

DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.1 Shielded Room
Date : 2012/06/26

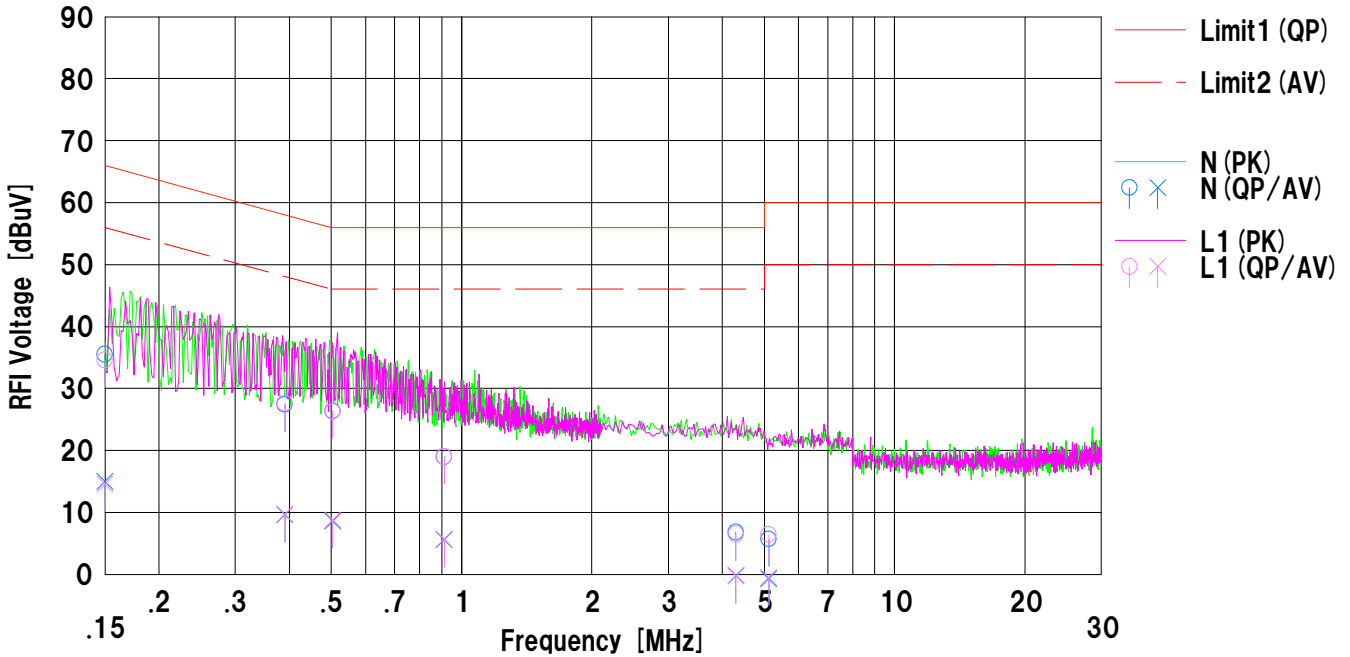
Company : SMK Corporation
Kind of EUT : WLAN Complete Module
Model No. : VRL4149-0601F
Serial No. : 1

Mode : Tx 11g 2437MHz
Report No. : 32FE0117-SH-02-A
Power : DC3.3V/DC1.8V
Temp./Humi. : 25deg.C / 48%RH

Remarks : DC power supply input: AC120V/60Hz, DC3.3V line,

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

Engineer : Kenichi Adachi



No.	Freq. [MHz]	Reading		C.Fac [dB]	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]		<QP> [dBuV]	<AV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.15000	22.9	2.4	12.6	35.5	15.0	66.0	56.0	30.5	41.0	N	
2	0.39072	14.8	-3.0	12.6	27.4	9.6	58.0	48.0	30.6	38.4	N	
3	0.50369	13.8	-4.0	12.6	26.4	8.6	56.0	46.0	29.6	37.4	N	
4	0.91165	6.4	-7.0	12.6	19.0	5.6	56.0	46.0	37.0	40.4	N	
5	4.30298	-6.0	-13.0	12.8	6.8	-0.2	56.0	46.0	49.2	46.2	N	
6	5.12451	-7.2	-13.6	12.9	5.7	-0.7	60.0	50.0	54.3	50.7	N	
7	0.15000	22.0	2.0	12.6	34.6	14.6	66.0	56.0	31.4	41.4	L1	
8	0.39072	15.0	-2.9	12.6	27.6	9.7	58.0	48.0	30.4	38.3	L1	
9	0.50369	13.7	-3.8	12.6	26.3	8.8	56.0	46.0	29.7	37.2	L1	
10	0.91165	6.4	-6.9	12.6	19.0	5.7	56.0	46.0	37.0	40.3	L1	
11	4.30298	-6.3	-13.1	12.8	6.5	-0.3	56.0	46.0	49.5	46.3	L1	
12	5.12451	-6.5	-13.4	12.9	6.4	-0.5	60.0	50.0	53.6	50.5	L1	

Calculation: Result [dBuV] = Reading [dBuV] + C.Fac (LISN+Cable+ATT) [dB]
LISN: SLS-01

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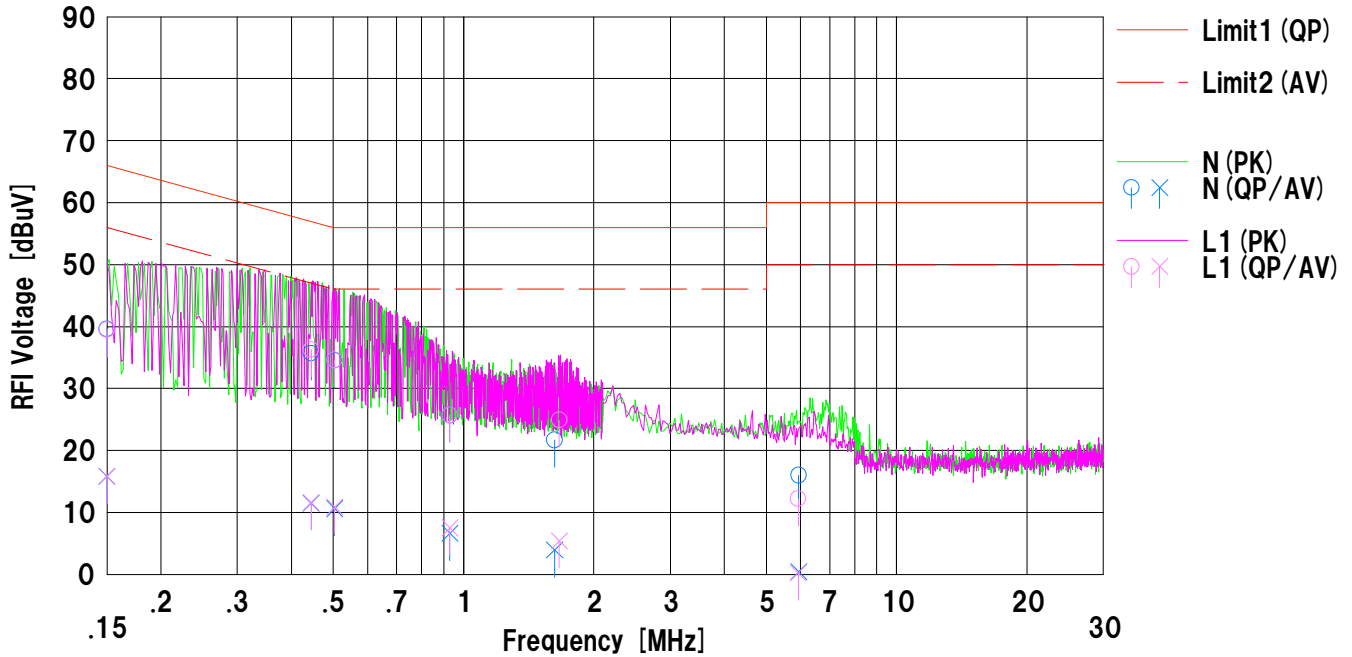
Company : SMK Corporation
Kind of EUT : WLAN Complete Module
Model No. : VRL4149-0601F
Serial No. : 1

Mode : Tx 11g 2437MHz
Report No. : 32FE0117-SH-02-A
Power : DC3.3V/DC1.8V
Temp./Humi. : 25deg.C / 48%RH

Remarks : DC power supply input: AC120V/60Hz, DC1.8V line,

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

Engineer : Kenichi Adachi



No.	Freq. [MHz]	Reading		C.Fac [dB]	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]		<QP> [dBuV]	<AV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.15000	27.0	3.2	12.6	39.6	15.8	66.0	56.0	26.4	40.2	N	
2	0.44469	23.1	-1.1	12.6	35.7	11.5	56.9	46.9	21.2	35.4	N	
3	0.50369	21.9	-2.0	12.6	34.5	10.6	56.0	46.0	21.5	35.4	N	
4	0.92934	13.1	-6.0	12.6	25.7	6.6	56.0	46.0	30.3	39.4	N	
5	1.62325	9.0	-8.8	12.7	21.7	3.9	56.0	46.0	34.3	42.1	N	
6	5.94158	3.1	-12.5	12.9	16.0	0.4	60.0	50.0	44.0	49.6	N	
7	0.15000	26.9	3.2	12.6	39.5	15.8	66.0	56.0	26.5	40.2	L1	
8	0.44469	23.7	-1.0	12.6	36.3	11.6	56.9	46.9	20.6	35.3	L1	
9	0.50369	22.0	-1.7	12.6	34.6	10.9	56.0	46.0	21.4	35.1	L1	
10	0.92934	13.1	-5.1	12.6	25.7	7.5	56.0	46.0	30.3	38.5	L1	
11	1.66421	12.2	-7.3	12.7	24.9	5.4	56.0	46.0	31.1	40.6	L1	
12	5.92444	-0.7	-12.7	12.9	12.2	0.2	60.0	50.0	47.8	49.8	L1	

Calculation: Result [dBuV] = Reading [dBuV] + C.Fac (LISN+Cable+ATT) [dB]
LISN: SLS-01

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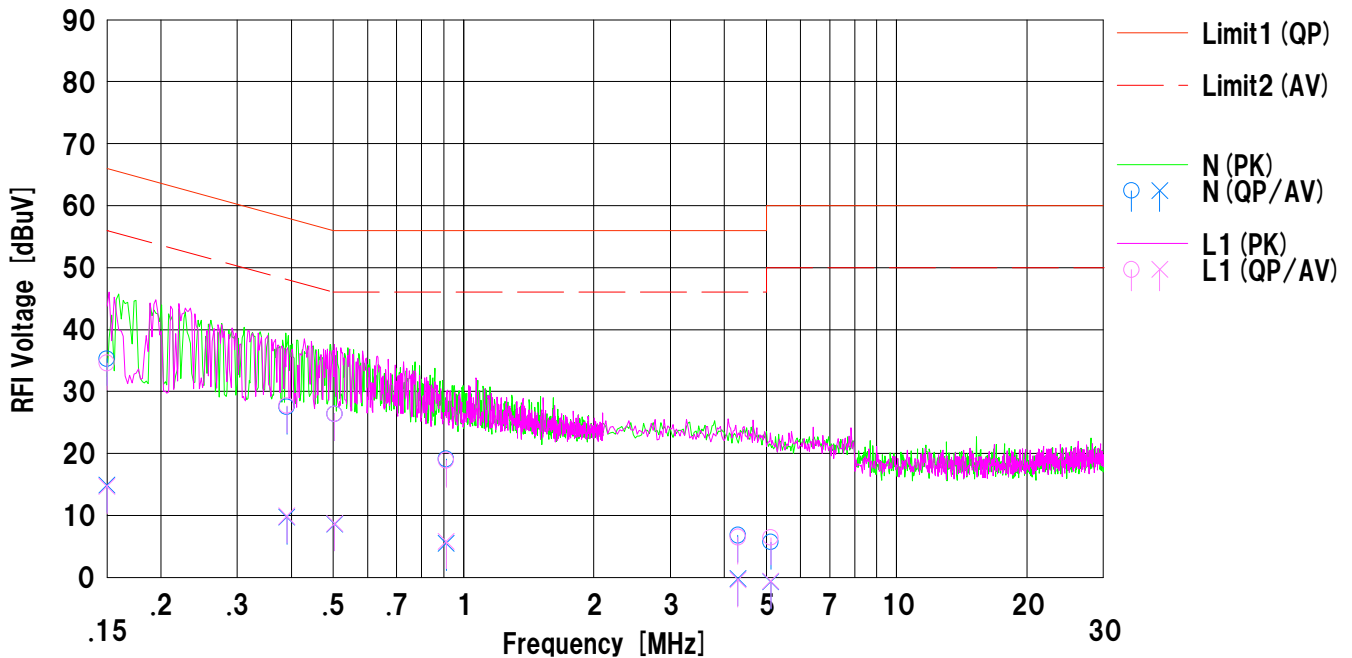
Company : SMK Corporation
Kind of EUT : WLAN Complete Module
Model No. : VRL4149-0601F
Serial No. : 1

Mode : Tx 11a 5745MHz
Report No. : 32FE0117-SH-02-A
Power : DC3.3V/DC1.8V
Temp./Humi. : 25deg.C / 48%RH

Remarks : DC power supply input: AC120V/60Hz, DC3.3V line,

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

Engineer : Kenichi Adachi



No.	Freq. [MHz]	Reading		C.Fac [dB]	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]		<QP> [dBuV]	<AV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.15000	22.7	2.3	12.6	35.3	14.9	66.0	56.0	30.7	41.1	N	
2	0.39075	14.9	-2.9	12.6	27.5	9.7	58.0	48.0	30.5	38.3	N	
3	0.50369	13.8	-4.0	12.6	26.4	8.6	56.0	46.0	29.6	37.4	N	
4	0.91141	6.5	-7.1	12.6	19.1	5.5	56.0	46.0	36.9	40.5	N	
5	4.30311	-6.0	-13.0	12.8	6.8	-0.2	56.0	46.0	49.2	46.2	N	
6	5.12489	-7.2	-13.6	12.9	5.7	-0.7	60.0	50.0	54.3	50.7	N	
7	0.15000	22.0	2.1	12.6	34.6	14.7	66.0	56.0	31.4	41.3	L1	
8	0.39075	15.1	-2.7	12.6	27.7	9.9	58.0	48.0	30.3	38.1	L1	
9	0.50369	13.8	-3.9	12.6	26.4	8.7	56.0	46.0	29.6	37.3	L1	
10	0.91141	6.3	-6.8	12.6	18.9	5.8	56.0	46.0	37.1	40.2	L1	
11	4.30311	-6.3	-13.2	12.8	6.5	-0.4	56.0	46.0	49.5	46.4	L1	
12	5.12489	-6.5	-13.5	12.9	6.4	-0.6	60.0	50.0	53.6	50.6	L1	

Calculation:Result [dBuV] =Reading [dBuV] +C.Fac (LISN+Cable+ATT) [dB]
LISN: SLS-01

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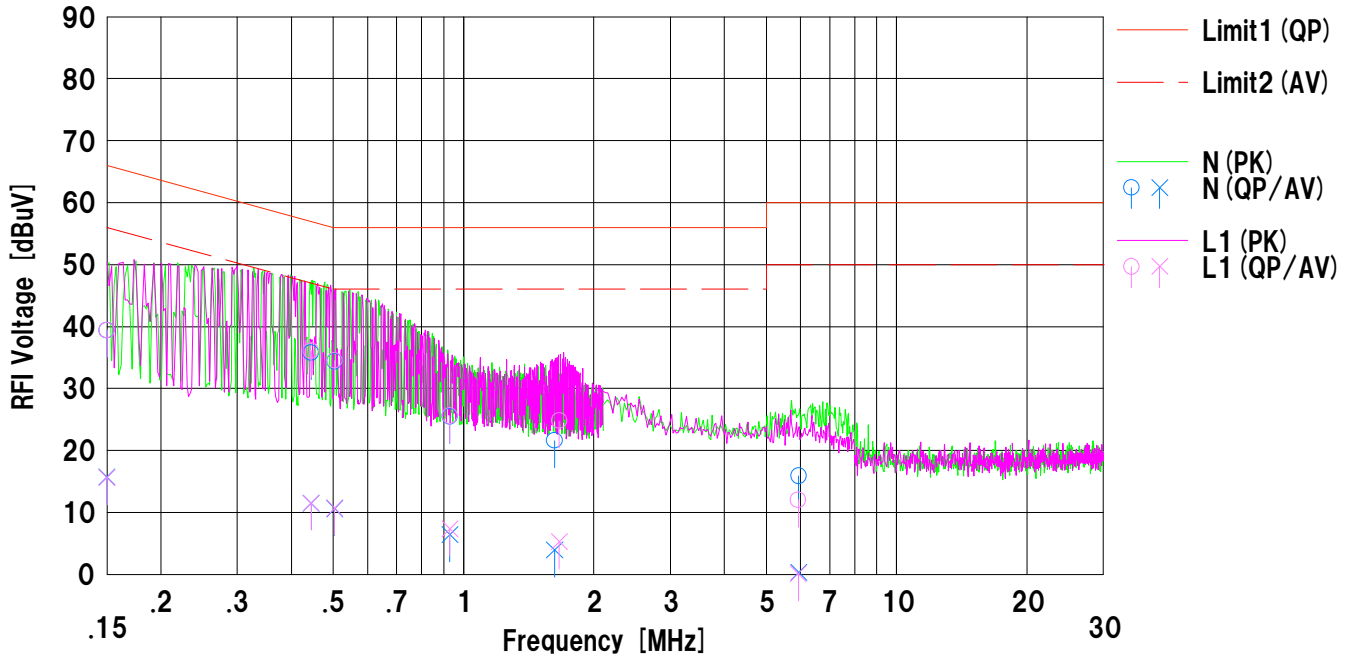
Company : SMK Corporation
Kind of EUT : WLAN Complete Module
Model No. : VRL4149-0601F
Serial No. : 1

Mode : Tx 11a 5745MHz
Report No. : 32FE0117-SH-02-A
Power : DC3.3V/DC1.8V
Temp./Humi. : 25deg.C / 48%RH

Remarks : DC power supply input: AC120V/60Hz, DC1.8V line,

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

Engineer : Kenichi Adachi



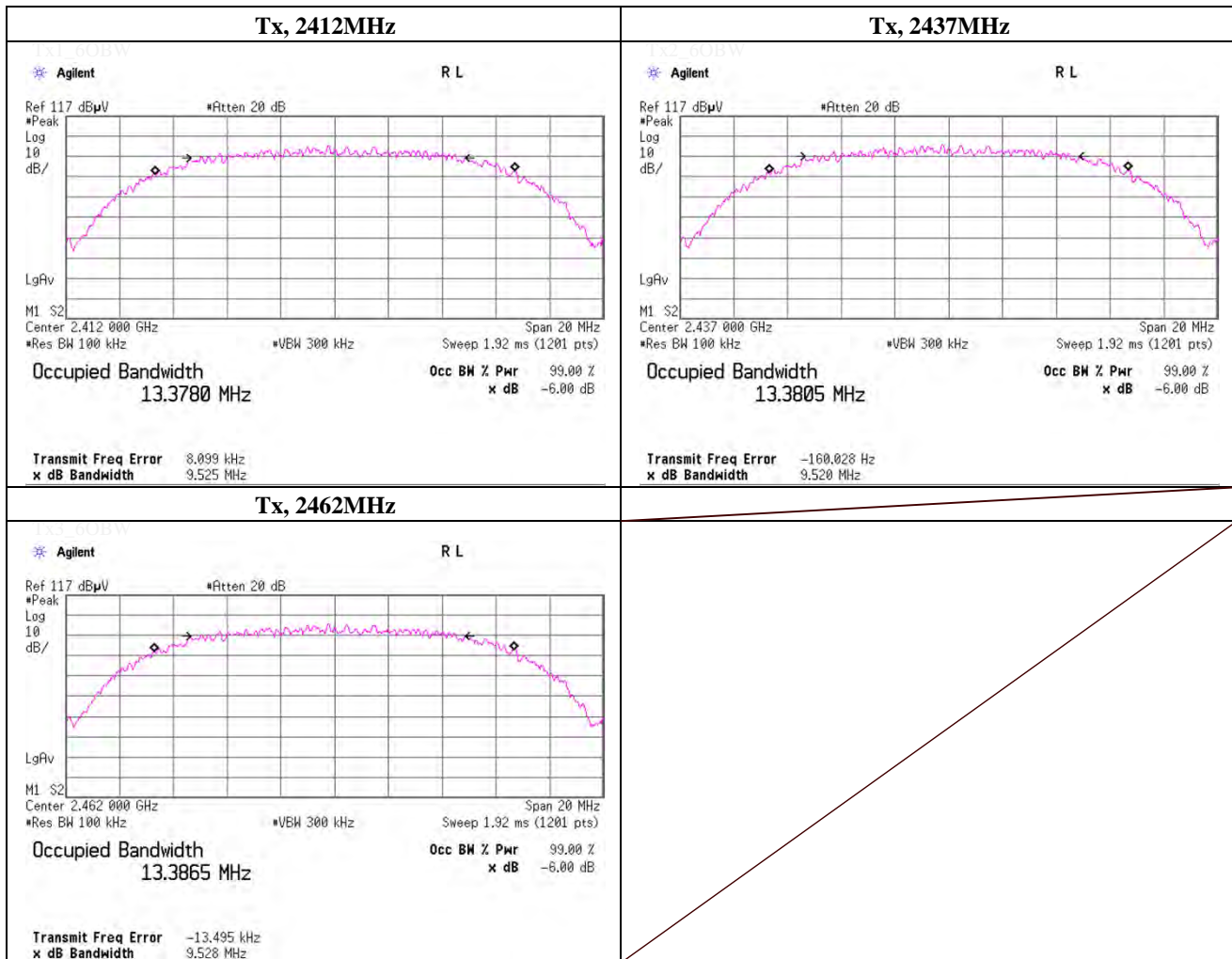
No.	Freq. [MHz]	Reading		C.Fac [dB]	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]		<QP> [dBuV]	<AV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.15000	26.8	3.1	12.6	39.4	15.7	66.0	56.0	26.6	40.3	N	
2	0.44476	23.2	-1.1	12.6	35.8	11.5	56.9	46.9	21.1	35.4	N	
3	0.50367	21.8	-2.0	12.6	34.4	10.6	56.0	46.0	21.6	35.4	N	
4	0.92931	12.9	-6.2	12.6	25.5	6.4	56.0	46.0	30.5	39.6	N	
5	1.62331	8.9	-8.8	12.7	21.6	3.9	56.0	46.0	34.4	42.1	N	
6	5.94211	3.0	-12.6	12.9	15.9	0.3	60.0	50.0	44.1	49.7	N	
7	0.15000	26.8	3.0	12.6	39.4	15.6	66.0	56.0	26.6	40.4	L1	
8	0.44476	23.5	-1.1	12.6	36.1	11.5	56.9	46.9	20.8	35.4	L1	
9	0.50367	21.9	-1.9	12.6	34.5	10.7	56.0	46.0	21.5	35.3	L1	
10	0.92931	13.0	-5.2	12.6	25.6	7.4	56.0	46.0	30.4	38.6	L1	
11	1.66441	12.1	-7.4	12.7	24.8	5.3	56.0	46.0	31.2	40.7	L1	
12	5.92444	-0.9	-12.8	12.9	12.0	0.1	60.0	50.0	48.0	49.9	L1	

Calculation:Result [dBuV] =Reading [dBuV] +C.Fac (LISN+Cable+ATT) [dB]
LISN: SLS-01

-6dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.6 Shielded Room
Date	June 15, 2012	
Temperature / Humidity	24deg.C , 47%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11b, PN9, worst data mode 11Mbps	

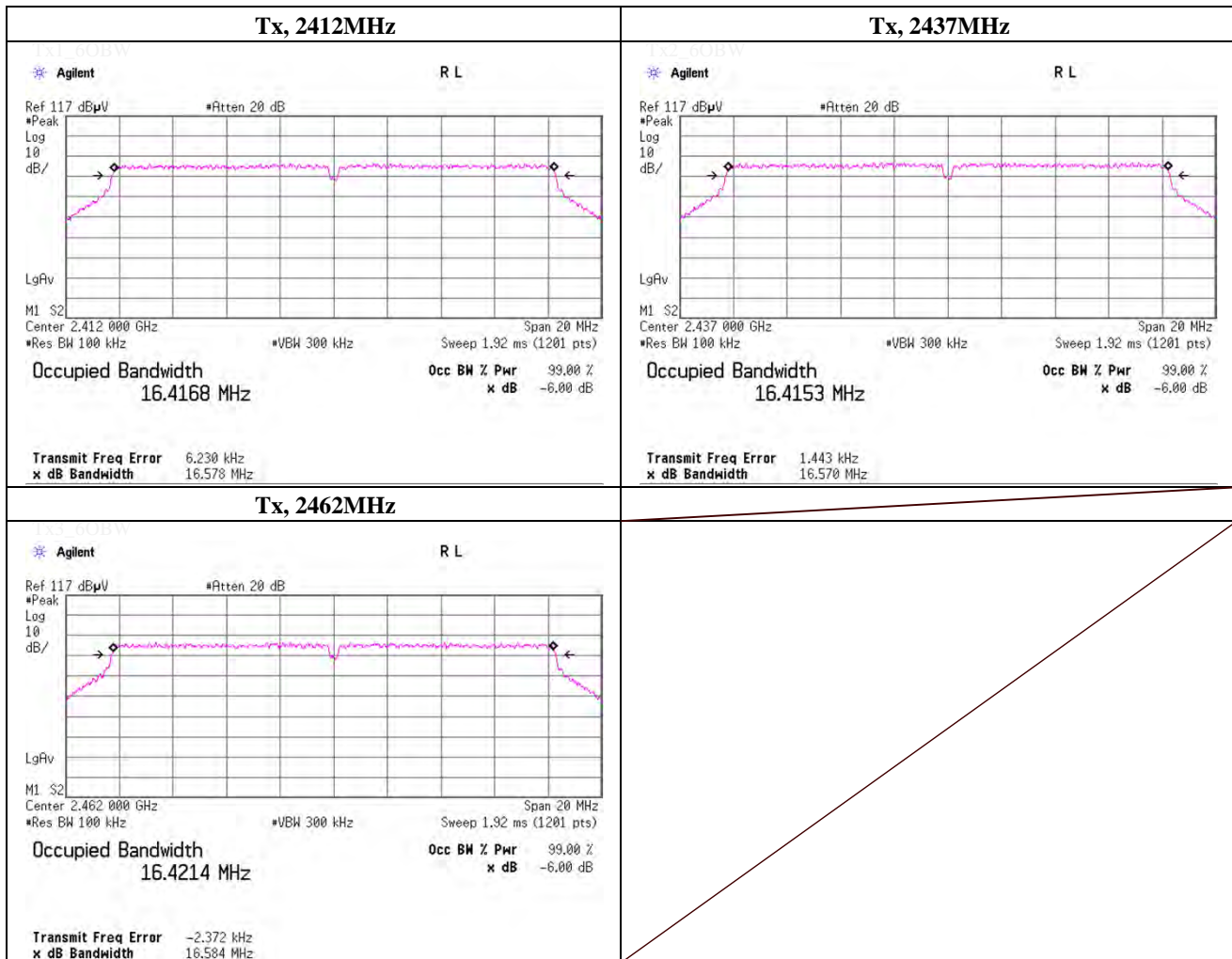
Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	9.525	> 0.500
2437.0000	9.520	> 0.500
2462.0000	9.528	> 0.500



-6dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.6 Shielded Room
Date	June 15, 2012	
Temperature / Humidity	24deg.C , 47%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11g, PN9, worst data mode 6Mbps	

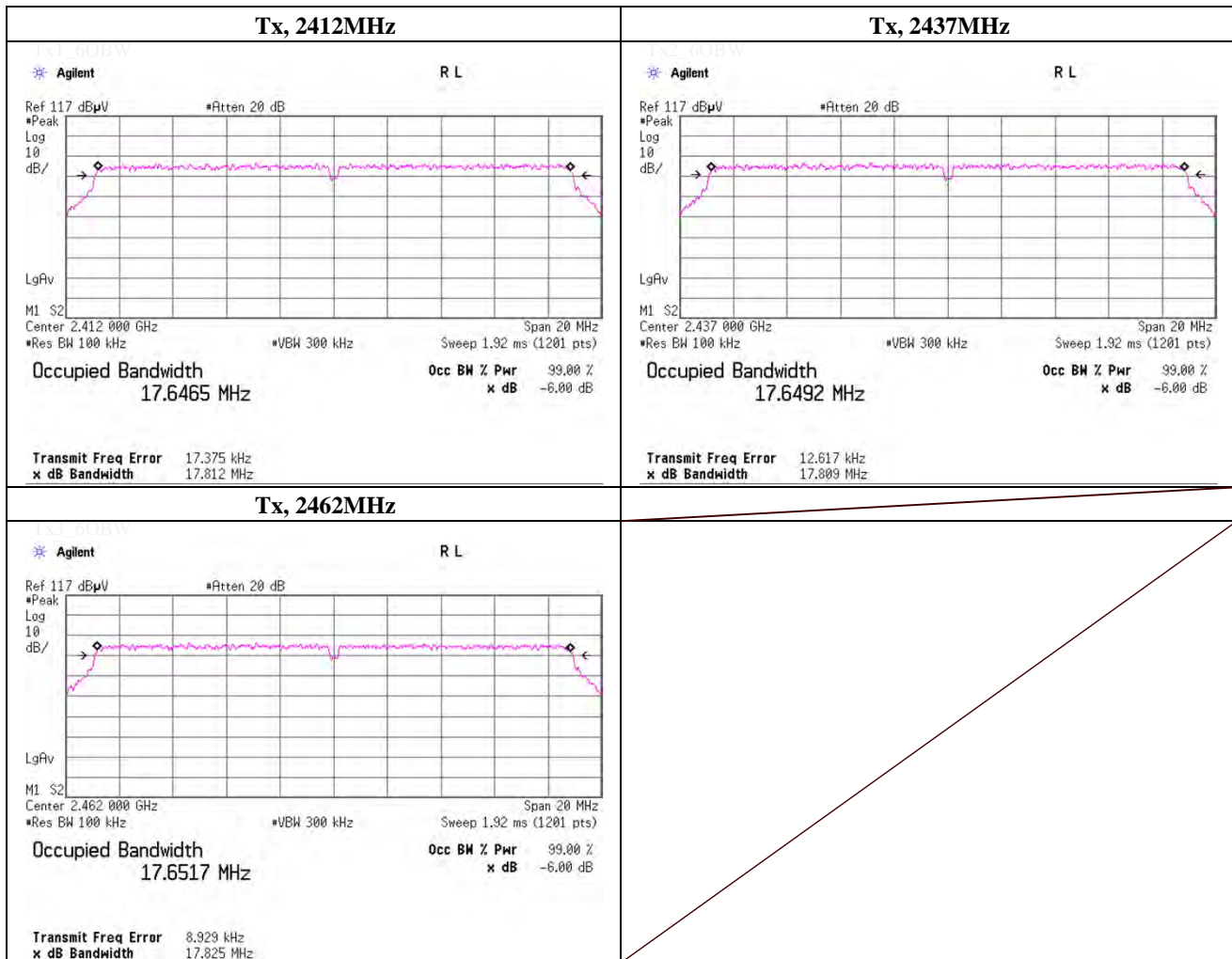
Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	16.578	> 0.500
2437.0000	16.570	> 0.500
2462.0000	16.584	> 0.500



-6dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.6 Shielded Room
Date	June 15, 2012	
Temperature / Humidity	24deg.C , 47%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11n (HT20), PN9, worst data mode 3(MCS)	

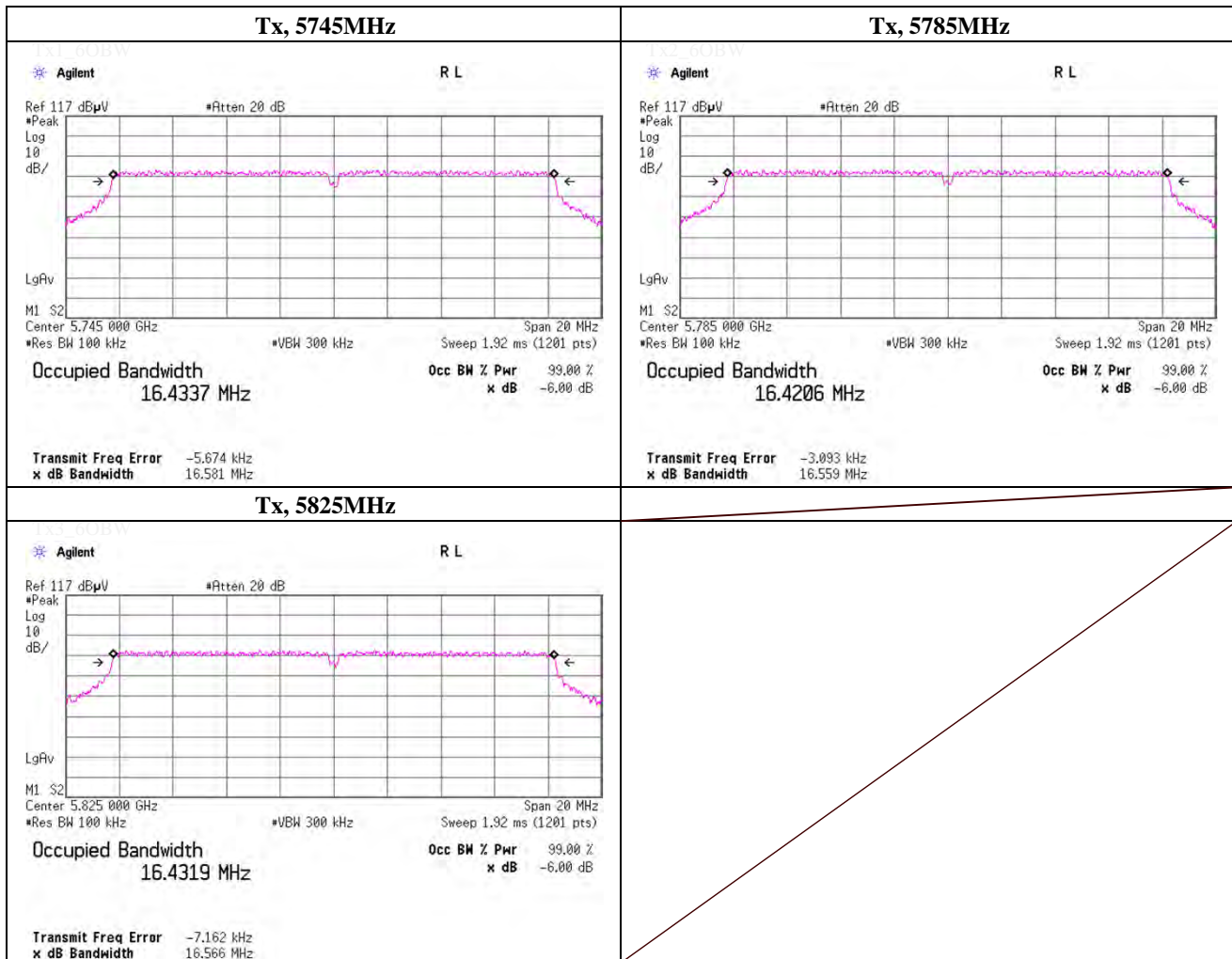
Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	17.812	> 0.500
2437.0000	17.809	> 0.500
2462.0000	17.825	> 0.500



-6dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	June 19, 2012	
Temperature / Humidity	27deg.C , 56%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11a (W58), PN9, worst data mode 6Mbps	

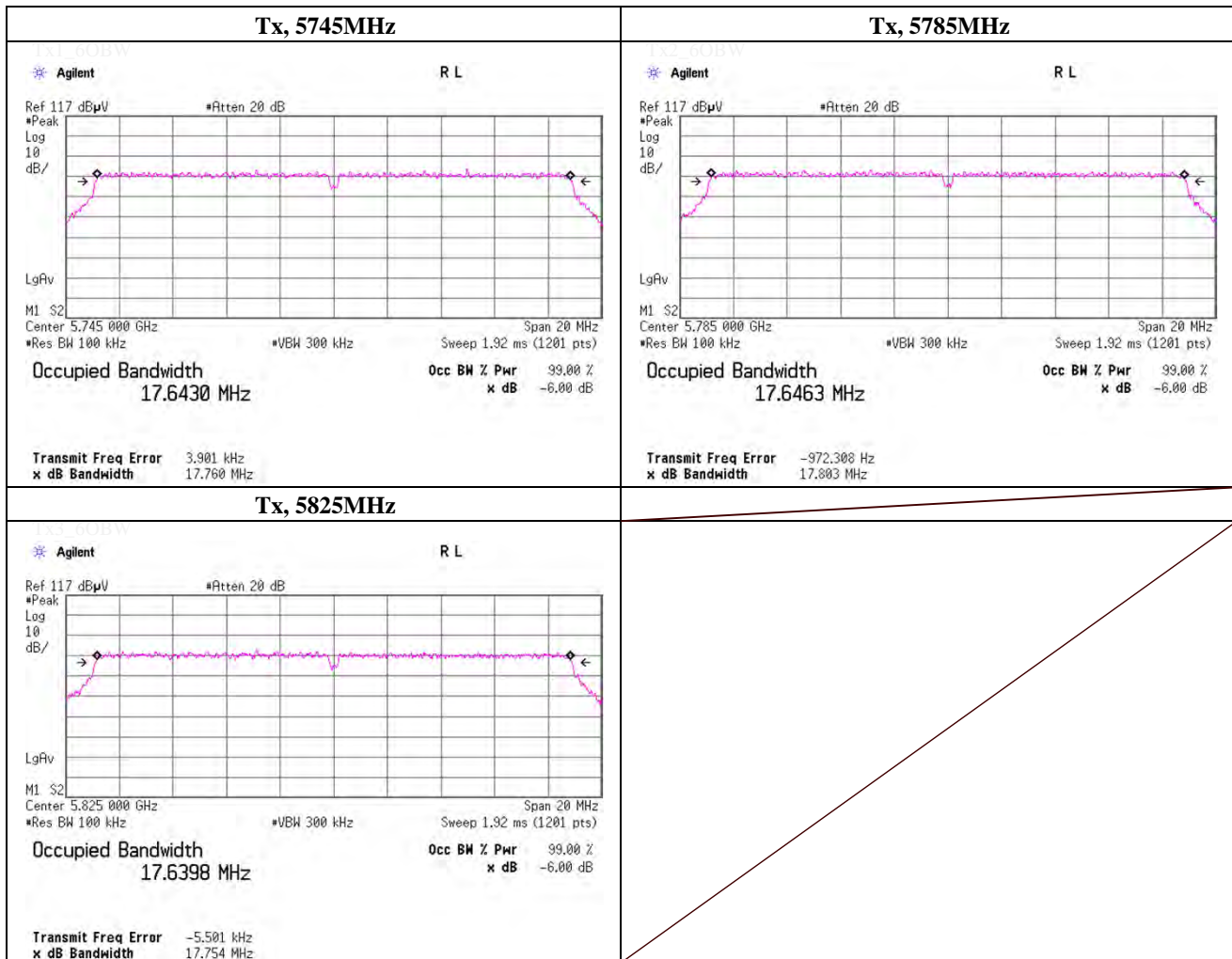
Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
5745.0000	16.581	> 0.500
5785.0000	16.559	> 0.500
5825.0000	16.566	> 0.500



-6dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	June 19, 2012	
Temperature / Humidity	27deg.C , 56%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11n (HT20) (W58), PN9, worst data mode 3(MCS)	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
5745.0000	17.760	> 0.500
5785.0000	17.803	> 0.500
5825.0000	17.754	> 0.500



Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
Date June 14, 2012 June 15, 2012 June 16, 2012
Temperature / Humidity 23 deg.C , 47%RH 23 deg.C , 47%RH 24 deg.C , 54%RH
Engineer Wataru Kojima Wataru Kojima Akio Hayashi
Mode Tx, 2412 MHz
 Tx, IEEE802.11b, PN9, worst data mode 11Mbps

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2390.000	PK	47.1	27.2	24.5	41.1	57.7	73.9	16.2	100	343	
Hori.	4824.000	PK	47.1	31.1	6.8	41.0	44.0	73.9	29.9	100	0	
Hori.	7236.000	PK	48.4	36.6	8.5	41.3	52.2	73.9	21.7	100	0	
Hori.	9648.000	PK	45.4	38.2	9.4	38.8	54.2	73.9	19.7	153	19	
Hori.	12060.000	PK	46.3	39.3	10.7	39.2	57.1	73.9	16.8	100	0	
Hori.	2390.000	AV	34.3	27.2	24.5	41.1	44.9	53.9	9.0	100	343	
Hori.	4824.000	AV	35.2	31.1	6.8	41.0	32.1	53.9	21.8	100	0	
Hori.	7236.000	AV	35.7	36.6	8.5	41.3	39.5	53.9	14.4	100	0	
Hori.	9648.000	AV	33.2	38.2	9.4	38.8	42.0	53.9	11.9	153	19	
Hori.	12060.000	AV	34.5	39.3	10.7	39.2	45.3	53.9	8.6	100	0	
Vert.	2390.000	PK	49.6	27.2	24.5	41.1	60.2	73.9	13.7	100	71	
Vert.	4824.000	PK	46.8	31.1	6.8	41.0	43.7	73.9	30.2	100	9	
Vert.	7236.000	PK	47.1	36.6	8.5	41.3	50.9	73.9	23.0	100	0	
Vert.	9648.000	PK	44.5	38.2	9.4	38.8	53.3	73.9	20.6	100	0	
Vert.	12060.000	PK	46.7	39.3	10.7	39.2	57.5	73.9	16.4	100	0	
Vert.	2390.000	AV	34.3	27.2	24.5	41.1	44.9	53.9	9.0	100	71	
Vert.	4824.000	AV	35.2	31.1	6.8	41.0	32.1	53.9	21.8	100	9	
Vert.	7236.000	AV	35.7	36.6	8.5	41.3	39.5	53.9	14.4	100	0	
Vert.	9648.000	AV	33.0	38.2	9.4	38.8	41.8	53.9	12.1	100	0	
Vert.	12060.000	AV	34.5	39.3	10.7	39.2	45.3	53.9	8.6	100	0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

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

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

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	87.1	27.3	24.5	41.1	97.8	-	-	Carrier
Hori.	2397.670	PK	43.1	27.3	24.5	41.1	53.8	77.8	24.0	
Hori.	2400.000	PK	41.1	27.3	24.5	41.1	51.8	77.8	26.0	
Hori.	6432.024	PK	50.6	34.5	7.5	40.4	52.2	77.8	25.6	
Vert.	2412.000	PK	86.2	27.3	24.5	41.1	96.9	-	-	Carrier
Vert.	2397.670	PK	41.6	27.3	24.5	41.1	52.3	76.9	24.6	
Vert.	2400.000	PK	41.7	27.3	24.5	41.1	52.4	76.9	24.5	
Vert.	6432.024	PK	50	34.5	7.5	40.4	51.6	76.9	25.3	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
Date June 14, 2012 June 15, 2012 June 16, 2012
Temperature / Humidity 23 deg.C , 47%RH 23 deg.C , 47%RH 24 deg.C , 54%RH
Engineer Wataru Kojima Wataru Kojima Akio Hayashi
Mode Tx, 2437 MHz
 Tx, IEEE802.11b, PN9, worst data mode 11Mbps

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	4874.000	PK	46.9	31.2	6.9	41.0	44.0	73.9	29.9	100	7	
Hori.	7311.000	PK	47.0	36.7	8.6	41.4	50.9	73.9	23.0	100	0	
Hori.	9748.000	PK	45.2	38.5	9.5	38.8	54.4	73.9	19.5	154	346	
Hori.	12185.000	PK	44.4	39.3	10.7	39.2	55.2	73.9	18.7	100	0	
Hori.	4874.000	AV	35.1	31.2	6.9	41.0	32.2	53.9	21.7	100	7	
Hori.	7311.000	AV	35.2	36.7	8.6	41.4	39.1	53.9	14.8	100	0	
Hori.	9748.000	AV	33.6	38.5	9.5	38.8	42.8	53.9	11.1	154	346	
Hori.	12185.000	AV	32.9	39.3	10.7	39.2	43.7	53.9	10.2	100	0	
Vert.	4874.000	PK	46.4	31.2	6.9	41.0	43.5	73.9	30.4	100	50	
Vert.	7311.000	PK	47.3	36.7	8.6	41.4	51.2	73.9	22.7	100	0	
Vert.	9748.000	PK	46.1	38.5	9.5	38.8	55.3	73.9	18.6	100	0	
Vert.	12185.000	PK	45.6	39.3	10.7	39.2	56.4	73.9	17.5	100	0	
Vert.	4874.000	AV	34.8	31.2	6.9	41.0	31.9	53.9	22.0	100	50	
Vert.	7311.000	AV	35.1	36.7	8.6	41.4	39.0	53.9	14.9	100	0	
Vert.	9748.000	AV	32.9	38.5	9.5	38.8	42.1	53.9	11.8	100	0	
Vert.	12185.000	AV	33.5	39.3	10.7	39.2	44.3	53.9	9.6	100	0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

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

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

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2437.000	PK	84.8	27.4	24.5	41.1	95.6	-	-	Carrier
Hori.	6498.684	PK	50.8	34.6	7.5	40.4	52.5	75.6	23.1	
Vert.	2437.000	PK	80.4	27.4	24.5	41.1	91.2	-	-	Carrier
Vert.	6498.684	PK	50.5	34.6	7.5	40.4	52.2	71.2	19.0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
Date June 14, 2012 June 15, 2012 June 16, 2012
Temperature / Humidity 23 deg.C , 47%RH 23 deg.C , 47%RH 24 deg.C , 54%RH
Engineer Wataru Kojima Wataru Kojima Akio Hayashi
Mode Tx, 2462 MHz
Tx, IEEE802.11b, PN9, worst data mode 11Mbps

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2483.500	PK	51.3	27.5	24.6	41.1	62.3	73.9	11.6	100	0	
Hori.	4924.000	PK	48.1	31.3	6.9	40.9	45.4	73.9	28.5	107	6	
Hori.	7386.000	PK	47.3	36.9	8.7	41.4	51.5	73.9	22.4	100	0	
Hori.	9848.000	PK	46.4	38.7	9.5	38.8	55.8	73.9	18.1	161	346	
Hori.	12310.000	PK	44.0	39.4	10.8	39.2	55.0	73.9	18.9	100	0	
Hori.	2483.500	AV	34.4	27.5	24.6	41.1	45.4	53.9	8.5	100	0	
Hori.	4924.000	AV	35.5	31.3	6.9	40.9	32.8	53.9	21.1	107	6	
Hori.	7386.000	AV	35.0	36.9	8.7	41.4	39.2	53.9	14.7	100	0	
Hori.	9848.000	AV	35.9	38.7	9.5	38.8	45.3	53.9	8.6	161	346	
Hori.	12310.000	AV	32.2	39.4	10.8	39.2	43.2	53.9	10.7	100	0	
Vert.	2483.500	PK	49.5	27.5	24.6	41.1	60.5	73.9	13.4	100	0	
Vert.	4924.000	PK	48.9	31.3	6.9	40.9	46.2	73.9	27.7	100	64	
Vert.	7386.000	PK	47.8	36.9	8.7	41.4	52.0	73.9	21.9	100	0	
Vert.	9848.000	PK	45.6	38.7	9.5	38.8	55.0	73.9	18.9	100	0	
Vert.	12310.000	PK	44.8	39.4	10.8	39.2	55.8	73.9	18.1	100	0	
Vert.	2483.500	AV	34.4	27.5	24.6	41.1	45.4	53.9	8.5	100	0	
Vert.	4924.000	AV	36.2	31.3	6.9	40.9	33.5	53.9	20.4	100	64	
Vert.	7386.000	AV	35.2	36.9	8.7	41.4	39.4	53.9	14.5	100	0	
Vert.	9848.000	AV	32.3	38.7	9.5	38.8	41.7	53.9	12.2	100	0	
Vert.	12310.000	AV	32.4	39.4	10.8	39.2	43.4	53.9	10.5	100	0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

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

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

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2462.000	PK	94.3	27.4	24.5	41.1	105.1	-	-	Carrier
Hori.	6565.360	PK	51.2	34.8	7.7	40.5	53.2	85.1	31.9	
Vert.	2462.000	PK	88.4	27.4	24.5	41.1	99.2	-	-	Carrier
Vert.	6565.360	PK	45.3	34.8	7.7	40.5	47.3	79.2	31.9	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
Date June 14, 2012 June 15, 2012 June 16, 2012
Temperature / Humidity 23 deg.C , 47%RH 23 deg.C , 47%RH 24 deg.C , 54%RH
Engineer Wataru Kojima Wataru Kojima Akio Hayashi
Mode Tx, 2412 MHz
Tx, IEEE802.11g, PN9, worst data mode 6Mbps

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2390.000	PK	50.5	27.2	24.5	41.1	61.1	73.9	12.8	100	147	
Hori.	4824.000	PK	47.1	31.1	6.8	41.0	44.0	73.9	29.9	100	0	
Hori.	7236.000	PK	46.7	36.6	8.5	41.3	50.5	73.9	23.4	100	0	
Hori.	9648.000	PK	44.9	38.2	9.4	38.8	53.7	73.9	20.2	163	337	
Hori.	12060.000	PK	45.7	39.3	10.7	39.2	56.5	73.9	17.4	100	0	
Hori.	2390.000	AV	35.5	27.2	24.5	41.1	46.1	53.9	7.8	100	147	
Hori.	4824.000	AV	35.1	31.1	6.8	41.0	32.0	53.9	21.9	100	0	
Hori.	7236.000	AV	34.9	36.6	8.5	41.3	38.7	53.9	15.2	100	0	
Hori.	9648.000	AV	33.2	38.2	9.4	38.8	42.0	53.9	11.9	163	337	
Hori.	12060.000	AV	34.1	39.3	10.7	39.2	44.9	53.9	9.0	100	0	
Vert.	2390.000	PK	48.6	27.2	24.5	41.1	59.2	73.9	14.7	100	271	
Vert.	4824.000	PK	46.5	31.1	6.8	41.0	43.4	73.9	30.5	100	25	
Vert.	7236.000	PK	47.5	36.6	8.5	41.3	51.3	73.9	22.6	100	0	
Vert.	9648.000	PK	45.0	38.2	9.4	38.8	53.8	73.9	20.1	100	0	
Vert.	12060.000	PK	45.7	39.3	10.7	39.2	56.5	73.9	17.4	100	0	
Vert.	2390.000	AV	35.0	27.2	24.5	41.1	45.6	53.9	8.3	100	271	
Vert.	4824.000	AV	34.9	31.1	6.8	41.0	31.8	53.9	22.1	100	25	
Vert.	6432.018	AV	48.2	34.5	7.5	40.4	49.8	53.9	4.1	100	351	
Vert.	7236.000	AV	34.7	36.6	8.5	41.3	38.5	53.9	15.4	100	0	
Vert.	9648.000	AV	32.2	38.2	9.4	38.8	41.0	53.9	12.9	100	0	
Vert.	12060.000	AV	34.5	39.3	10.7	39.2	45.3	53.9	8.6	100	0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

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

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

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	80.5	27.3	24.5	41.1	91.2	-	-	Carrier
Hori.	2398.920	PK	43.4	27.3	24.5	41.1	54.1	71.2	17.1	
Hori.	2400.000	PK	45.4	27.3	24.5	41.1	56.1	71.2	15.1	
Hori.	6432.018	PK	48.4	34.5	7.5	40.4	50.0	71.2	21.2	
Vert.	2412.000	PK	78.7	27.3	24.5	41.1	89.4	-	-	Carrier
Vert.	2398.920	PK	44.1	27.3	24.5	41.1	54.8	69.4	14.6	
Vert.	2400.000	PK	44.8	27.3	24.5	41.1	55.5	69.4	13.9	
Vert.	6432.018	PK	49.8	34.5	7.5	40.4	51.4	69.4	18.0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.1 and No.3 Semi Anechoic Chamber
 Date June 14, 2012 June 15, 2012 June 16, 2012 June 22, 2012
 Temperature / Humidity 23 deg.C , 47%RH 23 deg.C , 47%RH 24 deg.C , 54%RH 23 deg.C , 63%RH
 Engineer Wataru Kojima Wataru Kojima Akio Hayashi Kenichi Adachi
 Mode Tx, 2437 MHz
 Tx, IEEE802.11g, PN9, worst data mode 6Mbps

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	246.006	QP	21.6	17.2	9.7	31.7	16.8	46.0	29.2	202	6	
Hori.	360.860	QP	22.3	15.2	7.4	31.7	13.2	46.0	32.8	100	8	
Hori.	619.508	QP	21.6	19.1	8.9	32.0	17.6	46.0	28.4	156	269	
Hori.	805.396	QP	21.7	20.9	9.7	31.8	20.5	46.0	25.5	130	201	
Hori.	892.117	QP	21.5	21.8	10.0	31.3	22.0	46.0	24.0	100	355	
Hori.	4874.000	PK	46.0	31.2	6.9	41.0	43.1	73.9	30.8	100	0	
Hori.	7311.000	PK	45.5	36.7	8.6	41.4	49.4	73.9	24.5	100	0	
Hori.	9748.000	PK	44.3	38.5	9.5	38.8	53.5	73.9	20.4	153	343	
Hori.	12185.000	PK	44.8	39.3	10.7	39.2	55.6	73.9	18.3	100	0	
Hori.	4874.000	AV	32.8	31.2	6.9	41.0	29.9	53.9	24.0	100	0	
Hori.	7311.000	AV	34.0	36.7	8.6	41.4	37.9	53.9	16.0	100	0	
Hori.	9748.000	AV	32.5	38.5	9.5	38.8	41.7	53.9	12.2	153	343	
Hori.	12185.000	AV	32.5	39.3	10.7	39.2	43.3	53.9	10.6	100	0	
Vert.	160.076	QP	21.9	15.0	8.7	31.8	13.8	43.5	29.7	100	86	
Vert.	4874.000	PK	46.0	31.2	6.9	41.0	43.1	73.9	30.8	100	0	
Vert.	7311.000	PK	46.0	36.7	8.6	41.4	49.9	73.9	24.0	100	0	
Vert.	9748.000	PK	44.3	38.5	9.5	38.8	53.5	73.9	20.4	100	0	
Vert.	12185.000	PK	44.4	39.3	10.7	39.2	55.2	73.9	18.7	100	0	
Vert.	4874.000	AV	34.0	31.2	6.9	41.0	31.1	53.9	22.8	100	0	
Vert.	7311.000	AV	34.0	36.7	8.6	41.4	37.9	53.9	16.0	100	0	
Vert.	9748.000	AV	32.1	38.5	9.5	38.8	41.3	53.9	12.6	100	0	
Vert.	12185.000	AV	32.5	39.3	10.7	39.2	43.3	53.9	10.6	100	0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

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

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

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2437.000	PK	79.9	27.4	24.5	41.1	90.7	-	-	Carrier
Hori.	6498.693	PK	51.4	34.6	7.5	40.4	53.1	70.7	17.6	
Vert.	2437.000	PK	77.6	27.4	24.5	41.1	88.4	-	-	Carrier
Vert.	6498.693	PK	50.4	34.6	7.5	40.4	52.1	68.4	16.3	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
Date June 14, 2012 June 15, 2012 June 16, 2012
Temperature / Humidity 23 deg.C , 47%RH 23 deg.C , 47%RH 24 deg.C , 54%RH
Engineer Wataru Kojima Wataru Kojima Akio Hayashi
Mode Tx, 2462 MHz
Tx, IEEE802.11g, PN9, worst data mode 6Mbps

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2483.500	PK	49.6	27.5	24.6	41.1	60.6	73.9	13.3	100	3	
Hori.	4924.000	PK	46.4	31.3	6.9	40.9	43.7	73.9	30.2	108	10	
Hori.	7386.000	PK	46.7	36.9	8.7	41.4	50.9	73.9	23.0	100	0	
Hori.	9848.000	PK	43.6	38.7	9.5	38.8	53.0	73.9	20.9	153	348	
Hori.	12310.000	PK	43.5	39.4	10.8	39.2	54.5	73.9	19.4	100	0	
Hori.	2483.500	AV	35.5	27.5	24.6	41.1	46.5	53.9	7.4	100	3	
Hori.	4924.000	AV	34.8	31.3	6.9	40.9	32.1	53.9	21.8	108	10	
Hori.	7386.000	AV	34.3	36.9	8.7	41.4	38.5	53.9	15.4	100	0	
Hori.	9848.000	AV	32.0	38.7	9.5	38.8	41.4	53.9	12.5	153	348	
Hori.	12310.000	AV	31.4	39.4	10.8	39.2	42.4	53.9	11.5	100	0	
Vert.	2483.500	PK	49.4	27.5	24.6	41.1	60.4	73.9	13.5	100	300	
Vert.	4924.000	PK	46.3	31.3	6.9	40.9	43.6	73.9	30.3	100	0	
Vert.	7386.000	PK	48.0	36.9	8.7	41.4	52.2	73.9	21.7	100	0	
Vert.	9848.000	PK	44.0	38.7	9.5	38.8	53.4	73.9	20.5	100	0	
Vert.	12310.000	PK	42.8	39.4	10.8	39.2	53.8	73.9	20.1	100	0	
Vert.	2483.500	AV	35.3	27.5	24.6	41.1	46.3	53.9	7.6	100	300	
Vert.	4924.000	AV	34.7	31.3	6.9	40.9	32.0	53.9	21.9	100	0	
Vert.	7386.000	AV	34.2	36.9	8.7	41.4	38.4	53.9	15.5	100	0	
Vert.	9848.000	AV	32.5	38.7	9.5	38.8	41.9	53.9	12.0	100	0	
Vert.	12310.000	AV	31.2	39.4	10.8	39.2	42.2	53.9	11.7	100	0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

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

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

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2462.000	PK	81.4	27.4	24.5	41.1	92.2	-	-	Carrier
Hori.	6565.348	PK	51.8	34.8	7.7	40.5	53.8	72.2	18.4	
Vert.	2462.000	PK	77.6	27.4	24.5	41.1	88.4	-	-	Carrier
Vert.	6565.348	PK	51.5	34.8	7.7	40.5	53.5	68.4	14.9	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
Date June 14, 2012 June 15, 2012 June 16, 2012
Temperature / Humidity 23 deg.C , 47%RH 23 deg.C , 47%RH 24 deg.C , 54%RH
Engineer Wataru Kojima Wataru Kojima Akio Hayashi
Mode Tx, 2412 MHz
Tx, IEEE802.11n (HT20), PN9, worst data mode 3(MCS)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2390.000	PK	55.5	27.2	24.5	41.1	66.1	73.9	7.8	100	152	
Hori.	4824.000	PK	46.9	31.1	6.8	41.0	43.8	73.9	30.1	100	0	
Hori.	7236.000	PK	46.8	36.6	8.5	41.3	50.6	73.9	23.3	100	0	
Hori.	9648.000	PK	44.9	38.2	9.4	38.8	53.7	73.9	20.2	153	344	
Hori.	12060.000	PK	46.3	39.3	10.7	39.2	57.1	73.9	16.8	100	0	
Hori.	2390.000	AV	36.8	27.2	24.5	41.1	47.4	53.9	6.5	100	152	
Hori.	4824.000	AV	34.9	31.1	6.8	41.0	31.8	53.9	22.1	100	0	
Hori.	7236.000	AV	35.0	36.6	8.5	41.3	38.8	53.9	15.1	100	0	
Hori.	9648.000	AV	33.1	38.2	9.4	38.8	41.9	53.9	12.0	153	344	
Hori.	12060.000	AV	34.1	39.3	10.7	39.2	44.9	53.9	9.0	100	0	
Vert.	2390.000	PK	50.6	27.2	24.5	41.1	61.2	73.9	12.7	100	91	
Vert.	4824.000	PK	46.7	31.1	6.8	41.0	43.6	73.9	30.3	100	10	
Vert.	7236.000	PK	46.4	36.6	8.5	41.3	50.2	73.9	23.7	100	0	
Vert.	9648.000	PK	44.4	38.2	9.4	38.8	53.2	73.9	20.7	100	0	
Vert.	12060.000	PK	46.0	39.3	10.7	39.2	56.8	73.9	17.1	100	0	
Vert.	2390.000	AV	35.3	27.2	24.5	41.1	45.9	53.9	8.0	100	91	
Vert.	4824.000	AV	35.0	31.1	6.8	41.0	31.9	53.9	22.0	100	10	
Vert.	7236.000	AV	34.9	36.6	8.5	41.3	38.7	53.9	15.2	100	0	
Vert.	9648.000	AV	32.6	38.2	9.4	38.8	41.4	53.9	12.5	100	0	
Vert.	12060.000	AV	33.8	39.3	10.7	39.2	44.6	53.9	9.3	100	0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

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

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

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	80.4	27.3	24.5	41.1	91.1	-	-	Carrier
Hori.	2397.830	PK	44.4	27.3	24.5	41.1	55.1	71.1	16.0	
Hori.	2400.000	PK	46.5	27.3	24.5	41.1	57.2	71.1	13.9	
Hori.	6432.020	PK	49.0	34.5	7.5	40.4	50.6	71.1	20.5	
Vert.	2412.000	PK	77.6	27.3	24.5	41.1	88.3	-	-	Carrier
Vert.	2397.830	PK	44.0	27.3	24.5	41.1	54.7	68.3	13.6	
Vert.	2400.000	PK	43.5	27.3	24.5	41.1	54.2	68.3	14.1	
Vert.	6432.020	PK	51.0	34.5	7.5	40.4	52.6	68.3	15.7	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
Date June 14, 2012 June 15, 2012 June 16, 2012
Temperature / Humidity 23 deg.C , 47%RH 23 deg.C , 47%RH 24 deg.C , 54%RH
Engineer Wataru Kojima Wataru Kojima Akio Hayashi
Mode Tx, 2437 MHz
Tx, IEEE802.11n (HT20), PN9, worst data mode 3(MCS)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	4874.000	PK	46.5	31.2	6.9	41.0	43.6	73.9	30.3	100	2	
Hori.	7311.000	PK	46.2	36.7	8.6	41.4	50.1	73.9	23.8	100	0	
Hori.	9748.000	PK	44.4	38.5	9.5	38.8	53.6	73.9	20.3	144	344	
Hori.	12185.000	PK	44.5	39.3	10.7	39.2	55.3	73.9	18.6	100	0	
Hori.	4874.000	AV	34.1	31.2	6.9	41.0	31.2	53.9	22.7	100	2	
Hori.	7311.000	AV	34.0	36.7	8.6	41.4	37.9	53.9	16.0	100	0	
Hori.	9748.000	AV	32.5	38.5	9.5	38.8	41.7	53.9	12.2	144	344	
Hori.	12185.000	AV	32.6	39.3	10.7	39.2	43.4	53.9	10.5	100	0	
Vert.	4874.000	PK	45.9	31.2	6.9	41.0	43.0	73.9	30.9	100	11	
Vert.	7311.000	PK	46.1	36.7	8.6	41.4	50.0	73.9	23.9	100	0	
Vert.	9748.000	PK	44.7	38.5	9.5	38.8	53.9	73.9	20.0	100	0	
Vert.	12185.000	PK	44.8	39.3	10.7	39.2	55.6	73.9	18.3	100	0	
Vert.	4874.000	AV	34.1	31.2	6.9	41.0	31.2	53.9	22.7	100	11	
Vert.	7311.000	AV	33.9	36.7	8.6	41.4	37.8	53.9	16.1	100	0	
Vert.	9748.000	AV	32.0	38.5	9.5	38.8	41.2	53.9	12.7	100	0	
Vert.	12185.000	AV	32.4	39.3	10.7	39.2	43.2	53.9	10.7	100	0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

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

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

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2437.000	PK	81.4	27.4	24.5	41.1	92.2	-	-	Carrier
Hori.	6498.687	PK	51.9	34.6	7.5	40.4	53.6	72.2	18.6	
Vert.	2437.000	PK	78.7	27.4	24.5	41.1	89.5	-	-	Carrier
Vert.	6498.687	PK	51.5	34.6	7.5	40.4	53.2	69.5	16.3	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

UL Japan, Inc.

Shonan EMC Lab.

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

Telephone : +81 463 50 6400

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Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
Date June 14, 2012 June 15, 2012 June 16, 2012
Temperature / Humidity 23 deg.C , 47%RH 23 deg.C , 47%RH 24 deg.C , 54%RH
Engineer Wataru Kojima Wataru Kojima Akio Hayashi
Mode Tx, 2462 MHz
Tx, IEEE802.11n (HT20), PN9, worst data mode 3(MCS)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2483.500	PK	50.4	27.5	24.6	41.1	61.4	73.9	12.5	100	344	
Hori.	4924.000	PK	47.4	31.3	6.9	40.9	44.7	73.9	29.2	101	5	
Hori.	7386.000	PK	46.7	36.9	8.7	41.4	50.9	73.9	23.0	100	0	
Hori.	9848.000	PK	43.5	38.7	9.5	38.8	52.9	73.9	21.0	145	353	
Hori.	12310.000	PK	43.1	39.4	10.8	39.2	54.1	73.9	19.8	100	0	
Hori.	2483.500	AV	36.1	27.5	24.6	41.1	47.1	53.9	6.8	100	344	
Hori.	4924.000	AV	34.7	31.3	6.9	40.9	32.0	53.9	21.9	101	5	
Hori.	7386.000	AV	34.1	36.9	8.7	41.4	38.3	53.9	15.6	100	0	
Hori.	9848.000	AV	31.8	38.7	9.5	38.8	41.2	53.9	12.7	145	353	
Hori.	12310.000	AV	31.3	39.4	10.8	39.2	42.3	53.9	11.6	100	0	
Vert.	2483.500	PK	49.2	27.5	24.6	41.1	60.2	73.9	13.7	100	245	
Vert.	4924.000	PK	46.6	31.3	6.9	40.9	43.9	73.9	30.0	103	53	
Vert.	7386.000	PK	47.6	36.9	8.7	41.4	51.8	73.9	22.1	100	0	
Vert.	9848.000	PK	43.9	38.7	9.5	38.8	53.3	73.9	20.6	100	0	
Vert.	12310.000	PK	43.6	39.4	10.8	39.2	54.6	73.9	19.3	100	0	
Vert.	2483.500	AV	35.6	27.5	24.6	41.1	46.6	53.9	7.3	100	245	
Vert.	4924.000	AV	34.8	31.3	6.9	40.9	32.1	53.9	21.8	103	53	
Vert.	7386.000	AV	34.6	36.9	8.7	41.4	38.8	53.9	15.1	100	0	
Vert.	9848.000	AV	31.8	38.7	9.5	38.8	41.2	53.9	12.7	100	0	
Vert.	12310.000	AV	30.9	39.4	10.8	39.2	41.9	53.9	12.0	100	0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

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

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

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2462.000	PK	80.5	27.4	24.5	41.1	91.3	-	-	Carrier
Hori.	6565.355	PK	52.0	34.8	7.7	40.5	54.0	71.3	17.3	
Vert.	2462.000	PK	78.8	27.4	24.5	41.1	89.6	-	-	Carrier
Vert.	6565.355	PK	50.2	34.8	7.7	40.5	52.2	69.6	17.4	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.1 and No.3 Semi Anechoic Chamber
Date June 18, 2012 June 19, 2012 June 22, 2012
Temperature / Humidity 23 deg.C , 63%RH 24 deg.C , 67%RH 23 deg.C , 63%RH
Engineer Yasumasa Owaki Yasumasa Owaki Kenichi Adachi
Mode Tx, 5745 MHz
 Tx, IEEE802.11a (W58), PN9, worst data mode 6Mbps

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	132.353	QP	21.9	13.7	8.4	31.8	12.2	43.5	31.3	300	12	
Hori.	243.815	QP	21.8	17.2	9.7	31.7	17.0	46.0	29.0	300	207	
Hori.	640.002	QP	29.6	19.4	9.0	32.0	26.0	46.0	20.0	145	178	
Hori.	910.300	QP	21.5	22.0	10.1	31.2	22.4	46.0	23.6	100	273	
Hori.	936.100	QP	21.3	22.3	10.2	31.0	22.8	46.0	23.2	150	343	
Hori.	3830.000	PK	49.1	29.6	15.0	41.8	51.9	73.9	22.0	100	0	
Hori.	7660.000	PK	53.6	37.0	7.8	41.2	57.2	73.9	16.7	127	5	
Hori.	11490.000	PK	48.3	40.1	9.5	40.0	57.9	73.9	16.0	166	277	
Hori.	3830.000	AV	36.2	29.6	15.0	41.8	39.0	53.9	14.9	100	0	
Hori.	7660.000	AV	47.4	37.0	7.8	41.2	51.0	53.9	2.9	127	5	
Hori.	11490.000	AV	35.0	40.1	9.5	40.0	44.6	53.9	9.3	166	277	
Vert.	400.225	QP	29.1	15.9	7.7	31.8	20.9	46.0	25.1	100	4	
Vert.	827.117	QP	21.6	21.1	9.7	31.6	20.8	46.0	25.2	100	16	
Vert.	910.300	QP	21.1	22.0	10.1	31.2	22.0	46.0	24.0	100	24	
Vert.	936.100	QP	21.4	22.3	10.2	31.0	22.9	46.0	23.1	100	90	
Vert.	3830.000	PK	49.0	29.6	15.0	41.8	51.8	73.9	22.1	100	0	
Vert.	7660.000	PK	53.2	37.0	7.8	41.2	56.8	73.9	17.1	180	320	
Vert.	11490.000	PK	46.9	40.1	9.5	40.0	56.5	73.9	17.4	100	0	
Vert.	3830.000	AV	36.2	29.6	15.0	41.8	39.0	53.9	14.9	100	0	
Vert.	7660.000	AV	46.8	37.0	7.8	41.2	50.4	53.9	3.5	180	320	
Vert.	11490.000	AV	35.0	40.1	9.5	40.0	44.6	53.9	9.3	100	0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

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

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

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	5745.002	PK	85.7	32.4	16.3	40.5	93.9	-	-	Carrier
Hori.	5725.001	PK	49.6	32.3	16.3	40.5	57.7	73.9	16.2	
Hori.	17235.000	PK	39.4	42.5	2.1	39.9	44.1	73.9	29.8	
Vert.	5745.001	PK	87.1	32.4	16.3	40.5	95.3	-	-	Carrier
Vert.	5725.001	PK	49.0	32.3	16.3	40.5	57.1	75.3	18.2	
Vert.	17235.000	PK	39.0	42.5	2.1	39.9	43.7	75.3	31.6	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
Date June 18, 2012 June 19, 2012
Temperature / Humidity 23 deg.C , 63%RH 24 deg.C , 67%RH
Engineer Yasumasa Owaki Yasumasa Owaki
Mode Tx, 5785 MHz
 Tx, IEEE802.11a (W58), PN9, worst data mode 6Mbps

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	3857.000	PK	49.1	29.6	15.0	41.8	51.9	73.9	22.0	100	0	
Hori.	7713.366	PK	52.5	37.2	7.8	41.2	56.3	73.9	17.6	106	6	
Hori.	11570.000	PK	49.0	40.1	9.5	39.9	58.7	73.9	15.2	157	292	
Hori.	3857.000	AV	36.0	29.6	15.0	41.8	38.8	53.9	15.1	100	0	
Hori.	7713.366	AV	45.8	37.2	7.8	41.2	49.6	53.9	4.3	106	6	
Hori.	11570.000	AV	36.1	40.1	9.5	39.9	45.8	53.9	8.1	157	292	
Vert.	3857.000	PK	48.7	29.6	15.0	41.8	51.5	73.9	22.4	100	0	
Vert.	7713.366	PK	51.6	37.2	7.8	41.2	55.4	73.9	18.5	175	347	
Vert.	11570.000	PK	47.1	40.1	9.5	39.9	56.8	73.9	17.1	100	0	
Vert.	3857.000	AV	35.9	29.6	15.0	41.8	38.7	53.9	15.2	100	0	
Vert.	7713.366	AV	44.3	37.2	7.8	41.2	48.1	53.9	5.8	175	347	
Vert.	11570.000	AV	34.9	40.1	9.5	39.9	44.6	53.9	9.3	100	0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

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

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

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	5785.000	PK	84.8	32.4	16.2	40.5	92.9	-	-	Carrier
Hori.	17355.000	PK	39.6	43.6	2.1	39.9	45.4	72.9	27.5	
Vert.	5785.000	PK	86.9	32.4	16.2	40.5	95.0	-	-	Carrier
Vert.	17355.000	PK	39.9	43.6	2.1	39.9	45.7	75.0	29.3	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
Date June 18, 2012 June 19, 2012
Temperature / Humidity 23 deg.C , 63%RH 24 deg.C , 67%RH
Engineer Yasumasa Owaki Yasumasa Owaki
Mode Tx, 5825 MHz
 Tx, IEEE802.11a (W58), PN9, worst data mode 6Mbps

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	3883.000	PK	48.6	29.7	15.0	41.8	51.5	73.9	22.4	100	0	
Hori.	11650.000	PK	49.4	39.9	9.5	39.8	59.0	73.9	14.9	160	292	
Hori.	3883.000	AV	36.6	29.7	15.0	41.8	39.5	53.9	14.4	100	0	
Hori.	11650.000	AV	37.2	39.9	9.5	39.8	46.8	53.9	7.1	160	292	
Vert.	3883.000	PK	49.0	29.7	15.0	41.8	51.9	73.9	22.0	100	0	
Vert.	11650.000	PK	46.9	39.9	9.5	39.8	56.5	73.9	17.4	100	0	
Vert.	3883.000	AV	36.6	29.7	15.0	41.8	39.5	53.9	14.4	100	0	
Vert.	11650.000	AV	35.1	39.9	9.5	39.8	44.7	53.9	9.2	100	0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

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

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

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	5825.000	PK	85.6	32.5	16.3	40.5	93.9	-	-	Carrier
Hori.	5850.001	PK	40.6	32.5	16.3	40.6	48.8	73.9	25.1	
Hori.	7766.681	PK	47.3	37.4	7.8	41.1	51.4	73.9	22.5	
Hori.	17475.000	PK	42.0	44.7	2.1	39.9	48.9	73.9	25.0	
Vert.	5825.000	PK	86.3	32.5	16.3	40.5	94.6	-	-	Carrier
Vert.	5850.001	PK	40.3	32.5	16.3	40.6	48.5	74.6	26.1	
Vert.	7766.681	PK	47.4	37.4	7.8	41.1	51.5	74.6	23.1	
Vert.	17475.000	PK	40.9	44.7	2.1	39.9	47.8	74.6	26.8	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
Date June 18, 2012 June 19, 2012
Temperature / Humidity 23 deg.C , 63%RH 24 deg.C , 67%RH
Engineer Yasumasa Owaki Yasumasa Owaki
Mode Tx, 5745 MHz
Tx, IEEE802.11n (HT20) (W58), PN9, worst data mode 3(MCS)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	3830.000	PK	48.1	29.6	15.0	41.8	50.9	73.9	23.0	100	0	
Hori.	7660.000	PK	53.1	37.0	7.8	41.2	56.7	73.9	17.2	127	5	
Hori.	11490.000	PK	47.4	40.1	9.5	40.0	57.0	73.9	16.9	165	282	
Hori.	3830.000	AV	35.8	29.6	15.0	41.8	38.6	53.9	15.3	100	0	
Hori.	7660.000	AV	46.9	37.0	7.8	41.2	50.5	53.9	3.4	127	5	
Hori.	11490.000	AV	35.3	40.1	9.5	40.0	44.9	53.9	9.0	165	282	
Vert.	3830.000	PK	49.3	29.6	15.0	41.8	52.1	73.9	21.8	100	0	
Vert.	7660.000	PK	53.3	37.0	7.8	41.2	56.9	73.9	17.0	181	320	
Vert.	11490.000	PK	47.3	40.1	9.5	40.0	56.9	73.9	17.0	100	0	
Vert.	3830.000	AV	35.8	29.6	15.0	41.8	38.6	53.9	15.3	100	0	
Vert.	7660.000	AV	47.2	37.0	7.8	41.2	50.8	53.9	3.1	181	320	
Vert.	11490.000	AV	34.9	40.1	9.5	40.0	44.5	53.9	9.4	100	0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

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

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

Carrier

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	5745.000	PK	84.3	32.4	16.3	40.5	92.5	-	-	Carrier
Hori.	5725.001	PK	47.9	32.3	16.3	40.5	56.0	72.5	16.5	
Hori.	17235.000	PK	39.1	42.5	2.1	39.9	43.8	72.5	28.7	
Vert.	5745.000	PK	87.1	32.4	16.3	40.5	95.3	-	-	Carrier
Vert.	5725.001	PK	47.7	32.3	16.3	40.5	55.8	75.3	19.5	
Vert.	17235.000	PK	39.5	42.5	2.1	39.9	44.2	75.3	31.1	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
Date June 18, 2012 June 19, 2012
Temperature / Humidity 23 deg.C , 63%RH 24 deg.C , 67%RH
Engineer Yasumasa Owaki Yasumasa Owaki
Mode Tx, 5785 MHz
Tx, IEEE802.11n (HT20) (W58), PN9, worst data mode 3(MCS)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	3857.000	PK	49.6	29.6	15.0	41.8	52.4	73.9	21.5	100	0	
Hori.	7713.333	PK	52.8	37.2	7.8	41.2	56.6	73.9	17.3	106	6	
Hori.	11570.000	PK	47.6	40.1	9.5	39.9	57.3	73.9	16.6	159	291	
Hori.	3857.000	AV	36.6	29.6	15.0	41.8	39.4	53.9	14.5	100	0	
Hori.	7713.333	AV	46.0	37.2	7.8	41.2	49.8	53.9	4.1	106	6	
Hori.	11570.000	AV	35.8	40.1	9.5	39.9	45.5	53.9	8.4	159	291	
Vert.	3857.000	PK	49.3	29.6	15.0	41.8	52.1	73.9	21.8	100	0	
Vert.	7713.333	PK	52.2	37.2	7.8	41.2	56.0	73.9	17.9	187	340	
Vert.	11570.000	PK	47.6	40.1	9.5	39.9	57.3	73.9	16.6	100	0	
Vert.	3857.000	AV	36.2	29.6	15.0	41.8	39.0	53.9	14.9	100	0	
Vert.	7713.333	AV	46.1	37.2	7.8	41.2	49.9	53.9	4.0	187	340	
Vert.	11570.000	AV	34.9	40.1	9.5	39.9	44.6	53.9	9.3	100	0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

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

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

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	5785.000	PK	83.6	32.4	16.2	40.5	91.7	-	-	Carrier
Hori.	17355.000	PK	39.1	43.6	2.1	39.9	44.9	71.7	26.8	
Vert.	5785.000	PK	86.4	32.4	16.2	40.5	94.5	-	-	Carrier
Vert.	17355.000	PK	39.3	43.6	2.1	39.9	45.1	74.5	29.4	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
Date June 18, 2012 June 19, 2012
Temperature / Humidity 23 deg.C , 63%RH 24 deg.C , 67%RH
Engineer Yasumasa Owaki Yasumasa Owaki
Mode Tx, 5825 MHz
 Tx, IEEE802.11n (HT20) (W58), PN9, worst data mode 3(MCS)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	3883.000	PK	48.6	29.7	15.0	41.8	51.5	73.9	22.4	100	0	
Hori.	11650.000	PK	49.0	39.9	9.5	39.8	58.6	73.9	15.3	166	293	
Hori.	3883.000	AV	36.6	29.7	15.0	41.8	39.5	53.9	14.4	100	0	
Hori.	11650.000	AV	36.6	39.9	9.5	39.8	46.2	53.9	7.7	166	293	
Vert.	3883.000	PK	49.0	29.7	15.0	41.8	51.9	73.9	22.0	100	0	
Vert.	11650.000	PK	47.7	39.9	9.5	39.8	57.3	73.9	16.6	100	0	
Vert.	3883.000	AV	36.6	29.7	15.0	41.8	39.5	53.9	14.4	100	0	
Vert.	11650.000	AV	35.0	39.9	9.5	39.8	44.6	53.9	9.3	100	0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

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

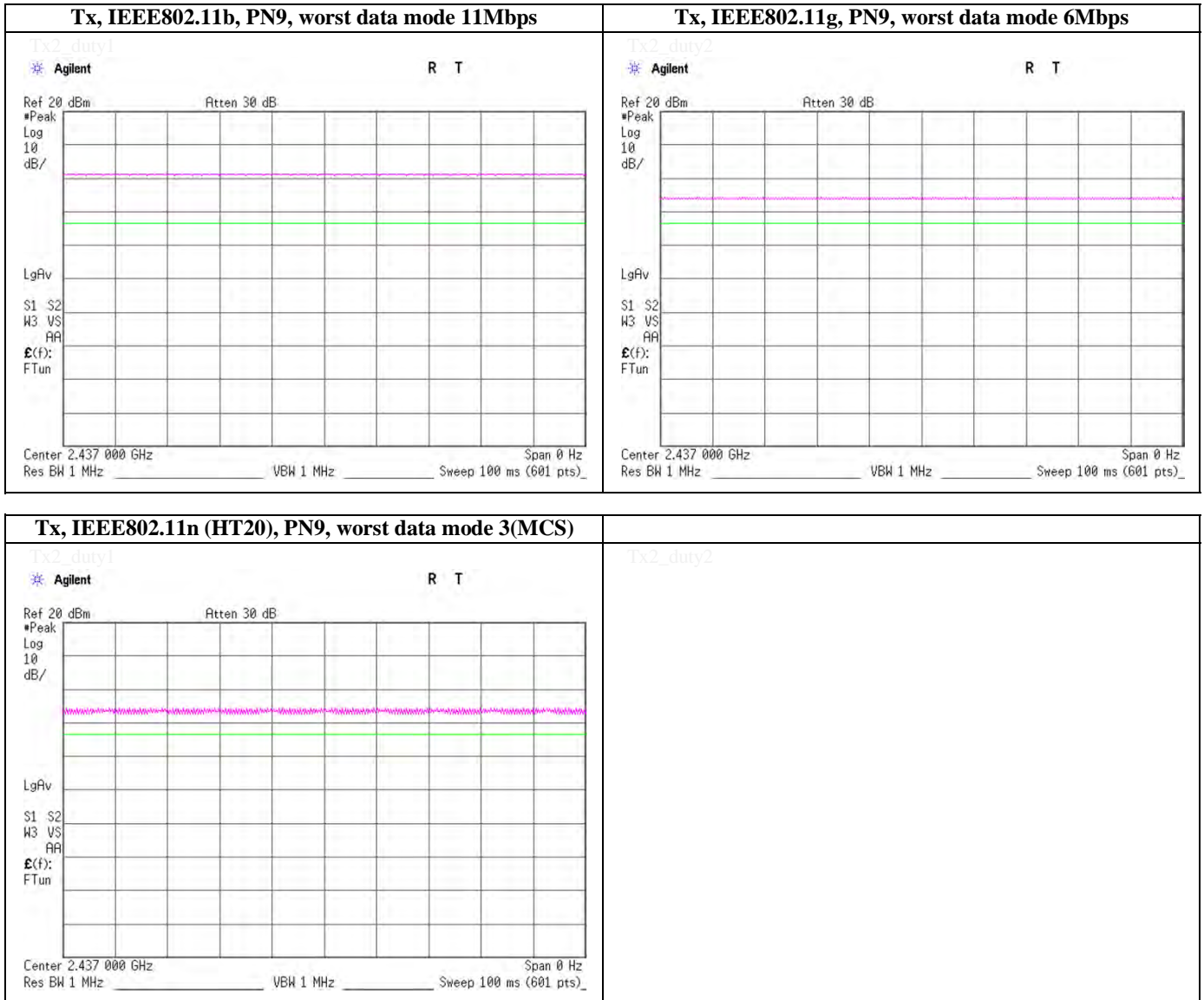
Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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

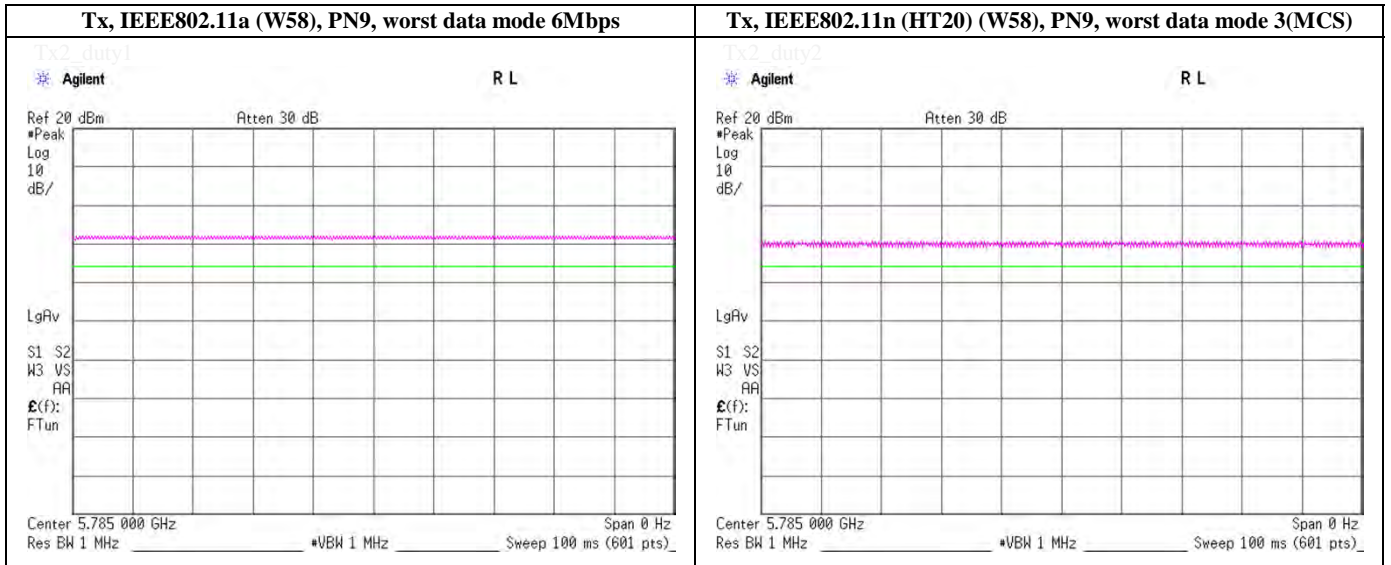
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	5825.000	PK	84.3	32.5	16.3	40.5	92.6	-	-	Carrier
Hori.	5850.001	PK	40.2	32.5	16.3	40.6	48.4	72.6	24.2	
Hori.	7766.681	PK	47.7	37.4	7.8	41.1	51.8	72.6	20.8	
Hori.	17475.000	PK	40.8	44.7	2.1	39.9	47.7	72.6	24.9	
Vert.	5825.000	PK	86.0	32.5	16.3	40.5	94.3	-	-	Carrier
Vert.	5850.001	PK	39.7	32.5	16.3	40.6	47.9	74.3	26.4	
Vert.	7766.681	PK	47.2	37.4	7.8	41.1	51.3	74.3	23.0	
Vert.	17475.000	PK	40.1	44.7	2.1	39.9	47.0	72.6	25.6	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Burst rate confirmation

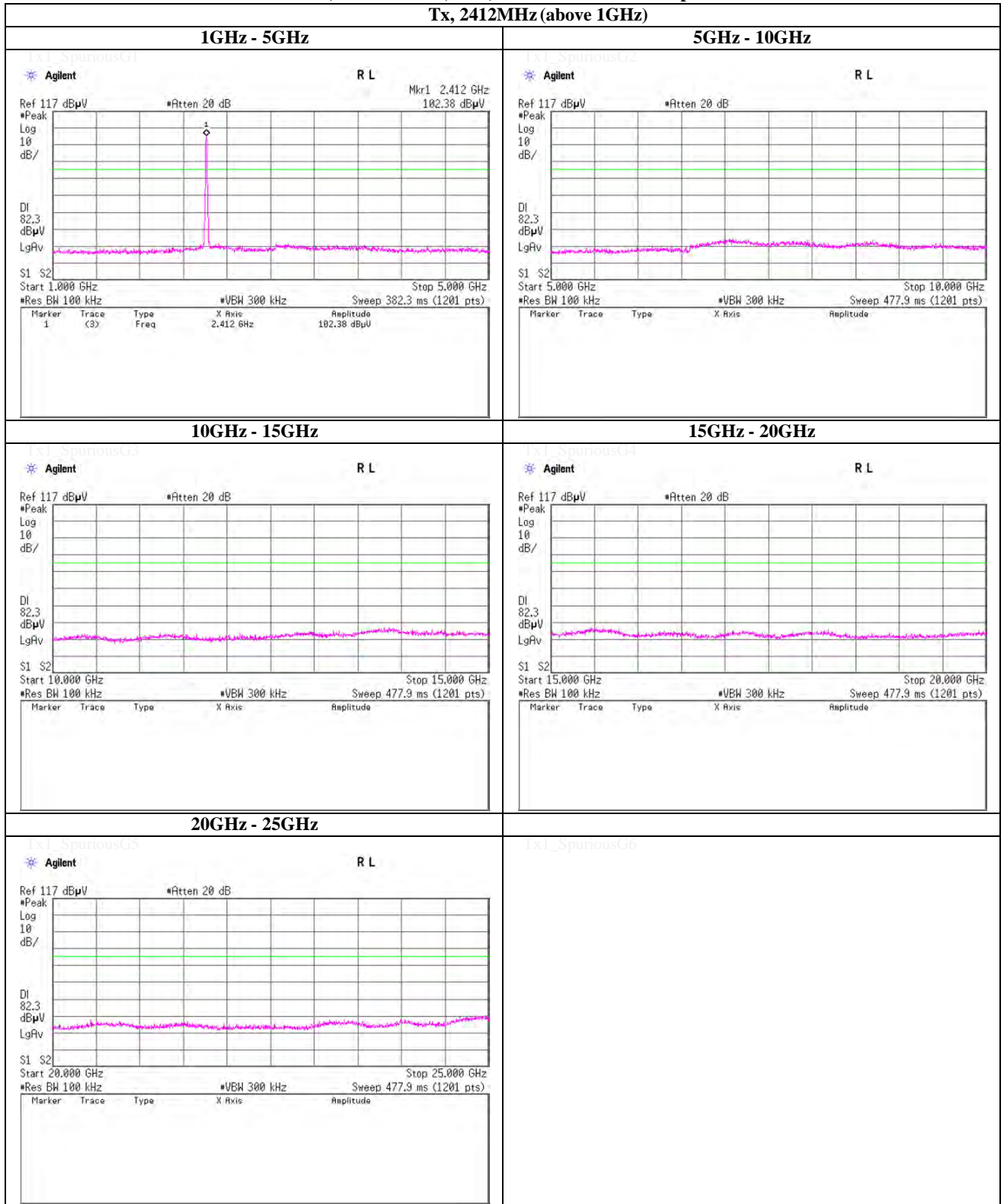


Burst rate confirmation

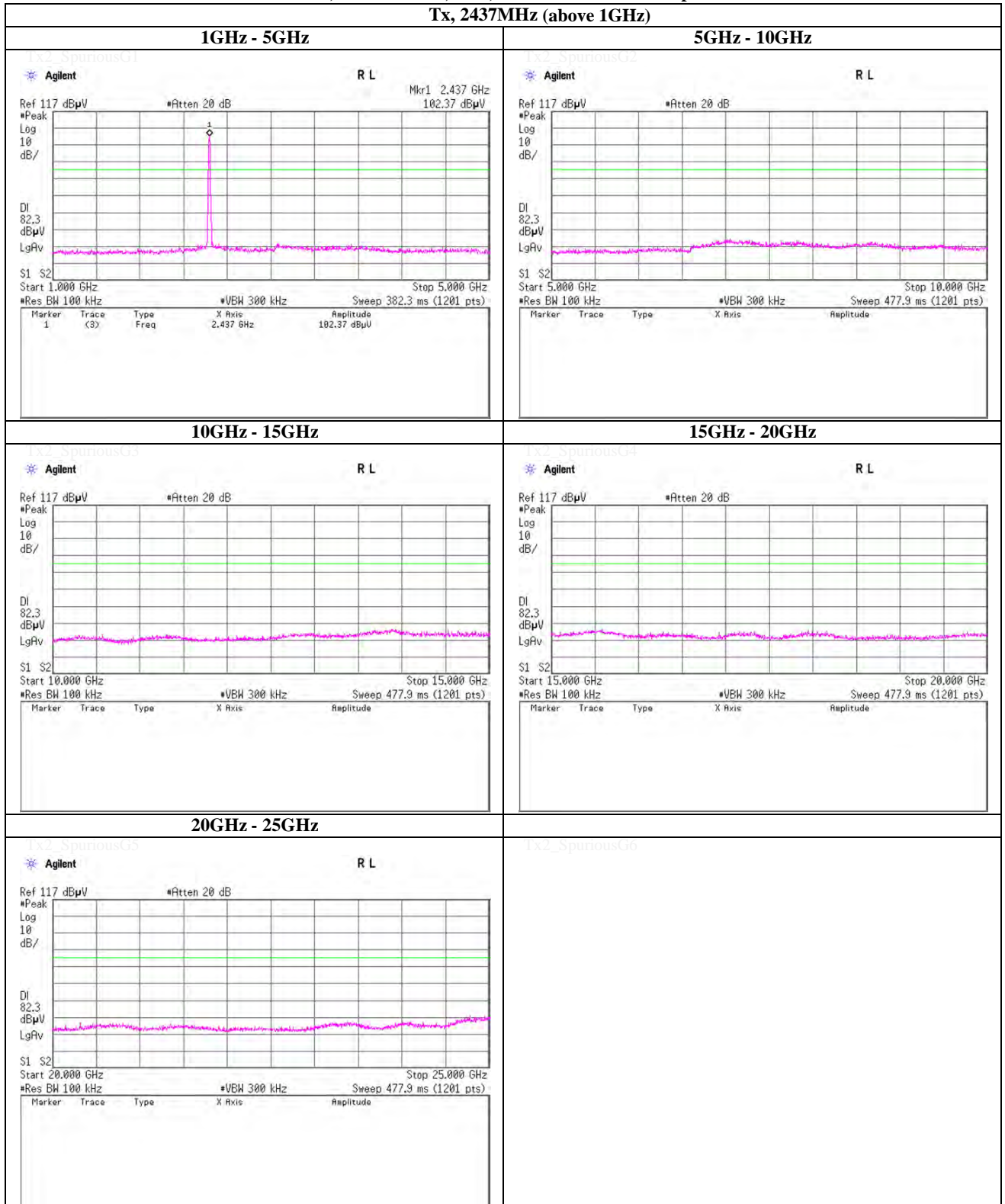


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 Facsimile : +81 463 50 6401

Spurious emission (Conducted)
Tx, IEEE802.11b, PN9, worst data mode 11Mbps



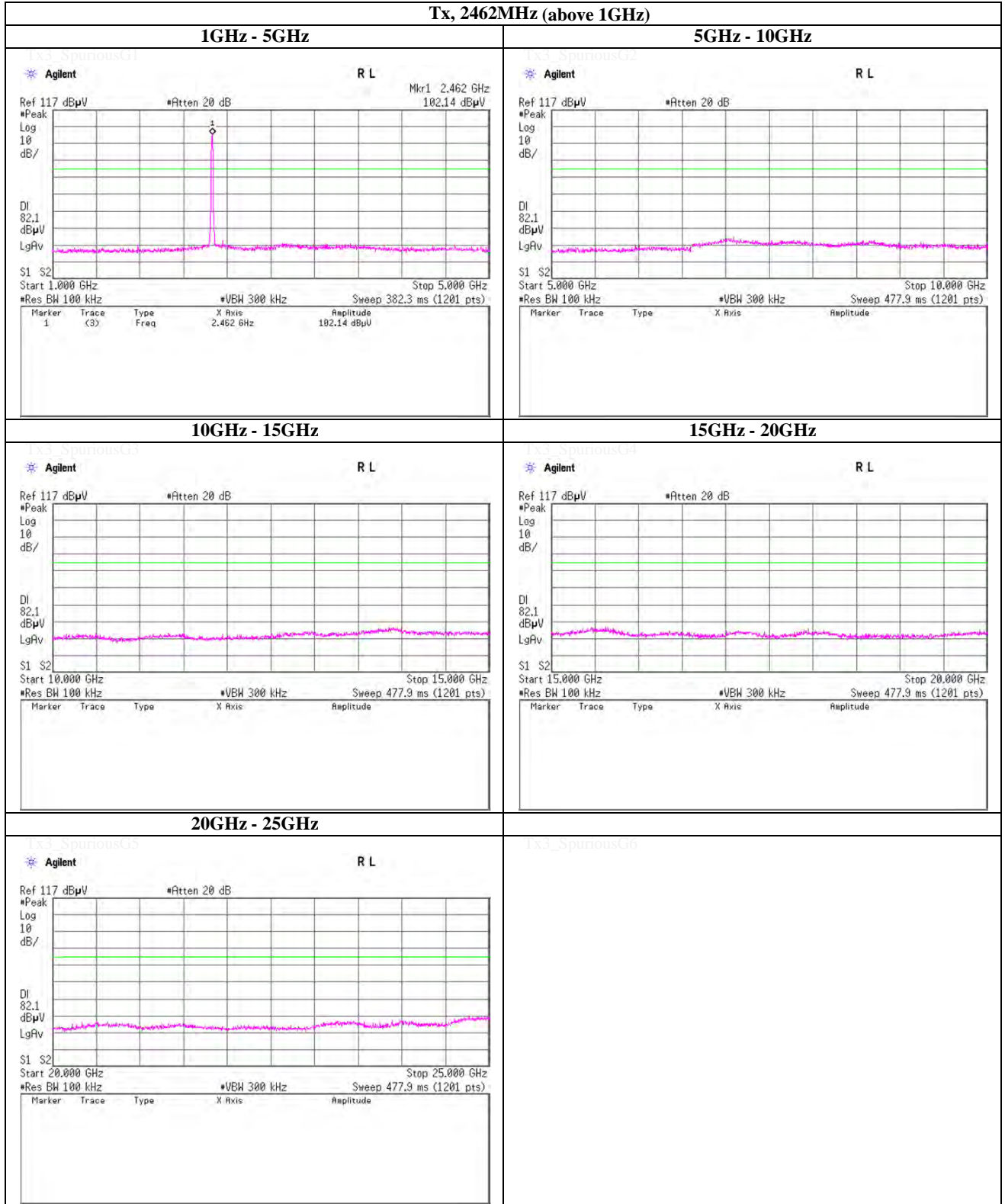
Spurious emission (Conducted)
Tx, IEEE802.11b, PN9, worst data mode 11Mbps



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Tx, IEEE802.11b, PN9, worst data mode 11Mbps

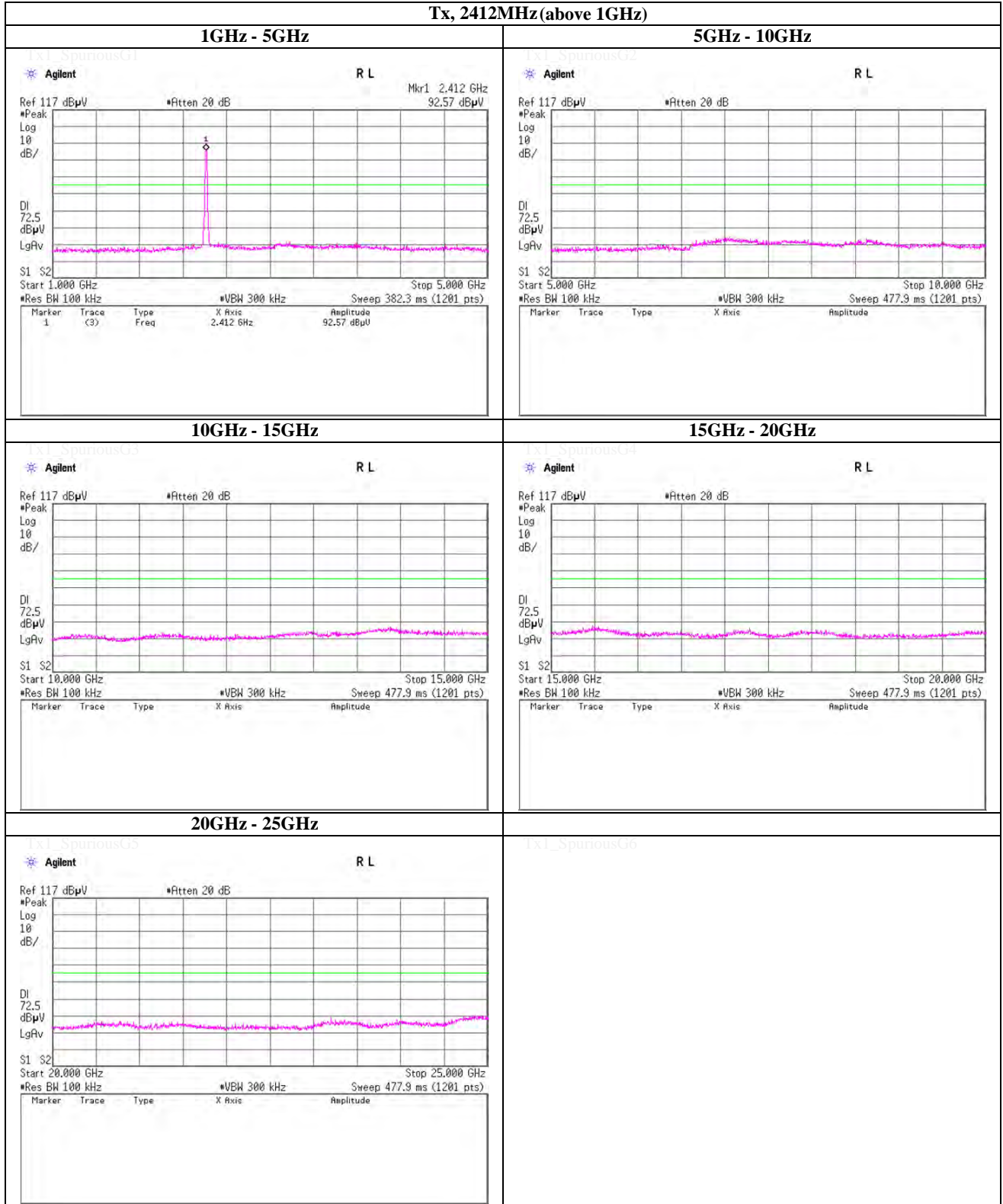
Tx, 2462MHz (above 1GHz)



Spurious emission (Conducted)

Tx, IEEE802.11g, PN9, worst data mode 6Mbps

Tx, 2412MHz(above 1GHz)



UL Japan, Inc.

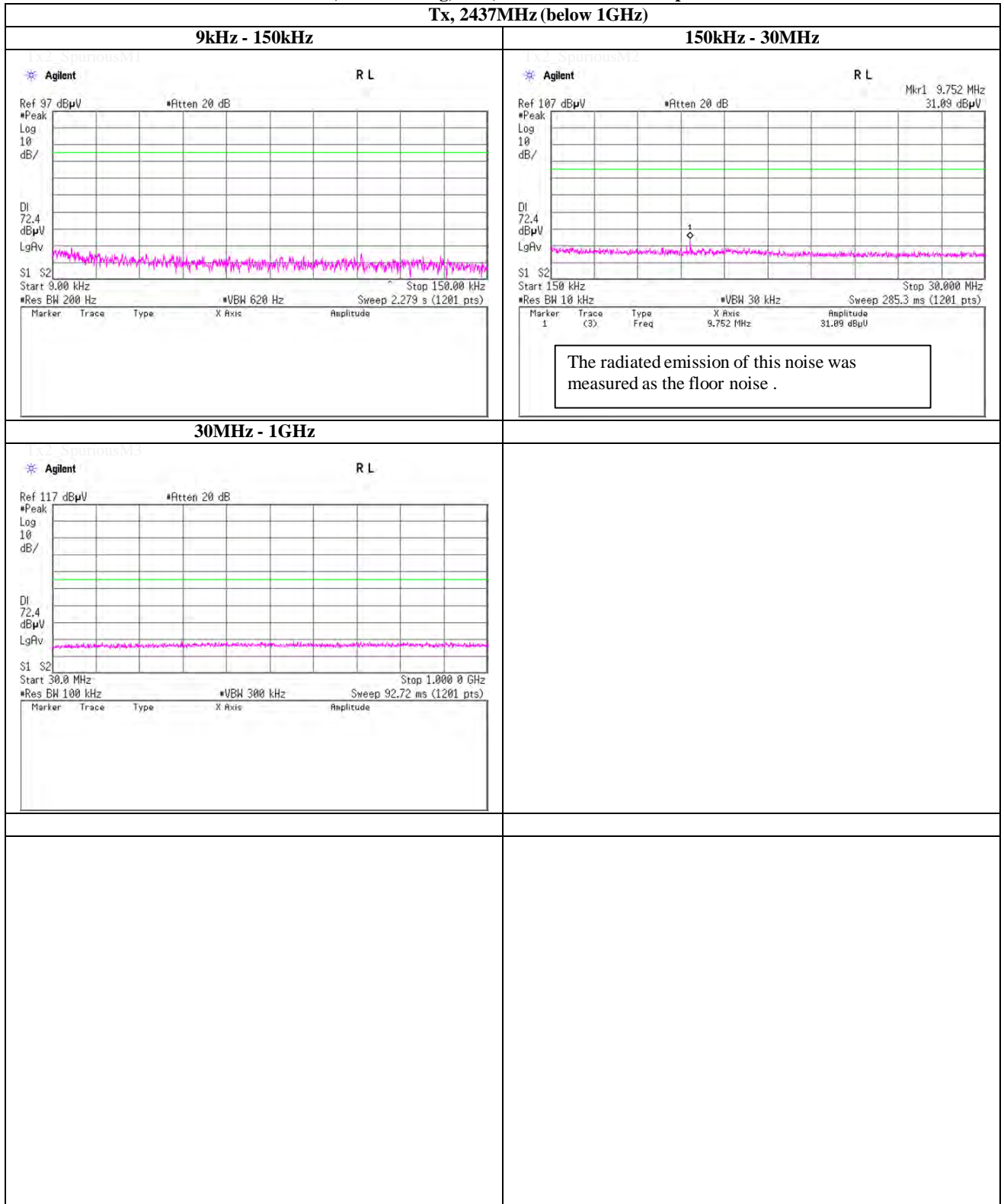
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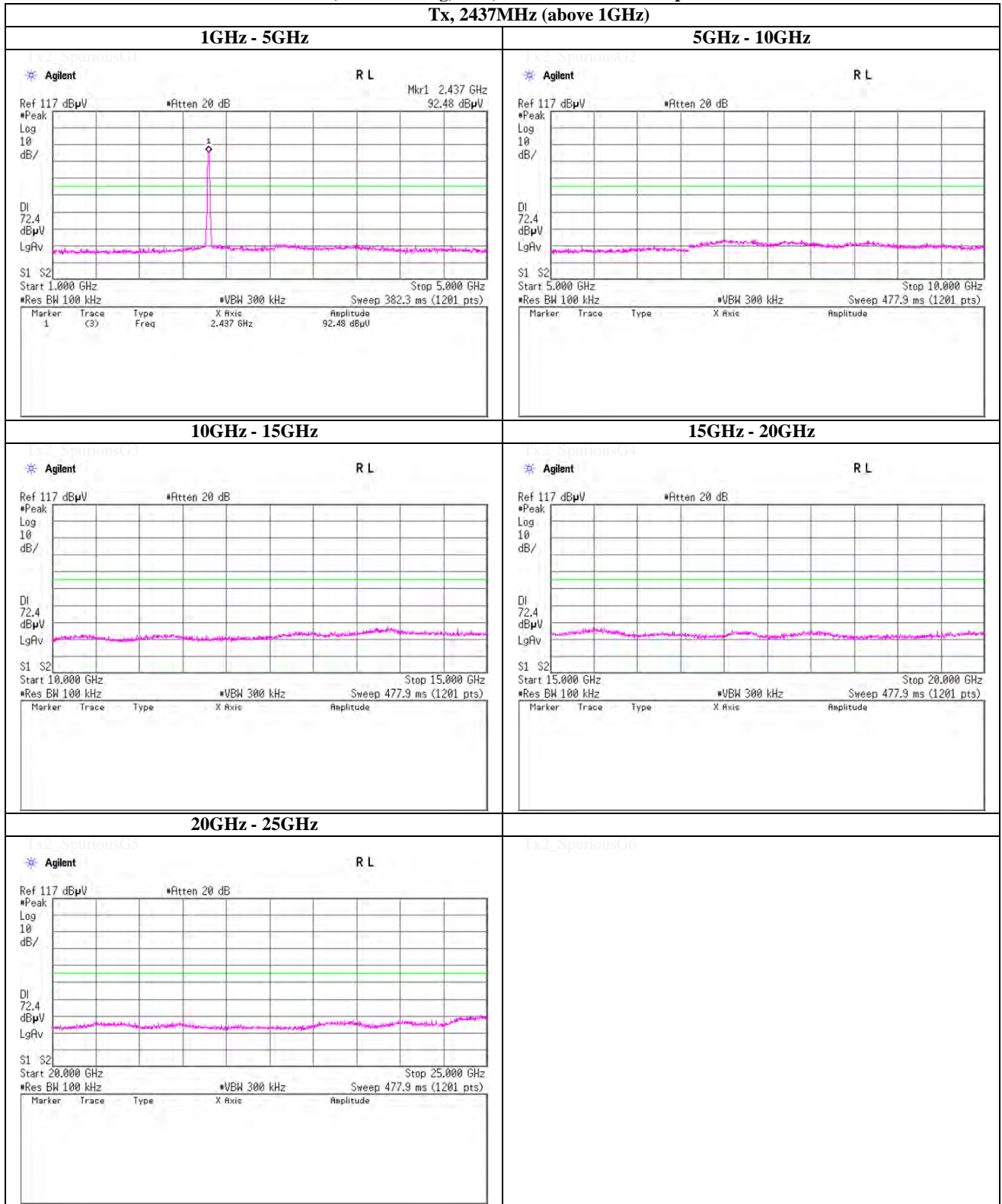
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Spurious emission (Conducted)
Tx, IEEE802.11g, PN9, worst data mode 6Mbps

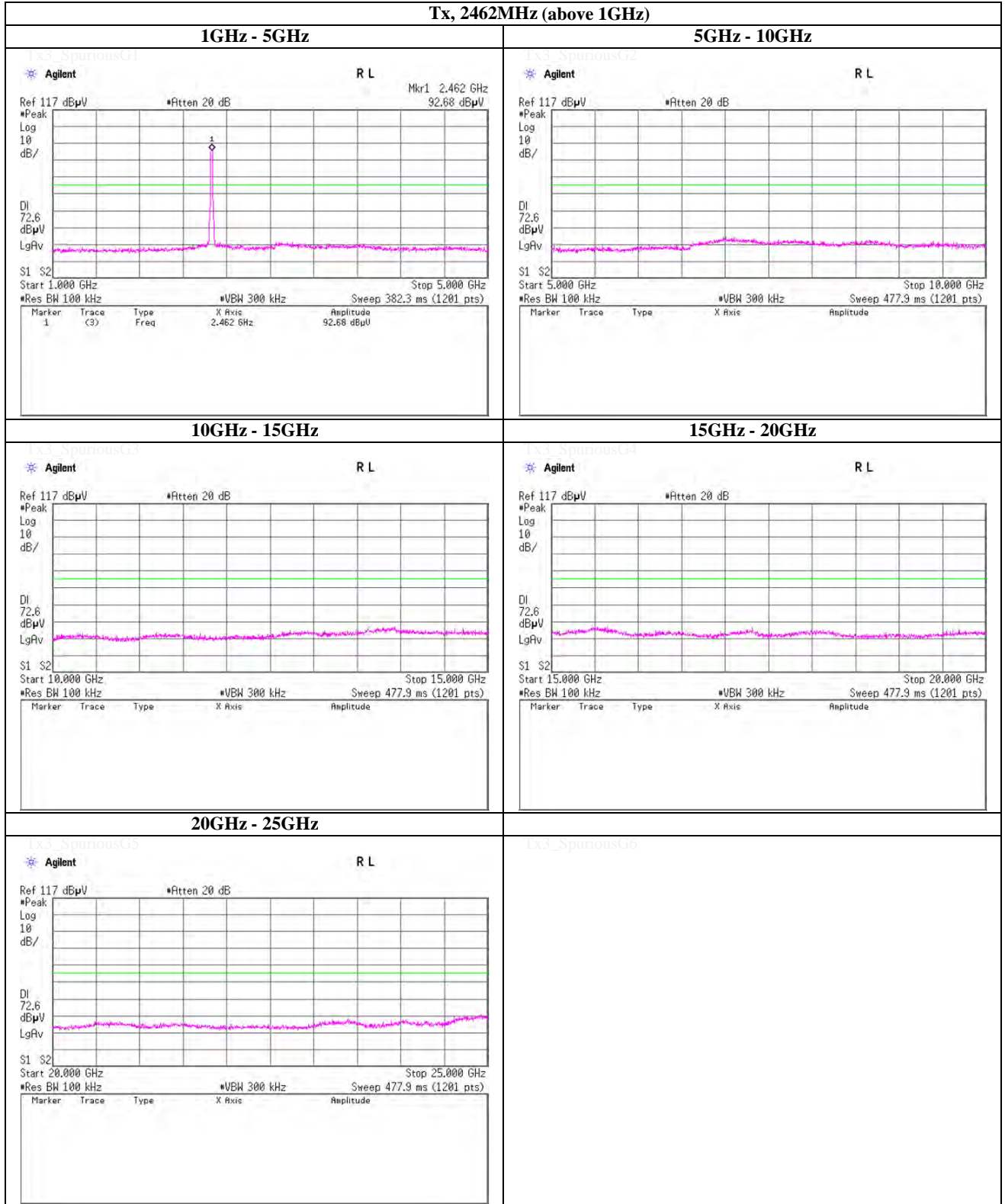


Spurious emission (Conducted)
Tx, IEEE802.11g, PN9, worst data mode 6Mbps
Tx, 2437MHz (above 1GHz)



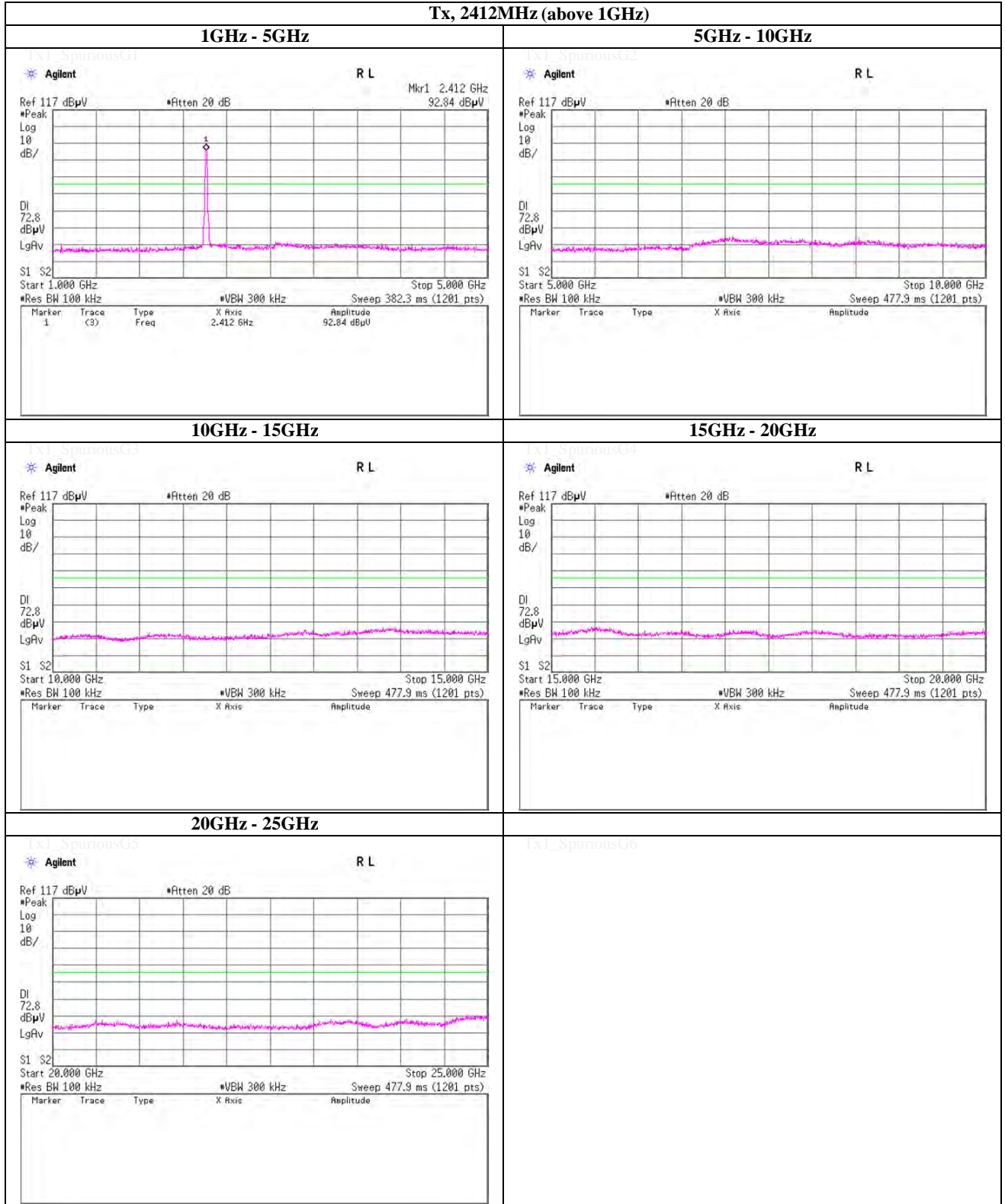
Spurious emission (Conducted)
Tx, IEEE802.11g, PN9, worst data mode 6Mbps

Tx, 2462MHz (above 1GHz)



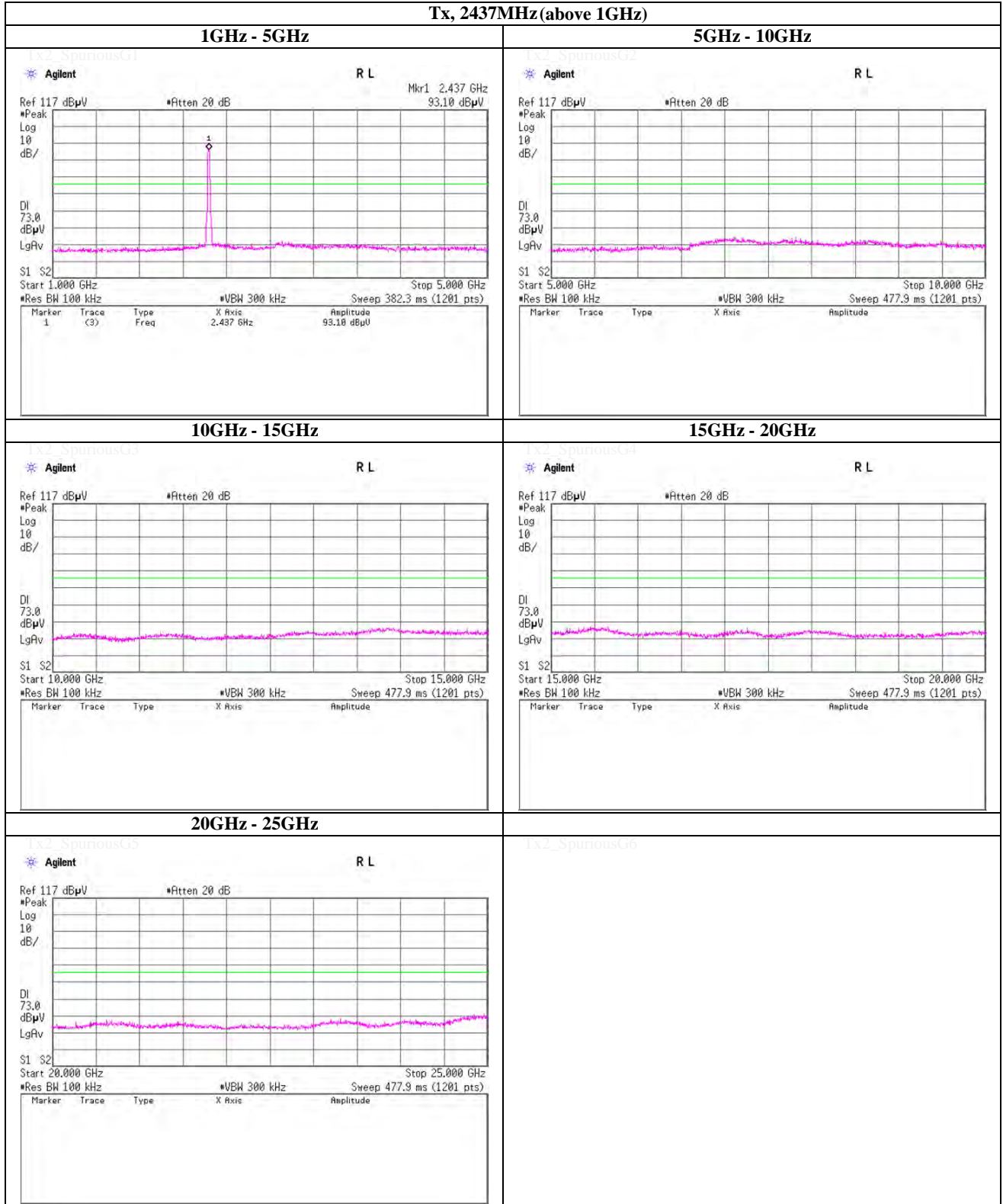
Spurious emission (Conducted)
 Tx, IEEE802.11n (HT20), PN9, worst data mode 3(MCS)

Tx, 2412MHz (above 1GHz)



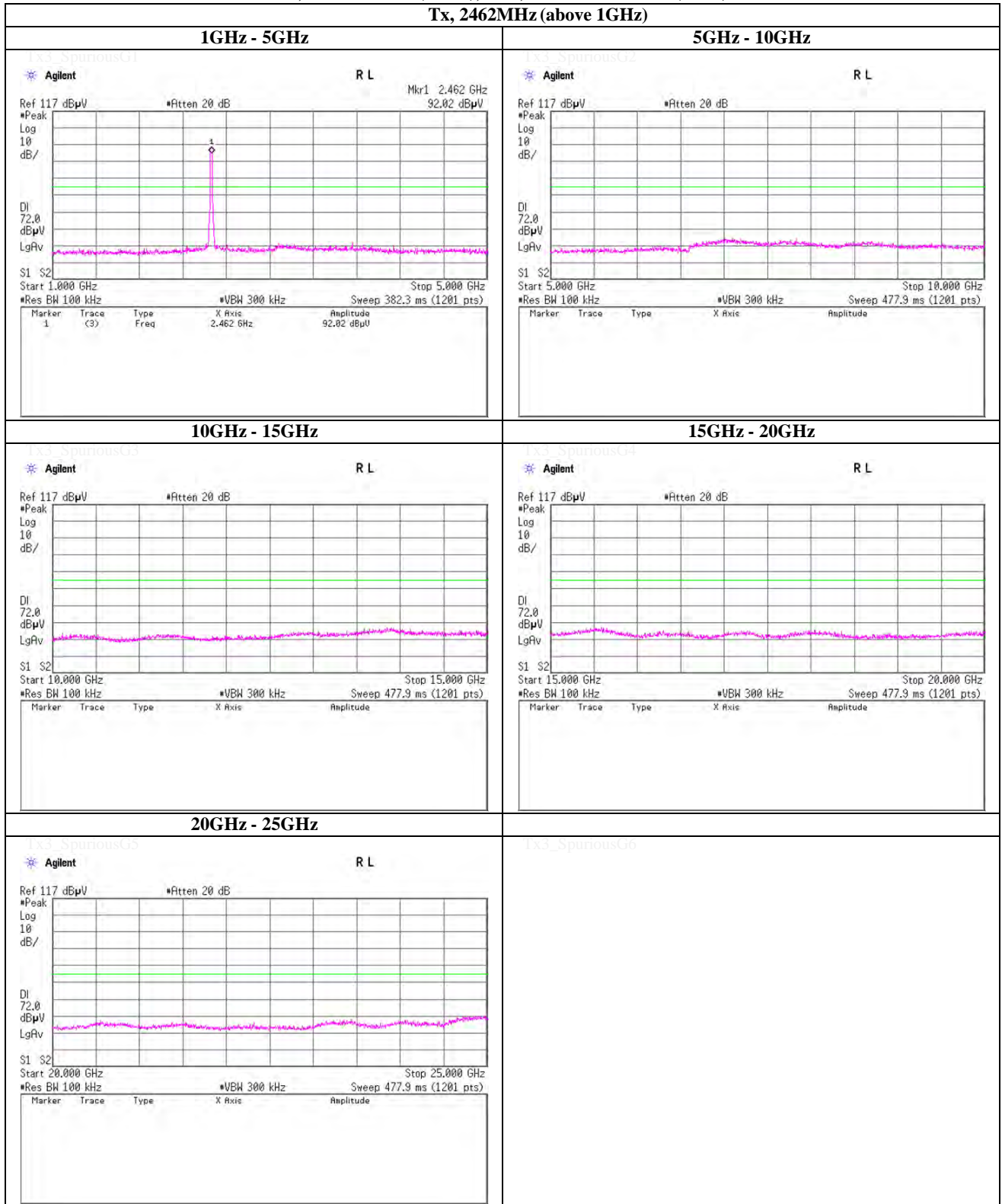
Spurious emission (Conducted)
Tx, IEEE802.11n (HT20), PN9, worst data mode 3(MCS)

Tx, 2437MHz (above 1GHz)



Spurious emission (Conducted)
 Tx, IEEE802.11n (HT20), PN9, worst data mode 3(MCS)

Tx, 2462MHz (above 1GHz)



Spurious emission (Conducted)

Tx, IEEE802.11a (W58), PN9, worst data mode 6Mbps

Tx, 5745MHz (below 1GHz)



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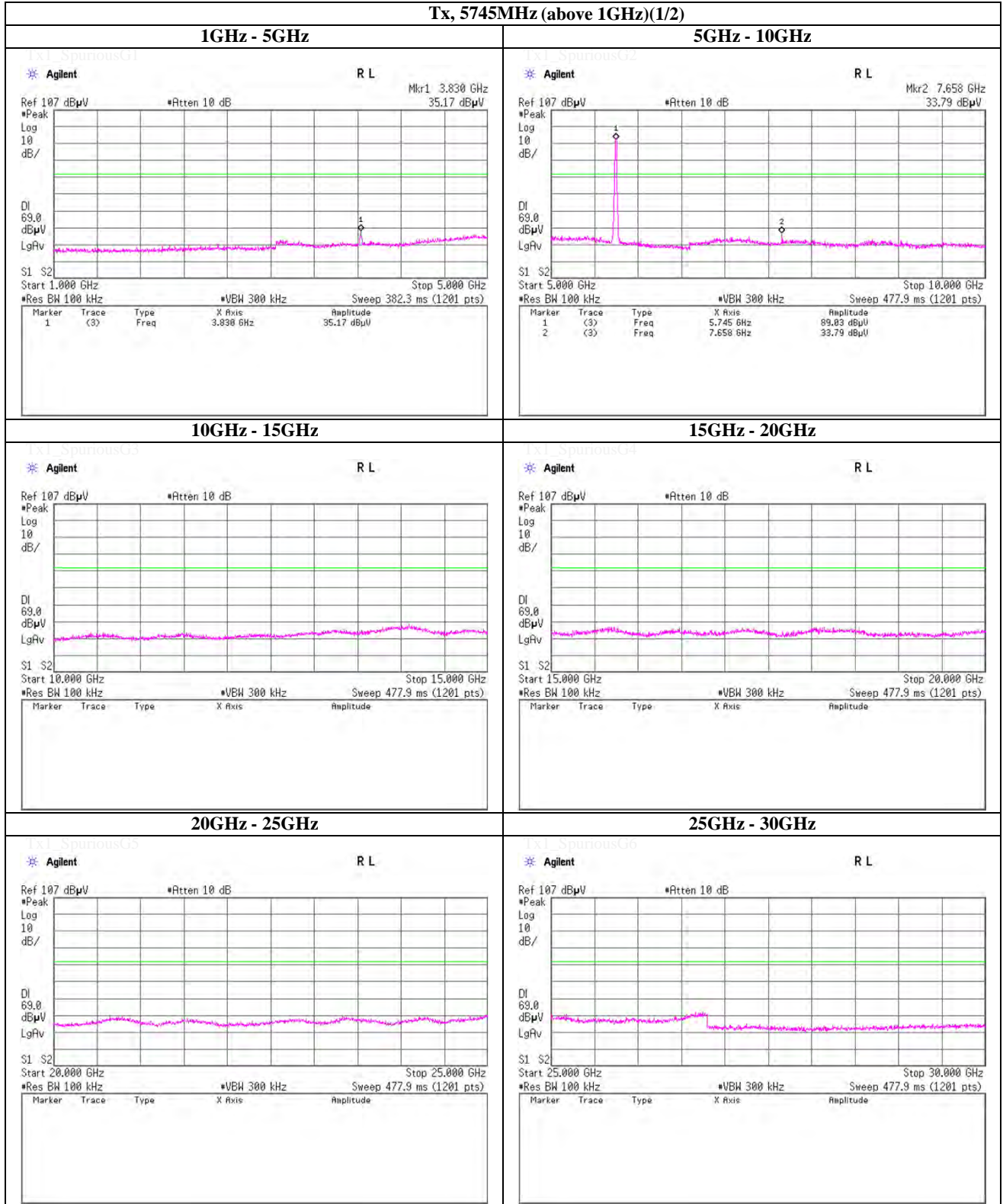
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Telephone : +81 463 50 6400

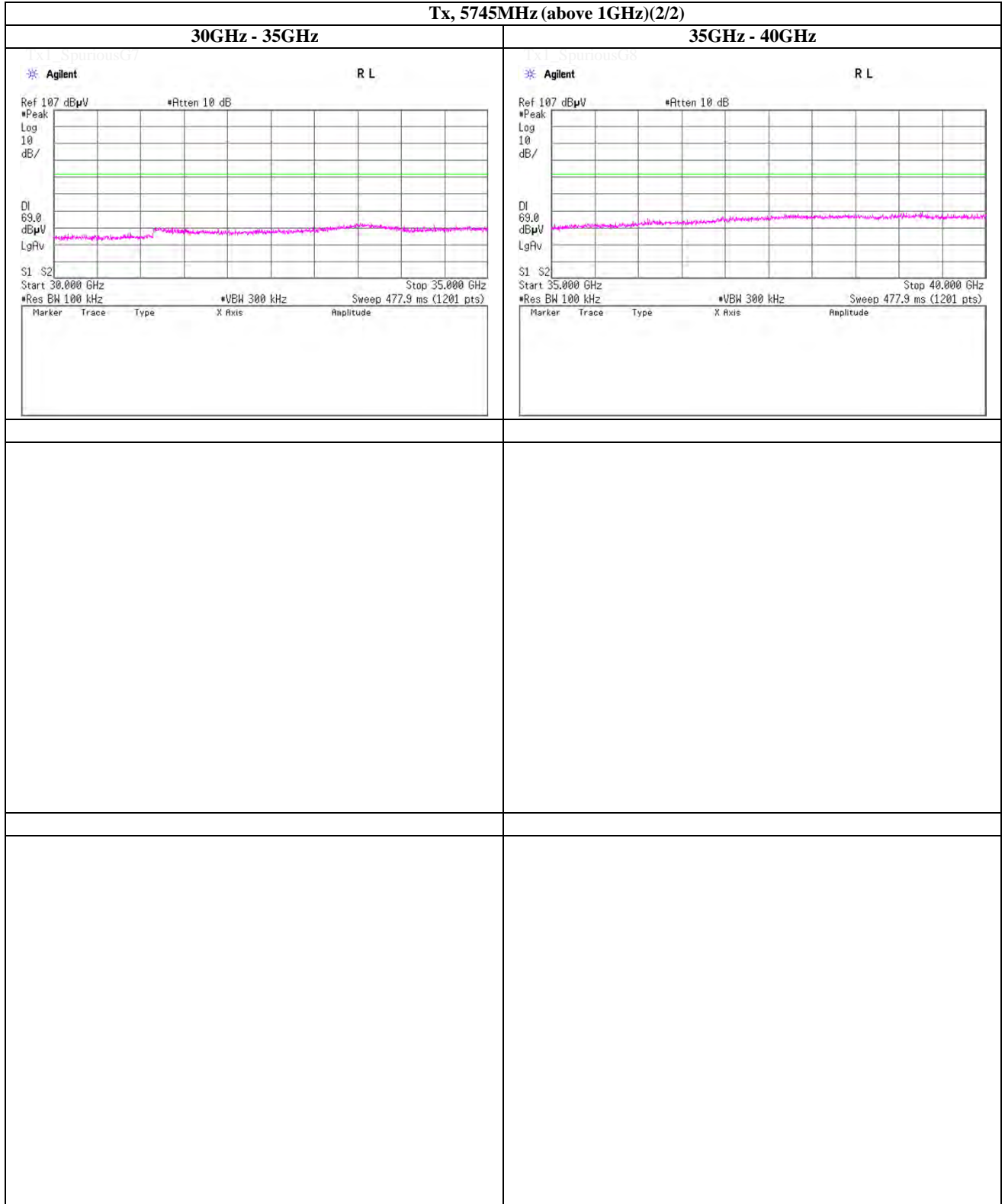
Facsimile : +81 463 50 6401

Spurious emission (Conducted)
Tx, IEEE802.11a (W58), PN9, worst data mode 6Mbps

Tx, 5745MHz (above 1GHz)(1/2)

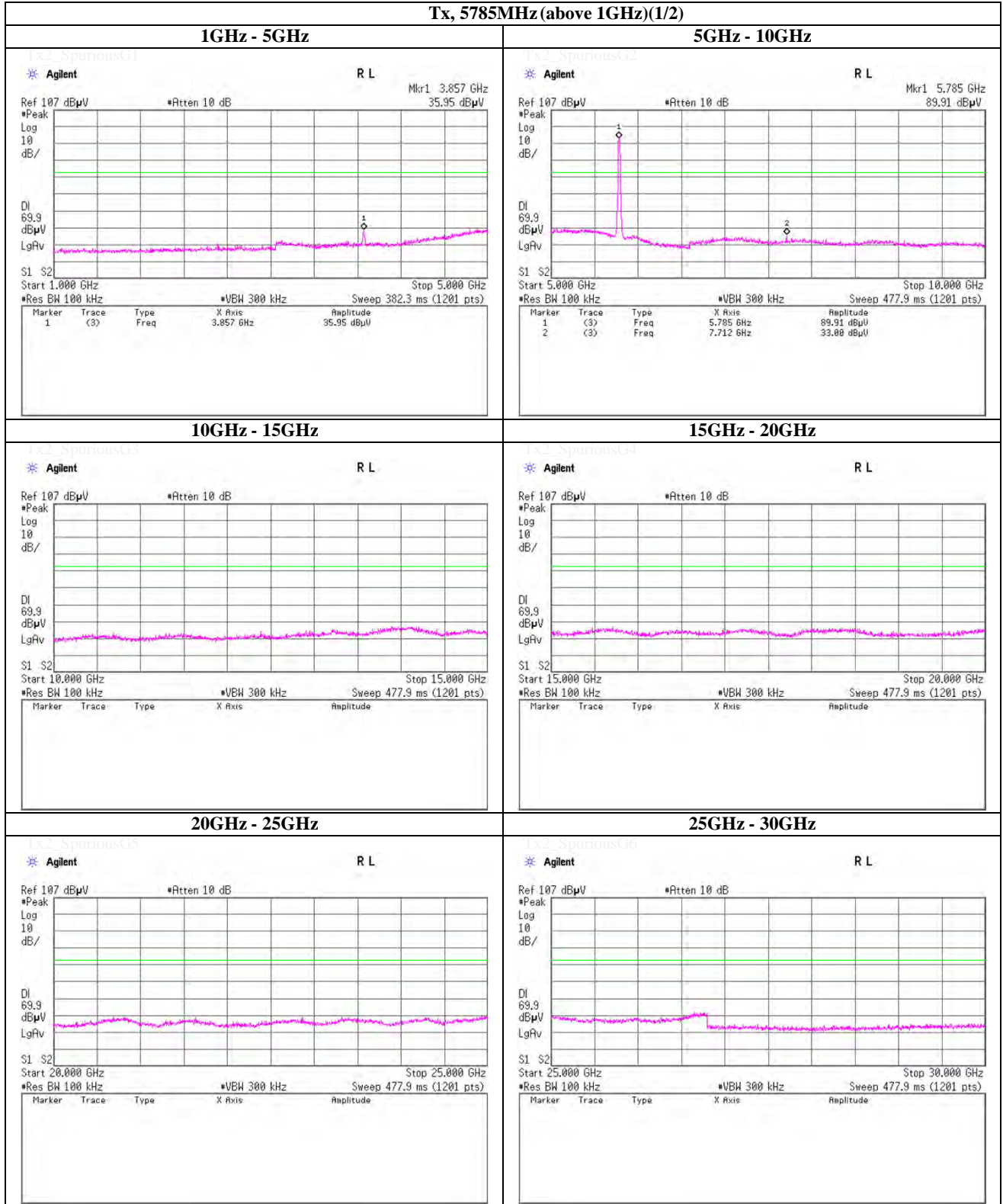


Spurious emission (Conducted)
Tx, IEEE802.11a (W58), PN9, worst data mode 6Mbps

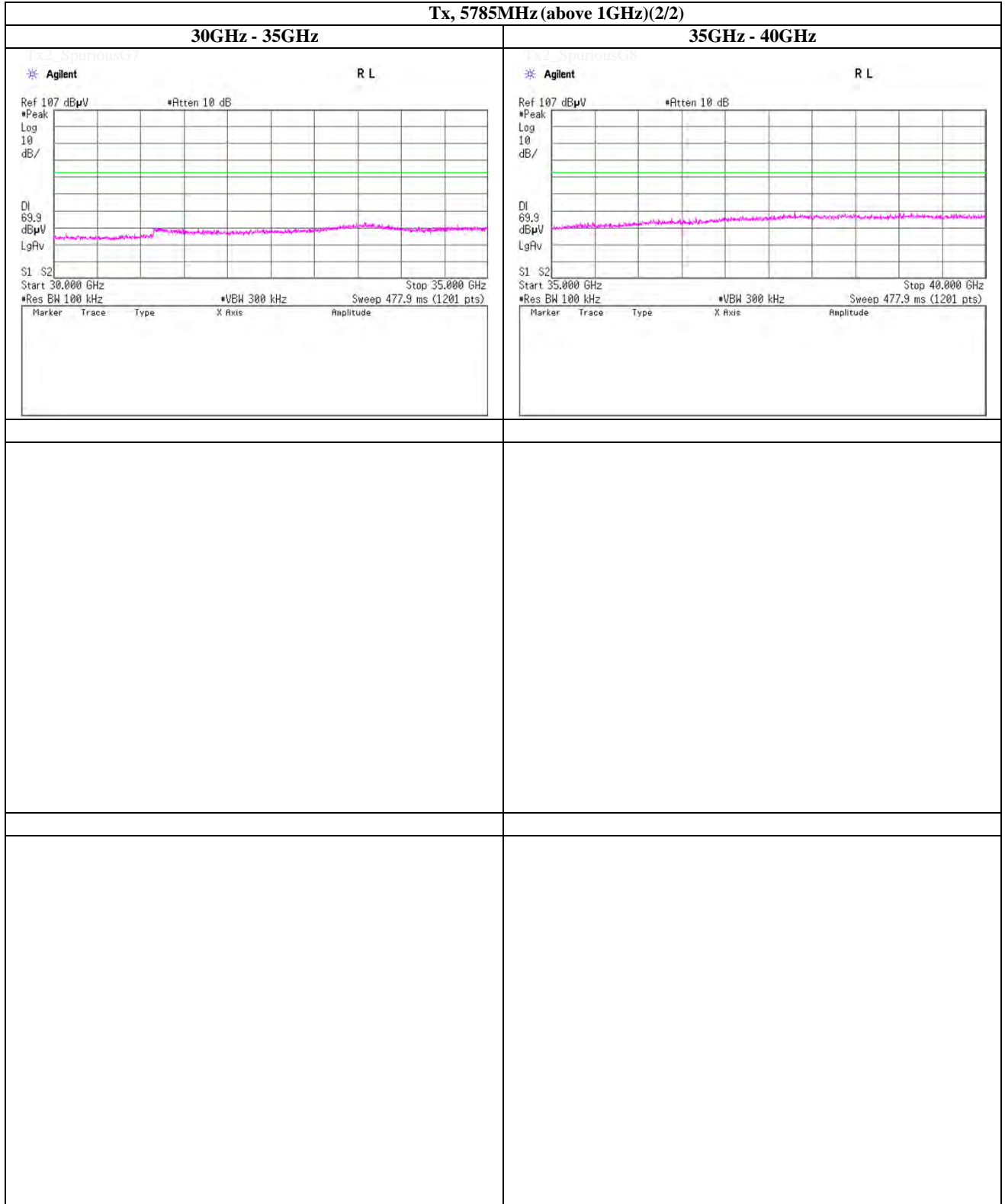


Spurious emission (Conducted)
 Tx, IEEE802.11a (W58), PN9, worst data mode 6Mbps

Tx, 5785MHz (above 1GHz)(1/2)

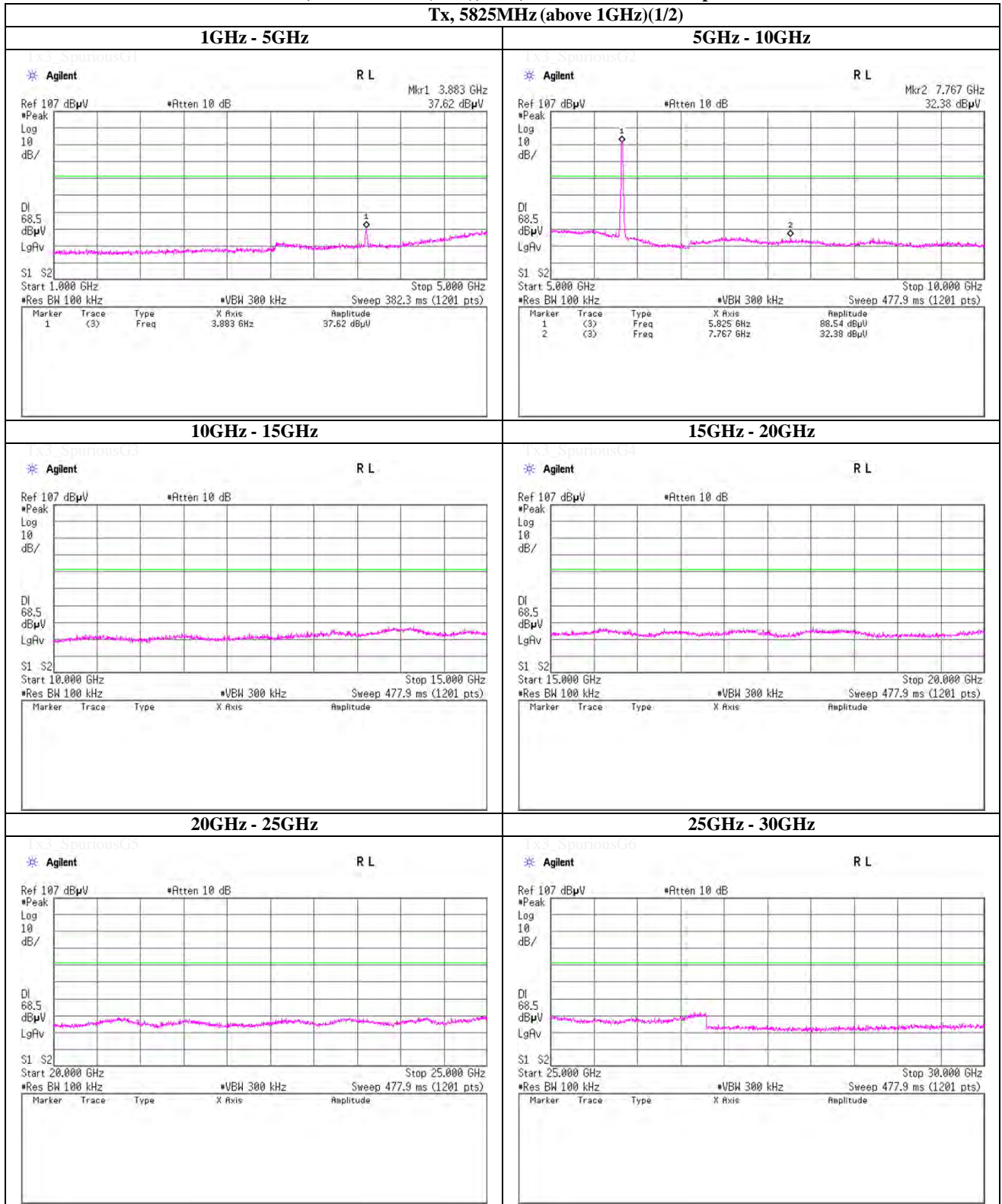


Spurious emission (Conducted)
Tx, IEEE802.11a (W58), PN9, worst data mode 6Mbps

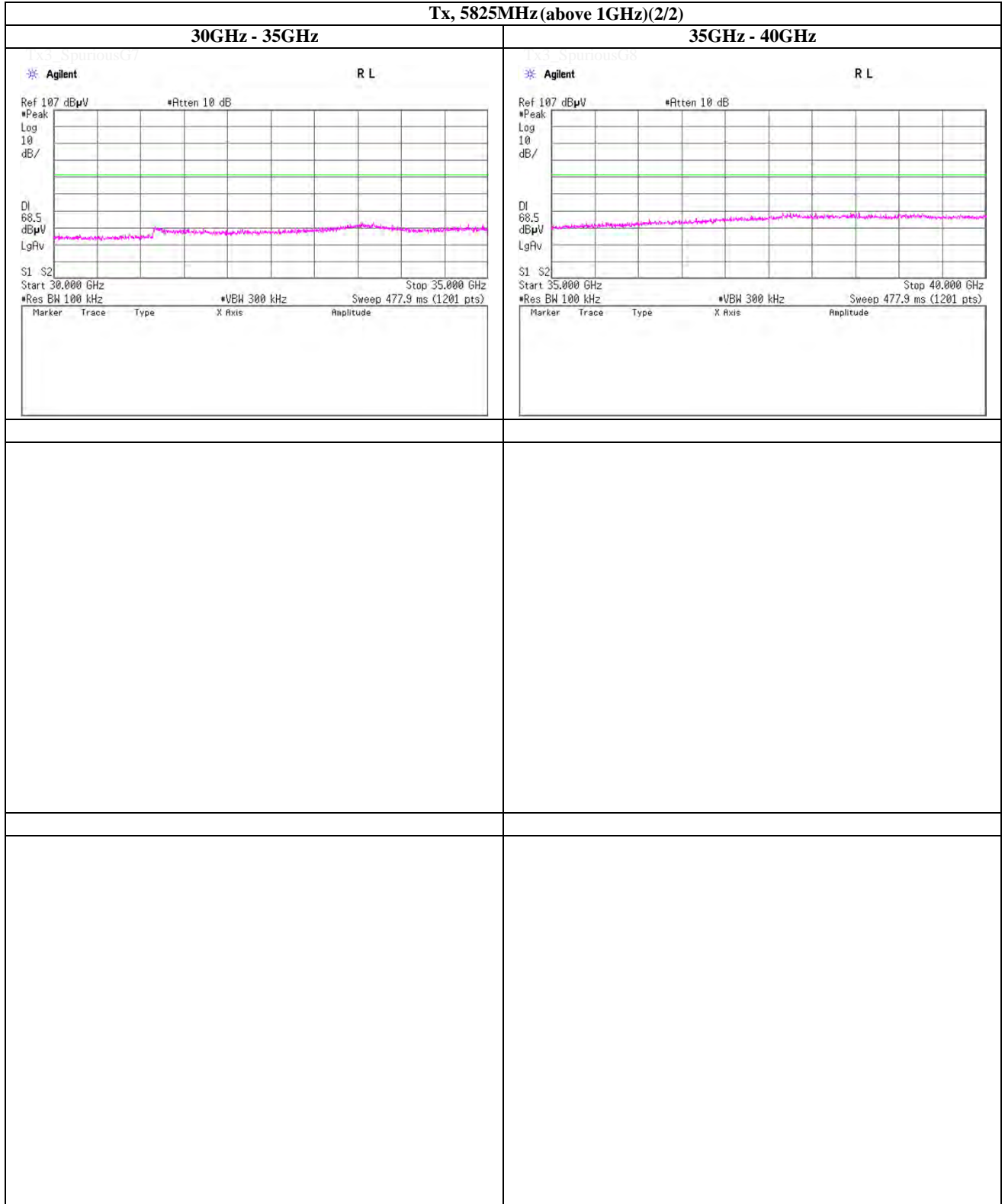


Spurious emission (Conducted)
Tx, IEEE802.11a (W58), PN9, worst data mode 6Mbps

Tx, 5825MHz (above 1GHz)(1/2)



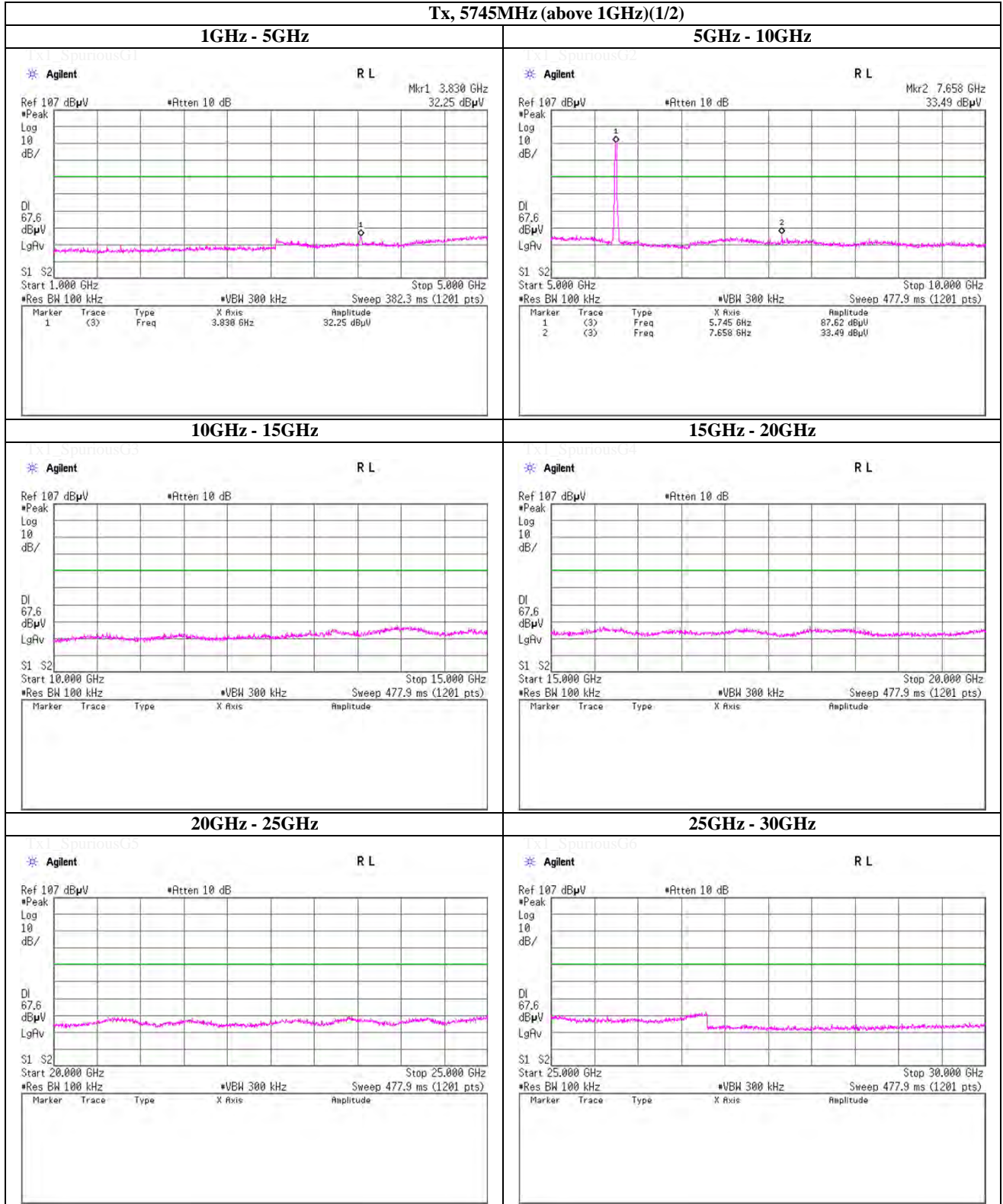
Spurious emission (Conducted)
Tx, IEEE802.11a (W58), PN9, worst data mode 6Mbps



Spurious emission (Conducted)

Tx, IEEE802.11n (HT20) (W58), PN9, worst data mode 3(MCS)

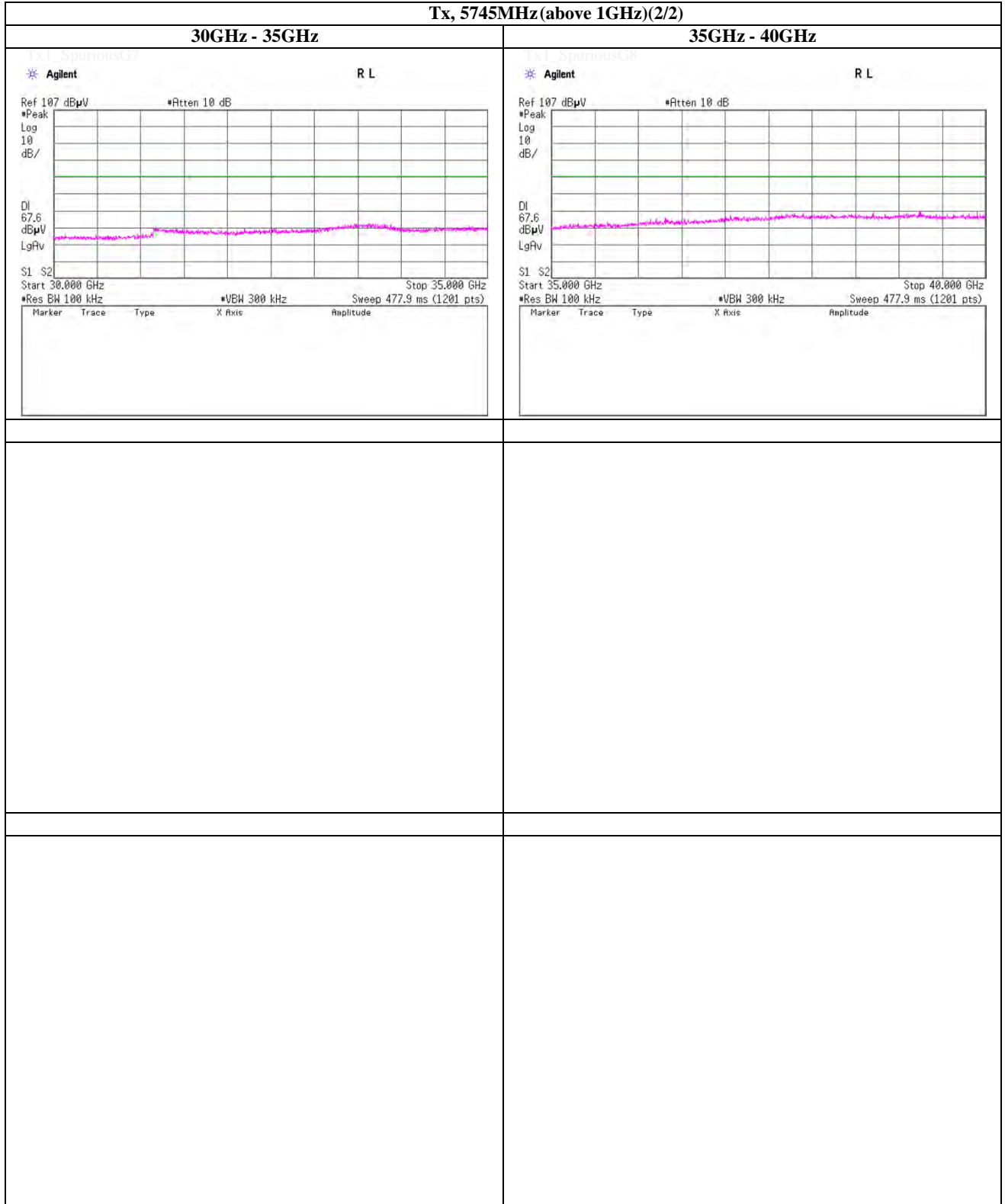
Tx, 5745MHz (above 1GHz)(1/2)



Spurious emission (Conducted)

Tx, IEEE802.11n (HT20) (W58), PN9, worst data mode 3(MCS)

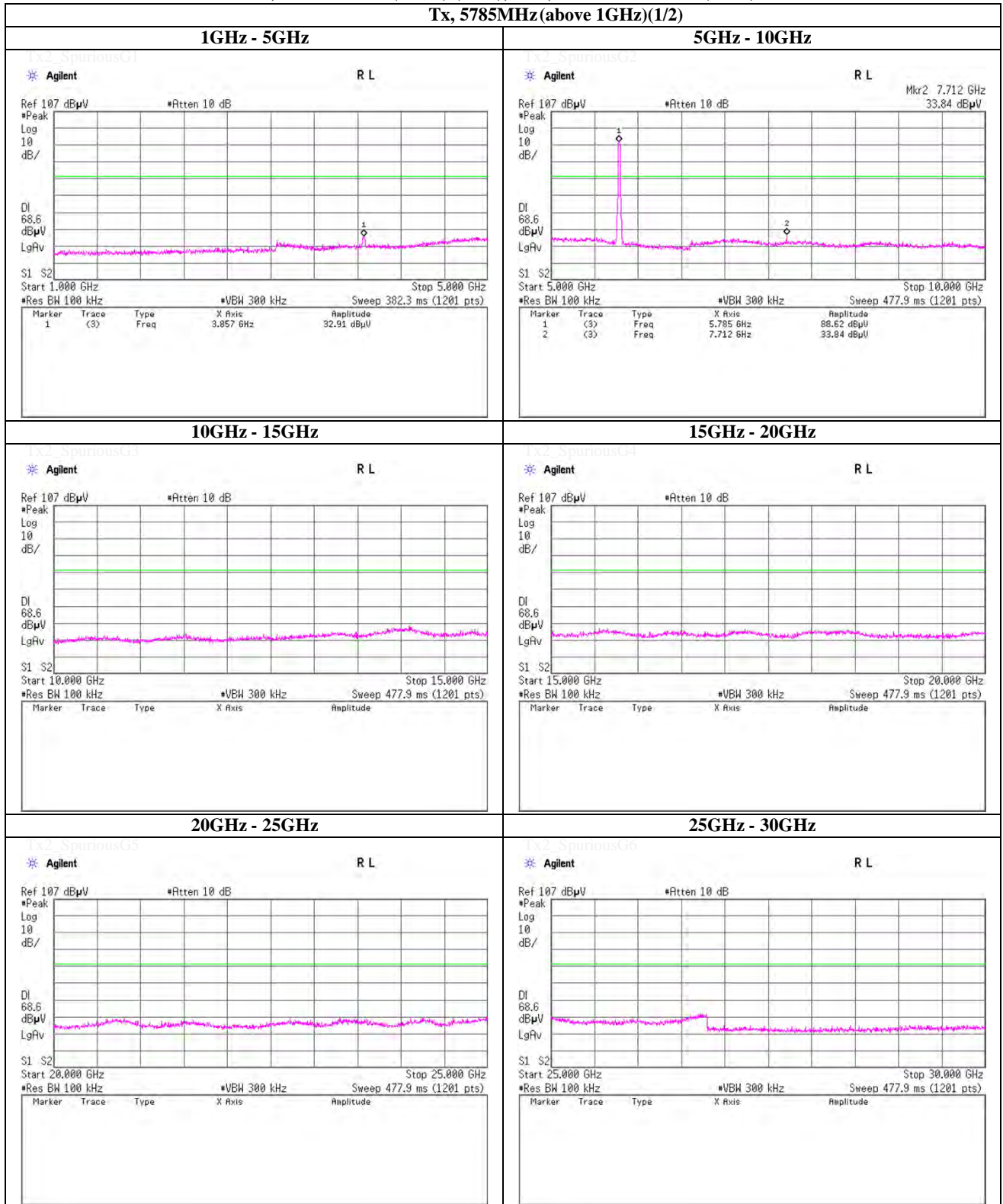
Tx, 5745MHz (above 1GHz)(2/2)



Spurious emission (Conducted)

Tx, IEEE802.11n (HT20) (W58), PN9, worst data mode 3(MCS)

Tx, 5785MHz(above 1GHz)(1/2)



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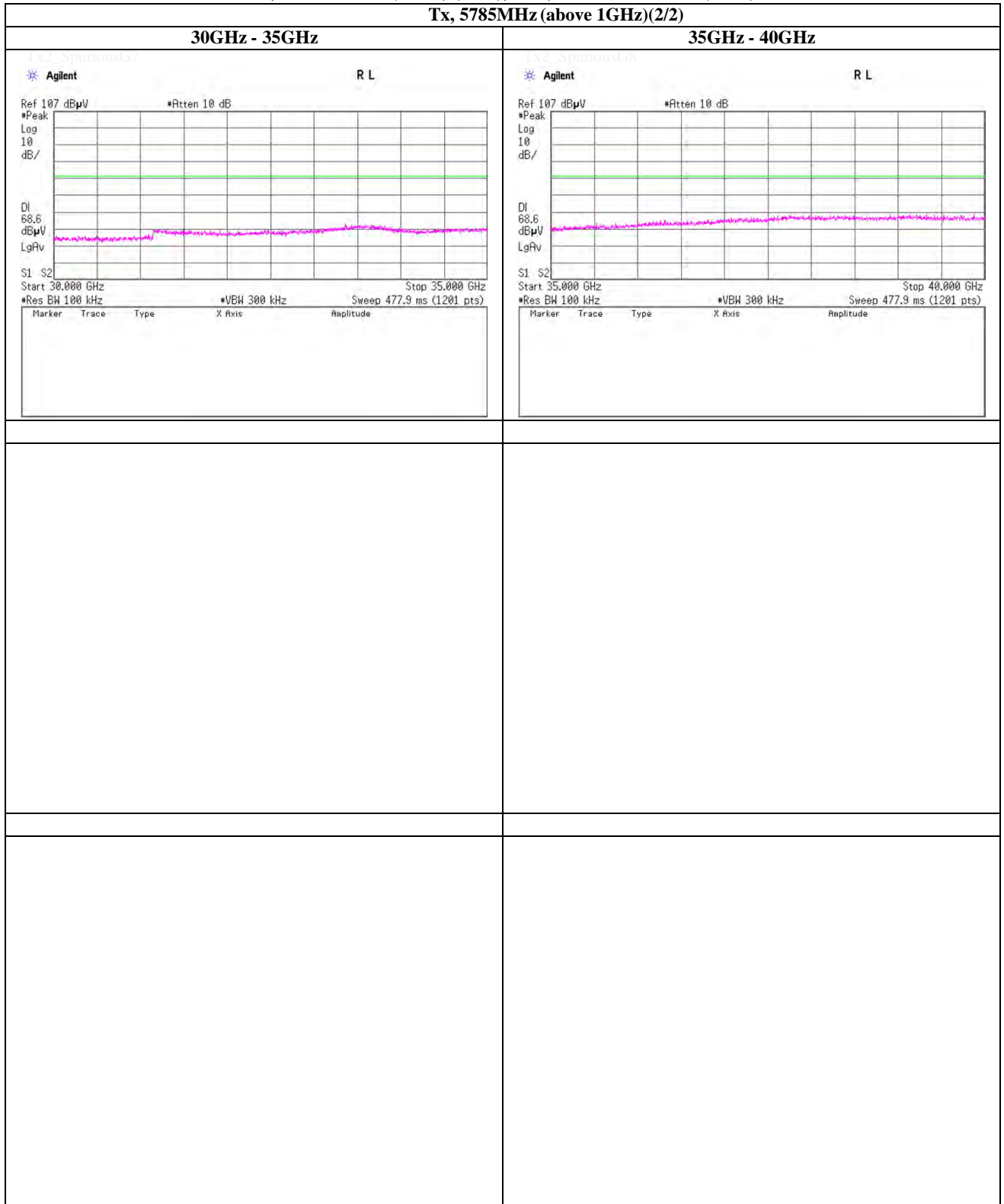
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Spurious emission (Conducted)

Tx, IEEE802.11n (HT20) (W58), PN9, worst data mode 3(MCS)

Tx, 5785MHz (above 1GHz)(2/2)



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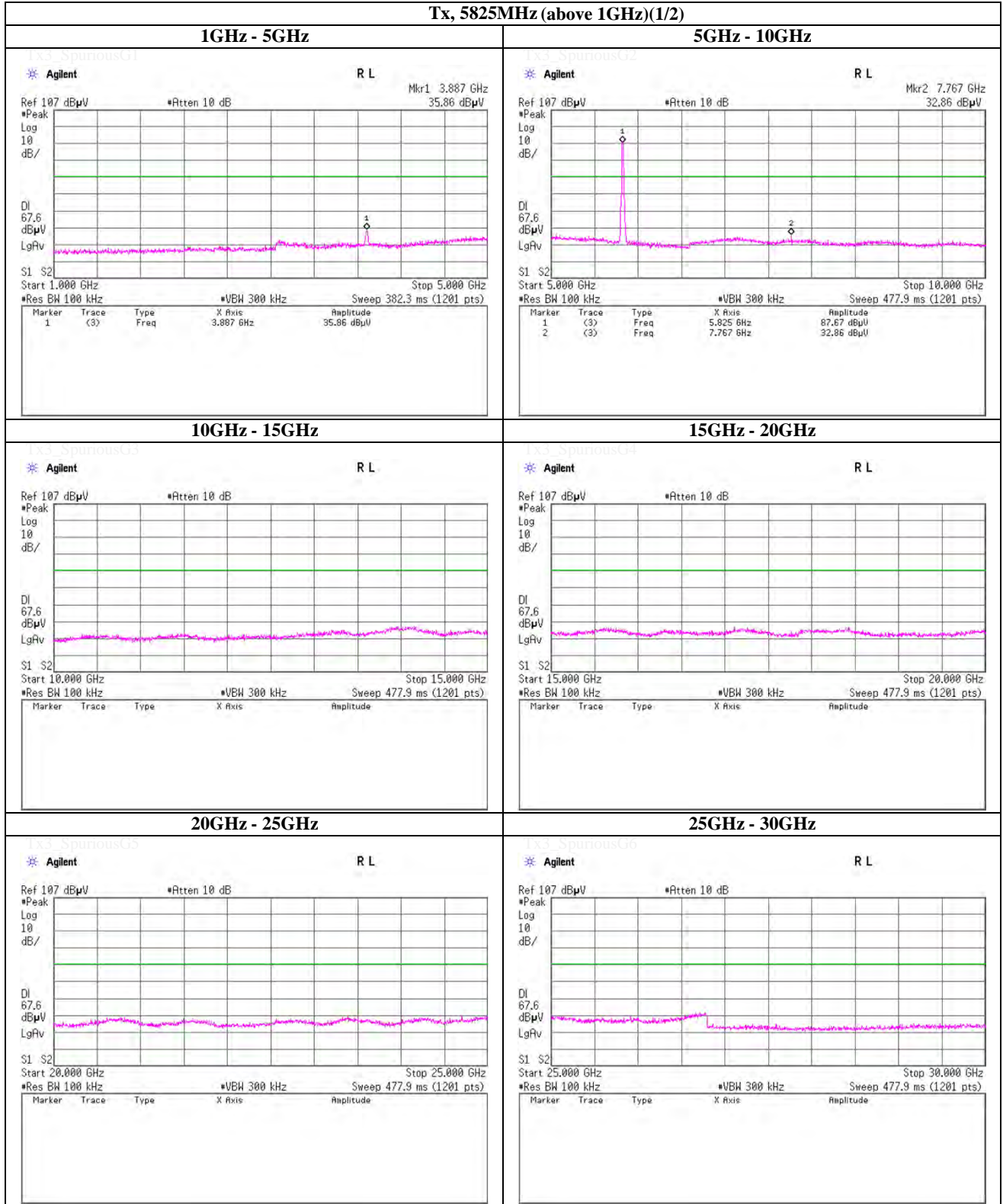
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Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, IEEE802.11n (HT20) (W58), PN9, worst data mode 3(MCS)

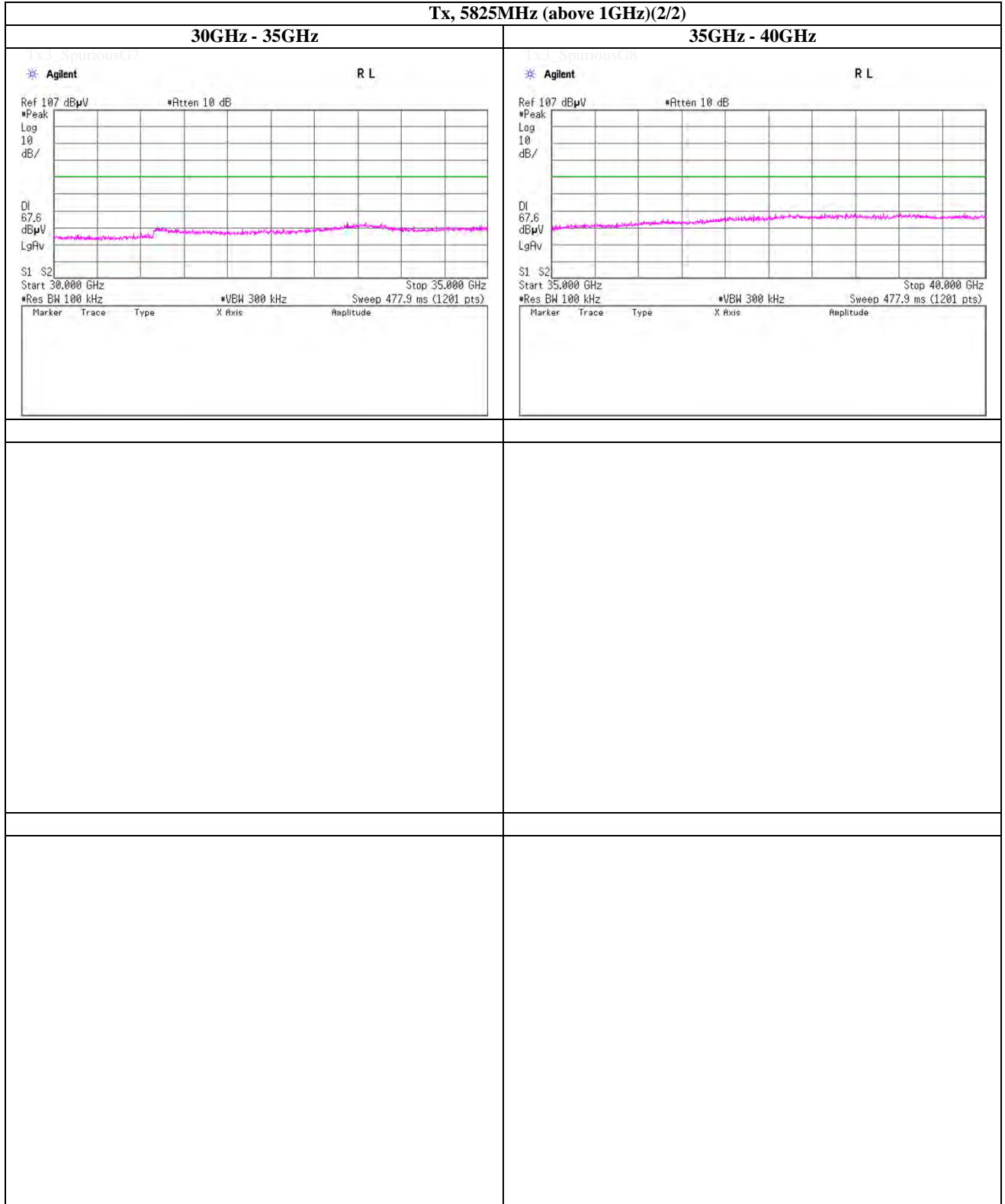
Tx, 5825MHz (above 1GHz)(1/2)



Spurious emission (Conducted)

Tx, IEEE802.11n (HT20) (W58), PN9, worst data mode 3(MCS)

Tx, 5825MHz (above 1GHz)(2/2)



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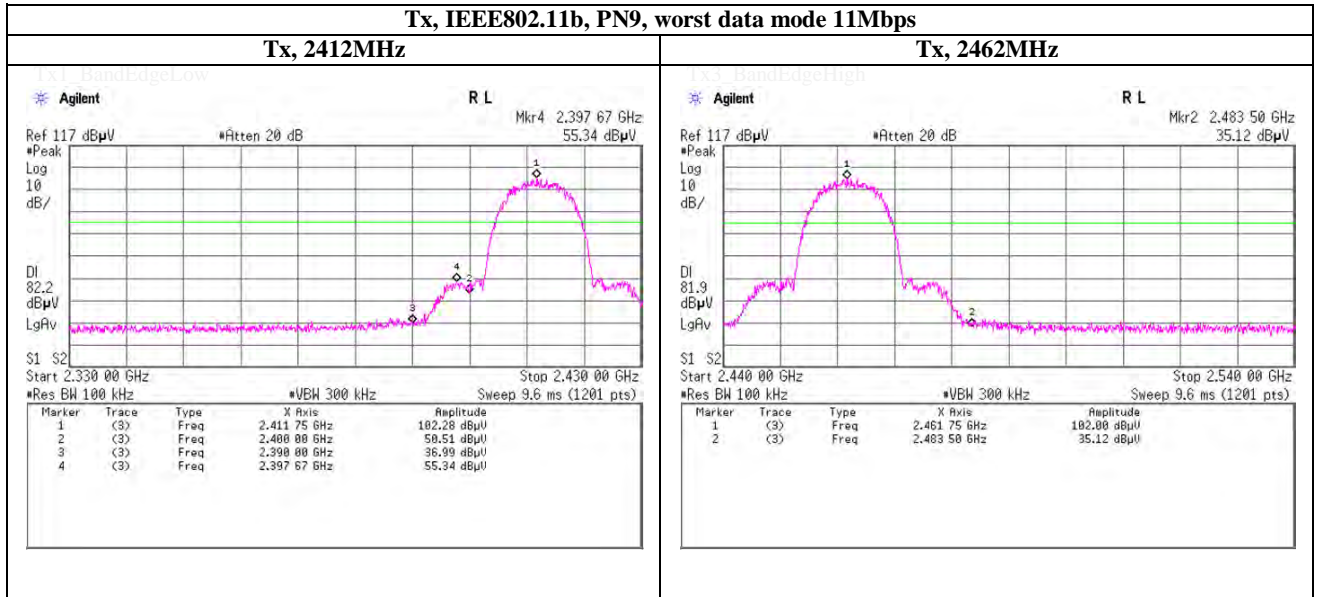
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Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Band Edge compliance



UL Japan, Inc.

Shonan EMC Lab.

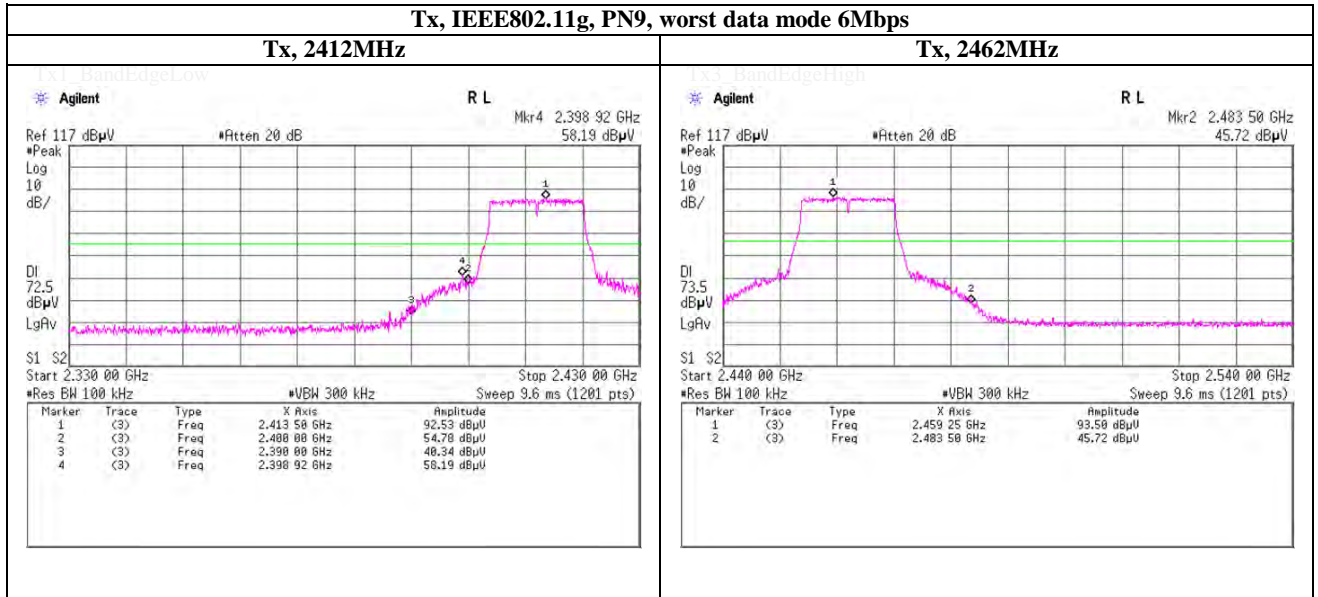
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Spurious emission (Conducted)

Band Edge compliance



UL Japan, Inc.

Shonan EMC Lab.

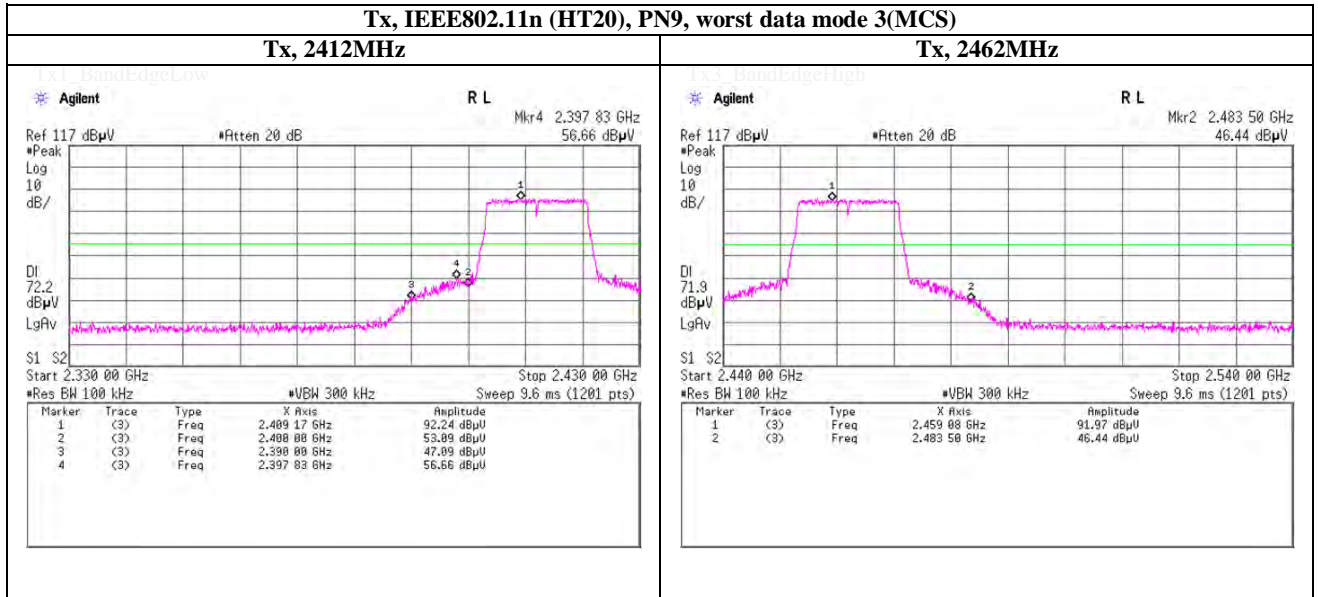
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Spurious emission (Conducted)

Band Edge compliance



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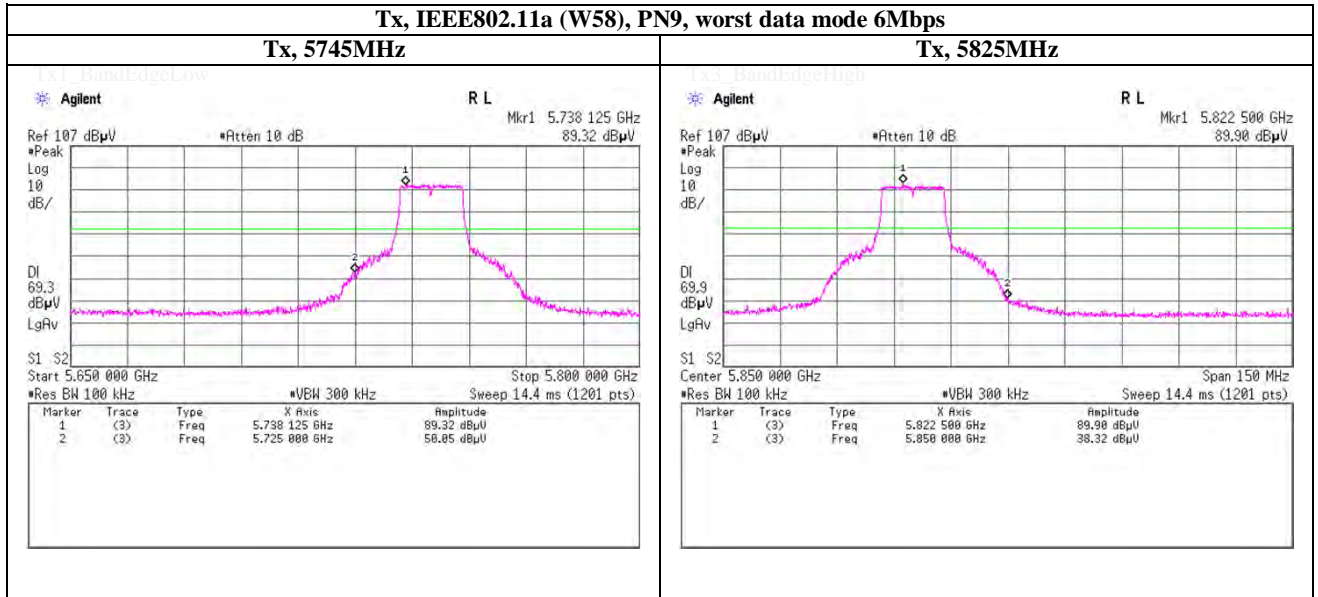
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Spurious emission (Conducted)

Band Edge compliance



UL Japan, Inc.

Shonan EMC Lab.

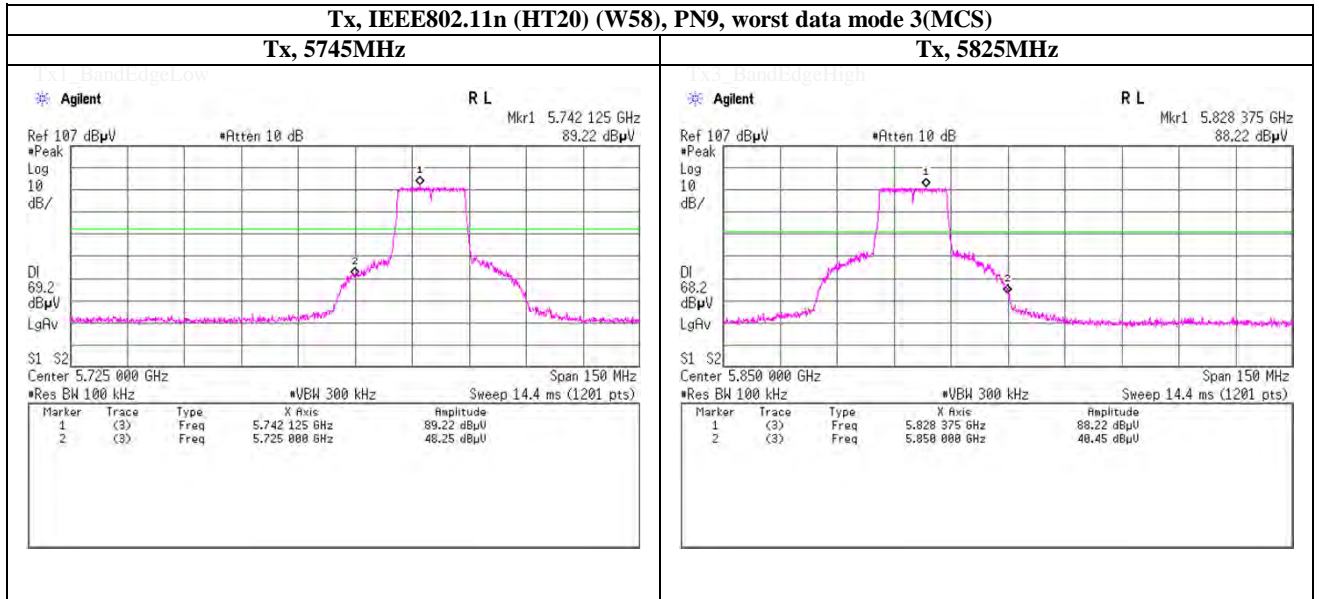
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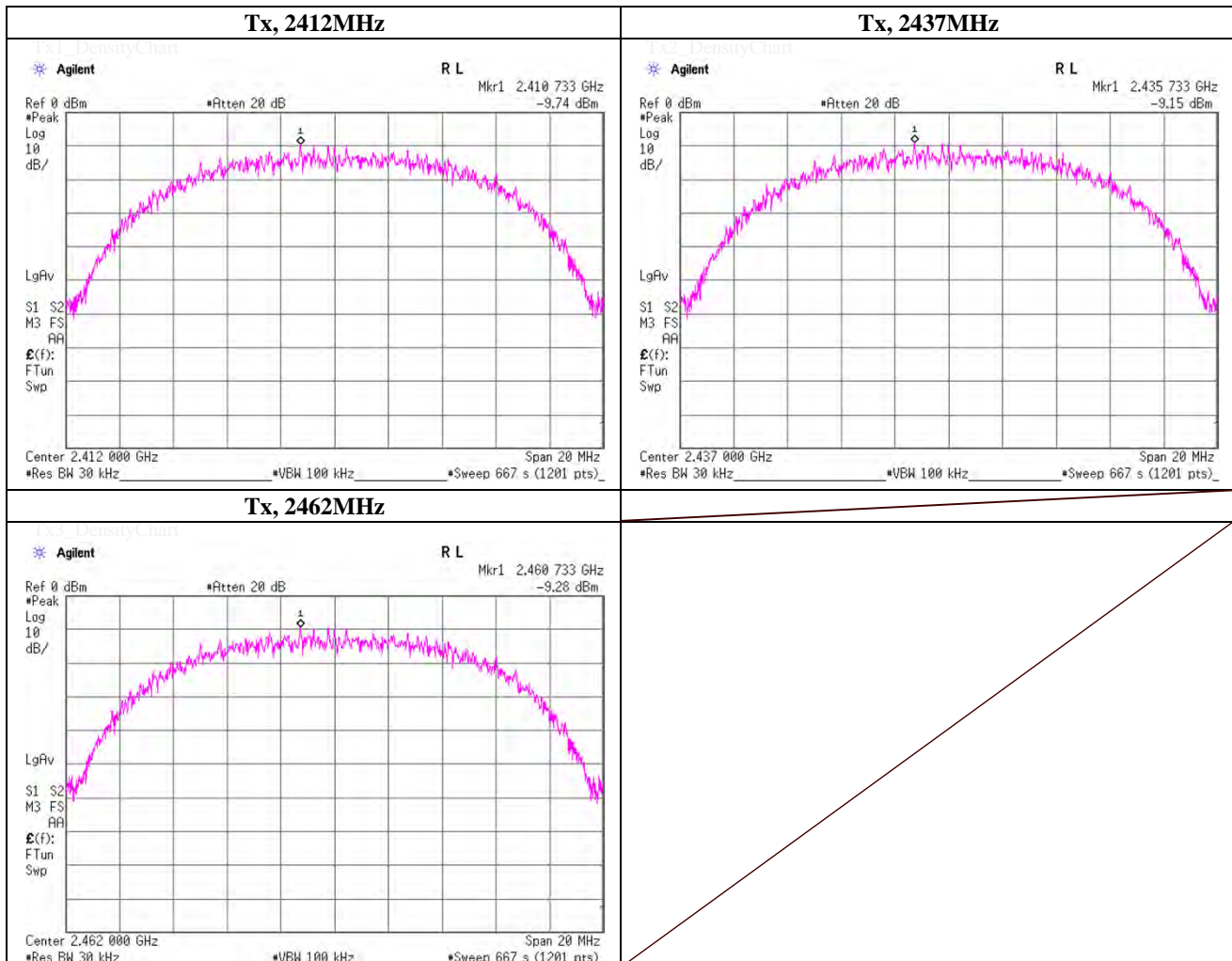
Power Density

Test place	UL Japan, Inc. Shonan EMC Lab.	No.6 Shielded Room
Date	June 15, 2012	
Temperature / Humidity	24deg.C , 47%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11b, PN9, worst data mode 11Mbps	

Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2410.73	-9.74	1.56	9.98	1.80	8.00	6.20
2437.0000	2435.73	-9.15	1.57	9.98	2.40	8.00	5.60
2462.0000	2460.73	-9.29	1.58	9.98	2.28	8.00	5.73

Sample Calculation:

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



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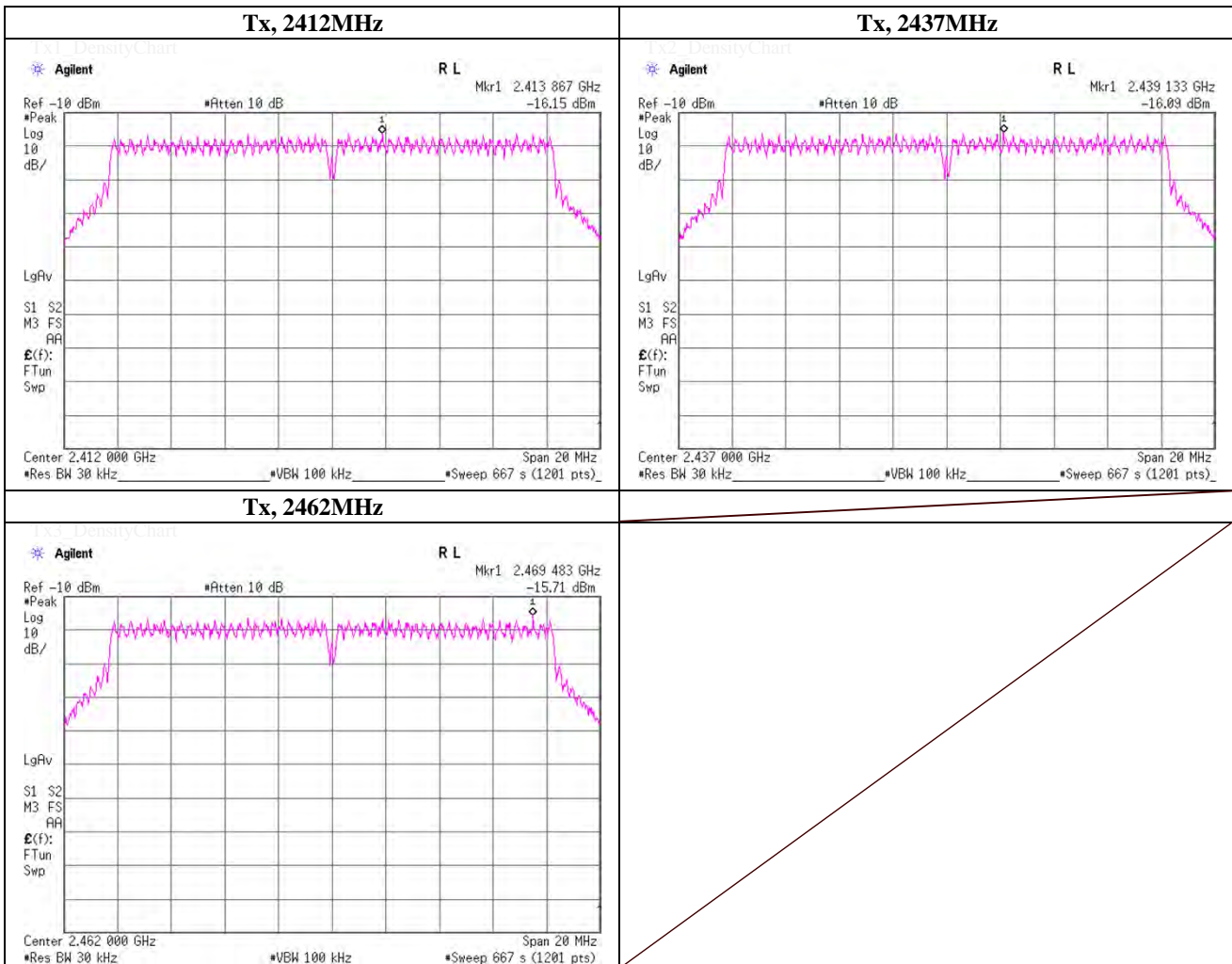
Power Density

Test place	UL Japan, Inc. Shonan EMC Lab.	No.6 Shielded Room
Date	June 15, 2012	
Temperature / Humidity	24deg.C , 47%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11g, PN9, worst data mode 6Mbps	

Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2413.87	-16.15	1.56	9.98	-4.61	8.00	12.61
2437.0000	2439.13	-16.09	1.57	9.98	-4.54	8.00	12.54
2462.0000	2469.48	-15.71	1.58	9.98	-4.15	8.00	12.15

Sample Calculation:

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



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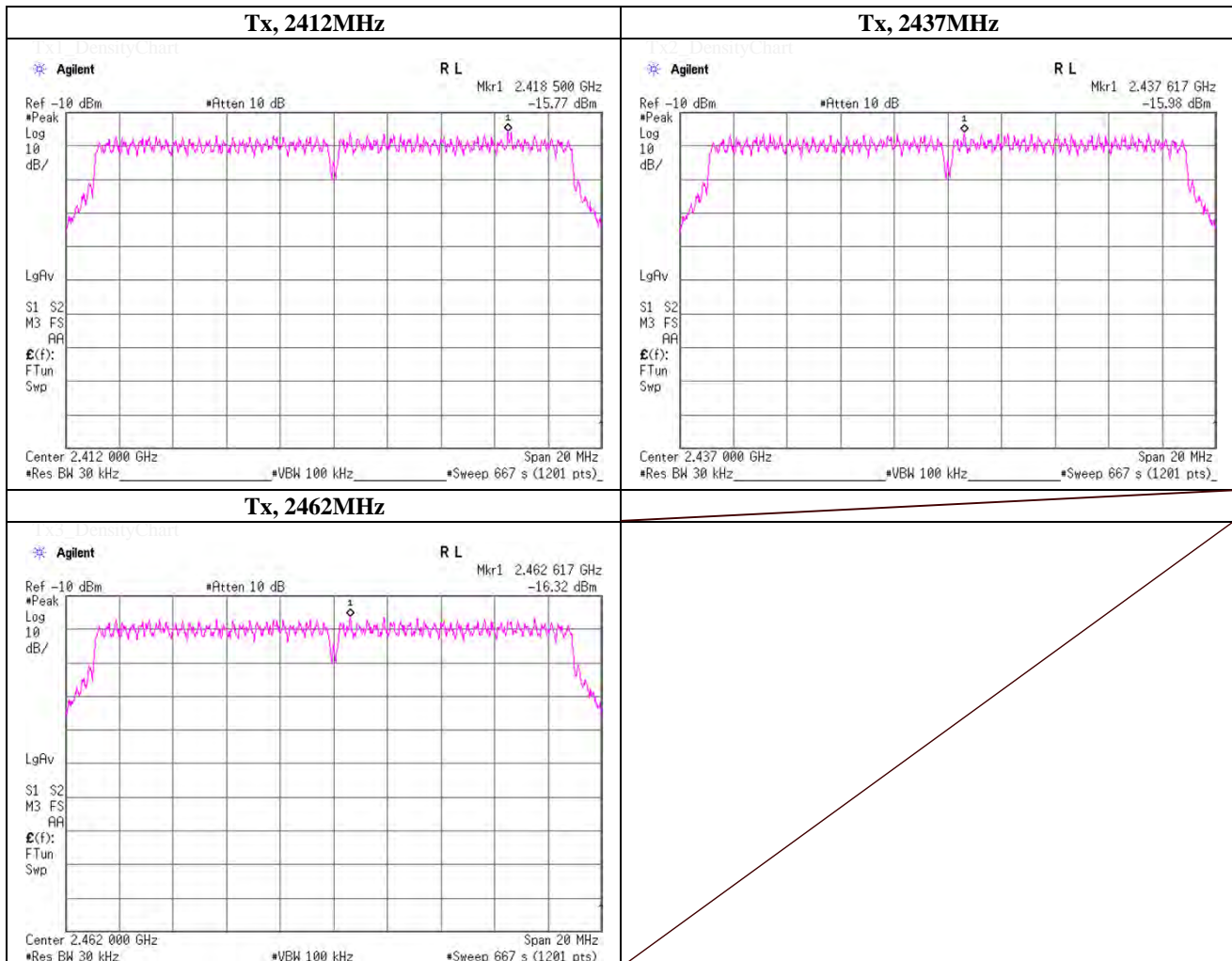
Power Density

Test place	UL Japan, Inc. Shonan EMC Lab.	No.6 Shielded Room
Date	June 15, 2012	
Temperature / Humidity	24deg.C , 47%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11n (HT20), PN9, worst data mode 3(MCS)	

Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2418.50	-15.77	1.56	9.98	-4.23	8.00	12.23
2437.0000	2437.62	-15.98	1.57	9.98	-4.43	8.00	12.43
2462.0000	2462.62	-16.32	1.58	9.98	-4.76	8.00	12.76

Sample Calculation:

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



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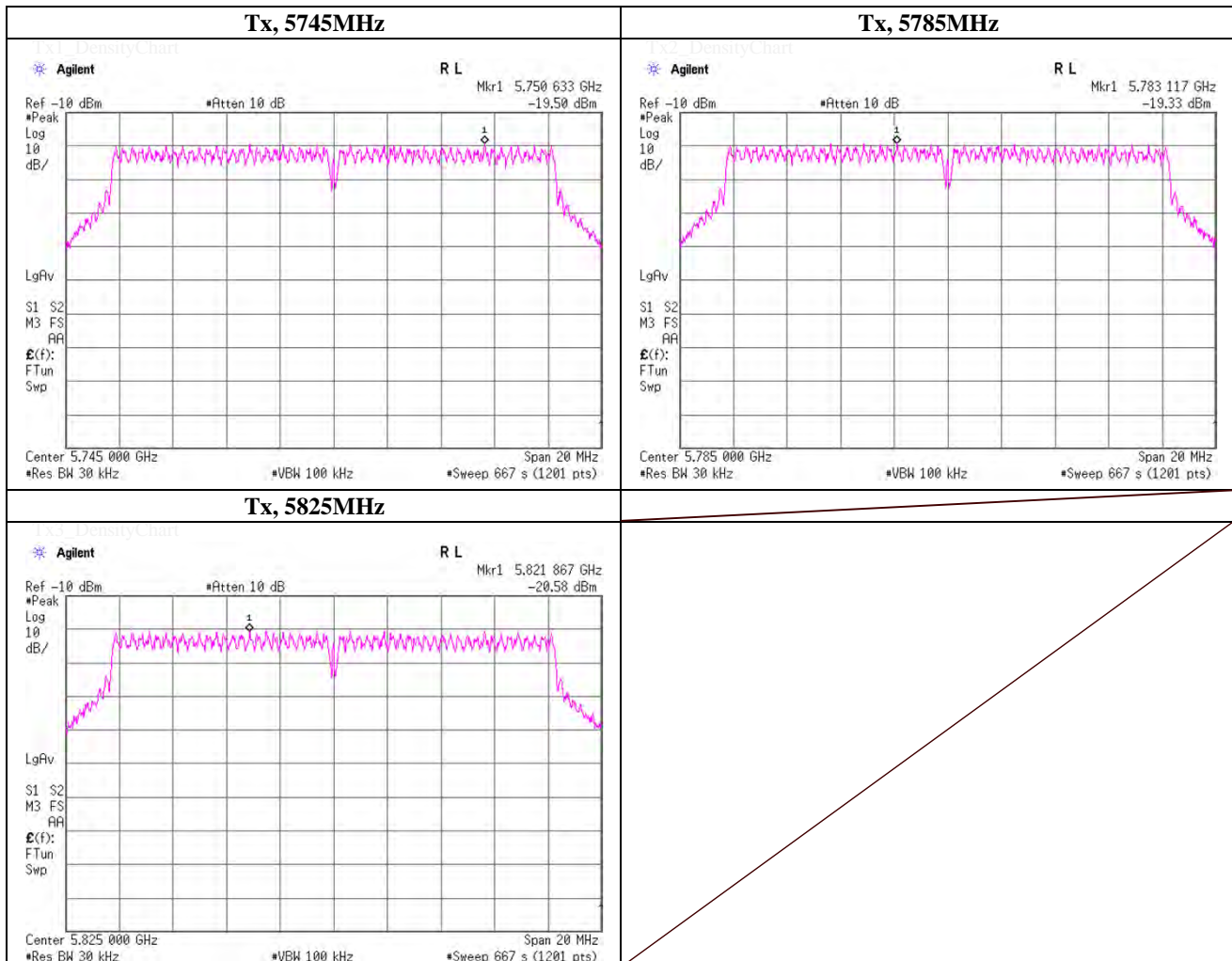
Power Density

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	June 19, 2012	
Temperature / Humidity	27deg.C , 56%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11a (W58), PN9, worst data mode 6Mbps	

Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
5745.0000	5750.63	-19.51	1.05	10.01	-8.45	8.00	16.45
5785.0000	5783.12	-19.33	1.04	10.01	-8.28	8.00	16.28
5825.0000	5821.87	-20.58	1.04	10.00	-9.54	8.00	17.54

Sample Calculation:

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



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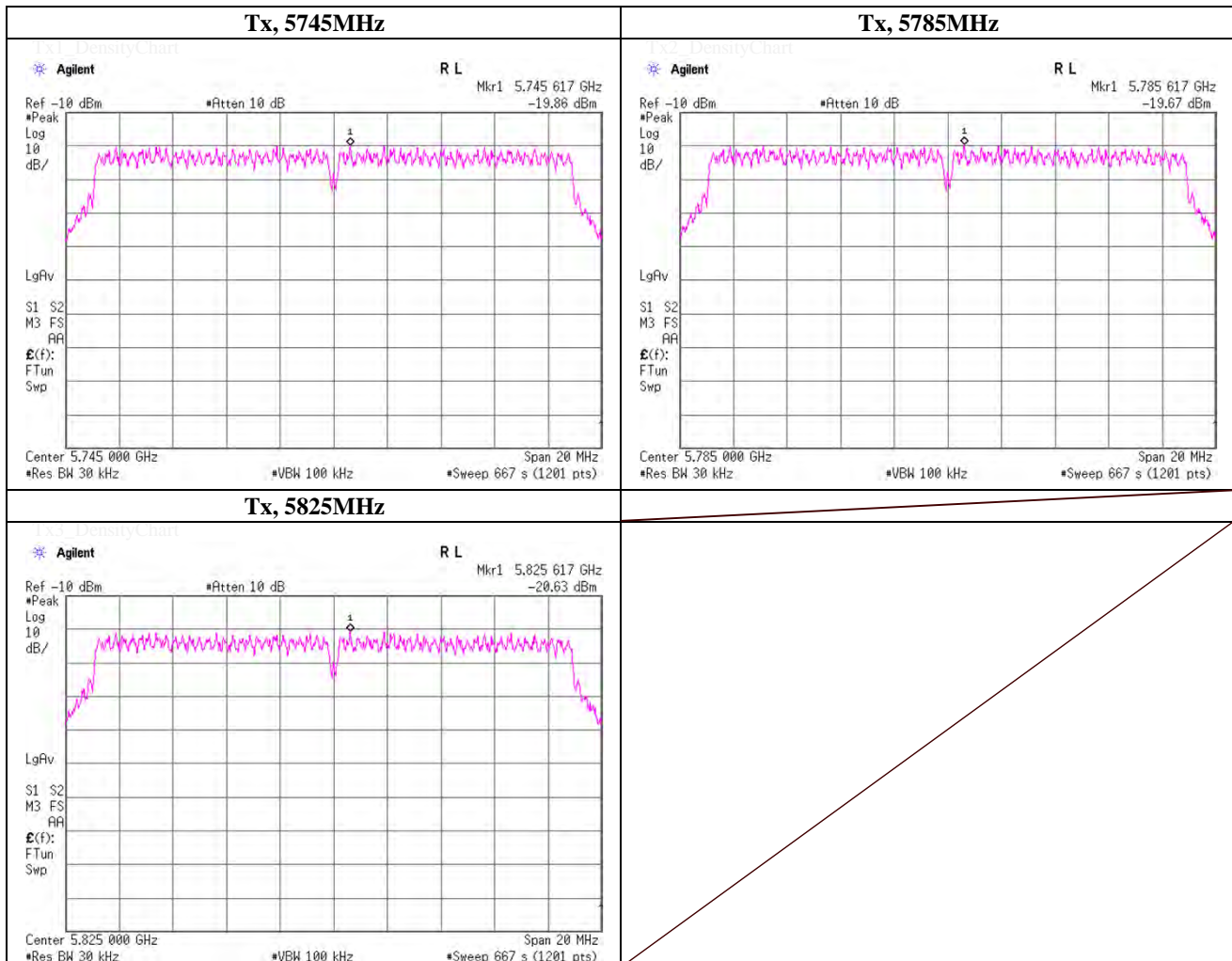
Power Density

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	June 19, 2012	
Temperature / Humidity	27deg.C , 56%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11n (HT20) (W58), PN9, worst data mode 3(MCS)	

Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
5745.0000	5745.62	-19.86	1.05	10.01	-8.80	8.00	16.80
5785.0000	5785.62	-19.67	1.04	10.01	-8.62	8.00	16.62
5825.0000	5825.62	-20.63	1.04	10.00	-9.59	8.00	17.59

Sample Calculation:

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



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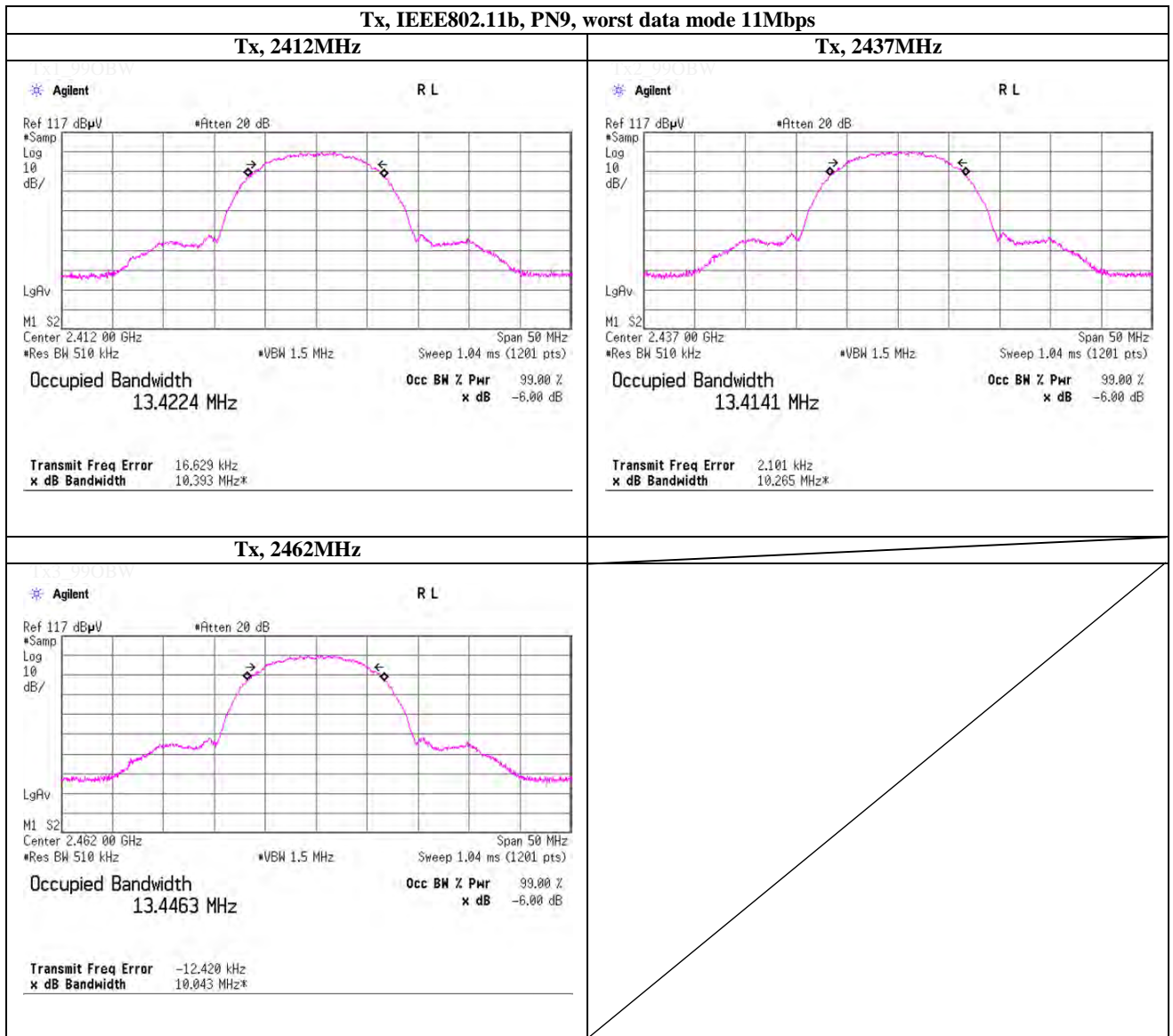
Shonan EMC Lab.

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

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

99% Occupied Bandwidth



UL Japan, Inc.

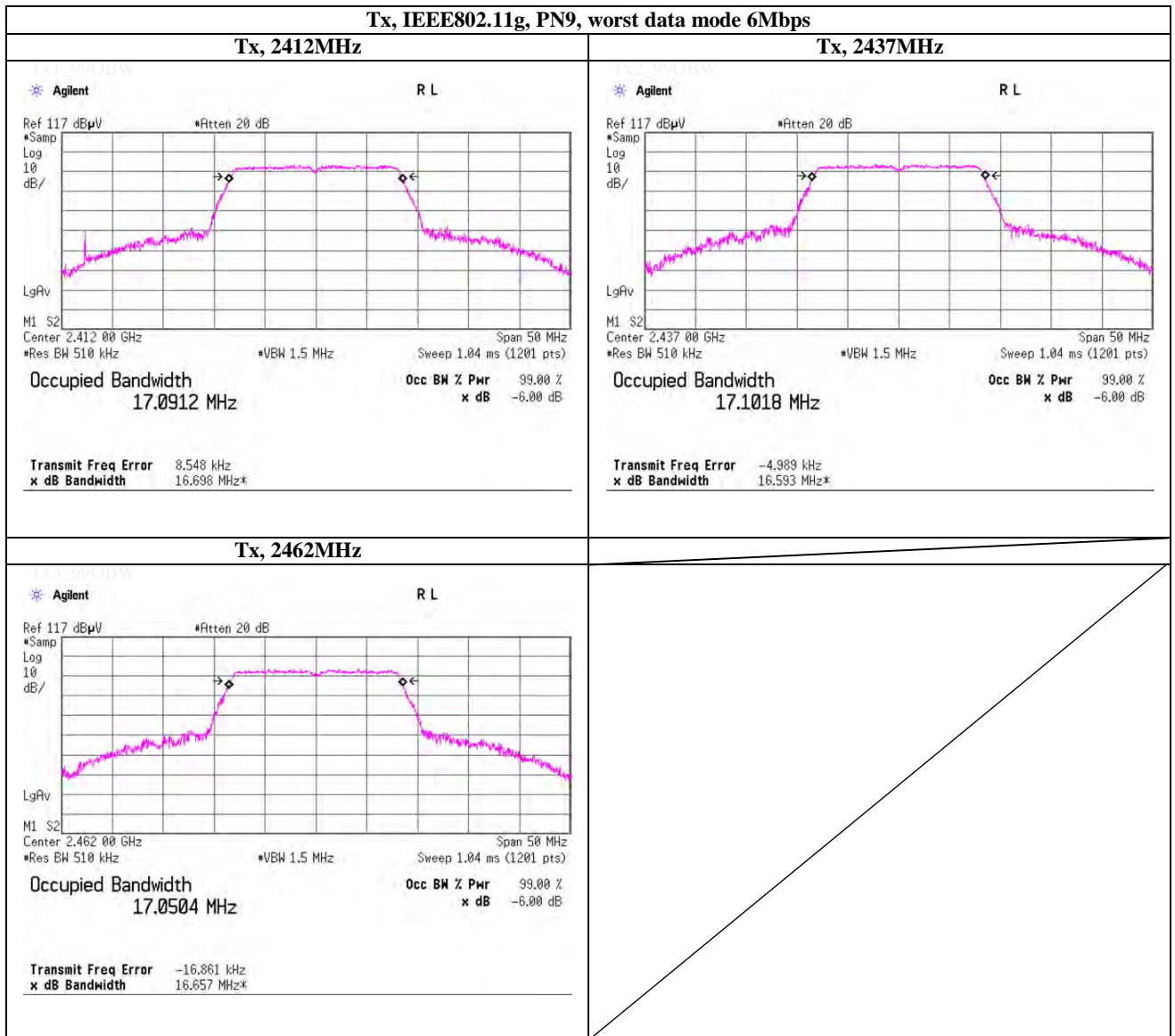
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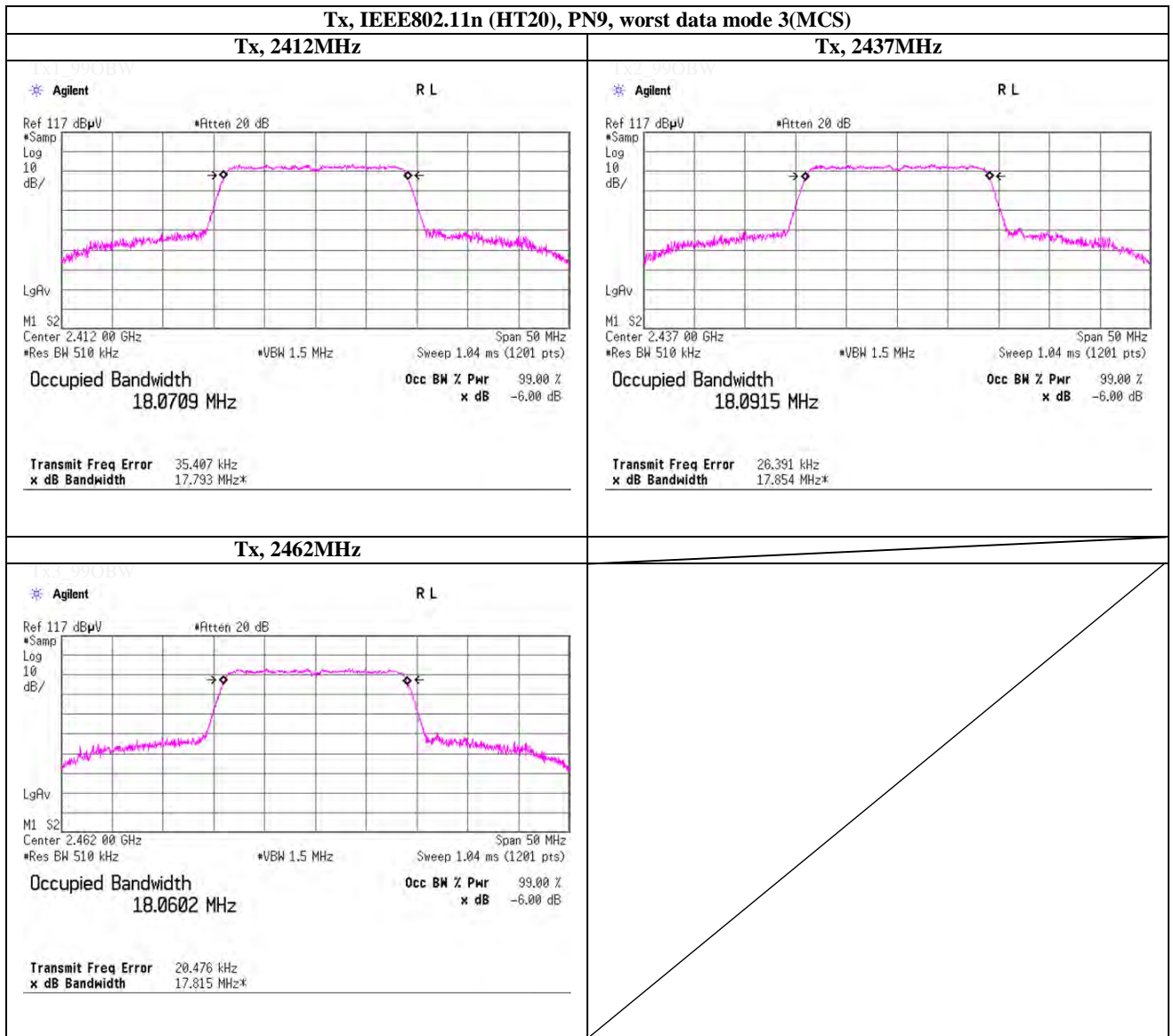
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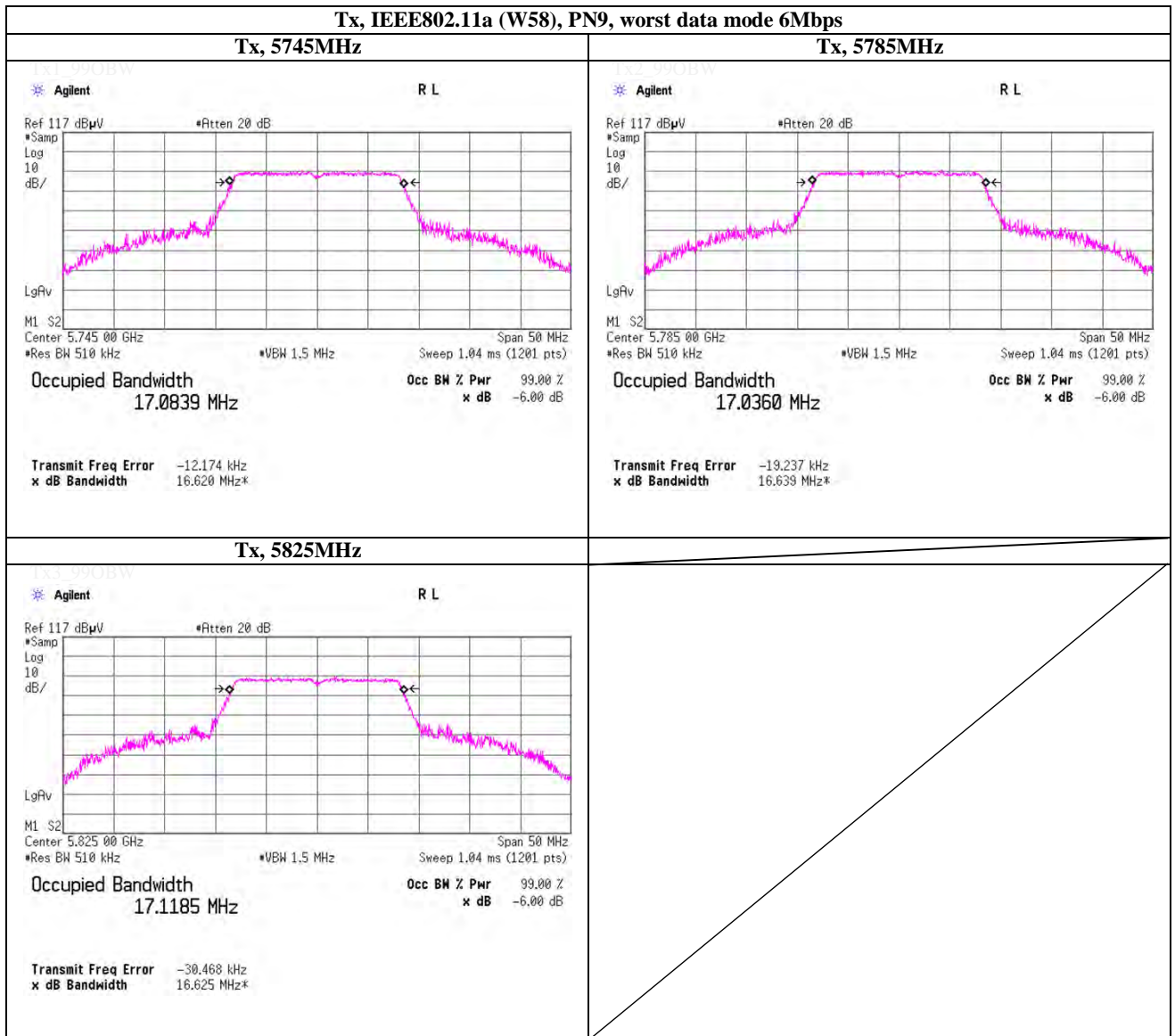
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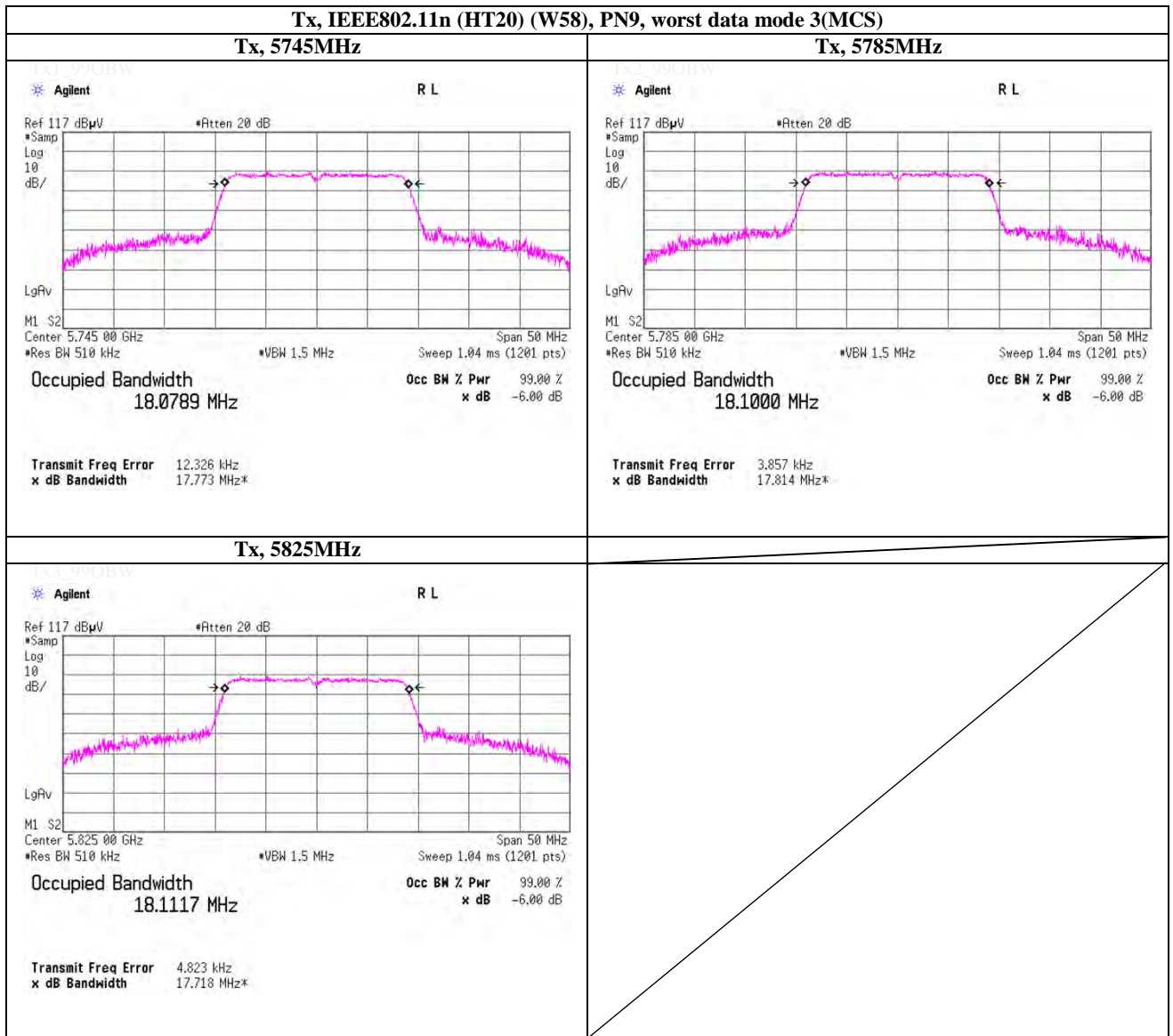
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Test Report No :32FE0117-SH-02-A

APPENDIX 2

Test Instruments

EMI test equipment (1/2)

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
KPM-08	Power meter	Anritsu	ML2495A	6K00003356	AT	2011/09/12 * 12
KPSS-04	Power sensor	Anritsu	MA2411B	012088	AT	2011/09/12 * 12
KSA-08	Spectrum Analyzer	Agilent	E4446A	MY46180525	AT	2012/02/16 * 12
SAT10-08	Attenuator	Weinschel	W54-10	-	AT	2012/03/12 * 12
SCC-G12	Coaxial Cable	Suhner	SUCOFLEX 102	30790/2	AT	2012/03/12 * 12
SOS-09	Humidity Indicator	A&D	AD-5681	4061484	AT	2012/03/26 * 12
SAF-06	Pre Amplifier	TOYO Corporation	TPA0118-36	1440491	RE	2011/07/19 * 12
SCC-G03	Coaxial Cable	Suhner	SUCOFLEX 104A	46499/4A	RE	2012/04/10 * 12
SCC-G23	Coaxial Cable	Suhner	SUCOFLEX 104	297342/4	RE	2012/05/22 * 12
SHA-03	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	RE	2011/08/28 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2012/02/06 * 12
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	RE, AT	2012/03/16 * 12
SJM-10	Measure	PROMART	SEN1935	-	RE	-
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE,RF,MF)	-	RE, CE	-
SAT20-01	Attenuator(above1GHz)	Agilent	8493C-020	74889	RE	2011/12/27 * 12
SFL-04	Low Pass Filter	MICROLAB/FXR	LA-20	-	RE	2011/12/27 * 12
SCC-G13	Coaxial Cable	Suhner	SUCOFLEX 102	31599/2	AT	2012/03/12 * 12
SAT10-06	Attenuator	Agilent	8493C-010	74865	RE	2011/12/27 * 12
SHA-04	Horn Antenna	ETS LINDGREN	3160-09	LM3640	RE	2012/03/30 * 12
SAF-08	Pre Amplifier	TOYO Corporation	HAP18-26W	00000019	RE	2012/03/12 * 12
SCC-G17	Coaxial Cable	Suhner	SUCOFLEX 104A	46291/4A	RE	2012/03/12 * 12
SCC-G11	Coaxial Cable	Suhner	SUCOFLEX 102	31595/2	AT	2012/03/12 * 12
SPM-06	Power Meter	Anritsu	ML2495A	0850009	AT	2012/04/19 * 12
SPSS-03	Power sensor	Anritsu	MA2411B	0917063	AT	2012/04/19 * 12
SSA-03	Spectrum Analyzer	Agilent	E4448A	MY48250152	AT	2011/12/05 * 12
SHA-06	Horn Antenna	ETS LINDGREN	3160-10	LM3459	RE	2012/03/30 * 12
SCC-G19	Coaxial Cable	Suhner	SUCOFLEX 102A	1188/2A	RE	2012/03/12 * 12
SAF-01	Pre Amplifier	SONOMA	310N	290211	RE	2012/02/10 * 12
SAT6-05	Attenuator	JFW	50HF-006N	-	RE	2012/02/10 * 12
SAT3-04	Attenuator	JFW	50HF-003N	-	RE	2012/02/10 * 12
SBA-01	Biconical Antenna	Schwarzbeck	BBA9106	91032664	RE	2011/10/15 * 12
SCC-A1/A3/A5/A7/A8/A13/SRSE-01	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-269(RF Selector)	RE	2012/04/10 * 12
SCC-A2/A4/A6/A7/A8/A13/SRSE-01	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-269(RF Selector)	RE	2012/04/10 * 12
SLA-01	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0888	RE	2011/11/23 * 12

The expiration date of the calibration is the end of the expired month .
As for some calibrations performed after the tested dates , those test equipment have been controlled by means of an unbroken chains of calibrations .

All equipment is calibrated with valid calibrations . Each measurement data is traceable to the national or international standards .

Test Item :

- CE: Conducted emission ,
- RE: Radiated emission ,
- AT: Antenna terminal conducted tests ,

Test Report No :32FE0117-SH-02-A

APPENDIX 2 Test Instruments

EMI test equipment (2/2)

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SOS-01	Humidity Indicator	A&D	AD-5681	4062555	RE	2012/02/06 * 12
STR-01	Test Receiver	Rohde & Schwarz	ESU40	100093	RE, CE	2011/10/22 * 12
SJM-11	Measure	PROMART	SEN1935	-	RE, CE	-
SAEC-01(NSA)	Semi-Anechoic Chamber	TDK	SAEC-01(NSA)	1	RE	2011/09/01 * 12
SCC-A12/A13/SRSE-01	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/N S4906	-/0901-269 (RF Selector)	CE	2012/04/10 * 12
SLS-01	LISN	Rohde & Schwarz	ENV216	100511	CE (EUT)	2012/02/20 * 12
SLS-02	LISN	Rohde & Schwarz	ENV216	100512	CE (AE)	2012/02/28 * 12
SAT3-06	Attenuator	JFW	50HF-003N	-	CE	2012/02/17 * 12
STM-01	Terminator	TME	CT-01 BP	-	CE	2012/01/05 * 12
SOS-02	Humidity Indicator	A&D	AD-5681	4063343	CE	2012/03/26 * 12

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

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

All equipment is calibrated with valid calibrations . Each measurement data is traceable to the national or international standards .

Test Item :

CE: Conducted emission ,

RE: Radiated emission ,

AT: Antenna terminal conducted tests ,