LOW CHANNEL 100 DATA

Project :13J14910
Company Name:Mitsumi
Model / Config:DWM_W095/ EUT, Laptop,Test jig
Mode:11a_CDD_5.6G_MCS 0 ch100_5500MHz
Test By:Thanh Nguyen

Horizontal 1000 - 7600MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T161 BRF [dB]	dB(uVolts /meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
1	1323.238	44.97	PK	28.5	-35.5	3.5	0.1	41.57	53.97	-12.4	74	-32.43	100	Horz
*2	5502.249	49.45	PK	34.9	-34.9	7.6	1	58.05	-	-	-	-	100	Horz

Vertical 1000 - 7600MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T161 BRF [dB]	dB(uVolts /meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
3	1333.133	46.57	PK	28.5	-35.5	3.5	0.1	43.17	53.97	-10.8	74	-30.83	100	Vert
*4	5495.652	46.2	PK	34.9	-34.9	7.6	1	54.8	-	-	-	-	200	Vert

Horizontal 7600 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T161 BRF [dB]	dB(uVolts /meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
5	12168.516	33.94	PK	39.2	-33.1	11.6	0.2	51.84	-	-	74	-22.16	100	Horz

Vertical 7600 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T161 BRF [dB]	dB(uVolts /meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
6	12745.427	33.01	PK	39.2	-32.2	12	0.5	52.51	-	-	68.2	-15.69	100	Vert

Horizontal 10000 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T161 BRF [dB]	dB(uVolts /meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
7	12146.927	23.09	PK	39.2	-33.1	11.6	0.2	40.99	53.97	-12.98	74	-33.01	200	Horz

Vertical 10000 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T161 BRF [dB]	dB(uVolts /meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
8	12758.621	23.06	PK	39.2	-32.1	12	0.3	42.46	-	-	68.2	-25.74	100	Vert

* Fundametal

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

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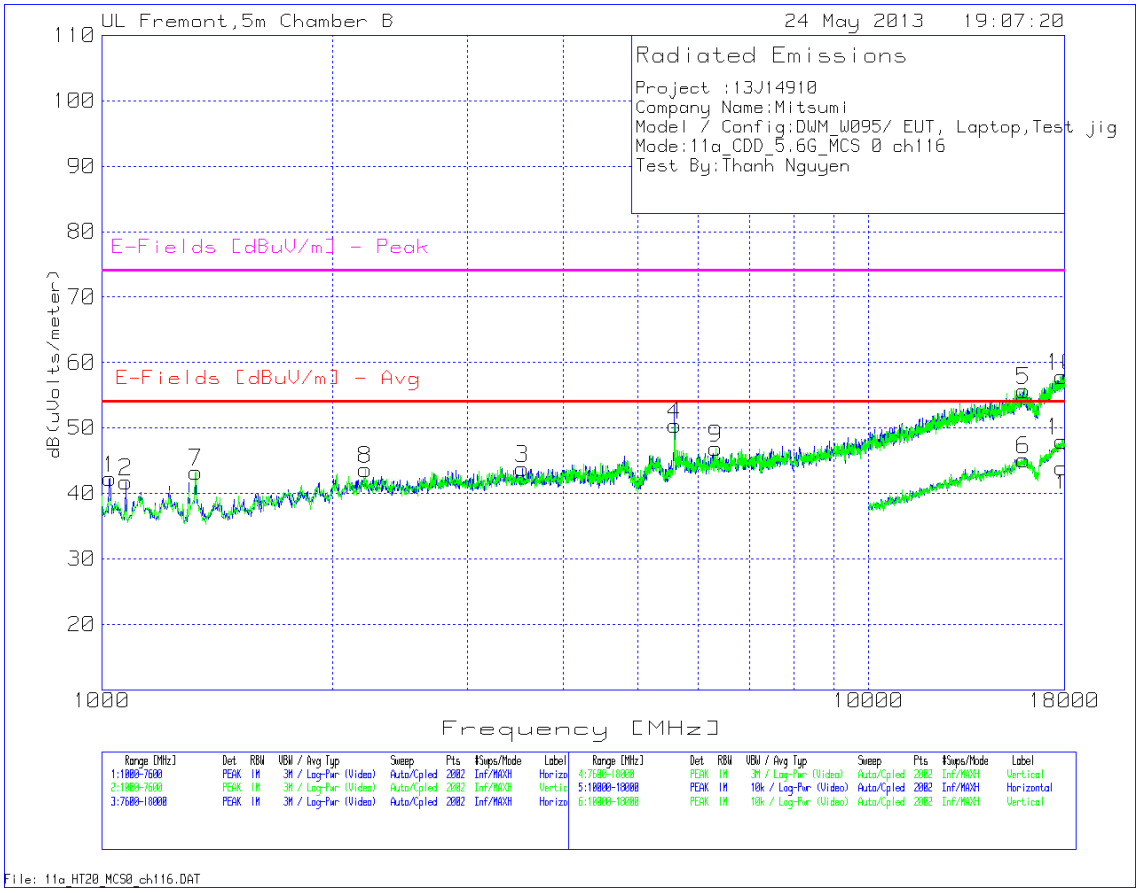
Mid Channel



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MID CHANNEL 116 DATA

Project :13J14910
Company Name:Mitsumi
Model / Config:DWM_W095/ EUT, Laptop,Test jig
Mode:11a_CDD_5.6G_MCS 0 ch116_5580 MHz
Test By:Thanh Nguyen

Horizontal 1000 - 7600MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T161 BRF [dB]	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
1	1026.387	47.45	PK	27.5	-36	3.2	0.1	42.25	53.97	-11.72	74	-31.75	100	Horz
2	1075.862	46.52	PK	27.8	-35.9	3.2	0.1	41.72	53.97	-12.25	74	-32.28	100	Horz
3	3536.432	39.58	PK	33.3	-35	5.8	0.1	43.78	-	-	68.2	-24.42	100	Horz
*4	5584.708	41.79	PK	35	-34.9	7.6	1	50.49	-	-	-	-	100	Horz

Vertical 1000 - 7600MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T161 BRF [dB]	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
7	1326.537	46.62	PK	28.5	-35.5	3.5	0.1	43.22	53.97	-10.75	74	-30.78	200	Vert
8	2207.196	42.22	PK	32	-35	4.4	0.1	43.72	53.97	-10.25	74	-30.28	100	Vert
9	6323.538	37.48	PK	36	-35	8.2	0.2	46.88	-	-	68.2	-21.32	200	Vert

Horizontal 7600 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T192 HPF [dB]	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
5	15910.645	33.17	PK	41.5	-32.9	13.7	0.2	55.67	-	-	74	-18.33	200	Horz

Vertical 7600 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T192 HPF [dB]	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
10	17844.078	31.84	PK	42.2	-31.3	14.7	0.4	57.84	-	-	74	-16.16	100	Vert

Horizontal 10000 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T192 HPF [dB]	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
6	15925.037	22.58	PK	41.5	-32.9	13.7	0.3	45.18	53.97	-8.79	74	-28.82	100	Horz

Vertical 10000 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T192 HPF [dB]	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
11	17848.076	21.98	PK	42.2	-31.3	14.7	0.4	47.98	53.97	-5.99	74	-26.02	100	Vert

* Fundametal

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

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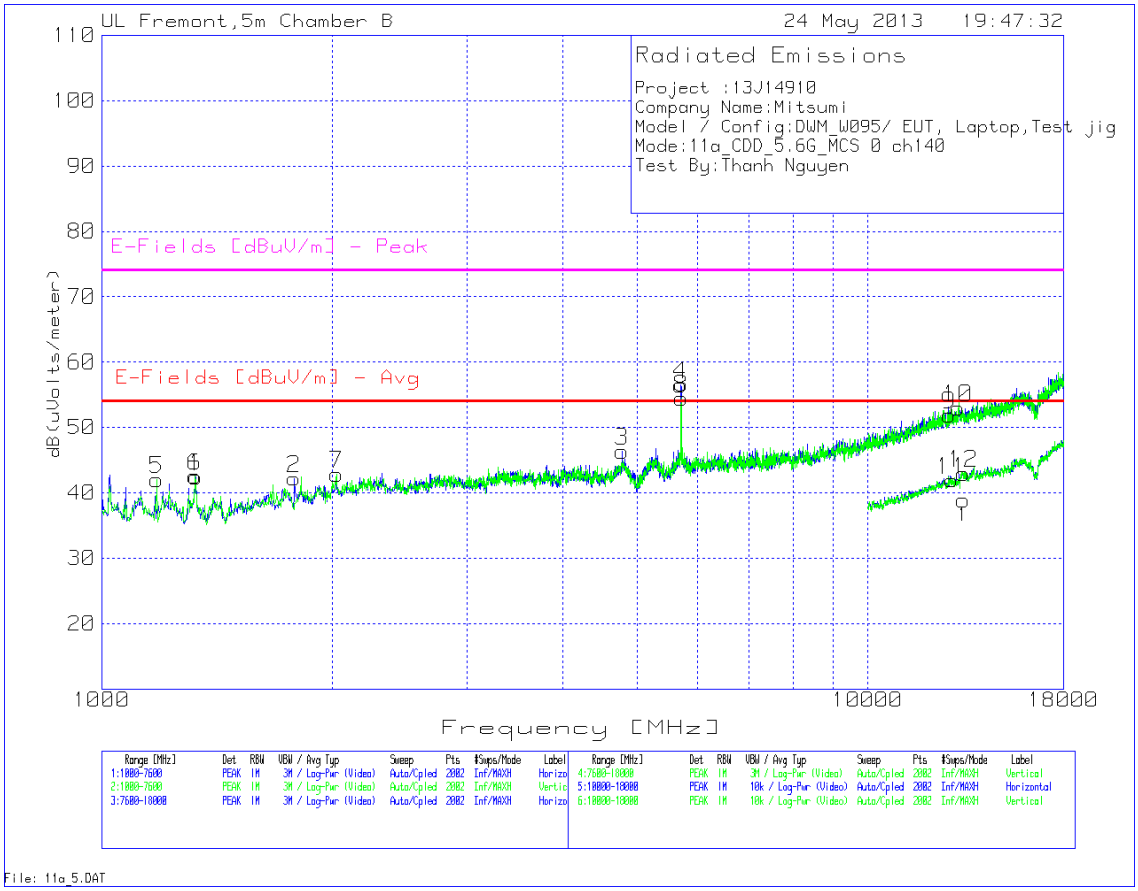
High Channel



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HIGH CHANNEL 140 DATA

Project :13J14910
Company Name:Mitsumi
Model / Config:DWM_W095/ EUT, Laptop,Test jig
Mode:11a_CDD_5.6G_MCS 0 ch140_5700 MHz
Test By:Thanh Nguyen

Horizontal 1000 - 7600MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T161 BRF [dB]	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin (dB)	E-Fields [dBuV/m] - Peak	Peak Margin (dB)	Height [cm]	Polarity
1	1326.537	45.79	PK	28.5	-35.5	3.5	0.1	42.39	53.97	-11.58	74	-31.61	100	Horz
2	1785.007	42.94	PK	30.3	-35.1	4	0.1	42.24	-	-	68.2	-25.96	200	Horz
3	4779.91	39.48	PK	34.7	-34.9	7	0.1	46.38	53.97	-7.59	74	-27.62	100	Horz
*4	5703.448	47.62	PK	35.1	-34.9	7.7	1	56.52	-	-	-	-	100	Horz

Vertical 1000 - 7600MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T161 BRF [dB]	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin (dB)	E-Fields [dBuV/m] - Peak	Peak Margin (dB)	Height [cm]	Polarity
5	1181.409	45.98	PK	28.3	-35.7	3.4	0.1	42.08	53.97	-11.89	74	-31.92	200	Vert
6	1323.238	45.92	PK	28.5	-35.5	3.5	0.1	42.52	53.97	-11.45	74	-31.48	200	Vert
7	2025.787	41.73	PK	31.8	-35	4.2	0.1	42.83	-	-	68.2	-25.37	200	Vert
*8	5706.747	45.64	PK	35.1	-34.9	7.7	1	54.54	-	-	-	-	200	Vert

Horizontal 7600 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T192 BRF [dB]	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin (dB)	E-Fields [dBuV/m] - Peak	Peak Margin (dB)	Height [cm]	Polarity
9	12755.822	32.56	PK	39.2	-32.1	12	0.3	51.96	-	-	68.2	-16.24	200	Horz

Vertical 7600 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T192 BRF [dB]	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin (dB)	E-Fields [dBuV/m] - Peak	Peak Margin (dB)	Height [cm]	Polarity
10	13124.838	33.22	PK	39.2	-31.8	12.2	0.2	53.02	-	-	68.2	-15.18	100	Vert

Horizontal 10000 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T192 BRF [dB]	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin (dB)	E-Fields [dBuV/m] - Peak	Peak Margin (dB)	Height [cm]	Polarity
11	12878.561	22.47	PK	39.2	-32	12	0.3	41.97	-	-	68.2	-26.23	200	Horz

Vertical 10000 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T192 BRF [dB]	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin (dB)	E-Fields [dBuV/m] - Peak	Peak Margin (dB)	Height [cm]	Polarity
12	13318.341	23.4	PK	39.1	-31.9	12.3	0.1	43	53.97	-10.97	74	-31	100	Vert

* Fundamental

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

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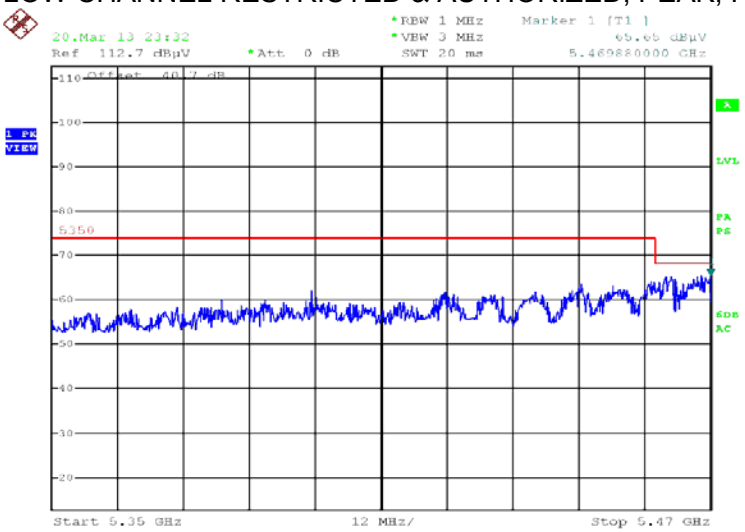
9.14. 802.11n HT20 SDM MCS8 2TX MODE IN THE 5.6 GHz BAND

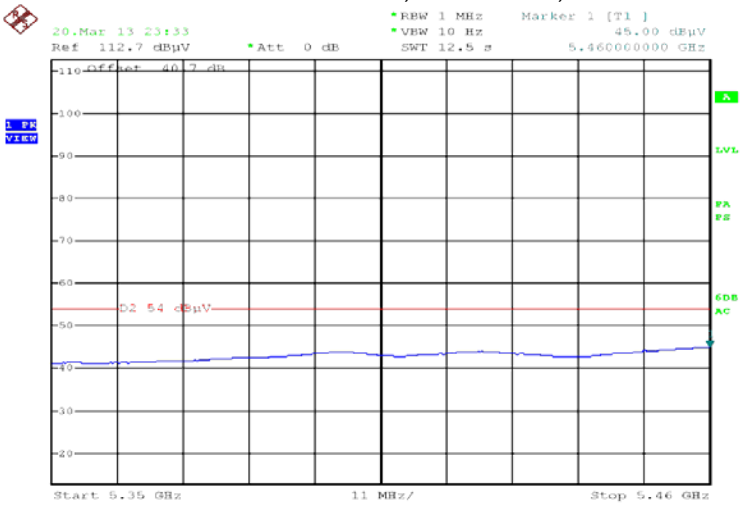
RESTRICTED & AUTHORIZED BANDEDGE (LOW CHANNEL)

LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, HORIZ



Date: 20.MAR.2013 23:32:33

LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



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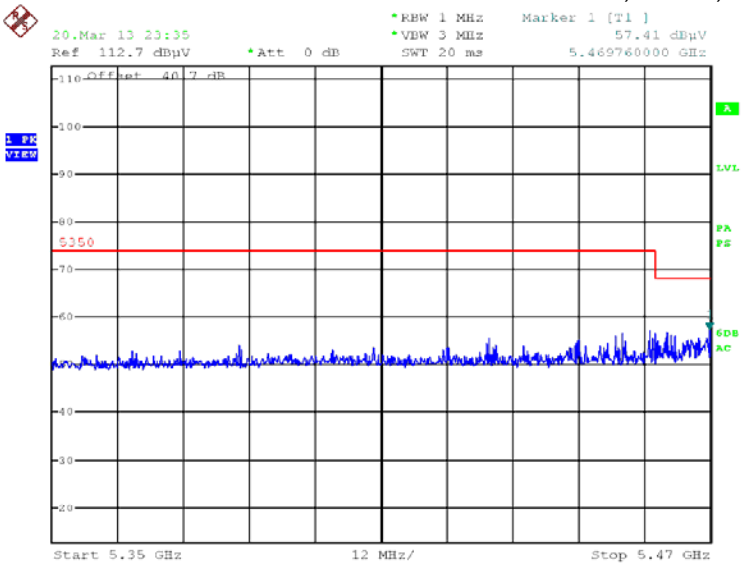
LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, VERT



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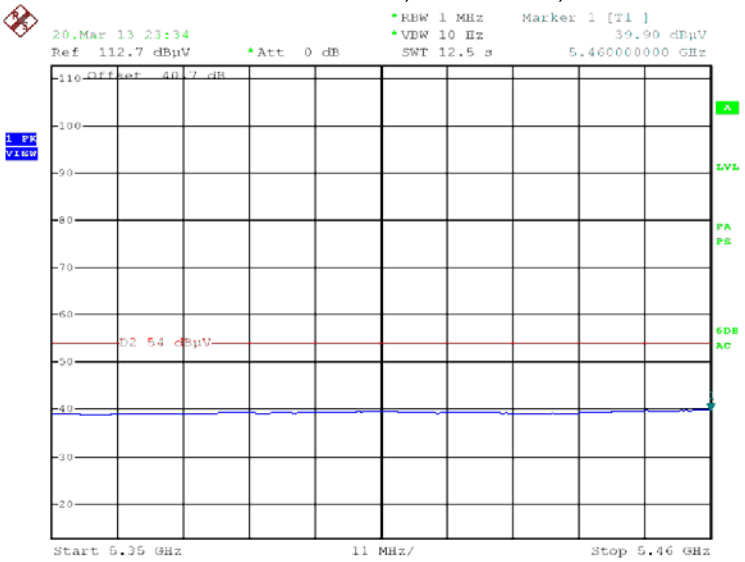
LOW CHANNEL RESTRICTED, AVERAGE, VERT



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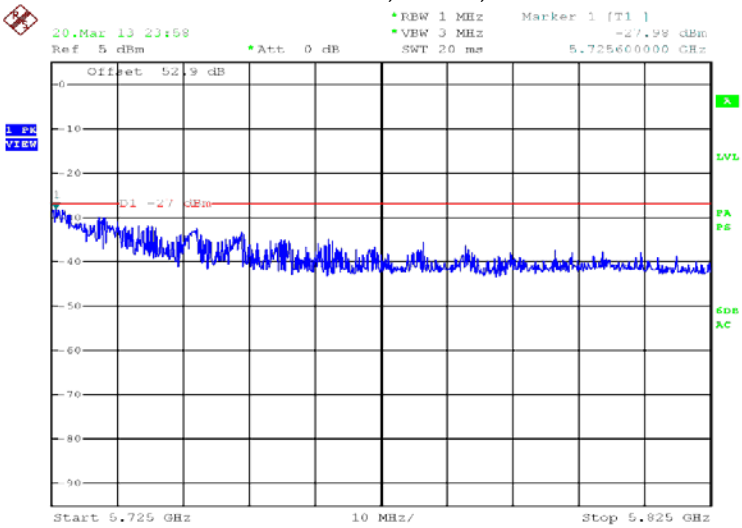
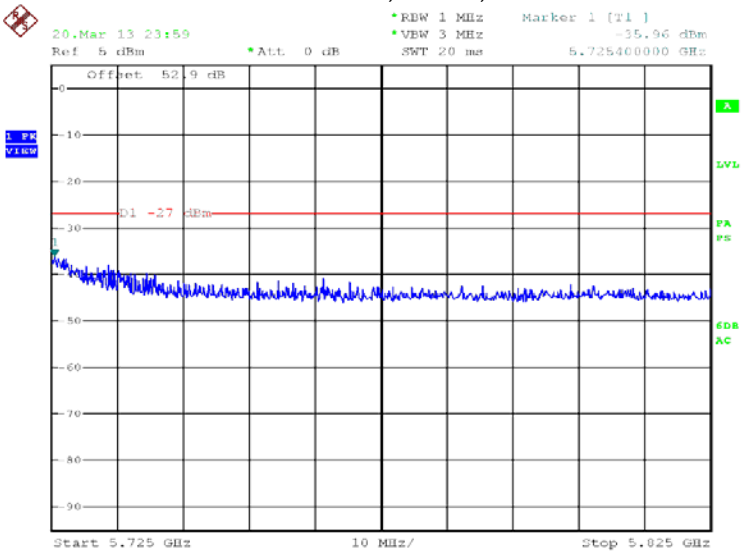
AUTHORIZED BANDEDGE (HIGH CHANNEL

HIGH CHANNEL BANDEDGE, PEAK, HORIZ



Date: 20.MAR.2013 23:58:28

HIGH CHANNEL BANDEDGE, PEAK, VERT



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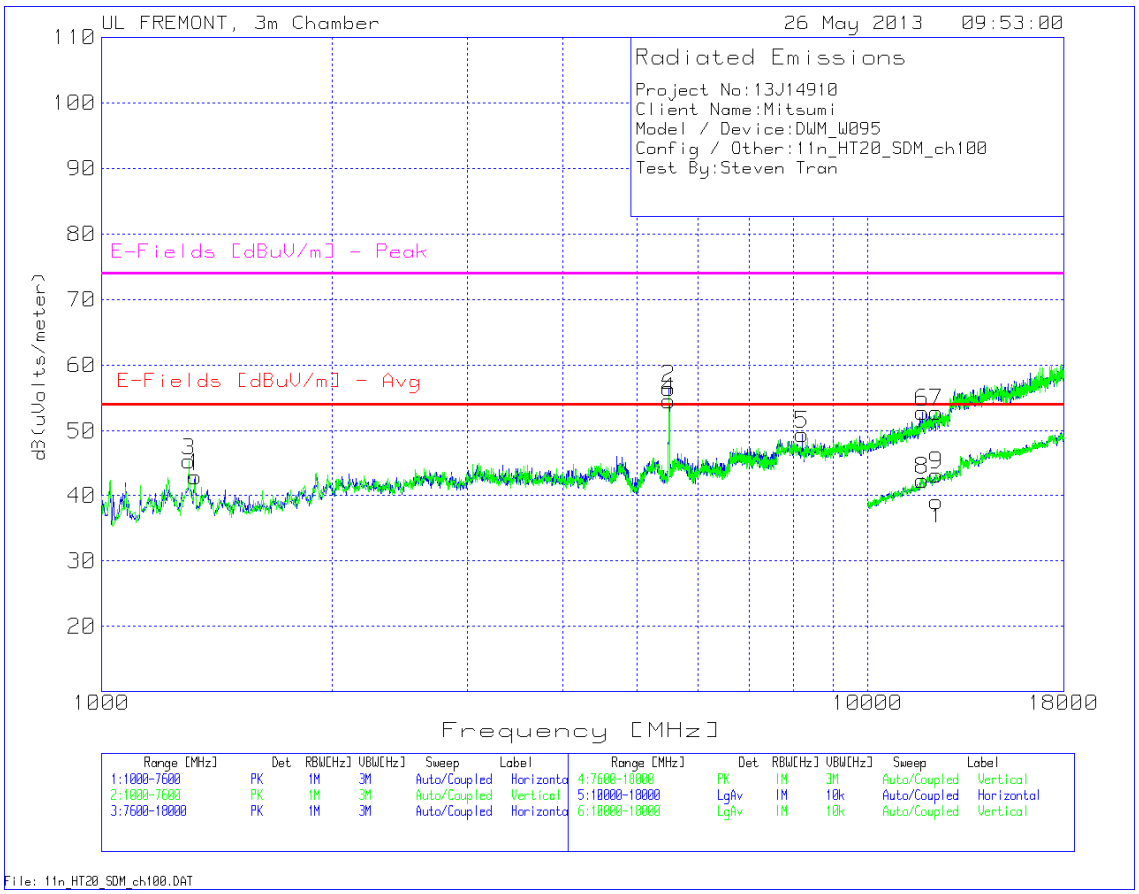
HARMONICS AND SPURIOUS EMISSIONS

Low Channel



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LOW CHANNEL 100 DATA

Project No:13J14910
Client Name:Mitsumi
Model / Device:DWM_W095
Config / Other:11n_HT20_SDM_ch100
Test By:Steven Tran

Horizontal 1000 - 7600MHz

Marker No.	Test Frequency [MHz]	Meter Reading (dBuV)	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/ Cable Loss (dB)	T161 BRF [dB] (dB)	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Margin	E-Fields [dBuV/m] - Peak	Margin
1	1326.537	45.69	PK	29.9	-32.8	0.1	42.89	54	-11.11	74	-31.11
*2	5495.652	45.2	PK	34.8	-24.5	1	56.5	-	-	-	-

Vertical 1000 - 7600MHz

Marker No.	Test Frequency [MHz]	Meter Reading	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/ Cable Loss (dB)	T161 BRF [dB] (dB)	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Margin	E-Fields [dBuV/m] - Peak	Margin
3	1300.15	47.94	PK	30.2	-32.9	0.1	45.34	54	-8.66	74	-28.66
*4	5502.249	43.29	PK	34.8	-24.5	1	54.59	-	-	-	-

Horizontal 7600 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/ Cable Loss (dB)	T192 BRF [dB] (dB)	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Margin	E-Fields [dBuV/m] - Peak	Margin
5	8208.096	35.53	PK	35.8	-22.2	0.4	49.53	-	-	74	-24.47
6	11773.513	32.89	PK	38.8	-19.1	0.3	52.89	-	-	74	-21.11

Vertical 7600 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/ Cable Loss (dB)	T192BRF [dB] (dB)	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Margin	E-Fields [dBuV/m] - Peak	Margin
7	12288.056	32.01	PK	39	-18.6	0.4	52.81	-	-	74	-21.19

Horizontal 10000 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/ Cable Loss (dB)	T192 BRF [dB] (dB)	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Margin	E-Fields [dBuV/m] - Peak	Margin
8	11771.114	22.36	PK	38.8	-19.1	0.3	42.36	54	-11.64	74	-31.64

Vertical 10000 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/ Cable Loss (dB)	T192 BRF [dB] (dB)	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Margin	E-Fields [dBuV/m] - Peak	Margin
9	12298.851	22.49	PK	39	-18.6	0.3	43.19	54	-10.81	74	-30.81

* Fundamental

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

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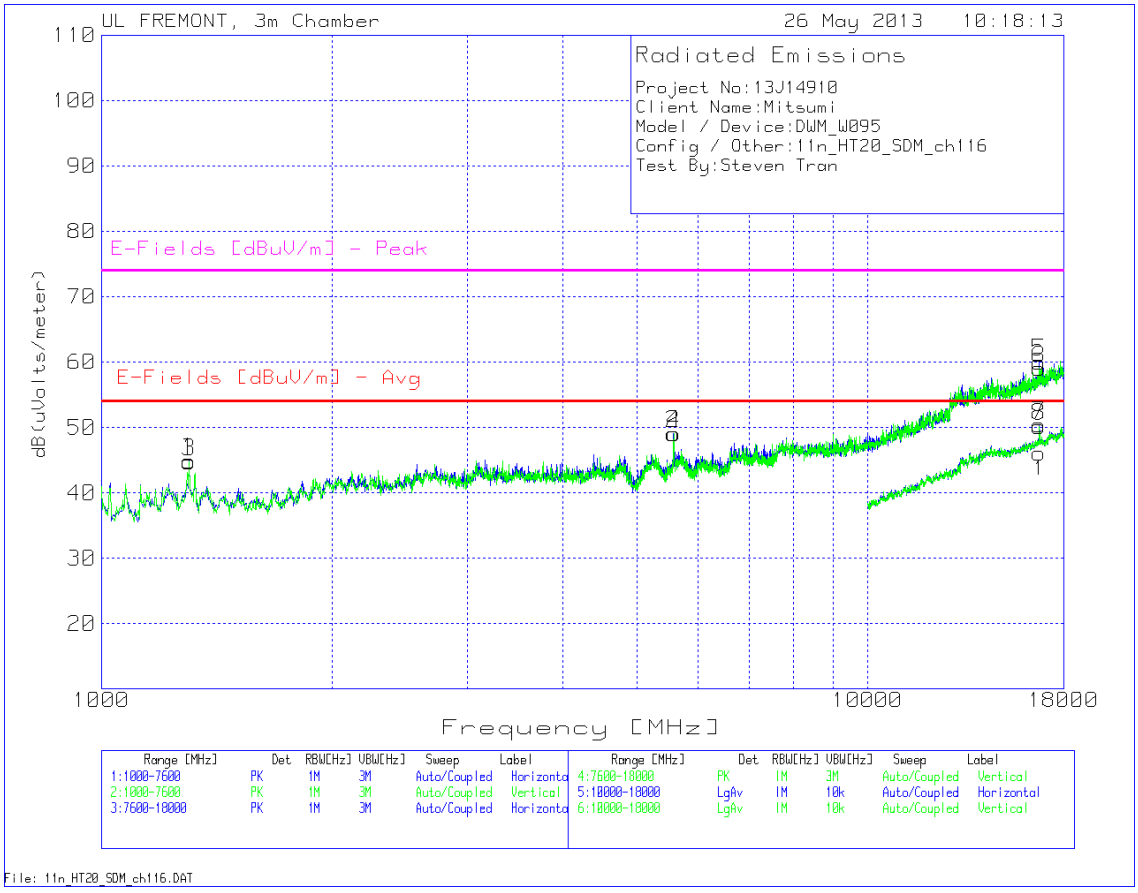
Mid Channel



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MID CHANNEL 116 DATA

Project No:13J14910
Client Name:Mitsumi
Model / Device:DWM_W095
Config / Other:11n_HT20_SDM_ch116
Test By:Steven Tran

Horizontal 1000 - 7600MHz

Marker No.	Test Frequency [MHz]	Meter Reading (dBuV)	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/Cable Loss [dB] (dB)	T161 BRF [dB] (dB)	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Margin	E-Fields [dBuV/m] - Peak	Margin
1	1300.15	47.55	PK	30.2	-32.9	0.1	44.95	54	-9.05	74	-29.05
*2	5574.813	37.62	PK	34.8	-24.4	1	49.02	-	-	-	-

Vertical 1000 - 7600MHz

Marker No.	Test Frequency [MHz]	Meter Reading	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/Cable Loss [dB] (dB)	T161 BRF [dB] (dB)	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Margin	E-Fields [dBuV/m] - Peak	Margin
3	1300.15	47.34	PK	30.2	-32.9	0.1	44.74	54	-9.26	74	-29.26
*4	5584.708	37.74	PK	34.8	-24.4	1	49.14	-	-	-	-

Horizontal 7600 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/Cable Loss [dB] (dB)	T192 BRF [dB] (dB)	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Margin	E-Fields [dBuV/m] - Peak	Margin
5	16737.031	33.72	PK	41.2	-15.3	0.4	60.02	-	-	68.2	-8.18

Vertical 7600 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/Cable Loss [dB] (dB)	T192 BRF [dB] (dB)	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Margin	E-Fields [dBuV/m] - Peak	Margin
6	16737.031	32.71	PK	41.2	-15.3	0.4	59.01	-	-	68.2	-9.19

Horizontal 10000 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/Cable Loss [dB] (dB)	T192 BRF [dB] (dB)	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Margin	E-Fields [dBuV/m] - Peak	Margin
7	16736.632	24.15	PK	41.2	-15.3	0.4	50.45	-	-	68.2	-17.75

Vertical 10000 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/Cable Loss [dB] (dB)	T192 BRF [dB] (dB)	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Margin	E-Fields [dBuV/m] - Peak	Margin
8	16740.63	23.81	PK	41.2	-15.3	0.4	50.11	-	-	68.2	-18.09

*Fundamental

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

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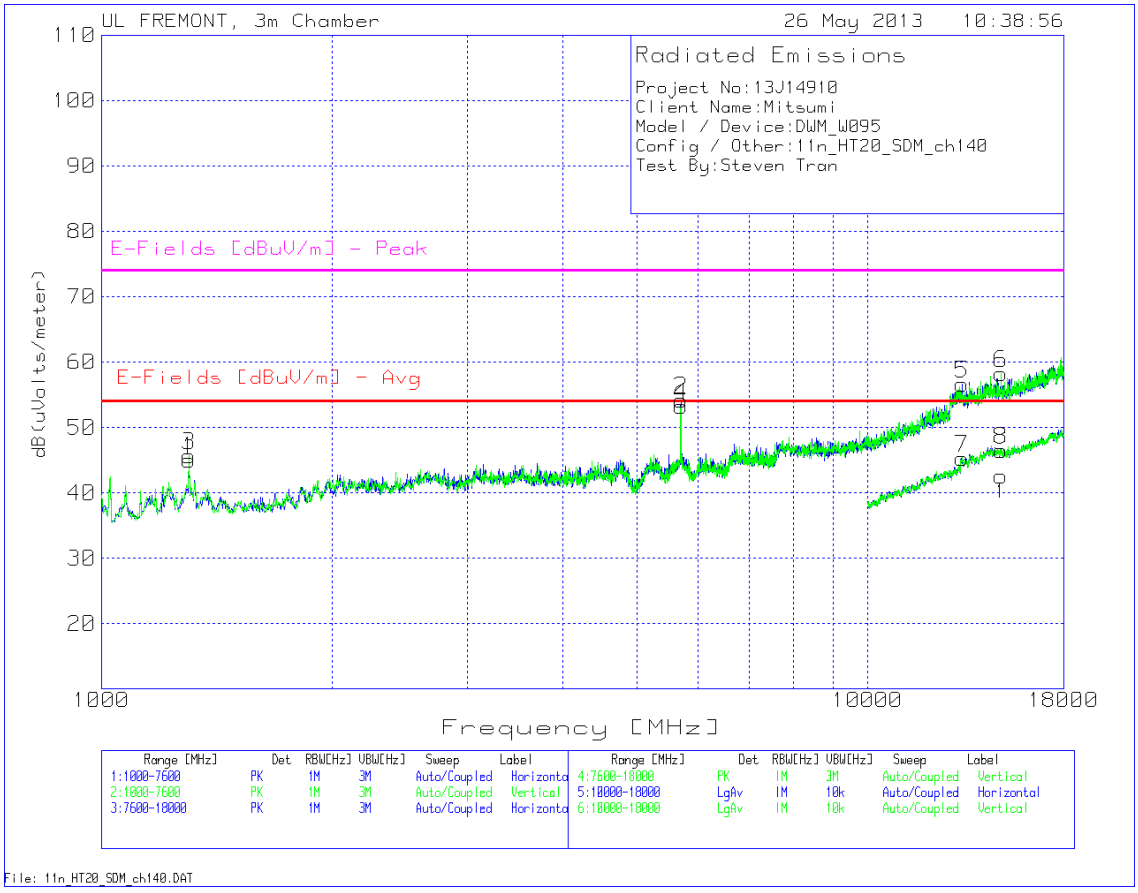
High Channel



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HIGH CHANNEL 140 DATA

Project No:13J14910
Client Name:Mitsumi
Model / Device:DWM_W095
Config / Other:11n_HT20_SDM_ch140_5700MHz
Test By:Steven Tran

Horizontal 1000 - 7600MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/Cable Loss [dB] (dB)	T161 BRF [dB] (dB)	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
1	1300.15	47.67	PK	30.2	-32.9	0.1	45.07	54	-8.93	74	-28.93
*2	5703.448	42.72	PK	34.8	-24.3	1	54.22	-	-	-	-

Vertical 1000 - 7600MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/Cable Loss [dB] (dB)	T161 BRF [dB] (dB)	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
3	1300.15	48.37	PK	30.2	-32.9	0.1	45.77	54	-8.23	74	-28.23
*4	5700.15	41.74	PK	34.8	-24.3	1	53.24	-	-	-	-

Horizontal 7600 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/Cable Loss [dB] (dB)	T192 BRF [dB] (dB)	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
5	13259.97	33.96	PK	39.1	-16.7	0.3	56.66	-	-	74	-17.34

Vertical 7600 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/Cable Loss [dB] (dB)	T192 BRF [dB] (dB)	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
6	14917.941	34.01	PK	39.7	-16	0.6	58.31	-	-	68.2	-9.89

Horizontal 10000 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/Cable Loss [dB] (dB)	T192 BRF [dB] (dB)	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
7	13266.367	22.38	PK	39.1	-16.7	0.5	45.28	54	-8.72	74	-28.72

Vertical 10000 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/Cable Loss [dB] (dB)	T192 BRF [dB] (dB)	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
8	14917.541	22.28	PK	39.7	-16	0.6	46.58	-	-	68.2	-21.62

* Fundamental

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

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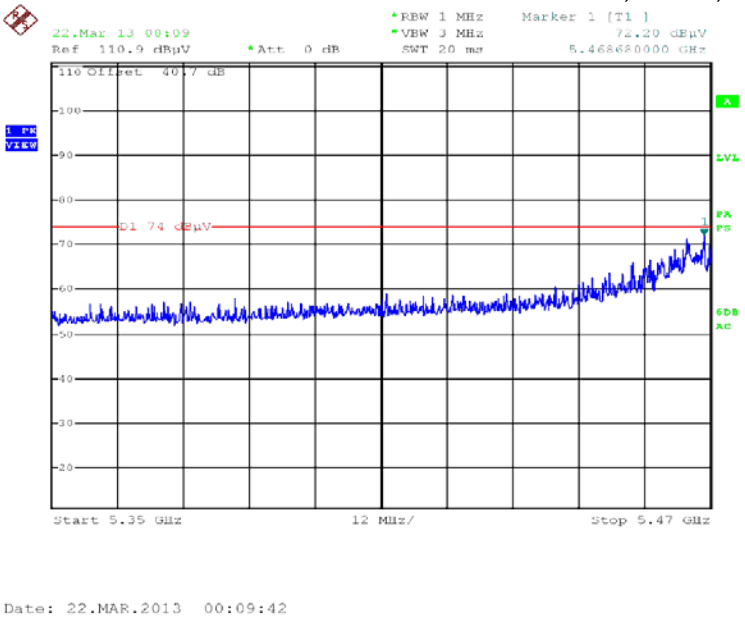
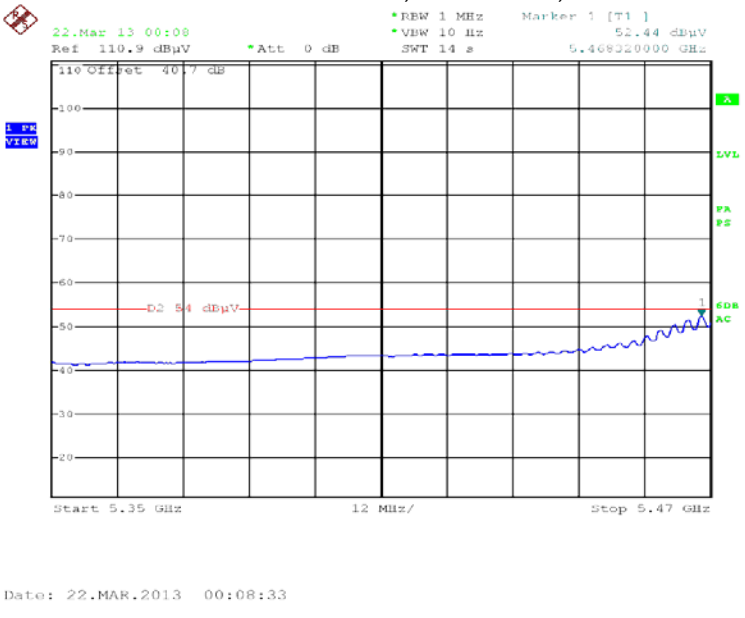
9.15. 802.11n HT40 CDD MCS0 2TX MODE IN THE 5.6 GHz BAND

RESTRICTED & AUTHORIZED BANDEDGE (LOW CHANNEL)

LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, HORIZ



LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



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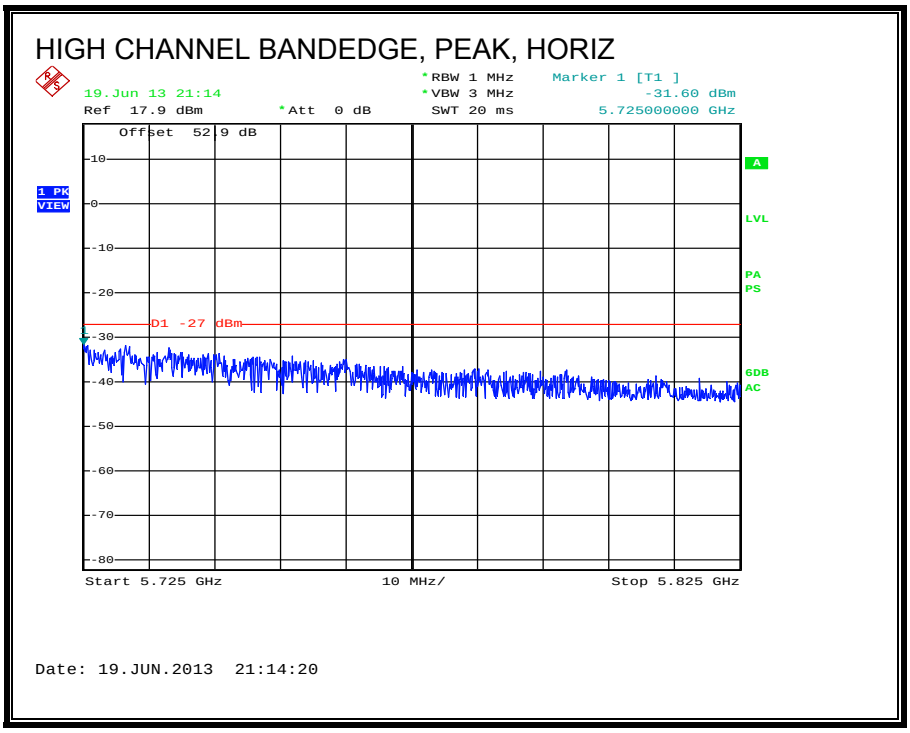
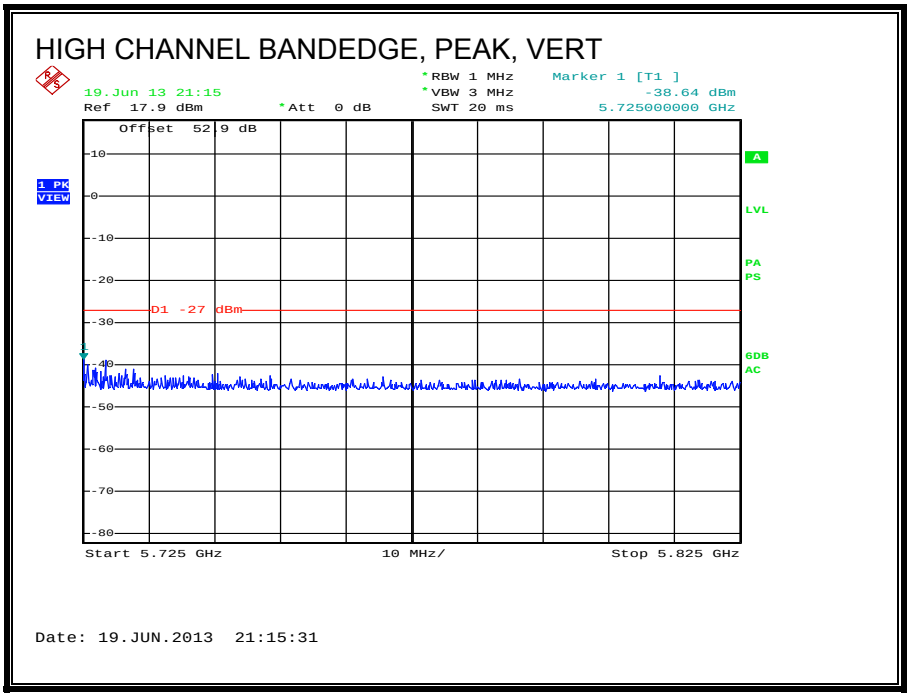
AUTHORIZED BANDEDGE (HIGH CHANNEL)





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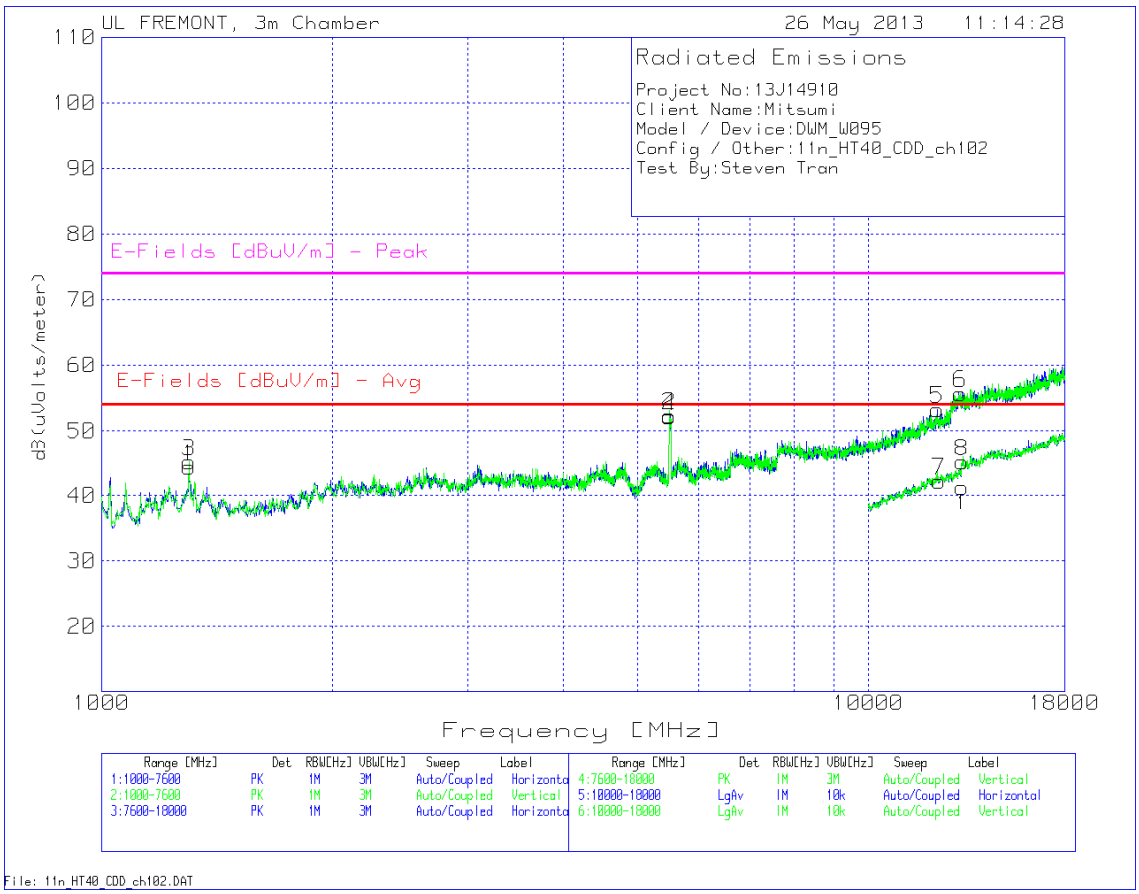
HARMONICS AND SPURIOUS EMISSIONS

Low Channel



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LOW CHANNEL 102 DATA

Project No:13J14910
Client Name:Mitsumi
Model / Device:DWM_W095
Config / Other:11n_HT40_CDD_ch102_5510Mhz
Test By:Steven Tran

Horizontal 1000 - 7600MHz

Marker No.	Test Frequency [MHz]	Meter Reading (dBuV)	Detector	T119 Ant Factor (dB)	T34 Preamp/Cable Loss (dB)	T161 BRF (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
1	1300.15	46.92	PK	30.2	-32.9	0.1	44.32	54	-9.68	74	-29.68
*2	5495.652	41.05	PK	34.8	-24.5	1	52.35	-	-	-	-

Vertical 1000 - 7600MHz

Marker No.	Test Frequency [MHz]	Meter Reading (dBuV)	Detector	T119 Ant Factor (dB)	T34 Preamp/Cable Loss (dB)	T161 BRF (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
3	1300.15	47.78	PK	30.2	-32.9	0.1	45.18	54	-8.82	74	-28.82
*4	5505.547	40.91	PK	34.8	-24.5	1	52.21	-	-	-	-

Horizontal 7600 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading (dBuV)	Detector	T119 Ant Factor (dB)	T34 Preamp/Cable Loss (dB)	T192 BRF (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
5	12293.253	32.48	PK	39	-18.6	0.4	53.28	-	-	74	-20.72

Vertical 7600 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading (dBuV)	Detector	T119 Ant Factor (dB)	T34 Preamp/Cable Loss (dB)	T192 BRF (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
6	13156.022	32.99	PK	39	-16.8	0.5	55.69	-	-	68.2	-12.51

Horizontal 10000 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading (dBuV)	Detector	T119 Ant Factor (dB)	T34 Preamp/Cable Loss (dB)	T192 BRF (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
7	12366.817	21.58	PK	39.1	-18.5	0	42.18	54	-11.82	-	-

Vertical 10000 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading (dBuV)	Detector	T119 Ant Factor (dB)	T34 Preamp/Cable Loss (dB)	T192 BRF (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
8	13234.383	22.53	PK	39.1	-16.7	0.3	45.23	-	-	68.2	-22.97

* Fundamental

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

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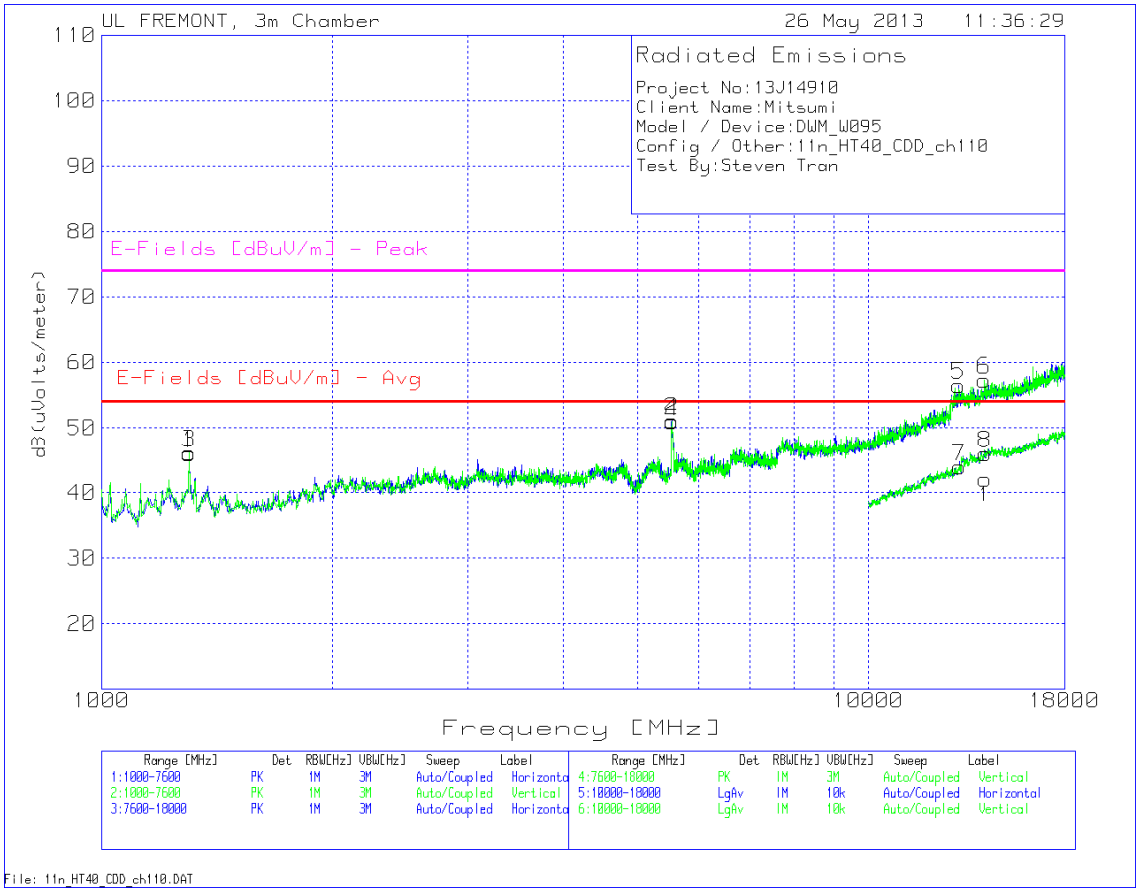
Mid Channel



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MID CHANNEL 110 DATA

Project No:13J14910
Client Name:Mitsumi
Model / Device:DWM_W095
Config / Other:11n_HT40_CDD_ch110_5550MHz
Test By:Steven Tran

Horizontal 1000 - 7600MHz

Marker No.	Test Frequency [MHz]	Meter Reading (dBuV)	Detector	T119 Ant Factor (dB)	T34 Preamp/Cable Loss (dB)	T161 BRF (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
1	1300.15	48.62	PK	30.2	-32.9	0.1	46.02	54	-7.98	74	-27.98
*2	5538.531	39.73	PK	34.8	-24.4	1	51.13	-	-	-	-

Vertical 1000 - 7600MHz

Marker No.	Test Frequency [MHz]	Meter Reading (dBuV)	Detector	T119 Ant Factor (dB)	T34 Preamp/Cable Loss (dB)	T161 BRF (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
3	1300.15	48.75	PK	30.2	-32.9	0.1	46.15	54	-7.85	74	-27.85
*4	5548.426	39.51	PK	34.8	-24.4	1	50.91	-	-	-	-

Horizontal 7600 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading (dBuV)	Detector	T119 Ant Factor (dB)	T34 Preamp/Cable Loss (dB)	T192 BRF (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
5	13114.443	34.05	PK	39.1	-16.9	0.3	56.55	-	-	68.2	-11.65

Vertical 7600 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading (dBuV)	Detector	T119 Ant Factor (dB)	T34 Preamp/Cable Loss (dB)	T192 BRF [dB] (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
6	14164.318	33.48	PK	39.1	-15.8	0.6	57.38	-	-	68.2	-10.82

Horizontal 10000 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading (dBuV)	Detector	T119 Ant Factor (dB)	T34 Preamp/Cable Loss (dB)	T192 BRF [dB] (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
7	13118.441	21.47	PK	39.1	-16.9	0.3	43.97	-	-	68.2	-24.23

Vertical 10000 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading (dBuV)	Detector	T119 Ant Factor (dB)	T34 Preamp/Cable Loss (dB)	T192 BRF [dB] (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
8	14169.915	22.24	PK	39.1	-15.8	0.5	46.04	-	-	68.2	-22.16

* Fundamental

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

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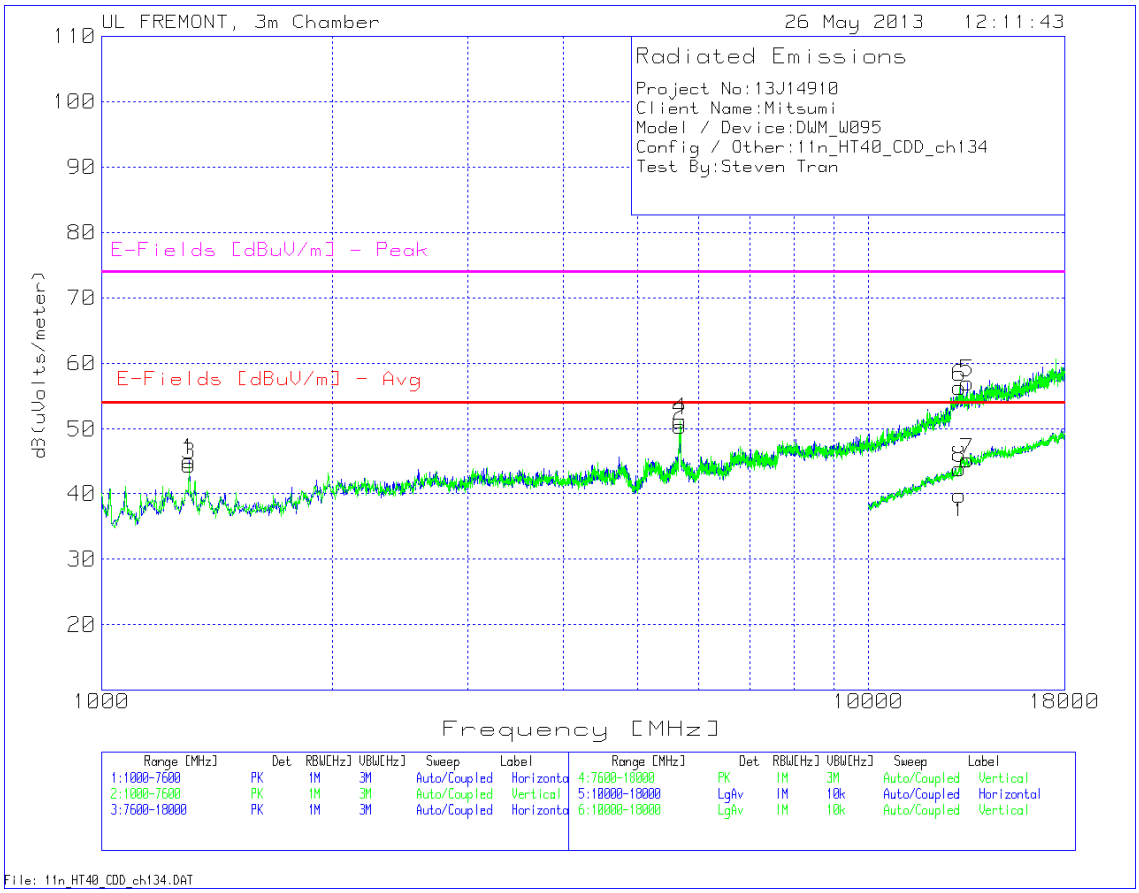
High Channel



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HIGH CHANNEL 134 DATA

Project No:13J14910
Client Name:Mitsumi
Model / Device:DWM_W095
Config / Other:11n_HT40_CDD_ch134_5670MHz
Test By:Steven Tran

Horizontal 1000 - 7600MHz

Marker No.	Test Frequency [MHz]	Meter Reading (dBuV)	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/Cable Loss [dB] (dB)	T161 BRF [dB] (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
1	1300.15	47.59	PK	30.2	-32.9	0.1	44.99	54	-9.01	74	-29.01
*2	5677.061	39.07	PK	34.8	-24.4	1	50.47	-	-	-	-

Vertical 1000 - 7600MHz

Marker No.	Test Frequency [MHz]	Meter Reading (dBuV)	Detector	T119 Ant Factor (dB)	T34 Preamp/Cable Loss (dB)	T161 BRF (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
3	1300.15	46.96	PK	30.2	-32.9	0.1	44.36	54	-9.64	74	-29.64
*4	5683.658	39.73	PK	34.8	-24.3	1	51.23	-	-	-	-

Horizontal 7600 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading (dBuV)	Detector	T119 Ant Factor (dB)	T34 Preamp/Cable Loss (dB)	T192 BRF (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
5	13436.682	34	PK	39.1	-16.6	0.5	57	-	-	68.2	-11.2

Vertical 7600 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading (dBuV)	Detector	T119 Ant Factor (dB)	T34 Preamp/Cable Loss (dB)	T192 BRF (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
6	13124.838	33.83	PK	39.1	-16.9	0.3	56.33	-	-	68.2	-11.87

Horizontal 10000 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading (dBuV)	Detector	T119 Ant Factor (dB)	T34 Preamp/Cable Loss (dB)	T192 BRF (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
7	13446.277	22.1	PK	39.1	-16.5	0.4	45.1	-	-	68.2	-23.1

Vertical 10000 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading (dBuV)	Detector	T119 Ant Factor (dB)	T34 Preamp/Cable Loss (dB)	T192 BRF (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
8	13138.431	21.09	PK	39.1	-16.9	0.5	43.79	-	-	68.2	-24.41

* Fundametal

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

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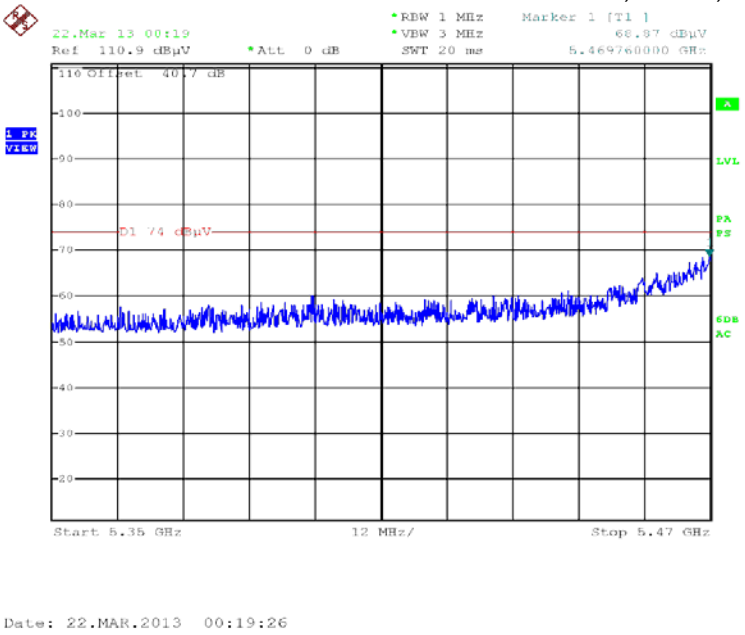
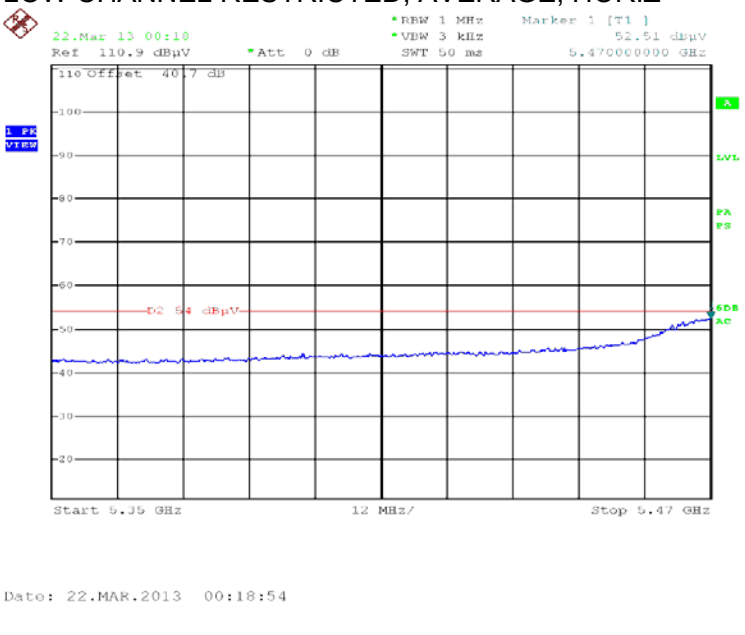
9.16. 802.11n HT40 SDM MCS8 2TX MODE IN THE 5.6 GHz BAND

RESTRICTED & AUTHORIZED BANDEDGE (LOW CHANNEL)

LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, HORIZ



LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



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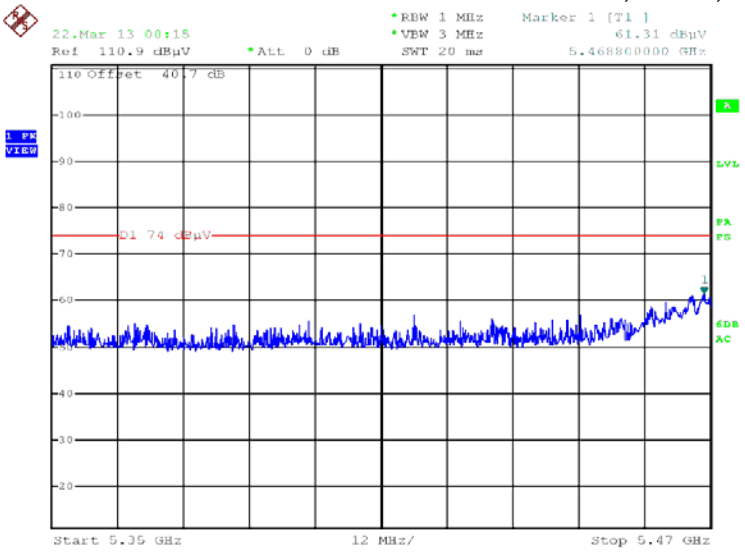
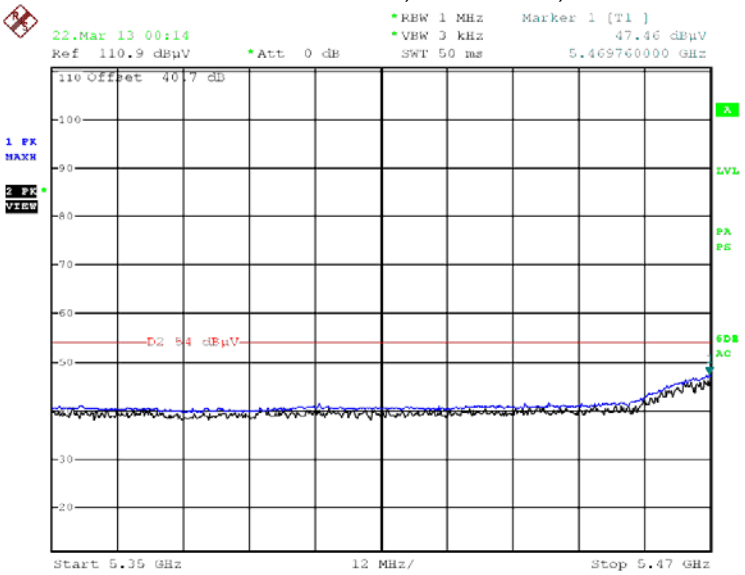
LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, VERT



Date: 22.MAR.2013 00:15:24

LOW CHANNEL RESTRICTED, AVERAGE, VERT



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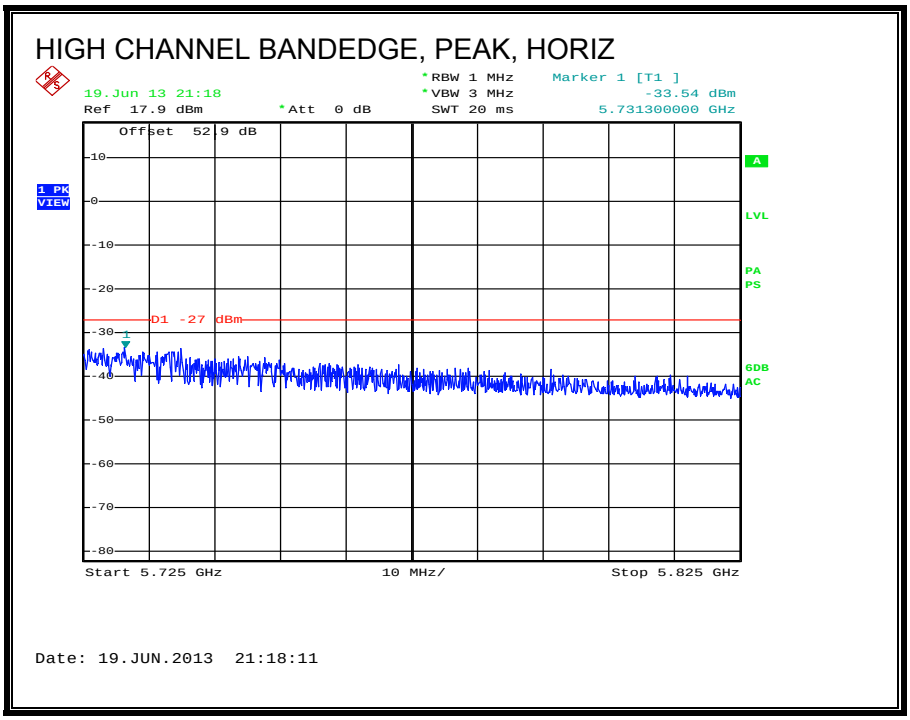
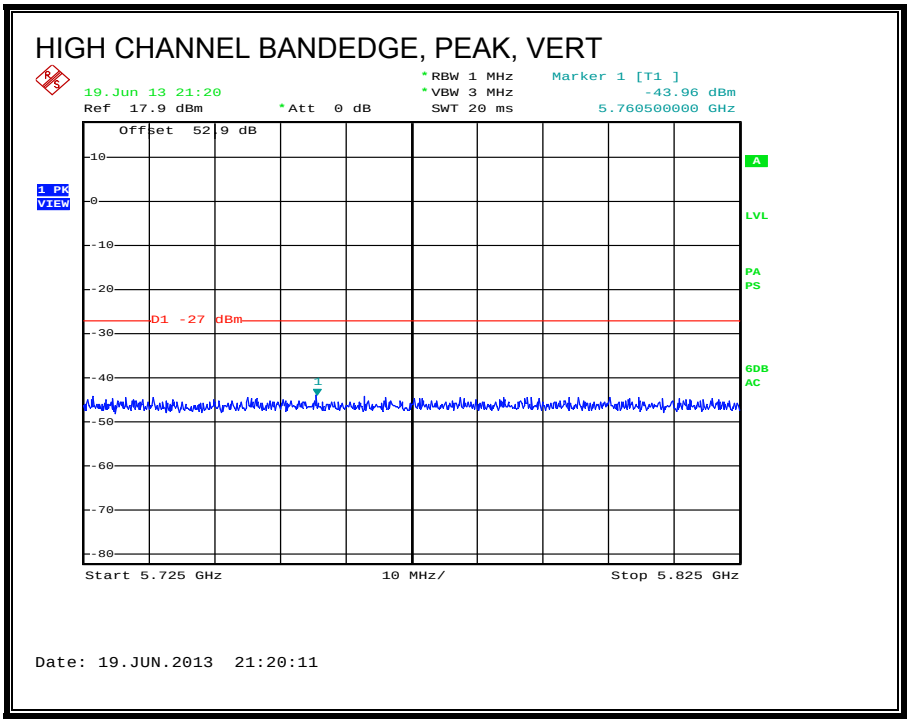
AUTHORIZED BANDEDGE (HIGH CHANNEL)





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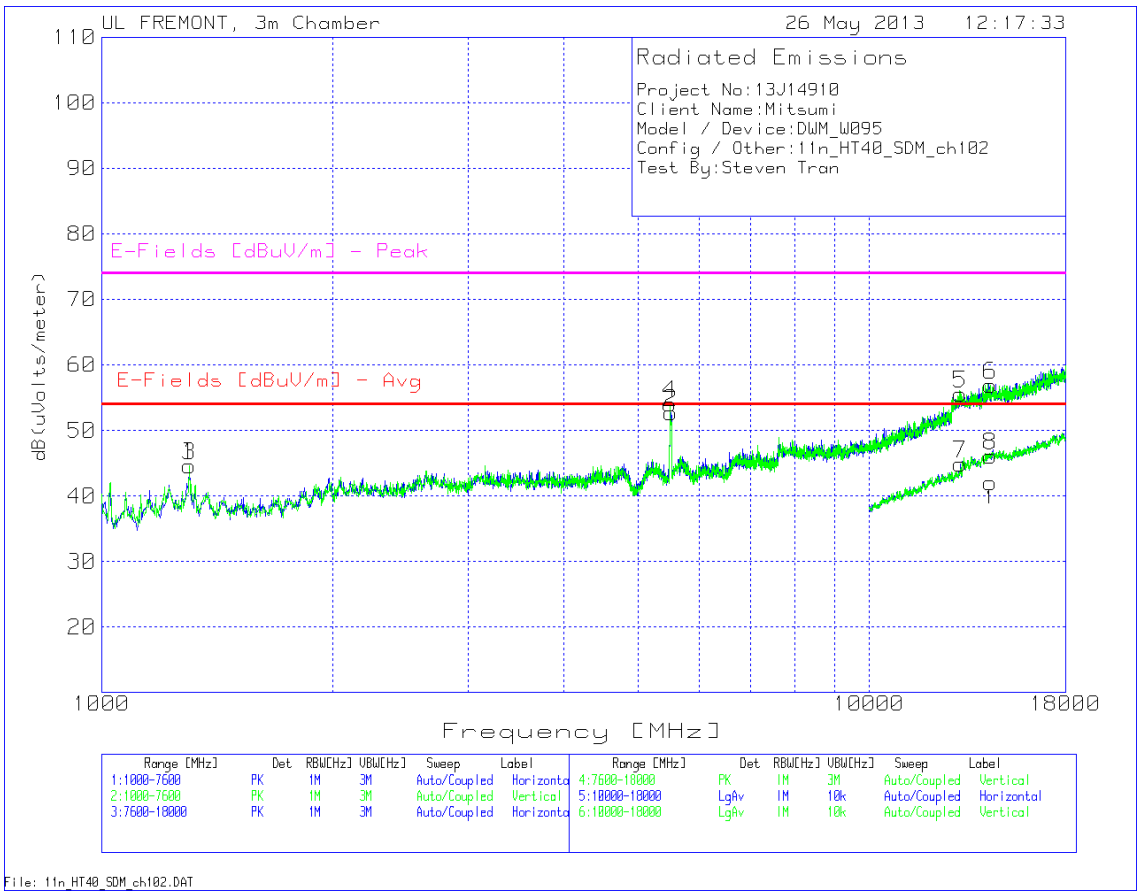
HARMONICS AND SPURIOUS EMISSIONS

Low Channel



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LOW CHANNEL 102 DATA

Project No:13J14910
Client Name:Mitsumi
Model / Device:DWM_W095
Config / Other:11n_HT40_SDM_ch102
Test By:Steven Tran

Horizontal 1000 - 7600MHz

Marker No.	Test Frequency [MHz]	Meter Reading [dBuV]	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/Cable Loss [dB] (dB)	T161 BRF [dB] (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
1	1300.15	47.22	PK	30.2	-32.9	0.1	44.62	54	-9.38	74	-29.38
*2	5508.846	41.48	PK	34.8	-24.5	1	52.78	-	-	-	-

Vertical 1000 - 7600MHz

Marker No.	Test Frequency [MHz]	Meter Reading [dBuV]	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/Cable Loss [dB] (dB)	T161 BRF [dB] (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
3	1300.15	47.23	PK	30.2	-32.9	0.1	44.63	54	-9.37	74	-29.37
*4	5495.652	42.76	PK	34.8	-24.5	1	54.06	-	-	-	-

Horizontal 7600 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading [dBuV]	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/Cable Loss [dB] (dB)	T192 BRF [dB] (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
5	13145.627	32.76	PK	39.1	-16.8	0.5	55.56	-	-	68.2	-12.64

Vertical 7600 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading [dBuV]	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/Cable Loss [dB] (dB)	T192 BRF [dB] (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
6	14356.622	33.11	PK	39.4	-15.8	0.2	56.91	-	-	68.2	-11.29

Horizontal 10000 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading [dBuV]	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/Cable Loss [dB] (dB)	T192 BRF [dB] (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
7	13150.425	22.05	AV	39.1	-16.8	0.5	44.85	-	-	68.2	-23.35

Vertical 10000 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading [dBuV]	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/Cable Loss [dB] (dB)	T192 BRF [dB] (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
8	14369.815	22.39	AV	39.4	-15.8	0.1	46.09	-	-	68.2	-22.11

* Fundamental

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

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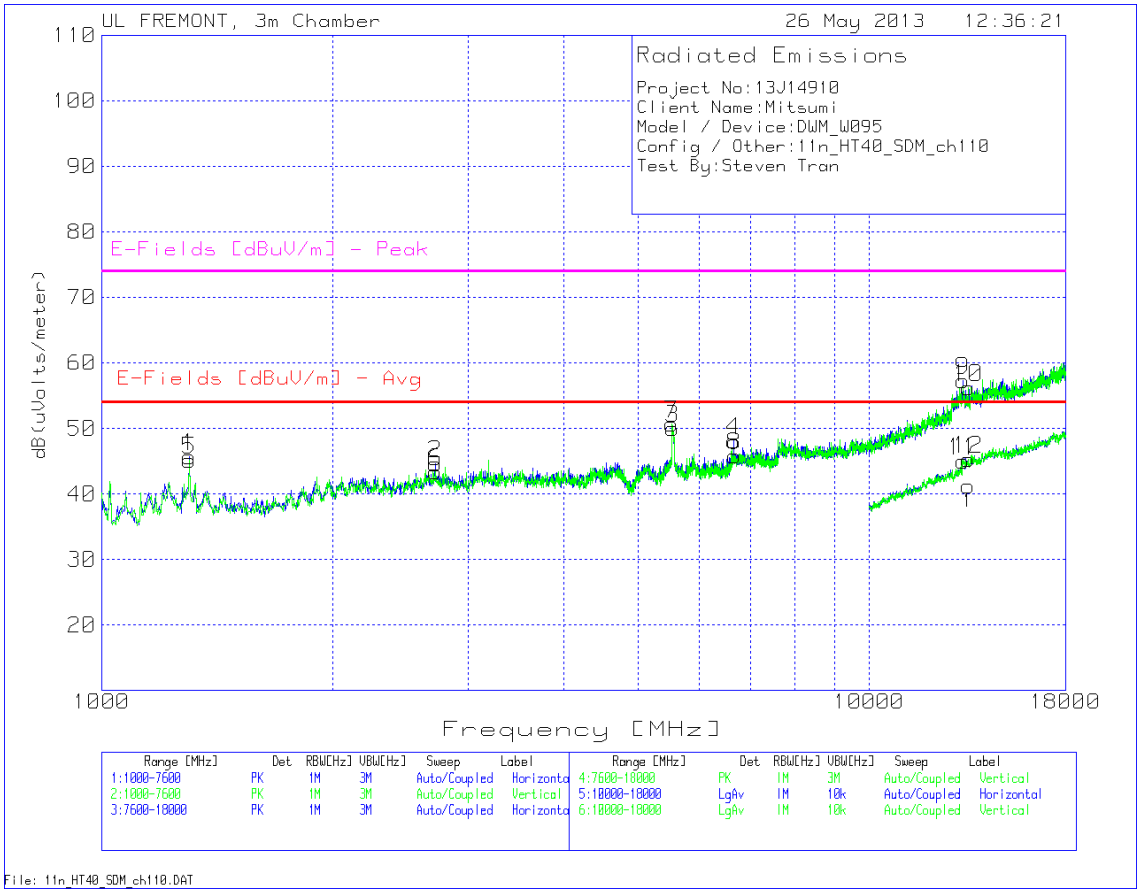
Mid Channel



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MID CHANNEL 110 DATA

Project No:13J14910
Client Name:Mitsumi
Model / Device:DWM_W095
Config / Other:11n_HT40_SDM_ch110_5550MHz
Test By:Steven Tran

Horizontal 1000 - 7600MHz

Marker No.	Test Frequency [MHz]	Meter Reading [dBuV]	Detector	T119 Ant Factor (dB)	T34 Preamp/ Cable Loss (dB)	T161 BRF (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
1	1300.15	48.32	PK	30.2	-32.9	0.1	45.72	54	-8.28	74	-28.28
2	2718.441	40.97	PK	32.6	-29	0.1	44.67	54	-9.33	74	-29.33
*3	5541.829	38.63	PK	34.8	-24.4	1	50.03	-	-	-	-
4	6656.672	35.71	PK	35.6	-23.4	0.2	48.11	-	-	68.2	-20.09

Vertical 1000 - 7600MHz

Marker No.	Test Frequency [MHz]	Meter Reading [dBuV]	Detector	T119 Ant Factor (dB)	T34 Preamp/ Cable Loss (dB)	T161 BRF (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
5	1300.15	47.71	PK	30.2	-32.9	0.1	45.11	54	-8.89	74	-28.89
6	2721.739	39.7	PK	32.6	-29	0.1	43.4	54	-10.6	74	-30.6
*7	5535.232	39.24	PK	34.8	-24.4	1	50.64	-	-	-	-
8	6683.058	33.39	PK	35.6	-23.4	0.2	45.79	-	-	68.2	-22.41

Horizontal 7600 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading [dBuV]	Detector	T119 Ant Factor (dB)	T34 Preamp/ Cable Loss (dB)	T192 BRF (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
9	13223.588	34.48	PK	39.1	-16.7	0.4	57.28	-	-	74	-16.72

Vertical 7600 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading [dBuV]	Detector	T119 Ant Factor (dB)	T34 Preamp/ Cable Loss (dB)	T192 BRF (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
10	13447.076	33.21	PK	39.1	-16.5	0.4	56.21	-	-	74	-17.79

Horizontal 10000 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading [dBuV]	Detector	T119 Ant Factor (dB)	T34 Preamp/ Cable Loss (dB)	T192 BRF (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
11	13222.389	22.38	PK	39.1	-16.7	0.3	45.08	-	-	68.2	-23.12

Vertical 10000 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading [dBuV]	Detector	T119 Ant Factor (dB)	T34 Preamp/ Cable Loss (dB)	T192 BRF (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
12	13450.275	22.29	PK	39.1	-16.5	0.4	45.29	-	-	68.2	-22.91

* Fundamental

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

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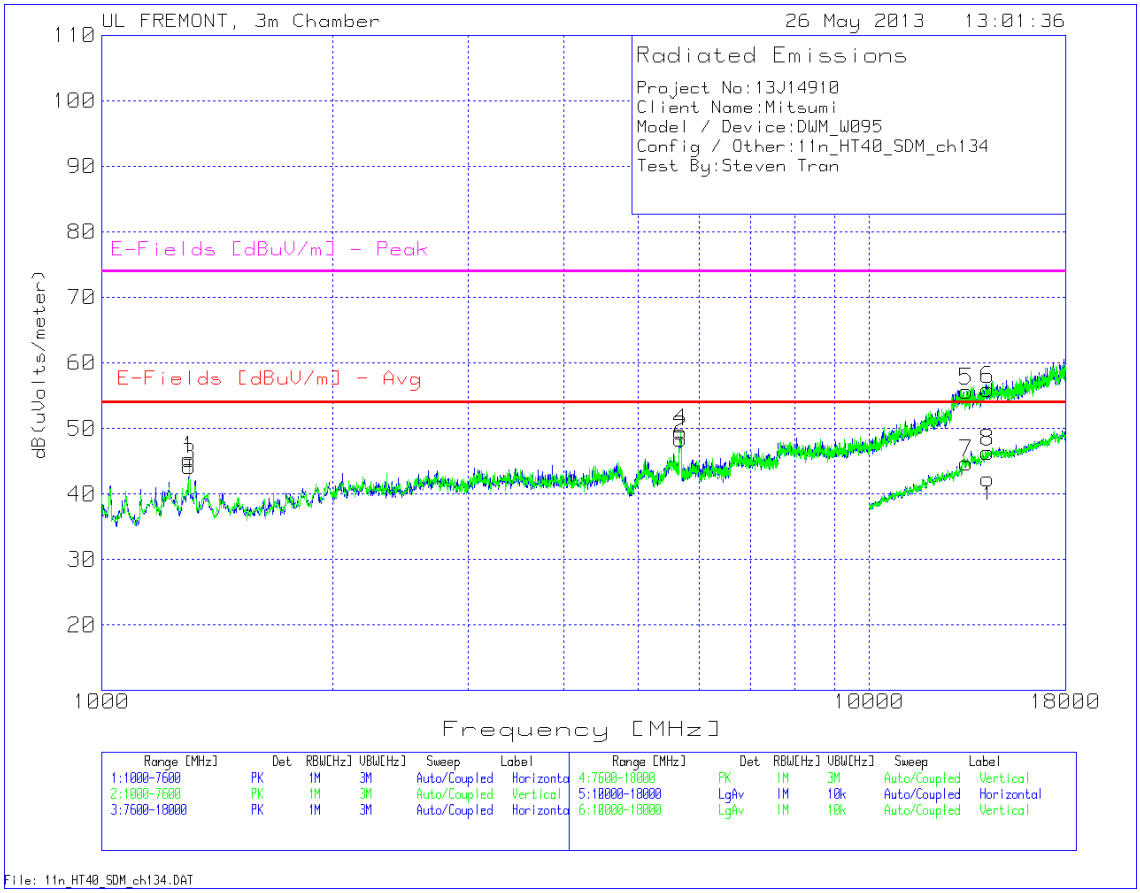
High Channel



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HIGH CHANNEL 134 DATA

Project No:13J14910
Client Name:Mitsumi
Model / Device:DWM_W095
Config / Other:11n_HT40_SDM_ch134_5670MHz
Test By:Steven Tran

Horizontal 1000 - 7600MHz

Marker No.	Test Frequency [MHz]	Meter Reading [dBuV]	Detector	T119 Ant Factor (dB)	T34 Preamp/Cable Loss (dB)	T161 BRF (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
1	1300.15	47.87	PK	30.2	-32.9	0.1	45.27	54	-8.73	74	-28.73
*2	5673.763	37.06	PK	34.8	-24.4	1	48.46	-	-	-	-

Vertical 1000 - 7600MHz

Marker No.	Test Frequency [MHz]	Meter Reading [dBuV]	Detector	T119 Ant Factor (dB)	T34 Preamp/Cable Loss (dB)	T161 BRF (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
3	1300.15	46.85	PK	30.2	-32.9	0.1	44.25	54	-9.75	74	-29.75
*4	5677.061	38.13	PK	34.8	-24.4	1	49.53	-	-	-	-

Horizontal 7600 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading [dBuV]	Detector	T119 Ant Factor (dB)	T34 Preamp/Cable Loss (dB)	T192 BRF (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
5	13389.905	33.09	PK	39.1	-16.7	0.2	55.69	-	-	74	-18.31

Vertical 7600 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading [dBuV]	Detector	T119 Ant Factor (dB)	T34 Preamp/Cable Loss (dB)	T192 BRF (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
6	14263.068	32.4	PK	39.2	-15.8	0.2	56	-	-	68.2	-12.2

Horizontal 10000 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading [dBuV]	Detector	T119 Ant Factor (dB)	T34 Preamp/Cable Loss (dB)	T192 BRF (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
7	13386.307	22.18	PK	39.1	-16.7	0.2	44.78	54	-9.22	74	-29.22

Vertical 10000 - 18000MHz

Marker No.	Test Frequency [MHz]	Meter Reading [dBuV]	Detector	T119 Ant Factor (dB)	T34 Preamp/Cable Loss (dB)	T192 BRF (dB)	dB(uVolts/ meter)	E-Fields [dBuV/m] - Avg	Average Margin	E-Fields [dBuV/m] - Peak	Peak Margin
8	14269.865	22.75	PK	39.2	-15.8	0.2	46.35	-	-	68.2	-21.85

* Fundamental

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

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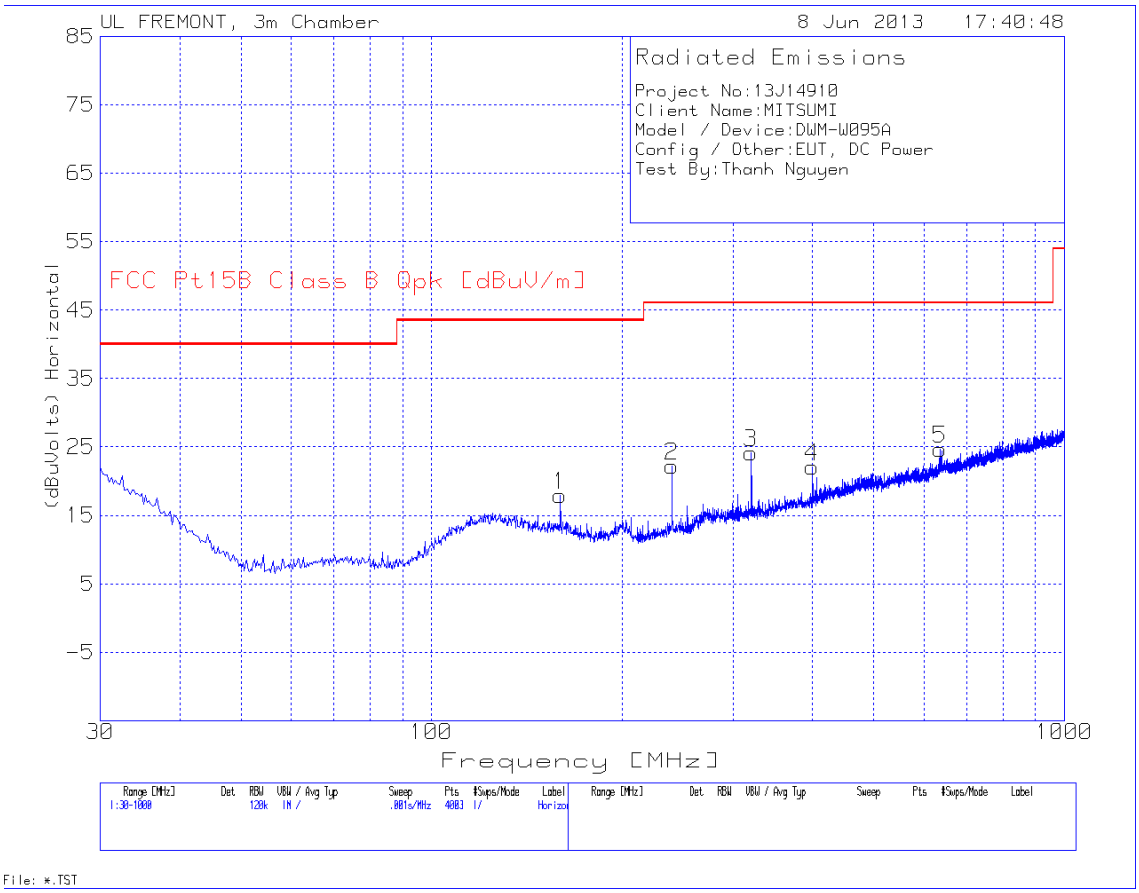
9.17. WORST-CASE BELOW 1 GHz

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

HORIZONTAL PLOT



UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701J
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
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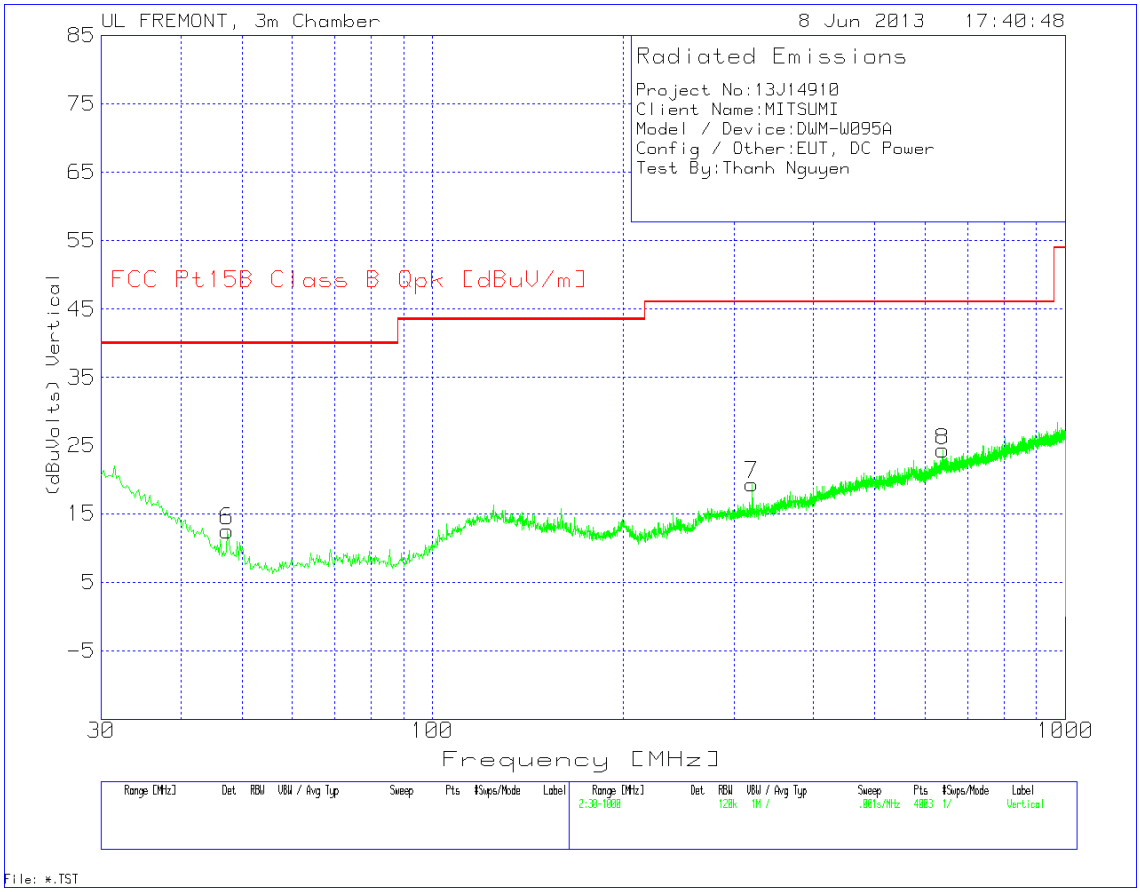
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)

VERTICAL PLOT



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HORIZONTAL & VERTICAL DATA

Project No:13J14910
Client Name:MITSUMI
Model / Device:DWM-W095A
Config / Other:EUT, DC Power
Test By:Thanh Nguyen

Horizontal 30 - 1000MHz

Marker No.	Test Frequency	Meter Reading	Detector	Antenna T185	3m Loop	DC Corr [dB]	(dBuVolts)	FCC Pt15B Class B Qpk [dBuV/m]	Margin (dB)	Height [cm]	Polarity
1	159.8826	31.83	PK	12.2	-26.2	0.1	17.93	43.52	-25.59	301	Horz
2	239.8476	36.03	PK	11.6	-25.5	0.1	22.23	46.02	-23.79	100	Horz
3	320.055	35.44	PK	13.8	-25.2	0.1	24.14	46.02	-21.88	100	Horz
4	400.02	32.26	PK	15.4	-25.7	0.1	22.06	46.02	-23.96	100	Horz
5	635.311	30.33	PK	19.6	-25.3	0.1	24.73	46.02	-21.29	400	Horz

Vertical 30 - 1000MHz

Marker No.	Test Frequency	Meter Reading	Detector	Antenna T185	3m Loop	DC Corr [dB]	(dBuVolts)	FCC Pt15B Class B Qpk [dBuV/m]	Margin (dB)	Height [cm]	Polarity
6	47.4469	30.65	PK	9	-27.3	0.1	12.45	40	-27.55	99	Vert
7	320.055	30.59	PK	13.8	-25.2	0.1	19.29	46.02	-26.73	249	Vert
8	639.4304	29.73	PK	19.7	-25.3	0.1	24.23	46.02	-21.79	99	Vert

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

RESULTS

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6 WORST EMISSIONS

Project No:13J14910
Client Name:MITSUMI
Model/Device:EUT; Tx Worst Case
Test Volt/Freq:120VAC/60Hz
Test By:K. NGUYEN

Line-L1 .15 - 30MHz

Test Frequency (Mhz)	Meter Reading (dBuV)	Detector	T24 IL L1.TXT (dB)	LC Cables (dB)	dB(uVolts)	CFR 47 Part 15 Class B QP (dBuV)	Margin (dB)	CFR 47 Part 15 Class B Avg (dBuV)	Margin (dB)
0.186	57.75	PK	0.1	0.0	57.85	64.2	-6.35	-	-
0.186	49.88	Av	0.1	0.0	49.98	-	-	54.20	-4.22
1.311	10.90	PK	0.1	0.1	11.10	56.0	-44.90	-	-
1.311	6.44	Av	0.1	0.1	6.64	-	-	46.00	-39.36
29.769	56.61	PK	0.5	0.3	57.41	60.0	-2.59	-	-
29.769	44.53	Av	0.5	0.3	45.33	-	-	50.00	-4.67

Line-L2 .15 - 30MHz

Test Frequency (Mhz)	Meter Reading (dBuV)	Detector	T24 IL L1.TXT (dB)	LC Cables (dB)	dB(uVolts)	CFR 47 Part 15 Class B QP (dBuV)	Margin (dB)	CFR 47 Part 15 Class B Avg (dBuV)	Margin (dB)
0.186	56.96	PK	0.1	0.0	57.06	64.2	-7.14	-	-
0.186	52.72	Av	0.1	0.0	52.82	-	-	54.2	-1.38
1.311	12.50	PK	0.1	0.1	12.70	56.0	-43.30	-	-
1.311	8.04	Av	0.1	0.1	8.24	-	-	46.0	-37.76
29.2695	56.81	PK	0.5	0.3	57.61	60.0	-2.39	-	-
29.2695	44.36	Av	0.5	0.3	45.16	-	-	50.0	-4.84

PK - Peak detector
QP - Quasi-Peak detector
Av - Average detector
Text File: Client WLAN_Remark2.TXT
File: WLAN_Remark2.DAT

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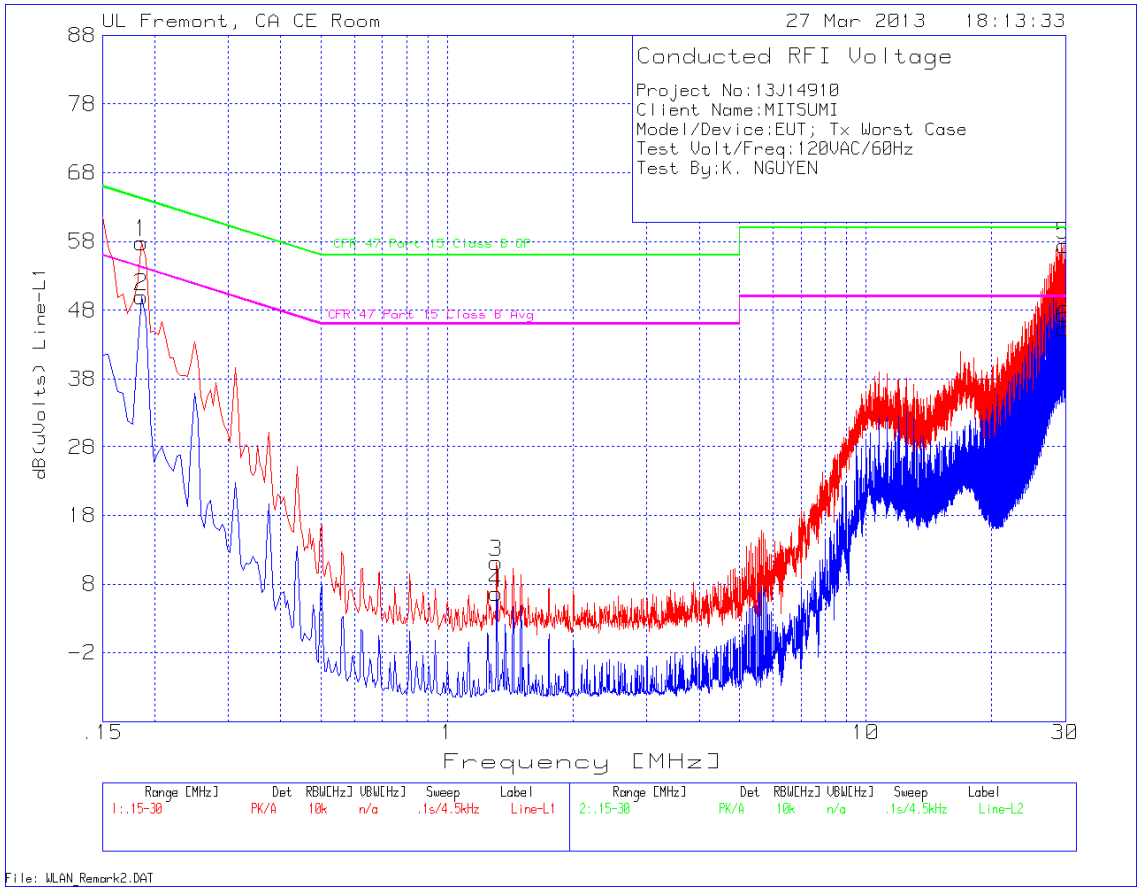
LINE 1 RESULTS



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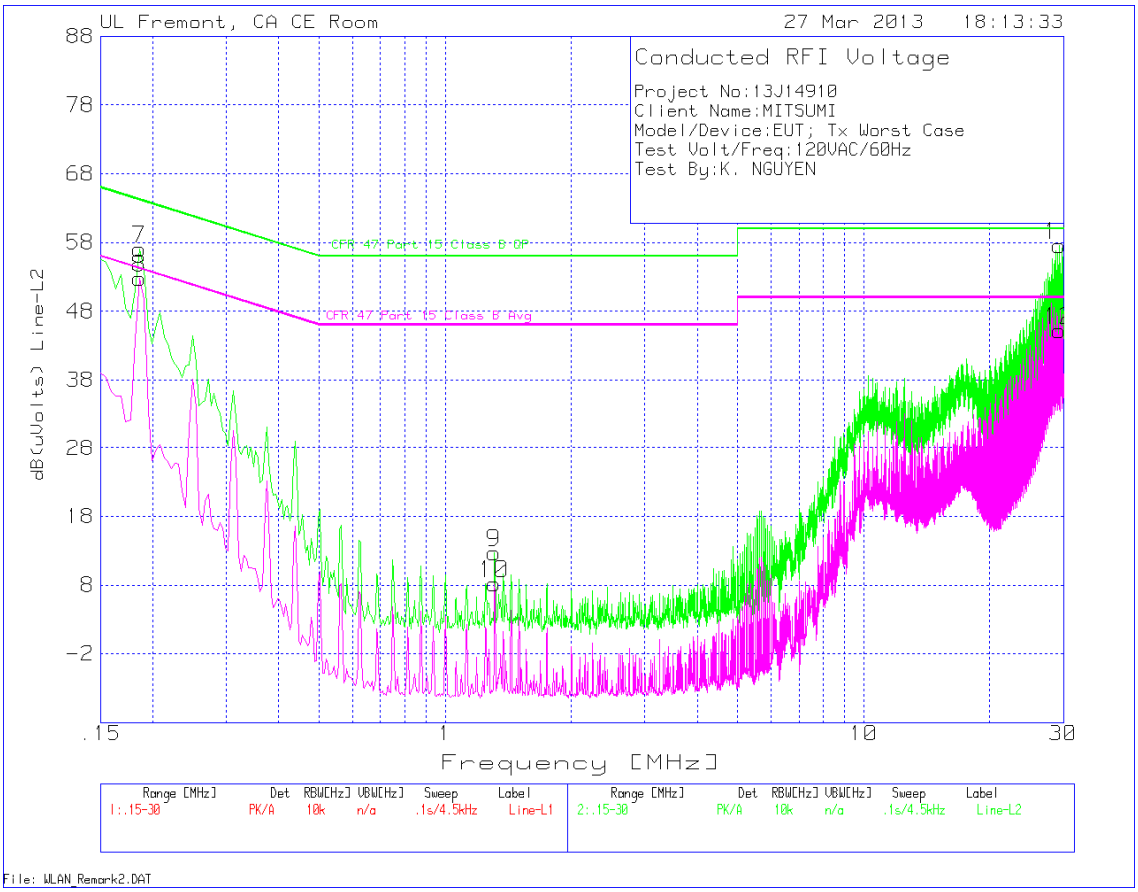
LINE 2 RESULTS



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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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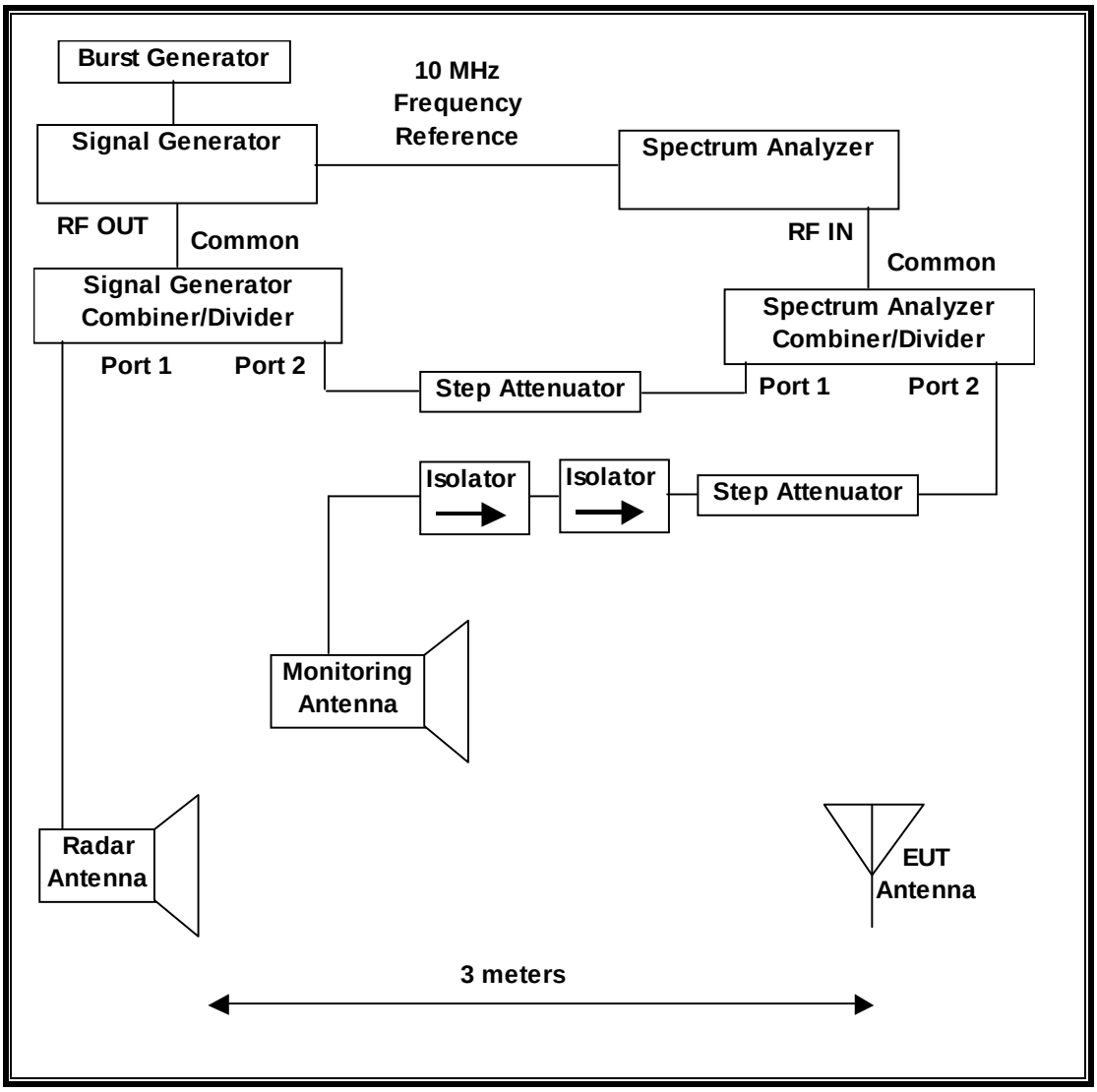
11.1.2. TEST AND MEASUREMENT SYSTEM

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:

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
N600 Wireless Dual Band Router	Netgear	WNDR3400	2BK311730FF6B	PY309300116
AC Adapter(AP)	Netgear	FA-1201500SJA / FA-1201500SUA	4F105116T10209045B	DoC
Notebook PC (Controller/Server)	HP	Pavilion zv6000	CND5290401	DoC
AC Adapter (Controller/Server PC)	HP	PA-1121-12HD	58B240ALLRK0HU	DoC
Notebook PC (Host)	IBM	Type 2373-GEU	99-M9YGR 05/03	DoC
AC Adapter(Host)	IBM	08K8204	11S08K204Z1Z6LV44Y0SZ	DoC

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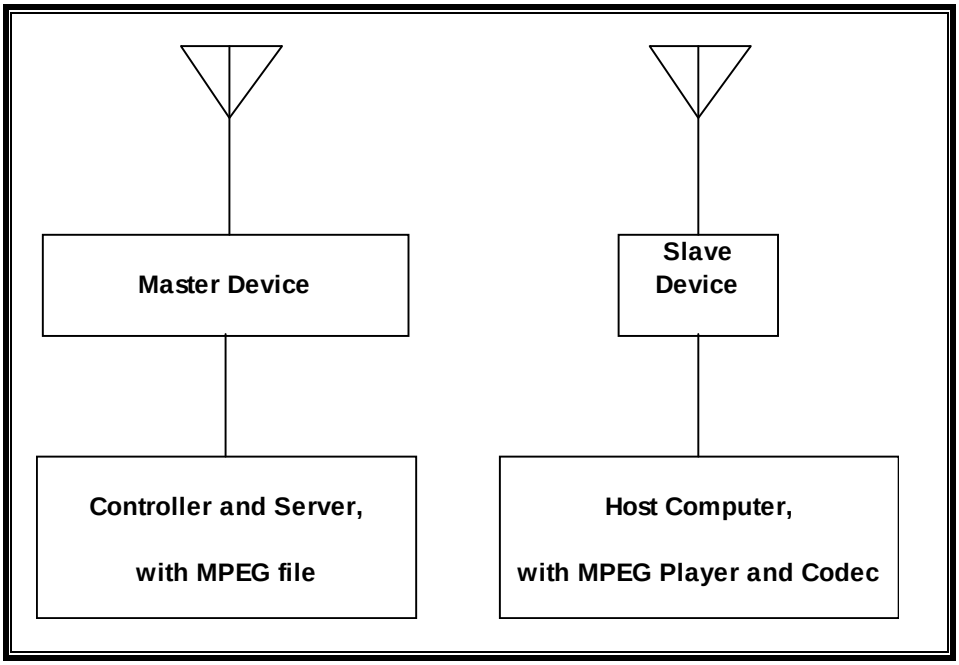
11.1.3. SETUP OF EUT

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**
N600 Wireless Dual Band Router	Netgear	WNDR3400	2BK311730FF6B	PY309300116
AC Adapter (AP)	Netgear	FA-1201500SJA / FA-1201500SUA	4F105116T10209045B	DoC
Notebook PC (Controller/Server)	HP	Pavilion zv6000	CND5290401	DoC
AC Adapter (Controller/Server PC)	HP	PA-1121-12HD	58B240ALLRK0HU	DoC
Notebook PC (Host)	IBM	Type 2373-GEU	99-M9YGR 05/03	DoC
AC Adapter (Host)	IBM	08K8204	11S08K204Z1Z6LV44Y0SZ	DoC

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11.1.4. 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 20.36 dBm EIRP in the 5250-5350 MHz band and 19.69 dBm EIRP in the 5470-5725 MHz band.

The only antenna assembly utilized with the EUT has a gain of 4 dBi.

Two identical antennas are utilized to meet the diversity and MIMO operational requirements.

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 two transmitter/receiver chains, each 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 VLC version 1.1.11 media player.

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 are implemented: 20 MHz and 40 MHz.

The software installed in the access point is Linux revision 5.22.84.0.

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 Netgear N600 Dual Band Router, FCC ID: PY309300116. The DFS software installed in the Master Device is Linux revision 5.22.84.0. The minimum antenna gain for the Master Device is 2.73 dBi.

The calibrated radiated DFS Detection Threshold level is set to –64 dBm.

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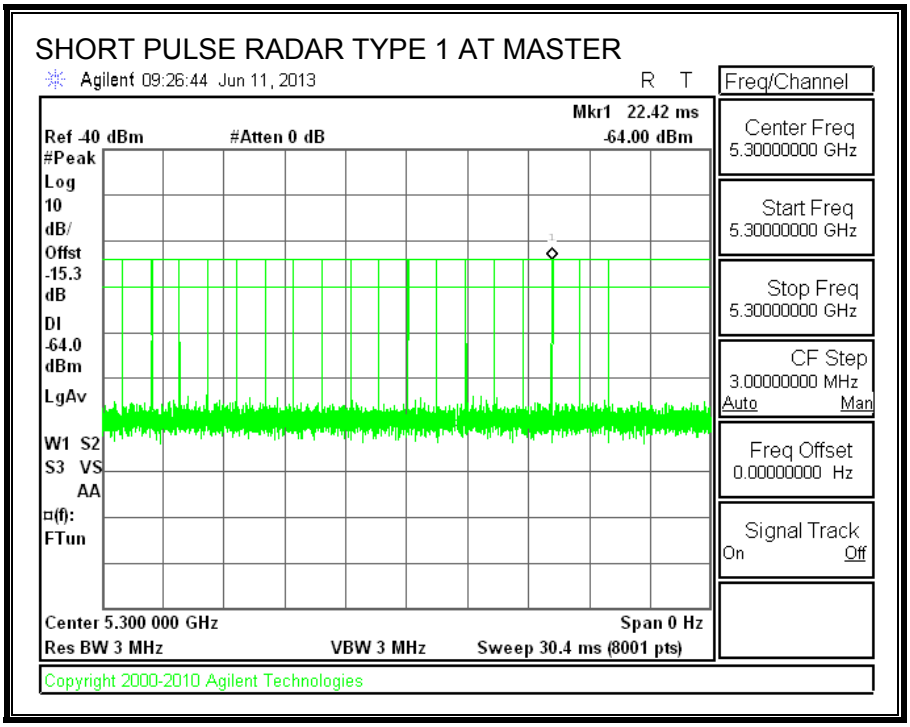
11.2. RESULTS FOR 20 MHz BANDWIDTH

11.2.1. TEST CHANNEL

All tests were performed at a channel center frequency of 5300 MHz.

11.2.2. RADAR WAVEFORM AND TRAFFIC

RADAR WAVEFORM



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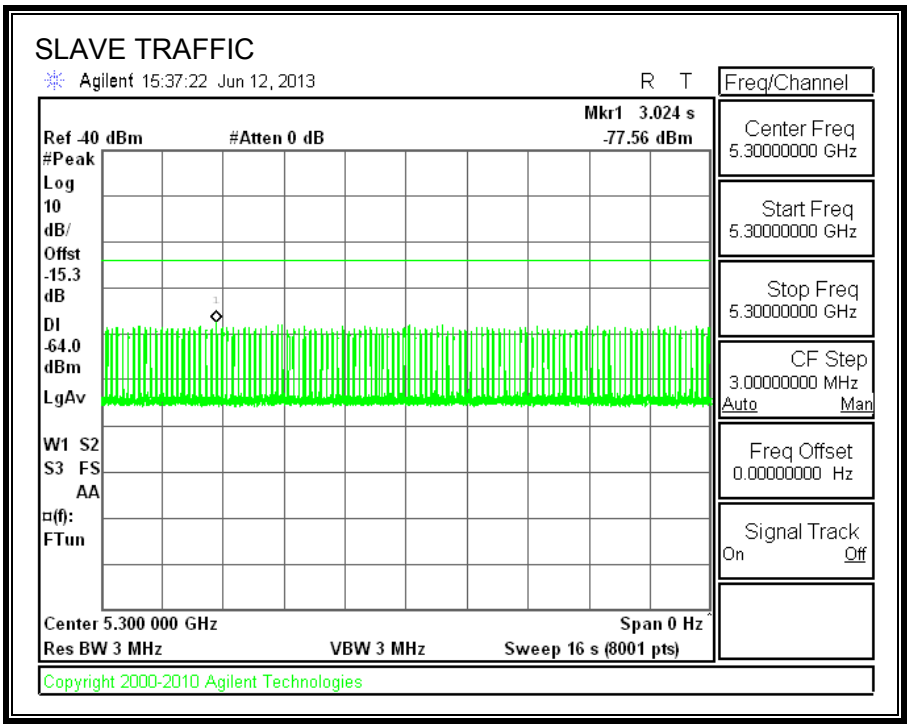
TRAFFIC



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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	3.983	10

Agency	Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
FCC	29.3	60
IC	31.5	260

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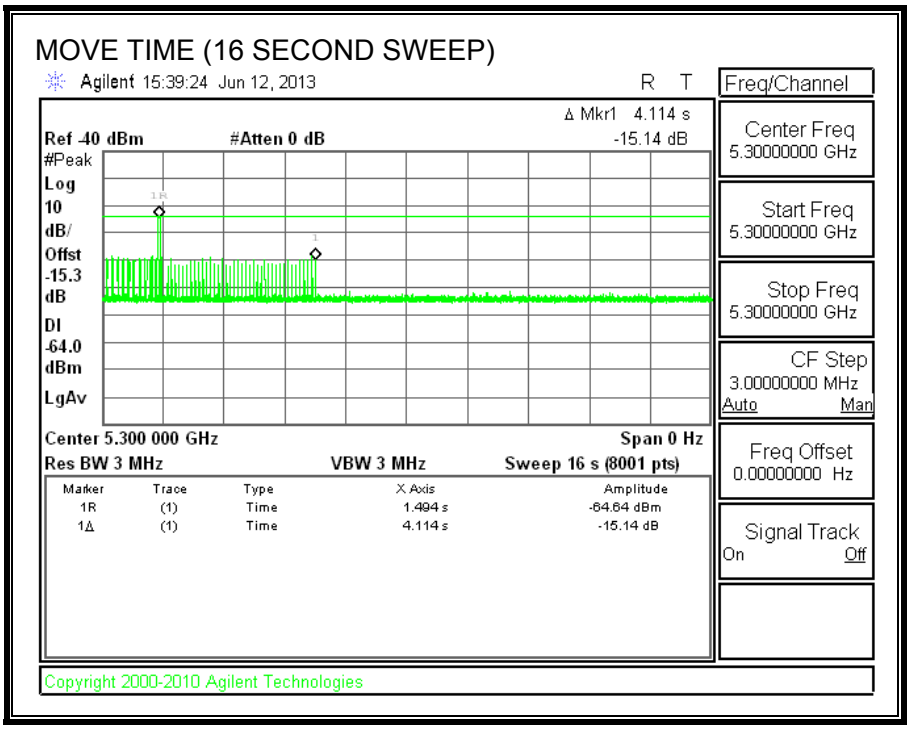
MOVE TIME (16 SECOND SWEEP)



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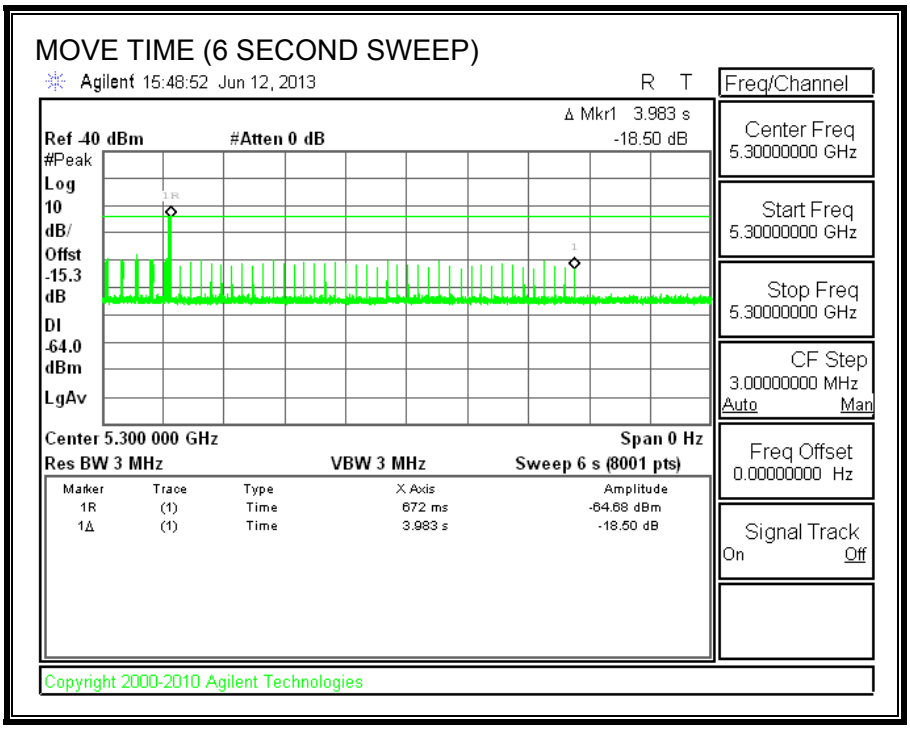
MOVE TIME (6 SECOND SWEEP)



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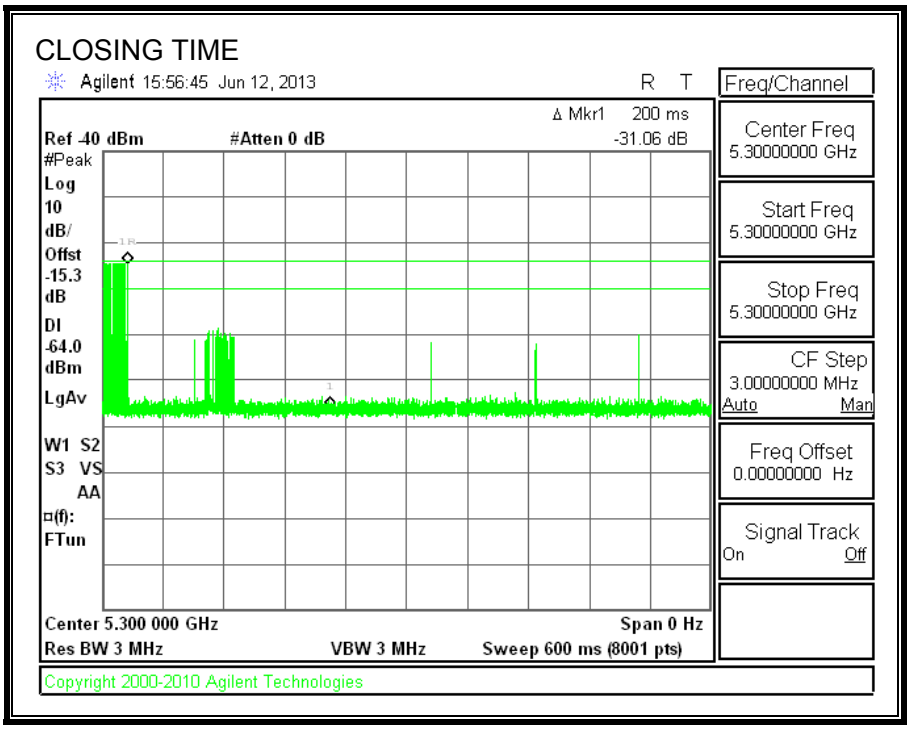
CHANNEL CLOSING TIME



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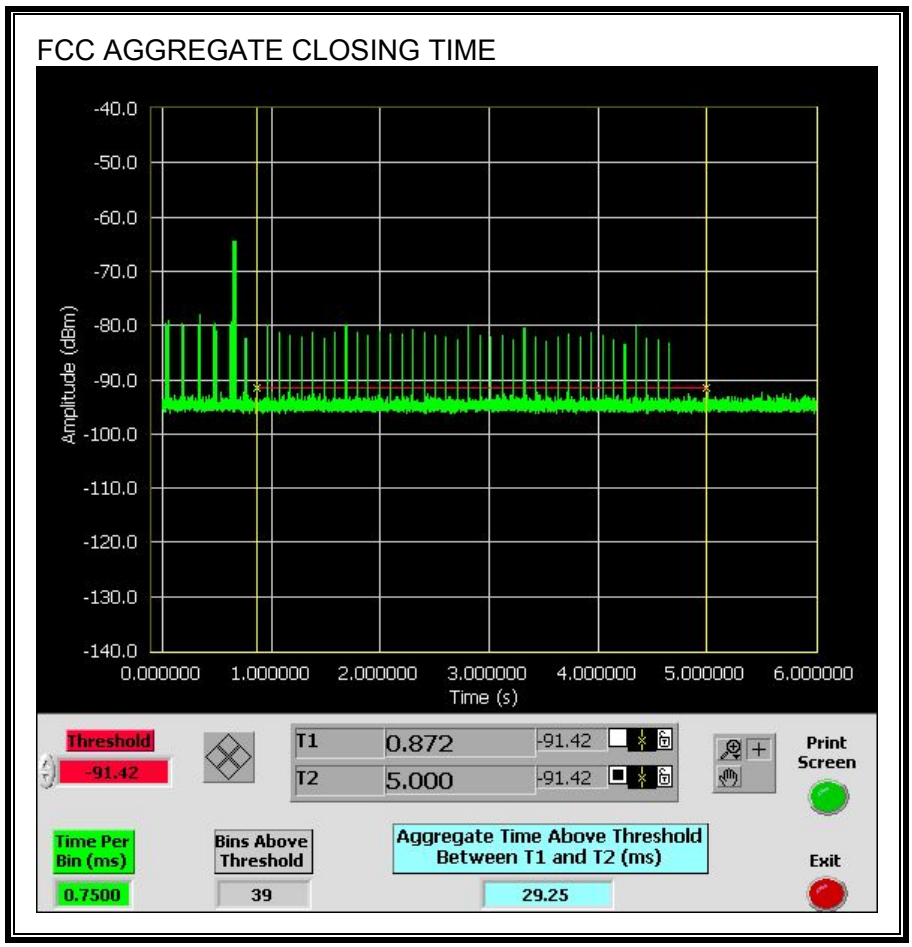
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

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



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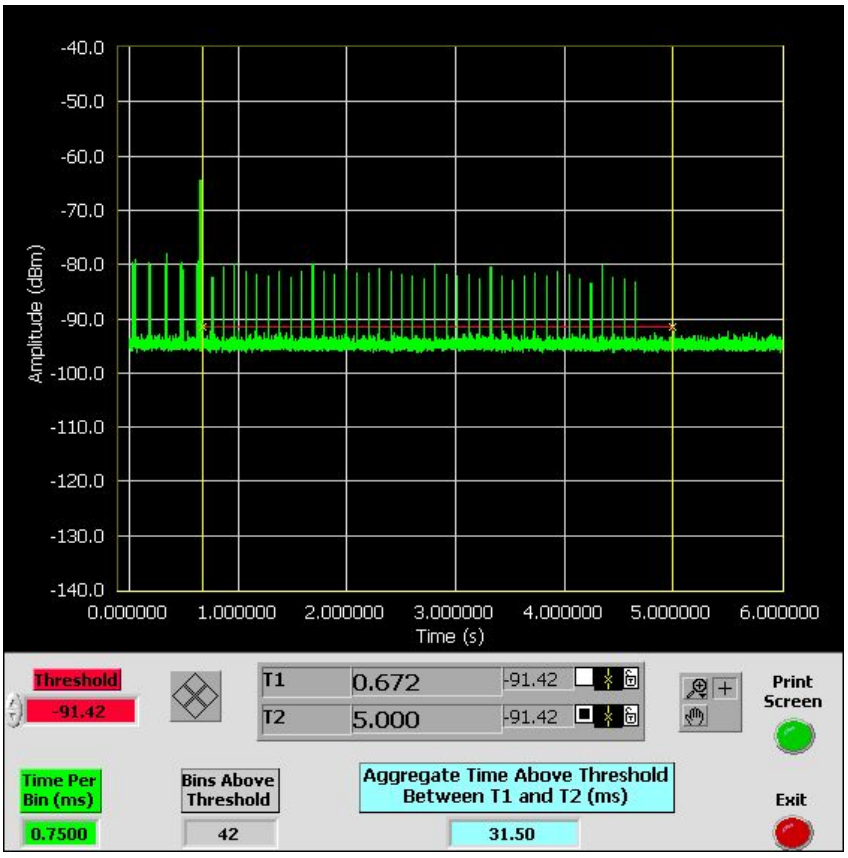
Only intermittent transmissions are observed during the IC aggregate monitoring period.

IC AGGREGATE CLOSING TIME



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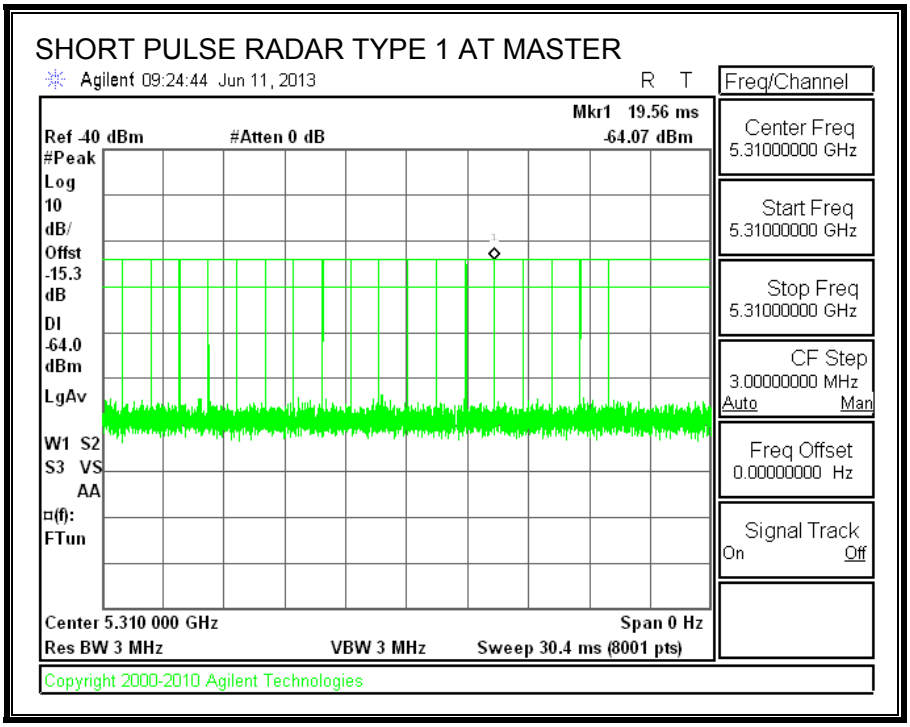
11.3. RESULTS FOR 40 MHz BANDWIDTH

11.3.1. TEST CHANNEL

All tests were performed at a channel center frequency of 5310 MHz.

11.3.2. RADAR WAVEFORM AND TRAFFIC

RADAR WAVEFORM



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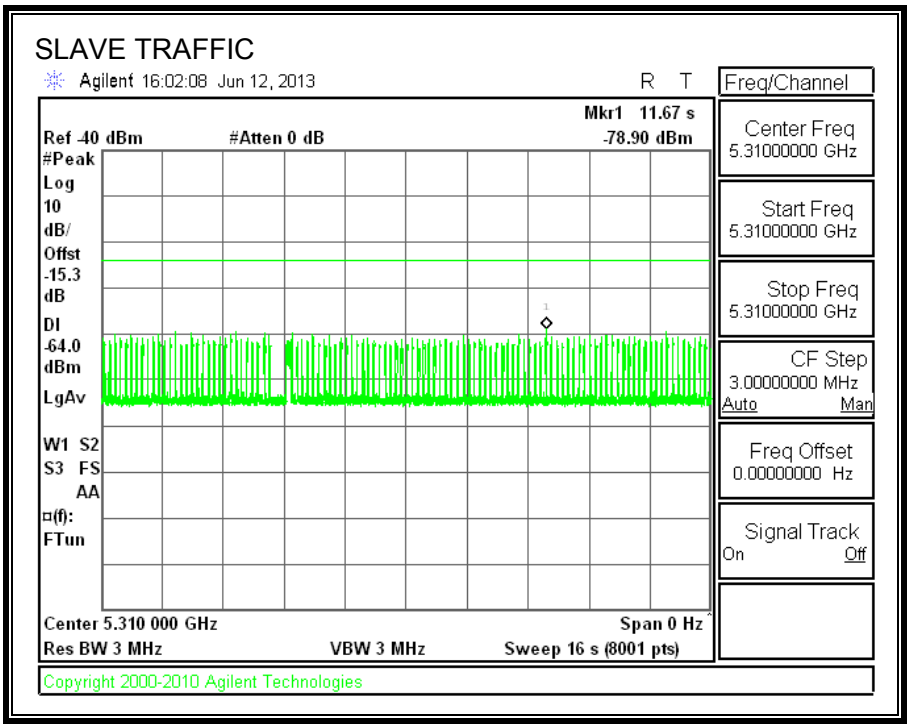
TRAFFIC



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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	4.058	10

Agency	Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
FCC	30.0	60
IC	30.8	260

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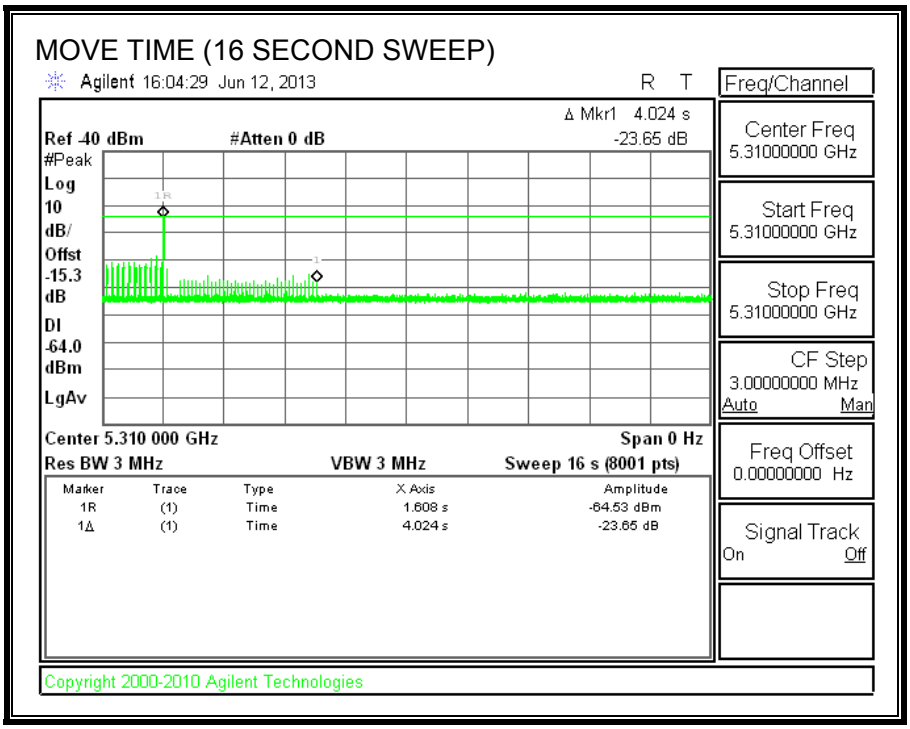
MOVE TIME (16 SECOND SWEEP)



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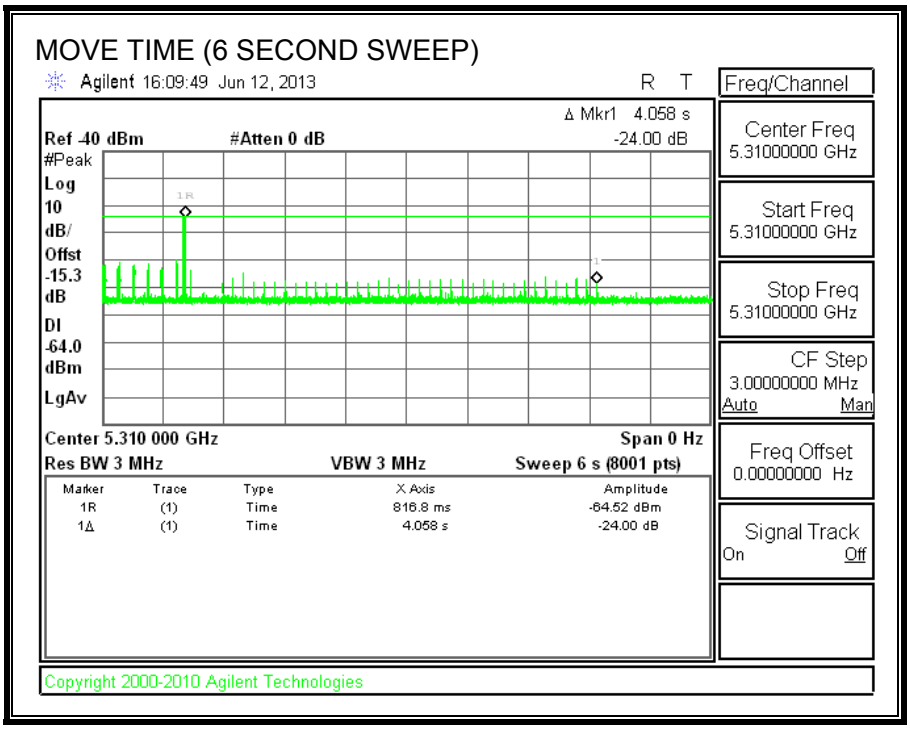
MOVE TIME (6 SECOND SWEEP)



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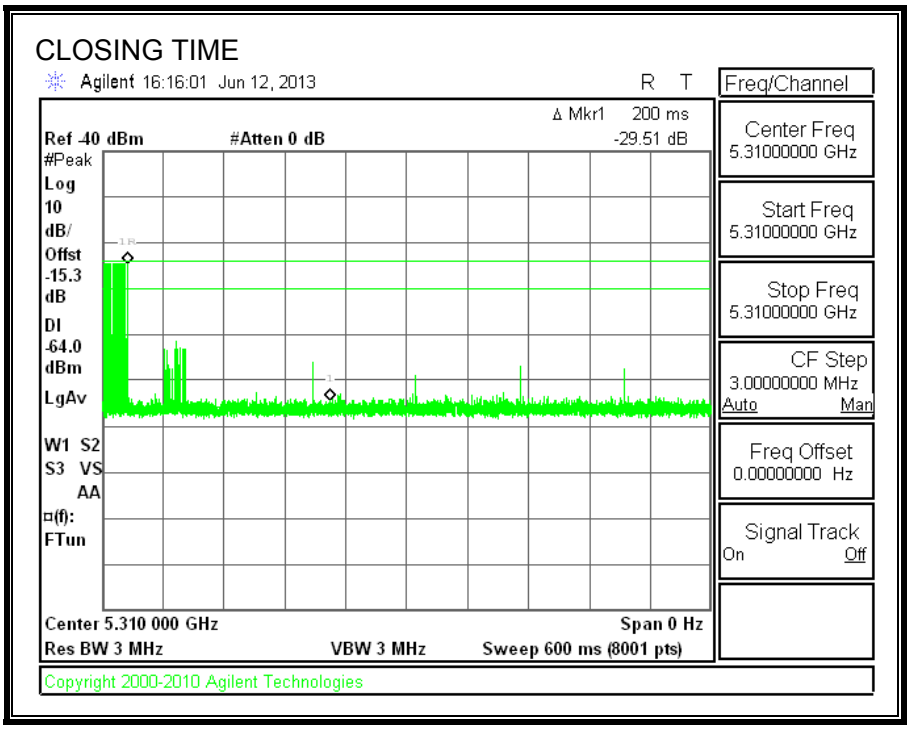
CHANNEL CLOSING TIME



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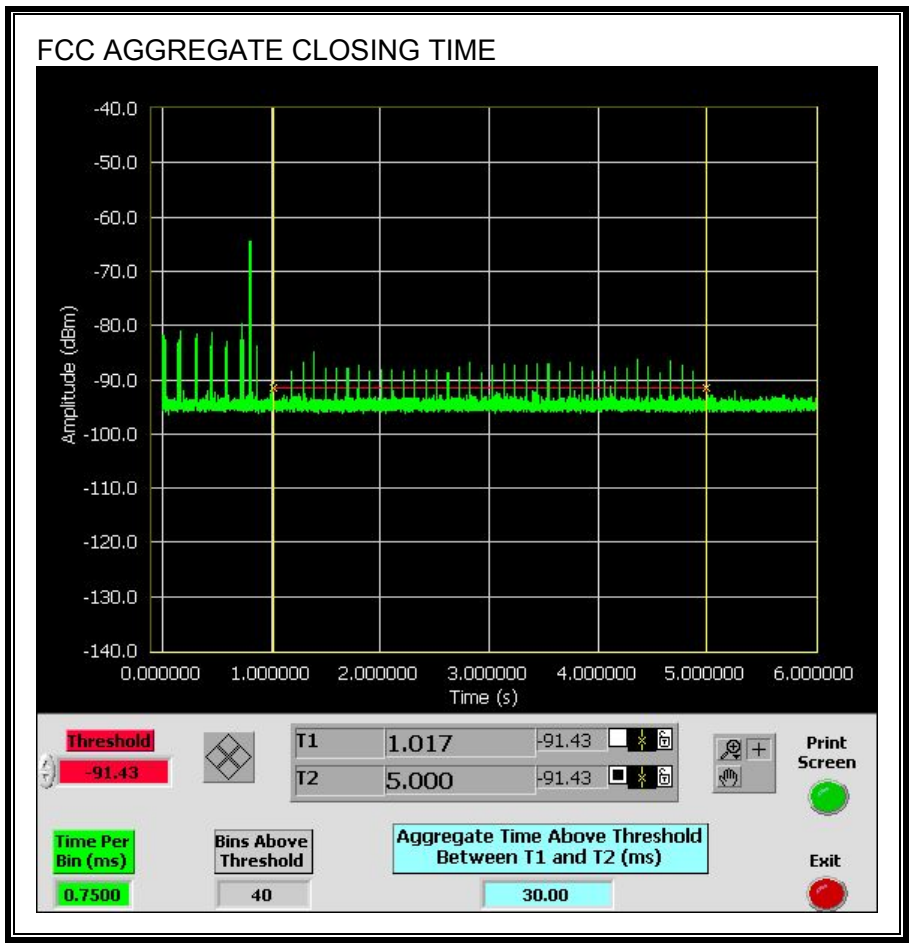
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

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



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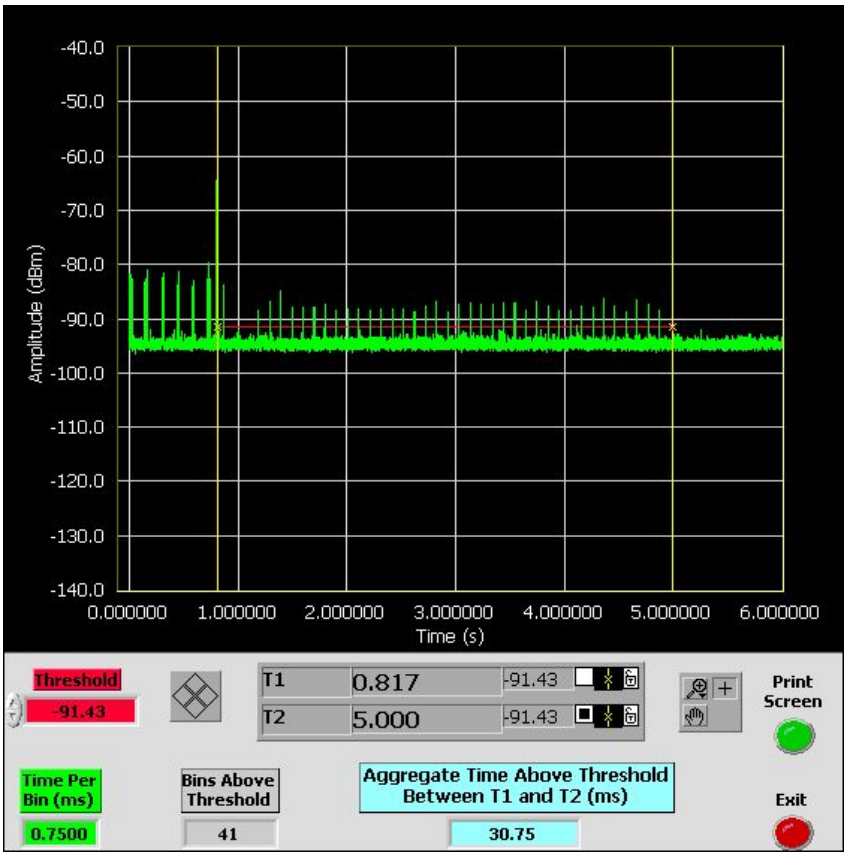
Only intermittent transmissions are observed during the IC aggregate monitoring period.

IC AGGREGATE CLOSING TIME



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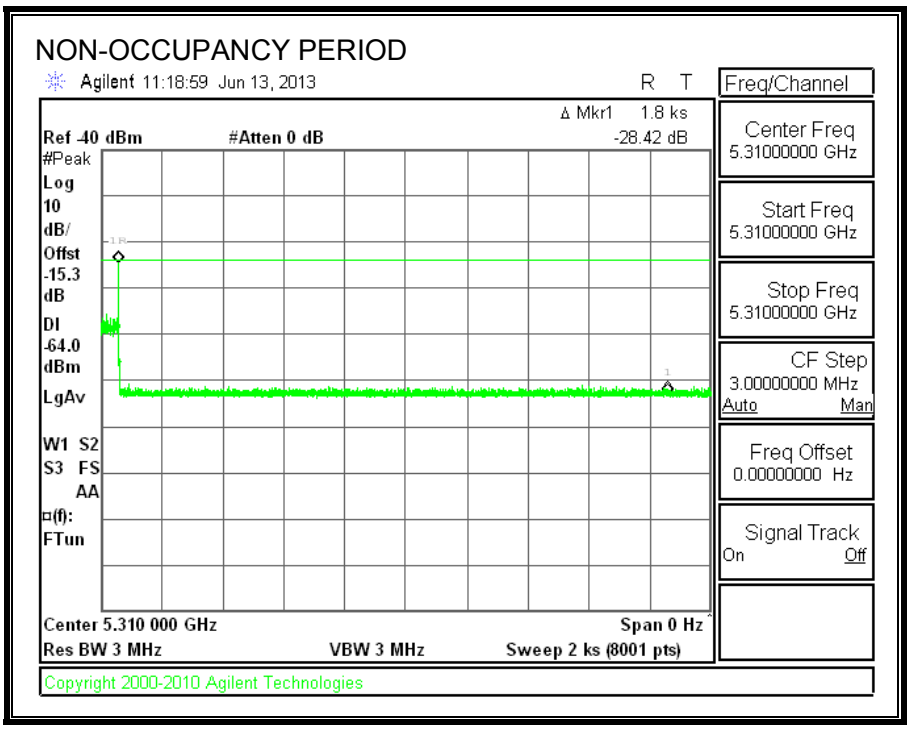
11.3.5. NON-OCCUPANCY PERIOD

RESULTS

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



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