APPENDIX 2: Data of EMI test

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

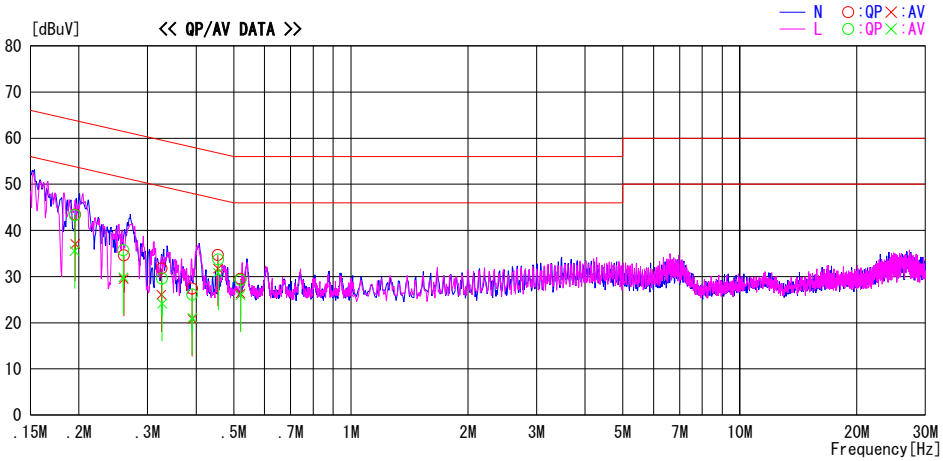
UL Japan, Inc. Head Office EMC Lab. No.4 Semi Anechoic Chamber
Date : 2010/03/13

Report No. : 30GE0203-HO-02

Temp./Humi. : 23deg.C / 36%
Engineer : Takumi Shimada

Mode / Remarks : Tx 11b 2412MHz 2Mbps

LIMIT : FCC15.207 QP
FCC15.207 AV



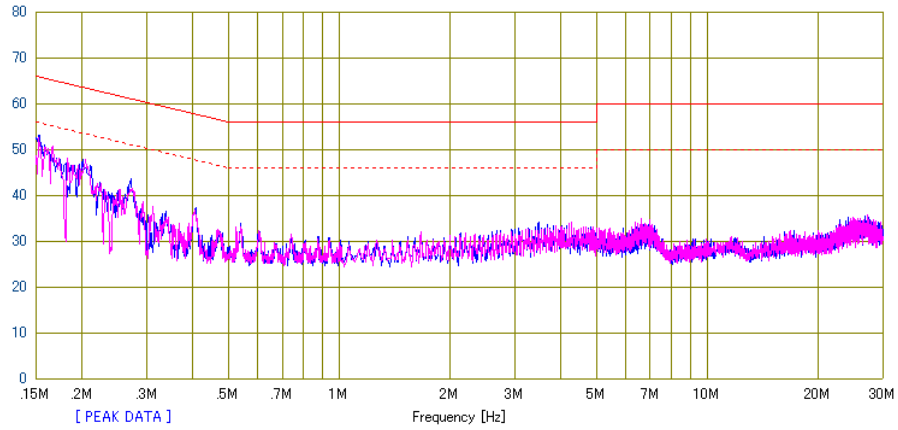
Frequency	Reading Level		Corr.	Results		Limit		Margin		Phase	Comment
	QP	AV	Factor	QP	AV	QP	AV	QP	AV		
[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
0.19556	30.1	23.8	13.3	43.4	37.1	63.8	53.8	20.4	16.7	N	
0.26075	21.3	16.2	13.3	34.6	29.5	61.4	51.4	26.8	21.9	N	
0.32603	18.5	12.8	13.3	31.8	26.1	59.6	49.6	27.8	23.5	N	
0.39086	14.1	7.5	13.3	27.4	20.8	58.0	48.0	30.6	27.2	N	
0.45522	21.4	18.4	13.3	34.7	31.7	56.8	46.8	22.1	15.1	N	
0.52040	16.2	13.0	13.3	29.5	26.3	56.0	46.0	26.5	19.7	N	
0.19496	30.0	22.2	13.3	43.3	35.5	63.8	53.8	20.5	18.3	L	
0.26006	22.4	16.6	13.3	35.7	29.9	61.4	51.4	25.7	21.5	L	
0.32702	16.3	10.8	13.3	29.6	24.1	59.5	49.5	29.9	25.4	L	
0.39112	12.8	7.8	13.3	26.1	21.1	58.0	48.0	31.9	26.9	L	
0.45556	20.4	17.5	13.3	33.7	30.8	56.8	46.8	23.1	16.0	L	
0.52038	16.0	12.7	13.3	29.3	26.0	56.0	46.0	26.7	20.0	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.

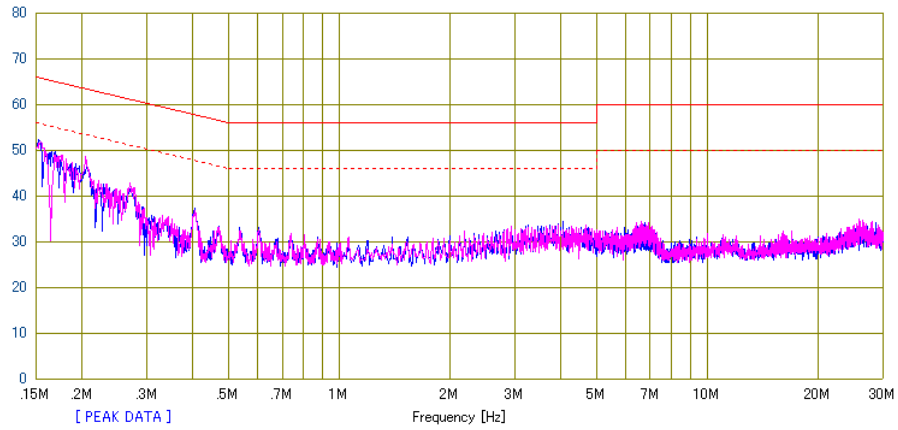
Conducted Emission

Test place	Head Office EMC Lab. No.4 Semi Anechoic Chamber
Report No.	30GE0203-HO-02
Date	03/13/2010
Temperature/ Humidity	23 deg.C./ 36%
Engineer	Takumi Shimada
Mode	11b Tx

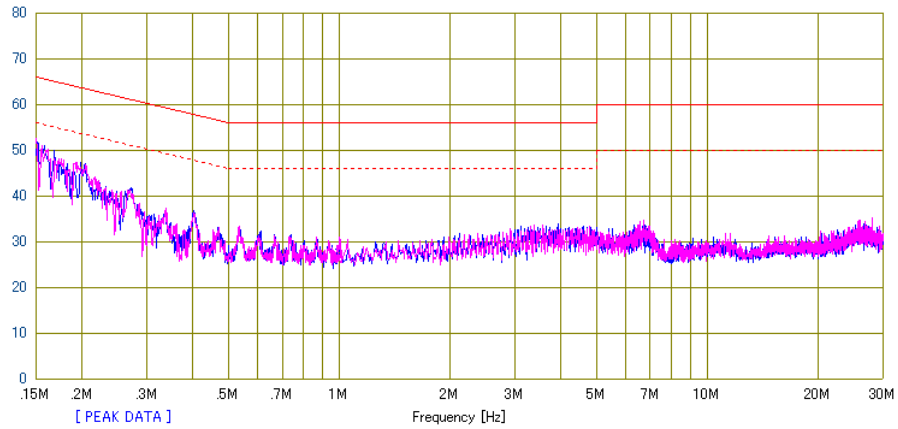
2412MHz



2437MHz



2462MHz



Y scale [dBuV] Chart — N — L

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Conducted Emission

DATA OF CONDUCTED EMISSION TEST

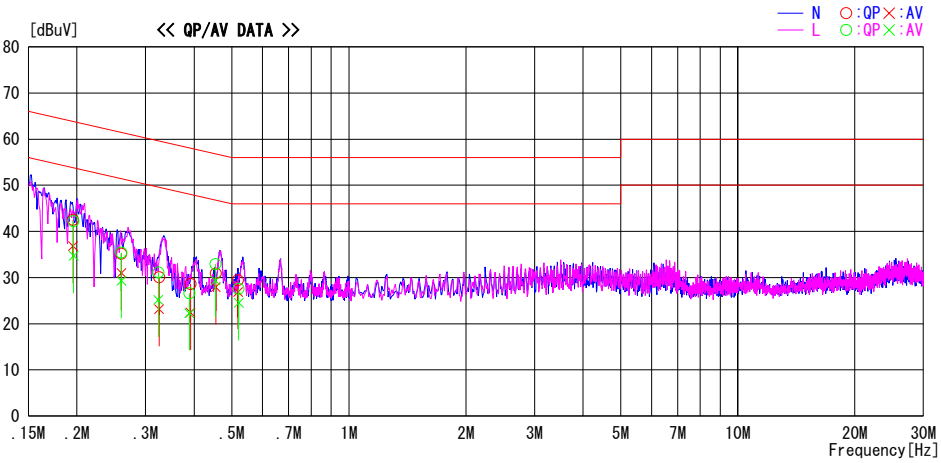
UL Japan, Inc. Head Office EMC Lab. No.4 Semi Anechoic Chamber
Date : 2010/03/13

Report No. : 30GE0203-HO-02

Temp./Humi. : 23deg.C / 36%
Engineer : Takumi Shimada

Mode / Remarks : Tx 11g 2437MHz 12Mbps

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]		
0.19536	29.2	23.5	13.3	42.5	36.8	63.8	53.8	21.3	17.0	N	
0.26005	21.9	17.7	13.3	35.2	31.0	61.4	51.4	26.2	20.4	N	
0.32524	16.8	9.9	13.3	30.1	23.2	59.6	49.6	29.5	26.4	N	
0.39153	15.3	9.1	13.3	28.6	22.4	58.0	48.0	29.4	25.6	N	
0.45499	17.6	14.6	13.3	30.9	27.9	56.8	46.8	25.9	18.9	N	
0.51884	16.1	13.6	13.3	29.4	26.9	56.0	46.0	26.6	19.1	N	
0.19597	28.9	21.4	13.3	42.2	34.7	63.8	53.8	21.6	19.1	L	
0.25999	22.1	16.0	13.3	35.4	29.3	61.4	51.4	26.0	22.1	L	
0.32375	17.8	11.9	13.3	31.1	25.2	59.6	49.6	28.5	24.4	L	
0.38871	13.3	9.0	13.3	26.6	22.3	58.1	48.1	31.5	25.8	L	
0.45387	19.6	16.1	13.3	32.9	29.4	56.8	46.8	23.9	17.4	L	
0.52106	14.3	11.2	13.3	27.6	24.5	56.0	46.0	28.4	21.5	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.

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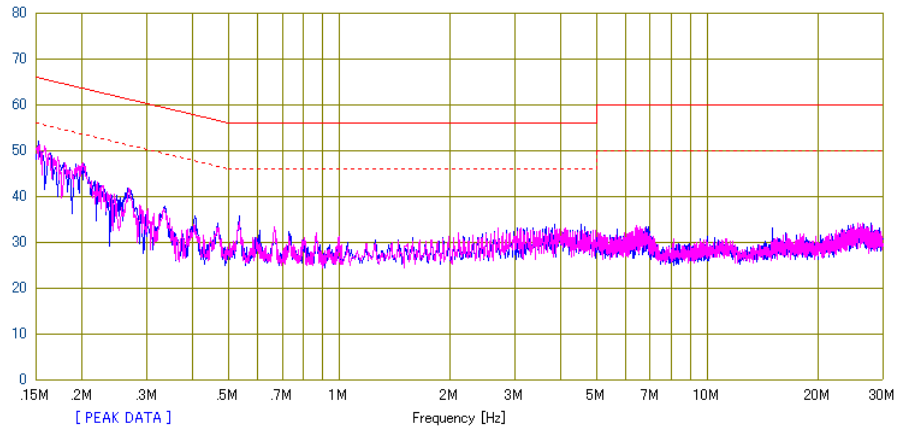
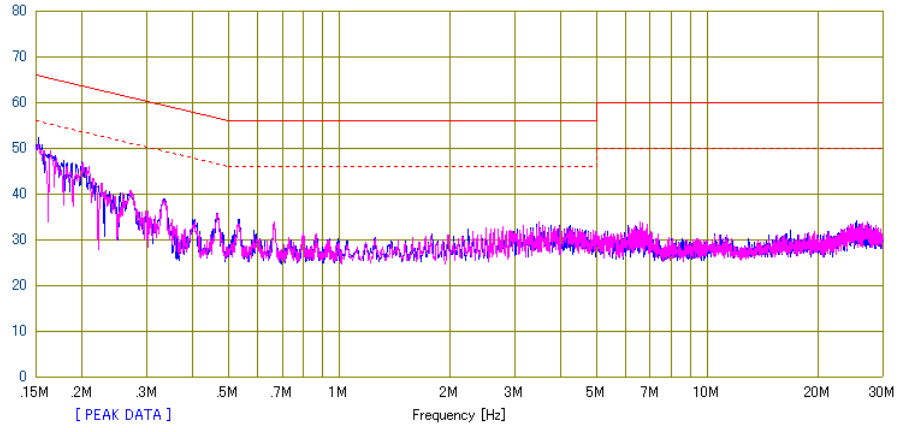
Conducted Emission

Test place	Head Office EMC Lab. No.4 Semi Anechoic Chamber
Report No.	30GE0203-HO-02
Date	03/13/2010
Temperature/ Humidity	23 deg.C./ 36%
Engineer	Takumi Shimada
Mode	11g Tx

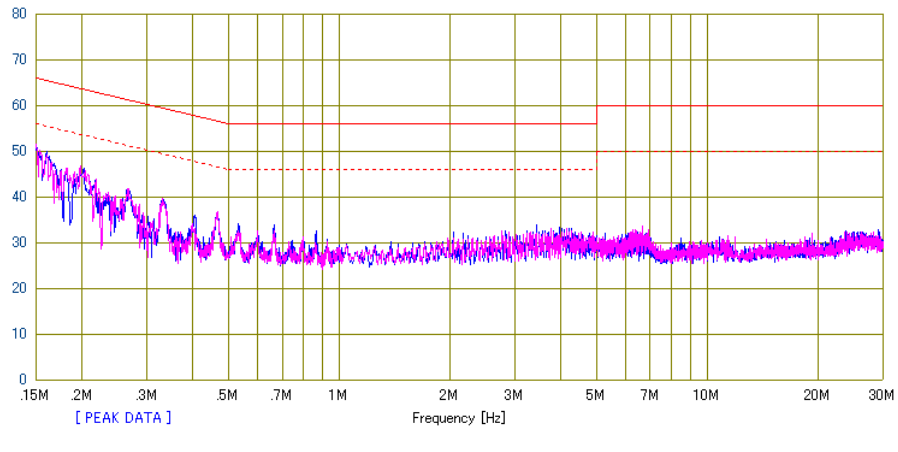
2412MHz



2437MHz



2462MHz



Conducted Emission

DATA OF CONDUCTED EMISSION TEST

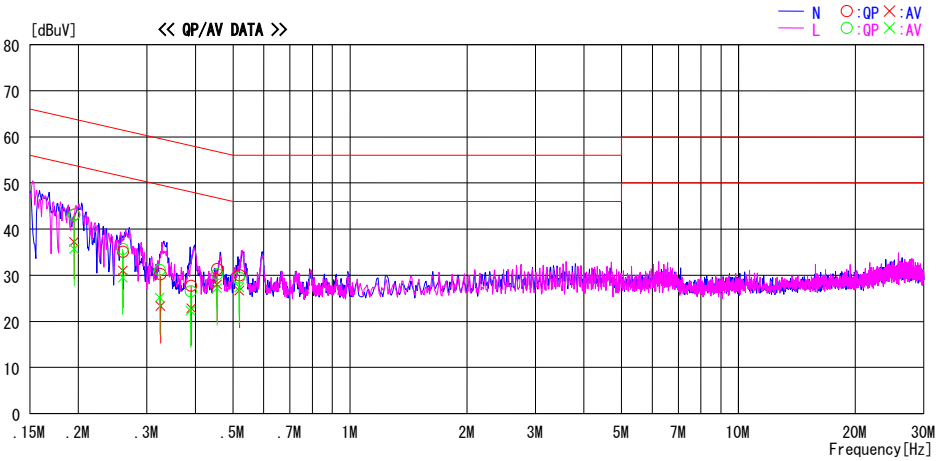
UL Japan, Inc. Head Office EMC Lab. No.4 Semi Anechoic Chamber
Date : 2010/03/13

Report No. : 30GE0203-HO-02

Temp./Humi. : 23deg.C / 36%
Engineer : Takumi Shimada

Mode / Remarks : Tx 11n-20 2462MHz 26Mbps

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]		
0.19480	29.9	23.9	13.3	43.2	37.2	63.8	53.8	20.6	16.6	N	
0.26027	21.8	17.7	13.3	35.1	31.0	61.4	51.4	26.3	20.4	N	
0.32509	16.9	10.0	13.3	30.2	23.3	59.6	49.6	29.4	26.3	N	
0.39006	14.4	9.5	13.3	27.7	22.8	58.1	48.1	30.4	25.3	N	
0.45498	18.1	14.7	13.3	31.4	28.0	56.8	46.8	25.4	18.8	N	
0.51914	16.7	13.3	13.3	30.0	26.6	56.0	46.0	26.0	19.4	N	
0.19492	29.8	22.4	13.3	43.1	35.7	63.8	53.8	20.7	18.1	L	
0.25989	22.4	16.2	13.3	35.7	29.5	61.4	51.4	25.7	21.9	L	
0.32364	17.8	11.9	13.3	31.1	25.2	59.6	49.6	28.5	24.4	L	
0.38893	13.2	9.0	13.3	26.5	22.3	58.1	48.1	31.6	25.8	L	
0.45491	16.9	13.9	13.3	30.2	27.2	56.8	46.8	26.6	19.6	L	
0.51859	16.2	14.1	13.3	29.5	27.4	56.0	46.0	26.5	18.6	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.

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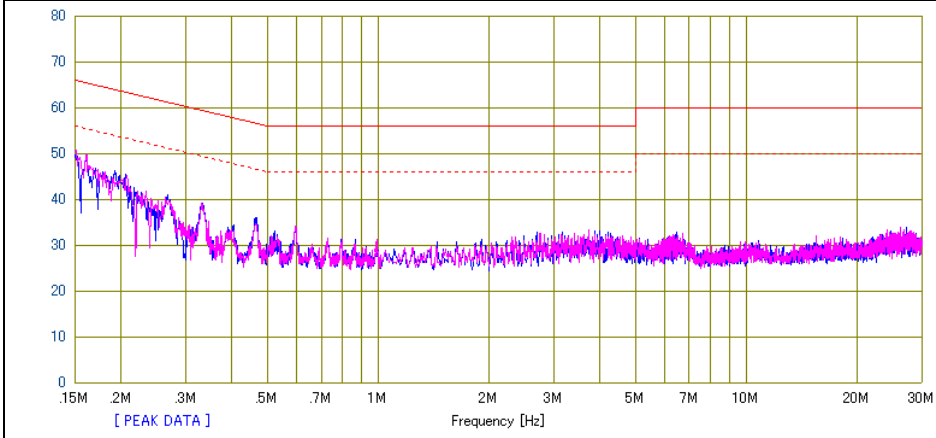
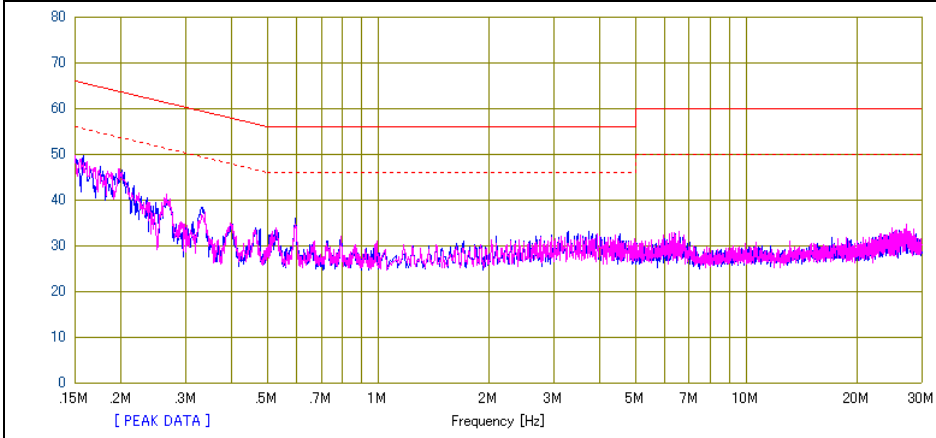
Conducted Emission

Test place	Head Office EMC Lab. No.4 Semi Anechoic Chamber
Report No.	30GE0203-HO-02
Date	03/13/2010
Temperature/ Humidity	23 deg.C./ 36%
Engineer	Takumi Shimada
Mode	11n-20 Tx

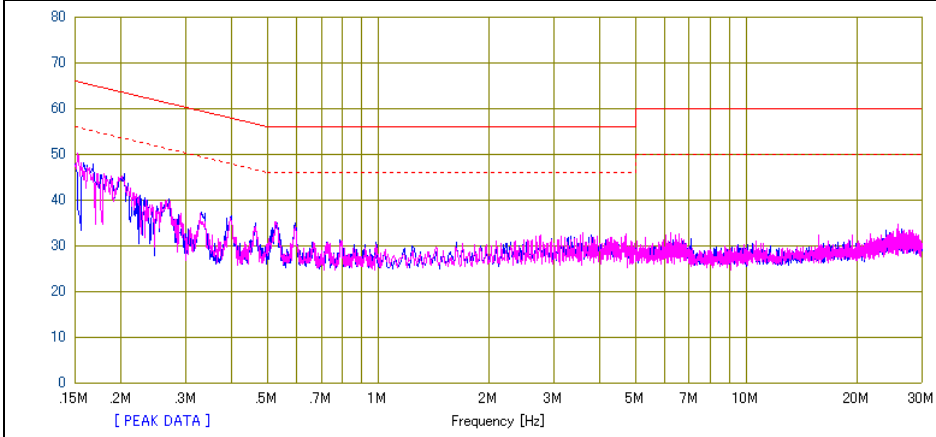
2412MHz



2437MHz



2462MHz



Y scale [dBuV] Chart — N — L

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Conducted Emission

DATA OF CONDUCTED EMISSION TEST

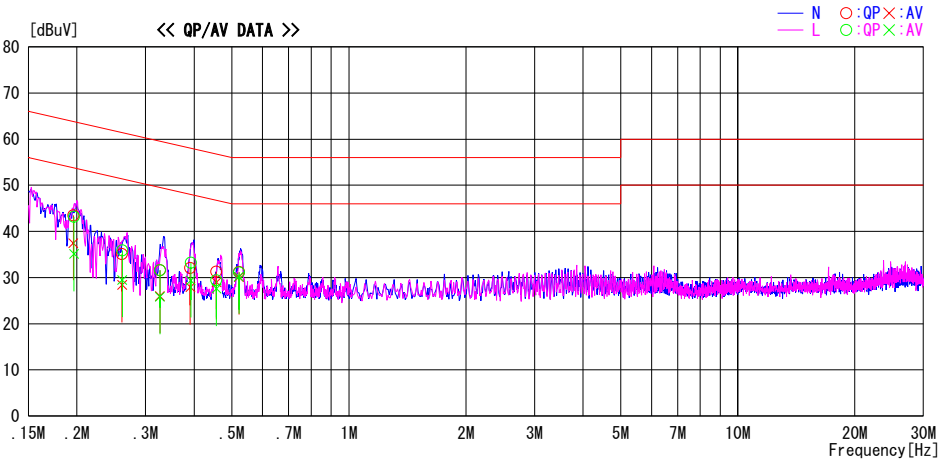
UL Japan, Inc. Head Office EMC Lab. No.4 Semi Anechoic Chamber
Date : 2010/03/13

Report No. : 30GE0203-HO-02

Temp./Humi. : 23deg.C / 36%
Engineer : Takumi Shimada

Mode / Remarks : Rx 2437MHz

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]		
0.19569	30.2	24.2	13.3	43.5	37.5	63.8	53.8	20.3	16.3	N	
0.26094	21.8	15.1	13.3	35.1	28.4	61.4	51.4	26.3	23.0	N	
0.32671	18.3	12.7	13.3	31.6	26.0	59.5	49.5	27.9	23.5	N	
0.39114	18.8	14.6	13.3	32.1	27.9	58.0	48.0	25.9	20.1	N	
0.45648	18.0	15.7	13.3	31.3	29.0	56.8	46.8	25.5	17.8	N	
0.52159	17.9	16.8	13.3	31.2	30.1	56.0	46.0	24.8	15.9	N	
0.19648	29.9	21.8	13.3	43.2	35.1	63.8	53.8	20.6	18.7	L	
0.26133	22.6	16.2	13.3	35.9	29.5	61.4	51.4	25.5	21.9	L	
0.32650	18.3	12.5	13.3	31.6	25.8	59.5	49.5	27.9	23.7	L	
0.39224	19.9	16.1	13.3	33.2	29.4	58.0	48.0	24.8	18.6	L	
0.45649	16.1	14.3	13.3	29.4	27.6	56.8	46.8	27.4	19.2	L	
0.52137	17.8	16.9	13.3	31.1	30.2	56.0	46.0	24.9	15.8	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.6 Shielded Room
Report No.	30GE0203-HO-02
Date	03/13/2010
Temperature/ Humidity	23 deg.C./ 35%
Engineer	Takumi Shimada
Mode	Tx

11b

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
2412	10.146	>500
2437	10.121	>500
2462	10.149	>500

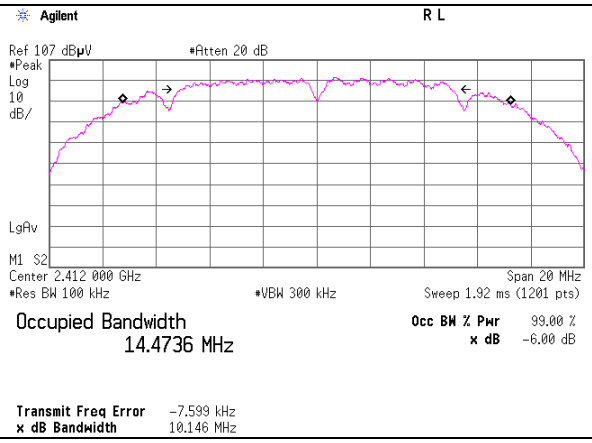
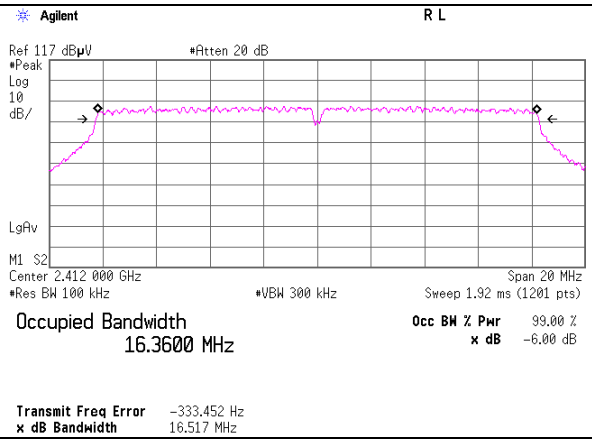
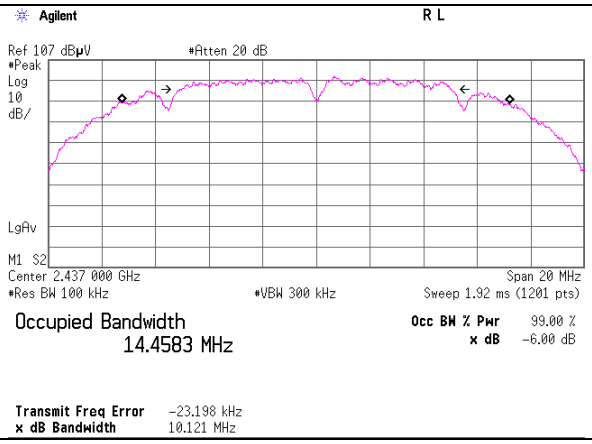
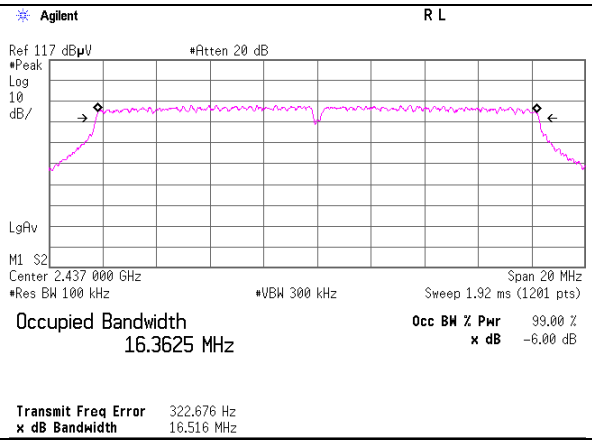
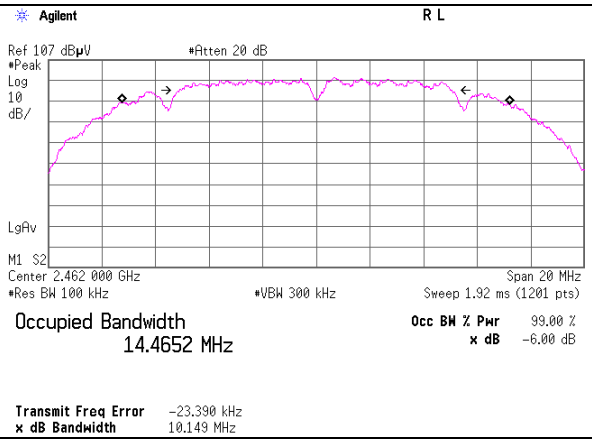
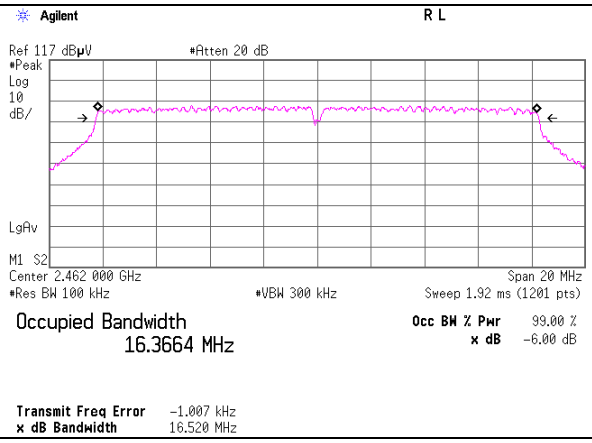
11g

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
2412	16.517	>500
2437	16.516	>500
2462	16.520	>500

11n-20

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
2412	17.673	>500
2437	17.666	>500
2462	17.675	>500

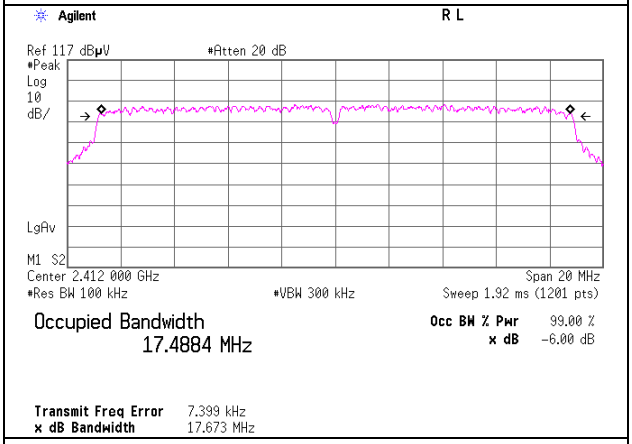
6dB Bandwidth

11b	11g
2412MHz	**2412MHz**
	
2437MHz	**2437MHz**
	
2462MHz	**2462MHz**
	

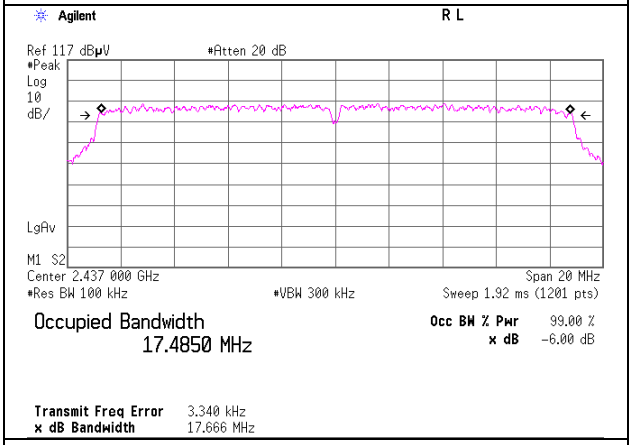
6dB Bandwidth

11n-20

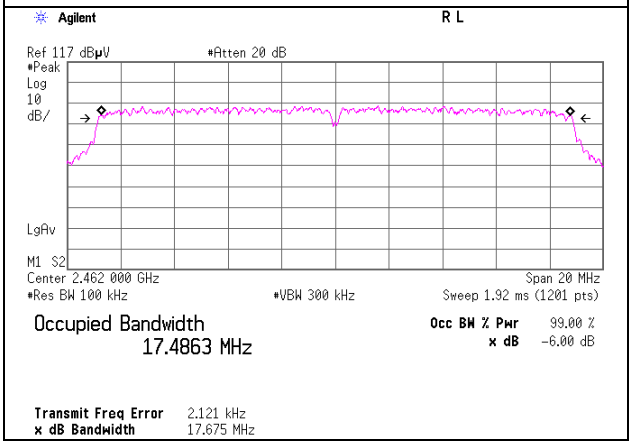
2412MHz



2437MHz



2462MHz



Maximum Peak Output Power

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	30GE0203-HO-02
Date	03/10/2010
Temperature/ Humidity	24 deg.C./ 38%
Engineer	Hiroyuki Furutaka
Mode	11b Tx

Print Antenna 0

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	5.35	1.89	10.09	17.33	54.08	30.00	1000	12.67
2437	5.81	1.89	10.09	17.79	60.12	30.00	1000	12.21
2462	5.92	1.91	10.09	17.92	61.94	30.00	1000	12.08

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

Print Antenna 0, 2437MHz

Rate	Reading	Remark
[Mbps]	[dBm]	
1	5.70	
2	5.81	*
5.5	5.80	
11	5.70	

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

Maximum Peak Output Power

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	30GE0203-HO-02
Date	03/10/2010
Temperature/ Humidity	24 deg.C./ 38%
Engineer	Hiroyuki Furutaka
Mode	11g Tx

Print Antenna 0

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	11.98	1.89	10.09	23.96	248.89	30.00	1000	6.04
2437	12.64	1.89	10.09	24.62	289.73	30.00	1000	5.38
2462	12.66	1.91	10.09	24.66	292.42	30.00	1000	5.34

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

Print Antenna 0, 2437MHz

Rate	Reading	Remark
[Mbps]	[dBm]	
6	12.63	
9	12.27	
12	12.64	*
18	12.19	
24	10.98	
36	12.21	
48	10.79	
54	12.01	

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

Maximum Peak Output Power

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	30GE0203-HO-02
Date	03/10/2010
Temperature/ Humidity	24 deg.C./ 38%
Engineer	Hiroyuki Furutaka
Mode	11n-20 Tx

Print Antenna 0

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result [mW]	Limit [dBm]	Limit [mW]	Margin [dB]
2412	12.38	1.89	10.09	24.36	272.90	30.00	1000	5.64
2437	12.64	1.89	10.09	24.62	289.73	30.00	1000	5.38
2462	12.91	1.91	10.09	24.91	309.74	30.00	1000	5.09

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

Print Antenna 0, 2437MHz, Long GI

MCS Number	Reading [dBm]	Remark
0	12.09	
1	12.15	
2	12.56	
3	12.64	*
4	12.03	
5	12.21	
6	11.00	
7	11.60	

* Worst MCS

Print Antenna 0, 2437MHz

MCS Number	Reading [dBm]	GI	Remark
3	12.64	Long	*
3	12.60	Short	

* Worst Conditioin

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4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
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Radiated Spurious Emission

Test place	Head Office EMC Lab. No.3 Anechoic Chamber		
Report No.	30GE0203-HO-02		
Date	03/10/2010	03/11/2010	03/11/2010
Temperature/ Humidity	22 deg.C./ 40%	21 deg.C./ 36%	23 deg.C./ 34%
Engineer	Takeshi Choda (1-10GHz)	Tomohisa Nakagawa (10-26.5GHz)	Tomotaka Sasagawa (Below 1GHz)
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	57.882	QP	38.8	8.5	7.6	32.2	22.7	40.0	17.3	
Hori	80.003	QP	33.4	6.3	7.9	32.1	15.5	40.0	24.5	
Hori	99.975	QP	38.6	10.1	8.1	32.1	24.7	43.5	18.8	
Hori	132.936	QP	37.8	13.9	8.5	32.1	28.1	43.5	15.4	
Hori	359.988	QP	29.8	16.3	10.4	32.0	24.5	46.0	21.5	
Hori	397.999	QP	34.1	17.4	10.7	32.0	30.2	46.0	15.8	
Hori	666.754	QP	38.2	20.1	12.2	32.0	38.5	46.0	7.5	
Hori	2390.000	PK	51.7	27.2	2.6	32.5	49.0	73.9	24.9	
Hori	2400.000	PK	58.5	27.2	2.6	32.5	55.8	73.9	18.1	
Hori	4824.000	PK	47.5	31.7	5.1	31.8	52.5	73.9	21.4	
Hori	24120.000	PK	46.5	38.1	-1.3	31.0	52.3	73.9	21.6	NS
Hori	2390.000	AV	40.3	27.2	2.6	32.5	37.6	53.9	16.3	
Hori	2400.000	AV	47.7	27.2	2.6	32.5	45.0	53.9	8.9	
Hori	4824.000	AV	32.9	31.7	5.1	31.8	37.9	53.9	16.0	
Hori	24120.000	AV	33.9	38.1	-1.3	31.0	39.7	53.9	14.2	NS
Vert	57.885	QP	50.9	8.5	7.6	32.2	34.8	40.0	5.2	
Vert	79.999	QP	45.9	6.3	7.9	32.1	28.0	40.0	12.0	
Vert	100.019	QP	49.7	10.2	8.1	32.1	35.9	43.5	7.6	
Vert	132.934	QP	43.8	13.9	8.5	32.1	34.1	43.5	9.4	
Vert	359.500	QP	28.9	16.3	10.4	32.0	23.6	46.0	22.4	
Vert	399.166	QP	31.9	17.4	10.7	32.0	28.0	46.0	18.0	
Vert	666.414	QP	33.0	20.1	12.2	32.0	33.3	46.0	12.7	
Vert	2390.000	PK	48.3	27.2	2.6	32.5	45.6	73.9	28.3	
Vert	2400.000	PK	53.1	27.2	2.6	32.5	50.4	73.9	23.5	
Vert	4824.000	PK	40.9	31.7	5.1	31.8	45.9	73.9	28.0	
Vert	24120.000	PK	46.5	38.1	-1.3	31.0	52.3	73.9	21.6	NS
Vert	2390.000	AV	36.7	27.2	2.6	32.5	34.0	53.9	19.9	
Vert	2400.000	AV	43.6	27.2	2.6	32.5	40.9	53.9	13.0	
Vert	4824.000	AV	29.9	31.7	5.1	31.8	34.9	53.9	19.0	
Vert	24120.000	AV	33.9	38.1	-1.3	31.0	39.7	53.9	14.2	NS

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

*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
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

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Radiated Spurious Emission

Test place	Head Office EMC Lab. No.3 Anechoic Chamber		
Report No.	30GE0203-HO-02		
Date	03/10/2010	03/11/2010	03/11/2010
Temperature/ Humidity	22 deg.C./ 40%	21 deg.C./ 36%	23 deg.C./ 34%
Engineer	Takeshi Choda (1-10GHz)	Tomohisa Nakagawa (10-26.5GHz)	Tomotaka Sasagawa (Below 1GHz)
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	57.893	QP	38.2	8.5	7.6	32.2	22.1	40.0	17.9	
Hori	80.420	QP	33.7	6.4	7.9	32.1	15.9	40.0	24.1	
Hori	99.974	QP	38.5	10.1	8.1	32.1	24.6	43.5	18.9	
Hori	132.941	QP	37.9	13.9	8.5	32.1	28.2	43.5	15.3	
Hori	399.948	QP	34.5	17.4	10.7	32.0	30.6	46.0	15.4	
Hori	479.665	QP	30.7	18.0	11.2	32.0	27.9	46.0	18.1	
Hori	666.723	QP	37.9	20.1	12.2	32.0	38.2	46.0	7.8	
Hori	4874.000	PK	47.6	31.8	5.2	31.8	52.8	73.9	21.1	
Hori	24370.000	PK	44.9	38.5	-1.2	30.8	51.4	73.9	22.5	NS
Hori	4874.000	AV	32.6	31.8	5.2	31.8	37.8	53.9	16.1	
Hori	24370.000	AV	33.0	38.5	-1.2	30.8	39.5	53.9	14.4	NS
Vert	57.892	QP	51.0	8.5	7.6	32.2	34.9	40.0	5.1	
Vert	79.941	QP	45.6	6.3	7.9	32.1	27.7	40.0	12.3	
Vert	100.003	QP	49.2	10.2	8.1	32.1	35.4	43.5	8.1	
Vert	132.421	QP	43.6	13.9	8.5	32.1	33.9	43.5	9.6	
Vert	398.931	QP	32.1	17.4	10.7	32.0	28.2	46.0	17.8	
Vert	479.983	QP	32.3	18.0	11.2	32.0	29.5	46.0	16.5	
Vert	666.421	QP	33.4	20.1	12.2	32.0	33.7	46.0	12.3	
Vert	4874.000	PK	46.7	31.8	5.2	31.8	51.9	73.9	22.0	
Vert	24370.000	PK	45.4	38.5	-1.2	30.8	51.9	73.9	22.0	NS
Vert	4874.000	AV	32.6	31.8	5.2	31.8	37.8	53.9	16.1	
Vert	24370.000	AV	33.0	38.5	-1.2	30.8	39.5	53.9	14.4	NS

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

*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
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

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Test place	Head Office EMC Lab. No.3 Anechoic Chamber		
Report No.	30GE0203-HO-02		
Date	03/10/2010	03/11/2010	03/11/2010
Temperature/ Humidity	22 deg.C./ 40%	21 deg.C./ 36%	23 deg.C./ 34%
Engineer	Takeshi Choda (1-10GHz)	Tomohisa Nakagawa (10-26.5GHz)	Tomotaka Sasagawa (Below 1GHz)
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	57.613	QP	38.3	8.6	7.6	32.2	22.3	40.0	17.7	
Hori	80.004	QP	34.1	6.3	7.9	32.1	16.2	40.0	23.8	
Hori	99.984	QP	38.6	10.1	8.1	32.1	24.7	43.5	18.8	
Hori	132.875	QP	38.2	13.9	8.5	32.1	28.5	43.5	15.0	
Hori	399.938	QP	34.7	17.4	10.7	32.0	30.8	46.0	15.2	
Hori	480.003	QP	30.9	18.0	11.2	32.0	28.1	46.0	17.9	
Hori	666.243	QP	38.1	20.1	12.2	32.0	38.4	46.0	7.6	
Hori	2483.500	PK	64.8	27.3	2.7	32.4	62.4	73.9	11.5	
Hori	4924.000	PK	47.0	31.8	5.3	31.8	52.3	73.9	21.6	
Hori	24620.000	PK	46.0	38.8	-1.2	30.6	53.0	73.9	20.9	NS
Hori	2483.500	AV	40.7	27.3	2.7	32.4	38.3	53.9	15.6	
Hori	4924.000	AV	31.9	31.8	5.3	31.8	37.2	53.9	16.7	
Hori	24620.000	AV	33.9	38.8	-1.2	30.6	40.9	53.9	13.0	NS
Vert	57.932	QP	50.9	8.5	7.6	32.2	34.8	40.0	5.2	
Vert	79.984	QP	46.2	6.3	7.9	32.1	28.3	40.0	11.7	
Vert	100.032	QP	48.7	10.2	8.1	32.1	34.9	43.5	8.6	
Vert	132.421	QP	44.1	13.9	8.5	32.1	34.4	43.5	9.1	
Vert	399.321	QP	32.7	17.4	10.7	32.0	28.8	46.0	17.2	
Vert	479.993	QP	32.9	18.0	11.2	32.0	30.1	46.0	15.9	
Vert	666.241	QP	33.7	20.1	12.2	32.0	34.0	46.0	12.0	
Vert	2483.500	PK	58.1	27.3	2.7	32.4	55.7	73.9	18.2	
Vert	4924.000	PK	46.1	31.8	5.3	31.8	51.4	73.9	22.5	
Vert	24620.000	PK	46.9	38.8	-1.2	30.6	53.9	73.9	20.0	NS
Vert	2483.500	AV	35.2	27.3	2.7	32.4	32.8	53.9	21.1	
Vert	4924.000	AV	30.9	31.8	5.3	31.8	36.2	53.9	17.7	
Vert	24620.000	AV	32.5	38.8	-1.2	30.6	39.5	53.9	14.4	NS

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

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

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26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

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Report No.	30GE0203-HO-02		
Date	03/10/2010	03/11/2010	03/11/2010
Temperature/ Humidity	22 deg.C./ 40%	21 deg.C./ 36%	23 deg.C./ 34%
Engineer	Takeshi Choda (1-10GHz)	Tomohisa Nakagawa (10-26.5GHz)	Tomotaka Sasagawa (Below 1GHz)
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	57.932	QP	38.7	8.5	7.6	32.2	22.6	40.0	17.4	
Hori	80.032	QP	34.2	6.3	7.9	32.1	16.3	40.0	23.7	
Hori	99.983	QP	38.1	10.1	8.1	32.1	24.2	43.5	19.3	
Hori	132.993	QP	38.5	13.9	8.5	32.1	28.8	43.5	14.7	
Hori	399.123	QP	34.9	17.4	10.7	32.0	31.0	46.0	15.0	
Hori	479.993	QP	31.2	18.0	11.2	32.0	28.4	46.0	17.6	
Hori	666.213	QP	37.9	20.1	12.2	32.0	38.2	46.0	7.8	
Hori	2390.000	PK	61.6	27.2	2.6	32.5	58.9	73.9	15.0	
Hori	2400.000	PK	66.2	27.2	2.6	32.5	63.5	-	-	See 20dBc Data Sheet
Hori	4824.000	PK	45.7	31.7	5.1	31.8	50.7	73.9	23.2	
Hori	7236.000	PK	44.8	35.9	6.1	32.4	54.4	73.9	19.5	
Hori	24120.000	PK	45.5	38.1	-1.3	31.0	51.3	73.9	22.6	NS
Hori	2390.000	AV	41.2	27.2	2.6	32.5	38.5	53.9	15.4	
Hori	2400.000	AV	55.0	27.2	2.6	32.5	52.3	-	-	See 20dBc Data Sheet
Hori	4824.000	AV	33.6	31.7	5.1	31.8	38.6	53.9	15.3	
Hori	7236.000	AV	31.0	35.9	6.1	32.4	40.6	53.9	13.3	
Hori	24120.000	AV	33.9	38.1	-1.3	31.0	39.7	53.9	14.2	NS
Vert	57.992	QP	51.0	8.5	7.6	32.2	34.9	40.0	5.1	
Vert	79.994	QP	46.1	6.3	7.9	32.1	28.2	40.0	11.8	
Vert	100.032	QP	50.0	10.2	8.1	32.1	36.2	43.5	7.3	
Vert	132.421	QP	44.9	13.9	8.5	32.1	35.2	43.5	8.3	
Vert	399.938	QP	32.9	17.4	10.7	32.0	29.0	46.0	17.0	
Vert	480.030	QP	32.5	18.0	11.2	32.0	29.7	46.0	16.3	
Vert	666.024	QP	33.4	20.1	12.2	32.0	33.7	46.0	12.3	
Vert	2390.000	PK	62.3	27.2	2.6	32.5	59.6	73.9	14.3	
Vert	2400.000	PK	55.0	27.2	2.6	32.5	52.3	-	-	See 20dBc Data Sheet
Vert	4824.000	PK	44.1	31.7	5.1	31.8	49.1	73.9	24.8	
Vert	7236.000	PK	42.6	35.9	6.1	32.4	52.2	73.9	21.7	NS
Vert	24120.000	PK	46.3	38.1	-1.3	31.0	52.1	73.9	21.8	NS
Vert	2390.000	AV	37.7	27.2	2.6	32.5	35.0	53.9	18.9	
Vert	2400.000	AV	51.1	27.2	2.6	32.5	48.4	-	-	See 20dBc Data Sheet
Vert	4824.000	AV	31.6	31.7	5.1	31.8	36.6	53.9	17.3	
Vert	7236.000	AV	30.2	35.9	6.1	32.4	39.8	53.9	14.1	NS
Vert	24120.000	AV	34.9	38.1	-1.3	31.0	40.7	53.9	13.2	NS

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

*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
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

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	93.5	27.2	2.6	32.5	90.8	-	-	Carrier
Hori	2400.000	PK	55.2	27.2	2.6	32.5	52.5	70.8	18.3	
Vert	2412.000	PK	88.9	27.2	2.6	32.5	86.2	-	-	Carrier
Vert	2400.000	PK	51.3	27.2	2.6	32.5	48.6	66.2	17.6	

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

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.3 Anechoic Chamber		
Report No.	30GE0203-HO-02		
Date	03/10/2010	03/11/2010	03/11/2010
Temperature/ Humidity	22 deg.C./ 40%	21 deg.C./ 36%	23 deg.C./ 34%
Engineer	Takeshi Choda	Tomohisa Nakagawa	Tomotaka Sasagawa
	(1-10GHz)	(10-26.5GHz)	(Below 1GHz)
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	57.993	QP	39.2	8.5	7.6	32.2	23.1	40.0	16.9	
Hori	79.992	QP	33.2	6.3	7.9	32.1	15.3	40.0	24.7	
Hori	99.932	QP	38.7	10.1	8.1	32.1	24.8	43.5	18.7	
Hori	132.874	QP	38.7	13.9	8.5	32.1	29.0	43.5	14.5	
Hori	399.421	QP	35.1	17.4	10.7	32.0	31.2	46.0	14.8	
Hori	479.982	QP	31.7	18.0	11.2	32.0	28.9	46.0	17.1	
Hori	666.321	QP	37.5	20.1	12.2	32.0	37.8	46.0	8.2	
Hori	4874.000	PK	47.3	31.8	5.2	31.8	52.5	73.9	21.4	
Hori	7311.000	PK	45.7	36.1	6.1	32.4	55.5	73.9	18.4	
Hori	24370.000	PK	45.6	38.5	-1.2	30.8	52.1	73.9	21.8	NS
Hori	4874.000	AV	35.1	31.8	5.2	31.8	40.3	53.9	13.6	
Hori	7311.000	AV	31.6	36.1	6.1	32.4	41.4	53.9	12.5	
Hori	24370.000	AV	33.0	38.5	-1.2	30.8	39.5	53.9	14.4	NS
Vert	57.839	QP	50.5	8.5	7.6	32.2	34.4	40.0	5.6	
Vert	79.942	QP	45.9	6.3	7.9	32.1	28.0	40.0	12.0	
Vert	100.021	QP	47.9	10.2	8.1	32.1	34.1	43.5	9.4	
Vert	132.411	QP	44.1	13.9	8.5	32.1	34.4	43.5	9.1	
Vert	399.983	QP	33.1	17.4	10.7	32.0	29.2	46.0	16.8	
Vert	480.030	QP	32.1	18.0	11.2	32.0	29.3	46.0	16.7	
Vert	666.002	QP	33.2	20.1	12.2	32.0	33.5	46.0	12.5	
Vert	4874.000	PK	45.8	31.8	5.2	31.8	51.0	73.9	22.9	
Vert	7311.000	PK	45.0	36.1	6.1	32.4	54.8	73.9	19.1	
Vert	24370.000	PK	46.1	38.5	-1.2	30.8	52.6	73.9	21.3	NS
Vert	4874.000	AV	32.9	31.8	5.2	31.8	38.1	53.9	15.8	
Vert	7311.000	AV	31.2	36.1	6.1	32.4	41.0	53.9	12.9	
Vert	24370.000	AV	33.0	38.5	-1.2	30.8	39.5	53.9	14.4	NS

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

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Radiated Spurious Emission

Test place	Head Office EMC Lab. No.3 Anechoic Chamber		
Report No.	30GE0203-HO-02		
Date	03/10/2010	03/11/2010	03/11/2010
Temperature/ Humidity	22 deg.C./ 40%	21 deg.C./ 36%	23 deg.C./ 34%
Engineer	Takeshi Choda (1-10GHz)	Tomohisa Nakagawa (10-26.5GHz)	Tomotaka Sasagawa (Below 1GHz)
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	57.932	QP	39.2	8.5	7.6	32.2	23.1	40.0	16.9	
Hori	80.123	QP	33.9	6.3	7.9	32.1	16.0	40.0	24.0	
Hori	99.984	QP	38.9	10.1	8.1	32.1	25.0	43.5	18.5	
Hori	132.222	QP	38.9	13.8	8.5	32.1	29.1	43.5	14.4	
Hori	399.941	QP	35.4	17.4	10.7	32.0	31.5	46.0	14.5	
Hori	479.939	QP	32.1	18.0	11.2	32.0	29.3	46.0	16.7	
Hori	666.000	QP	37.8	20.1	12.2	32.0	38.1	46.0	7.9	
Hori	2483.500	PK	62.6	27.3	2.7	32.4	60.2	73.9	13.7	
Hori	4924.000	PK	46.3	31.8	5.3	31.8	51.6	73.9	22.3	
Hori	7386.000	PK	47.1	36.2	6.1	32.4	57.0	73.9	16.9	
Hori	24620.000	PK	46.4	38.8	-1.2	30.6	53.4	73.9	20.5	NS
Hori	2483.500	AV	45.3	27.3	2.7	32.4	42.9	53.9	11.0	
Hori	4924.000	AV	34.1	31.8	5.3	31.8	39.4	53.9	14.5	
Hori	7386.000	AV	33.0	36.2	6.1	32.4	42.9	53.9	11.0	
Hori	24620.000	AV	33.9	38.8	-1.2	30.6	40.9	53.9	13.0	NS
Vert	57.992	QP	50.9	8.5	7.6	32.2	34.8	40.0	5.2	
Vert	79.983	QP	45.7	6.3	7.9	32.1	27.8	40.0	12.2	
Vert	100.032	QP	47.6	10.2	8.1	32.1	33.8	43.5	9.7	
Vert	132.432	QP	44.5	13.9	8.5	32.1	34.8	43.5	8.7	
Vert	399.938	QP	33.7	17.4	10.7	32.0	29.8	46.0	16.2	
Vert	480.023	QP	31.8	18.0	11.2	32.0	29.0	46.0	17.0	
Vert	666.322	QP	33.1	20.1	12.2	32.0	33.4	46.0	12.6	
Vert	2483.500	PK	54.3	27.3	2.7	32.4	51.9	73.9	22.0	
Vert	4924.000	PK	45.5	31.8	5.3	31.8	50.8	73.9	23.1	
Vert	7386.000	PK	43.1	36.2	6.1	32.4	53.0	73.9	20.9	NS
Vert	24620.000	PK	46.1	38.8	-1.2	30.6	53.1	73.9	20.8	NS
Vert	2483.500	AV	39.3	27.3	2.7	32.4	36.9	53.9	17.0	
Vert	4924.000	AV	32.8	31.8	5.3	31.8	38.1	53.9	15.8	
Vert	7386.000	AV	30.3	36.2	6.1	32.4	40.2	53.9	13.7	NS
Vert	24620.000	AV	33.9	38.8	-1.2	30.6	40.9	53.9	13.0	NS

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

*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
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

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Radiated Spurious Emission

Test place	Head Office EMC Lab. No.3 Anechoic Chamber		
Report No.	30GE0203-HO-02		
Date	03/10/2010	03/11/2010	03/11/2010
Temperature/ Humidity	22 deg.C./ 40%	21 deg.C./ 36%	23 deg.C./ 34%
Engineer	Takeshi Choda (1-10GHz)	Tomohisa Nakagawa (10-26.5GHz)	Tomotaka Sasagawa (Below 1GHz)
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	57.821	QP	39.8	8.5	7.6	32.2	23.7	40.0	16.3	
Hori	80.003	QP	33.1	6.3	7.9	32.1	15.2	40.0	24.8	
Hori	99.994	QP	38.9	10.1	8.1	32.1	25.0	43.5	18.5	
Hori	132.423	QP	38.1	13.9	8.5	32.1	28.4	43.5	15.1	
Hori	399.933	QP	35.9	17.4	10.7	32.0	32.0	46.0	14.0	
Hori	479.993	QP	32.8	18.0	11.2	32.0	30.0	46.0	16.0	
Hori	666.043	QP	36.9	20.1	12.2	32.0	37.2	46.0	8.8	
Hori	2390.000	PK	56.6	27.2	2.6	32.5	53.9	73.9	20.0	
Hori	2400.000	PK	66.8	27.2	2.6	32.5	64.1	-	-	See 20dBc Data Sheet
Hori	4824.000	PK	46.5	31.7	5.1	31.8	51.5	73.9	22.4	
Hori	7236.000	PK	45.4	35.9	6.1	32.4	55.0	73.9	18.9	
Hori	24120.000	PK	46.1	38.1	-1.3	31.0	51.9	73.9	22.0	NS
Hori	2390.000	AV	41.7	27.2	2.6	32.5	39.0	53.9	14.9	
Hori	2400.000	AV	55.7	27.2	2.6	32.5	53.0	-	-	See 20dBc Data Sheet
Hori	4824.000	AV	32.8	31.7	5.1	31.8	37.8	53.9	16.1	
Hori	7236.000	AV	31.0	35.9	6.1	32.4	40.6	53.9	13.3	
Hori	24120.000	AV	34.0	38.1	-1.3	31.0	39.8	53.9	14.2	NS
Vert	57.993	QP	50.3	8.5	7.6	32.2	34.2	40.0	5.8	
Vert	79.983	QP	45.6	6.3	7.9	32.1	27.7	40.0	12.3	
Vert	100.002	QP	47.8	10.2	8.1	32.1	34.0	43.5	9.5	
Vert	132.231	QP	44.7	13.8	8.5	32.1	34.9	43.5	8.6	
Vert	399.932	QP	33.2	17.4	10.7	32.0	29.3	46.0	16.7	
Vert	480.003	QP	32.3	18.0	11.2	32.0	29.5	46.0	16.5	
Vert	666.231	QP	33.5	20.1	12.2	32.0	33.8	46.0	12.2	
Vert	2390.000	PK	55.9	27.2	2.6	32.5	53.2	73.9	20.7	
Vert	2400.000	PK	63.5	27.2	2.6	32.5	60.8	-	-	See 20dBc Data Sheet
Vert	4824.000	PK	43.4	31.7	5.1	31.8	48.4	73.9	25.5	
Vert	7236.000	PK	42.9	35.9	6.1	32.4	52.5	73.9	21.4	NS
Vert	24120.000	PK	46.0	38.1	-1.3	31.0	51.8	73.9	22.1	NS
Vert	2390.000	AV	37.7	27.2	2.6	32.5	35.0	53.9	18.9	
Vert	2400.000	AV	51.3	27.2	2.6	32.5	48.6	-	-	See 20dBc Data Sheet
Vert	4824.000	AV	31.1	31.7	5.1	31.8	36.1	53.9	17.8	
Vert	7236.000	AV	30.1	35.9	6.1	32.4	39.7	53.9	14.2	NS
Vert	24120.000	AV	34.0	38.1	-1.3	31.0	39.8	53.9	14.1	NS

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

*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
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

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	94.7	27.2	2.6	32.5	92.0	-	-	Carrier
Hori	2400.000	PK	56.6	27.2	2.6	32.5	53.9	72.0	18.1	
Vert	2412.000	PK	88.1	27.2	2.6	32.5	85.4	-	-	Carrier
Vert	2400.000	PK	52.3	27.2	2.6	32.5	49.6	65.4	15.8	

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

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.3 Anechoic Chamber		
Report No.	30GE0203-HO-02		
Date	03/10/2010	03/11/2010	03/11/2010
Temperature/ Humidity	22 deg.C./ 40%	21 deg.C./ 36%	23 deg.C./ 34%
Engineer	Takeshi Choda (1-10GHz)	Tomohisa Nakagawa (10-26.5GHz)	Tomotaka Sasagawa (Below 1GHz)
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	57.932	QP	39.8	8.5	7.6	32.2	23.7	40.0	16.3	
Hori	80.231	QP	33.1	6.4	7.9	32.1	15.3	40.0	24.7	
Hori	99.893	QP	38.6	10.1	8.1	32.1	24.7	43.5	18.8	
Hori	132.243	QP	38.9	13.8	8.5	32.1	29.1	43.5	14.4	
Hori	399.982	QP	36.1	17.4	10.7	32.0	32.2	46.0	13.8	
Hori	479.993	QP	33.1	18.0	11.2	32.0	30.3	46.0	15.7	
Hori	666.313	QP	37.2	20.1	12.2	32.0	37.5	46.0	8.5	
Hori	4874.000	PK	46.3	31.8	5.2	31.8	51.5	73.9	22.4	
Hori	7311.000	PK	44.4	36.1	6.1	32.4	54.2	73.9	19.7	
Hori	24370.000	PK	45.0	38.5	-1.2	30.8	51.5	73.9	22.5	NS
Hori	4874.000	AV	35.8	31.8	5.2	31.8	41.0	53.9	12.9	
Hori	7311.000	AV	31.2	36.1	6.1	32.4	41.0	53.9	12.9	
Hori	24370.000	AV	32.9	38.5	-1.2	30.8	39.4	53.9	14.5	NS
Vert	57.832	QP	50.8	8.5	7.6	32.2	34.7	40.0	5.3	
Vert	79.932	QP	45.6	6.3	7.9	32.1	27.7	40.0	12.3	
Vert	100.030	QP	47.6	10.2	8.1	32.1	33.8	43.5	9.7	
Vert	132.321	QP	44.9	13.8	8.5	32.1	35.1	43.5	8.4	
Vert	399.939	QP	33.4	17.4	10.7	32.0	29.5	46.0	16.5	
Vert	480.003	QP	32.6	18.0	11.2	32.0	29.8	46.0	16.2	
Vert	666.232	QP	33.4	20.1	12.2	32.0	33.7	46.0	12.3	
Vert	4874.000	PK	44.3	31.8	5.2	31.8	49.5	73.9	24.4	
Vert	7311.000	PK	42.4	36.1	6.1	32.4	52.2	73.9	21.7	NS
Vert	24370.000	PK	45.2	38.5	-1.2	30.8	51.7	73.9	22.2	NS
Vert	4874.000	AV	31.7	31.8	5.2	31.8	36.9	53.9	17.0	
Vert	7311.000	AV	30.1	36.1	6.1	32.4	39.9	53.9	14.0	NS
Vert	24370.000	AV	32.9	38.5	-1.2	30.8	39.4	53.9	14.5	NS

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

*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
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.3 Anechoic Chamber		
Report No.	30GE0203-HO-02		
Date	03/10/2010	03/11/2010	03/11/2010
Temperature / Humidity	22 deg.C./ 40%	21 deg.C./ 36%	23 deg.C./ 34%
Engineer	Takeshi Choda (1-10GHz)	Tomohisa Nakagawa (10-26.5GHz)	Tomotaka Sasagawa (Below 1GHz)
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	57.830	QP	38.9	8.5	7.6	32.2	22.8	40.0	17.2	
Hori	80.123	QP	34.1	6.3	7.9	32.1	16.2	40.0	23.8	
Hori	99.831	QP	38.9	10.1	8.1	32.1	25.0	43.5	18.5	
Hori	132.142	QP	37.8	13.8	8.5	32.1	28.0	43.5	15.5	
Hori	399.941	QP	35.9	17.4	10.7	32.0	32.0	46.0	14.0	
Hori	479.983	QP	33.9	18.0	11.2	32.0	31.1	46.0	14.9	
Hori	666.321	QP	37.9	20.1	12.2	32.0	38.2	46.0	7.8	
Hori	2483.500	PK	63.0	27.3	2.7	32.4	60.6	73.9	13.3	
Hori	4924.000	PK	46.8	31.8	5.3	31.8	52.1	73.9	21.8	
Hori	7386.000	PK	44.5	36.2	6.1	32.4	54.4	73.9	19.5	
Hori	24620.000	PK	48.2	38.8	-1.2	30.6	55.2	73.9	18.7	NS
Hori	2483.500	AV	47.1	27.3	2.7	32.4	44.7	53.9	9.2	
Hori	4924.000	AV	34.6	31.8	5.3	31.8	39.9	53.9	14.0	
Hori	7386.000	AV	31.0	36.2	6.1	32.4	40.9	53.9	13.0	
Hori	24620.000	AV	29.1	38.8	-1.2	30.6	36.1	53.9	17.8	NS
Vert	57.984	QP	51.1	8.5	7.6	32.2	35.0	40.0	5.0	
Vert	79.931	QP	45.8	6.3	7.9	32.1	27.9	40.0	12.1	
Vert	100.023	QP	47.8	10.2	8.1	32.1	34.0	43.5	9.5	
Vert	132.134	QP	44.7	13.8	8.5	32.1	34.9	43.5	8.6	
Vert	399.312	QP	33.9	17.4	10.7	32.0	30.0	46.0	16.0	
Vert	480.931	QP	32.8	18.0	11.2	32.0	30.0	46.0	16.0	
Vert	666.021	QP	33.7	20.1	12.2	32.0	34.0	46.0	12.0	
Vert	2483.500	PK	58.2	27.3	2.7	32.4	55.8	73.9	18.1	
Vert	4924.000	PK	49.5	31.8	5.3	31.8	54.8	73.9	19.1	
Vert	7386.000	PK	45.5	36.2	6.1	32.4	55.4	73.9	18.5	
Vert	24620.000	PK	48.3	38.8	-1.2	30.6	55.3	73.9	18.6	NS
Vert	2483.500	AV	42.7	27.3	2.7	32.4	40.3	53.9	13.6	
Vert	4924.000	AV	32.8	31.8	5.3	31.8	38.1	53.9	15.8	
Vert	7386.000	AV	31.6	36.2	6.1	32.4	41.5	53.9	12.4	
Vert	24620.000	AV	29.2	38.8	-1.2	30.6	36.2	53.9	17.7	NS

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

*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
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

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Radiated Spurious Emission

Test place	Head Office EMC Lab. No.3 Anechoic Chamber	
Report No.	30GE0203-HO-02	
Date	03/11/2010	03/11/2010
Temperature/ Humidity	21 deg.C./ 36%	22 deg.C./ 37%
Engineer	Tomohisa Nakagawa (1-12.5GHz)	Hiroshi Kukita (Below 1GHz)
Mode	Rx 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	48.900	QP	28.8	11.0	7.4	32.2	15.0	40.0	25.0	
Hori	63.176	QP	30.7	7.5	7.7	32.2	13.7	40.0	26.3	
Hori	99.998	QP	34.1	10.1	8.1	32.1	20.2	43.5	23.3	
Hori	139.995	QP	31.0	14.3	8.6	32.1	21.8	43.5	21.7	
Hori	171.820	QP	33.2	15.8	8.9	32.1	25.8	43.5	17.7	
Hori	320.007	QP	37.9	15.0	10.1	32.0	31.0	46.0	15.0	
Hori	2437.000	PK	42.8	27.2	2.7	32.4	40.3	73.9	33.6	NS
Hori	4874.000	PK	41.2	31.8	3.9	31.8	45.1	73.9	28.8	NS
Hori	7311.000	PK	43.4	36.1	4.7	32.4	51.8	73.9	22.1	NS
Hori	2437.000	AV	29.4	27.2	2.7	32.4	26.9	53.9	27.0	NS
Hori	4874.000	AV	28.3	31.8	3.9	31.8	32.2	53.9	21.7	NS
Hori	7311.000	AV	30.5	36.1	4.7	32.4	38.9	53.9	15.0	NS
Vert	63.172	QP	48.0	7.5	7.7	32.2	31.0	40.0	9.0	
Vert	80.001	QP	45.3	6.3	7.9	32.1	27.4	40.0	12.6	
Vert	99.998	QP	49.2	10.1	8.1	32.1	35.3	43.5	8.2	
Vert	139.996	QP	37.7	14.3	8.6	32.1	28.5	43.5	15.0	
Vert	166.344	QP	32.0	15.6	8.8	32.1	24.3	43.5	19.2	
Vert	624.090	QP	28.9	19.7	12.0	32.0	28.6	46.0	17.4	
Vert	2437.000	PK	43.3	27.2	2.7	32.4	40.8	73.9	33.1	NS
Vert	4874.000	PK	40.9	31.8	3.9	31.8	44.8	73.9	29.1	NS
Vert	7311.000	PK	43.0	36.1	4.7	32.4	51.4	73.9	22.5	NS
Vert	2437.000	AV	31.0	27.2	2.7	32.4	28.5	53.9	25.4	NS
Vert	4874.000	AV	28.7	31.8	3.9	31.8	32.6	53.9	21.3	NS
Vert	7311.000	AV	30.5	36.1	4.7	32.4	38.9	53.9	15.0	NS

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

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

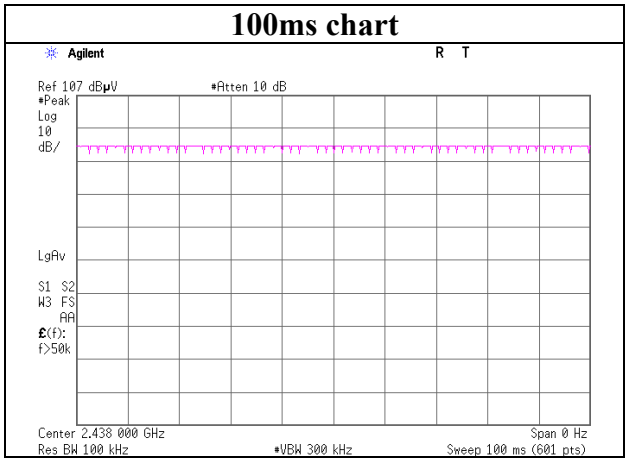
*The 3rd harmonic was not seen so the result was its base noise level.

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

VBW (AV) Calculation

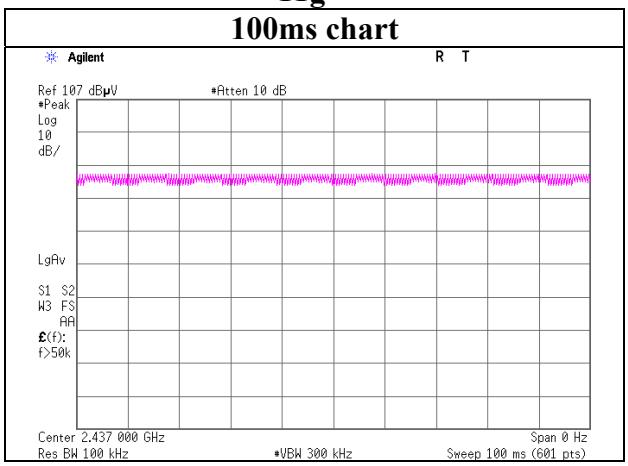
11b

100ms chart



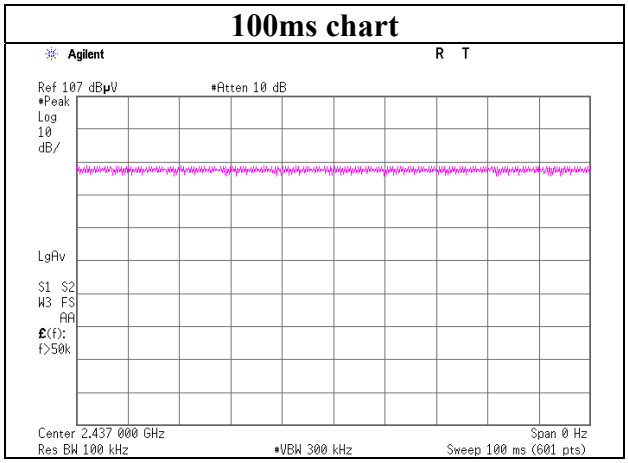
11g

100ms chart



11n-20

100ms chart



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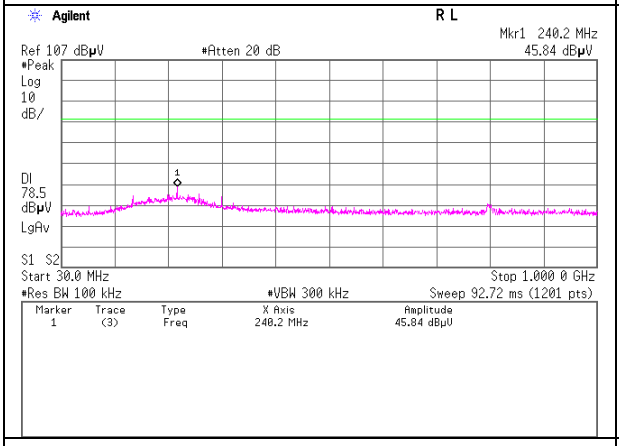
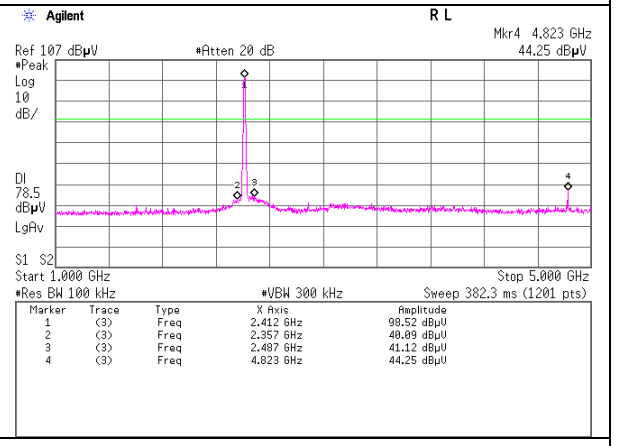
Conducted Spurious Emission

11b Tx 2412MHz

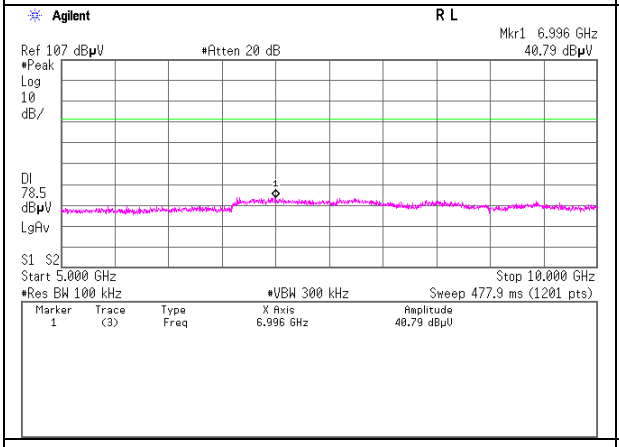
30MHz-1GHz



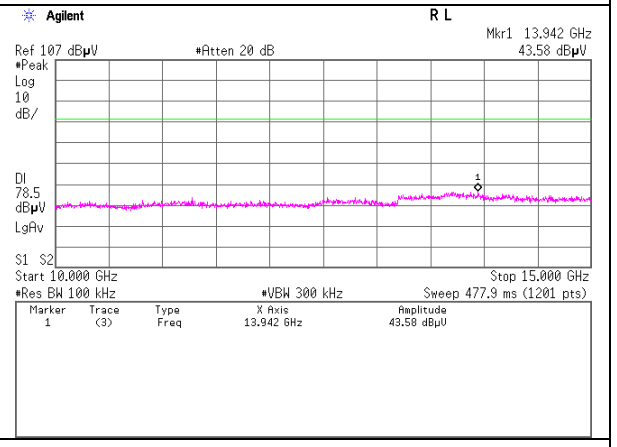
1GHz-5GHz



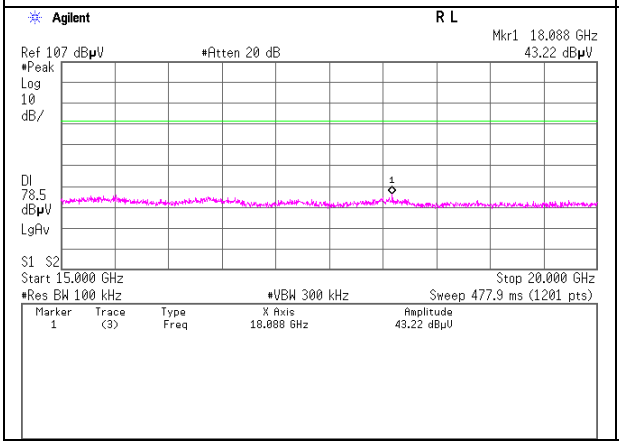
5GHz-10GHz



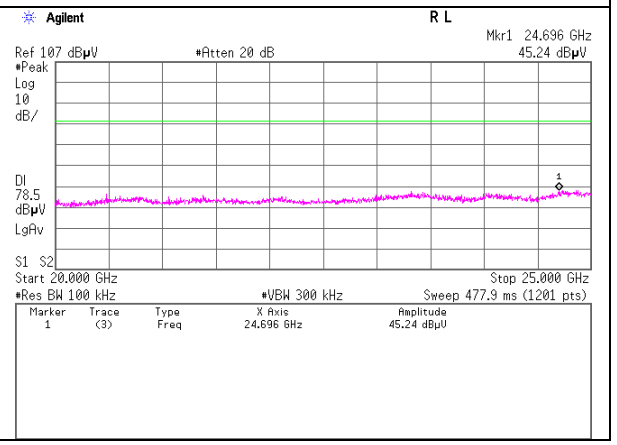
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz



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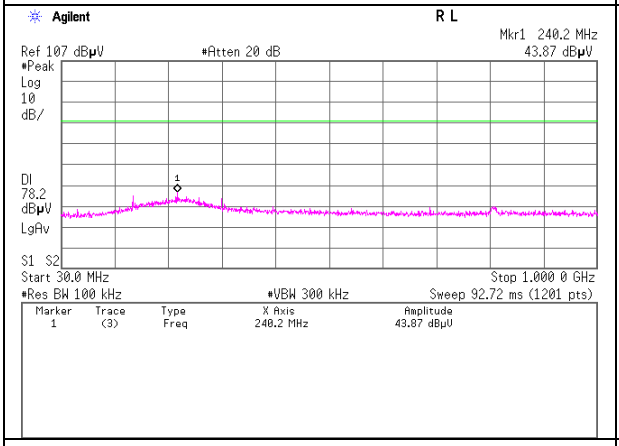
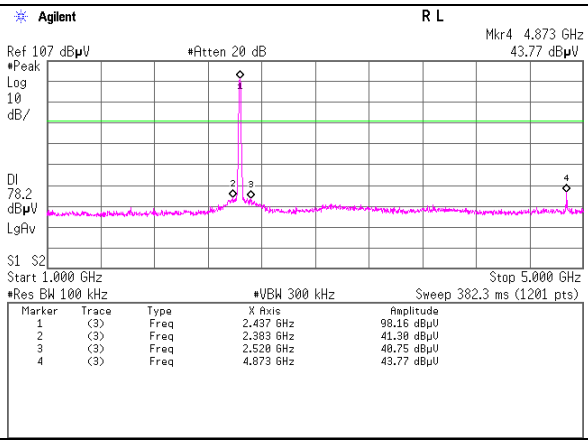
Conducted Spurious Emission

11b Tx 2437MHz

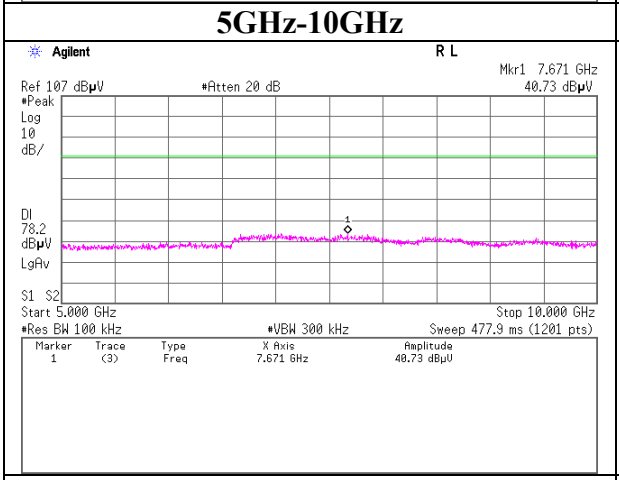
30MHz-1GHz



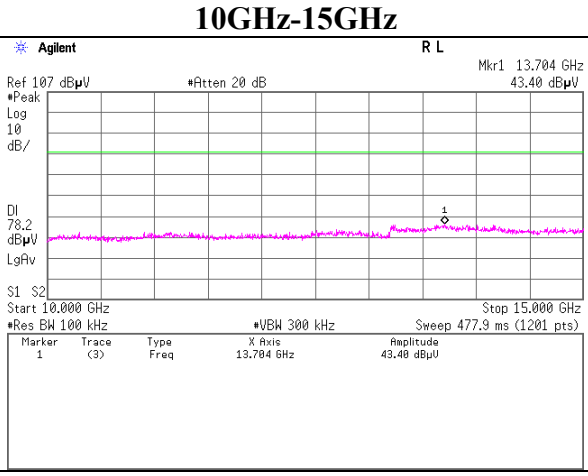
1GHz-5GHz



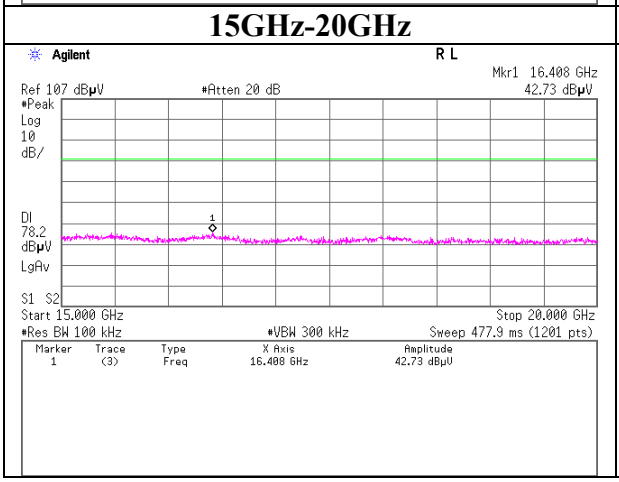
5GHz-10GHz



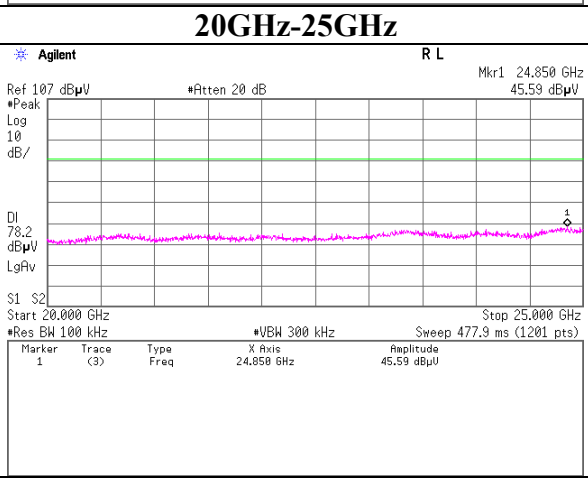
10GHz-15GHz



15GHz-20GHz



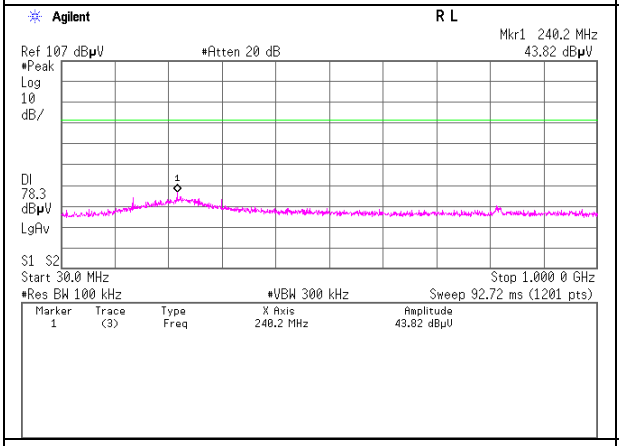
20GHz-25GHz



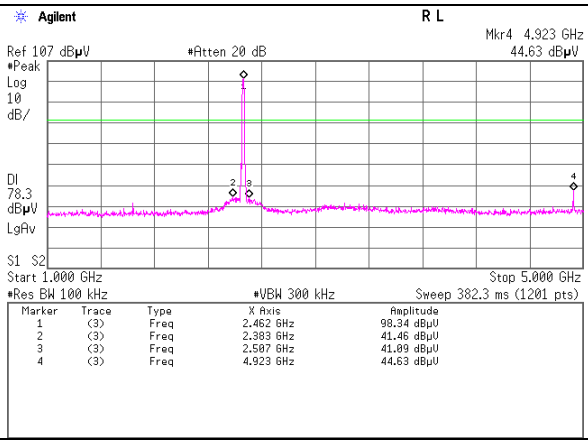
Conducted Spurious Emission

11b Tx 2462MHz

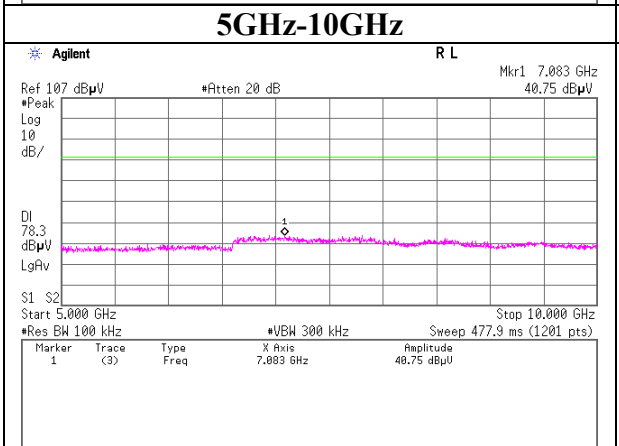
30MHz-1GHz



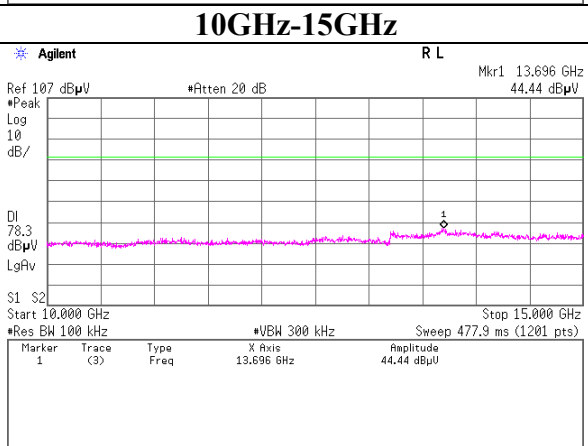
1GHz-5GHz



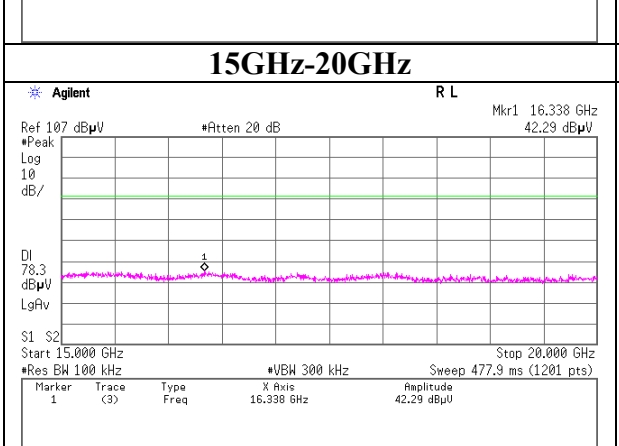
5GHz-10GHz



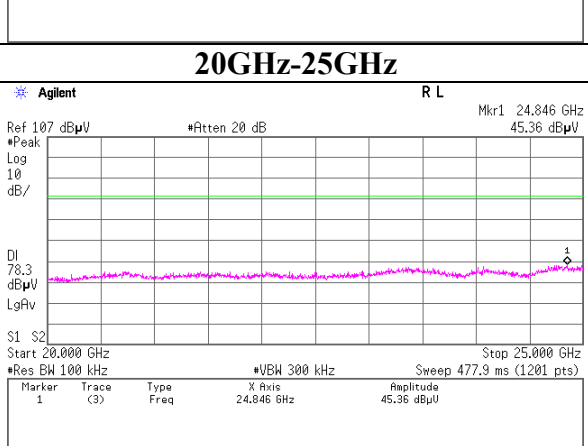
10GHz-15GHz



15GHz-20GHz



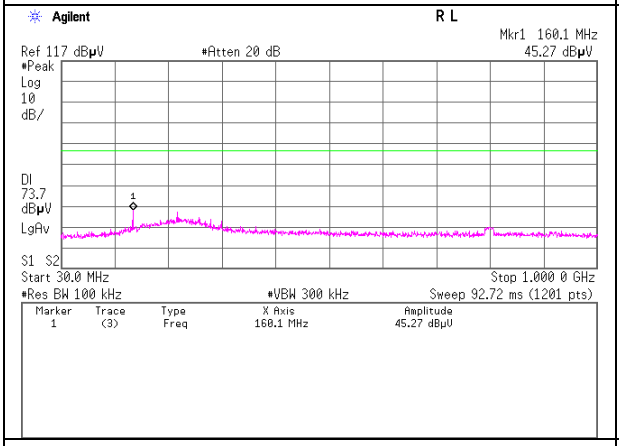
20GHz-25GHz



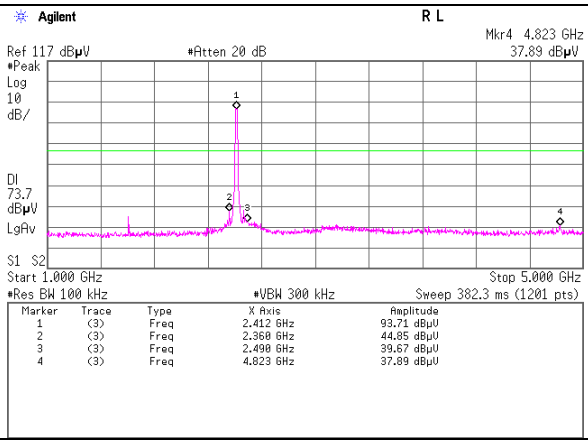
Conducted Spurious Emission

11g Tx 2412MHz

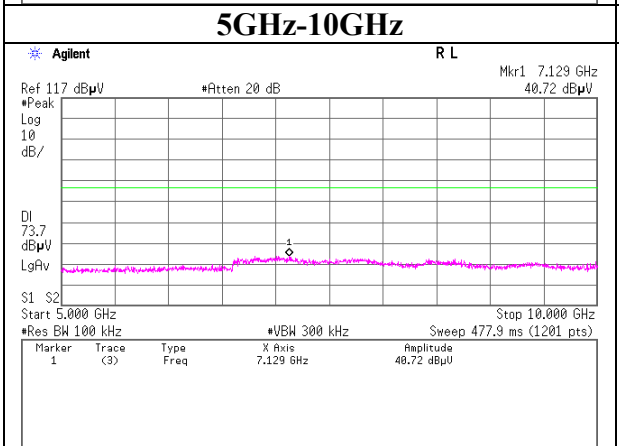
30MHz-1GHz



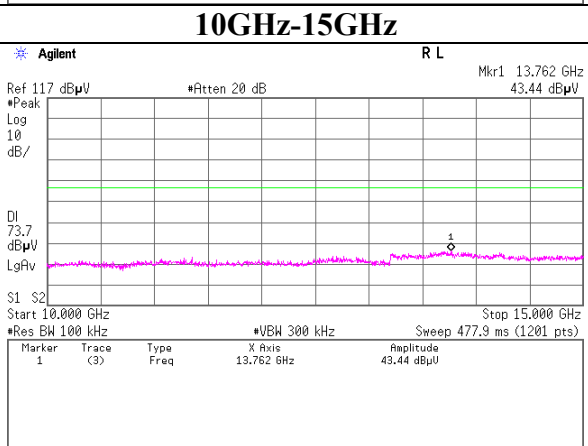
1GHz-5GHz



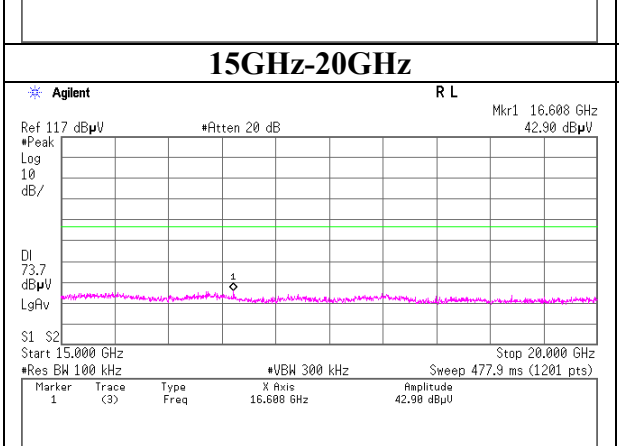
5GHz-10GHz



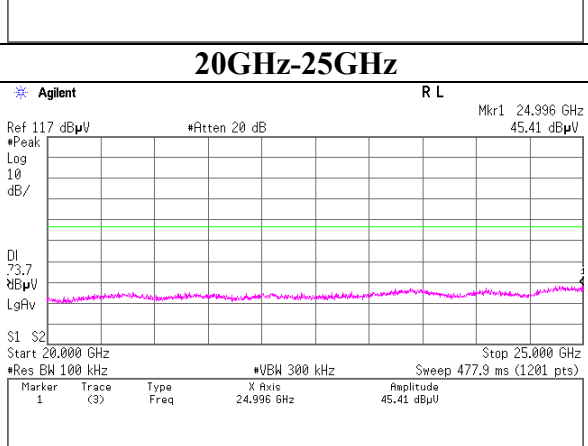
10GHz-15GHz



15GHz-20GHz



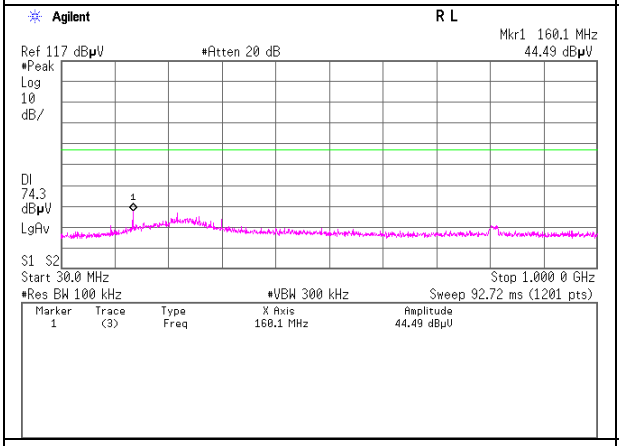
20GHz-25GHz



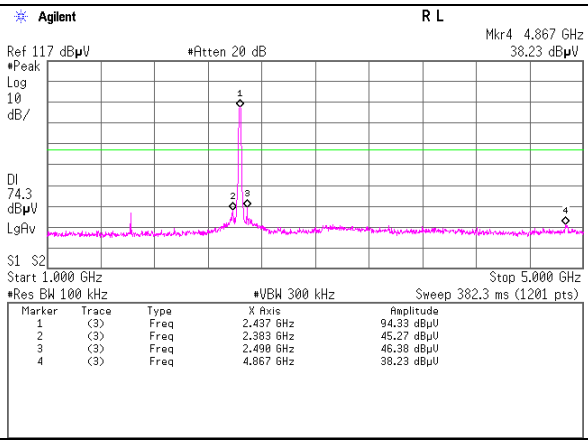
Conducted Spurious Emission

11g Tx 2437MHz

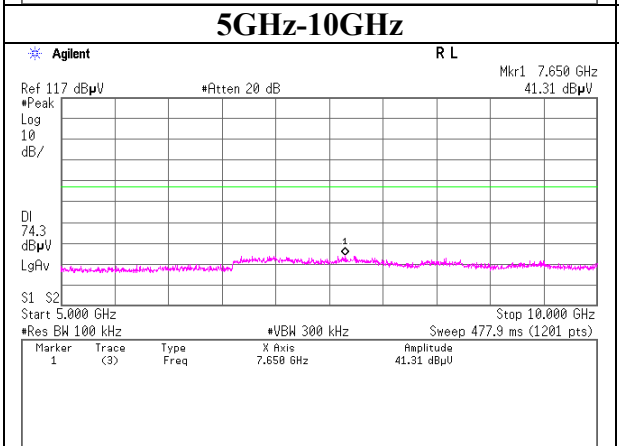
30MHz-1GHz



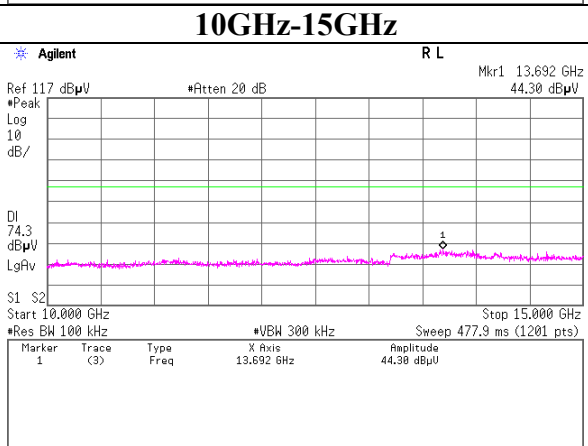
1GHz-5GHz



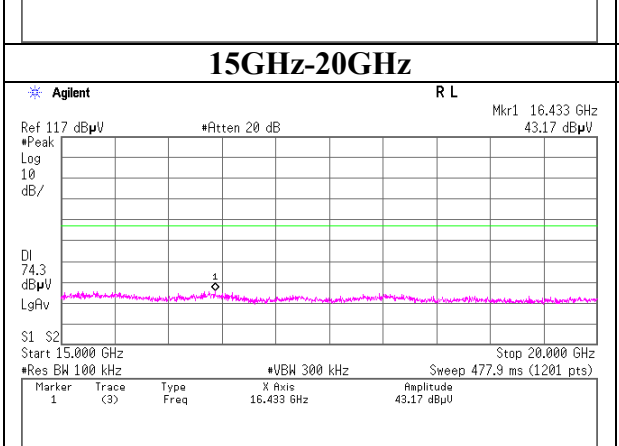
5GHz-10GHz



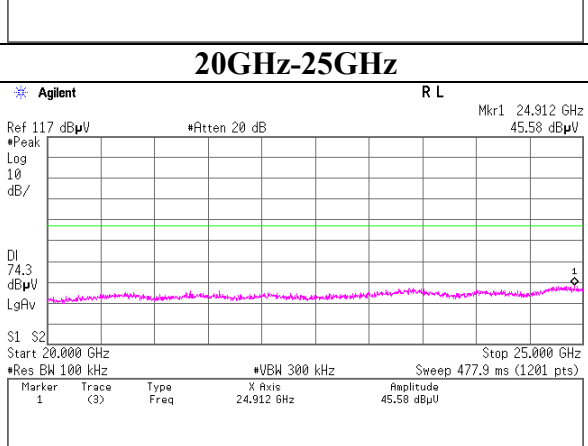
10GHz-15GHz



15GHz-20GHz



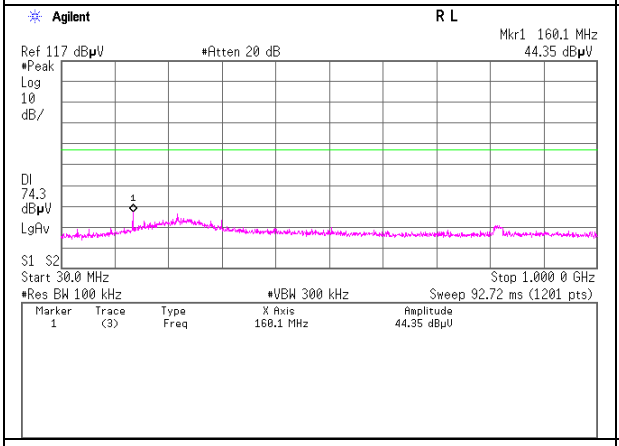
20GHz-25GHz



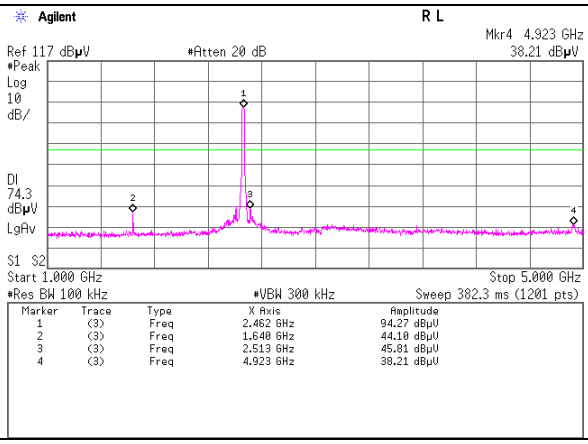
Conducted Spurious Emission

11g Tx 2462MHz

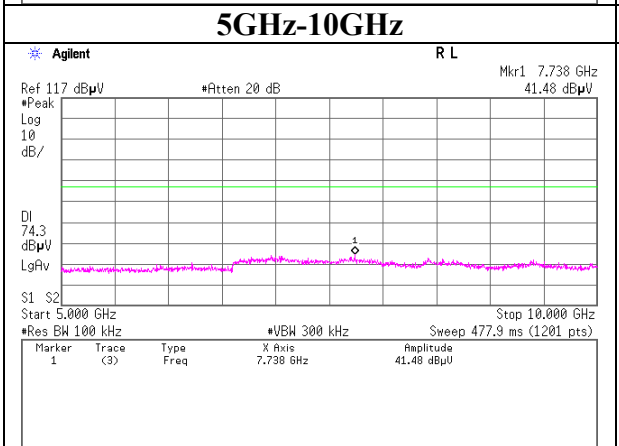
30MHz-1GHz



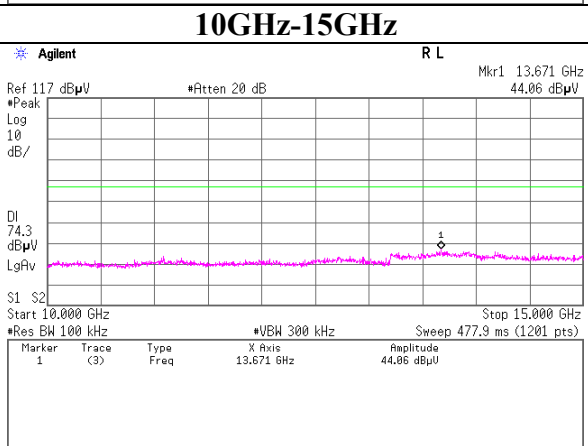
1GHz-5GHz



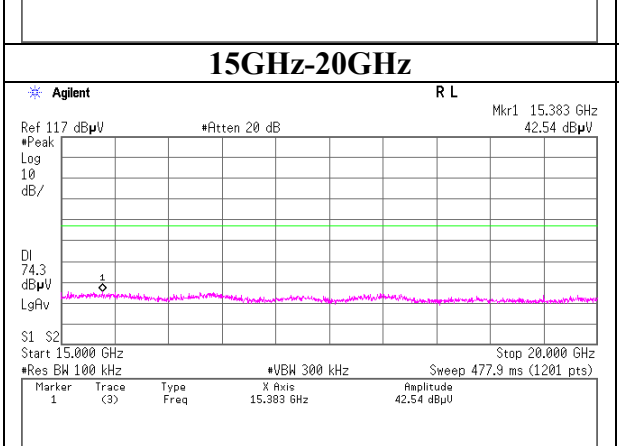
5GHz-10GHz



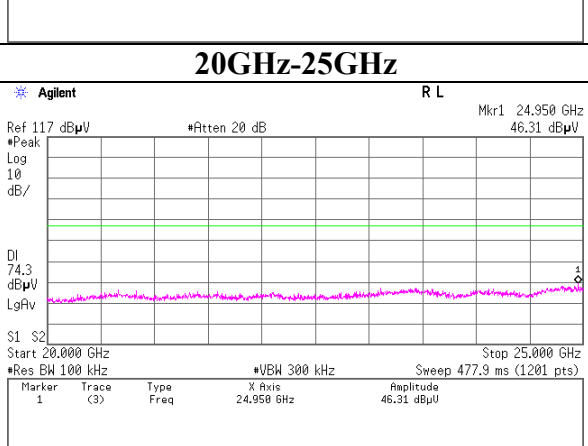
10GHz-15GHz



15GHz-20GHz



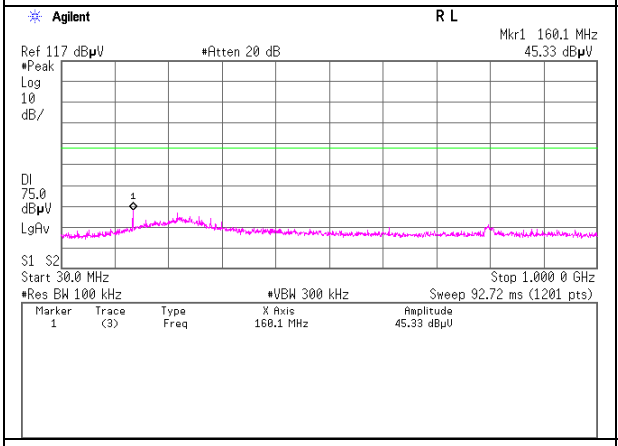
20GHz-25GHz



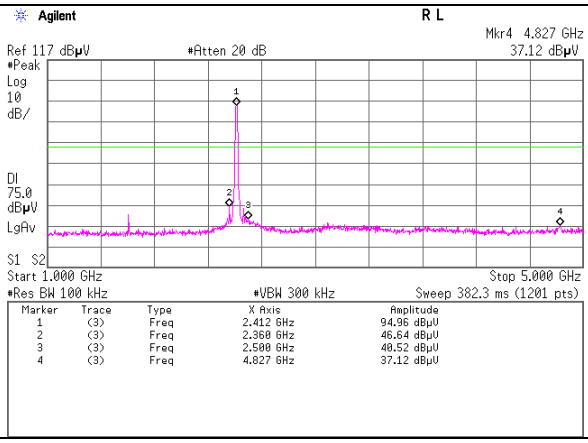
Conducted Spurious Emission

11n-20 Tx 2412MHz

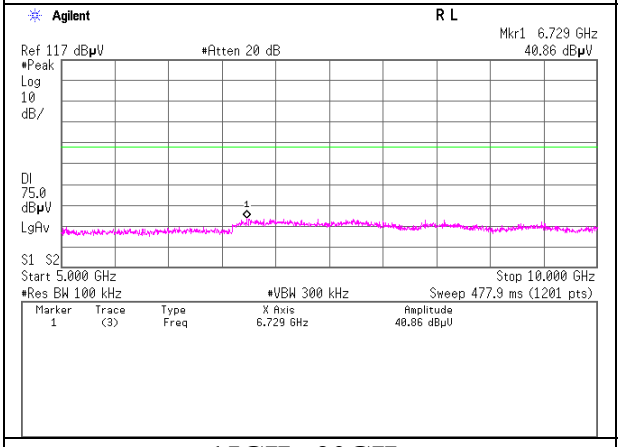
30MHz-1GHz



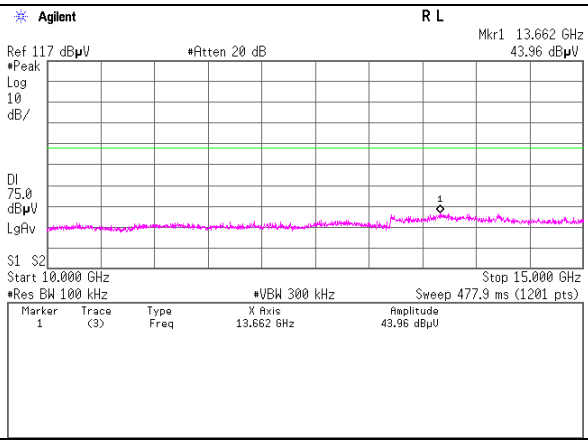
1GHz-5GHz



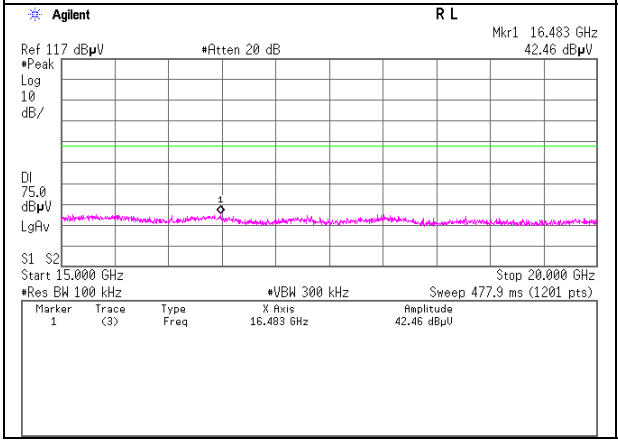
5GHz-10GHz



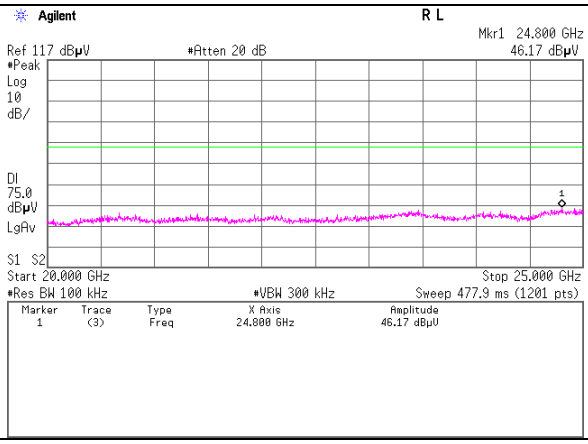
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz



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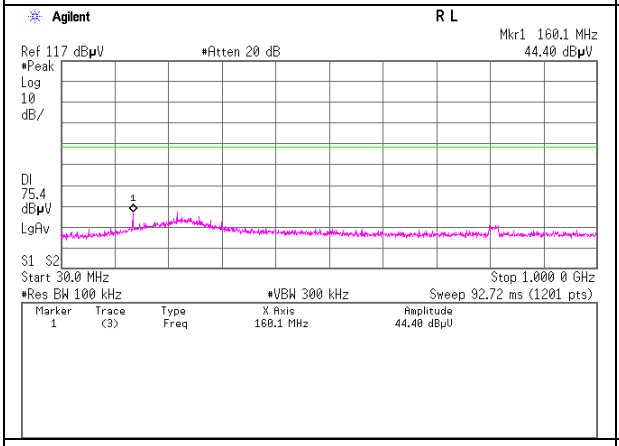
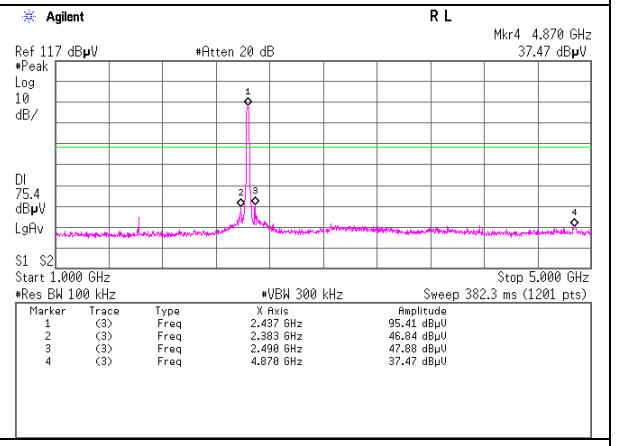
Conducted Spurious Emission

11n-20 Tx 2437MHz

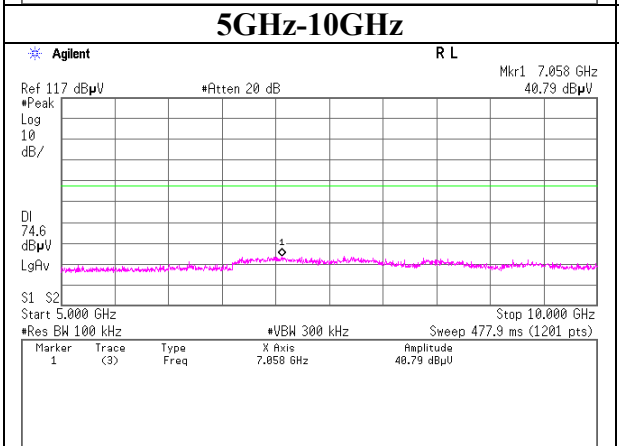
30MHz-1GHz



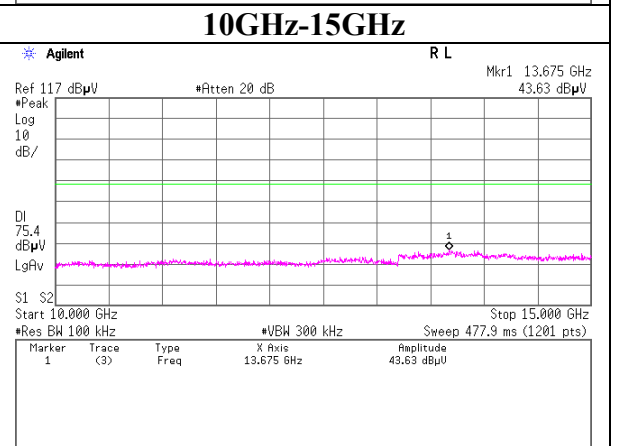
1GHz-5GHz



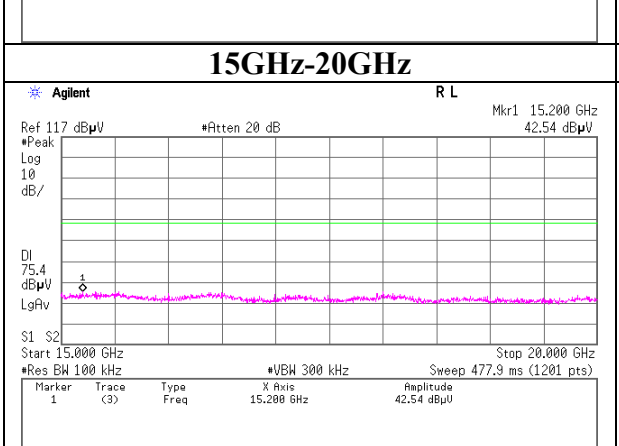
5GHz-10GHz



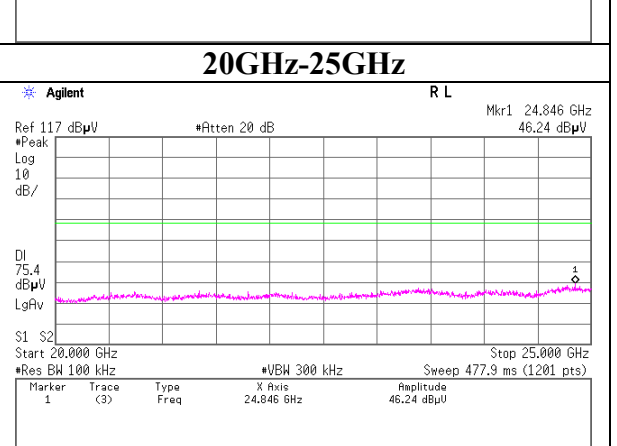
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz



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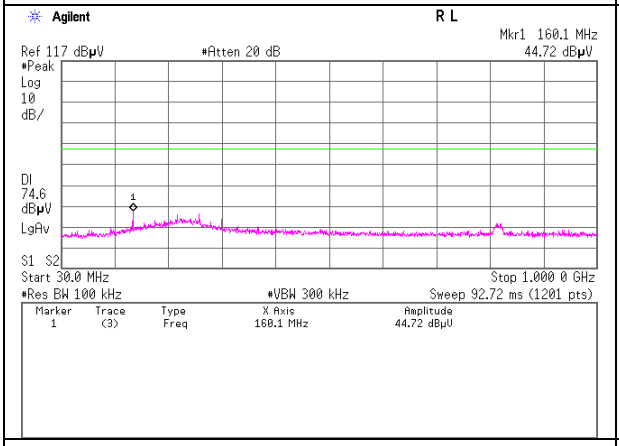
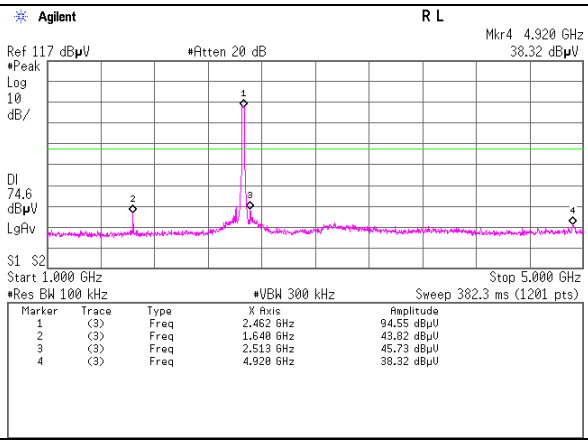
Conducted Spurious Emission

11n-20 Tx 2462MHz

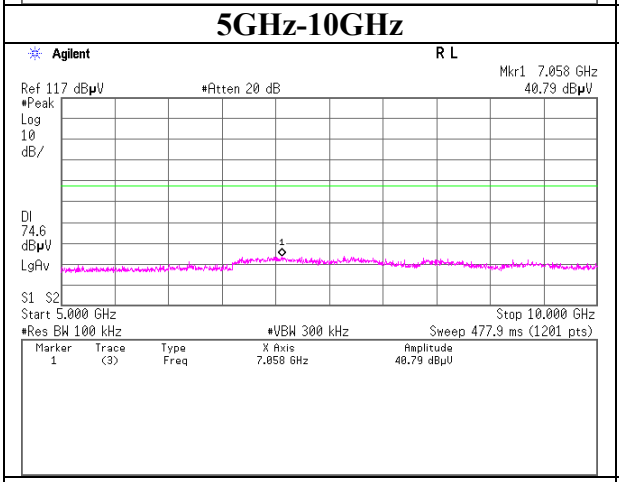
30MHz-1GHz



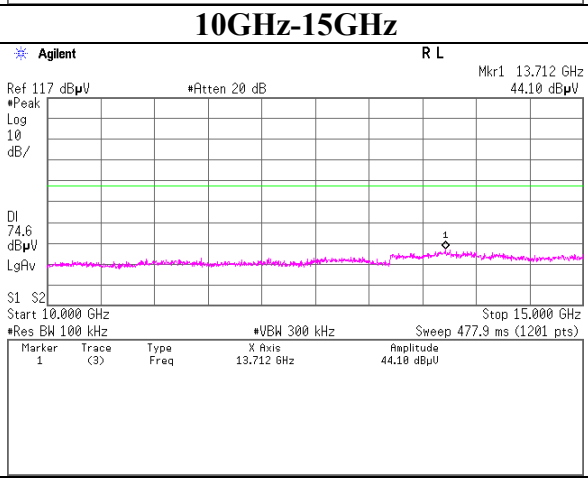
1GHz-5GHz



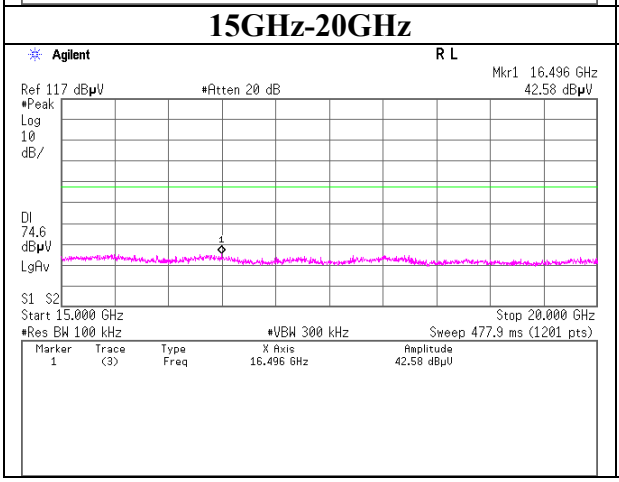
5GHz-10GHz



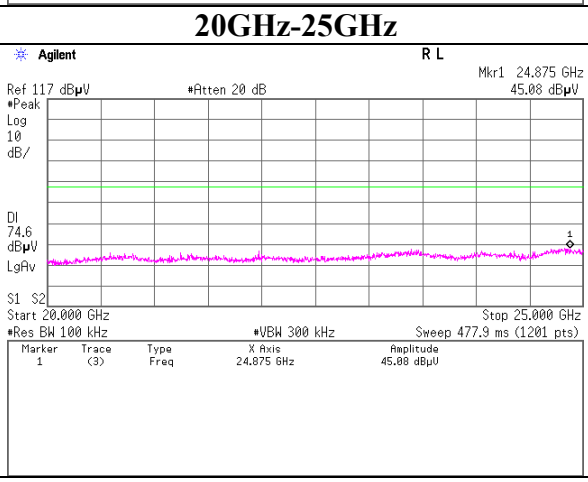
10GHz-15GHz



15GHz-20GHz



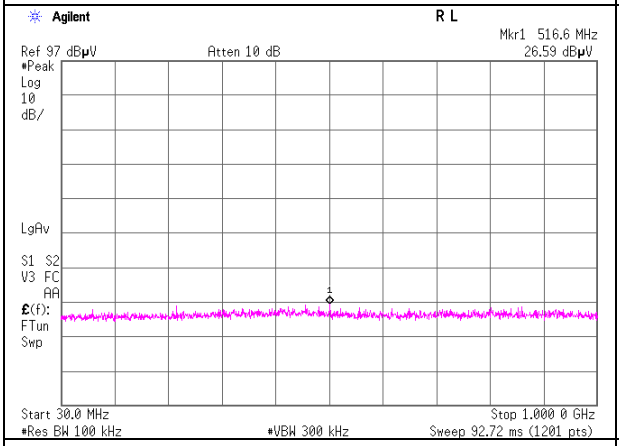
20GHz-25GHz



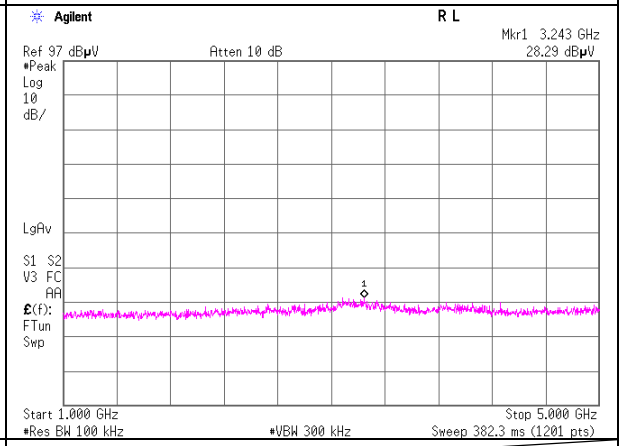
Conducted Spurious Emission

Rx 2437MHz

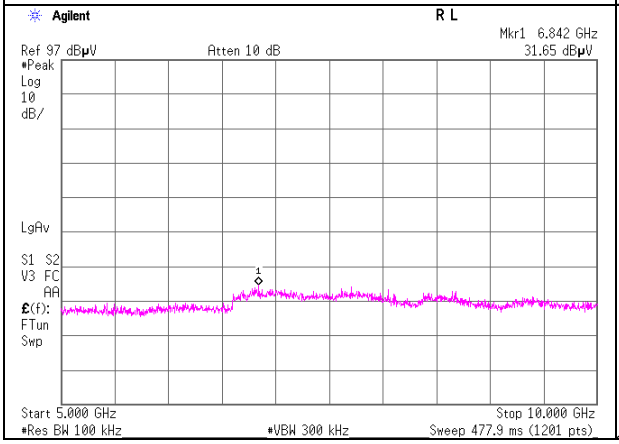
30MHz-1GHz



1GHz-5GHz



5GHz-10GHz



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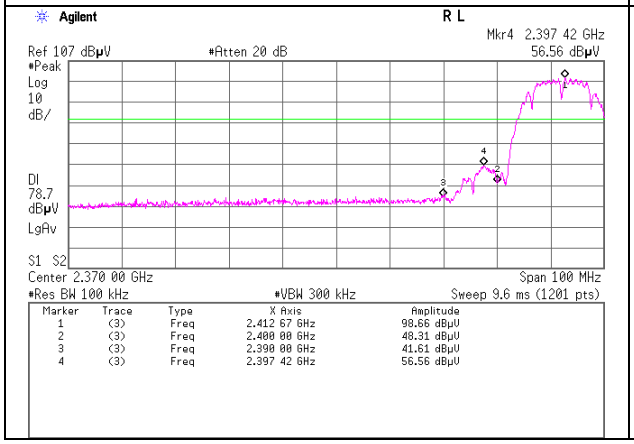
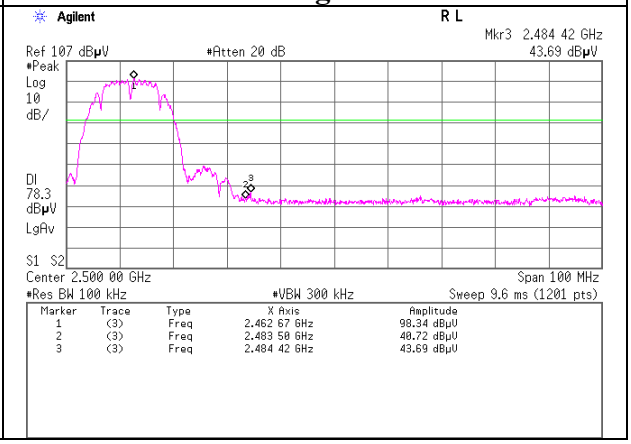
Conducted Emission Band Edge compliance

11b Tx

Low

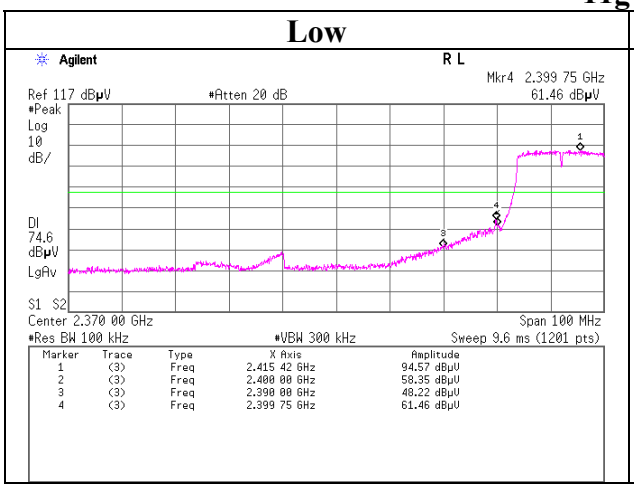


High

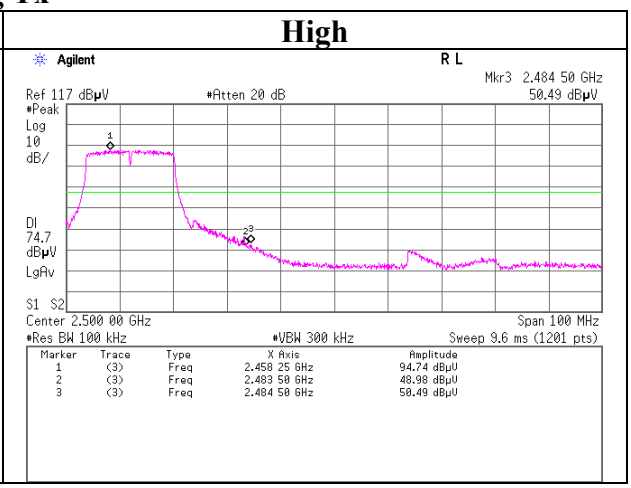


11g Tx

Low

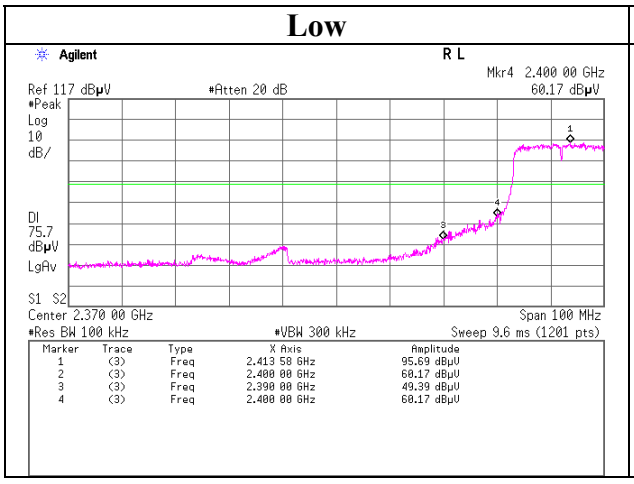


High

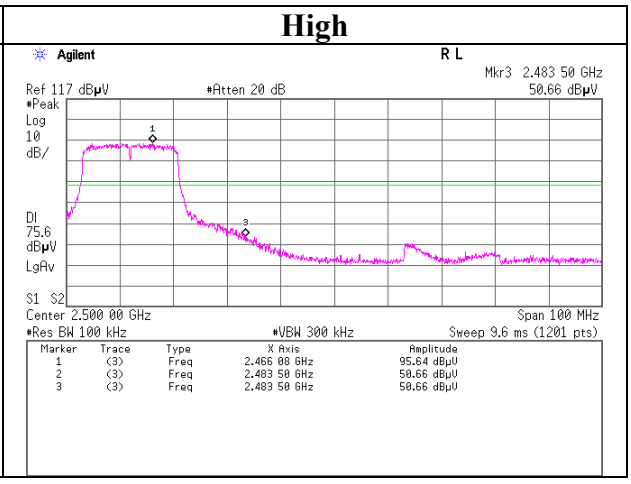


11n-20 Tx

Low



High



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Power Density

Test place	Head Office EMC Lab. No.6 Shielded Room
Report No.	30GE0203-HO-02
Date	03/13/2010
Temperature/ Humidity	23 deg.C./ 35%
Engineer	Takumi Shimada
Mode	11b Tx, 11g Tx

11b

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.00	-14.54	1.89	10.09	-2.56	8.00	10.56
2437.00	-14.19	1.89	10.09	-2.21	8.00	10.21
2462.00	-14.31	1.91	10.09	-2.31	8.00	10.31

11g

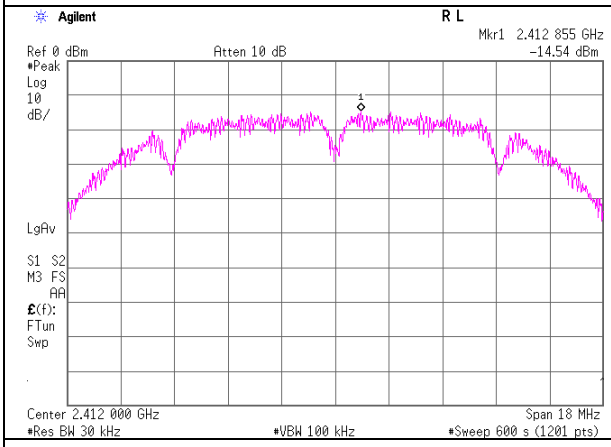
Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.00	-15.19	1.89	10.09	-3.21	8.00	11.21
2437.00	-15.60	1.89	10.09	-3.62	8.00	11.62
2462.00	-15.73	1.91	10.09	-3.73	8.00	11.73

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

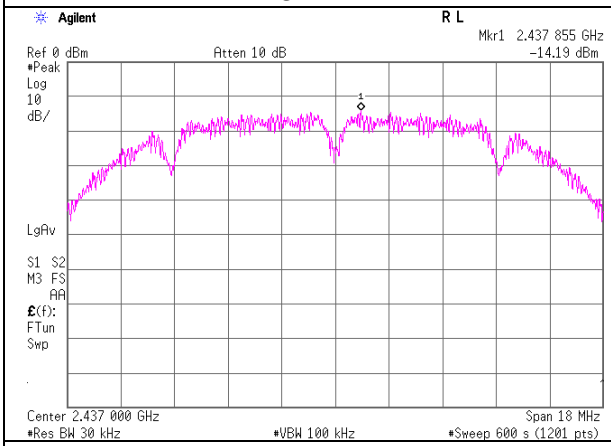
Power Density

11b

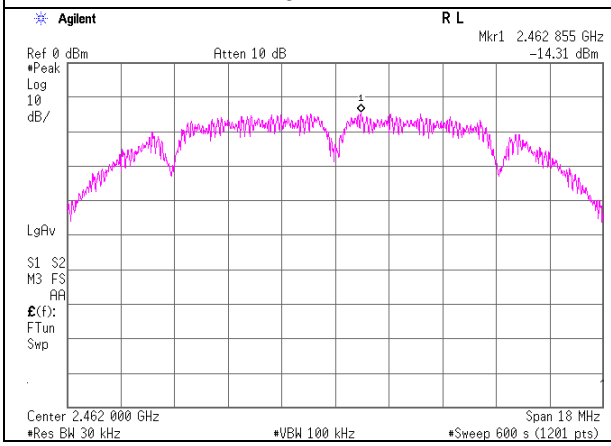
2412MHz



2437MHz

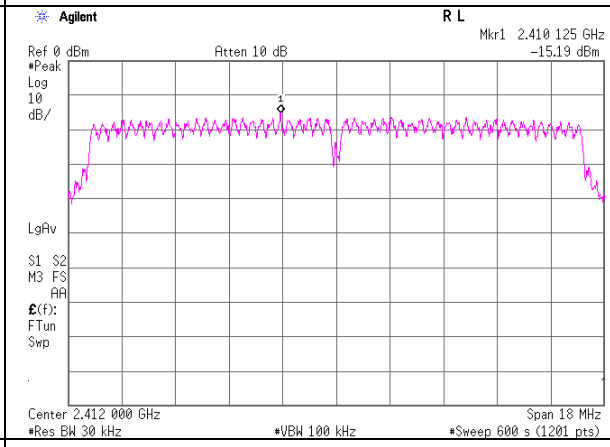


2462MHz

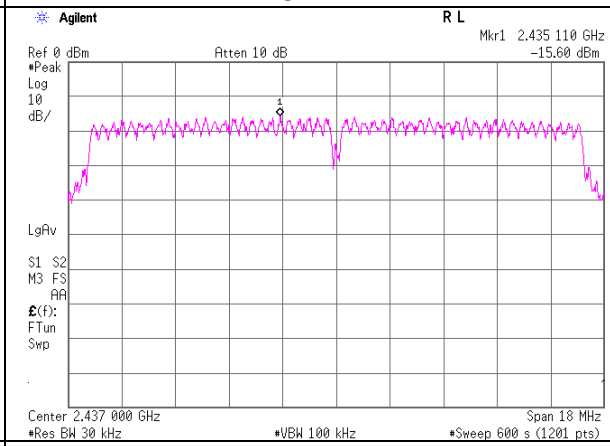


11g

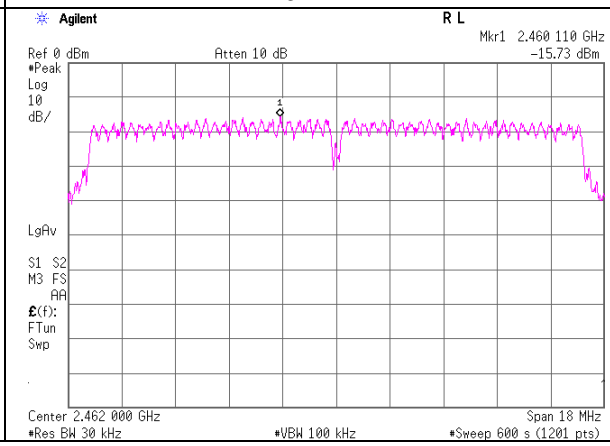
2412MHz



2437MHz



2462MHz



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Power Density

Test place	Head Office EMC Lab. No.6 Shielded Room
Report No.	30GE0203-HO-02
Date	03/13/2010
Temperature/ Humidity	23 deg.C./ 35%
Engineer	Takumi Shimada
Mode	11n-20 Tx

Antenna 1

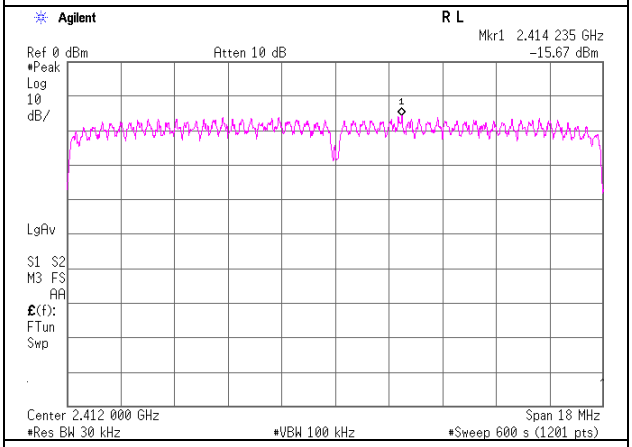
Freq.	Reading	Cable Loss	Atten.	Result		Limit	Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
2412.00	-15.67	1.89	10.09	-3.69	0.43	8.00	11.69
2437.00	-15.35	1.89	10.09	-3.37	0.46	8.00	11.37
2462.00	-15.49	1.91	10.09	-3.49	0.45	8.00	11.49

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

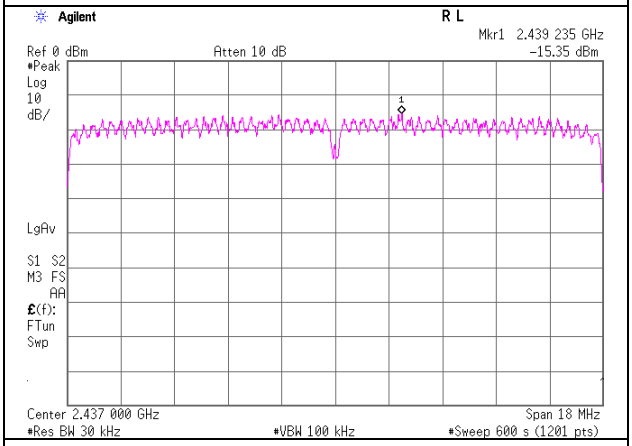
Power Density

11n-20

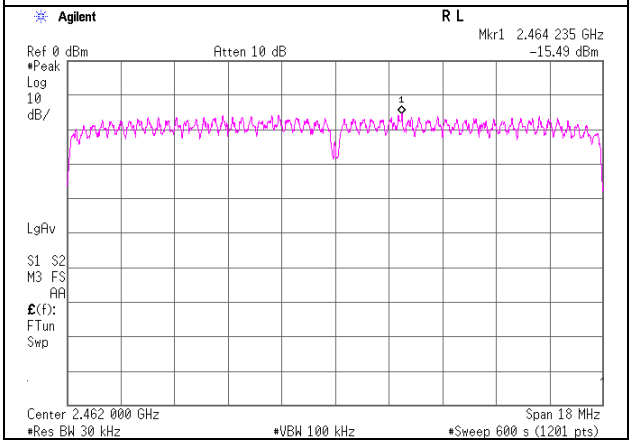
2412MHz



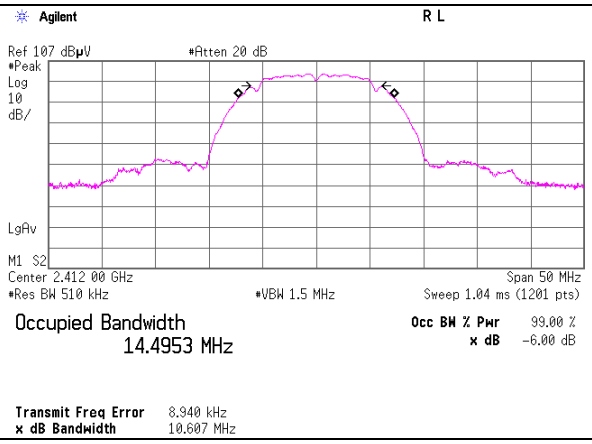
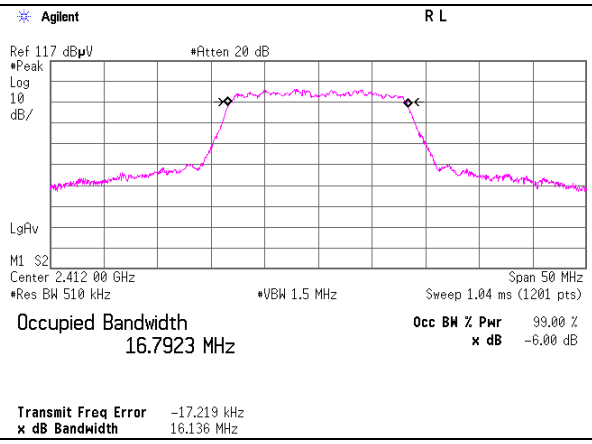
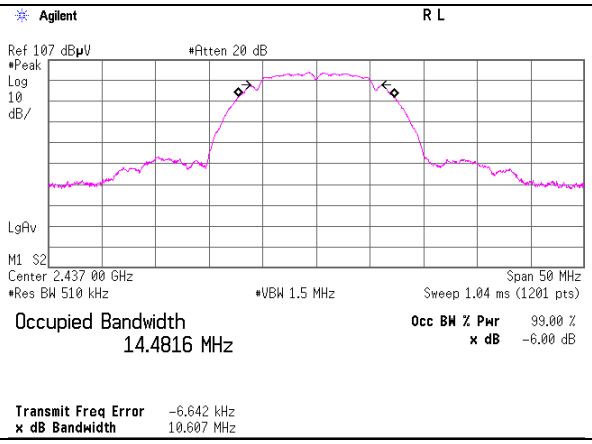
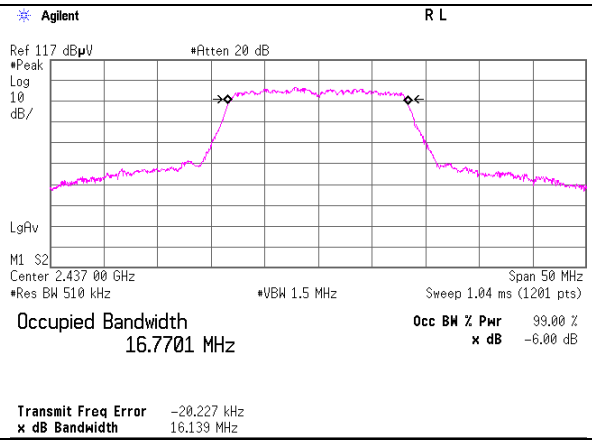
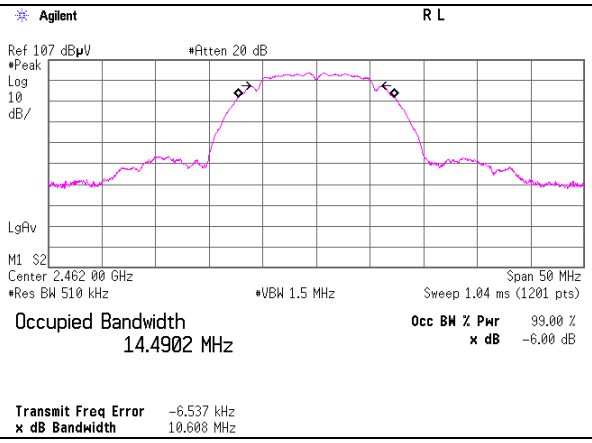
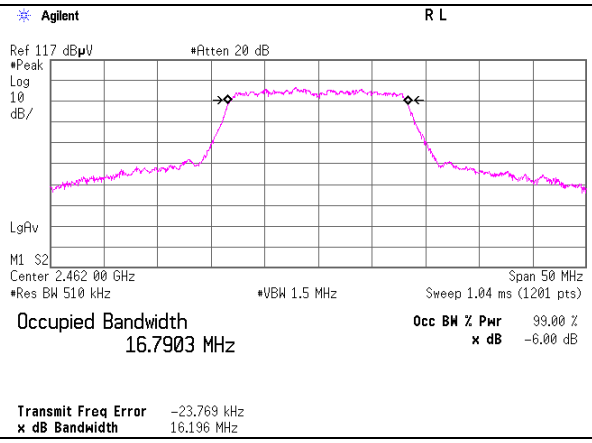
2437MHz



2462MHz



99%Occupied Bandwidth

11b	11g
2412MHz	**2412MHz**
	
2437MHz	**2437MHz**
	
2462MHz	**2462MHz**
	

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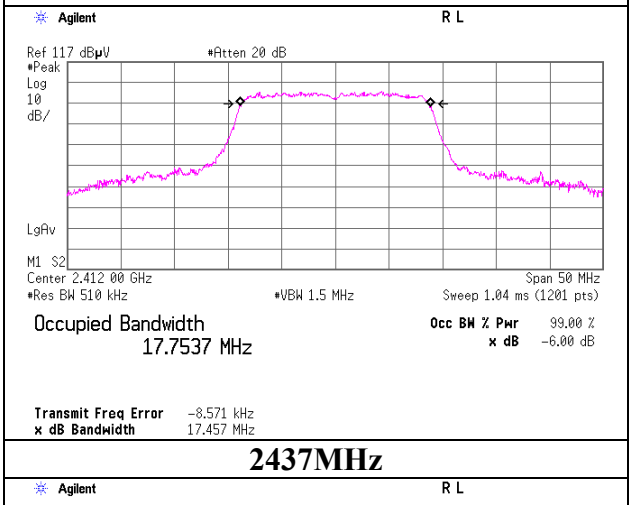
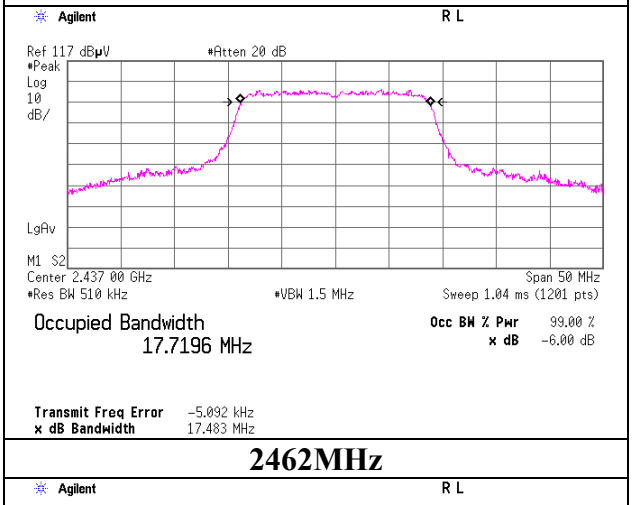
99% Occupied Bandwidth

11n-20

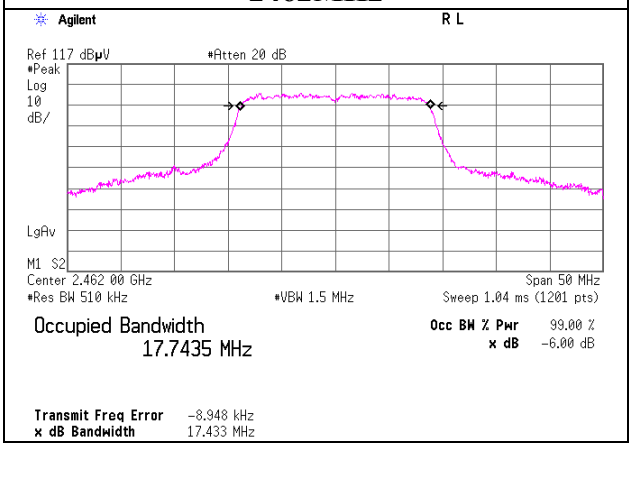
2412MHz



2437MHz



2462MHz



APPENDIX 3: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MOS-14	Thermo-Hygrometer	Custom	CTH-180	-	AT	2010/02/09 * 12
MAT-23	Attenuator(10dB) 1-18GHz	Orient Microwave	BX10-0476-00	-	AT	2010/03/01 * 12
MCC-45	Microwave Cable	Murata	MXGS83RK3000	-	AT	2009/07/06 * 12
MCC-114	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	290212/4	AT	2009/08/27 * 12
MTA-09	Terminator	HP	HP 909D	03745	AT	2010/02/02 * 12
MPM-12	Power Meter	Anritsu	ML2495A	0825002	AT	2009/08/26 * 12
MPSE-17	Power sensor	Anritsu	MA2411B	0738285	AT	2009/08/26 * 12
MCC-46	Microwave Cable	Murata	MXGS83RK3000	-	AT	2009/07/06 * 12
MAEC-03	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE/CE	2010/02/01 * 12
MOS-13	Thermo-Hygrometer	Custom	CTH-180	-	RE/CE	2010/02/09 * 12
MJM-06	Measure	PROMART	SEN1955	-	RE/CE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE/CE	-
MHA-20	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	258	RE	2009/04/30 * 12
MCC-56	Microwave Cable	Suhner	SUCOFLEX104	174410(1m) / 284655(5m)	RE	2010/01/25 * 12
MPA-11	MicroWave System Amplifier	Agilent	83017A	MY39500779	RE	2010/03/03 * 12
MHF-19	High Pass Filter 3.5-18.0GHz	TOKIMEC	TF323DCA	602	RE	2009/12/19 * 12
MCC-78	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	278993/4	RE	2009/12/19 * 12
MSA-10	Spectrum Analyzer	Agilent	E4448A	MY46180655	RE/AT	2010/02/03 * 12
MTR-08	Test Receiver	Rohde & Schwarz	ESCI	100767	RE/CE	2009/06/30 * 12
MBA-03	Biconical Antenna	Schwarzbeck	BBA9106	1915	RE	2010/01/23 * 12
MLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	174	RE	2010/01/23 * 12
MCC-51	Coaxial cable	UL Japan	-	-	RE	2009/07/02 * 12
MAT-09	Attenuator(6dB)	Weinschel Corp	2	BK7973	RE	2009/11/12 * 12
MPA-13	Pre Amplifier	SONOMA INSTRUMENT	310	260834	RE	2009/03/18 * 12
MSA-09	Spectrum Analyzer	Advantest	R3273	95090115	CE	2009/12/11 * 12
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	8127363	CE(EUT)	2010/02/04 * 12
MCC-112	Coaxial cable	Fujikura/Suhner/TSJ	5D-2W(10m)/SFM141(3m)/sucoform141-PE(1m)/421-010(1.5m)/RFM-E321(Switcher)	-/00640	CE	2009/07/02 * 12
MAT-66	Attenuator(13dB)	JFW Industries, Inc.	50FP-013H2 N	-	CE	2010/02/04 * 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

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