Certificate Number: 1449-01

CGISS EME Test Laboratory
8000 West Sunrise Blvd
Fort Lauderdale, FL. 33322

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

Date of Report:	June 11, 2004
Report Revision:	Rev. O
Manufacturer:	Motorola
Product Description:	iDEN i860**;** 1:6, 1:3, 81:120, 1:12 TDM; 64 QAM, 16 QAM & QPSK Modulation; 0.6 W Pulse average
FCC ID:	AZ489FT5833
Device Model:	H73XAN6RR4AN/NUF3754A00

Test Period:	5/24/04-6/3/04
Technician:	Clint Miller (EME Technician Electronics II)
Responsible Eng:	Jim Fortier (Elect. Principle Staff 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 — 6/11/04

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

Date Approved

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REVISION HISTORY

Date	Revision	Comments
6/11/04	O	Release of 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 H73XAN6RR4AN/NUF3754A00, FCC ID: AZ489FT5833.

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
- IEEE 1528, 2003 "Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques"
- 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 Radiocommunications (Electromagnetic Radiation - Human Exposure) Standard 2003
- ANATEL, Brazil Regulatory Authority, Resolution No. 303 of July 2, 2002 "Regulation of the limitation of exposure to electrical, magnetic, and electromagnetic fields in the radio frequency range between 9KHz and 300 GHz." and “Attachment to resolution # 303 from July 2, 2002”

3.0 Description of Test Sample

(Horizontal and vertical reference lines intersecting at the acoustic output are marked in white on the DUT)

FCC ID: AZ489FT5833 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 1:3 mode that operates using a 16.67% transmission duty cycle. Two 7.5ms pulses occur 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 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 voice, PTT and data modes.

FCC ID: AZ489FT5833 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: AZ489FT5833 is offered with the following options and accessories:

Antenna	**Description**
85-85744F01	806 – 941 MHz ¼ wave retractable antenna; 10.1cm Worst case antenna gain -2.4dBd @ 813MHz, -0.6dBd @ 896 MHz

Batteries

SNN5705B	8-mm 950mAh Lithium Ion battery
SNN5704C	5-mm 700mAh Lithium Ion battery
NNTN5529A	Battery cover (5mm)
NNTN5530A	Battery cover (8mm)

Body-worn Accessories

NNTN5003A	Black carry holster
NNTN4747A	Belt clip

Applicable Audio accessories

SYN8390B	Privacy Earpiece and Mic
NNTN4033A	Privacy earpiece and Mic w/ PTT
NSN6066A	Remote speaker Mic
NNTN4620A	Silver Earbud
SYN8146C	Lightweight over the ear headset w/boom Mic
SYN7875C	Hearing Aid Neck loop
NTN8496A	Lightweight Headset w/mic
NTN8513B	Lightweight Headband
NNTN5004A	PTT headset (Over-the-ear)
NNTN5005A	PTT headset (Over the head)
NNTN5006A	PTT headset (Ear bud)
NNTN5330A	Chrome PTT headset

Other applicable options:

NKN6560A	RS232 Data Cable
NKN6559A	USB Data Cable

3.1 Test Signal

Test Mode	X	Call Simulator		Simulator	

Test Signal mode:

Transmission Mode:

CW	
Native Transmission	**X**
TDMA	
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 ET3DV6 and EX3DV3 E-Field probes. Please reference the SPEAG user manual and application notes for detailed probe, robot, and S.A.R. computational procedures.
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. 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)
1383	FCC Body	2/25/04	D900V2/085	12.105 +/- 0.125	11.17 +/- 10%	5/28/04-6/3/04 5 test days
1383	IEEE Head	2/25/04	D900V2/085	11.645 +/- 0.170	12.00 +/- 10%	5/24/04-5/28/04 5 test days

Note: System performance results reflects the median performance +/- ½ of the test date(s) performance ranges

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 S.A.R. EME compliance was calibrated according to 17025 A2LA guidelines.

4.2 Description of Phantom

4.2.1 Flat Phantom

A rectangular shaped box made of high density polyethylene (HDPE) material. The phantom is mounted on a wooden supporting structure that has a loss tangent of < 0.05. The structure has a 68.58 cm x 25.40 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 = 80cm, W = 60cm, H = 20cm, Surface Thickness = 0.2cm.

4.2.2 SAM Phantom

A SAM TP1234 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) and IEEE 1528, 2003 "Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques"

Simulated Tissue	Body Position
FCC Body	Torso
IEEE Head	Head/Face

4.3.2 Simulated Tissue Composition

% of listed ingredients	900MHz		835MHz	
	Head	Body	Head	Body
Sugar	56.50	44.90	57.00	44.90
DGBE (Glycol)	NA	NA	NA	NA
Diacetin	NA	NA	NA	NA
De ionized -Water	40.95	53.06	44.90	53.06
Salt	1.45	0.94	1.45	0.94
HEC	1	1	1	1
Bact.	0.1	0.1	0.1	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

FCC Body				
Frequency (MHz)	**Di-electric Constant Target**	**Di-electric Constant Meas. (Range)**	**Conductivity Target S/m**	**Conductivity Meas. (Range) S/m**
900	55.0	53.9-55.0	1.05	1.01-1.03
813	55.3	54.7-55.6	0.97	0.93-0.94

IEEE Head				
Frequency (MHz)	**Di-electric Constant Target**	**Di-electric Constant Meas. (Range)**	**Conductivity Target S/m**	**Conductivity Meas. (Range) S/m**
900	41.5	40.5-40.9	0.97	1.01-1.01
813	41.6	41.7-41.9	0.90	0.93-0.93

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^{o}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: 20.3-22.9˚C Avg. 21.8˚C
Relative Humidity	30 - 70 %	Range: 45.8-59.4% Avg. 50.60%
Tissue Temperature	NA	Range: 19.1-21.7˚C Avg. 20.04˚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 Probe Scan Procedures

The E-field probe first scans 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.

5.1 Shortened scan rationale

APPENDIX A presents relevant shortened S.A.R. cube scan to assess the validity of the calculated results presented herein. The results of the shortened cube scans demonstrate that the scaling methodology used to determine the calculated S.A.R. results presented herein are valid.

5.2 Device test positions

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

5.2.1 Body

The DUT was positioned such that the carry case was centered against the flat phantom with and without the applicable accessory attachments. The DUT was positioned with its' front, and back separated 2.5cm from the flat phantom.

5.2.2 Head

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

5.2.3 Face

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

5.3 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 with applicable tissue simulant to assess performance at the body and a SAM phantom with applicable tissue simulant to assess performance at the side of the head and in front of the face using the applicable transmission modes.

Assessments at the head (800MHz band) **[Page22-23 of 27; Table 1]**

The DUT was assessed at the TX center frequency of the band, in cheek touch position at the left ear of the SAM phantom, with the antenna retracted and extended, using each of the offered batteries, in the 1:3 transmission mode.
The DUT was assessed at the TX center frequency of the band, in the 15˚ tilt position at the left ear of the Sam phantom, with the antenna retracted and extended, using the worst case battery from above, in 1:3 transmission mode.
The DUT was assessed at the TX band edges, in 1:3 transmission mode, with the antenna retracted and extended, using the test configuration from above that produced the highest S.A.R results.

The DUT was assessed at the TX center frequency of the band, in cheek touch position at the right ear of the SAM phantom, with the antenna retracted and extended, using the worst case battery from the left ear assessment, in the 1:3 transmission mode.
The DUT was assessed at the TX center frequency of the band, in the 15˚ tilt position at the right ear of the Sam phantom, with the antenna retracted and extended, using the worst case battery from the left ear assessment, in 1:3 transmission mode.
The DUT was assessed at the TX band edges, in 1:3 transmission mode, with the antenna retracted and extended, using the test configuration from above that produced the highest S.A.R results.

The DUT was assessed at the center frequency of the band, in the 1:6 transmission mode, with 2.5cm separation distance from the flat area of the SAM phantom (face assessment), using the worst case battery from above, with the flip open and closed.

Assessments at the head (900MHz band) **[Page 23-24 of 27; Table 2]**

The DUT was assessed at the TX center frequency of the band, in cheek touch position at the left ear of the SAM phantom, with the antenna retracted and extended, using each of the offered batteries, in the 1:3 transmission mode.
The DUT was assessed at the TX center frequency of the band, in the 15˚ tilt position at the left ear of the Sam phantom, with the antenna retracted and extended, using the worst case battery from above, in 1:3 transmission mode.
The DUT was assessed at the TX band edges, in 1:3 transmission mode, with the antenna retracted and extended, using the test configuration from above that produced the highest S.A.R results.

The DUT was assessed at the TX center frequency of the band, in cheek touch position at the right ear of the SAM phantom, with the antenna retracted and extended, using the worst case battery from the left ear assessment, in the 1:3 transmission mode.
The DUT was assessed at the TX center frequency of the band, in the 15˚ tilt position at the left ear of the Sam phantom, with the antenna retracted and extended, using the worst case battery from the left ear assessment, in 1:3 transmission mode.
The DUT was assessed at the TX band edges, in 1:3 transmission mode, with the antenna retracted and extended, using the test configuration from above that produced the highest S.A.R results.

The DUT was assessed at the center frequency of the band, in the 1:6 transmission mode, with

2.5cm separation distance from the flat area of the SAM phantom (face assessment), using the worst case battery from above.

Assessments at the body (800MHz band) **[Pages 24-25 of 27; Table 3]**

The DUT was assessed at the TX center frequency of the band, with the offered body worn accessories against the flat phantom, in the 81:120 transmission mode, with the antenna retracted and extended, using each of the offered batteries.
The DUT was assessed at the TX center frequency of the band, against the flat phantom, in the 81:120 transmission mode, with the antenna retracted and extended, using the worst test configuration from above, with each of the offered data cable attachments.
The DUT was assessed at the TX center frequency of the band, against the flat phantom, in the 1:3 transmission mode, using the worst case test configuration from above, with each of the offered audio accessories.
The DUT was assessed at the TX center frequency of the band, against the flat phantom, in the 1:6 transmission mode, using the worst case test configuration from above, with the offered remote speaker microphone accessory.
The DUT was assessed at the edges of the band, in the 81:120 transmission mode, with the antenna retracted and extended, using the over all worst case test configuration at the body from above.

Assessments at the body (900MHz band) **[Page 26 of 27; Table 4]**

The DUT was assessed in the 1:3 transmission mode, across the TX band, with the antenna retracted and extended, using the applicable worst case test configuration from the 800MHz band assessment at the body.

Assessments at the body (@ 2.5cm) **[Page 26 of 27; Table 4]**
The DUT was assessed in the 81:120 transmission mode, against the phantom with its' back and front housing separated 2.5 cm from the phantom, using the worst case test frequency and offered battery from the 800MHz and 900MHz assessments above.

Shortened scan assessment at the body **[APPENDIX A]**
A "shortened" scan was performed using the test configuration that produced the highest S.A.R. results overall at the body.

5.4 Test Position Photographs

Figure 1: Highest S.A.R. Test Position (@ body)
DUT with body worn accessory model NNTN4747A against the flat phantom.

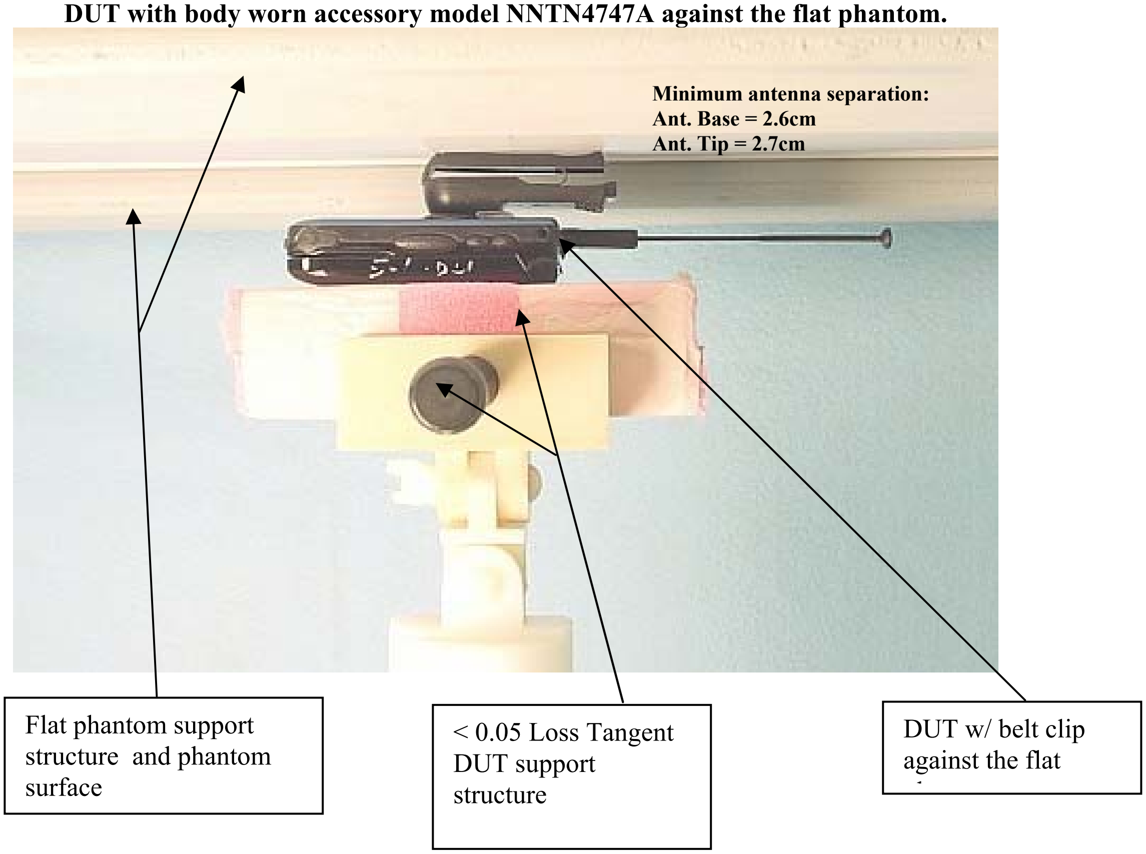

Figure 2. Assessment @ the Left ear
DUT in 15° tilt position

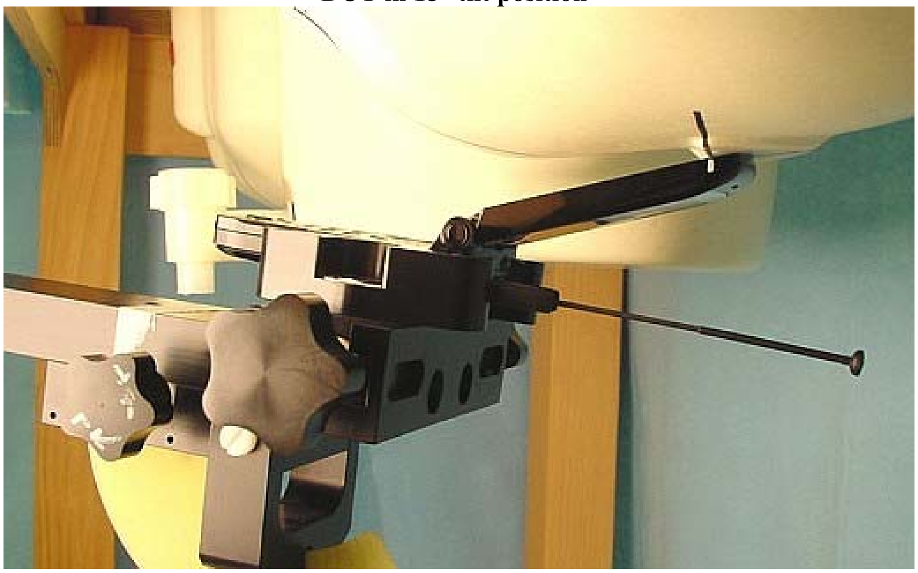

Figure 3. Assessment @ the Left ear
DUT in Cheek touch position

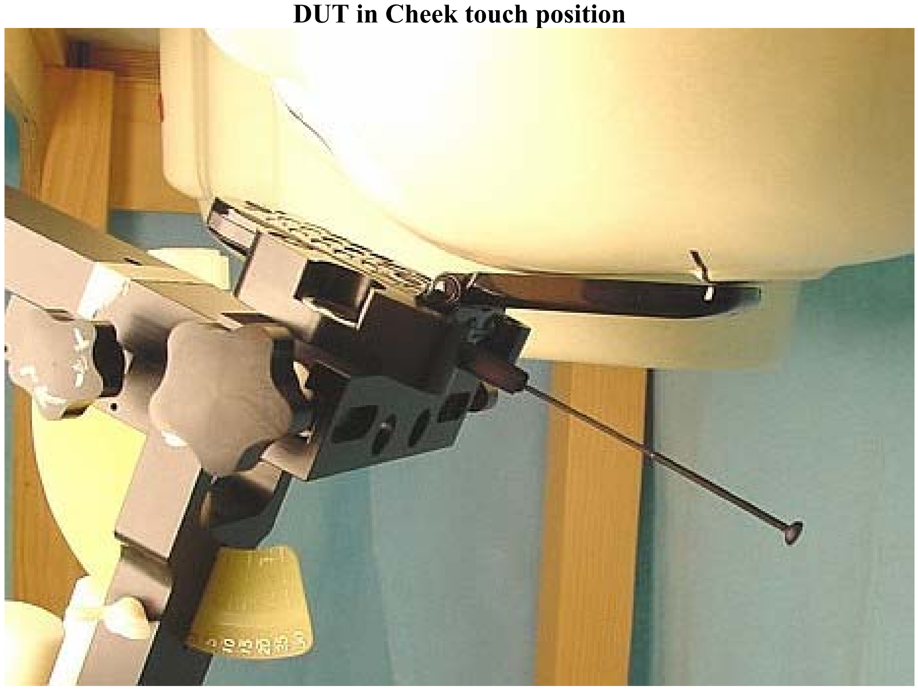

Figure 4. Assessment @ the Right ear
DUT in 15° tilt position

Figure 5. Assessment @ the Right ear
DUT in Cheek touch position

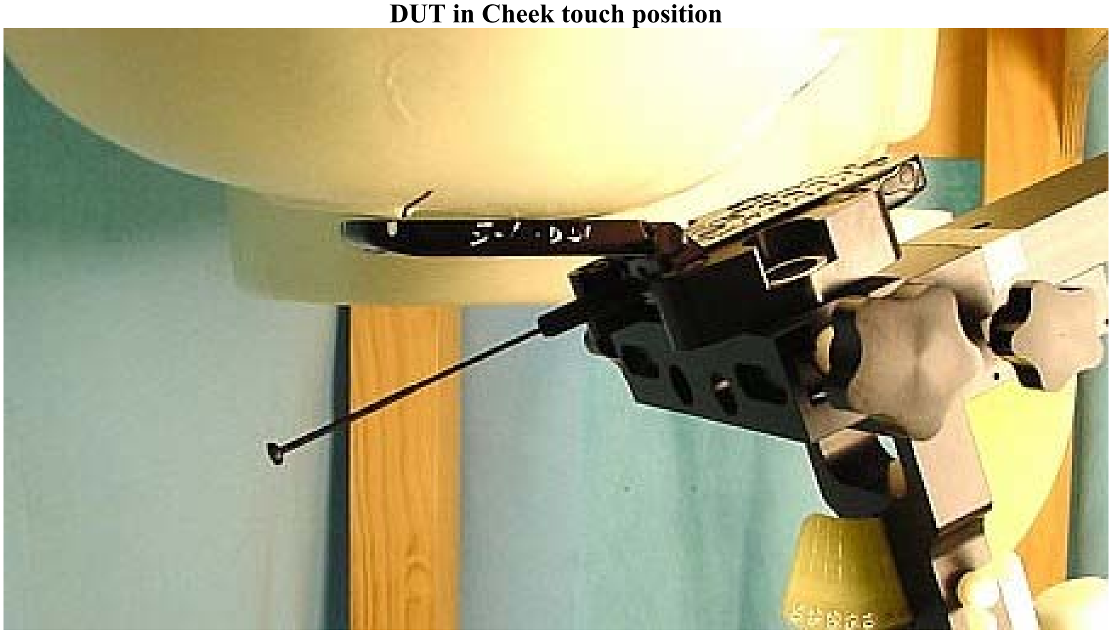

Figure 6. Assessment @ the Face (Flip opened)
DUT front 2.5cm separation distance from flat phantom.

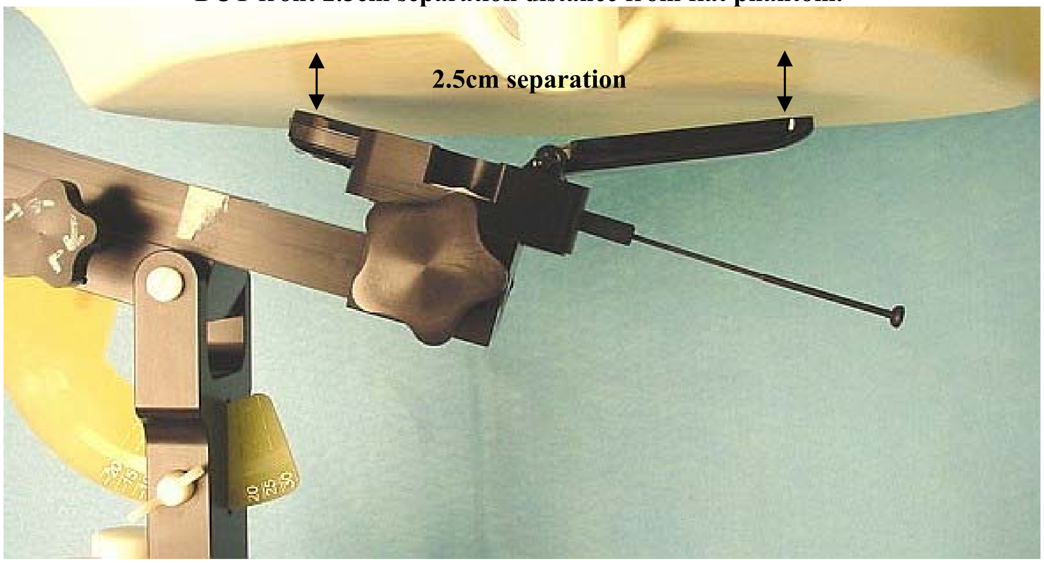

Figure 7. Assessment @ the Face (Flip closed)
DUT front 2.5cm separation distance from flat phantom.

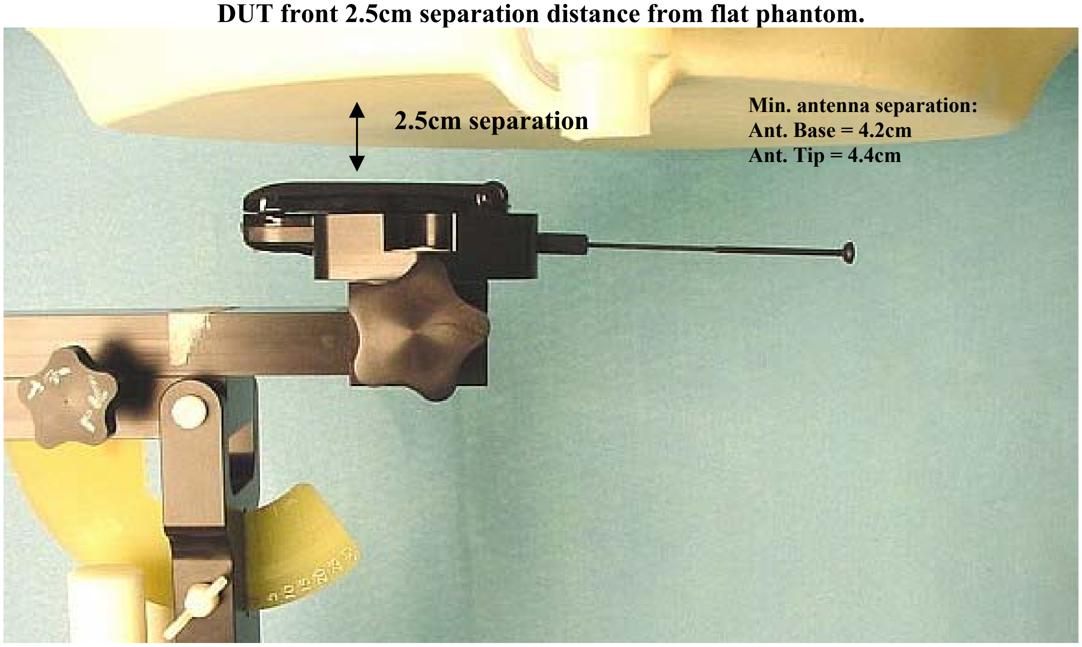

Figure 8. Assessment @ Body
DUT w/ holster model NNTN5003A against the flat phantom

Figure 8. Assessment @ Body
DUT w/ belt clip model NNTN4747A against the flat phantom
With data cable model NKN6 559A attached;
(same position used with other data cable as well as with offered audio accessories attached)

Figure 9. Body assessment @ 2.5cm
DUT with front housing separated 2.5cm from the phantom.

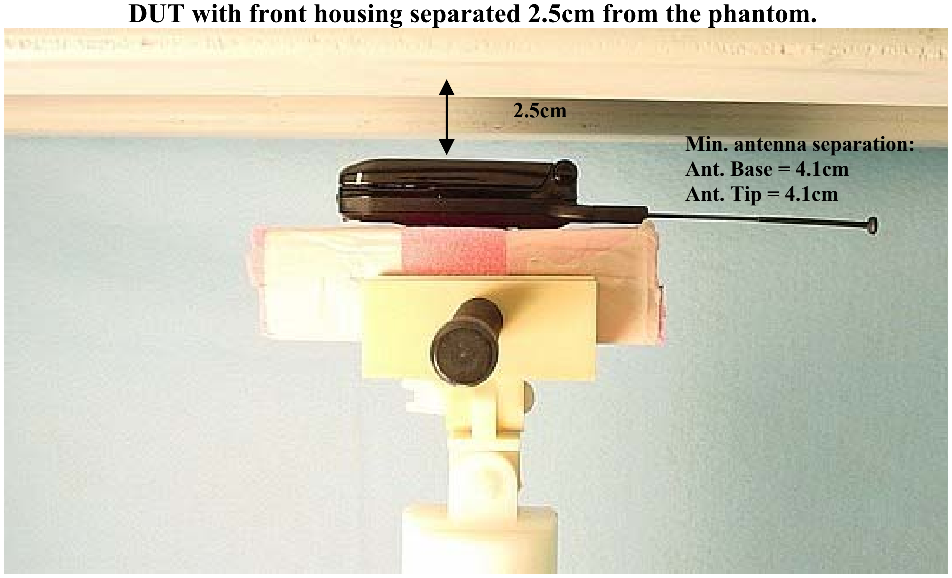

Figure 10. Body assessment @ 2.5cm
DUT with back housing separated 2.5cm from the phantom.

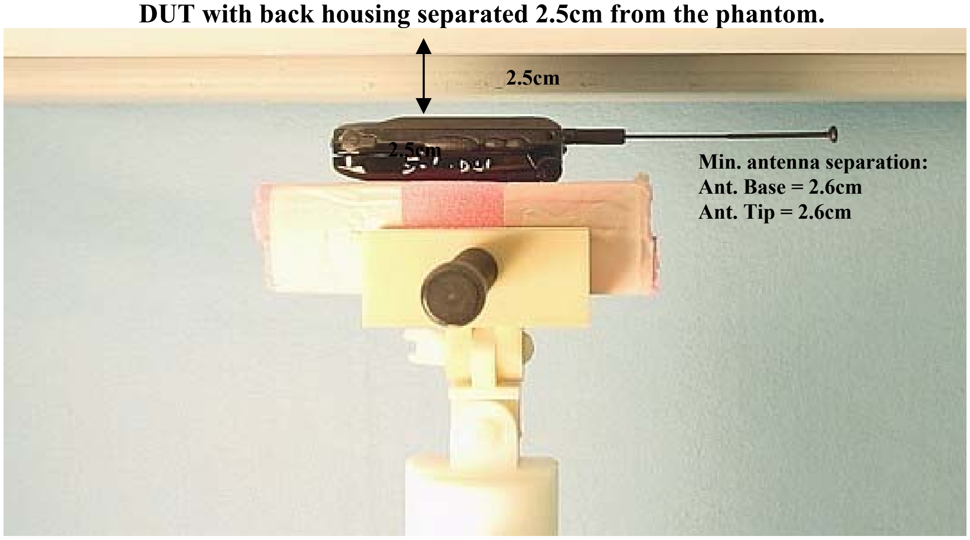

Figure 10: Robot Test System (Flat Phantom)

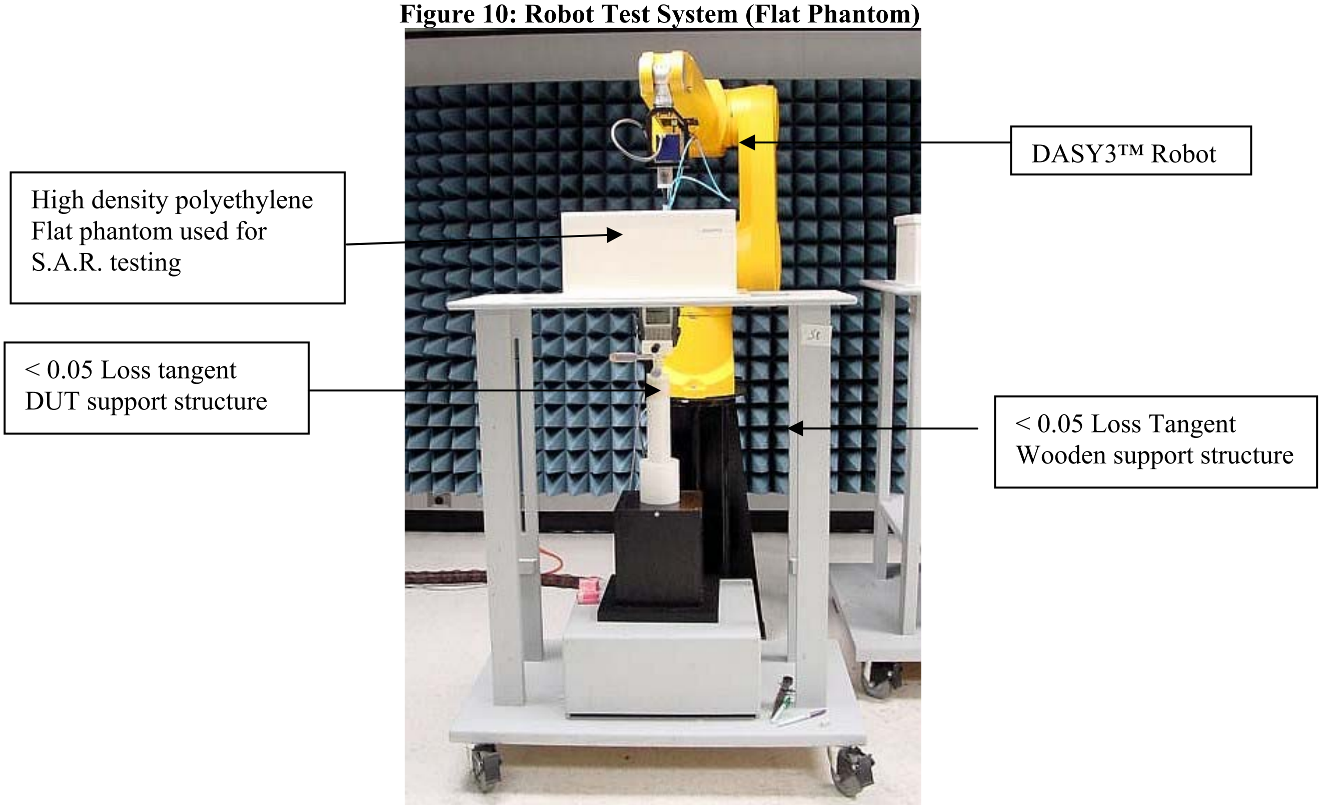

Figure 11: Robot Test System (SAM phantom)

6.0 Measurement Uncertainty

Table 1: Uncertainty Budget for Device Under Test: 75 – 3000 MHz

a	*b*	*c*	*d*	*e = f(d,k)*	*f*	*g*	*h = c x f / e*	*i = c x g / e*	*k*
Uncertainty Component	IEEE 1528 section	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	∞
Hemispherical Isotropy	E.2.2	9.6	R	1.73	0.707	0.707	3.9	3.9	∞
Boundary Effect	E.2.3	1.0	R	1.73	1	1	0.6	0.6	∞
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 - Noise	E.6.1	3.0	R	1.73	1	1	1.7	1.7	∞
RF Ambient Conditions - Reflections	E.6.1	0.0	R	1.73	1	1	0.0	0.0	∞
Probe Positioner Mech. Tolerance	E.6.2	1.0	R	1.73	1	1	0.6	0.6	∞
Probe Positioning w.r.t Phantom	E.6.3	4.0	R	1.73	1	1	2.3	2.3	∞
Max. SAR Evaluation (ext., int., avg.)	E.5	3.4	R	1.73	1	1	2.0	2.0	∞
Test sample Related									
Test Sample Positioning	E.4.2	3.4	N	1.00	1	1	3.4	3.4	29
Device Holder Uncertainty	E.4.1	3.8	N	1.00	1	1	3.8	3.8	8
SAR drift	6.6.2	5.0	R	1.73	1	1	2.9	2.9	∞
Phantom and Tissue Parameters									
Phantom Uncertainty	E.3.1	4.0	R	1.73	1	1	2.3	2.3	∞
Liquid Conductivity (target)	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity (measurement)	E.3.3	6.5	N	1.00	0.64	0.43	4.2	2.8	∞
Liquid Permittivity (target)	E.3.2	5.0	R	1.73	0.6	0.49	1.7	1.4	∞
Liquid Permittivity (measurement)	E.3.3	4.0	N	1.00	0.6	0.49	2.4	2.0	∞
Combined Standard Uncertainty			RSS				12	11	601
Expanded Uncertainty (95% CONFIDENCE LEVEL)			*k*=2				23	22	

Table 2: Uncertainty Budget for System Check: 75 – 3000 MHz

a	b	c	d	e = f(d,k)	f	g	h = c x f / e	i = c x g / e	k
Uncertainty Component	IEEE 1528 section	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	1.0	R	1.73	1	1	0.6	0.6	∞
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 - Noise	E.6.1	3.0	R	1.73	1	1	1.7	1.7	∞
RF Ambient Conditions - Reflections	E.6.1	0.0	R	1.73	1	1	0.0	0.0	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.4	R	1.73	1	1	0.2	0.2	∞
Probe Positioning w.r.t. Phantom	E.6.3	1.4	R	1.73	1	1	0.8	0.8	∞
Max. SAR Evaluation (ext., int., avg.)	E.5	3.4	R	1.73	1	1	2.0	2.0	∞
Dipole									
Dipole Axis to Liquid Distance	8, E.4.2	2.0	R	1.73	1	1	1.2	1.2	∞
Input Power and SAR Drift Measurement	8, 6.6.2	5.0	R	1.73	1	1	2.9	2.9	∞
Phantom and Tissue Parameters									
Phantom Uncertainty	E.3.1	4.0	R	1.73	1	1	2.3	2.3	∞
Liquid Conductivity (target)	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity (measurement)	E.3.3	6.0	R	1.73	0.64	0.43	2.2	1.5	∞
Liquid Permittivity (target)	E.3.2	5.0	R	1.73	0.6	0.49	1.7	1.4	∞
Liquid Permittivity (measurement)	E.3.3	6.0	R	1.73	0.6	0.49	2.1	1.7	∞
Combined Standard Uncertainty			RSS				9	8	99999
Expanded Uncertainty (95% CONFIDENCE LEVEL)			*k*=2				17	17	

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. performances for the relevant test configuration. DASY3™ S.A.R. measurement scans are provided in APPENDIX B for the highest observed S.A.R. performances.

7.1 S.A.R. results

Table1

DUT assessment at the head; Cheek Touch, Tilt, and edges and Face; 1:3 mode at head, 1:6 mode at face; 806-825MHz band											
Run Number/ SN	**Antenna Position**	**Freq. (MHz)**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**S.A.R. Drift (dB)**	**Meas. 1g-S.A.R. (mW/g)**	**Meas. 10g-S.A.R. (mW/g)**	**Max Calc. 1g-S.A.R. (mW/g)**	**Max Calc. 10g-S.A.R. (mW/g)**
Assessment at the left Ear												
CM-LEAR-R3-040524-07/364AEJ068L	In	813.5125	SNN5705B	Cheek Touch	None	None	0.712	-0.140	0.876	0.577	0.905	0.596
CM-LEAR-R3-040524-08/364AEJ068L	Out	813.5125	SNN5705B	Cheek Touch	None	None	0.711	-0.080	0.785	0.527	0.800	0.537
CM-LEAR-R3-040524-09/364AEJ068L	In	813.5125	SNN5704C	Cheek Touch	None	None	0.716	0.290	0.809	0.549	0.809	0.549
CM-LEAR-R3-040524-10/364AEJ068L	Out	813.5125	SNN5704C	Cheek Touch	None	None	0.719	0.060	0.716	0.495	0.716	0.495
CM-LEAR-R3-040524-11/364AEJ068L	In	813.5125	SNN5705B	15º tilt	None	None	0.715	-0.290	0.295	0.219	0.315	0.234
CM-LEAR-R3-040524-12/364AEJ068L	Out	813.5125	SNN5705B	15º tilt	None	None	0.717	-0.030	0.320	0.237	0.322	0.239
CM-LEAR-R3-040524-13/364AEJ068L	In	806.0125	SNN5705B	Cheek Touch	None	None	0.709	0.270	0.738	0.514	0.738	0.514
CM-LEAR-R3-040525-02/364AEJ068L	Out	806.0125	SNN5705B	Cheek Touch	None	None	0.712	-0.160	0.806	0.545	0.836	0.565
CM-LEAR-R3-040525-03/364AEJ068L	In	824.9875	SNN5705B	Cheek Touch	None	None	0.730	-0.040	0.757	0.541	0.764	0.546
CM-LEAR-R3-040525-04/364AEJ068L	Out	824.9875	SNN5705B	Cheek Touch	None	None	0.734	-0.470	0.785	0.531	0.875	0.592
Assessment at the right Ear												
CM-LEAR-R3-040526-05/364AEJ068L	In	813.5125	SNN5705B	Cheek Touch	None	None	0.719	-0.540	0.778	0.543	0.881	0.615
CM-LEAR-R3-040526-06/364AEJ068L	Out	813.5125	SNN5705B	Cheek Touch	None	None	0.716	-0.170	0.853	0.582	0.887	0.605
CM-LEAR-R3-040526-07/364AEJ068L	In	813.5125	SNN5705B	15º tilt	None	None	0.717	-0.860	0.220	0.164	0.268	0.200
CM-LEAR-R3-040526-08/364AEJ068L	Out	813.5125	SNN5705B	15º tilt	None	None	0.715	0.100	0.258	0.189	0.258	0.189
CM-LEAR-R3-040526-09/364AEJ068L	In	806.0125	SNN5705B	Cheek Touch	None	None	0.710	-0.420	0.712	0.493	0.784	0.543

CM-LEAR-R3-040527-02/364AEJ068L	Out	806.0125	SNN5705B	Cheek Touch	None	None	0.712	-0.300	0.867	0.589	0.929	0.631
CM-LEAR-R3-040527-03/364AEJ068L	In	824.9875	SNN5705B	Cheek Touch	None	None	0.734	-0.160	0.900	0.620	**0.934**	0.643
CM-LEAR-R3-040527-04/364AEJ068L	Out	824.9875	SNN5705B	Cheek Touch	None	None	0.735	-0.430	0.831	0.565	0.917	0.624
Assessment at the Face												
CM-Face-R3-040528-05/364AEJ068L	In	813.5125	SNN5705B	DUT front , Flip open 2.5cm	None	None	0.708	0.180	0.086	0.062	0.043	0.031
CM-Face-R3-040528-06/364AEJ068L	Out	813.5125	SNN5705B	DUT front Flip open 2.5cm	None	None	0.713	-0.080	0.080	0.058	0.041	0.030
CM-Face-R3-040528-07/364AEJ068L	In	813.5125	SNN5705B	DUT front Flip close 2.5cm	None	None	0.709	-0.010	0.156	0.111	0.078	0.056
CM-Face-R3-040528-08/364AEJ068L	Out	813.5125	SNN5705B	DUT front Flip close 2.5cm	None	None	0.710	-0.320	0.154	0.110	**0.083**	0.059

Table 2

DUT assessment at the head; Cheek Touch, Tilt, and edges and Face; 1:3 mode at head, 1:6 mode at face; 896-902MHz band												
Run Number/ SN	**Antenna Position**	**Freq. (MHz)**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**S.A.R. Drift (dB)**	**Meas. 1g-S.A.R. (mW/g)**	**Meas. 10g-S.A.R. (mW/g)**	**Max Calc. 1g-S.A.R. (mW/g)**	**Max Calc. 10g-S.A.R. (mW/g)**
Assessment at the left Ear												
CM-LEAR-R3-040525-05/364AEJ068L	In	899.66875	SNN5705B	Cheek Touch	None	None	0.680	-0.230	0.624	0.432	0.677	0.469
CM-LEAR-R3-040525-06/364AEJ068L	Out	899.66875	SNN5705B	Cheek Touch	None	None	0.685	-0.250	0.566	0.379	0.613	0.410
CM-LEAR-R3-040525-07/364AEJ068L	In	899.66875	SNN5704C	Cheek Touch	None	None	0.687	-0.070	0.627	0.442	0.649	0.458
CM-LEAR-R3-040525-08/364AEJ068L	Out	899.66875	SNN5704C	Cheek Touch	None	None	0.688	-0.260	0.657	0.448	0.710	0.484
CM-LEAR-R3-040525-09/364AEJ068L	In	899.66875	SNN5704C	15º tilt	None	None	0.682	0.740	0.062	0.046	0.063	0.047
CM-LEAR-R3-040525-10/364AEJ068L	Out	899.66875	SNN5704C	15º tilt	None	None	0.689	0.090	0.293	0.209	0.298	0.212
CM-LEAR-R3-040525-11/364AEJ068L	In	896.01875	SNN5704C	Cheek Touch	None	None	0.692	-0.350	0.784	0.534	**0.860**	0.586
CM-LEAR-R3-040526-02/364AEJ068L	Out	896.01875	SNN5704C	Cheek Touch	None	None	0.690	0.010	0.618	0.426	0.627	0.432
CM-LEAR-R3-040526-03/364AEJ068L	In	901.98125	SNN5704C	Cheek Touch	None	None	0.683	0.270	0.664	0.479	0.681	0.491
CM-LEAR-R3-040526-04/364AEJ068L	Out	901.98125	SNN5704C	Cheek Touch	None	None	0.687	0.560	0.532	0.377	0.542	0.384
Assessment at the right Ear												

CM-REAR-R3-040527-05/364AEJ068L	In	899.66875	SNN5704C	Cheek Touch	None	None	0.690	-0.310	0.742	0.508	0.808	0.553
CM-REAR-R3-040527-06/364AEJ068L	Out	899.66875	SNN5704C	Cheek Touch	None	None	0.692	-0.180	0.654	0.442	0.690	0.466
CM-REAR-R3-040527-07/364AEJ068L	In	899.66875	SNN5704C	15º tilt	None	None	0.683	-0.160	0.216	0.156	0.230	0.166
CM-REAR-R3-040527-08/364AEJ068L	Out	899.66875	SNN5704C	15º tilt	None	None	0.685	-0.060	0.224	0.161	0.232	0.167
CM-REAR-R3-040527-09/364AEJ068L	In	896.01875	SNN5704C	Cheek Touch	None	None	0.692	0.610	0.635	0.427	0.642	0.432
CM-REAR-R3-040527-10/364AEJ068L	Out	896.01875	SNN5704C	Cheek Touch	None	None	0.691	-0.270	0.585	0.398	0.631	0.429
CM-REAR-R3-040527-11/364AEJ068L	In	901.98125	SNN5704C	Cheek Touch	None	None	0.674	-0.160	0.784	0.525	0.845	0.566
CM-REAR-R3-040528-02/364AEJ068L	Out	901.98125	SNN5704C	Cheek Touch	None	None	0.681	-0.290	0.647	0.431	0.711	0.474
Assessment at the Face												
CM-Face-R3-040528-03/364AEJ068L	In	899.66875	SNN5704C	DUT front Flip open 2.5cm	None	None	0.680	0.150	0.078	0.054	0.040	0.028
CM-Face-R3-040528-04/364AEJ068L	Out	899.66875	SNN5704C	DUT front Flip open 2.5cm	None	None	0.681	0.170	0.071	0.050	0.037	0.026
CM-Face-R3-040528-09/364AEJ068L	In	899.66875	SNN5704C	DUT front Flip close 2.5cm	None	None	0.683	-0.110	0.125	0.088	**0.066**	0.046
CM-Face-R3-040528-10/364AEJ068L	Out	899.66875	SNN5704C	DUT front Flip close 2.5cm	None	None	0.684	-0.110	0.093	0.066	0.049	0.034

Table 3

DUT assessment at the body; against phantom, band edges, and 2.5cm separation; 81:120, 1:3, and 1:6 modes; 806-825MHz band												
Run Number/ SN	**Antenna Position**	**Freq. (MHz)**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**S.A.R. Drift (dB)**	**Meas. 1g-S.A.R. (mW/g)**	**Meas. 10g-S.A.R. (mW/g)**	**Max Calc. 1g-S.A.R. (mW/g)**	**Max Calc. 10g-S.A.R. (mW/g)**
Assessment of offered battery and carry cases (81:120 mode)												
CM-Ab-R3-040528-11/364AEJ068L	In	813.5125	SNN5705B	Against phantom	NNTN4747A	None	0.691	-0.360	0.848	0.619	0.933	0.681
CM-Ab-R3-040528-12/364AEJ068L	Out	813.5125	SNN5705B	Against phantom	NNTN4747A	None	0.691	-0.560	1.050	0.762	1.210	0.878
CM-Ab-R3-040529-02/364AEJ068L	In	813.5125	SNN5705B	Against phantom	NNTN4747A	None	0.690	-0.600	0.778	0.570	0.906	0.664
CM-Ab-R3-040529-03/364AEJ068L	Out	813.5125	SNN5705B	Against phantom	NNTN4747A	None	0.692	-0.750	1.060	0.769	1.274	0.925
CM-Ab-R3-040529-04/364AEJ068L	In	813.5125	SNN5704C	Against phantom	NNTN4747A	None	0.696	-0.010	0.932	0.676	0.940	0.681
CM-Ab-R3-040529-05/364AEJ068L	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	None	0.692	-0.780	1.190	0.861	1.441	1.042
JF-Ab-R3-040603-04/364AEJ068N	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	None	0.702	-0.840	1.200	0.867	**1.456**	1.052

Table 3 (continued)

DUT assessment at the body; against phantom, band edges, and 2.5cm separation; 81:120, 1:3, and 1:6 modes; 806-825MHz band												
Run Number/ SN	**Antenna Position**	**Freq. (MHz)**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**S.A.R. Drift (dB)**	**Meas. 1g-S.A.R. (mW/g)**	**Meas. 10g-S.A.R. (mW/g)**	**Max Calc. 1g-S.A.R. (mW/g)**	**Max Calc. 10g-S.A.R. (mW/g)**
Assessment of worst case battery, worst case carry case accessory, and offered data cable attachment (81:120 mode)												
CM-Ab-R3-040529-06/364AEJ068L	In	813.5125	SNN5704C	Against phantom	NNTN4747A	NKN6559A	0.693	-0.860	0.469	0.336	0.577	0.414
CM-Ab-R3-040529-07/364AEJ068L	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	NKN6559A	0.700	-0.670	0.864	0.609	**1.008**	0.711
CM-Ab-R3-040529-08/364AEJ068L	In	813.5125	SNN5704C	Against phantom	NNTN4747A	NKN6560A	0.694	-0.760	0.481	0.348	0.578	0.418
CM-Ab-R3-040601-02/364AEJ068L	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	NKN6560A	0.695	-0.450	0.534	0.388	0.597	0.433
Assessment of worst case battery, worst case carry case accessory, and offered audio accessories (1:3 mode)												
CM-Ab-R3-040601-03/364AEJ068L	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	NNTN4620A	0.711	-0.010	0.543	0.377	0.544	0.378
CM-Ab-R3-040601-04/364AEJ068L	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	SYN8390B	0.715	-0.400	0.353	0.250	0.387	0.274
CM-Ab-R3-040601-05/364AEJ068L	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	SYN8146C	0.716	-1.040	0.400	0.280	0.508	0.356
CM-Ab-R3-040601-06/364AEJ068L	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	NTN8496A	0.717	-0.510	0.471	0.338	0.530	0.380
CM-Ab-R3-040601-07/364AEJ068L	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	NNTN4033A	0.719	-0.270	0.513	0.372	0.546	0.396
CM-Ab-R3-040601-08/364AEJ068L	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	NTN8513B	0.715	-0.070	0.374	0.265	0.380	0.269
CM-Ab-R3-040601-09/364AEJ068L	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	SYN7875C	0.712	0.060	0.428	0.303	0.428	0.303
Assessment of worst case battery, worst case carry case accessory, and offered PTT (1:3 mode)												
CM-Ab-R3-040601-11/364AEJ068L	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	NNTN5004A	0.716	-0.110	0.510	0.361	0.523	0.370
CM-Ab-R3-040601-12/364AEJ068L	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	NNTN5005A	0.720	-0.060	0.458	0.321	0.464	0.325
JF-Ab-R3-040602-03/364AEJ068L	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	NNTN5006A	0.720	-0.070	0.562	0.398	0.571	0.404
JF-Ab-R3-040602-04/364AEJ068L	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	NNTN5330A	0.718	-0.010	0.584	0.406	**0.585**	0.407
Assessment of worst case battery, worst case body worn accessory, and offered RSM (1:6 mode)												
CM-Ab-R3-040601-10/364AEJ068L	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	NSN6066A	0.713	-0.460	0.403	0.288	0.224	0.160
Assessment of band edges using worst case test configuration from above (81:120 mode)												
JF-Ab-R3-040602-06/364AEJ068L	In	806.0125	SNN5704C	Against phantom	NNTN4747A	None	0.695	-0.530	0.712	0.522	0.810	0.594
JF-Ab-R3-040602-07/364AEJ068L	Out	806.0125	SNN5704C	Against phantom	NNTN4747A	None	0.691	-0.870	1.130	0.827	**1.399**	1.024
CM-Ab-R3-040602-09/364AEJ068L	In	824.9875	SNN5704C	Against phantom	NNTN4747A	None	0.726	-0.400	1.070	0.782	1.173	0.857
JF-Ab-R3-040602-08/364AEJ068L	Out	824.9875	SNN5704C	Against phantom	NNTN4747A	None	0.725	-0.910	0.897	0.655	1.106	0.808

Table 4

DUT assessment at the body; across the band, with worst case test configuration from 800MHz band assessment; 1:3, mode; 896-902MHz band												
Run Number/ SN	**Antenna Position**	**Freq. (MHz)**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**S.A.R. Drift (dB)**	**Meas. 1g-S.A.R. (mW/g)**	**Meas. 10g-S.A.R. (mW/g)**	**Max Calc. 1g-S.A.R. (mW/g)**	**Max Calc. 10g-S.A.R. (mW/g)**
Assessment with worst case configuration from 800MHz assessment												
CM-Ab-R3-040602-10/364AEJ068L	In	896.01875	SNN5704C	Against phantom	NNTN4747A	NNTN5330A	0.692	-0.250	0.404	0.290	**0.433**	0.311
CM-Ab-R3-040602-11/364AEJ068L	Out	896.01875	SNN5704C	Against phantom	NNTN4747A	NNTN5330A	0.695	0.050	0.400	0.277	0.403	0.279
CM-Ab-R3-040602-12/364AEJ068L	In	899.66875	SNN5704C	Against phantom	NNTN4747A	NNTN5330A	0.718	-0.160	0.346	0.246	0.359	0.255
CM-Ab-R3-040602-13/364AEJ068L	Out	899.66875	SNN5704C	Against phantom	NNTN4747A	NNTN5330A	0.690	0.120	0.392	0.271	0.398	0.275
CM-Ab-R3-040602-14/364AEJ068L	In	901.98125	SNN5704C	Against phantom	NNTN4747A	NNTN5330A	0.688	-0.070	0.358	0.256	0.370	0.265
CM-Ab-R3-040602-15/364AEJ068L	Out	901.98125	SNN5704C	Against phantom	NNTN4747A	NNTN5330A	0.685	0.020	0.410	0.286	0.419	0.292
Assessment at 2.5cm using the worst case frequency and offered battery from both 800Mhz and 900Mhz assessments												
JF-Ab-R3-040603-02/364AEJ068L	Out	813.5125	SNN5704C	DUT Back 2.5cm	None	None	0.698	-0.860	0.968	0.710	**1.183**	0.868
JF-Ab-R3-040603-03/364AEJ068L	Out	813.5125	SNN5704C	DUT Front 2.5cm	None	None	0.695	-0.740	0.600	0.443	0.717	0.529

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))* DC%

P_{max} = Maximum Power (W)

P_{int} = Initial Power (W)

Pdrift = DASY drift results (dB)

SAR_{meas}. = Measured 1 gram averaged peak S.A.R. (mW/g)

DC % = Transmission mode duty cycle in % where applicable

Note that the use of the above formula should consider the relationship between the initial power, max power, and drift. Also, a 50% duty cycle is applied for PTT operation.

8.0 Conclusion

The highest Operational Maximum Calculated 1-gram and 10-gram average S.A.R. values found for FCC ID: AZ489FT5833 model H73XAN6RRAN/NUF3754A00A.

At the Body: **1-g Avg. = 1.46 mW/g; 10-g Avg. = 1.05 mW/g**
At the Face: **1-g Avg. = 0.08 mW/g; 10-g Avg. = 0.06 mW/g**
At the Head: **1-g Avg. = 0.93 mW/g; 10-g Avg. = 0.64 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).