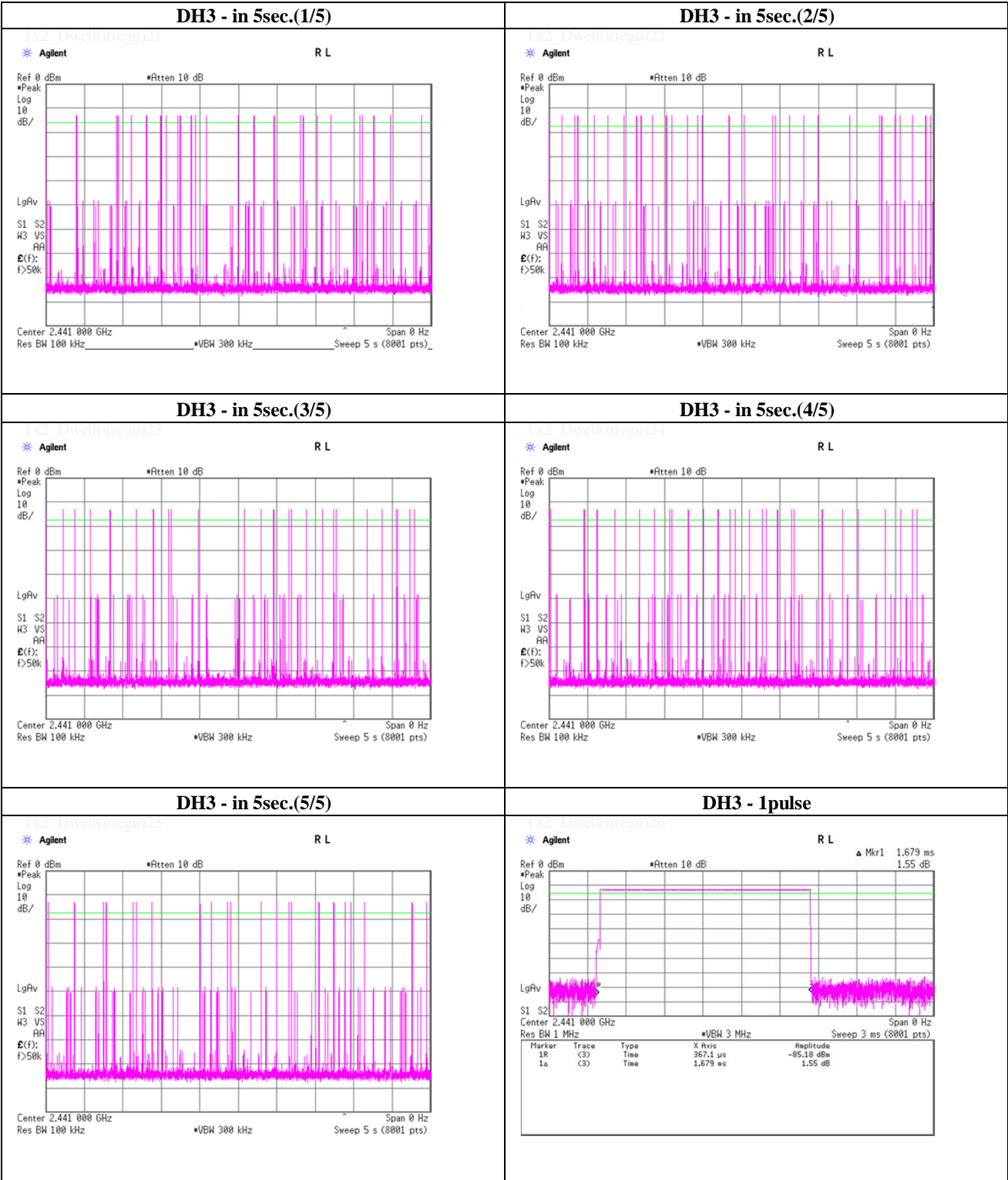


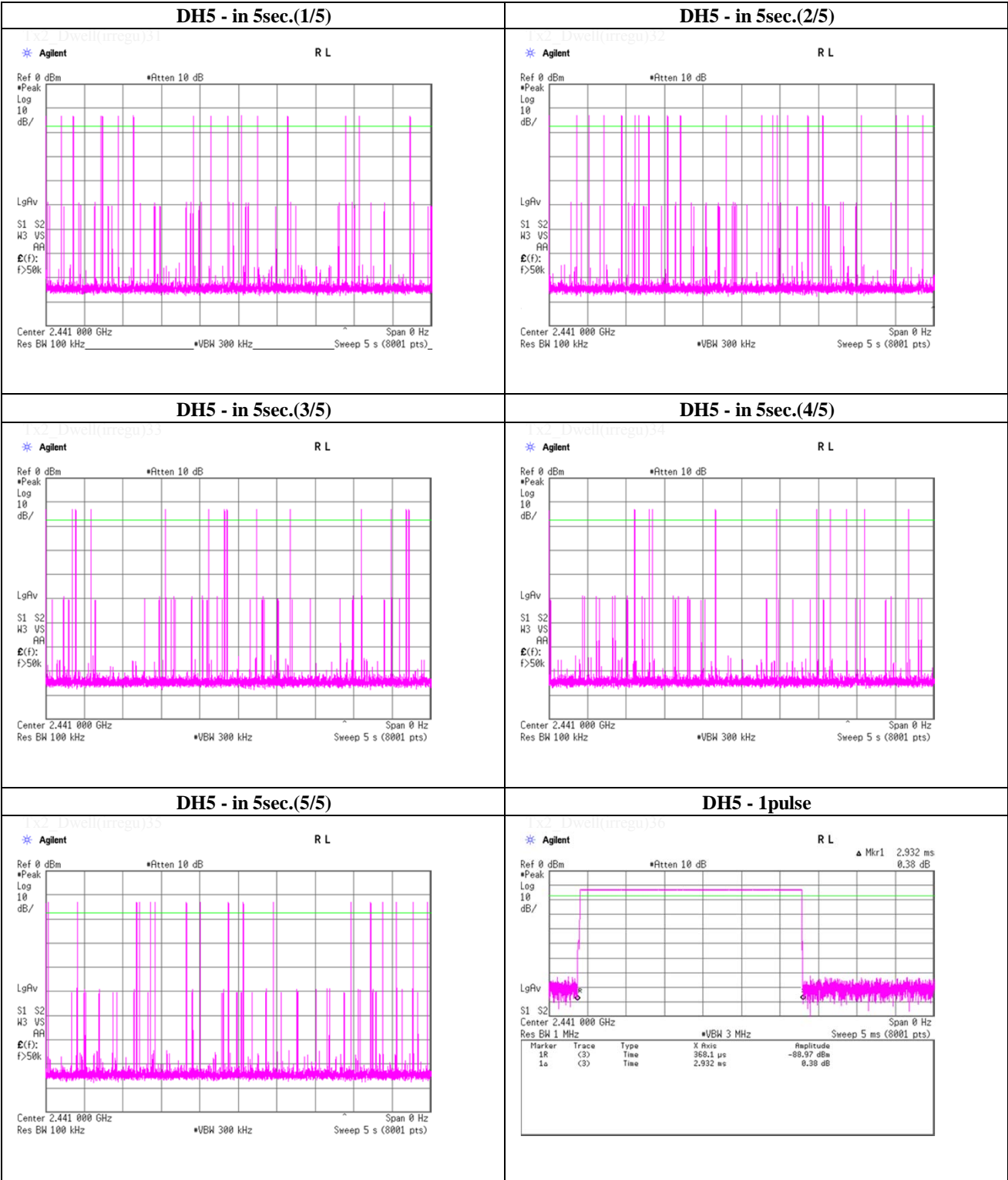
Dwell time

Tx, Bluetooth, BDR, PRBS9



Dwell time

Tx, Bluetooth, BDR, PRBS9



Dwell Time

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date February 9, 2015
 Temperature / Humidity 24 deg.C , 43 %RH
 Engineer Tatsuya Arai
 Mode Tx, Bluetooth, EDR, PRBS9

Mode	Number of transmission in a 31.6 (79 Hopping x 0.4) second			Length of transmission time [msec]	Result [msec]	Limit [msec]
3-DH1	49.2	/ 5.0 sec.	x 31.6 sec. = 311 times	0.426	133	400
3-DH3	25.0	/ 5.0 sec.	x 31.6 sec. = 158 times	1.678	265	400
3-DH5	18.2	/ 5.0 sec.	x 31.6 sec. = 116 times	2.930	340	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	49	48	49	50	50	49.2
3-DH3	24	28	25	29	19	25.0
3-DH5	14	14	23	23	17	18.2

Sample Calculation

Average= Summation(Sampling 1 to 5) / 5

* This device complies with the Bluetooth protocol for FHSS operation, employing a pseudo random channel selection and hopping rate to ensure that the occupancy time in $N \times 0.4s$, where N is the number of channels being used in the hopping sequence ($20 \leq N \leq 79$), is always less than 0.4s regardless of packet size (3-DH1, 3-DH3 or 3-DH5). This is confirmed in the test report for $N=79$.

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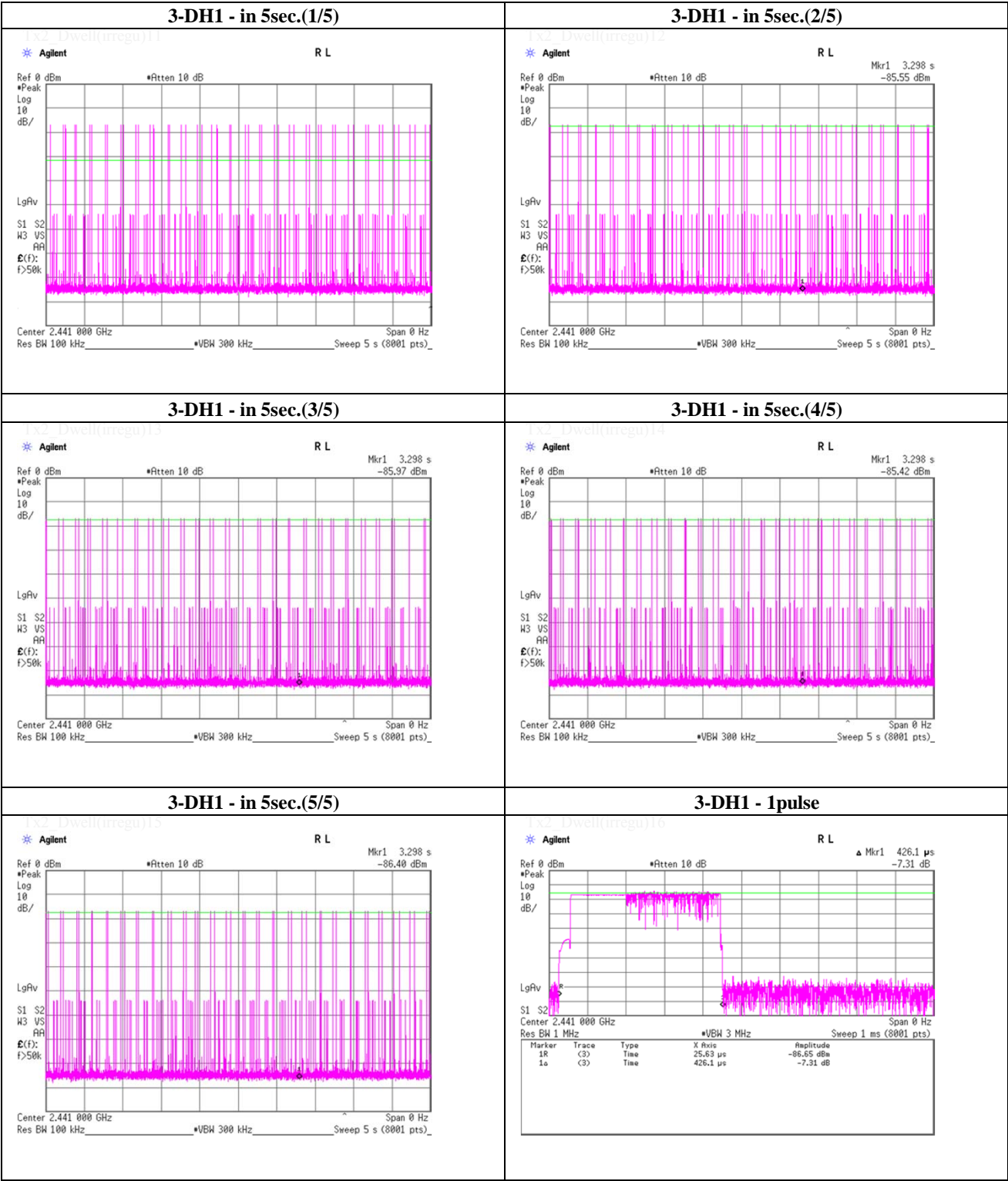
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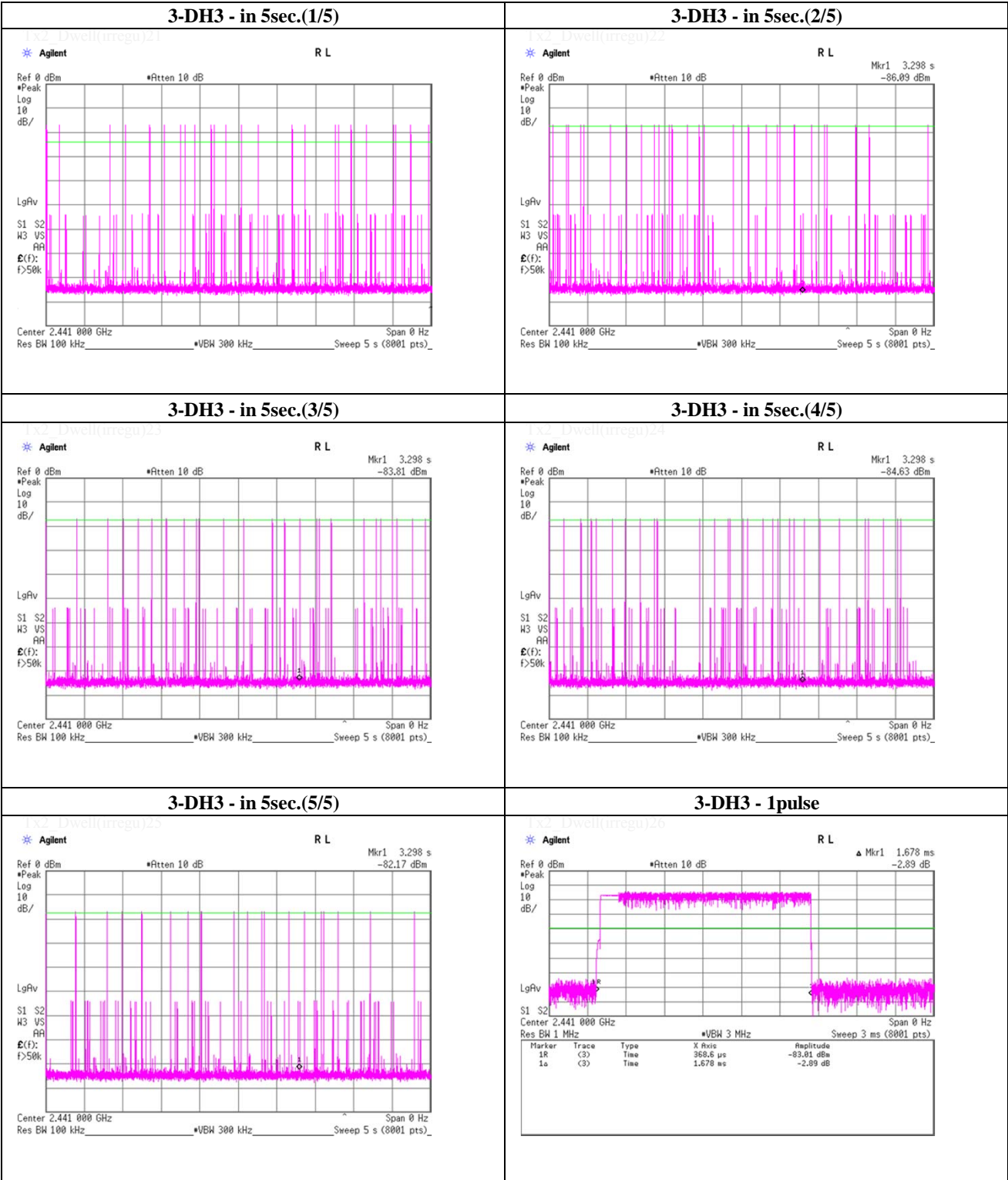
Dwell time

Tx, Bluetooth, EDR, PRBS9



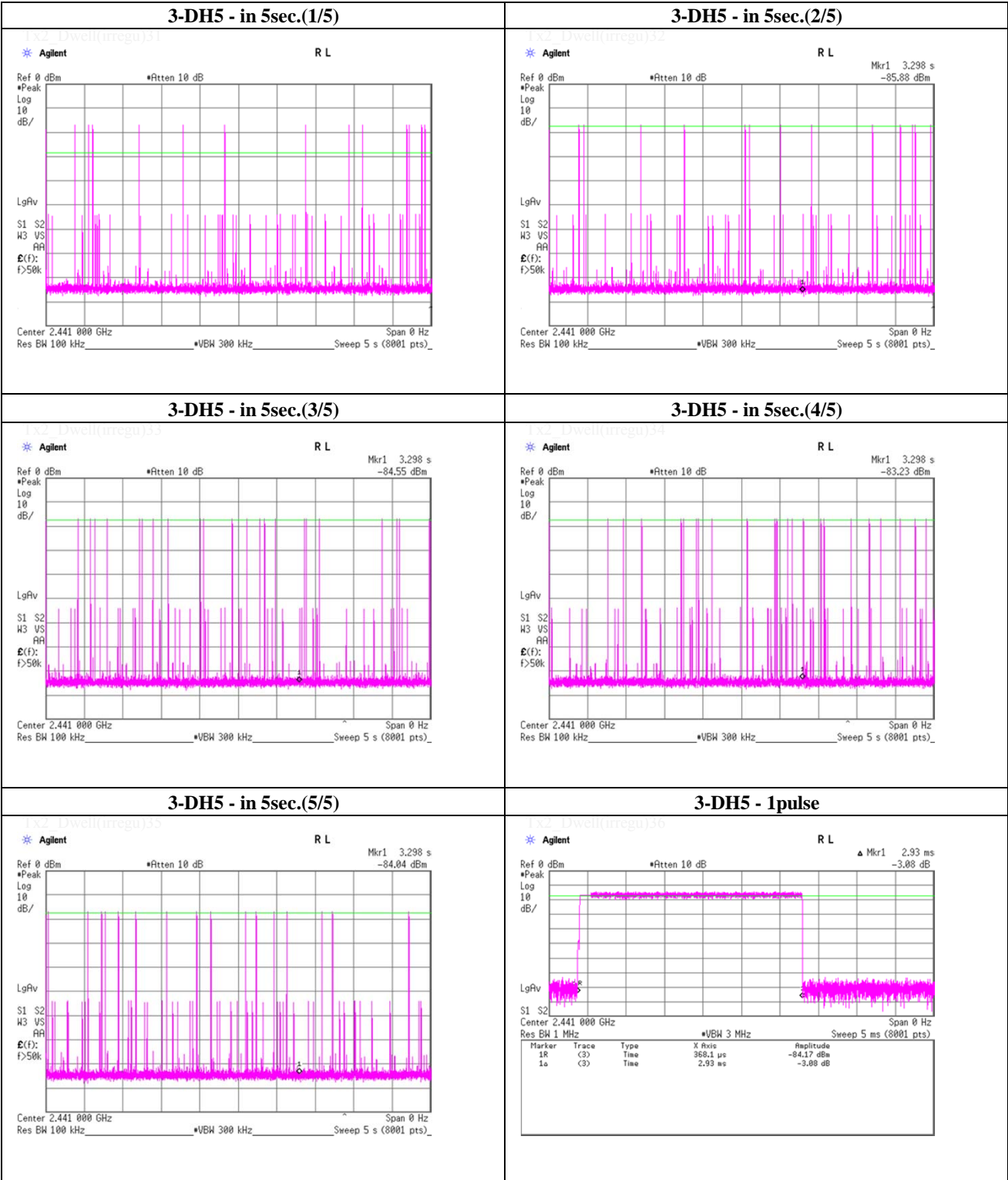
Dwell time

Tx, Bluetooth, EDR, PRBS9



Dwell time

Tx, Bluetooth, EDR, PRBS9



Maximum Peak Conducted Output Power (Conducted)

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date January 28, 2015
 Temperature / Humidity 24deg.C , 35%RH
 Engineer Yosuke Ishikawa
 Mode Tx, Bluetooth

(* P/M: Power Meter with power sensor)

	Freq. [MHz]	P/M (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]	
DH5	2402.0	-12.50	1.09	20.24	8.83	7.64	20.97	125	12.14
DH5	2441.0	-12.14	1.10	20.24	9.20	8.32	20.97	125	11.77
DH5	2480.0	-12.48	1.11	20.24	8.87	7.71	20.97	125	12.10
2-DH5	2402.0	-13.53	1.09	20.24	7.80	6.03	20.97	125	13.17
2-DH5	2441.0	-13.32	1.10	20.24	8.02	6.34	20.97	125	12.95
2-DH5	2480.0	-13.79	1.11	20.24	7.56	5.70	20.97	125	13.41
3-DH5	2402.0	-13.24	1.09	20.24	8.09	6.44	20.97	125	12.88
3-DH5	2441.0	-13.08	1.10	20.24	8.26	6.70	20.97	125	12.71
3-DH5	2480.0	-13.62	1.11	20.24	7.73	5.93	20.97	125	13.24

Sample Calculation:

Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss

(Reference maximum conducted power (average))

(* P/M: Power Meter with power sensor)

	Freq. [MHz]	P/M (Average) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result	
						[dBm]	[mW]
DH5	2402.0	-14.37	1.09	20.24	1.20	8.16	6.55
DH5	2441.0	-13.87	1.10	20.24	1.20	8.67	7.36
DH5	2480.0	-14.39	1.11	20.24	1.20	8.16	6.55
2-DH5	2402.0	-17.71	1.09	20.24	1.21	4.83	3.04
2-DH5	2441.0	-17.46	1.10	20.24	1.21	5.09	3.23
2-DH5	2480.0	-18.16	1.11	20.24	1.21	4.40	2.75
3-DH5	2402.0	-17.70	1.09	20.24	1.21	4.84	3.05
3-DH5	2441.0	-17.58	1.10	20.24	1.21	4.97	3.14
3-DH5	2480.0	-18.15	1.11	20.24	1.21	4.41	2.76

Sample Calculation:

Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty factor

* Duty factor is refer to the page of "(Reference) duty chart for Maximum conducted power"

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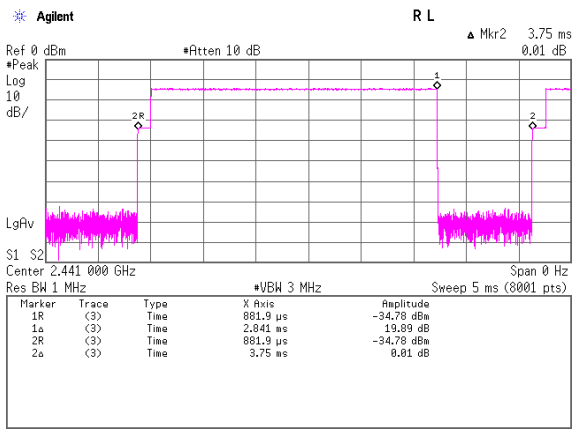
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Facsimile : +81 463 50 6401

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
Date January 28, 2015
Temperature / Humidity 24deg.C , 35%RH
Engineer Yosuke Ishikawa

(Reference) duty chart for Maximum conducted power

(Reference duty chart for Maximum conducted power)



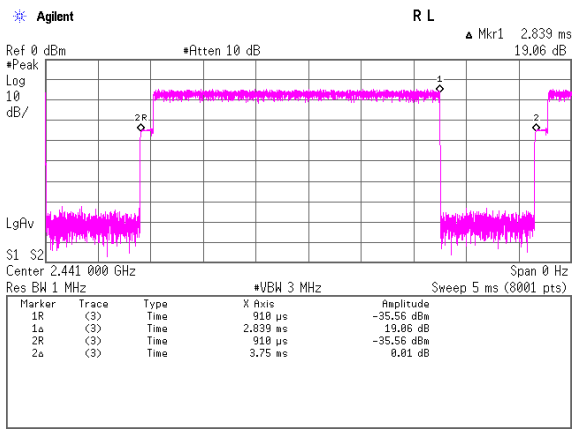
on time [ms] 2.841 1cycle[ms] 3.75 duty 0.758
 duty factor [dB] 1.2
* caliculation: duty factor [dB] = 10 x log (1cycle [ms] / on time [ms])

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Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
Date January 28, 2015
Temperature / Humidity 24deg.C , 35%RH
Engineer Yosuke Ishikawa

(Reference) duty chart for Maximum conducted power

(Reference duty chart for Maximum conducted power)



on time [ms] 2.839 1cycle[ms] 3.75 duty 0.757
duty factor [dB] 1.21
* caliculation: duty factor [dB] = 10 x log (1cycle [ms] / on time [ms])

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Radiated Emission

Test place No.3 Semi Anechoic Chamber
 Date February 3, 2015 February 7, 2015
 Temperature / Humidity 24 deg.C, 30 %RH 22 deg.C, 38 %RH
 Engineer Yasumasa Owaki Takahiro Suzuki
 Mode Tx, 2402 MHz
 Tx, Bluetooth, BDR, PRBS9, Monopole Antenna

(* 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.	348.562	QP	41.8	15.2	8.8	32.0	33.8	46.0	12.2	163	231	
Hori.	2390.000	PK	46.2	26.4	13.6	41.1	45.1	73.9	28.8	100	239	
Hori.	3202.700	PK	53.2	27.8	5.2	40.8	45.4	73.9	28.5	100	152	
Hori.	4804.000	PK	55.6	30.6	5.6	39.8	52.0	73.9	21.9	100	285	
Hori.	7206.000	PK	45.1	36.6	7.1	40.2	48.6	73.9	25.3	120	321	
Hori.	12010.000	PK	49.1	39.5	9.2	39.6	58.2	73.9	15.7	100	47	
Hori.	2390.000	AV	34.0	26.4	13.6	41.1	32.9	53.9	21.0	100	239	
Hori.	3202.700	AV	48.6	27.8	5.2	40.8	40.8	53.9	13.1	100	152	
Hori.	4804.000	AV	50.2	30.6	5.6	39.8	46.6	53.9	7.3	100	285	
Hori.	7206.000	AV	34.3	36.6	7.1	40.2	37.8	53.9	16.1	120	321	
Hori.	12010.000	AV	36.1	39.5	9.2	39.6	45.2	53.9	8.7	100	47	
Vert.	66.397	QP	37.8	6.8	7.1	32.2	19.5	40.0	20.5	100	123	
Vert.	336.113	QP	39.0	14.9	8.8	32.0	30.7	46.0	15.3	100	226	
Vert.	348.561	QP	44.0	15.2	8.8	32.0	36.0	46.0	10.0	100	212	
Vert.	361.006	QP	36.6	15.5	8.9	32.0	29.0	46.0	17.0	100	231	
Vert.	373.457	QP	36.6	15.8	8.9	32.0	29.3	46.0	16.7	100	271	
Vert.	398.352	QP	37.4	16.4	9.0	32.0	30.8	46.0	15.2	100	127	
Vert.	473.044	QP	37.2	17.4	9.3	32.0	31.9	46.0	14.1	100	221	
Vert.	2390.000	PK	45.5	26.4	13.6	41.1	44.4	73.9	29.5	173	221	
Vert.	3202.700	PK	53.1	27.8	5.2	40.8	45.3	73.9	28.6	100	226	
Vert.	4804.000	PK	55.8	30.6	5.6	39.8	52.2	73.9	21.7	115	77	
Vert.	7206.000	PK	45.4	36.6	7.1	40.2	48.9	73.9	25.0	100	0	
Vert.	12010.000	PK	45.8	39.5	9.2	39.6	54.9	73.9	19.0	100	0	
Vert.	2390.000	AV	33.8	26.4	13.6	41.1	32.7	53.9	21.2	173	221	
Vert.	3202.700	AV	48.2	27.8	5.2	40.8	40.4	53.9	13.5	100	226	
Vert.	4804.000	AV	50.2	30.6	5.6	39.8	46.6	53.9	7.3	115	77	
Vert.	7206.000	AV	33.7	36.6	7.1	40.2	37.2	53.9	16.7	100	0	
Vert.	12010.000	AV	34.4	39.5	9.2	39.6	43.5	53.9	10.4	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	105.0	26.4	13.6	41.1	103.9	-	-	Carrier
Hori.	2400.000	PK	41.4	26.4	13.6	41.1	40.3	83.9	43.6	
Hori.	9608.001	PK	47.8	38.5	8.1	40.1	54.3	83.9	29.6	
Vert.	2402.000	PK	99.9	26.4	13.6	41.1	98.8	-	-	Carrier
Vert.	2400.000	PK	38.7	26.4	13.6	41.1	37.6	78.8	41.2	
Vert.	9608.001	PK	51.3	38.5	8.1	40.1	57.8	78.8	21.0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place No.3 Semi Anechoic Chamber
 Date February 3, 2015 February 7, 2015
 Temperature / Humidity 24 deg.C, 30 %RH 22 deg.C, 38 %RH
 Engineer Yasumasa Owaki Takahiro Suzuki
 Mode Tx, 2441 MHz
 Tx, Bluetooth, BDR, PRBS9, Monopole Antenna

(* 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.	348.540	QP	41.4	15.2	8.8	32.0	33.4	46.0	12.6	160	224	
Hori.	3254.673	PK	54.3	27.9	5.2	40.9	46.5	73.9	27.4	100	153	
Hori.	4882.000	PK	53.6	30.9	5.6	39.7	50.4	73.9	23.5	100	71	
Hori.	7323.000	PK	45.5	36.8	7.0	40.3	49.0	73.9	24.9	100	326	
Hori.	12205.000	PK	46.9	39.4	9.3	39.8	55.8	73.9	18.1	100	48	
Hori.	3254.673	AV	49.4	27.9	5.2	40.9	41.6	53.9	12.3	100	153	
Hori.	4882.000	AV	47.7	30.9	5.6	39.7	44.5	53.9	9.4	100	71	
Hori.	7323.000	AV	33.6	36.8	7.0	40.3	37.1	53.9	16.8	100	326	
Hori.	12205.000	AV	35.5	39.4	9.3	39.8	44.4	53.9	9.5	100	48	
Vert.	66.317	QP	37.5	6.8	7.1	32.2	19.2	40.0	20.8	100	153	
Vert.	336.112	QP	38.8	14.9	8.8	32.0	30.5	46.0	15.5	100	221	
Vert.	348.508	QP	43.7	15.2	8.8	32.0	35.7	46.0	10.3	100	210	
Vert.	361.062	QP	36.3	15.5	8.9	32.0	28.7	46.0	17.3	100	210	
Vert.	373.458	QP	36.4	15.8	8.9	32.0	29.1	46.0	16.9	100	261	
Vert.	398.407	QP	37.0	16.4	9.0	32.0	30.4	46.0	15.6	100	120	
Vert.	473.099	QP	36.9	17.4	9.3	32.0	31.6	46.0	14.4	100	203	
Vert.	3254.698	PK	53.3	27.9	5.2	40.9	45.5	73.9	28.4	100	229	
Vert.	4882.000	PK	52.1	30.9	5.6	39.7	48.9	73.9	25.0	100	70	
Vert.	7323.000	PK	45.6	36.8	7.0	40.3	49.1	73.9	24.8	100	0	
Vert.	12205.000	PK	45.9	39.4	9.3	39.8	54.8	73.9	19.1	100	0	
Vert.	3254.698	AV	48.2	27.9	5.2	40.9	40.4	53.9	13.5	100	229	
Vert.	4882.000	AV	46.0	30.9	5.6	39.7	42.8	53.9	11.1	100	70	
Vert.	7323.000	AV	33.4	36.8	7.0	40.3	36.9	53.9	17.0	100	0	
Vert.	12205.000	AV	33.8	39.4	9.3	39.8	42.7	53.9	11.2	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2441.000	PK	103.1	26.5	13.6	41.1	102.1	-	-	Carrier
Hori.	9764.001	PK	46.3	38.6	8.1	40.0	53.0	82.1	29.1	
Vert.	2441.000	PK	97.2	26.5	13.6	41.1	96.2	-	-	Carrier
Vert.	9764.001	PK	48.2	38.6	8.1	40.0	54.9	76.2	21.3	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place No.3 Semi Anechoic Chamber
 Date February 3, 2015 February 7, 2015
 Temperature / Humidity 24 deg.C, 30 %RH 22 deg.C, 38 %RH
 Engineer Yasumasa Owaki Takahiro Suzuki
 Mode Tx, 2480 MHz
 Tx, Bluetooth, BDR, PRBS9, Monopole Antenna

(* 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.	348.593	QP	41.6	15.2	8.8	32.0	33.6	46.0	12.4	158	209	
Hori.	2483.500	PK	48.8	26.6	13.6	41.1	47.9	73.9	26.0	100	240	
Hori.	3306.664	PK	52.8	27.9	5.2	40.9	45.0	73.9	28.9	100	159	
Hori.	4960.000	PK	51.8	31.2	5.7	39.6	49.1	73.9	24.8	100	303	
Hori.	7440.000	PK	45.8	37.0	7.0	40.4	49.4	73.9	24.5	100	44	
Hori.	12400.000	PK	45.6	39.3	9.4	40.0	54.3	73.9	19.6	100	48	
Hori.	2483.500	AV	33.8	26.6	13.6	41.1	32.9	53.9	21.0	100	240	
Hori.	3306.664	AV	48.0	27.9	5.2	40.9	40.2	53.9	13.7	100	159	
Hori.	4960.000	AV	45.1	31.2	5.7	39.6	42.4	53.9	11.5	100	303	
Hori.	7440.000	AV	33.7	37.0	7.0	40.4	37.3	53.9	16.6	100	44	
Hori.	12400.000	AV	33.5	39.3	9.4	40.0	42.2	53.9	11.7	100	48	
Vert.	64.861	QP	37.3	7.0	7.1	32.2	19.2	40.0	20.8	100	27	
Vert.	336.115	QP	39.2	14.9	8.8	32.0	30.9	46.0	15.1	100	307	
Vert.	348.609	QP	43.5	15.2	8.8	32.0	35.5	46.0	10.5	100	217	
Vert.	360.953	QP	36.8	15.5	8.9	32.0	29.2	46.0	16.8	100	253	
Vert.	373.448	QP	36.9	15.8	8.9	32.0	29.6	46.0	16.4	100	198	
Vert.	398.286	QP	37.1	16.4	9.0	32.0	30.5	46.0	15.5	100	133	
Vert.	473.102	QP	36.8	17.4	9.3	32.0	31.5	46.0	14.5	100	210	
Vert.	2483.500	PK	47.1	26.6	13.6	41.1	46.2	73.9	27.7	117	170	
Vert.	3306.671	PK	53.8	27.9	5.2	40.9	46.0	73.9	27.9	100	269	
Vert.	4960.000	PK	50.8	31.2	5.7	39.6	48.1	73.9	25.8	106	266	
Vert.	7440.000	PK	45.9	37.0	7.0	40.4	49.5	73.9	24.4	100	0	
Vert.	12400.000	PK	44.1	39.3	9.4	40.0	52.8	73.9	21.1	100	0	
Vert.	2483.500	AV	33.4	26.6	13.6	41.1	32.5	53.9	21.4	117	170	
Vert.	3306.671	AV	48.8	27.9	5.2	40.9	41.0	53.9	12.9	100	269	
Vert.	4960.000	AV	44.0	31.2	5.7	39.6	41.3	53.9	12.6	106	266	
Vert.	7440.000	AV	33.8	37.0	7.0	40.4	37.4	53.9	16.5	100	0	
Vert.	12400.000	AV	32.8	39.3	9.4	40.0	41.5	53.9	12.4	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2480.000	PK	104.0	26.6	13.6	41.1	103.1	-	-	Carrier
Hori.	9920.001	PK	43.1	38.6	8.0	39.9	49.8	83.1	33.3	
Vert.	2480.000	PK	96.7	26.6	13.6	41.1	95.8	-	-	Carrier
Vert.	9920.001	PK	43.5	38.6	8.0	39.9	50.2	75.8	25.6	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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

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Telephone : +81 463 50 6400

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Radiated Emission

Test place No.3 Semi Anechoic Chamber
Date February 3, 2015 February 8, 2015
Temperature / Humidity 24 deg.C, 30 %RH 24 deg.C, 30 %RH
Engineer Yasumasa Owaki Yosuke Ishikawa
Mode Tx, 2402 MHz
 Tx, Bluetooth, EDR, PRBS9, Monopole Antenna

(* 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.	348.577	QP	43.2	15.2	8.8	32.0	35.2	46.0	10.8	208	221	
Hori.	2390.000	PK	46.5	26.4	13.6	41.1	45.4	73.9	28.5	100	241	
Hori.	3202.704	PK	53.0	27.8	5.2	40.8	45.2	73.9	28.7	100	151	
Hori.	4804.000	PK	52.9	30.6	5.6	39.8	49.3	73.9	24.6	100	305	
Hori.	7206.000	PK	45.8	36.6	7.1	40.2	49.3	73.9	24.6	100	324	
Hori.	12010.000	PK	47.2	39.5	9.2	39.6	56.3	73.9	17.6	100	46	
Hori.	2390.000	AV	34.0	26.4	13.6	41.1	32.9	53.9	21.0	100	241	
Hori.	3202.704	AV	47.8	27.8	5.2	40.8	40.0	53.9	13.9	100	151	
Hori.	4804.000	AV	44.7	30.6	5.6	39.8	41.1	53.9	12.8	100	305	
Hori.	7206.000	AV	33.6	36.6	7.1	40.2	37.1	53.9	16.8	100	324	
Hori.	12010.000	AV	35.0	39.5	9.2	39.6	44.1	53.9	9.8	100	46	
Vert.	69.504	QP	34.9	6.4	7.1	32.2	16.2	40.0	23.8	100	181	
Vert.	336.133	QP	36.0	14.9	8.8	32.0	27.7	46.0	18.3	100	79	
Vert.	348.581	QP	46.1	15.2	8.8	32.0	38.1	46.0	7.9	100	91	
Vert.	361.032	QP	41.9	15.5	8.9	32.0	34.3	46.0	11.7	100	102	
Vert.	373.477	QP	38.7	15.8	8.9	32.0	31.4	46.0	14.6	100	151	
Vert.	398.377	QP	33.7	16.4	9.0	32.0	27.1	46.0	18.9	100	181	
Vert.	473.076	QP	35.0	17.4	9.3	32.0	29.7	46.0	16.3	100	125	
Vert.	2390.000	PK	45.6	26.4	13.6	41.1	44.5	73.9	29.4	100	320	
Vert.	3202.694	PK	52.2	27.8	5.2	40.8	44.4	73.9	29.5	133	254	
Vert.	4804.000	PK	52.3	30.6	5.6	39.8	48.7	73.9	25.2	109	67	
Vert.	7206.000	PK	45.6	36.6	7.1	40.2	49.1	73.9	24.8	100	0	
Vert.	12010.000	PK	46.1	39.5	9.2	39.6	55.2	73.9	18.7	100	0	
Vert.	2390.000	AV	32.4	26.4	13.6	41.1	31.3	53.9	22.6	100	320	
Vert.	3202.694	AV	46.6	27.8	5.2	40.8	38.8	53.9	15.1	133	254	
Vert.	4804.000	AV	44.3	30.6	5.6	39.8	40.7	53.9	13.2	109	67	
Vert.	7206.000	AV	33.5	36.6	7.1	40.2	37.0	53.9	16.9	100	0	
Vert.	12010.000	AV	34.2	39.5	9.2	39.6	43.3	53.9	10.6	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	101.4	26.4	13.6	41.1	100.3	-	-	Carrier
Hori.	2400.000	PK	43.5	26.4	13.6	41.1	42.4	80.3	37.9	
Hori.	9608.001	PK	41.5	38.5	8.1	40.1	48.0	80.3	32.3	
Vert.	2402.000	PK	92.2	26.4	13.6	41.1	91.1	-	-	Carrier
Vert.	2400.000	PK	38.3	26.4	13.6	41.1	37.2	71.1	33.9	
Vert.	9608.001	PK	43.6	38.5	8.1	40.1	50.1	71.1	21.0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place No.3 Semi Anechoic Chamber
 Date February 3, 2015 February 8, 2015
 Temperature / Humidity 24 deg.C, 30 %RH 24 deg.C, 30 %RH
 Engineer Yasumasa Owaki Yosuke Ishikawa
 Mode Tx, 2441 MHz
 Tx, Bluetooth, EDR, PRBS9, Monopole Antenna

(* 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.	348.580	QP	42.5	15.2	8.8	32.0	34.5	46.0	11.5	214	222	
Hori.	3254.694	PK	52.9	27.9	5.2	40.9	45.1	73.9	28.8	100	153	
Hori.	4882.000	PK	51.1	30.9	5.6	39.7	47.9	73.9	26.0	100	64	
Hori.	7323.000	PK	45.4	36.8	7.0	40.3	48.9	73.9	25.0	100	326	
Hori.	12205.000	PK	45.7	39.4	9.3	39.8	54.6	73.9	19.3	100	47	
Hori.	3254.694	AV	48.0	27.9	5.2	40.9	40.2	53.9	13.7	100	153	
Hori.	4882.000	AV	42.1	30.9	5.6	39.7	38.9	53.9	15.0	100	64	
Hori.	7323.000	AV	33.4	36.8	7.0	40.3	36.9	53.9	17.0	100	326	
Hori.	12205.000	AV	34.3	39.4	9.3	39.8	43.2	53.9	10.7	100	47	
Vert.	69.518	QP	34.6	6.4	7.1	32.2	15.9	40.0	24.1	100	173	
Vert.	336.137	QP	36.0	14.9	8.8	32.0	27.7	46.0	18.3	100	80	
Vert.	348.582	QP	46.3	15.2	8.8	32.0	38.3	46.0	7.7	100	96	
Vert.	361.035	QP	41.8	15.5	8.9	32.0	34.2	46.0	11.8	100	108	
Vert.	373.479	QP	38.1	15.8	8.9	32.0	30.8	46.0	15.2	100	151	
Vert.	398.387	QP	33.4	16.4	9.0	32.0	26.8	46.0	19.2	100	182	
Vert.	473.073	QP	34.5	17.4	9.3	32.0	29.2	46.0	16.8	100	124	
Vert.	3254.689	PK	52.4	27.9	5.2	40.9	44.6	73.9	29.3	100	297	
Vert.	4882.000	PK	50.4	30.9	5.6	39.7	47.2	73.9	26.7	100	287	
Vert.	7323.000	PK	46.0	36.8	7.0	40.3	49.5	73.9	24.4	100	0	
Vert.	12205.000	PK	46.4	39.4	9.3	39.8	55.3	73.9	18.6	100	0	
Vert.	3254.689	AV	47.6	27.9	5.2	40.9	39.8	53.9	14.1	100	297	
Vert.	4882.000	AV	42.1	30.9	5.6	39.7	38.9	53.9	15.0	100	287	
Vert.	7323.000	AV	33.4	36.8	7.0	40.3	36.9	53.9	17.0	100	0	
Vert.	12205.000	AV	34.1	39.4	9.3	39.8	43.0	53.9	10.9	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2441.000	PK	100.6	26.5	13.6	41.1	99.6	-	-	Carrier
Hori.	9764.001	PK	40.1	38.6	8.1	40.0	46.8	79.6	32.8	
Vert.	2441.000	PK	94.8	26.5	13.6	41.1	93.8	-	-	Carrier
Vert.	9764.001	PK	42.2	38.6	8.1	40.0	48.9	73.8	24.9	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place No.3 Semi Anechoic Chamber
 Date February 3, 2015 February 8, 2015
 Temperature / Humidity 24 deg.C, 30 %RH 24 deg.C, 30 %RH
 Engineer Yasumasa Owaki Yosuke Ishikawa
 Mode Tx, 2480 MHz
 Tx, Bluetooth, EDR, PRBS9, Monopole Antenna

(* 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.	348.580	QP	42.5	15.2	8.8	32.0	34.5	46.0	11.5	217	221	
Hori.	2483.500	PK	46.8	26.6	13.6	41.1	45.9	73.9	28.0	100	238	
Hori.	3306.690	PK	52.5	27.9	5.2	40.9	44.7	73.9	29.2	100	144	
Hori.	4960.000	PK	48.8	31.2	5.7	39.6	46.1	73.9	27.8	100	302	
Hori.	7440.000	PK	45.4	37.0	7.0	40.4	49.0	73.9	24.9	100	0	
Hori.	12400.000	PK	45.7	39.3	9.4	40.0	54.4	73.9	19.5	100	0	
Hori.	2483.500	AV	34.7	26.6	13.6	41.1	33.8	53.9	20.1	100	238	
Hori.	3306.690	AV	47.5	27.9	5.2	40.9	39.7	53.9	14.2	100	144	
Hori.	4960.000	AV	39.6	31.2	5.7	39.6	36.9	53.9	17.0	100	302	
Hori.	7440.000	AV	33.6	37.0	7.0	40.4	37.2	53.9	16.7	100	0	
Hori.	12400.000	AV	32.9	39.3	9.4	40.0	41.6	53.9	12.3	100	0	
Vert.	69.504	QP	34.7	6.4	7.1	32.2	16.0	40.0	24.0	100	165	
Vert.	336.131	QP	35.9	14.9	8.8	32.0	27.6	46.0	18.4	100	89	
Vert.	348.569	QP	45.7	15.2	8.8	32.0	37.7	46.0	8.3	100	94	
Vert.	361.026	QP	41.5	15.5	8.9	32.0	33.9	46.0	12.1	100	102	
Vert.	373.481	QP	37.5	15.8	8.9	32.0	30.2	46.0	15.8	100	152	
Vert.	398.373	QP	32.9	16.4	9.0	32.0	26.3	46.0	19.7	100	175	
Vert.	473.067	QP	34.0	17.4	9.3	32.0	28.7	46.0	17.3	100	126	
Vert.	2483.500	PK	46.2	26.6	13.6	41.1	45.3	73.9	28.6	105	151	
Vert.	3306.678	PK	53.0	27.9	5.2	40.9	45.2	73.9	28.7	100	333	
Vert.	4960.000	PK	48.2	31.2	5.7	39.6	45.5	73.9	28.4	110	270	
Vert.	7440.000	PK	46.3	37.0	7.0	40.4	49.9	73.9	24.0	100	0	
Vert.	12400.000	PK	45.4	39.3	9.4	40.0	54.1	73.9	19.8	100	0	
Vert.	2483.500	AV	34.0	26.6	13.6	41.1	33.1	53.9	20.8	105	151	
Vert.	3306.678	AV	47.7	27.9	5.2	40.9	39.9	53.9	14.0	100	333	
Vert.	4960.000	AV	38.8	31.2	5.7	39.6	36.1	53.9	17.8	110	270	
Vert.	7440.000	AV	33.7	37.0	7.0	40.4	37.3	53.9	16.6	100	0	
Vert.	12400.000	AV	32.8	39.3	9.4	40.0	41.5	53.9	12.4	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2480.000	PK	100.5	26.6	13.6	41.1	99.6	-	-	Carrier
Hori.	9920.001	PK	37.5	38.6	8.0	39.9	44.2	79.6	35.4	
Vert.	2480.000	PK	94.2	26.6	13.6	41.1	93.3	-	-	Carrier
Vert.	9920.001	PK	38.0	38.6	8.0	39.9	44.7	73.3	28.6	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place No.3 Semi Anechoic Chamber
Date February 3, 2015 February 7, 2015
Temperature / Humidity 21deg.C, 31%RH 22deg.C, 38%RH
Engineer Tatsuya Arai Takahiro Suzuki
Mode Tx, 2402 MHz
 Tx, Bluetooth, BDR, PRBS9, Dipole Antenna

(* 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.	348.555	QP	40.6	15.2	8.8	32.0	32.6	46.0	13.4	167	151	
Hori.	2390.000	PK	47.2	26.4	13.6	41.1	46.1	73.9	27.8	100	241	
Hori.	3202.708	PK	53.6	27.8	5.2	40.8	45.8	73.9	28.1	100	238	
Hori.	4804.000	PK	56.4	30.6	5.6	39.8	52.8	73.9	21.1	100	35	
Hori.	7206.000	PK	48.0	36.6	7.1	40.2	51.5	73.9	22.4	100	350	
Hori.	12010.000	PK	47.4	39.5	9.2	39.6	56.5	73.9	17.4	100	344	
Hori.	2390.000	AV	33.9	26.4	13.6	41.1	32.8	53.9	21.1	100	241	
Hori.	3202.708	AV	47.6	27.8	5.2	40.8	39.8	53.9	14.1	100	238	
Hori.	4804.000	AV	46.2	30.6	5.6	39.8	42.6	53.9	11.3	100	35	
Hori.	7206.000	AV	35.0	36.6	7.1	40.2	38.5	53.9	15.4	100	350	
Hori.	12010.000	AV	36.0	39.5	9.2	39.6	45.1	53.9	8.8	100	344	
Vert.	66.393	QP	37.3	6.8	7.1	32.2	19.0	40.0	21.0	100	171	
Vert.	336.103	QP	37.8	14.9	8.8	32.0	29.5	46.0	16.5	100	228	
Vert.	348.555	QP	42.0	15.2	8.8	32.0	34.0	46.0	12.0	100	204	
Vert.	361.000	QP	37.3	15.5	8.9	32.0	29.7	46.0	16.3	100	228	
Vert.	373.448	QP	37.0	15.8	8.9	32.0	29.7	46.0	16.3	100	273	
Vert.	398.346	QP	39.5	16.4	9.0	32.0	32.9	46.0	13.1	100	287	
Vert.	473.041	QP	37.8	17.4	9.3	32.0	32.5	46.0	13.5	100	299	
Vert.	2390.000	PK	46.6	26.4	13.6	41.1	45.5	73.9	28.4	100	128	
Vert.	3202.802	PK	51.4	27.8	5.2	40.8	43.6	73.9	30.3	114	55	
Vert.	4804.000	PK	56.3	30.6	5.6	39.8	52.7	73.9	21.2	115	359	
Vert.	7206.000	PK	45.7	36.6	7.1	40.2	49.2	73.9	24.7	100	260	
Vert.	12010.000	PK	45.7	39.5	9.2	39.6	54.8	73.9	19.1	100	0	
Vert.	2390.000	AV	33.7	26.4	13.6	41.1	32.6	53.9	21.3	100	128	
Vert.	3202.802	AV	45.6	27.8	5.2	40.8	37.8	53.9	16.1	114	55	
Vert.	4804.000	AV	51.1	30.6	5.6	39.8	47.5	53.9	6.4	115	359	
Vert.	7206.000	AV	33.1	36.6	7.1	40.2	36.6	53.9	17.3	100	260	
Vert.	12010.000	AV	33.3	39.5	9.2	39.6	42.4	53.9	11.5	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	104.2	26.4	13.6	41.1	103.1	-	-	Carrier
Hori.	2400.000	PK	42.5	26.4	13.6	41.1	41.4	83.1	41.7	
Hori.	9608.000	PK	46.4	38.5	8.1	40.1	52.9	83.1	30.2	
Vert.	2402.000	PK	99.9	26.4	13.6	41.1	98.8	-	-	Carrier
Vert.	2400.000	PK	38.1	26.4	13.6	41.1	37.0	78.8	41.8	
Vert.	9608.000	PK	41.8	38.5	8.1	40.1	48.3	78.8	30.5	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place No.3 Semi Anechoic Chamber
 Date February 3, 2015 February 7, 2015
 Temperature / Humidity 21 deg.C, 31 %RH 22 deg.C, 38 %RH
 Engineer Tatsuya Arai Takahiro Suzuki
 Mode Tx, 2441 MHz
 Tx, Bluetooth, BDR, PRBS9, Dipole Antenna

(* 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.	348.534	QP	40.3	15.2	8.8	32.0	32.3	46.0	13.7	160	148	
Hori.	3254.752	PK	53.5	27.9	5.2	40.9	45.7	73.9	28.2	100	233	
Hori.	4882.000	PK	54.7	30.9	5.6	39.7	51.5	73.9	22.4	100	20	
Hori.	7323.000	PK	47.0	36.8	7.0	40.3	50.5	73.9	23.4	100	348	
Hori.	12205.000	PK	47.4	39.4	9.3	39.8	56.3	73.9	17.6	100	248	
Hori.	3254.752	AV	48.2	27.9	5.2	40.9	40.4	53.9	13.5	100	233	
Hori.	4882.000	AV	49.8	30.9	5.6	39.7	46.6	53.9	7.3	100	20	
Hori.	7323.000	AV	35.0	36.8	7.0	40.3	38.5	53.9	15.4	100	348	
Hori.	12205.000	AV	35.3	39.4	9.3	39.8	44.2	53.9	9.7	100	248	
Vert.	65.736	QP	36.9	6.9	7.1	32.2	18.7	40.0	21.3	100	168	
Vert.	336.100	QP	37.5	14.9	8.8	32.0	29.2	46.0	16.8	100	224	
Vert.	348.552	QP	41.7	15.2	8.8	32.0	33.7	46.0	12.3	100	201	
Vert.	361.000	QP	37.0	15.5	8.9	32.0	29.4	46.0	16.6	100	253	
Vert.	373.448	QP	37.3	15.8	8.9	32.0	30.0	46.0	16.0	100	276	
Vert.	398.286	QP	39.8	16.4	9.0	32.0	33.2	46.0	12.8	100	277	
Vert.	473.102	QP	38.0	17.4	9.3	32.0	32.7	46.0	13.3	100	307	
Vert.	3254.720	PK	52.5	27.9	5.2	40.9	44.7	73.9	29.2	147	177	
Vert.	4882.000	PK	51.5	30.9	5.6	39.7	48.3	73.9	25.6	100	357	
Vert.	7323.000	PK	48.2	36.8	7.0	40.3	51.7	73.9	22.2	100	89	
Vert.	12205.000	PK	47.3	39.4	9.3	39.8	56.2	73.9	17.7	100	348	
Vert.	3254.720	AV	45.4	27.9	5.2	40.9	37.6	53.9	16.3	147	177	
Vert.	4882.000	AV	45.2	30.9	5.6	39.7	42.0	53.9	11.9	100	357	
Vert.	7323.000	AV	34.9	36.8	7.0	40.3	38.4	53.9	15.5	100	89	
Vert.	12205.000	AV	34.8	39.4	9.3	39.8	43.7	53.9	10.2	100	348	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2441.000	PK	104.2	26.5	13.6	41.1	103.2	-	-	Carrier
Hori.	9764.000	PK	48.8	38.6	8.1	40.0	55.5	83.2	27.7	
Vert.	2441.000	PK	99.5	26.5	13.6	41.1	98.5	-	-	Carrier
Vert.	9764.000	PK	44.2	38.6	8.1	40.0	50.9	78.5	27.6	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place No.3 Semi Anechoic Chamber
 Date February 3, 2015 February 7, 2015
 Temperature / Humidity 21 deg.C, 31 %RH 22 deg.C, 38 %RH
 Engineer Tatsuya Arai Takahiro Suzuki
 Mode Tx, 2480 MHz
 Tx, Bluetooth, BDR, PRBS9, Dipole Antenna

(* 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.	348.575	QP	40.7	15.2	8.8	32.0	32.7	46.0	13.3	162	153	
Hori.	2483.500	PK	47.7	26.6	13.6	41.1	46.8	73.9	27.1	100	233	
Hori.	3306.709	PK	53.4	27.9	5.2	40.9	45.6	73.9	28.3	100	228	
Hori.	4960.000	PK	52.8	31.2	5.7	39.6	50.1	73.9	23.8	100	24	
Hori.	7440.000	PK	47.5	37.0	7.0	40.4	51.1	73.9	22.8	100	196	
Hori.	12400.000	PK	45.6	39.3	9.4	40.0	54.3	73.9	19.6	100	131	
Hori.	2483.500	AV	35.4	26.6	13.6	41.1	34.5	53.9	19.4	100	233	
Hori.	3306.709	AV	48.1	27.9	5.2	40.9	40.3	53.9	13.6	100	228	
Hori.	4960.000	AV	46.2	31.2	5.7	39.6	43.5	53.9	10.4	100	24	
Hori.	7440.000	AV	35.0	37.0	7.0	40.4	38.6	53.9	15.3	100	196	
Hori.	12400.000	AV	34.4	39.3	9.4	40.0	43.1	53.9	10.8	100	131	
Vert.	66.407	QP	37.9	6.8	7.1	32.2	19.6	40.0	20.4	100	193	
Vert.	336.128	QP	37.7	14.9	8.8	32.0	29.4	46.0	16.6	100	213	
Vert.	348.503	QP	41.6	15.2	8.8	32.0	33.6	46.0	12.4	100	199	
Vert.	361.027	QP	37.5	15.5	8.9	32.0	29.9	46.0	16.1	100	223	
Vert.	373.401	QP	36.7	15.8	8.9	32.0	29.4	46.0	16.6	100	293	
Vert.	398.300	QP	39.2	16.4	9.0	32.0	32.6	46.0	13.4	100	281	
Vert.	473.000	QP	37.9	17.4	9.3	32.0	32.6	46.0	13.4	100	293	
Vert.	2483.500	PK	47.8	26.6	13.6	41.1	46.9	73.9	27.0	100	339	
Vert.	3306.700	PK	52.2	27.9	5.2	40.9	44.4	73.9	29.5	100	56	
Vert.	4960.000	PK	51.4	31.2	5.7	39.6	48.7	73.9	25.2	161	358	
Vert.	7440.000	PK	47.9	37.0	7.0	40.4	51.5	73.9	22.4	100	325	
Vert.	12400.000	PK	46.7	39.3	9.4	40.0	55.4	73.9	18.5	100	113	
Vert.	2483.500	AV	35.4	26.6	13.6	41.1	34.5	53.9	19.4	100	339	
Vert.	3306.700	AV	45.5	27.9	5.2	40.9	37.7	53.9	16.2	100	56	
Vert.	4960.000	AV	44.4	31.2	5.7	39.6	41.7	53.9	12.2	161	358	
Vert.	7440.000	AV	35.0	37.0	7.0	40.4	38.6	53.9	15.3	100	325	
Vert.	12400.000	AV	34.3	39.3	9.4	40.0	43.0	53.9	10.9	100	113	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2480.000	PK	104.0	26.6	13.6	41.1	103.1	-	-	Carrier
Hori.	9920.000	PK	46.7	38.6	8.0	39.9	53.4	83.1	29.7	
Vert.	2480.000	PK	96.6	26.6	13.6	41.1	95.7	-	-	Carrier
Vert.	9920.000	PK	39.6	38.6	8.0	39.9	46.3	75.7	29.4	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place No.3 Semi Anechoic Chamber
 Date February 3, 2015 February 7, 2015
 Temperature / Humidity 21 deg.C, 31 %RH 22 deg.C, 38 %RH
 Engineer Tatsuya Arai Takahiro Suzuki
 Mode Tx, 2402 MHz
 Tx, Bluetooth, EDR, PRBS9, Dipole Antenna

(* 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.	348.577	QP	40.3	15.2	8.8	32.0	32.3	46.0	13.7	163	157	
Hori.	2390.000	PK	48.0	26.4	13.6	41.1	46.9	73.9	27.0	100	239	
Hori.	3202.808	PK	53.3	27.8	5.2	40.8	45.5	73.9	28.4	100	229	
Hori.	4804.000	PK	56.2	30.6	5.6	39.8	52.6	73.9	21.3	100	16	
Hori.	7206.000	PK	47.7	36.6	7.1	40.2	51.2	73.9	22.7	100	22	
Hori.	12010.000	PK	48.5	39.5	9.2	39.6	57.6	73.9	16.3	100	358	
Hori.	2390.000	AV	35.3	26.4	13.6	41.1	34.2	53.9	19.7	100	239	
Hori.	3202.808	AV	47.9	27.8	5.2	40.8	40.1	53.9	13.8	100	229	
Hori.	4804.000	AV	51.6	30.6	5.6	39.8	48.0	53.9	5.9	100	16	
Hori.	7206.000	AV	35.1	36.6	7.1	40.2	38.6	53.9	15.3	100	22	
Hori.	12010.000	AV	35.9	39.5	9.2	39.6	45.0	53.9	8.9	100	358	
Vert.	66.489	QP	37.5	6.8	7.1	32.2	19.2	40.0	20.8	100	237	
Vert.	336.133	QP	38.0	14.9	8.8	32.0	29.7	46.0	16.3	100	212	
Vert.	348.526	QP	41.2	15.2	8.8	32.0	33.2	46.0	12.8	100	209	
Vert.	360.919	QP	37.5	15.5	8.9	32.0	29.9	46.0	16.1	100	258	
Vert.	373.489	QP	36.7	15.8	8.9	32.0	29.4	46.0	16.6	100	261	
Vert.	398.275	QP	40.4	16.4	9.0	32.0	33.8	46.0	12.2	100	298	
Vert.	472.987	QP	37.5	17.4	9.3	32.0	32.2	46.0	13.8	100	306	
Vert.	2390.000	PK	47.4	26.4	13.6	41.1	46.3	73.9	27.6	100	356	
Vert.	3202.728	PK	50.9	27.8	5.2	40.8	43.1	73.9	30.8	100	30	
Vert.	4804.000	PK	55.5	30.6	5.6	39.8	51.9	73.9	22.0	100	354	
Vert.	7206.000	PK	47.3	36.6	7.1	40.2	50.8	73.9	23.1	100	309	
Vert.	12010.000	PK	47.9	39.5	9.2	39.6	57.0	73.9	16.9	100	162	
Vert.	2390.000	AV	35.3	26.4	13.6	41.1	34.2	53.9	19.7	100	356	
Vert.	3202.728	AV	43.7	27.8	5.2	40.8	35.9	53.9	18.0	100	30	
Vert.	4804.000	AV	50.3	30.6	5.6	39.8	46.7	53.9	7.2	100	354	
Vert.	7206.000	AV	35.1	36.6	7.1	40.2	38.6	53.9	15.3	100	309	
Vert.	12010.000	AV	35.9	39.5	9.2	39.6	45.0	53.9	8.9	100	162	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	104.4	26.4	13.6	41.1	103.3	-	-	Carrier
Hori.	2400.000	PK	43.5	26.4	13.6	41.1	42.4	83.3	40.9	
Hori.	9608.000	PK	46.5	38.5	8.1	40.1	53.0	83.3	30.3	
Vert.	2402.000	PK	98.1	26.4	13.6	41.1	97.0	-	-	Carrier
Vert.	2400.000	PK	38.9	26.4	13.6	41.1	37.8	77.0	39.2	
Vert.	9608.000	PK	41.5	38.5	8.1	40.1	48.0	77.0	29.0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place No.3 Semi Anechoic Chamber
 Date February 3, 2015 February 7, 2015
 Temperature / Humidity 21 deg.C, 31 %RH 22 deg.C, 38 %RH
 Engineer Tatsuya Arai Takahiro Suzuki
 Mode Tx, 2441 MHz
 Tx, Bluetooth, EDR, PRBS9, Dipole Antenna

(* 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.	348.462	QP	40.9	15.2	8.8	32.0	32.9	46.0	13.1	158	154	
Hori.	3254.667	PK	53.3	27.9	5.2	40.9	45.5	73.9	28.4	100	230	
Hori.	4882.000	PK	54.7	30.9	5.6	39.7	51.5	73.9	22.4	100	25	
Hori.	7323.000	PK	47.3	36.8	7.0	40.3	50.8	73.9	23.1	100	275	
Hori.	12205.000	PK	47.6	39.4	9.3	39.8	56.5	73.9	17.4	100	267	
Hori.	3254.667	AV	48.5	27.9	5.2	40.9	40.7	53.9	13.2	100	230	
Hori.	4882.000	AV	49.6	30.9	5.6	39.7	46.4	53.9	7.5	100	25	
Hori.	7323.000	AV	34.8	36.8	7.0	40.3	38.3	53.9	15.6	100	275	
Hori.	12205.000	AV	35.5	39.4	9.3	39.8	44.4	53.9	9.5	100	267	
Vert.	65.638	QP	37.7	6.9	7.1	32.2	19.5	40.0	20.5	100	267	
Vert.	336.180	QP	38.0	14.9	8.8	32.0	29.7	46.0	16.3	100	227	
Vert.	348.552	QP	41.6	15.2	8.8	32.0	33.6	46.0	12.4	100	197	
Vert.	361.090	QP	37.4	15.5	8.9	32.0	29.8	46.0	16.2	100	201	
Vert.	373.376	QP	37.8	15.8	8.9	32.0	30.5	46.0	15.5	100	268	
Vert.	398.286	QP	39.6	16.4	9.0	32.0	33.0	46.0	13.0	100	297	
Vert.	473.015	QP	37.4	17.4	9.3	32.0	32.1	46.0	13.9	100	297	
Vert.	3254.695	PK	51.7	27.9	5.2	40.9	43.9	73.9	30.0	100	143	
Vert.	4882.000	PK	52.4	30.9	5.6	39.7	49.2	73.9	24.7	100	352	
Vert.	7323.000	PK	46.9	36.8	7.0	40.3	50.4	73.9	23.5	100	289	
Vert.	12205.000	PK	48.1	39.4	9.3	39.8	57.0	73.9	16.9	100	356	
Vert.	3254.695	AV	44.4	27.9	5.2	40.9	36.6	53.9	17.3	100	143	
Vert.	4882.000	AV	46.7	30.9	5.6	39.7	43.5	53.9	10.4	100	352	
Vert.	7323.000	AV	43.9	36.8	7.0	40.3	47.4	53.9	6.5	100	289	
Vert.	12205.000	AV	35.5	39.4	9.3	39.8	44.4	53.9	9.5	100	356	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2441.000	PK	104.1	26.5	13.6	41.1	103.1	-	-	Carrier
Hori.	9764.000	PK	45.8	38.6	8.1	40.0	52.5	83.1	30.6	
Vert.	2441.000	PK	98.7	26.5	13.6	41.1	97.7	-	-	Carrier
Vert.	9764.000	PK	41.8	38.6	8.1	40.0	48.5	77.7	29.2	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place No.3 Semi Anechoic Chamber
 Date February 3, 2015 February 7, 2015
 Temperature / Humidity 21 deg.C, 31 %RH 22 deg.C, 38 %RH
 Engineer Tatsuya Arai Takahiro Suzuki
 Mode Tx, 2480 MHz
 Tx, Bluetooth, EDR, PRBS9, Dipole Antenna

(* 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.	348.536	QP	40.2	15.2	8.8	32.0	32.2	46.0	13.8	166	152	
Hori.	2483.500	PK	49.9	26.6	13.6	41.1	49.0	73.9	24.9	100	248	
Hori.	3306.690	PK	52.8	27.9	5.2	40.9	45.0	73.9	28.9	127	223	
Hori.	4960.000	PK	52.5	31.2	5.7	39.6	49.8	73.9	24.1	100	14	
Hori.	7440.000	PK	47.5	37.0	7.0	40.4	51.1	73.9	22.8	100	218	
Hori.	12400.000	PK	47.0	39.3	9.4	40.0	55.7	73.9	18.2	100	271	
Hori.	2483.500	AV	36.9	26.6	13.6	41.1	36.0	73.9	17.9	100	248	
Hori.	3306.690	AV	47.1	27.9	5.2	40.9	39.3	73.9	14.6	127	223	
Hori.	4960.000	AV	46.2	31.2	5.7	39.6	43.5	73.9	10.4	100	14	
Hori.	7440.000	AV	34.5	37.0	7.0	40.4	38.1	73.9	15.8	100	218	
Hori.	12400.000	AV	34.3	39.3	9.4	40.0	43.0	73.9	10.9	100	271	
Vert.	65.809	QP	38.2	6.9	7.1	32.2	20.0	40.0	20.0	100	353	
Vert.	336.006	QP	37.5	14.9	8.8	32.0	29.2	46.0	16.8	100	223	
Vert.	348.623	QP	41.7	15.2	8.8	32.0	33.7	46.0	12.3	100	192	
Vert.	361.011	QP	37.5	15.5	8.9	32.0	29.9	46.0	16.1	100	236	
Vert.	373.398	QP	36.7	15.8	8.9	32.0	29.4	46.0	16.6	100	303	
Vert.	398.336	QP	40.0	16.4	9.0	32.0	33.4	46.0	12.6	100	278	
Vert.	472.986	QP	38.1	17.4	9.3	32.0	32.8	46.0	13.2	100	306	
Vert.	2483.500	PK	48.1	26.6	13.6	41.1	47.2	73.9	26.7	100	357	
Vert.	3306.780	PK	52.3	27.9	5.2	40.9	44.5	73.9	29.4	100	256	
Vert.	4960.000	PK	51.4	31.2	5.7	39.6	48.7	73.9	25.2	100	3	
Vert.	7440.000	PK	48.0	37.0	7.0	40.4	51.6	73.9	22.3	100	348	
Vert.	12400.000	PK	46.3	39.3	9.4	40.0	55.0	73.9	18.9	100	298	
Vert.	2483.500	AV	35.6	26.6	13.6	41.1	34.7	73.9	19.2	100	357	
Vert.	3306.780	AV	45.7	27.9	5.2	40.9	37.9	73.9	16.0	100	256	
Vert.	4960.000	AV	45.0	31.2	5.7	39.6	42.3	73.9	11.6	100	3	
Vert.	7440.000	AV	35.0	37.0	7.0	40.4	38.6	73.9	15.3	100	348	
Vert.	12400.000	AV	34.4	39.3	9.4	40.0	43.1	73.9	10.8	100	298	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2480.000	PK	103.9	26.6	13.6	41.1	103.0	-	-	Carrier
Hori.	9920.000	PK	44.7	38.6	8.0	39.9	51.4	83.0	31.6	
Vert.	2480.000	PK	97.4	26.6	13.6	41.1	96.5	-	-	Carrier
Vert.	9920.000	PK	41.9	38.6	8.0	39.9	48.6	76.5	27.9	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place No.3 Semi Anechoic Chamber
 Date February 9, 2015
 Temperature / Humidity 27 deg.C, 31 %RH
 Engineer Yosuke Ishikawa
 Mode Tx, 2402 MHz
 Tx, Bluetooth, BDR, PRBS9, Dual Antenna

(* 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.	2390.000	PK	46.4	26.4	13.6	41.1	45.3	73.9	28.6	100	230	
Hori.	2390.000	AV	33.9	26.4	13.6	41.1	32.8	53.9	21.1	100	230	
Vert.	2390.000	PK	46.1	26.4	13.6	41.1	45.0	73.9	28.9	100	57	
Vert.	2390.000	AV	33.8	26.4	13.6	41.1	32.7	53.9	21.2	100	57	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	100.3	26.4	13.6	41.1	99.2	-	-	Carrier
Hori.	2400.000	PK	39.7	26.4	13.6	41.1	38.6	79.2	40.6	
Vert.	2402.000	PK	95.5	26.4	13.6	41.1	94.4	-	-	Carrier
Vert.	2400.000	PK	37.9	26.4	13.6	41.1	36.8	74.4	37.6	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

Radiated Emission

Test place No.3 Semi Anechoic Chamber
Date February 9, 2015
Temperature / Humidity 27 deg.C, 31 %RH
Engineer Yosuke Ishikawa
Mode Tx, 2480 MHz
 Tx, Bluetooth, BDR, PRBS9, Dual Antenna

(* 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.	2483.500	PK	47.9	26.6	13.6	41.1	47.0	73.9	26.9	100	124	
Hori.	2483.500	AV	35.4	26.6	13.6	41.1	34.5	53.9	19.4	100	124	
Vert.	2483.500	PK	46.4	26.6	13.6	41.1	45.5	73.9	28.4	100	296	
Vert.	2483.500	AV	34.1	26.6	13.6	41.1	33.2	53.9	20.7	100	296	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)
Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

Radiated Emission

Test place No.3 Semi Anechoic Chamber
 Date February 9, 2015
 Temperature / Humidity 27 deg.C, 31 %RH
 Engineer Yosuke Ishikawa
 Mode Tx, 2402 MHz
 Tx, Bluetooth, EDR, PRBS9, Dual Antenna

(* 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.	2390.000	PK	47.3	26.4	13.6	41.1	46.2	73.9	27.7	100	127	
Hori.	2390.000	AV	33.9	26.4	13.6	41.1	32.8	53.9	21.1	100	127	
Vert.	2390.000	PK	46.3	26.4	13.6	41.1	45.2	73.9	28.7	100	304	
Vert.	2390.000	AV	33.9	26.4	13.6	41.1	32.8	53.9	21.1	100	304	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	98.2	26.4	13.6	41.1	97.1	-	-	Carrier
Hori.	2400.000	PK	39.6	26.4	13.6	41.1	38.5	77.1	38.6	
Vert.	2402.000	PK	90.3	26.4	13.6	41.1	89.2	-	-	Carrier
Vert.	2400.000	PK	37.7	26.4	13.6	41.1	36.6	69.2	32.6	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place No.3 Semi Anechoic Chamber
 Date February 9, 2015
 Temperature / Humidity 27 deg.C, 31 %RH
 Engineer Yosuke Ishikawa
 Mode Tx, 2480 MHz
 Tx, Bluetooth, EDR, PRBS9, Dual Antenna

(* 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.	2483.500	PK	47.6	26.6	13.6	41.1	46.7	73.9	27.2	100	139	
Hori.	2483.500	AV	34.8	26.6	13.6	41.1	33.9	53.9	20.0	100	139	
Vert.	2483.500	PK	46.6	26.6	13.6	41.1	45.7	73.9	28.2	100	305	
Vert.	2483.500	AV	34.0	26.6	13.6	41.1	33.1	53.9	20.8	100	305	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : $20\log(3.0\text{m}/1.0\text{m})= 9.5\text{dB}$

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Radiated Emission

Test place No.3 Semi Anechoic Chamber
 Date February 9, 2015
 Temperature / Humidity 27 deg.C, 31 %RH
 Engineer Yosuke Ishikawa
 Mode Tx, 2402 MHz
 Tx, Bluetooth, BDR, PRBS9, Dual Antenna, with Tx, IEEE802.11n (HT20) 5260MHz

(* 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.	2390.000	PK	46.0	26.4	23.6	41.1	54.9	73.9	19.0	100	137	
Hori.	2390.000	AV	33.6	26.4	23.6	41.1	42.5	53.9	11.4	100	137	
Vert.	2390.000	PK	45.8	26.4	23.6	41.1	54.7	73.9	19.2	100	304	
Vert.	2390.000	AV	33.7	26.4	23.6	41.1	42.6	53.9	11.3	100	304	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	90.1	26.4	23.6	41.1	99.0	-	-	Carrier
Hori.	2400.000	PK	36.8	26.4	23.6	41.1	45.7	79.0	33.3	
Vert.	2402.000	PK	83.0	26.4	23.6	41.1	91.9	-	-	Carrier
Vert.	2400.000	PK	36.4	26.4	23.6	41.1	45.3	71.9	26.6	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place No.3 Semi Anechoic Chamber
 Date February 9, 2015 February 10, 2015
 Temperature / Humidity 27 deg.C, 31 %RH 23 deg.C, 34 %RH
 Engineer Yosuke Ishikawa Yosuke Ishikawa
 Mode Tx, 2441 MHz
 Tx, Bluetooth, BDR, PRBS9, Dual Antenna, with Tx, IEEE802.11n (HT20) 5260MHz

(* 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.	348.546	QP	38.6	15.2	8.8	32.0	30.6	46.0	15.4	258	16	
Hori.	3254.679	PK	49.5	27.9	15.2	40.9	51.7	73.9	22.2	100	134	
Hori.	4882.000	PK	49.2	30.9	15.6	39.7	56.0	73.9	17.9	100	288	
Hori.	7323.000	PK	45.7	36.8	6.7	40.3	48.9	73.9	25.0	100	359	
Hori.	9764.000	PK	47.3	38.6	7.7	40.0	53.6	73.9	20.3	138	306	
Hori.	12205.000	PK	45.6	39.4	8.8	39.8	54.0	73.9	19.9	100	359	
Hori.	3254.679	AV	40.0	27.9	15.2	40.9	42.2	53.9	11.7	100	134	
Hori.	4882.000	AV	40.1	30.9	15.6	39.7	46.9	53.9	7.0	100	288	
Hori.	7323.000	AV	33.0	36.8	6.7	40.3	36.2	53.9	17.7	100	359	
Hori.	9764.000	AV	35.0	38.6	7.7	40.0	41.3	53.9	12.6	138	306	
Hori.	12205.000	AV	33.3	39.4	8.8	39.8	41.7	53.9	12.2	100	359	
Vert.	65.358	QP	34.8	7.0	7.1	32.2	16.7	40.0	23.3	100	123	
Vert.	298.755	QP	38.7	19.3	8.6	32.0	34.6	46.0	11.4	100	228	
Vert.	336.095	QP	36.2	14.9	8.8	32.0	27.9	46.0	18.1	100	276	
Vert.	348.544	QP	41.4	15.2	8.8	32.0	33.4	46.0	12.6	100	217	
Vert.	360.992	QP	39.2	15.5	8.9	32.0	31.6	46.0	14.4	100	229	
Vert.	373.434	QP	35.8	15.8	8.9	32.0	28.5	46.0	17.5	100	200	
Vert.	473.023	QP	35.7	17.4	9.3	32.0	30.4	46.0	15.6	100	270	
Vert.	3254.693	PK	49.0	27.9	15.2	40.9	51.2	73.9	22.7	147	167	
Vert.	4882.000	PK	48.9	30.9	15.6	39.7	55.7	73.9	18.2	100	354	
Vert.	7323.000	PK	45.0	36.8	6.7	40.3	48.2	73.9	25.7	100	359	
Vert.	9764.000	PK	48.8	38.6	7.7	40.0	55.1	73.9	18.8	157	35	
Vert.	12205.000	PK	45.6	39.4	8.8	39.8	54.0	73.9	19.9	100	359	
Vert.	3254.693	AV	38.2	27.9	15.2	40.9	40.4	53.9	13.5	147	167	
Vert.	4882.000	AV	39.5	30.9	15.6	39.7	46.3	53.9	7.6	100	354	
Vert.	7323.000	AV	33.0	36.8	6.7	40.3	36.2	53.9	17.7	100	359	
Vert.	9764.000	AV	37.0	38.6	7.7	40.0	43.3	53.9	10.6	157	35	
Vert.	12205.000	AV	33.3	39.4	8.8	39.8	41.7	53.9	12.2	100	359	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place No.3 Semi Anechoic Chamber
Date February 9, 2015
Temperature / Humidity 27 deg.C, 31 %RH
Engineer Yosuke Ishikawa
Mode Tx, 2480 MHz
 Tx, Bluetooth, BDR, PRBS9, Dual Antenna, with Tx, IEEE802.11n (HT20) 5260MHz

(* 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.	2483.500	PK	46.9	26.6	23.6	41.1	56.0	73.9	17.9	100	125	
Hori.	2483.500	AV	33.9	26.6	23.6	41.1	43.0	53.9	10.9	100	125	
Vert.	2483.500	PK	46.1	26.6	23.6	41.1	55.2	73.9	18.7	100	218	
Vert.	2483.500	AV	33.8	26.6	23.6	41.1	42.9	53.9	11.0	100	218	

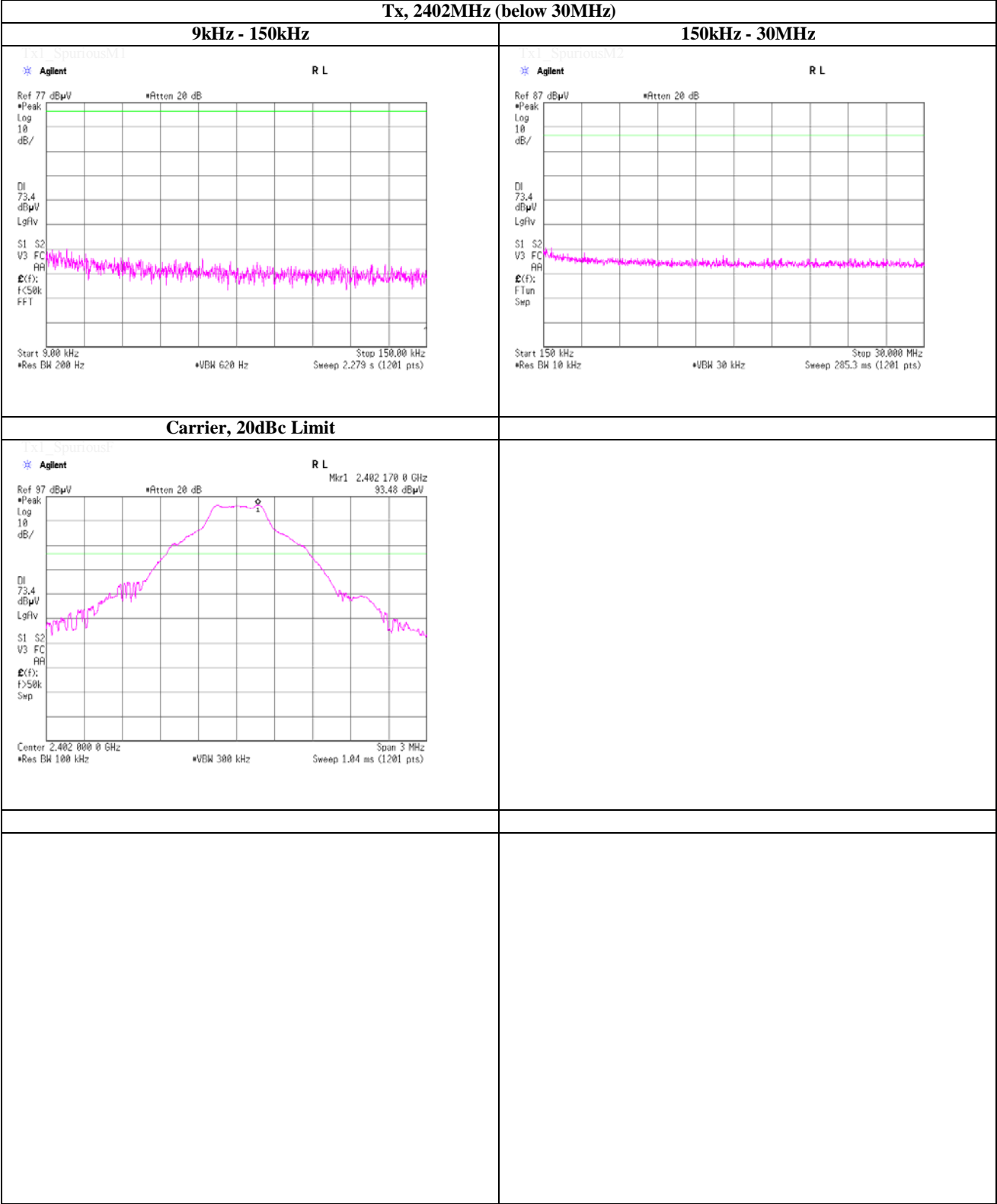
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amplifier)
Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
Date February 9, 2015
Temperature / Humidity 24 deg.C , 43 %RH
Engineer Tatsuya Arai

Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2402MHz (below 30MHz)



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Test place

UL Japan, Inc. Shonan EMC Lab.

No.5 Shielded Room

Date

February 9, 2015

Temperature / Humidity

24 deg.C , 43 %RH

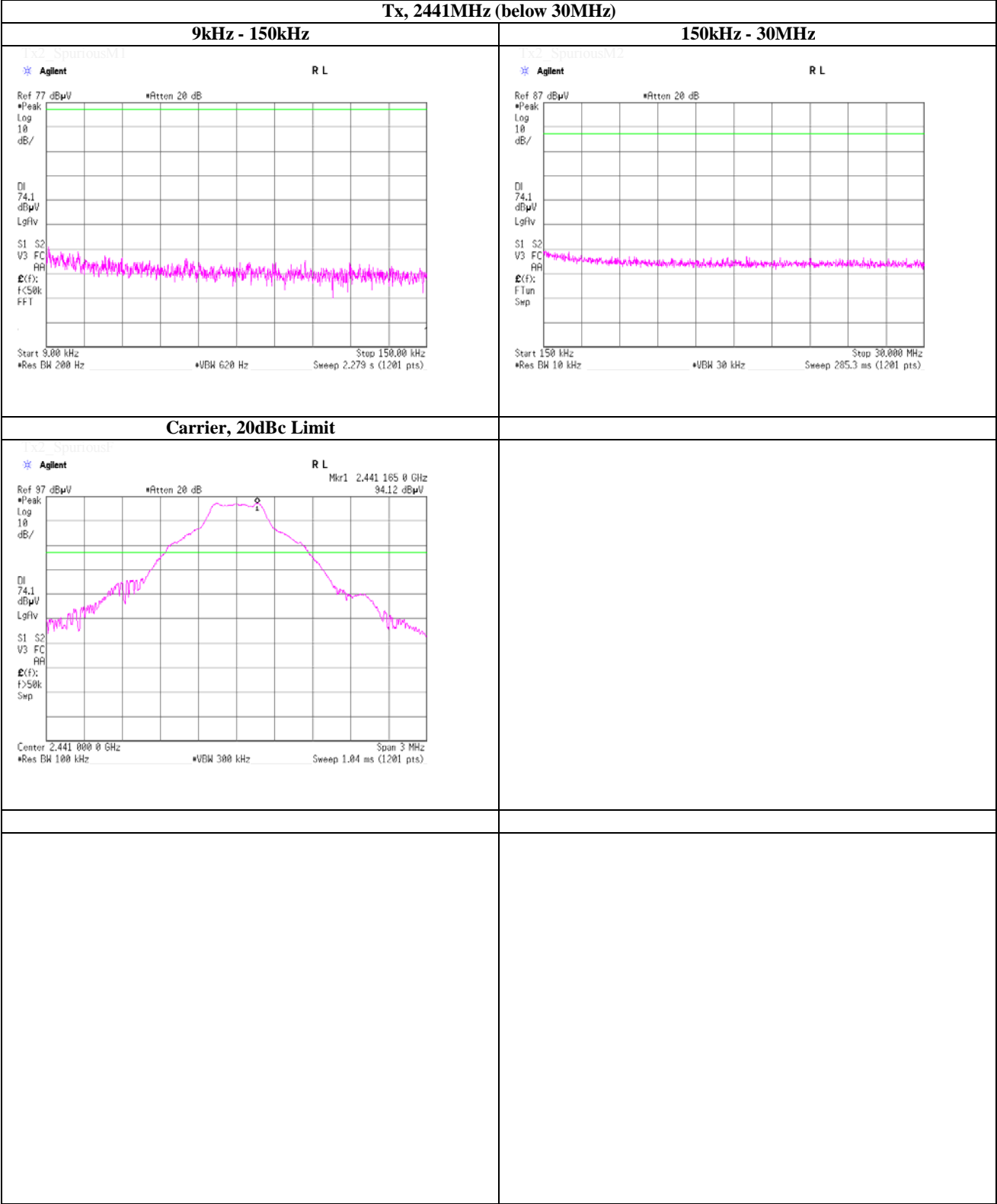
Engineer

Tatsuya Arai

Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2441MHz (below 30MHz)



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Test place

UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room

Date

February 9, 2015

Temperature / Humidity

24 deg.C , 43 %RH

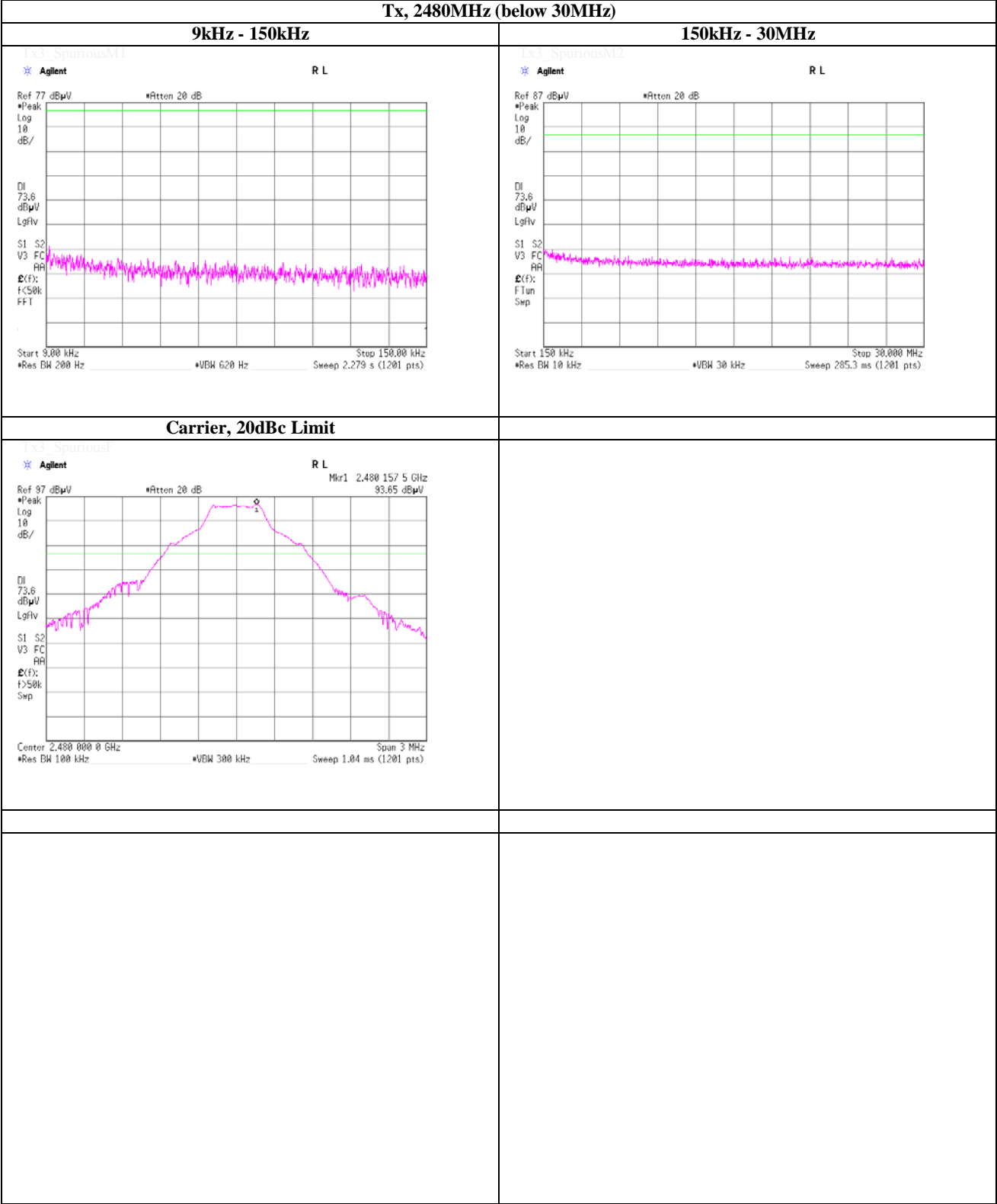
Engineer

Tatsuya Arai

Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2480MHz (below 30MHz)



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Test place

UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room

Date

February 9, 2015

Temperature / Humidity

24 deg.C , 43 %RH

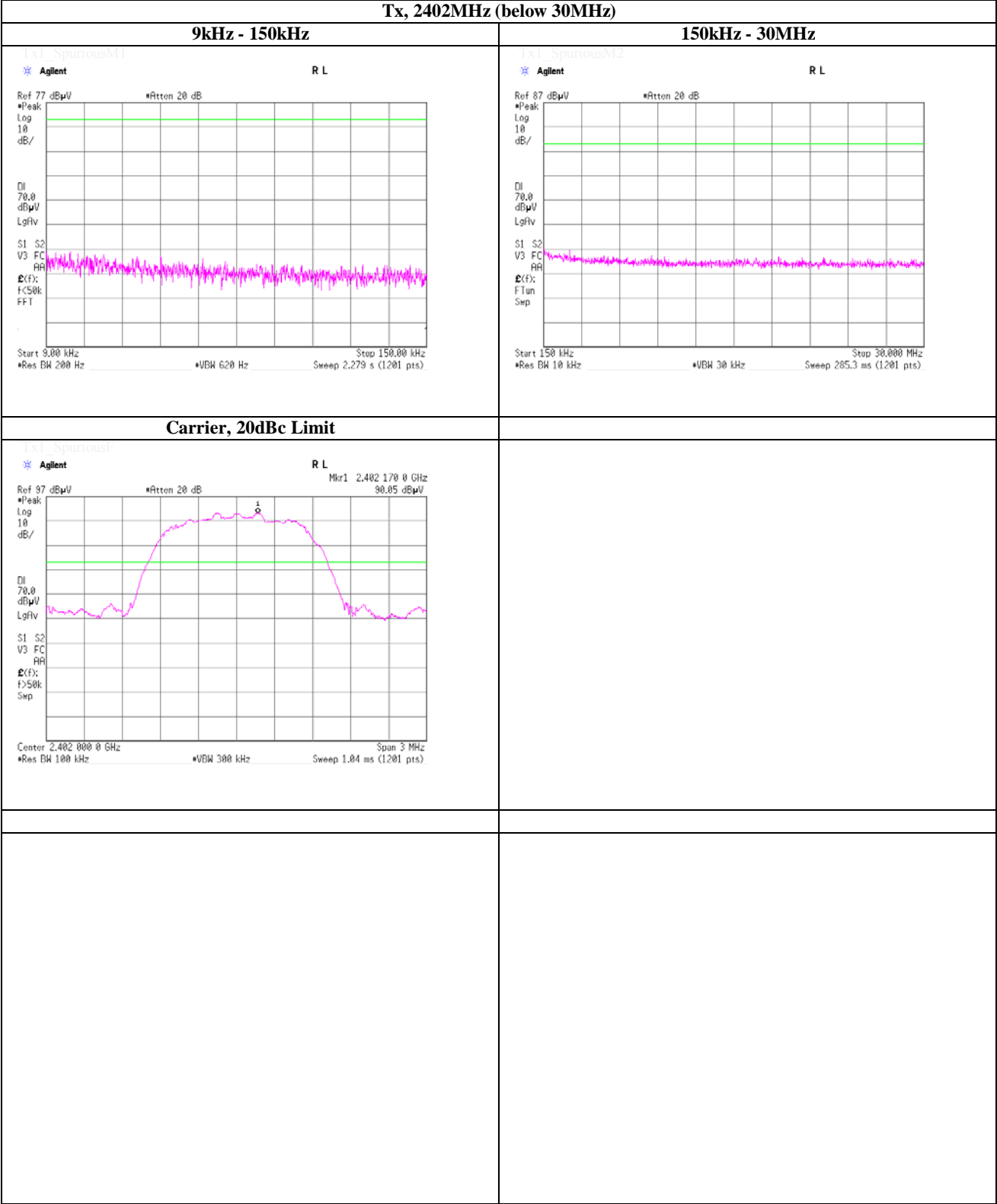
Engineer

Tatsuya Arai

Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2402MHz (below 30MHz)



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Test place

UL Japan, Inc. Shonan EMC Lab.

No.5 Shielded Room

Date

February 9, 2015

Temperature / Humidity

24 deg.C , 43 %RH

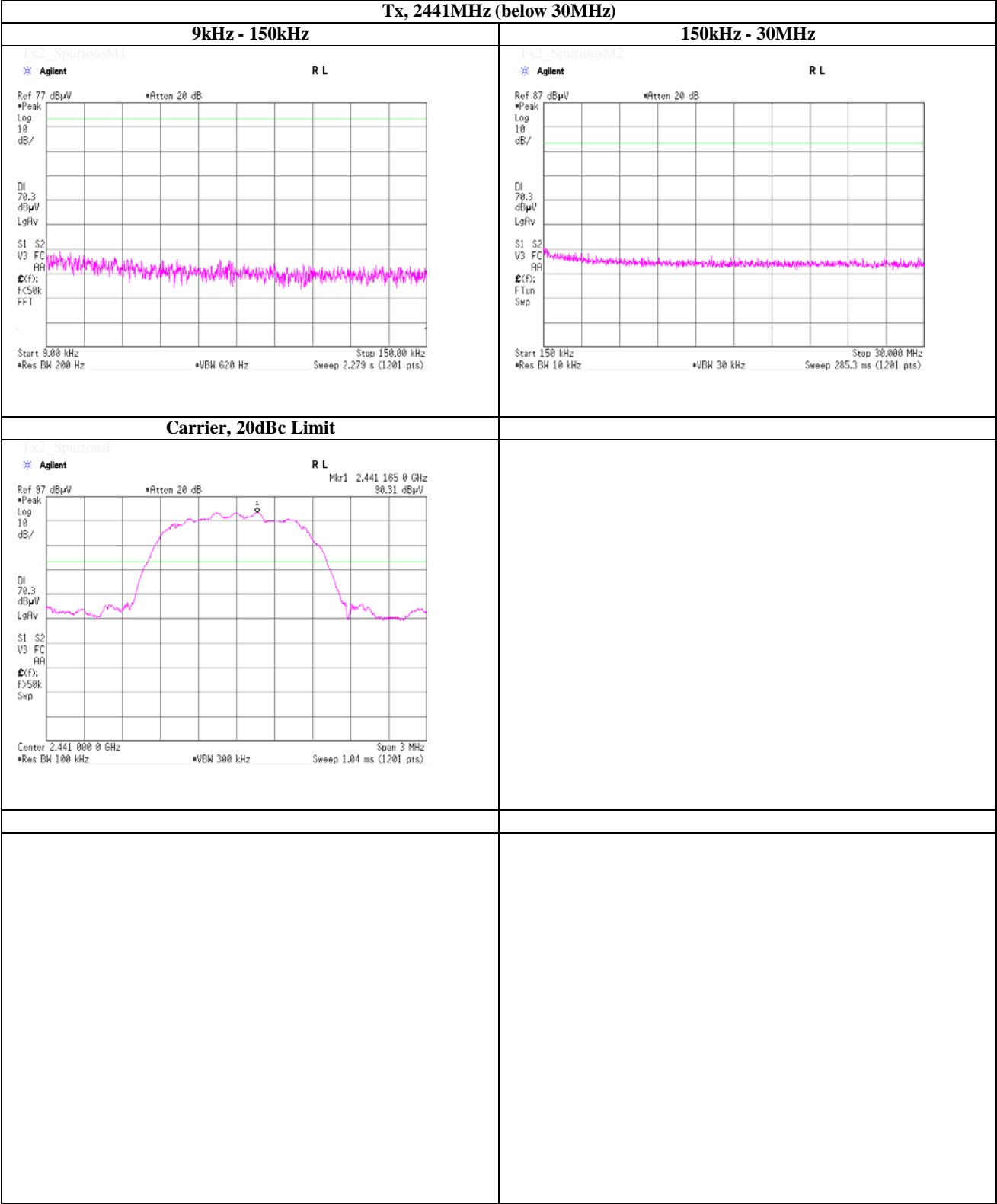
Engineer

Tatsuya Arai

Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2441MHz (below 30MHz)



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No.5 Shielded Room

Date

February 9, 2015

Temperature / Humidity

24 deg.C , 43 %RH

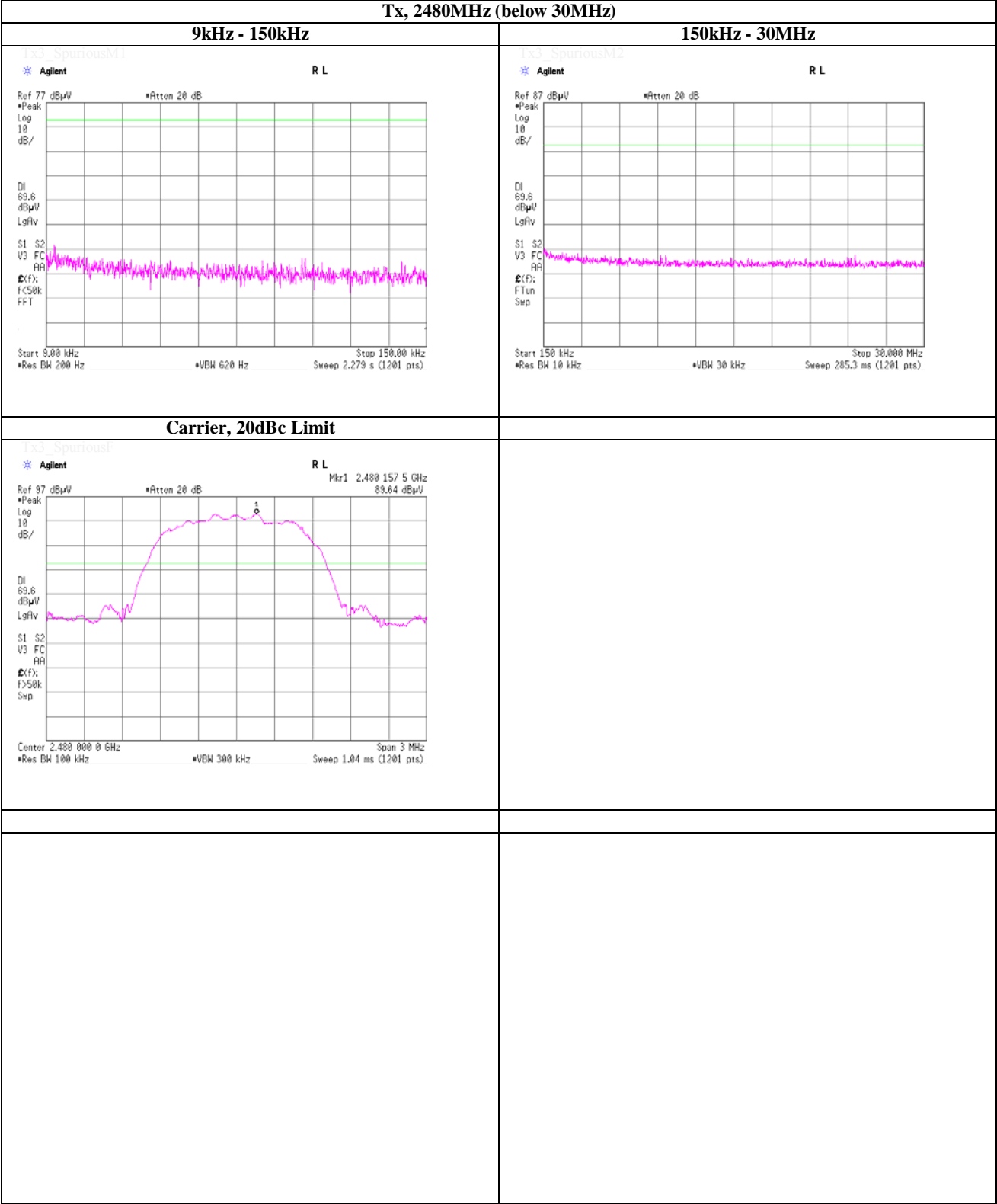
Engineer

Tatsuya Arai

Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2480MHz (below 30MHz)



UL Japan, Inc.

Shonan EMC Lab.

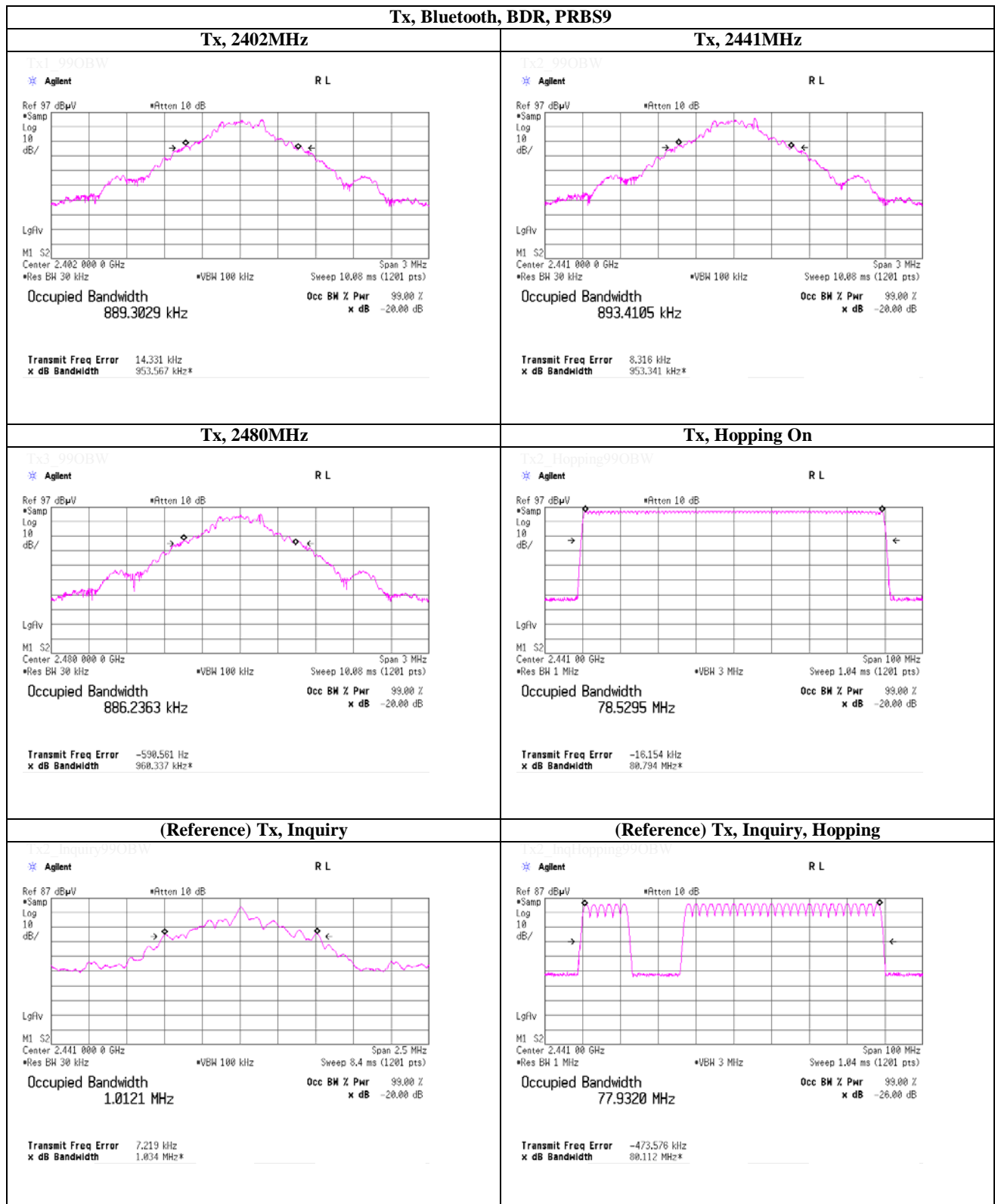
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Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
Date February 9, 2015
Temperature / Humidity 24 deg.C , 43 %RH
Engineer Tatsuya Arai

99% Occupied Bandwidth



UL Japan, Inc.

Shonan EMC Lab.

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Test place

UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room

Date

February 9, 2015

Temperature / Humidity

24 deg.C , 43 %RH

Engineer

Tatsuya Arai

99% Occupied Bandwidth

Tx, Bluetooth, EDR, PRBS9	
Tx, 2402MHz	Tx, 2441MHz
<div><div>Tx1_99OBW</div><div><div>Agilent</div><div>RL</div></div><div><div>Ref 97 dBμV</div><div>*Atten 10 dB</div></div><div><div><div>•Samp</div><div>Log</div><div>10</div><div>dB/</div></div><div><div>Lgflv</div><div>M1 S2</div><div>Center 2.402 000 0 GHz</div><div>•Res BW 30 kHz</div><div>•VBW 100 kHz</div><div>Sweep 10.00 ms (1201 pts)</div><div>Span 3 MHz</div></div></div><div><div>Occupied Bandwidth</div><div>1.2053 MHz</div></div><div><div>Occ BW % Pwr</div><div>99.00 %</div><div>x dB</div><div>-20.00 dB</div></div><div><div>Transmit Freq Error</div><div>10.775 kHz</div><div>x dB Bandwidth</div><div>1.323 MHz*</div></div></div>	<div><div>Tx2_99OBW</div><div><div>Agilent</div><div>RL</div></div><div><div>Ref 97 dBμV</div><div>*Atten 10 dB</div></div><div><div><div>•Samp</div><div>Log</div><div>10</div><div>dB/</div></div><div><div>Lgflv</div><div>M1 S2</div><div>Center 2.441 000 0 GHz</div><div>•Res BW 30 kHz</div><div>•VBW 100 kHz</div><div>Sweep 10.00 ms (1201 pts)</div><div>Span 3 MHz</div></div></div><div><div>Occupied Bandwidth</div><div>1.2036 MHz</div></div><div><div>Occ BW % Pwr</div><div>99.00 %</div><div>x dB</div><div>-20.00 dB</div></div><div><div>Transmit Freq Error</div><div>4.132 kHz</div><div>x dB Bandwidth</div><div>1.308 MHz*</div></div></div>
Tx, 2480MHz	Tx, Hopping On
<div><div>Tx3_99OBW</div><div><div>Agilent</div><div>RL</div></div><div><div>Ref 97 dBμV</div><div>*Atten 10 dB</div></div><div><div><div>•Samp</div><div>Log</div><div>10</div><div>dB/</div></div><div><div>Lgflv</div><div>M1 S2</div><div>Center 2.480 000 0 GHz</div><div>•Res BW 30 kHz</div><div>•VBW 100 kHz</div><div>Sweep 10.00 ms (1201 pts)</div><div>Span 3 MHz</div></div></div><div><div>Occupied Bandwidth</div><div>1.2045 MHz</div></div><div><div>Occ BW % Pwr</div><div>99.00 %</div><div>x dB</div><div>-20.00 dB</div></div><div><div>Transmit Freq Error</div><div>-2.407 kHz</div><div>x dB Bandwidth</div><div>1.308 MHz*</div></div></div>	<div><div>Tx2_Hopping99OBW</div><div><div>Agilent</div><div>RL</div></div><div><div>Ref 97 dBμV</div><div>*Atten 10 dB</div></div><div><div><div>•Samp</div><div>Log</div><div>10</div><div>dB/</div></div><div><div>Lgflv</div><div>M1 S2</div><div>Center 2.441 00 0 GHz</div><div>•Res BW 1 MHz</div><div>•VBW 3 MHz</div><div>Sweep 1.04 ms (1201 pts)</div><div>Span 100 MHz</div></div></div><div><div>Occupied Bandwidth</div><div>78.6882 MHz</div></div><div><div>Occ BW % Pwr</div><div>99.00 %</div><div>x dB</div><div>-20.00 dB</div></div><div><div>Transmit Freq Error</div><div>-50.227 kHz</div><div>x dB Bandwidth</div><div>80.951 MHz*</div></div></div>
<div><div>Tx2_Inquiry99OBW</div></div>	<div><div>Tx2_InqHopping99OBW</div></div>

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APPENDIX 2

Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SPM-07	Power Meter	Agilent	8990B	MY5100272	AT	2014/04/04 * 12
SPSS-04	Power sensor	Agilent	N1923A	MY5326009	AT	2014/04/04 * 12
SAT20-07	Attenuator	Weinschel Corp.	54A-20	31484	AT	2014/04/22 * 12
SCC-G12	Coaxial Cable	Suhner	SUCOFLEX 102	30790/2	AT	2014/03/13 * 12
SOS-09	Humidity Indicator	A&D	AD-5681	4061484	AT	2014/12/24 * 12
SSA-03	Spectrum Analyzer	Agilent	E4448A	MY48250152	AT	2014/02/03 * 12
SAEC-03(NSA)	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	RE	2014/07/14 * 12
SAF-06	Pre Amplifier	TOYO Corporation	TPA0118-36	1440491	RE	2014/05/23 * 12
SCC-G04	Coaxial Cable	Junkosha	J12J102207-00	JUN-12-14-018	RE	2014/06/24 * 12
SCC-G23	Coaxial Cable	Suhner	SUCOFLEX 104	297342/4	RE	2014/05/15 * 12
SHA-03	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	RE	2014/08/12 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2014/10/30 * 12
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	RE	2014/03/17 * 12
SJM-15	Measure	ASKUL	-	-	RE,CE	-
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE, RFI,MF)	-	RE,CE	-
SAT10-05	Attenuator(above1GHz)	Agilent	8493C-010	74864	RE	2014/11/21 * 12
SFL-02	Highpass Filter	MICRO-TRONICS	HPM50111	051	RE	2014/11/21 * 12
SFL-18	Highpass Filter	MICRO-TRONICS	HPM50111	119	RE	2014/04/22 * 12
SHA-05	Horn Antenna	ETS LINDGREN	3160-09	LM4210	RE	2014/03/15 * 12
SAF-09	Pre Amplifier	TOYO Corporation	HAP18-26W	00000018	RE	2014/05/15 * 12
SCC-G18	Coaxial Cable	Suhner	SUCOFLEX 104A	46292/4A	RE	2014/03/14 * 12
SBA-03	Biconical Antenna	Schwarzbeck	BBA9106	91032666	RE	2014/10/18 * 12
SLA-03	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0901	RE	2014/10/18 * 12
SAT6-08	Attenuator	HIROSE ELECTRIC CO.,LTD.	AT-406(40)	-	RE	2014/08/27 * 12
SCC-C1/C2/C 3/C4/C5/C10/ SRSE-03	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhne r/Suhner/Suhner/Suhn er/TOYO	8D2W/12DSFA/14 1PE/141PE/141PE /141PE/NS4906	-/0901-271(RF Selector)	RE	2014/04/25 * 12
SAF-03	Pre Amplifier	SONOMA	310N	290213	RE	2014/02/14 * 12
STR-06	Test Receiver	Rohde & Schwarz	ESCI	101259	RE,CE	2014/03/04 * 12
SHA-04	Horn Antenna	ETS LINDGREN	3160-09	LM3640	RE	2014/03/15 * 12
SCC-G15	Coaxial Cable	Suhner	SUCOFLEX 102	32703/2	RE	2014/03/13 * 12
SCC-C9/C10/S RSE-03	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/N S4906	-/0901-271(RF Selector)	CE	2014/04/25 * 12
SLS-05	LISN	Rohde & Schwarz	ENV216	100516	CE	2014/02/26 * 12
SAT3-06	Attenuator	JFW	50HF-003N	-	CE	2014/02/17 * 12
SOS-06	Humidity Indicator	A&D	AD-5681	4062118	CE	2014/12/24 * 12
STM-05	Terminator	TME	CT-01 BP	-	CE	2014/12/19 * 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 :

CE: Conducted emission,

RE: Radiated emission,

AT: Antenna terminal disturbance voltage