

SAR Compliance Test Report

Test Report no.: DTX06551-EN
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Date of Report: 27th February 2003
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Tested device: FCC ID: QMNRH-44, ESN: 235/14065124, HW: 4102, SW: E100_02w37.nbr; DUT#: 232115
with standard and active cover

Supplement reports:

Testing has been 47CFR §2.1093
Carried out in Radiofrequency Radiation Exposure Evaluation: Portable Devices
Accordance with: IEEE P1528-200X Draft 6.4
Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques

FCC OET Bulletin 65 (Edition 97-01), Supplement C (Edition 01-01)
Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields

Documentation: The documentation of the testing performed on the tested devices is archived for 15 years at Test & Certification Center, Copenhagen

Test Results: The tested device complies with the requirements in respect of all parameters subject to the test.
The test results and statements relate only to the items tested.
The test report shall not be reproduced except in full, without written approval of the laboratory.

Date and signatures:
For the contents:

02/27/2003


Svend Bøgsted
TCC Manager


Ruben Chr. Hansen
SAR Test Engineer

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APPENDIX A:	Validation Test Printouts
APPENDIX B:	SAR Distribution Printouts
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1. SUMMARY FOR SAR TEST REPORT

Date of test	10/07/2002 to 1/15/2003
Contact person	Robert Taylor
FCC ID	QMNRH-44
SN, HW, SW and DUT numbers of tested device	ESN: 235/14065124, HW 4102, SW E100_02w37.nbr, DUT # 232115
Accessories used in testing	Erica Active cover B4.1, Headset HDC-5, DUT# 232116, Headset HDB-4, DUT# 232117, Battery BLC-2, DUT# 232118, 232119 and 232120
Notes	
Document code	DTX 06551-EN
Responsible test engineer	Ruben Chr. Hansen
Measurement performed by	Leif F. Klysner

1.1 Maximum Results Found during SAR Evaluation

The equipment is deemed to fulfil the requirements if the measured values are less than or equal to the limit. Maximum found results are reported per operating band.

1.1.1 Head Configuration, standard cover

Mode of operation	Channel	Power [dBm]	Position	Limit [W/kg]	Measured [W/kg]	Result
AMPS	799	26.27	Touch, left hand, antenna out	1.6	1.08	PASSED
CDMA	777	25.55	Touch, left hand, antenna in	1.6	0.951	PASSED
PCS	600	23.02	Touch, left hand, antenna in	1.6	1.13	PASSED

1.1.2 Head Configuration, Erica cover

Mode of operation	Channel	Power [dBm]	Position	Limit [W/kg]	Measured [W/kg]	Result
AMPS	799	26.27	Touch, left hand, antenna out	1.6	1.02	PASSED
CDMA	777	25.55	Touch, left hand, antenna out	1.6	0.929	PASSED
PCS	600	23.02	Touch, left hand, antenna in	1.6	0.808	PASSED

1.1.3 Head Configuration, Siren cover

Mode of operation	Channel	Power [dBm]	Position	Limit [W/kg]	Measured [W/kg]	Result
AMPS	799	26.27	Touch, left hand, antenna in	1.6	1.02	PASSED
CDMA	777	25.55	Touch, left hand, antenna in	1.6	0.915	PASSED
PCS	600	23.02	Touch, left hand, antenna in	1.6	1.18	PASSED

1.1.4 Body Worn Configuration, standard cover

Mode of operation	Channel	Power [dBm]	Position	Limit [W/kg]	Measured [W/kg]	Result
AMPS	991	26.2	HDC-5, Antenna towards body, antenna in	1.6	0.953	PASSED
CDMA	777	25.55	HDC-5, Antenna towards body, antenna in	1.6	0.706	PASSED
PCS	1175	23.05	HDC-5, Antenna towards body, antenna out	1.6	0.537	PASSED

1.1.5 Body Worn Configuration, Erica cover

Mode of operation	Channel	Power [dBm]	Position	Limit [W/kg]	Measured [W/kg]	Result
AMPS	991	26.2	HDC-5, Antenna towards body, antenna in	1.6	0.842	PASSED
CDMA	384	25.7	HDC-5, Antenna towards body, antenna in	1.6	0.744	PASSED
PCS	1175	23.05	HDC-5, Antenna towards body, antenna out	1.6	0.480	PASSED

1.1.6 Body Worn Configuration, Siren cover

Mode of operation	Channel	Power [dBm]	Position	Limit [W/kg]	Measured [W/kg]	Result
AMPS	991	26.2	HDC-5, Antenna towards body, antenna in	1.6	0.929	PASSED
CDMA	384	25.7	HDC-5, Antenna towards body, antenna in	1.6	0.824	PASSED
PCS	1175	23.05	HDC-5, Antenna towards body, antenna out	1.6	0.491	PASSED

1.1.7 Measurement Uncertainty

Combined Standard Uncertainty	± 13.6%
Expanded Standard Uncertainty (k=2)	± 27.1%

2. DESCRIPTION OF TESTED DEVICE

FCC ID Number:	QMNRH-44		
ESN:	235/14065124		
Mode(s) of operation	AMPS	CDMA	PCS
Modulation Mode(s)	FM	Quadrature PSK	Quadrature PSK
Duty Cycle	1	1	1
Transmitting Frequency Range [MHz]	824.040 – 848.970	824.730 – 848.310	1851.250 – 1908.750
Production Unit or Identical Prototype (47 CFR. § 2.908)	Identical Prototype		
Device Category	Portable		
RF Exposure Limits	General Population / Uncontrolled		

2.1 Picture of Phone



QMNRH-44 with standard cover



QMNRH-44 with Erica cover

QMNRH-44 with Siren cover

2.2 Description of the Antenna

The QMNRH-44 cellular phone has an integral patch antenna and a retractable whip antenna.



QMNRH-44 with antenna extended.

2.3 Battery Options

There is only one battery option available for tested device.

2.4 Body Worn Accessories

There are currently no body worn accessories available for the QMNRH-44.

3. TEST CONDITIONS

3.1 Ambient Conditions

Ambient temperature (°C)	22 ±1
Tissue simulating liquid temperature (°C)	22 ±1
Humidity % r.h.	45 ±10

3.2 Test Signal, Frequencies, and Output Power

The device was controlled by using a radio tester. Communication between the device and the tester was established by air link.

In all operating bands the measurements were performed on lowest, middle and highest channels.

The phone was set to maximum power level during the all tests and at the beginning of the each test the battery was fully charged. The conducted output power was measured using a Rohde & Schwarz power meter.

DASY3 system measures the phones output power drift during SAR testing by comparing the radiated e-field in a reference point at the beginning and at the end of measurement. These measurements were used to monitor stability of power output (drift).

4. DESCRIPTION OF THE TEST EQUIPMENT

The measurements were performed with an automated near-field scanning system, DASY3, manufactured by Schmid & Partner Engineering AG (SPEAG) in Switzerland.

Test Equipment	Serial Number	Due Date
DASY3 DAE V1	501	02/25/2003
E-field Probe ET3DV6R	1429	04/25/2003
Dipole Validation Kit, D900V2	160	08/29/2004
Dipole Validation Kit, D1800V2	230	10/25/2003

E-field probe calibration records are presented in Appendix C.

Additional equipment needed in validation

Test Equipment	Model	Serial Number	Due Date
Signal Generator	R&S SMIQ 03	826046/034	08/18/2003
Amplifier	MiniCircuits ZHL-42W	D091395-1	-
Power Meter	R&S NRVD	840297/008	09/06/2003
Power Sensor	R&S NRV-Z51	841918/059	06/28/2003
Power Sensor	R&S NRV-Z51	848327/025	09/25/2003
Thermometer	LUFFT CAN	5620.03	10/07/2003
Vector Network Analyzer	Agilent 8753ES	MY 4000 1091	08/08/2003
Transmission Line Dielectric Probe	HP 85070B	US 33020403	-

4.1 System Accuracy Verification

The SAR measurements were verified using a dipole antenna placed under the flat section of the generic twin phantom. A power level of 250 mW supplied to the dipole antenna was used for the verification. The results are normalised to 1 W input power. The power level was controlled during verification, using a directional coupler and a power meter. A SAR measurement was performed to verify that the measured SAR was within $\pm 10\%$ from the target value indicated in the dipole(s) calibration certificate. These tests were done at 900 MHz and 1800 MHz, which is within 100 MHz of the mid-band frequency of the D.U.T. The tests were performed every morning before measurements of the D.U.T. The liquid depth was 15.0 cm ± 0.5 cm.

Liquid	Date	Frequency [MHz]	Description	SAR averaged over 1g [mW/g]	Dielectric Parameters ϵ_r σ [S/m]	
Head	10/07/02	900	Measured	11.52	40.5	0.96
			Reference	11.1	41.7	0.97
	10/08/02	900	Measured	11.4	40.8	0.97
			Reference	11.1	41.7	0.97
	10/09/02	900	Measured	11.28	40.2	0.96
			Reference	11.1	41.7	0.97
	10/10/02	1800	Measured	39.88	38.4	1.38
			Reference	37.4	40.7	1.35
	10/11/02	1800	Measured	38.52	38.8	1.34
			Reference	37.4	40.7	1.35
	11/27/02	1800	Measured	39.72	38.9	1.37
			Reference	37.4	40.7	1.35
	11/28/02	1800	Measured	39.32	38.8	1.36
			Reference	37.4	40.7	1.35
	12/02/02	900	Measured	11.28	41.2	0.97
			Reference	11.1	41.7	0.97
	12/03/02	900	Measured	11.24	41.4	0.97
			Reference	11.1	41.7	0.97
	12/04/02	900	Measured	11.24	41.5	0.97
			Reference	11.1	41.7	0.97
	12/05/02	900	Measured	11.20	41.2	0.97
			Reference	11.1	41.7	0.97
	12/10/02	900	Measured	11.16	40.6	0.96
			Reference	11.1	41.7	0.97
	01/03/03	1800	Measured	34.56	38.5	1.37
			Reference	37.4	40.7	1.35
	01/07/03	1800	Measured	40.4	39.1	1.37
			Reference	37.4	40.7	1.35
	01/08/03	900	Measured	11.08	40.7	0.96
			Reference	11.1	41.7	0.97
	01/09/03	900	Measured	11.44	41.8	0.98
			Reference	11.1	41.7	0.97
	01/10/03	900	Measured	11.24	41.5	0.97
			Reference	11.1	41.7	0.97

Liquid	Date	Frequency [MHz]	Description	SAR averaged over 1g [mW/g]	Dielectric Parameters ϵ_r σ [S/m]	
Body	01/12/03	1800	Measured	38.44	52.1	1.44
			Reference	40.8	53.5	1.45
	01/13/03	1800	Measured	38.56	51.9	1.44
			Reference	40.8	53.5	1.45
	01/14/03	900	Measured	11.36	54.6	1.00
			Reference	11.1	54.8	1.02
	01/15/03	900	Measured	11.48	54.6	1.00
			Reference	11.1	54.8	1.02
	01/16/03	900	Measured	11.32	54.0	0.99
			Reference	11.1	54.8	1.02

4.2 Tissue Simulants

All dielectric parameters of tissue simulants were measured within 24 hours of SAR measurements. The depth of the tissue simulant in the ear reference point of the phantom was $15\text{cm} \pm 5\text{mm}$ during all the tests. Volume for each tissue simulant was 26 liters.

4.2.1 Head Tissue Simulant

The composition of the brain tissue simulating liquid for 835MHz is

58.31% Sugar
39.74% De-Ionized Water
1.55% Salt
0.25% HEC
0.15% Bactericide

and for 1900MHz

44.91% 2-(2-butoxyethoxy) Ethanol
54.88% De-Ionized Water
0.21% Salt

Date	Frequency [MHz]	Description	ϵ_r Relative permittivity	σ [S/m] Conductivity
10/07/02	835	Measured	41.3	0.90
		Recommended	41.5	0.90
10/08/02	835	Measured	41.6	0.91
		Recommended	41.5	0.90
10/09/02	835	Measured	41.0	0.90
		Recommended	41.5	0.90
10/10/02	1880	Measured	38.0	1.46
		Recommended	40.0	1.40
10/11/02	1880	Measured	38.5	1.42
		Recommended	40.0	1.40
11/27/02	1880	Measured	38.6	1.44
		Recommended	40.0	1.40
11/28/02	1880	Measured	38.5	1.44
		Recommended	40.0	1.40
12/02/02	835	Measured	42.0	0.91
		Recommended	41.5	0.90
12/03/02	835	Measured	42.2	0.91
		Recommended	41.5	0.90
12/04/02	835	Measured	42.2	0.91
		Recommended	41.5	0.90
12/05/02	835	Measured	42.0	0.91
		Recommended	41.5	0.90
12/10/02	835	Measured	41.3	0.90
		Recommended	41.5	0.90
01/03/03	1880	Measured	38.1	1.45
		Recommended	40.0	1.40
01/07/03	1880	Measured	38.8	1.44
		Recommended	40.0	1.40
01/08/03	835	Measured	41.5	0.90
		Recommended	41.5	0.90
01/09/03	835	Measured	42.6	0.92
		Recommended	41.5	0.90
01/10/03	835	Measured	42.2	0.91
		Recommended	41.5	0.90

Recommended values are adopted from OET Bulletin 65 (97-01) Supplement C (01-01).

4.2.2 Muscle Tissue Simulant

The composition of the muscle tissue simulating liquid for 835MHz is

55.97% De-Ionized Water
41.76% Sugar
1.21% HEC
0.79% Salt
0.27% Preservative

and for 1900MHz

69.02% De-Ionized Water
30.76% Diethylene Glycol Monobutyl Ether
0.22% Salt

Frequency band [MHz]		Description	ϵ_r Relative permittivity	σ [S/m] Conductivity
12/19/02	835	Measured	55.8	0.93
		Recommended	55.2	0.97
01/12/03	1880	Measured	51.8	1.52
		Recommended	53.5	1.52
01/13/03	1880	Measured	51.6	1.52
		Recommended	53.5	1.52
01/14/03	835	Measured	55.2	0.93
		Recommended	55.2	0.97
01/15/03	835	Measured	55.2	0.93
		Recommended	55.2	0.97
01/16/03	835	Measured	54.6	0.93
		Recommended	55.2	0.97

Recommended values are adopted from OET Bulletin 65 (97-01) Supplement C (01-01).

4.3 Phantoms

"SAM v4.0" phantom", manufactured by SPEAG, was used during the measurement. It has fiberglass shell integrated in a wooden table. The shape of the shell corresponds to the phantom defined by SCC34-SC2. It enables the dosimetric evaluation of left and right hand phone usage as well as body



mounted usage at the flat phantom region. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points in the robot.

The thickness of phantom shell is 2 mm except for the ear, where an integrated ear spacer provides a 6 mm spacing from the tissue boundary. Manufacturer reports tolerance in shell thickness to be ± 0.1 mm.

4.4 Isotropic E-Field Probe ET3DV6

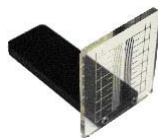
Construction	Symmetrical design with triangular core Built-in optical fiber for surface detection system Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., glycolether)
Calibration	Calibration certificate in Appendix C
Frequency	10 MHz to 3 GHz (dosimetry); Linearity: ± 0.2 dB (30 MHz to 3 GHz)
Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.4 dB in HSL (rotation normal to probe axis)
Dynamic Range	5 μ W/g to > 100 mW/g; Linearity: ± 0.2 dB
Dimensions	Overall length: 330 mm Tip length: 16 mm Body diameter: 12 mm Tip diameter: 6.8 mm Distance from probe tip to dipole centers: 2.7 mm
Application	General dosimetry up to 3 GHz Compliance tests of mobile phones Fast automatic scanning in arbitrary phantoms



5. DESCRIPTION OF THE TEST PROCEDURE

5.1 Test Positions

The device was placed in holder using a special positioning tool, which aligns the bottom of the device with holder and ensures that holder contacts only to the sides of the device. After positioning is done, tool is removed. This method provides standard positioning and separation, and also ensures free space for antenna.



Device holder was provided by SPEAG together with DASY3.

5.1.1 Against Phantom Head

Measurements were made on both the "left hand" and "right hand" side of the phantom.

The device was positioned against phantom according to OET Bulletin 65 (97-01) Supplement C (01-01). Definitions of terms used in aligning the device to a head phantom are available in IEEE Draft Standard P1528-2001 "Recommended Practice for Determining the Spatial-Peak Specific Absorption

Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques

5.1.1.1 Initial Ear Position

The device was initially positioned with the earpiece region pressed against the ear spacer of a head phantom parallel to the “Neck-Front” 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”.

5.1.1.2 Cheek Position

“Initial ear position” alignments are maintained and the device is brought toward the mouth of the head phantom by pivoting along the “Neck-Front” line until any point on the display, keypad or mouthpiece portions of the handset is in contact with the phantom 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.

5.1.1.3 Tilt Position

In the “Cheek Position”, if the earpiece of the device is not in full contact with the phantom’s ear spacer and the peak SAR location for the “cheek position” is located at the ear spacer region or corresponds to the earpiece region of the handset, the device is 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 device is 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 device 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 is repeated with a tilt angle less than 15° so that the device and its antenna would touch the phantom simultaneously.

5.1.2 Body Worn Configuration

There are currently no body worn accessories available for the QMNRH-44.

5.2 Scan Procedures

First coarse scans are used for quick determination of the field distribution. Next a cube scan, 5x5x7 points; spacing between each point 8x8x5 mm, is performed around the highest E-field value to determine the averaged SAR-distribution over 1g.

5.3 SAR Averaging Methods

The maximum SAR value is averaged over its volume using interpolation and extrapolation.

The interpolation of the points is done with a 3d-Spline. The 3d-Spline is composed of three one-dimensional splines with the "Not a knot" -condition [W. Gander, Computermathematik, p. 141-150] (x, y and z -directions) [Numerical Recipes in C, Second Edition, p 123].

The extrapolation is based on least square algorithm [W. Gander, Computermathematik, p.168-180]. Through the points in the first 30 mm in all z-axis, polynomials of order four are calculated. This polynomial is then used to evaluate the points between the surface and the probe tip. The points, calculated from the surface, have a distance of 1mm from one another.

6. MEASUREMENT UNCERTAINTY

Uncertainty description	Uncert. value %	Probability distribution	Div.	c_i	Stand. uncert (1g) %	v_i or v_{eff}
Measurement System						
Probe calibration	± 4.4	normal	1	1	± 4.4	∞
Axial isotropy of the probe	± 4.7	rectangular	$\sqrt{3}$	$(1 - c_p)^{1/2}$	± 1.9	∞
Sph. Isotropy of the probe	± 9.6	rectangular	$\sqrt{3}$	$(c_p)^{1/2}$	± 3.9	∞
Spatial resolution	± 0.0	rectangular	$\sqrt{3}$	1	± 0.0	∞
Boundary effects	± 5.5	rectangular	$\sqrt{3}$	1	± 3.2	∞
Probe linearity	± 4.7	rectangular	$\sqrt{3}$	1	± 2.7	∞
Detection limit	± 1.0	rectangular	$\sqrt{3}$	1	± 0.6	∞
Readout electronics	± 1.0	normal	1	1	± 1.0	∞
Response time	± 0.8	rectangular	$\sqrt{3}$	1	± 0.5	∞
Integration time	± 1.4	rectangular	$\sqrt{3}$	1	± 0.8	∞
RF ambient conditions	± 3.0	rectangular	$\sqrt{3}$	1	± 1.7	∞
Mech. constrains of robot	± 0.4	rectangular	$\sqrt{3}$	1	± 0.2	∞
Probe positioning	± 2.9	rectangular	$\sqrt{3}$	1	± 1.7	∞
Extrap. and integration	± 3.9	rectangular	$\sqrt{3}$	1	± 2.3	∞
Test Sample Related						
Device positioning	± 6.0	normal	0.89	1	± 6.7	12
Device holder uncertainty	± 5.0	normal	0.84	1	± 5.9	8
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	$\sqrt{3}$	0.6	± 1.7	∞
Liquid conductivity (meas.)	± 10.0	rectangular	$\sqrt{3}$	0.6	± 3.5	∞
Liquid permittivity (target)	± 5.0	rectangular	$\sqrt{3}$	0.6	± 1.7	∞
Liquid permittivity (meas.)	± 5.0	rectangular	$\sqrt{3}$	0.6	± 1.7	∞
Combined Standard Uncertainty					± 13.6	
Expanded Standard Uncertainty (k=2)					± 27.1	

7. RESULTS AND CONFIGURATION

Corresponding SAR distribution printouts of maximum results in every operating mode and position are shown in Appendix B. The SAR distributions are substantially similar or equivalent to the plots submitted regardless of used channel in each mode and position. The coarse scans used in the head configuration measurements cover the whole head region.

7.1 Head Configuration



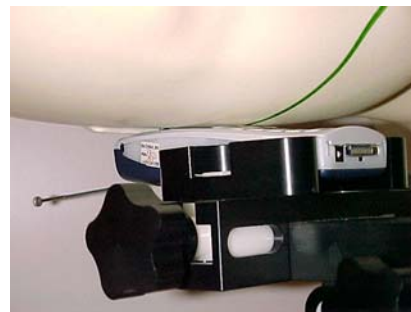
Touch, Left Side, Ant. In.



Touch, Left Side, Ant. Out.



Touch, Right Side, Ant. In.



Touch, Right Side, Ant. Out



Tilted, Left Side, Ant. In.



Tilted, Left Side, Ant. Out.



Tilted, Right Side, Ant. In.

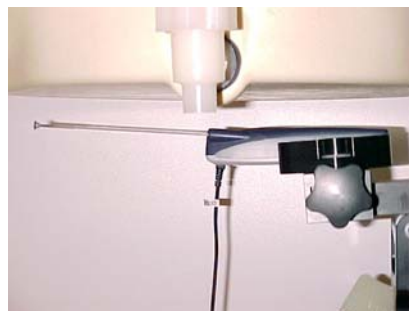


Tilted, Right Side, Ant. Out

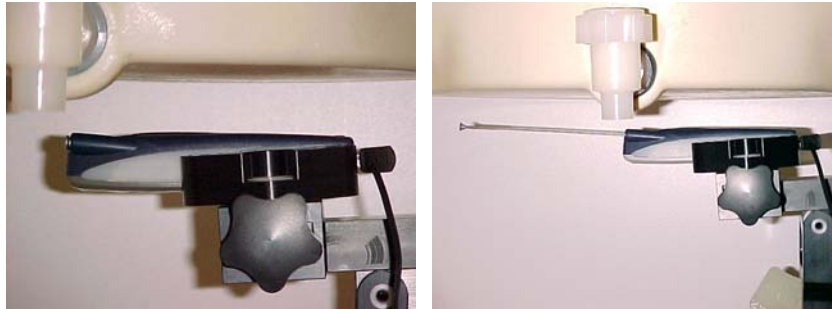
7.2 Body Worn Configuration



QMNRH-44 with 22 mm distance spacer before measurements



QMNRH-44 with HDC-5 Headset connected



QMNRH-44 with HDB-4 Headset connected

7.3 Results, Head and Body

7.3.1 QMNRH-44 with Standard Cover, AMPS

Position		AMPS								
		Power [dBm]								
		26,2			26,2			26,27		
		CHANNEL								
		991			384			799		
		1g	10 g	Drift	1g	10 g	Drift	1g	10 g	Drift
Touch, left hand	Antenna in	0.737	0.480	0.05	0.866	0.566	-0.08	1.08	0.701	-0.16
Touch, left hand	Antenna out	0.923	0.601	-0.01	0.992	0.647	0.01	1.02	0.66	-0.01
Tilted, left hand	Antenna in	0.450	0.275	-0.03	0.592	0.364	-0.13	0.696	0.429	-0.18
Tilted, left hand	Antenna out	0.628	0.397	0.04	0.746	0.469	0.00	0.793	0.499	-0.01
Touch, right hand	Antenna in	0.673	0.463	0.00	0.813	0.557	-0.16	0.953	0.651	0.01
Touch, right hand	Antenna out	0.769	0.546	0.01	0.806	0.569	0.00	0.798	0.561	-0.04
Tilted, right hand	Antenna in	0.410	0.263	0.06	0.487	0.309	-0.11	0.603	0.383	-0.15
Tilted, right hand	Antenna out	0.520	0.342	0.10	0.575	0.38	-0.11	0.614	0.404	0.07
HDB-4, Antenna towards body	Antenna in	0.604	0.441	-0.03	0.672	0.489	-0.02	0.621	0.451	-0.14
	Antenna out	0.475	0.338	-0.03	0.623	0.444	-0.03	0.534	0.375	-0.06
HDC-5, Antenna towards body	Antenna in	0.953	0.696	0.00	0.914	0.665	-0.02	0.824	0.599	-0.11
	Antenna out	0.575	0.413	-0.02	0.704	0.501	-0.02	0.642	0.457	-0.06

7.3.2 QMNRH-44 with Standard Cover, CDMA

Position		CDMA								
		Power [dBm]								
		25,6			25,7			25,55		
		CHANNEL								
		1013			384			777		
		1g	10 g	Drift	1g	10 g	Drift	1g	10 g	Drift
Touch, left hand	Antenna in	0,655	0,426	-0,02	0,804	0,519	0,00	0,951	0,611	0,02
Touch, left hand	Antenna out	0,902	0,588	-0,01	0,668	0,433	-0,22	0,924	0,592	-0,09
Tilted, left hand	Antenna in	0,404	0,246	0,07	0,501	0,304	0,00	0,609	0,368	-0,02
Tilted, left hand	Antenna out	0,549	0,347	0,01	0,652	0,408	0,01	0,719	0,450	-0,02
Touch, right hand	Antenna in	0,618	0,425	-0,21	0,730	0,498	0,03	0,856	0,584	-0,34
Touch, right hand	Antenna out	0,668	0,475	0,07	0,724	0,511	-0,02	0,706	0,498	-0,01
Tilted, right hand	Antenna in	0,364	0,232	0,06	0,436	0,276	-0,01	0,528	0,334	-0,02
Tilted, right hand	Antenna out	0,454	0,300	0,00	0,518	0,343	0,01	0,603	0,382	-0,11
HDB-4, Antenna towards body	Antenna in	0,523	0,382	0,02	0,564	0,410	0,00	0,544	0,395	-0,05
	Antenna out	0,371	0,237	-0,10	0,265	0,187	-0,17	0,460	0,322	-0,04
HDC-5, Antenna towards body	Antenna in	0,357	0,258	0,21	0,555	0,403	0,19	0,706	0,512	-0,07
	Antenna out	0,468	0,337	-0,01	0,606	0,432	-0,03	0,543	0,388	-0,06

7.3.3 QMNRH-44 with Standard Cover, PCS

Position		PCS								
		Power [dBm]								
		23.0			23.02			23.05		
		CHANNEL								
		25			600			1175		
		1g	10 g	Drift	1g	10 g	Drift	1g	10 g	Drift
Touch, left hand	Antenna in	1.02	0.595	0.05	1.13	0.656	0.10	1.08	0.621	-0.02
Touch, left hand	Antenna out	1.03	0.603	0.02	0.894	0.516	0.00	0.831	0.479	0.01
Tilted, left hand	Antenna in	0.991	0.581	-0.08	0.992	0.578	-0.05	0.964	0.556	-0.10
Tilted, left hand	Antenna out	0.917	0.534	-0.01	0.888	0.517	-0.01	0.766	0.442	-0.06
Touch, right hand	Antenna in	0.949	0.570	-0.23	0.997	0.594	0.23	0.945	0.563	-0.01
Touch, right hand	Antenna out	0.817	0.488	-0.14	0.956	0.565	-0.02	0.637	0.373	-0.08
Tilted, right hand	Antenna in	0.847	0.509	0.07	0.853	0.511	0.08	0.763	0.455	-0.14
Tilted, right hand	Antenna out	0.733	0.438	-0.09	0.636	0.377	0.05	0.510	0.302	0.01
HDB-4, Antenna towards body	Antenna in	0.284	0.175	0.02	0.381	0.233	-0.11	0.422	0.257	-0.08
	Antenna out	0.323	0.204	-0.04	0.408	0.256	-0.06	0.473	0.293	-0.22
HDC-5, Antenna towards body	Antenna in	0.324	0.200	-0.06	0.407	0.250	-0.10	0.461	0.281	-0.10
	Antenna out	0.358	0.227	-0.05	0.442	0.282	-0.03	0.537	0.334	-0.27

7.3.4 QMNRH-44 with Erica Cover, AMPS

Position		AMPS								
		Power [dBm]								
		26.2			26.2			26.27		
		CHANNEL								
		991			384			799		
		1g	10 g	Drift	1g	10 g	Drift	1g	10 g	Drift
Touch, left hand	Antenna in	0.565	0.356	0.10	0.683	0.429	-0.10	0.841	0.524	-0.04
Touch, left hand	Antenna out	0.892	0.559	0.00	0.982	0.615	-0.05	1.02	0.640	-0.19
Tilted, left hand	Antenna in	0.451	0.261	0.02	0.558	0.323	-0.18	0.708	0.409	-0.11
Tilted, left hand	Antenna out	0.728	0.450	-0.01	0.838	0.516	-0.01	0.927	0.576	0.01
Touch, right hand	Antenna in	0.447	0.298	0.03	0.541	0.355	-0.11	0.670	0.445	0.04
Touch, right hand	Antenna out	0.650	0.432	0.00	0.712	0.469	-0.01	0.726	0.481	0.03
Tilted, right hand	Antenna in	0.384	0.233	0.14	0.479	0.290	-0.07	0.595	0.361	-0.09
Tilted, right hand	Antenna out	0.577	0.383	-0.05	0.675	0.441	-0.17	0.746	0.489	-0.16
HDB-4, Antenna towards body	Antenna in	0.514	0.375	-0.03	0.567	0.413	-0.04	0.545	0.395	-0.04
	Antenna out	0.476	0.339	0.05	0.604	0.427	-0.01	0.528	0.373	-0.16
HDC-5, Antenna towards body	Antenna in	0.842	0.616	0.00	0.814	0.593	-0.02	0.745	0.541	-0.22
	Antenna out	0.532	0.382	-0.01	0.687	0.490	-0.05	0.630	0.449	-0.06

7.3.5 QMNRH-44 with Erica Cover, CDMA

Position		CDMA								
		Power [dBm]								
		25.6			25.7			25.55		
		CHANNEL								
		1013			384			777		
		1g	10 g	Drift	1g	10 g	Drift	1g	10 g	Drift
Touch, left hand	Antenna in	0.512	0.319	0.19	0.637	0.396	0.00	0.776	0.479	0.01
Touch, left hand	Antenna out	0.782	0.490	-0.02	0.893	0.559	0.00	0.929	0.579	0.01
Tilted, left hand	Antenna in	0.406	0.237	0.00	0.519	0.302	-0.02	0.639	0.37	-0.03
Tilted, left hand	Antenna out	0.665	0.408	-0.08	0.780	0.479	0.00	0.865	0.533	-0.07
Touch, right hand	Antenna in	0.398	0.267	-0.07	0.504	0.332	-0.17	0.603	0.397	-0.06
Touch, right hand	Antenna out	0.558	0.369	0.03	0.612	0.403	0.01	0.654	0.428	0.00
Tilted, right hand	Antenna in	0.408	0.270	0.07	0.432	0.261	-0.04	0.532	0.319	-0.01
Tilted, right hand	Antenna out	0.585	0.384	-0.06	0.604	0.394	-0.01	0.660	0.435	-0.01
HDB-4, Antenna towards body	Antenna in	0.452	0.329	-0.10	0.536	0.390	-0.02	0.480	0.349	-0.04
	Antenna out	0.339	0.284	-0.01	0.519	0.367	0.02	0.474	0.334	-0.08
HDC-5, Antenna towards body	Antenna in	0.726	0.532	0.00	0.744	0.540	0.00	0.660	0.478	-0.02
	Antenna out	0.474	0.339	-0.03	0.616	0.437	0.00	0.558	0.398	-0.04

7.3.6 QMNRH-44 with Erica Cover, PCS

Position		PCS								
		Power [dBm]								
		23			23.02			23.05		
		CHANNEL								
		25			600			1175		
		1g	10 g	Drift	1g	10 g	Drift	1g	10 g	Drift
Touch, left hand	Antenna in	0.749	0.436	0.02	0.808	0.466	0.00	0.781	0.447	0.07
Touch, left hand	Antenna out	0.703	0.402	-0.04	0.673	0.385	-0.05	0.582	0.329	-0.01
Tilted, left hand	Antenna in	0.711	0.401	-0.15	0.730	0.406	0.00	0.675	0.373	-0.13
Tilted, left hand	Antenna out	0.681	0.38	0.01	0.610	0.339	-0.12	0.507	0.282	-0.02
Touch, right hand	Antenna in	0.625	0.386	0.03	0.658	0.400	-0.02	0.665	0.397	-0.08
Touch, right hand	Antenna out	0.584	0.356	-0.11	0.513	0.31	-0.02	0.464	0.274	-0.03
Tilted, right hand	Antenna in	0.615	0.367	-0.01	0.620	0.366	0.01	0.580	0.344	-0.06
Tilted, right hand	Antenna out	0.575	0.344	0.05	0.504	0.299	0.03	0.407	0.242	-0.05
HDB-4, Antenna towards body	Antenna in	0.263	0.253	-0.03	0.360	0.221	-0.11	0.415	0.162	-0.16
	Antenna out	0.304	0.191	-0.21	0.378	0.237	-0.06	0.412	0.256	-0.07
HDC-5, Antenna towards body	Antenna in	0.276	0.169	0.04	0.359	0.219	-0.06	0.398	0.242	-0.11
	Antenna out	0.327	0.207	-0.01	0.408	0.260	-0.02	0.480	0.298	-0.16

7.3.7 QMNRH-44 with Siren Cover, AMPS

Position		AMPS								
		Power [dBm]								
		26.2			26.2			26.27		
		CHANNEL								
		991			384			799		
		1g	10 g	Drift	1g	10 g	Drift	1g	10 g	Drift
Touch, left hand	Antenna in	0.691	0.453	0.09	0.845	0.548	-0.05	1.02	0.655	-0.14
Touch, left hand	Antenna out	0.889	0.576	0.02	0.974	0.611	0.01	0.996	0.639	-0.08
Tilted, left hand	Antenna in	0.409	0.252	-0.01	0.517	0.315	-0.04	0.657	0.398	-0.15
Tilted, left hand	Antenna out	0.563	0.356	-0.02	0.675	0.421	-0.07	0.769	0.483	-0.34
Touch, right hand	Antenna in	0.654	0.448	0.13	0.775	0.530	-0.09	0.930	0.635	-0.06
Touch, right hand	Antenna out	0.741	0.524	-0.01	0.781	0.551	-0.02	0.778	0.548	-0.02
Tilted, right hand	Antenna in	0.387	0.249	-0.05	0.480	0.304	-0.14	0.586	0.371	-0.02
Tilted, right hand	Antenna out	0.495	0.325	0.01	0.570	0.374	-0.03	0.609	0.401	0.02
HDB-4, Antenna towards body	Antenna in	0.471	0.343	0.01	0.606	0.441	-0.05	0.504	0.365	-0.07
	Antenna out	0.410	0.292	0.01	0.568	0.403	-0.01	0.492	0.347	-0.02
HDC-5, Antenna towards body	Antenna in	0.929	0.680	0.00	0.902	0.657	0.00	0.804	0.583	0.01
	Antenna out	0.527	0.380	0.00	0.657	0.470	-0.01	0.589	0.421	-0.03

7.3.8 QMNRH-44 with Siren Cover, CDMA

Position		CDMA								
		Power [dBm]								
		25.6			25.7			25.55		
		CHANNEL								
		1013			384			777		
		1g	10 g	Drift	1g	10 g	Drift	1g	10 g	Drift
Touch, left hand	Antenna in	0.639	0.413	0.31	0.770	0.495	-0.01	0.915	0.590	-0.07
Touch, left hand	Antenna out	0.766	0.499	0.00	0.873	0.566	0.01	0.883	0.569	0.00
Tilted, left hand	Antenna in	0.400	0.244	-0.04	0.503	0.303	-0.03	0.612	0.368	-0.10
Tilted, left hand	Antenna out	0.565	0.354	-0.02	0.642	0.402	-0.03	0.708	0.444	0.02
Touch, right hand	Antenna in	0.590	0.407	0.12	0.699	0.480	-0.02	0.823	0.563	-0.09
Touch, right hand	Antenna out	0.657	0.462	-0.03	0.703	0.496	0.00	0.689	0.485	-0.01
Tilted, right hand	Antenna in	0.354	0.226	0.06	0.428	0.272	0.00	0.519	0.327	-0.02
Tilted, right hand	Antenna out	0.439	0.289	-0.01	0.514	0.337	0.02	0.550	0.363	-0.05
HDB-4, Antenna towards body	Antenna in	0.397	0.287	0.02	0.510	0.368	-0.05	0.497	0.361	-0.05
	Antenna out	0.392	0.276	-0.03	0.440	0.310	-0.05	0.445	0.314	-0.05
HDC-5, Antenna towards body	Antenna in	0.368	0.266	0.21	0.824	0.597	-0.06	0.727	0.527	-0.05
	Antenna out	0.481	0.347	0.00	0.611	0.436	0.02	0.541	0.387	0.01

7.3.9 QMNRH-44 with Siren Cover, PCS

Position		PCS								
		Power [dBm]								
		23			23.02			23.05		
		CHANNEL								
		25			600			1175		
		1g	10 g	Drift	1g	10 g	Drift	1g	10 g	Drift
Touch, left hand	Antenna in	1.13	0.654	0.09	1.18	0.677	0.00	1.07	0.613	-0.07
Touch, left hand	Antenna out	0.958	0.553	0.00	0.917	0.527	0.00	0.743	0.425	-0.02
Tilted, left hand	Antenna in	0.947	0.555	-0.02	0.944	0.55	-0.04	0.862	0.499	-0.04
Tilted, left hand	Antenna out	0.825	0.478	0.11	0.714	0.414	-0.11	0.596	0.343	0.13
Touch, right hand	Antenna in	0.909	0.548	0.15	0.914	0.548	0.02	0.908	0.541	-0.08
Touch, right hand	Antenna out	0.807	0.481	0.04	0.730	0.433	-0.21	0.641	0.374	0.11
Tilted, right hand	Antenna in	0.829	0.498	0.02	0.825	0.495	-0.04	0.767	0.457	-0.04
Tilted, right hand	Antenna out	0.703	0.422	0.03	0.622	0.371	0.08	0.510	0.302	0.05
HDB-4, Antenna towards body	Antenna in	0.292	0.180	0.02	0.389	0.240	-0.10	0.430	0.263	-0.12
	Antenna out	0.313	0.198	-0.06	0.392	0.245	-0.06	0.444	0.277	-0.08
HDC-5, Antenna towards body	Antenna in	0.318	0.197	-0.01	0.398	0.245	-0.10	0.444	0.270	-0.08
	Antenna out	0.343	0.219	-0.02	0.424	0.270	-0.01	0.491	0.307	-0.15