

APPENDIX 2: Data of EMI test

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

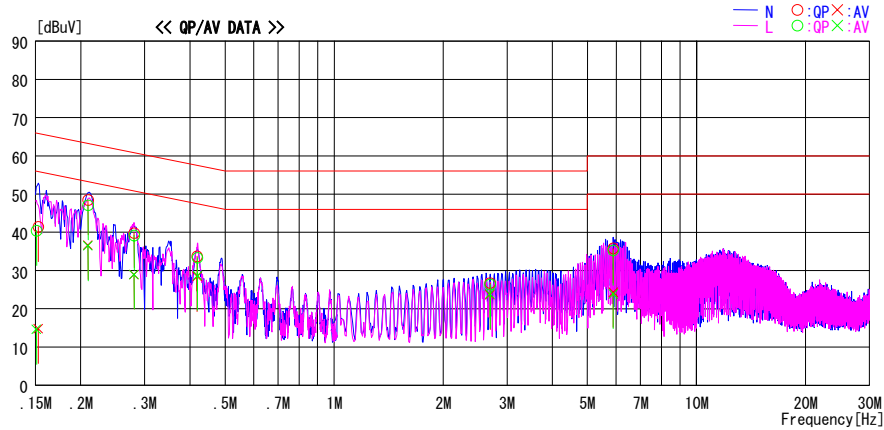
UL Japan, Inc. Head Office EMC Lab. No. 4 Semi Anechoic Chamber
Date : 2009/10/17

Report No. : 29LE0211-HO-02

Temp./Humi. : 24deg. C / 45%
Engineer : Tomotaka Sasagawa

Mode / Remarks : Tx 11a 5180MHz

LIMIT : FCC15.207 QP
FCC15.207 AV

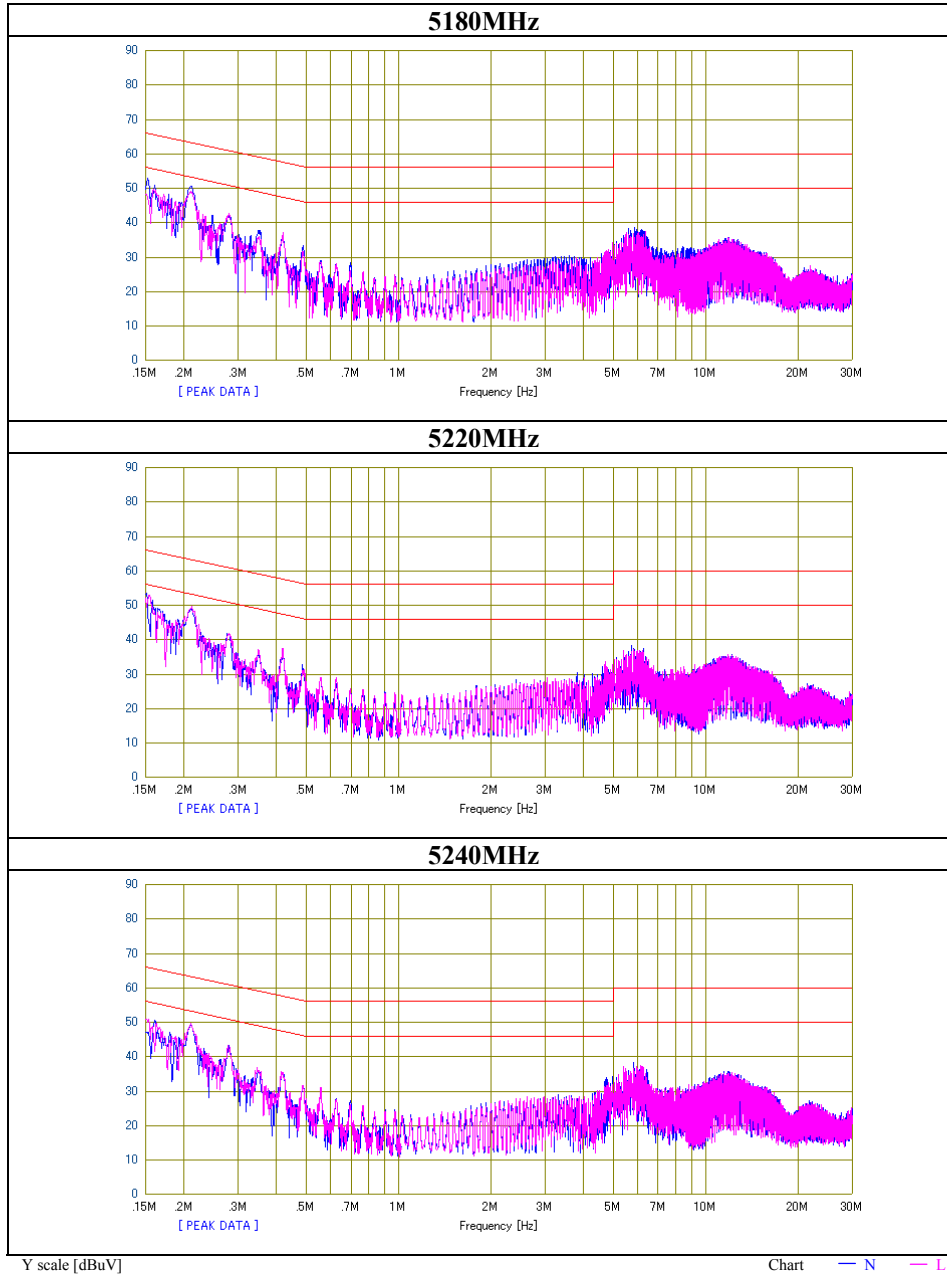


Frequency [MHz]	Reading Level		Corr. Factor	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.15261	41.2	14.5	0.3	41.5	14.8	65.9	55.9	24.4	41.1	N	
0.20916	48.2	36.4	0.3	48.5	36.7	63.2	53.2	14.7	16.5	N	
0.28050	39.5	28.7	0.3	39.8	29.0	60.8	50.8	21.0	21.8	N	
0.41883	33.4	28.1	0.3	33.7	28.4	57.5	47.5	23.8	19.1	N	
2.69423	26.2	23.2	0.5	26.7	23.7	56.0	46.0	29.3	22.3	N	
5.88684	35.0	23.5	0.8	35.8	24.3	60.0	50.0	24.2	25.7	N	
0.15087	40.2	14.3	0.3	40.5	14.6	66.0	56.0	25.5	41.4	L	
0.20916	46.8	36.2	0.3	47.1	36.5	63.2	53.2	16.1	16.7	L	
0.28050	38.9	28.7	0.3	39.2	29.0	60.8	50.8	21.6	21.8	L	
0.41970	33.1	28.4	0.3	33.4	28.7	57.5	47.5	24.1	18.8	L	
2.69423	25.9	23.4	0.5	26.4	23.9	56.0	46.0	29.6	22.1	L	
5.88684	34.5	23.1	0.8	35.3	23.9	60.0	50.0	24.7	26.1	L	

CHART: WITH FACTOR, Peak hold data. CALCURATION: RESULT[dBuV]=READING[dBuV]+C.F[dB] (LISN LOSS+CABLE LOSS)
Except for the above table : adequate margin data below the limits.

Conducted Emission

Test place	Head Office EMC Lab. No.4 Semi Anechoic Chamber
Report No.	29LE0211-HO-02
Date	10/17/2009
Temperature/ Humidity	24 deg.C./ 45%
Engineer	Tomotaka Sasagawa
Mode	11a Tx



Conducted Emission

DATA OF CONDUCTED EMISSION TEST

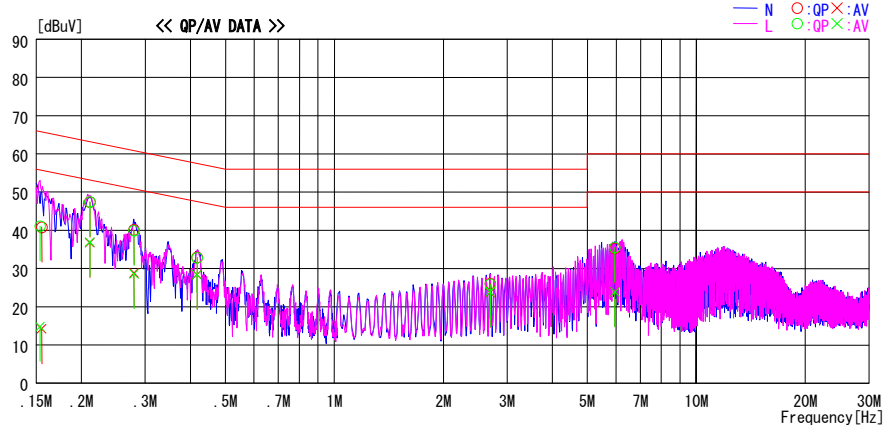
UL Japan, Inc. Head Office EMC Lab. No.4 Semi Anechoic Chamber
Date : 2009/10/17

Report No. : 29LE0211-HO-02

Temp./Humi. : 24deg. C. / 45%
Engineer : Tomotaka Sasagawa

Mode / Remarks : Tx 11a 5260MHz

LIMIT : FCC15.207 QP
FCC15.207 AV



Frequency [MHz]	Reading Level		Corr. Factor	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.15522	40.5	13.9	0.3	40.8	14.2	65.7	55.7	24.9	41.5	N	
0.21090	47.1	36.5	0.3	47.4	36.8	63.2	53.2	15.8	16.4	N	
0.27963	39.8	28.6	0.3	40.1	28.9	60.8	50.8	20.7	21.9	N	
0.41709	32.6	28.1	0.3	32.9	28.4	57.5	47.5	24.6	19.1	N	
2.69423	25.6	23.2	0.5	26.1	23.7	56.0	46.0	29.9	22.3	N	
5.95033	34.5	23.1	0.8	35.3	23.9	60.0	50.0	24.7	26.1	N	
0.15348	40.8	14.5	0.3	41.1	14.8	65.8	55.8	24.7	41.0	L	
0.21090	47.2	36.7	0.3	47.5	37.0	63.2	53.2	15.7	16.2	L	
0.27963	39.6	28.3	0.3	39.9	28.6	60.8	50.8	20.9	22.2	L	
0.41709	32.5	28.1	0.3	32.8	28.4	57.5	47.5	24.7	19.1	L	
2.69423	25.4	23.4	0.5	25.9	23.9	56.0	46.0	30.1	22.1	L	
5.95033	34.8	23.1	0.8	35.6	23.9	60.0	50.0	24.4	26.1	L	

CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT [dBuV]=READING[dBuV]+C. F[dB] (L ISN LOSS+CABLE LOSS)
Except for the above table : adequate margin data below the limits.

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

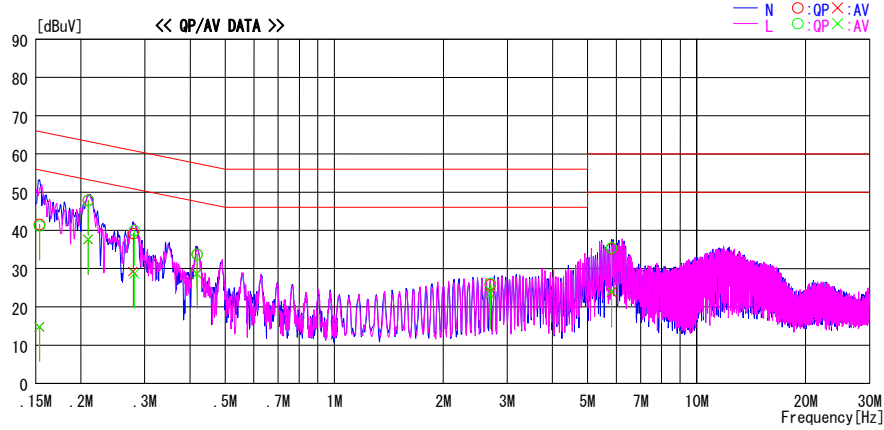
UL Japan, Inc. Head Office EMC Lab. No.4 Semi Anechoic Chamber
Date : 2009/10/17

Report No. : 29LE0211-HO-02

Temp./Humi. : 24deg. C. / 45%
Engineer : Tomotaka Sasagawa

Mode / Remarks : Tx 11n-20 5180MHz

LIMIT : FCC15.207 QP
FCC15.207 AV



Frequency [MHz]	Reading Level		Corr. Factor [dB]	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.15348	41.3	14.5	0.3	41.6	14.8	65.8	55.8	24.2	41.0	N	
0.20916	47.6	37.3	0.3	47.9	37.6	63.2	53.2	15.3	15.6	N	
0.27876	38.9	28.9	0.3	39.2	29.2	60.9	50.9	21.7	21.7	N	
0.41796	33.4	28.4	0.3	33.7	28.7	57.5	47.5	23.8	18.8	N	
2.69423	25.3	22.9	0.5	25.8	23.4	56.0	46.0	30.2	22.6	N	
5.82335	34.5	23.1	0.8	35.3	23.9	60.0	50.0	24.7	26.1	N	
0.15348	40.9	14.5	0.3	41.2	14.8	65.8	55.8	24.6	41.0	L	
0.20916	47.5	37.4	0.3	47.8	37.7	63.2	53.2	15.4	15.5	L	
0.28050	39.7	28.4	0.3	40.0	28.7	60.8	50.8	20.8	22.1	L	
0.41796	33.4	28.3	0.3	33.7	28.6	57.5	47.5	23.8	18.9	L	
2.69423	25.7	22.9	0.5	26.2	23.4	56.0	46.0	29.8	22.6	L	
5.82335	34.7	23.3	0.8	35.5	24.1	60.0	50.0	24.5	25.9	L	

CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT [dBuV]=READING [dBuV]+C. F [dB] (L IS N LOSS+CABLE LOSS)
Except for the above table : adequate margin data below the limits.

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

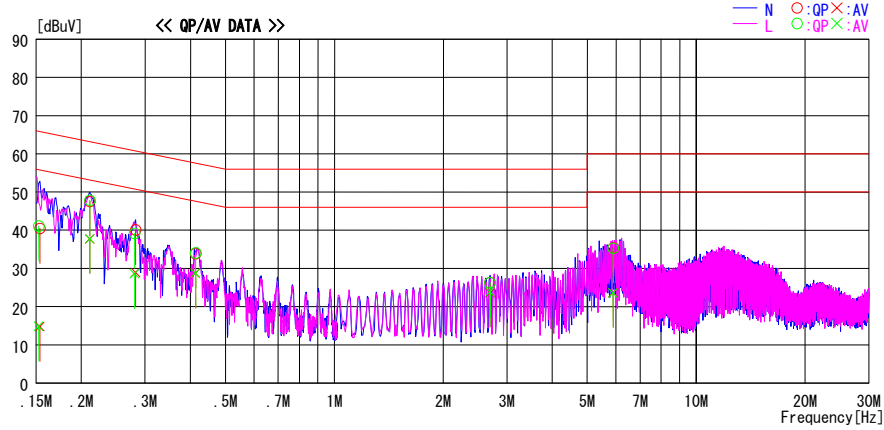
UL Japan, Inc. Head Office EMC Lab. No.4 Semi Anechoic Chamber
Date : 2009/10/17

Report No. : 29LE0211-HO-02

Temp./Humi. : 24deg. C. / 45%
Engineer : Tomotaka Sasagawa

Mode / Remarks : Tx 11n-20 5260MHz

LIMIT : FCC15.207 QP
FCC15.207 AV



Frequency [MHz]	Reading Level		Corr. Factor	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.15348	40.2	14.5	0.3	40.5	14.8	65.8	55.8	25.3	41.0	N	
0.21090	47.3	37.5	0.3	47.6	37.8	63.2	53.2	15.6	15.4	N	
0.28224	39.8	28.7	0.3	40.1	29.0	60.7	50.7	20.6	21.7	N	
0.41361	33.6	28.4	0.3	33.9	28.7	57.6	47.6	23.7	18.9	N	
2.69423	25.8	23.2	0.5	26.3	23.7	56.0	46.0	29.7	22.3	N	
5.89591	34.6	22.9	0.8	35.4	23.7	60.0	50.0	24.6	26.3	N	
0.15261	40.8	14.6	0.3	41.1	14.9	65.9	55.9	24.8	41.0	L	
0.21090	47.5	37.5	0.3	47.8	37.8	63.2	53.2	15.4	15.4	L	
0.28050	38.9	28.3	0.3	39.2	28.6	60.8	50.8	21.6	22.2	L	
0.41361	33.8	28.5	0.3	34.1	28.8	57.6	47.6	23.5	18.8	L	
2.69423	25.8	23.4	0.5	26.3	23.9	56.0	46.0	29.7	22.1	L	
5.89591	34.5	22.8	0.8	35.3	23.6	60.0	50.0	24.7	26.4	L	

CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT [dBuV]=READING [dBuV]+C. F [dB] (L ISN LOSS+CABLE LOSS)
Except for the above table : adequate margin data below the limits.

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

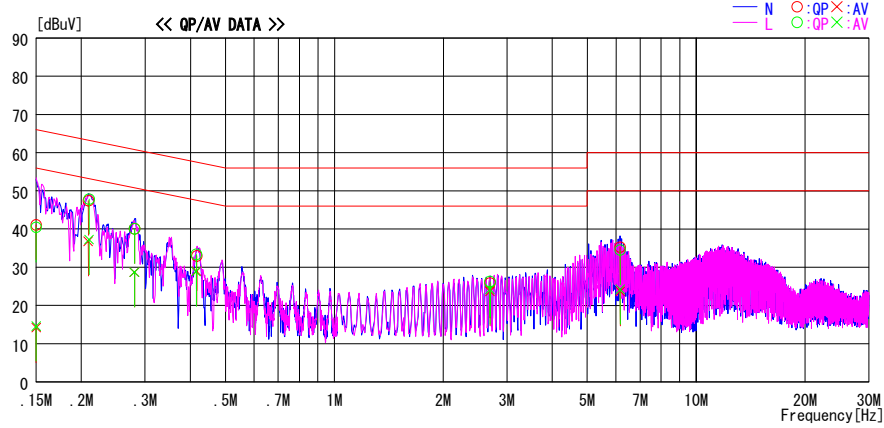
UL Japan, Inc. Head Office EMC Lab. No. 4 Semi Anechoic Chamber
Date : 2009/10/17

Report No. : 29LE0211-HO-02

Temp./Humi. : 24deg. C / 45%
Engineer : Tomotaka Sasagawa

Mode / Remarks : Tx 11n-40 5190MHz

LIMIT : FCC15.207 QP
FCC15.207 AV



Frequency [MHz]	Reading Level		Corr. Factor	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.15000	40.8	13.9	0.3	41.1	14.2	66.0	56.0	24.9	41.8	N	
0.20916	47.2	36.5	0.3	47.5	36.8	63.2	53.2	15.7	16.4	N	
0.28050	39.8	28.4	0.3	40.1	28.7	60.8	50.8	20.7	22.1	N	
0.41622	32.7	28.7	0.3	33.0	29.0	57.5	47.5	24.5	18.5	N	
2.69423	25.4	23.2	0.5	25.9	23.7	56.0	46.0	30.1	22.3	N	
6.16801	34.5	22.9	0.8	35.3	23.7	60.0	50.0	24.7	26.3	N	
0.15000	40.2	14.3	0.3	40.5	14.6	66.0	56.0	25.5	41.4	L	
0.21003	47.5	36.9	0.3	47.8	37.2	63.2	53.2	15.4	16.0	L	
0.28050	39.8	28.4	0.3	40.1	28.7	60.8	50.8	20.7	22.1	L	
0.41535	33.1	28.6	0.3	33.4	28.9	57.5	47.5	24.1	18.6	L	
2.69423	25.8	23.7	0.5	26.3	24.2	56.0	46.0	29.7	21.8	L	
6.16801	33.8	23.4	0.8	34.6	24.2	60.0	50.0	25.4	25.8	L	

CHART: WITH FACTOR, Peak hold data. CALCURATION: RESULT [dBuV]=READING [dBuV]+C. F [dB] (L ISN LOSS+CABLE LOSS)
Except for the above table : adequate margin data below the limits.

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

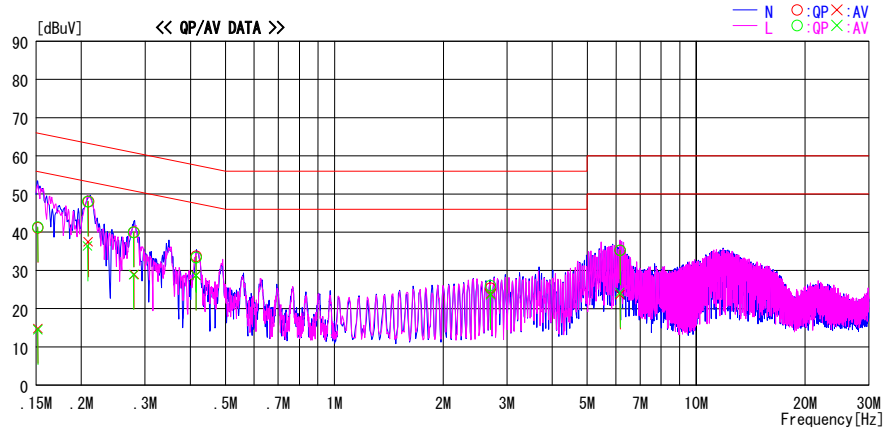
UL Japan, Inc. Head Office EMC Lab. No.4 Semi Anechoic Chamber
Date : 2009/10/17

Report No. : 29LE0211-HO-02

Temp./Humi. : 24deg. C / 45%
Engineer : Tomotaka Sasagawa

Mode / Remarks : Tx 11n-40 5270MHz

LIMIT : FCC15.207 QP
FCC15.207 AV



Frequency [MHz]	Reading Level		Corr. Factor [dB]	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.15174	40.9	14.5	0.3	41.2	14.8	65.9	55.9	24.7	41.1	N	
0.20916	47.8	37.2	0.3	48.1	37.5	63.2	53.2	15.1	15.7	N	
0.27963	39.7	28.7	0.3	40.0	29.0	60.8	50.8	20.8	21.8	N	
0.41448	33.4	28.4	0.3	33.7	28.7	57.6	47.6	23.9	18.9	N	
2.70330	24.9	23.4	0.5	25.4	23.9	56.0	46.0	30.6	22.1	N	
6.15894	34.5	22.9	0.8	35.3	23.7	60.0	50.0	24.7	26.3	N	
0.15174	41.1	14.2	0.3	41.4	14.5	65.9	55.9	24.5	41.4	L	
0.20829	47.8	36.1	0.3	48.1	36.4	63.3	53.3	15.2	16.9	L	
0.27876	39.7	28.6	0.3	40.0	28.9	60.9	50.9	20.9	22.0	L	
0.41448	33.1	28.4	0.3	33.4	28.7	57.6	47.6	24.2	18.9	L	
2.70330	25.6	23.1	0.5	26.1	23.6	56.0	46.0	29.9	22.4	L	
6.15894	34.5	23.4	0.8	35.3	24.2	60.0	50.0	24.7	25.8	L	

CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT [dBuV]=READING [dBuV]+C. F [dB] (L ISN LOSS+CABLE LOSS)
Except for the above table : adequate margin data below the limits.

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

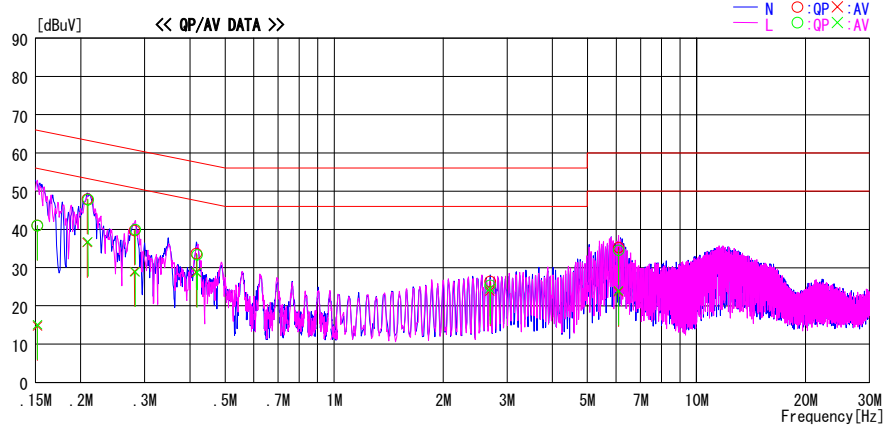
UL Japan, Inc. Head Office EMC Lab. No.4 Semi Anechoic Chamber
Date : 2009/10/17

Report No. : 29LE0211-HO-02

Temp./Humi. : 24deg. C. / 45%
Engineer : Tomotaka Sasagawa

Mode / Remarks : Rx 11a 5180MHz

LIMIT : FCC15.207 QP
FCC15.207 AV



Frequency [MHz]	Reading Level		Corr. Factor	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.15174	40.7	14.5	0.3	41.0	14.8	65.9	55.9	24.9	41.1	N	
0.20829	47.6	36.3	0.3	47.9	36.6	63.3	53.3	15.4	16.7	N	
0.28137	39.4	28.7	0.3	39.7	29.0	60.8	50.8	21.1	21.8	N	
0.41622	33.4	28.5	0.3	33.7	28.8	57.5	47.5	23.8	18.7	N	
2.69423	25.9	23.4	0.5	26.4	23.9	56.0	46.0	29.6	22.1	N	
6.09545	34.5	22.9	0.8	35.3	23.7	60.0	50.0	24.7	26.3	N	
0.15174	40.7	14.8	0.3	41.0	15.1	65.9	55.9	24.9	40.8	L	
0.20916	47.5	36.5	0.3	47.8	36.8	63.2	53.2	15.4	16.4	L	
0.28224	39.6	28.6	0.3	39.9	28.9	60.7	50.7	20.8	21.8	L	
0.41796	33.1	28.4	0.3	33.4	28.7	57.5	47.5	24.1	18.8	L	
2.69423	24.9	23.9	0.5	25.4	24.4	56.0	46.0	30.6	21.6	L	
6.09545	33.8	23.2	0.8	34.6	24.0	60.0	50.0	25.4	26.0	L	

CHART: WITH FACTOR, Peak hold data. CALCURATION: RESULT[dBuV]=READING[dBuV]+C. F[dB] (LISN LOSS+CABLE LOSS)
Except for the above table : adequate margin data below the limits.

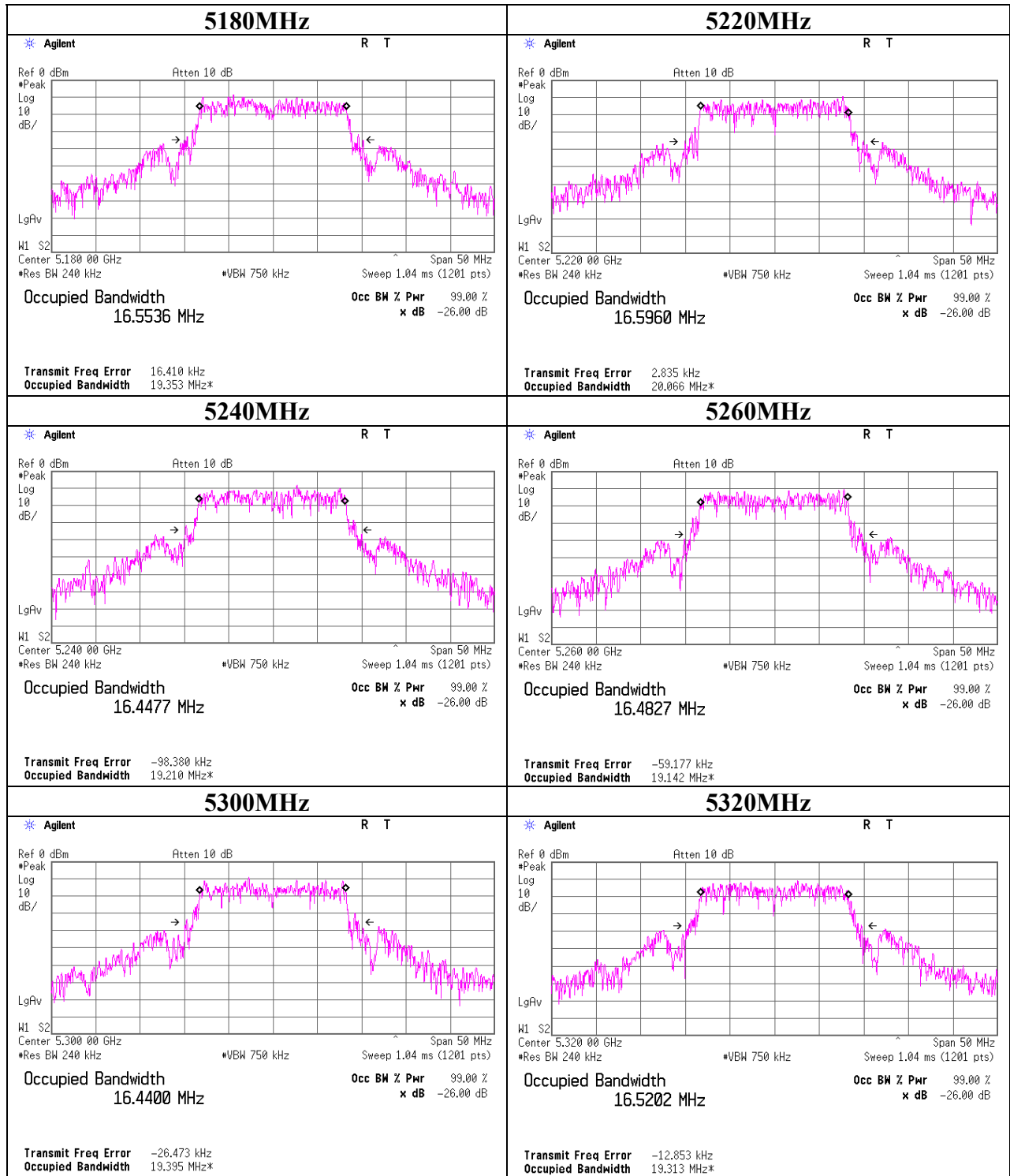
26dB Emission Bandwidth and 99% Occupied Bandwidth

Test place Head Office EMC Lab. No. 4 measurement Chamber
Report No. 29LE0211-HO-02
Date 10/15/2009
Temperature/ Humidity 24deg.C. / 46%
Engineer Takumi Shimada
Mode 11a Tx

Frequency [MHz]	26dB Emission Bandwidth [MHz]	99% Occupied Bandwidth [MHz]	Limit [MHz]
5180	19.353	17.935	-
5220	20.066	17.770	-
5240	19.210	17.800	-
5260	19.142	17.712	-
5300	19.395	17.732	-
5320	19.313	17.741	-

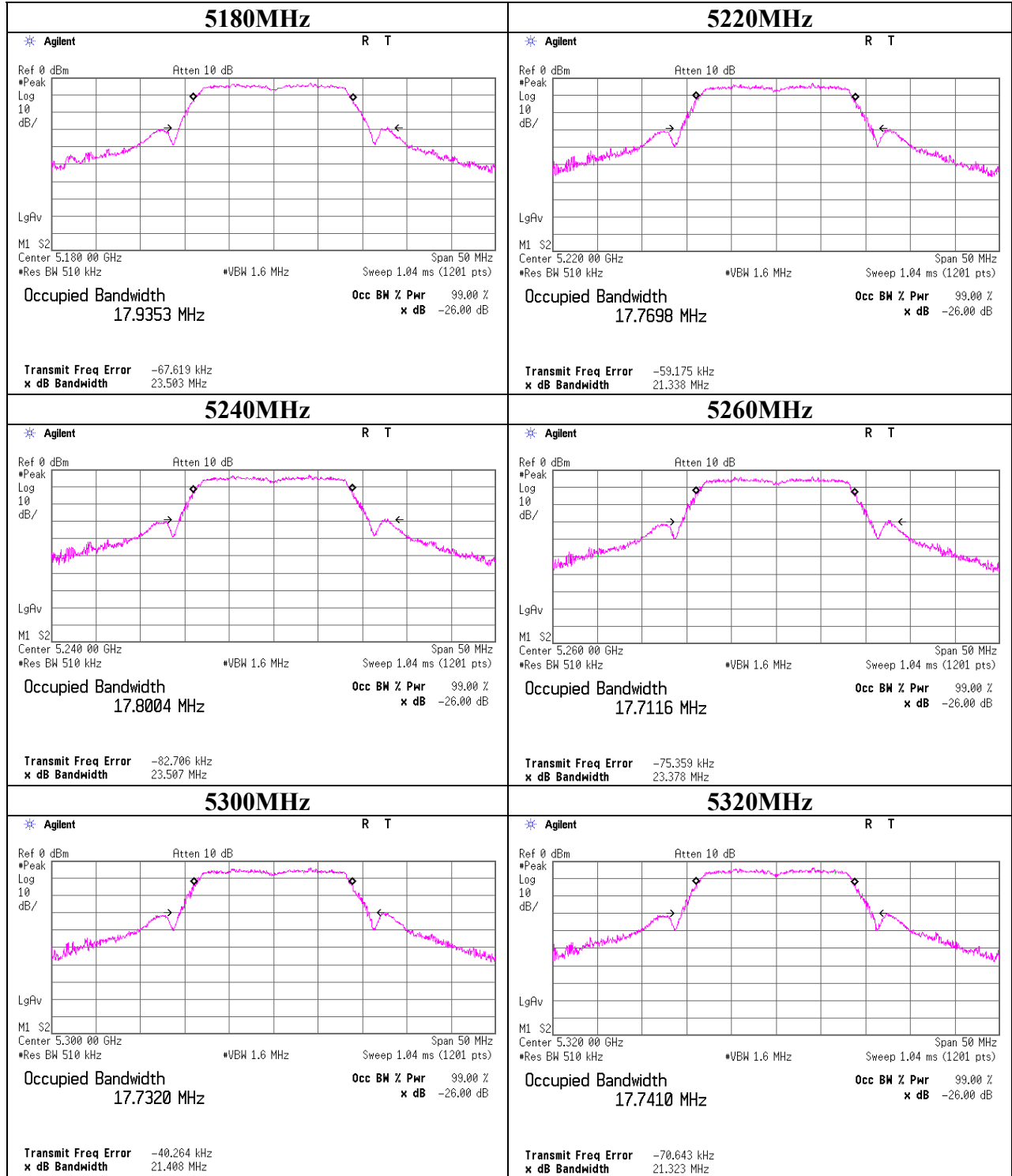
26dB Emission Bandwidth

11a Antenna 0



99% Occupied Bandwidth

11a Antenna 0



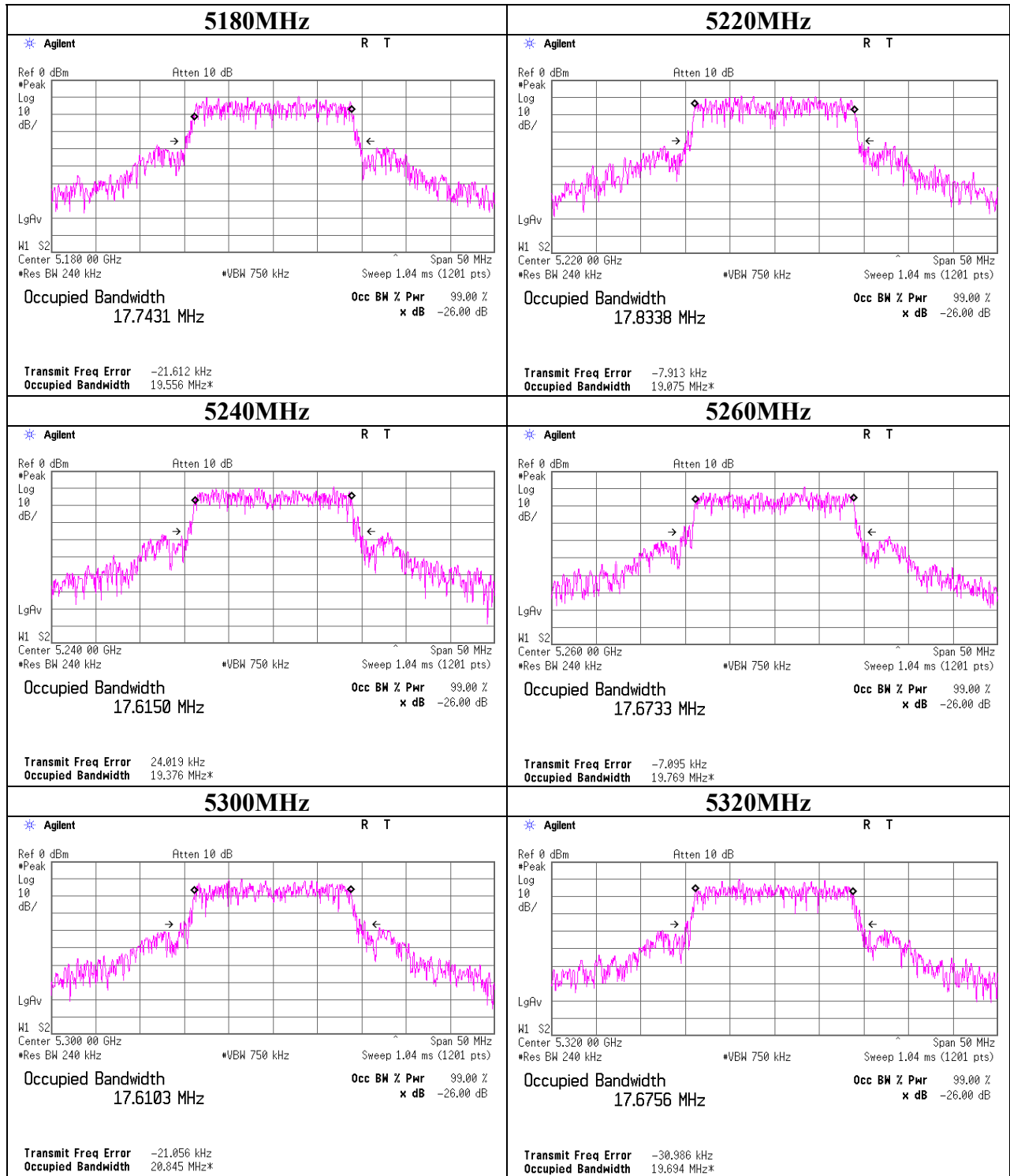
26dB Emission Bandwidth and 99% Occupied Bandwidth

Test place Head Office EMC Lab. No. 4 measurement Chamber
Report No. 29LE0211-HO-02
Date 10/15/2009
Temperature/ Humidity 24deg.C. / 46%
Engineer Takumi Shimada
Mode 11n-20 Tx

Frequency [MHz]	26dB Emission Bandwidth [MHz]	99% Occupied Bandwidth [MHz]	Limit [MHz]
5180	19.556	18.142	-
5220	19.075	18.124	-
5240	19.376	18.144	-
5260	19.769	18.136	-
5300	20.845	18.178	-
5320	19.694	18.186	-

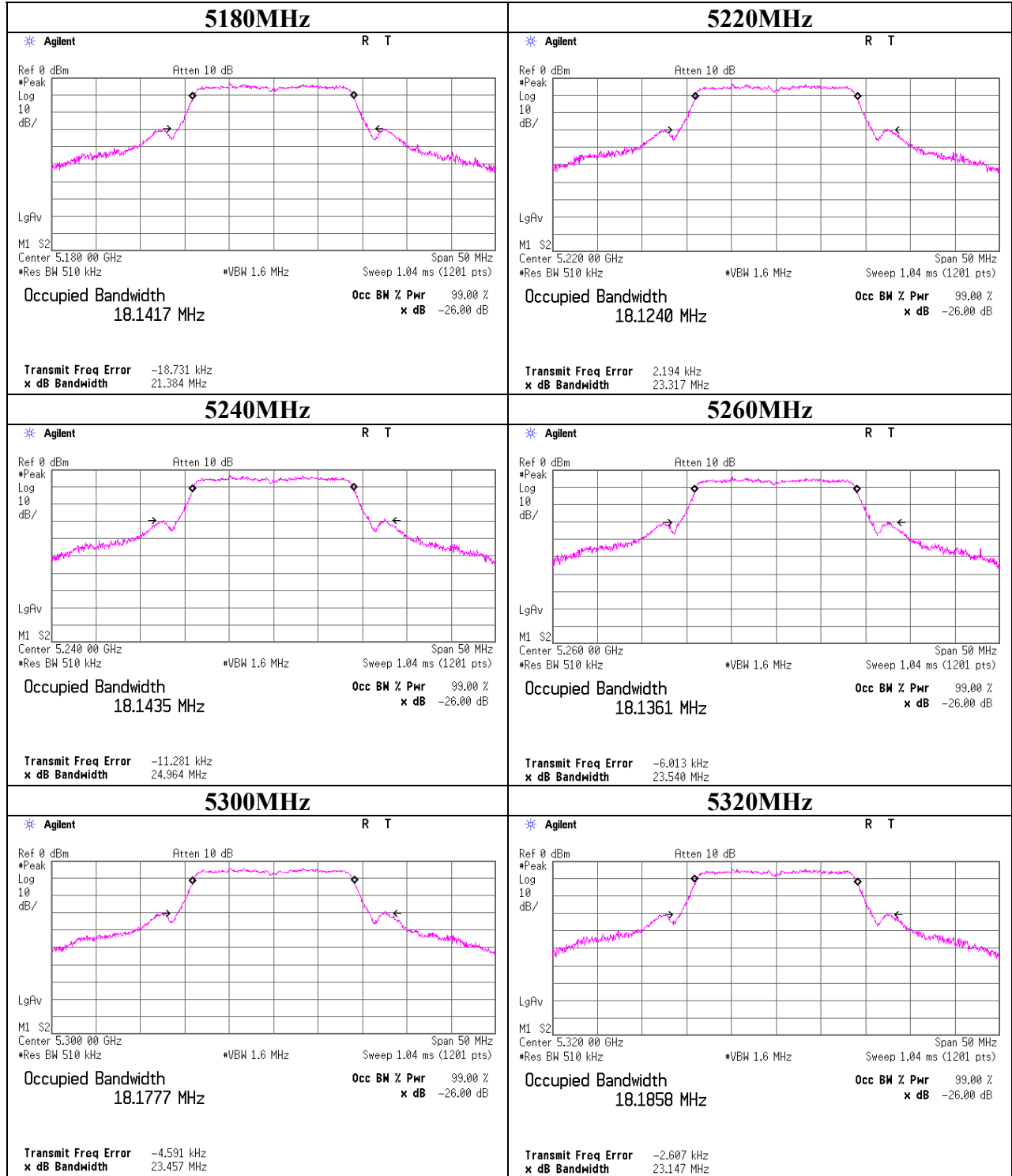
26dB Emission Bandwidth

11n-20 Antenna 0



99% Occupied Bandwidth

11n-20 Antenna 0



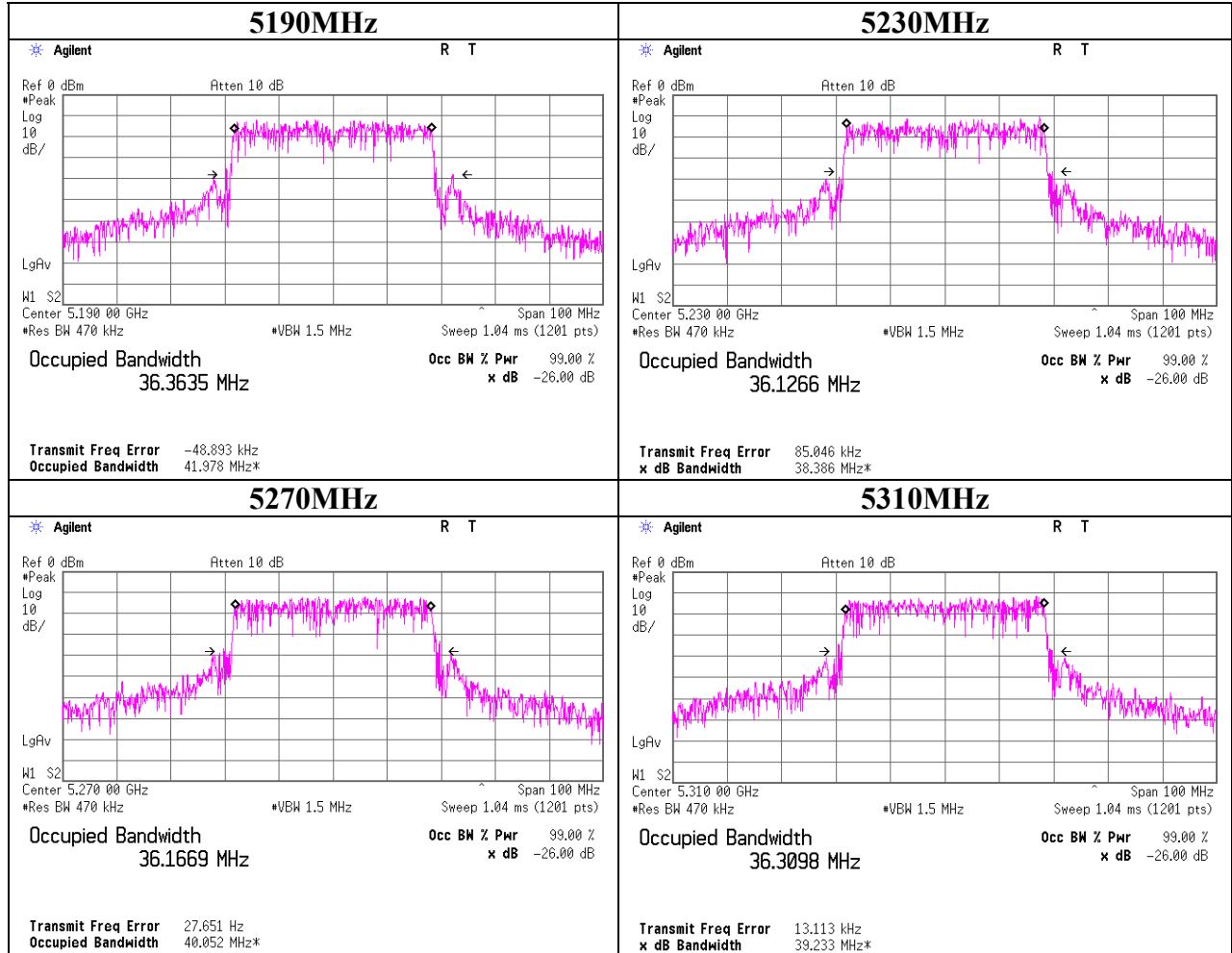
26dB Emission Bandwidth and 99% Occupied Bandwidth

Test place Head Office EMC Lab. No. 4 measurement Chamber
Report No. 29LE0211-HO-02
Date 10/15/2009
Temperature/ Humidity 24deg.C. / 46%
Engineer Takumi Shimada
Mode 11n-40 Tx

Frequency [MHz]	26dB Emission Bandwidth [MHz]	99% Occupied Bandwidth [MHz]	Limit [MHz]
5190	41.978	36.418	-
5230	38.386	36.437	-
5270	40.052	36.414	-
5310	39.233	36.439	-

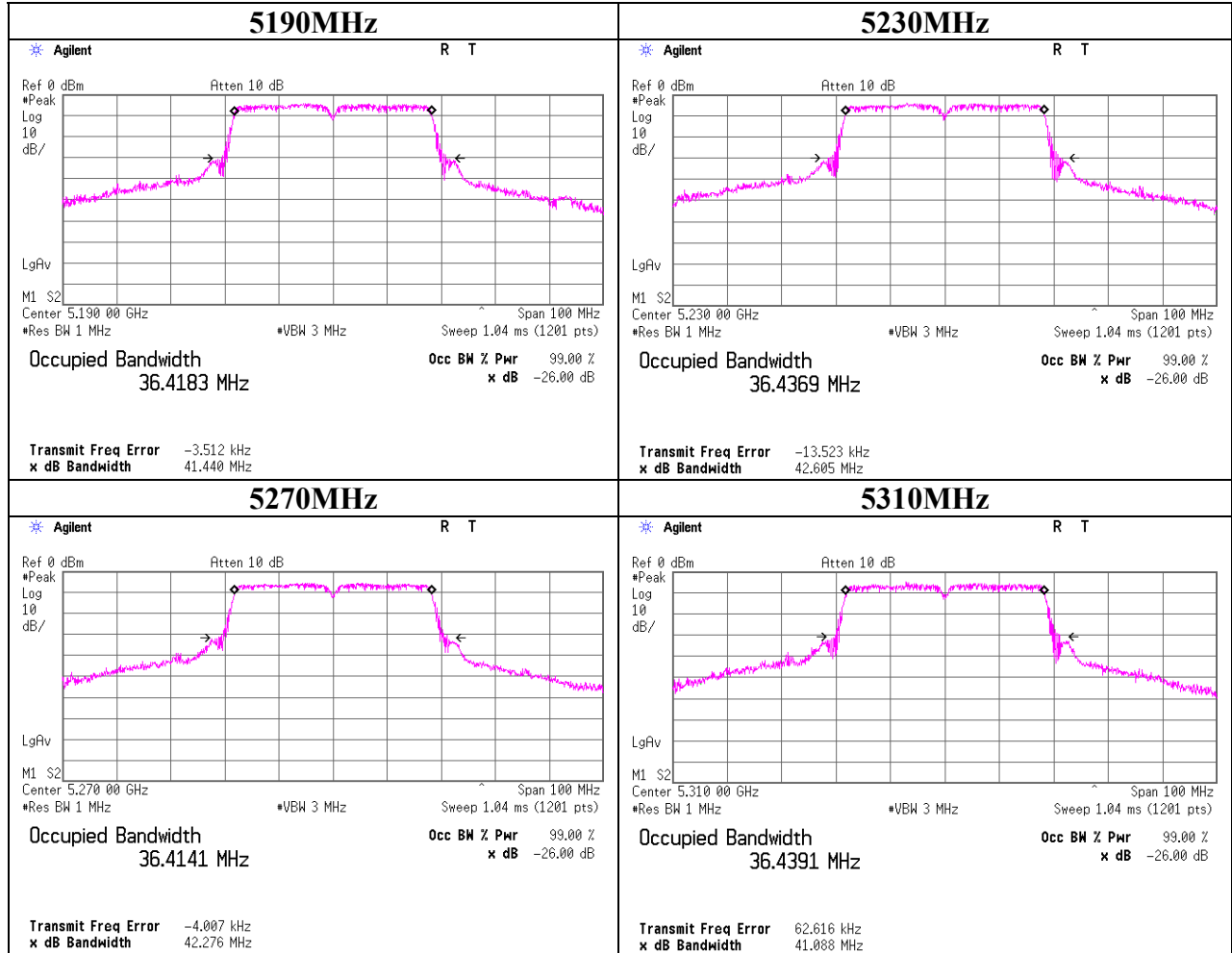
26dB Emission Bandwidth

11n-40 Antenna 0



99% Occupied Bandwidth

11n-40 Antenna 0



20dB Bandwidth

Test place Head Office EMC Lab. No. 6 measurement Chamber
Report No. 29LE0211-HO-02
Date 10/28/2009
Temperature/ Humidity 23deg.C. / 49%
Engineer Takeshi Choda
Mode Tx

11a

Frequency [MHz]	20dB Bandwidth [MHz]	Limit [MHz]
5240	18.370	-
5260	18.355	-

11n-20

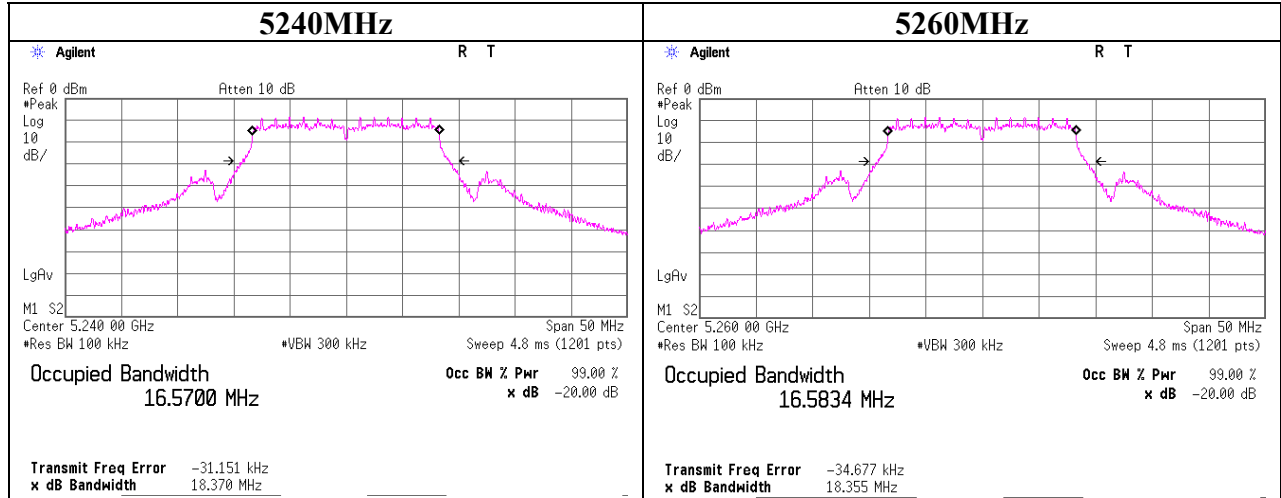
Frequency [MHz]	20dB Bandwidth [MHz]	Limit [MHz]
5240	18.722	-
5260	18.827	-

11n-40

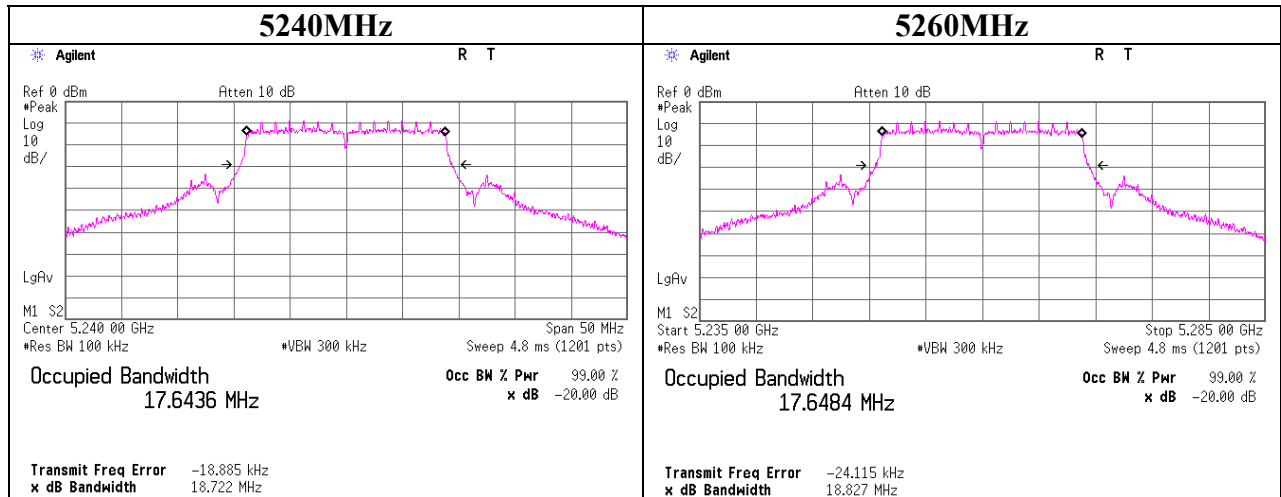
Frequency [MHz]	20dB Bandwidth [MHz]	Limit [MHz]
5230	37.246	-
5270	37.281	-

20dB Bandwidth

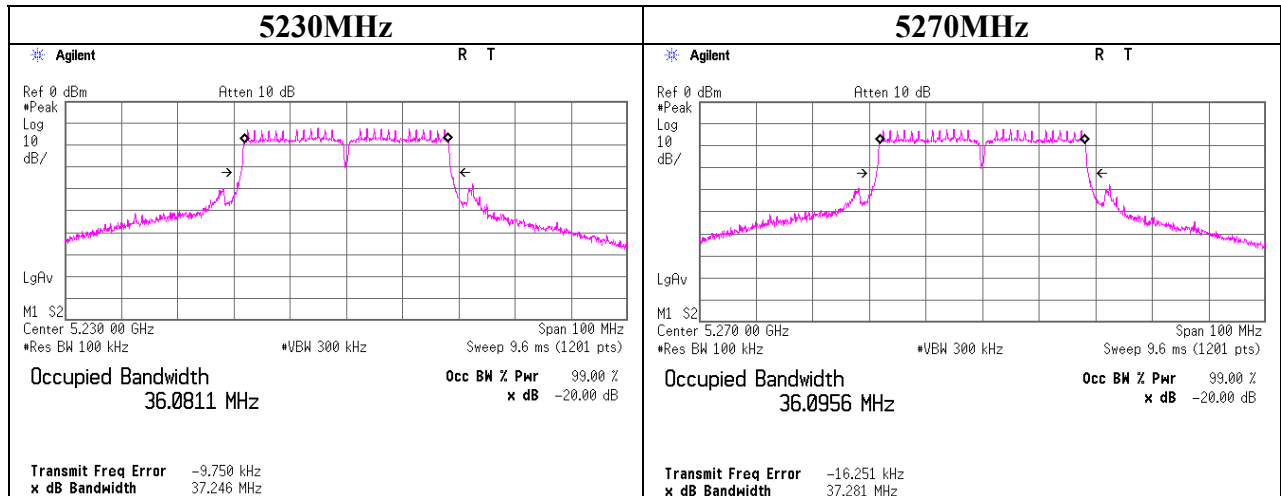
11a Antenna 0



11n-20



11n-40



Maximum Peak Output Power

Test place Head Office EMC Lab. No.7 Shielded Room
Report No. 29LE0211-HO-02
Date 10/25/2009
Temperature/ Humidity 24deg.C. / 53%
Engineer Takeshi Choda
Mode 11n-40 Tx

Antenna 0

Freq. [MHz]	S/A Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Antenna Gain [dBi]	Result (Cond.) [dBm]	Result (e.i.r.p.) [dBm]	Limit (Cond.) [dBm]	Margin (Cond.) [dB]
5190.0	1.09	1.00	10.14	1.50	12.23	13.73	16.99	4.76
5230.0	1.18	1.00	10.14	1.47	12.32	13.79	16.99	4.67
5270.0	0.24	1.00	10.14	1.43	11.38	12.81	23.98	12.60
5310.0	0.42	1.00	10.14	1.40	11.56	12.96	23.98	12.42

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

Result(e.i.r.p.) = Reading + Cable Loss (including the cable(s) customer supplied) + Atten.Loss + Antenna Gain

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

UL Japan, Inc.

Head Office EMC Lab.

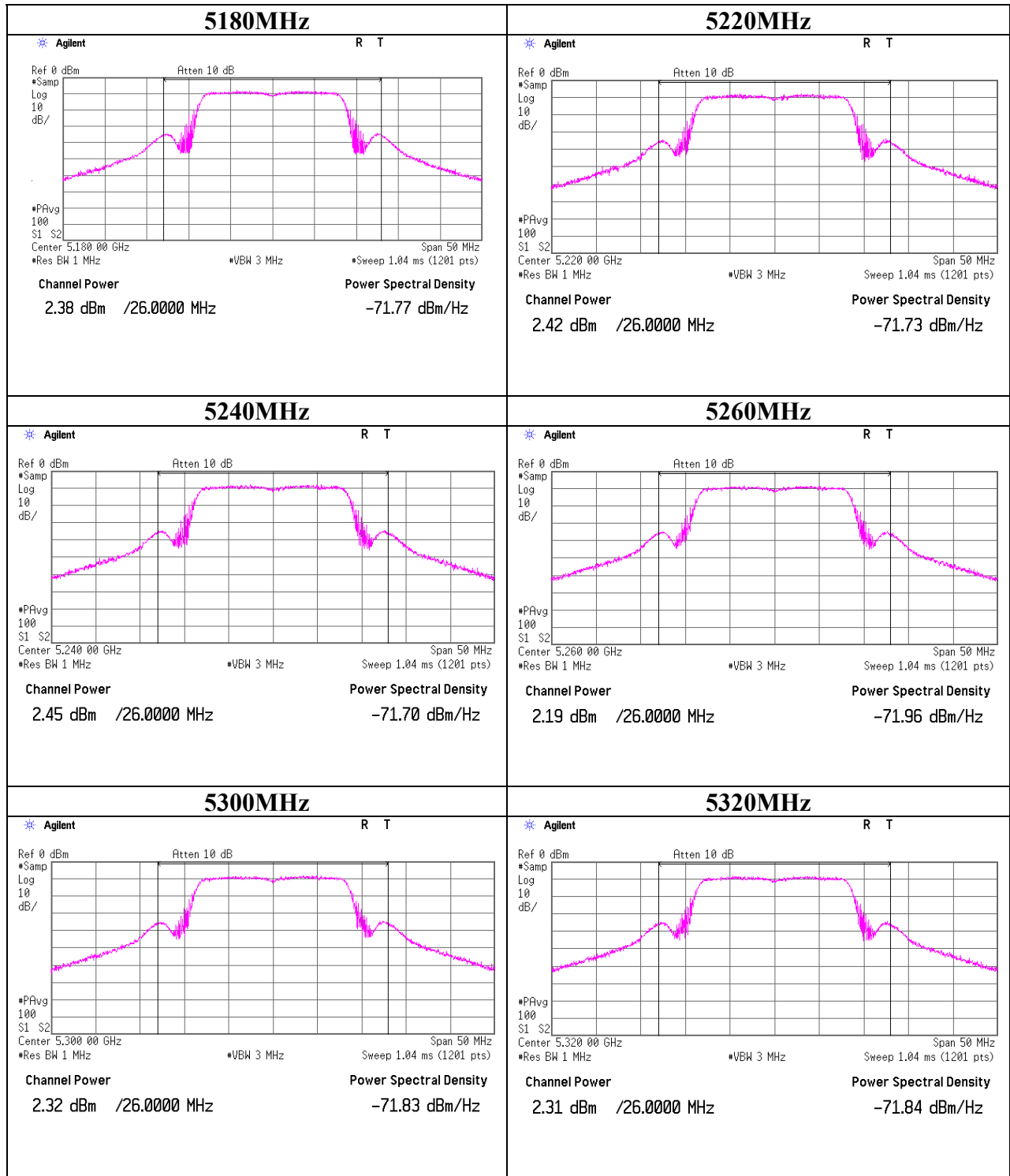
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

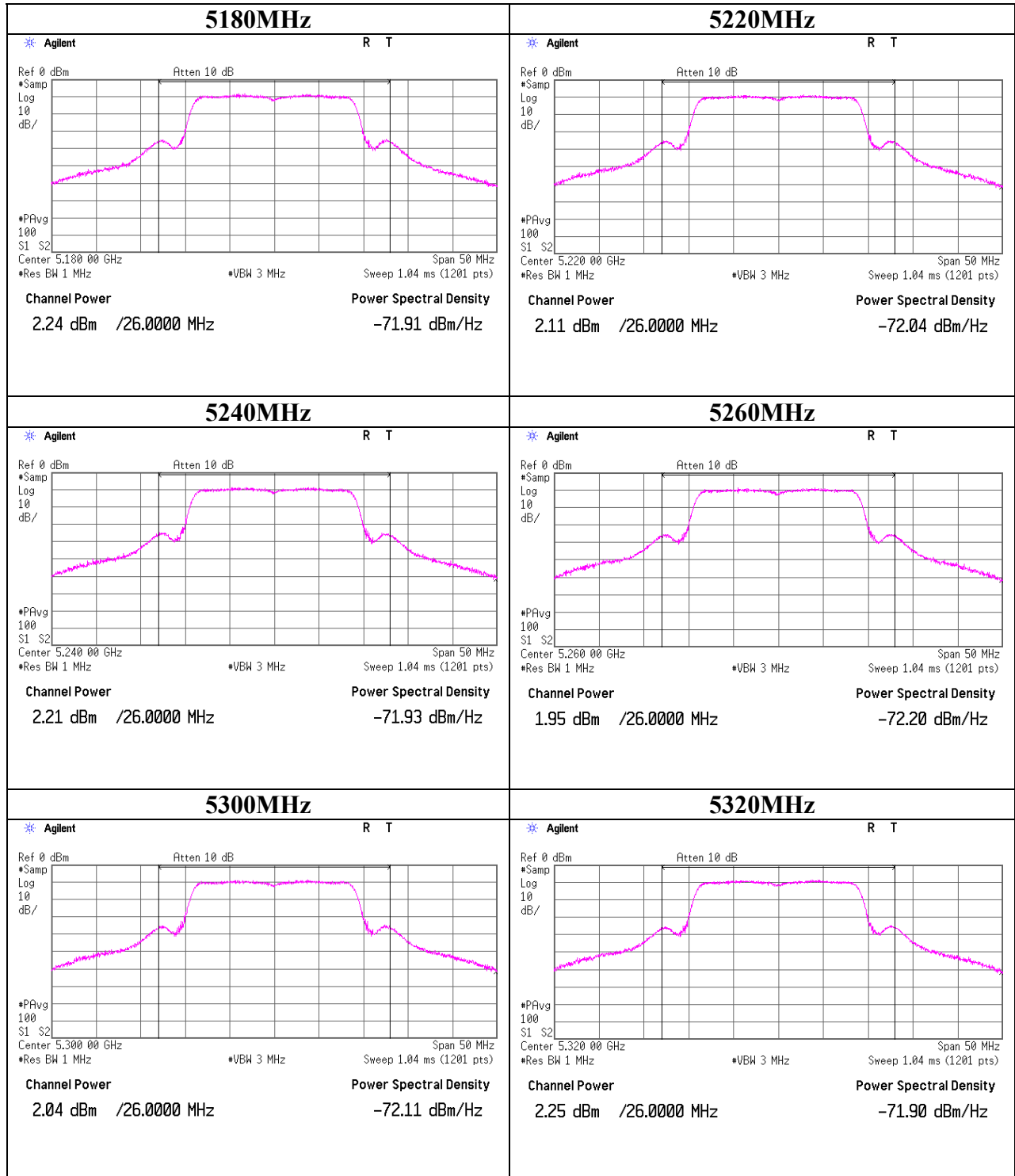
Maximum Peak Output Power

11a Antenna 0



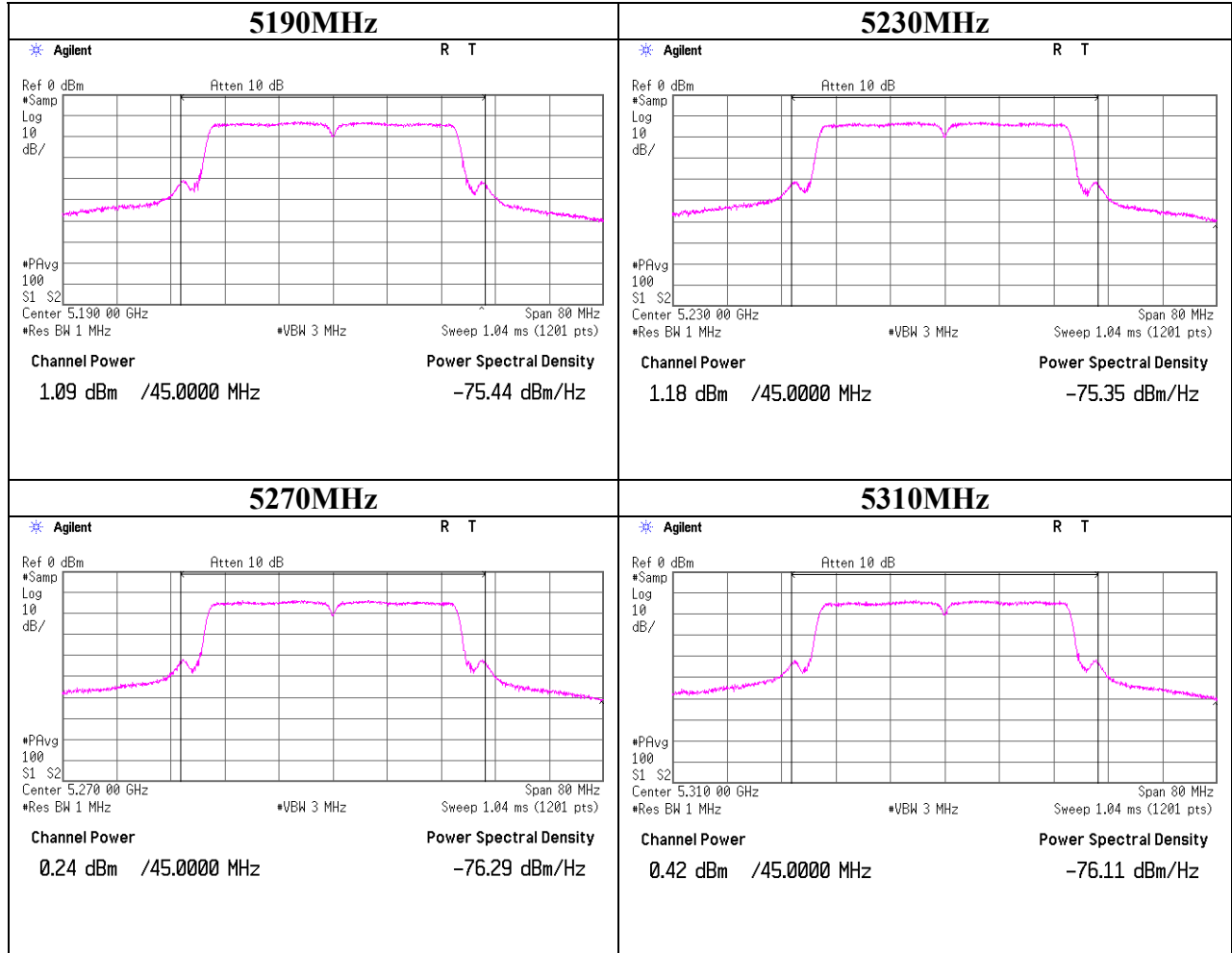
Maximum Peak Output Power

11n-20 Antenna 0



Maximum Peak Output Power

11n-40 Antenna 0



Maximum Peak Output Power
(Reference data)

Test place Head Office EMC Lab. No.4 Semi Anechoic Chamber
Report No. 29LE0211-HO-02
Date 10/13/2009
Temperature/ Humidity 24deg.C. / 53%
Engineer Takeshi Choda
Mode 11a Tx

Antenna 0, 5180MHz

Data Rate [Mbps]	Reading [dBm]	Remark
6	2.38	*
9	2.24	
12	2.28	
18	2.25	
24	2.24	
36	2.10	
48	2.16	
54	2.22	

Antenna 1, 5180MHz

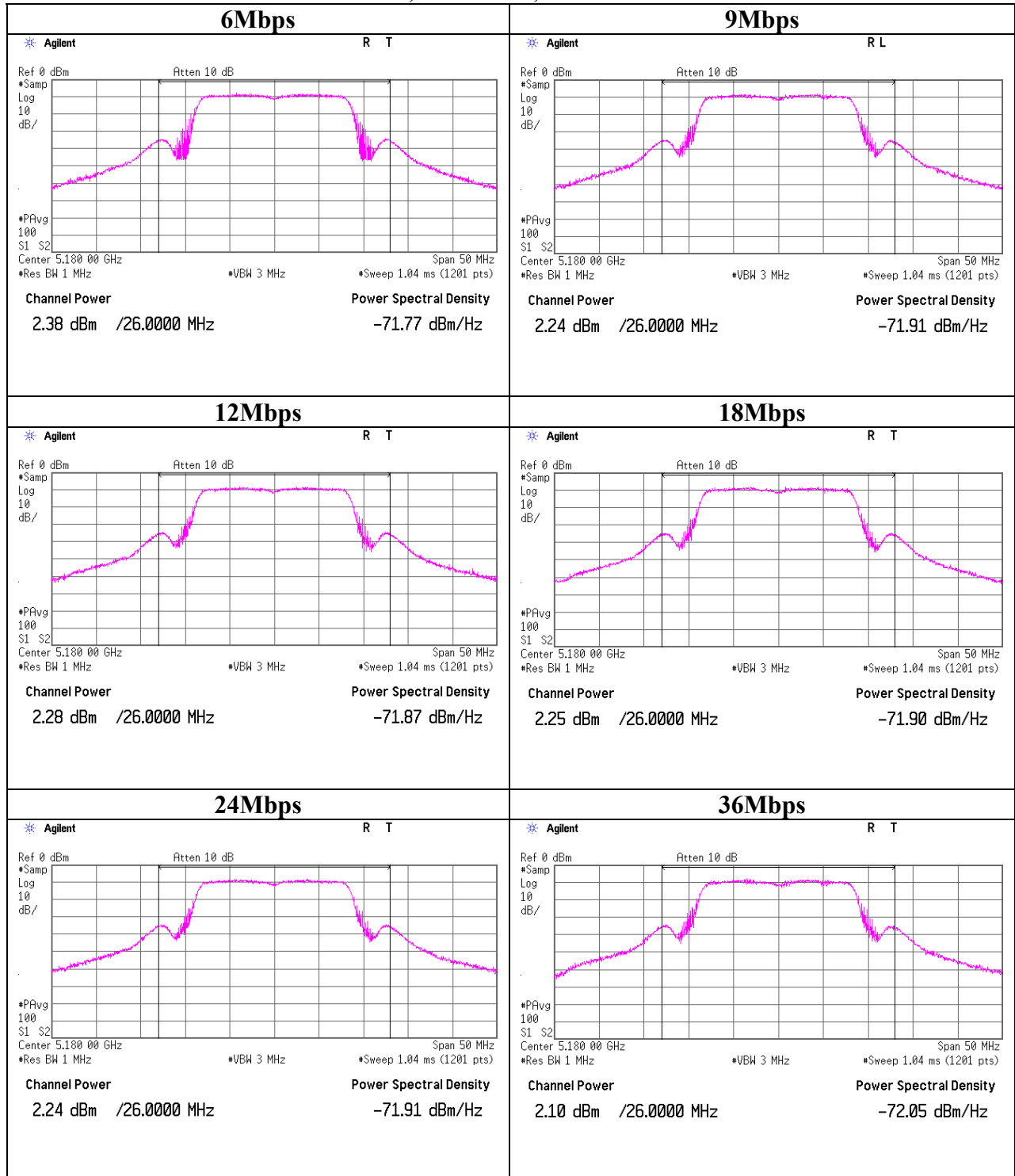
Data Rate [Mbps]	Reading [dBm]	Remark
6	1.96	*

* Worst Rate

All comparizon were carried out on same frequency and measurement factors.

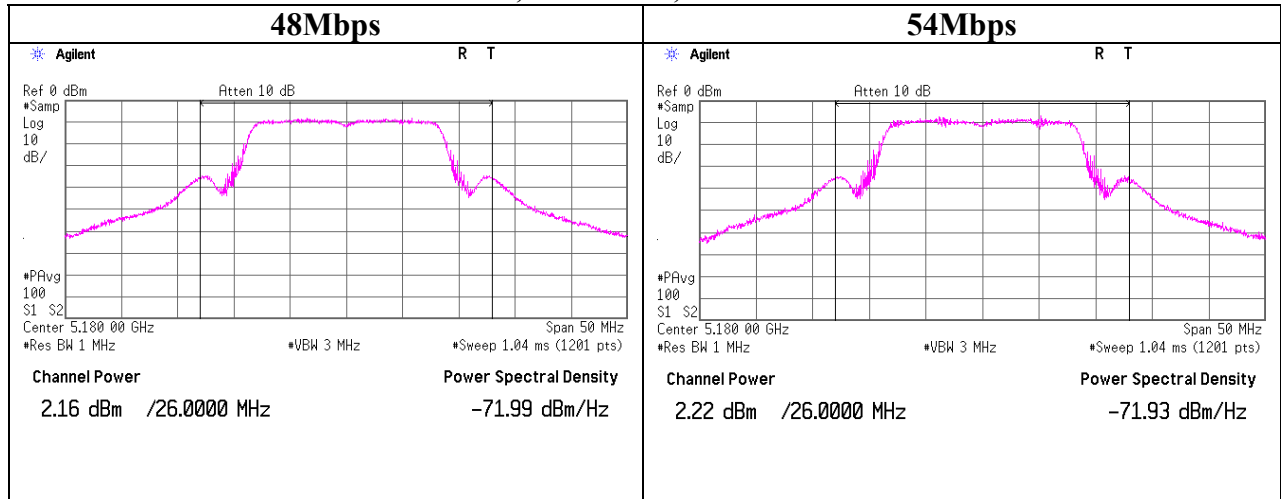
**Maximum Peak Output Power
 (Reference data)**

11a, Antenna 0, 5180MHz

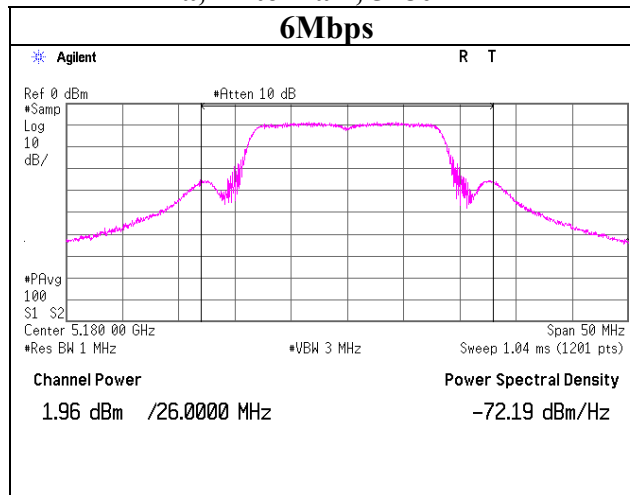


**Maximum Peak Output Power
(Reference data)**

11a, Antenna 0, 5180MHz

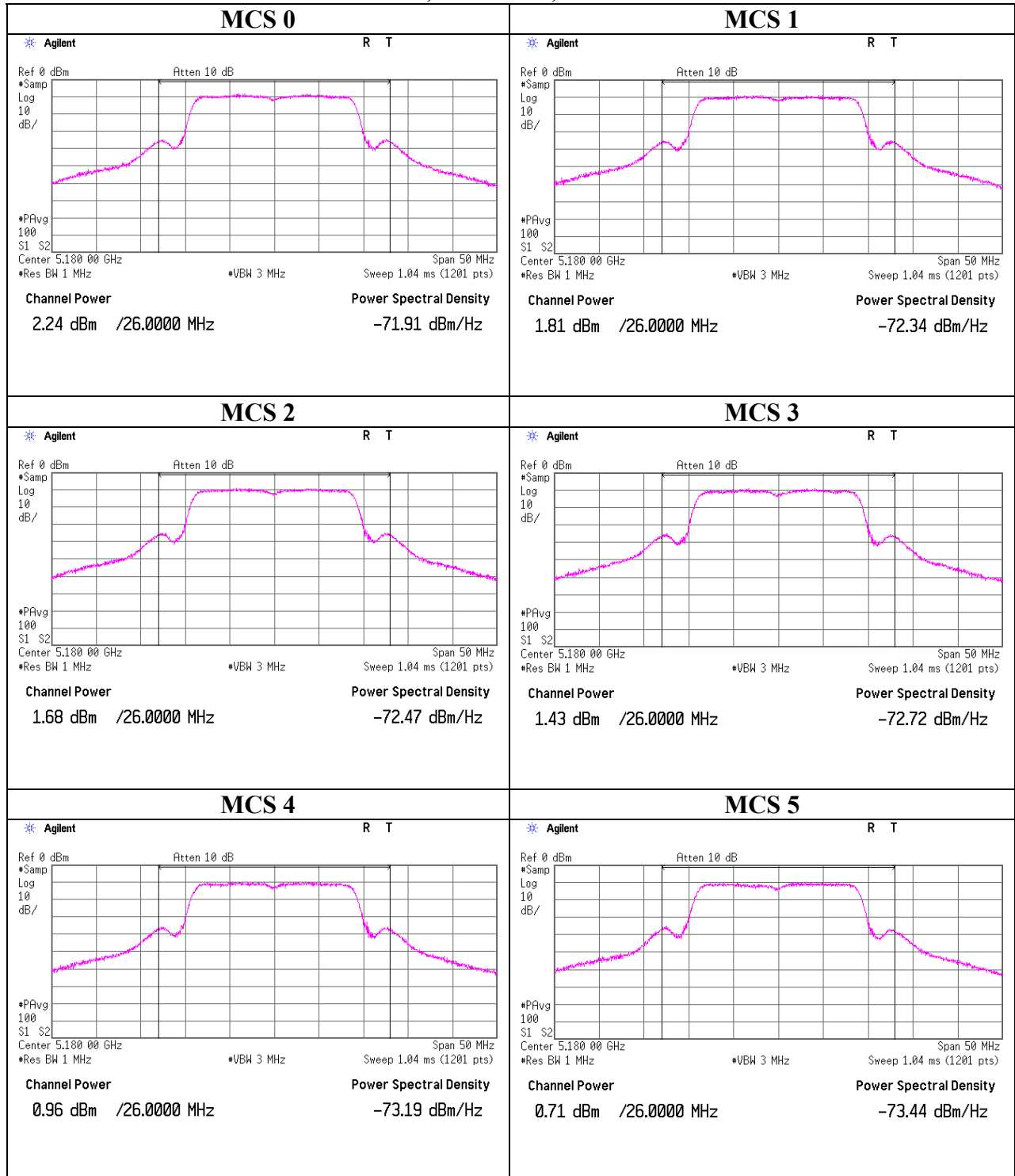


11a, Antenna 1, 5180MHz



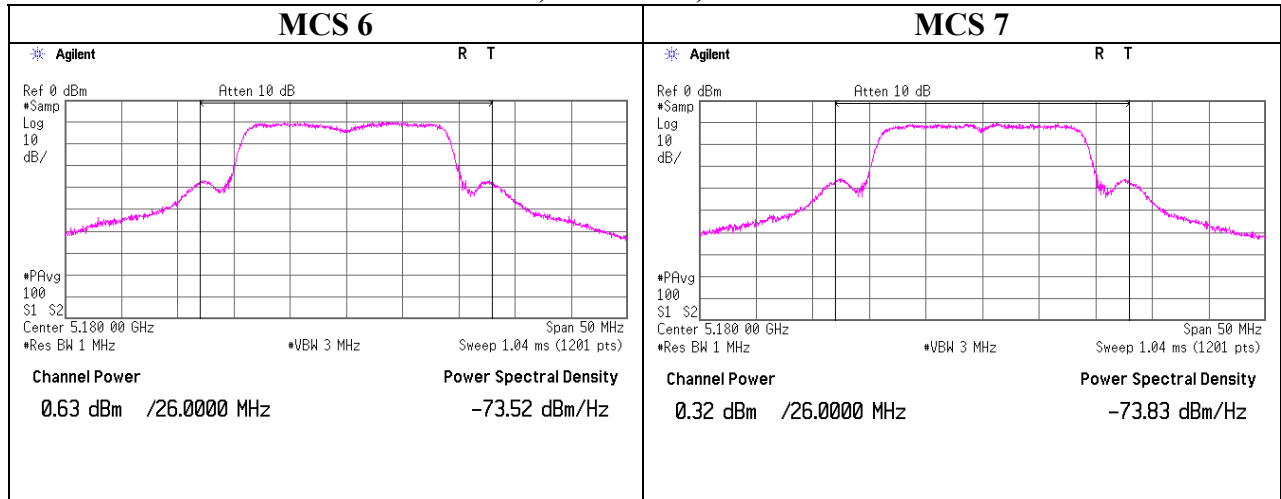
**Maximum Peak Output Power
(Reference data)**

11n-20, Antenna 0, 5180MHz

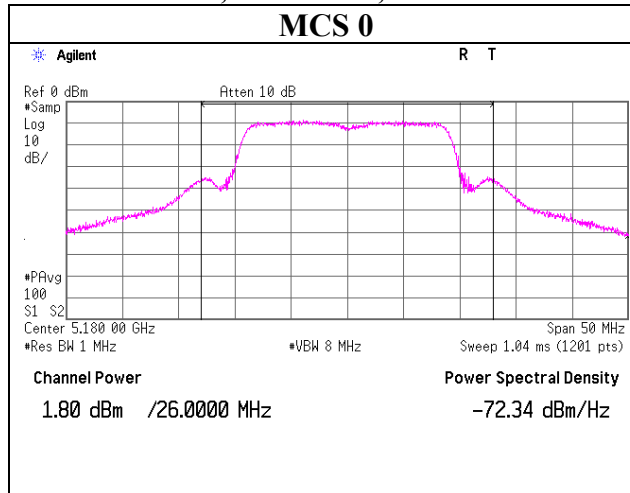


**Maximum Peak Output Power
(Reference data)**

11n-20, Antenna 0, 5180MHz

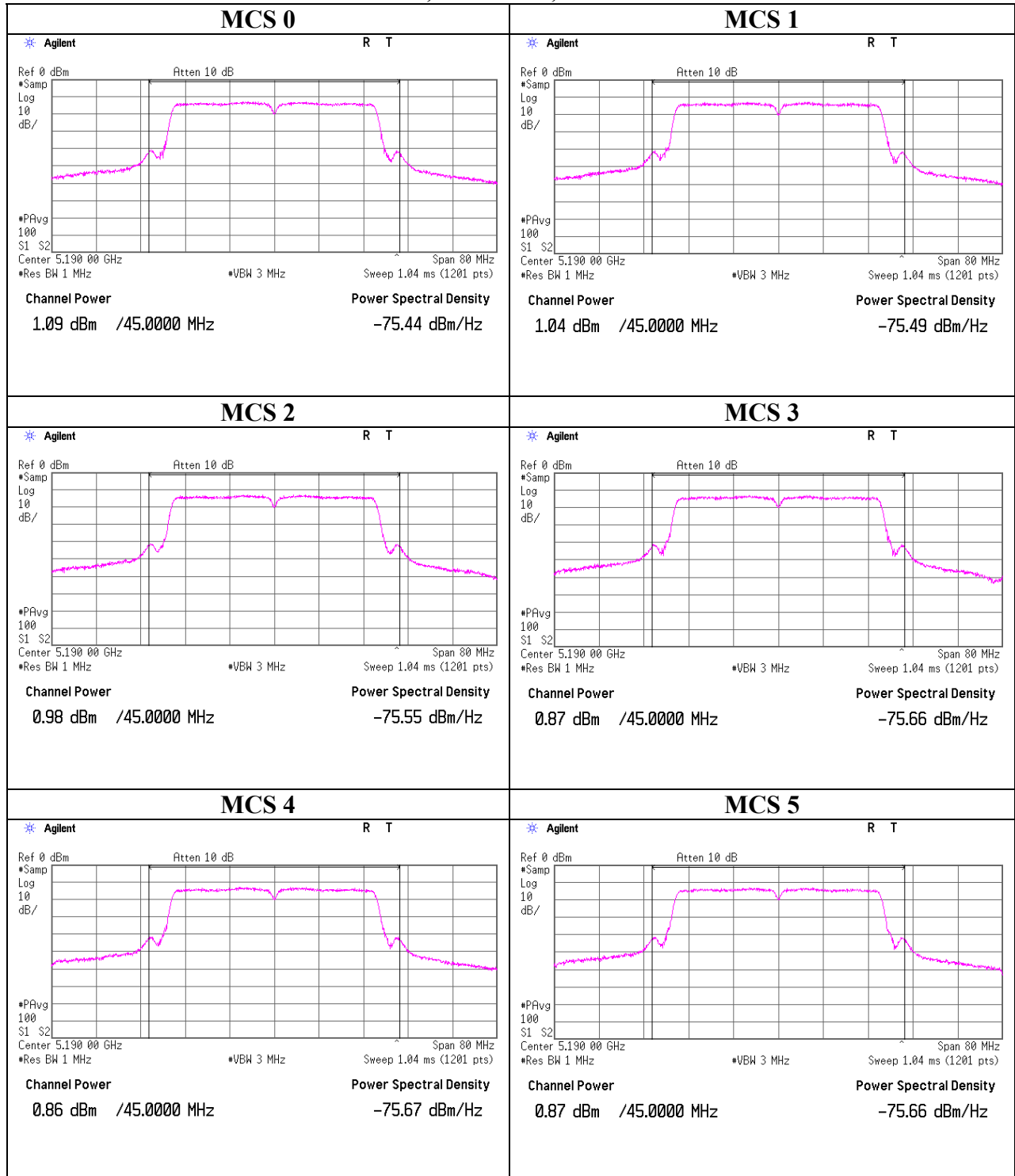


11n-20, Antenna 1, 5180MHz



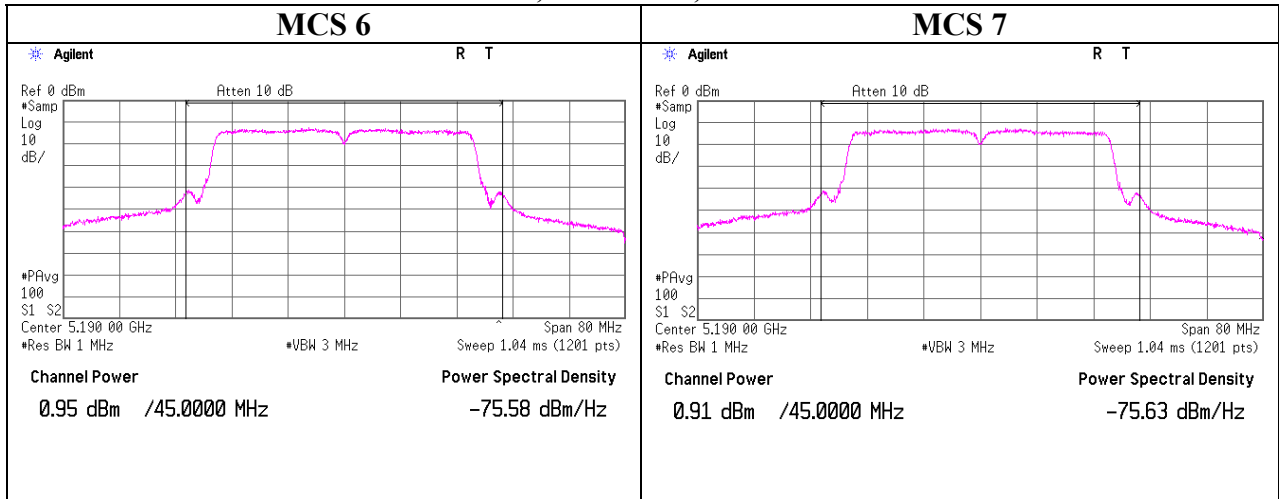
**Maximum Peak Output Power
 (Reference data)**

11n-40, Antenna 0, 5190MHz

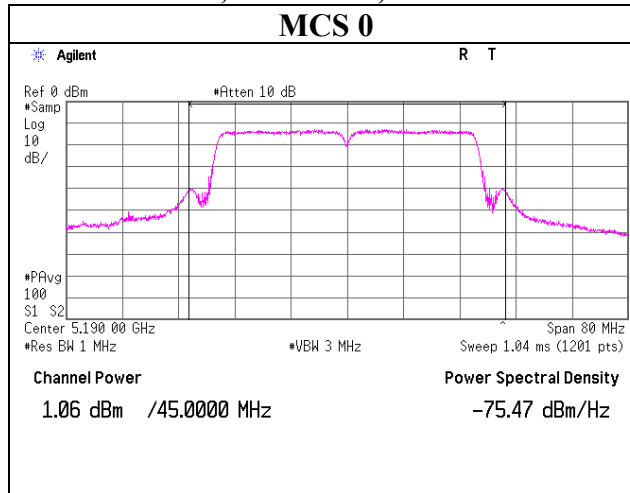


**Maximum Peak Output Power
(Reference data)**

11n-40, Antenna 0, 5190MHz



11n-40, Antenna 1, 5190MHz



**Maximum Peak Output Power
(Reference data for SAR testing)**

Test place Head Office EMC Lab. No.4 and 6 measurement room
Report No. 29LE0211-HO-02
Date 10/13/2009 10/25/2009 10/29/2009
Temperature/ Humidity 24deg.C. / 53% 24deg.C. / 53% 26deg.C. / 43%
Engineer Hisayoshi Sato Hisayoshi Sato Hisayoshi Sato
Mode 11a/n Tx

[IEEE 802.11a ant.0, 6Mbps]

Ch	Freq. [MHz]	P/M AVG Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result	
					[dBm]	[mW]
36	5180.0	1.89	1.00	10.14	13.03	20.1
44	5220.0	1.72	1.00	10.14	12.86	19.3
48	5240.0	1.83	1.00	10.14	12.97	19.8
52	5260.0	1.30	1.00	10.14	12.44	17.5
60	5300.0	1.00	1.00	10.14	12.14	16.4
64	5320.0	1.05	1.00	10.15	12.20	16.6

[IEEE 802.11a ant.1, 6Mbps]

Ch	Freq. [MHz]	P/M AVG Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result	
					[dBm]	[mW]
36	5180.0	1.02	1.00	10.14	12.16	16.4
44	5220.0	1.04	1.00	10.14	12.18	16.5
48	5240.0	1.36	1.00	10.14	12.50	17.8
52	5260.0	0.71	1.00	10.14	11.85	15.3
60	5300.0	0.80	1.00	10.14	11.94	15.6
64	5320.0	0.82	1.00	10.15	11.97	15.7

Sample Calculation:

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

[IEEE 802.11n-20 ant.0, MCS 0]

Ch	Freq. [MHz]	P/M AVG Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result	
					[dBm]	[mW]
36	5180.0	1.84	1.00	10.14	12.98	19.9
44	5220.0	1.69	1.00	10.14	12.83	19.2
48	5240.0	1.74	1.00	10.14	12.88	19.4
52	5260.0	0.96	1.00	10.14	12.10	16.2
60	5300.0	0.94	1.00	10.14	12.08	16.1
64	5320.0	1.01	1.00	10.15	12.16	16.4

[IEEE 802.11n-20 ant.1, MCS 0]

Ch	Freq. [MHz]	P/M AVG Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result	
					[dBm]	[mW]
36	5180.0	1.00	1.00	10.14	12.14	16.4
44	5220.0	0.94	1.00	10.14	12.08	16.1
48	5240.0	1.24	1.00	10.14	12.38	17.3
52	5260.0	0.77	1.00	10.14	11.91	15.5
60	5300.0	0.72	1.00	10.14	11.86	15.3
64	5320.0	0.79	1.00	10.15	11.94	15.6

Sample Calculation:

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

[IEEE 802.11n-40 ant.0, MCS 0]

Ch	Freq. [MHz]	P/M AVG Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result	
					[dBm]	[mW]
38	5190.0	0.78	1.00	10.14	11.92	15.6
46	5230.0	0.65	1.00	10.14	11.79	15.1
54	5270.0	0.42	1.00	10.14	11.56	14.3
62	5310.0	0.46	1.00	10.15	11.61	14.5

[IEEE 802.11n-40 ant.1, MCS 0]

Ch	Freq. [MHz]	P/M AVG Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result	
					[dBm]	[mW]
38	5190.0	0.64	1.00	10.14	11.78	15.1
46	5230.0	0.47	1.00	10.14	11.61	14.5
54	5270.0	0.26	1.00	10.14	11.40	13.8
62	5310.0	0.36	1.00	10.15	11.51	14.2

Sample Calculation:

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

Peak Power Spectral Density

Test place Head Office EMC Lab. No.4 measurement Chamber
Report No. 29LE0211-HO-02
Date 10/15/2009
Temperature/ Humidity 24deg.C. / 46%
Engineer Takumi Shimada
Mode 11a Tx

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	ENBW [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
5180.0	-8.61	1.00	10.14	0.20	2.33	4.00	1.67
5220.0	-8.33	1.00	10.14	0.20	2.61	4.00	1.39
5240.0	-8.40	1.00	10.14	0.20	2.54	4.00	1.46
5260.0	-9.22	1.00	10.14	0.20	1.72	11.00	9.28
5300.0	-9.52	1.00	10.14	0.20	1.42	11.00	9.58
5320.0	-9.23	1.00	10.15	0.20	1.72	11.00	9.28

Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator - ENBW
*ENBW: Equivalent Noise Band Width

Peak Power Spectral Density

Test place Head Office EMC Lab. No. 4 measurement Chamber
Report No. 29LE0211-HO-02
Date 10/15/2009
Temperature/ Humidity 24deg.C. / 46%
Engineer Takumi Shimada
Mode 11n-20 Tx

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	ENBW [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
5180.0	-8.03	1.00	10.14	0.20	2.91	4.00	1.09
5220.0	-8.65	1.00	10.14	0.20	2.29	4.00	1.71
5240.0	-8.10	1.00	10.14	0.20	2.84	4.00	1.16
5260.0	-9.23	1.00	10.14	0.20	1.71	11.00	9.29
5300.0	-9.22	1.00	10.14	0.20	1.72	11.00	9.28
5320.0	-9.09	1.00	10.15	0.20	1.86	11.00	9.14

Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator - ENBW
*ENBW: Equivalent Noise Band Width

Peak Power Spectral Density

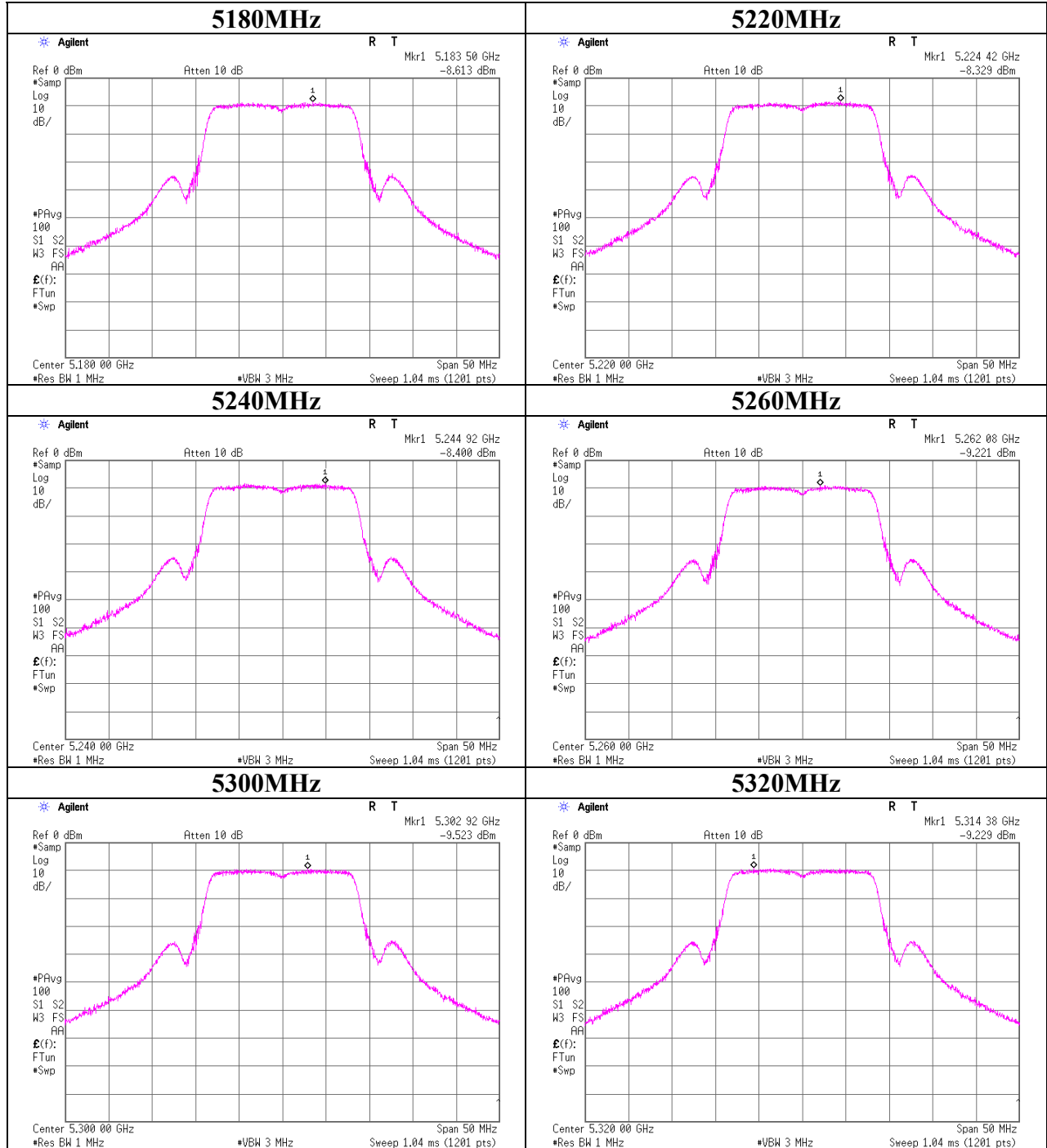
Test place Head Office EMC Lab. No.7 Shielded Room
Report No. 29LE0211-HO-02
Date 10/25/2009
Temperature/ Humidity 24deg.C. / 53%
Engineer Takeshi Choda
Mode 11n-40 Tx

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	ENBW [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
5190.0	-12.84	1.00	10.14	0.20	-1.90	4.00	5.90
5230.0	-12.79	1.00	10.14	0.20	-1.85	4.00	5.85
5270.0	-14.06	1.00	10.14	0.20	-3.12	11.00	14.12
5310.0	-13.61	1.00	10.15	0.20	-2.66	11.00	13.66

Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator - EN
*ENBW: Equivalent Noise Band Width

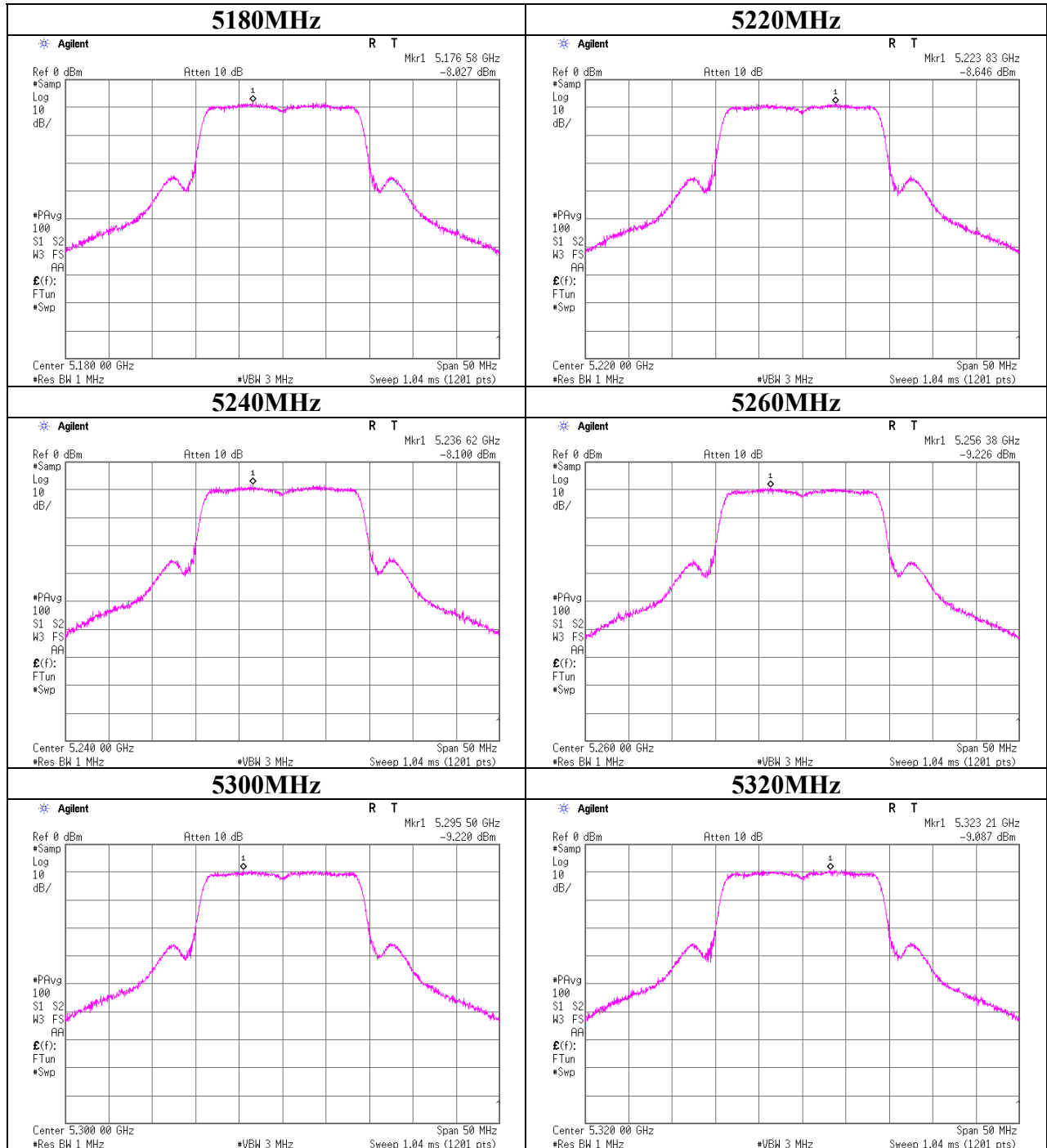
Peak Power Spectral Density

11a Antenna 0



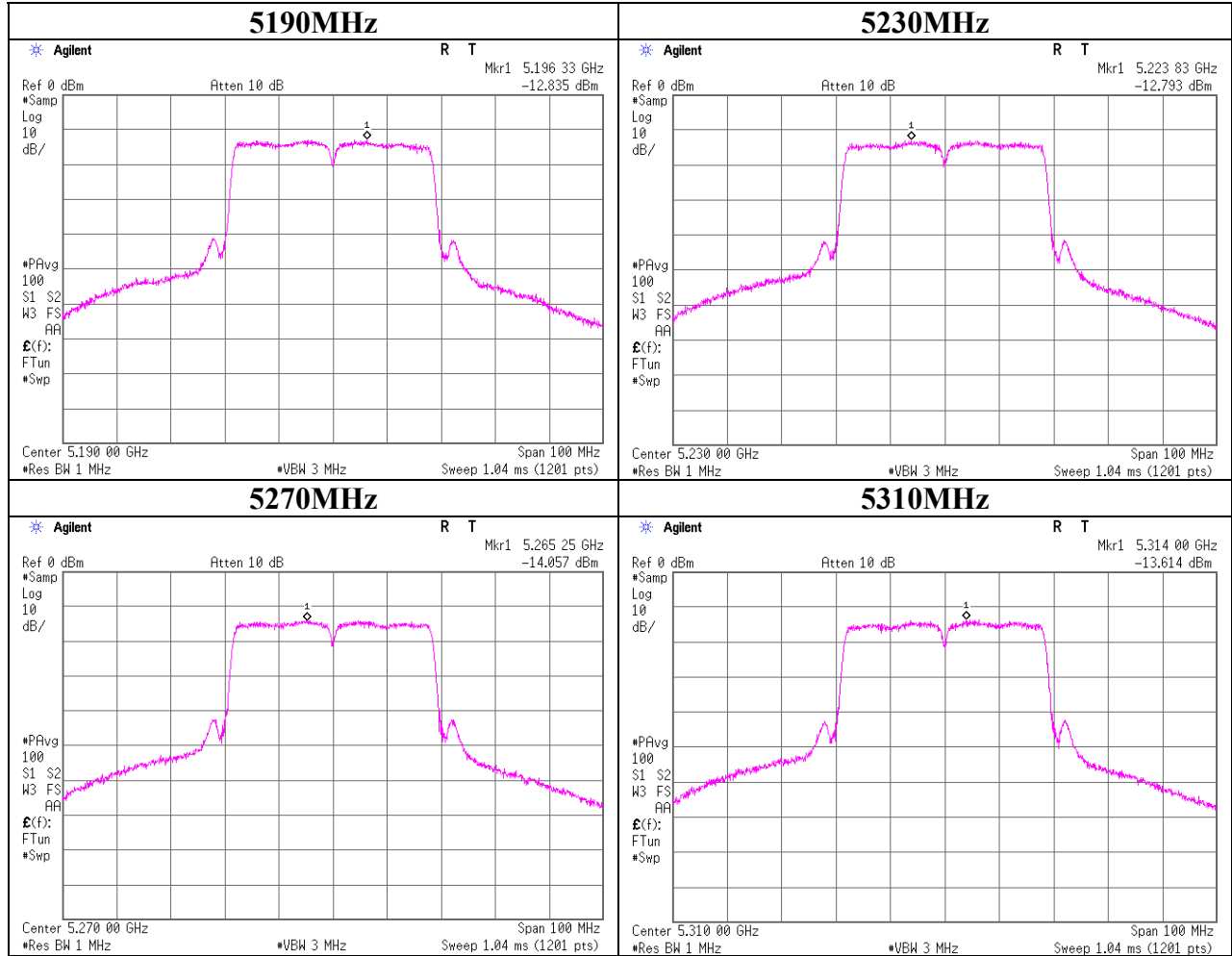
Peak Power Spectral Density

11n-20 Antenna 0



Peak Power Spectral Density

11n-40 Antenna 0



Radiated Spurious Emission

Test place Head Office EMC Lab. No.4 Anechoic Chamber
Report No. 29LE0211-HO-02
Date 10/14/2009 10/14/2009 10/15/2009
Temperature/ Humidity 23deg.C. / 42% 22deg.C. / 52% 22deg.C. / 51%
Engineer Tomotaka Sasagawa Takeshi Choda Takeshi Choda
Mode 11a Tx 5180MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	80.220	QP	23.2	6.3	7.9	32.0	5.4	40.0	34.6	Outside	
Hori	144.012	QP	32.6	14.0	8.6	32.0	23.2	43.5	20.3	Outside	
Hori	196.610	QP	38.0	16.4	9.1	31.9	31.6	43.5	11.9	Outside	
Hori	239.985	QP	30.5	17.4	9.5	31.9	25.5	46.0	20.5	Outside	
Hori	364.511	QP	38.2	17.3	10.3	32.0	33.8	46.0	12.2	Outside	
Hori	729.031	QP	33.5	22.7	12.5	32.0	36.7	46.0	9.3	Outside	
Hori	5150.000	PK	56.0	31.6	4.0	31.9	59.7	68.2	8.5	Bandedge	
Hori	10360.000	PK	52.3	39.0	-2.6	33.5	55.2	68.2	13.0	Outside	
Hori	15540.000	PK	48.3	39.5	-1.3	33.2	53.3	73.9	20.6	Inside	
Hori	36260.000	PK	45.7	41.8	-2.1	25.1	60.3	68.2	7.9	Outside	NS
Hori	5150.000	AV	46.1	31.6	4.0	31.9	49.8	53.9	4.1	Bandedge	
Hori	15540.000	AV	35.9	39.5	-1.3	33.2	40.9	53.9	13.0	Inside	
Hori	36260.000	AV	34.9	41.8	-2.1	25.1	49.5	-	-	Outside	NS
Vert	80.471	QP	45.2	6.3	7.9	32.0	27.4	40.0	12.6	Outside	
Vert	143.999	QP	37.3	14.0	8.6	32.0	27.9	43.5	15.6	Outside	
Vert	196.619	QP	30.6	16.4	9.1	31.9	24.2	43.5	19.3	Outside	
Vert	239.972	QP	29.7	17.4	9.5	31.9	24.7	46.0	21.3	Outside	
Vert	364.521	QP	35.8	17.3	10.3	32.0	31.4	46.0	14.6	Outside	
Vert	729.002	QP	32.9	22.7	12.5	32.0	36.1	46.0	9.9	Outside	
Vert	5150.000	PK	57.9	31.6	4.0	31.9	61.6	68.2	6.6	Bandedge	
Vert	10360.000	PK	53.1	39.0	-2.6	33.5	56.0	68.2	12.2	Outside	
Vert	15540.000	PK	47.0	39.5	-1.3	33.2	52.0	73.9	21.9	Inside	
Vert	36260.000	PK	46.8	41.8	-2.1	25.1	61.4	68.2	6.8	Outside	NS
Vert	5150.000	AV	41.0	31.6	4.0	31.9	44.7	53.9	9.2	Bandedge	
Vert	15540.000	AV	34.8	39.5	-1.3	33.2	39.8	53.9	14.1	Inside	
Vert	36260.000	AV	34.0	41.8	-2.1	25.1	48.6	-	-	Outside	NS

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place Head Office EMC Lab. No.4 Anechoic Chamber
Report No. 29LE0211-HO-02
Date 10/14/2009 10/15/2009 10/15/2009
Temperature/ Humidity 23deg.C. / 42% 22deg.C. / 52% 22deg.C. / 51%
Engineer Tomotaka Sasagawa Tomotaka Sasagawa Takeshi Choda
Mode 11a Tx 5260MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	80.231	QP	24.1	6.3	7.9	32.0	6.3	40.0	33.7	Outside	
Hori	157.003	QP	32.9	14.9	8.8	32.0	24.6	43.5	18.9	Outside	
Hori	196.020	QP	37.8	16.4	9.1	31.9	31.4	43.5	12.1	Outside	
Hori	240.002	QP	30.1	17.4	9.5	31.9	25.1	46.0	20.9	Inside	
Hori	363.998	QP	38.1	17.3	10.3	32.0	33.7	46.0	12.3	Outside	
Hori	729.031	QP	33.1	22.7	12.5	32.0	36.3	46.0	9.7	Outside	
Hori	10520.000	PK	48.2	39.2	-2.6	33.5	51.3	68.2	16.9	Outside	
Hori	15780.000	PK	47.1	38.5	-1.3	33.2	51.1	73.9	22.8	Inside	
Hori	36820.000	PK	45.8	41.3	-2.0	25.0	60.1	68.2	8.1	Outside	NS
Hori	15780.000	AV	35.5	38.5	-1.3	33.2	39.5	53.9	14.4	Inside	
Hori	36820.000	AV	34.6	41.3	-2.0	25.0	48.9	-	-	Outside	NS
Vert	83.143	QP	44.8	6.8	8.0	32.0	27.6	40.0	12.4	Outside	
Vert	157.003	QP	38.9	14.9	8.8	32.0	30.6	43.5	12.9	Outside	
Vert	196.002	QP	32.0	16.4	9.1	31.9	25.6	43.5	17.9	Outside	
Vert	240.042	QP	30.9	17.4	9.5	31.9	25.9	46.0	20.1	Inside	
Vert	364.003	QP	37.1	17.3	10.3	32.0	32.7	46.0	13.3	Outside	
Vert	729.003	QP	31.9	22.7	12.5	32.0	35.1	46.0	10.9	Outside	
Vert	10520.000	PK	51.1	39.2	-2.6	33.5	54.2	68.2	14.0	Outside	
Vert	15780.000	PK	43.7	38.5	-1.3	33.2	47.7	73.9	26.2	Inside	
Vert	36820.000	PK	45.6	41.3	-2.0	25.0	59.9	68.2	8.3	Outside	NS
Vert	15780.000	AV	33.5	38.5	-1.3	33.2	37.5	53.9	16.4	Inside	
Vert	36820.000	AV	34.9	41.3	-2.0	25.0	49.2	-	-	Outside	NS

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place Head Office EMC Lab. No.4 Anechoic Chamber
Report No. 29LE0211-HO-02
Date 10/14/2009 10/15/2009 10/15/2009
Temperature/ Humidity 23deg.C. / 42% 22deg.C. / 52% 22deg.C. / 51%
Engineer Tomotaka Sasagawa Tomotaka Sasagawa Takeshi Choda
Mode 11a Tx 5320MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	5350.000	PK	53.1	31.9	4.0	31.9	57.1	68.2	11.1	Bandedge	
Hori	10640.000	PK	47.1	39.3	-2.6	33.5	50.3	73.9	23.6	Inside	
Hori	15960.000	PK	44.5	37.8	-1.4	33.2	47.7	73.9	26.2	Inside	
Hori	5350.000	AV	37.0	31.9	4.0	31.9	41.0	53.9	12.9	Bandedge	
Hori	10640.000	AV	35.2	39.3	-2.6	33.5	38.4	53.9	15.5	Inside	
Hori	15960.000	AV	34.7	37.8	-1.4	33.2	37.9	53.9	16.0	Inside	
Vert	5350.000	PK	54.2	31.9	4.0	31.9	58.2	68.2	10.0	Bandedge	
Vert	10640.000	PK	49.0	39.3	-2.6	33.5	52.2	73.9	21.7	Inside	
Vert	15960.000	PK	45.7	37.8	-1.4	33.2	48.9	73.9	25.0	Inside	
Vert	5350.000	AV	37.1	31.9	4.0	31.9	41.1	53.9	12.8	Bandedge	
Vert	10640.000	AV	37.4	39.3	-2.6	33.5	40.6	53.9	13.3	Inside	
Vert	15960.000	AV	34.8	37.8	-1.4	33.2	38.0	53.9	15.9	Inside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

Distance factor: 10GHz-26.5GHz $20\log(3.0m/1.0m)=9.5dB$

26.5GHz-40GHz $20\log(3.0m/0.5m)=15.6dB$

* The noise level below 1GHz for this mode was equivalence noise level with 11a Tx 5260MHz and it was verified to be satisfied section 15.209 limit.

Radiated Spurious Emission

Test place Head Office EMC Lab. No.4 Anechoic Chamber
Report No. 29LE0211-HO-02
Date 10/14/2009 10/14/2009 10/15/2009
Temperature/ Humidity 23deg.C. / 42% 22deg.C. / 52% 22deg.C. / 51%
Engineer Tomotaka Sasagawa Takeshi Choda Takeshi Choda
Mode 11n-20 Tx 5180MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	80.421	QP	23.9	6.3	7.9	32.0	6.1	40.0	33.9	Outside	
Hori	157.243	QP	33.9	14.9	8.8	32.0	25.6	43.5	17.9	Outside	
Hori	196.201	QP	38.1	16.4	9.1	31.9	31.7	43.5	11.8	Outside	
Hori	240.951	QP	30.9	17.4	9.5	31.9	25.9	46.0	20.1	Inside	
Hori	364.123	QP	38.7	17.3	10.3	32.0	34.3	46.0	11.7	Outside	
Hori	729.810	QP	34.5	22.7	12.5	32.0	37.7	46.0	8.3	Outside	
Hori	5150.000	PK	56.3	31.6	4.0	31.9	60.0	68.2	8.2	Bandedge	
Hori	10360.000	PK	50.1	39.0	-2.6	33.5	53.0	68.2	15.2	Outside	
Hori	15540.000	PK	47.9	39.5	-1.3	33.2	52.9	73.9	21.0	Inside	
Hori	5150.000	AV	39.7	31.6	4.0	31.9	43.4	53.9	10.5	Bandedge	
Hori	15540.000	AV	36.1	39.5	-1.3	33.2	41.1	53.9	12.8	Inside	
Vert	83.141	QP	46.2	6.8	8.0	32.0	29.0	40.0	11.0	Outside	
Vert	157.841	QP	39.8	15.0	8.8	32.0	31.6	43.5	11.9	Outside	
Vert	196.024	QP	32.1	16.4	9.1	31.9	25.7	43.5	17.8	Outside	
Vert	239.984	QP	31.2	17.4	9.5	31.9	26.2	46.0	19.8	Outside	
Vert	364.124	QP	36.1	17.3	10.3	32.0	31.7	46.0	14.3	Outside	
Vert	729.042	QP	32.5	22.7	12.5	32.0	35.7	46.0	10.3	Outside	
Vert	5150.000	PK	58.5	31.6	4.0	31.9	62.2	68.2	6.0	Bandedge	
Vert	10360.000	PK	51.3	39.0	-2.6	33.5	54.2	68.2	14.0	Outside	
Vert	15540.000	PK	47.2	39.5	-1.3	33.2	52.2	73.9	21.7	Inside	
Vert	5150.000	AV	41.2	31.6	4.0	31.9	44.9	53.9	9.0	Bandedge	
Vert	15540.000	AV	35.8	39.5	-1.3	33.2	40.8	53.9	13.1	Inside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.4 Anechoic Chamber		
Report No.	29LE0211-HO-02		
Date	10/14/2009	10/14/2009	10/15/2009
Temperature/ Humidity	23deg.C. / 42%	22deg.C. / 52%	22deg.C. / 51%
Engineer	Tomotaka Sasagawa	Takeshi Choda	Takeshi Choda
Mode	11n-20 Tx 5220MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	10440.000	PK	48.7	39.1	-2.6	33.5	51.7	68.2	16.5	Outside	
Hori	15660.000	PK	48.3	39.0	-1.3	33.2	52.8	73.9	21.1	Inside	
Hori	15660.000	AV	37.2	39.0	-1.3	33.2	41.7	53.9	12.2	Inside	
Vert	10440.000	PK	50.7	39.1	-2.6	33.5	53.7	68.2	14.5	Outside	
Vert	15660.000	PK	47.2	39.0	-1.3	33.2	51.7	73.9	22.2	Inside	
Vert	15660.000	AV	36.3	39.0	-1.3	33.2	40.8	53.9	13.1	Inside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
 26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

** The noise level below 1GHz for this mode was equivalence noise level with 11n-20 Tx 5180MHz and it was verified to be satisfied section 15.209 limit.*

Radiated Spurious Emission

Test place Head Office EMC Lab. No.4 Anechoic Chamber
Report No. 29LE0211-HO-02
Date 10/14/2009 10/15/2009 10/15/2009
Temperature/ Humidity 23deg.C. / 42% 22deg.C. / 52% 22deg.C. / 51%
Engineer Tomotaka Sasagawa Tomotaka Sasagawa Takeshi Choda
Mode 11n-20 Tx 5260MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	80.321	QP	24.1	6.3	7.9	32.0	6.3	40.0	33.7	Outside	
Hori	156.994	QP	32.1	14.9	8.8	32.0	23.8	43.5	19.7	Outside	
Hori	196.041	QP	38.0	16.4	9.1	31.9	31.6	43.5	11.9	Outside	
Hori	240.943	QP	30.8	17.4	9.5	31.9	25.8	46.0	20.2	Inside	
Hori	364.421	QP	37.2	17.3	10.3	32.0	32.8	46.0	13.2	Outside	
Hori	729.942	QP	33.2	22.7	12.5	32.0	36.4	46.0	9.6	Outside	
Hori	10520.000	PK	48.2	39.2	-2.6	33.5	51.3	68.2	16.9	Outside	
Hori	15780.000	PK	47.6	38.5	-1.3	33.2	51.6	73.9	22.3	Inside	
Hori	15780.000	AV	35.6	38.5	-1.3	33.2	39.6	53.9	14.3	Inside	
Vert	82.994	QP	47.2	6.7	8.0	32.0	29.9	40.0	10.1	Outside	
Vert	157.099	QP	38.9	14.9	8.8	32.0	30.6	43.5	12.9	Outside	
Vert	196.004	QP	33.2	16.4	9.1	31.9	26.8	43.5	16.7	Outside	
Vert	240.001	QP	30.9	17.4	9.5	31.9	25.9	46.0	20.1	Inside	
Vert	363.994	QP	35.9	17.3	10.3	32.0	31.5	46.0	14.5	Outside	
Vert	729.004	QP	31.2	22.7	12.5	32.0	34.4	46.0	11.6	Outside	
Vert	10520.000	PK	49.3	39.2	-2.6	33.5	52.4	68.2	15.8	Outside	
Vert	15780.000	PK	47.1	38.5	-1.3	33.2	51.1	73.9	22.8	Inside	
Vert	15780.000	AV	35.7	38.5	-1.3	33.2	39.7	53.9	14.2	Inside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place Head Office EMC Lab. No.4 Anechoic Chamber
Report No. 29LE0211-HO-02
Date 10/14/2009 10/15/2009 10/15/2009
Temperature/ Humidity 23deg.C. / 42% 22deg.C. / 52% 22deg.C. / 51%
Engineer Tomotaka Sasagawa Tomotaka Sasagawa Takeshi Choda
Mode 11n-20 Tx 5300MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	10600.000	PK	48.1	39.3	-2.6	33.5	51.3	73.9	22.6	Inside	
Hori	15900.000	PK	44.5	38.1	-1.4	33.2	48.0	73.9	25.9	Inside	
Hori	10600.000	AV	36.2	39.3	-2.6	33.5	39.4	53.9	14.5	Inside	
Hori	15900.000	AV	35.0	38.1	-1.4	33.2	38.5	53.9	15.4	Inside	
Vert	10600.000	PK	49.7	39.3	-2.6	33.5	52.9	73.9	21.0	Inside	
Vert	15900.000	PK	46.0	38.1	-1.4	33.2	49.5	73.9	24.4	Inside	
Vert	10600.000	AV	38.1	39.3	-2.6	33.5	41.3	53.9	12.6	Inside	
Vert	15900.000	AV	35.3	38.1	-1.4	33.2	38.8	53.9	15.1	Inside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

Distance factor: 10GHz-26.5GHz $20\log(3.0\text{m}/1.0\text{m})= 9.5\text{dB}$
26.5GHz-40GHz $20\log(3.0\text{m}/0.5\text{m})=15.6\text{dB}$

* The noise level below 1GHz for this mode was equivalence noise level with 11n-20 Tx 5260MHz and it was verified to be satisfied section 15.209 limit.

Radiated Spurious Emission

Test place Head Office EMC Lab. No.4 Anechoic Chamber
Report No. 29LE0211-HO-02
Date 10/14/2009 10/15/2009 10/15/2009
Temperature/ Humidity 23deg.C. / 42% 22deg.C. / 52% 22deg.C. / 51%
Engineer Tomotaka Sasagawa Tomotaka Sasagawa Takeshi Choda
Mode 11n-20 Tx 5320MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	5350.000	PK	54.8	31.9	4.0	31.9	58.8	68.2	9.4	Bandedge	
Hori	10640.000	PK	47.1	39.3	-2.6	33.5	50.3	73.9	23.6	Inside	
Hori	15960.000	PK	44.5	37.8	-1.4	33.2	47.7	73.9	26.2	Inside	
Hori	5350.000	AV	41.2	31.9	4.0	31.9	45.2	53.9	8.7	Bandedge	
Hori	10640.000	AV	35.2	39.3	-2.6	33.5	38.4	53.9	15.5	Inside	
Hori	15960.000	AV	34.7	37.8	-1.4	33.2	37.9	53.9	16.0	Inside	
Vert	5350.000	PK	53.4	31.9	4.0	31.9	57.4	68.2	10.8	Bandedge	
Vert	10640.000	PK	49.0	39.3	-2.6	33.5	52.2	73.9	21.7	Inside	
Vert	15960.000	PK	45.7	37.8	-1.4	33.2	48.9	73.9	25.0	Inside	
Vert	5350.000	AV	39.2	31.9	4.0	31.9	43.2	53.9	10.7	Bandedge	
Vert	10640.000	AV	37.4	39.3	-2.6	33.5	40.6	53.9	13.3	Inside	
Vert	15960.000	AV	34.8	37.8	-1.4	33.2	38.0	53.9	15.9	Inside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

Distance factor: 10GHz-26.5GHz $20\log(3.0m/1.0m)=9.5dB$

26.5GHz-40GHz $20\log(3.0m/0.5m)=15.6dB$

* The noise level below 1GHz for this mode was equivalence noise level with 11n-20 Tx 5260MHz and it was verified to be satisfied section 15.209 limit.

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.4 Anechoic Chamber		
Report No.	29LE0211-HO-02		
Date	10/14/2009	10/14/2009	10/15/2009
Temperature/ Humidity	23deg.C. / 42%	22deg.C. / 52%	22deg.C. / 51%
Engineer	Tomotaka Sasagawa	Takeshi Choda	Takeshi Choda
Mode	11n-40 Tx 5270MHz		

Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
80.432	QP	24.1	6.3	7.9	32.0	6.3	40.0	33.7	Outside	
157.412	QP	34.1	14.9	8.8	32.0	25.8	43.5	17.7	Outside	
196.413	QP	37.9	16.4	9.1	31.9	31.5	43.5	12.0	Outside	
240.004	QP	31.2	17.4	9.5	31.9	26.2	46.0	19.8	Inside	
363.095	QP	38.5	17.3	10.3	32.0	34.1	46.0	11.9	Outside	
729.514	QP	33.1	22.7	12.5	32.0	36.3	46.0	9.7	Outside	
5150.000	PK	46.4	31.6	4.0	31.9	50.1	68.2	18.1	Bandedge	
10540.000	PK	45.3	39.2	-2.6	33.5	48.4	68.2	19.8	Outside	
15810.000	PK	44.8	38.4	-1.4	33.2	48.6	73.9	25.3	Inside	
36890.000	PK	45.8	41.2	-2.0	25.0	60.0	68.2	8.2	Outside	NS
5150.000	AV	36.3	31.6	4.0	31.9	40.0	53.9	13.9	Bandedge	
15810.000	AV	34.6	38.4	-1.4	33.2	38.4	53.9	15.5	Inside	
36890.000	AV	35.5	41.2	-2.0	25.0	49.7	-	-	Outside	NS
83.141	QP	45.9	6.8	8.0	32.0	28.7	40.0	11.3	Outside	
157.321	QP	38.7	14.9	8.8	32.0	30.4	43.5	13.1	Outside	
196.004	QP	33.9	16.4	9.1	31.9	27.5	43.5	16.0	Outside	
239.321	QP	32.1	17.3	9.5	31.9	27.0	46.0	19.0	Outside	
363.342	QP	36.8	17.3	10.3	32.0	32.4	46.0	13.6	Outside	
729.514	QP	32.8	22.7	12.5	32.0	36.0	46.0	10.0	Outside	
5150.000	PK	43.5	31.6	4.0	31.9	47.2	68.2	21.0	Bandedge	
10540.000	PK	46.3	39.2	-2.6	33.5	49.4	68.2	18.8	Outside	
15810.000	PK	44.9	38.4	-1.4	33.2	48.7	73.9	25.2	Inside	
36890.000	PK	45.3	41.2	-2.0	25.0	59.5	68.2	8.7	Outside	NS
5150.000	AV	34.4	31.6	4.0	31.9	38.1	53.9	15.8	Bandedge	
15810.000	AV	34.5	38.4	-1.4	33.2	38.3	53.9	15.6	Inside	
36890.000	AV	35.5	41.2	-2.0	25.0	49.7	-	-	Outside	NS

Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place Head Office EMC Lab. No.4 Anechoic Chamber
Report No. 29LE0211-HO-02
Date 10/14/2009 10/14/2009 10/15/2009
Temperature/ Humidity 23deg.C. / 42% 22deg.C. / 52% 22deg.C. / 51%
Engineer Tomotaka Sasagawa Takeshi Choda Takeshi Choda
Mode 11n-40 Tx 5310MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	5350.000	PK	58.6	31.9	4.0	31.9	62.6	68.2	5.6	Bandedge	
Hori	10620.000	PK	44.8	39.3	-2.6	33.5	48.0	73.9	25.9	Inside	
Hori	15930.000	PK	44.0	37.9	-1.4	33.2	47.3	73.9	26.6	Inside	
Hori	5350.000	AV	47.3	31.9	4.0	31.9	51.3	53.9	2.6	Bandedge	
Hori	10620.000	AV	34.9	39.3	-2.6	33.5	38.1	53.9	15.8	Inside	
Hori	15930.000	AV	34.9	37.9	-1.4	33.2	38.2	53.9	15.7	Inside	
Vert	5350.000	PK	57.8	31.9	4.0	31.9	61.8	68.2	6.4	Bandedge	
Vert	10620.000	PK	45.6	39.3	-2.6	33.5	48.8	73.9	25.1	Inside	
Vert	15930.000	PK	44.5	37.9	-1.4	33.2	47.8	73.9	26.1	Inside	
Vert	5350.000	AV	46.8	31.9	4.0	31.9	50.8	53.9	3.1	Bandedge	
Vert	10620.000	AV	35.2	39.3	-2.6	33.5	38.4	53.9	15.5	Inside	
Vert	15930.000	AV	34.6	37.9	-1.4	33.2	37.9	53.9	16.0	Inside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

Distance factor: 10GHz-26.5GHz $20\log(3.0m/1.0m)=9.5dB$

26.5GHz-40GHz $20\log(3.0m/0.5m)=15.6dB$

* The noise level below 1GHz for this mode was equivalence noise level with 11n-40 Tx 5270MHz and it was verified to be satisfied section 15.209 limit.

Radiated Spurious Emission

Test place : Head Office EMC Lab. No.4 Anechoic Chamber
Report No. : 29LE0211-HO-02
Date : 10/14/2009 10/15/2009 10/15/2009
Temperature/ Humidity : 23deg.C. / 42% 22deg.C. / 52% 22deg.C. / 51%
Engineer : Tomotaka Sasagawa Tomotaka Sasagawa Takeshi Choda
Mode : 11a Rx 5300MHz

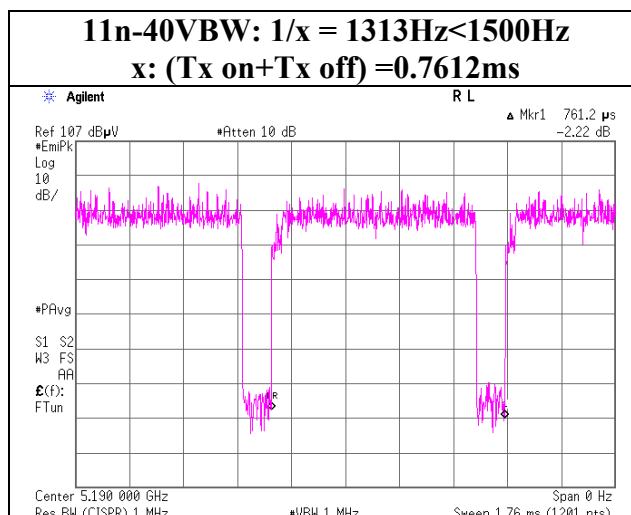
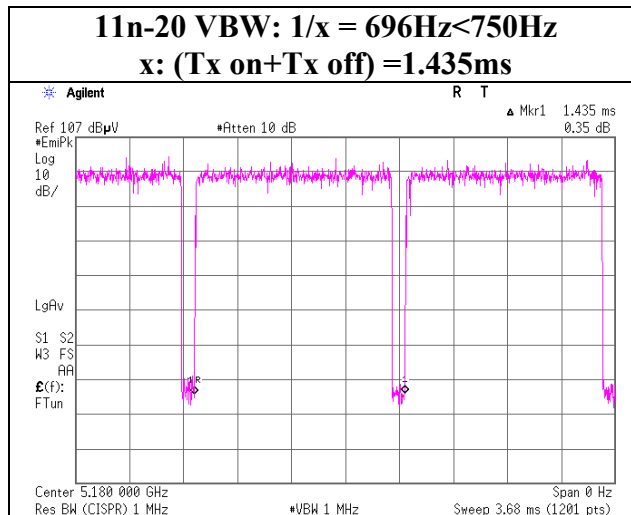
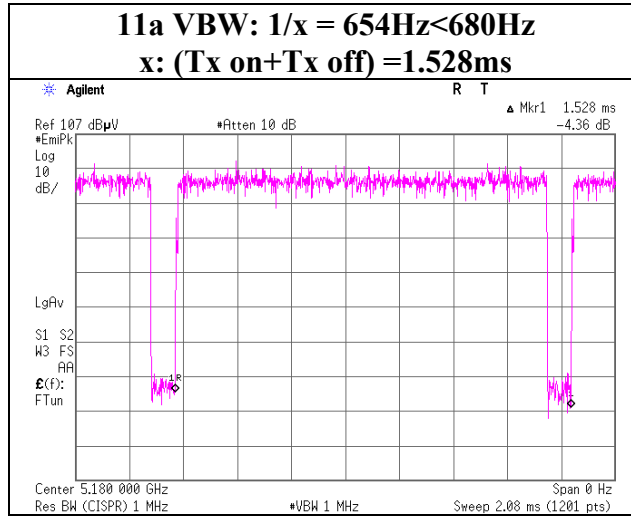
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	80.312	QP	23.9	6.3	7.9	32.0	6.1	40.0	33.9	Outside	
Hori	127.948	QP	32.8	13.2	8.5	32.1	22.4	43.5	21.1	Inside	
Hori	196.042	QP	36.9	16.4	9.1	31.9	30.5	43.5	13.0	Outside	
Hori	240.985	QP	30.9	17.4	9.5	31.9	25.9	46.0	20.1	Inside	
Hori	364.005	QP	37.9	17.3	10.3	32.0	33.5	46.0	12.5	Outside	
Hori	729.002	QP	32.9	22.7	12.5	32.0	36.1	46.0	9.9	Outside	
Hori	5300.000	PK	41.2	31.8	4.0	31.9	45.1	68.2	23.1	Outside	
Hori	10600.000	PK	42.0	39.3	-4.3	33.5	43.5	73.9	30.4	Inside	NS
Hori	15900.000	PK	43.4	38.1	-3.0	33.2	45.3	73.9	28.6	Inside	NS
Hori	5300.000	AV	30.5	31.8	4.0	31.9	34.4	53.9	19.5	Outside	
Hori	10600.000	AV	33.2	39.3	-4.3	33.5	34.7	53.9	19.2	Inside	NS
Hori	15900.000	AV	32.1	38.1	-3.0	33.2	34.0	53.9	19.9	Inside	NS
Vert	83.412	QP	45.2	6.8	8.0	32.0	28.0	40.0	12.0	Outside	
Vert	127.851	QP	37.8	13.2	8.5	32.1	27.4	43.5	16.1	Inside	
Vert	196.002	QP	32.9	16.4	9.1	31.9	26.5	43.5	17.0	Outside	
Vert	240.005	QP	32.1	17.4	9.5	31.9	27.1	46.0	18.9	Inside	
Vert	364.004	QP	38.0	17.3	10.3	32.0	33.6	46.0	12.4	Outside	
Vert	729.004	QP	32.0	22.7	12.5	32.0	35.2	46.0	10.8	Outside	
Vert	5300.000	PK	41.0	31.8	4.0	31.9	44.9	68.2	23.3	Outside	
Vert	10600.000	PK	42.5	39.3	-4.3	33.5	44.0	73.9	29.9	Inside	NS
Vert	15900.000	PK	43.7	38.1	-3.0	33.2	45.6	73.9	28.3	Inside	NS
Vert	5300.000	AV	30.9	31.8	4.0	31.9	34.8	53.9	19.1	Outside	
Vert	10600.000	AV	32.8	39.3	-4.3	33.5	34.3	53.9	19.6	Inside	NS
Vert	15900.000	AV	33.7	38.1	-3.0	33.2	35.6	53.9	18.3	Inside	NS

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

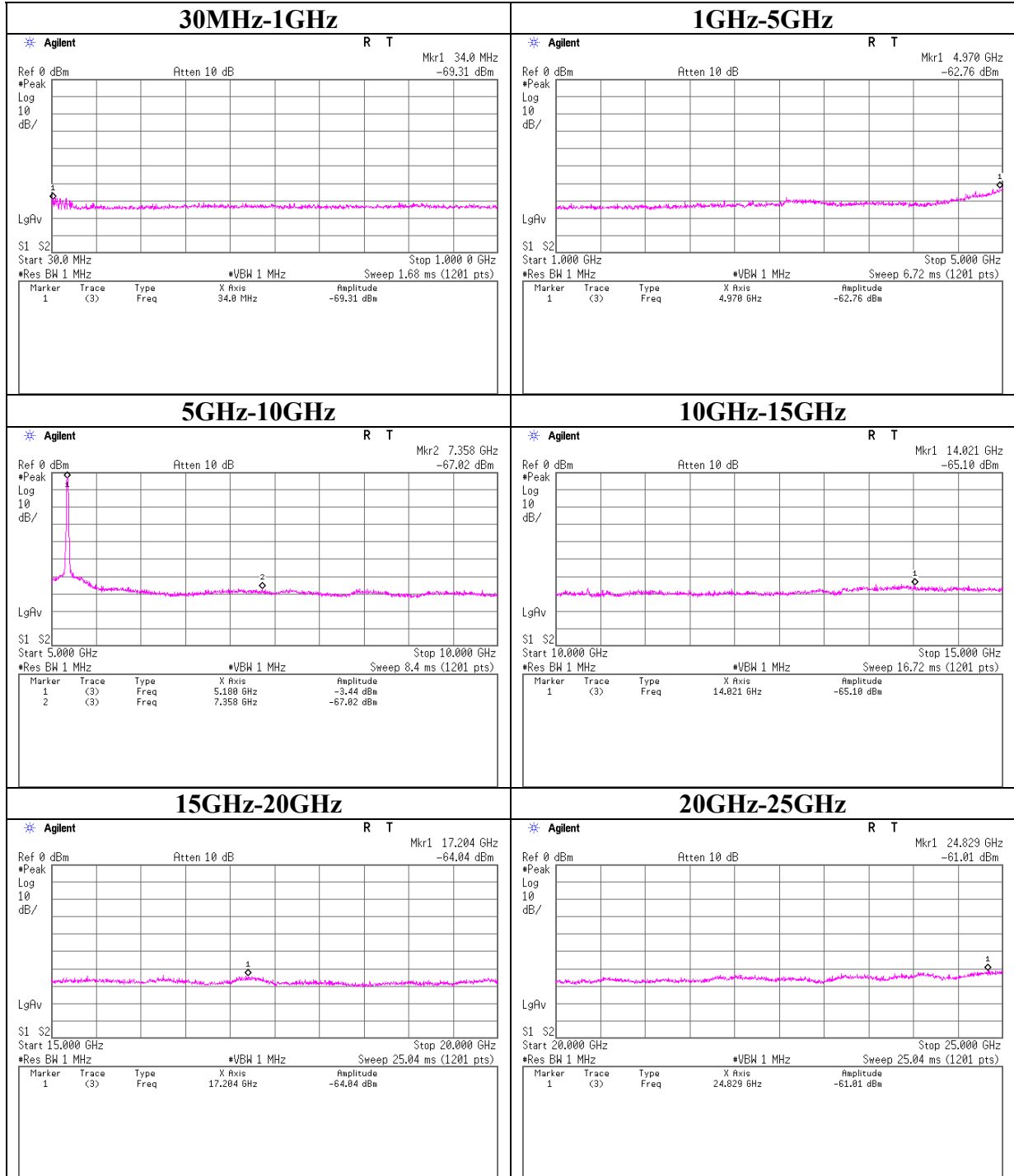
Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
 26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

VBW (AV) Calculation



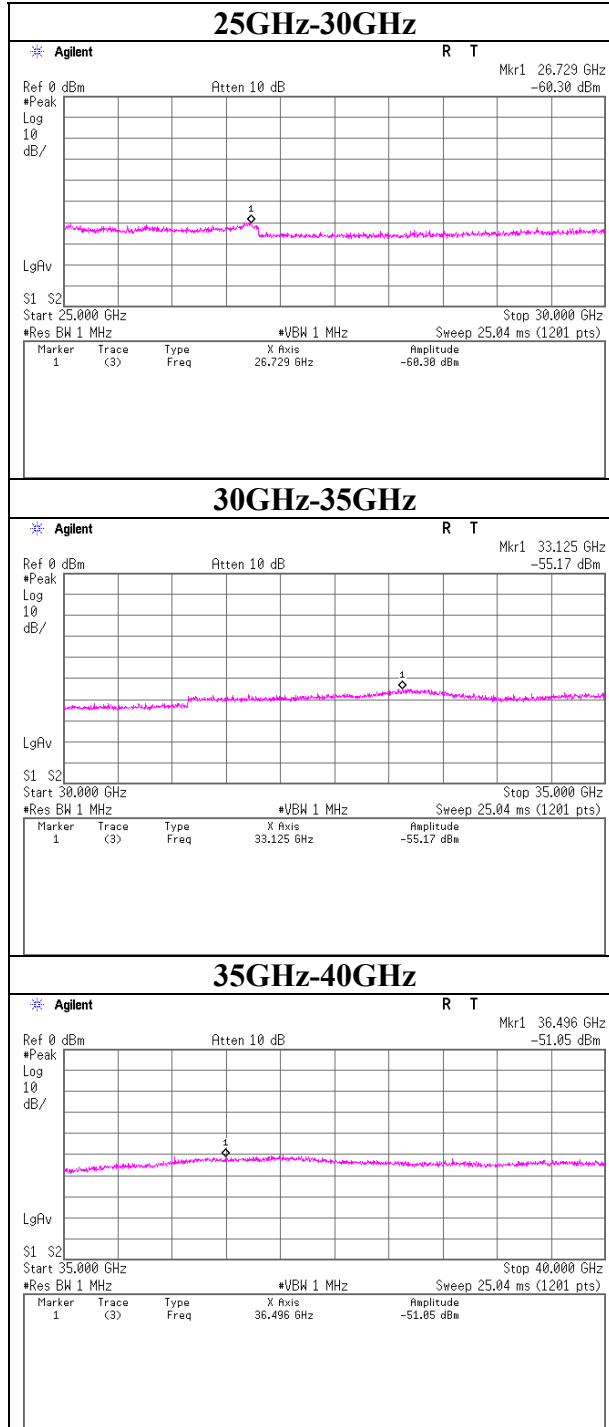
Conducted Spurious Emission

11a Tx 5180MHz Antenna 0



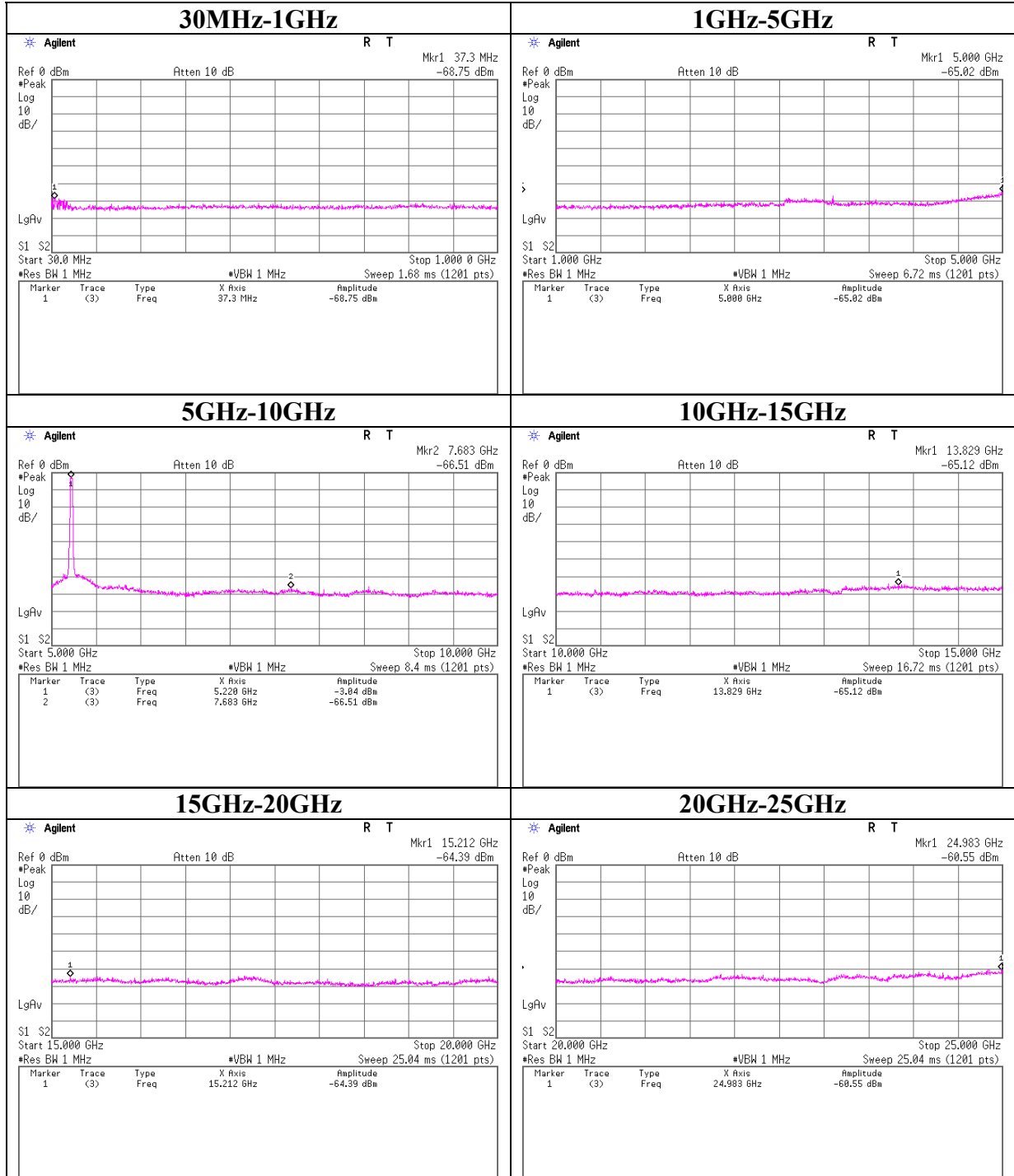
Conducted Spurious Emission

11a Tx 5180MHz Antenna 0



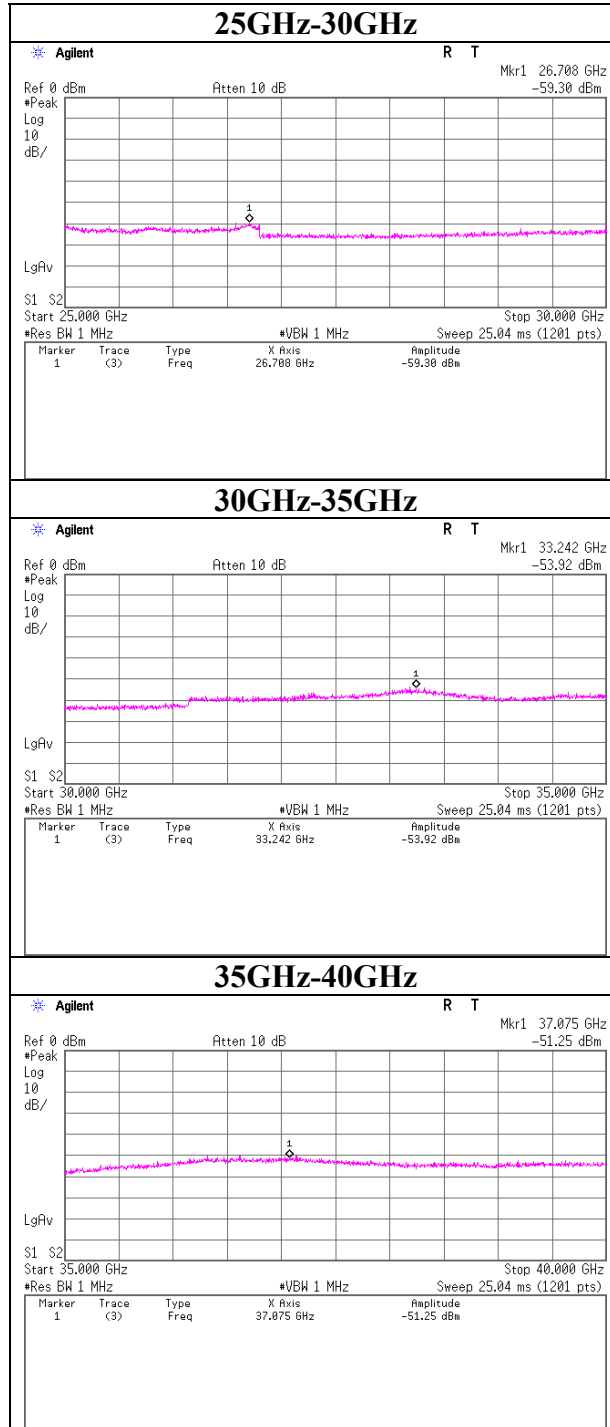
Conducted Spurious Emission

11a Tx 5220MHz Antenna 0



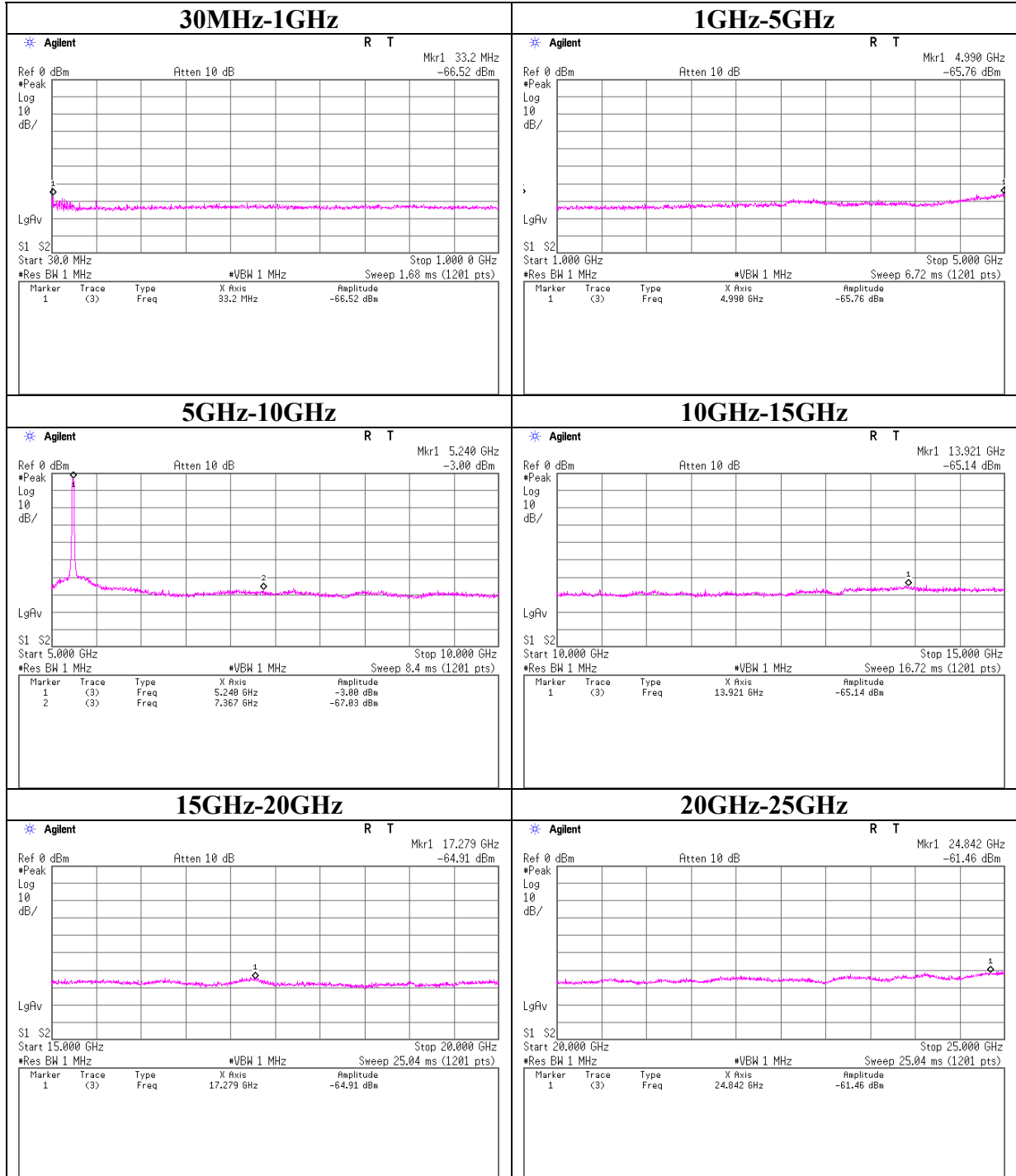
Conducted Spurious Emission

11a Tx 5220MHz Antenna 0



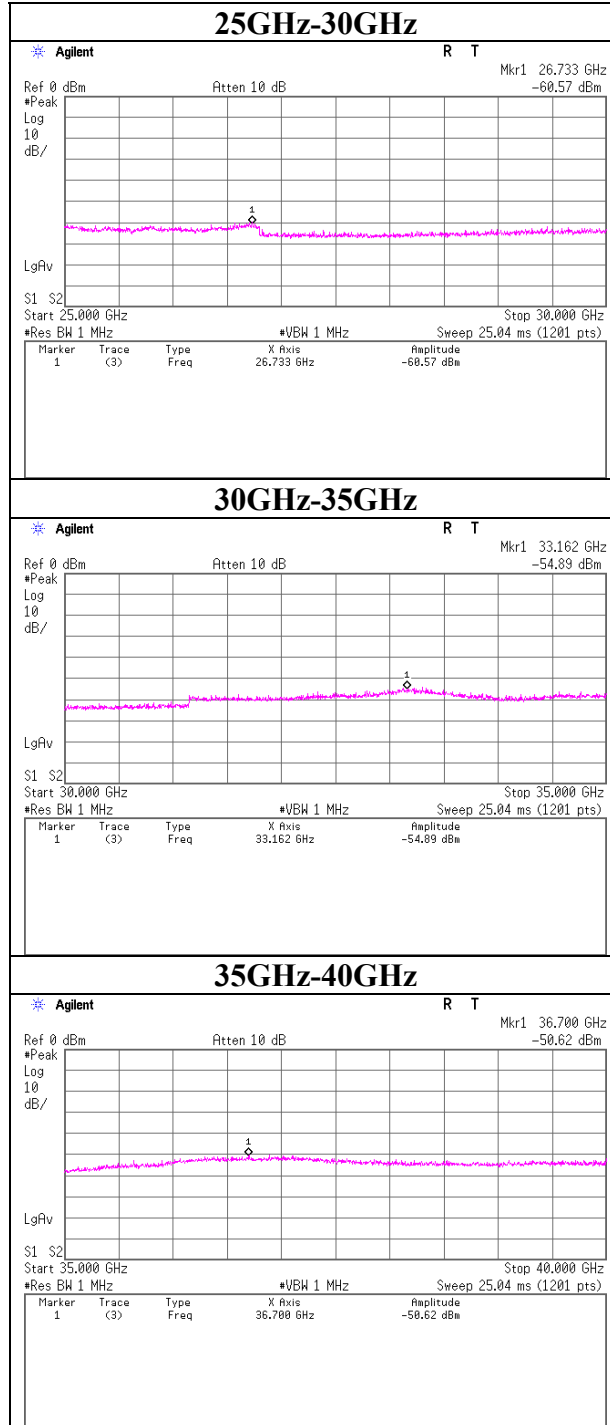
Conducted Spurious Emission

11a Tx 5240MHz Antenna 0



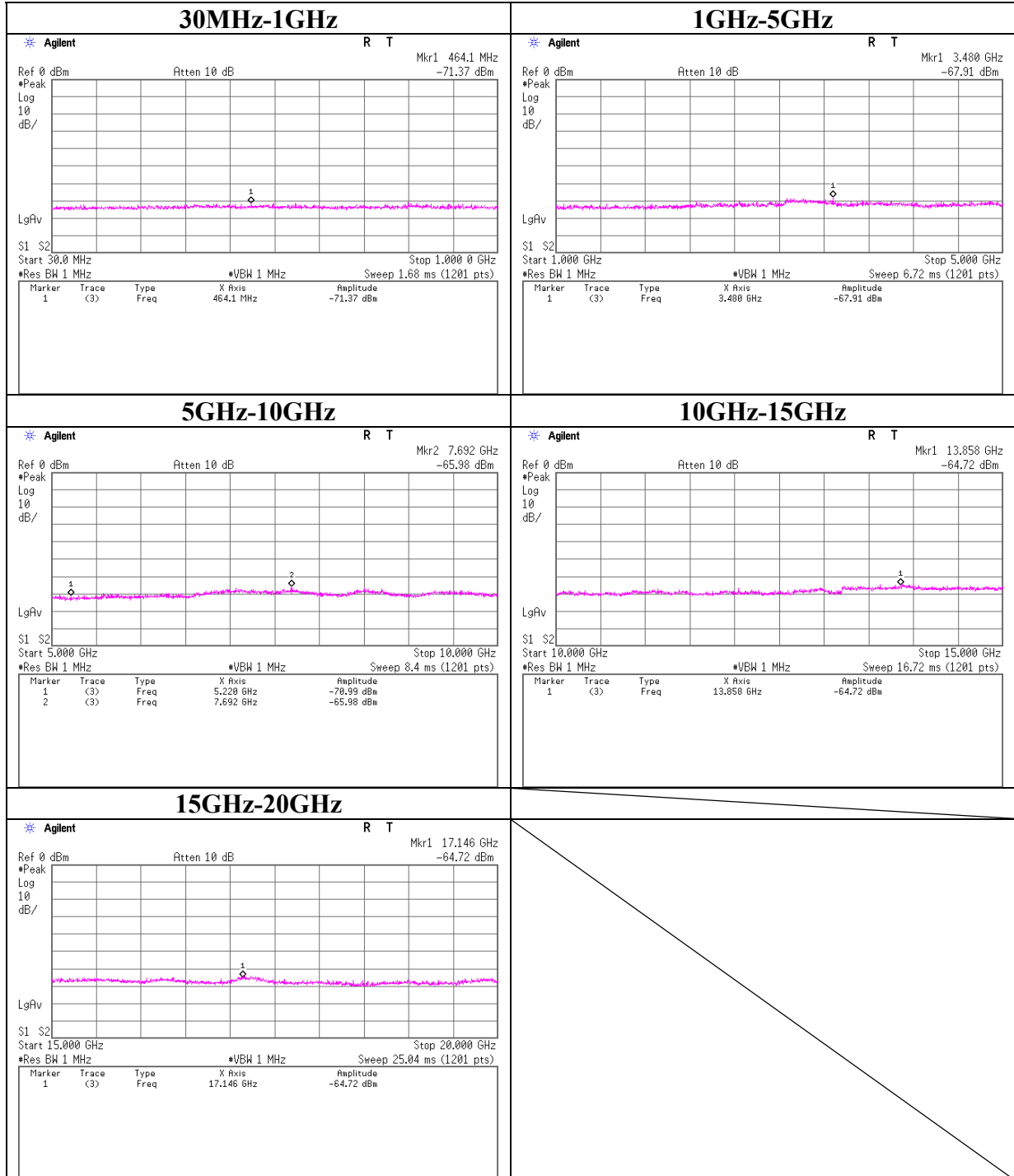
Conducted Spurious Emission

11a Tx 5240MHz Antenna 0



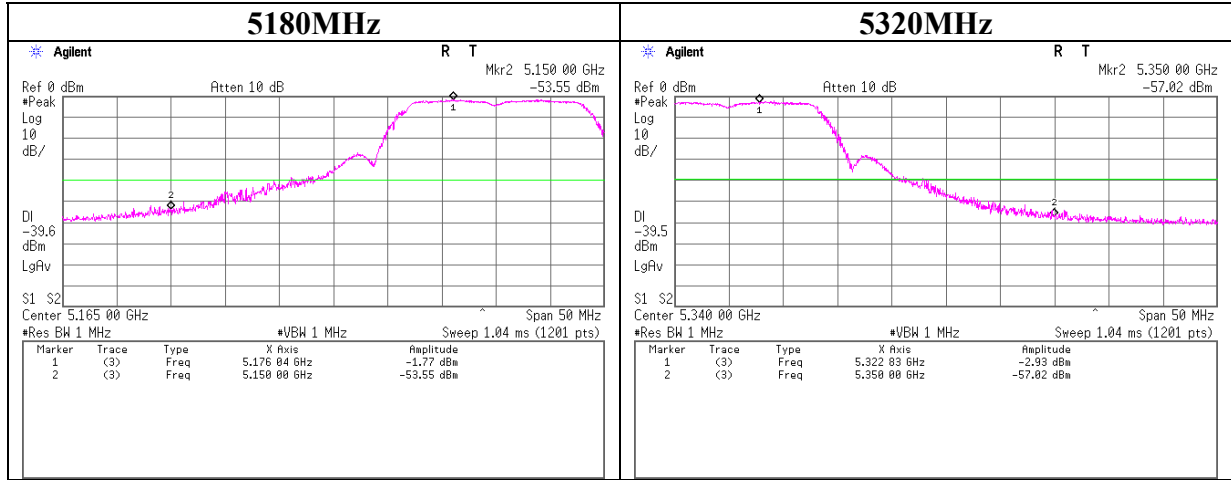
Conducted Spurious Emission

11a Rx 5220MHz Antenna 0

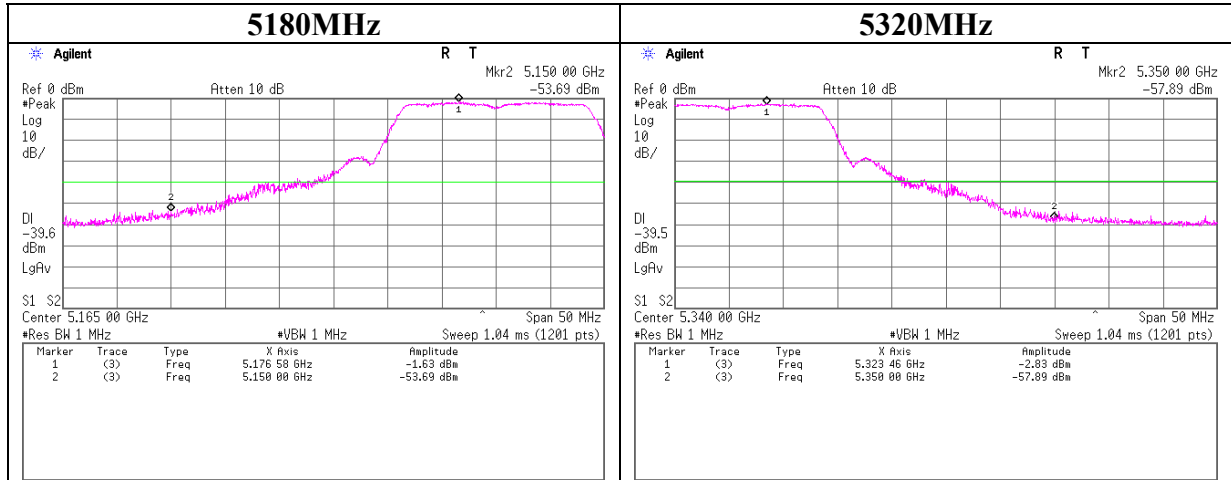


Conducted emission Band Edge compliance

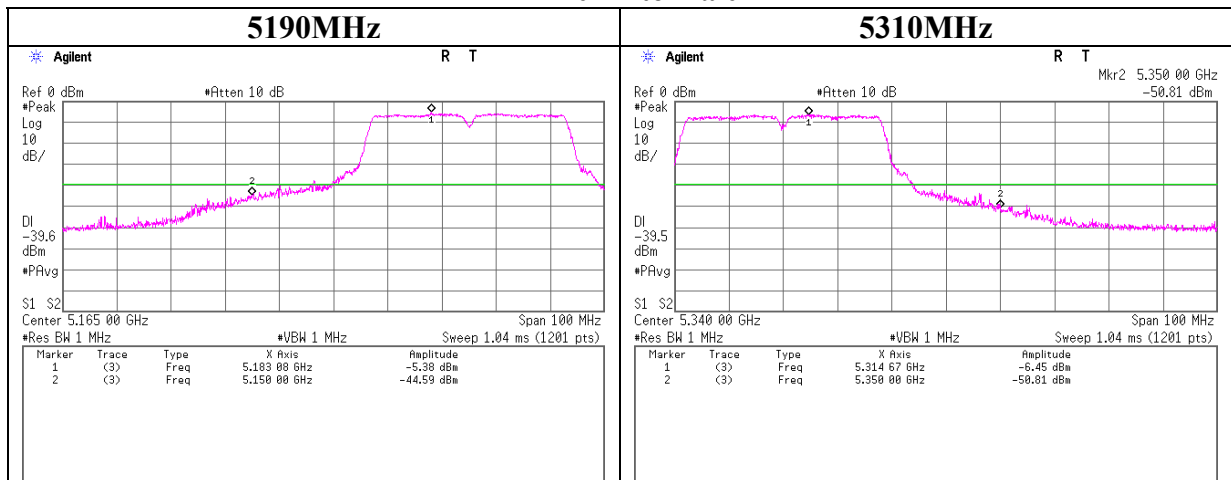
11a Antenna 0



11n-20 Antenna 0



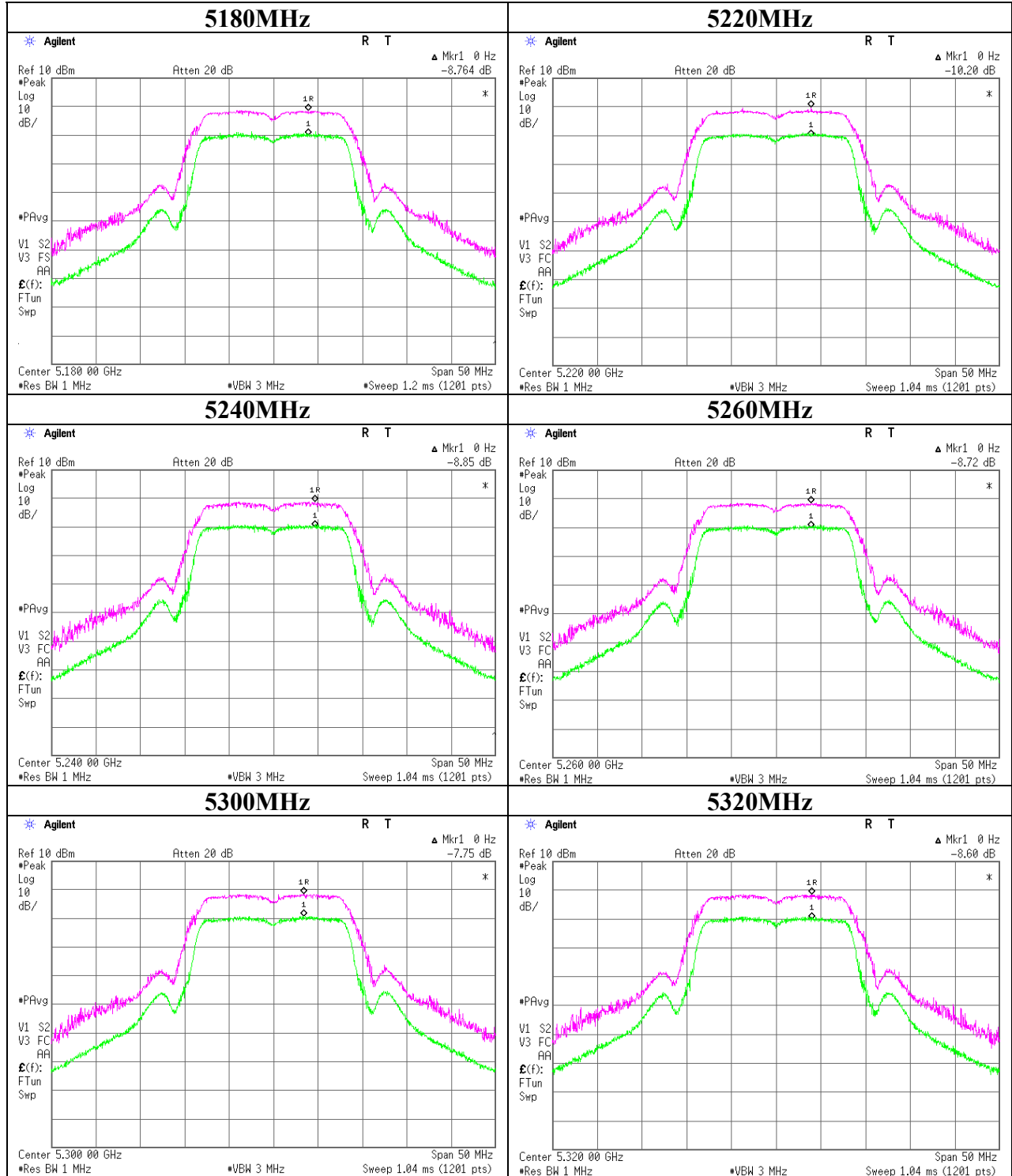
11n-40 Antenna 0



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

Peak Excursion Ratio

11a Antenna 0



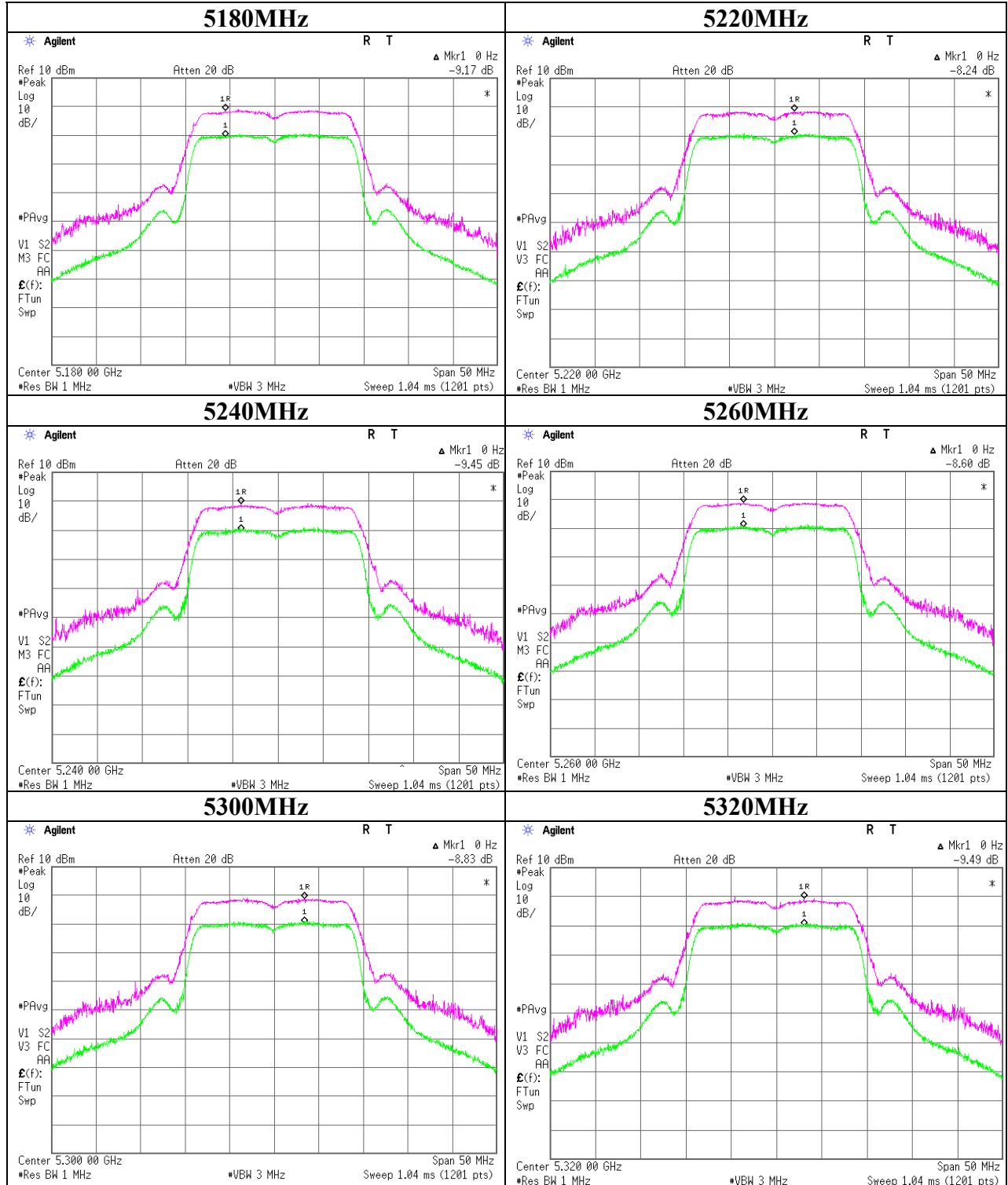
Peak Excursion Ratio

Test place Head Office EMC Lab. No.4 Measurement room
Report No. 29LE0211-HO-02
Date 10/22/2009
Temperature/ Humidity 25deg.C. / 41%
Engineer Takumi Shimada
Mode 11n-20 Tx

Frequency [MHz]	Peak Power Excursion [dB]	Limit [dB]
5180	9.17	13.00
5220	8.24	13.00
5240	9.45	13.00
5260	8.60	13.00
5300	8.83	13.00
5320	9.49	13.00

Peak Excursion Ratio

11n-20 Antenna 0



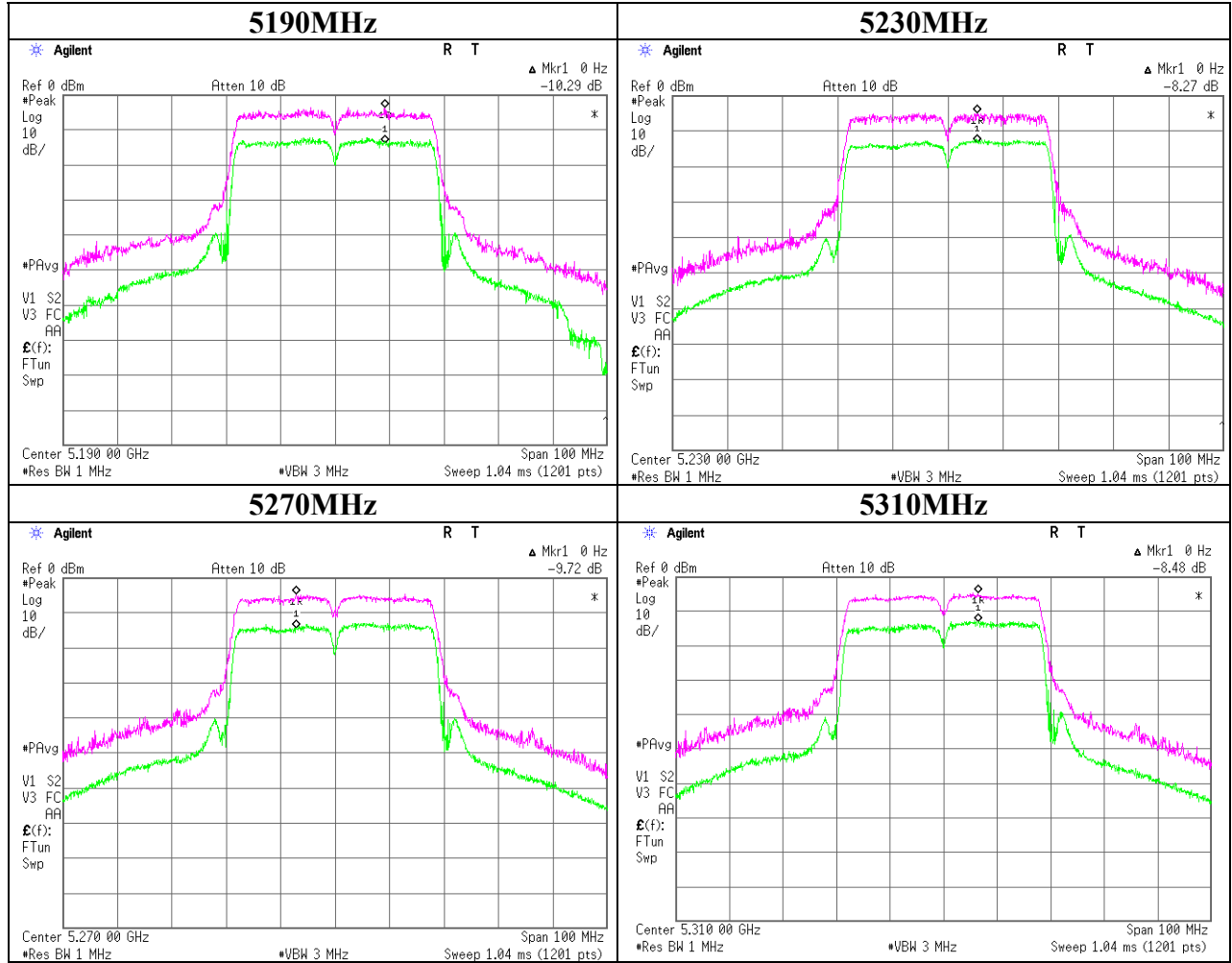
Peak Excursion Ratio

Test place Head Office EMC Lab. No.4 Measurement room
Report No. 29LE0211-HO-02
Date 10/22/2009
Temperature/ Humidity 25deg.C. / 41%
Engineer Takumi Shimada
Mode 11n-40 Tx

Frequency [MHz]	Peak Power Excursion [dB]	Limit [dB]
5190	10.29	13.00
5230	8.27	13.00
5270	9.72	13.00
5310	8.48	13.00

Peak Excursion Ratio

11n-40 Antenna 0



APPENDIX 3: Test instruments

EMI test equipment [1/2]

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-04	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	CE/RE	2009/02/03 * 12
MOS-15	Thermo-Hygrometer	Custom	CTH-180	-	CE/RE	2009/02/06 * 12
MJM-07	Measure	PROMART	SEN1955	-	CE/RE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	CE/RE	-
MSA-05	Spectrum Analyzer	Advantest	R3273	160400285	CE/RE	2009/06/29 * 12
MTR-07	Test Receiver	Rohde & Schwarz	ESCI	100635	CE/RE	2008/10/03 * 12
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	8127363	CE(EUT)	2009/02/18 * 12
MCC-113	Coaxial cable	Fujikura/Suhner/TSJ	5D-2W(10m)/SFM141(5m)/421-010(1m)/sucoform141-PE(1m)/RFM-E121(Switcher)	-/04178	CE	2009/07/01 * 12
MOS-23	Thermo-Hygrometer	Custom	CTH-201	0004	AT	2008/12/08 * 12
MSA-03	Spectrum Analyzer	Agilent	E4448A	MY44020357	AT	2008/11/07 * 12
MAT-23	Attenuator(10dB) DC-18GHz	Orient Microwave	BX10-0476-00	-	AT	2009/03/24 * 12
MPM-08	Power Meter	Anritsu	ML2495A	6K00003338	AT	2009/09/09 * 12
MPM-11	Dual Power Meter	Agilent	E4419B	MY45102060	AT	2009/06/18 * 12
MPM-09	Power Meter	Anritsu	ML2495A	6K00003348	AT	2009/09/09 * 12
MPSE-12	Power sensor	Anritsu	MA2411B	011598	AT	2009/09/09 * 12
MBA-05	Biconical Antenna	Schwarzbeck	BBA9106	1302	RE	2009/01/10 * 12
MLA-08	Logperiodic Antenna	Schwarzbeck	UKLP9140-A	N/A	RE	2009/01/10 * 12
MCC-50	Coaxial cable	UL Japan	-	-	RE	2009/03/18 * 12
MAT-31	Attenuator(6dB)	TME	UFA-01	-	RE	2009/03/03 * 12
MPA-14	Pre Amplifier	SONOMA INSTRUMENT	310	260833	RE	2009/03/18 * 12
MHA-21	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	9120D-557	RE	2009/08/10 * 12
MCC-57	Microwave Cable 1G-26.5GHz 6m	Suhner	SUCOFLEX104	246769(1m) / 292411(5m)	RE	2008/11/05 * 12
MPA-12	MicroWave System Amplifier	Agilent	83017A	MY39500780	RE	2009/03/19 * 12
MHA-17	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170307	RE	2009/06/18 * 12
MCC-79	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	278923/4	RE	2008/12/17 * 12
MHF-23	High Pass Filter 7-20GHz	TOKIMEC	TF37NCCC	603	RE	2009/01/23 * 12

UL Japan, Inc.

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Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

EMI test equipment [2/2]

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-03	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE	2009/02/02 * 12
MOS-13	Thermo-Hygrometer	Custom	CTH-180	-	RE	2009/02/06 * 12
MJM-06	Measure	PROMART	SEN1955	-	RE	-
MHA-16	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170306	RE	2009/04/30 * 12
MCC-54	Microwave Cable 1G-40GHz	Suhner	SUCOFLEX101	2873(1m) / 2876(5m)	RE	2009/03/02 * 12
MPA-03	Microwave System Power Amplifier	Agilent	83050A	3950M00205	RE	2009/06/30 * 12
MSA-04	Spectrum Analyzer	Agilent	E4448A	US44300523	RE	2009/08/25 * 12
MSA-09	Spectrum Analyzer	Advantest	R3273	95090115	RE	2008/12/24 * 12
MTR-08	Test Receiver	Rohde & Schwarz	ESCI	100767	RE	2009/06/30 * 12
MBA-03	Biconical Antenna	Schwarzbeck	BBA9106	1915	RE	2009/01/19 * 12
MLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	174	RE	2009/01/10 * 12
MCC-51	Coaxial cable	UL Japan	-	-	RE	2009/07/02 * 12
MAT-09	Attenuator(6dB)	Weinschel Corp	2	BK7973	RE	2008/11/14 * 12
MPA-13	Pre Amplifier	SONOMA INSTRUMENT	310	260834	RE	2009/03/18 * 12
MHA-20	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	258	RE	2009/04/30 * 12
MCC-56	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	174410(1m) / 284655(5m)	RE	2009/01/07 * 12
MPA-11	MicroWave System Amplifier	Agilent	83017A	MY39500779	RE	2009/03/19 * 12

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 Conducted test**