

APPENDIX 1: Data of EMI test

20dB Bandwidth and Carrier Frequency Separation

Test placeUL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room

Date10/13/2011

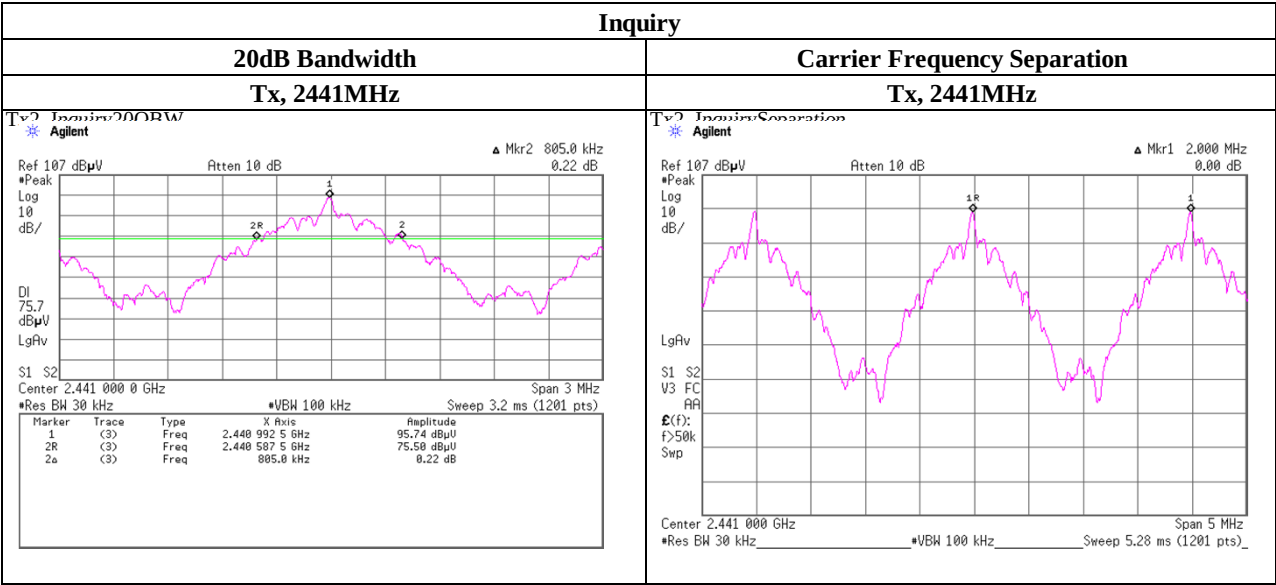
Temperature / Humidity25deg.C , 57 %RH

EngineerHikaru Shirasawa

ModeTx, Bluetooth, BDR, PRBS9 Inquiry

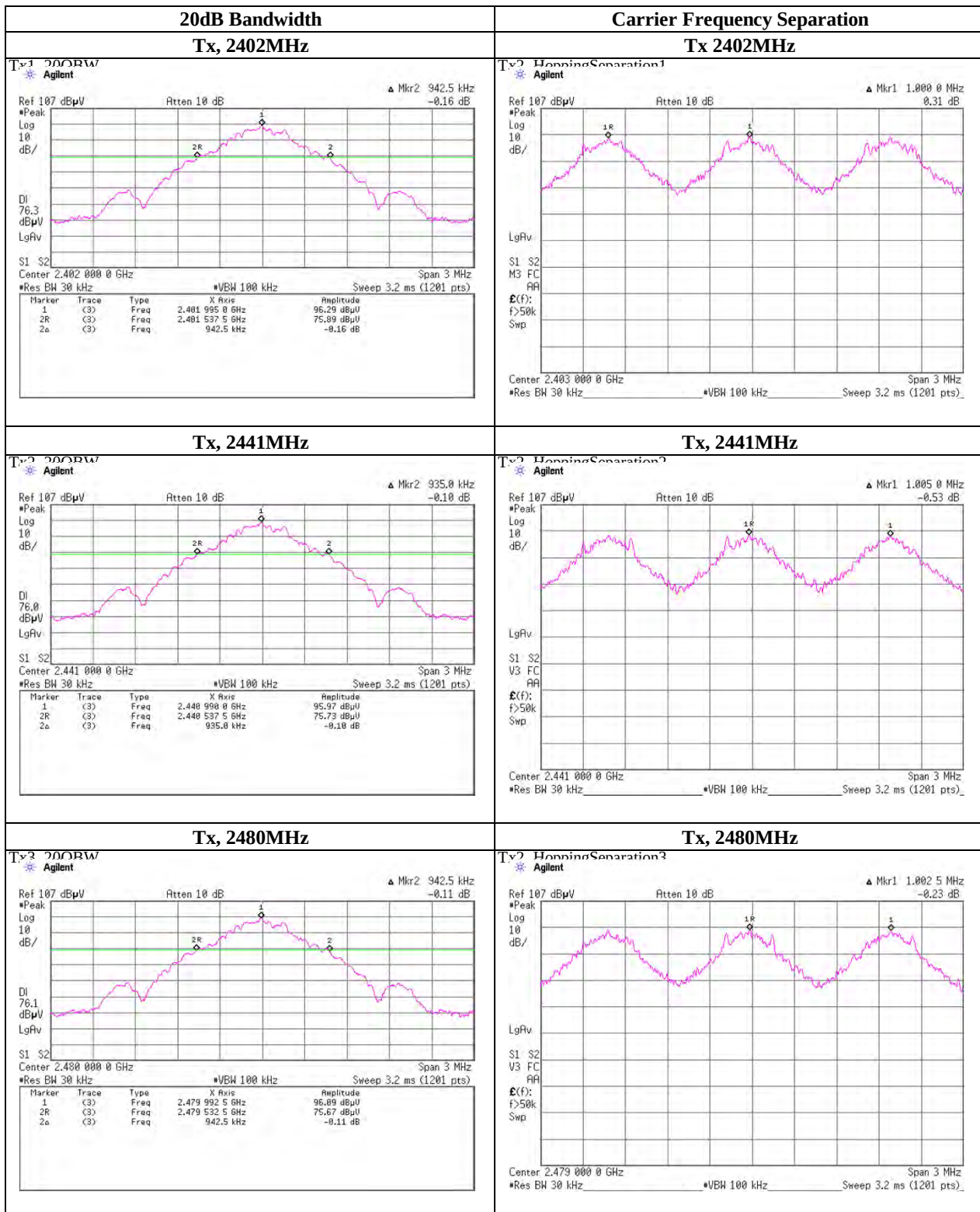
Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency Separation [MHz]
DH5	2402.0	0.943	1.000	>= 0.629
DH5	2441.0	0.935	1.005	>= 0.623
DH5	2480.0	0.943	1.003	>= 0.628
Inquiry	2441.0	0.805	2.000	>= 0.537

Limit: Two-thirds of 20dB Bandwidth or 25kHz (whichever is greater).
No limit applies to 20dB Bandwidth.



20dB Bandwidth and Carrier Frequency Separation

Tx, Bluetooth, BDR, PRBS9



UL Japan, Inc.

Shonan EMC Lab.

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20dB Bandwidth and Carrier Frequency Separation

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
Date 10/13/2011
Temperature / Humidity 25deg.C , 57 %RH
Engineer Hikaru Shirasawa
Mode Tx, Bluetooth, EDR, PRBS9

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency Separation [MHz]
3-DH5	2402.0	1.293	1.000	>= 0.862
3-DH5	2441.0	1.298	1.000	>= 0.865
3-DH5	2480.0	1.303	1.000	>= 0.868

Limit: Two-thirds of 20dB Bandwidth or 25kHz (whichever is greater).

No limit applies to 20dB Bandwidth.

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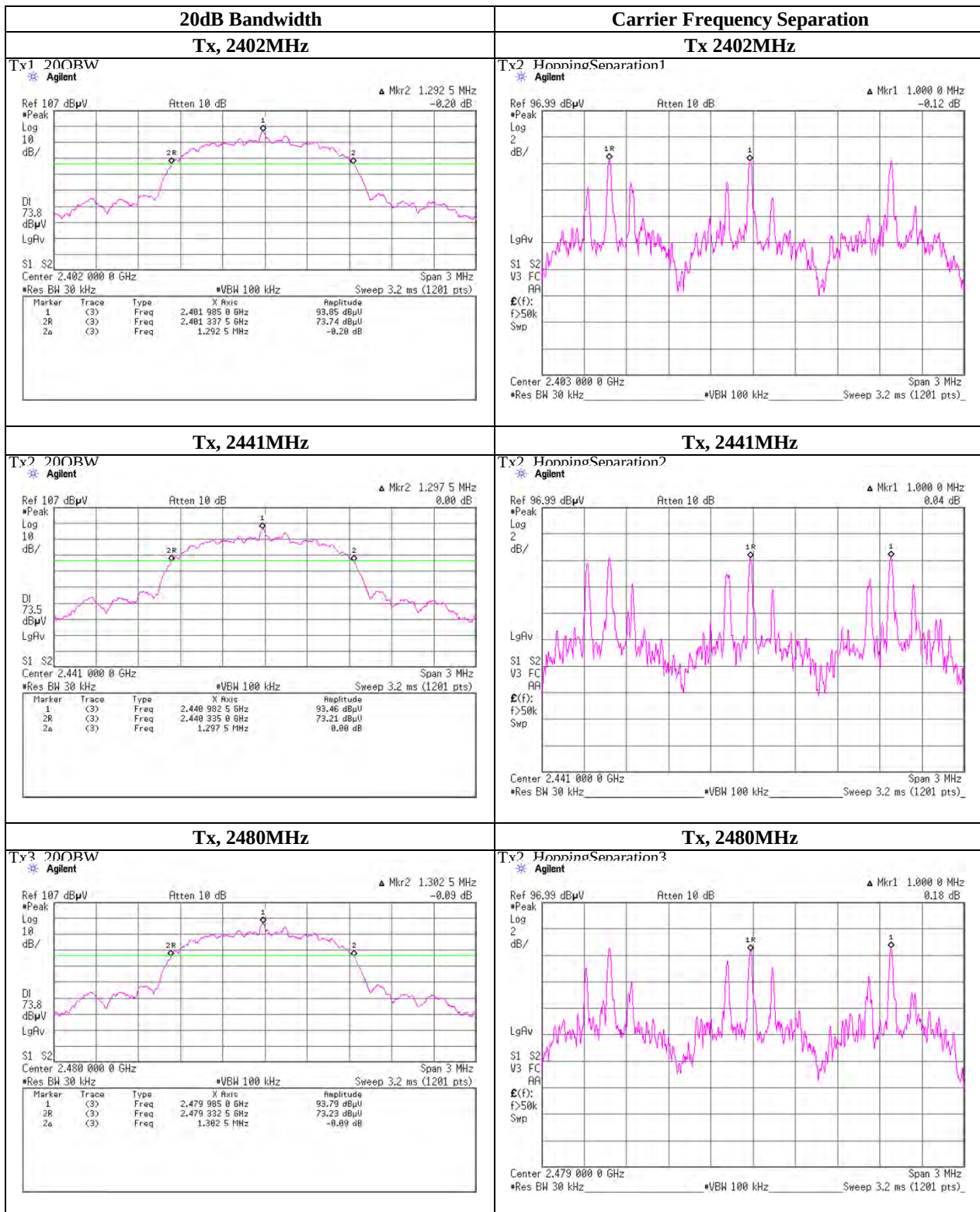
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20dB Bandwidth and Carrier Frequency Separation

Tx, Bluetooth, EDR, PRBS9



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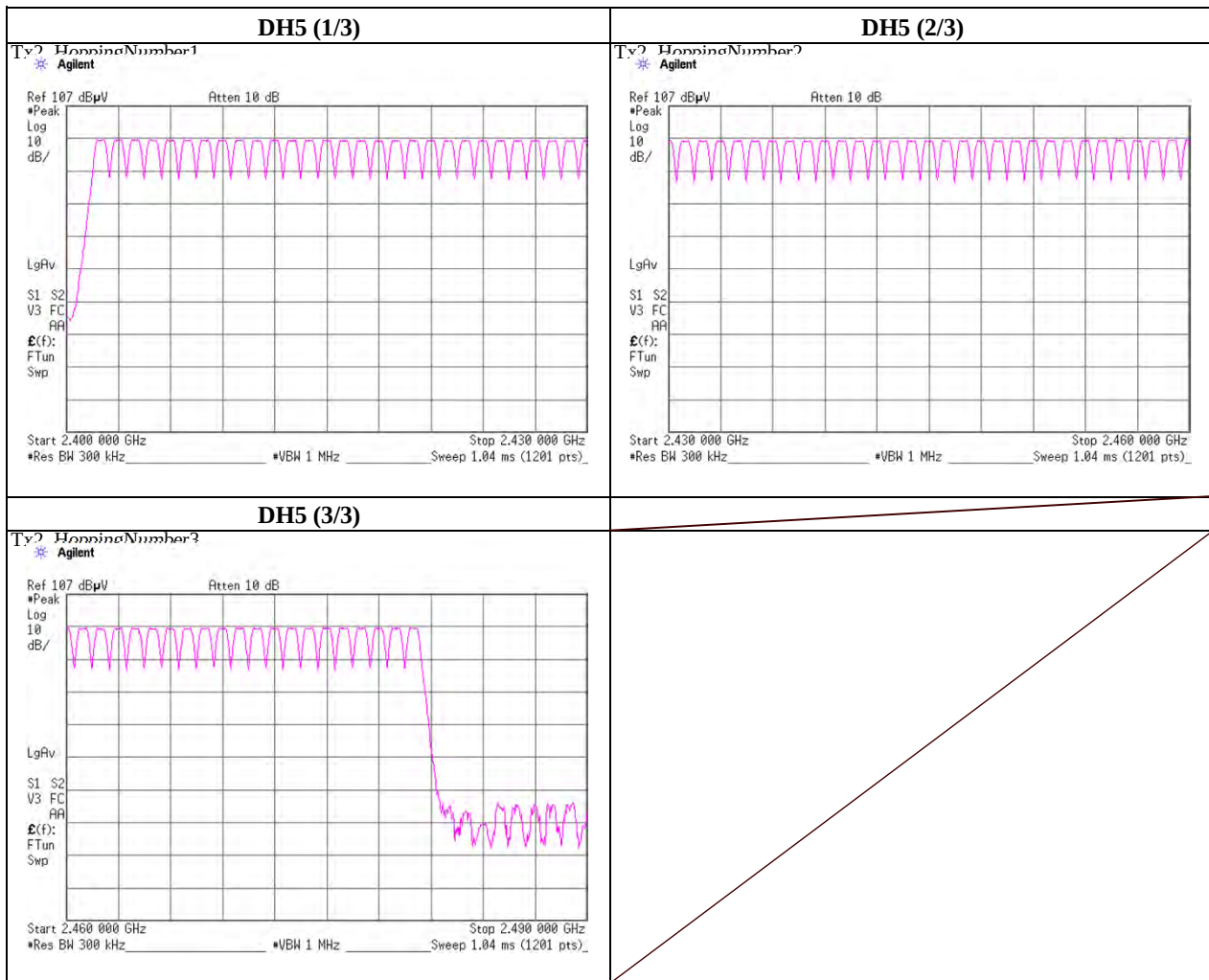
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Number of Hopping Frequency

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	10/13/2011	
Temperature / Humidity	25deg.C , 57 %RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, Bluetooth, BDR, PRBS9	

Mode	Number of Channel [times]	Limit [times]
DH5	79	>= 15



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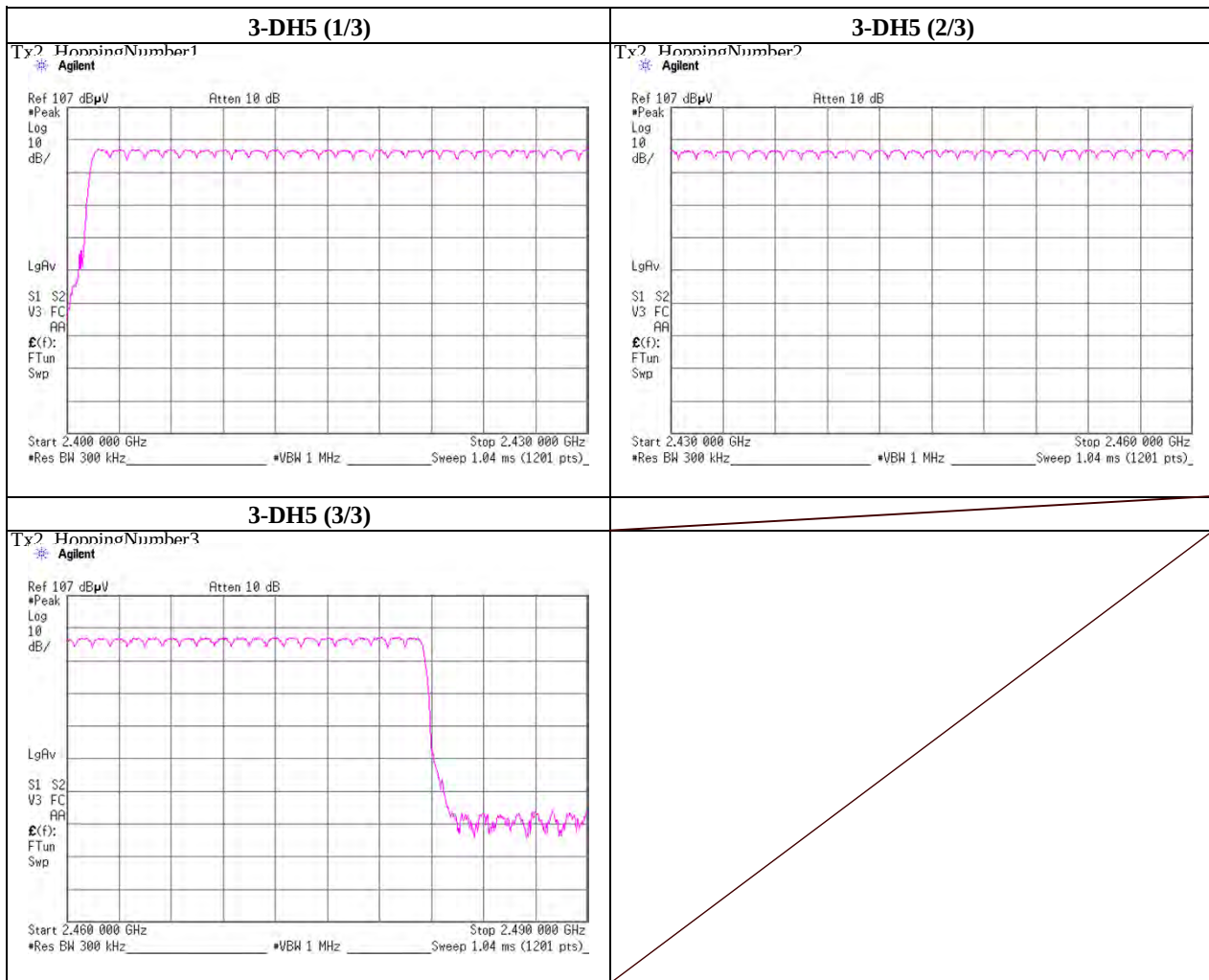
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Number of Hopping Frequency

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	10/13/2011	
Temperature / Humidity	25deg.C , 57 %RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, Bluetooth, EDR, PRBS9	

Mode	Number of Channel [times]	Limit [times]
3-DH5	79	>= 15



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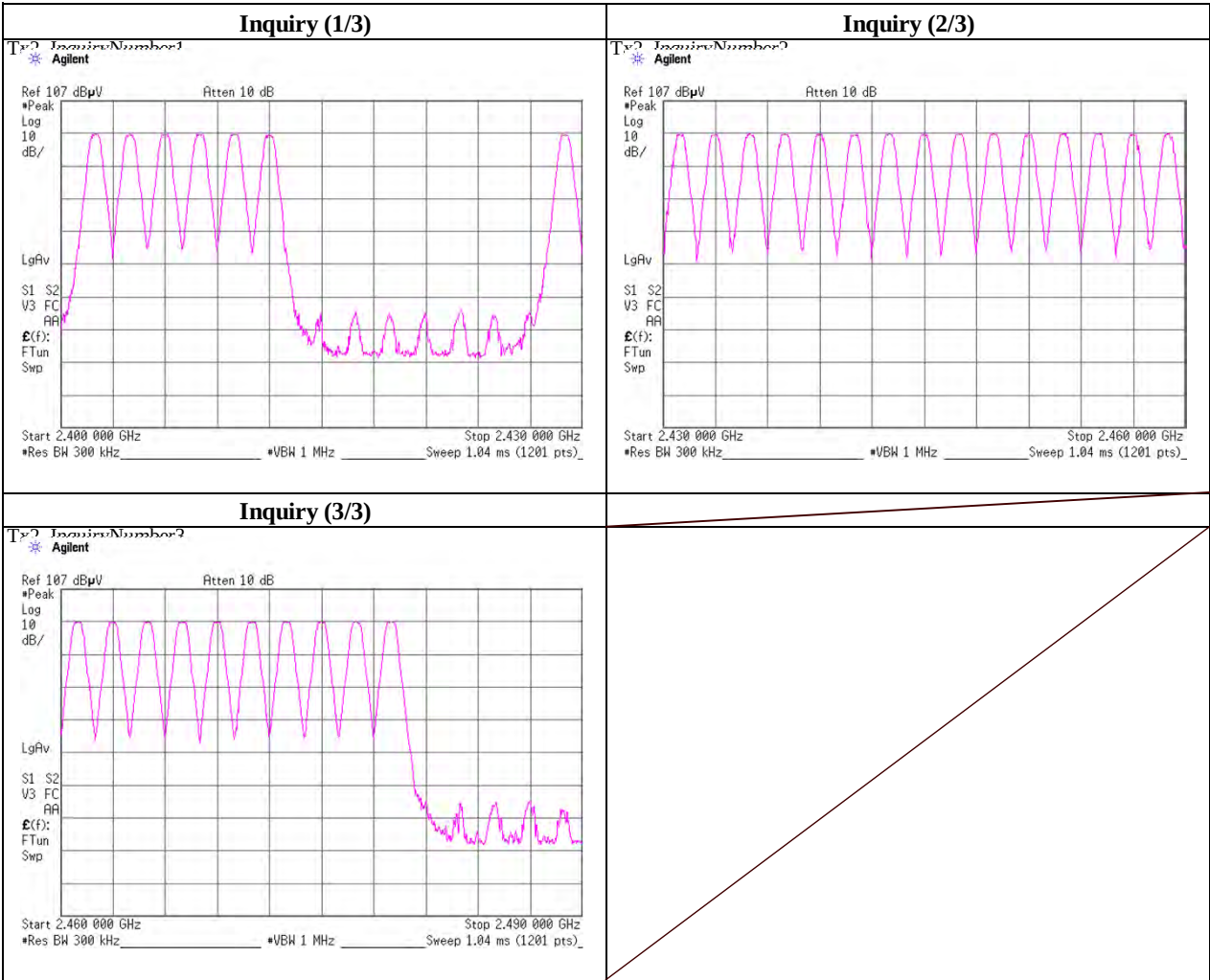
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Number of Hopping Frequency

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	10/13/2011	
Temperature / Humidity	25deg.C , 57 %RH	
Engineer	Hikaru Shirasawa	
Mode	Inquiry	

Mode	Number of Channel [times]	Limit [times]
Inquiry	32	>= 15



Dwell Time

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date 10/13/2011
 Temperature / Humidity 25deg.C , 57 %RH
 Engineer Hikaru Shirasawa
 Mode Tx, Bluetooth, BDR, PRBS9
 Inquiry

Mode	Number of transmission in a 31.6(79 Hopping x 0.4) / 12.8(32 Hopping x 0.4)second period			Length of transmission time [msec]	Result [msec]	Limit [msec]
DH1	21.6	/ 5.0 sec.	x 31.6 sec. =	137 times	0.397	54
DH3	19.6	/ 5.0 sec.	x 31.6 sec. =	124 times	1.654	205
DH5	15.6	/ 5.0 sec.	x 31.6 sec. =	99 times	2.902	287
Inquiry	100.0	/ 1.0 sec.	x 12.8 sec. =	1280 times	0.099	127

Sample Calculation

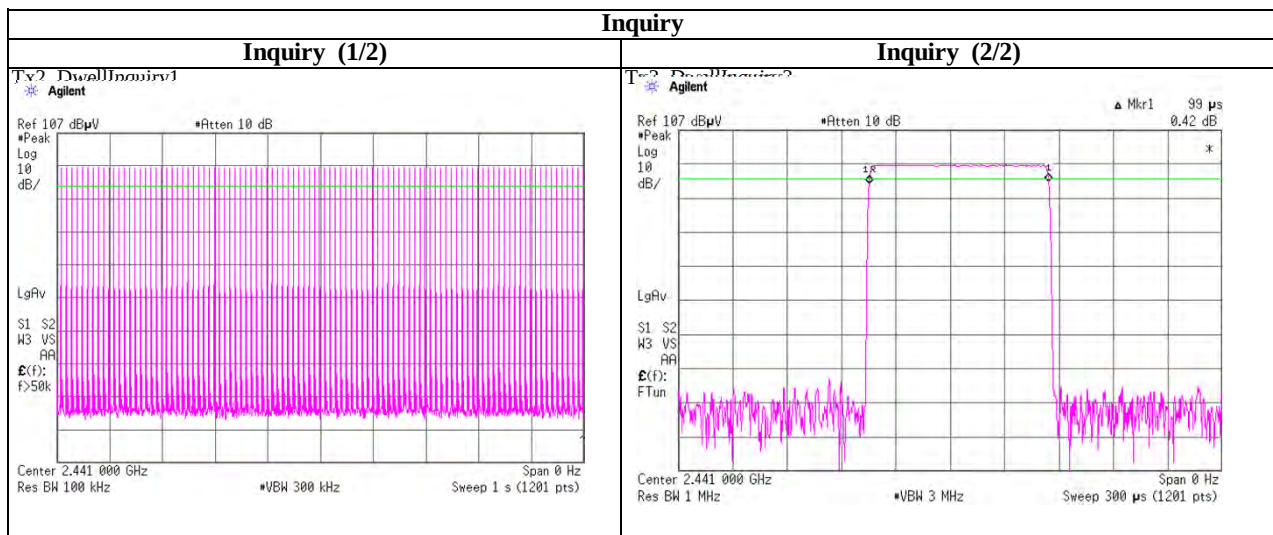
Result = Number of transmission x Length of transmission time

*Average data of 5 tests.(except Inquiry)

Mode	Sampling [times]					Average [times]
	1	2	3	4	5	
DH1	25	19	21	20	23	21.6
DH3	12	24	24	17	21	19.6
DH5	13	15	13	17	20	15.6

Sample Calculation

Average= Summation(Sampling 1 to 5) / 5

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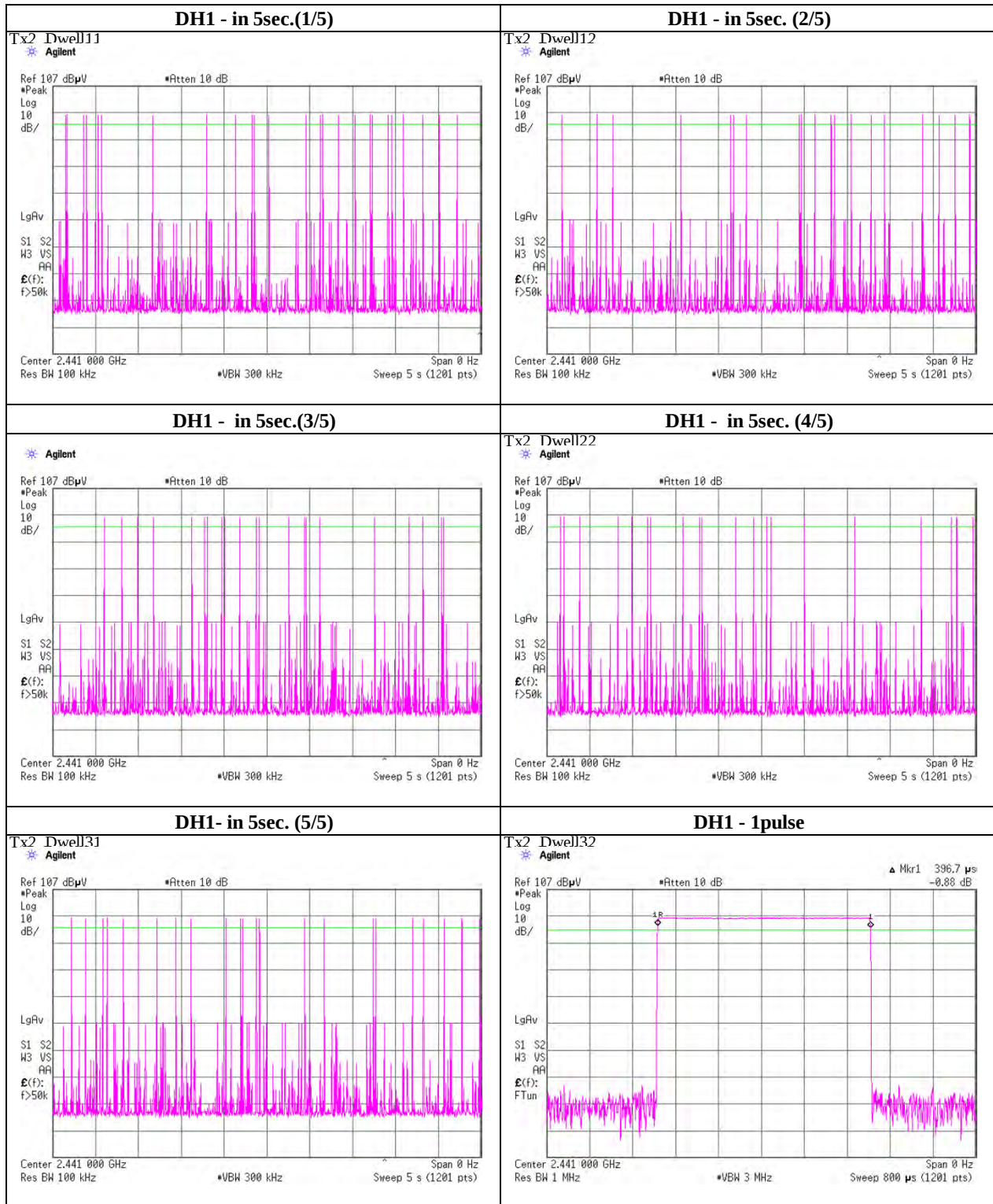
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Dwell time

Tx, Bluetooth, BDR, PRBS9



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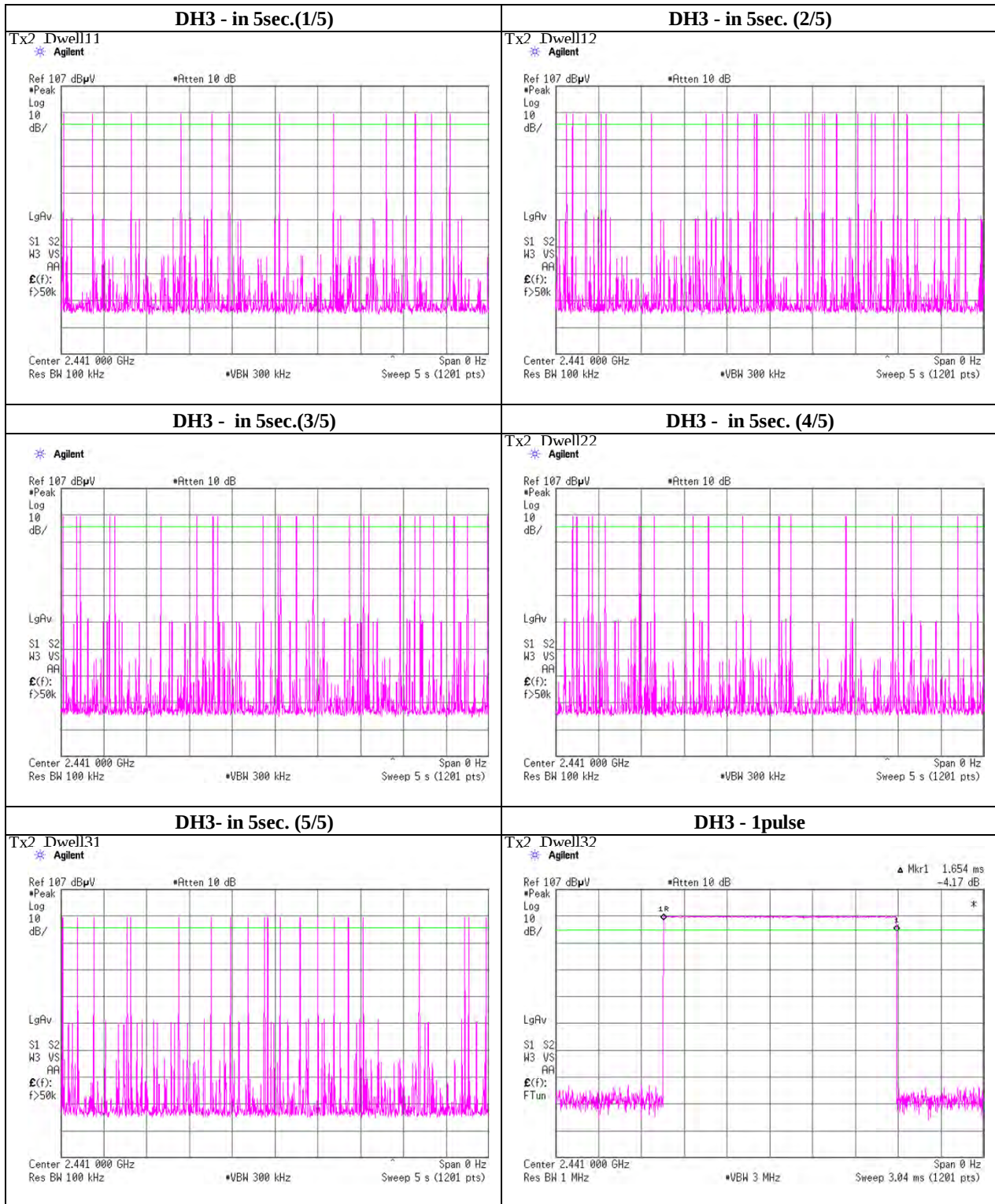
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Dwell time

Tx, Bluetooth, BDR, PRBS9



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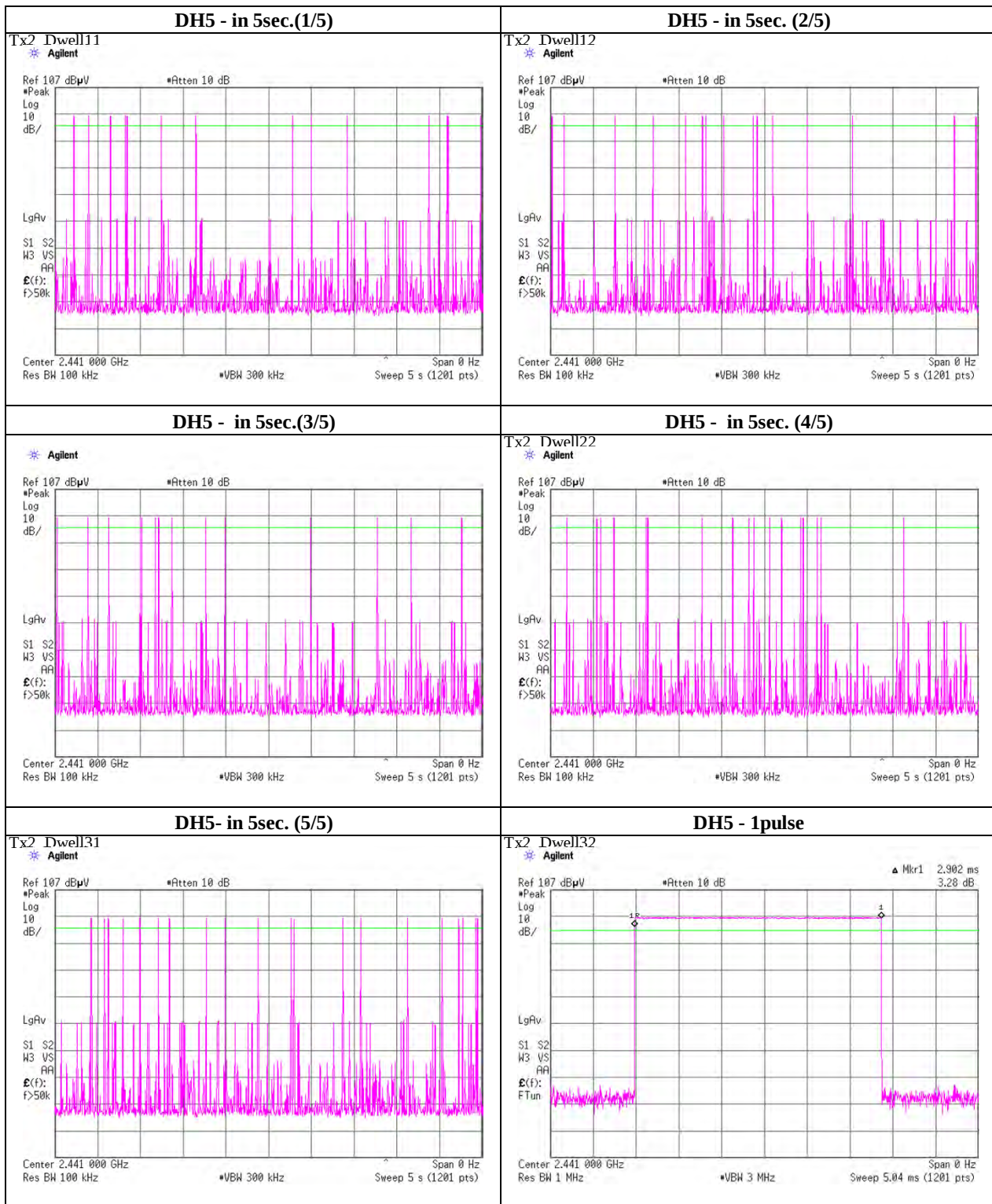
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Dwell time

Tx, Bluetooth, BDR, PRBS9



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Dwell Time

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date 10/13/2011
 Temperature / Humidity 25deg.C , 57 %RH
 Engineer Hikaru Shirasawa
 Mode Tx, Bluetooth, EDR, PRBS9

Mode	Number of transmission in a 31.6(79 Hopping x 0.4) / 12.8(32 Hopping x 0.4)second period	Length of transmission time [msec]	Result [msec]	Limit [msec]
3-DH1	18.2 / 5.0 sec. x 31.6 sec. = 116 times	0.407	47	400
3-DH3	20.0 / 5.0 sec. x 31.6 sec. = 127 times	1.659	211	400
3-DH5	19.4 / 5.0 sec. x 31.6 sec. = 123 times	2.911	358	400

Sample Calculation

Result = Number of transmission x Length of transmission time

*Average data of 5 tests.(except Inquiry)

Mode	Sampling [times]					Average [times]
	1	2	3	4	5	
3-DH1	17	15	20	18	21	18.2
3-DH3	22	19	22	18	19	20.0
3-DH5	20	27	14	23	13	19.4

Sample Calculation

Average= Summation(Sampling 1 to 5) / 5

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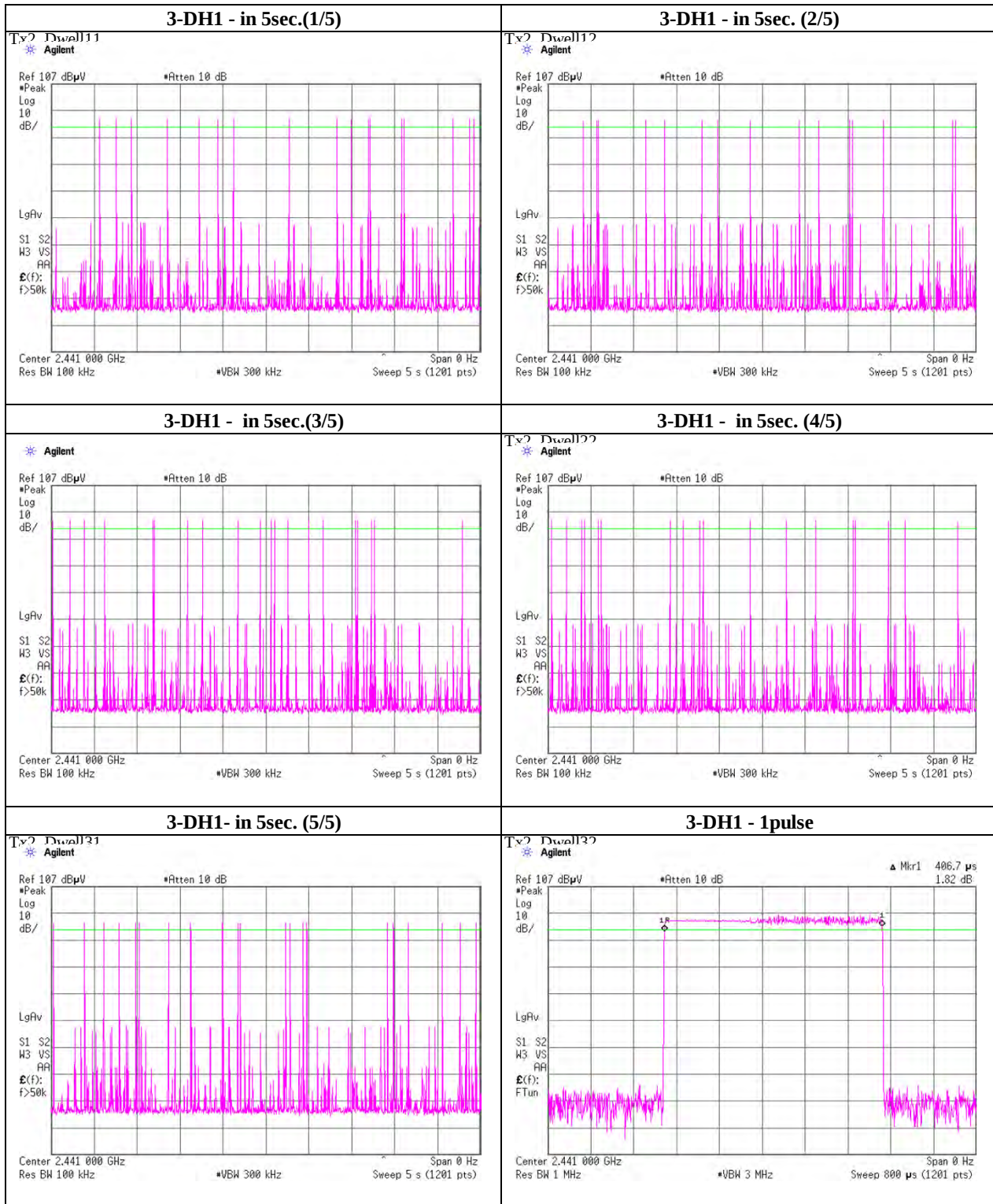
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Dwell time

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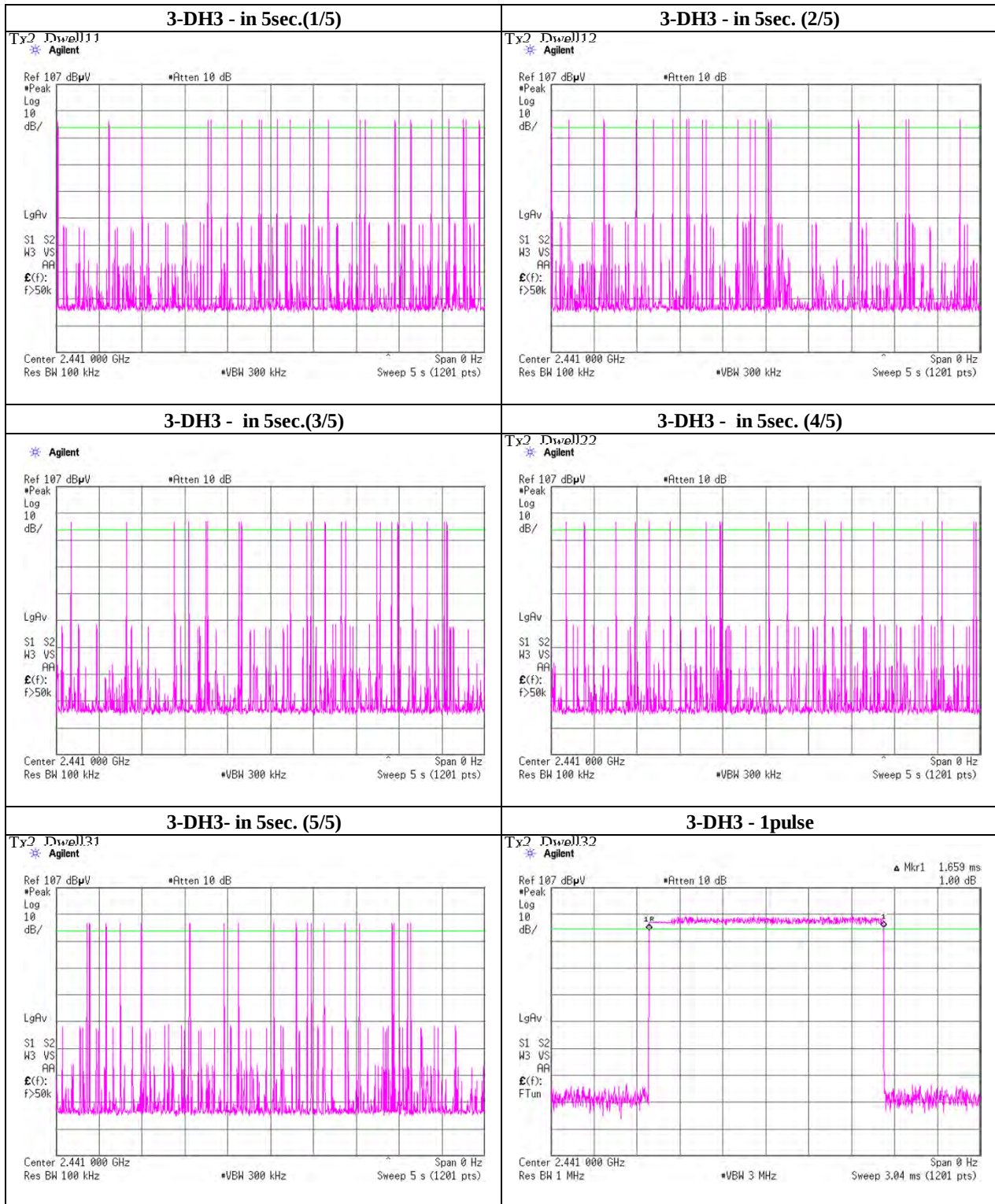
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Dwell time

Tx, Bluetooth, EDR, PRBS9



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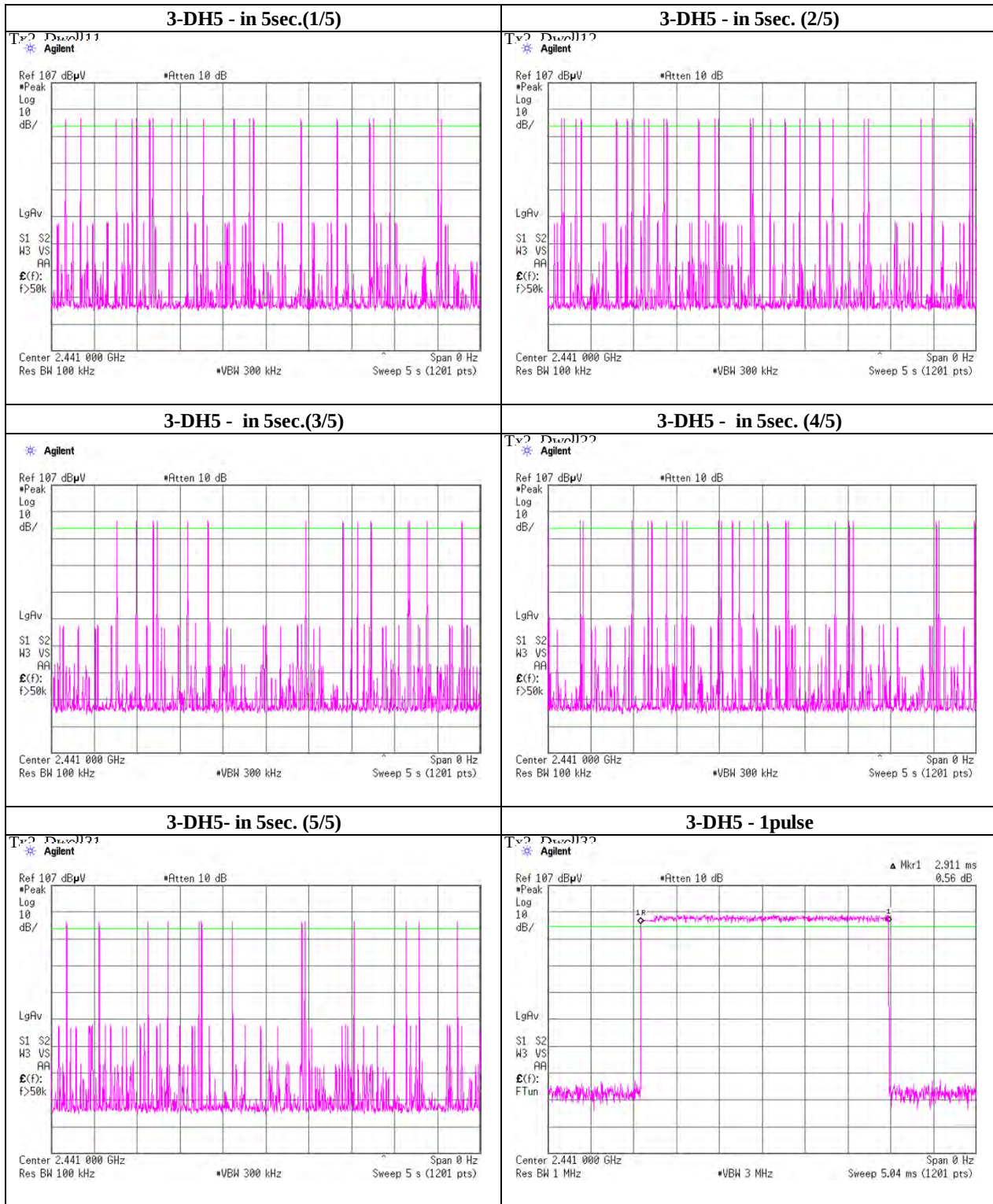
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Dwell time

Tx, Bluetooth, EDR, PRBS9



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Peak Output Power (Conducted)

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
 Date 10/12/2011
 Temperature / Humidity 24deg.C , 50 %RH
 Engineer Hikaru Shirasawa
 Mode Tx, Bluetooth PRBS9

(* P/M: Power Meter and Power Sensor)

	Freq.	P/M (Peak) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
DH5	2402.0	-10.14	1.96	9.94	1.76	1.50	20.97	125	19.21
DH5	2441.0	-10.22	1.97	9.94	1.69	1.47	20.97	125	19.28
DH5	2480.0	-10.39	1.98	9.93	1.52	1.42	20.97	125	19.45
2-DH5	2402.0	-10.47	1.96	9.94	1.43	1.39	20.97	125	19.54
2-DH5	2441.0	-10.65	1.97	9.94	1.26	1.34	20.97	125	19.71
2-DH5	2480.0	-10.30	1.98	9.93	1.61	1.45	20.97	125	19.36
3-DH5	2402.0	-10.64	1.96	9.94	1.26	1.34	20.97	125	19.71
3-DH5	2441.0	-10.22	1.97	9.94	1.69	1.47	20.97	125	19.28
3-DH5	2480.0	-9.91	1.98	9.93	2.00	1.59	20.97	125	18.97

Sample Calculation:

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

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Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab.

No.3 Semi Anechoic Chamber No.1 Semi Anechoic Chamber No.2 Semi Anechoic Chamber

Date September 22, 2011 September 22, 2011 October 15, 2011

Temperature / Humidity 24deg.C , 59%RH 26deg.C , 62%RH 26deg.C , 62%RH

Engineer Akio Hayashi Hikaru Shirasawa Hikaru Shirasawa

Mode Tx, 2402 MHz

Tx, Bluetooth, BDR, PRBS9

(* PK: Peak, AV: Average, QP: Quasi-Peak)

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.	137.021	QP	42.3	14.0	8.3	31.8	32.8	43.5	10.7	242	359	
Hori.	217.340	QP	40.6	17.0	9.1	31.7	35.0	46.0	11.0	150	321	
Hori.	327.453	QP	35.8	14.7	7.0	31.8	25.7	46.0	20.3	100	106	
Hori.	448.012	QP	38.6	16.8	7.8	31.8	31.4	46.0	14.6	100	250	
Hori.	624.005	QP	29.3	19.3	8.7	32.0	25.3	46.0	20.7	155	358	
Hori.	2377.000	PK	46.7	27.2	13.8	41.1	46.6	73.9	27.3	100	0	Not Detected
Hori.	2389.067	PK	47.7	27.2	13.7	37.8	50.8	73.9	23.1	100	0	October 15, 2011
Hori.	2390.000	PK	46.4	27.2	13.8	41.1	46.3	73.9	27.6	100	49	
Hori.	2400.000	PK	47.5	27.3	13.8	41.1	47.5	73.9	26.4	100	49	
Hori.	2427.000	PK	45.4	27.3	13.7	41.1	45.3	73.9	28.6	100	0	Not Detected
Hori.	4804.000	PK	49.7	31.1	6.0	41.1	45.7	73.9	28.2	100	243	
Hori.	7206.000	PK	48.4	36.5	7.4	41.3	51.0	73.9	22.9	100	0	
Hori.	9608.000	PK	44.6	38.2	8.7	38.8	52.7	73.9	21.2	100	0	
Hori.	12010.000	PK	47.3	39.3	10.2	39.2	57.6	73.9	16.3	100	0	
Hori.	2377.000	AV	35.2	27.2	13.8	41.1	35.1	53.9	18.8	100	0	Not Detected(VBW:10Hz)
Hori.	2389.067	AV	34.9	27.2	13.7	37.8	38.0	53.9	15.9	100	0	October 15, 2011(VBW:270Hz)
Hori.	2390.000	AV	35.5	27.2	13.8	41.1	35.4	53.9	18.5	100	49	VBW:270Hz
Hori.	2400.000	AV	36.2	27.3	13.8	41.1	36.2	53.9	17.7	100	49	VBW:270Hz
Hori.	2427.000	AV	35.2	27.3	13.7	41.1	35.1	53.9	18.8	100	0	Not Detected(VBW:10Hz)
Hori.	4804.000	AV	41.4	31.1	6.0	41.1	37.4	53.9	16.5	100	243	VBW:270Hz
Hori.	7206.000	AV	36.2	36.5	7.4	41.3	38.8	53.9	15.1	100	0	VBW:270Hz
Hori.	9608.000	AV	33.4	38.2	8.7	38.8	41.5	53.9	12.4	100	0	VBW:270Hz
Hori.	12010.000	AV	36.2	39.3	10.2	39.2	46.5	53.9	7.4	100	0	VBW:270Hz
Vert.	36.679	QP	38.9	16.2	7.0	31.8	30.3	40.0	9.7	100	0	
Vert.	274.062	QP	33.9	18.5	9.6	31.8	30.2	46.0	15.8	100	309	
Vert.	624.005	QP	32.3	19.3	8.7	32.0	28.3	46.0	17.7	100	318	
Vert.	832.007	QP	34.4	21.3	9.7	31.8	33.6	46.0	12.4	100	299	
Vert.	2377.000	PK	46.9	27.2	13.8	41.1	46.8	73.9	27.1	100	0	
Vert.	2389.067	PK	47.8	27.2	13.7	37.8	50.9	73.9	23.0	100	359	October 15, 2011
Vert.	2390.000	PK	45.9	27.2	13.8	41.1	45.8	73.9	28.1	102	356	
Vert.	2400.000	PK	47.4	27.3	13.8	41.1	47.4	73.9	26.5	102	356	
Vert.	2427.000	PK	46.7	27.3	13.7	41.1	46.6	73.9	27.3	100	0	
Vert.	4804.000	PK	50.2	31.1	6.0	41.1	46.2	73.9	27.7	100	189	
Vert.	7206.000	PK	47.6	36.5	7.4	41.3	50.2	73.9	23.7	100	0	
Vert.	9608.000	PK	44.9	38.2	8.7	38.8	53.0	73.9	20.9	100	0	
Vert.	12010.000	PK	46.8	39.3	10.2	39.2	57.1	73.9	16.8	100	0	
Vert.	2377.000	AV	35.2	27.2	13.8	41.1	35.1	53.9	18.8	100	0	Not Detected(VBW:10Hz)
Vert.	2389.067	AV	34.9	27.2	13.7	37.8	38.0	53.9	15.9	100	359	October 15, 2011(VBW:270Hz)
Vert.	2390.000	AV	35.5	27.2	13.8	41.1	35.4	53.9	18.5	102	356	VBW:270Hz
Vert.	2400.000	AV	36.9	27.3	13.8	41.1	36.9	53.9	17.0	102	356	VBW:270Hz
Vert.	2427.000	AV	35.2	27.3	13.7	41.1	35.1	53.9	18.8	100	0	Not Detected(VBW:10Hz)
Vert.	4804.000	AV	41.3	31.1	6.0	41.1	37.3	53.9	16.6	100	189	VBW:270Hz
Vert.	7206.000	AV	35.6	36.5	7.4	41.3	38.2	53.9	15.7	100	0	VBW:270Hz
Vert.	9608.000	AV	33.9	38.2	8.7	38.8	42.0	53.9	11.9	100	0	VBW:270Hz
Vert.	12010.000	AV	35.4	39.3	10.2	39.2	45.7	53.9	8.2	100	0	VBW:270Hz

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 13GHz)) - Gain(Amplifier) + Dwell time factor (refer to "Dwell time factor Calculation")

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

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

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

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Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab.
 No.3 Semi Anechoic Chamber No.1 Semi Anechoic Chamber
 Date September 22, 2011 September 22, 2011
 Temperature / Humidity 24deg.C , 59%RH 26deg.C , 62%RH
 Engineer Akio Hayashi Hikaru Shirasawa
 Mode Tx, 2441 MHz
 Tx, Bluetooth, BDR, PRBS9

(* PK: Peak, AV: Average, QP: Quasi-Peak)

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.	137.088	QP	41.3	14.1	8.3	31.8	31.9	43.5	11.6	249	17	
Hori.	217.325	QP	39.7	17.0	9.1	31.7	34.1	46.0	11.9	139	309	
Hori.	327.523	QP	35.9	14.7	7.0	31.8	25.8	46.0	20.2	100	106	
Hori.	448.015	QP	38.4	16.8	7.8	31.8	31.2	46.0	14.8	100	252	
Hori.	624.005	QP	29.5	19.3	8.7	32.0	25.5	46.0	20.5	150	340	
Hori.	2417.000	PK	48.0	27.3	13.7	41.1	47.9	73.9	26.0	100	0	
Hori.	2467.000	PK	47.8	27.4	13.7	41.1	47.8	73.9	26.1	100	0	
Hori.	4882.000	PK	46.8	31.2	6.0	40.9	43.1	73.9	30.8	100	286	
Hori.	7323.000	PK	46.2	36.8	7.4	41.4	49.0	73.9	24.9	100	0	
Hori.	9764.000	PK	44.2	38.5	8.7	38.8	52.6	73.9	21.3	100	0	
Hori.	12205.000	PK	45.5	39.3	10.3	39.2	55.9	73.9	18.0	100	0	
Hori.	2417.000	AV	37.0	27.3	13.7	41.1	36.9	53.9	17.0	100	0	Not Detected(VBW:10Hz)
Hori.	2467.000	AV	36.8	27.4	13.7	41.1	36.8	53.9	17.1	100	0	Not Detected(VBW:10Hz)
Hori.	4882.000	AV	35.9	31.2	6.0	40.9	32.2	53.9	21.7	100	286	VBW:270Hz
Hori.	7323.000	AV	35.1	36.8	7.4	41.4	37.9	53.9	16.0	100	0	VBW:270Hz
Hori.	9764.000	AV	32.7	38.5	8.7	38.8	41.1	53.9	12.8	100	0	VBW:270Hz
Hori.	12205.000	AV	33.3	39.3	10.3	39.2	43.7	53.9	10.2	100	0	VBW:270Hz
Vert.	36.672	QP	39.1	16.1	7.0	31.8	30.4	40.0	9.6	100	359	
Vert.	273.773	QP	33.7	18.5	9.6	31.8	30.0	46.0	16.0	100	350	
Vert.	624.005	QP	32.3	19.3	8.7	32.0	28.3	46.0	17.7	100	315	
Vert.	831.999	QP	34.4	21.3	9.7	31.8	33.6	46.0	12.4	100	299	
Vert.	2417.000	PK	48.2	27.3	13.7	41.1	48.1	73.9	25.8	100	0	
Vert.	2467.000	PK	49.0	27.4	13.7	41.1	49.0	73.9	24.9	100	0	
Vert.	4882.000	PK	45.9	31.2	6.0	40.9	42.2	73.9	31.7	103	358	
Vert.	7323.000	PK	46.9	36.8	7.4	41.4	49.7	73.9	24.2	100	0	
Vert.	9764.000	PK	44.3	38.5	8.7	38.8	52.7	73.9	21.2	100	0	
Vert.	12205.000	PK	44.5	39.3	10.3	39.2	54.9	73.9	19.0	100	0	
Vert.	2417.000	AV	37.2	27.3	13.7	41.1	37.1	53.9	16.8	100	0	Not Detected(VBW:10Hz)
Vert.	2467.000	AV	36.9	27.4	13.7	41.1	36.9	53.9	17.0	100	0	Not Detected(VBW:10Hz)
Vert.	4882.000	AV	37.5	31.2	6.0	40.9	33.8	53.9	20.1	103	358	VBW:270Hz
Vert.	7323.000	AV	35.1	36.8	7.4	41.4	37.9	53.9	16.0	100	0	VBW:270Hz
Vert.	9764.000	AV	32.9	38.5	8.7	38.8	41.3	53.9	12.6	100	0	VBW:270Hz
Vert.	12205.000	AV	33.8	39.3	10.3	39.2	44.2	53.9	9.7	100	0	VBW:270Hz

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 13GHz)) - Gain(Amplifier) + Dwell time factor (refer to "Dwell time factor Calculation")

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

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

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

UL Japan, Inc.**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

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Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab.
 No.3 Semi Anechoic Chamber No.1 Semi Anechoic Chamber No.2 Semi Anechoic Chamber
 Date September 22, 2011 September 22, 2011 October 15, 2011
 Temperature / Humidity 24deg.C , 59%RH 26deg.C , 62%RH 26deg.C , 62%RH
 Engineer Akio Hayashi Hikaru Shirasawa Hikaru Shirasawa
 Mode Tx, 2480 MHz
 Tx, Bluetooth, BDR, PRBS9

(* PK: Peak, AV: Average, QP: Quasi-Peak)

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.	137.190	QP	41.4	14.1	8.3	31.8	32.0	43.5	11.5	236	17	
Hori.	217.328	QP	38.9	17.0	9.1	31.7	33.3	46.0	12.7	148	312	
Hori.	327.503	QP	35.4	14.7	7.0	31.8	25.3	46.0	20.7	100	102	
Hori.	448.014	QP	38.3	16.8	7.8	31.8	31.1	46.0	14.9	100	248	
Hori.	624.005	QP	29.0	19.3	8.7	32.0	25.0	46.0	21.0	151	342	
Hori.	2453.000	PK	45.9	27.4	13.7	41.1	45.9	73.9	28.0	100	0	
Hori.	2483.500	PK	45.9	27.5	13.7	41.1	46.0	73.9	27.9	100	303	
Hori.	2487.912	PK	48.2	27.5	13.6	37.6	51.7	73.9	22.2	100	0	October 15, 2011
Hori.	2507.000	PK	46.5	27.5	13.9	41.1	46.8	73.9	27.1	100	0	
Hori.	4960.000	PK	46.0	31.4	6.0	40.8	42.6	73.9	31.3	100	28	
Hori.	7440.000	PK	45.8	37.0	7.3	41.5	48.6	73.9	25.3	100	0	
Hori.	9920.000	PK	42.6	38.8	8.8	38.8	51.4	73.9	22.5	100	0	
Hori.	12400.000	PK	42.6	39.4	10.3	39.2	53.1	73.9	20.8	100	0	
Hori.	2453.000	AV	35.2	27.4	13.7	41.1	35.2	53.9	18.7	100	0	Not Detected(VBW:10Hz)
Hori.	2483.500	AV	35.2	27.5	13.7	41.1	35.3	53.9	18.6	100	303	VBW:270Hz
Hori.	2487.912	AV	35.0	27.5	13.6	37.6	38.5	53.9	15.4	100	0	October 15, 2011(VBW:270Hz)
Hori.	2507.000	AV	35.1	27.5	13.9	41.1	35.4	53.9	18.5	100	0	Not Detected(VBW:10Hz)
Hori.	4960.000	AV	35.6	31.4	6.0	40.8	32.2	53.9	21.7	100	28	VBW:270Hz
Hori.	7440.000	AV	35.4	37.0	7.3	41.5	38.2	53.9	15.7	100	0	VBW:270Hz
Hori.	9920.000	AV	31.6	38.8	8.8	38.8	40.4	53.9	13.5	100	0	VBW:270Hz
Hori.	12400.000	AV	32.5	39.4	10.3	39.2	43.0	53.9	10.9	100	0	VBW:270Hz
Vert.	36.666	QP	38.3	16.1	7.0	31.8	29.6	40.0	10.4	100	6	
Vert.	273.770	QP	32.3	18.5	9.6	31.8	28.6	46.0	17.4	100	348	
Vert.	624.005	QP	32.4	19.3	8.7	32.0	28.4	46.0	17.6	100	313	
Vert.	832.001	QP	34.3	21.3	9.7	31.8	33.5	46.0	12.5	100	297	
Vert.	2453.000	PK	46.2	27.4	13.7	41.1	46.2	73.9	27.7	100	0	
Vert.	2483.500	PK	45.9	27.5	13.7	41.1	46.0	73.9	27.9	100	327	
Vert.	2487.912	PK	48.0	27.5	13.6	37.6	51.5	73.9	22.4	100	359	October 15, 2011
Vert.	2507.000	PK	46.2	27.5	13.9	41.1	46.5	73.9	27.4	100	0	
Vert.	4960.000	PK	46.6	31.4	6.0	40.8	43.2	73.9	30.7	100	13	
Vert.	7440.000	PK	46.8	37.0	7.3	41.5	49.6	73.9	24.3	100	0	
Vert.	9920.000	PK	42.7	38.8	8.8	38.8	51.5	73.9	22.4	100	0	
Vert.	12400.000	PK	43.9	39.4	10.3	39.2	54.4	73.9	19.5	100	0	
Vert.	2453.000	AV	36.0	27.4	13.7	41.1	36.0	53.9	17.9	100	0	Not Detected(VBW:10Hz)
Vert.	2483.500	AV	36.2	27.5	13.7	41.1	36.3	53.9	17.6	100	327	VBW:270Hz
Vert.	2487.912	AV	35.0	27.5	13.6	37.6	38.5	53.9	15.4	100	359	October 15, 2011(VBW:270Hz)
Vert.	2507.000	AV	35.7	27.5	13.9	41.1	36.0	53.9	17.9	100	0	Not Detected(VBW:10Hz)
Vert.	4960.000	AV	35.8	31.4	6.0	40.8	32.4	53.9	21.5	100	13	VBW:270Hz
Vert.	7440.000	AV	35.3	37.0	7.3	41.5	38.1	53.9	15.8	100	0	VBW:270Hz
Vert.	9920.000	AV	31.6	38.8	8.8	38.8	40.4	53.9	13.5	100	0	VBW:270Hz
Vert.	12400.000	AV	32.3	39.4	10.3	39.2	42.8	53.9	11.1	100	0	VBW:270Hz

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 13GHz)) - Gain(Amplifier) + Dwell time factor (refer to "Dwell time factor Calculation")

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

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

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

UL Japan, Inc.**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

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Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab.
 No.3 Semi Anechoic Chamber No.1 Semi Anechoic Chamber No.2 Semi Anechoic Chamber
 Date September 22, 2011 September 22, 2011 October 15, 2011
 Temperature / Humidity 24deg.C , 59%RH 26deg.C , 62%RH 26deg.C , 62%RH
 Engineer Akio Hayashi Hikaru Shirasawa Hikaru Shirasawa
 Mode Tx, 2402 MHz
 Tx, Bluetooth, EDR, PRBS9
 (* PK: Peak, AV: Average, QP: Quasi-Peak)

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.	59.271	QP	45.7	8.6	7.4	31.8	29.9	40.0	10.1	341	76	
Hori.	142.233	QP	43.3	14.4	8.4	31.8	34.3	43.5	9.2	222	305	
Hori.	221.421	QP	41.8	17.1	9.2	31.7	36.4	46.0	9.6	137	25	
Hori.	448.010	QP	38.5	16.8	7.8	31.8	31.3	46.0	14.7	100	250	
Hori.	623.995	QP	27.8	19.3	8.7	32.0	23.8	46.0	22.2	123	80	
Hori.	2377.000	PK	46.2	27.2	13.8	41.1	46.1	73.9	27.8	100	0	
Hori.	2389.194	PK	46.9	27.2	13.7	37.8	50.0	73.9	23.9	100	0	October 15, 2011
Hori.	2390.000	PK	45.6	27.2	13.8	41.1	45.5	73.9	28.4	127	351	
Hori.	2400.000	PK	50.5	27.3	13.8	41.1	50.5	73.9	23.4	127	351	
Hori.	2427.000	PK	45.6	27.3	13.7	41.1	45.5	73.9	28.4	100	0	
Hori.	4804.000	PK	47.1	31.1	6.0	41.1	43.1	73.9	30.8	100	241	
Hori.	7206.000	PK	47.1	36.5	7.4	41.3	49.7	73.9	24.2	100	0	
Hori.	9608.000	PK	45.6	38.2	8.7	38.8	53.7	73.9	20.2	100	0	
Hori.	12010.000	PK	46.9	39.3	10.2	39.2	57.2	73.9	16.7	100	0	
Hori.	2377.000	AV	35.2	27.2	13.8	41.1	35.1	53.9	18.8	100	0	Not Detected(VBW:10Hz)
Hori.	2389.194	AV	33.2	27.2	13.7	37.8	36.3	53.9	17.6	100	0	October 15, 2011(VBW:270Hz)
Hori.	2390.000	AV	35.6	27.2	13.8	41.1	35.5	53.9	18.4	127	351	VBW:270Hz
Hori.	2400.000	AV	38.7	27.3	13.8	41.1	38.7	53.9	15.2	127	351	VBW:270Hz
Hori.	2427.000	AV	35.2	27.3	13.7	41.1	35.1	53.9	18.8	100	0	Not Detected(VBW:10Hz)
Hori.	4804.000	AV	38.0	31.1	6.0	41.1	34.0	53.9	19.9	100	241	VBW:270Hz
Hori.	7206.000	AV	36.5	36.5	7.4	41.3	39.1	53.9	14.8	100	0	VBW:270Hz
Hori.	9608.000	AV	34.2	38.2	8.7	38.8	42.3	53.9	11.6	100	0	VBW:270Hz
Hori.	12010.000	AV	35.6	39.3	10.2	39.2	45.9	53.9	8.0	100	0	VBW:270Hz
Vert.	36.671	QP	38.8	16.2	7.0	31.8	30.2	40.0	9.8	100	360	
Vert.	279.416	QP	35.6	18.8	9.7	31.8	32.3	46.0	13.7	100	350	
Vert.	623.995	QP	32.1	19.3	8.7	32.0	28.1	46.0	17.9	100	315	
Vert.	832.001	QP	34.2	21.3	9.7	31.8	33.4	46.0	12.6	100	302	
Vert.	2377.000	PK	45.6	27.2	13.8	41.1	45.5	73.9	28.4	100	0	
Vert.	2389.194	PK	46.6	27.2	13.7	37.8	49.7	73.9	24.2	100	0	October 15, 2011
Vert.	2390.000	PK	47.5	27.2	13.8	41.1	47.4	73.9	26.5	100	358	
Vert.	2400.000	PK	53.2	27.3	13.8	41.1	53.2	73.9	20.7	100	358	
Vert.	2427.000	PK	47.2	27.3	13.7	41.1	47.1	73.9	26.8	100	0	
Vert.	4804.000	PK	47.5	31.1	6.0	41.1	43.5	73.9	30.4	100	189	
Vert.	7206.000	PK	47.2	36.5	7.4	41.3	49.8	73.9	24.1	100	0	
Vert.	9608.000	PK	45.1	38.2	8.7	38.8	53.2	73.9	20.7	100	0	
Vert.	12010.000	PK	46.9	39.3	10.2	39.2	57.2	73.9	16.7	100	0	
Vert.	2377.000	AV	35.2	27.2	13.8	41.1	35.1	53.9	18.8	100	0	Not Detected(VBW:10Hz)
Vert.	2389.194	AV	33.2	27.2	13.7	37.8	36.3	53.9	17.6	100	0	October 15, 2011(VBW:270Hz)
Vert.	2390.000	AV	36.0	27.2	13.8	41.1	35.9	53.9	18.0	100	358	VBW:270Hz
Vert.	2400.000	AV	39.1	27.3	13.8	41.1	39.1	53.9	14.8	100	358	VBW:270Hz
Vert.	2427.000	AV	35.2	27.3	13.7	41.1	35.1	53.9	18.8	100	0	Not Detected(VBW:10Hz)
Vert.	4804.000	AV	38.0	31.1	6.0	41.1	34.0	53.9	19.9	100	189	VBW:270Hz
Vert.	7206.000	AV	36.5	36.5	7.4	41.3	39.1	53.9	14.8	100	0	VBW:270Hz
Vert.	9608.000	AV	34.2	38.2	8.7	38.8	42.3	53.9	11.6	100	0	VBW:270Hz
Vert.	12010.000	AV	35.7	39.3	10.2	39.2	46.0	53.9	7.9	100	0	VBW:270Hz

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 13GHz)) - Gain(Amplifier) + Dwell time factor (refer to "Dwell time factor Calculation")

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

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

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

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab.
 No.3 Semi Anechoic Chamber No.1 Semi Anechoic Chamber
 Date September 22, 2011 September 22, 2011
 Temperature / Humidity 24deg.C , 59%RH 26deg.C , 62%RH
 Engineer Akio Hayashi Hikaru Shirasawa
 Mode Tx, 2441 MHz
 Tx, Bluetooth, EDR, PRBS9

(* PK: Peak, AV: Average, QP: Quasi-Peak)

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.	59.276	QP	45.6	8.6	7.4	31.8	29.8	40.0	10.2	357	78	
Hori.	142.233	QP	43.3	14.4	8.4	31.8	34.3	43.5	9.2	222	305	
Hori.	221.574	QP	41.6	17.1	9.2	31.7	36.2	46.0	9.8	152	26	
Hori.	448.010	QP	38.6	16.8	7.8	31.8	31.4	46.0	14.6	100	251	
Hori.	623.993	QP	28.0	19.3	8.7	32.0	24.0	46.0	22.0	115	79	
Hori.	2415.000	PK	48.0	27.3	13.8	41.1	48.0	73.9	25.9	100	0	
Hori.	2467.000	PK	47.6	27.4	13.7	41.1	47.6	73.9	26.3	100	0	
Hori.	4882.000	PK	47.7	31.2	6.0	40.9	44.0	73.9	29.9	100	28	
Hori.	7323.000	PK	47.3	36.8	7.4	41.4	50.1	73.9	23.8	100	0	
Hori.	9764.000	PK	44.8	38.5	8.7	38.8	53.2	73.9	20.7	100	0	
Hori.	12205.000	PK	46.6	39.3	10.3	39.2	57.0	73.9	16.9	100	0	
Hori.	2415.000	AV	36.9	27.3	13.8	41.1	36.9	53.9	17.0	100	0	Not Detected(VBW:10Hz)
Hori.	2467.000	AV	36.8	27.4	13.7	41.1	36.8	53.9	17.1	100	0	Not Detected(VBW:10Hz)
Hori.	4882.000	AV	37.1	31.2	6.0	40.9	33.4	53.9	20.5	100	28	VBW:270Hz
Hori.	7323.000	AV	36.4	36.8	7.4	41.4	39.2	53.9	14.7	100	0	VBW:270Hz
Hori.	9764.000	AV	33.9	38.5	8.7	38.8	42.3	53.9	11.6	100	0	VBW:270Hz
Hori.	12205.000	AV	34.9	39.3	10.3	39.2	45.3	53.9	8.6	100	0	VBW:270Hz
Vert.	36.670	QP	38.5	16.1	7.0	31.8	29.8	40.0	10.2	100	358	
Vert.	279.423	QP	35.1	18.8	9.7	31.8	31.8	46.0	14.2	100	0	
Vert.	624.000	QP	32.1	19.3	8.7	32.0	28.1	46.0	17.9	100	315	
Vert.	831.996	QP	34.6	21.3	9.7	31.8	33.8	46.0	12.2	100	304	
Vert.	2415.000	PK	47.7	27.3	13.8	41.1	47.7	73.9	26.2	100	0	
Vert.	2467.000	PK	48.3	27.4	13.7	41.1	48.3	73.9	25.6	100	0	
Vert.	4882.000	PK	46.3	31.2	6.0	40.9	42.6	73.9	31.3	103	358	
Vert.	7323.000	PK	46.4	36.8	7.4	41.4	49.2	73.9	24.7	100	0	
Vert.	9764.000	PK	43.9	38.5	8.7	38.8	52.3	73.9	21.6	100	0	
Vert.	12205.000	PK	44.8	39.3	10.3	39.2	55.2	73.9	18.7	100	0	
Vert.	2415.000	AV	37.1	27.3	13.8	41.1	37.1	53.9	16.8	100	0	Not Detected(VBW:10Hz)
Vert.	2467.000	AV	37.0	27.4	13.7	41.1	37.0	53.9	16.9	100	0	Not Detected(VBW:10Hz)
Vert.	4882.000	AV	36.3	31.2	6.0	40.9	32.6	53.9	21.3	103	358	VBW:270Hz
Vert.	7323.000	AV	36.5	36.8	7.4	41.4	39.3	53.9	14.6	100	0	VBW:270Hz
Vert.	9764.000	AV	34.2	38.5	8.7	38.8	42.6	53.9	11.3	100	0	VBW:270Hz
Vert.	12205.000	AV	35.2	39.3	10.3	39.2	45.6	53.9	8.3	100	0	VBW:270Hz

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 13GHz)) - Gain(Amplifier) + Dwell time factor (refer to "Dwell time factor Calculation")

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

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

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

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab.
 No.3 Semi Anechoic Chamber No.1 Semi Anechoic Chamber
 Date September 22, 2011 September 22, 2011
 Temperature / Humidity 24deg.C , 59%RH 26deg.C , 62%RH
 Engineer Akio Hayashi Hikaru Shirasawa
 Mode Tx, 2480 MHz
 Tx, Bluetooth, EDR, PRBS9

(* PK: Peak, AV: Average, QP: Quasi-Peak)

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.	59.273	QP	45.7	8.6	7.4	31.8	29.9	40	10.1	356	67	
Hori.	142.235	QP	43.4	14.4	8.4	31.8	34.4	43.5	9.1	230	308	
Hori.	221.482	QP	41.6	17.1	9.2	31.7	36.2	46	9.8	149	29	
Hori.	448.008	QP	38.5	16.8	7.8	31.8	31.3	46	14.7	100	250	
Hori.	623.998	QP	27.9	19.3	8.7	32	23.9	46	22.1	112	76	
Hori.	2453.000	PK	45.7	27.4	13.7	41.1	45.7	73.9	28.2	100	0	
Hori.	2483.500	PK	47.4	27.5	13.7	41.1	47.5	73.9	26.4	100	0	
Hori.	2507.000	PK	46.4	27.5	13.9	41.1	46.7	73.9	27.2	100	0	
Hori.	4960.000	PK	46.3	31.4	6	40.8	42.9	73.9	31.0	141	341	
Hori.	7440.000	PK	45.8	37	7.3	41.5	48.6	73.9	25.3	100	0	
Hori.	9920.000	PK	43.3	38.8	8.8	38.8	52.1	73.9	21.8	100	0	
Hori.	12400.000	PK	43.7	39.4	10.3	39.2	54.2	73.9	19.7	100	0	
Hori.	2453.000	AV	35.2	27.4	13.7	41.1	35.2	53.9	18.7	100	0	Not Detected(VBW:10Hz)
Hori.	2483.500	AV	35.5	27.5	13.7	41.1	35.6	53.9	18.3	100	0	VBW:270Hz
Hori.	2507.000	AV	35.1	27.5	13.9	41.1	35.4	53.9	18.5	100	0	Not Detected(VBW:10Hz)
Hori.	4960.000	AV	35.5	31.4	6	40.8	32.1	53.9	21.8	141	341	VBW:270Hz
Hori.	7440.000	AV	35.4	37	7.3	41.5	38.2	53.9	15.7	100	0	VBW:270Hz
Hori.	9920.000	AV	31.7	38.8	8.8	38.8	40.5	53.9	13.4	100	0	VBW:270Hz
Hori.	12400.000	AV	32.7	39.4	10.3	39.2	43.2	53.9	10.7	100	0	VBW:270Hz
Vert.	36.674	QP	39.3	16.1	7	31.8	30.6	40	9.4	100	358	
Vert.	279.413	QP	36	18.8	9.7	31.8	32.7	46	13.3	100	0	
Vert.	624.003	QP	31.9	19.3	8.7	32	27.9	46	18.1	100	316	
Vert.	832.000	QP	34.5	21.3	9.7	31.8	33.7	46	12.3	100	300	
Vert.	2453.000	PK	46.5	27.4	13.7	41.1	46.5	73.9	27.4	100	0	
Vert.	2483.500	PK	46.4	27.5	13.7	41.1	46.5	73.9	27.4	100	13	
Vert.	2507.000	PK	45.7	27.5	13.9	41.1	46	73.9	27.9	100	0	
Vert.	4960.000	PK	47.2	31.4	6	40.8	43.8	73.9	30.1	100	359	
Vert.	7440.000	PK	46.9	37	7.3	41.5	49.7	73.9	24.2	100	0	
Vert.	9920.000	PK	43.6	38.8	8.8	38.8	52.4	73.9	21.5	100	0	
Vert.	12400.000	PK	44.2	39.4	10.3	39.2	54.7	73.9	19.2	100	0	
Vert.	2453.000	AV	35.2	27.4	13.7	41.1	35.2	53.9	18.7	100	0	Not Detected(VBW:10Hz)
Vert.	2483.500	AV	35.6	27.5	13.7	41.1	35.7	53.9	18.2	100	13	VBW:270Hz
Vert.	2507.000	AV	35.1	27.5	13.9	41.1	35.4	53.9	18.5	100	0	Not Detected(VBW:10Hz)
Vert.	4960.000	AV	37.5	31.4	6	40.8	34.1	53.9	19.8	100	359	VBW:270Hz
Vert.	7440.000	AV	35.4	37	7.3	41.5	38.2	53.9	15.7	100	0	VBW:270Hz
Vert.	9920.000	AV	31.7	38.8	8.8	38.8	40.5	53.9	13.4	100	0	VBW:270Hz
Vert.	12400.000	AV	32.2	39.4	10.3	39.2	42.7	53.9	11.2	100	0	VBW:270Hz

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 13GHz)) - Gain(Amplifier) + Dwell time factor (refer to "Dwell time factor Calculation")

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

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

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

UL Japan, Inc.**Shonan EMC Lab.**

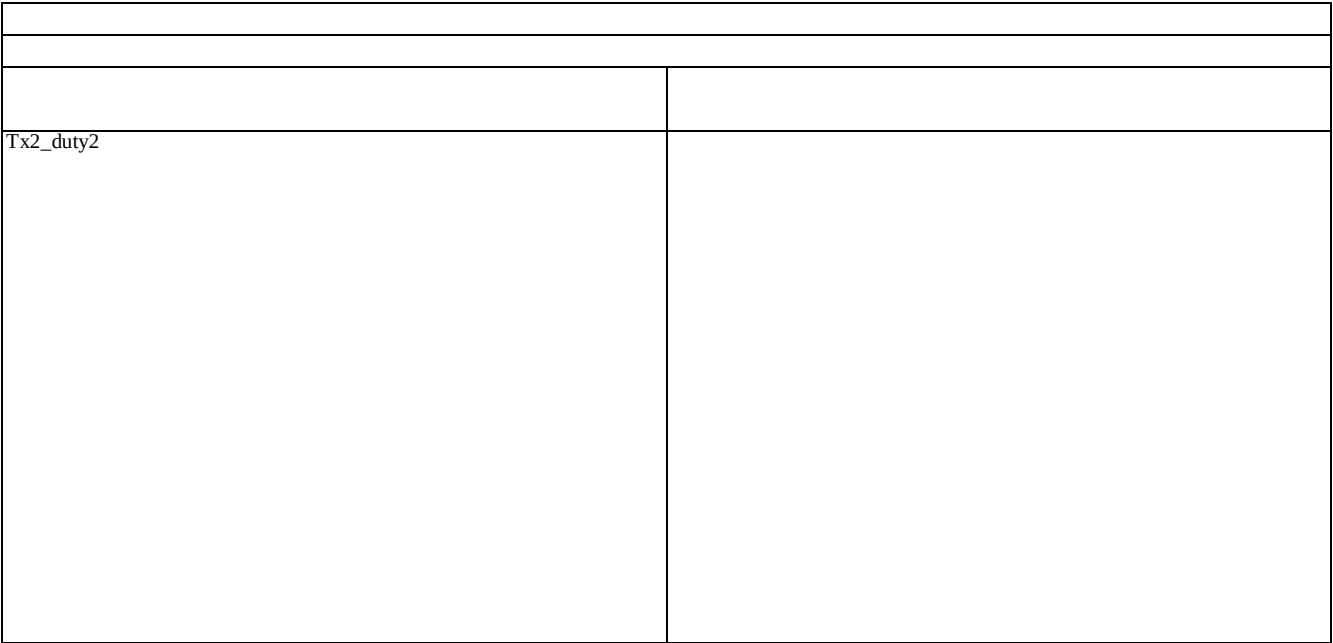
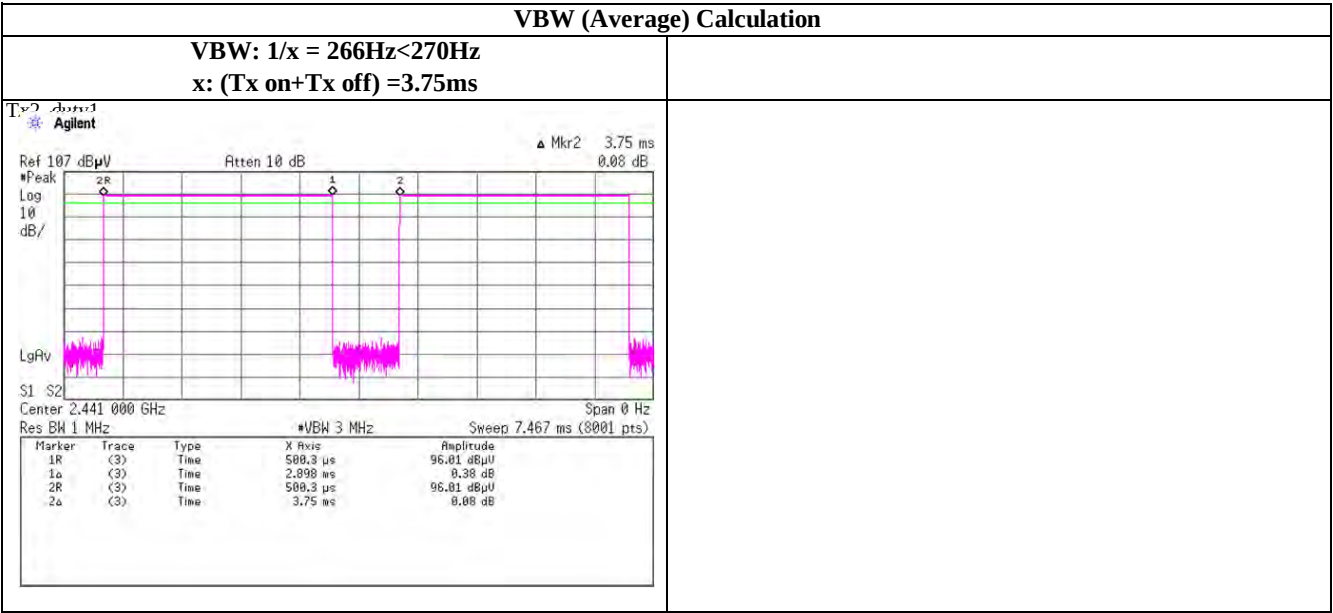
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

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Spurious emission (Radiated)

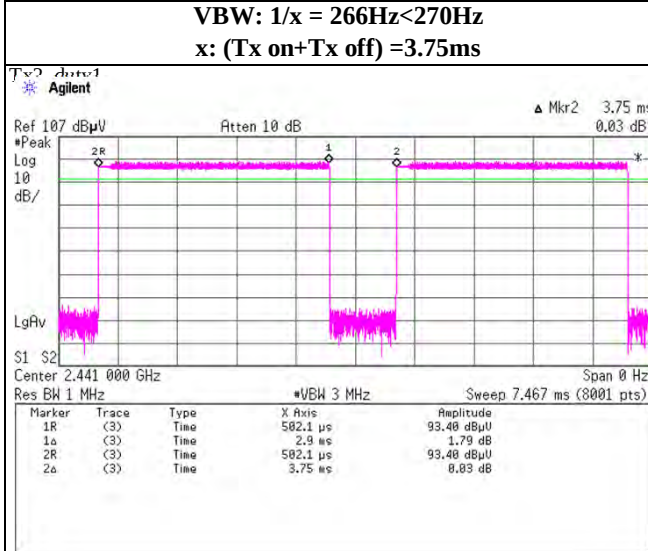
Tx, Bluetooth, BDR, PRBS9
VBW (Average) Calculation



Spurious emission (Radiated)

Tx, Bluetooth, EDR, PRBS9

VBW (Average) Calculation



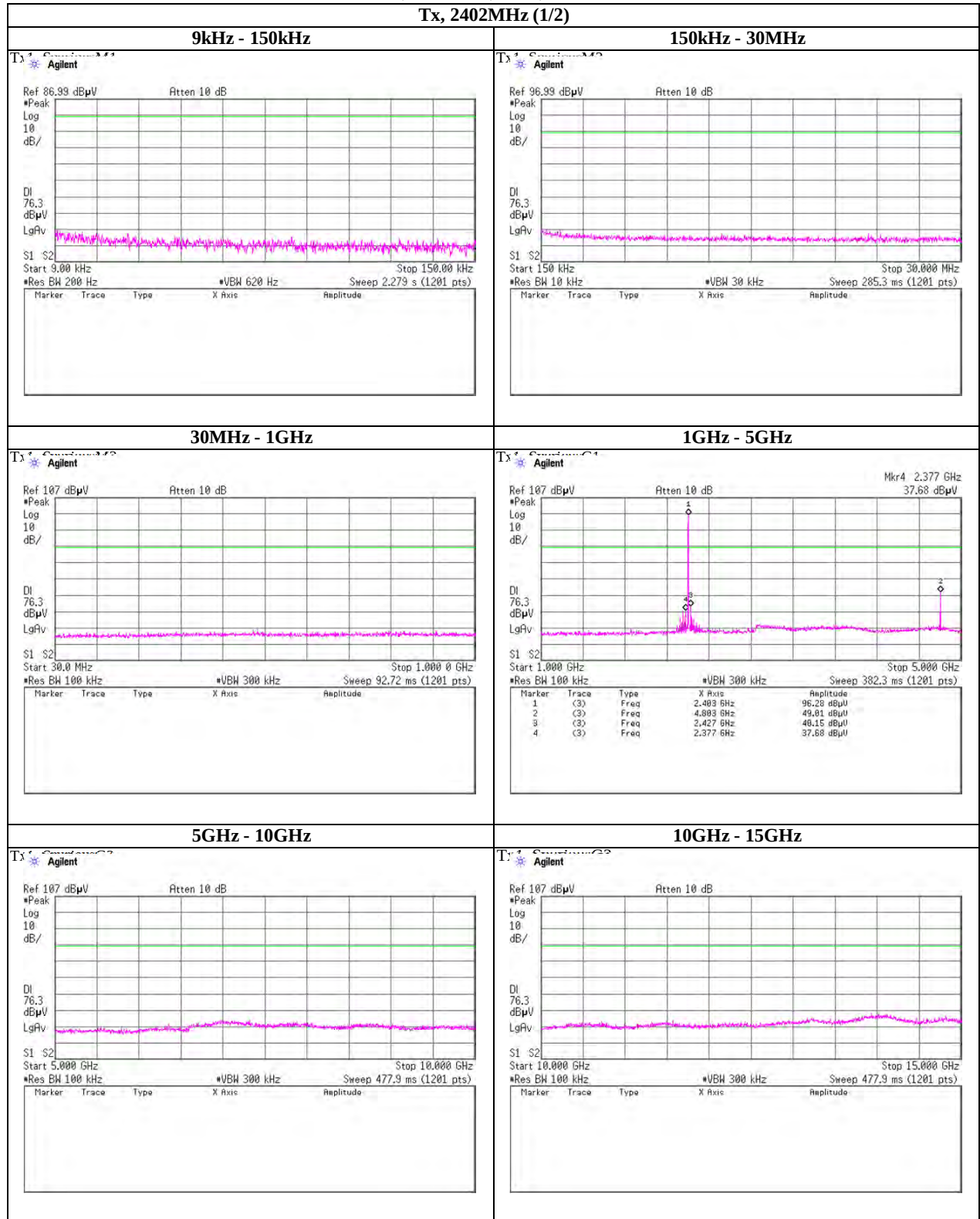
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Spurious emission (Conducted)**Tx, Bluetooth, BDR, PRBS9****Tx, 2402MHz (1/2)****UL Japan, Inc.****Shonan EMC Lab.**

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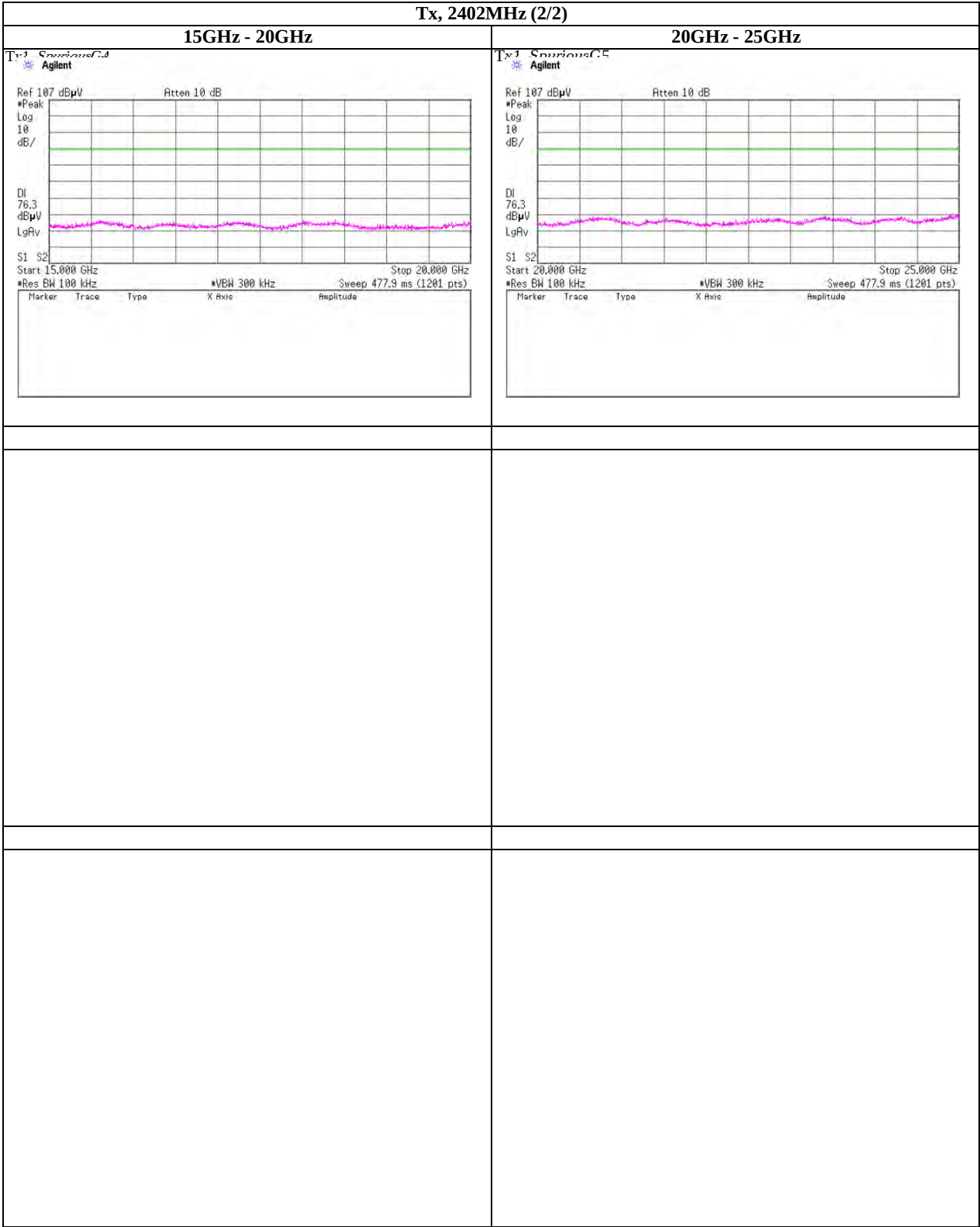
Telephone : +81 463 50 6400

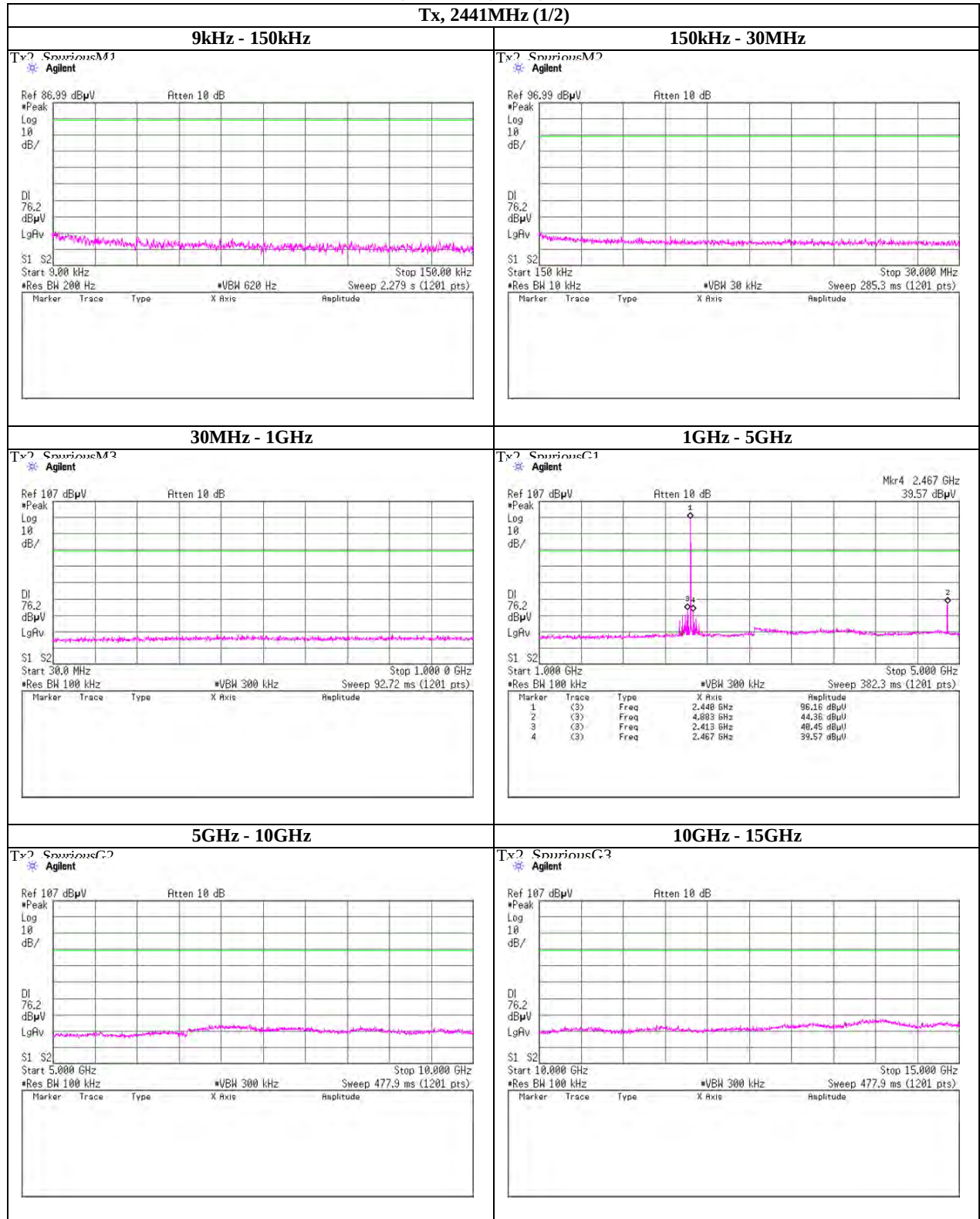
Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2402MHz (2/2)



Spurious emission (Conducted)**Tx, Bluetooth, BDR, PRBS9****Tx, 2441MHz (1/2)****UL Japan, Inc.****Shonan EMC Lab.**

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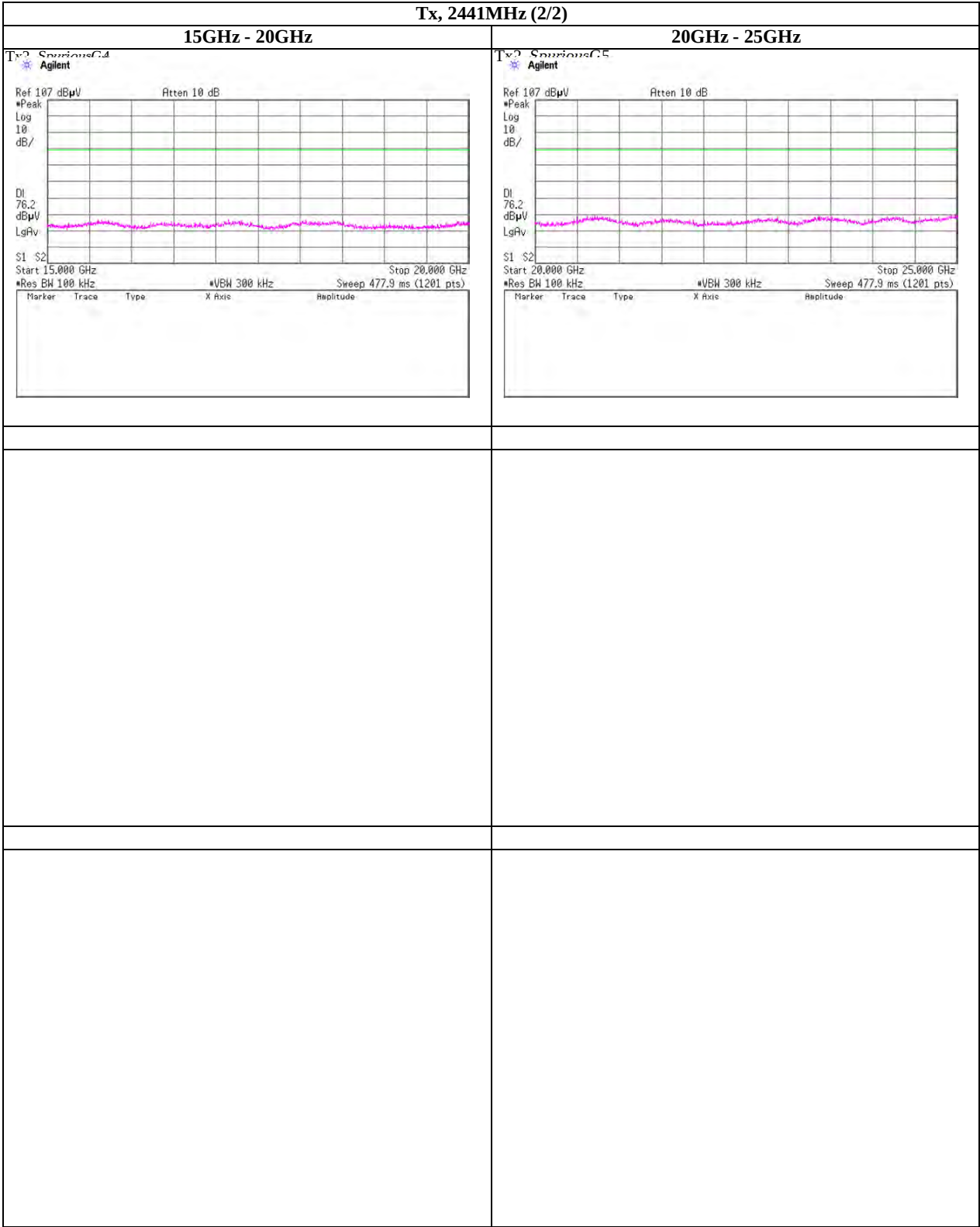
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Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2441MHz (2/2)



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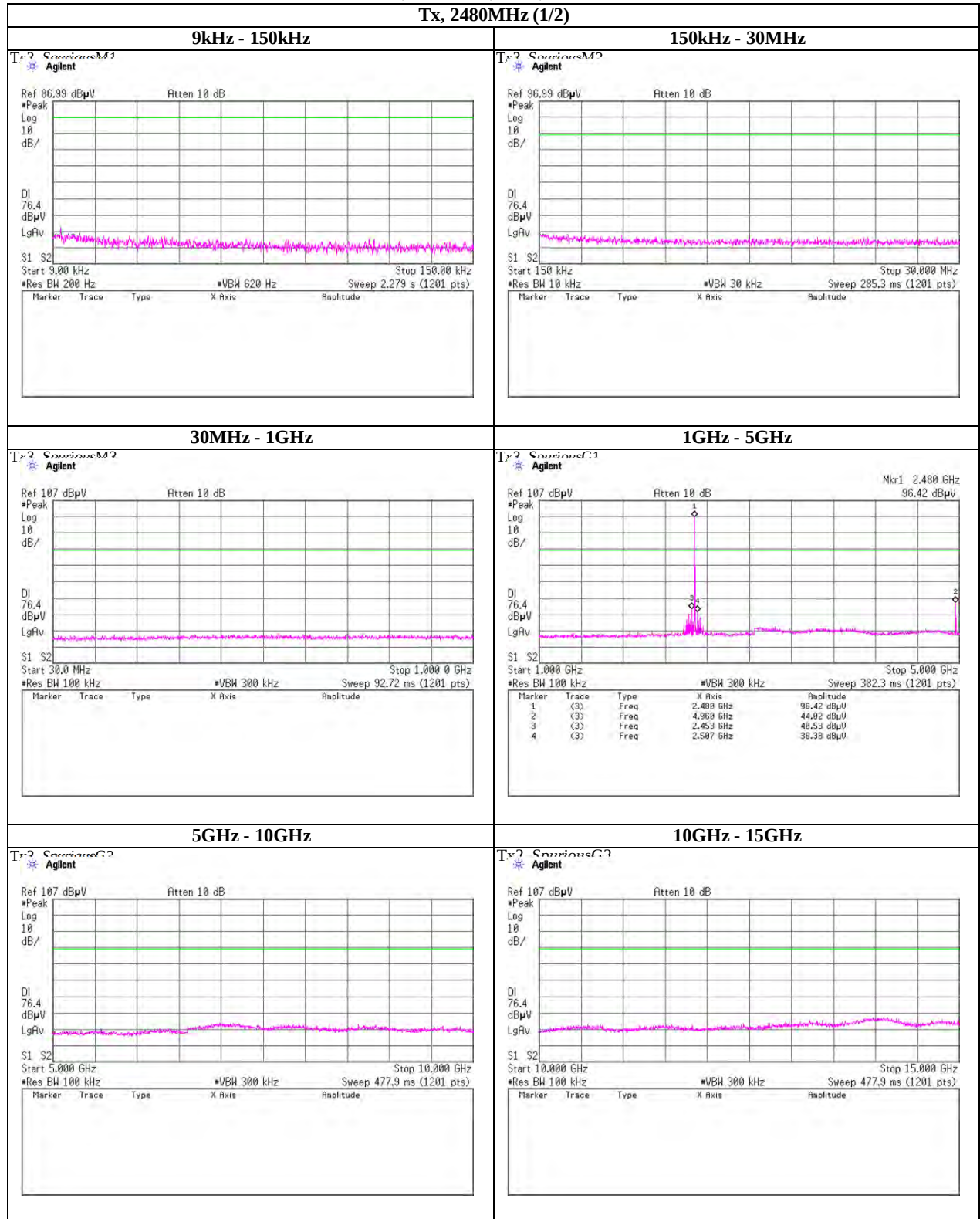
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Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2480MHz (1/2)



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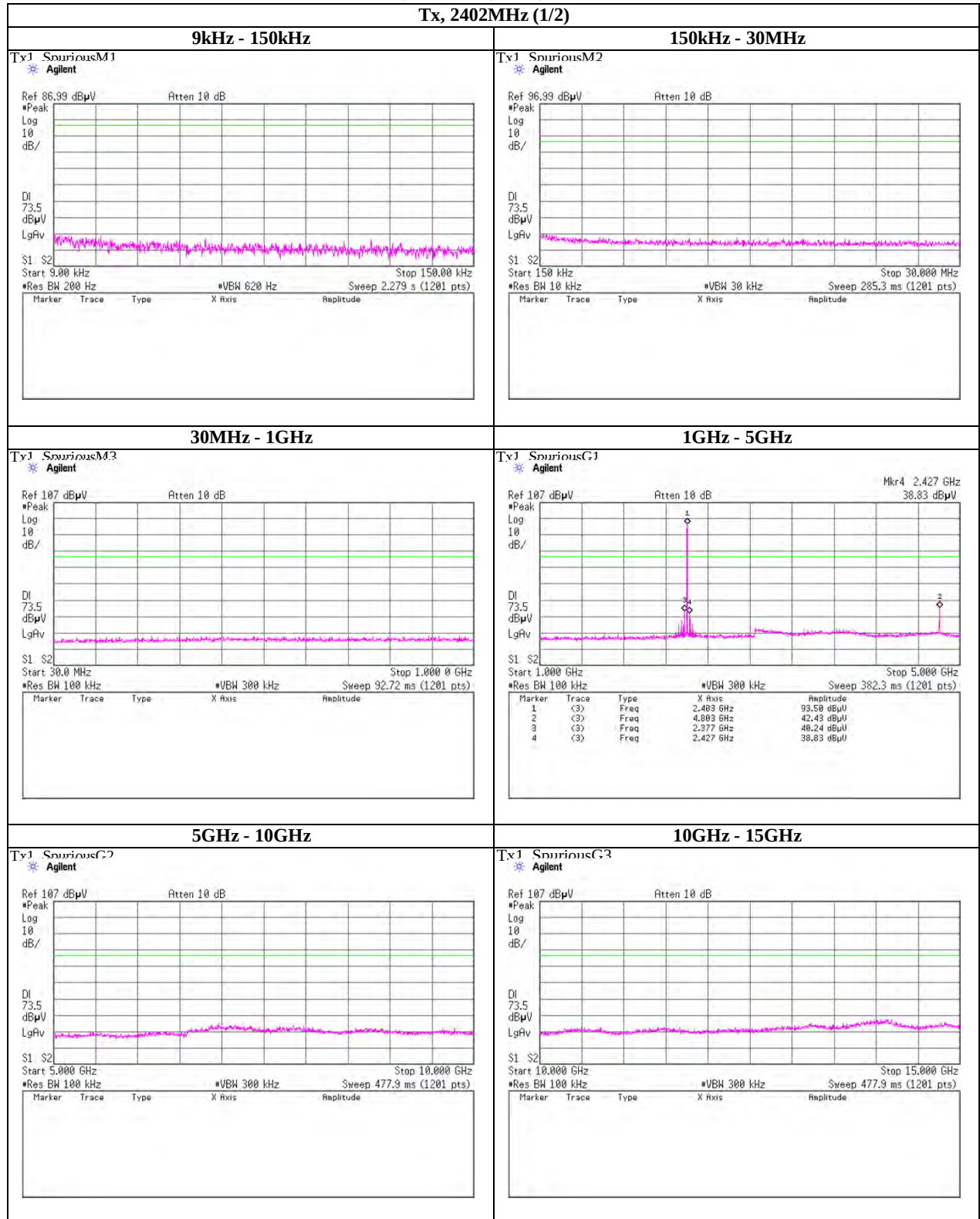
Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2480MHz (2/2)



Spurious emission (Conducted)**Tx, Bluetooth, EDR, PRBS9****Tx, 2402MHz (1/2)****UL Japan, Inc.****Shonan EMC Lab.**

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Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

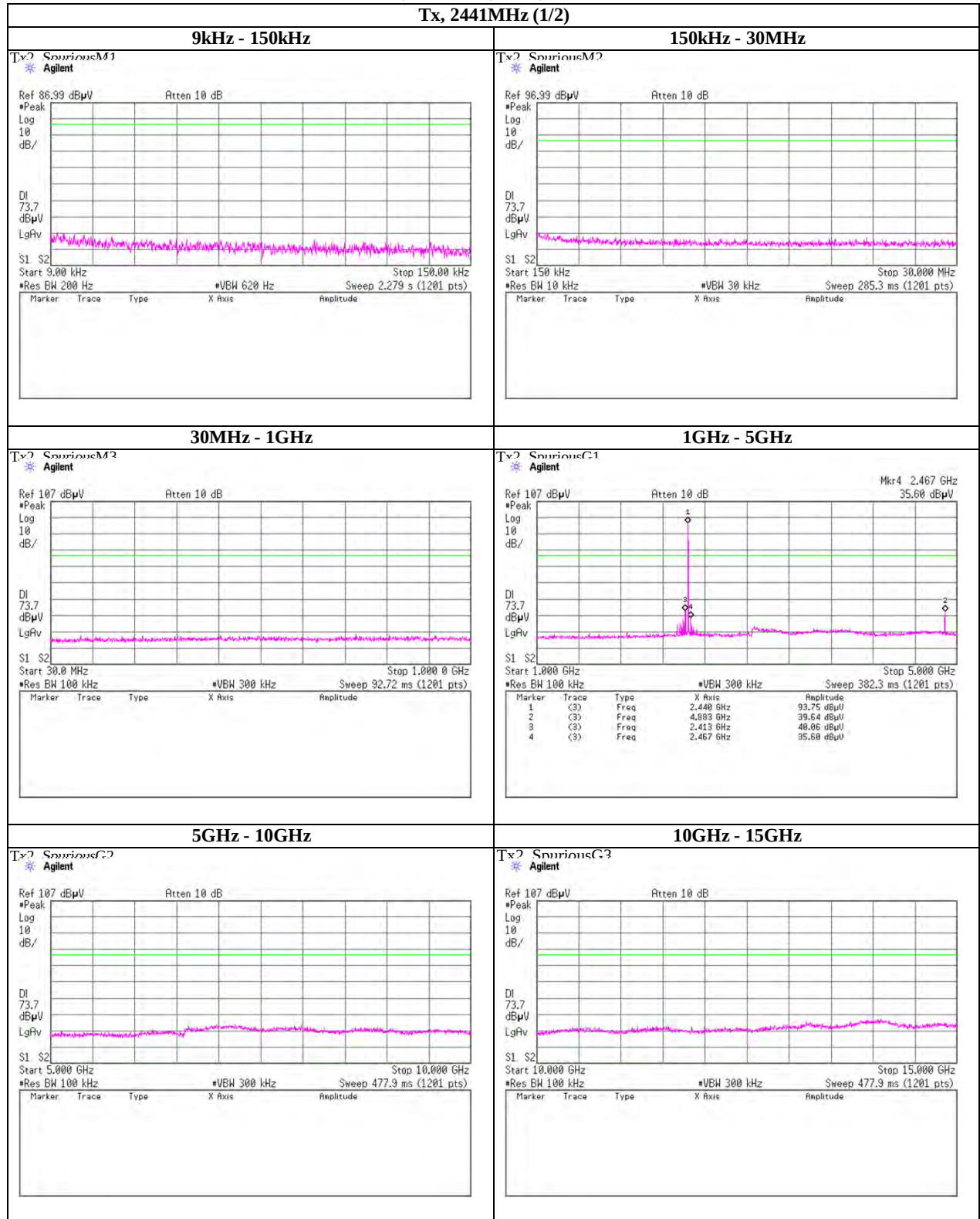
Tx, 2402MHz (2/2)



Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2441MHz (1/2)



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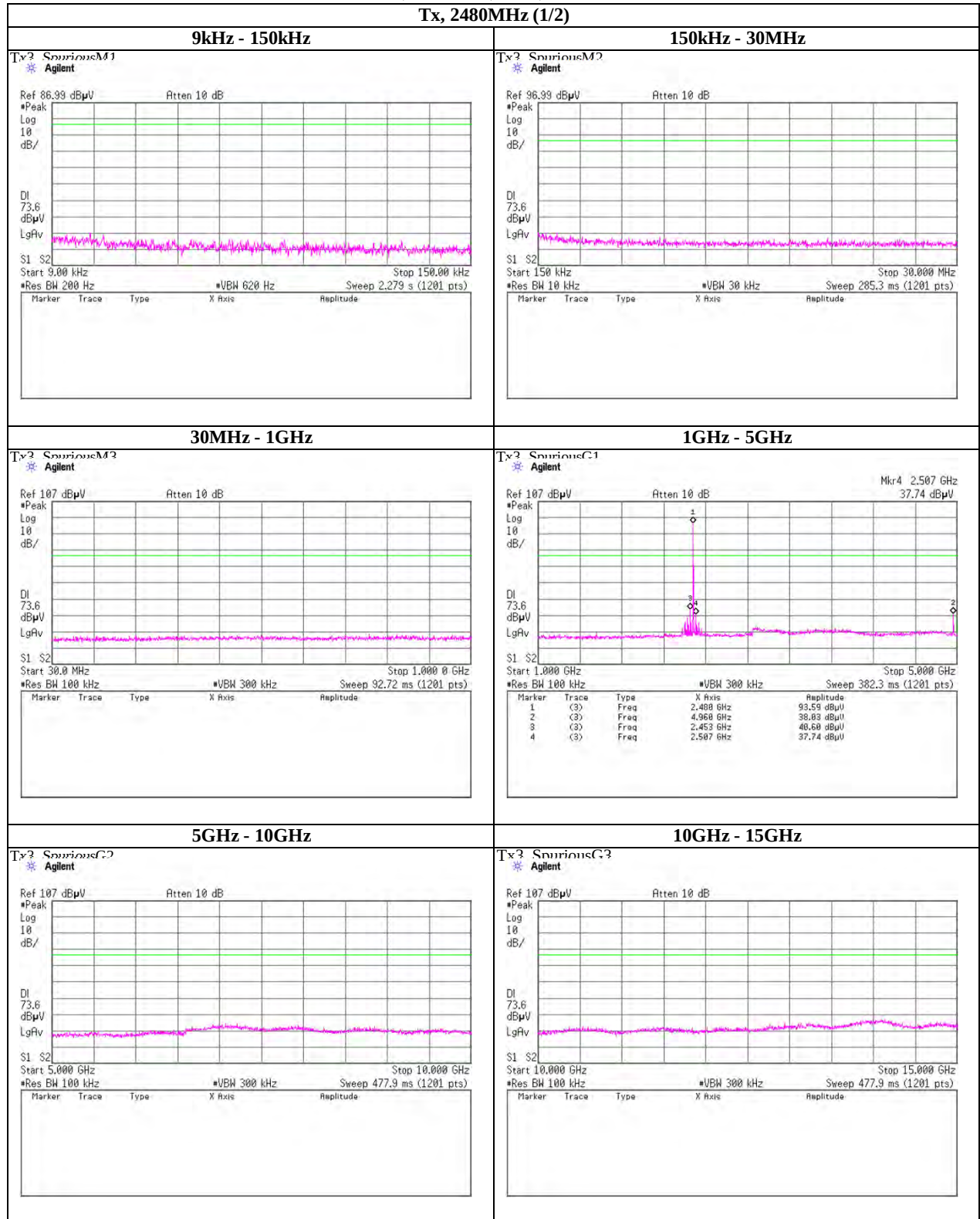
Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2441MHz (2/2)



Spurious emission (Conducted)**Tx, Bluetooth, EDR, PRBS9****Tx, 2480MHz (1/2)****UL Japan, Inc.****Shonan EMC Lab.**

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Spurious emission (Conducted)

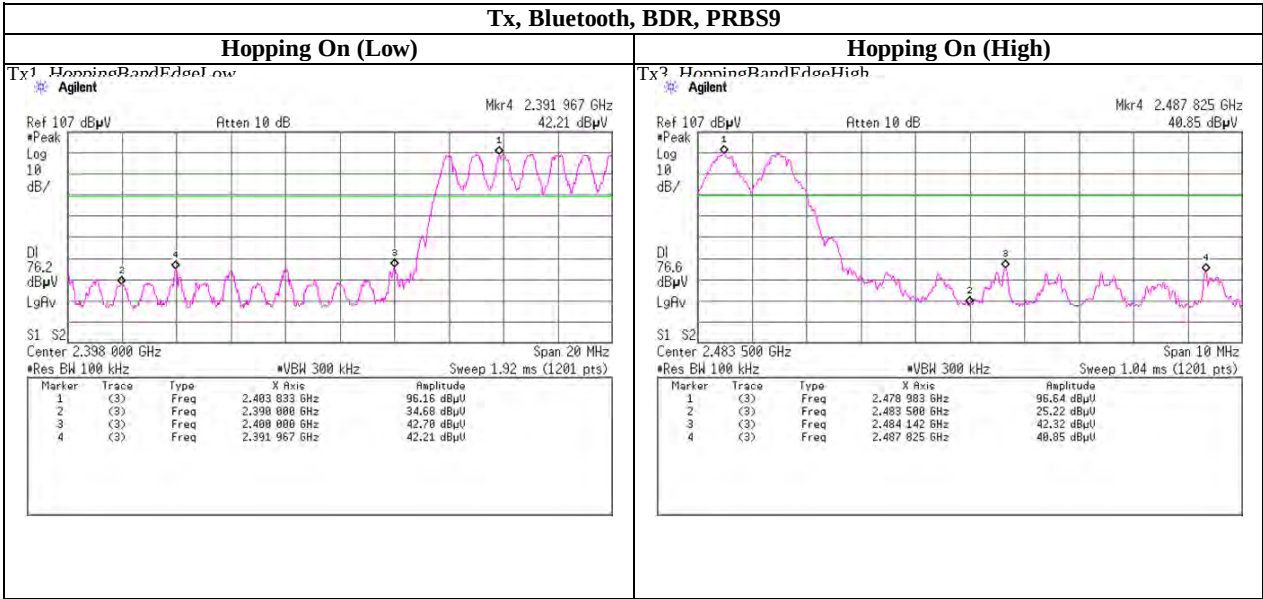
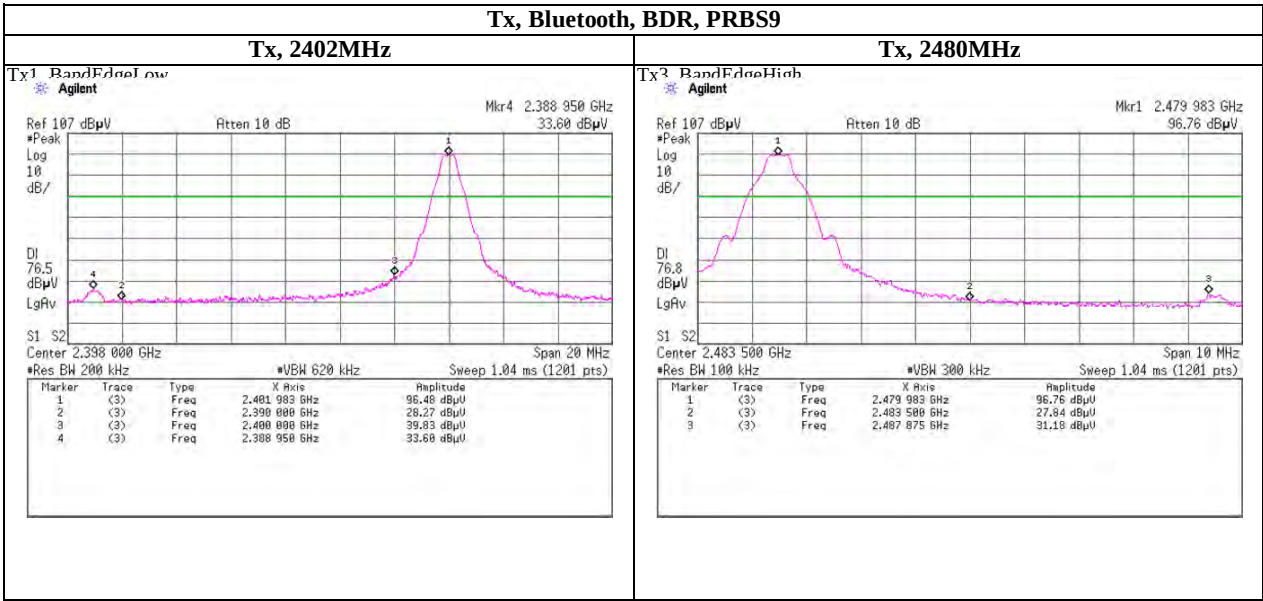
Tx, Bluetooth, EDR, PRBS9

Tx, 2480MHz (2/2)



Spurious emission (Conducted)

Band Edge compliance



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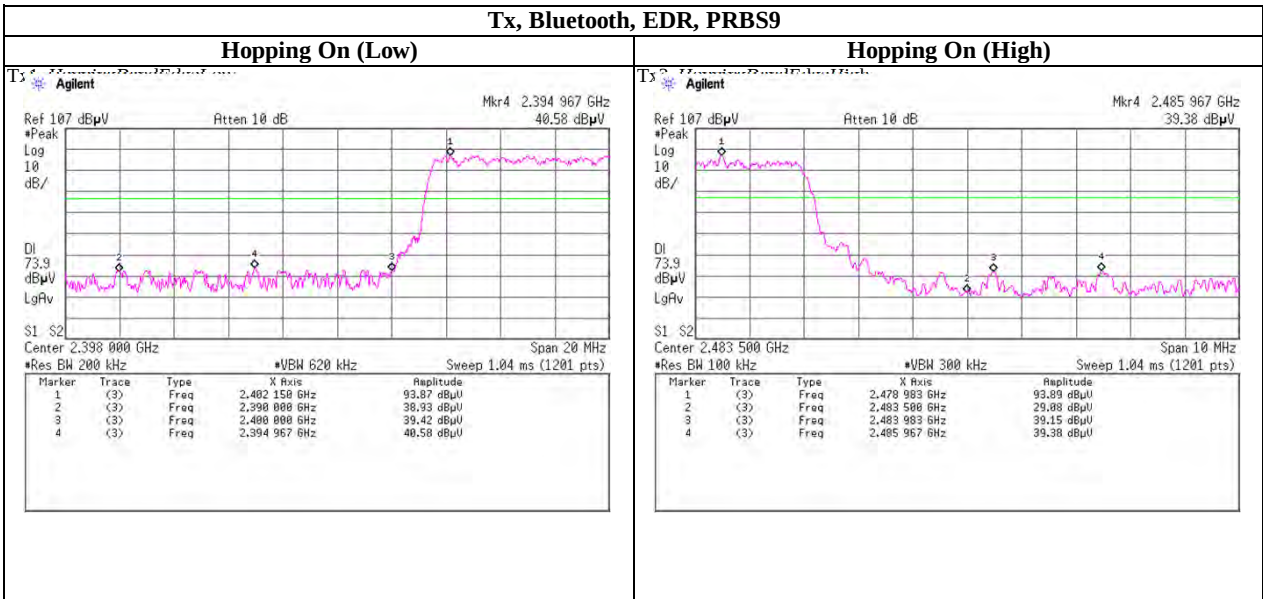
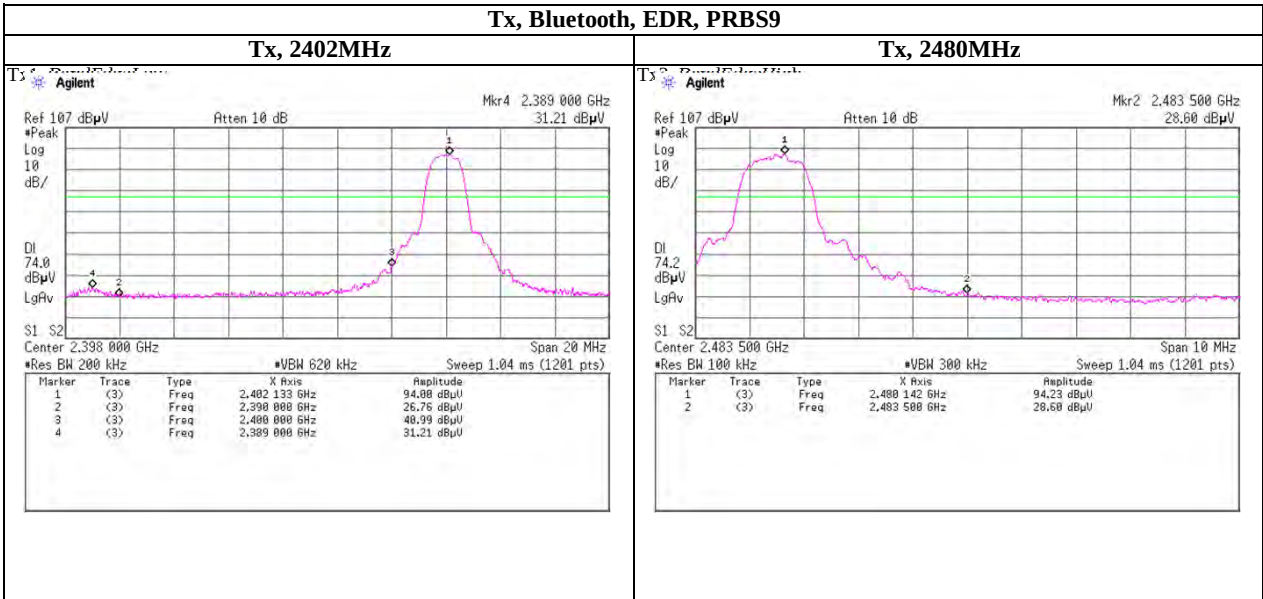
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Spurious emission (Conducted)

Band Edge compliance



UL Japan, Inc.

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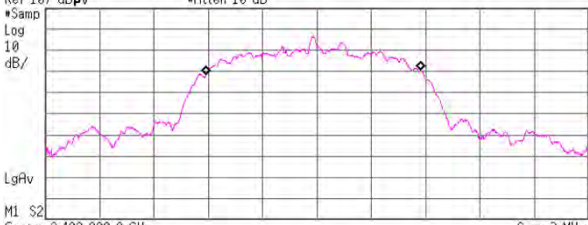
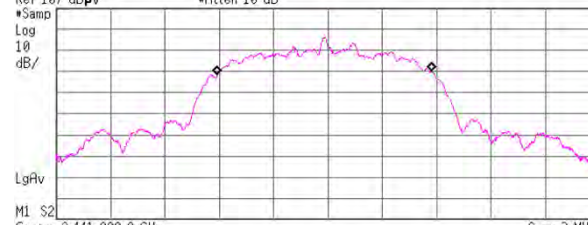
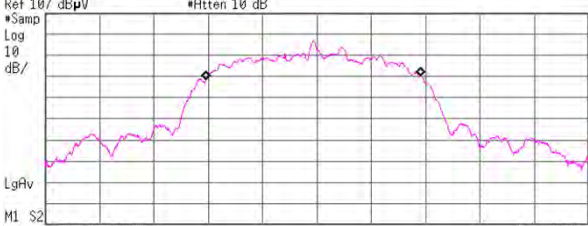
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

99% Occupied Bandwidth

Tx, Bluetooth, BDR, PRBS9	
Tx, 2402MHz Ref 107 dBµV *Atten 10 dB *Samp Log 10 dB/ LgRv M1 S2 Center 2.402 000 0 GHz *Res BW 30 kHz *VBW 100 kHz Sweep 10.08 ms (1201 pts) Span 3 MHz Occupied Bandwidth 874.4186 kHz Occ BW % Pwr 99.00 % x dB -20.00 dB Transmit Freq Error -23.222 kHz x dB Bandwidth 925.159 kHz*	Tx, 2441MHz Ref 107 dBµV *Atten 10 dB *Samp Log 10 dB/ LgRv M1 S2 Center 2.441 000 0 GHz *Res BW 30 kHz *VBW 100 kHz Sweep 10.08 ms (1201 pts) Span 3 MHz Occupied Bandwidth 868.8394 kHz Occ BW % Pwr 99.00 % x dB -20.00 dB Transmit Freq Error -23.498 kHz x dB Bandwidth 924.910 kHz*
Tx, 2480MHz Ref 107 dBµV *Atten 10 dB *Samp Log 10 dB/ LgRv M1 S2 Center 2.480 000 0 GHz *Res BW 30 kHz *VBW 100 kHz Sweep 10.08 ms (1201 pts) Span 3 MHz Occupied Bandwidth 871.7069 kHz Occ BW % Pwr 99.00 % x dB -20.00 dB Transmit Freq Error -23.991 kHz x dB Bandwidth 927.122 kHz*	Tx, Hopping On Ref 107 dBµV *Atten 10 dB *Samp Log 10 dB/ LgRv M1 S2 Center 2.441 00 GHz *Res BW 2 MHz *VBW 6 MHz Sweep 1.04 ms (1201 pts) Span 200 MHz Occupied Bandwidth 79.8065 MHz Occ BW % Pwr 99.00 % x dB -20.00 dB Transmit Freq Error -22.390 kHz x dB Bandwidth 83.315 MHz*

99% Occupied Bandwidth

Tx, Bluetooth, EDR, PRBS9	
Tx, 2402MHz Tx1 99QBW Agilent Ref 107 dBμV *Atten 10 dB *Samp Log 10 dB/  M1 S2 Center 2.402 000 0 GHz *Res BW 30 kHz *VBW 100 kHz Sweep 10.08 ms (1201 pts) Span 3 MHz Occupied Bandwidth 1.1826 MHz Occ BW % Pwr 99.00 % x dB -20.00 dB Transmit Freq Error -21.378 kHz x dB Bandwidth 1.271 MHz*	Tx, 2441MHz Tx2 99QBW Agilent Ref 107 dBμV *Atten 10 dB *Samp Log 10 dB/  M1 S2 Center 2.441 000 0 GHz *Res BW 30 kHz *VBW 100 kHz Sweep 10.08 ms (1201 pts) Span 3 MHz Occupied Bandwidth 1.1819 MHz Occ BW % Pwr 99.00 % x dB -20.00 dB Transmit Freq Error -21.775 kHz x dB Bandwidth 1.271 MHz*
Tx, 2480MHz Tx3 99QBW Agilent Ref 107 dBμV *Atten 10 dB *Samp Log 10 dB/  M1 S2 Center 2.480 000 0 GHz *Res BW 30 kHz *VBW 100 kHz Sweep 10.08 ms (1201 pts) Span 3 MHz Occupied Bandwidth 1.1829 MHz Occ BW % Pwr 99.00 % x dB -20.00 dB Transmit Freq Error -22.110 kHz x dB Bandwidth 1.272 MHz*	Tx, Hopping On Tx2 Hopping99QBW Agilent Ref 107 dBμV *Atten 10 dB *Samp Log 10 dB/  M1 S2 Center 2.441 00 0 GHz *Res BW 2 MHz *VBW 6 MHz Sweep 1.04 ms (1201 pts) Span 200 MHz Occupied Bandwidth 79.7911 MHz Occ BW % Pwr 99.00 % x dB -20.00 dB Transmit Freq Error -3.747 kHz x dB Bandwidth 83.330 MHz*

APPENDIX 2

Test Instruments

Page : 55 of 56
 Issued date : October 19, 2011
 FCC ID : AJDK045

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SOS-09	Humidity Indicator	A&D	AD-5681	4061484	AT	03/02/2011 * 12
SPM-06	Power Meter	Anritsu	ML2495A	0850009	AT	04/12/2011 * 12
SPSS-03	Power sensor	Anritsu	MA2411B	0917063	AT	04/12/2011 * 12
SSA-03	Spectrum Analyzer	Agilent	E4448A	MY48250152	AT	11/16/2010 * 12
SAT10-05	Attenuator(above1GHz)	Agilent	8493C-010	74864	AT	12/15/2010 * 12
SCC-G14	Coaxial Cable	Suhner	SUCOFLEX 102	31600/2	AT	03/23/2011 * 12
SAF-06	Pre Amplifier	TOYO Corporation	TPA0118-36	1440491	RE	07/19/2011 * 12
SCC-G03	Coaxial Cable	Suhner	SUCOFLEX 104A	46499/4A	RE	04/28/2011 * 12
SCC-G23	Coaxial Cable	Suhner	SUCOFLEX 104	297342/4	RE	05/27/2011 * 12
SHA-03	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	RE	08/28/2011 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	02/23/2011 * 12
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	RE	03/07/2011 * 12
SJM-10	Measure	PROMART	SEN1935	-	RE	-
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE, RFI,MF)	-	RE	-
SFL-02	Highpass Filter	MICRO-TRONICS	HPM50111	051	RE	12/15/2010 * 12
SAT10-04	Attenuator(above1GHz)	Agilent	8493C-010	74863	RE	12/15/2010 * 12
SHA-04	Horn Antenna	ETS LINDGREN	3160-09	LM3640	RE	03/15/2011 * 12
SAF-08	Pre Amplifier	TOYO Corporation	HAP18-26W	00000019	RE	03/16/2011 * 12
SCC-G17	Coaxial Cable	Suhner	SUCOFLEX 104A	46291/4A	RE	03/16/2011 * 12
SAF-01	Pre Amplifier	SONOMA	310N	290211	RE	02/17/2011 * 12
SAT6-01	Attenuator	JFW	50HF-006N	-	RE	02/17/2011 * 12
SAT3-04	Attenuator	JFW	50HF-003N	-	RE	02/17/2011 * 12
SBA-01	Biconical Antenna	Schwarzbeck	BBA9106	91032664	RE	08/17/2011 * 12
SCC-A1/A3/A5/A7/A8/A13/SRSE-01	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-269(RF Selector)	RE	04/28/2011 * 12
SCC-A2/A4/A6/A7/A8/A13/SRSE-01	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-269(RF Selector)	RE	04/28/2011 * 12
SLA-01	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0888	RE	08/17/2011 * 12
SOS-01	Humidity Indicator	A&D	AD-5681	4062555	RE	02/23/2011 * 12
STR-01	Test Receiver	Rohde & Schwarz	ESU40	100093	RE	10/29/2010 * 12
SJM-12	Measure	PROMART	SEN1935	-	RE	-
SAEC-01(NSA)	Semi-Anechoic Chamber	TDK	SAEC-01(NSA)	1	RE	09/01/2011 * 12
SAF-05	Pre Amplifier	TOYO Corporation	TPA0118-36	1440490	RE	03/23/2011 * 12
SCC-G02	Coaxial Cable	Suhner	SUCOFLEX 104A	46498/4A	RE	04/28/2011 * 12
SCC-G22	Coaxial Cable	Suhner	SUCOFLEX 104	296199/4	RE	05/27/2011 * 12
SHA-02	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-726	RE	08/28/2011 * 12
SOS-03	Humidity Indicator	A&D	AD-5681	4063325	RE	02/23/2011 * 12
SSA-01	Spectrum Analyzer	Agilent	N9010A-526	MY48031482	RE	04/20/2011 * 12
SJM-02	Measure	KOMELON	KMC-36	-	RE	-
SAEC-02(NSA)	Semi-Anechoic Chamber	TDK	SAEC-02(NSA)	2	RE	09/25/2011 * 12

The expiration date of the calibration is the end of the expired month .
 As for some calibrations performed after the tested dates , those test equipment have been controlled by means of an unbroken chains of calibrations .

All equipment is calibrated with valid calibrations . Each measurement data is traceable to the national or international standards .

Test Item :

RE: Radiated emission ,
 AT: Antenna terminal disturbance voltage