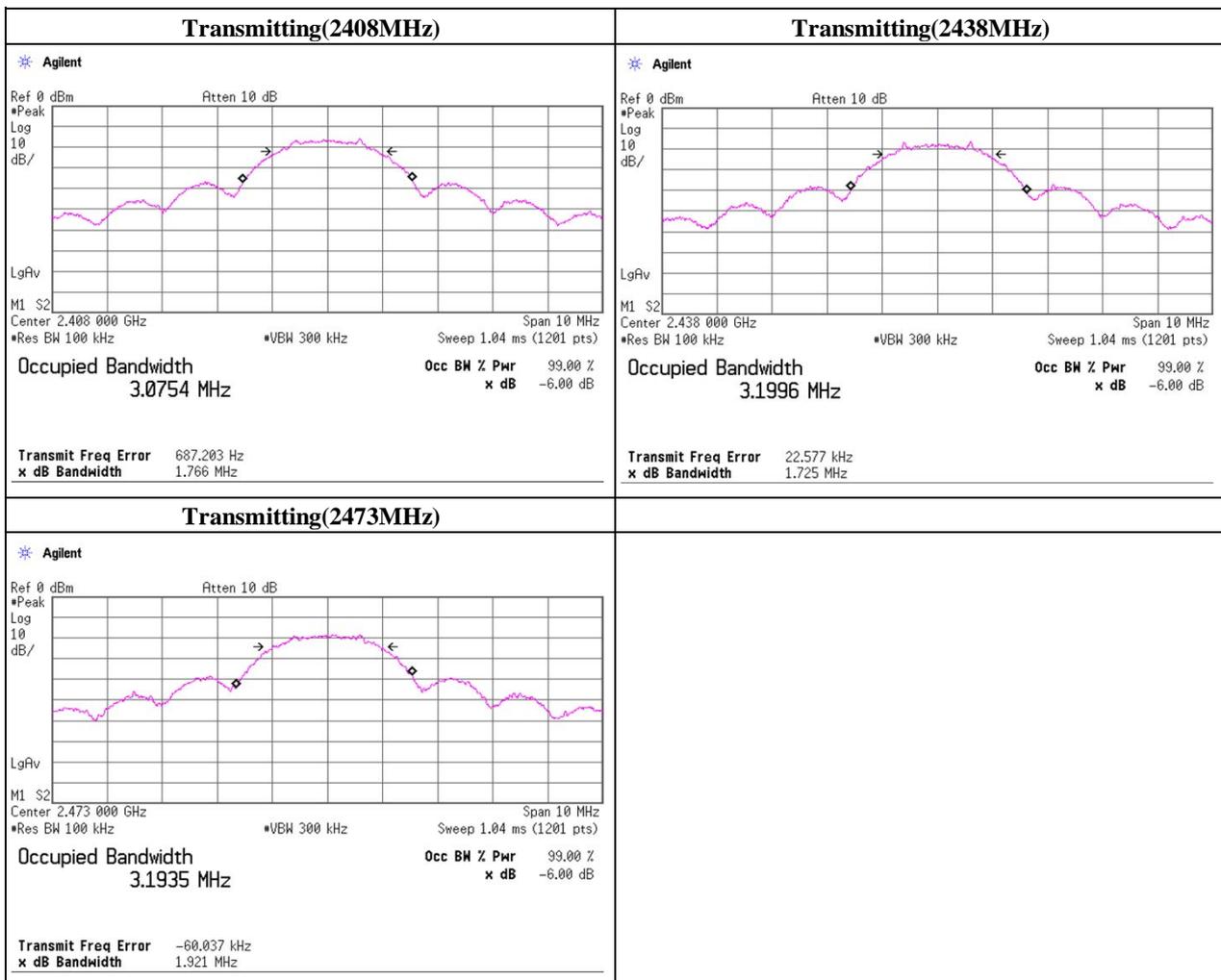


-6dB Bandwidth

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date 2011/1/8
 Temperature / Humidity 24deg.C./ 42%
 Engineer Makoto Hosaka
 Mode Tx, , ANT 2

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2408.0000	1.766	> 0.500
2438.0000	1.725	> 0.500
2473.0000	1.921	> 0.500



UL Japan, Inc.

Shonan EMC Lab.

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Peak Output Power (Conducted)

Test place UL Japan, Inc. Shonan EMC Lab. No.2 Shielded Room
Date 2011/1/6
Temperature / Humidity 23deg.C. 45 %
Engineer Makoto Hosaka
Mode Tx

ANT 2

Ch	Freq. [MHz]	P/M (PK) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]	
Low	2408.0	-12.32	0.38	20.16	8.22	6.63	30.00	1000	21.78
Mid	2438.0	-12.88	0.39	20.15	7.66	5.83	30.00	1000	22.34
High	2473.0	-13.57	0.39	20.15	6.97	4.98	30.00	1000	23.03

Sample Calculation:

Result = Reading + Cable Loss (supplied by customer) + Atten. Loss

* In the above table, factor 0.0dB represents no use of Atten. and/or Filter.

*The test result is rounded off to one or two decimal places, so some differences might be observed.

[Pre check]

Antenna	Freq. [MHz]	P/M (PK) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]	
1	2438.0	-13.12	0.39	20.15	7.42	5.52	30.00	1000	22.58
2	2438.0	-12.88	0.39	20.15	7.66	5.83	30.00	1000	22.34

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Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.2 Semi Anechoic Chamber
 Date 2011/1/6 2011/1/7
 Temperature / Humidity 19deg.C./35% 18deg.C./25%
 Engineer Tatsuya Arai Hikaru Shirasawa
 Mode Tx, 2408 MHz
 , ANT 2

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	112.900	QP	35.1	11.9	8.0	31.8	23.2	43.5	20.3	159	319	
Hori.	186.276	QP	35.8	16.3	8.8	31.7	29.2	43.5	14.3	175	315	
Hori.	218.909	QP	31.0	16.8	9.0	31.7	25.1	46.0	20.9	155	297	
Hori.	278.053	QP	34.1	18.8	9.5	31.7	30.7	46.0	15.3	119	55	
Hori.	359.282	QP	35.8	15.4	6.8	31.6	26.4	46.0	19.6	100	326	
Hori.	443.003	QP	33.6	17.1	7.4	31.6	26.5	46.0	19.5	100	239	
Hori.	2362.650	PK	47.1	27.3	13.5	37.1	50.8	73.9	23.1	100	161	
Hori.	2385.050	PK	49.4	27.4	13.6	37.1	53.3	73.9	20.6	100	161	
Hori.	2390.000	PK	46.5	27.4	13.6	37.0	50.5	73.9	23.4	100	161	
Hori.	2626.846	PK	47.7	27.6	13.7	36.9	52.1	73.9	21.8	100	161	
Hori.	4816.000	PK	55.6	30.6	5.8	35.9	56.1	73.9	17.8	100	316	
Hori.	7224.000	PK	47.0	36.3	7.2	37.3	53.2	73.9	20.7	154	279	
Hori.	9632.000	PK	43.7	38.4	8.3	35.6	54.8	73.9	19.1	100	0	
Hori.	12040.000	PK	45.1	39.4	9.4	36.9	57.0	73.9	16.9	100	0	
Hori.	2362.650	AV	38.2	27.3	13.5	37.1	41.9	53.9	12.0	100	161	
Hori.	2385.050	AV	39.9	27.4	13.6	37.1	43.8	53.9	10.1	100	161	
Hori.	2390.000	AV	35.9	27.4	13.6	37.0	39.9	53.9	14.0	100	161	
Hori.	2626.846	AV	39.1	27.6	13.7	36.9	43.5	53.9	10.4	100	161	
Hori.	4816.000	AV	48.6	30.6	5.8	35.9	49.1	53.9	4.8	100	316	
Hori.	7224.000	AV	38.3	36.3	7.2	37.3	44.5	53.9	9.4	154	279	
Hori.	9632.000	AV	31.3	38.4	8.3	35.6	42.4	53.9	11.5	100	0	
Hori.	12040.000	AV	33.1	39.4	9.4	36.9	45.0	53.9	8.9	100	0	
Vert.	112.900	QP	35.1	11.9	8.0	31.8	23.2	43.5	20.3	100	230	
Vert.	176.662	QP	27.9	16.1	8.7	31.7	21.0	43.5	22.5	100	221	
Vert.	445.935	QP	35.0	17.3	7.4	31.6	28.1	46.0	17.9	134	21	
Vert.	2362.650	PK	48.5	27.3	13.5	37.1	52.2	73.9	21.7	100	236	
Vert.	2385.050	PK	50.7	27.4	13.6	37.1	54.6	73.9	19.3	100	236	
Vert.	2390.000	PK	47.4	27.4	13.6	37.0	51.4	73.9	22.5	100	236	
Vert.	2626.846	PK	47.1	27.6	13.7	36.9	51.5	73.9	22.4	100	236	
Vert.	4816.000	PK	59.4	30.6	5.8	35.9	59.9	73.9	14.0	155	303	
Vert.	7224.000	PK	45.6	36.3	7.2	37.3	51.8	73.9	22.1	100	272	
Vert.	9632.000	PK	44.0	38.4	8.3	35.6	55.1	73.9	18.8	100	0	
Vert.	12040.000	PK	45.0	39.4	9.4	36.9	56.9	73.9	17.0	100	0	
Vert.	2362.650	AV	38.5	27.3	13.5	37.1	42.2	53.9	11.7	100	236	
Vert.	2385.050	AV	41.1	27.4	13.6	37.1	45.0	53.9	8.9	100	236	
Vert.	2390.000	AV	35.9	27.4	13.6	37.0	39.9	53.9	14.0	100	236	
Vert.	2626.846	AV	38.7	27.6	13.7	36.9	43.1	53.9	10.8	100	236	
Vert.	4816.000	AV	49.7	30.6	5.8	35.9	50.2	53.9	3.7	155	303	
Vert.	7224.000	AV	36.1	36.3	7.2	37.3	42.3	53.9	11.6	100	272	
Vert.	9632.000	AV	31.4	38.4	8.3	35.6	42.5	53.9	11.4	100	0	
Vert.	12040.000	AV	33.2	39.4	9.4	36.9	45.1	53.9	8.8	100	0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 13GHz)) - Gain(Amplifier)

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

Distance factor: 13GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

20dBc Data Sheet (RBW 100kHz, VBW 300kHz)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2408.000	PK	98.3	27.4	13.7	37.0	102.4	-	-	Carrier
Hori.	2400.000	PK	49.0	27.4	13.7	37.0	53.1	82.4	29.3	
Vert.	2408.000	PK	99.2	27.4	13.7	37.0	103.3	-	-	Carrier
Vert.	2400.000	PK	48.6	27.4	13.7	37.0	52.7	83.3	30.6	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 13GHz)) - Gain(Amplifier)

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Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.2 Semi Anechoic Chamber
 Date 2011/1/6 2011/1/7
 Temperature / Humidity 19deg.C./35% 18deg.C./25%
 Engineer Tatsuya Arai Hikaru Shirasawa
 Mode Tx, 2438 MHz
 , ANT 2

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	112.896	QP	35.1	11.9	8.0	31.8	23.2	43.5	20.3	160	318	
Hori.	186.284	QP	35.7	16.3	8.8	31.7	29.1	43.5	14.4	178	322	
Hori.	221.649	QP	30.2	16.9	9.1	31.7	24.5	46.0	21.5	141	281	
Hori.	280.614	QP	33.9	18.8	9.5	31.7	30.5	46.0	15.5	126	55	
Hori.	358.580	QP	36.0	15.5	6.8	31.6	26.7	46.0	19.3	100	323	
Hori.	443.285	QP	33.3	17.1	7.4	31.6	26.2	46.0	19.8	100	237	
Hori.	2483.500	PK	47.7	27.4	13.6	36.9	51.8	73.9	22.1	100	162	
Hori.	4876.000	PK	56.7	30.7	5.8	35.9	57.3	73.9	16.6	100	317	
Hori.	7314.000	PK	47.9	36.4	7.2	37.3	54.2	73.9	19.7	156	279	
Hori.	9752.000	PK	42.1	38.5	8.3	35.8	53.1	73.9	20.8	100	0	
Hori.	12190.000	PK	44.0	39.4	9.5	36.9	56.0	73.9	17.9	100	0	
Hori.	2483.500	AV	36.4	27.4	13.6	36.9	40.5	53.9	13.4	100	162	
Hori.	4876.000	AV	49.3	30.7	5.8	35.9	49.9	53.9	4.0	100	317	
Hori.	7314.000	AV	39.3	36.4	7.2	37.3	45.6	53.9	8.3	156	279	
Hori.	9752.000	AV	32.1	38.5	8.3	35.8	43.1	53.9	10.8	100	0	
Hori.	12190.000	AV	32.5	39.4	9.5	36.9	44.5	53.9	9.4	100	0	
Vert.	112.896	QP	35.3	11.9	8.0	31.8	23.4	43.5	20.1	100	196	
Vert.	186.279	QP	31.0	16.3	8.8	31.7	24.4	43.5	19.1	100	289	
Vert.	445.111	QP	33.7	17.2	7.4	31.6	26.7	46.0	19.3	134	6	
Vert.	2483.500	PK	47.9	27.4	13.6	36.9	52.0	73.9	21.9	100	192	
Vert.	4876.000	PK	57.6	30.7	5.8	35.9	58.2	73.9	15.7	100	302	
Vert.	7314.000	PK	46.3	36.4	7.2	37.3	52.6	73.9	21.3	139	194	
Vert.	9752.000	PK	42.0	38.5	8.3	35.8	53.0	73.9	20.9	100	0	
Vert.	12190.000	PK	43.8	39.4	9.5	36.9	55.8	73.9	18.1	100	0	
Vert.	2483.500	AV	37.7	27.4	13.6	36.9	41.8	53.9	12.1	100	192	
Vert.	4876.000	AV	50.1	30.7	5.8	35.9	50.7	53.9	3.2	100	302	
Vert.	7314.000	AV	36.8	36.4	7.2	37.3	43.1	53.9	10.8	139	194	
Vert.	9752.000	AV	32.7	38.5	8.3	35.8	43.7	53.9	10.2	100	0	
Vert.	12190.000	AV	32.6	39.4	9.5	36.9	44.6	53.9	9.3	100	0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 13GHz)) - Gain(Amplifier)

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

Distance factor: 13GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.2 Semi Anechoic Chamber
 Date 2011/1/6 2011/1/7
 Temperature / Humidity 19deg.C./35% 18deg.C./25%
 Engineer Tatsuya Arai Hikaru Shirasawa
 Mode Tx, 2473 MHz
 , ANT 2

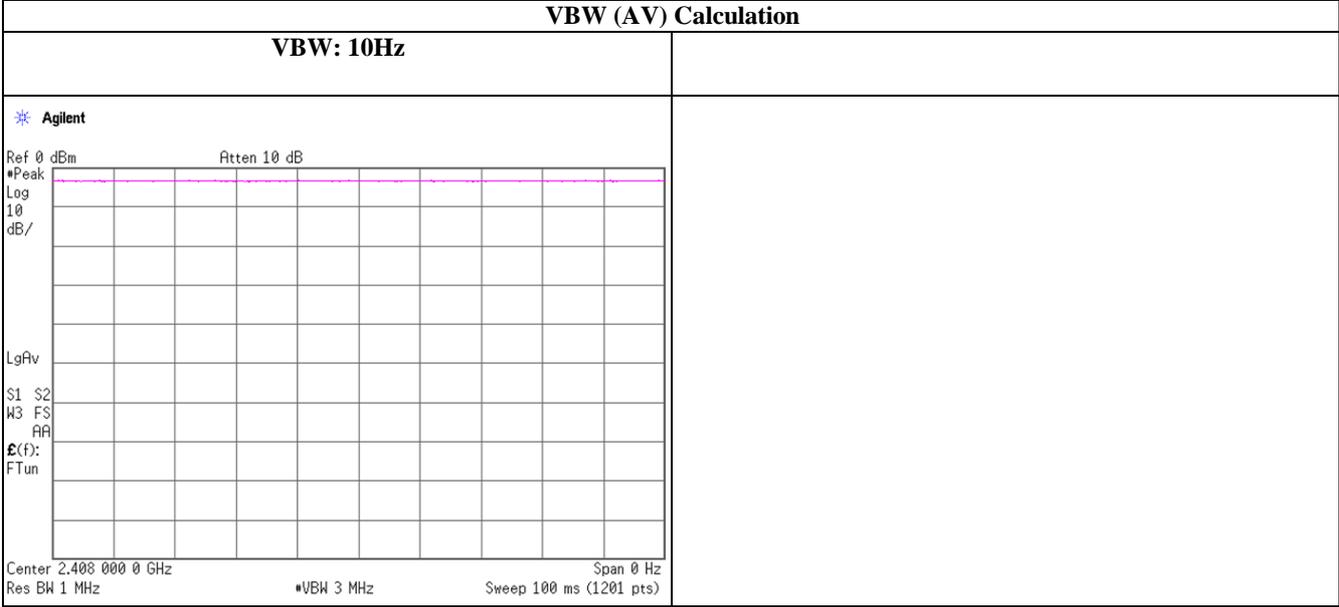
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	112.901	QP	35.2	11.9	8.0	31.8	23.3	43.5	20.2	163	328	
Hori.	186.287	QP	34.7	16.3	8.8	31.7	28.1	43.5	15.4	166	323	
Hori.	224.809	QP	31.0	16.9	9.1	31.7	25.3	46.0	20.7	140	281	
Hori.	280.530	QP	33.1	18.8	9.5	31.7	29.7	46.0	16.3	119	45	
Hori.	362.263	QP	35.2	15.6	6.8	31.6	26.0	46.0	20.0	100	301	
Hori.	440.297	QP	35.4	17.1	7.4	31.6	28.3	46.0	17.7	100	223	
Hori.	2427.828	PK	47.6	27.4	13.6	37.0	51.6	73.9	22.3	100	155	
Hori.	2483.500	PK	49.1	27.4	13.6	36.9	53.2	73.9	20.7	100	155	
Hori.	2495.000	PK	47.9	27.4	13.6	36.9	52.0	73.9	21.9	100	155	
Hori.	2518.152	PK	44.6	27.5	13.7	36.9	48.9	73.9	25.0	100	155	
Hori.	4946.000	PK	55.7	30.9	5.9	35.9	56.6	73.9	17.3	119	108	
Hori.	7419.000	PK	46.4	36.6	7.1	37.3	52.8	73.9	21.1	128	10	
Hori.	9892.000	PK	43.4	38.7	8.4	35.9	54.6	73.9	19.3	100	0	
Hori.	12365.000	PK	43.9	39.4	9.6	36.8	56.1	73.9	17.8	100	0	
Hori.	2427.828	AV	37.3	27.4	13.6	37.0	41.3	53.9	12.6	100	155	
Hori.	2483.500	AV	37.3	27.4	13.6	36.9	41.4	53.9	12.5	100	155	
Hori.	2495.000	AV	37.9	27.4	13.6	36.9	42.0	53.9	11.9	100	155	
Hori.	2518.152	AV	34.8	27.5	13.7	36.9	39.1	53.9	14.8	100	155	
Hori.	4946.000	AV	48.5	30.9	5.9	35.9	49.4	53.9	4.5	119	108	
Hori.	7419.000	AV	36.2	36.6	7.1	37.3	42.6	53.9	11.3	128	10	
Hori.	9892.000	AV	31.0	38.7	8.4	35.9	42.2	53.9	11.7	100	0	
Hori.	12365.000	AV	31.3	39.4	9.6	36.8	43.5	53.9	10.4	100	0	
Vert.	112.901	QP	35.7	11.9	8.0	31.8	23.8	43.5	19.7	100	241	
Vert.	186.276	QP	31.2	16.3	8.8	31.7	24.6	43.5	18.9	100	312	
Vert.	445.037	QP	31.8	17.2	7.4	31.6	24.8	46.0	21.2	134	13	
Vert.	2427.828	PK	47.8	27.4	13.6	37.0	51.8	73.9	22.1	100	193	
Vert.	2483.500	PK	49.9	27.4	13.6	36.9	54.0	73.9	19.9	100	193	
Vert.	2495.000	PK	49.3	27.4	13.6	36.9	53.4	73.9	20.5	100	193	
Vert.	2518.152	PK	46.3	27.5	13.7	36.9	50.6	73.9	23.3	100	193	
Vert.	4946.000	PK	52.6	30.9	5.9	35.9	53.5	73.9	20.4	100	292	
Vert.	7419.000	PK	45.3	36.6	7.1	37.3	51.7	73.9	22.2	130	189	
Vert.	9892.000	PK	43.1	38.7	8.4	35.9	54.3	73.9	19.6	100	0	
Vert.	12365.000	PK	43.4	39.4	9.6	36.8	55.6	73.9	18.3	100	0	
Vert.	2427.828	AV	39.1	27.4	13.6	37.0	43.1	53.9	10.8	100	193	
Vert.	2483.500	AV	38.7	27.4	13.6	36.9	42.8	53.9	11.1	100	193	
Vert.	2495.000	AV	39.6	27.4	13.6	36.9	43.7	53.9	10.2	100	193	
Vert.	2518.152	AV	36.4	27.5	13.7	36.9	40.7	53.9	13.2	100	193	
Vert.	4946.000	AV	46.1	30.9	5.9	35.9	47.0	53.9	6.9	100	292	
Vert.	7419.000	AV	36.1	36.6	7.1	37.3	42.5	53.9	11.4	130	189	
Vert.	9892.000	AV	30.9	38.7	8.4	35.9	42.1	53.9	11.8	100	0	
Vert.	12365.000	AV	31.3	39.4	9.6	36.8	43.5	53.9	10.4	100	0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 13GHz)) - Gain(Amplifier)

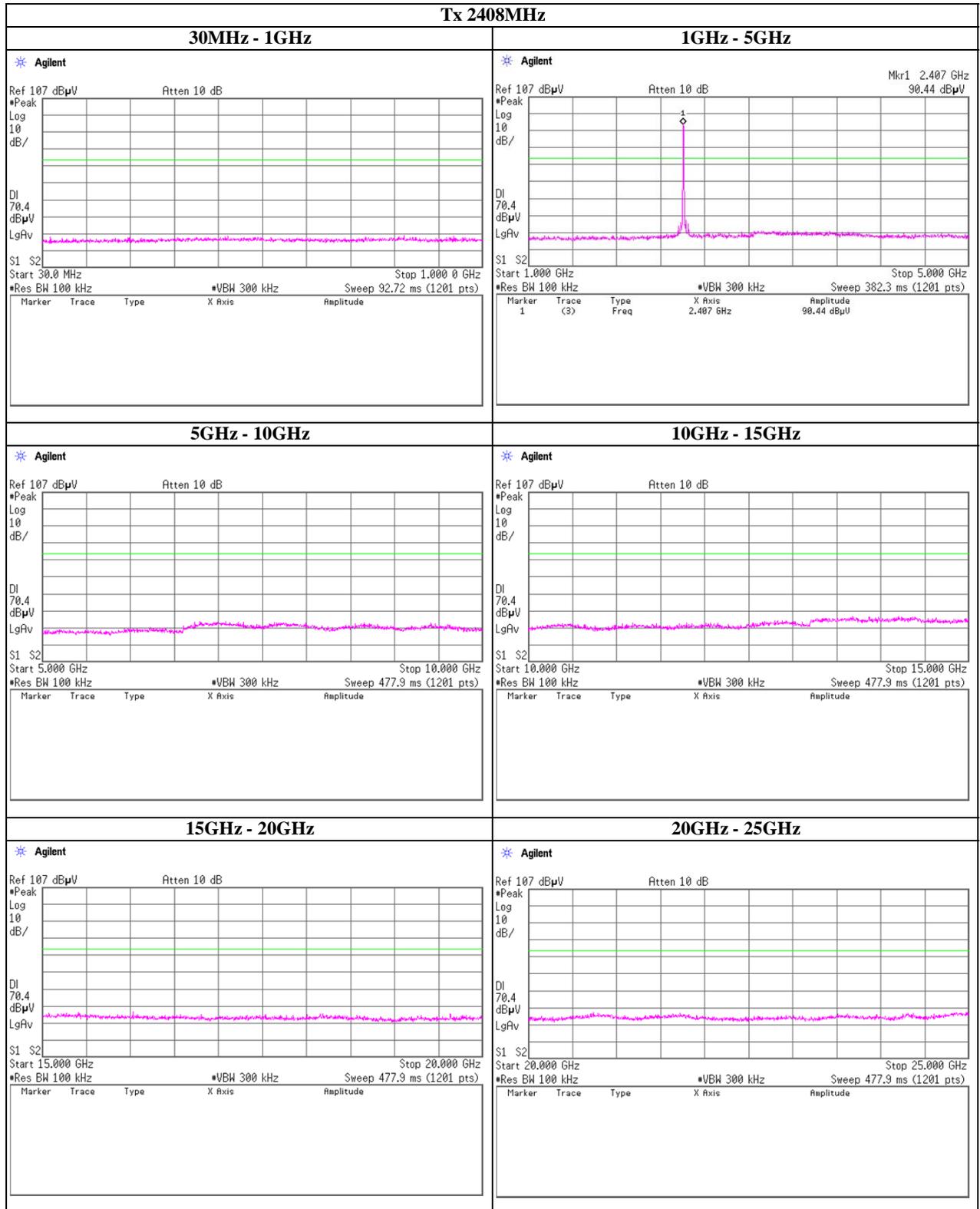
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor: 13GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

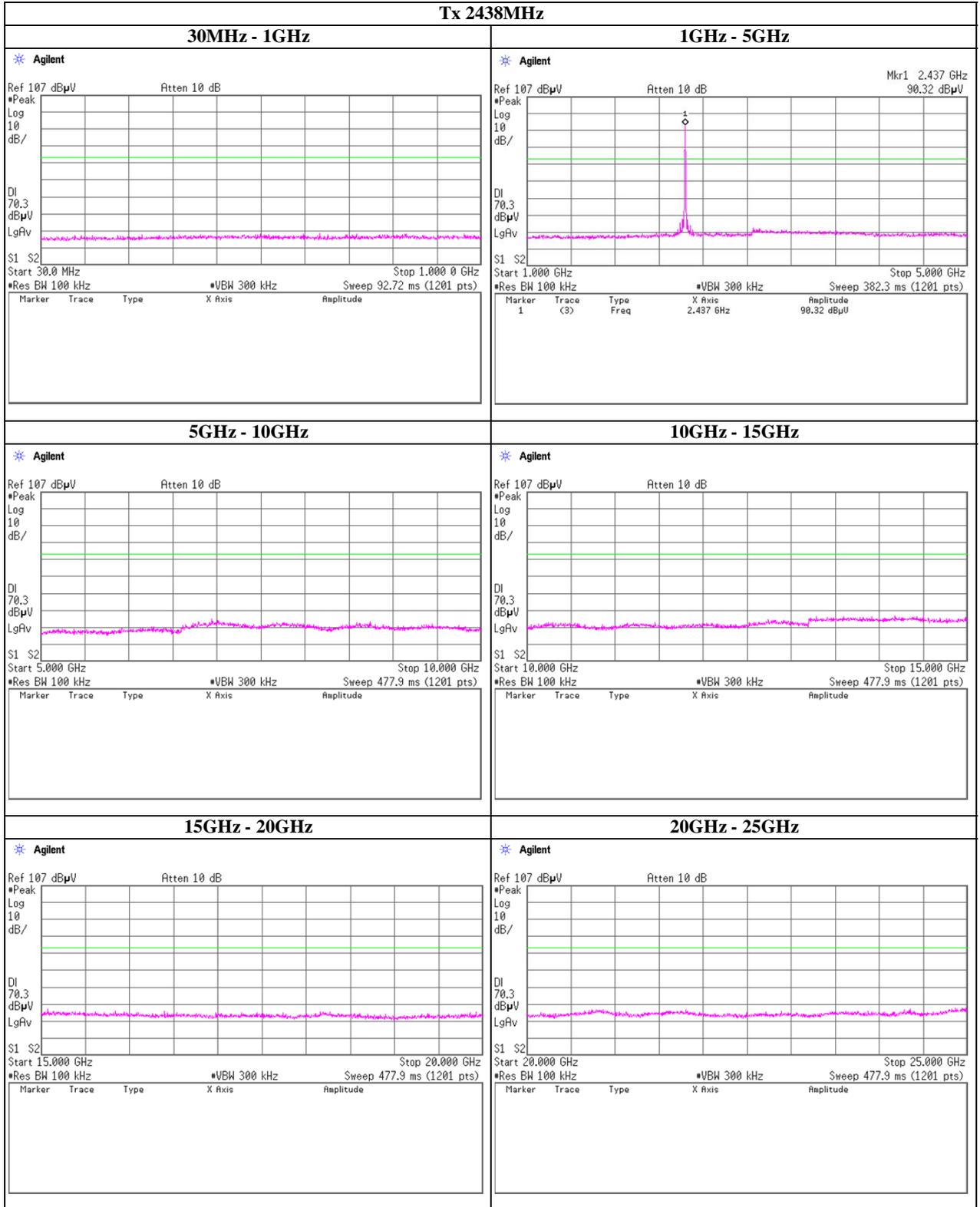
Spurious emission (Radiated)



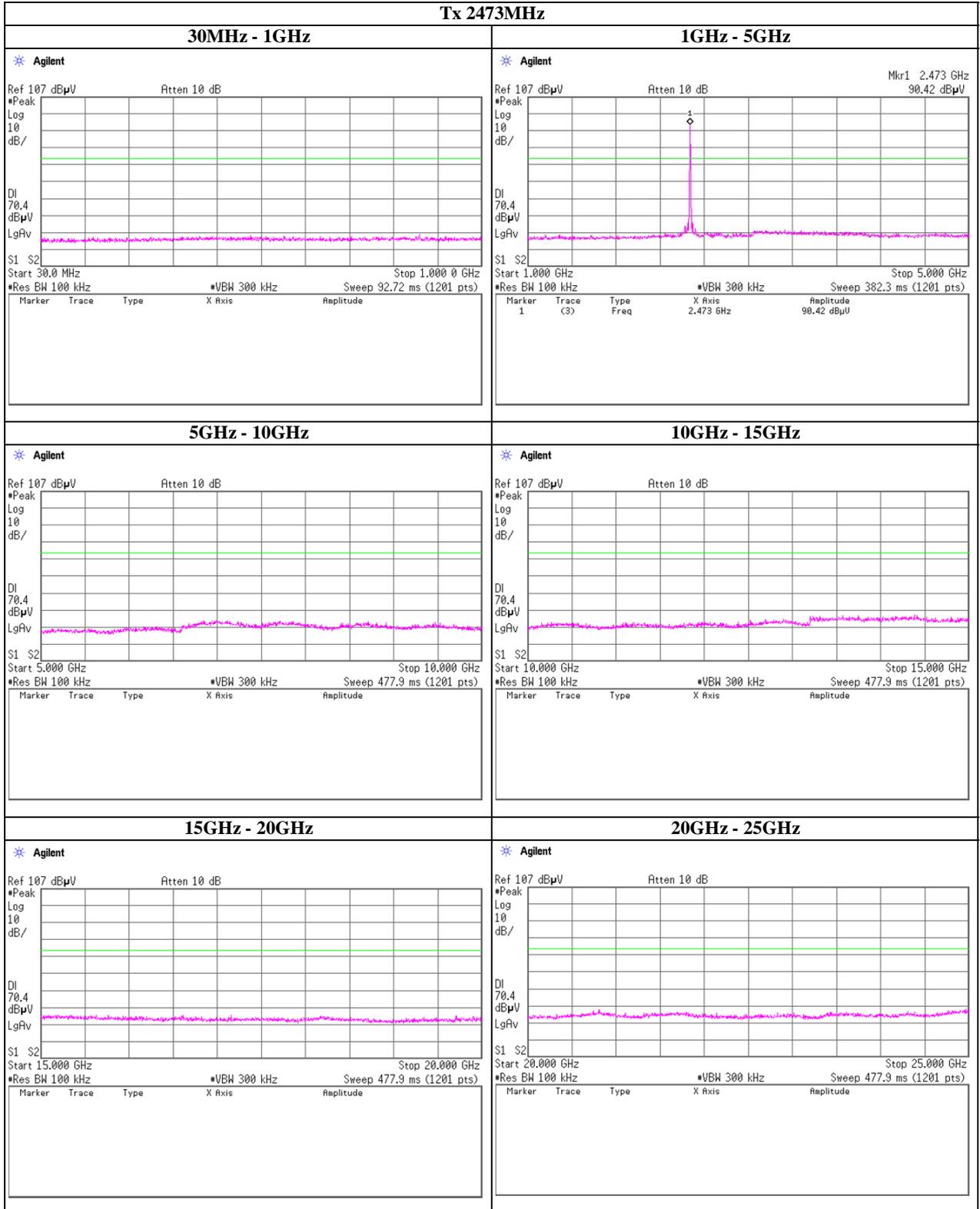
Spurious emission (Conducted)



Spurious emission (Conducted)

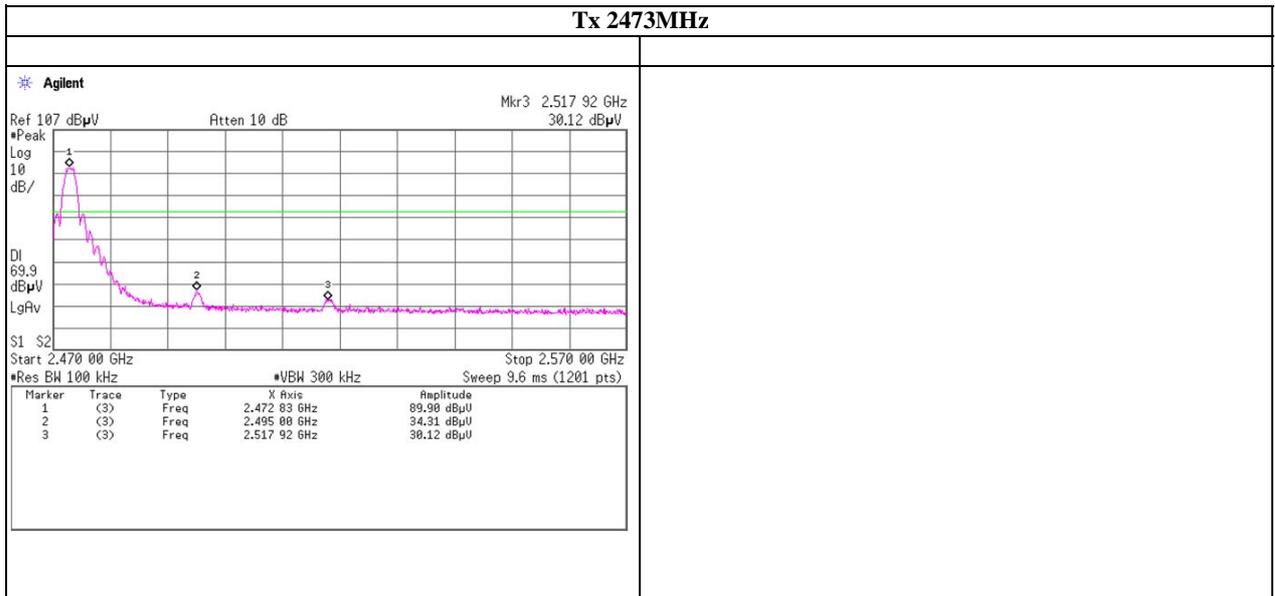
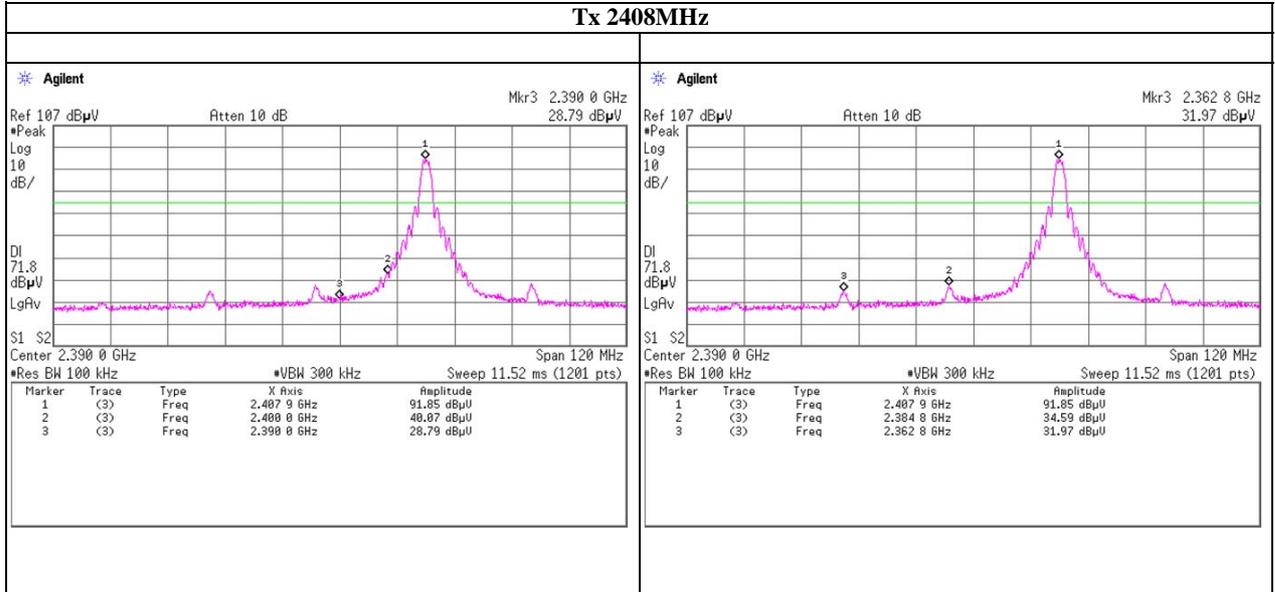


Spurious emission (Conducted)



Spurious emission (Conducted)

Band Edge compliance



UL Japan, Inc.

Shonan EMC Lab.

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Power Density

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
Date 2011/1/8
Temperature / Humidity 24deg.C./ 42%
Engineer Makoto Hosaka
Mode Tx, , ANT 2

Ch. Freq. [MHz]	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2408	2408.11	-12.11	0.38	9.97	-1.76	8.00	9.76
2438	2438.05	-12.70	0.38	9.97	-2.35	8.00	10.35
2473	2472.88	-13.72	0.39	9.97	-3.36	8.00	11.36

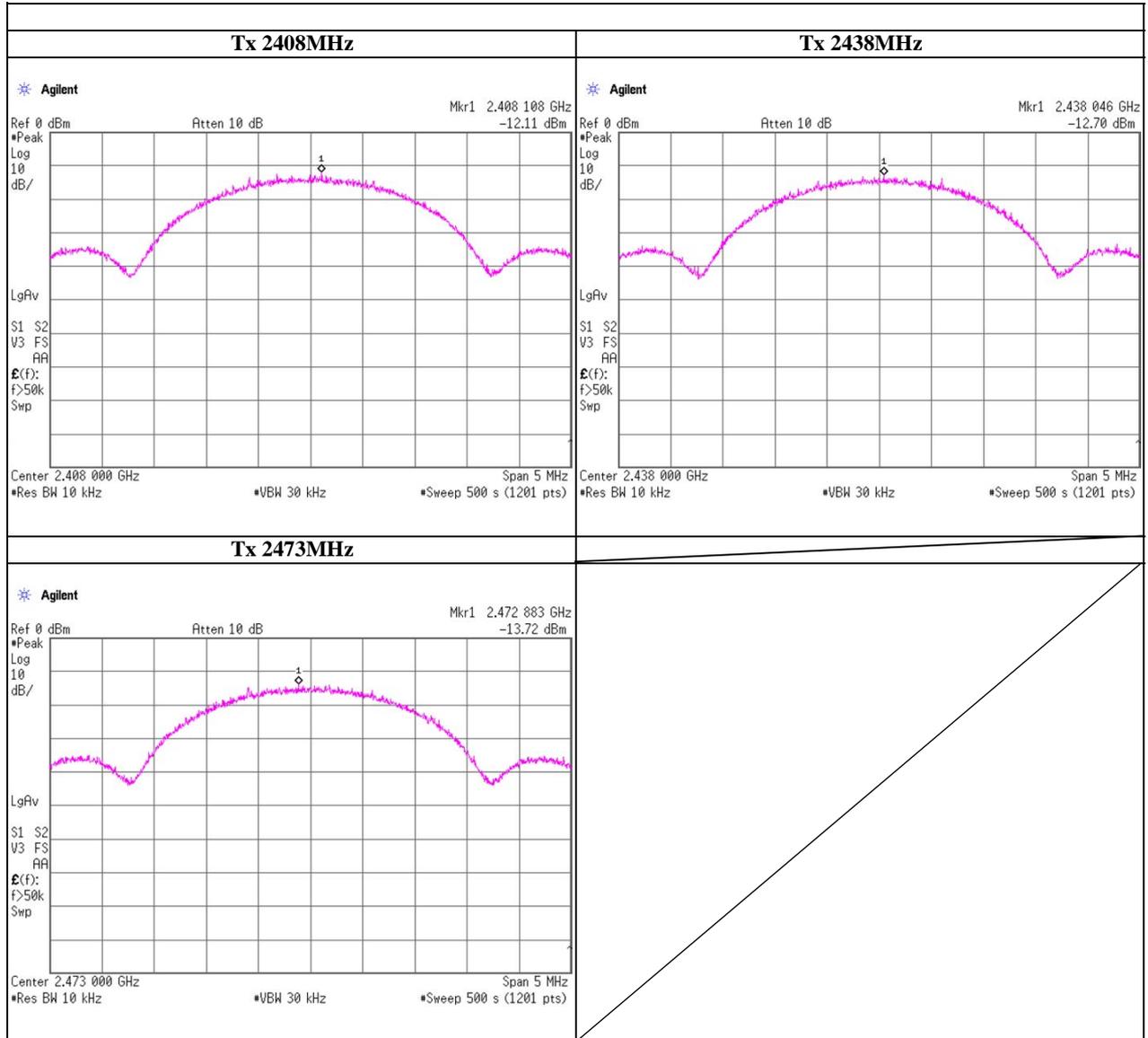
Sample Calculation:

Result = Reading + Cable Loss (supplied by customer) + Atten. Loss

UL Japan, Inc.
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Power Density



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99% Occupied Bandwidth

