



# RADIO TEST REPORT

Test Report No. : 28BE0083-HO-A

Applicant : Panasonic Communications Co., Ltd.  
Type of Equipment : Cordless Telephone (Handset)  
Model No. : KX-TGA431  
FCC ID : ACJ96NKX-TG4321  
Test standard : FCC Part 15 Subpart C 2007  
Section 15.207, Section 15.247  
Test Result : Complied

1. This test report shall not be reproduced in full or partial, without the written approval of UL Japan, Inc.
2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the above regulation.
4. The test results in this report are traceable to the national or international standards.

Date of test:

October 1 to 4, 2007

Tested by:

*T. Sasagawa*

Tomotaka Sasagawa  
EMC Services

*M. Kosaka*

Makoto Kosaka  
EMC Services

Approved by :

*H. Shimoji*

Hironobu Shimoji  
Assistant Manager of EMC Services

**NVLAP**<sup>®</sup>

NVLAP LAB CODE: 200572-0

This laboratory is accredited by the NVLAP LAB CODE 200572-0, U.S.A. The tests reported herein have been performed in accordance with its terms of accreditation.  
\*As for the range of Accreditation in NVLAP, you may refer to the WEB address, <http://ulapex.jp/emc/nvlap.htm>

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MF060b (18.06.07)

<b>CONTENTS</b>	<b>PAGE</b>
<b>SECTION 1: Client information.....</b>	<b>3</b>
<b>SECTION 2: Equipment under test (E.U.T.) .....</b>	<b>3</b>
<b>SECTION 3: Test specification, procedures &amp; results .....</b>	<b>4</b>
<b>SECTION 4: Operation of E.U.T. during testing.....</b>	<b>8</b>
<b>SECTION 5: Conducted Emission .....</b>	<b>10</b>
<b>SECTION 6: Spurious Emission.....</b>	<b>11</b>
<b>SECTION 7: Bandwidth.....</b>	<b>12</b>
<b>SECTION 8: Maximum Peak Output Power .....</b>	<b>12</b>
<b>SECTION 9: Carrier Frequency Separation.....</b>	<b>12</b>
<b>SECTION 10: Number of Hopping Frequency .....</b>	<b>12</b>
<b>SECTION 11: Dwell time .....</b>	<b>12</b>
<b>APPENDIX 1: Photographs of test setup.....</b>	<b>13</b>
<b>Conducted Emission .....</b>	<b>13</b>
<b>Spurious Emission (Radiated) .....</b>	<b>14</b>
<b>Worst Case Position (Horizontal: X-axis/ Vertical:Z-axis) .....</b>	<b>15</b>
<b>APPENDIX 2: Data of EMI test .....</b>	<b>16</b>
<b>Conducted Emission .....</b>	<b>16</b>
<b>Carrier Frequency Separation .....</b>	<b>24</b>
<b>20dB Bandwidth .....</b>	<b>26</b>
<b>Number of Hopping Frequency.....</b>	<b>28</b>
<b>Dwell time .....</b>	<b>30</b>
<b>Maximum Peak Output Power.....</b>	<b>32</b>
<b>Radiated Spurious Emission (below 1GHz) .....</b>	<b>33</b>
<b>Radiated Spurious Emission (above 1GHz) .....</b>	<b>37</b>
<b>Conducted Spurious Emission.....</b>	<b>41</b>
<b>99% Occupied Bandwidth .....</b>	<b>49</b>
<b>APPENDIX 3:Test instruments .....</b>	<b>50</b>

## **SECTION 1: Client information**

Company Name	Panasonic Communications Co., Ltd.
Brand name	Panasonic
Address	1-62, 4-chome, Minoshima, Hakata-ku, Fukuoka, 812-8531 Japan
Telephone Number	+81-92-477-1405
Facsimile Number	+81-92-477-1487
Contact Person	Kunihiko Nawata

## **SECTION 2: Equipment under test (E.U.T.)**

### **2.1 Identification of E.U.T.**

Type of Equipment	Cordless Telephone (Handset)
Model No.	KX-TGA431
Serial No.	RF TEST No.1 (Used for Antenna Terminal Conducted test) Air001 (Used for Conducted Emission and Radiated Emission tests)
Rating	DC 2.4V (Ni-MH Battery AAA x2)
Country of Manufacture	China
Condition of EUT	Engineering prototype (Not for sale: This sample is equivalent to mass-produced items.)
Receipt Date of Sample	October 1, 2007
Modification of EUT	No modification by the test lab.

### **2.2 Product Description**

Equipment Type	Transceiver
Frequency band	Lower Channel : 5759.700MHz Upper Channel : 5838.185MHz
Bandwidth & Channel spacing	Bandwidth: 79MHz Channel spacing: 892kHz
Type of Modulation	FHSS
Antenna Type	5/8 lambda Pattern-Antenna
Antenna Gain	3dBi (Typ.)
Power Supply (RF Part)	DC3.1V
Method of Frequency Generation	Synthesizer
Operation Clock	Main clock:13.824 MHz

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### **SECTION 3: Test specification, procedures & results**

#### **3.1 Test Specification**

Test Specification : FCC Part15 Subpart C: 2007  
Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators  
Section 15.207 Conducted limits  
Section 15.247 Operation within the bands 902-928MHz,  
2400-2483.5MHz, and 5725-5850MHz

#### **FCC 15.31 (e)**

The EUT provides stable voltage (DC3.1V) constantly to RF Module regardless of input voltage. Therefore, the EUT complies with the requirement.

#### **FCC Part 15.203 Antenna requirement**

It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT. Therefore, the equipment complies with the antenna requirement of Section 15.203.

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3.2 Procedures and results

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst Margin	Results		
1	Conducted emission	FCC: ANSI C63.4:2003 7. AC powerline conducted emission measurements	FCC: Section 15.207		N/A	[Tx] 39.1dB 29.87212MHz/ 29.61020MHz QP, N/L [Rx] 39.8dB 29.30044MHz/ 29.32044MHz QP, L/N	Complied		
		IC: RSS-Gen 7.2.2	IC: RSS-Gen 7.2.2						
2	Carrier Frequency Separation	FCC: ANSI C63.4:2003 13. Measurement of intentional radiators	FCC: Section 15.247(a)(1)	Conducted	N/A	See data.	Complied		
		IC: -	IC: RSS-210 A8.1 (b)						
3	20dB Bandwidth	FCC: ANSI C63.4:2003 13. Measurement of intentional radiators	FCC: Section 15.247(a)(1)(ii)	Conducted	N/A		See data.	Complied	
		IC: -	IC: RSS-210 A8.1 (a) (e)						
4	Number of Hopping Frequency	FCC: ANSI C63.4:2003 13. Measurement of intentional radiators	FCC: Section 15.247(a)(1)(ii)	Conducted	N/A			See data.	Complied
		IC: -	IC: RSS-210 A8.1 (e)						
5	Dwell time	FCC: ANSI C63.4:2003 13. Measurement of intentional radiators	FCC: Section 15.247(a)(1)(ii)	Conducted	N/A				See data.
		IC: -	IC: RSS-210 A8.1 (e)						
6	Maximum Peak Output Power	FCC: ANSI C63.4:2003 13. Measurement of intentional radiators	FCC: Section 15.247(b)(1)	Conducted	N/A	See data.			
		IC: RSS-Gen 4.8	IC: RSS-210 A8.4 (3)						
7	Band Edge Compliance	FCC: ANSI C63.4:2003 13. Measurement of intentional radiators	FCC: Section 15.247(d)	Conducted	N/A		See data.		
		IC: -	IC: RSS-210 A8.5						
8	Spurious Emission	FCC: ANSI C63.4:2003 13. Measurement of intentional radiators	FCC: Section 15.247(d)	Conducted/ Radiated	N/A			See data.	
		IC: RSS-Gen 4.9 RSS-Gen 4.10	IC: RSS-210 A8.5 RSS-Gen 7.2.1 and 7.2.3						

Note: UL Japan, Inc.'s EMI Work Procedures No.QPM05 and QPM15.

\*These tests were also referred to FCC Public Notice DA 00-705 "Guidance on Measurement for Frequency Hopping Spread Spectrum Systems".

\*These tests were performed without any deviations from test procedure except for additions or exclusions.

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### 3.3 Addition to standards

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	99% Occupied Band Width	IC: RSS-Gen 4.6.1	IC: RSS-Gen 4.6.1	Conducted	N/A	N/A	N/A

### 3.4 Uncertainty

The following uncertainties have been calculated to provide a confidence level of 95% using a coverage factor k=2.

#### Conducted Emission

The measurement uncertainty for this test is  $\pm 4.19\text{dB}$ (9-150kHz),  $\pm 3.73\text{dB}$ (150kHz-30MHz).  
The data listed in this test report has enough margin, more than the site margin.

#### Spurious Emission (Radiated)

The measurement uncertainty for this test using Biconical antenna is  $\pm 4.88\text{dB}$ (3m).  
The measurement uncertainty for this test using Logperiodic antenna is  $\pm 4.86\text{dB}$ (3m).  
The measurement uncertainty for this test using Horn antenna is  $\pm 5.77\text{dB}$ .  
[Tx] The data listed in this report meets the limits unless the uncertainty is taken into consideration.  
[Rx] The data listed in this test report has enough margin, more than the site margin.

#### Other test except Conducted Emission and Spurious Emission (Radiated)

The measurement uncertainty for this test is  $\pm 3.0\text{dB}$ .

### 3.5 Test Location

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	FCC Registration Number	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms
No.1 semi-anechoic chamber	313583	IC4247	19.2 x 11.2 x 7.7m	7.0 x 6.0m	No.1 Power source room
No.2 semi-anechoic chamber	655103	IC4247-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 semi-anechoic chamber	148738	IC4247-3	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.3 Preparation room
No.3 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.4 semi-anechoic chamber	134570	IC4247-4	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.4 Preparation room
No.4 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.5 semi-anechoic chamber	-	-	6.0 x 6.0 x 3.9m	6.0 x 6.0m	-
No.6 shielded room	-	-	4.0 x 4.5 x 2.7m	4.75 x 5.4 m	-
No.6 measurement room	-	-	4.75 x 5.4 x 3.0m	4.75 x 4.15 m	-
No.7 shielded room	-	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.8 measurement room	-	-	3.1 x 5.0 x 2.7m	N/A	-

\* Size of vertical conducting plane (for Conducted Emission test) : 2.0 x 2.0m for No.1, No.2, No.3, and No.4 semi-anechoic chambers and No.3 and No.4 shielded rooms.

### 3.6 Test set up, Test instruments and Data of EMI

Refer to APPENDIX 1 to 3.

## **SECTION 4: Operation of E.U.T. during testing**

### **4.1 Operating Modes**

<b>Test</b>	<b>Operating mode</b>	<b>Tested frequency</b>
Carrier Frequency Separation	Transmitting (Tx) (Hopping on)	5759.700MHz 5798.053MHz 5838.185MHz
Conducted Emission	Transmitting (Tx)	5759.700MHz 5798.053MHz 5838.185MHz
	Receiving (Rx)	5798.053MHz
20dB Bandwidth Maximum Peak Output Power	Transmitting (Tx) (Hopping off)	5759.700MHz 5798.053MHz 5838.185MHz
Number of Hopping Frequency Dwell time	Transmitting (Tx) (Hopping on)	-
Spurious Emission(Radiated)	Transmitting (Tx), ANT1	5759.700MHz
	Transmitting (Tx), ANT2	5798.053MHz 5838.185MHz
	Receiving (Rx)	5798.053MHz
Spurious Emission(Conducted)	Transmitting (Tx)	5759.700MHz 5798.053MHz 5838.185MHz
	Receiving (Rx)	5798.053MHz
Band Edge compliance(Conducted)	Transmitting (Tx) Hopping on	-
	Transmitting (Tx) Hopping off	5759.700MHz 5838.185MHz
99% Occupied Bandwidth	Transmitting (Tx) Hopping on	-
	Transmitting (Tx) Hopping off	5759.700MHz 5798.053MHz 5838.185MHz

#### **[Remarks]**

The EUT has 2 antennas (Antenna 1 and 2). At Ch:Low(5759.700MHz) for Spurious Emission(Radiated), The Antenna 1 is used since Antenna 1 has the higher output power level than Antenna 2. At Ch:Mid/Ch:High (5798.053MHz/5838.185MHz) for Spurious Emission(Radiated), the Antenna 2 is used since Antenna 2 has the higher output power level than Antenna 1. As for Conducted Emission test, both Antenna 1 and 2 were used.

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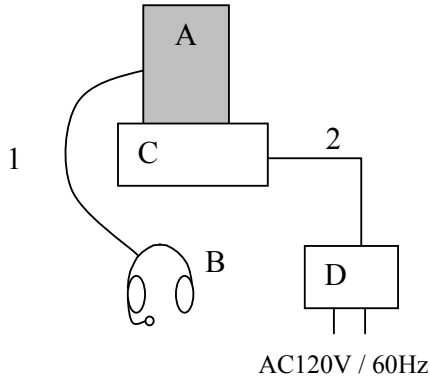
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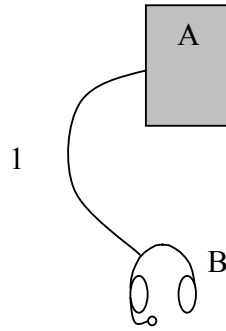
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## 4.2 Configuration and peripherals

[Conducted Emission test]



[Other tests than Conducted Emission test]



\* Cabling and setup were taken into consideration and test data was taken under worst case conditions.

### Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Cordless Telephone (Handset)	KX-TGA431	RF TEST No.1 *1) Air001 *2)	Panasonic Communications Co., Ltd.	EUT
B	Headphone	KX-TCA95	-	Panasonic Communications Co., Ltd.	-
C	Battery Charger	PNLC1001ZAB	-	Panasonic Communications Co., Ltd.	- *3)
D	AC Adapter	PQLV209	0734R	Panasonic Communications Co., Ltd.	- *3)

### List of cables used

No.	Name	Length (m)	Shield	
			Cable	Connector
1	Headset Cable	1.45	Shielded	Shielded
2	DC Cable *3)	1.9	Unshielded	Unshielded

\*1) Used for Antenna Terminal Conducted test

\*2) Used for Conducted Emission and Radiated Emission tests

\*3) The test was performed without Battery charger and AC Adapter in Radiated Emission test since the test result (for EUT without Battery charger) had a higher output power level.

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## **SECTION 5: Conducted Emission**

### **Test Procedure and conditions**

EUT was placed on a urethane platform of nominal size, 1.0m by 1.5m, raised 80cm above the conducting ground plane. The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT, including peripherals aligned and flushed with rear of tabletop. All other surfaces of tabletop were at least 80cm from any other grounded conducting surface. EUT was located 80cm from a Line Impedance Stabilization Network (LISN)/ Artificial mains Network (AMN) and excess AC cable was bundled in center.

#### For the tests on EUT with other peripherals (as a whole system)

I/O cable and AC cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane. All unused 50ohm connectors of the LISN(AMN) were resistivity terminated in 50ohm when not connected to the measuring equipment.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT in a Semi Anechoic Chamber or a Measurement Room.

The EUT was connected to a LISN (AMN).

An overview sweep with peak detection has been performed.

<b>Detector</b>	<b>: CISPR quasi-peak and average detector (IF BW 9 kHz)</b>
<b>Measurement range</b>	<b>: 0.15-30MHz</b>
<b>Test data</b>	<b>: APPENDIX 2</b>
<b>Test result</b>	<b>: Pass</b>

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## **SECTION 6: Spurious Emission**

### **[Conducted]**

#### **Test Procedure**

The Out of Band Emission was measured with a spectrum analyzer connected to the antenna port.

**Test data** : APPENDIX 2

**Test result** : Pass

### **[Radiated]**

#### **Test Procedure**

EUT was placed on a urethane platform of nominal size, 1.0m by 1.5m, raised 80cm above the conducting ground plane.

The Radiated Electric Field Strength intensity has been measured in a Semi Anechoic Chamber with a ground plane and at a distance of 3m(Below 10GHz) and 1m(Upper 10GHz) and 0.5m (Upper 26.5GHz).

The height of the measuring varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer (in linear mode).

The test was made with the detector (RBW/VBW) in the following table.

When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

The result also satisfied with the general limits specified in section 15.209(a).

Frequency	Below 1GHz	Above 1GHz
Instrument used	Test Receiver	Spectrum Analyzer
Detector	QP: BW 120kHz	PK: RBW:1MHz/VBW: 1MHz
IF Bandwidth		AV: RBW:1MHz/VBW:10Hz

- The carrier level and noise levels were confirmed at each position of X, Y and Z axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

**Test data** : APPENDIX 2

**Test result** : Pass

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## **SECTION 7: Bandwidth**

### **Test Procedure**

The bandwidth was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 2  
Test result : Pass

## **SECTION 8: Maximum Peak Output Power**

### **Test Procedure**

The Maximum Peak Output Power was measured with a power meter (tested bandwidth: 50MHz) connected to the antenna port.

Test data : APPENDIX 2  
Test result : Pass

## **SECTION 9: Carrier Frequency Separation**

### **Test Procedure**

The carrier frequency separation was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 2  
Test result : Pass

## **SECTION 10: Number of Hopping Frequency**

### **Test Procedure**

The Number of Hopping Frequency was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 2  
Test result : Pass

## **SECTION 11: Dwell time**

### **Test Procedure**

The Dwell time was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 2  
Test result : Pass

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**APPENDIX 1: Photographs of test setup**

**Conducted Emission**

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**Spurious Emission (Radiated)**

This page has been submitted in a separate sheet.

**Worst Case Position (Horizontal: X-axis/ Vertical:Z-axis)**

This page has been submitted in a separate sheet.

**APPENDIX 2: Data of EMI test**

**Conducted Emission**  
(Tx, Ant1, Low)

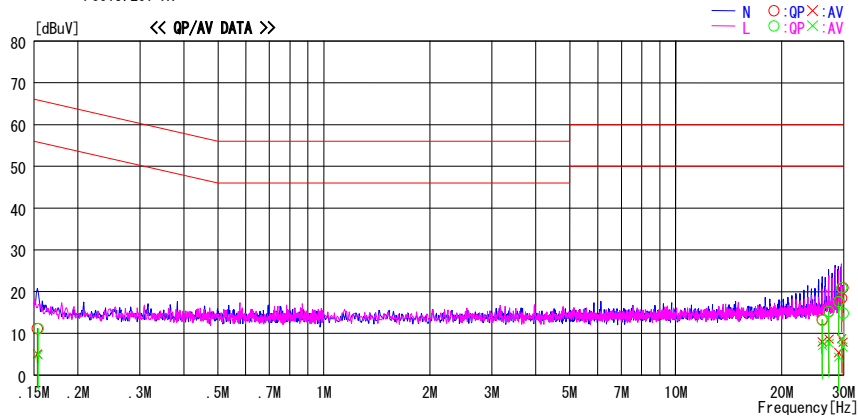
**DATA OF CONDUCTED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber  
Date : 2007/10/03

Company : Panasonic Communications  
Kind of EUT : Cordless Telephone (Handset)  
Model No. : KX-TGA431  
Serial No. : Air001  
Report No. : 28BE0083-HO  
Power : AC 120V / 60Hz  
Temp./Humi. : 24 deg. C / 64%  
Operator : Tomotaka Sasagawa

Mode / Remarks : Transmitting , Lch , 5759.7MHz , ANT1

LIMIT : FCC15.207 QP  
FCC15.207 AV



Frequency [MHz]	Reading Level		Corr. Factor	Results		Limit		Margin		Phase
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]	
0.15340	10.9	4.8	0.3	11.2	5.1	65.8	55.8	54.6	50.7	N
0.15425	10.9	4.5	0.3	11.2	4.8	65.8	55.8	54.6	51.0	L
26.06037	11.4	6.1	1.9	13.3	8.0	60.0	50.0	46.7	42.0	N
26.10037	11.2	5.2	1.9	13.1	7.1	60.0	50.0	46.9	42.9	L
27.22039	13.4	6.7	1.9	15.3	8.6	60.0	50.0	44.7	41.4	N
27.24039	13.4	5.7	1.9	15.3	7.6	60.0	50.0	44.7	42.4	L
29.03212	15.8	3.4	2.0	17.8	5.4	60.0	50.0	42.2	44.6	N
29.03587	15.6	2.3	2.0	17.6	4.3	60.0	50.0	42.4	45.7	L
29.58291	16.4	6.7	2.0	18.4	8.7	60.0	50.0	41.6	41.3	N
29.87212	18.9	5.9	2.0	20.9	7.9	60.0	50.0	39.1	42.1	N
29.61020	18.9	6.7	2.0	20.9	8.7	60.0	50.0	39.1	41.3	L
29.89725	12.8	4.7	2.0	14.8	6.7	60.0	50.0	45.2	43.3	L

CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT[dBuV]=READING[dBuV]+C.F[dB] (L1SN LOSS+CABLE LOSS)  
Except for the above table: adequate margin data below the limits.

**Conducted Emission**  
 (Tx, Ant2, Low)

**DATA OF CONDUCTED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No. 3 Semi Anechoic Chamber  
 Date : 2007/10/04

Company	: Panasonic Communications	Report No.	: 28BE0083-H0
Kind of EUT	: Cordless Telephone (Handset)	Power	: AC 120V / 60Hz
Model No.	: KX-TGA431	Temp./Humi.	: 24 deg. C. / 64%
Serial No.	: Air001	Operator	: Tomotaka Sasagawa

Mode / Remarks : Transmitting , Lch , 5759.7MHz , ANT2

LIMIT : FCC15.207 QP  
FCC15.207 AV

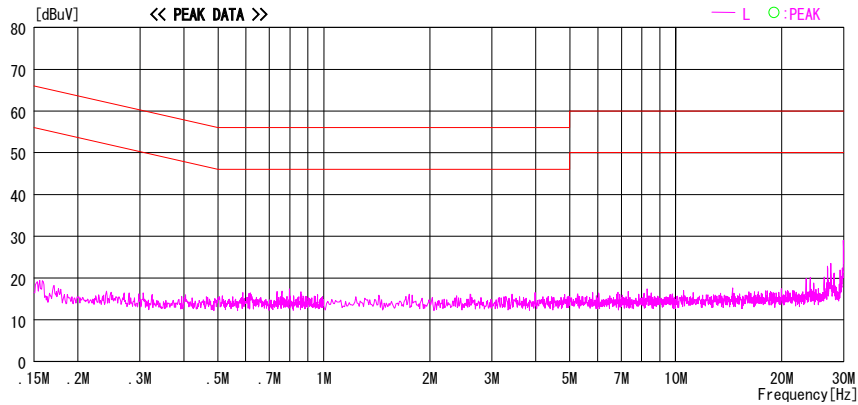
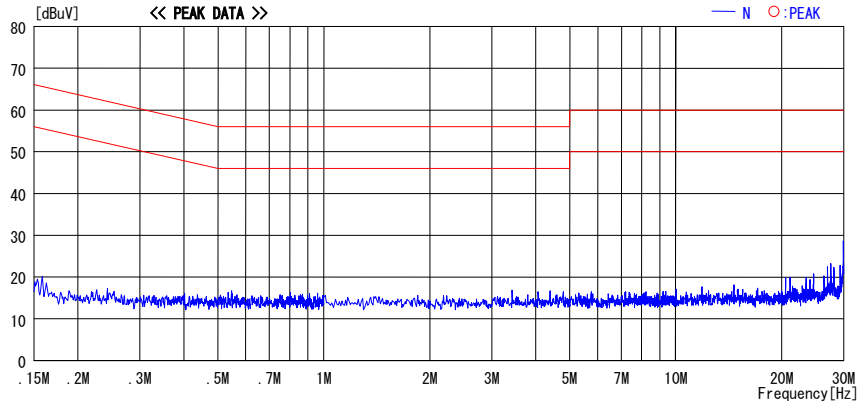


CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT[dBuV]=READING[dBuV]+C.F[dB] (LISN LOSS+CABLE LOSS)  
 Except for the above table: adequate margin data below the limits.

**Conducted Emission**  
 (Tx, Ant1, Mid)

**DATA OF CONDUCTED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No. 3 Semi Anechoic Chamber  
 Date : 2007/10/04

Company	: Panasonic Communications	Report No.	: 28BE0083-HO
Kind of EUT	: Cordless Telephone (Handset)	Power	: AC 120V / 60Hz
Model No.	: KX-TGA431	Temp./Humi.	: 24 deg. C. / 64%
Serial No.	: Air001	Operator	: Tomotaka Sasagawa

Mode / Remarks : Transmitting , Mch . 5798.053MHz , ANT1

LIMIT : FCC15.207 QP  
 FCC15.207 AV

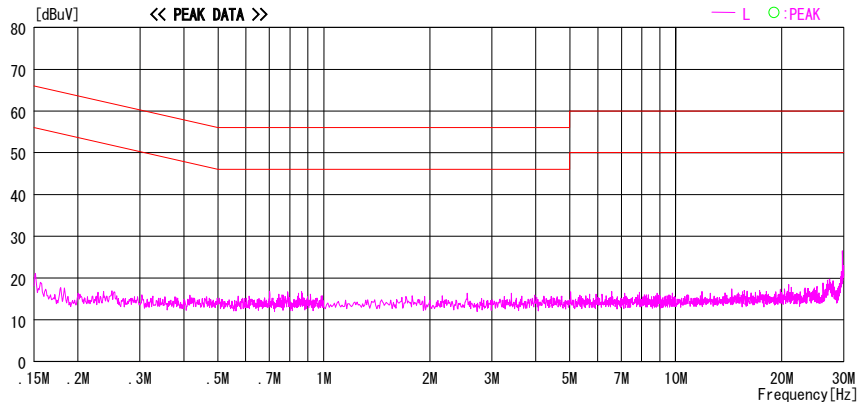
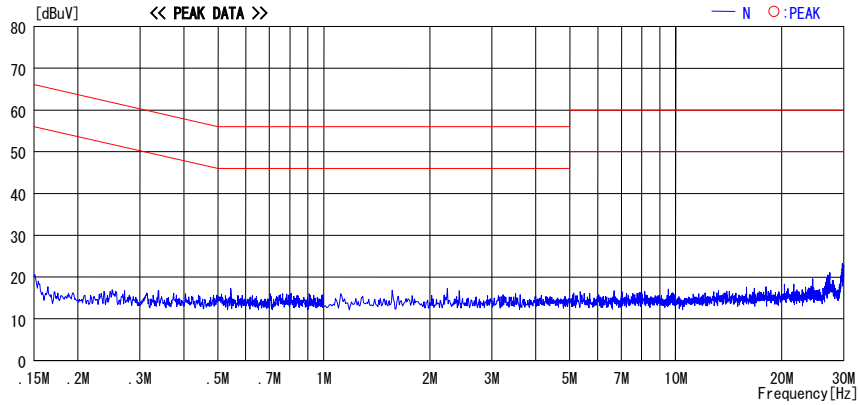


CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT[dBuV]=READING[dBuV]+C. F[dB] (LISN LOSS+CABLE LOSS)  
 Except for the above table: adequate margin data below the limits.

**Conducted Emission**  
 (Tx, Ant2, Mid)

**DATA OF CONDUCTED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No. 3 Semi Anechoic Chamber  
 Date : 2007/10/04

Company	: Panasonic Communications	Report No.	: 28BE0083-H0
Kind of EUT	: Cordless Telephone (Handset)	Power	: AC 120V / 60Hz
Model No.	: KX-TGA431	Temp./Humi.	: 24 deg. C. / 64%
Serial No.	: Air001	Operator	: Tomotaka Sasagawa

Mode / Remarks : Transmitting , Mch , 5798.053MHz , ANT2

LIMIT : FCC15.207 QP  
FCC15.207 AV

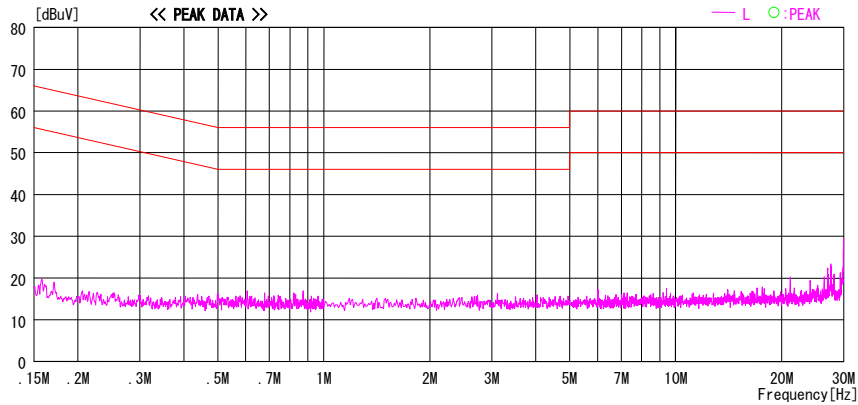
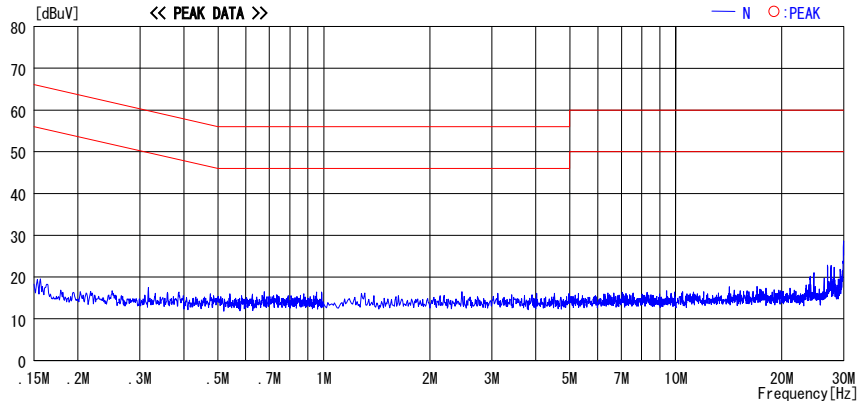


CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT [dBuV] = READING [dBuV] + C. F [dB] (LISN LOSS + CABLE LOSS)  
 Except for the above table: adequate margin data below the limits.

**Conducted Emission**  
 (Tx, Ant1, High)

**DATA OF CONDUCTED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber  
 Date : 2007/10/04

Company	: Panasonic Communications	Report No.	: 28BE0083-HO
Kind of EUT	: Cordless Telephone (Handset)	Power	: AC 120V / 60Hz
Model No.	: KX-TGA431	Temp./Humi.	: 24 deg. C. / 64%
Serial No.	: Air001	Operator	: Tomotaka Sasagawa

Mode / Remarks : Transmitting , Hch , 5838.185MHz , ANT1

LIMIT : FCC15.207 QP  
FCC15.207 AV

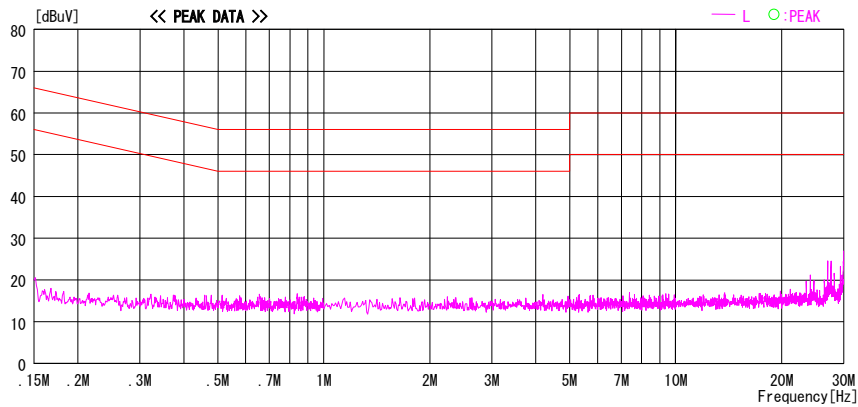
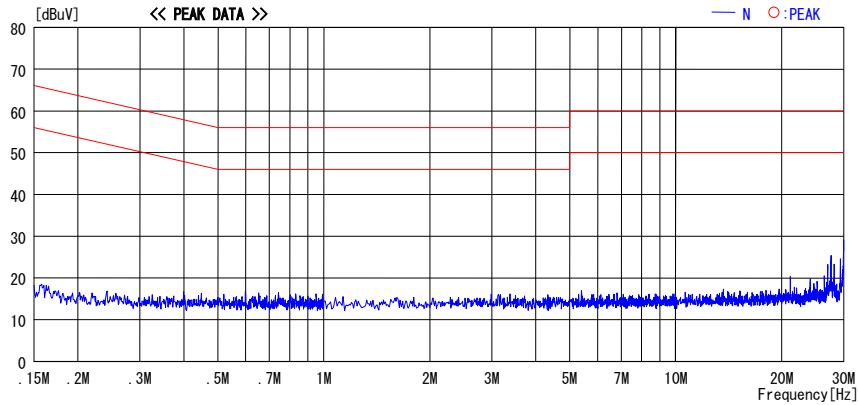


CHART: WITH FACTOR, Peak hold data. CALCURATION: RESULT[dBuV]=READING[dBuV]+C.F[dB] (LISN LOSS+CABLE LOSS)  
 Except for the above table: adequate margin data below the limits.

**Conducted Emission**  
 (Tx, Ant2, High)

**DATA OF CONDUCTED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber  
 Date : 2007/10/04

Company	: Panasonic Communications	Report No.	: 28BE0083-HO
Kind of EUT	: Cordless Telephone (Handset)	Power	: AC 120V / 60Hz
Model No.	: KX-TGA431	Temp./Humi.	: 24 deg. C. / 64%
Serial No.	: Air001	Operator	: Tomotaka Sasagawa

Mode / Remarks : Transmitting , Hch , 5838.185MHz , ANT2

LIMIT : FCC15.207 QP  
FCC15.207 AV

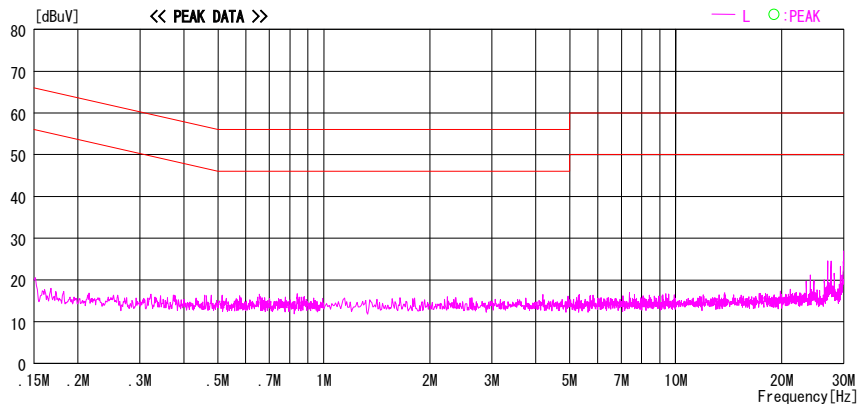
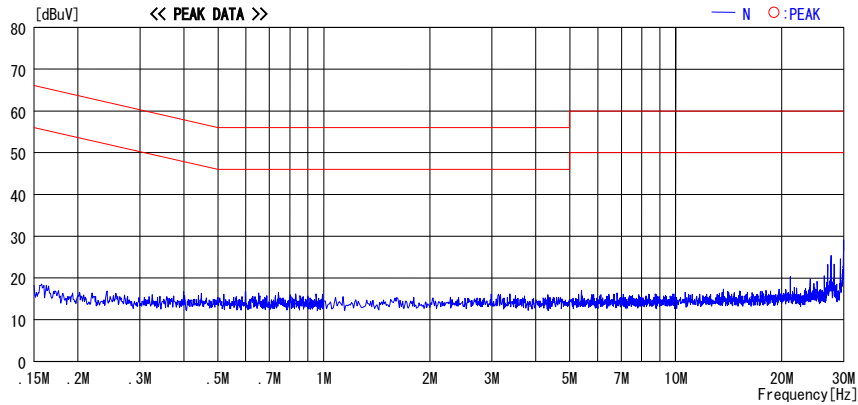


CHART: WITH FACTOR, Peak hold data. CALCURATION: RESULT[dBuV]=READING[dBuV]+C. F[dB] (LISN LOSS+CABLE LOSS)  
 Except for the above table: adequate margin data below the limits.

**Conducted Emission**  
 (Rx, Ant1, Mid)

**DATA OF CONDUCTED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber  
 Date : 2007/10/04

Company	: Panasonic Communications	Report No.	: 28BE0083-H0
Kind of EUT	: Cordless Telephone (Handset)	Power	: AC 120V / 60Hz
Model No.	: KX-TGA431	Temp./Humi.	: 24 deg. C. / 64%
Serial No.	: Air001	Operator	: Tomotaka Sasagawa

Mode / Remarks : Receiving , Mch , 5798.053MHz , ANT1

LIMIT : FCC15.207 QP  
FCC15.207 AV

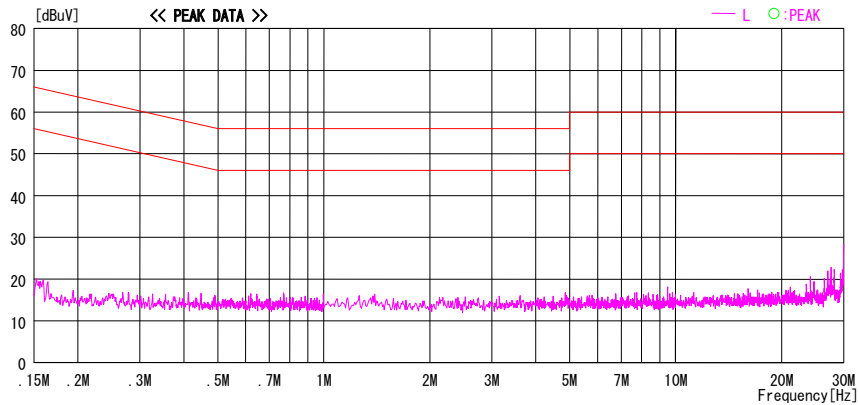
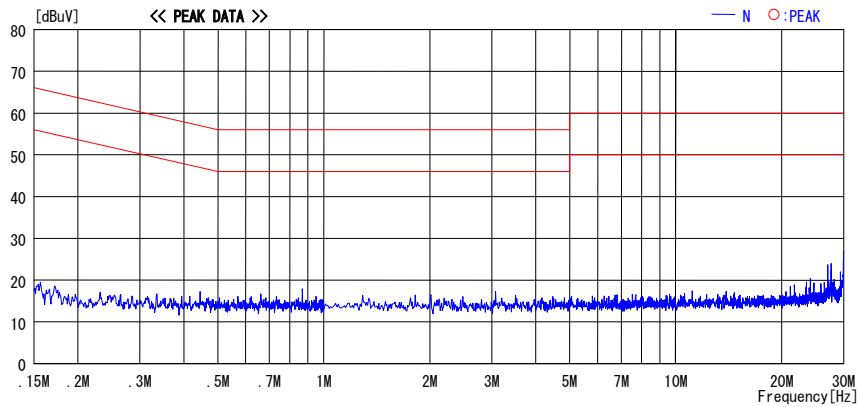


CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT[dBuV]=READING[dBuV]+C.F[dB] (LISN LOSS+CABLE LOSS)  
 Except for the above table: adequate margin data below the limits.

**Conducted Emission**  
 (Rx, Ant2, Mid)

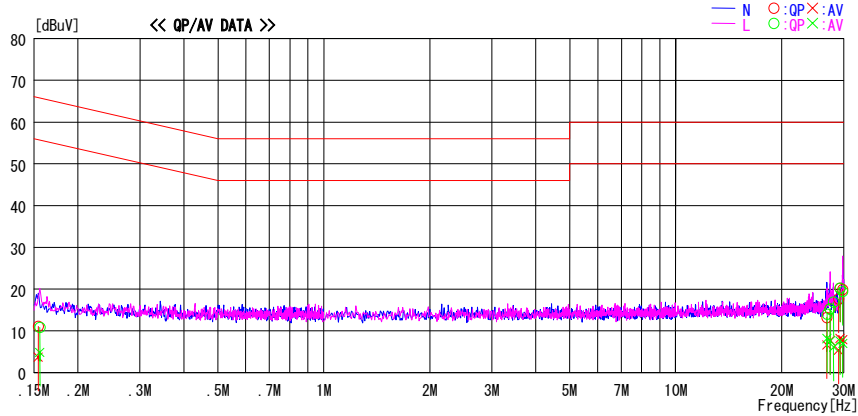
**DATA OF CONDUCTED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber  
 Date : 2007/10/04

Company : Panasonic Communications      Report No. : 28BE0083-HO  
 Kind of EUT : Cordless Telephone (Handset)      Power : AC 120V / 60Hz  
 Model No. : KX-TGA431      Temp./Humi. : 24 deg. C. / 64%  
 Serial No. : Air001      Operator : Tomotaka Sasagawa

Mode / Remarks : Receiving , Mch , 5798.053MHz , ANT2

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]	
0.15425	10.8	3.4	0.3	11.1	3.7	65.8	55.8	54.7	52.1	N
0.15596	10.5	4.5	0.3	10.8	4.8	65.7	55.7	54.9	50.9	L
26.88039	11.3	4.7	1.9	13.2	6.6	60.0	50.0	46.8	43.4	N
26.90039	12.1	6.2	1.9	14.0	8.1	60.0	50.0	46.0	41.9	L
27.46040	13.4	5.8	1.9	15.3	7.7	60.0	50.0	44.7	42.3	N
27.46040	13.4	5.7	1.9	15.3	7.6	60.0	50.0	44.7	42.4	L
28.08041	15.0	4.2	1.9	16.9	6.1	60.0	50.0	43.1	43.9	N
29.00313	15.6	3.4	2.0	17.6	5.4	60.0	50.0	42.4	44.6	N
29.30044	18.2	5.6	2.0	20.2	7.6	60.0	50.0	39.8	42.4	L
29.32044	18.2	6.2	2.0	20.2	8.2	60.0	50.0	39.8	41.8	N
29.82045	17.9	5.9	2.0	19.9	7.9	60.0	50.0	40.1	42.1	N
29.82045	17.4	5.0	2.0	19.4	7.0	60.0	50.0	40.6	43.0	L

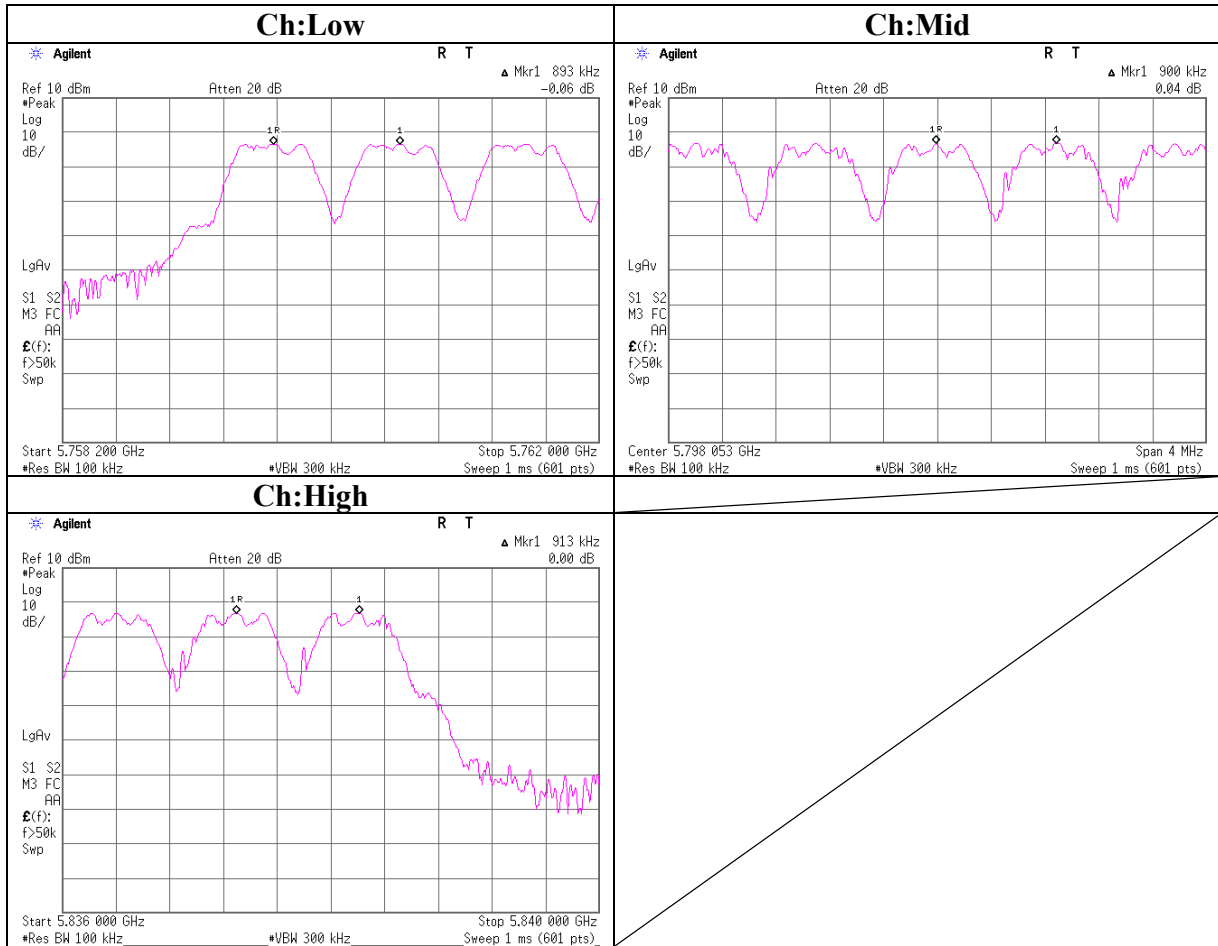
CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT[dBuV]=READING[dBuV]+C.F[dB] (LISN LOSS+CABLE LOSS)  
 Except for the above table: adequate margin data below the limits.

### Carrier Frequency Separation

Company	: Panasonic Communications Co., Ltd.	UL Japan, Inc.
Equipment	: Cordless Telephone (Handset)	Head Office EMC Lab. No.7 Shielded Room
Model	: KX-TGA431	Regulation : FCC 15.247(a)(1)(ii)
S/N	: RF TEST No.1	Test Distance : -
Power	: DC2.4V	Date : 10/03/2007
Mode	: Tx (Hopping on), Ant2 (Worst)	Temperature : 24 deg.C.
		Humidity : 63 %
		Engineer : Makoto Kosaka

Ch	Freq. [MHz]	Channel separation [MHz]	Limit
Low	5759.700	0.893	> two-thirds of 0.625MHz (20dB Bandwidth) or 0.025MHz (whichever is greater)
Mid	5798.053	0.900	> two-thirds of 0.625MHz (20dB Bandwidth) or 0.025MHz (whichever is greater)
High	5838.185	0.913	> two-thirds of 0.635MHz (20dB Bandwidth) or 0.025MHz (whichever is greater)

### Carrier Frequency Separation

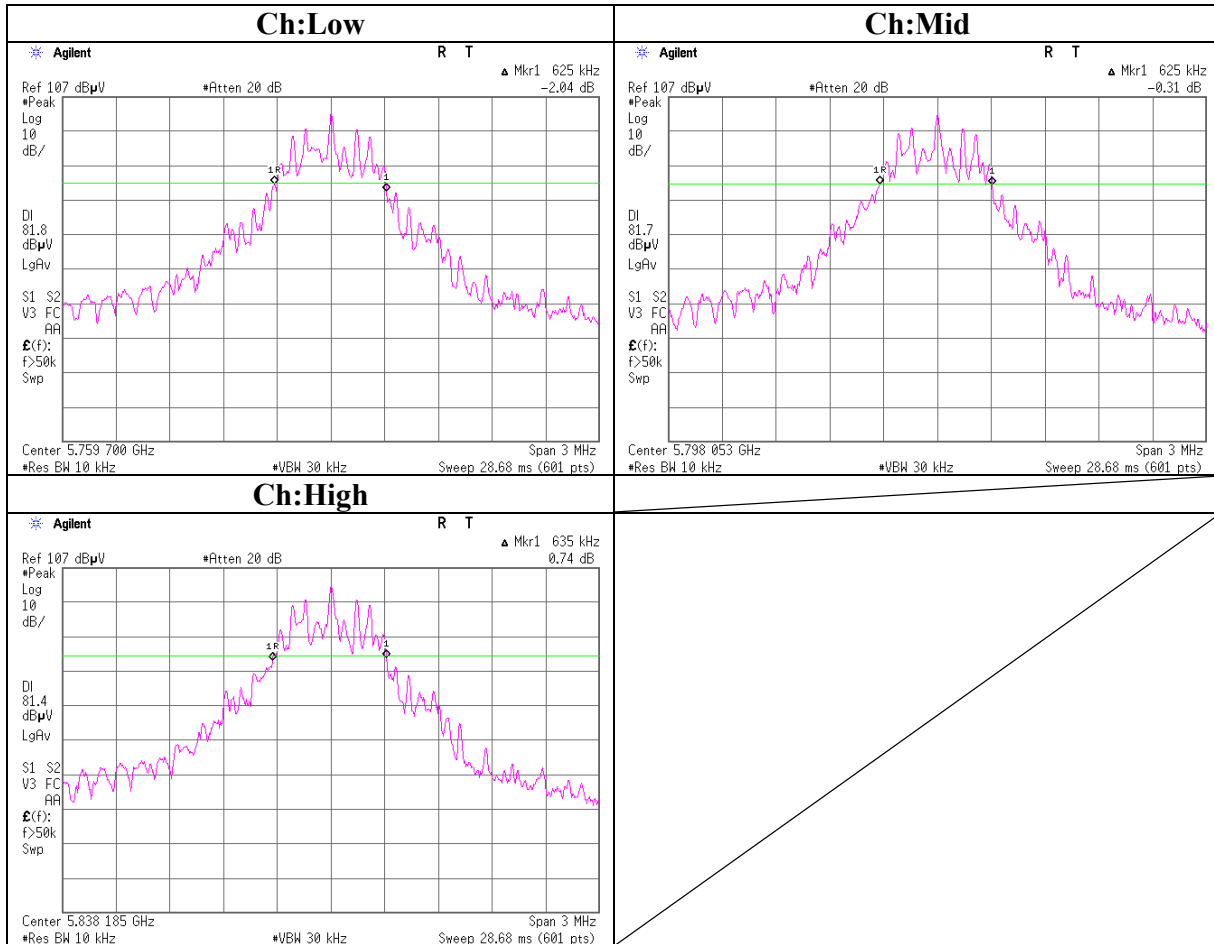


### 20dB Bandwidth

Company	Panasonic Communications Co., Ltd.	UL Japan, Inc.	
Equipment	Cordless Telephone (Handset)	Head Office EMC Lab. No.7 Shielded Room	
Model	KX-TGA431	Regulation	FCC15.247(a)(1)
S/N	RF TEST No.1	Test Distance	-
Power	DC2.4V	Date	10/03/2007
Mode	Tx (Hopping off) , Ant2(Worst)	Temperature	24 deg.C.
		Humidity	63 %
		Engineer	Makoto Kosaka

Ch	Freq. [MHz]	20dB Bandwidth [MHz]	Limit [MHz]
Low	5759.700	0.625	-
Mid	5798.053	0.625	-
High	5838.185	0.635	-

### 20dB Bandwidth

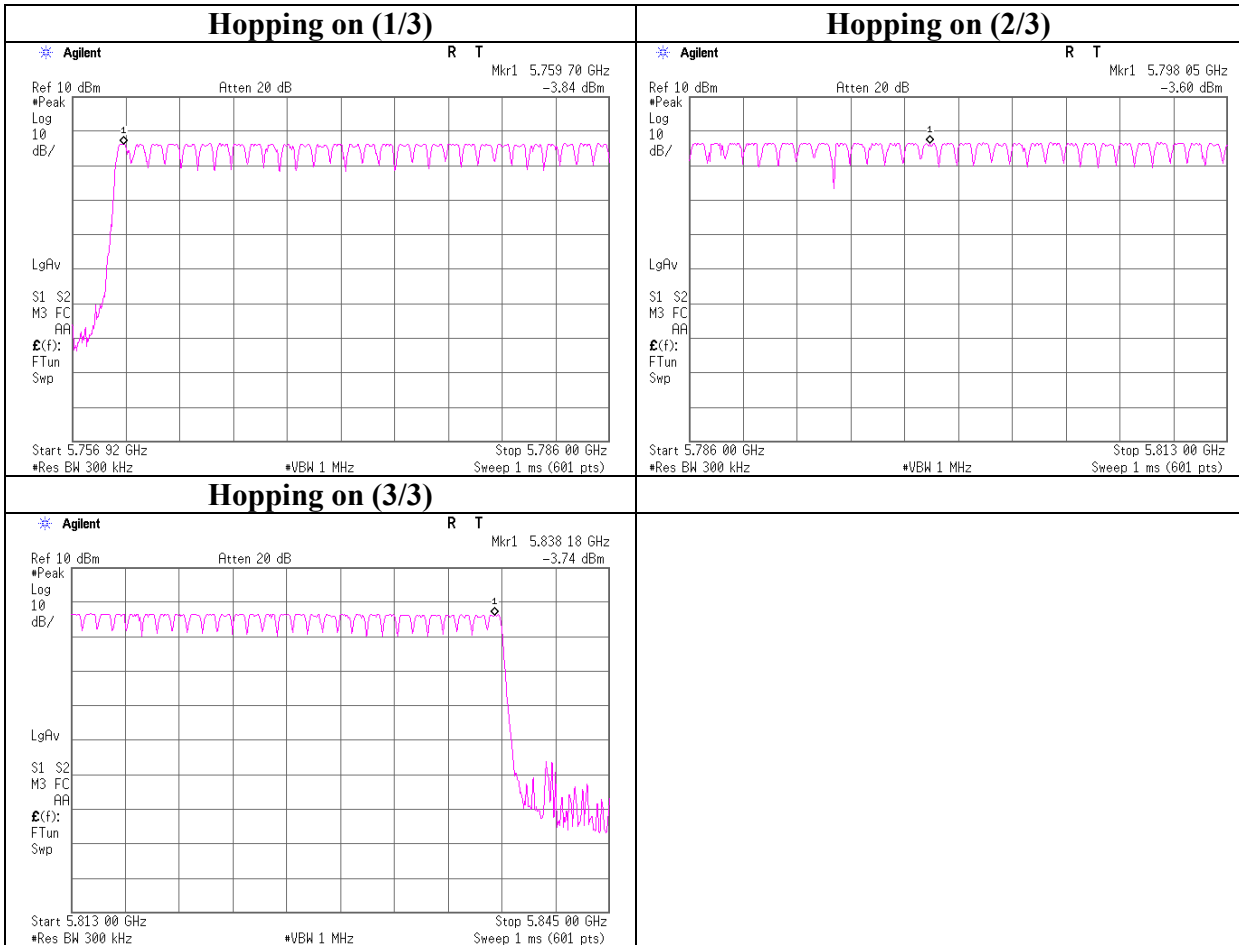


### Number of Hopping Frequency

Company	: Panasonic Communications Co., Ltd.	UL Japan, Inc.
Equipment	: Cordless Telephone (Handset)	Head Office EMC Lab. No.7 Shielded Room
Model	: KX-TGA431	Regulation : FCC15.247(a)(1)(ii)
S/N	: RF TEST No.1	Test Distance : -
Power	: DC2.4V	Date : 10/03/2007
Mode	: Tx (Hopping on), Ant2(Worst)	Temperature : 24 deg.C.
		Humidity : 63 %
		Engineer : Makoto Kosaka

Mode	Number of channel [time]	Limit [time]
Tx(Hopping on)	89	$\geq 75$

**Number of Hopping Frequency**

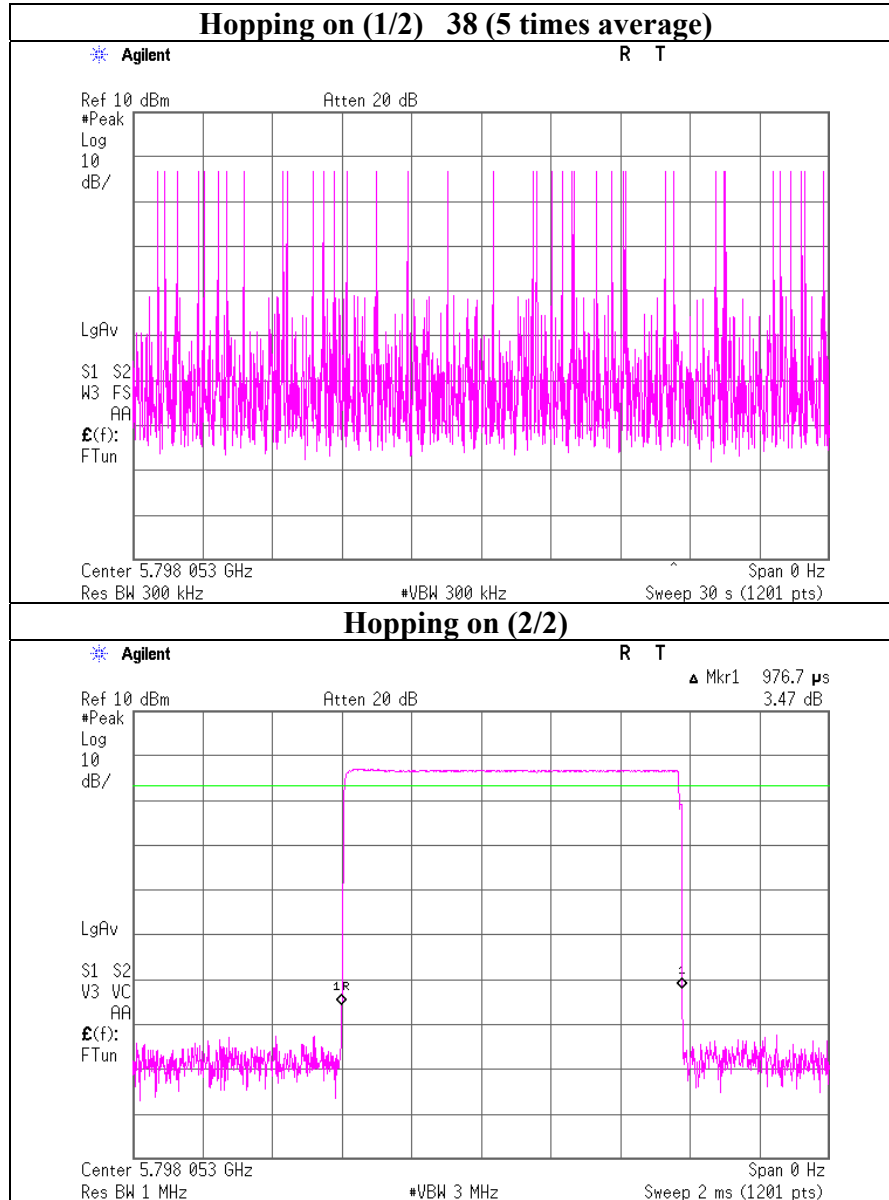


**Dwell time**

Company	: Panasonic Communications Co., Ltd.	UL Japan, Inc.
Equipment	: Cordless Telephone (Handset)	Head Office EMC Lab. No.7 Shielded Room
Model	: KX-TGA431	Regulation : FCC15.247(a)(1)(ii)
S/N	: RF TEST No.1	Test Distance : -
Power	: DC2.4V	Date : 10/03/2007
Mode	: Tx (Hopping on), Ant2(Worst)	Temperature : 24 deg.C.
		Humidity : 63 %
		Engineer : Makoto Kosaka

Mode	Number of transmission in a 30 second period	Length of transmission time [msec]	Result [msec]	Limit [msec]
Tx(Hopping on)	38 times / 30 sec. x 30.0 sec. = 38 times	0.977	37	400

**Dwell time**



### Maximum Peak Output Power

<p>Company : Panasonic Communications Co., Ltd.  Equipment : Cordless Telephone (Handset)  Model : KX-TGA431  S/N : RF TEST No.1  Power : DC2.4V  Mode : Tx (Hopping off)</p>	<p style="text-align: center;">UL Japan, Inc.  Head Office EMC Lab. No.7 Shielded Room</p> <p>Regulation : FCC15.247(b)(1)  Test Distance : -  Date : 10/01/2007  Temperature : 23 deg.C.  Humidity : 66 %  Engineer : Makoto Kosaka</p>
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**Ant 1**

Ch	Freq. [MHz]	P/M (PK) Reading [dBm]	Atten.+ Cable [dB]	Result		Limit		Margin [dB]
				[dBm]	[mW]	[dBm]	[mW]	
Low	5759.700	-2.56	19.68	17.12	51.52	30.00	1000	12.88
Mid	5798.053	-2.52	19.68	17.16	52.00	30.00	1000	12.84
High	5838.185	-2.52	19.68	17.16	52.00	30.00	1000	12.84

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

\* In the above table, factor 0.0dB represents no use of Atten. and/or Filter.

**Ant 2**

Ch	Freq. [MHz]	P/M (PK) Reading [dBm]	Atten.+ Cable [dB]	Result		Limit		Margin [dB]
				[dBm]	[mW]	[dBm]	[mW]	
Low	5759.700	-2.71	19.68	16.97	49.77	30.00	1000	13.03
Mid	5798.053	-2.51	19.68	17.17	52.12	30.00	1000	12.83
High	5838.185	-2.36	19.68	17.32	53.95	30.00	1000	12.68

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

\* In the above table, factor 0.0dB represents no use of Atten. and/or Filter.

**Reference Data for SAR test report (28BE0083-HO-E)**

**EIRP power measurement**

Test date: 10/03/2007

- 1) **Spectrum analyzer setting**  
Function of spectrum analyzer : None  
Center frequency : equal to the signal source  
Resolution BW : 1MHz  
Video BW : 1MHz  
Detector mode : Peak  
Trace : Max hold
- 2) **Calculation of result**  
E-field [dBμV/m]= Reading (S/A) + Factor (Measurement equipment)  
E-field [dBμV/m] was converted into E[V/m]  
 $EIRP[dBm] = 10\log\left(\frac{E^2 \cdot d^2}{30G}\right) \cdot 10^3$  ; d= 3[m], G =1  
Antenna gain : 3.00dBi  
Max.EIRP power of antenna port : 20.32dBm  
Max.EIRP power of radiation : 20.37dBm

Testing method	Power [dBm] Measurement	Antenna Gain [dBi]	EIRP [dBm]
Antenna port (S/N: RF TEST No.1)	17.32	3.00	20.32
Radiation (S/N: Air 001)	-	-	20.37

**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

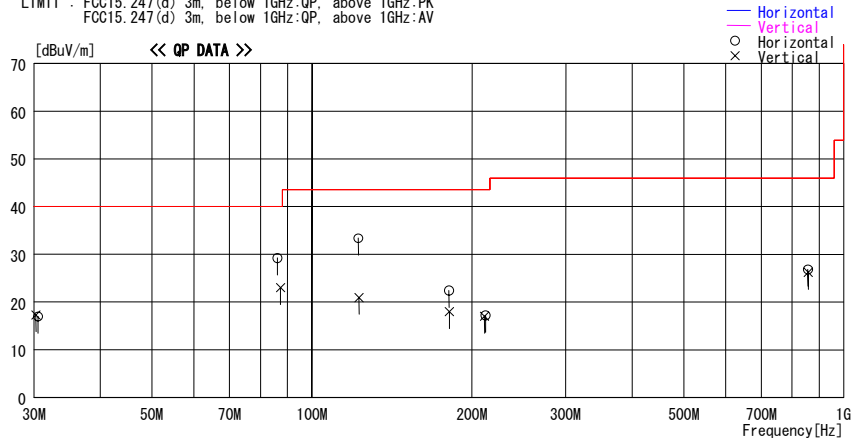
**Radiated Spurious Emission (below 1GHz)**  
(Tx, Ant1, Low)

**DATA OF RADIATED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No. 4 Semi Anechoic Chamber  
Date : 2007/10/03

Company : Panasonic Communications Report No. : 28BE0083-HO  
Kind of EUT : Cordless Telephone (Handset) Power : AC 120V / 60Hz  
Model No. : KX-TGA431 Temp./Humi. : 25deg. C / 52%  
Serial No. : Air001 Operator : Tomotaka Sasagawa  
Mode / Remarks : Transmitting, Lch., 5759.7MHz, Worst-axis (Hor:X / Ver:Y), ANT1

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



Frequency [MHz]	Reading [dBUV]	DET	Antenna		Level [dBUV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBUV/m]	Margin [dB]	Comment
			Factor [dB/m]	Loss & Gain [dB]							
30.270	23.1	QP	19.2	-25.0	17.3	100	100	Vert.	40.0	22.7	
30.540	22.9	QP	19.1	-25.0	17.0	312	250	Hori.	40.0	23.0	
86.079	45.3	QP	8.0	-24.1	29.2	270	250	Hori.	40.0	10.8	
87.240	38.9	QP	8.2	-24.1	23.0	182	100	Vert.	40.0	17.0	
122.260	43.8	QP	13.3	-23.7	33.4	291	250	Hori.	43.5	10.1	
122.609	31.3	QP	13.3	-23.7	20.9	215	100	Vert.	43.5	22.6	
180.930	28.9	QP	16.5	-23.0	22.4	351	250	Hori.	43.5	21.1	
181.200	24.5	QP	16.5	-23.0	18.0	105	100	Vert.	43.5	25.5	
211.171	22.9	QP	16.8	-22.7	17.0	145	100	Vert.	43.5	26.5	
211.981	23.1	QP	16.8	-22.7	17.2	350	250	Hori.	43.5	26.3	
856.992	23.4	QP	21.7	-18.3	26.8	304	100	Hori.	46.0	19.2	
857.910	22.8	QP	21.7	-18.3	26.2	346	100	Vert.	46.0	19.8	

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)

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

**Radiated Spurious Emission (below 1GHz)**  
(Tx, Ant2, Mid)

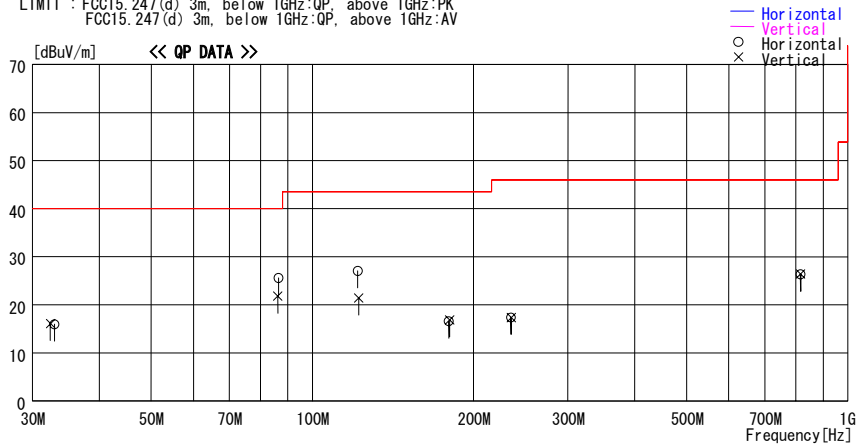
**DATA OF RADIATED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No.4 Semi Anechoic Chamber  
Date : 2007/10/03

Company : Panasonic Communications Report No. : 28BE0083-HO  
Kind of EUT : Cordless Telephone (Handset) Power : AC 120V / 60Hz  
Model No. : KX-TGA431 Temp./Humi. : 25deg. C / 52%  
Serial No. : Air001 Operator : Tomotaka Sasagawa

Mode / Remarks : Transmitting , Mch , 5798.053MHz, Worst-axis(Hor:X / Ver:Y) , ANT2

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



Frequency [MHz]	Reading [dBuV]	DET	Antenna		Level [dBuV/m]	Angle [Deg.]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]	Comment
			Factor [dB/m]	Loss & Gain [dB]							
32.430	22.9	QP	18.2	-25.0	16.1	0	100	Vert.	40.0	23.9	
32.970	23.1	QP	17.9	-25.0	16.0	254	250	Hori.	40.0	24.0	
86.160	37.9	QP	8.0	-24.1	21.8	353	100	Vert.	40.0	18.2	
86.430	41.7	QP	8.0	-24.1	25.6	231	250	Hori.	40.0	14.4	
121.529	37.6	QP	13.2	-23.7	27.1	263	250	Hori.	43.5	16.4	
122.069	31.8	QP	13.3	-23.7	21.4	345	100	Vert.	43.5	22.1	
179.850	23.1	QP	16.5	-23.0	16.6	121	250	Hori.	43.5	26.9	
180.660	23.4	QP	16.5	-23.0	16.9	355	100	Vert.	43.5	26.6	
234.931	22.9	QP	17.1	-22.6	17.4	10	250	Hori.	46.0	28.6	
235.201	22.9	QP	17.1	-22.6	17.4	352	100	Vert.	46.0	28.6	
816.609	23.4	QP	21.7	-18.7	26.4	57	100	Hori.	46.0	19.6	
817.309	23.4	QP	21.7	-18.7	26.4	302	100	Vert.	46.0	19.6	

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)

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

**Radiated Spurious Emission (below 1GHz)**  
(Tx, Ant2, High)

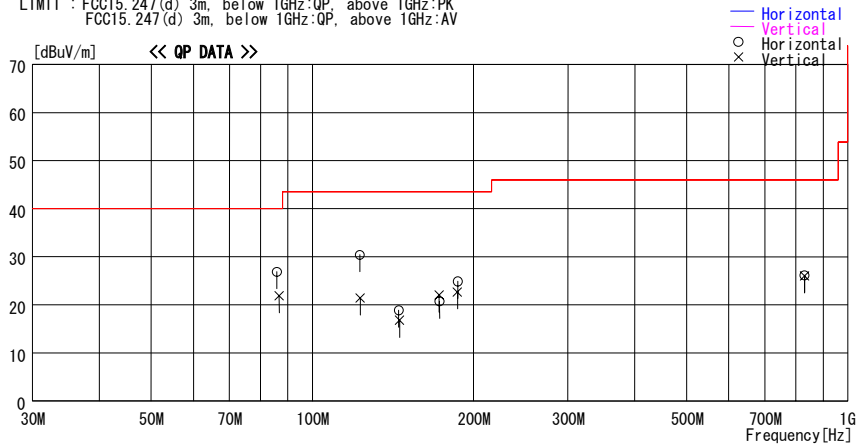
**DATA OF RADIATED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No.4 Semi Anechoic Chamber  
Date : 2007/10/03

Company : Panasonic Communications Report No. : 28BE0083-HO  
Kind of EUT : Cordless Telephone (Handset) Power : AC 120V / 60Hz  
Model No. : KX-TGA431 Temp./Humi. : 25deg. C / 52%  
Serial No. : Air001 Operator : Tomotaka Sasagawa

Mode / Remarks : Transmitting , Hch , 5838.185MHz, Worst-axis(Hor:X / Ver:Y) , ANT2

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



Frequency [MHz]	Reading [dBuV]	DET	Antenna		Level [dBuV/m]	Angle [Deg.]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]	Comment
			Factor [dB/m]	Loss & Gain [dB]							
85.890	43.1	QP	7.9	-24.1	26.9	268	250	Hori.	40.0	13.1	
86.700	37.9	QP	8.1	-24.1	21.9	130	100	Vert.	40.0	18.1	
122.609	40.8	QP	13.3	-23.7	30.4	70	250	Hori.	43.5	13.1	
122.879	31.8	QP	13.3	-23.7	21.4	203	100	Vert.	43.5	22.1	
145.020	27.4	QP	14.9	-23.4	18.9	303	250	Hori.	43.5	24.6	
145.560	25.3	QP	14.9	-23.4	16.8	211	100	Vert.	43.5	26.7	
172.560	28.9	QP	16.2	-23.1	22.0	95	100	Vert.	43.5	21.5	
172.830	27.6	QP	16.2	-23.1	20.7	305	250	Hori.	43.5	22.8	
186.600	29.0	QP	16.6	-22.9	22.7	241	100	Vert.	43.5	20.8	
186.870	31.2	QP	16.6	-22.9	24.9	0	250	Hori.	43.5	18.6	
830.609	23.1	QP	21.7	-18.6	26.2	302	100	Hori.	46.0	19.8	
830.609	22.9	QP	21.7	-18.6	26.0	323	100	Vert.	46.0	20.0	

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)

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

**Radiated Spurious Emission (below 1GHz)**  
(Rx, Ant2, Mid)

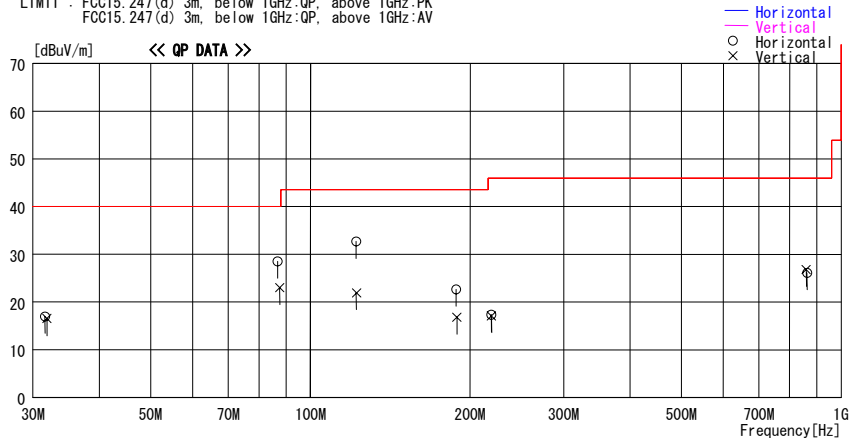
**DATA OF RADIATED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No. 4 Semi Anechoic Chamber  
Date : 2007/10/03

Company : Panasonic Communications Report No. : 28BE0083-HO  
Kind of EUT : Cordless Telephone (Handset) Power : AC 120V / 60Hz  
Model No. : KX-TGA431 Temp./Humi. : 25deg. C / 52%  
Serial No. : Air001 Operator : Tomotaka Sasagawa

Mode / Remarks : Receiving, Mch., 5759.7MHz, Worst-axis(Hor:X / Ver:Y), ANT2

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



Frequency [MHz]	Reading [dBuV]	DET	Antenna	Loss&	Level	Angle	Height	Polar.	Limit	Margin	Comment
			Factor	Gain							
			[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]	
31.620	23.4	QP	18.6	-25.0	17.0	348	250	Hori.	40.0	23.0	
31.890	23.1	QP	18.4	-25.0	16.5	16	100	Vert.	40.0	23.5	
86.700	44.5	QP	8.1	-24.1	28.5	227	250	Hori.	40.0	11.5	
87.510	38.9	QP	8.2	-24.1	23.0	149	100	Vert.	40.0	17.0	
121.799	43.2	QP	13.2	-23.7	32.7	92	250	Hori.	43.5	10.8	
122.069	32.3	QP	13.3	-23.7	21.9	171	100	Vert.	43.5	21.6	
187.950	28.9	QP	16.6	-22.9	22.6	305	250	Hori.	43.5	20.9	
188.760	23.1	QP	16.6	-22.9	16.8	264	100	Vert.	43.5	26.7	
219.271	23.1	QP	16.9	-22.7	17.3	357	250	Hori.	46.0	28.7	
219.541	22.9	QP	16.9	-22.7	17.1	32	100	Vert.	46.0	28.9	
860.010	23.4	QP	21.7	-18.3	26.8	109	100	Vert.	46.0	19.2	
862.110	22.6	QP	21.7	-18.2	26.1	169	100	Hori.	46.0	19.9	

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)

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

### Radiated Spurious Emission (above 1GHz)

(Tx, Ant1, Low)

UL Japan, Inc.

Head Office EMC Lab. No.4 & 3 Semi Anechoic Chamber

Company : Panasonic Communications Co., Ltd.  
Equipment : Cordless Telephone (Handset)  
Model : KX-TGA431  
S/N : Air001  
Power : DC2.4V  
Mode : Tx Low 5759.7MHz  
Position : H: X-axis, V: Y-axis, Worst Ant: Ant1

Regulation : FCC15.247(d)  
Test Distance : 3m / 1m / 0.5m  
Date : 10/01/2007, 10/02/2007  
Temperature : 25 deg.C. , 25deg.C.  
Humidity : 52 % , 52%  
Engineer : Tomotaka Sasagawa

**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	4319.23	55.7	54.9	29.7	31.2	3.8	0.0	58.0	57.2	73.9	15.9	16.7
2	5460.00	41.5	40.9	31.5	31.1	4.1	0.0	46.0	45.4	73.9	27.9	28.5
3	5725.00	42.1	42.7	31.9	31.1	4.2	0.0	47.1	47.7	73.9	26.8	26.2
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac</b>												
4	11519.40	57.9	57.7	39.7	32.4	6.4	0.6	62.7	62.5	73.9	11.2	11.4
5	17225.60	53.6	53.3	42.7	31.1	7.5	0.6	63.8	63.5	73.9	10.1	10.4
6	23038.80	49.6	47.9	38.7	31.4	8.8	0.7	56.9	55.2	73.9	17.0	18.7
<b>Test distance 0.5meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac</b>												
7	34451.19	42.1	41.4	40.5	28.2	16.5	0.0	55.3	54.6	73.9	18.6	19.3

**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	4319.23	34.3	40.8	29.7	31.2	3.8	0.0	36.6	43.1	53.9	17.3	10.8
2	5460.00	31.2	30.5	31.5	31.1	4.1	0.0	35.7	35.0	53.9	18.2	18.9
3	5725.00	30.9	31.3	31.9	31.1	4.2	0.0	35.9	36.3	53.9	18.0	17.6
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac</b>												
4	11519.40	37.5	37.1	39.7	32.4	6.4	0.6	42.3	41.9	53.9	11.6	12.0
5	17225.60	36.4	36.3	42.7	31.1	7.5	0.6	46.6	46.5	53.9	7.3	7.4
6	23038.80	34.6	34.1	38.7	31.4	8.8	0.7	41.9	41.4	53.9	12.0	12.5
<b>Test distance 0.5meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac</b>												
7	34451.19	31.2	32.1	40.5	28.2	16.5	0.0	44.4	45.3	53.9	9.5	8.6

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.54 dB

Test Distance 0.5m : Distance Factor(Dfac) = 20log(3/0.5) = 15.56 dB

Test Distance 0.2m : Distance Factor(Dfac) = 20log(3/0.2) = 23.52 dB

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

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

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

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### Radiated Spurious Emission (above 1GHz)

(Tx, Ant2, Mid)

UL Japan, Inc.

Company : Panasonic Communications Co., Ltd.  
Equipment : Cordless Telephone (Handset)  
Model : KX-TGA431  
S/N : Air001  
Power : DC2.4V  
Mode : Tx Mid 5798.053MHz  
Position : H: X-axis, V: Y-axis, Worst Ant: Ant2

Head Office EMC Lab. No.4 & 3 Semi Anechoic Chamber  
Regulation : FCC15.247(d)  
Test Distance : 3m / 1m / 0.5m  
Date : 10/01/2007, 10/02/2007  
Temperature : 25 deg.C , 25deg.C.  
Humidity : 52 % , 52%  
Engineer : Tomotaka Sasagawa

**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]											
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>													
1	4348.26	58.6	56.3	29.7	31.2	3.8	0.0	60.9	58.6	73.9	13.0	15.3	
2	5460.00	41.8	42.1	31.5	31.1	4.1	0.0	46.3	46.6	73.9	27.6	27.3	
3	5850.00	41.2	41.2	32.0	31.0	4.2	0.0	46.4	46.4	73.9	27.5	27.5	
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac</b>													
4	11596.11	51.5	54.7	39.6	32.4	6.5	0.5	56.2	59.4	73.9	17.7	14.5	
5	17394.16	53.4	48.2	43.7	31.0	7.5	0.6	64.7	59.5	73.9	9.2	14.4	
6	23192.19	42.9	41.9	38.7	31.3	8.9	0.7	50.4	49.4	73.9	23.5	24.5	
<b>Test distance 0.5meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac</b>													
7	34788.32	41.2	41.2	40.6	28.1	16.5	0.0	54.6	54.6	73.9	19.3	19.3	

**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]											
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>													
1	4348.26	41.6	40.8	29.7	31.2	3.8	0.0	43.9	43.1	53.9	10.0	10.8	
2	5460.00	31.2	31.2	31.5	31.1	4.1	0.0	35.7	35.7	53.9	18.2	18.2	
3	5850.00	31.2	30.9	32.0	31.0	4.2	0.0	36.4	36.1	53.9	17.5	17.8	
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac</b>													
4	11596.11	36.6	35.9	39.6	32.4	6.5	0.5	41.3	40.6	53.9	12.6	13.3	
5	17394.16	36.8	34.0	43.7	31.0	7.5	0.6	48.1	45.3	53.9	5.8	8.6	
6	23192.19	31.2	30.0	38.7	31.3	8.9	0.7	38.7	37.5	53.9	15.2	16.4	
<b>Test distance 0.5meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac</b>													
7	34788.32	31.2	30.9	40.6	28.1	16.5	0.0	44.6	44.3	53.9	9.3	9.6	

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.54 dB

Test Distance 0.5m : Distance Factor(Dfac) = 20log(3/0.5) = 15.56 dB

Test Distance 0.2m : Distance Factor(Dfac) = 20log(3/0.2) = 23.52 dB

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

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

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

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### Radiated Spurious Emission (above 1GHz)

(Tx, Ant2, High)

UL Japan, Inc.

Company : Panasonic Communications Co., Ltd.  
Equipment : Cordless Telephone (Handset)  
Model : KX-TGA431  
S/N : Air001  
Power : DC2.4V  
Mode : Tx High 5838.185MHz  
Position : H: X-axis, V: Y-axis, Worst Ant: Ant2

Head Office EMC Lab. No.4 & 3 Semi Anechoic Chamber  
Regulation : FCC15.247(d)  
Test Distance : 3m / 1m / 0.5m  
Date : 10/01/2007, 10/02/2007  
Temperature : 25 deg.C , 25deg.C.  
Humidity : 52 % , 52%  
Engineer : Tomotaka Sasagawa

**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	4378.48	50.9	51.2	29.8	31.2	3.2	0.0	52.7	53.0	73.9	21.2	20.9
2	5460.00	40.9	42.1	31.5	31.1	3.5	0.0	44.8	46.0	73.9	29.1	27.9
3	5725.00	41.2	41.1	31.9	31.1	3.6	0.0	45.6	45.5	73.9	28.3	28.4
4	5850.00	41.0	45.4	32.0	31.0	3.7	0.0	45.7	50.1	73.9	28.2	23.8
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
5	11676.37	46.9	47.1	39.5	32.4	6.5	0.5	51.5	51.7	73.9	22.4	22.2
6	17514.56	50.9	51.2	44.7	31.0	7.6	0.6	63.3	63.6	73.9	10.6	10.3
7	23352.75	40.9	41.2	38.7	31.1	9.0	0.8	48.8	49.1	73.9	25.1	24.8
Test distance 0.5meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
8	35029.11	41.2	41.2	40.8	28.0	16.6	0.0	55.0	55.0	73.9	18.9	18.9

**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
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	4378.48	40.1	40.1	29.8	31.2	3.2	0.0	41.9	41.9	53.9	12.0	12.0
2	5460.00	30.6	30.8	31.5	31.1	3.5	0.0	34.5	34.7	53.9	19.4	19.2
3	5725.00	31.2	31.0	31.9	31.1	3.6	0.0	35.6	35.4	53.9	18.3	18.5
4	5850.00	31.2	30.4	32.0	31.0	3.7	0.0	35.9	35.1	53.9	18.0	18.8
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
5	11676.37	32.5	34.5	39.5	32.4	6.5	0.5	37.1	39.1	53.9	16.8	14.8
6	17514.56	35.7	36.0	44.7	31.0	7.6	0.6	48.1	48.4	53.9	5.8	5.5
7	23352.75	31.9	30.2	38.7	31.1	9.0	0.8	39.8	38.1	53.9	14.1	15.8
Test distance 0.5meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
8	35029.11	30.9	31.2	40.8	28.0	16.6	0.0	44.7	45.0	53.9	9.2	8.9

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.54 dB

Test Distance 0.5m : Distance Factor(Dfac) = 20log(3/0.5) = 15.56 dB

Test Distance 0.2m : Distance Factor(Dfac) = 20log(3/0.2) = 23.52 dB

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

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

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

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

(Rx, Ant2, Mid)

UL Japan, Inc.

Head Office EMC Lab. No.4 & 3 Semi Anechoic Chamber

Company : Panasonic Communications Co., Ltd.  
Equipment : Cordless Telephone (Handset)  
Model : KX-TGA431  
S/N : Air001  
Power : DC2.4V  
Mode : Rx Mid 5798.053MHz  
Position : H: X-axis, V: Y-axis, Worst Ant: Ant2

Regulation : FCC15.247(d)  
Test Distance : 3m / 1m / 0.5m  
Date : 10/01/2007, 10/02/2007  
Temperature : 25 deg.C , 25deg.C.  
Humidity : 52 % , 52%  
Engineer : Tomotaka Sasagawa

**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]						[dB]			[dB]	
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	5798.05	41.5	42.3	32.0	31.1	4.2	0.0	46.6	47.4	73.9	27.3	26.5
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac</b>												
2	17394.16	46.2	46.5	43.7	31.0	7.5	0.0	56.9	57.2	73.9	17.0	16.7

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

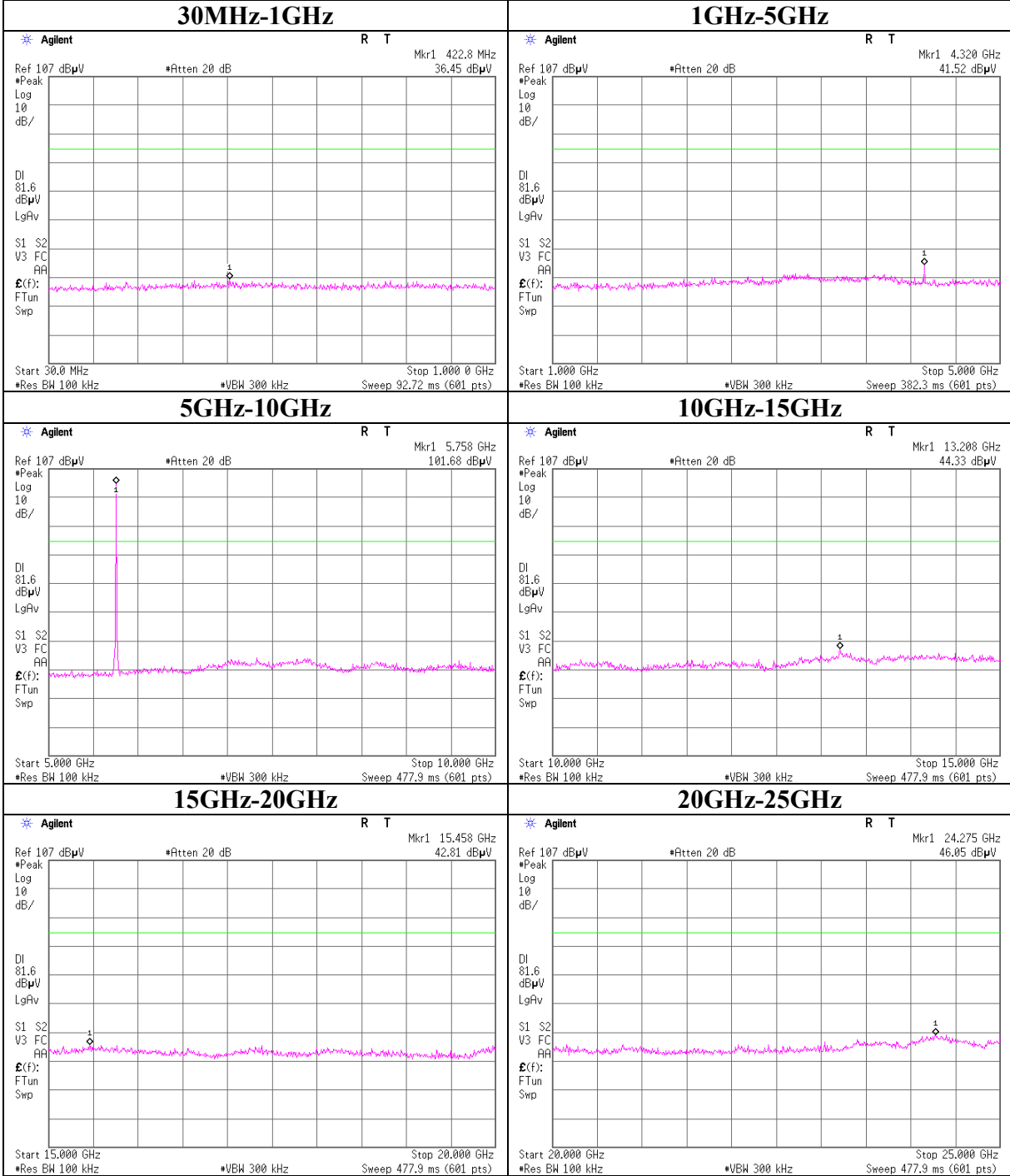
No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dB]			[dB]	
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	5798.05	31.0	30.9	32.0	31.1	4.2	0.0	36.1	36.0	53.9	17.8	17.9
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac</b>												
2	17394.16	32.1	33.9	43.7	31.0	7.5	0.0	42.8	44.6	53.9	11.1	9.3

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.54 dB  
Test Distance 0.5m : Distance Factor(Dfac) = 20log(3/0.5) = 15.56 dB  
Test Distance 0.2m : Distance Factor(Dfac) = 20log(3/0.2) = 23.52 dB

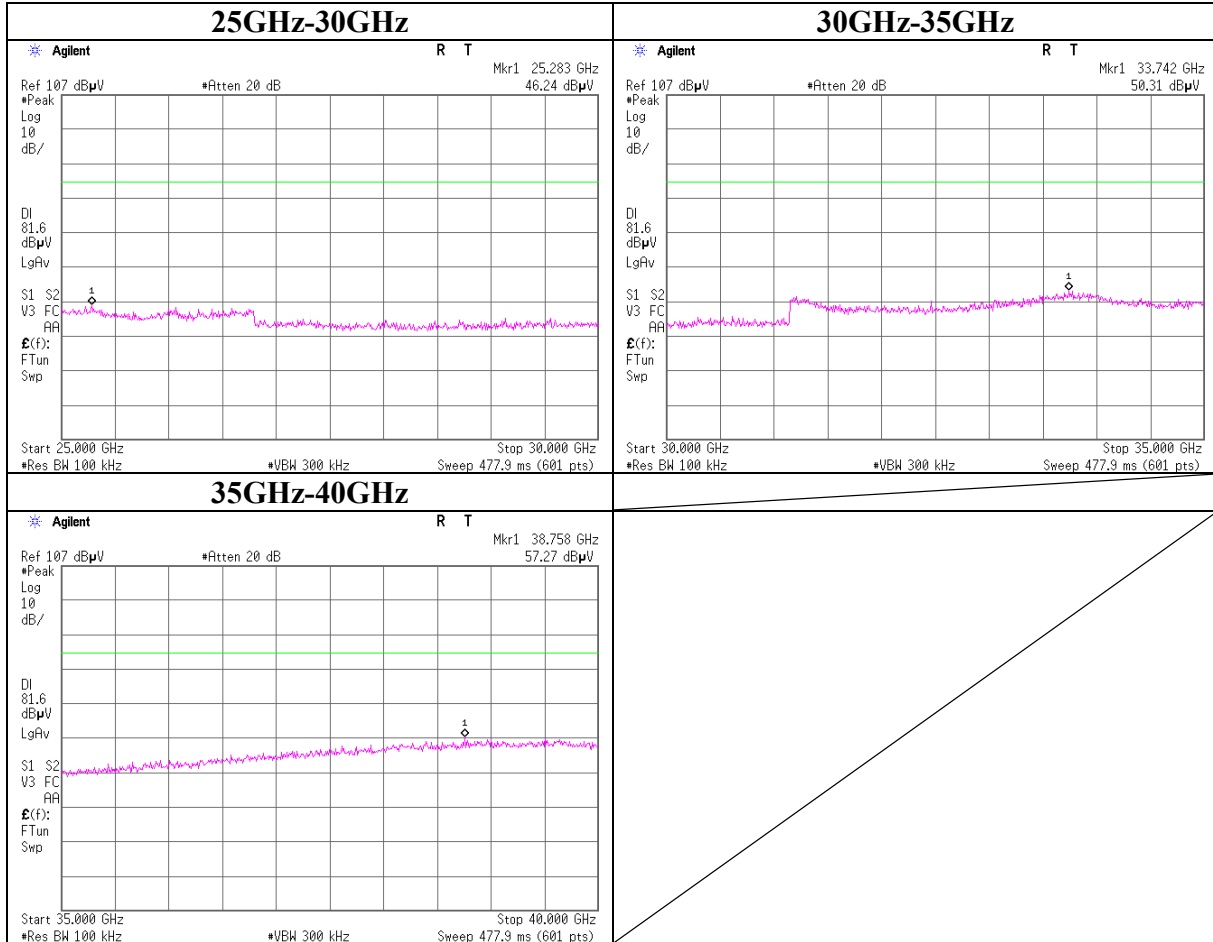
\*Except for the above table : All other spurious emissions were less than 20dB for the limit.  
\*The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.  
\*Hi-Pass Fiter was not used for factor 0.0dB of the above table.

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

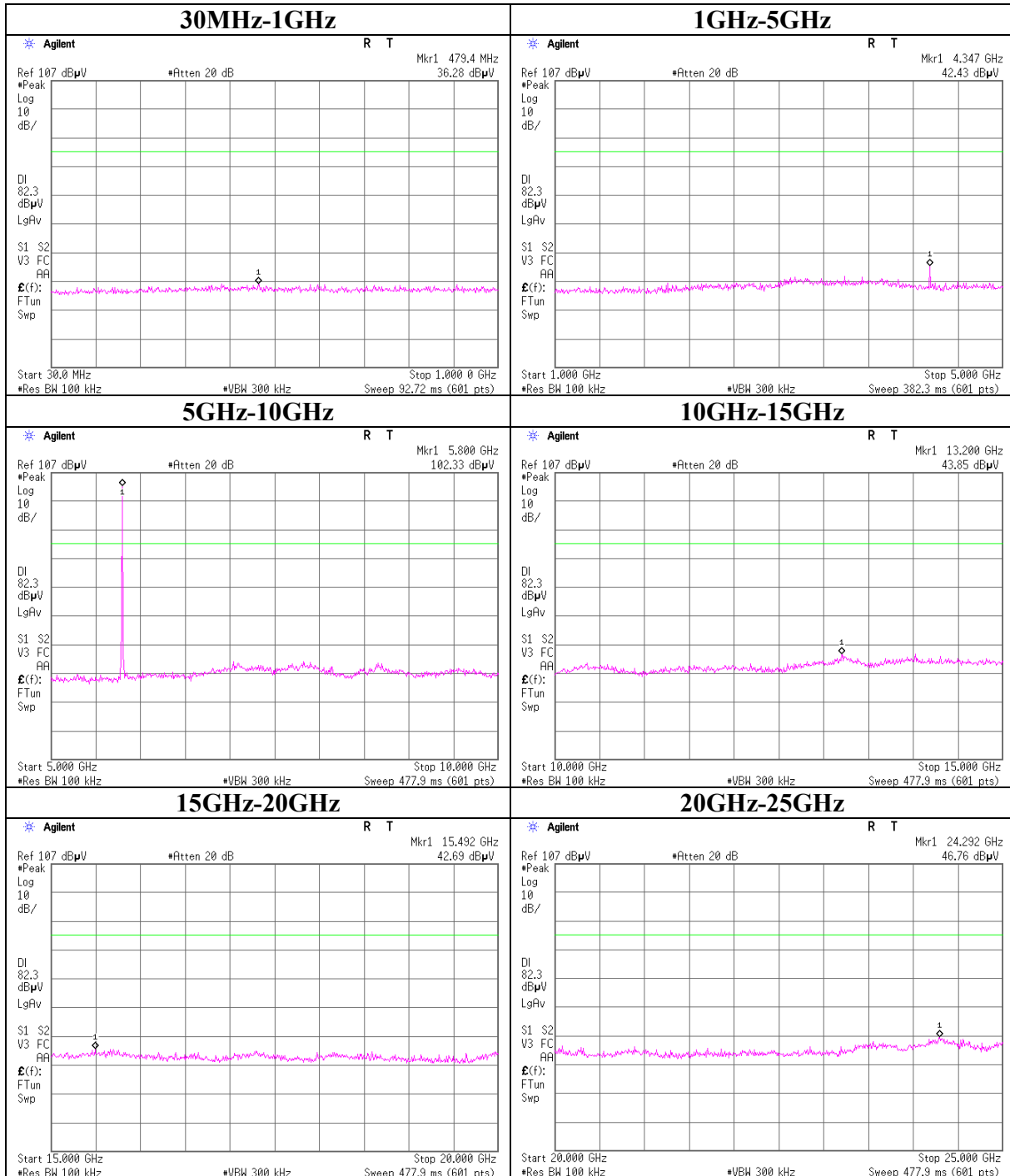
**Conducted Spurious Emission**  
**Ch:Low**



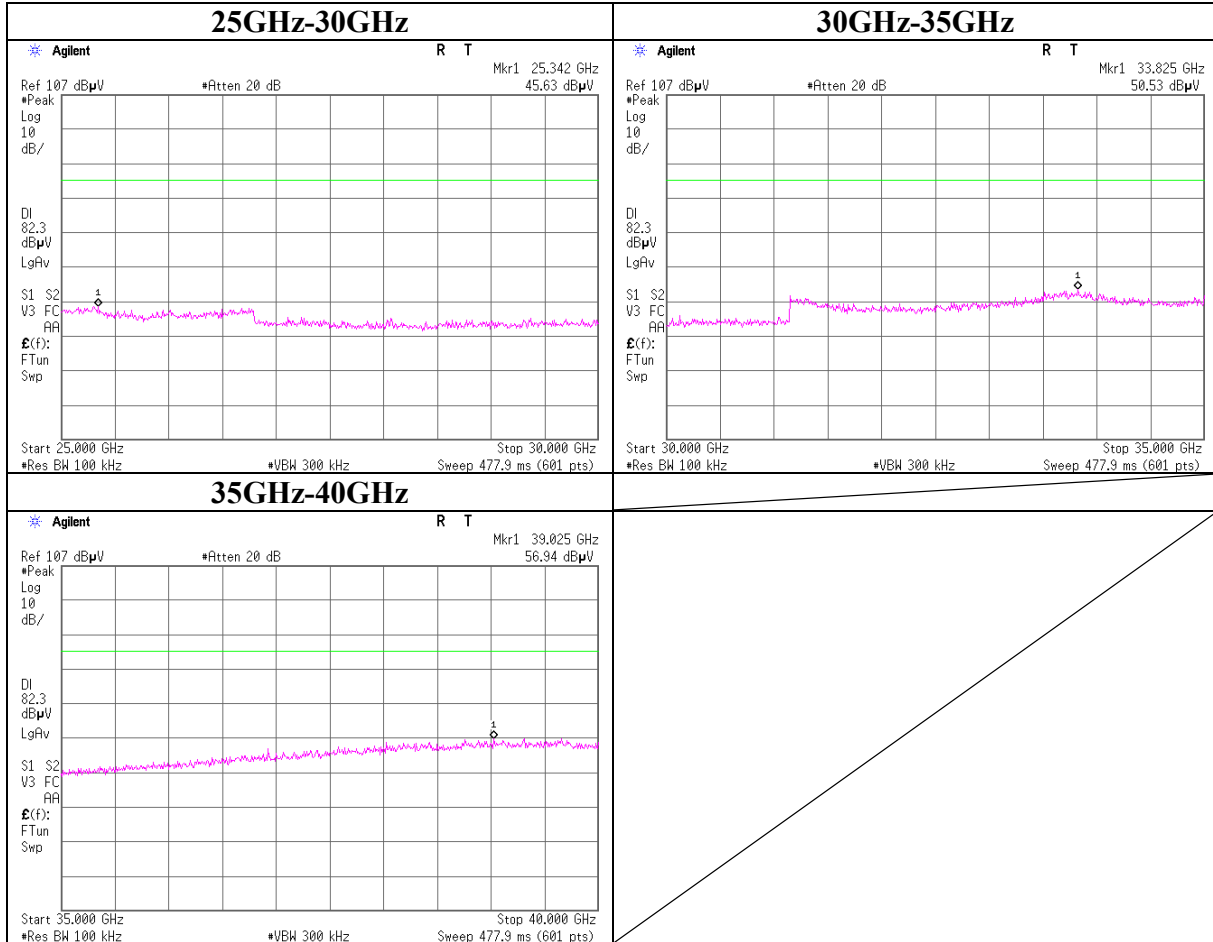
**Conducted Spurious Emission**  
**Ch:Low**



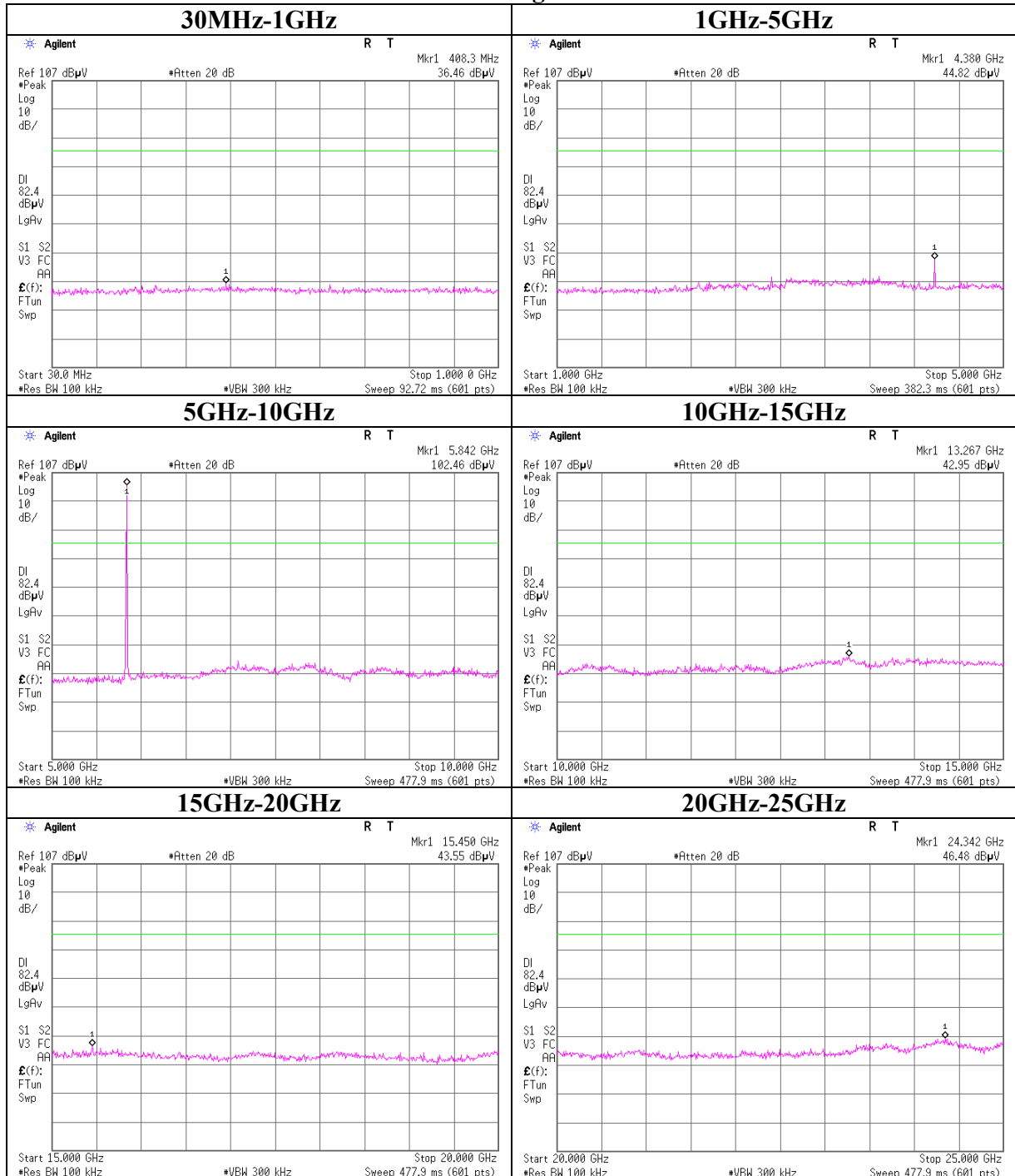
**Conducted Spurious Emission**  
**Ch:Mid**



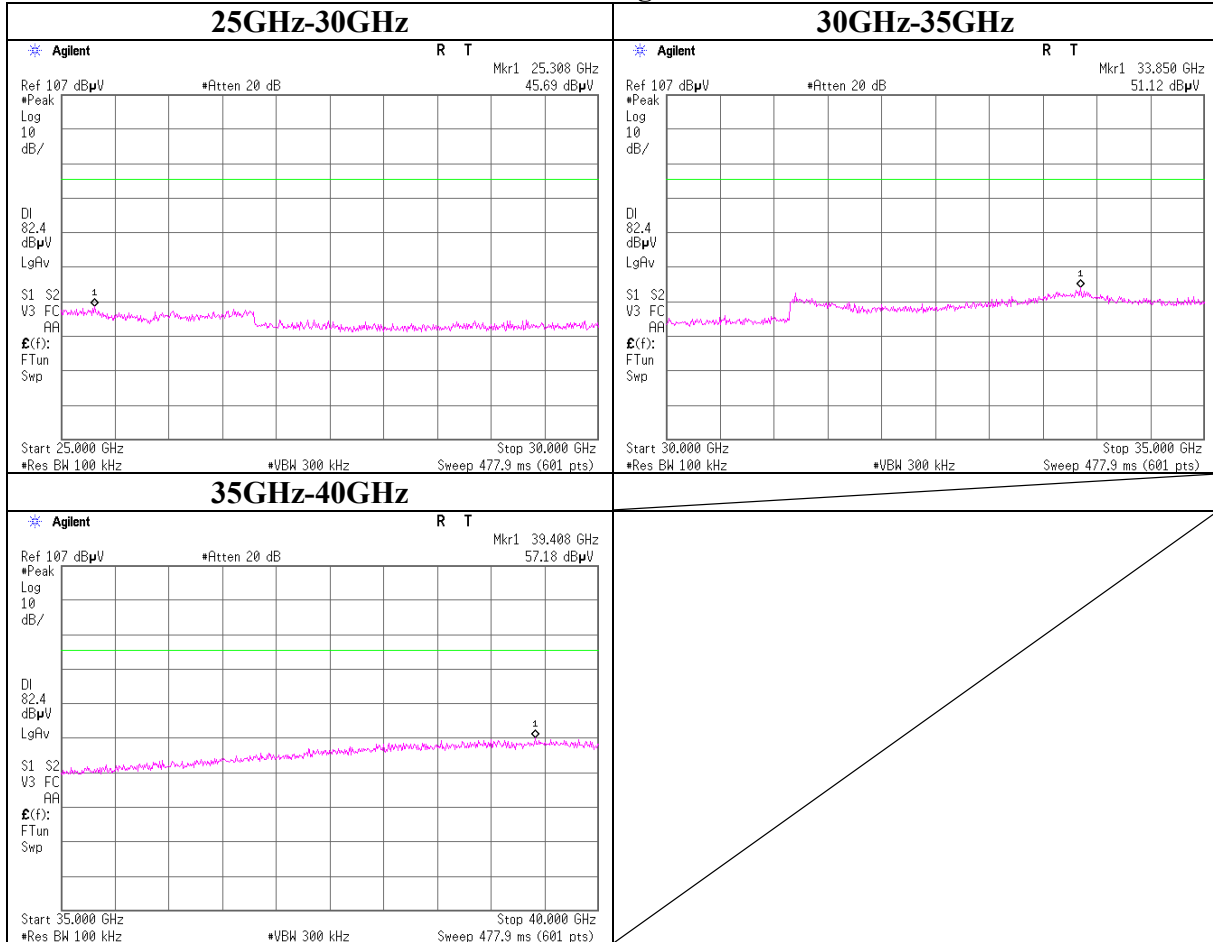
**Conducted Spurious Emission**  
**Ch:Mid**



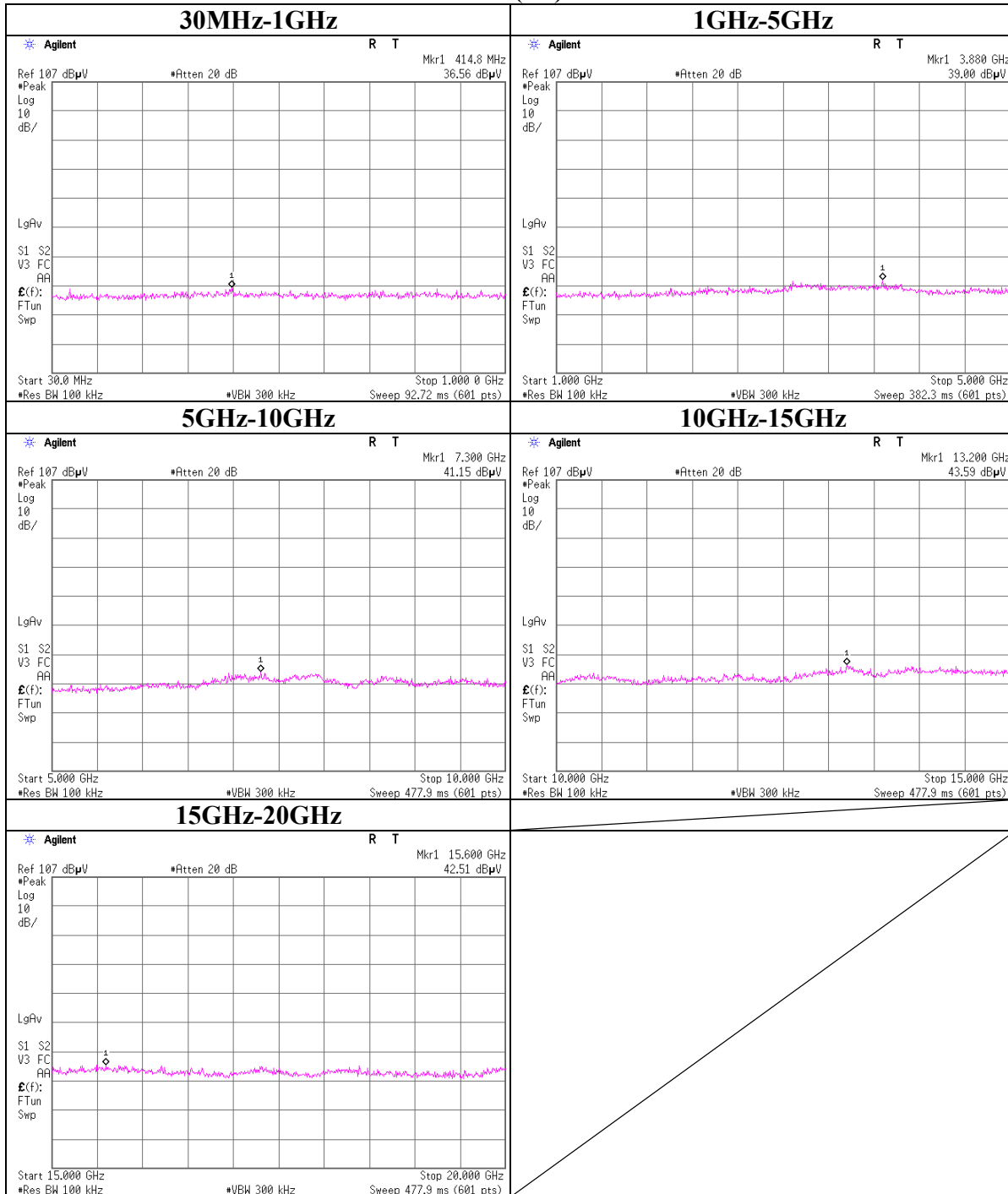
**Conducted Spurious Emission**  
**Ch:High**



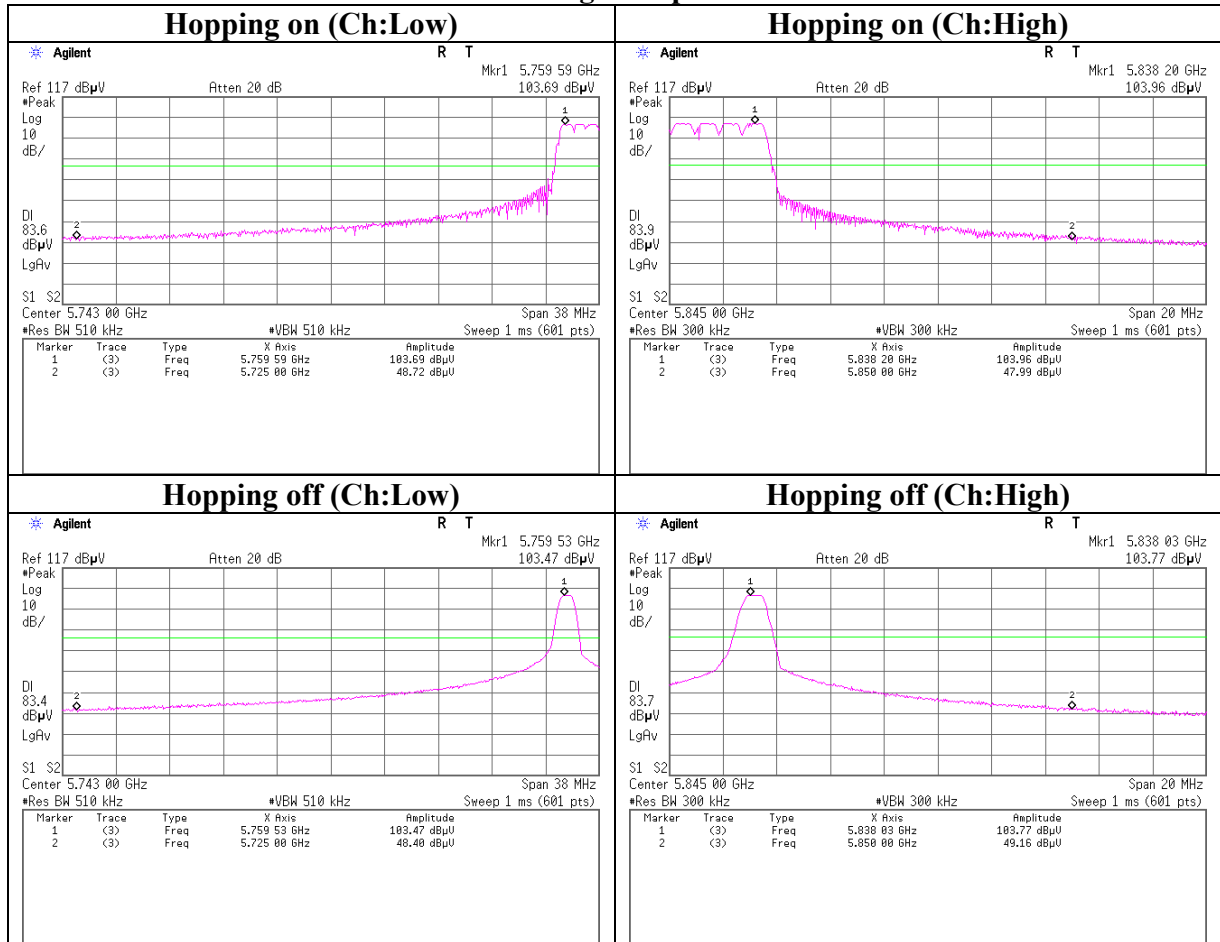
**Conducted Spurious Emission**  
**Ch:High**



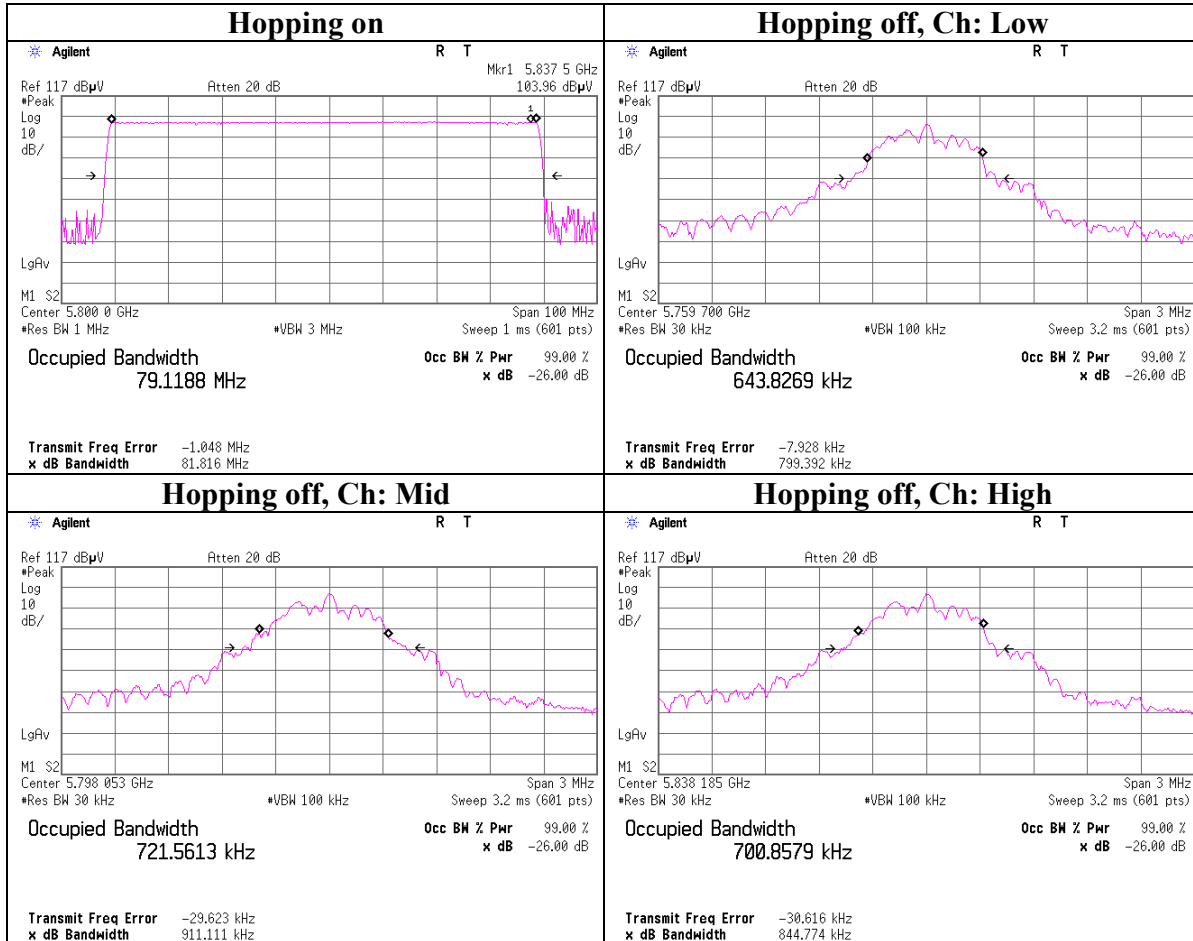
**Conducted Spurious Emission**  
**Ch:Mid(Rx)**



**Conducted Spurious Emission**  
**Band Edge compliance**



### 99% Occupied Bandwidth



### APPENDIX 3:Test instruments

#### EMI test equipment (1/2)

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
MPM-08	Power Meter	Anritsu	ML2495A	AT	2007/09/12 * 12
MPSE-11	Power sensor	Anritsu	MA2411B	AT	2007/09/12 * 12
MAT-21	Attenuator(20dB)(above 1GHz)	HIROSE ELECTRIC CO.,LTD.	AT-120	AT	2007/01/11 * 12
MCC-06	Microwave Cable 1G-26.5GHz 1m	Suhner	SUCOFLEX 104	AT	2007/02/26 * 12
MSA-10	Spectrum Analyzer	Agilent	E4448A	AT	2007/07/04 * 12
MOS-04	Digital Humidity Indicator	N.T	NT-1800	AT	2006/11/27 * 12
MCC-65	Microwave Cable 1G-40GHz	Schner	SUCOFLEX102	AT	2007/04/03 * 12
MAEC-04	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	RE	2007/03/03 * 12
MHA-21	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	RE	2007/08/16 * 12
MCC-57	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	RE	2007/03/30 * 12
MPA-12	MicroWave System Amplifier	Agilent	83017A	RE	2007/03/12 * 12
MSA-05	Spectrum Analyzer	Advantest	R3273	RE	2007/06/01 * 12
MSTW-14	EMI measurement program	TSJ	TEPTO-DV	RE	-
MOS-14	Thermo-Hygrometer	Custom	CTH-180	RE	2006/01/19 * 24
MHF-11	High Pass Filter 7-30GHz	TOKIMEC	TF37NCCC	RE	2007/06/26 * 12
MHA-16	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	RE	2007/04/06 * 12
MHA-20	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	RE	2007/04/14 * 12
MCC-56	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	RE	2007/03/29 * 12
MPA-11	MicroWave System Amplifier	Agilent	83017A	RE	2007/03/02 * 12
MPA-13	Pre Amplifier	SONOMA INSTRUMENT	310	RE	2007/03/16 * 12
MPA-17	Pre Amplifier	UNITEK ELECTROBICS INC.	40GHzAMP	RE	2006/12/15 * 12
MCC-51	Coaxial cable	UL Japan	-	RE / CE	2007/07/26 * 12
MAT-30	Attenuator(6dB)	TME	UFA-01	RE	2007/03/05 * 12
MBA-03	Biconical Antenna	Schwarzbeck	BBA9106	RE	2007/01/19 * 12
MLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2007/01/19 * 12

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EMI test equipment (2/2)

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
MOS-12	Thermo-Hygrometer	Custom	CTH-180	RE	2006/01/19 * 24
MSA-09	Spectrum Analyzer	Advantest	R3273	RE	2006/12/08 * 12
MTR-02	Test Receiver	Rohde & Schwarz	ESCS30	RE	2007/02/03 * 12
MJM-06	Measure	PROMART	SEN1955	RE	-
MAEC-03	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	RE / CE	2007/03/05 * 12
MSA-03	Spectrum Analyzer	Agilent	E4448A	RE	2007/09/05 * 12
MCC-53	Microwave Cable 1G-40GHz	Suhner	SUCOFLEX101	RE	2007/03/08 * 12
MOS-12	Thermo-Hygrometer	Custom	CTH-180	RE / CE	2006/01/19 * 24
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	CE (EUT)	2007/02/22 * 12
MLS-07	LISN(AMN)	Schwarzbeck	NSLK8127	CE (AE)	2007/02/22 * 12
MJM-06	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 test
- RE: Radiated Spurious Emission test
- AT: Antenna Terminal Conducted test