



MOTOROLA



CGISS EME Test Laboratory

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S.A.R. EME Compliance Test Report (Part 1 of 2)

Attention: Federal Communication Commission
Date of Report: July 3, 2002
Report Revision: Rev. O
Device Manufacturer: Motorola
Device Model: H58XAH6RR7AN; i88s & i58sr
Device Description: 1:6, 2:6, 81:120 TDM; 64 QAM, 16 QAM & QPSK Modulation; 0.6Watt Pulse Average; GPS Capability
FCC ID: **AZ489FT5815**

Test Period: 5/22/02 – 6/25/02

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Note: Based on the information and the testing results provided herein, the undersigned certifies that when used as stated in the operating instructions supplied, said product complies with the national and international reference standards and guidelines listed in section 2.0 of this report.

/s/ Ken Enger

Senior Resource Manager, Product Safety and EME Director

7/03/02

Date Approved

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REVISION HISTORY

Date	Revision	Comments
7/03/02	O	Initial release

1.0 Introduction

This report details the utilization, test setup, test equipment, and test results of the Specific Absorption Rate (S.A.R.) measurements performed at the CGISS EME Test Lab for FCC ID: AZ489FT5815.

The applicable exposure environment is General Population/Uncontrolled.

The test results included herein represent the highest S.A.R. levels applicable to this product and clearly demonstrate compliance with FCC General Population/Uncontrolled RF Exposure limits of 1.6 mW/g per the requirements of 47 CFR 2.1093(d).

2.0 Reference Standards and Guidelines

This product is designed to comply with the following national and international standards and guidelines.

- United States Federal Communications Commission, Code of Federal Regulations; 47CFR part 2 sub-part J
- American National Standards Institute (ANSI) / Institute of Electrical and Electronic Engineers (IEEE) C95. 1-1992
- Institute of Electrical and Electronic Engineers (IEEE) C95.1-1999 Edition
- International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1998
- Ministry of Health (Canada) Safety Code 6. Limits of Human Exposure to Terminal frequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz, 1999
- Australian Communications Authority Terminal communications (Electromagnetic Radiation - Human Exposure) Standard 2001
- ANATEL, Brazil Regulatory Authority, Resolution 256 (April 11, 2001) "additional requirements for SMR, cellular and PCS product certification."

3.0 Description of Test Sample



i88s

i58sr

FCC ID: AZ489FT5815, iDEN model H58XAH6RR7AN: i88s and i58sr digital multi-service data capable phone are derivatives of model H40XAH6RR1BN. The i88s and i58sr phones have different front housing variations, supported by a common back housing. Electrical operation is identical for both models as they share common circuit boards. The i88s and i58sr operates using 1:6, 2:6, 81:120 TDM; 64 QAM, 16 QAM & QPSK modulation with GPS capability. Transmission employs time division multiplexing with a duty cycle ranging from 16.67% to 33.33% using 16-QAM for voice or circuit data transmissions. Packet data transmission is also supported up to a maximum duty cycle of 67.5% depending on the modulation used. The intended functional use is by the general population handheld at the head or by two-way PTT operation 1 to 2 inches in front of the face. The phone may also be mounted to a person or vehicle with the offered options and accessories. In addition, the phone may also be connected to a personal computer or digital assistant using a data cable interface.

FCC ID: AZ489FT5815 is capable of operating in the 806-825 MHz and 896-901 MHz bands. The rated power is 0.60 watts with a maximum output capability of 0.70 watts as defined by the upper limit of the production line final test station.

FCC ID: AZ489FT5815 is offered with the following options and accessories:

	KIT NUMBER	DESCRIPTION
BATTERIES:		
	SNN5705B	750 mAh Lithium Ion (High Performance)
	SNN5716A	1300 mAh Lithium Ion (Maximum Capacity)
	SNN5717C	450 mAh Lithium Ion (Slim Battery)
	SNN5706A	1050 mAh Lithium Ion (Extra Capacity)
BATTERY COVER:		
	NTN9344A	High Performance Battery Cover
	NTN9343A	Maximum Capacity Battery Cover
	NTN9346A	Extra Capacity Battery Cover
	NTN9345A	Slim Battery Cover
BATTERY & COVER SETS:		
	NTN1792A	Slim Battery and Cover (SNN5717C Battery, NTN9345A Cover)
	NTN1793A	High Performance Battery and Cover (SNN5705B Battery, NTN9344A Cover)
	NTN1794A	Extra Capacity Battery and Cover (SNN5706A Battery, NTN9346A Cover)
	NTN1795A	Maximum Capacity Battery and Cover (SNN5716A Battery, NTN9343A Cover)
ACCESSORIES:		
BODY Worn		
	NTN9475A	Swivel Belt Carry System (NTN9544 = Belt Clip; NTN9545 = Radio swivel holder)
	NTN9478A	Leather Carry Case (Open Key Pad) [NTN9544A = belt clip]
	NTN9479A	Leather Carry Case (Plastic Widow) [NTN9544A = Belt clip]
OTHER		
	NKN6544A	RS232 Data Cable
	NKN6540A	Dual Port Adapter Cable
	NNTN4007A	USB PC Data Cable
	NKN6546A	Palm Pilot III/VII Adapter
	NKN6547A	Palm Pilot V Adapter
	NTN8993A	Generic PDA Adapter
	NTN9476A	i85s Dash Mount Holder
	NTN1796A	Easy install Hands Free Car Kit 9w/PTT and Visor Mic)
	NTN9712A	Motorola iBOARD (include NTN9942A = Keyboard, NTN9854A = Case, NTN9855A = manual)
	SYN8390B	Privacy Earpiece and Microphone with garment clip
	NTN8496A	Light-weight Headset W/Mic
	SYN7875B	Hearing Aid Neckloop (includes SJN9634A = manual, SPN4604A = charger, SPN4770A = charger base, SHN7497A = charger base adapter, SNN5536A = battery, SYN8608B = neckloop)
	SYN7875C	Hearing Aid Neckloop (includes SJN9634A = manual, SPN4604A = charger, SPN4770A = charger base, SHN7497A = charger base adapter, SNN5536A = battery, SYN8608C = neckloop)
	SYN8146C	Lightweight Over the Ear Headset W/ Boom Mic

3.1 Test Signal

Test Signal mode

Test Mode	X	Base Station		Simulator	
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Transmission Mode

CW	
Native Transmission	
TDM 1:6, 1:3, 81:120;	X
EGSM, DCS, PCS	

3.2 Test Output Power

Output power was measured before and after each test. A characteristic power slump table is provided in Appendix A for the worst case battery offered for FCC ID: AZ489FT5815 in this report. Appendix A also presents a “shortened” S.A.R. cube scan performed with the configuration that produced the worst-case observed power slump.

Note that the results of the shortened cube scans presented in Appendix A demonstrate that the scaling methodology used to determine the calculated S.A.R. results presented herein are valid.

4.0 Description of Test Equipment

4.1 Descriptions of SAR Measurement System

The CGISS EME laboratory utilizes a Dosimetric Assessment System (DASY3™) S.A.R. measurement system manufactured by Schmid & Partner Engineering AG (SPEAG™), of Zurich Switzerland. The measurement setup and procedures are consistent with the guidelines recommended by SPEAG. The test system consists of a Stäubli RX90L robot with an ET3DV6 E-Field probe. Please reference the following website URLs for detailed specifications of the robot and E-Field probe: http://www.speag.com/robot_acc.html, <http://www.speag.com/probes.html>. The S.A.R. measurements were conducted with probe model/serial number ET3DV6/SN1383. The system performance check was conducted daily and within 24 hours prior to testing. A copy of the DASY output files of the system performance test results and the probe calibration certificates are included in APPENDIX C and D respectively. The table below summarizes the system performance check results normalized to 1W.

Probe Serial #	Tissue Type	Probe Cal Date	Dipole Kit / Serial #	System Perf. Result when normalized to 1W (mW/g)	Reference SAR @ 1W (mW/g)	Test Date
1383	FCC Body	02/21/02	D835V2 SN426	10.895 +/- 0.285	10.65 +/- 10%	5/22/02 to 6/25/02
1383	IEEE Head	02/21/02	D835V2 SN426	10.29 +/- 0.33	10.04 +/- 10%	5/22/02 to 6/25/02

The DASY3™ system is operated per the instructions in the DASY3™ Users Manual. The complete manual is available directly from SPEAG™.

All measurement equipment used to assess EME S.A.R. compliance was calibrated according to 17025 A2LA guidelines.

4.2 Description of Phantoms

4.2.1 Abdomen

Flat Phantom

The flat phantom used to assess S.A.R. performance was a rectangular shaped box made from acrylic material. The flat phantom is mounted on a wooden supporting structure that has a loss tangent of < 0.05. The structure has a 60.96 cm x 15.24 cm opening at its center to allow positioning the DUT to the phantom's surface. The supporting structure is assembled with wooden pegs and glue. The table below shows the flat phantom dimensions.

Length	40cm
Width	23cm
Height	20cm
Surface Thickness	0.2cm

4.2.2 Head

SAM Phantom

A SAM TP1079 phantom supplied by SPEAG was used to assess S.A.R. performance at the head.

4.3 Simulated Tissue Properties

4.3.1 Type of Simulated Tissue

The simulated tissue used is compliant to that specified in FCC Supplement C (Edition 01 - 01) to OET Bulletin 65 (Edition 97 - 01).

Simulated Tissue	Body Position
Body	Abdomen
Head	Head/Face

4.3.2 Simulated Tissue Composition

		Ingredient %				
Tissue type	Frequency (MHz)	Sugar	Water	Salt	HEC	Bact.
FCC Body	806-902	44.9	53.06	0.94	1	0.1
IEEE Head	806-902	57	40.45	1.45	1	0.1

Characterization of Simulated tissue materials and ambient conditions:

Simulated tissue prepared for S.A.R. measurements is measured daily and within 24 hours prior to actual S.A.R. testing to verify that the tissue is within 5% of target parameters at the center of the transmit band. This measurement is done using the Agilent (HP) probe kit model 85070C and a HP8753D Network Analyzer.

Target tissue parameters

Frequency (MHz)	FCC Body	
	Di-electric Constant	Conductivity – S/m
813	55.3	0.97
835	55.2	0.97
899	55.0	1.05

Frequency (MHz)	IEEE Head	
	Di-electric Constant	Conductivity – S/m
813	41.6	0.90
835	41.5	0.90
899	41.5	0.97

4.4 Test conditions

The EME Laboratory ambient environment is well controlled resulting in very stable simulated tissue temperature and therefore stable dielectric properties. Simulated tissue temperature is measured prior to each scan to insure it is within $\pm 2^{\circ}\text{C}$ of the temperature at which the dielectric properties were determined. The liquid depth in the phantom used for measurements was $15\text{cm} \pm 0.5\text{cm}$. Additional precautions are routinely taken to ensure the stability of the simulated tissue such as covering the phantoms when scans are not actively in process in order to minimize evaporation. The lab environment is continuously monitored. The table below represents the average environmental conditions during the S.A.R. tests reported herein:

Ambient Temperature	23.1 °C
Relative Humidity	49.1 %
Tissue Temperature	21.7 °C

The EME Lab RF environment uses a Spectrum Analyzer to monitor for extraneous large signal RF contaminants that could possibly affect the test results. If such unwanted signals are discovered the S.A.R. scans are repeated. However, the lab environment is sufficiently protected such that no S.A.R. impacting interference has been experienced to date.

5.0 Description of Test Procedure

All options and accessories listed in section 3.0 were considered in the test matrix in order to assess the highest S.A.R. levels. The transmit power was set to the stated maximum power output $\pm 5\%$ for all tests. Initial and end power was measured before and after each test. Measured S.A.R. results were scaled to account for maximum power and drift. All test were done in the phone's native transmission mode relative to the user position. Each test was commenced with a fully charged battery. S.A.R. compliance assessment of FC ID: AZ489FT5815 was performed within the following categories:

i88s

- 900MHz band S.A.R. assessment at the left ear in phone mode (1:3)
- 900MHz band S.A.R. assessment at the right ear in phone mode (1:3)
- 900MHz band S.A.R. assessment in PTT mode (1:6) at the Face.
- 900MHz band S.A.R. assessment in phone mode (1:3) at the abdomen.
- 800MHz band S.A.R. assessment in phone mode (1:3) at the left ear.
- 800MHz band S.A.R. assessment in phone mode (1:3) at the right ear.
- 800MHz band S.A.R. assessment in PTT mode (1:6) at the Face..
- 800MHz band S.A.R. assessment in data mode (81:120) at the abdomen.
- 800MHz band S.A.R. assessment in phone mode (1:3) at the abdomen.

i58sr

- 900 MHz band S.A.R. assessment at the left ear in phone mode (1:3).
- 900 MHz band S.A.R. assessment at the right ear in phone mode (1:3).
- 900 MHz band S.A.R. assessment at the abdomen in phone mode (1:3)
- 900 MHz band S.A.R. assessment at the face in PTT mode (1:6).
- 800 MHz band S.A.R. assessment at the left ear in phone mode (1:3).
- 800 MHz band S.A.R. assessment at the right ear in phone mode (1:3).
- 800 MHz band S.A.R. assessment at the face in PTT mode (1:6).
- 800 MHz band S.A.R. assessment at the abdomen in data mode (81:120).

5.1 Device Test Positions

Note: Figure 1 presents the highest S.A.R. test configuration. Figure 4 depicts an overall perspective of the system setup and support structure.

5.1.1 Abdomen

A flat phantom containing simulated FCC body tissue consistent with applicable standards was used to assess S.A.R. performance of the device at the abdomen.

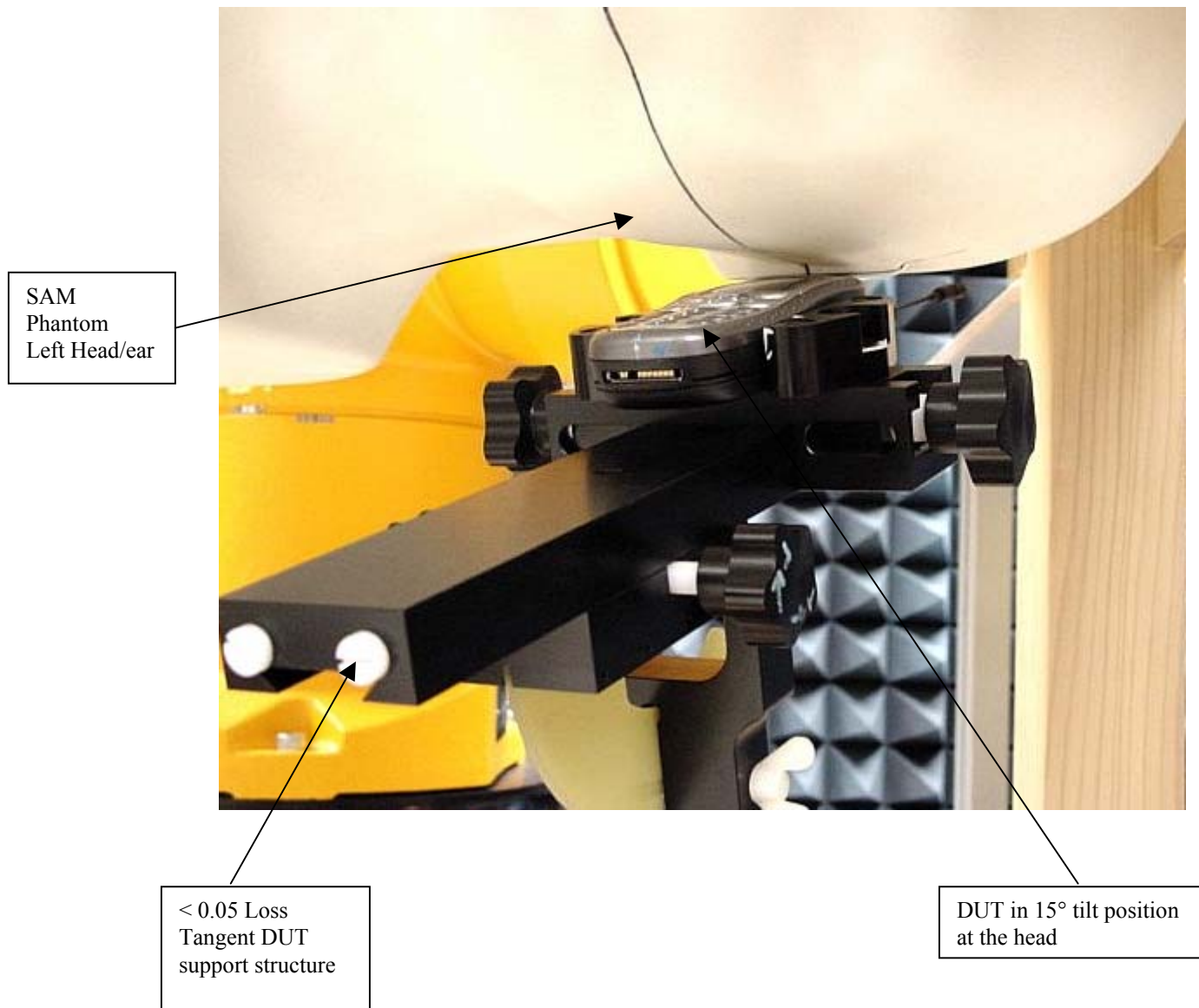
5.1.2 2.5cm Face and Abdomen

A flat phantom containing simulated FCC body tissue and a SAM phantom containing IEEE head tissue consistent with applicable standards was used to assess S.A.R. performance of the device at 2.5cm for abdomen and face.

5.1.3 Head

A SAM phantom containing simulated IEEE head tissue consistent with applicable standards was used to assess S.A.R. performance of the device at the head.

Figure 1: Highest S.A.R. Test Configuration Left ear SAM Phantom 15 degree tilt



Additional Test Position Photos

Figure 2: Abdomen Test Position with Data cable connected



Figure 3: Face Test Position with 2.5 cm separation

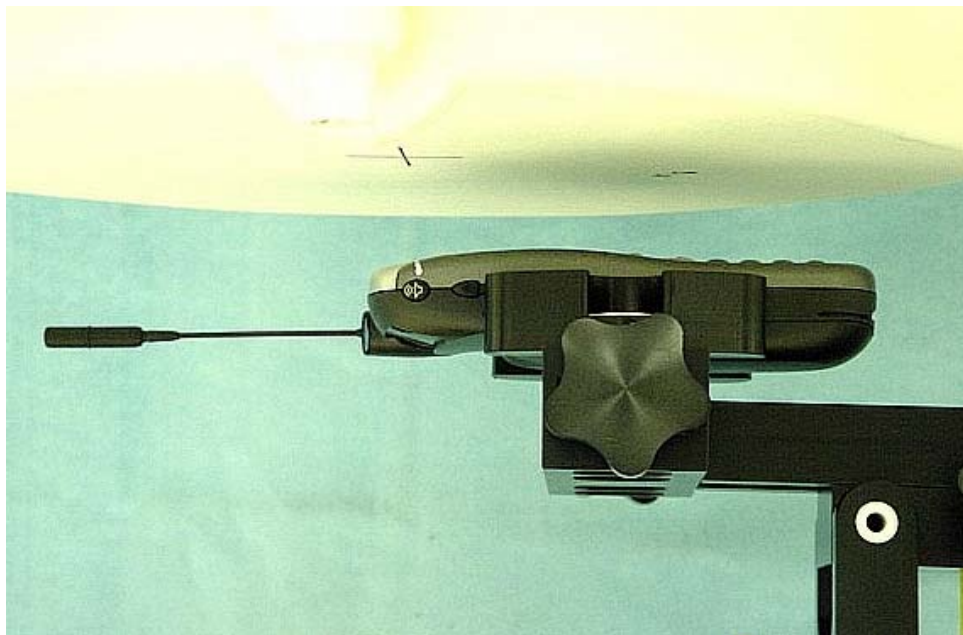
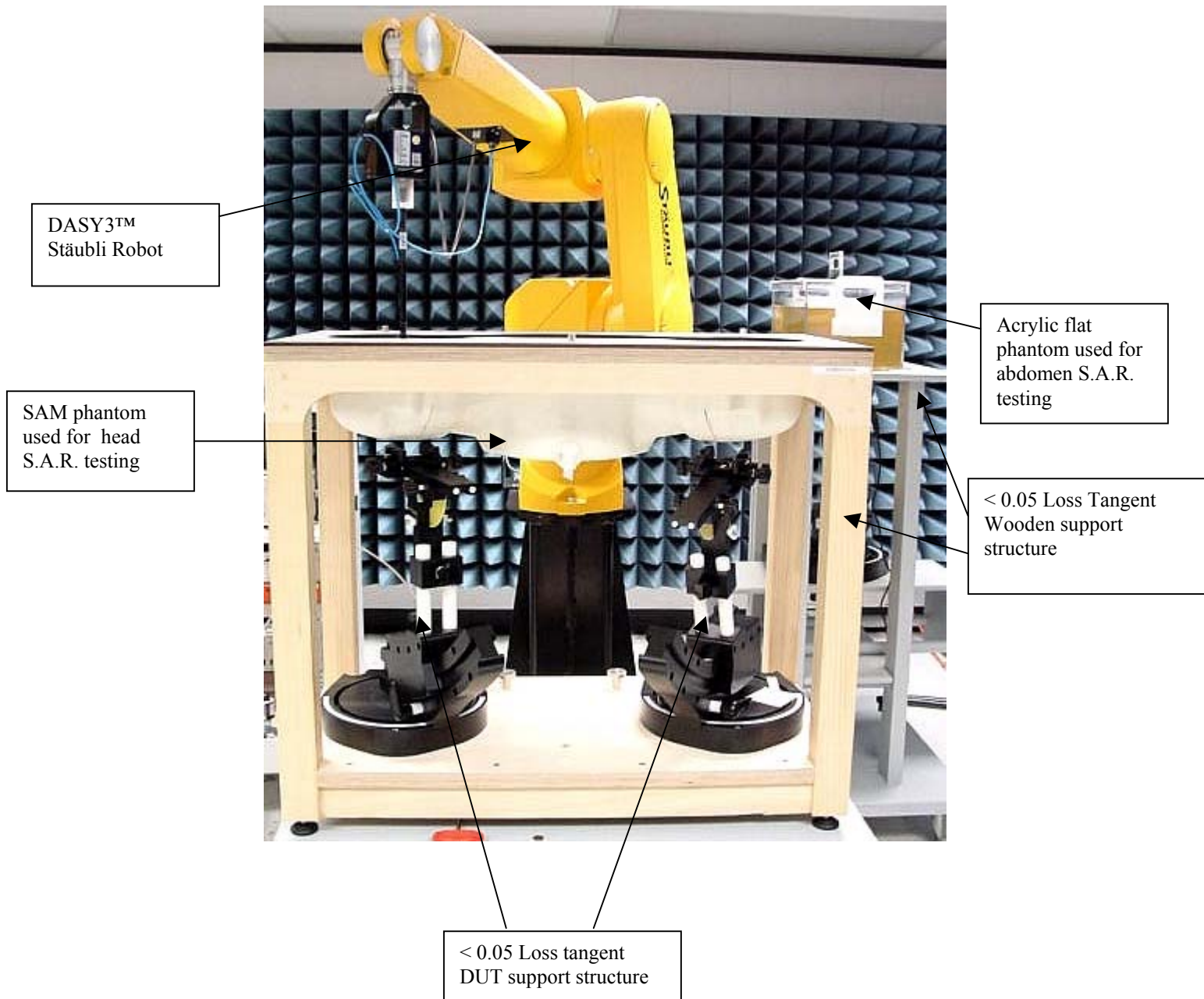


Figure 4: Robot Test System



5.2 Probe Scan Procedures

The E-field probe is first scanned in a coarse grid over a large area inside the phantom in order to locate the interpolated maximum S.A.R. distribution. After the coarse scan measurement, the probe is automatically moved to a position at the interpolated maximum. The subsequent scan can directly use this position as reference for the cube evaluations.

6.0 Measurement Uncertainty

The table below lists the uncertainty estimate of the possible errors that are associated with the measurement system.

Uncertainty Description	Standard Uncertainty
Probe Uncertainty	
- Axial Isotropy	$\pm 2.4 \%$
- Spherical Isotropy	$\pm 4.8 \%$
- Spatial Resolution	$\pm 0.5 \%$
- Linearity Error	$\pm 2.7 \%$
- Calibration Error	$\pm 8 \%$
Evaluation Uncertainty	
- Data Acquisition Error	$\pm 0.60 \%$
- ELF and RF Disturbances	$\pm 0.25 \%$
- Conductivity Assessment	$\pm 5 \%$
Spatial Peak S.A.R. Evaluation Uncertainty	
- Extrapolation and boundary effects	$\pm 3\%$
- Probe positioning	$\pm 1 \%$
- Integration and cube orientation	$\pm 3 \%$
- Cube shape inaccuracies	$\pm 1.2 \%$
- Device positioning	$\pm 1.0 \%$

The Total Measurement Uncertainty (k=1) is $\pm 12.1 \%$. The Expanded Measurement Uncertainty (k=2) is $\pm 24.2 \%$

Note: Per item #13 of the *OET 65 Supplement C EAB Part 22/24 S.A.R. Review Reminder Sheet 01/2002* handed out during the February and April, 2002 TCB council meeting the tabulated total measurement uncertainty is nominal until the IEEE Std 1528 is completed. Much of the required information has to be supplied by the equipment manufacturer, which has not yet been officially supplied. Other items are based on results of studies currently underway. Our work is scheduled to be complete by the time IEEE P1528 is ratified.

7.0 S.A.R. Test Results

All S.A.R. results obtained by the tests described in Section 5.0 are listed in section 7.1 below. The bolded result indicates the highest observed S.A.R. performance for each test configuration. DASY3™ S.A.R. measurement scans are provided in APPENDIX B for the highest observed S.A.R. results for each test configuration.

7.1 i88s results

900MHz S.A.R. assessment at the head; left ear; in phone mode 1:3									
Run Number Unit S/N	Freq. (MHz)	Fixed Antenna Position In/out	Battery	Carry Case	Audio Acc.	Initial Power (mW)	End Power (mW)	Meas. 1g S.A.R.	Max. Calc. 1g-S.A.R. (mW/g)
Battery Assessment									
R2-02052203-KU 919ACJ031Q	899	OUT	SNN5717C NTN9345A	NONE	NONE	0.681	0.687	0.293	0.30
R2-02052808-KU 919ACJ031Q	899	IN	SNN5717C NTN9345A	NONE	NONE	0.678	0.682	1.070	1.10
R2-02052802-KU 919ACJ031Q	899	IN	SNN5705B NTN9344A	NONE	NONE	0.67	0.677	1.060	1.10
R2-02052803-KU 919ACJ031Q	899	OUT	SNN5705B NTN9344A	NONE	NONE	0.675	0.68	0.299	0.31
R2-02052804-KU 919ACJ031Q	899	IN	SNN5706A NTN9346A	NONE	NONE	0.672	0.682	1.050	1.08
R2-02052805-KU 919ACJ031Q	899	OUT	SNN5706A NTN9346A	NONE	NONE	0.673	0.683	0.305	0.31
R2-02052806-KU 919ACJ031Q	899	IN	SNN5716A NTN9343A	NONE	NONE	0.68	0.684	1.050	1.07
R2-02052807-KU 919ACJ031Q	899	OUT	SNN5716A NTN9343A	NONE	NONE	0.68	0.684	0.308	0.32
Band edge assessment									
R2-02052809-KU 919ACJ031Q	896	IN	SNN5717C NTN9345A	NONE	NONE	0.674	0.68	1.060	1.09
R2-02052810-KU 919ACJ031Q	902	IN	SNN5717C NTN9345A	NONE	NONE	0.669	0.672	1.040	1.08
R2-02052902-KU 919ACJ031Q	896	OUT	SNN5717C NTN9345A	15 Degree Tilted	NONE	0.669	0.68	1.100	1.13
R2-02052903-KU 919ACJ031Q	902	OUT	SNN5717C NTN9345A	15 Degree Tilted	NONE	0.67	0.674	1.120	1.16
Tilt position assessment									
R2-02052206a-KU 919ACJ031Q	899	OUT	SNN5717C NTN9345A	15 Degree Tilted	NONE	0.674	0.682	1.140	1.17
R2-02052308-KU 919ACJ031Q	899	IN	SNN5717C NTN9345A	15 Degree Tilted	NONE	0.672	0.68	0.727	0.75
R2-02061906-KU 919ACJ031H	896	OUT	SNN5717C NTN9345A	15 Degree Tilted	NONE	0.665	0.667	1.130	1.19

900MHz S.A.R. assessment at the head; right ear; in phone mode 1:3									
Run Number Unit S/N	Freq. (MHz)	Fixed Antenna Position In/out	Battery	Carry Case	Audio Acc.	Initial Power (mW)	End Power (mW)	Meas. 1g S.A.R.	Max. Calc. 1g-S.A.R. (mW/g)
Battery Assessment									
R2-02052904-KU 919ACJ031Q	899	IN	SNN5717C NTN9345A	NONE	NONE	0.673	0.681	1.030	1.06
R2-02052905-KU 919ACJ031Q	899	OUT	SNN5717C NTN9345A	NONE	NONE	0.673	0.684	0.228	0.23
R2-02052906-KU 919ACJ031Q	899	IN	SNN5705B NTN9344A	NONE	NONE	0.677	0.684	1.020	1.04
R2-02052907-KU 919ACJ031Q	899	OUT	SNN5705B NTN9344A	NONE	NONE	0.673	0.681	0.230	0.24
R2-02052908-KU 919ACJ031Q	899	IN	SNN5706A NTN9346A	NONE	NONE	0.681	0.678	0.976	1.01
R2-02052909-KU 919ACJ031Q	899	OUT	SNN5706A NTN9346A	NONE	NONE	0.68	0.687	0.231	0.24
R2-02052910-KU 919ACJ031Q	899	IN	SNN5716A NTN9343A	NONE	NONE	0.685	0.687	0.980	1.00
R2-02052911-KU 919ACJ031Q	899	OUT	SNN5716A NTN9343A	NONE	NONE	0.682	0.685	0.231	0.24
Band edge assessment									
R2-02053003-KU 919ACJ031Q	896	IN	SNN5717C NTN9345A	NONE	NONE	0.67	0.669	1.020	1.07
R2-02053004-KU 919ACJ031Q	902	IN	SNN5717C NTN9345A	NONE	NONE	0.668	0.668	0.993	1.04
R2-02053005-KU 919ACJ031Q	896	OUT	SNN5717C NTN9345A	NONE	NONE	0.67	0.676	0.241	0.25
R2-02053006-KU 919ACJ031Q	902	OUT	SNN5717C NTN9345A	NONE	NONE	0.665	0.668	0.232	0.24
Tilt position assessment									
R2-02052912-KU 919ACJ031Q	899	IN	SNN5717C NTN9345A	15 Degree Tilted	NONE	0.675	0.682	0.641	0.66
R2-02053002-KU 919ACJ031Q	899	OUT	SNN5717C NTN9345A	15 Degree Tilted	NONE	0.672	0.679	0.657	0.68

900MHz S.A.R. assessment at the Face PTT in phone mode 1:6									
Run Number Unit S/N	Freq. (MHz)	Fixed Antenna Position In/out	Battery	Carry Case	Audio Acc.	Initial Power (mW)	End Power (mW)	Meas. 1g S.A.R.	Max. Calc. 1g-S.A.R. (mW/g)
Frequency assessment with battery producing highest S.A.R. at the head									
R2-02062503-KU 919ACJ031Q	899	IN	SNN5717C NTN9345A	NONE	NONE	0.665	0.665	0.115	0.12
R2-02062505-KU 919ACJ031Q	899	OUT	SNN5717C NTN9345A	NONE	NONE	0.665	0.667	0.053	0.06
R2-02062506-KU 919ACJ031Q	896	IN	SNN5717C NTN9345A	NONE	NONE	0.67	0.665	0.114	0.12
R2-02062507-KU 919ACJ031Q	896	OUT	SNN5717C NTN9345A	NONE	NONE	0.66	0.661	0.051	0.05
R2-02062508-KU 919ACJ031Q	902	IN	SNN5717C NTN9345A	NONE	NONE	0.66	0.662	0.113	0.12
R2-02062509-KU 919ACJ031Q	902	OUT	SNN5717C NTN9345A	NONE	NONE	0.665	0.653	0.055	0.06

900MHz S.A.R. assessment at the abdomen in phone mode 1:3									
Run Number Unit S/N	Freq. (MHz)	Fixed Antenna Position In/out	Battery	Carry Case	Audio Acc.	Initial Power (mW)	End Power (mW)	Meas. 1g S.A.R.	Max. Calc. 1g-S.A.R. (mW/g)
Battery Assessment									
R2-02053102-KU 919ACJ031Q	899	IN	SNN5717C NTN9345A	NTN9478A NTN9544A	NTN8496A	0.668	0.675	0.291	0.30
R2-02053103-KU 919ACJ031Q	899	OUT	SNN5717C NTN9345A	NTN9478A NTN9544A	NTN8496A	0.672	0.683	0.216	0.22
R2-02053104-KU 919ACJ031Q	899	IN	SNN5705B NTN9344A	NTN9478A NTN9544A	NTN8496A	0.672	0.678	0.298	0.31
R2-02053105-KU 919ACJ031Q	899	OUT	SNN5705B NTN9344A	NTN9478A NTN9544A	NTN8496A	0.678	0.682	0.173	0.18
R2-02053106-KU 919ACJ031Q	899	IN	SNN5706A NTN9346A	NTN9478A NTN9544A	NTN8496A	0.672	0.682	0.220	0.23
R2-02053107-KU 919ACJ031Q	899	OUT	SNN5706A NTN9346A	NTN9478A NTN9544A	NTN8496A	0.67	0.68	0.164	0.17
R2-02053108-KU 919ACJ031Q	899	IN	SNN5716A NTN9343A	NTN9478A NTN9544A	NTN8496A	0.677	0.681	0.188	0.19
R2-02053109-KU 919ACJ031Q	899	OUT	SNN5716A NTN9343A	NTN9478A NTN9544A	NTN8496A	0.675	0.681	0.128	0.13
Body Worn Accessory assessment with worst case configuration from above									
R2-02053110-KU 919ACJ031Q	899	IN	SNN5705B NTN9344A	NTN9475A	NTN8496A	0.669	0.675	0.296	0.31
R2-02053111-KU 919ACJ031Q	899	OUT	SNN5705B NTN9344A	NTN9475A	NTN8496A	0.667	0.676	0.171	0.18

Audio Accessory assessment									
R2-02053112-KU 919ACJ031Q	899	IN	SNN5705B NTN9344A	NTN9478A NTN9544A	SYN8608B	0.675	0.678	0.261	0.27
R2-02053113-KU 919ACJ031Q	899	OUT	SNN5705B NTN9344A	NTN9478A NTN9544A	SYN8608B	0.67	0.677	0.186	0.19
R2-02053114-KU 919ACJ031Q	899	IN	SNN5705B NTN9344A	NTN9478A NTN9544A	SYN8390B	0.668	0.676	0.273	0.28
R2-02060302-KU 919ACJ031Q	899	OUT	SNN5705B NTN9344A	NTN9478A NTN9544A	SYN8390B	0.665	0.679	0.164	0.17
Band edge assessment									
R2-02060303-KU 919ACJ031Q	896	IN	SNN5705B NTN9344A	NTN9478A NTN9544A	NTN8496A	0.673	0.679	0.284	0.29
R2-02060304-KU 919ACJ031Q	902	IN	SNN5705B NTN9344A	NTN9478A NTN9544A	NTN8496A	0.666	0.671	0.296	0.31
R2-02060305-KU 919ACJ031Q	896	OUT	SNN5705B NTN9344A	NTN9478A NTN9544A	NTN8496A	0.674	0.67	0.177	0.18
R2-02060306-KU 919ACJ031Q	902	OUT	SNN5705B NTN9344A	NTN9478A NTN9544A	NTN8496A	0.665	0.669	0.188	0.20

800MHz S.A.R. assessment at the head; left ear; in phone mode 1:3									
Run Number Unit S/N	Freq. (MHz)	Fixed Antenna Position In/out	Battery	Carry Case	Audio Acc.	Initial Power (mW)	End Power (mW)	Meas. 1g S.A.R.	Max. Calc. 1g-S.A.R. (mW/g)
Battery Assessment									
R2-02060308-KU 919ACJ031Q	814	IN	SNN5716A NTN9343A	NONE	NONE	0.672	0.606	0.986	1.14
R2-02060309-KU 919ACJ031Q	814	OUT	SNN5716A NTN9343A	NONE	NONE	0.68	0.609	0.817	0.94
R2-02060310-KU 919ACJ031Q	814	IN	SNN5706A NTN9346A	NONE	NONE	0.693	0.620	1.070	1.21
R2-02060311-KU 919ACJ031Q	814	OUT	SNN5706A NTN9346A	NONE	NONE	0.693	0.630	0.876	0.97
R2-02060312-KU 919ACJ031Q	814	IN	SNN5705B NTN9344A	NONE	NONE	0.676	0.639	1.060	1.16
R2-02060313-KU 919ACJ031Q	814	OUT	SNN5705B NTN9344A	NONE	NONE	0.681	0.638	0.887	0.97
Band edge assessment									
R2-02060403-KU 919ACJ031Q	806	IN	SNN5706A NTN9346A	NONE	NONE	0.68	0.540	0.866	1.12
R2-02060404-KU 919ACJ031Q	806	OUT	SNN5706A NTN9346A	NONE	NONE	0.68	0.572	0.835	1.02
R2-02060405-KU 919ACJ031Q	825	IN	SNN5706A NTN9346A	NONE	NONE	0.683	0.684	1.070	1.10
R2-02060406-KU 919ACJ031Q	825	OUT	SNN5706A NTN9346A	NONE	NONE	0.667	0.687	0.782	0.80

Tilt position assessment									
R2-02060314-KU 919ACJ031Q	814	IN	SNN5706A NTN9346A	15 Degree Tilted	NONE	0.682	0.603	0.602	0.70
R2-02060402-KU 919ACJ031Q	814	OUT	SNN5706A NTN9346A	15 Degree Tilted	NONE	0.68	0.603	0.790	0.92

800MHz S.A.R. assessment at the head; right ear; in phone mode 1:3									
Run Number Unit S/N	Freq. (MHz)	Fixed Antenna Position In/out	Battery	Carry Case	Audio Acc.	Initial Power (mW)	End Power (mW)	Meas. 1g S.A.R.	Max. Calc. 1g-S.A.R. (mW/g)
Battery Assessment									
R2-02060407-KU 919ACJ031Q	814	IN	SNN5717C NTN9345A	NONE	NONE	0.673	0.591	0.948	1.12
R2-02061002-KU 919ACJ031Q	814	OUT	SNN5717C NTN9345A	NONE	NONE	0.67	0.592	0.763	0.90
R2-02061003-KU 919ACJ031Q	814	IN	SNN5705B NTN9344A	NONE	NONE	0.679	0.593	0.980	1.16
R2-02061004-KU 919ACJ031Q	814	OUT	SNN5705B NTN9344A	NONE	NONE	0.685	0.642	0.819	0.89
R2-02061005-KU 919ACJ031Q	814	IN	SNN5706A NTN9346A	NONE	NONE	0.7	0.605	0.961	1.11
R2-02061006-KU 919ACJ031Q	814	OUT	SNN5706A NTN9346A	NONE	NONE	0.69	0.617	0.788	0.89
R2-02061007-KU 919ACJ031Q	814	IN	SNN5716A NTN9343A	NONE	NONE	0.675	0.600	0.918	1.07
R2-02061008-KU 919ACJ031Q	814	OUT	SNN5716A NTN9343A	NONE	NONE	0.68	0.600	0.750	0.88
Band edge assessment									
R2-02061011-KU 919ACJ031Q	806	IN	SNN5705B NTN9344A	NONE	NONE	0.68	0.540	0.827	1.07
R2-02061012-KU 919ACJ031Q	806	OUT	SNN5705B NTN9344A	NONE	NONE	0.67	0.577	0.798	0.97
R2-02061013-KU 919ACJ031Q	825	IN	SNN5705B NTN9344A	NONE	NONE	0.672	0.648	1.050	1.13
R2-02061102-KU 919ACJ031Q	825	OUT	SNN5705B NTN9344A	NONE	NONE	0.667	0.680	0.710	0.73
Tilt position assessment									
R2-02061009-KU 919ACJ031Q	814	IN	SNN5705B NTN9344A	15 Degree Tilted	NONE	0.678	0.590	0.543	0.64
R2-02061010-KU 919ACJ031Q	814	OUT	SNN5705B NTN9344A	15 Degree Tilted	NONE	0.675	0.604	0.550	0.64

800MHz S.A.R. assessment at the Face PTT in phone mode 1:6									
Run Number Unit S/N	Freq. (MHz)	Fixed Antenna Position In/out	Battery	Carry Case	Audio Acc.	Initial Power (mW)	End Power (mW)	Meas. 1g S.A.R.	Max. Calc. 1g-S.A.R. (mW/g)
Frequency assessment with battery producing highest S.A.R. at the head									
R2-02061104-KU 919ACJ031Q	806	IN	SNN5706A NTN9346A	NONE	NONE	0.68	0.610	0.148	0.17
R2-02061105-KU 919ACJ031Q	806	OUT	SNN5706A NTN9346A	NONE	NONE	0.683	0.612	0.111	0.13
R2-02061106-KU 919ACJ031Q	814	IN	SNN5706A NTN9346A	NONE	NONE	0.683	0.665	0.145	0.15
R2-02061107-KU 919ACJ031Q	814	OUT	SNN5706A NTN9346A	NONE	NONE	0.677	0.656	0.106	0.11
R2-02061108-KU 919ACJ031Q	825	IN	SNN5706A NTN9346A	NONE	NONE	0.68	0.679	0.132	0.14
R2-02061109-KU 919ACJ031Q	825	OUT	SNN5706A NTN9346A	NONE	NONE	0.678	0.680	0.091	0.09

800MHz S.A.R. assessment at the abdomen in data mode 81:120									
Run Number Unit S/N	Freq. (MHz)	Fixed Antenna Position In/out	Battery	Carry Case	Audio Acc.	Initial Power (mW)	End Power (mW)	Meas. 1g S.A.R.	Max. Calc. 1g-S.A.R. (mW/g)
Battery assessment									
R2-02061203-KU 919ACJ031Q	814	OUT	SNN5705B NTN9344A	NTN9478A NTN9544A	NKN6540A	0.67	0.568	0.348	0.43
R2-02061204-KU 919ACJ031Q	814	IN	SNN5705B NTN9344A	NTN9478A NTN9544A	NKN6540A	0.68	0.525	0.138	0.18
R2-02061205-KU 919ACJ031Q	814	OUT	SNN5706A NTN9346A	NTN9478A NTN9544A	NKN6540A	0.68	0.539	0.286	0.37
R2-02061206-KU 919ACJ031Q	814	IN	SNN5706A NTN9346A	NTN9478A NTN9544A	NKN6540A	0.684	0.544	0.133	0.17
R2-02061207-KU 919ACJ031Q	814	OUT	SNN5716A NTN9343A	NTN9478A NTN9544A	NKN6540A	0.65	0.520	0.251	0.34
R2-02061208-KU 919ACJ031Q	814	IN	SNN5716A NTN9343A	NTN9478A NTN9544A	NKN6540A	0.658	0.522	0.119	0.16
Body Worn assessment									
R2-02061302-KU 919ACJ031Q	814	IN	SNN5717C NTN9345A	NTN9475A	NKN6540A	0.672	0.523	0.179	0.24
R2-02061303-KU 919ACJ031Q	814	OUT	SNN5717C NTN9345A	NTN9475A	NKN6540A	0.68	0.534	0.366	0.48
Data cable assessment									
R2-02061304-KU 919ACJ031Q	814	IN	SNN5717C NTN9345A	NTN9478A NTN9544A	NKN6544A	0.673	0.536	0.354	0.46
R2-02061305-KU 919ACJ031Q	814	OUT	SNN5717C NTN9345A	NTN9478A NTN9544A	NKN6544A	0.675	0.537	0.438	0.57

R2-02061306-KU 919ACJ031Q	814	IN	SNN5717C NTN9345A	NTN9478A NTN9544A	NNTN4007A	0.674	0.536	0.287	0.37
R2-02061307-KU 919ACJ031Q	814	OUT	SNN5717C NTN9345A	NTN9478A NTN9544A	NNTN4007A	0.672	0.535	0.348	0.46
Band edge assessment									
R2-02061308-KU 919ACJ031Q	806	IN	SNN5717C NTN9345A	NTN9478A NTN9544A	NKN6544A	0.666	0.509	0.327	0.45
R2-02061309-KU 919ACJ031Q	806	OUT	SNN5717C NTN9345A	NTN9478A NTN9544A	NKN6544A	0.67	0.499	0.365	0.51
R2-02061402-KU 919ACJ031Q	825	IN	SNN5717C NTN9345A	NTN9478A NTN9544A	NKN6544A	0.68	0.580	0.338	0.41
R2-02061403-KU 919ACJ031Q	825	OUT	SNN5717C NTN9345A	NTN9478A NTN9544A	NKN6544A	0.682	0.600	0.398	0.46

800MHz S.A.R. assessment 2.5cm separation at the abdomen in data mode 81:120									
Run Number Unit S/N	Freq. (MHz)	Fixed Antenna Position In/out	Battery	Carry Case	Audio Acc.	Initial Power (mW)	End Power (mW)	Meas. 1g S.A.R.	Max. Calc. 1g-S.A.R. (mW/g)
R2-02061411-KU 919ACJ031Q	814	OUT	SNN5717C NTN9345A	NONE, Phone Back Radio @ 2.5cm separation	NKN6544A	0.68	0.558	0.276	0.35
R2-02061702-KU 919ACJ031Q	814	OUT	SNN5717C NTN9345A	NONE, Phone Front radio @ 2.5cm separation	NKN6544A	0.684	0.546	0.287	0.37
R2-02061704-KU 919ACJ031Q	814	OUT	SNN5717C NTN9345A	NONE, Phone Back radio @ 2.5cm separation	NONE	0.67	0.530	0.429	0.57
R2-02061703-KU 919ACJ031Q	814	OUT	SNN5717C NTN9345A	NONE, Phone Front radio @ 2.5cm separation	NONE	0.675	0.538	0.329	0.43

800MHz S.A.R. assessment antenna position at the abdomen in phone mode 1:3									
Run Number Unit S/N	Freq. (MHz)	Fixed Antenna Position In/out	Battery	Carry Case	Audio Acc.	Initial Power (mW)	End Power (mW)	Meas. 1g S.A.R.	Max. Calc. 1g-S.A.R. (mW/g)
R2-02061404-KU 919ACJ031Q	814	IN	SNN5717C NTN9345A	NTN9478A NTN9544A	SYN8390B	0.669	0.600	0.342	0.40
R2-02061405-KU 919ACJ031Q	814	OUT	SNN5717C NTN9345A	NTN9478A NTN9544A	SYN8390B	0.677	0.608	0.262	0.30
R2-02061406-KU 919ACJ031Q	814	IN	SNN5717C NTN9345A	NTN9478A NTN9544A	NTN8496A	0.68	0.595	0.255	0.30
R2-02061407-KU 919ACJ031Q	814	OUT	SNN5717C NTN9345A	NTN9478A NTN9544A	NTN8496A	0.685	0.609	0.279	0.32

R2-02061408-KU 919ACJ031Q	814	IN	SNN5717C NTN9345A	NTN9478A NTN9544A	SYN8608B	0.68	0.644	0.231	0.25
R2-02061409-KU 919ACJ031Q	814	OUT	SNN5717C NTN9345A	NTN9478A NTN9544A	SYN8608B	0.71	0.631	0.212	0.24

7.2 i58sr results

900MHz S.A.R. assessment at the head; left ear; in phone mode 1:3									
Run Number Unit S/N	Freq. (MHz)	Fixed Antenna Position In/out	Battery	Carry Case	Audio Acc.	Initial Power (mW)	End Power (mW)	Meas. 1g S.A.R.	Max. Calc. 1g-S.A.R. (mW/g)
R2-02062002-KU 919ACJ033Z	899	IN	SNN5717C NTN9345A	NONE	NONE	0.665	0.654	0.936	1.00
R2-02062003-KU 919ACJ033Z	899	OUT	SNN5717C NTN9345A	NONE	NONE	0.665	0.662	0.236	0.25
R2-02062004-KU 919ACJ033Z	899	IN	SNN5717C NTN9345A	15 Degree Tilted	NONE	0.665	0.673	0.510	0.53
R2-02052411-KU 919ACJ033Z	899	OUT	SNN5717C NTN9345A	15degree	NONE	0.666	0.678	0.780	0.81

900MHz S.A.R. assessment at the head; right ear; in phone mode 1:3									
Run Number Unit S/N	Freq. (MHz)	Fixed Antenna Position In/out	Battery	Carry Case	Audio Acc.	Initial Power (mW)	End Power (mW)	Meas. 1g S.A.R.	Max. Calc. 1g-S.A.R. (mW/g)
R2-02062005-KU 919ACJ033Z	899	IN	SNN5717C NTN9345A	NONE	NONE	0.665	0.674	0.910	0.95
R2-02062006-KU 919ACJ033Z	899	OUT	SNN5717C NTN9345A	NONE	NONE	0.669	0.675	0.205	0.21
R2-02062007-KU 919ACJ033Z	899	IN	SNN5717C NTN9345A	15 Degree Tilted	NONE	0.67	0.673	0.448	0.47
R2-02062008-KU 919ACJ033Z	899	OUT	SNN5717C NTN9345A	15 Degree Tilted	NONE	0.668	0.65	0.521	0.56

900MHz S.A.R. assessment at the face PTT mode 1:6									
Run Number Unit S/N	Freq. (MHz)	Fixed Antenna Position In/out	Battery	Carry Case	Audio Acc.	Initial Power (mW)	End Power (mW)	Meas. 1g S.A.R.	Max. Calc. 1g-S.A.R. (mW/g)
R2-02062502-KU 919ACJ033Z	899	IN	SNN5717C NTN9345A	NONE	NONE	0.655	0.66	0.098	0.10
R2-02062403-KU 919ACJ033Z	899	OUT	SNN5717C NTN9345A	NONE	NONE	0.658	0.66	0.054	0.06

900MHz S.A.R. assessment at the abdomen in phone mode 1:3									
Run Number Unit S/N	Freq. (MHz)	Fixed Antenna Position In/out	Battery	Carry Case	Audio Acc.	Initial Power (mW)	End Power (mW)	Meas. 1g S.A.R.	Max. Calc. 1g-S.A.R. (mW/g)
R2-02062408-KU 919ACJ033Z	899	IN	SNN5705B NTN9344A	NTN9478A NTN9544A	NTN8496A	0.665	0.675	0.257	0.27
R2-02062409-KU 919ACJ033Z	899	OUT	SNN5705B NTN9344A	NTN9478A NTN9544A	NTN8496A	0.664	0.665	0.142	0.15

800MHz S.A.R. assessment at the head; left ear; in phone mode 1:3									
Run Number Unit S/N	Freq. (MHz)	Fixed Antenna Position In/out	Battery	Carry Case	Audio Acc.	Initial Power (mW)	End Power (mW)	Meas. 1g S.A.R.	Max. Calc. 1g-S.A.R. (mW/g)
R2-02062102-KU 919ACJ033Z	814	IN	SNN5706A NTN9346A	NONE	NONE	0.687	0.619	0.918	1.04
R2-02062103-KU 919ACJ033Z	814	OUT	SNN5706A NTN9346A	NONE	NONE	0.693	0.618	0.915	1.04
R2-02062104-KU 919ACJ033Z	814	IN	SNN5706A NTN9346A	15 Degree Tilted	NONE	0.689	0.604	0.478	0.55
R2-02062105-KU 919ACJ033Z	814	OUT	SNN5706A NTN9346A	15 Degree Tilted	NONE	0.688	0.606	0.490	0.57

800MHz S.A.R. assessment at the head; right ear; in phone mode 1:3									
Run Number Unit S/N	Freq. (MHz)	Fixed Antenna Position In/out	Battery	Carry Case	Audio Acc.	Initial Power (mW)	End Power (mW)	Meas. 1g S.A.R.	Max. Calc. 1g-S.A.R. (mW/g)
R2-02062106-KU 919ACJ033Z	814	IN	SNN5705B NTN9344A	NONE	NONE	0.677	0.632	0.907	1.00
R2-02062107-KU 919ACJ033Z	814	OUT	SNN5705B NTN9344A	NONE	NONE	0.684	0.611	0.788	0.90
R2-02062108-KU 919ACJ033Z	814	IN	SNN5705B NTN9344A	15 Degree Tilted	NONE	0.678	0.591	0.474	0.56
R2-02062109-KU 919ACJ033Z	814	OUT	SNN5705B NTN9344A	15 Degree Tilted	NONE	0.679	0.64	0.522	0.57

800MHz S.A.R. assessment at the face PTT mode 1:6									
Run Number Unit S/N	Freq. (MHz)	Fixed Antenna Position In/out	Battery	Carry Case	Audio Acc.	Initial Power (mW)	End Power (mW)	Meas. 1g S.A.R.	Max. Calc. 1g-S.A.R. (mW/g)
R2-02062405-KU 919ACJ033Z	806	IN	SNN5706A NTN9346A	NONE	NONE	0.7	0.689	0.128	0.13
R2-02062406-KU 919ACJ033Z	806	OUT	SNN5706A NTN9346A	NONE	NONE	0.683	0.68	0.108	0.11

800MHz S.A.R. assessment at the abdomen in Data mode 81:120									
Run Number Unit S/N	Freq. (MHz)	Fixed Antenna Position In/out	Battery	Carry Case	Audio Acc.	Initial Power (mW)	End Power (mW)	Meas. 1g S.A.R.	Max. Calc. 1g-S.A.R. (mW/g)
R2-02062410-KU 919ACJ033Z	814	IN	SNN5717C NTN9345A	NTN9478A	NKN6544A	0.69	0.506	0.252	0.35
R2-02062411-KU 919ACJ033Z	814	OUT	SNN5717C NTN9345A	NTN9478A	NKN6544A	0.693	0.504	0.378	0.53
R2-02062412-KU 919ACJ033Z	814	OUT	SNN5717C NTN9345A	NONE, Phone Back Radio 2.5cm separation	NONE	0.688	0.502	0.425	0.59

8.0 Conclusion

The highest Operational calculated 1-gram average S.A.R. values found for model number H58XAH6RR7AN were **0.59 mW/g** at the abdomen, **0.17 mW/g** at the face, and **1.21 mW/g** at the head. The following formulas were used:

Max. Calc. 1g S.A.R. = (Max Power/End Power) * meas. 1g S.A.R.
Maximum power = 0.70 Watts

The test results clearly demonstrate compliance with FCC General Population/Uncontrolled RF Exposure limits of **1.6 mW/g** per the requirements of 47 CFR 2.1093(d)