


**MOTOROLA**

**MFRL EME Test Laboratory**

 8000 West Sunrise Blvd  
 Fort Lauderdale, FL. 33322

S.A.R. EME Compliance Test Report  
Part 1 of 3

<b>Attention:</b>	FCC
<b>Date of Report:</b>	March 19, 2004
<b>Report Revision:</b>	Rev. B
<b>Manufacturer:</b>	Motorola South – ARAD Israel
<b>Product Description:</b>	Enhanced Power Pad w/ GPRS: 0.631W GSM800, 0.809W for PCS1900; TDMA: 1:8 duty cycle, GMSK modulation; Bluetooth: 1mW, Frequency Hopping Spread Spectrum (FHSS)
<b>FCC ID:</b>	<b>AZ489FT7008</b>
<b>Device Model:</b>	F4421A
<b>Test Period:</b>	3/10/04-3/15/04
<b>EME Tech:</b>	Clint Miller
<b>Responsible Engineer:</b>	Kim Uong (Lead EME Engineer)
<b>Author:</b>	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

3/19/04

---

 Ken Enger  
 Senior Resource Manager, Product Safety and EME Director

---

 Date Approved

**Note: This report shall not be reproduced without written approval from an officially designated representative of the Motorola EME Laboratory.**

# TABLE OF CONTENTS

## Part 1 of 3

- 1.0 Introduction
- 2.0 Reference Standards and Guidelines
- 3.0 Description of Test Sample
  - 3.1 Test Signal
  - 3.2 Test Output Power
- 4.0 Description of Test Equipment
  - 4.1 Description of S.A.R Measurement System
  - 4.2 Description of Phantom
    - 4.2.1 Flat Phantom
    - 4.2.2 SAM phantom
  - 4.3 Simulated Tissue Properties
    - 4.3.1 Type of Simulated Tissue
    - 4.3.2 Simulated Tissue Composition
  - 4.4 Test condition
- 5.0 Description of Test Procedure
  - 5.1 Device Test Positions
    - 5.1.1 Abdomen
    - 5.1.2 Head
    - 5.1.3 Face
  - 5.2 Test Position Photographs
  - 5.3 Probe Scan Procedures
- 6.0 Measurement Uncertainty
- 7.0 S.A.R. Test Results
  - 7.1 S.A.R. results
  - 7.2 Peak S.A.R. location
  - 7.3 Highest S.A.R. results calculation methodology
- 8.0 Conclusion

## Part 2 of 3

- Appendix A: Power Slump Data/Shortened scan
- Appendix B: Data Results
- Appendix C: Dipole System Performance Check Results

## Part 3 of 3

- Appendix D: Calibration Certificates
- Appendix E: Illustration of Body-worn Accessories
- Appendix F: Accessories and options test status and separation distances

## REVISION HISTORY

Date	Revision	Comments
10/20/03	O	Release of Initial Prototype Results
3/17/04	A	Release of Final Pilot Results
3/19/04	B	Revised exposure classification language in sections 1.0, 3.0, 7.1, and 8.0

## **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 F4421A, FCC ID: AZ489FT7008.

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 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: AZ489FT7008 is a hand held data terminal equipped with GSM/GPRS, and Bluetooth radio modems. The GSM/GPRS radio modem operates within the GSM800, and PCS bands. The maximum transmit duty cycle is 12.5% using TDMA 1:8 (577 micro seconds out of 4.165 milliseconds). The GSM/GPRS modem is used for packet switching data applications. The TDMA protocol is used by enabling the radio modem to transmit its' data information only in the allocated slot 1 out of 8. The maximum transmit duty cycle is imposed by the Bluetooth standard: for single-slot operation the Bluetooth device transmits 366 micro seconds out of 625 micro seconds. The Bluetooth transmitter only transmits simultaneously with the GSM co-located transmitter. This device is used for data acquisition. While this product will be marketed to and used by employees solely for work related operations such as data acquisition and transmission for package/parcel/mail shipments by commercial freight carriers, public agencies and utilities, it also meets the General Population/Uncontrolled limits. User training is the responsibility of these agencies, and they are expected to employ the usage instructions, safety information and operational cautions set forth in the user's manual through instructional sessions or other means. Motorola also makes available to its customers training classes on the proper use of two-way radios and wireless data devices.

FCC ID: AZ489FT7008 operates at 824.2-848.8 MHz in the GSM800 band, 1850.2 - 1909.8 MHz in the PCS1900 band, and 2.402-2.48 GHz for Bluetooth in the IEEE 802.11 band. The rated power is 0.631W for GSM800, 0.809W for PCS1900, and 1mW for the Bluetooth transmitter. The maximum output is 0.757W for the GSM800, 0.971W for PCS1900, and 1.0mW for the Bluetooth (FHSS).

FCC ID: AZ489FT7008 is offered with the following options and accessories:

**Antenna**

8587526V02 Internal ½ and ¼ wave dual-band antenna: GSM 824.2-848.8MHz, 0.5dBi; PCS1900 1850.2-1909.8 MHz; 2dBi.

8589488U01 Internal Monopole ¼ wave antenna, 2.402-2.48 GHz; 2.5 dBi

**Batteries**

FTN6032B 7.2V/1800mAh Lithium Ion Rechargeable Battery

**Body-worn Accessories**

FHN6498A Holster

**3.1 Test Signal**

**Test Signal mode:**

Test Mode	<input checked="" type="checkbox"/>	Base Station	<input type="checkbox"/>	Simulator	<input type="checkbox"/>
-----------	-------------------------------------	--------------	--------------------------	-----------	--------------------------

**Transmission Mode:**

CW	<input type="checkbox"/>
Native Transmission	<input checked="" type="checkbox"/>
TDMA: 1:8	<input checked="" type="checkbox"/>
Other:	<input type="checkbox"/>

**3.2 Test Output Power**

The DASY3™ system’s S.A.R. drift function was used to determine the power slump characteristic of the device. A characteristic power slump table based on 50 ohms measurements is provided in APPENDIX A using the offered battery.

## 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 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/SN1545. 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. Result when normalized to 1W (mW/g)	Reference S.A.R @ 1W (mW/g)	Test Date(s)
1545	FCC Body	8/28/03	D835V2/426	10.48 +/- 0.06	10.17 +/- 10%	3/11/04 & 3/12/04
1545	FCC Body	8/28/03	D1800V2/278	38.68 +/- 0.52	36.69 +/- 10%	3/10/04, 3/12/04, 3/15/04

Note: See APPENDIX C for an explanation of the reference S.A.R. targets stated above.

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 high-density polyethylene (HDPE) with a dielectric constant of 2.26 and a loss tangent of less than 0.00031. Two phantoms were used to assess compliance. The phantoms were mounted on wooden supporting structures having loss tangents of < 0.05. The structures both have 68.58cm x 20.32cm openings at their respective centers to allow positioning the DUT relative to the phantom's surface. The flat phantom dimensions used for S.A.R. performance assessment at the body were: Length=80cm, Width=30cm, Height=20cm, Surface thickness=0.2cm and Length=40cm, Width=30cm, Height=20cm, surface thickness=0.2cm.

#### 4.2.2 SAM Phantom

SAM Phantom assessment was not applicable for this filing.

### 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	Torso/hand

#### 4.3.2 Simulated Tissue Composition

	Tissue Ingredients (%)					
	835 MHz		1800 MHz		NA	
	Head	Body	Head	Body	Head	Body
Sugar	NA	44.9	NA	NA	NA	NA
DGBE (Glycol)	NA	NA	NA	30.8	NA	NA
De ionized -Water	NA	53.06	NA	68.8	NA	NA
Salt	NA	0.94	NA	0.40	NA	NA
HEC	NA	1	NA	NA	NA	NA
Bact.	NA	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.

#### Tissue Parameters (Target/Measured)

FCC Body				
Frequency (MHz)	Di-electric Constant Target	Di-electric Constant Meas. (Range)	Conductivity Target S/m	Conductivity Meas. (Range) S/m
835	55.2	53.0-53.2	0.97	0.97-0.97
1800	53.3	53.6-55.2	1.52	1.50-1.51

#### 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: 21.1-22.8°C Avg. 22.04°C
Relative Humidity	30 - 70 %	Range: 40.2-52.6 % Avg. 44.71%
Tissue Temperature	NA	Range: 19.3-20.7°C Avg. 20.0°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. All assessments were done using a flat phantom containing applicable FCC body tissue simulant and with the DUT in TDMA 1:8 mode. The DUT assessment was based on the test configurations that exhibited the highest S.A.R performance from the prototype assessment previously reported.

##### **DUT assessment with and with out the offered carry case accessory in the PCS band:**

The DUT was tested at the center frequency of the band, with the offered carry case accessory against the phantom.

The DUT was tested at the center frequency of the band, with the bottom side towards the phantom, without the offered carry case accessory (Typical user position).

##### **DUT assessment of typical hand positions in the PCS band:**

The DUT was tested at the center frequency of the band, with the right side, left side, and backside of the DUT against the phantom to assess performance at the hand.

**DUT assessment of by-stander exposure in the PCS band:**

The DUT was tested at the center frequency of the band, with the topside separated 2.5cm from the phantom.

**DUT assessment at the band edges in the PCS band:**

The DUT was assessed at the PCS band edges using the worst-case configuration from the assessments above.

**DUT assessment with and without the offered carry case accessory in the GSM band:**

The DUT was tested at the center frequency of the band, with the offered carry case accessory against the phantom.

The DUT was tested at the center frequency of the band, with the bottom side towards the phantom, without the offered carry case accessory (Typical user position).

**DUT assessment of typical hand positions in the GSM band:**

The DUT was tested at the center frequency of the band, with the right side, left side, and backside of the DUT against the phantom, to assess performance at the hand.

**DUT assessment of by-stander exposure in the GSM band:**

The DUT was tested at the center frequency of the band with the topside separated 2.5cm from the phantom.

**DUT assessment at the band edges in the GSM band:**

The DUT was assessed at the band edges of the GSM band using the worst-case configuration from the assessments above.

**DUT assessment with both co-located Bluetooth and GSM transmitters on:**

The DUT was assessed using the worst-case test configuration from the GSM band assessment above, with both co-located transmitters on simultaneously.

**Shortened scan assessment:**

A shortened scan was performed using the over-all worst-case test configuration from both the GSM and PCS bands.

## **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 the backside, bottom side, right side, and left side of the DUT were centered against the flat phantom. The DUT was positioned with the topside separated 2.5cm from the phantom. The DUT was positioned with the offered carry case against the phantom.

### 5.1.2 Head

Assessment at the head was not applicable for this filing

### 5.1.3 Face

Assessment at the face was not applicable for this filing

## 5.2 Test Position Photographs

**Figure 1: Highest S.A.R. Test Position  
DUT with right side against the phantom (Hand assessment)**



< 0.05 Loss tangent  
Wooden Support  
Structure and Opening

< 0.05 Loss  
Tangent DUT  
support structure

DUT with back against  
the flat phantom

**Figure 2. DUT left side against the phantom (Hand assessment)**



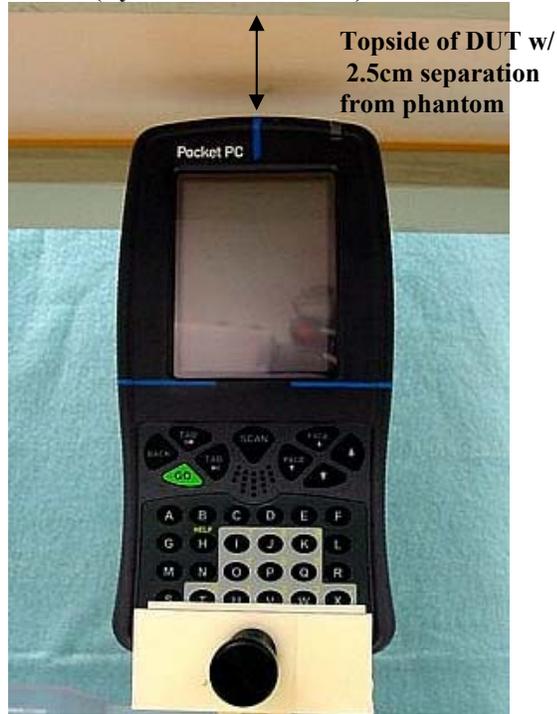
**Figure 3. DUT back against the phantom (Hand assessment)**



**Figure 4. DUT with bottom side against the phantom.  
(User Body Assessment)**



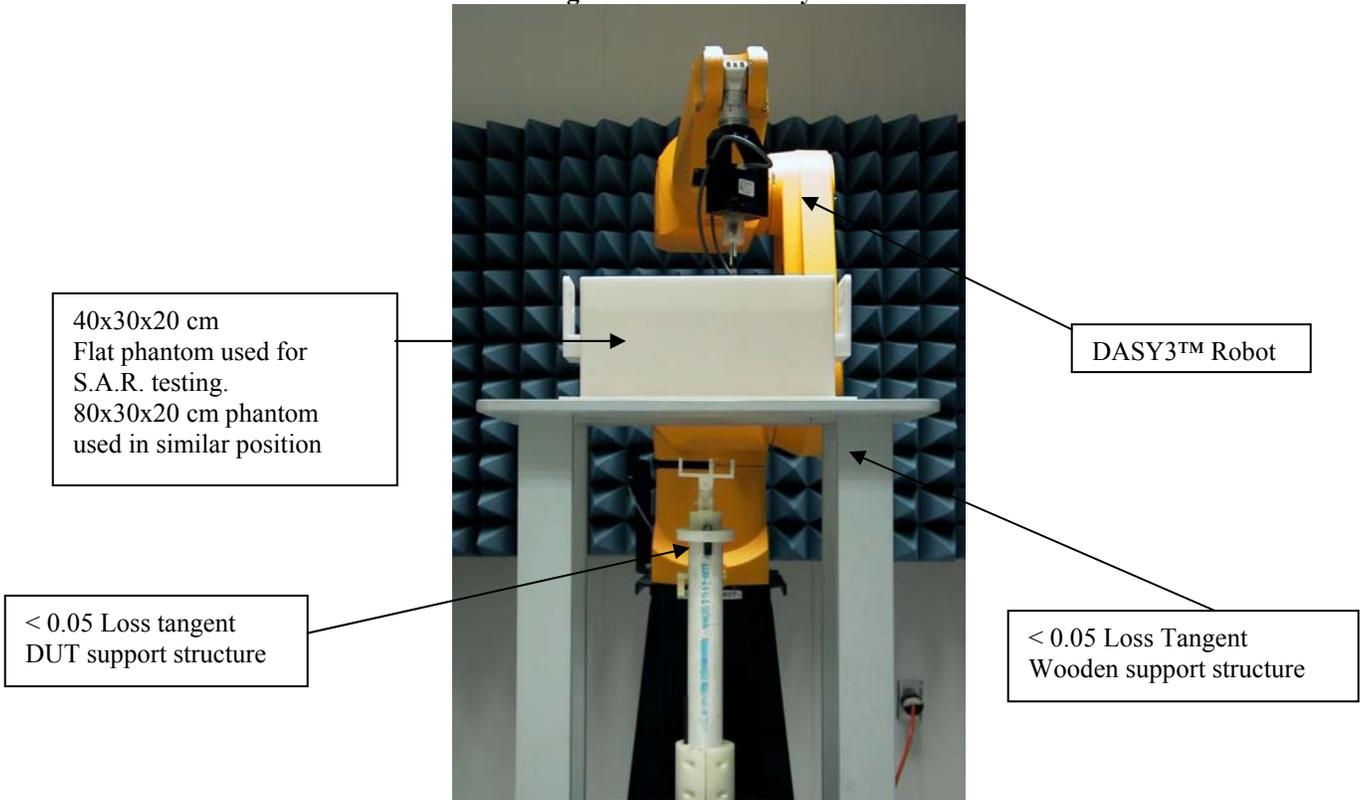
**Figure 5. DUT w/ topside separated 2.5cm from phantom  
(Bystander Assessment)**



**Figure 6. DUT w/ carry case model FHN6498A against the phantom  
(Body worn accessory Assessment)**



**Figure 7: Robot Test System**



### 5.3 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.

## 6.0 Measurement Uncertainty

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

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e = f(d,k)</i>	<i>f</i>	<i>g</i>	<i>h =</i>	<i>i =</i>	<i>k</i>
							<i>c x f / e</i>	<i>c x g / e</i>	
Uncertainty Component	IEEE 1528 section	Tol.	Prob	Div.	<i>c<sub>i</sub></i>	<i>c<sub>i</sub></i>	1 g	10 g	<i>v<sub>i</sub></i>
		(± %)	Dist		(1 g)	(10 g)	<i>u<sub>i</sub></i>	<i>u<sub>i</sub></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)			<i>k=2</i>				23	22	

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

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e = f(d,k)</i>	<i>f</i>	<i>g</i>	<i>h =</i>		<i>k</i>
							<i>c x f / e</i>	<i>c x g / e</i>	
Uncertainty Component	IEEE 1528 section	Tol.	Prob.	Div.	<i>c<sub>i</sub></i>	<i>c<sub>i</sub></i>	1 g	10 g	<i>v<sub>i</sub></i>
		(± %)	Dist.		(1 g)	(10 g)	<i>u<sub>i</sub></i> (±%)	<i>u<sub>i</sub></i> (±%)	
<b>Measurement System</b>									
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	∞
<b>Dipole</b>									
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	∞
<b>Phantom and Tissue Parameters</b>									
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	∞
<b>Combined Standard Uncertainty</b>			RSS				9	8	99999
<b>Expanded Uncertainty (95% CONFIDENCE LEVEL)</b>			<i>k</i> =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) *c<sub>i</sub>* - sensitivity coefficient that should be applied to convert the variability of the uncertainty component into a variability of SAR.
- g) *u<sub>i</sub>* – SAR uncertainty
- h) *v<sub>i</sub>* - 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.

Note: The Bluetooth transmitter only transmits simultaneously with the GSM co-located transmitter and does not transmit simultaneously with the PCS co-located transmitters.

## 7.1 S.A.R. results

**Note:** Measurements at the left side, right side, and back side were performed to the applicable exposure limits for the hand (4.0mW/g). Measurements at the top and bottom sides were performed to the applicable exposure limit for the body. Measurements at the topside are to assess by-stander exposure performance.

Compliance Assessment at the body and hands; TDMA 1:8 mode												
Run Number/ SN	Freq. (MHz)	Antenna/ Position	Battery	Test position	Body- worn Acc.	Additional attachments	Initial Power (W)	S.A.R. Drift (dB)	Measured 1g-S.A.R. (mW/g)	Measured 10g-S.A.R. (mW/g)	Max Calc. 1g-S.A.R. (mW/g)	Max Calc. 10g-S.A.R. (mW/g)
<b>DUT assessment with and with out the offered carry case in the PCS band (Typical user positions)</b>												
CM-R2-040310-14/PNT3521372	1880	Fixed Internal	FTN6032B	Against phantom	FHN6498A	None	0.959	-0.11	0.0093	0.0057	0.01	0.01
CM-R2-040312-06/PNT3521372	1880	Fixed Internal	FTN6032B	Bottom Side Against phantom	None	None	0.959	0.02	0.0336	0.0194	<b>0.03</b>	0.02
<b>DUT assessment of typical hand positions in the PCS band</b>												
CM-R2-040310-13/PNT3521372	1880	Fixed Internal	FTN6032B	Right Side Against phantom	None	None	0.959	-0.22	0.643	0.320	<b>0.68</b>	0.34
CM-R2-040312-07/PNT3521372	1880	Fixed Internal	FTN6032B	Back Side Against phantom	None	None	0.959	-0.18	0.3710	0.2200	0.39	0.23
CM-R2-040312-08/PNT3521372	1880	Fixed Internal	FTN6032B	Left Side Against phantom	None	None	0.959	-0.07	0.0292	0.0190	0.03	0.02
<b>DUT assessment of by-stander exposure in the PCS band</b>												
CM-R2-040312-09/PNT3521372	1880	Fixed Internal	FTN6032B	DUT top side 2.5cm separation	None	None	0.959	0.17	0.0262	0.0171	<b>0.03</b>	0.02
<b>DUT assessment at the band edges in the PCS band</b>												
KU-R2-040315-05/PNT3521372	1850.2	Fixed Internal	FTN6032B	Right Side Against phantom	None	None	0.964	0.050	1.060	0.526	<b>1.07</b>	0.53
KU-R2-040315-04/PNT3521372	1909.8	Fixed Internal	FTN6032B	Right Side Against phantom	None	None	0.953	0.020	0.403	0.199	0.41	0.20

**Compliance Assessment at the body and hands; TDMA 1:8 mode**

Run Number/ SN	Freq. (MHz)	Antenna/ Position	Battery	Test position	Body- worn Acc.	Additional attachments	Initial Power (W)	S.A.R. Drift (dB)	Measured 1g-S.A.R. (mW/g)	Measured 10g-S.A.R. (mW/g)	Max Calc. 1g-S.A.R. (mW/g)	Max Calc. 10g-S.A.R. (mW/g)
<b>DUT assessment with and without the offered carry case accessory in the GSM band (Typical user positions)</b>												
CM-R2-040311-02/PNT3521372	836.6	Fixed internal	FTN6032B	Against phantom	FHN6498A	None	0.738	0.19	0.0322	0.0246	<b>0.03</b>	0.03
CM-R2-040311-03/PNT3521372	836.6	Fixed internal	FTN6032B	Bottom Side Against phantom	None	None	0.738	-0.06	0.0209	0.0150	0.02	0.02
<b>DUT assessment of typical hand positions in the GSM band</b>												
CM-R2-040311-04/PNT3521372	836.6	Fixed internal	FTN6032B	Back Side Against phantom	None	None	0.738	-0.11	0.1560	0.1060	0.16	0.11
CM-R2-040311-05/PNT3521372	836.6	Fixed internal	FTN6032B	Right Side Against phantom	None	None	0.738	0.00	0.2600	0.1640	<b>0.27</b>	0.17
CM-R2-040311-06/PNT3521372	836.6	Fixed internal	FTN6032B	Left Side Against phantom	None	None	0.738	0.00	0.0567	0.0383	0.06	0.04
<b>DUT assessment of by-stander exposure in the GSM band</b>												
CM-R2-040311-07/PNT3521372	836.6	Fixed internal	FTN6032B	DUT top side 2.5cm separation	None	None	0.738	0.03	0.0296	0.0216	<b>0.03</b>	0.02
<b>DUT assessment at the band edges in the GSM band</b>												
KU-R2-040312-02/PNT3521372	824.2	Fixed internal	FTN6032B	Right Side Against phantom	None	None	0.736	0.01	0.2880	0.1770	<b>0.30</b>	0.18
KU-R2-040312-03/PNT3521372	848.8	Fixed internal	FTN6032B	Right Side Against phantom	None	None	0.740	0.05	0.2690	0.1680	0.28	0.17
<b>DUT assessment with both co-located Bluetooth and GSM transmitters on</b>												
CM-R2-040312-04/PNT3521372	824.2	Fixed Internal	FTN6032B	Right Side Against phantom	None	None	0.736	-0.090	0.2750	0.1710	<b>0.29</b>	0.18

## 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. value is determined by scaling the measured S.A.R. to account for power output slump below the reported maximum power during the S.A.R. measurements. For this device the Maximum Calculated 1-gram and 10-gram averaged peak S.A.R. is calculated using the following formula:

$$\text{Max. Calc. 1-g Avg. SAR} = ((\text{S.A.R. meas.} / (10^{(\text{Pdrift}/10)}) * (\text{Pmax}/\text{Pint})) * \text{DC}\%)$$

$P_{\text{max}}$  = Maximum Power (W)

$P_{\text{int}}$  = Initial Power (W)

Pdrift = DASY drift results (dB)

SAR<sub>meas.</sub> = Measured 1 gram averaged peak S.A.R. (mW/g)

DC % = Transmission mode duty cycle in % where applicable

Note: The relationship between max power, initial power, and SAR drift should be considered when applying the above formula for conservative results.

### 8.0 Conclusion

The highest Operational Maximum Calculated 1-gram and 10-gram average S.A.R. values found for FCC ID: AZ489FT7008

**At the body:**            **1-g Avg. = 1.07mW/g; 10-g Avg. = 0.53mW/g**

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