

APPENDIX 2: Data of EMI test

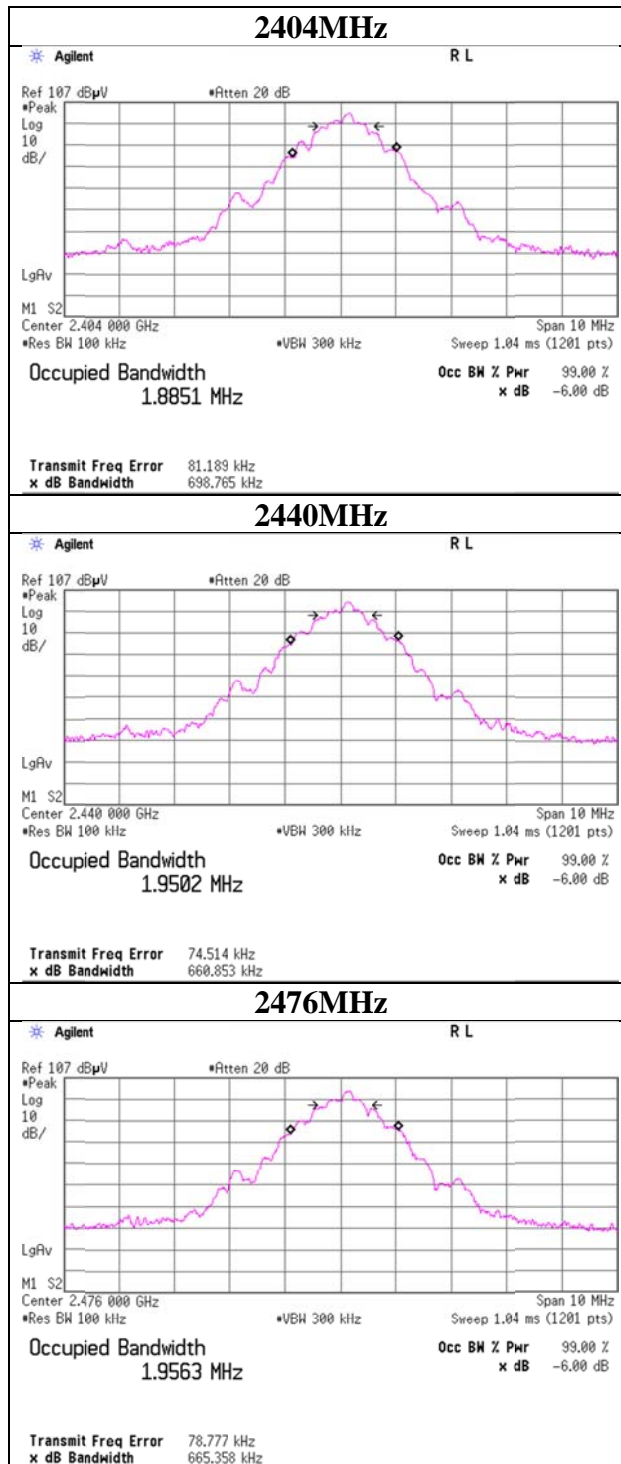
6dB Bandwidth

Test place Head Office EMC Lab. No.6 Shielded Room
Report No. 31DE0278-HO-01
Date 04/14/2011
Temperature/ Humidity 22 deg.C / 38% RH
Engineer Hiroshi Kukita
Mode Tx

Ant 1

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
2404	0.699	>500
2440	0.661	>500
2476	0.665	>500

6dB Bandwidth



Maximum Peak Output Power

Test place Head Office EMC Lab. No.6 Shielded Room
Report No. 31DE0278-HO-01
Date 04/14/2011
Temperature/ Humidity 22 deg.C / 38% RH
Engineer Hiroshi Kukita
Mode Tx

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
				[dBm]	[mW]	[dBm]	[mW]	
2404	-4.95	2.66	9.99	7.70	5.89	30.00	1000	22.30
2440	-5.19	2.68	9.99	7.48	5.60	30.00	1000	22.52
2476	-5.81	2.68	9.99	6.86	4.85	30.00	1000	23.14

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 and 4 Semi Anechoic Chamber
Report No. 31DE0278-HO-01
Date 04/13/2011 04/21/2011
Temperature/ Humidity 23 deg.C / 32% RH 25 deg.C / 37% RH
Engineer Satofumi Matsuyama Satofumi Matsuyama
(1-10GHz) (Above10GHz)
Mode Tx 2476MHz

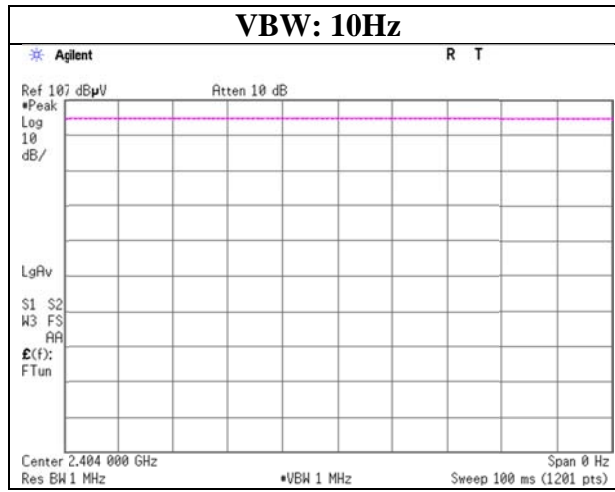
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	68.700	QP	24.1	6.5	7.2	28.6	9.2	40.0	30.8	
Hori	75.450	QP	23.3	6.6	7.3	28.6	8.6	40.0	31.4	
Hori	100.200	QP	31.2	10.3	7.4	28.4	20.5	43.5	23.0	
Hori	104.700	QP	28.7	10.9	7.5	28.4	18.7	43.5	24.8	
Hori	108.133	QP	31.7	11.4	7.5	28.4	22.2	43.5	21.3	
Hori	646.501	QP	22.4	19.9	10.3	28.6	24.0	46.0	22.0	
Hori	1237.960	PK	51.7	24.8	11.8	34.1	54.2	73.9	19.7	
Hori	2483.500	PK	57.9	27.2	2.6	32.2	55.5	73.9	18.4	
Hori	2492.084	PK	45.4	27.6	2.6	32.4	43.2	73.9	30.7	
Hori	2523.992	PK	45.8	27.6	12.6	32.4	53.6	73.9	20.3	
Hori	4952.000	PK	51.1	31.2	5.1	31.4	56.0	73.9	17.9	
Hori	7428.000	PK	47.1	36.1	6.3	32.5	57.0	73.9	16.9	
Hori	9904.000	PK	41.6	38.2	7.2	33.3	53.7	73.9	20.2	
Hori	24760.000	PK	47.8	38.0	-1.2	31.2	53.4	73.9	20.5	
Hori	1237.960	AV	46.9	24.8	11.8	34.1	49.4	53.9	4.5	
Hori	2483.500	AV	45.5	27.2	2.6	32.2	43.1	53.9	10.8	
Hori	2492.084	AV	33.1	27.6	2.6	32.4	30.9	53.9	23.0	
Hori	2523.992	AV	34.0	27.6	12.6	32.4	41.8	53.9	12.1	
Hori	4952.000	AV	43.8	31.2	5.1	31.4	48.7	53.9	5.2	
Hori	7428.000	AV	37.7	36.1	6.3	32.5	47.6	53.9	6.3	
Hori	9904.000	AV	29.9	38.2	7.2	33.3	42.0	53.9	11.9	
Hori	24760.000	AV	36.0	38.0	-1.2	31.2	41.6	53.9	12.3	
Vert	68.033	QP	29.3	6.6	7.2	28.6	14.5	40.0	25.5	
Vert	75.450	QP	28.7	6.6	7.3	28.6	14.0	40.0	26.0	
Vert	100.200	QP	26.4	10.3	7.4	28.4	15.7	43.5	27.8	
Vert	105.600	QP	22.4	11.1	7.5	28.4	12.6	43.5	30.9	
Vert	108.750	QP	24.1	11.5	7.5	28.4	14.7	43.5	28.8	
Vert	646.501	QP	21.5	19.9	10.3	28.6	23.1	46.0	22.9	
Vert	1238.140	PK	52.2	24.8	11.8	34.1	54.7	73.9	19.2	
Vert	2483.500	PK	45.0	27.2	12.6	32.2	52.6	73.9	21.3	
Vert	2492.092	PK	47.9	27.6	2.6	32.4	45.7	73.9	28.2	
Vert	2524.596	PK	44.2	27.6	12.6	32.4	52.0	73.9	21.9	
Vert	4952.000	PK	51.0	31.2	5.1	31.4	55.9	73.9	18.0	
Vert	7428.000	PK	47.5	36.1	6.3	32.5	57.4	73.9	16.5	
Vert	9904.000	PK	41.4	38.2	7.2	33.3	53.5	73.9	20.4	
Vert	24760.000	PK	47.5	38.0	-1.2	31.2	53.1	73.9	20.8	
Vert	1238.140	AV	48.6	24.8	11.8	34.1	51.1	53.9	2.8	
Vert	2483.500	AV	31.6	27.2	12.6	32.2	39.2	53.9	14.7	
Vert	2492.092	AV	36.2	27.6	2.6	32.4	34.0	53.9	19.9	
Vert	2524.596	AV	32.0	27.6	12.6	32.4	39.8	53.9	14.1	
Vert	4952.000	AV	43.5	31.2	5.1	31.4	48.4	53.9	5.5	
Vert	7428.000	AV	38.4	36.1	6.3	32.5	48.3	53.9	5.6	
Vert	9904.000	AV	29.9	38.2	7.2	33.3	42.0	53.9	11.9	
Vert	24760.000	AV	36.0	38.0	-1.2	31.2	41.6	53.9	12.3	

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).

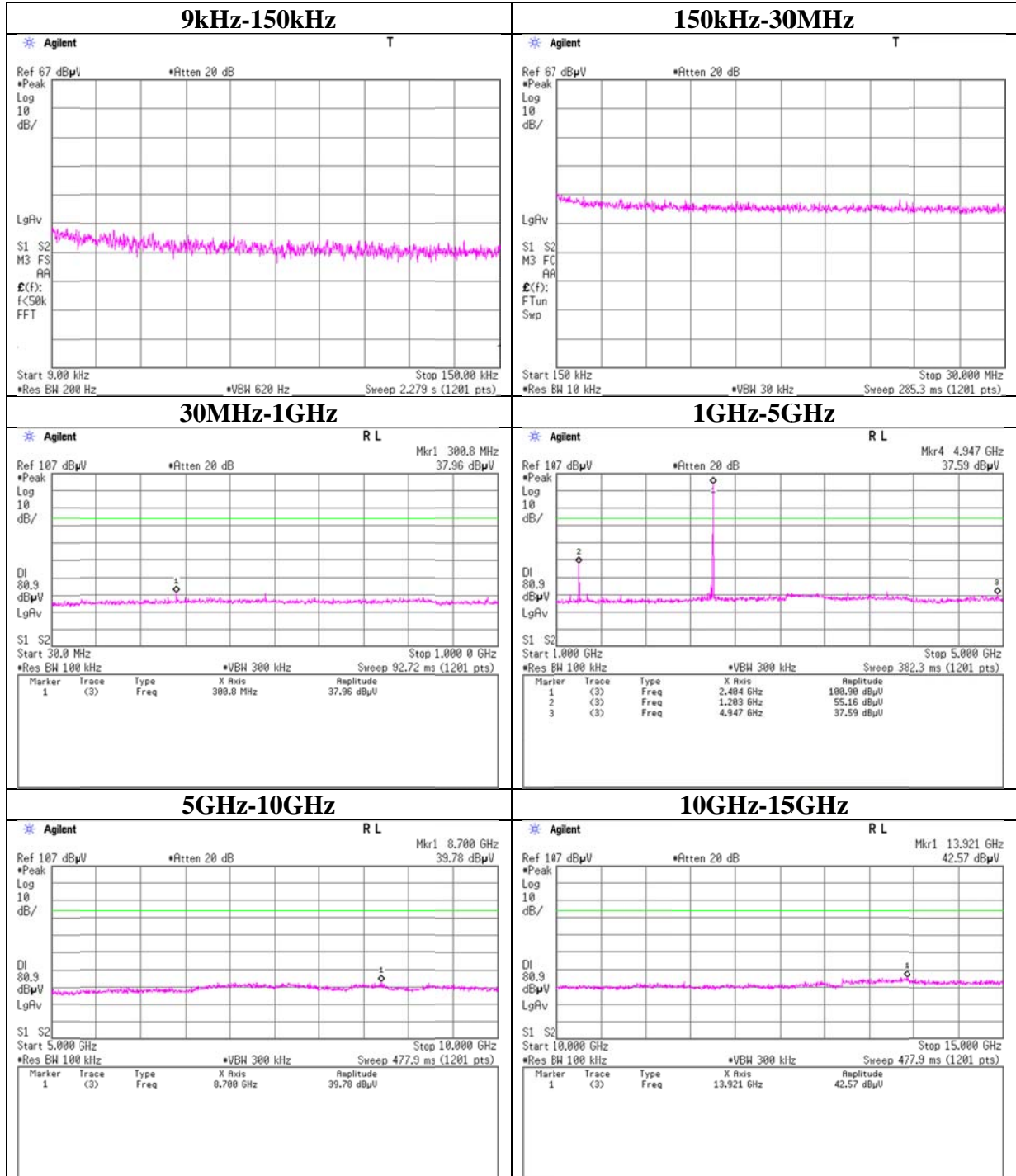
*The 10th harmonic was not seen so the result was its base noise level.
Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

VBW (AV) Calculation



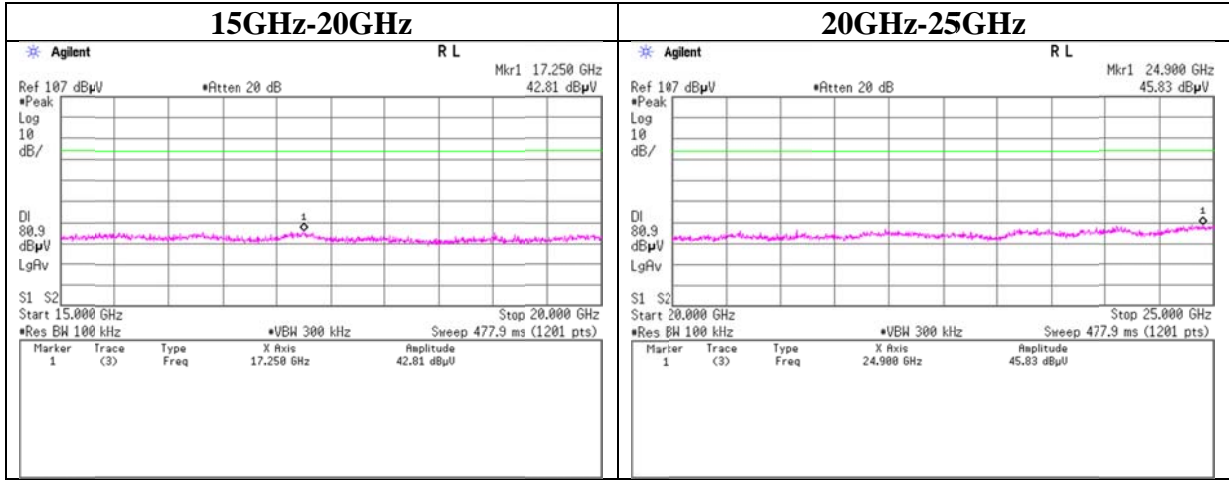
Conducted Spurious Emission

Tx 2404MHz



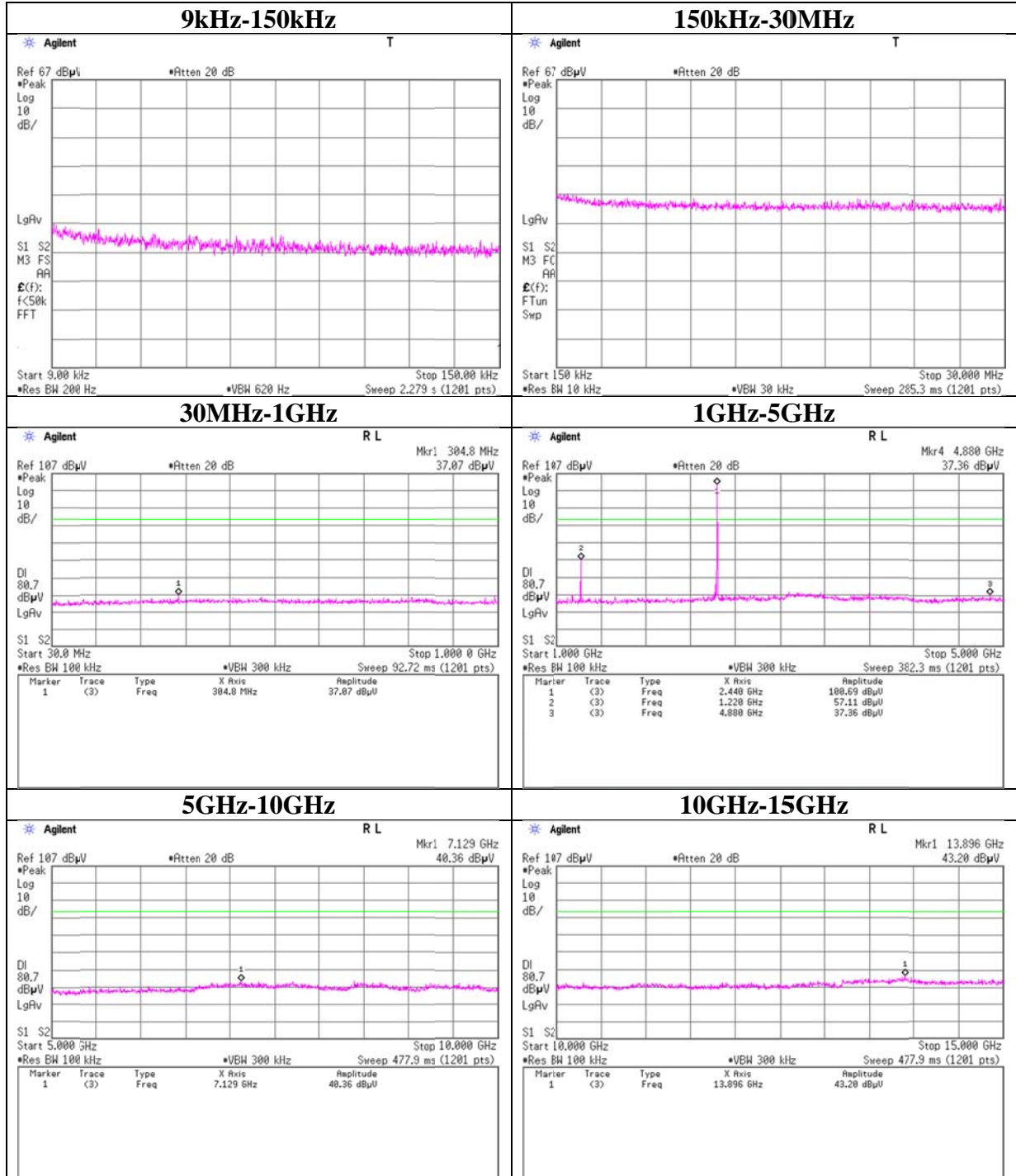
Conducted Spurious Emission

Tx 2404MHz



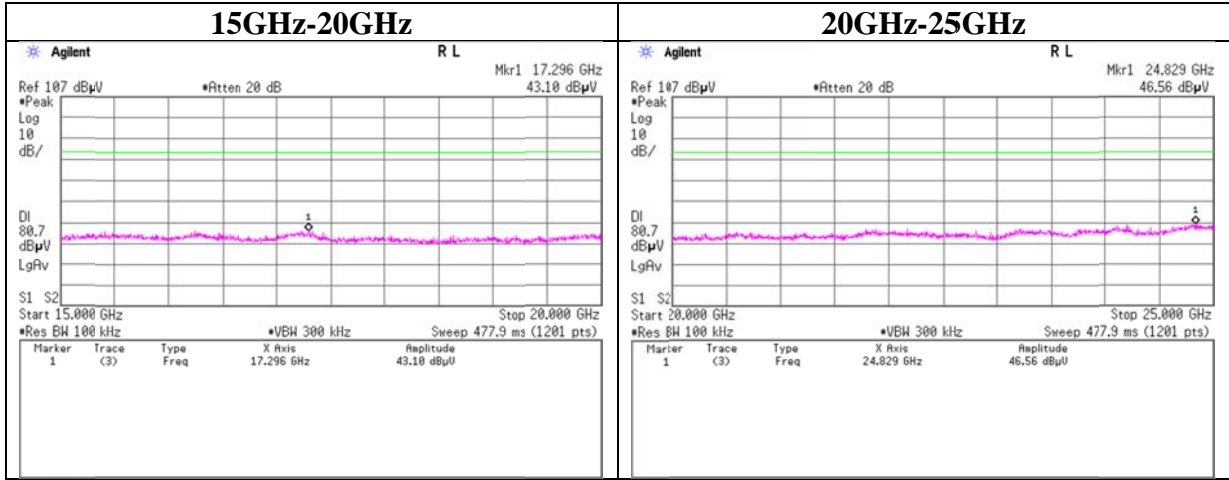
Conducted Spurious Emission

Tx 2440MHz



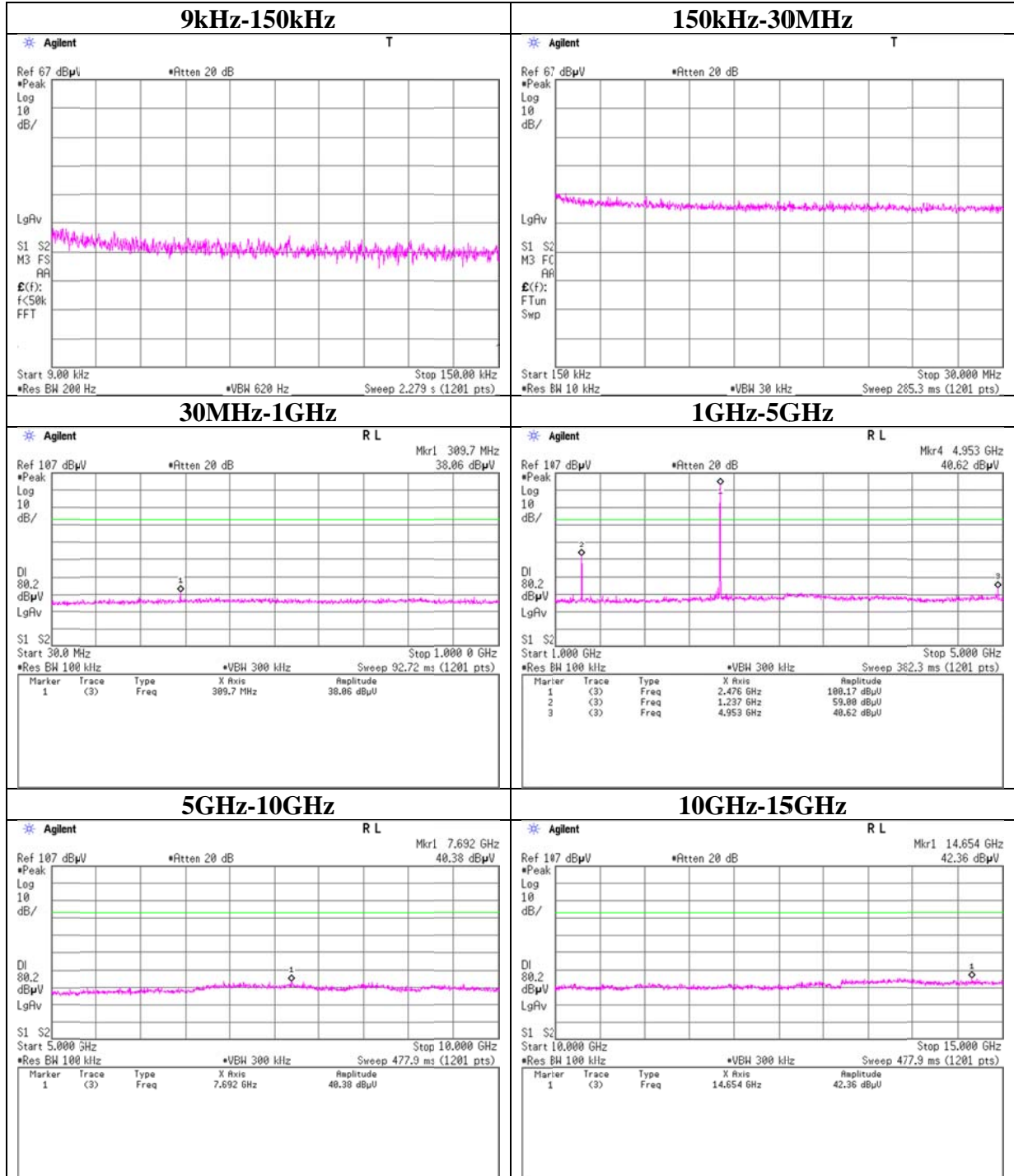
Conducted Spurious Emission

Tx 2440MHz



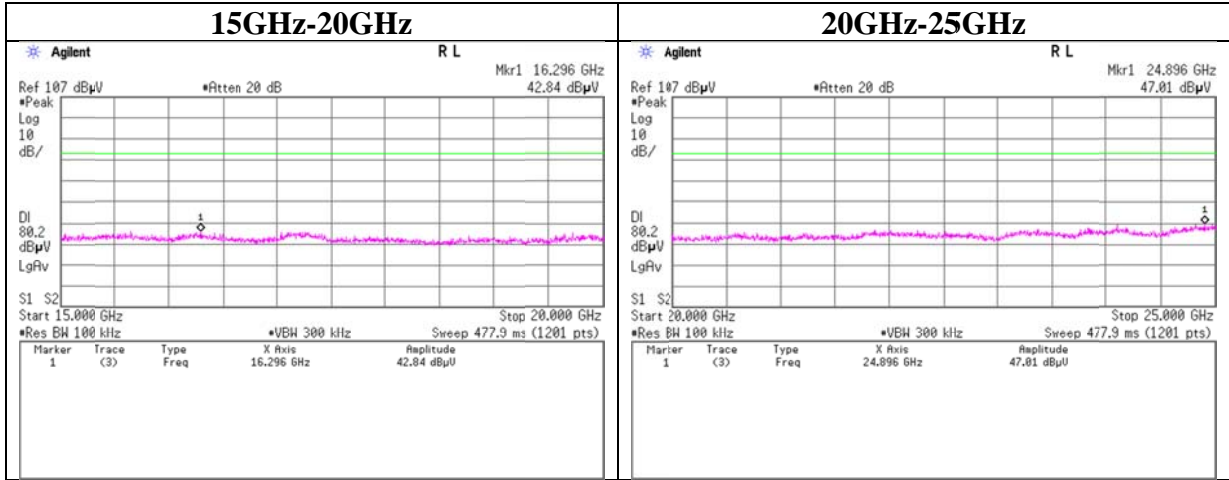
Conducted Spurious Emission

Tx 2476MHz



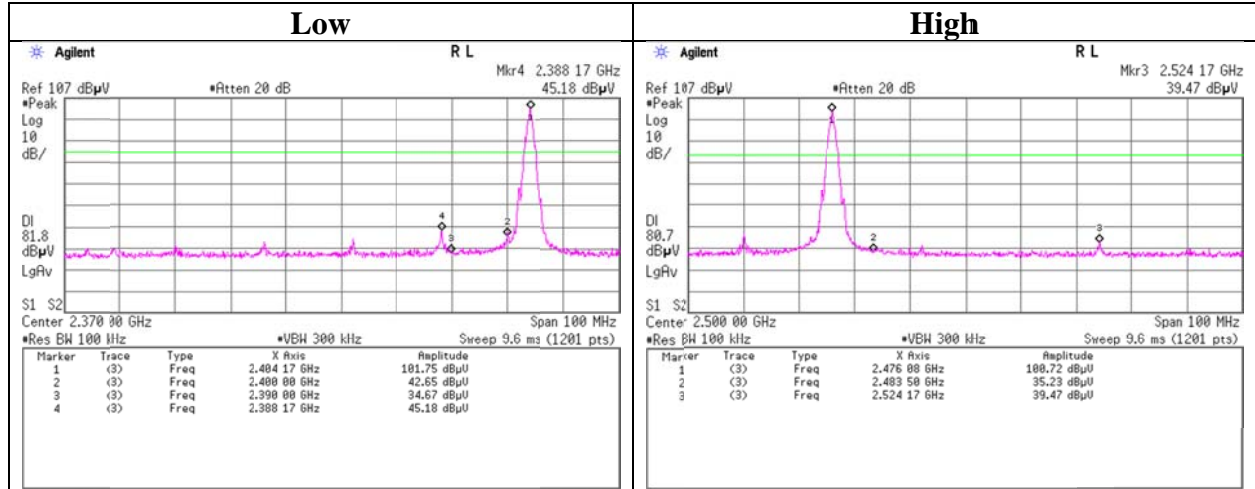
Conducted Spurious Emission

Tx 2476MHz



Conducted Emission Band Edge compliance

Tx



Power Density

Test place Head Office EMC Lab. No.6 Shielded Room
Report No. 31DE0278-HO-01
Date 04/14/2011
Temperature/ Humidity 22 deg.C / 38% RH
Engineer Hiroshi Kukita
Mode Tx

Antenna 1

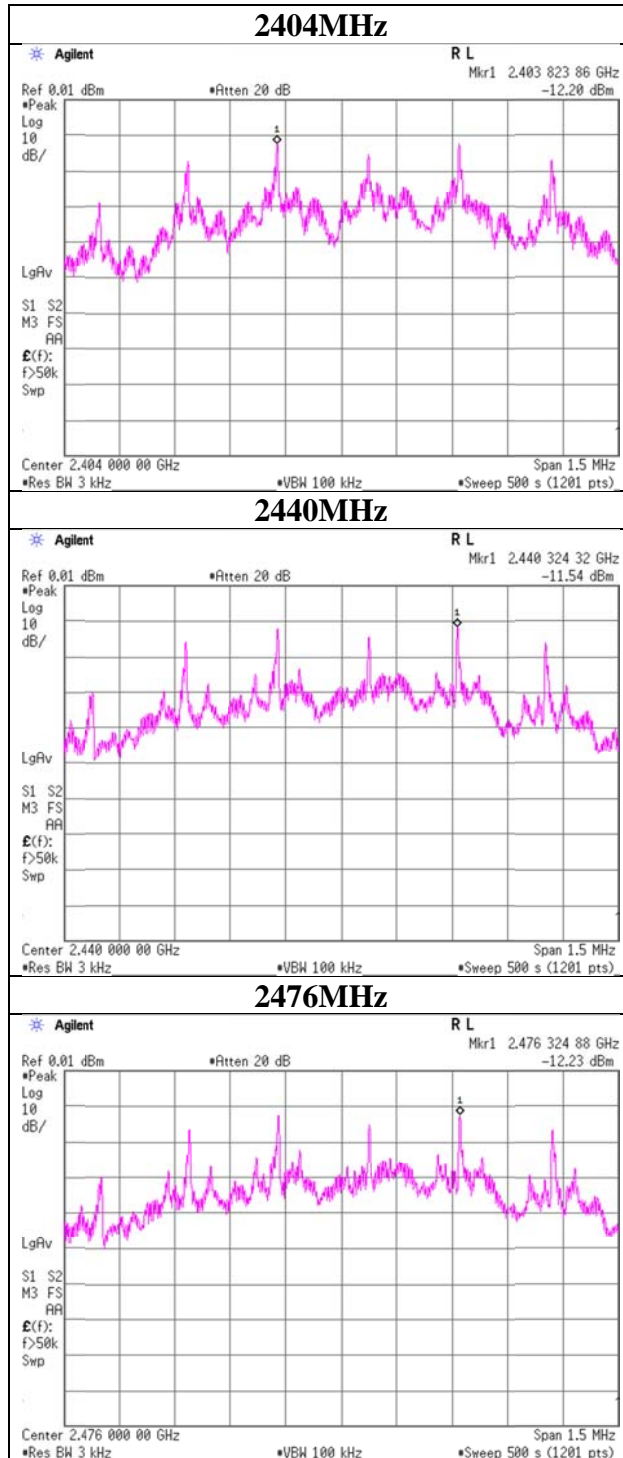
Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2404.00	-12.20	2.66	9.99	0.45	8.00	7.55
2440.00	-11.54	2.68	9.99	1.13	8.00	6.87
2476.00	-12.23	2.68	9.99	0.44	8.00	7.56

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

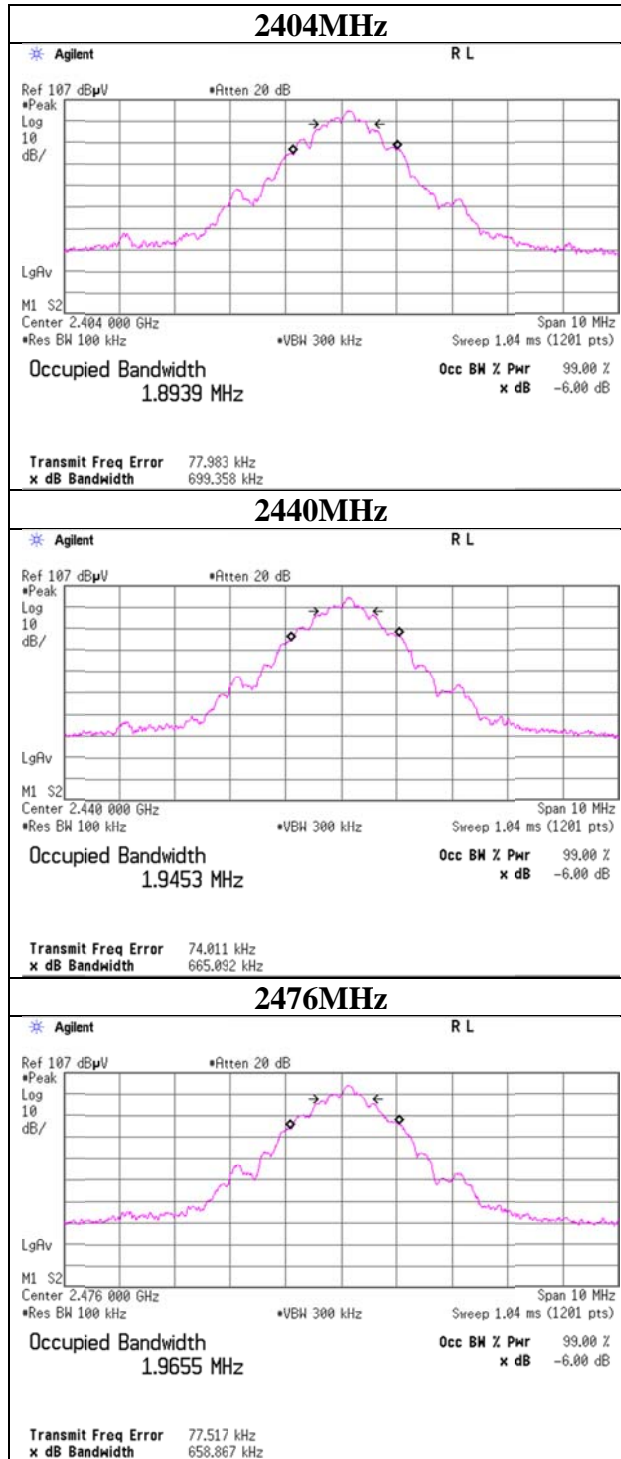
Power Density

Tx



99%Occupied Bandwidth

Tx



APPENDIX 3: Test instruments

EMI test equipment (1/2)

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-04	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE	2011/03/01 * 12
MOS-15	Thermo-Hygrometer	Custom	CTH-180	-	RE	2011/02/23 * 12
MJM-07	Measure	PROMART	SEN1955	-	RE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE	-
MSA-03	Spectrum Analyzer	Agilent	E4448A	MY44020357	RE	2010/11/30 * 12
MHA-21	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	9120D-557	RE	2010/08/08 * 12
MCC-56	Microwave Cable	Suhner	SUCOFLEX104	270875/4(1m) / 284655(5m)	RE	2011/03/02 * 12
MPA-12	MicroWave System Amplifier	Agilent	83017A	MY39500780	RE	2011/03/10 * 12
MHA-17	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170307	RE	2010/06/29 * 12
MHF-20	High Pass Filter 3.5-18.0GHz	TOKIMEC	TF323DCC	607	RE	2010/09/21 * 12
MCC-79	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	278923/4	RE	2010/12/02 * 12
MAT-22	Attenuator(10dB) 1-18GHz	Orient Microwave	BX10-0476-00	-	RE	2011/03/14 * 12
MOS-14	Thermo-Hygrometer	Custom	CTH-201	-	AT	2011/02/23 * 12
MBM-10	Barometer	Sunoh	SBR121	832	AT	2010/12/13 * 36
MSA-03	Spectrum Analyzer	Agilent	E4448A	MY44020357	AT	2010/11/30 * 12
MPM-12	Power Meter	Anritsu	ML2495A	0825002	AT	2010/08/20 * 12
MPSE-17	Power sensor	Anritsu	MA2411B	0738285	AT	2010/08/20 * 12
MDCB-01	DC Block	Agilent	N9398C	51053	AT	2010/11/16 * 12
MAT-22	Attenuator(10dB) 1-18GHz	Orient Microwave	BX10-0476-00	-	AT	2011/03/14 * 12
MCC-37	Microwave Cable	Hirose Electric	U.FL-2LP-066-A-(200)	-	AT	2010/09/29 * 12
MCC-114	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	290212/4	AT	2010/08/05 * 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	2011/02/23 * 12
MJM-05	Measure	PROMART	SEN1955	-	RE	-
MTR-03	Test Receiver	Rohde & Schwarz	ESCI	100300	RE	2011/04/15 * 12
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	VHA91032008	RE	2010/10/11 * 12
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	201	RE	2010/10/11 * 12
MCC-12	Coaxial Cable	Fujikura/Agilent	-	-	RE	2011/02/18 * 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

EMI test equipment (2/2)

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-03	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE	2011/02/22 * 12
MOS-13	Thermo-Hygrometer	Custom	CTH-180	-	RE	2011/02/23 * 12
MJM-06	Measure	PROMART	SEN1955	-	RE	-
MHA-20	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	258	RE	2010/05/07 * 12
MCC-58	Microwave Cable	Suhner	SUCOFLEX104	246770(1m) / 250655(5m)	RE	2011/03/02 * 12
MPA-11	MicroWave System Amplifier	Agilent	83017A	MY39500779	RE	2011/03/10 * 12
MHA-16	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170306	RE	2010/05/07 * 12
MSA-09	Spectrum Analyzer	Advantest	R3273	95090115	RE /AT	2010/11/18 * 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**