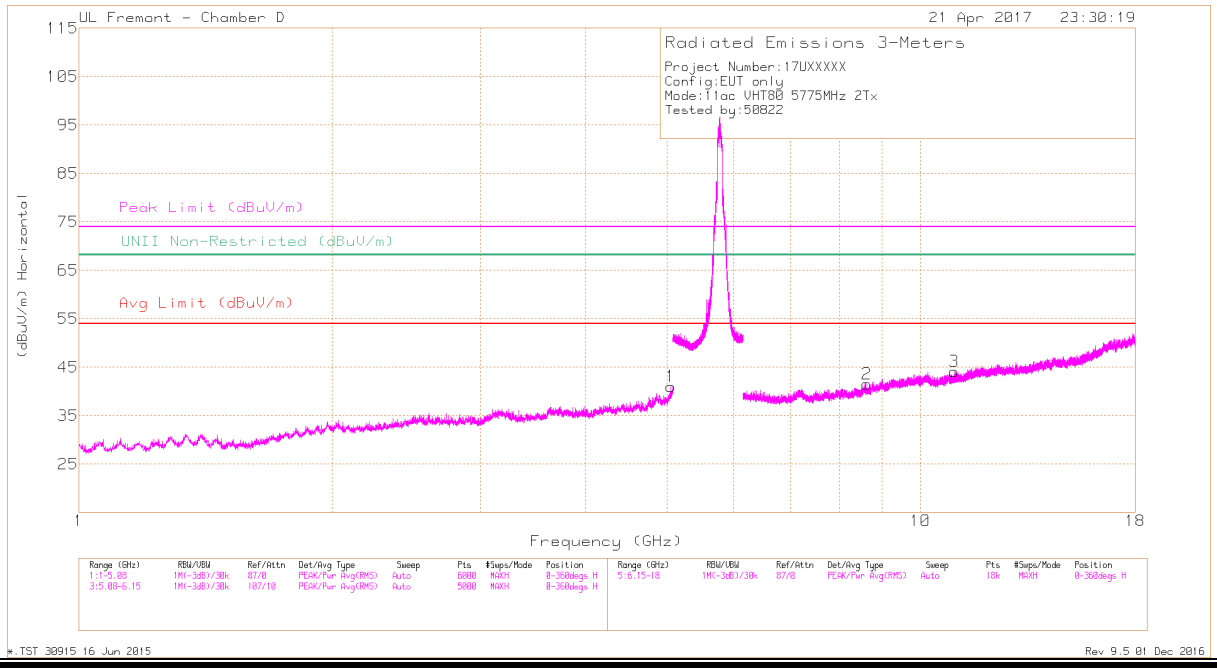
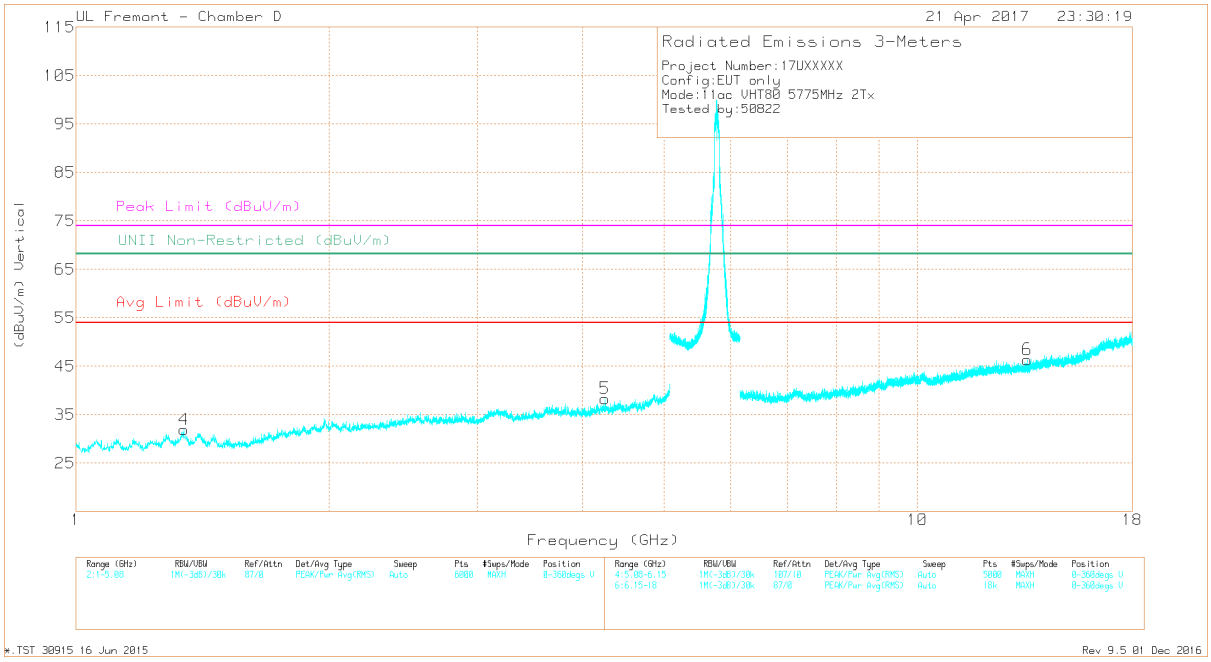
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



LOW CHANNEL VER



TICAL

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DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (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	* 5.047	38.37	PK-U	34.3	-25.6		47.07	-	-	74	-26.93	-	-	237	106	H
	* 5.051	26.35	ADR	34.3	-25.6	.19	35.24	54	-18.76	-	-	-	-	237	106	H
4	* 1.343	41.85	PK-U	29.3	-31.5		39.65	-	-	74	-34.35	-	-	12	297	V
	* 1.341	29.11	ADR	29.3	-31.5	.19	26.72	54	-26.9	-	-	-	-	12	297	V
5	* 4.256	37.65	PK-U	33.5	-27.7		43.45	-	-	74	-30.55	-	-	292	202	V
	* 4.257	26.15	ADR	33.5	-27.7	.19	32.14	54	-21.86	-	-	-	-	292	202	V
3	* 10.969	34.52	PK-U	37.5	-21.4		50.62	-	-	74	-23.38	-	-	83	113	H
	* 10.971	22.55	ADR	37.5	-21.4	.19	38.84	54	-15.16	-	-	-	-	83	113	H
2	8.635	34.77	PK-U	36.2	-22.7		48.27	-	-	-	-	68.2	-19.93	109	227	H
	8.635	23.21	ADR	36.2	-22.7		36.71	-	-	-	-	-	-	109	227	H
6	13.504	36.2	PK-U	39.2	-22.2		53.2	-	-	-	-	68.2	-15	69	352	V
	13.505	35.05	PK-U	39.2	-22.3		51.95	-	-	-	-	68.2	-16.25	278	175	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

*.TST 30915 16 Jun 2015

Rev 9.5 01 Dec 2016

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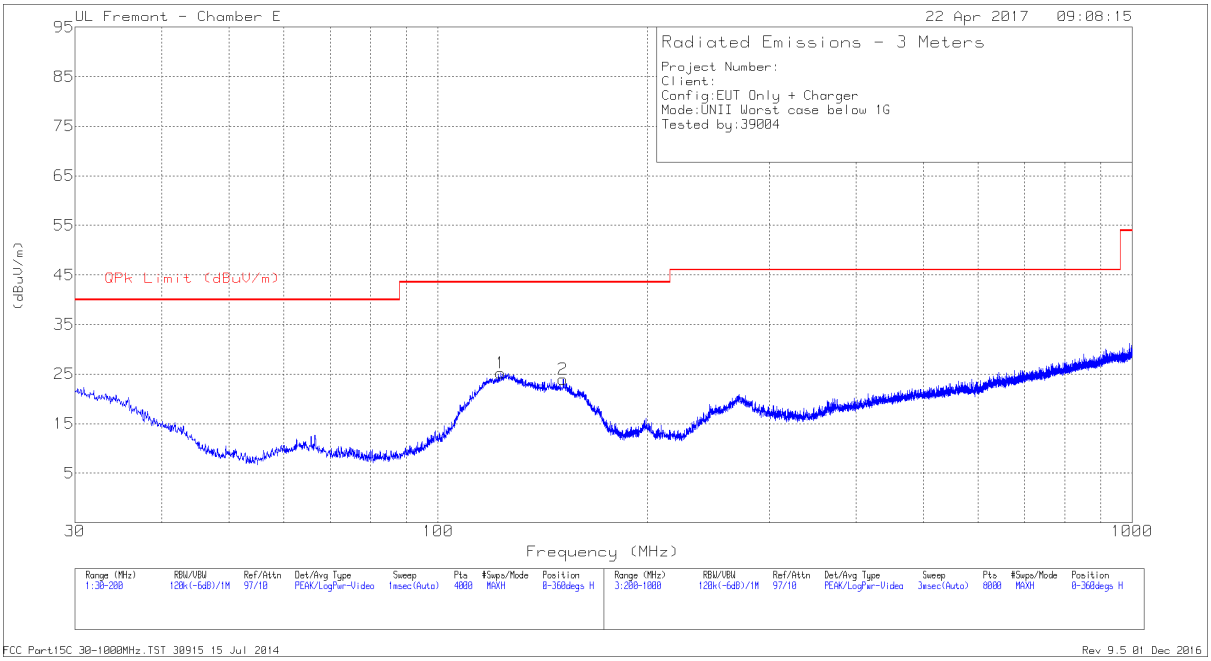
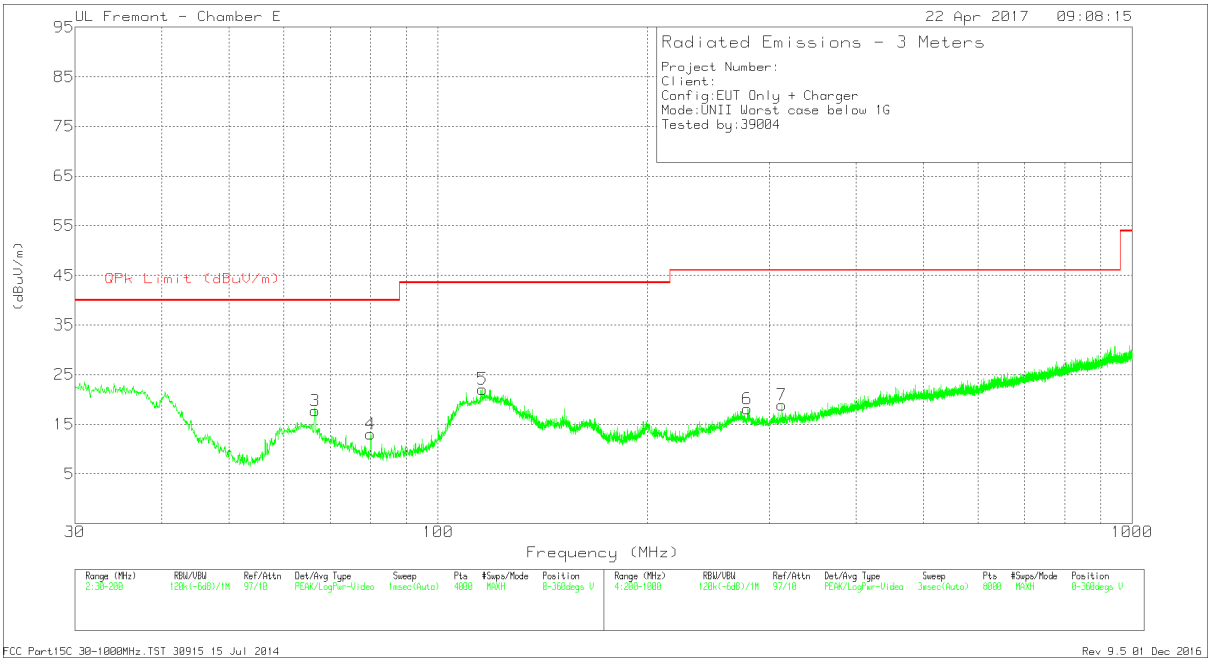
9.2. WORST-CASE BELOW 1 GHz

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 T899 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 123.1841	38.16	Pk	17.7	-30.6	25.26	43.52	-18.26	0-360	200	H
5	* 115.9147	35.41	Pk	17.4	-30.7	22.11	43.52	-21.41	0-360	100	V
6	* 279.1103	30.14	Pk	17.4	-29.4	18.14	46.02	-27.88	0-360	200	V
3	66.602	36.88	Pk	12.1	-31.2	17.78	40	-22.22	0-360	100	V
4	79.9929	32.8	Pk	11.2	-31	13	40	-27	0-360	100	V
2	151.4964	37.97	Pk	16.4	-30.4	23.97	43.52	-19.55	0-360	200	H
7	312.7147	30.24	Pk	17.8	-29.2	18.84	46.02	-27.18	0-360	300	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
FCC Part15C 30-1000MHz.TST 30915 15 Jul 2014
Rev 9.5 01 Dec 2016

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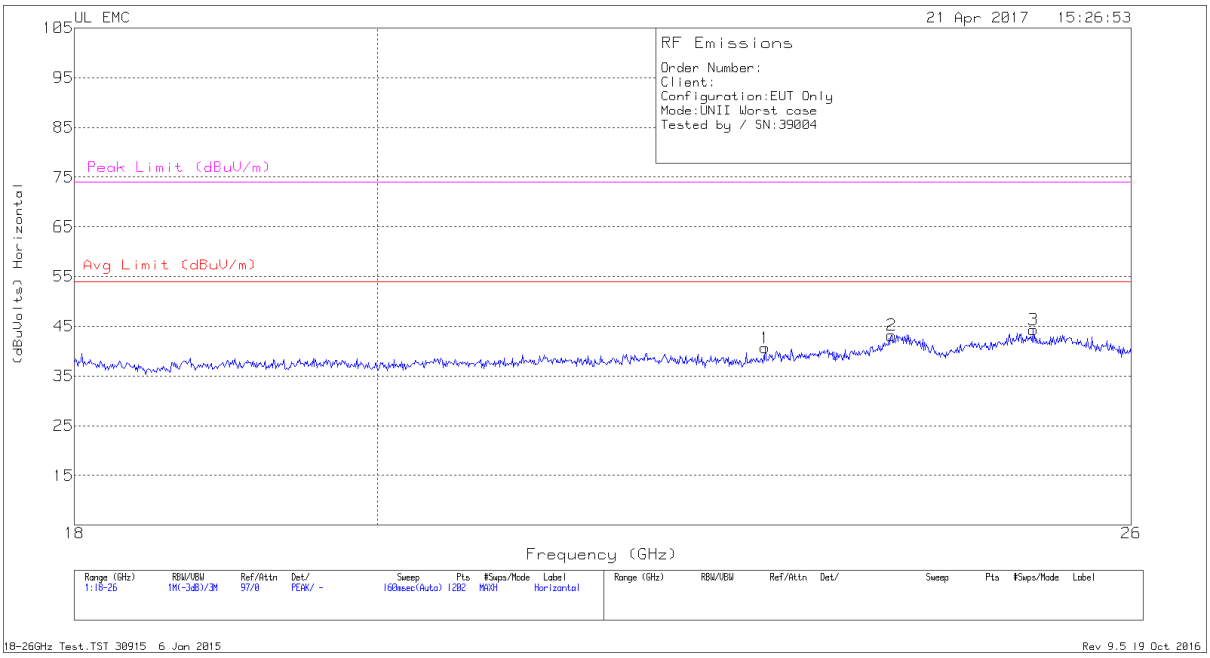
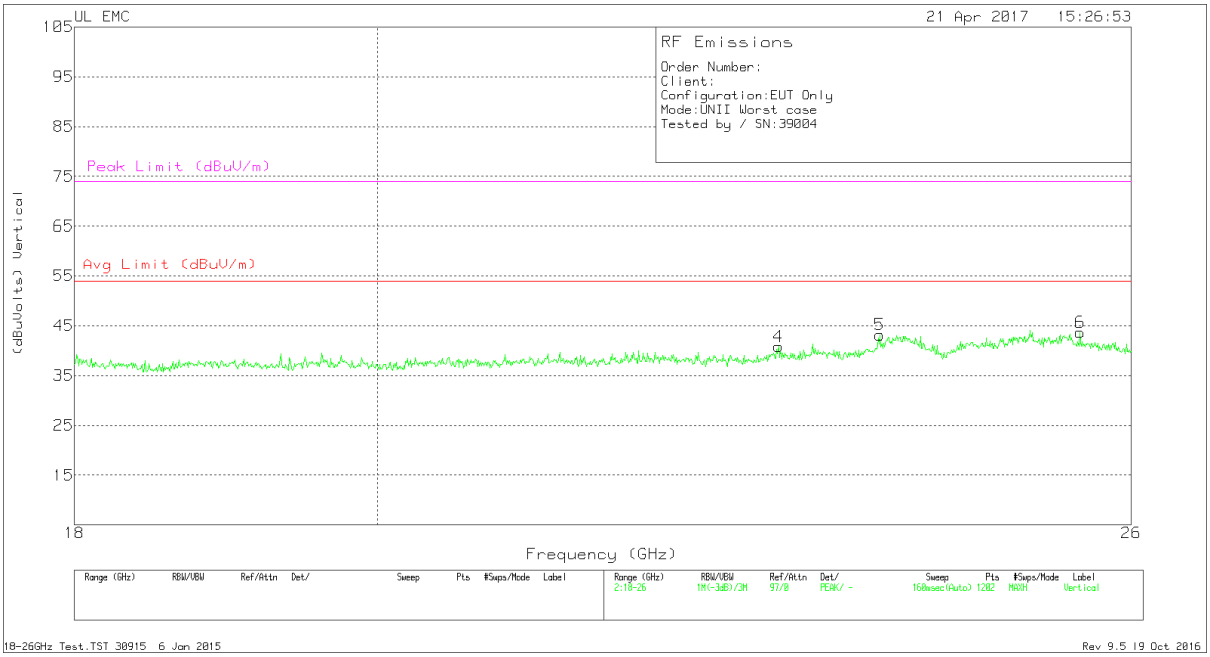
9.3. WORST-CASE 18 to 26 GHz

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	22.889	41.77	Pk	33.4	-25	-9.5	40.67	54	-13.33	74	-33.33
2	23.918	42.57	Pk	34	-23.9	-9.5	43.17	54	-10.83	74	-30.83
3	25.127	44.13	Pk	34.3	-24.6	-9.5	44.34	54	-9.66	74	-29.66
4	22.996	41.93	Pk	33.4	-25	-9.5	40.84	54	-13.16	74	-33.16
5	23.822	42.87	Pk	33.9	-24.1	-9.5	43.17	54	-10.83	74	-30.83
6	25.54	43.67	Pk	34.4	-24.9	-9.5	43.67	54	-10.33	74	-30.33

Pk - Peak detector
18-26GHz Test.TST 30915 6 Jan 2015
Rev 9.5 19 Oct 2016

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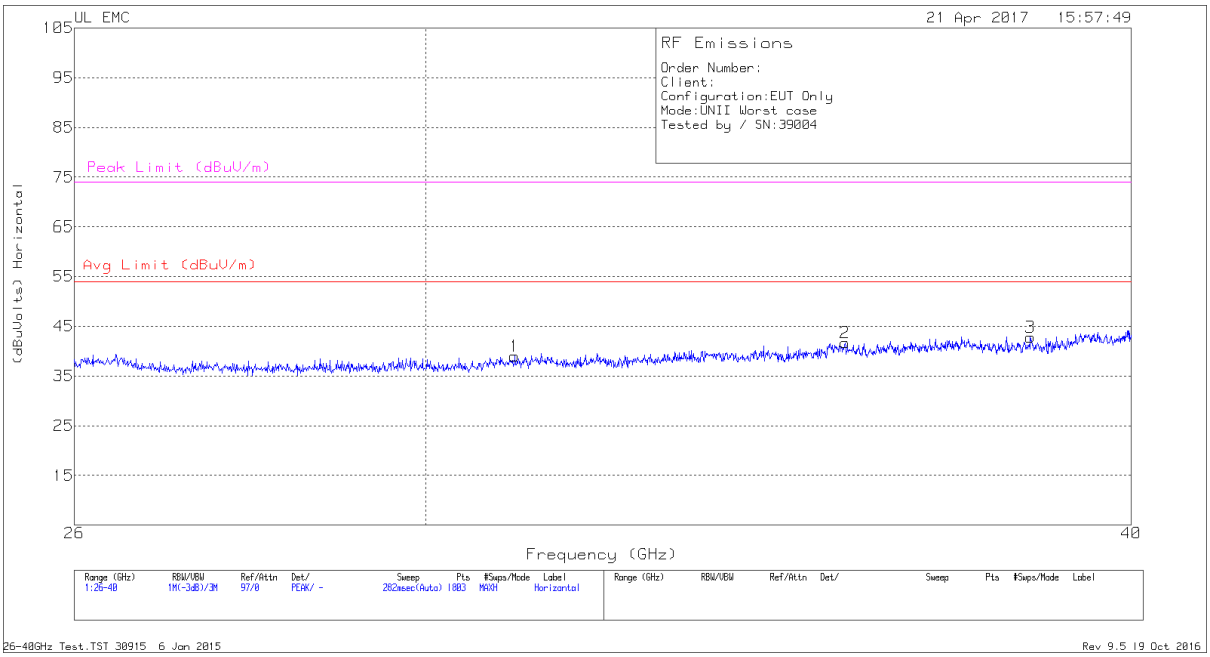
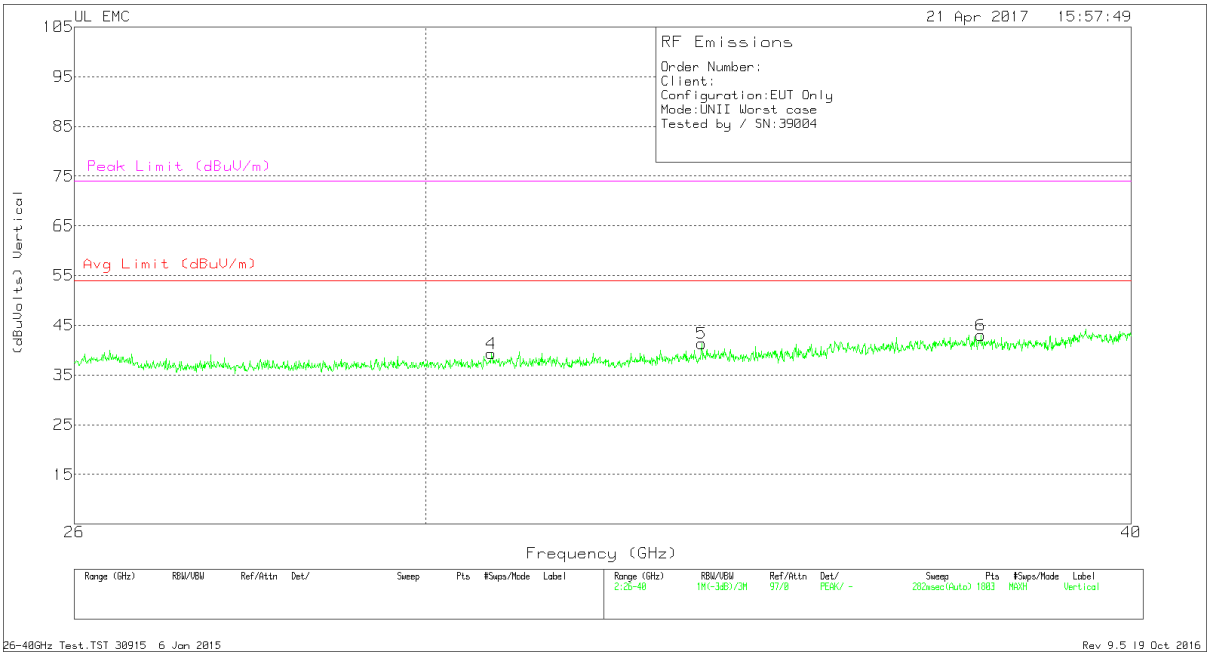
9.4. WORST-CASE 26 to 40 GHz

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	31.112	45.9	Pk	35.9	-33.3	-9.5	39	54	-15	74	-35
2	35.595	47.87	Pk	37.6	-34.3	-9.5	41.67	54	-12.33	74	-32.33
3	38.384	48.73	Pk	37.1	-33.5	-9.5	42.84	54	-11.16	74	-31.16
4	30.817	45.83	Pk	36	-33	-9.5	39.34	54	-14.66	74	-34.66
5	33.575	47.03	Pk	37	-33.2	-9.5	41.34	54	-12.66	74	-32.66
6	37.623	49.5	Pk	37.1	-34.1	-9.5	43	54	-11	74	-31

Pk - Peak detector
26-40GHz Test.TST 30915 6 Jan 2015
Rev 9.5 19 Oct 2016

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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

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701J
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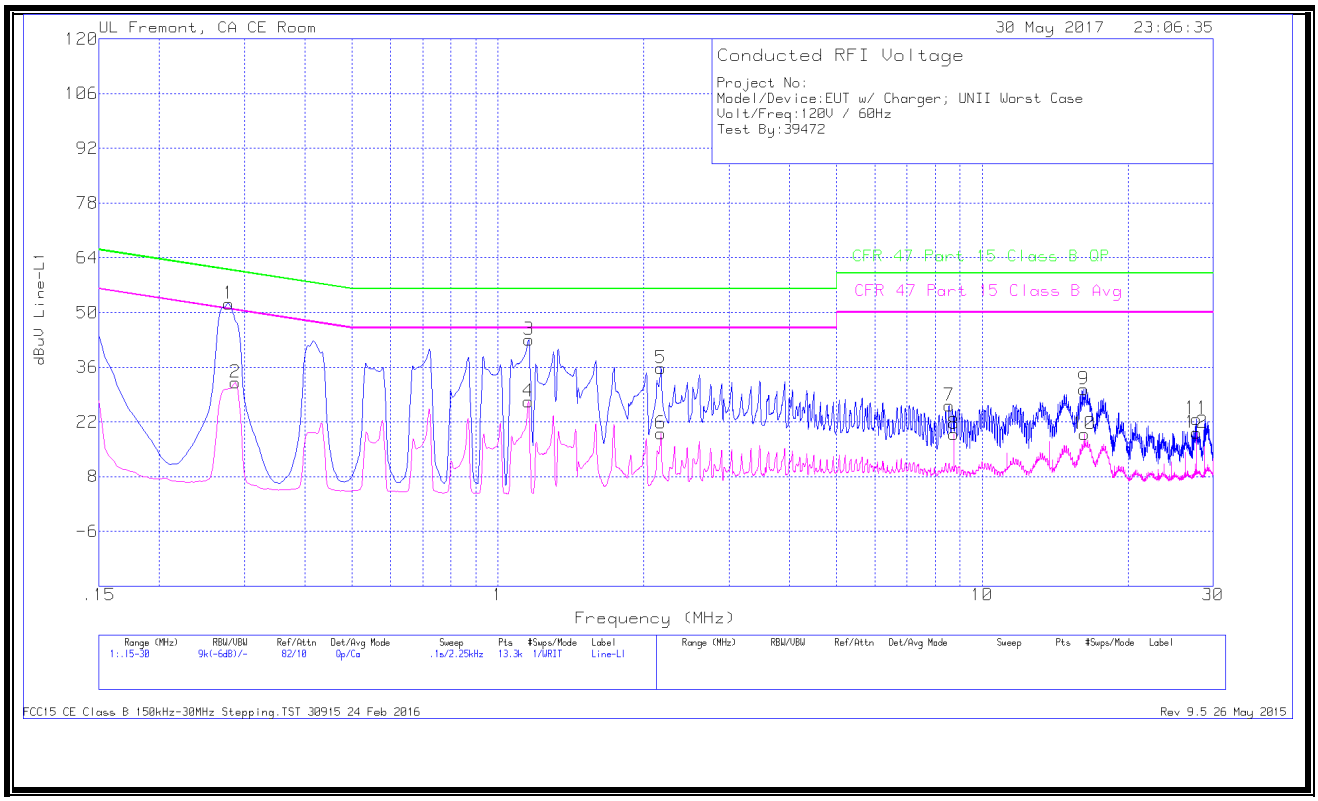
10.1. EUT POWERED BY AC/DC ADAPTER VIA USB CABLE

LINE 1 RESULTS



WORST EMISSIONS

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	.27825	42.11	Qp	0	.1	10.1	52.31	60.87	-8.56	-	-
2	.28725	21.88	Ca	0	.1	10.1	32.08	-	-	50.6	-18.52
3	1.158	32.87	Qp	0	.1	10.1	43.07	56	-12.93	-	-
4	1.15575	17.05	Ca	0	.1	10.1	27.25	-	-	46	-18.75
5	2.17275	25.49	Qp	0	.1	10.1	35.69	56	-20.31	-	-
6	2.1705	8.83	Ca	0	.1	10.1	19.03	-	-	46	-26.97
7	8.55038	15.82	Qp	0	.2	10.2	26.22	60	-33.78	-	-
8	8.7495	8.41	Ca	0	.2	10.2	18.81	-	-	50	-31.19
9	16.2353	19.92	Qp	0	.2	10.3	30.42	60	-29.58	-	-
10	16.251	8.45	Ca	0	.2	10.3	18.95	-	-	50	-31.05
11	27.6923	11.89	Qp	.1	.3	10.5	22.79	60	-37.21	-	-
12	27.6923	8.37	Ca	.1	.3	10.5	19.27	-	-	50	-30.73

Qp - Quasi-Peak detector
Ca - CISPR average detection

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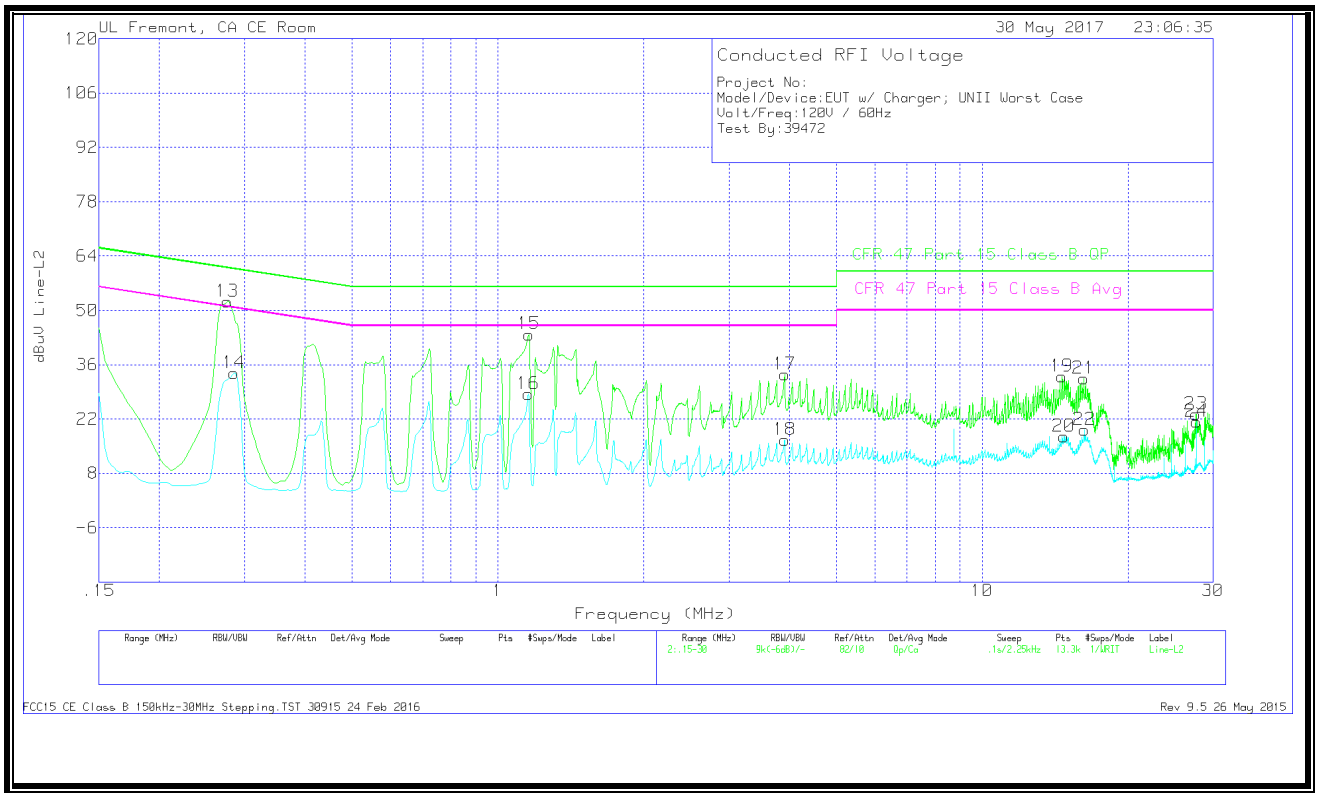
LINE 2 RESULTS



WORST EMISSIONS

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	.276	42.09	Qp	0	0	10.1	52.19	60.94	-8.75	-	-
14	.285	23.6	Ca	0	.1	10.1	33.8	-	-	50.67	-16.87
15	1.158	33.63	Qp	0	.1	10.1	43.83	56	-12.17	-	-
16	1.15575	18.19	Ca	0	.1	10.1	28.39	-	-	46	-17.61
17	3.912	23.29	Qp	0	.1	10.1	33.49	56	-22.51	-	-
18	3.90975	6.35	Ca	0	.1	10.1	16.55	-	-	46	-29.45
19	14.6355	22.46	Qp	.1	.2	10.2	32.96	60	-27.04	-	-
20	14.7728	6.95	Ca	.1	.2	10.2	17.45	-	-	50	-32.55
21	16.2308	21.91	Qp	0	.2	10.3	32.41	60	-27.59	-	-
22	16.251	8.73	Ca	0	.2	10.3	19.23	-	-	50	-30.77
23	27.6675	12.4	Qp	.1	.3	10.5	23.3	60	-36.7	-	-
24	27.6923	10.38	Ca	.1	.3	10.5	21.28	-	-	50	-28.72

Qp - Quasi-Peak detector
Ca - CISPR average detection
FCC15 CE Class B 150kHz-30MHz Stepping.TST 30915 24 Feb 2016
Rev 9.5 26 May 2015

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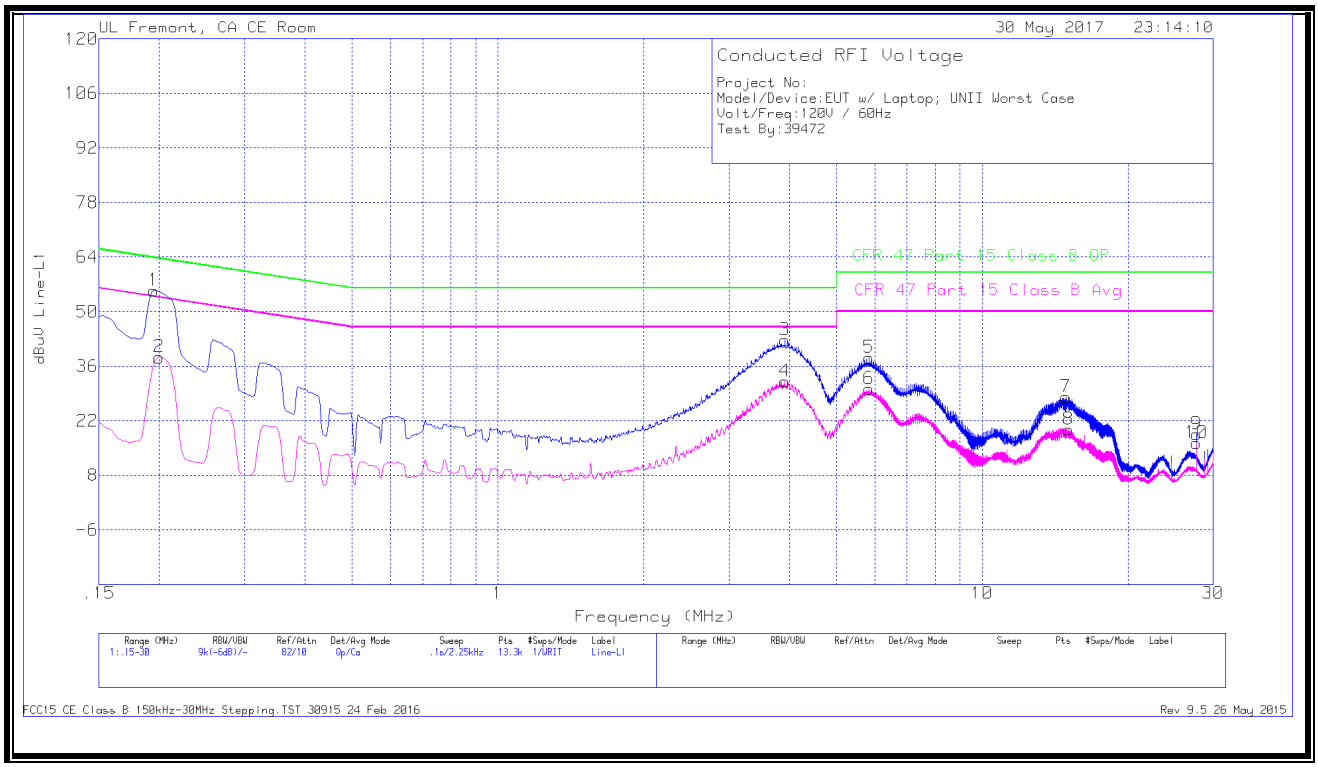
10.2. EUT POWERED BY HOST PC VIA USB CABLE

LINE 1 RESULTS



WORST EMISSIONS

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	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	.195	45.17	Qp	0	.1	10.1	55.37	63.82	-8.45	-	-
2	.1995	28.07	Ca	0	.1	10.1	38.27	-	-	53.63	-15.36
3	3.91425	32.42	Qp	0	.1	10.1	42.62	56	-13.38	-	-
4	3.912	21.97	Ca	0	.1	10.1	32.17	-	-	46	-13.83
5	5.83575	27.84	Qp	0	.1	10.2	38.14	60	-21.86	-	-
6	5.83575	19.81	Ca	0	.1	10.2	30.11	-	-	50	-19.89
7	14.8785	17.64	Qp	0	.2	10.2	28.04	60	-31.96	-	-
8	15.0698	9.43	Ca	0	.2	10.2	19.83	-	-	50	-30.17
9	27.6923	7.57	Qp	.1	.3	10.5	18.47	60	-41.53	-	-
10	27.6923	5.34	Ca	.1	.3	10.5	16.24	-	-	50	-33.76

Qp - Quasi-Peak detector
Ca - CISPR average detection

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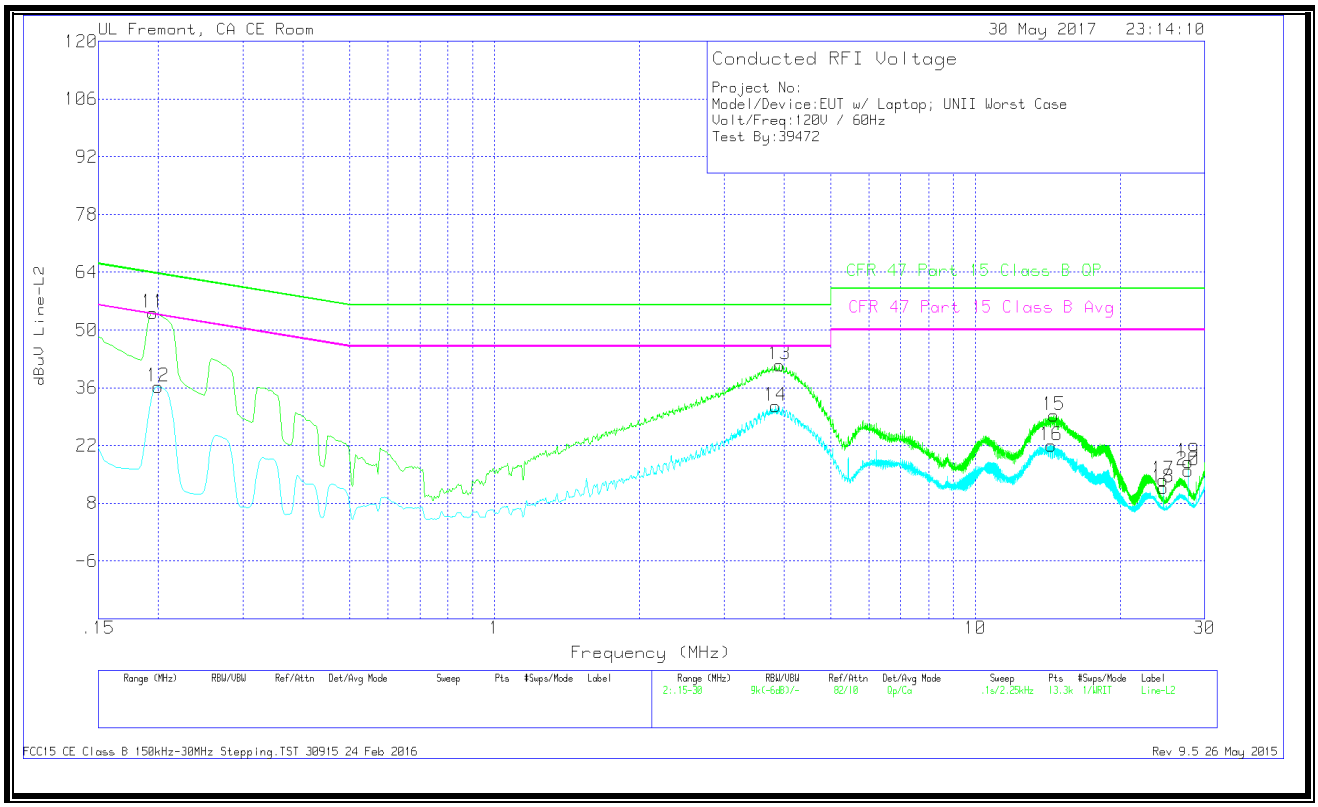
LINE 2 RESULTS



WORST EMISSIONS

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)
11	.195	44.04	Qp	0	.1	10.1	54.24	63.82	-9.58	-	-
12	.1995	26.08	Ca	0	.1	10.1	36.28	-	-	53.63	-17.35
13	3.912	31.37	Qp	0	.1	10.1	41.57	56	-14.43	-	-
14	3.8445	21.39	Ca	0	.1	10.1	31.59	-	-	46	-14.41
15	14.5883	18.84	Qp	.1	.2	10.2	29.34	60	-30.66	-	-
16	14.3858	11.5	Ca	.1	.2	10.2	22	-	-	50	-28
17	24.6165	2.84	Qp	.1	.3	10.5	13.74	60	-46.26	-	-
18	24.6165	.87	Ca	.1	.3	10.5	11.77	-	-	50	-38.23
19	27.6923	7.17	Qp	.1	.3	10.5	18.07	60	-41.93	-	-
20	27.6923	5.03	Ca	.1	.3	10.5	15.93	-	-	50	-34.07

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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) x (19 x 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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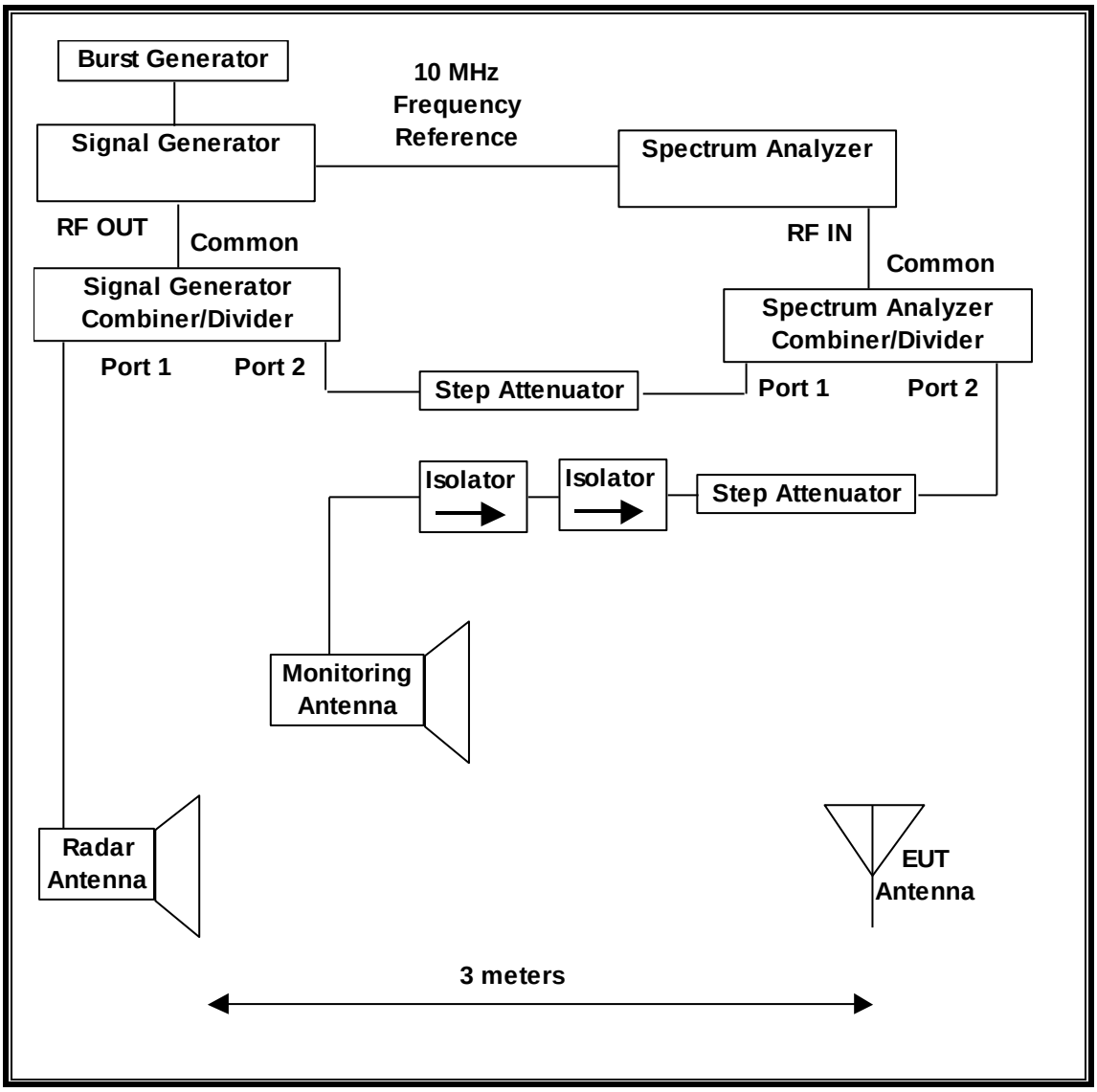
11.1.2. TEST AND MEASUREMENT SYSTEM

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**	**Serial Number**	**Cal Due**
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight	N9030A	US51350187	06/13/17
Signal Generator, MXG X-Series RF Vector	Agilent	N5182B	MY51350337	04/21/18

11.1.3. TEST ROOM ENVIRONMENT

The test room temperature and humidity shall be maintained within normal temperature of 15~35 °C and normal humidity 20~75% (relative humidity).

ENVIRONMENT CONDITION

Parameter	Value
Temperature	26.8 °C
Humidity	29 %

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

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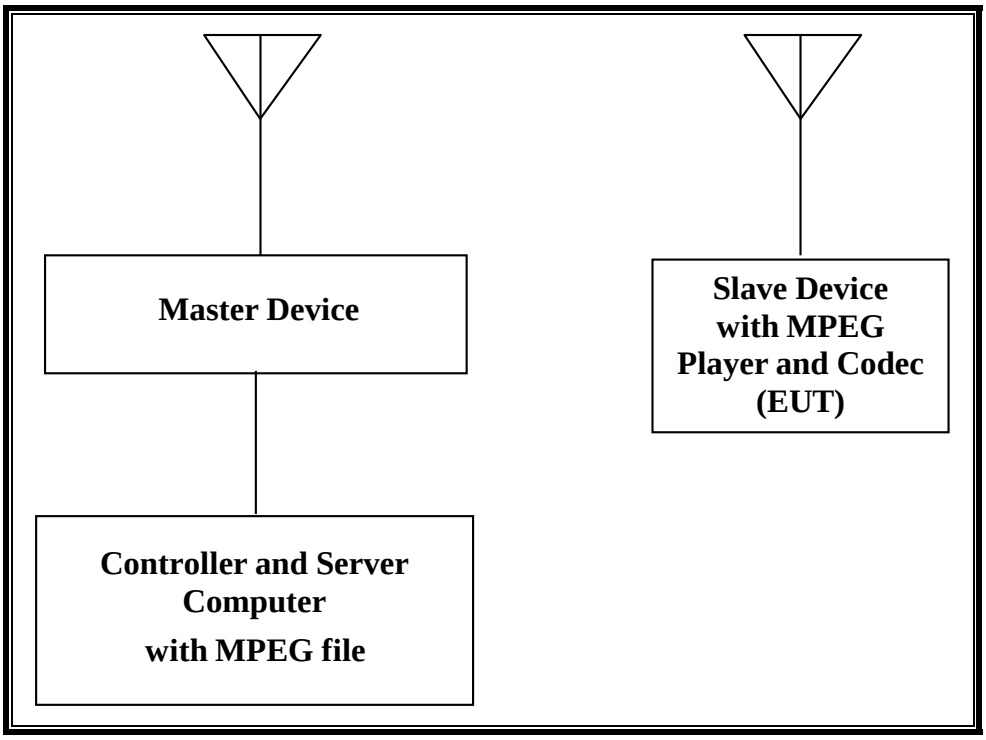
11.1.5. SETUP OF EUT (CLIENT MODE)

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**
802.11a/b/g/n/ac Wireless Router (Master Device)	Apple	A1521	C86LCE5GFJ1R	BCGA1521
Notebook PC (Controller/Server)	Apple	A1181	4H629022WLV	DoC
AC Adapter (Notebook PC)	Apple	A1343	C0424760BMPF1Y7AB	DoC

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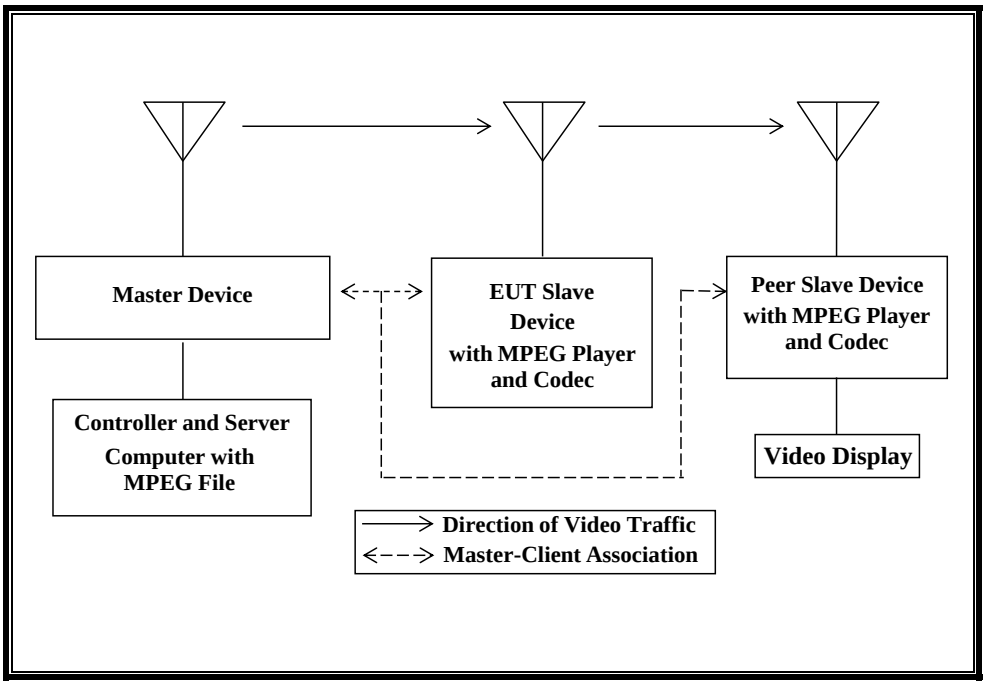
11.1.6. SETUP OF EUT (CLIENT-TO-CLIENT COMMUNICATIONS MODE)

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**
802.11a/b/g/n/ac Wireless Router (Master Device)	Apple	A1521	C86LCE5GFJ1R	BCGA1521
Notebook PC (Controller/Server)	Apple	A1181	4H629022WLV	DoC
AC Adapter (Notebook PC)	Apple	A1343	C0424760BMPF1Y7AB	DoC
Peer Slave Device	Apple	A1625	C07S4033HHFP	BCGA1625
15" LCD TV (Video Display)	Polaroid	TLX-01511C	02006	DoC

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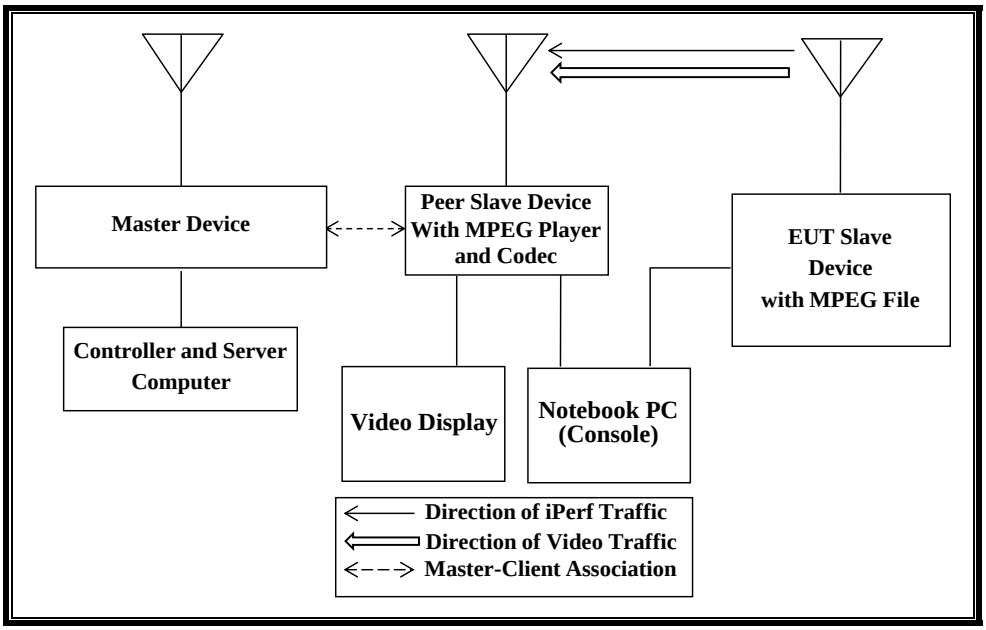
11.1.7. SETUP OF EUT (PEER TO PEER MODE)

RADIATED METHOD EUT TEST SETUP WHEN MONITORING THE EUT



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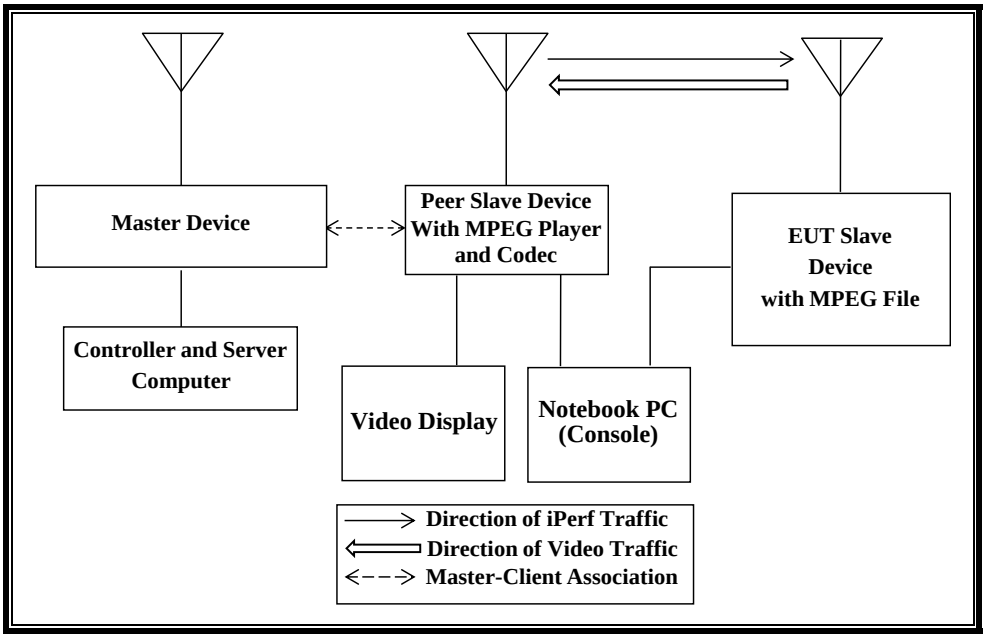
RADIATED METHOD EUT TEST SETUP WHEN MONITORING THE PEER SLAVE DEVICE)



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**
802.11a/b/g/n/ac Wireless Router (Master Device)	Apple	A1521	C86LCE5GFJ1R	BCGA1521
Notebook PC (Controller/Server)	Apple	A1181	4H629022WLV	DoC
AC Adapter (Notebook PC)	Apple	A1343	C0424760BMPF1Y7AB	DoC
Apple TV (Peer Slave Device)	Apple	A1625	C07S4033HHFP	BCGA1625
Notebook PC (Peer Console)	Apple	A1466	C2QLN093FKYR	DoC
AC Adapter (Console PC)	Apple	A1424	C06520721HYG6P4AH	DoC
15" LCD TV (Video Display)	Polaroid	TLX-01511C	02006	DoC

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11.1.8. 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
The EUT is a Slave Device without Radar Detection.

The highest power level within these bands is 21.98 dBm EIRP in the 5250-5350 MHz band and 22.26 dBm EIRP in the 5470-5725 MHz band.

Only UAT 2 and LAT 3 antenna assembly utilized with the EUT has a gain of -1.91 dBi and -0.46 dBi in the 5250-5350 MHz band and -2.41 dBi and -0.15 dBi in the 5470-5725 MHz band.

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

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

The EUT uses two transmitter/receiver chains, each 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.

In **Peer to Peer mode while monitoring the EUT**, WLAN traffic is generated with the combination of streaming the compressed version of the video test file “6 ½ Magic Hours” from the EUT to the Peer Slave Device in full motion video mode using QuickTime media player and embedded proprietary AirPlay software and Iperf from the EUT to the Peer Slave Device.

In **Peer to Peer mode while monitoring the Peer Slave Device**, WLAN traffic is generated with the combination of streaming the compressed version of the video test file “6 ½ Magic Hours” from the EUT to the Peer Slave Device in full motion video mode using QuickTime media player and embedded proprietary AirPlay software and Iperf from the Peer Slave Device to the EUT.

While performing Peer to Peer Mode testing only the Peer Slave Device is associated to the Master Device.

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The Peer to Peer mode has been reviewed and approved as compliant with the DFS requirements for client devices by the FCC via KDB enquiry. The enquiry confirmed that the test cases used adequately demonstrate compliance with DFS requirements for client devices.

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 access point is revision 7.7.4 f0 dev.

The software installed in the EUT is 11.0 (15A282).

UNIFORM CHANNEL SPREADING

This function is not required per KDB 905462.

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 revision 7.7.4 f0 dev.

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11.2. CLIENT MODE RESULTS FOR 20 MHz BANDWIDTH

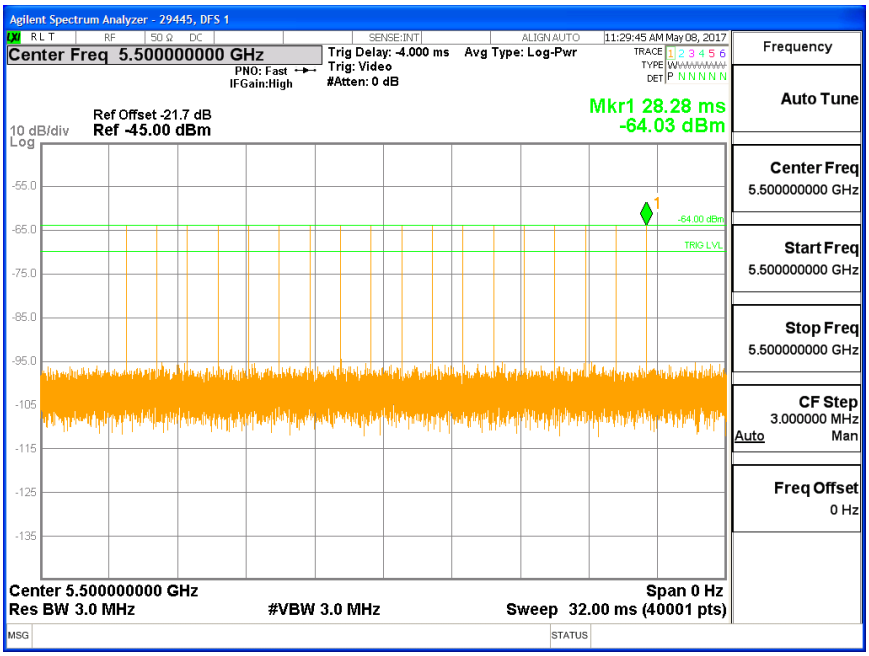
11.2.1. TEST CHANNEL

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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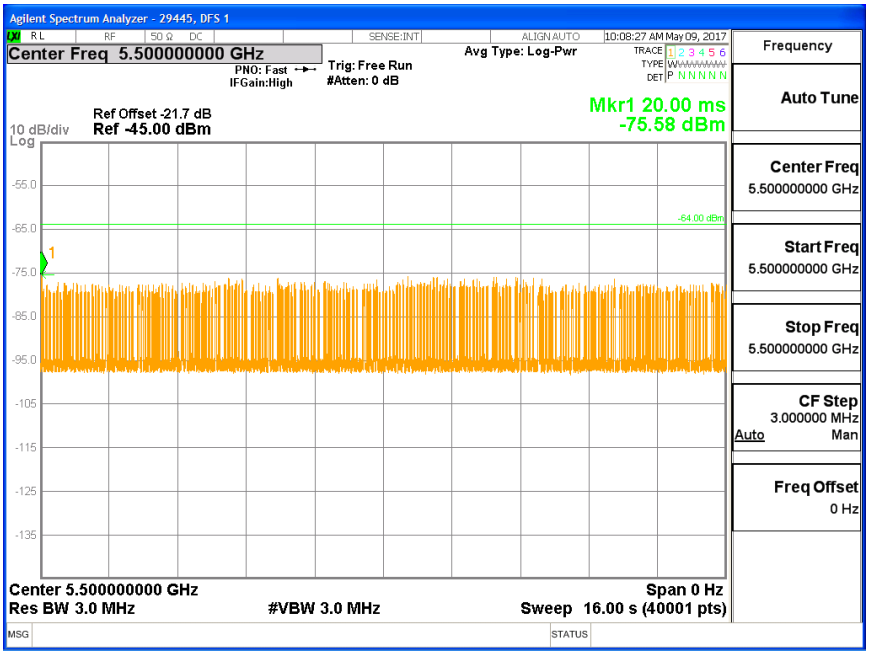
TRAFFIC

SLAVE TRAFFIC



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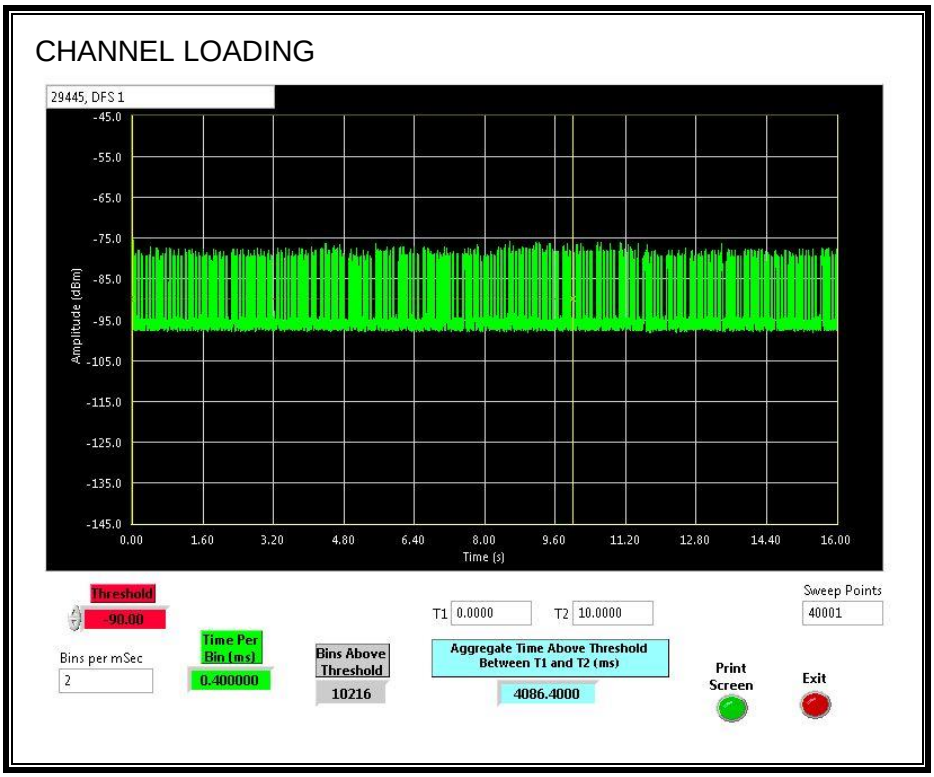
CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 40.86%

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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)
1.696	**10**

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

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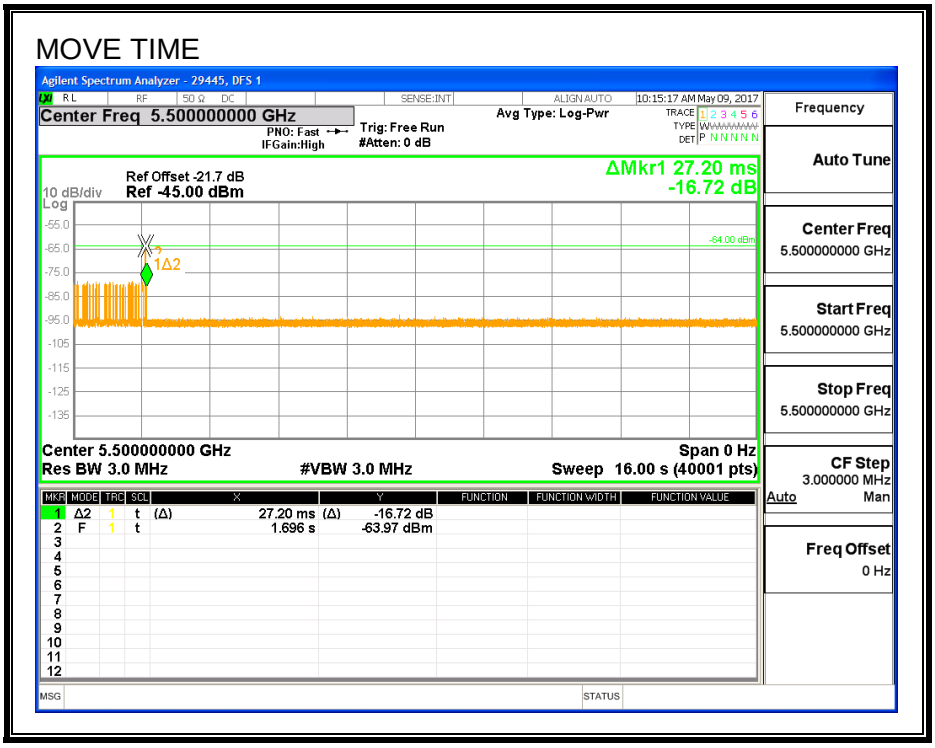
MOVE TIME



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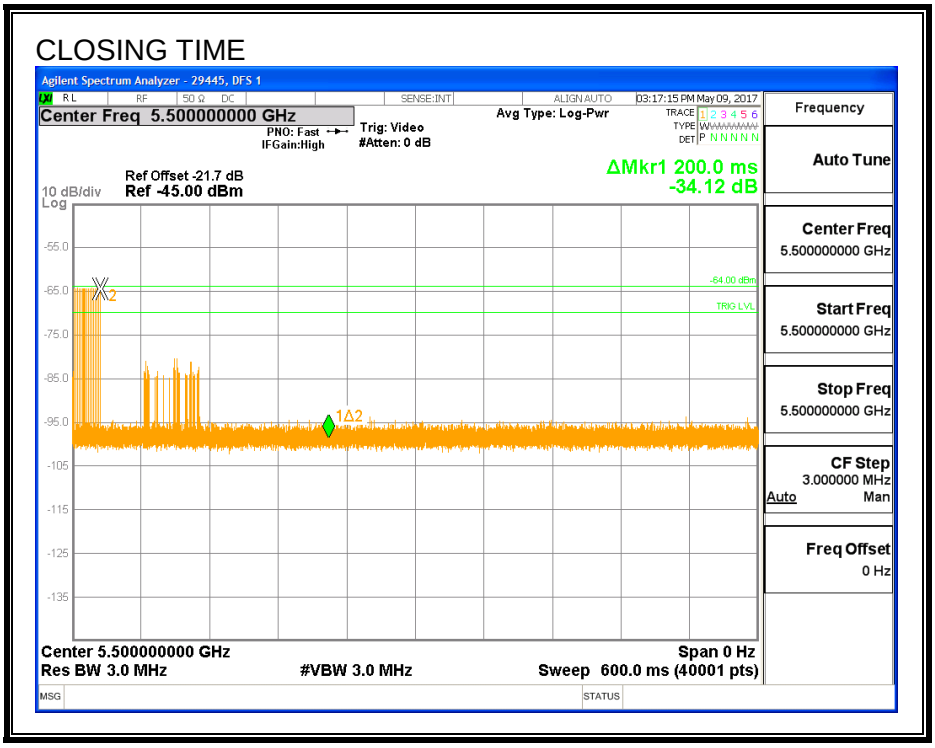
CHANNEL CLOSING TIME



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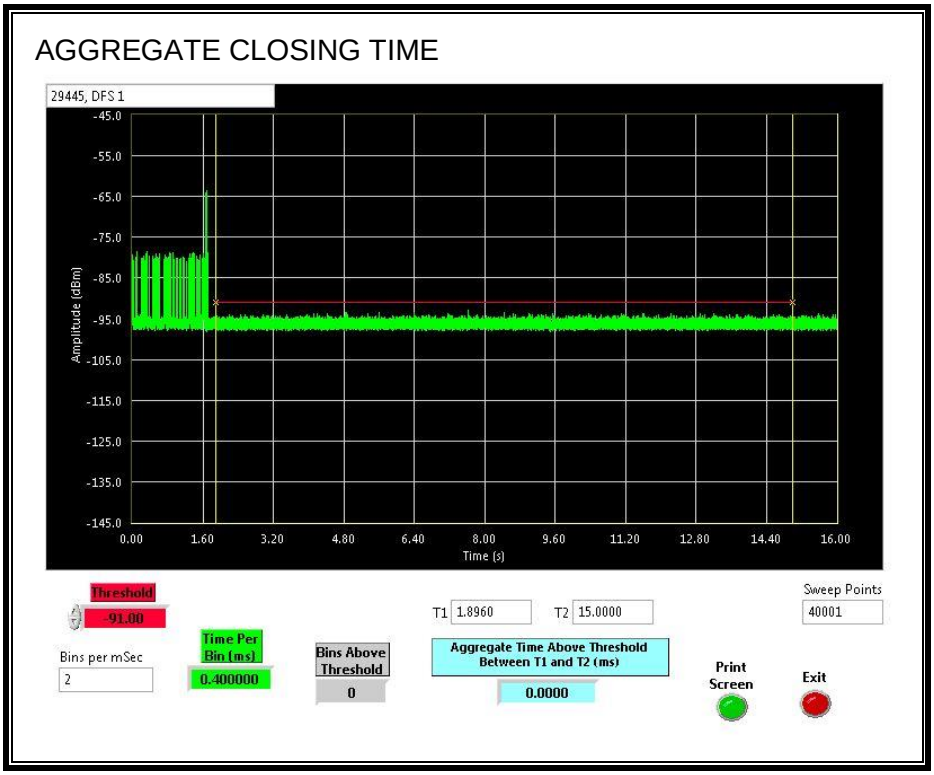
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the aggregate monitoring period.



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11.3. CLIENT MODE RESULTS FOR 40 MHz BANDWIDTH

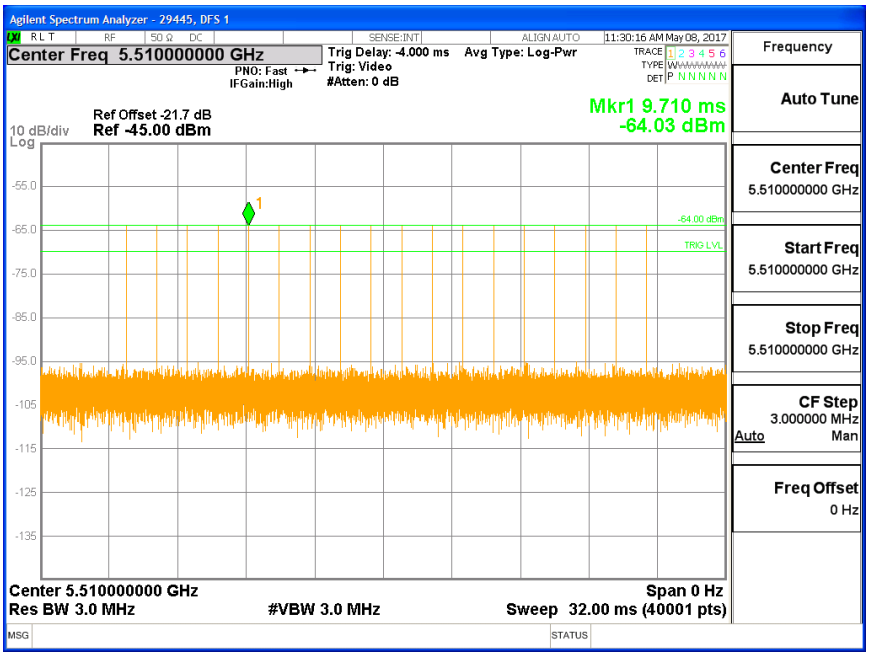
11.3.1. TEST CHANNEL

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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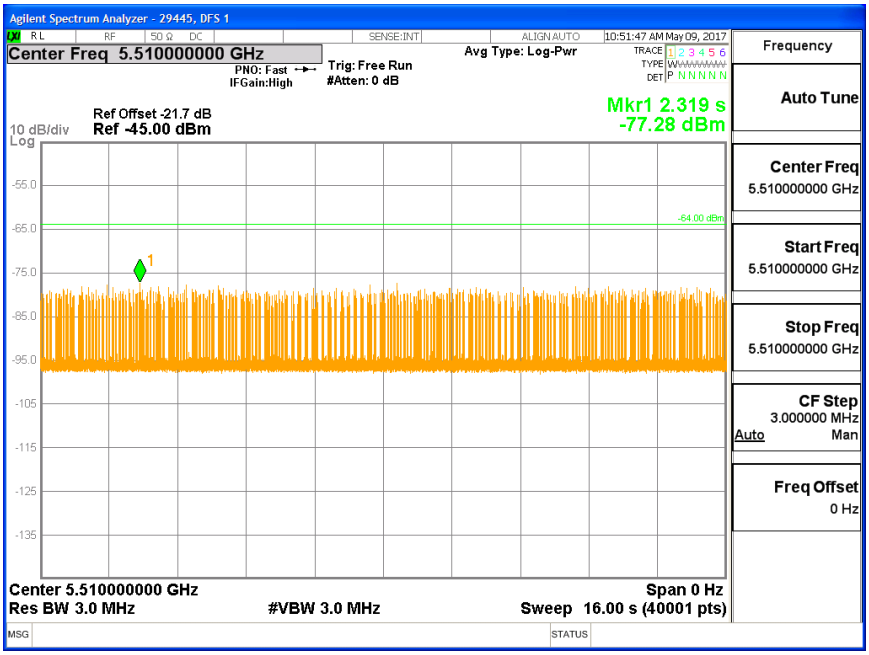
TRAFFIC

SLAVE TRAFFIC



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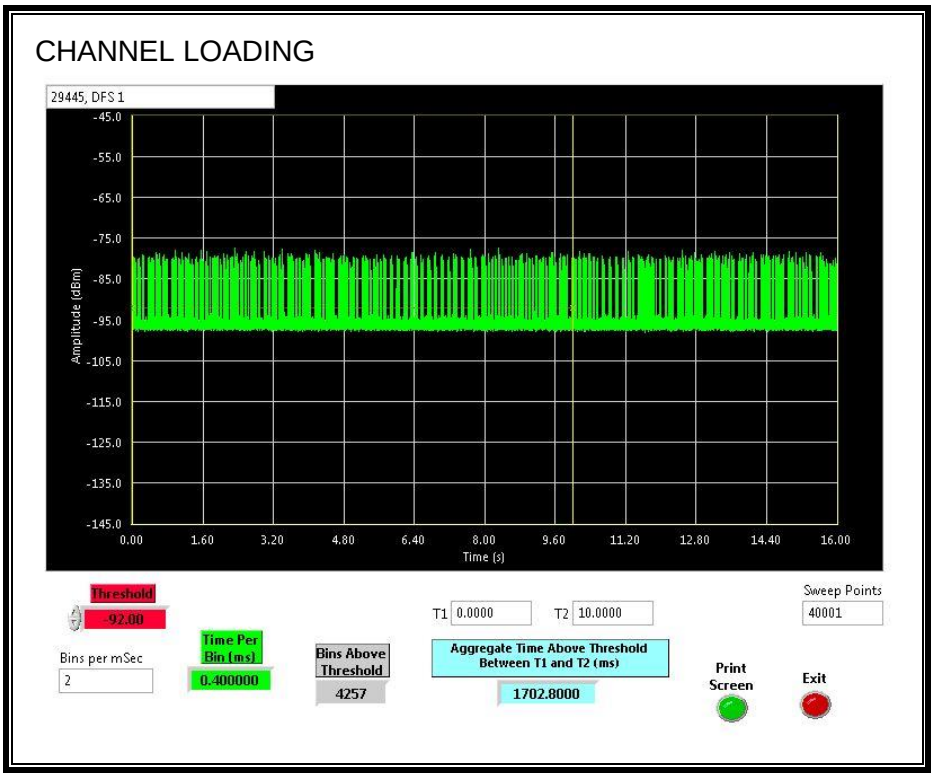
CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 17.02%

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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)
0.097	10

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

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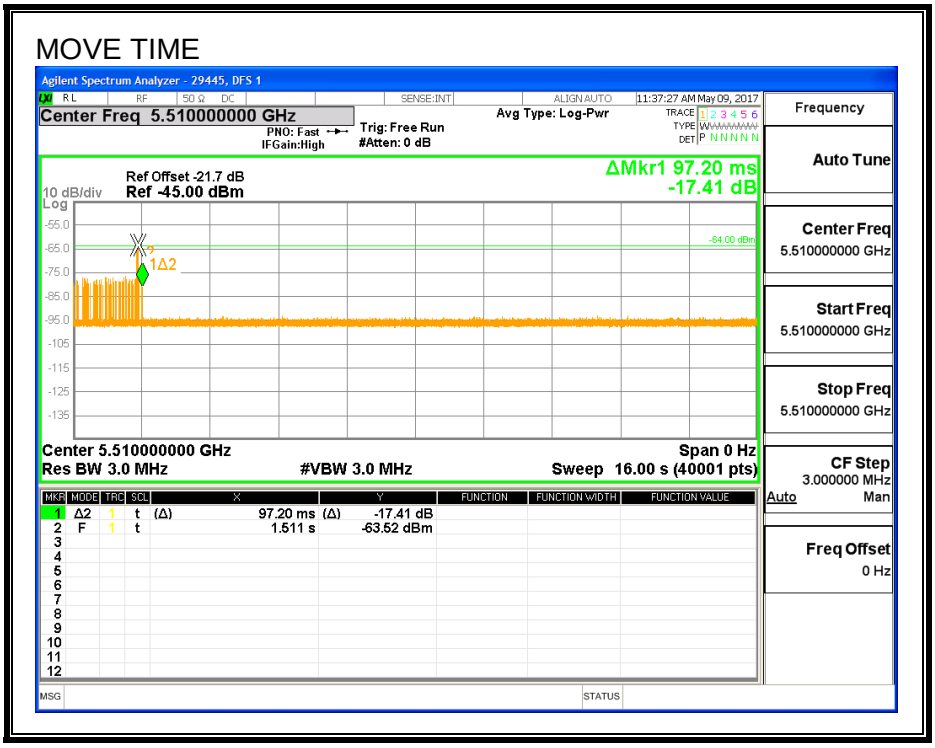
MOVE TIME



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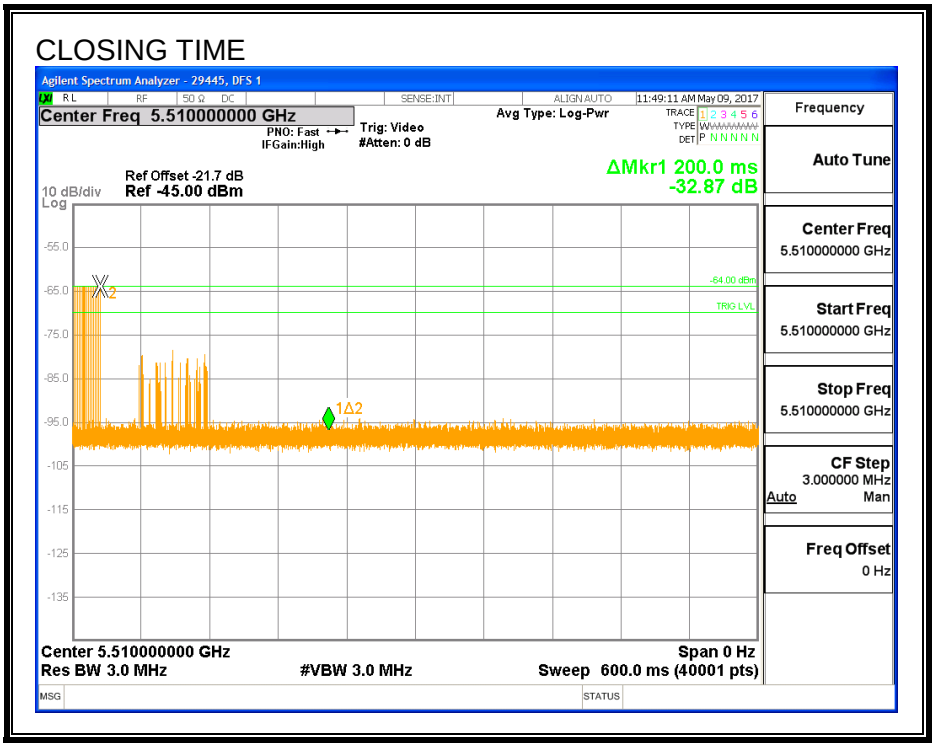
CHANNEL CLOSING TIME



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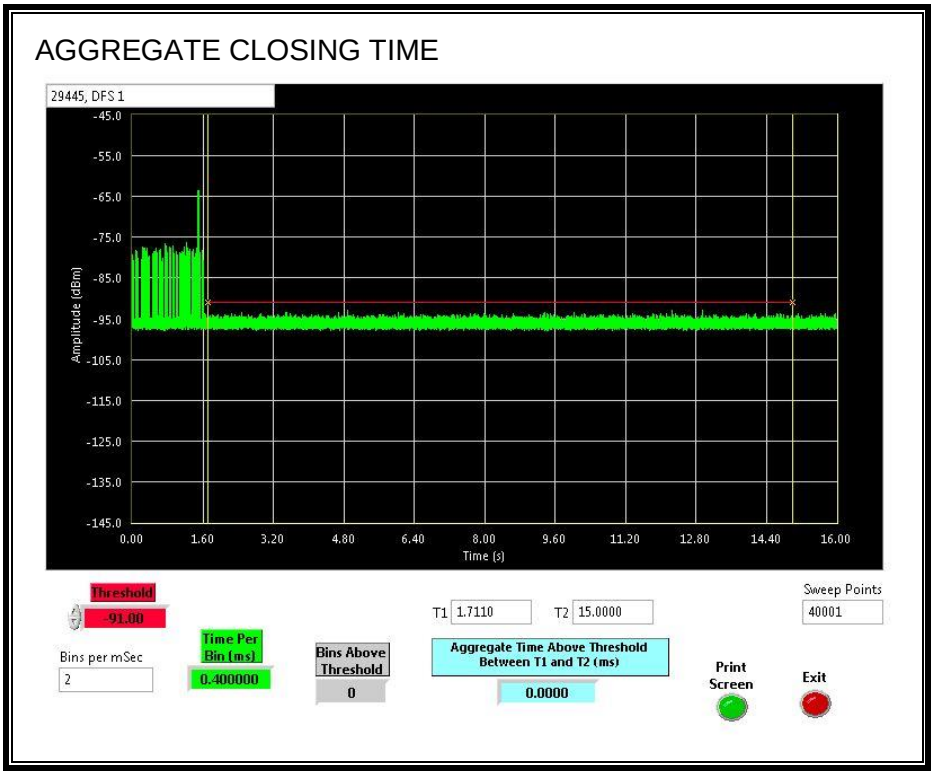
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the aggregate monitoring period.



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11.4. CLIENT MODE RESULTS FOR 80 MHz BANDWIDTH

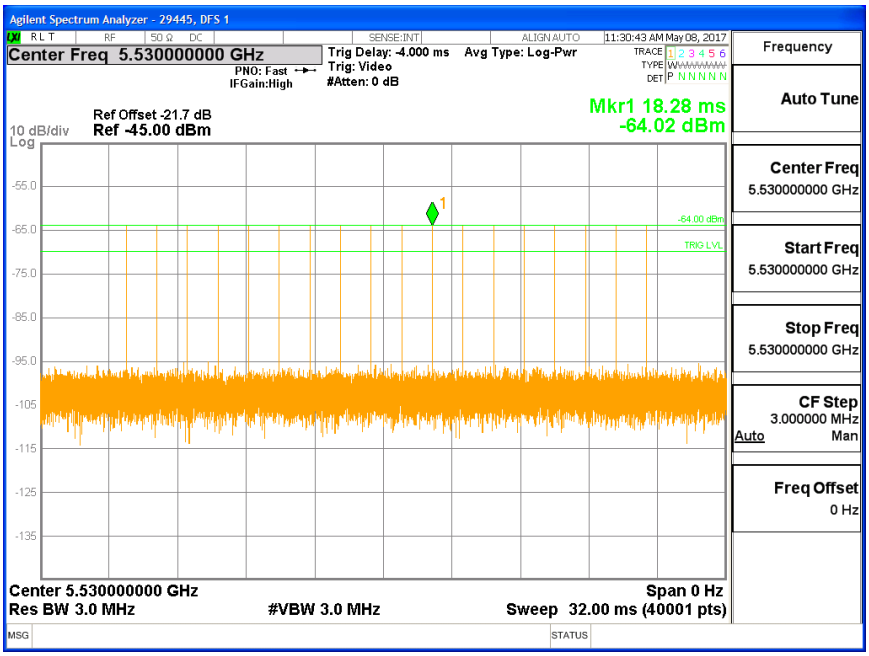
11.4.1. TEST CHANNEL

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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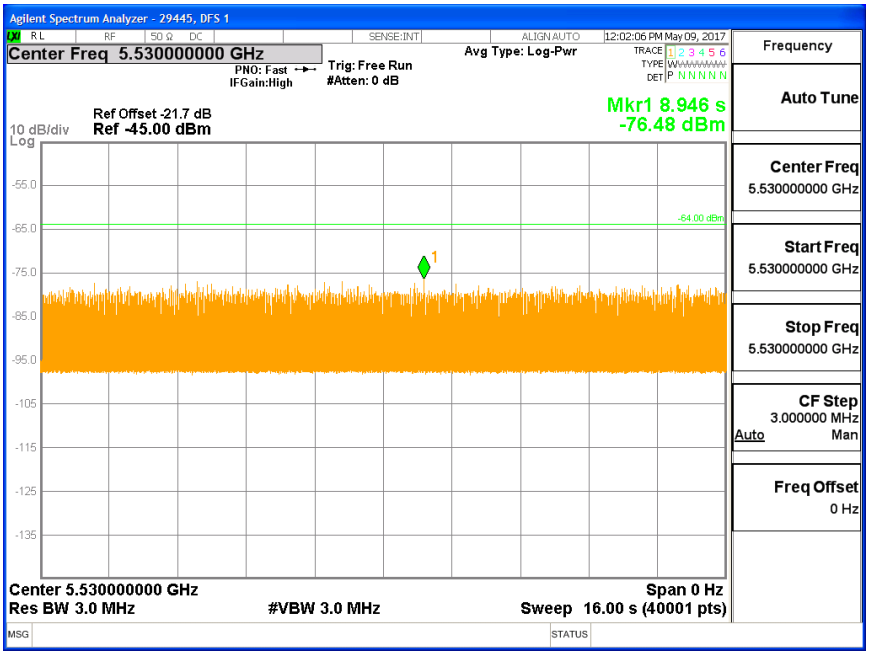
TRAFFIC

SLAVE TRAFFIC



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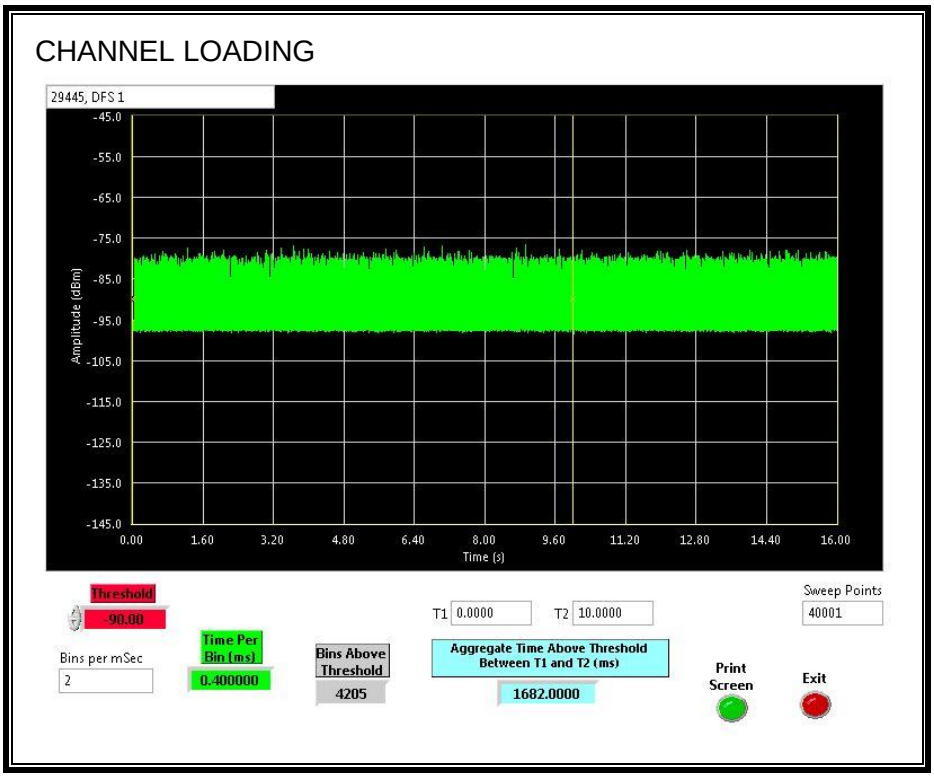
CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 16.82%

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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)
0.043	**10**

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

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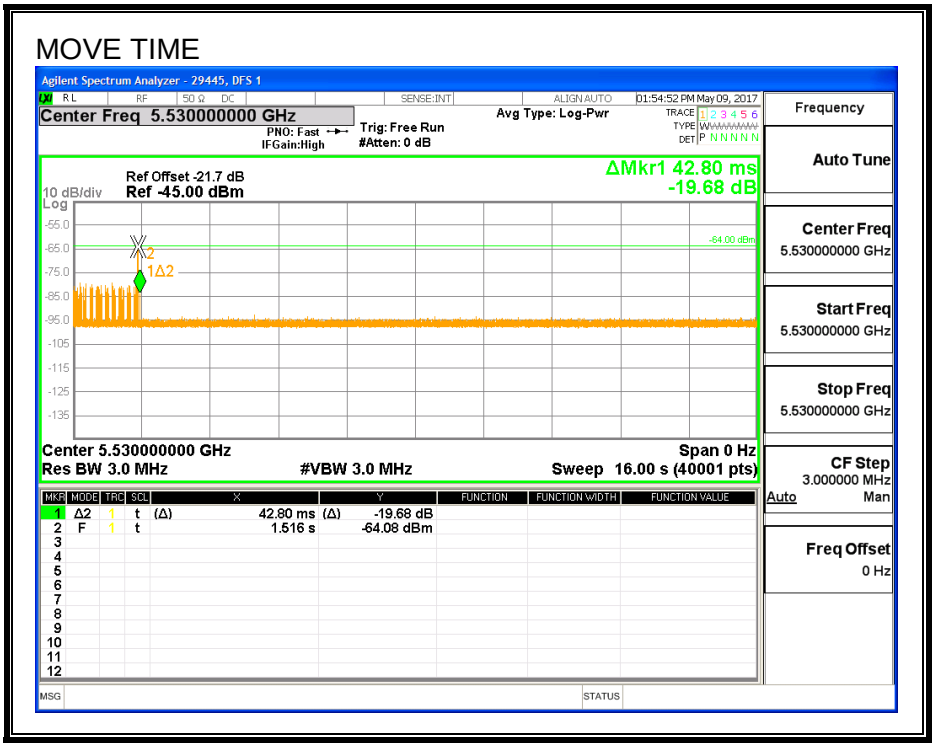
MOVE TIME



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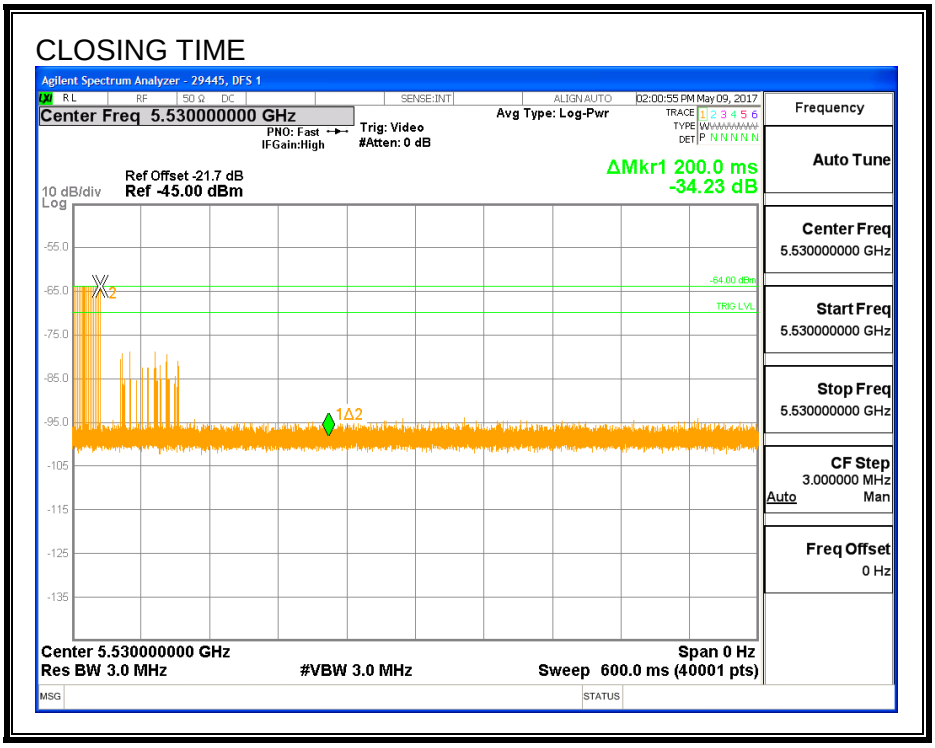
CHANNEL CLOSING TIME



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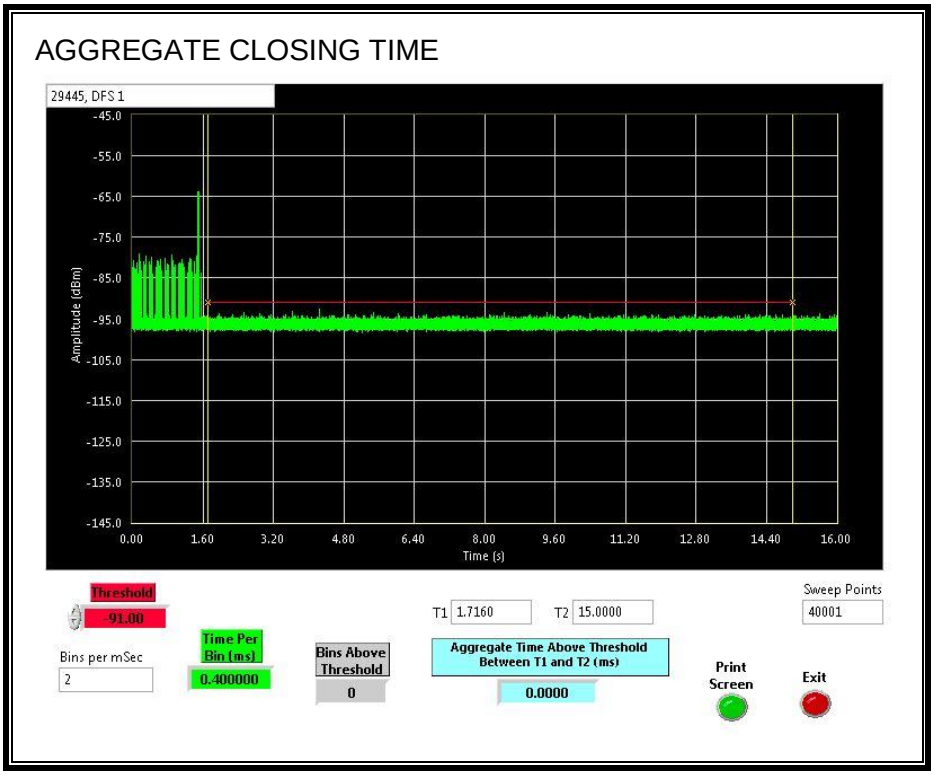
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the aggregate monitoring period.



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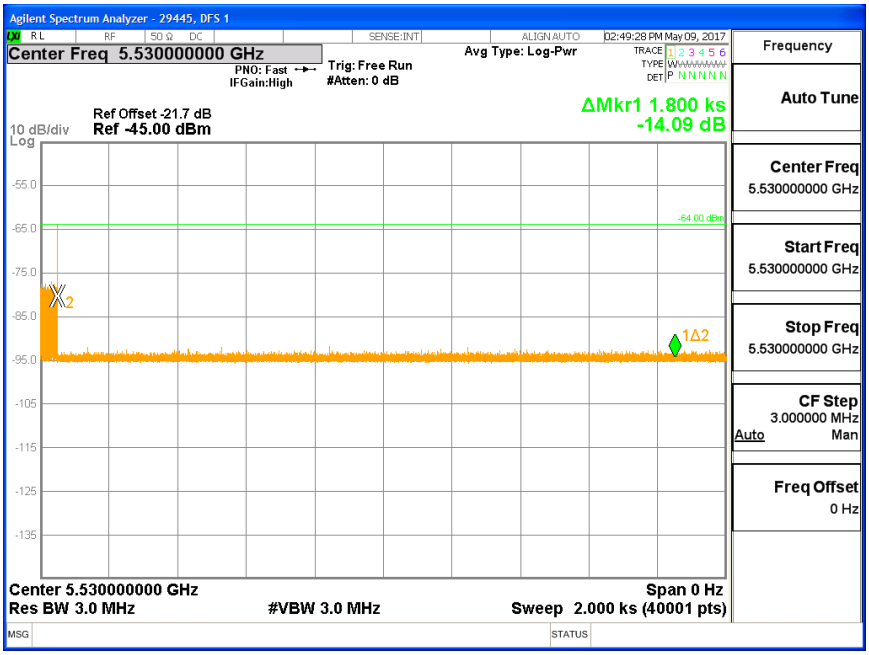
11.4.5. 30-MINUTE NON-OCCUPANCY PERIOD

RESULTS

No EUT transmissions were observed on the test channel during the 30-minute observation time.

30-MINUTE NON-OCCUPANCY PERIOD



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

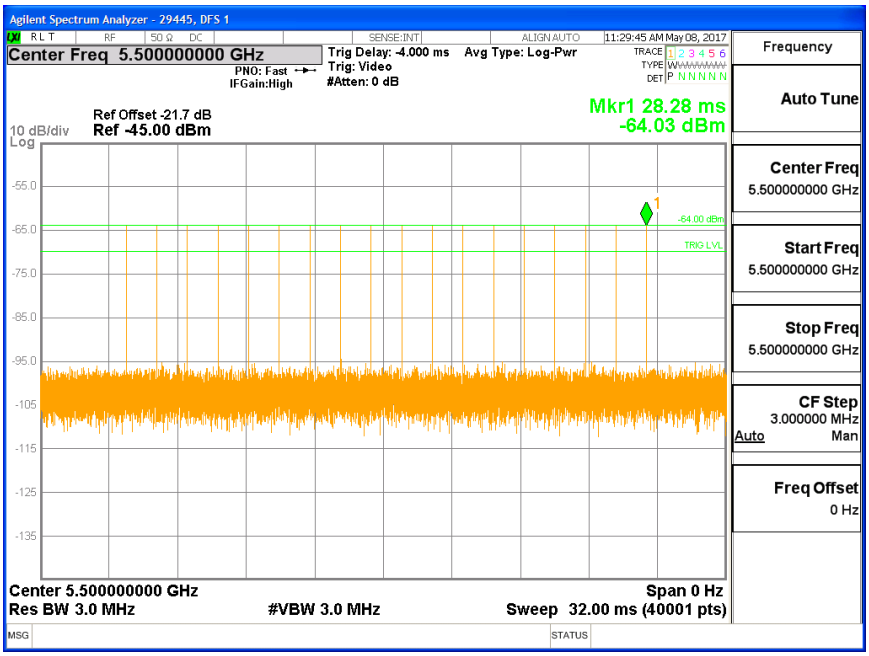
11.5.1. TEST CHANNEL

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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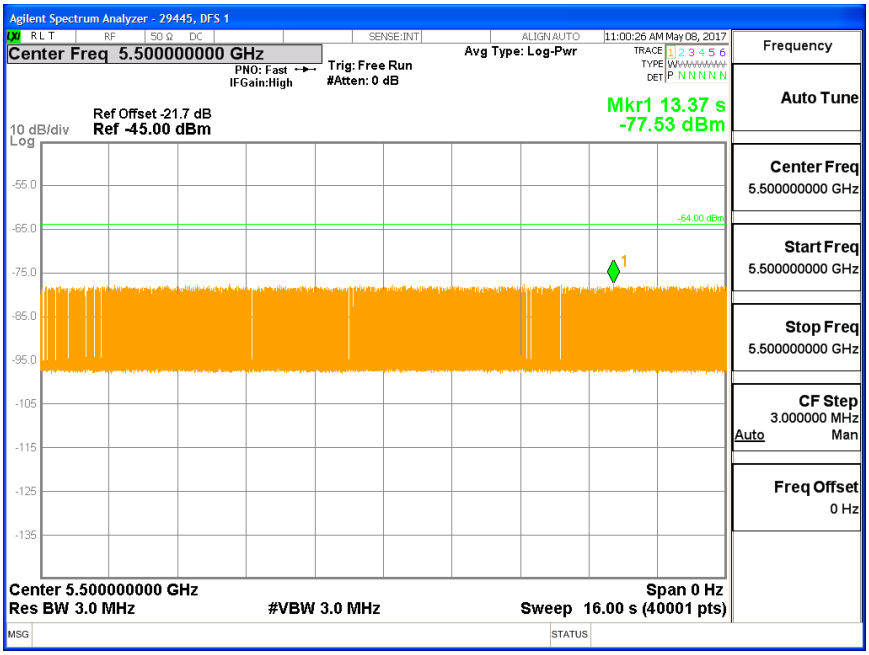
TRAFFIC

SLAVE TRAFFIC



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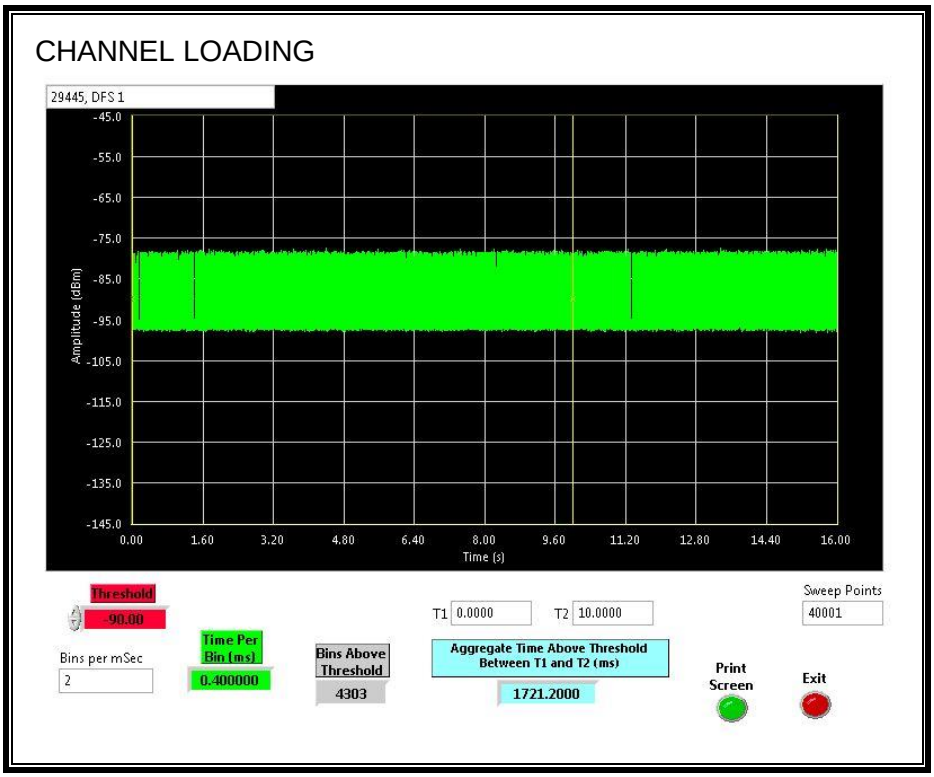
CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 17.21%

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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)
0.088	10

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

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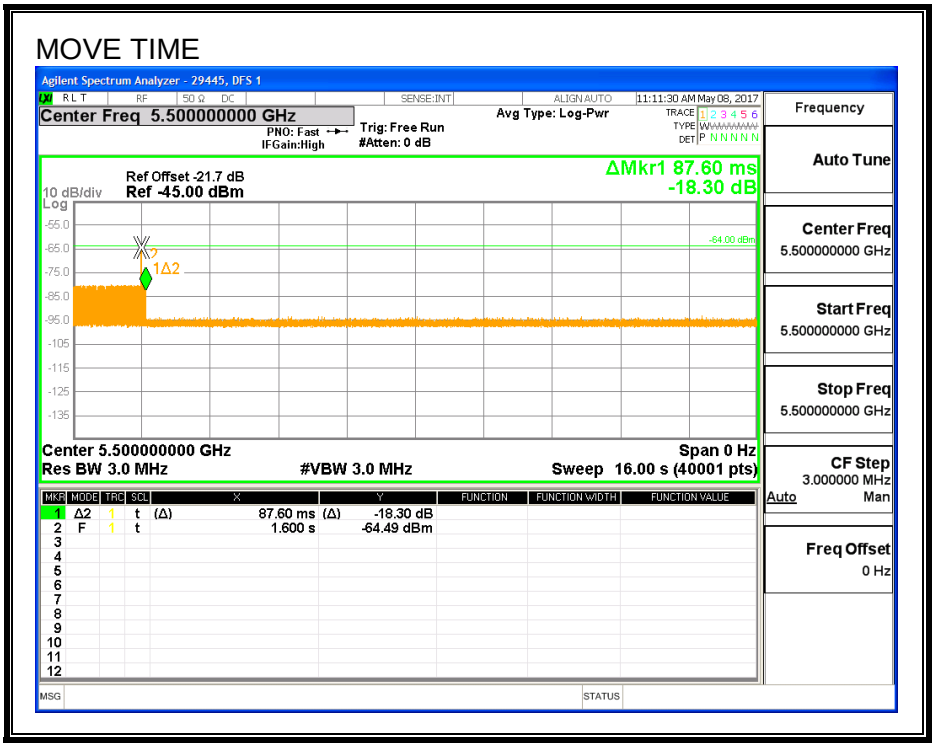
MOVE TIME



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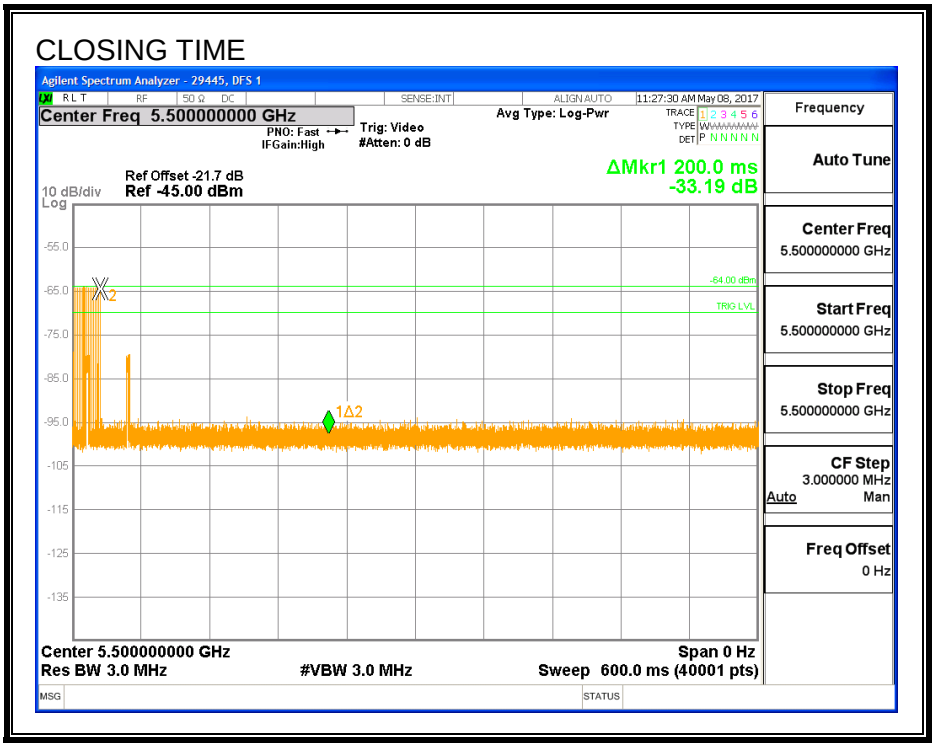
CHANNEL CLOSING TIME



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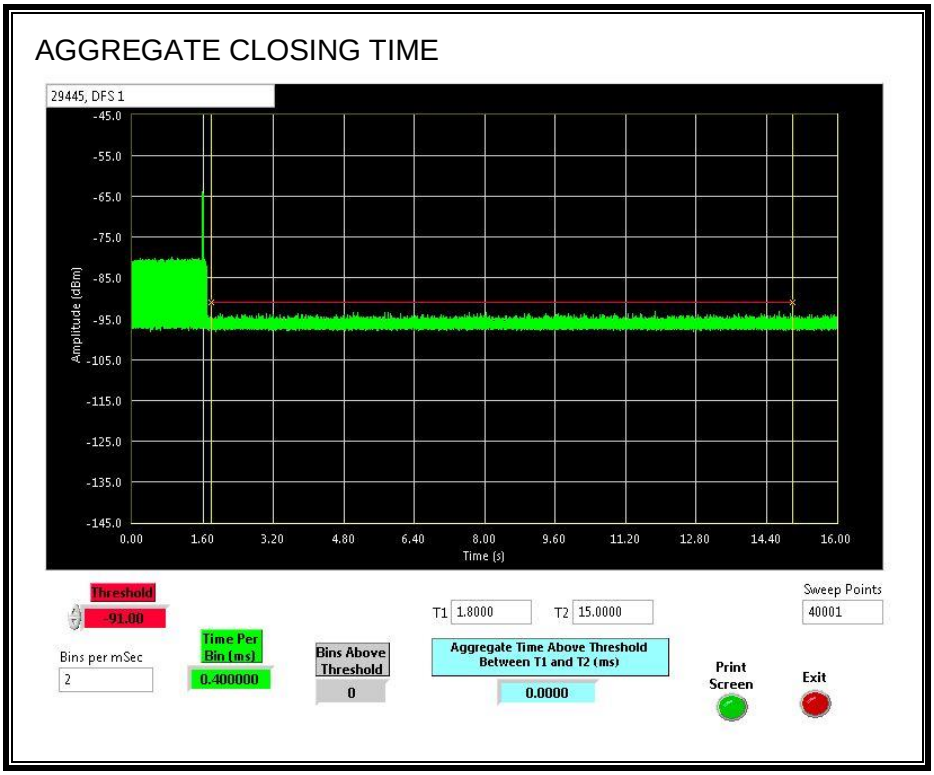
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

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

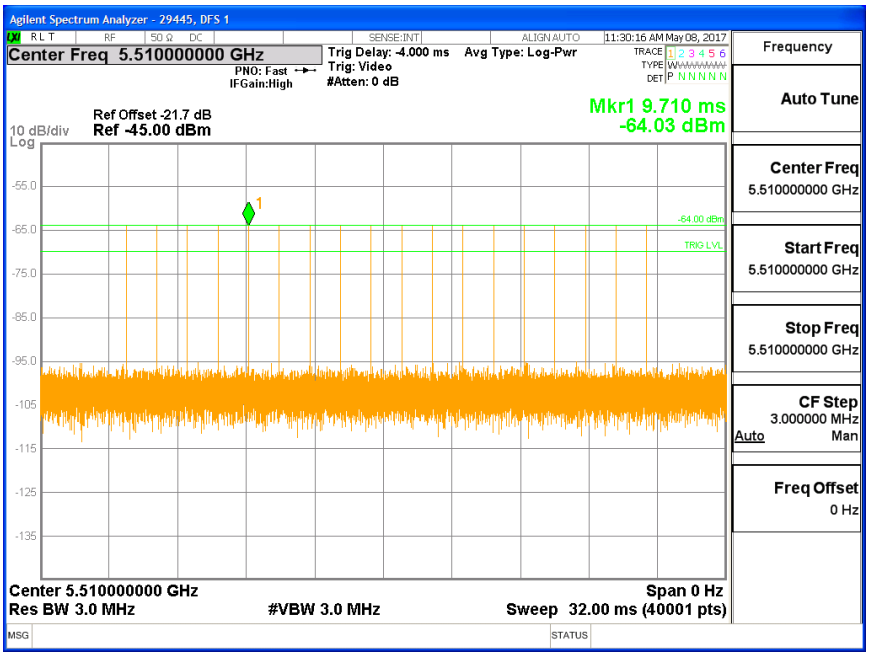
11.6.1. TEST CHANNEL

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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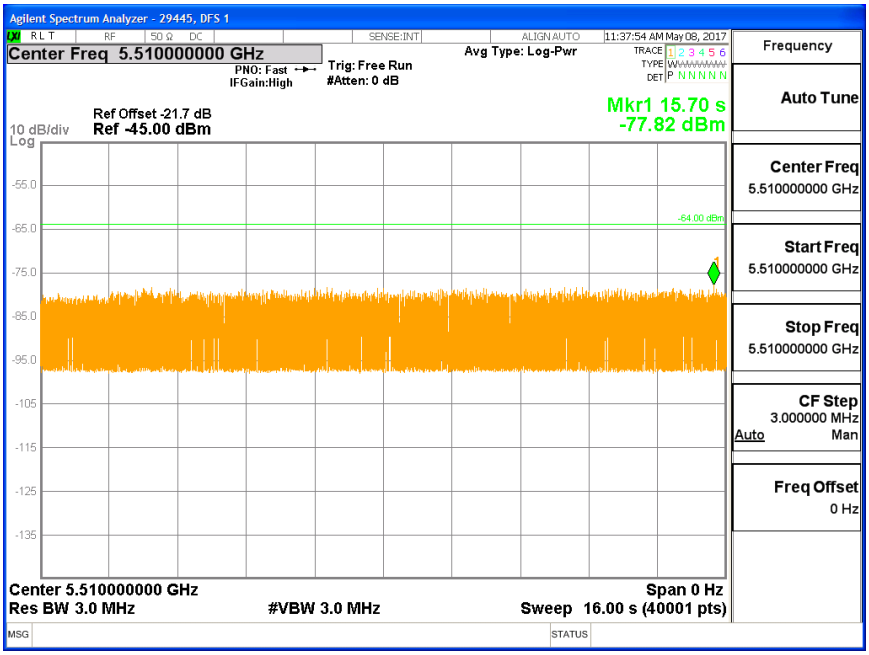
TRAFFIC

SLAVE TRAFFIC



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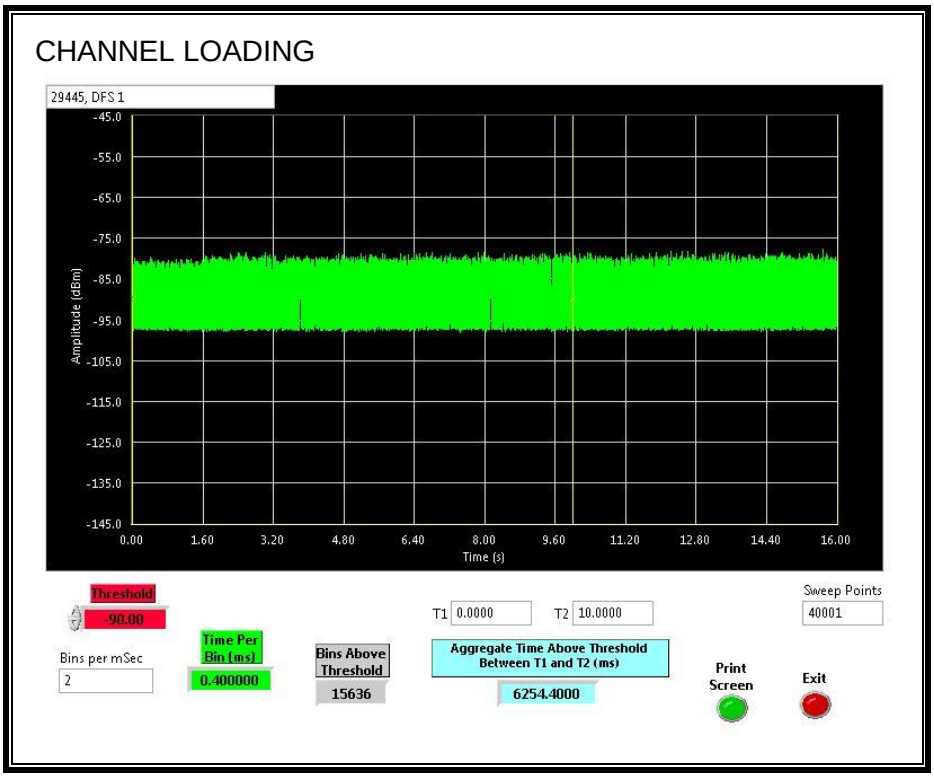
CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 62.54%

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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)
3.496	**10**

Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
13.6	**60**

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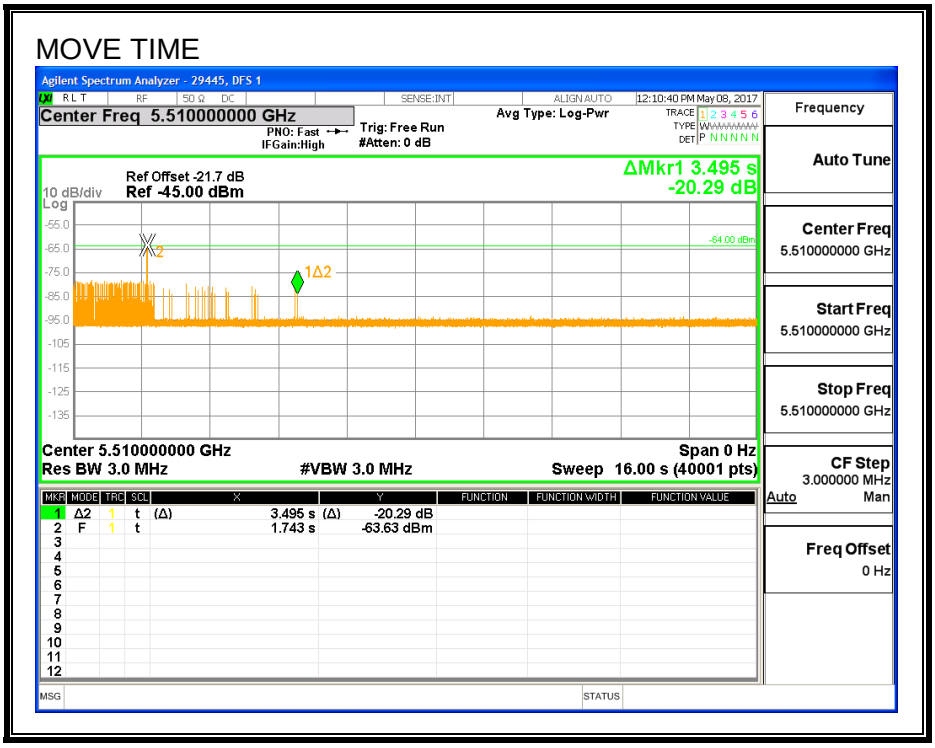
MOVE TIME



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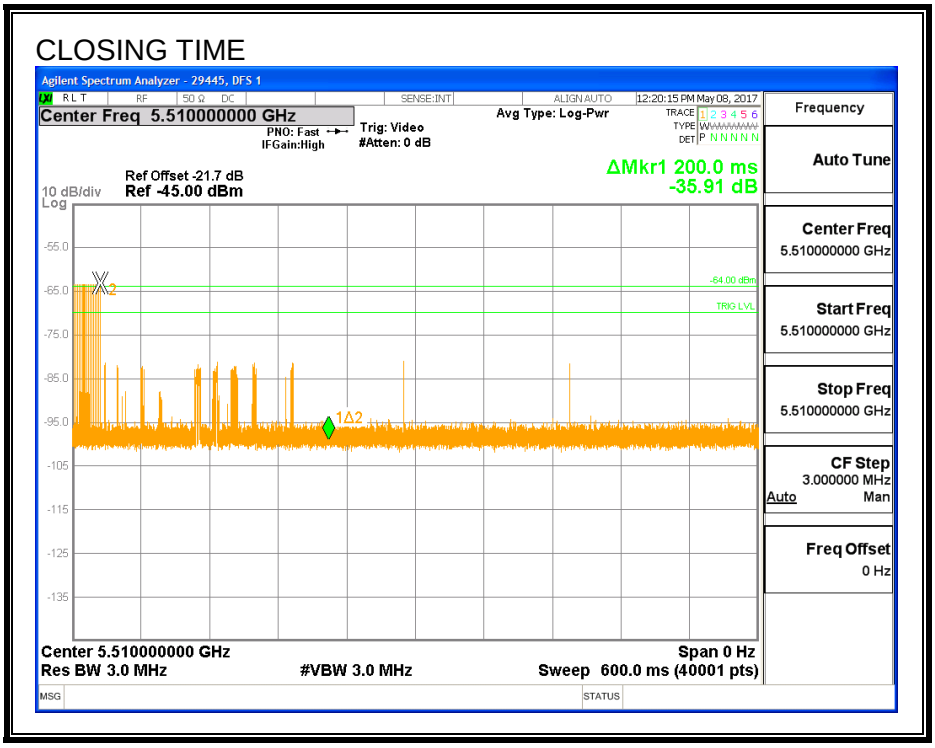
CHANNEL CLOSING TIME



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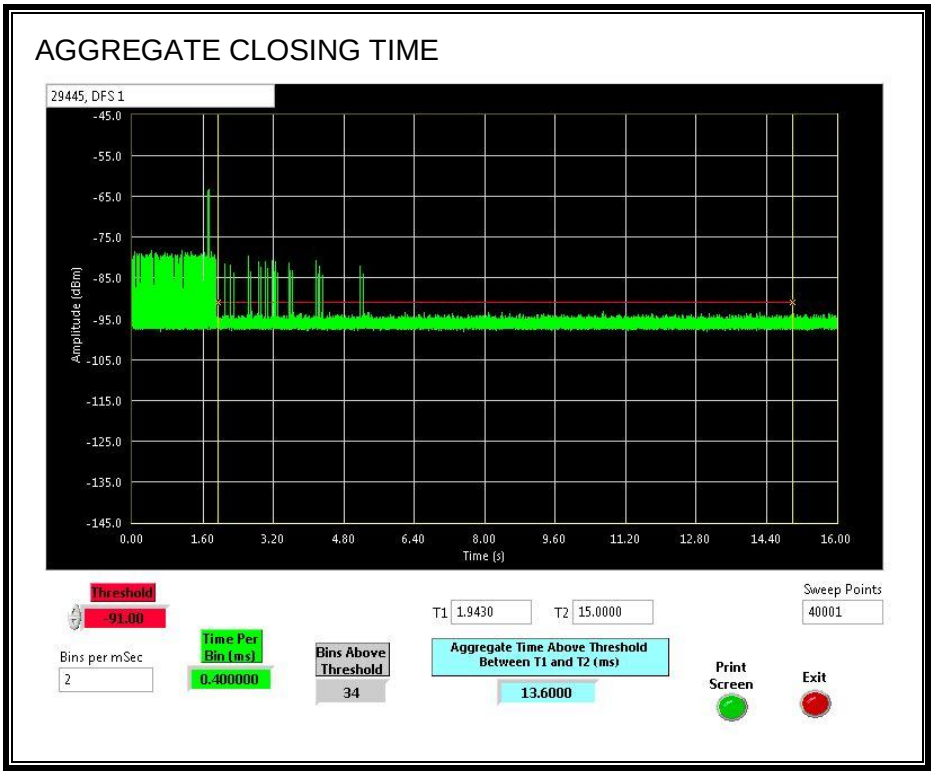
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

Only intermittent transmissions are observed during the aggregate monitoring period.



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

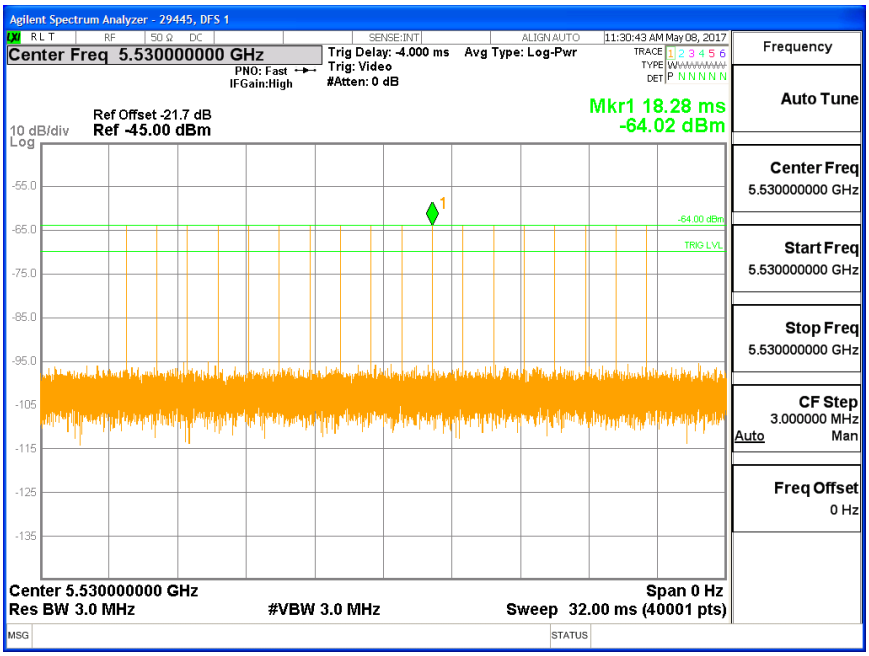
11.7.1. TEST CHANNEL

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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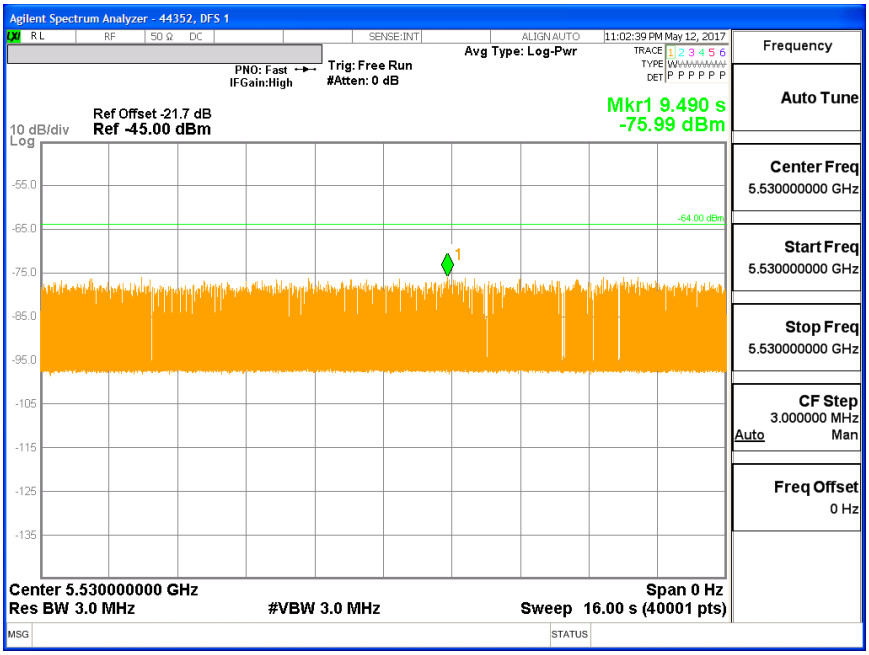
TRAFFIC

SLAVE TRAFFIC



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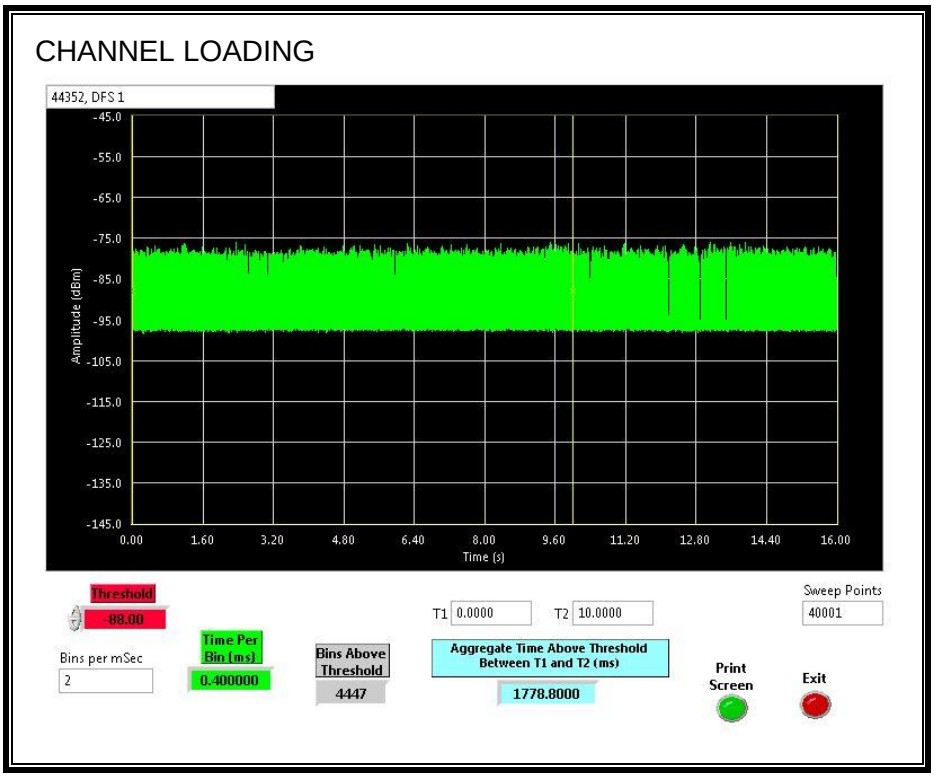
CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 17.788%

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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)
4.078	**10**

Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
23.2	**60**

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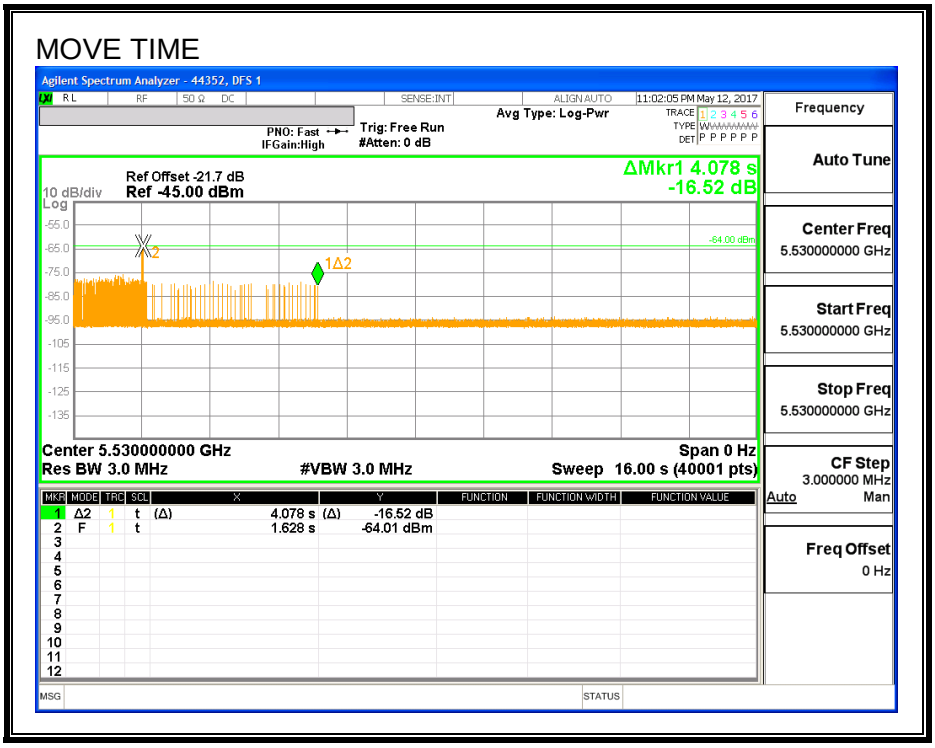
MOVE TIME



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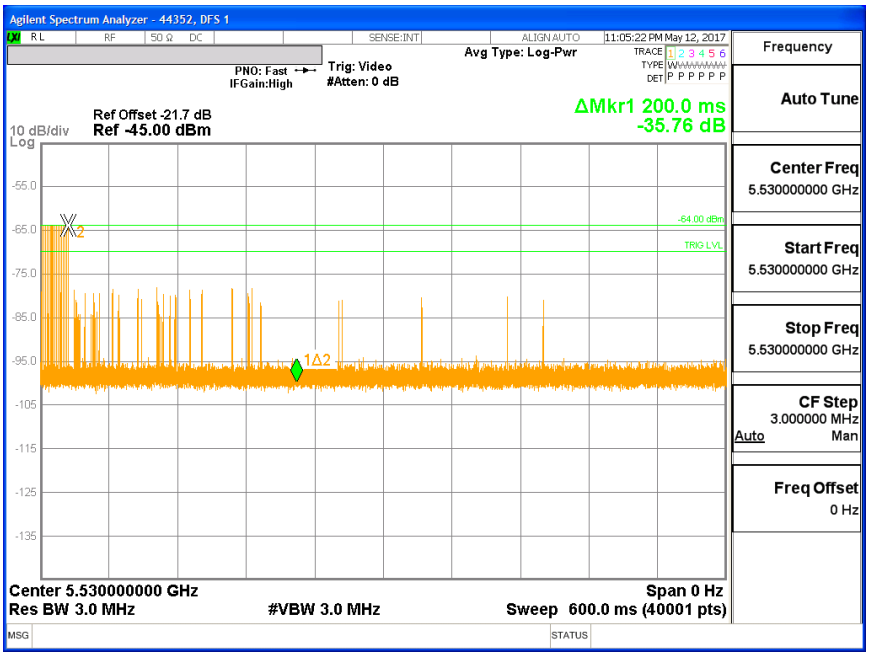
CHANNEL CLOSING TIME

CLOSING TIME



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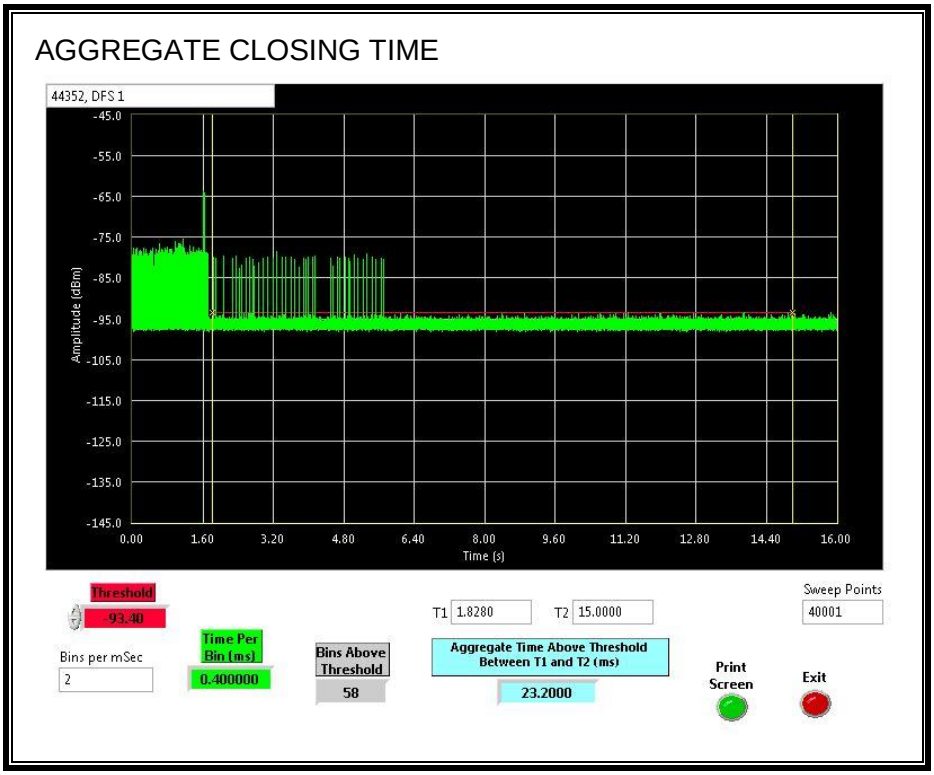
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the aggregate monitoring period.



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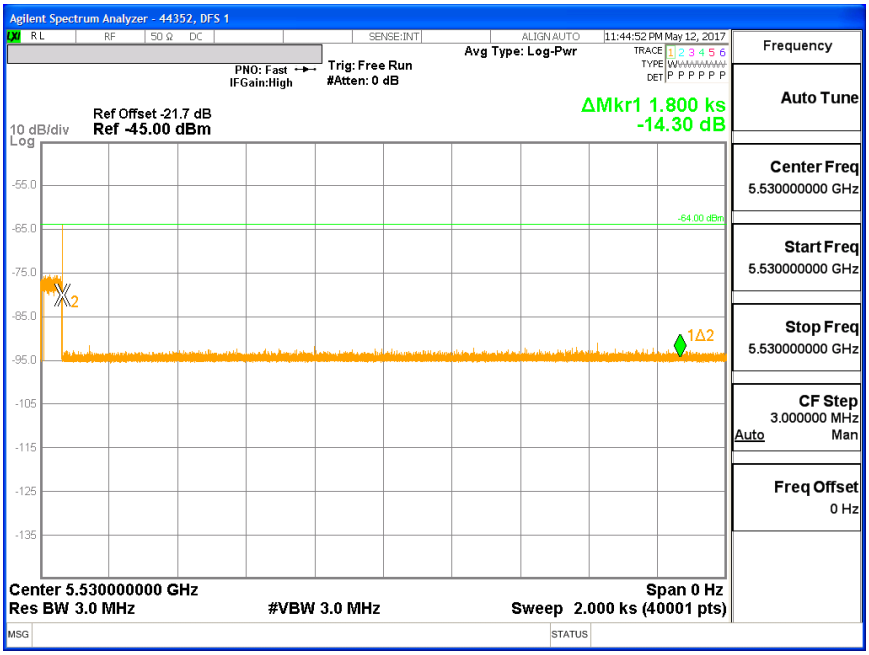
11.7.5. 30-MINUTE NON-OCCUPANCY PERIOD

RESULTS

No EUT transmissions were observed on the test channel during the 30-minute observation time.

30-MINUTE NON-OCCUPANCY PERIOD



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11.8. PEER TO PEER MODE EUT RESULTS FOR 20 MHz BANDWIDTH

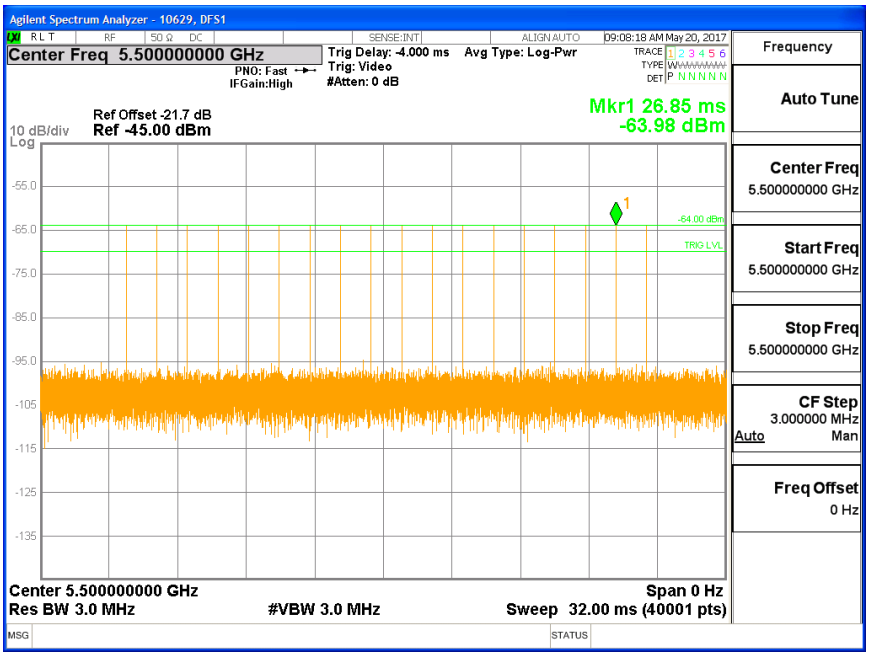
11.8.1. TEST CHANNEL

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

11.8.2. RADAR WAVEFORM AND TRAFFIC

RADAR WAVEFORM

SHORT PULSE RADAR TYPE 0 AT MASTER



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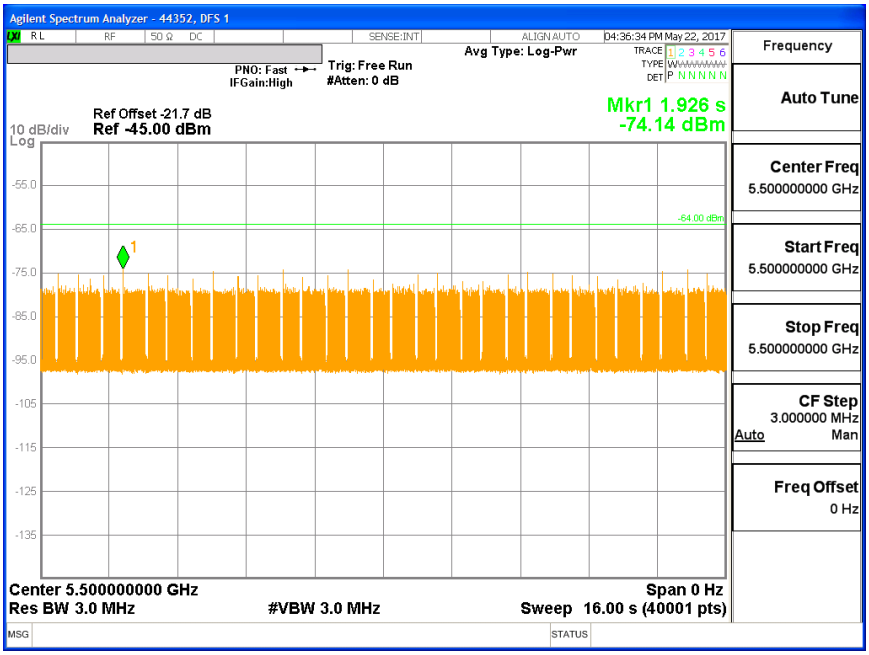
TRAFFIC

SLAVE TRAFFIC



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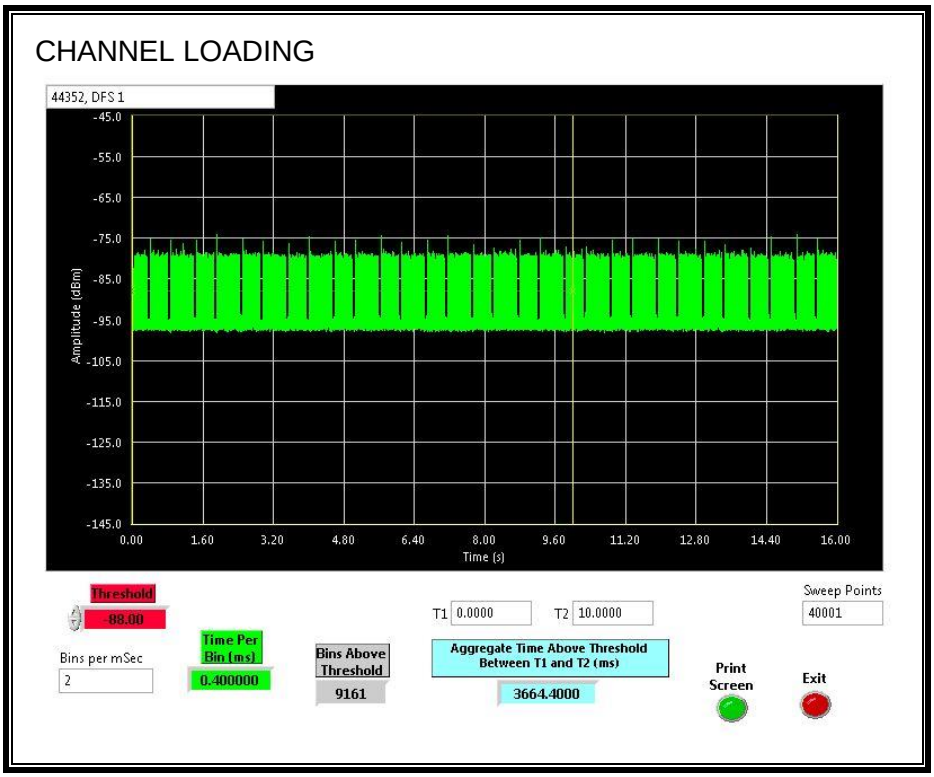
CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 36.644%

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11.8.3. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

11.8.4. 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)
0.101	10

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

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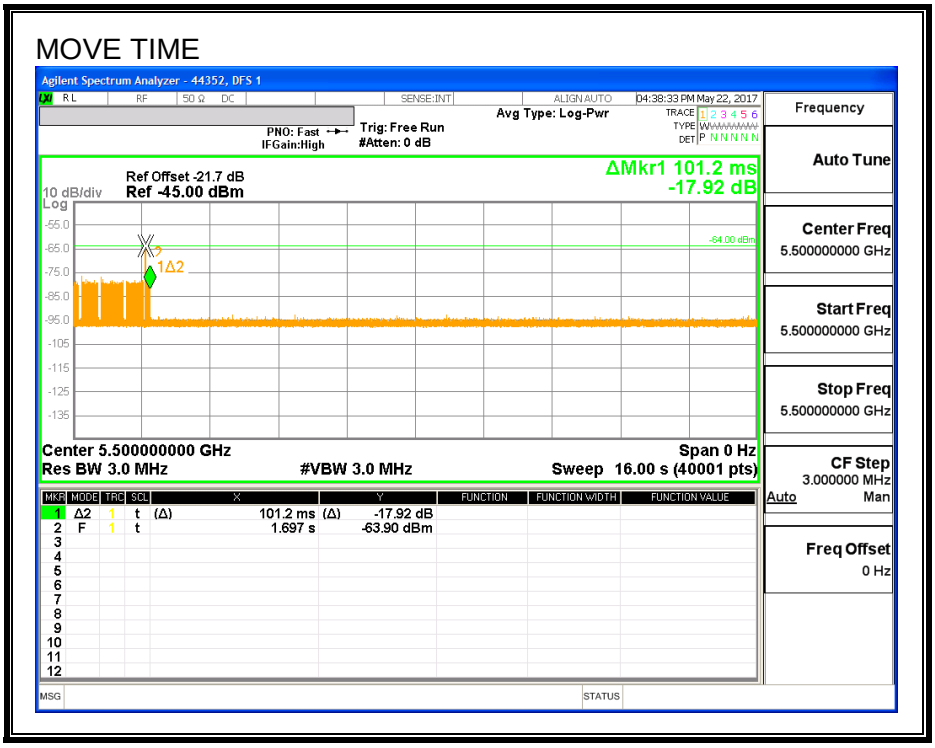
MOVE TIME



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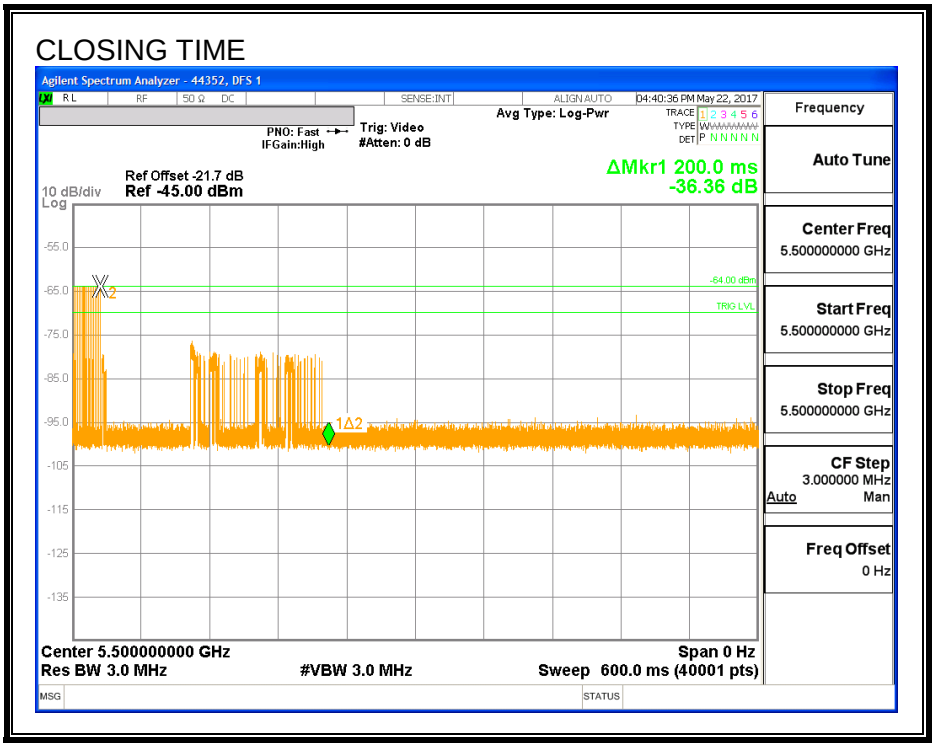
CHANNEL CLOSING TIME



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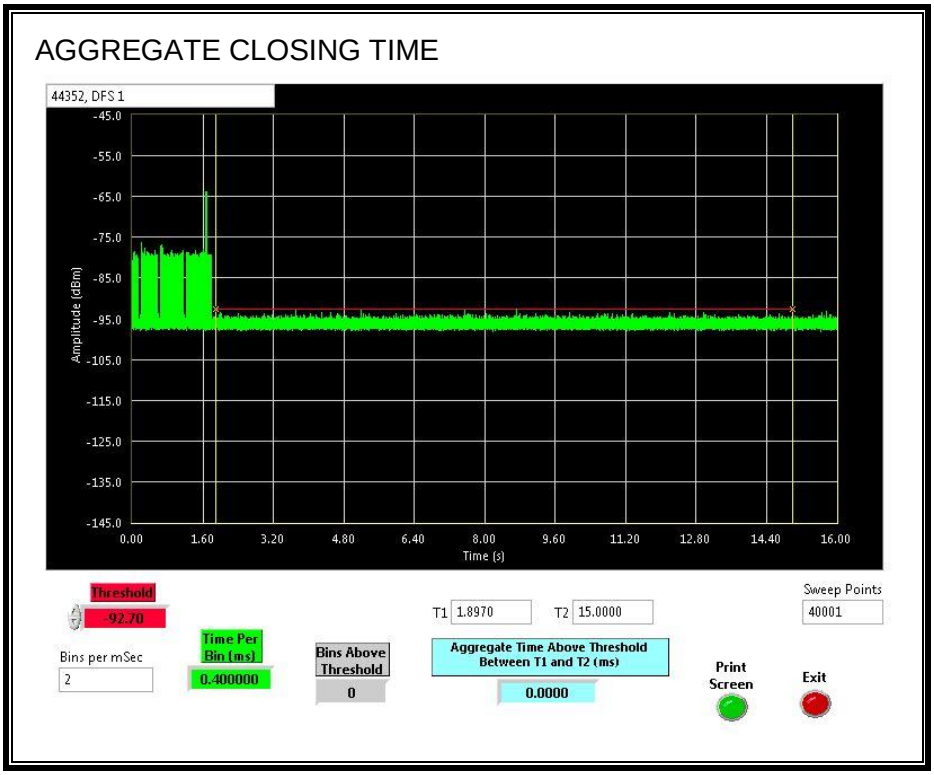
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the aggregate monitoring period.



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11.9. PEER TO PEER MODE EUT RESULTS FOR 40 MHz BANDWIDTH

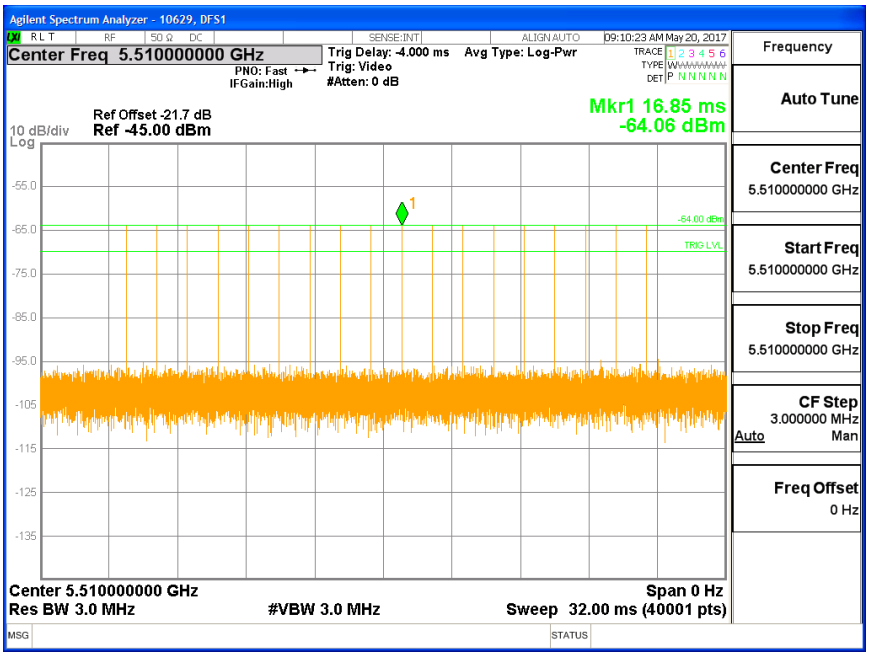
11.9.1. TEST CHANNEL

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

11.9.2. RADAR WAVEFORM AND TRAFFIC

RADAR WAVEFORM

SHORT PULSE RADAR TYPE 0 AT MASTER



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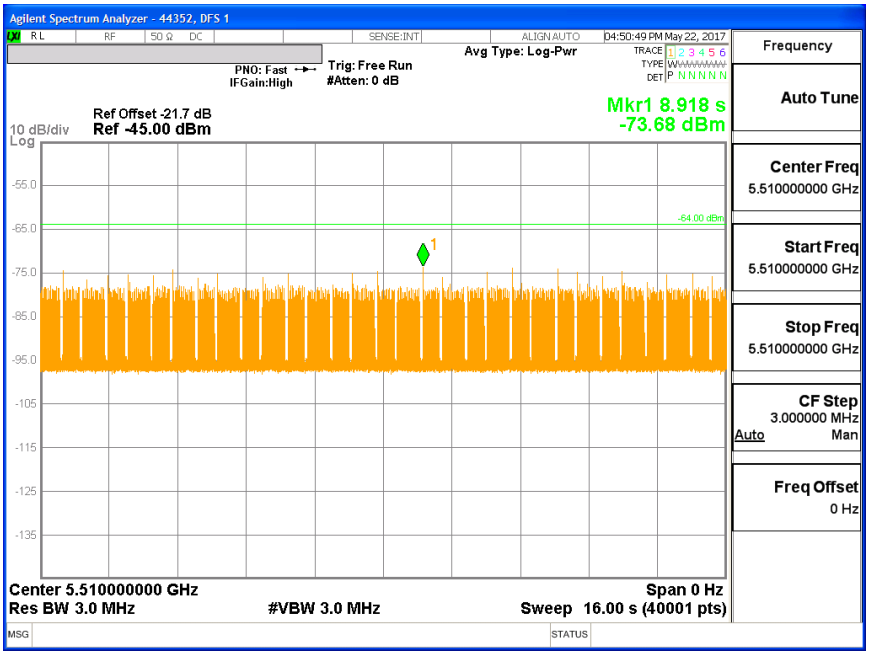
TRAFFIC

SLAVE TRAFFIC



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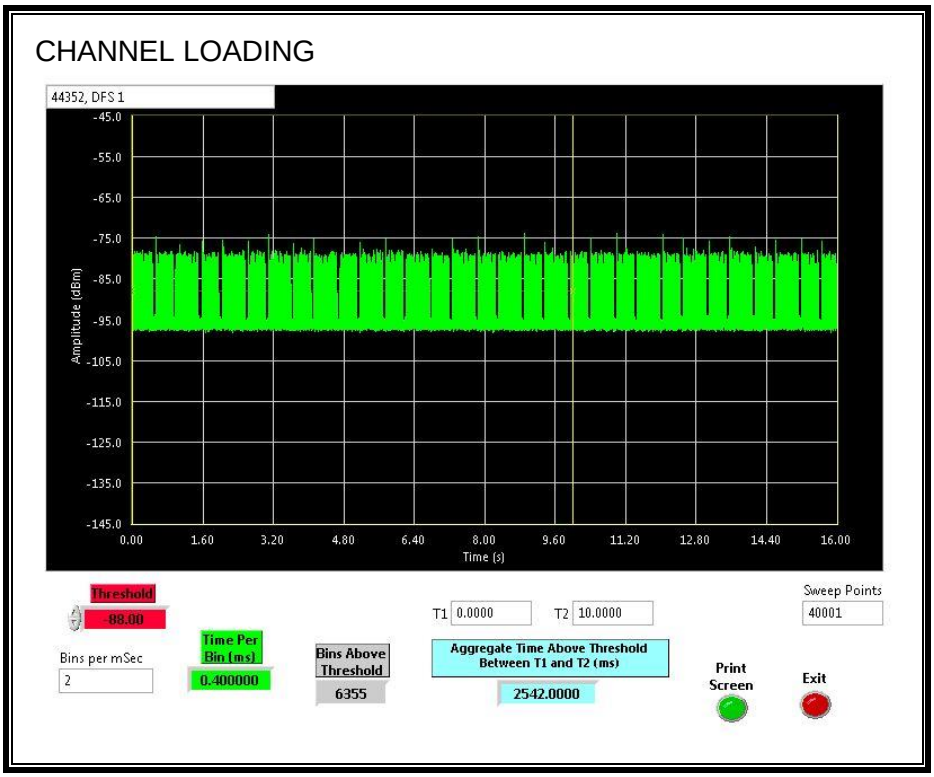
CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 25.42%

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11.9.3. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

11.9.4. 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)
0.116	10

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

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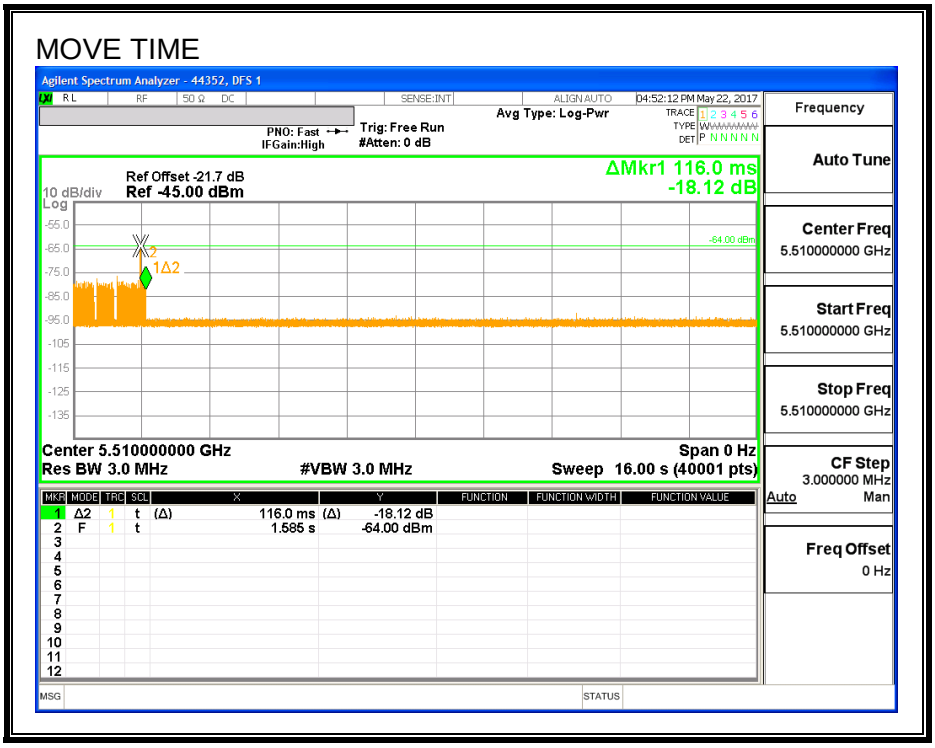
MOVE TIME



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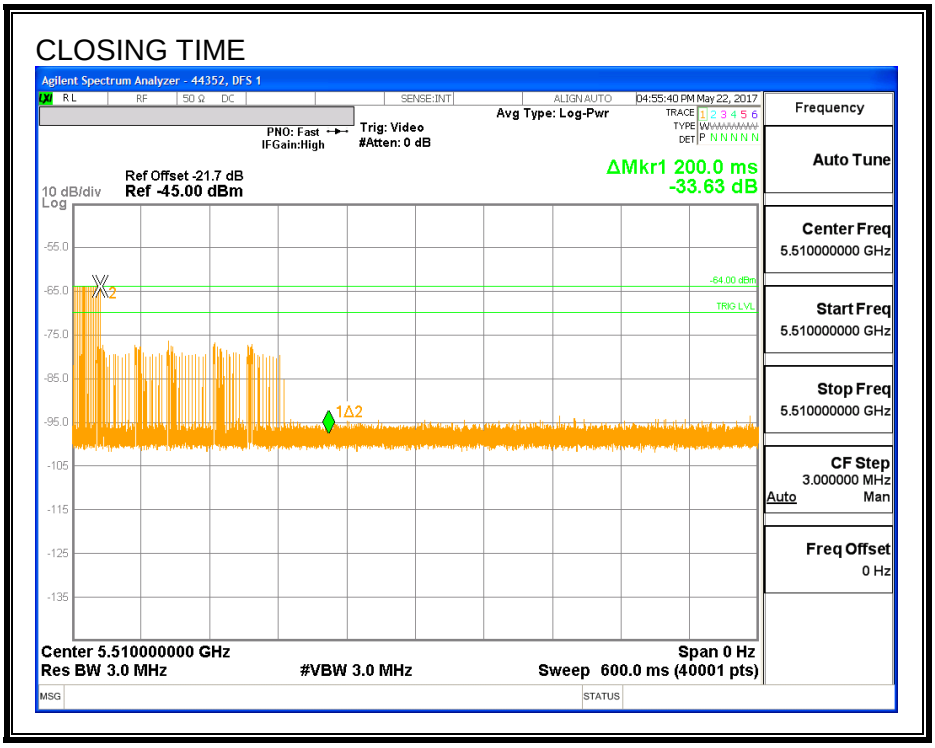
CHANNEL CLOSING TIME



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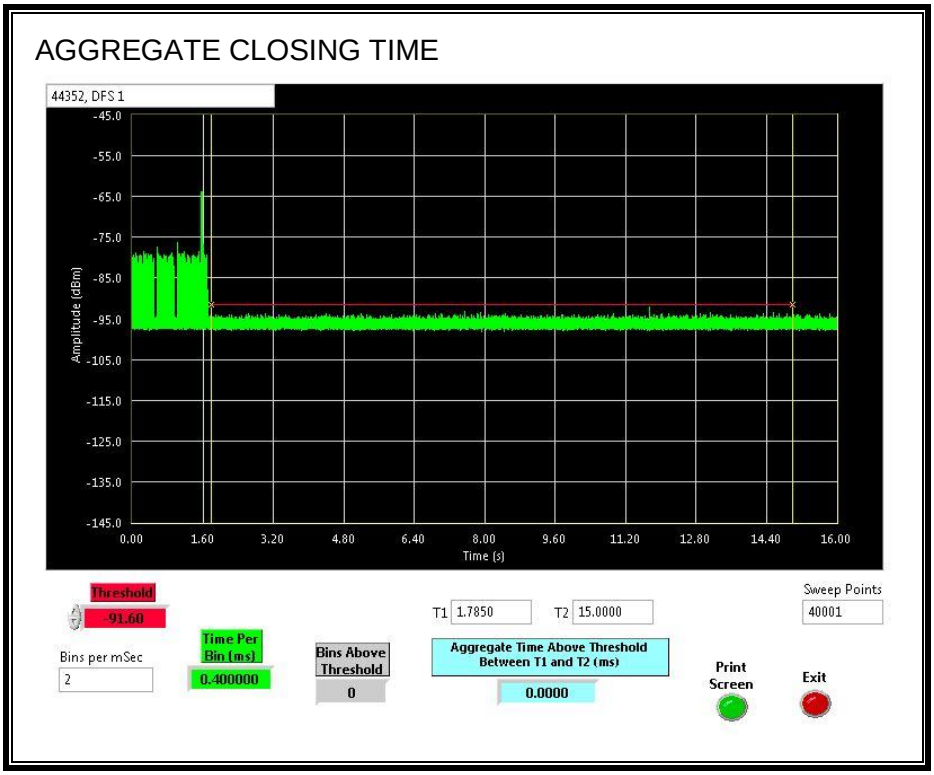
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the aggregate monitoring period.



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11.10. PEER TO PEER MODE EUT RESULTS FOR 80 MHz BANDWIDTH

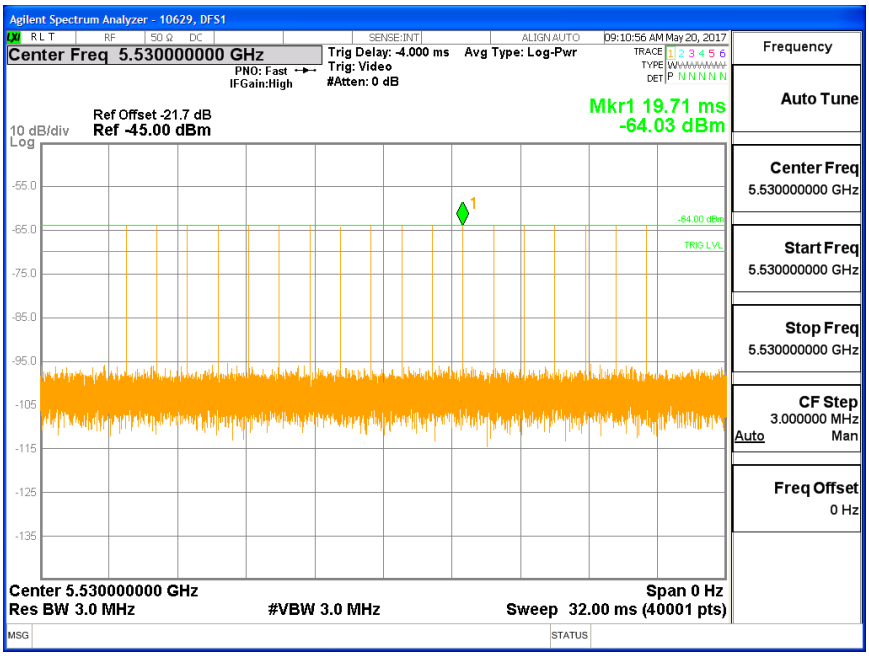
11.10.1. TEST CHANNEL

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

11.10.2. RADAR WAVEFORM AND TRAFFIC

RADAR WAVEFORM

SHORT PULSE RADAR TYPE 0 AT MASTER



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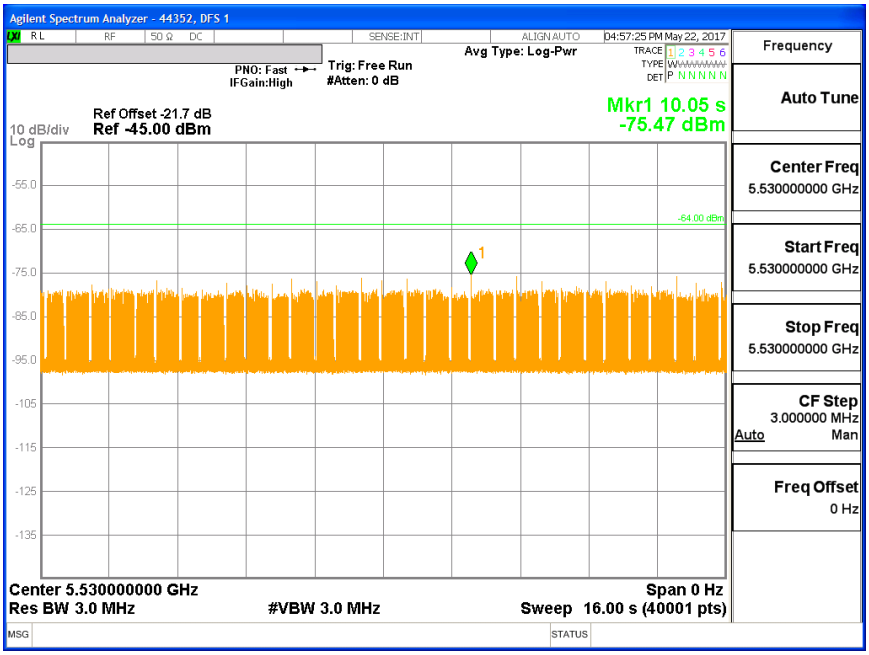
TRAFFIC

SLAVE TRAFFIC



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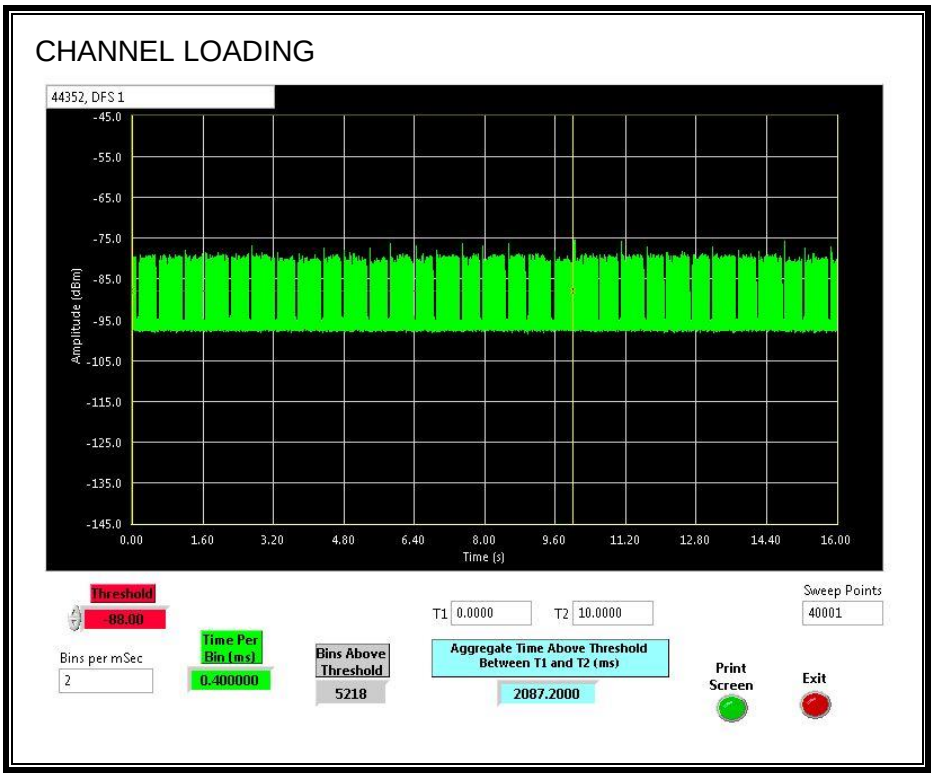
CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 20.872%

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11.10.3. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

11.10.4. 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)
0.181	10

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

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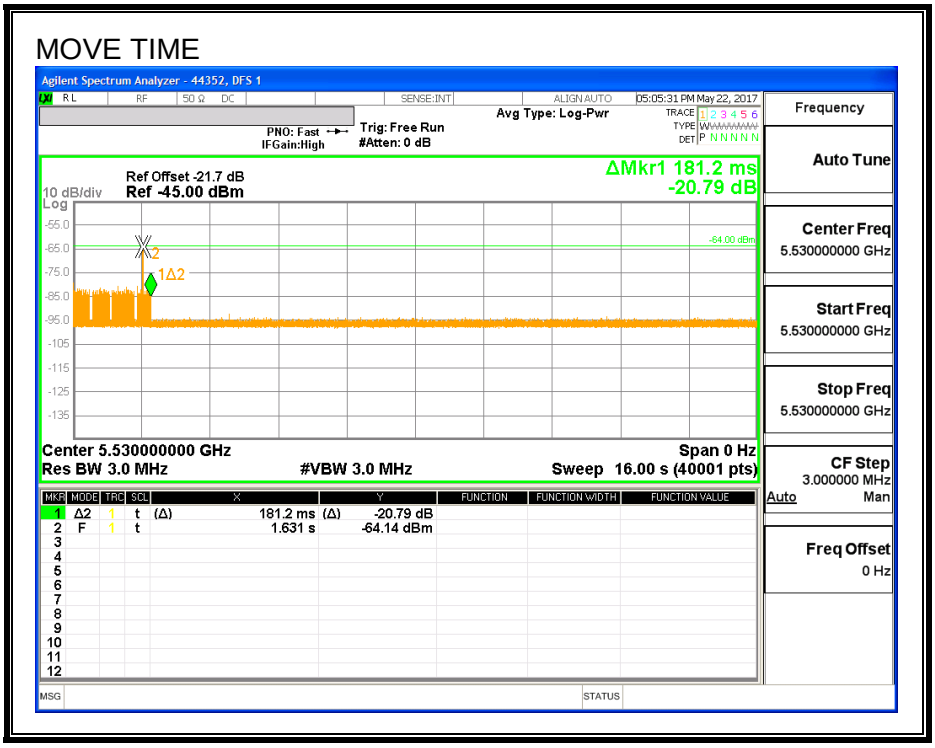
MOVE TIME



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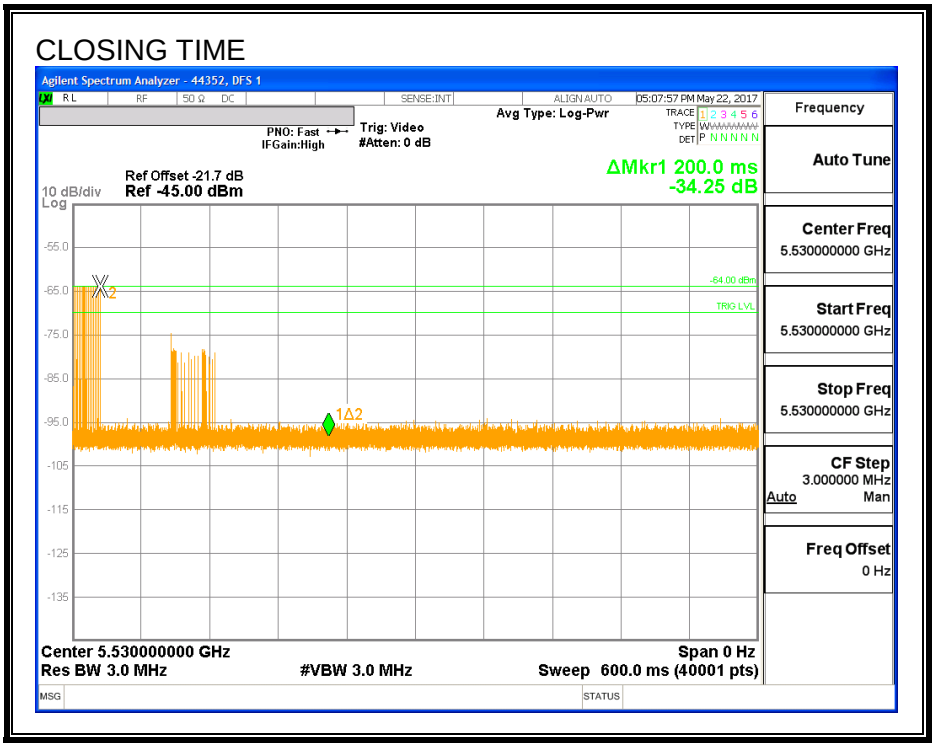
CHANNEL CLOSING TIME



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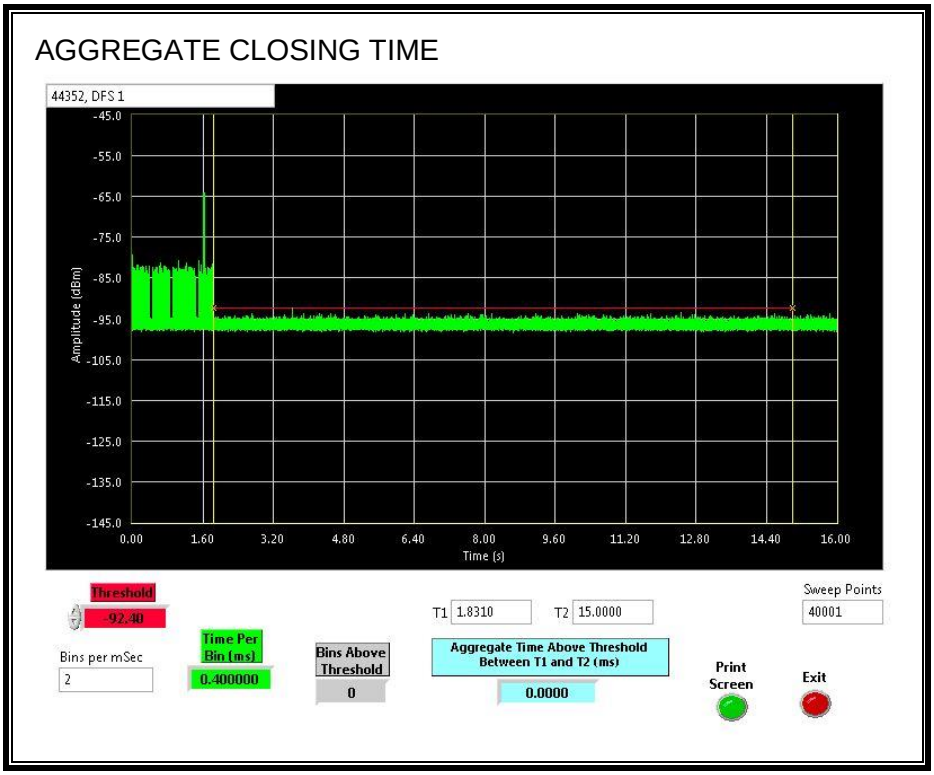
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the aggregate monitoring period.



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