

# DATA OF CONDUCTED EMISSION TEST

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

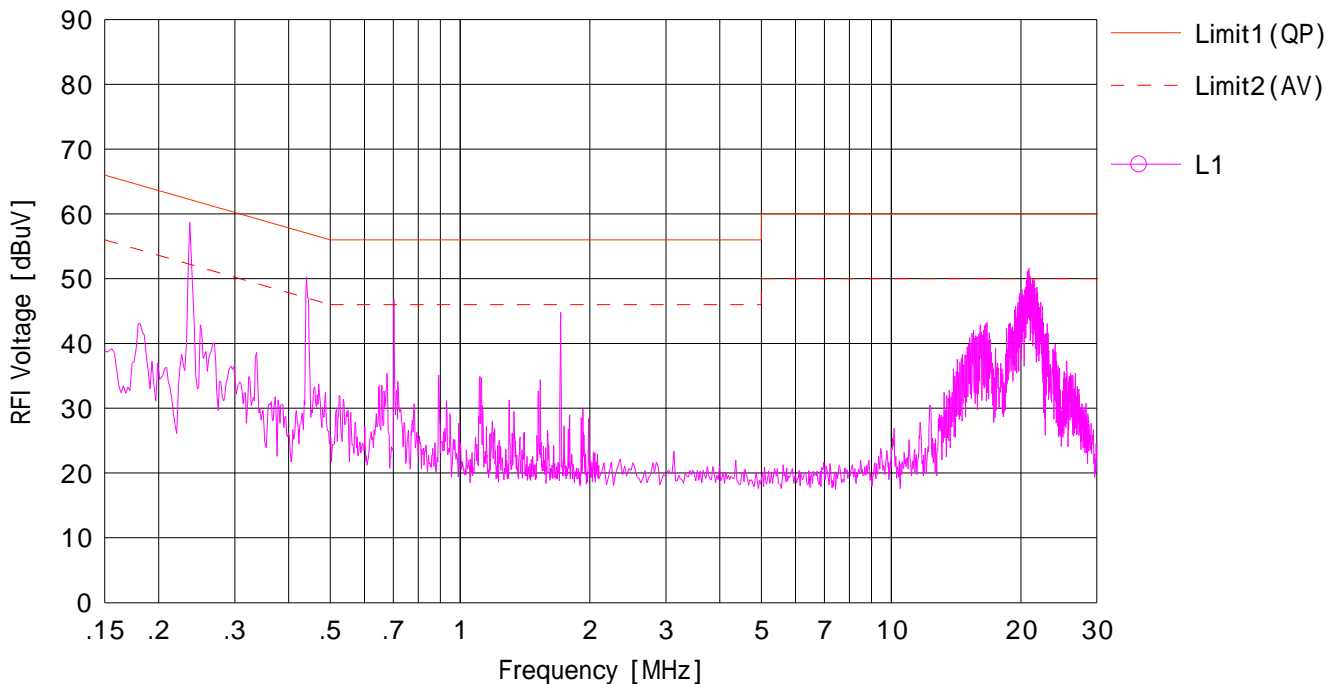
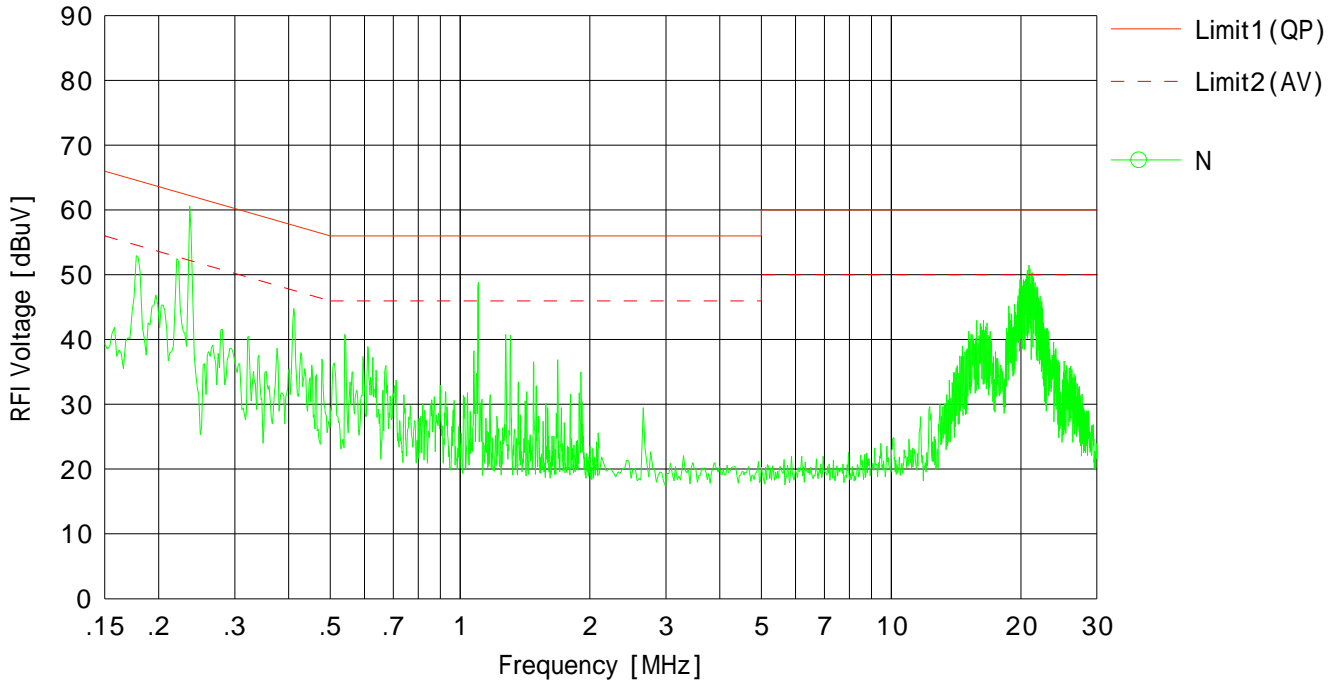
Company : Ricoh Company, Ltd.  
Kind of EUT : Option(s) for Radiocommunications  
Model No. : R-WL54C1N  
Serial No. : 911S0334

Mode : IEEE802.11a/Tx.54Mbps,5180MHz  
Report No. : 30GE0098 - YK - B - 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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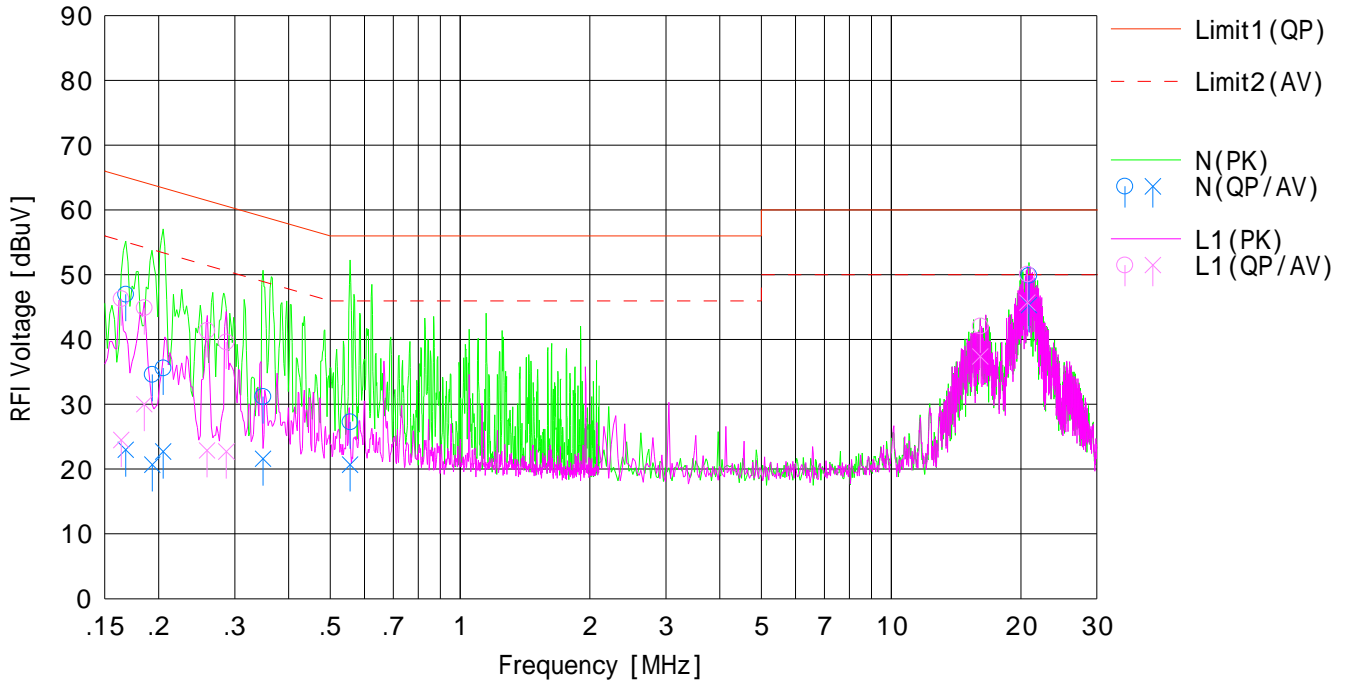
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Kind of EUT : Option(s) for Radiocommunications  
Model No. : R-WL54C1N  
Serial No. : 911S0334

Mode : IEEE802.11a/Tx.54Mbps,5200MHz  
Report No. : 30GE0098 - YK - B - 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	0.16755	34.2	10.2	12.8	47.0	23.0	65.1	55.1	18.1	32.1	N	
2	0.19300	21.8	7.9	12.8	34.6	20.7	63.9	53.9	29.3	33.2	N	
3	0.20460	22.8	9.9	12.8	35.6	22.7	63.4	53.4	27.8	30.7	N	
4	0.34890	18.4	8.8	12.8	31.2	21.6	59.0	49.0	27.8	27.4	N	
5	0.55560	14.5	7.9	12.8	27.3	20.7	56.0	46.0	28.7	25.3	N	
6	20.87700	36.1	31.5	13.8	49.9	45.3	60.0	50.0	10.1	4.7	N	
7	0.16365	33.5	11.7	12.8	46.3	24.5	65.3	55.3	19.0	30.8	L1	
8	0.18500	32.1	17.2	12.8	44.9	30.0	64.3	54.3	19.4	24.3	L1	
9	0.25900	28.6	10.1	12.8	41.4	22.9	61.5	51.5	20.1	28.6	L1	
10	0.28700	26.8	9.9	12.8	39.6	22.7	60.6	50.6	21.0	27.9	L1	
11	16.09820	28.5	23.8	13.6	42.1	37.4	60.0	50.0	17.9	12.6	L1	
12	20.68100	36.3	31.9	13.8	50.1	45.7	60.0	50.0	9.9	4.3	L1	

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

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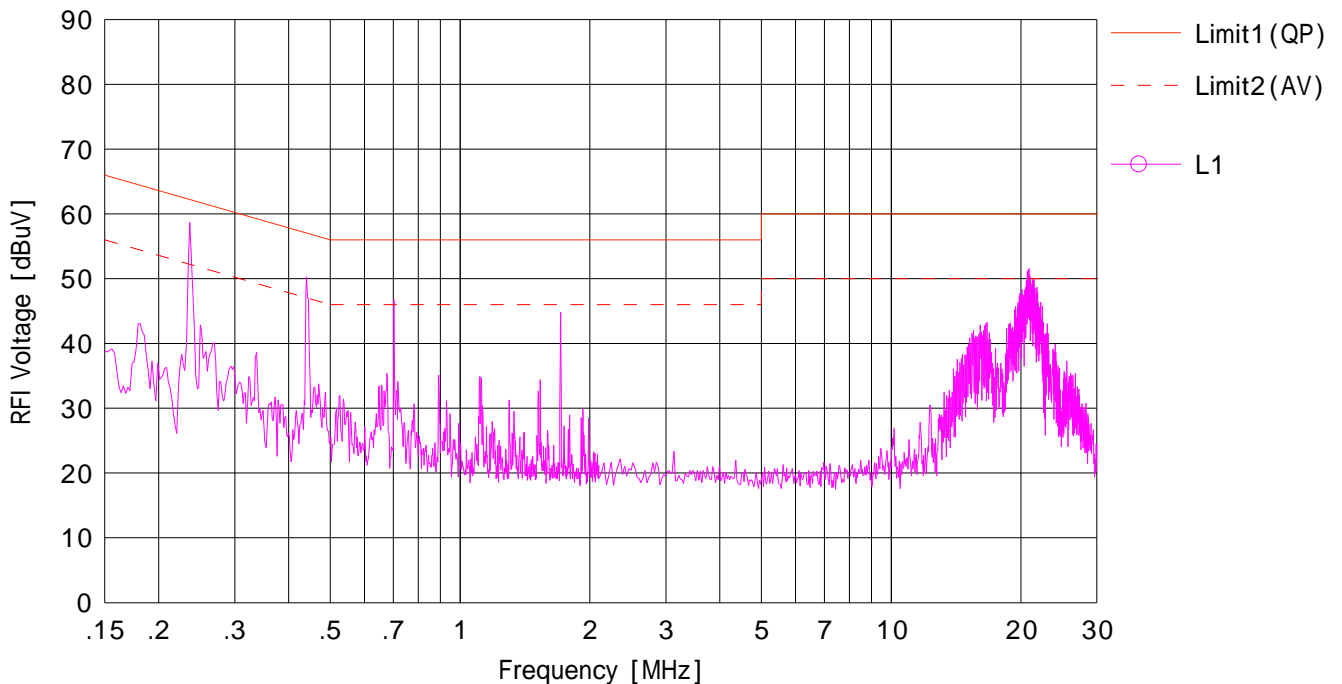
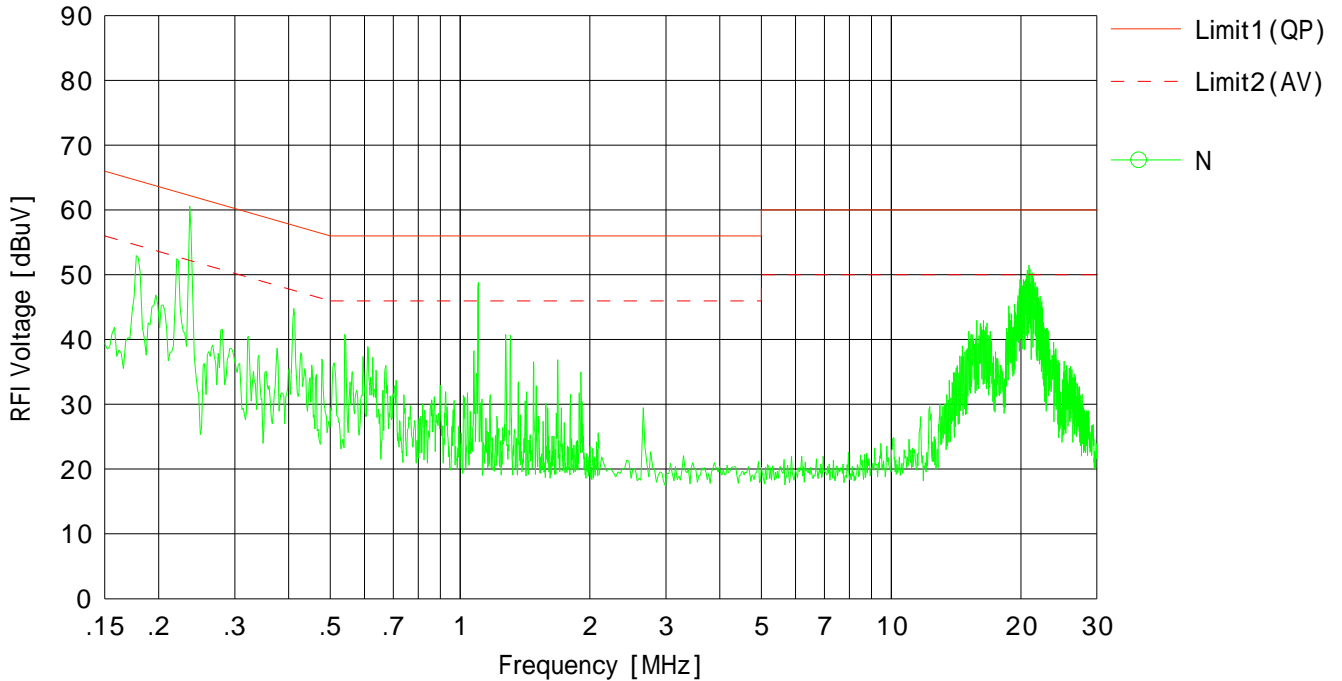
Company : Ricoh Company, Ltd.  
Kind of EUT : Option(s) for Radiocommunications  
Model No. : R-WL54C1N  
Serial No. : 911S0334

Mode : IEEE802.11a/Tx.54Mbps,5240MHz  
Report No. : 30GE0098 - YK - B - 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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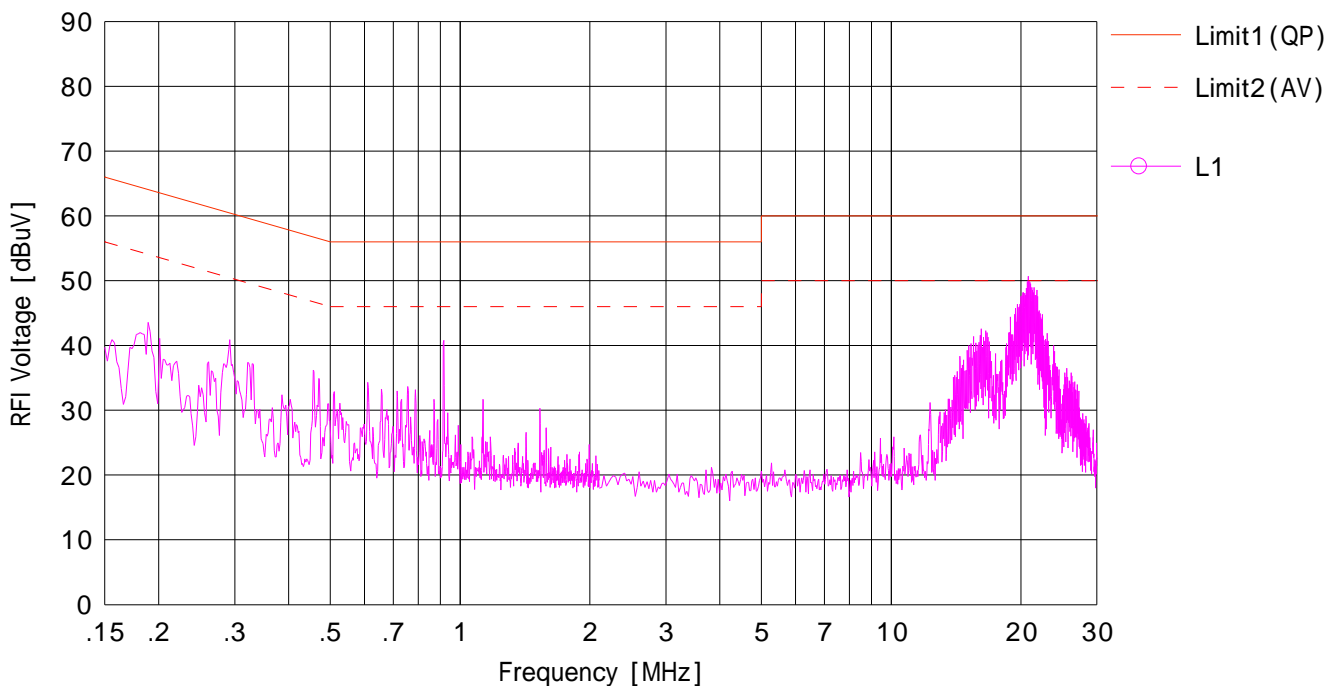
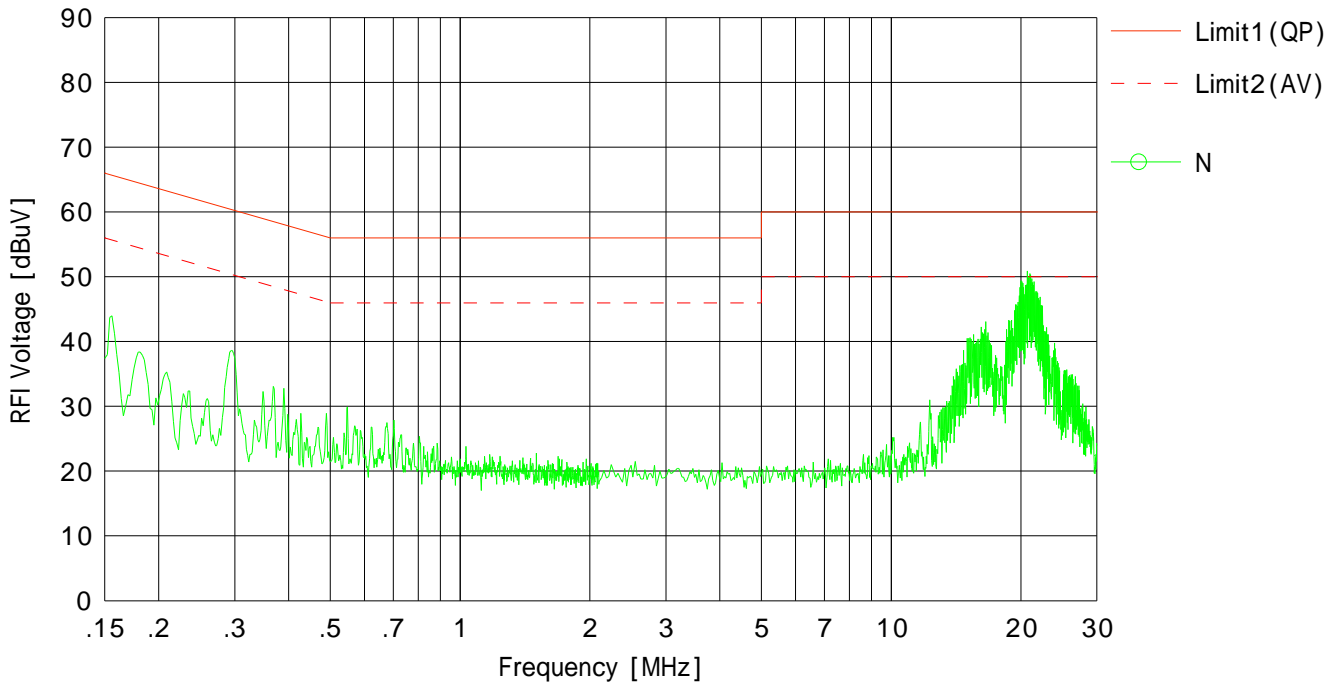
Company : Ricoh Company, Ltd.  
Kind of EUT : Option(s) for Radiocommunications  
Model No. : R-WL54C1N  
Serial No. : 911S0334

Mode : IEEE802.11a/Tx.54Mbps,5260MHz  
Report No. : 30GE0098 - YK - B - 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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Date : 2010/03/03

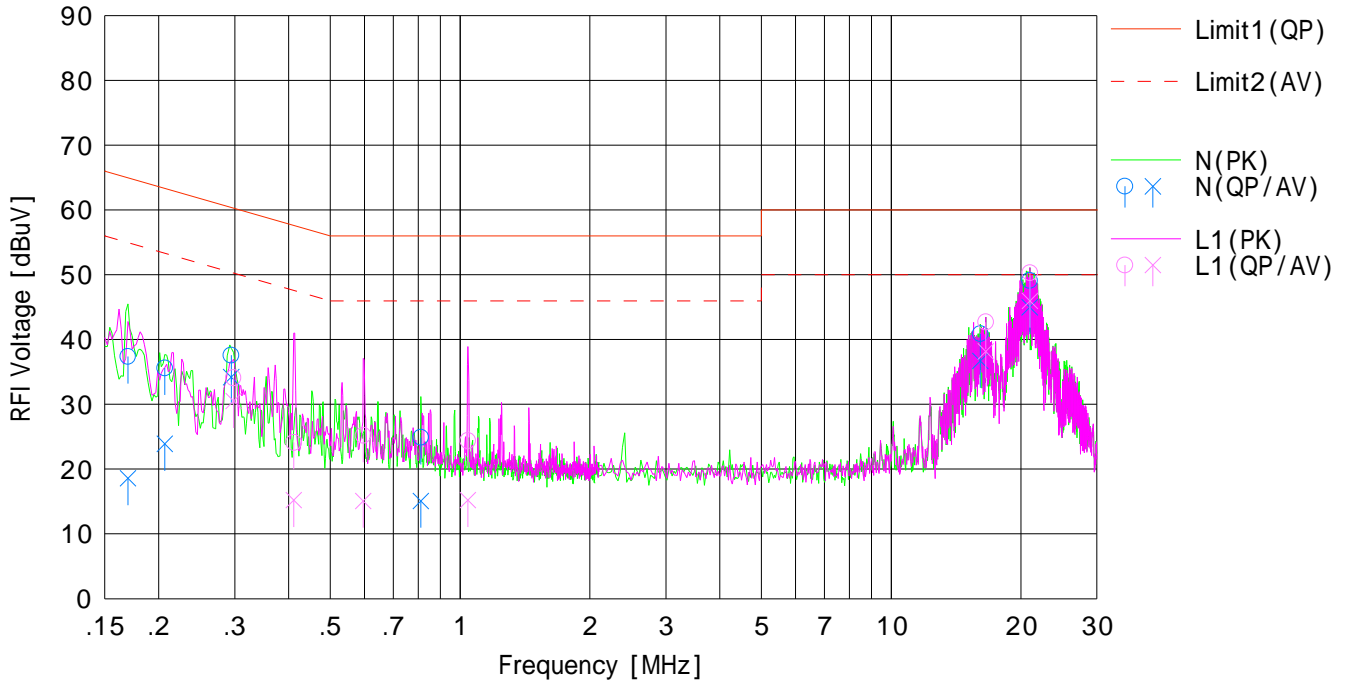
Company : Ricoh Company, Ltd.  
Kind of EUT : Option(s) for Radiocommunications  
Model No. : R-WL54C1N  
Serial No. : 911S0334

Mode : IEEE802.11a/Tx.54Mbps,5280MHz  
Report No. : 30GE0098 - YK - B - 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	0.16950	24.6	5.8	12.8	37.4	18.6	65.0	55.0	27.6	36.4	N	
2	0.20655	22.8	11.1	12.8	35.6	23.9	63.3	53.3	27.7	29.4	N	
3	0.29430	24.8	21.4	12.8	37.6	34.2	60.4	50.4	22.8	16.2	N	
4	0.81105	12.1	2.3	12.8	24.9	15.1	56.0	46.0	31.1	30.9	N	
5	16.09450	27.3	23.1	13.6	40.9	36.7	60.0	50.0	19.1	13.3	N	
6	20.97240	35.3	31.2	13.8	49.1	45.0	60.0	50.0	10.9	5.0	N	
7	0.29800	21.3	17.7	12.8	34.1	30.5	60.3	50.3	26.2	19.8	L1	
8	0.41130	11.3	2.4	12.8	24.1	15.2	57.6	47.6	33.5	32.4	L1	
9	0.59655	12.4	2.3	12.8	25.2	15.1	56.0	46.0	30.8	30.9	L1	
10	1.04310	11.6	2.4	12.8	24.4	15.2	56.0	46.0	31.6	30.8	L1	
11	16.58500	29.1	24.6	13.6	42.7	38.2	60.0	50.0	17.3	11.8	L1	
12	20.97470	36.5	32.2	13.8	50.3	46.0	60.0	50.0	9.7	4.0	L1	

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

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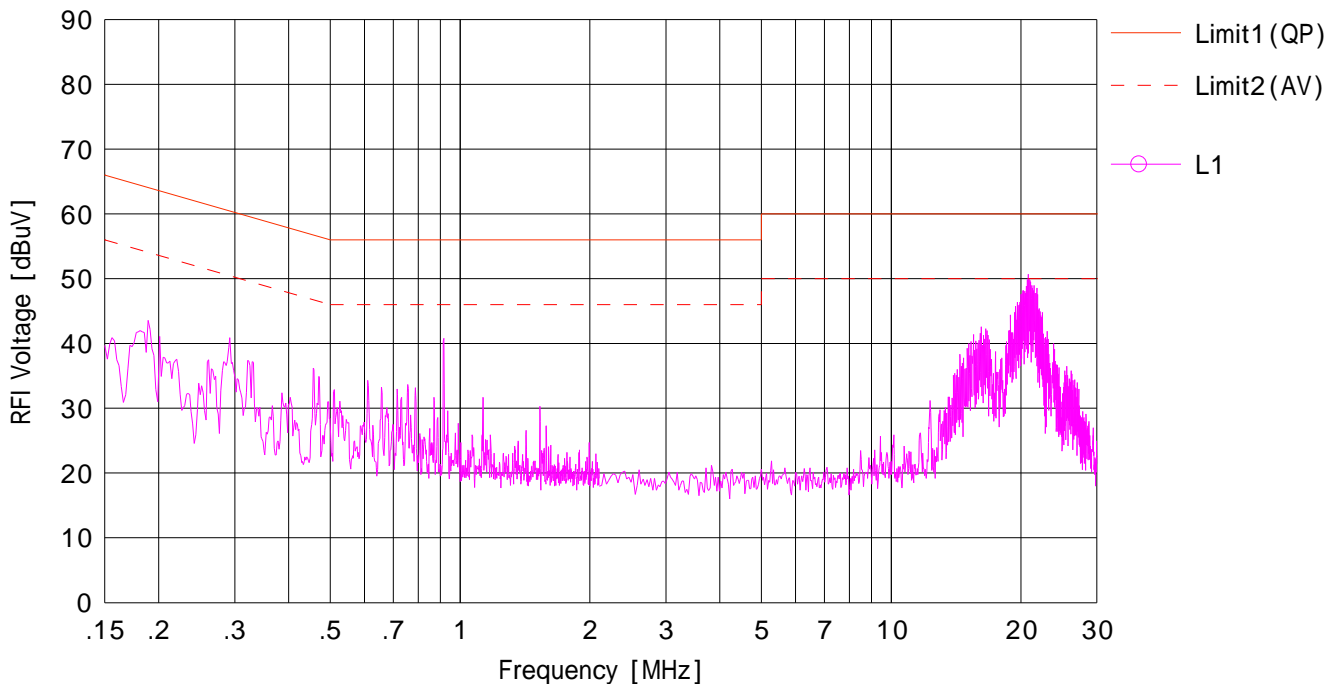
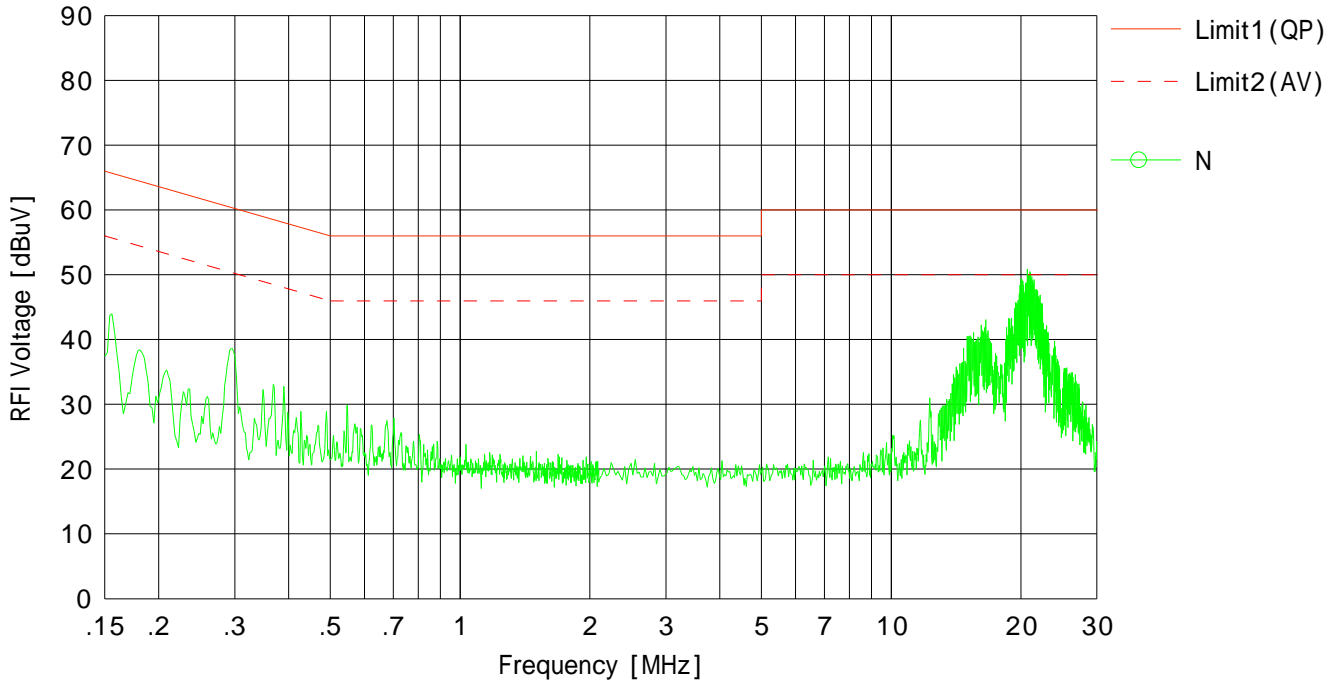
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Limit2 : FCC 15C(15.207) AV

Engineer : Tatsuya Arai



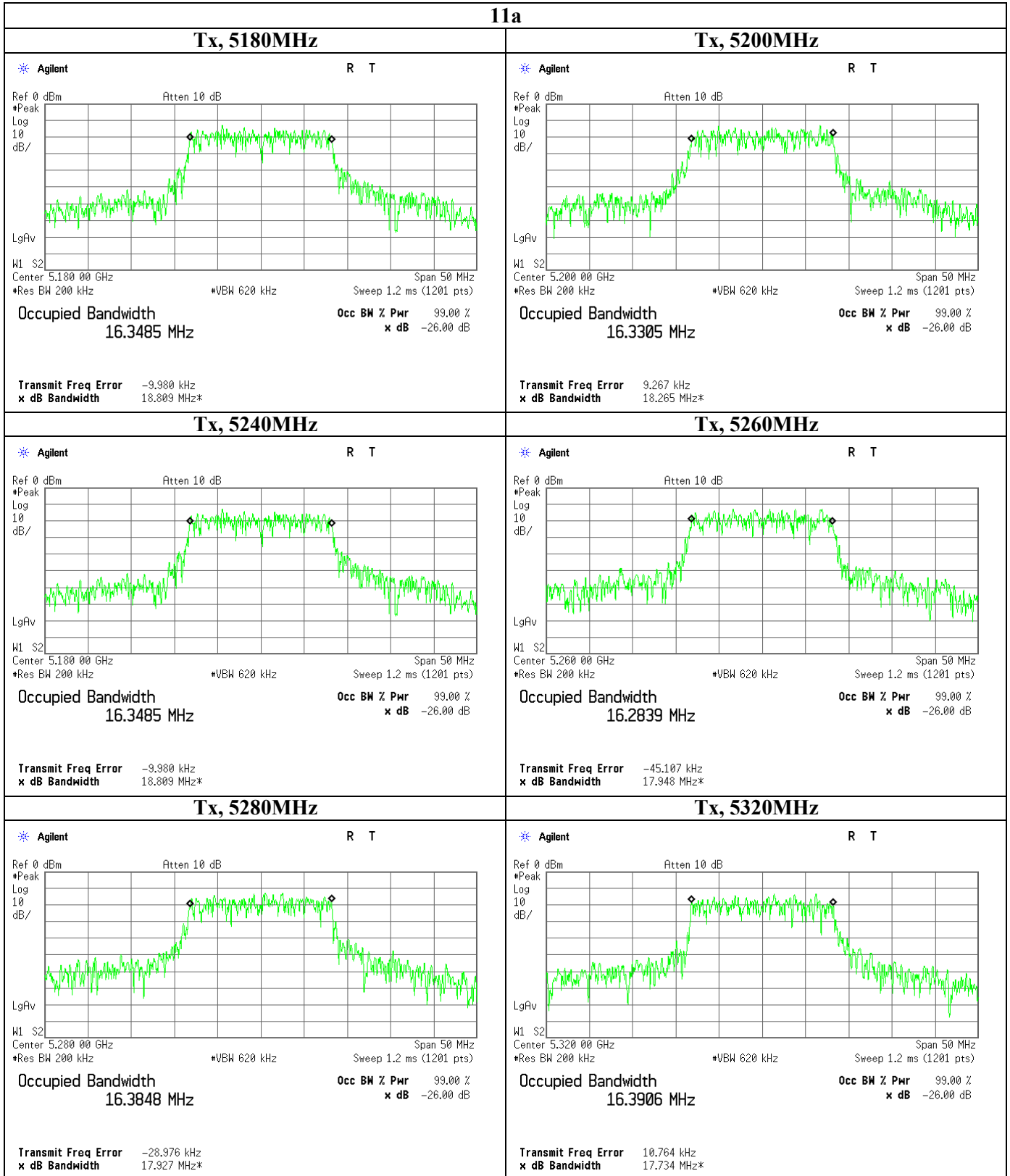
Calculation: Result [dBuV] = Reading [dBuV] + C.Fac(LISN+Cable) [dB]

**26dB Bandwidth and 99% Occupied Bandwidth**

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room  
Date 2010/3/2  
Temperature / Humidity 26deg.C. , 32%  
Engineer Akio Hayashi  
Mode 11a, Tx, Antenna A

Frequency [MHz]	26dB Bandwidth [MHz]	99% Occupied Bandwidth [MHz]
5180	18.809	16.855
5200	18.265	16.899
5240	18.809	16.867
5260	17.948	16.855
5280	17.927	16.943
5320	17.734	16.929

## 26dB Bandwidth

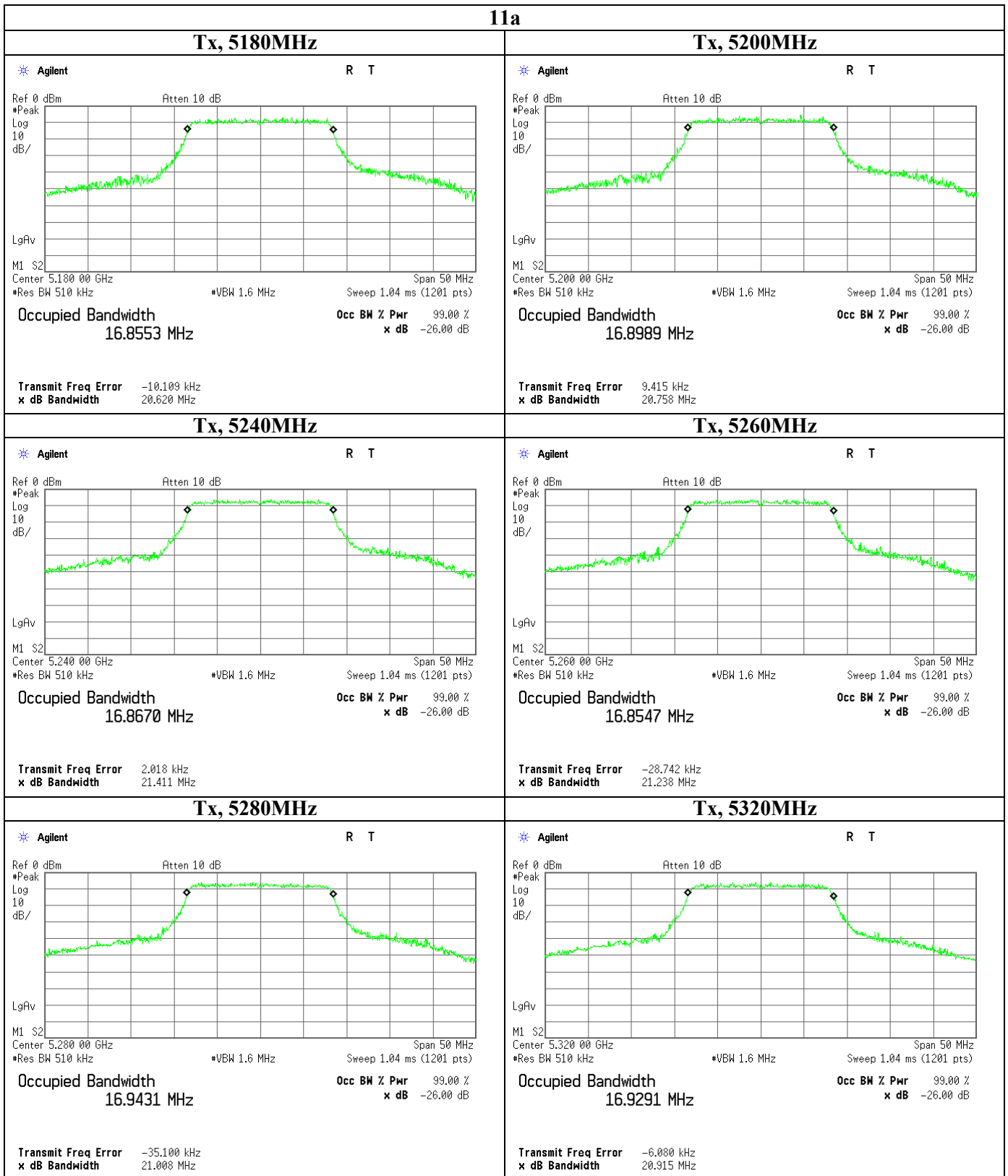


**UL Japan, Inc.**  
**Shonan EMC Lab.**

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



## 99% Occupied Bandwidth



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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	-0.46	1.85	10.06	11.45	13.96	16.74	47.25	5.29
Lower band, Mid	5200.0	-0.06	1.85	10.06	11.85	15.31	16.62	45.88	4.77
Lower band, High	5240.0	0.24	1.85	10.07	12.16	16.44	16.74	47.25	4.58
Mid band, Low	5260.0	-0.01	1.84	10.08	11.91	15.52	23.54	225.95	11.63
Mid band, Mid	5280.0	-0.25	1.84	10.08	11.67	14.69	23.54	225.69	11.87
Mid band, High	5320.0	-0.64	1.84	10.09	11.29	13.46	23.49	223.26	12.20

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	-0.50	1.85	10.06	11.41	13.84	16.74	47.25	5.33
9	5180.0	-0.52	1.85	10.06	11.39	13.77	16.74	47.25	5.35
12	5180.0	-0.57	1.85	10.06	11.34	13.61	16.74	47.25	5.40
18	5180.0	-0.50	1.85	10.06	11.41	13.84	16.74	47.25	5.33
24	5180.0	-0.49	1.85	10.06	11.42	13.87	16.74	47.25	5.32
36	5180.0	-0.49	1.85	10.06	11.42	13.87	16.74	47.25	5.32
48	5180.0	-0.50	1.85	10.06	11.41	13.84	16.74	47.25	5.33
54	5180.0	-0.46	1.85	10.06	11.45	13.96	16.74	47.25	5.29

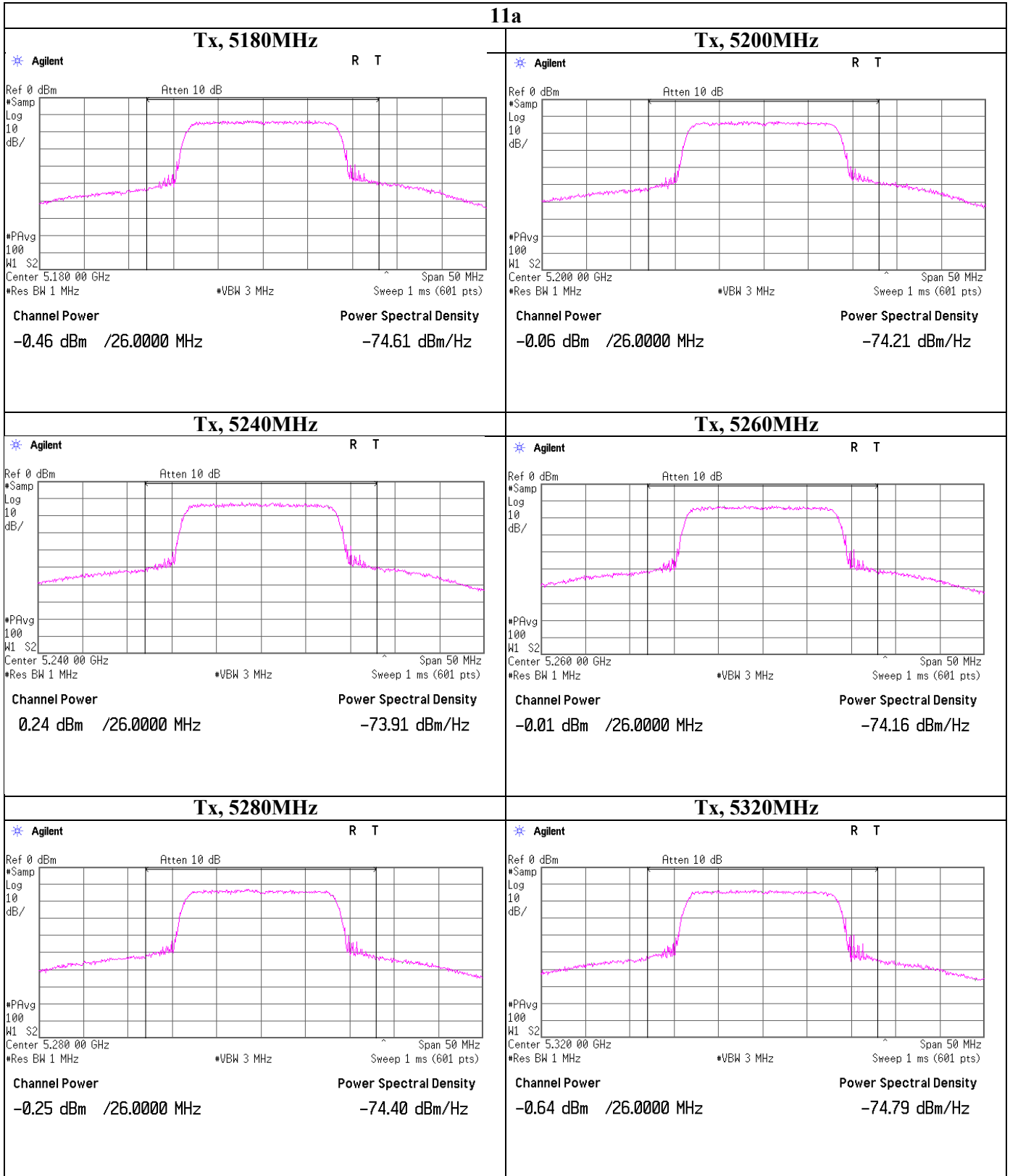
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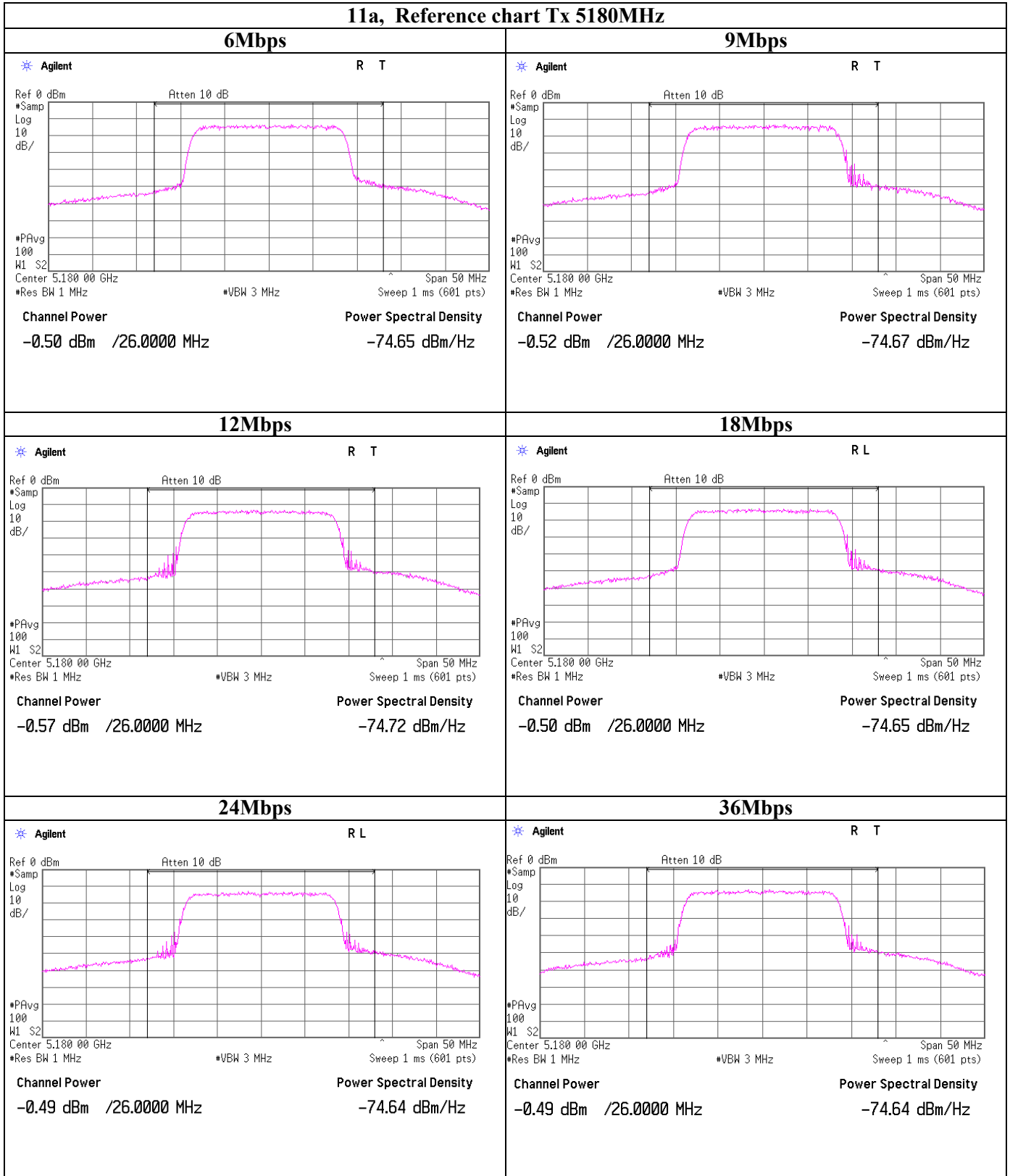
### Peak Output Power (Conducted)



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**Shonan EMC Lab.**

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### Peak Output Power (Conducted)

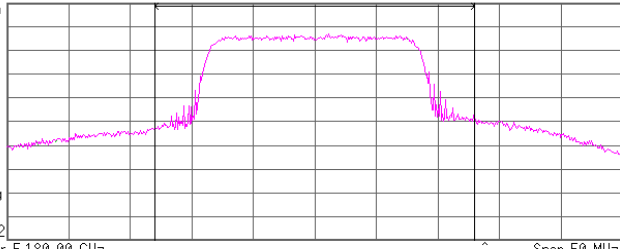
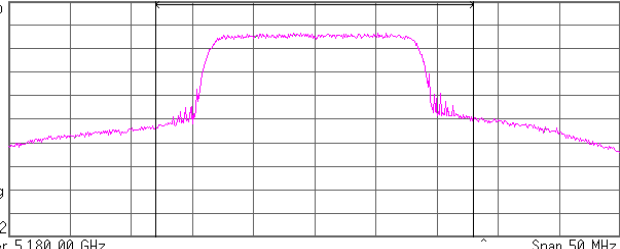


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**Peak Output Power (Conducted)**

**11a, Reference chart Tx 5180MHz**

48Mbps	54Mbps
<p>Agilent R T</p>  <p>       Ref 0 dBm        #Samp Log 10 dB/        #PAvg 100 W1 S2        Center 5.180 00 GHz Span 50 MHz        #Res BW 1 MHz #VBW 3 MHz Sweep 1 ms (601 pts)     </p> <p>       Channel Power: -0.50 dBm /26.0000 MHz        Power Spectral Density: -74.65 dBm/Hz     </p>	<p>Agilent R T</p>  <p>       Ref 0 dBm        #Samp Log 10 dB/        #PAvg 100 W1 S2        Center 5.180 00 GHz Span 50 MHz        #Res BW 1 MHz #VBW 3 MHz Sweep 1 ms (601 pts)     </p> <p>       Channel Power: -0.46 dBm /26.0000 MHz        Power Spectral Density: -74.61 dBm/Hz     </p>

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**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                         2010/2/22   2010/2/22   2010/2/24  
 Temperature / Humidity   20deg.C., 35%                                       23deg.C., 35%                                       22deg.C., 34%  
 Engineer                   Akio Hayashi   Akio Hayashi   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.	155.854	QP	46.1	14.8	7.5	32.0	36.4	43.5	7.1	200	294	X-axis
Hori.	239.96	QP	47.3	17.1	8.0	31.9	40.5	46.0	5.5	150	251	X-axis
Hori.	319.938	QP	50.2	14.1	8.4	31.9	40.8	46.0	5.2	100	257	X-axis
Hori.	599.977	QP	38.6	19.0	9.4	31.9	35.1	46.0	10.9	150	164	X-axis
Vert.	239.96	QP	38.4	17.1	8.0	31.9	31.6	46.0	14.4	100	268	Y-axis
Vert.	319.938	QP	43.1	14.1	8.4	31.9	33.7	46.0	12.3	100	285	Y-axis
Vert.	599.977	QP	38.0	19.0	9.4	31.9	34.5	46.0	11.5	100	158	Y-axis
Hori.	4144.001	PK	57.6	29.2	4.7	40.2	51.3	74.0	22.7	111	30	Z-axis
Hori.	5150	PK	65.2	31.5	5.4	39.2	62.9	74.0	11.1	101	64	Z-axis
Hori.	8287.987	PK	46.9	37.6	7.1	38.2	53.4	74.0	20.6	124	59	Z-axis
Hori.	15540	PK	45.5	39.6	0.2	37.5	47.8	74.0	26.2	100	306	Y-axis
Hori.	20720	PK	54.2	40.1	-2.7	43.8	47.8	74.0	26.2	100	298	Y-axis
Vert.	4147.5	PK	56.5	29.2	4.7	40.2	50.2	74.0	23.8	106	346	Z-axis
Vert.	5150	PK	65.2	31.5	5.4	39.2	62.9	74.0	11.1	101	252	Z-axis
Vert.	8287.987	PK	44.8	37.6	7.1	38.2	51.3	74.0	22.7	100	343	Z-axis
Vert.	15540	PK	45.6	39.6	0.2	37.5	47.9	74.0	26.1	109	175	Y-axis
Vert.	20720	PK	51.1	40.1	-2.7	43.8	44.5	74.0	29.5	101	177	Y-axis
Hori.	4144.001	AV	55.2	29.2	4.7	40.2	48.9	54.0	5.1	111	30	Z-axis
Hori.	5150	AV	48.1	31.5	5.4	39.2	45.8	54.0	8.2	101	64	Z-axis
Hori.	8287.987	AV	38.1	37.6	7.1	38.2	44.6	54.0	9.4	124	59	Z-axis
Hori.	15540	AV	33.0	39.6	0.2	37.5	35.3	54.0	18.7	100	306	Y-axis
Hori.	20720	AV	41.9	40.1	-2.7	43.8	35.5	54.0	18.5	100	298	Y-axis
Vert.	4147.5	AV	54.0	29.2	4.7	40.2	47.7	54.0	6.3	106	346	Z-axis
Vert.	5150	AV	48.7	31.5	5.4	39.2	46.4	54.0	7.6	101	252	Z-axis
Vert.	8287.987	AV	38.5	37.6	7.1	38.2	45.0	54.0	9.0	100	343	Z-axis
Vert.	15540	AV	31.3	39.6	0.2	37.5	33.6	54.0	20.4	109	175	Y-axis
Vert.	20720	AV	38.6	40.1	-2.7	43.8	32.2	54.0	21.8	101	177	Y-axis

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                         2010/2/22                                   2010/2/24  
 Temperature / Humidity   20deg.C., 35%                   23deg.C., 35%                   22deg.C., 34%  
 Engineer                  Akio Hayashi                   Akio Hayashi                   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.	155.856	QP	44.9	14.8	7.5	32.0	35.2	43.5	8.3	191	293	X-axis
Hori.	239.954	QP	47.5	17.1	8.0	31.9	40.7	46.0	5.3	146	241	X-axis
Hori.	319.942	QP	50.5	14.1	8.4	31.9	41.1	46.0	4.9	100	44	X-axis
Hori.	599.994	QP	39.2	19.0	9.4	31.9	35.7	46.0	10.4	169	98	X-axis
Vert.	239.954	QP	38.2	17.1	8.0	31.9	31.4	46.0	14.6	100	272	Y-axis
Vert.	319.942	QP	43.0	14.1	8.4	31.9	33.6	46.0	12.4	100	272	Y-axis
Vert.	599.994	QP	38.0	19.0	9.4	31.9	34.5	46.0	11.5	100	76	Y-axis
Hori.	4162.8	PK	57.7	29.3	4.7	40.2	51.5	74.0	22.6	112	30	Z-axis
Hori.	8319.965	PK	46.6	37.6	7.1	38.1	53.2	74.0	20.8	100	42	Z-axis
Hori.	15600	PK	49.2	39.4	0.4	37.5	51.5	74.0	22.5	100	226	Y-axis
Hori.	20800	PK	56.5	40.1	-2.6	43.7	50.3	74.0	23.7	100	299	Y-axis
Vert.	4162.8	PK	57.0	29.3	4.7	40.2	50.8	74.0	23.2	101	6	Z-axis
Vert.	8319.965	PK	47.2	37.6	7.1	38.1	53.8	74.0	20.2	106	342	Z-axis
Vert.	15600	PK	46.8	39.4	0.4	37.5	49.1	74.0	24.9	106	174	Y-axis
Vert.	20800	PK	51.8	40.1	-2.6	43.7	45.6	74.0	28.4	101	178	Y-axis
Hori.	4162.8	AV	55.7	29.3	4.7	40.2	49.5	54.0	4.5	112	30	Z-axis
Hori.	8319.965	AV	38.5	37.6	7.1	38.1	45.1	54.0	8.9	100	42	Z-axis
Hori.	15600	AV	37.3	39.4	0.4	37.5	39.6	54.0	14.4	100	226	Y-axis
Hori.	20800	AV	42.5	40.1	-2.6	43.7	36.3	54.0	17.7	100	299	Y-axis
Vert.	4162.8	AV	54.4	29.3	4.7	40.2	48.2	54.0	5.8	101	6	Z-axis
Vert.	8319.965	AV	38.6	37.6	7.1	38.1	45.2	54.0	8.8	106	342	Z-axis
Vert.	15600	AV	33.9	39.4	0.4	37.5	36.2	54.0	17.8	106	174	Y-axis
Vert.	20800	AV	39.4	40.1	-2.6	43.7	33.2	54.0	20.8	101	178	Y-axis

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.**

**Shonan EMC Lab.**

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

Telephone : +81 463 50 6400

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                           2010/2/22                           2010/2/22                           2010/2/24  
Temperature / Humidity    20deg.C., 35%                   23deg.C., 35%                   22deg.C., 34%  
Engineer                    Akio Hayashi                   Akio Hayashi                   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.	155.856	QP	44.4	14.8	7.5	32.0	34.7	43.5	8.8	198	293	X-axis
Hori.	239.956	QP	47.5	17.1	8.0	31.9	40.7	46.0	5.3	144	239	X-axis
Hori.	319.943	QP	50.6	14.1	8.4	31.9	41.2	46.0	4.8	100	46	X-axis
Hori.	599.984	QP	39.0	19.0	9.4	31.9	35.5	46.0	10.5	160	106	X-axis
Vert.	239.956	QP	38.2	17.1	8.0	31.9	31.4	46.0	14.6	100	260	Y-axis
Vert.	319.943	QP	43.0	14.1	8.4	31.9	33.6	46.0	12.4	100	278	Y-axis
Vert.	599.984	QP	38.1	19.0	9.4	31.9	34.6	46.0	11.4	100	101	Y-axis
Hori.	4191.981	PK	58.9	29.3	4.7	40.2	52.7	74.0	21.3	123	127	X-axis
Hori.	8383.975	PK	47.0	37.6	7.1	38.0	53.7	74.0	20.3	100	40	Z-axis
Hori.	15720	PK	52.1	39.0	0.4	37.6	53.9	74.0	20.1	100	218	Y-axis
Hori.	20960	PK	55.1	40.1	-2.6	43.5	49.1	74.0	24.9	100	298	Y-axis
Vert.	4191.981	PK	58.2	29.3	4.7	40.2	52.0	74.0	22.0	103	190	X-axis
Vert.	8383.975	PK	48.1	37.6	7.1	38.0	54.8	74.0	19.2	126	321	Z-axis
Vert.	15720	PK	44.8	39.0	0.4	37.6	46.6	74.0	27.4	100	219	Y-axis
Vert.	20960	PK	52.7	40.1	-2.6	43.5	46.7	74.0	27.3	100	170	Y-axis
Hori.	4191.981	AV	56.3	29.3	4.7	40.2	50.1	54.0	<b>3.9</b>	123	127	X-axis
Hori.	8383.975	AV	37.9	37.6	7.1	38.0	44.6	54.0	9.4	100	40	Z-axis
Hori.	15720	AV	40.9	39.0	0.4	37.6	42.7	54.0	11.3	100	218	Y-axis
Hori.	20960	AV	42.5	40.1	-2.6	43.5	36.5	54.0	17.5	100	298	Y-axis
Vert.	4191.981	AV	56.1	29.3	4.7	40.2	49.9	54.0	4.1	103	190	X-axis
Vert.	8383.975	AV	39.9	37.6	7.1	38.0	46.6	54.0	7.4	126	321	Z-axis
Vert.	15720	AV	34.6	39.0	0.4	37.6	36.4	54.0	17.6	100	219	Y-axis
Vert.	20960	AV	39.0	40.1	-2.6	43.5	33.0	54.0	21.0	100	170	Y-axis

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.**

**Shonan EMC Lab.**

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

Telephone : +81 463 50 6400

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                           2010/2/22                           2010/2/22                           2010/2/24  
Temperature / Humidity    20deg.C., 35%                   23deg.C., 35%                   22deg.C., 34%  
Engineer                    Akio Hayashi                   Akio Hayashi                   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.	155.857	QP	45.0	14.8	7.5	32.0	35.3	43.5	8.2	193	87	X-axis
Hori.	239.959	QP	47.4	17.1	8.0	31.9	40.6	46.0	5.4	141	234	X-axis
Hori.	319.941	QP	50.5	14.1	8.4	31.9	41.1	46.0	4.9	100	41	X-axis
Hori.	599.991	QP	38.3	19.0	9.4	31.9	34.8	46.0	11.2	188	103	X-axis
Vert.	239.959	QP	38.2	17.1	8.0	31.9	31.4	46.0	14.6	100	262	Y-axis
Vert.	319.941	QP	42.9	14.1	8.4	31.9	33.5	46.0	12.5	100	276	Y-axis
Vert.	599.991	QP	38.0	19.0	9.4	31.9	34.5	46.0	11.5	100	104	Y-axis
Hori.	4207.993	PK	59.0	29.3	4.7	40.1	52.9	74.0	21.1	107	128	Z-axis
Hori.	8415.951	PK	46.3	37.6	7.0	38.0	52.9	74.0	21.1	100	41	Z-axis
Hori.	15780	PK	54.1	38.9	0.5	37.6	55.9	74.0	18.1	100	221	Y-axis
Hori.	21040	PK	53.9	40.1	-2.6	43.6	47.8	74.0	26.2	100	296	Y-axis
Vert.	4207.993	PK	57.5	29.3	4.7	40.1	51.4	74.0	22.6	119	188	X-axis
Vert.	8415.951	PK	47.9	37.6	7.0	38.0	54.5	74.0	19.5	126	323	Z-axis
Vert.	15780	PK	55.8	38.9	0.5	37.6	57.6	74.0	16.4	100	237	Y-axis
Vert.	21040	PK	53.3	40.1	-2.6	43.6	47.2	74.0	26.8	103	171	Y-axis
Hori.	4207.993	AV	57.4	29.3	4.7	40.1	51.3	54.0	2.7	107	128	Z-axis
Hori.	8415.951	AV	37.9	37.6	7.0	38.0	44.5	54.0	9.6	100	41	Z-axis
Hori.	15780	AV	42.7	38.9	0.5	37.6	44.5	54.0	9.5	100	221	Y-axis
Hori.	21040	AV	40.8	40.1	-2.6	43.6	34.7	54.0	19.3	100	296	Y-axis
Vert.	4207.993	AV	55.5	29.3	4.7	40.1	49.4	54.0	4.6	119	188	X-axis
Vert.	8415.951	AV	40.8	37.6	7.0	38.0	47.4	54.0	6.6	126	323	Z-axis
Vert.	15780	AV	45.8	38.9	0.5	37.6	47.6	54.0	6.4	100	237	Y-axis
Vert.	21040	AV	40.5	40.1	-2.6	43.6	34.4	54.0	19.6	103	171	Y-axis

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.**

**Shonan EMC Lab.**

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

Telephone : +81 463 50 6400

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                           2010/2/22   2010/2/24   2010/2/24  
Temperature / Humidity    20deg.C., 35%                               23deg.C., 35%                               22deg.C., 34%  
Engineer                    Akio Hayashi                               Akio Hayashi                               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.	155.857	QP	44.3	14.8	7.5	32.0	34.6	43.5	8.9	195	282	X-axis
Hori.	239.952	QP	47.4	17.1	8.0	31.9	40.6	46.0	5.4	146	241	X-axis
Hori.	319.941	QP	50.4	14.1	8.4	31.9	41.0	46.0	5.0	100	49	X-axis
Hori.	599.994	QP	39.2	19.0	9.4	31.9	35.7	46.0	10.3	168	106	X-axis
Vert.	239.952	QP	38.1	17.1	8.0	31.9	31.3	46.0	14.7	100	261	Y-axis
Vert.	319.941	QP	42.9	14.1	8.4	31.9	33.5	46.0	12.5	100	283	Y-axis
Vert.	599.994	QP	37.5	19.0	9.4	31.9	34.0	46.0	12.0	100	162	Y-axis
Hori.	4223.976	PK	59.6	29.4	4.7	40.1	53.6	74.0	20.4	106	128	Z-axis
Hori.	8447.978	PK	46.6	37.6	7.0	38.0	53.2	74.0	20.8	124	315	Z-axis
Hori.	15840	PK	54.8	38.7	0.5	37.7	56.4	74.0	17.6	100	224	Y-axis
Hori.	21120	PK	52.5	40.1	-2.6	43.7	46.3	74.0	27.7	100	296	Y-axis
Vert.	4223.976	PK	58.1	29.4	4.7	40.1	52.1	74.0	21.9	102	188	X-axis
Vert.	8447.978	PK	47.9	37.6	7.0	38.0	54.5	74.0	19.6	126	321	Z-axis
Vert.	15840	PK	49.9	38.7	0.5	37.7	51.4	74.0	22.6	100	208	Y-axis
Vert.	21120	PK	54.4	40.1	-2.6	43.7	48.2	74.0	25.8	103	172	Y-axis
Hori.	4223.976	AV	57.6	29.4	4.7	40.1	51.6	54.0	2.4	106	128	Z-axis
Hori.	8447.978	AV	38.8	37.6	7.0	38.0	45.4	54.0	8.6	124	315	Z-axis
Hori.	15840	AV	43.9	38.7	0.5	37.7	45.4	54.0	8.6	100	224	Y-axis
Hori.	21120	AV	40.8	40.1	-2.6	43.7	34.6	54.0	19.4	100	296	Y-axis
Vert.	4223.976	AV	56.2	29.4	4.7	40.1	50.2	54.0	3.8	102	188	X-axis
Vert.	8447.978	AV	41.0	37.6	7.0	38.0	47.6	54.0	6.4	126	321	Z-axis
Vert.	15840	AV	38.6	38.7	0.5	37.7	40.1	54.0	13.9	100	208	Y-axis
Vert.	21120	AV	41.9	40.1	-2.6	43.7	35.7	54.0	18.3	103	172	Y-axis

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.**

**Shonan EMC Lab.**

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

Telephone : +81 463 50 6400

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                           2010/2/22                           2010/2/22                           2010/2/24  
Temperature / Humidity    20deg.C., 35%                   23deg.C., 35%                   22deg.C., 34%  
Engineer                    Akio Hayashi                    Akio Hayashi                    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.	155.856	QP	44.7	14.8	7.5	32.0	35.0	43.5	8.5	188	294	X-axis
Hori.	239.954	QP	47.4	17.1	8.0	31.9	40.6	46.0	5.4	150	233	X-axis
Hori.	319.941	QP	50.4	14.1	8.4	31.9	41.0	46.0	5.0	100	44	X-axis
Hori.	599.991	QP	39.2	19.0	9.4	31.9	35.7	46.0	10.3	171	112	X-axis
Vert.	239.954	QP	38.2	17.1	8.0	31.9	31.4	46.0	14.6	100	250	Y-axis
Vert.	319.941	QP	42.9	14.1	8.4	31.9	33.5	46.0	12.5	100	272	Y-axis
Vert.	599.991	QP	37.4	19.0	9.4	31.9	33.9	46.0	12.1	100	163	Y-axis
Hori.	4256.001	PK	59.8	29.4	4.7	40.1	53.8	74.0	20.2	118	130	Z-axis
Hori.	5350	PK	58.6	31.8	5.3	38.9	56.8	74.0	17.2	100	0	X-axis
Hori.	10640	PK	42.3	39.9	7.9	37.4	52.7	74.0	21.3	100	0	Z-axis(Non-detected)
Hori.	15960	PK	56.5	38.3	0.6	37.7	57.7	74.0	16.3	100	234	Y-axis
Hori.	21280	PK	53.2	40.1	-2.6	44.0	46.7	74.0	27.3	100	295	Z-axis
Vert.	4256.001	PK	57.9	29.4	4.7	40.1	51.9	74.0	22.1	101	192	Z-axis
Vert.	5350	PK	61.0	31.8	5.3	38.9	59.2	74.0	14.8	100	282	Y-axis
Vert.	10640	PK	45.2	39.9	7.9	37.4	55.6	74.0	18.4	104	23	Z-axis
Vert.	15960	PK	52.4	38.3	0.6	37.7	53.6	74.0	20.4	100	355	Y-axis
Vert.	21280	PK	56.8	40.1	-2.6	44.0	50.3	74.0	23.7	105	176	Y-axis
Hori.	4256.001	AV	58.1	29.4	4.7	40.1	52.1	54.0	<b>1.9</b>	118	130	Z-axis
Hori.	5350	AV	41.7	31.8	5.3	38.9	39.9	54.0	14.1	100	0	X-axis
Hori.	10640	AV	32.4	39.9	7.9	37.4	42.8	54.0	11.2	100	0	Z-axis(Non-detected)
Hori.	15960	AV	45.8	38.3	0.6	37.7	47.0	54.0	7.0	100	234	Y-axis
Hori.	21280	AV	40.9	40.1	-2.6	44.0	34.4	54.0	19.6	100	295	Z-axis
Vert.	4256.001	AV	56.1	29.4	4.7	40.1	50.1	54.0	4.0	101	192	Z-axis
Vert.	5350	AV	44.0	31.8	5.3	38.9	42.2	54.0	11.8	100	282	Y-axis
Vert.	10640	AV	36.2	39.9	7.9	37.4	46.6	54.0	7.4	104	23	Z-axis
Vert.	15960	AV	40.5	38.3	0.6	37.7	41.7	54.0	12.3	100	355	Y-axis
Vert.	21280	AV	44.0	40.1	-2.6	44.0	37.5	54.0	16.5	105	176	Y-axis

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.**

**Shonan EMC Lab.**

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

Telephone : +81 463 50 6400

Facsimile : +81 463 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 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, 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	65.2	65.2	-30.0	-30.0	-27.0	3.0	3.0	101	64	101	252	Hor:Z, Ver:Z
10360.00	52.9	57.3	-42.3	-37.9	-27.0	15.3	10.9	123	46	129	348	Hor:X, Ver:Z
16575.00	62.2	57.3	-42.6	-47.5	-27.0	15.6	20.5	100	61	100	18	Hor:Z, Ver:Y
25900.00	53.0	54.4	-51.8	-50.4	-27.0	24.8	23.4	100	135	100	169	Hor:Y, Ver:Y

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.**

**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 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	61.0	56.8	-34.2	-38.4	-27.0	7.2	11.4	119	336	132	35	Hor:X, Ver:Z
16641.00	61.7	58.0	-43.1	-46.8	-27.0	16.1	19.8	100	0	100	17	Hor:Z, Ver:Y
26000.00	54.4	58.2	-50.4	-46.6	-27.0	23.4	19.6	100	0	100	166	Hor:Y, Ver:Y

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	60.2	56.8	-35.0	-38.4	-27.0	8.0	11.4	125	23	131	34	Hor:X, Ver:Z
16768.00	62.5	58.9	-42.3	-45.9	-27.0	15.3	18.9	100	60	100	22	Hor:Z, Ver:Y
26200.00	54.4	56.4	-50.4	-48.4	-27.0	23.4	21.4	100	0	100	165	Hor:Y, Ver:Y

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.**

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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 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 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.]	
10520.00	60.7	56.7	-34.5	-38.5	-27.0	7.5	11.5	126	22	131	18	Hor:X, Ver:Z
16833.00	63.2	59.3	-41.6	-45.5	-27.0	14.6	18.5	100	62	100	190	Hor:Z, Ver:Y
26300.00	52.0	54.4	-52.8	-50.4	-27.0	25.8	23.4	100	142	104	151	Hor:Y, Ver:Y

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 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	60.7	57.8	-34.5	-37.4	-27.0	7.5	10.4	123	25	130	18	Hor:X, Ver:Z
16896.00	63.6	60.5	-41.2	-44.3	-27.0	14.2	17.3	100	61	100	192	Hor:Z, Ver:Y
26400.00	52.3	52.8	-52.5	-52.0	-27.0	25.5	25.0	100	142	105	154	Hor:Y, Ver:Y

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.**

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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 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.	Turn	Rx, Ant.	Turn	
								Height [cm]	Table [deg.]	Height [cm]	Table [deg.]	
5350.00	58.6	61	-36.6	-34.2	-27.0	9.6	7.2	100	0	100	282	Hor:X, Ver:Y
8512.00	53.1	54.2	-42.1	-41.0	-27.0	15.1	14.0	125	316	110	329	Hor:X, Ver:Z
17025.00	62.1	58.0	-42.7	-46.8	-27.0	15.7	19.8	100	56	100	193	Hor:Z, Ver:Y

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

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

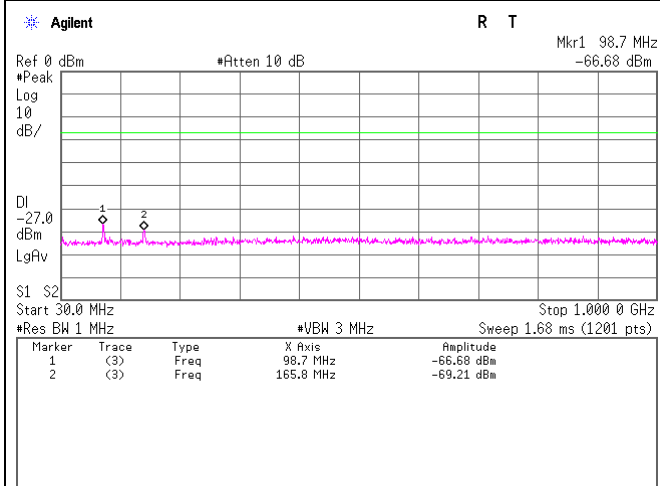
Facsimile : +81- (0) 463-50-6401

## Spurious emission (Conducted)

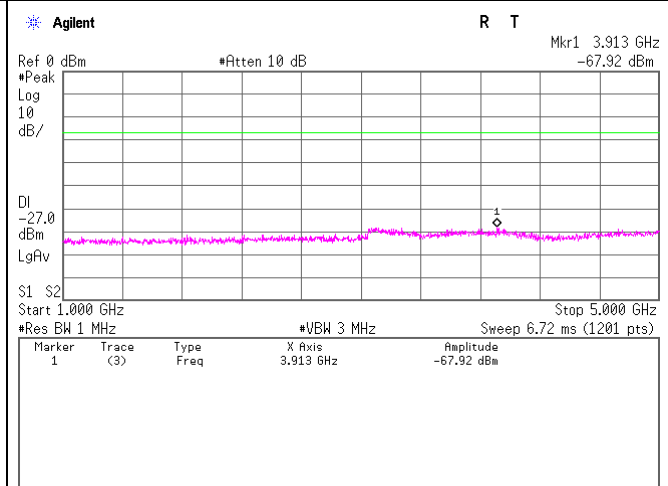
11a

Tx, 5180MHz

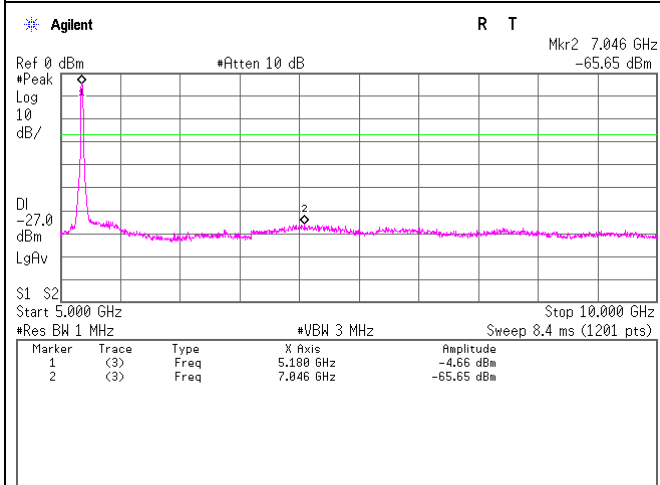
### 30MHz - 1GHz



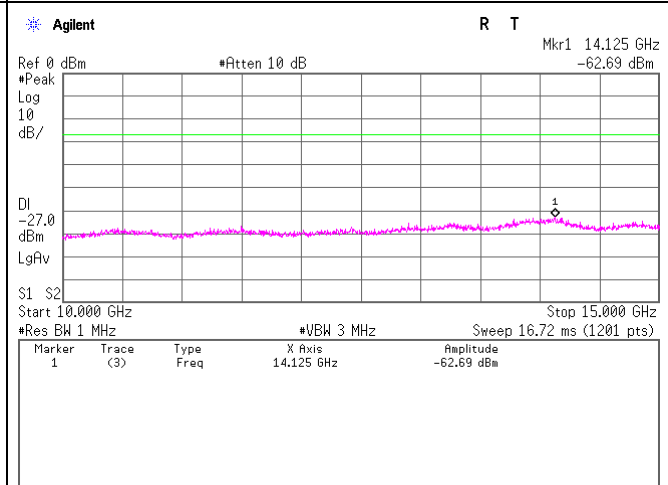
### 1GHz - 5GHz



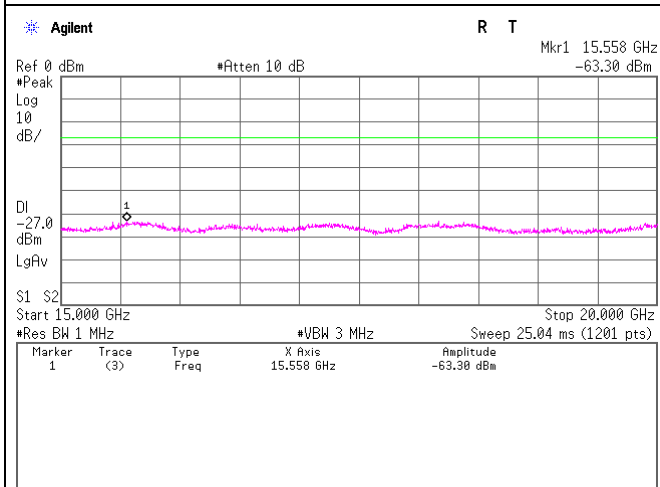
### 5GHz - 10GHz



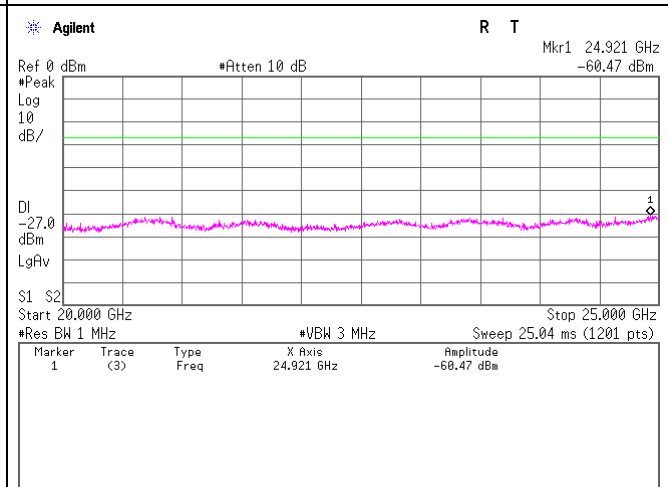
### 10GHz - 15GHz



### 15GHz - 20GHz



### 20GHz - 25GHz



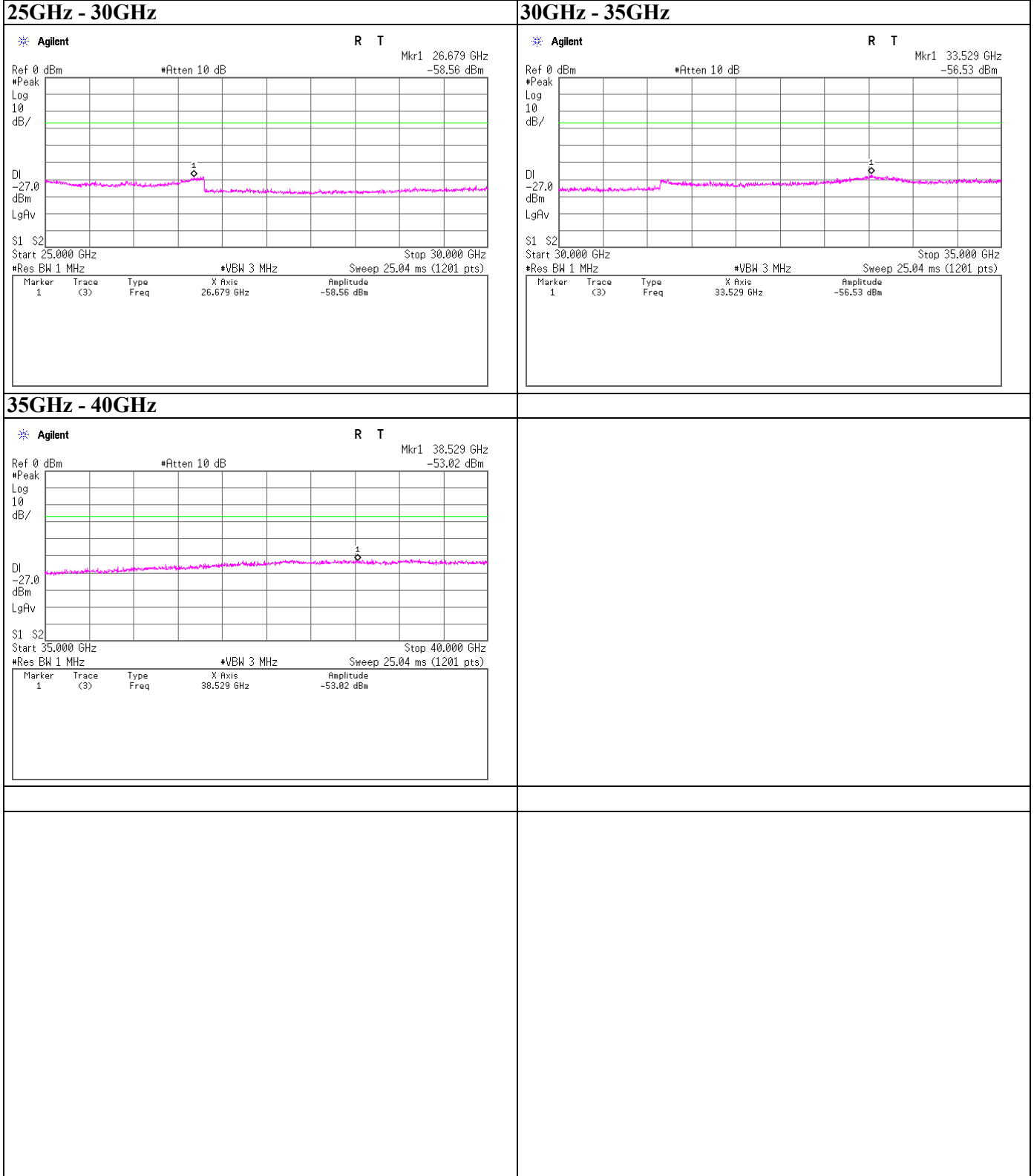
**UL Japan, Inc.**  
**Shonan EMC Lab.**

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 Facsimile : +81 463 50 6401

## Spurious emission (Conducted)

11a

Tx, 5180MHz



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

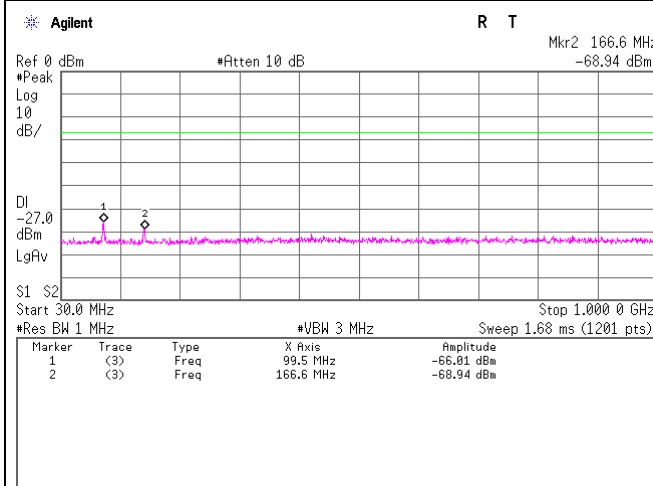
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN  
 Telephone : +81 463 50 6400  
 Facsimile : +81 463 50 6401

## Spurious emission (Conducted)

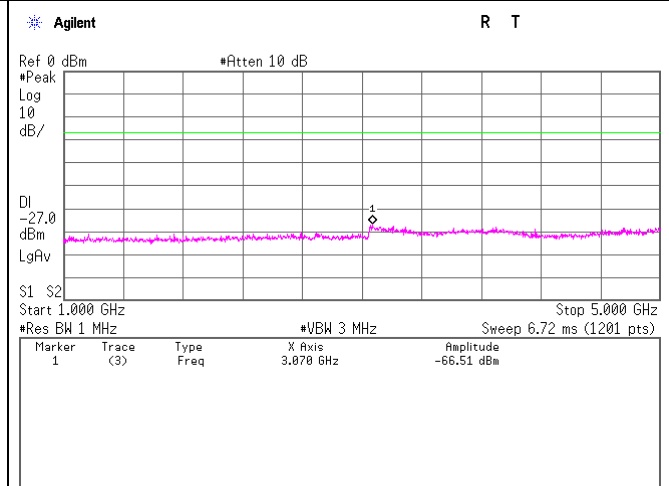
11a

Tx, 5200MHz

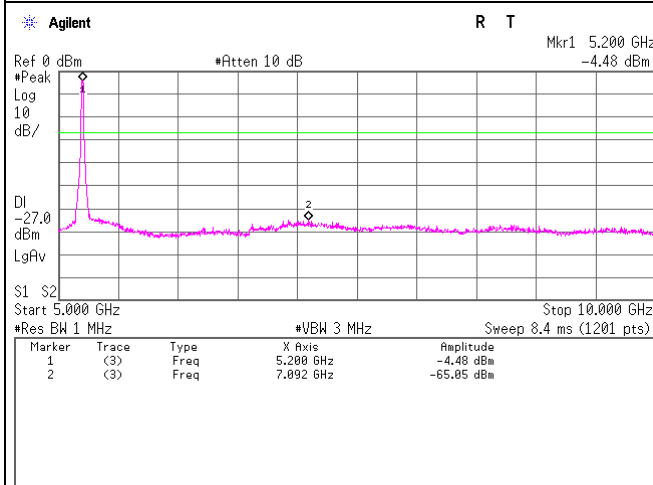
### 30MHz - 1GHz



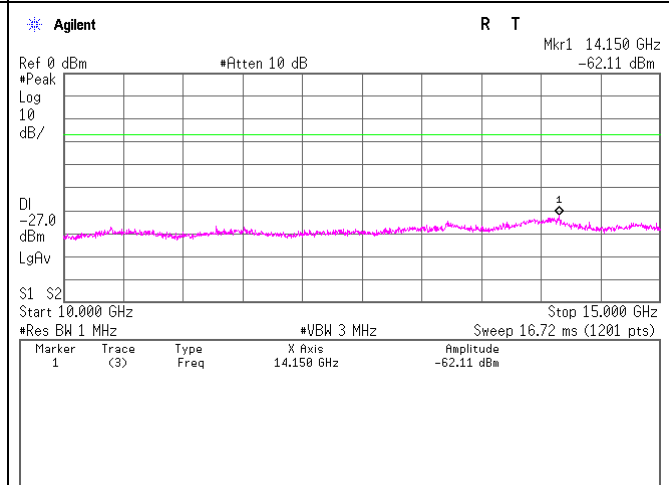
### 1GHz - 5GHz



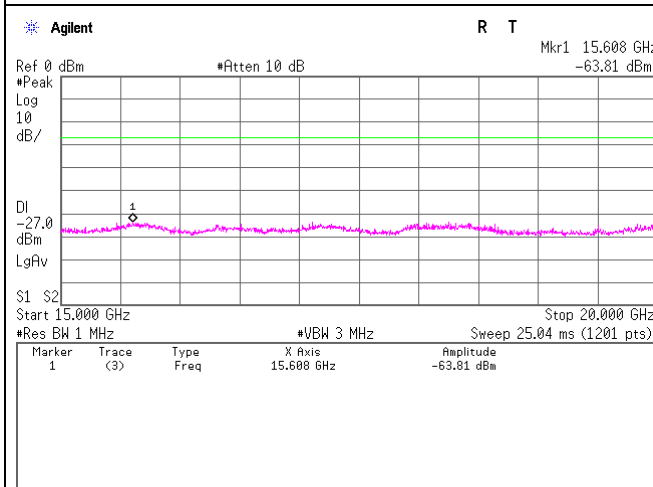
### 5GHz - 10GHz



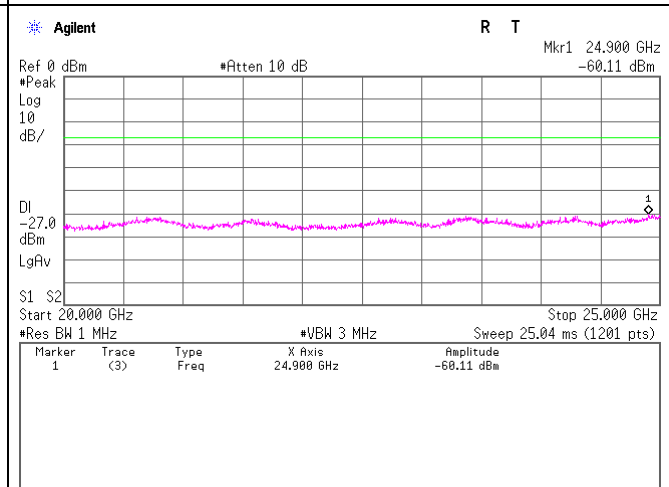
### 10GHz - 15GHz



### 15GHz - 20GHz



### 20GHz - 25GHz



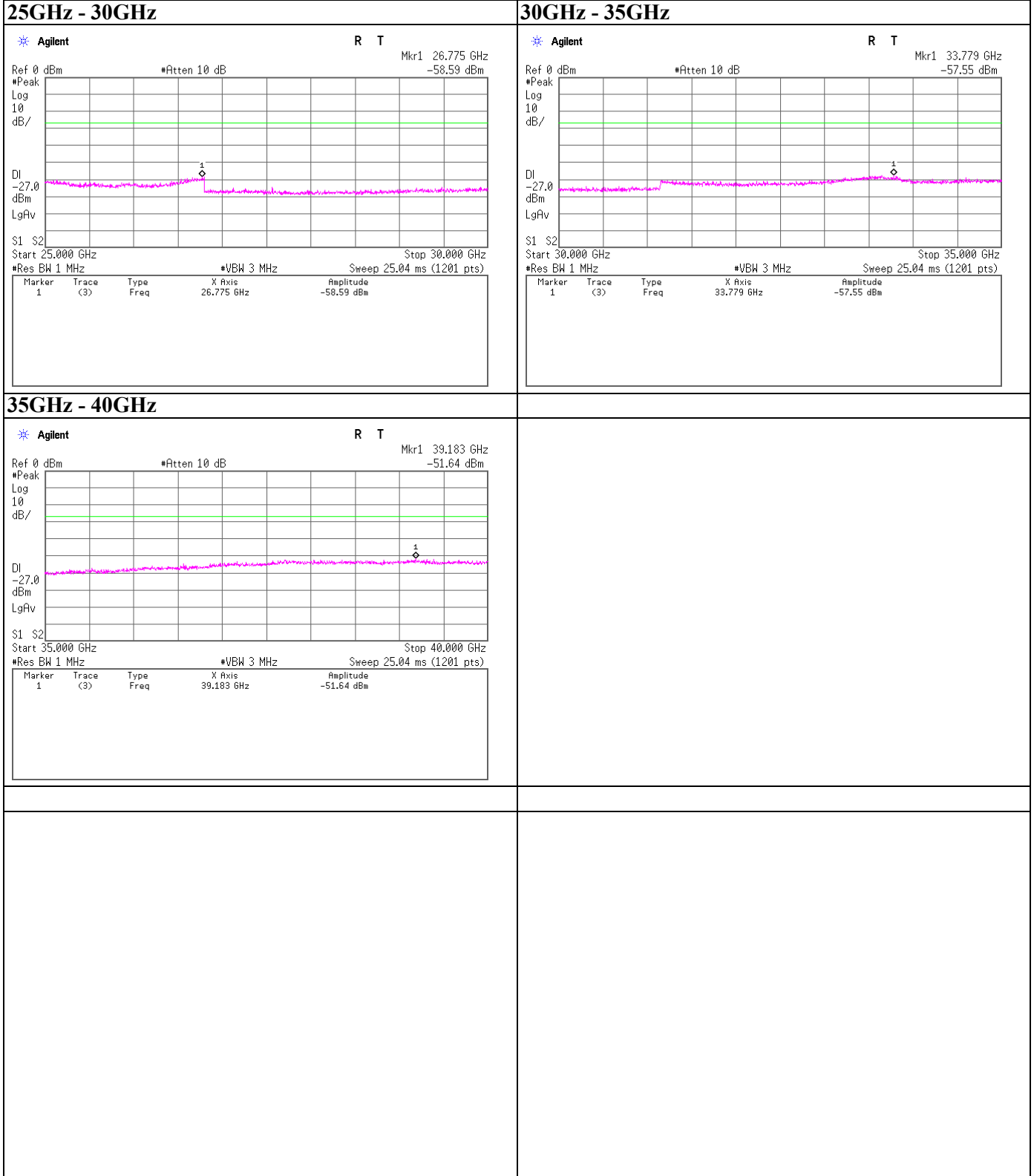
**UL Japan, Inc.**  
**Shonan EMC Lab.**

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

## Spurious emission (Conducted)

11a

Tx, 5200MHz



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

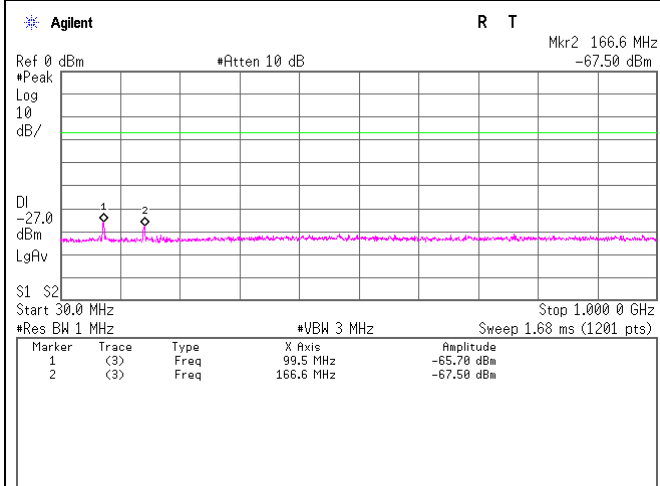
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN  
 Telephone : +81 463 50 6400  
 Facsimile : +81 463 50 6401

## Spurious emission (Conducted)

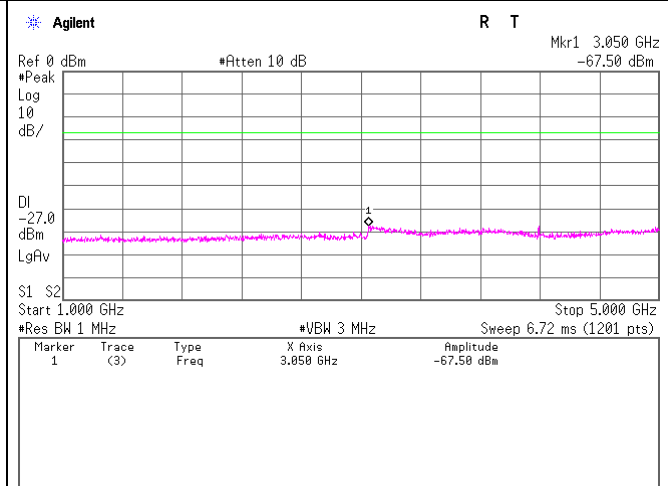
11a

Tx, 5240MHz

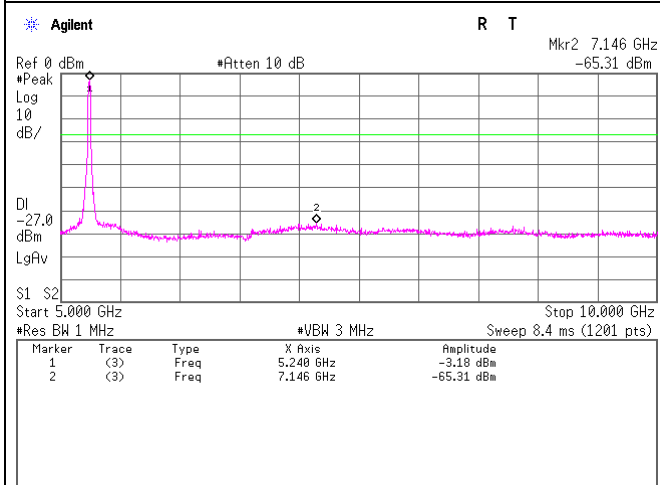
### 30MHz - 1GHz



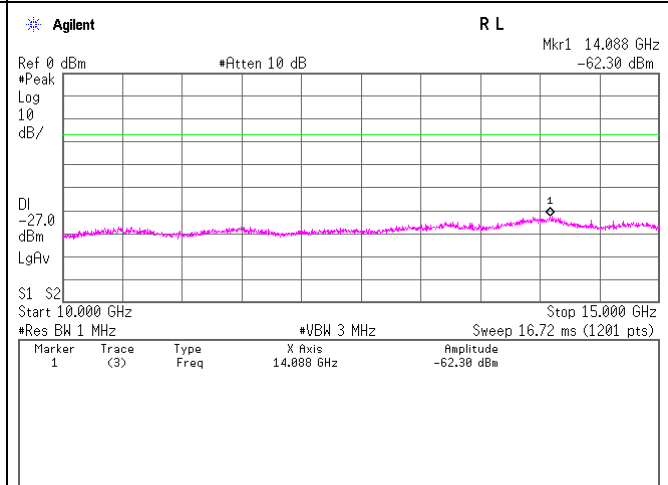
### 1GHz - 5GHz



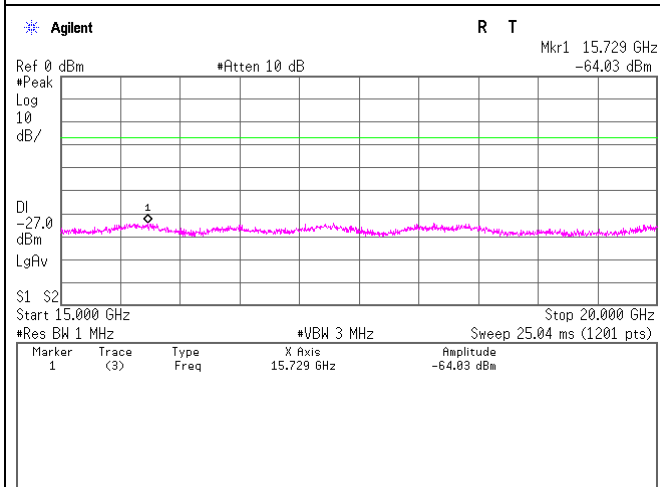
### 5GHz - 10GHz



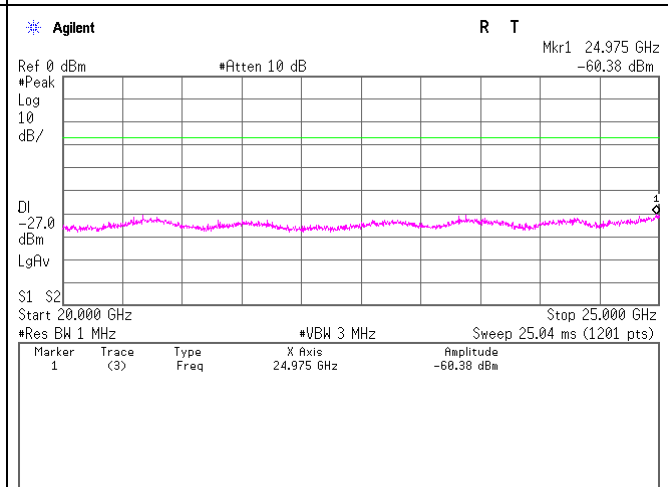
### 10GHz - 15GHz



### 15GHz - 20GHz



### 20GHz - 25GHz



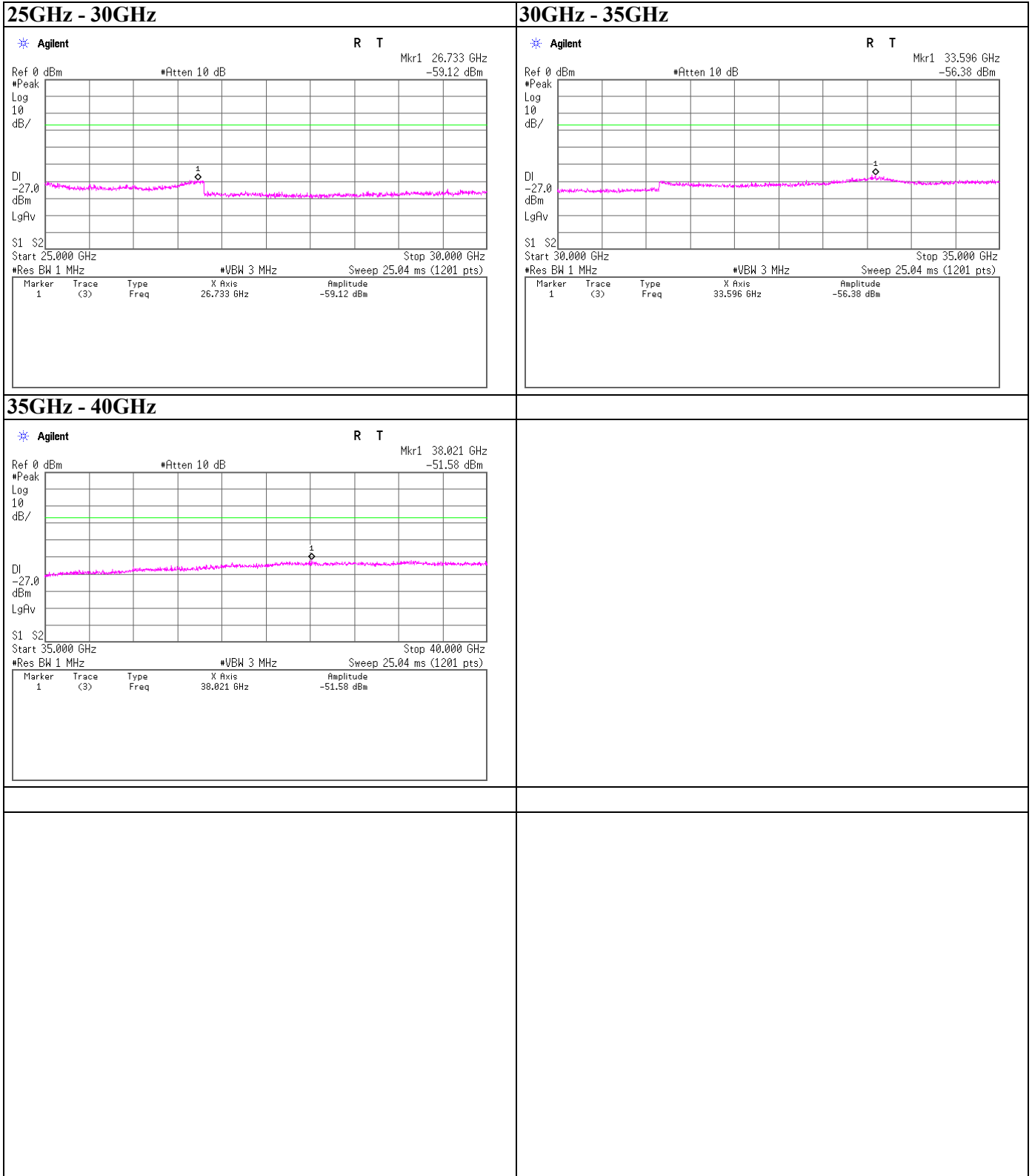
**UL Japan, Inc.**  
**Shonan EMC Lab.**

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 Telephone : +81 463 50 6400  
 Facsimile : +81 463 50 6401

## Spurious emission (Conducted)

11a

Tx, 5240MHz



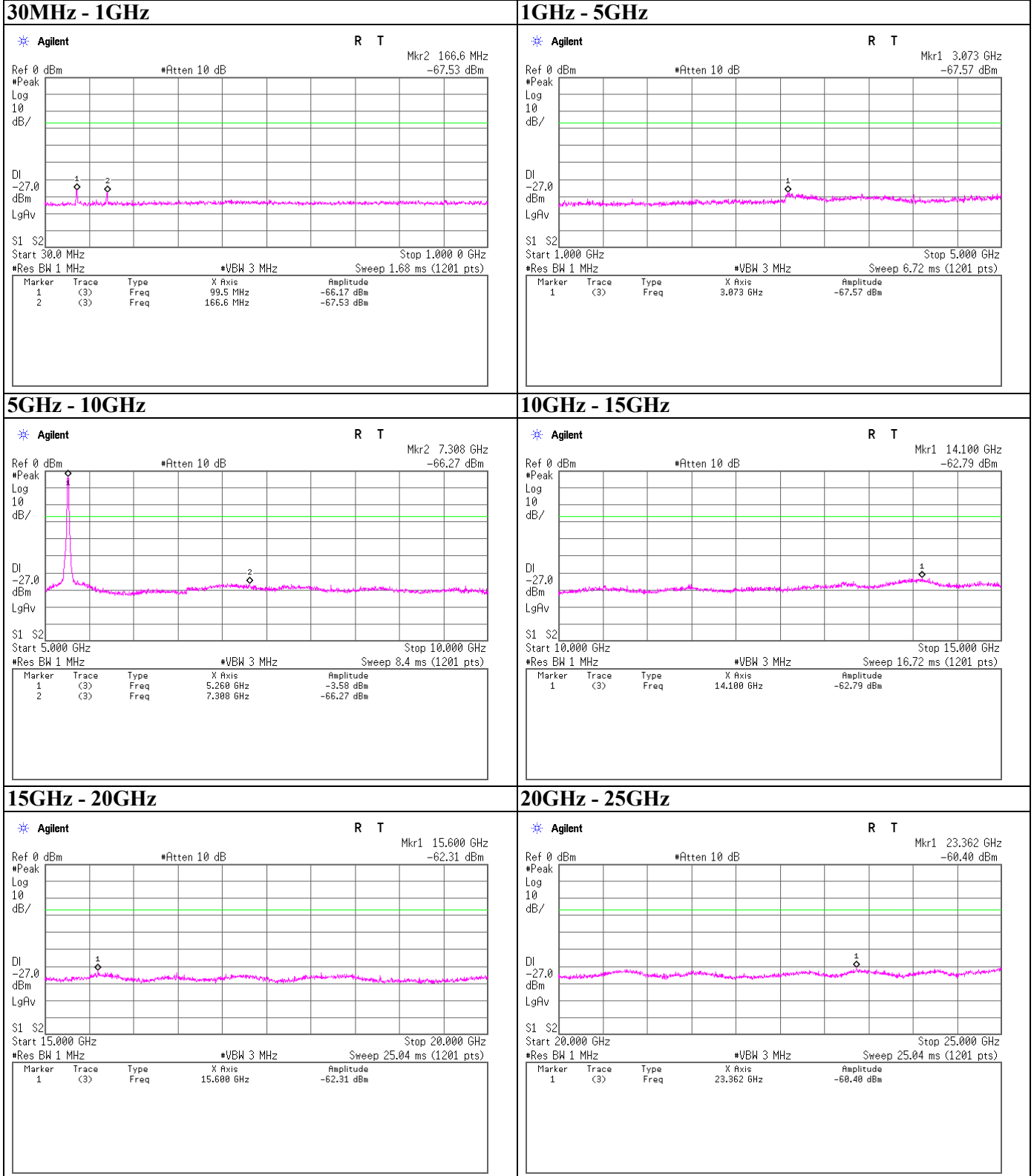
**UL Japan, Inc.**  
**Shonan EMC Lab.**

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, 5260MHz



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

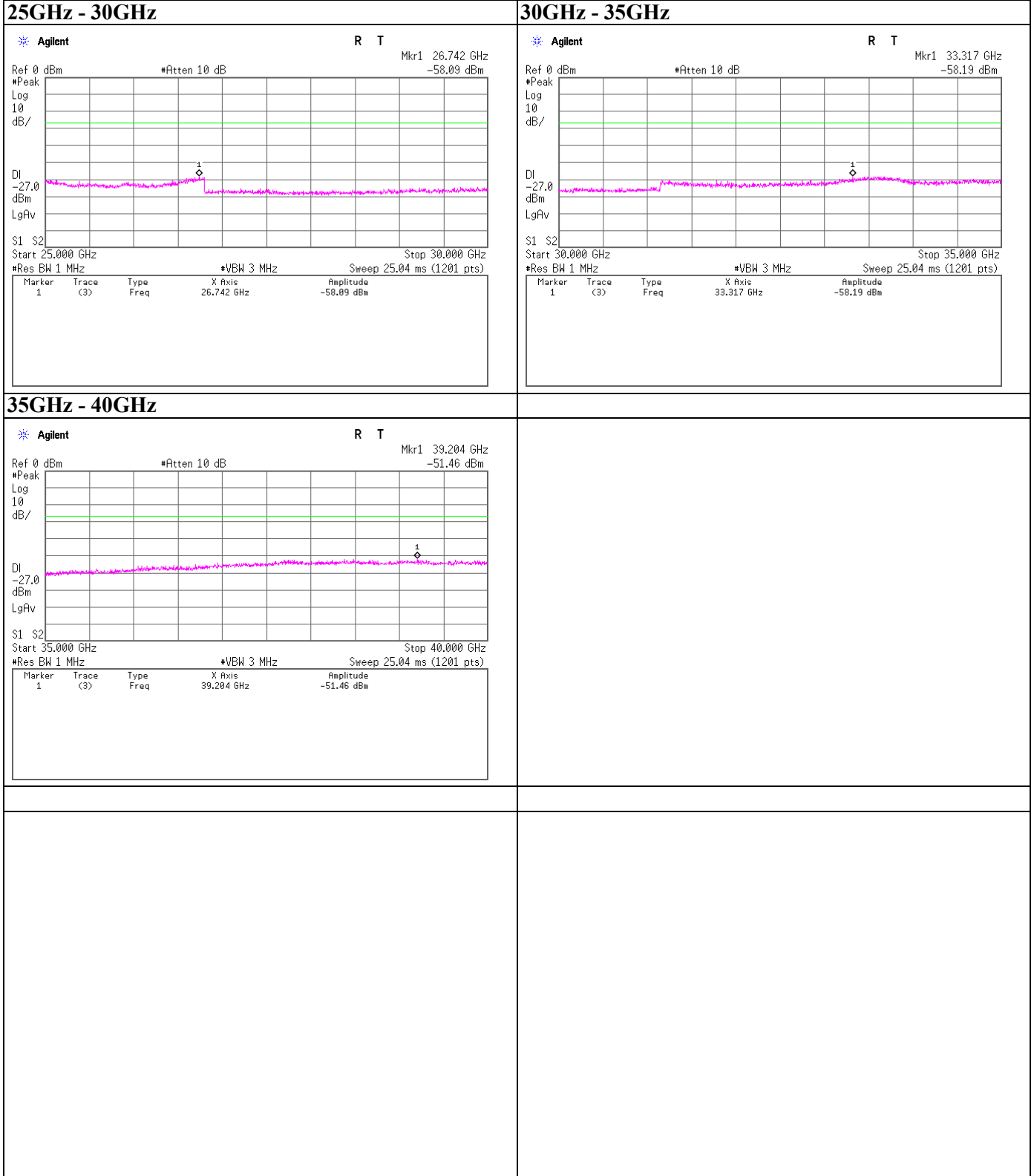
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN  
 Telephone : +81 463 50 6400  
 Facsimile : +81 463 50 6401



## Spurious emission (Conducted)

11a

Tx, 5260MHz



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

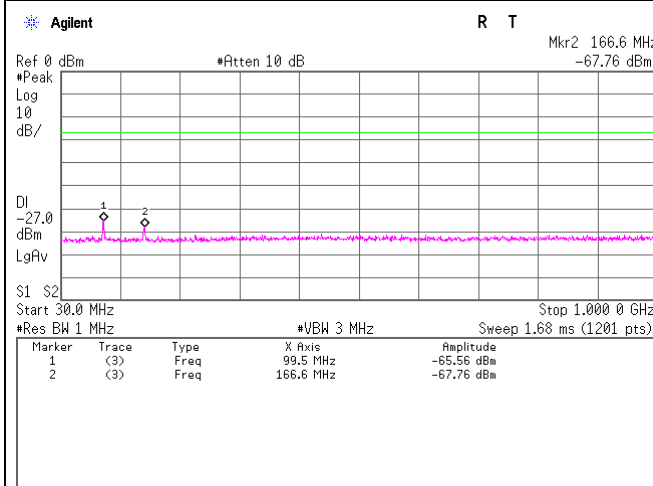
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN  
 Telephone : +81 463 50 6400  
 Facsimile : +81 463 50 6401

## Spurious emission (Conducted)

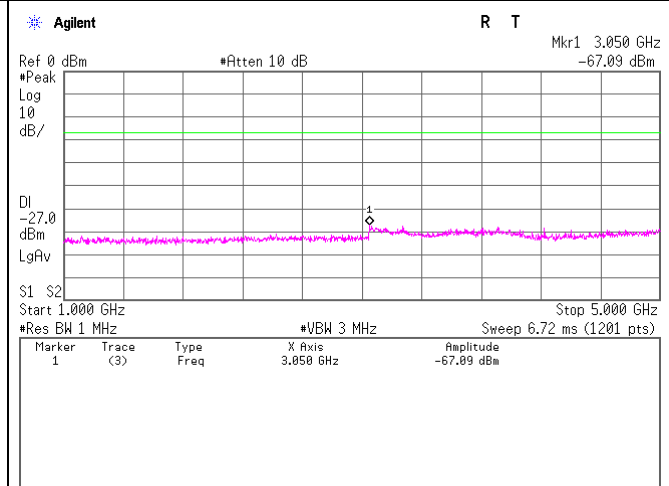
11a

Tx, 5280MHz

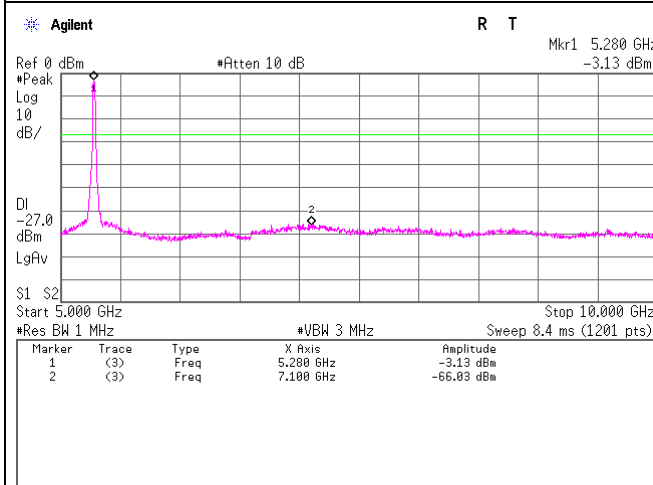
### 30MHz - 1GHz



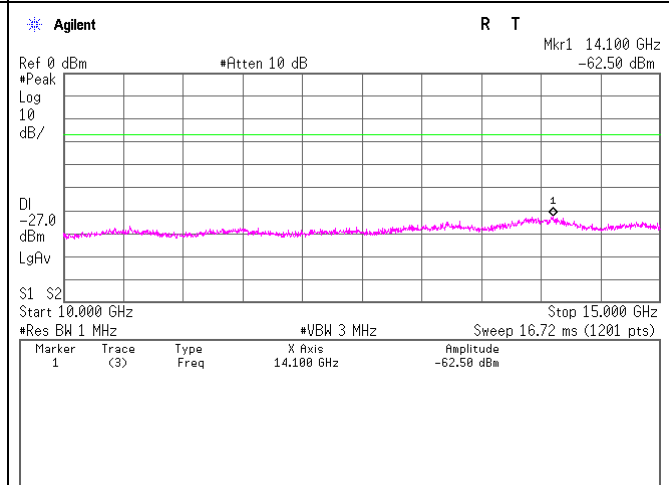
### 1GHz - 5GHz



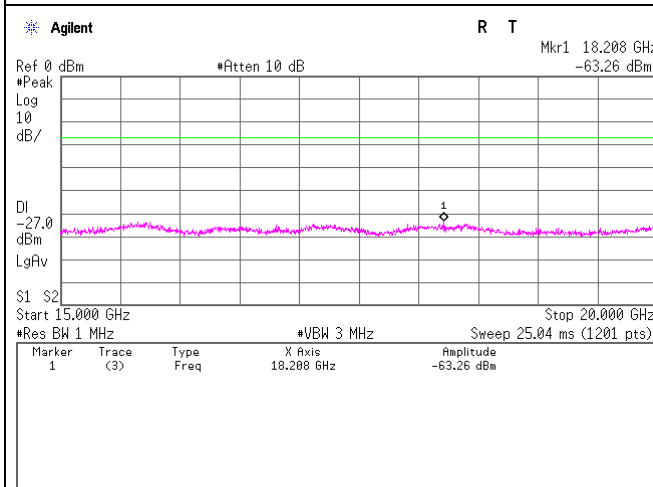
### 5GHz - 10GHz



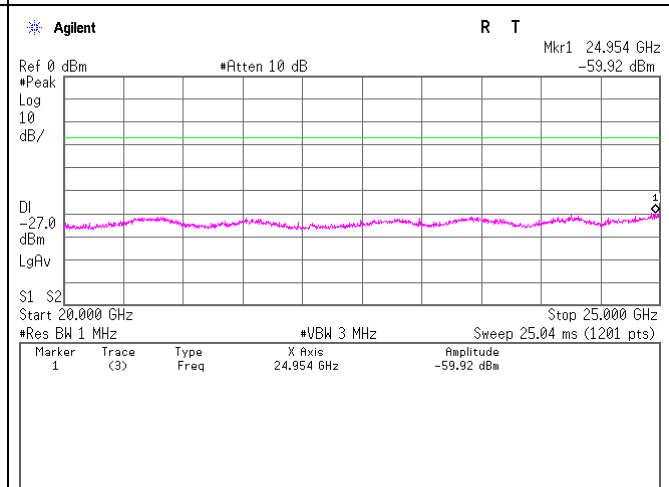
### 10GHz - 15GHz



### 15GHz - 20GHz



### 20GHz - 25GHz



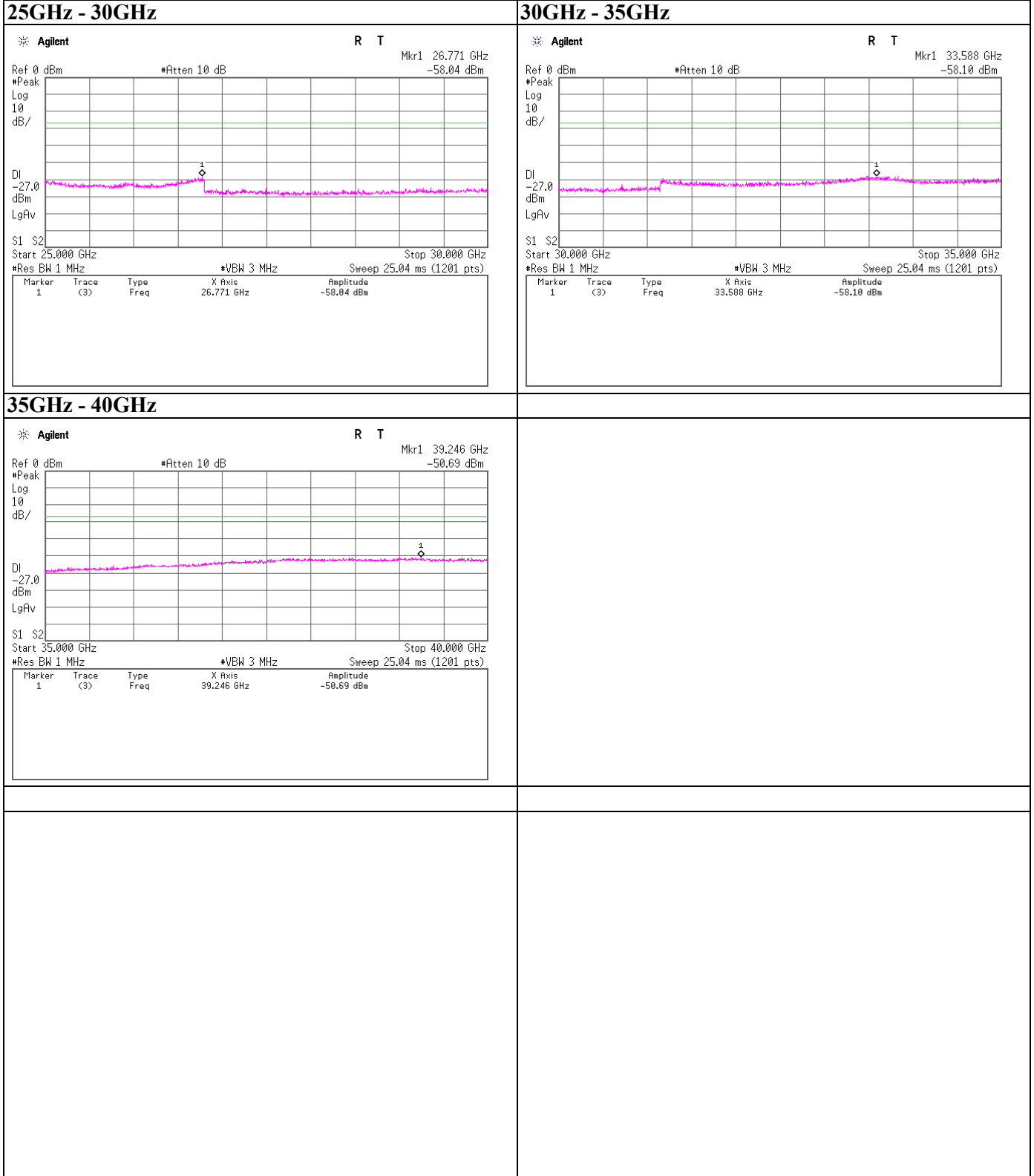
**UL Japan, Inc.**  
**Shonan EMC Lab.**

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 Facsimile : +81 463 50 6401

## Spurious emission (Conducted)

11a

Tx, 5280MHz



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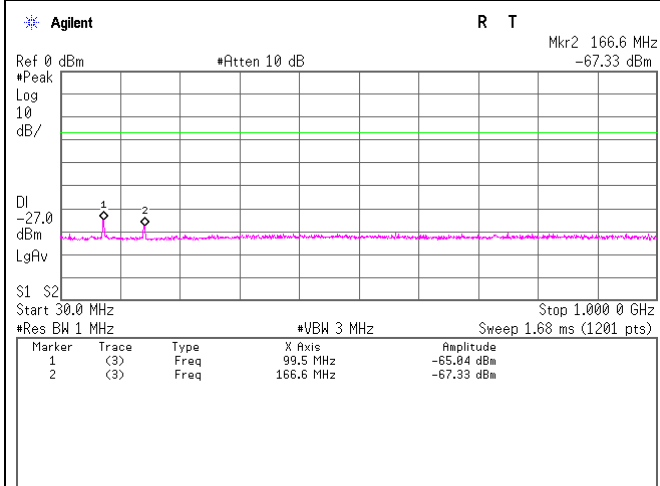
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN  
 Telephone : +81 463 50 6400  
 Facsimile : +81 463 50 6401

## Spurious emission (Conducted)

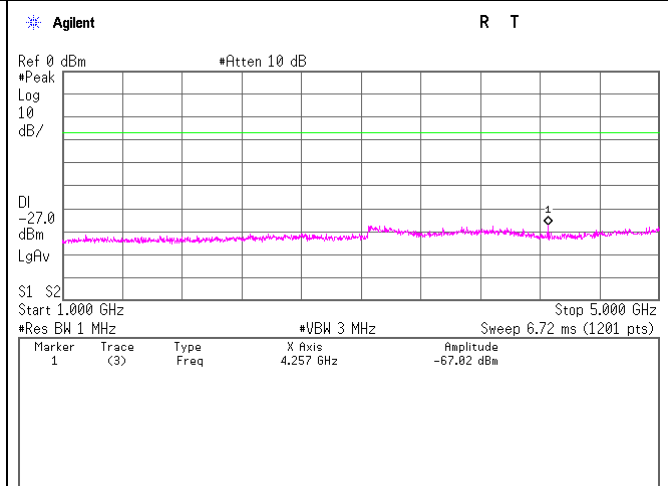
11a

Tx, 5320MHz

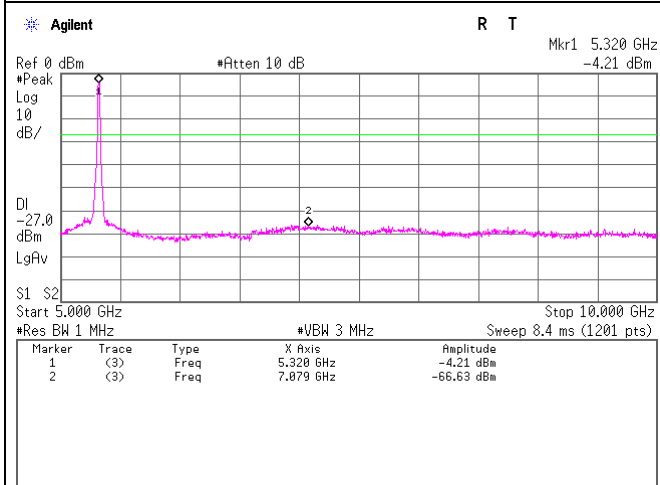
### 30MHz - 1GHz



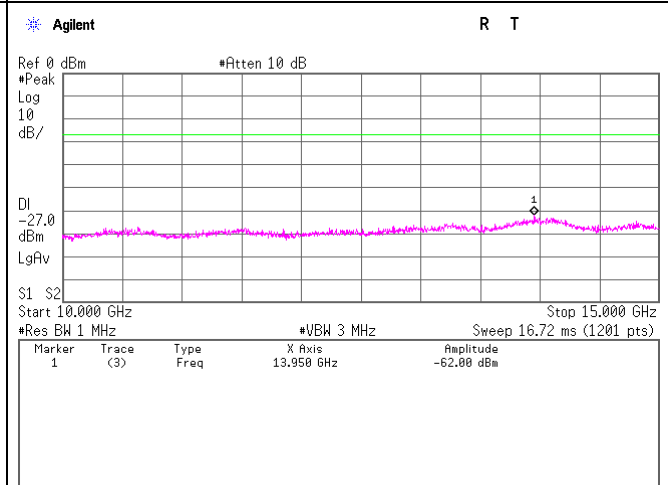
### 1GHz - 5GHz



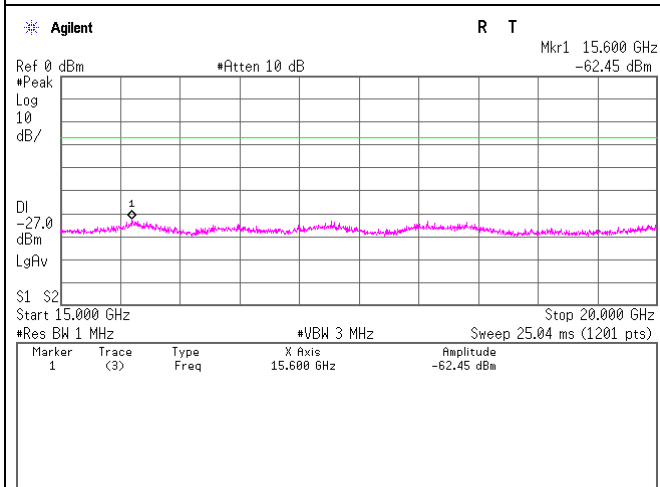
### 5GHz - 10GHz



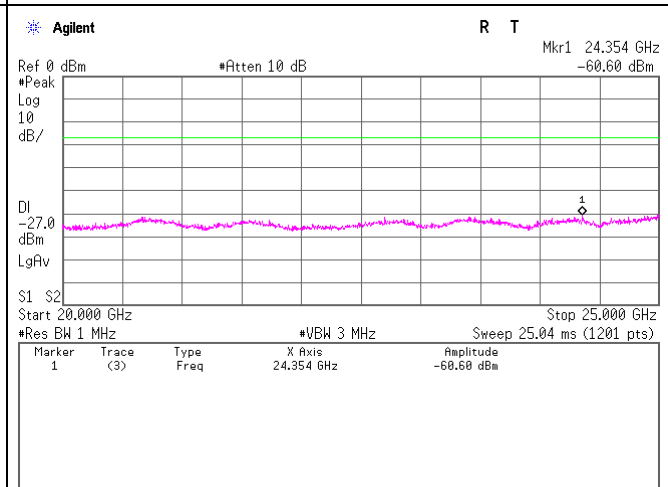
### 10GHz - 15GHz



### 15GHz - 20GHz



### 20GHz - 25GHz



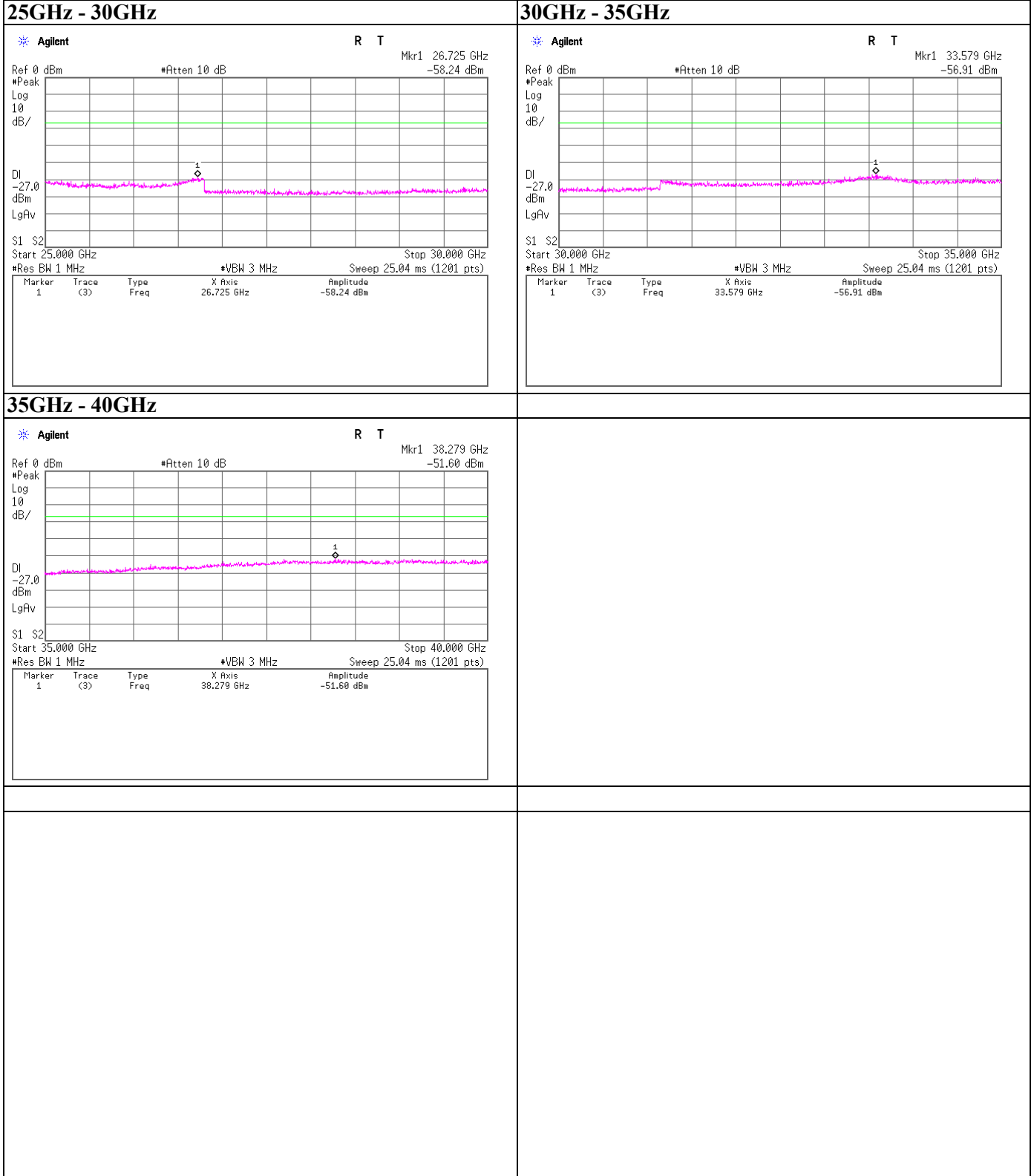
**UL Japan, Inc.**  
**Shonan EMC Lab.**

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

## Spurious emission (Conducted)

11a

Tx, 5320MHz



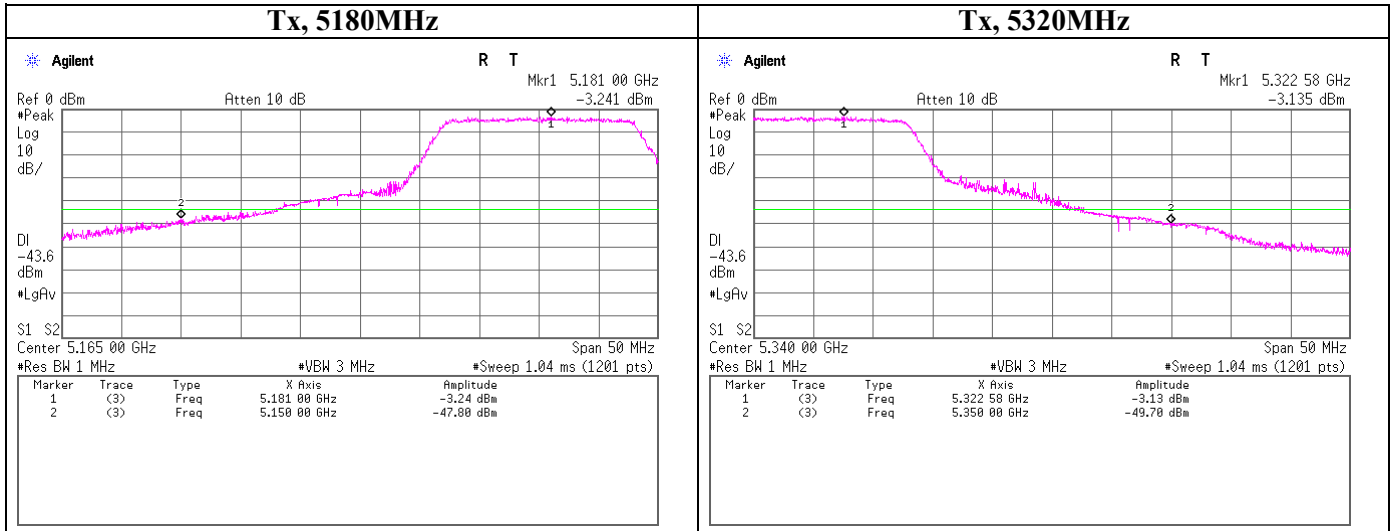
**UL Japan, Inc.**  
**Shonan EMC Lab.**

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

## Spurious emission (Conducted)

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 11a, Tx

Ch. Freq. [MHz]	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
5180	5186.96	-12.06	2.58	10.00	0.52	8.00	7.48
5200	5198.67	-11.62	2.58	10.00	0.97	8.00	7.04
5240	5238.00	-11.25	2.57	10.00	1.32	8.00	6.68
5260	5261.75	-11.15	2.57	10.01	1.44	8.00	6.57
5280	5278.71	-11.31	2.56	10.01	1.26	8.00	6.74
5320	5320.62	-12.26	2.56	10.01	0.31	8.00	7.69

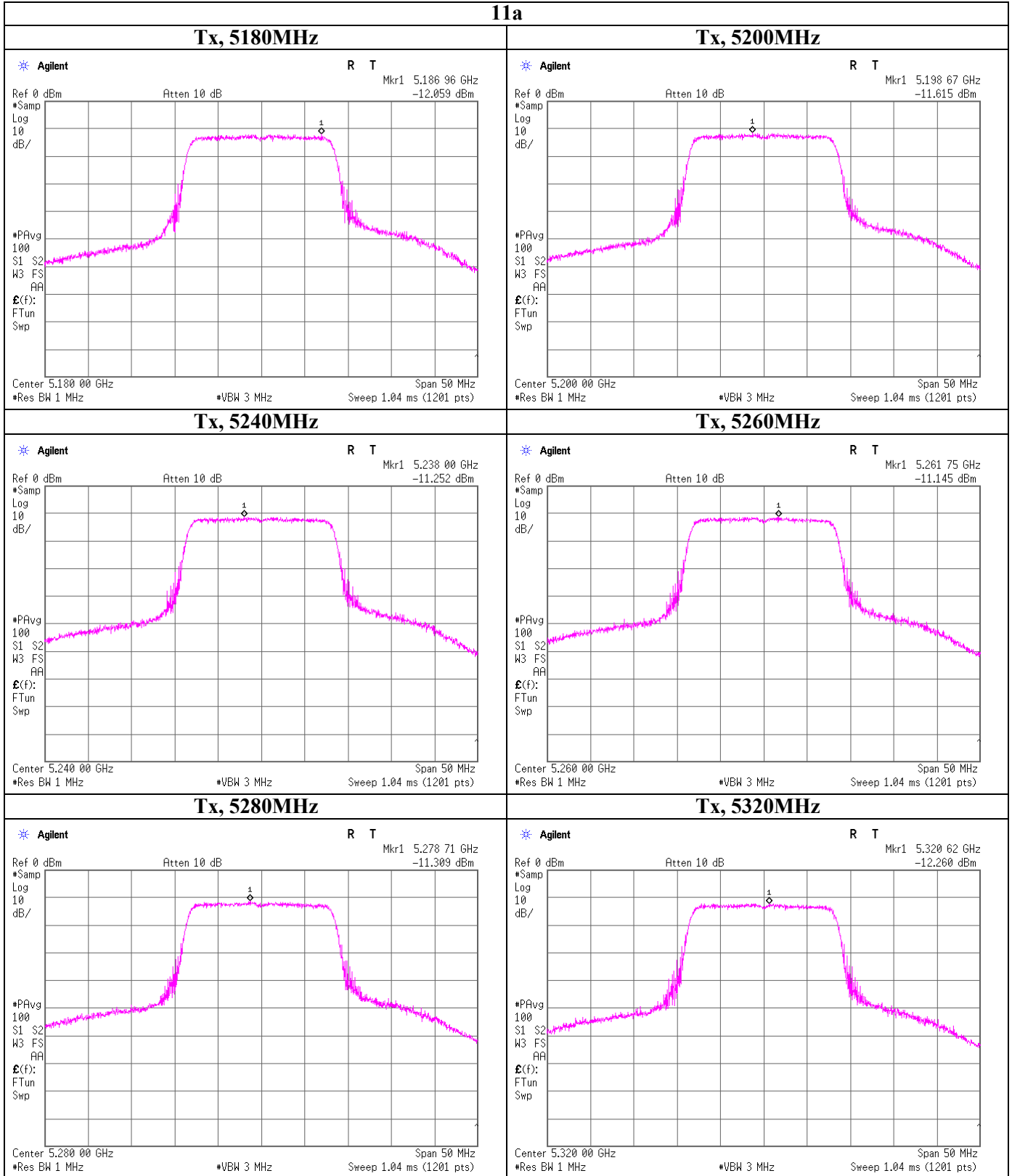
Sample Calculation:

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

**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 Power Spectral Density



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**Shonan EMC Lab.**

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## 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                         11a, Tx

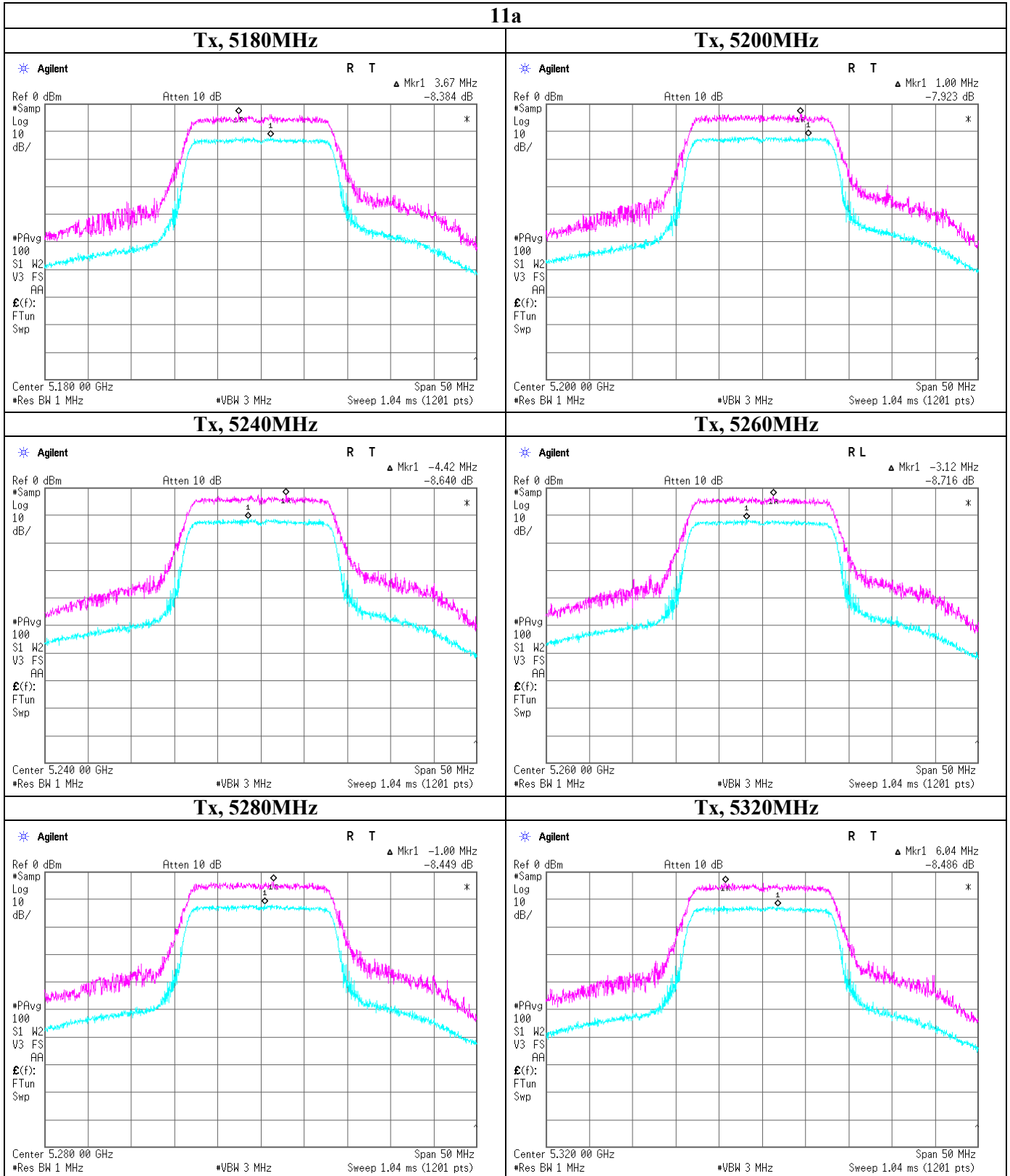
Freq. [MHz]	Peak Power Excursion [dB]	Limit [dB]
5180.0	8.384	=< 13.0
5200.0	7.923	=< 13.0
5240.0	8.640	=< 13.0
5260.0	8.716	=< 13.0
5280.0	8.449	=< 13.0
5320.0	8.486	=< 13.0

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## Peak Excursion Ratio



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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	TJSJ	TEPTO-DV	-	RE	-
SFL-03	Highpass Filter	MICRO-TRONICS	HPM50112	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/141P E/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-01	Coaxial Cable&RF Selector	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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