

APPENDIX 2: Data of EMI test

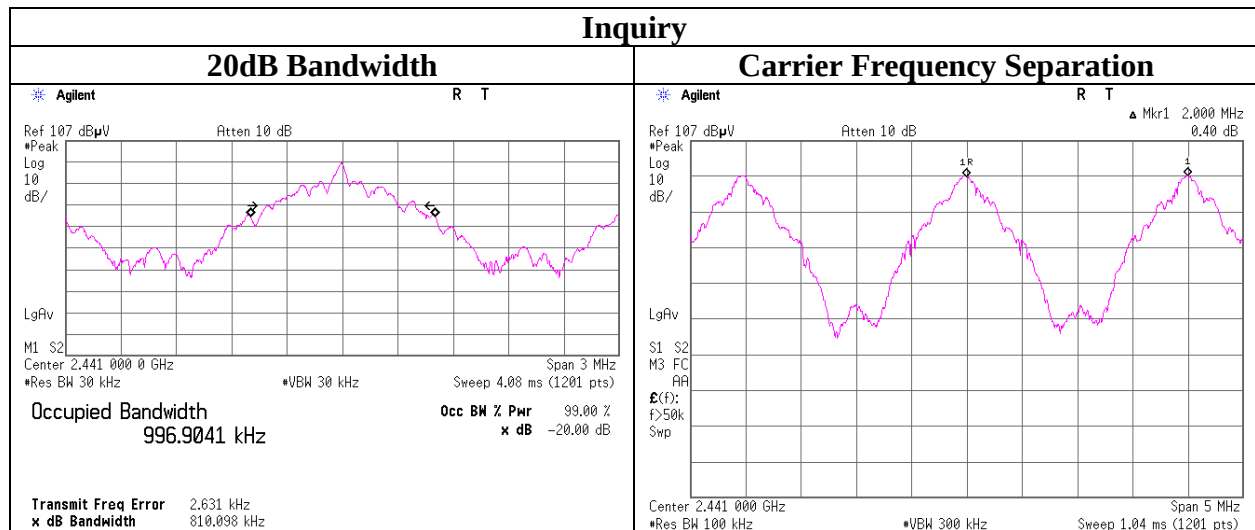
20dB Bandwidth and Carrier Frequency Separation

Test place	Head Office EMC Lab. No.11 Measurement Room
Report No.	31CE0189-HO-03
Date	11/28/2010
Temperature/ Humidity	23 deg.C./ 35%
Engineer	Hironobu Ohnishi
Mode	Tx (Hopping on) DH5/3DH5/Inquiry

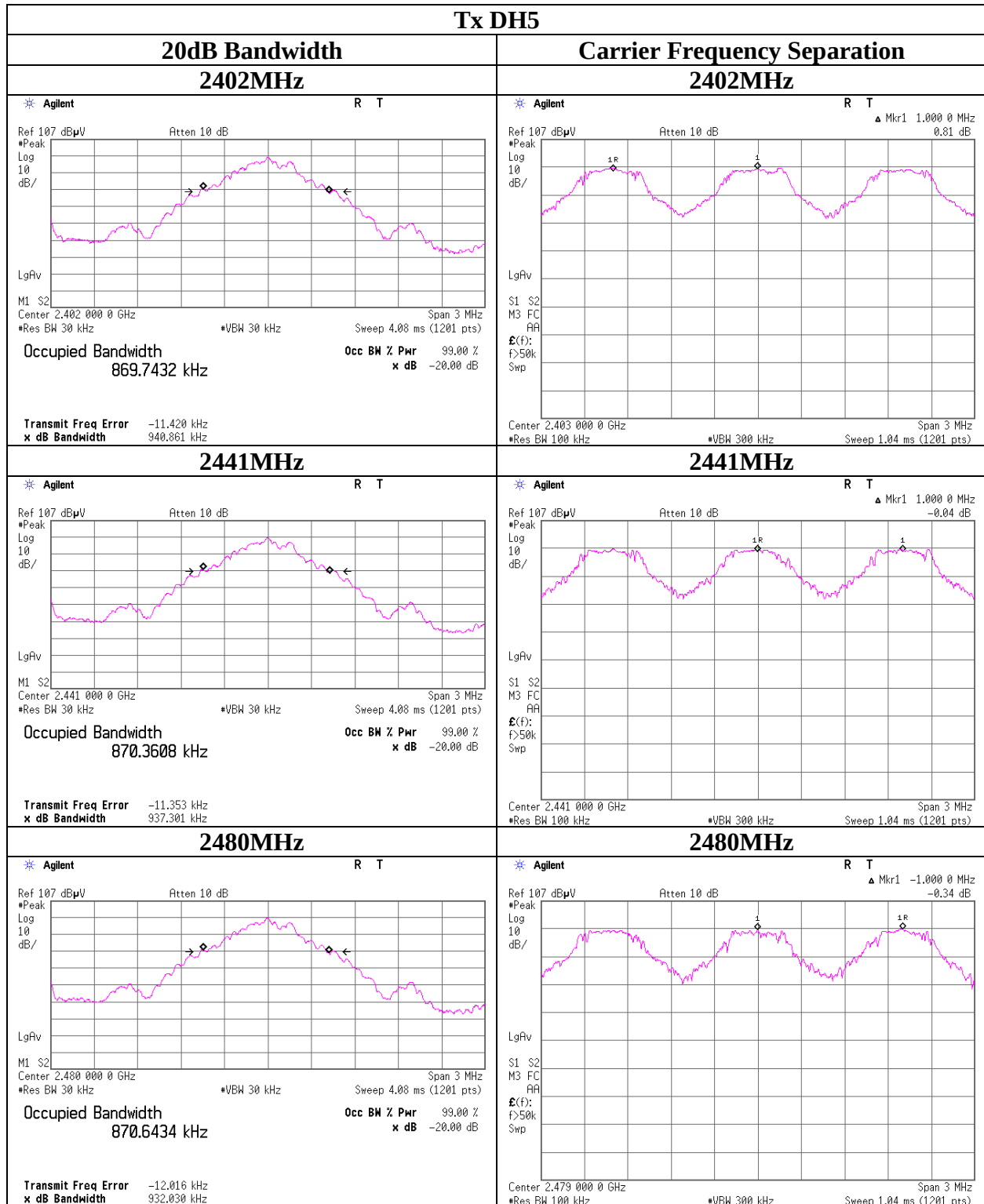
Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency separation [MHz]
DH5	2402.0	0.941	1.000	≥ 0.627
DH5	2441.0	0.937	1.000	≥ 0.625
DH5	2480.0	0.932	1.000	≥ 0.621
3DH5	2402.0	1.267	0.995	≥ 0.845
3DH5	2441.0	1.268	0.998	≥ 0.845
3DH5	2480.0	1.264	1.005	≥ 0.843
Inquiry	2441.0	0.810	2.000	≥ 0.540

Limit: Two-thirds of 20dB Bandwidth or 25kHz (whichever is greater).

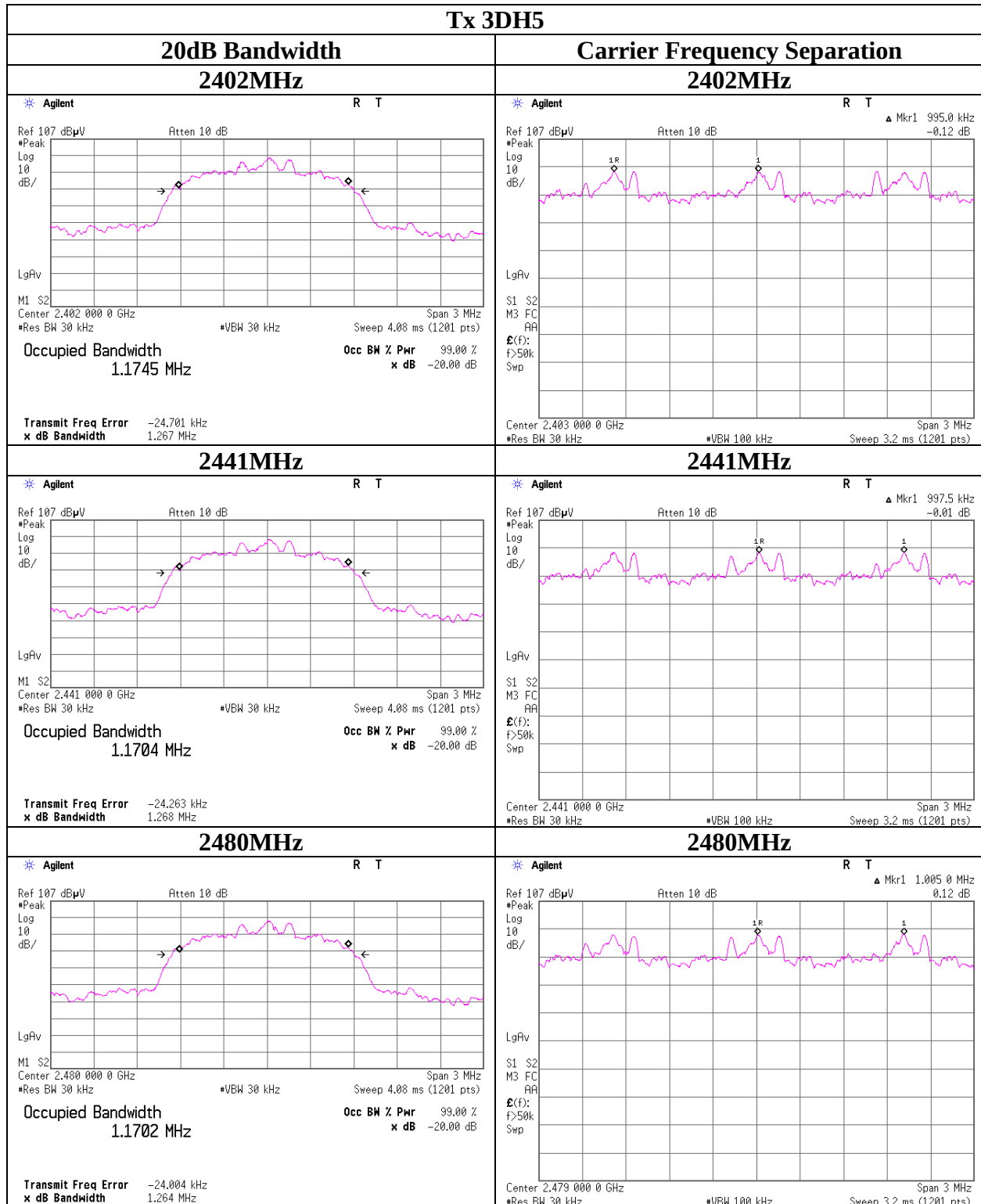
No limit applies to 20dB Bandwidth.



20dB Bandwidth and Carrier Frequency Separation



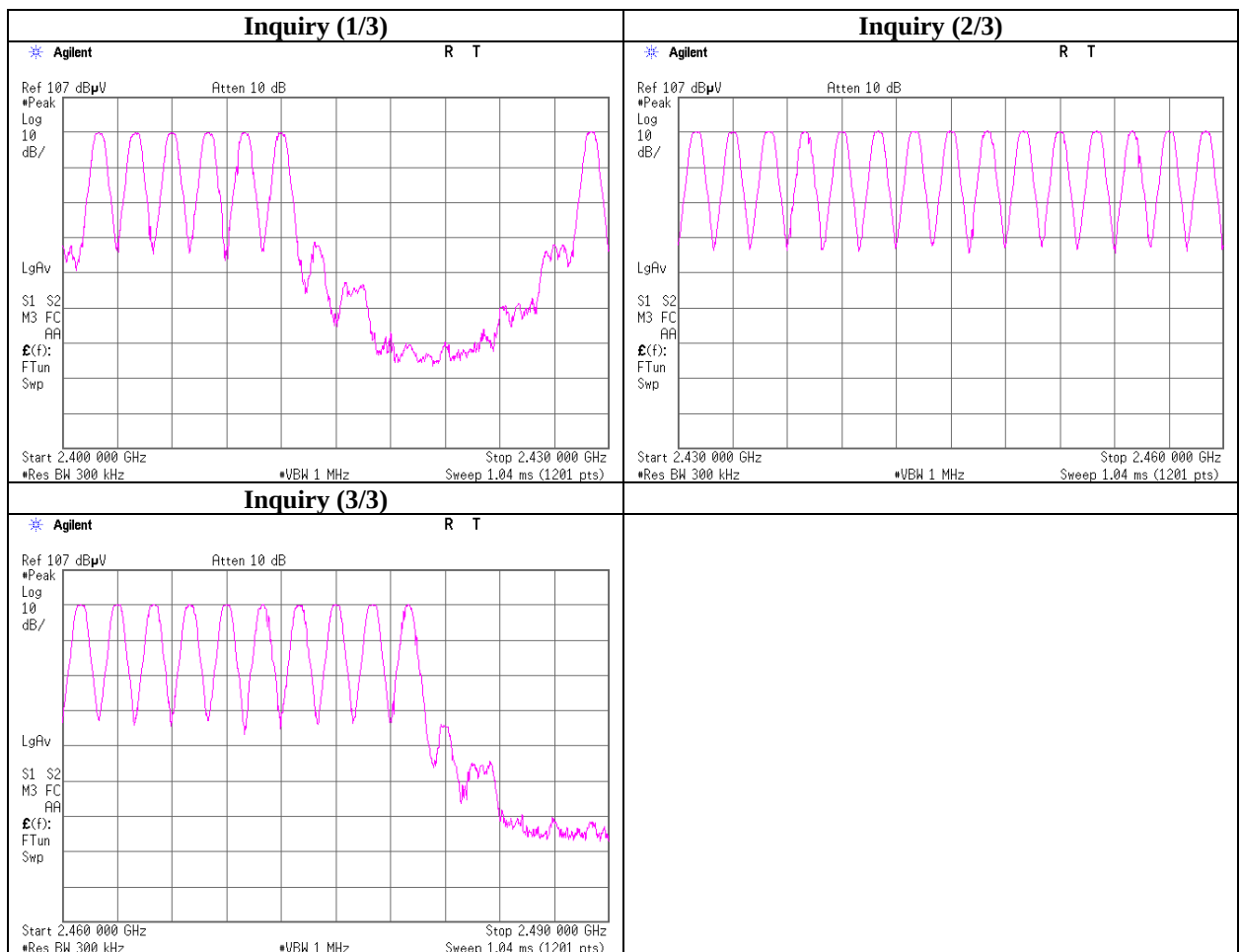
20dB Bandwidth and Carrier Frequency Separation



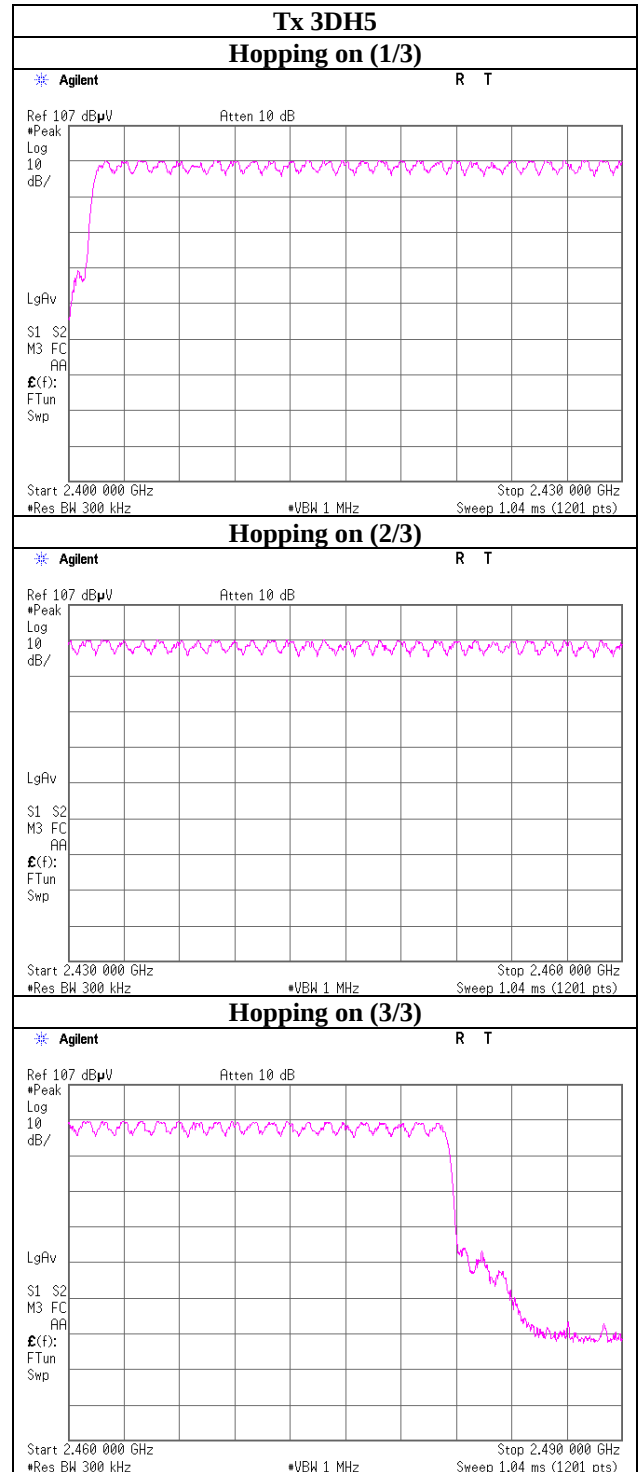
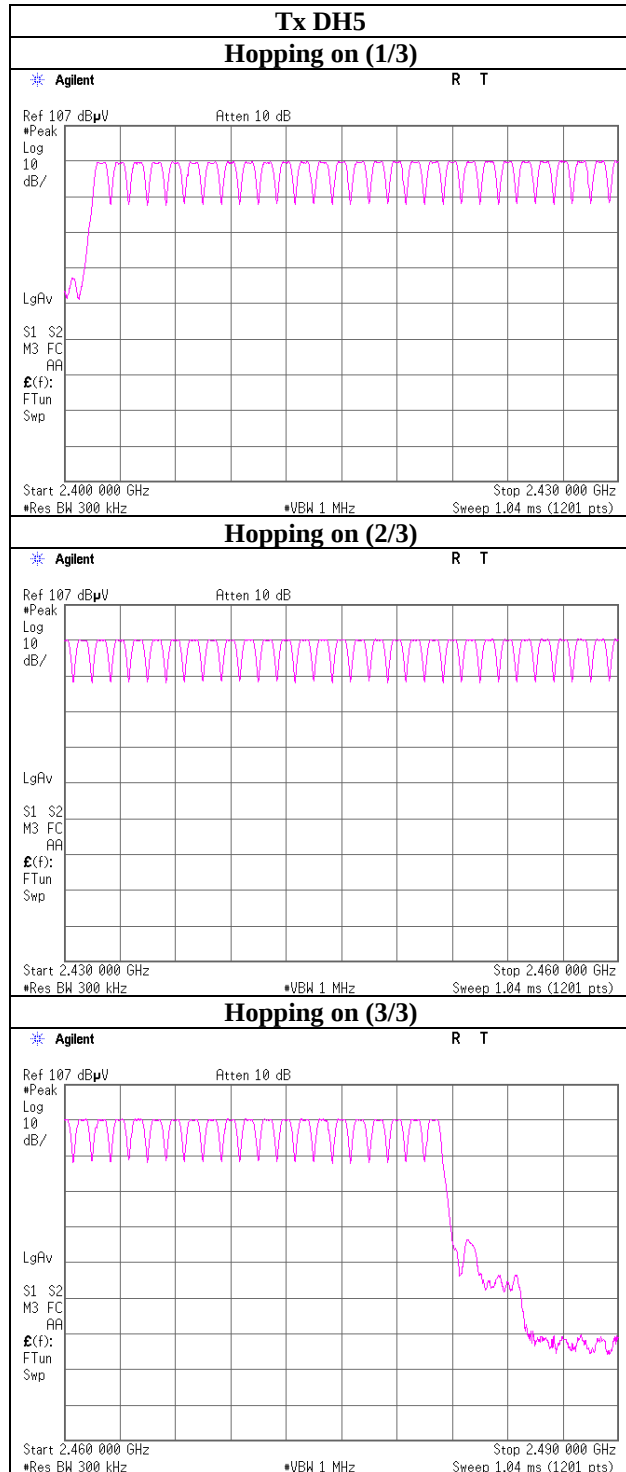
Number of Hopping Frequency

Test place	Head Office EMC Lab. No.11 Measurement Room
Report No.	31CE0189-HO-03
Date	11/28/2010
Temperature/ Humidity	23 deg.C./ 35%
Engineer	Hironobu Ohnishi
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



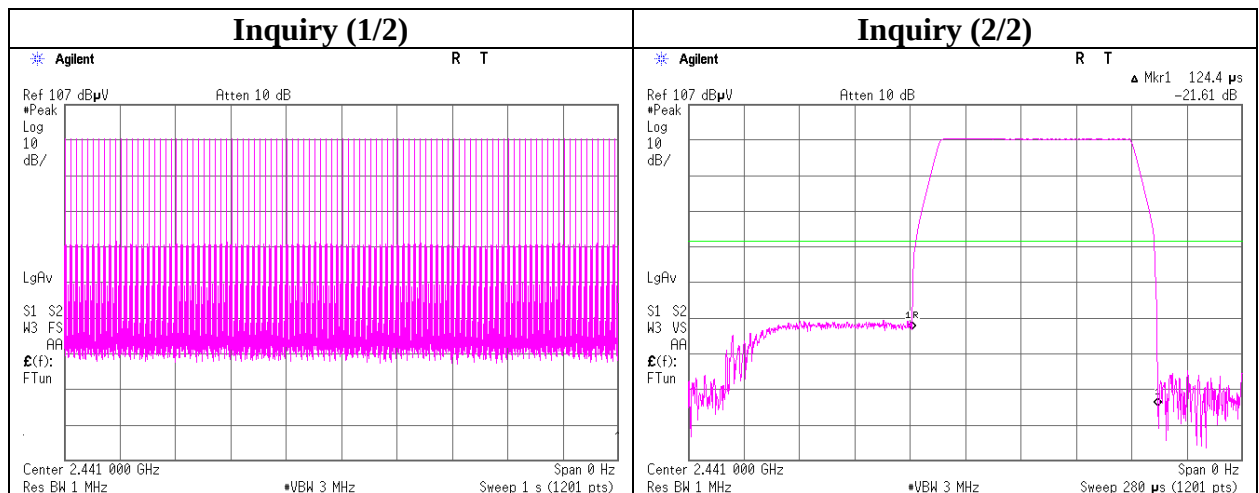
Dwell time

Test place Head Office EMC Lab. No.11 Measurement Room
Report No. 31CE0189-HO-03
Date 11/28/2010
Temperature/ Humidity 23 deg.C./ 35%
Engineer Hironobu Ohnishi
Mode Tx (Hopping on) DH5/3DH5/Inquiry

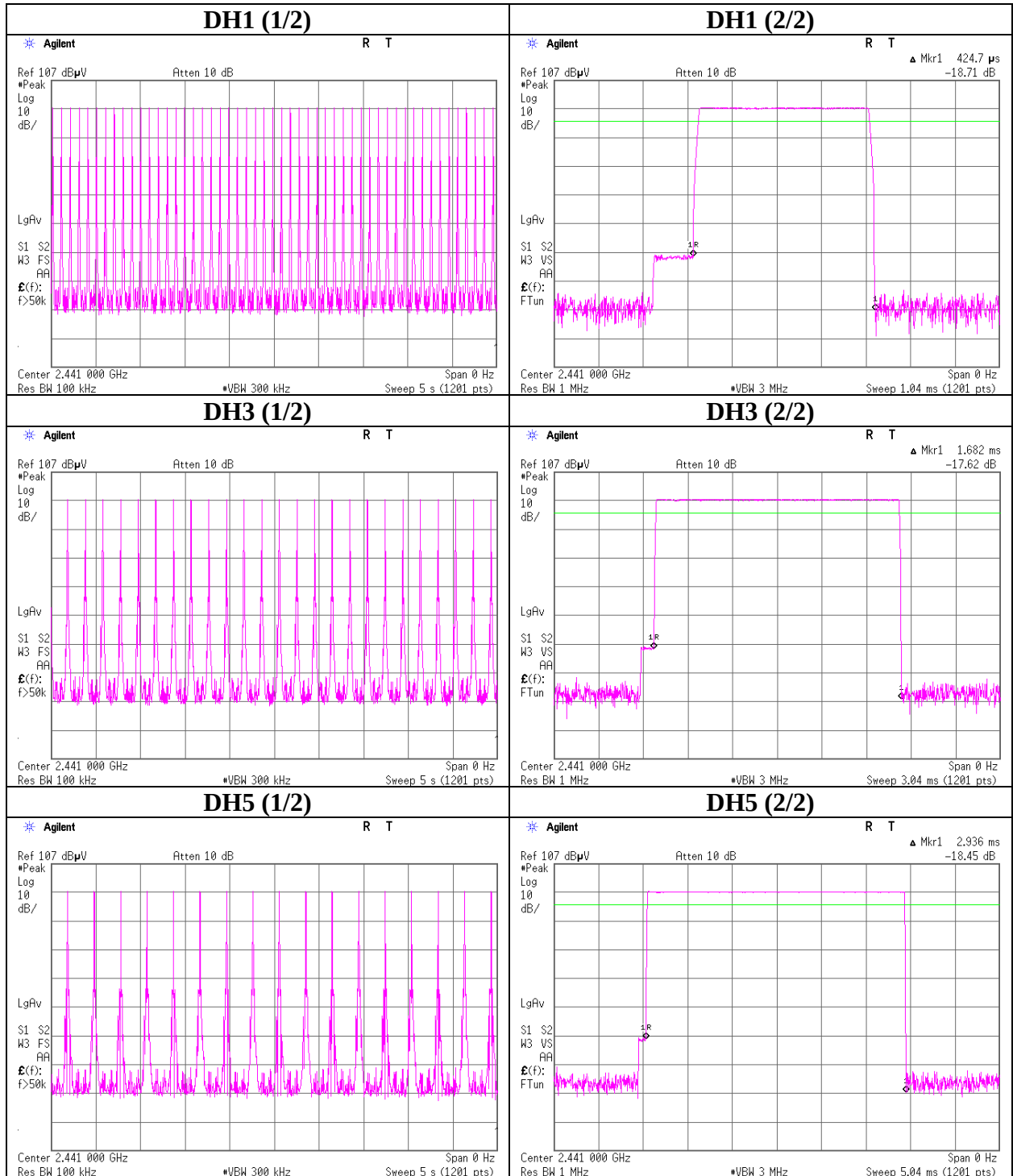
Mode	Number of transmission in a 31.6(79 Hopping x 0.4) / 12.8(32 Hopping x 0.4)second period				Length of transmission time [msec]	Result [msec]	Limit [msec]
DH1	51.0 times	/	5 sec.	x	31.6 sec. =	323 times	400
DH3	25.0 times	/	5 sec.	x	31.6 sec. =	158 times	400
DH5	17.0 times	/	5 sec.	x	31.6 sec. =	108 times	400
3DH1	51.0 times	/	5 sec.	x	31.6 sec. =	323 times	400
3DH3	25.0 times	/	5 sec.	x	31.6 sec. =	158 times	400
3DH5	17.0 times	/	5 sec.	x	31.6 sec. =	108 times	400
Inquiry	100.0 times	/	1 sec.	x	12.8 sec. =	1280 times	400

Sample Calculation

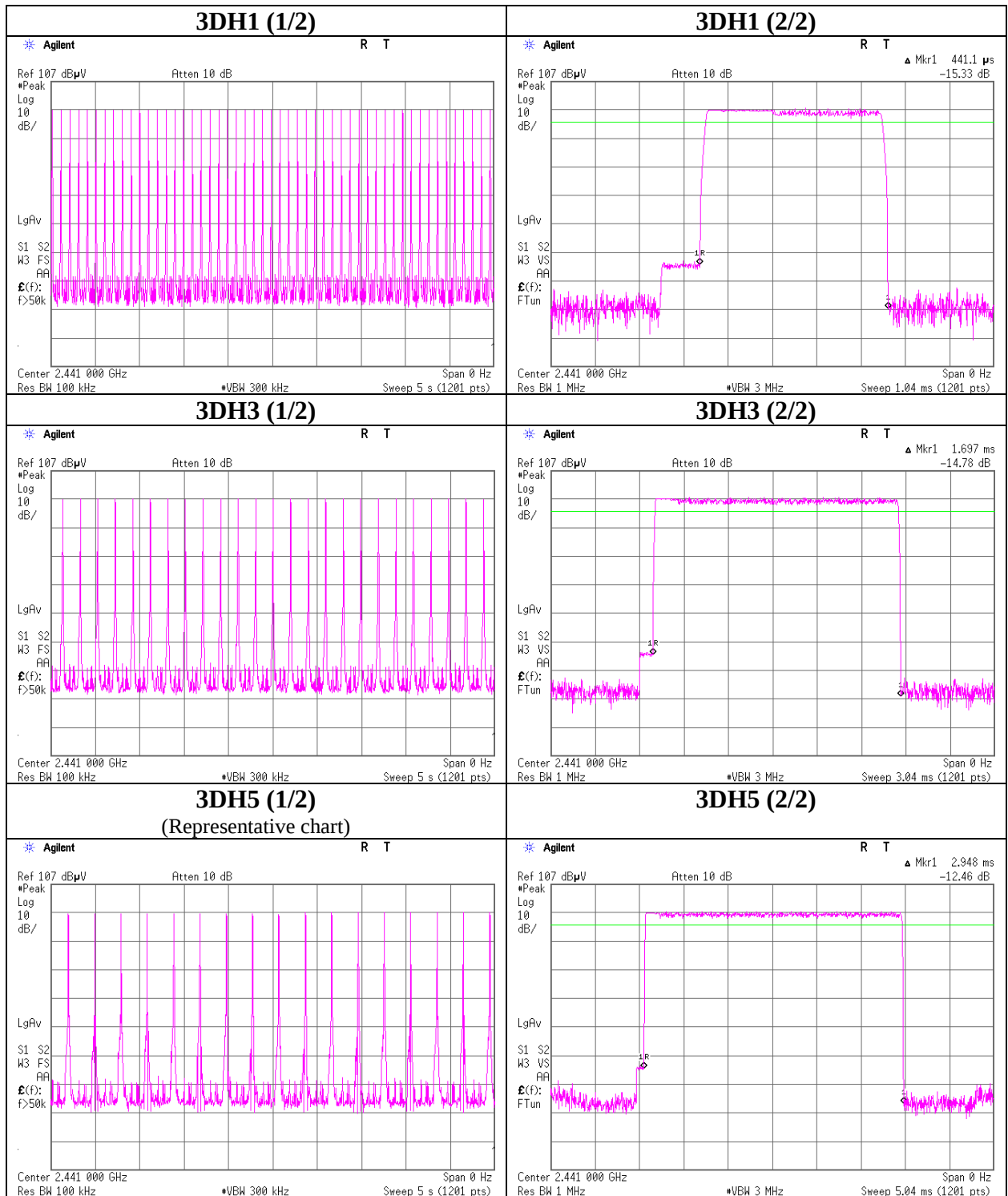
Result = Number of transmission x Length of transmittion time



Dwell time



Dwell time



Maximum Peak Output Power

Test place Head Office EMC Lab. No.11 Measurement Room
Report No. 31CE0189-HO-03
Date 11/27/2010
Temperature/ Humidity 23 deg.C./ 50%
Engineer Satofumi Matsuyama
Mode Tx (Hopping off) DH5/3DH5/Inquiry

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]	
DH5	2402.0	-9.83	0.95	10.08	1.20	1.32	20.97	125	19.77
DH5	2441.0	-9.42	0.97	10.08	1.63	1.46	20.97	125	19.34
DH5	2480.0	-9.46	0.98	10.08	1.60	1.45	20.97	125	19.37
3DH5	2402.0	-11.67	0.95	10.08	-0.64	0.86	20.97	125	21.61
3DH5	2441.0	-11.83	0.97	10.08	-0.78	0.84	20.97	125	21.75
3DH5	2480.0	-12.44	0.98	10.08	-1.38	0.73	20.97	125	22.35
Inquiry	2441.0	-8.42	0.97	10.08	2.63	1.83	20.97	125	18.34

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

Test was not performed at AFH mode, because the decrease of number of channel (min: 20ch) at AFH mode does not influence on the output power and bandwidth of the EUT.
However, the limit level 125mW of AFH mode was used for the test.

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 31CE0189-HO-03
Date 12/01/2010 12/02/2010
Temperature/ Humidity 23 deg.C./ 39% 22 deg.C./ 32%
Engineer Takeshi Choda Satofumi Matsuyama
(1-10GHz) (Below 1GHz and 10-26.5GHz)
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	30.000	QP	22.4	16.9	6.7	28.8	17.2	40.0	22.8	NS
Hori	35.000	QP	22.3	16.7	6.8	28.7	17.1	40.0	22.9	NS
Hori	48.450	QP	22.3	12.0	7.0	28.7	12.6	40.0	27.4	NS
Hori	70.000	QP	22.3	6.5	7.2	28.6	7.4	40.0	32.6	NS
Hori	288.750	QP	21.1	19.0	8.7	27.7	21.1	46.0	24.9	NS
Hori	615.000	QP	21.9	19.5	10.1	28.6	22.9	46.0	23.1	NS
Hori	2390.000	PK	45.0	27.1	2.6	32.4	42.3	73.9	31.6	- See 20dBc Data Sheet
Hori	2399.450	PK	65.4	27.1	2.6	32.4	62.7	73.9		
Hori	2400.000	PK	65.6	27.1	2.6	32.4	62.9	73.9		- See 20dBc Data Sheet
Hori	3205.000	PK	42.5	27.6	3.1	32.2	41.0	73.9	32.9	NS
Hori	4007.000	PK	40.6	28.7	4.8	31.6	42.5	73.9	31.4	NS
Hori	4804.000	PK	46.2	30.5	5.1	31.4	50.4	73.9	23.5	
Hori	7206.000	PK	42.1	35.1	6.3	31.6	51.9	73.9	22.0	NS
Hori	9608.000	PK	41.4	37.6	7.1	31.9	54.2	73.9	19.7	NS
Hori	24020.000	PK	47.6	39.8	-1.3	29.6	56.5	73.9	17.4	NS
Hori	2390.000	AV	32.7	27.1	2.6	32.4	30.0	53.9	23.9	- See 20dBc Data Sheet
Hori	2399.450	AV	58.9	27.1	2.6	32.4	56.2	53.9		
Hori	2400.000	AV	61.0	27.1	2.6	32.4	58.3	53.9		- See 20dBc Data Sheet
Hori	3205.000	AV	31.1	27.6	3.1	32.2	29.6	53.9	24.3	NS
Hori	4007.000	AV	29.3	28.7	4.8	31.6	31.2	53.9	22.7	NS
Hori	4804.000	AV	39.9	30.5	5.1	31.4	44.1	53.9	9.8	
Hori	7206.000	AV	29.9	35.1	6.3	31.6	39.7	53.9	14.2	NS
Hori	9608.000	AV	30.0	37.6	7.1	31.9	42.8	53.9	11.1	NS
Hori	24020.000	AV	35.7	39.8	-1.3	29.6	44.6	53.9	9.3	NS
Vert	30.000	QP	22.2	16.9	6.7	28.8	17.0	40.0	23.0	NS
Vert	35.000	QP	22.5	16.7	6.8	28.7	17.3	40.0	22.7	NS
Vert	48.450	QP	22.3	12.0	7.0	28.7	12.6	40.0	27.4	NS
Vert	70.000	QP	22.5	6.5	7.2	28.6	7.6	40.0	32.4	NS
Vert	288.750	QP	21.1	19.0	8.7	27.7	21.1	46.0	24.9	NS
Vert	615.000	QP	21.8	19.5	10.1	28.6	22.8	46.0	23.2	NS
Vert	2390.000	PK	43.4	27.1	2.6	32.4	40.7	73.9	33.2	- See 20dBc Data Sheet
Vert	2399.450	PK	65.2	27.1	2.6	32.4	62.5	73.9		
Vert	2400.000	PK	65.7	27.1	2.6	32.4	63.0	73.9		- See 20dBc Data Sheet
Vert	3205.000	PK	41.9	27.6	3.1	32.2	40.4	73.9	33.5	NS
Vert	4007.000	PK	41.0	28.7	4.8	31.6	42.9	73.9	31.0	NS
Vert	4804.000	PK	49.6	30.5	5.1	31.4	53.8	73.9	20.1	
Vert	7206.000	PK	42.3	35.1	6.3	31.6	52.1	73.9	21.8	
Vert	9608.000	PK	40.8	37.6	7.1	31.9	53.6	73.9	20.3	NS
Vert	24020.000	PK	47.2	39.8	-1.3	29.6	56.1	73.9	17.8	NS
Vert	2390.000	AV	32.1	27.1	2.6	32.4	29.4	53.9	24.5	- See 20dBc Data Sheet
Vert	2399.450	AV	58.6	27.1	2.6	32.4	55.9	53.9		
Vert	2400.000	AV	60.8	27.1	2.6	32.4	58.1	53.9		- See 20dBc Data Sheet
Vert	3205.000	AV	31.1	27.6	3.1	32.2	29.6	53.9	24.3	NS
Vert	4007.000	AV	29.3	28.7	4.8	31.6	31.2	53.9	22.7	NS
Vert	4804.000	AV	46.0	30.5	5.1	31.4	50.2	53.9	3.7	
Vert	7206.000	AV	31.7	35.1	6.3	31.6	41.5	53.9	12.4	
Vert	9608.000	AV	30.1	37.6	7.1	31.9	42.9	53.9	11.0	NS
Vert	24020.000	AV	35.7	39.8	-1.3	29.6	44.6	53.9	9.3	NS

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

*Other frequency noises omitted in this report were not seen or 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

*NS: No Signal detect

*For the band edge of the carrier and the harmonics that emission was found, the test was performed with VBW of the average detector set at 270Hz.

For other average detectors, VBW was set at 10Hz.

Radiated Spurious Emission

Test place : Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. : 31CE0189-HO-03
Date : 12/01/2010
Temperature/ Humidity : 23 deg.C./ 39%
Engineer : Takeshi Choda
(1-10GHz)
Mode : Tx, DH5 2402MHz

20dBc Data Sheet

Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori	2402.000	PK	101.6	27.1	2.6	32.4	98.9	-	-	Carrier
Hori	2399.450	PK	63.9	27.1	2.6	32.4	61.2	78.9	17.7	
Hori	2400.000	PK	64.9	27.1	2.6	32.4	62.2	78.9	16.7	
Vert	2402.000	PK	98.7	27.1	2.6	32.4	96.0	-	-	Carrier
Vert	2399.450	PK	63.7	27.1	2.6	32.4	61.0	76.0	15.0	
Vert	2400.000	PK	64.6	27.1	2.6	32.4	61.9	76.0	14.1	

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 31CE0189-HO-03
Date 12/01/2010 12/02/2010
Temperature/ Humidity 23 deg.C./ 39% 22 deg.C./ 32%
Engineer Takeshi Choda Satofumi Matsuyama
(1-10GHz) (Below 1GHz and 10-26.5GHz)
Mode Tx, DH5 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	30.000	QP	22.3	16.9	6.7	28.8	17.1	40.0	22.9	NS
Hori	35.000	QP	22.3	16.7	6.8	28.7	17.1	40.0	22.9	NS
Hori	48.450	QP	22.2	12.0	7.0	28.7	12.5	40.0	27.5	NS
Hori	70.000	QP	22.2	6.5	7.2	28.6	7.3	40.0	32.7	NS
Hori	288.749	QP	21.1	19.0	8.7	27.7	21.1	46.0	24.9	NS
Hori	615.000	QP	21.9	19.5	10.1	28.6	22.9	46.0	23.1	NS
Hori	3257.000	PK	41.9	27.7	3.1	32.1	40.6	73.9	33.3	NS
Hori	4070.000	PK	40.9	28.9	4.9	31.6	43.1	73.9	30.8	NS
Hori	4882.000	PK	46.2	30.6	5.2	31.3	50.7	73.9	23.2	
Hori	7323.000	PK	43.9	35.3	6.3	31.6	53.9	73.9	20.0	
Hori	9764.000	PK	42.7	37.9	7.1	31.8	55.9	73.9	18.0	NS
Hori	24410.000	PK	46.7	39.9	-1.2	29.5	55.9	73.9	18.0	NS
Hori	3257.000	AV	29.2	27.7	3.1	32.1	27.9	53.9	26.0	NS
Hori	4070.000	AV	29.4	28.9	4.9	31.6	31.6	53.9	22.3	NS
Hori	4882.000	AV	40.4	30.6	5.2	31.3	44.9	53.9	9.0	
Hori	7323.000	AV	32.5	35.3	6.3	31.6	42.5	53.9	11.4	
Hori	9764.000	AV	29.4	37.9	7.1	31.8	42.6	53.9	11.3	NS
Hori	24410.000	AV	34.9	39.9	-1.2	29.5	44.1	53.9	9.8	NS
Vert	30.000	QP	22.3	16.9	6.7	28.8	17.1	40.0	22.9	NS
Vert	35.000	QP	22.3	16.7	6.8	28.7	17.1	40.0	22.9	NS
Vert	48.450	QP	22.3	12.0	7.0	28.7	12.6	40.0	27.4	NS
Vert	70.000	QP	22.3	6.5	7.2	28.6	7.4	40.0	32.6	NS
Vert	288.749	QP	21.0	19.0	8.7	27.7	21.0	46.0	25.0	NS
Vert	615.000	QP	21.9	19.5	10.1	28.6	22.9	46.0	23.1	NS
Vert	3257.000	PK	41.8	27.7	3.1	32.1	40.5	73.9	33.4	NS
Vert	4070.000	PK	40.8	28.9	4.9	31.6	43.0	73.9	30.9	NS
Vert	4882.000	PK	48.7	30.6	5.2	31.3	53.2	73.9	20.7	
Vert	7323.000	PK	43.2	35.3	6.3	31.6	53.2	73.9	20.7	NS
Vert	9764.000	PK	42.9	37.9	7.1	31.8	56.1	73.9	17.8	NS
Vert	24410.000	PK	46.8	39.9	-1.2	29.5	56.0	73.9	17.9	NS
Vert	3257.000	AV	29.1	27.7	3.1	32.1	27.8	53.9	26.1	NS
Vert	4070.000	AV	29.4	28.9	4.9	31.6	31.6	53.9	22.3	NS
Vert	4882.000	AV	43.7	30.6	5.2	31.3	48.2	53.9	5.7	
Vert	7323.000	AV	30.5	35.3	6.3	31.6	40.5	53.9	13.4	NS
Vert	9764.000	AV	29.8	37.9	7.1	31.8	43.0	53.9	10.9	NS
Vert	24410.000	AV	34.9	39.9	-1.2	29.5	44.1	53.9	9.8	NS

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

*Other frequency noises omitted in this report were not seen or 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

*NS: No Signal detect

*For the band edge of the carrier and the harmonics that emission was found, the test was performed with VBW of the average detector set at 270Hz.
For other average detectors, VBW was set at 10Hz.

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 31CE0189-HO-03
Date 12/01/2010 12/02/2010
Temperature/ Humidity 23 deg.C./ 39% 22 deg.C./ 32%
Engineer Takeshi Choda Satofumi Matsuyama
(1-10GHz) (Below 1GHz and 10-26.5GHz)
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	30.000	QP	22.2	16.9	6.7	28.8	17.0	40.0	23.0	NS
Hori	35.000	QP	22.3	16.7	6.8	28.7	17.1	40.0	22.9	NS
Hori	48.449	QP	22.3	12.0	7.0	28.7	12.6	40.0	27.4	NS
Hori	70.000	QP	22.2	6.5	7.2	28.6	7.3	40.0	32.7	NS
Hori	288.754	QP	21.1	19.0	8.7	27.7	21.1	46.0	24.9	NS
Hori	615.000	QP	21.9	19.5	10.1	28.6	22.9	46.0	23.1	NS
Hori	2483.500	PK	60.5	27.2	2.7	32.4	58.0	73.9	15.9	
Hori	2484.467	PK	58.6	27.2	2.7	32.4	56.1	73.9	17.8	
Hori	3310.000	PK	41.5	27.8	3.1	32.1	40.3	73.9	33.6	NS
Hori	4133.000	PK	41.1	29.1	4.9	31.5	43.6	73.9	30.3	NS
Hori	4960.000	PK	44.9	30.7	5.2	31.3	49.5	73.9	24.4	
Hori	7440.000	PK	42.8	35.5	6.4	31.7	53.0	73.9	20.9	
Hori	9920.000	PK	41.9	38.2	7.1	31.8	55.4	73.9	18.5	NS
Hori	24800.000	PK	48.8	39.9	-1.1	29.4	58.2	73.9	15.7	NS
Hori	2483.500	AV	51.5	27.2	2.7	32.4	49.0	53.9	4.9	
Hori	2484.467	AV	52.9	27.2	2.7	32.4	50.4	53.9	3.5	
Hori	3310.000	AV	30.2	27.8	3.1	32.1	29.0	53.9	24.9	NS
Hori	4133.000	AV	29.4	29.1	4.9	31.5	31.9	53.9	22.0	NS
Hori	4960.000	AV	38.2	30.7	5.2	31.3	42.8	53.9	11.1	
Hori	7440.000	AV	32.1	35.5	6.4	31.7	42.3	53.9	11.6	
Hori	9920.000	AV	30.5	38.2	7.1	31.8	44.0	53.9	9.9	NS
Hori	24800.000	AV	36.9	39.9	-1.1	29.4	46.3	53.9	7.6	NS
Vert	30.000	QP	22.2	16.9	6.7	28.8	17.0	40.0	23.0	NS
Vert	35.000	QP	22.3	16.7	6.8	28.7	17.1	40.0	22.9	NS
Vert	48.449	QP	22.3	12.0	7.0	28.7	12.6	40.0	27.4	NS
Vert	70.000	QP	22.2	6.5	7.2	28.6	7.3	40.0	32.7	NS
Vert	288.754	QP	21.1	19.0	8.7	27.7	21.1	46.0	24.9	NS
Vert	615.000	QP	21.9	19.5	10.1	28.6	22.9	46.0	23.1	NS
Vert	2483.500	PK	56.0	27.2	2.7	32.4	53.5	73.9	20.4	
Vert	2484.467	PK	58.4	27.2	2.7	32.4	55.9	73.9	18.0	
Vert	3310.000	PK	41.2	27.8	3.1	32.1	40.0	73.9	33.9	NS
Vert	4133.000	PK	41.9	29.1	4.9	31.5	44.4	73.9	29.5	NS
Vert	4960.000	PK	46.3	30.7	5.2	31.3	50.9	73.9	23.0	
Vert	7440.000	PK	42.5	35.5	6.4	31.7	52.7	73.9	21.2	
Vert	9920.000	PK	41.7	38.2	7.1	31.8	55.2	73.9	18.7	NS
Vert	24800.000	PK	48.9	39.9	-1.1	29.4	58.3	73.9	15.6	NS
Vert	2483.500	AV	48.8	27.2	2.7	32.4	46.3	53.9	7.6	
Vert	2484.467	AV	50.3	27.2	2.7	32.4	47.8	53.9	6.1	
Vert	3310.000	AV	29.3	27.8	3.1	32.1	28.1	53.9	25.8	NS
Vert	4133.000	AV	29.4	29.1	4.9	31.5	31.9	53.9	22.0	NS
Vert	4960.000	AV	39.9	30.7	5.2	31.3	44.5	53.9	9.4	
Vert	7440.000	AV	31.1	35.5	6.4	31.7	41.3	53.9	12.6	
Vert	9920.000	AV	30.4	38.2	7.1	31.8	43.9	53.9	10.0	NS
Vert	24800.000	AV	36.9	39.9	-1.1	29.4	46.3	53.9	7.6	NS

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

*Other frequency noises omitted in this report were not seen or 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

*NS: No Signal detect

*For the band edge of the carrier and the harmonics that emission was found, the test was performed with VBW of the average detector set at 270Hz.

For other average detectors, VBW was set at 10Hz.

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 31CE0189-HO-03
Date 12/01/2010 12/02/2010
Temperature/ Humidity 23 deg.C./ 39% 22 deg.C./ 32%
Engineer Takeshi Choda Satofumi Matsuyama
(1-10GHz) (Below 1GHz and 10-26.5GHz)
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	30.000	QP	22.3	16.9	6.7	28.8	17.1	40.0	22.9	NS
Hori	35.000	QP	22.3	16.7	6.8	28.7	17.1	40.0	22.9	NS
Hori	48.451	QP	22.3	12.0	7.0	28.7	12.6	40.0	27.4	NS
Hori	70.000	QP	22.2	6.5	7.2	28.6	7.3	40.0	32.7	NS
Hori	288.751	QP	21.1	19.0	8.7	27.7	21.1	46.0	24.9	NS
Hori	615.000	QP	21.8	19.5	10.1	28.6	22.8	46.0	23.2	NS
Hori	2300.000	PK	41.9	27.0	2.6	32.4	39.1	73.9	34.8	NS
Hori	2390.000	PK	47.7	27.1	2.6	32.4	45.0	73.9	28.9	
Hori	2399.867	PK	67.4	27.1	2.6	32.4	64.7	73.9		- See 20dBc Data Sheet
Hori	2400.000	PK	68.6	27.1	2.6	32.4	65.9	73.9		- See 20dBc Data Sheet
Hori	3203.000	PK	41.3	27.6	3.1	32.2	39.8	73.9	34.1	NS
Hori	4804.000	PK	42.0	30.5	5.1	31.4	46.2	73.9	27.7	
Hori	7206.000	PK	41.9	35.1	6.3	31.6	51.7	73.9	22.2	NS
Hori	9608.000	PK	41.7	37.6	7.1	31.9	54.5	73.9	19.4	NS
Hori	24020.000	PK	47.8	39.8	-1.3	29.6	56.7	73.9	17.2	NS
Hori	2300.000	AV	29.7	27.0	2.6	32.4	26.9	53.9	27.0	NS
Hori	2390.000	AV	35.8	27.1	2.6	32.4	33.1	53.9	20.8	
Hori	2399.867	AV	54.9	27.1	2.6	32.4	52.2	53.9		- See 20dBc Data Sheet
Hori	2400.000	AV	56.4	27.1	2.6	32.4	53.7	53.9		- See 20dBc Data Sheet
Hori	3203.000	AV	29.9	27.6	3.1	32.2	28.4	53.9	25.5	NS
Hori	4804.000	AV	30.9	30.5	5.1	31.4	35.1	53.9	18.8	
Hori	7206.000	AV	30.0	35.1	6.3	31.6	39.8	53.9	14.1	NS
Hori	9608.000	AV	30.3	37.6	7.1	31.9	43.1	53.9	10.8	NS
Hori	24020.000	AV	36.1	39.8	-1.3	29.6	45.0	53.9	8.9	NS
Vert	30.000	QP	22.3	16.9	6.7	28.8	17.1	40.0	22.9	NS
Vert	35.000	QP	22.3	16.7	6.8	28.7	17.1	40.0	22.9	NS
Vert	48.451	QP	22.3	12.0	7.0	28.7	12.6	40.0	27.4	NS
Vert	70.000	QP	22.2	6.5	7.2	28.6	7.3	40.0	32.7	NS
Vert	288.751	QP	21.1	19.0	8.7	27.7	21.1	46.0	24.9	NS
Vert	615.000	QP	21.8	19.5	10.1	28.6	22.8	46.0	23.2	NS
Vert	2300.000	PK	42.0	27.0	2.6	32.4	39.2	73.9	34.7	NS
Vert	2390.000	PK	46.7	27.1	2.6	32.4	44.0	73.9	29.9	
Vert	2399.867	PK	64.6	27.1	2.6	32.4	61.9	73.9		- See 20dBc Data Sheet
Vert	2400.000	PK	65.4	27.1	2.6	32.4	62.7	73.9		- See 20dBc Data Sheet
Vert	3203.000	PK	41.5	27.6	3.1	32.2	40.0	73.9	33.9	NS
Vert	4804.000	PK	44.3	30.5	5.1	31.4	48.5	73.9	25.4	
Vert	7206.000	PK	41.1	35.1	6.3	31.6	50.9	73.9	23.0	NS
Vert	9608.000	PK	41.6	37.6	7.1	31.9	54.4	73.9	19.5	NS
Vert	24020.000	PK	47.4	39.8	-1.3	29.6	56.3	73.9	17.6	NS
Vert	2300.000	AV	29.8	27.0	2.6	32.4	27.0	53.9	26.9	NS
Vert	2390.000	AV	33.8	27.1	2.6	32.4	31.1	53.9	22.8	
Vert	2399.867	AV	43.4	27.1	2.6	32.4	40.7	53.9		- See 20dBc Data Sheet
Vert	2400.000	AV	53.4	27.1	2.6	32.4	50.7	53.9		- See 20dBc Data Sheet
Vert	3203.000	AV	30.4	27.6	3.1	32.2	28.9	53.9	25.0	NS
Vert	4804.000	AV	33.2	30.5	5.1	31.4	37.4	53.9	16.5	
Vert	7206.000	AV	30.4	35.1	6.3	31.6	40.2	53.9	13.7	NS
Vert	9608.000	AV	30.2	37.6	7.1	31.9	43.0	53.9	10.9	NS
Vert	24020.000	AV	36.1	39.8	-1.3	29.6	45.0	53.9	8.9	NS

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

*Other frequency noises omitted in this report were not seen or 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

*NS: No Signal detect

*For the band edge of the carrier and the harmonics that emission was found, the test was performed with VBW of the average detector set at 270Hz.

For other average detectors, VBW was set at 10Hz.

Radiated Spurious Emission

Test place : Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. : 31CE0189-HO-03
Date : 12/01/2010
Temperature/ Humidity : 23 deg.C./ 39%
Engineer : Takeshi Choda
(1-10GHz)
Mode : Tx, 3DH5 2402MHz

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2402.000	PK	102.2	27.1	2.6	32.4	99.5	-	-	Carrier
Hori	2399.867	PK	57.9	27.1	2.6	32.4	55.2	79.5	24.3	
Hori	2400.000	PK	60.1	27.1	2.6	32.4	57.4	79.5	22.1	
Vert	2402.000	PK	99.0	27.1	2.6	32.4	96.3	-	-	Carrier
Vert	2399.867	PK	54.5	27.1	2.6	32.4	51.8	76.3	24.5	
Vert	2400.000	PK	57.0	27.1	2.6	32.4	54.3	76.3	22.0	

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 31CE0189-HO-03
Date 12/01/2010 12/02/2010
Temperature/ Humidity 23 deg.C./ 39% 22 deg.C./ 32%
Engineer Takeshi Choda Satofumi Matsuyama
(1-10GHz) (Below 1GHz and 10-26.5GHz)
Mode Tx, 3DH5 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	30.000	QP	22.3	16.9	6.7	28.8	17.1	40.0	22.9	NS
Hori	35.000	QP	22.3	16.7	6.8	28.7	17.1	40.0	22.9	NS
Hori	48.620	QP	22.3	11.9	7.0	28.7	12.5	40.0	27.5	NS
Hori	70.000	QP	22.3	6.5	7.2	28.6	7.4	40.0	32.6	NS
Hori	288.771	QP	21.1	19.0	8.7	27.7	21.1	46.0	24.9	NS
Hori	615.000	QP	21.9	19.5	10.1	28.6	22.9	46.0	23.1	NS
Hori	1627.000	PK	41.3	25.8	2.1	32.9	36.3	73.9	37.6	NS
Hori	3257.000	PK	41.1	27.7	3.1	32.1	39.8	73.9	34.1	NS
Hori	4882.000	PK	41.7	30.6	5.2	31.3	46.2	73.9	27.7	
Hori	7323.000	PK	42.0	35.3	6.3	31.6	52.0	73.9	21.9	
Hori	9764.000	PK	42.0	37.9	7.1	31.8	55.2	73.9	18.7	NS
Hori	24410.000	PK	46.5	39.9	-1.2	29.5	55.7	73.9	18.2	NS
Hori	1627.000	AV	30.5	25.8	2.1	32.9	25.5	53.9	28.4	NS
Hori	3257.000	AV	29.7	27.7	3.1	32.1	28.4	53.9	25.5	NS
Hori	4882.000	AV	31.0	30.6	5.2	31.3	35.5	53.9	18.4	
Hori	7323.000	AV	29.7	35.3	6.3	31.6	39.7	53.9	14.2	
Hori	9764.000	AV	29.6	37.9	7.1	31.8	42.8	53.9	11.1	NS
Hori	24410.000	AV	34.8	39.9	-1.2	29.5	44.0	53.9	9.9	NS
Vert	30.000	QP	22.2	16.9	6.7	28.8	17.0	40.0	23.0	NS
Vert	35.000	QP	22.3	16.7	6.8	28.7	17.1	40.0	22.9	NS
Vert	48.620	QP	22.3	11.9	7.0	28.7	12.5	40.0	27.5	NS
Vert	70.000	QP	22.3	6.5	7.2	28.6	7.4	40.0	32.6	NS
Vert	288.771	QP	21.0	19.0	8.7	27.7	21.0	46.0	25.0	NS
Vert	615.000	QP	21.8	19.5	10.1	28.6	22.8	46.0	23.2	NS
Vert	1627.000	PK	41.8	25.8	2.1	32.9	36.8	73.9	37.1	NS
Vert	3257.000	PK	42.1	27.7	3.1	32.1	40.8	73.9	33.1	NS
Vert	4882.000	PK	43.1	30.6	5.2	31.3	47.6	73.9	26.3	
Vert	7323.000	PK	42.6	35.3	6.3	31.6	52.6	73.9	21.3	NS
Vert	9764.000	PK	42.9	37.9	7.1	31.8	56.1	73.9	17.8	NS
Vert	24410.000	PK	47.2	39.9	-1.2	29.5	56.4	73.9	17.5	NS
Vert	1627.000	AV	31.3	25.8	2.1	32.9	26.3	53.9	27.6	NS
Vert	3257.000	AV	30.1	27.7	3.1	32.1	28.8	53.9	25.1	NS
Vert	4882.000	AV	31.6	30.6	5.2	31.3	36.1	53.9	17.8	
Vert	7323.000	AV	29.9	35.3	6.3	31.6	39.9	53.9	14.0	NS
Vert	9764.000	AV	29.6	37.9	7.1	31.8	42.8	53.9	11.1	NS
Vert	24410.000	AV	34.8	39.9	-1.2	29.5	44.0	53.9	9.9	NS

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

*Other frequency noises omitted in this report were not seen or 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

*NS: No Signal detect

*For the band edge of the carrier and the harmonics that emission was found, the test was performed with VBW of the average detector set at 270Hz.

For other average detectors, VBW was set at 10Hz.

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 31CE0189-HO-03
Date 12/01/2010 12/02/2010
Temperature/ Humidity 23 deg.C./ 39% 22 deg.C./ 32%
Engineer Takeshi Choda Satofumi Matsuyama
(1-10GHz) (Below 1GHz and 10-26.5GHz)
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	30.000	QP	22.2	16.9	6.7	28.8	17.0	40.0	23.0	NS
Hori	35.000	QP	22.3	16.7	6.8	28.7	17.1	40.0	22.9	NS
Hori	48.452	QP	22.2	12.0	7.0	28.7	12.5	40.0	27.5	NS
Hori	70.000	QP	22.2	6.5	7.2	28.6	7.3	40.0	32.7	NS
Hori	288.756	QP	22.3	19.0	8.7	27.7	22.3	46.0	23.7	NS
Hori	615.000	QP	21.8	19.5	10.1	28.6	22.8	46.0	23.2	NS
Hori	1653.000	PK	41.6	25.9	2.2	32.9	36.8	73.9	37.1	NS
Hori	2483.500	PK	62.7	27.2	2.7	32.4	60.2	73.9	13.7	
Hori	3307.000	PK	42.0	27.8	3.1	32.1	40.8	73.9	33.1	NS
Hori	4960.000	PK	42.4	30.7	5.2	31.3	47.0	73.9	26.9	
Hori	7440.000	PK	42.3	35.5	6.4	31.7	52.5	73.9	21.4	NS
Hori	9920.000	PK	41.8	38.2	7.1	31.8	55.3	73.9	18.6	NS
Hori	24800.000	PK	49.3	39.9	-1.1	29.4	58.7	73.9	15.2	NS
Hori	1653.000	AV	29.5	25.9	2.2	32.9	24.7	53.9	29.2	NS
Hori	2483.500	AV	51.6	27.2	2.7	32.4	49.1	53.9	4.8	
Hori	3307.000	AV	29.5	27.8	3.1	32.1	28.3	53.9	25.6	NS
Hori	4960.000	AV	30.7	30.7	5.2	31.3	35.3	53.9	18.6	
Hori	7440.000	AV	29.8	35.5	6.4	31.7	40.0	53.9	13.9	NS
Hori	9920.000	AV	30.0	38.2	7.1	31.8	43.5	53.9	10.4	NS
Hori	24800.000	AV	37.4	39.9	-1.1	29.4	46.8	53.9	7.1	NS
Vert	30.000	QP	22.2	16.9	6.7	28.8	17.0	40.0	23.0	NS
Vert	35.000	QP	22.3	16.7	6.8	28.7	17.1	40.0	22.9	NS
Vert	48.452	QP	22.2	12.0	7.0	28.7	12.5	40.0	27.5	NS
Vert	70.000	QP	22.2	6.5	7.2	28.6	7.3	40.0	32.7	NS
Vert	288.756	QP	22.3	19.0	8.7	27.7	22.3	46.0	23.7	NS
Vert	615.000	QP	21.8	19.5	10.1	28.6	22.8	46.0	23.2	NS
Vert	1653.000	PK	42.1	25.9	2.2	32.9	37.3	73.9	36.6	NS
Vert	2483.500	PK	59.4	27.2	2.7	32.4	56.9	73.9	17.0	
Vert	3307.000	PK	41.8	27.8	3.1	32.1	40.6	73.9	33.3	NS
Vert	4960.000	PK	41.5	30.7	5.2	31.3	46.1	73.9	27.8	
Vert	7440.000	PK	42.1	35.5	6.4	31.7	52.3	73.9	21.6	NS
Vert	9920.000	PK	42.1	38.2	7.1	31.8	55.6	73.9	18.3	NS
Vert	24800.000	PK	49.1	39.9	-1.1	29.4	58.5	73.9	15.4	NS
Vert	1653.000	AV	29.5	25.9	2.2	32.9	24.7	53.9	29.2	NS
Vert	2483.500	AV	48.4	27.2	2.7	32.4	45.9	53.9	8.0	
Vert	3307.000	AV	29.5	27.8	3.1	32.1	28.3	53.9	25.6	NS
Vert	4960.000	AV	30.6	30.7	5.2	31.3	35.2	53.9	18.7	
Vert	7440.000	AV	30.2	35.5	6.4	31.7	40.4	53.9	13.5	NS
Vert	9920.000	AV	30.1	38.2	7.1	31.8	43.6	53.9	10.3	NS
Vert	24800.000	AV	37.4	39.9	-1.1	29.4	46.8	53.9	7.1	NS

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

*Other frequency noises omitted in this report were not seen or 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

*NS: No Signal detect

*For the band edge of the carrier and the harmonics that emission was found, the test was performed with VBW of the average detector set at 270Hz.
For other average detectors, VBW was set at 10Hz.

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 31CE0189-HO-03
Date 12/01/2010
Temperature/ Humidity 23 deg.C./ 39%
Engineer Takeshi Choda
(1-10GHz)
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	1627.000	PK	44.7	25.8	2.1	32.9	39.7	73.9	34.2	
Hori	2441.000	PK	41.4	27.2	2.7	32.4	38.9	73.9	35.0	NS
Hori	1627.000	AV	36.8	25.8	2.1	32.9	31.8	53.9	22.1	
Hori	2441.000	AV	29.2	27.2	2.7	32.4	26.7	53.9	27.2	NS
Vert	1627.000	PK	45.5	25.8	2.1	32.9	40.5	73.9	33.4	
Vert	2441.000	PK	41.5	27.2	2.7	32.4	39.0	73.9	34.9	NS
Vert	1627.000	AV	37.9	25.8	2.1	32.9	32.9	53.9	21.0	
Vert	2441.000	AV	29.5	27.2	2.7	32.4	27.0	53.9	26.9	NS

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

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

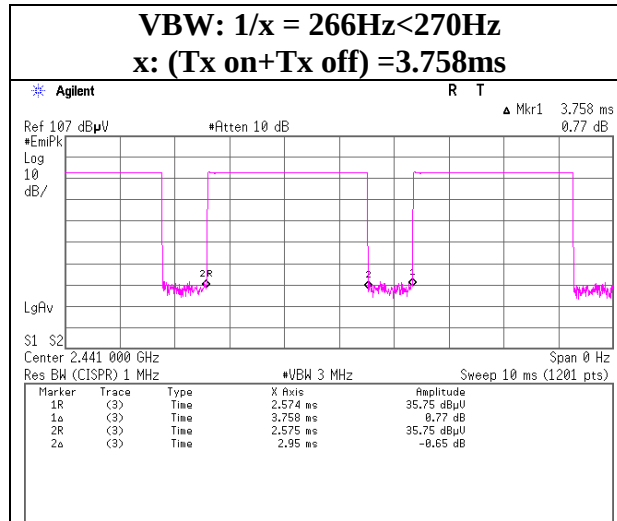
*The 10th harmonic was not seen so the result was its base noise level.

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

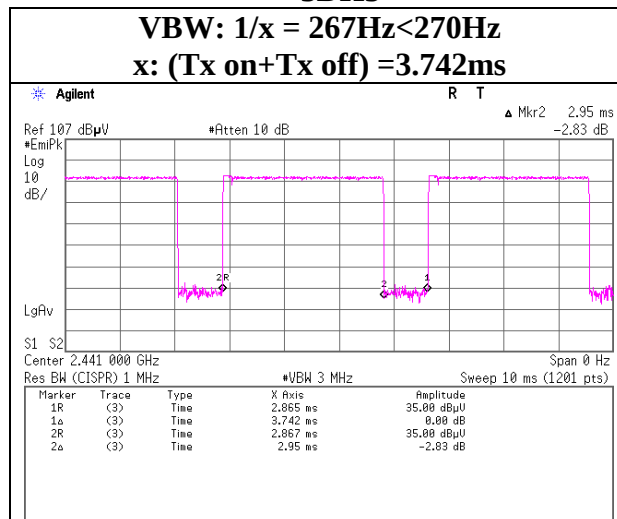
*NS: No Signal detect

*For average detectors, VBW was set at 10Hz.

VBW (AV) Calculation DH5

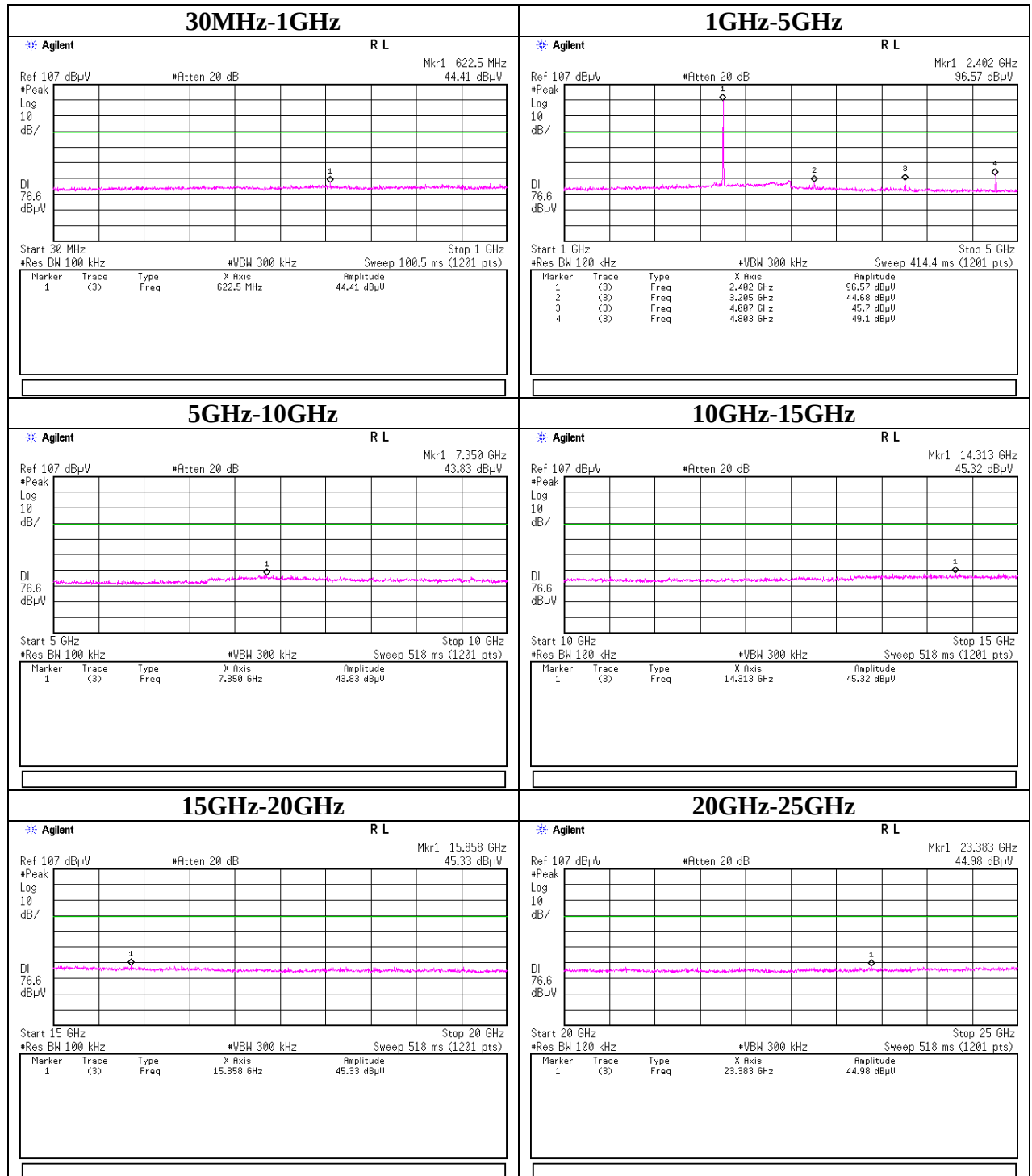


3DH5



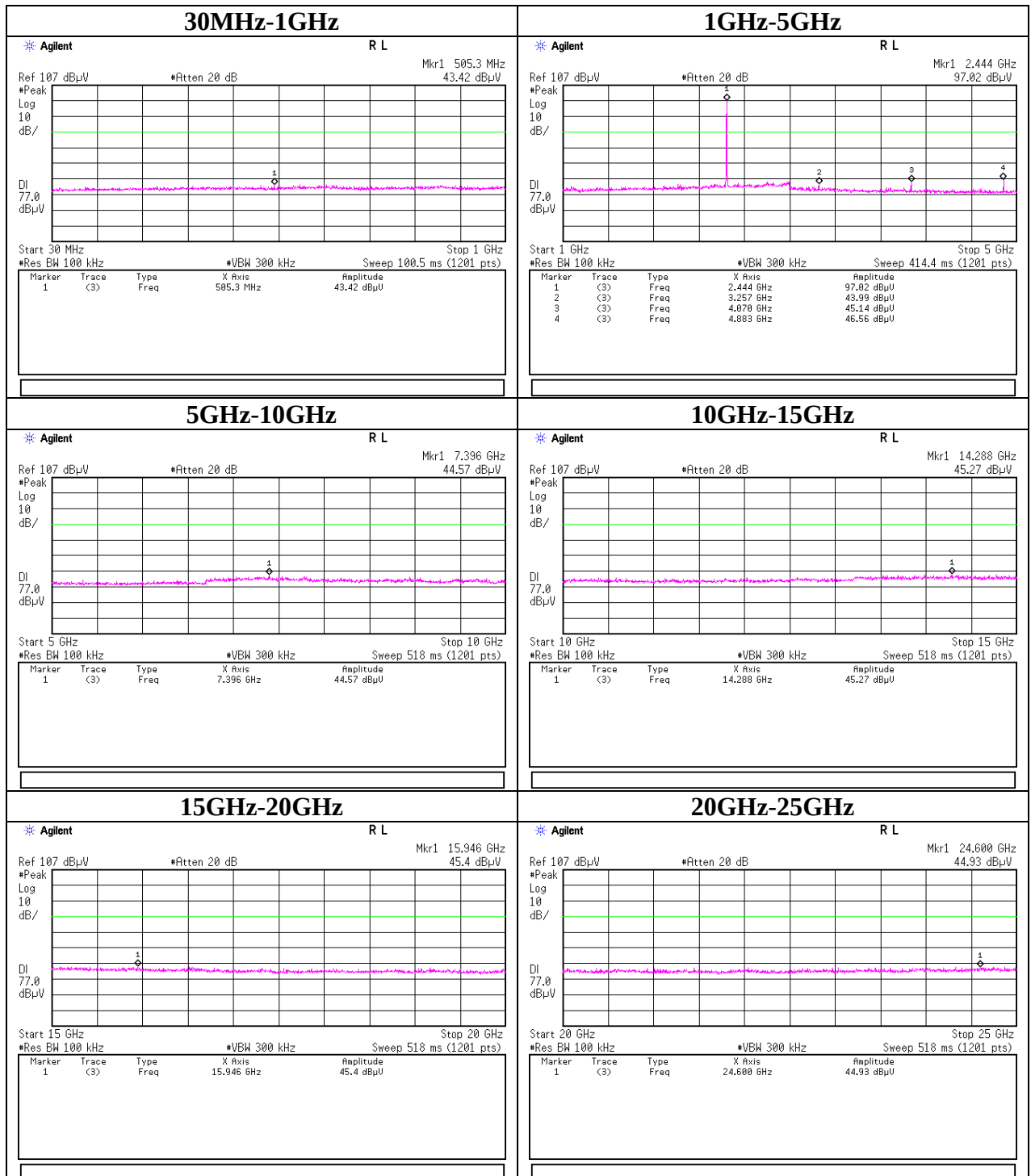
Conducted Spurious Emission

Tx DH5 2402MHz



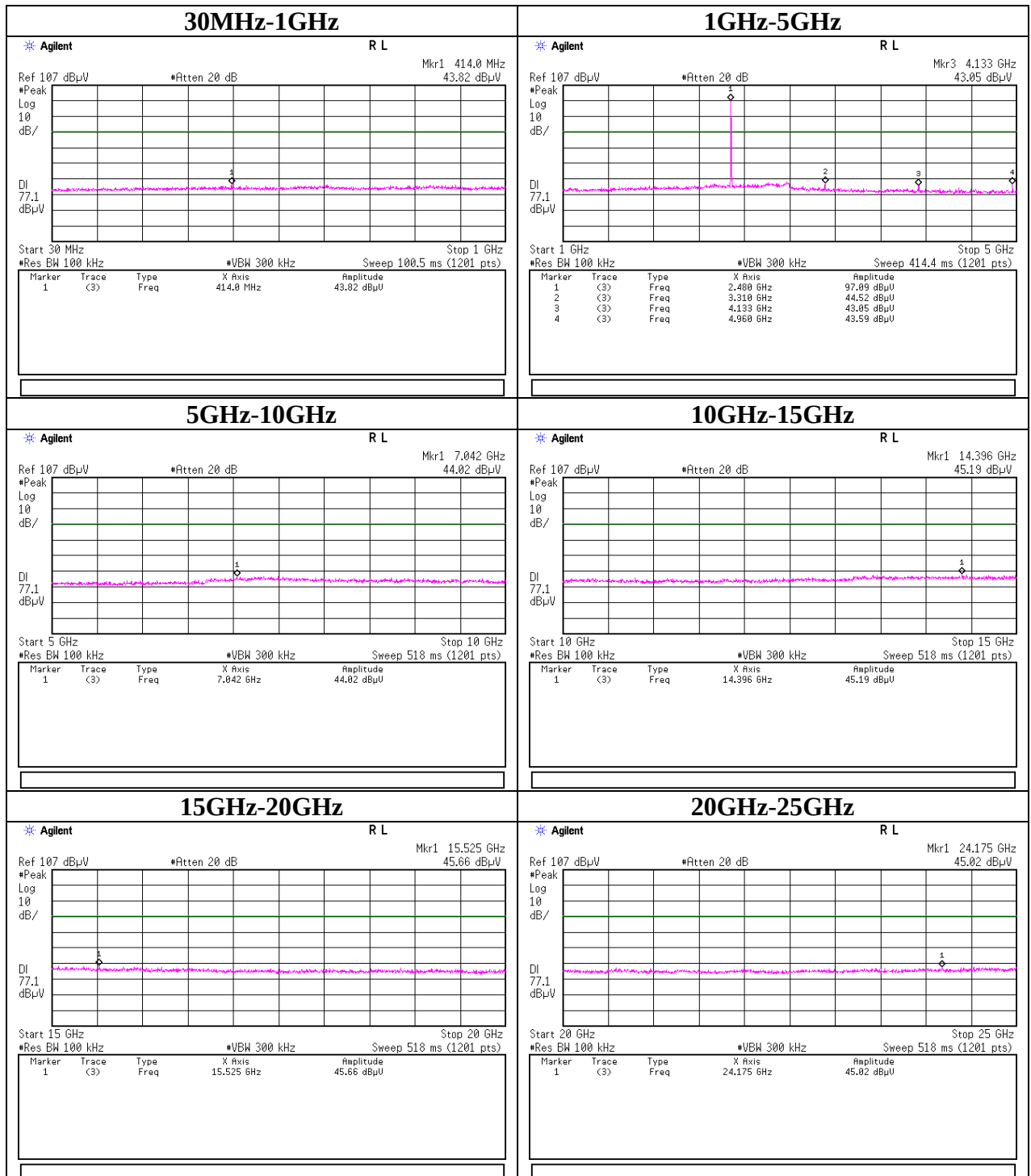
Conducted Spurious Emission

Tx DH5 2441MHz



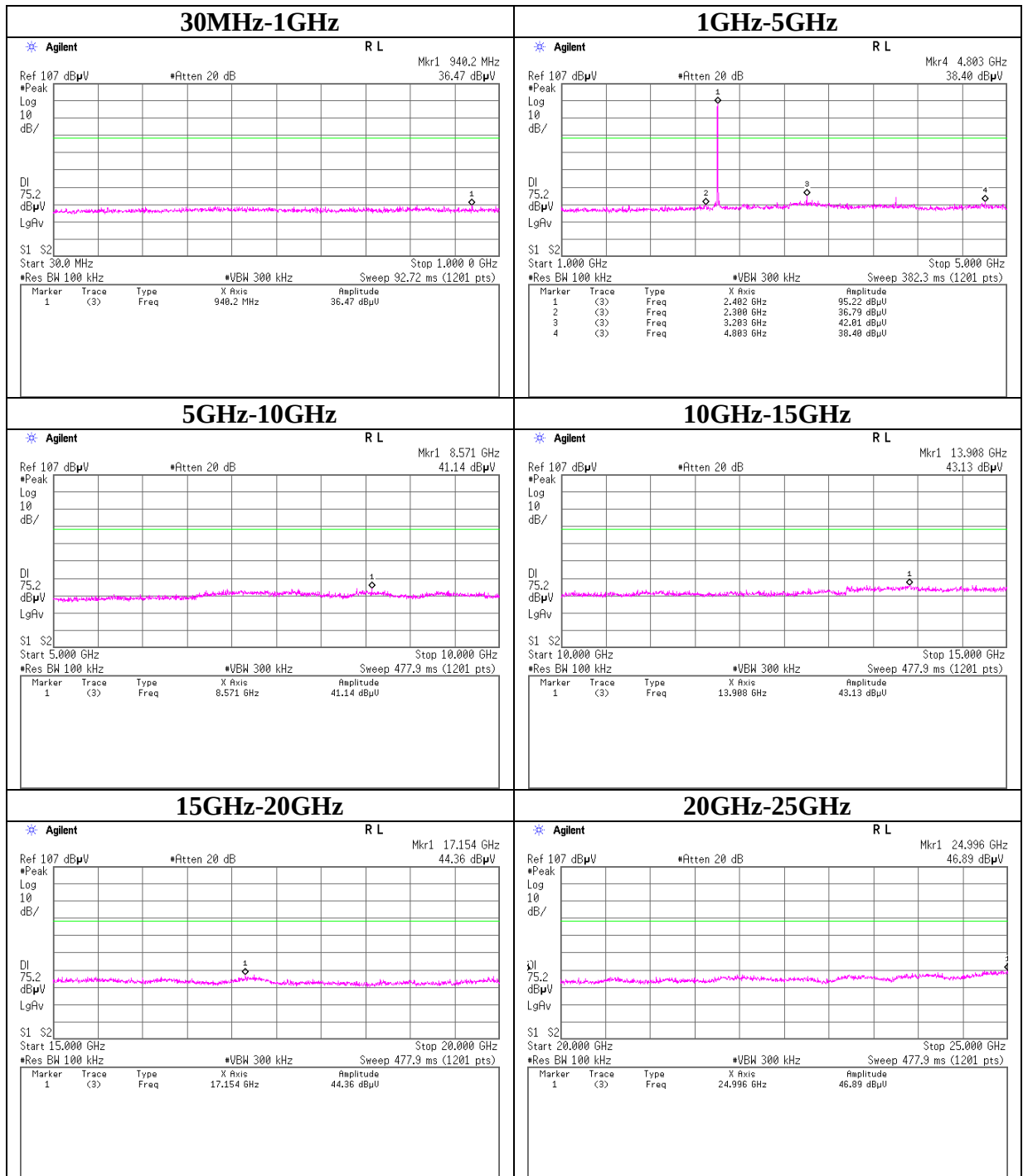
Conducted Spurious Emission

Tx DH5 2480MHz



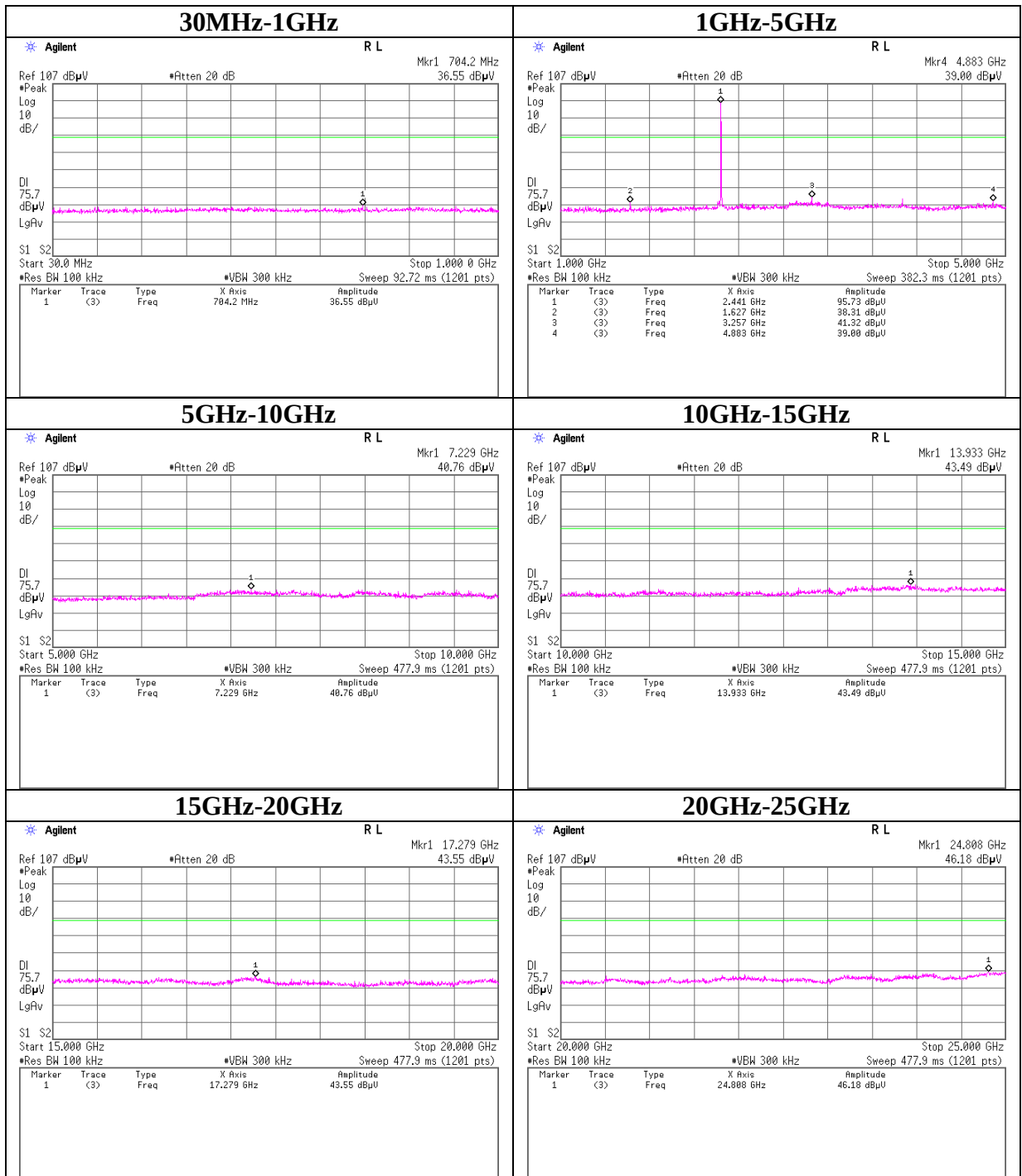
Conducted Spurious Emission

Tx 3DH5 2402MHz



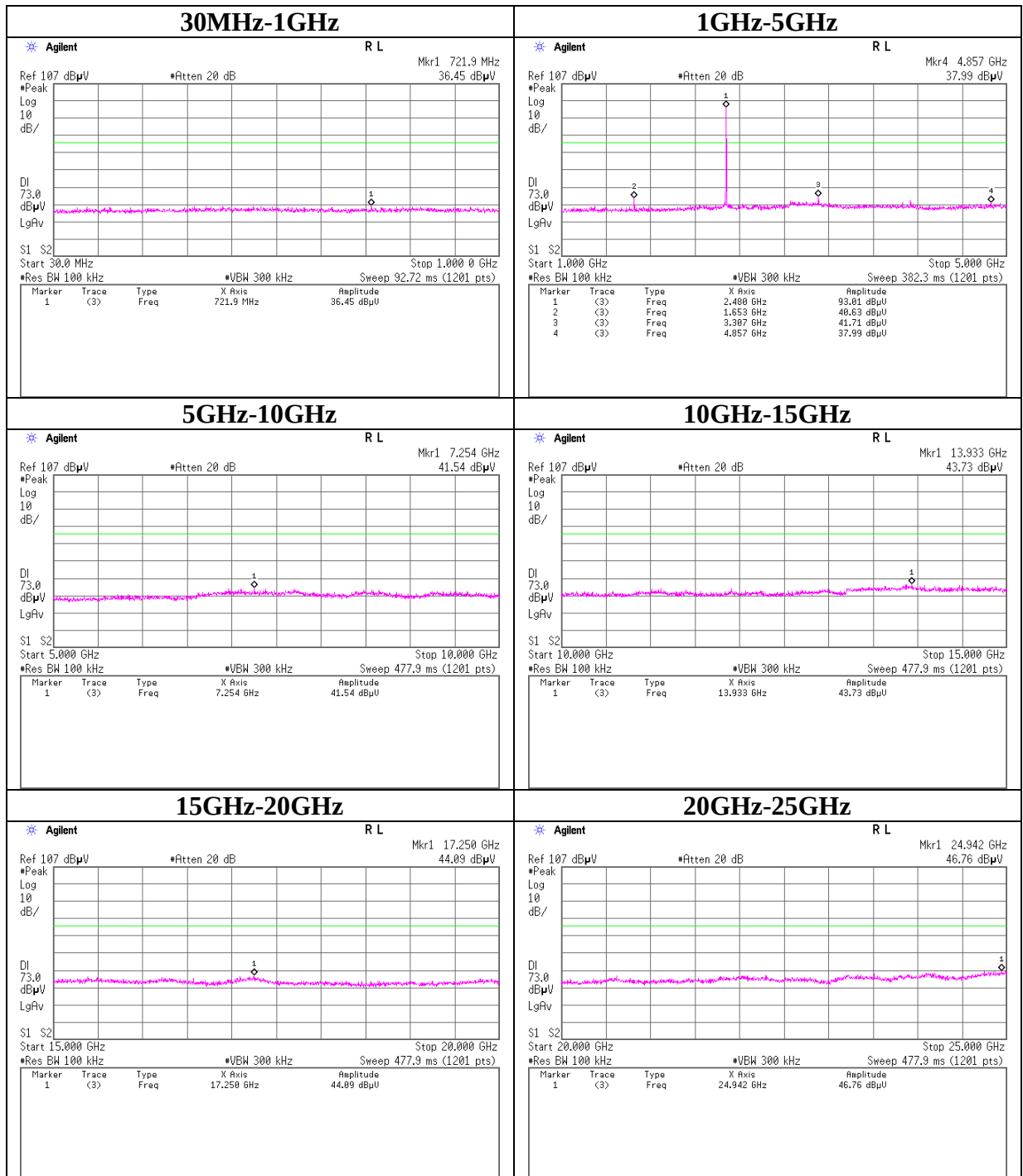
Conducted Spurious Emission

Tx 3DH5 2441MHz



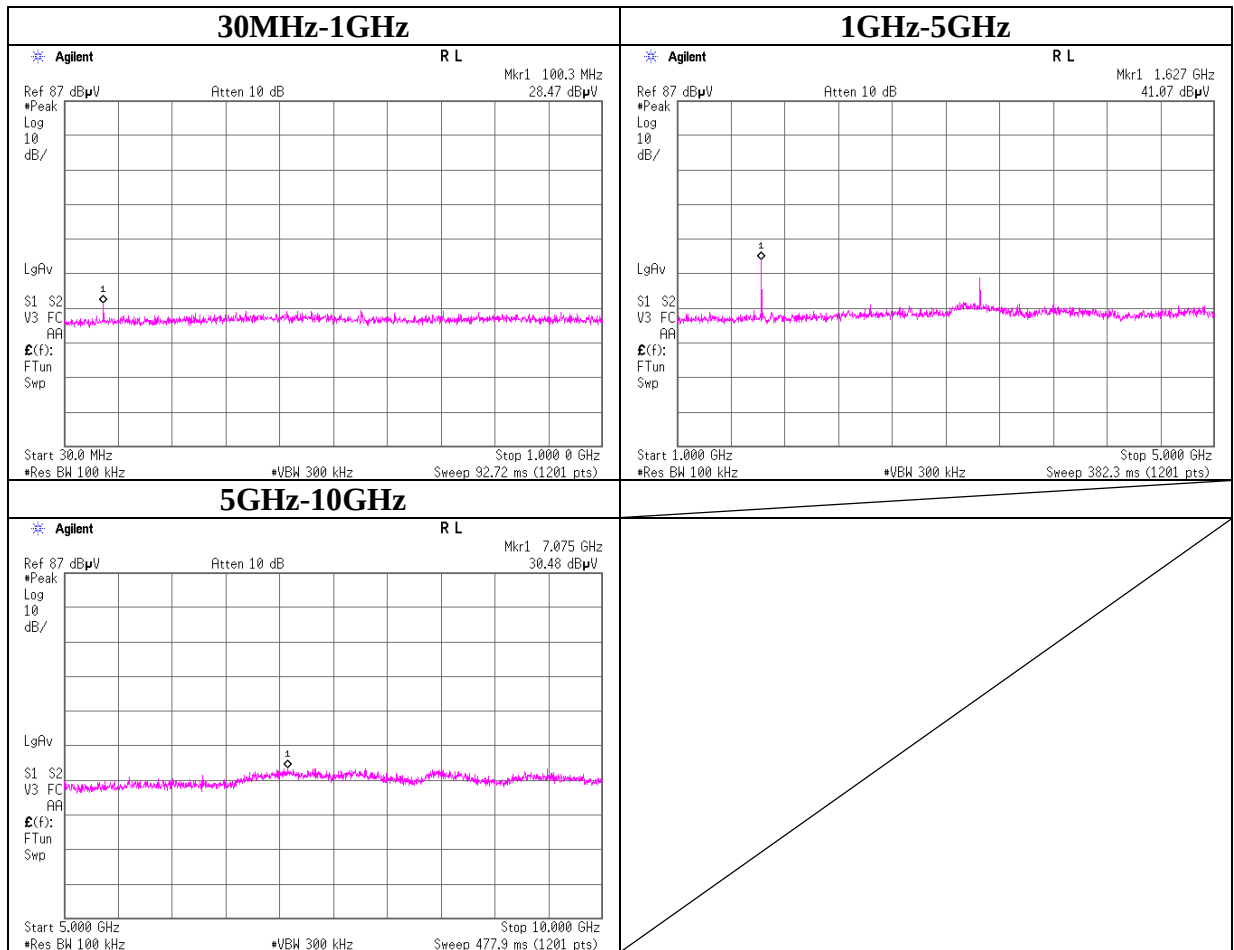
Conducted Spurious Emission

Tx 3DH5 2480MHz



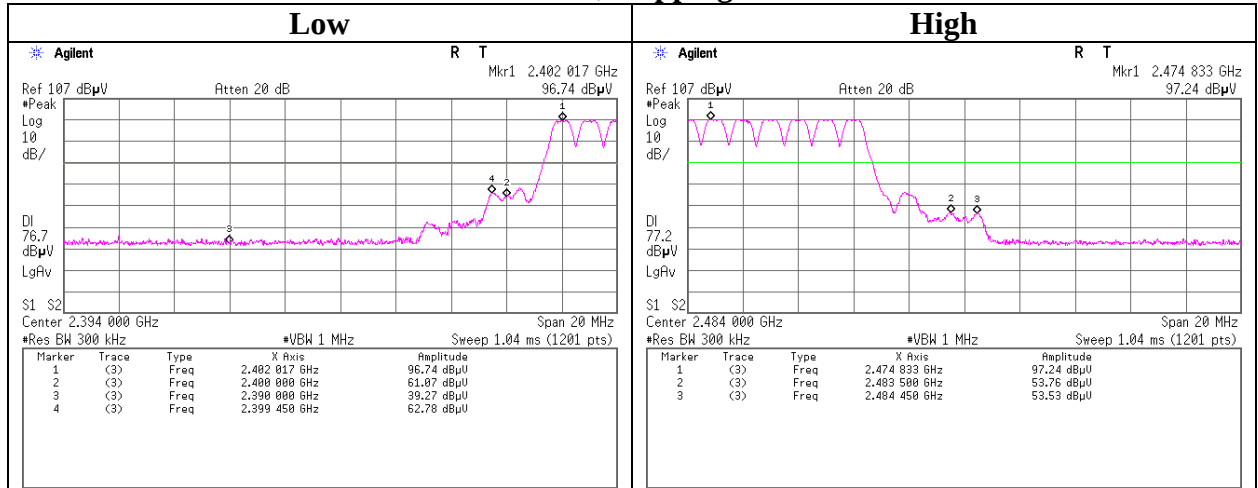
Conducted Spurious Emission

Rx 2441MHz

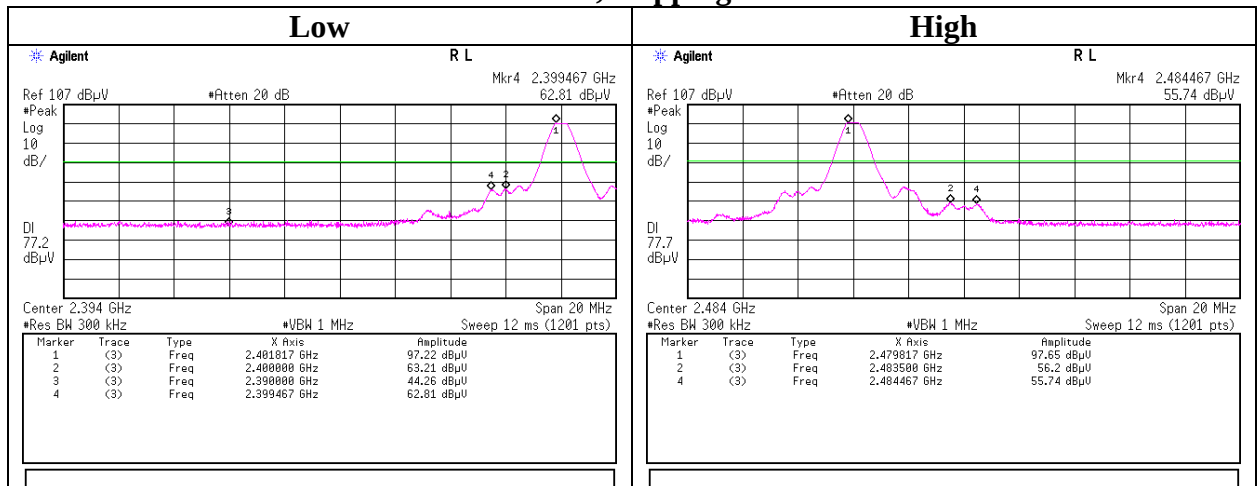


Conducted Emission Band Edge compliance

Tx DH5, Hopping on

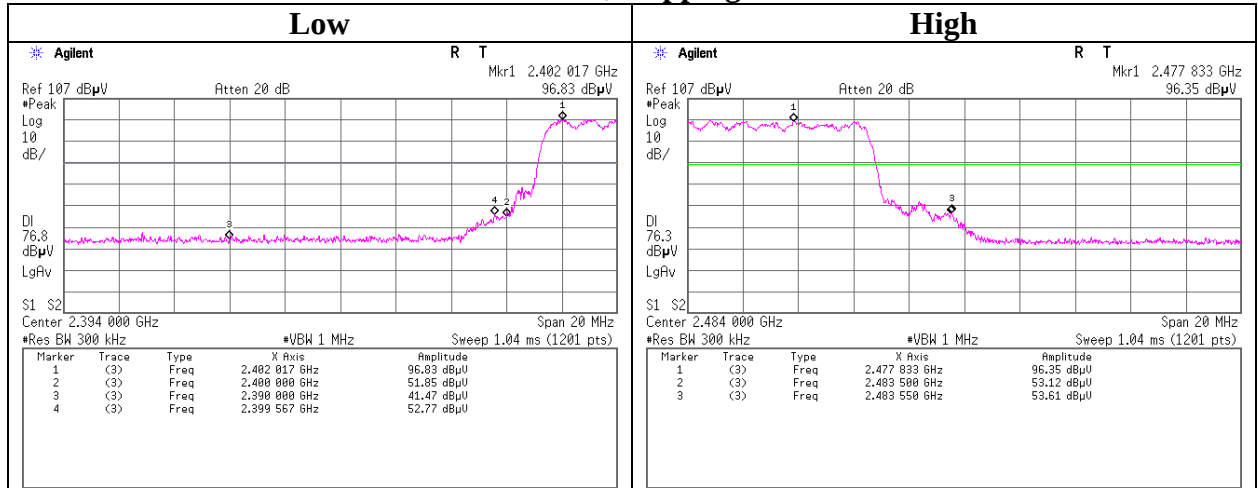


Tx DH5, Hopping off

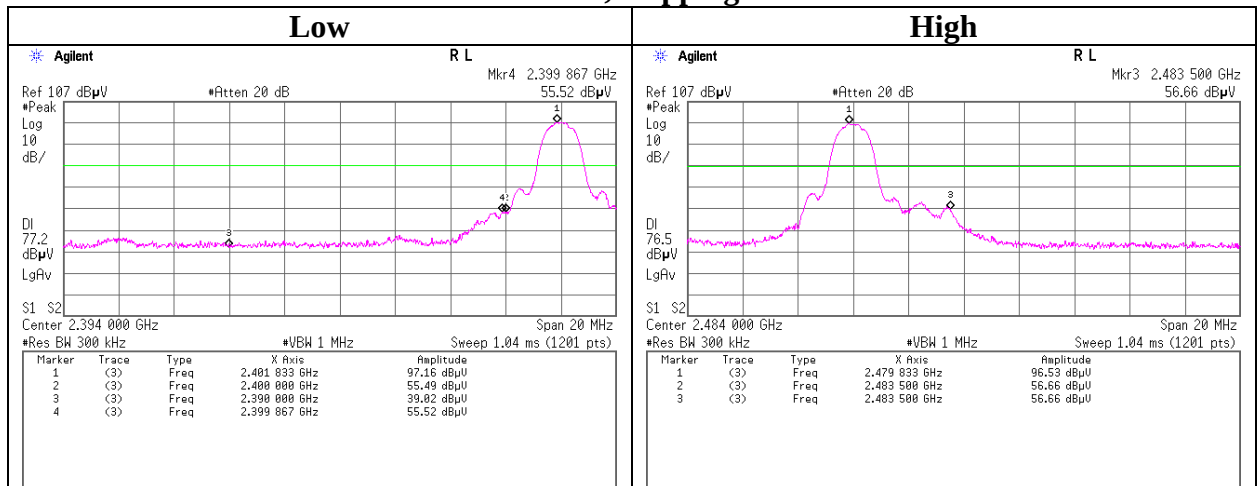


Conducted Emission Band Edge compliance

Tx 3DH5, Hopping on



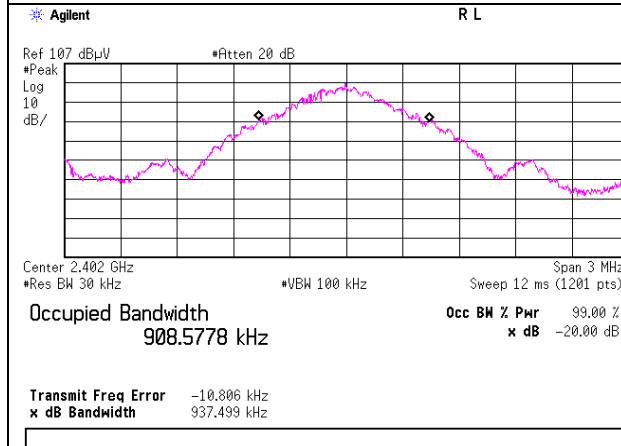
Tx 3DH5, Hopping off



99% Occupied Bandwidth

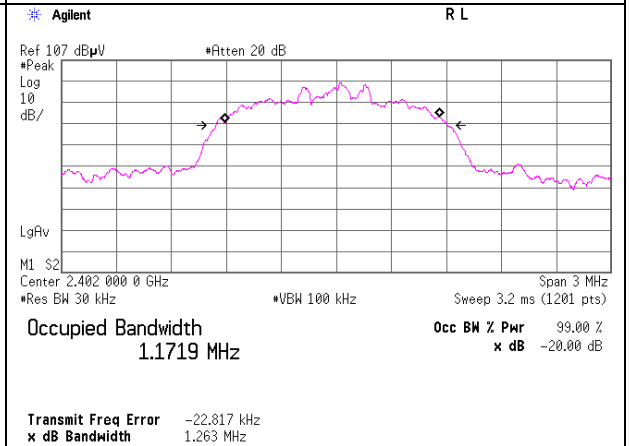
Tx DH5, Hopping off

2402MHz

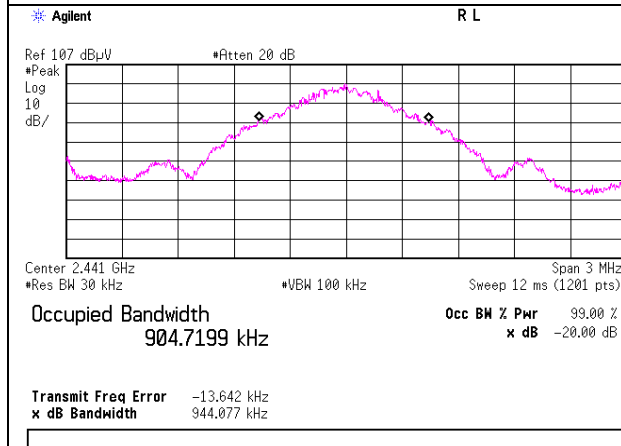


Tx 3DH5, Hopping off

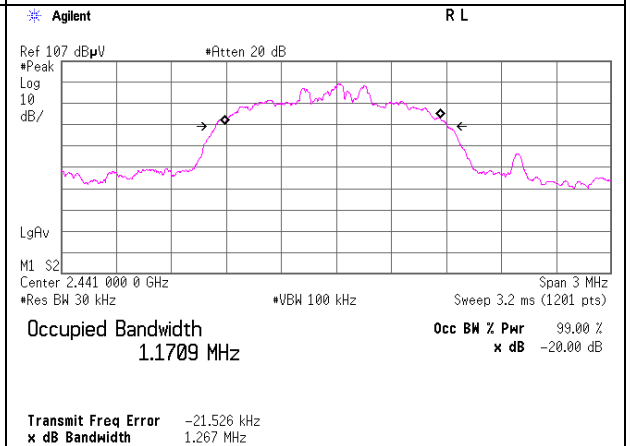
2402MHz



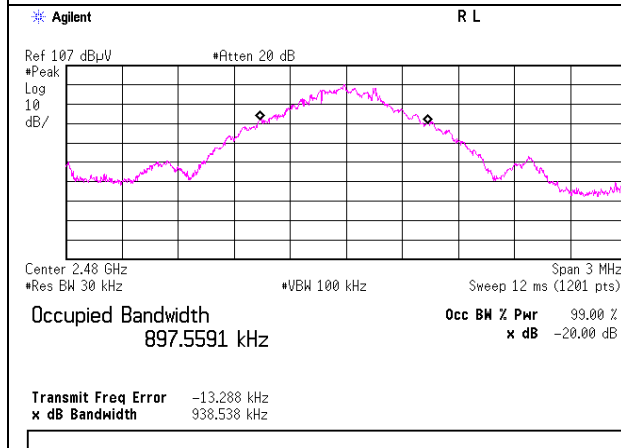
2441MHz



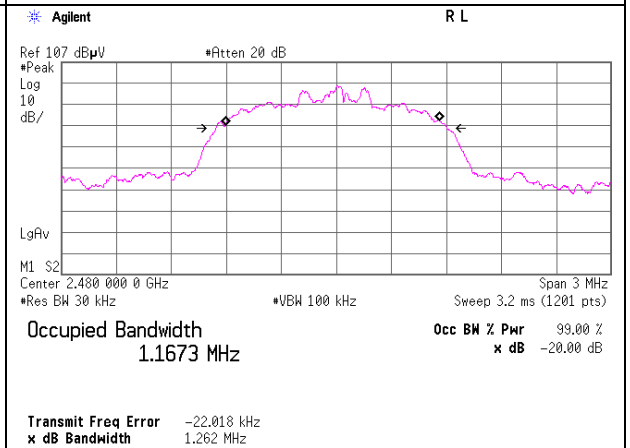
2441MHz



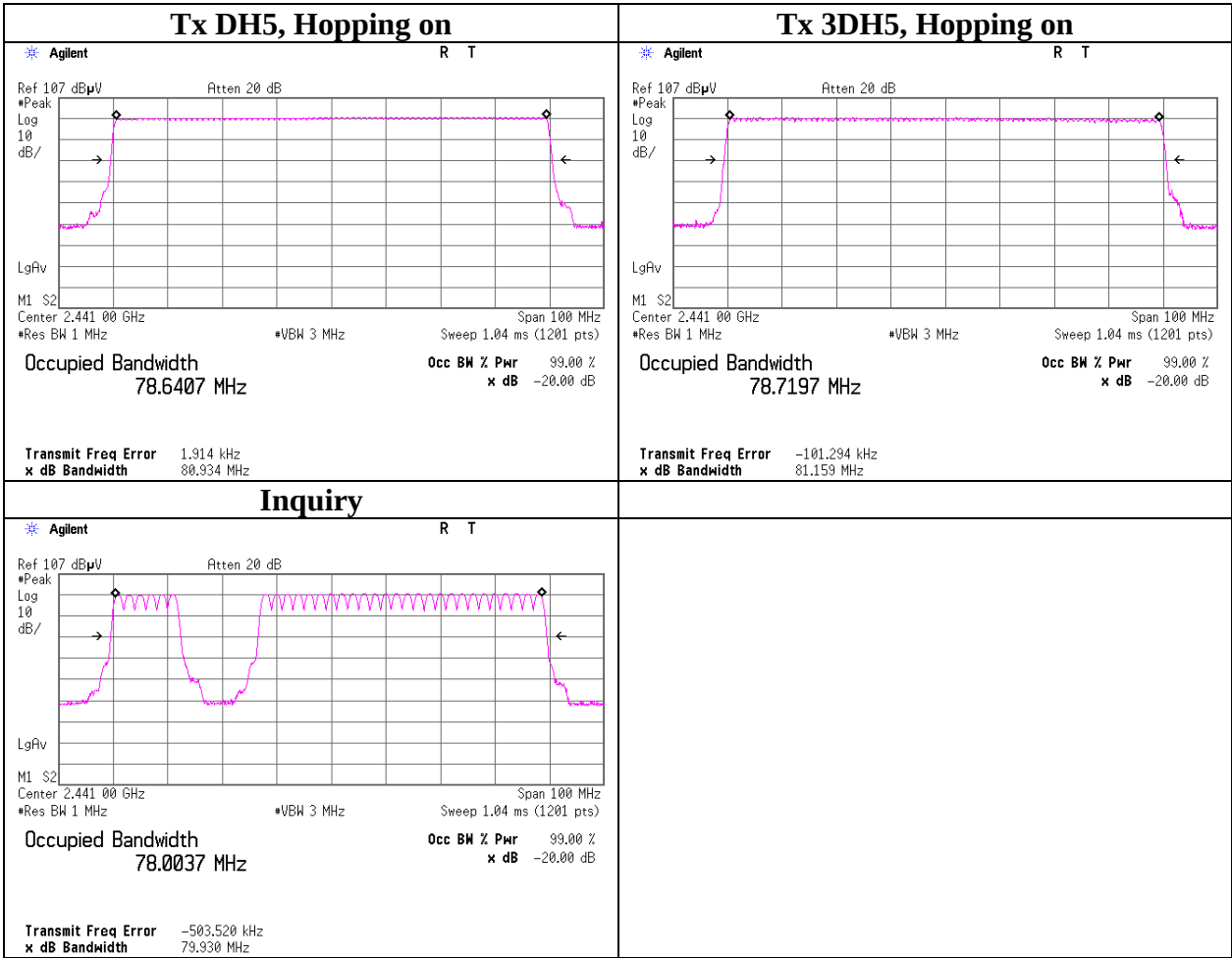
2480MHz



2480MHz



99% Occupied Bandwidth



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	2010/08/20 * 12
MPSE-17	Power sensor	Anritsu	MA2411B	0738285	AT	2010/08/20 * 12
MCC-45	Microwave Cable	Murata	MXGS83RK3000	-	AT	2010/07/26 * 12
MAT-23	Attenuator(10dB) 1-18GHz	Orient Microwave	BX10-0476-00	-	AT	2010/03/01 * 12
MCC-116	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	290221/4	AT	2010/08/05 * 12
MSA-06	Spectrum Analyzer	Agilent	E4407B	MY45107638	AT	2010/04/07 * 12
MOS-19	Thermo-Hygrometer	Custom	CTH-201	0001	AT	2009/12/22 * 12
MSA-03	Spectrum Analyzer	Agilent	E4448A	MY44020357	AT	2010/11/30 * 12
MAEC-02	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-06902	RE	2010/09/01 * 12
MOS-22	Thermo-Hygrometer	Custom	CTH-201	0003	RE	2010/02/09 * 12
MJM-05	Measure	PROMART	SEN1955	-	RE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE	-
MHA-06	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	254	RE	2010/01/19 * 12
MPA-10	Pre Amplifier	Agilent	8449B	3008A02142	RE	2010/09/30 * 12
MCC-56	Microwave Cable	Suhner	SUCOFLEX104	174410(1m) / 284655(5m)	RE	2010/01/25 * 12
MCC-77	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	278942/4	RE	2009/12/19 * 12
MHF-18	High Pass Filter 3.5-18.0GHz	TOKIMEC	TF323DCA	7002	RE	2010/09/21 * 12
MSA-10	Spectrum Analyzer	Agilent	E4448A	MY46180655	RE	2010/02/03 * 12
MTR-03	Test Receiver	Rohde & Schwarz	ESCI	100300	RE	2010/04/19 * 12
MBA-03	Biconical Antenna	Schwarzbeck	BBA9106	1915	RE	2010/10/11 * 12
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	201	RE	2010/10/11 * 12
MCC-12	Coaxial Cable	Fujikura/Agilent	-	-	RE	2010/02/22 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	BK7970	RE	2010/11/05 * 12
MPA-09	Pre Amplifier	Agilent	8447D	2944A10845	RE	2010/09/09 * 12
MHA-02	Horn Antenna 18-26.5GHz	EMCO	3160-09	1265	RE	2010/01/19 * 12

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

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

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

Test Item: 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

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124