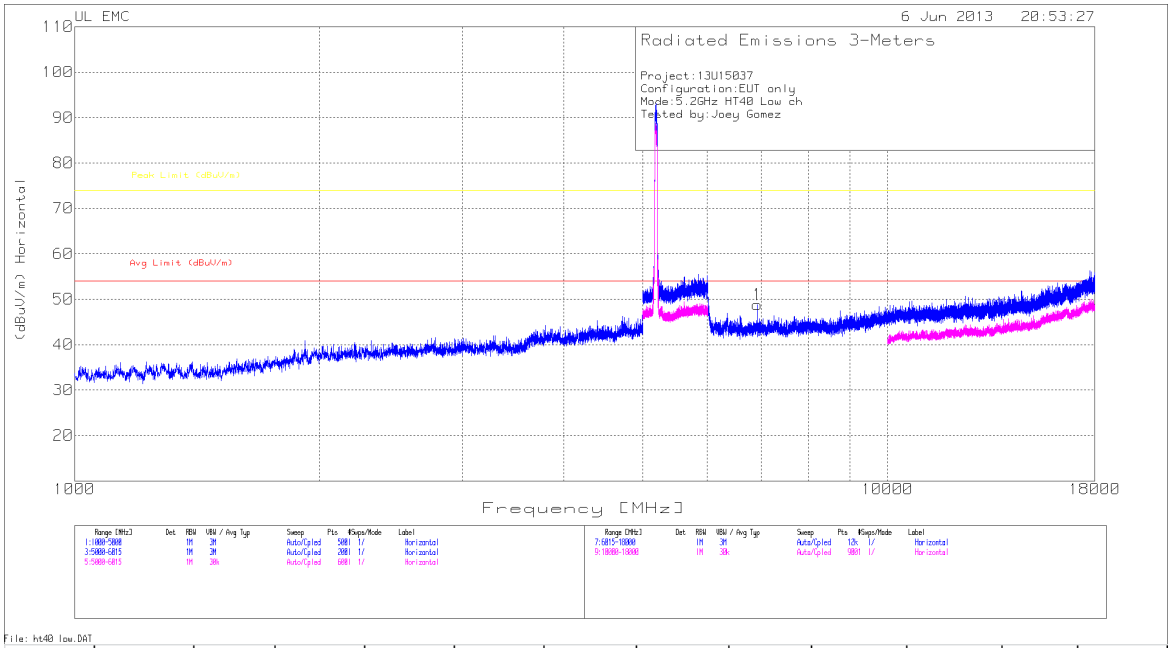
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



File: ht40 low.DAT

Marker No.	Test Frequency	Meter Reading (dBuV)	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
Horizontal 6015 - 18000MHz												
1	6920.791	42.39	PK	35.9	-29.5	48.79	53.97	-5.18	74	-25.21	101	Horz

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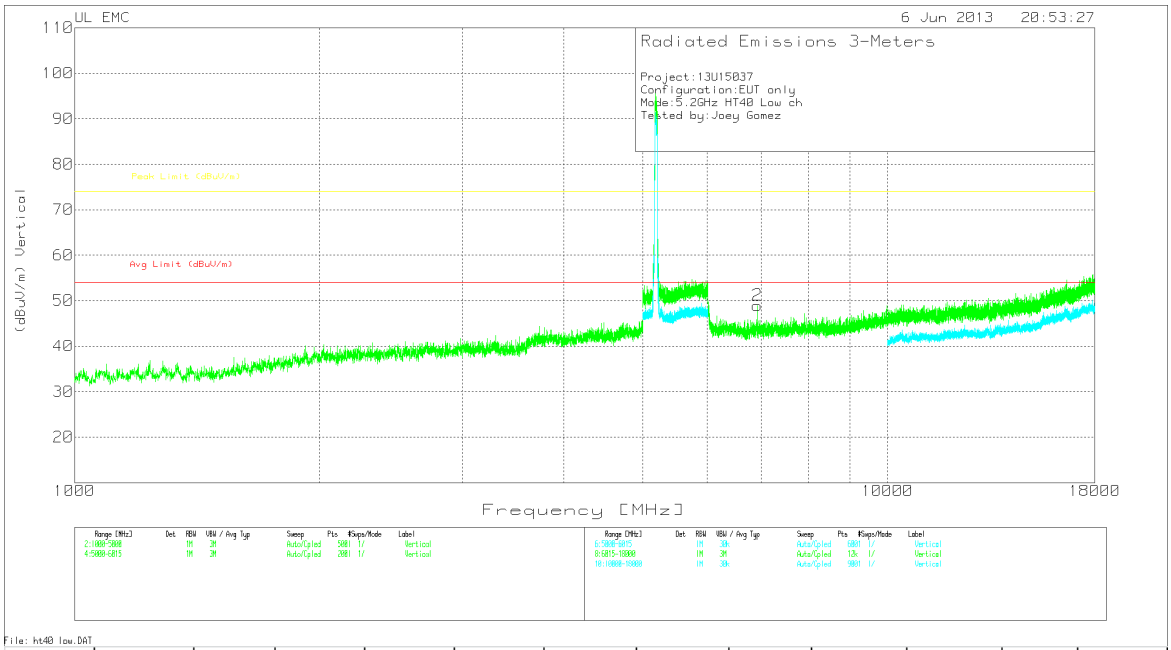
LOW CHANNEL VERTICAL



File: ht40 low.DAT

Marker No.	Test Frequency	Meter Reading (dBuV)	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
Vertical 6015 - 18000MHz												
2	6920.791	42.55	PK	35.9	-29.5	48.95	53.97	-5.02	74	-25.05	101	Vert

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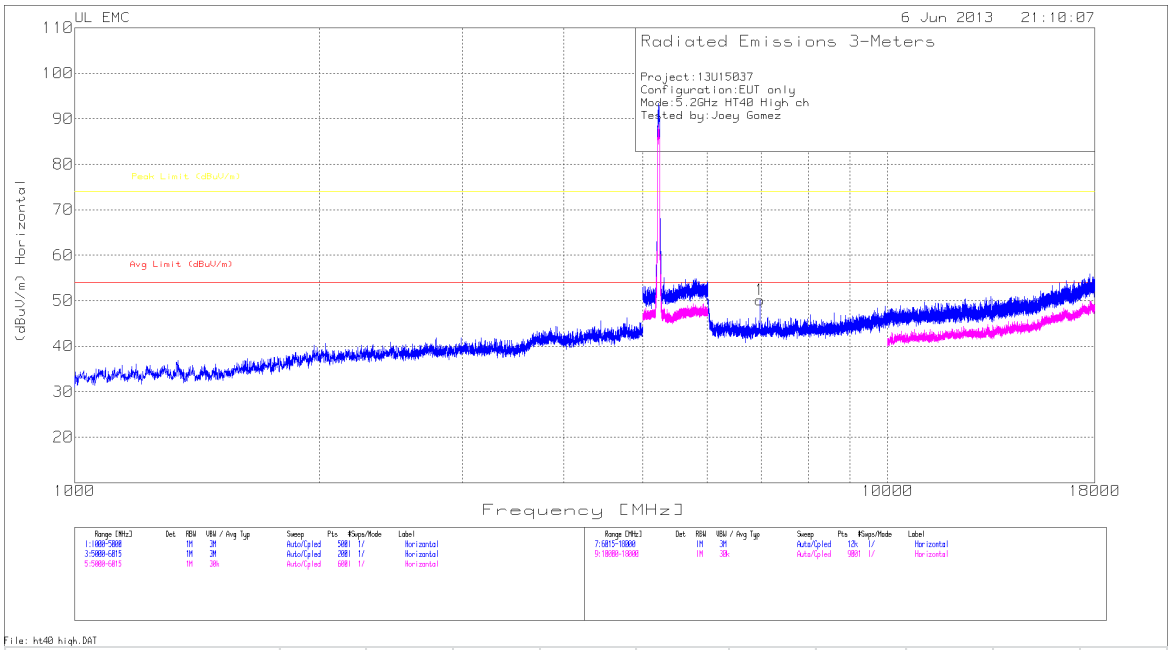
HIGH CHANNEL HORIZONTAL



Horizontal 6015 - 18000MHz

Marker No.	Test Frequency	Meter Reading	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	(dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
1*	6973.72	43.25	PK	36	-29.1	50.15	53.97	-3.82	74	-23.85	101	Horz

*- Not in restricted band
PK - Peak detector

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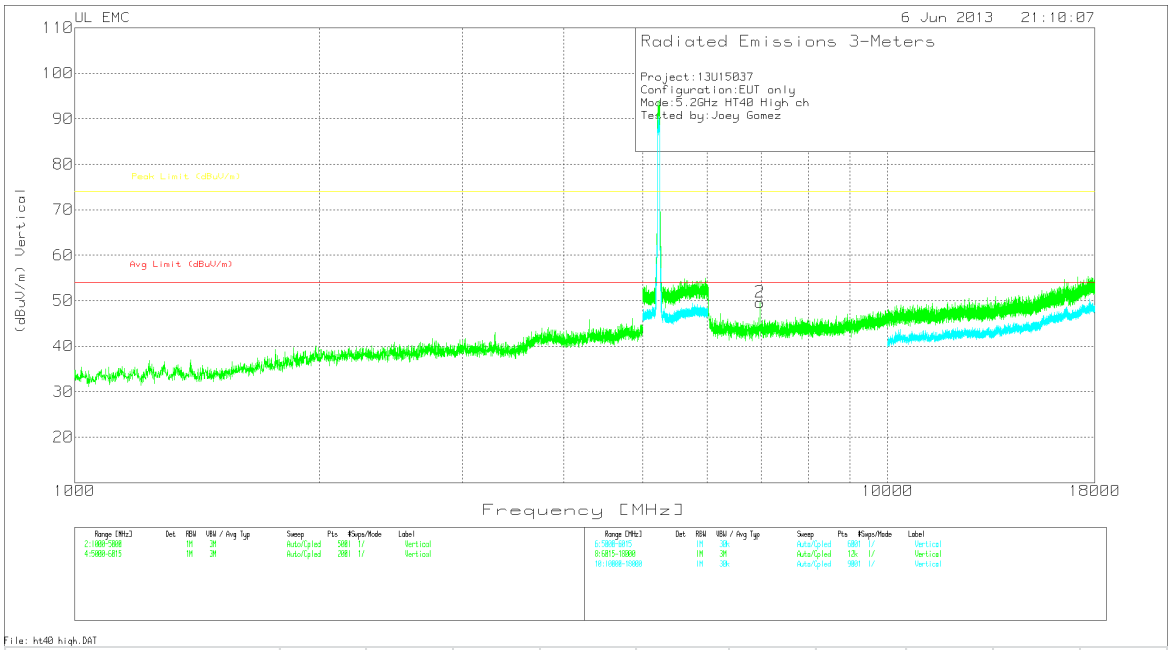
HIGH CHANNEL VERTICAL



File: ht40 high.DAT

Vertical 6015 - 18000MHz

Marker No.	Test Frequency	Meter Reading	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	(dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
2*	6973.72	42.74	PK	36	-29.1	49.64	53.97	-4.33	74	-24.36	101	Vert

*- Not in restricted band

PK - Peak detector

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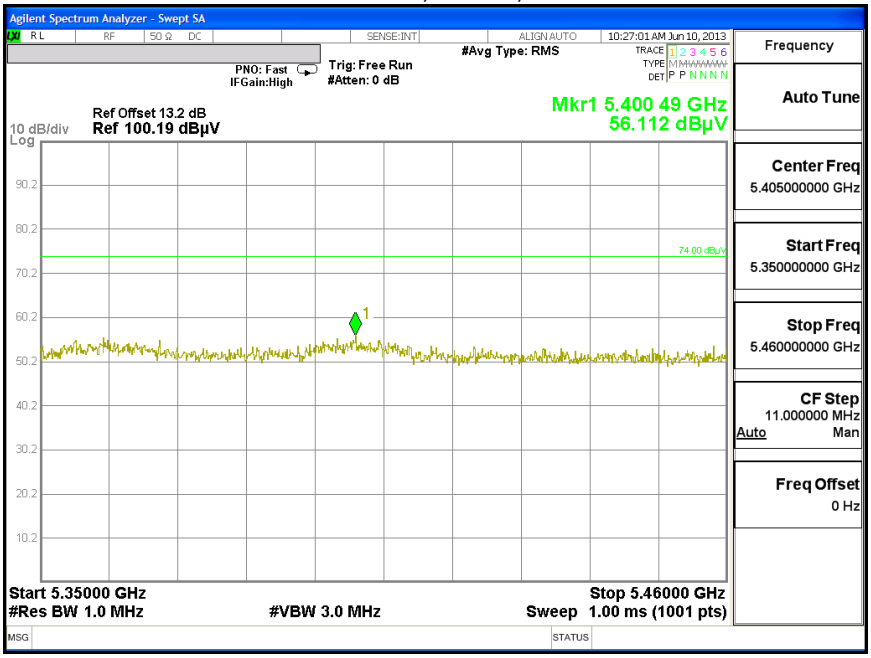
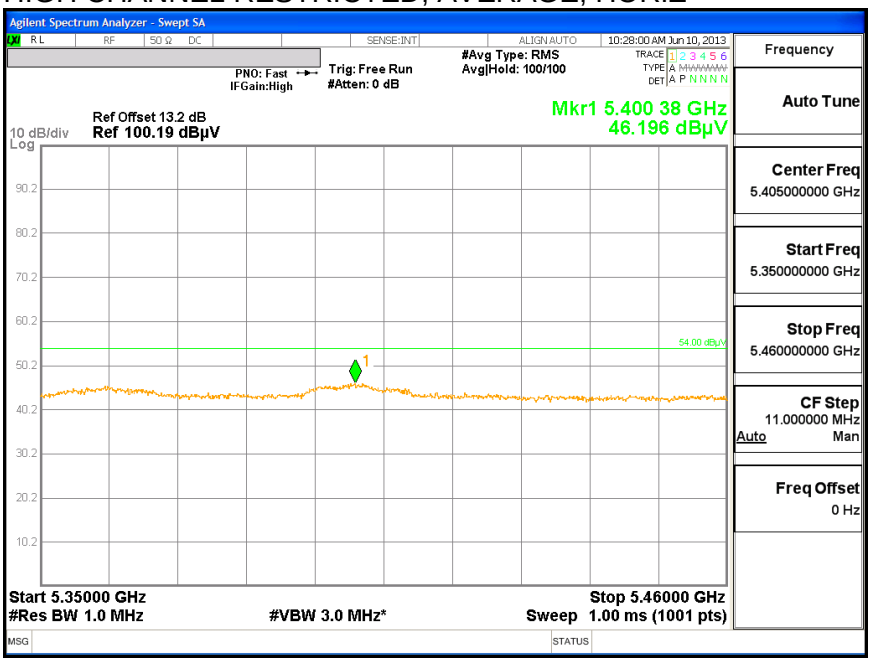
9.2.4. TX ABOVE 1 GHz 802.11a MODE IN THE 5.3 GHz BAND

RESTRICTED BANDEDGE (HIGH CHANNEL)

HIGH CHANNEL RESTRICTED, PEAK, HORIZ



HIGH CHANNEL RESTRICTED, AVERAGE, HORIZ



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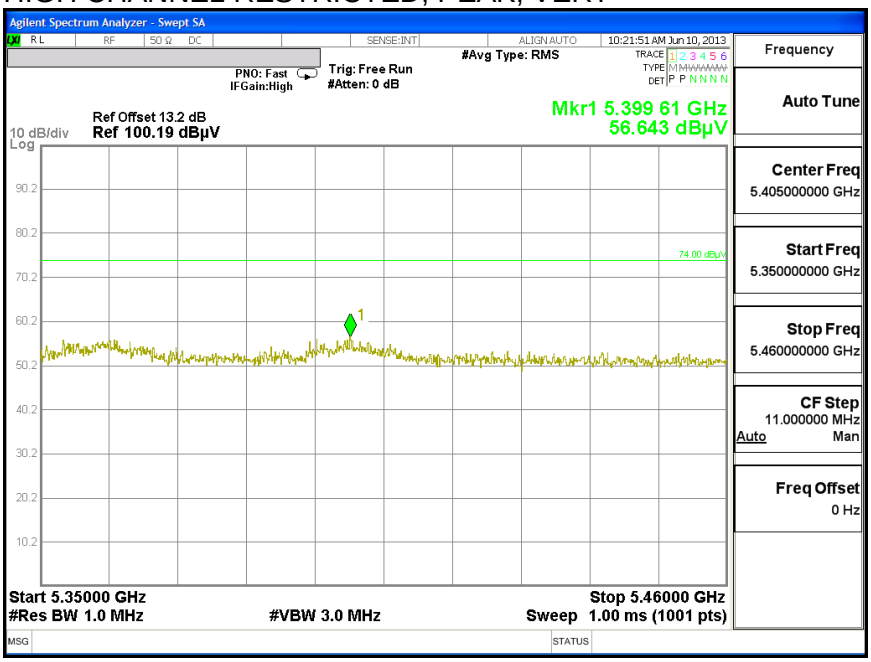
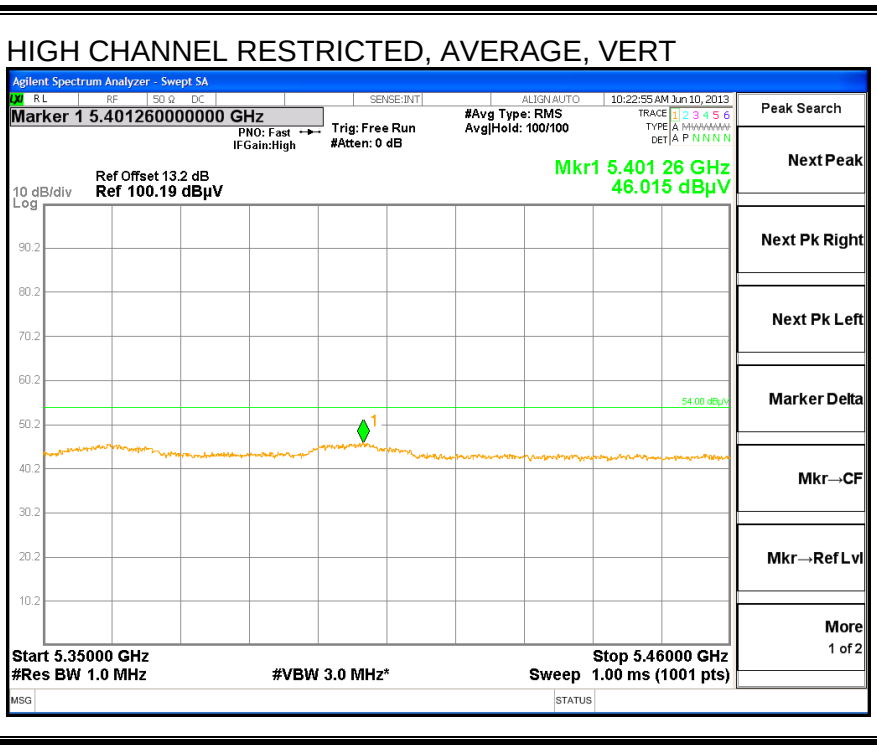
HIGH CHANNEL RESTRICTED, PEAK, VERT



HIGH CHANNEL RESTRICTED, AVERAGE, VERT



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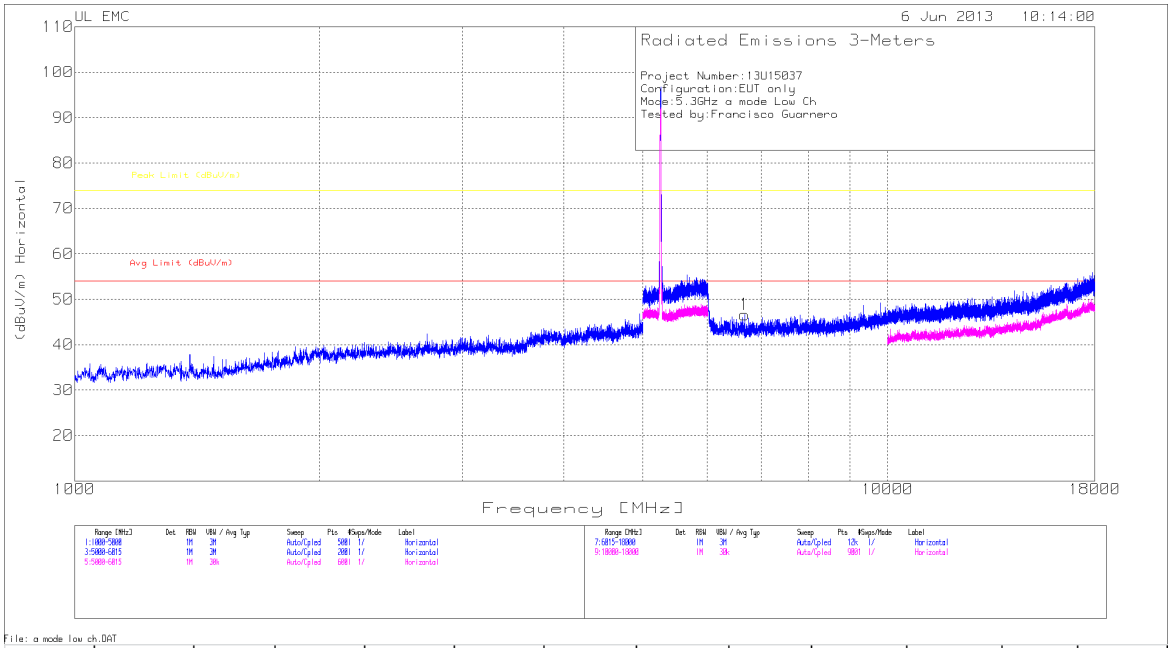
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



Marker No.	Test Frequency	Meter Reading (dBuV)	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
Horizontal 6015 - 18000MHz												
1	6675.119	40.51	PK	35.8	-29.7	46.61	54	-7.39	74	-27.39	100	Horz

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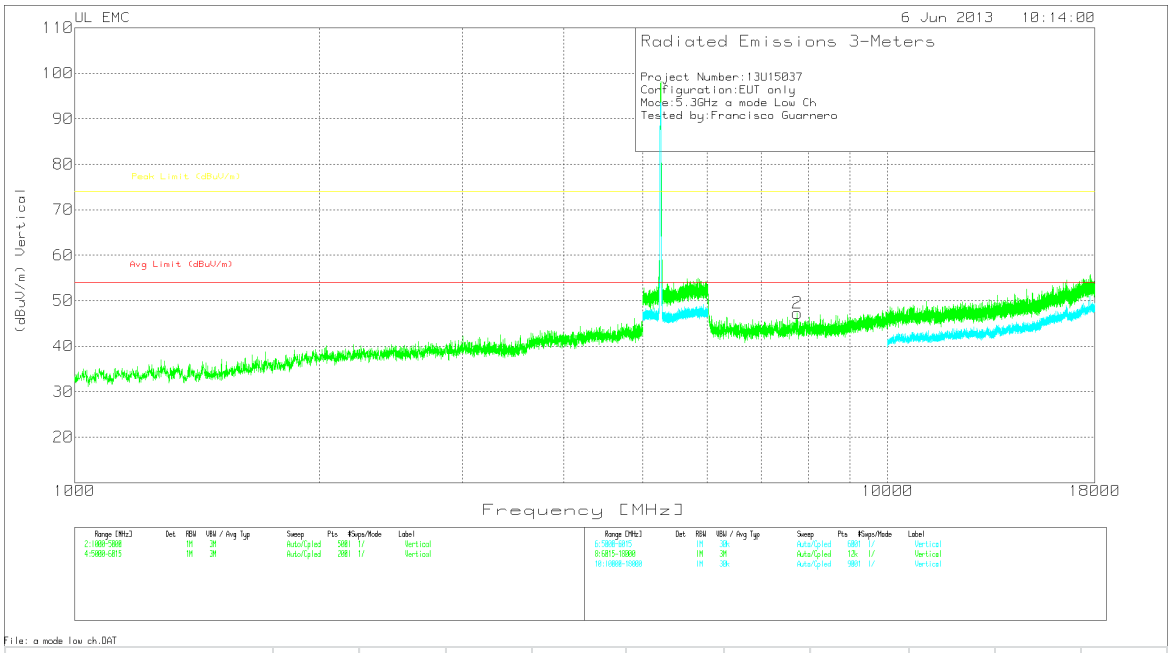
LOW CHANNEL VERTICAL



Vertical 6015 - 18000MHz

Marker No.	Test Frequency	Meter Reading	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	(dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
2	7748.686	39.99	PK	36.2	-28.9	47.29	53.97	-6.68	74	-26.71	100	Vert

PK - Peak detector

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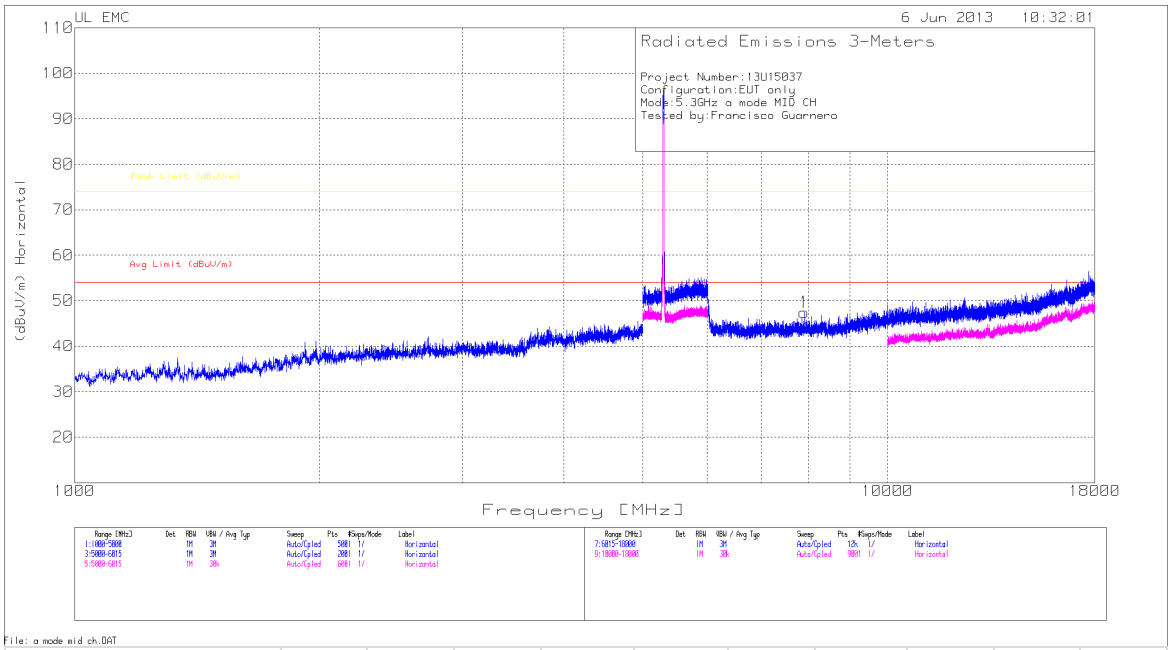
MID CHANNEL HORIZONTAL



Horizontal 6015 - 18000MHz

Marker No.	Test Frequency	Meter Reading	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	(dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
1	7902.48	39.43	PK	36.2	-28.2	47.43	53.97	-6.54	74	-26.57	100	Horz

PK - Peak detector

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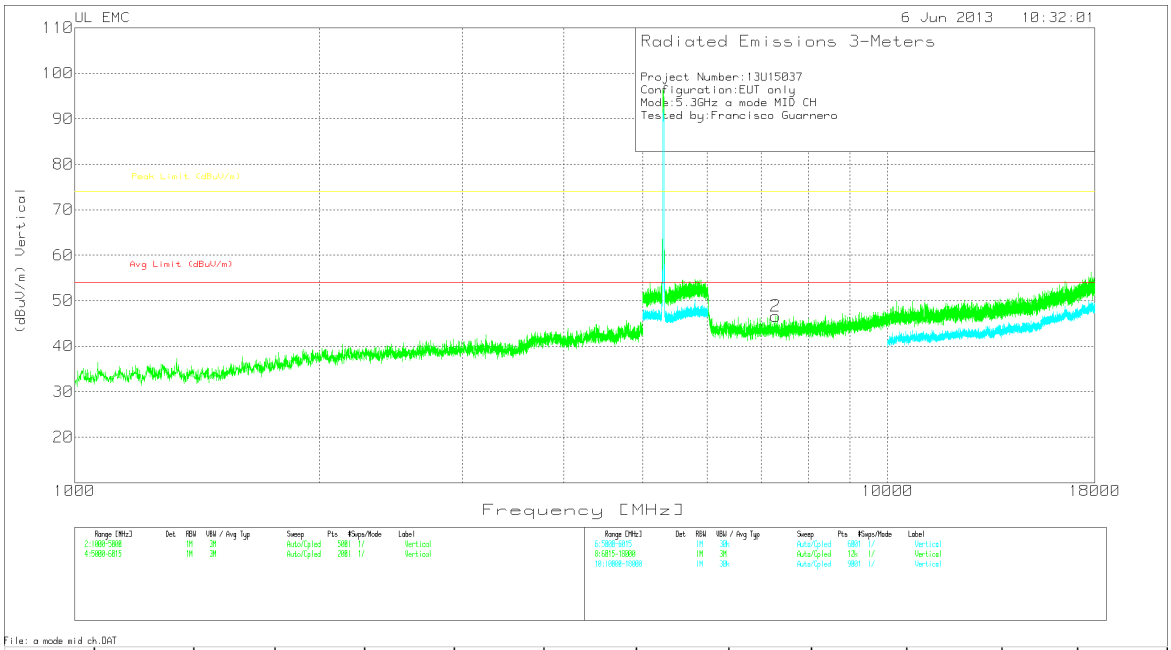
MID CHANNEL VERTICAL



Marker No.	Test Frequency	Meter Reading (dBuV)	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
Vertical 6015 - 18000MHz												
2	7288.3	39.59	PK	36	-29	46.59	53.97	-7.38	74	-27.41	100	Vert

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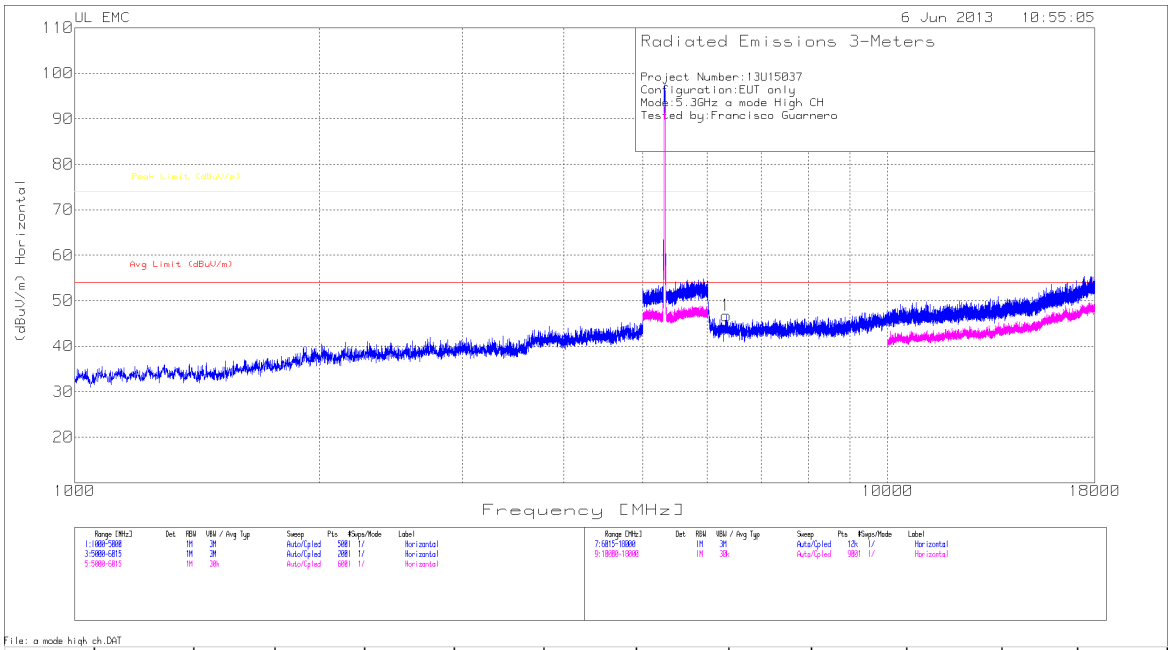
HIGH CHANNEL HORIZONTAL



File: a mode high ch.DAT

Marker No.	Test Frequency	Meter Reading (dBuV)	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
Horizontal 6015 - 18000MHz												
1	6336.571	40.15	PK	35.9	-29.3	46.75	53.97	-7.22	74	-27.25	100	Horz

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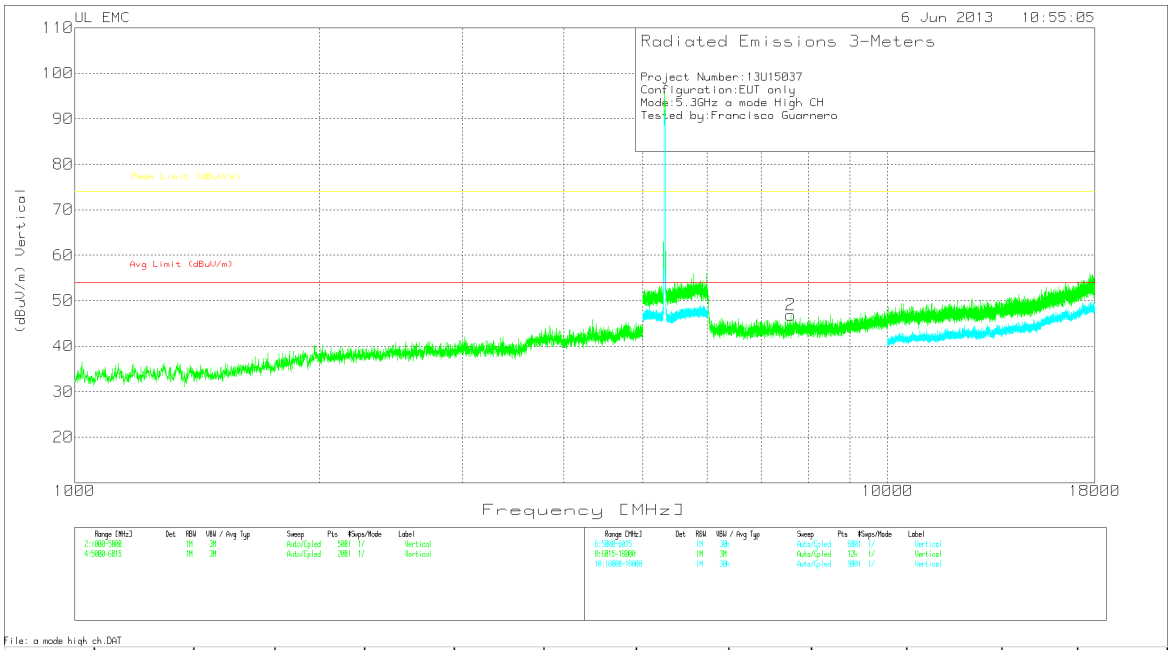
HIGH CHANNEL VERTICAL



File: a mode high ch.DAT

Marker No.	Test Frequency	Meter Reading (dBuV)	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
Vertical 6015 - 18000MHz												
2	7606.875	39.58	PK	36.1	-28.8	46.88	53.97	-7.09	74	-27.12	100	Vert

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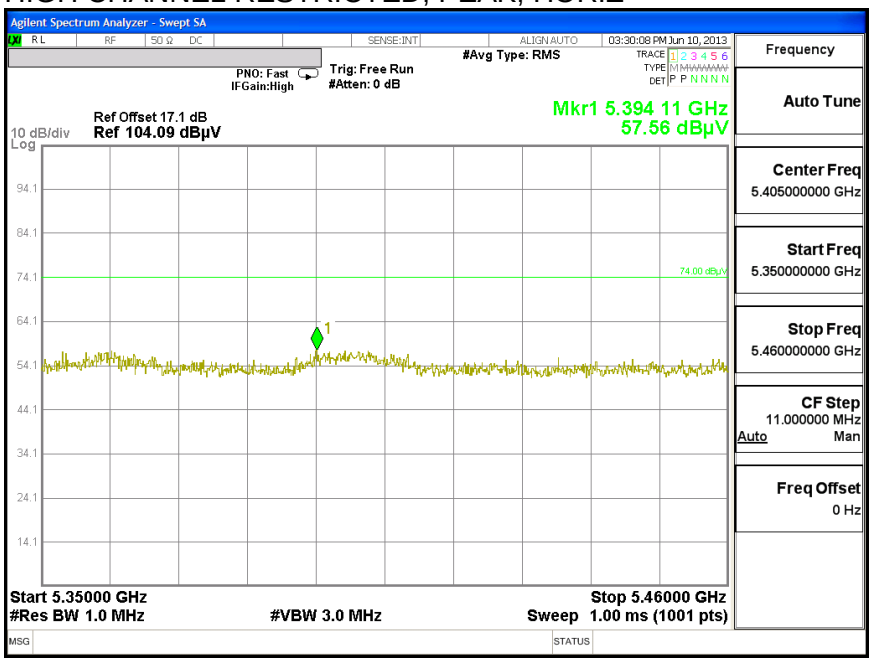
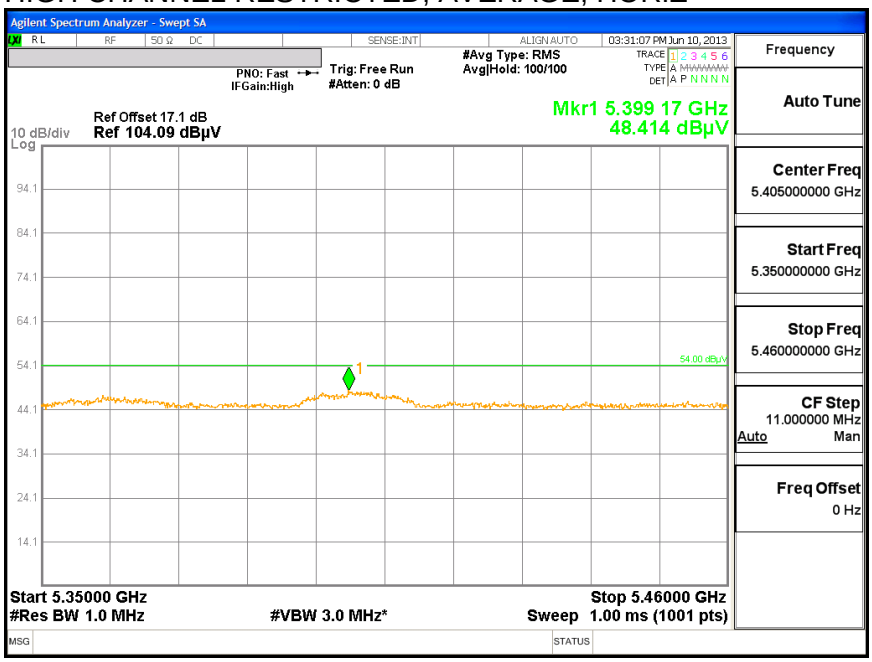
9.2.5. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.3 GHz BAND

RESTRICTED BANDEDGE (HIGH CHANNEL)

HIGH CHANNEL RESTRICTED, PEAK, HORIZ



HIGH CHANNEL RESTRICTED, AVERAGE, HORIZ



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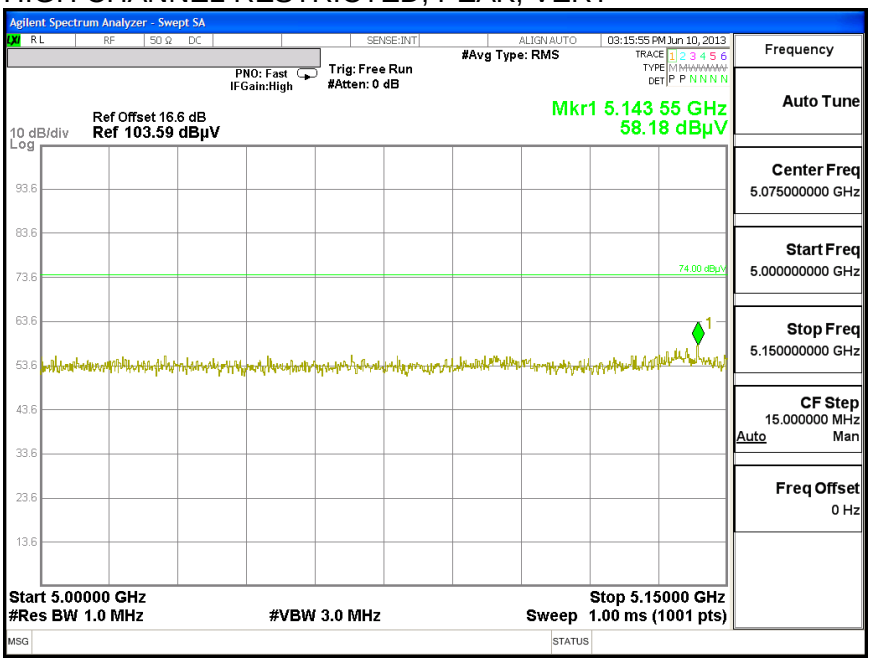
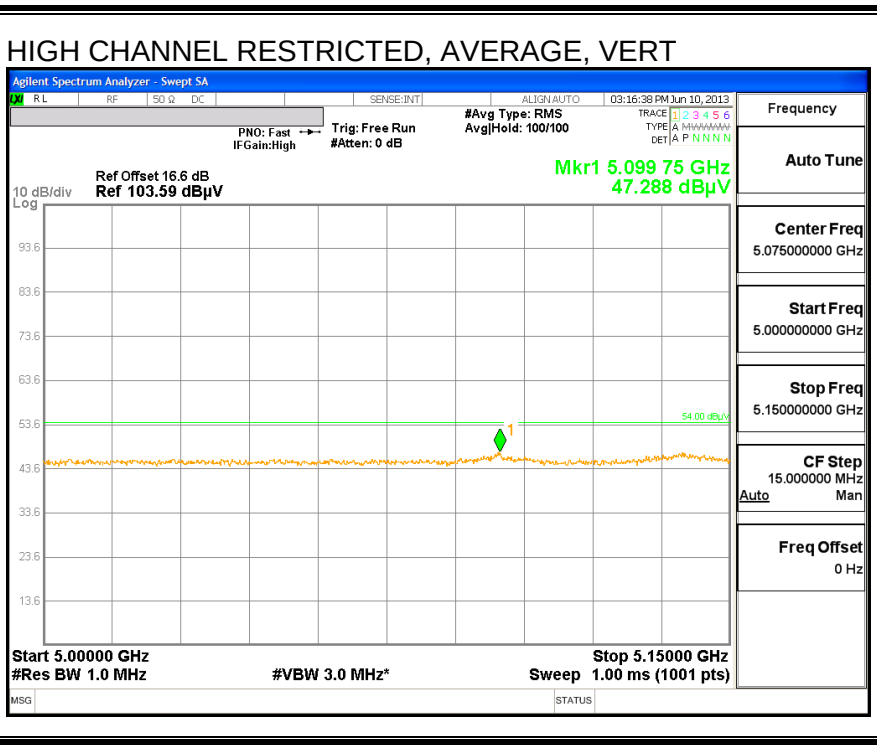
HIGH CHANNEL RESTRICTED, PEAK, VERT



HIGH CHANNEL RESTRICTED, AVERAGE, VERT



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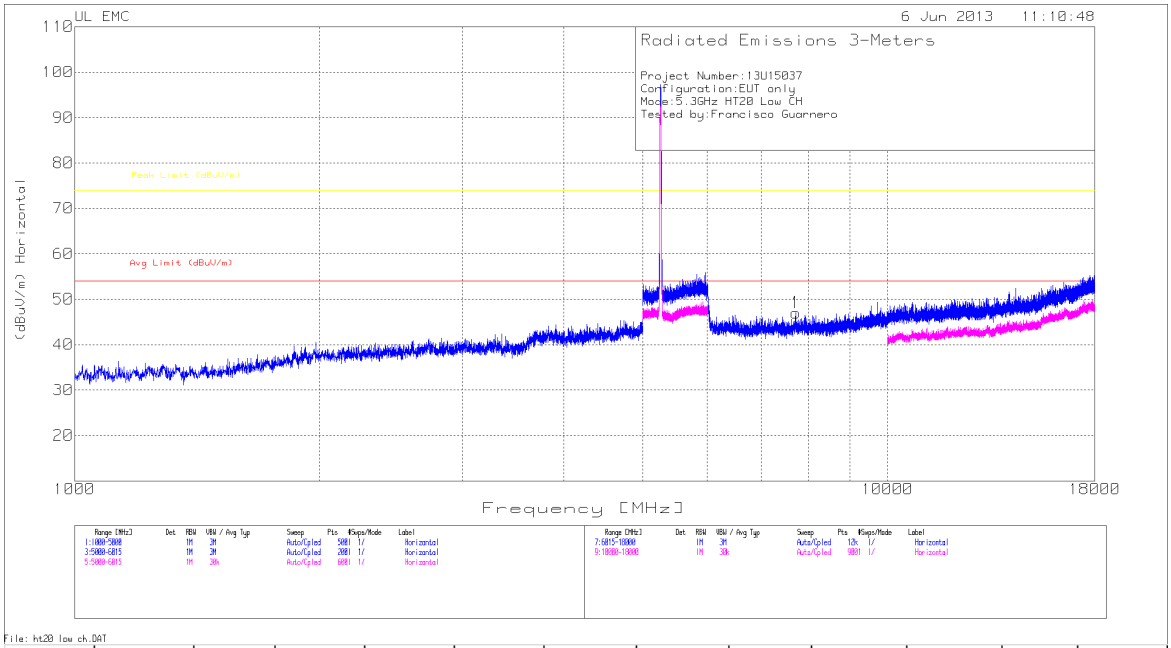
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



File: ht20 low ch.DAT

Marker No.	Test Frequency	Meter Reading (dBuV)	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
Horizontal 6015 - 18000MHz												
1	7717.727	39.4	PK	36.2	-28.6	47	53.97	-6.97	74	-27	100	Horz
PK - Peak detector												

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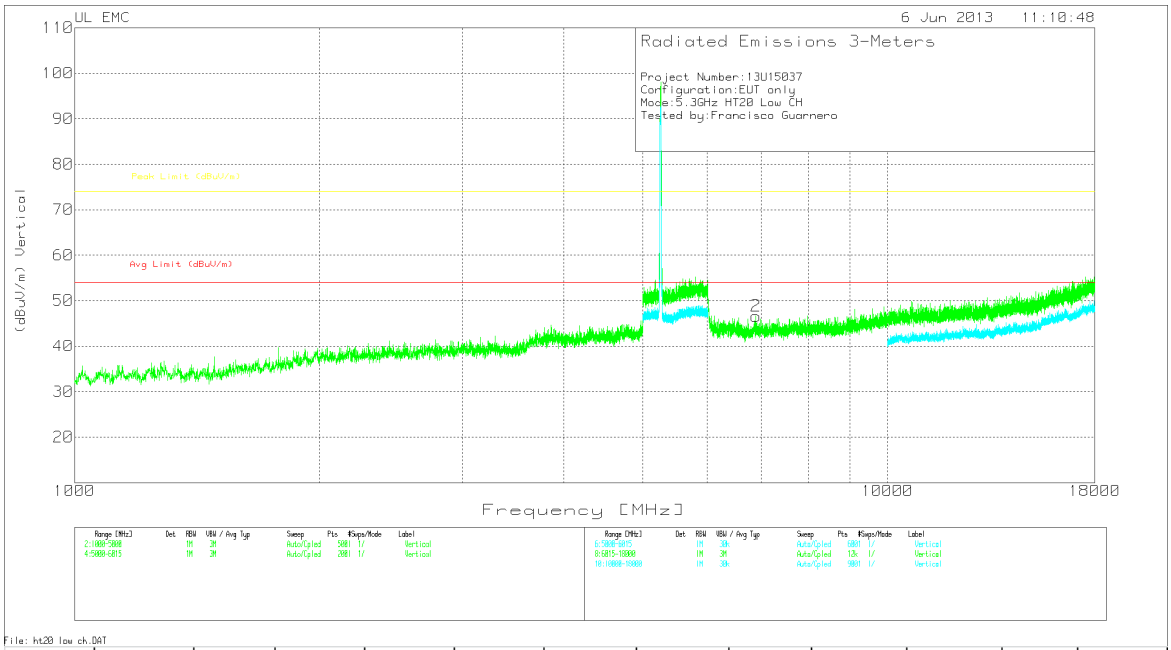
LOW CHANNEL VERTICAL



Marker No.	Test Frequency	Meter Reading (dBuV)	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
Vertical 6015 - 18000MHz												
2	6891.829	40.7	PK	35.9	-30	46.6	53.97	-7.37	74	-27.4	100	Vert
PK - Peak detector												

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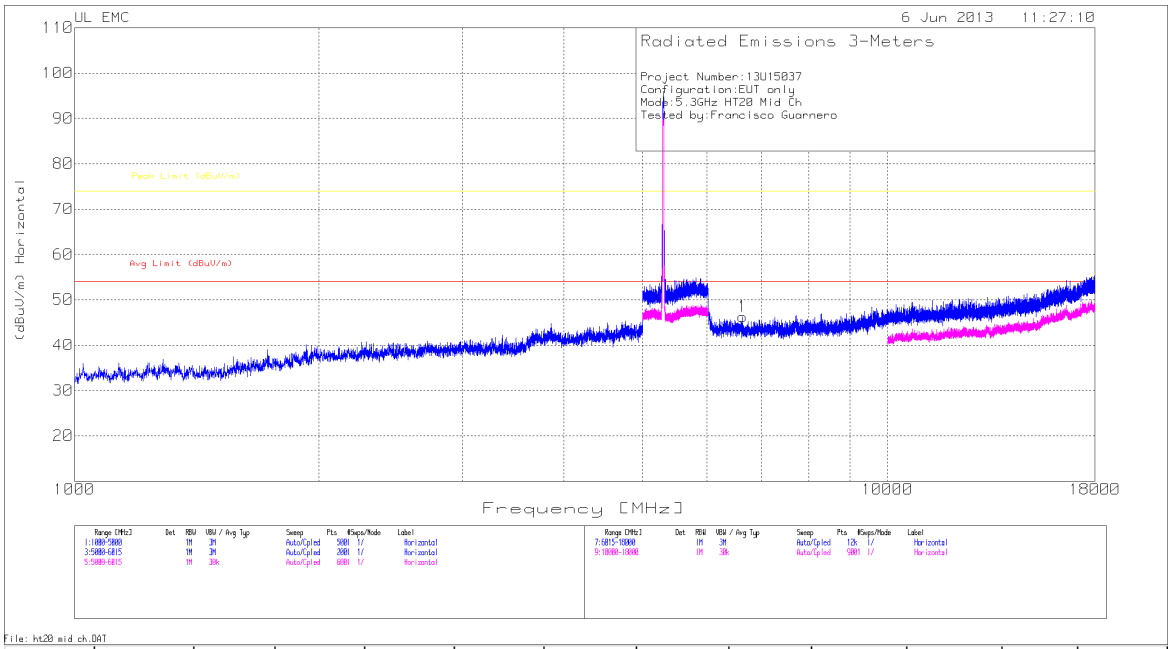
MID CHANNEL HORIZONTAL



Marker No.	Test Frequency	Meter Reading (dBuV)	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
Horizontal 6015 - 18000MHz												
1	6640.165	40.29	PK	35.8	-29.8	46.29	53.97	-7.68	74	-27.71	100	Horz
PK - Peak detector												

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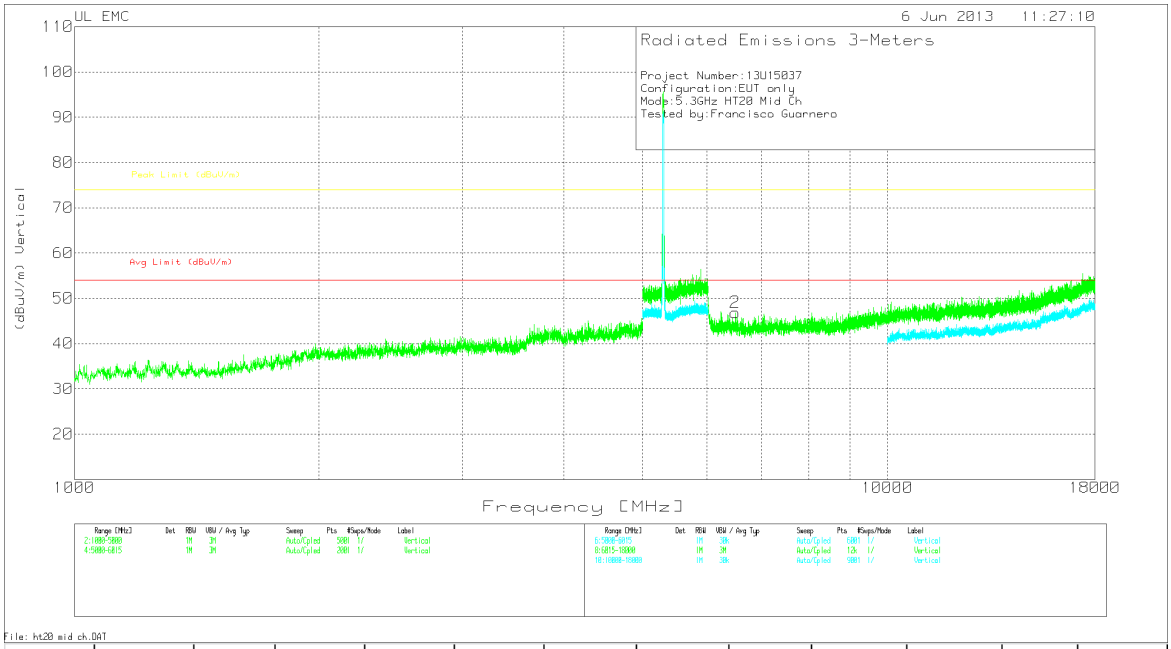
MID CHANNEL VERTICAL



Marker No.	Test Frequency	Meter Reading (dBuV)	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
Vertical 6015 - 18000MHz												
2	6501.351	40.55	PK	35.8	-29.5	46.85	53.97	-7.12	74	-27.15	100	Vert
PK - Peak detector												

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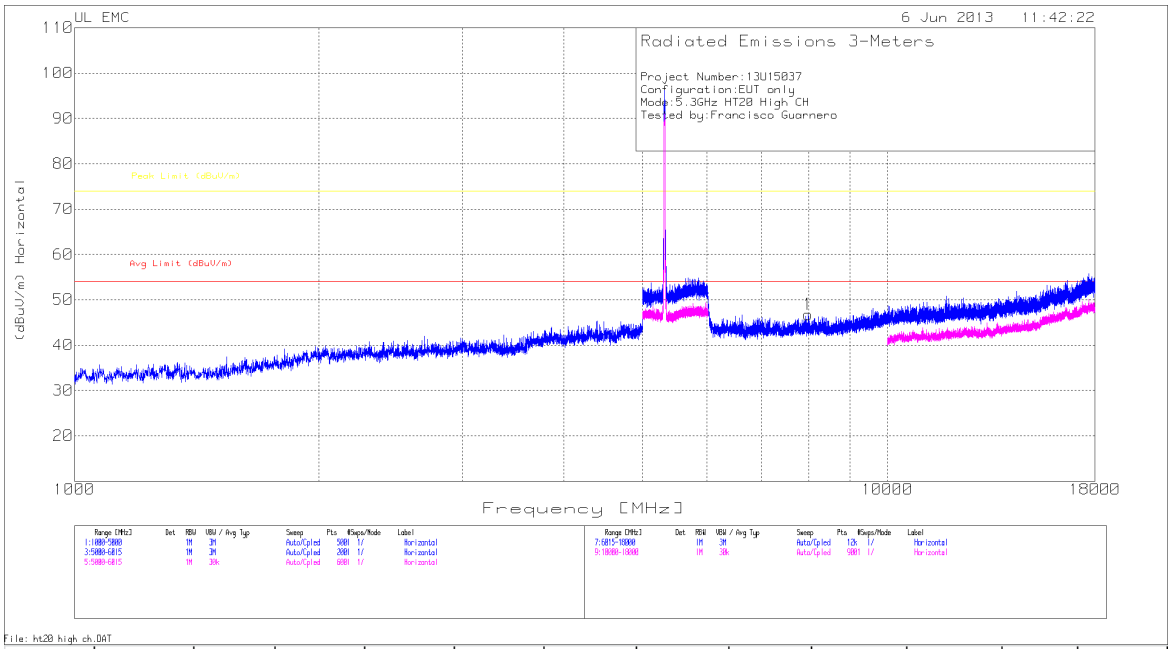
HIGH CHANNEL HORIZONTAL



File: ht20 high ch.DAT

Marker No.	Test Frequency	Meter Reading (dBuV)	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
Horizontal 6015 - 18000MHz												
1	7991.362	38.87	PK	36.2	-28.3	46.77	53.97	-7.2	74	-27.23	100	Horz
PK - Peak detector												

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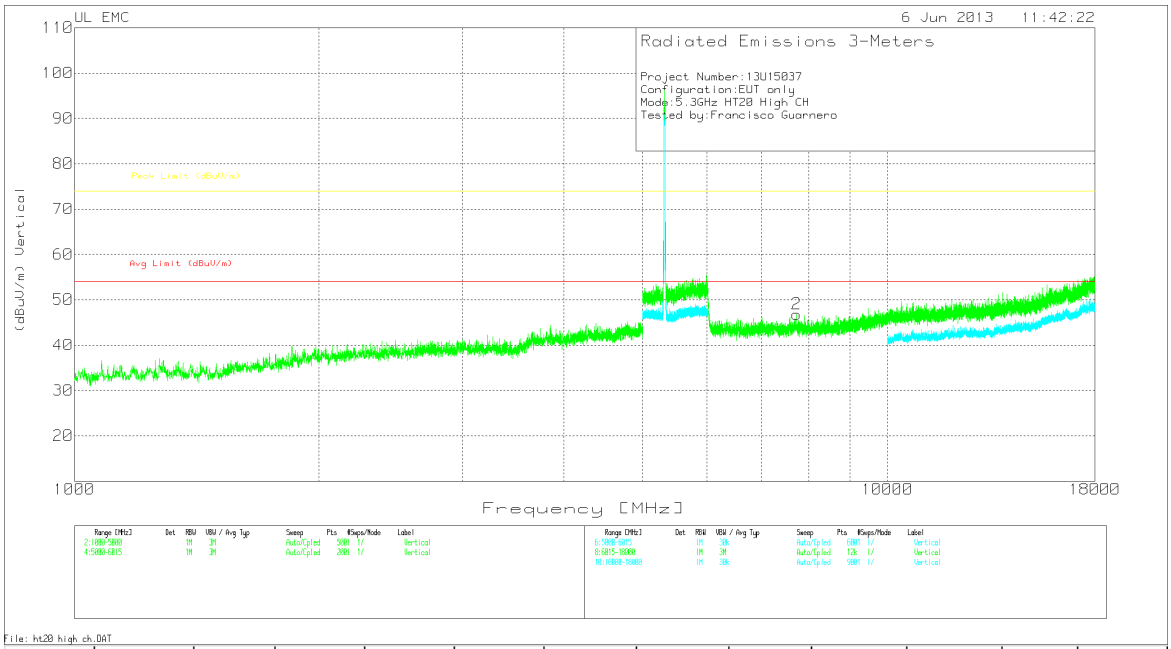
HIGH CHANNEL VERTICAL



File: ht20 high ch.DAT

Marker No.	Test Frequency	Meter Reading (dBuV)	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
Vertical 6015 - 18000MHz												
2	7734.704	39.41	PK	36.2	-28.8	46.81	53.97	-7.16	74	-27.19	100	Vert
PK - Peak detector												

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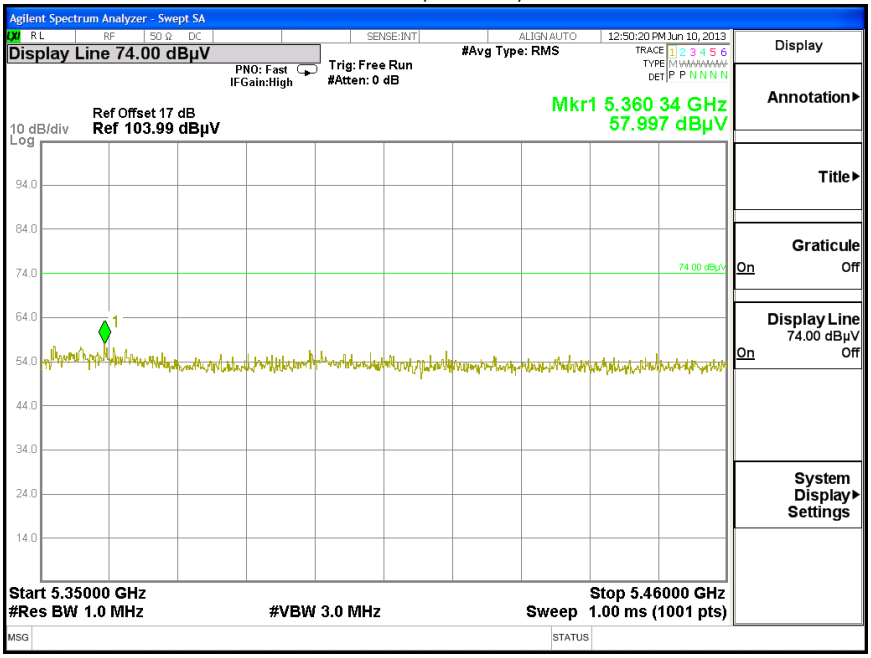
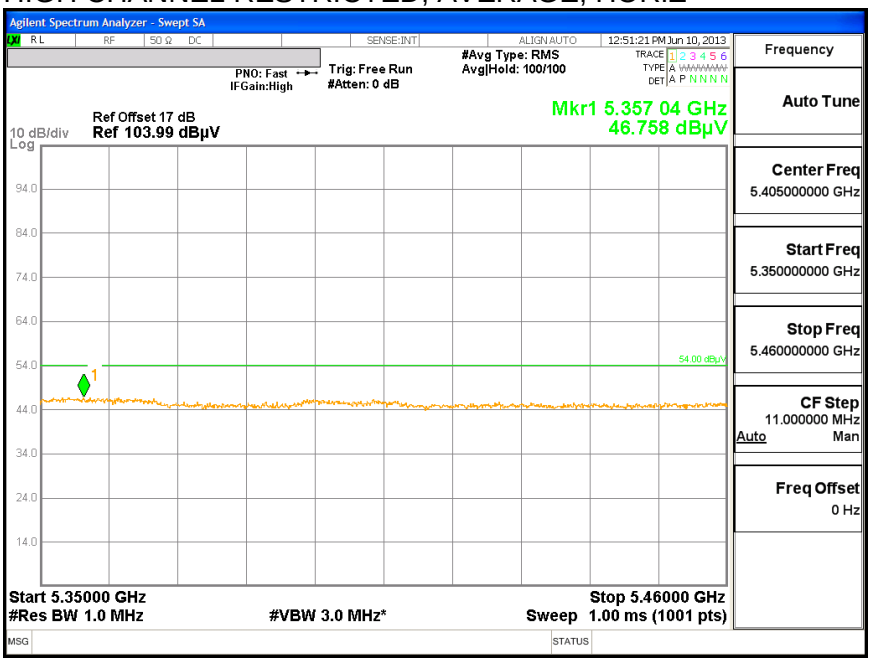
9.2.6. TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.3 GHz BAND

RESTRICTED BANDEDGE (HIGH CHANNEL)

HIGH CHANNEL RESTRICTED, PEAK, HORIZ



HIGH CHANNEL RESTRICTED, AVERAGE, HORIZ



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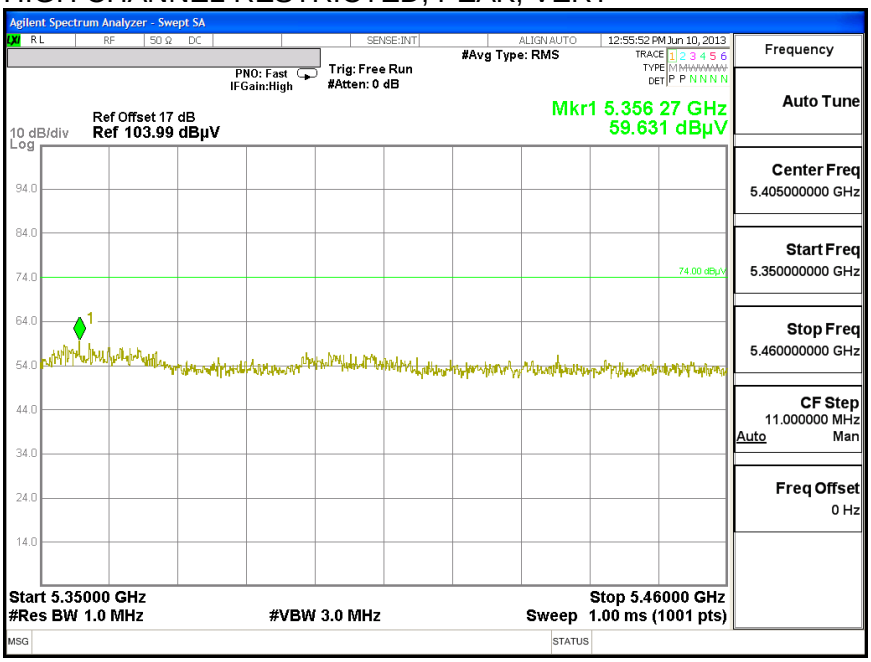
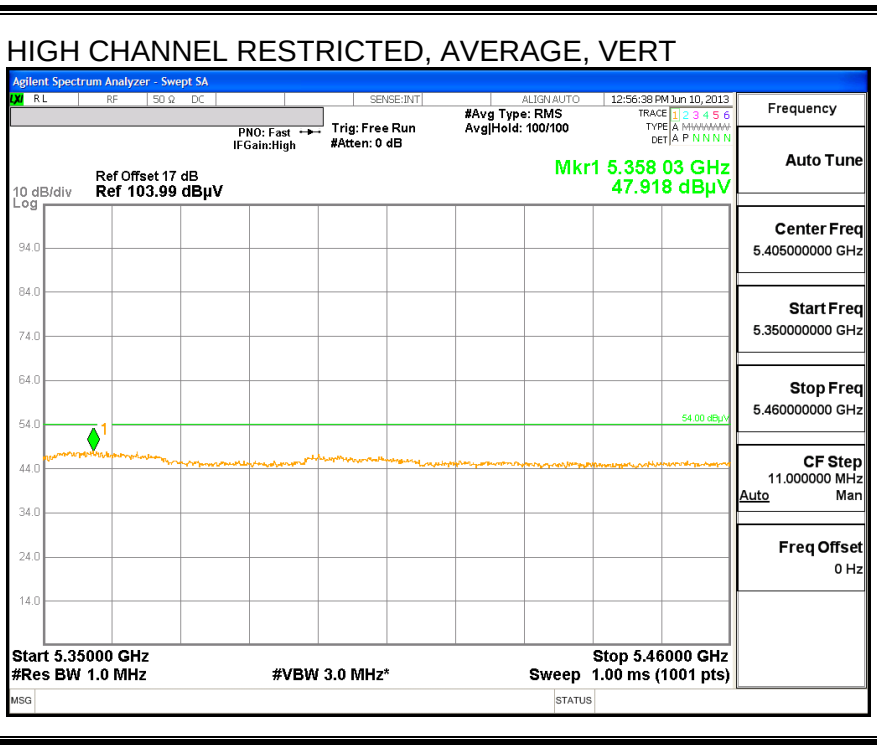
HIGH CHANNEL RESTRICTED, PEAK, VERT



HIGH CHANNEL RESTRICTED, AVERAGE, VERT



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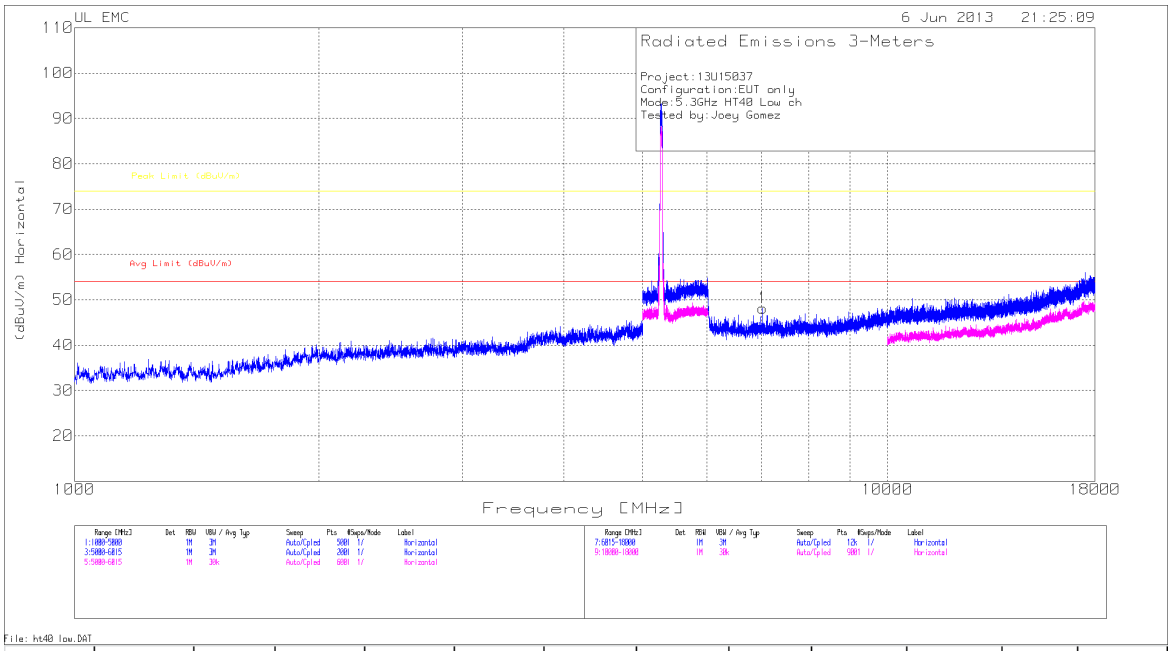
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



Marker No.	Test Frequency	Meter Reading (dBuV)	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
Horizontal 6015 - 18000MHz												
1	7027.648	41.06	PK	36	-28.9	48.16	53.97	-5.81	74	-25.84	101	Horz
PK - Peak detector												

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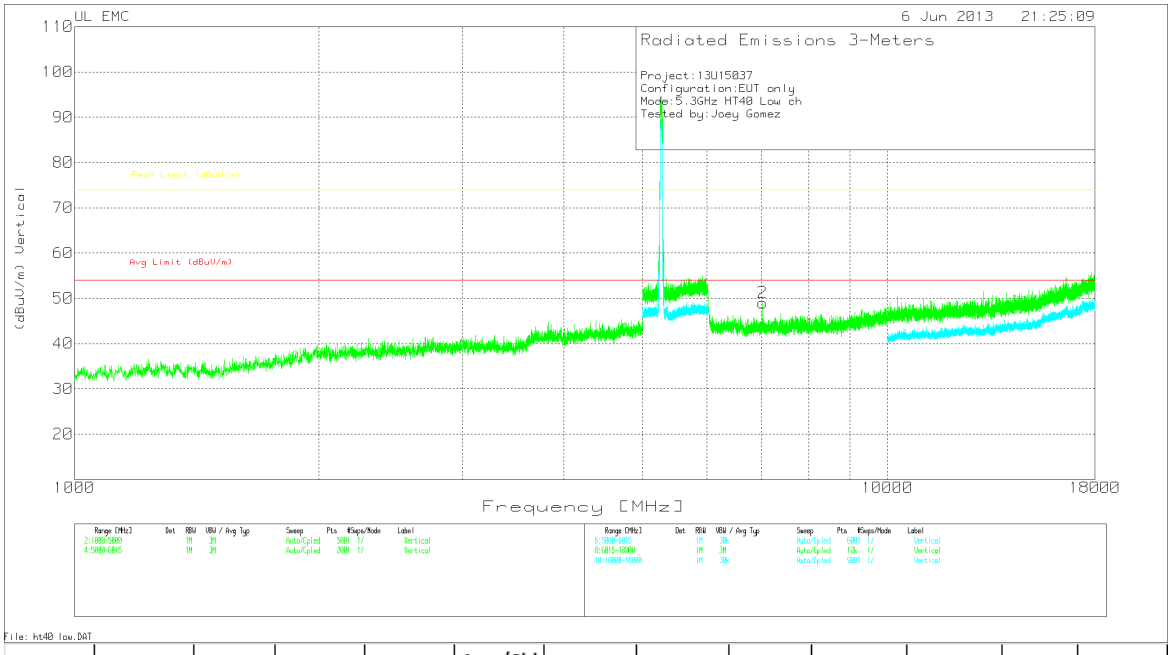
LOW CHANNEL VERTICAL



File: ht40 low.DAT

Marker No.	Test Frequency	Meter Reading (dBuV)	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
Vertical 6015 - 18000MHz												
2	7026.649	41.81	PK	36	-28.8	49.01	53.97	-4.96	74	-24.99	101	Vert
PK - Peak detector												

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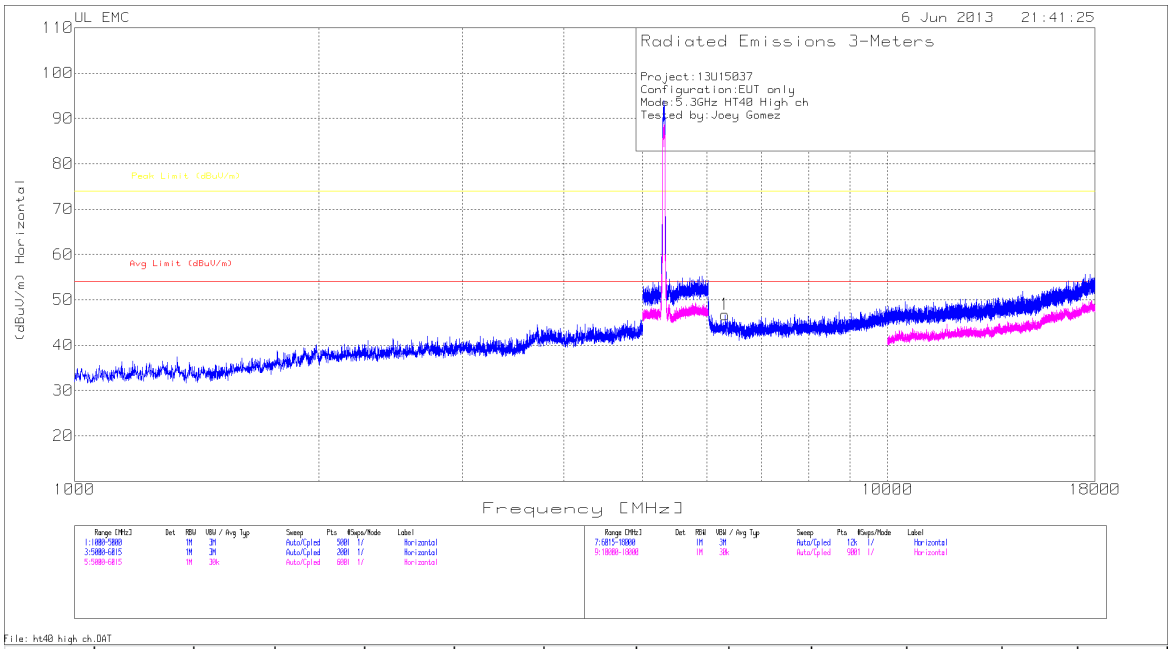
HIGH CHANNEL HORIZONTAL



Marker No.	Test Frequency	Meter Reading (dBuV)	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
Horizontal 6015 - 18000MHz												
1	6314.6	40.12	PK	35.9	-29.3	46.72	53.97	-7.25	74	-27.28	101	Horz
PK - Peak detector												

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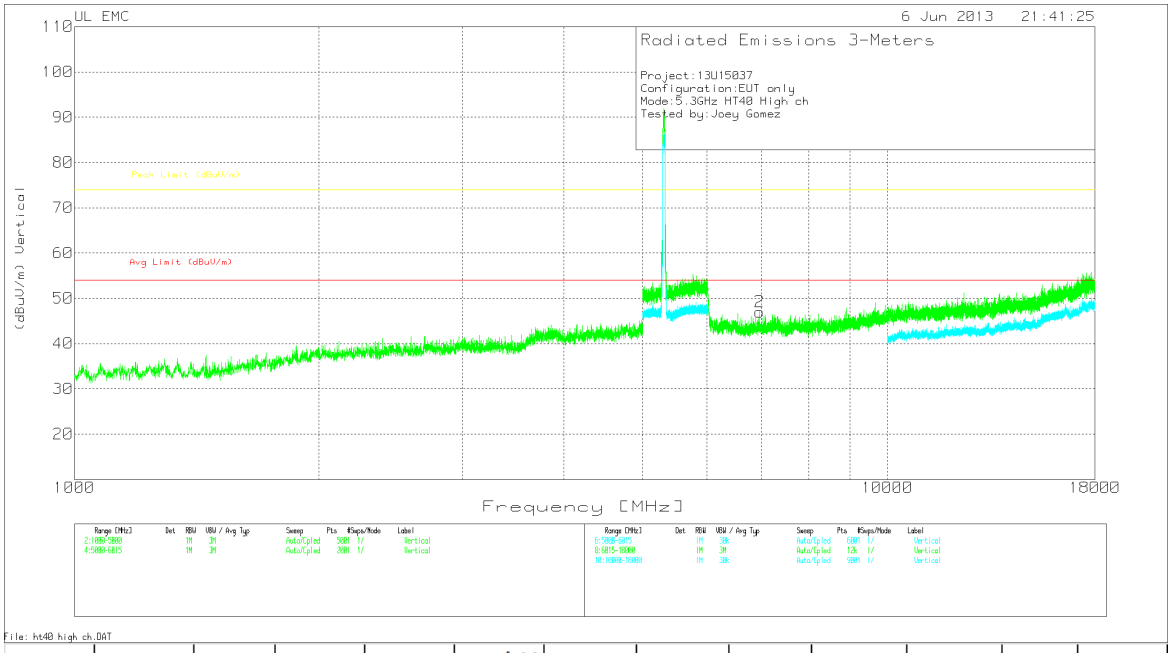
HIGH CHANNEL VERTICAL



Marker No.	Test Frequency	Meter Reading (dBuV)	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
Vertical 6015 - 18000MHz												
2	6965.731	40.09	PK	36	-29.1	46.99	53.97	-6.98	74	-27.01	101	Vert

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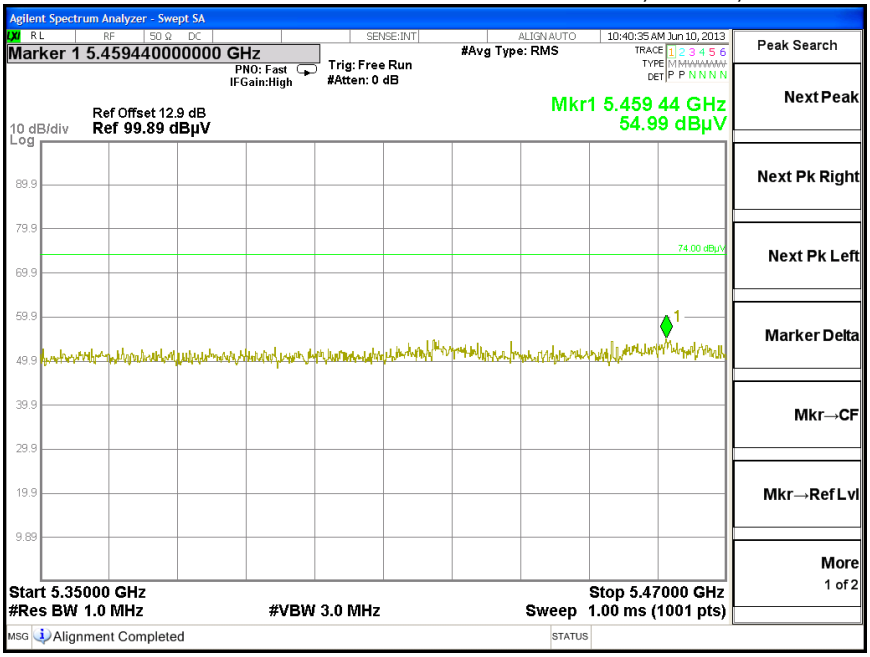
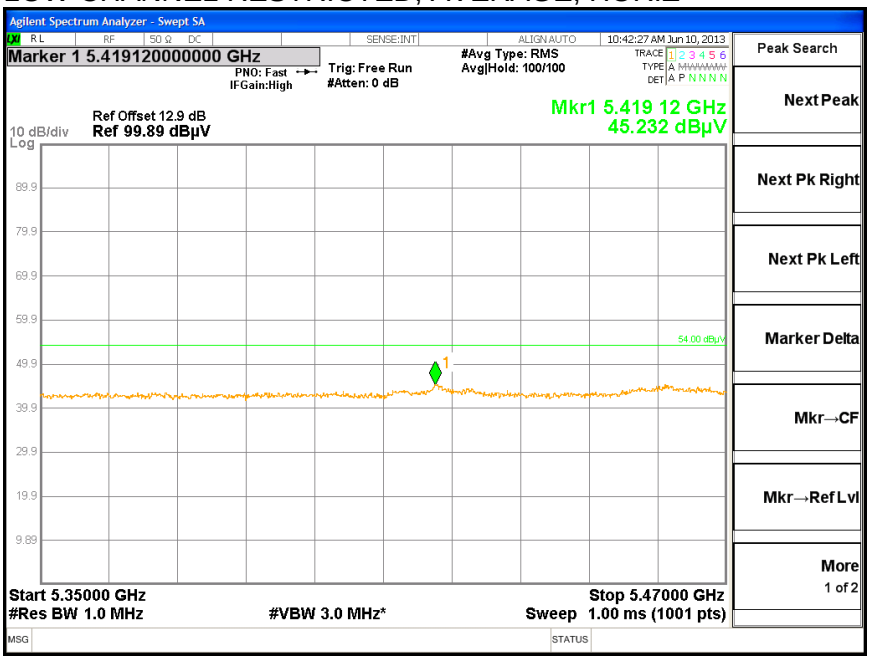
9.2.7. TX ABOVE 1 GHz 802.11a MODE IN THE 5.6 GHz BAND

RESTRICTED & AUTHORIZED BANDEDGE (LOW CHANNEL)

LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, HORIZ



LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



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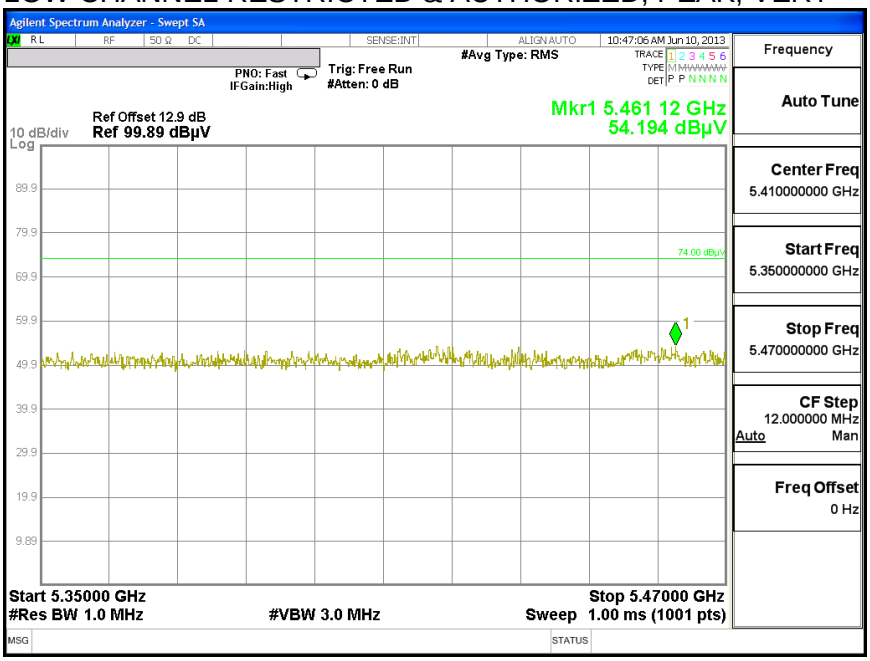
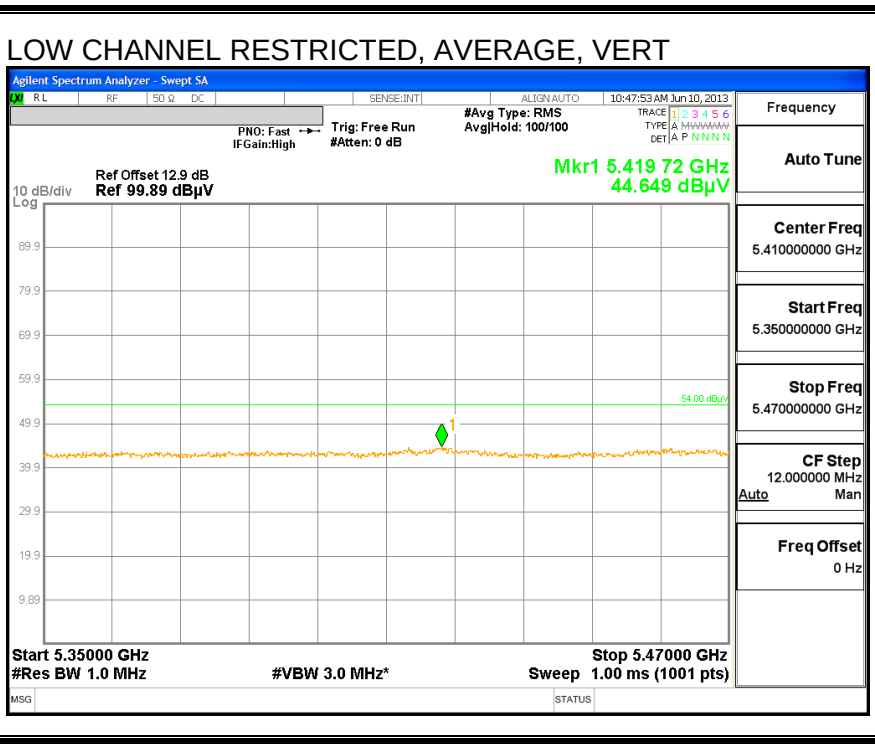
LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, VERT



LOW CHANNEL RESTRICTED, AVERAGE, VERT



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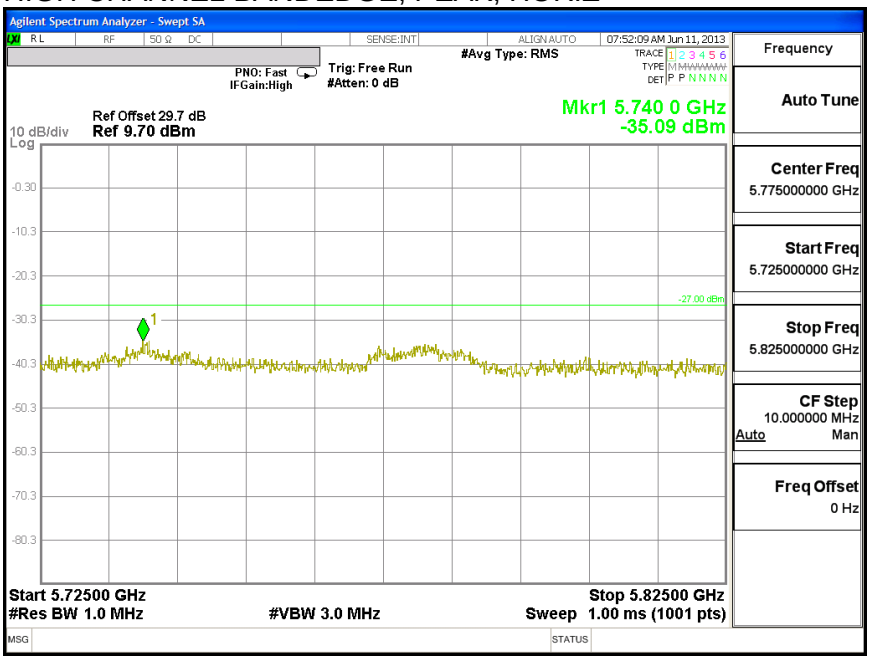
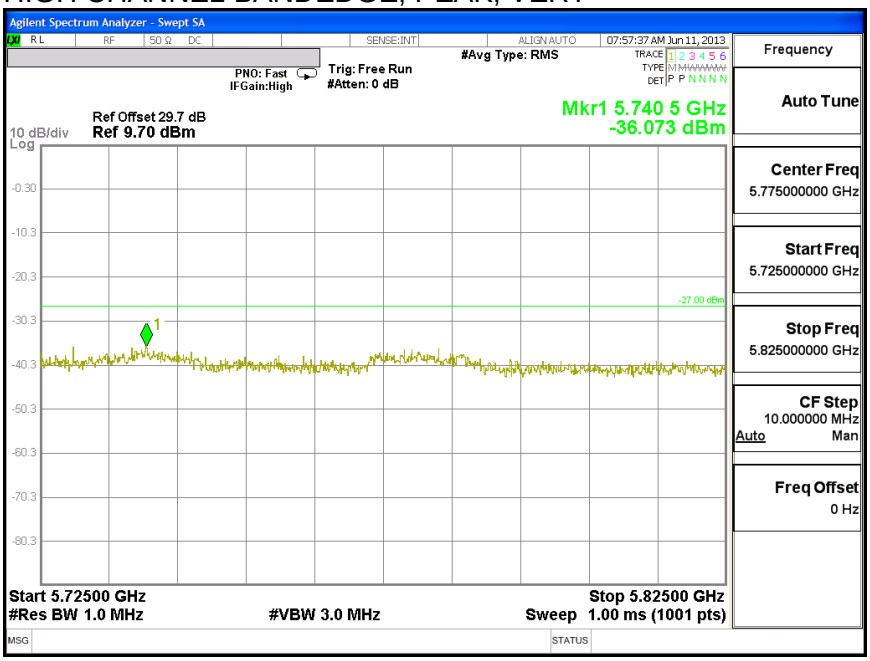
AUTHORIZED BANDEDGE (HIGH CHANNEL)

HIGH CHANNEL BANDEDGE, PEAK, HORIZ



HIGH CHANNEL BANDEDGE, PEAK, VERT



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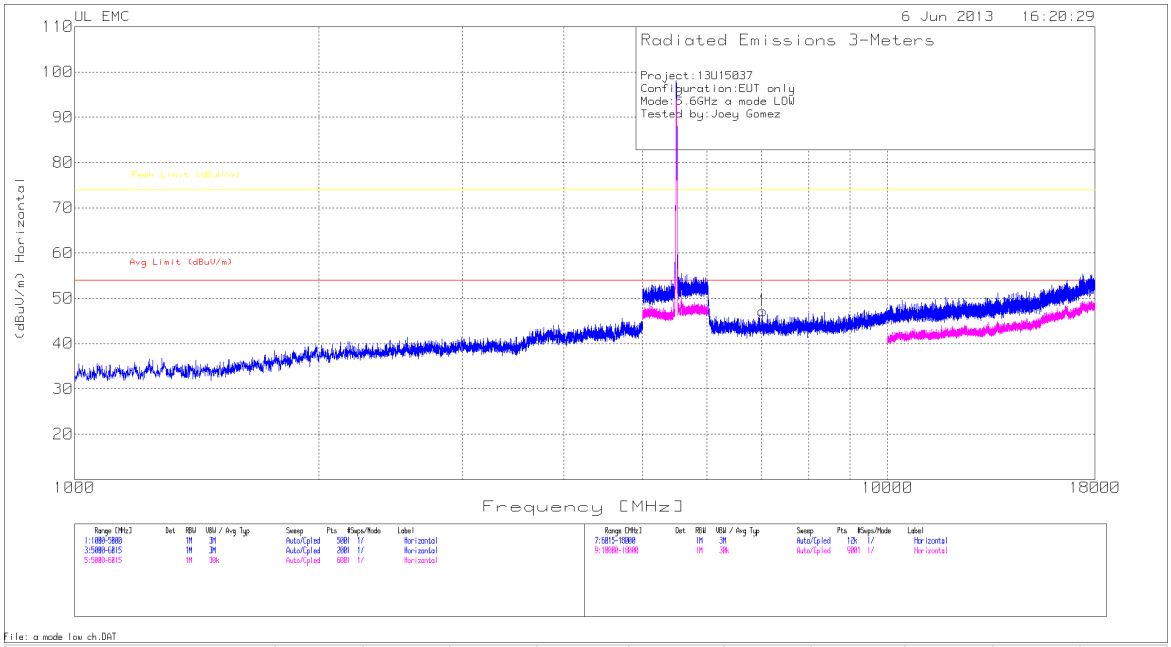
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



Horizontal 6015 - 18000MHz

Marker No.	Test Frequency	Meter Reading	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	(dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
1*	7024.652	40.01	PK	36	-28.8	47.21	53.97	-6.76	74	-26.79	101	Horz

* - Not in restricted band

PK - Peak detector

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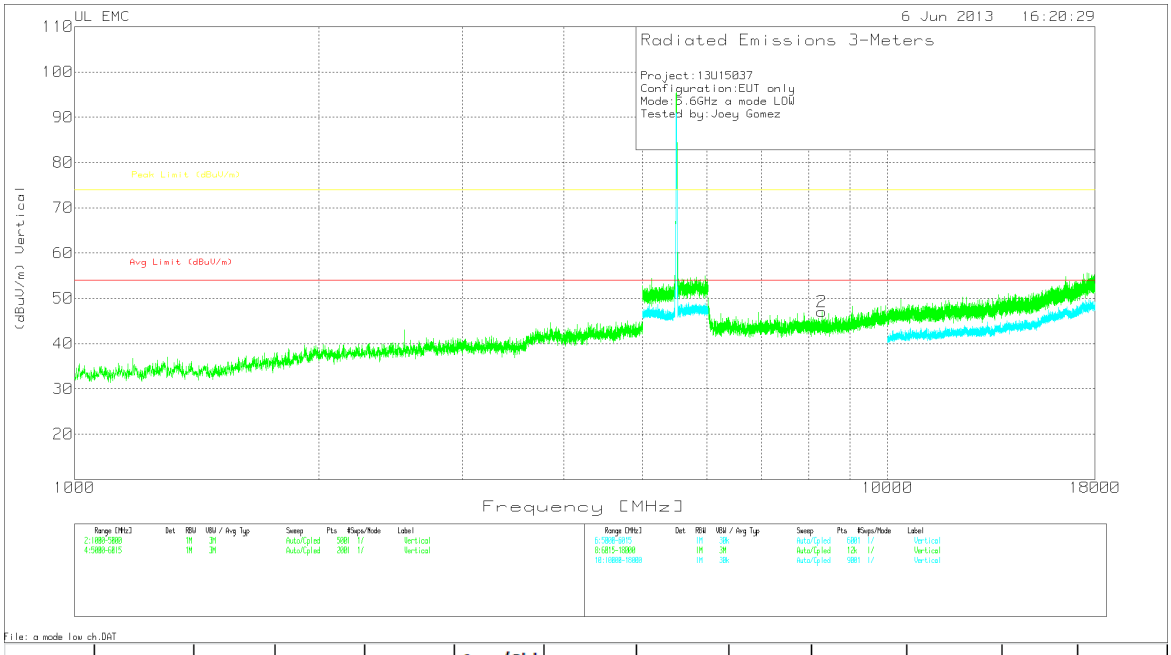
LOW CHANNEL VERTICAL



File: a mode low ch.DAT

Marker No.	Test Frequency	Meter Reading (dBuV)	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
Vertical 6015 - 18000MHz												
2	8309.936	38.66	PK	36.2	-27.8	47.06	53.97	-6.91	74	-26.94	101	Vert
PK - Peak detector												

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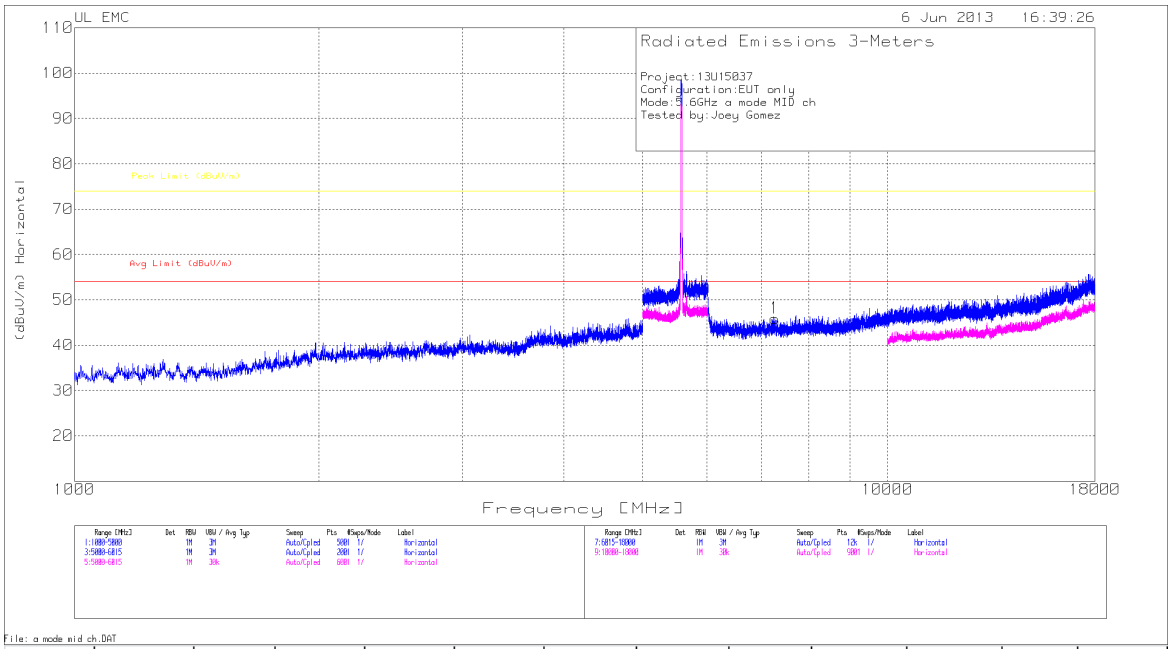
MID CHANNEL HORIZONTAL



File: a mode mid ch.DAT

Marker No.	Test Frequency	Meter Reading (dBuV)	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
Horizontal 6015 - 18000MHz												
1	7272.321	38.8	PK	36	-28.9	45.9	53.97	-8.07	74	-28.1	101	Horz
PK - Peak detector												

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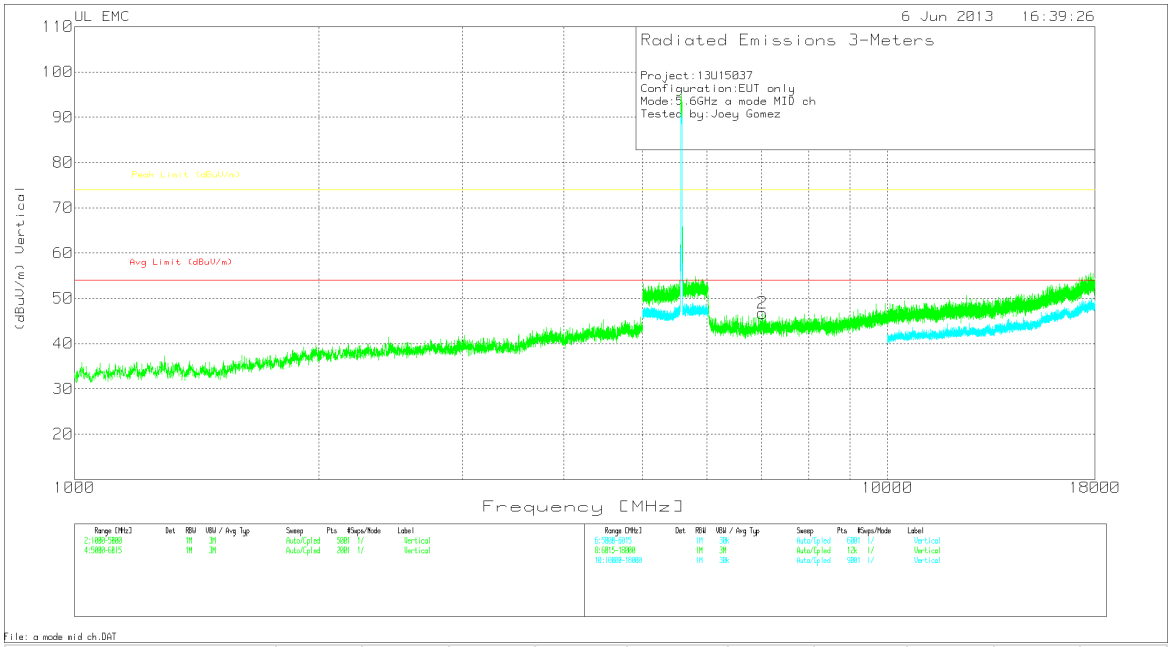
MID CHANNEL VERTICAL



Vertical 6015 - 18000MHz

Marker No.	Test Frequency	Meter Reading	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	(dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
2	7019.659	39.64	PK	36	-28.9	46.74	53.97	-7.23	74	-27.26	101	Vert

* - Not in restricted band

PK - Peak detector

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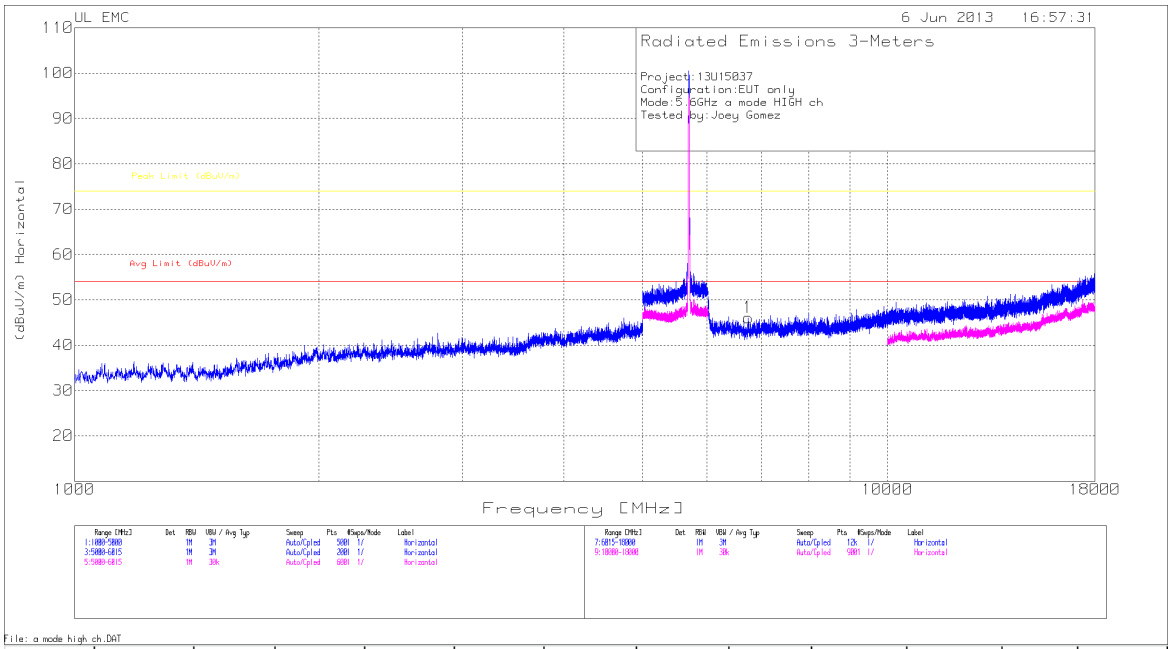
HIGH CHANNEL HORIZONTAL



File: a mode high ch.DAT

Marker No.	Test Frequency	Meter Reading (dBuV)	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
Horizontal 6015 - 18000MHz												
1	6745.025	40.15	PK	35.8	-29.9	46.05	53.97	-7.92	74	-27.95	101	Horz
PK - Peak detector												

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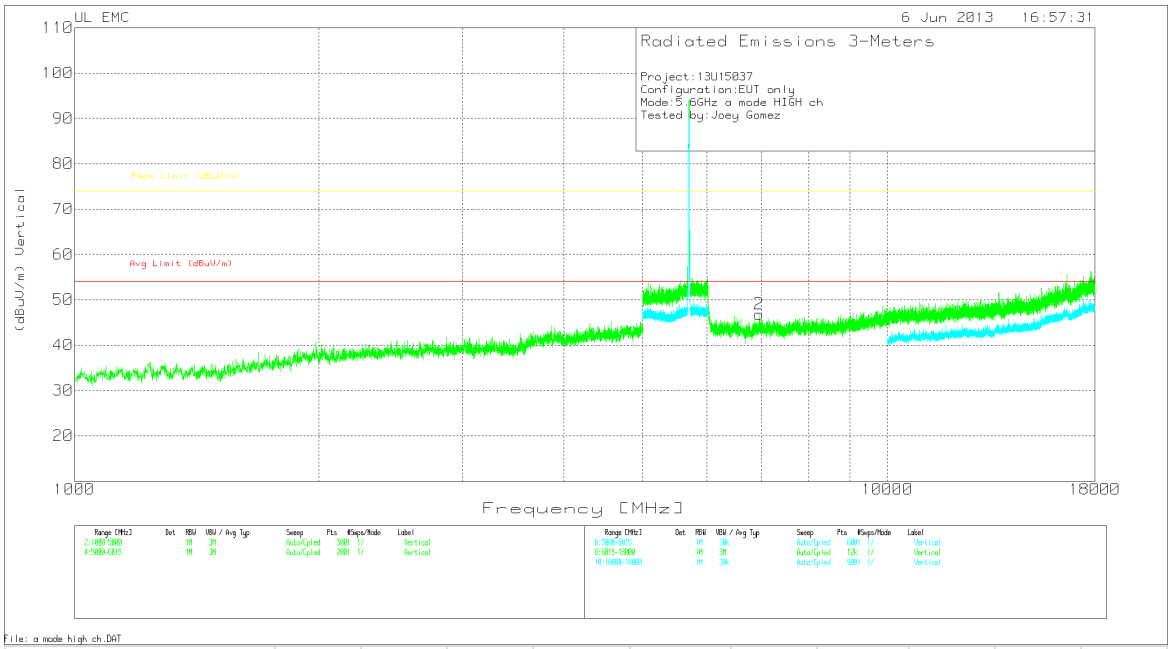
HIGH CHANNEL VERTICAL



Vertical 6015 - 18000MHz

Marker No.	Test Frequency	Meter Reading	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	(dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
2*	6954.745	40.03	PK	36	-29.2	46.83	53.97	-7.14	74	-27.17	101	Vert

* - Not in restricted band

PK - Peak detector

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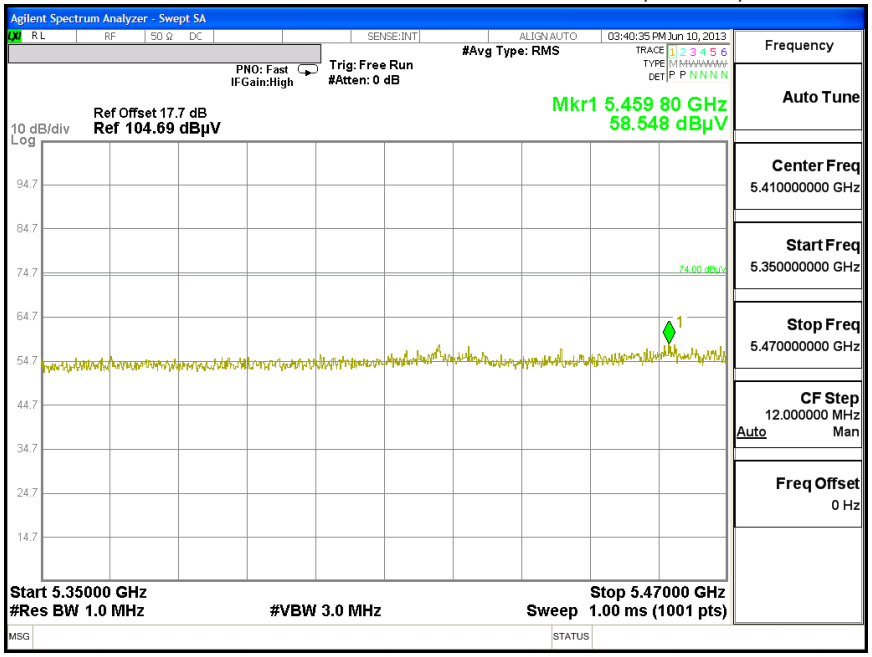
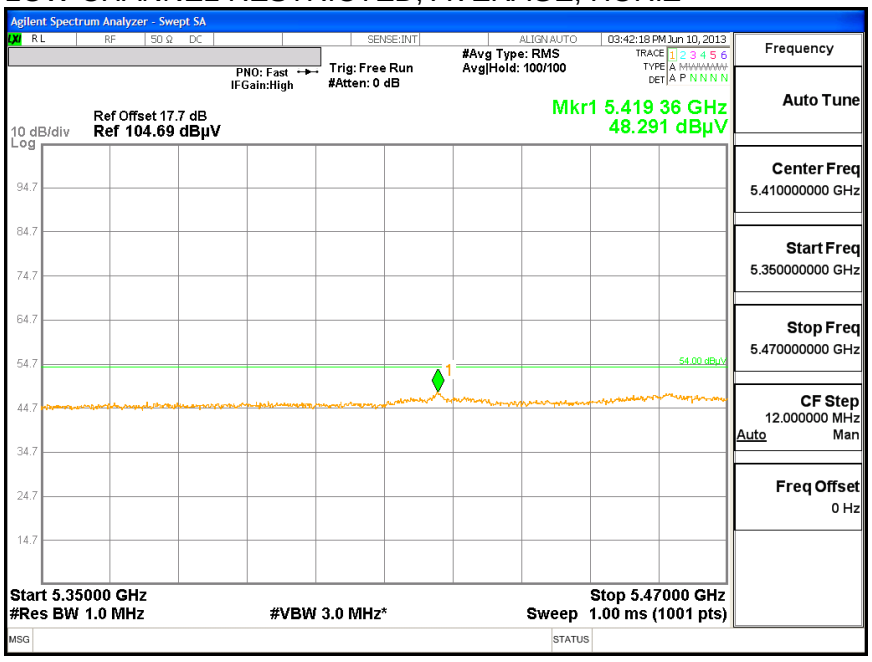
9.2.8. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.6 GHz BAND

RESTRICTED & AUTHORIZED BANDEDGE (LOW CHANNEL)

LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, HORIZ



LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



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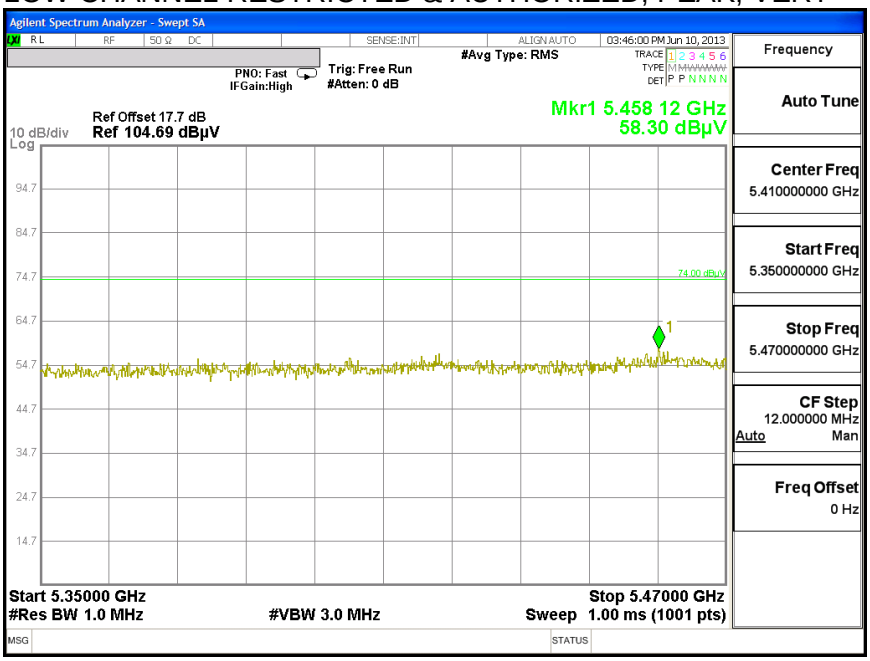
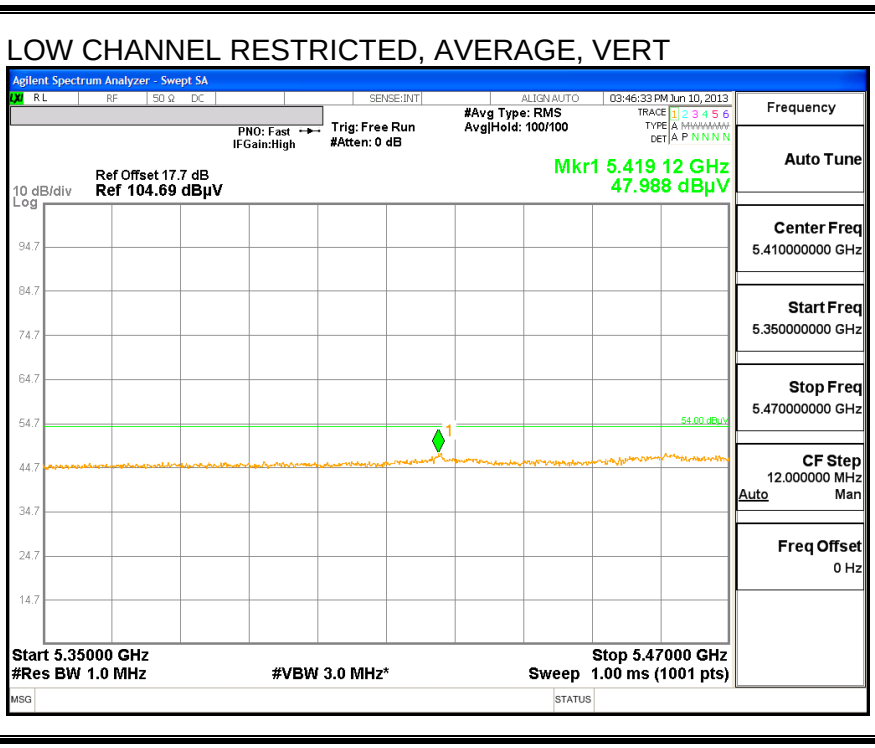
LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, VERT



LOW CHANNEL RESTRICTED, AVERAGE, VERT



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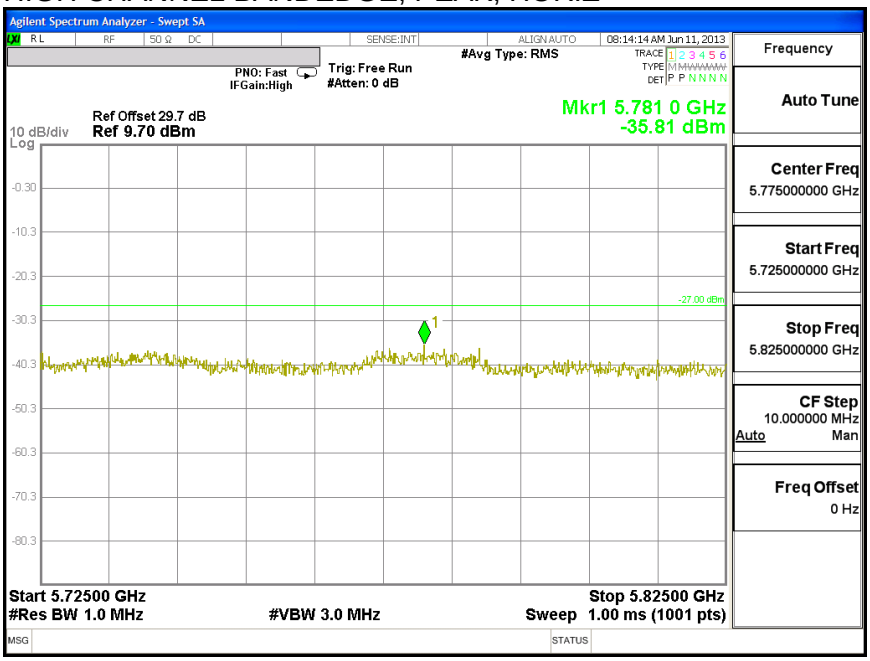
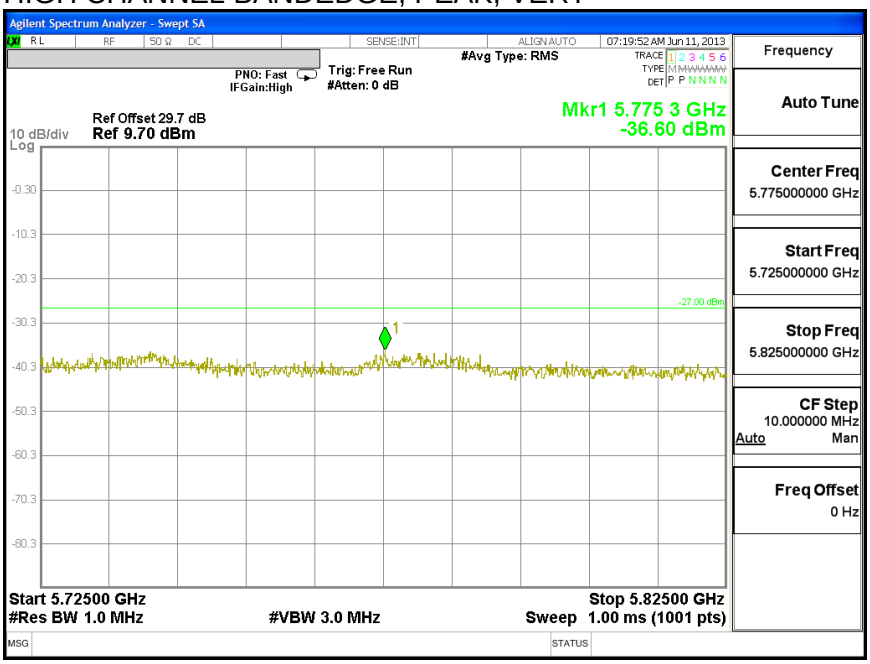
AUTHORIZED BANDEDGE (HIGH CHANNEL)

HIGH CHANNEL BANDEDGE, PEAK, HORIZ



HIGH CHANNEL BANDEDGE, PEAK, VERT



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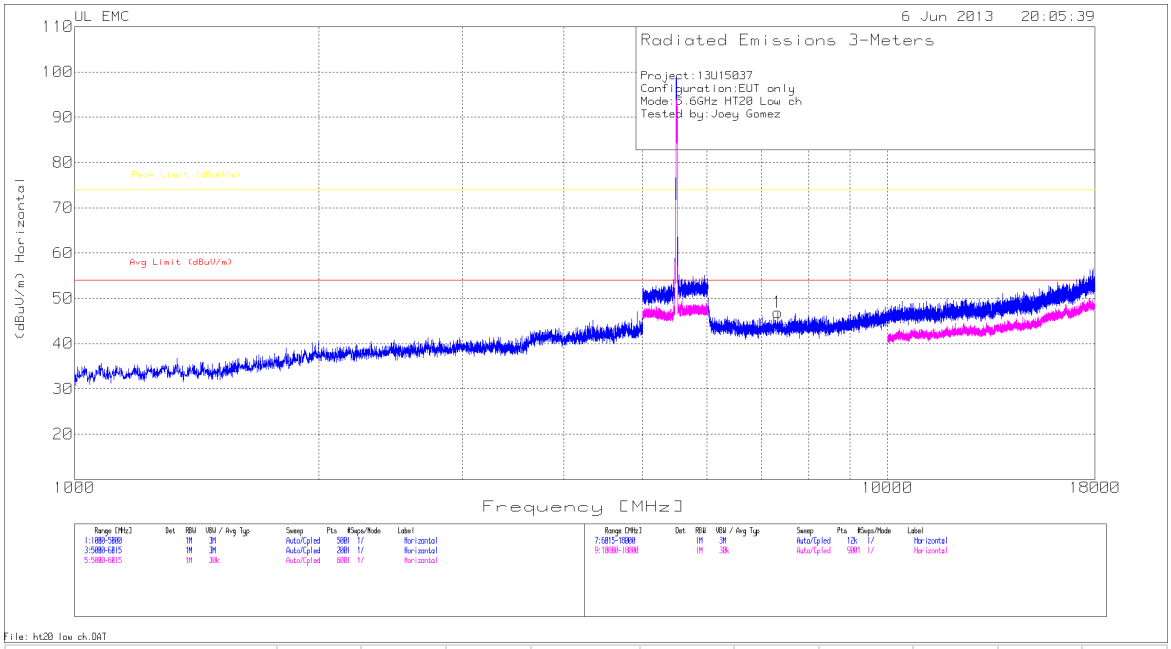
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



Horizontal 6015 - 18000MHz

Marker No.	Test Frequency	Meter Reading	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	(dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
1	7334.239	39.36	PK	36	-28.5	46.86	53.97	-7.11	74	-27.14	101	Horz

PK - Peak detector

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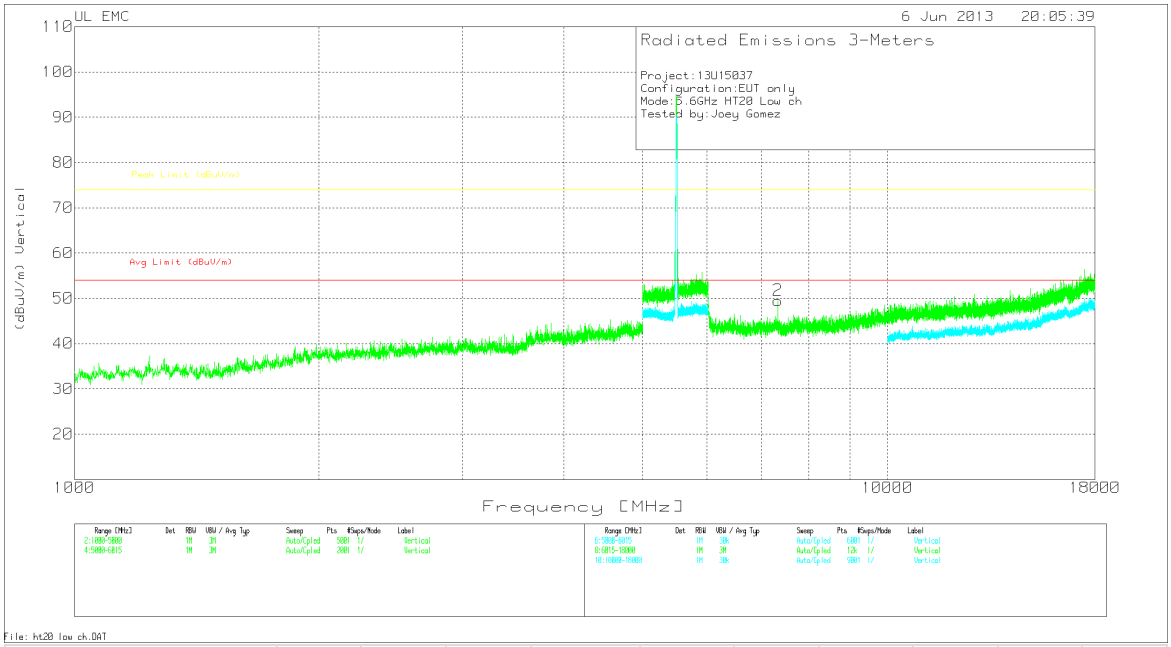
LOW CHANNEL VERTICAL



File: ht20 low ch.DAT

Vertical 6015 - 18000MHz

Marker No.	Test Frequency	Meter Reading	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	(dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
2	7334.239	42	PK	36	-28.5	49.5	53.97	-4.47	74	-24.5	101	Vert

PK - Peak detector

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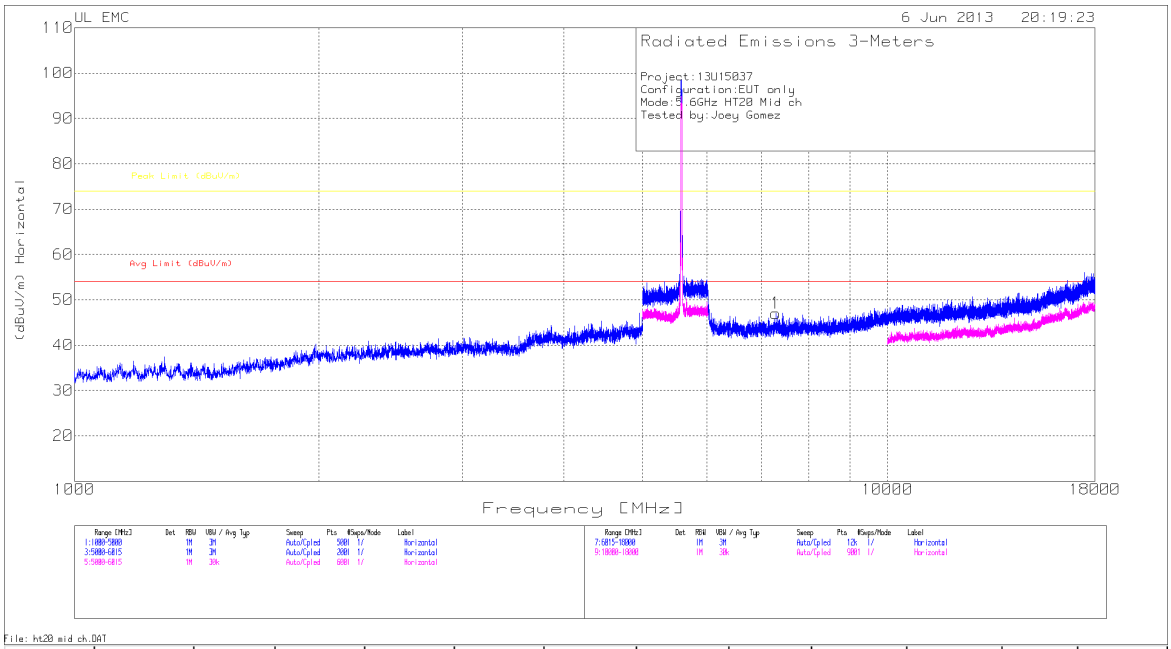
MID CHANNEL HORIZONTAL



Marker No.	Test Frequency	Meter Reading (dBuV)	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
Horizontal 6015 - 18000MHz												
1	7291.296	39.99	PK	36	-29	46.99	53.97	-6.98	74	-27.01	101	Horz
PK - Peak detector												

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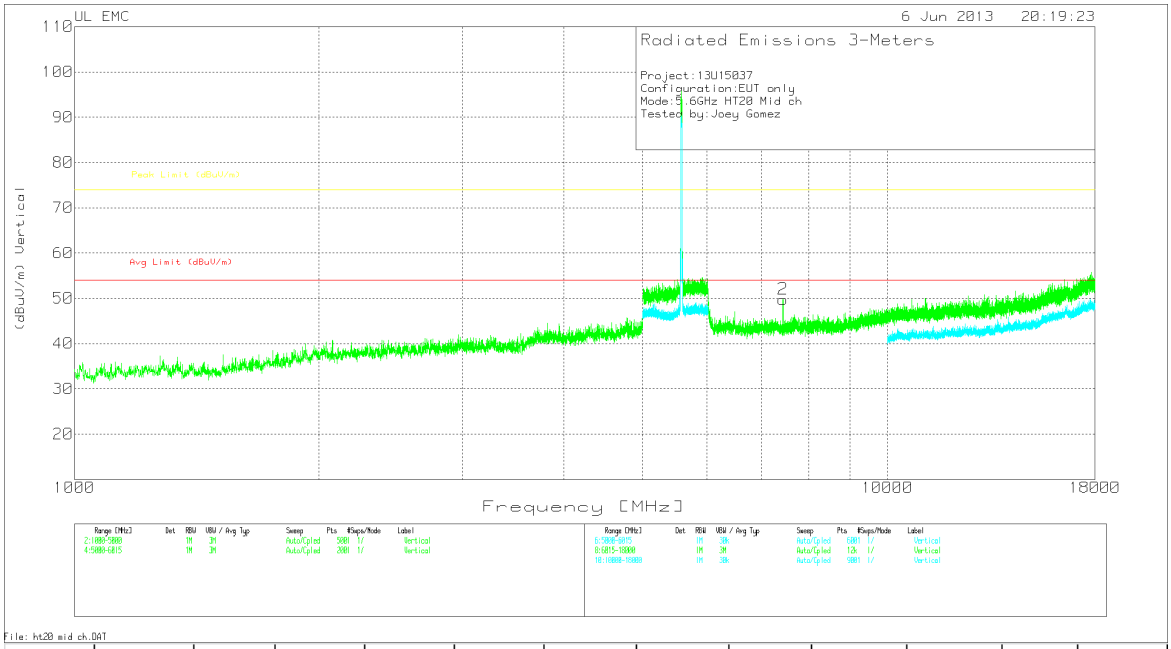
MID CHANNEL VERTICAL



Marker No.	Test Frequency	Meter Reading (dBuV)	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
Vertical 6015 - 18000MHz												
2	7441.096	43.18	PK	36.1	-29.5	49.78	53.97	-4.19	74	-24.22	101	Vert
PK - Peak detector												

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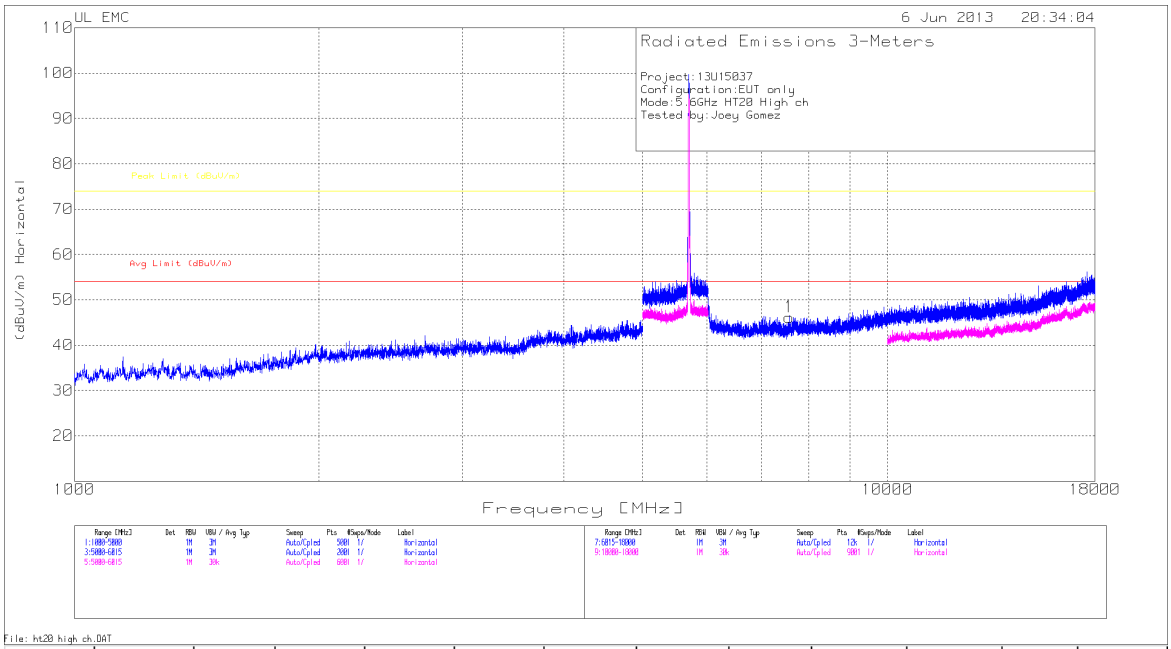
HIGH CHANNEL HORIZONTAL



Marker No.	Test Frequency	Meter Reading (dBuV)	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
Horizontal 6015 - 18000MHz												
1	7572.92	39.17	PK	36.1	-29.1	46.17	53.97	-7.8	74	-27.83	101	Horz
PK - Peak detector												

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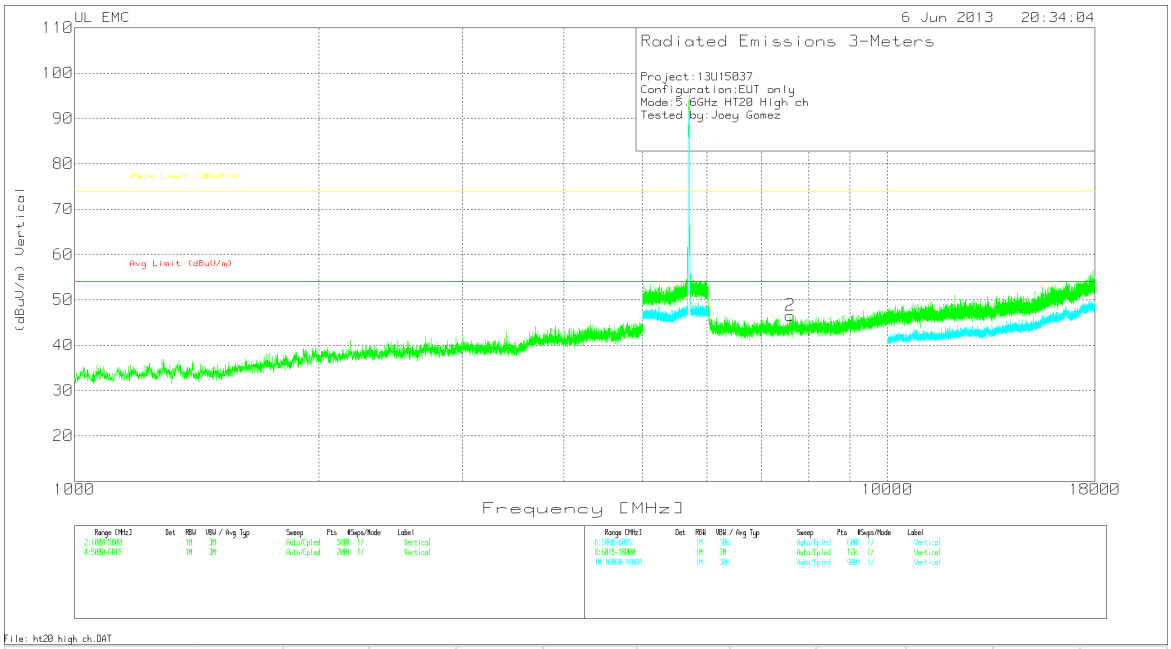
HIGH CHANNEL VERTICAL



Vertical 6015 - 18000MHz

Marker No.	Test Frequency	Meter Reading	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	(dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
2	7594.891	39.26	PK	36.1	-28.8	46.56	53.97	-7.41	74	-27.44	101	Vert

PK - Peak detector

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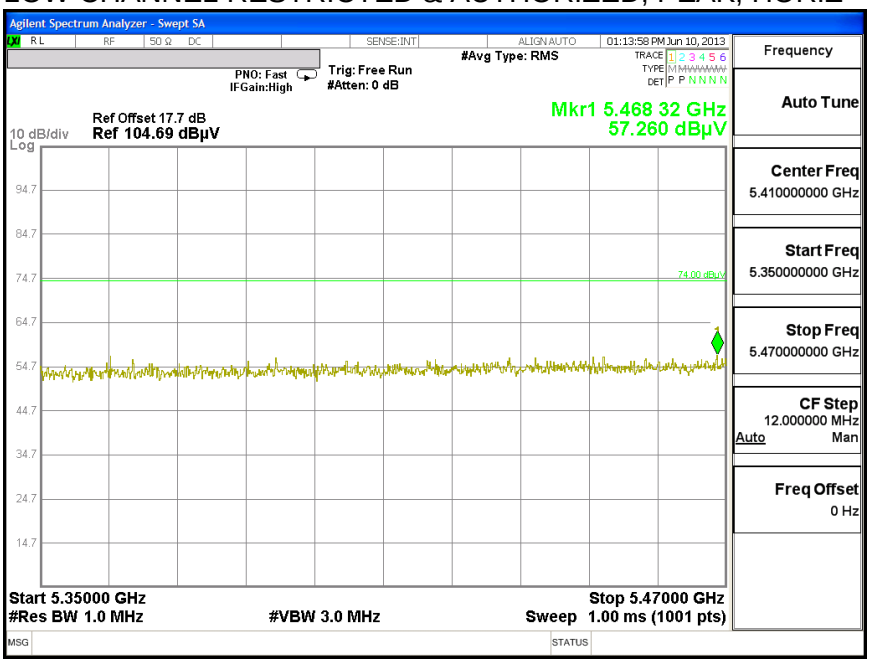
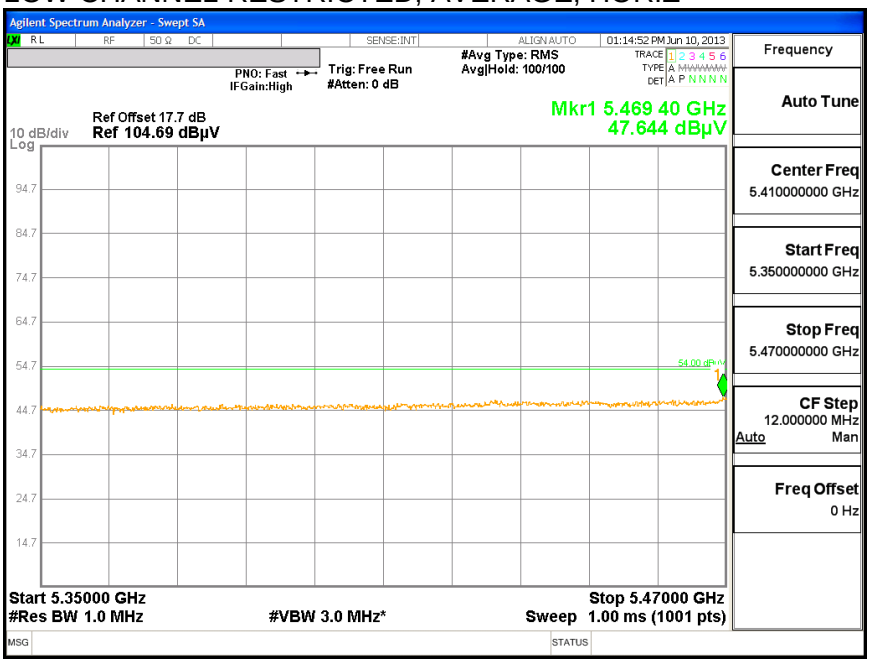
9.2.9. TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.6 GHz BAND

RESTRICTED & AUTHORIZED BANDEDGE (LOW CHANNEL)

LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, HORIZ



LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



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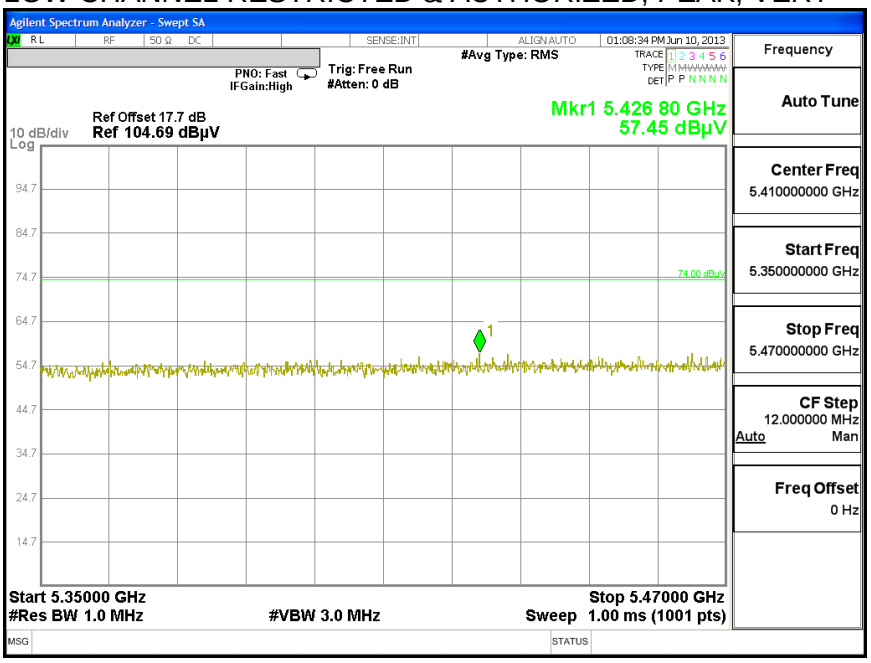
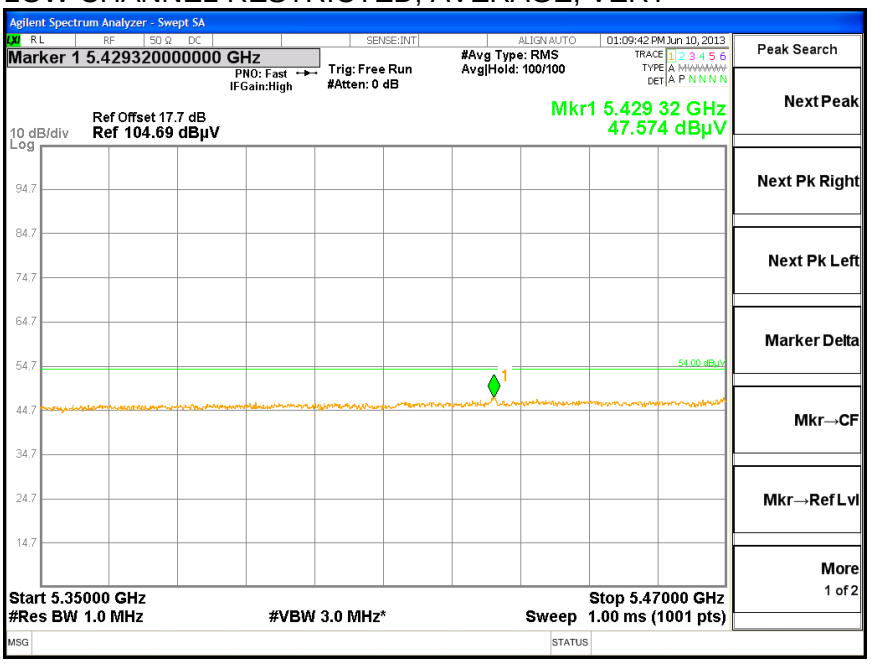
LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, VERT



LOW CHANNEL RESTRICTED, AVERAGE, VERT



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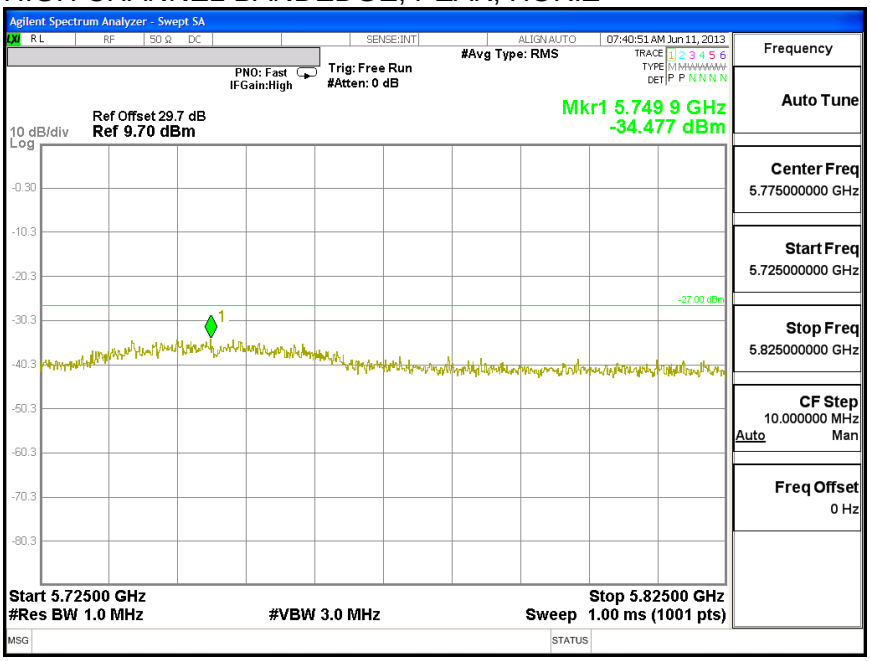
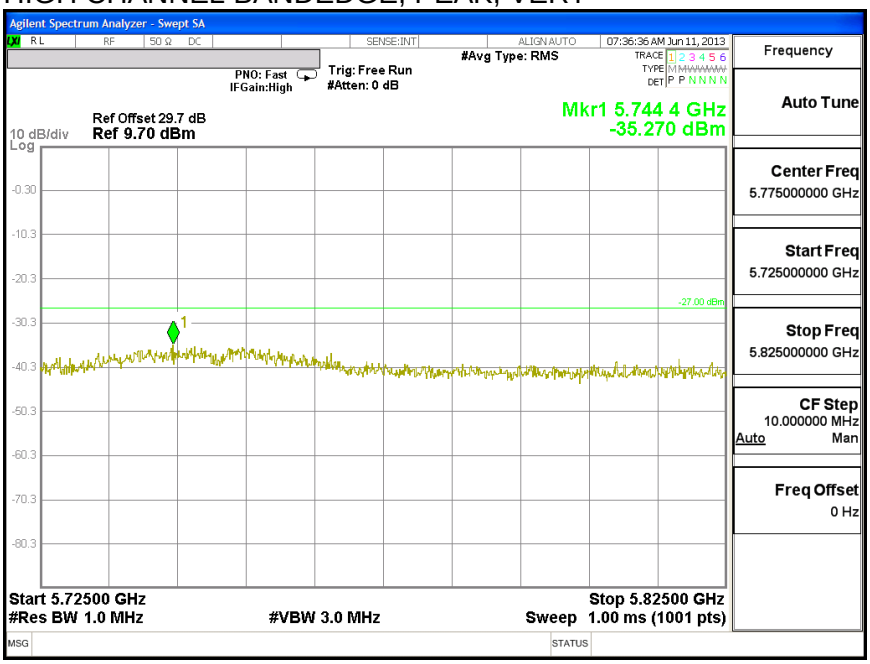
AUTHORIZED BANDEDGE (HIGH CHANNEL)

HIGH CHANNEL BANDEDGE, PEAK, HORIZ



HIGH CHANNEL BANDEDGE, PEAK, VERT



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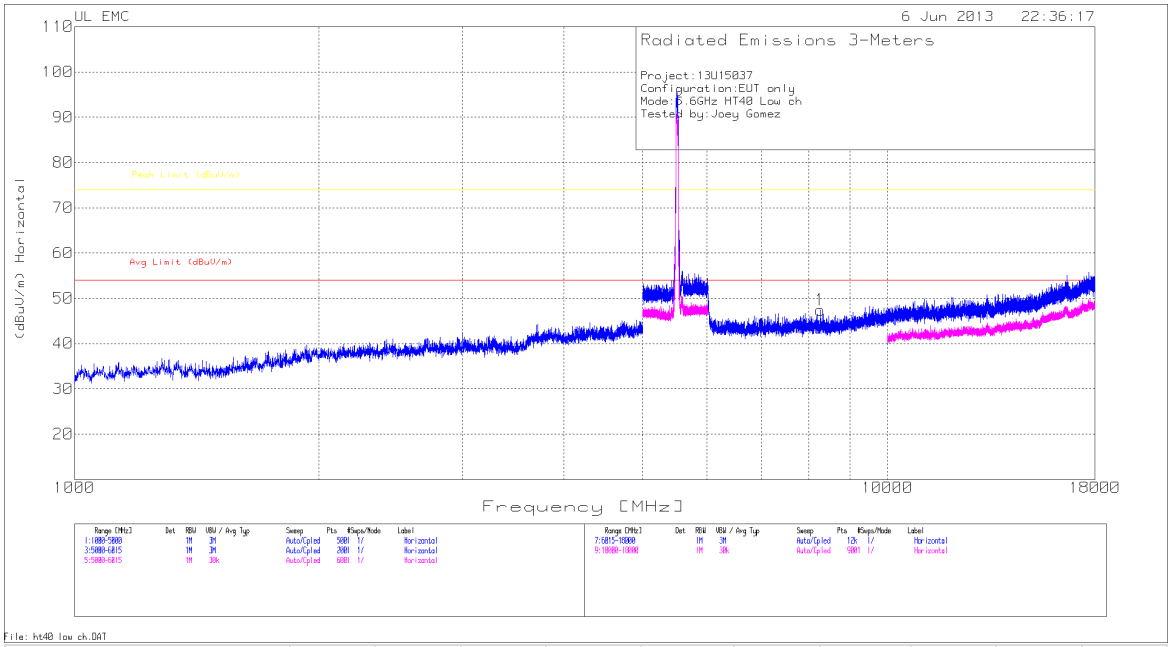
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



Horizontal 6015 - 18000MHz

Marker No.	Test Frequency	Meter Reading	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	(dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
1	8268.991	39.1	PK	36.2	-27.9	47.4	53.97	-6.57	74	-26.6	101	Horz

PK - Peak detector

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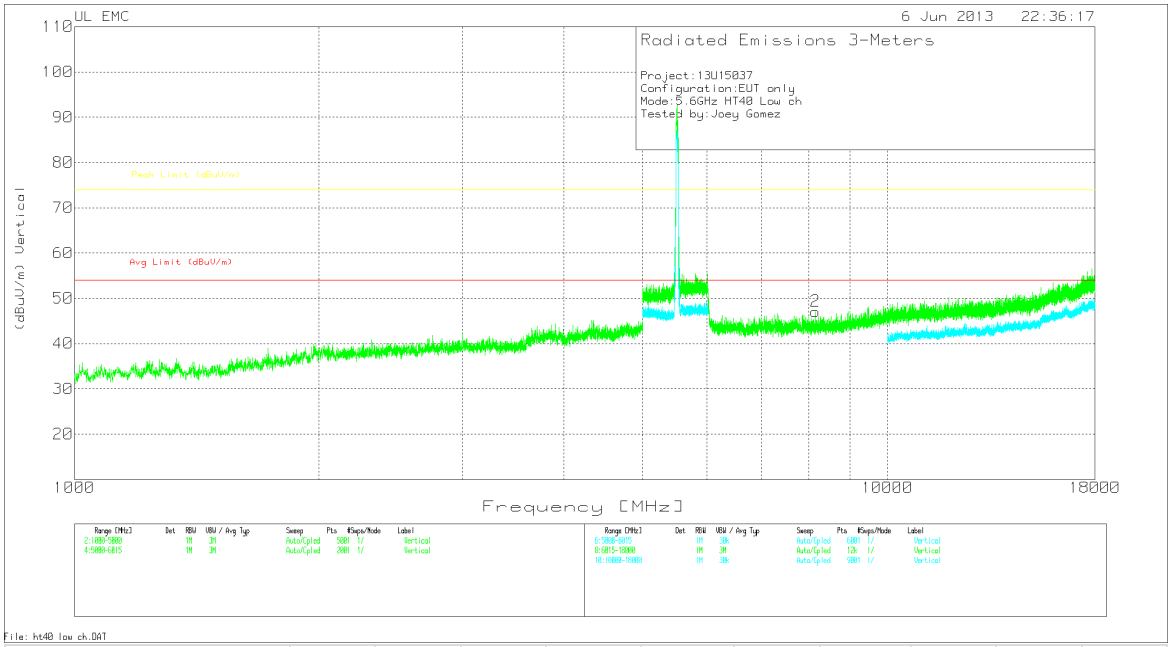
LOW CHANNEL VERTICAL



Vertical 6015 - 18000MHz

Marker No.	Test Frequency	Meter Reading	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	(dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
2	8157.14	39.38	PK	36.2	-28.5	47.08	53.97	-6.89	74	-26.92	101	Vert

PK - Peak detector

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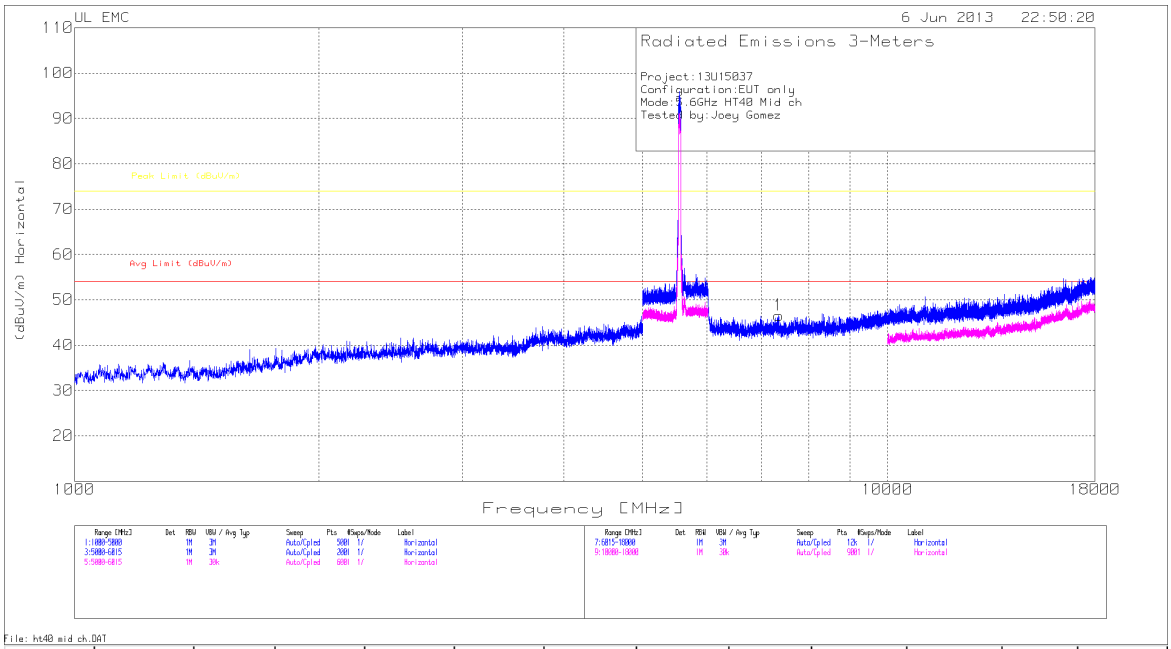
MID CHANNEL HORIZONTAL



Marker No.	Test Frequency	Meter Reading (dBuV)	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
Horizontal 6015 - 18000MHz												
1	7351.216	39.05	PK	36	-28.5	46.55	53.97	-7.42	74	-27.45	101	Horz
PK - Peak detector												

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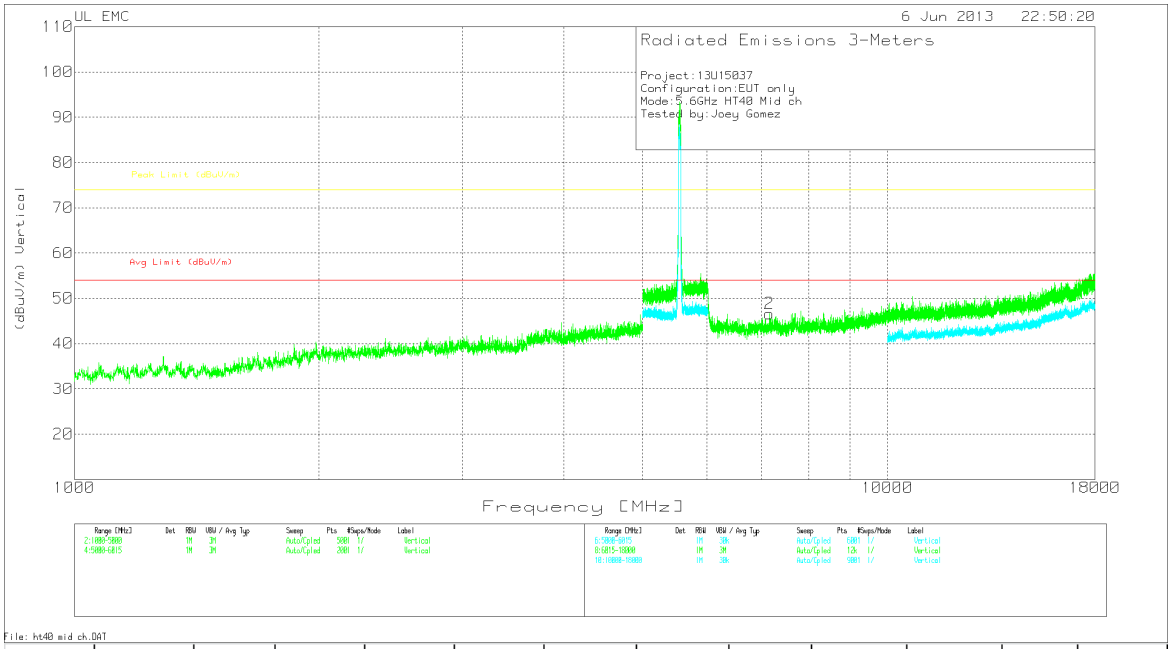
MID CHANNEL VERTICAL



Marker No.	Test Frequency	Meter Reading (dBuV)	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
Vertical 6015 - 18000MHz												
2	7158.473	40.3	PK	36	-29.7	46.6	53.97	-7.37	74	-27.4	101	Vert
PK - Peak detector												

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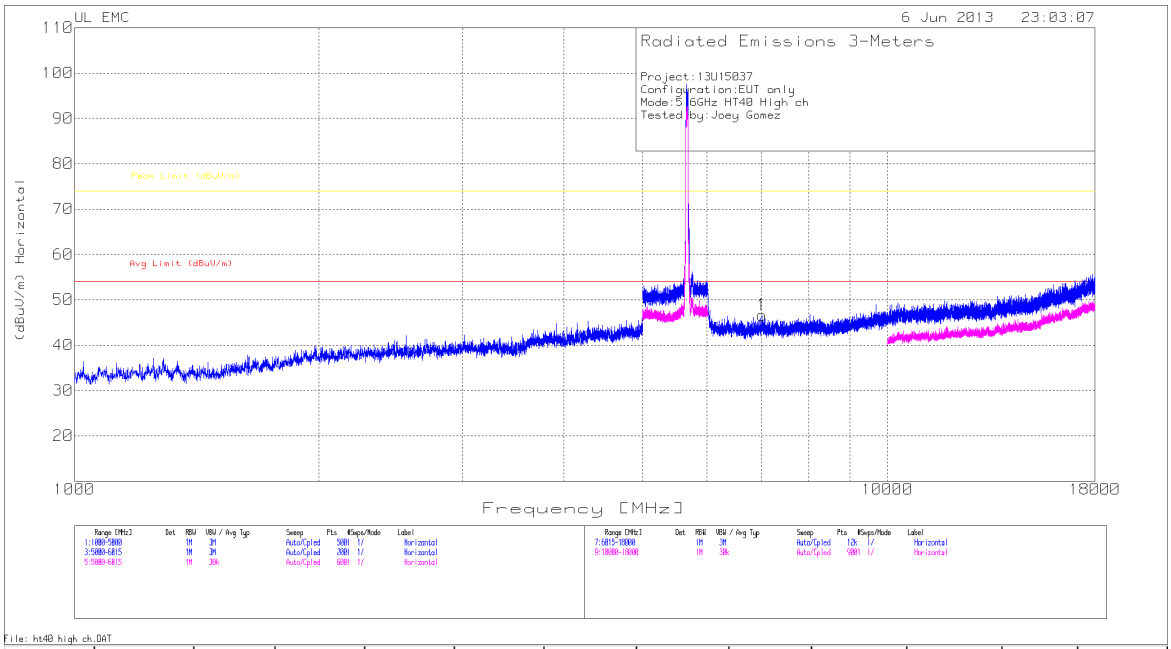
HIGH CHANNEL HORIZONTAL



Marker No.	Test Frequency	Meter Reading (dBuV)	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
Horizontal 6015 - 18000MHz												
1	7013.667	39.7	PK	36	-29.1	46.6	53.97	-7.37	74	-27.4	101	Horz
PK - Peak detector												

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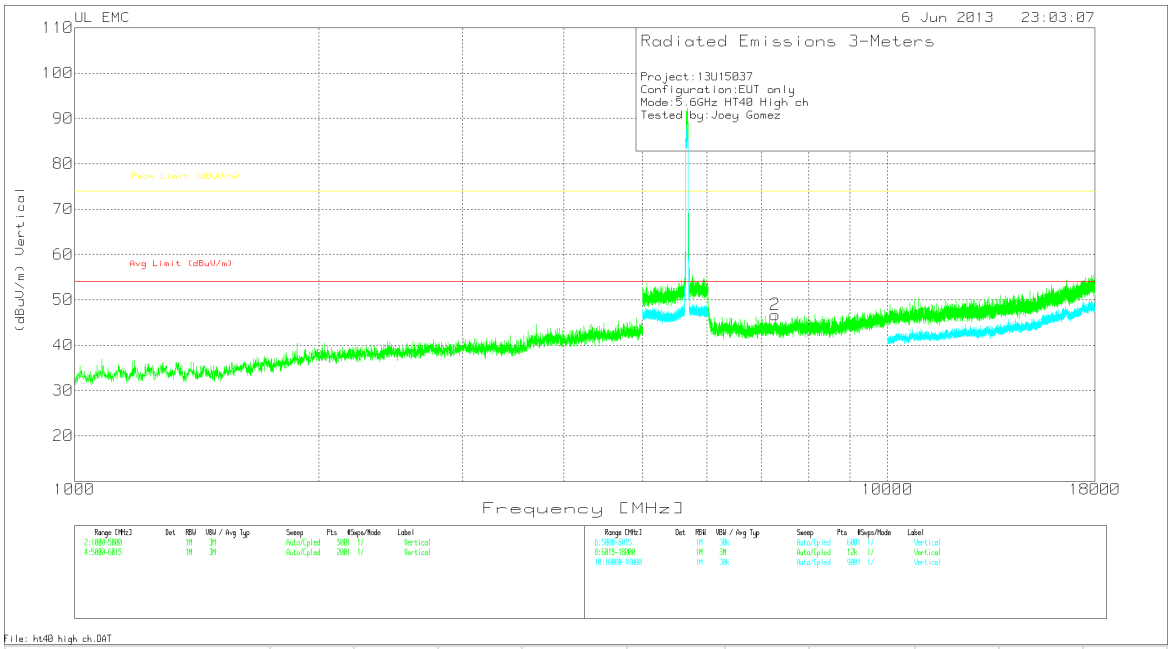
HIGH CHANNEL VERTICAL



File: ht40 high ch.DAT

Vertical 6015 - 18000MHz

Marker No.	Test Frequency	Meter Reading	Detector	AF T346 (dB/m)	Amp/Cbl /6GHz HPF (dB)	(dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
2	7279.312	39.48	PK	36	-28.8	46.68	53.97	-7.29	74	-27.32	101	Vert

PK - Peak detector

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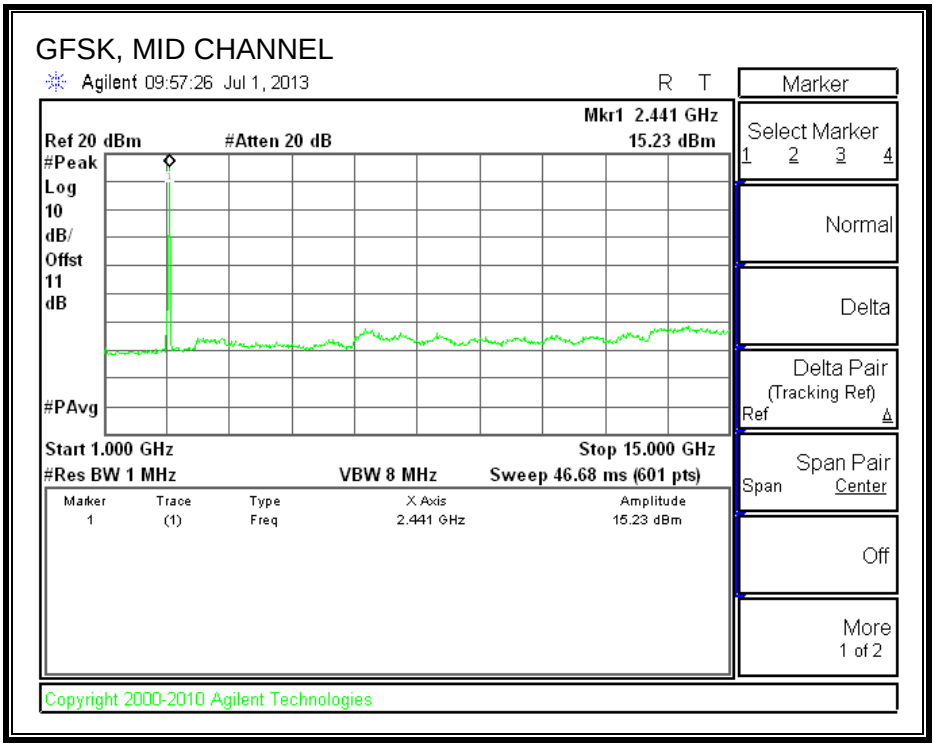
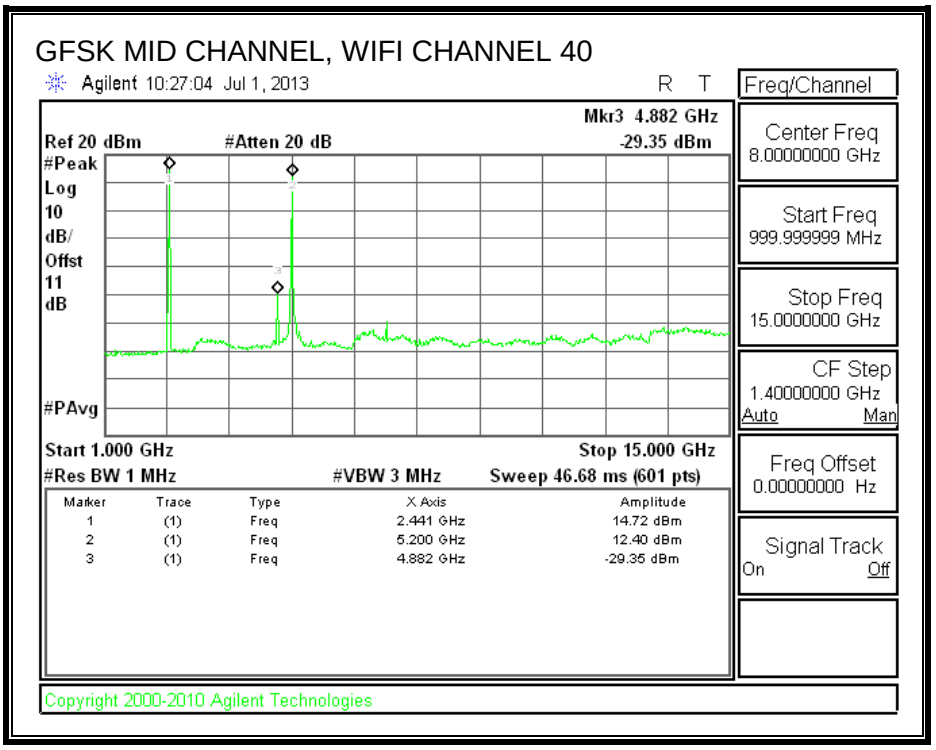
9.2.10. 2.4GHz and 5GHz Band Co-Location

BLUETOOTH ON



BLUETOOTH AND WiFi ON



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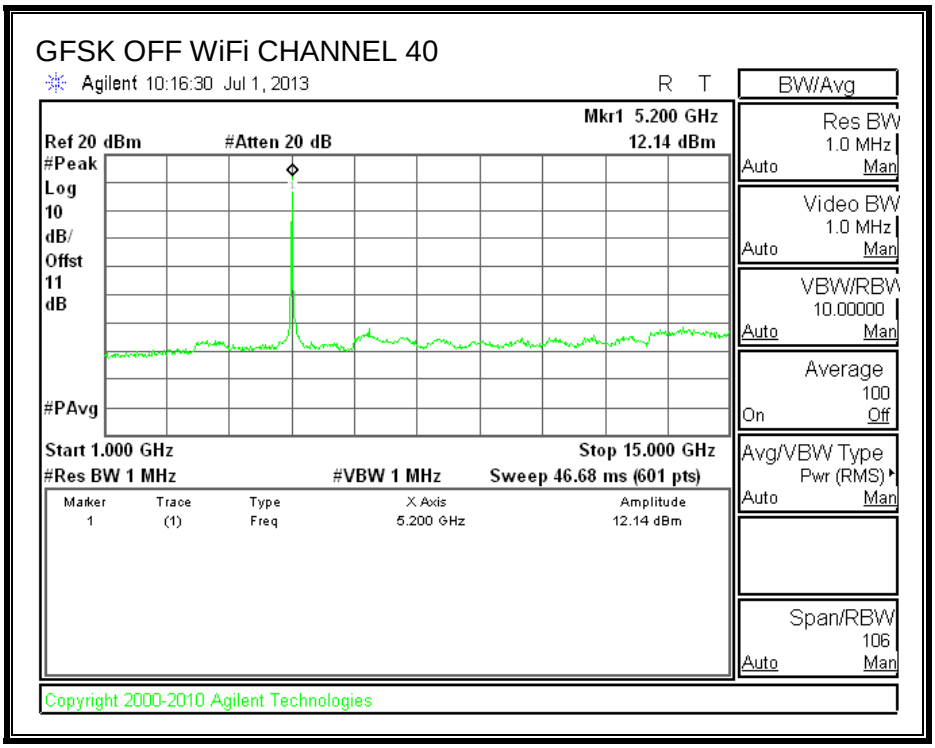
BLUETOOTH OFF WiFi ON



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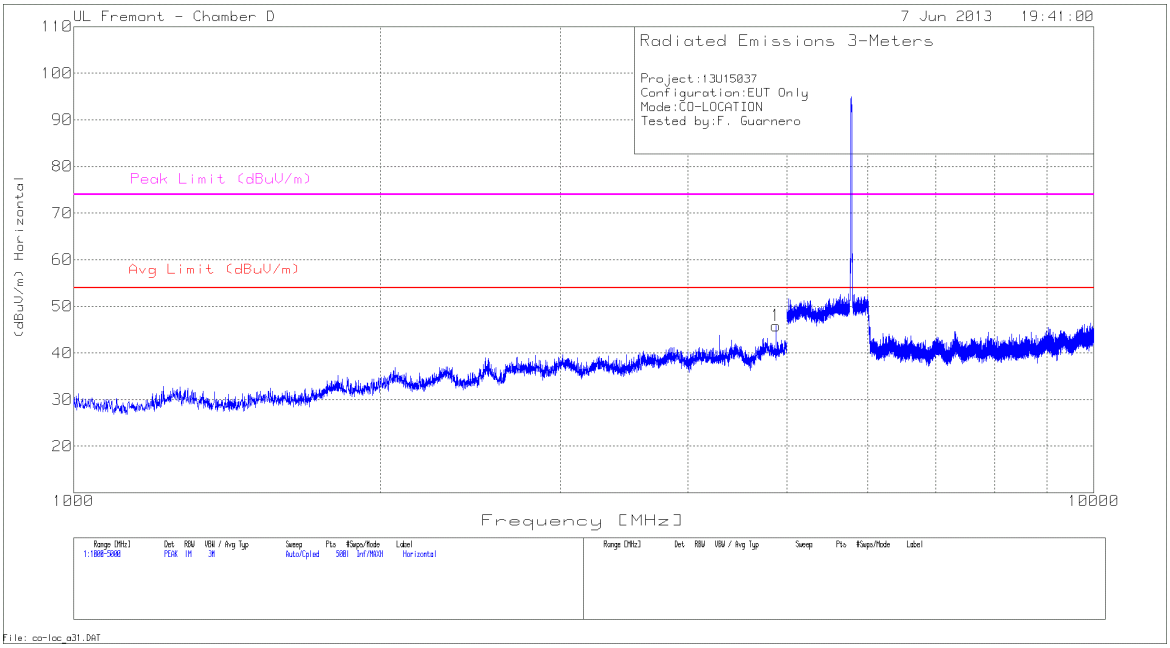
HARMONICS AND SPURIOUS EMISSIONS

CO-LOCATION HORIZONTAL



Horizontal 1000 - 5000MHz

Test Frequency	Meter Reading (dBuV)	Detector	T344 Ant Factor [dB/m]	Amp/Cbl /Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
4882.138	42	PK2	34.3	-30.9	45.4	53.97	-8.57	74	-28.6	314	221	Horz
4882.082	35.17	MAv1	34.3	-30.9	38.57	53.97	-15.4	74	-35.43	314	221	Horz

PK - Peak detector
MAv1 - KDB558074 v02 10.2.3.2/8.2.1 Option 1 Maximum RMS Average

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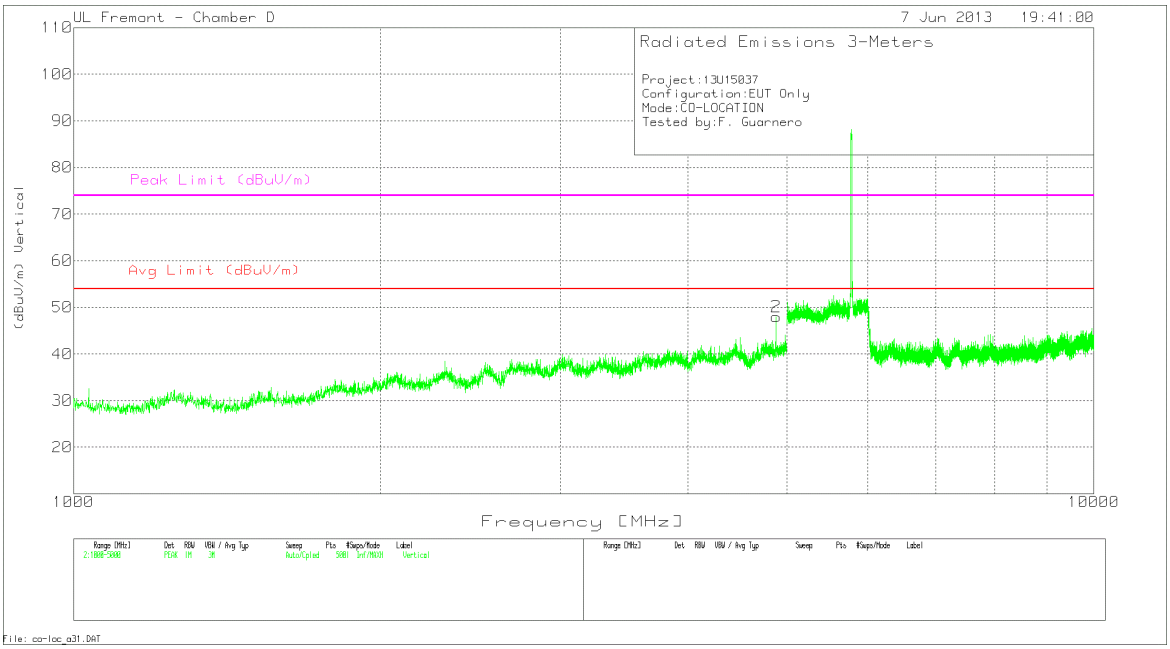
CO-LOCATION VERTICAL



Vertical 1000 - 5000MHz

Test Frequency	Meter Reading (dBuV)	Detector	T344 Ant Factor [dB/m]	Amp/Cbl /Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
4882.028	44.3	PK2	34.3	-30.9	47.7	53.97	-6.27	74	-26.3	314	221	Vert
4882.002	37.25	MAv1	34.3	-30.9	40.65	53.97	-13.32	74	-33.35	314	221	Vert

PK - Peak detector
MAv1 - KDB558074 v02 10.2.3.2/8.2.1 Option 1 Maximum RMS Average

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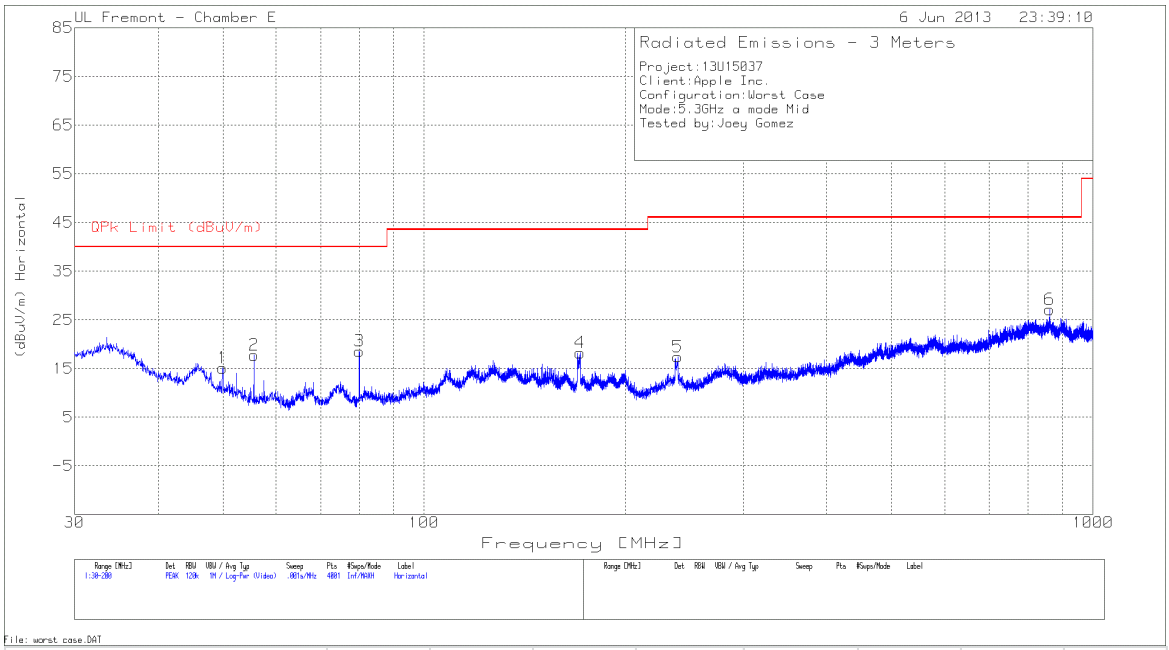
9.3. WORST-CASE BELOW 1 GHz

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

HORIZONTAL



Horizontal 30 - 200MHz										
Marker No.	Test Frequency	Meter Reading	Detector	AF T408 (dB/m)	Amp/Cbl (dB)	(dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
1	49.975	34.92	PK	7.9	-27.7	15.12	40	-24.88	200	Horz
2	55.67	38.47	PK	7.1	-27.8	17.77	40	-22.23	98	Horz
3	79.98	38.56	PK	7.7	-27.7	18.56	40	-21.44	300	Horz
4	171.0575	33.85	PK	11.7	-27.3	18.25	43.52	-25.27	98	Horz
Horizontal 200 - 1000MHz										
5	239.5	32.2	PK	11.5	-26.3	17.4	46.02	-28.62	99	Horz
6	861.7	30.83	PK	21.9	-25.6	27.13	46.02	-18.89	400	Horz

PK - Peak detector

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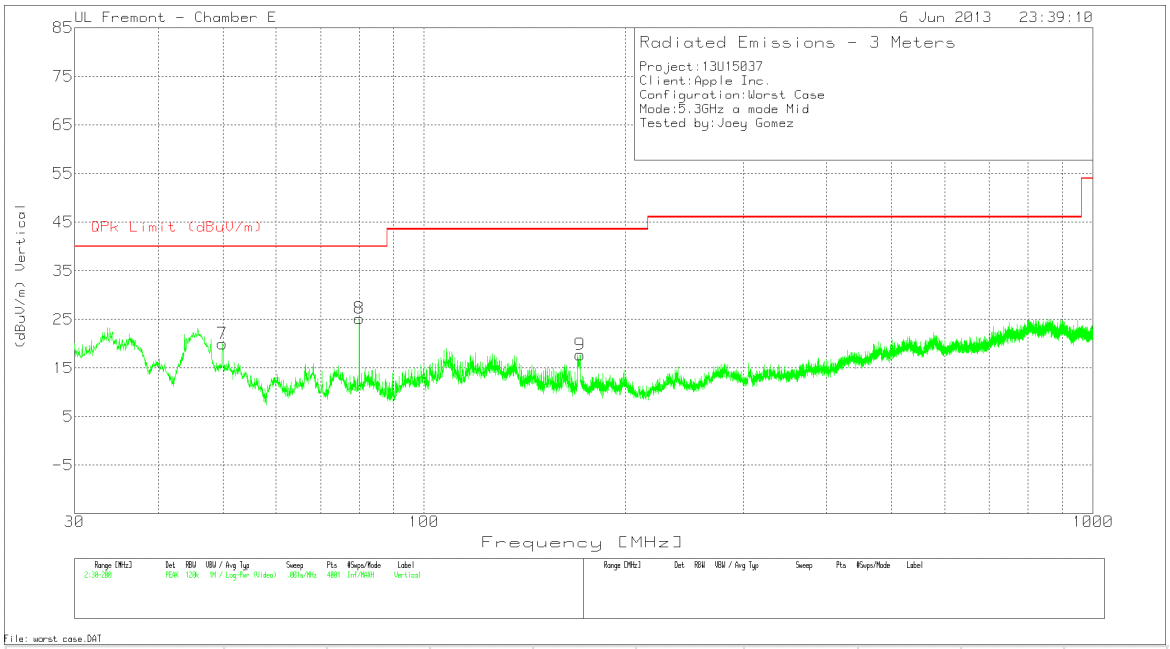
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)

VERTICAL



Vertical 30 - 200MHz

Marker No.	Test Frequency	Meter Reading	Detector	AF T408 (dB/m)	Amp/Cbl (dB)	(dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Height [cm]	Polarity
7	49.9325	39.82	PK	7.9	-27.7	20.02	40	-19.98	100	Vert
8	79.98	45.19	PK	7.7	-27.7	25.19	40	-14.81	100	Vert
9	171.015	33.31	PK	11.7	-27.3	17.71	43.52	-25.81	100	Vert

PK - Peak detector

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10. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

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

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

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.

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RESULTS

6 WORST EMISSIONS

Line-L1 .15 - 30MHz

Test Frequency	Meter Reading	Detector	T24 IL L1.TXT (dB)	LC Cables 1&3.TXT (dB)	dB(uVolts)	CISPR 11/22 Class B Quasi-peak	Margin	CISPR 11/22 Class B Average	Margin
0.159	54.38	QP	0.1	0	54.48	65.52	-11.04	-	-
0.159	48.7	Av	0.1	0	48.8	-	-	55.5	-6.7
0.8295	48.8	PK	0.1	0	48.9	56	-7.1	-	-
0.8295	30.76	Av	0.1	0	30.86	-	-	46	-15.14
7.278	39.71	PK	0.1	0.1	39.91	60	-20.09	-	-
7.278	25.72	Av	0.1	0.1	25.92	-	-	50	-24.08
16.854	45.42	PK	0.2	0.2	45.82	60	-14.18	-	-
16.854	28.85	Av	0.2	0.2	29.25	-	-	50	-20.75

Line-L2 .15 - 30MHz

Test Frequency	Meter Reading	Detector	T24 IL L2.TXT (dB)	LC Cables 2&3.TXT (dB)	dB(uVolts)	CISPR 11/22 Class B Quasi-peak	Margin	CISPR 11/22 Class B Average	Margin
0.1545	54.75	PK	0.1	0	54.85	65.8	-10.95	-	-
0.1545	40.25	Av	0.1	0	40.35	-	-	55.8	-15.45
0.78	42.3	PK	0.1	0	42.4	56	-13.6	-	-
0.78	24.89	Av	0.1	0	24.99	-	-	46	-21.01
2.4585	35.55	PK	0.1	0.1	35.75	56	-20.25	-	-
2.4585	22.07	Av	0.1	0.1	22.27	-	-	46	-23.73
17.5425	42	PK	0.2	0.2	42.4	60	-17.6	-	-
17.5425	29.72	Av	0.2	0.2	30.12	-	-	50	-19.88

PK - Peak detector
QP - Quasi-Peak detector
Av - Average detector

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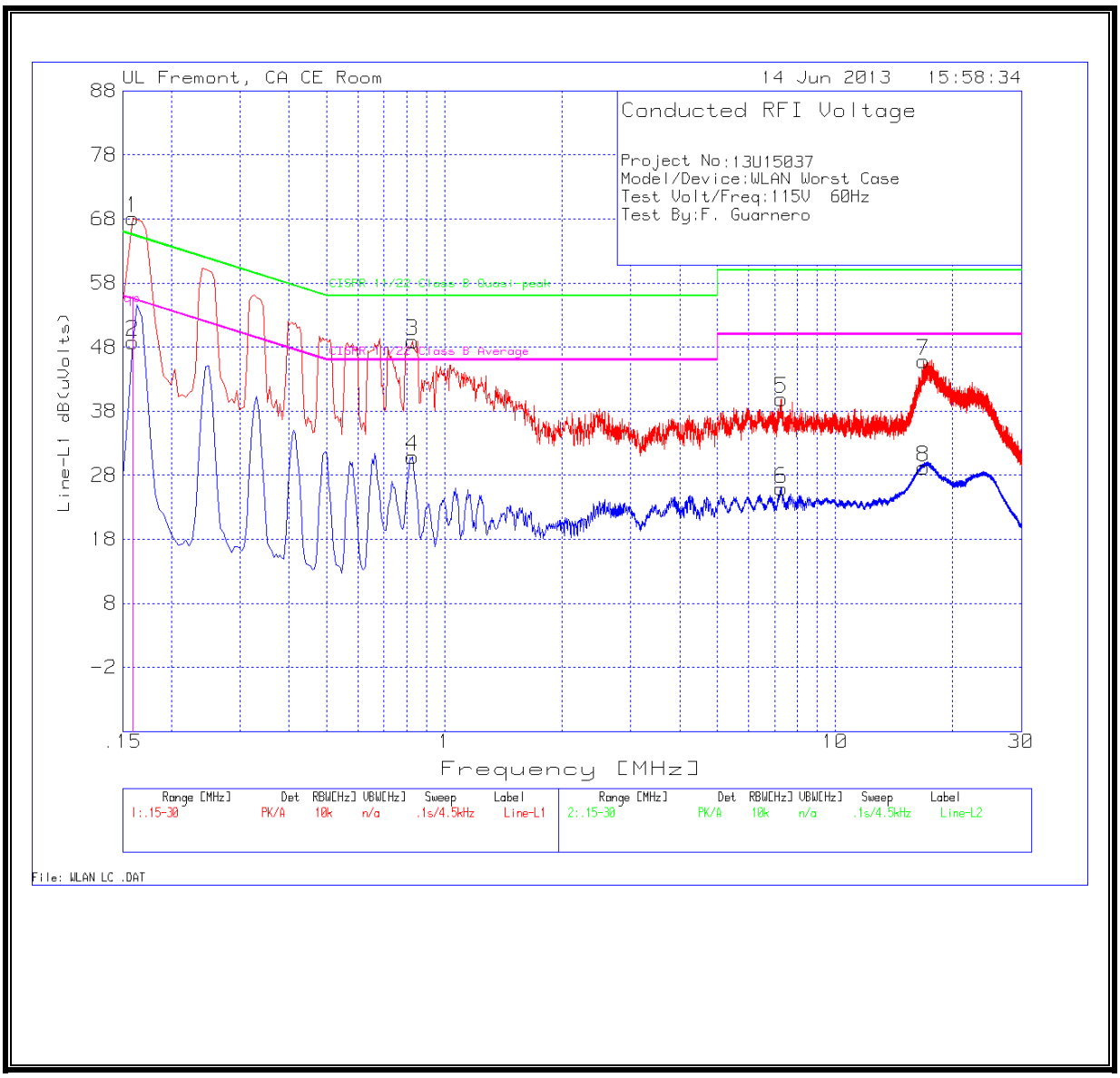
LINE 1 RESULTS



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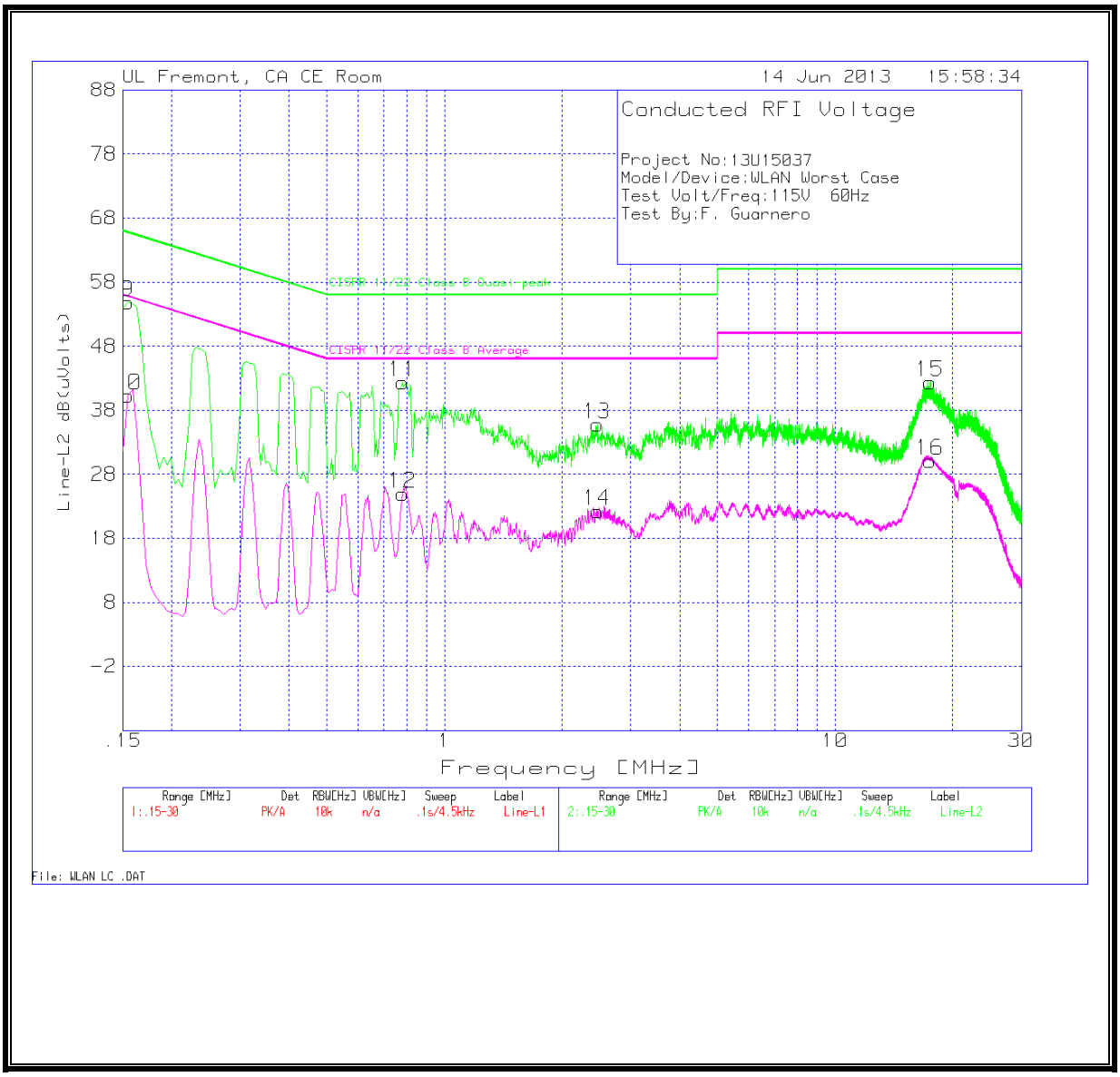
LINE 2 RESULTS



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11. DYNAMIC FREQUENCY SELECTION

11.1. OVERVIEW

11.1.1. LIMITS

INDUSTRY CANADA

IC RSS-210 is closely harmonized with FCC Part 15 DFS rules. The deviations are as follows:

RSS-210 Issue 7 A9.4 (b) (ii) **Channel Availability Check Time:** …

Additional requirements for the band 5600-5650 MHz: Until further notice, devices subject to this Section shall not be capable of transmitting in the band 5600-5650 MHz, so that Environment Canada weather radars operating in this band are protected.

RSS-210 Issue 7 A9.4 (b) (iv) **Channel closing time:** the maximum channel closing time is 260 ms.

FCC

§15.407 (h) and FCC 06-96 APPENDIX “COMPLIANCE MEASUREMENT PROCEDURES FOR UNLICENSED-NATIONAL INFORMATION INFRASTRUCTURE DEVCIES OPERATING IN THE 5250-5350 MHz AND 5470-5725 MHz BANDS INCORPORATING DYNAMIC FREQUENCY SELECTION”.

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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
Uniform Spreading	Yes	Not required	Not required

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

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

Maximum Transmit Power	Value (see note)
≥ 200 milliwatt	-64 dBm
< 200 milliwatt	-62 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.		

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Table 4: DFS Response requirement values

Parameter	Value
Non-occupancy period	30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds
Channel Closing Transmission Time	200 milliseconds + approx. 60 milliseconds over remaining 10 second period
The instant that the *Channel Move Time* and the *Channel Closing Transmission Time* begins is as follows: For the Short pulse radar Test Signals this instant is the end of the *Burst*. For the Frequency Hopping radar Test Signal, this instant is the end of the last radar burst generated. For the Long Pulse radar Test Signal this instant is the end of the 12 second period defining the radar transmission. 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 channel changes (an aggregate of approximately 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.	

Table 5 – Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (Microseconds)	PRI (Microseconds)	Pulses	Minimum Percentage of Successful Detection	Minimum Trials
1	1	1428	18	60%	30
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

Table 6 – Long Pulse Radar Test Signal

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

Table 7 – Frequency Hopping Radar Test Signal

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

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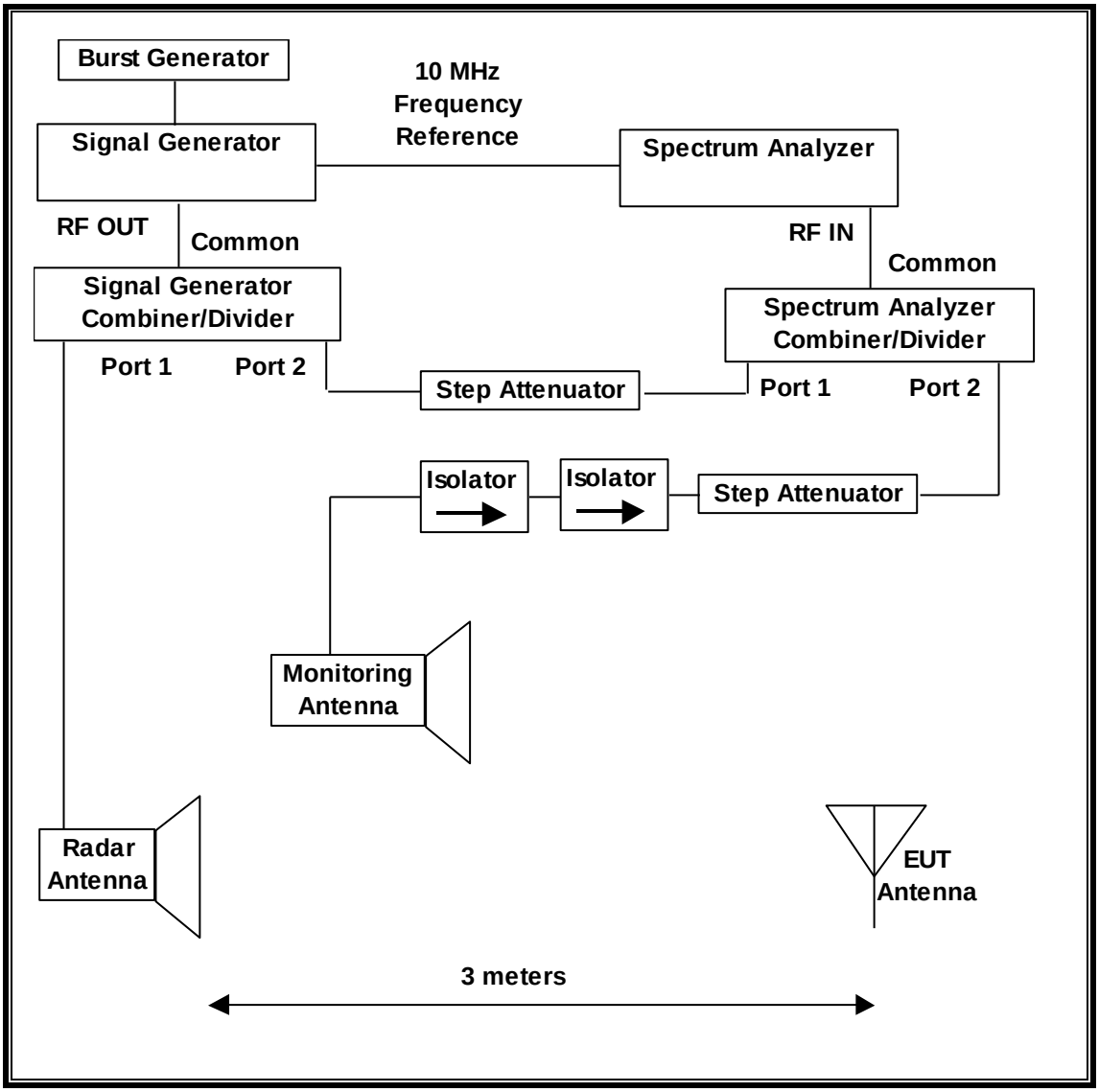
11.1.2. TEST AND MEASUREMENT SYSTEM

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 Freqeuncy Hopping Radar Waveform Generating Subsystem of FCC 06-96 APPENDIX. The frequency of the signal generator is incremented in 1 MHz steps from F_L to F_H for each successive trial. This incremental sequence is repeated as required to generate a minimum of 30 total trials and to maintain a uniform frequency distribution over the entire Detection Bandwidth.

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

SYSTEM CALIBRATION

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

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

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

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ADJUSTMENT OF DISPLAYED TRAFFIC LEVEL

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

TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Asset Number**	**Cal Due**
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01178	08/18/13
Vector Signal Generator, 20GHz	Agilent / HP	E8267C	C01066	11/20/13

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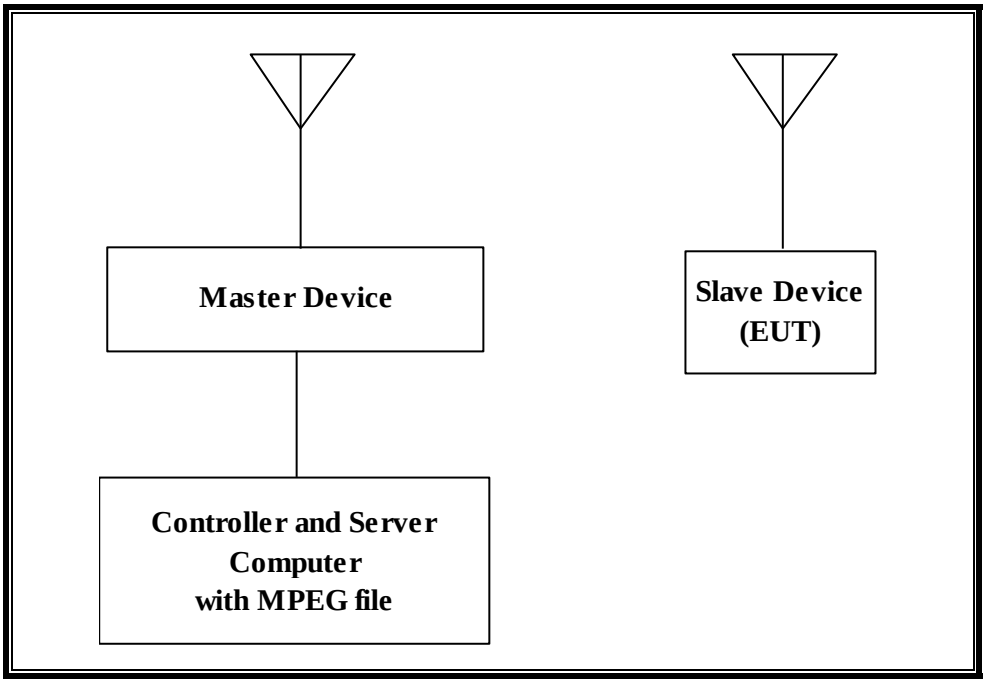
11.1.3. SETUP OF EUT (CLIENT MODE)

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**
Wireless Access Point (Master Device)	Cisco	AIR-AP1252AG-A-K9	FTX130390D9	LDK102061
AC Adapter (AP)	Delta Electronics	EADP-45BB B	DTH1049902N	DoC
Notebook PC (Controller/Server)	Apple	MacBook Pro A1150	AOU257941	DoC
AC Adapter (Controller/Server PC)	Delta Electronics	A1330	MV952157KAGKA	DoC

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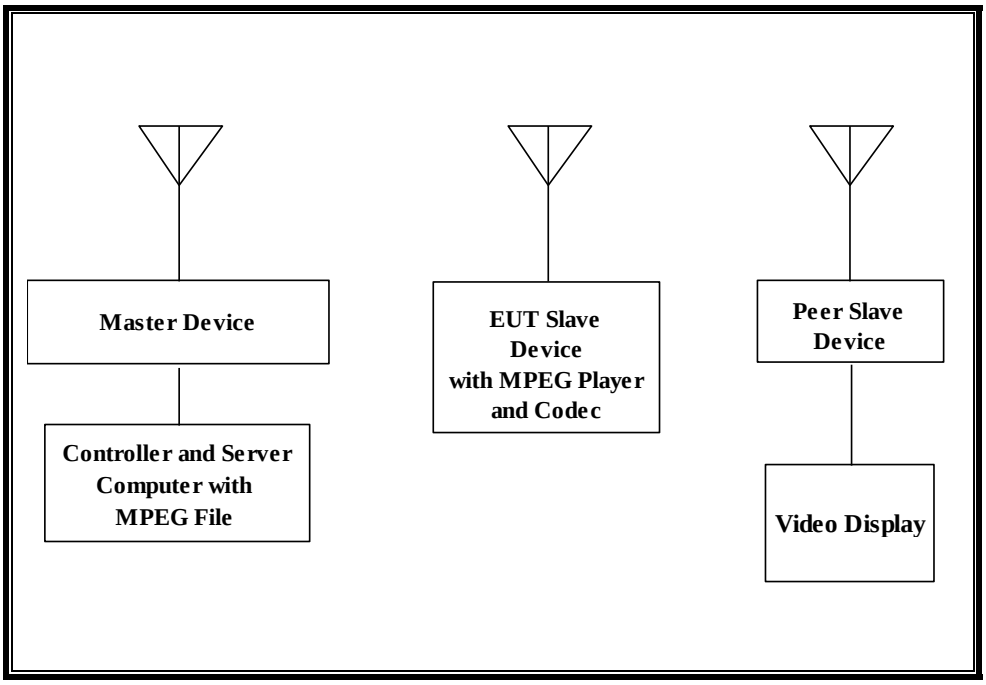
11.1.4. SETUP OF EUT (CLIENT-TO-CLIENT COMMUNICATIONS MODE)

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**
Wireless Access Point (Master Device)	Cisco	AIR-AP1252AG-A-K9	FTX130390D9	LDK102061
AC Adapter (AP)	Delta Electronics	EADP-45BB B	DTH1049902N	DoC
Notebook PC (Controller/Server)	Apple	MacBook Pro A1150	AOU257941	DoC
AC Adapter (Controller/Server PC)	Delta Electronics	A1330	MV952157KAGKA	DoC
Apple TV (Peer Slave Device)	Apple	A1469	V07JV1Z7FF54	BCGA1469
Video Display	Dell	U2410f	CN-0FJ525N-72872-1B5-AGAL	DoC

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11.1.5. DESCRIPTION OF EUT

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 9.54 dBm EIRP in the 5250-5350 MHz band and 11.74 dBm EIRP in the 5470-5725 MHz band.

The only antenna assembly utilized with the EUT has a gain of –5.83 dBi in the 5250-5350 MHz band and –4.25 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 margin to the limit.

The EUT uses one transmitter/receiver chain connected to an antenna to perform radiated tests.

WLAN traffic is generated by streaming the video file TestFile.mp2 “6 ½ Magic Hours” from the Master to the Slave in full motion video mode using Safari web browser.

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

The EUT utilizes the 802.11a/n architecture. Two nominal channel bandwidths of 20 MHz and 40 MHz are implemented.

The software installed in the EUT is 11A5400f.

UNIFORM CHANNEL SPREADING

This requirement is not applicable to Slave radio devices.

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

The Master Device is a Cisco Access Point, FCC ID: LDK102061. The minimum antenna gain for the Master Device is 3.5 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 margin to the limit.

The software installed in the access point is 12.4(25d)JA1.

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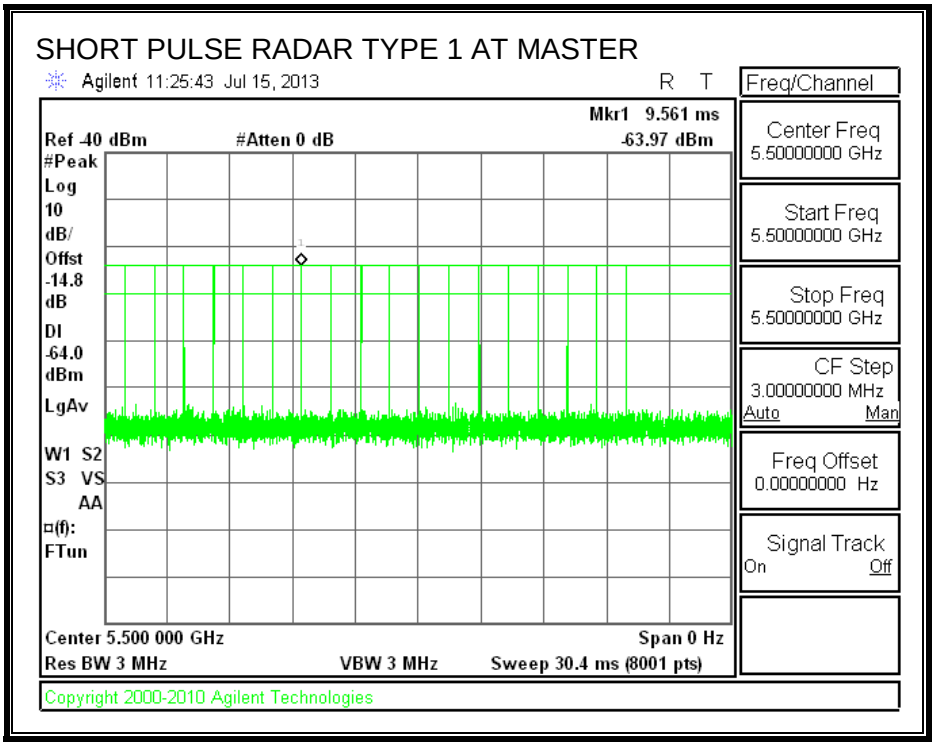
11.2. CLIENT MODE RESULTS FOR 20 MHz BANDWIDTH

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



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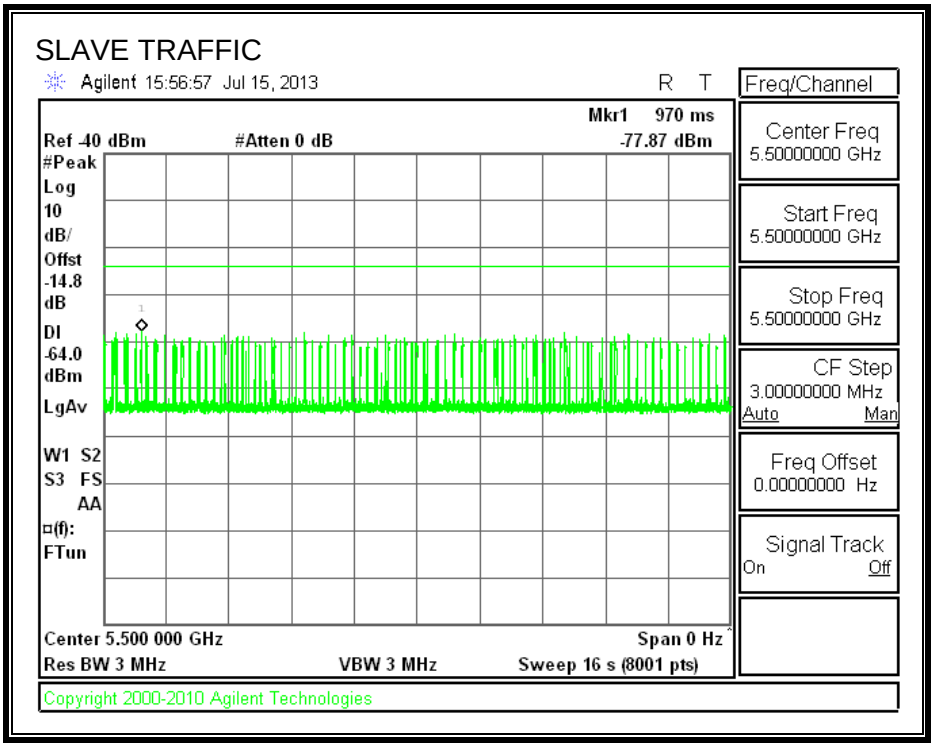
TRAFFIC



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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 FCC aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

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

RESULTS

Agency	Channel Move Time (sec)	Limit (sec)
FCC / IC	0.126	10

Agency	Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
FCC	0.0	60
IC	2.0	260

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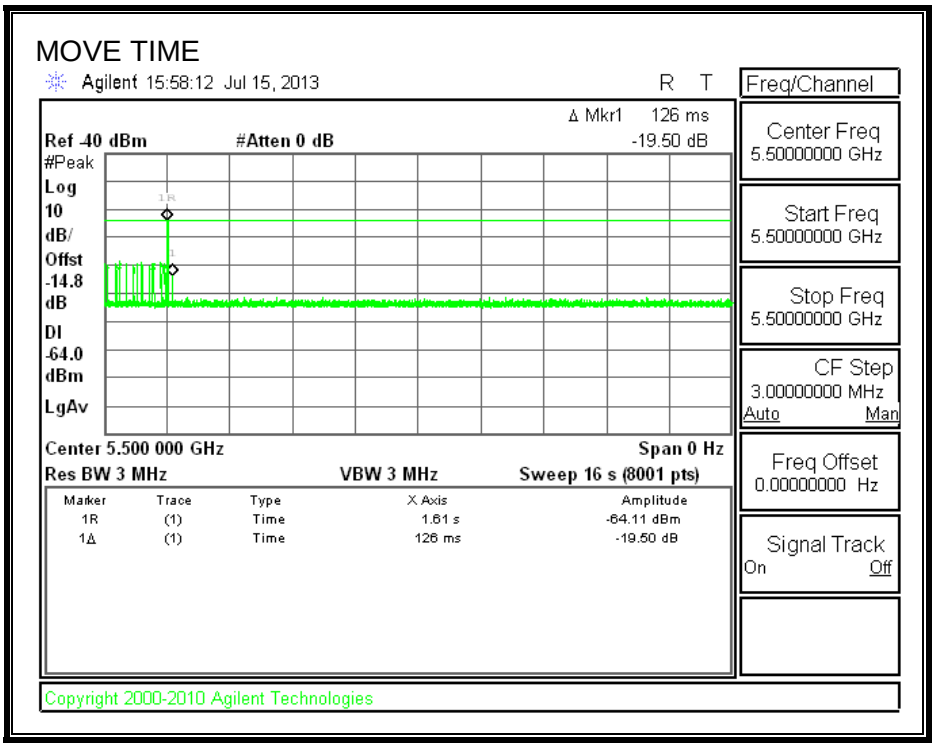
MOVE TIME



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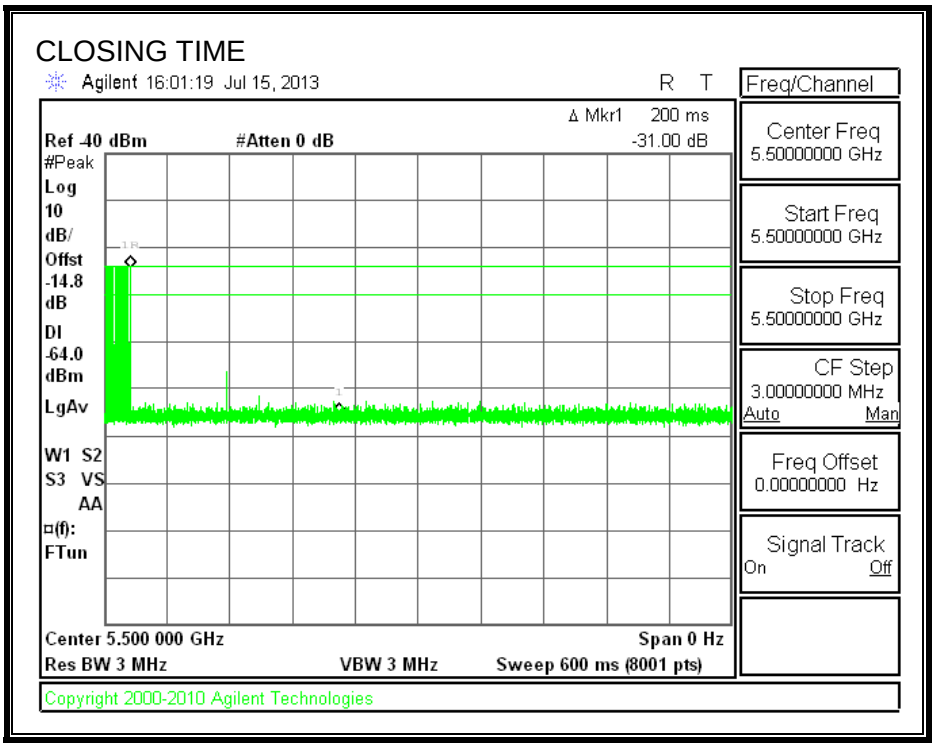
CHANNEL CLOSING TIME



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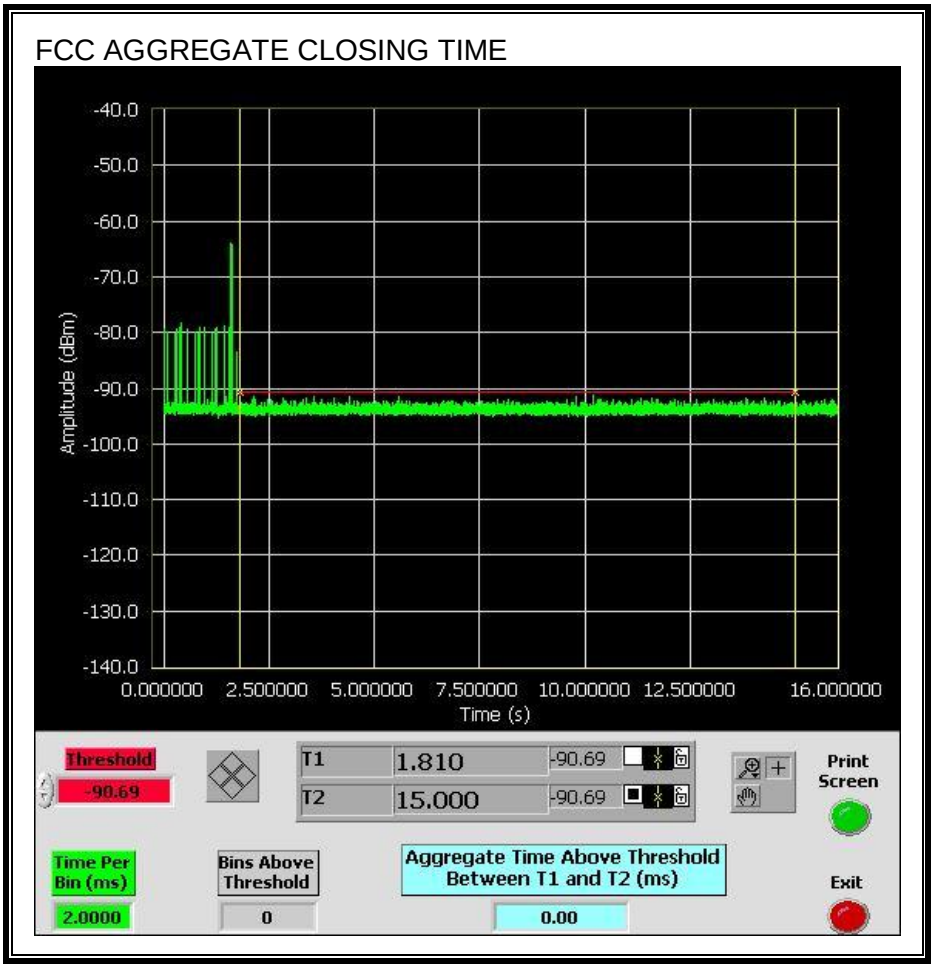
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the FCC aggregate monitoring period.



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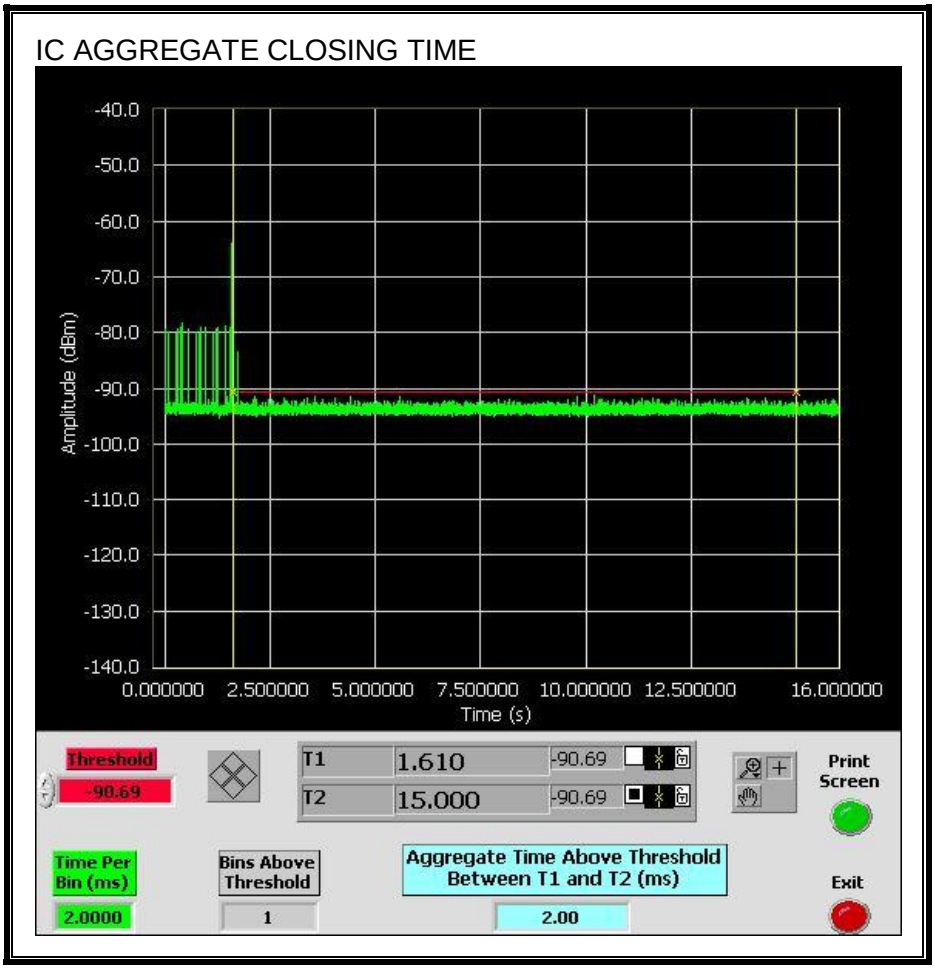
Only intermittent transmissions are observed during the IC aggregate monitoring period.



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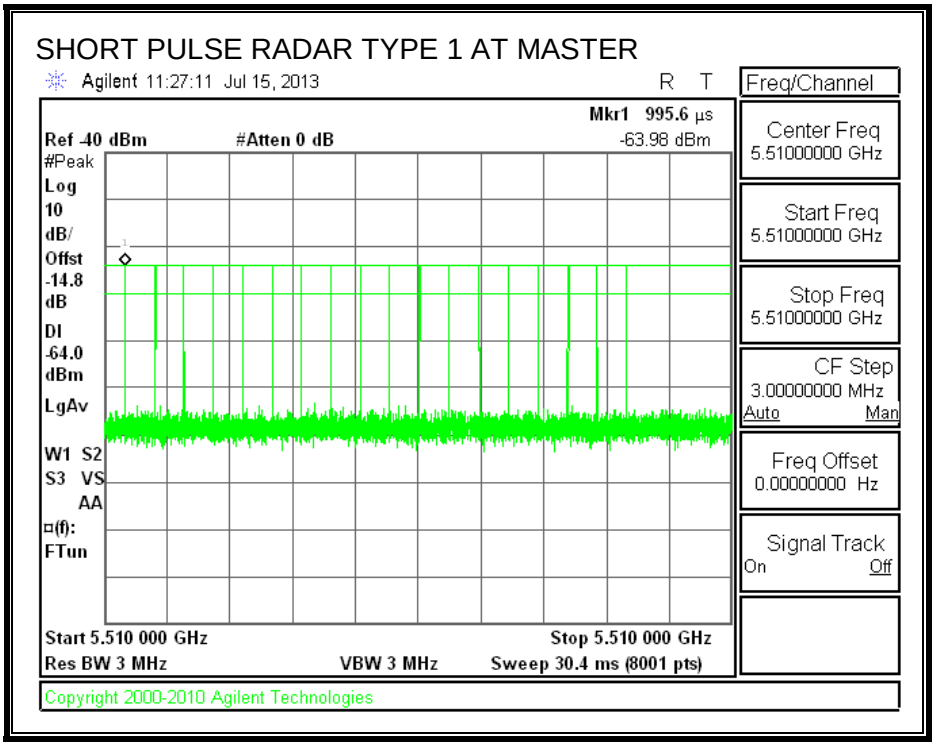
11.3. CLIENT MODE RESULTS FOR 40 MHz BANDWIDTH

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



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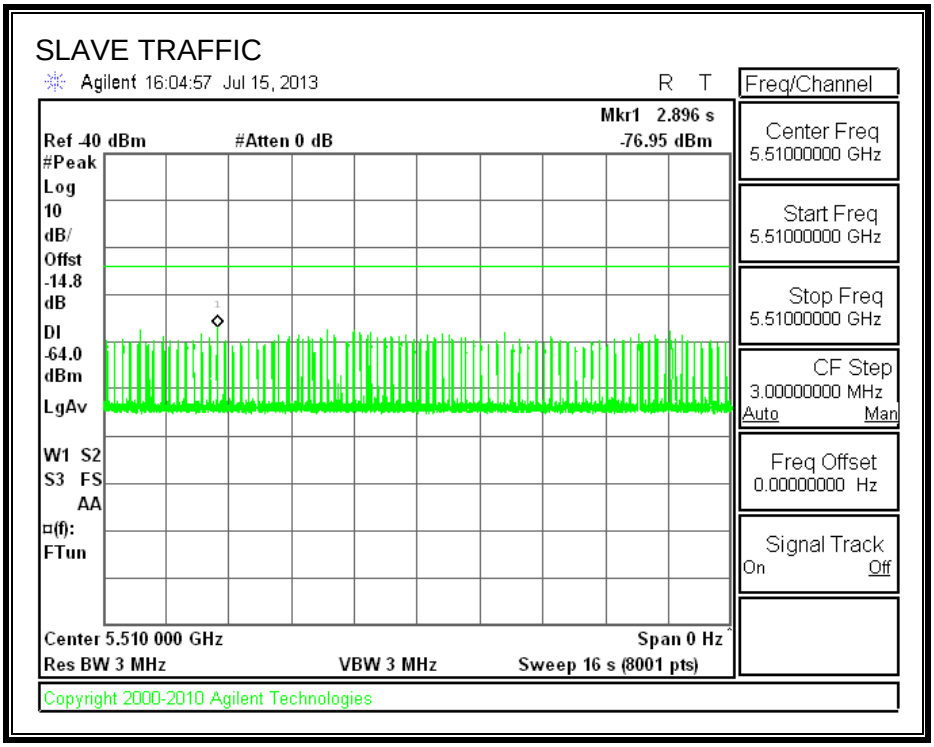
TRAFFIC



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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 FCC aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

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

RESULTS

Agency	Channel Move Time (sec)	Limit (sec)
FCC / IC	0.118	10

Agency	Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
FCC	0.0	60
IC	2.0	260

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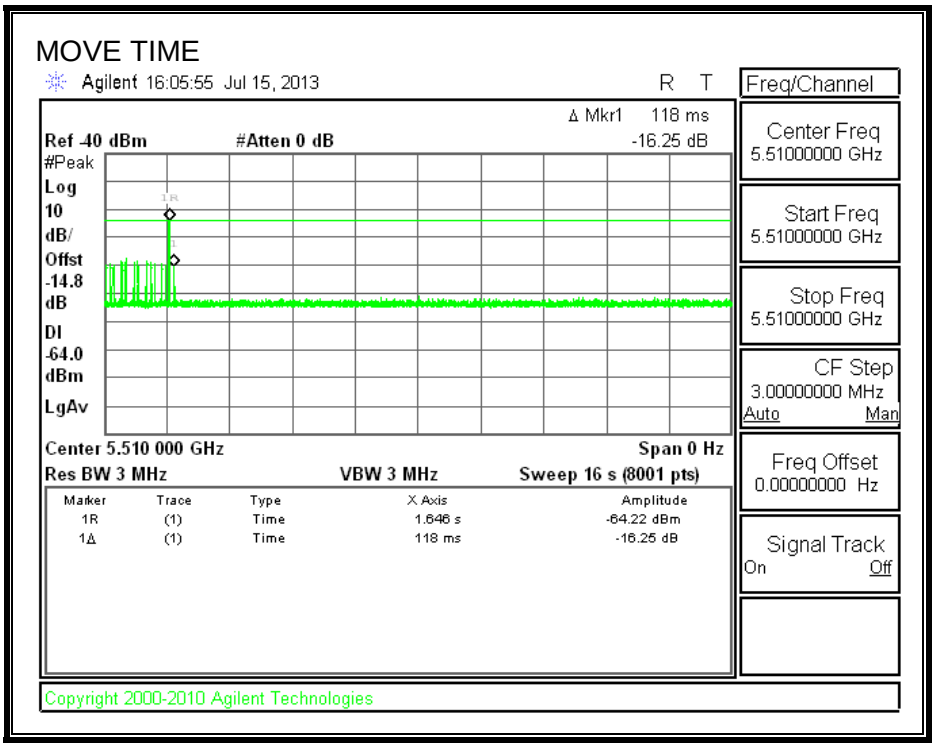
MOVE TIME



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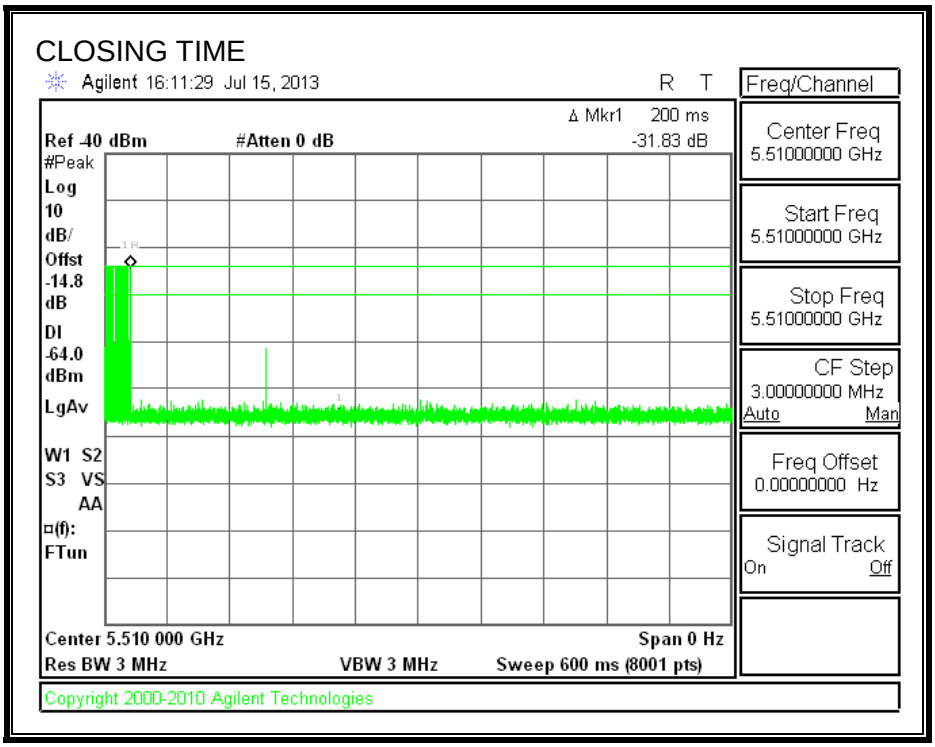
CHANNEL CLOSING TIME



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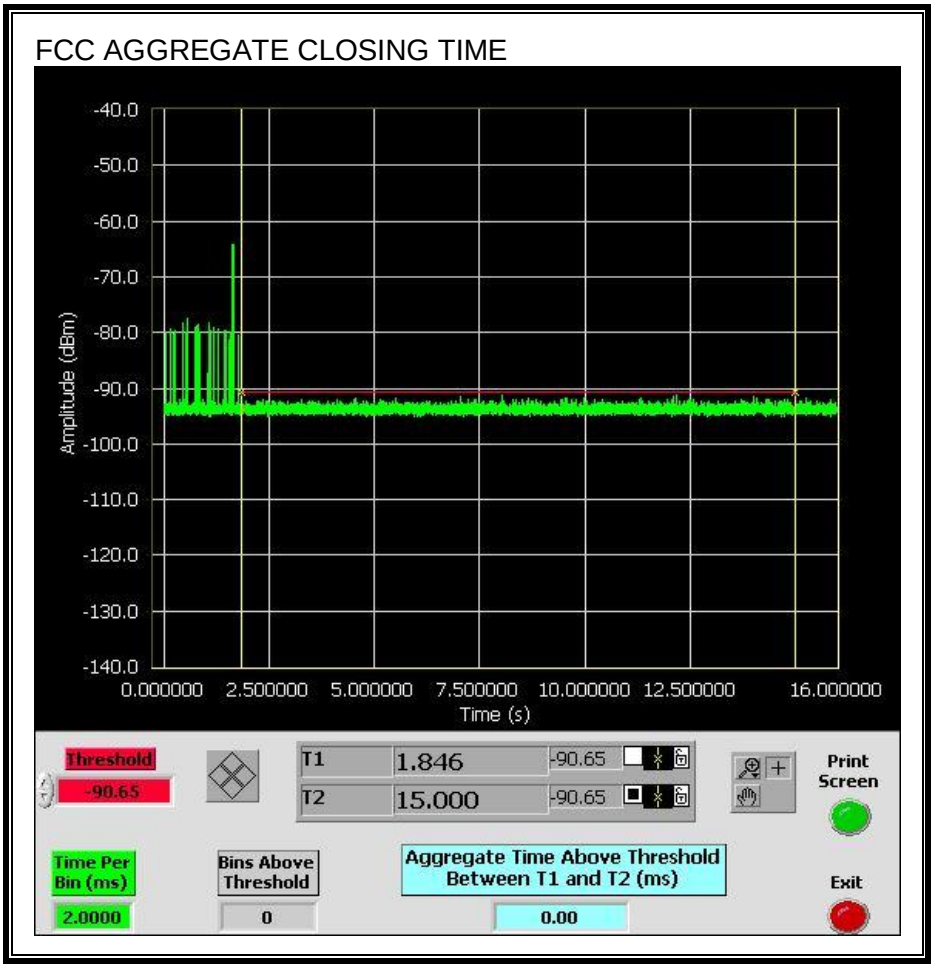
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the FCC aggregate monitoring period.



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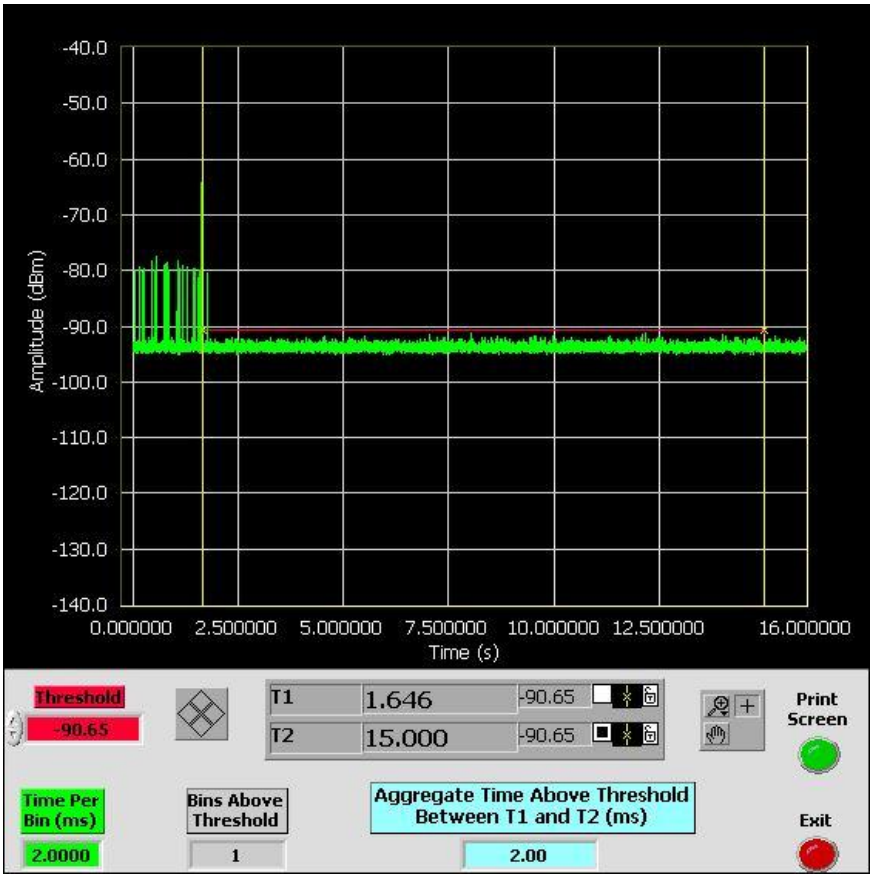
Only intermittent transmissions are observed during the IC aggregate monitoring period.

IC AGGREGATE CLOSING TIME



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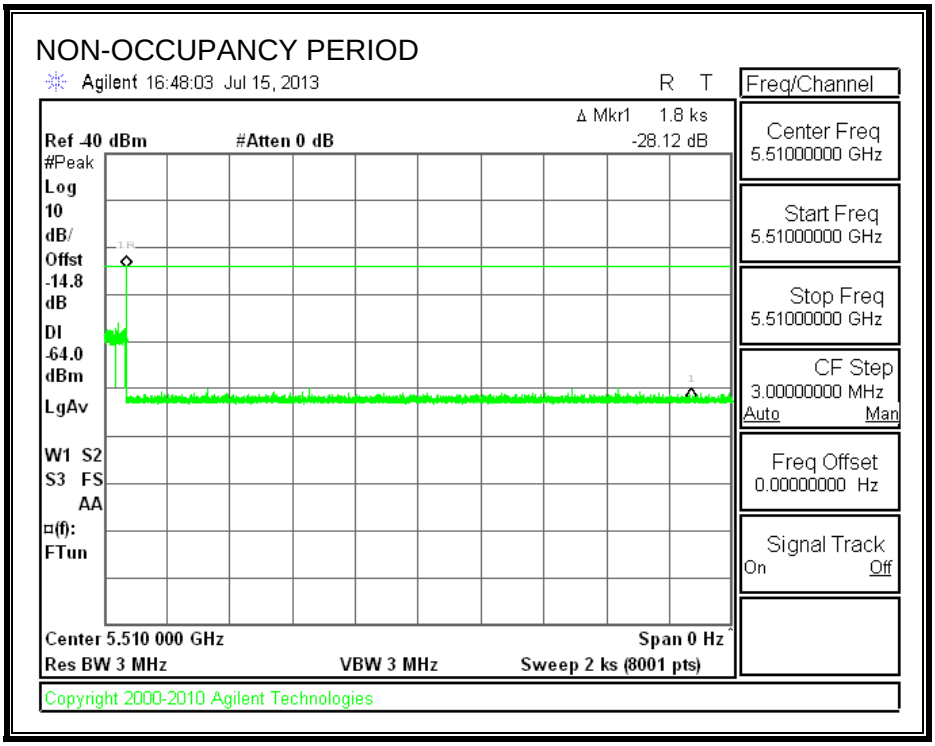
11.3.5. NON-OCCUPANCY PERIOD

RESULTS

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



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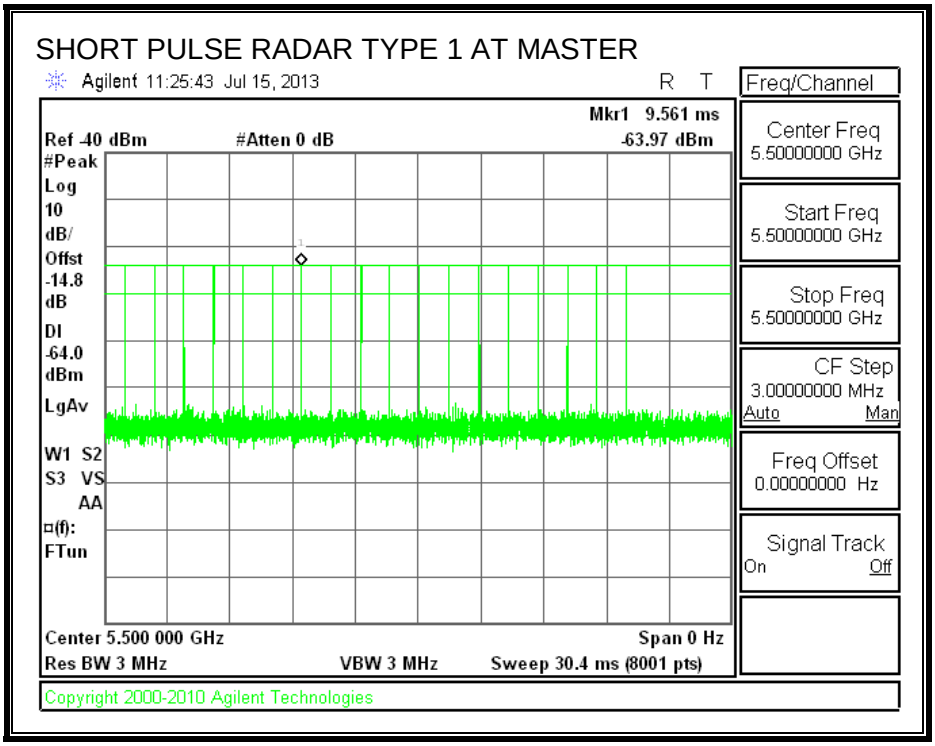
11.4. CLIENT-TO-CLIENT COMMUNICATIONS MODE RESULTS FOR 20 MHz BANDWIDTH

11.4.1. TEST CHANNEL

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

11.4.2. RADAR WAVEFORM AND TRAFFIC

RADAR WAVEFORM



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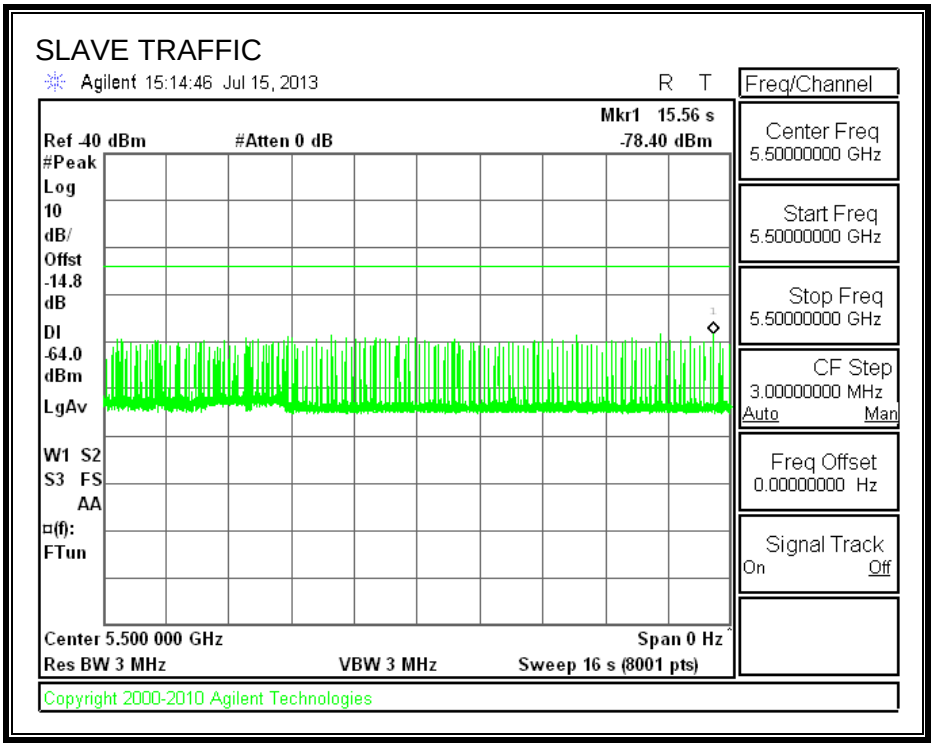
TRAFFIC



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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 FCC aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

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

RESULTS

Agency	Channel Move Time (sec)	Limit (sec)
FCC / IC	0.072	10

Agency	Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
FCC	0.0	60
IC	2.0	260

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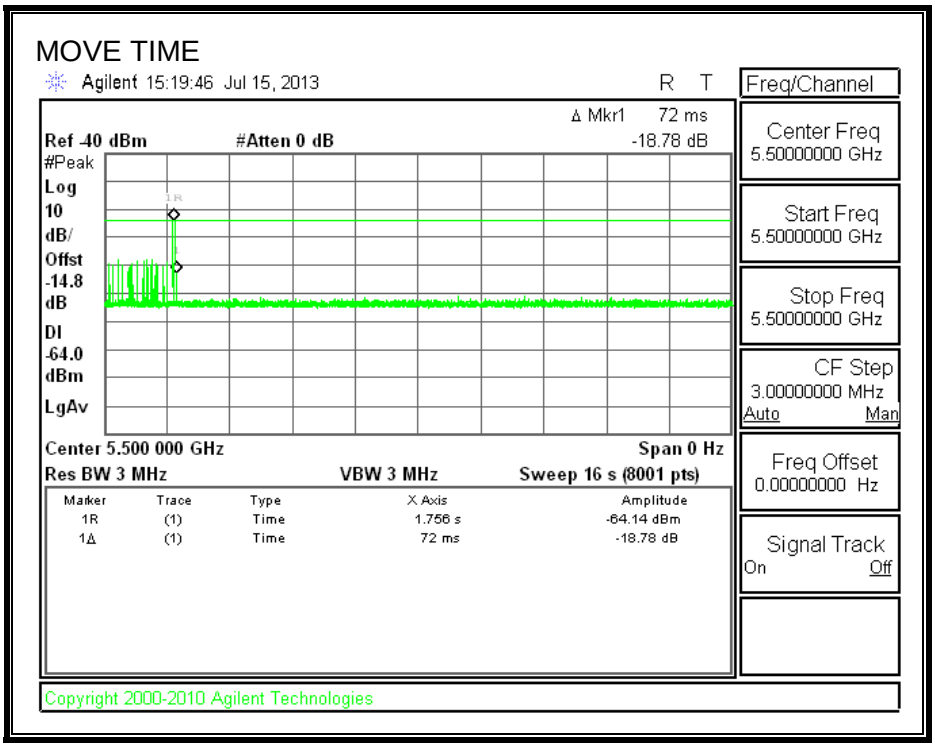
MOVE TIME



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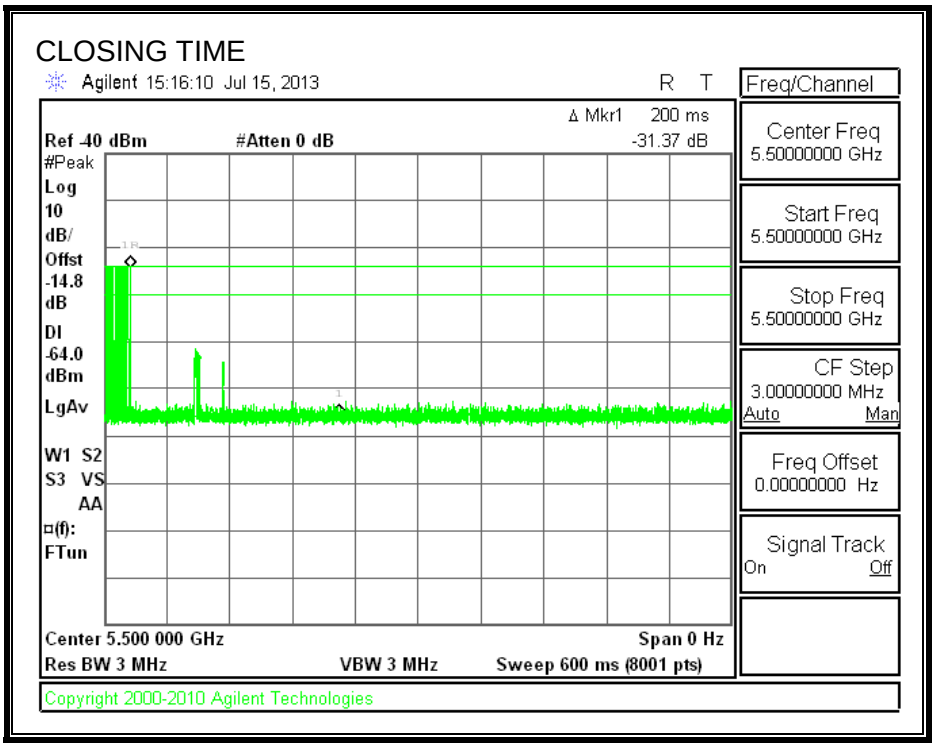
CHANNEL CLOSING TIME



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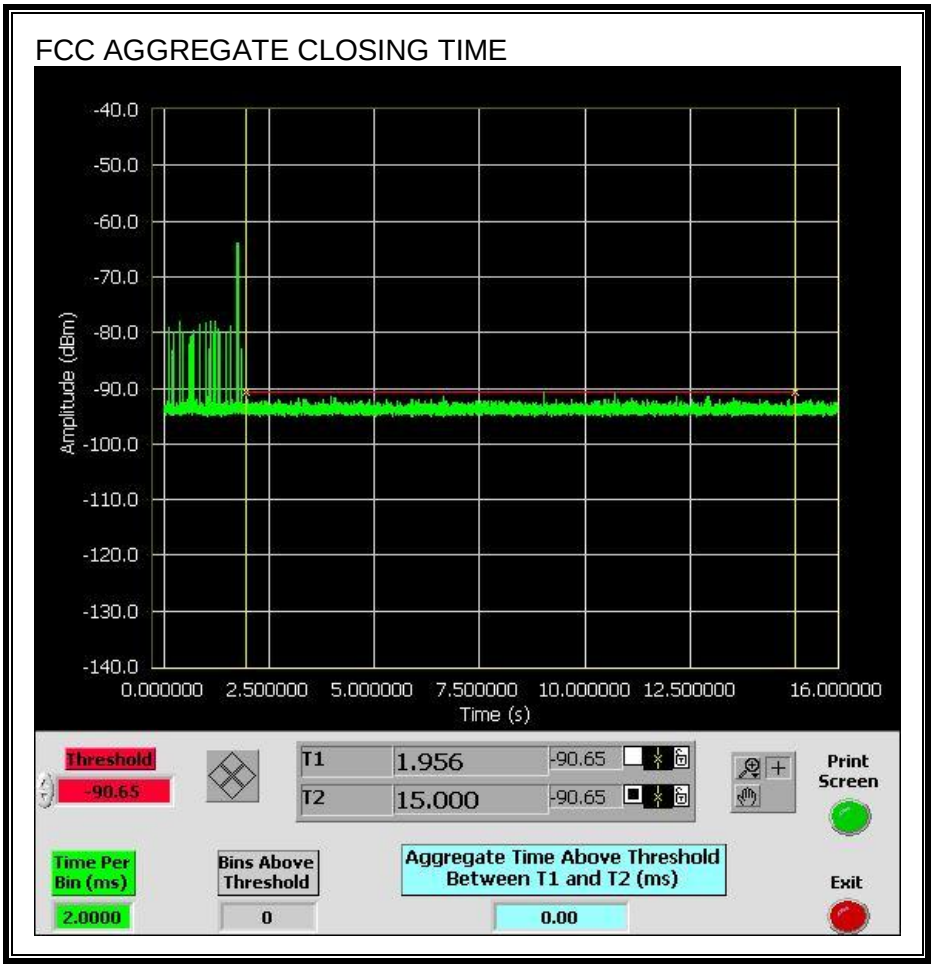
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the FCC aggregate monitoring period.



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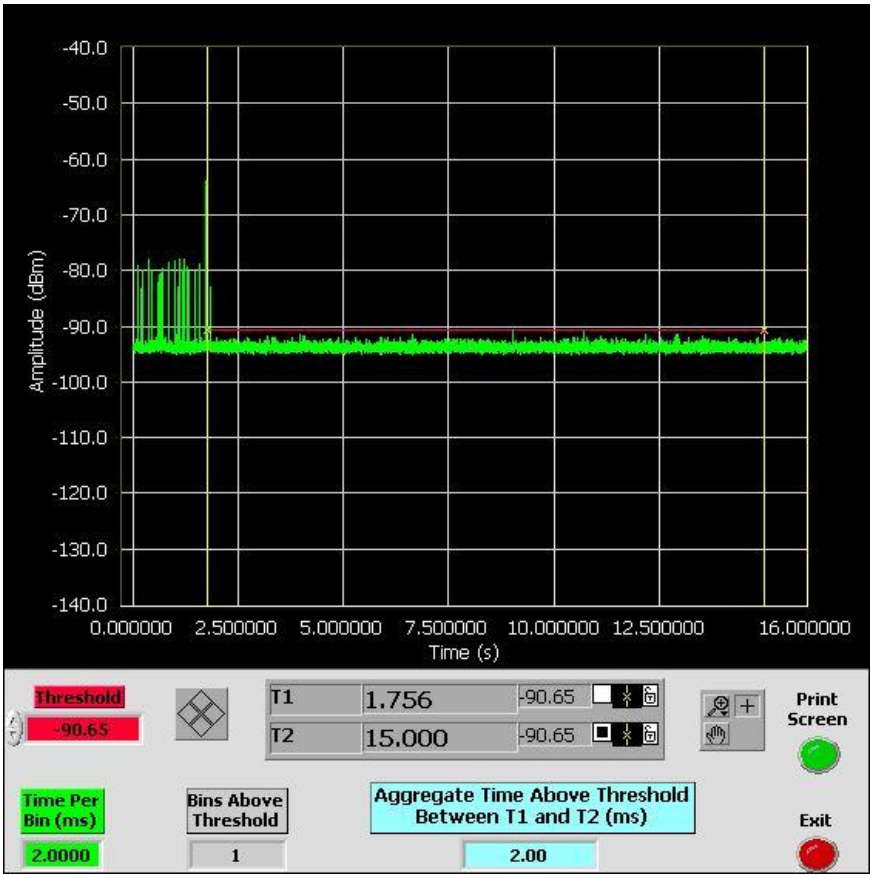
Only intermittent transmissions are observed during the IC aggregate monitoring period.

IC AGGREGATE CLOSING TIME



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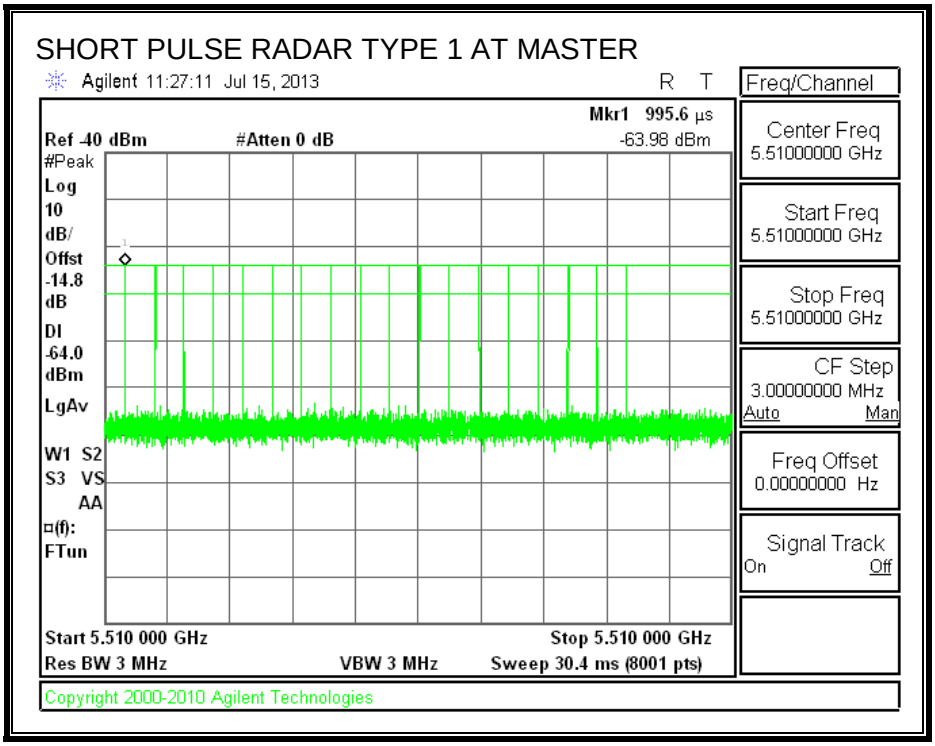
11.5. CLIENT-TO-CLIENT COMMUNICATIONS MODE RESULTS FOR 40 MHz BANDWIDTH

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



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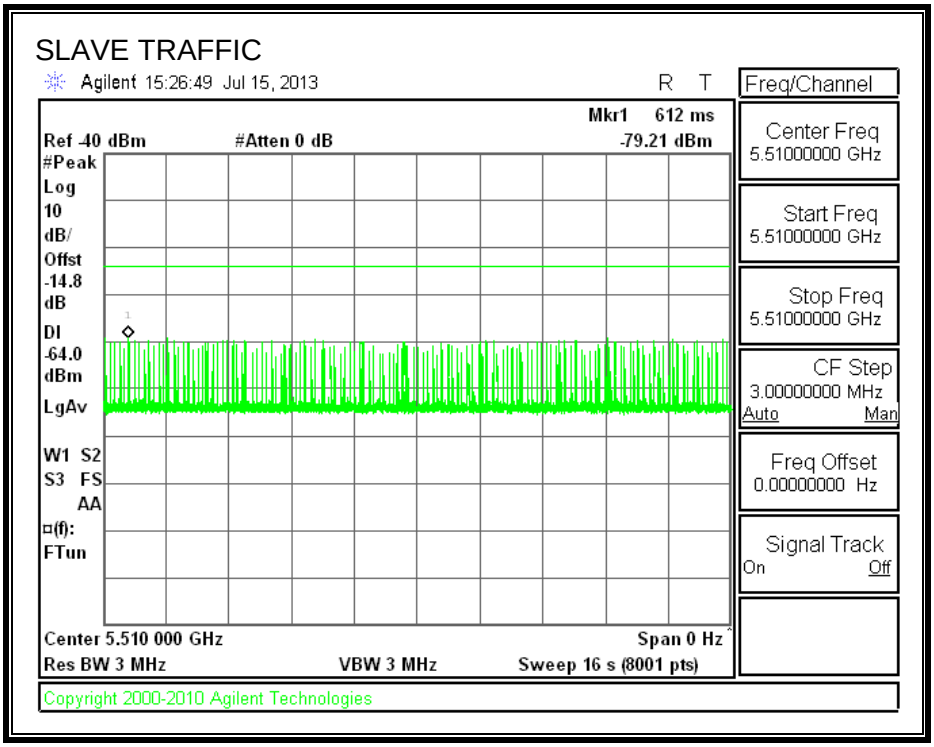
TRAFFIC



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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 FCC aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

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

RESULTS

Agency	Channel Move Time (sec)	Limit (sec)
FCC / IC	0.170	10

Agency	Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
FCC	0.0	60
IC	4.0	260

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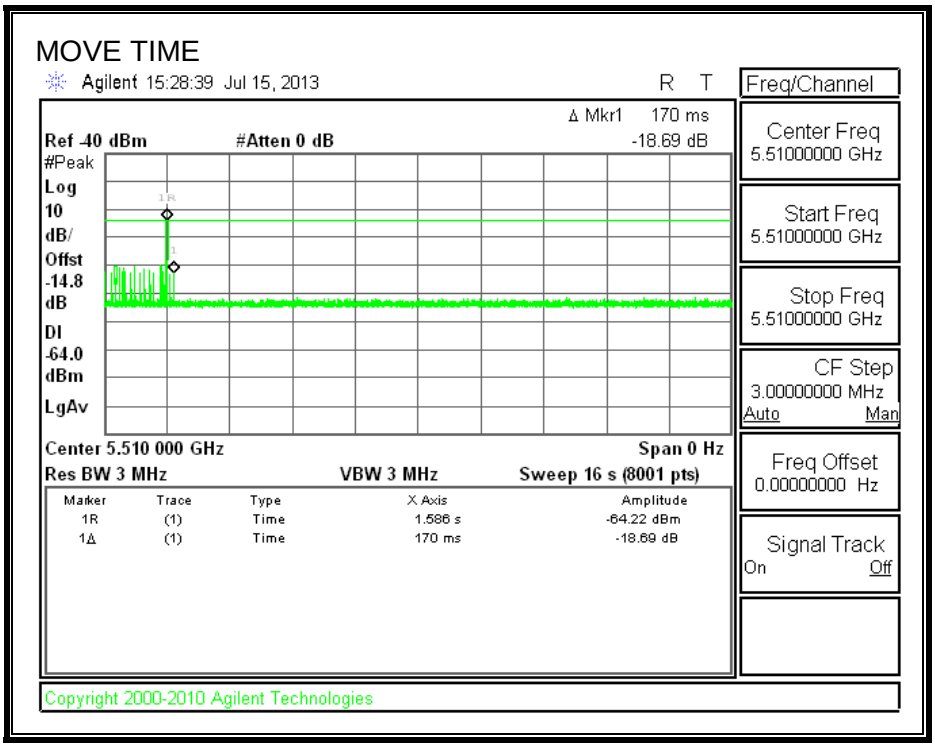
MOVE TIME



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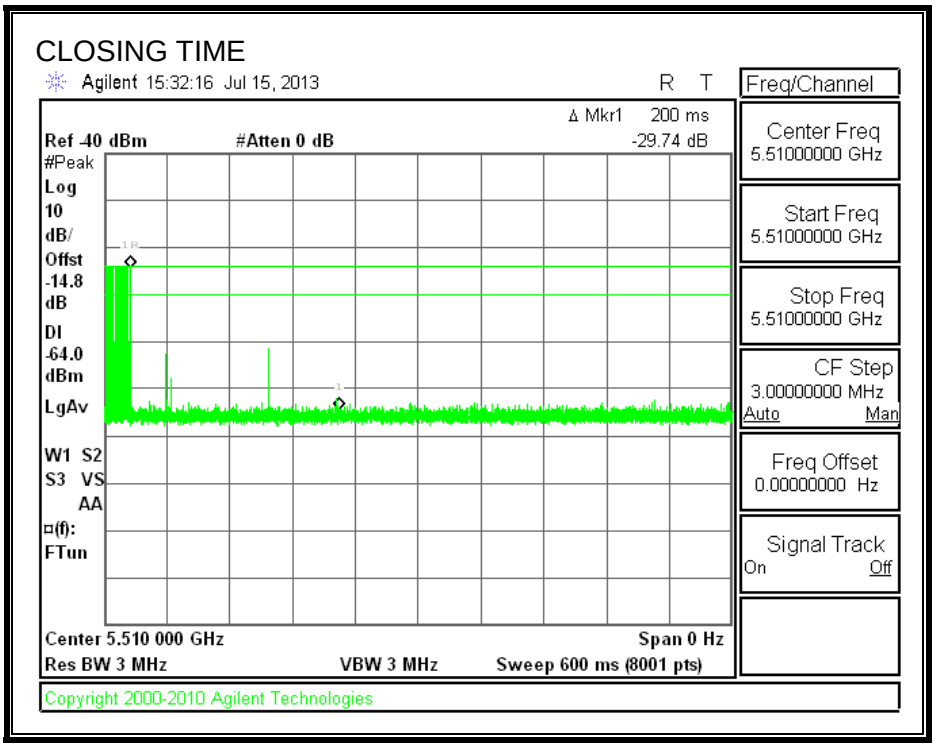
CHANNEL CLOSING TIME



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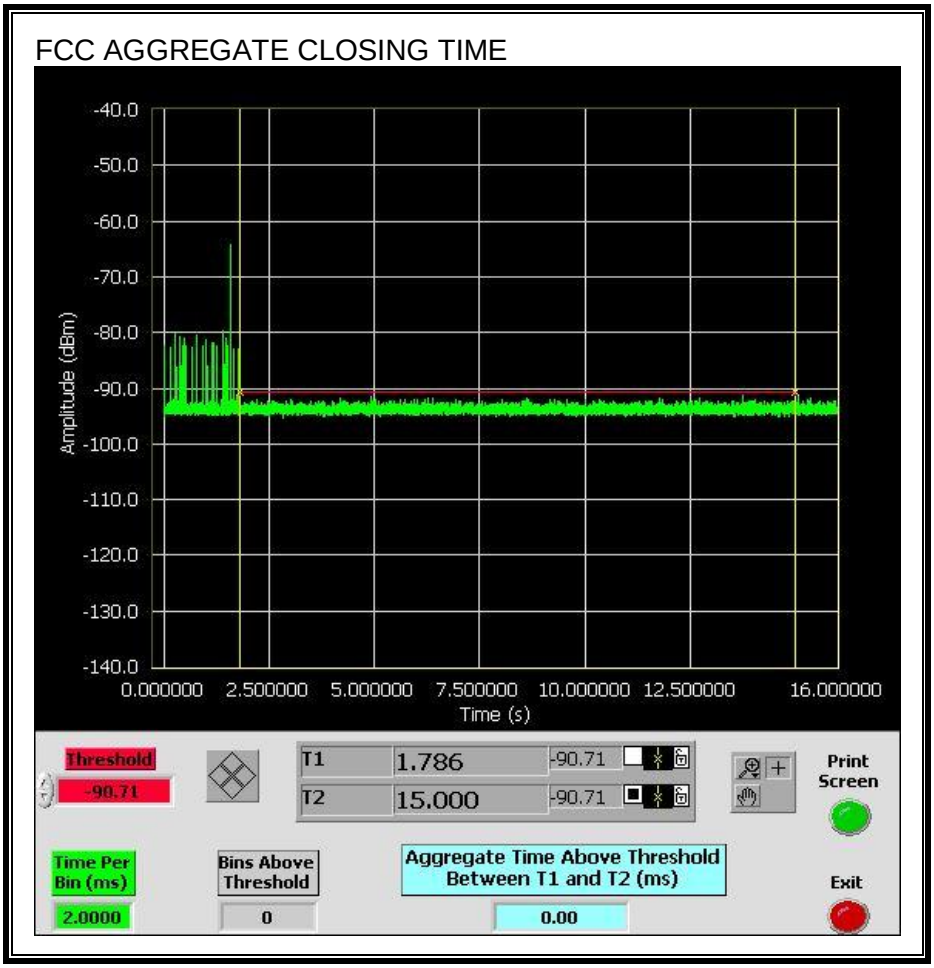
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the FCC aggregate monitoring period.



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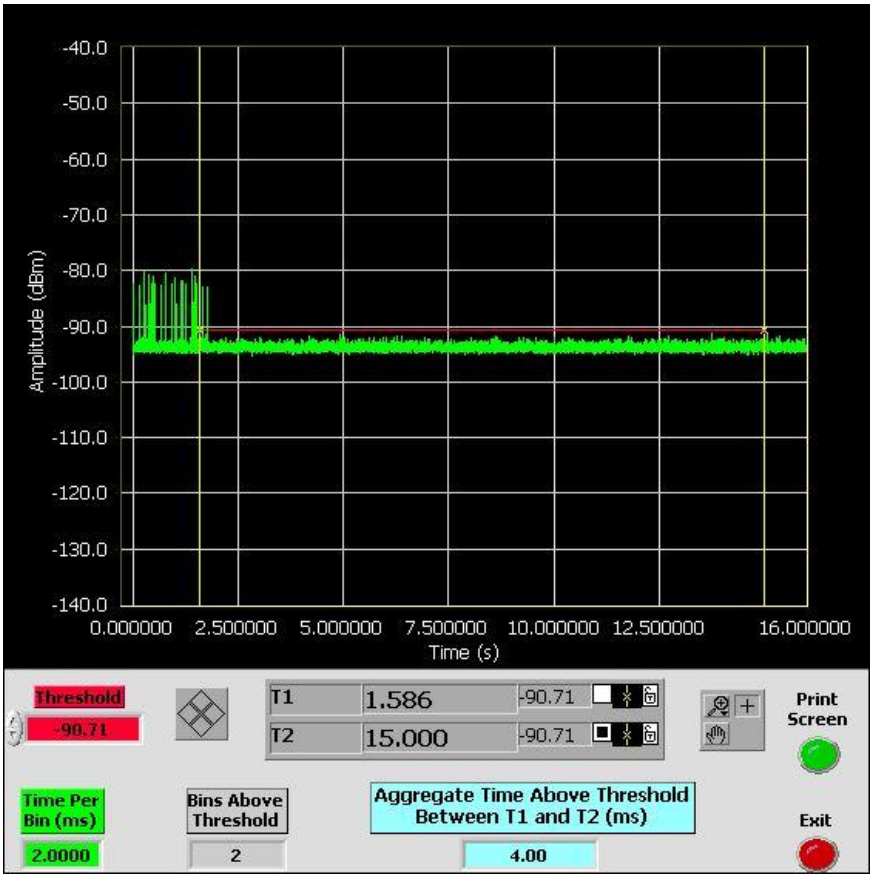
Only intermittent transmissions are observed during the IC aggregate monitoring period.

IC AGGREGATE CLOSING TIME



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