

**APPENDIX 2: Data of EMI test**

**Conducted Emission**  
 (Tx, Low, Magnet-base Antenna)  
**DATA OF CONDUCTED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
Date : 2007/02/28

Company	: OMRON Corporation Okayama Factory	Report No.	: 27EE0054-H0
Kind of EUT	: DeviceNet Wireless Units	Power	: DC 24V
Model No.	: WD30-ME	Temp./Humi.	: 25deg. C / 30%
Serial No.	: ME-4	Operator	: Kenichi Adachi

Mode / Remarks : Tx mode, ch:L 2402.2MHz, ANT1, Magnet-base Antenna

LIMIT : FCG15.207 QP  
FCG15.207 AV

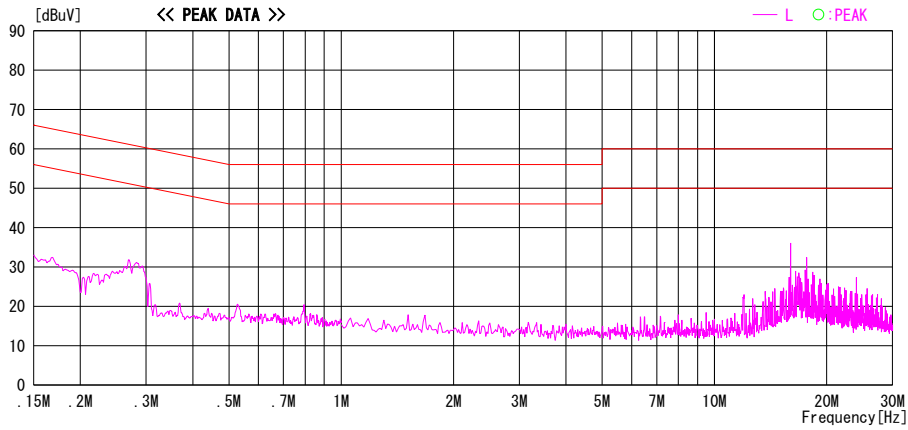
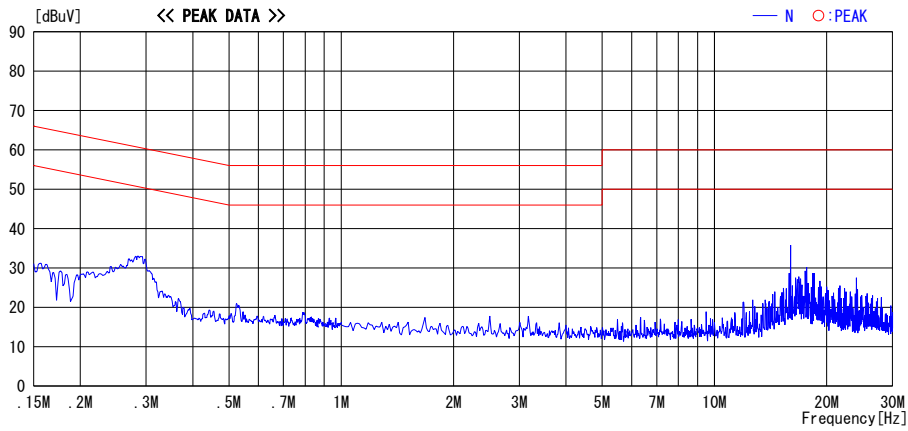


CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCULATION: RESULT=READING+C.F (LISN LOSS+CABLE LOSS)  
Except for the above table : adequate margin data below the limits.

**UL Apex Co., Ltd.**  
**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

MF060b(14.06.06)

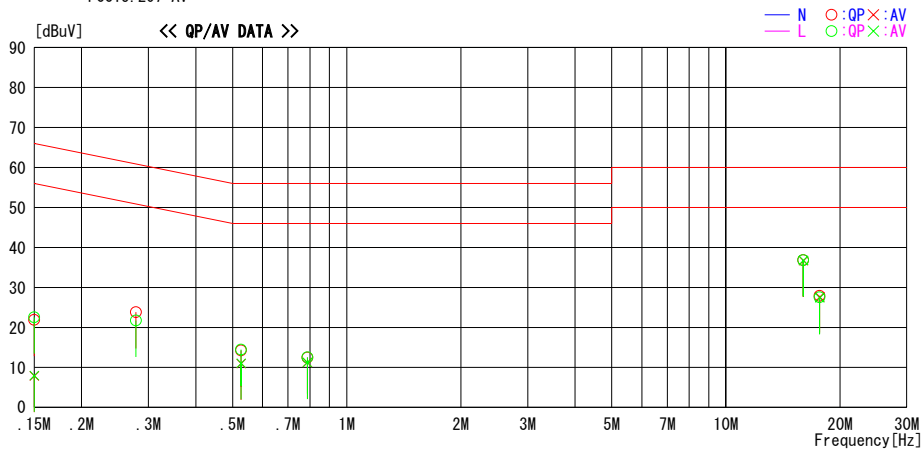
**Conducted Emission**  
 (Tx, Low, Magnet-base Antenna)  
**DATA OF CONDUCTED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
 Date : 2007/02/28

Company : OMRON Corporation Okayama Factory      Report No. : 27EE0054-HO  
 Kind of EUT : DeviceNet Wireless Units            Power : DC 24V  
 Model No. : WD30-ME                                    Temp./Humi. : 25deg. C / 30%  
 Serial No. : ME-4                                        Operator : Kenichi Adachi

Mode / Remarks : Tx mode, ch:L 2402.2MHz, ANT1, Magnet-base Antenna

LIMIT : FCC15.207 QP  
 FCC15.207 AV



Frequency [MHz]	Reading Level		Corr. Factor [dB]	Results		Limit		Margin		Phase
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]	
0.15000	21.6	7.6	0.3	21.9	7.9	66.0	56.0	44.1	48.1	N
0.27797	23.5	-----	0.3	23.8	-----	60.9	-----	37.1	-----	N
0.52650	14.0	10.7	0.3	14.3	11.0	56.0	46.0	41.7	35.0	N
0.78799	12.1	10.8	0.4	12.5	11.2	56.0	46.0	43.5	34.8	N
16.00000	34.9	34.8	1.9	36.8	36.7	60.0	50.0	23.2	13.3	N
17.66901	25.9	25.6	2.0	27.9	27.6	60.0	50.0	32.1	22.4	N
0.15000	22.3	7.7	0.3	22.6	8.0	66.0	56.0	43.4	48.0	L
0.27797	21.4	-----	0.3	21.7	-----	60.9	-----	39.2	-----	L
0.52650	14.2	10.8	0.3	14.5	11.1	56.0	46.0	41.5	34.9	L
0.78799	12.2	10.8	0.4	12.6	11.2	56.0	46.0	43.4	34.8	L
16.00000	34.9	34.9	1.9	36.8	36.8	60.0	50.0	23.2	13.2	L
17.66901	25.6	25.4	2.0	27.6	27.4	60.0	50.0	32.4	22.6	L

CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCULATION: RESULT=READING+C. F (L ISN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.

**Conducted Emission**  
 (Tx, Mid, Magnet-base Antenna)  
**DATA OF CONDUCTED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Semi Anechoic Chamber  
 Date : 2007/02/28

Company	: OMRON Corporation Okayama Factory	Report No.	: 27EE0054-HO
Kind of EUT	: DeviceNet Wireless Units	Power	: DC 24V
Model No.	: WD30-ME	Temp./Humi.	: 25deg. C / 30%
Serial No.	: ME-4	Operator	: Kenichi Adachi

Mode / Remarks : Tx mode, ch:M 2441.8MHz, ANT1, Magnet-base Antenna

LIMIT : FCC15.207 QP  
 FCC15.207 AV

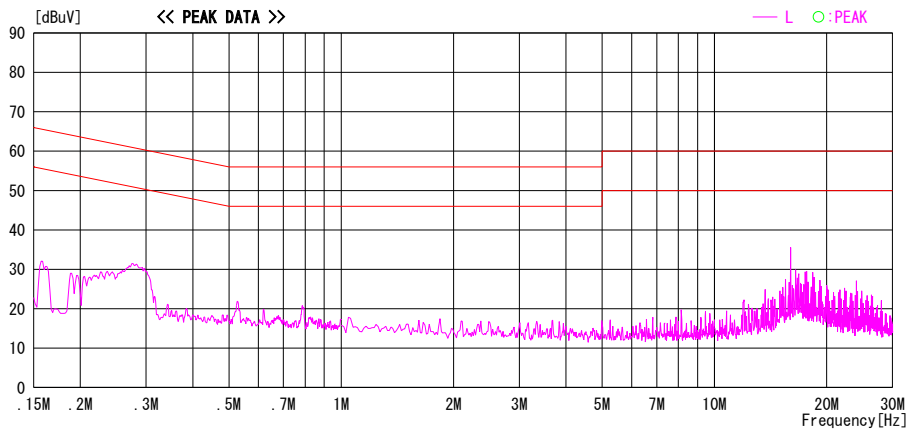
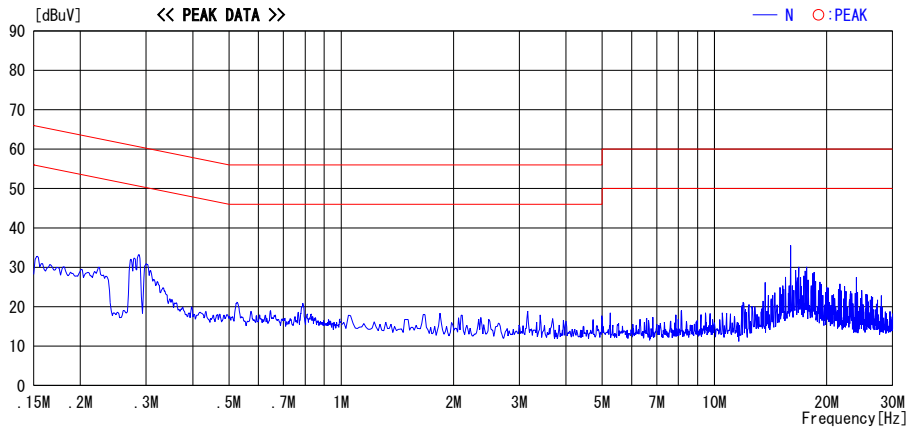


CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCULATION: RESULT=READING+C.F (LISN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.

**Conducted Emission**  
 (Tx, High, Magnet-base Antenna)  
**DATA OF CONDUCTED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Semi Anechoic Chamber  
 Date : 2007/02/28

Company	: OMRON Corporation Okayama Factory	Report No.	: 27EE0054-HO
Kind of EUT	: DeviceNet Wireless Units	Power	: DC 24V
Model No.	: WD30-ME	Temp./Humi.	: 25deg. C / 30%
Serial No.	: ME-4	Operator	: Kenichi Adachi

Mode / Remarks : Tx mode, ch:H 2480.2MHz, ANT1, Magnet-base Antenna

LIMIT : FCC15.207 QP  
 FCC15.207 AV

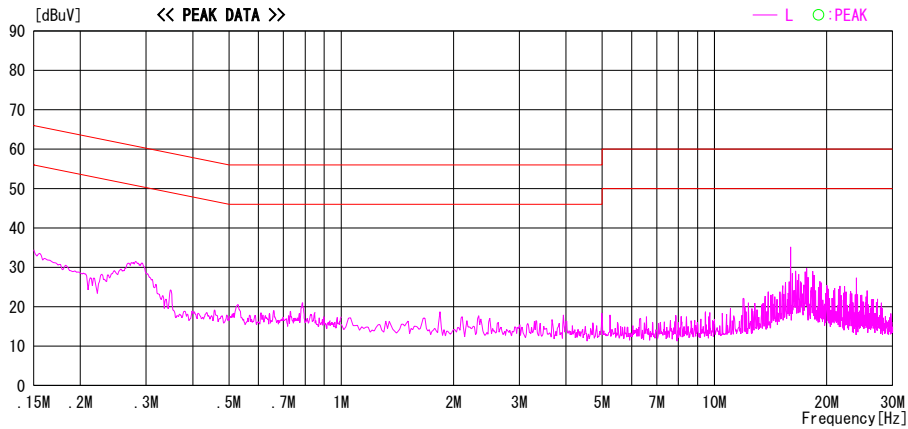
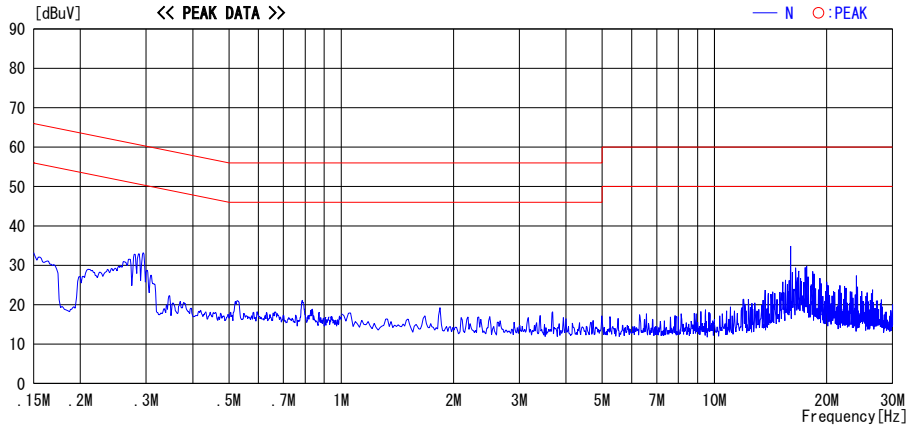


CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCULATION: RESULT=READING+C.F (LISN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.

**Conducted Emission**  
 (Rx, Mid, Magnet-base Antenna)  
**DATA OF CONDUCTED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Semi Anechoic Chamber  
 Date : 2007/02/28

Company	: OMRON Corporation Okayama Factory	Report No.	: 27EE0054-HO
Kind of EUT	: DeviceNet Wireless Units	Power	: DC 24V
Model No.	: WD30-ME	Temp./Humi.	: 25deg. C / 30%
Serial No.	: ME-4	Operator	: Kenichi Adachi

Mode / Remarks : Rx mode, ch:M 2441.8MHz, ANT1, Magnet-base Antenna

LIMIT : FCC15.107(a) QP  
 FCC15.107(a) AV

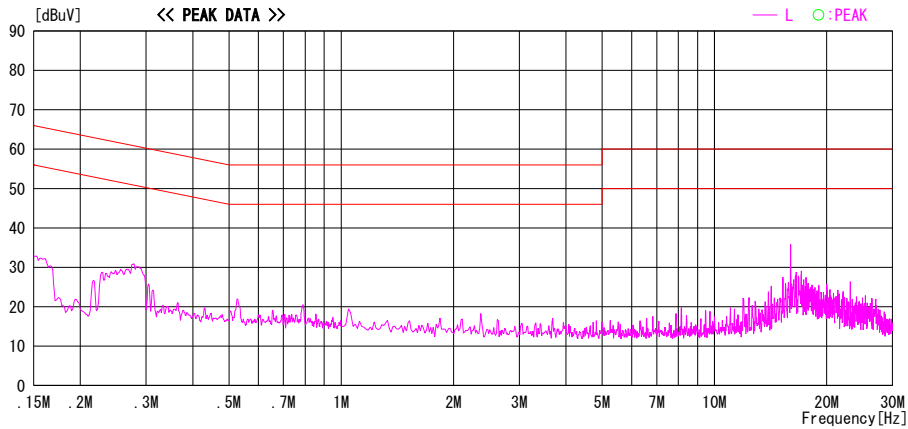
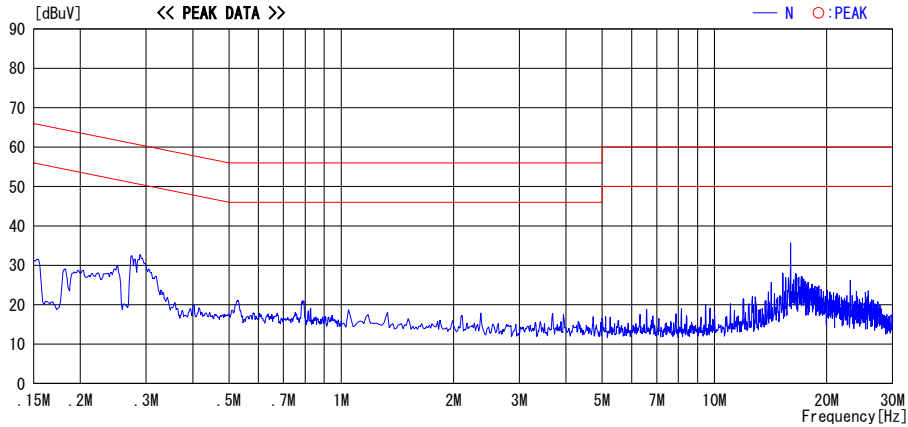


CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCULATION: RESULT=READING+C.F (LISN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.

**Conducted Emission**  
 (Tx, Low, Pencil Antenna)  
**DATA OF CONDUCTED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Semi Anechoic Chamber  
 Date : 2007/02/28

Company	: OMRON Corporation Okayama Factory	Report No.	: 27EE0054-HO
Kind of EUT	: DeviceNet Wireless Units	Power	: DC 24V
Model No.	: WD30-ME	Temp./Humi.	: 25deg. C / 30%
Serial No.	: ME-4	Operator	: Kenichi Adachi

Mode / Remarks : Tx mode, ch:L 2402.2MHz, ANT1, Pencil Antenna

LIMIT : FCC15.207 QP  
FCC15.207 AV

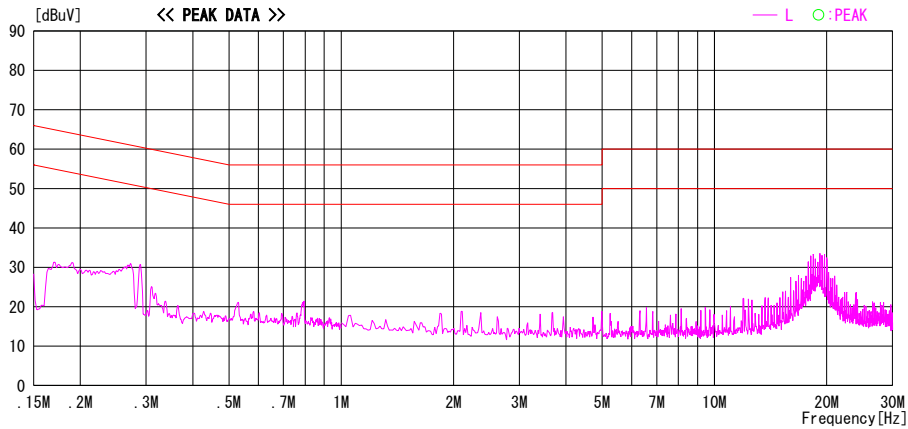
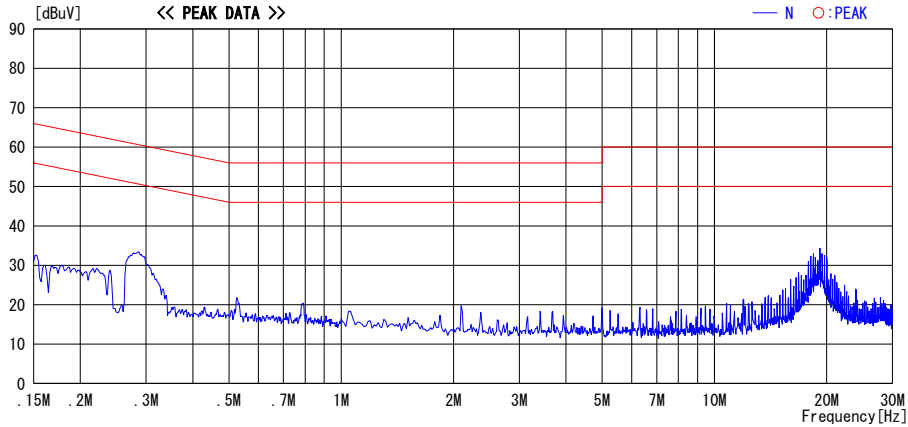


CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCULATION: RESULT=READING+C.F (LISN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.

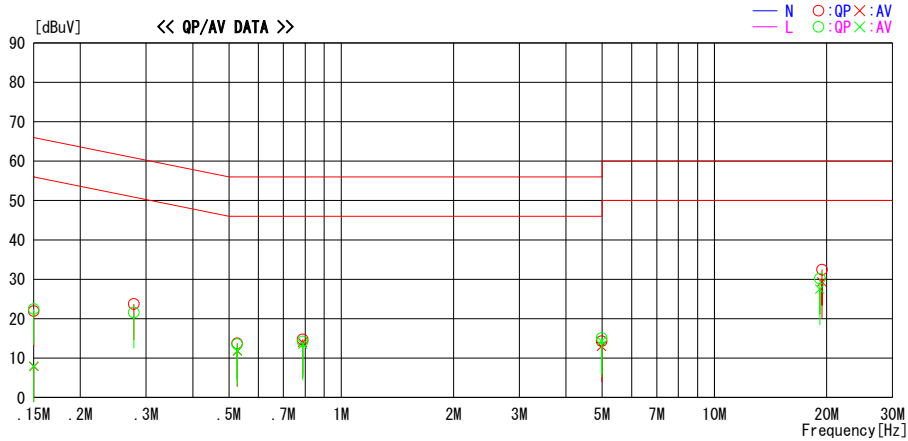
**Conducted Emission**  
 (Tx, Low, Pencil Antenna)  
**DATA OF CONDUCTED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Semi Anechoic Chamber  
 Date : 2007/02/28

Company : OMRON Corporation Okayama Factory      Report No. : 27EE0054-HO  
 Kind of EUT : DeviceNet Wireless Units            Power : DC 24V  
 Model No. : WD30-ME                                    Temp./Humi. : 25deg. C / 30%  
 Serial No. : ME-4                                         Operator : Kenichi Adachi

Mode / Remarks : Tx mode, ch:L 2402.2MHz, ANTI, Pencil Antenna

LIMIT : FCC15.207 QP  
           FCC15.207 AV



Frequency [MHz]	Reading		Corr. Factor	Results		Limit		Margin		Phase
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]	
0.15000	21.6	7.6	0.3	21.9	7.9	66.0	56.0	44.1	48.1	N
0.27810	23.4	—	0.3	23.7	—	60.9	—	37.2	—	N
0.52654	13.4	11.5	0.3	13.7	11.8	56.0	46.0	42.3	34.2	N
0.78770	14.3	13.6	0.4	14.7	14.0	56.0	46.0	41.3	32.0	N
4.98350	13.3	12.0	1.0	14.3	13.0	56.0	46.0	41.7	33.0	N
19.40115	30.4	27.2	2.1	32.5	29.3	60.0	50.0	27.5	20.7	N
0.15000	22.2	7.7	0.3	22.5	8.0	66.0	56.0	43.5	48.0	L
0.27810	21.3	—	0.3	21.6	—	60.9	—	39.3	—	L
0.52650	13.3	11.6	0.3	13.6	11.9	56.0	46.0	42.4	34.1	L
0.78850	13.8	13.1	0.4	14.2	13.5	56.0	46.0	41.8	32.5	L
4.98350	14.1	13.3	1.0	15.1	14.3	56.0	46.0	40.9	31.7	L
19.14695	28.1	25.4	2.1	30.2	27.5	60.0	50.0	29.8	22.5	L

CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCULATION: RESULT=READING+C.F (LISN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.

**Conducted Emission**  
 (Tx, Mid, Pencil Antenna)  
**DATA OF CONDUCTED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Semi Anechoic Chamber  
 Date : 2007/02/28

Company	: OMRON Corporation Okayama Factory	Report No.	: 27EE0054-HO
Kind of EUT	: DeviceNet Wireless Units	Power	: DC 24V
Model No.	: WD30-ME	Temp./Humi.	: 25deg. C / 30%
Serial No.	: ME-4	Operator	: Kenichi Adachi

Mode / Remarks : Tx mode, ch:M 2441.8MHz, ANT1, Pencil Antenna

LIMIT : FCC15.207 QP  
 FCC15.207 AV

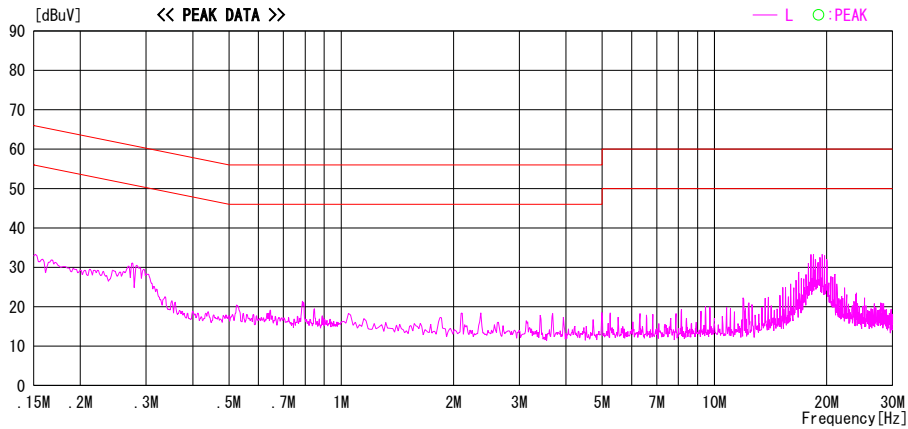
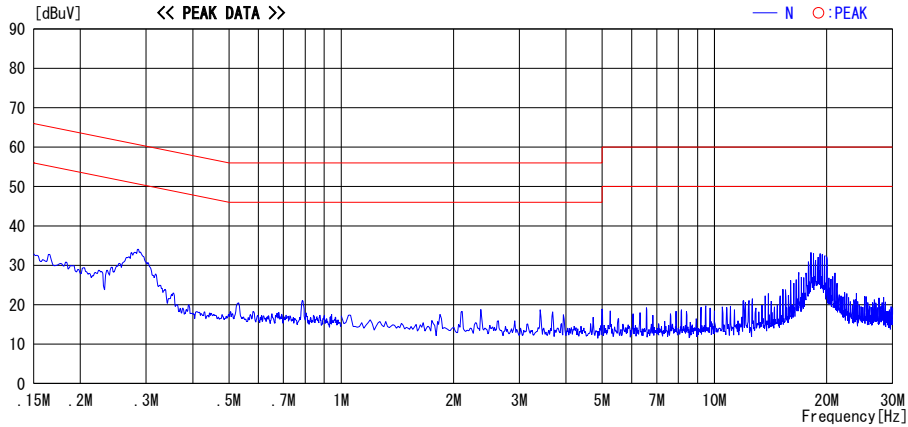


CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCULATION: RESULT=READING+C.F (LISN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.



**Conducted Emission**  
 (Tx, High, Pencil Antenna)  
**DATA OF CONDUCTED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Semi Anechoic Chamber  
 Date : 2007/02/28

Company	: OMRON Corporation Okayama Factory	Report No.	: 27EE0054-HO
Kind of EUT	: DeviceNet Wireless Units	Power	: DC 24V
Model No.	: WD30-ME	Temp./Humi.	: 25deg. C / 30%
Serial No.	: ME-4	Operator	: Kenichi Adachi

Mode / Remarks : Tx mode, ch:H 2480.2MHz, ANT1, Pencil Antenna

LIMIT : FCC15.207 QP  
FCC15.207 AV

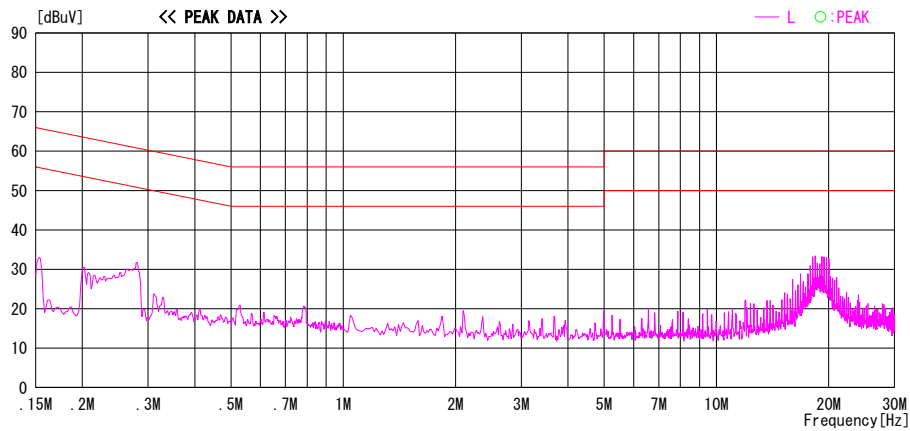
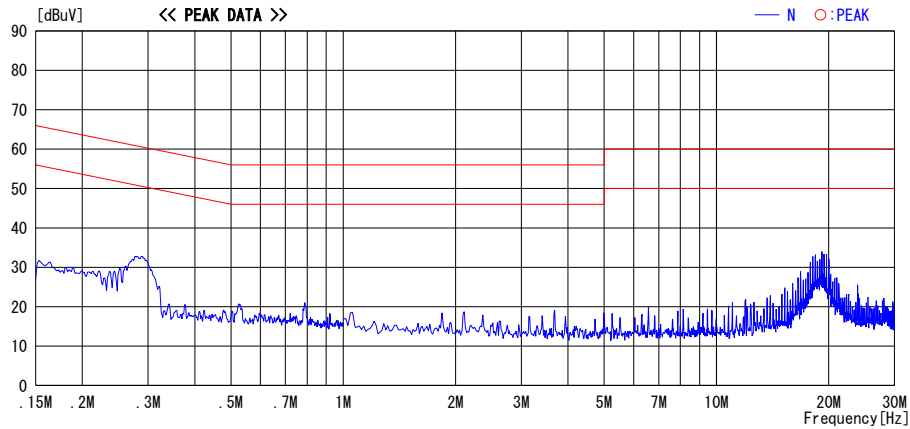


CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCULATION: RESULT=READING+C.F (LISN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.

**Conducted Emission**  
 (Rx, Mid, Pencil Antenna)  
**DATA OF CONDUCTED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Semi Anechoic Chamber  
 Date : 2007/02/28

Company	: OMRON Corporation Okayama Factory	Report No.	: 27EE0054-HO
Kind of EUT	: DeviceNet Wireless Units	Power	: DC 24V
Model No.	: WD30-ME	Temp./Humi.	: 25deg. C / 30%
Serial No.	: ME-4	Operator	: Kenichi Adachi

Mode / Remarks : Rx mode, ch:M 2441.8MHz, ANT1, Pencil Antenna

LIMIT : FCC15.107(a) QP  
 FCC15.107(a) AV

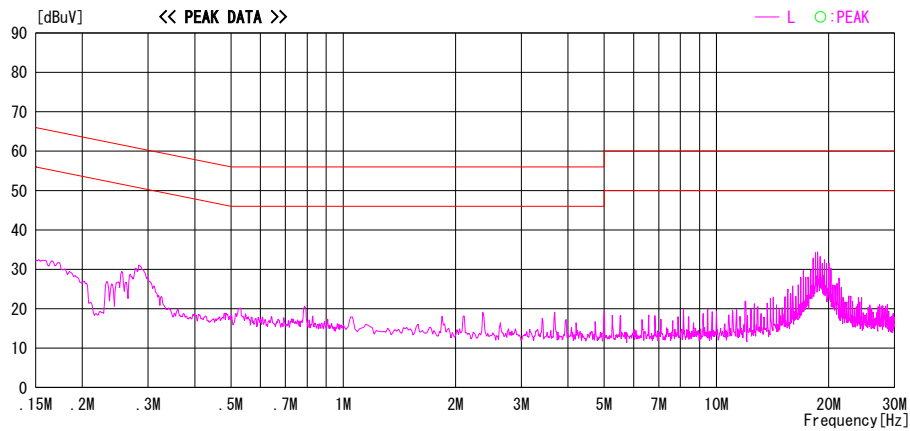
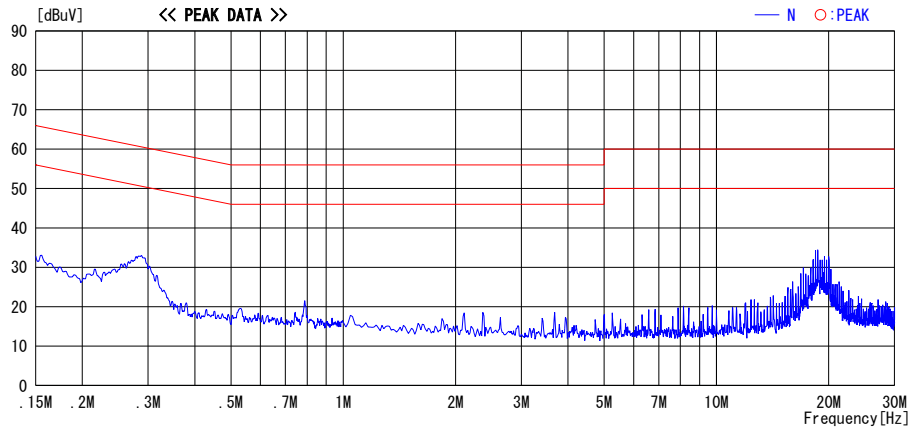


CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCULATION: RESULT=READING+C.F (LISN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.

[DSSS and other forms of modulation]

**6dB Bandwidth**

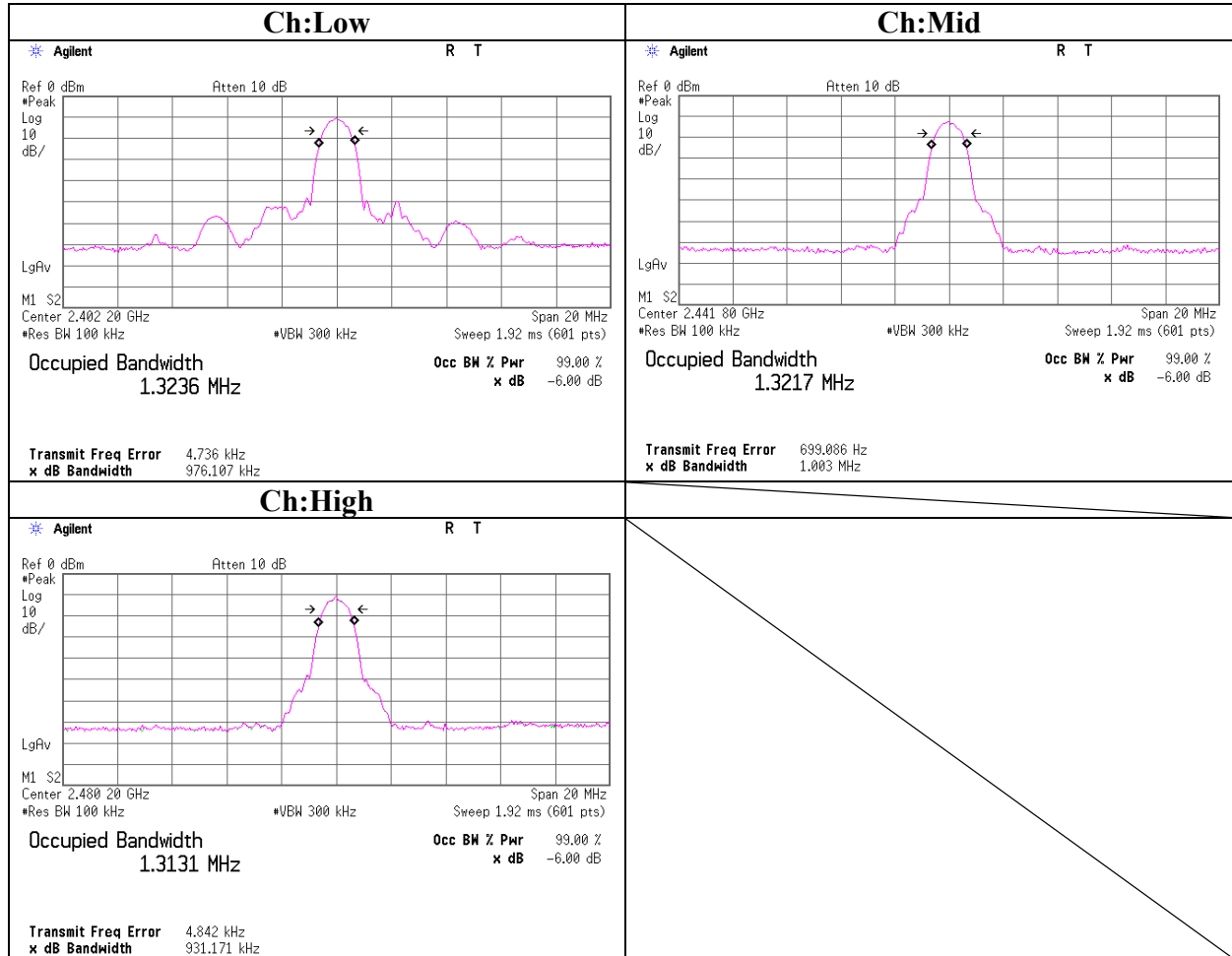
UL Apex Co., Ltd.  
Head Office EMC Lab. No.6 Shielded Room

Company : Omron Corporation Okayama Factory  
Equipment : DeviceNet Wireless Units  
Model : WD30-ME  
Sample No. : ME-4  
Power : DC24V  
Mode : Tx (Ch L, M, H)

REPORT NO : 27EE0054-HO  
REGULATION : FCC15.247(a)(2)/RSS-210A8.2(1)  
TEST DISTANCE : -  
DATE : 12/08/2006  
TEMPERATURE : 22°C  
HUMIDITY : 52%  
ENGINEER : Takumi Shimada

Ch	Freq. [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
Low	2402.2	0.976	>500
Mid	2441.8	1.003	>500
High	2480.2	0.931	>500

### 6dB Bandwidth



### Maximum Peak Output Power

UL Apex Co., Ltd.  
Head Office EMC Lab. No.6 Shielded Room

COMPANY : Omron Corporation Okayama Factory      REGULATION : FCC15.247(b)(3)/RSS-210A8.4(4)  
EQUIPMENT : DeviceNet Wireless Units              TEST DISTANCE : -  
MODEL : WD30-ME    DATE : 12/08/2006  
SAMPLE NO. : ME-4    TEMPERATURE : 22°C  
POWER : DC24V    HUMIDITY : 52%  
MODE : Tx (Ch L, M, H)                                      ENGINEER : Takumi Shimada

**(ANT1)**

Ch	Freq. [MHz]	P/M Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]	
Low	2402.2	-2.75	0.55	10.12	7.92	6.19	30.00	1000	22.08
Mid	2441.8	-3.81	0.51	10.12	6.82	4.81	30.00	1000	23.18
High	2480.2	-2.93	0.59	10.12	7.78	6.00	30.00	1000	22.22

Sample Calculation:  
Result = Reading + Cable Loss + Attenuator

**(ANT2)**

Ch	Freq. [MHz]	P/M Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]	
Low	2402.2	-2.80	0.55	10.12	7.87	6.12	30.00	1000	22.13
Mid	2441.8	-3.96	0.51	10.12	6.67	4.65	30.00	1000	23.33
High	2480.2	-3.12	0.59	10.12	7.59	5.74	30.00	1000	22.41

Sample Calculation:  
Result = Reading + Cable Loss + Attenuator

**Radiated Spurious Emission (below 1GHz)<Magnet-base Antenna>**

\* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

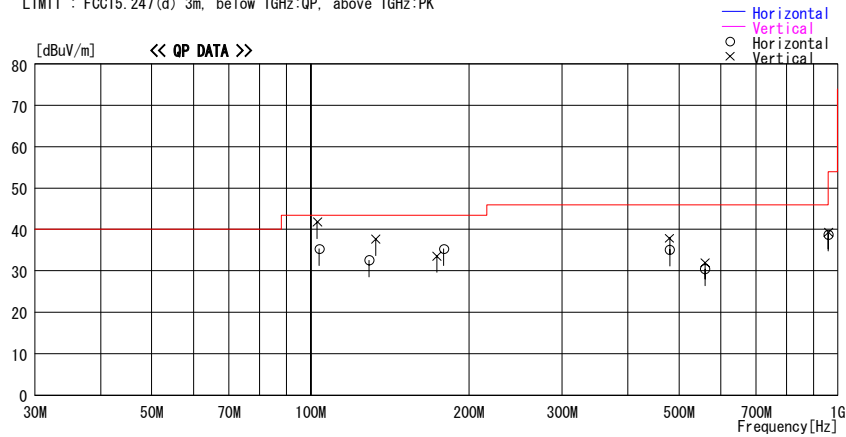
**DATA OF RADIATED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No.3 Semi Anechoic Chamber  
Date : 2007/01/05 17:25:28

Company : OMRON Corporation Okayama Factory Report No. : 27EE0054-HO  
Kind of EUT : DeviceNet Wireless Units Power : DC 24V  
Model No. : WD30-ME Temp./Humi. : 25deg.C / 40%  
Serial No. : ME-4 Operator : Takumi Shimada

Mode / Remarks : Tx mode, ch:L 2402.2MHz, EUT(H:Y-axis,V:X-axis), ANT1, Magnet

LIMIT : FCC15.247(d) 3m, below 1GHz:QP, above 1GHz:PK



Frequency [MHz]	Reading [dBuV]	DET	Antenna	Loss&	Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]	Comment
			Factor [dB/m]	Gain [dB]							
103.108	54.3	QP	11.4	-23.9	41.8	259	100	Vert.	43.5	1.7	
103.898	47.7	QP	11.5	-23.9	35.3	321	300	Hori.	43.5	8.2	
129.294	41.9	QP	14.3	-23.6	32.6	360	300	Hori.	43.5	10.9	
132.987	46.7	QP	14.6	-23.6	37.7	269	100	Vert.	43.5	5.8	
173.707	40.4	QP	16.4	-23.2	33.6	228	100	Vert.	43.5	9.9	
178.986	41.7	QP	16.7	-23.1	35.3	360	204	Hori.	43.5	8.2	
480.000	37.9	QP	18.6	-21.3	35.2	41	100	Hori.	46.0	10.8	
480.000	40.6	QP	18.6	-21.3	37.9	42	100	Vert.	46.0	8.1	
559.983	32.0	QP	19.4	-20.9	30.5	318	100	Hori.	46.0	15.5	
559.985	33.5	QP	19.4	-20.9	32.0	55	100	Vert.	46.0	14.0	
960.000	33.7	QP	22.8	-17.7	38.8	271	100	Hori.	46.0	7.2	
960.000	34.2	QP	22.8	-17.7	39.3	212	100	Vert.	46.0	6.7	

CHART: WITH FACTOR ANT TYPE: -30MHz: LOOP, 30-300MHz: BICONICAL, 300MHz-1000MHz: LOGPERIODIC, 1000MHz--: HORN  
CALCULATION: RESULT = READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - GAIN (AMP)

**Radiated Spurious Emission (below 1GHz)**

\* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

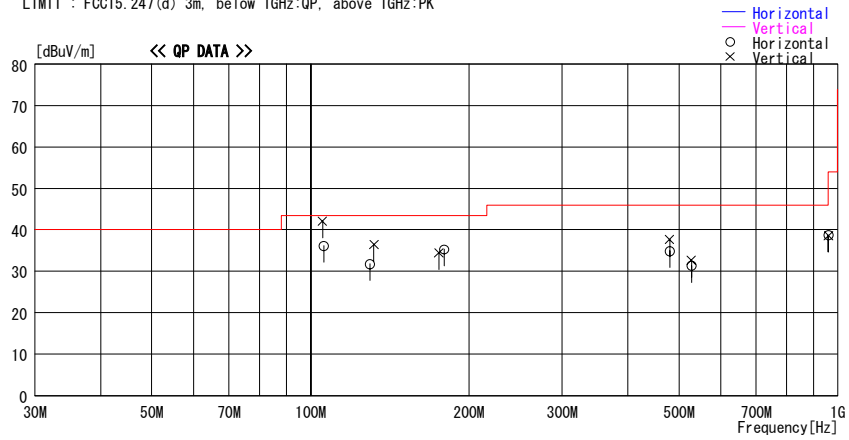
**DATA OF RADIATED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No.3 Semi Anechoic Chamber  
 Date : 2007/01/05 16:41:09

Company : OMRON Corporation Okayama Factory      Report No. : 27EE0054-HO  
 Kind of EUT : DeviceNet Wireless Units            Power : DC 24V  
 Model No. : WD30-ME                                    Temp./Humi. : 25deg.C / 40%  
 Serial No. : ME-4                                         Operator : Takumi Shimada

Mode / Remarks : Tx mode, ch:M 2441.8MHz, EUT (H:Y-axis,V:X-axis), ANT1, Magnet

LIMIT : FCC15.247(d) 3m, below 1GHz:QP, above 1GHz:PK



Frequency [MHz]	Reading [dBuV]	DET	Antenna	Loss&	Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit	Margin	Comment
			Factor [dB/m]	Gain [dB]					[dBuV/m]	[dB]	
105.474	54.3	QP	11.7	-23.9	42.1	234	100	Vert.	43.5	1.4	
106.006	48.1	QP	11.8	-23.8	36.1	156	300	Hori.	43.5	7.4	
129.545	41.1	QP	14.3	-23.6	31.8	316	300	Hori.	43.5	11.7	
131.917	45.5	QP	14.5	-23.6	36.4	260	100	Vert.	43.5	7.1	
175.286	41.1	QP	16.5	-23.2	34.4	229	100	Vert.	43.5	9.1	
179.272	41.7	QP	16.7	-23.1	35.3	360	194	Hori.	43.5	8.2	
480.000	40.4	QP	18.6	-21.3	37.7	49	100	Vert.	46.0	8.3	
480.000	37.6	QP	18.6	-21.3	34.9	58	100	Hori.	46.0	11.1	
527.986	33.4	QP	19.0	-21.0	31.4	292	140	Hori.	46.0	14.6	
527.986	34.6	QP	19.0	-21.0	32.6	57	100	Vert.	46.0	13.4	
959.999	33.6	QP	22.8	-17.7	38.7	270	100	Hori.	46.0	7.3	
960.000	33.5	QP	22.8	-17.7	38.6	180	100	Vert.	53.9	15.3	

CHART:WITH FACTOR ANT TYPE: -30MHz:LOOP, 30-300MHz:BICONICAL, 300MHz-1000MHz:LOGPERIODIC, 1000MHz-:HORN  
 CALCULATION:RESULT = READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - GAIN (AMP)

### Radiated Spurious Emission (below 1GHz)

\* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

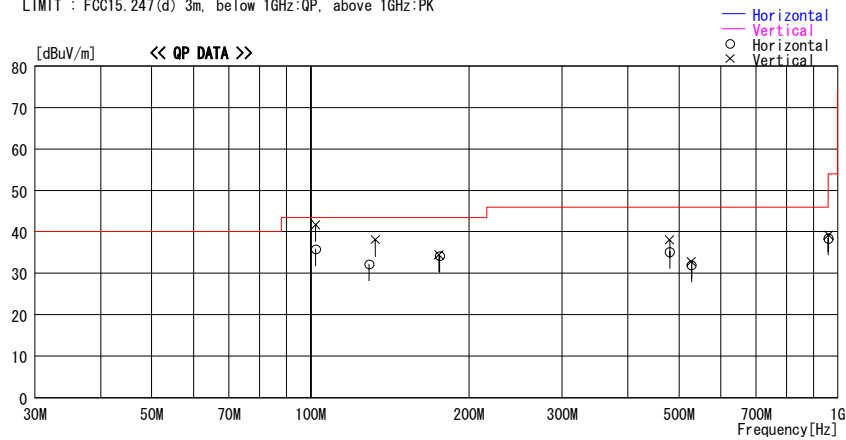
### DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.3 Semi Anechoic Chamber  
 Date : 2007/01/05 17:58:40

Company : OMRON Corporation Okayama Factory      Report No. : 27EE0054-HO  
 Kind of EUT : DeviceNet Wireless Units            Power : DC 24V  
 Model No. : WD30-ME                                    Temp./Humi. : 25deg.C / 40%  
 Serial No. : ME-4                                         Operator : Takumi Shimada

Mode / Remarks : Tx mode, ch:H 2480.2MHz, EUT (H:Y-axis,V:X-axis), ANT1, Magnet

LIMIT : FCC15.247(d) 3m, below 1GHz:QP, above 1GHz:PK



Frequency [MHz]	Reading [dBuV]	DET	Antenna	Loss&	Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit	Margin	Comment
			Factor [dB/m]	Gain [dB]					[dBuV/m]	[dB]	
102.328	46.4	QP	11.3	-23.9	35.8	156	300	Hori.	43.5	7.7	
102.314	54.3	QP	11.3	-23.9	41.7	256	100	Vert.	43.5	1.8	
129.282	41.5	QP	14.3	-23.6	32.2	351	300	Hori.	43.5	11.3	
132.717	47.2	QP	14.5	-23.6	38.1	261	100	Vert.	43.5	5.4	
175.322	41.1	QP	16.5	-23.2	34.4	239	100	Vert.	43.5	9.1	
175.835	40.9	QP	16.5	-23.2	34.2	351	300	Hori.	43.5	9.3	
480.000	40.7	QP	18.6	-21.3	38.0	41	100	Vert.	46.0	8.0	
480.000	37.9	QP	18.6	-21.3	35.2	44	100	Hori.	46.0	10.8	
527.987	33.9	QP	19.0	-21.0	31.9	294	148	Hori.	46.0	14.1	
527.984	34.8	QP	19.0	-21.0	32.8	38	100	Vert.	46.0	13.2	
960.000	33.3	QP	22.8	-17.7	38.4	272	100	Hori.	46.0	7.6	
960.000	34.1	QP	22.8	-17.7	39.2	216	100	Vert.	46.0	6.8	

CHART: WITH FACTOR    ANT TYPE: -30MHz: LOOP, 30-300MHz: BICONICAL, 300MHz-1000MHz: LOGPERIODIC, 1000MHz-: HORN  
 CALCULATION: RESULT = READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - GAIN (AMP)



### Radiated Spurious Emission (below 1GHz)

\* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

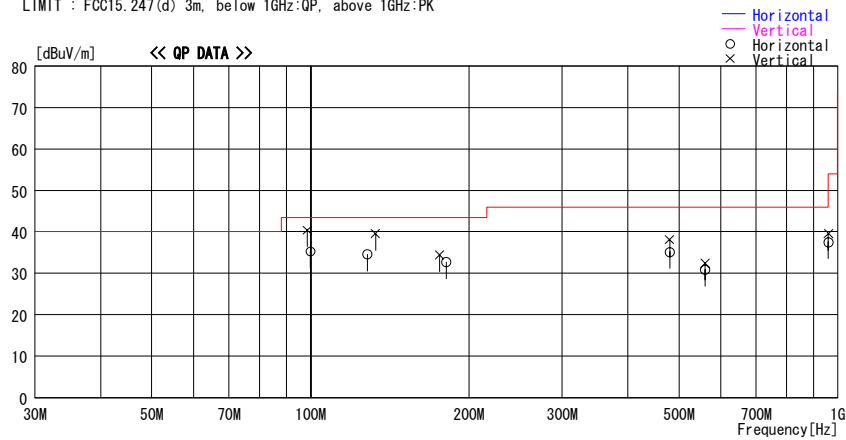
### DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.3 Semi Anechoic Chamber  
 Date : 2007/01/05 18:23:28

Company : OMRON Corporation Okayama Factory      Report No. : 27EE0054-HO  
 Kind of EUT : DeviceNet Wireless Units            Power : DC 24V  
 Model No. : WD30-ME                                    Temp./Humi. : 25deg.C / 40%  
 Serial No. : ME-4                                         Operator : Takumi Shimada

Mode / Remarks : Rx mode, ch:M 2441.8MHz, EUT (H:Y-axis,V:X-axis), ANT1, Magnet

LIMIT : FCC15.247(d) 3m, below 1GHz:QP, above 1GHz:PK



Frequency [MHz]	Reading [dBuV]	DET	Antenna	Loss&	Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit	Margin	Comment
			Factor [dB/m]	Gain [dB]					[dBuV/m]	[dB]	
98.654	53.6	QP	10.7	-23.9	40.4	250	100	Vert.	43.5	3.1	
99.990	48.2	QP	11.0	-23.9	35.3	360	300	Hori.	43.5	8.2	
127.996	44.0	QP	14.2	-23.6	34.6	335	300	Hori.	43.5	8.9	
132.767	48.7	QP	14.5	-23.6	39.6	269	100	Vert.	43.5	3.9	
180.890	39.1	QP	16.7	-23.1	32.7	360	258	Hori.	43.5	10.8	
175.593	41.1	QP	16.5	-23.2	34.4	280	100	Vert.	43.5	9.1	
480.000	40.8	QP	18.6	-21.3	38.1	50	100	Vert.	46.0	7.9	
480.000	37.9	QP	18.6	-21.3	35.2	42	100	Hori.	46.0	10.8	
559.990	32.4	QP	19.4	-20.9	30.9	291	100	Hori.	46.0	15.1	
559.987	33.9	QP	19.4	-20.9	32.4	94	100	Vert.	46.0	13.6	
960.000	32.4	QP	22.8	-17.7	37.5	269	100	Hori.	46.0	8.5	
960.000	34.5	QP	22.8	-17.7	39.6	213	100	Vert.	46.0	6.4	

CHART: WITH FACTOR ANT TYPE: -30MHz: LOOP, 30-300MHz: BICONICAL, 300MHz-1000MHz: LOGPERIODIC, 1000MHz-: HORN  
 CALCULATION: RESULT = READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - GAIN (AMP)

**Radiated Spurious Emission (below 1GHz)<Pencil Antenna>**

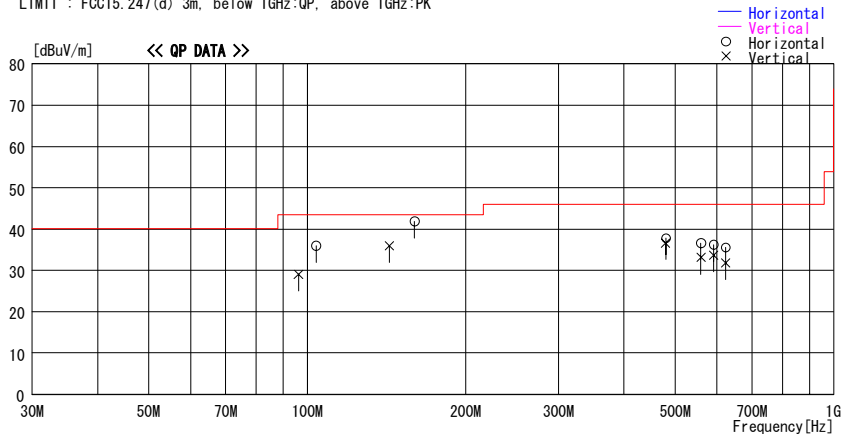
**DATA OF RADIATED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No. 4 Semi Anechoic Chamber  
 Date : 2006/12/11 13:18:11

Company : OMRON Corporation Okayama Factory      Report No. : 27EE0054-HO  
 Kind of EUT : Wireless Terminal                      Power : DC 24V  
 Model No. : WD30-ME                                    Temp./Humi. : 22deg.C. /40%  
 Serial No. : ME-4                                         Operator : Norihisa Hashimoto

Mode / Remarks : Tx mode, ch:M 2441.8MHz, EUT (H:Y-axis, V:X-axis) , ANT1 (Pencil)

LIMIT : FCC15.247(d) 3m, below 1GHz:QP, above 1GHz:PK



Frequency [MHz]	Reading [dBuV]	DET	Antenna		Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]
			Factor [dB/m]	Loss& Gain [dB]						
96.280	42.4	QP	10.4	-23.8	29.0	38	126	Vert.	43.5	14.5
103.936	48.2	QP	11.5	-23.7	36.0	0	162	Hori.	43.5	7.5
143.360	43.8	QP	15.2	-23.1	35.9	0	100	Vert.	43.5	7.6
160.011	49.2	QP	15.7	-23.0	41.9	7	184	Hori.	43.5	1.6
480.010	39.0	QP	19.6	-20.8	37.8	52	188	Hori.	46.0	8.2
480.013	37.8	QP	19.6	-20.8	36.6	63	100	Vert.	46.0	9.4
560.000	36.7	QP	20.3	-20.4	36.6	43	136	Hori.	46.0	9.4
559.987	33.2	QP	20.3	-20.4	33.1	46	100	Vert.	46.0	12.9
591.995	35.9	QP	20.5	-20.2	36.2	48	121	Hori.	46.0	9.8
592.003	33.4	QP	20.5	-20.2	33.7	31	100	Vert.	46.0	12.3
623.997	35.0	QP	20.8	-20.2	35.6	50	116	Hori.	46.0	10.4
623.997	31.2	QP	20.8	-20.2	31.8	40	100	Vert.	46.0	14.2

CHART: WITH FACTOR ANT TYPE: <30MHz>: LOOP, <30-300MHz>: BICONICAL, <300MHz-1000MHz>: LOGPERIODIC, <1000MHz->: HORN  
 CALCULATION: RESULT = READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - GAIN (AMP)

**Radiated Spurious Emission (above 1GHz)<Magnet-base Antenna>**

\* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.  
Head Office EMC Lab. No.2 Semi Anechoic Chamber

Company	: Omron Corporation Okayama Factory	Report No.	: 27EE0054-HO
Equipment	: DeviceNet Wireless Units	Regulation	: Fcc Part15 Subpart C 15.247(d)
Model	: WD30-ME	Test distance	: 3/1m
Sample No.	: ME-4	Date	: 01/09/2007
Power	: DC 24.0V	Temperature	: 21deg.C
Mode	: Tx 2402.2MHz	Humidity	: 34%
Remarks	: Hor Y-axis / Ver X-axis	Engineer	: Takumi Shimada
Antenna	: Magnet		

**PK DETECT (RBW: 1MHz, VBW: 1MHz)**

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR [dBuV]	VER [dBuV]					HOR [dBuV/m]	VER [dBuV/m]		HOR [dB]	VER [dB]
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	2162.3	49.2	48.4	31.0	32.4	3.3	0.0	51.1	50.3	74.0	22.9	23.7
2	2390.0	48.2	44.6	30.6	32.3	3.5	0.0	50.0	46.4	74.0	24.0	27.6
3*	2400.0	77.2	71.4	30.6	32.3	3.6	0.0	79.1	73.3	74.0	-	-
4	4804.4	41.9	42.7	35.7	31.6	4.8	0.1	50.9	51.7	74.0	23.1	22.3
5	7206.6	41.7	42.5	37.5	31.4	5.5	0.4	53.7	54.5	74.0	20.3	19.5
6	9608.8	42.4	42.9	36.6	31.9	6.4	0.7	54.2	54.7	74.0	19.8	19.3
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac</b>												
7	12011.0	-	-	-	-	-	-	-	-	74.0	-	-
8	14413.2	-	-	-	-	-	-	-	-	74.0	-	-
9	16815.4	-	-	-	-	-	-	-	-	74.0	-	-
10	19217.6	-	-	-	-	-	-	-	-	74.0	-	-
11	21619.8	-	-	-	-	-	-	-	-	74.0	-	-
12	24022.0	45.9	44.1	39.1	30.7	10.6	0.0	55.4	53.6	74.0	18.6	20.4

**AV DETECT (RBW: 1MHz, VBW: 10Hz)**

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR [dBuV]	VER [dBuV]					HOR [dBuV/m]	VER [dBuV/m]		HOR [dB]	VER [dB]
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	2162.3	43.9	44.3	31.0	32.4	3.3	0.0	45.8	46.2	54.0	8.2	7.8
2	2390.0	35.4	32.7	30.6	32.3	3.5	0.0	37.2	34.5	54.0	16.8	19.5
3*	2400.0	74.2	68.7	30.6	32.3	3.6	0.0	76.1	70.6	54.0	-	-
4	4804.4	30.2	30.4	35.7	31.6	4.8	0.1	39.2	39.4	54.0	14.8	14.6
5	7206.6	30.6	30.2	37.5	31.4	5.5	0.4	42.6	42.2	54.0	11.4	11.8
6	9608.8	30.9	30.8	36.6	31.9	6.4	0.7	42.7	42.6	54.0	11.3	11.4
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac</b>												
7	12011.0	-	-	-	-	-	-	-	-	54.0	-	-
8	14413.2	-	-	-	-	-	-	-	-	54.0	-	-
9	16815.4	-	-	-	-	-	-	-	-	54.0	-	-
10	19217.6	-	-	-	-	-	-	-	-	54.0	-	-
11	21619.8	-	-	-	-	-	-	-	-	54.0	-	-
12	24022.0	31.8	31.8	39.1	30.7	10.6	0.0	41.3	41.3	54.0	12.7	12.7

\* Reference data

**20dBc(Fundamental 2402.2MHz) (RBW: 100kHz, VBW: 300kHz)**

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit 20dBc [dBuV/m]	MARGIN	
		HOR [dBuV]	VER [dBuV]					HOR [dBuV/m]	VER [dBuV/m]		HOR [dB]	VER [dB]
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
0	2402.2	97.8	94.2	30.6	32.3	3.6	0.0	99.7	96.1	-	-	-
3	2400.0	56.7	50.0	30.6	32.3	3.6	0.0	58.6	51.9	Funda-20dB	21.1	24.2

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.5dB

\*Except for the above table : All other spurious emissions were less than 20dB for the limit.

\*In the frequency over the fifth harmonic, the noise from the EUT was not seen.The data above is its base noise.

\*Hi-Pass Fiter was not used for factor 0.0dB of the above table.

**UL Apex Co., Ltd.**

**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

MF060b(14.06.06)

**Radiated Spurious Emission**

\* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

UL Apex Co., Ltd.  
Head Office EMC Lab. No.2 Semi Anechoic Chamber

Company : Omron Corporation Okayama Factory Report No. : 27EE0054-HO  
Equipment : DeviceNet Wireless Units Regulation : Fcc Part15 Subpart C 15.247(d)  
Model : WD30-ME Test distance : 3/1m  
Sample No. : ME-4 Date : 01/09/2007  
Power : DC 24.0V Temperature : 21deg.C  
Mode : Tx 2441.8MHz Humidity : 34%  
Remarks : Hor Y-axis / Ver X-axis Engineer : Takumi Shimada  
Antenna : Magnet  
**PK DETECT** (RBW: 1MHz, VBW: 1MHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR [dBuV]	VER [dBuV]					HOR [dB]	VER [dB]			
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	2201.8	46.3	48.3	30.9	32.4	3.3	0.0	48.1	50.1	74.0	25.9	23.9
2*	2400.0	63.9	60.8	30.6	32.3	3.6	0.0	65.8	62.7	74.0	-	-
3	2483.5	61.4	58.9	30.4	32.3	3.5	0.0	63.0	60.5	74.0	11.0	13.5
4	4883.6	41.0	43.0	36.2	31.6	4.8	0.0	50.4	52.4	74.0	23.6	21.6
5	7325.4	41.7	42.3	37.9	31.4	5.6	0.4	54.2	54.8	74.0	19.8	19.2
6	9767.2	42.8	42.0	36.6	32.0	6.4	0.7	54.5	53.7	74.0	19.5	20.3
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
7	12209.0	-	-	-	-	-	-	-	-	74.0	-	-
8	14650.8	-	-	-	-	-	-	-	-	74.0	-	-
9	17092.6	-	-	-	-	-	-	-	-	74.0	-	-
10	19534.4	-	-	-	-	-	-	-	-	74.0	-	-
11	21976.2	-	-	-	-	-	-	-	-	74.0	-	-
12	24418.0	44.9	44.7	39.1	30.6	10.8	0.0	54.7	54.5	74.0	19.3	19.5

**AV DETECT** (RBW: 1MHz, VBW: 10Hz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR [dBuV]	VER [dBuV]					HOR [dB]	VER [dB]			
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	2201.8	39.0	43.0	30.9	32.4	3.3	0.0	40.8	44.8	54.0	13.2	9.2
2*	2400.0	58.8	55.5	30.6	32.3	3.6	0.0	60.7	57.4	54.0	-	-
3	2483.5	49.5	47.4	30.4	32.3	3.5	0.0	51.1	49.0	54.0	2.9	5.0
4	4883.6	29.9	29.9	36.2	31.6	4.8	0.0	39.3	39.3	54.0	14.7	14.7
5	7325.4	29.9	30.1	37.9	31.4	5.6	0.4	42.4	42.6	54.0	11.6	11.4
6	9767.2	30.4	30.4	36.6	32.0	6.4	0.7	42.1	42.1	54.0	11.9	11.9
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
7	12209.0	-	-	-	-	-	-	-	-	54.0	-	-
8	14650.8	-	-	-	-	-	-	-	-	54.0	-	-
9	17092.6	-	-	-	-	-	-	-	-	54.0	-	-
10	19534.4	-	-	-	-	-	-	-	-	54.0	-	-
11	21976.2	-	-	-	-	-	-	-	-	54.0	-	-
12	24418.0	32.7	32.7	39.1	30.6	10.8	0.0	42.5	42.5	54.0	11.5	11.5

\* Reference data

**20dBc(Fundamental 2441.8MHz)** (RBW: 100kHz, VBW: 300kHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit 20dBc [dBuV/m]	MARGIN	
		HOR [dBuV]	VER [dBuV]					HOR [dB]	VER [dB]			
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
0	2441.8	96.4	93.6	30.5	32.3	3.6	0.0	98.2	95.4	-	-	-
2	2400.0	60.8	57.6	30.6	32.3	3.6	0.0	62.7	59.5	Funda-20dB	15.5	15.9

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.5dB

\*Except for the above table : All other spurious emissions were less than 20dB for the limit.

\*In the frequency over the fifth harmonic, the noise from the EUT was not seen. The data above is its base noise.

\*Hi-Pass Fiter was not used for factor 0.0dB of the above table.

**UL Apex Co., Ltd.**

**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

MF060b(14.06.06)

### Radiated Spurious Emission

\* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

UL Apex Co., Ltd.

Head Office EMC Lab. No.2 Semi Anechoic Chamber

Company : Omron Corporation Okayama Factory  
Equipment : DeviceNet Wireless Units  
Model : WD30-ME  
Sample No. : ME-4  
Power : DC 24.0V  
Mode : Tx 2480.2MHz  
Remarks : Hor Y-axis / Ver X-axis  
Antenna : Magnet

Report No. : 27EE0054-HO  
Regulation : Fcc Part15 Subpart C 15.247(d)  
Test distance : 3/1m  
Date : 01/09/2007  
Temperature : 21deg.C  
Humidity : 34%  
Engineer : Takumi Shimada

**PK DETECT** (RBW: 1MHz, VBW: 1MHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]		[dB]		
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	2240.2	45.1	50.0	30.9	32.4	3.4	0.0	47.0	51.9	74.0	27.0	22.1
2*	2400.0	63.5	58.9	30.6	32.3	3.6	0.0	65.4	60.8	74.0	-	-
3*	2483.5	67.1	63.1	30.4	32.3	3.5	0.0	68.7	64.7	74.0	-	-
4	2960.0	52.0	47.7	31.8	32.4	3.9	0.0	55.3	51.0	74.0	18.7	23.0
5	4960.4	43.4	42.2	36.6	31.6	4.9	0.0	53.3	52.1	74.0	20.7	21.9
6	7440.6	41.9	42.3	38.2	31.4	5.7	0.5	54.9	55.3	74.0	19.1	18.7
7	9920.8	42.2	42.6	36.5	32.0	6.4	0.7	53.8	54.2	74.0	20.2	19.8
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac</b>												
8	12401.0	-	-	-	-	-	-	-	-	74.0	-	-
9	14881.2	-	-	-	-	-	-	-	-	74.0	-	-
10	17361.4	-	-	-	-	-	-	-	-	74.0	-	-
11	19841.6	-	-	-	-	-	-	-	-	74.0	-	-
12	22321.8	-	-	-	-	-	-	-	-	74.0	-	-
13	24802.0	45.8	45.6	39.3	30.5	11.0	0.0	56.1	55.9	74.0	17.9	18.1

**AV DETECT** (RBW: 1MHz, VBW: 10Hz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]		[dB]		
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	2240.2	41.8	46.6	30.9	32.4	3.4	0.0	43.7	48.5	54.0	10.3	5.5
2*	2400.0	59.3	54.7	30.6	32.3	3.6	0.0	61.2	56.6	54.0	-	-
3*	2483.5	63.5	59.5	30.4	32.3	3.5	0.0	65.1	61.1	54.0	-	-
4	2960.0	44.8	38.9	31.8	32.4	3.9	0.0	48.1	42.2	54.0	5.9	11.8
5	4960.4	30.1	29.9	36.6	31.6	4.9	0.0	40.0	39.8	54.0	14.0	14.2
6	7440.6	30.1	30.1	38.2	31.4	5.7	0.5	43.1	43.1	54.0	10.9	10.9
7	9920.8	31.0	31.0	36.5	32.0	6.4	0.7	42.6	42.6	54.0	11.4	11.4
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac</b>												
8	12401.0	-	-	-	-	-	-	-	-	54.0	-	-
9	14881.2	-	-	-	-	-	-	-	-	54.0	-	-
10	17361.4	-	-	-	-	-	-	-	-	54.0	-	-
11	19841.6	-	-	-	-	-	-	-	-	54.0	-	-
12	22321.8	-	-	-	-	-	-	-	-	54.0	-	-
13	24802.0	33.0	33.0	39.3	30.5	11.0	0.0	43.3	43.3	54.0	10.7	10.7

\* Reference data

**20dBc(Fundamental 2480.2MHz)** (RBW: 100kHz, VBW: 300kHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit 20dBc [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]		[dB]		
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
0	2480.2	99.6	95.9	30.4	32.3	3.5	0.0	101.2	97.5	-	-	-
2	2400.0	60.9	56.5	30.6	32.3	3.6	0.0	62.8	58.4	Funda-20dB	18.4	19.1

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.5dB

\*Except for the above table : All other spurious emissions were less than 20dB for the limit.

\*In the frequency over the fifth harmonic, the noise from the EUT was not seen. The data above is its base noise.

\*Hi-Pass Fiter was not used for factor 0.0dB of the above table.

**UL Apex Co., Ltd.**

**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

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**Marker-Delta Method (RBW:30kHz)**

No.	FREQ [MHz]	Field strength of band-edge*		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATT [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR [dBuV]	VER					HOR	VER		HOR	VER
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
<b>PK DETECT</b>												
3	2483.5	51.9	49.7	30.4	32.3	3.5	0.0	53.5	51.3	74.0	20.5	22.7
<b>AV DETECT</b>												
3	2483.5	44.4	42.1	30.4	32.3	3.5	0.0	46.0	43.7	54.0	8.0	10.3

\*Reference data  
S/A Reading

		Polarity	Hor [dBuV]		Ver [dBuV]		
			Detector	PK	AV	PK	AV
				RBW	VBW	1MHz	10Hz
Step 1)	Fundamental(2480.2MHz)	1MHz	106.8	99.9	103.2	96.1	
Step 2)	Fundamental(2480.2MHz)	30kHz	93.1	82.0	89.3	78.1	
	Band-edge(2483.5MHz)	30kHz	38.2	26.5	35.8	24.1	
	Amplitude delta *1	-	54.9	55.5	53.5	54.0	
Step 3)	Field strength of band-edge *2	-	51.9	44.4	49.7	42.1	

\*1 Amplitude delta = Fundamental(RBW:30kHz) - Band-edge(RBW:30kHz)  
\*2 Field strength of band-edge = Fundamental(RBW:1MHz) - Amplitude delta

### Radiated Spurious Emission

\* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

UL Apex Co., Ltd.  
 Head Office EMC Lab. No.2 Semi Anechoic Chamber

Company	: Omron Corporation Okayama Factory	Report No.	: 27EE0054-HO
Equipment	: DeviceNet Wireless Units	Regulation	: Fcc Part15 Subpart C 15.247(d)
Model	: WD30-ME	Test distance	: 3m
Sample No.	: ME-4	Date	: 01/09/2007
Power	: DC 24.0V	Temperature	: 21deg.C
Mode	: Rx 2441.8MHz	Humidity	: 34%
Remarks	: Hor Y-axis / Ver X-axis	Engineer	: Takumi Shimada
Antenna	: Magnet		

**PK DETECT** (RBW: 1MHz, VBW: 1MHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]			[dB]	
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	2201.8	44.6	48.2	30.9	32.4	3.3	0.0	46.4	50.0	74.0	27.6	24.0
2	2441.8	41.8	41.8	30.5	32.3	3.6	0.0	43.6	43.6	74.0	30.4	30.4
3	4403.6	46.0	45.0	33.7	31.8	4.6	0.0	52.5	51.5	74.0	21.5	22.5
4	4883.6	41.1	41.3	36.2	31.6	4.8	0.0	50.5	50.7	74.0	23.5	23.3
5	7325.4	41.6	41.0	37.9	31.4	5.6	0.0	53.7	53.1	74.0	20.3	20.9

**AV DETECT** (RBW: 1MHz, VBW: 10Hz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]			[dB]	
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	2201.8	35.7	43.7	30.9	32.4	3.3	0.0	37.5	45.5	54.0	16.5	8.5
2	2441.8	30.3	30.2	30.5	32.3	3.6	0.0	32.1	32.0	54.0	21.9	22.0
3	4403.6	37.2	36.2	33.7	31.8	4.6	0.0	43.7	42.7	54.0	10.3	11.3
4	4883.6	30.0	29.9	36.2	31.6	4.8	0.0	39.4	39.3	54.0	14.6	14.7
5	7325.4	29.9	29.8	37.9	31.4	5.6	0.0	42.0	41.9	54.0	12.0	12.1

\*Except for the above table : All other spurious emissions were less than 20dB for the limit.

\*Hi-Pass Fiter was not used for factor 0.0dB of the above table.

**UL Apex Co., Ltd.**

**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

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**Radiated Spurious Emission (above 1GHz)<Pencil Antenna>**

\* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

UL Apex Co., Ltd.  
Head Office EMC Lab. No.4 Semi Anechoic Chamber

Company	: Omron Corporation Okayama Factory	Report No.	: 27EE0054-HO
Equipment	: DeviceNet Wireless Units	Regulation	: Fcc Part15 Subpart C 15.247(d)
Model	: WD30-ME	Test distance	: 3m
Sample No.	: ME-4	Date	: 12/07/2006
Power	: DC 24.0V	Temperature	: 23deg.C
Mode	: Tx 2402.2MHz	Humidity	: 30%
Remarks	: Hor Y-axis / Ver X-axis	Engineer	: Takumi Shimada
Antenna	: Pencil		

**PK DETECT (RBW: 1MHz, VBW: 1MHz)**

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	2390.0	45.7	48.0	26.6	32.7	2.1	0.0	41.7	44.0	74.0	32.3	30.0
2*	2400.0	73.7	75.1	26.6	32.7	2.1	0.0	69.7	71.1	74.0	-	-

**AV DETECT (RBW: 1MHz, VBW: 10Hz)**

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	2390.0	33.7	34.5	26.6	32.7	2.1	0.0	29.7	30.5	54.0	24.3	23.5
2*	2400.0	72.0	72.4	26.6	32.7	2.1	0.0	68.0	68.4	54.0	-	-

\* Reference data

**20dBc(Fundamental 2402.2MHz) (RBW: 100kHz, VBW: 300kHz)**

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit 20dBc [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
0	2402.2	95.7	97.2	26.6	32.7	2.1	0.0	91.7	93.2	-	-	-
2	2400.0	52.5	54.0	26.6	32.7	2.1	0.0	48.5	50.0	Funda-20dB	23.2	23.2

\*Hi-Pass Fiter was not used for factor 0.0dB of the above table.

**UL Apex Co., Ltd.**

**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

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**Radiated Spurious Emission (above 1GHz)**

\* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

UL Apex Co., Ltd.  
Head Office EMC Lab. No.4 Semi Anechoic Chamber

Company	: Omron Corporation Okayama Factory	Report No.	: 27EE0054-HO
Equipment	: DeviceNet Wireless Units	Regulation	: Fcc Part15 Subpart C 15.247(d)
Model	: WD30-ME	Test distance	: 3/1m
Sample No.	: ME-4	Date	: 12/07/2006
Power	: DC 24.0V	Temperature	: 23deg.C
Mode	: Tx 2441.8MHz	Humidity	: 30%
Remarks	: Hor Y-axis / Ver X-axis	Engineer	: Takumi Shimada
Antenna	: Pencil		

**PK DETECT (RBW: 1MHz, VBW: 1MHz)**

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR [dBuV]	VER [dBuV]					HOR [dB]	VER [dB]			
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	2201.9	50.0	50.2	26.1	32.8	2.0	0.0	45.3	45.5	74.0	28.7	28.5
2*	2400.0	64.7	63.0	26.6	32.7	2.1	0.0	60.7	59.0	74.0	-	-
3	2483.5	60.3	60.8	26.8	32.6	2.2	0.0	56.7	57.2	74.0	17.3	16.8
4	4883.6	40.5	40.2	31.0	31.5	3.2	1.4	44.6	44.3	74.0	29.4	29.7
5	7325.4	42.0	43.0	35.4	32.5	3.9	1.1	49.9	50.9	74.0	24.1	23.1
6	9767.2	41.8	41.7	37.6	33.1	4.9	1.1	52.3	52.2	74.0	21.7	21.8
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
7	12209.0	-	-	-	-	-	-	-	-	74.0	-	-
8	14650.8	-	-	-	-	-	-	-	-	74.0	-	-
9	17092.6	-	-	-	-	-	-	-	-	74.0	-	-
10	19534.4	-	-	-	-	-	-	-	-	74.0	-	-
11	21976.2	-	-	-	-	-	-	-	-	74.0	-	-
12	24418.0	44.9	45.1	38.3	31.6	8.0	0.0	50.1	50.3	74.0	23.9	23.7

**AV DETECT (RBW: 1MHz, VBW: 10Hz)**

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR [dBuV]	VER [dBuV]					HOR [dB]	VER [dB]			
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	2201.9	47.1	46.1	26.1	32.8	2.0	0.0	42.4	41.4	54.0	11.6	12.6
2*	2400.0	59.9	58.1	26.6	32.7	2.1	0.0	55.9	54.1	54.0	-	-
3	2483.5	48.4	48.8	26.8	32.6	2.2	0.0	44.8	45.2	54.0	9.2	8.8
4	4883.6	28.3	28.2	31.0	31.5	3.2	1.4	32.4	32.3	54.0	21.6	21.7
5	7325.4	29.6	29.6	35.4	32.5	3.9	1.1	37.5	37.5	54.0	16.5	16.5
6	9767.2	28.7	28.4	37.6	33.1	4.9	1.1	39.2	38.9	54.0	14.8	15.1
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
7	12209.0	-	-	-	-	-	-	-	-	54.0	-	-
8	14650.8	-	-	-	-	-	-	-	-	54.0	-	-
9	17092.6	-	-	-	-	-	-	-	-	54.0	-	-
10	19534.4	-	-	-	-	-	-	-	-	54.0	-	-
11	21976.2	-	-	-	-	-	-	-	-	54.0	-	-
12	24418.0	33.1	33.2	38.3	31.6	8.0	0.0	38.3	38.4	54.0	15.7	15.6

\* Reference data

**20dBc(Fundamental 2441.8MHz) (RBW: 100kHz, VBW: 300kHz)**

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit 20dBc [dBuV/m]	MARGIN	
		HOR [dBuV]	VER [dBuV]					HOR [dB]	VER [dB]			
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
0	2441.8	94.5	95.5	26.7	32.6	2.1	0.0	90.7	91.7	-	-	-
2	2400.0	61.6	59.9	26.6	32.7	2.1	0.0	57.6	55.9	Funda-20dB	13.1	15.8

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.5dB

\*Except for the above table : All other spurious emissions were less than 20dB for the limit.

\*In the frequency over the fifth harmonic, the noise from the EUT was not seen. The data above is its base noise.

\*Hi-Pass Fiter was not used for factor 0.0dB of the above table.

**Radiated Spurious Emission (above 1GHz)<Pencil Antenna>**

\* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

UL Apex Co., Ltd.  
Head Office EMC Lab. No.4 Semi Anechoic Chamber

Company	: Omron Corporation Okayama Factory	Report No.	: 27EE0054-HO
Equipment	: DeviceNet Wireless Units	Regulation	: Fcc Part15 Subpart C 15.247(d)
Model	: WD30-ME	Test distance	: 3/1m
Sample No.	: ME-4	Date	: 12/07/2006
Power	: DC 24.0V	Temperature	: 23deg.C
Mode	: Tx 2480.2MHz	Humidity	: 30%
Remarks	: Hor Y-axis / Ver X-axis	Engineer	: Takumi Shimada
Antenna	: Pencil		

**PK DETECT (RBW: 1MHz, VBW: 1MHz)**

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1*	2483.5	62.3	62.8	26.8	32.6	2.2	0.0	58.7	59.2	74.0	-	-

**AV DETECT (RBW: 1MHz, VBW: 10Hz)**

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1*	2483.5	59.0	59.3	26.8	32.6	2.2	0.0	55.4	55.7	54.0	-	-

\* Reference data

**Marker-Delta Method (RBW:30kHz)**

No.	FREQ [MHz]	Field strength of band-edge*		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATT [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
<b>PK DETECT</b>												
1	2483.5	51.0	51.5	26.8	32.6	2.2	0.0	47.4	47.9	74.0	26.6	26.1
<b>AV DETECT</b>												
1	2483.5	42.5	42.8	26.8	32.6	2.2	0.0	38.9	39.2	54.0	15.1	14.8

\*Reference data

S/A Reading

	Polarity	Hor [dBuV]		Ver [dBuV]		
		Detector		Detector		
		PK	AV	PK	AV	
		RBW		VBW		
		1MHz	10Hz	1MHz	10Hz	
Step 1)	Fundamental(2480.2MHz)	1MHz	103.8	96.9	104.9	97.7
Step 2)	Fundamental(2480.2MHz)	30kHz	89.8	78.7	91.0	79.9
	Band-edge(2483.5MHz)	30kHz	37.0	24.3	37.6	25.0
	Amplitude delta *1	-	52.8	54.4	53.4	54.9
Step 3)	Field strength of band-edge *2	-	51.0	42.5	51.5	42.8

\*1 Amplitude delta = Fundamental(RBW:30kHz) - Band-edge(RBW:30kHz)

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

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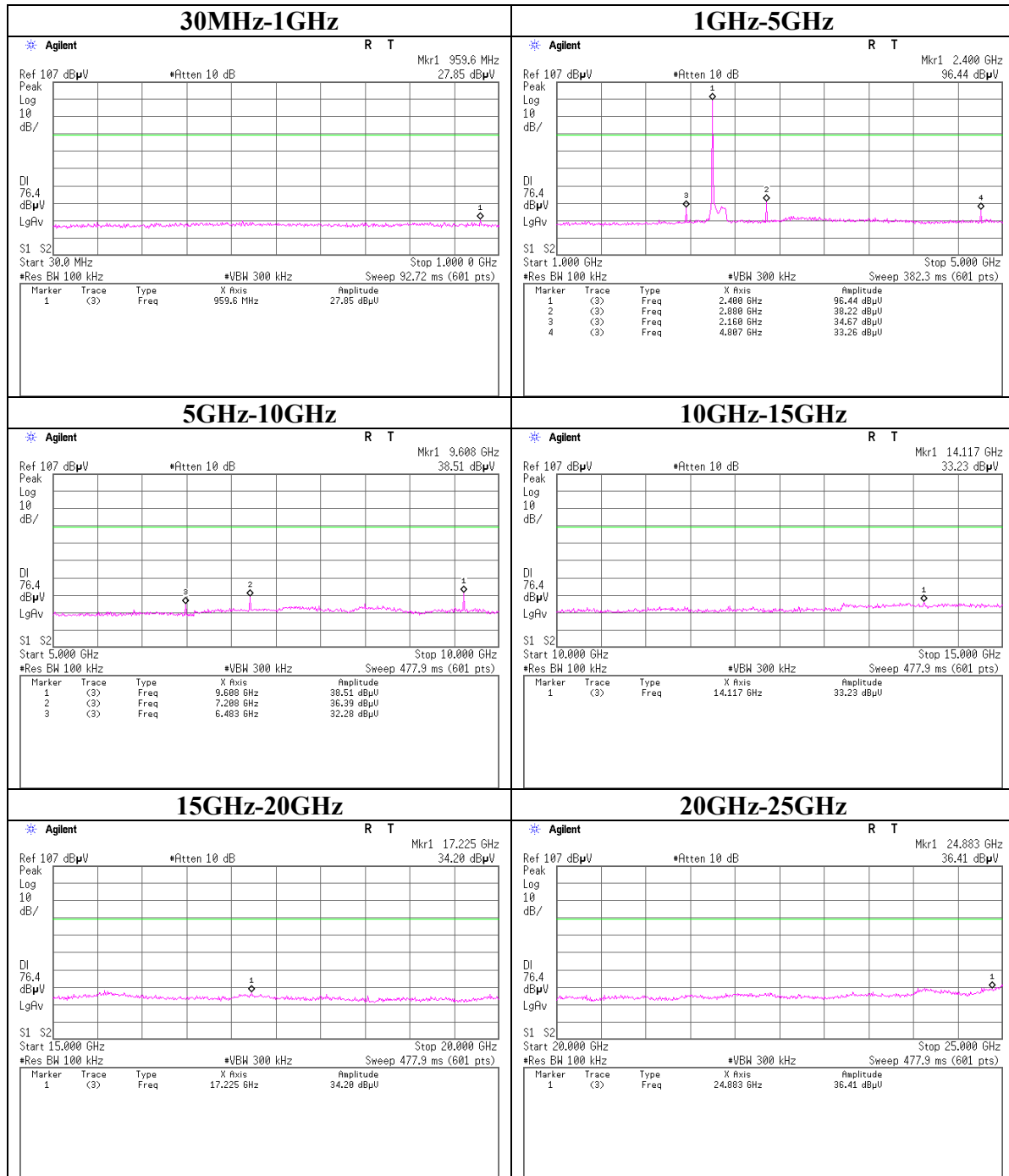
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

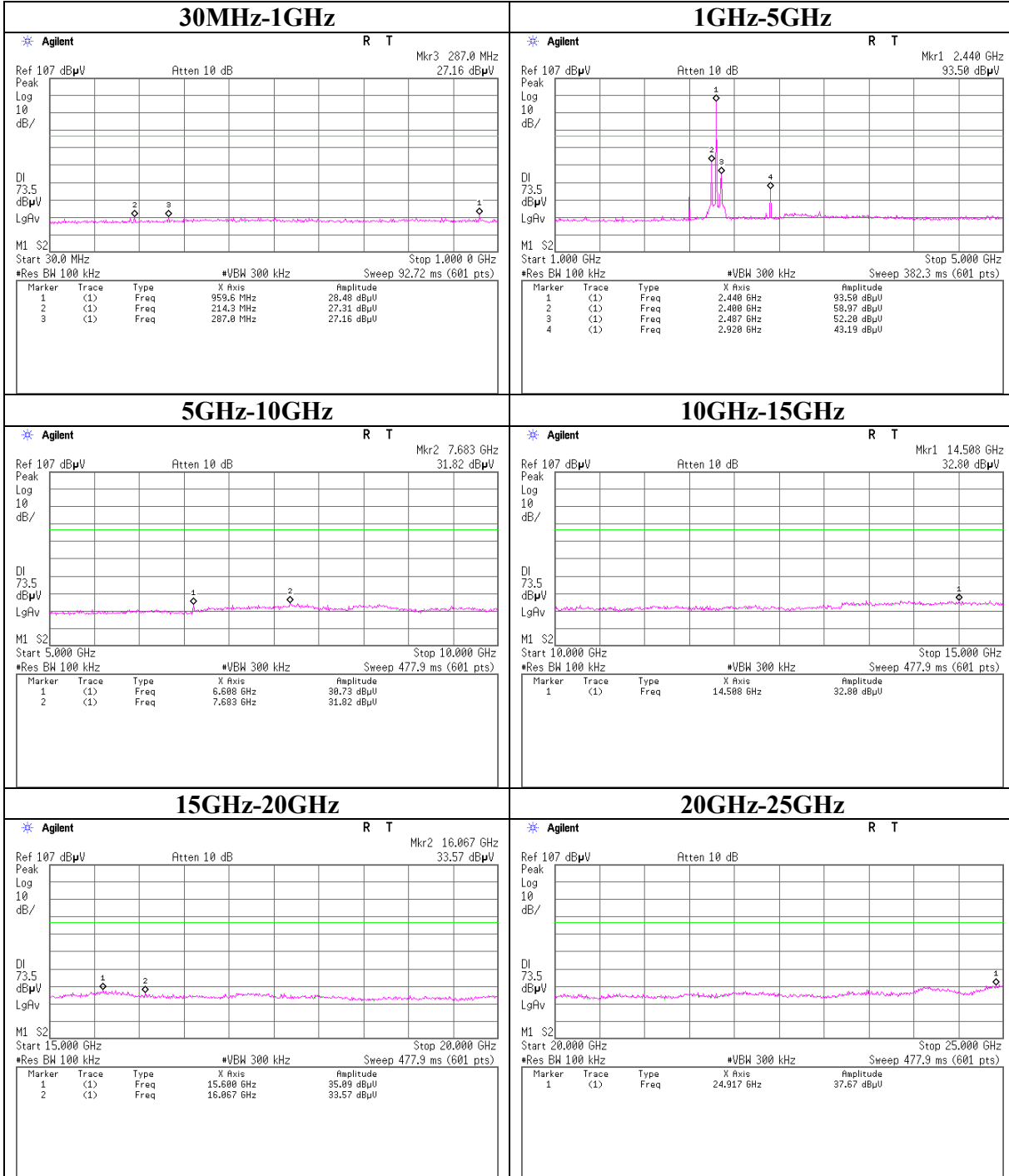
Facsimile : +81 596 24 8124

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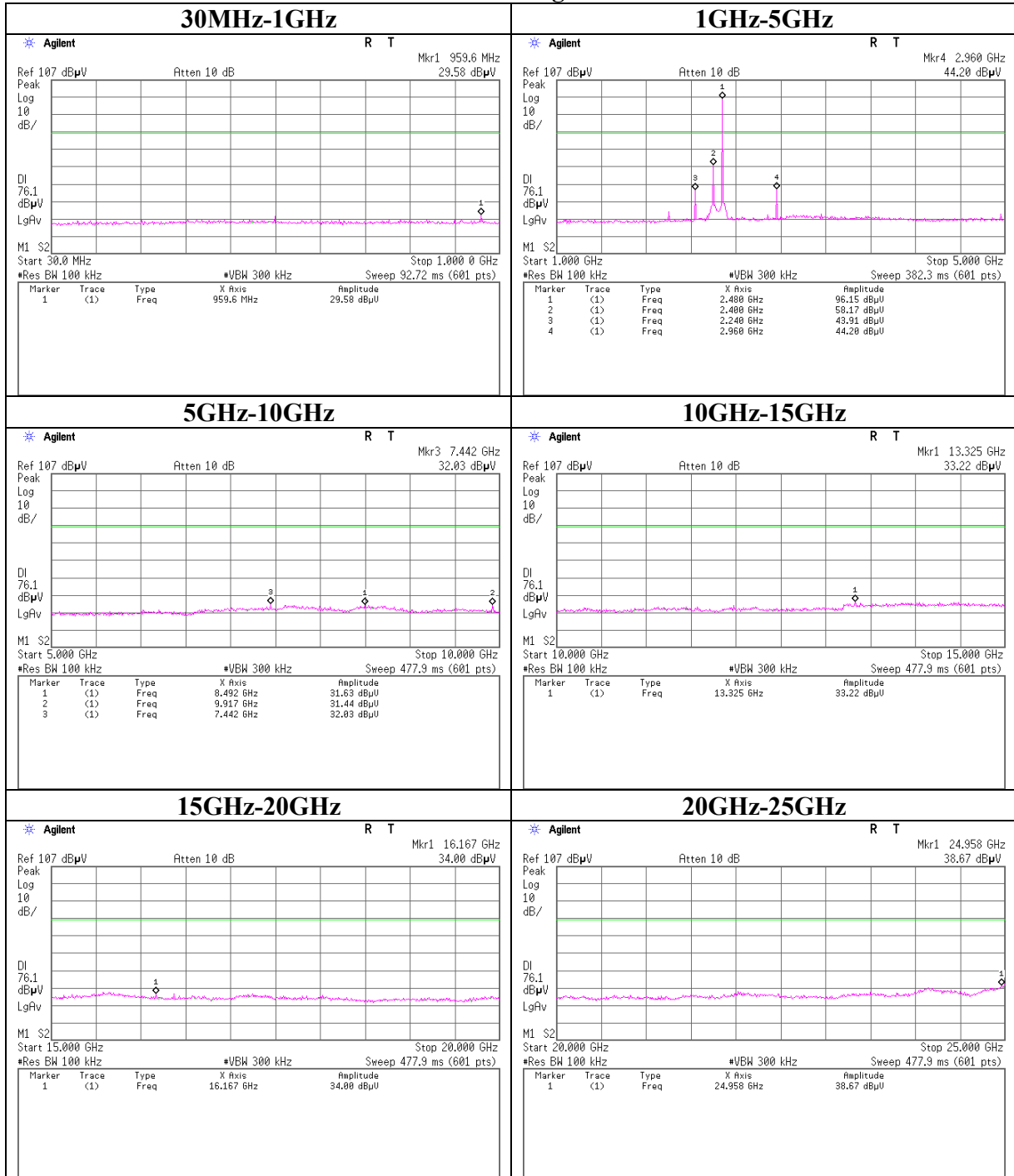
**Conducted Spurious Emission**  
**Ch: Low**



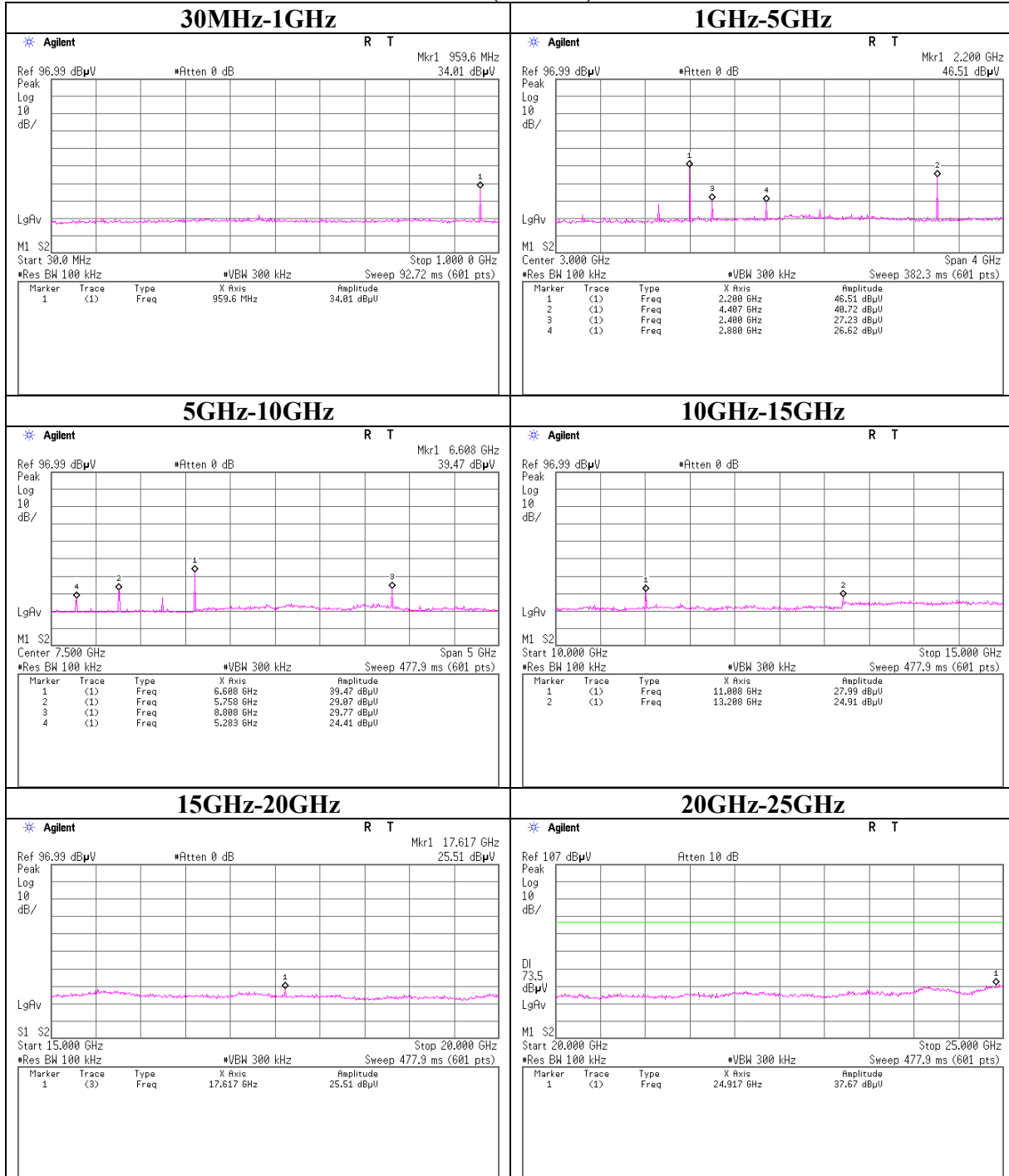
**Conducted Spurious Emission**  
**Ch: Mid**



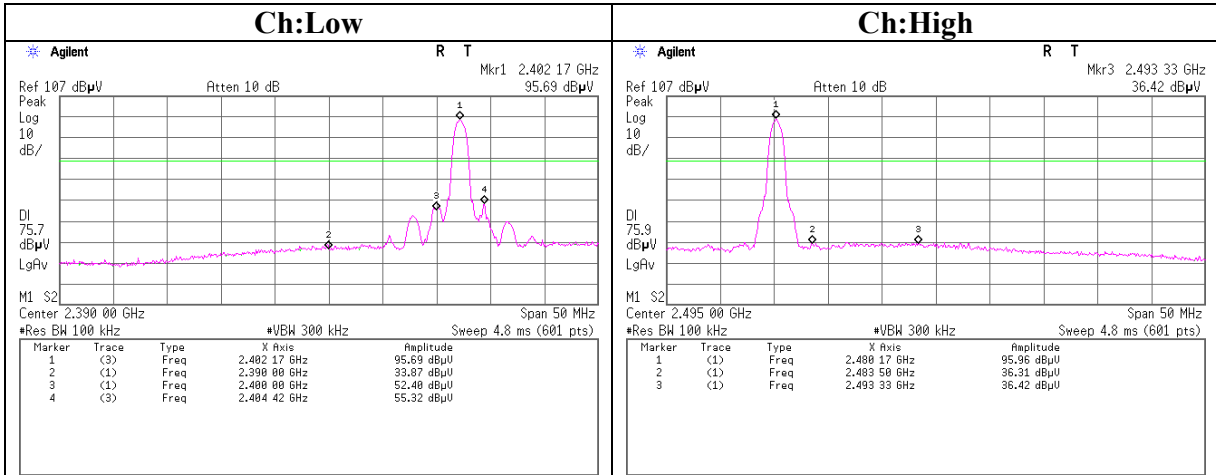
**Conducted Spurious Emission**  
**Ch: High**



**Conducted Spurious Emission**  
**Rx(Ch:Mid)**



**Conducted emission Band Edge compliance**



### Power Density

UL Apex Co., Ltd.  
Head Office EMC Lab. No.6 Shielded Room

COMPANY : Omron Corporation Okayama Factory      REGULATION : FCC15.247(e)/RSS-210A8.2(2)  
EQUIPMENT : DeviceNet Wireless Unit      TEST DISTANCE : -  
MODEL : WD30-ME      DATE : 12/08/2006  
SAMPLE NO. : ME-4      TEMPERATURE : 22°C  
POWER : DC24V      HUMIDITY : 52%  
MODE : Tx (Ch L, M, H)      ENGINEER : Takumi Shimada

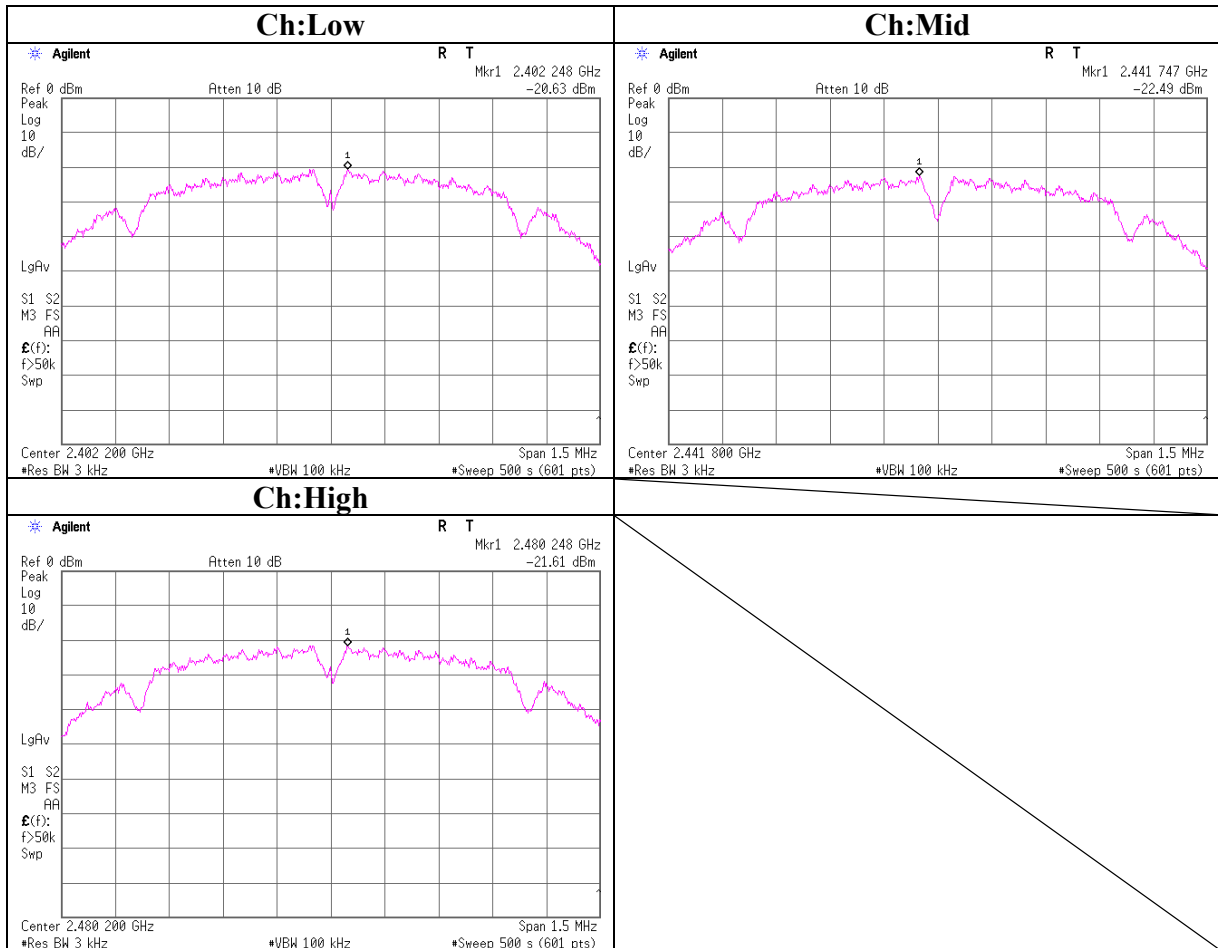
Ch	Freq. [MHz]	Reading [dBm]	Cable [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
Low	2402.2	-20.63	0.55	10.12	-9.96	8.00	17.96
Mid	2441.7	-22.49	0.51	10.12	-11.86	8.00	19.86
High	2480.2	-21.61	0.59	10.10	-10.92	8.00	18.92

Sample Calculation:

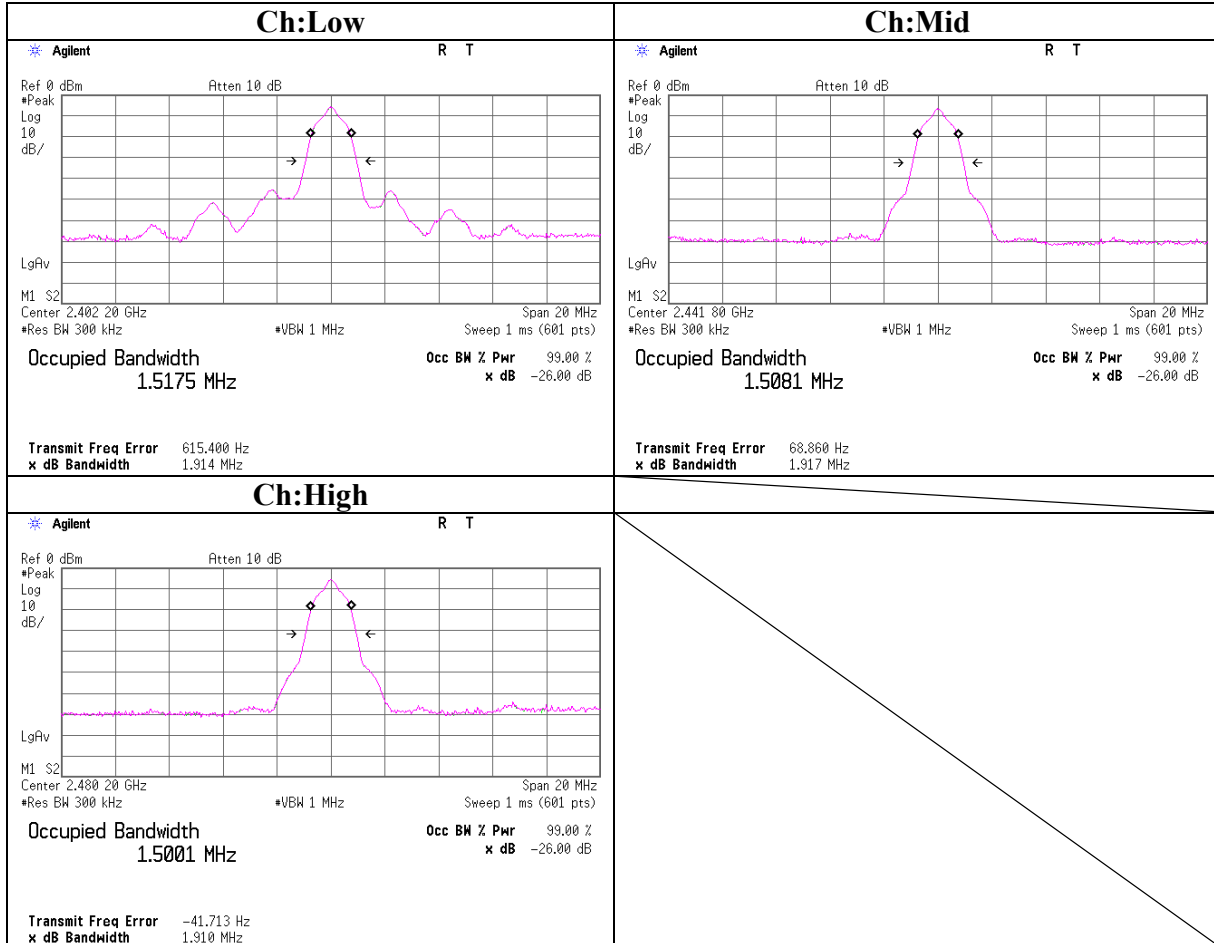
Result = Reading + Cable Loss + Attenuator



**Power Density**



### 99% Occupied Bandwidth



### **APPENDIX 3:Test instruments**

#### **EMI test equipment**

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
MAEC-04	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	RE	2006/03/06 * 12
MSA-05	Spectrum Analyzer	Advantest	R3273	RE	2006/05/20 * 12
MOS-15	Thermo-Hygrometer	Custom	CTH-180	RE	2006/01/19 * 24
MHA-21	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	RE	2006/08/17 * 12
MCC-57	Microwave Cable 1G- 26.5GHz	Suhner	SUCOFLEX104	RE	2006/04/15 * 12
MHF-05	High Pass Filter 3.5- 24GHz	Tokimec	TF323DCA	RE	2006/01/24 * 12
MPA-12	MicroWave System Amplifier	Agilent	83017A	RE	2006/03/27 * 12
MHA-17	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	RE	2006/04/15 * 12
MSTW-14	EMI measurement program	TSJ	TEPTO-DV	RE / CE	-
MJM-07	Measure	PROMART	SEN1955	RE	-
MOS-14	Thermo-Hygrometer	Custom	CTH-180	AT	2006/01/19 * 24
MSA-04	Spectrum Analyzer	Agilent	E4448A	AT / CE	2006/06/02 * 12
MCC-15	Microwave Cable 1G- 26.5GHz 1m	Suhner	SUCOFLEX 104	AT	2006/02/02 * 12
MAT-22	Attenuator(10dB) DC- 18GHz	Orient Microwave	BX10-0476-00	AT	2006/03/18 * 12
MDPS-13	DC Power Supply	Kikusui	PAK35-10A	AT	Pre Check
MPM-09	Power Meter	Anritsu	ML2495A	AT	2006/09/20 * 12
MPSE-11	Power sensor	Anritsu	MA2411B	AT	2006/09/20 * 12
MMM-11	Digital HiTESTER	Hioki	3805	AT	2006/04/25 * 12
MAT-31	Attenuator(6dB)	TME	UFA-01	RE	2006/03/11 * 12
MLA-08	Logperiodic Antenna	Schwarzbeck	UKLP9140-A	RE	2006/01/29 * 12
MBA-05	Biconical Antenna	Schwarzbeck	BBA9106	RE	2006/01/29 * 12
MCC-50	Coaxial cable	UL Apex	-	RE	2006/03/09 * 12
MTR-02	Test Receiver	Rohde & Schwarz	ESCS30	RE	2006/02/02 * 12
MPA-14	Pre Amplifier	SONOA INSTRUMENT	310	RE	2006/03/25 * 12
MAEC-02	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	RE / CE	2006/04/10 * 12
MRENT-39	Spectrum Analyzer	Advantest	R3273	RE	2006/07/25 * 12
MCC-16	Microwave Cable 1G- 26.5GHz	Suhner	SUCOFLEX 104	RE	2006/02/02 * 12
MCC-47	Microwave Cable 1G- 26.5GHz	Suhner	SUCOFLEX104	RE	2006/08/29 * 12
MHA-06	Horn Antenna	Schwarzbeck	BBHA9120D	RE	2006/01/09 * 12
MHA-02	Horn Antenna	EMCO	3160-09	RE	2006/01/09 * 12
MPA-10	Pre Amplifier	Agilent	8449B	RE	2006/09/11 * 12
MHF-06	High Pass Filter 3.5- 24GHz	Tokimec	TF323DCA	RE	2006/05/20 * 12
MOS-02	Digital Humidity Indicator	N.T	NT-1800	RE / CE	2006/11/27 * 12

**UL Apex Co., Ltd.**

**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

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Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
MAEC-03	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	RE	2006/03/03 * 12
MSA-09	Spectrum Analyzer	Advantest	R3273	RE	2006/12/08 * 12
TR-07	Test Receiver	Rohde & Schwarz	ESCS30	RE	2006/09/12 * 12
MCC-51	Coaxial cable	UL Apex	-	RE	2006/03/11 * 12
MBA-03	Biconical Antenna	Schwarzbeck	BBA9106	RE	2006/01/29 * 12
MLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2006/01/29 * 12
MAT-30	Attenuator(6dB)	TME	UFA-01	RE	2006/03/11 * 12
MPA-13	Pre Amplifier	SONOA INSTRUMENT	310	RE	2006/03/25 * 12
MTR-03	Test Receiver	Rohde & Schwarz	ESCI	CE	2006/03/04 * 12
MCC-13	Coaxial Cable	Fujikura/Agilent	-	CE	2007/02/27 * 12
MLS-07	LISN(AMN)	Schwarzbeck	NSLK8127	CE (EUT)	2007/02/22 * 12
MDPS-02	DC Power Supply	Agilent	6654A	CE	Pre Check
MJM-05	Measure	PROMART	SEN1955	CE	-

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.

**Test Item:**

CE: Conducted Emission

RE: Radiated Spurious Emission

AT: Antenna terminal conducted measurements

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