

Appendix C for KSCR2207001162AT

Calibration Certificate

Object	Apply	No	Model	SN	Calibration Date
	☐	1	D750V3	1188	2022/03/29
	☒	2	D835V2	4d114	2022/03/31
	☐	3	D900V2	1d079	2022/06/07
	☒	4	D1800V2	2d170	2022/03/31
	☒	5	D1900V2	5d136	2022/06/07
	☐	6	D2000V2	1041	2022/06/06
	☐	7	D2300V2	1096	2022/03/31
	☒	8	D2450V2	817	2022/04/01
	☒	9	D2600V2	1158	2022/03/31
	☒	10	D5GHzV2	1095	2022/06/01
DAE	☒	11	DAE4	1245	2022/05/30
Probe	☒	12	EX3DV4	7346	2022/03/30



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1 Dipole

1.1 CLA150 - SN 4025

Calibration Laboratory of Schmid & Partner Engineering AG Zughausstrasse 43, 8004 Zurich, Switzerland		S Schweizerischer Kalibrierdienst Service suisse d'étalonnage C Servizio svizzero di taratura Swiss Calibration Service	
Accredited by the Swiss Accreditation Service (SAT) The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates		Accreditation No.: SCS 0108	
Client: SGS-CN (Auden)		Certificate No.: CLA150-4025_Apr21	
CALIBRATION CERTIFICATE			
Object: CLA150 - SN: 4025			
Calibration procedure(s): QA CAL-15.v9 Calibration Procedure for SAR Validation Sources below 700 MHz			
Calibration date: April 26, 2021			
This calibration certificate documents the traceability to national standards, which require the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.			
All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 2)°C and humidity < 70%.			
Calibration Equipment used (MATE critical for calibration)			
Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104776	09-Apr-21 (No. 217-0320/103202)	Apr-22
Power sensor NRP-Z31	SN: 103044	09-Apr-21 (No. 217-0320/1)	Apr-22
Power sensor NRP-Z31	SN: 103045	09-Apr-21 (No. 217-0320/2)	Apr-22
Reference 20 dB Attenuator	SN: C2362 (200)	09-Apr-21 (No. 217-0334/8)	Apr-22
Type-N mismatch combination	SN: 310802 / 00027	09-Apr-21 (No. 217-0334/4)	Apr-22
Reference Probe EXENNA	SN: 3877	30-Dec-20 (No. 133-0917 / Dec20)	Dec-21
DAEA	SN: 464	26-Jun-20 (No. 0464-094_Jun20)	Jun-21
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E413B	SN: G811203874	26-Apr-16 (in house check Jun-20)	In house check Jun-22
Power sensor E413A	SN: M141498057	09-Apr-16 (in house check Jun-20)	In house check Jun-22
Power sensor E413A	SN: 000110210	09-Apr-16 (in house check Jun-20)	In house check Jun-22
RF generator HP 8542C	SN: US3450101708	04-Aug-09 (in house check Jun-20)	In house check Jun-22
Network Analyser Agilent E836A	SN: US41080477	31-Mar-14 (in house check Oct-20)	In house check Oct-21
Calibrated by:	Name: Jeffrey Katman	Function: Laboratory Technician	Signature:
Approved by:	Kato Pokovic	Technical Manager	Signature:
This calibration certificate shall not be reproduced except in full without written approval of the laboratory.			
Issued: April 26, 2021			
Certificate No.: CLA150-4025_Apr21		Page 1 of 6	

Calibration Laboratory of Schmid & Partner Engineering AG Zughausstrasse 43, 8004 Zurich, Switzerland		S Schweizerischer Kalibrierdienst Service suisse d'étalonnage C Servizio svizzero di taratura Swiss Calibration Service	
Accredited by the Swiss Accreditation Service (SAT) The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates		Accreditation No.: SCS 0108	
Glossary:			
TSL	Issue simulating liquid		
ConvF	sensitivity in TSL / NORM x,y,z		
N/A	not applicable or not measured		
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 865864, "SAR Measurement Requirements for 100 MHz to 6 GHz"			
Additional Documentation:			
e) DASY4/5 System Handbook			
Methods Applied and Interpretation of Parameters:			
• Measurement Conditions: Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.			
• Antenna Parameters with TSL: The source is mounted in a touch configuration below the center marking of the flat phantom.			
• Return Loss: This parameter is measured with the source positioned under the liquid filled phantom (as described in the measurement condition clause). The Return Loss ensures low reflected power. No uncertainty required.			
• SAR measured: SAR measured at the stated antenna input power.			
• SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.			
• SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.			
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.: CLA150-4025_Apr21		Page 2 of 6	

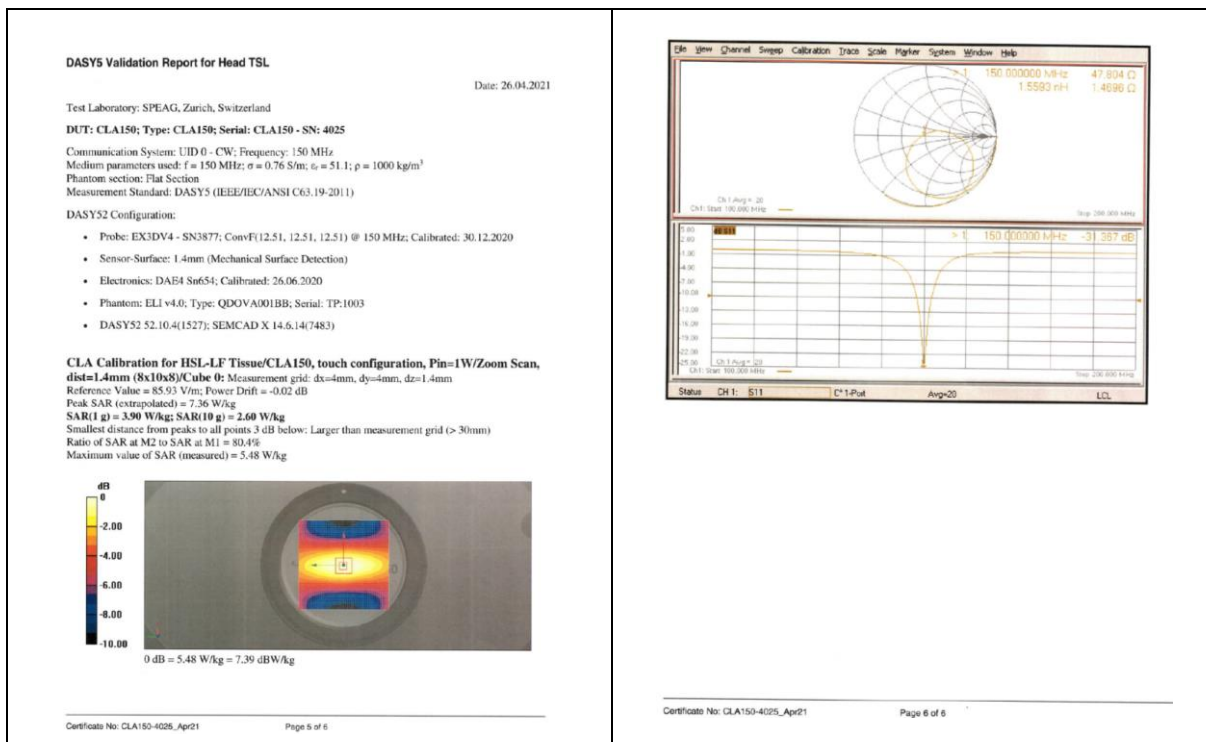
Measurement Conditions		
DASY system configuration, as far as not given on page 1.		
DASY Version	DASY5	V32.10.4
Extrapolation	Advanced Extrapolation	
Phantom	ELI Flat Phantom	Shell thickness: 2 ± 0.2 mm
EUT Positioning	Touch Position	
Zoom Scan Resolution	dx, dy = 4.0 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	150 MHz ± 1 MHz	

Head TSL parameters			
The following parameters and calculations were applied.			
	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	52.3	0.75 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	51.1 ± 6 %	0.75 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	---	---

SAR result with Head TSL		
SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	1 W input power	3.90 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	3.88 W/kg ± 18.4 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Head TSL	Condition	
SAR measured	1 W input power	2.60 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	2.59 W/kg ± 18.0 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)	
Antenna Parameters with Head TSL	
Impedance, transformed to feed point	47.8 Ω ± 1.5 Ω
Return Loss	-31.4 dB
Additional EUT Data	
Manufactured by	SPEAG

Certificate No.: CLA150-4025_Apr21	
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1.2 D450V3 - SN 1103

Calibration Laboratory of Schmid & Partner Engineering AG
Ziegelstrasse 43, 8604 Zurich, Switzerland

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Accreditation No.: SCS 0108

Client: **SGS-CN (Aude)** Certificate No: **D450V3-1103_Apr21**

CALIBRATION CERTIFICATE

Object: **D450V3 - SN: 1103**

Calibration procedure(s): **QA CAL-15_v9**
Calibration Procedure for SAR Validation Sources below 700 MHz

Calibration date: **April 21, 2021**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 2) °C and humidity < 70%.

Calibration Equipment used (MATE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104776	09-Apr-21 (No. 217-0201102020)	Apr-22
Power sensor MRP-Z91	SN: 103244	09-Apr-21 (No. 217-02011)	Apr-22
Power sensor MRP-Z91	SN: 103245	09-Apr-21 (No. 217-02012)	Apr-22
Reference 20 dB Attenuator	SN: CC2502 (200)	09-Apr-21 (No. 217-03343)	Apr-22
Type-H mismatch contribution	SN: 310952 / 06327	09-Apr-21 (No. 217-03344)	Apr-22
Reference Probe EX3DV4	SN: 3877	30-Dec-20 (No. EX3-3877 Dec20)	Dec-21
DA54	SN: 654	26-Jan-20 (No. DA54-654_Jan20)	Jun-21

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4418B	SN: GB4120074	06-Apr-16 (in house check Jun-20)	In house check: Jun-20
Power sensor E4412A	SN: MY4149007	06-Apr-16 (in house check Jun-20)	In house check: Jun-20
Power sensor E4412A	SN: 000118210	06-Apr-16 (in house check Jun-20)	In house check: Jun-20
RF generator HP 8648C	SN: U53400101700	06-Aug-09 (in house check Jun-20)	In house check: Jun-22
Network Analyzer Agilent E8363A	SN: U541080477	31-Mar-14 (in house check Oct-20)	In house check: Oct-21

Calibrated by: **Giacinto Luber** Function: **Laboratory Technician**

Approved by: **Kello Polovic** Technical Manager

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Issued: April 23, 2021

Calibration Laboratory of Schmid & Partner Engineering AG
Ziegelstrasse 43, 8604 Zurich, Switzerland

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Accreditation No.: SCS 0108

Glossary:

TSL: Issue simulating liquid

ConvF: sensitivity in TSL / NORM x,y,z

N/A: not applicable or not measured

Calibration is Performed According to the Following Standards:

- 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
- 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
- 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
- KDB 665664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

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%.



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Measurement Conditions
DASY5 system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	ELH Flat Phantom	Shell thickness: 2 ± 0.2 mm
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	450 MHz ± 1 MHz	

Head TSL parameters
The following parameters and calculations were applied:

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	43.5	0.57 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	43.1 ± 6 %	0.57 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	---	---

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	1.14 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	4.55 W/kg ± 18.1 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	0.757 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	3.06 W/kg ± 17.6 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0106)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	57.1 Ω - 2.8 jΩ
Return Loss	-23.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.346 ns
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After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is well below the wavelength, so that no excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
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Certificate No: D450V3-1103_Apr21 Page 3 of 6

DASY5 Validation Report for Head TSL

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 450 MHz; Type: D450V3; Serial: D450V3 - SN:1103

Communication System: UID 0 - CW; Frequency: 450 MHz

Medium parameters used: f = 450 MHz; α = 0.87 S/m; ε_r = 43.1; ρ = 1000 kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3877; ConvF(10.64, 10.64) @ 450 MHz; Calibrated: 30.12.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DA64 S654; Calibrated: 26.06.2020
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP.1003
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Dipole Calibration for Head Tissue/d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 39.18 W/m; Power Drift = -0.08 dB

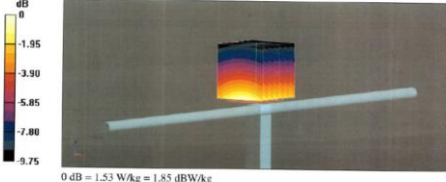
Peak SAR (extrapolated) = 1.76 W/kg

SAR(1g) = 1.14 W/kg; SAR(10g) = 0.767 W/kg

Smallest distance from peaks to all points 3 dB below: Larger than measurement grid

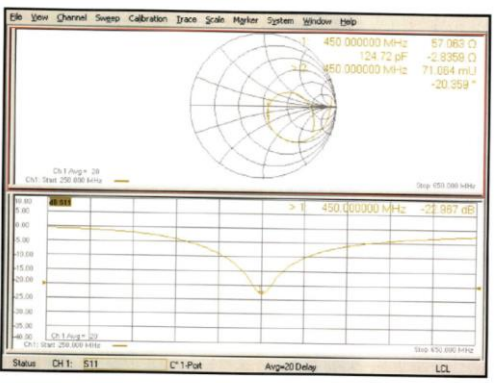
Ratio of SAR at M2 to SAR at M1 = 64.9%

Maximum value of SAR (measured) = 1.53 W/kg



0 dB = 1.53 W/kg = 1.85 dBW/kg

Certificate No: D450V3-1103_Apr21 Page 4 of 6





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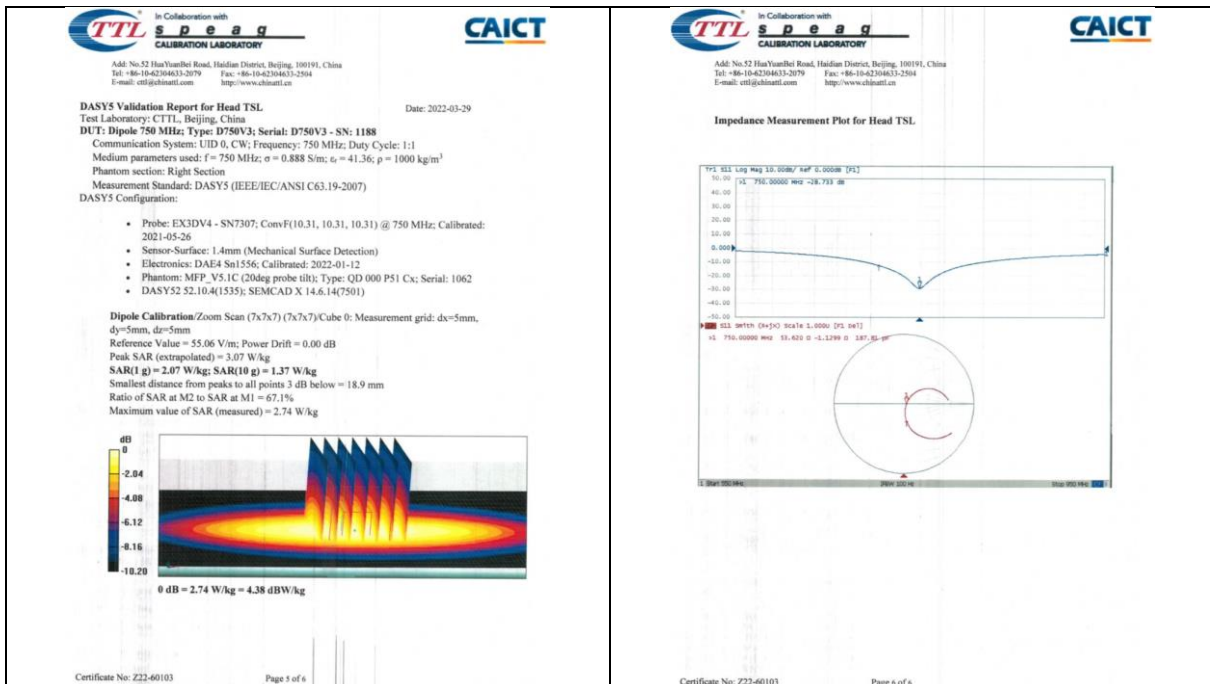
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1.3 D750V3 - SN 1188

TTL Speaq CALIBRATION LABORATORY		CAICT																					
Client: SGS-CN Certificate No: Z22-60103																							
CALIBRATION CERTIFICATE																							
Object: D750V3 - SN: 1188																							
Calibration Procedure(s): FF-Z11-003-01 Calibration Procedures for dipole validation kits																							
Calibration date: March 28, 2022																							
This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.																							
All calibrations have been conducted in the closed laboratory facility: environment temperature (22±3)°C and humidity<70%.																							
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Calibrated by: Zhao Jing SAR Test Engineer Signature: <i>[Signature]</i>																							
Reviewed by: Lin Hao SAR Test Engineer																							
Approved by: Qi Diqian SAR Project Leader																							
Issued: April 3, 2022																							
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Certificate No: Z22-60103		Page 1 of 6																					
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Measurement Conditions																							
DASY system configuration, as far as not given on page 1.																							
<table border="1"> <thead> <tr> <th>DASY Version</th> <th>DASY52</th> <th>V52.10.4</th> </tr> </thead> <tbody> <tr> <td>Extrapolation</td> <td>Advanced Extrapolation</td> <td></td> </tr> <tr> <td>Phantom</td> <td>Triple Flat Phantom 5.1C</td> <td></td> </tr> <tr> <td>Distance Dipole Center - TSL</td> <td>15 mm</td> <td>with Spacer</td> </tr> <tr> <td>Zoom Scan Resolution</td> <td>dx, dy, dz = 5 mm</td> <td></td> </tr> <tr> <td>Frequency</td> <td>750 MHz ± 1 MHz</td> <td></td> </tr> </tbody> </table>				DASY Version	DASY52	V52.10.4	Extrapolation	Advanced Extrapolation		Phantom	Triple Flat Phantom 5.1C		Distance Dipole Center - TSL	15 mm	with Spacer	Zoom Scan Resolution	dx, dy, dz = 5 mm		Frequency	750 MHz ± 1 MHz			
DASY Version	DASY52	V52.10.4																					
Extrapolation	Advanced Extrapolation																						
Phantom	Triple Flat Phantom 5.1C																						
Distance Dipole Center - TSL	15 mm	with Spacer																					
Zoom Scan Resolution	dx, dy, dz = 5 mm																						
Frequency	750 MHz ± 1 MHz																						
Head TSL parameters																							
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Certificate No: Z22-60103		Page 3 of 6																					
TTL Speaq CALIBRATION LABORATORY		CAICT																					
Glossary:																							
TSL: tissue simulating liquid																							
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a) IEC/IEEE 62209-1528, "Measurement Procedure for The Assessment of Specific Absorption Rate of Human Exposure to Radio Frequency Fields from Hand-held and Body-mounted Wireless Communication Devices- Part 1528: Human Models, Instrumentation and Procedures (Frequency range of 4 MHz to 10 GHz)", October 2020																							
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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: Z22-60103		Page 2 of 6																					
TTL Speaq CALIBRATION LABORATORY		CAICT																					
Appendix (Additional assessments outside the scope of CNAS L0570)																							
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After long term use with 100W radiated power, only a slight warming of the dipole near the feed-point can be measured.																							
The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard. No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feed-point may be damaged.																							
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Manufactured by	SPEAG																						
Certificate No: Z22-60103		Page 4 of 6																					



1.4 D835V2 - SN 4d114

TTL Calibration Laboratory
In Collaboration with CAICT

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Tel: +86-10-4204633-2079 Fax: +86-10-4204633-2504
E-mail: cti@china.ttl.com http://www.china.ttl.com

Client: **SGS-CN** Certificate No: **Z22-60104**

CALIBRATION CERTIFICATE

Object: **D835V2 - SN: 4d114**

Calibration Procedure(s): **FF-Z11-003-01**
Calibration Procedures for dipole validation kits

Calibration date: **March 31, 2022**

This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22±3)°C and humidity <70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by Certificate No.)	Scheduled Calibration
Power Meter NRP2	106277	24-Sep-21 (CTTL No.J21X08326)	Sep-22
Power sensor NRPBS	104291	24-Sep-21 (CTTL No.J21X08326)	Sep-22
Reference Probe EX3DV4	SN 7307	26-May-21 (SPEAG No.EK3-7307_May21)	May-22
DAE4	SN 1556	12-Jan-22 (CTTL-SPEAG No.Z22-60007)	Jan-23

Secondary Standards	ID #	Cal Date (Calibrated by Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	13-Jan-22 (CTTL No.J22X00409)	Jan-23
Network Analyzer E5071C	MY46110673	14-Jan-22 (CTTL No.J22X00409)	Jan-23

Calibrated by: **Zhao Jing** SAR Test Engineer
Reviewed by: **Lin Hao** SAR Test Engineer
Approved by: **Qi Diqian** SAR Project Leader

Issued: April 6, 2022

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Certificate No: Z22-60104 Page 1 of 6

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Glossary:

TSL: tissue simulating liquid
ConvF: sensitivity in TSL / NORMx,y,z
N/A: not applicable or not measured

Calibration is Performed According to the Following Standards:

- IEC/IEEE 62209-1528: "Measurement Procedure for The Assessment of Specific Absorption Rate of Human Exposure to Radio Frequency Fields from Hand-held and Body-mounted Wireless Communication Devices- Part 1528: Human Models, Instrumentation and Procedures (Frequency range of 4 MHz to 10 GHz)", October 2020
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
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- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

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: Z22-60104 Page 2 of 6



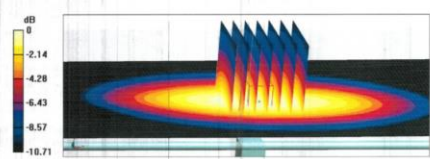
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t(86-512)57355888 f(86-512)57370818 sgs.china@sgs.com

TTL Calibration Laboratory		CAICT	
Address: No. 52 HuaYuanBei Road, Haidian District, Beijing, 100191, China Tel: +86-10-42304633-2079 Fax: +86-10-42304633-2504 E-mail: cti@china.ttl.com http://www.china.ttl.com			
Measurement Conditions DASY system configuration, as far as not given on page 1.			
DASY Version	DASY52	V52.10.4	
Extrapolation	Advanced Extrapolation		
Phantom	Triple Flat Phantom 5.1C		
Distance Dipole Center - TSL	15 mm	with Spacer	
Zoom Scan Resolution	dx, dy, dz = 5 mm		
Frequency	835 MHz ± 1 MHz		
Head TSL parameters The following parameters and calculations were applied:			
Nominal Head TSL parameters	Temperature 22.0 °C	Permittivity 41.5	Conductivity 0.90 mho/m
Measured Head TSL parameters	22.0 ± 0.2 °C	41.0 ± 6 %	0.91 mho/m ± 6 %
Head TSL temperature change during test	<1.0 °C	---	---
SAR result with Head TSL			
SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition		
SAR measured	250 mW input power	2.37 W/kg	
SAR for nominal Head TSL parameters	normalized to 1W	9.40 W/kg ± 18.8 % (k=2)	
SAR averaged over 10 cm ³ (10 g) of Head TSL	Condition		
SAR measured	250 mW input power	1.54 W/kg	
SAR for nominal Head TSL parameters	normalized to 1W	6.12 W/kg ± 18.7 % (k=2)	
Appendix (Additional assessments outside the scope of CNAS L0570)			
Antenna Parameters with Head TSL			
Impedance, transformed to feed point	48.70 - j22jΩ		
Return Loss	-25.3dB		
General Antenna Parameters and Design			
Electrical Delay (one direction)	1.307 ns		
After long term use with 100W radiated power, only a slight warming of the dipole near the feed-point can be measured.			
The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard. No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feed-point may be damaged.			
Additional EUT Data			
Manufactured by	SPEAG		

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Certificate No: Z22-60104 Page 3 of 6			
DASY5 Validation Report for Head TSL Test Laboratory: TTL, Beijing, China Date: 2022-03-31			
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 40114 Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1 Medium parameters used: f = 835 MHz; σ = 0.907 S/m; ε_r = 40.98; ρ = 1000 kg/m³ Phantom section: Right Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007) DASY5 Configuration:			
- Probe: EX3DV4 - SN7307; ConvF(10.13, 10.13, 10.13) @ 835 MHz; Calibrated: 2021-05-26 - Sensor-Surface: 1.4mm (Mechanical Surface Detection) - Electronics: DAE4 Sn1556; Calibrated: 2022-01-12 - Phantom: MFP_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx; Serial: 1062 - DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)			
Dipole Calibration/Zoom Scan (7x7x7) Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 57.88 V/m; Power Drift = 0.04 dB Peak SAR (extrapolated) = 3.56 W/kg SAR(1 g) = 2.37 W/kg; SAR(10 g) = 1.54 W/kg Smallest distance from peaks to all points 3 dB below = 15.8 mm Ratio of SAR at M2 to SAR at M1 = 66.2% Maximum value of SAR (measured) = 3.17 W/kg			
			
Certificate No: Z22-60104 Page 3 of 6			



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1.5 D900V2 - SN 1d079

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Client: SGS-CN Certificate No: Z22-60184																							
CALIBRATION CERTIFICATE																							
Object: D900V2 - SN: 1d079																							
Calibration Procedure(s): FF-Z11-003-01 Calibration Procedures for dipole validation kits																							
Calibration date: June 7, 2022																							
This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.																							
All calibrations have been conducted in the closed laboratory facility: environment temperature (23±3)°C and humidity <70%.																							
Calibration Equipment used (M&TE critical for calibration)																							
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Calibrated by: Zhao Jing SAR Test Engineer																							
Reviewed by: Lin Hao SAR Test Engineer																							
Approved by: Qi Dianyan SAR Project Leader																							
Issued: June 13, 2022																							
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SAR for nominal Head TSL parameters	normalized to 1W	11.0 W/kg ± 18.4 % (k=2)																						
SAR averaged over 10 cm ² (10 g) of Head TSL																								
SAR measured	250 mW input power	1.75 W/kg																						
SAR for nominal Head TSL parameters	normalized to 1W	7.09 W/kg ± 18.7 % (k=2)																						
Certificate No: Z22-60184 Page 3 of 6																								

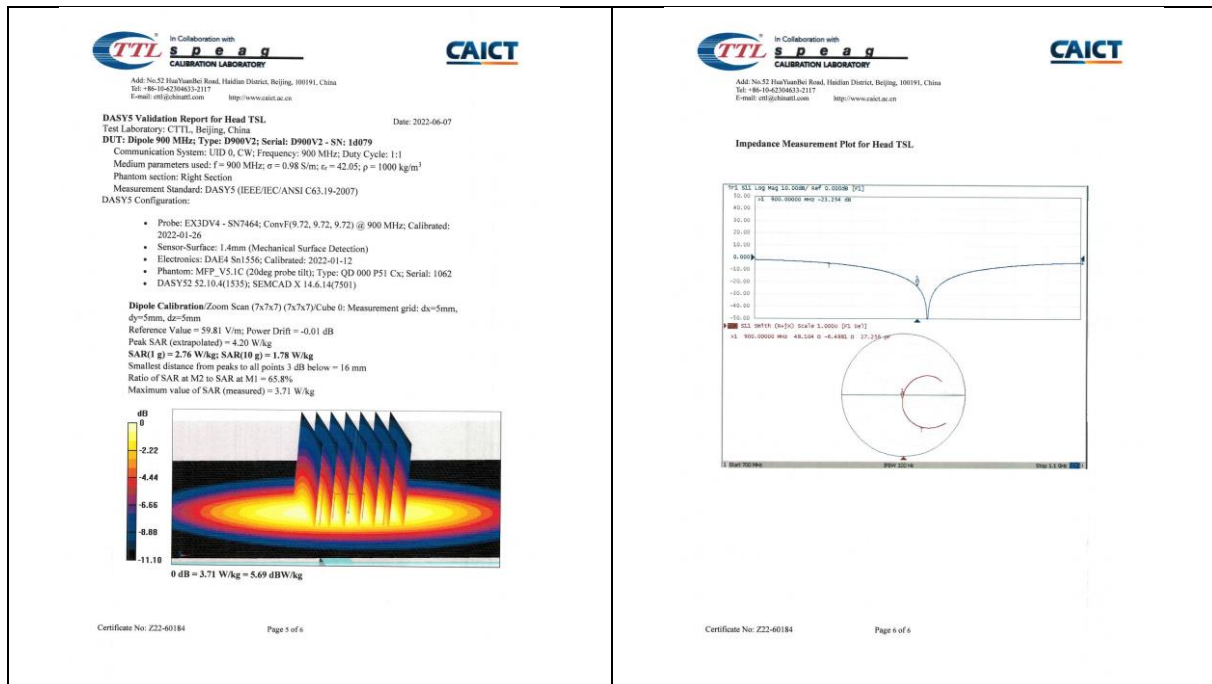
TTL Calibration Laboratory		CAICT							
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Appendix (Additional assessments outside the scope of CNAS L0570)									
Antenna Parameters with Head TSL									
<table border="1"><thead><tr><th></th><th></th></tr></thead><tbody><tr><td>Impedance, transformed to feed point</td><td>48.10 - 8.49jΩ</td></tr><tr><td>Return Loss</td><td>-23.3 dB</td></tr></tbody></table>						Impedance, transformed to feed point	48.10 - 8.49jΩ	Return Loss	-23.3 dB
Impedance, transformed to feed point	48.10 - 8.49jΩ								
Return Loss	-23.3 dB								
General Antenna Parameters and Design									
<table border="1"><thead><tr><th></th><th></th></tr></thead><tbody><tr><td>Electrical Delay (one direction)</td><td>1.312 ns</td></tr></tbody></table>						Electrical Delay (one direction)	1.312 ns		
Electrical Delay (one direction)	1.312 ns								
After long term use with 100W radiated power, only a slight warming of the dipole near the feed-point can be measured.									
The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.									
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feed-point may be damaged.									
Additional EUT Data									
<table border="1"><thead><tr><th></th><th></th></tr></thead><tbody><tr><td>Manufactured by</td><td>SPEAG</td></tr></tbody></table>						Manufactured by	SPEAG		
Manufactured by	SPEAG								
Certificate No: Z22-60184 Page 4 of 6									



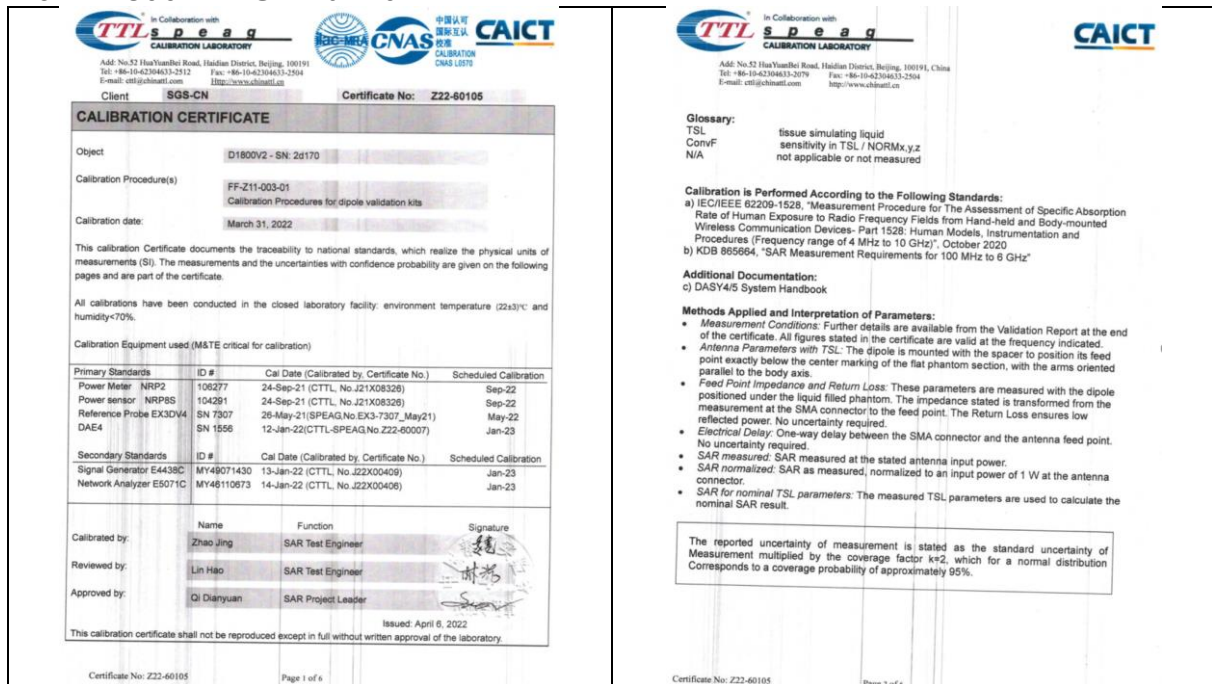
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1.6 D1800V2 - SN 2d170



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Speag
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E-mail: cti@china.ttl.com http://www.chinatitl.cn

Measurement Conditions
DASY system configuration, as far as not given on page 1

DASY Version	DASY52	52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1800 MHz ± 1 MHz	

Head TSL parameters
The following parameters and calculations were applied:

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.6 ± 6 %	1.41 mho/m ± 6 %
Head TSL temperature change during test	+1.0 °C	---	---

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.73 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	38.9 W/kg ± 18.8 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	5.11 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	20.4 W/kg ± 18.7 % (k=2)

Certificate No: Z22-60105 Page 3 of 6

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Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	47.90-2.54jΩ
Return Loss	-29.4dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.116 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feed-point can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard. No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feed-point may be damaged.

Additional EUT Data

Manufactured by	SPEAG
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DASY5 Validation Report for Head TSL
Test Laboratory: TTL, Beijing, China
Date: 2022-03-31
DUT: Dipole 1800 MHz; Type: D1800V2 - SN: 2d170
Communication System: UID 0, CW; Frequency: 1800 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1800 MHz; σ = 1.411 S/m; ε = 40.62; ρ = 1000 kg/m³
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN7307; ConvF(8.34, 8.34) @ 1800 MHz; Calibrated: 2021-05-26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1556; Calibrated: 2022-01-12
- Phantom: MFP_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx; Serial: 1062
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

Dipole Calibration/Zoom Scan (7x7x7) (7x7x7) Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 98.14 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 18.2 W/kg
SAR(1 g) = 9.73 W/kg; SAR(10 g) = 5.11 W/kg
Smallest distance from peaks to all points 3 dB below = 10 mm
Ratio of SAR at M2 to SAR at M1 = 54%
Maximum value of SAR (measured) = 15.2 W/kg

Certificate No: Z22-60105 Page 5 of 6

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Impedance Measurement Plot for Head TSL

Certificate No: Z22-60105 Page 6 of 6



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1.7 D1900V2 - SN 5d136

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Client: SGS-CN Certificate No: Z22-60185																							
CALIBRATION CERTIFICATE																							
Object: D1900V2 - SN: 5d136																							
Calibration Procedure(s): FF-Z11-003-01 Calibration Procedures for dipole validation kits																							
Calibration date: June 7, 2022																							
This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.																							
All calibrations have been conducted in the closed laboratory facility: environment temperature (22±3)°C and humidity <70%.																							
Calibration Equipment used (M&TE critical for calibration)																							
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Approved by:	Qi Danyuan	SAR Project Leader																					
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Appendix (Additional assessments outside the scope of CNAS L0570)			
Antenna Parameters with Head TSL			
Impedance, transformed to feed point		51.2D ± 7.58j	
Return Loss		- 22.4dB	
General Antenna Parameters and Design			
Electrical Delay (one direction)		1.109 ns	
After long term use with 100W radiated power, only a slight warming of the dipole near the feed-point can be measured.			
The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard. No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feed-point may be damaged.			
Additional EUT Data			
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Measurement Conditions			
DASY system configuration, as far as not given on page 1:			
DASY Version		DASY52	
Extrapolation		Advanced Extrapolation	
Phantom		Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL		10 mm with Spacer	
Zoom Scan Resolution		dx, dy, dz = 5 mm	
Frequency		1900 MHz ± 1 MHz	
Head TSL parameters			
The following parameters and calculations were applied:			
Nominal Head TSL parameters		Temperature: 22.0 °C Permittivity: 40.0 Conductivity: 1.40 nS/m	
Measured Head TSL parameters		(22.0 ± 0.2) °C 39.9 ± 6 % 1.39 nS/m ± 6 %	
Head TSL temperature change during test		<1.0 °C	
SAR result with Head TSL			
SAR averaged over 1 cm² (1 g) of Head TSL		Condition: 250 mW input power 9.55 W/kg	
SAR for nominal Head TSL parameters		normalized to 1W 40.0 W/kg ± 18.8 % (k=2)	
SAR averaged over 10 cm² (10 g) of Head TSL		Condition: 250 mW input power 5.18 W/kg	
SAR for nominal Head TSL parameters		normalized to 1W 20.8 W/kg ± 18.7 % (k=2)	
Certificate No: Z22-60185		Page 3 of 6	

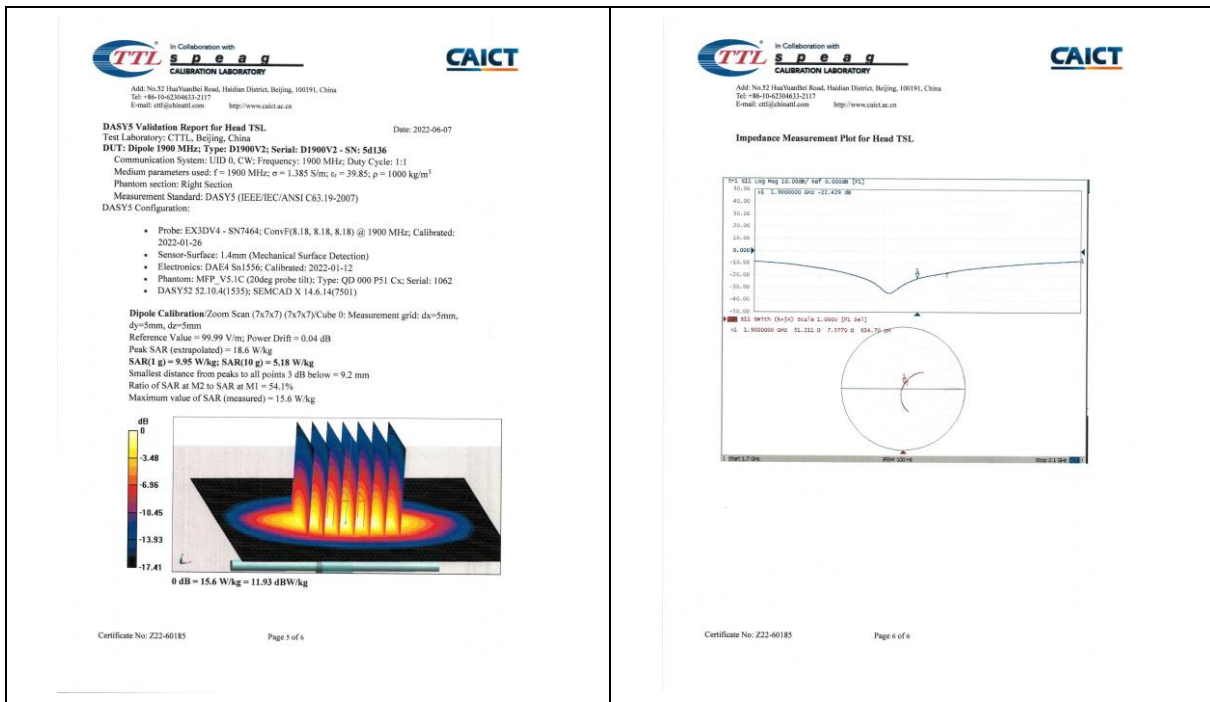


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1.8 D2000V2 - SN 1041

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Client: **SGS-CN** Certificate No: **Z22-60186**

CALIBRATION CERTIFICATE

Object: **D2000V2 - SN: 1041**

Calibration Procedure(s): **FF-211-003-01**
Calibration Procedures for dipole validation kits

Calibration date: **June 8, 2022**

This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements (S). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22±3)°C; and humidity <70%.

Calibration Equipment used (M&E critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by: Certificate No.)	Scheduled Calibration
Power Meter: NRP2	106277	24-Sep-21 (CTTL No. J21X08326)	Sep-22
Power sensor: NRP8S	104591	24-Sep-21 (CTTL No. J21X08326)	Sep-22
Reference Probe: EX3DV4	SN 7464	26-Jan-22 (SPEAQ No. EX3-7464_Jan22)	Jan-23
DAE4	SN 1556	12-Jan-22 (CTTL-SPEAQ No. Z22-60007)	Jan-23

Secondary Standards	ID #	Cal Date (Calibrated by: Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	13-Jan-22 (CTTL No. J22X00409)	Jan-23
Network Analyzer E5071C	MY46110673	14-Jan-22 (CTTL No. J22X00406)	Jan-23

Calibrated by: **Zhao Jing** SAR Test Engineer Signature:

Reviewed by: **Lin Hao** SAR Test Engineer Signature:

Approved by: **Qi Diaryuan** SAR Project Leader Signature:

Issued: June 13, 2022

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Glossary:

Issue: Issue simulating liquid
ConvF: sensitivity in TSL / NORMx.y.z
N/A: not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEC/IEEE 62209-1528, "Measurement Procedure for the Assessment of Specific Absorption Rate of Human Exposure to Radio Frequency Fields from Hand-held and Body-mounted Wireless Communication Devices- Part 1528: Human Models, Instrumentation and Procedures (Frequency range of 4 MHz to 10 GHz)", October 2020
b) KDB 855964, "SAR Measurement Requirements for 100 MHz to 6 GHz"
c) DASY4/5 System Handbook

Additional Documentation:

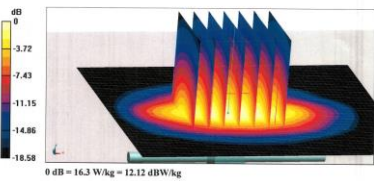
Methods Applied and Interpretation of Parameters:

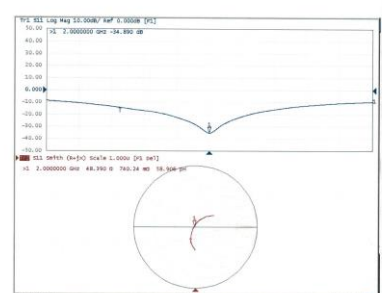
- Measurement Conditions: Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss: These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

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: Z22-60186 Page 2 of 6

In Collaboration with TTL s p e a g CALIBRATION LABORATORY		CAICT	
Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China Tel: +86-10-62306833-2117 E-mail: cti@china.ttl.com http://www.caict.ac.cn			
Measurement Conditions DASYS system configuration, as far as not given on page 1:			
DASY Version	DASY52	52.10.4	
Extrapolation	Advanced Extrapolation		
Phantom	Triple Flat Phantom 5.1C		
Distance Dipole Center - TSL	10 mm	with Spacer	
Zoom Scan Resolution	dx, dy, dz = 5 mm		
Frequency	2000 MHz ± 1 MHz		
Head TSL parameters The following parameters and calculations were applied:			
Nominal Head TSL parameters	Temperature	Permittivity	Conductivity
	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.2 ± 5 %	1.39 mho/m ± 5 %
Head TSL temperature change during test	<1.0 °C	---	---
SAR result with Head TSL			
SAR averaged over 1 cm ² (1 g) of Head TSL	Condition		
SAR measured	250 mW input power	10.4 W/kg	
SAR for nominal Head TSL parameters	normalized to 1W	41.8 W/kg ± 18.8 % (n=2)	
SAR averaged over 10 cm ² (10 g) of Head TSL	Condition		
SAR measured	250 mW input power	5.30 W/kg	
SAR for nominal Head TSL parameters	normalized to 1W	21.3 W/kg ± 18.7 % (n=2)	
Appendix (Additional assessments outside the scope of CNAS L0570) Antenna Parameters with Head TSL			
Impedance, transformed to feed point	48.4 ± 0.74jΩ		
Return Loss	-34.8dB		
General Antenna Parameters and Design			
Electrical Delay (line direction)	1.088 ns		
After long term use with 100W radiated power, only a slight warming of the dipole near the feed-point can be measured. The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard. No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feed-point may be damaged.			
Additional EUT Data			
Manufactured by	SPEAG		
Certificate No: Z22-60186		Page 3 of 6	

In Collaboration with TTL s p e a g CALIBRATION LABORATORY		CAICT	
Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China Tel: +86-10-62306833-2117 E-mail: cti@china.ttl.com http://www.caict.ac.cn			
DASY5 Validation Report for Head TSL Date: 2022-06-06 Test Laboratory: CTTL, Beijing, China DUT: Dipole 2000 MHz; Type: D2000V2; Serial: D2000V2 - SN: 1041 Communication System: UFD 0, CW; Frequency: 2000 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2000 MHz; σ = 1.392 S/m; ε _r = 40.21; ρ = 1000 kg/m ³ Phantom section: Right Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007) DASY5 Configuration: - Probe: EX3DV4 - SN7464; ConvF(8.2, 8.2) @ 2000 MHz; Calibrated: 2022-01-26 - Sensor-Surface: 1.4mm (Mechanical Surface Detection) - Electronics: DA64 Sn1556; Calibrated: 2022-01-12 - Phantom: MPP_V5.1C (20deg probe 01); Type: QD 000 P51 Cx; Serial: 1062 - DASY52 52.10.4 (535); SEMCAD X 14.6.14(7501)			
Dipole Calibration/Zoom Scan (7x7) (7x7) Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 103.4 V/m; Power Drift = 0.03 dB Peak SAR (extrapolated) = 19.6 W/kg SAR(1 g) = 18.4 W/kg; SAR(10 g) = 5.3 W/kg Smallest distance from peaks to all points 3 dB below = 9.1 mm Ratio of SAR at M2 to SAR at M1 = 53.6% Maximum value of SAR (measured) = 16.3 W/kg			
			
Certificate No: Z22-60186		Page 5 of 6	

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Impedance Measurement Plot for Head TSL			
			
Certificate No: Z22-60186		Page 6 of 6	

1.9 D2300V2 - SN 1096

TTL Calibration Laboratory		CAICT																																			
Address: No. 52 HuaYuanBei Road, Haidian District, Beijing, 100191 Tel: +86-10-42366433-2512 Fax: +86-10-42366433-2504 E-mail: cti@china.ttl.com.cn http://www.china.ttl.com.cn		Address: No. 52 HuaYuanBei Road, Haidian District, Beijing, 100191, China Tel: +86-10-42366433-2079 Fax: +86-10-42366433-2504 E-mail: cti@china.ttl.com.cn http://www.china.ttl.com.cn																																			
Client: SGS-CN		Certificate No: Z22-60106																																			
CALIBRATION CERTIFICATE																																					
Object: D2300V2 - SN 1096																																					
Calibration Procedure(s): FF-Z11-003-01																																					
Calibration date: March 31, 2022																																					
This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.																																					
All calibrations have been conducted in the closed laboratory facility: environment temperature (22±3)°C and humidity <70%.																																					
Calibration Equipment used (M&TE critical for calibration)																																					
Primary Standards	ID #	Cal Date (Calibrated by Certificate No.)	Scheduled Calibration																																		
Power Meter NRP2	106277	24-Sep-21 (CTTL No.J21X08328)	Sep-22																																		
Power sensor NRP8	104291	24-Sep-21 (CTTL No.J21X08328)	Sep-22																																		
Reference Probe EX3DV4	SN 7307	26-May-21 (SPEAG No.EX3-7307_May21)	May-22																																		
DAE4	SN 1556	12-Jan-22 (CTTL-SPEAG No.Z22-60007)	Jan-23																																		
Secondary Standards	ID #	Cal Date (Calibrated by Certificate No.)	Scheduled Calibration																																		
Signal Generator E4438C	MY48071430	13-Jan-22 (CTTL No.J22X00406)	Jan-23																																		
Network Analyzer E5071C	MY48110673	14-Jan-22 (CTTL No.J22X00406)	Jan-23																																		
Calibrated by:	Name: Zhao Jing	Function: SAR Test Engineer	Signature:																																		
Reviewed by:	Name: Lin Hao	Function: SAR Test Engineer	Signature:																																		
Approved by:	Name: Qi Diaryuan	Function: SAR Project Leader	Signature:																																		
Issued: April 6, 2022 This calibration certificate shall not be reproduced except in full without written approval of the laboratory.																																					
Certificate No: Z22-60106		Page 1 of 6																																			
Measurement Conditions DASY system configuration, as far as not given on page 1: <table border="1"> <tr> <td>DASY Version</td> <td>DASY32</td> <td>52.10.4</td> </tr> <tr> <td>Extrapolation</td> <td>Advanced Extrapolation</td> <td></td> </tr> <tr> <td>Phantom</td> <td>Triple Flat Phantom 5.1C</td> <td></td> </tr> <tr> <td>Distance Dipole Center - TSL</td> <td>10 mm</td> <td>with Spacer</td> </tr> <tr> <td>Zoom Scan Resolution</td> <td>dx, dy, dz = 5 mm</td> <td></td> </tr> <tr> <td>Frequency</td> <td>2300 MHz ± 1 MHz</td> <td></td> </tr> </table>		DASY Version	DASY32	52.10.4	Extrapolation	Advanced Extrapolation		Phantom	Triple Flat Phantom 5.1C		Distance Dipole Center - TSL	10 mm	with Spacer	Zoom Scan Resolution	dx, dy, dz = 5 mm		Frequency	2300 MHz ± 1 MHz		Head TSL parameters The following parameters and calculations were applied: <table border="1"> <tr> <th></th> <th>Temperature</th> <th>Permittivity</th> <th>Conductivity</th> </tr> <tr> <td>Nominal Head TSL parameters</td> <td>22.0 °C</td> <td>39.5</td> <td>1.67 mho/m</td> </tr> <tr> <td>Measured Head TSL parameters</td> <td>(22.0 ± 0.2) °C</td> <td>39.8 ± 6 %</td> <td>1.70 mho/m ± 6 %</td> </tr> <tr> <td>Head TSL temperature change during test</td> <td><1.0 °C</td> <td>—</td> <td>—</td> </tr> </table>			Temperature	Permittivity	Conductivity	Nominal Head TSL parameters	22.0 °C	39.5	1.67 mho/m	Measured Head TSL parameters	(22.0 ± 0.2) °C	39.8 ± 6 %	1.70 mho/m ± 6 %	Head TSL temperature change during test	<1.0 °C	—	—
DASY Version	DASY32	52.10.4																																			
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SAR result with Head TSL <table border="1"> <tr> <th></th> <th>Condition</th> <th></th> </tr> <tr> <td>SAR averaged over 1 cm² (1 g) of Head TSL</td> <td>250 mW input power</td> <td>12.4 W/kg</td> </tr> <tr> <td>SAR measured</td> <td>normalized to 1W</td> <td>49.2 W/kg ± 18.8 % (k=2)</td> </tr> <tr> <td>SAR for nominal Head TSL parameters</td> <td>Condition</td> <td></td> </tr> <tr> <td>SAR averaged over 10 cm² (10 g) of Head TSL</td> <td>250 mW input power</td> <td>5.88 W/kg</td> </tr> <tr> <td>SAR measured</td> <td>normalized to 1W</td> <td>23.4 W/kg ± 18.7 % (k=2)</td> </tr> </table>			Condition		SAR averaged over 1 cm ² (1 g) of Head TSL	250 mW input power	12.4 W/kg	SAR measured	normalized to 1W	49.2 W/kg ± 18.8 % (k=2)	SAR for nominal Head TSL parameters	Condition		SAR averaged over 10 cm ² (10 g) of Head TSL	250 mW input power	5.88 W/kg	SAR measured	normalized to 1W	23.4 W/kg ± 18.7 % (k=2)	Appendix (Additional assessments outside the scope of CNAS L0570) Antenna Parameters with Head TSL <table border="1"> <tr> <td>Impedance, transformed to feed point</td> <td>49.20 - 4.56jΩ</td> </tr> <tr> <td>Return Loss</td> <td>-26.5dB</td> </tr> </table> General Antenna Parameters and Design <table border="1"> <tr> <td>Electrical Delay (one direction)</td> <td>1.083 ns</td> </tr> </table> After long term use with 100W radiated power, only a slight warming of the dipole near the feed-point can be measured. The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard. No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feed-point may be damaged. Additional EUT Data <table border="1"> <tr> <td>Manufactured by</td> <td>SPEAG</td> </tr> </table>		Impedance, transformed to feed point	49.20 - 4.56jΩ	Return Loss	-26.5dB	Electrical Delay (one direction)	1.083 ns	Manufactured by	SPEAG								
	Condition																																				
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Impedance, transformed to feed point	49.20 - 4.56jΩ																																				
Return Loss	-26.5dB																																				
Electrical Delay (one direction)	1.083 ns																																				
Manufactured by	SPEAG																																				
Certificate No: Z22-60106		Page 2 of 6																																			

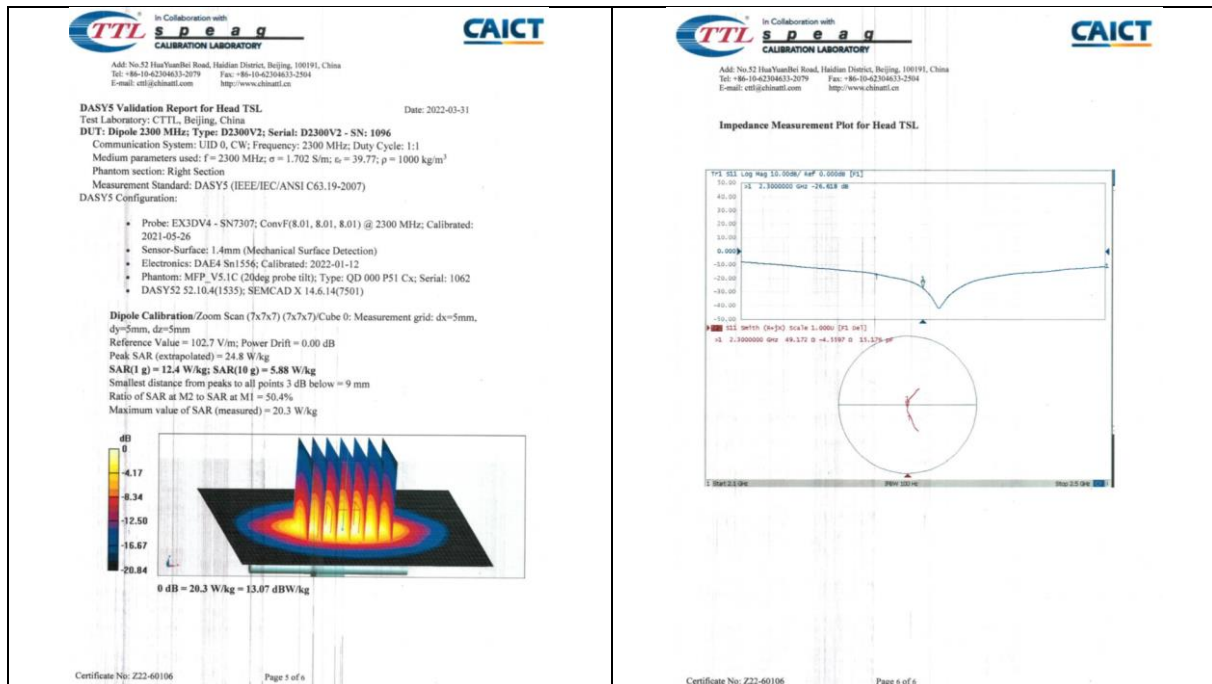


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1.10 D2450V2 - SN 817

TTL Speaq Calibration Laboratory
In Collaboration with CAICT

Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2079 Fax: +86-10-62304633-2504
E-mail: cti@china.ttl.com http://www.china.ttl.com

Client: SGS-CN Certificate No: Z22-60107

CALIBRATION CERTIFICATE

Object: D2450V2 - SN: 817
Calibration Procedure(s): FF-Z11-003-01
Calibration date: April 1, 2022

This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22±3)°C and humidity <70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by Certificate No.)	Scheduled Calibration
Power Meter: NRP2	106277	24-Sep-21 (CTTL No.J21X08326)	Sep-22
Power sensor: NRPBS	104291	24-Sep-21 (CTTL No.J21X08326)	Sep-22
Reference Probe EX3DV4	SN 7307	25-May-21 (SPEAG No EX3-7307_May21)	May-22
DA64	SN 1556	12-Jan-22 (CTTL-SPEAG No Z22-60007)	Jan-23

Secondary Standards	ID #	Cal Date (Calibrated by Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	13-Jan-22 (CTTL No. J22X00409)	Jan-23
Network Analyzer E5071C	MY48110873	14-Jan-22 (CTTL No. J22X00406)	Jan-23

Calibrated by: Zhao Jing, SAR Test Engineer
Reviewed by: Lin Hao, SAR Test Engineer
Approved by: Qi Dianyan, SAR Project Leader

Issued: April 6, 2022

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Glossary:
TSL: tissue simulating liquid
ConvF: sensitivity in TSL / NORMx,y,z
N/A: not applicable or not measured

Calibration is Performed According to the Following Standards:
a) IEC/IEEE 62209-1528, "Measurement Procedure for The Assessment of Specific Absorption Rate of Human Exposure to Radio Frequency Fields from Hand-held and Body-mounted Wireless Communication Devices- Part 1528: Human Models, Instrumentation and Procedures (Frequency range of 4 MHz to 10 GHz)", October 2020
b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:
c) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

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: Z22-60107 Page 2 of 6



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Tel: +86-10-42304633-2079 Fax: +86-10-42304633-2504
E-mail: cti@china.ttl.com http://www.chinatitl.cn

Measurement Conditions
DASY system configuration, as far as not given on page 1.

DASY Version	DASY52	52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

Head TSL parameters
The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.5 ± 6 %	1.79 mho/m ± 6 %
Head TSL temperature change during test	<1.0 °C	---	---

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.2 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	53.0 W/kg ± 18.8 % (p=2)
SAR averaged over 10 cm ³ (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	6.15 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	24.7 W/kg ± 18.7 % (p=2)

Certificate No: Z22-60107 Page 3 of 6

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E-mail: cti@china.ttl.com http://www.chinatitl.cn

Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.10 ± 3.20Ω
Return Loss	-28.5dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.066 ns
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After long term use with 100W radiated power, only a slight warming of the dipole near the feed-point can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard. No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feed-point may be damaged.

Additional EUT Data

Manufactured by	SPEAG
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Certificate No: Z22-60107 Page 4 of 6

TTL Speag In Collaboration with **CAICT** CALIBRATION LABORATORY

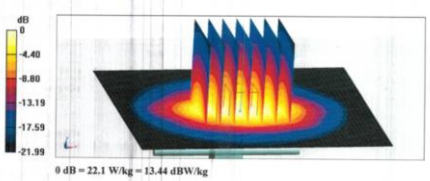
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E-mail: cti@china.ttl.com http://www.chinatitl.cn

DASY5 Validation Report for Head TSL
Test Laboratory: TTL, Beijing, China. Date: 2022-04-01

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 817
Communication System: UFD 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.79 S/m; ε = 39.52; ρ = 1000 kg/m³
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN7307; ConvF(7.75, 7.75) @ 2450 MHz; Calibrated: 2021-05-26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1556; Calibrated: 2022-01-12
- Phantom: MFP_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx; Serial: 1062
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

Dipole Calibration/Zoom Scan (7x7x7) (7x7x7) Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 104.6 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 27.0 W/kg
SAR(1 g) = 13.2 W/kg; SAR(10 g) = 6.15 W/kg
Smallest distance from peaks to all points 3 dB below = 8.9 mm
Ratio of SAR at M2 to SAR at M1 = 49.2%
Maximum value of SAR (measured) = 22.1 W/kg



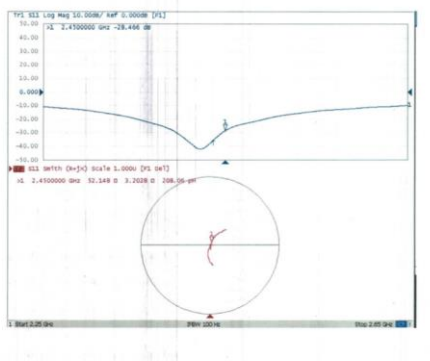
0 dB = 22.1 W/kg = 13.44 dBW/kg

Certificate No: Z22-60107 Page 5 of 6

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Impedance Measurement Plot for Head TSL



Certificate No: Z22-60107 Page 6 of 6



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1.11 D2600V2 - SN 1158

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Client: SGS-CN		Certificate No: Z22-60108																					
CALIBRATION CERTIFICATE Object: D2600V2 - SN: 1158 Calibration Procedure(s): FF-Z11-003-01 Calibration date: March 31, 2022 Calibration Procedures for dipole validation kits This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate. All calibrations have been conducted in the closed laboratory facility: environment temperature (22±3)°C and humidity <70%. Calibration Equipment used (M&TE critical for calibration)																							
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After long term use with 100W radiated power, only a slight warming of the dipole near the feed-point can be measured. The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard. No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feed-point may be damaged.							
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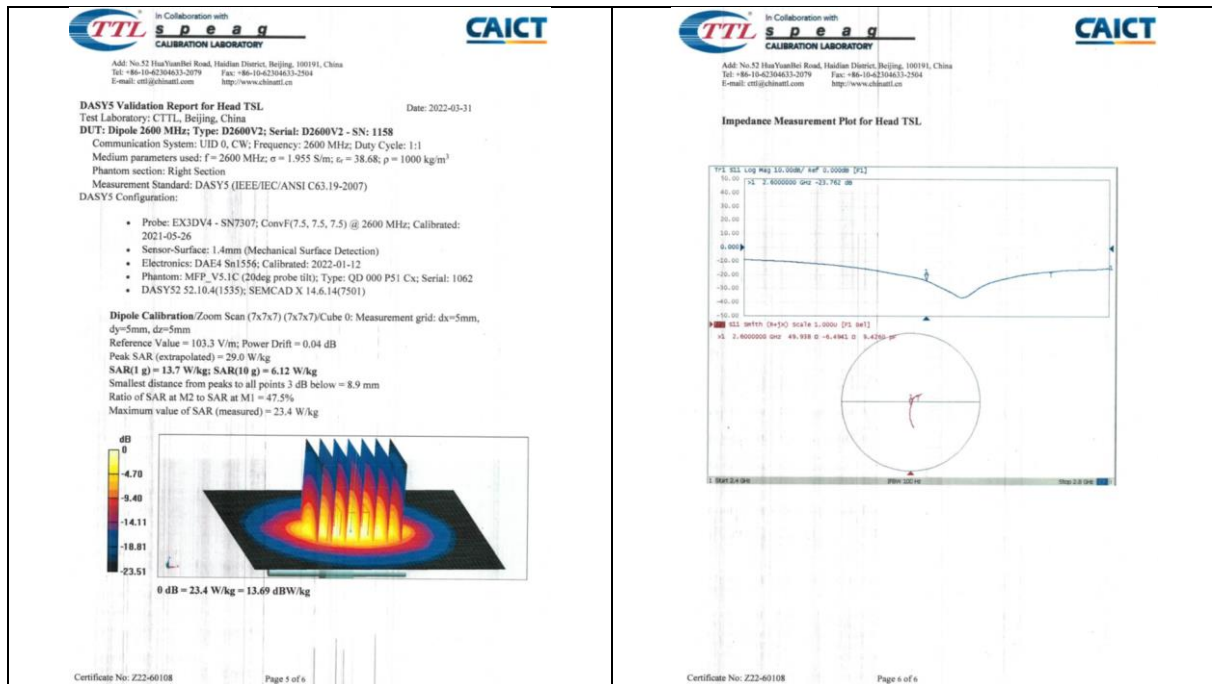


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1.12 D5GHZV2 - SN 1095

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Client: **SGS-CN** Certificate No: **Z22-60187**

CALIBRATION CERTIFICATE

Object: **D5GHZV2 - SN: 1095**

Calibration Procedure(s): **FF-Z11-003-01**
Calibration Procedures for dipole validation kits

Calibration date: **June 1, 2022**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22±3)°C and humidity <70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by Certificate No.)	Scheduled Calibration
Power Meter NRP2	106277	24-Sep-21 (CTTL No.J211006326)	Sep-22
Power sensor NRP8S	104291	24-Sep-21 (CTTL No.J211006326)	Sep-22
Reference Probe EX3DV4	SN 7464	26-Jan-22(SPEAG No.EX3-7464-Jan22)	Jan-23
DAE4	SN 1556	12-Jan-22(CTTL-SPEAG No.Z22-60007)	Jan-23

Secondary Standards	ID #	Cal Date (Calibrated by Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	13-Jan-22 (CTTL No. J22X00409)	Jan-23
Network Analyzer E5071C	MY46110673	14-Jan-22 (CTTL No. J22X00406)	Jan-23

Calibrated by: **Zhao Jing** SAR Test Engineer Signature:

Reviewed by: **Lin Hao** SAR Test Engineer Signature:

Approved by: **Qi Danyuan** SAR Project Leader Signature:

Issued: June 6, 2022

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Glossary:

TSL: Issue simulating liquid sensitivity in TSL / NORM.y,z
N/A: not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEC/IEEE 62209-1528, "Measurement Procedure for The Assessment of Specific Absorption Rate of Human Exposure to Radio Frequency Fields from Hand-held and Body-mounted Wireless Communication Devices- Part 1528: Human Models, Instrumentation and Procedures (Frequency range of 4 MHz to 10 GHz)", October 2020
b) KCB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:
c) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

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%.

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Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY52	52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy = 4 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	5200 MHz ± 1 MHz 5300 MHz ± 1 MHz 5600 MHz ± 1 MHz 5800 MHz ± 1 MHz	

Head TSL parameters at 5200MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	36.0	4.66 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.4 ± 6 %	4.62 mho/m ± 6 %
Head TSL temperature change during test	<1.0 °C	—	—

SAR result with Head TSL at 5200MHz

	Condition	
SAR averaged over 1 cm ² (1 g) of Head TSL	250 mW input power	7.75 W/kg
SAR measured		
SAR for nominal Head TSL parameters	normalized to 1W	77.6 W/kg ± 24.4 % (k=2)
SAR averaged over 10 cm ² (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.22 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	22.1 W/kg ± 24.2 % (k=2)

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Head TSL parameters at 5300MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.9	4.76 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.2 ± 6 %	4.73 mho/m ± 6 %
Head TSL temperature change during test	<1.0 °C	—	—

SAR result with Head TSL at 5300MHz

	Condition	
SAR averaged over 1 cm ² (1 g) of Head TSL	100 mW input power	7.94 W/kg
SAR measured		
SAR for nominal Head TSL parameters	normalized to 1W	79.1 W/kg ± 24.4 % (k=2)
SAR averaged over 10 cm ² (10 g) of Head TSL	Condition	
SAR measured	100 mW input power	2.27 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	22.6 W/kg ± 24.2 % (k=2)

Head TSL parameters at 5500MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.6	4.96 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.8 ± 6 %	4.94 mho/m ± 6 %
Head TSL temperature change during test	<1.0 °C	—	—

SAR result with Head TSL at 5500MHz

	Condition	
SAR averaged over 1 cm ² (1 g) of Head TSL	100 mW input power	8.26 W/kg
SAR measured		
SAR for nominal Head TSL parameters	normalized to 1W	82.5 W/kg ± 24.4 % (k=2)
SAR averaged over 10 cm ² (10 g) of Head TSL	Condition	
SAR measured	100 mW input power	2.34 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	23.3 W/kg ± 24.2 % (k=2)

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Head TSL parameters at 5600MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.5	5.07 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.7 ± 6 %	5.05 mho/m ± 6 %
Head TSL temperature change during test	<1.0 °C	—	—

SAR result with Head TSL at 5600MHz

	Condition	
SAR averaged over 1 cm ² (1 g) of Head TSL	100 mW input power	8.12 W/kg
SAR measured		
SAR for nominal Head TSL parameters	normalized to 1W	80.8 W/kg ± 24.4 % (k=2)
SAR averaged over 10 cm ² (10 g) of Head TSL	Condition	
SAR measured	100 mW input power	2.30 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	23.0 W/kg ± 24.2 % (k=2)

Head TSL parameters at 5800MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.3	5.27 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.4 ± 6 %	5.25 mho/m ± 6 %
Head TSL temperature change during test	<1.0 °C	—	—

SAR result with Head TSL at 5800MHz

	Condition	
SAR averaged over 1 cm ² (1 g) of Head TSL	100 mW input power	7.71 W/kg
SAR measured		
SAR for nominal Head TSL parameters	normalized to 1W	76.7 W/kg ± 24.4 % (k=2)
SAR averaged over 10 cm ² (10 g) of Head TSL	Condition	
SAR measured	100 mW input power	2.16 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	21.5 W/kg ± 24.2 % (k=2)

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Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL at 5200MHz

Impedance, transformed to feed point	48.1D-5.03jΩ
Return Loss	-23.6dB

Antenna Parameters with Head TSL at 5300MHz

Impedance, transformed to feed point	47.8D-2.42jΩ
Return Loss	-28.5dB

Antenna Parameters with Head TSL at 5500MHz

Impedance, transformed to feed point	50.3D-4.26jΩ
Return Loss	-27.4dB

Antenna Parameters with Head TSL at 5600MHz

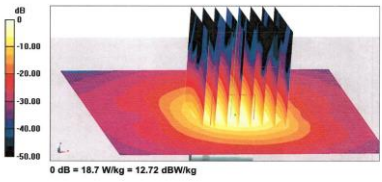
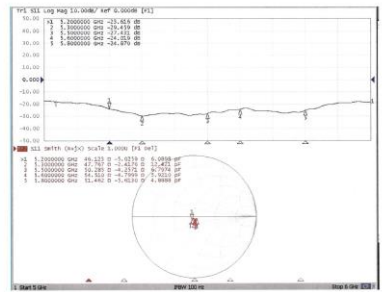
Impedance, transformed to feed point	54.5D-4.80jΩ
Return Loss	-24.6dB

Antenna Parameters with Head TSL at 5800MHz

Impedance, transformed to feed point	51.5D-5.61jΩ
Return Loss	-24.9dB

Certificate No: Z22-60187

Page 6 of 10

 In Collaboration with TTL Calibration Laboratory Add: No.52 Huayuanbei Road, Haidian District, Beijing, 100191, China Tel: +86-10-62920117 E-mail: cti@china.ttl.com http://www.caiet.ac.cn  General Antenna Parameters and Design Electrical Delay (one direction) 1.101 ns After long term use with 100W radiated power, only a slight warming of the dipole near the feed-point can be measured. The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard. No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feed-point may be damaged. Additional EUT Data Manufactured by SPEAG Certificate No: Z22-60187 Page 7 of 10	 In Collaboration with TTL Calibration Laboratory Add: No.52 Huayuanbei Road, Haidian District, Beijing, 100191, China Tel: +86-10-62920117 E-mail: cti@china.ttl.com http://www.caiet.ac.cn  DASY5 Validation Report for Head TSL Date: 2022-06-01 Test Laboratory: GTTL, Beijing, China DUT: Dipole 5GHz; Type: D5GHzV2; Serial: 1095 Communication System: CW; Frequency: 5200 MHz; Frequency: 5300 MHz; Frequency: 5500 MHz; Frequency: 5600 MHz; Frequency: 5800 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5200 MHz; σ = 4.62 S/m; ϵ_r = 35.36; ρ = 1000 kg/m³ Medium parameters used: f = 5300 MHz; σ = 4.73 S/m; ϵ_r = 35.19; ρ = 1000 kg/m³ Medium parameters used: f = 5500 MHz; σ = 4.939 S/m; ϵ_r = 34.83; ρ = 1000 kg/m³ Medium parameters used: f = 5600 MHz; σ = 5.051 S/m; ϵ_r = 34.68; ρ = 1000 kg/m³ Medium parameters used: f = 5800 MHz; σ = 5.247 S/m; ϵ_r = 34.42; ρ = 1000 kg/m³ Phantom section: Right Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007) DASY5 Configuration: - Probe: EX3DV4 - SN7464; ConvF(5.6, 5.6, 5.6) @ 5200 MHz; ConvF(5.32, 5.32, 5.32) @ 5300 MHz; ConvF(5.11, 5.11, 5.11) @ 5500 MHz; ConvF(4.91, 4.91, 4.91) @ 5600 MHz; ConvF(5, 5, 5) @ 5800 MHz; Calibrated: 2022-01-26 - Sensor-Surface: 1.4mm (Mechanical Surface Detection) - Electronics: DA64 Sn1556; Calibrated: 2022-01-12 - Phantom: MFP_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx; Serial: 1062 - DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501) Dipole Calibration /Pin=100mW, d=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm Reference Value = 60.80 V/m; Power Drift = -0.06 dB Peak SAR (extrapolated) = 29.8 W/kg SAR(1 g) = 7.79 W/kg; SAR(10 g) = 2.22 W/kg Smallest distance from peaks to all points 3 dB below = 7.2 mm Ratio of SAR at M2 to SAR at M1 = 66.8% Maximum value of SAR (measured) = 18.3 W/kg Dipole Calibration /Pin=100mW, d=10mm, f=5300 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm Reference Value = 61.08 V/m; Power Drift = -0.07 dB Peak SAR (extrapolated) = 31.5 W/kg SAR(1 g) = 7.94 W/kg; SAR(10 g) = 2.27 W/kg Smallest distance from peaks to all points 3 dB below = 7.2 mm Ratio of SAR at M2 to SAR at M1 = 65.5% Maximum value of SAR (measured) = 19.0 W/kg Certificate No: Z22-60187 Page 8 of 10
 In Collaboration with TTL Calibration Laboratory Add: No.52 Huayuanbei Road, Haidian District, Beijing, 100191, China Tel: +86-10-62920117 E-mail: cti@china.ttl.com http://www.caiet.ac.cn  Dipole Calibration /Pin=100mW, d=10mm, f=5500 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm Reference Value = 61.82 V/m; Power Drift = -0.08 dB Peak SAR (extrapolated) = 34.7 W/kg SAR(1 g) = 8.29 W/kg; SAR(10 g) = 2.34 W/kg Smallest distance from peaks to all points 3 dB below = 7.2 mm Ratio of SAR at M2 to SAR at M1 = 63.9% Maximum value of SAR (measured) = 20.2 W/kg Dipole Calibration /Pin=100mW, d=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm Reference Value = 65.08 V/m; Power Drift = -0.07 dB Peak SAR (extrapolated) = 35.2 W/kg SAR(1 g) = 8.12 W/kg; SAR(10 g) = 2.3 W/kg Smallest distance from peaks to all points 3 dB below = 7.2 mm Ratio of SAR at M2 to SAR at M1 = 62.5% Maximum value of SAR (measured) = 19.1 W/kg Dipole Calibration /Pin=100mW, d=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm Reference Value = 62.13 V/m; Power Drift = -0.06 dB Peak SAR (extrapolated) = 34.8 W/kg SAR(1 g) = 7.71 W/kg; SAR(10 g) = 2.16 W/kg Smallest distance from peaks to all points 3 dB below = 7.2 mm Ratio of SAR at M2 to SAR at M1 = 61.6% Maximum value of SAR (measured) = 18.7 W/kg  Certificate No: Z22-60187 Page 9 of 10	 In Collaboration with TTL Calibration Laboratory Add: No.52 Huayuanbei Road, Haidian District, Beijing, 100191, China Tel: +86-10-62920117 E-mail: cti@china.ttl.com http://www.caiet.ac.cn  Impedance Measurement Plot for Head TSL  Certificate No: Z22-60187 Page 10 of 10

2 DAE4 - SN 1245

Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland Phone +41 44 245 9700, Fax +41 44 245 9779 www.spsag.ch, info@spsag.ch s p e a g IMPORTANT NOTICE USAGE OF THE DAE4 The DAE unit is a delicate, high precision instrument and requires careful treatment by the user. There are no serviceable parts inside the DAE. Special attention shall be given to the following points: Battery Exchange: The battery cover of the DAE4 unit is fixed using a screw, over tightening the screw may cause the threads inside the DAE to wear out. Shipping of the DAE: Before shipping the DAE to SPEAG for calibration, remove the batteries and pack the DAE in an anti-static bag. This anti-static bag shall then be packed into a larger box or container which protects the DAE from impacts during transportation. The package shall be marked to indicate that a fragile instrument is inside. E-Stop Failures: Touch detection may be malfunctioning due to broken magnets in the E-stop. Rough handling of the E-stop may lead to damage of these magnets. Touch and collision errors are often caused by dust and dirt accumulated in the E-stop. To prevent E-stop failure, the customer shall always mount the probe to the DAE carefully and keep the DAE unit in a non-dusty environment if not used for measurements. Repair: Minor repairs are performed at no extra cost during the annual calibration. However, SPEAG reserves the right to charge for any repair especially if rough professional handling caused the defect. DASY Configuration Files: Since the exact values of the DAE input resistances, as measured during the calibration procedure of a DAE unit, are not used by the DASY software, a nominal value of 200 MOhm is given in the corresponding configuration file. Important Note: Warranty and calibration is void if the DAE unit is disassembled partly or fully by the Customer. Important Note: Never attempt to grease or oil the E-stop assembly. Cleaning and readjusting of the E-stop assembly is allowed by certified SPEAG personnel only and is part of the annual calibration procedure. Important Note: To prevent damage of the DAE probe connector pins, use great care when installing the probe to the DAE. Carefully connect the probe with the connector notch oriented in the mating position. Avoid any rotational movement of the probe body versus the DAE while turning the locking nut of the connector. The same care shall be used when disconnecting the probe from the DAE. TH_EH190306AE DAE4.docx 07.03.2019	Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland Accredited by the Swiss Accreditation Service (SAS) The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates Client: SGS-CN (Auden) Certificate No.: DAE4-1245_May22 CALIBRATION CERTIFICATE Object: DAE4 - SD 000 D04 BM - SN: 1245 Calibration procedure(s): QA CAL-06.v30 Calibration procedure for the data acquisition electronics (DAE) Calibration date: May 30, 2022 This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate. All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3) °C and humidity < 70%. Calibration Equipment used (MATE critical for calibration) <table border="1"><thead><tr><th>Primary Standards</th><th>ID #</th><th>Cal Date (Certificate No.)</th><th>Scheduled Calibration</th></tr></thead><tbody><tr><td>Kettler Multimeter Type 2001</td><td>SN: 0810276</td><td>31-Aug-21 (No 31386)</td><td>Aug-22</td></tr></tbody></table> <table border="1"><thead><tr><th>Secondary Standards</th><th>ID #</th><th>Check Date (in house)</th><th>Scheduled Check</th></tr></thead><tbody><tr><td>Auto DAE Calibration Unit</td><td>SE LMS 000 AA 1001</td><td>26-Jan-22 (in house check)</td><td>In house check: Jan-23</td></tr><tr><td>Calibrator Box VE 1</td><td>SE LMS 006 AA 1002</td><td>26-Jan-22 (in house check)</td><td>In house check: Jan-23</td></tr></tbody></table> Calibrated by: Dominique Steffen Function: Laboratory Technician Signature: <i>[Signature]</i> Approved by: Stefen Küller Technical Manager Signature: <i>[Signature]</i> This calibration certificate shall not be reproduced except in full without written approval of the laboratory. Issued: May 30, 2022 Certificate No: DAE4-1245_May22 Page 1 of 5	Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration	Kettler Multimeter Type 2001	SN: 0810276	31-Aug-21 (No 31386)	Aug-22	Secondary Standards	ID #	Check Date (in house)	Scheduled Check	Auto DAE Calibration Unit	SE LMS 000 AA 1001	26-Jan-22 (in house check)	In house check: Jan-23	Calibrator Box VE 1	SE LMS 006 AA 1002	26-Jan-22 (in house check)	In house check: Jan-23
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Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland Accredited by the Swiss Accreditation Service (SAS) The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates Accreditation No.: SCS 0108 Glossary DAE: data acquisition electronics Connector angle: information used in DASY system to align probe sensor X to the robot coordinate system. Methods Applied and Interpretation of Parameters DC Voltage Measurement: Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range. Connector angle: The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required. - The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty. DC Voltage Measurement Linearity: Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement. Common mode sensitivity: Influence of a positive or negative common mode voltage on the differential measurement. Channel separation: Influence of a voltage on the neighbor channels not subject to an input voltage. AD Converter Values with inputs shorted: Values on the internal AD converter corresponding to zero input voltage. Input Offset Measurement: Output voltage and statistical results over a large number of zero voltage measurements. Input Offset Current: Typical value for information: Maximum channel input offset current, not considering the input resistance. Input resistance: Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement. Low Battery Alarm Voltage: Typical value for information. Below this voltage, a battery alarm signal is generated. Power consumption: Typical value for information. Supply currents in various operating modes. Certificate No: DAE4-1245_May22 Page 2 of 5	DC Voltage Measurement AD - Converter Resolution nominal: 6.1 μV, full range = -100...+300 mV High Range: 1LSB = 6.1 μV, full range = -100...+300 mV Low Range: 1LSB = 6.1 μV, full range = -100...+300 mV DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec <table border="1"><thead><tr><th>Calibration Factors</th><th>X</th><th>Y</th><th>Z</th></tr></thead><tbody><tr><td>High Range</td><td>405.265 ± 0.02% (k=2)</td><td>403.974 ± 0.02% (k=2)</td><td>406.092 ± 0.02% (k=2)</td></tr><tr><td>Low Range</td><td>3.99534 ± 1.50% (k=2)</td><td>3.99508 ± 1.50% (k=2)</td><td>4.01015 ± 1.50% (k=2)</td></tr></tbody></table> Connector Angle <table border="1"><thead><tr><th>Connector Angle to be used in DASY system</th><th>30.0° ± 1°</th></tr></thead></table> Certificate No: DAE4-1245_May22 Page 3 of 5	Calibration Factors	X	Y	Z	High Range	405.265 ± 0.02% (k=2)	403.974 ± 0.02% (k=2)	406.092 ± 0.02% (k=2)	Low Range	3.99534 ± 1.50% (k=2)	3.99508 ± 1.50% (k=2)	4.01015 ± 1.50% (k=2)	Connector Angle to be used in DASY system	30.0° ± 1°						
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Connector Angle to be used in DASY system	30.0° ± 1°																				

Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

High Range	Reading (µV)	Difference (µV)	Error (%)
Channel X + Input	19994.45	1.82	0.00
Channel X + Input	20004.58	2.22	0.01
Channel X + Input	20000.14	1.12	-0.01
Channel Y + Input	19994.72	1.98	0.00
Channel Y + Input	20001.22	-1.00	-0.00
Channel Y + Input	20003.05	-1.67	0.01
Channel Z + Input	19992.84	0.19	0.00
Channel Z + Input	20003.09	0.88	0.00
Channel Z + Input	20001.73	-0.27	0.00
Low Range	Reading (µV)	Difference (µV)	Error (%)
Channel X + Input	2001.91	0.41	0.20
Channel X + Input	200.54	0.65	0.32
Channel X + Input	-197.86	0.07	-0.04
Channel Y + Input	2002.06	0.58	0.03
Channel Y + Input	201.27	-0.57	-0.28
Channel Y + Input	-188.39	-0.06	0.03
Channel Z + Input	2001.36	0.08	0.00
Channel Z + Input	200.09	-1.53	-0.76
Channel Z + Input	-199.85	-1.57	0.79

2. Common mode sensitivity

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Common mode Input Voltage (mV)	High Range Average Reading (µV)	Low Range Average Reading (µV)
Channel X		
-200	-3.87	-7.69
-200	9.12	7.79
Channel Y		
-200	-8.68	-9.28
-200	8.52	6.36
Channel Z		
-200	-5.36	-5.60
-200	3.58	3.08

3. Channel separation

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Input Voltage (mV)	Channel X (µV)	Channel Y (µV)	Channel Z (µV)
Channel X	200	-	4.07
Channel Y	200	9.36	-
Channel Z	200	10.11	7.14

Certificate No: DAE4-1245_May22

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4. AD-Converter Values with inputs shorted

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	High Range (LSB)	Low Range (LSB)
Channel X	15984	17040
Channel Y	16562	16768
Channel Z	18035	15958

5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Input (10MΩ)	Average (µV)	min. Offset (µV)	max. Offset (µV)	Std. Deviation (µV)
Channel X	1.00	-0.15	1.93	0.45
Channel Y	-0.18	-1.28	0.94	0.45
Channel Z	-0.58	-2.61	0.88	0.60

6. Input Offset Current

Nominal input circuitry offset current on all channels: <25nA

7. Input Resistance (Typical values for information)

	Zeroing (MΩ)	Measuring (MΩ)
Channel X	200	200
Channel Y	200	200
Channel Z	200	200

8. Low Battery Alarm Voltage (Typical values for information)

Typical values	Alarm Level (VDC)
Supply (+ Vcc)	+7.9
Supply (- Vcc)	-7.8

9. Power Consumption (Typical values for information)

Typical values	Switched off (mA)	Stand by (mA)	Transmitting (mA)
Supply (+ Vcc)	<0.01	<6	<14
Supply (- Vcc)	<0.01	<6	<9

Certificate No: DAE4-1245_May22

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3 EX3DV4 - SN 7346

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zugstrasse 63, 8048 Zurich, SwitzerlandSchweizerischer Kalibrierdienst
Service suisse d'étalonnage
Servicio suizo de tarificación
Swiss Calibration Service

Accreditation No.: SCS 0108

Accredited by the Swiss Accreditation Service (SAS)

The Swiss Accreditation Service is one of the signatories to the EA

Multilateral Agreement for the recognition of calibration certificates

Client: Auden

Certificate No: EX3-7346_Mar22

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN 7346

Calibration procedure(s): QA CAL-01 v8, QA CAL-14 v6, QA CAL-23 v5, QA CAL-25 v7
Calibration procedure for dosimetric E-field probes

Calibration date: March 30, 2022

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the dosimetry laboratory facility: environment temperature (22 ± 3)°C and humidity < 75%.

Calibration Equipment used (MTE critical for calibration):

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN 184719	08-Apr-21 (No. 211-02301)	Apr-22
Power sensor NRP-291	SN 103244	08-Apr-21 (No. 211-02301)	Apr-22
Power sensor NRP-291	SN 103245	08-Apr-21 (No. 211-02301)	Apr-22
Reference 20 dB attenuator	SN C22552 (20s)	08-Apr-21 (No. 211-02301)	Apr-22
DAK4	SN 680	13-Sep-21 (No. DAE4-985, Dae21)	Oct-22
Reference Probe ES302	SN 3013	27-Dec-21 (No. ES3-913, Dae21)	Dec-22

Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E41196	SN GR1429574	08-Apr-21 (in house check Jun-20)	in house check Jun-22
Power sensor E4112A	SN MY1488087	08-Apr-18 (in house check Jun-20)	in house check Jun-22
Power sensor E4112A	SN 000102102	08-Apr-18 (in house check Jun-20)	in house check Jun-22
RF generator HP 8640C	SN US3424101709	04-Aug-19 (in house check Jun-20)	in house check Jun-22
Network Analyzer E3030A	SN US100047	31-Mar-14 (in house check Oct-20)	in house check Oct-22

Calibrated by: Name: Jochen Kuttler, Function: Laboratory Technician, Signature: [Signature]

Approved by: Name: Sven Kuhn, Function: Deputy Manager, Signature: [Signature]

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Issued: March 31, 2022

Certificate No: EX3-7346_Mar22

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Service suisse d'étalonnage
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Swiss Calibration Service

Accreditation No.: SCS 0108

Accredited by the Swiss Accreditation Service (SAS)

The Swiss Accreditation Service is one of the signatories to the EA

Multilateral Agreement for the recognition of calibration certificates

Glossary:

TSL: Issue simulating input sensitivity in free space

Conf: sensitivity in TSL / NORMA.y.z

DCP: diode compression point

A, B, C, D: crest factor (15 duty cycle) of the RF signal

Polarization φ : modulation dependent linearization parameters

Polarization θ : φ rotation around probe axis

Connector Angle: θ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\theta = 0$ 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) IEC/IEEE 62209-1528: Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices - Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz), October 2020
- b) KOB 855664: "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- NORMA.y.z: Assessed for E-field polarization $\theta = 0$ if $f < 300$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide; NORMA.y.z are only intermediate values, i.e., the uncertainties of NORMA.y.z do not affect the E-field uncertainty inside TSL (see below Conf).
- NORMA.y.z = NORMA.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 Conf.
- DCP.y.z: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (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.
- A.y.z, B.y.z, C.y.z, D.y.z: V.R.y.z: A, B, C, D 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. V.R. is the maximum calibration range expressed in RMS voltage across the diode.
- Conf and Boundary Effect Parameters: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f > 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORMA.y.z + Conf where the uncertainty corresponds to that given for Conf. A frequency dependent Conf is used in DASY4 version 4.4 and higher which allows extending the validity from 1.50 MHz to 1.100 MHz.
- Spherical Isotropy (SD 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 (or probe axis). No tolerance required.
- Connector Angle: The angle is assessed using the information gained by determining the NORMA (no uncertainty required).

Certificate No: EX3-7346_Mar22

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EX3DV4 - SN:7346

March 30, 2022

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7346

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm $\mu V/(V/m)^2$	0.46	0.47	0.61	$\pm 10.1\%$
DCP (mV) ¹	101.4	106.0	106.9	

Calibration Results for Modulation Response

UID	Communication System Name	A dB	B dB	C dB	D dB	VR mV	Max dev.	Max Unc ²
0	CW	X: 0.00 Y: 0.00 Z: 0.00	0.00 0.00 0.00	1.00 1.00 1.00	0.00 0.00 0.00	143.5 139.0 139.0	$\pm 3.0\%$	$\pm 1.1\%$
10352-AAA	Pulse Waveform (200Hz, 10%)	X: 3.33 Y: 4.03 Z: 1.63	68.90 75.75 61.25	11.66 12.25 6.76	15.00 15.00 60.0	60.0 60.0 60.0	$\pm 3.5\%$	$\pm 9.6\%$
10353-AAA	Pulse Waveform (200Hz, 20%)	X: 3.00 Y: 11.51 Z: 3.83	70.65 81.32 66.00	11.31 14.72 6.11	6.99 88.0 88.0	88.0 88.0 88.0	$\pm 2.4\%$	$\pm 9.6\%$
10354-AAA	Pulse Waveform (200Hz, 40%)	X: 7.41 Y: 26.95 Z: 0.18	79.85 89.42 136.38	12.51 15.51 0.01	3.98 95.0 95.0	95.0 95.0 95.0	$\pm 2.7\%$	$\pm 9.6\%$
10355-AAA	Pulse Waveform (200Hz, 60%)	X: 2.27 Y: 20.00 Z: 7.84	71.13 81.58 158.51	6.52 16.29 16.47	2.22 120.0 120.0	120.0 120.0 120.0	$\pm 1.7\%$	$\pm 9.6\%$
10387-AAA	GPSK Waveform, 1 MHz	X: 1.47 Y: 1.56 Z: 0.45	64.88 66.24 61.88	13.82 14.70 11.05	1.00 150.0 150.0	150.0 150.0 150.0	$\pm 4.2\%$	$\pm 9.6\%$
10388-AAA	GPSK Waveform, 10 MHz	X: 1.86 Y: 2.98 Z: 1.21	66.27 67.33 64.75	14.65 15.38 15.18	0.00 150.0 150.0	150.0 150.0 150.0	$\pm 1.1\%$	$\pm 9.6\%$
10389-AAA	64-QAM Waveform, 100 kHz	X: 2.63 Y: 2.74 Z: 1.70	68.51 68.83 64.72	18.25 18.16 15.99	3.01 150.0 150.0	150.0 150.0 150.0	$\pm 1.0\%$	$\pm 9.6\%$
10390-AAA	64-QAM Waveform, 40 MHz	X: 3.34 Y: 3.38 Z: 2.79	66.36 66.82 62.92	15.56 15.56 14.94	0.00 150.0 150.0	150.0 150.0 150.0	$\pm 2.0\%$	$\pm 9.6\%$
10414-AAA	WLAN CCDF, 64-QAM, 60MHz	X: 4.71 Y: 5.76 Z: 3.83	65.35 66.41 66.16	15.27 15.41 15.28	0.00 150.0 150.0	150.0 150.0 150.0	$\pm 3.8\%$	$\pm 9.6\%$

Note: For details 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%.

¹ The uncertainties of Norm X, Y, Z do not affect the E-field uncertainty model TSL (see Pages 5 and 6).

² Numerical limitation parameter - uncertainty not required.

³ Uncertainty is determined using the error deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

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March 30, 2022

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7346

Sensor Model Parameters

	C1	C2	a	T1	T2	T3	T4	T5	T6
	#	#	mV	ms	ms	ms	V	V	V
X	39.3	291.80	35.10	5.63	0.03	5.02	1.42	0.12	1.01
Y	37.1	270.84	34.12	8.29	0.00	5.01	1.82	0.05	1.01
Z	9.7	69.14	33.37	4.96	0.00	4.94	0.61	0.00	1.00

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-166.1
Mechanical Surface Detection Mode	enabled
Cylindrical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

Note: Measurement distance from surface can be increased to 3-4 mm for an Area Scan job.

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March 30, 2022

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7346

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz)	Relative Permittivity ¹	Conductivity (S/m) ²	ConvF X	ConvF Y	ConvF Z	Alpha ³	Depth ⁴ (mm)	Unc (k=2)
750	41.9	0.89	10.56	10.56	10.56	0.55	0.85	$\pm 12.0\%$
835	41.5	0.90	10.12	10.12	10.12	0.42	0.96	$\pm 12.0\%$
900	41.5	0.97	10.10	10.10	10.10	0.53	0.80	$\pm 12.0\%$
1450	40.5	1.20	9.26	9.26	9.26	0.50	0.80	$\pm 12.0\%$
1750	40.1	1.37	8.83	8.83	8.83	0.34	0.86	$\pm 12.0\%$
1900	40.0	1.40	8.48	8.48	8.48	0.35	0.86	$\pm 12.0\%$
2000	40.0	1.40	8.35	8.35	8.35	0.34	0.86	$\pm 12.0\%$
2200	39.5	1.67	7.86	7.86	7.86	0.39	0.90	$\pm 12.0\%$
2450	39.2	1.80	7.63	7.63	7.63	0.41	0.90	$\pm 12.0\%$
2600	39.0	1.96	7.33	7.33	7.33	0.44	0.90	$\pm 12.0\%$
3000	38.2	2.71	7.15	7.15	7.15	0.30	1.35	$\pm 13.1\%$
3050	37.8	2.81	7.14	7.14	7.14	0.30	1.35	$\pm 13.1\%$
3700	37.7	3.12	6.85	6.85	6.85	0.30	1.35	$\pm 13.1\%$
3900	37.5	3.32	6.71	6.71	6.71	0.40	1.60	$\pm 13.1\%$
4100	37.2	3.53	6.58	6.58	6.58	0.40	1.60	$\pm 13.1\%$
4200	37.1	3.63	6.30	6.30	6.30	0.40	1.70	$\pm 13.1\%$
4400	36.9	3.84	6.24	6.24	6.24	0.40	1.70	$\pm 13.1\%$
4600	36.7	4.04	6.11	6.11	6.11	0.40	1.70	$\pm 13.1\%$
4800	36.4	4.25	6.08	6.08	6.08	0.40	1.80	$\pm 13.1\%$
4900	36.3	4.40	5.84	5.84	5.84	0.40	1.80	$\pm 13.1\%$
5200	36.0	4.66	5.25	5.25	5.25	0.40	1.80	$\pm 13.1\%$
5300	35.9	4.78	5.12	5.12	5.12	0.40	1.80	$\pm 13.1\%$
5500	35.6	4.96	4.85	4.85	4.85	0.40	1.80	$\pm 13.1\%$
5600	35.5	5.07	4.70	4.70	4.70	0.40	1.80	$\pm 13.1\%$
5800	35.3	5.27	4.75	4.75	4.75	0.40	1.80	$\pm 13.1\%$

¹ Frequency validity above 300 MHz of a 100 MHz only applies for DASY v4.4 and higher (see Page 2), else 4 is restricted to ± 50 MHz. The uncertainty is the RSS of the ConfF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10 , 35, 40, 50 and 70 MHz for ConfF assessments at 30, 64, 128, 192 and 220 MHz respectively. Validity of ConfF assessed at 8 MHz is a 6 MHz, and ConfF assessed at 13 MHz is a 10 MHz. Above 5 GHz frequency validity can be extended to ± 110 MHz.

² At frequencies below 3 GHz, the validity of tissue parameters (i) and (ii) can be related to a 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (i) and (ii) is restricted to $\pm 3\%$. The uncertainty is the RSS of the ConfF uncertainty for indicated target tissue parameters.

³ 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 $\pm 3\%$ for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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March 30, 2022

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7346

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz)	Relative Permittivity ¹	Conductivity (S/m) ²	ConvF X	ConvF Y	ConvF Z	Alpha ³	Depth ⁴ (mm)	Unc (k=2)
6500	34.5	6.07	5.30	5.30	5.30	0.20	2.50	$\pm 18.6\%$

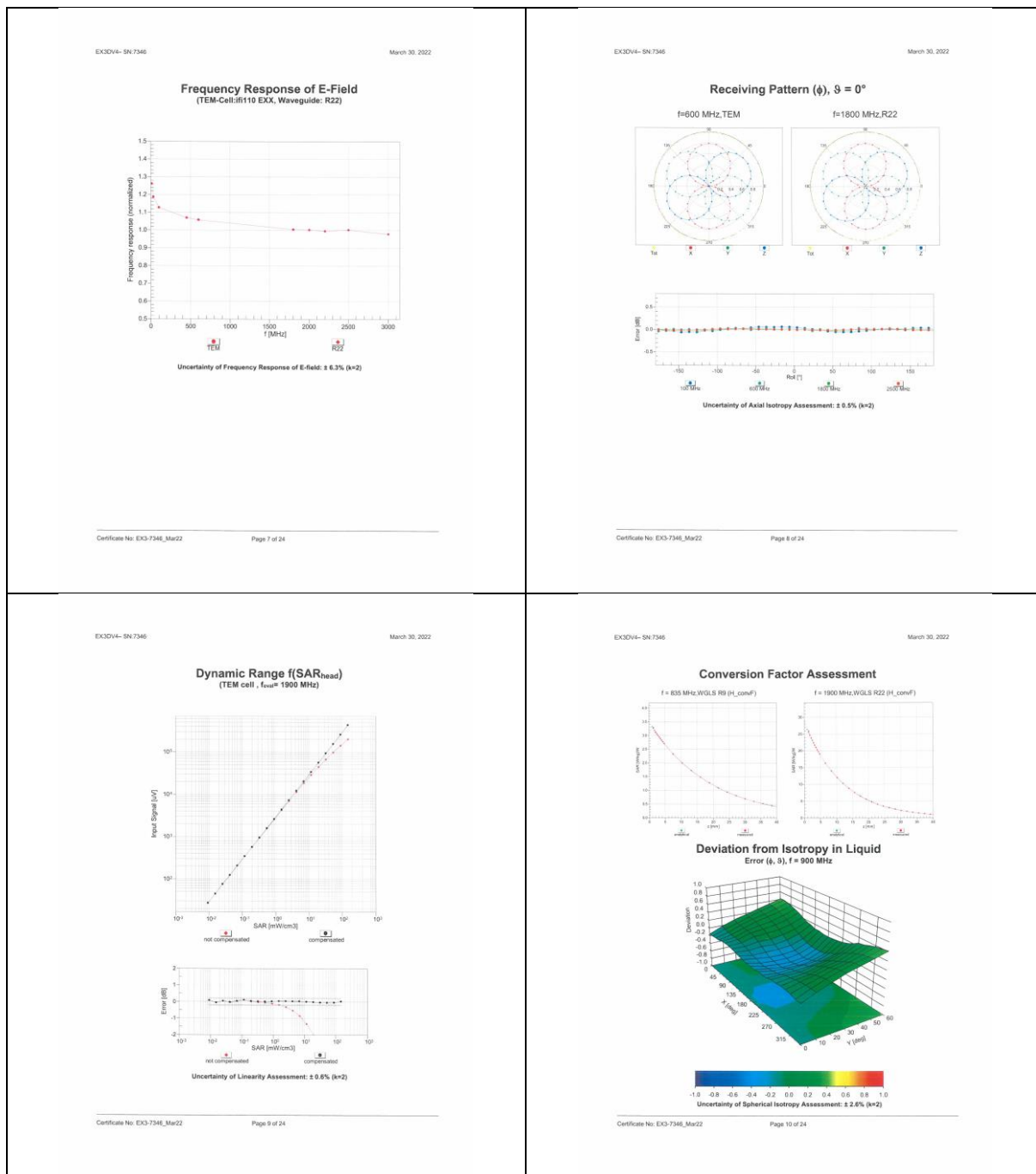
¹ Frequency validity above 600 MHz is ± 700 MHz. The uncertainty is the RSS of the ConfF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

² At frequencies 6-10 GHz, the validity of tissue parameters (i) and (ii) can be related to $\pm 10\%$ if liquid compensation formula is applied to measured SAR values. The uncertainty is the RSS of the ConfF uncertainty for indicated target tissue parameters.

³ 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, below $\pm 3\%$ for frequencies between 3-6 GHz and below $\pm 4\%$ for frequencies between 6-10 GHz at any distance larger than half the probe tip diameter from the boundary.

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EX30V4-SN-7346 <table><tr><td>10414</td><td>AAA</td><td>WLAN CDFM 64-QAM 40MHz</td><td>Generic</td><td>8.54</td><td>± 0.6 %</td></tr><tr><td>10415</td><td>AAA</td><td>IEEE 802.11n WFI 2.4 GHz (DSSS) 5 Mbps (Rsp. Sec)</td><td>WLAN</td><td>1.54</td><td>± 0.6 %</td></tr><tr><td>10416</td><td>AAA</td><td>IEEE 802.11n WFI 2.4 GHz (DSSS) 5 Mbps (Rsp. Sec)</td><td>WLAN</td><td>8.23</td><td>± 0.6 %</td></tr><tr><td>10417</td><td>AAC</td><td>IEEE 802.11n WFI 5 GHz (OFDM) 4 Mbps (Rsp. Sec)</td><td>WLAN</td><td>8.23</td><td>± 0.6 %</td></tr><tr><td>10418</td><td>AAA</td><td>IEEE 802.11n WFI 2.4 GHz (DSSS) 5 Mbps (Rsp. Long)</td><td>WLAN</td><td>8.14</td><td>± 0.6 %</td></tr><tr><td>10419</td><td>AAA</td><td>IEEE 802.11n WFI 2.4 GHz (DSSS) 5 Mbps (Rsp. Short)</td><td>WLAN</td><td>8.19</td><td>± 0.6 %</td></tr><tr><td>10420</td><td>AAC</td><td>IEEE 802.11n HT Overhead: 7.2 Mbps (Rsp. Sec)</td><td>WLAN</td><td>8.32</td><td>± 0.6 %</td></tr><tr><td>10421</td><td>AAC</td><td>IEEE 802.11n HT Overhead: 43.3 Mbps (Rsp. Sec)</td><td>WLAN</td><td>8.47</td><td>± 0.6 %</td></tr><tr><td>10424</td><td>AAC</td><td>IEEE 802.11n HT Overhead: 7.2 Mbps (Rsp. Sec)</td><td>WLAN</td><td>8.40</td><td>± 0.6 %</td></tr><tr><td>10425</td><td>AAC</td><td>IEEE 802.11n HT Overhead: 15 Mbps (Rsp. Sec)</td><td>WLAN</td><td>8.41</td><td>± 0.6 %</td></tr><tr><td>10426</td><td>AAC</td><td>IEEE 802.11n HT Overhead: 30 Mbps (Rsp. Sec)</td><td>WLAN</td><td>8.45</td><td>± 0.6 %</td></tr><tr><td>10427</td><td>AAC</td><td>IEEE 802.11n HT Overhead: 150 Mbps (Rsp. Sec)</td><td>WLAN</td><td>8.41</td><td>± 0.6 %</td></tr><tr><td>10430</td><td>AAD</td><td>LTE-FDD (SC-FDMA, 5 MHz, E-TR 1.1)</td><td>LTE-FDD</td><td>8.28</td><td>± 0.6 %</td></tr><tr><td>10431</td><td>AAD</td><td>LTE-FDD (SC-FDMA, 10 MHz, E-TR 1.1)</td><td>LTE-FDD</td><td>8.36</td><td>± 0.6 %</td></tr><tr><td>10432</td><td>AAC</td><td>LTE-FDD (SC-FDMA, 15 MHz, E-TR 1.1)</td><td>LTE-FDD</td><td>8.34</td><td>± 0.6 %</td></tr><tr><td>10433</td><td>AAC</td><td>LTE-FDD (SC-FDMA, 20 MHz, E-TR 1.1)</td><td>LTE-FDD</td><td>8.34</td><td>± 0.6 %</td></tr><tr><td>10434</td><td>AAA</td><td>W-CDMA (BS Test Model 1, 64 QPSK, Clipping 44%)</td><td>WCDMA</td><td>8.60</td><td>± 0.6 %</td></tr><tr><td>10435</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 1 RB, 30 MHz, QPSK, UL, Sub)</td><td>LTE-TDD</td><td>7.82</td><td>± 0.6 %</td></tr><tr><td>10447</td><td>AAD</td><td>LTE-FDD (SC-FDMA, 5 MHz, E-TR 1.1, Clipping 44%)</td><td>LTE-FDD</td><td>7.96</td><td>± 0.6 %</td></tr><tr><td>10448</td><td>AAD</td><td>LTE-FDD (SC-FDMA, 10 MHz, E-TR 1.1, Clipping 44%)</td><td>LTE-FDD</td><td>7.93</td><td>± 0.6 %</td></tr><tr><td>10449</td><td>AAC</td><td>LTE-FDD (SC-FDMA, 15 MHz, E-TR 1.1, Clipping 44%)</td><td>LTE-FDD</td><td>7.91</td><td>± 0.6 %</td></tr><tr><td>10450</td><td>AAC</td><td>LTE-FDD (SC-FDMA, 20 MHz, E-TR 1.1, Clipping 44%)</td><td>LTE-FDD</td><td>7.88</td><td>± 0.6 %</td></tr><tr><td>10451</td><td>AAA</td><td>W-CDMA (BS Test Model 1, 64 QPSK, Clipping 44%)</td><td>WCDMA</td><td>7.99</td><td>± 0.6 %</td></tr><tr><td>10452</td><td>AAD</td><td>Validation (Scramble, Time, TDD)</td><td>Test</td><td>10.90</td><td>± 0.6 %</td></tr><tr><td>10453</td><td>AAC</td><td>IEEE 802.11ac WFI (160MHz, 64-QAM, Rsp. Sec)</td><td>WLAN</td><td>8.63</td><td>± 0.6 %</td></tr><tr><td>10457</td><td>AAA</td><td>UMTS FDD (SC-FDMA)</td><td>WCDMA</td><td>6.62</td><td>± 0.6 %</td></tr><tr><td>10458</td><td>AAA</td><td>CDMA2000 1X (EV-DO, Rev. B, 3 carriers)</td><td>CDMA2000</td><td>6.93</td><td>± 0.6 %</td></tr><tr><td>10459</td><td>AAA</td><td>CDMA2000 1X (EV-DO, Rev. B, 3 carriers)</td><td>CDMA2000</td><td>8.25</td><td>± 0.6 %</td></tr><tr><td>10460</td><td>AAA</td><td>UMTS FDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL, Sub)</td><td>LTE-TDD</td><td>7.82</td><td>± 0.6 %</td></tr><tr><td>10461</td><td>AAA</td><td>LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL, Sub)</td><td>LTE-TDD</td><td>7.82</td><td>± 0.6 %</td></tr><tr><td>10462</td><td>AAA</td><td>LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.30</td><td>± 0.6 %</td></tr><tr><td>10463</td><td>AAA</td><td>LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.30</td><td>± 0.6 %</td></tr><tr><td>10464</td><td>AAC</td><td>LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL, Sub)</td><td>LTE-TDD</td><td>7.82</td><td>± 0.6 %</td></tr><tr><td>10465</td><td>AAC</td><td>LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.30</td><td>± 0.6 %</td></tr><tr><td>10466</td><td>AAC</td><td>LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.30</td><td>± 0.6 %</td></tr><tr><td>10467</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL, Sub)</td><td>LTE-TDD</td><td>7.82</td><td>± 0.6 %</td></tr><tr><td>10468</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.32</td><td>± 0.6 %</td></tr><tr><td>10469</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.56</td><td>± 0.6 %</td></tr><tr><td>10470</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL, Sub)</td><td>LTE-TDD</td><td>8.57</td><td>± 0.6 %</td></tr><tr><td>10471</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL, Sub)</td><td>LTE-TDD</td><td>8.32</td><td>± 0.6 %</td></tr><tr><td>10472</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.57</td><td>± 0.6 %</td></tr><tr><td>10473</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.57</td><td>± 0.6 %</td></tr><tr><td>10474</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.52</td><td>± 0.6 %</td></tr><tr><td>10475</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.57</td><td>± 0.6 %</td></tr><tr><td>10477</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.52</td><td>± 0.6 %</td></tr><tr><td>10478</td><td>LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.57</td><td>± 0.6 %</td></tr><tr><td>10479</td><td>AAA</td><td>LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL, Sub)</td><td>LTE-TDD</td><td>7.74</td><td>± 0.6 %</td></tr><tr><td>10480</td><td>AAA</td><td>LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.16</td><td>± 0.6 %</td></tr><tr><td>10481</td><td>AAA</td><td>LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.45</td><td>± 0.6 %</td></tr><tr><td>10482</td><td>AAC</td><td>LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL, Sub)</td><td>LTE-TDD</td><td>7.71</td><td>± 0.6 %</td></tr><tr><td>10483</td><td>AAC</td><td>LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.16</td><td>± 0.6 %</td></tr><tr><td>10484</td><td>AAC</td><td>LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.47</td><td>± 0.6 %</td></tr><tr><td>10485</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL, Sub)</td><td>LTE-TDD</td><td>7.99</td><td>± 0.6 %</td></tr><tr><td>10486</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.16</td><td>± 0.6 %</td></tr><tr><td>10487</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.60</td><td>± 0.6 %</td></tr><tr><td>10488</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL, Sub)</td><td>LTE-TDD</td><td>7.70</td><td>± 0.6 %</td></tr></table> Certificate No: EX3-7346_Mar22 Page 15 of 24	10414	AAA	WLAN CDFM 64-QAM 40MHz	Generic	8.54	± 0.6 %	10415	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS) 5 Mbps (Rsp. Sec)	WLAN	1.54	± 0.6 %	10416	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS) 5 Mbps (Rsp. Sec)	WLAN	8.23	± 0.6 %	10417	AAC	IEEE 802.11n WFI 5 GHz (OFDM) 4 Mbps (Rsp. Sec)	WLAN	8.23	± 0.6 %	10418	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS) 5 Mbps (Rsp. Long)	WLAN	8.14	± 0.6 %	10419	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS) 5 Mbps (Rsp. Short)	WLAN	8.19	± 0.6 %	10420	AAC	IEEE 802.11n HT Overhead: 7.2 Mbps (Rsp. Sec)	WLAN	8.32	± 0.6 %	10421	AAC	IEEE 802.11n HT Overhead: 43.3 Mbps (Rsp. Sec)	WLAN	8.47	± 0.6 %	10424	AAC	IEEE 802.11n HT Overhead: 7.2 Mbps (Rsp. Sec)	WLAN	8.40	± 0.6 %	10425	AAC	IEEE 802.11n HT Overhead: 15 Mbps (Rsp. Sec)	WLAN	8.41	± 0.6 %	10426	AAC	IEEE 802.11n HT Overhead: 30 Mbps (Rsp. Sec)	WLAN	8.45	± 0.6 %	10427	AAC	IEEE 802.11n HT Overhead: 150 Mbps (Rsp. Sec)	WLAN	8.41	± 0.6 %	10430	AAD	LTE-FDD (SC-FDMA, 5 MHz, E-TR 1.1)	LTE-FDD	8.28	± 0.6 %	10431	AAD	LTE-FDD (SC-FDMA, 10 MHz, E-TR 1.1)	LTE-FDD	8.36	± 0.6 %	10432	AAC	LTE-FDD (SC-FDMA, 15 MHz, E-TR 1.1)	LTE-FDD	8.34	± 0.6 %	10433	AAC	LTE-FDD (SC-FDMA, 20 MHz, E-TR 1.1)	LTE-FDD	8.34	± 0.6 %	10434	AAA	W-CDMA (BS Test Model 1, 64 QPSK, Clipping 44%)	WCDMA	8.60	± 0.6 %	10435	AAF	LTE-TDD (SC-FDMA, 1 RB, 30 MHz, QPSK, UL, Sub)	LTE-TDD	7.82	± 0.6 %	10447	AAD	LTE-FDD (SC-FDMA, 5 MHz, E-TR 1.1, Clipping 44%)	LTE-FDD	7.96	± 0.6 %	10448	AAD	LTE-FDD (SC-FDMA, 10 MHz, E-TR 1.1, Clipping 44%)	LTE-FDD	7.93	± 0.6 %	10449	AAC	LTE-FDD (SC-FDMA, 15 MHz, E-TR 1.1, Clipping 44%)	LTE-FDD	7.91	± 0.6 %	10450	AAC	LTE-FDD (SC-FDMA, 20 MHz, E-TR 1.1, Clipping 44%)	LTE-FDD	7.88	± 0.6 %	10451	AAA	W-CDMA (BS Test Model 1, 64 QPSK, Clipping 44%)	WCDMA	7.99	± 0.6 %	10452	AAD	Validation (Scramble, Time, TDD)	Test	10.90	± 0.6 %	10453	AAC	IEEE 802.11ac WFI (160MHz, 64-QAM, Rsp. Sec)	WLAN	8.63	± 0.6 %	10457	AAA	UMTS FDD (SC-FDMA)	WCDMA	6.62	± 0.6 %	10458	AAA	CDMA2000 1X (EV-DO, Rev. B, 3 carriers)	CDMA2000	6.93	± 0.6 %	10459	AAA	CDMA2000 1X (EV-DO, Rev. B, 3 carriers)	CDMA2000	8.25	± 0.6 %	10460	AAA	UMTS FDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL, Sub)	LTE-TDD	7.82	± 0.6 %	10461	AAA	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL, Sub)	LTE-TDD	7.82	± 0.6 %	10462	AAA	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.30	± 0.6 %	10463	AAA	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.30	± 0.6 %	10464	AAC	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL, Sub)	LTE-TDD	7.82	± 0.6 %	10465	AAC	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.30	± 0.6 %	10466	AAC	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.30	± 0.6 %	10467	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL, Sub)	LTE-TDD	7.82	± 0.6 %	10468	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.32	± 0.6 %	10469	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.56	± 0.6 %	10470	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL, Sub)	LTE-TDD	8.57	± 0.6 %	10471	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL, Sub)	LTE-TDD	8.32	± 0.6 %	10472	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.57	± 0.6 %	10473	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.57	± 0.6 %	10474	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.52	± 0.6 %	10475	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.57	± 0.6 %	10477	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.52	± 0.6 %	10478	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.57	± 0.6 %	10479	AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL, Sub)	LTE-TDD	7.74	± 0.6 %	10480	AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.16	± 0.6 %	10481	AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.45	± 0.6 %	10482	AAC	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL, Sub)	LTE-TDD	7.71	± 0.6 %	10483	AAC	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.16	± 0.6 %	10484	AAC	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.47	± 0.6 %	10485	AAF	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL, Sub)	LTE-TDD	7.99	± 0.6 %	10486	AAF	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.16	± 0.6 %	10487	AAF	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.60	± 0.6 %	10488	AAF	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL, Sub)	LTE-TDD	7.70	± 0.6 %	EX30V4-SN-7346 <table><tr><td>10489</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.31</td><td>± 0.6 %</td></tr><tr><td>10490</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.54</td><td>± 0.6 %</td></tr><tr><td>10491</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL, Sub)</td><td>LTE-TDD</td><td>7.74</td><td>± 0.6 %</td></tr><tr><td>10492</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.41</td><td>± 0.6 %</td></tr><tr><td>10493</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.55</td><td>± 0.6 %</td></tr><tr><td>10494</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL, Sub)</td><td>LTE-TDD</td><td>7.74</td><td>± 0.6 %</td></tr><tr><td>10495</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.37</td><td>± 0.6 %</td></tr><tr><td>10496</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.54</td><td>± 0.6 %</td></tr><tr><td>10497</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL, Sub)</td><td>LTE-TDD</td><td>7.67</td><td>± 0.6 %</td></tr><tr><td>10498</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.40</td><td>± 0.6 %</td></tr><tr><td>10499</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.68</td><td>± 0.6 %</td></tr><tr><td>10500</td><td>AAC</td><td>LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL, Sub)</td><td>LTE-TDD</td><td>7.67</td><td>± 0.6 %</td></tr><tr><td>10501</td><td>AAC</td><td>LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.44</td><td>± 0.6 %</td></tr><tr><td>10502</td><td>AAC</td><td>LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.52</td><td>± 0.6 %</td></tr><tr><td>10503</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL, Sub)</td><td>LTE-TDD</td><td>7.72</td><td>± 0.6 %</td></tr><tr><td>10504</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.31</td><td>± 0.6 %</td></tr><tr><td>10505</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.54</td><td>± 0.6 %</td></tr><tr><td>10506</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL, Sub)</td><td>LTE-TDD</td><td>7.74</td><td>± 0.6 %</td></tr><tr><td>10507</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.36</td><td>± 0.6 %</td></tr><tr><td>10508</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.55</td><td>± 0.6 %</td></tr><tr><td>10509</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL, Sub)</td><td>LTE-TDD</td><td>7.99</td><td>± 0.6 %</td></tr><tr><td>10510</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.49</td><td>± 0.6 %</td></tr><tr><td>10511</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.51</td><td>± 0.6 %</td></tr><tr><td>10512</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL, Sub)</td><td>LTE-TDD</td><td>7.74</td><td>± 0.6 %</td></tr><tr><td>10513</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.42</td><td>± 0.6 %</td></tr><tr><td>10514</td><td>AAF</td><td>LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL, Sub)</td><td>LTE-TDD</td><td>8.45</td><td>± 0.6 %</td></tr><tr><td>10515</td><td>AAA</td><td>IEEE 802.11n WFI 2.4 GHz (DSSS, 2 Mbps, Rsp. Sec)</td><td>WLAN</td><td>1.58</td><td>± 0.6 %</td></tr><tr><td>10516</td><td>AAA</td><td>IEEE 802.11n WFI 2.4 GHz (DSSS, 5.5 Mbps, Rsp. Sec)</td><td>WLAN</td><td>1.57</td><td>± 0.6 %</td></tr><tr><td>10517</td><td>AAA</td><td>IEEE 802.11n WFI 2.4 GHz (DSSS, 11 Mbps, Rsp. Sec)</td><td>WLAN</td><td>1.58</td><td>± 0.6 %</td></tr><tr><td>10518</td><td>AAC</td><td>IEEE 802.11n WFI 5 GHz (OFDM, 9 Mbps, Rsp. Sec)</td><td>WLAN</td><td>8.23</td><td>± 0.6 %</td></tr><tr><td>10519</td><td>AAC</td><td>IEEE 802.11n WFI 5 GHz (OFDM, 12 Mbps, Rsp. Sec)</td><td>WLAN</td><td>8.39</td><td>± 0.6 %</td></tr><tr><td>10520</td><td>AAC</td><td>IEEE 802.11n WFI 5 GHz (OFDM, 18 Mbps, Rsp. Sec)</td><td>WLAN</td><td>8.12</td><td>± 0.6 %</td></tr><tr><td>10521</td><td>AAC</td><td>IEEE 802.11n WFI 5 GHz (OFDM, 24 Mbps, Rsp. Sec)</td><td>WLAN</td><td>7.97</td><td>± 0.6 %</td></tr><tr><td>10522</td><td>AAC</td><td>IEEE 802.11n WFI 5 GHz (OFDM, 30 Mbps, Rsp. Sec)</td><td>WLAN</td><td>8.45</td><td>± 0.6 %</td></tr><tr><td>10523</td><td>AAC</td><td>IEEE 802.11n WFI 5 GHz (OFDM, 48 Mbps, Rsp. Sec)</td><td>WLAN</td><td>8.08</td><td>± 0.6 %</td></tr><tr><td>10524</td><td>AAC</td><td>IEEE 802.11n WFI 5 GHz (OFDM, 54 Mbps, Rsp. Sec)</td><td>WLAN</td><td>8.27</td><td>± 0.6 %</td></tr><tr><td>10525</td><td>AAC</td><td>IEEE 802.11ac WFI (20MHz, MCS9, Rsp. Sec)</td><td>WLAN</td><td>8.36</td><td>± 0.6 %</td></tr><tr><td>10526</td><td>AAC</td><td>IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)</td><td>WLAN</td><td>8.42</td><td>± 0.6 %</td></tr><tr><td>10527</td><td>AAC</td><td>IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)</td><td>WLAN</td><td>8.51</td><td>± 0.6 %</td></tr><tr><td>10528</td><td>AAC</td><td>IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)</td><td>WLAN</td><td>8.36</td><td>± 0.6 %</td></tr><tr><td>10529</td><td>AAC</td><td>IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)</td><td>WLAN</td><td>8.36</td><td>± 0.6 %</td></tr><tr><td>10530</td><td>AAC</td><td>IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)</td><td>WLAN</td><td>8.43</td><td>± 0.6 %</td></tr><tr><td>10531</td><td>AAC</td><td>IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)</td><td>WLAN</td><td>8.29</td><td>± 0.6 %</td></tr><tr><td>10532</td><td>AAC</td><td>IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)</td><td>WLAN</td><td>8.38</td><td>± 0.6 %</td></tr><tr><td>10533</td><td>AAC</td><td>IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)</td><td>WLAN</td><td>8.45</td><td>± 0.6 %</td></tr><tr><td>10534</td><td>AAC</td><td>IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)</td><td>WLAN</td><td>8.45</td><td>± 0.6 %</td></tr><tr><td>10535</td><td>AAC</td><td>IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)</td><td>WLAN</td><td>8.45</td><td>± 0.6 %</td></tr><tr><td>10536</td><td>AAC</td><td>IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)</td><td>WLAN</td><td>8.32</td><td>± 0.6 %</td></tr><tr><td>10537</td><td>AAC</td><td>IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)</td><td>WLAN</td><td>8.44</td><td>± 0.6 %</td></tr><tr><td>10538</td><td>AAC</td><td>IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)</td><td>WLAN</td><td>8.45</td><td>± 0.6 %</td></tr><tr><td>10539</td><td>AAC</td><td>IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)</td><td>WLAN</td><td>8.39</td><td>± 0.6 %</td></tr><tr><td>10540</td><td>AAC</td><td>IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)</td><td>WLAN</td><td>8.46</td><td>± 0.6 %</td></tr><tr><td>10541</td><td>AAC</td><td>IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)</td><td>WLAN</td><td>8.65</td><td>± 0.6 %</td></tr><tr><td>10542</td><td>AAC</td><td>IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)</td><td>WLAN</td><td>8.47</td><td>± 0.6 %</td></tr><tr><td>10543</td><td>AAC</td><td>IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)</td><td>WLAN</td><td>8.65</td><td>± 0.6 %</td></tr><tr><td>10544</td><td>AAC</td><td>IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)</td><td>WLAN</td><td>8.47</td><td>± 0.6 %</td></tr><tr><td>10545</td><td>AAC</td><td>IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)</td><td>WLAN</td><td>8.55</td><td>± 0.6 %</td></tr><tr><td>10546</td><td>AAC</td><td>IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)</td><td>WLAN</td><td>8.35</td><td>± 0.6 %</td></tr></table> Certificate No: EX3-7346_Mar22 Page 16 of 24	10489	AAF	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.31	± 0.6 %	10490	AAF	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.54	± 0.6 %	10491	AAF	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL, Sub)	LTE-TDD	7.74	± 0.6 %	10492	AAF	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.41	± 0.6 %	10493	AAF	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.55	± 0.6 %	10494	AAF	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL, Sub)	LTE-TDD	7.74	± 0.6 %	10495	AAF	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.37	± 0.6 %	10496	AAF	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.54	± 0.6 %	10497	AAF	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL, Sub)	LTE-TDD	7.67	± 0.6 %	10498	AAF	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.40	± 0.6 %	10499	AAF	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.68	± 0.6 %	10500	AAC	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL, Sub)	LTE-TDD	7.67	± 0.6 %	10501	AAC	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.44	± 0.6 %	10502	AAC	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.52	± 0.6 %	10503	AAF	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL, Sub)	LTE-TDD	7.72	± 0.6 %	10504	AAF	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.31	± 0.6 %	10505	AAF	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.54	± 0.6 %	10506	AAF	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL, Sub)	LTE-TDD	7.74	± 0.6 %	10507	AAF	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.36	± 0.6 %	10508	AAF	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.55	± 0.6 %	10509	AAF	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL, Sub)	LTE-TDD	7.99	± 0.6 %	10510	AAF	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.49	± 0.6 %	10511	AAF	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.51	± 0.6 %	10512	AAF	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL, Sub)	LTE-TDD	7.74	± 0.6 %	10513	AAF	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.42	± 0.6 %	10514	AAF	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.45	± 0.6 %	10515	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS, 2 Mbps, Rsp. Sec)	WLAN	1.58	± 0.6 %	10516	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS, 5.5 Mbps, Rsp. Sec)	WLAN	1.57	± 0.6 %	10517	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS, 11 Mbps, Rsp. Sec)	WLAN	1.58	± 0.6 %	10518	AAC	IEEE 802.11n WFI 5 GHz (OFDM, 9 Mbps, Rsp. Sec)	WLAN	8.23	± 0.6 %	10519	AAC	IEEE 802.11n WFI 5 GHz (OFDM, 12 Mbps, Rsp. Sec)	WLAN	8.39	± 0.6 %	10520	AAC	IEEE 802.11n WFI 5 GHz (OFDM, 18 Mbps, Rsp. Sec)	WLAN	8.12	± 0.6 %	10521	AAC	IEEE 802.11n WFI 5 GHz (OFDM, 24 Mbps, Rsp. Sec)	WLAN	7.97	± 0.6 %	10522	AAC	IEEE 802.11n WFI 5 GHz (OFDM, 30 Mbps, Rsp. Sec)	WLAN	8.45	± 0.6 %	10523	AAC	IEEE 802.11n WFI 5 GHz (OFDM, 48 Mbps, Rsp. Sec)	WLAN	8.08	± 0.6 %	10524	AAC	IEEE 802.11n WFI 5 GHz (OFDM, 54 Mbps, Rsp. Sec)	WLAN	8.27	± 0.6 %	10525	AAC	IEEE 802.11ac WFI (20MHz, MCS9, Rsp. Sec)	WLAN	8.36	± 0.6 %	10526	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.42	± 0.6 %	10527	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.51	± 0.6 %	10528	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.36	± 0.6 %	10529	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.36	± 0.6 %	10530	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.43	± 0.6 %	10531	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.29	± 0.6 %	10532	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.38	± 0.6 %	10533	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.45	± 0.6 %	10534	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.45	± 0.6 %	10535	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.45	± 0.6 %	10536	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.32	± 0.6 %	10537	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.44	± 0.6 %	10538	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.45	± 0.6 %	10539	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.39	± 0.6 %	10540	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.46	± 0.6 %	10541	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.65	± 0.6 %	10542	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.47	± 0.6 %	10543	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.65	± 0.6 %	10544	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.47	± 0.6 %	10545	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.55	± 0.6 %	10546	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.35	± 0.6 %
10414	AAA	WLAN CDFM 64-QAM 40MHz	Generic	8.54	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10415	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS) 5 Mbps (Rsp. Sec)	WLAN	1.54	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10416	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS) 5 Mbps (Rsp. Sec)	WLAN	8.23	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10417	AAC	IEEE 802.11n WFI 5 GHz (OFDM) 4 Mbps (Rsp. Sec)	WLAN	8.23	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10418	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS) 5 Mbps (Rsp. Long)	WLAN	8.14	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10419	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS) 5 Mbps (Rsp. Short)	WLAN	8.19	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10420	AAC	IEEE 802.11n HT Overhead: 7.2 Mbps (Rsp. Sec)	WLAN	8.32	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10421	AAC	IEEE 802.11n HT Overhead: 43.3 Mbps (Rsp. Sec)	WLAN	8.47	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10424	AAC	IEEE 802.11n HT Overhead: 7.2 Mbps (Rsp. Sec)	WLAN	8.40	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10425	AAC	IEEE 802.11n HT Overhead: 15 Mbps (Rsp. Sec)	WLAN	8.41	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10426	AAC	IEEE 802.11n HT Overhead: 30 Mbps (Rsp. Sec)	WLAN	8.45	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10427	AAC	IEEE 802.11n HT Overhead: 150 Mbps (Rsp. Sec)	WLAN	8.41	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10430	AAD	LTE-FDD (SC-FDMA, 5 MHz, E-TR 1.1)	LTE-FDD	8.28	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10431	AAD	LTE-FDD (SC-FDMA, 10 MHz, E-TR 1.1)	LTE-FDD	8.36	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10432	AAC	LTE-FDD (SC-FDMA, 15 MHz, E-TR 1.1)	LTE-FDD	8.34	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10433	AAC	LTE-FDD (SC-FDMA, 20 MHz, E-TR 1.1)	LTE-FDD	8.34	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10434	AAA	W-CDMA (BS Test Model 1, 64 QPSK, Clipping 44%)	WCDMA	8.60	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10435	AAF	LTE-TDD (SC-FDMA, 1 RB, 30 MHz, QPSK, UL, Sub)	LTE-TDD	7.82	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10447	AAD	LTE-FDD (SC-FDMA, 5 MHz, E-TR 1.1, Clipping 44%)	LTE-FDD	7.96	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10448	AAD	LTE-FDD (SC-FDMA, 10 MHz, E-TR 1.1, Clipping 44%)	LTE-FDD	7.93	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10449	AAC	LTE-FDD (SC-FDMA, 15 MHz, E-TR 1.1, Clipping 44%)	LTE-FDD	7.91	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10450	AAC	LTE-FDD (SC-FDMA, 20 MHz, E-TR 1.1, Clipping 44%)	LTE-FDD	7.88	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10451	AAA	W-CDMA (BS Test Model 1, 64 QPSK, Clipping 44%)	WCDMA	7.99	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10452	AAD	Validation (Scramble, Time, TDD)	Test	10.90	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10453	AAC	IEEE 802.11ac WFI (160MHz, 64-QAM, Rsp. Sec)	WLAN	8.63	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10457	AAA	UMTS FDD (SC-FDMA)	WCDMA	6.62	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10458	AAA	CDMA2000 1X (EV-DO, Rev. B, 3 carriers)	CDMA2000	6.93	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10459	AAA	CDMA2000 1X (EV-DO, Rev. B, 3 carriers)	CDMA2000	8.25	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10460	AAA	UMTS FDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL, Sub)	LTE-TDD	7.82	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10461	AAA	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL, Sub)	LTE-TDD	7.82	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10462	AAA	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.30	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10463	AAA	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.30	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10464	AAC	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL, Sub)	LTE-TDD	7.82	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10465	AAC	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.30	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10466	AAC	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.30	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10467	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL, Sub)	LTE-TDD	7.82	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10468	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.32	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10469	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.56	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10470	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL, Sub)	LTE-TDD	8.57	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10471	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL, Sub)	LTE-TDD	8.32	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10472	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.57	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10473	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.57	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10474	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.52	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10475	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.57	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10477	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.52	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10478	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.57	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
10479	AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL, Sub)	LTE-TDD	7.74	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10480	AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.16	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10481	AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.45	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10482	AAC	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL, Sub)	LTE-TDD	7.71	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10483	AAC	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.16	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10484	AAC	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.47	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10485	AAF	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL, Sub)	LTE-TDD	7.99	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10486	AAF	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.16	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10487	AAF	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.60	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10488	AAF	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL, Sub)	LTE-TDD	7.70	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10489	AAF	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.31	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10490	AAF	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.54	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10491	AAF	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL, Sub)	LTE-TDD	7.74	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10492	AAF	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.41	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10493	AAF	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.55	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10494	AAF	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL, Sub)	LTE-TDD	7.74	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10495	AAF	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.37	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10496	AAF	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.54	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10497	AAF	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL, Sub)	LTE-TDD	7.67	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10498	AAF	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.40	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10499	AAF	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.68	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10500	AAC	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL, Sub)	LTE-TDD	7.67	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10501	AAC	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.44	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10502	AAC	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.52	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10503	AAF	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL, Sub)	LTE-TDD	7.72	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10504	AAF	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.31	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10505	AAF	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.54	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10506	AAF	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL, Sub)	LTE-TDD	7.74	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10507	AAF	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.36	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10508	AAF	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.55	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10509	AAF	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL, Sub)	LTE-TDD	7.99	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10510	AAF	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.49	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10511	AAF	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.51	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10512	AAF	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL, Sub)	LTE-TDD	7.74	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10513	AAF	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL, Sub)	LTE-TDD	8.42	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10514	AAF	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL, Sub)	LTE-TDD	8.45	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10515	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS, 2 Mbps, Rsp. Sec)	WLAN	1.58	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10516	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS, 5.5 Mbps, Rsp. Sec)	WLAN	1.57	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10517	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS, 11 Mbps, Rsp. Sec)	WLAN	1.58	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10518	AAC	IEEE 802.11n WFI 5 GHz (OFDM, 9 Mbps, Rsp. Sec)	WLAN	8.23	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10519	AAC	IEEE 802.11n WFI 5 GHz (OFDM, 12 Mbps, Rsp. Sec)	WLAN	8.39	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10520	AAC	IEEE 802.11n WFI 5 GHz (OFDM, 18 Mbps, Rsp. Sec)	WLAN	8.12	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10521	AAC	IEEE 802.11n WFI 5 GHz (OFDM, 24 Mbps, Rsp. Sec)	WLAN	7.97	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10522	AAC	IEEE 802.11n WFI 5 GHz (OFDM, 30 Mbps, Rsp. Sec)	WLAN	8.45	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10523	AAC	IEEE 802.11n WFI 5 GHz (OFDM, 48 Mbps, Rsp. Sec)	WLAN	8.08	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10524	AAC	IEEE 802.11n WFI 5 GHz (OFDM, 54 Mbps, Rsp. Sec)	WLAN	8.27	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10525	AAC	IEEE 802.11ac WFI (20MHz, MCS9, Rsp. Sec)	WLAN	8.36	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10526	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.42	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10527	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.51	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10528	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.36	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10529	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.36	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10530	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.43	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10531	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.29	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10532	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.38	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10533	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.45	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10534	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.45	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10535	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.45	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10536	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.32	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10537	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.44	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10538	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.45	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10539	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.39	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10540	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.46	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10541	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.65	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10542	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.47	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10543	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.65	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10544	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.47	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10545	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.55	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
10546	AAC	IEEE 802.11ac WFI (20MHz, MCS1, Rsp. Sec)	WLAN	8.35	± 0.6 %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							

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10547	AAC	IEEE 802.11ac WFI (80MHz, MCS9, Rsp. Sec)	WLAN	8.49	± 0.6 %
10548	AAC	IEEE 802.11ac WFI (80MHz, MCS9, Rsp. Sec)	WLAN	8.57	± 0.6 %
10549	AAC	IEEE 802.11ac WFI (80MHz, MCS9, Rsp. Sec)	WLAN	8.59	± 0.6 %
10550	AAC	IEEE 802.11ac WFI (80MHz, MCS9, Rsp. Sec)	WLAN	8.50	± 0.6 %
10551	AAC	IEEE 802.11ac WFI (80MHz, MCS9, Rsp. Sec)	WLAN	8.42	± 0.6 %
10552	AAC	IEEE 802.11ac WFI (80MHz, MCS9, Rsp. Sec)	WLAN	8.47	± 0.6 %
10553	AAC	IEEE 802.11ac WFI (80MHz, MCS9, Rsp. Sec)	WLAN	8.45	± 0.6 %
10554	AAC	IEEE 802.11ac WFI (80MHz, MCS9, Rsp. Sec)	WLAN	8.48	± 0.6 %
10555	AAC	IEEE 802.11ac WFI (80MHz, MCS9, Rsp. Sec)	WLAN	8.47	± 0.6 %
10556	AAC	IEEE 802.11ac WFI (80MHz, MCS9, Rsp. Sec)	WLAN	8.50	± 0.6 %
10557	AAC	IEEE 802.11ac WFI (80MHz, MCS9, Rsp. Sec)	WLAN	8.52	± 0.6 %
10558	AAC	IEEE 802.11ac WFI (80MHz, MCS9, Rsp. Sec)	WLAN	8.51	± 0.6 %
10559	AAC	IEEE 802.11ac WFI (80MHz, MCS9, Rsp. Sec)	WLAN	8.73	± 0.6 %
10560	AAC	IEEE 802.11ac WFI (80MHz, MCS9, Rsp. Sec)	WLAN	8.56	± 0.6 %
10561	AAC	IEEE 802.11ac WFI (80MHz, MCS9, Rsp. Sec)	WLAN	8.59	± 0.6 %
10562	AAC	IEEE 802.11ac WFI (80MHz, MCS9, Rsp. Sec)	WLAN	8.59	± 0.6 %
10563	AAC	IEEE 802.11ac WFI (80MHz, MCS9, Rsp. Sec)	WLAN	8.77	± 0.6 %
10564	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS) 9 Mbps (Rsp. Sec)	WLAN	8.25	± 0.6 %
10565	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS) 12 Mbps (Rsp. Sec)	WLAN	8.45	± 0.6 %
10566	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS) 18 Mbps (Rsp. Sec)	WLAN	8.30	± 0.6 %
10567	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS) 24 Mbps (Rsp. Sec)	WLAN	8.30	± 0.6 %
10568	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS) 30 Mbps (Rsp. Sec)	WLAN	8.37	± 0.6 %
10569	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS) 48 Mbps (Rsp. Sec)	WLAN	8.13	± 0.6 %
10570	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS) 54 Mbps (Rsp. Sec)	WLAN	8.30	± 0.6 %
10571	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS) 1 Mbps (Rsp. Sec)	WLAN	1.99	± 0.6 %
10572	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS) 2 Mbps (Rsp. Sec)	WLAN	1.99	± 0.6 %
10573	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS) 5.5 Mbps (Rsp. Sec)	WLAN	1.98	± 0.6 %
10574	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS) 11 Mbps (Rsp. Sec)	WLAN	1.98	± 0.6 %
10575	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS) 6 Mbps (Rsp. Sec)	WLAN	8.59	± 0.6 %
10576	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS) 9 Mbps (Rsp. Sec)	WLAN	8.60	± 0.6 %
10577	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS) 12 Mbps (Rsp. Sec)	WLAN	8.70	± 0.6 %
10578	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS) 18 Mbps (Rsp. Sec)	WLAN	8.49	± 0.6 %
10579	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS) 24 Mbps (Rsp. Sec)	WLAN	8.36	± 0.6 %
10580	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS) 30 Mbps (Rsp. Sec)	WLAN	8.76	± 0.6 %
10581	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS) 48 Mbps (Rsp. Sec)	WLAN	8.25	± 0.6 %
10582	AAA	IEEE 802.11n WFI 2.4 GHz (DSSS) 54 Mbps (Rsp. Sec)	WLAN	8.67	± 0.6 %
10583	AAC	IEEE 802.11n WFI 5 GHz (OFDM) 9 Mbps (Rsp. Sec)	WLAN	8.58	± 0.6 %
10584	AAC	IEEE 802.11n WFI 5 GHz (OFDM) 12 Mbps (Rsp. Sec)	WLAN	8.60	± 0.6 %
10585	AAC	IEEE 802.11n WFI 5 GHz (OFDM) 18 Mbps (Rsp. Sec)	WLAN	8.70	± 0.6 %
10586	AAC	IEEE 802.11n WFI 5 GHz (OFDM) 24 Mbps (Rsp. Sec)	WLAN	8.49	± 0.6 %
10587	AAC	IEEE 802.11n WFI 5 GHz (OFDM) 30 Mbps (Rsp. Sec)			

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EXPOSURE DATA			Month (0-12)
1987	AGE	10-14	1.00
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1989	AGE	10-14	1.00
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2088	AGE	10-14	1.00
2089	AGE	10-14	1.00
2090	AGE	10-14	1.

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or email: CN.Doccheck@sgs.com
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中国·江苏·昆山市留学生创业园伟业路10号 邮编 215300

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t(86-512)57355888 f(86-512)57370818 sgs.china@sgs.com

EX3034-36780 March 30, 2022

109851	AAA	SG NR DL (CP-CPOM, TM 3.1, 40 MHz, 64-QAM, 30 kHz)	SG NR PR1 TDD	9.54	± 0.8 %
109852	AAA	SG NR DL (CP-CPOM, TM 3.1, 40 MHz, 64-QAM, 30 kHz)	SG NR PR1 TDD	9.58	± 0.8 %
109853	AAA	SG NR DL (CP-CPOM, TM 3.1, 40 MHz, 64-QAM, 30 kHz)	SG NR PR1 TDD	9.53	± 0.8 %
109854	AAA	SG NR DL (CP-CPOM, TM 3.1, 40 MHz, 64-QAM, 30 kHz)	SG NR PR1 TDD	9.58	± 0.8 %
109855	AAA	SG NR DL (CP-CPOM, TM 3.1, 40 MHz, 64-QAM, 30 kHz)	SG NR PR1 TDD	9.53	± 0.8 %
109856	AAA	SG NR DL (CP-CPOM, TM 3.1, 40 MHz, 64-QAM, 30 kHz)	SG NR PR1 TDD	9.58	± 0.8 %
109857	AAA	SG NR DL (CP-CPOM, TM 3.1, 40 MHz, 64-QAM, 30 kHz)	SG NR PR1 TDD	9.53	± 0.8 %
109858	AAA	SG NR DL (CP-CPOM, TM 3.1, 40 MHz, 64-QAM, 30 kHz)	SG NR PR1 TDD	9.58	± 0.8 %
109859	AAA	SG NR DL (CP-CPOM, TM 3.1, 40 MHz, 64-QAM, 30 kHz)	SG NR PR1 TDD	9.53	± 0.8 %
109860	AAA	SG NR DL (CP-CPOM, TM 3.1, 40 MHz, 64-QAM, 30 kHz)	SG NR PR1 TDD	9.58	± 0.8 %

Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the test value.

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109851	AAA	SG NR DL (CP-CPOM, TM 3.1, 40 MHz, 64-QAM, 30 kHz)	SG NR PR1 TDD	9.54	± 0.8 %
109852	AAA	SG NR DL (CP-CPOM, TM 3.1, 40 MHz, 64-QAM, 30 kHz)	SG NR PR1 TDD	9.58	± 0.8 %
109853	AAA	SG NR DL (CP-CPOM, TM 3.1, 40 MHz, 64-QAM, 30 kHz)	SG NR PR1 TDD	9.53	± 0.8 %
109854	AAA	SG NR DL (CP-CPOM, TM 3.1, 40 MHz, 64-QAM, 30 kHz)	SG NR PR1 TDD	9.58	± 0.8 %
109855	AAA	SG NR DL (CP-CPOM, TM 3.1, 40 MHz, 64-QAM, 30 kHz)	SG NR PR1 TDD	9.53	± 0.8 %
109856	AAA	SG NR DL (CP-CPOM, TM 3.1, 40 MHz, 64-QAM, 30 kHz)	SG NR PR1 TDD	9.58	± 0.8 %
109857	AAA	SG NR DL (CP-CPOM, TM 3.1, 40 MHz, 64-QAM, 30 kHz)	SG NR PR1 TDD	9.53	± 0.8 %
109858	AAA	SG NR DL (CP-CPOM, TM 3.1, 40 MHz, 64-QAM, 30 kHz)	SG NR PR1 TDD	9.58	± 0.8 %
109859	AAA	SG NR DL (CP-CPOM, TM 3.1, 40 MHz, 64-QAM, 30 kHz)	SG NR PR1 TDD	9.53	± 0.8 %
109860	AAA	SG NR DL (CP-CPOM, TM 3.1, 40 MHz, 64-QAM, 30 kHz)	SG NR PR1 TDD	9.58	± 0.8 %

Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the test value.



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