

DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2011/06/03

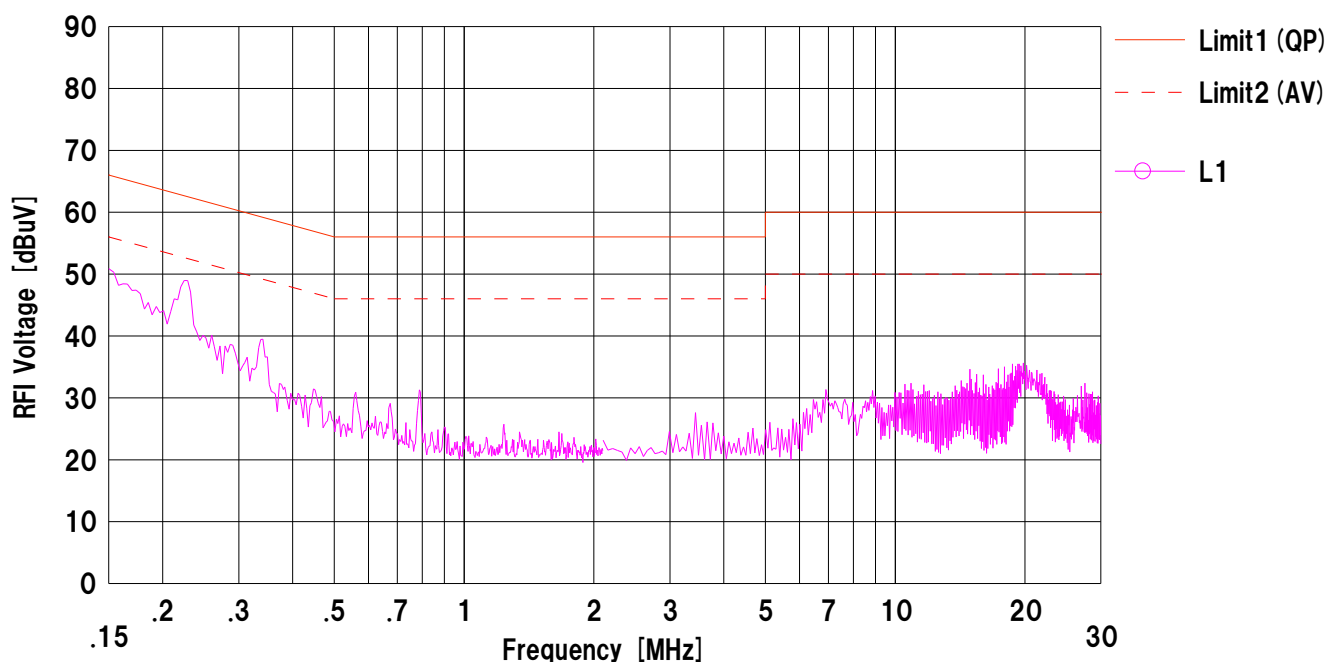
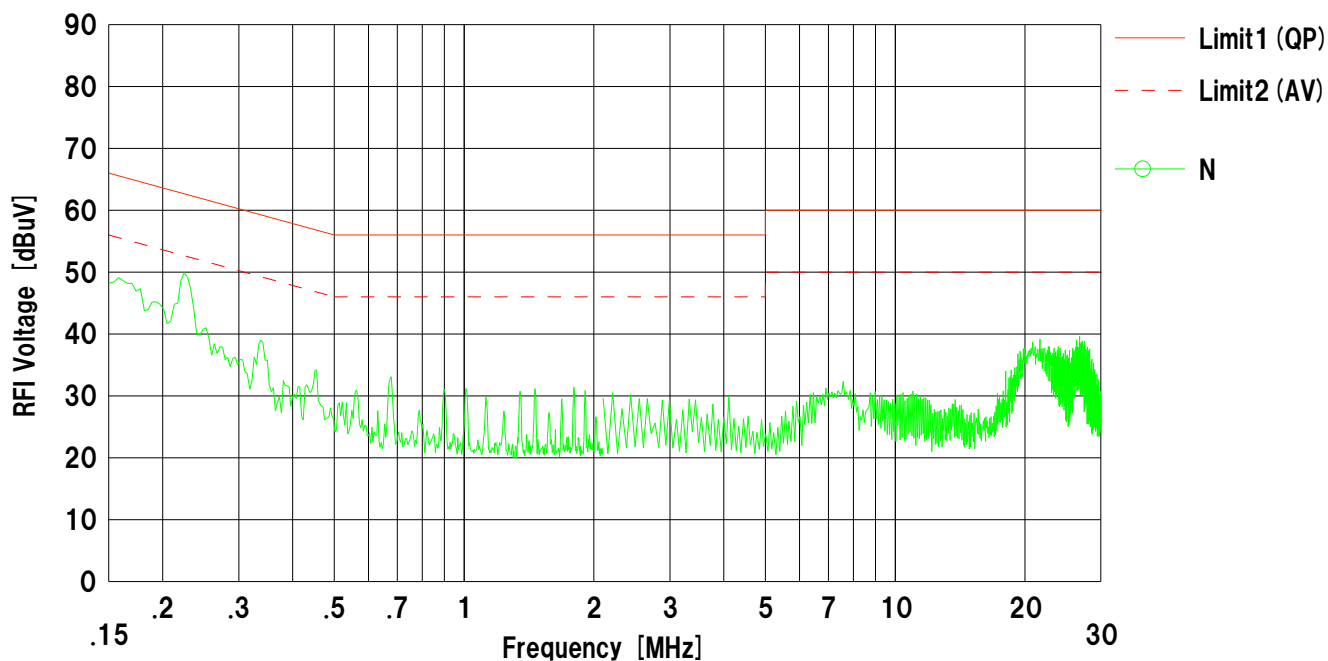
Company : CANON INC.
Kind of EUT : WLAN Module
Model No. : K30345
Serial No. : 3

Mode : 11b Tx 2412MHz
Report No. : 31KE0010-SH-A
Power : AC120V/60Hz
Temp./Humi. : 25deg.C / 53%

Remarks : -

Limit1 : FCC 15C (15.207) QP
Limit2 : FCC 15C (15.207) AV

Engineer : Minoru Nakatake



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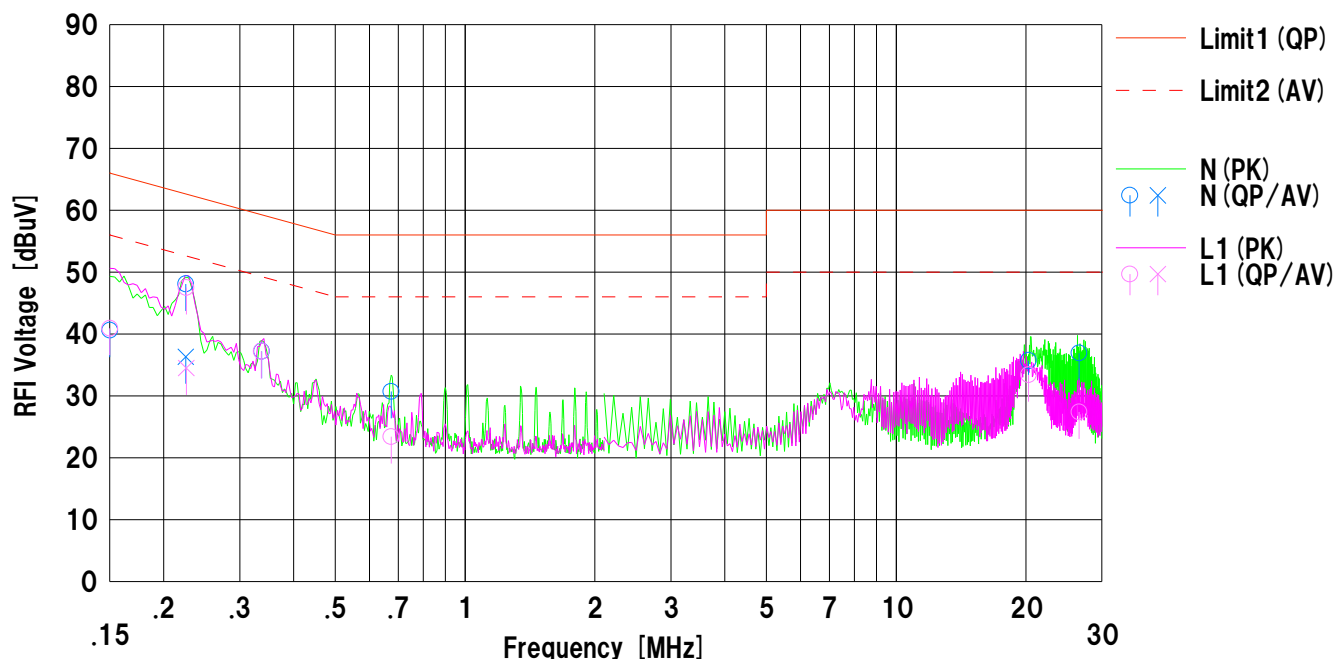
Company : CANON INC.
Kind of EUT : WLAN Module
Model No. : K30345
Serial No. : 3

Mode : 11b Tx 2437MHz
Report No. : 31KE0010-SH-A
Power : AC120V/60Hz
Temp./Humi. : 25deg.C / 53%

Remarks : -

Limit1 : FCC 15C (15.207) QP
Limit2 : FCC 15C (15.207) AV

Engineer : Minoru Nakatake



No.	Freq. [MHz]	Reading		C.Fac [dB]	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]		<QP> [dBuV]	<AV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.15000	28.0	---	12.6	40.6	---	66.0	56.0	25.4	---	N	
2	0.22490	35.6	23.8	12.5	48.1	36.3	62.6	52.6	14.5	16.3	N	
3	0.33709	24.7	---	12.5	37.2	---	59.2	49.2	22.0	---	N	
4	0.67350	18.1	---	12.6	30.7	---	56.0	46.0	25.3	---	N	
5	20.28664	22.2	---	13.5	35.7	---	60.0	50.0	24.3	---	N	
6	26.56215	23.3	---	13.6	36.9	---	60.0	50.0	23.1	---	N	
7	0.15000	28.3	---	12.6	40.9	---	66.0	56.0	25.1	---	L1	
8	0.22550	35.0	22.0	12.5	47.5	34.5	62.6	52.6	15.1	18.1	L1	
9	0.33669	24.7	---	12.5	37.2	---	59.2	49.2	22.0	---	L1	
10	0.67390	10.8	---	12.6	23.4	---	56.0	46.0	32.6	---	L1	
11	20.28570	19.9	---	13.5	33.4	---	60.0	50.0	26.6	---	L1	
12	26.56020	13.8	---	13.6	27.4	---	60.0	50.0	32.6	---	L1	

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Date : 2011/06/03

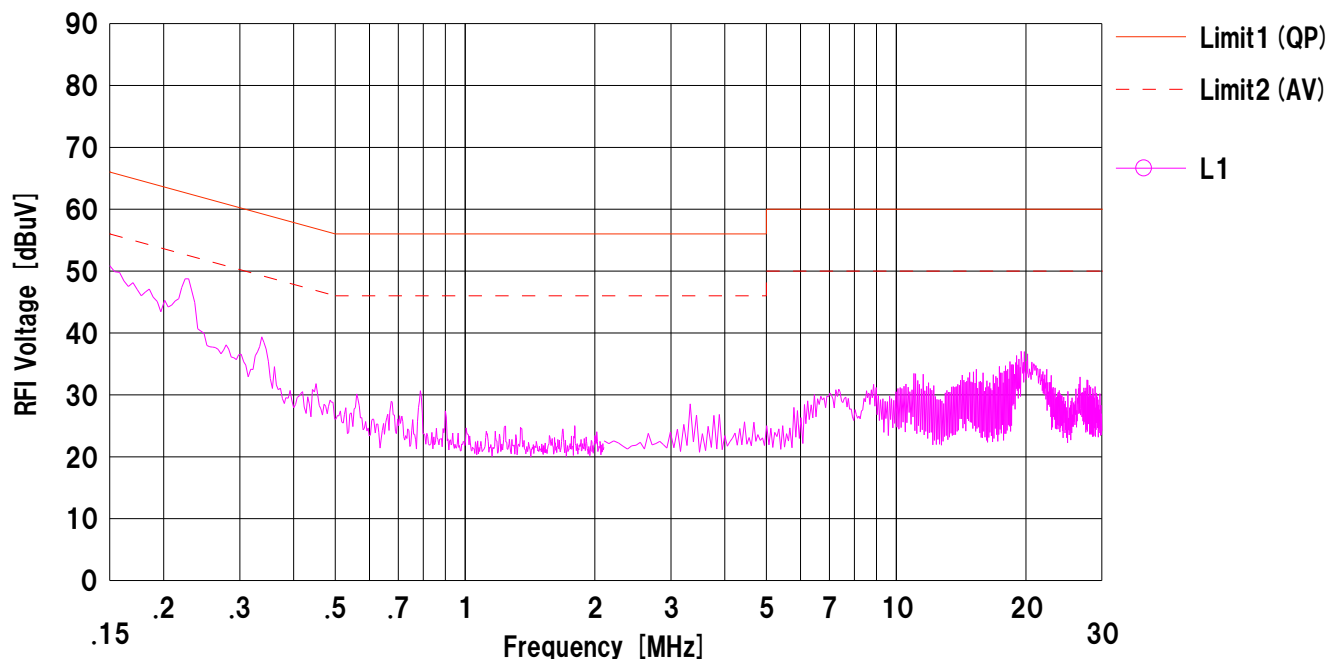
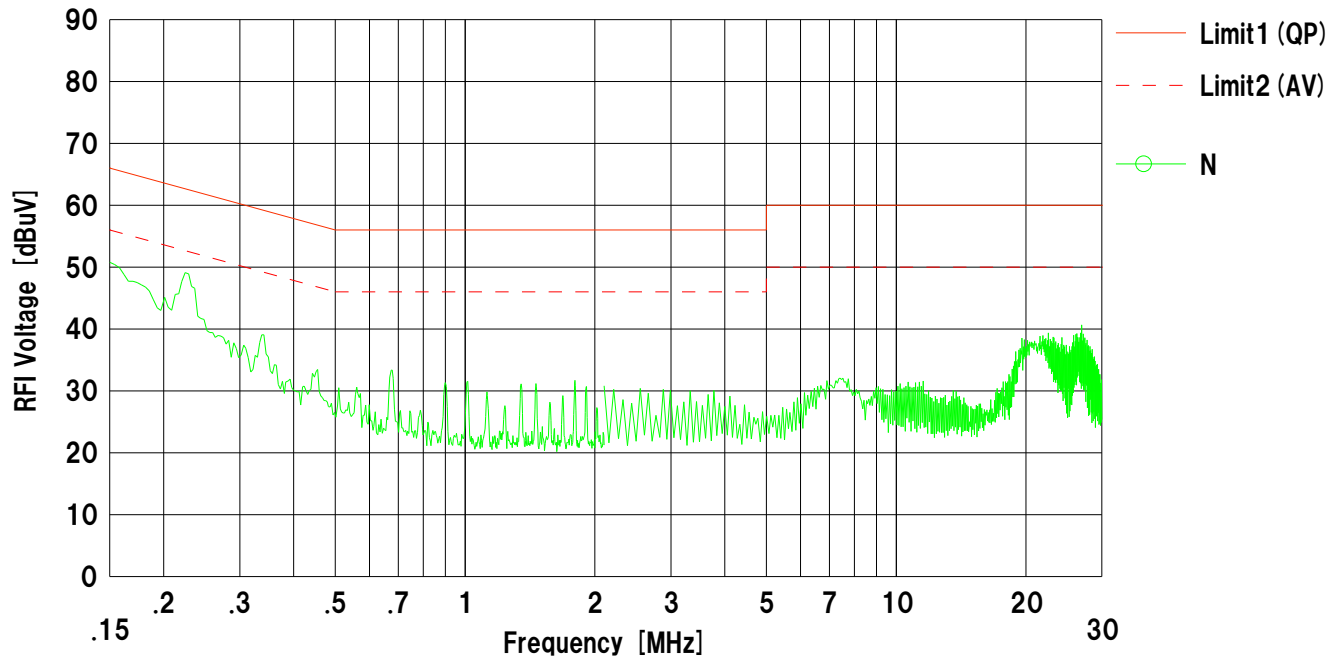
Company : CANON INC.
Kind of EUT : WLAN Module
Model No. : K30345
Serial No. : 3

Mode : 11b Tx 2462MHz
Report No. : 31KE0010-SH-A
Power : AC120V/60Hz
Temp./Humi. : 25deg.C / 53%

Remarks : -

Limit1 : FCC 15C (15.207) QP
Limit2 : FCC 15C (15.207) AV

Engineer : Minoru Nakatake



DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
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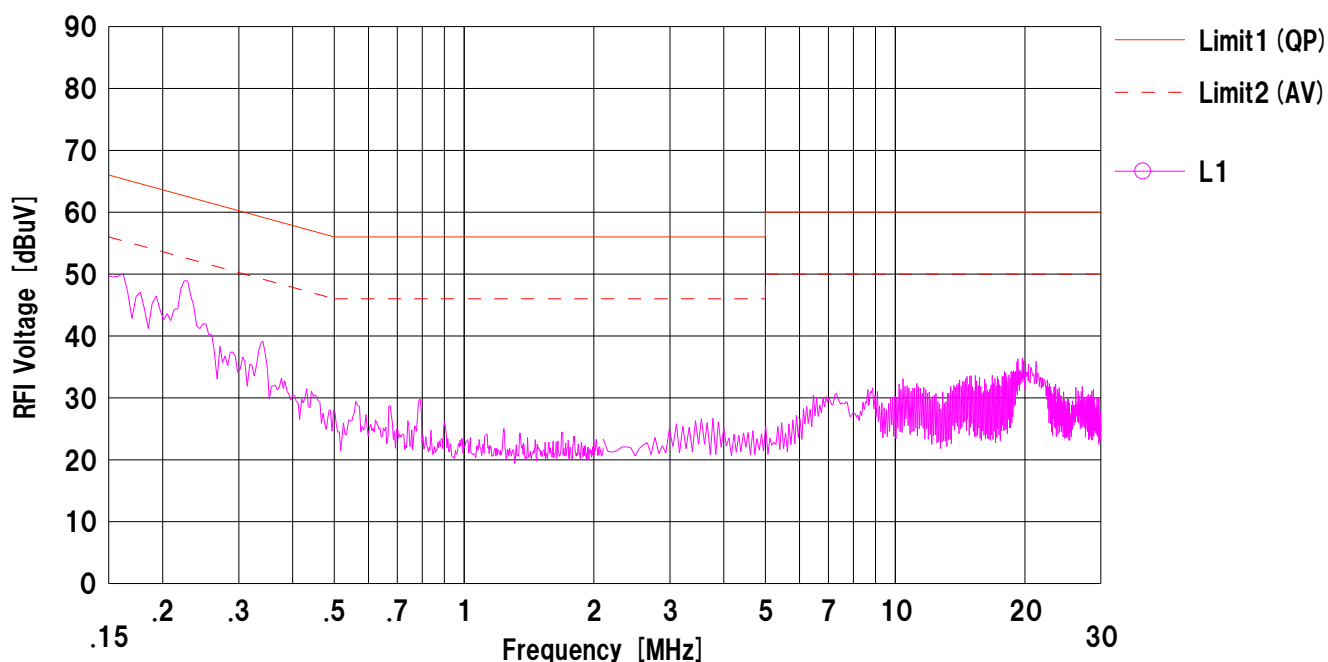
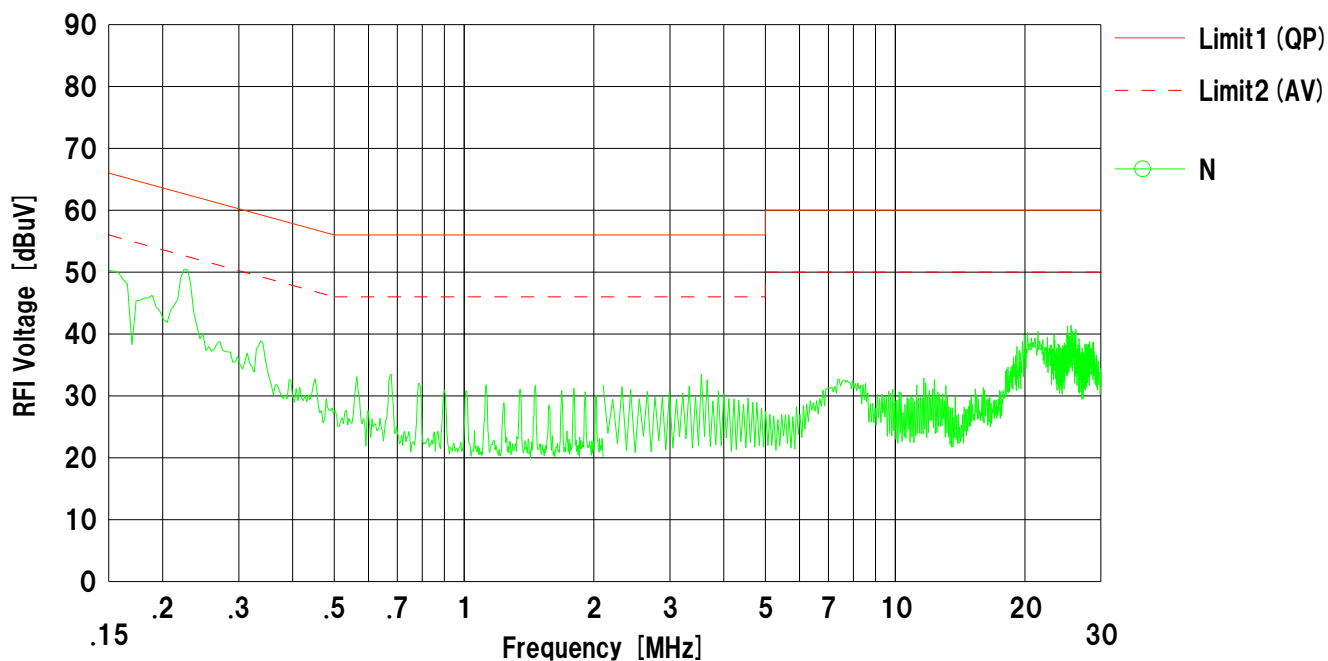
Company : CANON INC.
Kind of EUT : WLAN Module
Model No. : K30345
Serial No. : 3

Mode : 11g Tx 2412MHz
Report No. : 31KE0010-SH-A
Power : AC120V/60Hz
Temp./Humi. : 25deg.C / 53%

Remarks : -

Limit1 : FCC 15C (15.207) QP
Limit2 : FCC 15C (15.207) AV

Engineer : Minoru Nakatake



DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2011/06/03

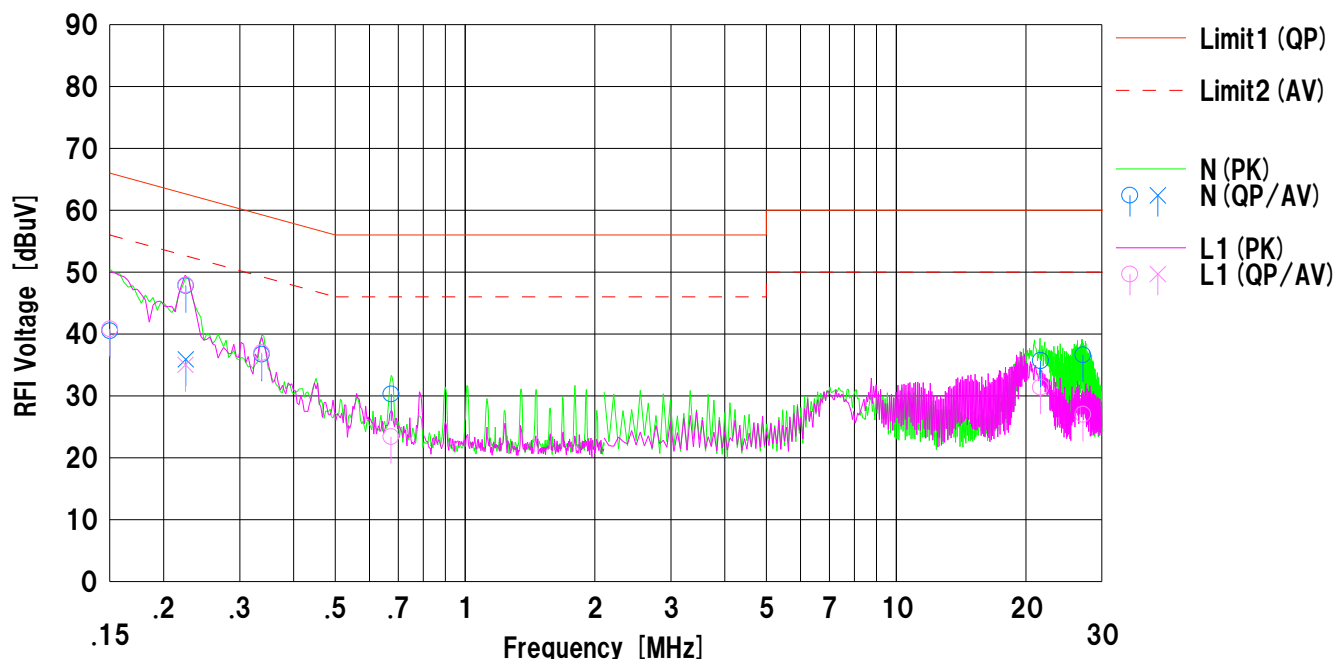
Company : CANON INC.
Kind of EUT : WLAN Module
Model No. : K30345
Serial No. : 3

Mode : 11g Tx 2437MHz
Report No. : 31KE0010-SH-A
Power : AC120V/60Hz
Temp./Humi. : 25deg.C / 53%

Remarks : -

Limit1 : FCC 15C (15.207) QP
Limit2 : FCC 15C (15.207) AV

Engineer : Minoru Nakatake



No.	Freq. [MHz]	Reading		C.Fac [dB]	Results		Limit		Margin		Phase	Comment
		<QP>	<AV>		<QP>	<AV>	<QP>	<AV>	<QP>	<AV>		
		[dBuV]	[dBuV]		[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	27.9	---	12.6	40.5	---	66.0	56.0	25.5	---	N	
2	0.22500	35.3	23.4	12.5	47.8	35.9	62.6	52.6	14.8	16.7	N	
3	0.33730	24.2	---	12.5	36.7	---	59.2	49.2	22.5	---	N	
4	0.67390	17.7	---	12.6	30.3	---	56.0	46.0	25.7	---	N	
5	21.63045	22.2	---	13.5	35.7	---	60.0	50.0	24.3	---	N	
6	27.12129	23.0	---	13.6	36.6	---	60.0	50.0	23.4	---	N	
7	0.15000	28.2	---	12.6	40.8	---	66.0	56.0	25.2	---	L1	
8	0.22470	35.4	22.5	12.5	47.9	35.0	62.6	52.6	14.7	17.6	L1	
9	0.33730	24.5	---	12.5	37.0	---	59.2	49.2	22.2	---	L1	
10	0.67310	10.8	---	12.6	23.4	---	56.0	46.0	32.6	---	L1	
11	21.63070	17.9	---	13.5	31.4	---	60.0	50.0	28.6	---	L1	
12	27.12205	13.4	---	13.6	27.0	---	60.0	50.0	33.0	---	L1	

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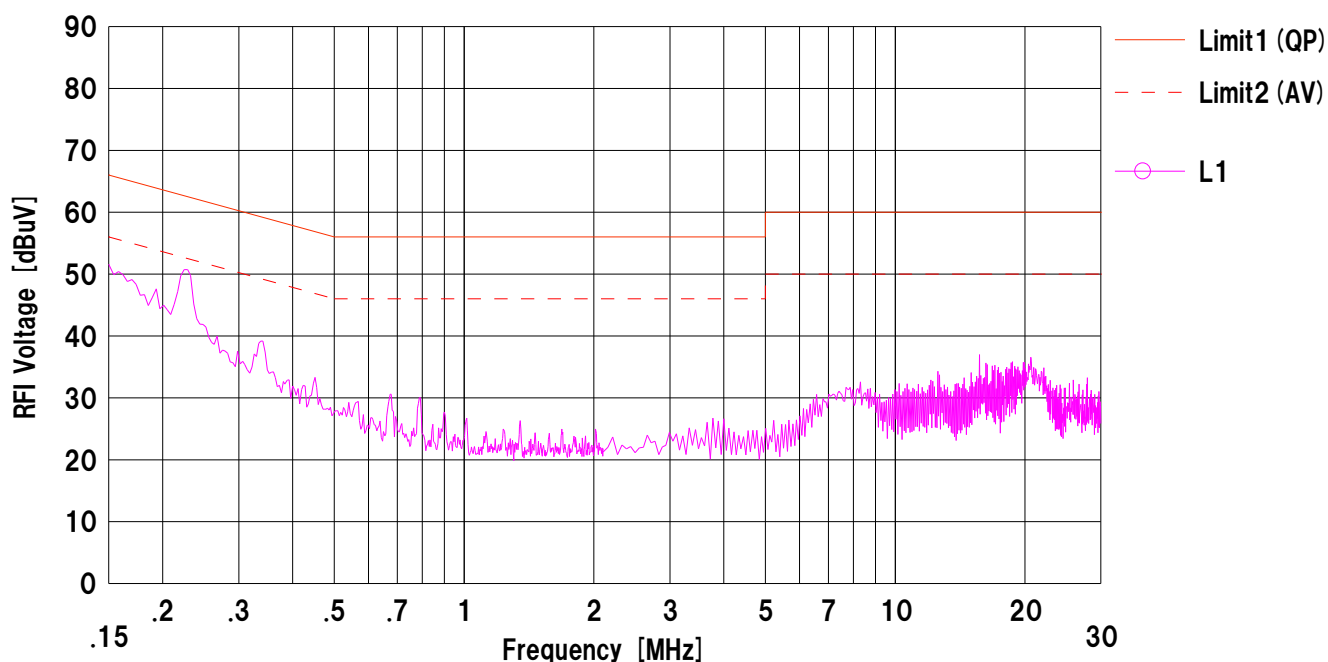
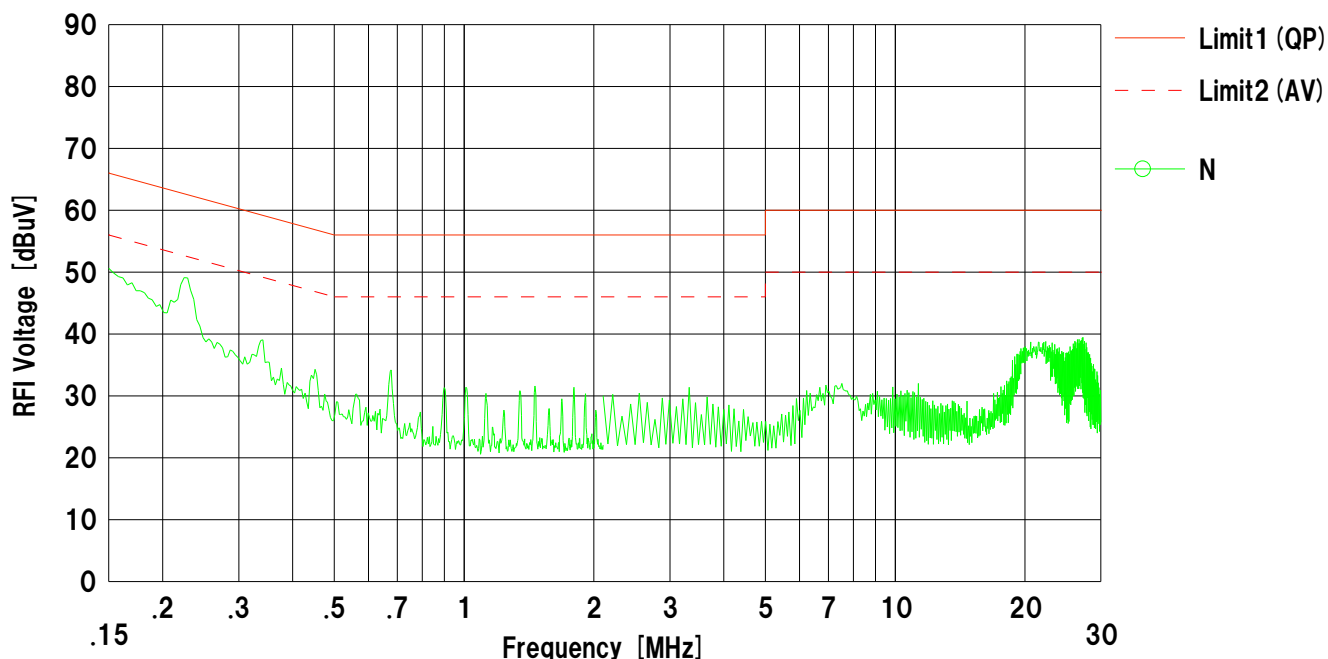
Company : CANON INC.
Kind of EUT : WLAN Module
Model No. : K30345
Serial No. : 3

Mode : 11g Tx 2462MHz
Report No. : 31KE0010-SH-A
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Remarks : -

Limit1 : FCC 15C (15.207) QP
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Engineer : Minoru Nakatake



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Date : 2011/06/03

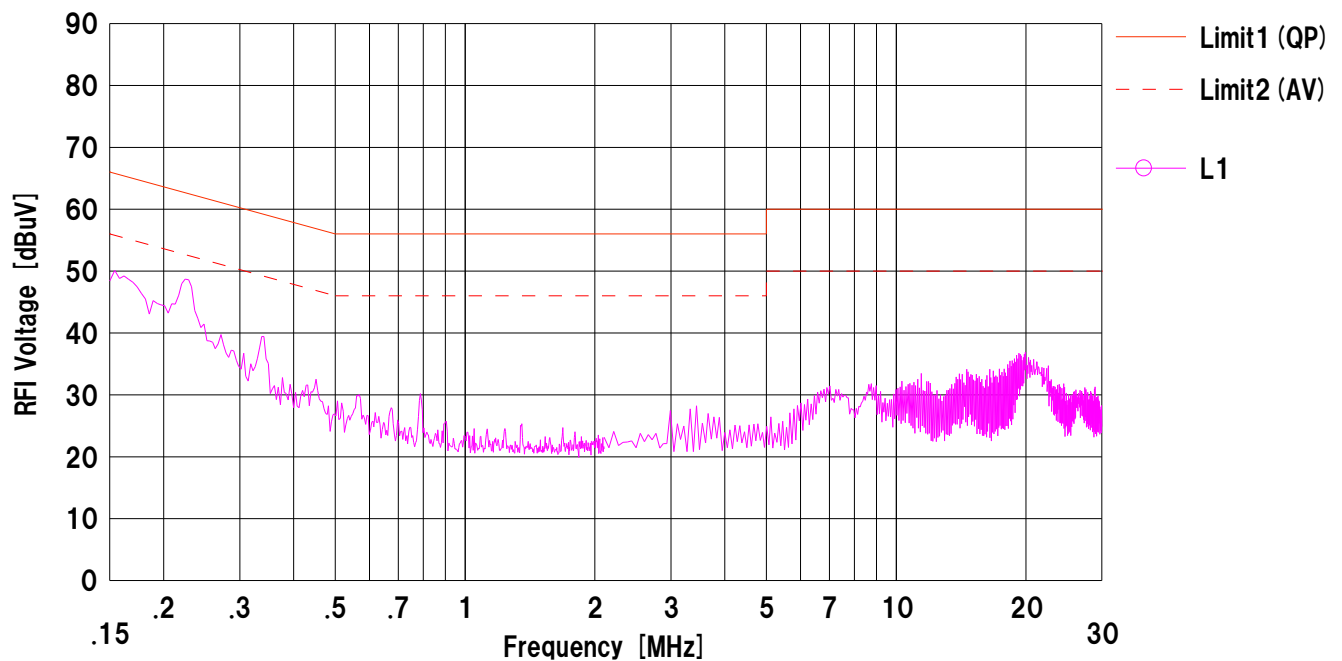
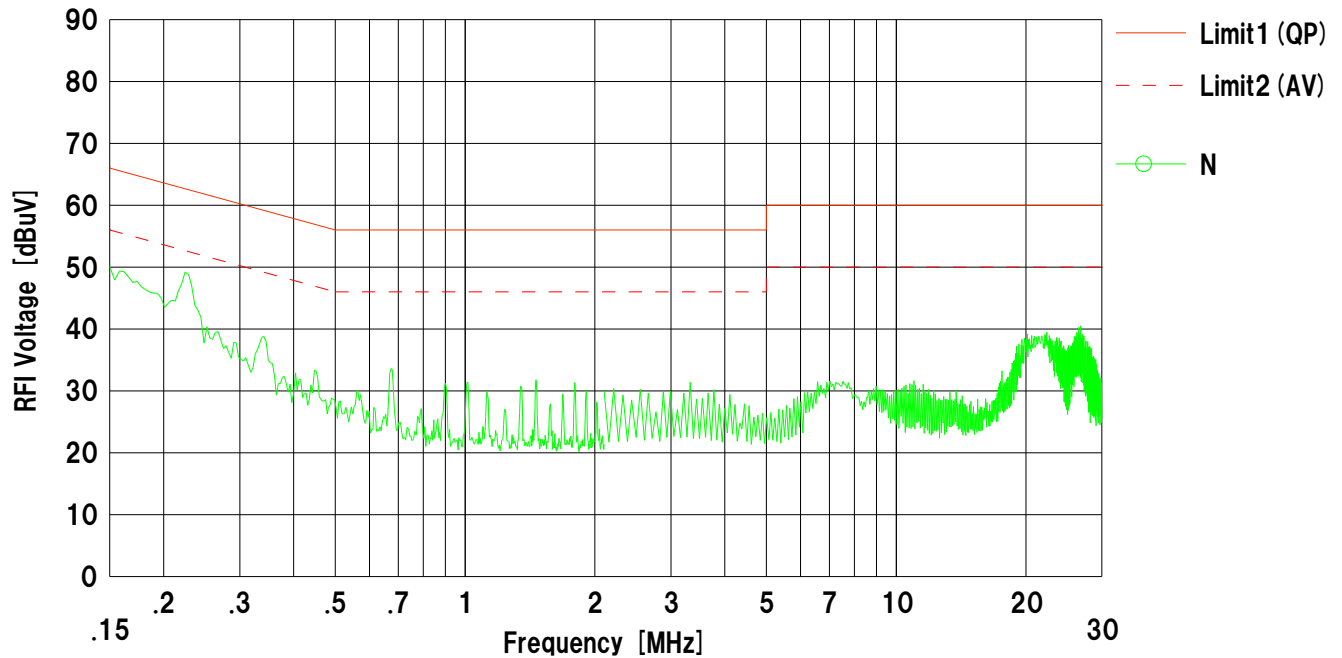
Company : CANON INC.
Kind of EUT : WLAN Module
Model No. : K30345
Serial No. : 3

Mode : 11n-20 Tx 2412MHz
Report No. : 31KE0010-SH-A
Power : AC120V/60Hz
Temp./Humi. : 25deg.C / 53%

Remarks : -

Limit1 : FCC 15C (15.207) QP
Limit2 : FCC 15C (15.207) AV

Engineer : Minoru Nakatake



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UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2011/06/03

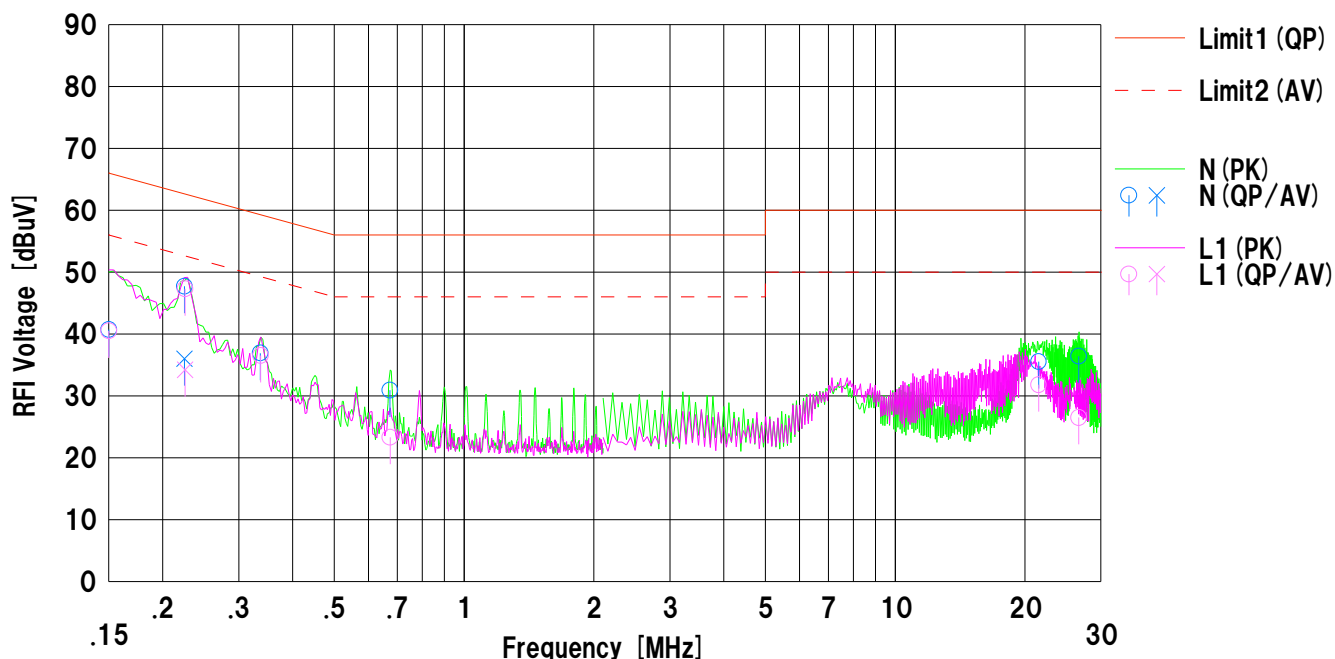
Company : CANON INC.
Kind of EUT : WLAN Module
Model No. : K30345
Serial No. : 3

Mode : 11n-20 Tx 2437MHz
Report No. : 31KE0010-SH-A
Power : AC120V/60Hz
Temp./Humi. : 25deg.C / 53%

Remarks : -

Limit1 : FCC 15C (15.207) QP
Limit2 : FCC 15C (15.207) AV

Engineer : Minoru Nakatake



No.	Freq. [MHz]	Reading		C.Fac [dB]	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]		<QP> [dBuV]	<AV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.15000	28.1	---	12.6	40.7	---	66.0	56.0	25.3	---	N	
2	0.22470	35.2	23.5	12.5	47.7	36.0	62.6	52.6	14.9	16.6	N	
3	0.33650	24.4	---	12.5	36.9	---	59.2	49.2	22.3	---	N	
4	0.67310	18.3	---	12.6	30.9	---	56.0	46.0	25.1	---	N	
5	21.51805	22.0	---	13.5	35.5	---	60.0	50.0	24.5	---	N	
6	26.67225	22.8	---	13.6	36.4	---	60.0	50.0	23.6	---	N	
7	0.15000	27.9	---	12.6	40.5	---	66.0	56.0	25.5	---	L1	
8	0.22530	34.8	21.7	12.5	47.3	34.2	62.6	52.6	15.3	18.4	L1	
9	0.33710	24.0	---	12.5	36.5	---	59.2	49.2	22.7	---	L1	
10	0.67350	10.7	---	12.6	23.3	---	56.0	46.0	32.7	---	L1	
11	21.51710	18.3	---	13.5	31.8	---	60.0	50.0	28.2	---	L1	
12	26.67210	12.9	---	13.6	26.5	---	60.0	50.0	33.5	---	L1	

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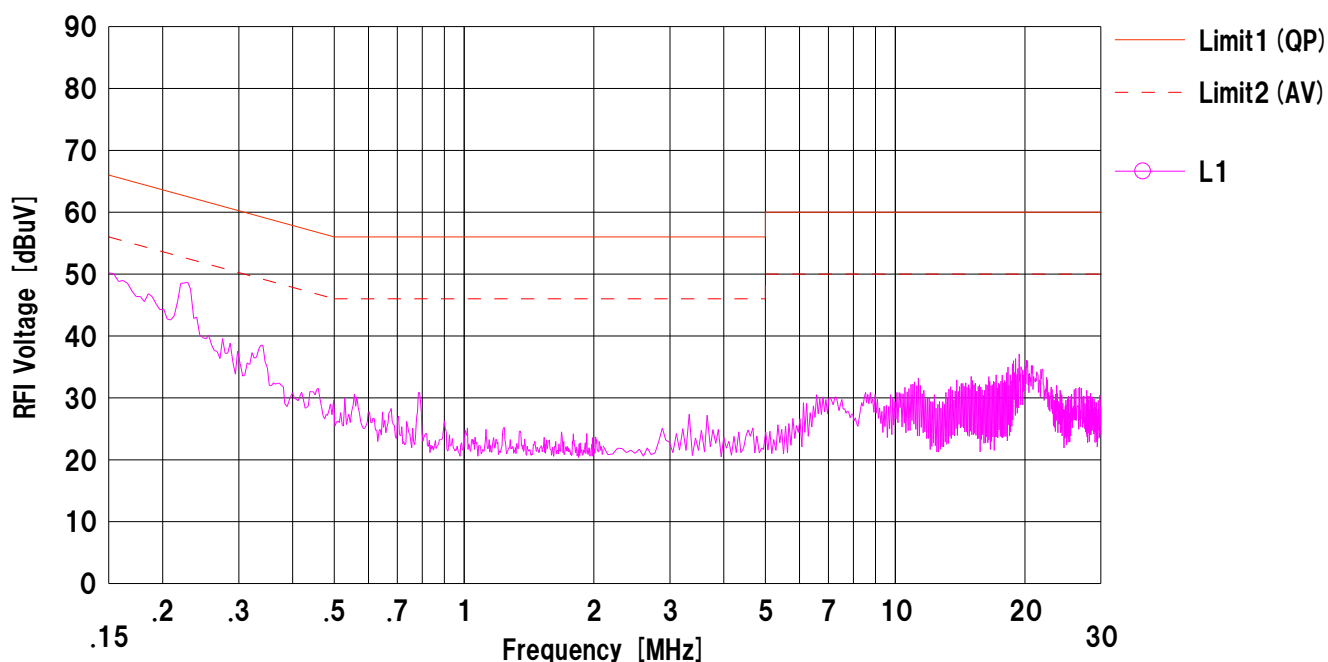
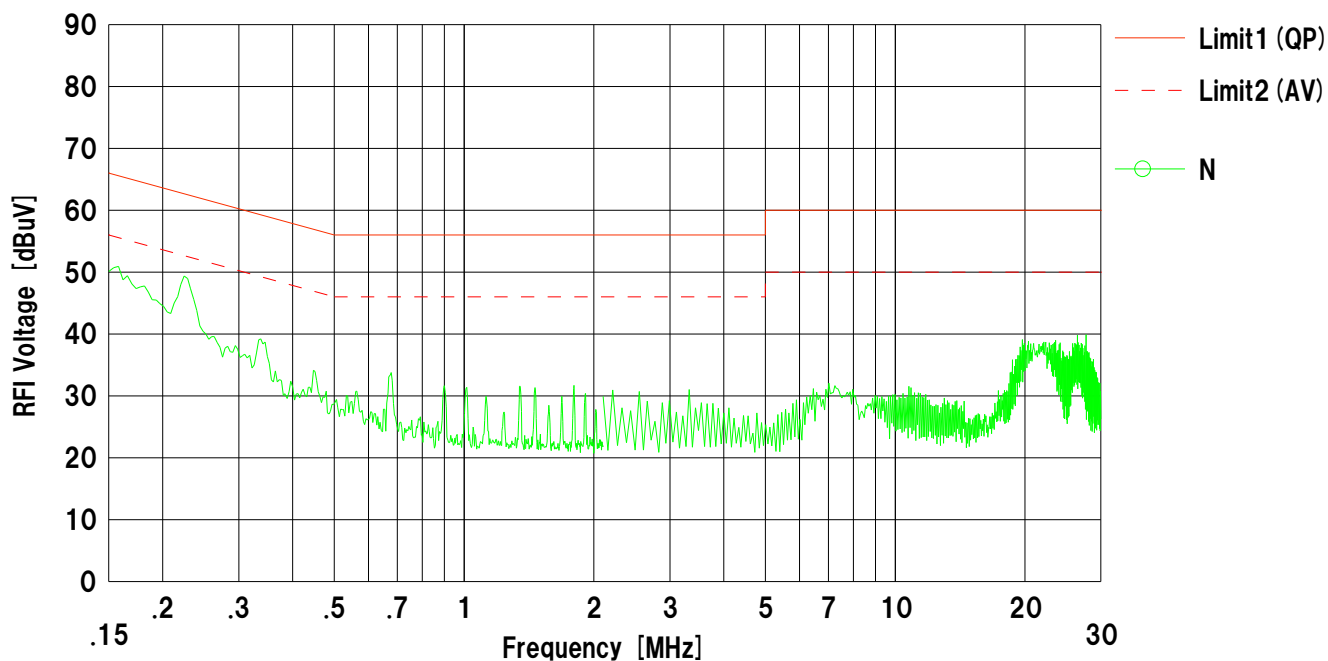
Company : CANON INC.
Kind of EUT : WLAN Module
Model No. : K30345
Serial No. : 3

Mode : 11n-20 Tx 2462MHz
Report No. : 31KE0010-SH-A
Power : AC120V/60Hz
Temp./Humi. : 25deg.C / 53%

Remarks : -

Limit1 : FCC 15C (15.207) QP
Limit2 : FCC 15C (15.207) AV

Engineer : Minoru Nakatake



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UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2011/06/03

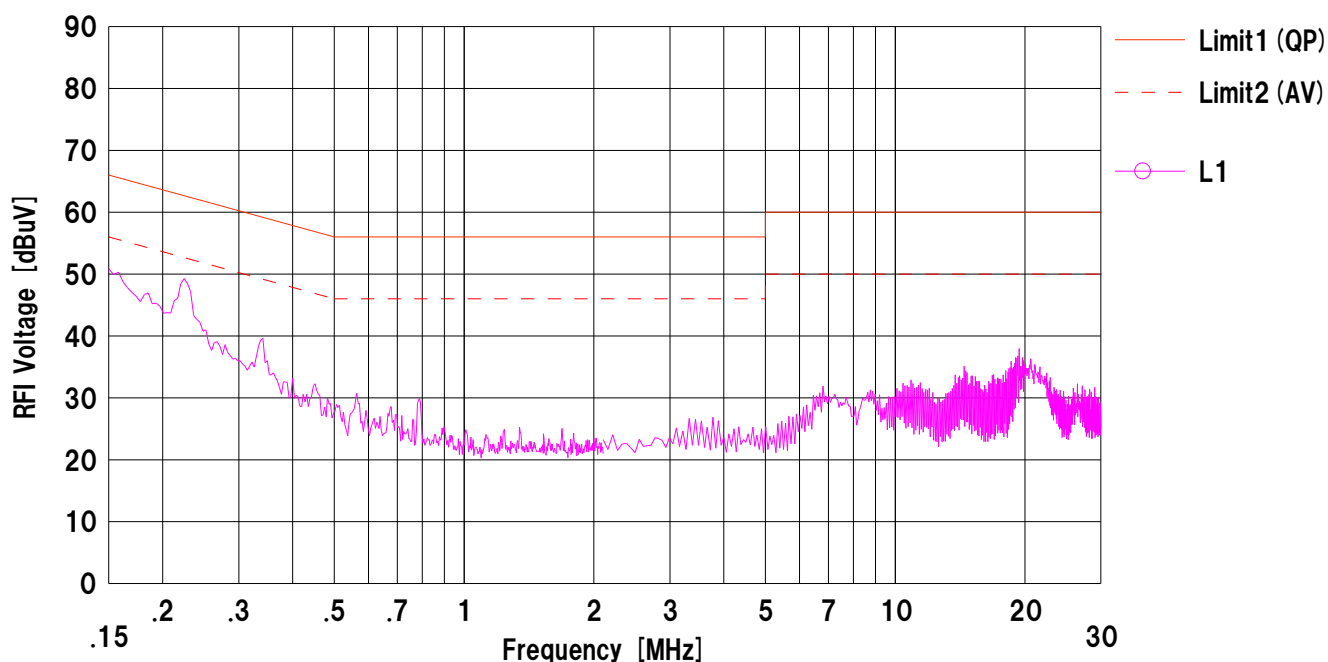
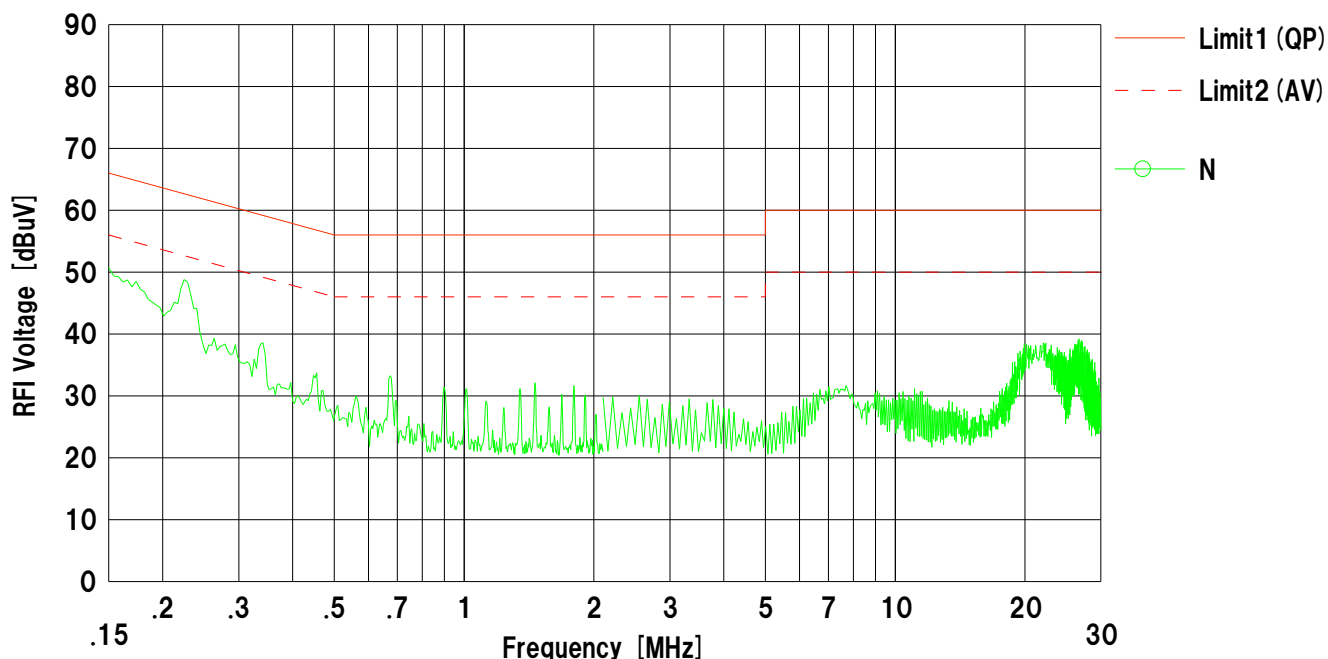
Company : CANON INC.
Kind of EUT : WLAN Module
Model No. : K30345
Serial No. : 3

Mode : 11n-40 Tx 2422MHz
Report No. : 31KE0010-SH-A
Power : AC120V/60Hz
Temp./Humi. : 25deg.C / 53%

Remarks : -

Limit1 : FCC 15C (15.207) QP
Limit2 : FCC 15C (15.207) AV

Engineer : Minoru Nakatake



DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2011/06/03

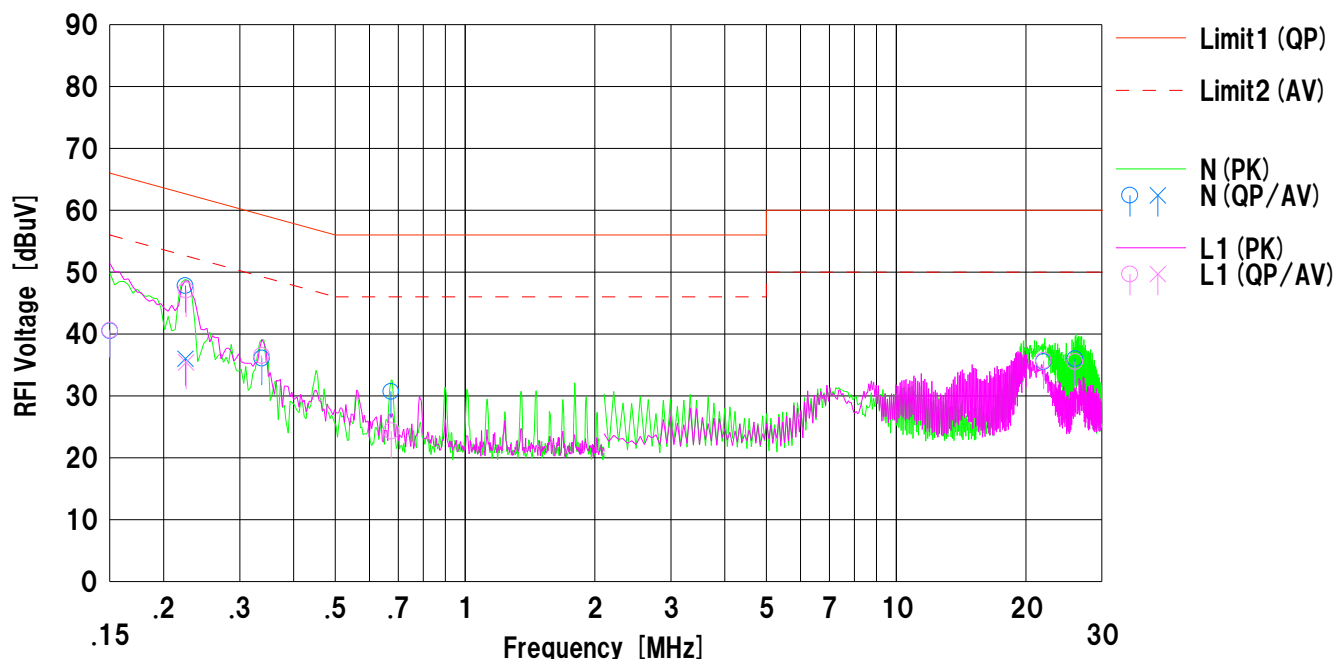
Company : CANON INC.
Kind of EUT : WLAN Module
Model No. : K30345
Serial No. : 3

Mode : 11n-40 Tx 2437MHz
Report No. : 31KE0010-SH-A
Power : AC120V/60Hz
Temp./Humi. : 25deg.C / 53%

Remarks : -

Limit1 : FCC 15C (15.207) QP
Limit2 : FCC 15C (15.207) AV

Engineer : Minoru Nakatake



No.	Freq. [MHz]	Reading		C.Fac [dB]	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]		<QP> [dBuV]	<AV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.15000	27.9	---	12.6	40.5	---	66.0	56.0	25.5	---	N	
2	0.22430	35.3	23.5	12.5	47.8	36.0	62.6	52.6	14.8	16.6	N	
3	0.33750	23.6	---	12.5	36.1	---	59.2	49.2	23.1	---	N	
4	0.67329	18.1	---	12.6	30.7	---	56.0	46.0	25.3	---	N	
5	21.96464	22.0	---	13.5	35.5	---	60.0	50.0	24.5	---	N	
6	25.99862	22.4	---	13.6	36.0	---	60.0	50.0	24.0	---	N	
7	0.15000	28.0	---	12.6	40.6	---	66.0	56.0	25.4	---	L1	
8	0.22530	34.6	22.9	12.5	47.1	35.4	62.6	52.6	15.5	17.2	L1	
9	0.33700	24.0	---	12.5	36.5	---	59.2	49.2	22.7	---	L1	
10	0.67410	11.7	---	12.6	24.3	---	56.0	46.0	31.7	---	L1	
11	21.96490	22.2	---	13.5	35.7	---	60.0	50.0	24.3	---	L1	
12	25.99952	21.9	---	13.6	35.5	---	60.0	50.0	24.5	---	L1	

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UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2011/06/03

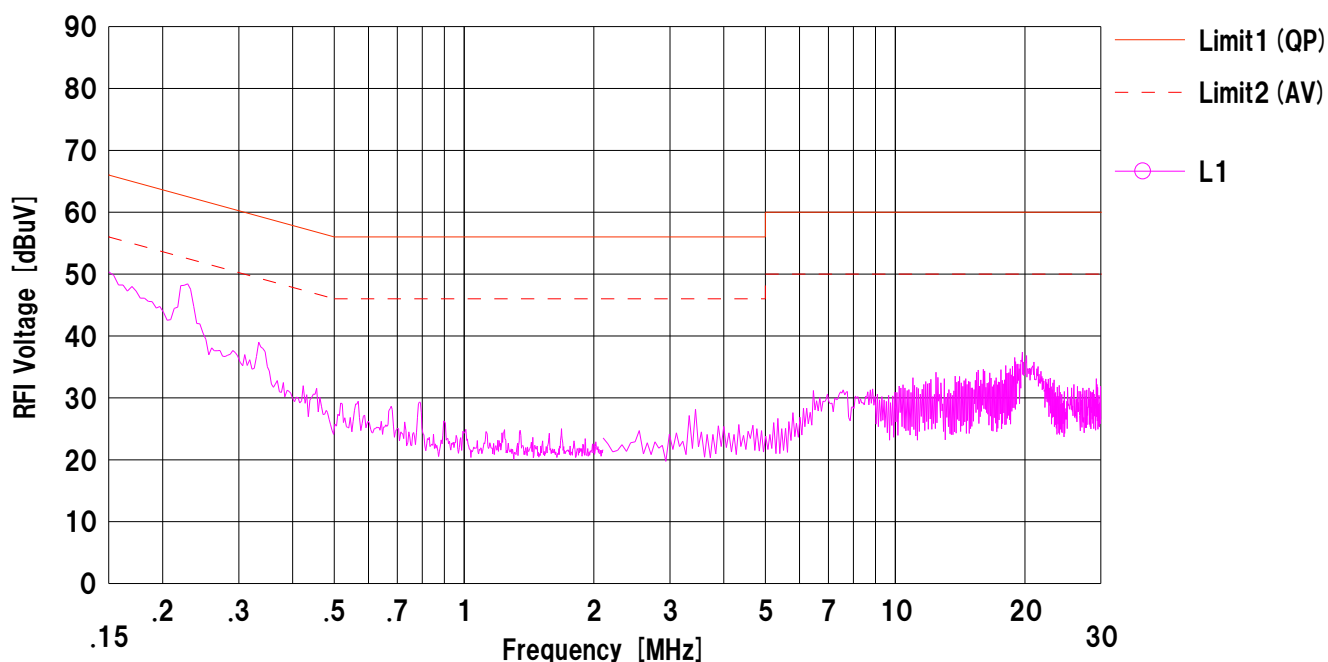
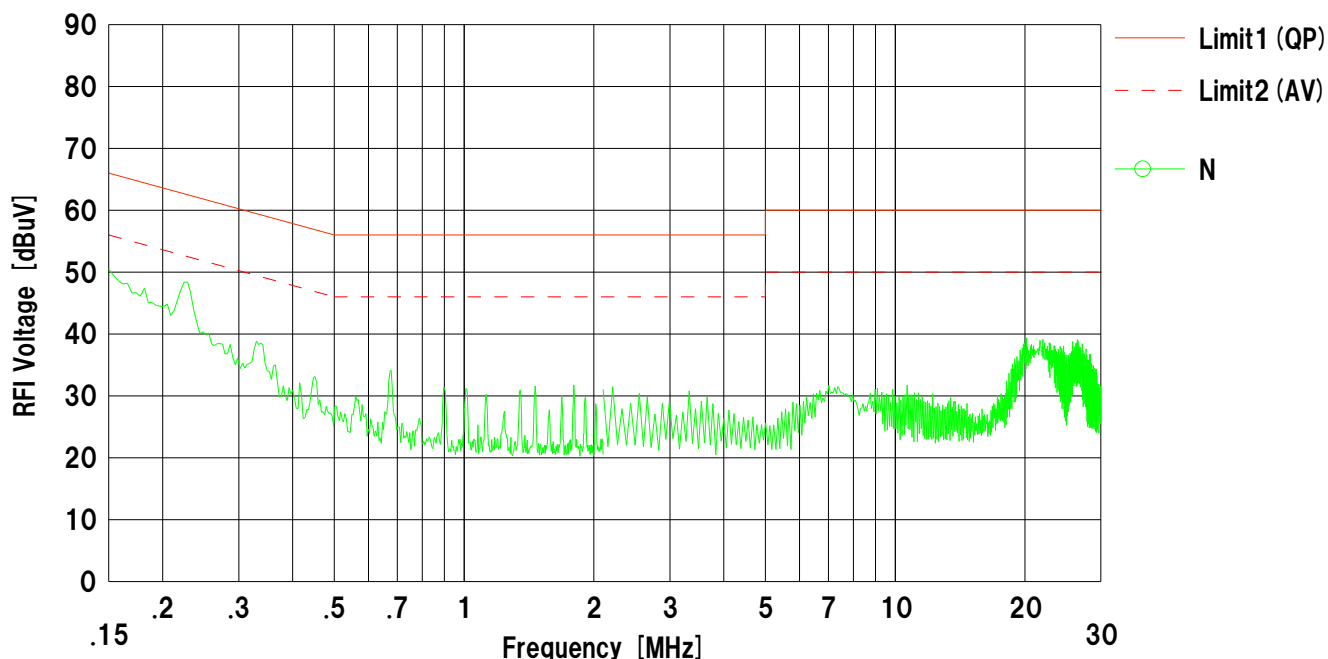
Company : CANON INC.
Kind of EUT : WLAN Module
Model No. : K30345
Serial No. : 3

Mode : 11n-40 Tx 2452MHz
Report No. : 31KE0010-SH-A
Power : AC120V/60Hz
Temp./Humi. : 25deg.C / 53%

Remarks : -

Limit1 : FCC 15C (15.207) QP
Limit2 : FCC 15C (15.207) AV

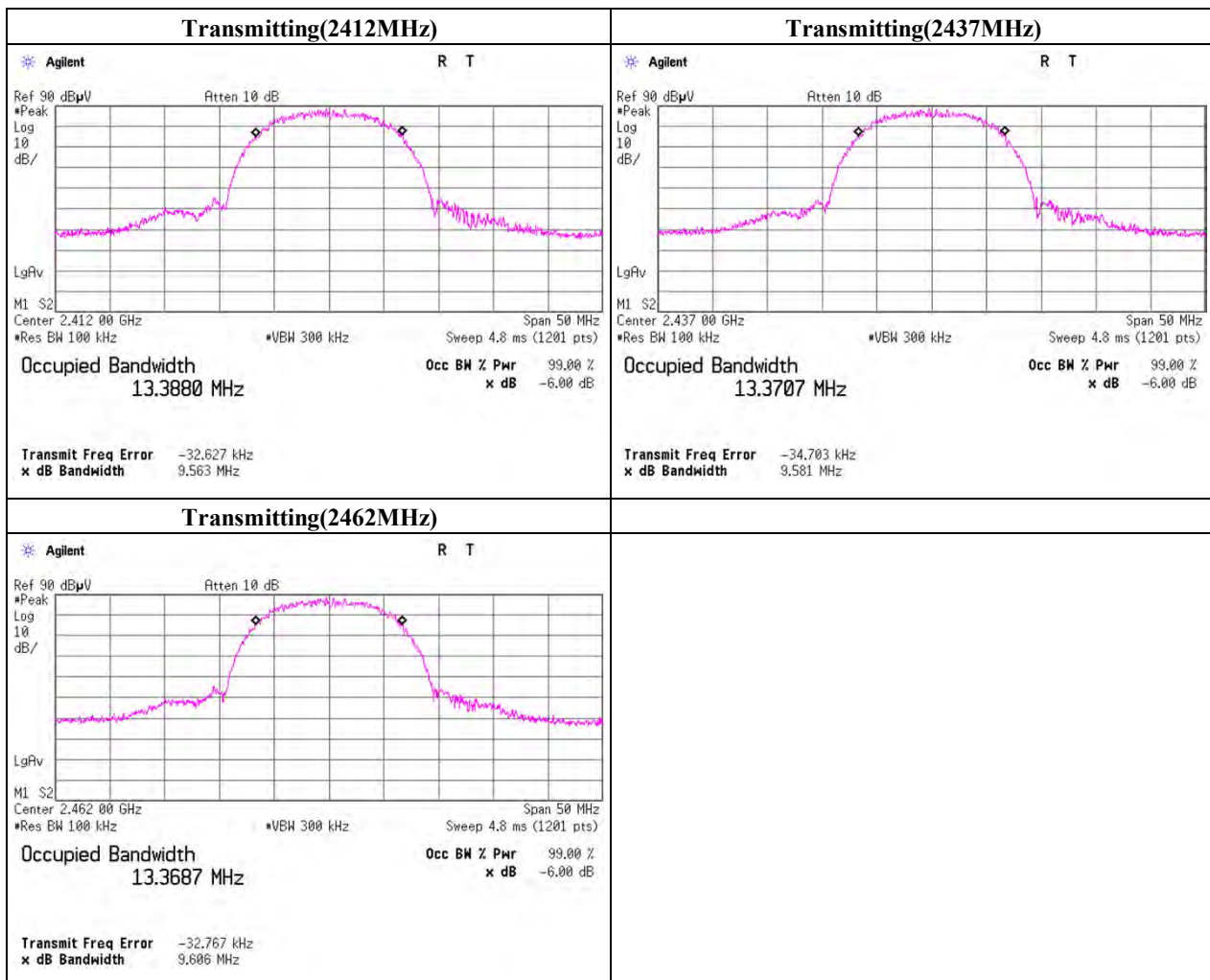
Engineer : Minoru Nakatake



-6dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	July 28, 2011	
Temperature / Humidity	27deg.C. , 55%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11b, PN9, worst data mode 11Mbps	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	9.563	> 0.500
2437.0000	9.581	> 0.500
2462.0000	9.606	> 0.500

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

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

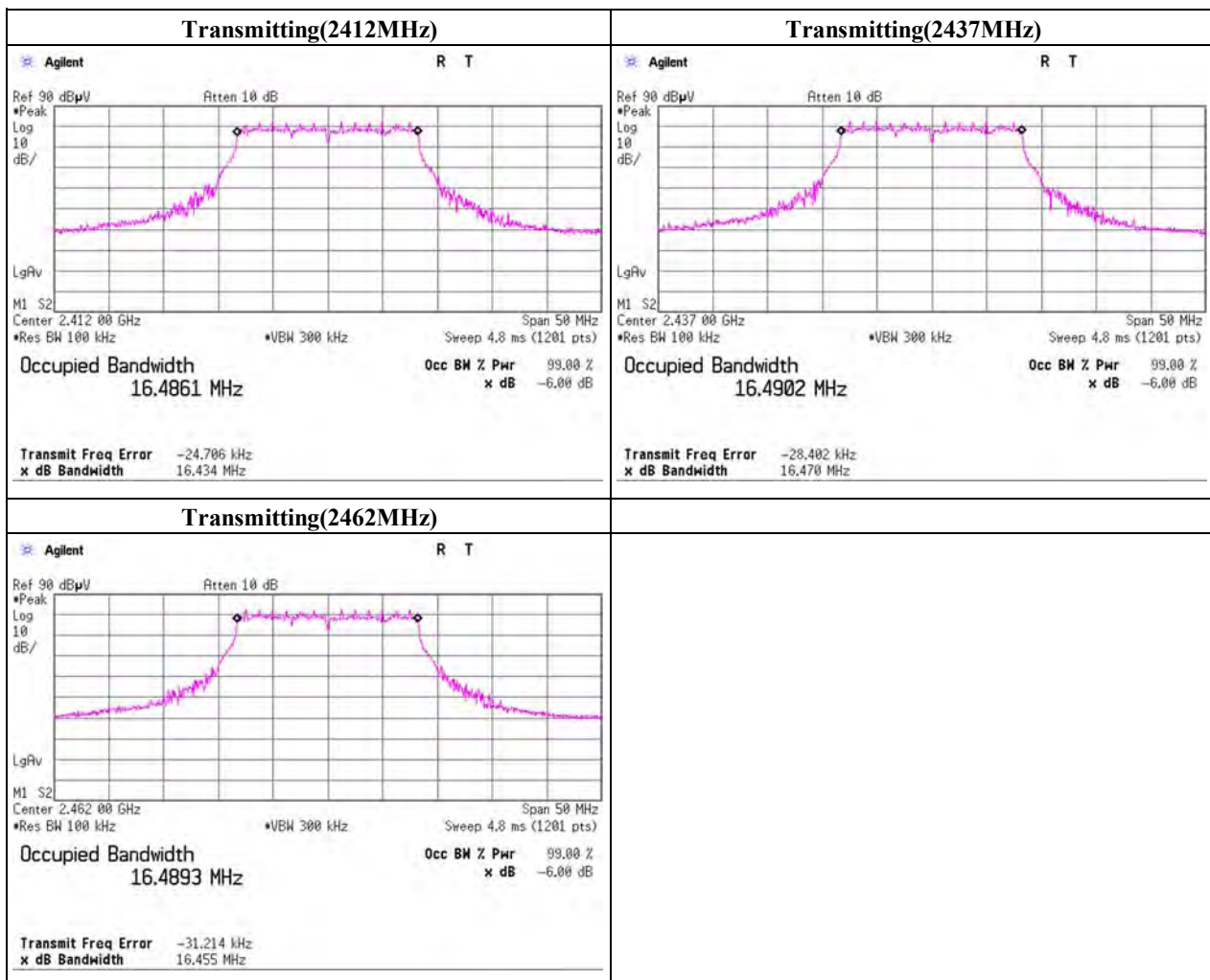
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

-6dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	Jun 7, 2011	
Temperature / Humidity	27deg.C. , 50%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11g, PN9, worst data mode 9Mbps	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	16.434	> 0.500
2437.0000	16.470	> 0.500
2462.0000	16.455	> 0.500

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

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

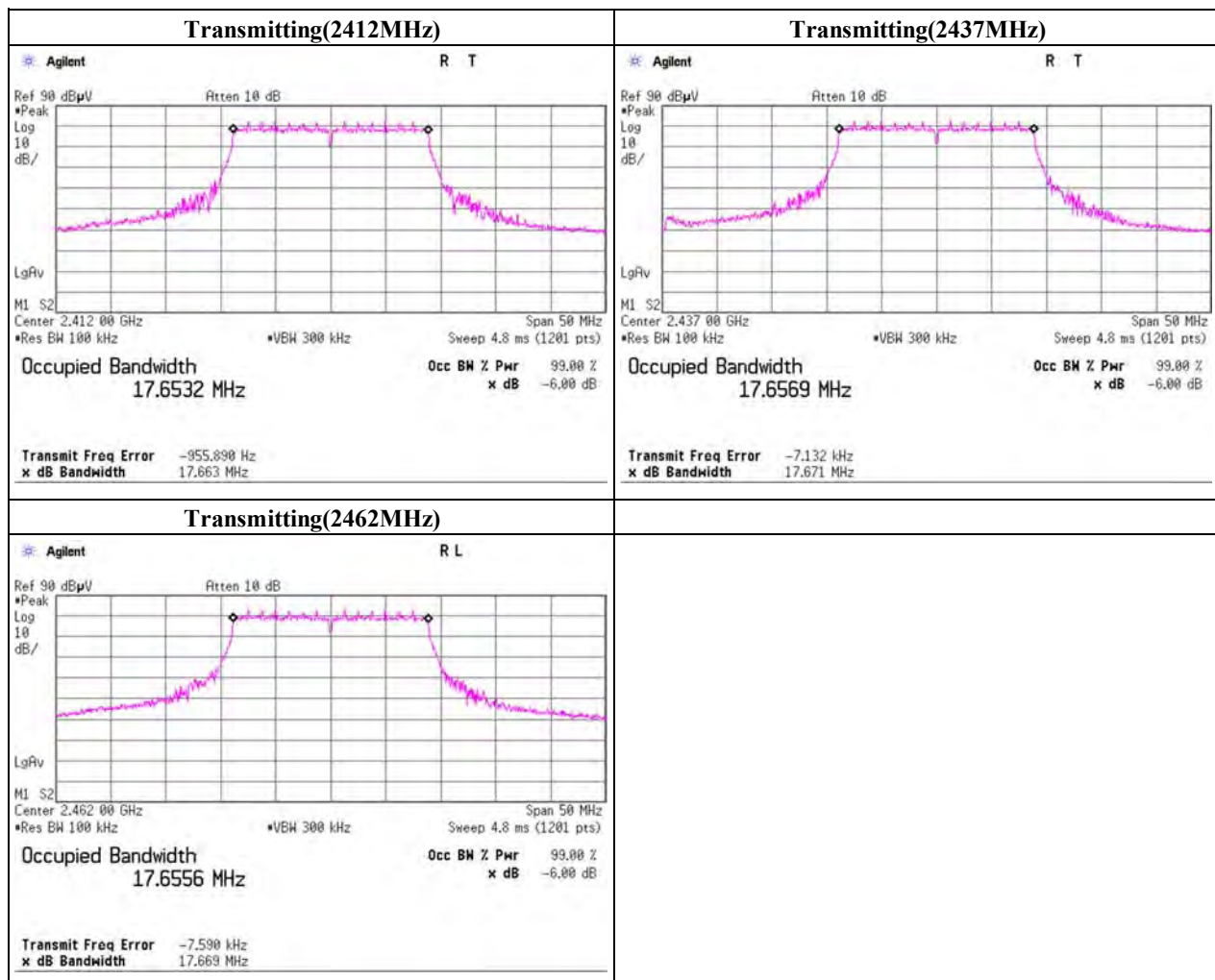
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

-6dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	Jun 7, 2011	
Temperature / Humidity	27deg.C. , 50%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11n(HT20M), PN9, worst data mode 0(MCS)	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	17.663	> 0.500
2437.0000	17.671	> 0.500
2462.0000	17.669	> 0.500

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

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

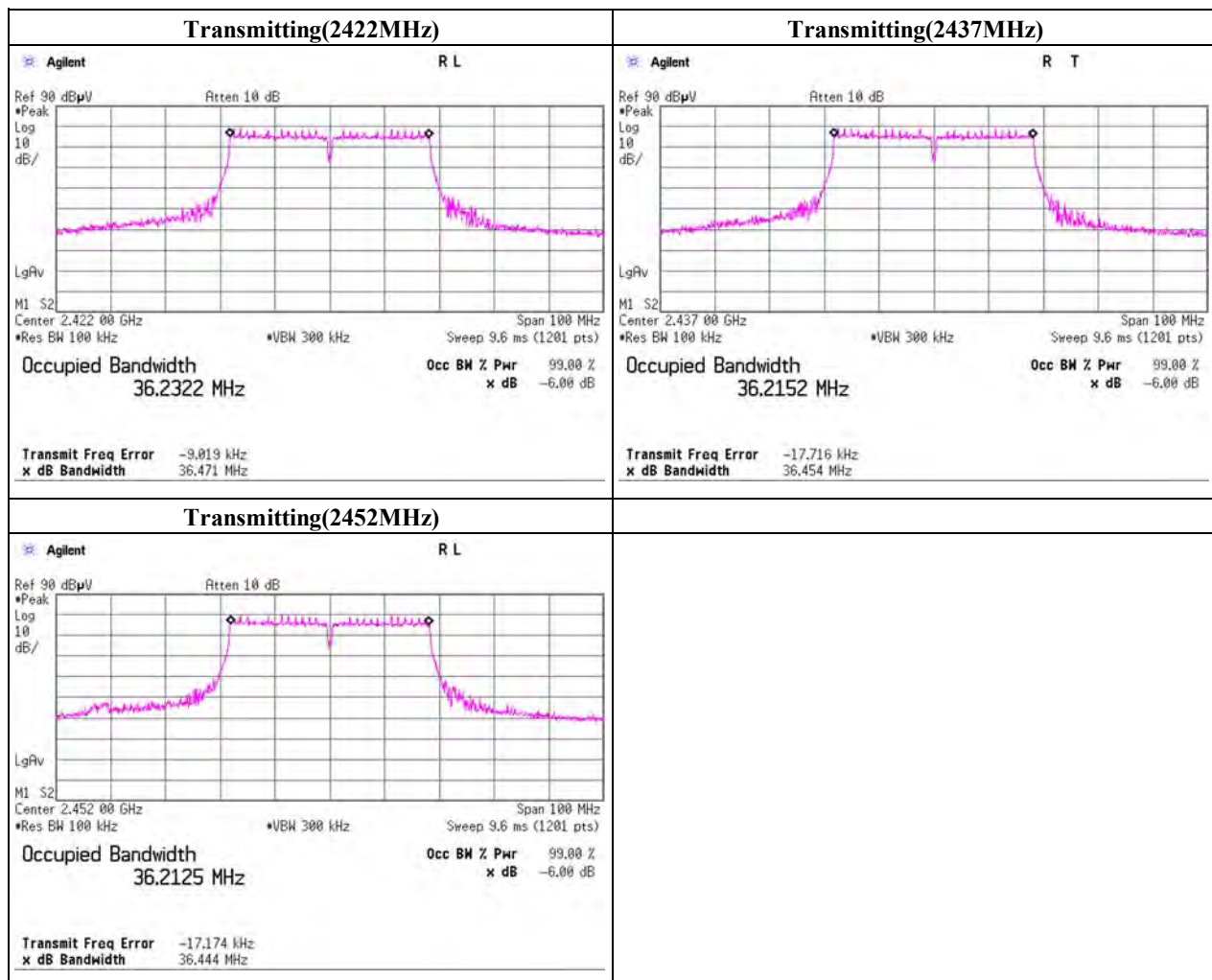
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

-6dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	Jun 7, 2011	
Temperature / Humidity	27deg.C , 50%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11n(HT40M), PN9, worst data mode 0(MCS)	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2422.0000	36.471	> 0.500
2437.0000	36.454	> 0.500
2452.0000	36.444	> 0.500

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

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

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Peak Output Power (Conducted)

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date July 28, 2011
 Temperature / Humidity 27deg.C. , 55%RH
 Engineer Shinichi Takano
 Mode Tx, IEEE802.11b, PN9, worst data mode : 11 Mbps

Ch	Freq. [MHz]	P/M (PK) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin
					[dBm]	[mW]	[dBm]	[mW]	[dB]
Low	2412.0	-6.38	0.82	20.14	14.58	28.70	30.00	1000	15.42
Mid	2437.0	-6.42	0.83	20.14	14.55	28.50	30.00	1000	15.45
High	2462.0	-6.47	0.83	20.14	14.50	28.18	30.00	1000	15.50

Sample Calculation:

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

[Pre check]

	Data rate [Mbps]	Freq. [MHz]	P/M (PK) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin
						[dBm]	[mW]	[dBm]	[mW]	[dB]
A	1	2437.0	-6.46	0.83	20.14	14.51	28.24	30.00	1000	15.49
A	2	2437.0	-6.44	0.83	20.14	14.53	28.37	30.00	1000	15.47
A	5.5	2437.0	-6.48	0.83	20.14	14.49	28.11	30.00	1000	15.51
A	11	2437.0	-6.42	0.83	20.14	14.55	28.50	30.00	1000	15.45

UL Japan, Inc.
Shonan EMC Lab.

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

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Peak Output Power (Conducted)

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date Jun 6, 2011
 Temperature / Humidity 26deg.C. , 47%RH
 Engineer Shinichi Takano
 Mode Tx, IEEE802.11g, PN9, worst data mode : 9 Mbps

Ch	Freq. [MHz]	P/M (PK) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin
					[dBm]	[mW]	[dBm]	[mW]	[dB]
Low	2412.0	-3.34	0.82	20.14	17.62	57.79	30.00	1000	12.38
Mid	2437.0	-3.25	0.83	20.14	17.72	59.14	30.00	1000	12.28
High	2462.0	-3.42	0.83	20.14	17.55	56.88	30.00	1000	12.45

Sample Calculation:

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

[Pre check]

	Data rate [Mbps]	Freq. [MHz]	P/M (PK) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin
						[dBm]	[mW]	[dBm]	[mW]	[dB]
A	6	2437.0	-3.35	0.83	20.14	17.62	57.79	30.00	1000	12.38
A	9	2437.0	-3.25	0.83	20.14	17.72	59.14	30.00	1000	12.28
A	12	2437.0	-3.42	0.83	20.14	17.55	56.87	30.00	1000	12.45
A	18	2437.0	-3.62	0.83	20.14	17.35	54.31	30.00	1000	12.65
A	24	2437.0	-3.29	0.83	20.14	17.68	58.60	30.00	1000	12.32
A	36	2437.0	-3.56	0.83	20.14	17.41	55.06	30.00	1000	12.59
A	48	2437.0	-3.74	0.83	20.14	17.23	52.83	30.00	1000	12.77
A	54	2437.0	-3.60	0.83	20.14	17.37	54.56	30.00	1000	12.63

UL Japan, Inc.
Shonan EMC Lab.

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

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Peak Output Power (Conducted)

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date Jun 6, 2011
 Temperature / Humidity 26deg.C. , 47%RH
 Engineer Shinichi Takano
 Mode Tx, IEEE802.11n(HT20M), PN9, worst data mode : 0 (MCS)

Ch	Freq. [MHz]	P/M (PK) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin
					[dBm]	[mW]	[dBm]	[mW]	[dB]
Low	2412.0	-3.23	0.82	20.14	17.73	59.27	30.00	1000	12.27
Mid	2437.0	-3.40	0.83	20.14	17.57	57.13	30.00	1000	12.43
High	2462.0	-3.44	0.83	20.14	17.53	56.61	30.00	1000	12.47

Sample Calculation:

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

[Pre check]

	Mode (MCS)	Freq. [MHz]	P/M (PK) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin
						[dBm]	[mW]	[dBm]	[mW]	[dB]
A	0	2437.0	-3.40	0.83	20.14	17.57	57.13	30.00	1000	12.43
A	1	2437.0	-3.55	0.83	20.14	17.42	55.19	30.00	1000	12.58
A	2	2437.0	-3.46	0.83	20.14	17.51	56.35	30.00	1000	12.49
A	3	2437.0	-3.64	0.83	20.14	17.33	54.06	30.00	1000	12.67
A	4	2437.0	-3.69	0.83	20.14	17.28	53.44	30.00	1000	12.72
A	5	2437.0	-3.52	0.83	20.14	17.45	55.57	30.00	1000	12.55
A	6	2437.0	-3.42	0.83	20.14	17.55	56.87	30.00	1000	12.45
A	7	2437.0	-3.74	0.83	20.14	17.23	52.83	30.00	1000	12.77

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Peak Output Power (Conducted)

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date Jun 6, 2011
 Temperature / Humidity 26deg.C. , 47%RH
 Engineer Shinichi Takano
 Mode Tx, IEEE802.11n(HT40M), PN9, worst data mode : 0 (MCS)

Ch	Freq. [MHz]	P/M (PK) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin
					[dBm]	[mW]	[dBm]	[mW]	[dB]
Low	2422.0	-3.81	0.83	20.14	17.16	51.98	30.00	1000	12.84
Mid	2437.0	-3.76	0.83	20.14	17.21	52.59	30.00	1000	12.79
High	2452.0	-3.89	0.83	20.14	17.08	51.04	30.00	1000	12.92

Sample Calculation:

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

[Pre check]

	Mode (MCS)	Freq. [MHz]	P/M (PK) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin
						[dBm]	[mW]	[dBm]	[mW]	[dB]
A	0	2437.0	-3.76	0.83	20.14	17.21	52.59	30.00	1000	12.79
A	1	2437.0	-3.85	0.83	20.14	17.12	51.51	30.00	1000	12.88
A	2	2437.0	-3.98	0.83	20.14	16.99	49.99	30.00	1000	13.01
A	3	2437.0	-3.80	0.83	20.14	17.17	52.10	30.00	1000	12.83
A	4	2437.0	-3.83	0.83	20.14	17.14	51.75	30.00	1000	12.86
A	5	2437.0	-3.86	0.83	20.14	17.11	51.39	30.00	1000	12.89
A	6	2437.0	-3.93	0.83	20.14	17.04	50.57	30.00	1000	12.96
A	7	2437.0	-3.97	0.83	20.14	17.00	50.10	30.00	1000	13.00

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Facsimile : +81 463 50 6401

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
 Date July 23, 2011 July 26, 2011
 Temperature / Humidity 25deg.C., 51%RH 26deg.C., 64%RH
 Engineer Akio Hayashi Shinichi Takano
 Mode Tx, 2412 MHz
 Tx, IEEE802.11b, PN9, worst data mode 11Mbps

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	45.4	27.4	23.9	37.8	58.9	73.9	15.0	100	97	
Hori.	4824.000	PK	50.1	30.6	5.9	36.6	50.0	73.9	23.9	100	317	
Hori.	7236.000	PK	46.6	36.3	7.3	38.4	51.8	73.9	22.1	114	100	
Hori.	9648.000	PK	45.3	38.4	8.6	37.1	55.2	73.9	18.7	167	249	
Hori.	12060.000	PK	44.4	39.4	9.9	37.9	55.8	73.9	18.1	100	0	
Hori.	19296.000	PK	60.6	40.0	-3.2	48.3	49.1	73.9	24.8	108	188	
Hori.	2390.000	AV	34.0	27.4	23.9	37.8	47.5	53.9	6.4	100	97	VBW: 510Hz
Hori.	4824.000	AV	43.0	30.6	5.9	36.6	42.9	53.9	11.0	100	317	VBW: 510Hz
Hori.	7236.000	AV	36.6	36.3	7.3	38.4	41.8	53.9	12.1	114	100	VBW: 510Hz
Hori.	9648.000	AV	38.2	38.4	8.6	37.1	48.1	53.9	5.8	167	249	VBW: 510Hz
Hori.	12060.000	AV	33.5	39.4	9.9	37.9	44.9	53.9	9.0	100	0	VBW: 510Hz
Hori.	19296.000	AV	57.7	40.0	-3.2	48.3	46.2	53.9	7.7	108	188	VBW: 10Hz
Vert.	130.876	QP	37.6	13.0	7.5	32.1	26.0	43.5	17.5	100	182	
Vert.	181.925	QP	35.5	15.8	7.8	32.0	27.1	43.5	16.4	100	133	
Vert.	688.495	QP	34.4	19.6	10.1	31.8	32.3	46.0	13.7	100	277	
Vert.	2390.000	PK	46.4	27.4	23.9	37.8	59.9	73.9	14.0	102	137	
Vert.	4824.000	PK	46.2	30.6	5.9	36.6	46.1	73.9	27.8	104	329	
Vert.	7236.000	PK	47.5	36.3	7.3	38.4	52.7	73.9	21.2	160	260	
Vert.	9648.000	PK	48.1	38.4	8.6	37.1	58.0	73.9	15.9	176	243	
Vert.	12060.000	PK	43.5	39.4	9.9	37.9	54.9	73.9	19.0	100	0	
Vert.	19296.000	PK	59.2	40.0	-3.2	48.3	47.7	73.9	26.2	100	14	
Vert.	2390.000	AV	35.1	27.4	23.9	37.8	48.6	53.9	5.3	102	137	VBW: 510Hz
Vert.	4824.000	AV	38.7	30.6	5.9	36.6	38.6	53.9	15.3	104	329	VBW: 510Hz
Vert.	7236.000	AV	36.7	36.3	7.3	38.4	41.9	53.9	12.0	160	260	VBW: 510Hz
Vert.	9648.000	AV	40.6	38.4	8.6	37.1	50.5	53.9	3.4	176	243	VBW: 510Hz
Vert.	12060.000	AV	33.3	39.4	9.9	37.9	44.7	53.9	9.2	100	0	VBW: 510Hz
Vert.	19296.000	AV	55.6	40.0	-3.2	48.3	44.1	53.9	9.8	100	14	VBW: 10Hz

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

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

Distance factor: 13GHz-40GHz $20\log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	86.0	27.4	23.9	37.8	99.5	-	-	Carrier
Hori.	2400.000	PK	41.5	27.4	23.9	37.8	55.0	79.5	24.5	
Vert.	2412.000	PK	91.4	27.4	23.9	37.8	104.9	-	-	Carrier
Vert.	2400.000	PK	44.3	27.4	23.9	37.8	57.8	84.9	27.1	

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

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
 Date July 23, 2011 July 26, 2011
 Temperature / Humidity 25deg.C., 51%RH 26deg.C., 64%RH
 Engineer Akio Hayashi Shinichi Takano
 Mode Tx, 2437 MHz
 Tx, IEEE802.11b, PN9, worst data mode 11Mbps

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.	4874.000	PK	49.7	30.7	5.9	36.6	49.7	73.9	24.2	100	56	
Hori.	7311.000	PK	46.2	36.4	7.4	38.4	51.6	73.9	22.3	171	101	
Hori.	9748.000	PK	44.0	38.5	8.6	37.1	54.0	73.9	19.9	164	248	
Hori.	12185.000	PK	42.4	39.4	9.9	38.0	53.7	73.9	20.2	100	0	
Hori.	19496.000	PK	59.6	40.1	-3.1	48.1	48.5	73.9	25.4	108	185	
Hori.	4874.000	AV	42.2	30.7	5.9	36.6	42.2	53.9	11.7	100	56	VBW: 510Hz
Hori.	7311.000	AV	35.9	36.4	7.4	38.4	41.3	53.9	12.6	171	101	VBW: 510Hz
Hori.	9748.000	AV	35.7	38.5	8.6	37.1	45.7	53.9	8.2	164	248	VBW: 510Hz
Hori.	12185.000	AV	32.9	39.4	9.9	38.0	44.2	53.9	9.7	100	0	VBW: 510Hz
Hori.	19496.000	AV	56.5	40.1	-3.1	48.1	45.4	53.9	8.5	108	185	VBW: 10Hz
Vert.	130.877	QP	38.5	13.0	7.5	32.1	26.9	43.5	16.6	100	180	
Vert.	181.493	QP	36.3	15.8	7.8	32.0	27.9	43.5	15.6	100	113	
Vert.	688.489	QP	33.4	19.6	10.1	31.8	31.3	46.0	14.7	100	276	
Vert.	4874.000	PK	48.4	30.7	5.9	36.6	48.4	73.9	25.5	100	358	
Vert.	7311.000	PK	46.9	36.4	7.4	38.4	52.3	73.9	21.6	167	57	
Vert.	9748.000	PK	45.6	38.5	8.6	37.1	55.6	73.9	18.3	134	260	
Vert.	12185.000	PK	43.7	39.4	9.9	38.0	55.0	73.9	18.9	100	0	
Vert.	19496.000	PK	58.1	40.1	-3.1	48.1	47.0	73.9	26.9	104	210	
Vert.	4874.000	AV	41.1	30.7	5.9	36.6	41.1	53.9	12.8	100	358	VBW: 510Hz
Vert.	7311.000	AV	36.2	36.4	7.4	38.4	41.6	53.9	12.3	167	57	VBW: 510Hz
Vert.	9748.000	AV	38.2	38.5	8.6	37.1	48.2	53.9	5.7	134	260	VBW: 510Hz
Vert.	12185.000	AV	33.0	39.4	9.9	38.0	44.3	53.9	9.6	100	0	VBW: 510Hz
Vert.	19496.000	AV	54.2	40.1	-3.1	48.1	43.1	53.9	10.8	104	210	VBW: 10Hz

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

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

Distance factor: 13GHz-40GHz $20\log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
 Date July 23, 2011 July 26, 2011
 Temperature / Humidity 25deg.C., 51%RH 26deg.C., 64%RH
 Engineer Akio Hayashi Shinichi Takano
 Mode Tx, 2462 MHz
 Tx, IEEE802.11b, PN9, worst data mode 11Mbps

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	44.1	27.4	23.9	37.6	57.8	73.9	16.1	100	158	
Hori.	4924.000	PK	48.5	30.9	5.9	36.5	48.8	73.9	25.1	100	60	
Hori.	7386.000	PK	46.6	36.6	7.3	38.4	52.1	73.9	21.8	169	99	
Hori.	9848.000	PK	44.9	38.6	8.6	37.2	54.9	73.9	19.0	161	263	
Hori.	12310.000	PK	43.5	39.4	9.9	38.0	54.8	73.9	19.1	100	0	
Hori.	19696.000	PK	59.2	40.1	-3.0	48.1	48.2	73.9	25.7	108	184	
Hori.	2483.500	AV	33.6	27.4	23.9	37.6	47.3	53.9	6.6	100	158	VBW: 510Hz
Hori.	4924.000	AV	39.4	30.9	5.9	36.5	39.7	53.9	14.2	100	60	VBW: 510Hz
Hori.	7386.000	AV	36.7	36.6	7.3	38.4	42.2	53.9	11.7	169	99	VBW: 510Hz
Hori.	9848.000	AV	37.0	38.6	8.6	37.2	47.0	53.9	6.9	161	263	VBW: 510Hz
Hori.	12310.000	AV	32.6	39.4	9.9	38.0	43.9	53.9	10.0	100	0	VBW: 510Hz
Hori.	19696.000	AV	55.5	40.1	-3.0	48.1	44.5	53.9	9.4	108	184	VBW: 10Hz
Vert.	130.873	QP	40.3	13.0	7.5	32.1	28.7	43.5	14.8	100	190	
Vert.	181.500	QP	35.7	15.8	7.8	32.0	27.3	43.5	16.2	100	112	
Vert.	688.495	QP	32.6	19.6	10.1	31.8	30.5	46.0	15.5	100	280	
Vert.	2483.500	PK	44.5	27.4	23.9	37.6	58.2	73.9	15.7	100	128	
Vert.	4924.000	PK	47.8	30.9	5.9	36.5	48.1	73.9	25.8	100	1	
Vert.	7386.000	PK	47.8	36.6	7.3	38.4	53.3	73.9	20.6	153	262	
Vert.	9848.000	PK	45.3	38.6	8.6	37.2	55.3	73.9	18.6	160	233	
Vert.	12310.000	PK	42.9	39.4	9.9	38.0	54.2	73.9	19.7	100	0	
Vert.	19696.000	PK	55.6	40.1	-3.0	48.1	44.6	73.9	29.3	109	207	
Vert.	2483.500	AV	34.5	27.4	23.9	37.6	48.2	53.9	5.7	100	128	VBW: 510Hz
Vert.	4924.000	AV	40.3	30.9	5.9	36.5	40.6	53.9	13.3	100	1	VBW: 510Hz
Vert.	7386.000	AV	37.2	36.6	7.3	38.4	42.7	53.9	11.2	153	262	VBW: 510Hz
Vert.	9848.000	AV	37.9	38.6	8.6	37.2	47.9	53.9	6.0	160	233	VBW: 510Hz
Vert.	12310.000	AV	32.6	39.4	9.9	38.0	43.9	53.9	10.0	100	0	VBW: 510Hz
Vert.	19696.000	AV	50.2	40.1	-3.0	48.1	39.2	53.9	14.7	109	207	VBW: 10Hz

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

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

Distance factor: 13GHz-40GHz $20\log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
 Date May 26, 2011 May 31, 2011 June 1, 2011 June 3, 2011
 Temperature / Humidity 23deg.C., 45%RH 26deg.C., 47%RH 24deg.C., 44%RH 24deg.C., 53%RH
 Engineer Shinichi Takano Wataru Kojima Wataru Kojima Yasumasa Owaki
 Mode Tx, 2412 MHz
 Tx, IEEE802.11g, PN9, worst data mode 9Mbps

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	51.8	27.5	24.0	40.6	62.7	73.9	11.2	100	118	
Hori.	4824.000	PK	48.3	31.6	6.0	41.5	44.4	73.9	29.5	100	2	
Hori.	7236.000	PK	48.6	36.5	7.4	40.7	51.8	73.9	22.1	100	13	
Hori.	9648.000	PK	47.9	37.9	8.7	40.5	54.0	73.9	19.9	101	264	
Hori.	12060.000	PK	46.1	39.3	10.2	39.5	56.1	73.9	17.8	100	3	
Hori.	19296.000	PK	60.2	40.0	-3.2	48.3	48.7	73.9	25.3	100	212	
Hori.	2390.000	AV	37.9	27.5	24.0	40.6	48.8	53.9	5.1	100	118	VBW: 510Hz
Hori.	4824.000	AV	38.9	31.6	6.0	41.5	35.0	53.9	18.9	100	2	VBW: 510Hz
Hori.	7236.000	AV	37.8	36.5	7.4	40.7	41.0	53.9	12.9	100	13	VBW: 510Hz
Hori.	9648.000	AV	39.2	37.9	8.7	40.5	45.3	53.9	8.6	101	264	VBW: 510Hz
Hori.	12060.000	AV	35.2	39.3	10.2	39.5	45.2	53.9	8.7	100	3	VBW: 510Hz
Hori.	19296.000	AV	59.0	40.0	-3.2	48.3	47.5	53.9	6.5	100	212	VBW: 10Hz
Vert.	130.877	QP	40.5	13.0	7.5	32.1	28.9	43.5	14.6	100	180	
Vert.	180.190	QP	35.8	15.8	7.8	32.0	27.4	43.5	16.1	100	103	
Vert.	688.500	QP	33.4	19.6	10.1	31.8	31.3	46.0	14.7	100	275	
Vert.	2390.000	PK	52.6	27.5	24.0	40.6	63.5	73.9	10.4	100	86	
Vert.	4824.000	PK	49.0	31.6	6.0	41.5	45.1	73.9	28.8	100	316	
Vert.	7236.000	PK	48.1	36.5	7.4	40.7	51.3	73.9	22.6	100	340	
Vert.	9648.000	PK	47.8	37.9	8.7	40.5	53.9	73.9	20.0	100	331	
Vert.	12060.000	PK	46.2	39.3	10.2	39.5	56.2	73.9	17.7	100	339	
Vert.	19296.000	PK	57.5	40.0	-3.2	48.3	46.0	73.9	28.0	100	326	
Vert.	2390.000	AV	39.1	27.5	24.0	40.6	50.0	53.9	3.9	100	86	VBW: 510Hz
Vert.	4824.000	AV	40.3	31.6	6.0	41.5	36.4	53.9	17.5	100	316	VBW: 510Hz
Vert.	7236.000	AV	37.5	36.5	7.4	40.7	40.7	53.9	13.2	100	340	VBW: 510Hz
Vert.	9648.000	AV	39.2	37.9	8.7	40.5	45.3	53.9	8.6	100	331	VBW: 510Hz
Vert.	12060.000	AV	35.1	39.3	10.2	39.5	45.1	53.9	8.8	100	339	VBW: 510Hz
Vert.	19296.000	AV	55.8	40.0	-3.2	48.3	44.3	53.9	9.7	100	326	VBW: 10Hz

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

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

Distance factor: 13GHz-40GHz $20\log(3.0\text{m}/1.0\text{m})= 9.5\text{dB}$

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	83.0	27.6	24.0	40.6	94.0	-	-	Carrier
Hori.	2400.000	PK	42.0	27.5	24.0	40.6	52.9	74.0	21.1	
Vert.	2412.000	PK	88.5	27.6	24.0	40.6	99.5	-	-	Carrier
Vert.	2400.000	PK	43.0	27.5	24.0	40.6	53.9	79.5	25.6	

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

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		
Date	May 31, 2011	June 1, 2011	June 3, 2011
Temperature / Humidity	26deg.C., 47%RH	24deg.C., 44%RH	24deg.C., 53%RH
Engineer	Wataru Kojima	Wataru Kojima	Yasumasa Owaki
Mode	Tx, 2437 MHz		
	Tx, IEEE802.11g, PN9, worst data mode 9Mbps		

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.	4874.000	PK	48.2	31.7	6.0	41.5	44.4	73.9	29.5	100	11	
Hori.	7311.000	PK	46.7	36.7	7.4	40.7	50.1	73.9	23.8	100	21	
Hori.	9748.000	PK	47.6	38.1	8.7	40.5	53.9	73.9	20.0	102	252	
Hori.	12185.000	PK	45.9	39.2	10.3	39.5	55.9	73.9	18.0	100	11	
Hori.	19496.000	PK	61.3	40.1	-3.1	48.1	50.2	73.9	23.8	100	222	
Hori.	4874.000	AV	38.8	31.7	6.0	41.5	35.0	53.9	18.9	100	11	VBW: 510Hz
Hori.	7311.000	AV	36.9	36.7	7.4	40.7	40.3	53.9	13.6	100	21	VBW: 510Hz
Hori.	9748.000	AV	39.8	38.1	8.7	40.5	46.1	53.9	7.8	102	252	VBW: 510Hz
Hori.	12185.000	AV	35.6	39.2	10.3	39.5	45.6	53.9	8.3	100	11	VBW: 510Hz
Hori.	19496.000	AV	59.8	40.1	-3.1	48.1	48.7	53.9	5.3	100	222	VBW: 10Hz
Vert.	130.877	QP	40.4	13.0	7.5	32.1	28.8	43.5	14.7	100	182	
Vert.	180.114	QP	35.9	15.8	7.8	32.0	27.5	43.5	16.0	100	111	
Vert.	688.496	QP	33.4	19.6	10.1	31.8	31.3	46.0	14.7	100	274	
Vert.	4874.000	PK	49.0	31.7	6.0	41.5	45.2	73.9	28.7	100	328	
Vert.	7311.000	PK	46.4	36.7	7.4	40.7	49.8	73.9	24.1	100	358	
Vert.	9748.000	PK	47.8	38.1	8.7	40.5	54.1	73.9	19.8	133	314	
Vert.	12185.000	PK	45.4	39.2	10.3	39.5	55.4	73.9	18.5	100	340	
Vert.	19496.000	PK	56.5	40.1	-3.1	48.1	45.4	73.9	28.6	100	330	
Vert.	4874.000	AV	39.8	31.7	6.0	41.5	36.0	53.9	17.9	100	328	VBW: 510Hz
Vert.	7311.000	AV	36.7	36.7	7.4	40.7	40.1	53.9	13.8	100	358	VBW: 510Hz
Vert.	9748.000	AV	39.7	38.1	8.7	40.5	46.0	53.9	7.9	133	314	VBW: 510Hz
Vert.	12185.000	AV	35.5	39.2	10.3	39.5	45.5	53.9	8.4	100	340	VBW: 510Hz
Vert.	19496.000	AV	54.9	40.1	-3.1	48.1	43.8	53.9	10.2	100	330	VBW: 10Hz

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

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

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

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
 Date May 26, 2011 May 31, 2011 June 1, 2011 June 3, 2011
 Temperature / Humidity 23deg.C., 45%RH 26deg.C., 47%RH 24deg.C., 44%RH 24deg.C., 53%RH
 Engineer Shinichi Takano Wataru Kojima Wataru Kojima Yasumasa Owaki
 Mode Tx, 2462 MHz
 Tx, IEEE802.11g, PN9, worst data mode 9Mbps

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	48.1	27.6	24.0	40.5	59.2	73.9	14.7	117	98	
Hori.	4924.000	PK	48.6	31.8	6.0	41.5	44.9	73.9	29.0	100	11	
Hori.	7386.000	PK	46.9	36.8	7.3	40.7	50.3	73.9	23.6	100	28	
Hori.	9848.000	PK	48.1	38.3	8.8	40.5	54.7	73.9	19.2	105	264	
Hori.	12310.000	PK	44.7	39.2	10.3	39.5	54.7	73.9	19.2	100	3	
Hori.	19696.000	PK	60.9	40.1	-3.0	48.1	49.9	73.9	24.1	100	211	
Hori.	2483.500	AV	37.2	27.6	24.0	40.5	48.3	53.9	5.6	117	98	VBW: 510Hz
Hori.	4924.000	AV	38.8	31.8	6.0	41.5	35.1	53.9	18.8	100	11	VBW: 510Hz
Hori.	7386.000	AV	36.7	36.8	7.3	40.7	40.1	53.9	13.8	100	28	VBW: 510Hz
Hori.	9848.000	AV	39.9	38.3	8.8	40.5	46.5	53.9	7.4	105	264	VBW: 510Hz
Hori.	12310.000	AV	35.1	39.2	10.3	39.5	45.1	53.9	8.8	100	3	VBW: 510Hz
Hori.	19696.000	AV	59.6	40.1	-3.0	48.1	48.6	53.9	5.4	100	211	VBW: 10Hz
Vert.	130.877	QP	40.3	13.0	7.5	32.1	28.7	43.5	14.8	100	181	
Vert.	180.451	QP	35.8	15.8	7.8	32.0	27.4	43.5	16.1	100	108	
Vert.	688.497	QP	33.3	19.6	10.1	31.8	31.2	46.0	14.8	100	275	
Vert.	2483.500	PK	49.4	27.6	24.0	40.5	60.5	73.9	13.4	100	86	
Vert.	4924.000	PK	48.8	31.8	6.0	41.5	45.1	73.9	28.8	100	131	
Vert.	7386.000	PK	47.0	36.8	7.3	40.7	50.4	73.9	23.5	100	10	
Vert.	9848.000	PK	46.4	38.3	8.8	40.5	53.0	73.9	20.9	101	303	
Vert.	12310.000	PK	45.0	39.2	10.3	39.5	55.0	73.9	18.9	100	348	
Vert.	19696.000	PK	55.8	40.1	-3.0	48.1	44.8	73.9	29.2	100	328	
Vert.	2483.500	AV	37.9	27.6	24.0	40.5	49.0	53.9	4.9	100	86	VBW: 510Hz
Vert.	4924.000	AV	39.7	31.8	6.0	41.5	36.0	53.9	17.9	100	131	VBW: 510Hz
Vert.	7386.000	AV	36.8	36.8	7.3	40.7	40.2	53.9	13.7	100	10	VBW: 510Hz
Vert.	9848.000	AV	38.2	38.3	8.8	40.5	44.8	53.9	9.1	101	303	VBW: 510Hz
Vert.	12310.000	AV	34.8	39.2	10.3	39.5	44.8	53.9	9.1	100	348	VBW: 510Hz
Vert.	19696.000	AV	53.1	40.1	-3.0	48.1	42.1	53.9	11.9	100	328	VBW: 10Hz

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

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

Distance factor: 13GHz-40GHz $20\log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
 Date May 26, 2011 May 31, 2011 June 1, 2011 June 3, 2011
 Temperature / Humidity 23deg.C., 45%RH 26deg.C., 47%RH 24deg.C., 44%RH 24deg.C., 53%RH
 Engineer Shinichi Takano Wataru Kojima Wataru Kojima Yasumasa Owaki
 Mode Tx, 2412 MHz
 Tx, IEEE802.11n(HT20M), PN9, worst data mode MCS0

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	54.2	27.5	24.0	40.6	65.1	73.9	8.8	100	119	
Hori.	4824.000	PK	47.9	31.6	6.0	41.5	44.0	73.9	29.9	100	7	
Hori.	7236.000	PK	47.3	36.5	7.4	40.7	50.5	73.9	23.4	100	21	
Hori.	9648.000	PK	47.7	37.9	8.7	40.5	53.8	73.9	20.1	109	264	
Hori.	12060.000	PK	42.5	39.3	10.2	39.5	52.5	73.9	21.4	100	0	
Hori.	19296.000	PK	60.0	40.0	-3.2	48.3	48.5	73.9	25.5	100	228	
Hori.	2390.000	AV	38.1	27.5	24.0	40.6	49.0	53.9	4.9	100	119	VBW: 200Hz
Hori.	4824.000	AV	38.8	31.6	6.0	41.5	34.9	53.9	19.0	100	7	VBW: 200Hz
Hori.	7236.000	AV	37.3	36.5	7.4	40.7	40.5	53.9	13.4	100	21	VBW: 200Hz
Hori.	9648.000	AV	40.3	37.9	8.7	40.5	46.4	53.9	7.5	109	264	VBW: 200Hz
Hori.	12060.000	AV	34.0	39.3	10.2	39.5	44.0	53.9	9.9	100	0	VBW: 200Hz
Hori.	19296.000	AV	57.8	40.0	-3.2	48.3	46.3	53.9	7.7	100	228	VBW: 10Hz
Vert.	130.875	QP	40.2	13.0	7.5	32.1	28.6	43.5	14.9	100	172	
Vert.	180.190	QP	35.5	15.8	7.8	32.0	27.1	43.5	16.4	100	105	
Vert.	688.497	QP	33.5	19.6	10.1	31.8	31.4	46.0	14.6	100	276	
Vert.	2390.000	PK	54.8	27.5	24.0	40.6	65.7	73.9	8.2	100	88	
Vert.	4824.000	PK	48.5	31.6	6.0	41.5	44.6	73.9	29.3	100	316	
Vert.	7236.000	PK	47.7	36.5	7.4	40.7	50.9	73.9	23.0	100	358	
Vert.	9648.000	PK	47.5	37.9	8.7	40.5	53.6	73.9	20.3	100	331	
Vert.	12060.000	PK	43.0	39.3	10.2	39.5	53.0	73.9	20.9	100	0	
Vert.	19296.000	PK	58.0	40.0	-3.2	48.3	46.5	73.9	27.5	100	331	
Vert.	2390.000	AV	39.3	27.5	24.0	40.6	50.2	53.9	3.7	100	88	VBW: 200Hz
Vert.	4824.000	AV	39.8	31.6	6.0	41.5	35.9	53.9	18.0	100	316	VBW: 200Hz
Vert.	7236.000	AV	37.5	36.5	7.4	40.7	40.7	53.9	13.2	100	358	VBW: 200Hz
Vert.	9648.000	AV	39.2	37.9	8.7	40.5	45.3	53.9	8.6	100	331	VBW: 200Hz
Vert.	12060.000	AV	33.0	39.3	10.2	39.5	43.0	53.9	10.9	100	0	VBW: 200Hz
Vert.	19296.000	AV	55.0	40.0	-3.2	48.3	43.5	53.9	10.5	100	331	VBW: 10Hz

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

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

Distance factor: 13GHz-40GHz $20\log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	82.1	27.6	24.0	40.6	93.1	-	-	Carrier
Hori.	2400.000	PK	38.4	27.5	24.0	40.6	49.3	73.1	23.8	
Vert.	2412.000	PK	89.0	27.6	24.0	40.6	100.0	-	-	Carrier
Vert.	2400.000	PK	42.8	27.5	24.0	40.6	53.7	80.0	26.3	

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber		
Date	May 31, 2011	June 1, 2011	June 3, 2011
Temperature / Humidity	26deg.C., 47%RH	24deg.C., 44%RH	24deg.C., 53%RH
Engineer	Wataru Kojima	Wataru Kojima	Yasumasa Owaki
Mode	Tx, 2437 MHz		
	Tx, IEEE802.11n(HT20M), PN9, worst data mode MCS0		

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.	4874.000	PK	48.7	31.7	6.0	41.5	44.9	73.9	29.0	100	12	
Hori.	7311.000	PK	46.4	36.7	7.4	40.7	49.8	73.9	24.1	100	22	
Hori.	9748.000	PK	47.5	38.1	8.7	40.5	53.8	73.9	20.1	108	268	
Hori.	12185.000	PK	46.0	39.2	10.3	39.5	56.0	73.9	17.9	100	2	
Hori.	19496.000	PK	59.7	40.1	-3.1	48.1	48.6	73.9	25.4	100	221	
Hori.	4874.000	AV	38.8	31.7	6.0	41.5	35.0	53.9	18.9	100	12	VBW: 200Hz
Hori.	7311.000	AV	36.5	36.7	7.4	40.7	39.9	53.9	14.0	100	22	VBW: 200Hz
Hori.	9748.000	AV	39.9	38.1	8.7	40.5	46.2	53.9	7.7	108	268	VBW: 200Hz
Hori.	12185.000	AV	35.7	39.2	10.3	39.5	45.7	53.9	8.2	100	2	VBW: 200Hz
Hori.	19496.000	AV	58.5	40.1	-3.1	48.1	47.4	53.9	6.6	100	221	VBW: 10Hz
Vert.	130.878	QP	40.3	13.0	7.5	32.1	28.7	43.5	14.8	100	172	
Vert.	179.894	QP	35.6	15.7	7.8	32.0	27.1	43.5	16.4	100	109	
Vert.	688.501	QP	33.2	19.6	10.1	31.8	31.1	46.0	14.9	100	274	
Vert.	4874.000	PK	49.3	31.7	6.0	41.5	45.5	73.9	28.4	106	331	
Vert.	7311.000	PK	46.8	36.7	7.4	40.7	50.2	73.9	23.7	100	359	
Vert.	9748.000	PK	47.6	38.1	8.7	40.5	53.9	73.9	20.0	132	224	
Vert.	12185.000	PK	45.8	39.2	10.3	39.5	55.8	73.9	18.1	100	359	
Vert.	19496.000	PK	56.8	40.1	-3.1	48.1	45.7	73.9	28.3	100	330	
Vert.	4874.000	AV	39.7	31.7	6.0	41.5	35.9	53.9	18.0	106	331	VBW: 200Hz
Vert.	7311.000	AV	36.4	36.7	7.4	40.7	39.8	53.9	14.1	100	359	VBW: 200Hz
Vert.	9748.000	AV	39.4	38.1	8.7	40.5	45.7	53.9	8.2	132	224	VBW: 200Hz
Vert.	12185.000	AV	35.4	39.2	10.3	39.5	45.4	53.9	8.5	100	359	VBW: 200Hz
Vert.	19496.000	AV	55.1	40.1	-3.1	48.1	44.0	53.9	10.0	100	330	VBW: 10Hz

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

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

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

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
Date May 26, 2011 May 31, 2011 June 1, 2011 June 3, 2011
Temperature / Humidity 23deg.C., 45%RH 26deg.C., 47%RH 24deg.C., 44%RH 24deg.C., 53%RH
Engineer Shinichi Takano Wataru Kojima Wataru Kojima Yasumasa Owaki
Mode Tx, 2462 MHz
Tx, IEEE802.11n(HT20M), PN9, worst data mode MCS0

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	49.4	27.6	24.0	40.5	60.5	73.9	13.4	113	96	
Hori.	4924.000	PK	48.5	31.8	6.0	41.5	44.8	73.9	29.1	100	353	
Hori.	7386.000	PK	46.4	36.8	7.3	40.7	49.8	73.9	24.1	100	24	
Hori.	9848.000	PK	47.6	38.3	8.8	40.5	54.2	73.9	19.7	106	264	
Hori.	12310.000	PK	47.9	39.2	10.3	39.5	57.9	73.9	16.0	100	1	
Hori.	19696.000	PK	60.2	40.1	-3.0	48.1	49.2	73.9	24.8	100	222	
Hori.	2483.500	AV	36.7	27.6	24.0	40.5	47.8	53.9	6.1	113	96	VBW: 200Hz
Hori.	4924.000	AV	38.5	31.8	6.0	41.5	34.8	53.9	19.1	100	353	VBW: 200Hz
Hori.	7386.000	AV	36.5	36.8	7.3	40.7	39.9	53.9	14.0	100	24	VBW: 200Hz
Hori.	9848.000	AV	39.7	38.3	8.8	40.5	46.3	53.9	7.6	106	264	VBW: 200Hz
Hori.	12310.000	AV	35.8	39.2	10.3	39.5	45.8	53.9	8.1	100	1	VBW: 200Hz
Hori.	19696.000	AV	58.7	40.1	-3.0	48.1	47.7	53.9	6.3	100	222	VBW: 10Hz
Vert.	130.879	QP	40.5	13.0	7.5	32.1	28.9	43.5	14.6	100	175	
Vert.	179.930	QP	35.8	15.7	7.8	32.0	27.3	43.5	16.2	100	105	
Vert.	688.499	QP	33.3	19.6	10.1	31.8	31.2	46.0	14.8	100	272	
Vert.	2483.500	PK	51.4	27.6	24.0	40.5	62.5	73.9	11.4	100	90	
Vert.	4924.000	PK	48.7	31.8	6.0	41.5	45.0	73.9	28.9	100	131	
Vert.	7386.000	PK	46.8	36.8	7.3	40.7	50.2	73.9	23.7	100	331	
Vert.	9848.000	PK	47.2	38.3	8.8	40.5	53.8	73.9	20.1	117	219	
Vert.	12310.000	PK	47.4	39.2	10.3	39.5	57.4	73.9	16.5	100	3	
Vert.	19696.000	PK	55.6	40.1	-3.0	48.1	44.6	73.9	29.4	100	331	
Vert.	2483.500	AV	38.0	27.6	24.0	40.5	49.1	53.9	4.8	100	90	VBW: 200Hz
Vert.	4924.000	AV	39.5	31.8	6.0	41.5	35.8	53.9	18.1	100	131	VBW: 200Hz
Vert.	7386.000	AV	36.6	36.8	7.3	40.7	40.0	53.9	13.9	100	331	VBW: 200Hz
Vert.	9848.000	AV	39.5	38.3	8.8	40.5	46.1	53.9	7.8	117	219	VBW: 200Hz
Vert.	12310.000	AV	35.7	39.2	10.3	39.5	45.7	53.9	8.2	100	3	VBW: 200Hz
Vert.	19696.000	AV	53.1	40.1	-3.0	48.1	42.1	53.9	11.9	100	331	VBW: 10Hz

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

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

Distance factor: 13GHz-40GHz $20\log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
Date May 26, 2011 June 1, 2011 June 1, 2011 June 3, 2011
Temperature / Humidity 23deg.C., 45%RH 25deg.C., 39%RH 24deg.C., 44%RH 24deg.C., 53%RH
Engineer Shinichi Takano Shinichi Takano Wataru Kojima Yasumasa Owaki
Mode Tx, 2422 MHz
Tx, IEEE802.11n(HT40M), PN9, worst data mode MCS0

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	54.8	27.5	24.0	40.6	65.7	73.9	8.2	100	117	
Hori.	4844.000	PK	48.3	31.6	6.0	41.5	44.4	73.9	29.5	100	322	
Hori.	7266.000	PK	47.9	36.6	7.4	40.7	51.2	73.9	22.7	100	0	
Hori.	9688.000	PK	48.8	38.0	8.7	40.5	55.0	73.9	18.9	100	264	
Hori.	12110.000	PK	45.5	39.3	10.2	39.5	55.5	73.9	18.4	100	0	
Hori.	19376.000	PK	60.8	40.1	-3.1	48.2	49.6	73.9	24.4	100	211	
Hori.	2390.000	AV	40.0	27.5	24.0	40.6	50.9	53.9	3.0	100	117	VBW: 200Hz
Hori.	4844.000	AV	38.2	31.6	6.0	41.5	34.3	53.9	19.6	100	322	VBW: 200Hz
Hori.	7266.000	AV	37.3	36.6	7.4	40.7	40.6	53.9	13.3	100	0	VBW: 200Hz
Hori.	9688.000	AV	40.1	38.0	8.7	40.5	46.3	53.9	7.6	100	264	VBW: 200Hz
Hori.	12110.000	AV	35.5	39.3	10.2	39.5	45.5	53.9	8.4	100	0	VBW: 200Hz
Hori.	19376.000	AV	59.3	40.1	-3.1	48.2	48.1	53.9	5.9	100	211	VBW: 10Hz
Vert.	130.882	QP	40.6	13.0	7.5	32.1	29.0	43.5	14.5	100	172	
Vert.	180.946	QP	36.0	15.8	7.8	32.0	27.6	43.5	15.9	100	109	
Vert.	688.500	QP	33.4	19.6	10.1	31.8	31.3	46.0	14.7	100	274	
Vert.	2390.000	PK	59.1	27.5	24.0	40.6	70.0	73.9	3.9	100	88	
Vert.	4844.000	PK	47.9	31.6	6.0	41.5	44.0	73.9	29.9	100	318	
Vert.	7266.000	PK	47.3	36.6	7.4	40.7	50.6	73.9	23.3	100	0	
Vert.	9688.000	PK	47.9	38.0	8.7	40.5	54.1	73.9	19.8	134	314	
Vert.	12110.000	PK	46.4	39.3	10.2	39.5	56.4	73.9	17.5	100	0	
Vert.	19376.000	PK	57.0	40.1	-3.1	48.2	45.8	73.9	28.2	100	329	
Vert.	2390.000	AV	41.0	27.5	24.0	40.6	51.9	53.9	2.0	100	88	VBW: 200Hz
Vert.	4844.000	AV	39.1	31.6	6.0	41.5	35.2	53.9	18.7	100	318	VBW: 200Hz
Vert.	7266.000	AV	36.7	36.6	7.4	40.7	40.0	53.9	13.9	100	0	VBW: 200Hz
Vert.	9688.000	AV	39.4	38.0	8.7	40.5	45.6	53.9	8.3	134	314	VBW: 200Hz
Vert.	12110.000	AV	35.9	39.3	10.2	39.5	45.9	53.9	8.0	100	0	VBW: 200Hz
Vert.	19376.000	AV	54.9	40.1	-3.1	48.2	43.7	53.9	10.3	100	329	VBW: 10Hz

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

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

Distance factor: 13GHz-40GHz $20\log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2422.000	PK	79.3	27.6	24.0	40.6	90.3	-	-	Carrier
Hori.	2400.000	PK	44.4	27.5	24.0	40.6	55.3	70.3	15.0	
Vert.	2422.000	PK	84.2	27.6	24.0	40.6	95.2	-	-	Carrier
Vert.	2400.000	PK	38.8	27.5	24.0	40.6	49.7	75.2	25.5	

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

UL Japan, Inc.

Shonan EMC Lab.

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber		
Date	June 1, 2011	June 1, 2011	June 3, 2011
Temperature / Humidity	25deg.C., 39%RH	24deg.C., 44%RH	24deg.C., 53%RH
Engineer	Shinichi Takano	Wataru Kojima	Yasumasa Owaki
Mode	Tx, 2437 MHz		
	Tx, IEEE802.11n(HT40M), PN9, worst data mode MCS0		

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.	4874.000	PK	48.2	31.7	6.0	41.5	44.4	73.9	29.5	100	318	
Hori.	7311.000	PK	47.0	36.7	7.4	40.7	50.4	73.9	23.5	100	0	
Hori.	9748.000	PK	47.8	38.1	8.7	40.5	54.1	73.9	19.8	116	266	
Hori.	12185.000	PK	45.8	39.2	10.3	39.5	55.8	73.9	18.1	100	0	
Hori.	19496.000	PK	60.8	40.1	-3.1	48.1	49.7	73.9	24.3	100	211	
Hori.	4874.000	AV	38.8	31.7	6.0	41.5	35.0	53.9	18.9	100	318	VBW: 200Hz
Hori.	7311.000	AV	36.6	36.7	7.4	40.7	40.0	53.9	13.9	100	0	VBW: 200Hz
Hori.	9748.000	AV	40.1	38.1	8.7	40.5	46.4	53.9	7.5	116	266	VBW: 200Hz
Hori.	12185.000	AV	35.5	39.2	10.3	39.5	45.5	53.9	8.4	100	0	VBW: 200Hz
Hori.	19496.000	AV	59.3	40.1	-3.1	48.1	48.2	53.9	5.8	100	211	VBW: 10Hz
Vert.	130.876	QP	40.6	13.0	7.5	32.1	29.0	43.5	14.5	100	175	
Vert.	180.074	QP	36.0	15.8	7.8	32.0	27.6	43.5	15.9	100	106	
Vert.	688.498	QP	34.0	19.6	10.1	31.8	31.9	46.0	14.1	100	273	
Vert.	4874.000	PK	47.9	31.7	6.0	41.5	44.1	73.9	29.8	100	329	
Vert.	7311.000	PK	46.9	36.7	7.4	40.7	50.3	73.9	23.6	100	0	
Vert.	9748.000	PK	48.0	38.1	8.7	40.5	54.3	73.9	19.6	132	314	
Vert.	12185.000	PK	45.6	39.2	10.3	39.5	55.6	73.9	18.3	100	0	
Vert.	19496.000	PK	56.5	40.1	-3.1	48.1	45.4	73.9	28.6	100	330	
Vert.	4874.000	AV	39.2	31.7	6.0	41.5	35.4	53.9	18.5	100	329	VBW: 200Hz
Vert.	7311.000	AV	36.6	36.7	7.4	40.7	40.0	53.9	13.9	100	0	VBW: 200Hz
Vert.	9748.000	AV	40.0	38.1	8.7	40.5	46.3	53.9	7.6	132	314	VBW: 200Hz
Vert.	12185.000	AV	35.5	39.2	10.3	39.5	45.5	53.9	8.4	100	0	VBW: 200Hz
Vert.	19496.000	AV	54.5	40.1	-3.1	48.1	43.4	53.9	10.6	100	330	VBW: 10Hz

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

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

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

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
Date May 26, 2011 June 1, 2011 June 1, 2011 June 3, 2011
Temperature / Humidity 23deg.C., 45%RH 25deg.C., 39%RH 24deg.C., 44%RH 24deg.C., 53%RH
Engineer Shinichi Takano Shinichi Takano Wataru Kojima Yasumasa Owaki
Mode Tx, 2452 MHz
Tx, IEEE802.11n(HT40M), PN9, worst data mode MCS0

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	51.7	27.6	24.0	40.5	62.8	73.9	11.1	115	100	
Hori.	4904.000	PK	47.9	31.8	6.0	41.5	44.2	73.9	29.7	100	322	
Hori.	7356.000	PK	47.2	36.8	7.3	40.7	50.6	73.9	23.3	100	0	
Hori.	9808.000	PK	47.8	38.2	8.8	40.5	54.3	73.9	19.6	106	264	
Hori.	12260.000	PK	44.6	39.2	10.3	39.5	54.6	73.9	19.3	100	0	
Hori.	19616.000	PK	60.5	40.1	-3.0	48.1	49.5	73.9	24.5	100	222	
Hori.	2483.500	AV	39.3	27.6	24.0	40.5	50.4	53.9	3.5	115	100	VBW: 200Hz
Hori.	4904.000	AV	38.7	31.8	6.0	41.5	35.0	53.9	18.9	100	322	VBW: 200Hz
Hori.	7356.000	AV	36.9	36.8	7.3	40.7	40.3	53.9	13.6	100	0	VBW: 200Hz
Hori.	9808.000	AV	39.8	38.2	8.8	40.5	46.3	53.9	7.6	106	264	VBW: 200Hz
Hori.	12260.000	AV	34.7	39.2	10.3	39.5	44.7	53.9	9.2	100	0	VBW: 200Hz
Hori.	19616.000	AV	59.3	40.1	-3.0	48.1	48.3	53.9	5.7	100	222	VBW: 10Hz
Vert.	130.880	QP	40.7	13.0	7.5	32.1	29.1	43.5	14.4	100	179	
Vert.	179.750	QP	36.5	15.7	7.8	32.0	28.0	43.5	15.5	100	102	
Vert.	688.497	QP	33.1	19.6	10.1	31.8	31.0	46.0	15.0	100	279	
Vert.	2483.500	PK	55.2	27.6	24.0	40.5	66.3	73.9	7.6	100	87	
Vert.	4904.000	PK	48.4	31.8	6.0	41.5	44.7	73.9	29.2	100	333	
Vert.	7356.000	PK	47.1	36.8	7.3	40.7	50.5	73.9	23.4	100	0	
Vert.	9808.000	PK	48.1	38.2	8.8	40.5	54.6	73.9	19.3	124	221	
Vert.	12260.000	PK	44.4	39.2	10.3	39.5	54.4	73.9	19.5	100	0	
Vert.	19616.000	PK	55.4	40.1	-3.0	48.1	44.4	73.9	29.6	100	325	
Vert.	2483.500	AV	39.6	27.6	24.0	40.5	50.7	53.9	3.2	100	87	VBW: 200Hz
Vert.	4904.000	AV	39.3	31.8	6.0	41.5	35.6	53.9	18.3	100	333	VBW: 200Hz
Vert.	7356.000	AV	36.7	36.8	7.3	40.7	40.1	53.9	13.8	100	0	VBW: 200Hz
Vert.	9808.000	AV	40.8	38.2	8.8	40.5	47.3	53.9	6.6	124	221	VBW: 200Hz
Vert.	12260.000	AV	34.7	39.2	10.3	39.5	44.7	53.9	9.2	100	0	VBW: 200Hz
Vert.	19616.000	AV	52.9	40.1	-3.0	48.1	41.9	53.9	12.1	100	325	VBW: 10Hz

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

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

Distance factor: 13GHz-40GHz $20\log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

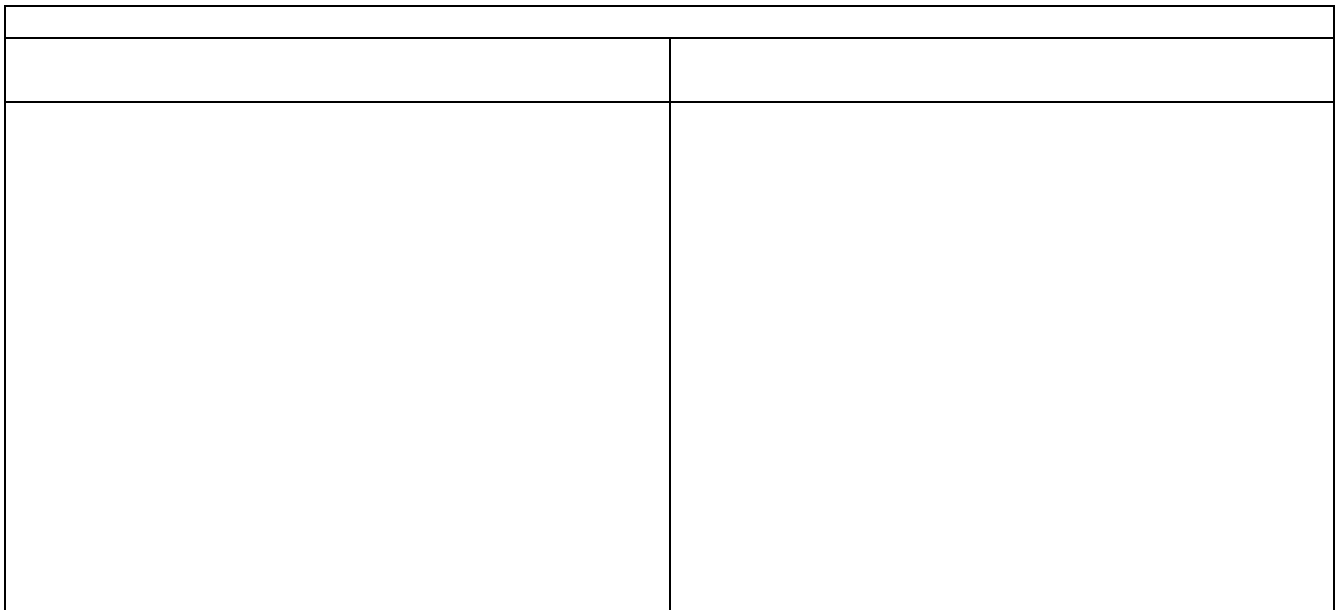
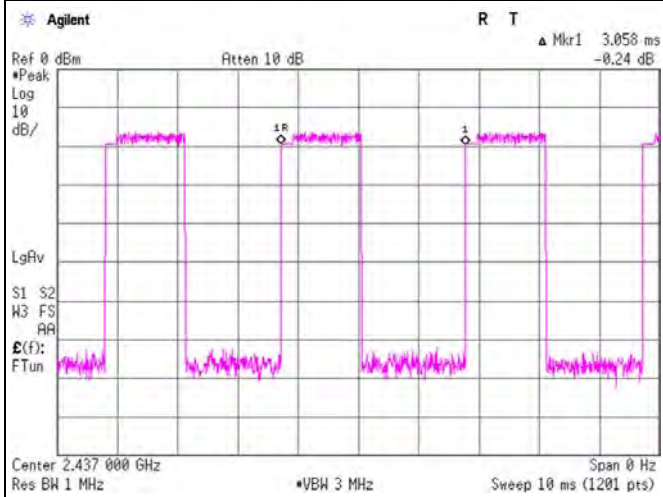
Spurious emission (Radiated)

Tx, IEEE802.11b, worst data mode 11Mbps

VBW (AV) Calculation

VBW: 1/x = 327Hz<510Hz

x: (Tx on+Tx off)=3.058ms



UL Japan, Inc.

Shonan EMC Lab.

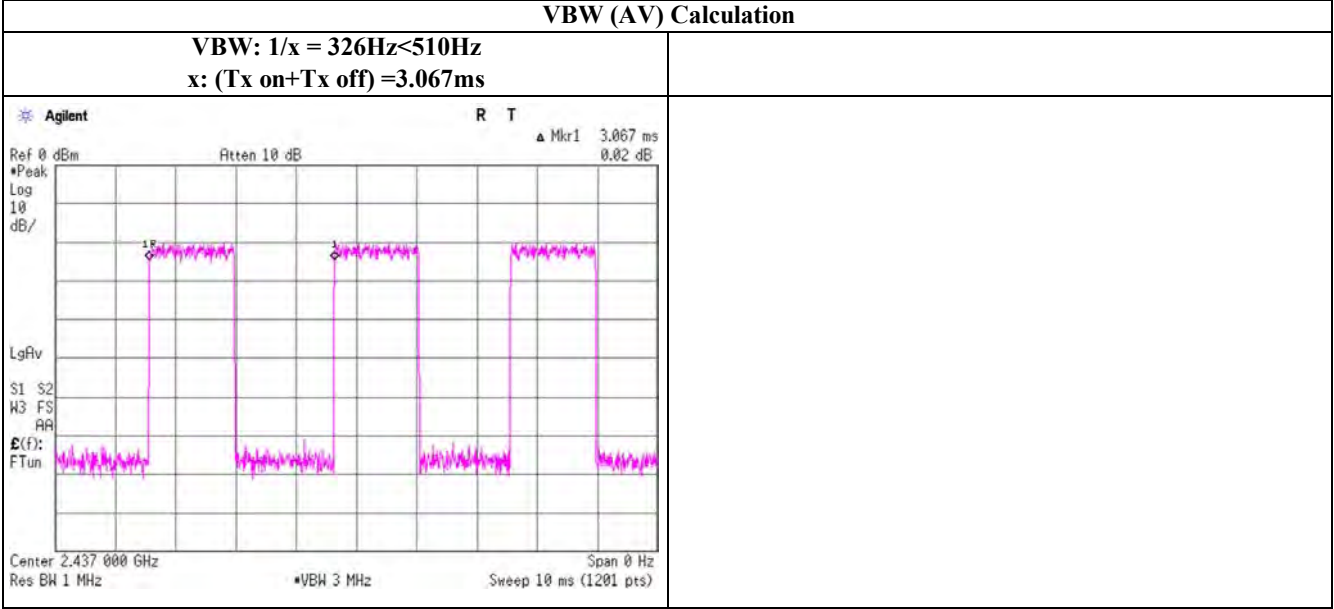
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

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Spurious emission (Radiated)

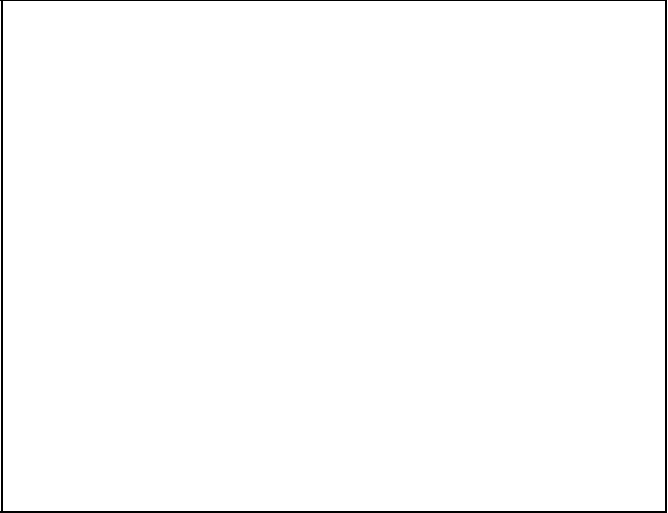
Tx, IEEE802.11g, worst data mode 9Mbps



x: (T_{x on}+T_{x off}) =5.076ms

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x: (T_{x on}+T_{x off}) =5.063ms

[illegible]

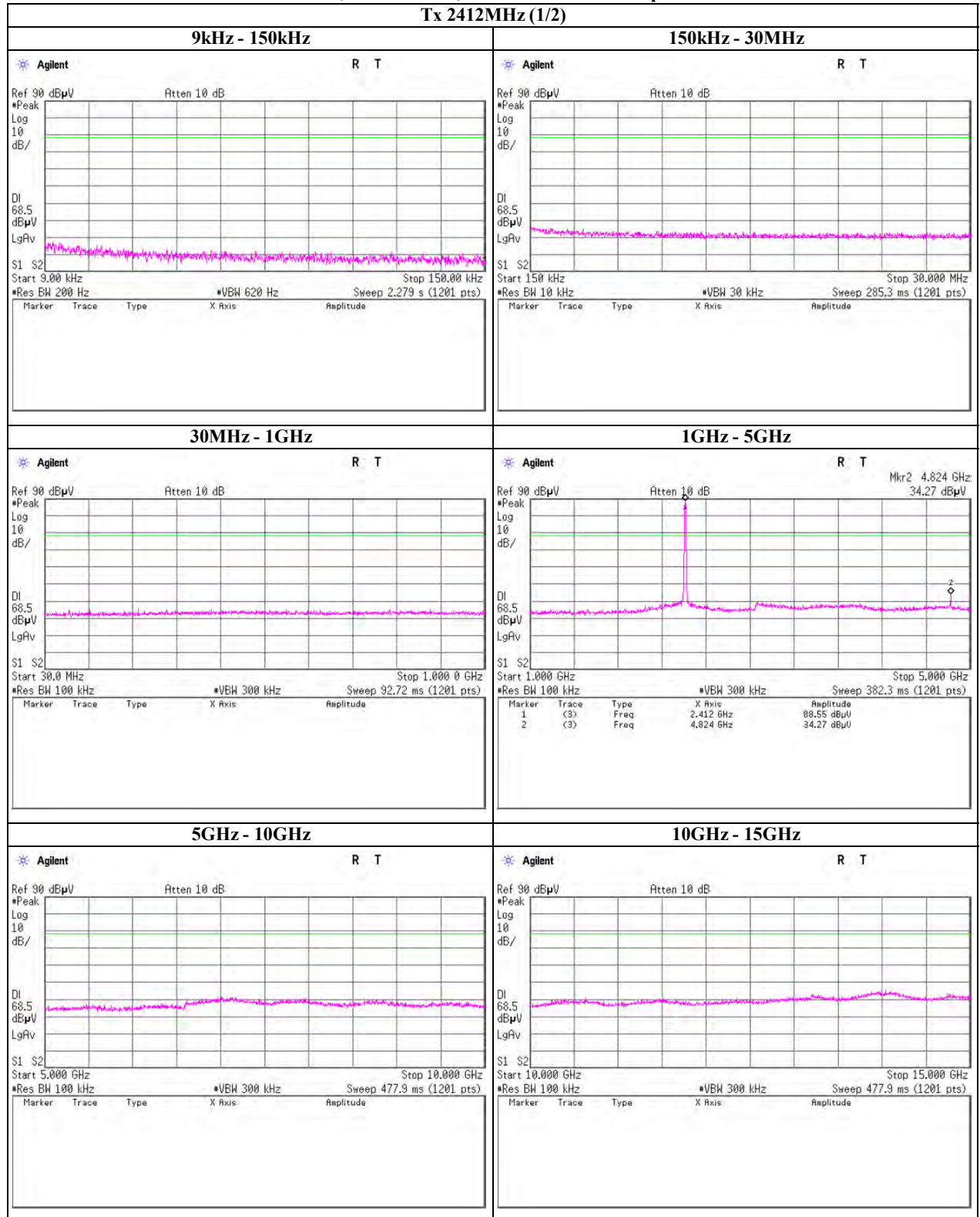
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Spurious emission (Conducted)

Tx, IEEE802.11b, worst data mode 11Mbps

Tx 2412MHz (1/2)

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

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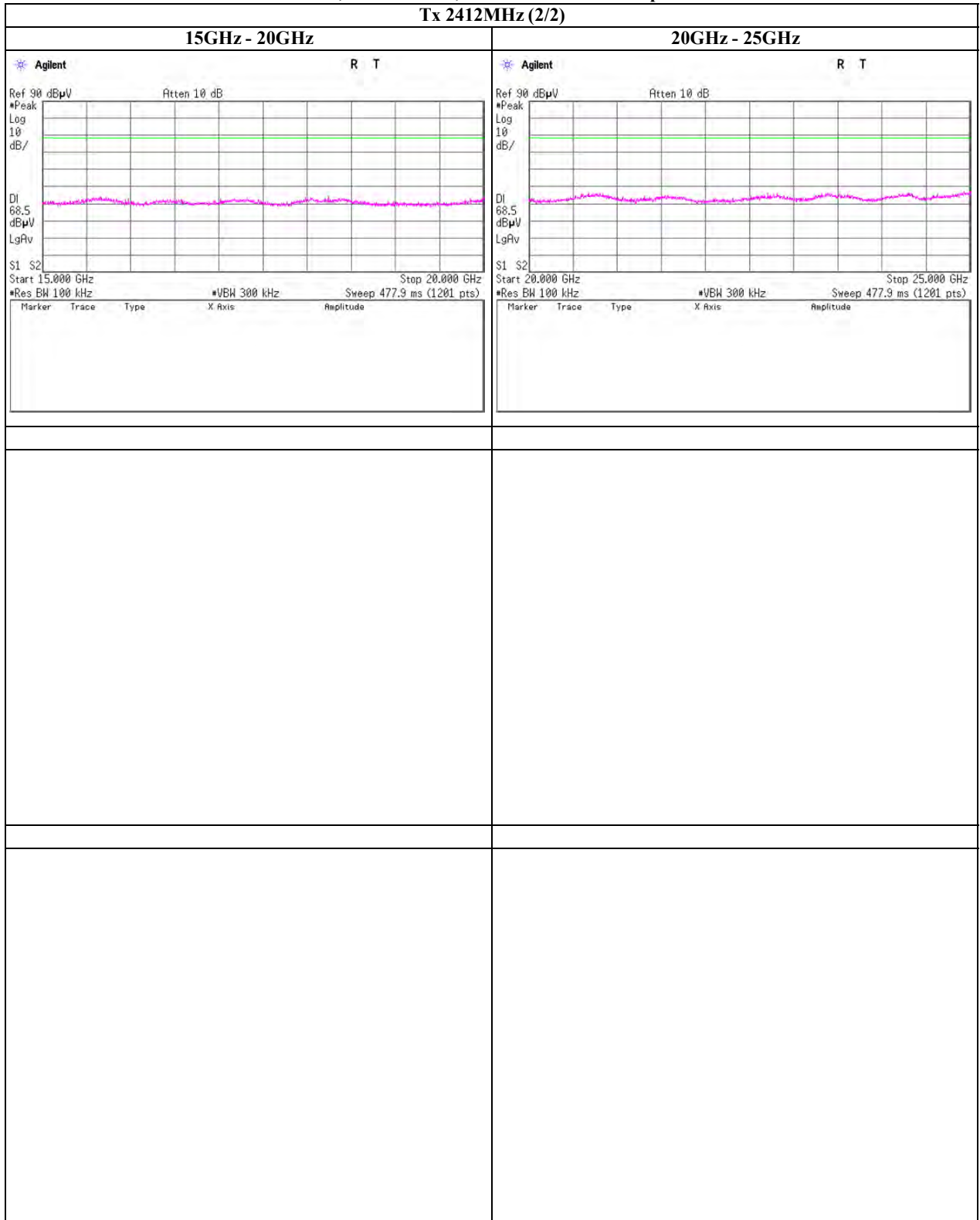
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, IEEE802.11b, worst data mode 11Mbps

Tx 2412MHz (2/2)

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

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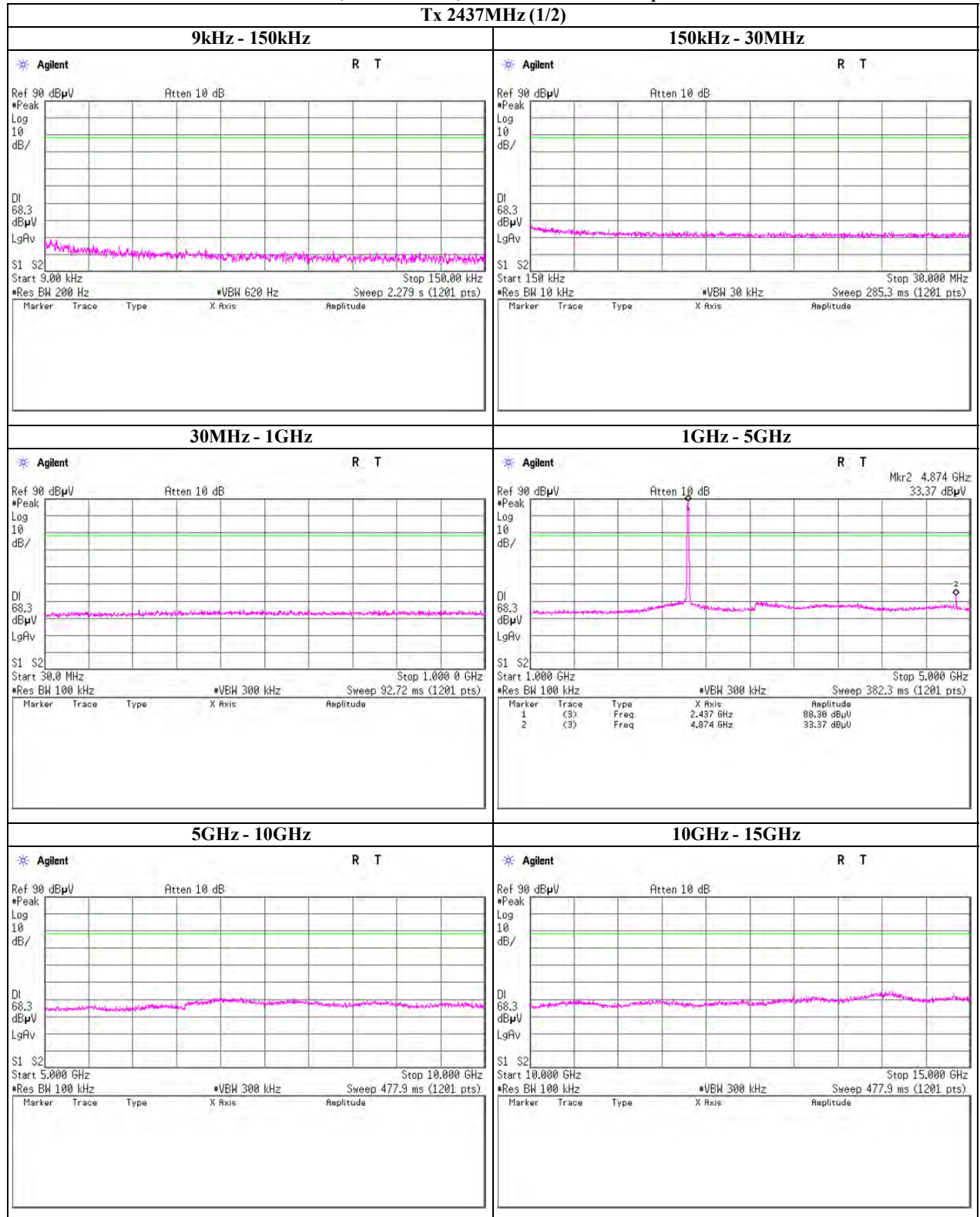
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, IEEE802.11b, worst data mode 11Mbps

Tx 2437MHz (1/2)

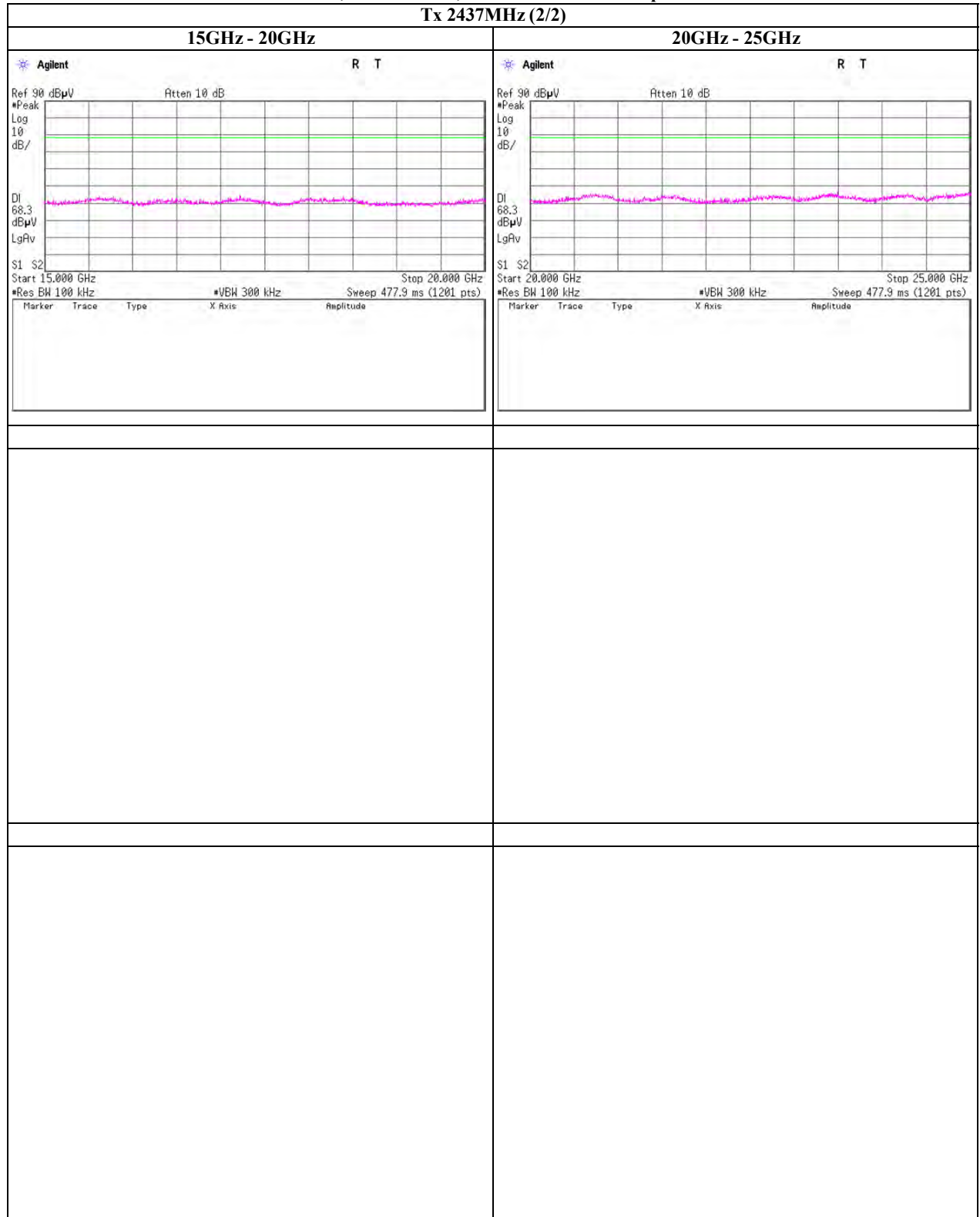
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Facsimile : +81 463 50 6401

Tx 2437MHz (2/2)

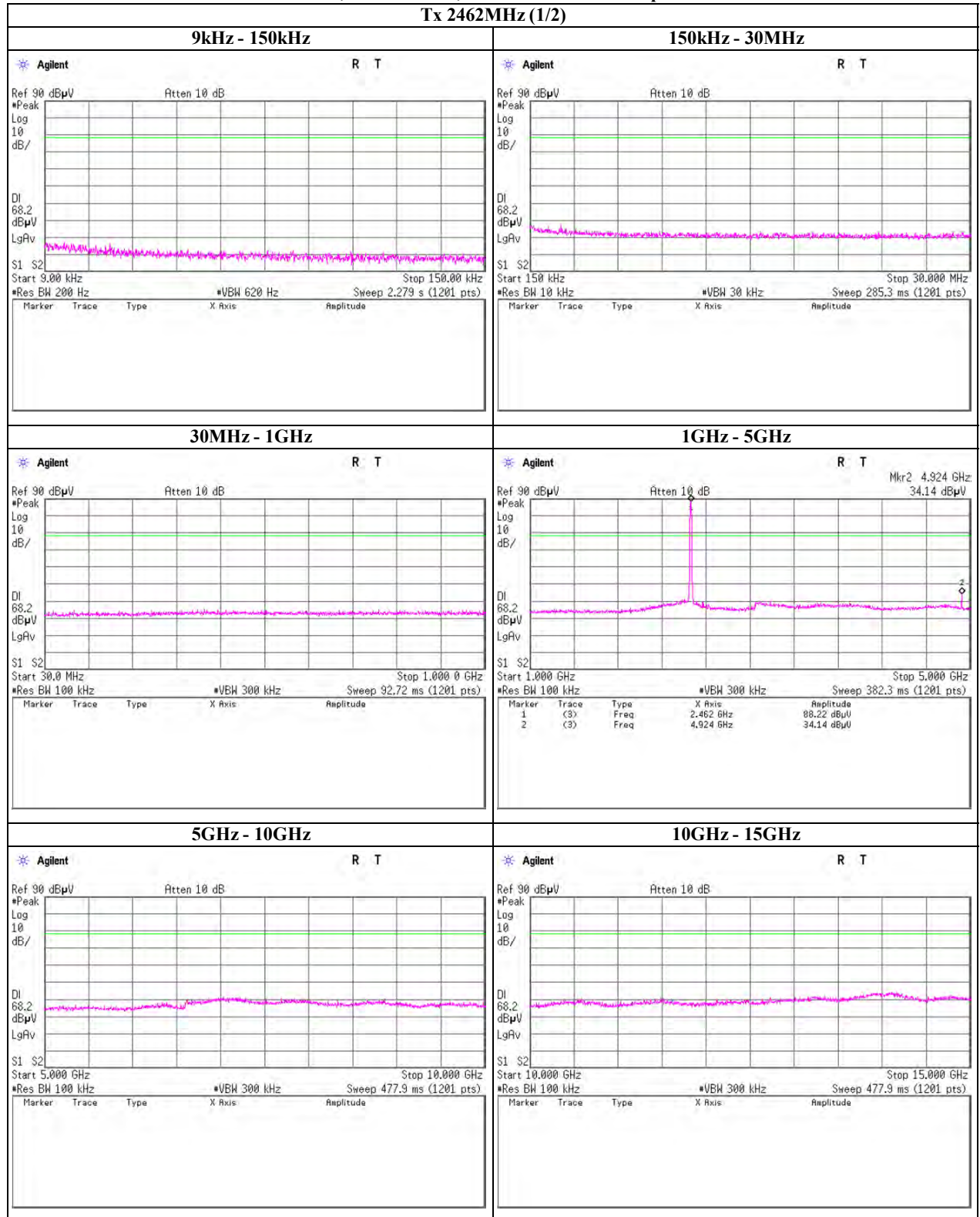


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Spurious emission (Conducted)

Tx, IEEE802.11b, worst data mode 11Mbps

Tx 2462MHz (1/2)



UL Japan, Inc.

Shonan EMC Lab.

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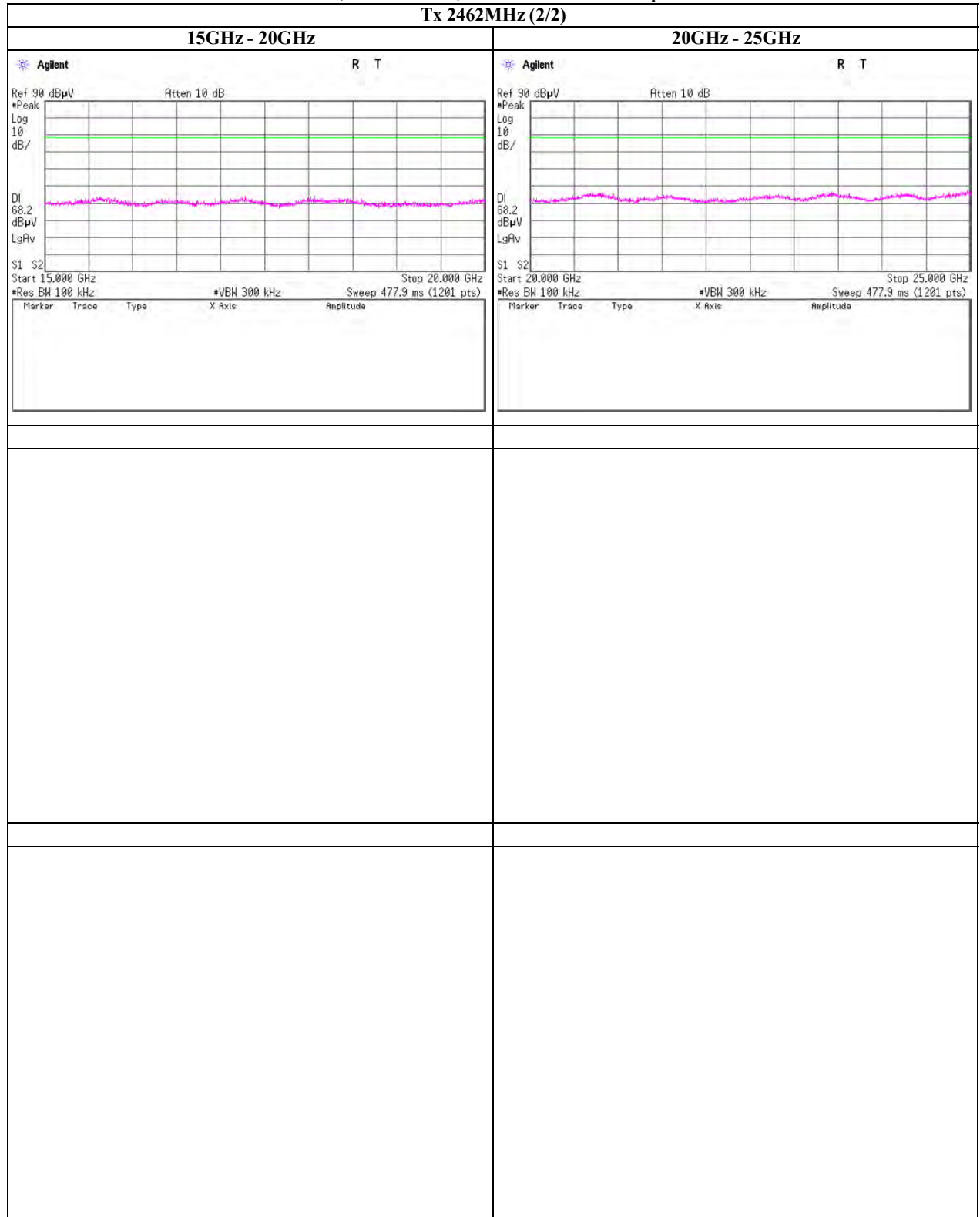
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, IEEE802.11b, worst data mode 11Mbps

Tx 2462MHz (2/2)

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

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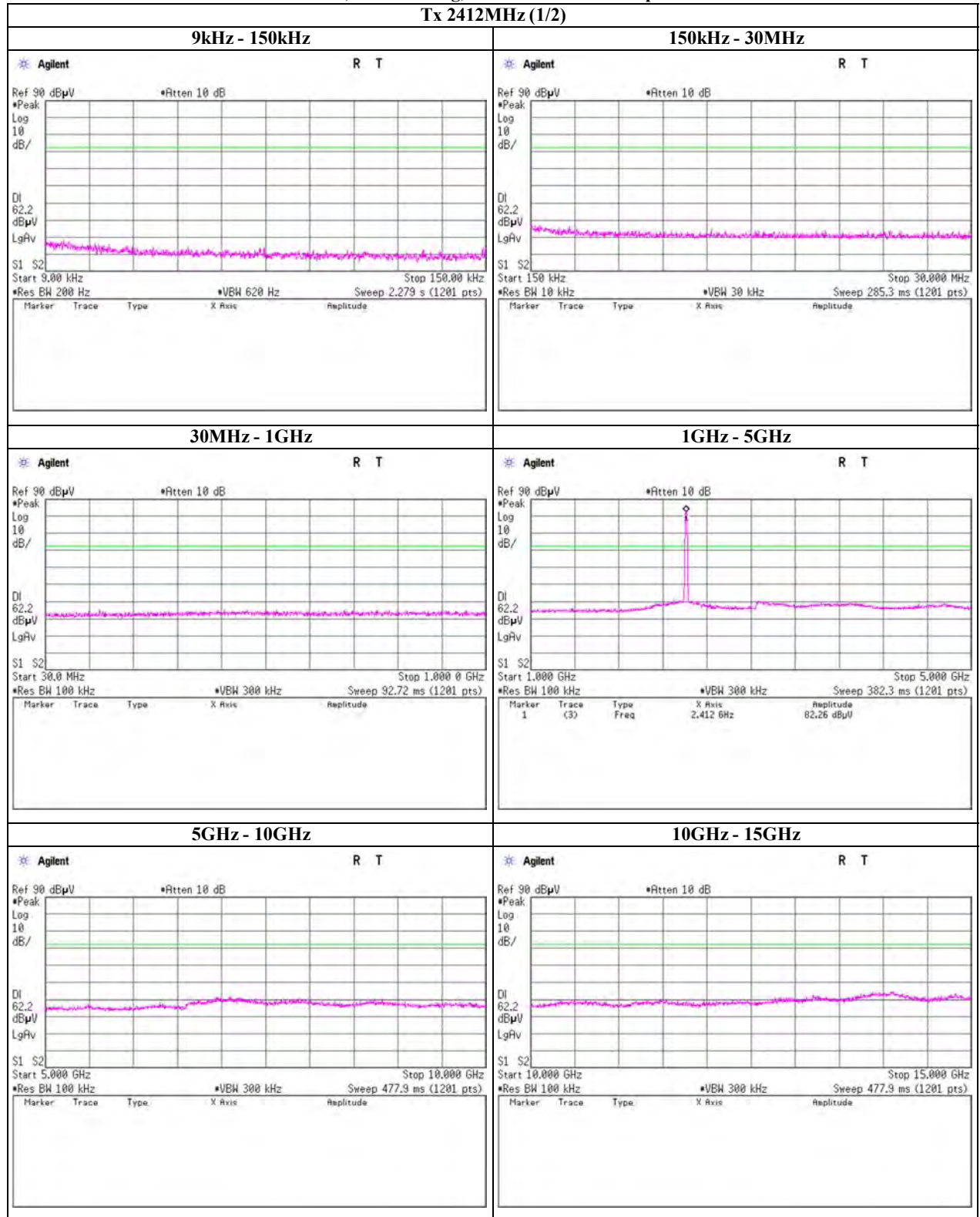
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, IEEE802.11g, worst data mode 9Mbps

Tx 2412MHz (1/2)

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

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

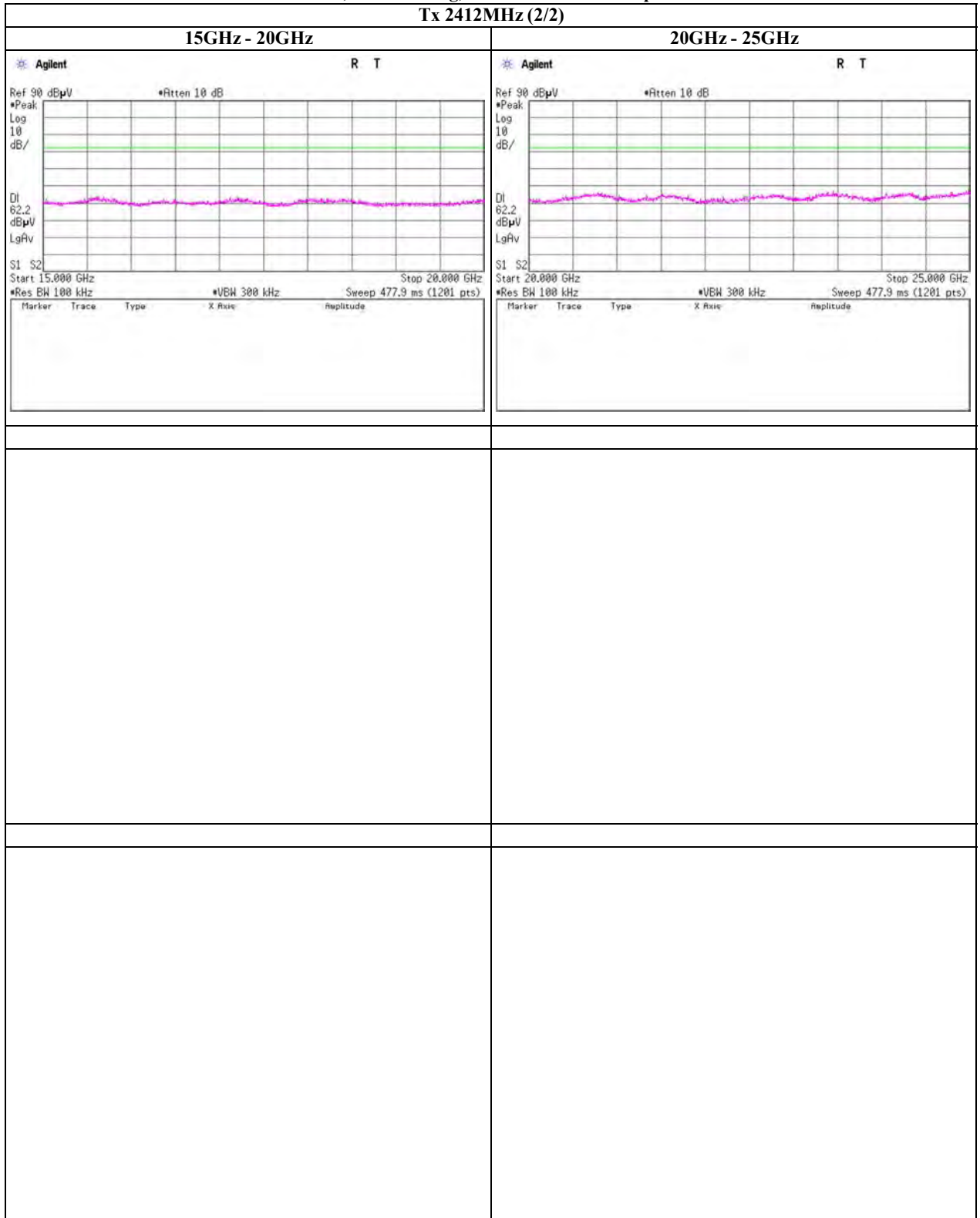
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, IEEE802.11g, worst data mode 9Mbps

Tx 2412MHz (2/2)

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

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

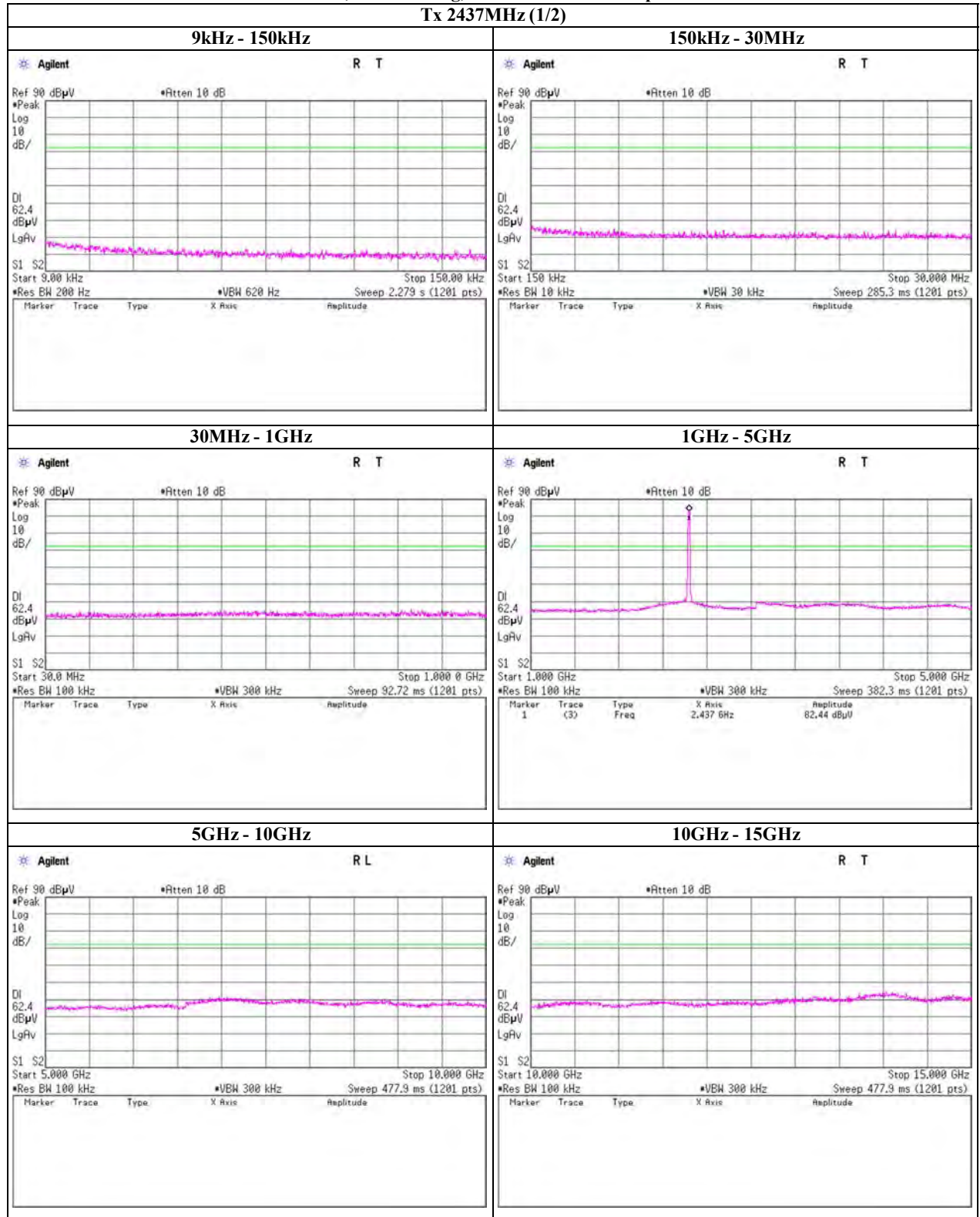
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, IEEE802.11g, worst data mode 9Mbps

Tx 2437MHz (1/2)

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

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Tx, IEEE802.11g, worst data mode 9Mbps

T 2427MH (2/2)

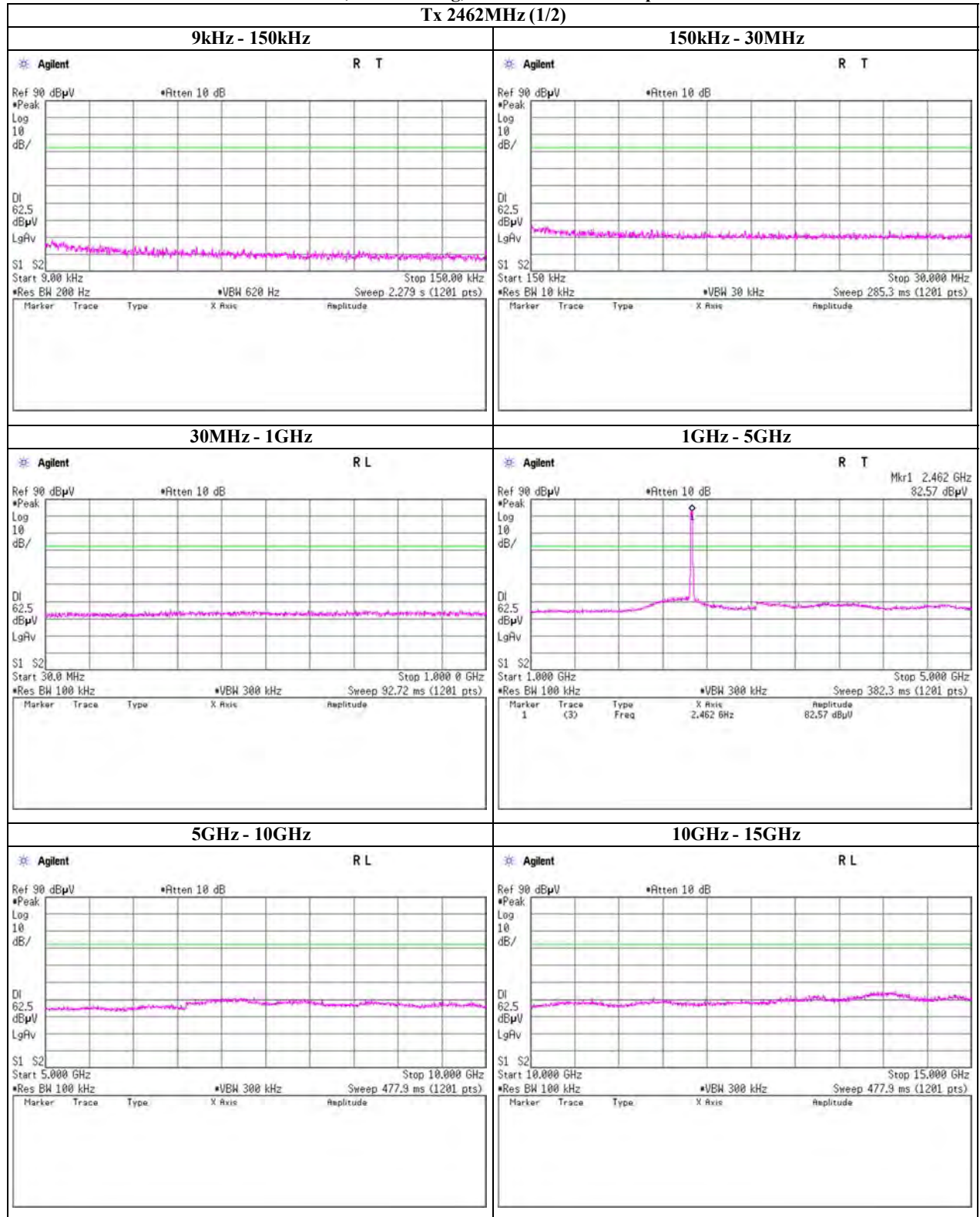


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Spurious emission (Conducted)

Tx, IEEE802.11g, worst data mode 9Mbps

Tx 2462MHz (1/2)

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

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

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Tx, IEEE802.11g, worst data mode 9Mbps

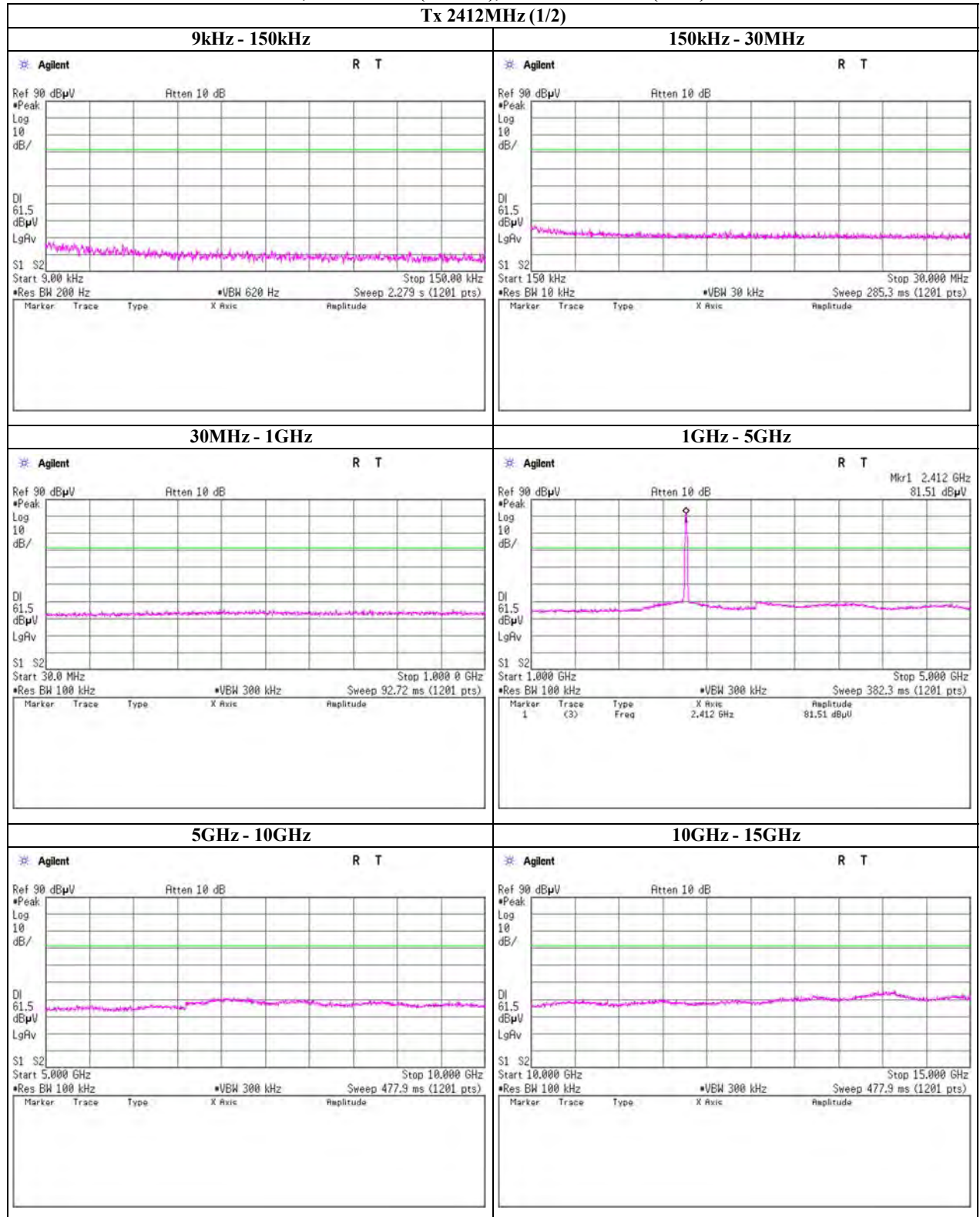
T 2462MH (2/2)



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Spurious emission (Conducted)
Tx, IEEE802.11n(HT20M), worst data mode 0(MCS)

Tx 2412MHz (1/2)



UL Japan, Inc.

Shonan EMC Lab.

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

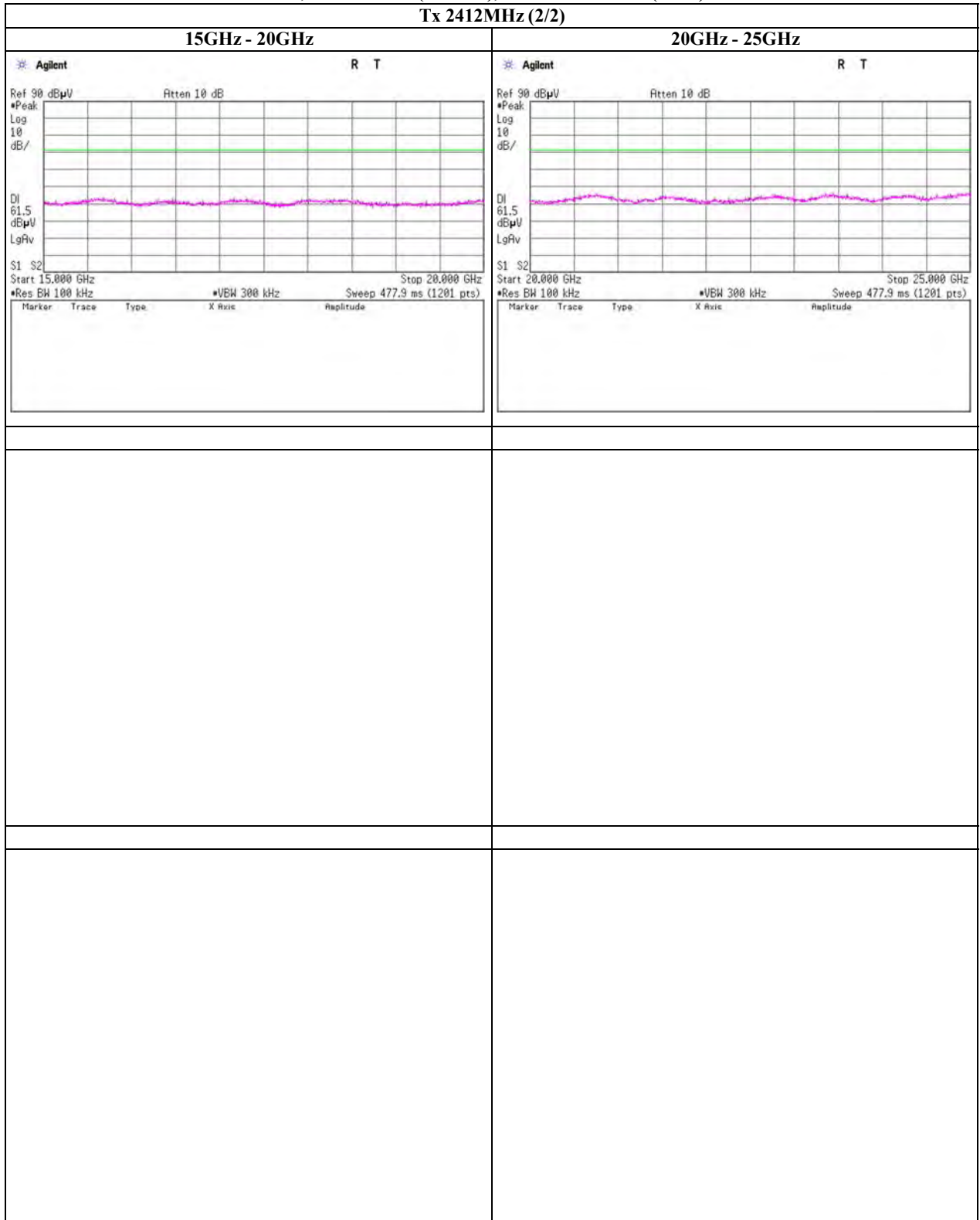
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, IEEE802.11n(HT20M), worst data mode 0(MCS)

Tx 2412MHz (2/2)

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

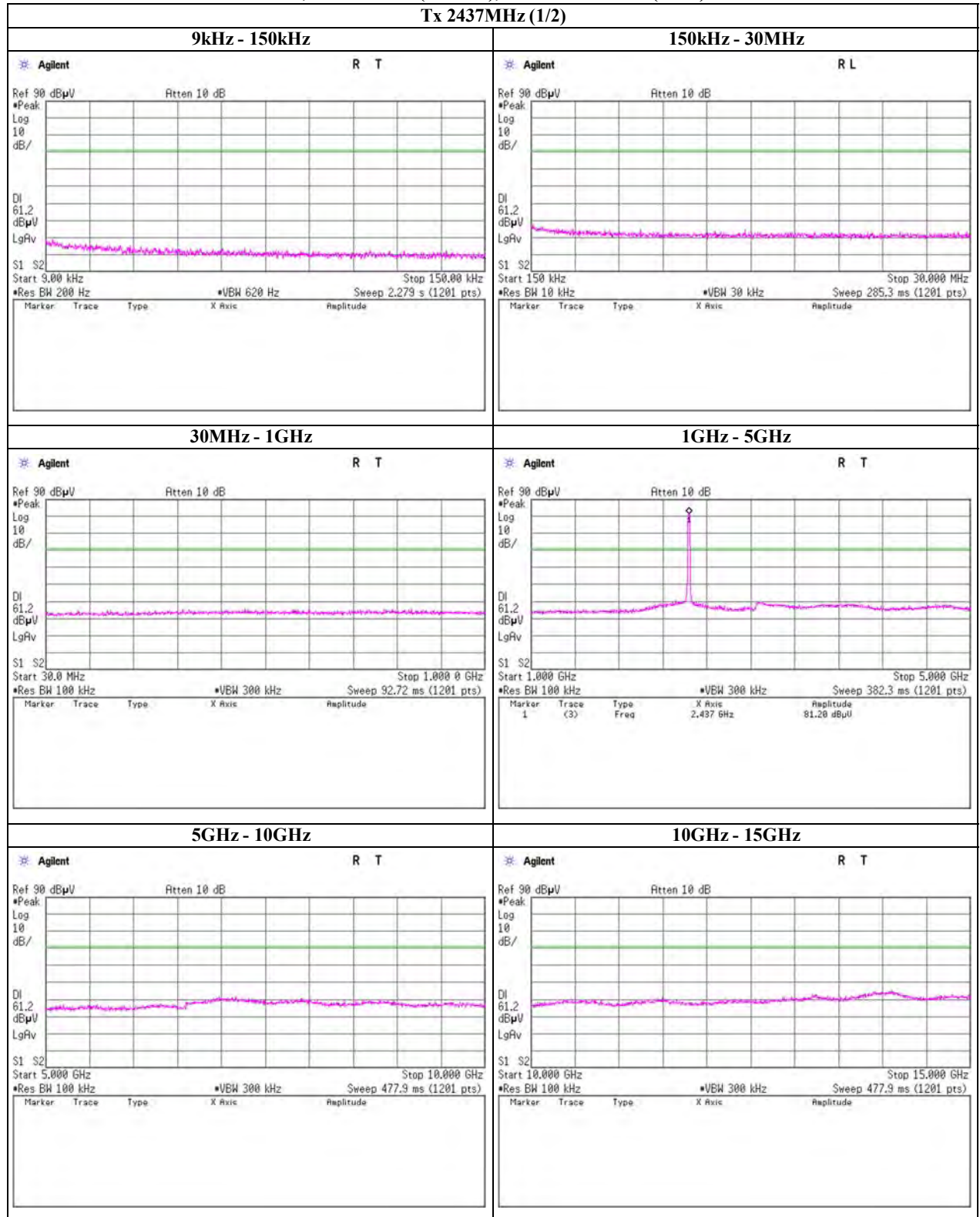
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Spurious emission (Conducted)
Tx, IEEE802.11n(HT20M), worst data mode 0(MCS)

Tx 2437MHz (1/2)



UL Japan, Inc.

Shonan EMC Lab.

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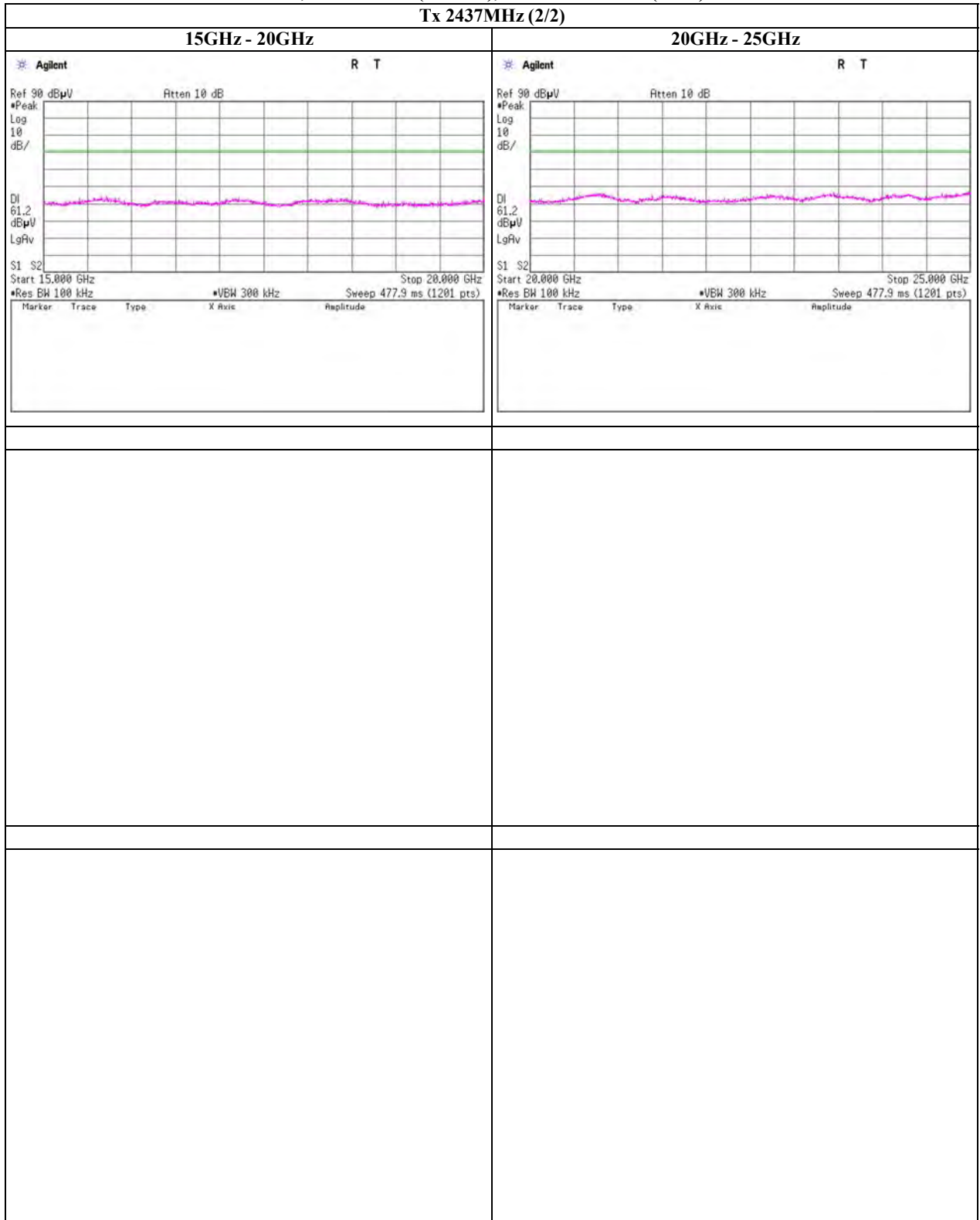
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, IEEE802.11n(HT20M), worst data mode 0(MCS)

Tx 2437MHz (2/2)

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

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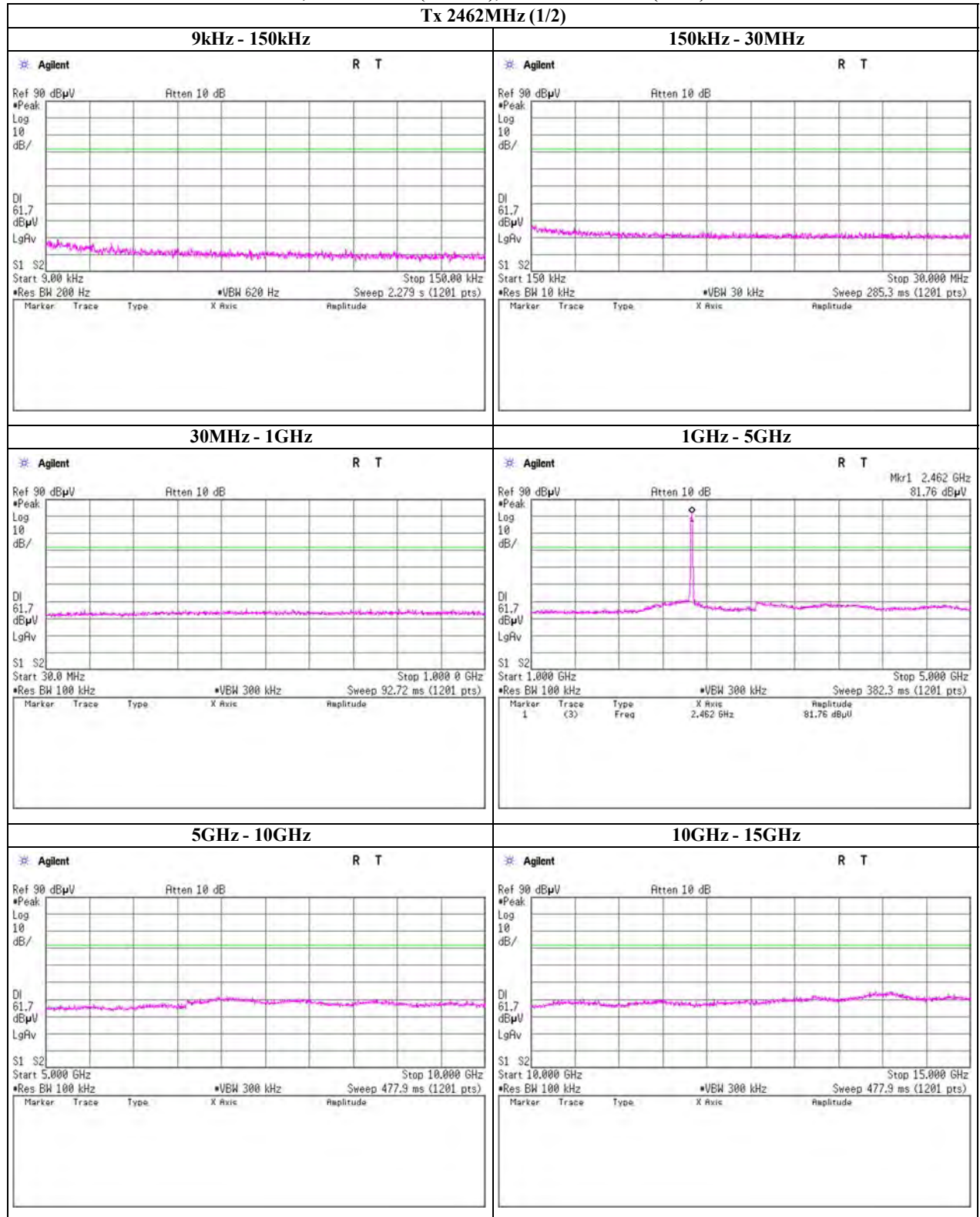
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, IEEE802.11n(HT20M), worst data mode 0(MCS)

Tx 2462MHz (1/2)



UL Japan, Inc.

Shonan EMC Lab.

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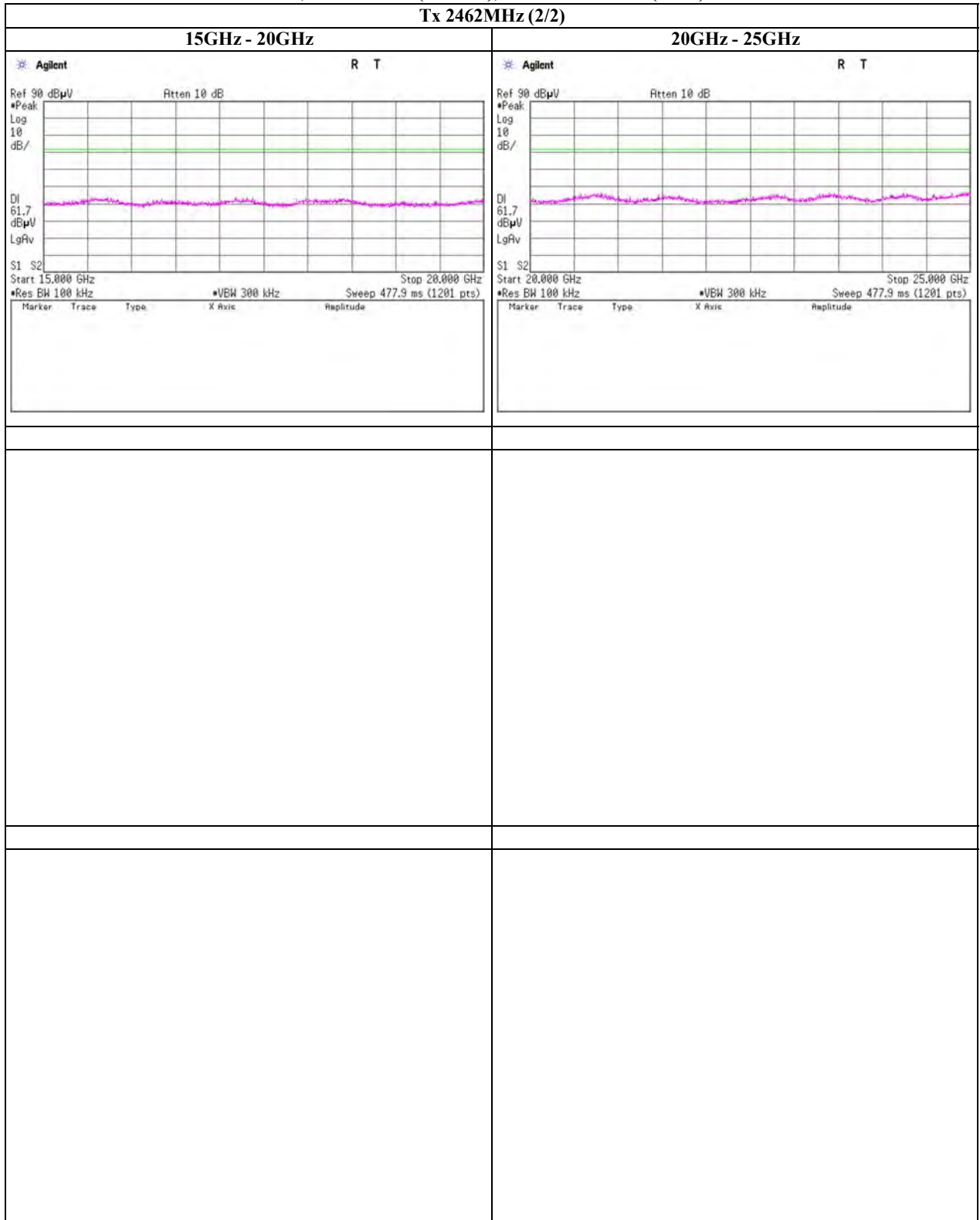
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, IEEE802.11n(HT20M), worst data mode 0(MCS)

Tx 2462MHz (2/2)

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

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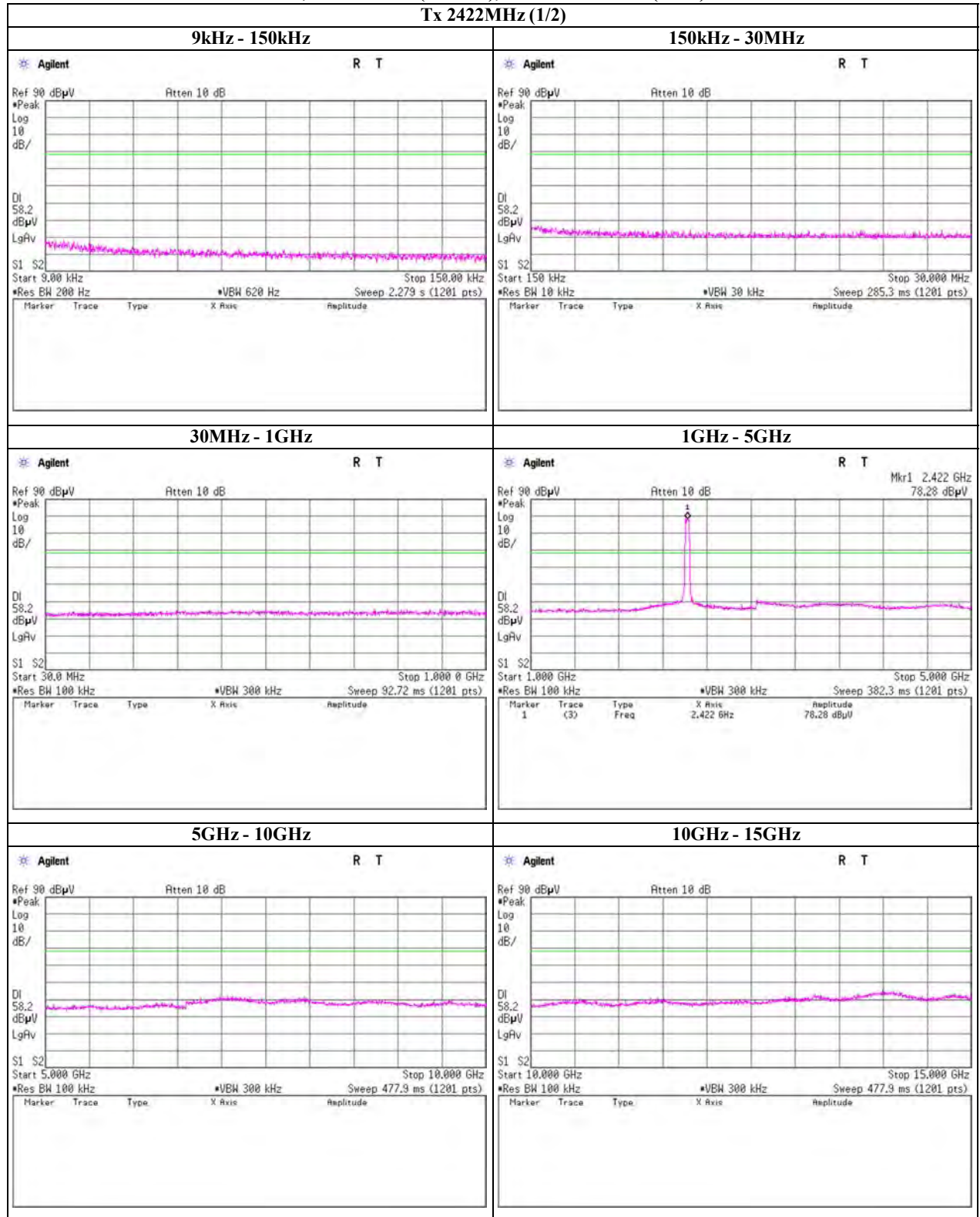
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, IEEE802.11n(HT40M), worst data mode 0(MCS)

Tx 2422MHz (1/2)

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

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Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Tx, IEEE802.11n(HT40M), worst data mode 0(MCS)

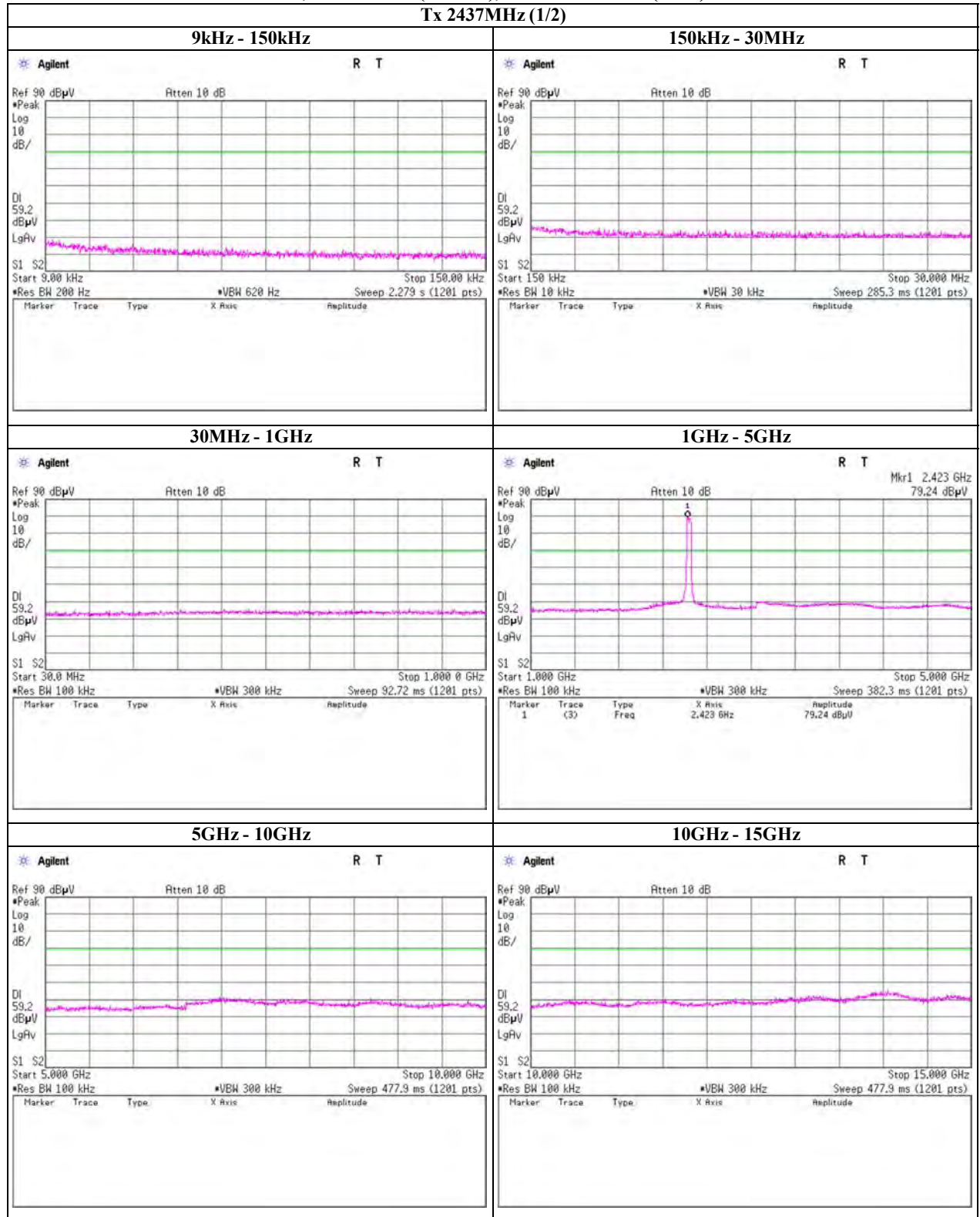


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Spurious emission (Conducted)

Tx, IEEE802.11n(HT40M), worst data mode 0(MCS)

Tx 2437MHz (1/2)

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

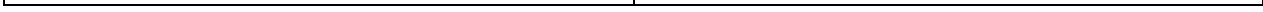
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Tx, IEEE802.11n(HT40M), worst data mode 0(MCS)

T 2427MH (2/2)

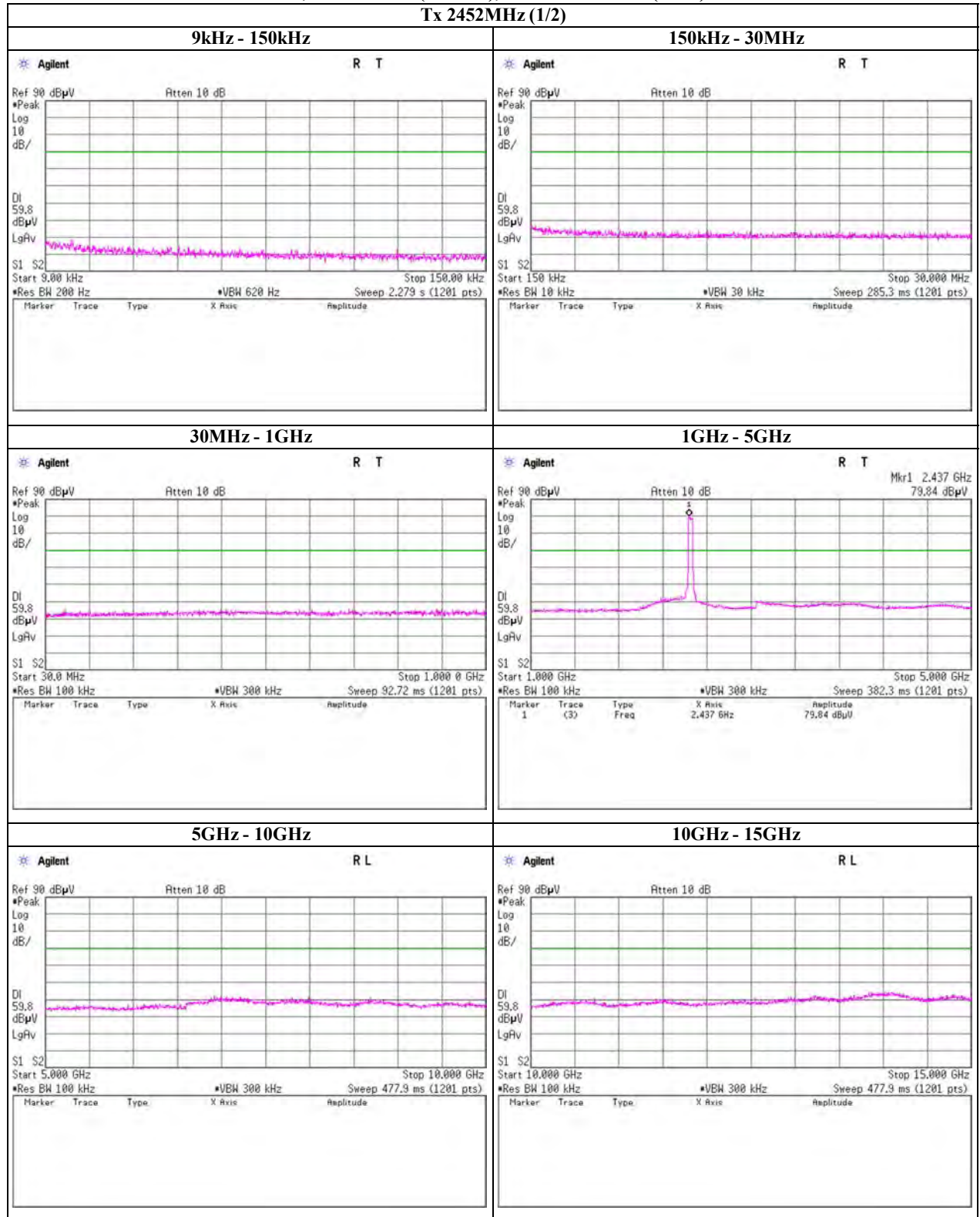


Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, IEEE802.11n(HT40M), worst data mode 0(MCS)

Tx 2452MHz (1/2)

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

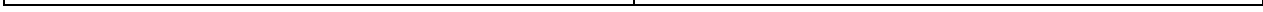
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

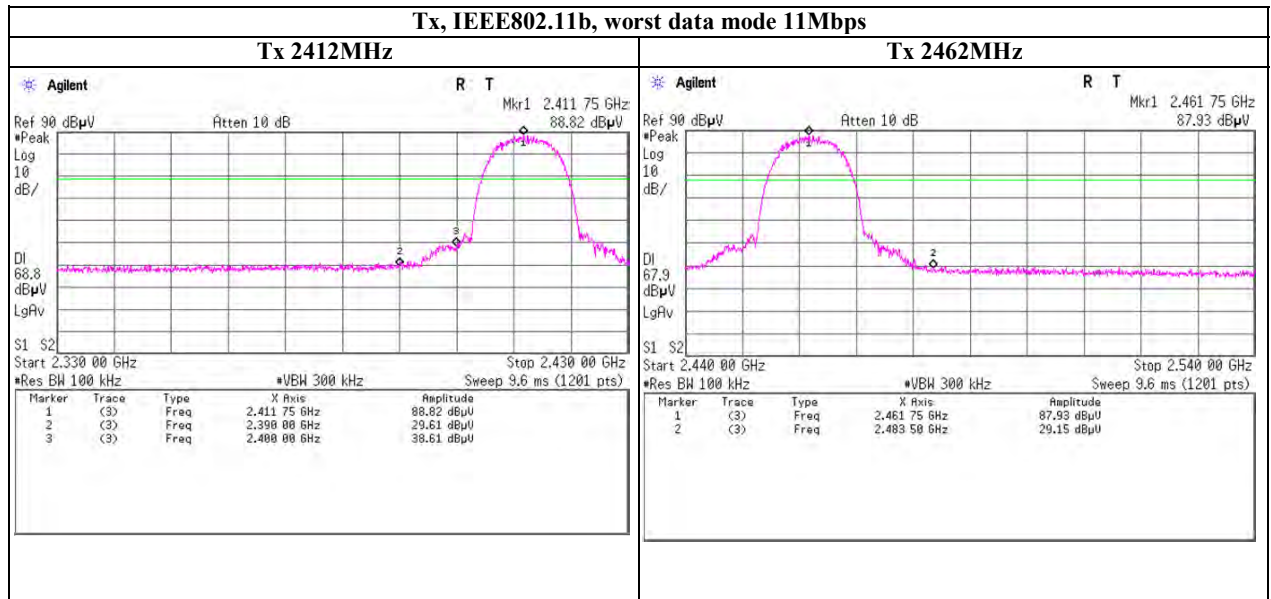
Facsimile : +81 463 50 6401

Tx, IEEE802.11n(HT40M), worst data mode 0(MCS)

T 2452MH (2/2)	
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75

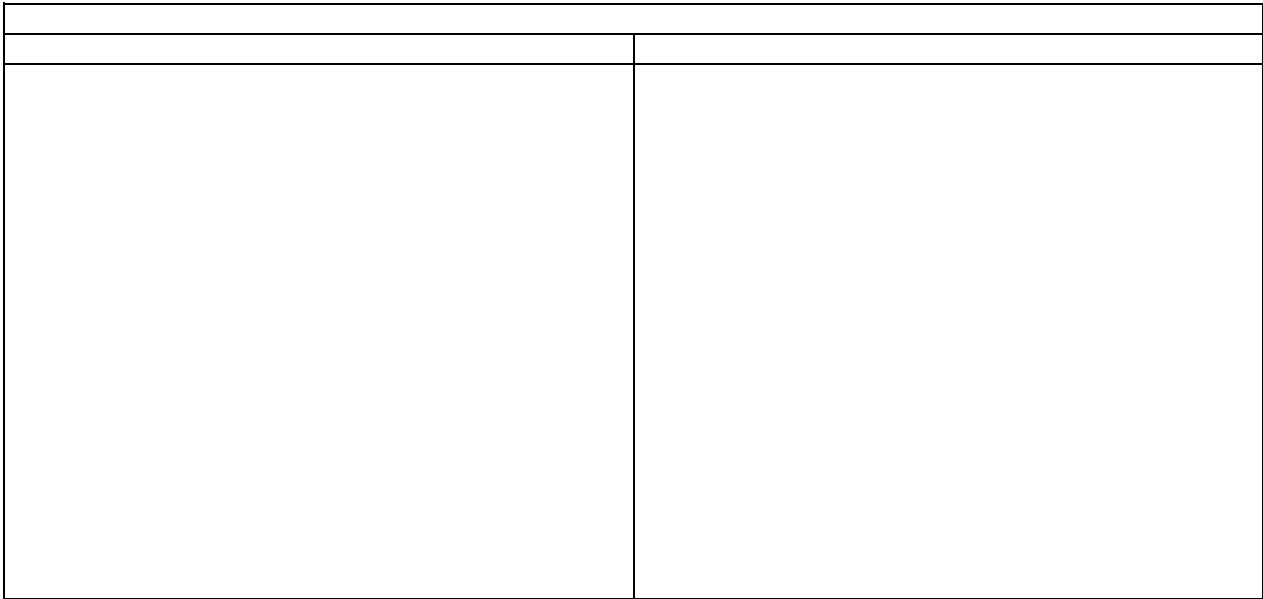
Spurious emission (Conducted)**Band Edge compliance****UL Japan, Inc.****Shonan EMC Lab.**

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E 0410MHz	E 0410MHz
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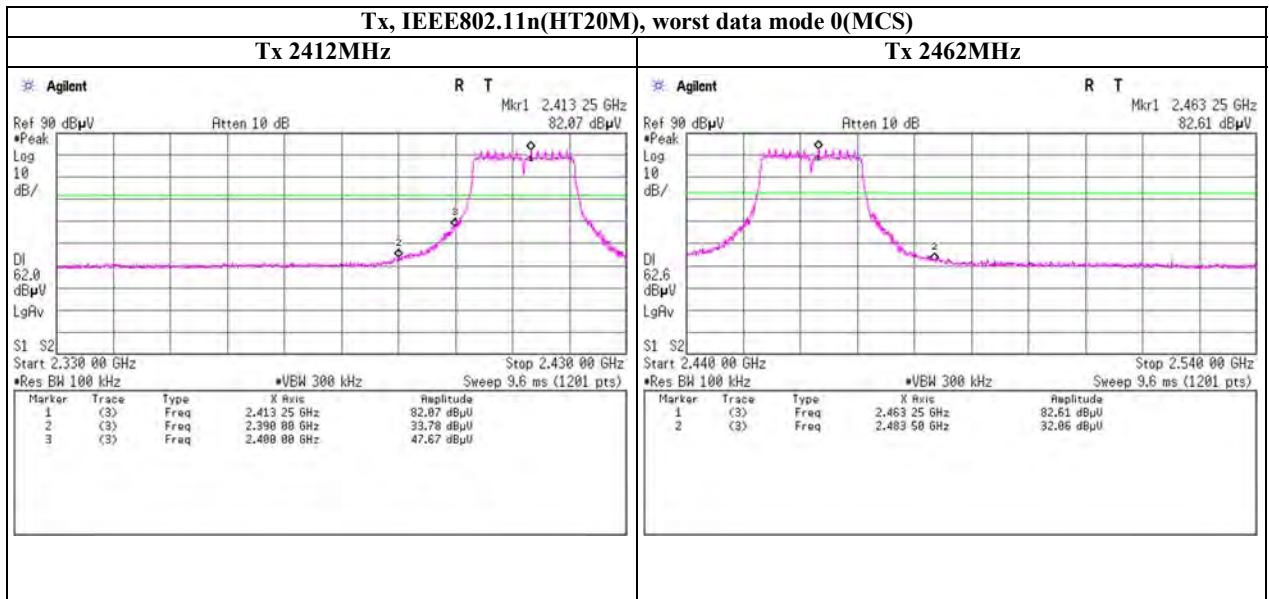


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Spurious emission (Conducted)

Band Edge compliance

Tx, IEEE802.11n(HT20M), worst data mode 0(MCS)



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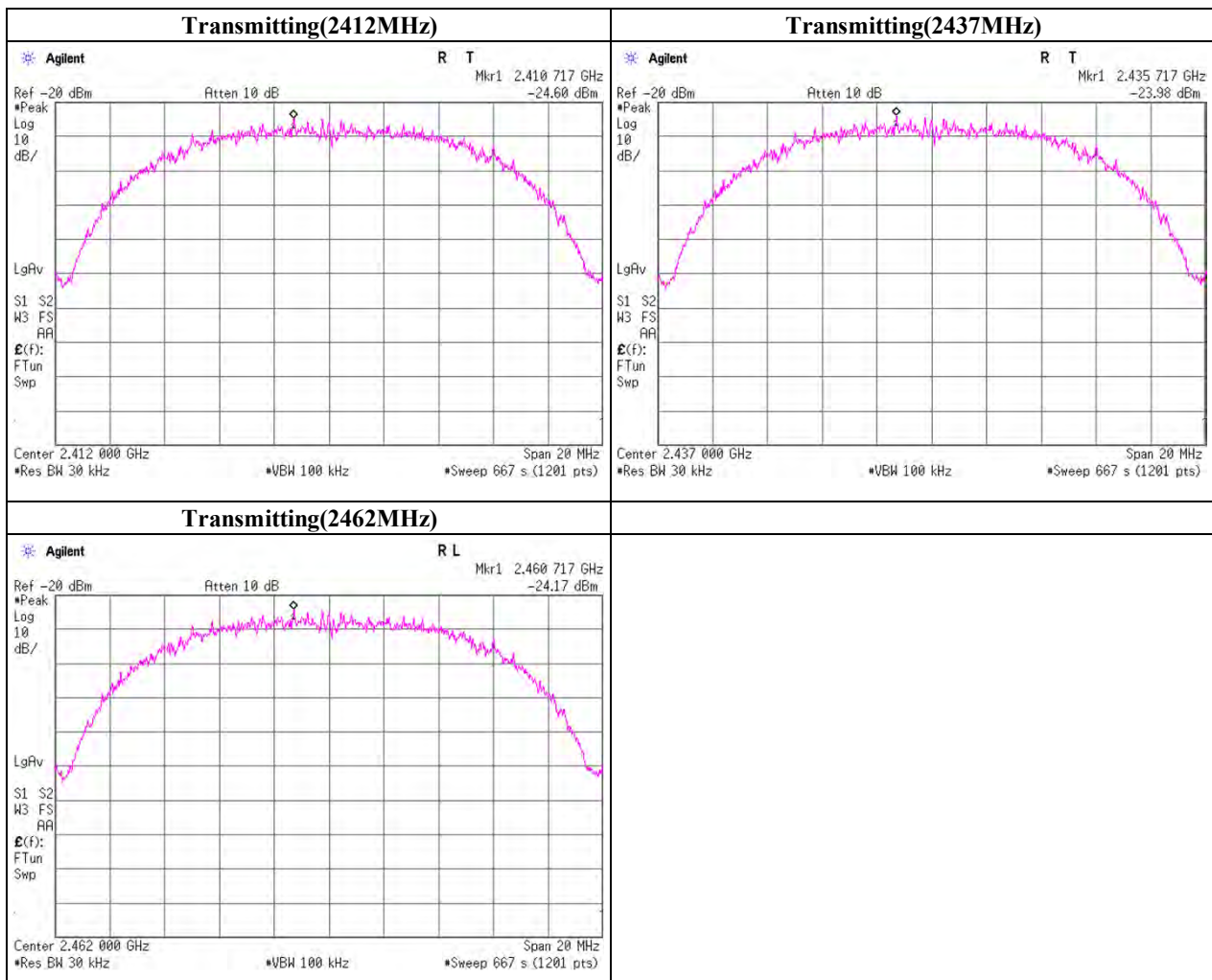
Power Density

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	July 28, 2011	
Temperature / Humidity	27deg.C. , 55%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11b, PN9, worst data mode 11Mbps	

Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2410.72	-24.60	1.75	20.14	-2.71	8.00	10.71
2437.0000	2435.72	-23.98	1.75	20.14	-2.09	8.00	10.09
2462.0000	2460.72	-24.17	1.76	20.14	-2.27	8.00	10.27

Sample Calculation:

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



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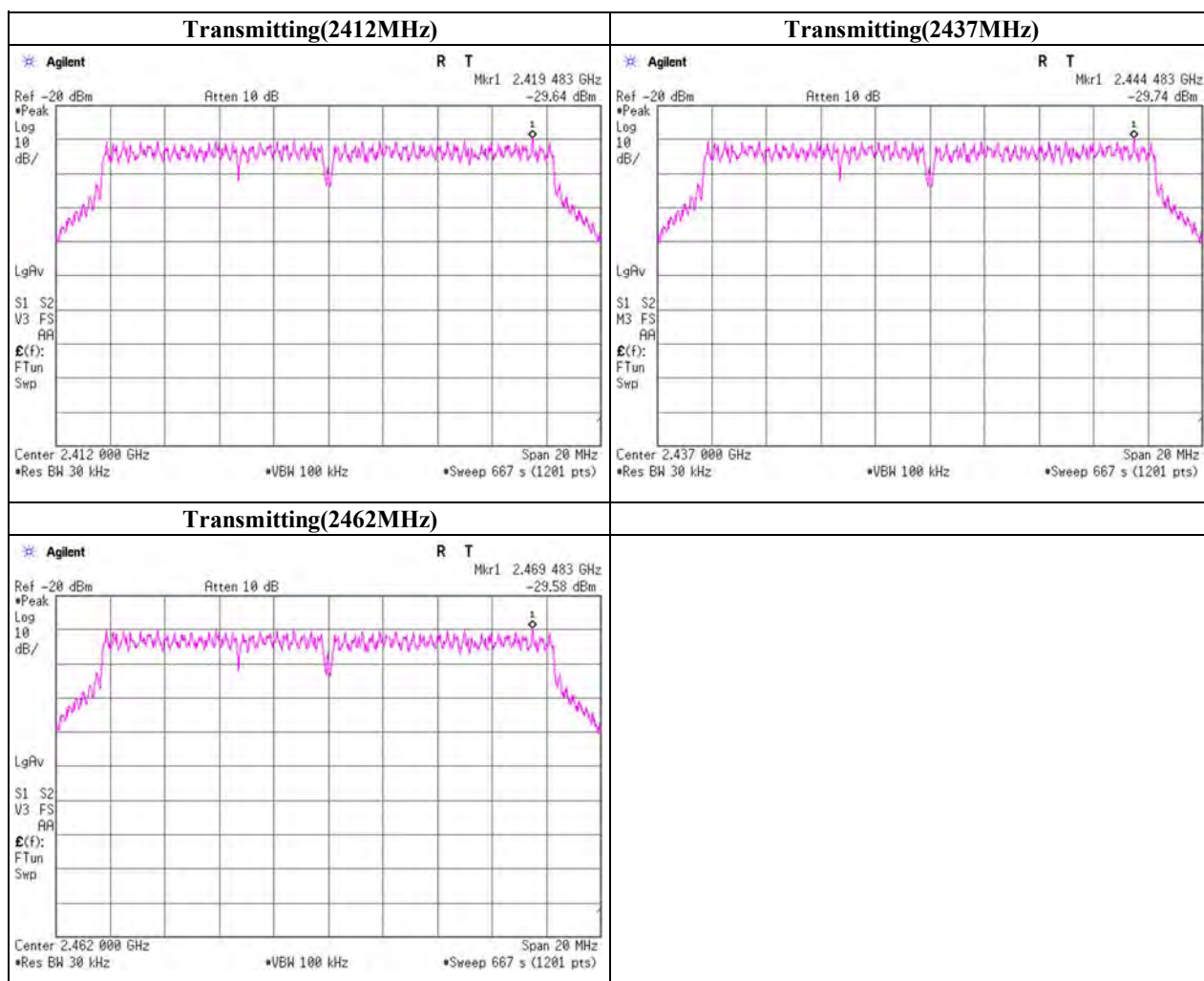
Power Density

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	Jun 9, 2011	
Temperature / Humidity	27deg.C. , 58%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11g, PN9, worst data mode 9Mbps	

Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2419.48	-29.64	1.75	20.14	-7.75	8.00	15.75
2437.0000	2444.48	-29.74	1.75	20.14	-7.85	8.00	15.85
2462.0000	2469.48	-29.58	1.76	20.14	-7.68	8.00	15.68

Sample Calculation:

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



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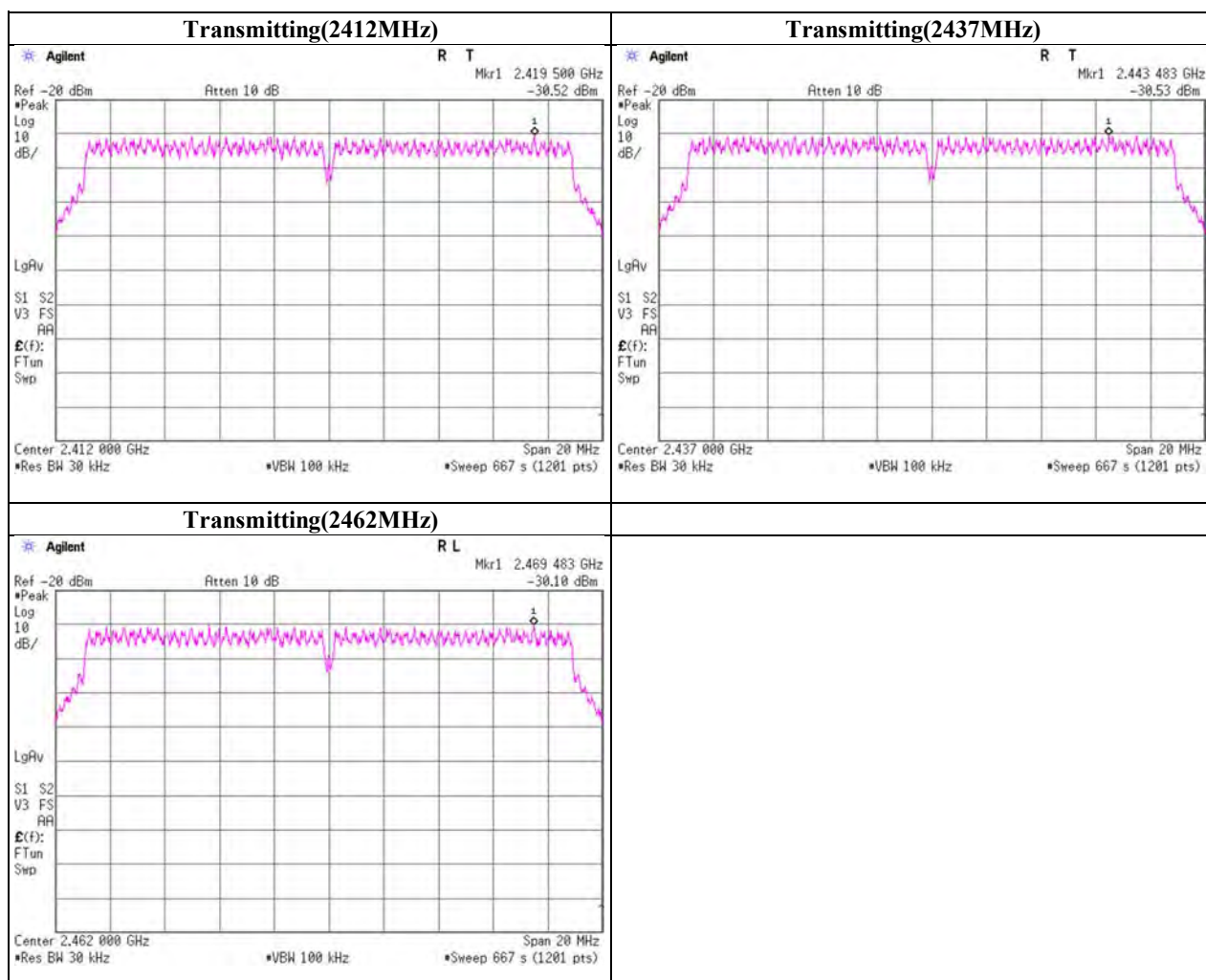
Power Density

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	Jun 9, 2011	
Temperature / Humidity	27deg.C. , 58%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11n(HT20M), PN9, worst data mode 0(MCS)	

Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2419.50	-30.52	1.75	20.14	-8.63	8.00	16.63
2437.0000	2443.48	-30.53	1.75	20.14	-8.64	8.00	16.64
2462.0000	2469.48	-30.10	1.76	20.14	-8.20	8.00	16.20

Sample Calculation:

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



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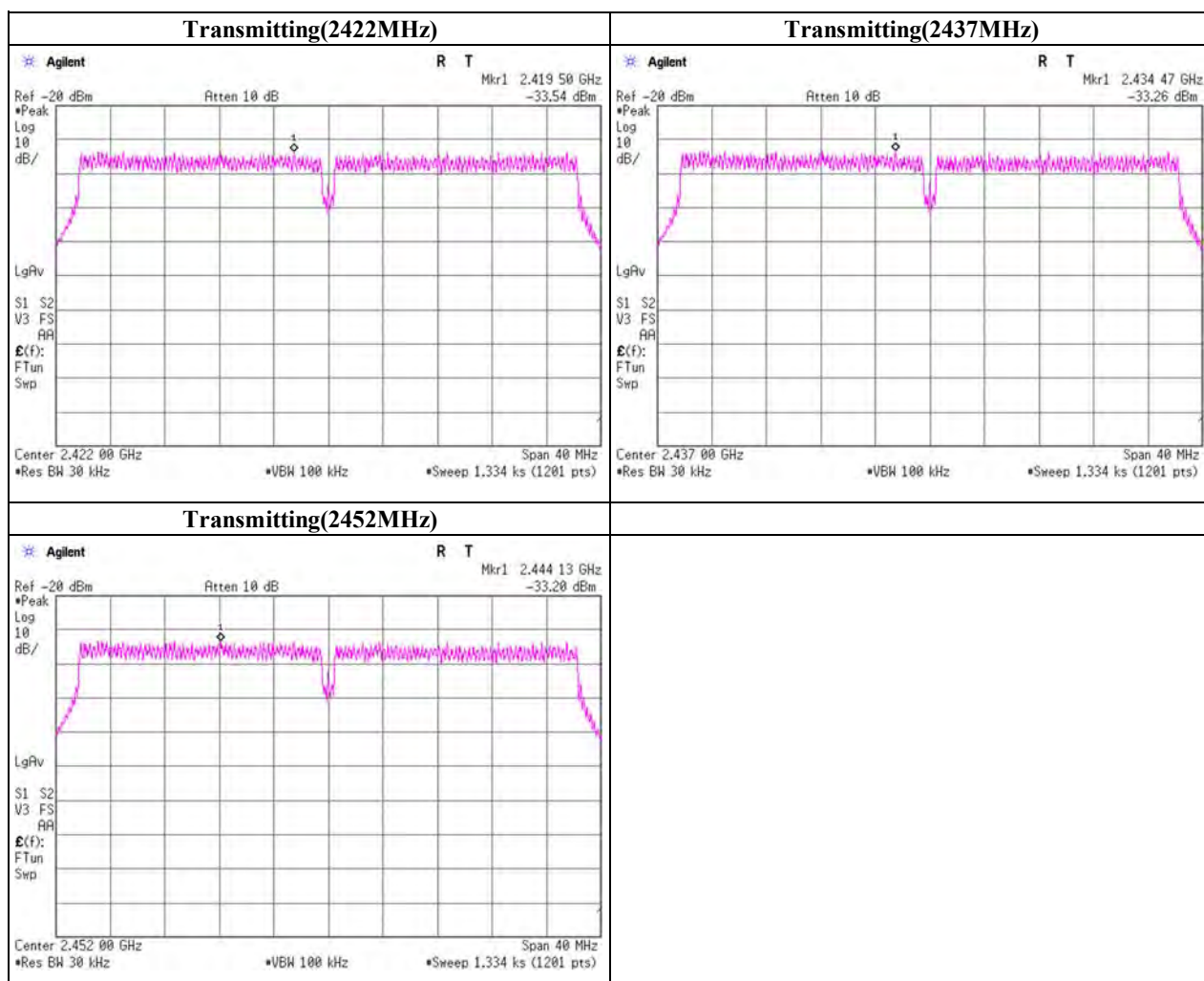
Power Density

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	Jun 9, 2011	
Temperature / Humidity	27deg.C. , 58%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11n(HT40M), PN9, worst data mode 0(MCS)	

Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2422.0000	2419.50	-33.54	1.75	20.14	-11.65	8.00	19.65
2437.0000	2434.47	-33.26	1.75	20.14	-11.37	8.00	19.37
2452.0000	2444.13	-33.20	1.76	20.14	-11.30	8.00	19.30

Sample Calculation:

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



UL Japan, Inc.

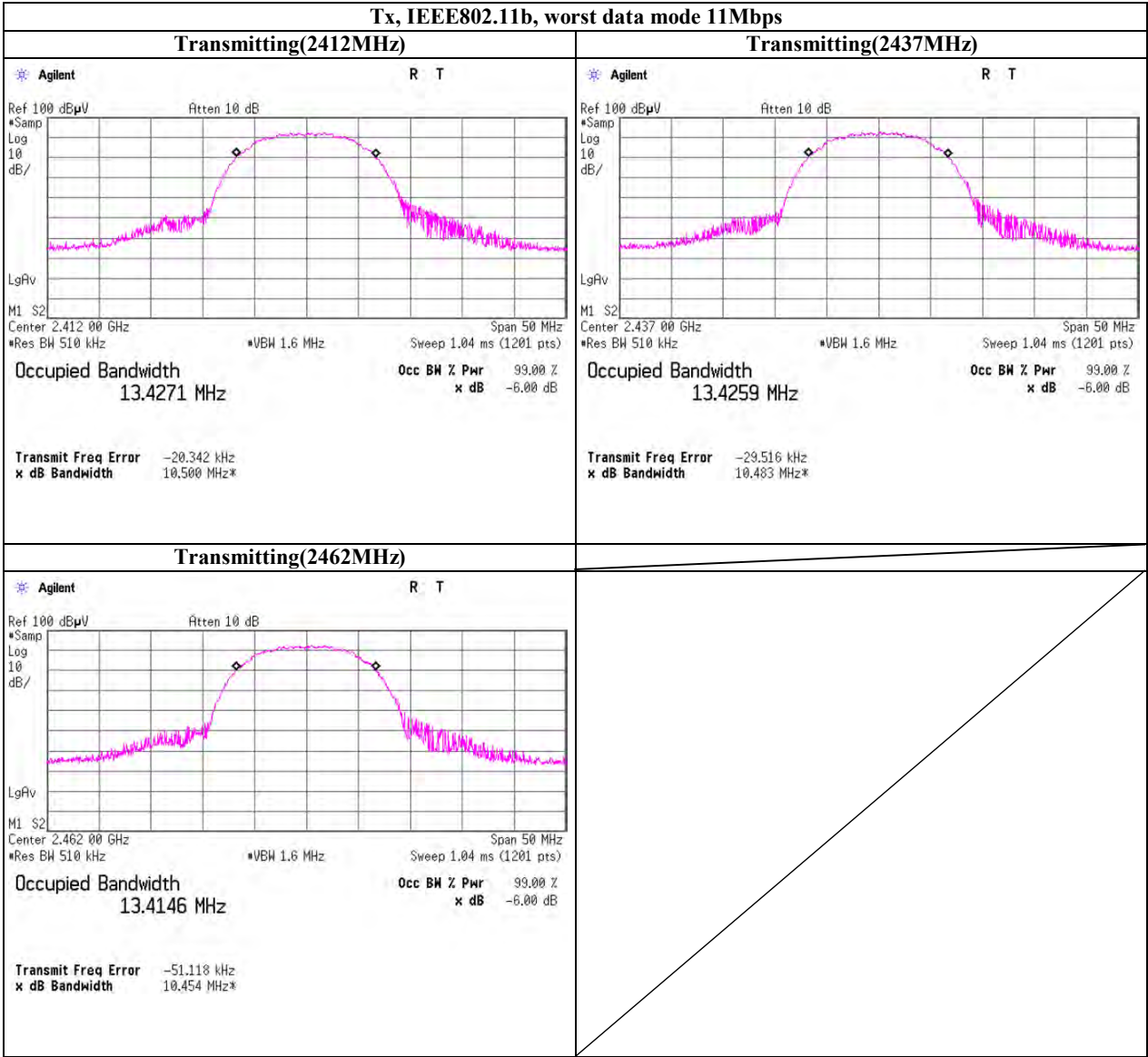
Shonan EMC Lab.

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

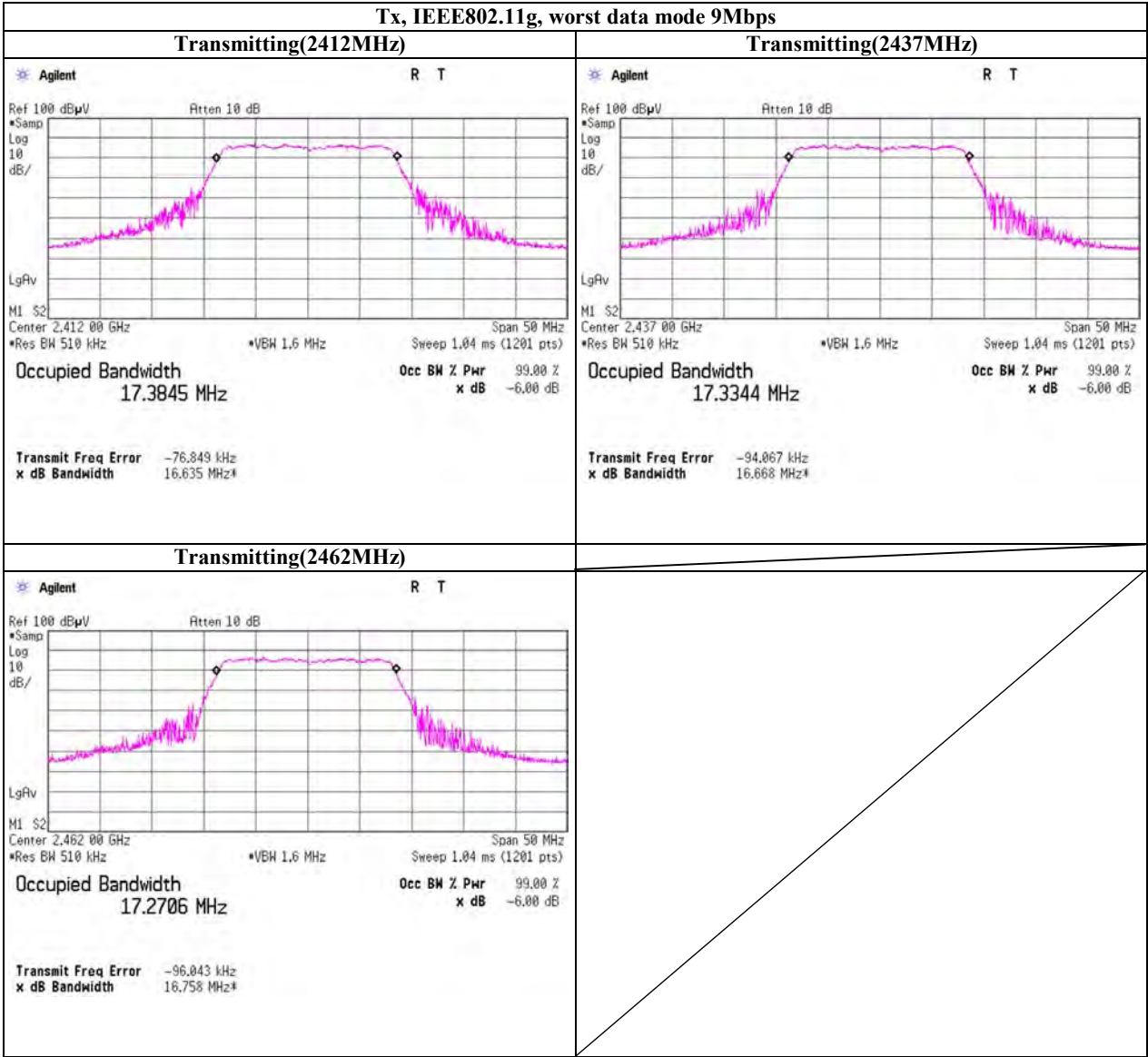
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

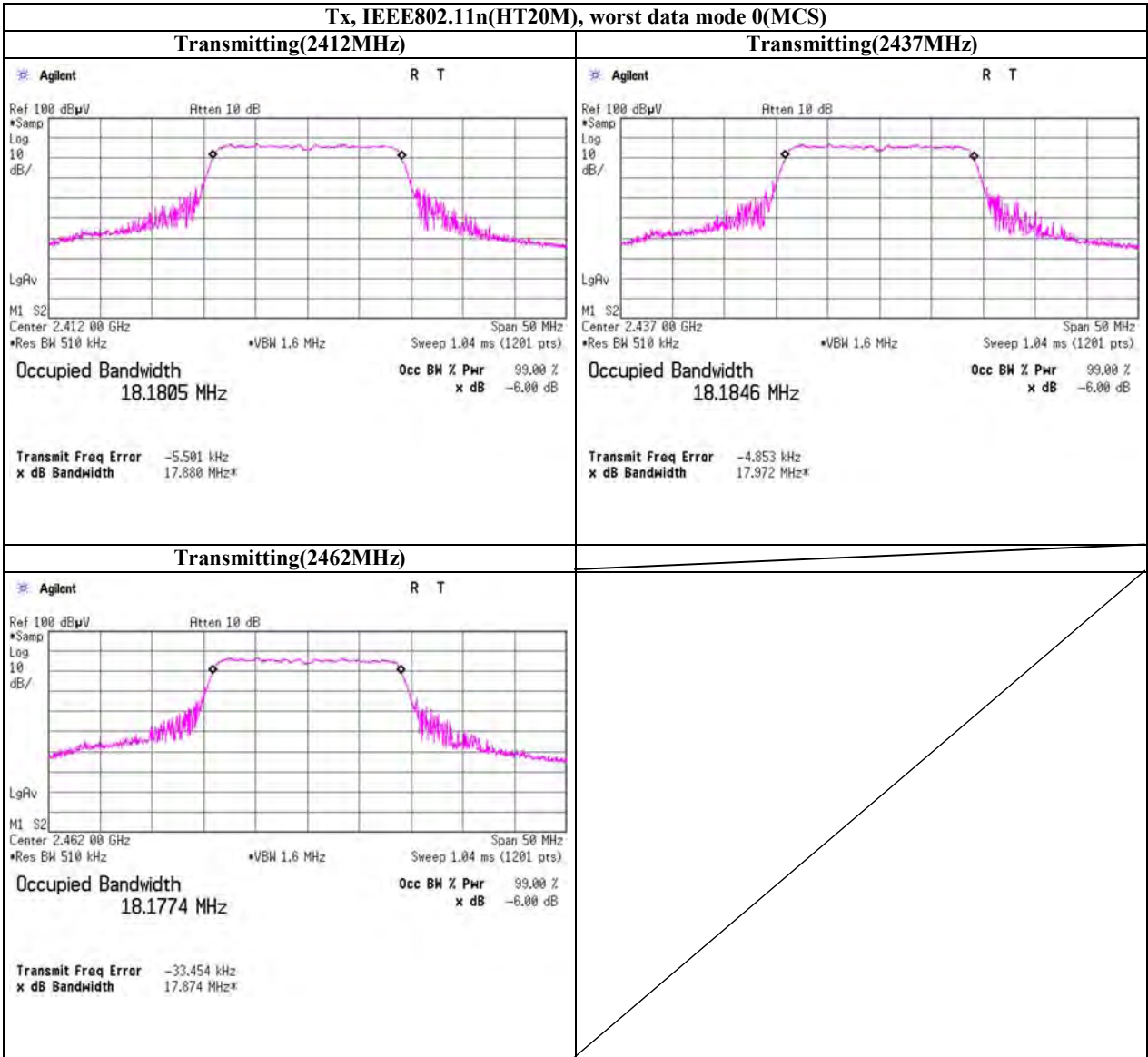
99% Occupied Bandwidth



99% Occupied Bandwidth



99% Occupied Bandwidth



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APPENDIX 3 Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SAF-04	Pre Amplifier	TOYO Corporation	TPA0118-36	1440489	RE	2011/03/23 * 12
SCC-G03	Coaxial Cable	Suhner	SUCOFLEX 104 A	46499/4 A	RE	2011/04/28 * 12
SCC-G23	Coaxial Cable	Suhner	SUCOFLEX 104	297342/4	RE	2011/05/27 * 12
SHA-03	Horn Antenna	Schwarzbeck	BBHA9120D	9120 D-739	RE	2010/08/17 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2011/02/23 * 12
SSA-02	Spectrum Analyzer	Agilent	E4448 A	MY48250106	RE,AT	2011/03/07 * 12
SJM-10	Measure	PROMART	SEN1935	-	RE,CE	-
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE, RF,IMF)	-	RE,CE	-
SAF-02	Pre Amplifier	SONOMA	310N	290212	RE	2011/02/17 * 12
SAT20-01	Attenuator(above1GHz)	Agilent	8493 C-020	74889	RE	2010/12/15 * 12
SFL-02	Highpass Filter	MICRO-TRONICS	HPM50111	051	RE	2010/12/15 * 12
SHA-04	Horn Antenna	ETS LINDGREN	3160-09	LM3640	RE	2011/03/15 * 12
SAF-08	Pre Amplifier	TOYO Corporation	HAP18-26 W	00000019	RE	2011/03/16 * 12
SCC-G17	Coaxial Cable	Suhner	SUCOFLEX 104 A	46291/4 A	RE	2011/03/16 * 12
SAF-03	Pre Amplifier	SONOMA	310N	290213	RE	2011/02/17 * 12
SAT6-03	Attenuator	JFW	50HF-006N	-	RE	2011/02/17 * 12
SBA-03	Biconical Antenna	Schwarzbeck	BBA9106	91032666	RE	2010/10/15 * 12
SCC-C1/C2/C3/C4/C5/C10/SRSE-03	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-271 (RF Selector)	RE	2011/04/28 * 12
SLA-03	Logperiodic Antenna	Schwarzbeck	UHALP9108 A	UHALP 9108-A 0901	RE	2010/10/15 * 12
STR-03	Test Receiver	Rohde & Schwarz	ESI40	100054/040	RE,CE	2010/07/21 * 12
SAEC-03(NSA)	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	RE	2010/09/13 * 12
SCC-C9/C10/SRSE-03	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/N S4906	-/0901-271 (RF Selector)	CE	2011/04/28 * 12
SLS-05	LISN	Rohde & Schwarz	ENV216	100516	CE	2011/02/23 * 12
SAT3-06	Attenuator	JFW	50HF-003N	-	CE	2011/02/17 * 12
SOS-06	Humidity Indicator	A&D	AD-5681	4062118	CE	2011/03/02 * 12
SSA-03	Spectrum Analyzer	Agilent	E4448 A	MY48250152	AT	2010/11/16 * 12
SCC-G11	Coaxial Cable	Suhner	SUCOFLEX 102	31595/2	AT	2011/03/23 * 12
SAT20-03	Attenuator	Agilent	8493 C-020	74891	AT	2011/03/23 * 12
SPM-06	Power Meter	Anritsu	ML2495 A	0850009	AT	2011/04/12 * 12
SPSS-03	Power sensor	Anritsu	MA2411 B	0917063	AT	2011/04/12 * 12
SOS-09	Humidity Indicator	A&D	AD-5681	4061484	AT	2011/03/02 * 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 conducted tests

APPENDIX 3 Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SAF-05	Pre Amplifier	TOYO Corporation	TPA0118-36	1440490	RE	2011/03/23 * 12
SCC-G02	Coaxial Cable	Suhner	SUCOFLEX 104 A	46498/4 A	RE	2011/04/28 * 12
SCC-G22	Coaxial Cable	Suhner	SUCOFLEX 104	296199/4	RE	2011/05/27 * 12
SHA-02	Horn Antenna	Schwarzbeck	BBHA9120D	9120 D-726	RE	2010/08/08 * 12
SOS-03	Humidity Indicator	A&D	AD-5681	4063325	RE	2011/02/23 * 12
KSA-08	Spectrum Analyzer	Agilent	E4446 A	MY46180525	RE	2011/02/02 * 12
SJM-02	Measure	KOMELON	KMC-36	-	RE	-
STR-R1	Test Receiver	Rohde & Schwarz	ESCI7	100790	RE	2010/09/27 * 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 conducted tests