SAR TEST REPORT

Test Report No. : 27FE0369-HO-E

Applicant	:	**Panasonic Communications Co., Ltd.**
Type of Equipment	:	**Cordless Telephone (Handset)**
Model No.	:	**BB-GTA150 (Handset)**
FCC ID	:	**ACJ96NBB-GT1540**
Test standard	:	**FCC47CFR 2.1093** **FCC OET Bulletin 65, Supplement C**
Test Result	:	**Complied**
Max. SAR Measured	:	**Head 0.244W/kg (5741.865 MHz)** **Body 0.267W/kg (5741.865 MHZ)**

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 : February 28 / March 1, 2007

Tested by : M. Ikuta

Miyo Ikuta
EMC Services

Approved by : H. Shimoji

Hironobu Shimoji
Asistant Manager of EMC Services

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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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
Model No.		BB-GTA150(Handset)
Serial No.		Air001
Country of Manufacture		Japan
Battery	Model Name :	HHR-P107
	Rating :	DC3.6V/650mAh
	Manufacture	Panasonic
Option Battery		N/A
Condition of EUT		Engineering Prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Accessories		BeltClip (Bundled item) Typical headset (No bundled item)
Size		W48mm×H156mm×H33mm
Receipt Date of Sample		February 19,2007
Modification of EUT		No modification by the test lab.
Category Identified		Portable device

2.2 Product Description

Equipment Type	Transceiver
Frequency band	Lower Channel : 5741.865 MHz Upper Channel : 5838.187MHz
Bandwidth & Channel spacing	Bandwidth: 97MHz Channel spacing: 892kHz
Max.Peak power tested	Antenna terminal Power:19.9dBm EIRP:23.6dBm
Type of Modulation	FHSS
Antenna Type	5/8 lambda Pattern-Antenna
Antenna Gain	4dBi (Typ.)
Power Supply (RF Part)	DC3.6V
Method of Frequency Generation	Synthesizer
Operation Clock	Main clock : 13.824 MHz

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.

NOTE:GENERAL POPULATION/UNCONTROLLED EXPOSURE
SPATIAL PEAK(averaged over any 1g of tissue) LIMIT
1.6 W/kg

SECTION 4 : Test result

4.1 Result of Max. SAR value

Max. SAR Measured : Head 0.244 W/kg (5741.865MHz)
Body 0.267 W/kg (5741.865MHz)

4.2 Test Location

UL Apex Co., Ltd. Head Office EMC Lab.
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Telephone : +81 596 24 8116
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SECTION 5 : Operation of E.U.T. during testing

5.1 Confirmation before SAR testing

Correlation of EMC power and SAR power

Peak Power test

It was checked that the EIRP was correlated within 0~+5% (FCC requirements)
SAR power is equal to DATA of EMC test based on the following reason.

- The EIRP of EUT was confirmed before SAR testing. (February 28, 2007)
- EMC and SAR tests were performed with the same test sample under the same condition.
- EMC and SAR tests were 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.

5.2 Confirmation after SAR testing

It was checked that the powerdrift is within ±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

The frequency band and the modulation used in this test are shown as a following.

Frequency band	: 5741.865 – 5838.187MHz	
Channel	Low channel	5741.865MHz
	Mid channel	5790.026MHz
	High channel	5838.187MHz
Modulation	: FHSS	
Crest factor	: 6.5 Duty Cycle is 15.4%, (On time:1.54ms (0.77ms x 2slots) / 1cycle:10.0ms)	

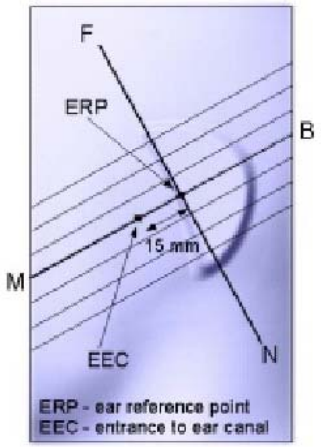
5.4 Description of the head test setup

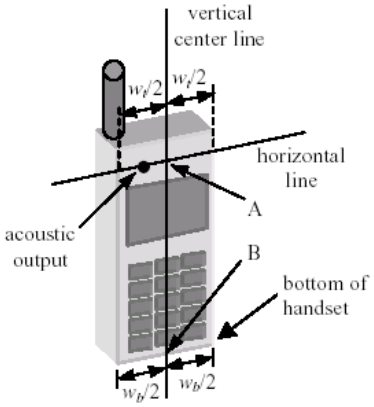
According to the OET 65, IEEE1528, and IEC62209-1 this EUT was tested on the "Cheek/Touch" and "Ear/Tilt" positions at the left head and right head section of the SAM phantom.

5.4.1 Initial ear position

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

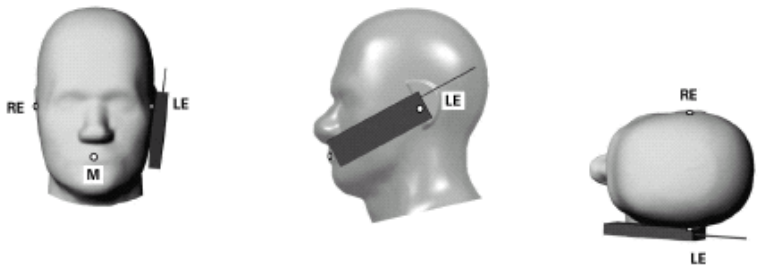
The device should be positioned parallel to the "N-F" line defined along the base of the ear spacer that contains the "ear reference point". The "test device reference point" is aligned to the "ear reference point" on the head phantom and the "vertical centerline" is aligned to the "phantom reference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





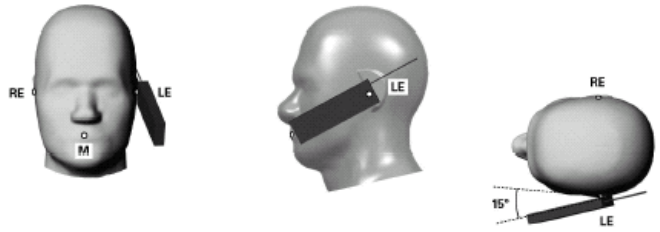
5.4.2 Cheek position

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.



5.4.4 Antenna position

The antenna of this EUT was built-in antenna.

5.5 Method of measurement (Head SAR)

Both Ant.1 and the Ant.2 test were tested from Step1 to Step2.
Step1. The searching for the worst position

Step2. The changing to the Low and High channels
The test was performed at the worst conditions of Step1.

5.6 Description of the Body-worn test setup and Method

The test was performed in touch with rear of the EUT (with the belt clip and earphone) to the flat phantom of SAM phantom. (Refer to the Appendix1)
In addition, the tests were performed in the Low, Mid, and the High channels

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 ± %	Probability distribution	divisor	(ci) 1g	Standard Uncertainty (1g)	vi or veff
Measurement System						
Probe calibration	±6.8	Normal	1	1	±6.8	∞
Axial isotropy of the probe	±4.7	Rectangular	√3	$(1-c_p)^{1/2}$	±1.9	∞
Spherical isotropy of the probe	±9.6	Rectangular	√3	$(c_p)^{1/2}$	±3.9	∞
Boundary effects	±2.0	Rectangular	√3	1	±1.2	∞
Probe linearity	±4.7	Rectangular	√3	1	±2.7	∞
Detection limit	±1.0	Rectangular	√3	1	±0.6	∞
Readout electronics	±0.3	Normal	1	1	±0.3	∞
Response time	±0.8	Rectangular	√3	1	±0.5	∞
Integration time	±2.6	Rectangular	√3	1	±1.5	∞
RF ambient Noise	±3.0	Rectangular	√3	1	±1.7	∞
RF ambient Reflections	±3.0	Rectangular	√3	1	±1.7	∞
Probe Positioner	±0.8	Rectangular	√3	1	±0.5	∞
Probe positioning	±9.9	Rectangular	√3	1	±5.7	∞
Max.SAR Eval.	±4.0	Rectangular	√3	1	±2.3	∞
Test Sample Related						
Device positioning	±2.9	Normal	1	1	±2.9	17
Device holder uncertainty	±3.6	Normal	1	1	±3.6	4
Power drift	±5.0	Rectangular	√3	1	±2.9	∞
Phantom and Setup						
Phantom uncertainty	±4.0	Rectangular	√3	1	±2.3	∞
Liquid conductivity (target)	±5.0	Rectangular	√3	0.64	±1.8	∞
Liquid conductivity (meas.)	±5.0	Rectangular	1	0.64	±3.2	∞
Liquid permittivity (target)	±10.0	Rectangular	√3	0.6	±3.5	∞
Liquid permittivity (meas.)	±10.0	Rectangular	1	0.6	±6.0	∞
Combined Standard Uncertainty					**±14.74**	
Expanded Uncertainty (k=2)					**±29.5**	

SECTION 7 : Results of confirmation before / after SAR testing

7.1 Correlation of EMC power and SAR power

The EIRP power was correlated within 0~+5% at EMC test.

7.2 EIRP power

7.2.1 EIRP measurement method

The output power of EUT is confirmed before the SAR test.
The EUT has 2 antennas (Antenna 1 and 2). The Antenna 2 is used for EIRP power tests since Antenna 2 has the higher output power level than Antenna 1.

Output power measurement method

(i)Spectrum Analyzer setting

Peak measurement procedure
Function of spectrum analyzer : None
Center frequency : equal to the signal source
Resolution BW : 1MHz
Video BW : 1MHz
Detector mode : Peak
Trace : Max hold

(ii)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] = $10\log[((E*d)^2/30G)*10^3]$; d= 3[m], G =1

7.2.2 EIRP measurement results

Test Date : February 28,2007

Reference Data Refer to EMC report (27FE0369-HO-A).

UL-Apex Co., Ltd.
Head Office EMC Lab. No.3 Semi Anechoic Chamber

Company : Panasonic Communications Co., Ltd.
Equipment : Cordless Telephone (Handset)
Model : BB-GTA150
S/N : Air001
Power : DC3.6V
Mode : Tx (Hopping off), Worst Ant : Ant2

Regulation : FCC15.247(b)(1)
Test Distance : 10m
Date : 02/28/2007
Temperature : 23 deg.C.
Humidity : 30 %

No.	Frequency [MHz]	Electric Field Strength (3m) (After Factor Calculation) [dBuV/m]		SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. ATT. Loss [dB]	RESULT (EIRP) [dBm]	
		HOR	VER	HOR	VER				HOR	VER
1	5741.87	120.4	124.7	11.5	16.3	3.2	10.5	0.0	18.8	23.6
2	5790.03	119.4	124.0	10.5	15.6	3.2	10.5	0.0	17.8	22.9
3	5838.19	119.2	123.5	10.3	15.1	3.2	10.5	0.0	17.5	22.4

CALCULATION RESULT = SG Reading - Tx Loss + Tx Ant. Gain - Tx Ant. ATT. Loss
Rx-ANTENNA : Biconical Antenna(30-300MHz), Logperriodic Antenna(300-1000MHz), Horn Antenna(1-12.75GHz)
Tx-ANTENNA : Shorted Dipole Antenna(30-120MHz), Dipole Antenna(120-1000MHz), Horn Antenna(1-12.75GHz)
Result is calculated to two places of decimals. Therefore, there may be 0.1 difference for the result.
With the result above, the effective radiated power was calculated on the basis of the reference value
- for the calibration data on the substitution measurement.

7.3 Antennaterminal power

7.3.1 Antennaterminal measurement results

FCC15.247 Maximum Peak Output Power (27FE0369-HO-A)

Test Date:February 20,2007

Ant 2 (Worst)

Ch	Freq. [MHz]	P/M (PK) Reading [dBm]	Atten. + Cable [dB]	Result [dBm]	Result [mW]
Low	5759.702	9.31	10.15	19.46	88.31
Mid	5798.053	9.51	10.16	19.67	92.68
High	5838.187	9.74	10.16	19.90	97.72

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

Ant 1

Ch	Freq. [MHz]	P/M (PK) Reading [dBm]	Atten. + Cable [dB]	Result [dBm]	Result [mW]
Low	5759.702	8.98	10.15	19.13	81.85
Mid	5798.053	9.23	10.16	19.39	86.90
High	5838.187	9.44	10.16	19.60	91.20

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

7.4 Correlation of Antenna Terminal power and Radiation

Antenna gain : 4.00dBi
Max.EIRP power of antenna port : 23.90dBm
Max.EIRP power of radiation : 23.60dBm

Testing method	Power [dBm] Measurement	Antenna Gain	EIRP [dBm]
Antenna port	19.9	4.00	23.90
Radiation	23.2	-	23.60

SECTION 8 : Measurement results

8.1 SAR measurement results

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

8.1.1 Head SAR 5800MHz

Liquid Depth (cm)	:	**15.0**	Model	:	**BB-GTA150**
Parameters	:	ε_r =**32.1**, σ =**5.08**	Serial No.	:	**Air001**
Ambient temperature (deg.c.)	:	**25.0**	Modulation	:	**FHSS**
Relative Humidity (%)	:	**32**	Crest factor	:	**6.5**
Date	:	**March 1, 2007**	Measured By	:	**Miyo Ikuta**

HEAD SAR MEASUREMENT RESULTS									
Frequency		Modulation	Phantom Section	EUT Set-up Conditions			Liquid Temp.[deg.c]		SAR(1g) [W/kg]
Channel	[MHz]			Antenna	Position	Separation [mm]	Before	After	Maximum value of multi-peak
ANT.1									
Step1. Position search									
Mid	5790.026	FHSS	Left Head	Ant.1	Cheek	0	24.0	24.0	**0.214**
Mid	5790.026	FHSS	Left Head	Ant.1	Tilt	0	24.0	24.0	**0.124**
Mid	5790.026	FHSS	Right Head	Ant.1	Cheek	0	24.3	24.3	**0.167**
Mid	5790.026	FHSS	Right Head	Ant.1	Tilt	0	24.3	24.3	**0.089**
Step2. Frequency Change									
Low	5741.865	FHSS	Left Head	Ant.1	Cheek	0	24.8	24.8	**0.244**
High	5838.187	FHSS	Left Head	Ant.1	Cheek	0	24.8	24.8	**0.227**
ANT.2									
Step1. Position search									
Mid	5790.026	FHSS	Left Head	Ant.2	Cheek	0	24.0	24.0	**0.079**
Mid	5790.026	FHSS	Left Head	Ant.2	Tilt	0	24.0	24.1	**0.101**
Mid	5790.026	FHSS	Right Head	Ant.2	Cheek	0	24.1	24.3	**0.082**
Mid	5790.026	FHSS	Right Head	Ant.2	Tilt	0	24.3	24.3	**0.114**
Step2. Frequency Change									
Low	5741.865	FHSS	Right Head	Ant.2	Tilt	0	24.8	24.8	**0.133**
High	5838.187	FHSS	Right Head	Ant.2	Tilt	0	24.8	24.8	**0.099**
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-worn 5800MHz SAR

Liquid Depth (cm)	:	**15.0**	Model	:	**BB-GTA150**
Parameters	:	ε_r =**45.3**, σ =**6.03**	Serial No.	:	**Air001**
Ambient temperature (deg.c.)	:	**25.0**	Modulation	:	**FHSS**
Relative Humidity (%)	:	**32**	Crest factor	:	**6.5**
Date	:	**March 1, 2007**	Measured By	:	**Miyo Ikuta**

BODY-WORN SAR MEASUREMENT RESULTS									
Frequency		Modulation	Phantom Section	EUT Set-up Conditions			Liquid Temp.[deg.c]		SAR(1g) [W/kg]
Channel	[MHz]			Antenna	Position	Separation [mm]	Before	After	Maximum value of multi-peak
ANT.1									
Low	5741.865	FHSS	Flat	Ant.1	Back	0	24.8	24.8	**0.082**
Mid	5790.026	FHSS	Flat	Ant.1	Back	0	24.8	24.8	**0.087**
High	5838.187	FHSS	Flat	Ant.1	Back	0	24.8	24.8	**0.080**
ANT.2									
Low	5741.865	FHSS	Flat	Ant.2	Back	0	24.8	24.8	**0.267**
Mid	5790.026	FHSS	Flat	Ant.2	Back	0	24.8	24.8	**0.227**
High	5838.187	FHSS	Flat	Ant.2	Back	0	24.8	24.8	**0.206**
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure / General Population						**Head SAR: 1.6 W/kg (averaged over 1 gram)**			

* See Appendix 3 for measurement data plots.