APPENDIX 2: Data of EMI test

20dB Bandwidth and Carrier Frequency Separation

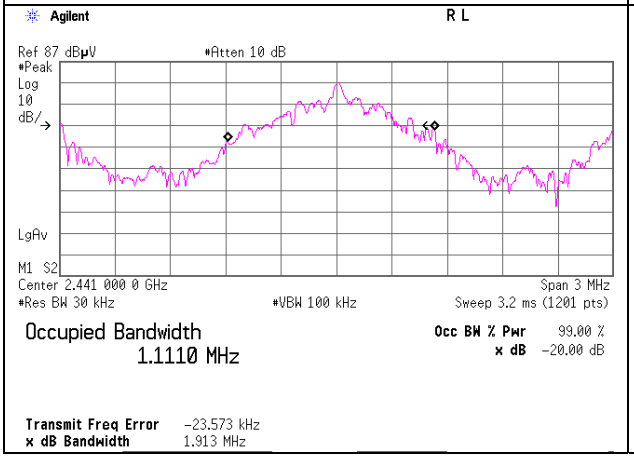
Test place	Head Office EMC Lab. No.6 Shielded room
Report No.	30KE0113-YK-01
Date	09/07/2010
Temperature/ Humidity	23 deg.C./ 56%
Engineer	Hiroshi Kukita
Mode	Tx (Hopping on) DH5/3DH5/Inquiry (Carrier Frequency Separation) Tx (Hopping off) DH5/3DH5/Inquiry (20dB Bandwidth)

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency separation [MHz]
DH5	2402.0	0.985	1.000	>= 0.657
DH5	2441.0	0.979	1.000	>= 0.653
DH5	2480.0	0.983	1.000	>= 0.655
3DH5	2402.0	1.270	1.000	>= 0.847
3DH5	2441.0	1.278	1.000	>= 0.852
3DH5	2480.0	1.290	1.000	>= 0.860
Inquiry	2441.0	1.913	2.000	>= 1.275

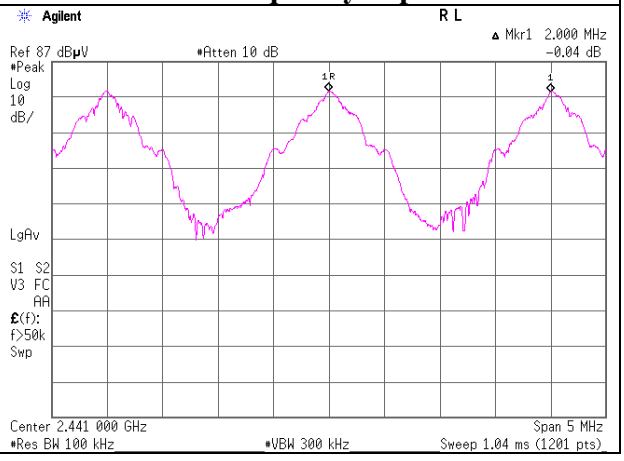
Limit: Two-thirds of 20dB Bandwidth or 25kHz (whichever is greater).
No limit applies to 20dB Bandwidth.

Inquiry

20dB Bandwidth



Carrier Frequency Separation

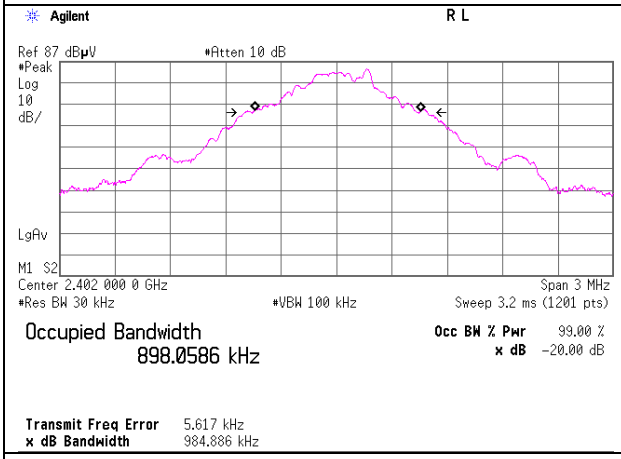


20dB Bandwidth and Carrier Frequency Separation

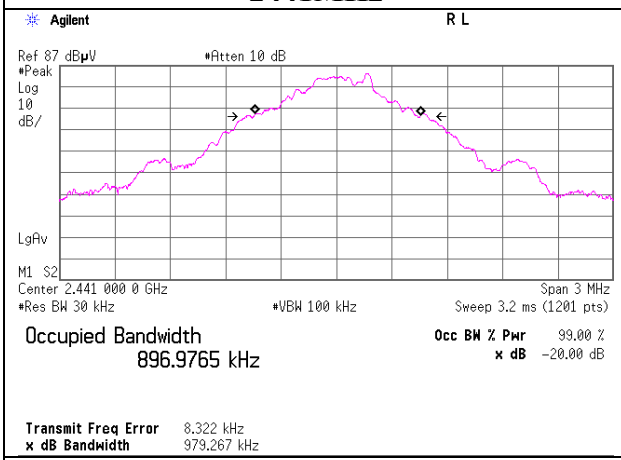
Tx DH5

20dB Bandwidth

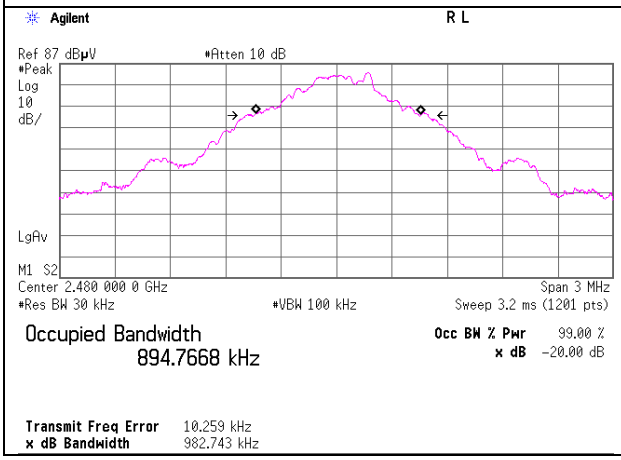
2402MHz



2441MHz

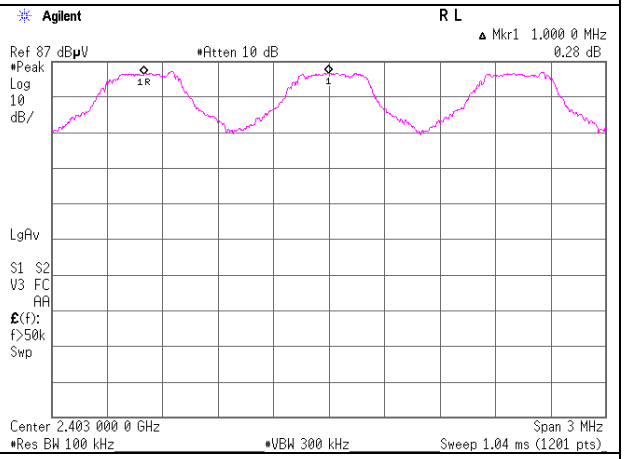


2480MHz

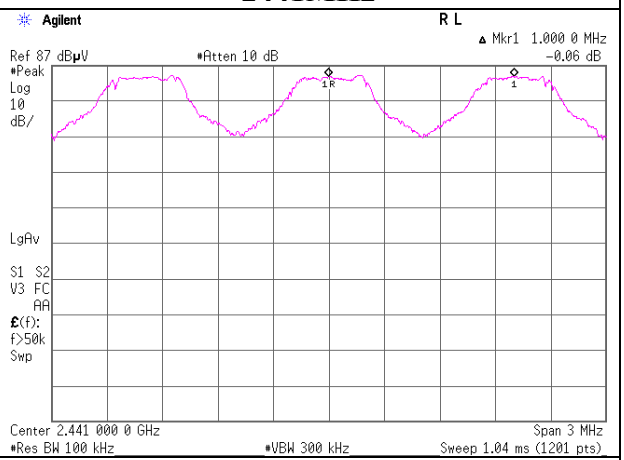


Carrier Frequency Separation

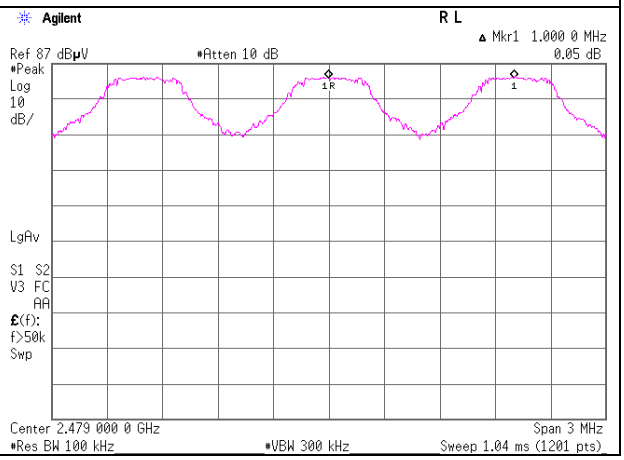
2402MHz



2441MHz



2480MHz



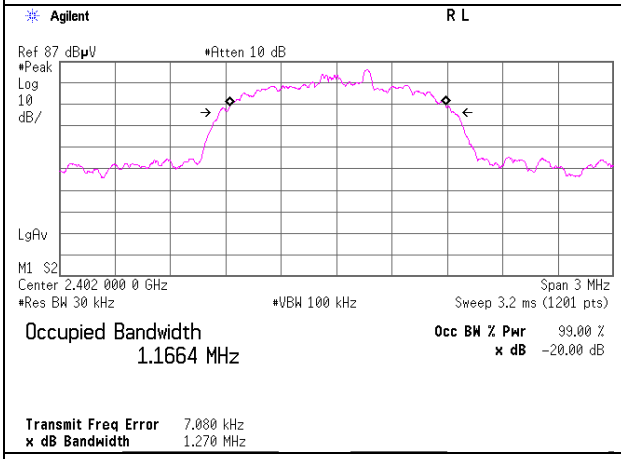
UL Japan, Inc.
Head Office EMC Lab.
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8116
Facsimile : +81 596 24 8124

20dB Bandwidth and Carrier Frequency Separation

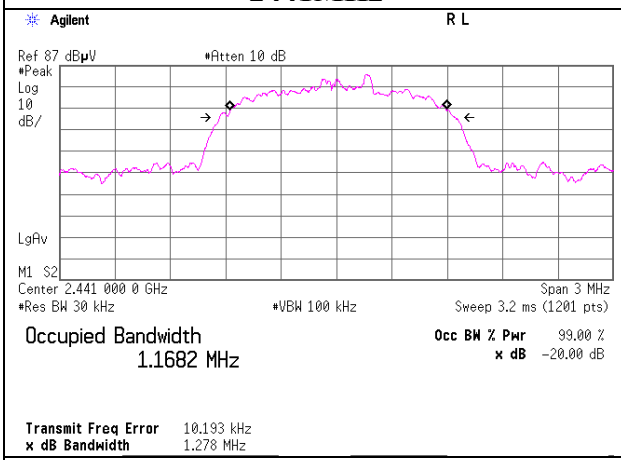
Tx 3DH5

20dB Bandwidth

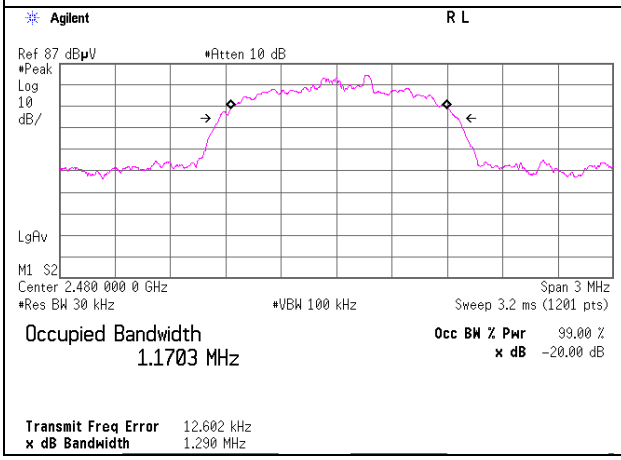
2402MHz



2441MHz

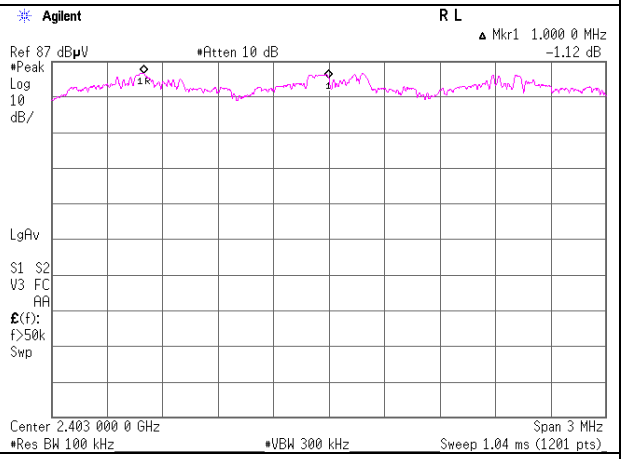


2480MHz

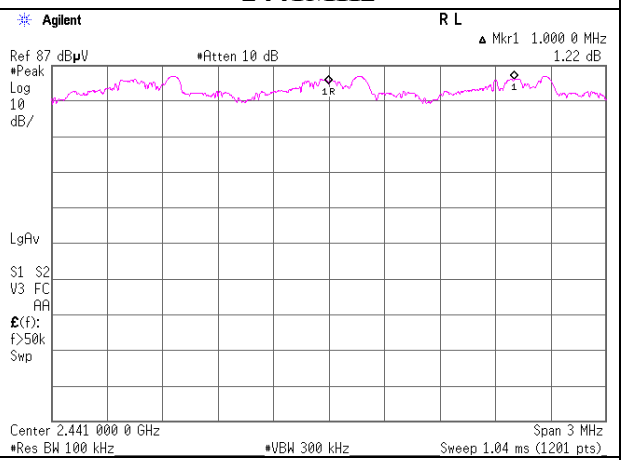


Carrier Frequency Separation

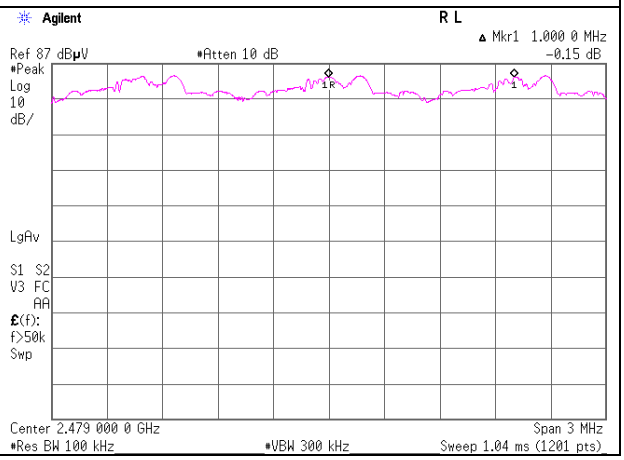
2402MHz



2441MHz



2480MHz



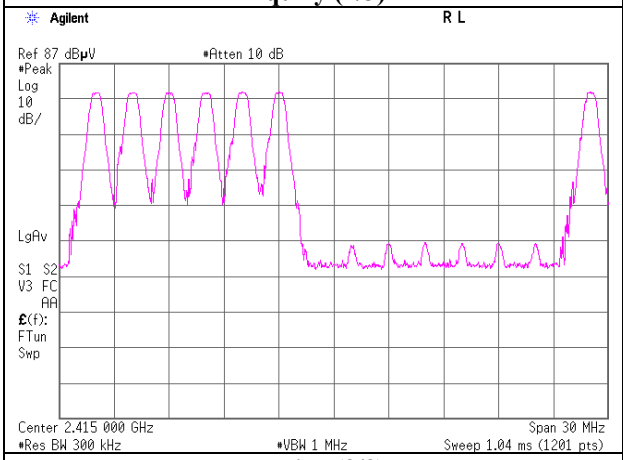
UL Japan, Inc.
Head Office EMC Lab.
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8116
Facsimile : +81 596 24 8124

Number of Hopping Frequency

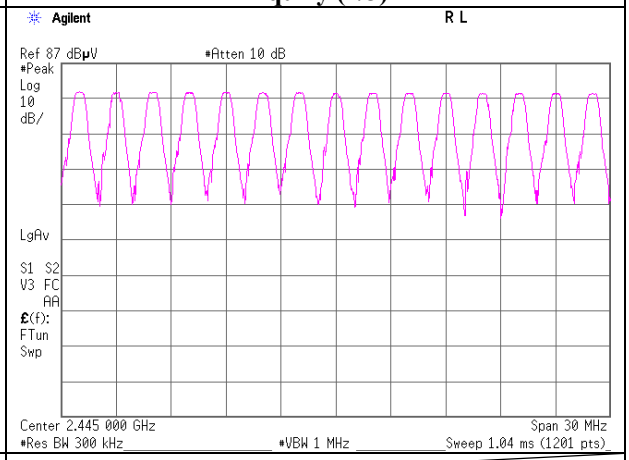
Test place	Head Office EMC Lab. No.6 Shielded room
Report No.	30KE0113-YK-01
Date	09/07/2010
Temperature/ Humidity	23 deg.C./ 56%
Engineer	Hiroshi Kukita
Mode	Tx (Hopping on) DH5/3DH5/Inquiry

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

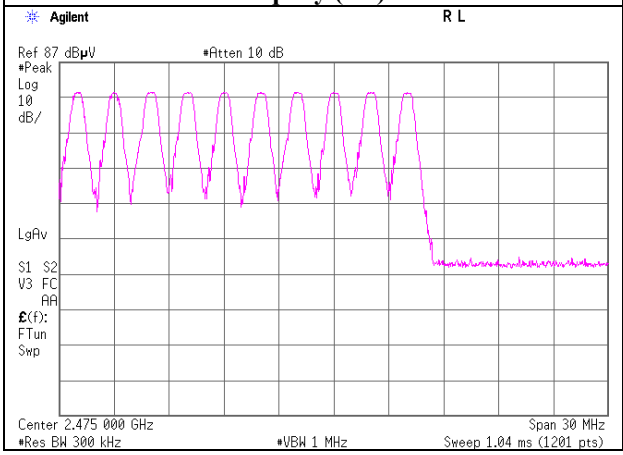
Inquiry (1/3)

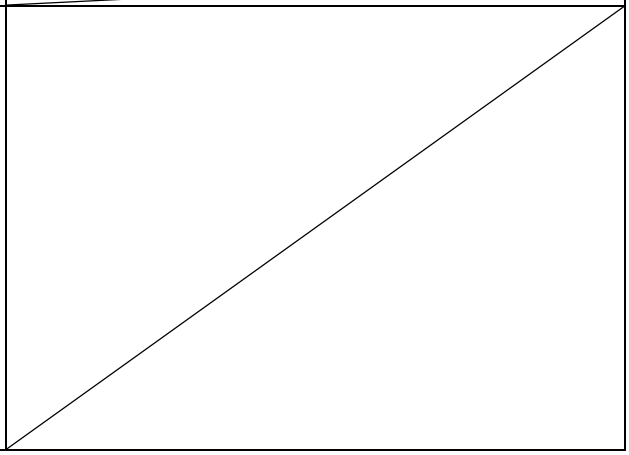


Inquiry (2/3)



Inquiry (3/3)





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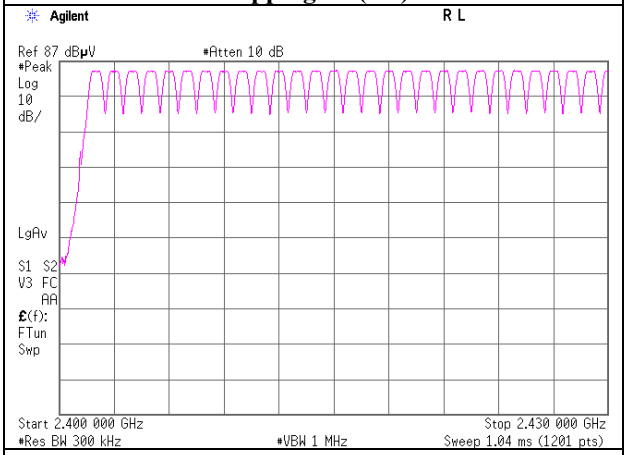
Head Office EMC Lab.
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8116
Facsimile : +81 596 24 8124

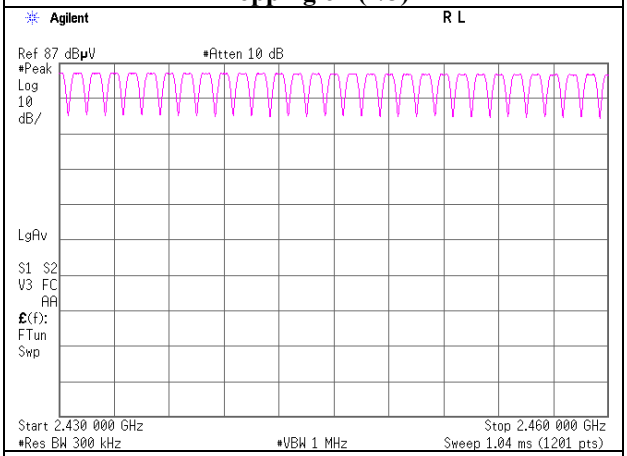
Number of Hopping Frequency

Tx DH5

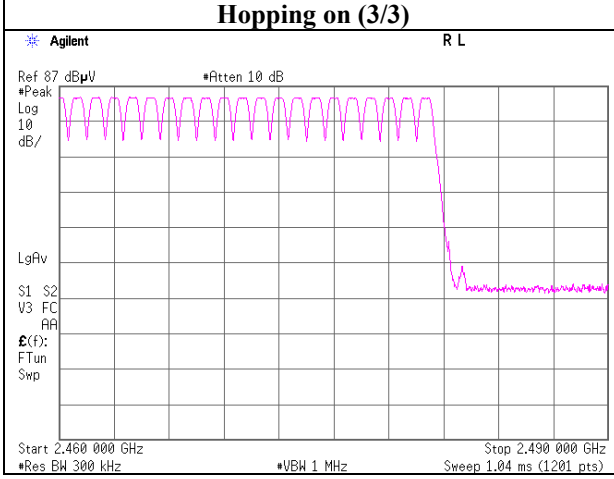
Hopping on (1/3)



Hopping on (2/3)

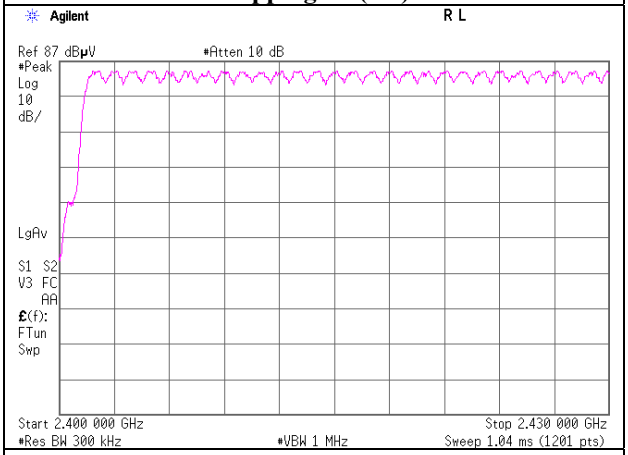


Hopping on (3/3)

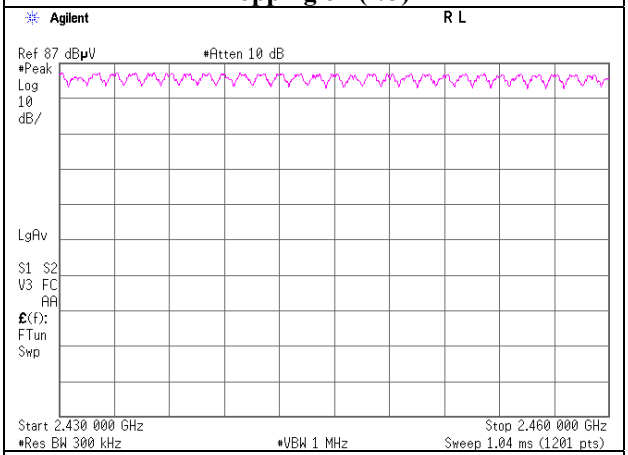


Tx 3DH5

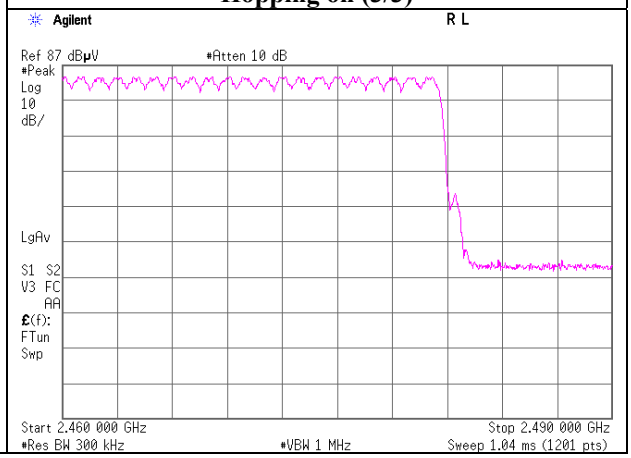
Hopping on (1/3)



Hopping on (2/3)



Hopping on (3/3)



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Telephone : +81 596 24 8116
Facsimile : +81 596 24 8124

Dwell time

Test place	Head Office EMC Lab. No.6 Shielded Room
Report No.	30KE0113-YK-01
Date	09/08/2010
Temperature/ Humidity	21 deg.C./ 51%
Engineer	Hiroshi Kukita
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	48.4 times / 5 sec. x 31.6 sec. = 306 times	0.484	148	400
DH3	24.8 times / 5 sec. x 31.6 sec. = 157 times	1.751	275	400
DH5	17.0 times / 5 sec. x 31.6 sec. = 108 times	2.995	323	400
3DH1	48.6 times / 5 sec. x 31.6 sec. = 308 times	0.490	151	400
3DH3	23.6 times / 5 sec. x 31.6 sec. = 150 times	1.748	262	400
3DH5	16.2 times / 5 sec. x 31.6 sec. = 103 times	2.999	309	400
Inquiry	100.0 times / 1 sec. x 12.8 sec. = 1280 times	0.184	235	400

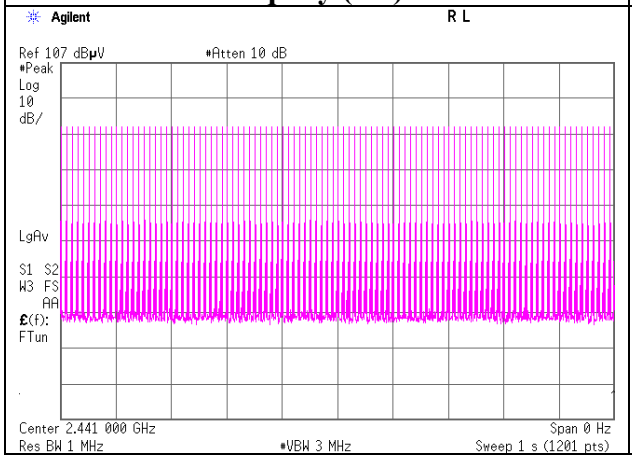
Sample Calculation
Result = Number of transmission x Length of transmition time

*Average data of 5 tests.(except Inquiry)

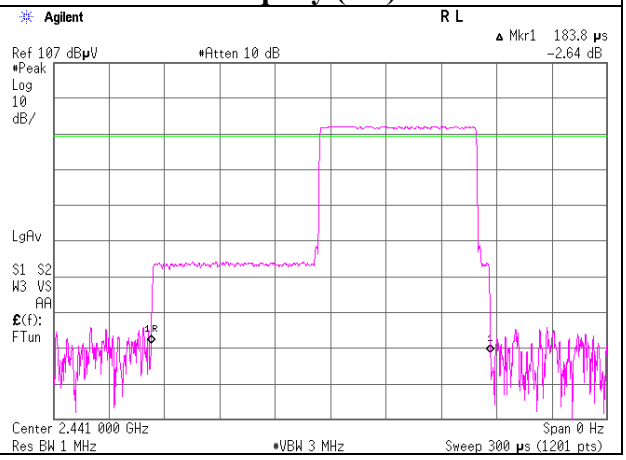
Mode	Sampling [times]					Average [times]
	1	2	3	4	5	
DH1	47	49	48	48	50	48.4
DH3	24	25	25	25	25	24.8
DH5	18	19	17	15	16	17
3DH1	49	50	47	47	50	48.6
3DH3	19	27	29	20	23	23.6
3DH5	18	14	15	19	15	16.2

Sample Calculation
Average= Summation(Sampling 1 to 5) / 5

Inquiry (1/2)

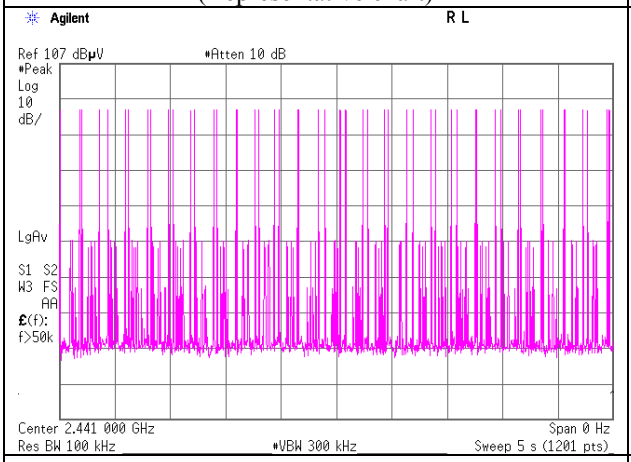


Inquiry (2/2)

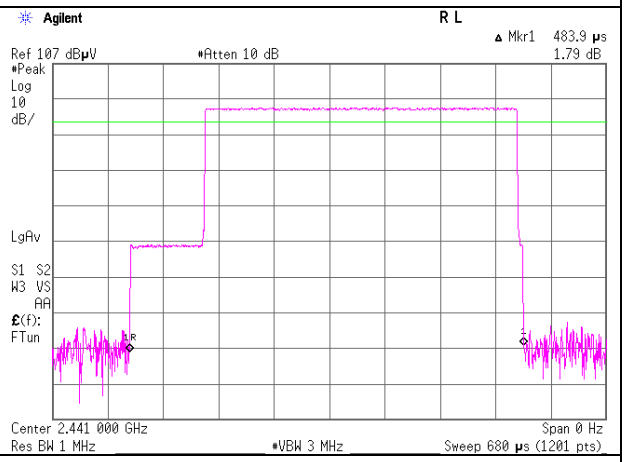


Dwell time

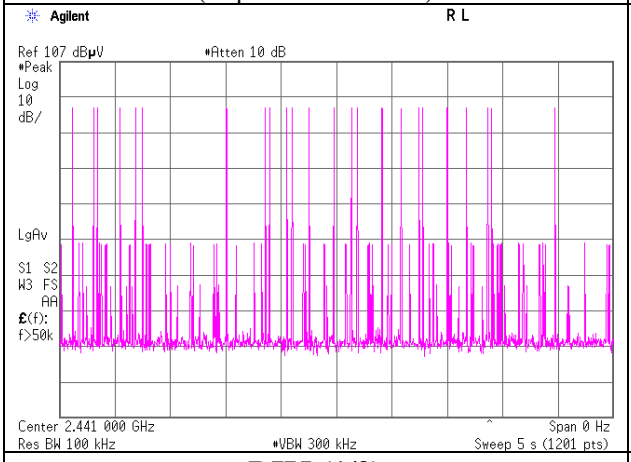
DH1 (1/2)
(Representative chart)



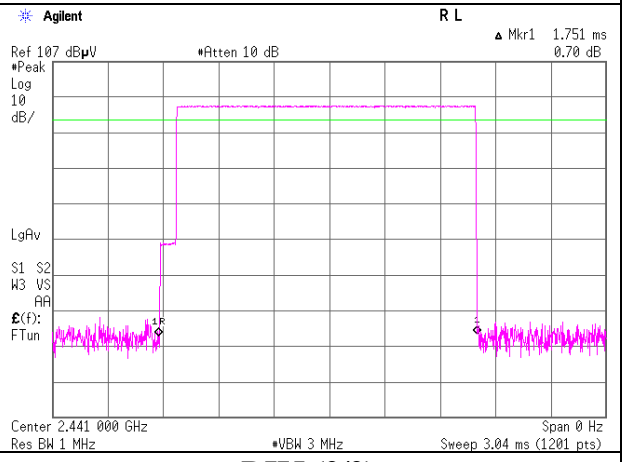
DH1 (2/2)



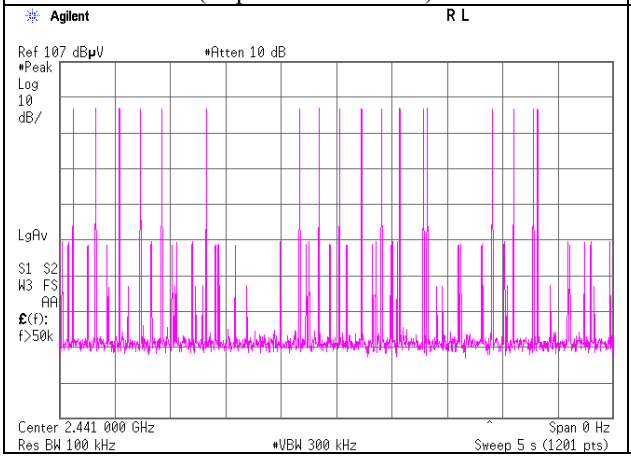
DH3 (1/2)
(Representative chart)



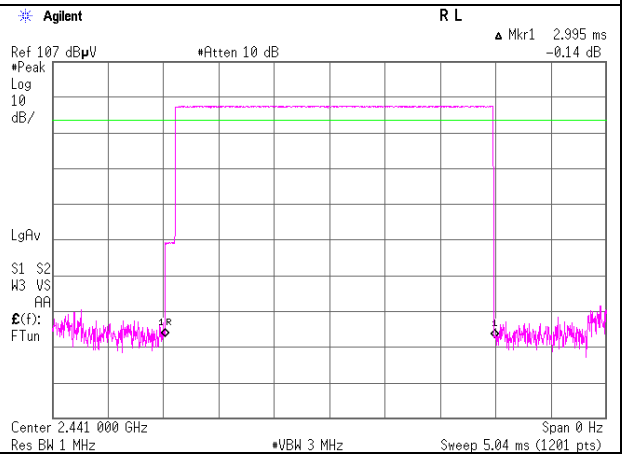
DH3 (2/2)



DH5 (1/2)
(Representative chart)



DH5 (2/2)



UL Japan, Inc.
Head Office EMC Lab.
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8116
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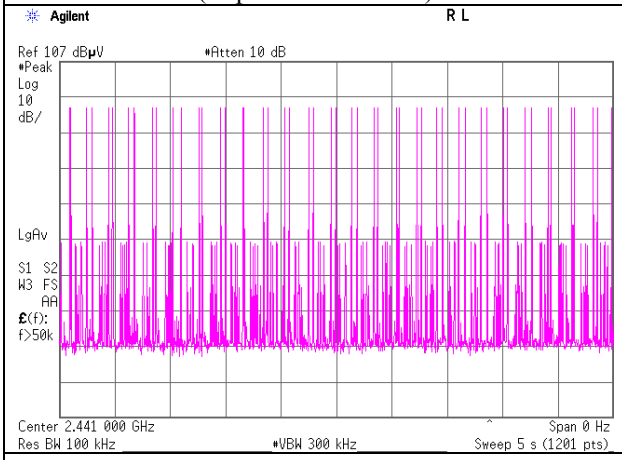
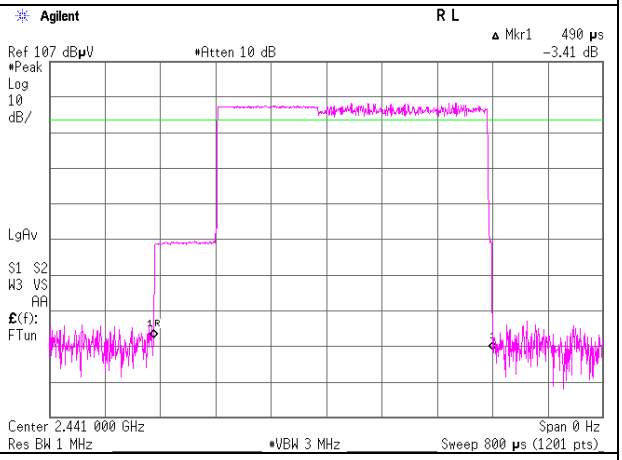
Dwell time

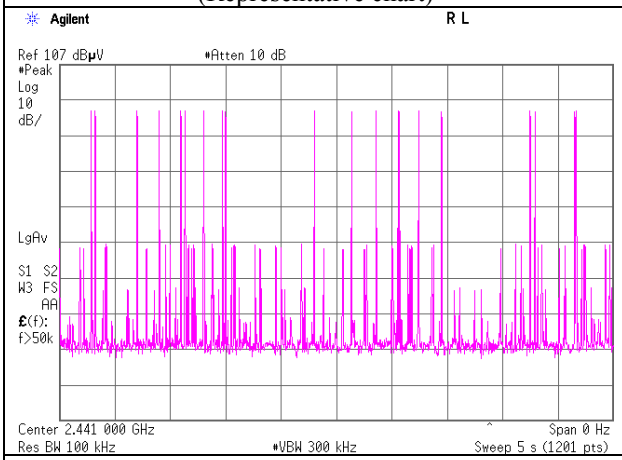
3DH1 (1/2)
(Representative chart)



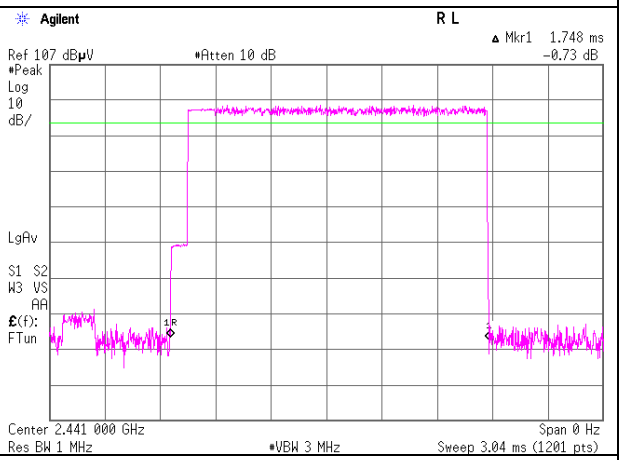
3DH1 (2/2)



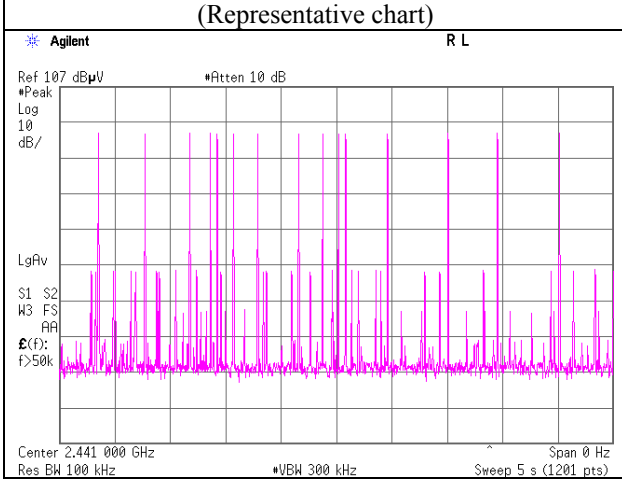
3DH3 (1/2)
(Representative chart)



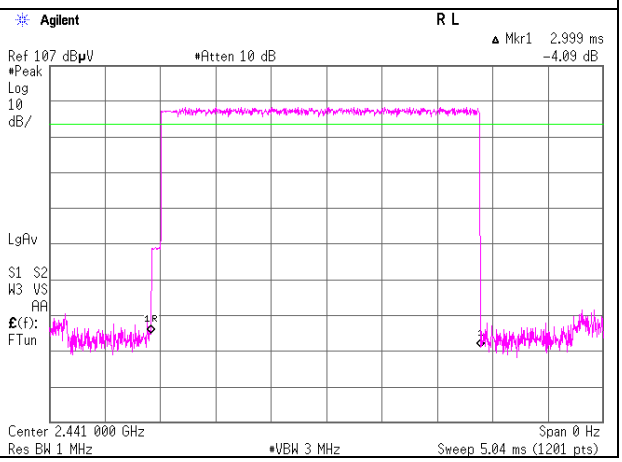
3DH3 (2/2)



3DH5 (1/2)
(Representative chart)



3DH5 (2/2)



Maximum Peak Output Power

Test place	Head Office EMC Lab. No.6 Shielded Room
Report No.	30KE0113-YK-01
Date	09/08/2010
Temperature/ Humidity	21 deg.C./ 58%
Engineer	Hiroshi Kukita
Mode	Tx (Hopping off) DH5/3DH5/Inquiry

Mode	Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
DH5	2402.0	-12.22	1.00	10.08	-1.14	0.77	20.97	125	22.11
DH5	2441.0	-12.45	1.01	10.08	-1.36	0.73	20.97	125	22.33
DH5	2480.0	-12.90	1.02	10.08	-1.80	0.66	20.97	125	22.77
3DH5	2402.0	-11.35	1.00	10.08	-0.27	0.94	20.97	125	21.24
3DH5	2441.0	-11.59	1.01	10.08	-0.50	0.89	20.97	125	21.47
3DH5	2480.0	-12.07	1.02	10.08	-0.97	0.80	20.97	125	21.94
Inquiry	2441.0	-19.19	1.01	10.08	-8.10	0.15	20.97	125	29.07

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied)+ 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 125mWof AFH mode was used for the test.

Radiated Spurious Emission

Test place	Head Office EMC Lab.		
Report No.	30KE0113-YK-01		
Semi Anechoic Chamber	No.3	No.2	No.2
Date	09/09/2010	09/11/2010	09/12/2010
Temperature/ Humidity	23 deg.C./ 58%	21 deg.C./ 63%	22 deg.C./ 63%
Engineer	Takayuki Shimada (1-10GHz)	Hiroyuki Furutaka (Below 1GHz)	Takayuki Shimada (Above 10GHz)
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	192.001	QP	27.5	17.2	8.1	28.0	24.8	43.5	18.7	
Hori	214.790	QP	27.4	17.6	8.2	27.9	25.3	43.5	18.2	
Hori	264.006	QP	31.7	18.5	8.5	27.7	31.0	46.0	15.0	
Hori	278.400	QP	28.2	19.2	8.6	27.7	28.3	46.0	17.7	
Hori	528.002	QP	37.6	18.8	9.9	28.9	37.4	46.0	8.6	
Hori	723.501	QP	31.3	21.0	10.6	28.4	34.5	46.0	11.5	
Hori	2390.000	PK	44.6	27.7	2.6	32.5	42.4	73.9	31.5	
Hori	2400.000	PK	55.0	27.7	2.6	32.5	52.8	73.9	21.1	
Hori	4804.000	PK	40.4	31.6	5.2	31.8	45.4	73.9	28.5	
Hori	7206.000	PK	42.7	36.2	6.2	32.4	52.7	73.9	21.2	
Hori	9608.000	PK	42.5	38.0	6.8	32.9	54.4	73.9	19.5	
Hori	24020.000	PK	46.5	39.8	-1.3	29.1	55.9	73.9	18.0	Non Signal
Hori	2390.000	AV	32.9	27.7	2.6	32.5	30.7	53.9	23.2	VBW:270Hz
Hori	2400.000	AV	36.3	27.7	2.6	32.5	34.1	53.9	19.8	VBW:270Hz
Hori	4804.000	AV	29.1	31.6	5.2	31.8	34.1	53.9	19.8	VBW:270Hz
Hori	7206.000	AV	31.1	36.2	6.2	32.4	41.1	53.9	12.8	VBW:270Hz
Hori	9608.000	AV	30.8	38.0	6.8	32.9	42.7	53.9	11.2	VBW:270Hz
Hori	24020.000	AV	34.7	39.8	-1.3	29.1	44.1	53.9	9.8	VBW:270Hz, Non Signal
Vert	192.000	QP	34.0	17.2	8.1	28.0	31.3	43.5	12.2	
Vert	214.790	QP	33.2	17.6	8.2	27.9	31.1	43.5	12.4	
Vert	264.003	QP	38.4	18.5	8.5	27.7	37.7	46.0	8.3	
Vert	274.376	QP	25.7	19.0	8.6	27.7	25.6	46.0	20.4	
Vert	528.002	QP	36.1	18.8	9.9	28.9	35.9	46.0	10.1	
Vert	723.505	QP	30.5	21.0	10.6	28.4	33.7	46.0	12.3	
Vert	2390.000	PK	44.7	27.7	2.6	32.5	42.5	73.9	31.4	
Vert	2400.000	PK	55.3	27.7	2.6	32.5	53.1	73.9	20.8	
Vert	4804.000	PK	40.4	31.6	5.2	31.8	45.4	73.9	28.5	
Vert	7206.000	PK	42.9	36.2	6.2	32.4	52.9	73.9	21.0	
Vert	9608.000	PK	42.3	38.0	6.8	32.9	54.2	73.9	19.7	
Vert	24020.000	PK	46.5	39.8	-1.3	29.1	55.9	73.9	18.0	Non Signal
Vert	2390.000	AV	32.9	27.7	2.6	32.5	30.7	53.9	23.2	VBW:270Hz
Vert	2400.000	AV	36.7	27.7	2.6	32.5	34.5	53.9	19.4	VBW:270Hz
Vert	4804.000	AV	29.1	31.6	5.2	31.8	34.1	53.9	19.8	VBW:270Hz
Vert	7206.000	AV	31.1	36.2	6.2	32.4	41.1	53.9	12.8	VBW:270Hz
Vert	9608.000	AV	30.8	38.0	6.8	32.9	42.7	53.9	11.2	VBW:270Hz
Vert	24020.000	AV	34.7	39.8	-1.3	29.1	44.1	53.9	9.8	VBW:270Hz, Non Signal

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

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

Radiated Spurious Emission

Test place	Head Office EMC Lab.		
Report No.	30KE0113-YK-01		
Semi Anechoic Chamber	No.3	No.2	No.2
Date	09/09/2010	09/11/2010	09/12/2010
Temperature/ Humidity	23 deg.C./ 58%	21 deg.C./ 63%	22 deg.C./ 63%
Engineer	Takayuki Shimada (1-10GHz)	Hiroyuki Furutaka (Below 1GHz)	Takayuki Shimada (Above 10GHz)
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	192.001	QP	28.4	17.2	8.1	28.0	25.7	43.5	17.8	
Hori	214.795	QP	26.9	17.6	8.2	27.9	24.8	43.5	18.7	
Hori	264.003	QP	28.3	18.5	8.5	27.7	27.6	46.0	18.4	
Hori	384.001	QP	32.5	17.1	9.3	28.2	30.7	46.0	15.3	
Hori	528.005	QP	37.8	18.8	9.9	28.9	37.6	46.0	8.4	
Hori	723.512	QP	28.9	21.0	10.6	28.4	32.1	46.0	13.9	
Hori	4882.000	PK	41.0	31.9	5.3	31.8	46.4	73.9	27.5	
Hori	7323.000	PK	42.8	36.2	6.2	32.4	52.8	73.9	21.1	
Hori	9764.000	PK	42.5	38.1	6.9	32.9	54.6	73.9	19.3	
Hori	24410.000	PK	46.2	39.9	-1.2	29.0	55.9	73.9	18.0	Non Signal
Hori	4882.000	AV	29.1	31.9	5.3	31.8	34.5	53.9	19.4	VBW:270Hz
Hori	7323.000	AV	30.8	36.2	6.2	32.4	40.8	53.9	13.1	VBW:270Hz
Hori	9764.000	AV	30.4	38.1	6.9	32.9	42.5	53.9	11.4	VBW:270Hz
Hori	24410.000	AV	34.2	39.9	-1.2	29.0	43.9	53.9	10.0	VBW:270Hz, Non Signal
Vert	192.002	QP	34.2	17.2	8.1	28.0	31.5	43.5	12.0	
Vert	214.795	QP	32.7	17.6	8.2	27.9	30.6	43.5	12.9	
Vert	264.003	QP	38.1	18.5	8.5	27.7	37.4	46.0	8.6	
Vert	384.001	QP	30.6	17.1	9.3	28.2	28.8	46.0	17.2	
Vert	528.007	QP	39.3	18.8	9.9	28.9	39.1	46.0	6.9	
Vert	723.512	QP	30.7	21.0	10.6	28.4	33.9	46.0	12.1	
Vert	4882.000	PK	40.7	31.9	5.3	31.8	46.1	73.9	27.8	
Vert	7323.000	PK	42.9	36.2	6.2	32.4	52.9	73.9	21.0	
Vert	9764.000	PK	42.6	38.1	6.9	32.9	54.7	73.9	19.2	
Vert	24410.000	PK	45.8	39.9	-1.2	29.0	55.5	73.9	18.4	Non Signal
Vert	4882.000	AV	29.1	31.9	5.3	31.8	34.5	53.9	19.4	VBW:270Hz
Vert	7323.000	AV	30.8	36.2	6.2	32.4	40.8	53.9	13.1	VBW:270Hz
Vert	9764.000	AV	30.4	38.1	6.9	32.9	42.5	53.9	11.4	VBW:270Hz
Vert	24410.000	AV	34.2	39.9	-1.2	29.0	43.9	53.9	10.0	VBW:270Hz, Non Signal

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

Radiated Spurious Emission

Test place	Head Office EMC Lab.		
Report No.	30KE0113-YK-01		
Semi Anechoic Chamber	No.3	No.2	No.2
Date	09/09/2010	09/11/2010	09/12/2010
Temperature/ Humidity	23 deg.C./ 58%	21 deg.C./ 63%	22 deg.C./ 63%
Engineer	Takayuki Shimada (1-10GHz)	Hiroyuki Furutaka (Below 1GHz)	Takayuki Shimada (Above 10GHz)
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	214.797	QP	25.8	17.6	8.2	27.9	23.7	43.5	19.8	
Hori	264.003	QP	30.5	18.5	8.5	27.7	29.8	46.0	16.2	
Hori	299.999	QP	27.1	20.1	8.7	27.6	28.3	46.0	17.7	
Hori	386.628	QP	31.1	17.2	9.3	28.2	29.4	46.0	16.6	
Hori	528.007	QP	35.6	18.8	9.9	28.9	35.4	46.0	10.6	
Hori	723.504	QP	31.7	21.0	10.6	28.4	34.9	46.0	11.1	
Hori	2483.500	PK	43.2	27.6	2.7	32.4	41.1	73.9	32.8	
Hori	4960.000	PK	40.7	32.2	5.3	31.8	46.4	73.9	27.5	
Hori	7440.000	PK	42.6	36.2	6.2	32.5	52.5	73.9	21.4	
Hori	9920.000	PK	42.1	38.2	7.0	33.0	54.3	73.9	19.6	
Hori	24800.000	PK	47.6	39.9	-1.1	29.0	57.4	73.9	16.5	Non Signal
Hori	2483.500	AV	31.5	27.6	2.7	32.4	29.4	53.9	24.5	VBW:270Hz
Hori	4960.000	AV	29.3	32.2	5.3	31.8	35.0	53.9	18.9	VBW:270Hz
Hori	7440.000	AV	31.4	36.2	6.2	32.5	41.3	53.9	12.6	VBW:270Hz
Hori	9920.000	AV	30.6	38.2	7.0	33.0	42.8	53.9	11.1	VBW:270Hz
Hori	24800.000	AV	35.6	39.9	-1.1	29.0	45.4	53.9	8.5	VBW:270Hz, Non Signal
Vert	214.793	QP	31.9	17.6	8.2	27.9	29.8	43.5	13.7	
Vert	264.003	QP	29.7	18.5	8.5	27.7	29.0	46.0	17.0	
Vert	299.999	QP	30.1	20.1	8.7	27.6	31.3	46.0	14.7	
Vert	384.005	QP	33.8	17.1	9.3	28.2	32.0	46.0	14.0	
Vert	528.005	QP	40.7	18.8	9.9	28.9	40.5	46.0	5.5	
Vert	723.504	QP	30.7	21.0	10.6	28.4	33.9	46.0	12.1	
Vert	2483.500	PK	43.1	27.6	2.7	32.4	41.0	73.9	32.9	
Vert	4960.000	PK	41.0	32.2	5.3	31.8	46.7	73.9	27.2	
Vert	7440.000	PK	42.6	36.2	6.2	32.5	52.5	73.9	21.4	
Vert	9920.000	PK	42.3	38.2	7.0	33.0	54.5	73.9	19.4	
Vert	24800.000	PK	47.5	39.9	-1.1	29.0	57.3	73.9	16.6	Non Signal
Vert	2483.500	AV	31.5	27.6	2.7	32.4	29.4	53.9	24.5	VBW:270Hz
Vert	4960.000	AV	29.3	32.2	5.3	31.8	35.0	53.9	18.9	VBW:270Hz
Vert	7440.000	AV	31.4	36.2	6.2	32.5	41.3	53.9	12.6	VBW:270Hz
Vert	9920.000	AV	30.6	38.2	7.0	33.0	42.8	53.9	11.1	VBW:270Hz
Vert	24800.000	AV	35.6	39.9	-1.1	29.0	45.4	53.9	8.5	VBW:270Hz, Non Signal

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

Radiated Spurious Emission

Test place	Head Office EMC Lab.		
Report No.	30KE0113-YK-01		
Semi Anechoic Chamber	No.3	No.2	No.2
Date	09/09/2010	09/11/2010	09/12/2010
Temperature/ Humidity	23 deg.C./ 58%	21 deg.C./ 63%	22 deg.C./ 63%
Engineer	Takayuki Shimada (1-10GHz)	Hiroyuki Furutaka (Below 1GHz)	Takayuki Shimada (Above 10GHz)
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	214.789	QP	25.9	17.6	8.2	27.9	23.8	43.5	19.7	
Hori	264.002	QP	29.5	18.5	8.5	27.7	28.8	46.0	17.2	
Hori	310.580	QP	30.6	14.9	8.9	27.7	26.7	46.0	19.3	
Hori	386.630	QP	31.7	17.2	9.3	28.2	30.0	46.0	16.0	
Hori	528.004	QP	40.3	18.8	9.9	28.9	40.1	46.0	5.9	
Hori	723.500	QP	32.2	21.0	10.6	28.4	35.4	46.0	10.6	
Hori	2390.000	PK	45.5	27.7	2.6	32.5	43.3	73.9	30.6	
Hori	2400.000	PK	61.2	27.7	2.6	32.5	59.0	73.9	14.9	
Hori	4804.000	PK	40.5	31.6	5.2	31.8	45.5	73.9	28.4	
Hori	7206.000	PK	42.7	36.2	6.2	32.4	52.7	73.9	21.2	
Hori	9608.000	PK	42.3	38.0	6.8	32.9	54.2	73.9	19.7	
Hori	24020.000	PK	46.5	39.8	-1.3	29.1	55.9	73.9	18.0	Non Signal
Hori	2390.000	AV	33.6	27.7	2.6	32.5	31.4	53.9	22.5	VBW:270Hz
Hori	2400.000	AV	47.0	27.7	2.6	32.5	44.8	53.9	9.1	VBW:270Hz
Hori	4804.000	AV	29.1	31.6	5.2	31.8	34.1	53.9	19.8	VBW:270Hz
Hori	7206.000	AV	31.1	36.2	6.2	32.4	41.1	53.9	12.8	VBW:270Hz
Hori	9608.000	AV	30.8	38.0	6.8	32.9	42.7	53.9	11.2	VBW:270Hz
Hori	24020.000	AV	34.7	39.8	-1.3	29.1	44.1	53.9	9.8	VBW:270Hz, Non Signal
Vert	214.789	QP	31.5	17.6	8.2	27.9	29.4	43.5	14.1	
Vert	264.002	QP	30.5	18.5	8.5	27.7	29.8	46.0	16.2	
Vert	310.580	QP	32.0	14.9	8.9	27.7	28.1	46.0	17.9	
Vert	386.630	QP	30.8	17.2	9.3	28.2	29.1	46.0	16.9	
Vert	528.004	QP	39.4	18.8	9.9	28.9	39.2	46.0	6.8	
Vert	723.500	QP	30.4	21.0	10.6	28.4	33.6	46.0	12.4	
Vert	2390.000	PK	45.1	27.7	2.6	32.5	42.9	73.9	31.0	
Vert	2400.000	PK	60.1	27.7	2.6	32.5	57.9	73.9	16.0	
Vert	4804.000	PK	40.4	31.6	5.2	31.8	45.4	73.9	28.5	
Vert	7206.000	PK	42.5	36.2	6.2	32.4	52.5	73.9	21.4	
Vert	9608.000	PK	42.4	38.0	6.8	32.9	54.3	73.9	19.6	
Vert	24020.000	PK	46.6	39.8	-1.3	29.1	56.0	73.9	17.9	Non Signal
Vert	2390.000	AV	32.9	27.7	2.6	32.5	30.7	53.9	23.2	VBW:270Hz
Vert	2400.000	AV	46.2	27.7	2.6	32.5	44.0	53.9	9.9	VBW:270Hz
Vert	4804.000	AV	29.1	31.6	5.2	31.8	34.1	53.9	19.8	VBW:270Hz
Vert	7206.000	AV	31.1	36.2	6.2	32.4	41.1	53.9	12.8	VBW:270Hz
Vert	9608.000	AV	30.8	38.0	6.8	32.9	42.7	53.9	11.2	VBW:270Hz
Vert	24020.000	AV	34.7	39.8	-1.3	29.1	44.1	53.9	9.8	VBW:270Hz, Non Signal

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

Radiated Spurious Emission

Test place	Head Office EMC Lab.		
Report No.	30KE0113-YK-01		
Semi Anechoic Chamber	No.3	No.2	No.2
Date	09/09/2010	09/11/2010	09/12/2010
Temperature/ Humidity	23 deg.C./ 58%	21 deg.C./ 63%	22 deg.C./ 63%
Engineer	Takayuki Shimada (1-10GHz)	Hiroyuki Furutaka (Below 1GHz)	Takayuki Shimada (Above 10GHz)
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	214.791	QP	26.3	17.6	8.2	27.9	24.2	43.5	19.3	
Hori	231.468	QP	31.2	17.7	8.3	27.9	29.3	46.0	16.7	
Hori	310.550	QP	31.5	14.9	8.9	27.7	27.6	46.0	18.4	
Hori	384.000	QP	33.7	17.1	9.3	28.2	31.9	46.0	14.1	
Hori	528.005	QP	37.4	18.8	9.9	28.9	37.2	46.0	8.8	
Hori	723.510	QP	32.2	21.0	10.6	28.4	35.4	46.0	10.6	
Hori	4882.000	PK	40.9	31.9	5.3	31.8	46.3	73.9	27.6	
Hori	7323.000	PK	42.6	36.2	6.2	32.4	52.6	73.9	21.3	
Hori	9764.000	PK	42.6	38.1	6.9	32.9	54.7	73.9	19.2	
Hori	24410.000	PK	46.1	39.9	-1.2	29.0	55.8	73.9	18.1	Non Signal
Hori	4882.000	AV	29.1	31.9	5.3	31.8	34.5	53.9	19.4	VBW:270Hz
Hori	7323.000	AV	30.8	36.2	6.2	32.4	40.8	53.9	13.1	VBW:270Hz
Hori	9764.000	AV	30.4	38.1	6.9	32.9	42.5	53.9	11.4	VBW:270Hz
Hori	24410.000	AV	34.2	39.9	-1.2	29.0	43.9	53.9	10.0	VBW:270Hz, Non Signal
Vert	214.791	QP	31.0	17.6	8.2	27.9	28.9	43.5	14.6	
Vert	231.466	QP	31.3	17.7	8.3	27.9	29.4	46.0	16.6	
Vert	310.550	QP	32.8	14.9	8.9	27.7	28.9	46.0	17.1	
Vert	384.000	QP	30.8	17.1	9.3	28.2	29.0	46.0	17.0	
Vert	528.005	QP	39.2	18.8	9.9	28.9	39.0	46.0	7.0	
Vert	723.510	QP	29.6	21.0	10.6	28.4	32.8	46.0	13.2	
Vert	4882.000	PK	40.6	31.9	5.3	31.8	46.0	73.9	27.9	
Vert	7323.000	PK	42.8	36.2	6.2	32.4	52.8	73.9	21.1	
Vert	9764.000	PK	42.6	38.1	6.9	32.9	54.7	73.9	19.2	
Vert	24410.000	PK	46.0	39.9	-1.2	29.0	55.7	73.9	18.2	Non Signal
Vert	4882.000	AV	29.1	31.9	5.3	31.8	34.5	53.9	19.4	VBW:270Hz
Vert	7323.000	AV	30.8	36.2	6.2	32.4	40.8	53.9	13.1	VBW:270Hz
Vert	9764.000	AV	30.4	38.1	6.9	32.9	42.5	53.9	11.4	VBW:270Hz
Vert	24410.000	AV	34.2	39.9	-1.2	29.0	43.9	53.9	10.0	VBW:270Hz, Non Signal

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

Radiated Spurious Emission

Test place	Head Office EMC Lab.		
Report No.	30KE0113-YK-01		
Semi Anechoic Chamber	No.3	No.2	No.2
Date	09/09/2010	09/12/2010	09/12/2010
Temperature/ Humidity	23 deg.C./ 58%	22 deg.C./ 63%	22 deg.C./ 63%
Engineer	Takayuki Shimada (1-10GHz)	Takayuki Shimada (Below 1GHz)	Takayuki Shimada (Above 10GHz)
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	264.002	QP	31.1	18.5	8.5	27.7	30.4	46.0	15.6	
Hori	297.002	QP	34.7	19.9	8.7	27.6	35.7	46.0	10.3	
Hori	386.621	QP	31.3	17.2	9.3	28.2	29.6	46.0	16.4	
Hori	458.160	QP	26.4	18.1	9.6	28.7	25.4	46.0	20.6	
Hori	528.004	QP	33.1	18.8	9.9	28.9	32.9	46.0	13.1	
Hori	723.501	QP	30.4	21.0	10.6	28.4	33.6	46.0	12.4	
Hori	2483.500	PK	44.9	27.6	2.7	32.4	42.8	73.9	31.1	
Hori	4960.000	PK	40.7	32.2	5.3	31.8	46.4	73.9	27.5	
Hori	7440.000	PK	42.6	36.2	6.2	32.5	52.5	73.9	21.4	
Hori	9920.000	PK	42.1	38.2	7.0	33.0	54.3	73.9	19.6	
Hori	24800.000	PK	47.5	39.9	-1.1	29.0	57.3	73.9	16.6	Non Signal
Hori	2483.500	AV	32.5	27.6	2.7	32.4	30.4	53.9	23.5	VBW:270Hz
Hori	4960.000	AV	29.3	32.2	5.3	31.8	35.0	53.9	18.9	VBW:270Hz
Hori	7440.000	AV	31.4	36.2	6.2	32.5	41.3	53.9	12.6	VBW:270Hz
Hori	9920.000	AV	30.6	38.2	7.0	33.0	42.8	53.9	11.1	VBW:270Hz
Hori	24800.000	AV	35.6	39.9	-1.1	29.0	45.4	53.9	8.5	VBW:270Hz, Non Signal
Vert	264.002	QP	34.0	18.5	8.5	27.7	33.3	46.0	12.7	
Vert	297.002	QP	31.8	19.9	8.7	27.6	32.8	46.0	13.2	
Vert	386.621	QP	30.4	17.2	9.3	28.2	28.7	46.0	17.3	
Vert	458.160	QP	27.6	18.1	9.6	28.7	26.6	46.0	19.4	
Vert	528.004	QP	39.9	18.8	9.9	28.9	39.7	46.0	6.3	
Vert	723.501	QP	30.5	21.0	10.6	28.4	33.7	46.0	12.3	
Vert	2483.500	PK	44.2	27.6	2.7	32.4	42.1	73.9	31.8	
Vert	4960.000	PK	40.9	32.2	5.3	31.8	46.6	73.9	27.3	
Vert	7440.000	PK	42.7	36.2	6.2	32.5	52.6	73.9	21.3	
Vert	9920.000	PK	42.0	38.2	7.0	33.0	54.2	73.9	19.7	
Vert	24800.000	PK	47.3	39.9	-1.1	29.0	57.1	73.9	16.8	Non Signal
Vert	2483.500	AV	32.0	27.6	2.7	32.4	29.9	53.9	24.0	VBW:270Hz
Vert	4960.000	AV	29.3	32.2	5.3	31.8	35.0	53.9	18.9	VBW:270Hz
Vert	7440.000	AV	31.4	36.2	6.2	32.5	41.3	53.9	12.6	VBW:270Hz
Vert	9920.000	AV	30.6	38.2	7.0	33.0	42.8	53.9	11.1	VBW:270Hz
Vert	24800.000	AV	35.6	39.9	-1.1	29.0	45.4	53.9	8.5	VBW:270Hz, Non Signal

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

Radiated Spurious Emission

Test place	Head Office EMC Lab.	
Report No.	30KE0113-YK-01	
Semi Anechoic Chamber	No.3	No.2
Date	09/09/2010	09/12/2010
Temperature/ Humidity	22 deg.C./ 56%	22 deg.C./ 63%
Engineer	Hirohi Kukita (1-10GHz)	Takayuki Shimada (Below 1GHz)
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	214.789	QP	26.5	17.6	8.2	27.9	24.4	43.5	19.1	
Hori	264.002	QP	30.5	18.5	8.5	27.7	29.8	46.0	16.2	
Hori	300.705	QP	33.1	14.6	8.8	27.6	28.9	46.0	17.1	
Hori	396.003	QP	28.1	17.4	9.4	28.3	26.6	46.0	19.4	
Hori	528.004	QP	30.0	18.8	9.9	28.9	29.8	46.0	16.2	
Hori	723.501	QP	30.4	21.0	10.6	28.4	33.6	46.0	12.4	
Hori	2443.008	PK	48.5	27.7	2.7	32.4	46.5	73.9	27.4	
Hori	4882.000	PK	40.6	31.9	3.9	31.8	44.6	73.9	29.3	Non Signal
Hori	7323.000	PK	42.5	36.2	4.7	32.4	51.0	73.9	22.9	Non Signal
Hori	2443.008	AV	42.8	27.7	2.7	32.4	40.8	53.9	13.1	VBW:10Hz
Hori	4882.000	AV	28.8	31.9	3.9	31.8	32.8	53.9	21.1	VBW:10Hz, Non Signal
Hori	7323.000	AV	30.3	36.2	4.7	32.4	38.8	53.9	15.1	VBW:10Hz, Non Signal
Vert	214.789	QP	32.3	17.6	8.2	27.9	30.2	43.5	13.3	
Vert	264.002	QP	32.8	18.5	8.5	27.7	32.1	46.0	13.9	
Vert	300.705	QP	36.3	14.6	8.8	27.6	32.1	46.0	13.9	
Vert	396.003	QP	28.0	17.4	9.4	28.3	26.5	46.0	19.5	
Vert	528.004	QP	36.4	18.8	9.9	28.9	36.2	46.0	9.8	
Vert	723.501	QP	30.2	21.0	10.6	28.4	33.4	46.0	12.6	
Vert	2443.037	PK	46.5	27.7	2.7	32.4	44.5	73.9	29.4	
Vert	4882.000	PK	40.6	31.9	3.9	31.8	44.6	73.9	29.3	Non Signal
Vert	7323.000	PK	42.3	36.2	4.7	32.4	50.8	73.9	23.1	Non Signal
Vert	2443.037	AV	39.9	27.7	2.7	32.4	37.9	53.9	16.0	VBW:10Hz
Vert	4882.000	AV	28.8	31.9	3.9	31.8	32.8	53.9	21.1	VBW:10Hz, Non Signal
Vert	7323.000	AV	30.4	36.2	4.7	32.4	38.9	53.9	15.0	VBW:10Hz, Non Signal

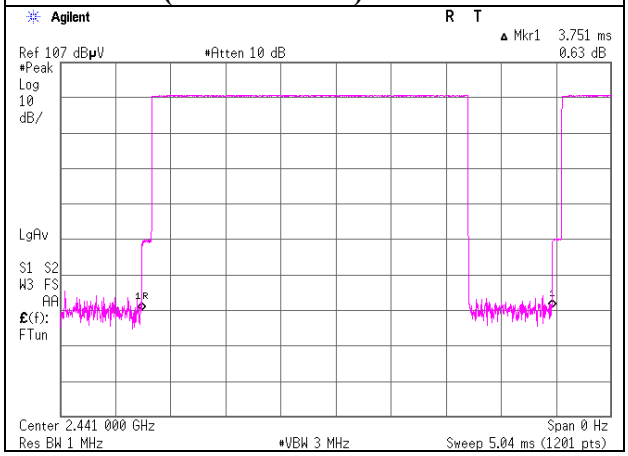
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

VBW (AV) Calculation

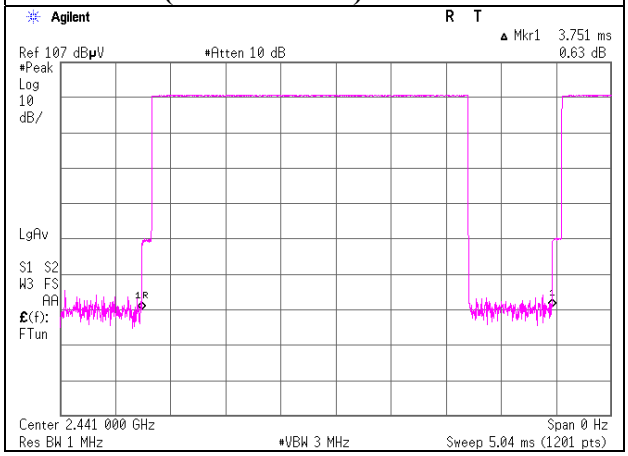
DH5

VBW: 1/x = 266Hz<270Hz
x: (Tx on+Tx off) =3.751ms



3DH5

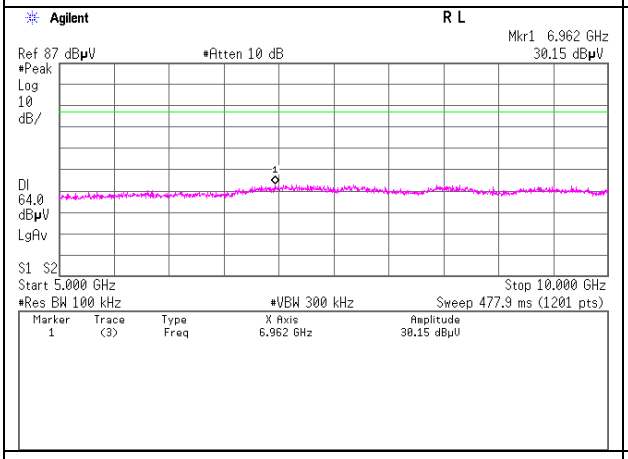
VBW: 1/x = 266Hz<270Hz
x: (Tx on+Tx off) =3.751ms



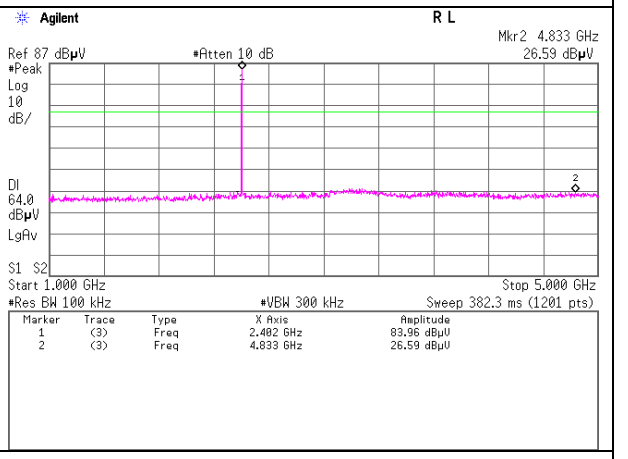
Conducted Spurious Emission

Tx DH5 2402MHz

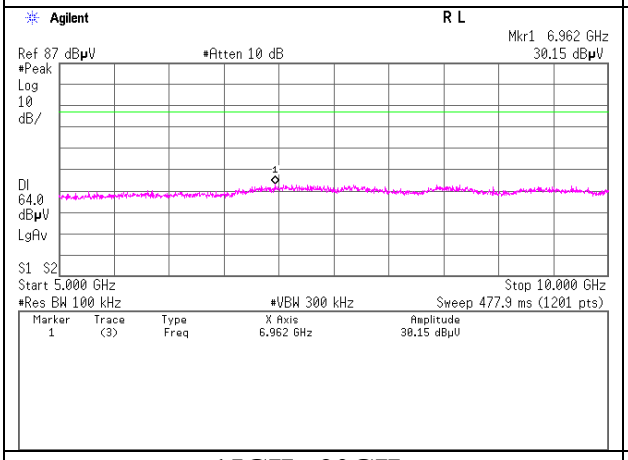
30MHz-1GHz



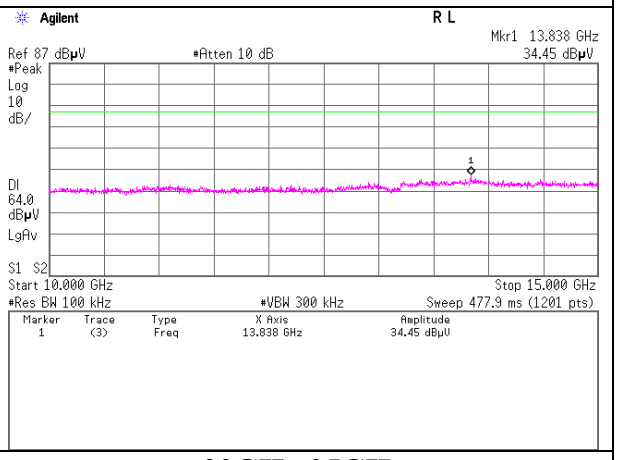
1GHz-5GHz



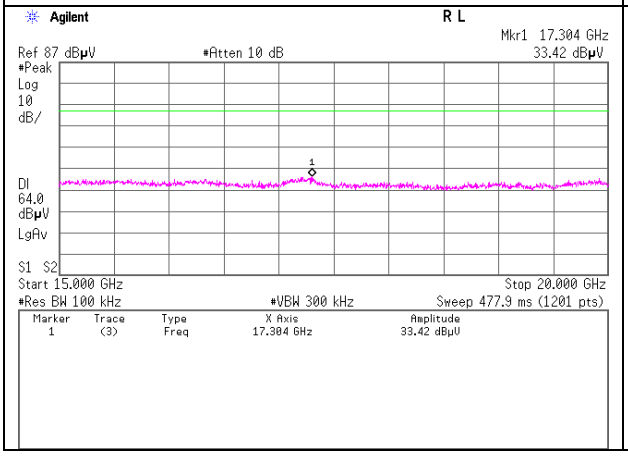
5GHz-10GHz



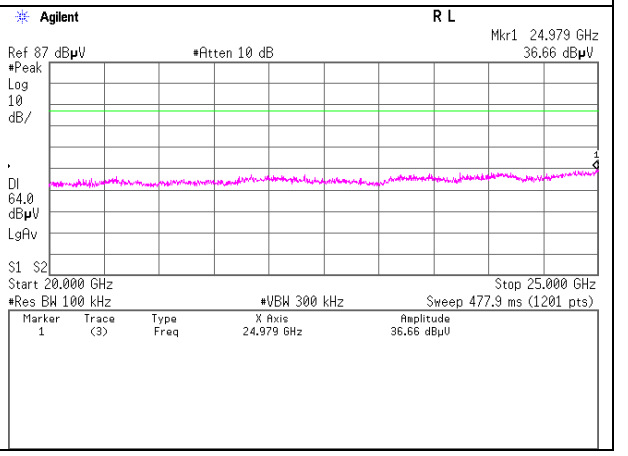
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz

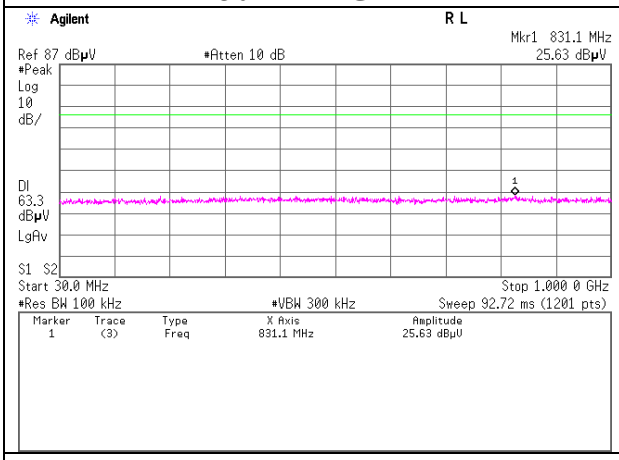


UL Japan, Inc.
Head Office EMC Lab.
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8116
Facsimile : +81 596 24 8124

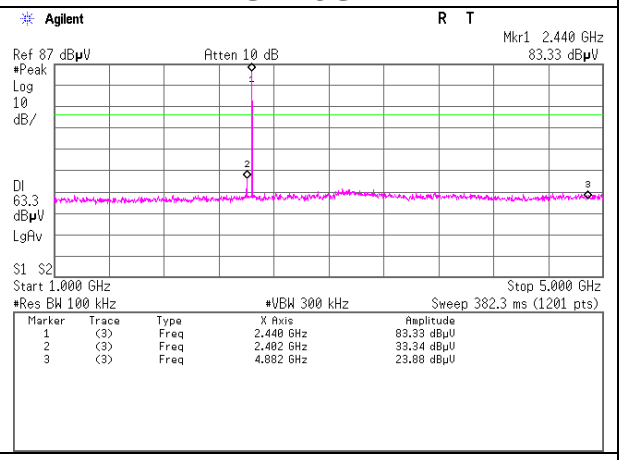
Conducted Spurious Emission

Tx DH5 2441MHz

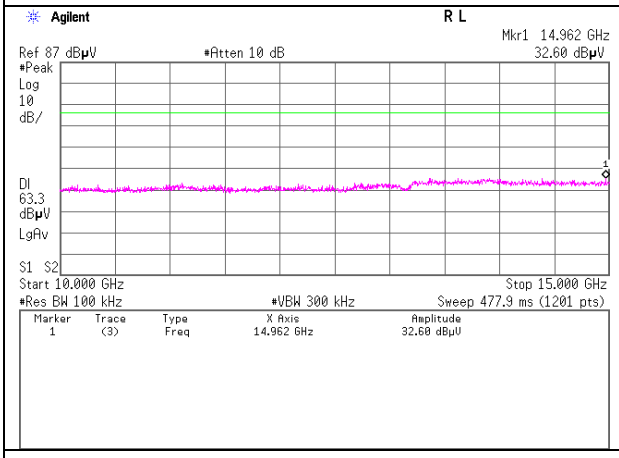
30MHz-1GHz



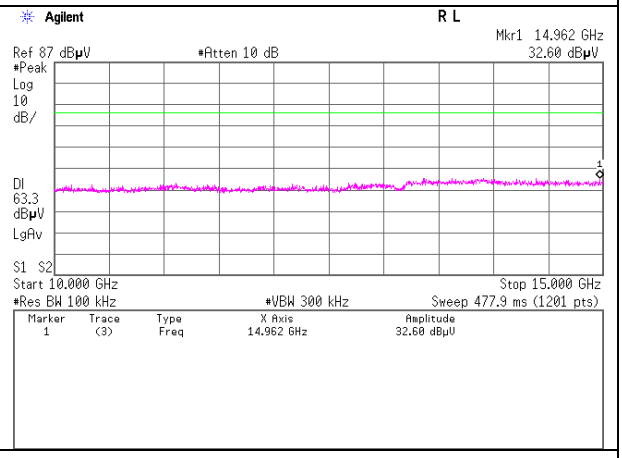
1GHz-5GHz



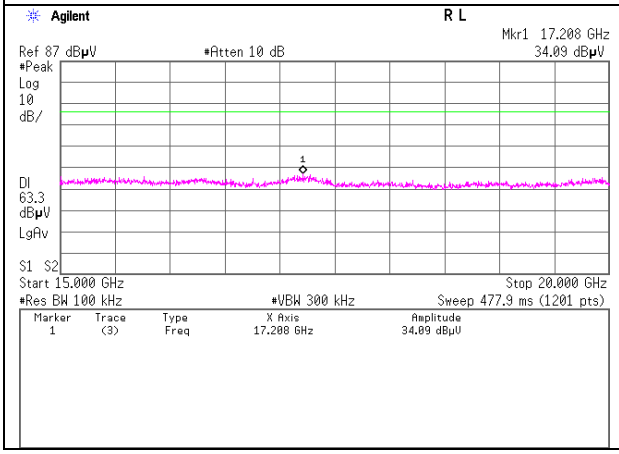
5GHz-10GHz



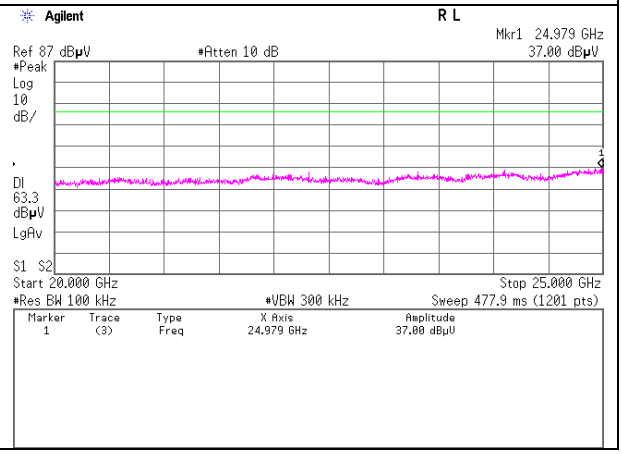
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz



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Head Office EMC Lab.
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8116
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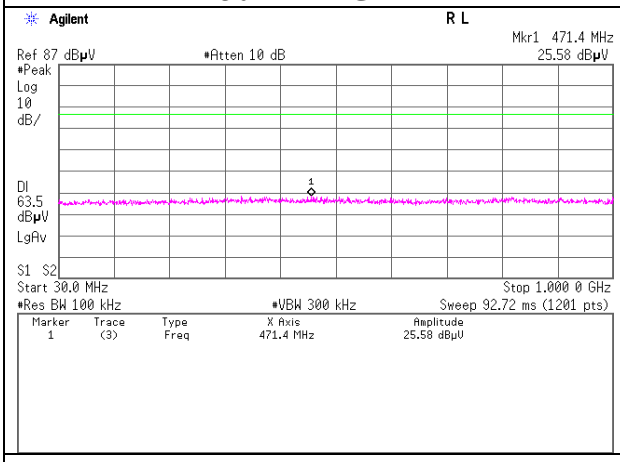
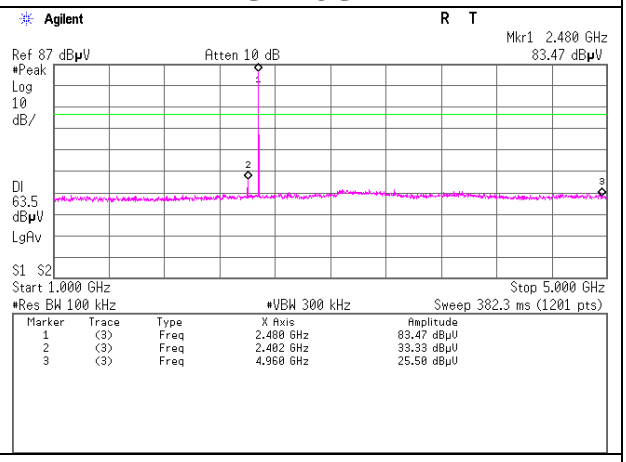
Conducted Spurious Emission

Tx DH5 2480MHz

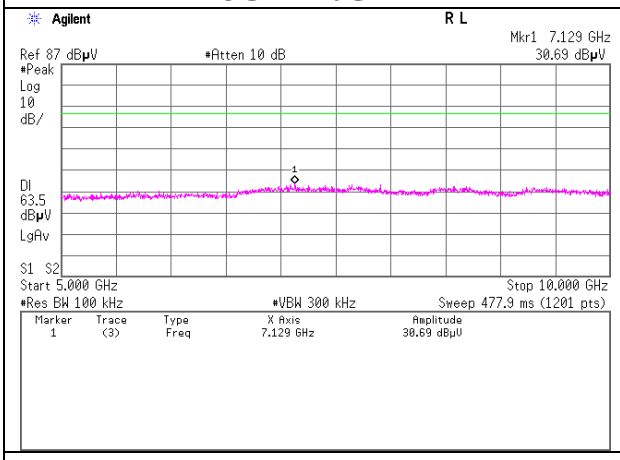
30MHz-1GHz



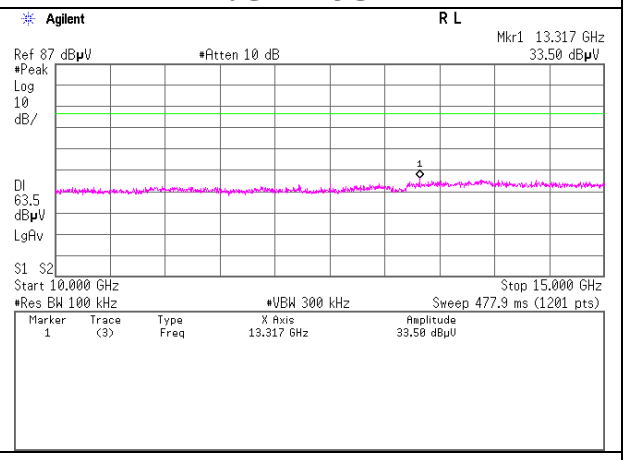
1GHz-5GHz



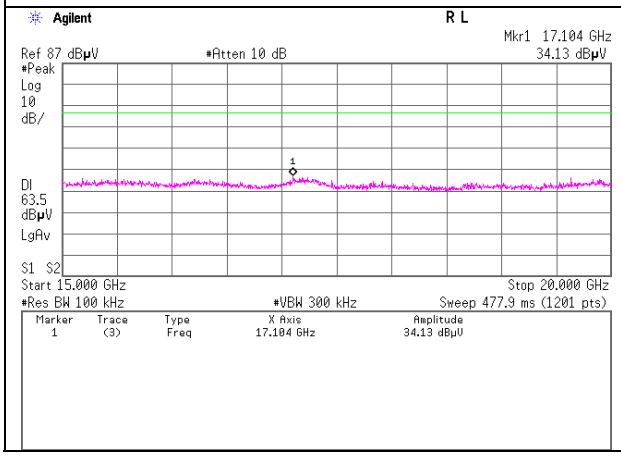
5GHz-10GHz



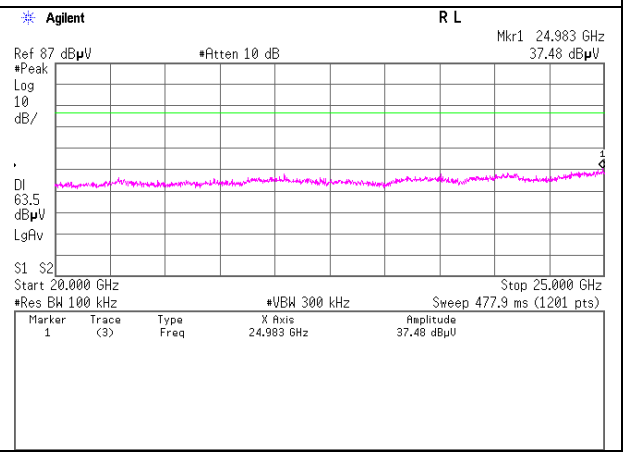
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz

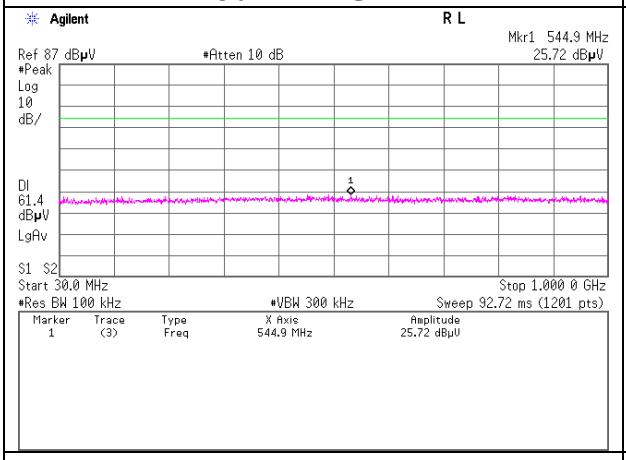


UL Japan, Inc.
Head Office EMC Lab.
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8116
Facsimile : +81 596 24 8124

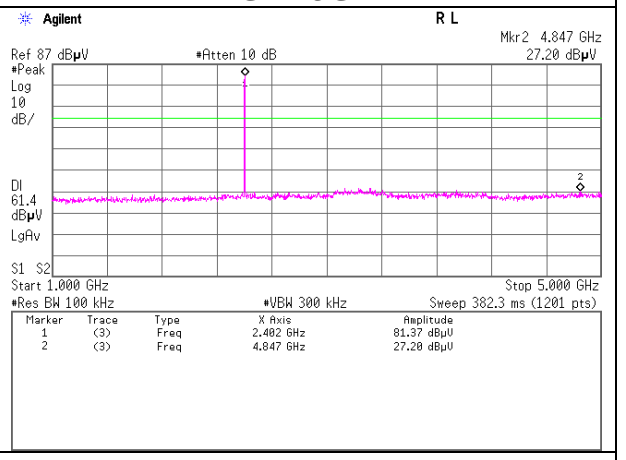
Conducted Spurious Emission

Tx 3DH5 2402MHz

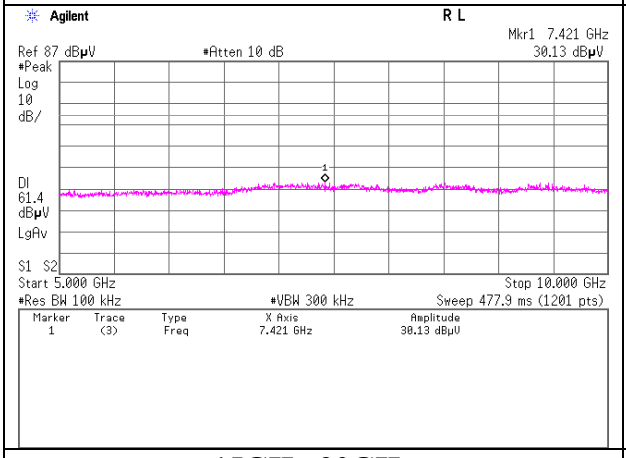
30MHz-1GHz



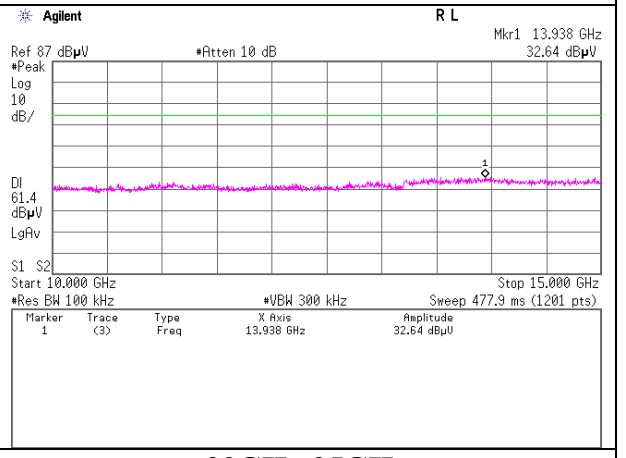
1GHz-5GHz



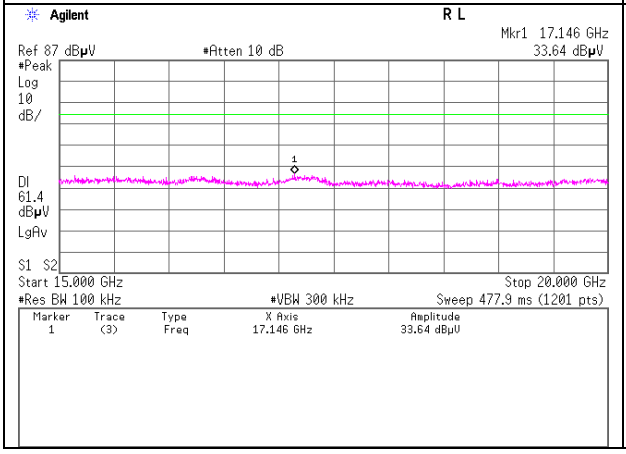
5GHz-10GHz



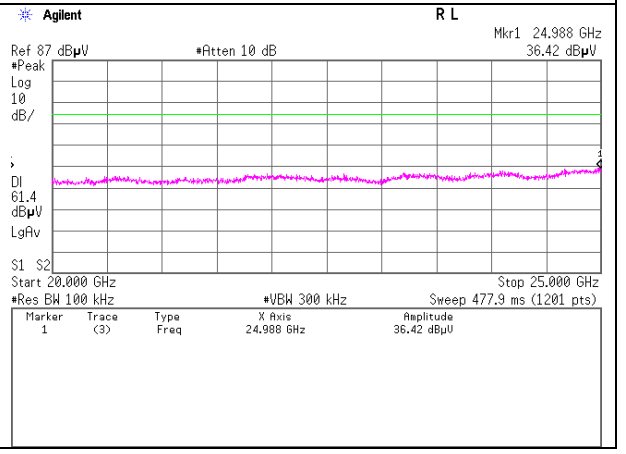
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz

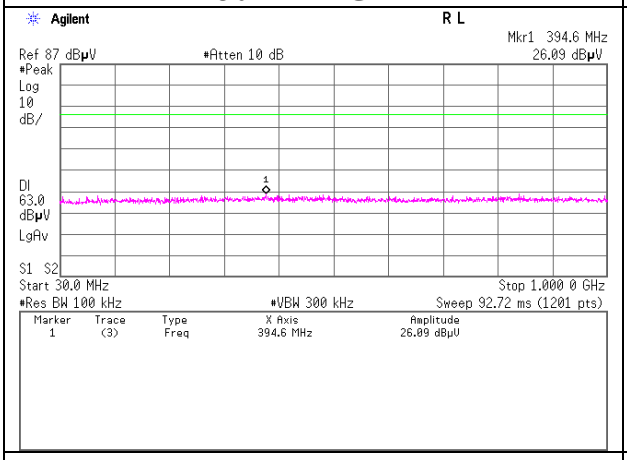


UL Japan, Inc.
Head Office EMC Lab.
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8116
Facsimile : +81 596 24 8124

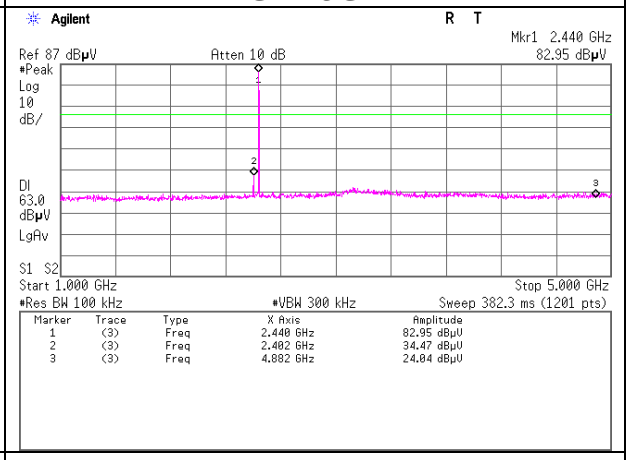
Conducted Spurious Emission

Tx 3DH5 2441MHz

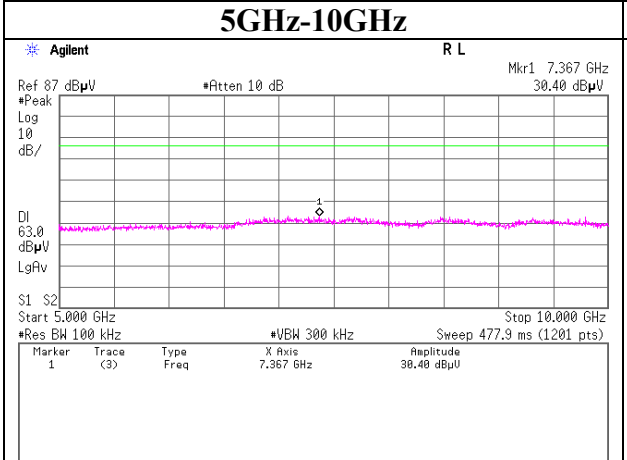
30MHz-1GHz



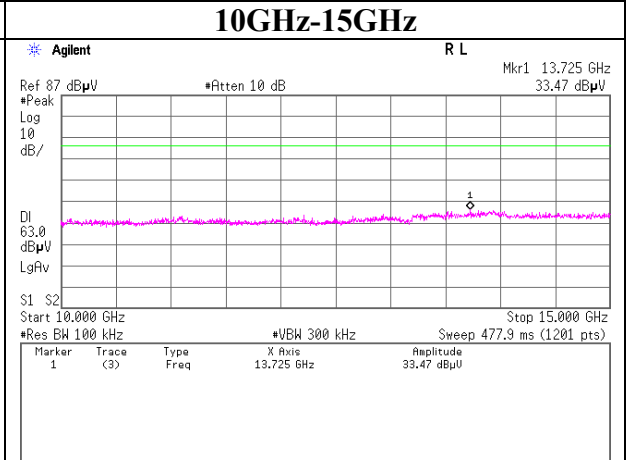
1GHz-5GHz



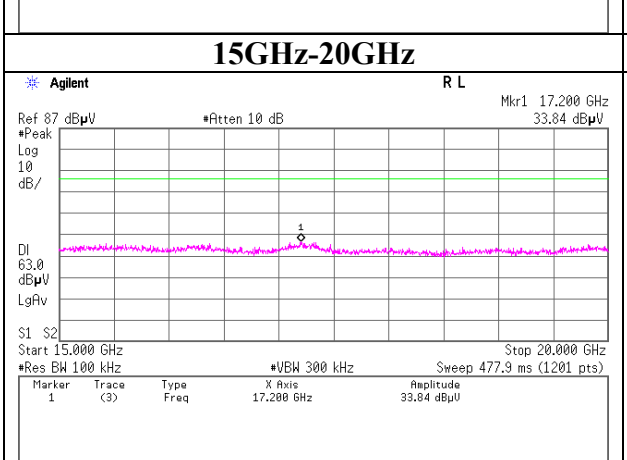
5GHz-10GHz



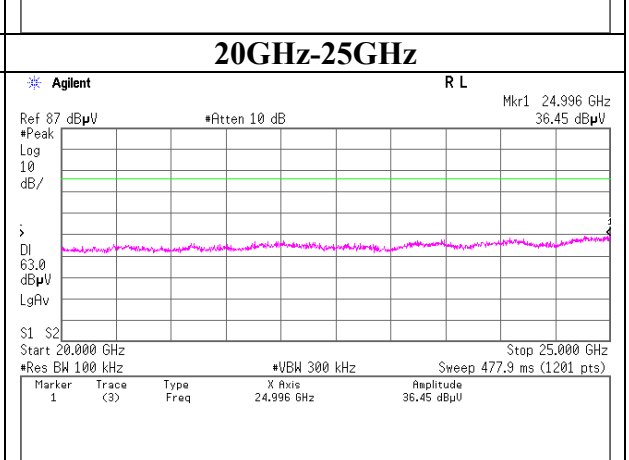
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz



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Head Office EMC Lab.
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8116
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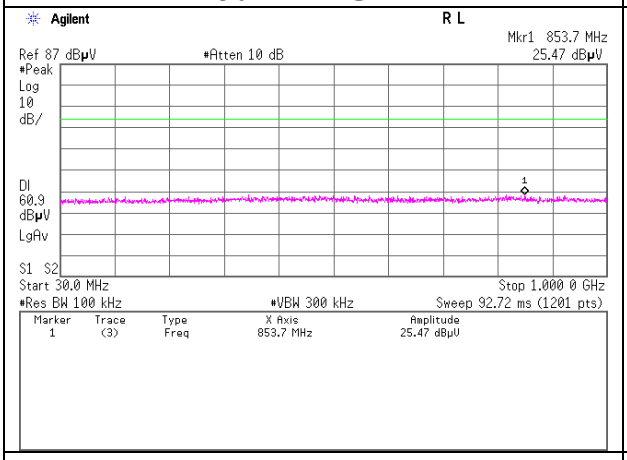
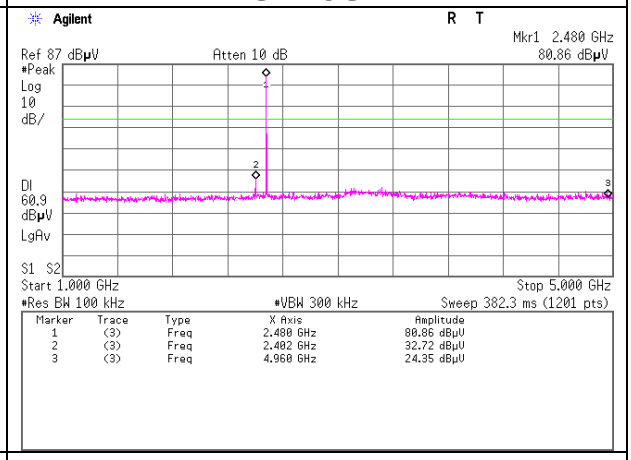
Conducted Spurious Emission

Tx 3DH5 2480MHz

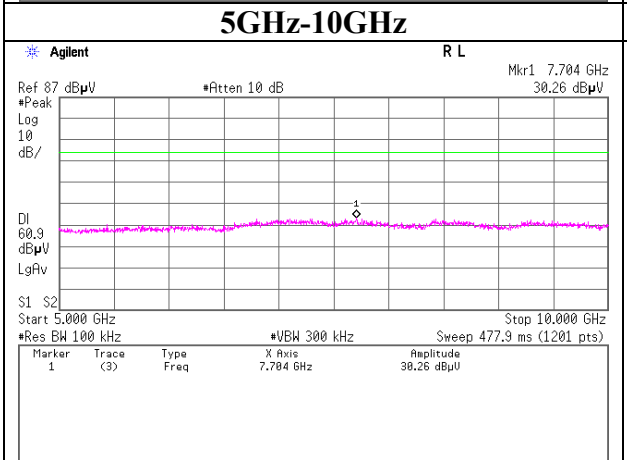
30MHz-1GHz



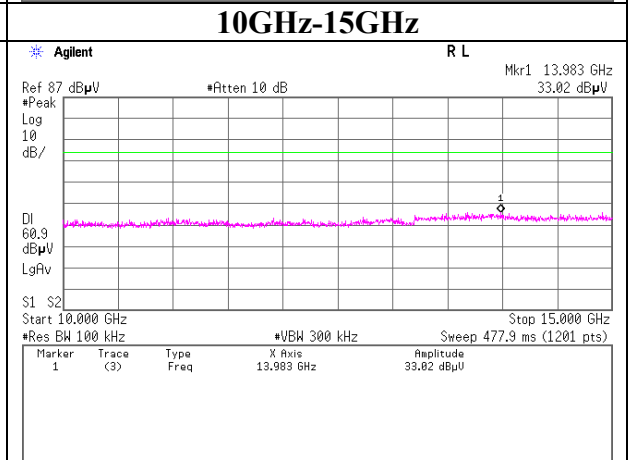
1GHz-5GHz



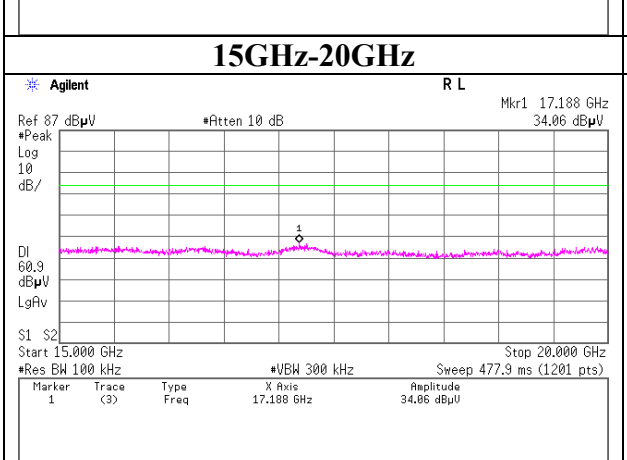
5GHz-10GHz



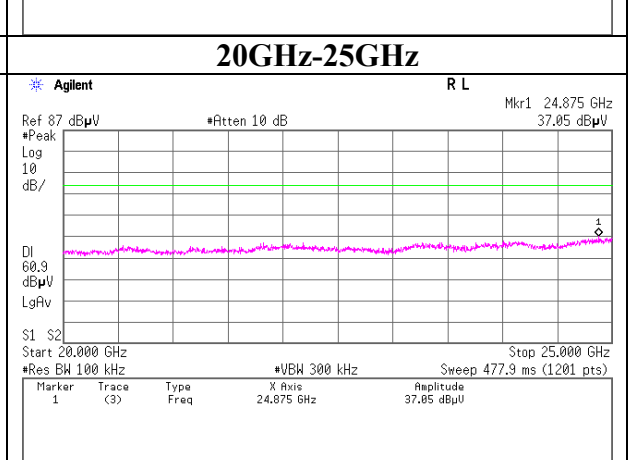
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz



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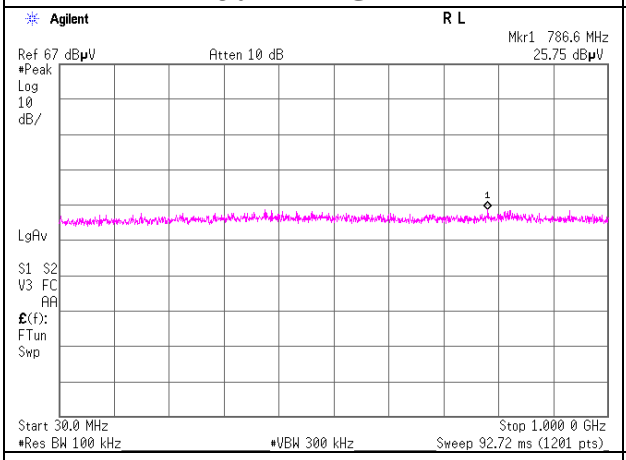
Head Office EMC Lab.
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8116
Facsimile : +81 596 24 8124

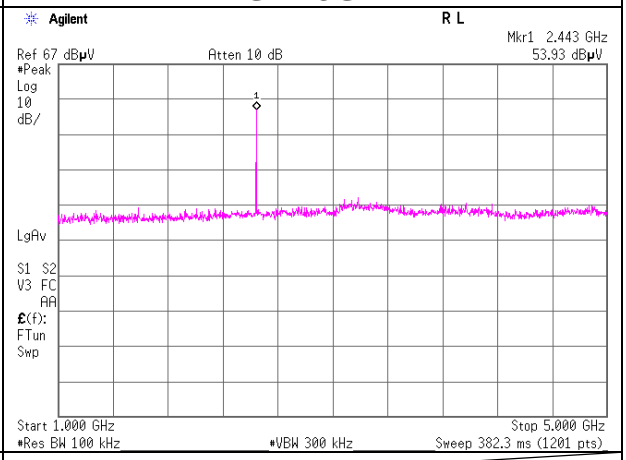
Conducted Spurious Emission

Rx 2441MHz

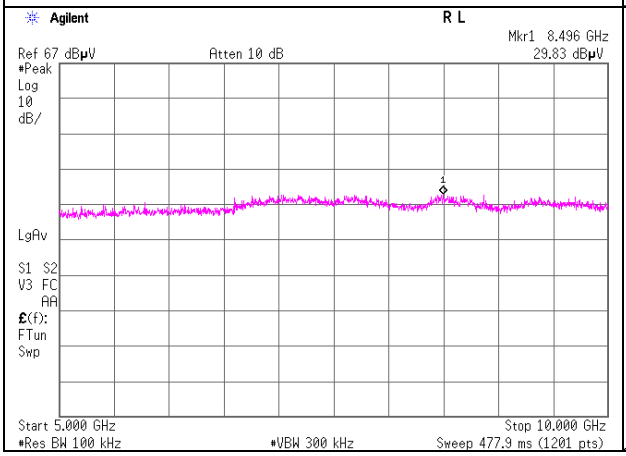
30MHz-1GHz

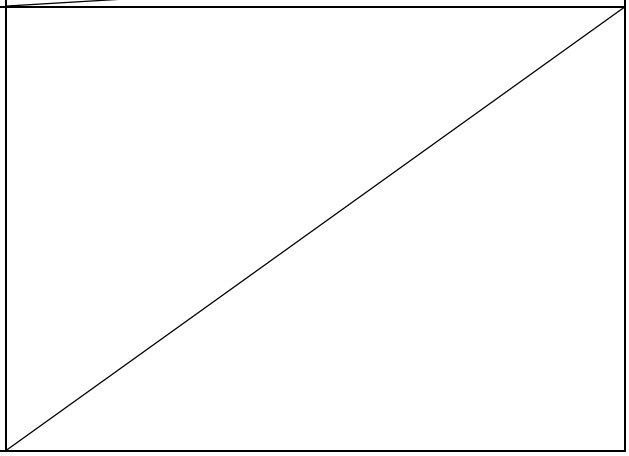


1GHz-5GHz



5GHz-10GHz



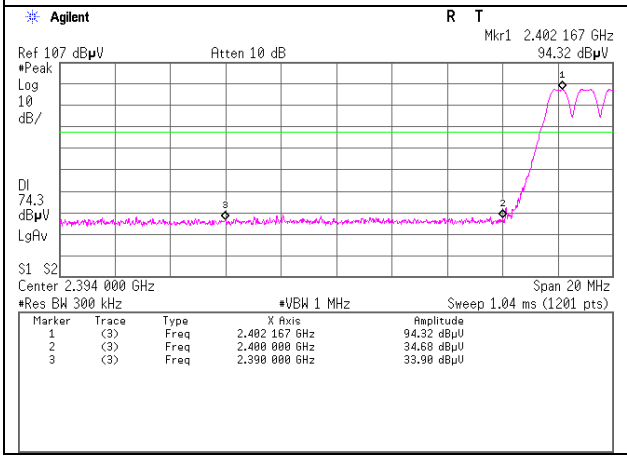


UL Japan, Inc.
Head Office EMC Lab.
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8116
Facsimile : +81 596 24 8124

Conducted Emission Band Edge compliance

Tx DH5, Hopping on

Low



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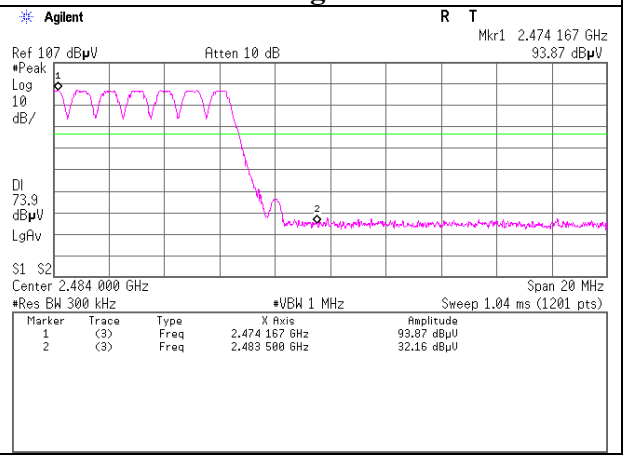
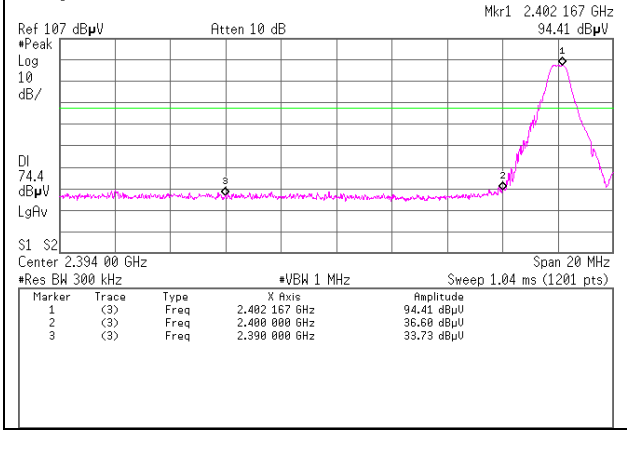


Tx DH5, Hopping off

Low



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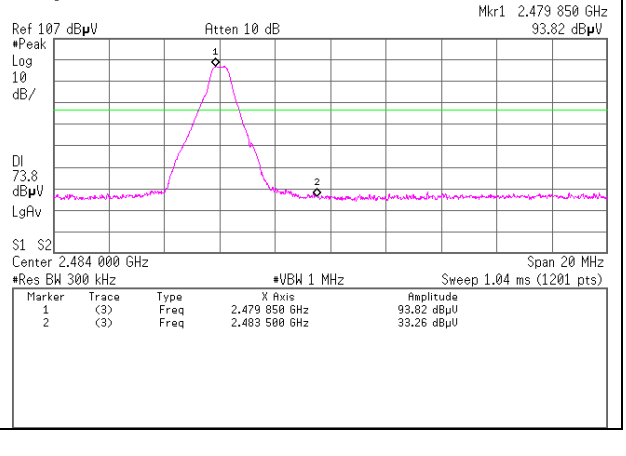
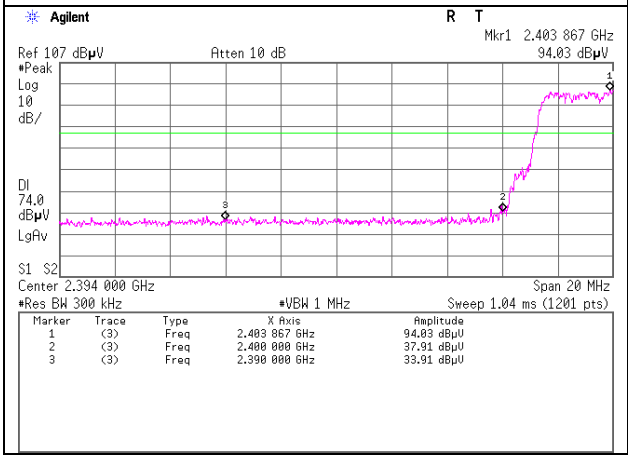


Conducted Emission Band Edge compliance

Tx 3DH5, Hopping on

Low



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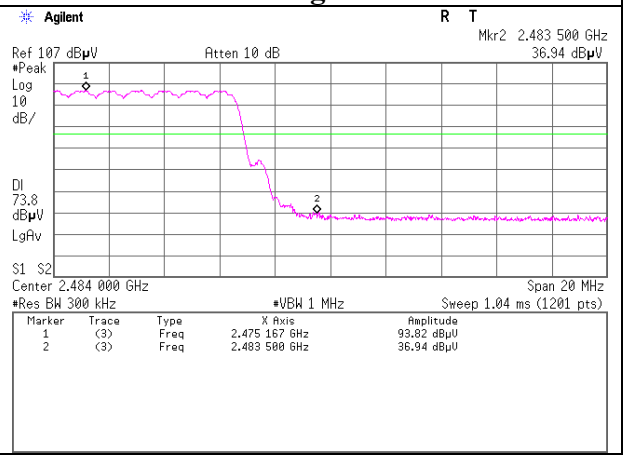
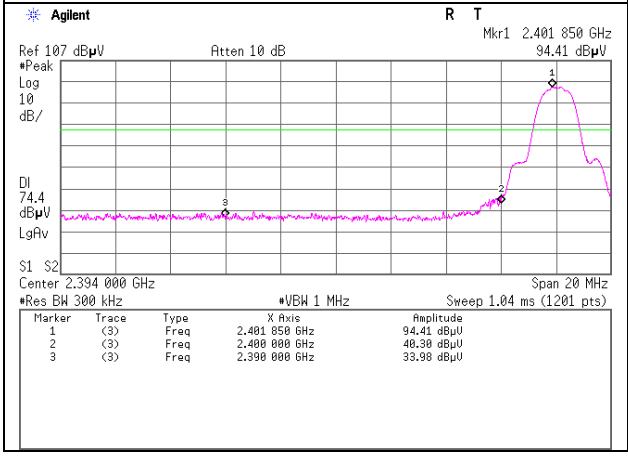


Tx 3DH5, Hopping off

Low



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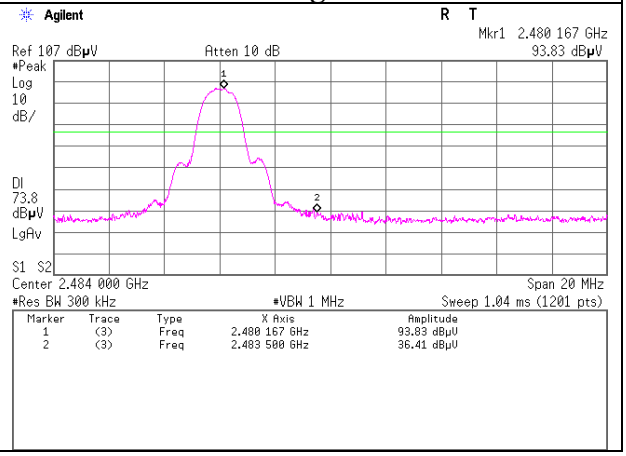
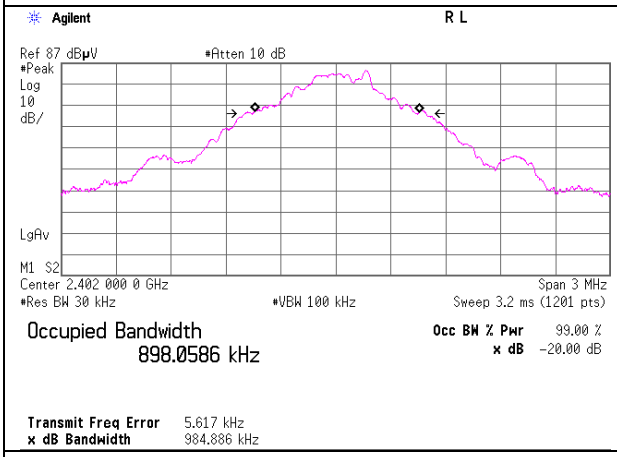


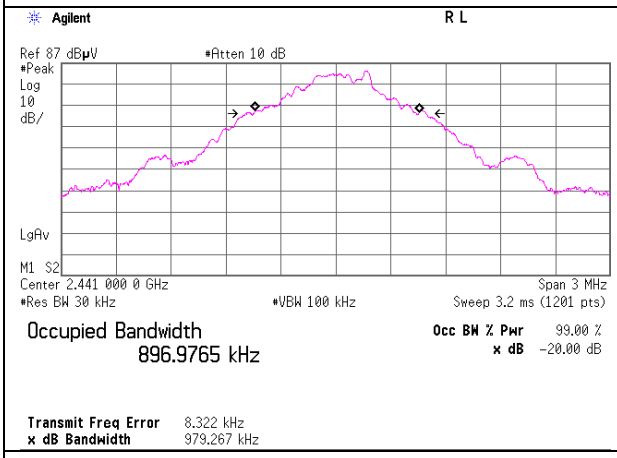
99%Occupied Bandwidth

Tx DH5, Hopping off

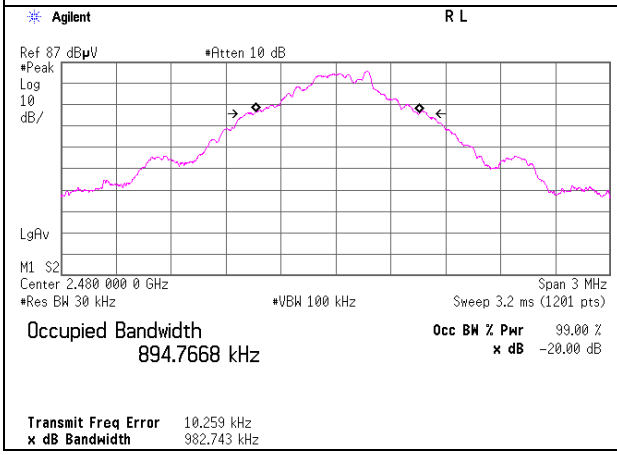
2402MHz



2441MHz

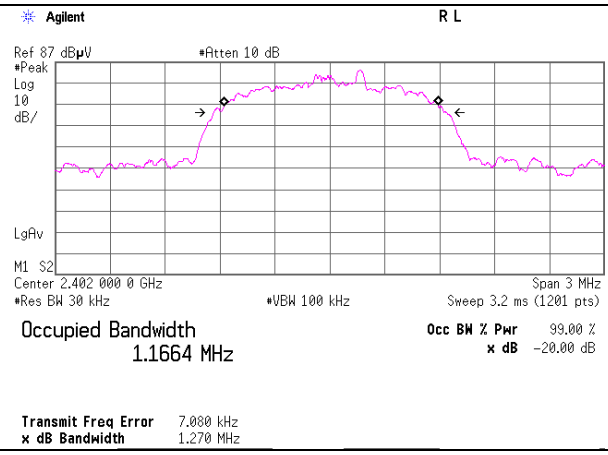


2480MHz

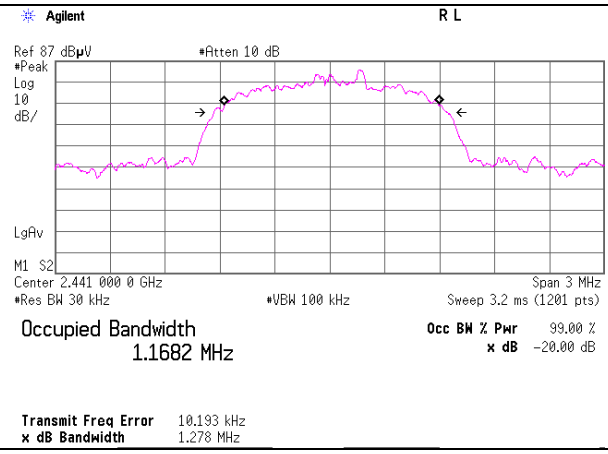


Tx 3DH5, Hopping off

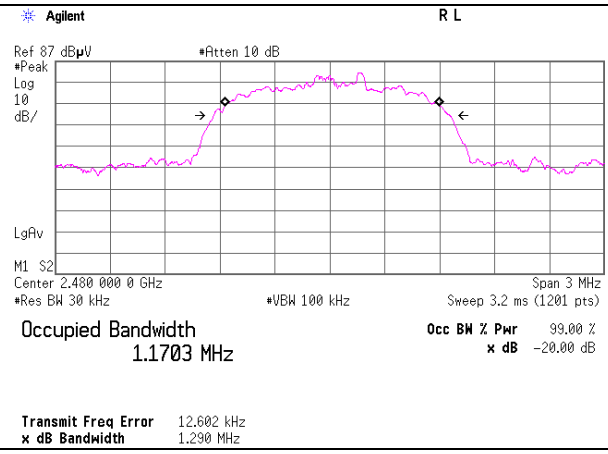
2402MHz



2441MHz



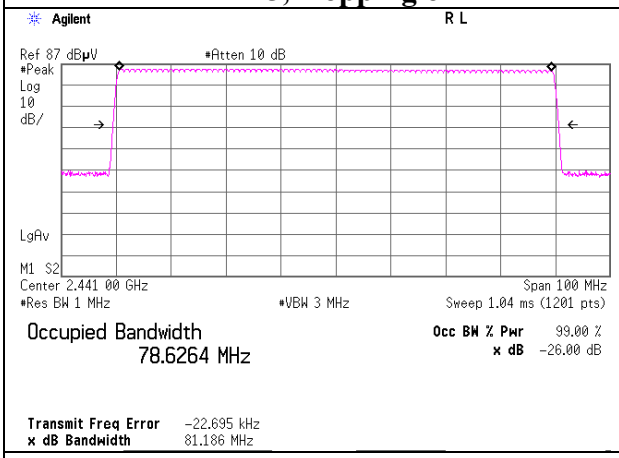
2480MHz



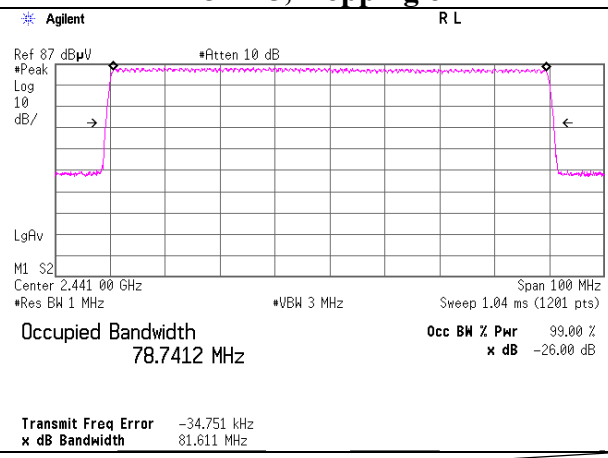
UL Japan, Inc.
Head Office EMC Lab.
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8116
Facsimile : +81 596 24 8124

99% Occupied Bandwidth

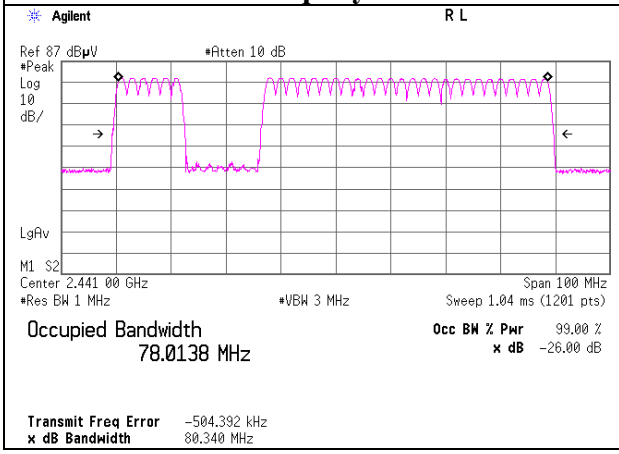
Tx DH5, Hopping on



Tx 3DH5, Hopping on



Inquiry



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Head Office EMC Lab.
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8116
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APPENDIX 3: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MOS-14	Thermo-Hygrometer	Custom	CTH-201	-	AT	2010/05/19 * 12
MOS-24	Thermo-Hygrometer	Custom	CTH-201	0005	AT	2010/02/09 * 12
MBM-10	Barometer	Sunoh	SBR121	832	AT	2007/12/27 * 36
MJM-09	Measure	KDS	E19-55	-	AT	-
MSA-03	Spectrum Analyzer	Agilent	E4448A	MY44020357	AT/RE	2009/11/20 * 12
MAT-21	Attenuator(20dB) (above1GHz)	HIROSE ELECTRIC CO.,LTD.	AT-120	901247	AT	2010/01/26 * 12
MCC-67	Microwave Cable 1G-40GHz	Schner	SUCOFLEX102	28635/2	AT	2010/04/28 * 12
MPM-12	Power Meter	Anritsu	ML2495A	0825002	AT	2010/08/20 * 12
MAT-20	Attenuator(10dB) (above1GHz)	HIROSE ELECTRIC CO.,LTD.	AT-110	-	AT	2010/01/26 * 12
MPSE-17	Power sensor	Anritsu	MA2411B	0738285	AT	2010/08/20 * 12
MAEC-03	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE	2010/02/01 * 12
MOS-13	Thermo-Hygrometer	Custom	CTH-180	-	RE	2010/02/09 * 12
MJM-06	Measure	PROMART	SEN1955	-	RE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE	-
MSA-10	Spectrum Analyzer	Agilent	E4448A	MY46180655	RE	2010/02/03 * 12
MHA-20	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	258	RE	2010/05/07 * 12
MCC-56	Microwave Cable	Suhner	SUCOFLEX104	174410(1m) / 284655(5m)	RE	2010/01/25 * 12
MPA-11	MicroWave System Amplifier	Agilent	83017A	MY39500779	RE	2010/03/03 * 12
MHF-19	High Pass Filter 3.5-18.0GHz	TOKIMEC	TF323DCA	602	RE	2009/12/19 * 12
MCC-79	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	278923/4	RE	2009/12/19 * 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	-
MTR-03	Test Receiver	Rohde & Schwarz	ESCI	100300	RE	2010/04/19 * 12
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	VHA91032008	RE	2009/10/05 * 12
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	201	RE	2010/06/12 * 12
MCC-12	Coaxial Cable	Fujikura/Agilent	-	-	RE	2010/02/22 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	BK7970	RE	2009/11/12 * 12
MPA-09	Pre Amplifier	Agilent	8447D	2944A10845	RE	2010/09/09 * 12
MHA-06	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	254	RE	2010/01/19 * 12
MPA-10	Pre Amplifier	Agilent	8449B	3008A02142	RE	2009/09/14 * 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 test
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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