

DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.1 Shield Room
Date : 2010/03/03

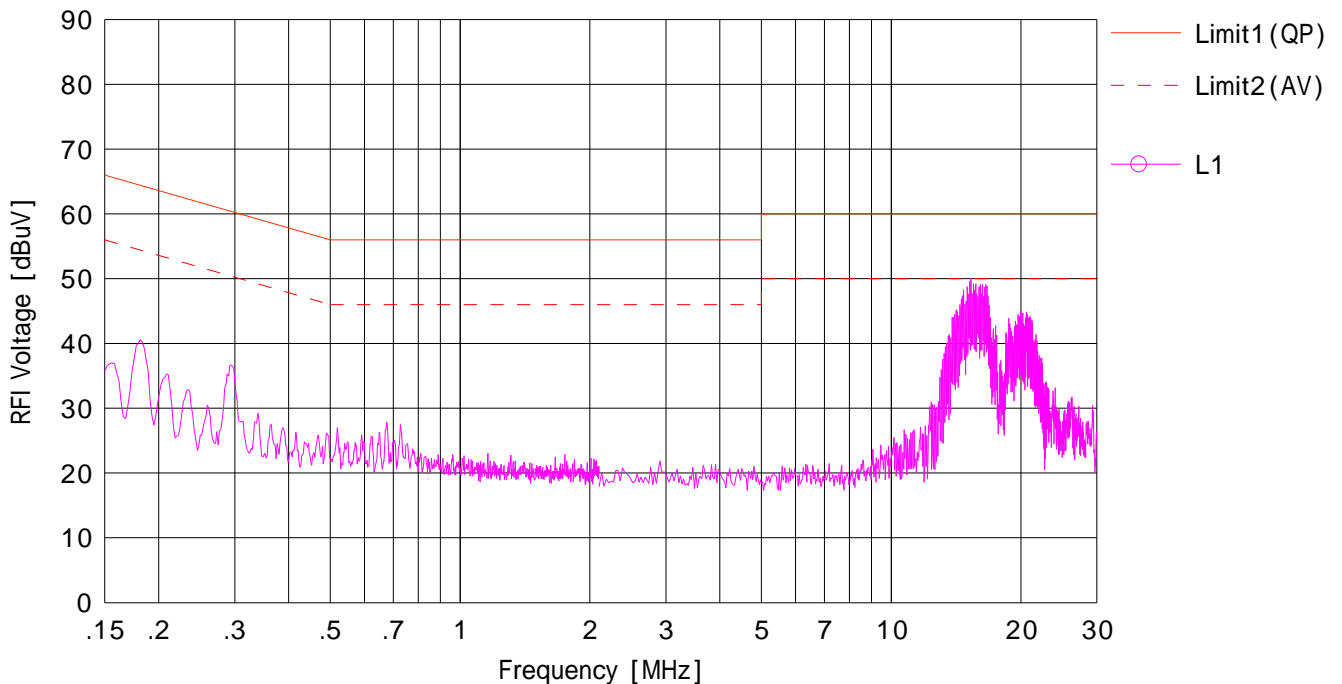
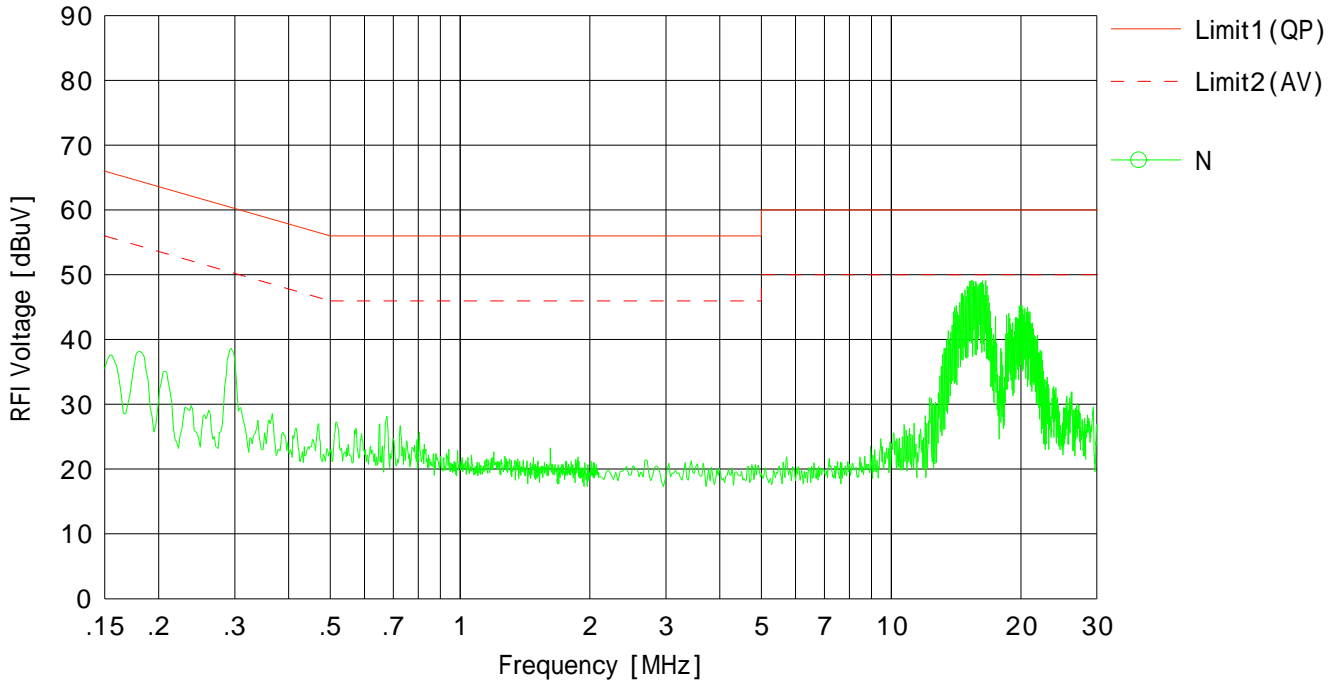
Company : Ricoh Company, Ltd.
Kind of EUT : Option(s) for Radiocommunications
Model No. : R-WL54M1N
Serial No. : 91290017

Mode : IEEE802.11a/Tx.54Mbps,5180MHz
Report No. : 30GE0098 - YK - D - R1
Power : AC120V / 60Hz
Temp./Humi. : 22deg.C. / 35%

Remarks :

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

Engineer : Tatsuya Arai



Calculation: Result [dBuV] = Reading [dBuV] + C.Fac (LISN+Cable) [dB]

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UL Japan, Inc. Shonan EMC Lab. No.1 Shield Room
Date : 2010/03/03

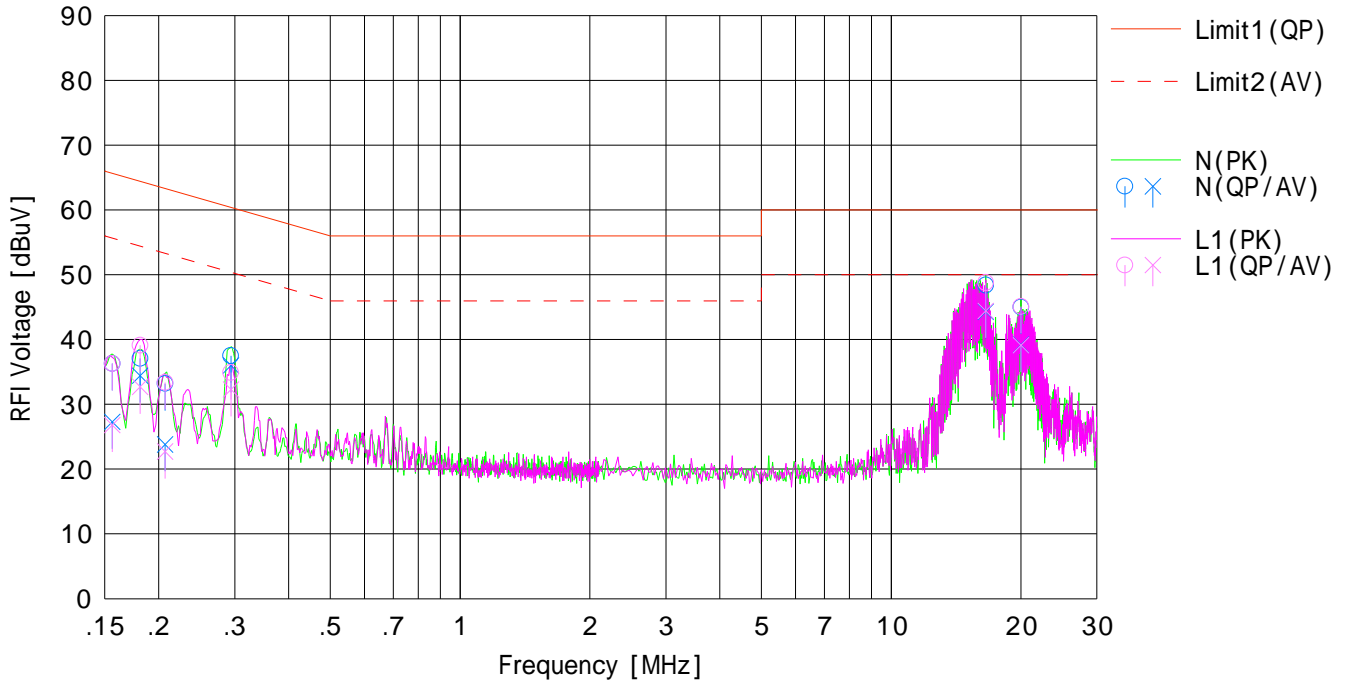
Company : Ricoh Company, Ltd.
Kind of EUT : Option(s) for Radiocommunications
Model No. : R-WL54M1N
Serial No. : 91290017

Mode : IEEE802.11a/Tx.54Mbps,5200MHz
Report No. : 30GE0098 - YK - D - R1
Power : AC120V / 60Hz
Temp./Humi. : 22deg.C. / 35%

Remarks :

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

Engineer : Tatsuya Arai



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	0.15600	23.5	14.5	12.8	36.3	27.3	65.7	55.7	29.4	28.4	N	
2	0.18100	24.3	21.6	12.8	37.1	34.4	64.4	54.4	27.3	20.0	N	
3	0.20700	20.4	11.0	12.8	33.2	23.8	63.3	53.3	30.1	29.5	N	
4	0.29400	24.7	23.2	12.8	37.5	36.0	60.4	50.4	22.9	14.4	N	
5	16.58560	34.8	30.7	13.6	48.4	44.3	60.0	50.0	11.6	5.7	N	
6	19.99820	31.2	25.4	13.8	45.0	39.2	60.0	50.0	15.0	10.8	N	
7	0.15600	23.5	14.0	12.8	36.3	26.8	65.7	55.7	29.4	28.9	L1	
8	0.18100	26.3	19.9	12.8	39.1	32.7	64.4	54.4	25.3	21.7	L1	
9	0.20700	20.6	9.9	12.8	33.4	22.7	63.3	53.3	29.9	30.6	L1	
10	0.29400	22.1	19.5	12.8	34.9	32.3	60.4	50.4	25.5	18.1	L1	
11	16.58420	35.2	30.8	13.6	48.8	44.4	60.0	50.0	11.2	5.6	L1	
12	19.99910	31.3	25.3	13.8	45.1	39.1	60.0	50.0	14.9	10.9	L1	

Calculation: Result [dBuV] = Reading [dBuV] + C.Fac (LISN+Cable) [dB]

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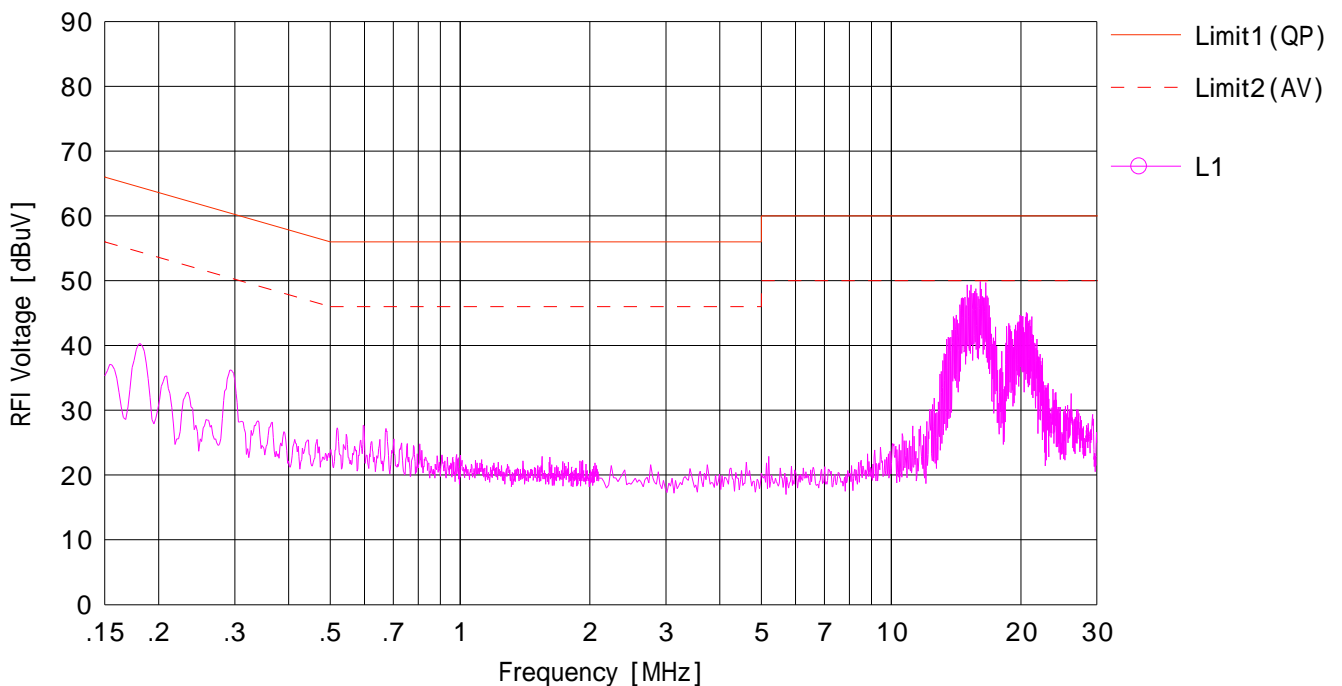
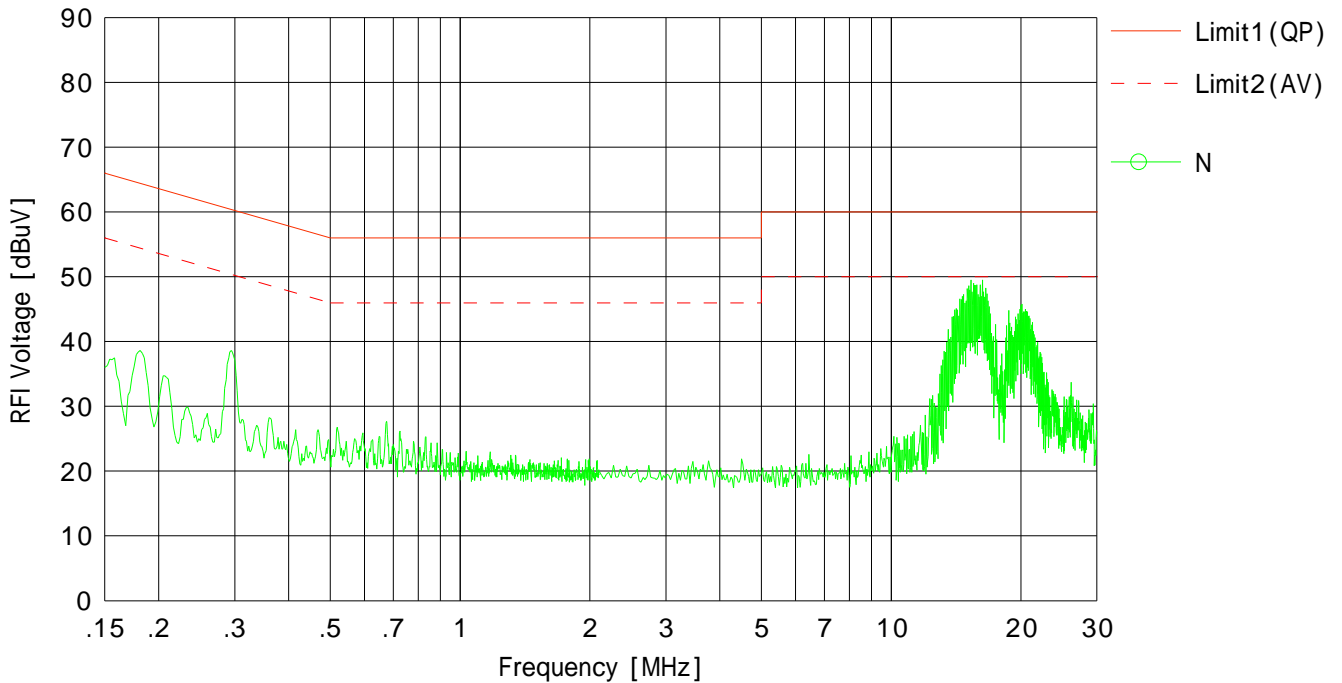
Company : Ricoh Company, Ltd.
Kind of EUT : Option(s) for Radiocommunications
Model No. : R-WL54M1N
Serial No. : 91290017

Mode : IEEE802.11a/Tx.54Mbps,5240MHz
Report No. : 30GE0098 - YK - D - R1
Power : AC120V / 60Hz
Temp./Humi. : 22deg.C. / 35%

Remarks :

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

Engineer : Tatsuya Arai



Calculation: Result [dBuV] = Reading [dBuV] + C.Fac (LISN+Cable) [dB]

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UL Japan, Inc. Shonan EMC Lab. No.1 Shield Room
Date : 2010/03/03

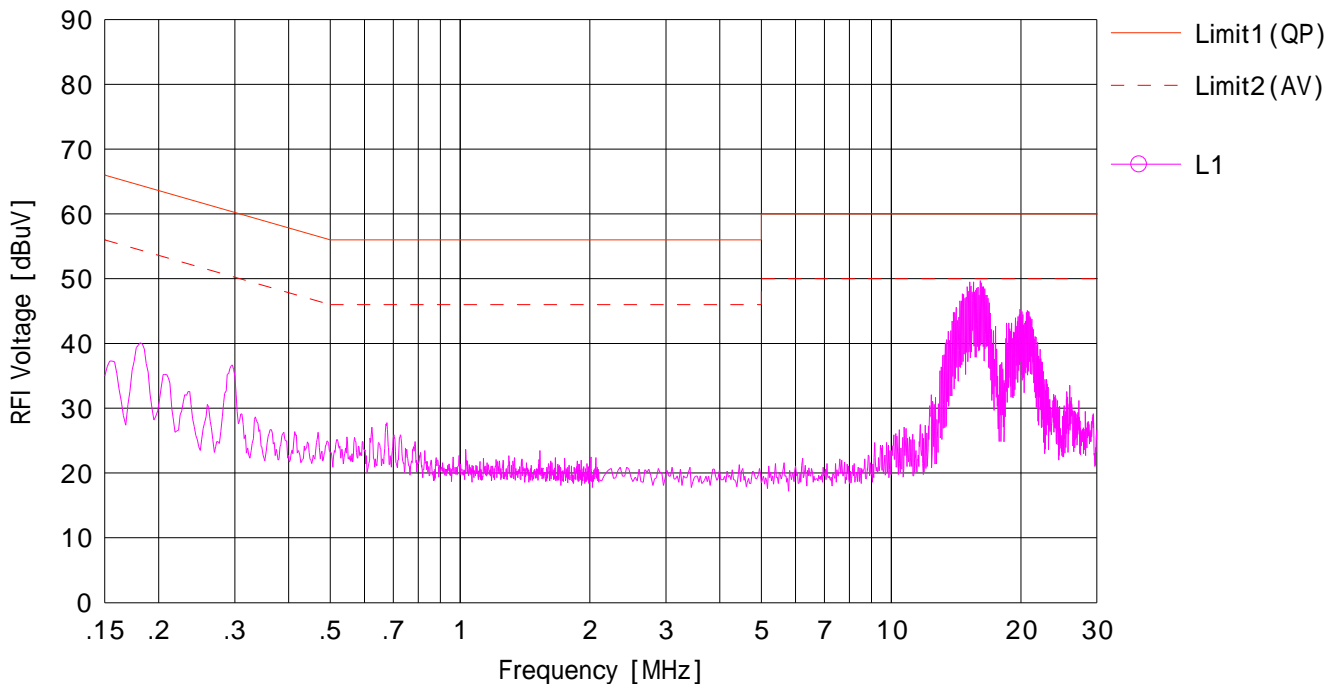
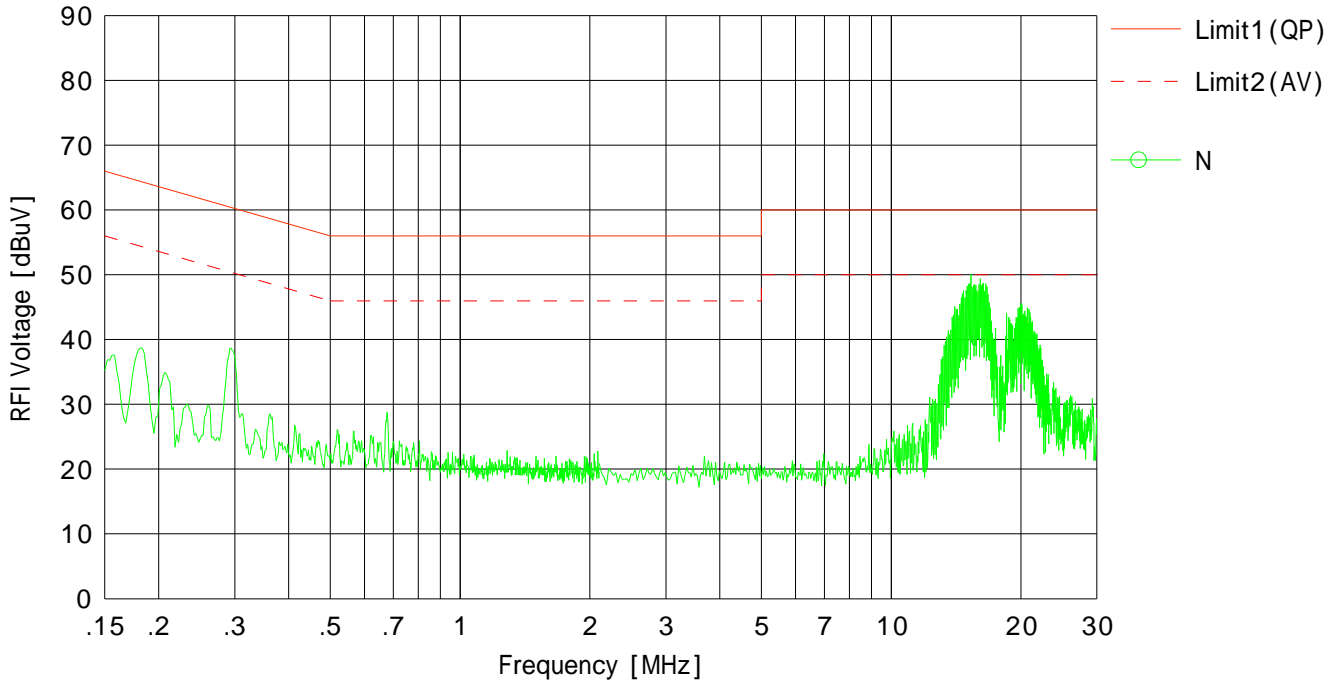
Company : Ricoh Company, Ltd.
Kind of EUT : Option(s) for Radiocommunications
Model No. : R-WL54M1N
Serial No. : 91290017

Mode : IEEE802.11a/Tx.54Mbps,5260MHz
Report No. : 30GE0098 - YK - D - R1
Power : AC120V / 60Hz
Temp./Humi. : 22deg.C. / 35%

Remarks :

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

Engineer : Tatsuya Arai



Calculation: Result [dBuV] = Reading [dBuV] + C.Fac (LISN+Cable) [dB]

DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.1 Shield Room
Date : 2010/03/03

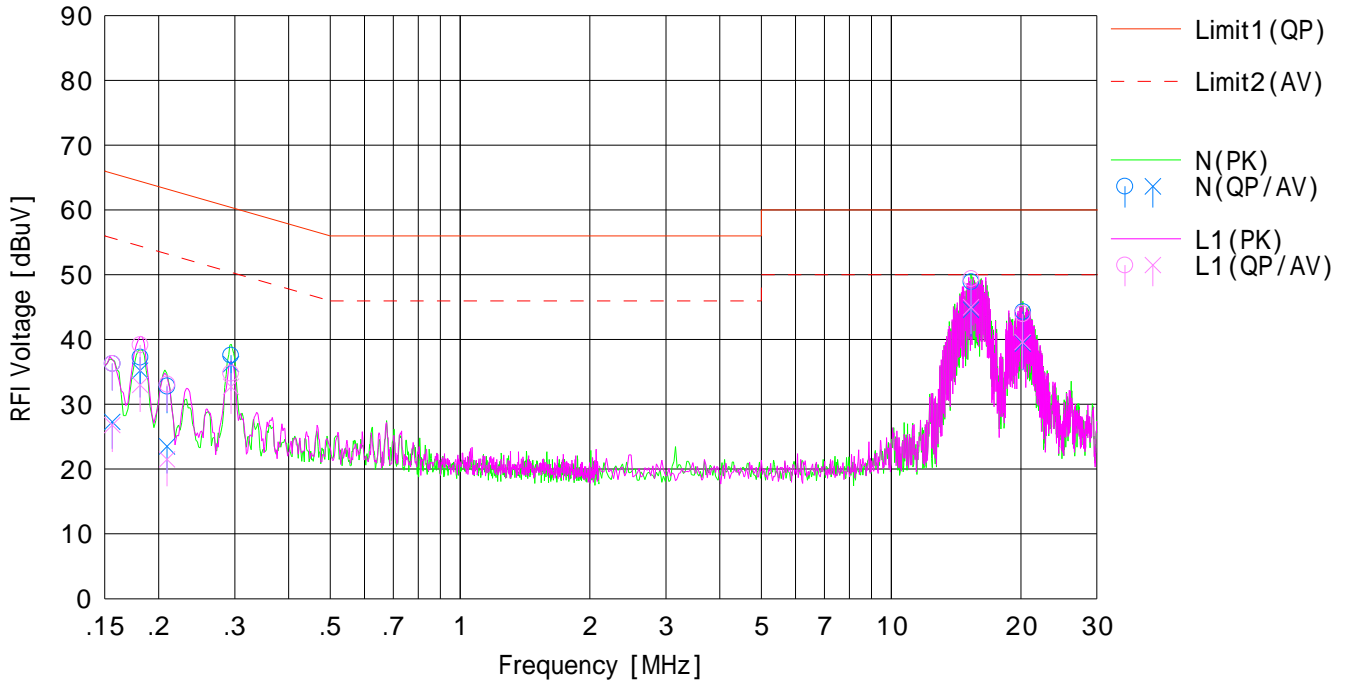
Company : Ricoh Company, Ltd.
Kind of EUT : Option(s) for Radiocommunications
Model No. : R-WL54M1N
Serial No. : 91290017

Mode : IEEE802.11a/Tx.54Mbps,5280MHz
Report No. : 30GE0098 - YK - D - R1
Power : AC120V / 60Hz
Temp./Humi. : 22deg.C. / 35%

Remarks :

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

Engineer : Tatsuya Arai



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	0.15600	23.5	14.5	12.8	36.3	27.3	65.7	55.7	29.4	28.4	N	
2	0.18100	24.5	22.4	12.8	37.3	35.2	64.4	54.4	27.1	19.2	N	
3	0.20900	20.0	10.7	12.8	32.8	23.5	63.2	53.2	30.4	29.7	N	
4	0.29400	24.8	23.4	12.8	37.6	36.2	60.4	50.4	22.8	14.2	N	
5	15.31790	35.3	31.0	13.6	48.9	44.6	60.0	50.0	11.1	5.4	N	
6	20.19640	30.5	25.6	13.8	44.3	39.4	60.0	50.0	15.7	10.6	N	
7	0.15600	23.5	14.0	12.8	36.3	26.8	65.7	55.7	29.4	28.9	L1	
8	0.18100	26.4	20.2	12.8	39.2	33.0	64.4	54.4	25.2	21.4	L1	
9	0.20900	20.3	8.7	12.8	33.1	21.5	63.2	53.2	30.1	31.7	L1	
10	0.29400	22.0	19.9	12.8	34.8	32.7	60.4	50.4	25.6	17.7	L1	
11	15.31690	35.8	31.4	13.6	49.4	45.0	60.0	50.0	10.6	5.0	L1	
12	20.19400	30.2	25.8	13.8	44.0	39.6	60.0	50.0	16.0	10.4	L1	

Calculation: Result [dBuV] = Reading [dBuV] + C.Fac (LISN+Cable) [dB]

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Date : 2010/03/03

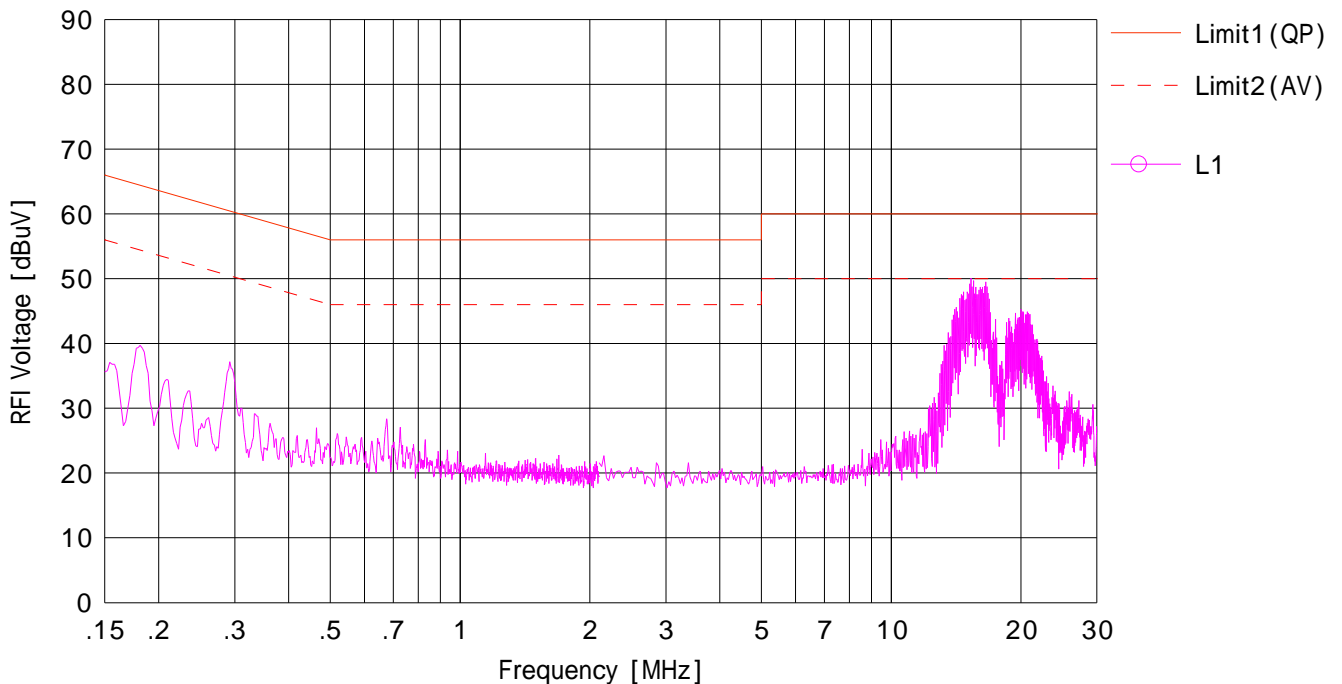
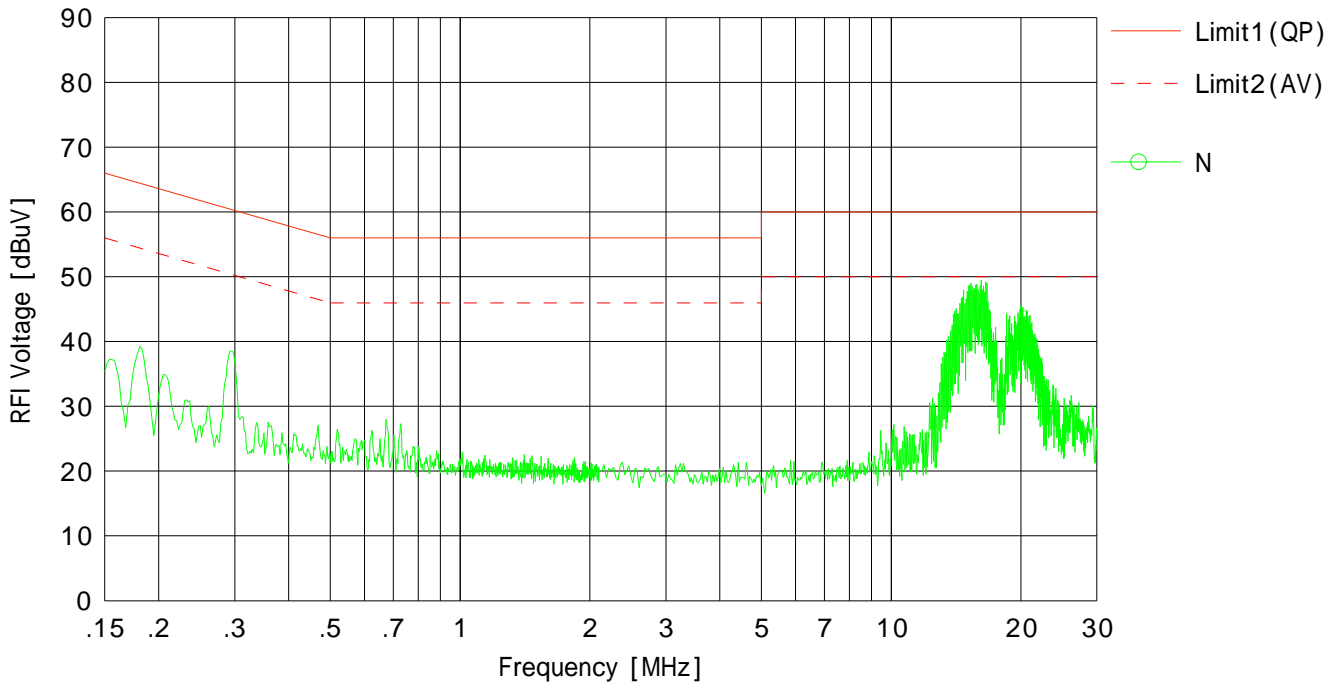
Company : Ricoh Company, Ltd.
Kind of EUT : Option(s) for Radiocommunications
Model No. : R-WL54M1N
Serial No. : 91290017

Mode : IEEE802.11a/Tx.54Mbps,5320MHz
Report No. : 30GE0098 - YK - D - R1
Power : AC120V / 60Hz
Temp./Humi. : 22deg.C. / 35%

Remarks :

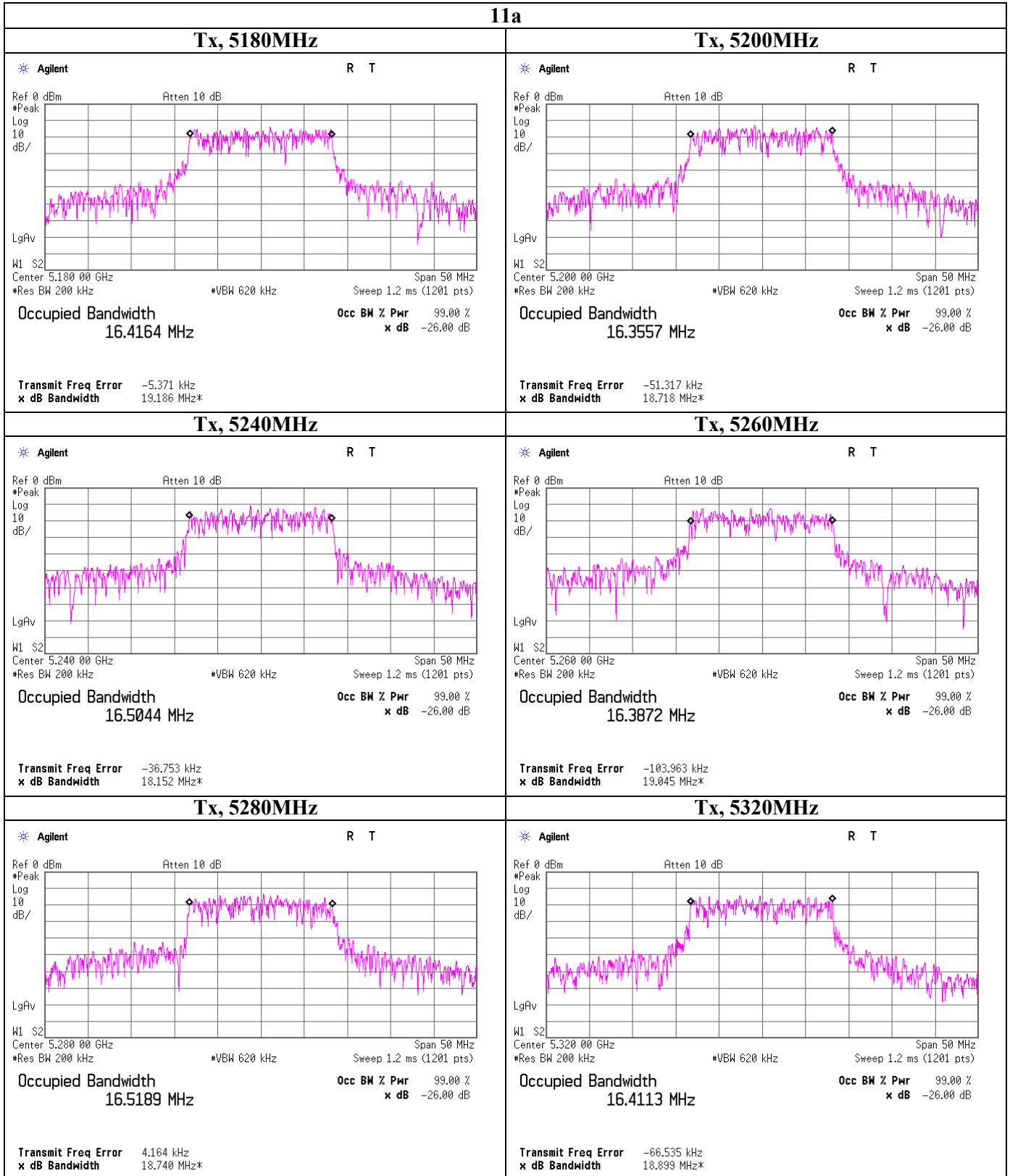
Limit1 : FCC 15C(15.207) QP
Limit2 : FCC 15C(15.207) AV

Engineer : Tatsuya Arai



Calculation: Result [dBuV] = Reading [dBuV] + C.Fac (LISN+Cable) [dB]

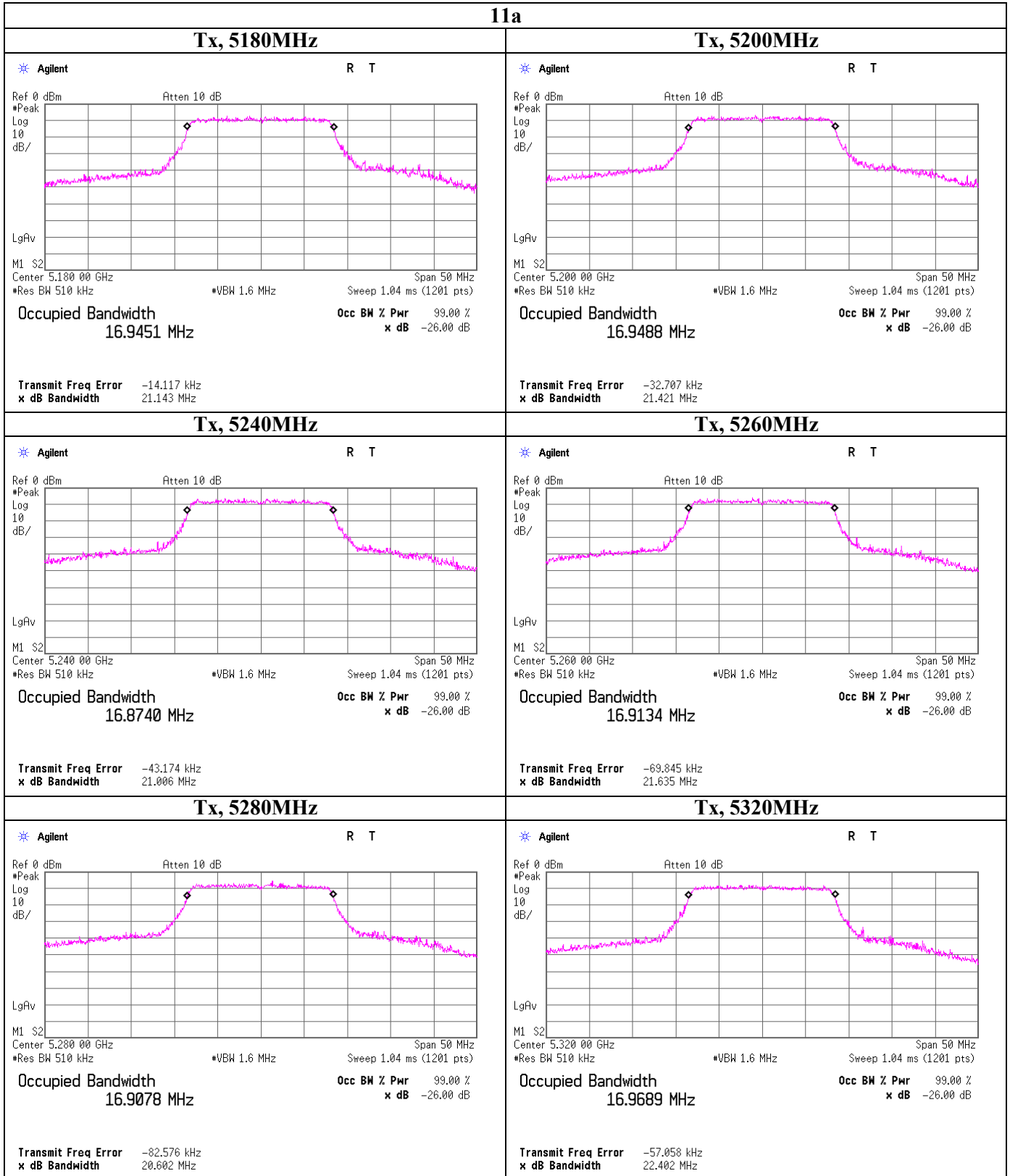
26dB Bandwidth



UL Japan, Inc.
Shonan EMC Lab.

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99% Occupied Bandwidth



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Peak Output Power (Conducted)

Test place : UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2010/2/18
Temperature / Humidity : 22deg.C , 36%
Engineer : Akio Hayashi
Mode : IEEE802.11a / Transmitting, 54Mbps

Ch	Freq. [MHz]	S/A Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]	
Lower band, Low	5180.0	-1.89	1.85	10.06	10.02	10.05	16.83	48.19	6.81
Lower band, Mid	5200.0	-1.51	1.85	10.06	10.40	10.96	16.72	47.02	6.32
Lower band, High	5240.0	-0.75	1.85	10.07	11.17	13.09	16.59	45.60	5.42
Mid band, Low	5260.0	-0.57	1.84	10.08	11.35	13.65	23.80	239.76	12.45
Mid band, Mid	5280.0	-0.44	1.84	10.08	11.48	14.06	23.73	235.92	12.25
Mid band, High	5320.0	-0.36	1.84	10.09	11.57	14.35	23.76	237.92	12.19

Sample Calculation:

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

15.407(a)(1) Limit(Cond.) = 16.99dBm(50mW) or 4 + 10log(26dB BW) dBm

15.407(a)(2) Limit(Cond.) = 23.98dBm(250mW) or 11 + 10log(26dB BW) dBm

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

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

[Pre check]

Data Rate [Mbps]	Freq. [MHz]	S/A Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]	
6	5180.0	-1.94	1.85	10.06	9.97	9.93	16.74	47.25	6.77
9	5180.0	-1.97	1.85	10.06	9.94	9.86	16.74	47.25	6.80
12	5180.0	-1.90	1.85	10.06	10.01	10.02	16.74	47.25	6.73
18	5180.0	-1.90	1.85	10.06	10.01	10.02	16.74	47.25	6.73
24	5180.0	-1.92	1.85	10.06	9.99	9.98	16.74	47.25	6.75
36	5180.0	-1.92	1.85	10.06	9.99	9.98	16.74	47.25	6.75
48	5180.0	-1.90	1.85	10.06	10.01	10.02	16.74	47.25	6.73
54	5180.0	-1.89	1.85	10.06	10.02	10.05	16.74	47.25	6.72

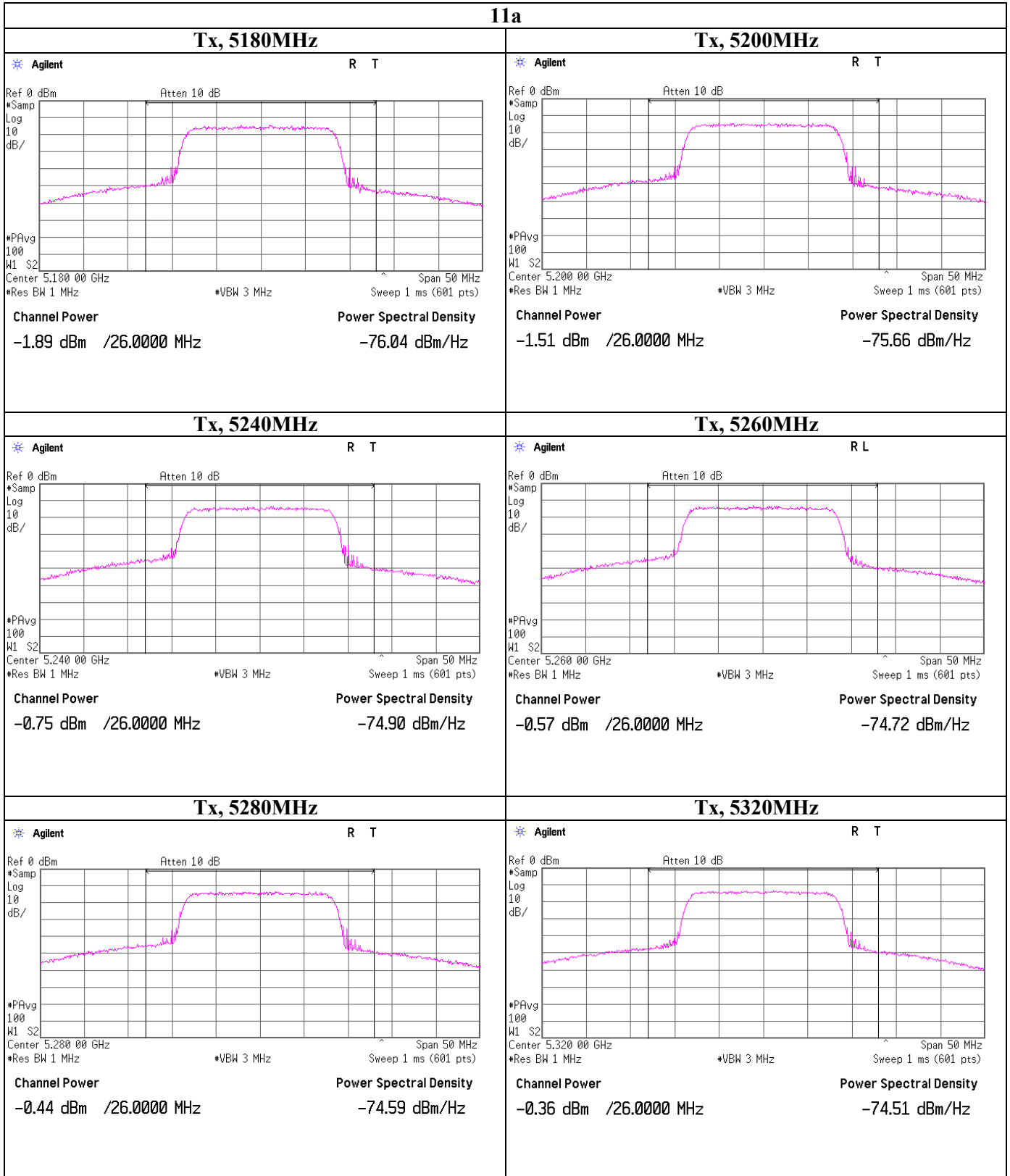
UL Japan, Inc.
Shonan EMC Lab.

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

Telephone : +81 463 50 6400

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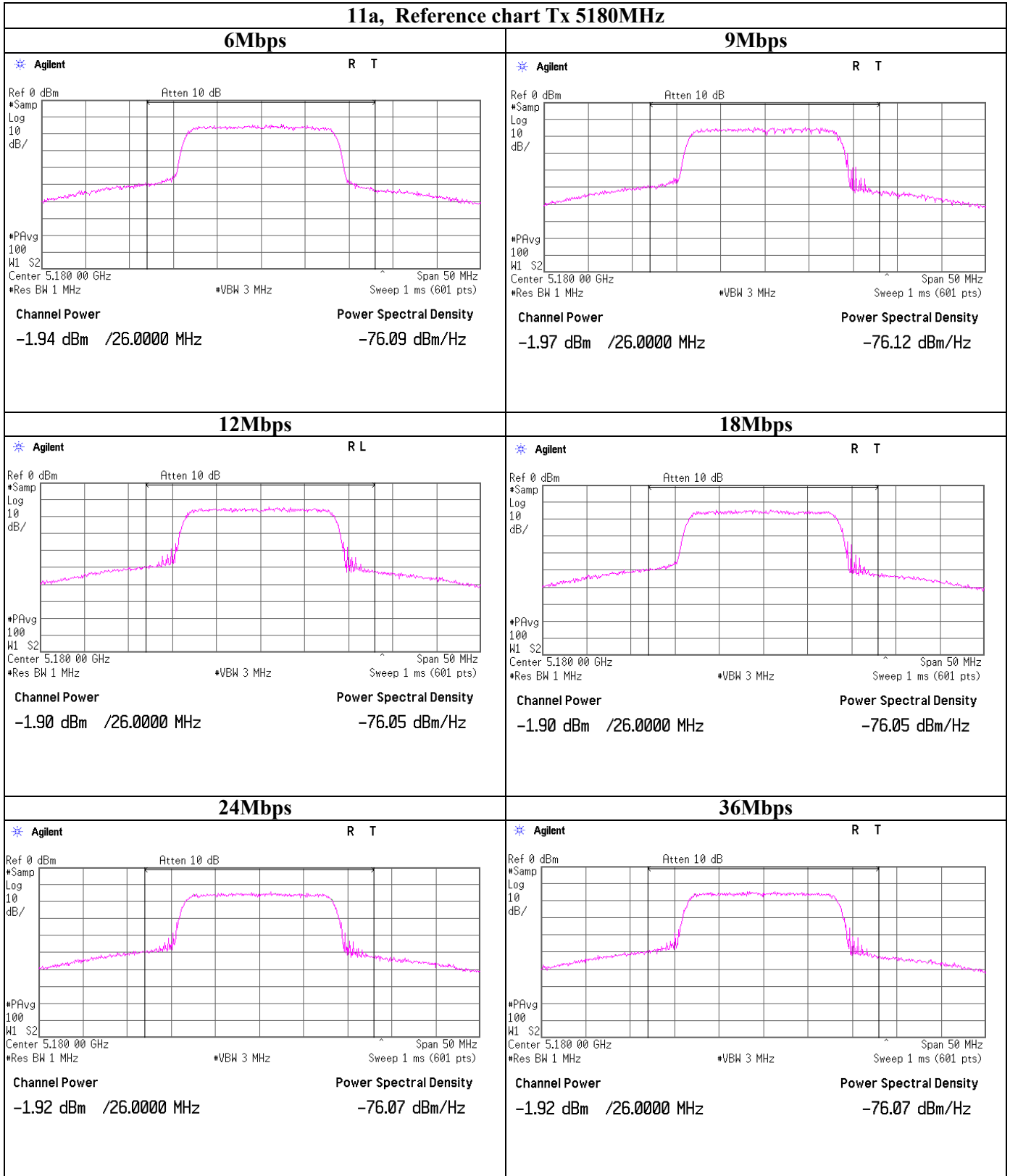
Peak Output Power (Conducted)



UL Japan, Inc.
Shonan EMC Lab.

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Peak Output Power (Conducted)



UL Japan, Inc.
Shonan EMC Lab.

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 Facsimile : +81 463 50 6401

Radiated Emission (below 1GHz and above 1GHz Inside of the restricted band)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.3 Semi Anechoic Chamber
Date	2010/2/26 2010/2/27	2010/3/1 2010/3/2
Temperature / Humidity	26deg.C., 46% 23deg.C., 50%	24deg.C., 43% 23deg.C., 34%
Engineer	Tatsuya Arai Akio Hayashi	Makoto Hosaka Makoto Hosaka
Mode	IEEE802.11a / Tx, 54Mbps, 5180MHz	

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.	199.998	QP	48.1	16.8	7.8	32.0	40.7	43.5	2.8	165	18	Module:X, Antenna:X
Hori.	239.978	QP	51.3	17.1	8.0	31.9	44.5	46.0	1.5	145	34	Module:X, Antenna:X
Hori.	319.954	QP	52.1	14.1	8.4	31.9	42.7	46.0	3.3	100	41	Module:X, Antenna:X
Vert.	239.992	QP	46.0	17.1	8.0	31.9	39.2	46.0	6.8	100	120	Module:Z, Antenna:X
Vert.	319.954	QP	38.8	14.1	8.4	31.9	29.4	46.0	16.6	315	73	Module:Z, Antenna:X
Hori.	4144.00	PK	50.6	29.2	14.8	40.2	54.4	74.0	19.6	100	143	Module:Z, Antenna:Z
Hori.	5150.00	PK	59.0	31.5	15.5	39.2	66.8	74.0	7.2	100	347	Module:Z, Antenna:Z
Hori.	8287.93	PK	49.4	37.6	7.1	38.2	55.9	74.0	18.1	100	304	Module:Z, Antenna:Z
Hori.	15540.00	PK	61.6	39.6	0.2	37.5	63.9	74.0	10.1	100	24	Module:Z, Antenna:Y
Hori.	20720.00	PK	55.0	40.1	-2.7	43.8	48.6	74.0	25.4	100	72	Module:Z, Antenna:X
Hori.	31080.00	PK	63.0	43.9	4.0	65.3	45.6	74.0	28.4	100	56	Module:Z, Antenna:X
Vert.	4144.00	PK	49.6	29.2	14.8	40.2	53.4	74.0	20.7	100	324	Module:Y, Antenna:Y
Vert.	5150.00	PK	58.3	31.5	15.5	39.2	66.1	74.0	7.9	102	129	Module:Y, Antenna:Y
Vert.	8287.93	PK	49.4	37.6	7.1	38.2	55.9	74.0	18.1	102	172	Module:Y, Antenna:Y
Vert.	15540.00	PK	55.1	39.6	0.2	37.5	57.4	74.0	16.6	100	354	Module:Z, Antenna:Z
Vert.	20720.00	PK	54.3	40.1	-2.7	43.8	47.9	74.0	26.1	100	201	Module:Y, Antenna:Z
Vert.	31080.00	PK	61.9	43.9	4.0	65.3	44.5	74.0	29.5	100	3	Module:Z, Antenna:X
Hori.	4144.00	AV	44.5	29.2	14.8	40.2	48.3	54.0	5.7	100	143	Module:Z, Antenna:Z
Hori.	5150.00	AV	42.9	31.5	15.5	39.2	50.7	54.0	3.3	100	347	Module:Z, Antenna:Z
Hori.	8287.93	AV	43.8	37.6	7.1	38.2	50.3	54.0	3.7	100	304	Module:Z, Antenna:Z
Hori.	15540.00	AV	51.0	39.6	0.2	37.5	53.3	54.0	0.7	100	24	Module:Z, Antenna:Y
Hori.	20720.00	AV	44.0	40.1	-2.7	43.8	37.6	54.0	16.4	100	72	Module:Z, Antenna:X
Hori.	31080.00	AV	50.4	43.9	4.0	65.3	33.0	54.0	21.0	100	56	Module:Z, Antenna:X
Vert.	4144.00	AV	42.8	29.2	14.8	40.2	46.6	54.0	7.4	100	324	Module:Y, Antenna:Y
Vert.	5150.00	AV	43.6	31.5	15.5	39.2	51.4	54.0	2.6	102	129	Module:Y, Antenna:Y
Vert.	8287.93	AV	44.7	37.6	7.1	38.2	51.2	54.0	2.8	102	172	Module:Y, Antenna:Y
Vert.	15540.00	AV	45.5	39.6	0.2	37.5	47.8	54.0	6.2	100	354	Module:Z, Antenna:Z
Vert.	20720.00	AV	43.1	40.1	-2.7	43.8	36.7	54.0	17.3	100	201	Module:Y, Antenna:Z
Vert.	31080.00	AV	49.1	43.9	4.0	65.3	31.7	54.0	22.3	100	3	Module:Z, Antenna:X

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 (below 1GHz and above 1GHz Inside of the restricted band)

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
 Date 2010/2/26 2010/2/27 2010/3/1 2010/3/2
 Temperature / Humidity 26deg.C., 46% 23deg.C., 50% 24deg.C., 43% 23deg.C., 34%
 Engineer Tatsuya Arai Akio Hayashi Makoto Hosaka Makoto Hosaka
 Mode IEEE802.11a / Tx, 54Mbps, 5200MHz

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.	199.993	QP	46.6	16.8	7.8	32.0	39.2	43.5	4.3	166	28	Module:X, Antenna:X
Hori.	239.985	QP	52.2	17.1	8.0	31.9	45.4	46.0	0.6	141	32	Module:X, Antenna:X
Hori.	319.967	QP	51.3	14.1	8.4	31.9	41.9	46.0	4.1	103	46	Module:X, Antenna:X
Vert.	239.995	QP	46.6	17.1	8.0	31.9	39.8	46.0	6.2	100	121	Module:Z, Antenna:X
Vert.	319.965	QP	39.0	14.1	8.4	31.9	29.6	46.0	16.4	313	78	Module:Z, Antenna:X
Hori.	4159.98	PK	50.1	29.3	14.8	40.2	54.0	74.0	20.0	100	129	Module:Z, Antenna:Z
Hori.	8319.94	PK	49.5	37.6	7.1	38.1	56.1	74.0	17.9	100	306	Module:Z, Antenna:Z
Hori.	15600.00	PK	62.2	39.4	0.4	37.5	64.5	74.0	9.5	100	64	Module:Z, Antenna:Y
Hori.	20800.00	PK	54.8	40.1	-2.6	43.7	48.6	74.0	25.4	100	74	Module:Z, Antenna:X
Hori.	31200.00	PK	63.6	43.8	4.0	64.8	46.6	74.0	27.4	100	350	Module:Z, Antenna:X
Vert.	4159.98	PK	49.3	29.3	14.8	40.2	53.2	74.0	20.8	100	325	Module:Y, Antenna:Y
Vert.	8319.94	PK	49.9	37.6	7.1	38.1	56.5	74.0	17.5	102	171	Module:Y, Antenna:Y
Vert.	15600.00	PK	55.8	39.4	0.4	37.5	58.1	74.0	15.9	100	342	Module:Z, Antenna:Z
Vert.	20800.00	PK	56.1	40.1	-2.6	43.7	49.9	74.0	24.1	100	210	Module:Y, Antenna:Z
Vert.	31200.00	PK	62.8	43.8	4.0	64.8	45.8	74.0	28.2	100	2	Module:Z, Antenna:X
Hori.	4159.98	AV	43.8	29.3	14.8	40.2	47.7	54.0	6.4	100	129	Module:Z, Antenna:Z
Hori.	8319.94	AV	44.5	37.6	7.1	38.1	51.1	54.0	2.9	100	306	Module:Z, Antenna:Z
Hori.	15600.00	AV	51.0	39.4	0.4	37.5	53.3	54.0	0.7	100	64	Module:Z, Antenna:Y
Hori.	20800.00	AV	44.2	40.1	-2.6	43.7	38.0	54.0	16.0	100	74	Module:Z, Antenna:X
Hori.	31200.00	AV	50.7	43.8	4.0	64.8	33.7	54.0	20.3	100	350	Module:Z, Antenna:X
Vert.	4159.98	AV	42.8	29.3	14.8	40.2	46.7	54.0	7.4	100	325	Module:Y, Antenna:Y
Vert.	8319.94	AV	45.6	37.6	7.1	38.1	52.2	54.0	1.8	102	171	Module:Y, Antenna:Y
Vert.	15600.00	AV	44.4	39.4	0.4	37.5	46.7	54.0	7.3	100	342	Module:Z, Antenna:Z
Vert.	20800.00	AV	43.7	40.1	-2.6	43.7	37.5	54.0	16.5	100	210	Module:Y, Antenna:Z
Vert.	31200.00	AV	50.1	43.8	4.0	64.8	33.1	54.0	20.9	100	2	Module:Z, Antenna:X

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 (below 1GHz and above 1GHz Inside of the restricted band)

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
 Date 2010/2/26 2010/2/27 2010/3/1 2010/3/2
 Temperature / Humidity 26deg.C., 46% 23deg.C., 50% 24deg.C., 43% 23deg.C., 34%
 Engineer Tatsuya Arai Akio Hayashi Makoto Hosaka Makoto Hosaka
 Mode IEEE802.11a / Tx, 54Mbps, 5240MHz

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.	199.985	QP	47.1	16.8	7.8	32.0	39.7	43.5	3.8	166	21	Module:X, Antenna:X
Hori.	239.983	QP	51.7	17.1	8.0	31.9	44.9	46.0	1.1	100	121	Module:X, Antenna:X
Hori.	319.958	QP	51.4	14.1	8.4	31.9	42.0	46.0	4.0	102	44	Module:X, Antenna:X
Vert.	239.992	QP	46.8	17.1	8.0	31.9	40.0	46.0	6.0	100	121	Module:Z, Antenna:X
Vert.	319.957	QP	38.7	14.1	8.4	31.9	29.3	46.0	16.7	317	77	Module:Z, Antenna:X
Hori.	4191.95	PK	50.5	29.3	14.8	40.2	54.4	74.0	19.6	100	142	Module:Z, Antenna:Z
Hori.	8383.92	PK	48.7	37.6	7.1	38.0	55.4	74.0	18.6	104	308	Module:Z, Antenna:Z
Hori.	15720.00	PK	59.9	39.0	0.4	37.6	61.7	74.0	12.3	100	80	Module:Z, Antenna:Y
Hori.	20960.00	PK	58.5	40.1	-2.6	43.5	52.5	74.0	21.5	100	322	Module:Z, Antenna:X
Hori.	31440.00	PK	64.1	43.7	4.1	63.9	48.0	74.0	26.0	100	350	Module:Z, Antenna:X
Vert.	4191.95	PK	49.1	29.3	14.8	40.2	53.0	74.0	21.0	100	329	Module:Y, Antenna:Y
Vert.	8383.92	PK	50.4	37.6	7.1	38.0	57.1	74.0	16.9	101	172	Module:Y, Antenna:Y
Vert.	15720.00	PK	54.0	39.0	0.4	37.6	55.8	74.0	18.2	100	353	Module:Z, Antenna:Z
Vert.	20960.00	PK	58.0	40.1	-2.6	43.5	52.0	74.0	22.0	100	152	Module:Y, Antenna:Z
Vert.	31440.00	PK	63.7	43.7	4.1	63.9	47.6	74.0	26.4	100	3	Module:Z, Antenna:X
Hori.	4191.95	AV	44.8	29.3	14.8	40.2	48.7	54.0	5.3	100	142	Module:Z, Antenna:Z
Hori.	8383.92	AV	43.3	37.6	7.1	38.0	50.0	54.0	4.0	104	308	Module:Z, Antenna:Z
Hori.	15720.00	AV	51.0	39.0	0.4	37.6	52.8	54.0	1.2	100	80	Module:Z, Antenna:Y
Hori.	20960.00	AV	47.2	40.1	-2.6	43.5	41.2	54.0	12.8	100	322	Module:Z, Antenna:X
Hori.	31440.00	AV	51.3	43.7	4.1	63.9	35.2	54.0	18.8	100	350	Module:Z, Antenna:X
Vert.	4191.95	AV	42.0	29.3	14.8	40.2	45.9	54.0	8.1	100	329	Module:Y, Antenna:Y
Vert.	8383.92	AV	46.9	37.6	7.1	38.0	53.6	54.0	0.4	101	172	Module:Y, Antenna:Y
Vert.	15720.00	AV	44.2	39.0	0.4	37.6	46.0	54.0	8.0	100	353	Module:Z, Antenna:Z
Vert.	20960.00	AV	45.9	40.1	-2.6	43.5	39.9	54.0	14.1	100	152	Module:Y, Antenna:Z
Vert.	31440.00	AV	51.3	43.7	4.1	63.9	35.2	54.0	18.8	100	3	Module:Z, Antenna:X

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 (below 1GHz and above 1GHz Inside of the restricted band)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.3 Semi Anechoic Chamber
Date	2010/2/26 2010/2/27	2010/3/1 2010/3/2
Temperature / Humidity	26deg.C., 46% 23deg.C., 50%	24deg.C., 43% 23deg.C., 34%
Engineer	Tatsuya Arai Akio Hayashi	Makoto Hosaka Makoto Hosaka
Mode	IEEE802.11a / Tx, 54Mbps, 5260MHz	

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.	198.131	QP	48.4	16.7	7.8	32.0	40.9	43.5	2.6	169	175	Module:X, Antenna:X
Hori.	239.992	QP	50.7	17.1	8.0	31.9	43.9	46.0	2.1	139	18	Module:X, Antenna:X
Hori.	319.951	QP	51.6	14.1	8.4	31.9	42.2	46.0	3.8	104	50	Module:X, Antenna:X
Vert.	239.993	QP	43.6	17.1	8.0	31.9	36.8	46.0	9.2	100	64	Module:Z, Antenna:X
Vert.	319.961	QP	40.5	14.1	8.4	31.9	31.1	46.0	14.9	244	92	Module:Z, Antenna:X
Hori.	4207.95	PK	50.2	29.3	14.8	40.1	54.2	74.0	19.8	100	144	Module:Z, Antenna:Z
Hori.	8415.95	PK	49.7	37.6	7.0	38.0	56.3	74.0	17.7	126	300	Module:Z, Antenna:Z
Hori.	15780.00	PK	59.9	38.9	0.5	37.6	61.7	74.0	12.3	100	83	Module:Z, Antenna:Y
Hori.	21040.00	PK	54.7	40.1	-2.6	43.6	48.6	74.0	25.4	100	144	Module:Z, Antenna:X
Hori.	31560.00	PK	67.1	43.7	4.1	63.8	51.1	74.0	22.9	100	350	Module:Z, Antenna:X
Vert.	4207.95	PK	50.1	29.3	14.8	40.1	54.1	74.0	19.9	112	331	Module:Y, Antenna:Y
Vert.	8415.95	PK	52.7	37.6	7.0	38.0	59.3	74.0	14.7	109	175	Module:Y, Antenna:Y
Vert.	15780.00	PK	54.6	38.9	0.5	37.6	56.4	74.0	17.6	100	5	Module:Z, Antenna:Z
Vert.	21040.00	PK	55.6	40.1	-2.6	43.6	49.5	74.0	24.5	100	214	Module:Y, Antenna:Z
Vert.	31560.00	PK	65.7	43.7	4.1	63.8	49.7	74.0	24.3	100	1	Module:Z, Antenna:X
Hori.	4207.95	AV	45.2	29.3	14.8	40.1	49.2	54.0	4.8	100	144	Module:Z, Antenna:Z
Hori.	8415.95	AV	44.6	37.6	7.0	38.0	51.2	54.0	2.8	126	300	Module:Z, Antenna:Z
Hori.	15780.00	AV	51.2	38.9	0.5	37.6	53.0	54.0	1.0	100	83	Module:Z, Antenna:Y
Hori.	21040.00	AV	41.0	40.1	-2.6	43.6	34.9	54.0	19.1	100	144	Module:Z, Antenna:X
Hori.	31560.00	AV	52.9	43.7	4.1	63.8	36.9	54.0	17.1	100	350	Module:Z, Antenna:X
Vert.	4207.95	AV	42.9	29.3	14.8	40.1	46.9	54.0	7.1	112	331	Module:Y, Antenna:Y
Vert.	8415.95	AV	47.2	37.6	7.0	38.0	53.8	54.0	0.2	109	175	Module:Y, Antenna:Y
Vert.	15780.00	AV	44.6	38.9	0.5	37.6	46.4	54.0	7.6	100	5	Module:Z, Antenna:Z
Vert.	21040.00	AV	44.3	40.1	-2.6	43.6	38.2	54.0	15.8	100	214	Module:Y, Antenna:Z
Vert.	31560.00	AV	53.1	43.7	4.1	63.8	37.1	54.0	16.9	100	1	Module:Z, Antenna:X

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 (below 1GHz and above 1GHz Inside of the restricted band)

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
 Date 2010/2/26 2010/2/27 2010/3/1 2010/3/2
 Temperature / Humidity 26deg.C., 46% 23deg.C., 50% 24deg.C., 43% 23deg.C., 34%
 Engineer Tatsuya Arai Akio Hayashi Makoto Hosaka Makoto Hosaka
 Mode IEEE802.11a / Tx, 54Mbps, 5280MHz

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.	198.15	QP	48.2	16.7	7.8	32.0	40.7	43.5	2.8	170	170	Module:X, Antenna:X
Hori.	240	QP	50.9	17.1	8.0	31.9	44.1	46.0	1.9	140	15	Module:X, Antenna:X
Hori.	319.962	QP	51.5	14.1	8.4	31.9	42.1	46.0	3.9	103	44	Module:X, Antenna:X
Vert.	240	QP	47.0	17.1	8.0	31.9	40.2	46.0	5.8	100	27	Module:Z, Antenna:X
Vert.	319.962	QP	40.8	14.1	8.4	31.9	31.4	46.0	14.6	206	75	Module:Z, Antenna:X
Hori.	4223.96	PK	50.8	29.4	14.8	40.1	54.9	74.0	19.1	100	142	Module:Z, Antenna:Z
Hori.	8447.94	PK	51.3	37.6	7.0	38.0	57.9	74.0	16.1	126	313	Module:Z, Antenna:Z
Hori.	15840.00	PK	56.8	38.7	0.5	37.7	58.3	74.0	15.7	100	24	Module:Z, Antenna:Y
Hori.	21120.00	PK	57.6	40.1	-2.6	43.7	51.4	74.0	22.6	100	323	Module:Z, Antenna:X
Hori.	31680.00	PK	65.6	43.7	4.1	64.2	49.2	74.0	24.8	100	334	Module:Z, Antenna:X
Vert.	4223.96	PK	49.7	29.4	14.8	40.1	53.8	74.0	20.2	100	316	Module:Y, Antenna:Y
Vert.	8447.94	PK	51.7	37.6	7.0	38.0	58.3	74.0	15.7	101	174	Module:Y, Antenna:Y
Vert.	15840.00	PK	47.1	38.7	0.5	37.7	48.6	74.0	25.4	100	83	Module:Z, Antenna:Z
Vert.	21120.00	PK	53.5	40.1	-2.6	43.7	47.3	74.0	26.7	100	217	Module:Y, Antenna:Z
Vert.	31680.00	PK	65.4	43.7	4.1	64.2	49.0	74.0	25.0	100	337	Module:Z, Antenna:X
Hori.	4223.96	AV	45.2	29.4	14.8	40.1	49.3	54.0	4.7	100	142	Module:Z, Antenna:Z
Hori.	8447.94	AV	47.1	37.6	7.0	38.0	53.7	54.0	0.3	126	313	Module:Z, Antenna:Z
Hori.	15840.00	AV	49.2	38.7	0.5	37.7	50.7	54.0	3.3	100	24	Module:Z, Antenna:Y
Hori.	21120.00	AV	45.4	40.1	-2.6	43.7	39.2	54.0	14.8	100	323	Module:Z, Antenna:X
Hori.	31680.00	AV	52.8	43.7	4.1	64.2	36.4	54.0	17.6	100	334	Module:Z, Antenna:X
Vert.	4223.96	AV	43.4	29.4	14.8	40.1	47.5	54.0	6.5	100	316	Module:Y, Antenna:Y
Vert.	8447.94	AV	47.1	37.6	7.0	38.0	53.7	54.0	0.3	101	174	Module:Y, Antenna:Y
Vert.	15840.00	AV	39.0	38.7	0.5	37.7	40.5	54.0	13.5	100	83	Module:Z, Antenna:Z
Vert.	21120.00	AV	42.7	40.1	-2.6	43.7	36.5	54.0	17.5	100	217	Module:Y, Antenna:Z
Vert.	31680.00	AV	52.7	43.7	4.1	64.2	36.3	54.0	17.7	100	337	Module:Z, Antenna:X

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 (below 1GHz and above 1GHz Inside of the restricted band)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.3 Semi Anechoic Chamber
Date	2010/2/26 2010/2/27	2010/3/1 2010/3/2
Temperature / Humidity	26deg.C., 46% 23deg.C., 50%	24deg.C., 43% 23deg.C., 34%
Engineer	Tatsuya Arai Akio Hayashi	Makoto Hosaka Makoto Hosaka
Mode	IEEE802.11a / Tx, 54Mbps, 5320MHz	

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.	198.15	QP	48.5	16.7	7.8	32.0	41.0	43.5	2.5	170	165	Module:X, Antenna:X
Hori.	240	QP	51.0	17.1	8.0	31.9	44.2	46.0	1.8	142	17	Module:X, Antenna:X
Hori.	319.97	QP	51.7	14.1	8.4	31.9	42.3	46.0	3.7	104	48	Module:X, Antenna:X
Vert.	240	QP	47.3	17.1	8.0	31.9	40.5	46.0	5.5	100	21	Module:Z, Antenna:X
Vert.	319.97	QP	40.9	14.1	8.4	31.9	31.5	46.0	14.5	212	66	Module:Z, Antenna:X
Hori.	4255.96	PK	51.7	29.4	14.8	40.1	55.8	74.0	18.2	112	156	Module:Z, Antenna:Z
Hori.	5350.00	PK	50.5	31.8	15.4	38.9	58.8	74.0	15.2	110	329	Module:Z, Antenna:Z
Hori.	10640.00	PK	50.7	39.9	7.9	37.4	61.1	74.0	12.9	110	21	Module:Z, Antenna:Z
Hori.	15960.00	PK	56.9	38.3	0.6	37.7	58.1	74.0	15.9	100	77	Module:Z, Antenna:Y
Hori.	21280.00	PK	54.0	40.1	-2.6	44.0	47.5	74.0	26.5	100	54	Module:Z, Antenna:X
Vert.	4255.96	PK	50.8	29.4	14.8	40.1	54.9	74.0	19.1	112	339	Module:Y, Antenna:Y
Vert.	5350.00	PK	54.7	31.8	15.4	38.9	63.0	74.0	11.0	100	179	Module:Y, Antenna:Y
Vert.	10640.00	PK	55.1	39.9	7.9	37.4	65.5	74.0	8.5	107	203	Module:Y, Antenna:Y
Vert.	15960.00	PK	48.2	38.3	0.6	37.7	49.4	74.0	24.6	100	347	Module:Z, Antenna:Z
Vert.	21280.00	PK	49.4	40.1	-2.6	44.0	42.9	74.0	31.1	100	347	Module:Y, Antenna:Z
Hori.	4255.96	AV	47.0	29.4	14.8	40.1	51.1	54.0	2.9	112	156	Module:Z, Antenna:Z
Hori.	5350.00	AV	37.2	31.8	15.4	38.9	45.5	54.0	8.5	110	329	Module:Z, Antenna:Z
Hori.	10640.00	AV	40.2	39.9	7.9	37.4	50.6	54.0	3.4	110	21	Module:Z, Antenna:Z
Hori.	15960.00	AV	47.2	38.3	0.6	37.7	48.4	54.0	5.6	100	77	Module:Z, Antenna:Y
Hori.	21280.00	AV	42.3	40.1	-2.6	44.0	35.8	54.0	18.2	100	54	Module:Z, Antenna:X
Vert.	4255.96	AV	45.2	29.4	14.8	40.1	49.3	54.0	4.7	112	339	Module:Y, Antenna:Y
Vert.	5350.00	AV	39.6	31.8	15.4	38.9	47.9	54.0	6.1	100	179	Module:Y, Antenna:Y
Vert.	10640.00	AV	43.2	39.9	7.9	37.4	53.6	54.0	0.4	107	203	Module:Y, Antenna:Y
Vert.	15960.00	AV	39.5	38.3	0.6	37.7	40.7	54.0	13.3	100	347	Module:Z, Antenna:Z
Vert.	21280.00	AV	38.9	40.1	-2.6	44.0	32.4	54.0	21.6	100	347	Module:Y, Antenna:Z

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

UL Japan, Inc.

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Data of Spurious Emissions (Calculation)(above 1GHz Outside of the restricted band)

UL Japan, Inc.
Shonan EMC Lab. Semi Anechoic Chamber : No3

MODE Tx 5180 MHz REGULATION FCC (FCC 2.1053)
IEEE802.11a / Tx, 54Mbps, 5180MHz TEST DISTANCE 3m(below13GHz)/ 1m(above13GHz)
DATE 2010/2/22, 2010/2/22
TEMPERATURE 20deg.C., 23deg.C. 20deg.C.
HUMIDITY 36%, 33% 35%
ENGINEER Akio Hayashi Akio Hayashi Akio Hayashi
(1-13GHz) (13-18GHz) (18-40GHz)

Frequency [MHz]	Electric Field Strength (After Factor Calculation) [dBuV]		Result(EIRP) [dBm]		LIMIT [dBm] (EIRP)	MARGIN [dB]		Horizontal		Vertical		Remarks
	HOR	VER	HOR	VER		HOR	VER	Rx, Ant. Height [cm]	Turn Table [deg.]	Rx, Ant. Height [cm]	Turn Table [deg.]	
5150.00	59.0	58.3	-36.2	-36.9	-27.0	9.2	9.9	100	347	102	129	Hor (Module:Z, Antenna:Z) Ver (Mudule:Y, Antenna: Y)
10360.00	61.0	62.2	-34.2	-33.0	-27.0	7.2	6.0	100	21	122	207	Hor (Module:Z, Antenna:Z) Ver (Mudule:Y, Antenna: Y)
16575.00	61.5	59.9	-43.3	-44.9	-27.0	16.3	17.9	100	65	100	177	Hor (Module:Z, Antenna:X) Ver (Mudule:Z, Antenna: Z)
25900.00	58.1	59.2	-46.7	-45.6	-27.0	19.7	18.6	100	65	100	144	Hor (Module:Z, Antenna:X) Ver (Mudule:Y, Antenna: Z)

Result(EIRP[dBm])=10*LOG((10^(Electric Field Strength [dBuV/m] / 20) * 10^(-6) * Distance:3or1[m])^2 / 30) *10^3)

All other emissions were at least 20dB below the specification limit.

With the result above, the equivalent isotropic radiated power was calculated on the basis of the reference value
- for the calibration data on the substitution measurement.

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

UL Japan, Inc.

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Data of Spurious Emissions (Calculation)(above 1GHz Outside of the restricted band)

UL Japan, Inc.
Shonan EMC Lab. Semi Anechoic Chamber : No3

MODE Tx 5200 MHz REGULATION FCC (FCC 2.1053)
IEEE802.11a / Tx, 54Mbps, 5200MHz TEST DISTANCE 3m(below13GHz)/ 1m(above13GHz)
DATE 2010/2/22 2010/2/22 2010/2/22
TEMPERATURE 20deg.C., 23deg.C. 20deg.C.
HUMIDITY 35%, 33% 35%
ENGINEER Akio Hayashi Akio Hayashi Akio Hayashi
(1-13GHz) (13-18GHz) (18-40GHz)

Frequency [MHz]	Electric Field Strength (After Factor Calculation) [dBuV]		Result(EIRP) [dBm]		LIMIT [dBm] (EIRP)	MARGIN [dB]		Horizontal		Vertical		Remarks
	HOR	VER	HOR	VER		HOR	VER	Rx, Ant.	Turn	Rx, Ant.	Turn	
								Height [cm]	Table [deg.]	Height [cm]	Table [deg.]	
10400.00	61.9	63.3	-33.3	-31.9	-27.0	6.3	4.9	100	21	134	209	Hor (Module:Z, Antenna:Z) Ver (Mudule:Y, Antenna: Y)
16639.85	63.8	57.5	-41.0	-47.3	-27.0	14.0	20.3	100	65	124	117	Hor (Module:Z, Antenna:X) Ver (Mudule:Z, Antenna: Z)
26000.00	57.3	58.3	-47.5	-46.5	-27.0	20.5	19.5	100	72	100	150	Hor (Module:Z, Antenna:X) Ver (Mudule:Y, Antenna: Z)

Result(EIRP[dBm])=10*LOG(({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:1or3[m]) ^ 2 } / 30) *10^3)

All other emissions were at least 20dB below the specification limit.

With the result above, the equivalent isotropic radiated power was calculated on the basis of the reference value

- for the calibration data on the substitution measurement.

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

UL Japan, Inc.

Shonan EMC Lab.

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

Telephone : +81- (0) 463-50-6400

Facsimile : +81- (0) 463-50-6401

Data of Spurious Emissions (Calculation)(above 1GHz Outside of the restricted band)

UL Japan, Inc.
Shonan EMC Lab. Semi Anechoic Chamber : No3

MODE Tx 5240 MHz REGULATION FCC (FCC 2.1053)
IEEE802.11a / Tx, 54Mbps, 5240MHz TEST DISTANCE 3m(below13GHz)/ 1m(above13GHz)
DATE 2010/2/22 2010/2/22
TEMPERATURE 20deg.C., 23deg.C. 20deg.C.
HUMIDITY 35%, 33% 35%
ENGINEER Akio Hayashi Akio Hayashi Akio Hayashi
(1-13GHz) (13-18GHz) (18-40GHz)

Frequency [MHz]	Electric Field Strength (After Factor Calculation) [dBuV]		Result(EIRP) [dBm]		LIMIT [dBm] (EIRP)	MARGIN [dB]		Horizontal		Vertical		Remarks
	HOR	VER	HOR	VER		HOR	VER	Rx, Ant. Height [cm]	Turn Table [deg.]	Rx, Ant. Height [cm]	Turn Table [deg.]	
10480.00	62.8	63.8	-32.4	-31.4	-27.0	5.4	4.4	100	20	127	208	Hor (Module:Z, Antenna:Z) Ver (Module:Y, Antenna: Y)
16767.92	63.0	60.4	-41.8	-44.4	-27.0	14.8	17.4	100	62	100	83	Hor (Module:Z, Antenna:X) Ver (Module:Z, Antenna: Z)
26200.00	56.2	56.1	-48.6	-48.7	-27.0	21.6	21.7	100	38	100	159	Hor (Module:Z, Antenna:X) Ver (Module:Y, Antenna: Z)

Result(EIRP[dBm])=10*LOG(({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:10r3[m]) ^ 2 } / 30) *10^3)

All other emissions were at least 20dB below the specification limit.

With the result above, the equivalent isotropic radiated power was calculated on the basis of the reference value

- for the calibration data on the substitution measurement.

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

UL Japan, Inc.

Shonan EMC Lab.

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Data of Spurious Emissions (Calculation)(above 1GHz Outside of the restricted band)

UL Japan, Inc.
Shonan EMC Lab. Semi Anechoic Chamber : No3

MODE Tx 5260 MHz REGULATION FCC (FCC 2.1053)
IEEE802.11a / Tx, 54Mbps, 5260MHz TEST DISTANCE 3m(below13GHz)/ 1m(above13GHz)
DATE 2010/2/22 2010/2/22
TEMPERATURE 20deg.C., 23deg.C. 20deg.C.
HUMIDITY 35%, 33% 35%
ENGINEER Akio Hayashi Akio Hayashi Akio Hayashi
(1-13GHz) (13-18GHz) (18-40GHz)

Frequency [MHz]	Electric Field Strength (After Factor Calculation) [dBuV]		Result(EIRP) [dBm]		LIMIT [dBm] (EIRP)	MARGIN [dB]		Horizontal		Vertical		Remarks
	HOR	VER	HOR	VER		HOR	VER	Rx, Ant. Height [cm]	Turn Table [deg.]	Rx, Ant. Height [cm]	Turn Table [deg.]	
10520.00	62.7	67.0	-32.5	-28.2	-27.0	5.5	1.2	118	21	118	21	Hor (Module:Z, Antenna:Z) Ver (Module:Y, Antenna: Y)
16831.75	63.7	60.4	-41.1	-44.4	-27.0	14.1	17.4	100	64	100	64	Hor (Module:Z, Antenna:X) Ver (Module:Z, Antenna: Z)
26300.00	55.6	55.6	-49.2	-49.2	-27.0	22.2	22.2	100	43	100	43	Hor (Module:Z, Antenna:X) Ver (Module:Y, Antenna: Z)

Result(EIRP[dBm])=10*LOG(({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:10r3[m]) ^ 2 } / 30) *10^3)

All other emissions were at least 20dB below the specification limit.

With the result above, the equivalent isotropic radiated power was calculated on the basis of the reference value

- for the calibration data on the substitution measurement.

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

UL Japan, Inc.

Shonan EMC Lab.

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

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Data of Spurious Emissions (Calculation)(above 1GHz Outside of the restricted band)

UL Japan, Inc.
Shonan EMC Lab. Semi Anechoic Chamber : No3

MODE Tx 5280 MHz REGULATION FCC (FCC 2.1053)
IEEE802.11a / Tx, 54Mbps, 5280MHz TEST DISTANCE 3m(below13GHz)/ 1m(above13GHz)
DATE 2010/2/22, 2010/2/22
TEMPERATURE 20deg.C., 23deg.C. 20deg.C.
HUMIDITY 35%, 33% 35%
ENGINEER Akio Hayashi Akio Hayashi Akio Hayashi
(1-13GHz) (13-18GHz) (18-40GHz)

Frequency [MHz]	Electric Field Strength (After Factor Calculation) [dBuV]		Result(EIRP) [dBm]		LIMIT [dBm] (EIRP)	MARGIN [dB]		Horizontal		Vertical		Remarks
	HOR	VER	HOR	VER		HOR	VER	Rx, Ant. Height [cm]	Turn Table [deg.]	Rx, Ant. Height [cm]	Turn Table [deg.]	
10560.00	64.3	64.8	-30.9	-30.4	-27.0	3.9	3.4	100	131	130	18	Hor (Module:Z, Antenna:Z) Ver (Module:Y, Antenna: Y)
16896.00	64.2	60.4	-40.6	-44.4	-27.0	13.6	17.4	100	62	100	192	Hor (Module:Z, Antenna:X) Ver (Module:Z, Antenna: Z)
26400.00	53.3	52.0	-51.5	-52.8	-27.0	24.5	25.8	100	59	105	154	Hor (Module:Z, Antenna:X) Ver (Module:Y, Antenna: Z)

Result(EIRP[dBm])=10*LOG(({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:1or3[m]) ^ 2 } / 30) *10^3)

All other emissions were at least 20dB below the specification limit.

With the result above, the equivalent isotropic radiated power was calculated on the basis of the reference value

- for the calibration data on the substitution measurement.

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

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Data of Spurious Emissions (Calculation)(above 1GHz Outside of the restricted band)

UL Japan, Inc.
Shonan EMC Lab. Semi Anechoic Chamber : No3

MODE Tx 5320 MHz REGULATION FCC (FCC 2.1053)
IEEE802.11a / Tx, 54Mbps, 5320MHz TEST DISTANCE 3m(below13GHz)/ 1m(above13GHz)
DATE 2010/2/22, 2010/2/22
TEMPERATURE 20deg.C., 23deg.C. 20deg.C.
HUMIDITY 36%, 33% 35%
ENGINEER Akio Hayashi Akio Hayashi Akio Hayashi
(1-13GHz) (13-18GHz) (18-40GHz)

Frequency [MHz]	Electric Field Strength (After Factor Calculation) [dBuV]		Result(EIRP) [dBm]		LIMIT [dBm] (EIRP)	MARGIN [dB]		Horizontal		Vertical		Remarks
	HOR	VER	HOR	VER		HOR	VER	Rx, Ant. Height [cm]	Turn Table [deg.]	Rx, Ant. Height [cm]	Turn Table [deg.]	
5350.00	50.5	54.7	-44.7	-40.5	-27.0	17.7	13.5	110	329	100	179	Hor (Module:Z, Antenna:Z) Ver (Module:Y, Antenna: Y)
8511.96	57.1	57.1	-38.1	-38.1	-27.0	11.1	11.1	148	315	108	173	Hor (Module:Z, Antenna:Z) Ver (Module:Y, Antenna: Y)
17025.00	63.9	59.3	-40.9	-45.5	-27.0	13.9	18.5	100	59	100	162	Hor (Module:Z, Antenna:X) Ver (Module:Z, Antenna: Z)
26600.00	53.0	51.8	-51.8	-53.0	-27.0	24.8	26.0	100	132	100	201	Hor (Module:Z, Antenna:X) Ver (Module:Y, Antenna: Z)
31920.00	57.5	56.4	-47.3	-48.4	-27.0	20.3	21.4	100	350	100	336	Hor (Module:Z, Antenna:X) Ver (Module:Z, Antenna: X)

Result(EIRP[dBm])=10*LOG((10^(Electric Field Strength [dBuV/m] / 20) * 10^(-6) * Distance:1or3[m])^2 / 30)*10^3)

All other emissions were at least 20dB below the specification limit.

With the result above, the equivalent isotropic radiated power was calculated on the basis of the reference value - for the calibration data on the substitution measurement.

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

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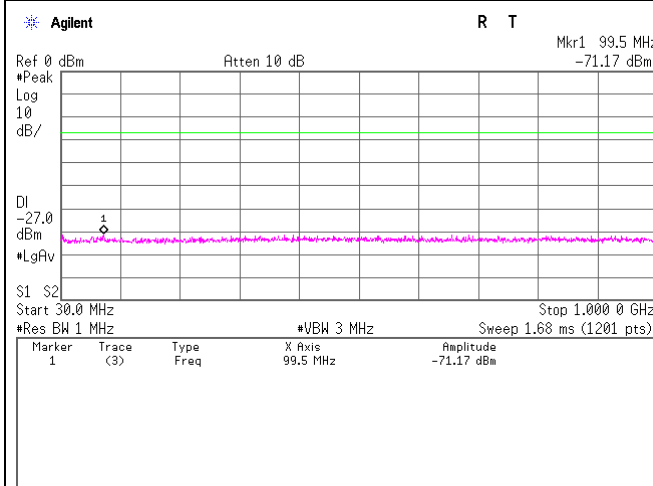
Facsimile : +81- (0) 463-50-6401

Spurious emission (Conducted)

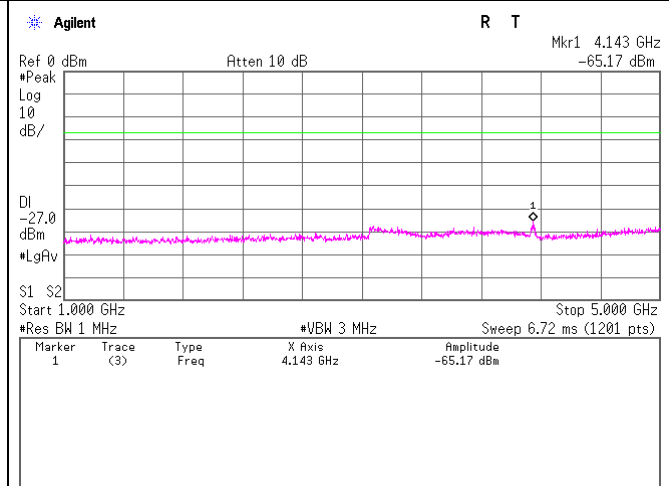
11a

Tx, 5180MHz

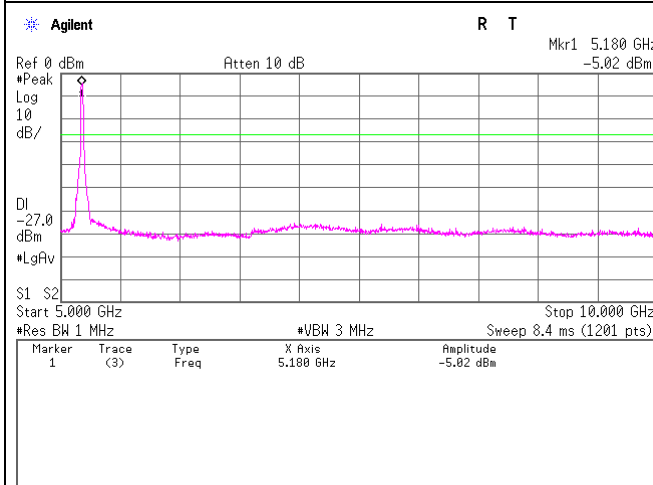
30MHz - 1GHz



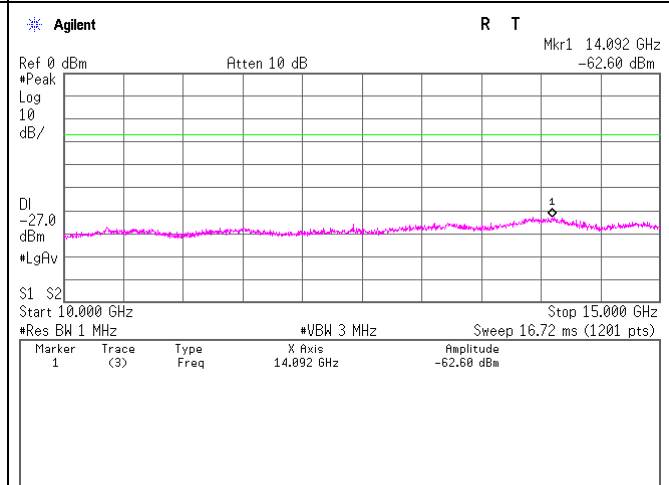
1GHz - 5GHz



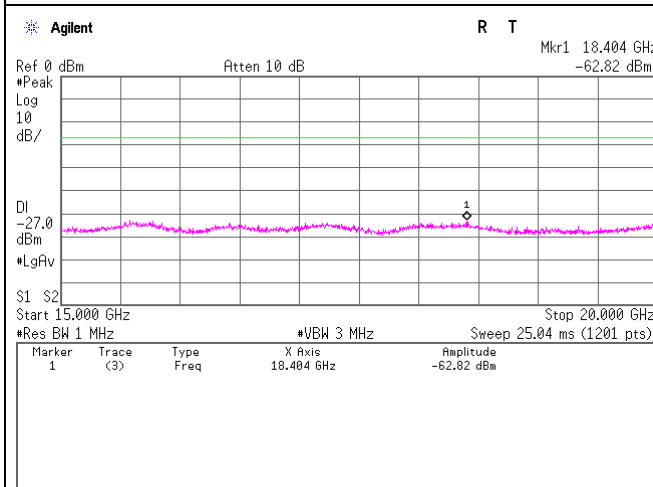
5GHz - 10GHz



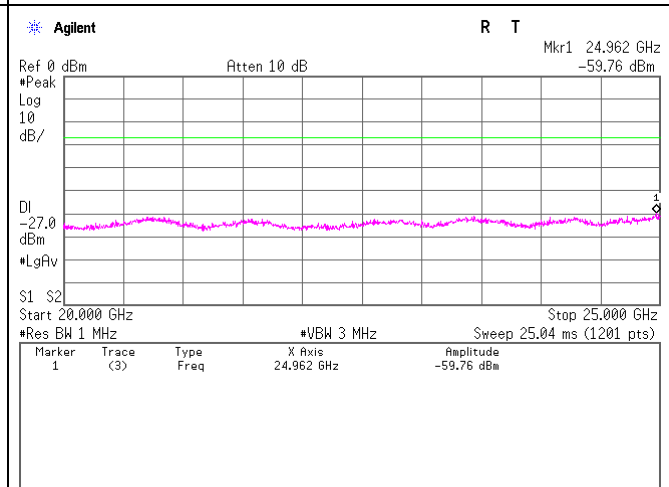
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



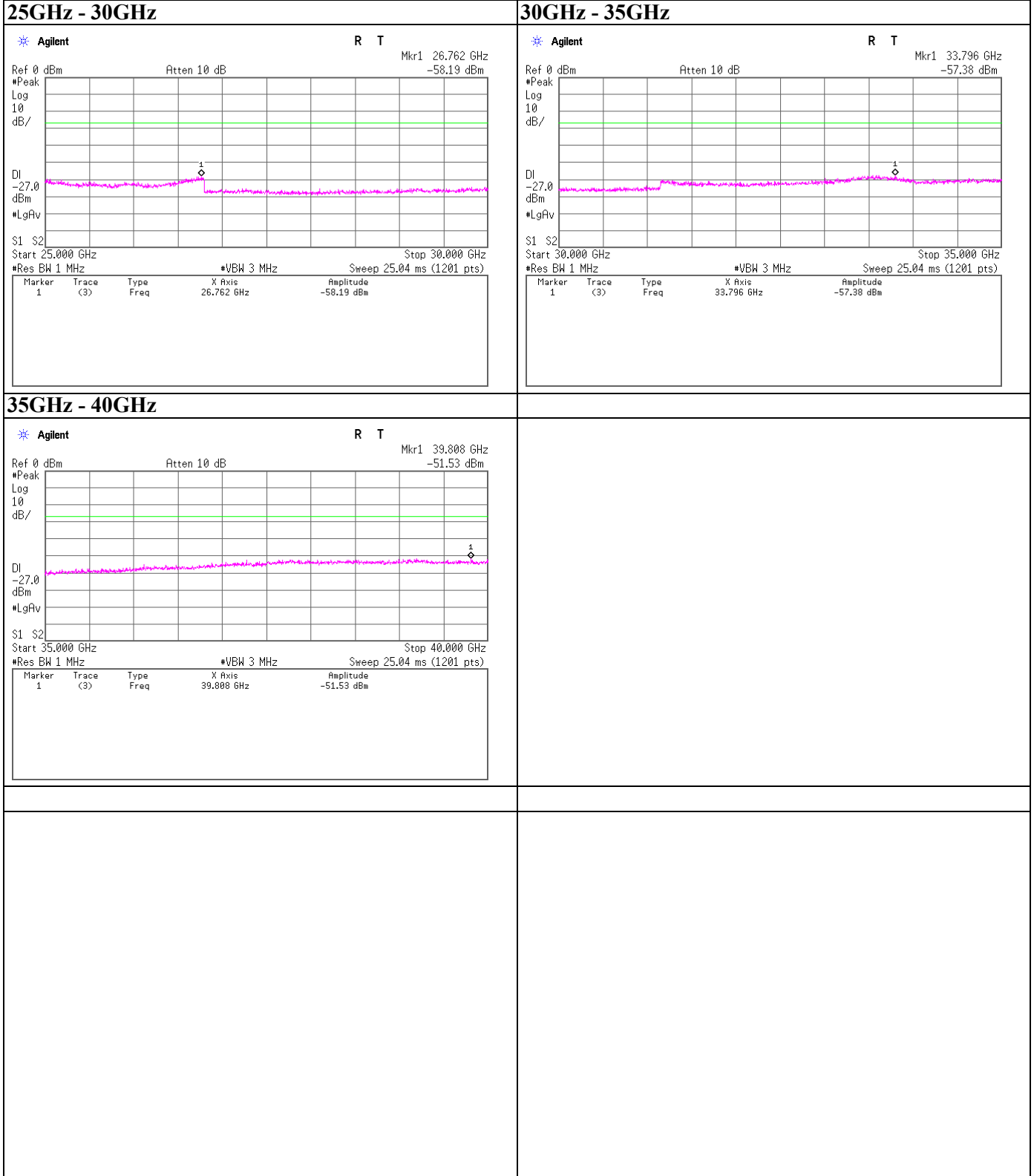
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Spurious emission (Conducted)

11a

Tx, 5180MHz



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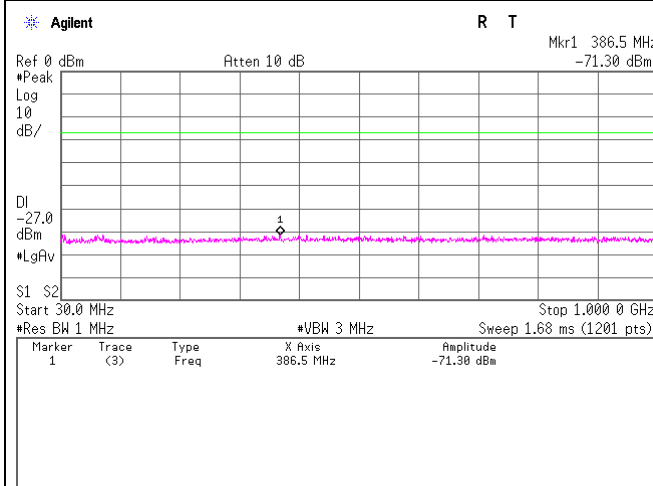
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
 Telephone : +81 463 50 6400
 Facsimile : +81 463 50 6401

Spurious emission (Conducted)

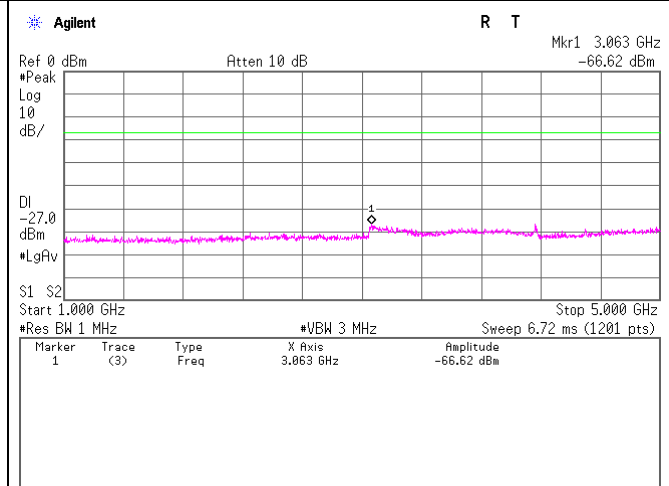
11a

Tx, 5200MHz

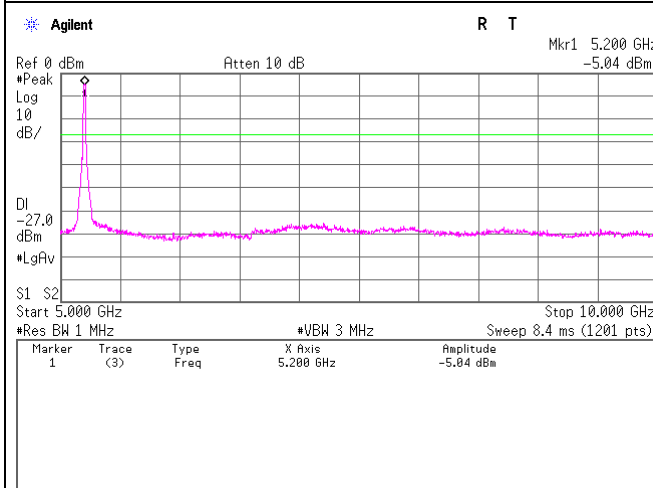
30MHz - 1GHz



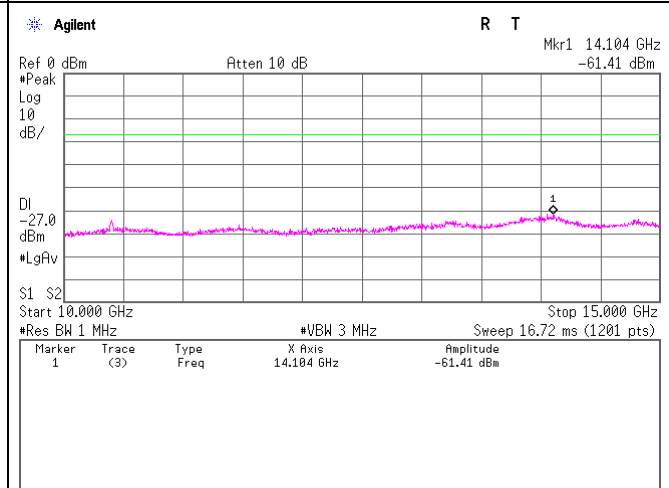
1GHz - 5GHz



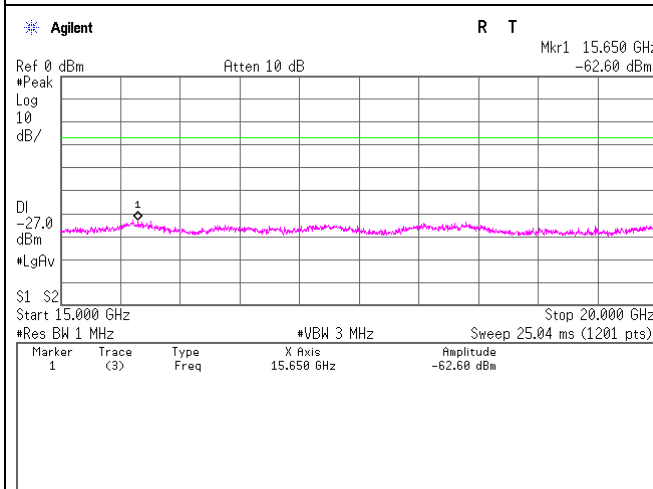
5GHz - 10GHz



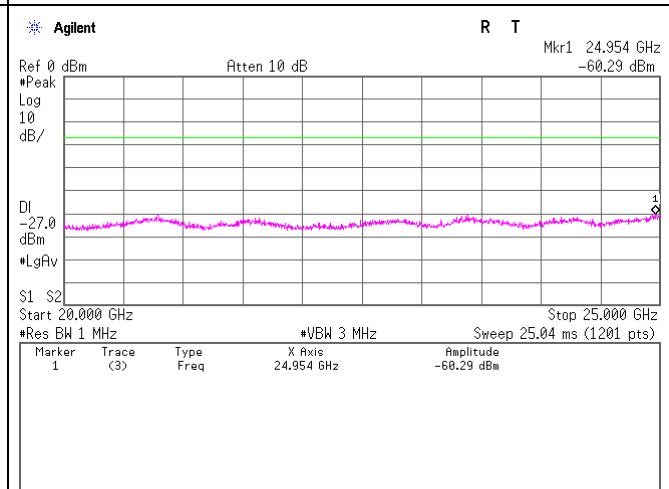
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



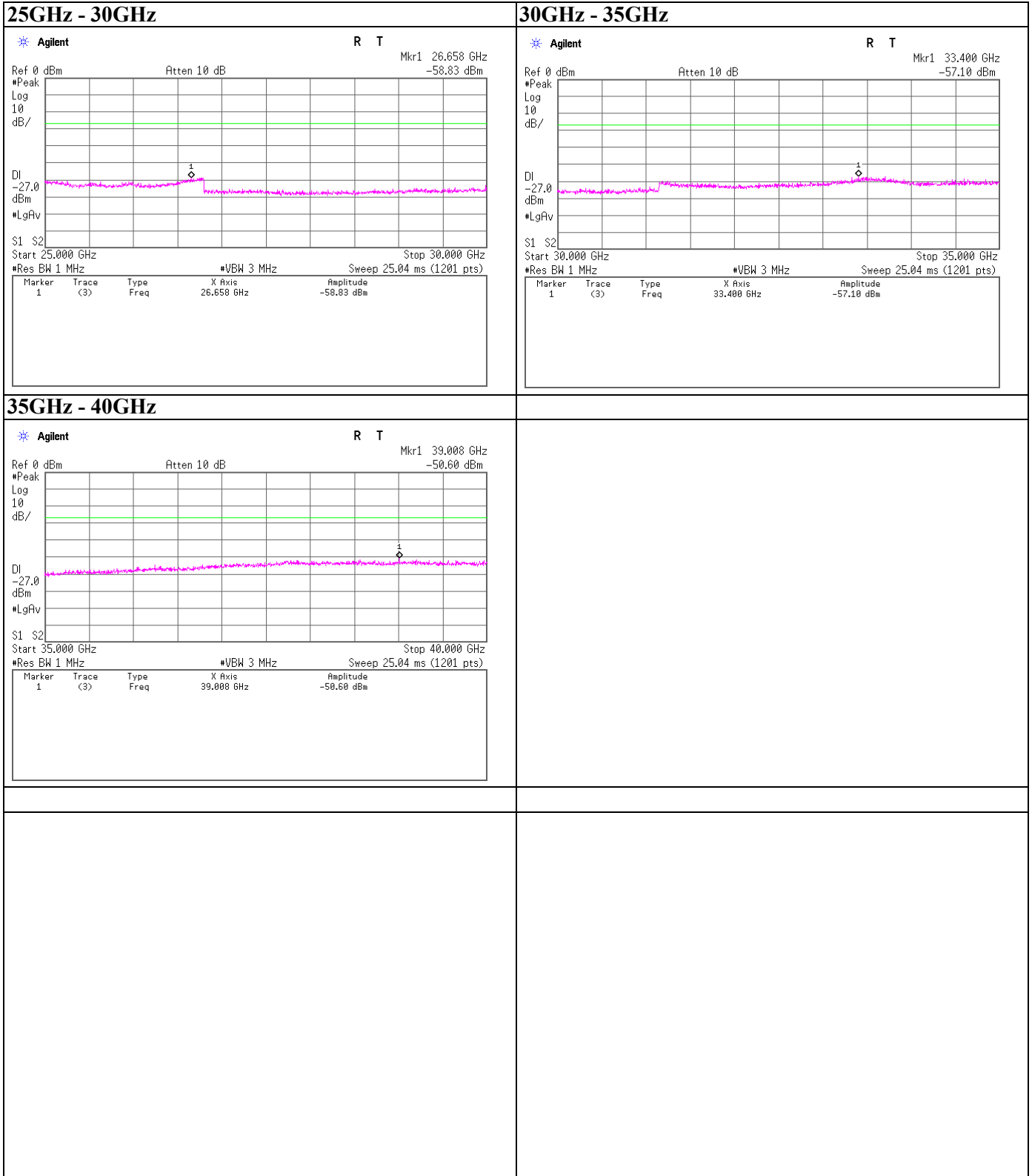
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Spurious emission (Conducted)

11a

Tx, 5200MHz



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Shonan EMC Lab.

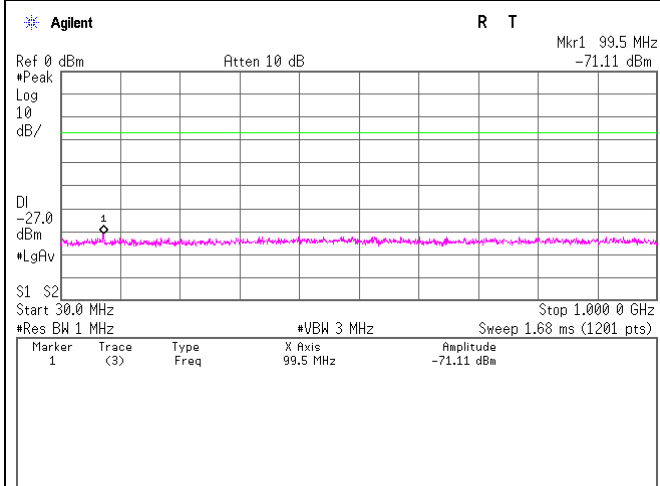
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
 Telephone : +81 463 50 6400
 Facsimile : +81 463 50 6401

Spurious emission (Conducted)

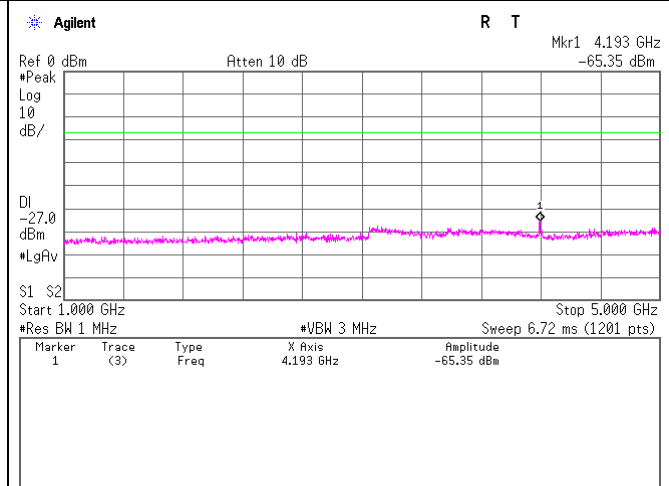
11a

Tx, 5240MHz

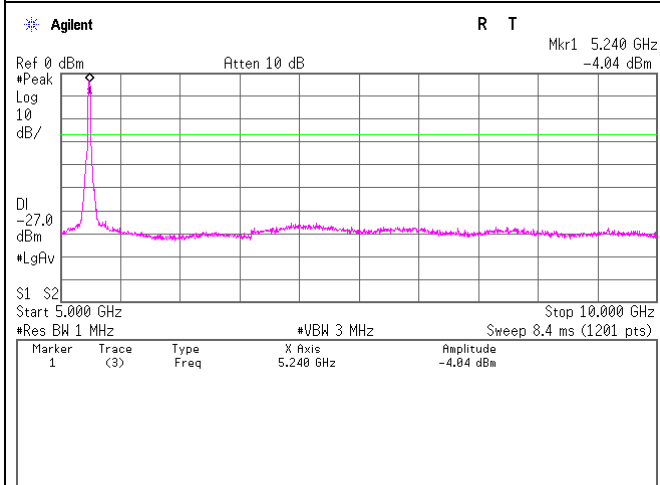
30MHz - 1GHz



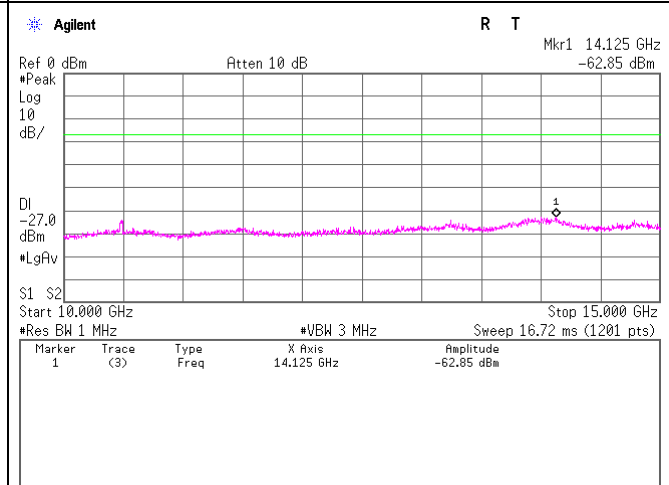
1GHz - 5GHz



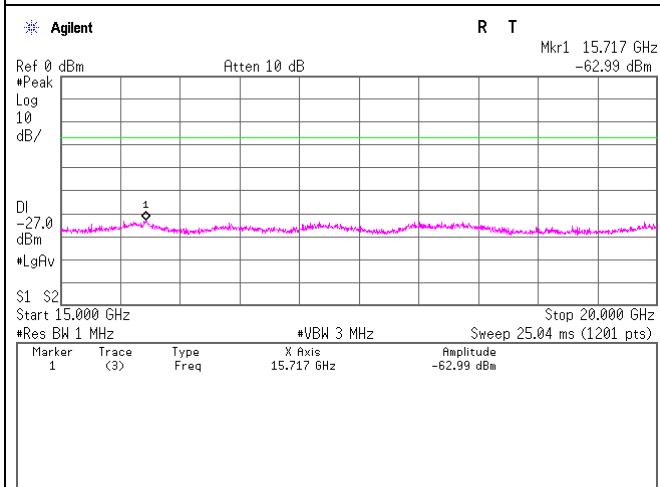
5GHz - 10GHz



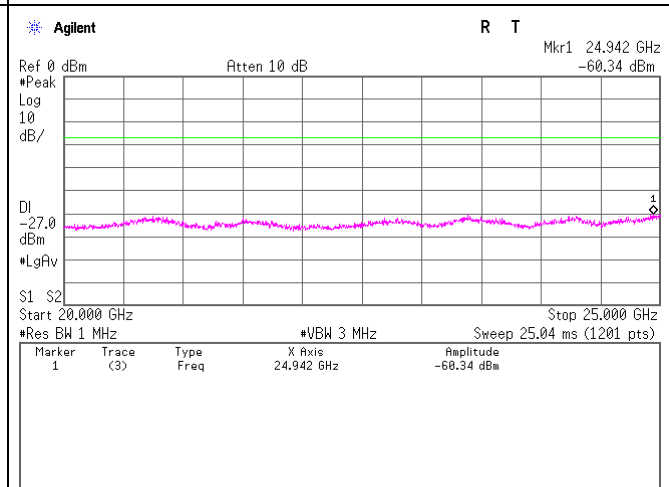
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



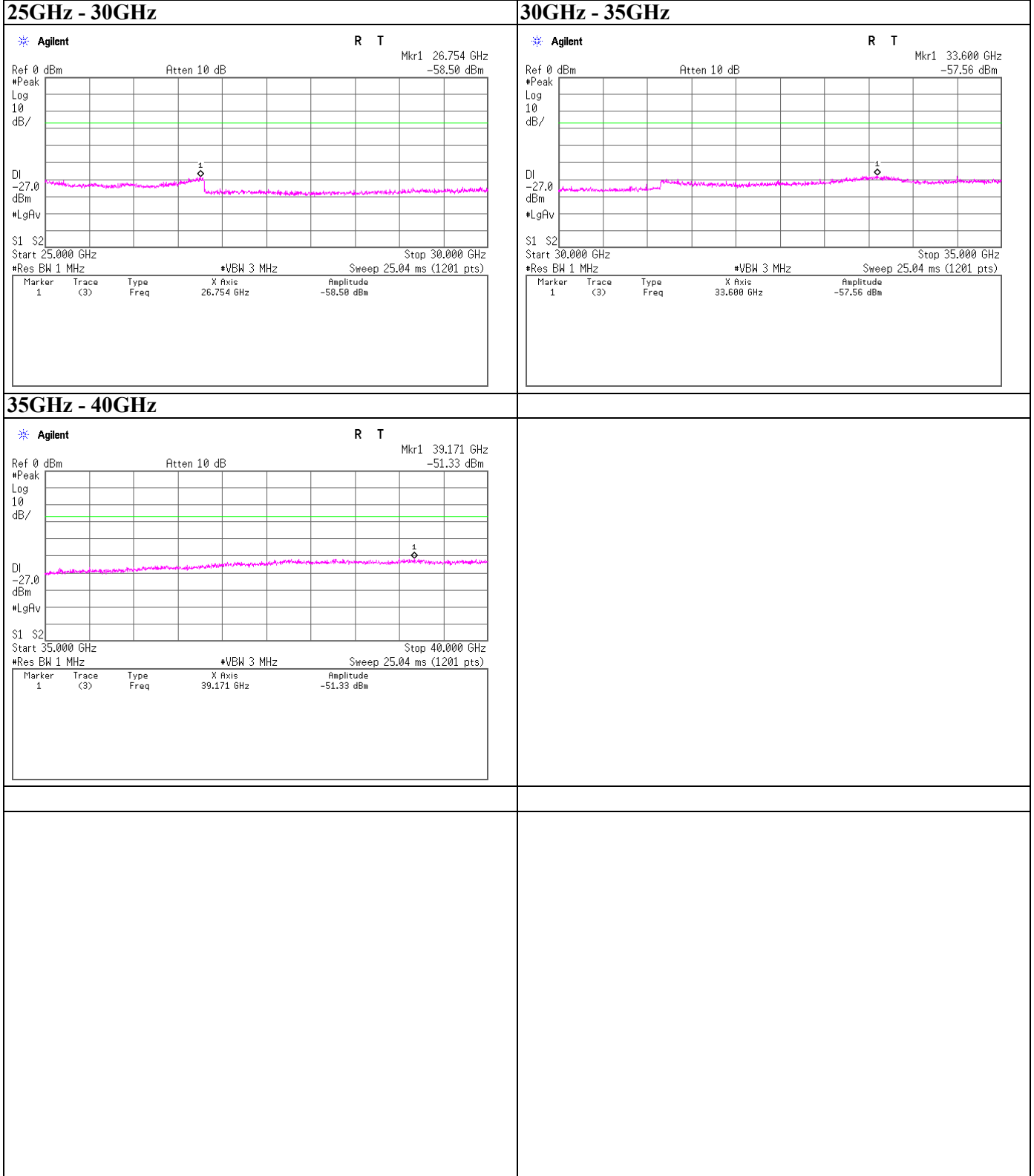
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Shonan EMC Lab.

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 Facsimile : +81 463 50 6401

Spurious emission (Conducted)

11a

Tx, 5240MHz



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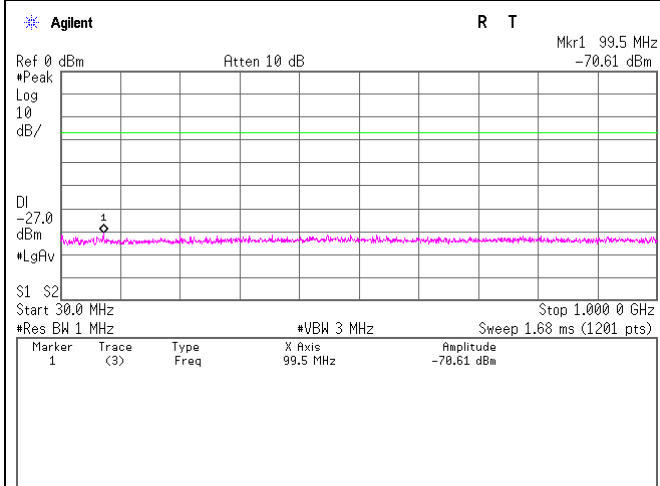
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
 Telephone : +81 463 50 6400
 Facsimile : +81 463 50 6401

Spurious emission (Conducted)

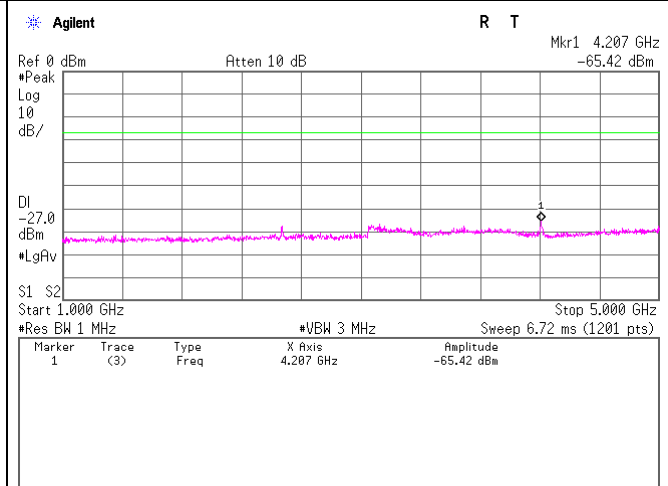
11a

Tx, 5260MHz

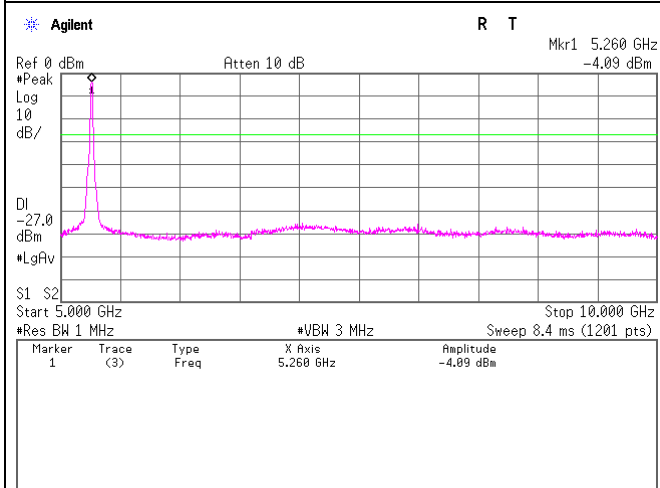
30MHz - 1GHz



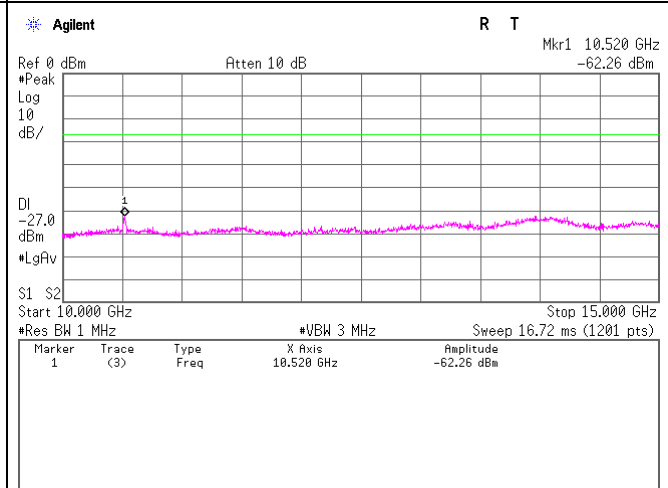
1GHz - 5GHz



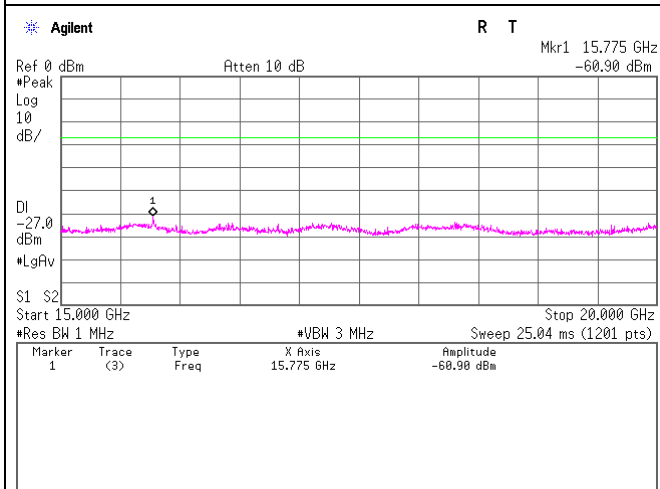
5GHz - 10GHz



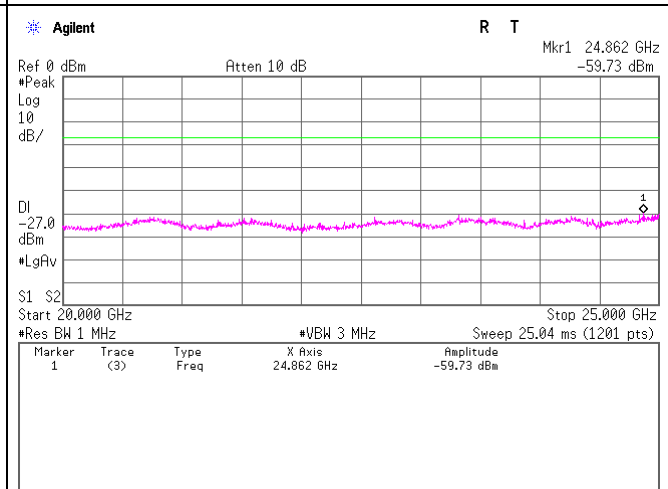
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



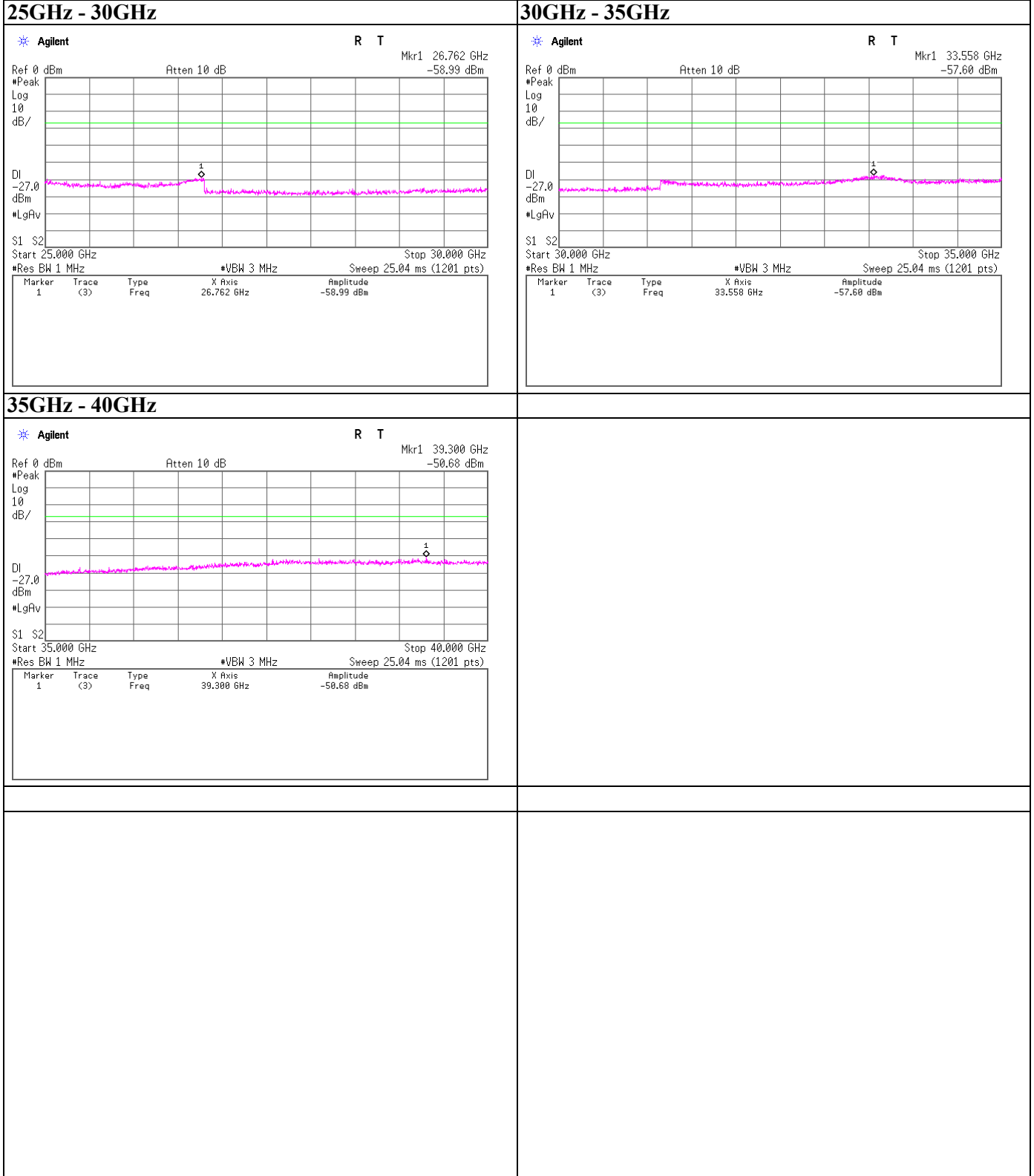
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Spurious emission (Conducted)

11a

Tx, 5260MHz



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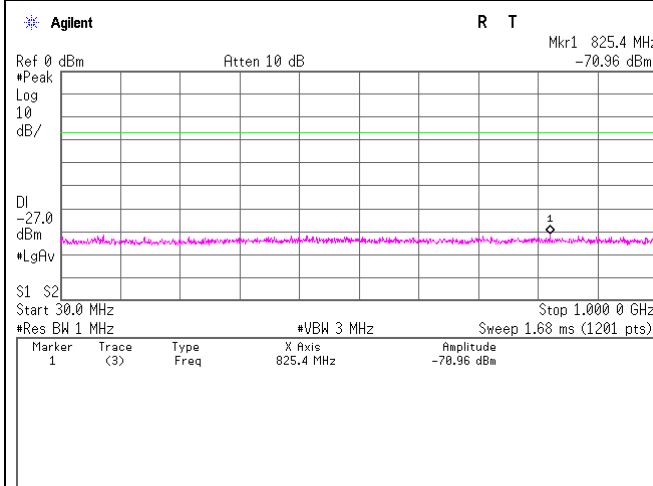
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
 Telephone : +81 463 50 6400
 Facsimile : +81 463 50 6401

Spurious emission (Conducted)

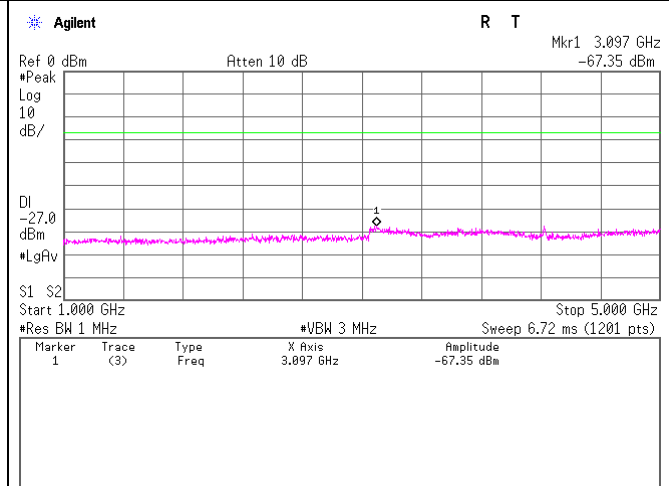
11a

Tx, 5280MHz

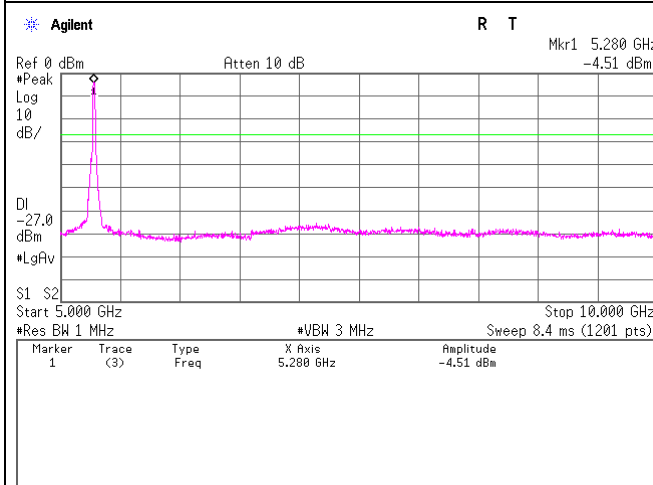
30MHz - 1GHz



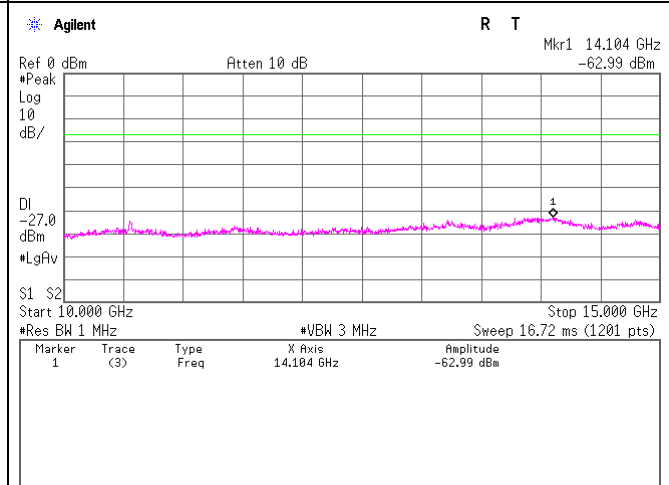
1GHz - 5GHz



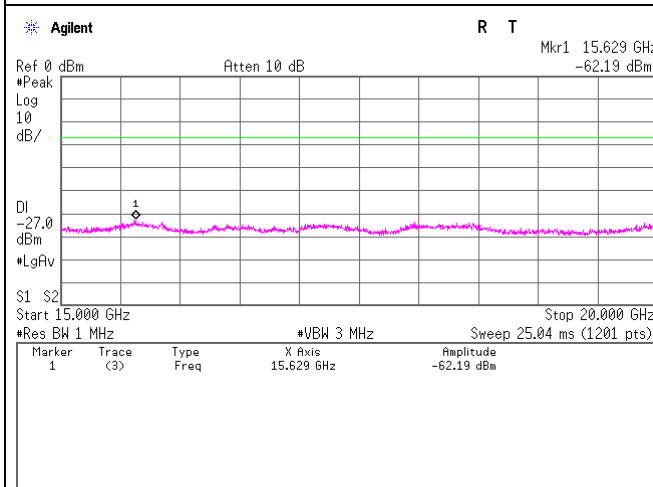
5GHz - 10GHz



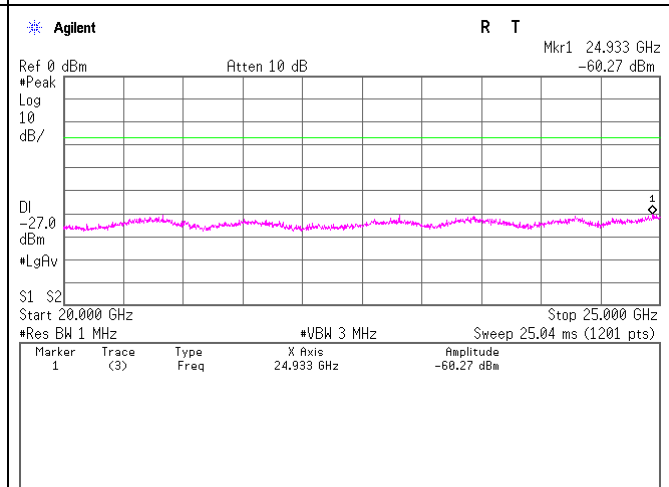
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



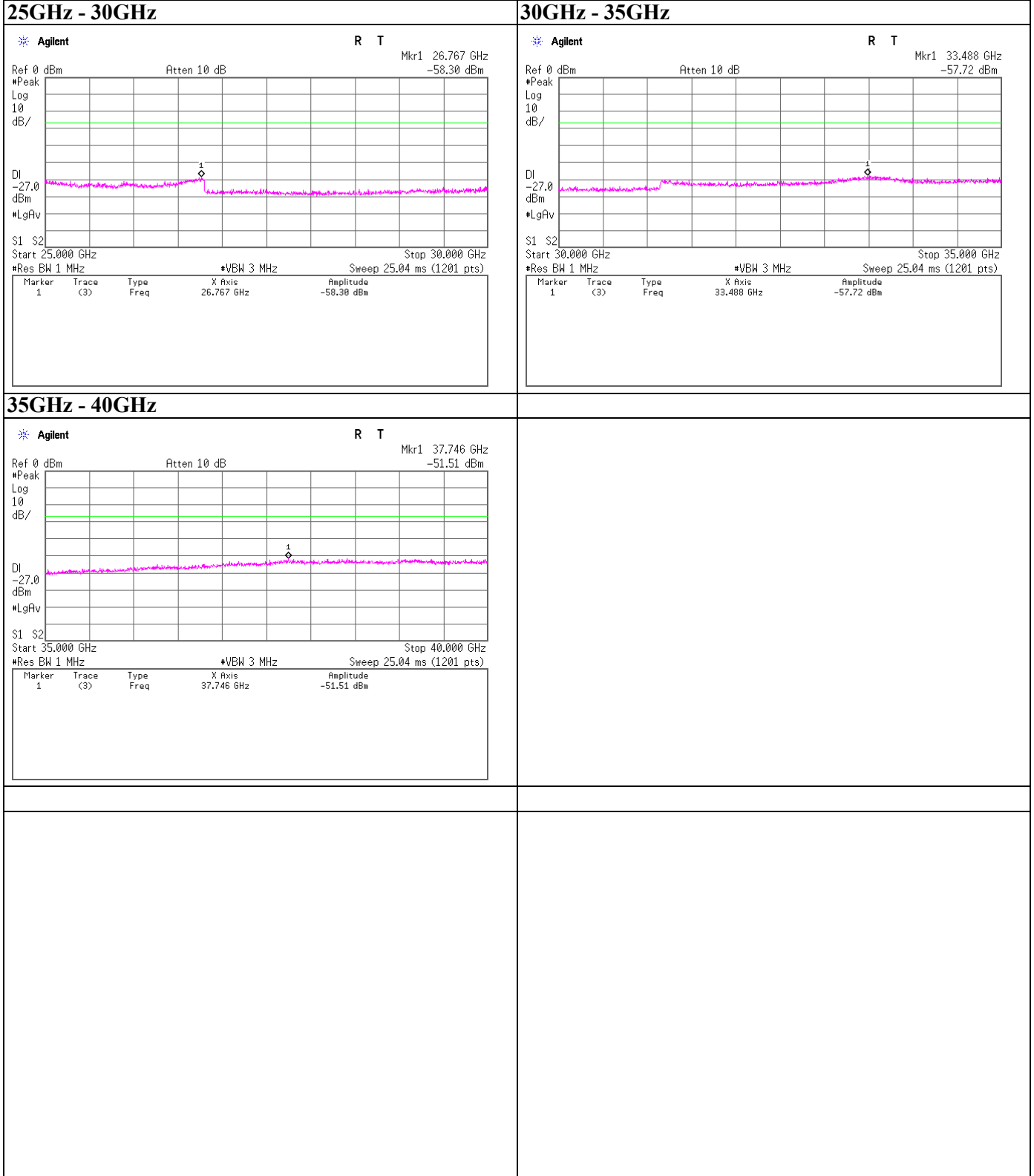
UL Japan, Inc.
Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
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 Facsimile : +81 463 50 6401

Spurious emission (Conducted)

11a

Tx, 5280MHz



UL Japan, Inc.
Shonan EMC Lab.

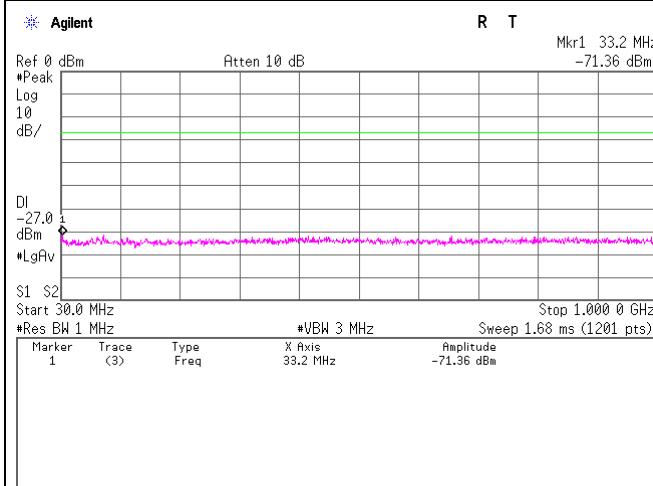
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
 Telephone : +81 463 50 6400
 Facsimile : +81 463 50 6401

Spurious emission (Conducted)

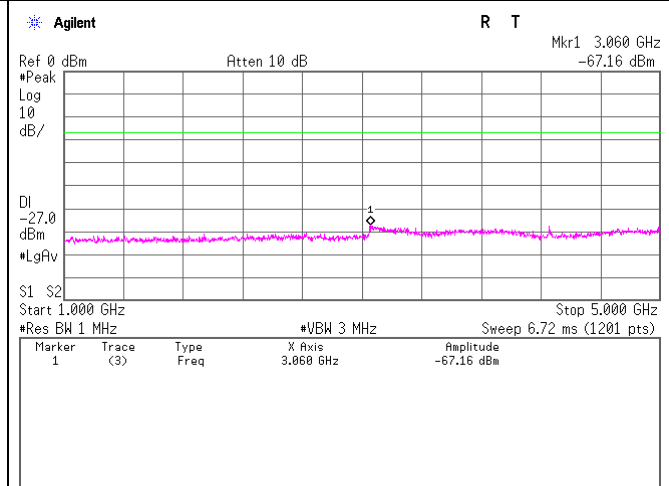
11a

Tx, 5320MHz

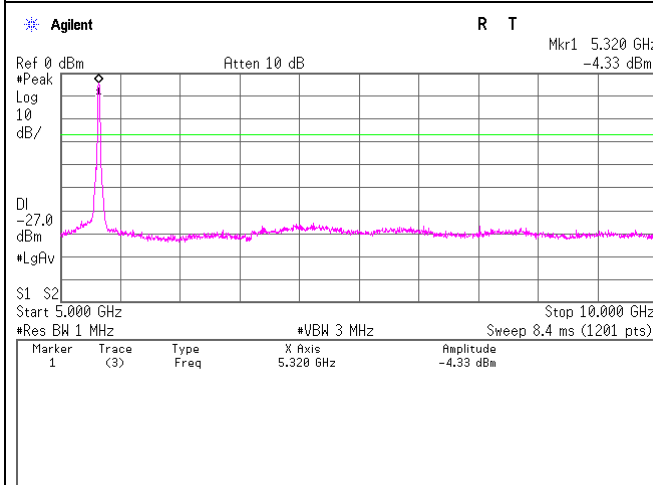
30MHz - 1GHz



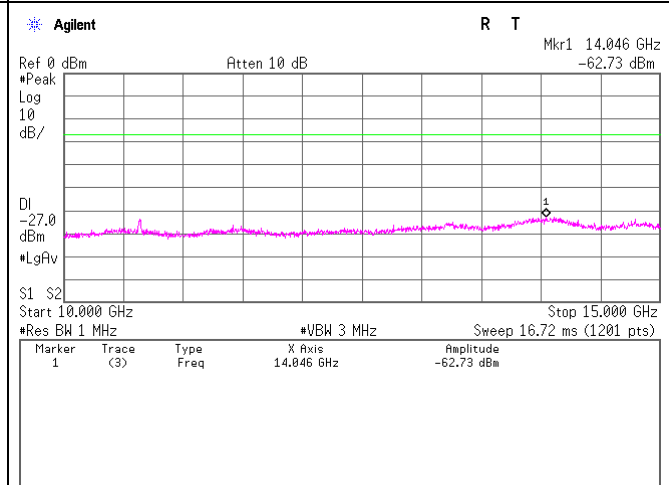
1GHz - 5GHz



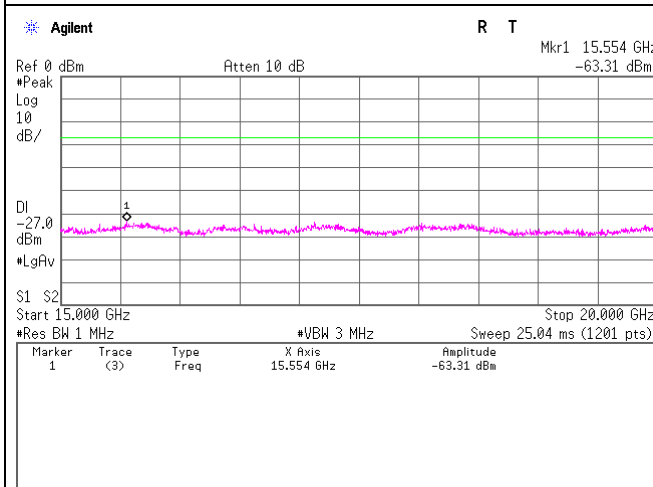
5GHz - 10GHz



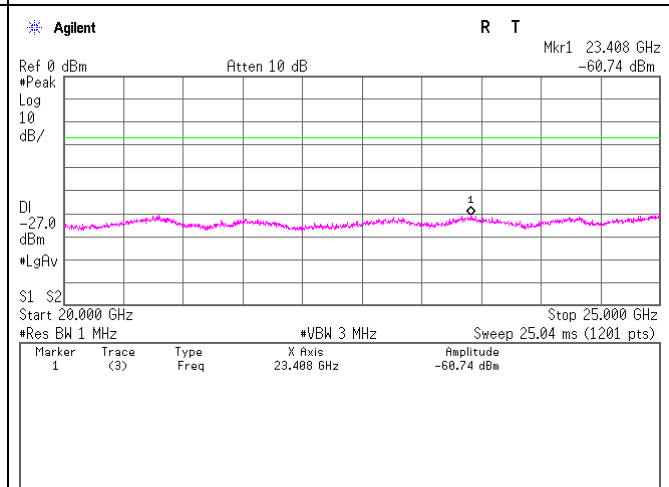
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



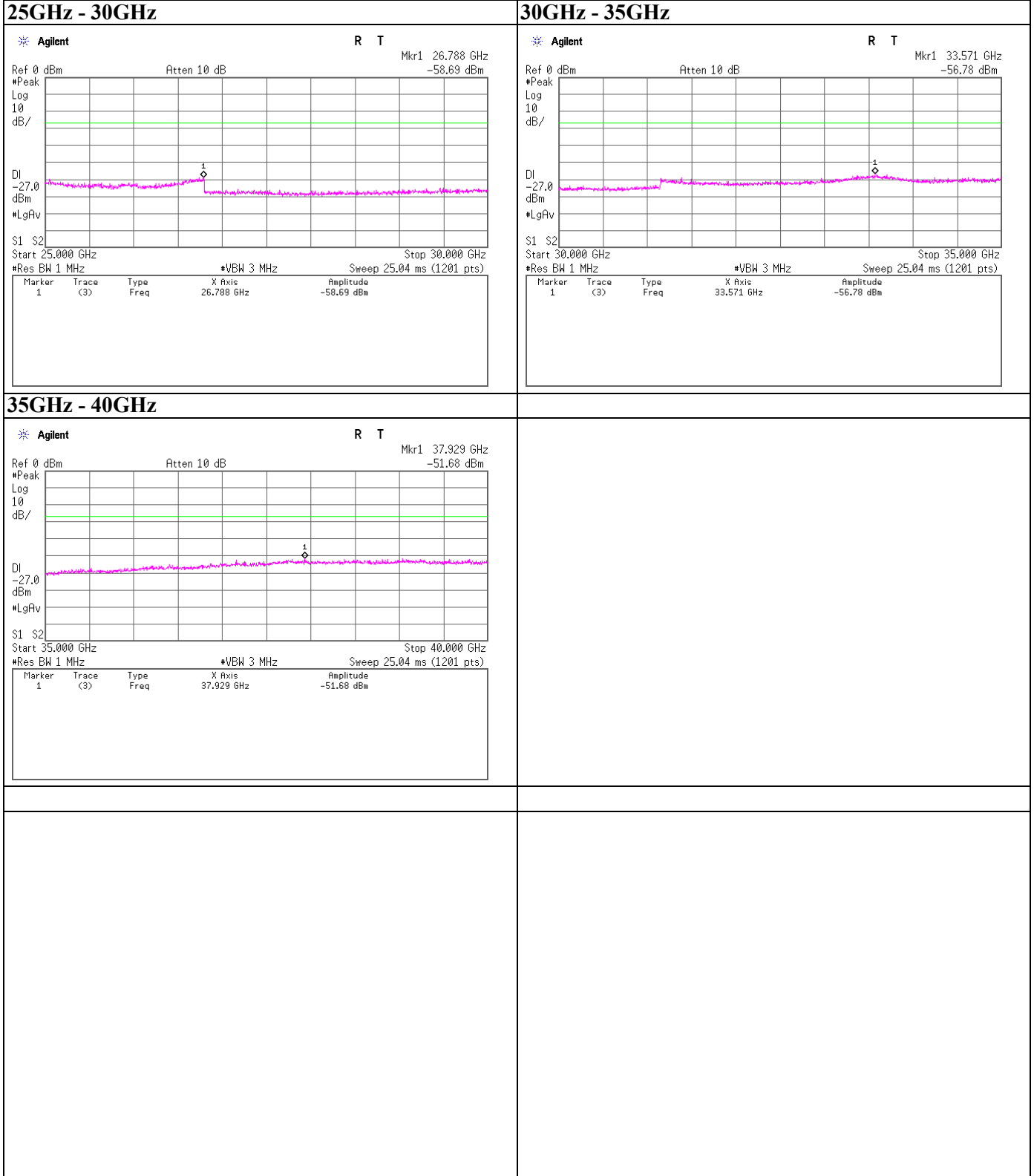
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Spurious emission (Conducted)

11a

Tx, 5320MHz



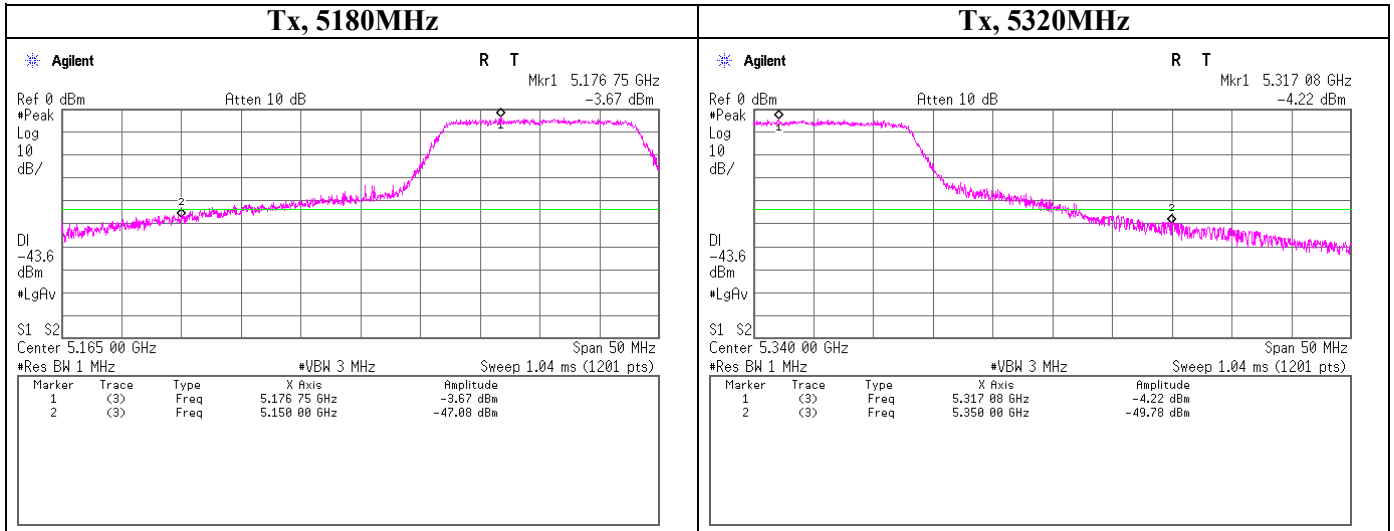
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Spurious emission (Conducted)

Band Edge compliance

11a



Display Line = -27dBm - Cable Loss - ATT.Loss - Ant.Gain

Peak Power Spectral Density

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
Date 2010/3/3
Temperature / Humidity 22deg.C. , 37%
Engineer Tatsuya Arai
Mode Tx,

Ch. Freq. [MHz]	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
5180	5178.38	-12.34	2.58	10.00	0.24	8.00	7.76
5200	5205.21	-11.86	2.58	10.00	0.72	8.00	7.28
5240	5239.21	-11.01	2.57	10.00	1.56	8.00	6.44
5260	5258.92	-11.01	2.57	10.01	1.57	8.00	6.43
5280	5281.21	-11.64	2.56	10.01	0.94	8.00	7.07
5320	5318.33	-12.70	2.56	10.01	-0.13	8.00	8.13

Sample Calculation:

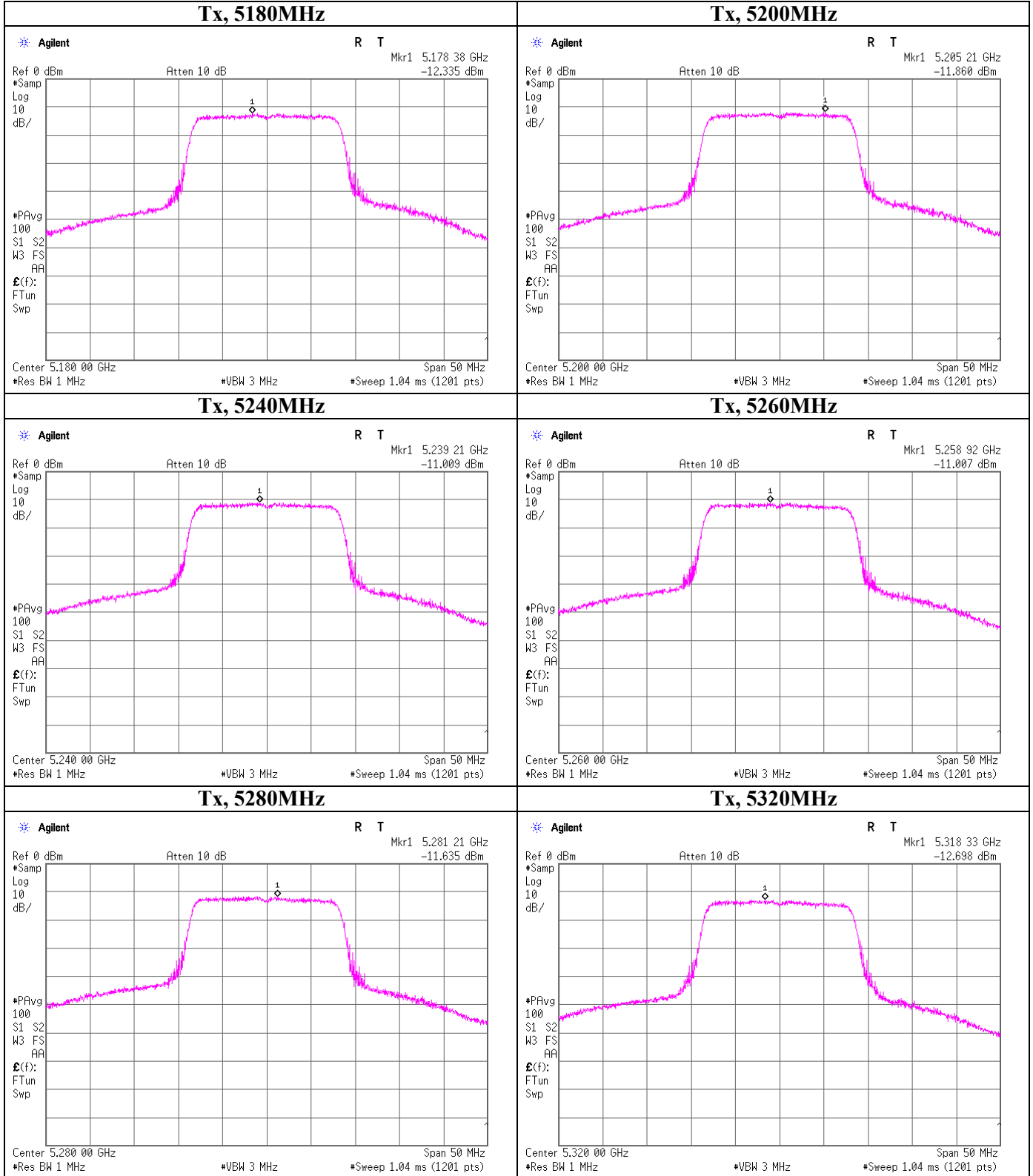
Result = Reading + Cable Loss (Including customer's cable loss)+ Attenuator

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Peak Power Spectral Density

11a



Peak Excursion Ratio

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
Date 2010/3/3
Temperature / Humidity 22deg.C. , 37%
Engineer Tatsuya Arai
Mode Tx,

Freq. [MHz]	Peak Power Excursion [dB]	Limit [dB]
5180.0	9.107	=< 13.0
5200.0	8.553	=< 13.0
5240.0	8.904	=< 13.0
5260.0	8.854	=< 13.0
5280.0	9.063	=< 13.0
5320.0	8.808	=< 13.0

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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)
SOS-06	Humidity Indicator	A&D	AD-5681	4062118	AT1	2010/02/17 * 12
SAT10-05	Attenuator(above1GHz)	Agilent	8493C-010	74864	AT1	2010/03/05 * 12
SCC-G23	Coaxial Cable	Suhner	SUCOFLEX 104	297342/4	AT1/RE	2009/05/27 * 12
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	AT1/RE	2010/02/02 * 12
SAF-06	Pre Amplifier	TOYO Corporation	TPA0118-36	1440491	RE	2010/03/09 * 12
SCC-G03	Coaxial Cable	Suhner	SUCOFLEX 104A	46499/4A	RE	2009/04/10 * 12
SHA-03	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	RE	2009/08/23 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2010/02/09 * 12
SJM-03	Measure	KOMELON	KMC-36	-	RE	-
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV	-	RE	-
SFL-03	Highpass Filter	MICRO-TRONICS	HPMS0112	28	RE	2009/12/04 * 12
SHA-05	Horn Antenna	ETS LINDGREN	Sep-60	LM4210	RE	2009/04/09 * 12
SAF-09	Pre Amplifier	TOYO Corporation	HAP18-26W	18	RE	2010/03/02 * 12
SCC-G18	Coaxial Cable	Suhner	SUCOFLEX 104A	46292/4A	RE	2010/03/02 * 12
SHA-06	Horn Antenna	ETS LINDGREN	Oct-60	LM3459	RE	2009/04/30 * 12
SAF-10	Pre Amplifier	TOYO Corporation	HAP26-40W	10	RE	2009/06/29 * 12
SCC-G19	Coaxial Cable	Suhner	SUCOFLEX 102A	1188/2A	RE	2010/03/09 * 12
SAF-03	Pre Amplifier	SONOMA	310N	290213	RE	2010/02/06 * 12
SAT6-03	Attenuator	JFW	50HF-006N	-	RE	2010/02/06 * 12
SBA-03	Biconical Antenna	Schwarzbeck	BBA9106	91032666	RE	2009/03/20 * 12
SCC-C1/C2/C3/C4/C5/C10/SRSE-03	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-271(RF Selector)	RE	2009/04/06 * 12
SLA-03	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0901	RE	2009/03/20 * 12
STR-03	Test Receiver	Rohde & Schwarz	ESI40	100054/040	RE	2009/04/08 * 12
SAEC-03(NSA)	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	RE	2009/09/18 * 12
SSA-03	Spectrum Analyzer	Agilent	E4448A	MY48250152	RE/AT2-5	2009/06/09 * 12
SAT10-04	Attenuator(above1GHz)	Agilent	8493C-010	74863	AT2-5	2010/03/05 * 12
SCC-G12	Coaxial Cable	Suhner	SUCOFLEX 102	30790/2	AT2-5	2010/03/09 * 12
SOS-09	Humidity Indicator	A&D	AD-5681	4061484	AT2-5	2010/02/17 * 12
SCC-A12/A13/SRSE	Coaxial Cable&RF	Suhner/Suhner/TOYO	RG223U/141PE/NS4906	-/0901-269(RF Selector)	CE	2009/04/06 * 12
SLS-01	LISN	Rohde & Schwarz	ENV216	100511	CE	2010/02/09 * 12
SAT3-03	Attenuator	JFW	50HF-003N	-	CE	2010/02/06 * 12
SOS-02	Humidity Indicator	A&D	AD-5681	4063343	CE	2010/02/17 * 12
STM-01	Terminator	TME	CT-01 BP	-	CE	2010/01/08 * 12
STR-01	Test Receiver	Rohde & Schwarz	ESU40	100093	CE	2009/04/02 * 12
SJM-01	Measure	KOMELON	KMC-36	-	CE	-

The expiration date of the calibration is the end of the expired month.

All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.

Test Item:

CE: Conducted emission,

RE: Radiated emission,

AT: Antenna terminal disturbance voltage

1: Maximum peak output power

2: 26dB bandwidth & Occupied bandwidth (99%)

3: Out of band emissions (Antenna port conducted)

4: Power density

5: Peak Excursion Ratio

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