

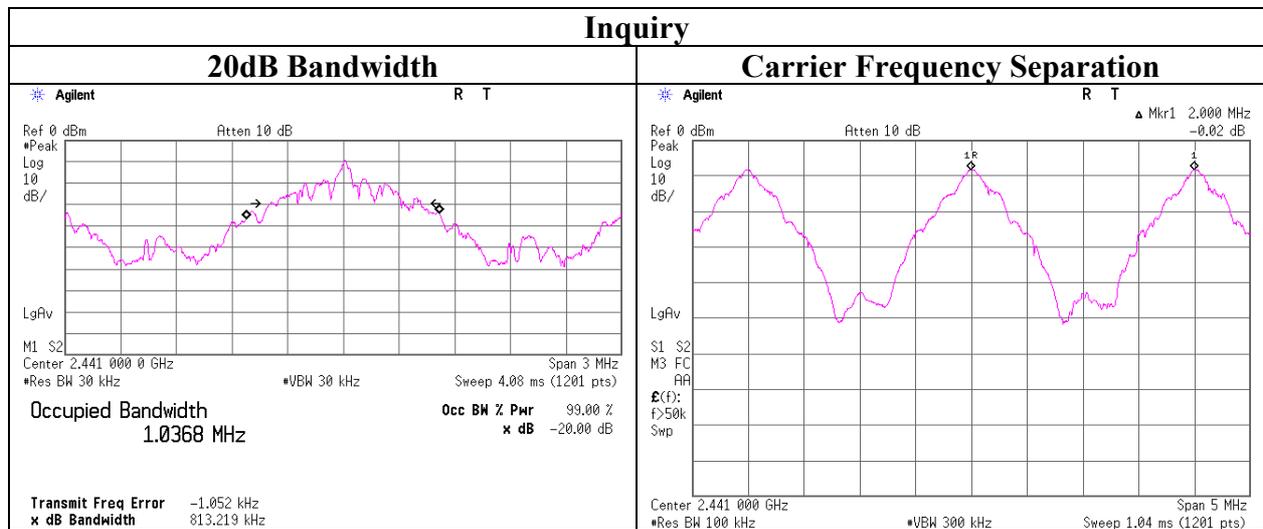
APPENDIX 2: Data of EMI test

20dB Bandwidth and Carrier Frequency Separation

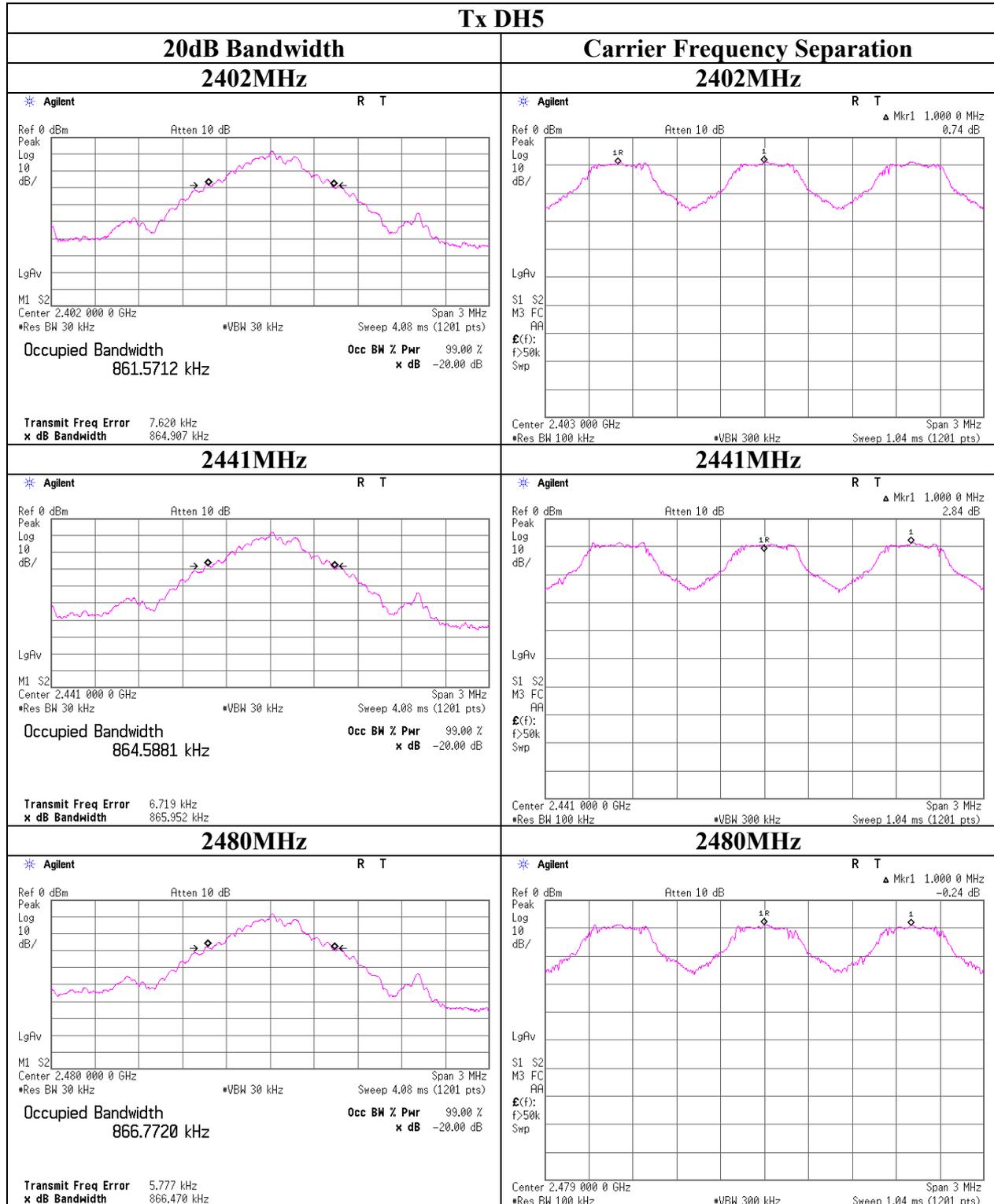
Test place Head Office EMC Lab. No.6 Measurement Room
Report No. 30FE0050-HO-01
Date 02/04/2010
Temperature/ Humidity 23 deg.C./ 34%
Engineer Takumi Shimada
Mode Tx (Hopping on/off) DH5/3DH5/Inquiry

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency separation [MHz]
DH5	2402.0	0.865	1.000	≥ 0.577
DH5	2441.0	0.866	1.000	≥ 0.577
DH5	2480.0	0.866	1.000	≥ 0.578
3DH5	2402.0	1.261	1.000	≥ 0.841
3DH5	2441.0	1.258	1.000	≥ 0.839
3DH5	2480.0	1.261	1.000	≥ 0.841
Inquiry	2441.0	0.813	2.000	≥ 0.542

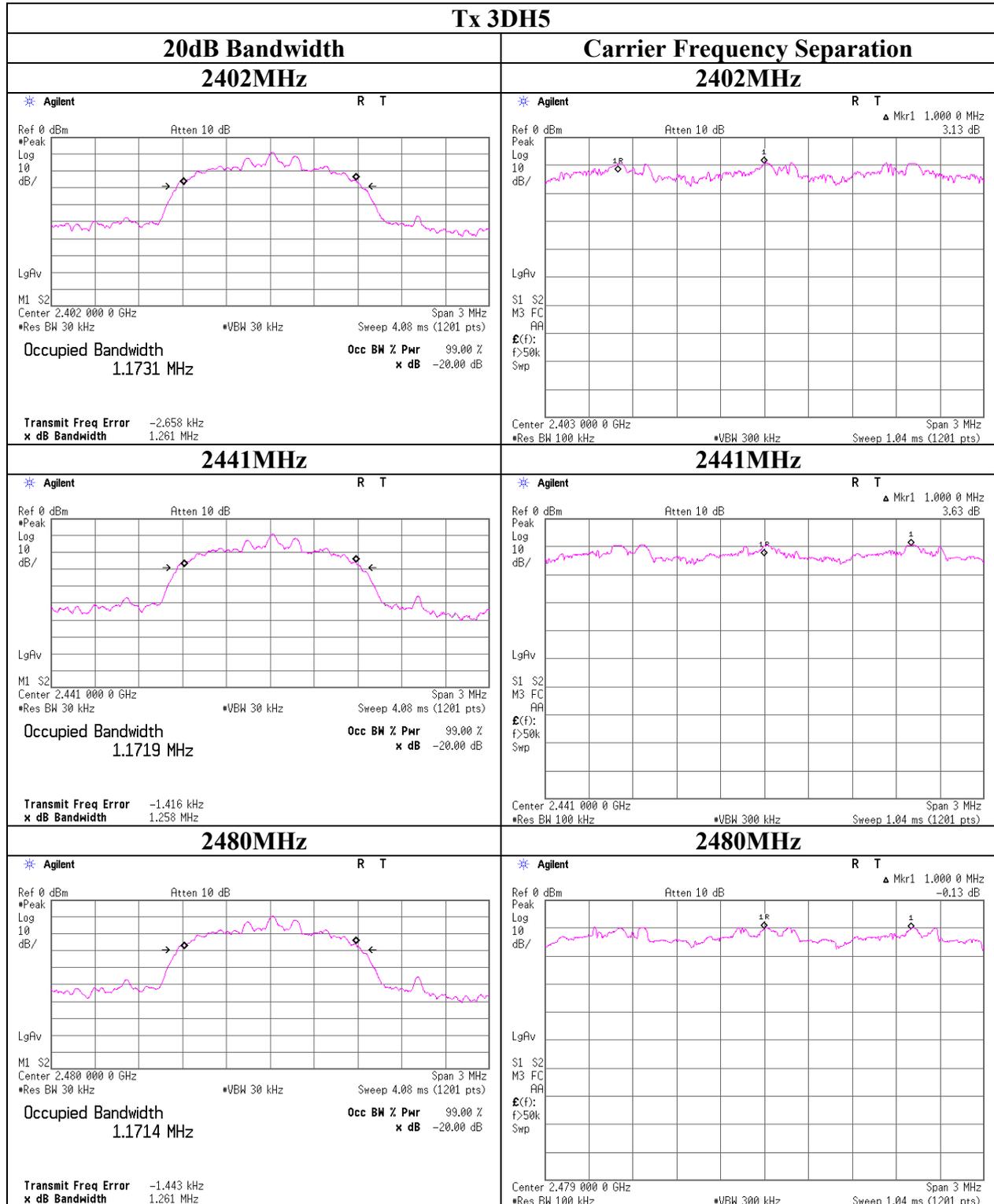
Limit: Two-thirds of 20dB Bandwidth or 25kHz (whichever is greater).
No limit applies to 20dB Bandwidth.



20dB Bandwidth and Carrier Frequency Separation



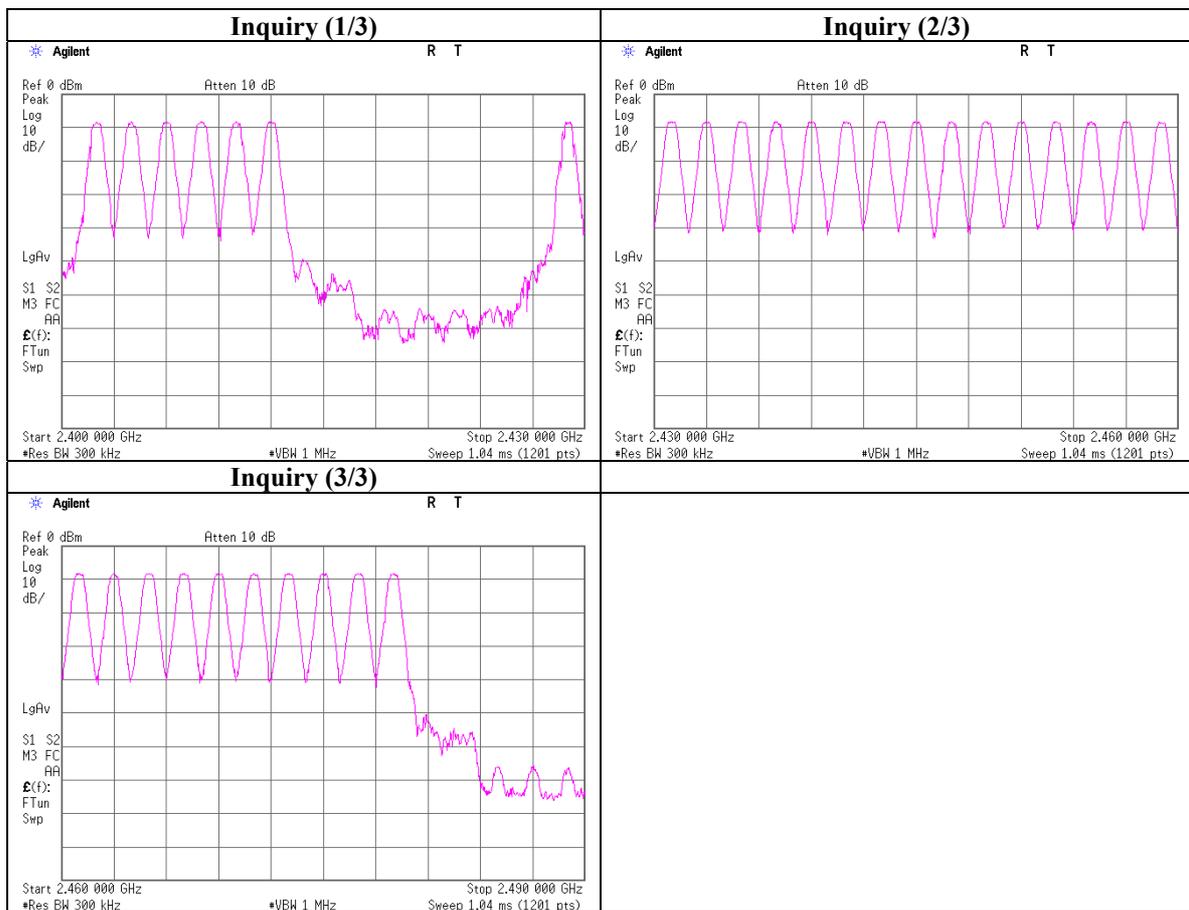
20dB Bandwidth and Carrier Frequency Separation



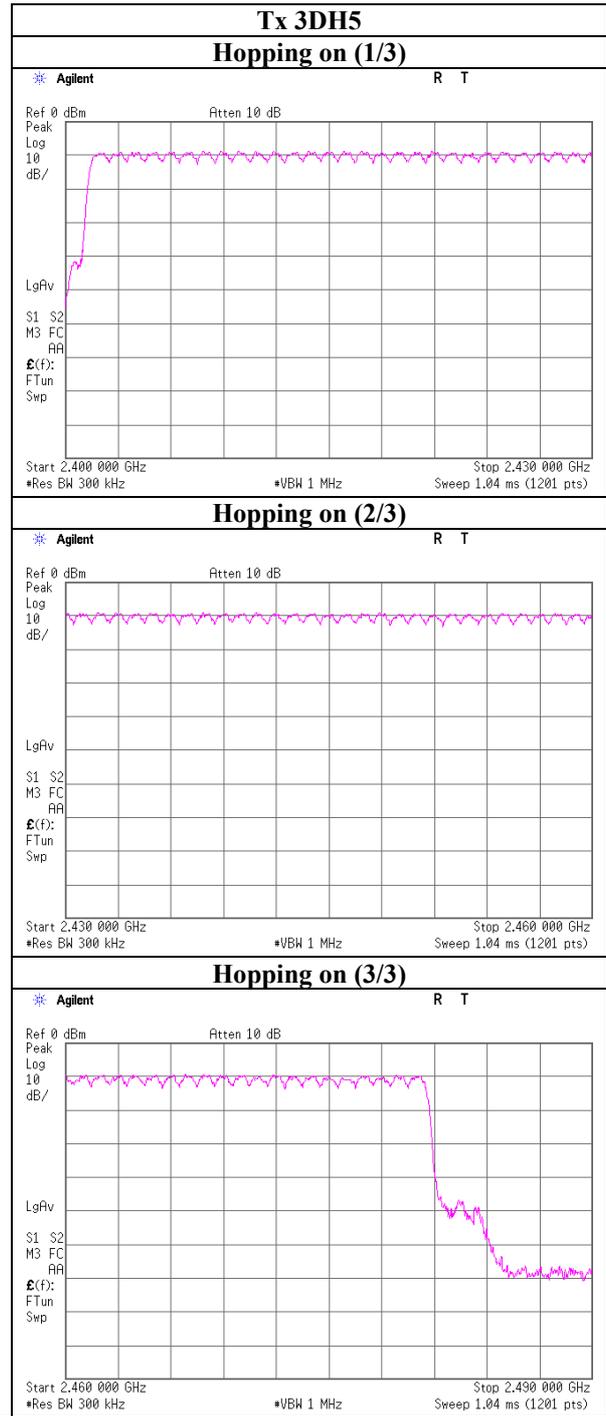
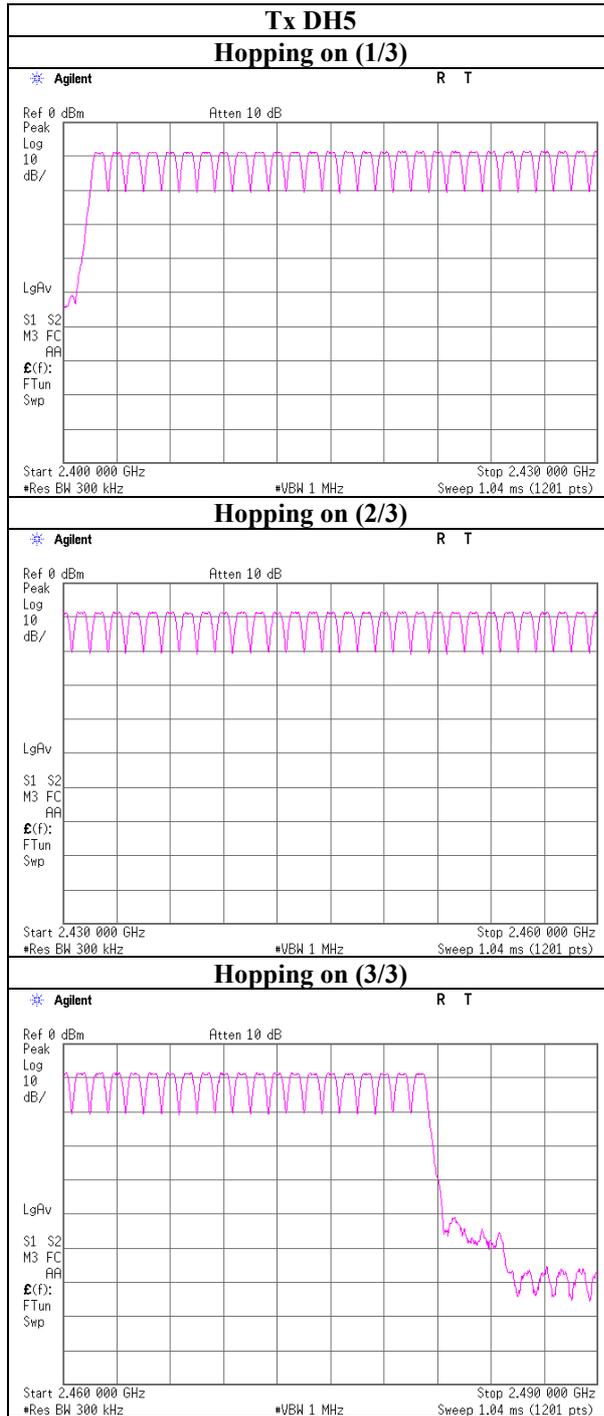
Number of Hopping Frequency

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	30FE0050-HO-01
Date	02/04/2010
Temperature/ Humidity	23 deg.C./ 34%
Engineer	Takumi Shimada
Mode	Tx (Hopping on) DH5/3DH5/Inquiry

Mode	Number of channel [times]	Limit [times]
DH5	79	>= 15
3DH5	79	>= 15
Inquiry	32	>= 15



Number of Hopping Frequency



Dwell time

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	30FE0050-HO-01
Date	02/04/2010
Temperature/ Humidity	23 deg.C./ 34%
Engineer	Takumi Shimada
Mode	Tx (Hopping on) DH1/DH3/DH5/3DH1/3DH3/3DH5/Inquiry

Mode	Number of transmission in a 31.6(79 Hopping x 0.4) / 12.8(32 Hopping x 0.4)second period	Length of transmission time [msec]	Result [msec]	Limit [msec]
DH1	51.2 times / 5 sec. x 31.6 sec. = 324 times	0.543	176	400
DH3	24.6 times / 5 sec. x 31.6 sec. = 156 times	1.809	282	400
DH5	17.2 times / 5 sec. x 31.6 sec. = 109 times	3.058	333	400
3DH1	50.8 times / 5 sec. x 31.6 sec. = 322 times	0.561	181	400
3DH3	24.8 times / 5 sec. x 31.6 sec. = 157 times	1.816	285	400
3DH5	17.2 times / 5 sec. x 31.6 sec. = 109 times	3.070	335	400
Inquiry	100.0 times / 1 sec. x 12.8 sec. = 1280 times	0.248	317	400

Sample Calculation

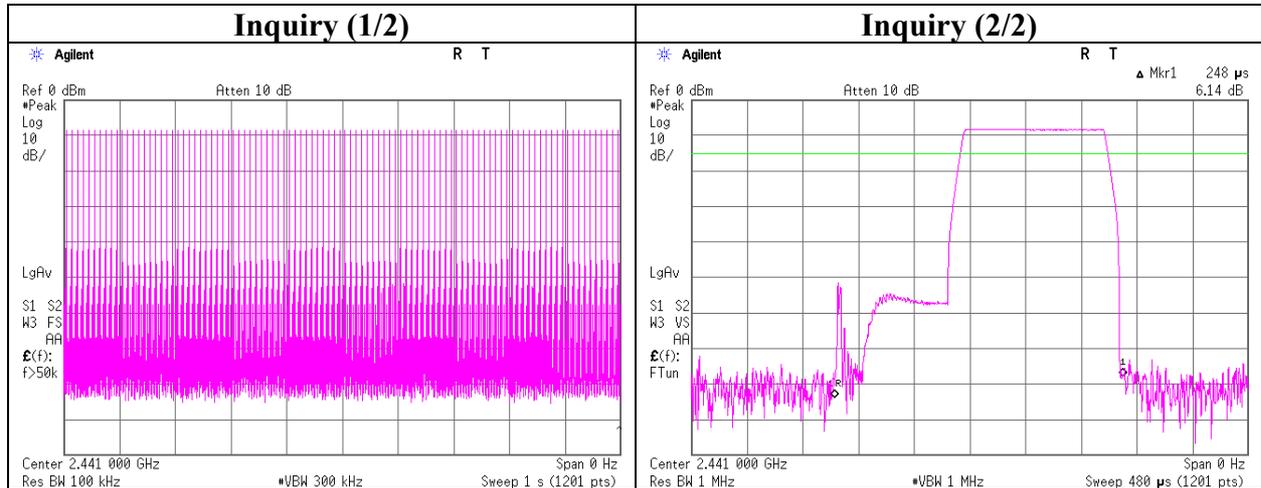
Result = Number of transmission x Length of transmission time

*Average data of 5 tests.(except Inquiry)

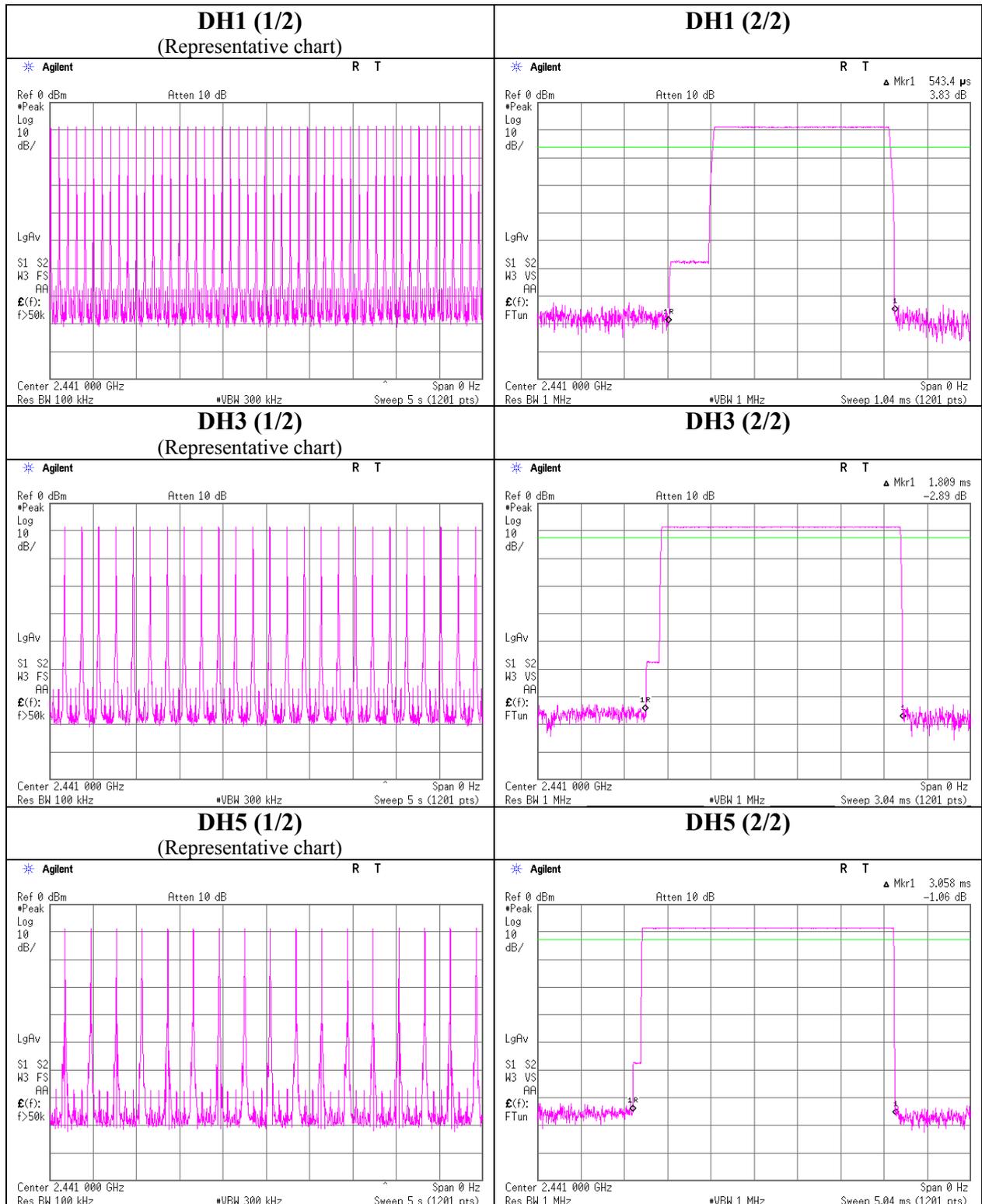
Mode	Sampling [times]					Average [times]
	1	2	3	4	5	
DH1	51	51	51	52	51	51.2
DH3	25	24	25	25	24	24.6
DH5	17	18	17	17	17	17.2
3DH1	51	51	51	50	51	50.8
3DH3	25	24	25	25	25	24.8
3DH5	17	17	17	18	17	17.2

Sample Calculation

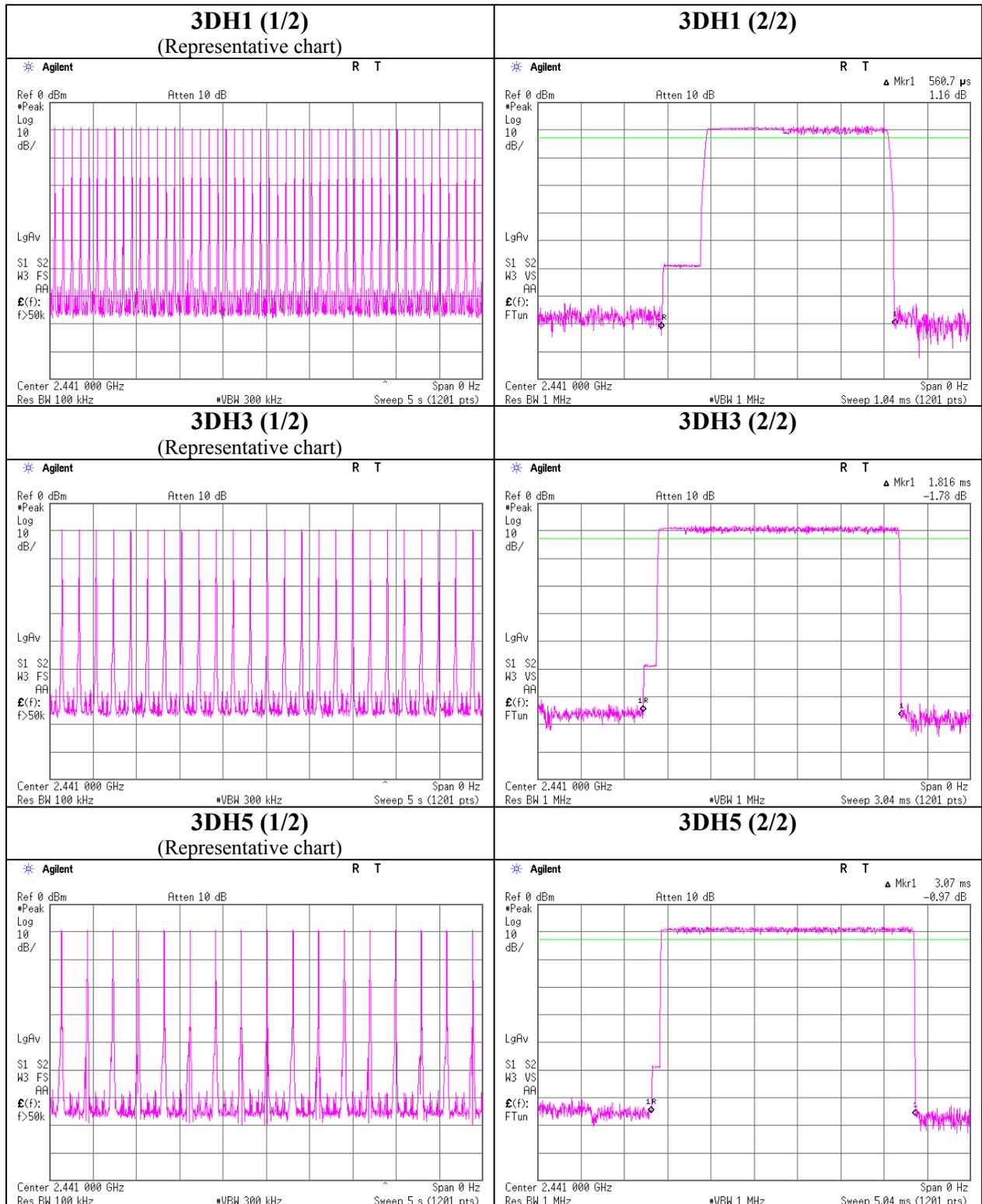
Average= Summation(Sampling 1 to 5) / 5



Dwell time



Dwell time



Maximum Peak Output Power

Test place Head Office EMC Lab. No.6 Measurement Room
Report No. 30FE0050-HO-01
Date 02/03/2010
Temperature/ Humidity 23 deg.C./ 40%
Engineer Takumi Shimada
Mode Tx (Hopping off) DH5/2DH5/3DH5/Inquiry

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]	
DH5	2402.0	-8.99	0.50	10.09	1.60	1.45	20.97	125	19.37
DH5	2441.0	-8.71	0.50	10.09	1.88	1.54	20.97	125	19.09
DH5	2480.0	-8.76	0.50	10.09	1.83	1.52	20.97	125	19.14
2DH5	2402.0	-7.63	0.50	10.09	2.96	1.98	20.97	125	18.01
2DH5	2441.0	-7.61	0.50	10.09	2.98	1.99	20.97	125	17.99
2DH5	2480.0	-8.01	0.50	10.09	2.58	1.81	20.97	125	18.39
3DH5	2402.0	-7.43	0.50	10.09	3.16	2.07	20.97	125	17.81
3DH5	2441.0	-7.57	0.50	10.09	3.02	2.00	20.97	125	17.95
3DH5	2480.0	-7.97	0.50	10.09	2.62	1.83	20.97	125	18.35
Inquiry	2441.0	-8.57	0.50	10.09	2.02	1.59	20.97	125	18.95

Sample Calculation:

Result = Reading + Cable Loss (supplied by customer)+ Attenuator

*Compared to the original test report 28BE0223-HO-01-A, difference in Maximum Peak Output Power is within +/- 0.5dB.

Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. 30FE0050-HO-01
Date 01/27/2010 01/27/2010 01/28/2010
Temperature/ Humidity 21 deg.C./ 41% 21 deg.C./ 41% 21 deg.C./ 41%
Engineer Satofumi Matsuyama Keisuke Kawamura Takumi Shimada
(1-10GHz) (10-26.5GHz) (30M-1000MHz)
Mode Tx, DH5 2402MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	59.334	QP	35.8	7.7	7.6	32.2	18.9	40.0	21.1	
Hori	72.134	QP	36.7	6.2	7.8	32.1	18.6	40.0	21.4	
Hori	108.006	QP	41.4	11.0	8.2	32.1	28.5	43.5	15.0	
Hori	360.716	QP	35.9	16.3	10.4	32.0	30.6	46.0	15.4	
Hori	384.770	QP	31.9	16.9	10.6	32.0	27.4	46.0	18.6	
Hori	400.016	QP	33.3	17.3	10.7	32.0	29.3	46.0	16.7	
Hori	1563.547	PK	47.6	25.7	2.1	33.4	42.0	73.9	31.9	
Hori	2390.000	PK	45.5	27.2	2.6	32.3	43.0	73.9	30.9	
Hori	2400.000	PK	59.7	27.2	2.6	32.3	57.2	-	-	See 20dBc Data Sheet
Hori	3203.989	PK	48.9	28.5	3.1	31.9	48.6	73.9	25.3	
Hori	4804.000	PK	45.7	31.7	5.1	31.4	51.1	73.9	22.8	
Hori	7206.000	PK	43.3	35.9	6.1	31.9	53.4	73.9	20.5	
Hori	9608.000	PK	43.9	38.4	6.8	32.7	56.4	73.9	17.5	
Hori	24020.000	PK	45.5	38.0	-1.3	30.5	51.7	73.9	22.2	
Hori	1563.547	AV	40.0	25.7	2.1	33.4	34.4	53.9	19.5	
Hori	2390.000	AV	32.7	27.2	2.6	32.3	30.2	53.9	23.7	
Hori	2400.000	AV	51.1	27.2	2.6	32.3	48.6	-	-	See 20dBc Data Sheet
Hori	3203.989	AV	44.3	28.5	3.1	31.9	44.0	53.9	9.9	
Hori	4804.000	AV	36.8	31.7	5.1	31.4	42.2	53.9	11.7	
Hori	7206.000	AV	30.7	35.9	6.1	31.9	40.8	53.9	13.1	
Hori	9608.000	AV	30.5	38.4	6.8	32.7	43.0	53.9	10.9	
Hori	24020.000	AV	35.7	38.0	-1.3	30.5	41.9	53.9	12.1	
Vert	57.829	QP	33.5	8.1	7.6	32.2	17.0	40.0	23.0	
Vert	72.121	QP	41.1	6.2	7.8	32.1	23.0	40.0	17.0	
Vert	108.116	QP	37.2	11.0	8.2	32.1	24.3	43.5	19.2	
Vert	358.916	QP	30.9	16.3	10.4	32.0	25.6	46.0	20.4	
Vert	384.770	QP	29.4	16.9	10.6	32.0	24.9	46.0	21.1	
Vert	400.016	QP	29.1	17.3	10.7	32.0	25.1	46.0	20.9	
Vert	1563.564	PK	49.7	25.7	2.1	33.4	44.1	73.9	29.8	
Vert	2390.000	PK	47.1	27.2	2.6	32.3	44.6	73.9	29.3	
Vert	2400.000	PK	64.6	27.2	2.6	32.3	62.1	-	-	See 20dBc Data Sheet
Vert	3204.016	PK	47.1	28.5	3.1	31.9	46.8	73.9	27.1	
Vert	4804.000	PK	44.6	31.7	5.1	31.4	50.0	73.9	23.9	
Vert	7206.000	PK	42.8	35.9	6.1	31.9	52.9	73.9	21.0	
Vert	9608.000	PK	43.4	38.4	6.8	32.7	55.9	73.9	18.0	
Vert	24020.000	PK	45.9	38.0	-1.3	30.5	52.1	73.9	21.8	
Vert	1563.564	AV	43.3	25.7	2.1	33.4	37.7	53.9	16.2	
Vert	2390.000	AV	35.2	27.2	2.6	32.3	32.7	53.9	21.2	
Vert	2400.000	AV	57.3	27.2	2.6	32.3	54.8	-	-	See 20dBc Data Sheet
Vert	3204.016	AV	41.5	28.5	3.1	31.9	41.2	53.9	12.7	
Vert	4804.000	AV	36.7	31.7	5.1	31.4	42.1	53.9	11.8	
Vert	7206.000	AV	30.8	35.9	6.1	31.9	40.9	53.9	13.0	
Vert	9608.000	AV	30.7	38.4	6.8	32.7	43.2	53.9	10.7	
Vert	24020.000	AV	35.6	38.0	-1.3	30.5	41.8	73.9	32.1	

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 had enough margin (more than 20dB).

*The 10th harmonic was not seen so the result was its base noise level.
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.3 Semi Anechoic Chamber		
Report No.	30FE0050-HO-01		
Date	01/27/2010	01/27/2010	01/28/2010
Temperature/ Humidity	21 deg.C./ 41%	21 deg.C./ 41%	21 deg.C./ 41%
Engineer	Satofumi Matsuyama (1-10GHz)	Keisuke Kawamura (10-26.5GHz)	Takumi Shimada (30M-1000MHz)
Mode	Tx, DH5 2480MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	57.853	QP	27.4	8.1	7.6	32.2	10.9	40.0	29.1	
Hori	72.148	QP	37.7	6.2	7.8	32.1	19.6	40.0	20.4	
Hori	108.214	QP	41.1	11.0	8.2	32.1	28.2	43.5	15.3	
Hori	360.713	QP	35.7	16.3	10.4	32.0	30.4	46.0	15.7	
Hori	384.760	QP	35.0	16.9	10.6	32.0	30.5	46.0	15.6	
Hori	400.006	QP	30.5	17.3	10.7	32.0	26.5	46.0	19.5	
Hori	1563.568	PK	47.5	25.7	2.1	33.4	41.9	73.9	32.0	
Hori	2483.500	PK	56.9	27.3	2.7	32.2	54.7	-	-	See Mraker Delta Method Sheet
Hori	3307.990	PK	46.3	28.8	3.1	31.8	46.4	73.9	27.5	
Hori	4960.000	PK	44.2	31.9	5.3	31.4	50.0	73.9	23.9	
Hori	7440.000	PK	43.5	36.3	6.1	32.0	53.9	73.9	20.0	
Hori	9920.000	PK	43.4	38.9	6.9	32.7	56.5	73.9	17.4	
Hori	24800.000	PK	46.8	39.1	-1.1	30.0	54.8	73.9	19.1	
Hori	1563.568	AV	41.4	25.7	2.1	33.4	35.8	53.9	18.1	
Hori	2483.500	AV	48.7	27.3	2.7	32.2	46.5	-	-	See Mraker Delta Method Sheet
Hori	3307.990	AV	39.2	28.8	3.1	31.8	39.3	53.9	14.6	
Hori	4960.000	AV	35.8	31.9	5.3	31.4	41.6	53.9	12.3	
Hori	7440.000	AV	31.2	36.3	6.1	32.0	41.6	53.9	12.3	
Hori	9920.000	AV	31.5	38.9	6.9	32.7	44.6	53.9	9.3	
Hori	24800.000	AV	36.6	39.1	-1.1	30.0	44.6	53.9	9.3	
Vert	58.355	QP	35.4	8.0	7.6	32.2	18.8	40.0	21.3	
Vert	72.136	QP	41.2	6.2	7.8	32.1	23.1	40.0	16.9	
Vert	108.214	QP	40.1	11.0	8.2	32.1	27.2	43.5	16.3	
Vert	355.397	QP	32.8	16.2	10.4	32.0	27.4	46.0	18.6	
Vert	384.176	QP	31.6	16.9	10.6	32.0	27.1	46.0	18.9	
Vert	400.006	QP	31.2	17.3	10.7	32.0	27.2	46.0	18.8	
Vert	1563.526	PK	49.5	25.7	2.1	33.4	43.9	73.9	30.0	
Vert	2483.500	PK	60.1	27.3	2.7	32.2	57.9	-	-	See Mraker Delta Method Sheet
Vert	3308.023	PK	46.9	28.8	3.1	31.8	47.0	73.9	26.9	
Vert	4960.000	PK	43.9	31.9	5.3	31.4	49.7	73.9	24.2	
Vert	7440.000	PK	43.2	36.3	6.1	32.0	53.6	73.9	20.3	
Vert	9920.000	PK	43.9	38.9	6.9	32.7	57.0	73.9	16.9	
Vert	24800.000	PK	47.1	39.1	-1.1	30.0	55.1	73.9	18.8	
Vert	1563.526	AV	43.3	25.7	2.1	33.4	37.7	53.9	16.2	
Vert	2483.500	AV	51.6	27.3	2.7	32.2	49.4	-	-	See Mraker Delta Method Sheet
Vert	3308.023	AV	39.7	28.8	3.1	31.8	39.8	53.9	14.1	
Vert	4960.000	AV	34.3	31.9	5.3	31.4	40.1	53.9	13.8	
Vert	7440.000	AV	31.1	36.3	6.1	32.0	41.5	53.9	12.4	
Vert	9920.000	AV	31.8	38.9	6.9	32.7	44.9	53.9	9.0	
Vert	24800.000	AV	36.6	39.1	-1.1	30.0	44.6	53.9	9.3	

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 had enough margin (more than 20dB).

*The 10th harmonic was not seen so the result was its base noise level.

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
(Marker Delta Method Sheet)

Test place : Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. : 30FE0050-HO-01
Date : 01/27/2010
Temperature/ Humidity : 21 deg.C./ 41%
Engineer : Satofumi Matsuyama
(1-10GHz)
Mode : Tx, DH5 2480MHz

Marker Delta Method(Test distance 3meters)

		Polarity	Hor[dB μ V/m]		Ver[dB μ V/m]	
		Detector	PK	AV	PK	AV
		RBW \ VBW	1MHz	270Hz	1MHz	270Hz
Step1	Fundamental(2480.0MHz)	1MHz	95.6	95.5	98.3	98.1
Step2	Fundamental(2480.0MHz)	30kHz	95.1	-	98.2	-
	Band-edge(2483.5MHz)	30kHz	46.5	-	49.0	-
	Amplitude delta	-	48.6	48.6	49.2	49.2
Step3	Field strength of band-edge	-	47.0	46.9	49.1	48.9
	Limit	-	73.9	53.9	73.9	53.9
	Margin	-	26.9	7.0	24.8	5.0

*1 Amplitude delta = Fundamental(RBW:30kHz,VBW:1MHz) - Band-edge(RBW:30kHz,VBW:1MHz)

*2Field strength of band-edge = Fundamental(RBW:1MHz) - Amplitude delta

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.3 Semi Anechoic Chamber	
Report No.	30FE0050-HO-01	
Date	01/27/2010	01/28/2010
Temperature/ Humidity	21 deg.C./ 41%	21 deg.C./ 41%
Engineer	Keisuke Kawamura	Takumi Shimada
	(Above 1GHz)	(Below 1Ghz)
Mode	Tx, 3DH5 2402MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	61.174	QP	30.1	7.4	7.6	32.2	12.9	40.0	27.1	
Hori	72.144	QP	38.0	6.2	7.8	32.1	19.9	40.0	20.1	
Hori	108.108	QP	40.2	11.0	8.2	32.1	27.3	43.5	16.2	
Hori	360.715	QP	36.2	16.3	10.4	32.0	30.9	46.0	15.1	
Hori	384.763	QP	34.9	16.9	10.6	32.0	30.4	46.0	15.6	
Hori	400.004	QP	33.3	17.3	10.7	32.0	29.3	46.0	16.7	
Hori	1563.547	PK	46.6	25.7	2.1	33.4	41.0	73.9	33.0	
Hori	2390.000	PK	45.5	27.2	2.6	32.3	43.0	73.9	30.9	
Hori	2400.000	PK	63.0	27.2	2.6	32.3	60.5	-	-	See 20dBc Data Sheet
Hori	3203.989	PK	43.8	28.5	3.1	31.9	43.5	73.9	30.4	
Hori	4804.000	PK	40.2	31.7	5.1	31.4	45.6	73.9	28.3	
Hori	7206.000	PK	41.4	35.9	6.1	31.9	51.5	73.9	22.4	
Hori	9608.000	PK	41.3	38.4	6.8	32.7	53.8	73.9	20.1	
Hori	24020.000	PK	45.5	38.0	-1.3	30.5	51.7	73.9	22.2	
Hori	1563.547	AV	41.2	25.7	2.1	33.4	35.6	53.9	18.3	
Hori	2390.000	AV	35.0	27.2	2.6	32.3	32.5	53.9	21.4	
Hori	2400.000	AV	57.6	27.2	2.6	32.3	55.1	-	-	See 20dBc Data Sheet
Hori	3203.989	AV	37.2	28.5	3.1	31.9	36.9	53.9	17.0	
Hori	4804.000	AV	31.0	31.7	5.1	31.4	36.4	53.9	17.5	
Hori	7206.000	AV	31.6	35.9	6.1	31.9	41.7	53.9	12.2	
Hori	9608.000	AV	31.2	38.4	6.8	32.7	43.7	53.9	10.2	
Hori	24020.000	AV	35.3	38.0	-1.3	30.5	41.5	53.9	12.4	
Vert	60.648	QP	35.6	7.4	7.6	32.2	18.4	40.0	21.6	
Vert	72.244	QP	40.0	6.2	7.8	32.1	21.9	40.0	18.1	
Vert	107.846	QP	39.8	11.0	8.2	32.1	26.9	43.5	16.6	
Vert	358.918	QP	33.6	16.3	10.4	32.0	28.3	46.0	17.7	
Vert	384.764	QP	31.5	16.9	10.6	32.0	27.0	46.0	19.0	
Vert	400.003	QP	31.0	17.3	10.7	32.0	27.0	46.0	19.0	
Vert	1563.564	PK	48.0	25.7	2.1	33.4	42.4	73.9	31.5	
Vert	2390.000	PK	46.0	27.2	2.6	32.3	43.5	73.9	30.4	
Vert	2400.000	PK	64.2	27.2	2.6	32.3	61.7	-	-	See 20dBc Data Sheet
Vert	3204.016	PK	43.6	28.5	3.1	31.9	43.3	73.9	30.6	
Vert	4804.000	PK	39.8	31.7	5.1	31.4	45.2	73.9	28.8	
Vert	7206.000	PK	41.6	35.9	6.1	31.9	51.7	73.9	22.2	
Vert	9608.000	PK	41.8	38.4	6.8	32.7	54.3	73.9	19.6	
Vert	24020.000	PK	45.6	38.0	-1.3	30.5	51.8	73.9	22.1	
Vert	1563.564	AV	43.1	25.7	2.1	33.4	37.5	53.9	16.4	
Vert	2390.000	AV	35.4	27.2	2.6	32.3	32.9	53.9	21.0	
Vert	2400.000	AV	58.7	27.2	2.6	32.3	56.2	-	-	See 20dBc Data Sheet
Vert	3204.016	AV	36.1	28.5	3.1	31.9	35.8	53.9	18.2	
Vert	4804.000	AV	30.2	31.7	5.1	31.4	35.6	53.9	18.3	
Vert	7206.000	AV	31.7	35.9	6.1	31.9	41.8	53.9	12.1	
Vert	9608.000	AV	31.2	38.4	6.8	32.7	43.7	53.9	10.2	
Vert	24020.000	AV	35.3	38.0	-1.3	30.5	41.5	53.9	12.4	

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 had enough margin (more than 20dB).

*The 10th harmonic was not seen so the result was its base noise level.
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.3 Semi Anechoic Chamber
Report No. : 30FE0050-HO-01
Date : 01/27/2010 01/28/2010
Temperature/ Humidity : 21 deg.C./ 41% 21 deg.C./ 41%
Engineer : Keisuke Kawamura Takumi Shimada
(Above 1GHz) (Below 1GHz)
Mode : Tx, 3DH5 2480MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	57.762	QP	29.3	8.1	7.6	32.2	12.8	40.0	27.2	
Hori	72.143	QP	37.6	6.2	7.8	32.1	19.5	40.0	20.5	
Hori	108.022	QP	41.7	11.0	8.2	32.1	28.8	43.5	14.7	
Hori	360.713	QP	36.5	16.3	10.4	32.0	31.2	46.0	14.8	
Hori	384.762	QP	34.5	16.9	10.6	32.0	30.0	46.0	16.0	
Hori	399.994	QP	33.1	17.3	10.7	32.0	29.1	46.0	16.9	
Hori	1563.568	PK	46.7	25.7	2.1	33.4	41.1	73.9	32.8	
Hori	2483.500	PK	63.3	27.3	2.7	32.2	61.1	-	-	See Marker Delta Method Sheet
Hori	3307.990	PK	42.1	28.8	3.1	31.8	42.2	73.9	31.7	
Hori	4960.000	PK	40.0	31.9	5.3	31.4	45.8	73.9	28.2	
Hori	7440.000	PK	42.3	36.3	6.1	32.0	52.7	73.9	21.2	
Hori	9920.000	PK	42.0	38.9	6.9	32.7	55.1	73.9	18.8	
Hori	24800.000	PK	47.2	39.1	-1.1	30.0	55.2	73.9	18.7	
Hori	1563.568	AV	40.5	25.7	2.1	33.4	34.9	53.9	19.0	
Hori	2483.500	AV	54.2	27.3	2.7	32.2	52.0	-	-	See Marker Delta Method Sheet
Hori	3307.990	AV	33.1	28.8	3.1	31.8	33.2	53.9	20.7	
Hori	4960.000	AV	30.8	31.9	5.3	31.4	36.6	53.9	17.3	
Hori	7440.000	AV	32.0	36.3	6.1	32.0	42.4	53.9	11.5	
Hori	9920.000	AV	31.8	38.9	6.9	32.7	44.9	53.9	9.0	
Hori	24800.000	AV	36.4	39.1	-1.1	30.0	44.4	53.9	9.5	
Vert	57.702	QP	33.6	8.1	7.6	32.2	17.1	40.0	22.9	
Vert	72.145	QP	41.0	6.2	7.8	32.1	22.9	40.0	17.1	
Vert	108.098	QP	39.5	11.0	8.2	32.1	26.6	43.5	16.9	
Vert	360.718	QP	35.6	16.3	10.4	32.0	30.3	46.0	15.7	
Vert	384.766	QP	30.7	16.9	10.6	32.0	26.2	46.0	19.8	
Vert	400.006	QP	31.2	17.3	10.7	32.0	27.2	46.0	18.8	
Vert	1563.569	PK	48.3	25.7	2.1	33.4	42.7	73.9	31.2	
Vert	2483.500	PK	64.2	27.3	2.7	32.2	62.0	-	-	See Marker Delta Method Sheet
Vert	3308.023	PK	41.9	28.8	3.1	31.8	42.0	73.9	31.9	
Vert	4960.000	PK	40.1	31.9	5.3	31.4	45.9	73.9	28.0	
Vert	7440.000	PK	42.4	36.3	6.1	32.0	52.8	73.9	21.1	
Vert	9920.000	PK	42.3	38.9	6.9	32.7	55.4	73.9	18.5	
Vert	24800.000	PK	46.6	39.1	-1.1	30.0	54.6	73.9	19.3	
Vert	1563.569	AV	44.0	25.7	2.1	33.4	38.4	53.9	15.5	
Vert	2483.500	AV	54.7	27.3	2.7	32.2	52.5	-	-	See Marker Delta Method Sheet
Vert	3308.023	AV	32.9	28.8	3.1	31.8	33.0	53.9	20.9	
Vert	4960.000	AV	30.7	31.9	5.3	31.4	36.5	53.9	17.4	
Vert	7440.000	AV	32.0	36.3	6.1	32.0	42.4	53.9	11.5	
Vert	9920.000	AV	31.9	38.9	6.9	32.7	45.0	53.9	8.9	
Vert	24800.000	AV	36.4	39.1	-1.1	30.0	44.4	53.9	9.5	

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 had enough margin (more than 20dB).

*The 10th harmonic was not seen so the result was its base noise level.

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
(Marker Delta Method Sheet)

Test place Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. 30FE0050-HO-01
Date 01/27/2010
Temperature/ Humidity 21 deg.C./ 41%
Engineer Keisuke Kawamura
 (Above 1GHz)
Mode Tx, 3DH5 2480MHz

Marker Delta Method(Test distance 3meters)

		Polarity	Hor[dBμV/m]		Ver[dBμV/m]	
		Detector	PK	AV	PK	AV
		RBW \ VBW	1MHz	270Hz	1MHz	270Hz
Step1	Fundamental(2480.0MHz)	1MHz	97.1	94.8	96.5	94.2
Step2	Fundamental(2480.0MHz)	30kHz	96.5	-	95.9	-
	Band-edge(2483.5MHz)	30kHz	48.1	-	47.3	-
	Amplitude delta*1	-	48.4	48.4	48.6	48.6
Step3	Field strength of band-edge*2	-	48.7	46.4	47.9	45.6
	Limit	-	73.9	53.9	73.9	53.9
	Margin	-	25.2	7.5	26.0	8.3

*1 Amplitude delta = Fundamental(RBW:30kHz,VBW:1MHz) - Band-edge(RBW:30kHz,VBW:1MHz)

*2Field strength of band-edge = Fundamental(RBW:1MHz) - Amplitude delta

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.3 Semi Anechoic Chamber	
Report No.	30FE0050-HO-01	
Date	01/27/2010	01/28/2010
Temperature/ Humidity	21 deg.C./ 41%	21 deg.C./ 41%
Engineer	Keisuke Kawamura	Takumi Shimada
	(1-10GHz)	(30M-1000MHz)
Mode	Rx, 2441MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	59.316	QP	27.9	7.7	7.6	32.2	11.0	40.0	29.0	
Hori	72.143	QP	37.4	6.2	7.8	32.1	19.3	40.0	20.7	
Hori	108.076	QP	41.6	11.0	8.2	32.1	28.7	43.5	14.8	
Hori	360.721	QP	36.6	16.3	10.4	32.0	31.3	46.0	14.7	
Hori	384.758	QP	34.9	16.9	10.6	32.0	30.4	46.0	15.6	
Hori	400.004	QP	33.3	17.3	10.7	32.0	29.3	46.0	16.7	
Hori	1563.568	PK	46.6	25.7	2.1	33.4	41.0	73.9	32.9	
Hori	2439.510	PK	48.3	27.2	2.7	32.3	45.9	73.9	28.1	
Hori	2441.000	PK	41.5	27.2	2.7	32.3	39.1	73.9	34.8	
Hori	1563.568	AV	40.5	25.7	2.1	33.4	34.9	53.9	19.0	
Hori	2439.510	AV	43.6	27.2	2.7	32.3	41.2	53.9	12.7	
Hori	2441.000	AV	31.4	27.2	2.7	32.3	29.0	53.9	24.9	
Vert	59.216	QP	35.1	7.7	7.6	32.2	18.2	40.0	21.8	
Vert	72.144	QP	40.9	6.2	7.8	32.1	22.8	40.0	17.2	
Vert	107.898	QP	40.5	11.0	8.2	32.1	27.6	43.5	15.9	
Vert	360.321	QP	35.5	16.3	10.4	32.0	30.2	46.0	15.8	
Vert	384.766	QP	31.2	16.9	10.6	32.0	26.7	46.0	19.3	
Vert	400.002	QP	31.3	17.3	10.7	32.0	27.3	46.0	18.7	
Vert	1563.569	PK	48.0	25.7	2.1	33.4	42.4	73.9	31.6	
Vert	2439.510	PK	47.4	27.2	2.7	32.3	45.0	73.9	28.9	
Vert	2441.000	PK	42.1	27.2	2.7	32.3	39.7	73.9	34.2	
Vert	1563.569	AV	43.7	25.7	2.1	33.4	38.1	53.9	15.8	
Vert	2439.510	AV	42.4	27.2	2.7	32.3	40.0	53.9	13.9	
Vert	2441.000	AV	31.4	27.2	2.7	32.3	29.0	53.9	24.9	

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

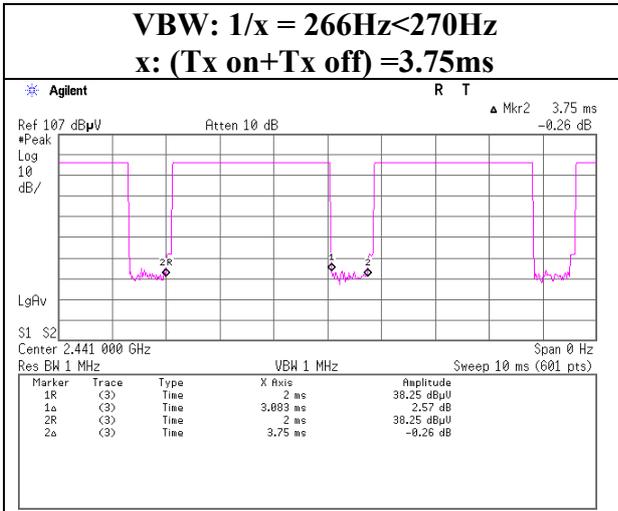
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

*The 10th harmonic was not seen so the result was its base noise level.
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

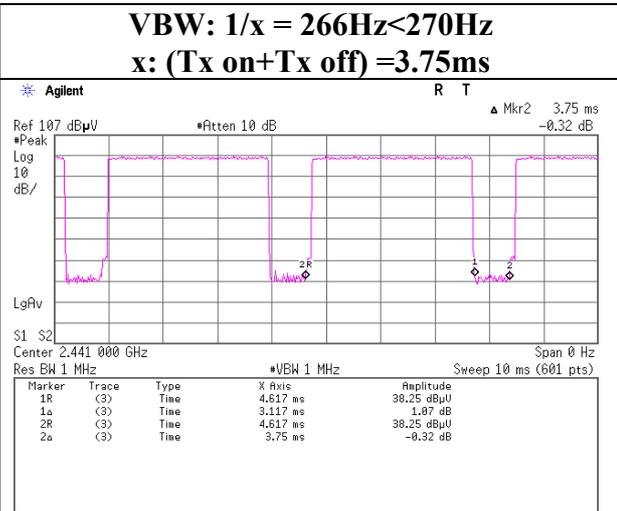
DH5

**VBW: $1/x = 266\text{Hz} < 270\text{Hz}$
x: (Tx on+Tx off) = 3.75ms**



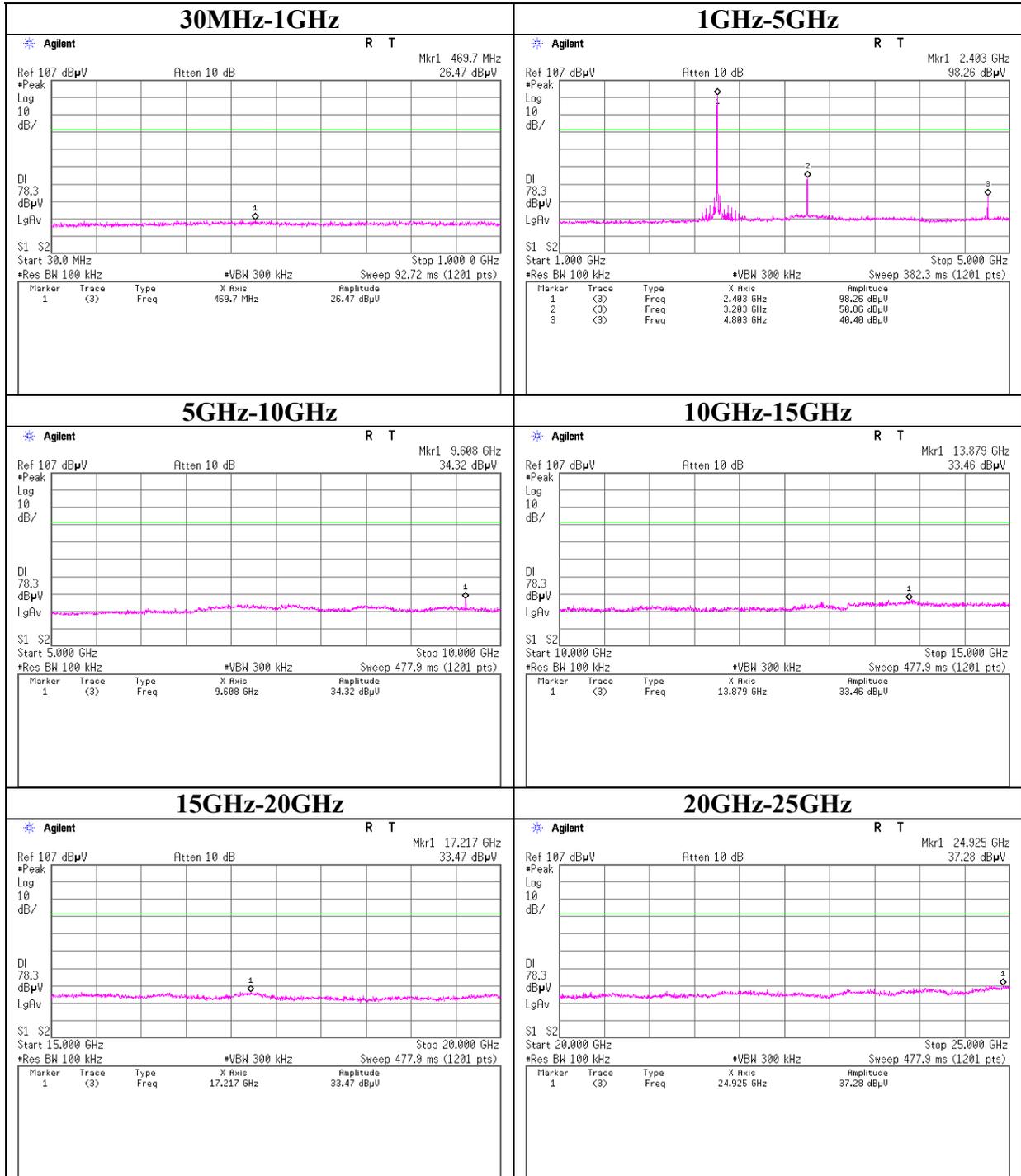
3DH5

**VBW: $1/x = 266\text{Hz} < 270\text{Hz}$
x: (Tx on+Tx off) = 3.75ms**



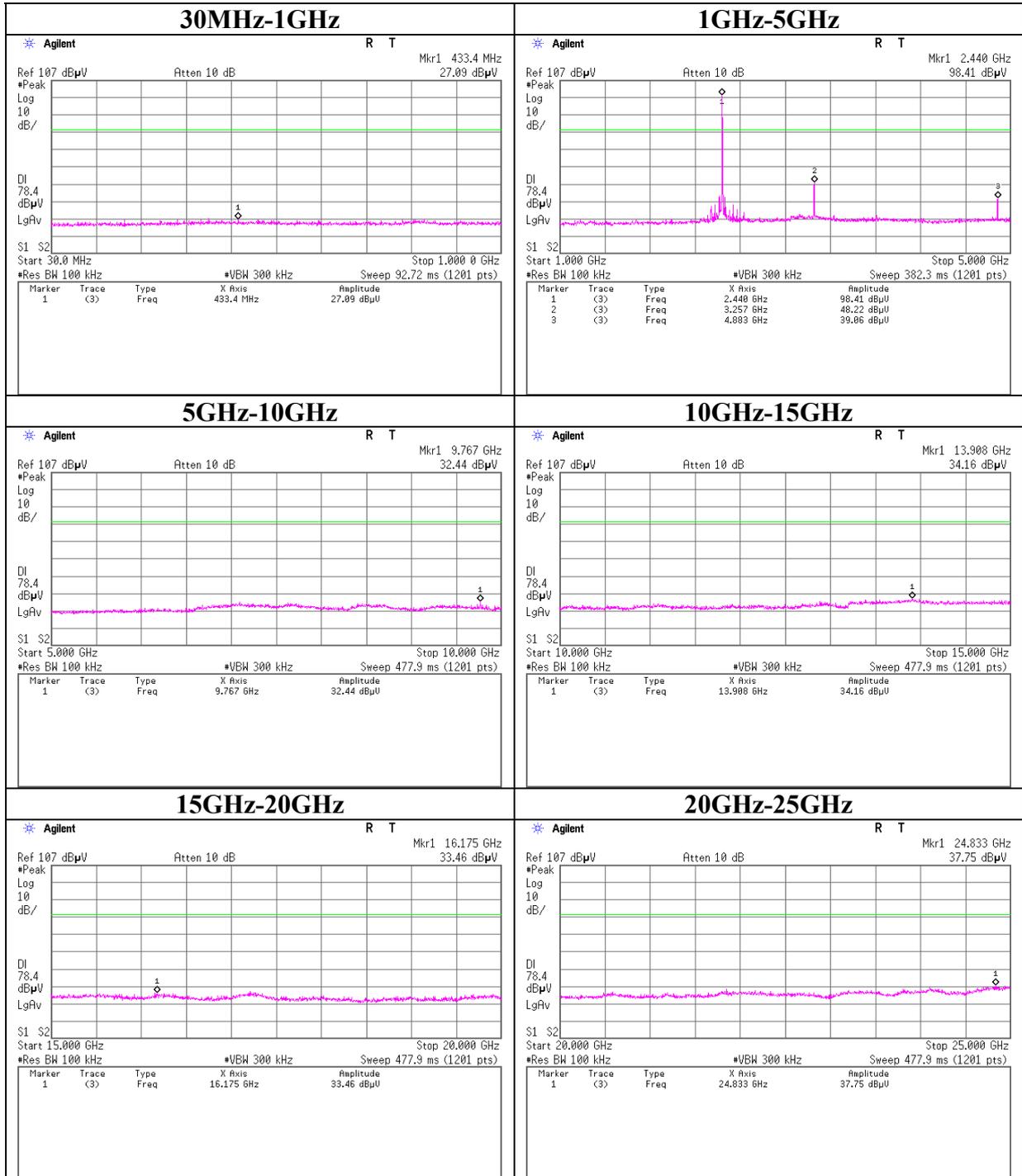
Conducted Spurious Emission

Tx DH5 2402MHz



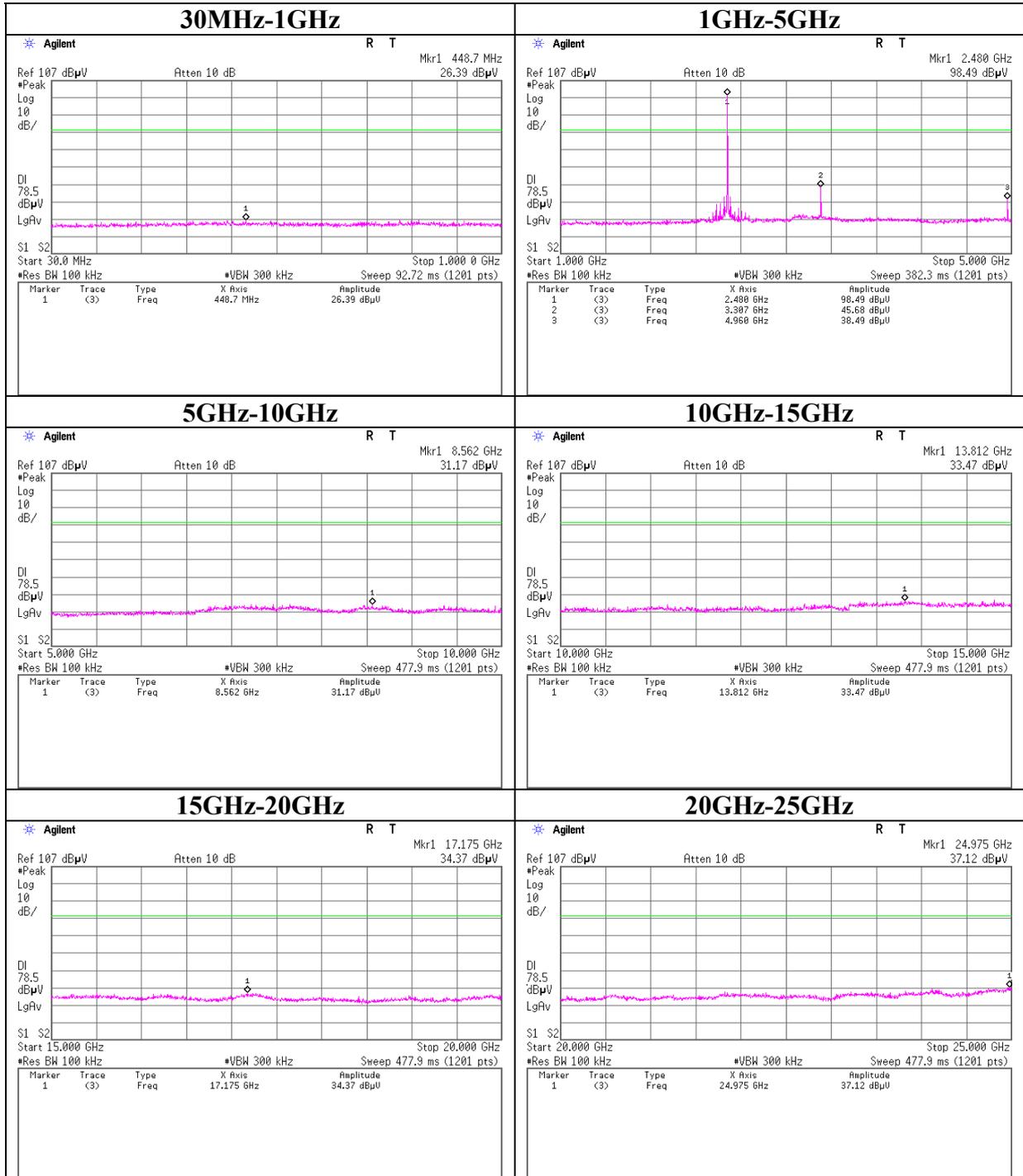
Conducted Spurious Emission

Tx DH5 2441MHz



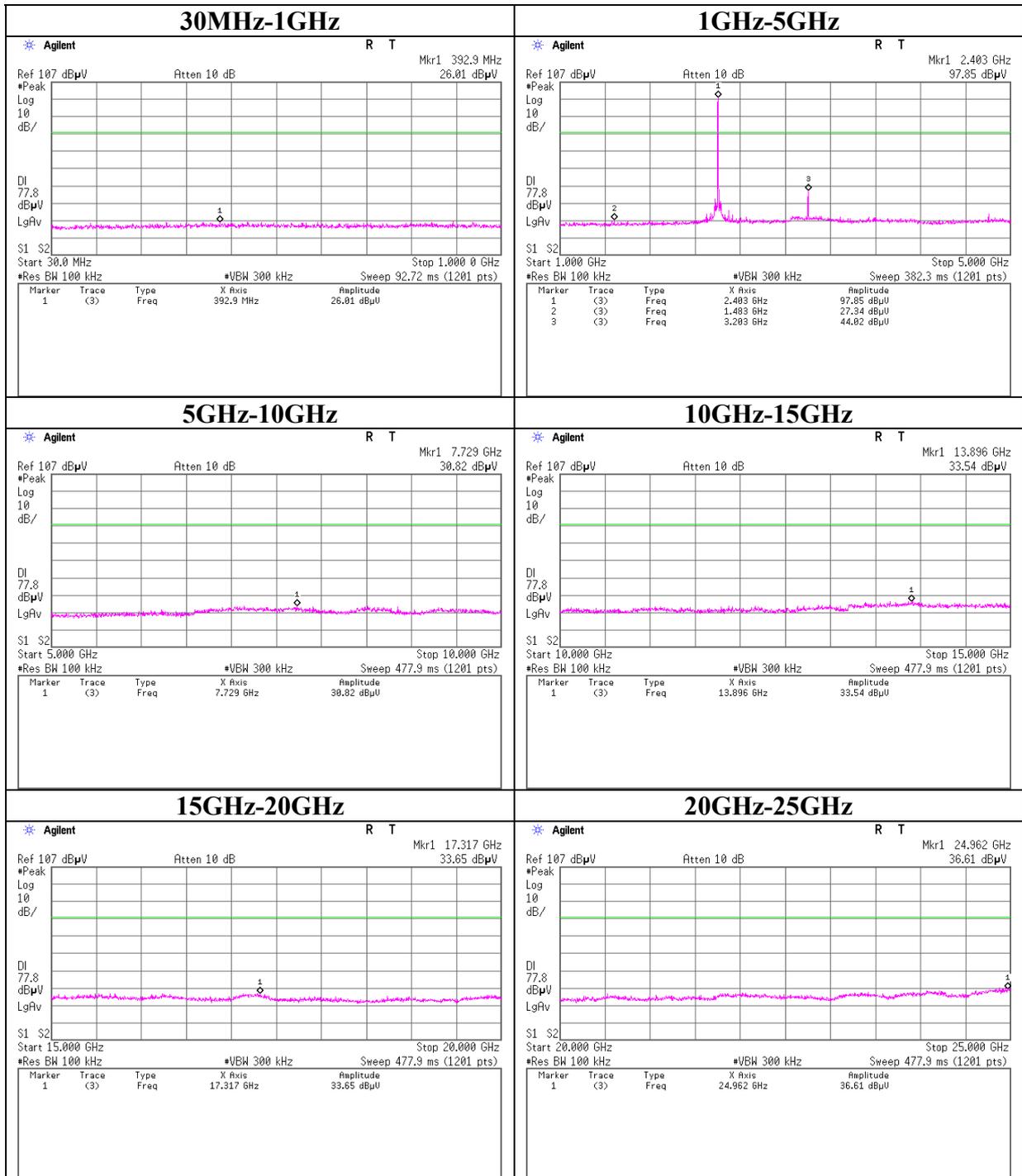
Conducted Spurious Emission

Tx DH5 2480MHz



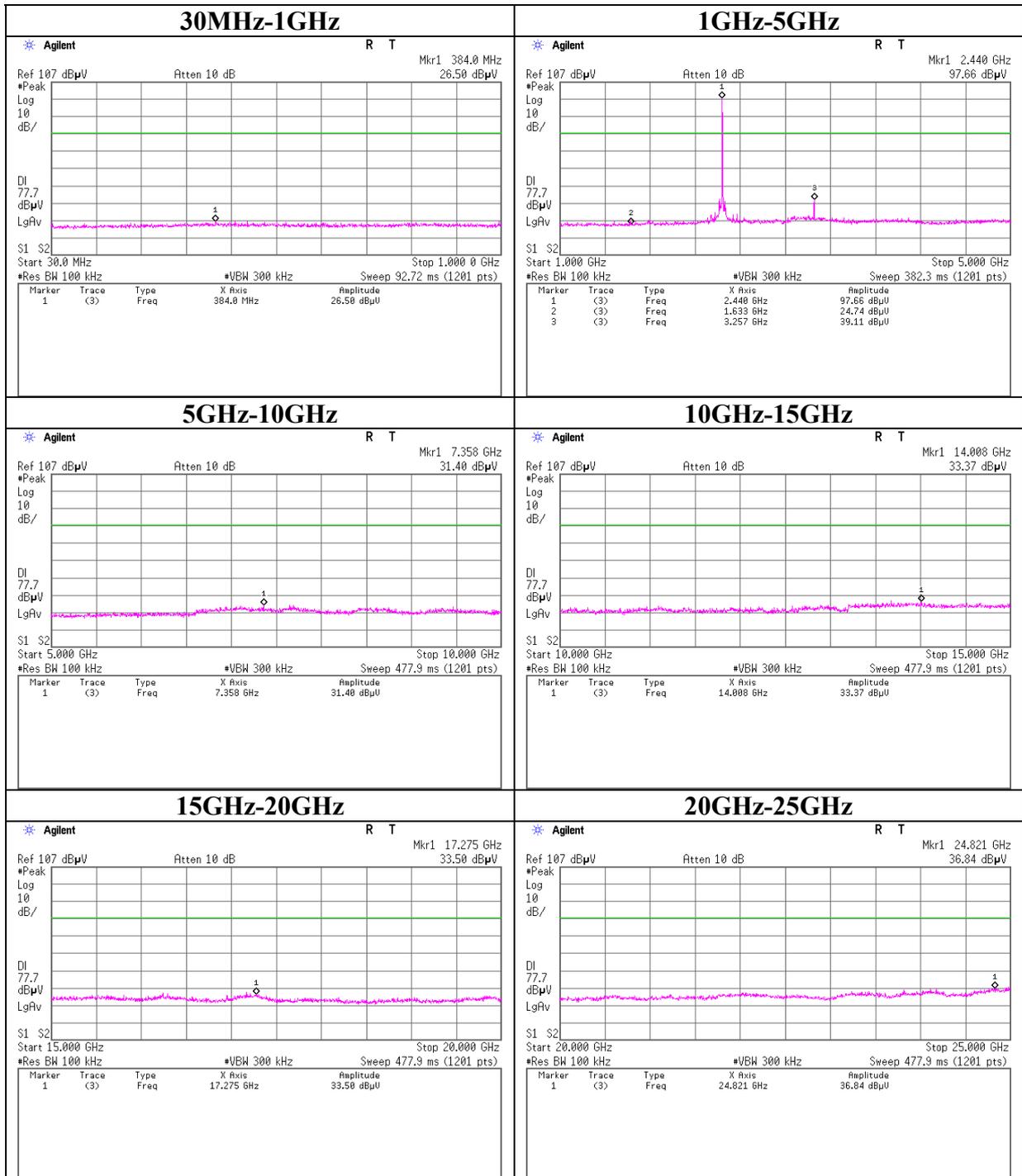
Conducted Spurious Emission

Tx 3DH5 2402MHz



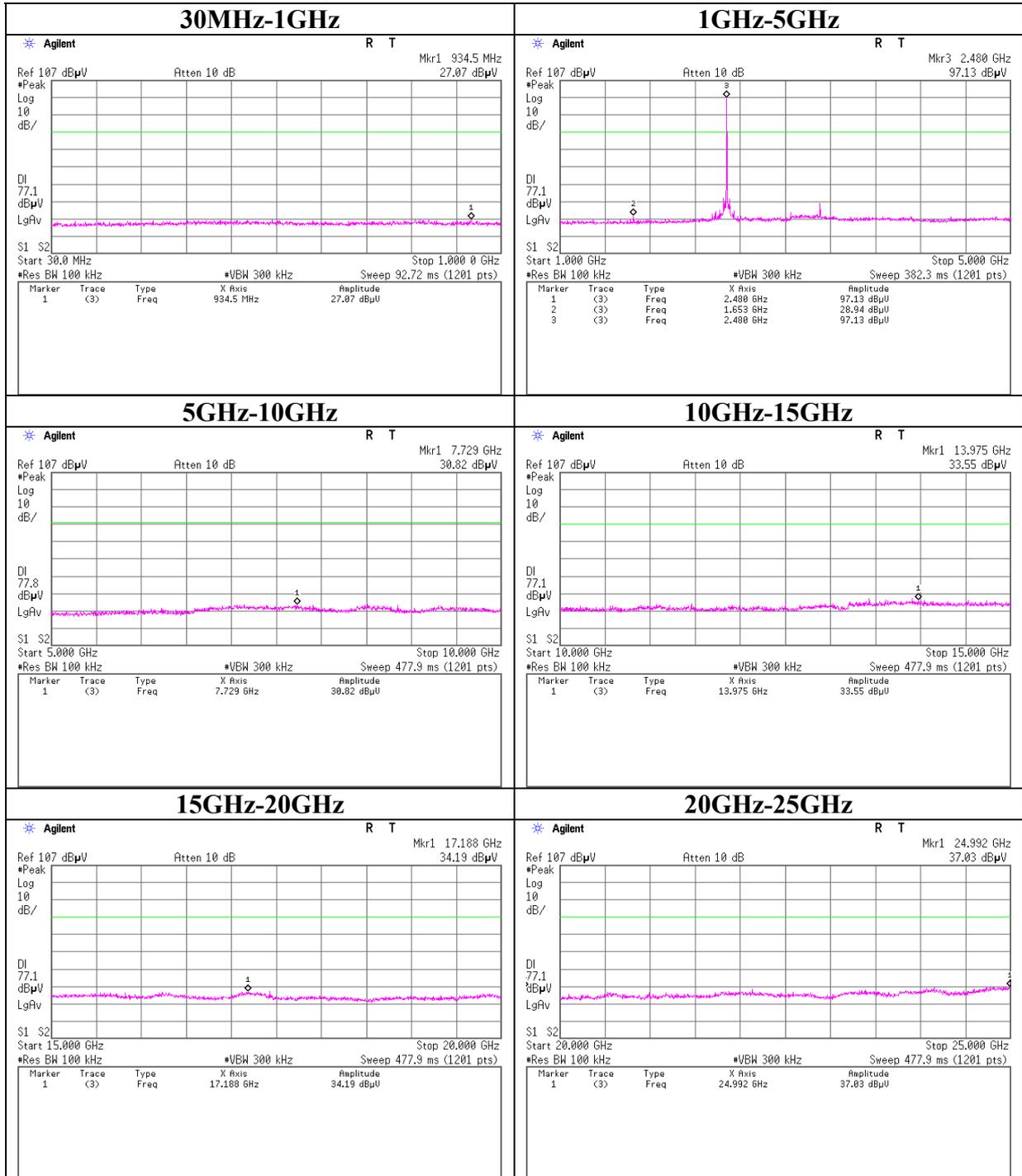
Conducted Spurious Emission

Tx 3DH5 2441MHz



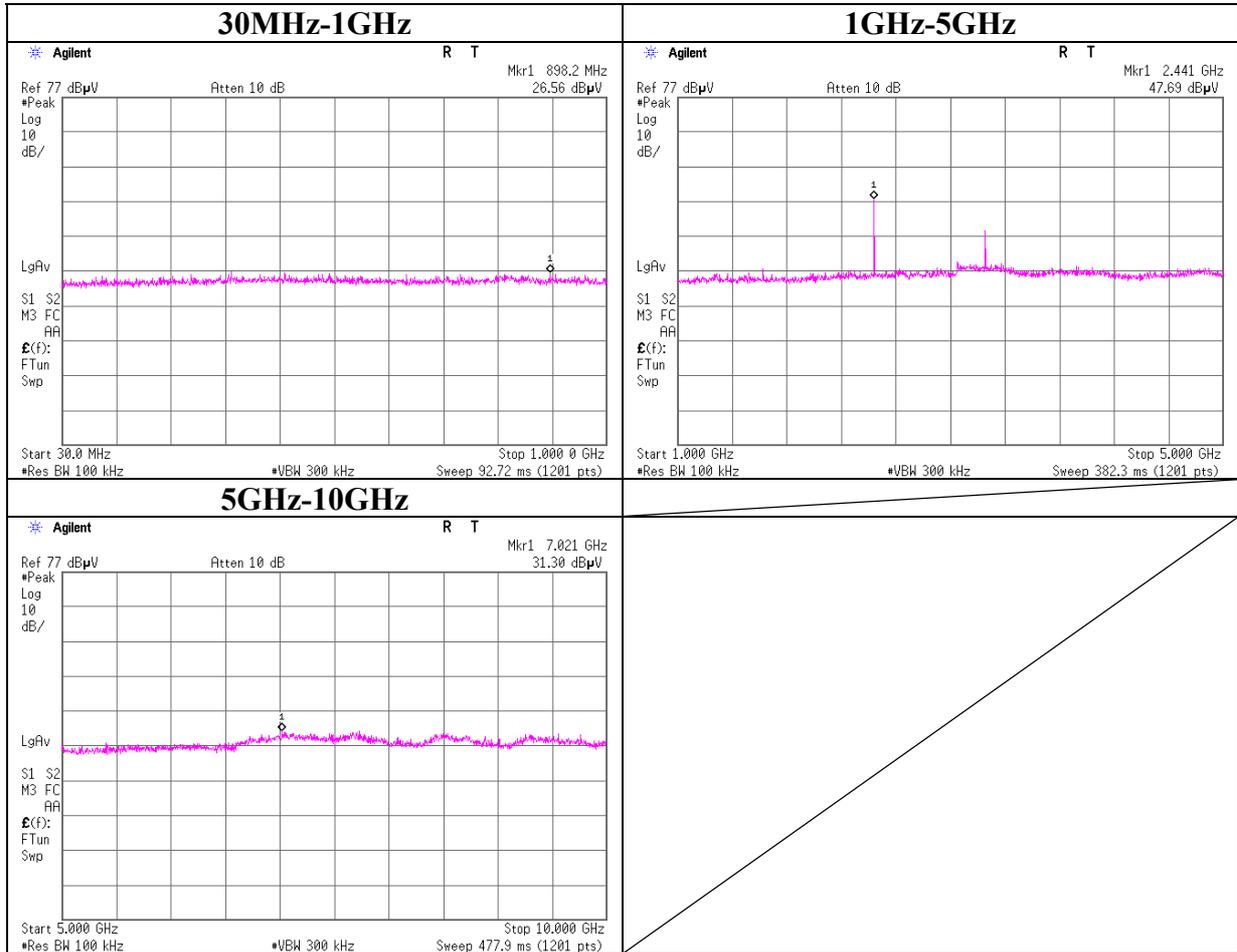
Conducted Spurious Emission

Tx 3DH5 2480MHz



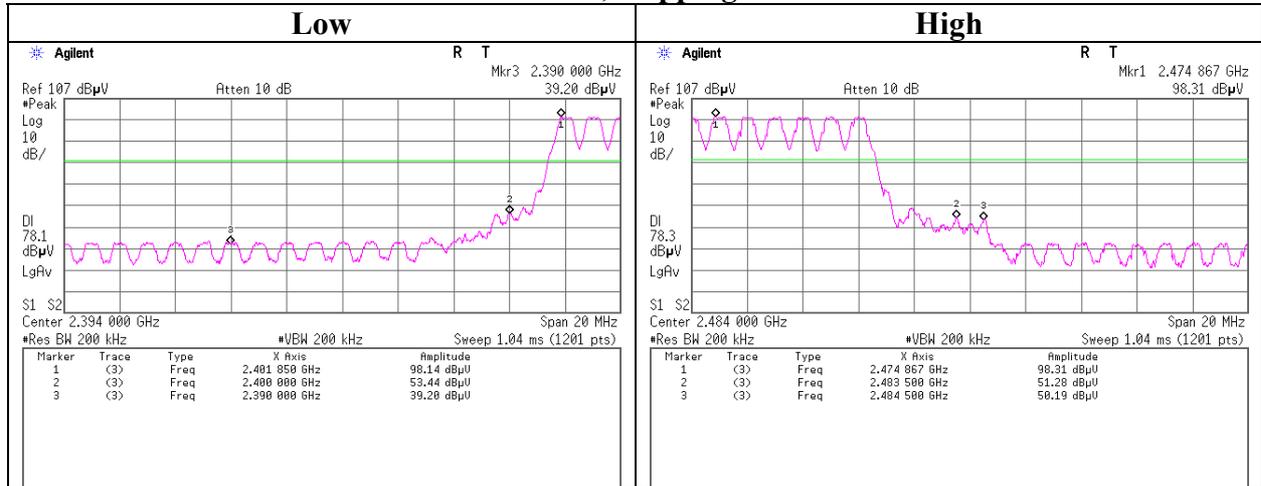
Conducted Spurious Emission

Rx 2441MHz

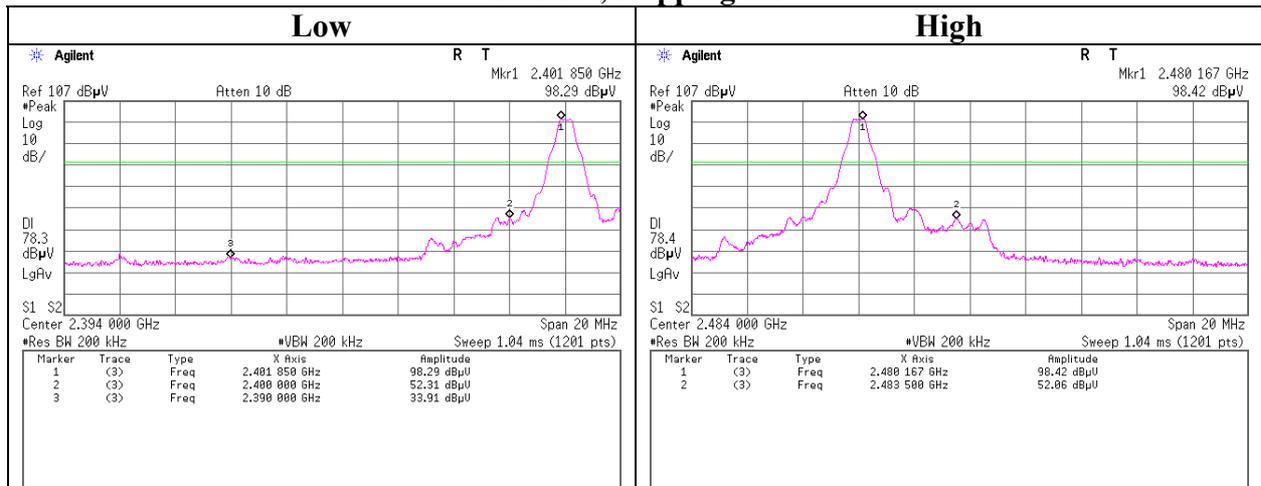


Conducted Emission Band Edge compliance

Tx DH5, Hopping on

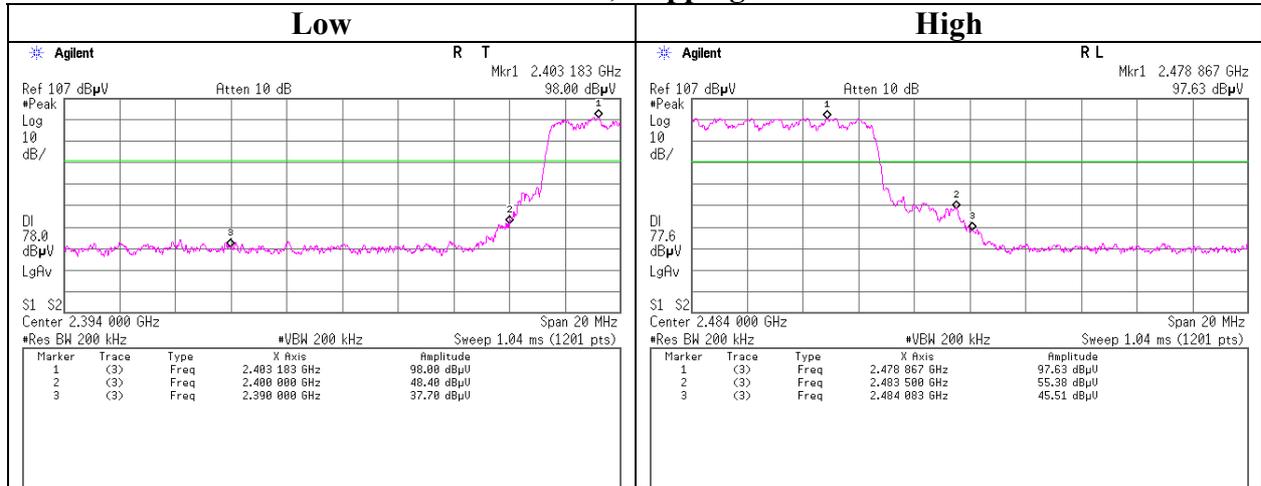


Tx DH5, Hopping off

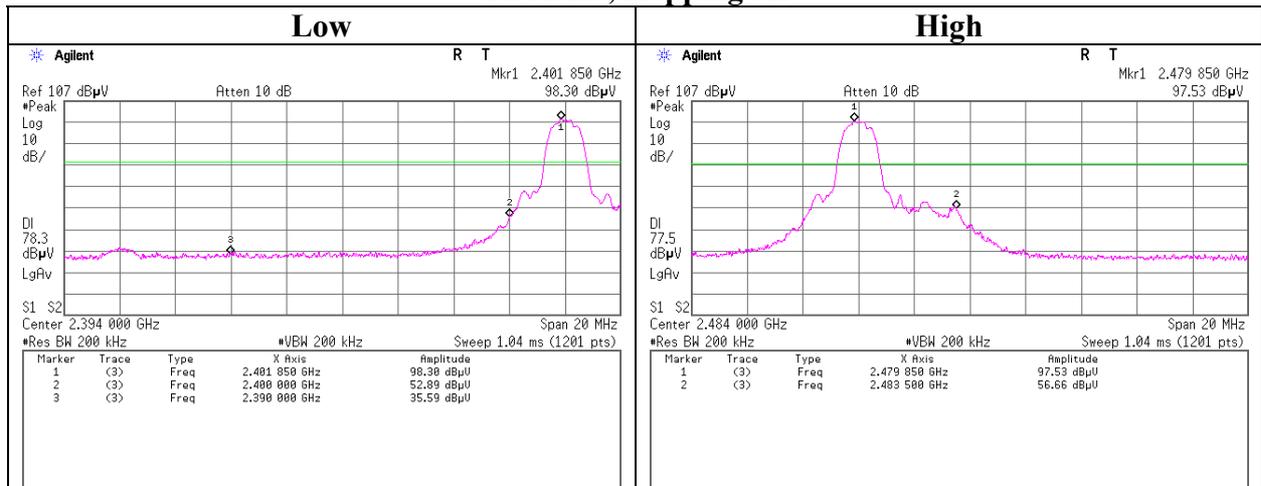


Conducted Emission Band Edge compliance

Tx 3DH5, Hopping on



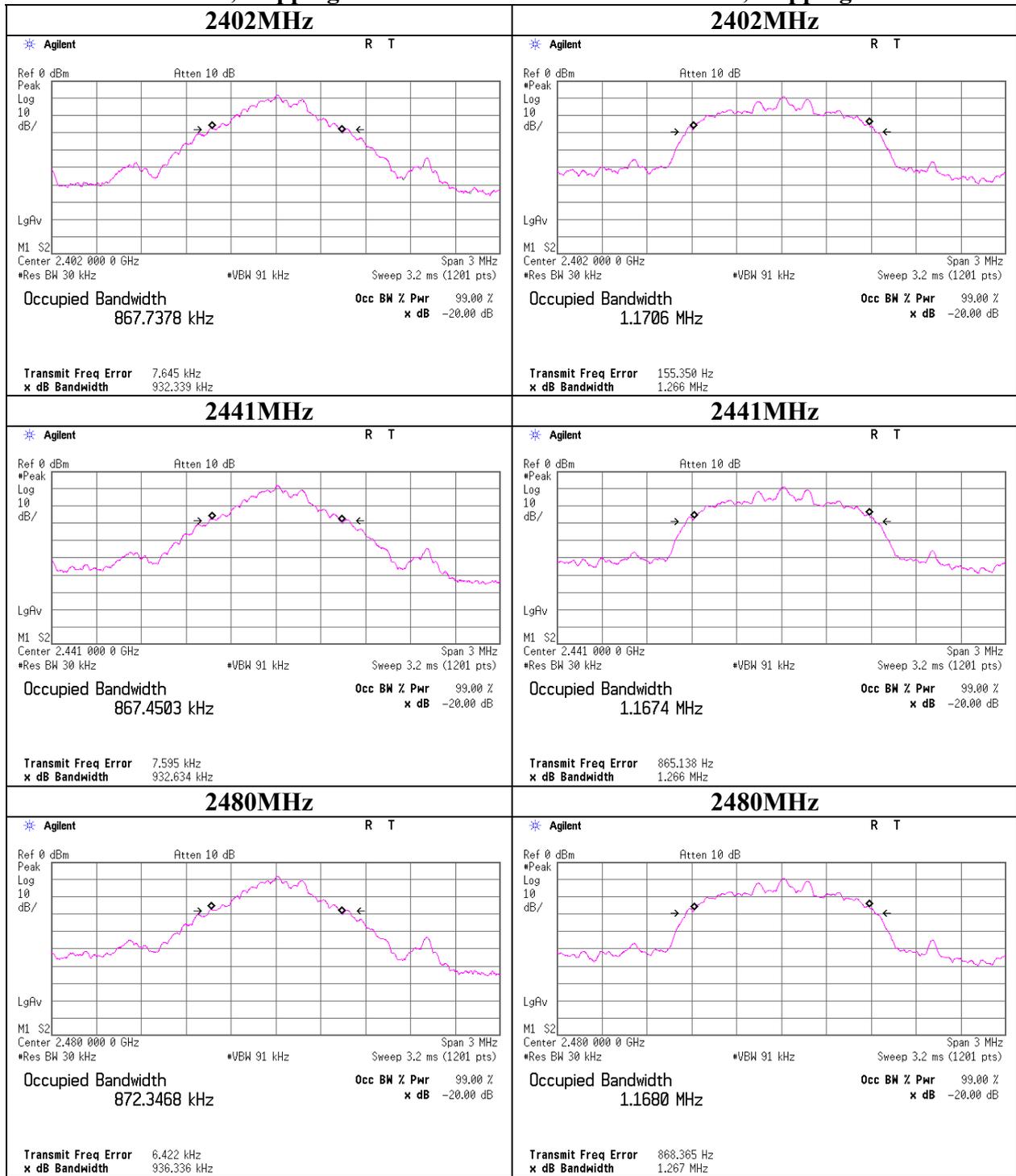
Tx 3DH5, Hopping off



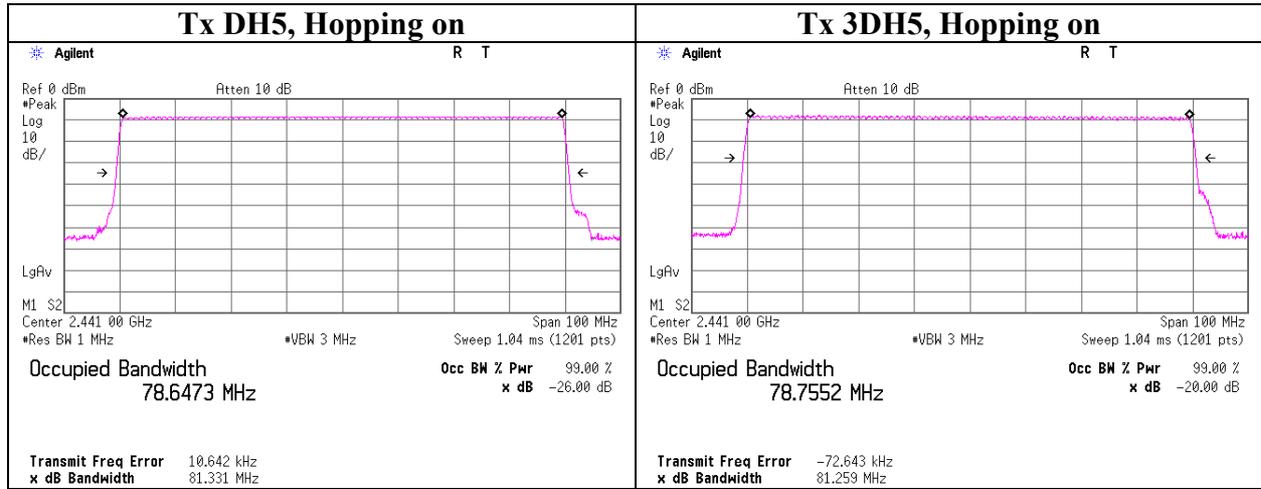
99%Occupied Bandwidth

Tx DH5, Hopping off

Tx 3DH5, Hopping off



99% Occupied Bandwidth



***Refer to 20dB Bandwidth for 99% Bandwidth inquiry mode.**

APPENDIX 3: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MPM-12	Power Meter	Anritsu	ML2495A	0825002	AT	2009/08/26 * 12
MPSE-17	Power sensor	Anritsu	MA2411B	0738285	AT	2009/08/26 * 12
MAT-23	Attenuator(10dB) DC-18GHz	Orient Microwave	BX10-0476-00	-	AT	2009/03/24 * 12
MSA-04	Spectrum Analyzer	Agilent	E4448A	US44300523	AT	2009/08/25 * 12
MOS-14	Thermo-Hygrometer	Custom	CTH-180	-	AT	2009/02/04 * 12
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	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE	-
MSA-10	Spectrum Analyzer	Agilent	E4448A	MY46180655	RE	2009/02/25 * 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	2010/01/25 * 12
MPA-11	MicroWave System Amplifier	Agilent	83017A	MY39500779	RE	2009/03/19 * 12
MHF-19	High Pass Filter 3.5-18.0GHz	TOKIMEC	TF323DCA	602	RE	2009/12/19 * 12
MCC-78	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	278993/4	RE	2009/12/19 * 12
MHA-16	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170306	RE	2009/04/30 * 12
MSA-09	Spectrum Analyzer	Advantest	R3273	95090115	RE	2009/12/11 * 12
MTR-08	Test Receiver	Rohde & Schwarz	ESCI	100767	RE	2009/06/30 * 12
MBA-03	Biconical Antenna	Schwarzbeck	BBA9106	1915	RE	2010/01/23 * 12
MLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	174	RE	2010/01/23 * 12
MCC-51	Coaxial cable	UL Japan	-	-	RE	2009/07/02 * 12
MAT-09	Attenuator(6dB)	Weinschel Corp	2	BK7973	RE	2009/11/12 * 12
MPA-13	Pre Amplifier	SONOMA INSTRUMENT	310	260834	RE	2009/03/18 * 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:

RE: Radiated Emission

AT: Antenna Terminal Conducted test

UL Japan, Inc.

Head Office EMC Lab.

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

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