# ANNEX A Graph Results

### ΒT

Measurement Report for Device, FRONT, ISM 2.4 GHz Band, UID 10032 CAA, Channel 78 (2480.000MHz)

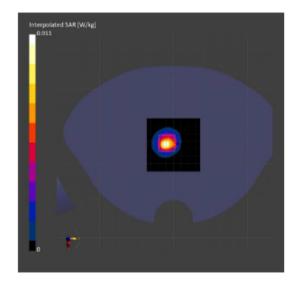
#### **Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat,	FRONT,	ISM 2.4	Bluetooth,	2480.000,	7.77	1.88	40.3
-	0.00	GHz Band	10032-CAA	78			

#### Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) -	H700-6000M -,	EX3DV4 - SN7548, 2025-01-06	DAE4 Sn1556, 2025-01-07
2134			

Scan Setup			Measurement Result	5	
	Area Scan	Zoom Scan		Area Scan	Zoom Scan
Grid Extents [mm]	72.0 x 72.0	30.0 x 30.0 x 30.0	Date	2025-03-21	2025-03-21
Grid Steps [mm]	12.0 × 12.0	5.0 x 5.0 x 5.0	psSAR1g [W/kg]	0.184	0.241
Sensor Surface [mm]	3.0	1.4	psSAR10g [W/kg]	0.076	0.073
Graded Grid	N/A	Yes	Power Drift [dB]	-0.04	-0.03
Grading Ratio	N/A	1.5	Power Scaling	Disabled	Disabled
AIA	Y	N/A	Scaling Factor [dB]		
Surface Detection	VMS + 6p	VMS + 6p	TSL Correction	No correction	No correction
Scan Method	Measured	Measured	M2/M1 [%]		23.8
			Dist 3dB Peak [mm]		4.2



# ANNEX B System Verification Results

### 2450 MHz

#### 2450MHz

#### **Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	BACK, 5.00	CD2450	CW, 0	2450.000, 50	7.77	1.85	40.4

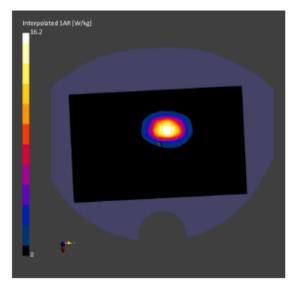
#### Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt)	H700-6000M -,	EX3DV4 - SN7548, 2025-01-06	DAE4 Sn1556, 2025-01-07
- 2134			

Measurement Results

#### Scan Setup

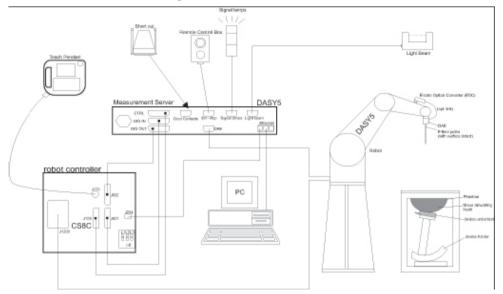
	Area Scan	Zoom Scan		Area Scan	Zoom Scan
Grid Extents [mm]	120.0 × 192.0	30.0 × 30.0 × 30.0	Date	2025-03-21	2025-03-21
Grid Steps [mm]	12.0 × 12.0	5.0 x 5.0 x 1.5	psSAR1g [W/kg]	13.18	13.24
Sensor Surface	3.0	1.4	psSAR10g [W/kg]	6.16	6.23
[mm]			Power Drift [dB]	0.11	0.08
Graded Grid	N/A	Yes	Power Scaling	Disabled	Disabled
Grading Ratio	N/A	1.5	Scaling Factor [dB]		
MAIA	N/A	N/A	TSL Correction	No correction	No correction
Surface Detection	VMS + 6p	VMS + 6p	M2/M1 [%]		79.3
Scan Method	Measured	Measured	Dist 3dB Peak [mm]		8.6



# ANNEX C SAR Measurement Setup

#### C.1 Measurement Set-up

The Dasy5 or DASY6/8 system for performing compliance tests is illustrated above graphically. This system consists of the following items:



Picture C.1SAR Lab Test Measurement Set-up

- A standard high precision 6-axis robot (StäubliTX=RX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP and the DASY5 or DASY6 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as
- warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

## C.2 Dasy5/6/8 E-field Probe System

The SAR measurements were conducted with the dosimetric probe designed in the classical triangular configuration and optimized for dosimetric evaluation. The probe is constructed using the thick film technique; with printed resistive lines on ceramic substrates. The probe is equipped with an optical multifiber line ending at the front of the probe tip. It is connected to the EOC box on the robot arm and provides an automatic detection of the phantom surface. Half of the fibers are connected to a pulsed infrared transmitter, the other half to a synchronized receiver. As the probe approaches the surface, the reflection from the surface produces a coupling from the transmitting to the receiving fibers. This reflection increases first during the approach, reaches maximum and then decreases. If the probe is flatly touching the surface, the coupling is zero. The distance of the coupling maximum to the surface is independent of the surface reflectivity and largely independent of the surface to probe angle. The DASY5 or DASY6 software reads the reflection durning a software approach and looks for the maximum using 2<sup>nd</sup> ord curve fitting. The approach is stopped at reaching the maximum.

#### **Probe Specifications:**

Tione opeomor	
Model:	ES3DV3, EX3DV4
Frequency	10MHz — 6.0GHz(EX3DV4)
Range:	10MHz — 4GHz(ES3DV3)
Calibration:	In head and body simulating tissue at
	Frequencies from 835 up to 5800MHz
Linearity:	± 0.2 dB(30 MHz to 6 GHz) for EX3DV4
± 0.2 dB(30 MHz	to 4 GHz) for ES3DV3
DynamicRange:	10 mW/kg — 100W/kg
Probe Length:	330 mm
Probe Tip	
Length:	20 mm
Body Diameter:	12 mm
Tip Diameter:	2.5 mm (3.9 mm for ES3DV3)
Tip-Center:	1 mm (2.0mm for ES3DV3)
Application:SAR	R Dosimetry Testing
	Compliance tests of mobile phones
	Dosimetry in strong gradient fields
Picture C.3E-fiel	d Probe



Picture C.2Near-field Probe



#### C.3 E-field Probe Calibration

Each E-Probe/Probe Amplifier combination has unique calibration parameters. A TEM cell calibration procedure is conducted to determine the proper amplifier settings to enter in the probe parameters. The amplifier settings are determined for a given frequency by subjecting the probe to a known E-field density (1 mW/cm<sup>2</sup>) using an RF Signal generator, TEM cell, and RF Power Meter.

The free space E-field from amplified probe outputs is determined in a test chamber. This calibration can be performed in a TEM cell if the frequency is below 1 GHz and inn a waveguide or

other methodologies above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is then rotated 360 degrees until the three channels show the maximum reading. The power density readings equates to 1 mW/cm<sup>2</sup>.

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated brain tissue. The E-field in the medium correlates with the temperature rise in the dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

$$SAR = C \frac{\Delta T}{\Delta t}$$

Where:

∆t = Exposure time (30 seconds), C = Heat capacity of tissue (brain or muscle),

 $\Delta T$  = Temperature increase due to RF exposure.

$$SAR = \frac{\left|E\right|^2 \cdot \sigma}{\rho}$$

Where:

 $\sigma$  = Simulated tissue conductivity,

 $\rho$  = Tissue density (kg/m<sup>3</sup>).

## C.4 Other Test Equipment

#### C.4.1 Data Acquisition Electronics(DAE)

The data acquisition electronics consist of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder with a control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information, as well as an optical uplink for commands and the clock.

The mechanical probe mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection.

The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.



PictureC.4: DAE

## C.4.2 Robot

The SPEAG DASY system uses the high precision robots (DASY5: RX160L) type from Stäubli SA (France). For the 6-axis controller system, the robot controller version from Stäubli is used. The Stäubli robot series have many features that are important for our application:

- High precision (repeatability 0.02mm)
- High reliability (industrial design)
- > Low maintenance costs (virtually maintenance free due to direct drive gears; no belt drives)
- > Jerk-free straight movements (brushless synchron motors; no stepper motors)
- Low ELF interference (motor control fields shielded via the closed metallic construction shields)



Picture C.5 DASY

#### C.4.3 Measurement Server

The Measurement server is based on a PC/104 CPU broad with CPU (DASY5: 400 MHz, Intel Celeron), chipdisk (DASY5: 128MB), RAM DASY5: 128MB). The necessary circuits for communication with the DAE electronic box, as well as the 16 bit AD converter system for optical detection and digital I/O interface are contained on the DASY I/O broad, which is directly connected to the PC/104 bus of the CPU broad.

The measurement server performs all real-time data evaluation of field measurements and surface detection, controls robot movements and handles safety operation. The PC operating system cannot interfere with these time critical processes. All connections are supervised by a watchdog, and disconnection of any of the cables to the measurement server will automatically disarm the robot and disable all program-controlled robot movements. Furthermore, the measurement server is equipped with an expansion port which is reserved for future applications. Please note that this expansion port does not have a standardized pinout, and therefore only devices provided by

SPEAG can be any other supplier the measurement



connected. Devices from could seriously damage server.

#### Picture C.6 Server for DASY 5

#### C.4.4 Device Holder for Phantom

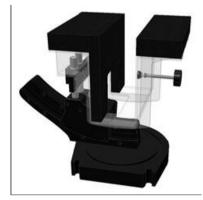
The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5mm distance, a positioning uncertainty of  $\pm 0.5$ mm would produce a SAR uncertainty of  $\pm 20\%$ . Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions in which the devices must be measured are defined by the standards.

The DASY device holder is designed to cope with the different positions given in the standard. It has two scales for device rotation (with respect to the body axis) and device inclination (with respect to the line between the ear reference points). The rotation centers for both scales are the ear reference point (ERP). Thus the device needs no repositioning when changing the angles. The DASY device holder is constructed of low-loss POM material having the following dielectric parameters: relative permittivity  $\ell = 3$  and loss tangent  $\delta = 0.02$ . The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered. <Laptop Extension Kit>

The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the Mounting Device in place of the phone positioner. The extension is fully compatible with the Twin-SAM and ELI phantoms.



**Picture C7-1: Device Holder** 



Picture C.7-2: Laptop Extension Kit

#### C.4.5 Phantom

The SAM Twin Phantom V4.0 is constructed of a fiberglass shell integrated in a table. The shape of the shell is based on data from an anatomical study designed to

Represent the 90<sup>th</sup> percentile of the population. The phantom enables the dissymmetric evaluation of SAR for both left and right handed handset usage, as well as body-worn usage using the flat phantom region. Reference markings on the Phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points in the robot. The shell

phantom has a 2mm shell thickness (except the ear region where shell thickness increases to 6 mm).

Shell Thickness:2±0. 2 mmFilling Volume:Approx. 25 litersDimensions:810 x 1000 x 500 mm (H x L x W)Available:Special

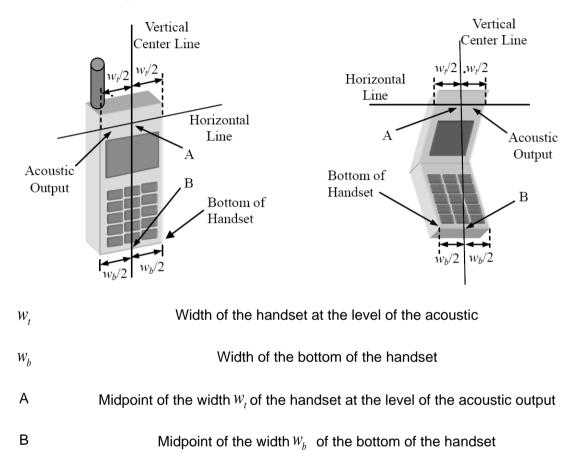


Picture C.8: SAM Twin Phantom

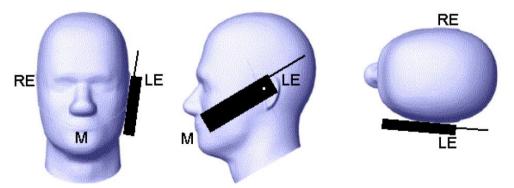
## ANNEX D Position of the wireless device in relation to the phantom

#### **D.1 General considerations**

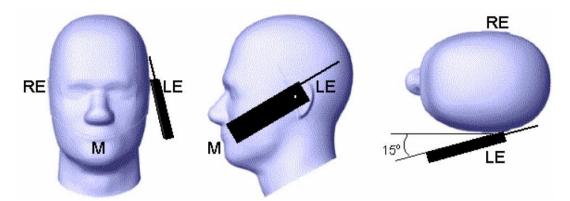
This standard specifies two handset test positions against the head phantom – the "cheek" position and the "tilt" position.



Picture D.1-a Typical "fixed" case handset Picture D.1-b Typical "clam-shell" case handset



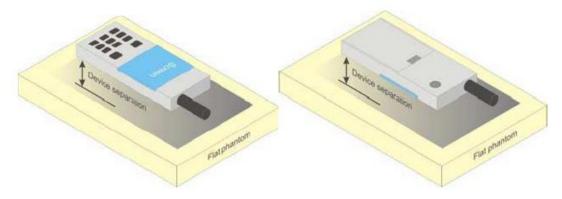
Picture D.2 Cheek position of the wireless device on the left side of SAM



Picture D.3 Tilt position of the wireless device on the left side of SAM

#### D.2 Body-worn device

A typical example of a body-worn device is a mobile phone, wireless enabled PDA or other battery operated wireless device with the ability to transmit while mounted on a person's body using a carry accessory approved by the wireless device manufacturer.

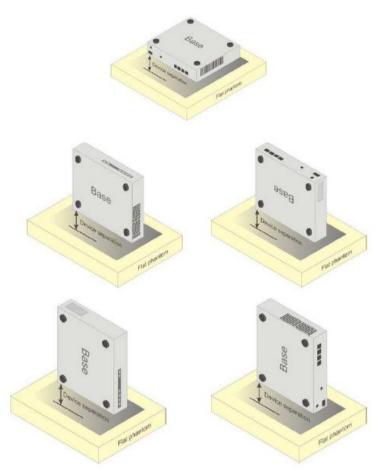


Picture D.4Test positions for body-worn devices

## D.3 Desktop device

A typical example of a desktop device is a wireless enabled desktop computer placed on a table or desk when used.

The DUT shall be positioned at the distance and in the orientation to the phantom that corresponds to the intended use as specified by the manufacturer in the user instructions. For devices that employ an external antenna with variable positions, tests shall be performed for all antenna positions specified. Picture8.5 show positions for desktop device SAR tests. If the intended use is not specified, the device shall be tested directly against the flat phantom.



Picture D.5 Test positions for desktop devices



D.4 DUT Setup Photos

Picture D.6

# ANNEX E Equivalent Media Recipes

The liquid used for the frequency range of 800-3000 MHz consisted of water, sugar, salt, preventol, glycol monobutyl and Cellulose. The liquid has been previously proven to be suited for worst-case. The Table E.1 shows the detail solution. It's satisfying the latest tissue dielectric parameters requirements proposed by the IEEE 1528 and IEC 62209.

		compositi	on or the	, 1133ue	Lyuivale	in matter		
Frequency	835Hea	835Bod	1900	1900	2450	2450	5800	5800
(MHz)	d	У	Head	Body	Head	Body	Head	Body
Ingredients (% by weight)								
Water	41.45	52.5	55.242	69.91	58.79	72.60	65.53	65.53
Sugar	56.0	45.0	١	\	١	١	١	\
Salt	1.45	1.4	0.306	0.13	0.06	0.18	١	\
Preventol	0.1	0.1	١	١	١	١	١	\
Cellulose	1.0	1.0	١	\	١	١	١	\
Glycol Monobutyl	١	١	44.452	29.96	41.15	27.22	١	١
Diethylenglycol monohexylethe r	١	١	١	١	١	١	17.24	17.24
Triton X-100	/	١	١	\	١	١	17.24	17.24
Dielectric	ε=41.5	ε=55.2	ε=40.0	ε=53.3	ε=39.2	ε=52.7	ε=35.3	ε=48.2
Parameters	ε=41.5 σ=0.90	ε=55.2 σ=0.97	σ=1.4	σ=1.5	σ=1.8	σ=1.9	σ=5.2	σ=6.0
Target Value	0-0.90	0-0.97	0	2	0	5	7	0

TableE.1: Composition of the Tissue Equivalent Matter

Note: There are a little adjustment respectively for 750, 1750, 2600, 5200, 5300 and 5600 based on the recipe of closest frequency in table E.1.

## ANNEX F System Validation

The SAR system must be validated against its performance specifications before it is deployed. When SAR probes, system components or software are changed, upgraded or recalibrated, these must be validated with the SAR system(s) that operates with such components.

		-		
Probe SN.	Liquid name	Validation date	Frequency point	Status (OK or Not)
7548	Head 750MHz	February.08,2025	750 MHz	OK
7548	Head 900MHz	February.08,2025	900 MHz	OK
7548	Head 1750MHz	February.08,2025	1750 MHz	OK
7548	Head 1900MHz	February.08,2025	1900 MHz	OK
7548	Head 2300MHz	February.08,2025	2300 MHz	OK
7548	Head 2450MHz	February.08,2025	2450 MHz	OK
7548	Head 2600MHz	February.08,2025	2600 MHz	OK
7548	Head 3500MHz	February.08,2025	3500 MHz	OK
7548	Head 3700MHz	February.08,2025	3700 MHz	OK
7548	Head 3900MHz	February.08,2025	3900 MHz	OK
7548	Head 5250MHz	February.08,2025	5250 MHz	OK
7548	Head 5600MHz	February.08,2025	5600 MHz	OK
7548	Head 5750MHz	February.08,2025	5750 MHz	OK

# ANNEX G PROBE CALIBRATION CERTIFICATE

### Probe 7548 Calibration Certificate

Client CTTL	http://www.ca	inclucion and a second	Certificate No: 2	4J02Z000968
Oliciti		PERSON PERSONNEL	Certificate No. 2	45022000568
CALIBRATION C	ERTIFIC	ATE		
		1. 1. 1.		
Dbject	EX3	DV4 - SN :	7548	
Calibration Procedure(s)	FF-Z	211-004-02		and the second second
	Calif	oration Pro	cedures for Dosimetric E-field Probes	
Calibration date:	Inni	100/06 20	25	STATISTICS STATISTICS
	Janu	Jary 06, 20	23	
his calibration Certificate docu	ments the traces	bility to natio	onal standards, which realize the physical units	of measurements(SI) The
neasurements and the uncertain	nties with confide	ence probabi	ility are given on the following pages and are page	art of the certificate.
All calibrations have been condu	ucted in the close	ed laboratory	facility: environment temperature(22±3)°C and h	numidity<70%.
Calibration Equipment used (M8	TE critical for ca	alibration)		
Primary Standards	ID#	Cal Date	e(Calibrated by, Certificate No.) Scheduled C	alibration
Power Meter NRP2	106277	Garbate	18-Oct-24(CTTL, No.24J02X101459)	Oct-25
Power sensor NRP8S	104291		18-Oct-24(CTTL, No.24J02X101459)	Oct-25
Power sensor NRP8S	104292		18-Oct-24(CTTL, No.24J02X101459)	Oct-25
Reference 10dBAttenuator	18N50W-1	OdB	19-Jan-23(CTTL, No.J23X00212)	Jan-25
Reference 20dBAttenuator	18N50W-2		19-Jan-23(CTTL, No.J23X00211)	Jan-25
Reference Probe EX3DV4	SN 7307		28-May-24(SPEAG, No.EX-7307 May24)	May-25
DAE4	SN 771		19-Jan-24(SPEAG, No.DAE4-771_Jan24)	Jan-25
DAE4	SN 1555		16-Aug-24(SPEAG, No. DAE4-1555_Aug24)	Aug-25
	ID#		Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Secondary Standards	620105260	5	12-Jun-24(CTTL, No.24J02X005419)	Jun-25
Secondary Standards SignalGenerator MG3700A	101 33460	0700-1959	26-Mar-24(CTTL, No.24J02X002468)	Mar-25
SignalGenerator MG3700A	101-33A0L			Dec-25
SignalGenerator MG3700A SignalGenerator APSIN26G	MY461106	73	18-Dec-24(CTTL, No.24J02X103932)	
SignalGenerator MG3700A SignalGenerator APSIN26G Network Analyzer E5071C		73	18-Dec-24(CTTL, No.24J02X103932) 11-May-23(CTTL, No.J23X04061)	May-25
SignalGenerator MG3700A SignalGenerator APSIN26G Network Analyzer E5071C Reference 10dBAttenuator	MY461106	73		May-25 May-25
SignalGenerator MG3700A SignalGenerator APSIN26G Network Analyzer E5071C Reference 10dBAttenuator Reference 20dBAttenuator	MY4611067 BT0520	73	11-May-23(CTTL, No.J23X04061)	May-25
SignalGenerator MG3700A SignalGenerator APSIN26G Network Analyzer E5071C Reference 10dBAttenuator Reference 20dBAttenuator OCP DAKS	MY4611067 BT0520 BT0267	73 Functi	11-May-23(CTTL, No.J23X04061) 11-May-23(CTTL, No.J23X04062) 09-Oct-24(SPEAG, No. OCP-DAKS-0015_Oct	May-25
SignalGenerator MG3700A SignalGenerator APSIN26G Network Analyzer E5071C Reference 10dBAttenuator Reference 20dBAttenuator OCP DAKS N	MY4611067 BT0520 BT0267 SN 0015 ame	Functi	11-May-23(CTTL, No.J23X04061) 11-May-23(CTTL, No.J23X04062) 09-Oct-24(SPEAG, No. OCP-DAKS-0015_Oc on Signature	May-25
SignalGenerator MG3700A SignalGenerator APSIN26G Network Analyzer E5071C Reference 10dBAttenuator Reference 20dBAttenuator OCP DAKS N	MY461106 BT0520 BT0267 SN 0015	Functi	11-May-23(CTTL, No.J23X04061) 11-May-23(CTTL, No.J23X04062) 09-Oct-24(SPEAG, No. OCP-DAKS-0015_Oc	May-25
SignalGenerator MG3700A SignalGenerator APSIN26G Network Analyzer E5071C Reference 10dBAttenuator Reference 20dBAttenuator OCP DAKS N alibrated by:	MY4611067 BT0520 BT0267 SN 0015 ame	Functi	11-May-23(CTTL, No.J23X04061) 11-May-23(CTTL, No.J23X04062) 09-Oct-24(SPEAG, No. OCP-DAKS-0015_Oct on Signature Test Engineer	May-25
SignalGenerator MG3700A SignalGenerator APSIN26G Network Analyzer E5071C Reference 10dBAttenuator Reference 20dBAttenuator OCP DAKS N alibrated by:	MY4611067 BT0520 BT0267 SN 0015 ame Yu Zongying	Functi	11-May-23(CTTL, No.J23X04061) 11-May-23(CTTL, No.J23X04062) 09-Oct-24(SPEAG, No. OCP-DAKS-0015_Oc on Signature	May-25
SignalGenerator MG3700A SignalGenerator APSIN26G Network Analyzer E5071C Reference 10dBAttenuator Reference 20dBAttenuator OCP DAKS	MY4611067 BT0520 BT0267 SN 0015 ame Yu Zongying	Functi SAR SAR	11-May-23(CTTL, No.J23X04061) 11-May-23(CTTL, No.J23X04062) 09-Oct-24(SPEAG, No. OCP-DAKS-0015_Oct on Signature Test Engineer	May-25





#### Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A,B,C,D	modulation dependent linearization parameters
Polarization Φ	Φ rotation around probe axis
Polarization θ	θ rotation around an axis that is in the plane normal to probe axis (at measurement center), i
	$\theta=0$ is normal to probe axis

Connector Angle information used in DASY system to align probe sensor X to the robot coordinate system Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010

d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

- Methods Applied and Interpretation of Parameters:
- NORMx, y,z: Assessed for E-field polarization θ=0 (f≤900MHz in TEM-cell; f>1800MHz: waveguide). NORMx, y,z are only intermediate values, i.e., the uncertainties of NORMx, y,z does not effect the E<sup>2</sup>-field uncertainty inside TSL (see below ConvF).
- NORM(f)x, y, z = NORMx, y, z\* frequency\_response (see Frequency Response Chart). This
  linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the
  frequency response is included in the stated uncertainty of ConvF.
- DCPx, y, z: DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.
- PAR: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics.
- Ax,y,z; Bx,y,z; Cx,y,z; VRx,y,z:A,B,C are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters: Assessed in flat phantom using E-field (or Temperature Transfer Standard for f≤800MHz) and inside waveguide using analytical field distributions based on power measurements for f >800MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty valued are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORMx,y,z\* ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from±50MHz to±100MHz.
- Spherical isotropy (3D deviation from isotropy): in a field of low gradients realized using a flat
  phantom exposed by a patch antenna.
- Sensor Offset: The sensor offset corresponds to the offset of virtual measurement center from the
  probe tip (on probe axis). No tolerance required.
- Connector Angle: The angle is assessed using the information gained by determining the NORMx (no uncertainty required).

Certificate No:24J02Z000968

Page 2 of 22





# DASY/EASY – Parameters of Probe: EX3DV4 – SN: 7548

#### **Basic Calibration Parameters**

Sensor X	Sensor Y	Sensor Z	Unc (k=2)
0.63	0.67	0.63	±10.0%
109.2	112.4		10.0%
	0.63	0.63 0.67	0.63 0.67 0.63

# **Calibration Results for Modulation Response**

UID	Communication System Name		A dB	B dBõV	C	D dB	VR mV	Max Dev.	Max Unc <sup>E</sup> ( <i>k</i> =2)
Ū	cw	X	0.0	0.0	1.0	0.00	214.6	±2.1%	±4.7%
		Y	0.0	0.0	1.0	1	221.8	1	
10352-AAA	Dulas Way 6	Z	0.0	0.0	1.0	1	211.2	1	
10352-444	Pulse Waveform (200Hz, 10%)	X	2.10	63.39	7.82		60	±4.6%	±9.6%
		Y	2.22	63.84	8.05	10.00	60		
10353-AAA	Dulas West (Dest)	Z	2.20	63.95	8.51	1	60		
10353-AAA	Pulse Waveform (200Hz, 20%)	X	0.91	60.29	5.12		80	±3.4%	±9.6%
		Y	0.99	60.71	5.39	6.99	80	1.0.470	-5.07
10354-AAA	Dulas W		1.08	60.95	6.05	1	80		
10354-AAA	Pulse Waveform (200Hz, 40%)		20.00	76.00	9.00		95	±2.6%	±9.6%
		-	20.00	76.00	9.00	3.98	95		
10355-AAA	Dute West		28.00	80.00	11.00		95		
10333-AAA	Pulse Waveform (200Hz, 60%)		0.27	60.00	3.26			±2.1%	±9.6%
			0.29	60.00	3.34	2.22			20.070
10387-AAA	0001/11/	Z	0.36	60.00	4.18				
10367-AAA	QPSK Waveform, 1 MHz	X	0.74	60.70	8.20			±4.1%	±9.6%
		Y	0.62	60.53	8.07	1.00		-1.170	10.070
10388-AAA	0001/11/	Z	0.82	60.79	8.01			_	
10300-AAA	QPSK Waveform, 10 MHz		1.36	62.01	10.29			±1.3%	±9.6%
		-	1.27	62.09	10.17	0.00		1.070	19.0%
0396-AAA	64 OANNY 4	Z	1.41	61.83	9.77				
10390-AAA	64-QAM Waveform, 100 kHz	X	1.81	63.08	14.22			±0.9%	±9.6%
			1.78	63.15	14.36	3.01			10.078
0414-AAA	WI AN CODE AL CARE		1.82	62.01	12.96	F			
	WLAN CCDF, 64-QAM, 40MHz		3.92	64.10	13.49			±4.7%	±9.6%
			3.76	64.29	13.50	0.00	150		-0.070
		$ \begin{array}{c c c c c c c c c c c c c c c c c c c $							

on UID parameters see Appendix

The reported uncertainty of measurement is stated as the standard uncertainty of Measurement multiplied by the coverage factor k=2, which for a normal distribution Corresponds to a coverage probability of approximately 95%.

Certificate No:24J02Z000968

<sup>&</sup>lt;sup>A</sup> The uncertainties of Norm X, Y, Z do not affect the E<sup>2</sup>-field uncertainty inside TSL (see Page 5).

 <sup>&</sup>lt;sup>a</sup> The uncertainties of Norm A, T, Z do not affect the E-field uncertainty finance For (acc Flage C).
 <sup>b</sup> Numerical linearization parameter: uncertainty not required.
 <sup>c</sup> Uncertainty is determined using the max, deviation from linear response applying rectangular distribution and is expressed for the contract of the fold unline.





# DASY/EASY - Parameters of Probe: EX3DV4 - SN: 7548

#### Sensor Model Parameters

	C1 fF	C2 fF	α V-1	T1 ms.V <sup>-2</sup>	T2 ms.V <sup>-1</sup>	T3 ms	T4 V <sup>-2</sup>	T5 V <sup>-1</sup>	Т6
х	16.35	105.87	33.96	3.59	0.00	4.90	0.39	0.00	1.02
Y	12.67	80.99	33.29	3.87	0.00	4.90	0.26	0.00	1.02
Z	16.13	103.15	32.73	6.23	0.00	4.90	0.46	0.00	1.02

## Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	6.7
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disable
Probe Overall Length	337mm
Probe Body Diameter	10mm
Tip Length	9mm
Tip Diameter	2.5mm
Probe Tip to Sensor X Calibration Point	1mm
Probe Tip to Sensor Y Calibration Point	1mm
Probe Tip to Sensor Z Calibration Point	1mm
Recommended Measurement Distance from Surface	1.4mm

Certificate No:24J02Z000968

Page 4 of 22





# DASY/EASY – Parameters of Probe: EX3DV4 – SN:7548

## Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz] <sup>C</sup>	Relative Permittivity <sup>F</sup>	Conductivity (S/m) <sup>F</sup>	ConvF X	ConvF Y	ConvF Z	Alpha <sup>G</sup>	Depth <sup>G</sup> (mm)	Unct. ( <i>k</i> =2)
750	41.9	0.89	10.73	10.73	10.73	0.10	1.45	±12.7%
900	41.5	0.97	10.24	10.24	10.24	0.12	1.35	±12.7%
1450	40.5	1.20	8.93	8.93	8.93	0.18	1.05	±12.7%
1750	40.1	1.37	8.66	8.66	8.66	0.21	1.01	±12.7%
1900	40.0	1.40	8.32	8.32	8.32	0.21	1.05	±12.7%
2100	39.8	1.49	8.37	8.37	8.37	0.17	1.18	±12.7%
2300	39.5	1.67	8.07	8.07	8.07	0.47	0.70	±12.7%
2450	39.2	1.80	7.77	7.77	7.77	0.47	0.76	±12.7%
2600	39.0	1.96	7.60	7.60	7.60	0.51	0.71	±12.7%
3300	38.2	2.71	7.15	7.15	7.15	0.42	0.95	±13.9%
3500	37.9	2.91	6.95	6.95	6.95	0.35	1.15	±13.9%
3700	37.7	3.12	6.65	6.65	6.65	0.35	1.30	±13.9%
3900	37.5	3.32	6.71	6.71	6.71	0.40	1.25	±13.9%
4100	37.2	3.53	6.68	6.68	6.68	0.35	1.26	±13.9%
4200	37.1	3.63	6.58	6.58	6.58	0.35	1.35	±13.9%
4400	36.9	3.84	6.48	6.48	6.48	0.35	1.35	±13.9%
4600	36.7	4.04	6.40	6.40	6.40	0.50	1.15	±13.9%
4800	36.4	4.25	6.35	6.35	6.35	0.50	1.15	±13.9%
4950	36.3	4.40	6.10	6.10	6.10	0.50	1.18	±13.9%
5250	35.9	4.71	5.51	5.51	5.51	0.55	1.22	±13.9%
5600	35.5	5.07	4.92	4.92	4.92	0.50	1.30	±13.9%
5750	35.4	5.22	5.05	5.05	5.05	0.50	1.30	±13.9%

<sup>c</sup> Frequency validity above 300 MHz of ±100MHz only applies for DASY v4.4 and higher (Page 2), else it is restricted to ±50MHz. The uncertainty is the RSS of ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

<sup>F</sup> At frequency up to 6 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) can be relaxed to ±10% if liquid compensation formula is applied to measured SAR values. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

<sup>G</sup> Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than  $\pm$  1% for frequencies below 3 GHz and below  $\pm$  2% for the frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

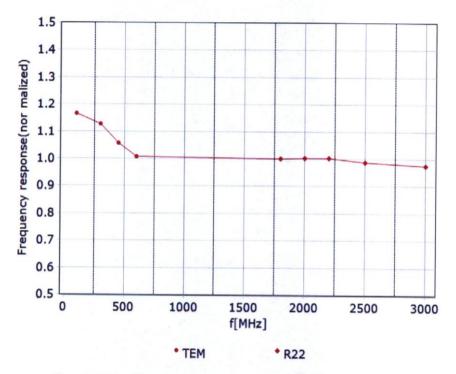
Certificate No:24J02Z000968

Page 5 of 22





# Frequency Response of E-Field (TEM-Cell: ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field: ±7.4% (k=2)

Certificate No:24J02Z000968

Page 6 of 22





0°

330

0. 0.8

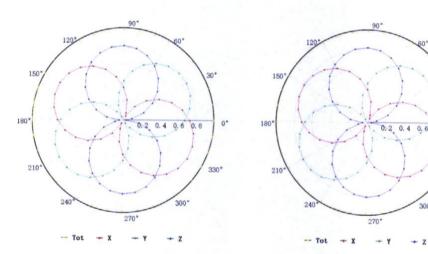
300\*

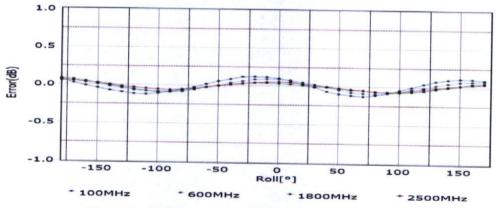
Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China Tel: +86-10-62304633-2117 E-mail: emf@caict.ac.cn http://www.caict.ac.cn

# Receiving Pattern (Φ), θ=0°

# f=600 MHz, TEM

f=1800 MHz, R22

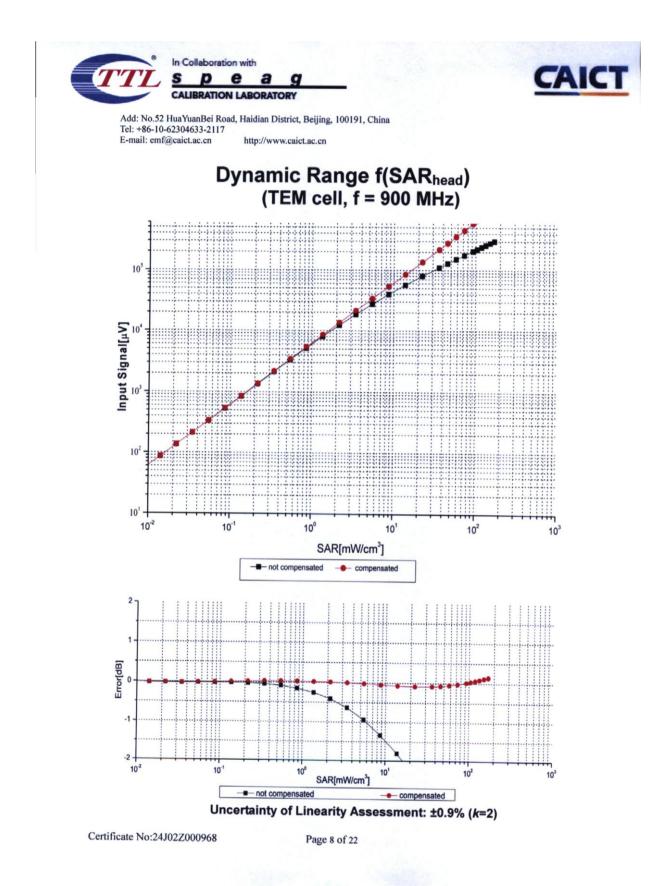




Uncertainty of Axial Isotropy Assessment: ±1.2% (k=2)

Certificate No:24J02Z000968

Page 7 of 22



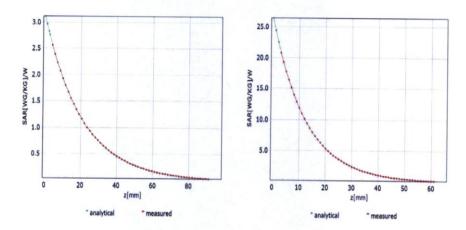




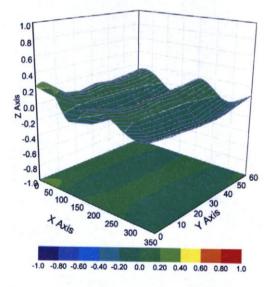
# **Conversion Factor Assessment**

f=750 MHz,WGLS R9(H\_convF)

f=1750 MHz,WGLS R22(H\_convF)



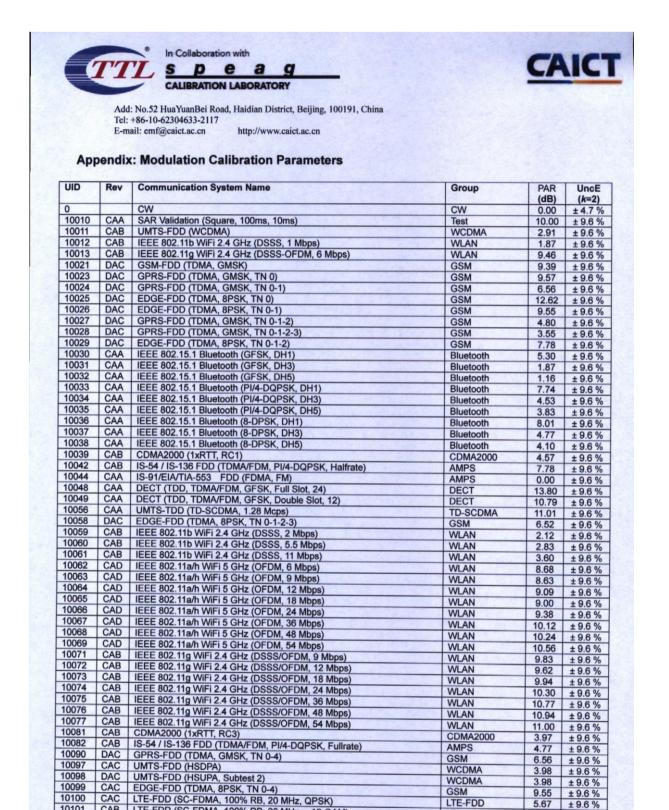
# **Deviation from Isotropy in Liquid**



Uncertainty of Spherical Isotropy Assessment: ±3.2% (k=2)

Certificate No:24J02Z000968

Page 9 of 22



CAB LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM) Certificate No:24J02Z000968

10100

10101

Page 10 of 22

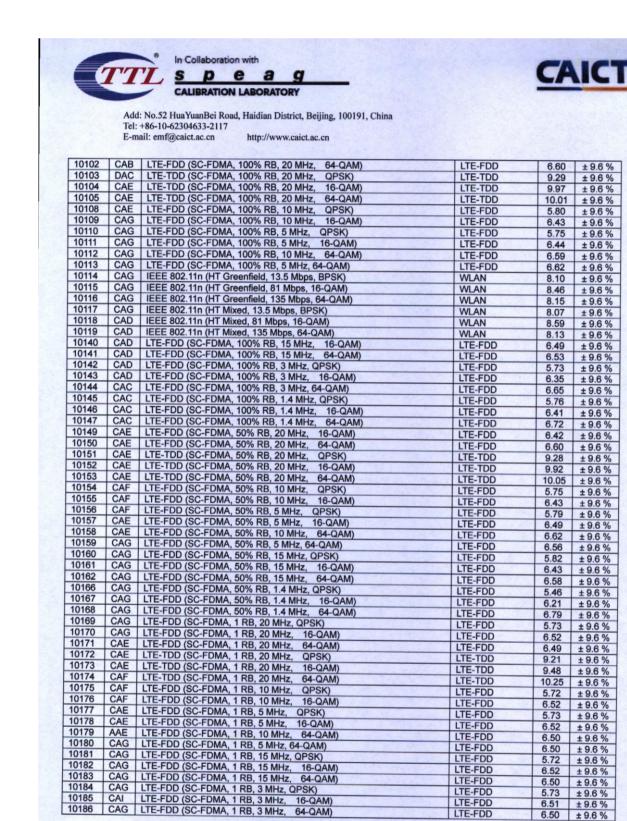
LTE-FDD

LTE-FDD

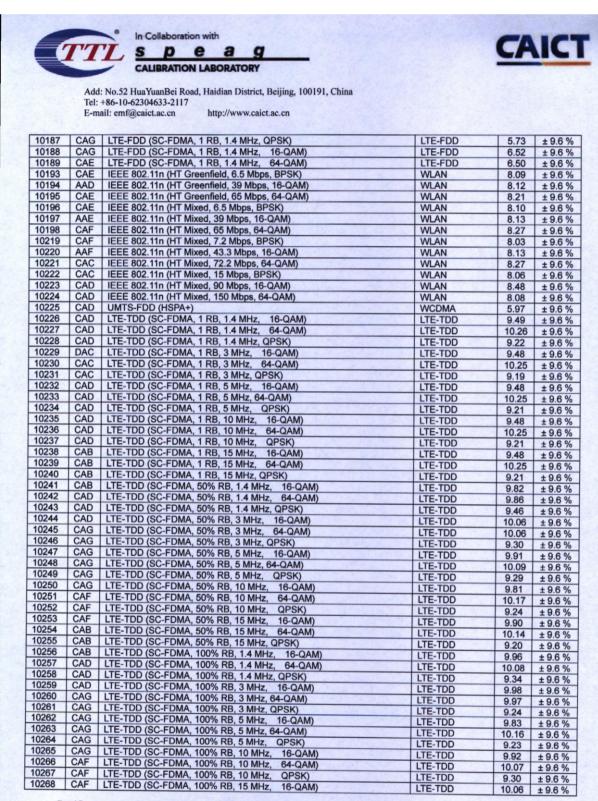
5.67

± 9.6 %

6.42 ± 9.6 %



Page 11 of 22



Page 12 of 22

6	TT	In Collaboration with		CA	IC'
		CALIBRATION LABORATORY			
	Tel:	: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China +86-10-62304633-2117 all: emf@caict.ac.cn http://www.caict.ac.cn			
10000	-1946	· · · · · · · · · · · · · · · · · · ·	1000 0000	1	
10269 10270	CAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM) LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	LTE-TDD LTE-TDD	9.58	± 9.6 %
10270	CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10)	WCDMA	4.87	± 9.6 %
10275	CAD	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)	WCDMA	3.96	± 9.6 %
10277	CAD	PHS (QPSK)	PHS	11.81	± 9.6 %
10278	CAD	PHS (QPSK, BW 884MHz, Rolloff 0.5)	PHS	11.81	± 9.6 %
10279	CAG	PHS (QPSK, BW 884MHz, Rolloff 0.38)	PHS	12.18	± 9.6 %
10290 10291	CAG	CDMA2000, RC1, SO55, Full Rate	CDMA2000	3.91	± 9.6 %
10291	CAG	CDMA2000, RC3, SO55, Full Rate CDMA2000, RC3, SO32, Full Rate	CDMA2000 CDMA2000	3.46	± 9.6 %
10292	CAG	CDMA2000, RC3, SO32, Full Rate	CDMA2000	3.50	± 9.6 %
10295	CAG	CDMA2000, RC1, SO3, 1/8th Rate 25 fr.	CDMA2000	12.49	± 9.6 %
10297	CAF	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	LTE-FDD	5.81	± 9.6 %
10298	CAF	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	LTE-FDD	5.72	± 9.6 %
10299	CAF	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	LTE-FDD	6.39	± 9.6 %
10300	CAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	LTE-FDD	6.60	± 9.6 %
10301 10302	CAC	IEEE 802.16e WIMAX (29:18, 5ms, 10MHz, QPSK, PUSC)	WIMAX	12.03	± 9.6 %
10302	CAB	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC, 3CTRL) IEEE 802.16e WiMAX (31:15, 5ms, 10MHz, 64QAM, PUSC)	WiMAX WiMAX	12.57	± 9.6 %
10304	CAA	IEEE 802.16e WIMAX (29:18, 5ms, 10MHz, 64QAM, PUSC)	WiMAX	12.52	± 9.6 %
10305	CAA	IEEE 802.16e WIMAX (31:15, 10ms, 10MHz, 64QAM, PUSC)	WIMAX	15.24	± 9.6 %
10306	CAA	IEEE 802.16e WIMAX (29:18, 10ms, 10MHz, 64QAM, PUSC)	WIMAX	14.67	± 9.6 %
10307	AAB	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, PUSC)	WIMAX	14.49	± 9.6 %
10308	AAB	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, PUSC)	WiMAX	14.46	± 9.6 %
10309 10310	AAB	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM,AMC 2x3)	WIMAX	14.58	± 9.6 %
10310	AAB	IEEE 802.16e WIMAX (29:18, 10ms, 10MHz, QPSK, AMC 2x3 LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	WIMAX	14.57	± 9.6 %
10313	AAD	IDEN 1:3	ITE-FDD iDEN	6.06	± 9.6 % ± 9.6 %
10314	AAD	IDEN 1:6	IDEN	13.48	± 9.6 %
10315	AAD	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 96pc dc)	WLAN	1.71	± 9.6 %
10316	AAD	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc dc)	WLAN	8.36	± 9.6 %
10317	AAA	IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc dc)	WLAN	8.36	± 9.6 %
10352 10353	AAA	Pulse Waveform (200Hz, 10%)	Generic	10.00	±9.6 %
10354	AAA	Pulse Waveform (200Hz, 20%) Pulse Waveform (200Hz, 40%)	Generic	6.99	± 9.6 %
10355	AAA	Pulse Waveform (200Hz, 60%)	Generic Generic	3.98	±9.6 %
10356	AAA	Pulse Waveform (200Hz, 80%)	Generic	2.22	± 9.6 % ± 9.6 %
10387	AAA	QPSK Waveform, 1 MHz	Generic	5.10	± 9.6 %
10388	AAA	QPSK Waveform, 10 MHz	Generic	5.22	± 9.6 %
10396	AAA	64-QAM Waveform, 100 kHz	Generic	6.27	± 9.6 %
10399	AAA AAD	64-QAM Waveform, 40 MHz	Generic	6.27	±9.6 %
10400	AAA	IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc dc) IEEE 802.11ac WiFi (40MHz, 64-QAM, 99pc dc)	WLAN	8.37	± 9.6 %
10402	AAA	IEEE 802.11ac WiFi (80MHz, 64-QAM, 99pc dc)	WLAN	8.60	± 9.6 %
10403	AAB	CDMA2000 (1xEV-DO, Rev. 0)	CDMA2000	8.53	± 9.6 %
10404	AAB	CDMA2000 (1xEV-DO, Rev. A)	CDMA2000	3.76	± 9.6 % ± 9.6 %
10406	AAD	CDMA2000, RC3, SO32, SCH0, Full Rate	CDMA2000	5.22	± 9.6 %
0410	AAA	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Sub=2,3,4,7,8,9)	LTE-TDD	7.82	± 9.6 %
10414	AAA	WLAN CCDF, 64-QAM, 40MHz	Generic	8.54	± 9.6 %
10415	AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc dc) IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc dc)	WLAN	1.54	± 9.6 %
	AAA	IEEE 802.11g WIFI 2.4 GHZ (ERF-OFDM, 6 Mbps, 99pc dc)	WLAN	8.23	± 9.6 %
	AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc, Long)	WLAN WLAN	8.23	± 9.6 %
	AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc, Short)	WLAN	8.14 8.19	± 9.6 % ± 9.6 %
	AAA	IEEE 802.11n (HT Greenfield, 7.2 Mbps, BPSK)	WLAN	8.32	± 9.6 %
	AAA	IEEE 802.11n (HT Greenfield, 43.3 Mbps, 16-QAM)	WLAN	8.47	± 9.6 %
	AAE	IEEE 802.11n (HT Greenfield, 72.2 Mbps, 64-QAM)	WLAN	8.40	± 9.6 %
	AAE	IEEE 802.11n (HT Greenfield, 15 Mbps, BPSK)	WLAN	0.40	I 9.0 70

Page 13 of 22

-		In Collaboration with		-	10
	TT	<u>Lspeag</u>		CA	
		CALIBRATION LABORATORY		-	
	Add	No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China			
	Tel:	+86-10-62304633-2117			
	E-m	ail: emf@caict.ac.cn http://www.caict.ac.cn			
10107				1.0.11	
10427 10430	AAB	IEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM) LTE-FDD (OFDMA, 5 MHz, E-TM 3.1)	UTE-FDD	8.41	± 9.6 % ± 9.6 %
10431	AAC	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1)	LTE-FDD	8.38	± 9.6 %
10432	AAB	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1)	LTE-FDD	8.34	± 9.6 %
10433	AAC	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1)	LTE-FDD	8.34	± 9.6 %
10434	AAG	W-CDMA (BS Test Model 1, 64 DPCH)	WCDMA	8.60	± 9.6 %
10435	AAA	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Sub) LTE-FDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	LTE-TDD LTE-FDD	7.82	± 9.6 %
10448	AAA	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)	LTE-FDD	7.53	± 9.6 %
10449	AAC	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1, Cliping 44%)	LTE-FDD	7.51	± 9.6 %
10450	AAA	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	LTE-FDD	7.48	±9.6 %
10451 10453	AAA	W-CDMA (BS Test Model 1, 64 DPCH, Clipping 44%)	WCDMA	7.59	± 9.6 %
10453	AAC	Validation (Square, 10ms, 1ms) IEEE 802.11ac WiFi (160MHz, 64-QAM, 99pc dc)	Test WLAN	10.00	± 9.6 % ± 9.6 %
10457	AAC	UMTS-FDD (DC-HSDPA)	WCDMA	6.62	± 9.6 %
10458	AAC	CDMA2000 (1xEV-DO, Rev. B, 2 carriers)	CDMA2000	6.55	± 9.6 %
10459	AAC	CDMA2000 (1xEV-DO, Rev. B, 3 carriers)	CDMA2000	8.25	± 9.6 %
10460	AAC	UMTS-FDD (WCDMA, AMR)	WCDMA	2.39	± 9.6 %
10461 10462	AAC	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK, UL Sub) LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM, UL Sub)	LTE-TDD LTE-TDD	7.82	± 9.6 %
10463	AAD	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM, UL Sub)	LTE-TDD	8.56	± 9.6 %
10464	AAD	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 9.6 %
10465	AAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM, UL Sub)	LTE-TDD	8.32	± 9.6 %
10466 10467	AAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM, UL Sub)	LTE-TDD	8.57	± 9.6 %
10467	AAA	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Sub) LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM, UL Sub)	LTE-TDD	7.82	± 9.6 %
10469	AAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM, UL Sub)	LTE-TDD LTE-TDD	8.32 8.56	± 9.6 %
10470	AAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 9.6 %
10471	AAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM, UL Sub)	LTE-TDD	8.32	± 9.6 %
10472 10473	AAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM, UL Sub)	LTE-TDD	8.57	± 9.6 %
10473	AAA	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK, UL Sub) LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM, UL Sub)	LTE-TDD LTE-TDD	7.82	± 9.6 %
10475	AAD	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM, UL Sub)	LTE-TDD	8.32 8.57	± 9.6 % ± 9.6 %
10477	AAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM, UL Sub)	LTE-TDD	8.32	± 9.6 %
10478	AAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM, UL Sub)	LTE-TDD	8.57	± 9.6 %
10479 10480	AAC	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL Sub)	LTE-TDD	7.74	±9.6 %
10480	AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL Sub) LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL Sub)	LTE-TDD	8.18	± 9.6 %
10482	AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL Sub)	LTE-TDD LTE-TDD	8.45	± 9.6 % ± 9.6 %
10483	AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, Sub)	LTE-TDD	8.39	± 9.6 %
10484	AAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL Sub)	LTE-TDD	8.47	± 9.6 %
10485	AAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK, UL Sub)	LTE-TDD	7.59	± 9.6 %
10486 10487	AAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM, UL Sub) LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM, UL Sub)	LTE-TDD	8.38	± 9.6 %
10488	AAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM, 0L Sub) LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL Sub)	LTE-TDD	8.60	± 9.6 %
10489	AAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL Sub)	LTE-TDD LTE-TDD	7.70	± 9.6 % ± 9.6 %
10490	AAF	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL Sub)	LTE-TDD	8.54	± 9.6 %
10491	AAF	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK, UL Sub)	LTE-TDD	7.74	± 9.6 %
10492 10493	AAF	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL Sub)	LTE-TDD	8.41	±9.6 %
10493	AAF	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL Sub) LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL Sub)	LTE-TDD	8.55	± 9.6 %
10495	AAF	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, 0L Sub)	LTE-TDD LTE-TDD	7.74	±9.6%
10496	AAE	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL Sub)	LTE-TDD	8.37 8.54	± 9.6 % ± 9.6 %
10497	AAE	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL Sub)	LTE-TDD	7.67	± 9.6 %
10498	AAE	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL Sub)	LTE-TDD	8.40	± 9.6 %
10499 10500	AAC	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL Sub)	LTE-TDD	8.68	±9.6 %
10500	AAF	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL Sub) LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Sub)	LTE-TDD	7.67	±9.6 %
		LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL Sub)	LTE-TDD	8.44	± 9.6 %

Page 14 of 22