MOTOROLA

ACCREDITED

CGISS EME Test Laboratory
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S.A.R. EME Compliance Test Report
Part 1 of 2

Date of Report:	August 28, 2003
Report Revision:	Rev. O
Manufacturer:	Motorola
Product Description:	1:6, 2:6, 81:120, 1:12 TDM; 64 QAM, 16 QAM & QPSK Modulation; 0.6 W Pulse average; w/ GPS capability
FCC ID:	**AZ489FT5822**
Device Model:	H62XAH6RR1AN/NUF3763A

Test Period:	8/11/03-8/21/03
EME Tech:	Clint Miller
EME Eng.:	Kim Uong (EME Lead Eng.)
Author:	Michael Sailsman Global EME Regulatory Affairs Liaison

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.

Signature on file — 8/28/03

Ken Enger
Senior Resource Manager, Laboratory Director, CGISS EME Lab

Date Approved

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REVISION HISTORY

Date	Revision	Comments
8/28/03	O	Prototype results

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 model number H62XAH6RR1AN/NUF3763A, FCC ID: AZ489FT5822. A derivative to FCC ID: AZ489FT5822 is being offered. The derivative product is identical to the original product except for the external housing design and the addition of GPS capability. This report discloses the EME compliance results for the derivative product.

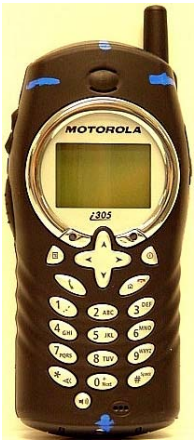
The applicable exposure environment is General Population/Uncontrolled.

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 2003
- ANATEL, Brazil Regulatory Authority, Resolution 256 (April 11, 2001) "additional requirements for SMR, cellular and PCS product certification."

3.0 Description of Test Sample



FCC ID: AZ489FT5822 is a digital multi-service data capable device that employs time division multiplexing transmission technology with a duty cycle ranging from 16.67% to 33.33% using 16-QAM modulation for voice or circuit data transmission. There is a Split 3:1 mode that operates using a 16.67% transmission duty cycle. Two 7.5ms pulses occurs during the six time slots within the 90-msec frame format. This mode is available in both the 806-825MHz and 896-902MHz bands in the telephone interconnect mode only. Packet data transmission is also supported up to a maximum duty cycle of 67.5% using quad QPSK modulation. This device also includes GPS functionality
This device will be marketed to and used by the general population. This device may be used while held against the head in voice mode, in front of the face in PTT mode, and against the body in both voice and data modes.
FCC ID: AZ489FT5822 is capable of operating in the 806-825 MHz and 896-902MHz bands. Packet data transmission is not available while transmitting in the 896-902 MHz band. The rated power is 0.6 watts pulsed averaged. The maximum output is 0.7 watts pulsed average as defined by the upper limit of the production line final test station.

FCC ID: AZ489FT5822 is offered with the following options and accessories:

Antenna	**Description**
8585924E01	Retractable whip ¼ wave antenna; 806-941 MHz; -0.9dBd (813MHz extended) to +0.3dBd (896MHz retracted)

Batteries

SNN5705A	750 mAH Lithium Ion
SNN5706A	1050 mAH Lithium Ion (Extra Capacity)
NNTN4655A	1350 mAH Lithium Ion (Maximum Capacity)

Body-worn Accessories

NNTN4755A	i305 Holster

Applicable attachments

SYN8390B	Privacy Earpiece and Microphone
NNTN4033A	Privacy earpiece and Mic w/ PTT
NSN6066A	Remote speaker Mic
NKN6560A	RS232 Data Cable
NKN6559A	USB Data Cable (w/o charging)

3.1 Test Signal

Test Signal mode:

Test Mode	X	Base Station		Simulator	

Transmission Mode:

CW	
Native Transmission	**X**
TDMA: 1:6, 1:3, 81:120	**X**
Other:	

3.2 Test Output Power

A table of the characteristic power slump versus time is provided in Appendix A for all tested batteries.

4.0 Description of Test Equipment

4.1 Descriptions of S.A.R. Measurement System

The laboratory utilizes a Dosimetric Assessment System (DASY3™) S.A.R. measurement system manufactured by Schmid & Partner Engineering AG (SPEAG™), of Zurich Switzerland. The test system consists of a Stäubli RX90L robot with an ET3DV6 E-Field probe. Please reference the following websites 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/SN1547. The system performance check was conducted daily and within 24 hours prior to testing. DASY output files of the system performance test results and the probe/dipole calibration certificates are included in appendices 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. 1-g S.A.R. Result when normalized to 1W (mW/g)	Reference 1-g S.A.R @ 1W (mW/g)	Test Date(s)
1547	FCC Body	9/28/02	D900V2/084	11.395+/- 0.115	11.99 +/- 10%	8/14/03-8/20/03 5 test days
1547	IEEE Head	9/28/02	D900V2/084	11.805 +/- 0.085	11.66 +/- 10%	8/8/03-8/21/03 7 test days

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 Phantom

4.2.1 Flat Phantom

A rectangular shaped box made of low loss acrylic material. The 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 flat phantom dimensions used for S.A.R. performance assessment are L = 40cm, W = 23cm, H = 20cm, Surface Thickness = 0.2cm.

4.2.2 SAM Phantom

A SAM TP1208 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
FCC Body	Abdomen
IEEE Head	Head/Face

4.3.2 Simulated Tissue Composition

	Tissue Ingredients (%)					
	900MHz		NA		NA	
	Head	Body	Head	Body	Head	Body
Sugar	56.50	44.90	NA	NA	NA	NA
DGBE (Glycol)	NA	NA	NA	NA	NA	NA
De ionized -Water	40.95	53.06	NA	NA	NA	NA
Salt	1.45	0.94	NA	NA	NA	NA
HEC	1	1	NA	NA	NA	NA
Bact.	0.1	0.1	NA	NA	NA	NA

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

FCC Body				
Frequency (MHz)	Di-electric Constant Target	Di-electric Constant Meas. (Range)	Conductivity Target S/m	Conductivity Meas. (Range) S/m
813	55.3	53.4-54.5	0.97	0.94-0.96
900	55.0	52.4-53.6	1.05	1.04-1.05

IEEE Head				
Frequency (MHz)	Di-electric Constant Target	Di-electric Constant Meas. (Range)	Conductivity Target S/m	Conductivity Meas. (Range) S/m
813	41.6	42.3-42.8	0.90	0.93-0.93
900	41.5	41.3-41.6	0.97	0.97-1.01

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 +/ - 2°C of the temperature at which the dielectric properties were determined. The liquid depth in the phantom used for measurements was 15cm +/- 0.5cm. 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 presents the range and average environmental conditions during the S.A.R. tests reported herein:

	Target	Measured
Ambient Temperature	20 - 25 ˚C	Range: 20.8-23.4˚C Avg. 22.8˚C
Relative Humidity	30 - 70 %	Range: 40.4-49.3% Avg. 43.3%
Tissue Temperature	NA	Range: 20.3-21.1˚C Avg. 20.7˚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 order to develop the S.A.R. test plan for this product. S.A.R. measurements were performed using a flat phantom to assess performance at the abdomen and a SAM phantom to assess performance at the side of the head and in front of the face using the applicable transmission modes.

Assessments at the head (806-825MHz)

The DUT was assessed at the center frequency of the 806-825MHz band, with the antenna retracted using the offered batteries and, at the left and right ear of the SAM phantom, in the 1:3 transmission mode. The DUT was then assessed at the center frequency of the 806-825MHz band with the antenna extended using the worst-case battery and test configuration from above. The DUT was then assessed in the 15˚ tilt position, with the antenna retracted and extended using the worst-case

battery and test configuration from above.
The DUT was assessed at the TX band edges, with the antenna in and out, in 1:3 transmission mode, using the test configuration from above that produced the highest S.A.R results.
The DUT was assessed at the center frequency of the 806-825MHz band, with the antenna in and out, with 2.5cm separation distance from the flat area of the SAM phantom, in the 1:6 transmission mode, using the worst-case battery from above. Band edge assessment was done using the configuration from above that produced the highest S.A.R.

Assessments at the head (896-902MHz)

The DUT was assessed at the center frequency of the 896-902MHz band, with the antenna retracted using the offered batteries and, at the left and right ear of the SAM phantom, in the 1:3 transmission mode. The DUT was then assessed at the center frequency of the 896-902MHz band with the antenna extended using the worst-case battery and test configuration from above. The DUT was then assessed in the 15˚ tilt position, with the antenna retracted and extended using the worst-case battery and test configuration from above.
The DUT was assessed at the TX band edges, with the antenna in and out, in 1:3 transmission mode, using the test configuration from above that produced the highest S.A.R results.
The DUT was assessed at the center frequency of the 896-902MHz band, with the antenna in and out, with 2.5cm separation distance from the flat area of the SAM phantom, in the 1:6 transmission mode, using the worst-case battery from above. Band edge assessment was done using the configuration from above that produced the highest S.A.R.

Assessments at the Abdomen (806-825MHz)

The DUT was assessed at the TX center frequency of the 806-825MHz band, against the flat phantom, in the 81:120 transmission mode, with antenna retracted and extended, using the offered carry case accessory and each offered batteries without any cable attachments. The DUT was also assessed with each applicable cable attachment offered using the test configuration from above that produced the highest S.A.R.
The DUT was assessed at the TX center frequency of the 806-825MHz band, against the flat phantom, in the 1:3 transmission mode, with antenna retracted and extended, using the offered carry case accessory and the worst case battery from above, with each applicable audio accessory attachment offered.
The DUT was assessed at the edges of the 806-825MHz band, with antenna retracted and extended, using the test configuration above that produced the highest S.A.R. results.

Assessments at the Abdomen (896-902MHz)

The DUT was assessed at the center frequency of the 896-902MHz band, against the flat phantom, in the 1:3 transmission mode, with antenna retracted and extended, using the test configuration from the audio accessory assessment in the 806-825MHz band that produced the highest S.A.R. results. The DUT was then assessed at the edges of the 896-902MHz band with the antenna retracted and extended, using the worst case configuration from above. Note that data mode is not a user option in the 896-902Mhz band and therefore this test condition was not assessed.

Assessments at the Abdomen 2.5cm separation

The DUT was also assessed with the front, and back of the device separated 2.5cm from the flat phantom using the worst-case antenna position from above and using the worst-case battery from the body assessment above.

Shortened scan assessment

A "shortened" scan was performed using the test configuration that produced the highest S.A.R. results overall.

5.1 Device Test Positions

Reference figure 1 for the device orientation and position which exhibited the highest S.A.R. performance.

5.1.1 Abdomen

The DUT was positioned such that it was centered against the flat phantom with the carry case and applicable accessory attachments. The front-side of the DUT was positioned with 2.5cm separation distance from the flat phantom.

5.1.2 Head

The DUT was placed in the cheek touch and 15° tilt positions at the left and right ears of the SAM phantom

5.1.3 Face

The DUT was placed with 2.5cm separation from the flat area of the SAM phantom.

5.2 Test Position Photographs

Figure 1: Highest S.A.R. Test Position (@ Left Ear)
(DUT in cheek touch position, antenna retracted. Same position used for antenna extended.)

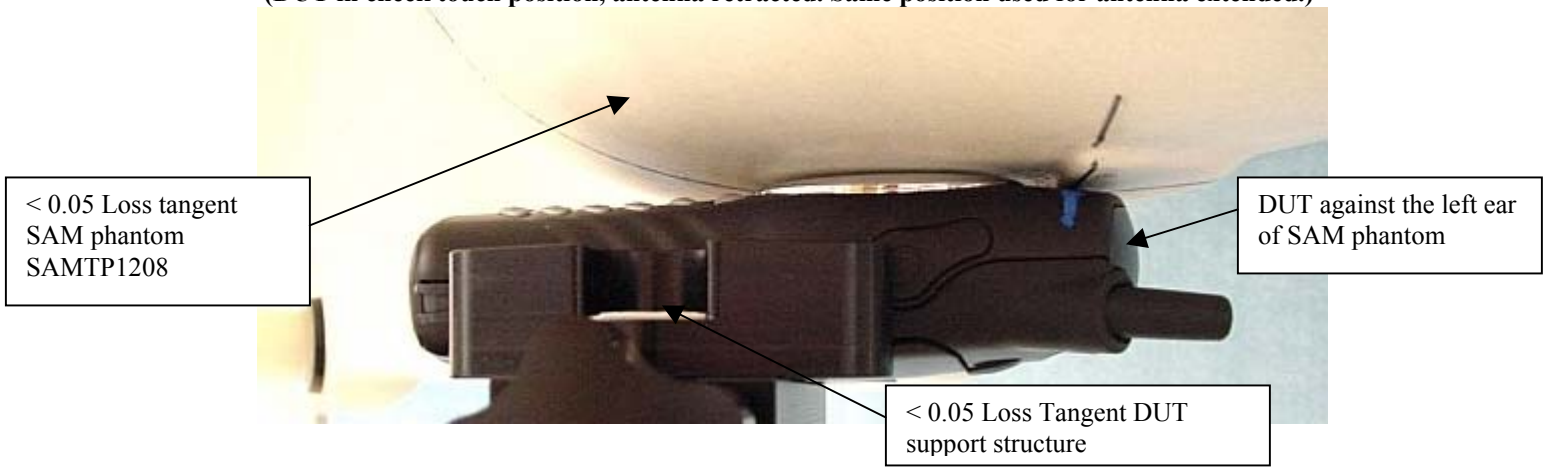


Figure 2. Assessment @ the Left ear; 15° tilt position;
(DUT antenna retracted. Same position used for antenna extended.)

Figure 3. Assessment @ the Right ear; Cheek touch position;
(DUT antenna retracted. Same position used for antenna extended.)

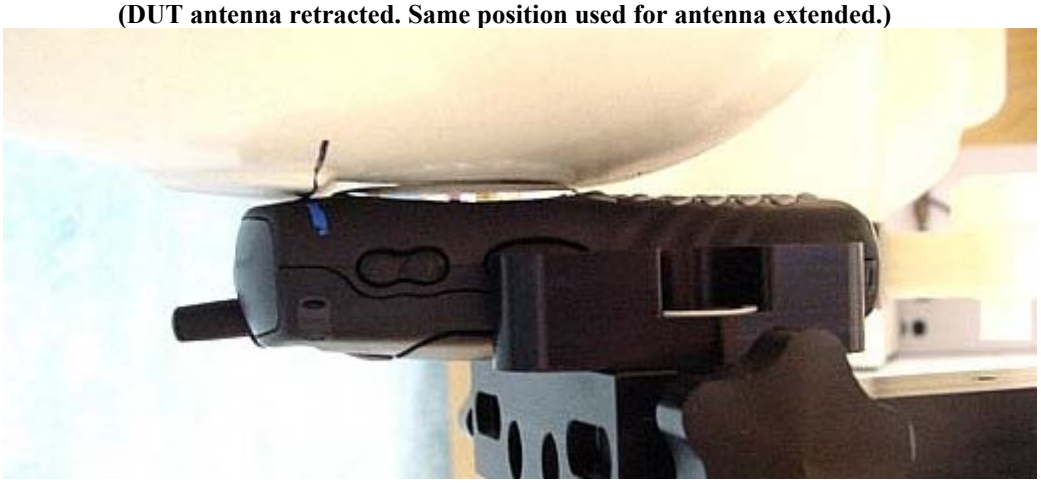


Figure 4. Assessment @ the Right ear; 15° tilt position;
(DUT antenna retracted. Same position used for antenna extended.)

Figure 5. Assessment @ the Face; DUT front 2.5cm separation distance from flat phantom. Same position used for antenna extended

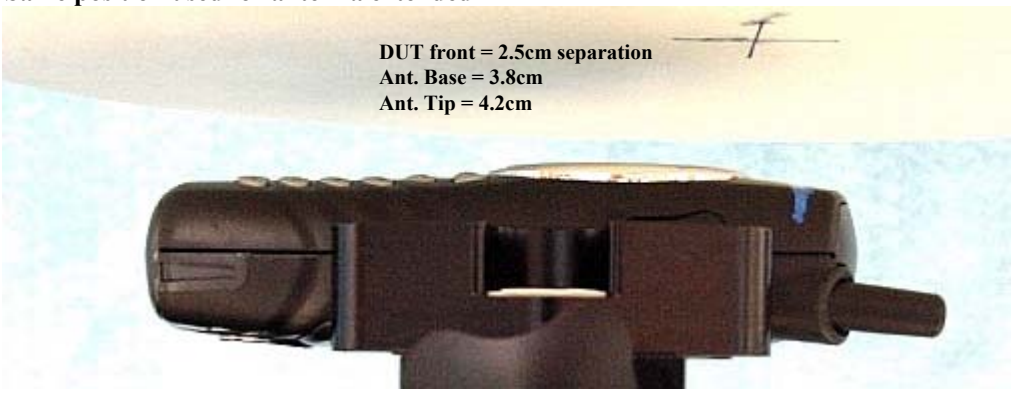


Figure 6. Assessment @ Abdomen; DUT w/ carry case model NNTN4755A against the flat phantom and attached data cable model NKN6560A. Same position used to assess data cable model NKN6559A, and antenna extended.

Figure 7. Assessment @ the Abdomen; with carry case model NNTN4755A and attached audio accessory model SYN8390B. Same position used to assess audio accessory models NNTN4033A, and NSN6066A w/ antenna in and out.

Figure 8. Assessment @ the Abdomen; DUT front 2.5cm separation.
Same position used for DUT back 2.5cm from phantom

Figure 9: Robot Test System (Flat Phantom)

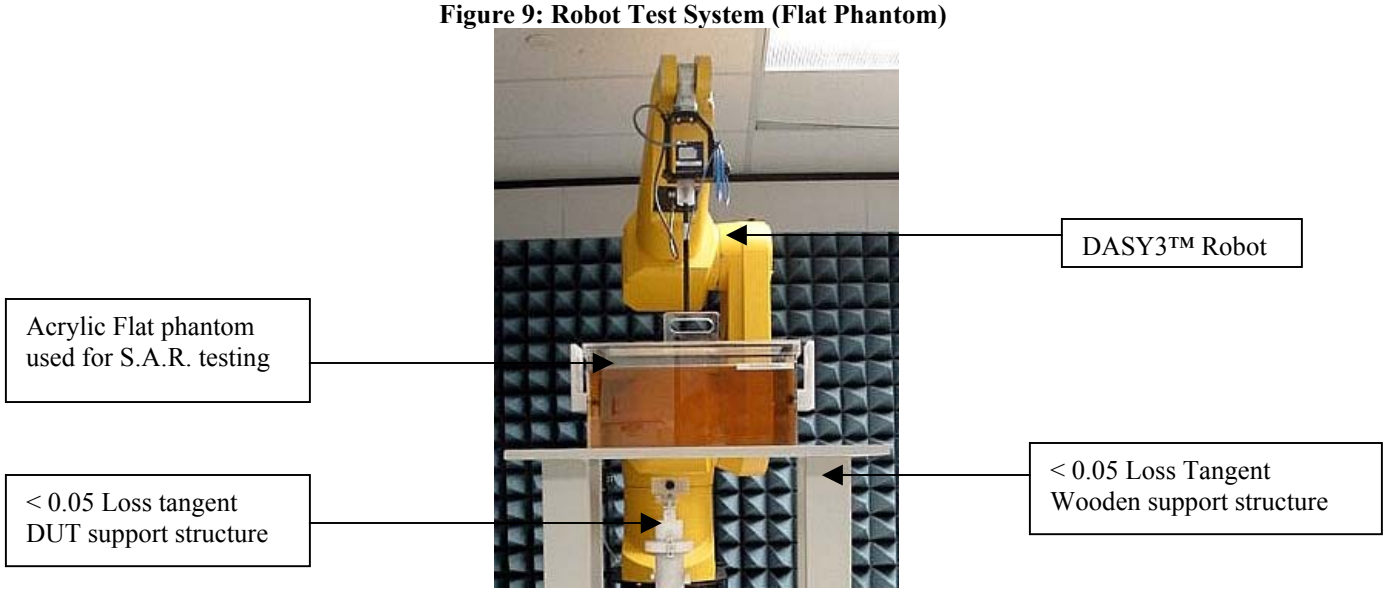
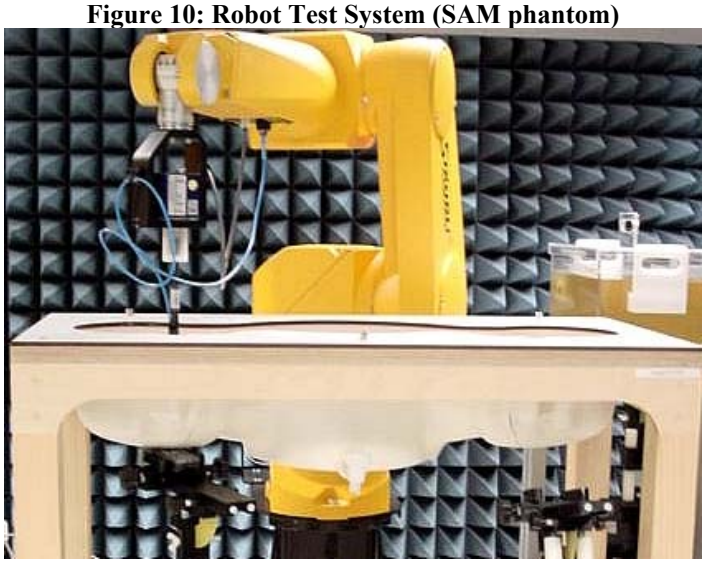


Figure 10: Robot Test System (SAM phantom)



5.3 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

Uncertainty Budget for Device Under Test

a	*b*	*c*	*d*	*e = f(d,k)*	*f*	*g*	*h = c x f / e*	*i = c x g / e*	*k*
Uncertainty Component	**Section of IEEE P1528**	**Tol. (± %)**	**Prob. Dist.**	**Div.**	**c_i (1 g)**	**c_i (10 g)**	**1 g u_i (±%)**	**10 g u_i (±%)**	**v_i**
Measurement System									
Probe Calibration	E.2.1	4.8	N	1.00	1	1	4.8	4.8	∞
Axial Isotropy	E.2.2	4.7	R	1.73	0.707	0.707	1.9	1.9	∞
Spherical Isotropy	E.2.2	9.6	R	1.73	0.707	0.707	3.9	3.9	∞
Boundary Effect	E.2.3	5.7	R	1.73	1	1	3.3	3.3	∞
Linearity	E.2.4	4.7	R	1.73	1	1	2.7	2.7	∞
System Detection Limits	E.2.5	1.0	R	1.73	1	1	0.6	0.6	∞
Readout Electronics	E.2.6	1.0	N	1.00	1	1	1.0	1.0	∞
Response Time	E.2.7	0.8	R	1.73	1	1	0.5	0.5	∞
Integration Time	E.2.8	1.3	R	1.73	1	1	0.8	0.8	∞
RF Ambient Conditions	E.6.1	3.0	R	1.73	1	1	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.3	R	1.73	1	1	0.2	0.2	∞
Probe Positioning with respect to Phantom Shell	E.6.3	1.1	R	1.73	1	1	0.6	0.6	∞
Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	E.5	3.9	R	1.73	1	1	2.3	2.3	∞
Test sample Related									
Test Sample Positioning	E.4.2	3.6	N	1.00	1	1	3.6	3.6	29
Device Holder Uncertainty	E.4.1	2.8	N	1.00	1	1	2.8	2.8	8
Output Power Variation - SAR drift measurement	6.6.2	5.0	R	1.73	1	1	2.9	2.9	∞
Phantom and Tissue Parameters									
Phantom Uncertainty (shape and thickness tolerances)	E.3.1	4.0	R	1.73	1	1	2.3	2.3	∞
Liquid Conductivity - deviation from target values	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity - measurement uncertainty	E.3.3	10.0	R	1.73	0.64	0.43	3.7	2.5	∞
Liquid Permittivity - deviation from target values	E.3.2	10.0	R	1.73	0.6	0.49	3.5	2.8	∞
Liquid Permittivity - measurement uncertainty	E.3.3	5.0	R	1.73	0.6	0.49	1.7	1.4	∞
Combined Standard Uncertainty			RSS				12	11	1361
Expanded Uncertainty (95% CONFIDENCE LEVEL)			k=2				23	22	

Uncertainty Budget for System Performance Check (dipole & flat phantom)

a	*b*	*c*	*d*	*e = f(d,k)*	*f*	*g*	*h = c x f / e*	*i = c x g / e*	*k*
Uncertainty Component	**Sec.**	**Tol. (± %)**	**Prob. Dist.**	**Div.**	c_i (1 g)	c_i (10 g)	1 g u_i (±%)	10 g u_i (±%)	v_i
Measurement System									
Probe Calibration	E.2.1	4.8	N	1.00	1	1	4.8	4.8	∞
Axial Isotropy	E.2.2	4.7	R	1.73	1	1	2.7	2.7	∞
Spherical Isotropy	E.2.2	9.6	R	1.73	0	0	0.0	0.0	∞
Boundary Effect	E.2.3	5.7	R	1.73	1	1	3.3	3.3	∞
Linearity	E.2.4	4.7	R	1.73	1	1	2.7	2.7	∞
System Detection Limits	E.2.5	1.0	R	1.73	1	1	0.6	0.6	∞
Readout Electronics	E.2.6	1.0	N	1.00	1	1	1.0	1.0	∞
Response Time	E.2.7	0.0	R	1.73	1	1	0.0	0.0	∞
Integration Time	E.2.8	0.0	R	1.73	1	1	0.0	0.0	∞
RF Ambient Conditions	E.6.1	3.0	R	1.73	1	1	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.3	R	1.73	1	1	0.2	0.2	∞
Probe Positioning with respect to Phantom Shell	E.6.3	1.1	R	1.73	1	1	0.6	0.6	∞
Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	E.5	3.9	R	1.73	1	1	2.3	2.3	∞
Dipole									
Dipole Axis to Liquid Distance	8, E.4.2	1.0	R	1.73	1	1	0.6	0.6	∞
Input Power and SAR Drift Measurement	8, 6.6.2	4.7	R	1.73	1	1	2.7	2.7	∞
Phantom and Tissue Parameters									
Phantom Uncertainty (shape and thickness tolerances)	E.3.1	4.0	R	1.73	1	1	2.3	2.3	∞
Liquid Conductivity - deviation from target values	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity - measurement uncertainty	E.3.3	10.0	R	1.73	0.64	0.43	3.7	2.5	∞
Liquid Permittivity - deviation from target values	E.3.2	10.0	R	1.73	0.6	0.49	3.5	2.8	∞
Liquid Permittivity - measurement uncertainty	E.3.3	5.0	R	1.73	0.6	0.49	1.7	1.4	∞
Combined Standard Uncertainty			RSS				10	9.4	99999
Expanded Uncertainty (95% CONFIDENCE LEVEL)			k=2				20	18	

Notes for Tables 1 and 2
a) Column headings *a-k* are given for reference.
b) Tol. - tolerance in influence quantity.
c) Prob. Dist. – Probability distribution
d) N, R - normal, rectangular probability distributions
e) Div. - divisor used to translate tolerance into normally distributed standard uncertainty
f) *ci* - sensitivity coefficient that should be applied to convert the variability of the uncertainty component into a variability of SAR.
g) *ui* – SAR uncertainty
h) *vi* - degrees of freedom for standard uncertainty and effective degrees of freedom for the expanded uncertainty.

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. DASY3™ S.A.R. measurement scans are provided in APPENDIX B for the highest observed S.A.R.
Appendix A presents a shortened S.A.R. cube scan to assess the validity of the calculated results presented herein.
Note: 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.

7.1 S.A.R. results

DUT assessment at the head; Cheek Touch and Tilt; 1:3 mode; 806-825MHz band												
Run Number/ SN	**Freq. (MHz)**	**Antenna Position**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**S.A.R. Drift (dB)**	**Measured 1g-S.A.R. (mW/g)**	**Max Calc. 1g-S.A.R. (mW/g)**	**Meas. 10g-S.A.R. (mW/g)**	**Max Calc. 10g-S.A.R. (mW/g)**
Left Ear												
CM-R2-030811-03/364ADN0037	813.5125	IN	SNN5705B	Cheek touch	None	None	0.695	0.16	1.450	**1.46**	0.942	0.95
CM-R2-030811-05/364ADN0037	813.5125	IN	SNN5706A	Cheek touch	None	None	0.690	0.08	1.280	1.30	0.843	0.86
CM-R2-030811-04/364ADN0037	813.5125	IN	NNTN4655A	Cheek touch	None	None	0.696	0.07	1.290	1.30	0.851	0.86
CM-R2-030811-06/364ADN0037	813.5125	OUT	SNN5705B	Cheek touch	None	None	0.699	0.41	0.596	0.60	0.417	0.42
CM-R2-030811-07/364ADN0037	813.5125	IN	SNN5705B	15° tilt	None	None	0.700	-0.36	0.689	0.75	0.479	0.52
CM-R2-030811-08/364ADN0037	813.5125	OUT	SNN5705B	15° tilt	None	None	0.696	0.52	0.695	0.70	0.487	0.49
Right Ear												
CM-R2-030811-09/364ADN0037	813.5125	IN	SNN5705B	Cheek touch	None	None	0.699	-0.21	0.965	1.01	0.677	0.71
KU-R2-030812-02/364ADN0037	813.5125	IN	SNN5706A	Cheek touch	None	None	0.696	0.12	0.971	0.98	0.682	0.69
KU-R2-030812-03/364ADN0037	813.5125	IN	NNTN4655A	Cheek touch	None	None	0.707	0.07	1.020	**1.02**	0.709	0.71
KU-R2-030812-04/364ADN0037	813.5125	OUT	NNTN4655A	Cheek touch	None	None	0.703	0.57	0.642	0.64	0.452	0.45
KU-R2-030812-05/364ADN0037	813.5125	IN	NNTN4655A	15° Tilt	None	None	0.707	0.46	0.600	0.60	0.447	0.45
KU-R2-030812-06/364ADN0037	813.5125	OUT	NNTN4655A	15° Tilt	None	None	0.697	0.93	0.634	0.64	0.439	0.44

DUT band edges assessment at the Head; using worst-case test condition at head; 1:3 mode; 806-825MHz band												
Run Number/ SN	**Freq. (MHz)**	**Antenna Position**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**S.A.R. Drift (dB)**	**Measured 1g-S.A.R. (mW/g)**	**Max Calc. 1g-S.A.R. (mW/g)**	**Meas. 10g-S.A.R. (mW/g)**	**Max Calc. 10g-S.A.R. (mW/g)**
CM-R2-030812-07/364ADN0037	806.0125	In	SNN5705B	Cheek touch	None	None	0.691	0.92	1.370	**1.39**	0.906	0.92
CM-R2-030812-08/364ADN0037	806.0125	Out	SNN5705B	Cheek touch	None	None	0.703	-0.21	0.606	0.64	0.439	0.46
CM-R2-030812-09/364ADN0037	824.9875	In	SNN5705B	Cheek touch	None	None	0.695	-0.03	1.260	1.28	0.831	0.84
CM-R2-030812-10/364ADN0037	824.9875	Out	SNN5705B	Cheek touch	None	None	0.700	-0.05	0.539	0.55	0.364	0.37

DUT assessment at the Face; 2.5cm separation; 1:6 mode; 806-825MHz band												
Run Number/ SN	**Freq. (MHz)**	**Antenna Position**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**S.A.R. Drift (dB)**	**Measured 1g-S.A.R. (mW/g)**	**Max Calc. 1g-S.A.R. (mW/g)**	**Meas. 10g-S.A.R. (mW/g)**	**Max Calc. 10g-S.A.R. (mW/g)**
KU-R2-030814-03/364ADN0037	813.5125	IN	SNN5705B	2.5cm separation	None	None	0.685	0.02	0.194	0.10	0.139	0.07
KU-R2-030814-04/364ADN0037	813.5125	OUT	SNN5705B	2.5cm separation	None	None	0.690	0.48	0.145	0.07	0.104	0.05
KU-R2-030814-05/364ADN0037	806.0125	IN	SNN5705B	2.5cm separation	None	None	0.690	0.03	0.194	**0.10**	0.140	0.07
KU-R2-030814-06/364ADN0037	824.9875	IN	SNN5705B	2.5cm separation	None	None	0.685	0.02	0.177	0.09	0.127	0.06

DUT assessment at the head; Cheek Touch and Tilt; 1:3 mode; 896-902 MHz band												
Run Number/ SN	**Freq. (MHz)**	**Antenna Position**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**S.A.R. Drift (dB)**	**Measured 1g-S.A.R. (mW/g)**	**Max Calc. 1g-S.A.R. (mW/g)**	**Meas. 10g-S.A.R. (mW/g)**	**Max Calc. 10g-S.A.R. (mW/g)**
Left Ear												
CM-R2-030812-11/364ADN0037	898.49375	IN	SNN5705B	Cheek touch	None	None	0.699	-0.34	0.938	**1.02**	0.618	0.67
CM-R2-030812-12/364ADN0037	898.49375	IN	SNN5706A	Cheek touch	None	None	0.700	0.33	0.927	0.93	0.615	0.62
CM-R2-030812-13/364ADN0037	898.49375	IN	NNTN4655A	Cheek touch	None	None	0.696	0.00	0.862	0.87	0.568	0.57
CM-R2-030812-14/364ADN0037	898.49375	OUT	SNN5705B	Cheek touch	None	None	0.698	-0.57	0.371	0.42	0.260	0.30
CM-R2-030812-15/364ADN0037	898.49375	IN	SNN5705B	15˚ tilt	None	None	0.704	-0.41	0.438	0.48	0.288	0.32
CM-R2-030812-16/364ADN0037	898.49375	OUT	SNN5705B	15˚ tilt	None	None	0.696	0.25	0.762	0.77	0.523	0.53

Right Ear												
KU-R2-030813-02/364ADN0037	898.49375	IN	SNN5705B	Cheek touch	None	None	0.696	0.37	0.715	0.72	0.504	0.51
KU-R2-030813-03/364ADN0037	898.49375	IN	SNN5706A	Cheek touch	None	None	0.701	0.04	0.660	0.66	0.459	0.46
KU-R2-030813-04/364ADN0037	898.49375	IN	NNTN4655A	Cheek touch	None	None	0.708	0.10	0.698	0.70	0.487	0.49
KU-R2-030813-05/364ADN0037	898.49375	OUT	SNN5705B	Cheek touch	None	None	0.707	-0.73	0.371	0.44	0.250	0.30
KU-R2-030813-06/364ADN0037	898.49375	IN	SNN5705B	15˚ Tilt	None	None	0.706	0.41	0.385	0.39	0.270	0.27
KU-R2-030813-07/364ADN0037	898.49375	OUT	SNN5705B	15˚ Tilt	None	None	0.707	-0.68	0.624	**0.73**	0.435	0.51

DUT band edges assessment at the Head; worst-case test condition at head; 1:3 mode; 896-902 MHz band												
Run Number/ SN	**Freq. (MHz)**	**Antenna Position**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**S.A.R. Drift (dB)**	**Measured 1g-S.A.R. (mW/g)**	**Max Calc. 1g-S.A.R. (mW/g)**	**Meas. 10g-S.A.R. (mW/g)**	**Max Calc. 10g-S.A.R. (mW/g)**
CM-R2-030813-08/364ADN0037	896.01875	IN	SNN5705B	Cheek touch	None	None	0.694	-0.54	0.837	0.96	0.554	0.63
CM-R2-030813-09/364ADN0037	896.01875	OUT	SNN5705B	Cheek touch	None	None	0.693	-0.18	0.423	0.45	0.288	0.30
CM-R2-030813-10/364ADN0037	901.98125	IN	SNN5705B	Cheek touch	None	None	0.693	0.31	0.971	**0.98**	0.637	0.64
CM-R2-030813-11/364ADN0037	901.98125	OUT	SNN5705B	Cheek touch	None	None	0.688	-0.01	0.402	0.41	0.280	0.29

DUT Assessment at the Face; 2.5cm separation; 1:6mode; 896-902MHz band												
Run Number/ SN	**Freq. (MHz)**	**Antenna Position**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**S.A.R. Drift (dB)**	**Measured 1g-S.A.R. (mW/g)**	**Max Calc. 1g-S.A.R. (mW/g)**	**Meas. 10g-S.A.R. (mW/g)**	**Max Calc. 10g-S.A.R. (mW/g)**
KU-R2-030820-08/364ADN0037	898.49375	IN	SNN5705B	2.5cm separation	None	None	0.692	-0.06	0.193	**0.10**	0.135	0.07
KU-R2-030820-09/364ADN0037	898.49375	OUT	SNN5705B	2.5cm separation	None	None	0.692	-0.02	0.142	0.07	0.100	0.05
KU-R2-030820-10/364ADN0037	896.01875	IN	SNN5705B	2.5cm separation	None	None	0.687	0.00	0.189	0.10	0.133	0.07
KU-R2-030821-02/364ADN0037	901.98125	IN	SNN5705B	2.5cm separation	None	None	0.681	0.07	0.173	0.09	0.121	0.06

DUT Assessment at the abdomen; Battery search; 81:120mode; 806-825MHz band												
Run Number/ SN	**Freq. (MHz)**	**Antenna Position**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**S.A.R. Drift (dB)**	**Measured 1g-S.A.R. (mW/g)**	**Max Calc. 1g-S.A.R. (mW/g)**	**Meas. 10g-S.A.R. (mW/g)**	**Max Calc. 10g-S.A.R. (mW/g)**
KU-R2-030814-07/364ADN0037	813.5125	IN	SNN5705B	Against phantom	NNTN4755A	NONE	0.702	-1.05	0.857	1.09	0.629	0.80
KU-R2-030814-08/364ADN0037	813.5125	OUT	SNN5705B	Against phantom	NNTN4755A	NONE	0.710	-1.22	0.721	0.95	0.530	0.70
KU-R2-030814-09/364ADN0037	813.5125	IN	SNN5706A	Against phantom	NNTN4755A	NONE	0.714	0.06	1.160	**1.16**	0.841	0.84
KU-R2-030814-10/364ADN0037	813.5125	OUT	SNN5706A	Against phantom	NNTN4755A	NONE	0.714	-0.80	0.754	0.91	0.550	0.66
CM-R2-030814-11/364ADN0037	813.5125	IN	NNTN4655A	Against phantom	NNTN4755A	NONE	0.710	0.74	1.140	1.14	0.836	0.84
CM-R2-030814-12/364ADN0037	813.5125	OUT	NNTN4655A	Against phantom	NNTN4755A	NONE	0.705	-0.67	0.781	0.91	0.571	0.67

DUT Assessment at the abdomen; offered data cable accessories; 81:120mode; 806-825MHz band												
Run Number/ SN	**Freq. (MHz)**	**Antenna Position**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**S.A.R. Drift (dB)**	**Measured 1g-S.A.R. (mW/g)**	**Max Calc. 1g-S.A.R. (mW/g)**	**Meas. 10g-S.A.R. (mW/g)**	**Max Calc. 10g-S.A.R. (mW/g)**
KU-R2-030815-02/364ADN0037	813.5125	In	SNN5706A	Against phantom	NNTN4755A	NKN6560A	0.692	0.05	0.670	**0.68**	0.482	0.49
KU-R2-030815-03/364ADN0037	813.5125	Out	SNN5706A	Against phantom	NNTN4755A	NKN6560A	0.710	-1.05	0.439	0.56	0.313	0.40
CM-R2-030815-04/364ADN0037	813.5125	In	SNN5706A	Against phantom	NNTN4755A	NKN6559A	0.702	0.20	0.656	0.66	0.472	0.47
CM-R2-030815-05/364ADN0037	813.5125	Out	SNN5706A	Against phantom	NNTN4755A	NKN6559A	0.712	-0.71	0.470	0.55	0.347	0.41

DUT Assessment at the abdomen; offered audio accessories; 1:3mode; 806-825MHz band												
Run Number/ SN	**Freq. (MHz)**	**Antenna Position**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**S.A.R. Drift (dB)**	**Measured 1g-S.A.R. (mW/g)**	**Max Calc. 1g-S.A.R. (mW/g)**	**Meas. 10g-S.A.R. (mW/g)**	**Max Calc. 10g-S.A.R. (mW/g)**
CM-R2-030815-06/364ADN0037	813.5125	IN	SNN5706A	Against phantom	NNTN4755A	SYN8390B	0.698	0.11	0.407	0.41	0.299	0.30
CM-R2-030815-07/364ADN0037	813.5125	OUT	SNN5706A	Against phantom	NNTN4755A	SYN8390B	0.696	1.05	0.324	0.33	0.239	0.24
KU-R2-030818-02/364ADN0037	813.5125	IN	SNN5706A	Against phantom	NNTN4755A	NNTN4033A	0.687	0.01	0.319	0.33	0.233	0.24
KU-R2-030818-03/364ADN0037	813.5125	OUT	SNN5706A	Against phantom	NNTN4755A	NNTN4033A	0.700	0.70	0.433	**0.43**	0.322	0.32

KU-R2-030818-04/364ADN0037	813.5125	IN	SNN5706A	Against phantom	NNTN4755A	NSN6066A	0.701	-0.03	0.325	0.33	0.237	0.24
KU-R2-030818-05/364ADN0037	813.5125	OUT	SNN5706A	Against phantom	NNTN4755A	NSN6066A	0.695	0.99	0.331	0.33	0.241	0.24

DUT band edges assessment at the abdomen; 81:120mode; 806-825MHz band

Run Number/ SN	Freq. (MHz)	Antenna Position	Battery	Test position	Carry Case	Additional attachments	Initial Power (W)	S.A.R. Drift (dB)	Measured 1g-S.A.R. (mW/g)	Max Calc. 1g-S.A.R. (mW/g)	Meas. 10g-S.A.R. (mW/g)	Max Calc. 10g-S.A.R. (mW/g)
KU-R2-030818-08/364ADN0037	806.0125	IN	SNN5706A	Against phantom	NNTN4755A	None	0.703	0.30	1.150	**1.15**	0.836	0.84
KU-R2-030818-09/364ADN0037	806.0125	OUT	SNN5706A	Against phantom	NNTN4755A	None	0.710	-0.95	0.687	0.85	0.502	0.62
KU-R2-030818-10/364ADN0037	824.9875	IN	SNN5706A	Against phantom	NNTN4755A	None	0.713	-0.23	1.010	1.06	0.717	0.76
KU-R2-030818-11/364ADN0037	824.9875	OUT	SNN5706A	Against phantom	NNTN4755A	None	0.701	-0.80	0.622	0.75	0.451	0.54

DUT assessment at the abdomen; w/ worst case battery from 806-825MHz assessment 1:3 mode; 896-902MHz band

Run Number/ SN	Freq. (MHz)	Antenna Position	Battery	Test position	Carry Case	Additional attachments	Initial Power (W)	S.A.R. Drift (dB)	Measured 1g-S.A.R. (mW/g)	Max Calc. 1g-S.A.R. (mW/g)	Meas. 10g-S.A.R. (mW/g)	Max Calc. 10g-S.A.R. (mW/g)
KU-R2-030819-02/364ADN0037	898.49375	IN	SNN5706A	Against phantom	NNTN4755A	SYN8390B	0.683	0.11	0.247	0.25	0.175	0.18
KU-R2-030819-03/364ADN0037	898.49375	OUT	SNN5706A	Against phantom	NNTN4755A	SYN8390B	0.705	0.02	0.227	0.23	0.163	0.16
KU-R2-030819-04/364ADN0037	898.49375	IN	SNN5706A	Against phantom	NNTN4755A	NNTN4033A	0.705	0.08	0.253	**0.25**	0.179	0.18
KU-R2-030819-05/364ADN0037	898.49375	OUT	SNN5706A	Against phantom	NNTN4755A	NNTN4033A	0.694	0.16	0.206	0.21	0.147	0.15
KU-R2-030819-06/364ADN0037	898.49375	IN	SNN5706A	Against phantom	NNTN4755A	NSN6066A	0.691	0.16	0.161	0.16	0.115	0.12
KU-R2-030819-07/364ADN0037	898.49375	OUT	SNN5706A	Against phantom	NNTN4755A	NSN6066A	0.698	0.06	0.174	0.17	0.124	0.12

DUT Band edges assessment at the abdomen; 81:120mode; 896-902MHz band

Run Number/ SN	Freq. (MHz)	Antenna Position	Battery	Test position	Carry Case	Additional attachments	Initial Power (W)	S.A.R. Drift (dB)	Measured 1g-S.A.R. (mW/g)	Max Calc. 1g-S.A.R. (mW/g)	Meas. 10g-S.A.R. (mW/g)	Max Calc. 10g-S.A.R. (mW/g)
KU-R2-030819-08/364ADN0037	896.01875	IN	SNN5706A	Against phantom	NNTN4755A	SYN8390B	0.697	-0.02	0.246	**0.25**	0.176	0.18
KU-R2-030819-09/364ADN0037	896.01875	OUT	SNN5706A	Against phantom	NNTN4755A	SYN8390B	0.690	0.08	0.198	0.20	0.142	0.14
KU-R2-030819-10/364ADN0037	901.98125	IN	SNN5706A	Against phantom	NNTN4755A	SYN8390B	0.686	0.37	0.242	0.25	0.172	0.18
KU-R2-030819-11/364ADN0037	901.98125	OUT	SNN5706A	Against phantom	NNTN4755A	SYN8390B	0.688	0.11	0.202	0.21	0.144	0.15

DUT assessment at the abdomen; 2.5cm separation; w/ overall worst case configuration; 81:120mode; 806-825 MHz band												
Run Number/ SN	**Freq. (MHz)**	**Antenna Position**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**S.A.R. Drift (dB)**	**Measured 1g-S.A.R. (mW/g)**	**Max Calc. 1g-S.A.R. (mW/g)**	**Meas. 10g-S.A.R. (mW/g)**	**Max Calc. 10g-S.A.R. (mW/g)**
KU-R2-030820-04/364ADN0037	813.5125	IN	SNN5706A	DUT Front 2.5cm separation	None	None	0.693	0.06	0.682	**0.69**	0.488	0.49
KU-R2-030820-06/364ADN0037	813.5125	IN	SNN5706A	DUT back 2.5cm separation	None	None	0.695	-0.08	0.638	0.65	0.463	0.48

7.2 Peak S.A.R. location

Refer to APPENDIX B for detailed S.A.R. scan distributions.

7.3 Highest S.A.R. results calculation methodology

The calculated maximum 1-gram and 10-gram averaged S.A.R. values are determined by scaling the measured S.A.R. to account for power leveling variations and power slump. For this device the Maximum Calculated 1-gram and 10-gram averaged peak S.A.R. is calculated using the following formula:

Max. Calc. 1-g Avg. SAR = ((S.A.R. meas. / (10^(Pdrift/10))*(Pmax/Pint))
P_{max} = Maximum Power (mW)
P_{int} = Initial Power (mW)
$SAR_{meas.}$ = Measured 1 or 10 gram averaged peak S.A.R. (mW/g)

Note: for positive drift values Max. Calc. S.A.R. = (measured S.A.R.*(Max Pwr/Init. Pwr.))
Note: 50% duty cycle is applied for PTT operation in front of the face.

8.0 Conclusion

The highest Operational Maximum Calculated 1-gram and 10-gram average S.A.R. values found for FCC ID: AZ489FT5822 model H62XAH6RR1AN/NUF3763A.
At the abdomen: 1-g Avg. = 1.16 mW/g; 10-g Avg. = 0.84 mW/g
At the Face: 1-g Avg. = 0.10 mW/g; 10-g Avg. = 0.07 mW/g
At the Head: 1-g Avg. = 1.46 mW/g; 10-g Avg. = 0.95 mW/g

These 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)