APPENDIX 2: Data of EMI test

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

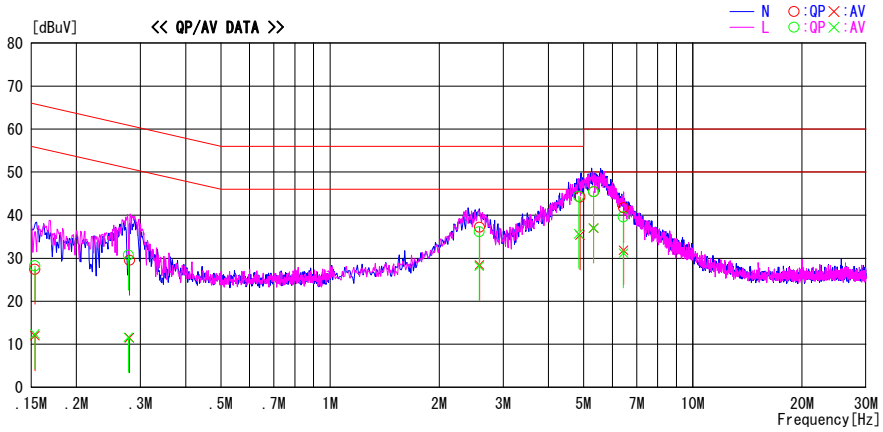
UL Japan, Inc. Head Office EMC Lab. No.4 Semi Anechoic Chamber
Date : 2011/05/22

Report No. : 31HE0169-HO-02

Temp./Humi. : 25deg. C / 59% RH
Engineer : Satofumi Matsuyama

Mode / Remarks : Tx 11n-40 MCS8 243¡Antenna 0+1

LIMIT : FCC15.207 QP
FCC15.207 AV



Frequency	Reading Level		Corr.	Results		Limit		Margin		Phase	Comment
	QP	AV	Factor	QP	AV	QP	AV	QP	AV		
[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
0.15352	14.3	-1.1	13.1	27.4	12.0	65.8	55.8	38.4	43.8	N	
0.27975	16.2	-1.8	13.3	29.5	11.5	60.8	50.8	31.3	39.3	N	
2.58244	23.8	15.0	13.4	37.2	28.4	56.0	46.0	18.8	17.6	N	
4.88674	30.5	21.7	13.7	44.2	35.4	56.0	46.0	11.8	10.6	N	
5.32452	31.6	23.2	13.8	45.4	37.0	60.0	50.0	14.6	13.0	N	
6.43936	27.9	18.1	13.8	41.7	31.9	60.0	50.0	18.3	18.1	N	
0.15350	15.1	-0.7	13.1	28.2	12.4	65.8	55.8	37.6	43.4	L	
0.27813	17.4	-1.7	13.3	30.7	11.6	60.9	50.9	30.2	39.3	L	
2.57613	22.7	14.8	13.4	36.1	28.2	56.0	46.0	19.9	17.8	L	
4.84187	30.8	22.1	13.6	44.4	35.7	56.0	46.0	11.6	10.3	L	
5.32358	31.6	23.2	13.8	45.4	37.0	60.0	50.0	14.6	13.0	L	
6.43166	25.8	17.4	13.8	39.6	31.2	60.0	50.0	20.4	18.8	L	

CHART:WITH FACTOR,Peak hold data. CALCULATION:RESULT[dBuV]=READING[dBuV]+C.F[dB](LISN LOSS+CABLE LOSS)
Except for the above table : adequate margin data below the limits.

6dB Bandwidth

Test place	Head Office EMC Lab. No.7 Shielded Room
Report No.	31HE0169-HO-02
Date	05/20/2011
Temperature/ Humidity	24 deg.C / 40% RH
Engineer	Takumi Shimada
Mode	Tx

11b, Antenna 0

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
2412	9.635	>500
2437	11.099	>500
2462	9.456	>500

11g, Antenna 0

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
2412	16.377	>500
2437	16.384	>500
2462	16.384	>500

11n-20

Antenna	Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
0	2412	17.723	>500
	2437	17.730	>500
	2462	17.777	>500
1	2412	17.770	>500
	2437	17.749	>500
	2462	17.779	>500

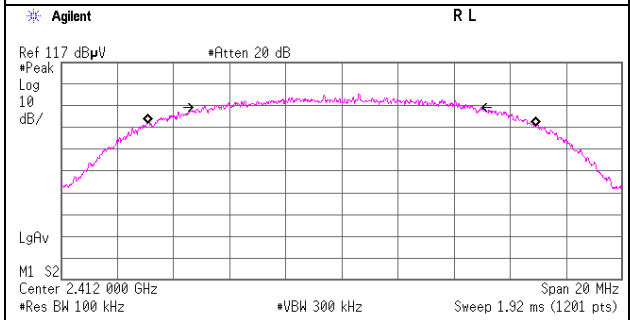
11n-40

Antenna	Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
0	2422	36.261	>500
	2437	35.924	>500
	2452	36.086	>500
1	2422	36.355	>500
	2437	36.407	>500
	2452	36.329	>500

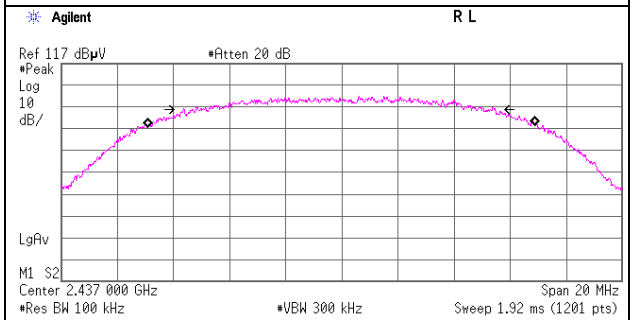
6dB Bandwidth

11b, Antenna 0, 11Mbps(Long)

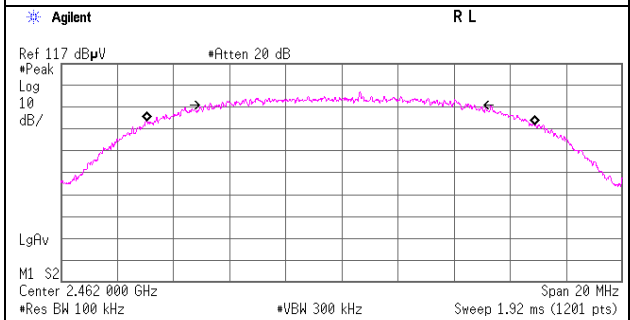
2412MHz



2437MHz

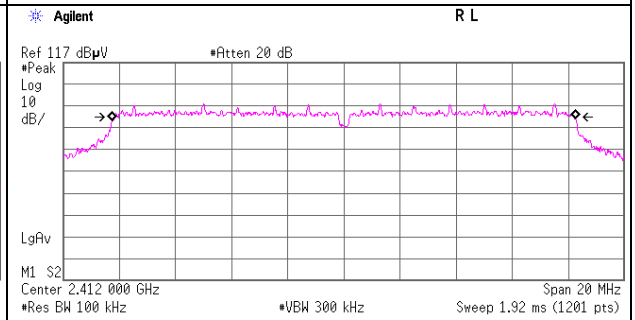


2462MHz

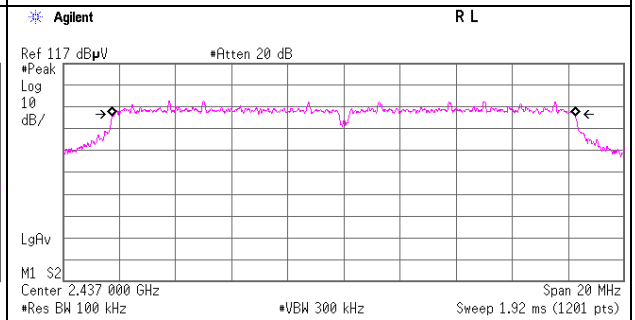


11g, Antenna 0, 9Mbps

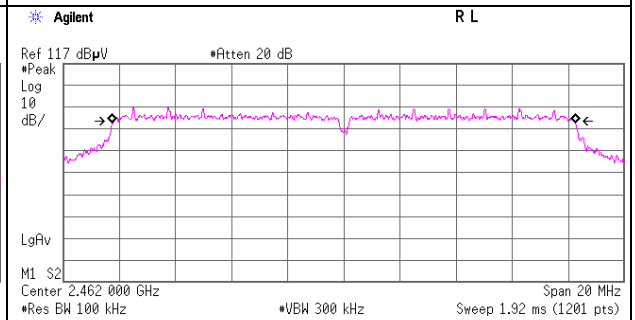
2412MHz



2437MHz



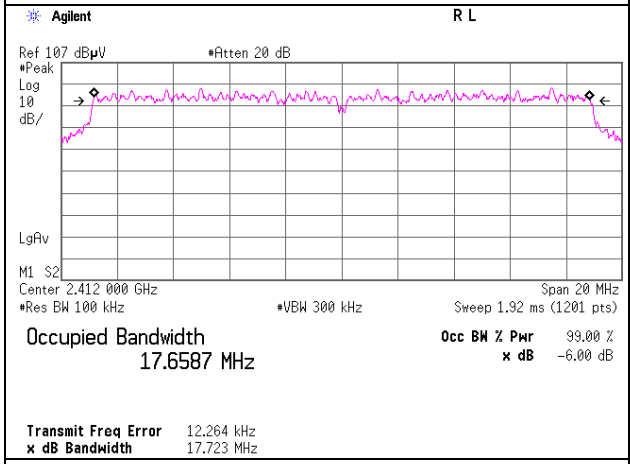
2462MHz



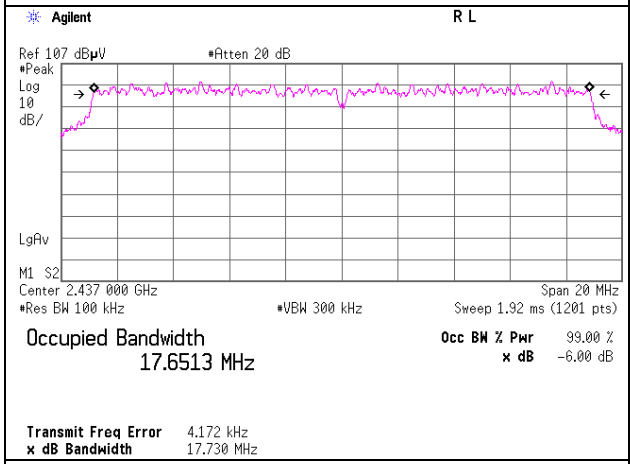
6dB Bandwidth

11n-20 Antenna 0, MCS13

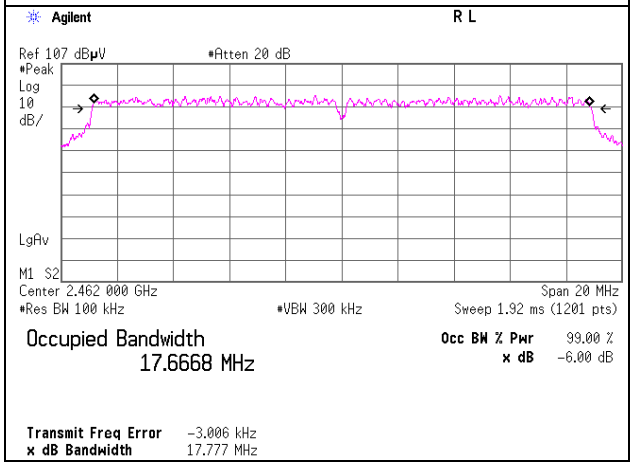
2412MHz



2437MHz

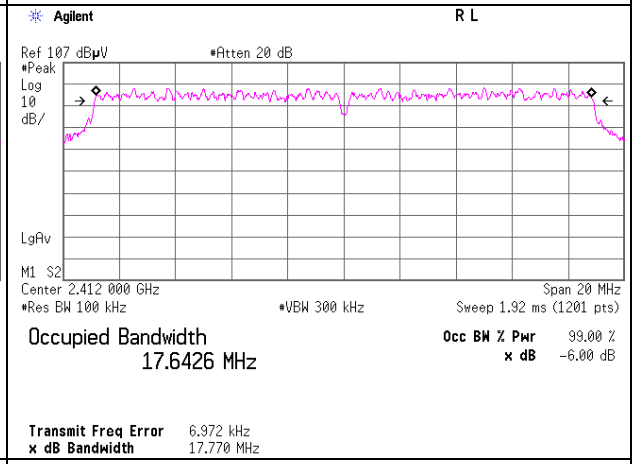


2462MHz

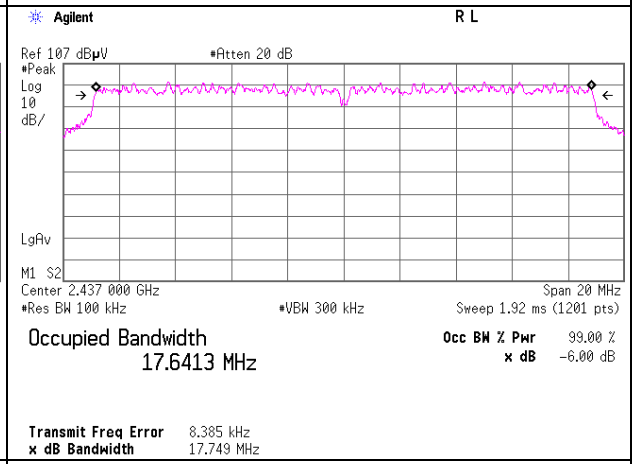


11n-20 Antenna 1, MCS13

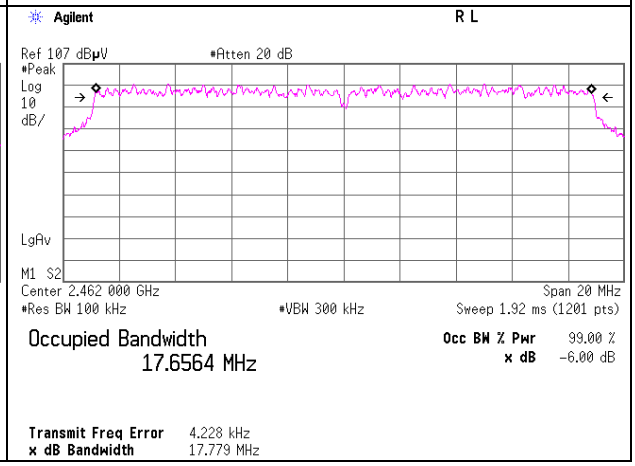
2412MHz



2437MHz



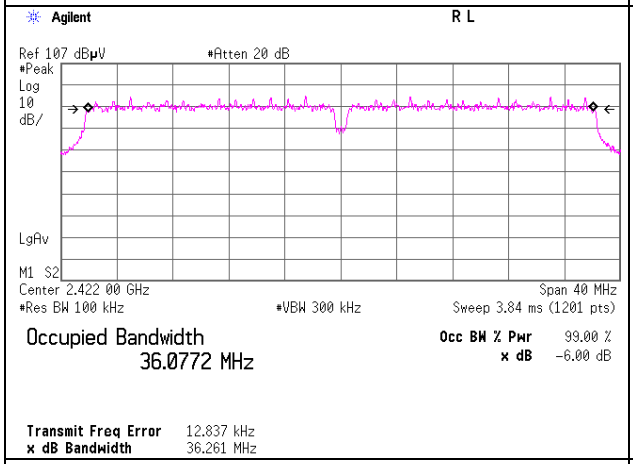
2462MHz



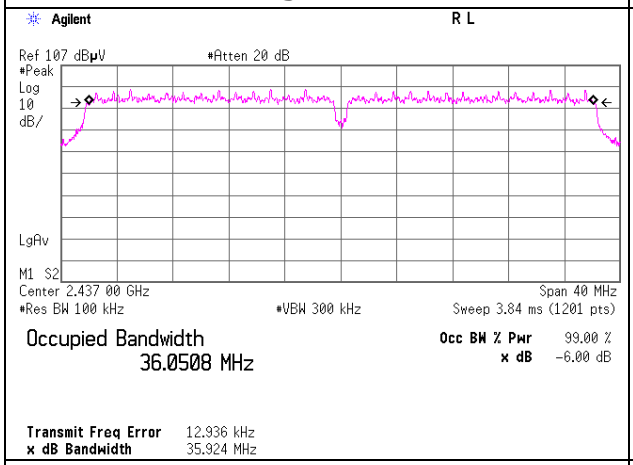
6dB Bandwidth

11n-40 Antenna 0, MCS8

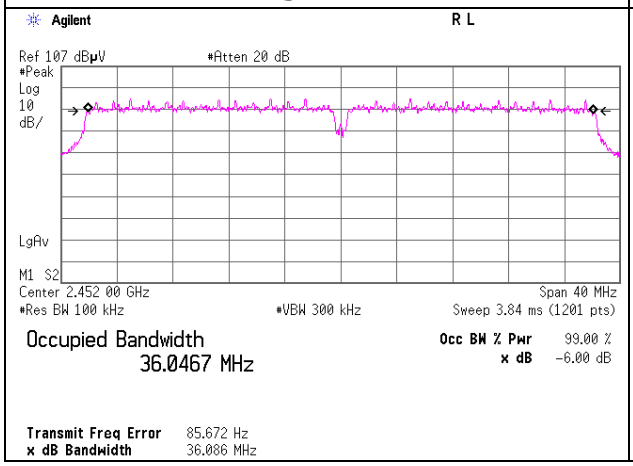
2422MHz



2437MHz

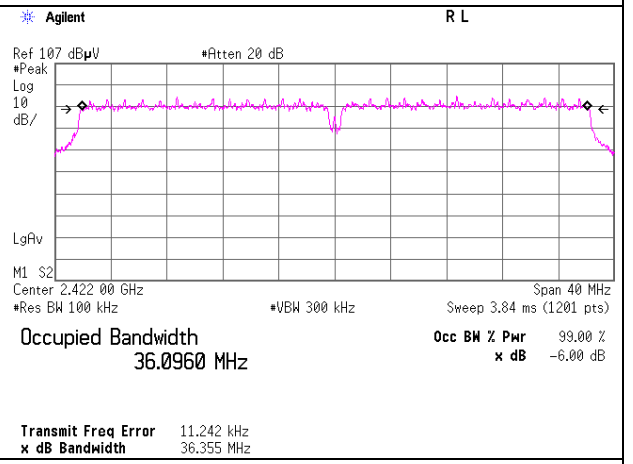


2452MHz

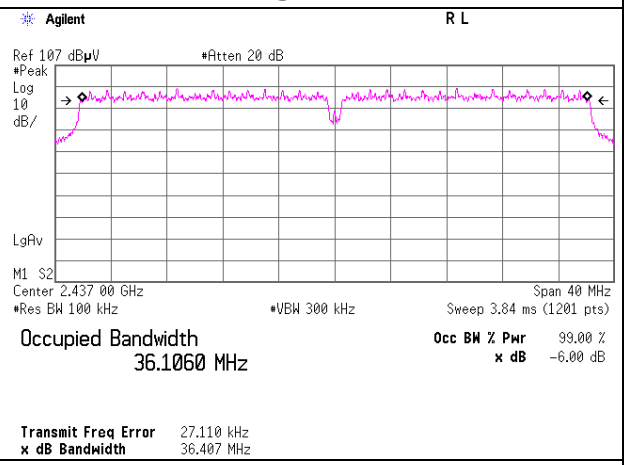


11n-40 Antenna 1, MCS8

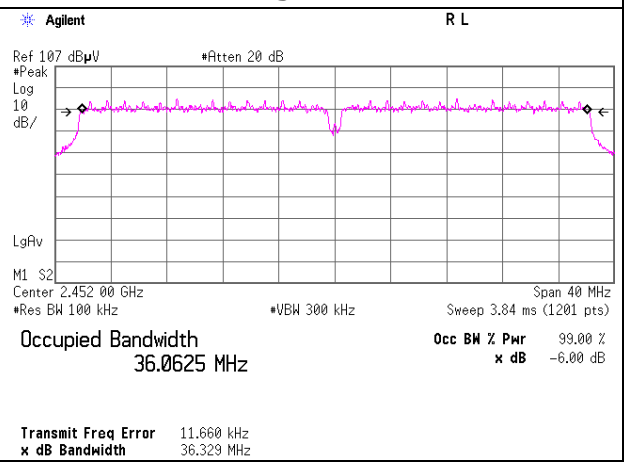
2422MHz



2437MHz



2452MHz



Maximum Peak Output Power

Test place	Head Office EMC Lab. No.6 and 11 Measurement Room	
Report No.	31HE0169-HO-02	
Date	04/21/2011	05/10/2011
Temperature/ Humidity	22 deg.C / 31% RH	23 deg.C / 37% RH
Engineer	Yutaka Yoshida	Takumi Shimada
Mode	11b Tx	

Antenna 0, 11Mbps(Long)

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	6.02	0.79	10.07	16.88	48.75	30.00	1000	13.12
2437	6.43	0.80	10.07	17.30	53.70	30.00	1000	12.70
2462	6.76	0.80	10.07	17.63	57.94	30.00	1000	12.37

Antenna 1, 2Mbps(Short)

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	5.93	0.79	10.07	16.79	47.75	30.00	1000	13.21
2437	6.32	0.80	10.07	17.19	52.36	30.00	1000	12.81
2462	6.37	0.80	10.07	17.24	52.97	30.00	1000	12.76

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

Antenna 0, 2437MHz

Rate	Reading	Remark
[Mbps]	[dBm]	
1(long)	6.36	
2(Long)	6.34	
2(Short)	6.32	
5.5(long)	6.35	
5.5(Short)	6.31	
11(Long)	6.43	*
11(Short)	6.41	

Antenna 1, 2437MHz

Rate	Reading	Remark
[Mbps]	[dBm]	
1(long)	6.00	
2(Long)	6.31	
2(Short)	6.32	*
5.5(long)	6.08	
5.5(Short)	6.06	
11(Long)	6.13	
11(Short)	6.20	

*: Worst Rate
All comparizon were carried out on same frequency and measurement factors.

Maximum Peak Output Power

Test place	Head Office EMC Lab. No.7 and 11 Measurement Room	
Report No.	31HE0169-HO-02	
Date	04/21/2011	05/20/2011
Temperature/ Humidity	22 deg.C / 31% RH	24 deg.C / 40% RH
Engineer	Yutaka Yoshida	Takumi Shimada
Mode	11g Tx	

Antenna 0, 9Mbps

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result [mW]	Limit [dBm]	Limit [mW]	Margin [dB]
2412	10.98	0.79	10.07	21.84	152.76	30.00	1000	8.16
2437	13.23	0.80	10.07	24.10	257.04	30.00	1000	5.90
2462	10.96	0.80	10.07	21.83	152.41	30.00	1000	8.17

Antenna 1, 9Mbps

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result [mW]	Limit [dBm]	Limit [mW]	Margin [dB]
2412	10.63	0.79	10.07	21.49	140.93	30.00	1000	8.51
2437	12.97	0.80	10.07	23.84	242.10	30.00	1000	6.16
2462	10.22	0.80	10.07	21.09	128.53	30.00	1000	8.91

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

Antenna 0, 2437MHz

Rate [Mbps]	Reading [dBm]	Remark
6	12.63	
9	13.23	*
12	12.55	
18	12.75	
24	12.81	
36	12.45	
48	10.82	
54	10.17	

Antenna 1, 2437MHz

Rate [Mbps]	Reading [dBm]	Remark
6	12.22	
9	12.97	*
12	12.28	
18	12.44	
24	12.24	
36	11.82	
48	10.08	
54	10.06	

*: Worst Rate
All comparison were carried out on same frequency and measurement factors.

Maximum Peak Output Power

Test place	Head Office EMC Lab. No.7 and 11 Measurement Room	
Report No.	31HE0169-HO-02	
Date	04/21/2011	05/20/2011
Temperature/ Humidity	22 deg.C / 31% RH	24 deg.C / 40% RH
Engineer	Yutaka Yoshida	Takumi Shimada
Mode	11n-20 Tx	

Antenna 0 + 1, MCS13

Freq.	Antenna 0 Result	Antenna 1 Result	Result		Limit		Margin
[MHz]	[mW]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	91.83	92.90	22.67	184.73	30.00	1000	7.33
2437	169.43	167.88	25.28	337.31	30.00	1000	4.72
2462	135.52	139.00	24.39	274.51	30.00	1000	5.61

Sample Calculation:
Result = Antenna 0 + 1

Antenna 0, MCS13

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	8.77	0.79	10.07	19.63	91.83	30.00	1000	10.37
2437	11.42	0.80	10.07	22.29	169.43	30.00	1000	7.71
2462	10.45	0.80	10.07	21.32	135.52	30.00	1000	8.68

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

Antenna 1, MCS13

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	8.82	0.79	10.07	19.68	92.90	30.00	1000	10.32
2437	11.38	0.80	10.07	22.25	167.88	30.00	1000	7.75
2462	10.56	0.80	10.07	21.43	139.00	30.00	1000	8.57

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

Maximum Peak Output Power

Test place	Head Office EMC Lab. No.7 and 11 Measurement Room	
Report No.	31HE0169-HO-02	
Date	04/21/2011	05/20/2011
Temperature/ Humidity	22 deg.C / 31 % RH	24 deg.C / 40% RH
Engineer	Yutaka Yoshida	Takumi Shimada
Mode	11n-20 Tx	

Antenna 0, 2437MHz

MCS Number	Antenna 0 Reading		Remark
	[dBm]	[mW]	
0	10.75	11.89	
1	10.38	10.91	
2	10.82	12.08	
3	10.76	11.91	
4	10.98	12.53	
5	10.88	12.25	
6	9.73	9.40	
7	9.14	8.20	

Antenna 1, 2437MHz

MCS Number	Antenna 0 Reading		Remark
	[dBm]	[mW]	[dB]
0	10.10	10.23	
1	9.36	8.63	
2	9.58	9.08	
3	9.69	9.31	
4	9.61	9.14	
5	9.54	8.99	
6	8.64	7.31	
7	8.21	6.62	

Antenna 0 + 1 , 2437MHz

MCS Number	Antenna 0 Reading		Antenna 1 Reading		Total Reading Power		Remark
	[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dB]
8	11.11	12.91	11.65	14.62	14.40	27.53	
9	10.90	12.30	11.37	13.71	14.15	26.01	
10	11.12	12.94	11.30	13.49	14.22	26.43	
11	10.96	12.47	11.32	13.55	14.15	26.03	
12	11.21	13.21	11.50	14.13	14.37	27.34	
13	11.42	13.87	11.38	13.74	14.41	27.61	*
14	10.12	10.28	10.51	11.25	13.33	21.53	
15	9.30	8.51	10.16	10.38	12.76	18.89	

* Worst Rate
Total Reading Power = Antenna 0 Reading + Antenna 1 Reading
All comparison were carried out on same frequency and measurement factors.

Maximum Peak Output Power

Test place	Head Office EMC Lab. No.7 and 11 Measurement Room	
Report No.	31HE0169-HO-02	
Date	04/21/2011	05/20/2011
Temperature/ Humidity	22 deg.C / 31% RH	24 deg.C / 40% RH
Engineer	Yutaka Yoshida	Takumi Shimada
Mode	11n-40 Tx	

Antenna 0 + 1, MCS8

Freq.	Antenna 0 Result	Antenna 1 Result	Result		Limit		Margin
[MHz]	[mW]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2422	78.52	80.91	22.03	159.43	30.00	1000	7.97
2437	179.89	258.23	26.42	438.11	30.00	1000	3.58
2452	79.43	85.31	22.17	164.74	30.00	1000	7.83

Sample Calculation:
Result = Antenna 0 + 1

Antenna 0, MCS8

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2422	8.09	0.79	10.07	18.95	78.52	30.00	1000	11.05
2437	11.68	0.80	10.07	22.55	179.89	30.00	1000	7.45
2452	8.13	0.80	10.07	19.00	79.43	30.00	1000	11.00

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

Antenna 1, MCS8

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2422	8.22	0.79	10.07	19.08	80.91	30.00	1000	10.92
2437	13.25	0.80	10.07	24.12	258.23	30.00	1000	5.88
2452	8.44	0.80	10.07	19.31	85.31	30.00	1000	10.69

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

Maximum Peak Output Power

Test place	Head Office EMC Lab. No.7 and 11 Measurement Room	
Report No.	31HE0169-HO-02	
Date	04/21/2011	05/20/2011
Temperature/ Humidity	22 deg.C / 31 % RH	24 deg.C / 40% RH
Engineer	Yutaka Yoshida	Takumi Shimada
Mode	11n-40 Tx	

Antenna 0, 2437MHz

MCS Number	Reading [dBm]	Reading [mW]	Remark
0	12.39	17.34	
1	11.15	13.03	
2	10.94	12.42	
3	11.13	12.97	
4	11.27	13.40	
5	11.39	13.77	
6	9.42	8.75	
7	8.73	7.46	

Antenna 1, 2437MHz

MCS Number	Reading [dBm]	Reading [mW]	Remark
0	10.53	11.30	
1	9.25	8.41	
2	9.26	8.43	
3	9.35	8.61	
4	9.38	8.67	
5	9.83	9.62	
6	7.28	5.35	
7	7.03	5.05	

Antenna 0 + 1 , 2437MHz

MCS Number	Antenna 0 Reading [dBm]	Antenna 0 Reading [mW]	Antenna 1 Reading [dBm]	Antenna 1 Reading [mW]	Total Reading Power [dBm]	Total Reading Power [mW]	Remark [dB]
8	11.68	14.72	13.25	21.13	15.55	35.86	*
9	11.43	13.90	12.08	16.14	14.78	30.04	
10	11.32	13.55	11.91	15.52	14.64	29.08	
11	11.19	13.15	11.92	15.56	14.58	28.71	
12	11.55	14.29	12.09	16.18	14.84	30.47	
13	10.95	12.45	11.65	14.62	14.32	27.07	
14	9.22	8.36	9.83	9.62	12.55	17.97	
15	8.99	7.93	9.59	9.10	12.31	17.02	

*Worst Rate
Total Reading Power = Antenna 0 Reading + Antenna 1 Reading
All comparison were carried out on same frequency and measurement factors.

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.4 Semi Anechoic Chamber	
Report No.	31HE0169-HO-02	
Date	05/20/2011	05/22/2011
Temperature/ Humidity	24 deg.C / 50% RH	25 deg.C / 59% RH
Engineer	Takayuki Shimada	Satofumi Matsuyama
	(1-10GHz)	(10-26.5GHz)
Mode	11b Tx 2412MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2390.000	PK	53.0	27.2	2.5	32.2	50.5	73.9	23.4	
Hori	2398.625	PK	73.4	27.2	2.5	32.2	70.9	-	-	See 20dBc Data Sheet
Hori	2400.000	PK	72.1	27.2	2.5	32.2	69.6	-	-	See 20dBc Data Sheet
Hori	3216.000	PK	48.2	28.6	2.9	31.9	47.8	73.9	26.1	
Hori	4824.000	PK	44.8	30.9	5.2	31.4	49.5	73.9	24.4	
Hori	7236.000	PK	42.4	35.7	6.2	32.4	51.9	73.9	22.0	
Hori	9648.000	PK	42.3	37.8	7.0	33.2	53.9	73.9	20.0	
Hori	24120.000	PK	45.7	37.9	-0.9	31.6	51.1	73.9	22.8	
Hori	2390.000	AV	40.9	27.2	2.5	32.2	38.4	53.9	15.5	
Hori	2398.625	AV	64.4	27.2	2.5	32.2	61.9	-	-	See 20dBc Data Sheet
Hori	2400.000	AV	61.5	27.2	2.5	32.2	59.0	-	-	See 20dBc Data Sheet
Hori	3216.000	AV	42.5	28.6	2.9	31.9	42.1	53.9	11.8	
Hori	4824.000	AV	29.3	30.9	5.2	31.4	34.0	53.9	19.9	
Hori	7236.000	AV	30.3	35.7	6.2	32.4	39.8	53.9	14.1	
Hori	9648.000	AV	30.0	37.8	7.0	33.2	41.6	53.9	12.3	
Hori	24120.000	AV	33.7	37.9	-0.9	31.6	39.1	53.9	14.8	
Vert	2390.000	PK	50.1	27.2	2.5	32.2	47.6	73.9	26.3	
Vert	2398.625	PK	69.8	27.2	2.5	32.2	67.3	-	-	See 20dBc Data Sheet
Vert	2400.000	PK	68.6	27.2	2.5	32.2	66.1	-	-	See 20dBc Data Sheet
Vert	3216.000	PK	48.5	28.6	2.9	31.9	48.1	73.9	25.8	
Vert	4824.000	PK	46.6	30.9	5.2	31.4	51.3	73.9	22.6	
Vert	7236.000	PK	42.3	35.7	6.2	32.4	51.8	73.9	22.1	
Vert	9648.000	PK	42.1	37.8	7.0	33.2	53.7	73.9	20.2	
Vert	24120.000	PK	45.9	37.9	-0.9	31.6	51.3	73.9	22.6	
Vert	2390.000	AV	38.2	27.2	2.5	32.2	35.7	53.9	18.2	
Vert	2398.625	AV	61.1	27.2	2.5	32.2	58.6	-	-	See 20dBc Data Sheet
Vert	2400.000	AV	58.5	27.2	2.5	32.2	56.0	-	-	See 20dBc Data Sheet
Vert	3216.000	AV	43.1	28.6	2.9	31.9	42.7	53.9	11.2	
Vert	4824.000	AV	33.5	30.9	5.2	31.4	38.2	53.9	15.7	
Vert	7236.000	AV	30.3	35.7	6.2	32.4	39.8	53.9	14.1	
Vert	9648.000	AV	30.0	37.8	7.0	33.2	41.6	53.9	12.3	
Vert	24120.000	AV	33.7	37.9	-0.9	31.6	39.1	53.9	14.8	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2412.000	PK	108.1	27.2	2.5	32.2	105.6	-	-	Carrier
Hori	2398.625	PK	67.7	27.2	2.5	32.2	65.2	85.6	20.4	
Hori	2400.000	PK	63.8	27.2	2.5	32.2	61.3	85.6	24.3	
Vert	2412.000	PK	104.5	27.2	2.5	32.2	102.0	-	-	Carrier
Vert	2398.625	PK	63.6	27.2	2.5	32.2	61.1	82.0	20.9	
Vert	2400.000	PK	60.9	27.2	2.5	32.2	58.4	82.0	23.6	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.4 Semi Anechoic Chamber	
Report No.	31HE0169-HO-02	
Date	05/20/2011	05/22/2011
Temperature/ Humidity	24 deg.C / 50% RH	25 deg.C / 59% RH
Engineer	Takayuki Shimada (1-10GHz)	Satofumi Matsuyama (10-26.5GHz)
Mode	11b Tx 2437MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	3249.344	PK	51.4	28.7	3.0	31.9	51.2	73.9	22.7	
Hori	4874.000	PK	42.3	31.0	5.1	31.4	47.0	73.9	26.9	
Hori	7311.000	PK	42.4	35.9	6.3	32.5	52.1	73.9	21.8	
Hori	9748.000	PK	42.3	38.0	7.2	33.2	54.3	73.9	19.6	
Hori	24370.000	PK	45.6	37.9	-0.9	31.6	51.0	73.9	22.9	
Hori	3249.344	AV	47.5	28.7	3.0	31.9	47.3	53.9	6.6	
Hori	4874.000	AV	29.3	31.0	5.1	31.4	34.0	53.9	19.9	
Hori	7311.000	AV	30.2	35.9	6.3	32.5	39.9	53.9	14.0	
Hori	9748.000	AV	30.0	38.0	7.2	33.2	42.0	53.9	11.9	
Hori	24370.000	AV	33.4	37.9	-0.9	31.6	38.8	53.9	15.1	
Vert	3249.344	PK	51.6	28.7	3.0	31.9	51.4	73.9	22.5	
Vert	4874.000	PK	42.6	31.0	5.1	31.4	47.3	73.9	26.6	
Vert	7311.000	PK	42.3	35.9	6.3	32.5	52.0	73.9	21.9	
Vert	9748.000	PK	42.0	38.0	7.2	33.2	54.0	73.9	19.9	
Vert	24370.000	PK	46.1	37.9	-0.9	31.6	51.5	73.9	22.4	
Vert	3249.344	AV	48.4	28.7	3.0	31.9	48.2	53.9	5.7	
Vert	4874.000	AV	29.7	31.0	5.1	31.4	34.4	53.9	19.5	
Vert	7311.000	AV	30.2	35.9	6.3	32.5	39.9	53.9	14.0	
Vert	9748.000	AV	30.0	38.0	7.2	33.2	42.0	53.9	11.9	
Vert	24370.000	AV	33.4	37.9	-0.9	31.6	38.8	53.9	15.1	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.4 Semi Anechoic Chamber	
Report No.	31HE0169-HO-02	
Date	05/20/2011	05/22/2011
Temperature/ Humidity	24 deg.C / 50% RH	25 deg.C / 59% RH
Engineer	Takayuki Shimada	Satofumi Matsuyama
	(1-10GHz)	(10-26.5GHz)
Mode	11b Tx 2462MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2483.500	PK	55.2	27.2	2.6	32.2	52.8	73.9	21.1	
Hori	3282.672	PK	52.9	28.8	3.0	31.9	52.8	73.9	21.1	
Hori	4924.000	PK	40.9	31.2	5.1	31.4	45.8	73.9	28.1	
Hori	7386.000	PK	42.8	36.0	6.3	32.5	52.6	73.9	21.3	
Hori	9848.000	PK	42.0	38.1	7.2	33.3	54.0	73.9	19.9	
Hori	24620.000	PK	46.3	37.9	-0.9	31.6	51.7	73.9	22.2	
Hori	2483.500	AV	43.1	27.2	2.6	32.2	40.7	53.9	13.2	
Hori	3282.672	AV	49.6	28.8	3.0	31.9	49.5	53.9	4.4	
Hori	4924.000	AV	28.5	31.2	5.1	31.4	33.4	53.9	20.5	
Hori	7386.000	AV	30.7	36.0	6.3	32.5	40.5	53.9	13.4	
Hori	9848.000	AV	30.0	38.1	7.2	33.3	42.0	53.9	11.9	
Hori	24620.000	AV	34.7	37.9	-0.9	31.6	40.1	53.9	13.8	
Vert	2483.500	PK	51.4	27.2	2.6	32.2	49.0	73.9	24.9	
Vert	3282.672	PK	54.0	28.8	3.0	31.9	53.9	73.9	20.0	
Vert	4924.000	PK	42.0	31.2	5.1	31.4	46.9	73.9	27.0	
Vert	7386.000	PK	43.0	36.0	6.3	32.5	52.8	73.9	21.1	
Vert	9848.000	PK	42.2	38.1	7.2	33.3	54.2	73.9	19.7	
Vert	24620.000	PK	46.2	37.9	-0.9	31.6	51.6	73.9	22.3	
Vert	2483.500	AV	39.6	27.2	2.6	32.2	37.2	53.9	16.7	
Vert	3282.672	AV	51.4	28.8	3.0	31.9	51.3	53.9	2.6	
Vert	4924.000	AV	29.3	31.2	5.1	31.4	34.2	53.9	19.7	
Vert	7386.000	AV	30.7	36.0	6.3	32.5	40.5	53.9	13.4	
Vert	9848.000	AV	30.0	38.1	7.2	33.3	42.0	53.9	11.9	
Vert	24620.000	AV	34.7	37.9	-0.9	31.6	40.1	53.9	13.8	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

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Radiated Spurious Emission

Test place	Head Office EMC Lab. No.4 Semi Anechoic Chamber	
Report No.	31HE0169-HO-02	
Date	05/21/2011	05/22/2011
Temperature/ Humidity	24 deg.C / 57% RH	25 deg.C / 59% RH
Engineer	Takumi Shimada	Satofumi Matsuyama
	(1-10GHz)	(10-26.5GHz)
Mode	11g Tx 2412MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2390.000	PK	73.4	27.2	2.5	32.2	70.9	73.9	3.0	
Hori	2398.580	PK	86.2	27.2	2.5	32.2	83.7	-	-	See 20dBc Data Sheet
Hori	2400.000	PK	89.5	27.2	2.5	32.2	87.0	-	-	See 20dBc Data Sheet
Hori	3216.035	PK	53.1	28.6	2.9	31.9	52.7	73.9	21.2	
Hori	4824.000	PK	41.9	30.9	5.2	31.4	46.6	73.9	27.3	
Hori	7236.000	PK	42.8	35.7	6.2	32.4	52.3	73.9	21.6	
Hori	9648.000	PK	42.2	37.8	7.0	33.2	53.8	73.9	20.1	
Hori	24120.000	PK	45.9	37.9	-0.9	31.6	51.3	73.9	22.6	
Hori	2390.000	AV	53.3	27.2	2.5	32.2	50.8	53.9	3.1	
Hori	2398.580	AV	68.6	27.2	2.5	32.2	66.1	-	-	See 20dBc Data Sheet
Hori	2400.000	AV	71.0	27.2	2.5	32.2	68.5	-	-	See 20dBc Data Sheet
Hori	3216.035	AV	49.0	28.6	2.9	31.9	48.6	53.9	5.3	
Hori	4824.000	AV	29.5	30.9	5.2	31.4	34.2	53.9	19.7	
Hori	7236.000	AV	30.3	35.7	6.2	32.4	39.8	53.9	14.1	
Hori	9648.000	AV	30.1	37.8	7.0	33.2	41.7	53.9	12.2	
Hori	24120.000	AV	33.9	37.9	-0.9	31.6	39.3	53.9	14.6	
Vert	2390.000	PK	73.4	27.2	2.5	32.2	70.9	73.9	3.0	
Vert	2398.580	PK	86.2	27.2	2.5	32.2	83.7	-	-	See 20dBc Data Sheet
Vert	2400.000	PK	89.5	27.2	2.5	32.2	87.0	-	-	See 20dBc Data Sheet
Vert	3215.981	PK	53.1	28.6	2.9	31.9	52.7	73.9	21.2	
Vert	4824.000	PK	42.1	30.9	5.2	31.4	46.8	73.9	27.1	
Vert	7236.000	PK	44.5	35.7	6.2	32.4	54.0	73.9	19.9	
Vert	9648.000	PK	42.6	37.8	7.0	33.2	54.2	73.9	19.7	
Vert	24120.000	PK	46.0	37.9	-0.9	31.6	51.4	73.9	22.5	
Vert	2390.000	AV	53.3	27.2	2.5	32.2	50.8	53.9	3.1	
Vert	2398.580	AV	68.6	27.2	2.5	32.2	66.1	-	-	See 20dBc Data Sheet
Vert	2400.000	AV	71.0	27.2	2.5	32.2	68.5	-	-	See 20dBc Data Sheet
Vert	3215.981	AV	50.1	28.6	2.9	31.9	49.7	53.9	4.2	
Vert	4824.000	AV	29.9	30.9	5.2	31.4	34.6	53.9	19.3	
Vert	7236.000	AV	30.3	35.7	6.2	32.4	39.8	53.9	14.1	
Vert	9648.000	AV	30.1	37.8	7.0	33.2	41.7	53.9	12.2	
Vert	24120.000	AV	33.9	37.9	-0.9	31.6	39.3	53.9	14.6	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2412.000	PK	102.0	27.2	2.5	32.2	99.5	-	-	Carrier
Hori	2398.580	PK	72.3	27.2	2.5	32.2	69.8	79.5	9.7	
Hori	2400.000	PK	74.6	27.2	2.5	32.2	72.1	79.5	7.4	
Vert	2412.000	PK	102.0	27.2	2.5	32.2	99.5	-	-	Carrier
Vert	2398.580	PK	72.3	27.2	2.5	32.2	69.8	79.5	9.7	
Vert	2400.000	PK	74.6	27.2	2.5	32.2	72.1	79.5	7.4	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.4 Semi Anechoic Chamber	
Report No.	31HE0169-HO-02	
Date	05/21/2011	05/22/2011
Temperature/ Humidity	24 deg.C / 57% RH	25 deg.C / 59% RH
Engineer	Takumi Shimada	Satofumi Matsuyama
	(1-10GHz)	(10-26.5GHz)
Mode	11g Tx 2437MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	3249.344	PK	53.2	28.7	3.0	31.9	53.0	73.9	20.9	
Hori	4874.000	PK	41.5	31.0	5.1	31.4	46.2	73.9	27.7	
Hori	7311.000	PK	42.5	35.9	6.3	32.5	52.2	73.9	21.7	
Hori	9748.000	PK	42.6	38.0	7.2	33.2	54.6	73.9	19.3	
Hori	24370.000	PK	46.1	37.9	-0.9	31.6	51.5	73.9	22.4	
Hori	3249.344	AV	50.5	28.7	3.0	31.9	50.3	53.9	3.6	
Hori	4874.000	AV	29.0	31.0	5.1	31.4	33.7	53.9	20.3	
Hori	7311.000	AV	30.1	35.9	6.3	32.5	39.8	53.9	14.1	
Hori	9748.000	AV	30.0	38.0	7.2	33.2	42.0	53.9	11.9	
Hori	24370.000	AV	33.4	37.9	-0.9	31.6	38.8	53.9	15.1	
Vert	3249.278	PK	54.6	28.7	3.0	31.9	54.4	73.9	19.6	
Vert	4874.000	PK	41.5	31.0	5.1	31.4	46.2	73.9	27.7	
Vert	7311.000	PK	42.7	35.9	6.3	32.5	52.4	73.9	21.5	
Vert	9748.000	PK	42.5	38.0	7.2	33.2	54.5	73.9	19.4	
Vert	24370.000	PK	45.4	37.9	-0.9	31.6	50.8	73.9	23.1	
Vert	3249.278	AV	51.4	28.7	3.0	31.9	51.2	53.9	2.7	
Vert	4874.000	AV	29.3	31.0	5.1	31.4	34.0	53.9	19.9	
Vert	7311.000	AV	30.2	35.9	6.3	32.5	39.9	53.9	14.0	
Vert	9748.000	AV	30.0	38.0	7.2	33.2	42.0	53.9	11.9	
Vert	24370.000	AV	33.4	37.9	-0.9	31.6	38.8	53.9	15.1	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.4 Semi Anechoic Chamber	
Report No.	31HE0169-HO-02	
Date	05/21/2011	05/22/2011
Temperature/ Humidity	24 deg.C / 57% RH	25 deg.C / 59% RH
Engineer	Takumi Shimada	Satofumi Matsuyama
	(1-10GHz)	(10-26.5GHz)
Mode	11g Tx 2462MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2483.500	PK	75.0	27.2	2.6	32.2	72.6	73.9	1.3	
Hori	2484.000	PK	73.5	27.2	2.6	32.2	71.1	73.9	2.8	
Hori	3282.698	PK	53.8	28.8	3.0	31.9	53.7	73.9	20.2	
Hori	4924.000	PK	41.4	31.2	5.1	31.4	46.3	73.9	27.7	
Hori	7386.000	PK	42.7	36.0	6.3	32.5	52.5	73.9	21.4	
Hori	9848.000	PK	42.3	38.1	7.2	33.3	54.3	73.9	19.6	
Hori	24620.000	PK	47.4	37.9	-0.9	31.6	52.8	73.9	21.1	
Hori	2483.500	AV	55.0	27.2	2.6	32.2	52.6	53.9	1.3	
Hori	2484.000	AV	53.6	27.2	2.6	32.2	51.2	53.9	2.7	
Hori	3282.698	AV	51.1	28.8	3.0	31.9	51.0	53.9	2.9	
Hori	4924.000	AV	28.7	31.2	5.1	31.4	33.6	53.9	20.3	
Hori	7386.000	AV	30.7	36.0	6.3	32.5	40.5	53.9	13.4	
Hori	9848.000	AV	30.0	38.1	7.2	33.3	42.0	53.9	11.9	
Hori	24620.000	AV	34.5	37.9	-0.9	31.6	39.9	53.9	14.0	
Vert	2483.500	PK	71.4	27.2	2.6	32.2	69.0	73.9	4.9	
Vert	2484.000	PK	69.9	27.2	2.6	32.2	67.5	73.9	6.4	
Vert	3282.665	PK	54.9	28.8	3.0	31.9	54.8	73.9	19.1	
Vert	4924.000	PK	41.2	31.2	5.1	31.4	46.1	73.9	27.8	
Vert	7386.000	PK	43.9	36.0	6.3	32.5	53.7	73.9	20.3	
Vert	9848.000	PK	43.5	38.1	7.2	33.3	55.5	73.9	18.4	
Vert	24620.000	PK	46.4	37.9	-0.9	31.6	51.8	73.9	22.1	
Vert	2483.500	AV	52.4	27.2	2.6	32.2	50.0	53.9	3.9	
Vert	2484.000	AV	51.1	27.2	2.6	32.2	48.7	53.9	5.2	
Vert	3282.665	AV	52.7	28.8	3.0	31.9	52.6	53.9	1.3	
Vert	4924.000	AV	28.8	31.2	5.1	31.4	33.7	53.9	20.3	
Vert	7386.000	AV	30.7	36.0	6.3	32.5	40.5	53.9	13.5	
Vert	9848.000	AV	29.9	38.1	7.2	33.3	41.9	53.9	12.0	
Vert	24620.000	AV	34.5	37.9	-0.9	31.6	39.9	53.9	14.0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.4 Semi Anechoic Chamber	
Report No.	31HE0169-HO-02	
Date	05/21/2011	05/22/2011
Temperature/ Humidity	24 deg.C / 57% RH	25 deg.C / 59% RH
Engineer	Takumi Shimada	Satofumi Matsuyama
	(1-10GHz)	(10-26.5GHz)
Mode	11n-20 Tx 2412MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2390.000	PK	66.1	27.2	2.5	32.2	63.6	73.9	10.3	
Hori	2399.170	PK	85.2	27.2	2.5	32.2	82.7	-	-	See 20dBc Data Sheet
Hori	2400.000	PK	87.4	27.2	2.5	32.2	84.9	-	-	See 20dBc Data Sheet
Hori	3215.968	PK	52.5	28.6	2.9	31.9	52.1	73.9	21.8	
Hori	4824.000	PK	41.4	30.9	5.2	31.4	46.1	73.9	27.8	
Hori	7236.000	PK	42.8	35.7	6.2	32.4	52.3	73.9	21.6	
Hori	9648.000	PK	43.3	37.8	7.0	33.2	54.9	73.9	19.1	
Hori	24120.000	PK	46.0	37.9	-0.9	31.6	51.4	73.9	22.5	
Hori	2390.000	AV	49.4	27.2	2.5	32.2	46.9	53.9	7.0	
Hori	2399.170	AV	64.7	27.2	2.5	32.2	62.2	-	-	See 20dBc Data Sheet
Hori	2400.000	AV	66.7	27.2	2.5	32.2	64.2	-	-	See 20dBc Data Sheet
Hori	3215.968	AV	48.6	28.6	2.9	31.9	48.2	53.9	5.7	
Hori	4824.000	AV	29.1	30.9	5.2	31.4	33.8	53.9	20.1	
Hori	7236.000	AV	30.3	35.7	6.2	32.4	39.8	53.9	14.1	
Hori	9648.000	AV	30.0	37.8	7.0	33.2	41.6	53.9	12.3	
Hori	24120.000	AV	33.9	37.9	-0.9	31.6	39.3	53.9	14.6	
Vert	2390.000	PK	67.7	27.2	2.5	32.2	65.2	73.9	8.7	
Vert	2399.170	PK	85.2	27.2	2.5	32.2	82.7	-	-	See 20dBc Data Sheet
Vert	2400.000	PK	87.9	27.2	2.5	32.2	85.4	-	-	See 20dBc Data Sheet
Vert	3215.998	PK	52.7	28.6	2.9	31.9	52.3	73.9	21.6	
Vert	4824.000	PK	41.8	30.9	5.2	31.4	46.5	73.9	27.4	
Vert	7236.000	PK	42.9	35.7	6.2	32.4	52.4	73.9	21.5	
Vert	9648.000	PK	42.7	37.8	7.0	33.2	54.3	73.9	19.6	
Vert	24120.000	PK	46.5	37.9	-0.9	31.6	51.9	73.9	22.0	
Vert	2390.000	AV	49.2	27.2	2.5	32.2	46.7	53.9	7.2	
Vert	2399.170	AV	64.3	27.2	2.5	32.2	61.8	-	-	See 20dBc Data Sheet
Vert	2400.000	AV	66.1	27.2	2.5	32.2	63.6	-	-	See 20dBc Data Sheet
Vert	3215.998	AV	49.4	28.6	2.9	31.9	49.0	53.9	4.9	
Vert	4824.000	AV	28.9	30.9	5.2	31.4	33.6	53.9	20.3	
Vert	7236.000	AV	30.3	35.7	6.2	32.4	39.8	53.9	14.1	
Vert	9648.000	AV	30.1	37.8	7.0	33.2	41.7	53.9	12.2	
Vert	24120.000	AV	33.9	37.9	-0.9	31.6	39.3	53.9	14.6	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).
*The 10th harmonic was not seen so the result was its base noise level.
Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2412.000	PK	105.5	27.2	2.5	32.2	103.0	-	-	Carrier
Hori	2399.170	PK	70.0	27.2	2.5	32.2	67.5	83.0	15.5	
Hori	2400.000	PK	71.5	27.2	2.5	32.2	69.0	83.0	14.0	
Vert	2412.000	PK	104.4	27.2	2.5	32.2	101.9	-	-	Carrier
Vert	2399.170	PK	69.8	27.2	2.5	32.2	67.3	81.9	14.6	
Vert	2400.000	PK	70.9	27.2	2.5	32.2	68.4	81.9	13.5	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.4 Semi Anechoic Chamber	
Report No.	31HE0169-HO-02	
Date	05/21/2011	05/22/2011
Temperature/ Humidity	24 deg.C / 57% RH	25 deg.C / 59% RH
Engineer	Takumi Shimada	Satofumi Matsuyama
	(1-10GHz)	(10-26.5GHz)
Mode	11n-20 Tx 2437MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	3249.344	PK	54.3	28.7	3.0	31.9	54.1	73.9	19.9	
Hori	4874.000	PK	42.5	31.0	5.1	31.4	47.2	73.9	26.7	
Hori	7311.000	PK	44.0	35.9	6.3	32.5	53.7	73.9	20.2	
Hori	9748.000	PK	43.7	38.0	7.2	33.2	55.7	73.9	18.2	
Hori	24370.000	PK	45.3	37.9	-0.9	31.6	50.7	73.9	23.2	
Hori	3249.344	AV	51.4	28.7	3.0	31.9	51.2	53.9	2.7	
Hori	4874.000	AV	30.4	31.0	5.1	31.4	35.1	53.9	18.9	
Hori	7311.000	AV	31.7	35.9	6.3	32.5	41.4	53.9	12.5	
Hori	9748.000	AV	31.6	38.0	7.2	33.2	43.6	53.9	10.3	
Hori	24370.000	AV	33.4	37.9	-0.9	31.6	38.8	53.9	15.1	
Vert	3249.351	PK	52.7	28.7	3.0	31.9	52.5	73.9	21.4	
Vert	4874.000	PK	41.5	31.0	5.1	31.4	46.2	73.9	27.8	
Vert	7311.000	PK	42.0	35.9	6.3	32.5	51.7	73.9	22.2	
Vert	9748.000	PK	42.6	38.0	7.2	33.2	54.6	73.9	19.3	
Vert	24370.000	PK	45.2	37.9	-0.9	31.6	50.6	73.9	23.3	
Vert	3249.351	AV	49.3	28.7	3.0	31.9	49.1	53.9	4.8	
Vert	4874.000	AV	28.9	31.0	5.1	31.4	33.6	53.9	20.3	
Vert	7311.000	AV	30.2	35.9	6.3	32.5	39.9	53.9	14.0	
Vert	9748.000	AV	30.0	38.0	7.2	33.2	42.0	53.9	11.9	
Vert	24370.000	AV	33.4	37.9	-0.9	31.6	38.8	53.9	15.1	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.4 Semi Anechoic Chamber	
Report No.	31HE0169-HO-02	
Date	05/21/2011	05/22/2011
Temperature/ Humidity	24 deg.C / 57% RH	25 deg.C / 59% RH
Engineer	Takumi Shimada (1-10GHz)	Satofumi Matsuyama (10-26.5GHz)
Mode	11n-20 Tx 2462MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2483.500	PK	72.1	27.2	2.6	32.2	69.7	73.9	4.2	
Hori	2484.700	PK	70.2	27.2	2.6	32.2	67.8	73.9	6.1	
Hori	3282.697	PK	53.2	28.8	3.0	31.9	53.1	73.9	20.8	
Hori	4924.000	PK	40.8	31.2	5.1	31.4	45.7	73.9	28.2	
Hori	7386.000	PK	43.6	36.0	6.3	32.5	53.4	73.9	20.5	
Hori	9848.000	PK	42.8	38.1	7.2	33.3	54.8	73.9	19.1	
Hori	24620.000	PK	46.3	37.9	-0.9	31.6	51.7	73.9	22.2	
Hori	2483.500	AV	54.7	27.2	2.6	32.2	52.3	53.9	1.6	
Hori	2484.700	AV	52.6	27.2	2.6	32.2	50.2	53.9	3.7	
Hori	3282.697	AV	48.5	28.8	3.0	31.9	48.4	53.9	5.5	
Hori	4924.000	AV	28.9	31.2	5.1	31.4	33.8	53.9	20.1	
Hori	7386.000	AV	30.7	36.0	6.3	32.5	40.5	53.9	13.4	
Hori	9848.000	AV	30.0	38.1	7.2	33.3	42.0	53.9	11.9	
Hori	24620.000	AV	34.5	37.9	-0.9	31.6	39.9	53.9	14.0	
Vert	2483.500	PK	70.4	27.2	2.6	32.2	68.0	73.9	5.9	
Vert	2484.700	PK	69.2	27.2	2.6	32.2	66.8	73.9	7.1	
Vert	3282.702	PK	52.8	28.8	3.0	31.9	52.7	73.9	21.2	
Vert	4924.000	PK	41.5	31.2	5.1	31.4	46.4	73.9	27.5	
Vert	7386.000	PK	43.2	36.0	6.3	32.5	53.0	73.9	20.9	
Vert	9848.000	PK	42.1	38.1	7.2	33.3	54.1	73.9	19.8	
Vert	24620.000	PK	47.0	37.9	-0.9	31.6	52.4	73.9	21.5	
Vert	2483.500	AV	52.8	27.2	2.6	32.2	50.4	53.9	3.5	
Vert	2484.700	AV	50.6	27.2	2.6	32.2	48.2	53.9	5.7	
Vert	3282.702	AV	49.6	28.8	3.0	31.9	49.5	53.9	4.4	
Vert	4924.000	AV	28.9	31.2	5.1	31.4	33.8	53.9	20.1	
Vert	7386.000	AV	30.7	36.0	6.3	32.5	40.5	53.9	13.4	
Vert	9848.000	AV	30.0	38.1	7.2	33.3	42.0	53.9	11.9	
Vert	24620.000	AV	34.5	37.9	-0.9	31.6	39.9	53.9	14.0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.4 Semi Anechoic Chamber	
Report No.	31HE0169-HO-02	
Date	05/21/2011	05/22/2011
Temperature/ Humidity	24 deg.C / 57% RH	25 deg.C / 59% RH
Engineer	Takumi Shimada	Satofumi Matsuyama
	(1-10GHz)	(10-26.5GHz)
Mode	11n-40 Tx 2422MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2390.000	PK	71.0	27.2	2.5	32.2	68.5	73.9	5.4	
Hori	2399.750	PK	85.8	27.2	2.5	32.2	83.3	-	-	See 20dBc Data Sheet
Hori	2400.000	PK	86.3	27.2	2.5	32.2	83.8	-	-	See 20dBc Data Sheet
Hori	3229.372	PK	53.9	28.6	3.0	31.9	53.6	73.9	20.3	
Hori	4844.000	PK	42.1	30.9	5.2	31.4	46.8	73.9	27.1	
Hori	7266.000	PK	43.6	35.8	6.3	32.5	53.2	73.9	20.7	
Hori	9688.000	PK	42.7	37.9	7.1	33.2	54.5	73.9	19.4	
Hori	24220.000	PK	46.0	37.9	-0.9	31.6	51.4	73.9	22.5	
Hori	2390.000	AV	54.8	27.2	2.5	32.2	52.3	53.9	1.7	
Hori	2399.750	AV	65.1	27.2	2.5	32.2	62.6	-	-	See 20dBc Data Sheet
Hori	2400.000	AV	65.5	27.2	2.5	32.2	63.0	-	-	See 20dBc Data Sheet
Hori	3229.372	AV	51.2	28.6	3.0	31.9	50.9	53.9	3.0	
Hori	4844.000	AV	28.8	30.9	5.2	31.4	33.5	53.9	20.4	
Hori	7266.000	AV	30.4	35.8	6.3	32.5	40.0	53.9	13.9	
Hori	9688.000	AV	29.9	37.9	7.1	33.2	41.7	53.9	12.2	
Hori	24220.000	AV	33.7	37.9	-0.9	31.6	39.1	53.9	14.8	
Vert	2390.000	PK	68.6	27.2	2.5	32.2	66.1	73.9	7.8	
Vert	2399.750	PK	83.3	27.2	2.5	32.2	80.8	-	-	See 20dBc Data Sheet
Vert	2400.000	PK	83.8	27.2	2.5	32.2	81.3	-	-	See 20dBc Data Sheet
Vert	3229.352	PK	52.1	28.6	3.0	31.9	51.8	73.9	22.1	
Vert	4844.000	PK	41.7	30.9	5.2	31.4	46.4	73.9	27.5	
Vert	7266.000	PK	43.7	35.8	6.3	32.5	53.3	73.9	20.6	
Vert	9688.000	PK	42.9	37.9	7.1	33.2	54.7	73.9	19.2	
Vert	24220.000	PK	45.9	37.9	-0.9	31.6	51.3	73.9	22.6	
Vert	2390.000	AV	52.6	27.2	2.5	32.2	50.1	53.9	3.8	
Vert	2399.750	AV	62.5	27.2	2.5	32.2	60.0	-	-	See 20dBc Data Sheet
Vert	2400.000	AV	62.8	27.2	2.5	32.2	60.3	-	-	See 20dBc Data Sheet
Vert	3229.352	AV	48.9	28.6	3.0	31.9	48.6	53.9	5.3	
Vert	4844.000	AV	28.8	30.9	5.2	31.4	33.5	53.9	20.4	
Vert	7266.000	AV	30.4	35.8	6.3	32.5	40.0	53.9	13.9	
Vert	9688.000	AV	29.9	37.9	7.1	33.2	41.7	53.9	12.2	
Vert	24220.000	AV	33.7	37.9	-0.9	31.6	39.1	53.9	14.8	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2422.000	PK	101.5	27.2	2.5	32.2	99.0	-	-	Carrier
Hori	2399.750	PK	70.5	27.2	2.5	32.2	68.0	79.0	11.0	
Hori	2400.000	PK	71.1	27.2	2.5	32.2	68.6	79.0	10.4	
Vert	2422.000	PK	99.9	27.2	2.5	32.2	97.4	-	-	Carrier
Vert	2399.750	PK	68.0	27.2	2.5	32.2	65.5	77.4	11.9	
Vert	2400.000	PK	68.3	27.2	2.5	32.2	65.8	77.4	11.6	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.4 Semi Anechoic Chamber	
Report No.	31HE0169-HO-02	
Date	05/21/2011	05/22/2011
Temperature/ Humidity	24 deg.C / 57% RH	25 deg.C / 59%RH
Engineer	Takumi Shimada (1-10GHz)	Satofumi Matsuyama (30M-1GHz, 10-26.5GHz)
Mode	11n-40 Tx 2437MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	87.997	QP	39.8	8.1	7.8	32.1	23.6	40.0	16.4	
Hori	173.222	QP	46.4	15.9	8.7	32.0	39.0	43.5	4.5	
Hori	204.881	QP	41.7	16.8	9.0	32.0	35.5	43.5	8.0	
Hori	299.684	QP	42.8	19.5	9.7	32.1	39.9	46.0	6.1	
Hori	329.864	QP	42.4	16.3	9.9	32.1	36.5	46.0	9.5	
Hori	361.548	QP	40.4	16.9	10.2	32.1	35.4	46.0	10.6	
Hori	898.110	QP	33.2	24.1	13.0	31.3	39.0	46.0	7.0	
Hori	3249.340	PK	52.7	28.7	3.0	31.9	52.5	73.9	21.4	
Hori	4874.000	PK	40.6	31.0	5.1	31.4	45.3	73.9	28.6	
Hori	7311.000	PK	42.6	35.9	6.3	32.5	52.3	73.9	21.6	
Hori	9748.000	PK	42.3	38.0	7.2	33.2	54.3	73.9	19.6	
Hori	24370.000	PK	45.8	37.9	-0.9	31.6	51.2	73.9	22.7	
Hori	3249.340	AV	49.6	28.7	3.0	31.9	49.4	53.9	4.5	
Hori	4874.000	AV	28.8	31.0	5.1	31.4	33.5	53.9	20.4	
Hori	7311.000	AV	30.2	35.9	6.3	32.5	39.9	53.9	14.0	
Hori	9748.000	AV	30.1	38.0	7.2	33.2	42.1	53.9	11.8	
Hori	24370.000	AV	33.4	37.9	-0.9	31.6	38.8	53.9	15.1	
Vert	87.996	QP	43.7	8.1	7.8	32.1	27.5	40.0	12.5	
Vert	173.867	QP	40.0	16.0	8.7	32.0	32.7	43.5	10.8	
Vert	205.539	QP	33.4	16.8	9.0	32.0	27.2	43.5	16.3	
Vert	298.824	QP	39.7	19.5	9.7	32.1	36.8	46.0	9.2	
Vert	332.182	QP	31.5	16.4	9.9	32.1	25.7	46.0	20.3	
Vert	363.774	QP	34.0	16.9	10.2	32.1	29.0	46.0	17.0	
Vert	898.940	QP	32.2	24.1	13.0	31.3	38.0	46.0	8.0	
Vert	3249.350	PK	54.4	28.7	3.0	31.9	54.2	73.9	19.7	
Vert	4874.000	PK	41.5	31.0	5.1	31.4	46.2	73.9	27.7	
Vert	7311.000	PK	43.1	35.9	6.3	32.5	52.8	73.9	21.1	
Vert	9748.000	PK	42.3	38.0	7.2	33.2	54.3	73.9	19.6	
Vert	24370.000	PK	45.2	37.9	-0.9	31.6	50.6	73.9	23.3	
Vert	3249.350	AV	51.9	28.7	3.0	31.9	51.7	53.9	2.2	
Vert	4874.000	AV	28.8	31.0	5.1	31.4	33.5	53.9	20.4	
Vert	7311.000	AV	30.2	35.9	6.3	32.5	39.9	53.9	14.0	
Vert	9748.000	AV	30.1	38.0	7.2	33.2	42.1	53.9	11.8	
Vert	24370.000	AV	33.4	37.9	-0.9	31.6	38.8	53.9	15.1	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.4 Semi Anechoic Chamber	
Report No.	31HE0169-HO-02	
Date	05/21/2011	05/22/2011
Temperature/ Humidity	24 deg.C / 57% RH	25 deg.C / 59% RH
Engineer	Takumi Shimada (1-10GHz)	Satofumi Matsuyama (10-26.5GHz)
Mode	11n-40 Tx 2452MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2483.500	PK	70.3	27.2	2.6	32.2	67.9	73.9	6.0	
Hori	2489.500	PK	68.2	27.2	2.6	32.2	65.8	73.9	8.2	
Hori	3269.298	PK	51.6	28.8	3.0	31.9	51.5	73.9	22.4	
Hori	4904.000	PK	41.1	31.1	5.1	31.4	45.9	73.9	28.0	
Hori	7356.000	PK	42.7	35.9	6.3	32.5	52.4	73.9	21.5	
Hori	9808.000	PK	42.7	38.1	7.2	33.2	54.8	73.9	19.1	
Hori	24520.000	PK	46.0	37.9	-0.9	31.6	51.4	73.9	22.5	
Hori	2483.500	AV	53.8	27.2	2.6	32.2	51.4	53.9	2.6	
Hori	2489.500	AV	50.4	27.2	2.6	32.2	48.0	53.9	5.9	
Hori	3269.298	AV	48.1	28.8	3.0	31.9	48.0	53.9	5.9	
Hori	4904.000	AV	28.7	31.1	5.1	31.4	33.5	53.9	20.4	
Hori	7356.000	AV	30.6	35.9	6.3	32.5	40.3	53.9	13.6	
Hori	9808.000	AV	30.1	38.1	7.2	33.2	42.2	53.9	11.8	
Hori	24520.000	AV	33.8	37.9	-0.9	31.6	39.2	53.9	14.7	
Vert	2483.500	PK	68.0	27.2	2.6	32.2	65.6	73.9	8.3	
Vert	2489.500	PK	66.3	27.2	2.6	32.2	63.9	73.9	10.0	
Vert	3269.342	PK	51.9	28.8	3.0	31.9	51.8	73.9	22.1	
Vert	4904.000	PK	41.4	31.1	5.1	31.4	46.2	73.9	27.7	
Vert	7356.000	PK	42.6	35.9	6.3	32.5	52.3	73.9	21.6	
Vert	9808.000	PK	43.0	38.1	7.2	33.2	55.1	73.9	18.8	
Vert	24520.000	PK	45.8	37.9	-0.9	31.6	51.2	73.9	22.7	
Vert	2483.500	AV	52.7	27.2	2.6	32.2	50.3	53.9	3.6	
Vert	2489.500	AV	48.9	27.2	2.6	32.2	46.5	53.9	7.4	
Vert	3269.342	AV	48.3	28.8	3.0	31.9	48.2	53.9	5.7	
Vert	4904.000	AV	28.6	31.1	5.1	31.4	33.4	53.9	20.5	
Vert	7356.000	AV	30.6	35.9	6.3	32.5	40.3	53.9	13.7	
Vert	9808.000	AV	30.1	38.1	7.2	33.2	42.2	53.9	11.7	
Vert	24520.000	AV	33.8	37.9	-0.9	31.6	39.2	53.9	14.7	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

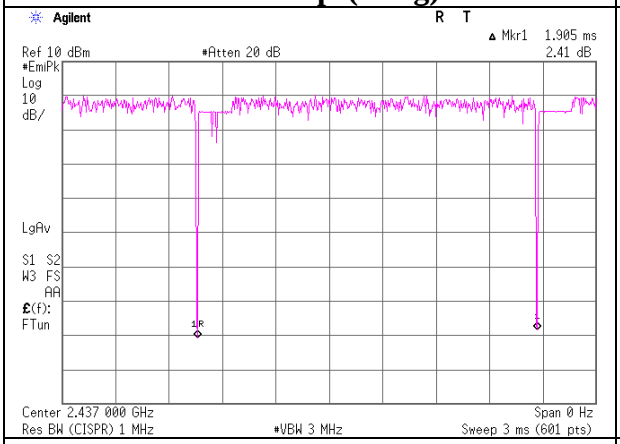
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

*The 10th harmonic was not seen so the result was its base noise level.

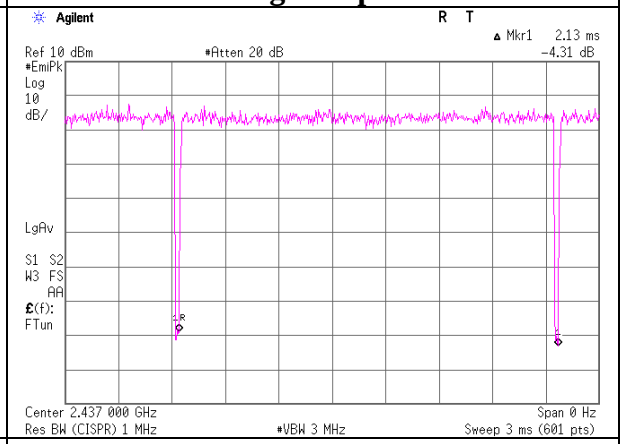
Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

The tested burst timing

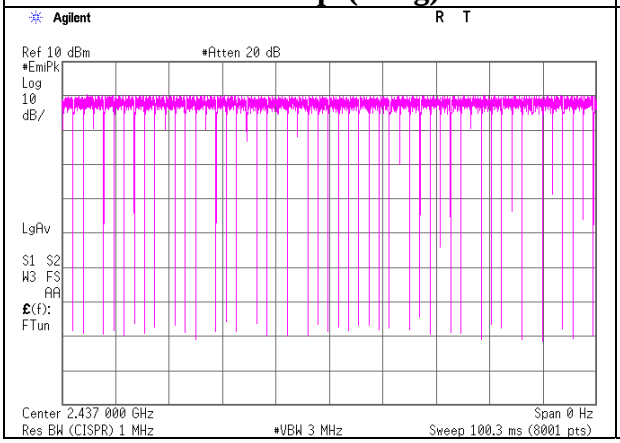
11b 11Mbps(Long)



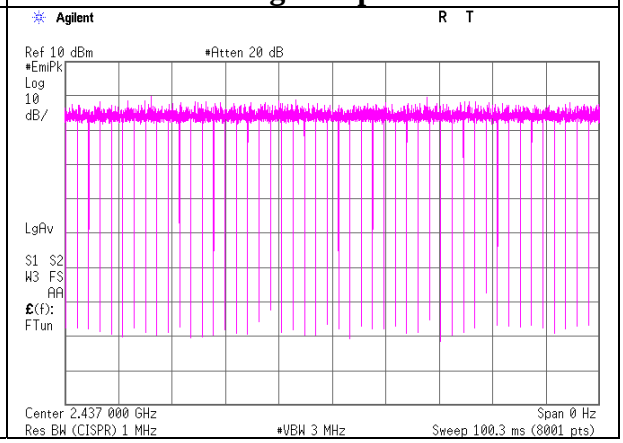
11g 9Mbps



11b 11Mbps(Long)

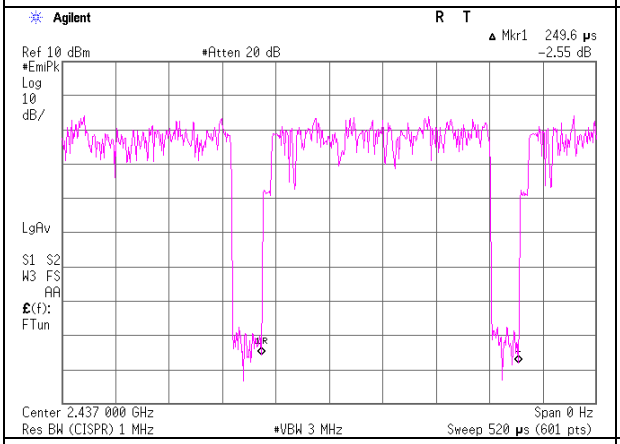


11g 9Mbps

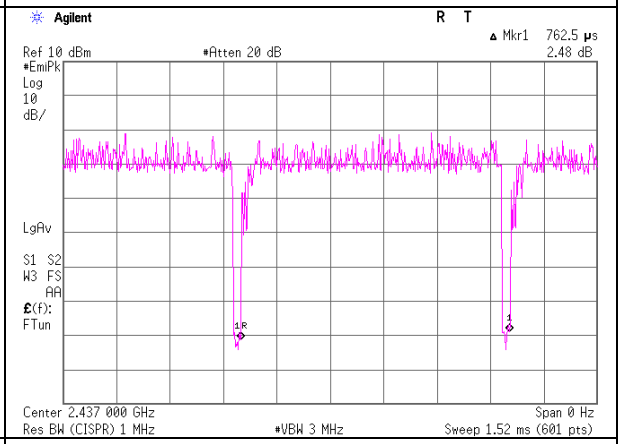


The tested burst timing

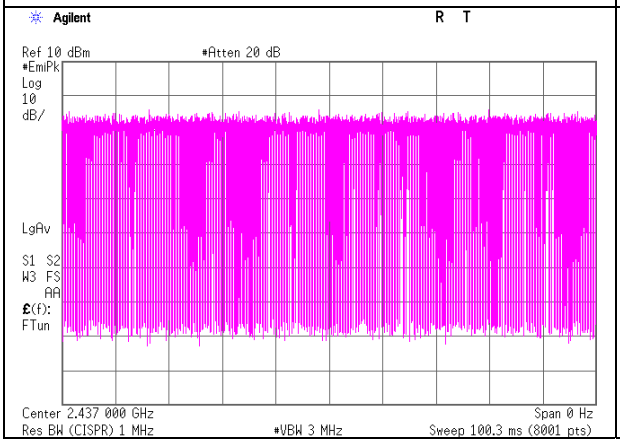
11n-20 MCS13



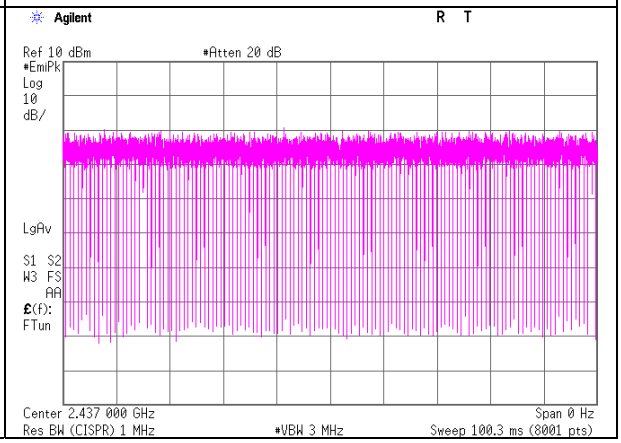
11n-40 MCS8



11n-20 MCS13



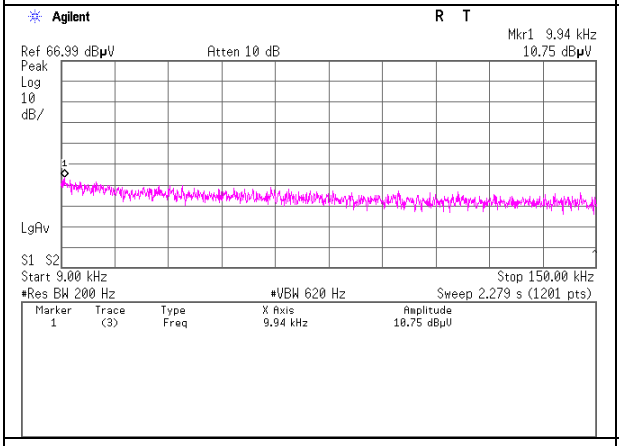
11n-40 MCS8



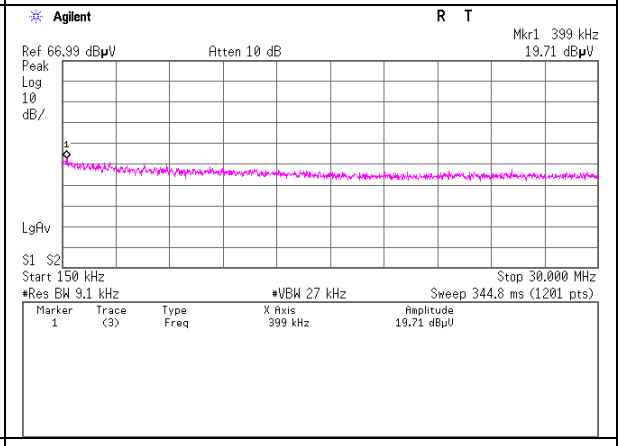
Conducted Spurious Emission

11b Tx 2412MHz, Antenna 0, 11Mbps(Long)

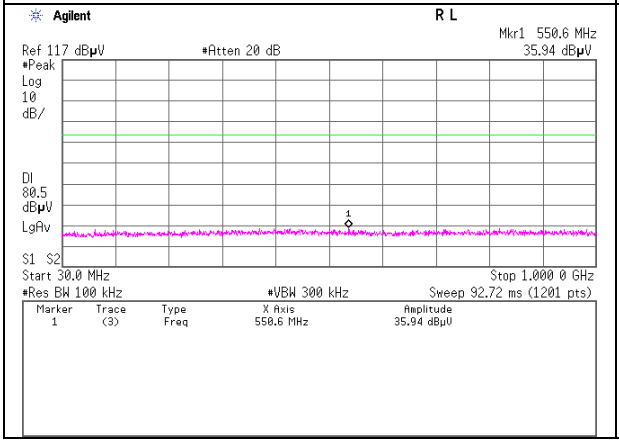
9kHz-150kHz



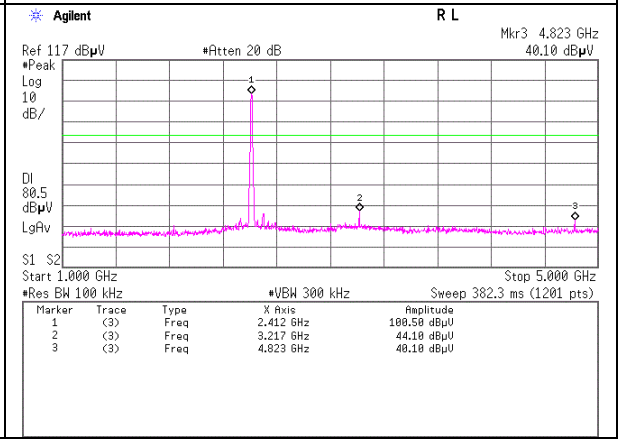
150kHz-30MHz



30MHz-1GHz



1GHz-5GHz



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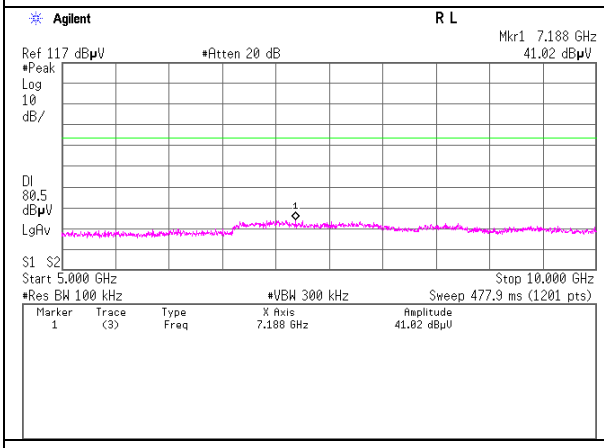
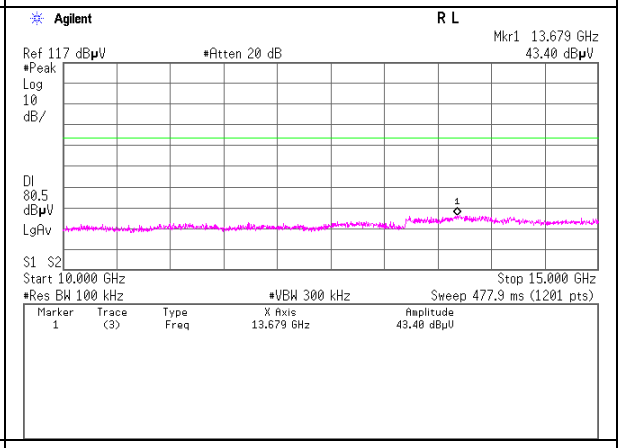
Conducted Spurious Emission

11b Tx 2412MHz, Antenna 0, 11Mbps(Long)

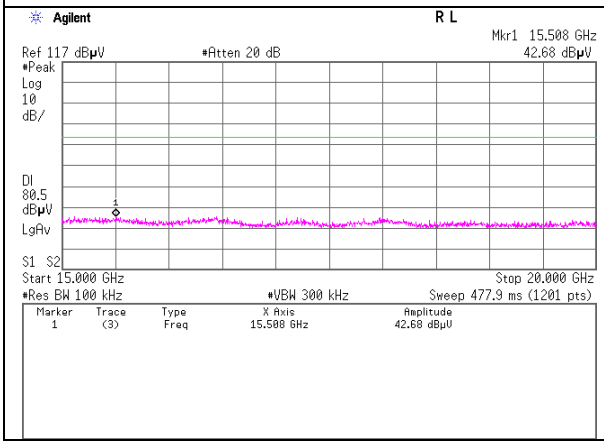
5GHz-10GHz



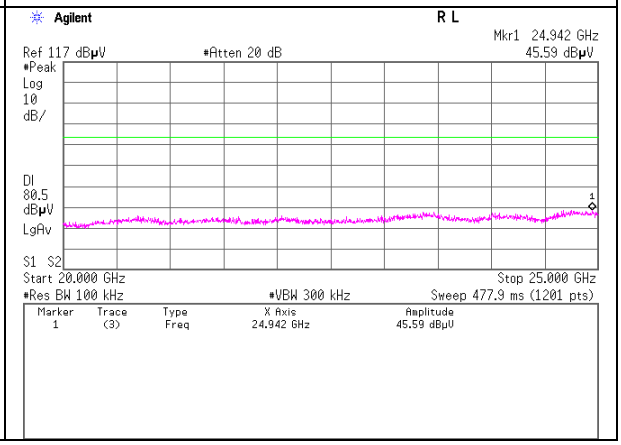
10GHz-15GHz



15GHz-20GHz



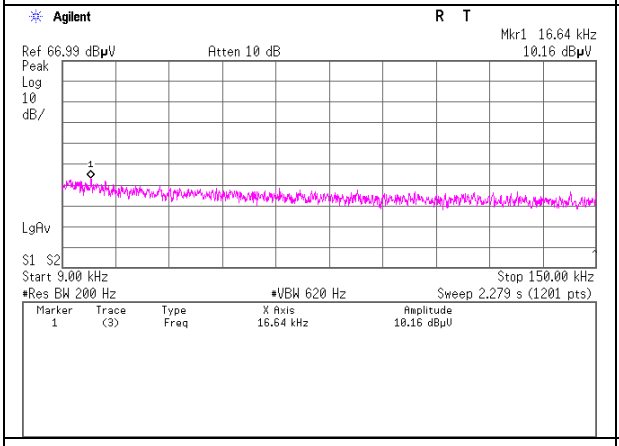
20GHz-25GHz



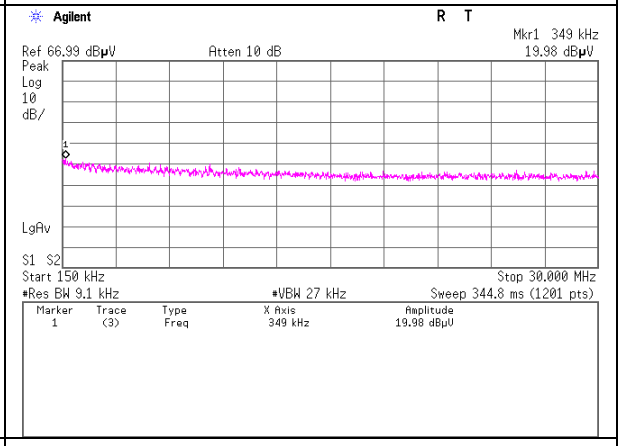
Conducted Spurious Emission

11b Tx 2437MHz, Antenna 0, 11Mbps(Long)

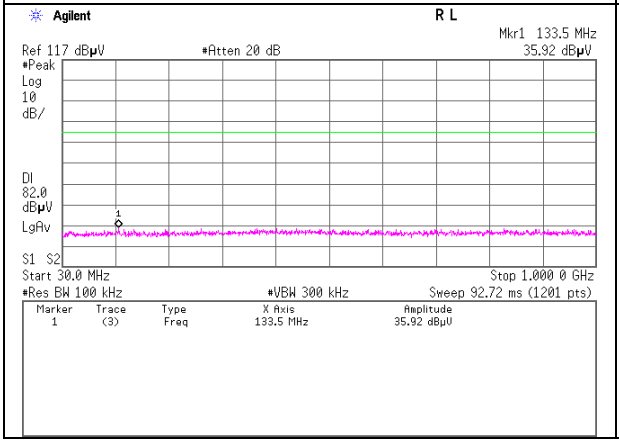
9kHz-150kHz



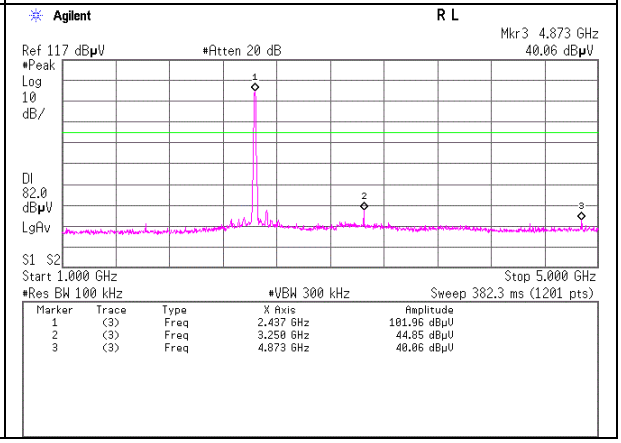
150kHz-30MHz



30MHz-1GHz



1GHz-5GHz



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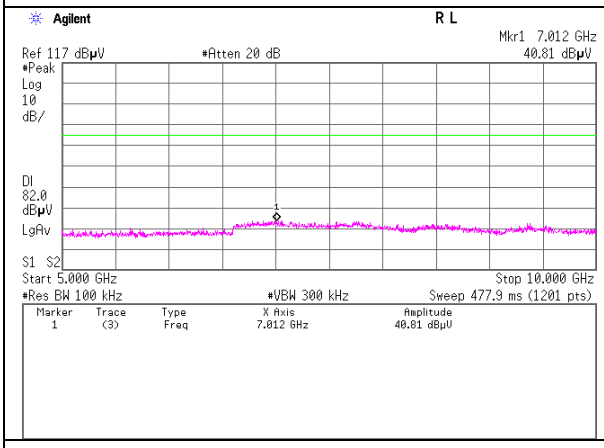
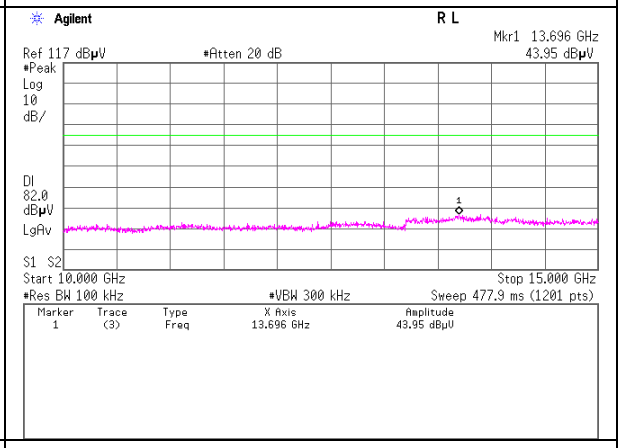
Conducted Spurious Emission

11b Tx 2437MHz, Antenna 0, 11Mbps(Long)

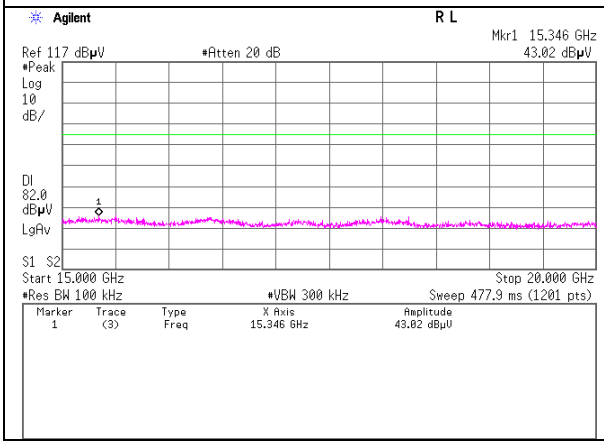
5GHz-10GHz



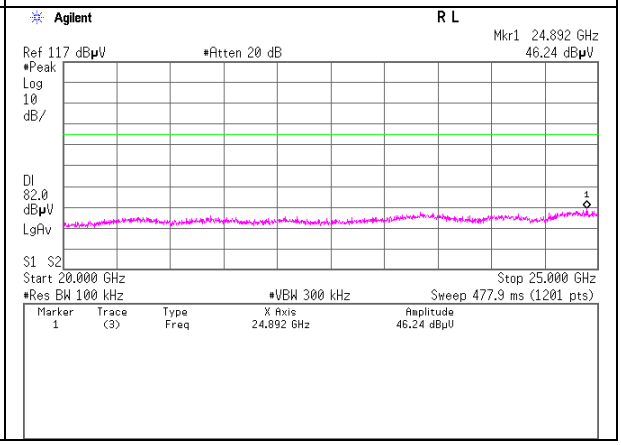
10GHz-15GHz



15GHz-20GHz



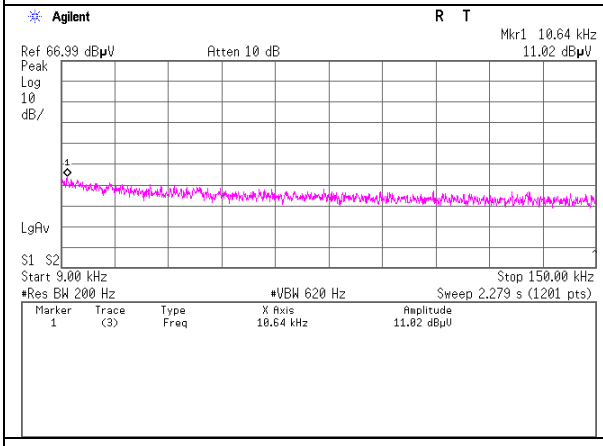
20GHz-25GHz



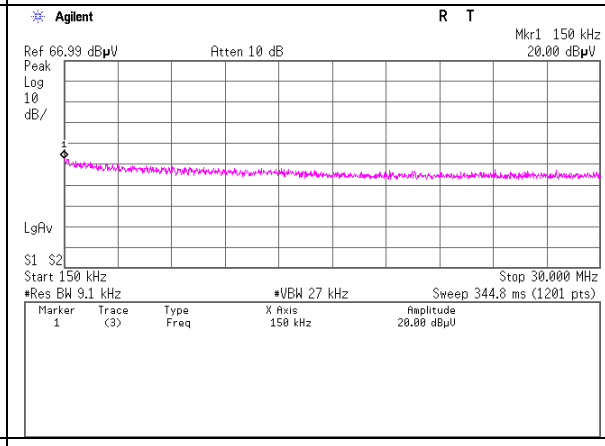
Conducted Spurious Emission

11b Tx 2462MHz, Antenna 0, 11Mbps(Long)

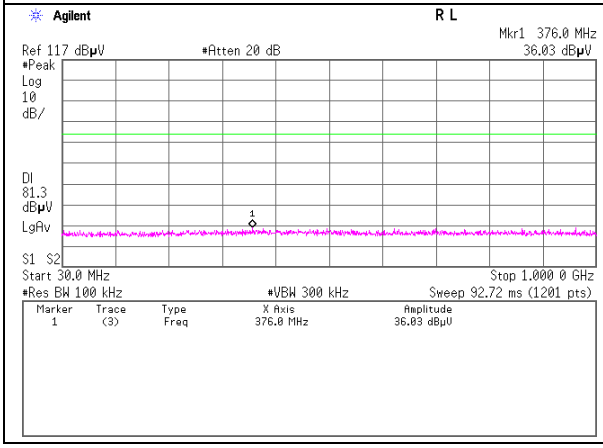
9kHz-150kHz



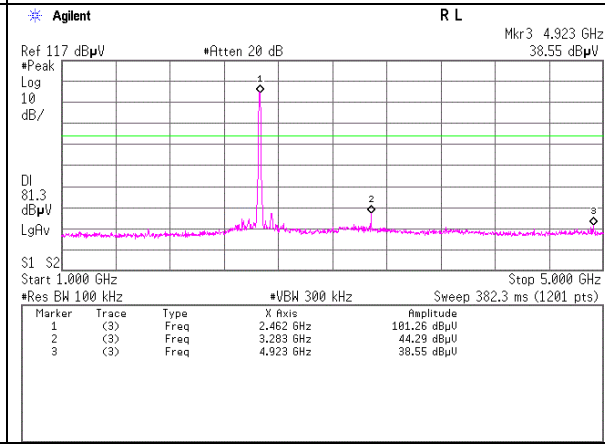
150kHz-30MHz



30MHz-1GHz



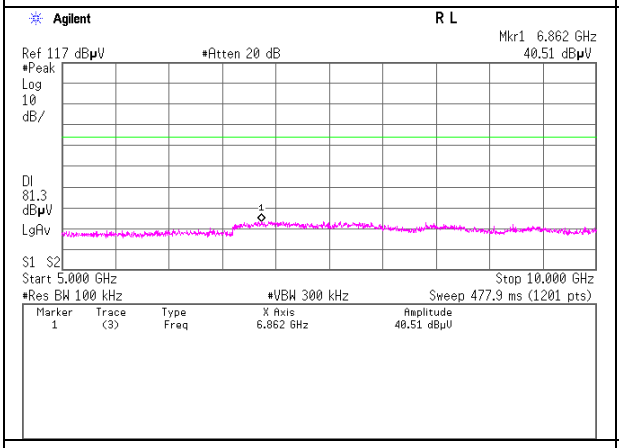
1GHz-5GHz



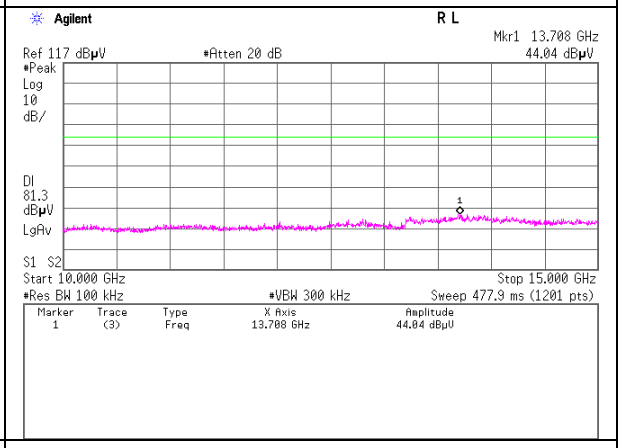
Conducted Spurious Emission

11b Tx 2462MHz, Antenna 0, 11Mbps(Long)

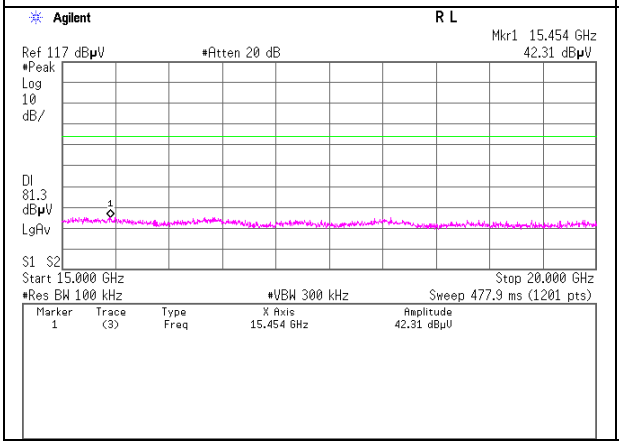
5GHz-10GHz



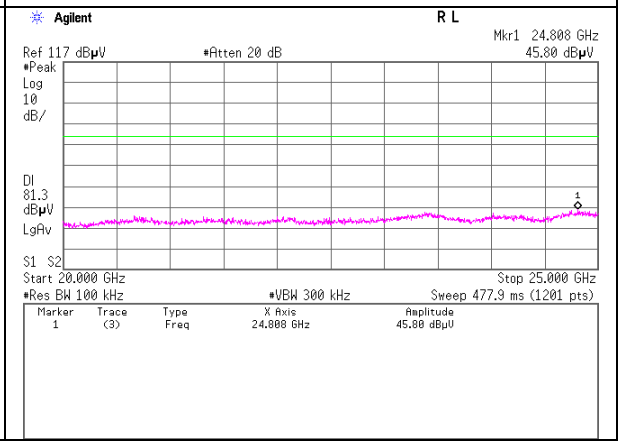
10GHz-15GHz



15GHz-20GHz



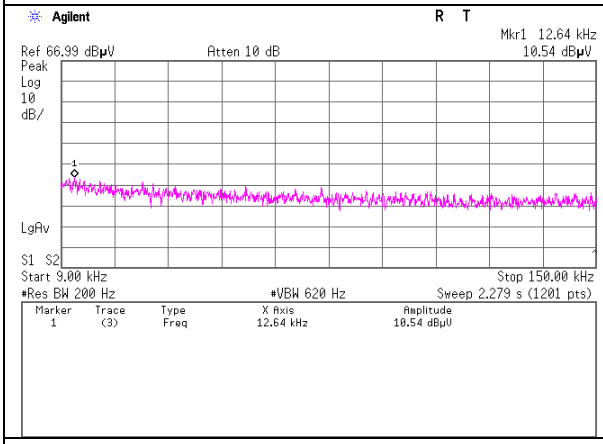
20GHz-25GHz



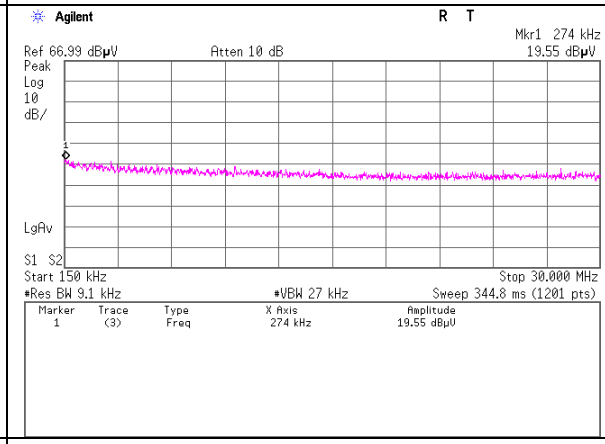
Conducted Spurious Emission

11g Tx 2412MHz, Antenna 0, 9Mbps

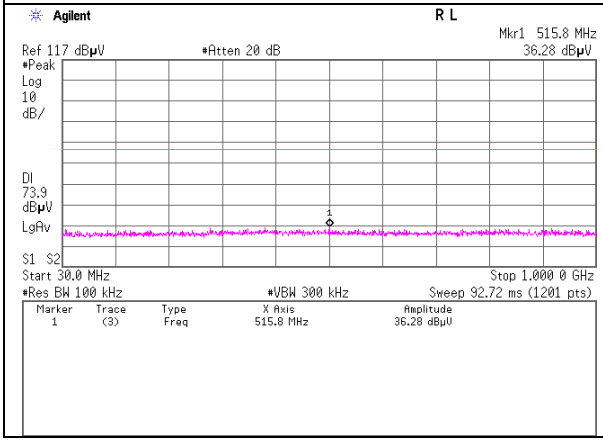
9kHz-150kHz



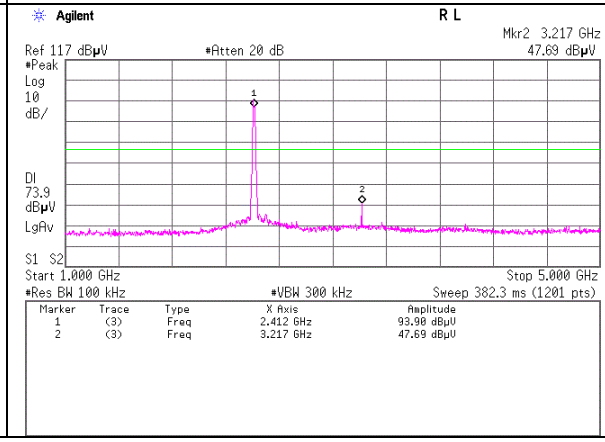
150kHz-30MHz



30MHz-1GHz



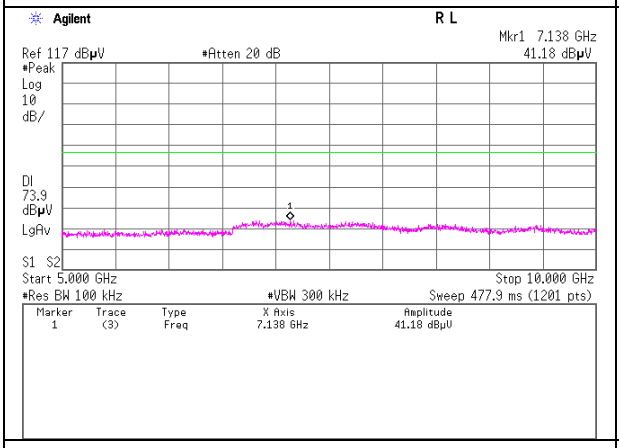
1GHz-5GHz



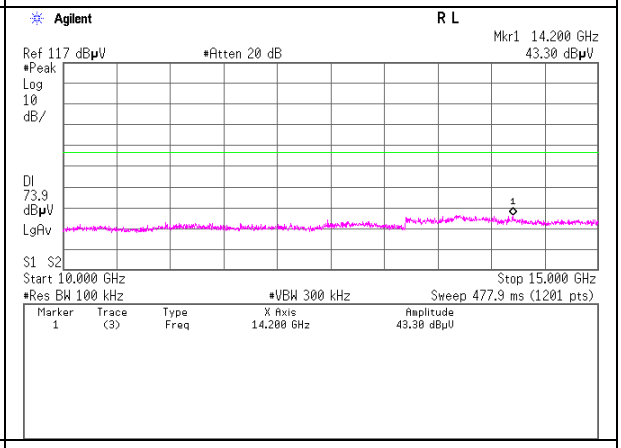
Conducted Spurious Emission

11g Tx 2412MHz, Antenna 0, 9Mbps

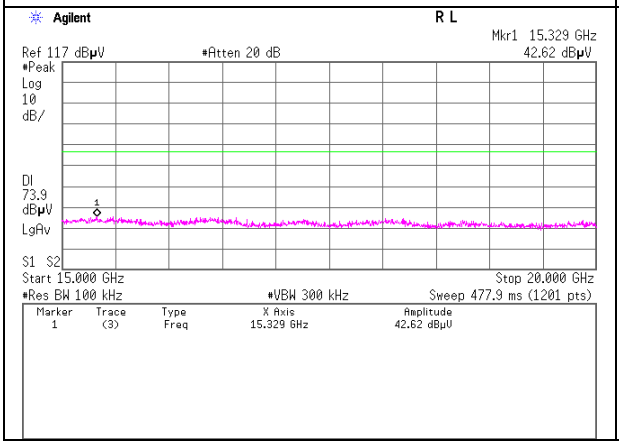
5GHz-10GHz



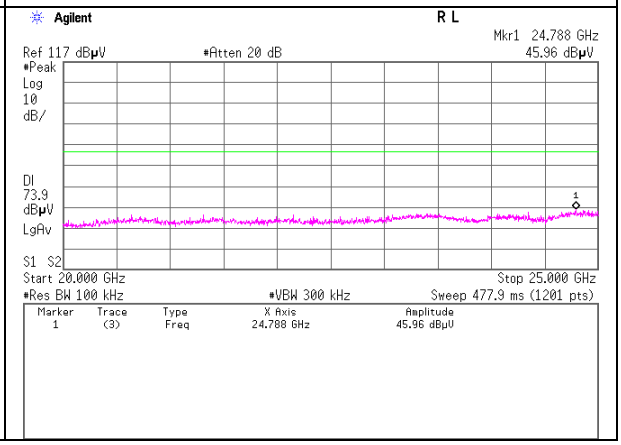
10GHz-15GHz



15GHz-20GHz



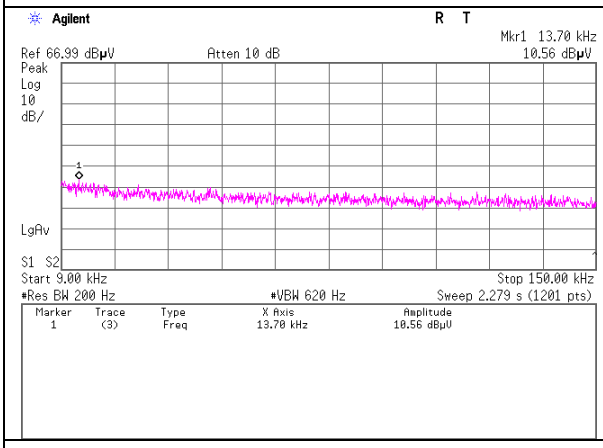
20GHz-25GHz



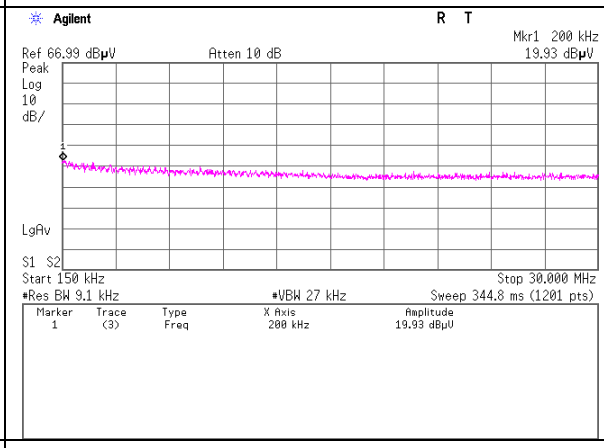
Conducted Spurious Emission

11g Tx 2437MHz, Antenna 0, 9Mbps

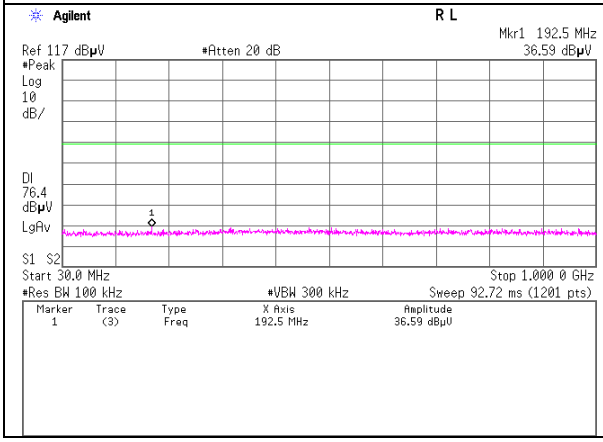
9kHz-150kHz



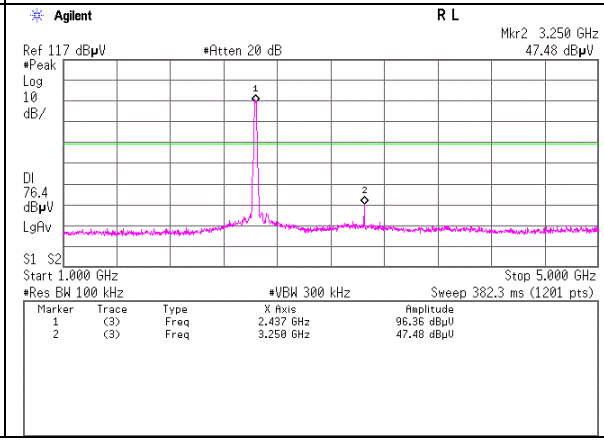
150kHz-30MHz



30MHz-1GHz



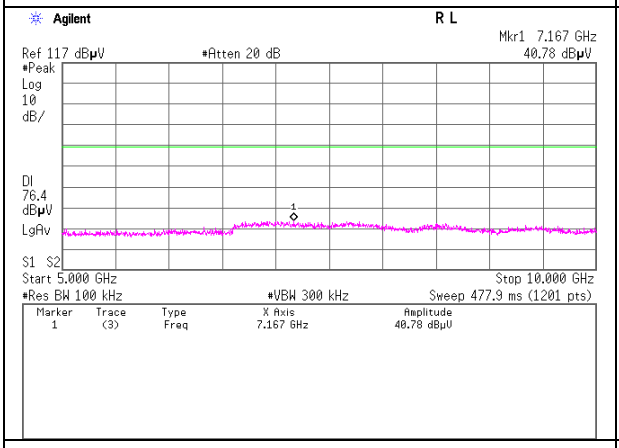
1GHz-5GHz



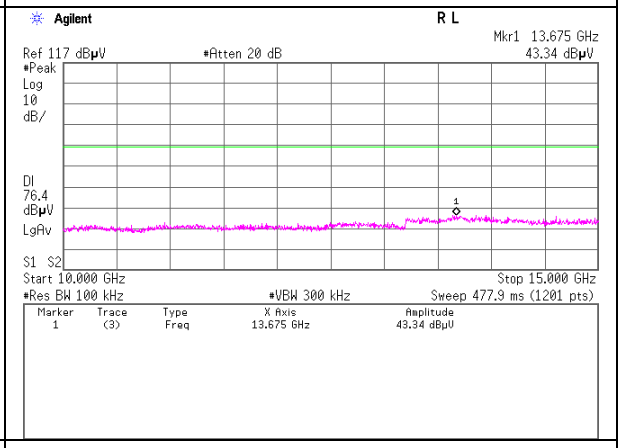
Conducted Spurious Emission

11g Tx 2437MHz, Antenna 0, 9Mbps

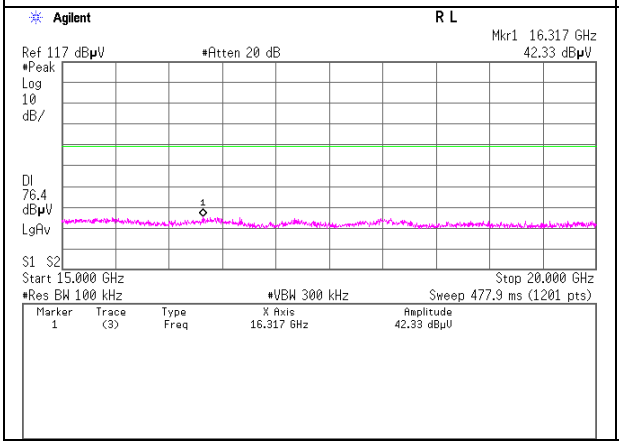
5GHz-10GHz



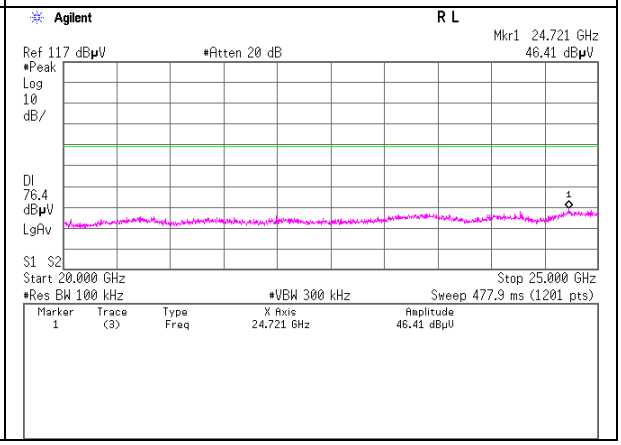
10GHz-15GHz



15GHz-20GHz



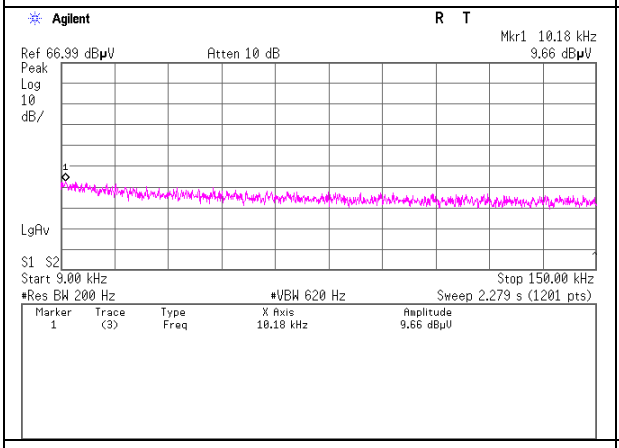
20GHz-25GHz



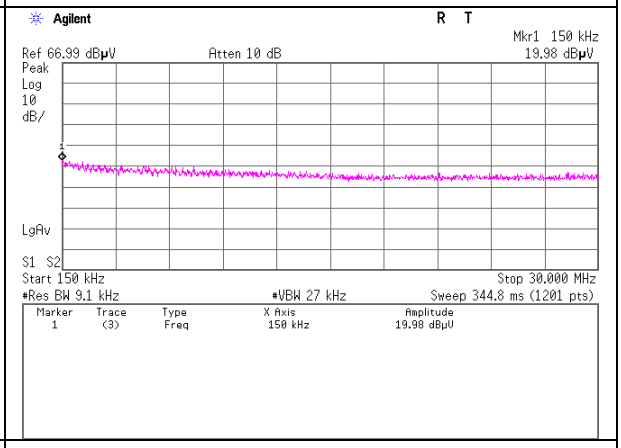
Conducted Spurious Emission

11g Tx 2462MHz, Antenna 0, 9Mbps

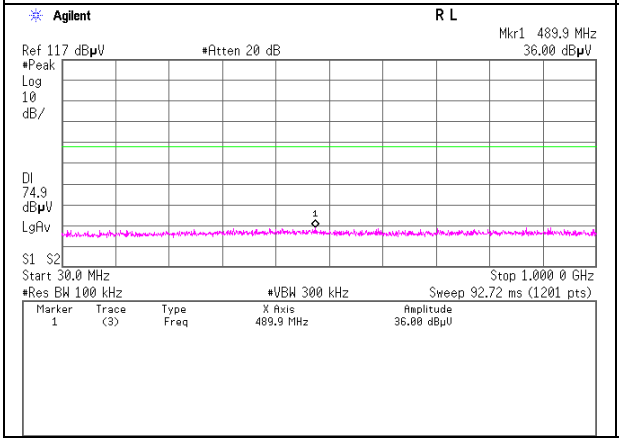
9kHz-150kHz



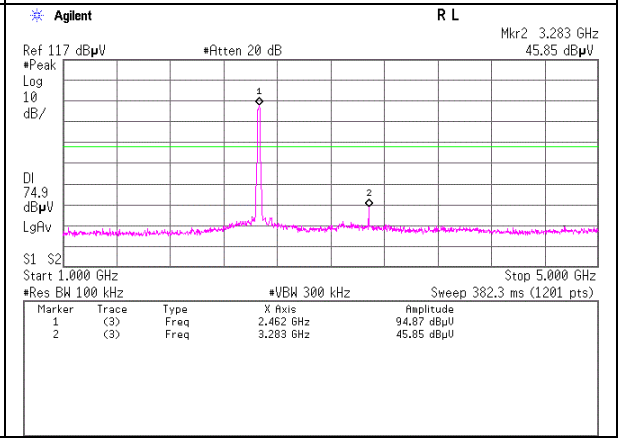
150kHz-30MHz



30MHz-1GHz



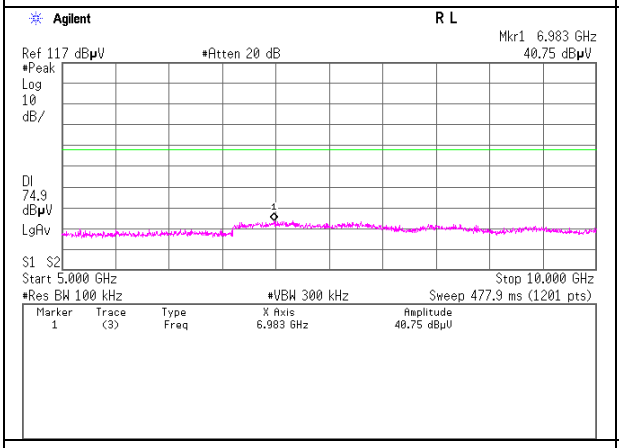
1GHz-5GHz



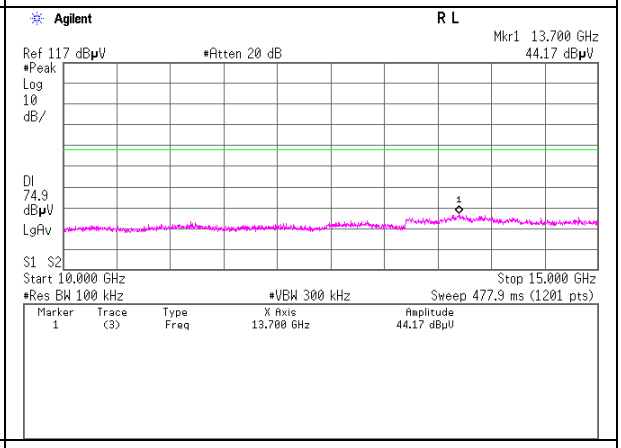
Conducted Spurious Emission

11g Tx 2462MHz, Antenna 0, 9Mbps

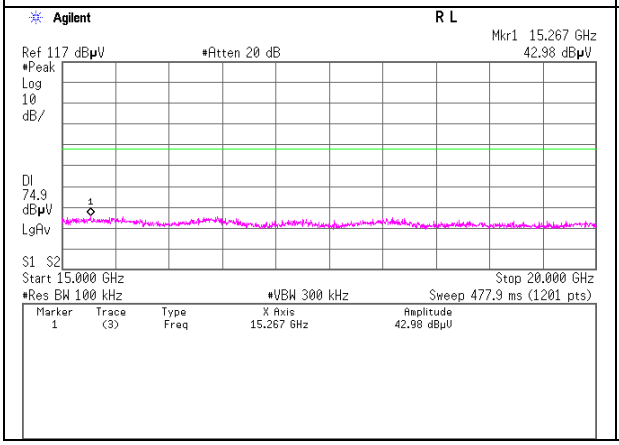
5GHz-10GHz



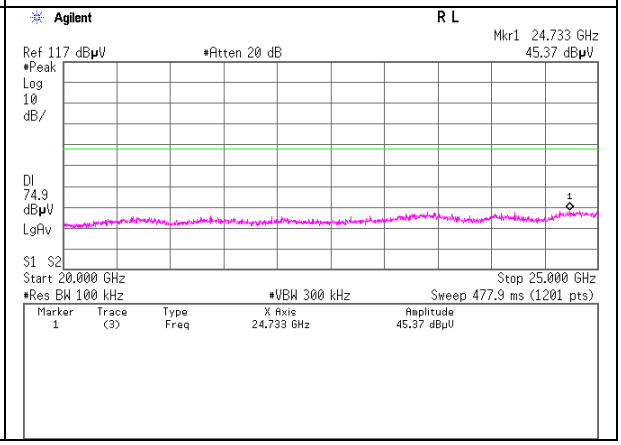
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz

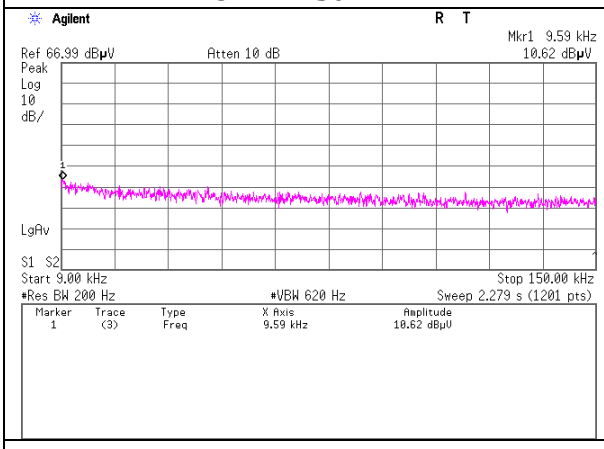


Conducted Spurious Emission

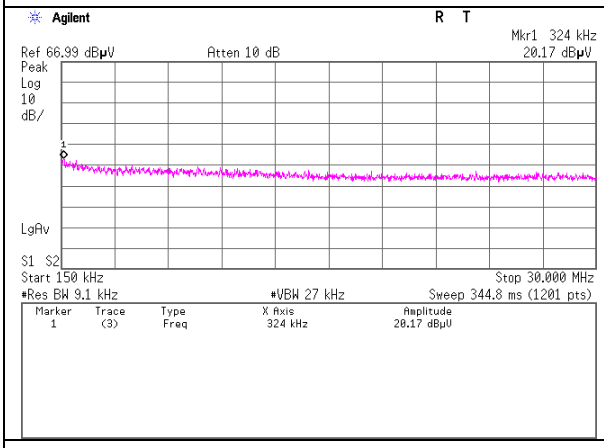
11n-20 Tx 2412MHz, MCS13

Antenna 0

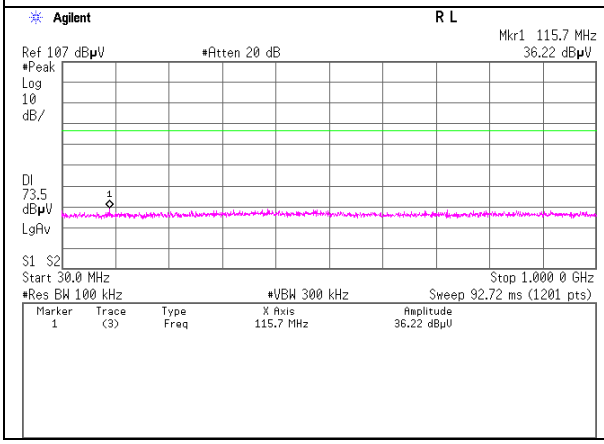
9kHz-150kHz



150kHz-30MHz

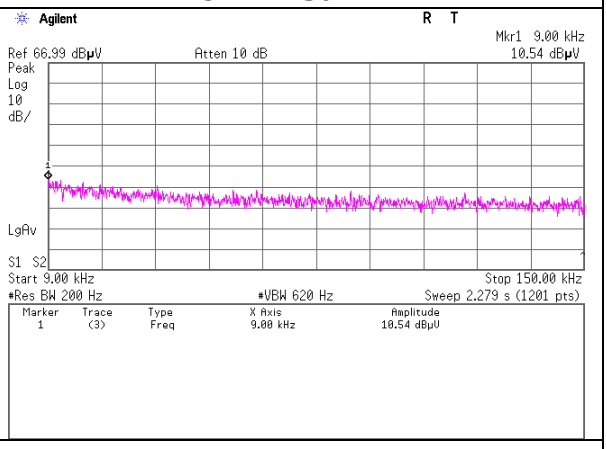


30MHz-1GHz

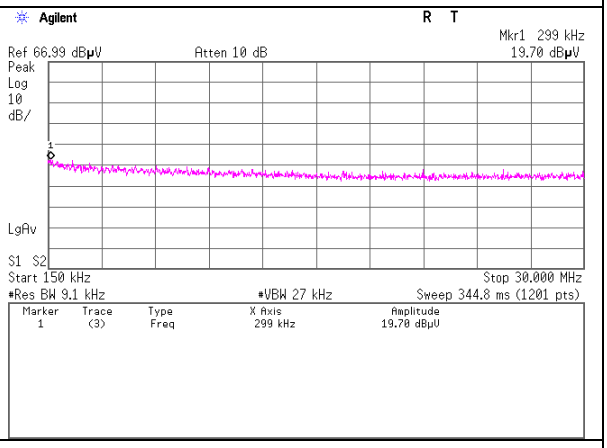


Antenna 1

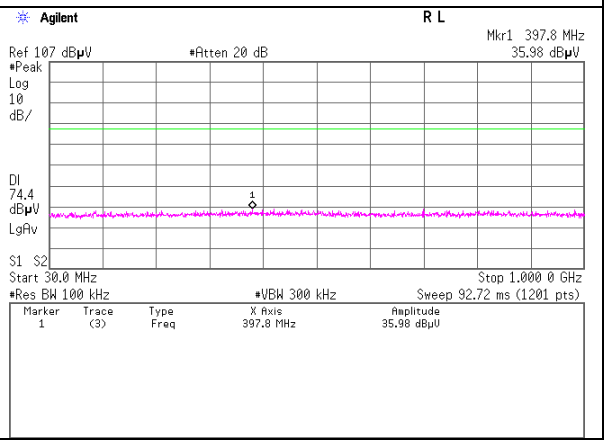
9kHz-150kHz



150kHz-30MHz



30MHz-1GHz

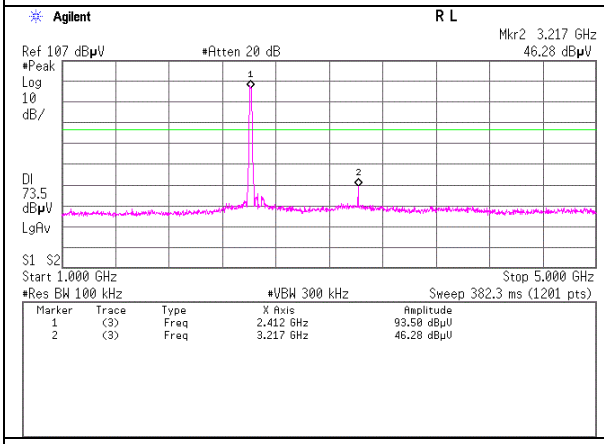


Conducted Spurious Emission

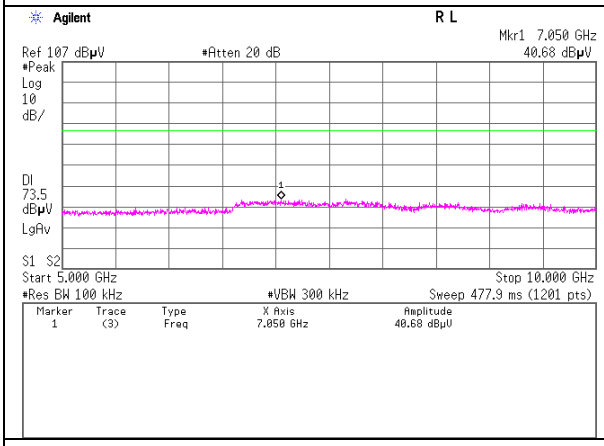
11n-20 Tx 2412MHz, MCS13

Antenna 0

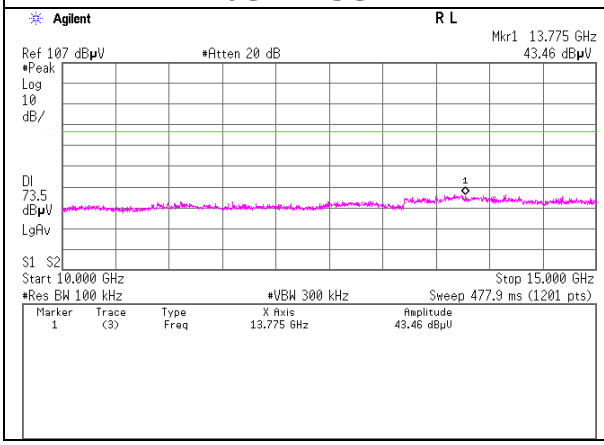
1GHz-5GHz



5GHz-10GHz

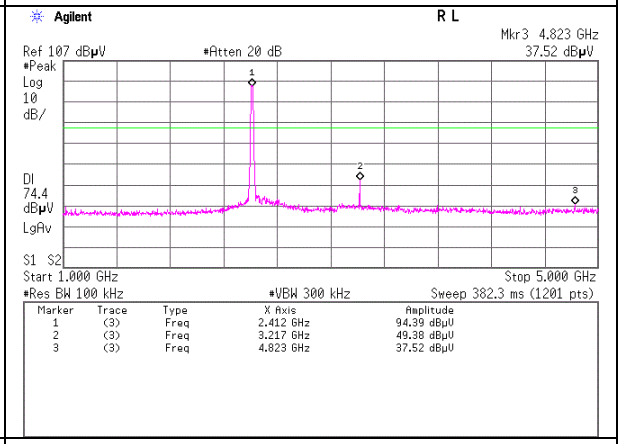


10GHz-15GHz

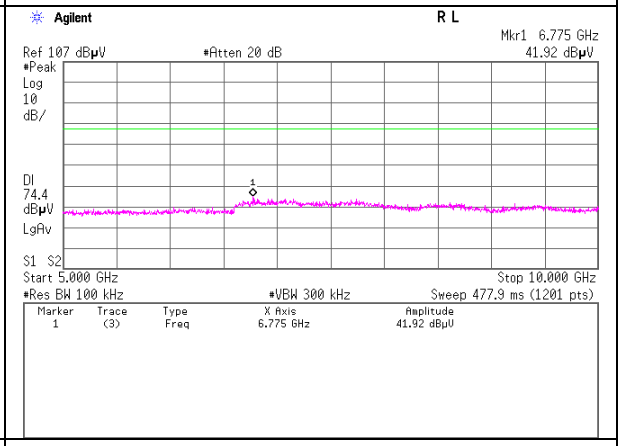


Antenna 1

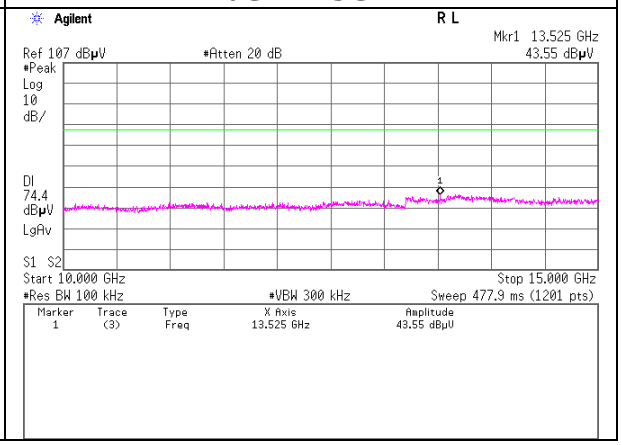
1GHz-5GHz



5GHz-10GHz



10GHz-15GHz

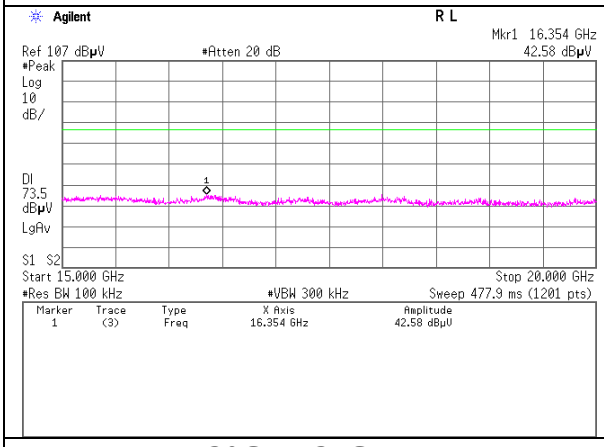


Conducted Spurious Emission

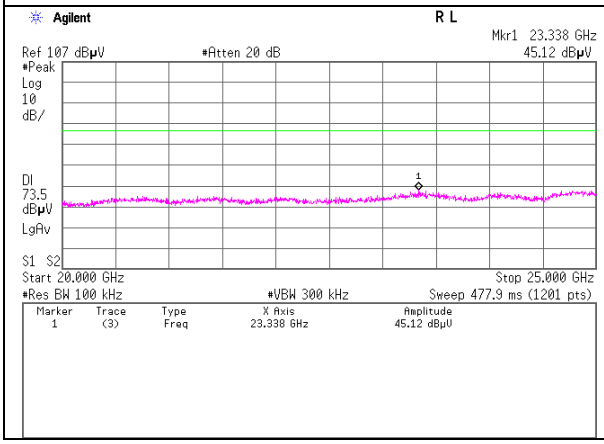
11n-20 Tx 2412MHz, MCS13

Antenna 0

15GHz-20GHz

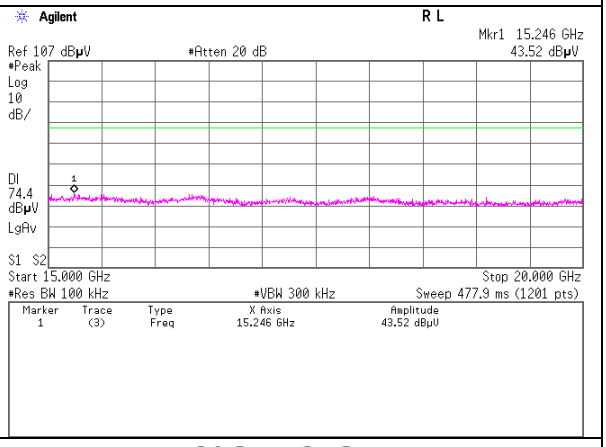


20GHz-25GHz

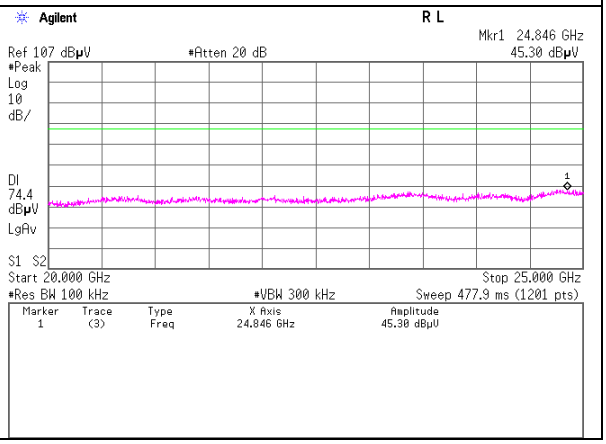


Antenna 1

15GHz-20GHz



20GHz-25GHz

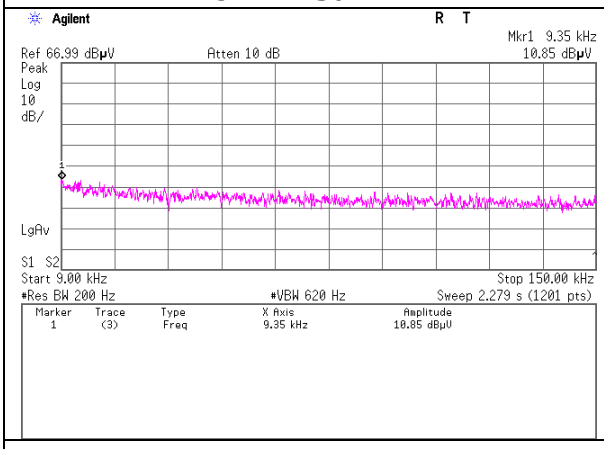


Conducted Spurious Emission

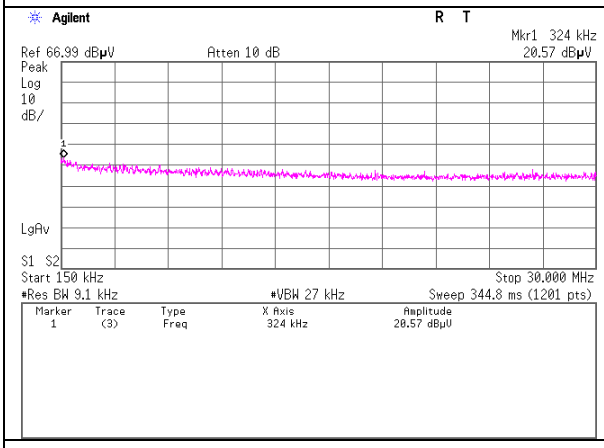
11n-20 Tx 2437MHz, MCS13

Antenna 0

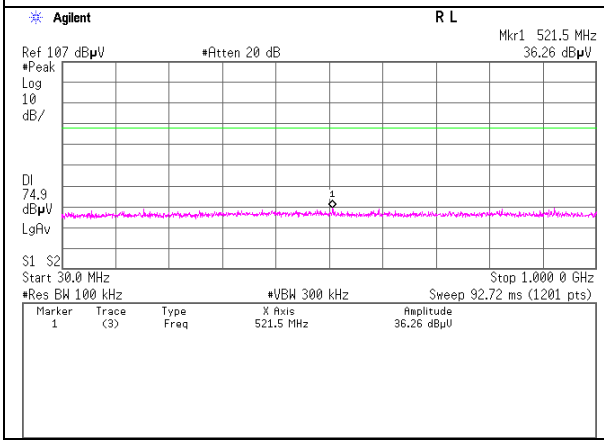
9kHz-150kHz



150kHz-30MHz

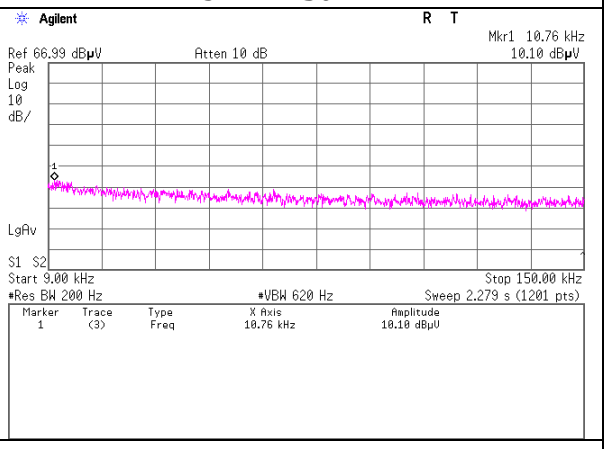


30MHz-1GHz

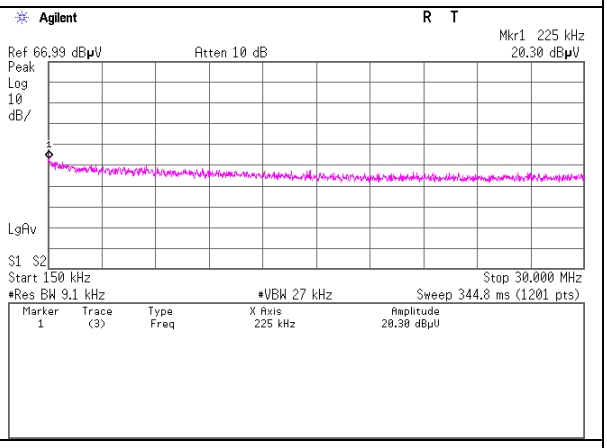


Antenna 1

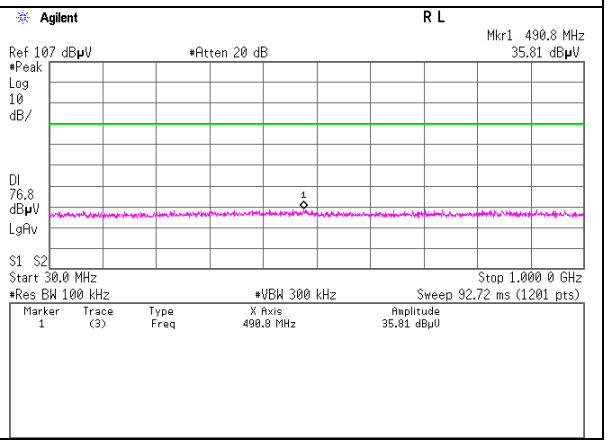
9kHz-150kHz



150kHz-30MHz



30MHz-1GHz



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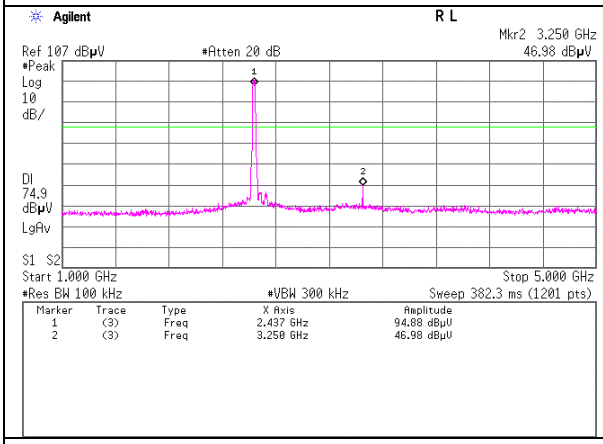
Conducted Spurious Emission

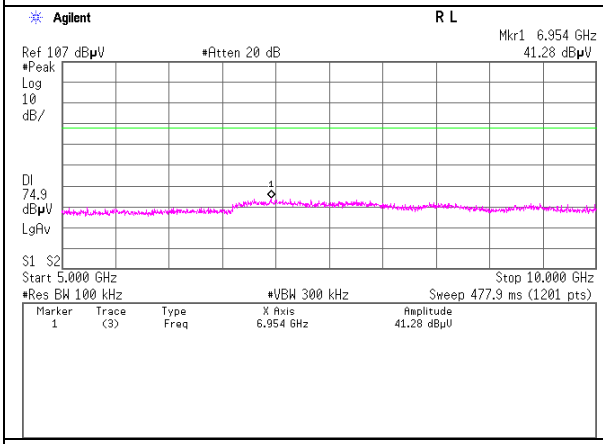
11n-20 Tx 2437MHz, MCS13

Antenna 0

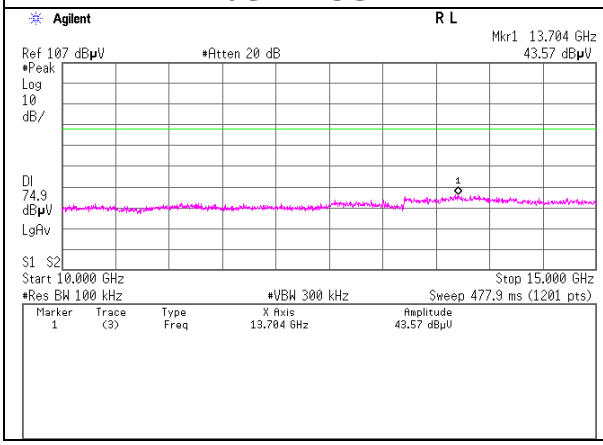
1GHz-5GHz



5GHz-10GHz

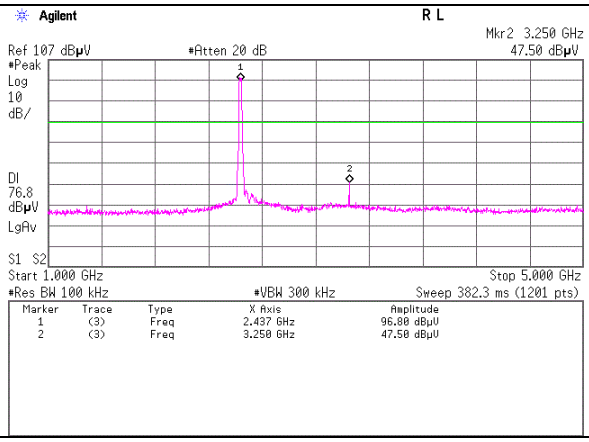


10GHz-15GHz

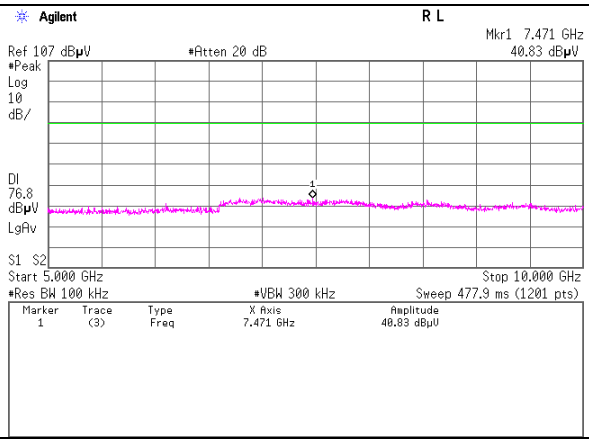


Antenna 1

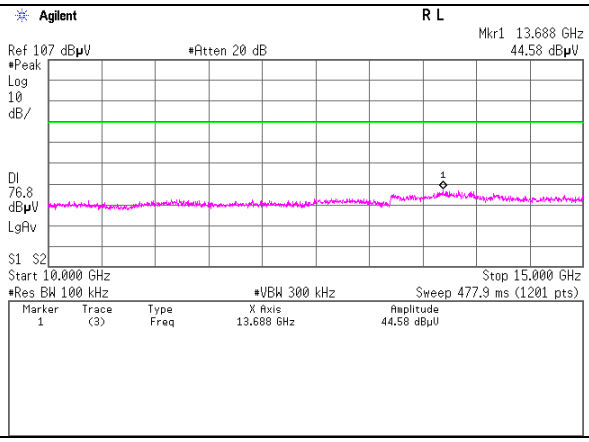
1GHz-5GHz



5GHz-10GHz



10GHz-15GHz

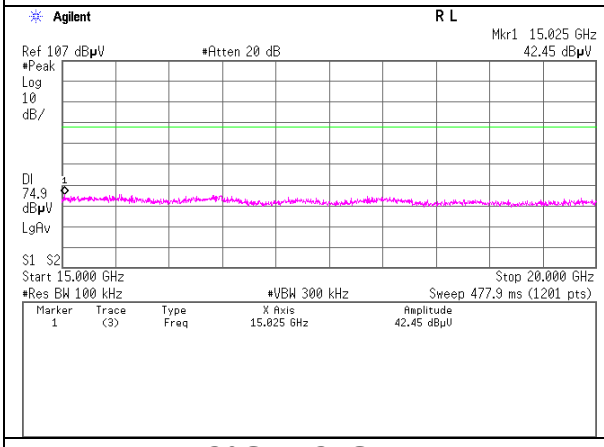


Conducted Spurious Emission

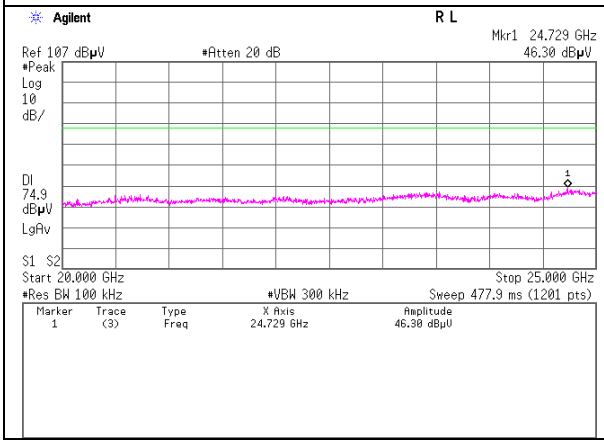
11n-20 Tx 2437MHz, MCS13

Antenna 0

15GHz-20GHz

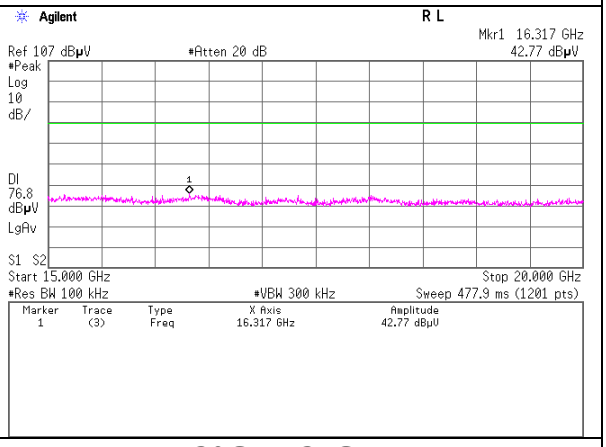


20GHz-25GHz

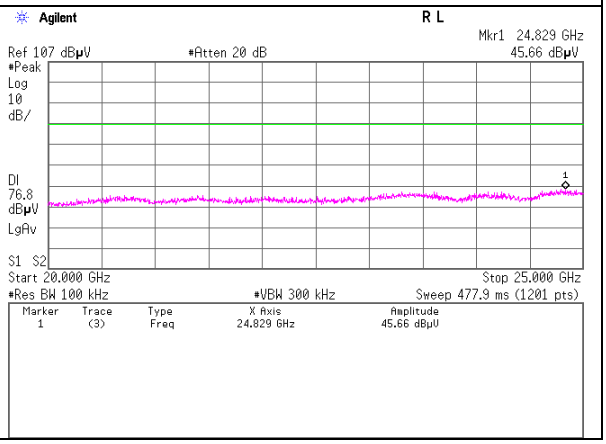


Antenna 1

15GHz-20GHz



20GHz-25GHz

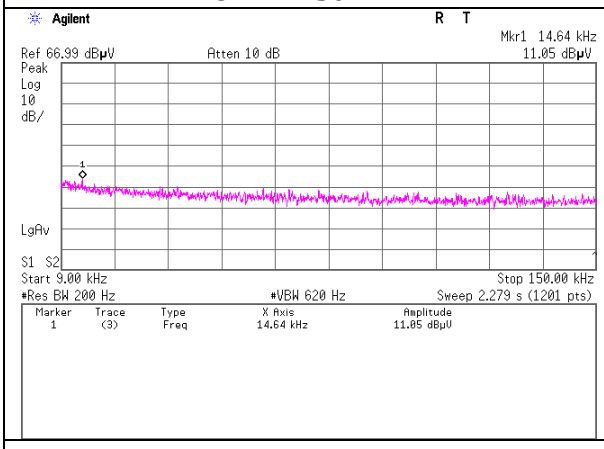


Conducted Spurious Emission

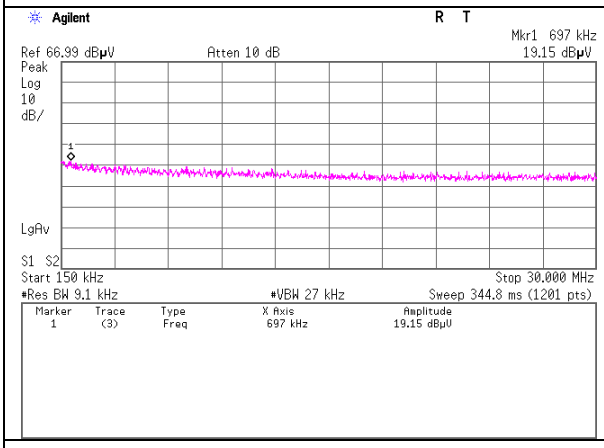
11n-20 Tx 2462MHz, MCS13

Antenna 0

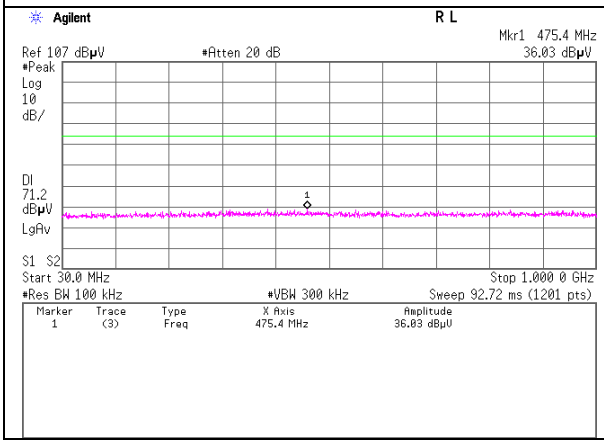
9kHz-150kHz



150kHz-30MHz

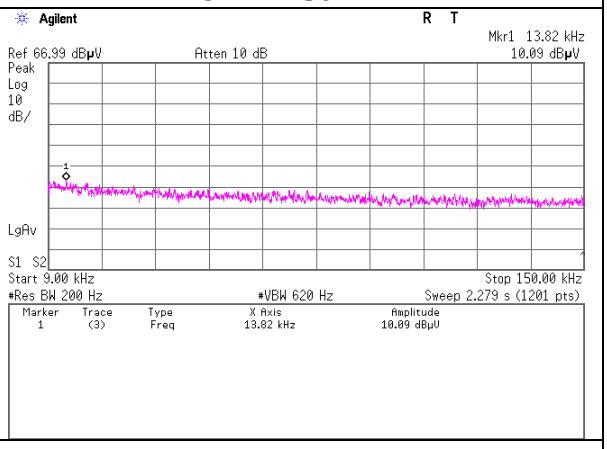


30MHz-1GHz

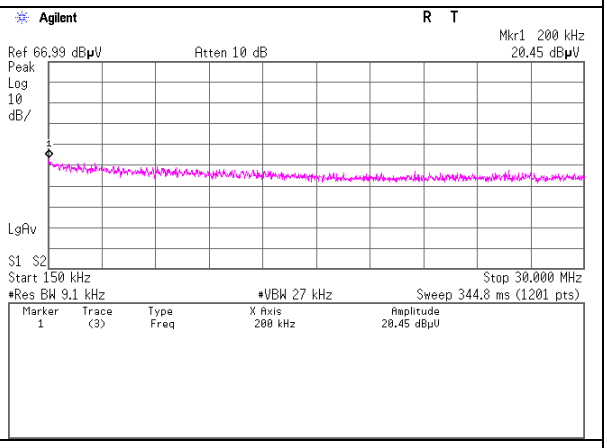


Antenna 1

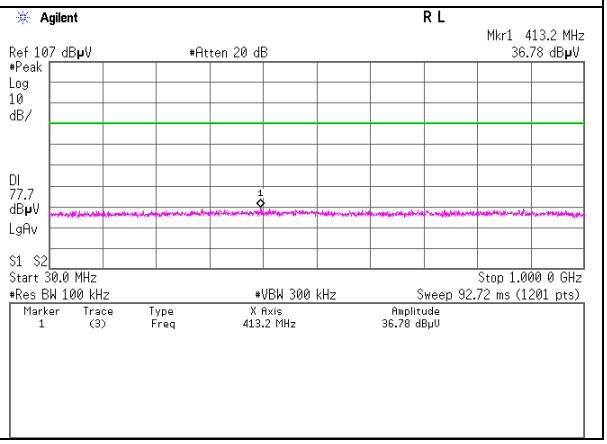
9kHz-150kHz



150kHz-30MHz



30MHz-1GHz

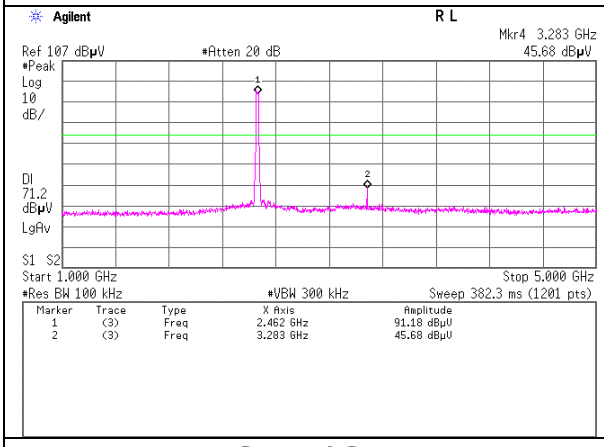


Conducted Spurious Emission

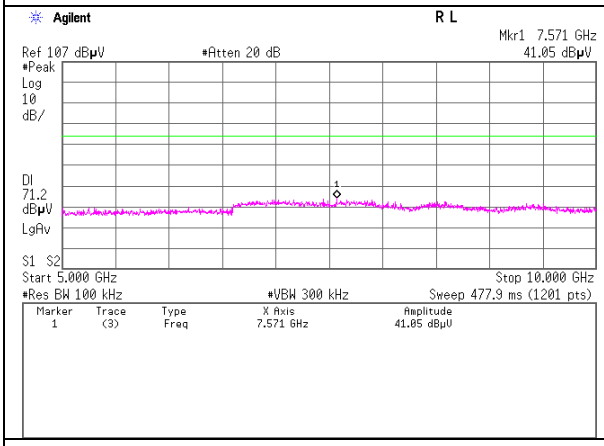
11n-20 Tx 2462MHz, MCS13

Antenna 0

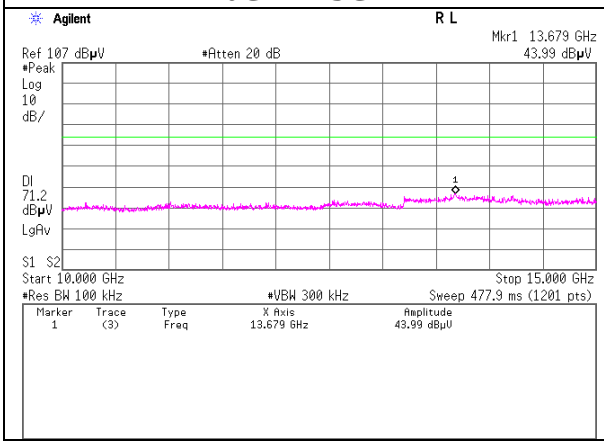
1GHz-5GHz



5GHz-10GHz

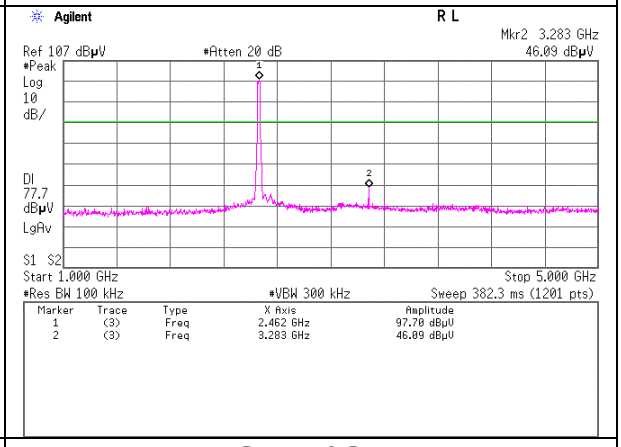


10GHz-15GHz

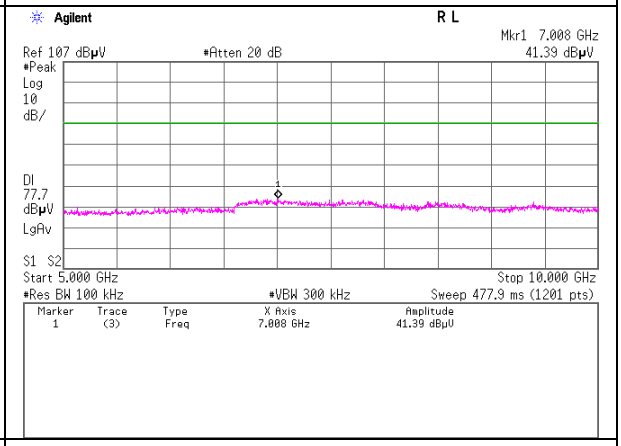


Antenna 1

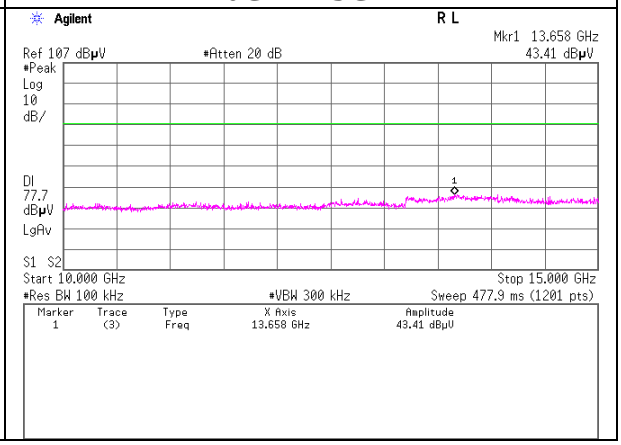
1GHz-5GHz



5GHz-10GHz



10GHz-15GHz



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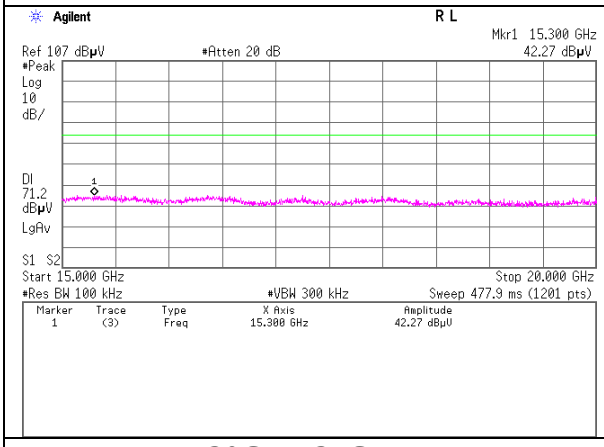
Conducted Spurious Emission

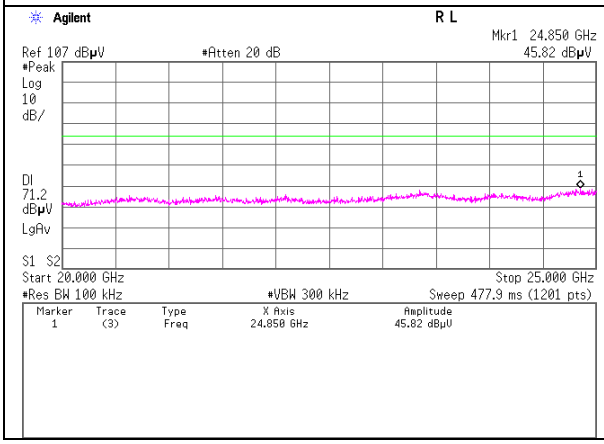
11n-20 Tx 2462MHz, MCS13

Antenna 0

15GHz-20GHz

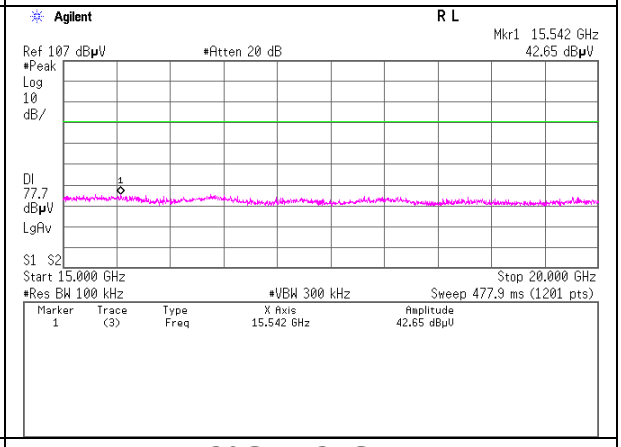


20GHz-25GHz

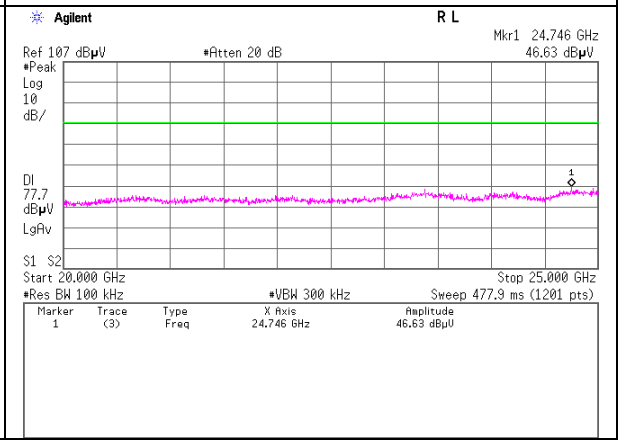


Antenna 1

15GHz-20GHz



20GHz-25GHz

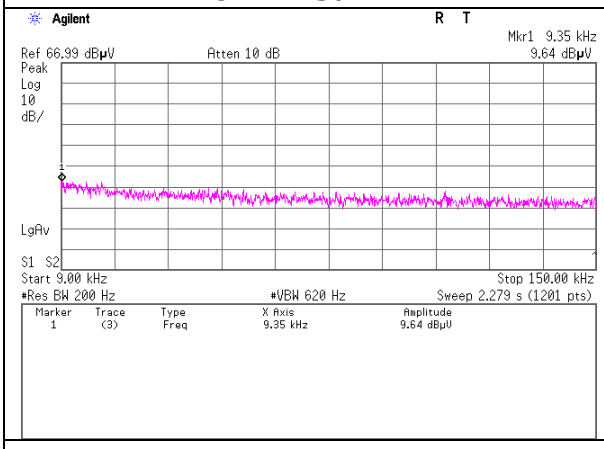


Conducted Spurious Emission

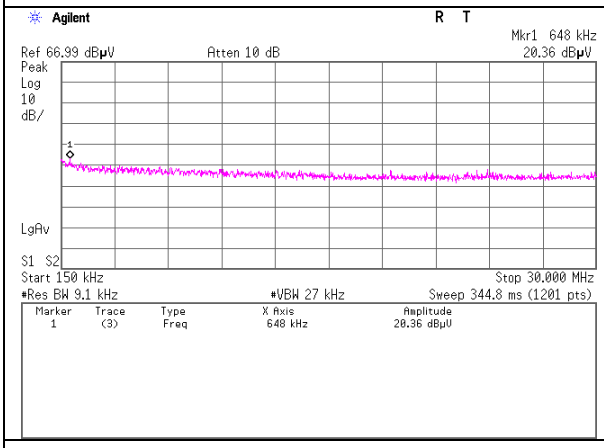
11n-40 Tx 2422MHz, MCS8

Antenna 0

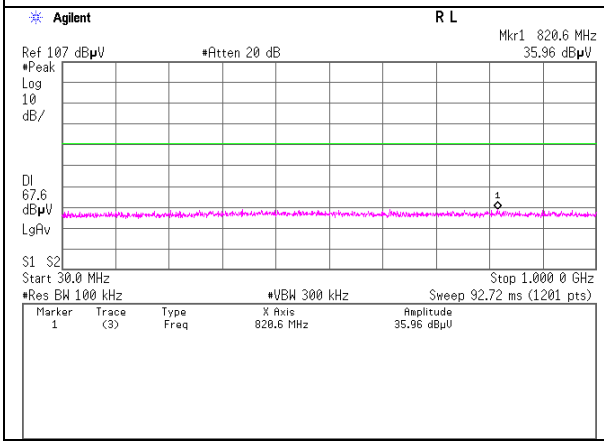
9kHz-150kHz



150kHz-30MHz

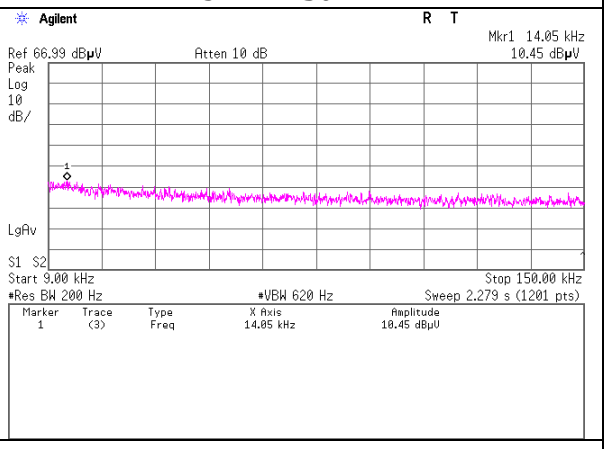


30MHz-1GHz

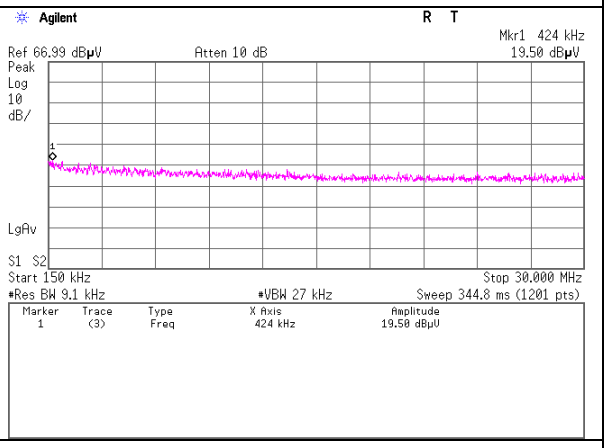


Antenna 1

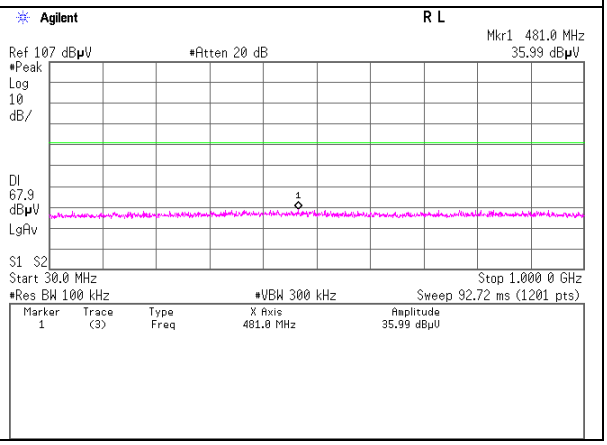
9kHz-150kHz



150kHz-30MHz



30MHz-1GHz

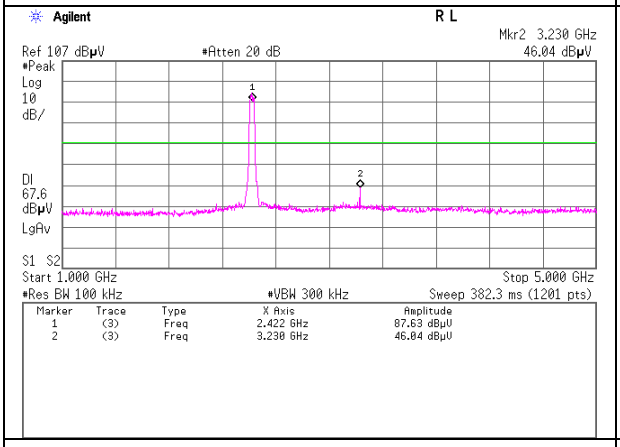


Conducted Spurious Emission

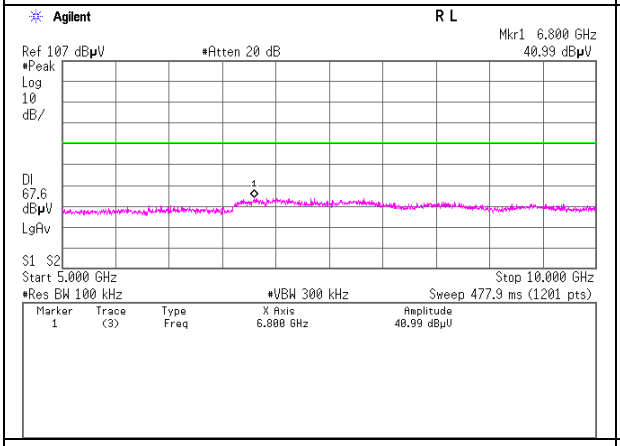
11n-40 Tx 2422MHz, MCS8

Antenna 0

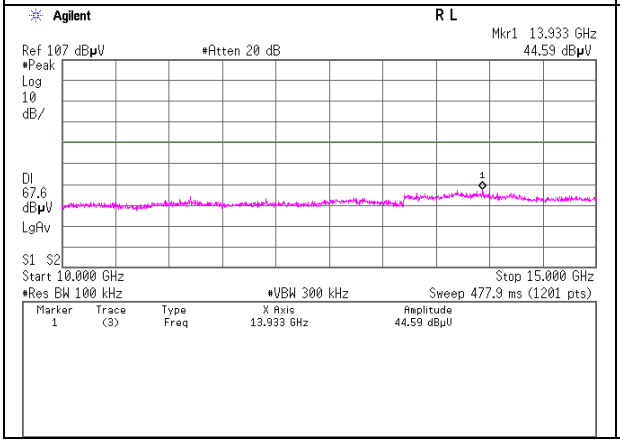
1GHz-5GHz



5GHz-10GHz

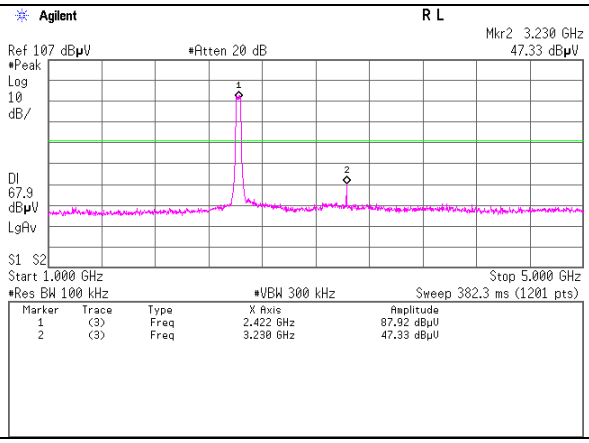


10MHz-15GHz

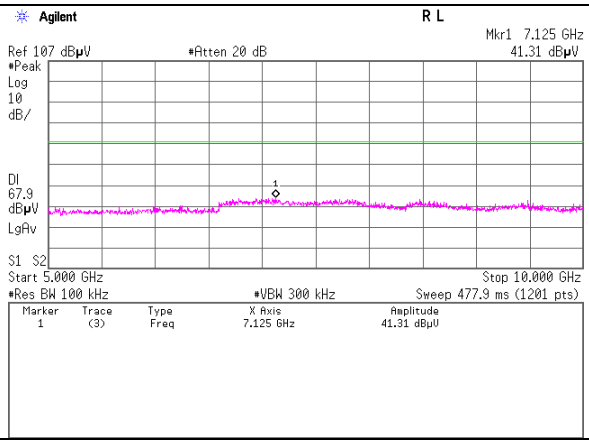


Antenna 1

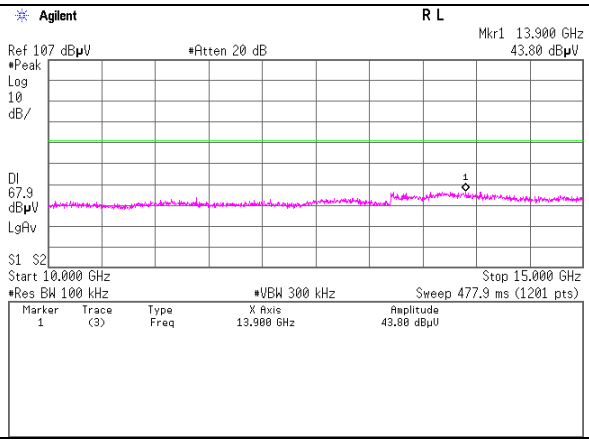
1GHz-5GHz



5GHz-10GHz



10GHz-15GHz

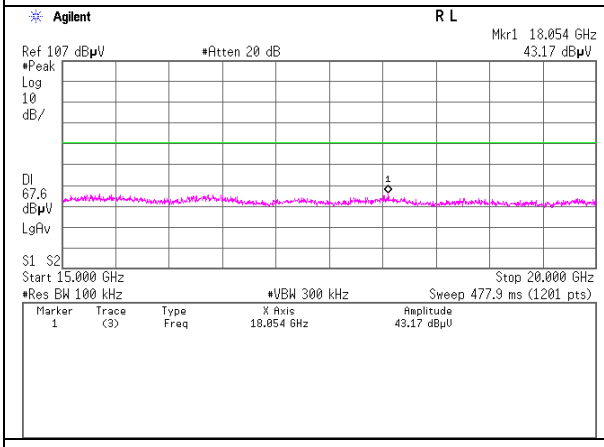


Conducted Spurious Emission

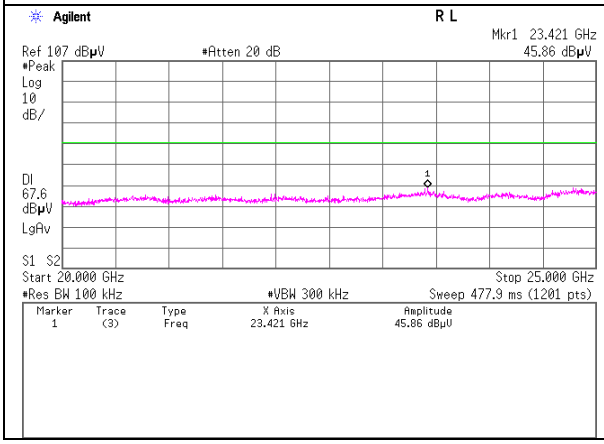
11n-40 Tx 2422MHz, MCS8

Antenna 0

15GHz-20GHz

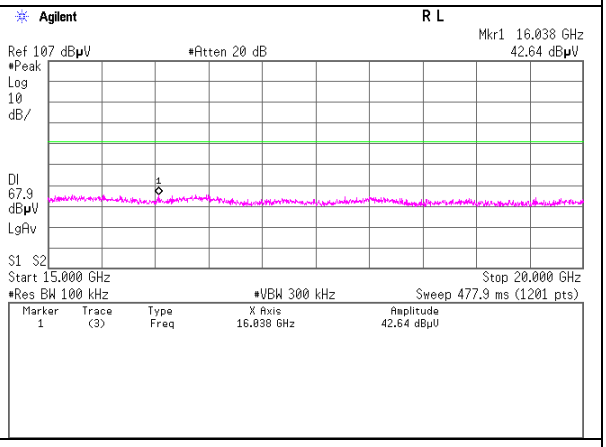


20GHz-25GHz

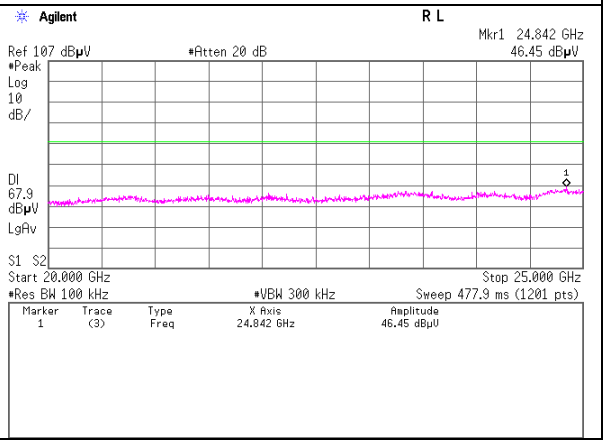


Antenna 1

15GHz-20GHz



20GHz-25GHz

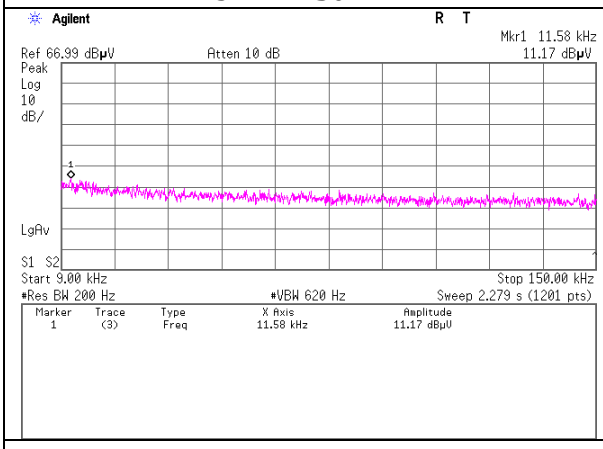


Conducted Spurious Emission

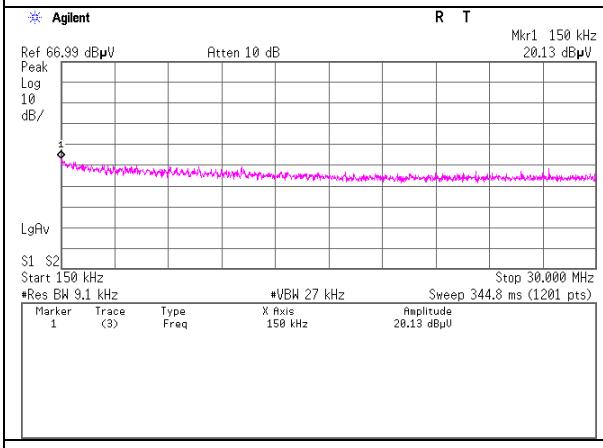
11n-40 Tx 2437MHz, MCS8

Antenna 0

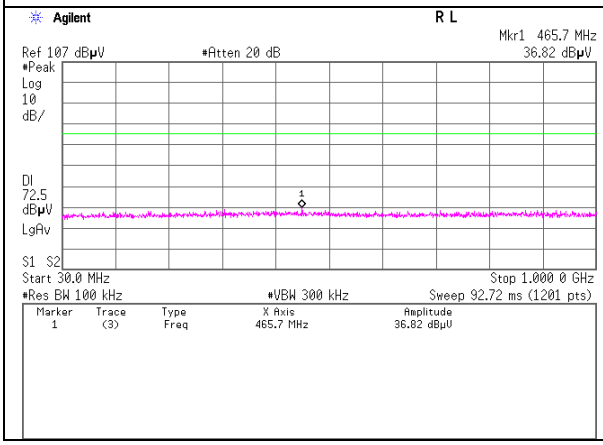
9kHz-150kHz



150kHz-30MHz

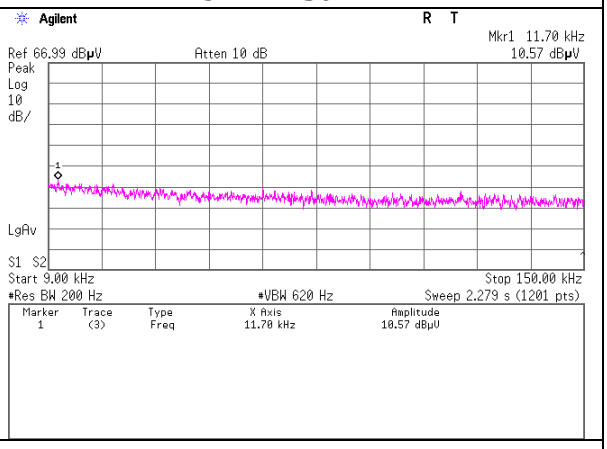


30MHz-1GHz

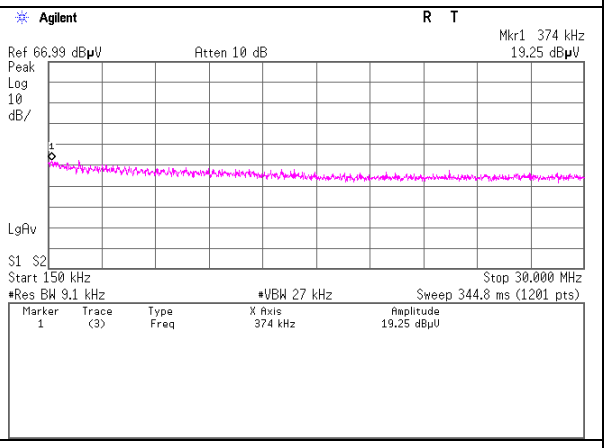


Antenna 1

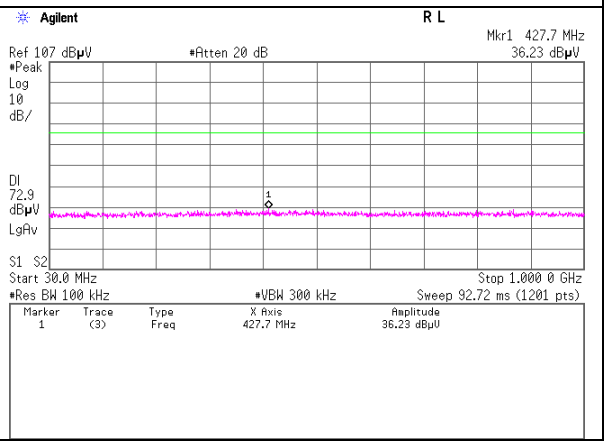
9kHz-150kHz



150kHz-30MHz



30MHz-1GHz

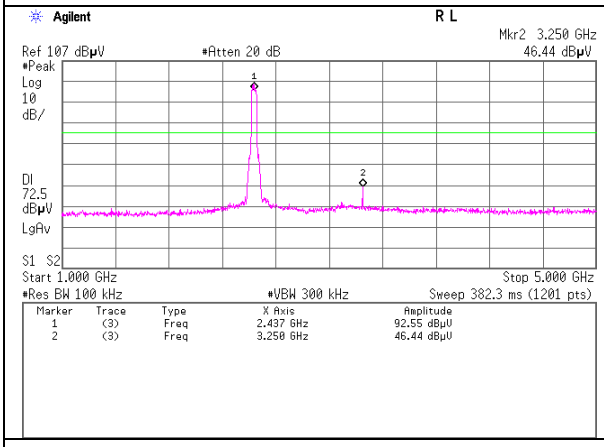


Conducted Spurious Emission

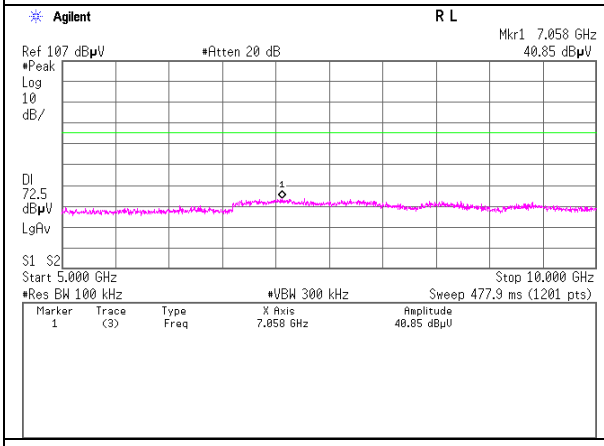
11n-40 Tx 2437MHz, MCS8

Antenna 0

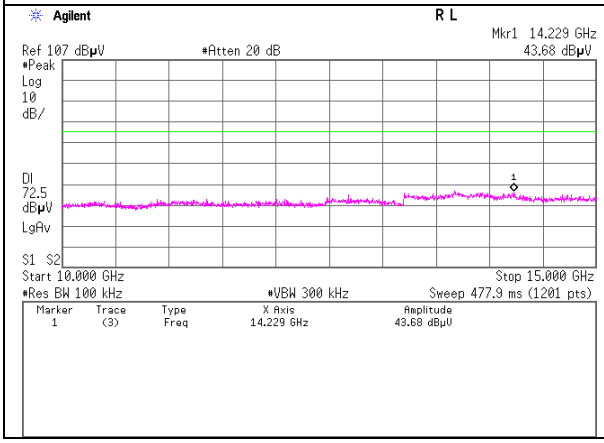
1GHz-5GHz



5GHz-10GHz

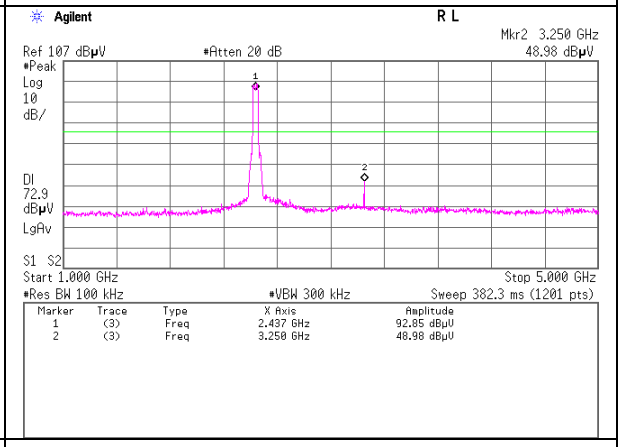


10GHz-15GHz

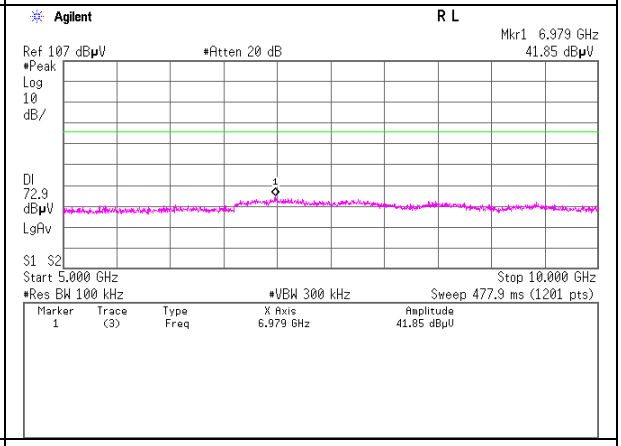


Antenna 1

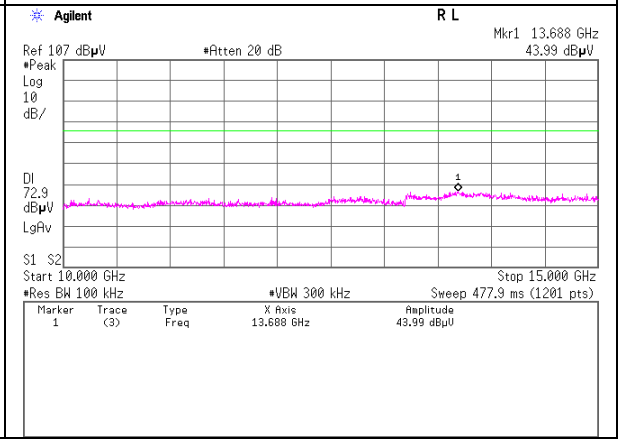
1GHz-5GHz



5GHz-10GHz



10GHz-15GHz

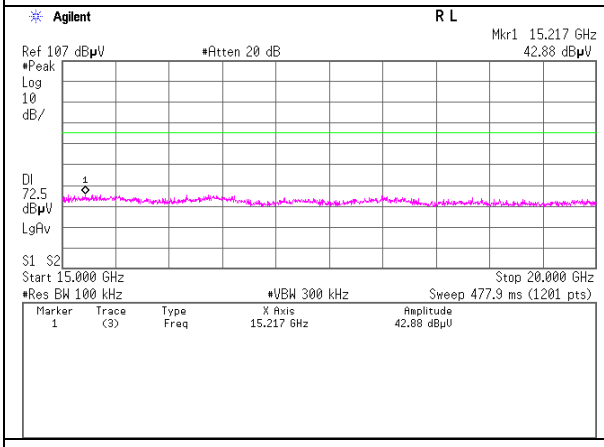


Conducted Spurious Emission

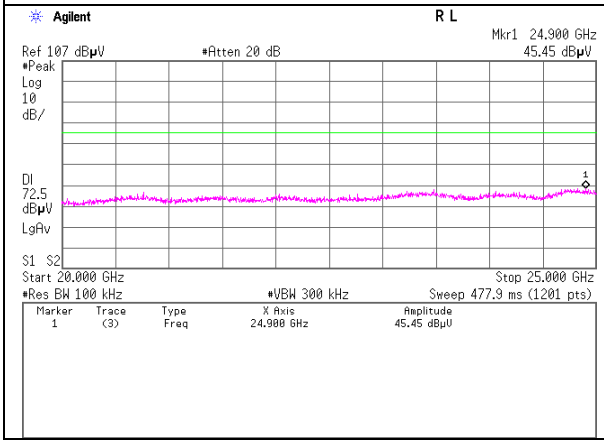
11n-40 Tx 2437MHz, MCS8

Antenna 0

15GHz-20GHz

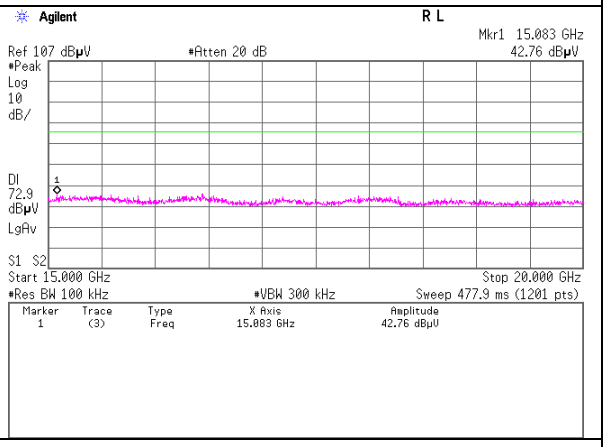


20GHz-25GHz

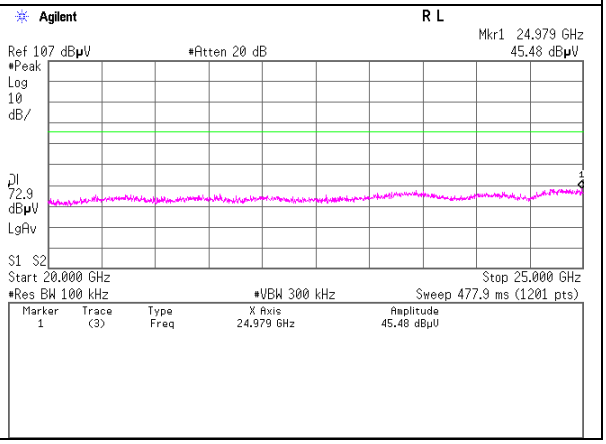


Antenna 1

15GHz-20GHz



20GHz-25GHz

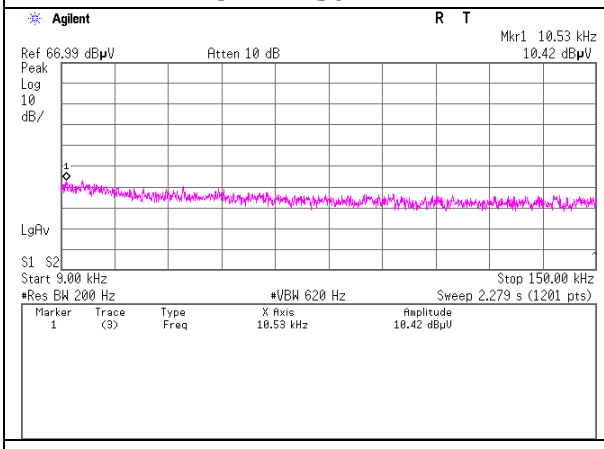


Conducted Spurious Emission

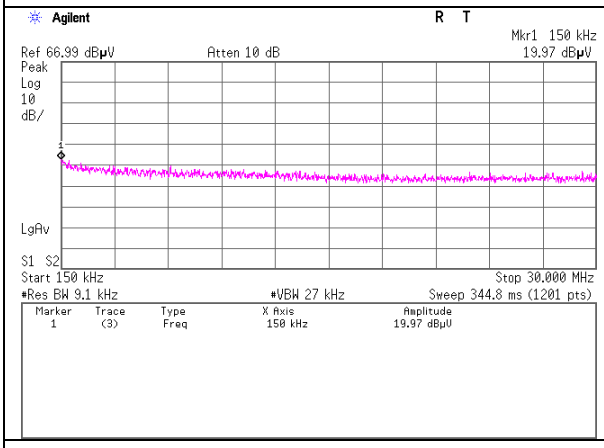
11n-40 Tx 2452MHz, MCS8

Antenna 0

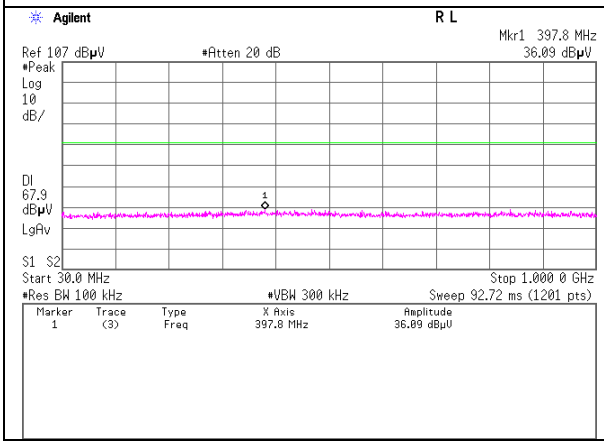
9kHz-150kHz



150kHz-30MHz

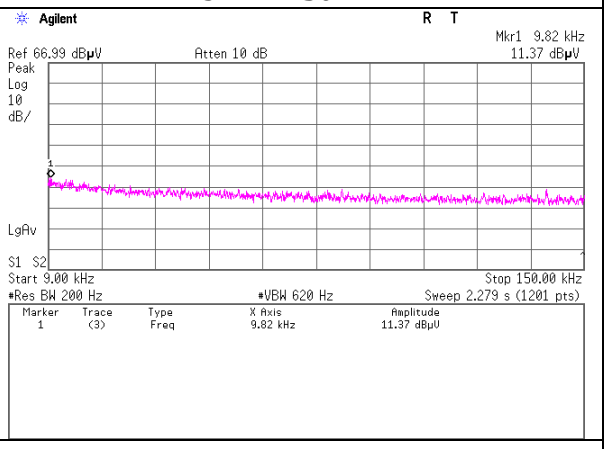


30MHz-1GHz

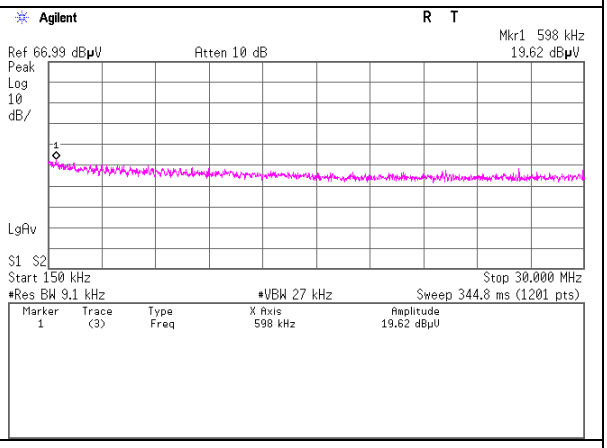


Antenna 1

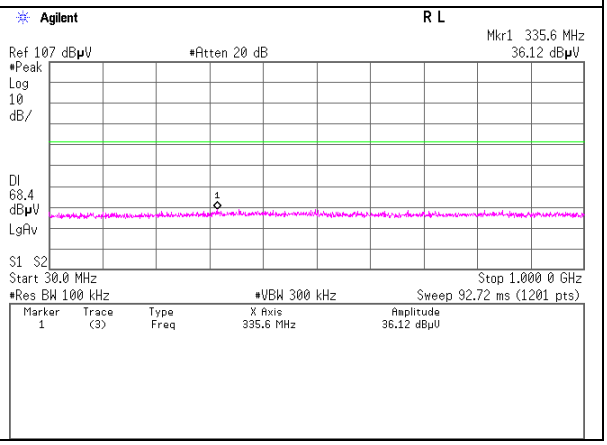
9kHz-150kHz



150kHz-30MHz



30MHz-1GHz

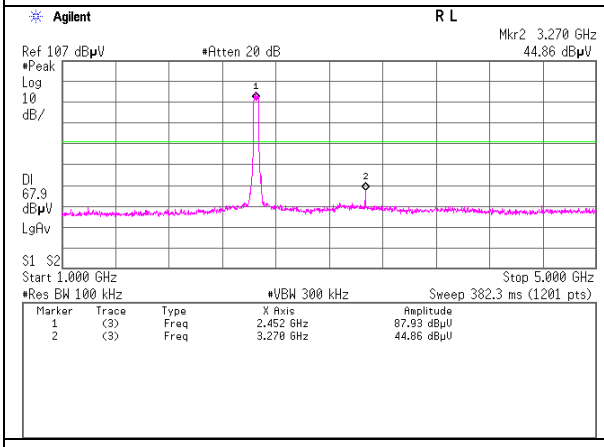


Conducted Spurious Emission

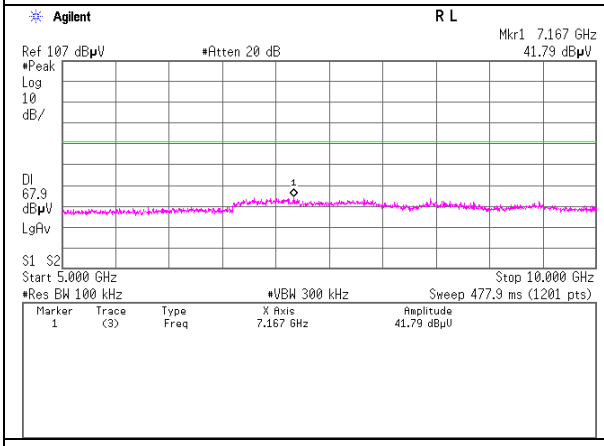
11n-40 Tx 2452MHz, MCS8

Antenna 0

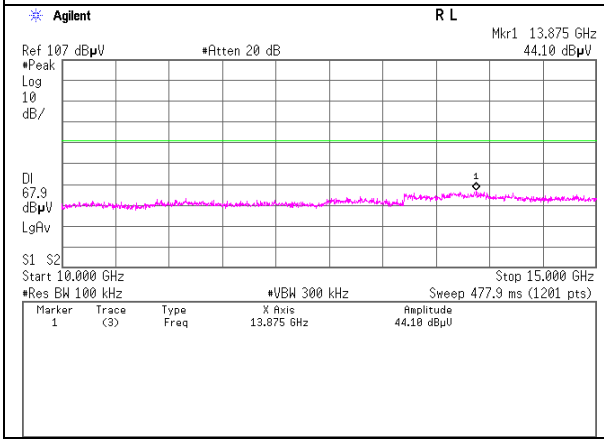
1GHz-5GHz



5GHz-10GHz

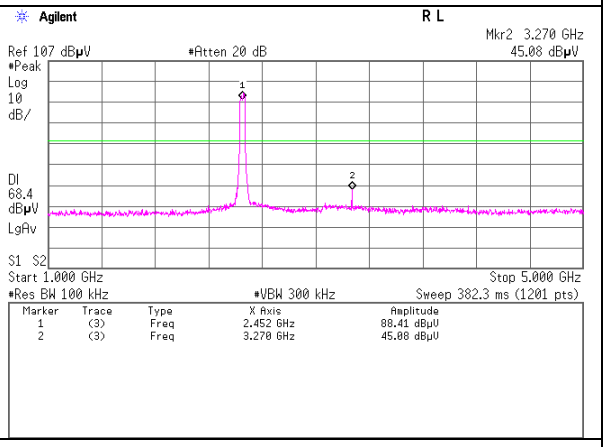


10GHz-15GHz

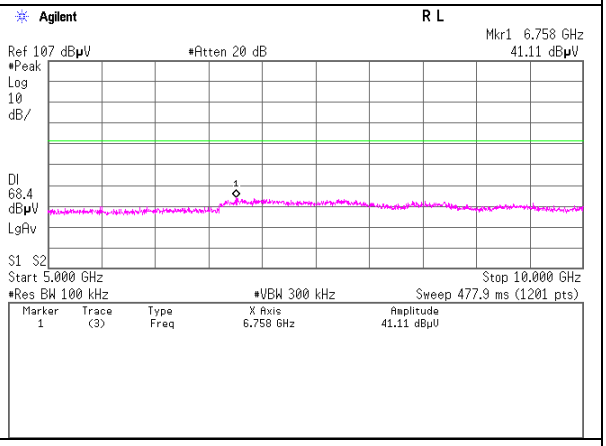


Antenna 1

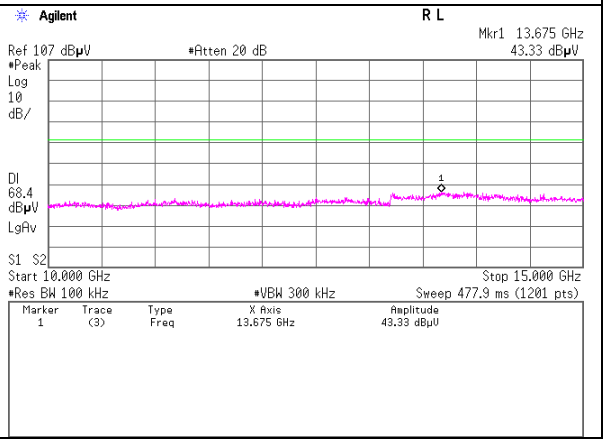
1GHz-5GHz



5GHz-10GHz



10GHz-15GHz

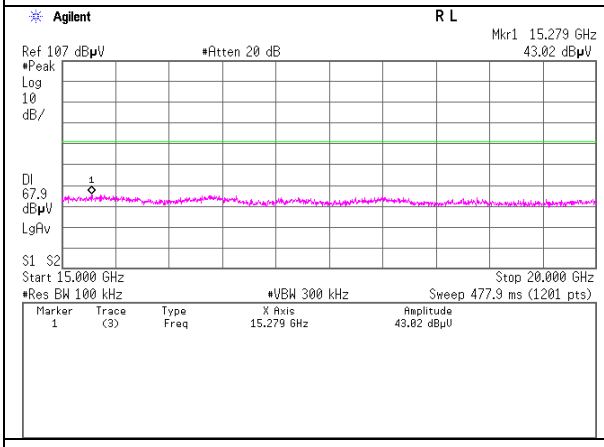


Conducted Spurious Emission

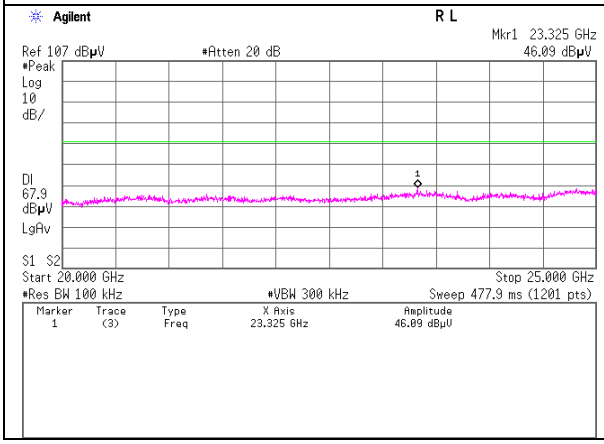
11n-40 Tx 2452MHz, MCS8

Antenna 0

15GHz-20GHz

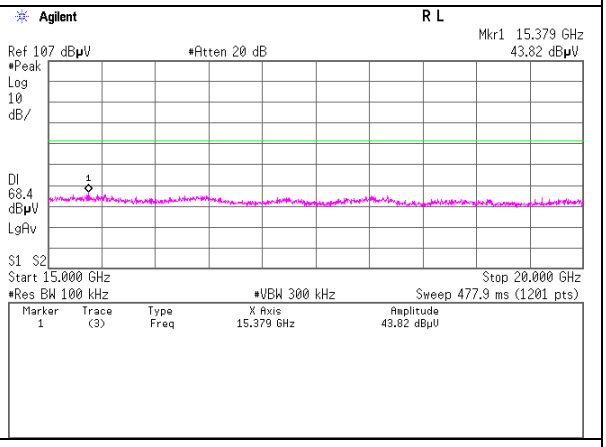


20GHz-25GHz

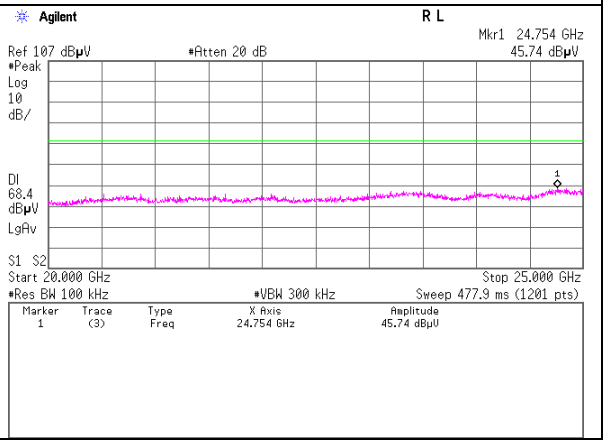


Antenna 1

15GHz-20GHz



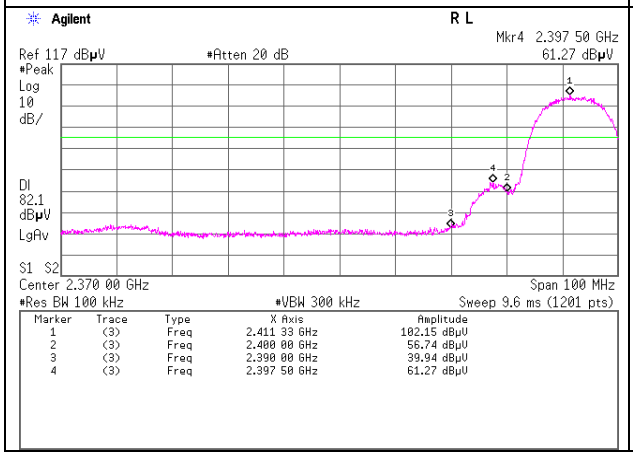
20GHz-25GHz



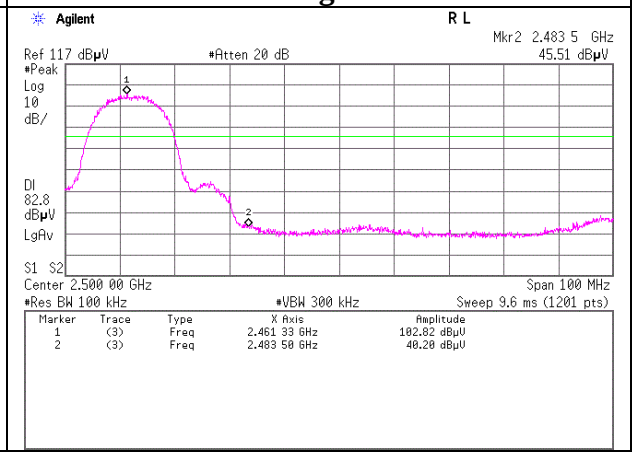
Conducted Emission Band Edge compliance

11b Tx, Antenna 0, 11Mbps(Long)

Low

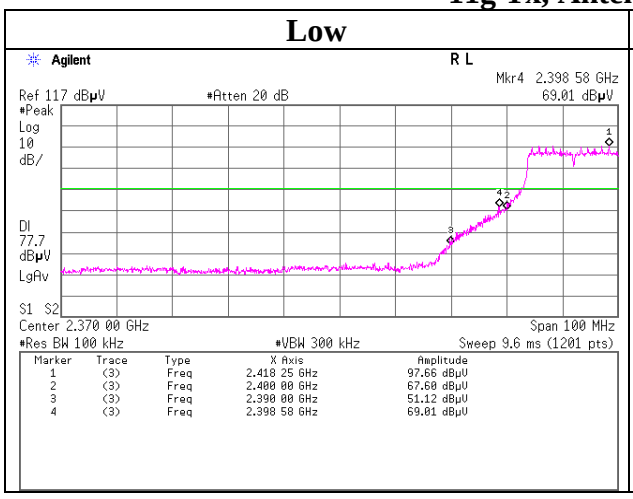


High

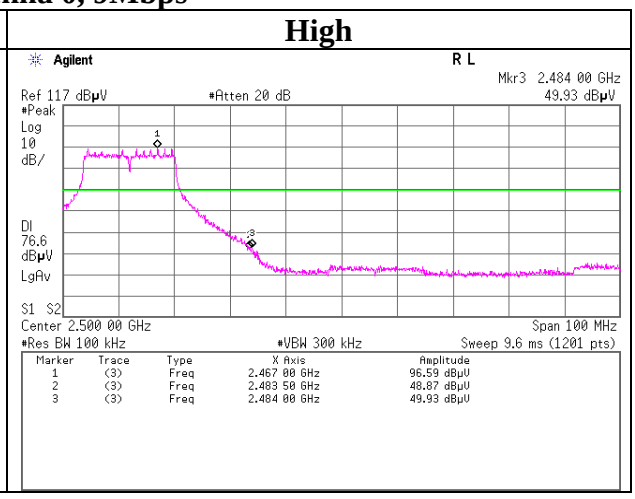


11g Tx, Antenna 0, 9Mbps

Low



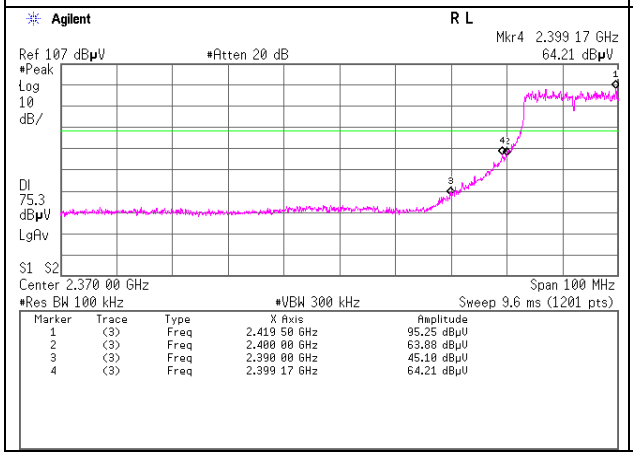
High



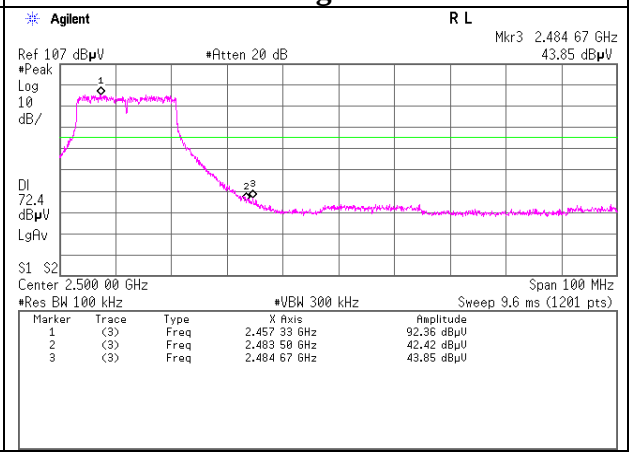
Conducted Emission Band Edge compliance

11n-20 Tx, Antenna 0, MCS13

Low

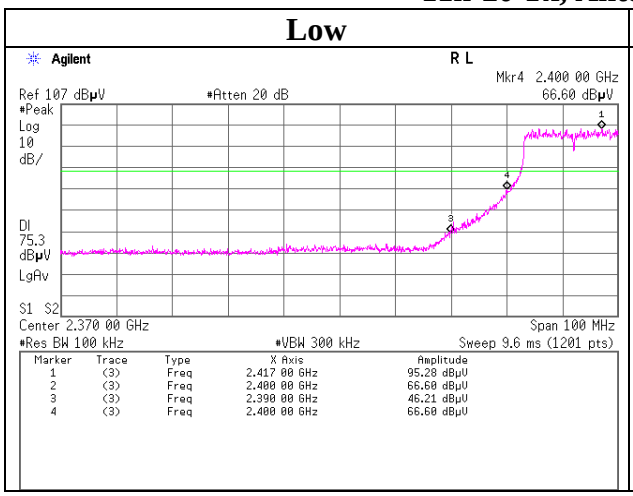


High

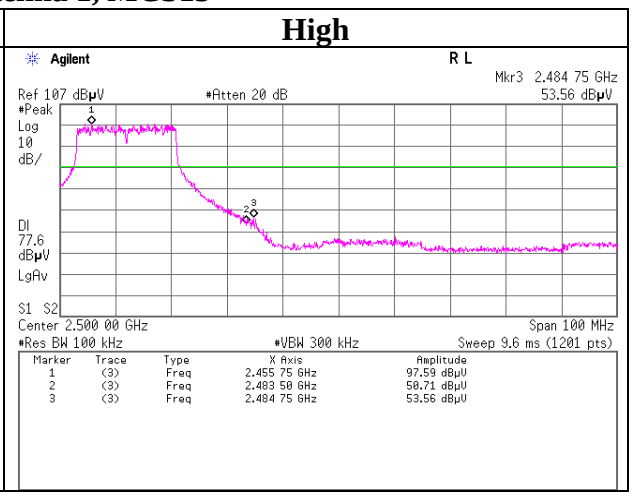


11n-20 Tx, Antenna 1, MCS13

Low



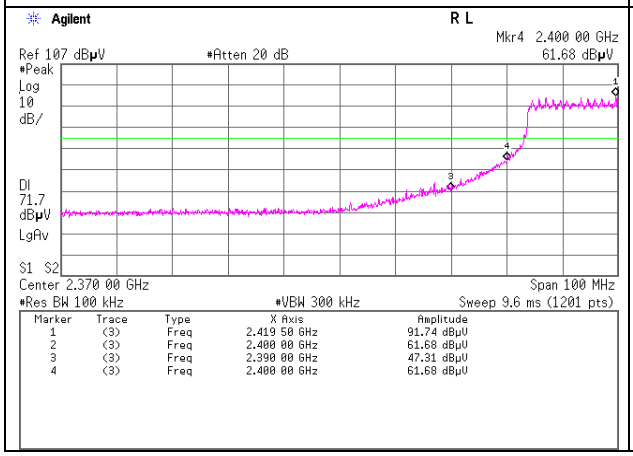
High



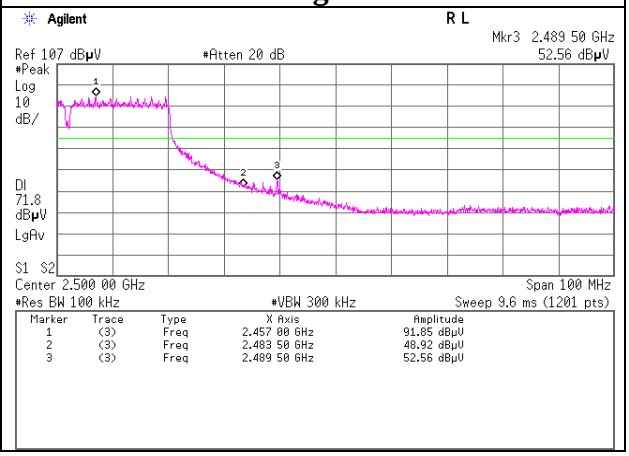
Conducted Emission Band Edge compliance

11n-40 Tx, Antenna 0, MCS8

Low

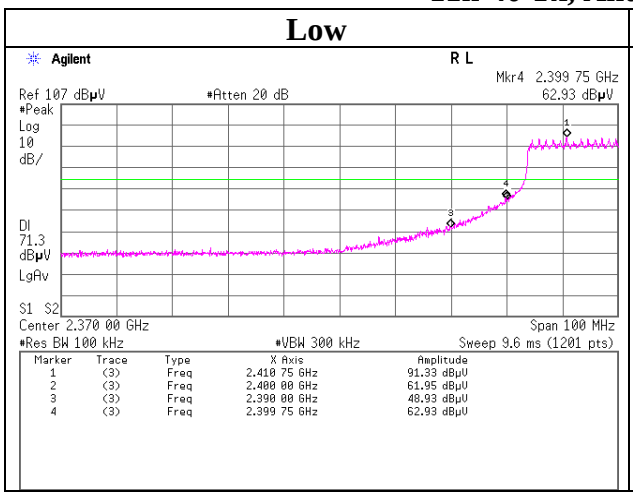


High

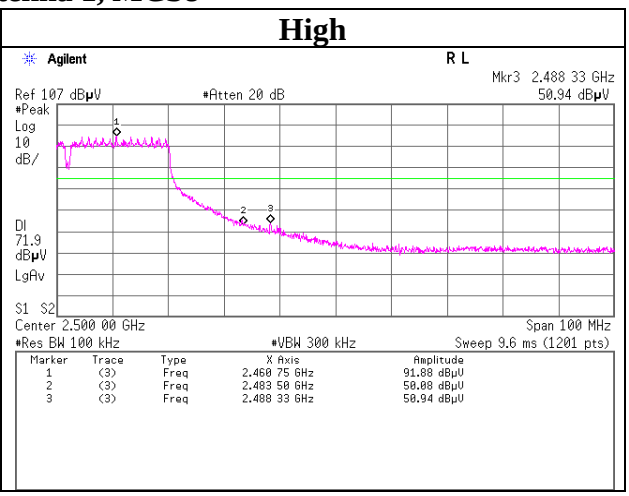


11n-40 Tx, Antenna 1, MCS8

Low



High



Power Density

Test place	Head Office EMC Lab. No.7 Shielded Room
Report No.	31HE0169-HO-02
Date	05/20/2011
Temperature/ Humidity	24 deg.C/ 40% RH
Engineer	Takumi Shimada
Mode	11b Tx, 11g Tx

11b Antenna 0

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.00	-10.07	0.79	10.07	0.79	8.00	7.21
2437.00	-8.70	0.80	10.07	2.17	8.00	5.83
2462.00	-9.56	0.80	10.07	1.31	8.00	6.69

11g Antenna 0

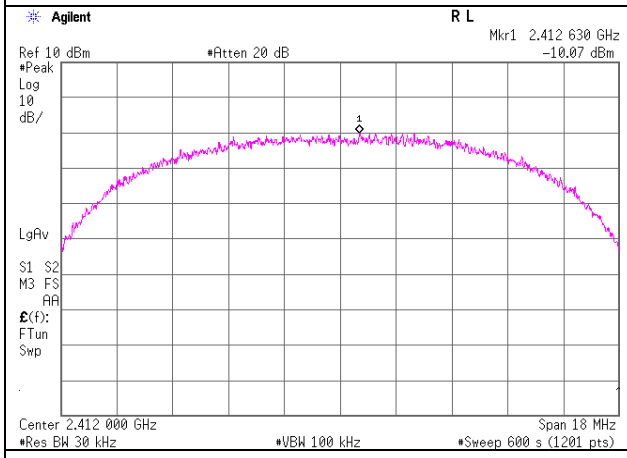
Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.00	-13.52	0.79	10.07	-2.66	8.00	10.66
2437.00	-11.41	0.80	10.07	-0.54	8.00	8.54
2462.00	-14.50	0.80	10.07	-3.63	8.00	11.63

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

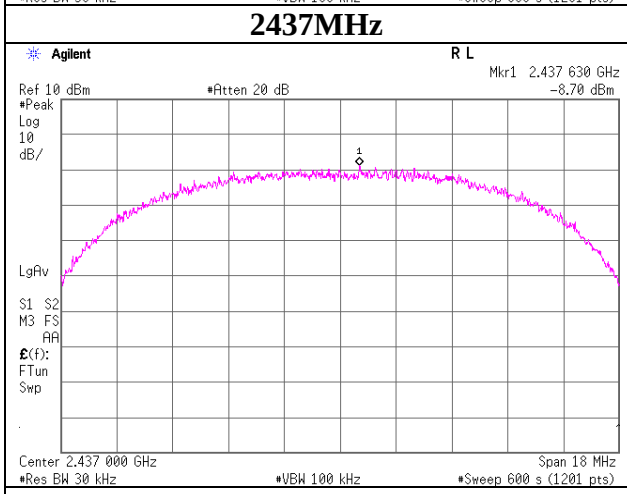
Power Density

11b, Antenna 0, 11Mbps(Long)

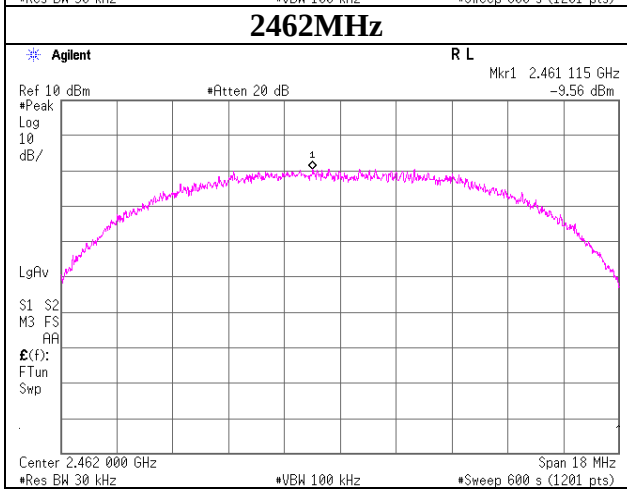
2412MHz



2437MHz

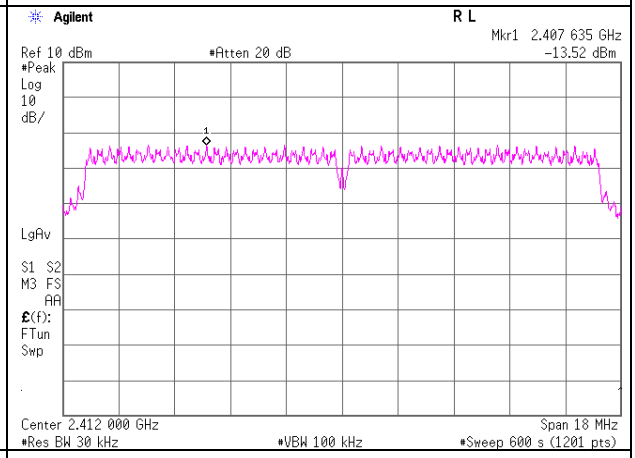


2462MHz

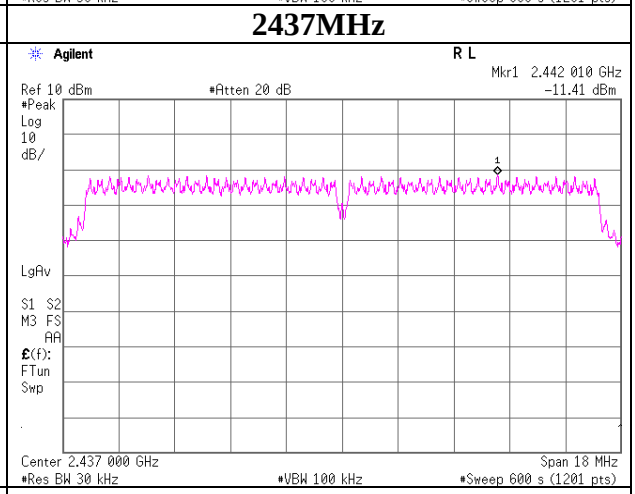


11g, Antenna 0, 9Mbps

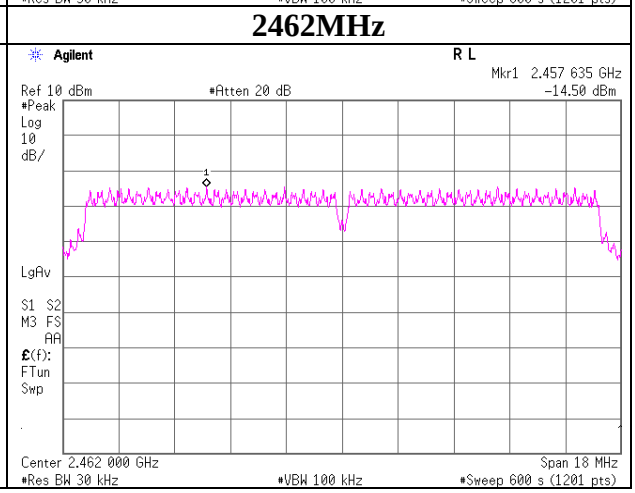
2412MHz



2437MHz



2462MHz



Power Density

Test place	Head Office EMC Lab. No.7 Shielded Room
Report No.	31HE0169-HO-02
Date	05/20/2011
Temperature/ Humidity	24 deg.C/ 40% RH
Engineer	Takumi Shimada
Mode	11n-20 Tx

Antenna 0 + 1

Freq.	Antenna 0 Result	Antenna 1 Result	Result		Limit	Margin
[MHz]	[mW]	[mW]	[dBm]	[mW]	[dBm]	[dB]
2412.00	0.25	0.30	-2.55	0.56	8.00	10.55
2437.00	0.55	0.62	0.67	1.17	8.00	7.33
2462.00	0.21	0.52	-1.41	0.72	8.00	9.41

Sample Calculation:
Result = Antenna 0 + 1

Antenna 0

Freq.	Reading	Cable Loss	Atten.	Result		Limit	Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
2412.00	-16.81	0.79	10.07	-5.95	0.25	8.00	13.95
2437.00	-13.46	0.80	10.07	-2.59	0.55	8.00	10.59
2462.00	-17.72	0.80	10.07	-6.85	0.21	8.00	14.85

Antenna 1

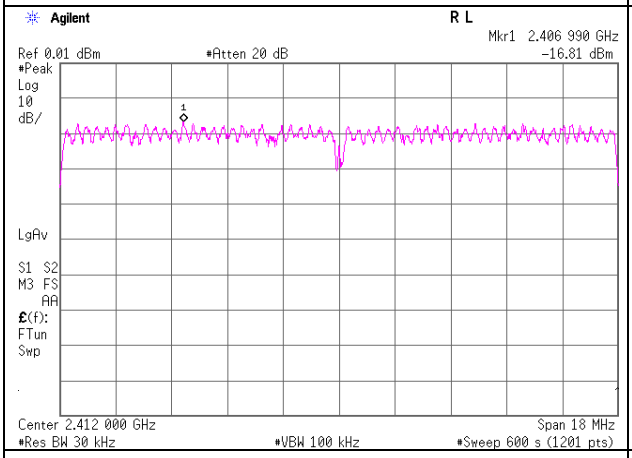
Freq.	Reading	Cable Loss	Atten.	Result		Limit	Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
2412.00	-16.06	0.79	10.07	-5.20	0.30	8.00	13.20
2437.00	-12.98	0.80	10.07	-2.11	0.62	8.00	10.11
2462.00	-13.74	0.80	10.07	-2.87	0.52	8.00	10.87

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

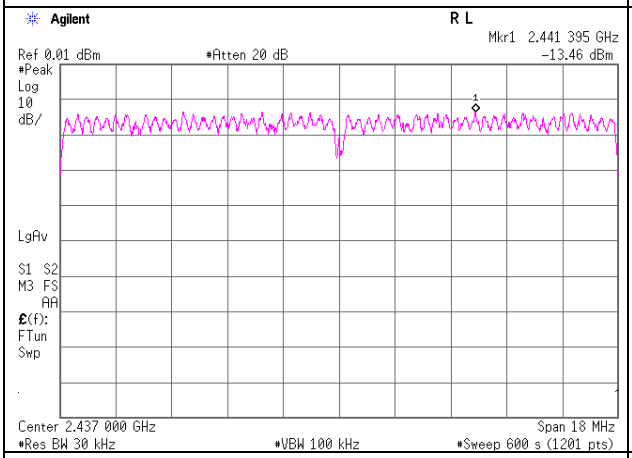
Power Density

11n-20 Antenna 0, MCS13

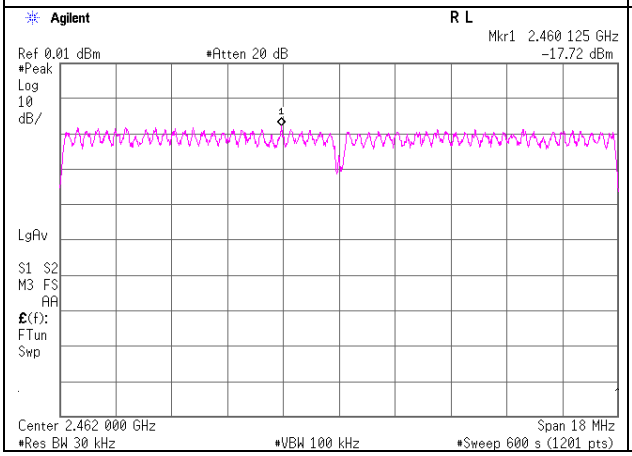
2412MHz



2437MHz

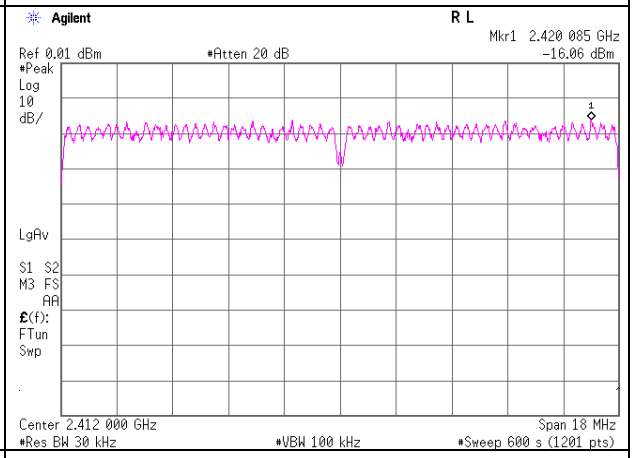


2462MHz

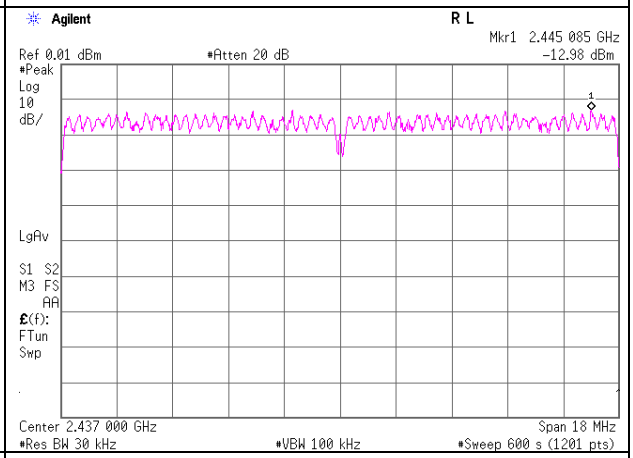


11n-20 Antenna 1, MCS13

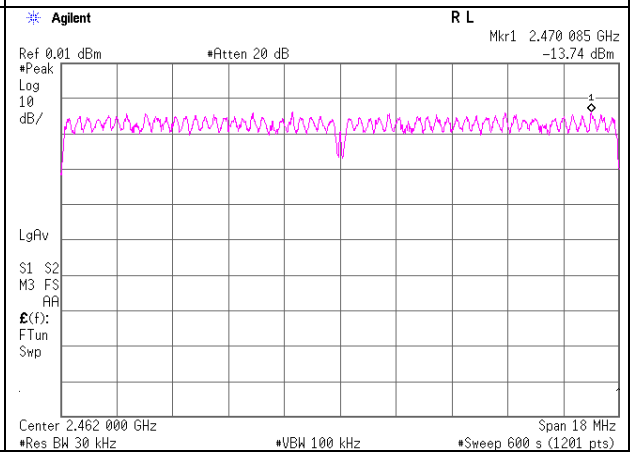
2412MHz



2437MHz



2462MHz



Power Density

Test place	Head Office EMC Lab. No.7 Shielded Room
Report No.	31HE0169-HO-02
Date	05/20/2011
Temperature/ Humidity	24 deg.C/ 40% RH
Engineer	Takayuki Shimada
Mode	11n-40 Tx

Antenna 0 + 1

Freq.	Antenna 0 Result	Antenna 1 Result	Result		Limit	Margin
[MHz]	[mW]	[mW]	[dBm]	[mW]	[dBm]	[dB]
2422.00	0.16	0.15	-5.06	0.31	8.00	13.06
2437.00	0.41	0.47	-0.57	0.88	8.00	8.57
2452.00	0.17	0.17	-4.68	0.34	8.00	12.68

Sample Calculation:
Result = Antenna 0 + 1

Antenna 0

Freq.	Reading	Cable Loss	Atten.	Result		Limit	Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
2422.00	-18.91	0.80	10.07	-8.04	0.16	8.00	16.04
2437.00	-14.77	0.80	10.07	-3.90	0.41	8.00	11.90
2452.00	-18.46	0.80	10.07	-7.59	0.17	8.00	15.59

Antenna 1

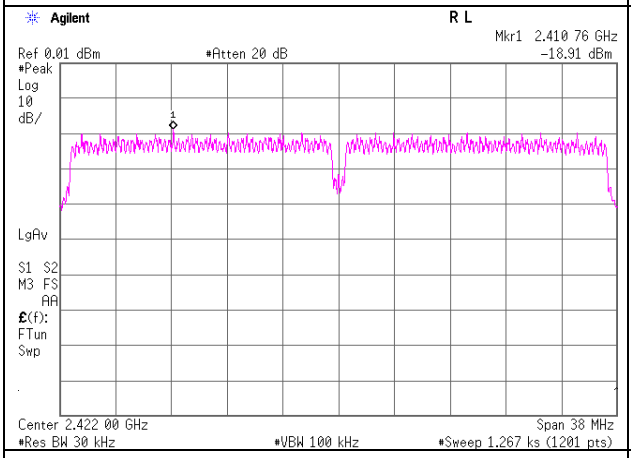
Freq.	Reading	Cable Loss	Atten.	Result		Limit	Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
2422.00	-18.97	0.80	10.07	-8.10	0.15	8.00	16.10
2437.00	-14.15	0.80	10.07	-3.28	0.47	8.00	11.28
2452.00	-18.66	0.80	10.07	-7.79	0.17	8.00	15.79

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

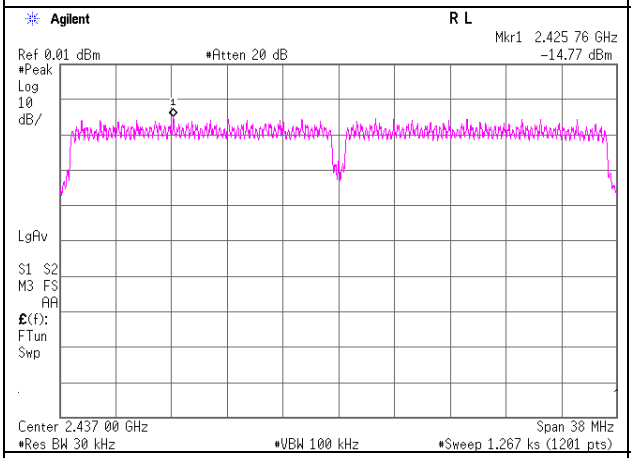
Power Density

11n-40 Antenna 0, MCS8

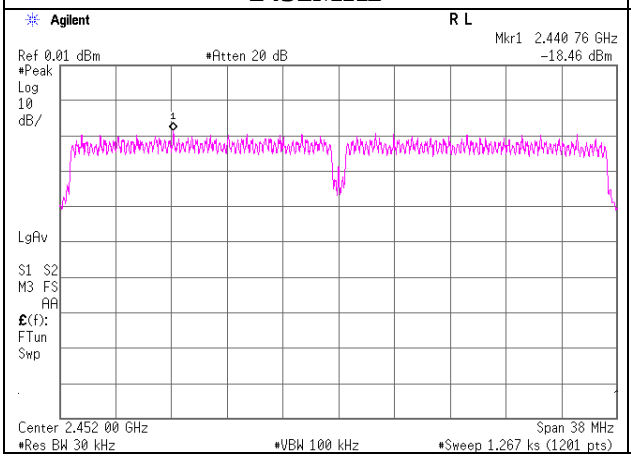
2422MHz



2437MHz

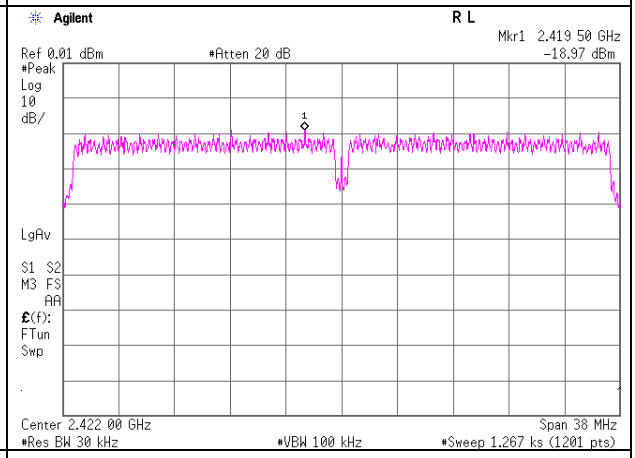


2452MHz

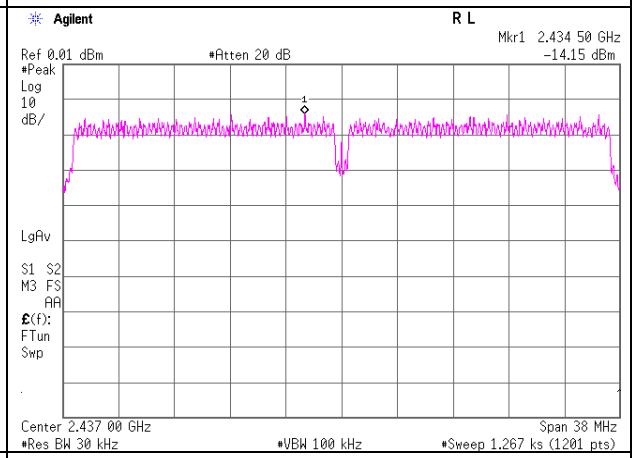


11n-40 Antenna 1, MCS8

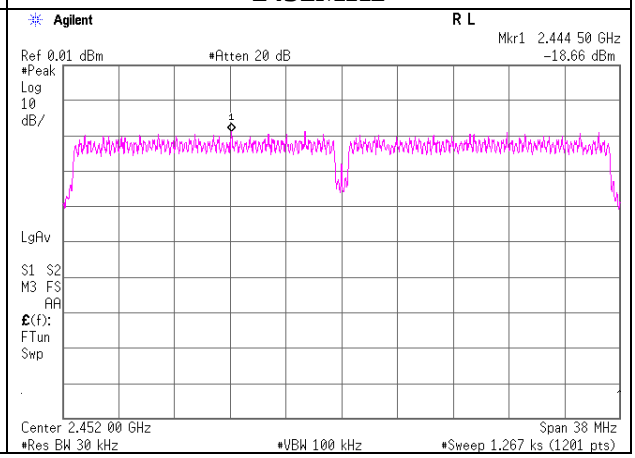
2422MHz



2437MHz



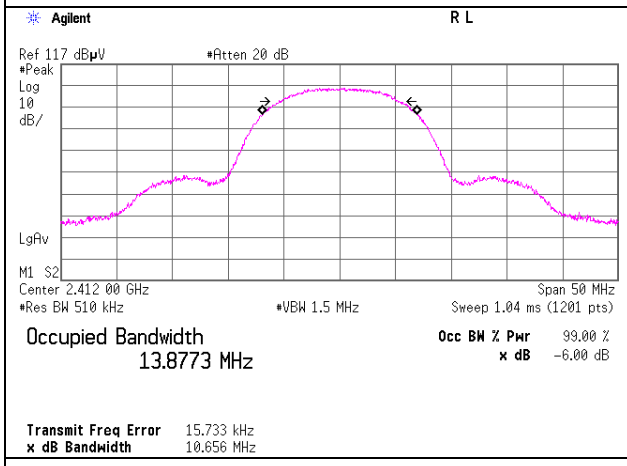
2452MHz



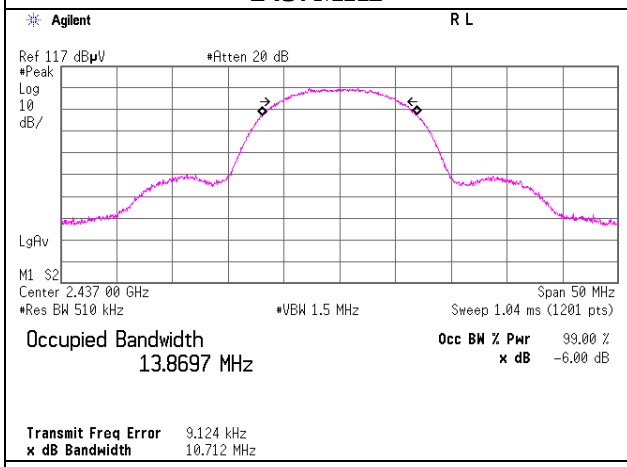
99%Occupied Bandwidth

11b, Antenna 0, 11Mbps(Long)

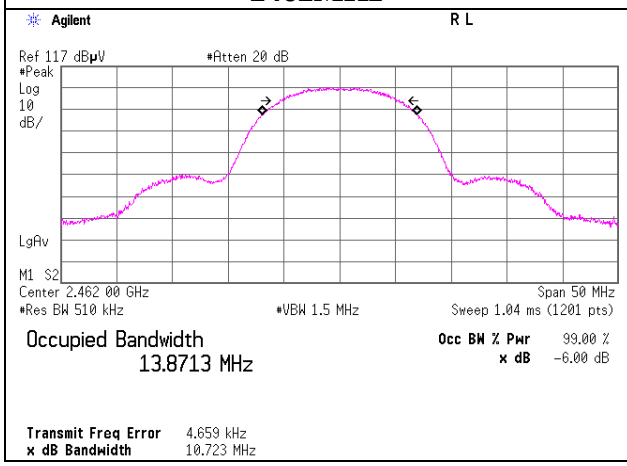
2412MHz



2437MHz

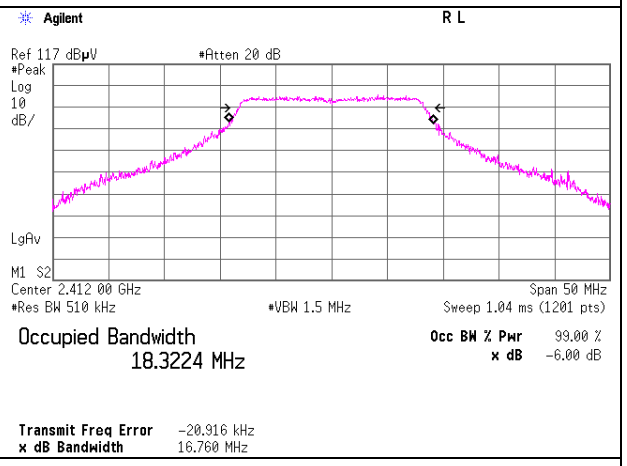


2462MHz

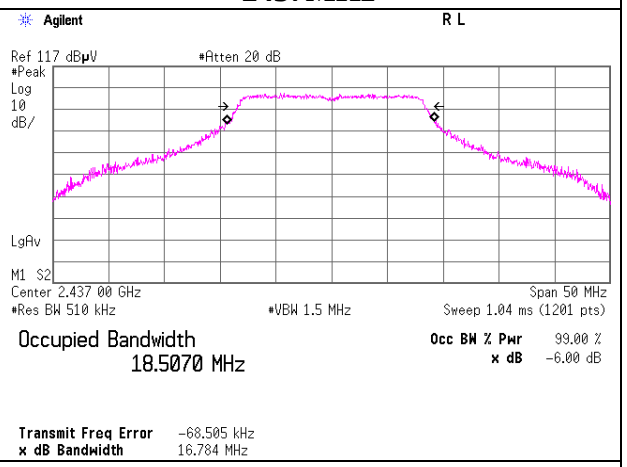


11g, Antenna 0, 9Mbps

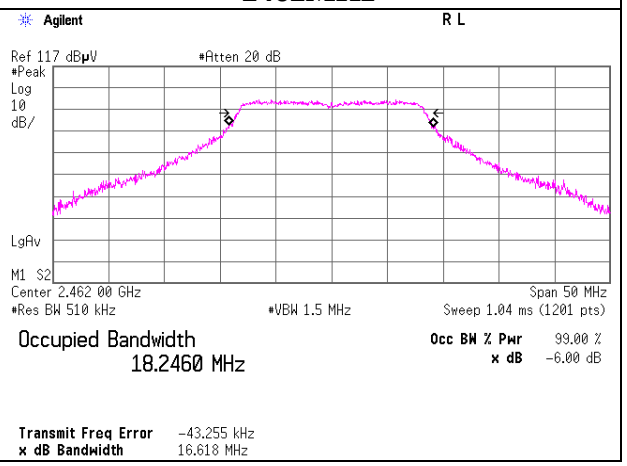
2412MHz



2437MHz



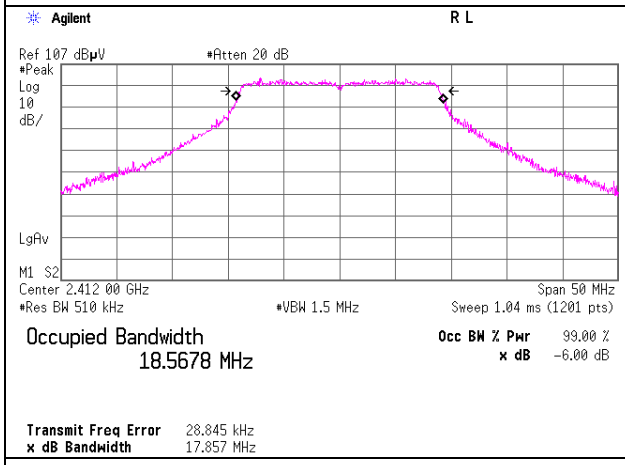
2462MHz



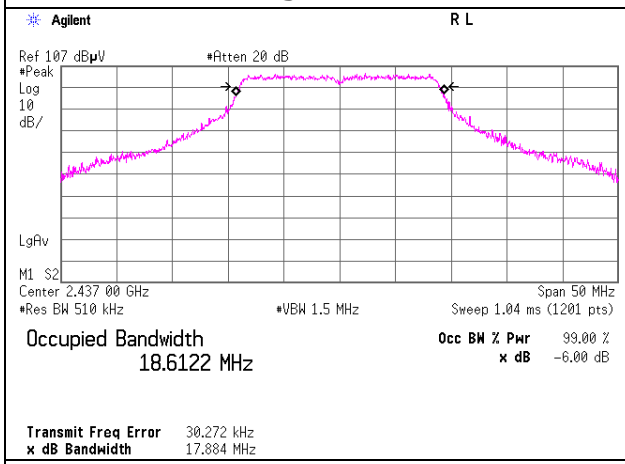
99% Occupied Bandwidth

11n-20 Antenna 0, MCS13

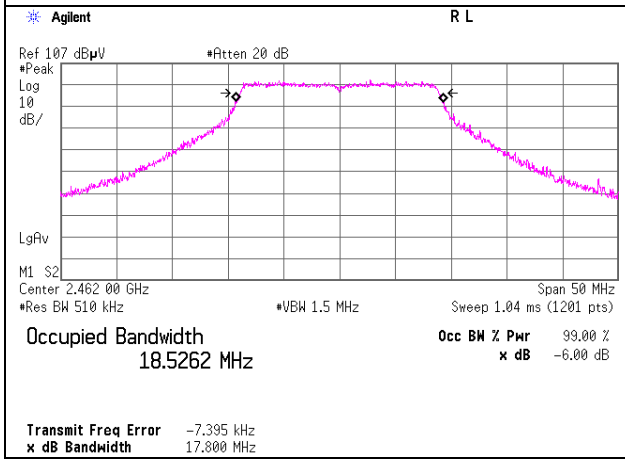
2412MHz



2437MHz

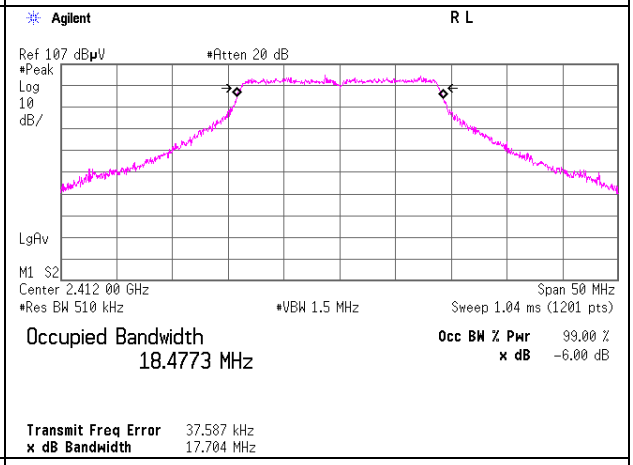


2462MHz

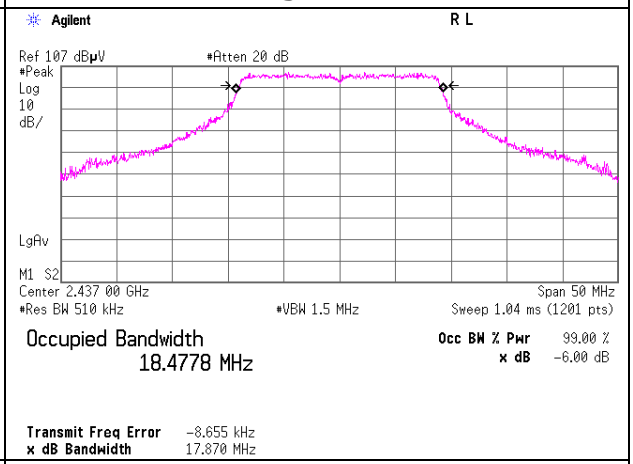


11n-20 Antenna 1, MCS13

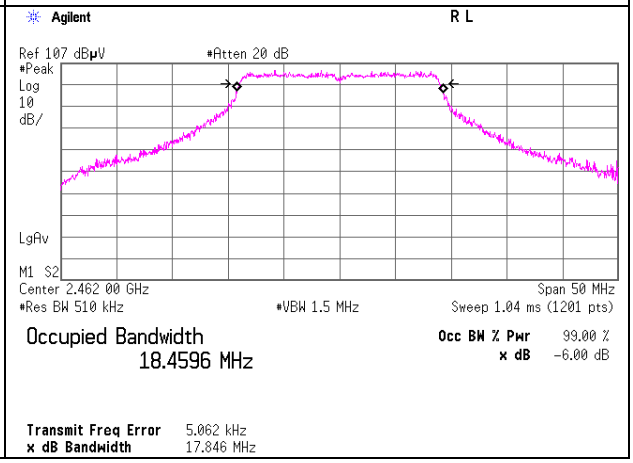
2412MHz



2437MHz



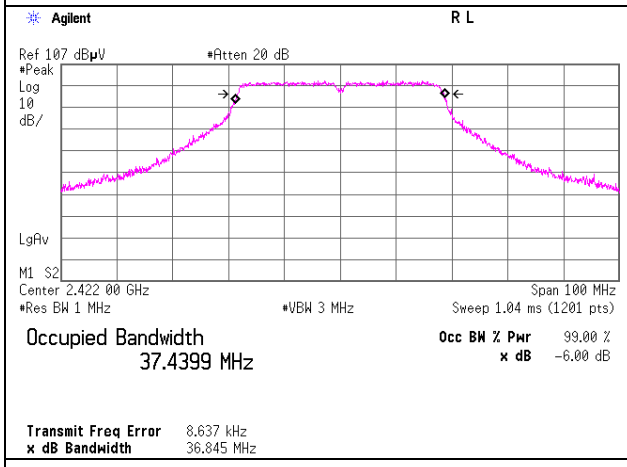
2462MHz



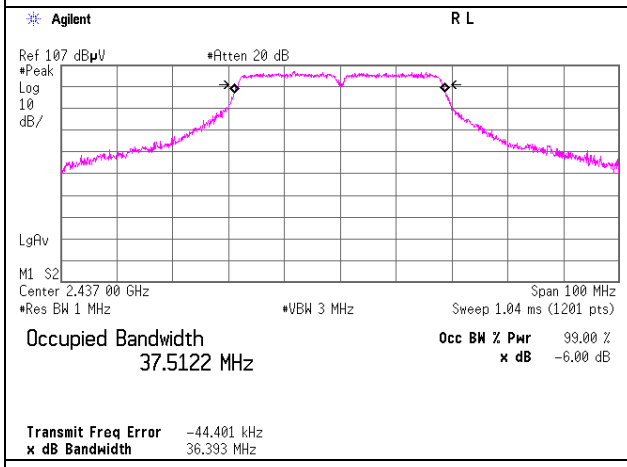
99% Occupied Bandwidth

11n-40 Antenna 0, MCS8

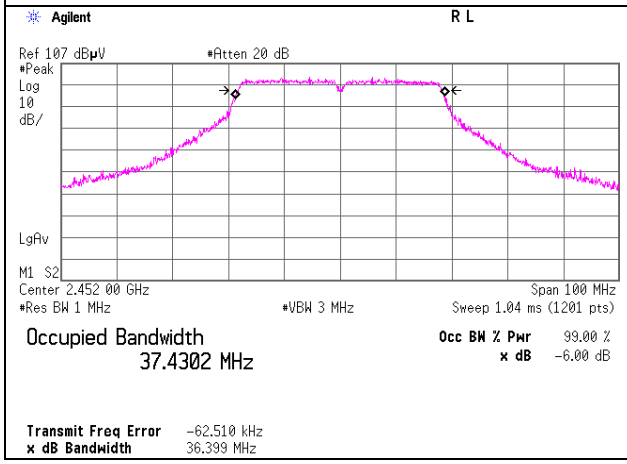
2422MHz



2437MHz

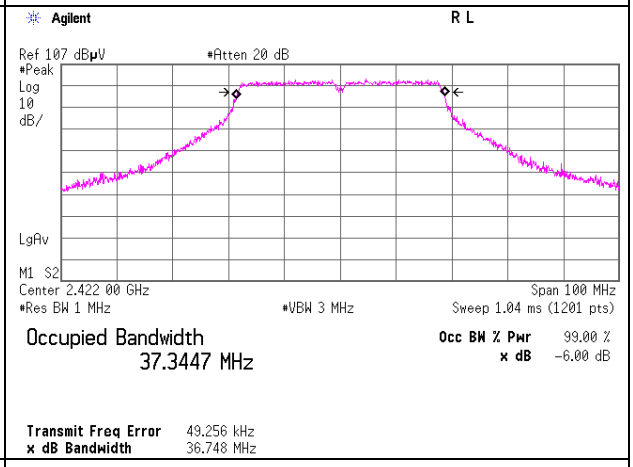


2452MHz

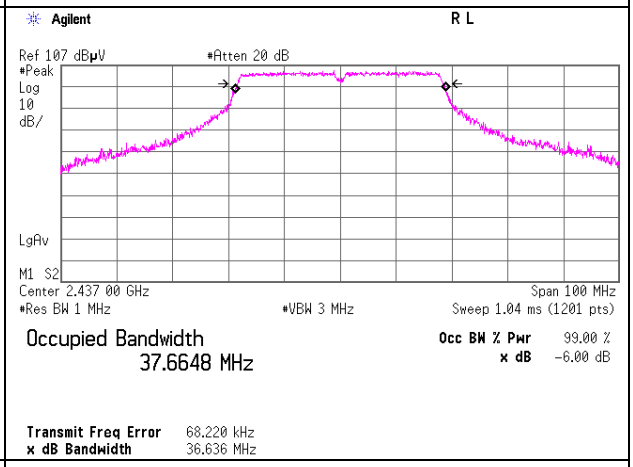


11n-40 Antenna 1, MCS8

2422MHz



2437MHz



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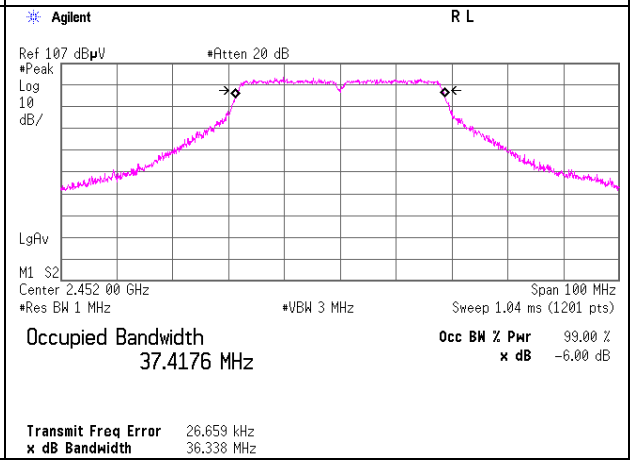

APPENDIX 3: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-04	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE/CE	2011/03/01 * 12
MOS-15	Thermo-Hygrometer	Custom	CTH-180	-	RE/CE	2011/02/23 * 12
MJM-07	Measure	PROMART	SEN1955	-	RE/CE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE/CE	-
MSA-10	Spectrum Analyzer	Agilent	E4448A	MY46180655	RE/AT	2011/02/15 * 12
MSA-05	Spectrum Analyzer	Advantest	R3273	160400285	CE	2010/11/18 * 12
MTR-07	Test Receiver	Rohde & Schwarz	ESCI	100635	RE/CE	2010/10/27 * 12
MBA-05	Biconical Antenna	Schwarzbeck	BBA9106	1302	RE	2010/10/11 * 12
MLA-08	Logperiodic Antenna	Schwarzbeck	UKLP9140-A	N/A	RE	2010/10/11 * 12
MCC-50	Coaxial Cable	UL Japan	-	-	RE	2011/03/25 * 12
MAT-51	Attenuator(6dB)	Weinschel	2	AS3557	RE	2011/01/14 * 12
MPA-14	Pre Amplifier	SONOMA INSTRUMENT	310	260833	RE	2011/03/04 * 12
MHA-21	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	9120D-557	RE	2010/08/08 * 12
MCC-56	Microwave Cable	Suhner	SUCOFLEX104	270875/4(1m) / 284655(5m)	RE	2011/03/02 * 12
MPA-12	MicroWave System Amplifier	Agilent	83017A	MY39500780	RE	2011/03/10 * 12
MHF-20	High Pass Filter 3.5-18.0GHz	TOKIMEC	TF323DCC	607	RE	2010/09/21 * 12
MCC-79	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	278923/4	RE	2010/12/02 * 12
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	8127363	CE(AE)	2011/02/20 * 12
MLS-07	LISN(AMN)	Schwarzbeck	NSLK8127	8127364	CE(EUT)	2011/02/22 * 12
MTA-31	Terminator	TME	CT-01	-	CE	2011/01/05 * 12
MAT-67	Attenuator(13dB)	JFW Industries, Inc.	50FP-013H2 N	-	CE	2011/02/22 * 12
MCC-113	Coaxial cable	Fujikura/Suhner/TSJ	5D-2W(10m)/SFM141(5m)/421-010(1m)/sucoform141-PE(1m)/RFM-E121(Switcher)	-/04178	CE	2010/07/21 * 12
MPM-13	Power Meter	Anritsu	ML2495A	0824014	AT	2010/11/01 * 12
MPSE-18	Power sensor	Anritsu	MA2411B	0738174	AT	2010/11/01 * 12
MAT-20	Attenuator(10dB)(above1 GHz)	HIROSE ELECTRIC CO.,LTD.	AT-110	-	AT	2011/01/06 * 12
MTA-09	Terminator	HP	HP 909D	03745	AT	2011/02/01 * 12
MCC-37	Microwave Cable	Hirose Electric	U.FL-2LP-066-A-(200)	-	AT	2010/09/29 * 12
MOS-19	Thermo-Hygrometer	Custom	CTH-201	0001	AT	2010/12/13 * 12
MSA-03	Spectrum Analyzer	Agilent	E4448A	MY44020357	AT	2010/11/30 * 12
MOS-04	Digital Humidity Indicator	N.T	NT-1800	MOS04	AT	2011/02/23 * 12

The expiration date of the calibration is the end of the expired month.
All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.

Test Item: CE: Conducted Emission
RE: Radiated Emission
AT: Antenna Terminal Conducted test