

SAR TEST REPORT

Test Report No. : 26KE0322-HO-E-3

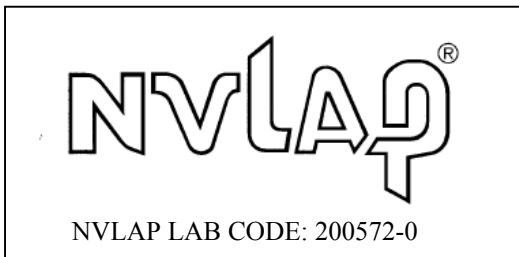
Applicant : Panasonic Communications Co., Ltd.
Type of Equipment : Travel Phone
Model No. : KX-WP1050 (KX-WPA100(Hand Unit))
FCC ID : ACJ96NKX-WP1050A(KX-WPA100(Hand Unit))
Test standard : FCC47CFR 2.1093
FCC OET Bulletin 65, Supplement C
Test Result : Complied
Max. SAR Measured : 0.887W/kg (Body, 2462MHz)

1. This test report shall not be reproduced except full or partial, without the written approval of UL Apex Co., Ltd.
2. The results in this report apply only to the sample tested.
3. This equipment is in compliance with the above standard. We hereby certify that the data contain a true representation of the SAR profile.
4. The test results in this test report are traceable to the national or international standards.

Date of test : July 31-August 2, 2006/ September 13, 2006

Tested by :  
Miyo Ikuta Hisayoshi Sato
EMC Services EMC Services

Approved by : 
Hironobu Shimoji
Group Leader of EMC Services



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>

SECTION 1 :	Client information	3
SECTION 2 :	Equipment under test (E.U.T.).....	3
2.1	Identification of E.U.T.	3
2.2	Product Description.....	4
SECTION 3 :	Test standard information	5
3.1	Requirements for compliance testing defined by the FCC	5
3.2	Exposure limit	6
SECTION 4 :	Test result	7
4.1	Result of Max. SAR value.....	7
4.2	Outline of SAR test	7
4.3	Test Location.....	7
SECTION 5 :	Operation of E.U.T. during testing.....	8
5.1	Confirmation before SAR testing.....	8
5.2	Confirmation after SAR testing.....	8
5.3	Operating modes for SAR testing.....	9
5.4	Description of the head test setup.....	10
5.5	Description of the Body-worn test setup	12
5.6	Antenna of EUT	13
5.7	Method of Head / Body SAR Measurement.....	13
SECTION 6 :	Test surrounding	14
6.1	Measurement uncertainty	14
SECTION 7 :	Results of confirmation before SAR testing.....	15
7.1	Correlation of EMC power and SAR power.....	15
7.2	Reference data of SAR test (Data rate determing)	16
7.3	Result of Duty factor verifications	17
SECTION 8 :	Measurement results	18
8.1	SAR measurement results of Ant.0	18
8.2	SAR measurement results of Ant.1	20
APPENDIX 1 :	Photographs of test setup.....	22
1.	Photograph EUT	23
2.	Antenna Location	23
3.	EUT with accessory.....	24
APPENDIX 2 :	SAR Measurement data.....	31
1.	Evaluation procedure	32
2.	Head measurement data of ANT.0	33
3.	Body measurement data of ANT.0	49
4.	Head measurement data of ANT.1.....	62
5.	Body measurement data of ANT.1	78
APPENDIX 3 :	Test instruments	90
1.	Equipment used	91
2.	Dosimetry assessment setup	92
3.	Configuration and peripherals	93
4.	System components	94
5.	Test system specifications	96
6.	Simulated Tissues Composition of 2450MHz	97
7.	Validation Measurement.....	97
8.	System validation data	99
9.	Validation uncertainty	100
10.	Validation Measurement data	101
11.	System Validation Dipole (D2450V2,S/N: 713)	104
12.	Dosimetric E-Field Probe Calibration (EX3DV3,S/N: 3507).....	113
13.	References	122
APPENDIX 4 :	Additional test.....	123

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

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	Travel Phone	
Model No.	KX-WP1050 (KX-WPA100(Hand Unit))	
Serial No.	2	
Country of Manufacture	Japan	
Condition of EUT	Engineering Prototype (Not for Sale: This sample is equivalent to mass-produced items.)	
Operation Clock	CPU156MHz, Bus Clock 78MHz, RTC 32.768MHz, RFIC20MHz	
Battery	Model name	CGA-L/115A (Li-Ion Battery)
	Rating :	DC 3.6V, 730mAh
	Manufacture	Panasonic
Option Battery	N/A	
Accessories	Typical headset	
Size	44mm×141mm×16mm	
Receipt Date of Sample	July 11, 2006	
Modification of EUT	No modification by the test lab.	
Category Identified	Portable device	

2.2 Product Description

Equipment Type	Transceiver
Frequency of Operation	2412-2462 MHz
Bandwidth & Channel spacing	22MHz&5MHz
Max.Peak power tested	21.16[dBm] (130.62mW)
Type of Modulation	DSSS / OFDM
Method of frequency generation	Crystal
Power Supply (Internal)	DC1.8V – 3.1%+3.0% DC3.2V +/- 5%
Antenna type	¼ λ Monopole antenna
Antenna Connector Type	N/A
Antenna Gain	+1dBi max.

SECTION 3 : Test standard information

3.1 Requirements for compliance testing defined by the FCC

The US Federal Communications Commission has released the report and order "Guidelines for Evaluating the Environmental Effects of RF Radiation", ET Docket No. 93-62 in August 1996. The order requires routine SAR evaluation prior to equipment authorization of portable transmitter devices, including portable telephones. For consumer products, the applicable limit is 1.6 mW/g for an uncontrolled environment and 8.0 mW/g for an occupational/controlled environment as recommended by the ANSI/IEEE standard C95.1-1992. According to the Supplement C of OET Bulletin 65 "Evaluating Compliance with FCC Guide-lines for Human Exposure to Radio frequency Electromagnetic Fields", released on Jun 29, 2001 by the FCC, the device should be evaluated at maximum output power (radiated from the antenna) under "worst-case" conditions for normal or intended use, incorporating normal antenna operating positions, device peak performance frequencies and positions for maximum RF energy coupling.

1 Specific Absorption Rate (SAR) is a measure of the rate of energy absorption due to exposure to an RF transmitting source (wireless portable device).

2 IEEE/ANSI Std. C95.1-1992 limits are used to determine compliance with FCC ET Docket 93-62.

3.2 Exposure limit

(A) Limits for Occupational/Controlled Exposure (W/kg)

Spatial Average (averaged over the whole body)	Spatial Peak (averaged over any 1g of tissue)	Spatial Peak (hands/wrists/feet/ankles averaged over 10g)
0.4	8.0	20.0

(B) Limits for General population/Uncontrolled Exposure (W/kg)

Spatial Average (averaged over the whole body)	Spatial Peak (averaged over any 1g of tissue)	Spatial Peak (hands/wrists/feet/ankles averaged over 10g)
0.08	1.6	4.0

Occupational/Controlled Environments: are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure, (i.e. as a result of employment or occupation).

General Population/Uncontrolled Environments: are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

<p style="text-align: center;">NOTE:GENERAL POPULATION/UNCONTROLLED EXPOSURE SPATIAL PEAK(averaged over any 1g of tissue) LIMIT 1.6 W/kg</p>

SECTION 4 : Test result

4.1 Result of Max. SAR value

Max. SAR Measured (IEEE 802.11b) : 0.887 W/kg (Body, 2462MHz)

4.2 Outline of SAR test

At first, the SAR test was performed with the USB cable connected to the EUT.

Those results are shown in Section8 and Appendix2.

The next, the test was performed without the USB cable connected to the EUT so that it was verified whether the USB cable have affected the SAR value of EUT.

Those results are shown in Appendix4 as an additional test.

4.3 Test Location

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

SECTION 5 : Operation of E.U.T. during testing

5.1 Confirmation before SAR testing

(i)Correlation of EMC power and SAR power

SAR power is equal to DATA of EMC test. (July 27, 2006) based on the following reason.

- EMC and SAR tests are performed with the same test sample under the same condition.
- EMC and SAR tests are performed at the same laboratory.
- The test mode setting is simple, and there is no possibility that the power (value) is changed by the wrong setting.

The result is shown in Section 7.1.

(ii)Duty factor verifications

Crest factor determing

Crest factor was calculated by the duty factor measured at each data rate.

The duty factor was calculated according to the following equation:

Duty factor = on time / 1 cycle (on+off time)

The result of duty factor is shown in Section 7.3.

5.2 Confirmation after SAR testing

It was checked that the powerdrift is within $\pm 5\%$ in the evaluation procedure of SARtesting.

The result is shown in APPENDIX 2.

5.3 Operating modes for SAR testing

5.3.1 Setting of EUT

1. IEEE 802.11b mode

Tx frequency band : 2412-2462MHz
Channel : 1ch(2412MHz),6ch(2437MHz),11ch(2462MHz)
Modulation : DSSS (DBPSK,DQPSK,CCK)
Crest factor* : 1(DBPSK),1.2(CCK)

Remark* : Crest factor decision in SAR testing

Modulation	DBPSK (1Mbps)	CCK (11Mbps)
DutyCycle[%]	99.19	82.90
Crestfactor	1.0	1.2

2. IEEE 802.11g mode

Tx frequency band : 2412-2462MHz
Channel : 1ch(2412MHz),6ch(2437MHz),11ch(2462MHz)
Modulation : OFDM (BPSK, QPSK, 16QAM, 64QAM)
Crest factor* : 1.1 (BPSK),1.5(QPSK),2.6 (16QAM),5.7(64QAM)

Remark* : Crest factor decision in SAR testing

Modulation	BPSK (6Mbps)	QPSK (12Mbps)	16QAM (24Mbps)	64QAM (48Mbps)
DutyCycle[%]	87.55	67.75	38.06	17.55
Crestfactor	1.1	1.5	2.6	5.7

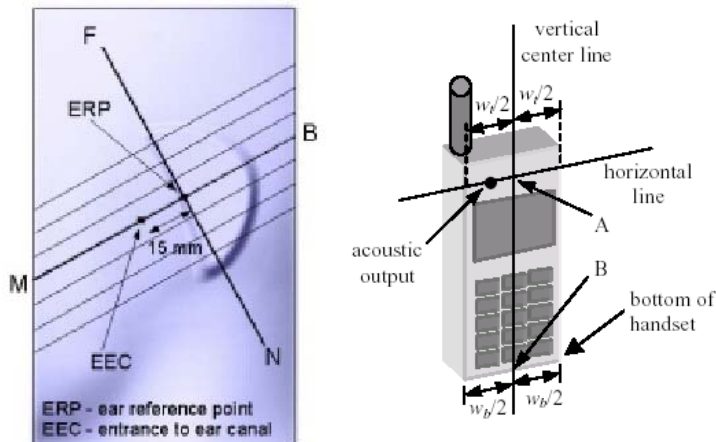
5.4 Description of the head test setup

According to the OET 65 and IEEE1528, this EUT was tested on the “Cheek/Touch” and “Ear/Tilt” positions at the left head and right head section of the SAM phantom.

5.4.1 Initial ear position

A handset should be initially positioned with the earpiece region pressed against the ear spacer of a head phantom.

The device should be positioned parallel to the “N-F” line defined along the base of the ear spacer that contains the “ear reference point”. The “test device reference point” is aligned to the “ear reference point” on the head phantom and the “vertical centerline” is aligned to the “phantom reference plane”.

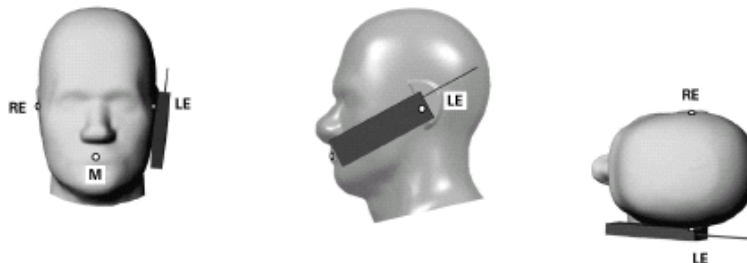


5.4.2 Cheek position

The device is brought toward the mouth of the head phantom by pivoting against the “ear reference point” or along the “N-F” line.

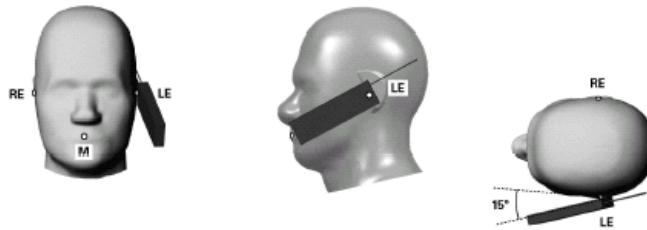
This test position is established:

- i) When any point on the display, keypad or mouthpiece portions of the handset is in contact with the phantom.
- ii) (or) When any portion of a foldout, sliding or similar keypad cover opened to its intended self-adjusting normal use position is in contact with the cheek or mouth of the phantom.



5.4.3 Tilt position

If the earpiece of the handset is not in full contact with the phantom's ear spacer and the peak SAR location for the "Cheek/Touch" position is located at the ear spacer region or corresponds to the earpiece region of the handset, the device should be returned to the "initial ear position" by rotating it away from the mouth until the earpiece is in full contact with the ear spacer. Otherwise the handset should be moved away from the cheek perpendicular to the line passes through both "ear reference points" for approximate 2-3 cm. While it is in this position, the handset is tilted away from the mouth with respect to the "test device reference point" by 15°. After the tilt, it is then moved back toward the head perpendicular to the line passes through both "ear reference points" until the device touches the phantom or the ear spacer. If the antenna touches the head first, the positioning process should be repeated with a tilt angle less than 15° so that the device and its antenna would touch the phantom simultaneously.



5.5 Description of the Body-worn test setup

This EUT were tested on the “Front” and “Back” positions at the flat section of SAM phantom.
The tests were performed in the EUT with the typical headset.

5.5.1 Front position

The test was performed in touch with front surface of the EUT to the flat section of SAM Twin phantom.

5.5.2 Back position

The test was performed in touch with back of the EUT to the flat section of SAM Twin phantom.

5.6 Antenna of EUT

The EUT have two antennas (Ant.0 / Ant.1) and both antennas were built-in antenna.

5.7 Method of Head / Body SAR Measurement

Radiated power is always monitored by Spectrum Analyzer.

IEEE 802.11b

Step1. The searching for the worst position.

Step2. The seaching for the modulation.

The DBPSK (1Mbps) of the highest average power* and the CCK (11Mbps) of the highest data rate were compared at the worst position of Step 1.

Step3. The changing to the Low and High channels

This test was performed at the worst conditions of Step 2

IEEE 802.11g

Step4. The searching for the worst position

Step5. The seaching for the worst modulation.

The data rate in the higher average power* each modulation was decided, then the worst modulation was searched in the SAR testing at the worst position of Step 4.

Step6. The changing to the Low and High channels

This test was performed at the worst conditions of Step 5.

* Refer to the average power data to Section 7.2.

SECTION 6 : Test surrounding

6.1 Measurement uncertainty

The uncertainty budget has been determined for the DASY4 measurement system according to the SPEAG documents[6][7] and is given in the following Table.

Error Description	Uncertainty value \pm %	Probability distribution	divisor	(ci) 1g	Standard Uncertainty (1g)	vi or v _{eff}
Measurement System						
Probe calibration	± 6.8	Normal	1	1	± 6.8	∞
Axial isotropy of the probe	± 4.7	Rectangular	$\sqrt{3}$	$(1-c_p)^{1/2}$	± 1.9	∞
Spherical isotropy of the probe	± 9.6	Rectangular	$\sqrt{3}$	$(c_p)^{1/2}$	± 3.9	∞
Boundary effects	± 2.0	Rectangular	$\sqrt{3}$	1	± 1.2	∞
Probe linearity	± 4.7	Rectangular	$\sqrt{3}$	1	± 2.7	∞
Detection limit	± 1.0	Rectangular	$\sqrt{3}$	1	± 0.6	∞
Readout electronics	± 0.3	Normal	1	1	± 0.3	∞
Response time	± 0.8	Rectangular	$\sqrt{3}$	1	± 0.5	∞
Integration time	± 2.6	Rectangular	$\sqrt{3}$	1	± 1.5	∞
RF ambient Noise	± 3.0	Rectangular	$\sqrt{3}$	1	± 1.7	∞
RF ambient Reflections	± 3.0	Rectangular	$\sqrt{3}$	1	± 1.7	∞
Probe Positioner	± 0.8	Rectangular	$\sqrt{3}$	1	± 0.5	∞
Probe positioning	± 9.9	Rectangular	$\sqrt{3}$	1	± 5.7	∞
Max.SAR Eval.	± 4.0	Rectangular	$\sqrt{3}$	1	± 2.3	∞
Test Sample Related						
Device positioning	± 2.9	Normal	1	1	± 2.9	55
Device holder uncertainty	± 3.6	Normal	1	1	± 3.6	5
Power drift	± 5.0	Rectangular	$\sqrt{3}$	1	± 2.9	∞
Phantom and Setup						
Phantom uncertainty	± 4.0	Rectangular	$\sqrt{3}$	1	± 2.3	∞
Liquid conductivity (target)	± 5.0	Rectangular	$\sqrt{3}$	0.64	± 1.8	∞
Liquid conductivity (meas.)	± 5.0	Rectangular	1	0.64	± 3.2	∞
Liquid permittivity (target)	± 5.0	Rectangular	$\sqrt{3}$	0.6	± 1.7	∞
Liquid permittivity (meas.)	± 5.0	Rectangular	1	0.6	± 3.0	∞
Combined Standard Uncertainty						
					± 13.45	
Expanded Uncertainty (k=2)						
					± 26.91	

SECTION 7 : Results of confirmation before SAR testing

7.1 Correlation of EMC power and SAR power

This data is reference data of EMC test. (Report No. 26KE0322-HO-A)

Date of test: July 27, 2006

[IEEE802.11b: 1Mbps]						
Ch	Freq. [MHz]	PM PK Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Converted [mW]
1	2412	-4.33	1.00	20.00	16.67	46.45
6	2437	-3.73	1.00	20.00	17.27	53.33
11	2462	-3.57	1.00	20.00	17.43	55.34

[IEEE802.11g: 6Mbps]						
Ch	Freq. [MHz]	PM PK Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Converted [mW]
1	2412	0.16	1.00	20.00	21.16	130.62
6	2437	-0.82	1.00	20.00	20.18	104.23
11	2462	-0.48	1.00	20.00	20.52	112.72

[IEEE802.11b : 2437MHz]						
Ch	Modulation (Data rate [bps])	PM PK Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Converted [mW]
6	DBPSK (1Mbps)	-3.73	1.00	20.00	17.27	53.33
6	DQPSK(2Mbps)	-3.79	1.00	20.00	17.21	52.60
6	CCK(5.5Mbps)	-3.77	1.00	20.00	17.23	52.84
6	CCK(11Mbps)	-3.76	1.00	20.00	17.24	52.97

[IEEE802.11g : 2437MHz]						
Ch	Modulation (Data rate [bps])	PM PK Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Converted [mW]
6	BPSK (6Mbps)	-0.82	1.00	20.00	20.18	104.23
6	BPSK (9Mbps)	-1.47	1.00	20.00	19.53	89.74
6	QPSK(12Mbps)	-1.16	1.00	20.00	19.84	96.38
6	QPSK(18Mbps)	-1.20	1.00	20.00	19.80	95.50
6	16QAM(24Mbps)	-1.38	1.00	20.00	19.62	91.62
6	16QAM(36Mbps)	-1.12	1.00	20.00	19.88	97.27
6	64QAM(48Mbps)	-1.75	1.00	20.00	19.25	84.14
6	64QAM(54Mbps)	-1.66	1.00	20.00	19.34	85.90

Sample Calculation:

$$\text{Result} = \text{Reading} + \text{Cable Loss (supplied by customer)} + \text{Attenuator}$$

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

7.2 Reference data of SAR test (Data rate determing)

This data is reference data of EMC test. (Report No. 26KE0322-HO-A)

Date of test: July 27, 2006

[IEEE802.11b: 1Mbps] Average power						
Ch	Freq. [MHz]	PM AVG Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Converted [mW]
1	2412	-8.03	1.00	20.00	12.97	19.82
6	2437	-7.49	1.00	20.00	13.51	22.44
11	2462	-7.39	1.00	20.00	13.61	22.96

[IEEE802.11g: 6Mbps] Average power						
Ch	Freq. [MHz]	PM AVG Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Converted [mW]
1	2412	-10.80	1.00	20.00	10.20	10.47
6	2437	-10.59	1.00	20.00	10.41	10.99
11	2462	-10.29	1.00	20.00	10.71	11.78

[IEEE802.11b : 2437MHz] Average power						
Ch	Modulation (Data rate [bps])	PM AVG Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Converted [mW]
6	DBPSK (1Mbps)	-7.49	1.00	20.00	13.51	22.44
6	DQPSK(2Mbps)	-7.61	1.00	20.00	13.39	21.83
6	CCK(5.5Mbps)	-7.77	1.00	20.00	13.23	21.04
6	CCK(11Mbps)	-8.11	1.00	20.00	12.89	19.45

[IEEE802.11g : 2437MHz] Average power						
Ch	Modulation (Data rate [bps])	PM AVG Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Converted [mW]
6	BPSK (6Mbps)	-10.59	1.00	20.00	10.41	10.99
6	BPSK (9Mbps)	-11.22	1.00	20.00	9.78	9.51
6	QPSK(12Mbps)	-12.30	1.00	20.00	8.70	7.41
6	QPSK(18Mbps)	-13.88	1.00	20.00	7.12	5.15
6	16QAM(24Mbps)	-14.06	1.00	20.00	6.94	4.94
6	16QAM(36Mbps)	-16.53	1.00	20.00	4.47	2.80
6	64QAM(48Mbps)	-17.68	1.00	20.00	3.32	2.15
6	64QAM(54Mbps)	-17.92	1.00	20.00	3.08	2.03

Sample Calculation:

$$\text{Result} = \text{Reading} + \text{Cable Loss (supplied by customer)} + \text{Attenuator}$$

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

7.3 Result of Duty factor verifications

The maximum duty factor of test mode was checked. The results are in the table below.
The duty factor when the user uses EUT is not exceeded from the duty factor of the test mode.

Test Date : July 27, 2006

11b		
DATA rate [Mbps]	Duty [%]	Crest factor for SAR
DBPSK (1Mbps)*	99.2	1.0
DQPSK (2Mbps)	97.7	N/A*
CCK (5.5Mbps)	87.1	N/A*
CCK (11Mbps)*	82.9	1.2

11g		
DATA rate [Mbps]	Duty [%]	Crest factor for SAR
BPSK (6Mbps)*	87.5	1.1
BPSK (9Mbps)	80.8	N/A*
QPSK (12Mbps)*	67.7	1.5
QPSK (18Mbps)	46.8	N/A*
16QAM (24Mbps)*	38.1	2.6
16QAM (36Mbps)	22.5	N/A*
64QAM (48Mbps)*	17.6	5.7
64QAM (54Mbps)	15.3	N/A*

*Reference: SAR test was not performed at the data rate.

SECTION 8 : Measurement results

The SAR test was performed with the USB cable connected to the EUT.

8.1 SAR measurement results of Ant.0

All of power drifts were within $\pm 5\%$. The measurement data is shown the "APPENDIX 2".

8.1.1 Head SAR 2450MHz of Ant.0

Liquid Depth (cm) : 15.0 Model : KX-WPA100(Hand Unit)
Parameters : $\epsilon_r = 37.7, \sigma = 1.88$ Serial No. : 2
Ambient temperature (deg.c.) : 25.0 Modulation : DSSS,OFDM
Relative Humidity (%) : 56 Crest factor : See Section 5.2
Date : August 1, 2006 Measured By : Miyo Ikuta

HEAD SAR MEASUREMENT RESULTS OF ANT.0 (With USB cable)									
Frequency			Modulation	Phantom Section	EUT Set-up Conditions		Liquid Temp.[deg.c]		SAR(1g) [W/kg]
Mode	Channel	[MHz]			Antenna	Position	Before	After	Maximum value of multi-peak
11b	Step1. Position search								
	6	2437.0	DBPSK(1Mbps)	Left head	Ant.0	Cheek	23.8	23.8	0.120
	6	2437.0	DBPSK(1Mbps)	Left head	Ant.0	Tilt	23.8	23.8	0.125
	6	2437.0	DBPSK(1Mbps)	Right head	Ant.0	Cheek	23.8	23.8	0.153
	6	2437.0	DBPSK(1Mbps)	Right head	Ant.0	Tilt	23.8	23.8	0.136
	Step2. Moduration Change								
	6	2437.0	CCK(11Mbps)	Right head	Ant.0	Cheek	23.8	23.9	0.118
	Step3. Frequency Change								
	1	2412.0	DBPSK(1Mbps)	Right head	Ant.0	Cheek	24.0	24.0	0.127
	11	2462.0	DBPSK(1Mbps)	Right head	Ant.0	Cheek	24.2	24.3	0.169
	11g	Step1. Position search							
6		2437.0	BPSK(6Mbps)	Left head	Ant.0	Cheek	24.0	24.0	0.052
6		2437.0	BPSK(6Mbps)	Left head	Ant.0	Tilt	24.0	24.0	0.058
6		2437.0	BPSK(6Mbps)	Right head	Ant.0	Cheek	24.0	24.0	0.084
6		2437.0	BPSK(6Mbps)	Right head	Ant.0	Tilt	24.0	24.0	0.071
Step2. Moduration Change									
6		2437.0	QPSK(12Mbps)	Right head	Ant.0	Cheek	24.0	24.0	0.060
6		2437.0	16QAM(24Mbps)	Right head	Ant.0	Cheek	24.0	24.0	0.030
6		2437.0	64QAM(48Mbps)	Right head	Ant.0	Cheek	24.0	24.0	0.014
Step3. Frequency Change									
1		2412.0	BPSK(6Mbps)	Right head	Ant.0	Cheek	24.0	24.0	0.064
11	2462.0	BPSK(6Mbps)	Right head	Ant.0	Cheek	23.7	23.7	0.078	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure / General Population							Head SAR: 1.6 W/kg (averaged over 1 gram)		

8.1.2 Body SAR 2450MHz of Ant.0

11b mode

Liquid Depth (cm) : **15.0** Model : **KX-WPA100(Hand Unit)**
Parameters : $\epsilon_r = 50.3, \sigma = 1.97$ Serial No. : **2**
Ambient temperature (deg.c.) : **25.0** Modulation : **DSSS**
Relative Humidity (%) : **56** Crest factor : **See Section 5.2**
Date : **August 1, 2006** Measured By : **Miyo Ikuta**

11g mode

Liquid Depth (cm) : **15.0** Model : **KX-WPA100(Hand Unit)**
Parameters : $\epsilon_r = 50.1, \sigma = 2.01$ Serial No. : **2**
Ambient temperature (deg.c.) : **25.0** Modulation : **OFDM**
Relative Humidity (%) : **54** Crest factor : **See Section 5.2**
Date : **August 2, 2006** Measured By : **Miyo Ikuta**

BODY SAR MEASUREMENT RESULTS OF ANT.0 (With USB cable)									
Frequency			Modulation	Phantom Section	EUT Set-up Conditions		Liquid Temp.[deg.c]		SAR(1g) [W/kg]
Mode	Channel	[MHz]			Antenna	Position	Before	After	Maximum value of multi-peak
11b	Step1. Position search								
	6	2437.0	DBPSK(1Mbps)	Flat	Ant.0	Front	24.0	24.0	0.194
	6	2437.0	DBPSK(1Mbps)	Flat	Ant.0	Back	24.0	24.0	0.700
	Step2. Moduration Change								
	6	2437.0	CCK(11Mbps)	Flat	Ant.0	Back	24.0	24.0	0.612
	Step3. Frequency Change								
	1	2412.0	DBPSK(1Mbps)	Flat	Ant.0	Back	24.0	24.0	0.591
11	2462.0	DBPSK(1Mbps)	Flat	Ant.0	Back	24.0	24.0	0.887	
11g	Step1. Position search								
	6	2437.0	BPSK(6Mbps)	Flat	Ant.0	Front	23.9	23.9	0.121
	6	2437.0	BPSK(6Mbps)	Flat	Ant.0	Back	24.0	24.0	0.410
	Step2. Moduration Change								
	6	2437.0	QPSK(12Mbps)	Flat	Ant.0	Back	23.9	23.9	0.310
	6	2437.0	16QAM(24Mbps)	Flat	Ant.0	Back	23.9	23.9	0.157
	6	2437.0	64QAM(48Mbps)	Flat	Ant.0	Back	23.9	23.9	0.075
	Step3. Frequency Change								
	1	2412.0	BPSK(6Mbps)	Flat	Ant.0	Back	23.8	23.8	0.400
11	2462.0	BPSK(6Mbps)	Flat	Ant.0	Back	23.8	23.8	0.514	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure / General Population							Head SAR: 1.6 W/kg (averaged over 1 gram)		

8.2 SAR measurement results of Ant.1

All of power drifts were within $\pm 5\%$. The measurement data is shown the "APPENDIX 2".

8.2.1 Head SAR 2450MHz of Ant.1

Liquid Depth (cm) : 15.0 Model : KX-WPA100(Hand Unit)
Parameters : $\epsilon_r = 37.8, \sigma = 1.88$ Serial No. : 2
Ambient temperature (deg.c.) : 25.0 Modulation : DSSS, OFDM
Relative Humidity (%) : 56 Crest factor : See Section 5.2
Date : July 31 2006 Measured By : Miyo Ikuta

HEAD SAR MEASUREMENT RESULTS OF ANT.1 (With USB cable)									
Frequency			Modulation	Phantom Section	EUT Set-up Conditions		Liquid Temp.[deg.c]		SAR(1g) [W/kg]
Mode	Channel	[MHz]			Antenna	Position	Before	After	Maximum value of multi-peak
11b	Step1. Position search								
	6	2437.0	DBPSK(1Mbps)	Left head	Ant.1	Cheek	24.0	24.0	0.240
	6	2437.0	DBPSK(1Mbps)	Left head	Ant.1	Tilt	24.0	24.0	0.219
	6	2437.0	DBPSK(1Mbps)	Right head	Ant.1	Cheek	24.0	24.0	0.357
	6	2437.0	DBPSK(1Mbps)	Right head	Ant.1	Tilt	24.0	24.0	0.295
	Step2. Moduration Change								
	6	2437.0	CCK(11Mbps)	Right head	Ant.1	Cheek	24.0	24.0	0.300
	Step3. Frequency Change								
	1	2412.0	DBPSK(1Mbps)	Right head	Ant.1	Cheek	24.0	24.0	0.335
	11	2462.0	DBPSK(1Mbps)	Right head	Ant.1	Cheek	24.0	24.0	0.376
11g	Step1. Position search								
	6	2437.0	BPSK(6Mbps)	Left head	Ant.1	Cheek	24.0	24.0	0.133
	6	2437.0	BPSK(6Mbps)	Left head	Ant.1	Tilt	24.0	24.0	0.111
	6	2437.0	BPSK(6Mbps)	Right head	Ant.1	Cheek	24.0	24.0	0.197
	6	2437.0	BPSK(6Mbps)	Right head	Ant.1	Tilt	24.0	24.0	0.145
	Step2. Moduration Change								
	6	2437.0	QPSK(12Mbps)	Right head	Ant.1	Cheek	24.0	24.0	0.146
	6	2437.0	16QAM(24Mbps)	Right head	Ant.1	Cheek	24.0	24.0	0.077
	6	2437.0	64QAM(48Mbps)	Right head	Ant.1	Cheek	23.9	23.8	0.036
	Step3. Frequency Change								
	1	2412.0	BPSK(6Mbps)	Right head	Ant.1	Cheek	23.8	23.8	0.182
	11	2462.0	BPSK(6Mbps)	Right head	Ant.1	Cheek	23.8	23.8	0.204
	ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure / General Population							Head SAR: 1.6 W/kg (averaged over 1 gram)	

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

8.2.2 Body SAR 2450MHz of Ant.1

11b mode

Liquid Depth (cm) : 15.0 Model : KX-WPA100(Hand Unit)
Parameters : $\epsilon_r = 50.3, \sigma = 1.97$ Serial No. : 2
Ambient temperature (deg.c.) : 25.0 Modulation : DSSS
Relative Humidity (%) : 56 Crest factor : See Section 5.2
Date : August 1, 2006 Measured By : Miyo Ikuta

11g mode

Liquid Depth (cm) : 15.0 Model : KX-WPA100(Hand Unit)
Parameters : $\epsilon_r = 50.1, \sigma = 2.01$ Serial No. : 2
Ambient temperature (deg.c.) : 25.0 Modulation : OFDM
Relative Humidity (%) : 54 Crest factor : See Section 5.2
Date : August 2, 2006 Measured By : Miyo Ikuta

BODY SAR MEASUREMENT RESULTS OF ANT.1 (With USB cable)									
Frequency			Modulation	Phantom Section	EUT Set-up Conditions		Liquid Temp.[deg.c]		SAR(1g) [W/kg]
Mode	Channel	[MHz]			Antenna	Position	Before	After	Maximum value of multi-peak
11b	Step1. Position search								
	6	2437.0	DBPSK(1Mbps)	Flat	Ant.1	Front	24.0	24.0	0.446
	6	2437.0	DBPSK(1Mbps)	Flat	Ant.1	Back	24.0	24.0	0.408
	Step2. Moduration Change								
	6	2437.0	CCK(11Mbps)	Flat	Ant.1	Front	24.0	24.0	0.380
	Step3. Frequency Change								
	1	2412.0	DBPSK(1Mbps)	Flat	Ant.1	Front	24.1	24.1	0.488
11	2462.0	DBPSK(1Mbps)	Flat	Ant.1	Front	24.1	24.1	0.512	
11g	Step1. Position search								
	6	2437.0	BPSK(6Mbps)	Flat	Ant.1	Front	23.9	24.0	0.317
	6	2437.0	BPSK(6Mbps)	Flat	Ant.1	Back	24.0	24.0	0.242
	Step2. Moduration Change								
	6	2437.0	QPSK(12Mbps)	Flat	Ant.1	Front	24.0	24.0	0.246
	6	2437.0	16QAM(24Mbps)	Flat	Ant.1	Front	24.0	24.0	0.128
	6	2437.0	64QAM(48Mbps)	Flat	Ant.1	Front	24.0	24.0	0.063
	Step3. Frequency Change								
	1	2412.0	BPSK(6Mbps)	Flat	Ant.1	Front	24.0	24.0	0.281
	11	2462.0	BPSK(6Mbps)	Flat	Ant.1	Front	24.0	24.0	0.307
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure / General Population							Head SAR: 1.6 W/kg (averaged over 1 gram)		