

1.11 D2600V2 - SN 1158

TTL Speaq CALIBRATION LABORATORY		CAICT	
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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 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 EX3DVA	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	MY49071430	13-Jan-22 (CTTL No.Z22X00406)	Jan-23
Network Analyzer E5071C	MY48110673	14-Jan-22 (CTTL No.Z22X00406)	Jan-23
Calibrated by:	Name: Zhao Jing	Function: SAR Test Engineer	Signature: [Signature]
Reviewed by:	Name: Lin Hao	Function: SAR Test Engineer	Signature: [Signature]
Approved by:	Name: Qi Dianyan	Function: SAR Project Leader	Signature: [Signature]
Issued: April 6, 2022			
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Measurement Conditions DASY system configuration, as far as not given on page 1.			
DASY Version	DASY2	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	2600 MHz ± 1 MHz		
Head TSL parameters The following parameters and calculations were applied:			
	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.0	1.96 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.7 ± 6 %	1.96 mho/m ± 6 %
Head TSL temperature change during test	<1.0 °C	---	---
SAR result with Head TSL			
	Condition		
SAR averaged over 1 cm ² (1 g) of Head TSL			
SAR measured	250 mW input power	13.7 W/kg	
SAR for nominal Head TSL parameters	normalized to 1W	54.8 W/kg ± 18.8 % (k=2)	
SAR averaged over 10 cm ² (10 g) of Head TSL			
SAR measured	250 mW input power	6.12 W/kg	
SAR for nominal Head TSL parameters	normalized to 1W	24.6 W/kg ± 18.7 % (k=2)	

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Appendix (Additional assessments outside the scope of CNAS L0570)			
Antenna Parameters with Head TSL			
Impedance, transformed to feed point	49.90-6.49jΩ		
Return Loss	-23.8dB		
General Antenna Parameters and Design			
Electrical Delay (one direction)	1.053 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		

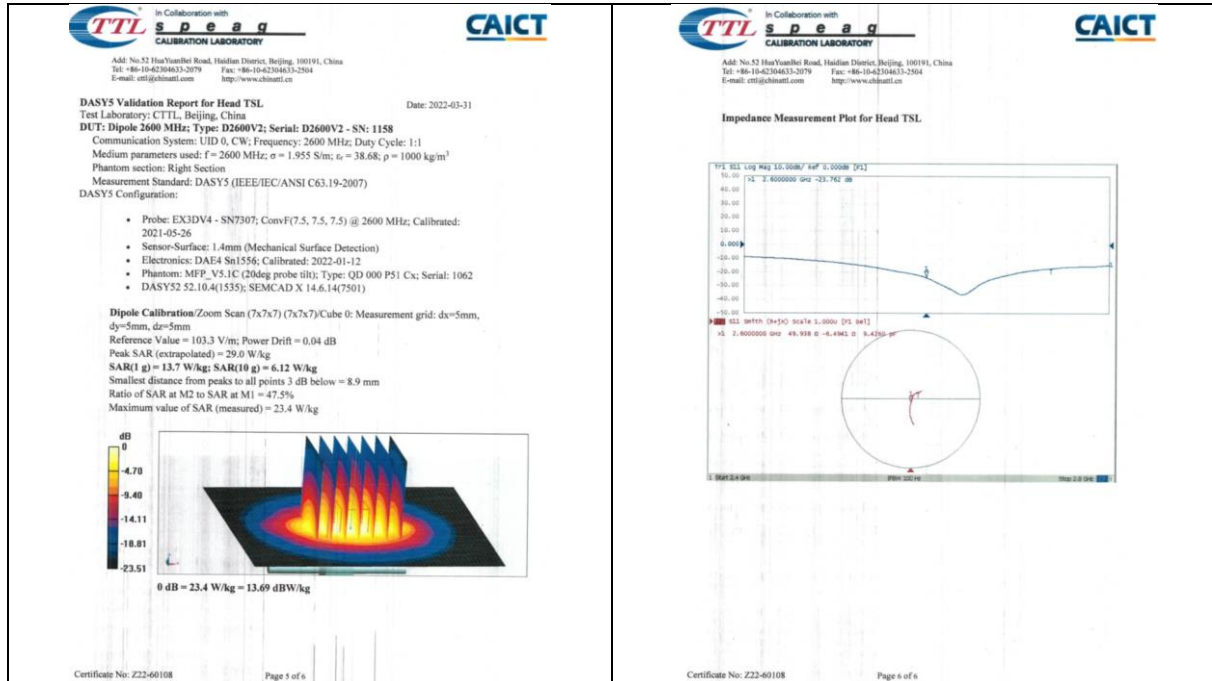


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1.12 D5GHZV2 - SN 1095

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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.																							
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Calibration Equipment used (M&TE critical for calibration)																							
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Glossary: TSL: Issue simulating liquid 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 665664, "SAR Measurement Requirements for 100 MHz to 6 GHz"			
Additional Documentation: c) DASY5 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 GSEY system configuration, as far as not given on page 1.			
DASY Version	DASY2	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	5000 MHz ± 1 MHz 5300 MHz ± 1 MHz 5500 MHz ± 1 MHz 5600 MHz ± 1 MHz 5800 MHz ± 1 MHz		
Head TSL parameters at 5200MHz The following parameters and calculations were applied.			
Nominal Head TSL parameters	Temperature	Permittivity	Conductivity
	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			
SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition		
SAR measured	250 mW input power	7.79 W/kg	
SAR for nominal Head TSL parameters	normalized to 1W	77.8 W/kg ± 24.4 % (k=2)	
SAR averaged over 10 cm ³ (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.			
Nominal Head TSL parameters	Temperature	Permittivity	Conductivity
	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			
SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition		
SAR measured	100 mW input power	7.94 W/kg	
SAR for nominal Head TSL parameters	normalized to 1W	79.1 W/kg ± 24.4 % (k=2)	
SAR averaged over 10 cm ³ (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.			
Nominal Head TSL parameters	Temperature	Permittivity	Conductivity
	22.0 °C	35.8	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			
SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition		
SAR measured	100 mW input power	8.29 W/kg	
SAR for nominal Head TSL parameters	normalized to 1W	82.6 W/kg ± 24.4 % (k=2)	
SAR averaged over 10 cm ³ (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.			
Nominal Head TSL parameters	Temperature	Permittivity	Conductivity
	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			
SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition		
SAR measured	100 mW input power	8.12 W/kg	
SAR for nominal Head TSL parameters	normalized to 1W	80.8 W/kg ± 24.4 % (k=2)	
SAR averaged over 10 cm ³ (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	22.9 W/kg ± 24.2 % (k=2)	
Head TSL parameters at 5800MHz The following parameters and calculations were applied.			
Nominal Head TSL parameters	Temperature	Permittivity	Conductivity
	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			
SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition		
SAR measured	100 mW input power	7.71 W/kg	
SAR for nominal Head TSL parameters	normalized to 1W	76.7 W/kg ± 24.4 % (k=2)	
SAR averaged over 10 cm ³ (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	21.6 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	-24.0dB		
Antenna Parameters with Head TSL at 5800MHz			
Impedance, transformed to feed point	51.5D-5.61jΩ		
Return Loss	-24.9dB		
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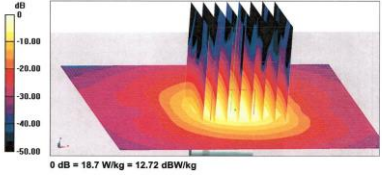
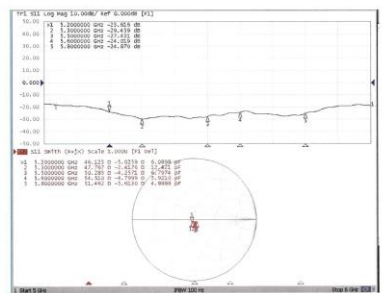


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In Collaboration with TTL s p e a q CALIBRATION LABORATORY CAICT Address: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China Tel: +86-10-62502117 E-mail: cti@chinaetl.com http://www.caict.ac.cn General Antenna Parameters and Design Electrical 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 s p e a q CALIBRATION LABORATORY CAICT Address: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China Tel: +86-10-62502117 E-mail: cti@chinaetl.com http://www.caict.ac.cn DASY5 Validation Report for Head TSL Test Laboratory: CTTL, Beijing, China Date: 2022-06-01 DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 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: $f = 5200 \text{ MHz}$; $\sigma = 4.62 \text{ S/m}$; $\epsilon_r = 35.19$; $\rho = 1000 \text{ kg/m}^3$ Medium parameters used: $f = 5300 \text{ MHz}$; $\sigma = 4.73 \text{ S/m}$; $\epsilon_r = 35.19$; $\rho = 1000 \text{ kg/m}^3$ Medium parameters used: $f = 5500 \text{ MHz}$; $\sigma = 4.939 \text{ S/m}$; $\epsilon_r = 34.83$; $\rho = 1000 \text{ kg/m}^3$ Medium parameters used: $f = 5600 \text{ MHz}$; $\sigma = 5.051 \text{ S/m}$; $\epsilon_r = 34.89$; $\rho = 1000 \text{ kg/m}^3$ Medium parameters used: $f = 5800 \text{ MHz}$; $\sigma = 5.247 \text{ S/m}$; $\epsilon_r = 34.42$; $\rho = 1000 \text{ kg/m}^3$ Phantom section: Right Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007) DASY5 Configuration: - Probe: EX3DV4 - SN7484; ConvF(5.6, 5.6) @ 5200 MHz; ConvF(5.32, 5.32) @ 5300 MHz; ConvF(5.11, 5.11) @ 5500 MHz; ConvF(4.91, 4.91) @ 5600 MHz; ConvF(5, 5) @ 5800 MHz; Calibrated: 2022-01-26 - Sensor-Surface: 1.4mm (Mechanical Surface Detection) - Electronics: DA64 Sn1556; Calibrated: 2022-01-12 - Phantom: MPF_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 s p e a q CALIBRATION LABORATORY CAICT Address: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China Tel: +86-10-62502117 E-mail: cti@chinaetl.com http://www.caict.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 = 61.92 V/m; Power Drift = -0.08 dB Peak SAR (extrapolated) = 34.7 W/kg SAR(1 g) = 8.28 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 s p e a q CALIBRATION LABORATORY CAICT Address: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China Tel: +86-10-62502117 E-mail: cti@chinaetl.com http://www.caict.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 9770 www.spgs.ch, info@spgs.ch s p e a g IMPORTANT NOTICE USAGE OF THE DAE4 The DAE4 unit is a delicate, high precision instrument and requires careful treatment by the user. There are no serviceable parts inside the DAE4. 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 DAE4 to wear out. Shipping of the DAE4: Before shipping the DAE4 to SPEAG for calibration, remove the batteries and pack the DAE4 in an anti-static bag. This anti-static bag shall then be packed into a larger box or container which protects the DAE4 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 DAE4 carefully and keep the DAE4 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 unprofessional handling caused the defect. DASY Configuration Files: Since the exact values of the DAE4 input resistances, as measured during the calibration procedure of a DAE4 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 DAE4 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 DAE4 probe connector pins, use great care when installing the probe to the DAE4. Carefully connect the probe with the connector notch oriented in the mating position. Avoid any rotational movement of the probe body versus the DAE4 while turning the locking nut of the connector. The same care shall be used when disconnecting the probe from the DAE4. TN_EH190306AE DAE4.docx 07.03.2019	Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland Schweizerischer Kalibrierdienst Service suisse d'étalonnage Servizio svizzero di taratura Swiss Calibration Service 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 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>Kelvin Multimeter Type 2001</td><td>SN: 0810276</td><td>31-Aug-21 (No.31368)</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 LWS 003 AA 1001</td><td>24-Jan-22 (in house check)</td><td>In house check: Jan-23</td></tr><tr><td>Calibrator Blue V2.1</td><td>SE LWS 006 AA 1002</td><td>24-Jan-22 (in house check)</td><td>In house check: Jan-23</td></tr></tbody></table> Calibrated by: Dominique Stettin Function: Laboratory Technician Signature: <i>[Signature]</i> Approved by: Ben Kohn 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	Kelvin Multimeter Type 2001	SN: 0810276	31-Aug-21 (No.31368)	Aug-22	Secondary Standards	ID #	Check Date (in house)	Scheduled Check	Auto DAE Calibration Unit	SE LWS 003 AA 1001	24-Jan-22 (in house check)	In house check: Jan-23	Calibrator Blue V2.1	SE LWS 006 AA 1002	24-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 Schweizerischer Kalibrierdienst Service suisse d'étalonnage Servizio svizzero di taratura Swiss Calibration Service 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 High Range: 1LSB = 6.1µV, full range = -190...+320 mV Low Range: 1LSB = 61µV, full range = -1...+3mV 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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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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Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

High Range	Reading (µV)	Difference (µV)	Error (%)
Channel X + Input	19994.45	1.52	0.00
Channel X - Input	20004.58	2.22	0.01
Channel X + Input	-20001.14	1.12	-0.01
Channel Y + Input	19994.72	1.58	0.00
Channel Y - Input	20001.22	-1.00	-0.00
Channel Y + Input	-20003.05	-1.57	0.01
Channel Z + Input	19992.44	0.19	0.00
Channel Z - Input	20003.09	0.58	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	0.02
Channel X - Input	202.54	0.65	0.32
Channel X + Input	-197.86	0.07	-0.04
Channel Y + Input	2002.05	0.58	0.03
Channel Y - Input	201.27	-0.57	-0.28
Channel Y + Input	-196.23	-0.06	0.03
Channel Z + Input	2001.96	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

Common mode Input Voltage (mV)	High Range Average Reading (µV)	Low Range Average Reading (µV)
Channel X	-5.87	-7.69
-200	9.12	7.79
Channel Y	-8.68	-9.28
-200	8.52	6.36
Channel Z	-5.36	-5.60
-200	3.58	3.06

3. Channel separation

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	7.14	-

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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	16035	15668

5. Input Offset Measurement

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

Input (mV)	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	-2.81	0.58	0.60

6. Input Offset Current

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

7. Input Resistance (Typical values for information)

	Zeroing (Ohm)	Measuring (MOhm)
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)	-7.6

9. Power Consumption (Typical values for information)

Typical values	Switched off (mA)	Stand by (mA)	Transmitting (mA)
Supply (+ Vcc)	+0.01	+8	+14
Supply (- Vcc)	-0.01	-8	-9

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3 EX3DV4 - SN 7346

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Accreditation No.: SCS 0108

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 closest laboratory facility: environment temperature (22 ± 3) °C and humidity < 70%.			
Calibration Equipment used (MATE: critical for calibration)			
Primary Standards	SI	Cal Date (Certificate No.)	Scheduled Calibration
Power meter MNP	SR 10478	08-Apr-21 (No. 217-02501-02502)	Apr-22
Power sensor MNP-291	SR 10324	08-Apr-21 (No. 217-02501)	Apr-22
Power sensor MNP-291	SR 10324	08-Apr-21 (No. 217-02502)	Apr-22
Reference 20 dB attenuator	SR C2253 (20)	08-Apr-21 (No. 217-02503)	Apr-22
DAEA	SR 460	13-Dec-21 (No. DAE4-485, 04031)	Dec-22
Reference Probe (S3302)	SR 3013	27-Dec-21 (No. E53-3013, Dec21)	Dec-22
Secondary Standards	SI	Check Date (in house)	Scheduled Calibration
Power meter E4415B	SR G84128304	08-Apr-21 (in house check Jun-20)	In house check Jun-22
Power sensor E4412A	SR MY4148687	08-Apr-21 (in house check Jun-20)	In house check Jun-22
Power sensor E4412A	SR 40011815	08-Apr-21 (in house check Jun-20)	In house check Jun-22
RF generator HP 8446C	SR US340101709	04-Apr-20 (in house check Jun-20)	In house check Jun-22
Network Analyzer E8359A	SR US41050477	31-Mar-14 (in house check Dec-20)	In house check Dec-22
Calibrated by:	Name: Sven Kuhn	Function: Laboratory Technician	Signature: [Signature]
Approved by:	Name: Sven Kuhn	Function: Deputy Manager	Signature: [Signature]
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Issued: March 31, 2022			

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Accreditation No.: SCS 0108

Glossary:

TSL	Issue simulating liquid
NORM _{M,y,z}	sensitivity in free space
CONF	sensitivity in TSL / NORM _{M,y,z}
DCP	diode compression point
CF	crest factor (10 duty cycle) of the RF signal
A, B, C, D	modulation dependent linearization parameters
Polarization ψ	ψ rotation around probe axis
Polarization θ	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 62208-1:2018, "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 1:351: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020
- b) KOB 805664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- NORM_{M,y,z}: Assessed for E-field polarization $\psi = 0$ if $f < 900$ MHz in TEM-cell; $f > 900$ MHz: R22 waveguide; NORM_{M,y,z} are only intermediate values, i.e., the uncertainties of NORM_{M,y,z} do not affect the E-field uncertainty inside TSL (see below CONF).
- NORM_{M,y,z} = NORM_{M,y,z} * Frequency response (see Frequency Response Chart). This linearization is implemented in DASY4 software version later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of CONF.
- DCP_{M,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.
- PAC: PAC is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics.
- A_{M,y,z}, B_{M,y,z}, C_{M,y,z}, D_{M,y,z}, V_{M,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_{M,y,z} is the maximum calibration range expressed in RMS voltage across the diode.
- CONF and Boundary Effect Parameters: Assessed in far phantom using E-field (or Temperature Transfer Standard for $f < 900$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 900$ MHz. The same values are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are NORM_{M,y,z} * CONF where the uncertainty corresponds to that given for CONF. A frequency dependent CONF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- Spherical isotropy / DCP deviation from isotropy: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle: The angle is assessed using the information gained by determining the NORM_M (no uncertainty required).

Certificate No: EX3-7346_Mar22

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No.10, Weyue Road, Innovation Park, Kunshan, Jiangsu, China 215300
中国·江苏·昆山市留学生创业园伟业路10号 邮编 215300

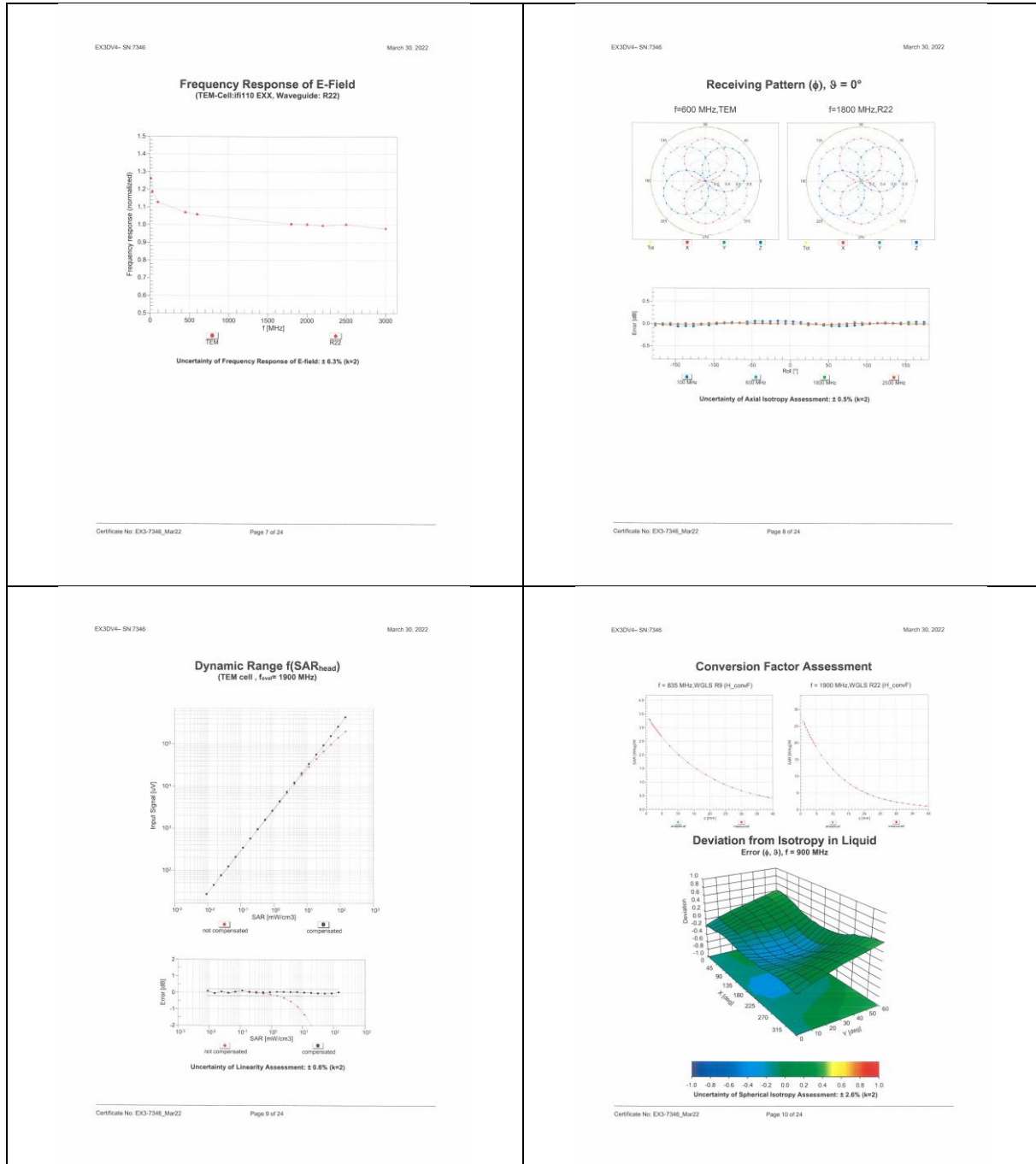
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EX3DV4 - SN:7346									
March 30, 2022									
DASY/EASY - Parameters of Probe: EX3DV4 - SN:7346									
Basic Calibration Parameters									
Norm. $\mu V/(V/m)^2$		Sensor X		Sensor Y		Sensor Z		Unc. (k=2)	
DCP (mV) ²		0.45		0.47		0.61		± 10.1 %	
		101.4		106.0		106.9			
Calibration Results for Modulation Response									
UID	Communication System Name	A	B	C	D	VR	Max. dev.	Max. Unc.	
		dB	dB-μV	dB	dB	mV			(k=2)
0	CW	X: 0.00	0.00	1.00	0.00	143.5	± 3.5 %	± 4.1 %	
		Y: 0.00	0.00	1.00	0.00	139.3			
		Z: 0.00	0.00	1.00	0.00	139.0			
10035	Pulse Waveform (200Hz, 10%)	X: 3.33	68.90	11.66	10.00	60.0	± 3.5 %	± 9.6 %	
		Y: 4.03	79.70	12.35	60.0				
		Z: 1.63	61.25	6.76	60.0				
10035	Pulse Waveform (200Hz, 20%)	X: 3.30	79.65	11.31	6.99	85.0	± 2.4 %	± 9.6 %	
		Y: 11.31	81.32	14.72	86.0				
		Z: 5.83	69.90	5.11	86.0				
10035	Pulse Waveform (200Hz, 40%)	X: 7.41	79.85	12.51	3.98	95.0	± 2.7 %	± 9.6 %	
		Y: 26.93	81.42	15.51	95.0				
		Z: 0.18	138.38	0.01	95.0				
10035	Pulse Waveform (200Hz, 60%)	X: 2.27	71.13	9.52	2.32	120.0	± 1.7 %	± 9.6 %	
		Y: 20.90	91.58	16.29	120.0				
		Z: 7.84	138.51	16.47	120.0				
10035	GRK Waveform, 1 MHz	X: 1.47	64.88	13.82	1.00	150.0	± 4.2 %	± 9.6 %	
		Y: 1.56	66.27	14.65	0.00	150.0			
		Z: 0.43	67.88	11.05	150.0				
10088	GRK Waveform, 10 MHz	X: 1.46	66.27	14.65	0.00	150.0	± 1.1 %	± 9.6 %	
		Y: 2.08	67.33	13.38	150.0				
		Z: 2.41	64.75	13.18	150.0				
10088	64-QAM Waveform, 100 MHz	X: 2.43	68.51	18.25	3.01	150.0	± 1.0 %	± 9.6 %	
		Y: 2.41	68.51	18.25	150.0				
		Z: 1.70	64.72	15.99	150.0				
10088	64-QAM Waveform, 40 MHz	X: 3.38	66.82	15.25	0.00	150.0	± 2.0 %	± 9.6 %	
		Y: 3.38	66.82	15.25	150.0				
		Z: 2.70	65.72	14.74	150.0				
10014	WLAN CCK40, 64-QAM, 40MHz	X: 4.11	69.35	12.77	0.00	150.0	± 3.6 %	± 9.6 %	
		Y: 4.70	65.54	15.41	150.0				
		Z: 3.83	66.16	15.28	150.0				
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%.									
* The uncertainties of Norm. V, Z, D do not affect the E-field uncertainty within T10, (see Pages 5 and 6)									
* Numerical indication parameter: uncertainty not required									
* Uncertainty is determined using the root deviation from linear response applying rectangular distribution and is expressed for the square of the field value.									
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EX3DV4 - SN:7346									
March 30, 2022									
DASY/EASY - Parameters of Probe: EX3DV4 - SN:7346									
Sensor Model Parameters									
C1	C2	a	T1	T2	T3	T4	T5	T6	
IP	IP	V ²	ms.V ²	ms.V ²	ms	V ²	V ²	V ²	
X	39.2	291.80	35.10	5.63	5.02	1.42	0.12	1.01	
Y	37.1	270.84	34.12	6.29	6.01	1.82	0.05	1.01	
Z	9.7	69.74	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									
Optical 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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EX3DV4 - SN:7346									
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	0.69	10.56	10.56	10.56	0.55	0.85	± 12.0 %	
835	41.5	0.90	10.12	10.12	10.12	0.42	0.96	± 12.0 %	
900	41.5	0.97	10.10	10.10	10.10	0.53	0.80	± 12.0 %	
1430	40.5	1.20	9.26	9.26	9.26	0.50	0.80	± 12.0 %	
1750	40.1	1.37	8.63	8.63	8.63	0.34	0.86	± 12.0 %	
1900	40.0	1.40	8.48	8.48	8.48	0.35	0.86	± 12.0 %	
2000	40.0	1.40	8.35	8.35	8.35	0.34	0.86	± 12.0 %	
2300	39.5	1.67	7.86	7.86	7.86	0.39	0.90	± 12.0 %	
2450	39.2	1.80	7.63	7.63	7.63	0.41	0.90	± 12.0 %	
2600	39.0	1.96	7.33	7.33	7.33	0.44	0.90	± 12.0 %	
3300	38.2	2.71	7.15	7.15	7.15	0.30	1.35	± 13.1 %	
3500	37.8	2.81	7.14	7.14	7.14	0.30	1.35	± 13.1 %	
3750	37.7	3.12	6.85	6.85	6.85	0.30	1.35	± 13.1 %	
3900	37.5	3.32	6.71	6.71	6.71	0.40	1.60	± 13.1 %	
4100	37.2	3.53	6.58	6.58	6.58	0.40	1.60	± 13.1 %	
4200	37.1	3.63	6.30	6.30	6.30	0.40	1.70	± 13.1 %	
4400	36.9	3.64	6.24	6.24	6.24	0.40	1.70	± 13.1 %	
4600	36.7	4.04	6.11	6.11	6.11	0.40	1.70	± 13.1 %	
4800	36.4	4.25	6.08	6.08	6.08	0.40	1.80	± 13.1 %	
4900	36.3	4.40	5.84	5.84	5.84	0.40	1.80	± 13.1 %	
5200	36.0	4.66	5.25	5.25	5.25	0.40	1.80	± 13.1 %	
5300	35.9	4.78	5.12	5.12	5.12	0.40	1.80	± 13.1 %	
5500	35.6	4.96	4.85	4.85	4.85	0.40	1.80	± 13.1 %	
5600	35.5	5.07	4.70	4.70	4.70	0.40	1.80	± 13.1 %	
5800	35.3	5.27	4.75	4.75	4.75	0.40	1.80	± 13.1 %	
* Frequency validity above 300 MHz is ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.									
* At frequencies 5-10 GHz, the validity of tissue parameters (ε and σ) can be related to ± 10% if liquid compensation formula is applied to measured DCP values. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.									
* Alpha/Depth are determined during calibration. SP-ECG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz, below ± 2% for frequencies between 3-6 GHz, and below ± 4% for frequencies between 6-10 GHz at any distance larger than half the probe tip diameter from the boundary.									
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EX3DV4 - SN:7346									
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	± 18.6 %	
* Frequency validity above 6 GHz is ± 700 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.									
* At frequencies 5-10 GHz, the validity of tissue parameters (ε and σ) can be related to ± 10% if liquid compensation formula is applied to measured DCP values. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.									
* Alpha/Depth are determined during calibration. SP-ECG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz, below ± 2% for frequencies between 3-6 GHz, and below ± 4% for frequencies between 6-10 GHz at any distance larger than half the probe tip diameter from the boundary.									
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No.10, Weiye Road, Innovation Park, Kunshan, Jiangsu, China 215300
中国·江苏·昆山市留学院创业园伟业路10号 邮编 215300

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EX3034-SN 7346							March 30, 2022	
10414	AAA	WLAN CDF: 64-QAM, 40MHz	Generic	8.54	± 0.6 %			
10415	AAA	IEEE 802.11b WFI 2.4 GHz (DSSS, 1 Mbps, R90c-d)	WLAN	1.54	± 0.6 %			
10416	AAA	IEEE 802.11g WFI 2.4 GHz (OFDM, 5.5 Mbps, R90c-d)	WLAN	8.23	± 0.6 %			
10417	AAC	IEEE 802.11n WFI 5 GHz (OFDM, 6 Mbps, R90c-d)	WLAN	8.23	± 0.6 %			
10418	AAA	IEEE 802.11g WFI 2.4 GHz (DSSS-OFDM, 6 Mbps, R90c-Long)	WLAN	8.14	± 0.6 %			
10419	AAA	IEEE 802.11g WFI 2.4 GHz (DSSS-OFDM, 6 Mbps, R90c-Short)	WLAN	8.19	± 0.6 %			
10420	AAC	IEEE 802.11n HT Overhead, 7.2 Mbps, R90c-d	WLAN	8.32	± 0.6 %			
10421	AAC	IEEE 802.11n HT Overhead, 6.3 Mbps, 16-QAM	WLAN	8.47	± 0.6 %			
10424	AAC	IEEE 802.11n HT Overhead, 7.2 Mbps, 64-QAM	WLAN	8.40	± 0.6 %			
10425	AAC	IEEE 802.11n HT Overhead, 14 Mbps, R90c-d	WLAN	8.41	± 0.6 %			
10426	AAC	IEEE 802.11n HT Overhead, 30 Mbps, 16-QAM	WLAN	8.45	± 0.6 %			
10427	AAC	IEEE 802.11n HT Overhead, 130 Mbps, 64-QAM	WLAN	8.41	± 0.6 %			
10430	AAD	LTE-FDD (FDDMA, 5 MHz, E-TRP 3.1)	LTE-FDD	8.28	± 0.6 %			
10431	AAD	LTE-FDD (FDDMA, 15 MHz, E-TRP 3.1)	LTE-FDD	8.38	± 0.6 %			
10432	AAC	LTE-FDD (FDDMA, 15 MHz, E-TRP 3.1)	LTE-FDD	8.34	± 0.6 %			
10433	AAC	LTE-FDD (FDDMA, 20 MHz, E-TRP 3.1)	LTE-FDD	8.34	± 0.6 %			
10434	AAA	WCDMA (BS Test Model 1, 64 DPM)	WCDMA	8.60	± 0.6 %			
10435	AAF	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 0.6 %			
10447	AAD	LTE-FDD (FDDMA, 5 MHz, E-TRP 3.1, Clipping 44%)	LTE-FDD	7.86	± 0.6 %			
10448	AAD	LTE-FDD (FDDMA, 10 MHz, E-TRP 3.1, Clipping 44%)	LTE-FDD	7.93	± 0.6 %			
10449	AAC	LTE-FDD (FDDMA, 15 MHz, E-TRP 3.1, Clipping 44%)	LTE-FDD	7.91	± 0.6 %			
10450	AAC	LTE-FDD (FDDMA, 20 MHz, E-TRP 3.1, Clipping 44%)	LTE-FDD	7.88	± 0.6 %			
10451	AAA	WCDMA (BS Test Model 1, 64 DPM, Clipping 44%)	WCDMA	7.89	± 0.6 %			
10452	AAD	Validation (Spurs, 10ms, 1ms)	Test	10.00	± 0.6 %			
10453	AAC	IEEE 802.11ac WFI (160MHz, 64-QAM, R90c-d)	WLAN	8.63	± 0.6 %			
10457	AAA	UMTS FDD (SC-HSPA)	WCDMA	6.62	± 0.6 %			
10458	AAA	CDMA2000 (1xEV-DO, Rev. 8, 3.1c)	CDMA2000	8.58	± 0.6 %			
10459	AAA	CDMA2000 (1xEV-DO, Rev. 8, 3.1c)	CDMA2000	8.25	± 0.6 %			
10462	AAA	UMTS FDD (HSPA, R90c-d)	WCDMA	2.39	± 0.6 %			
10463	AAB	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 0.6 %			
10462	AAB	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM, UL Sub)	LTE-TDD	8.30	± 0.6 %			
10463	AAB	LTE-TDD (SC-FDMA, 1 RB, 1.4 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	8.32	± 0.6 %			
10466	AAC	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL Sub)	LTE-TDD	8.32	± 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	8.32	± 0.6 %			
10470	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 0.6 %			
10471	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL Sub)	LTE-TDD	8.32	± 0.6 %			
10472	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL Sub)	LTE-TDD	8.32	± 0.6 %			
10473	AAB	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 0.6 %			
10474	AAB	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL Sub)	LTE-TDD	8.32	± 0.6 %			
10475	AAB	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL Sub)	LTE-TDD	8.32	± 0.6 %			
10476	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 0.6 %			
10477	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL Sub)	LTE-TDD	8.32	± 0.6 %			
10478	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL Sub)	LTE-TDD	8.32	± 0.6 %			
10479	AAB	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 0.6 %			
10480	AAB	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL Sub)	LTE-TDD	8.32	± 0.6 %			
10481	AAB	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL Sub)	LTE-TDD	8.32	± 0.6 %			
10482	AAC	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 0.6 %			
10483	AAC	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL Sub)	LTE-TDD	8.32	± 0.6 %			
10484	AAC	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL Sub)	LTE-TDD	8.32	± 0.6 %			
10485	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 0.6 %			
10486	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL Sub)	LTE-TDD	8.32	± 0.6 %			
10487	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL Sub)	LTE-TDD	8.32	± 0.6 %			
10488	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 0.6 %			

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10489	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 0.6 %			
10490	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL Sub)	LTE-TDD	8.32	± 0.6 %			
10491	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL Sub)	LTE-TDD	8.32	± 0.6 %			
10492	AAC	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 0.6 %			
10493	AAC	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL Sub)	LTE-TDD	8.32	± 0.6 %			
10494	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 0.6 %			
10495	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL Sub)	LTE-TDD	8.32	± 0.6 %			
10496	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL Sub)	LTE-TDD	8.32	± 0.6 %			
10497	AAB	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 0.6 %			
10498	AAB	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL Sub)	LTE-TDD	8.32	± 0.6 %			
10499	AAB	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL Sub)	LTE-TDD	8.32	± 0.6 %			
10500	AAC	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 0.6 %			
10501	AAC	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL Sub)	LTE-TDD	8.32	± 0.6 %			
10502	AAC	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL Sub)	LTE-TDD	8.32	± 0.6 %			
10503	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 0.6 %			
10504	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL Sub)	LTE-TDD	8.32	± 0.6 %			
10505	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL Sub)	LTE-TDD	8.32	± 0.6 %			
10506	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 0.6 %			
10507	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL Sub)	LTE-TDD	8.32	± 0.6 %			
10508	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL Sub)	LTE-TDD	8.32	± 0.6 %			
10509	AAC	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 0.6 %			
10510	AAC	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL Sub)	LTE-TDD	8.32	± 0.6 %			
10511	AAC	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL Sub)	LTE-TDD	8.32	± 0.6 %			
10512	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 0.6 %			
10513	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 16-QAM, UL Sub)	LTE-TDD	8.32	± 0.6 %			
10514	AAF	LTE-TDD (SC-FDMA, 1 RB, 3.1 MHz, 64-QAM, UL Sub)	LTE-TDD	8.32	± 0.6 %			
10515	AAA	IEEE 802.11ac WFI 2.4 GHz (DSSS, 2 Mbps, R90c-d)	WLAN	1.58	± 0.6 %			
10516	AAA	IEEE 802.11ac WFI 2.4 GHz (DSSS, 5.5 Mbps, R90c-d)	WLAN	1.57	± 0.6 %			
10517	AAA	IEEE 802.11ac WFI 2.4 GHz (DSSS, 11 Mbps, R90c-d)	WLAN	1.58	± 0.6 %			
10518	AAC	IEEE 802.11ac WFI 5 GHz (OFDM, 9 Mbps, R90c-d)	WLAN	8.32	± 0.6 %			
10519	AAC	IEEE 802.11ac WFI 5 GHz (OFDM, 12 Mbps, R90c-d)	WLAN	8.39	± 0.6 %			
10520	AAC	IEEE 802.11ac WFI 5 GHz (OFDM, 18 Mbps, R90c-d)	WLAN	8.12	± 0.6 %			
10521	AAC	IEEE 802.11ac WFI 5 GHz (OFDM, 24 Mbps, R90c-d)	WLAN	7.97	± 0.6 %			
10522	AAC	IEEE 802.11ac WFI 5 GHz (OFDM, 36 Mbps, R90c-d)	WLAN	8.45	± 0.6 %			
10523	AAC	IEEE 802.11ac WFI 5 GHz (OFDM, 48 Mbps, R90c-d)	WLAN	8.38	± 0.6 %			
10524	AAC	IEEE 802.11ac WFI 5 GHz (OFDM, 54 Mbps, R90c-d)	WLAN	8.27	± 0.6 %			
10525	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	2.36	± 0.6 %			
10526	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.42	± 0.6 %			
10527	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.21	± 0.6 %			
10528	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.32	± 0.6 %			
10529	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.36	± 0.6 %			
10530	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.36	± 0.6 %			
10531	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.29	± 0.6 %			
10532	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.29	± 0.6 %			
10533	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.30	± 0.6 %			
10534	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.45	± 0.6 %			
10535	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.45	± 0.6 %			
10536	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.32	± 0.6 %			
10537	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.44	± 0.6 %			
10538	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.34	± 0.6 %			
10539	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.39	± 0.6 %			
10540	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.39	± 0.6 %			
10541	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.46	± 0.6 %			
10542	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.45	± 0.6 %			
10543	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.55	± 0.6 %			
10544	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.47	± 0.6 %			
10545	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.55	± 0.6 %			
10546	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.35	± 0.6 %			

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10547	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.49	± 0.6 %			
10548	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.37	± 0.6 %			
10549	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.39	± 0.6 %			
10550	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.39	± 0.6 %			
10551	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.39	± 0.6 %			
10552	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.42	± 0.6 %			
10553	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.42	± 0.6 %			
10554	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.48	± 0.6 %			
10555	AAC	IEEE 802.11ac WFI (20MHz, MCS1, R90c-d)	WLAN	8.47	± 0.6 %			
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No.10, Weiye Road, Innovation Park, Kunshan, Jiangsu, China 215300
 中国·江苏·昆山市留学生创业园伟业路10号 邮编 215300

(t86-512)67355888 (t86-512)67370818 www.sgsgroup.com.cn
 (t86-512)67355888 (t86-512)67370818 sgs.china@sgs.com

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