

Appendix A Verification Plots

Appendix A.1 Verification Plots for Verification 835MHz

System Performance Check Report

Summary

Dipole	Frequency [MHz]	TSL	Power [dBm]	Dev. 1g [%]	Dev. 10g [%]	Dev. Peak [%]	Iso. Error [%]
D835V2 - SN490	835.0	HSL	20.0	0.2	2.4	1.7	-1.2

Exposure Conditions

Phantom Section, TSL	Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, Head Simulating Liquid	15	CW, 0--		835.000, 0	9.3	0.862	40.5

Hardware Setup

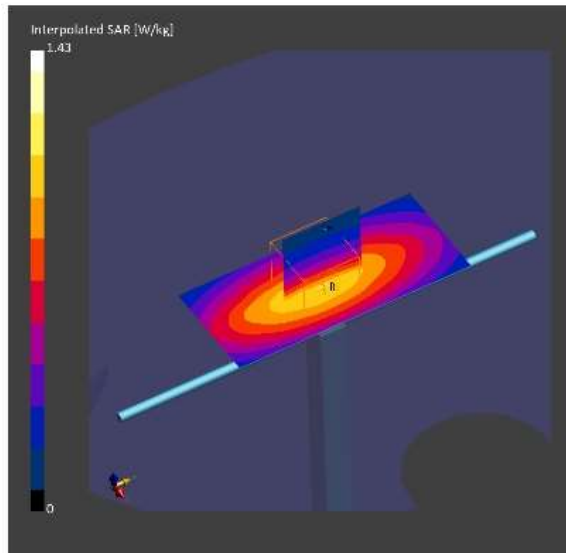
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) - 1998	HBBL-600-10000 Charge:xxxx, 2024-11-27	EK3DV4 - SN7574, 2024-05-23	DAE4 Sn1504, 2024-01-17

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	40.0 x 90.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	10.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-11-27, 10:33	2024-11-27, 10:39
psSAR1g [W/Kg]	0.936	0.933
psSAR10g [W/Kg]	0.618	0.625
Power Drift [dB]	0.00	-0.00
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction



System Performance Check Report

Summary

Dipole	Frequency [MHz]	TSL	Power [dBm]	Dev. 1g [%]	Dev. 10g [%]	Dev. Peak [%]	Iso. Error [%]
DB35V2 - SN490	835.0	HSL	20.0	7.9	7.3	13.8	1.6

Exposure Conditions

Phantom Section, TSL	Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, Head Simulating Liquid	15	CW, 0--		835.000, 0	9.3	0.862	40.2

Hardware Setup

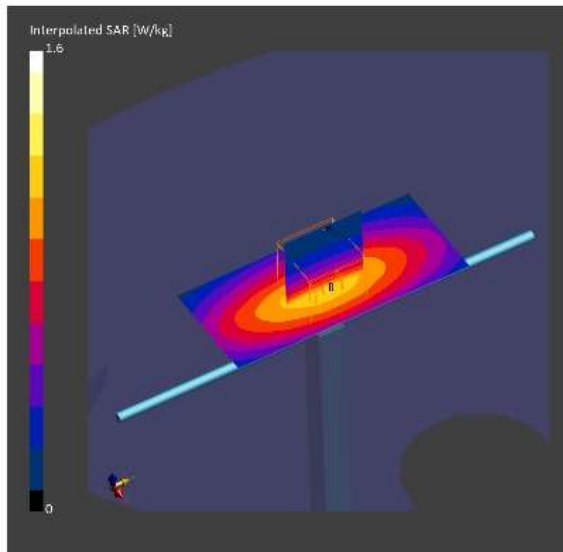
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) - 1998	HBBL-600-10000 Charge:xxxx, 2024-12-03	EK3DV4 - SN7574, 2024-05-23	DAE4 Sn1504, 2024-01-17

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	40.0 x 90.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	10.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.5
MA/A	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-12-03, 14:15	2024-12-03, 14:20
psSAR1g [W/Kg]	1.02	1.01
psSAR10g [W/Kg]	0.671	0.656
Power Drift [dB]	-0.01	0.00
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction



Appendix A.2 Verification Plots for Verification 1900MHz

System Performance Check Report

Summary

Dipole	Frequency [MHz]	TSL	Power [dBm]	Dev. 1g [%]	Dev. 10g [%]	Dev. Peak [%]	Iso. Error [%]
D1900V2 - SN5d033	1900.0	HSL	20.0	-3.8	-1.1	2.1	-1.7

Exposure Conditions

Phantom Section, TSL	Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, Head Simulating Liquid	10	CW, 0--		1900.000, 0	7.92	1.42	39.2

Hardware Setup

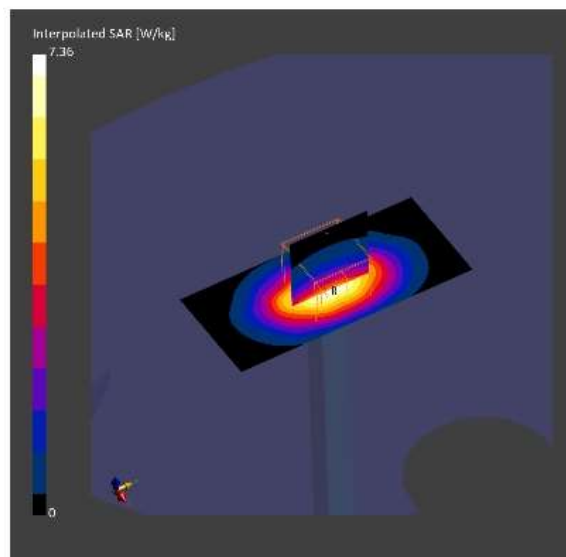
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) - 1998	HBBL-600-10000 Charge:xxxx, 2024-11-28	EK3DV4 - SN7574, 2024-05-23	DAE4 Sn1504, 2024-01-17

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	40.0 x 90.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	10.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.5
MA/A	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-11-28, 10:36	2024-11-28, 10:42
psSAR1g [W/Kg]	3.99	3.97
psSAR10g [W/Kg]	2.08	2.13
Power Drift [dB]	0.01	0.00
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction



Appendix A.3 Verification Plots for Verification 2600MHz

System Performance Check Report

Summary

Dipole	Frequency [MHz]	TSL	Power [dBm]	Dev. 1g [%]	Dev. 10g [%]	Dev. Peak [%]	Iso. Error [%]
D2600V2 - SN1124	2600.0	Head	20.0	-1.6	-2.2	1.2	-1.5

Exposure Conditions

Phantom Section, TSL	Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, Head Simulating Liquid	10	CW, 0--		2600.000, 0	7.31	1.96	40.5

Hardware Setup

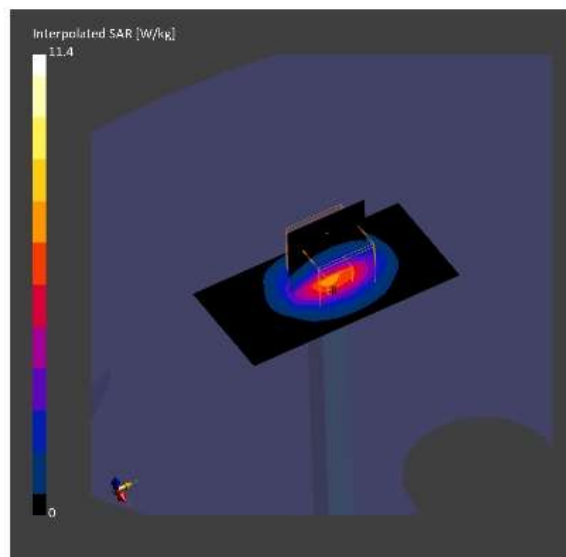
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) - 1997	HBBL-600-10000 Charge:xxxx, 2024-12-03	EK3DV4 - SN7574, 2024-05-23	DAE4 Sn1504, 2024-01-17

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	40.0 x 80.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	10.0 x 10.0	5.0 x 5.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.5
MA/A	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

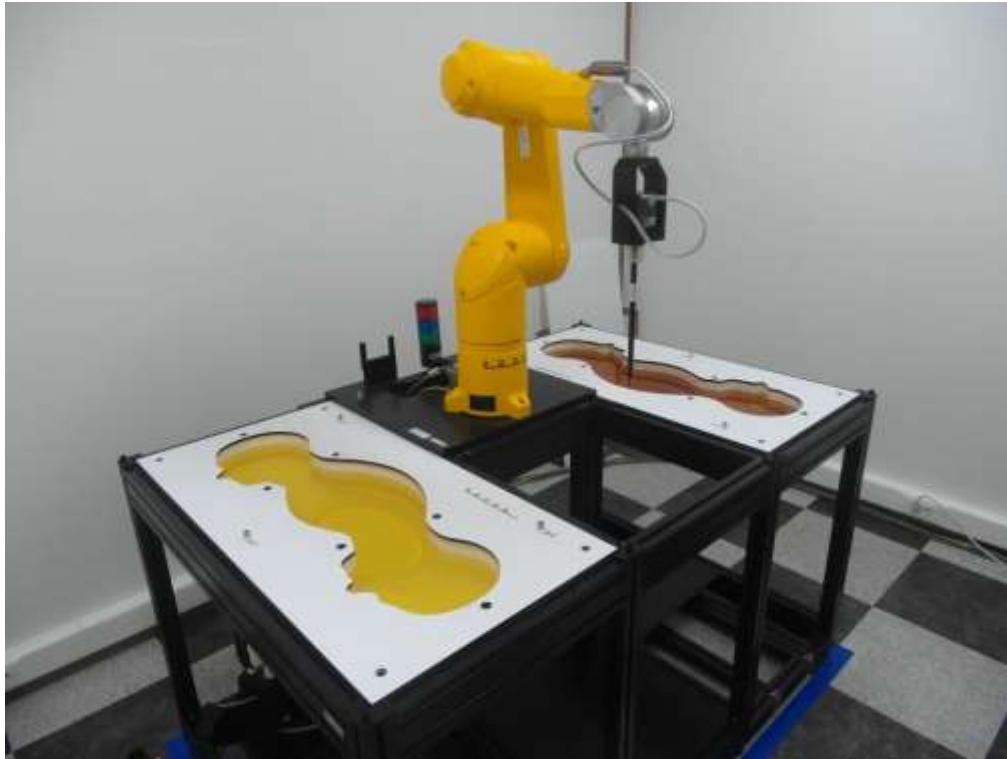
Measurement Results

	Area Scan	Zoom Scan
Date	2024-12-03, 13:23	2024-12-03, 13:29
psSAR1g [W/Kg]	5.32	5.31
psSAR10g [W/Kg]	2.42	2.38
Power Drift [dB]	-0.00	0.00
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction



Appendix B Photograph

Appendix B.1 Photographs of the SAR measurement system



(a) Photograph of the DASY6 SAR measurement System

Appendix C Probe, DAE and Dipole Calibration Certificates

Appendix C.1 Calibration certificate for DAE4_1504

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

Client: SGS
Gyeonggi-do, Republic of Korea

Certificate No.: DAE4-1504_Jan24

CALIBRATION CERTIFICATE

Object: DAE4 - SD 000 D04 BM - SN: 1504

Calibration procedure(s): QA CAL-06.v30
Calibration procedure for the data acquisition electronics (DAE)

Calibration date: January 17, 2024

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 (Certificate No.)	Scheduled Calibration
Kathley Multimeter Type 2001	SN: 0610278	29-Aug-23 (No:37421)	Aug-24

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Auto DAE Calibration Unit	SE UMS 050 AA 1001	27-Jan-23 (in house check)	In house check: Jan-24
Calibrator Box V2.1	SE UMS 006 AA 1002	27-Jan-23 (in house check)	In house check: Jan-24

Calibrated by: Dominique Steffen, Laboratory Technician

Approved by: Sven Kötter, Technical Manager

Issued: January 17, 2024

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

Certificate No: DAE4-1504_Jan24

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 Zeughausstrasse 43, 8004 Zurich, Switzerland



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 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.

DC Voltage Measurement

A/D - Converter Resolution nominal

High Range: 1LSB = 6.1μV , full range = -100...+300 mV

Low Range: 1LSB = 61nV , full range = -1.....+3mV

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

Calibration Factors	X	Y	Z
High Range	404.412 ± 0.02% (k=2)	403.989 ± 0.02% (k=2)	403.937 ± 0.02% (k=2)
Low Range	3.95738 ± 1.50% (k=2)	3.95342 ± 1.50% (k=2)	4.01625 ± 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	79.0 ° ± 1 °
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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	200007.15	-0.23	-0.00
Channel X + Input	20017.75	2.63	0.01
Channel X - Input	-19984.39	4.44	-0.02
Channel Y + Input	200006.81	-1.02	-0.00
Channel Y + Input	20013.77	-1.57	-0.01
Channel Y - Input	-19989.24	-0.56	0.00
Channel Z + Input	200006.10	-1.17	-0.00
Channel Z + Input	20013.80	-1.65	-0.01
Channel Z - Input	-19989.76	-0.06	0.00

Low Range	Reading (μV)	Difference (μV)	Error (%)
Channel X + Input	2015.88	1.45	0.07
Channel X + Input	216.22	1.61	0.75
Channel X - Input	-183.53	1.65	-0.89
Channel Y + Input	2015.02	0.47	0.02
Channel Y + Input	214.12	-0.65	-0.30
Channel Y - Input	-185.25	-0.07	0.04
Channel Z + Input	2014.58	0.00	0.00
Channel Z + Input	214.04	-0.77	-0.36
Channel Z - Input	-185.59	-0.30	0.16

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	-6.16	-8.34
	- 200	10.38	8.54
Channel Y	200	7.38	7.56
	- 200	-8.71	-8.97
Channel Z	200	-3.44	-3.56
	- 200	1.65	1.43

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	-	-1.00	-4.15
Channel Y	200	7.05	-	0.89
Channel Z	200	10.80	4.58	-

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	15945	16176
Channel Y	15782	15862
Channel Z	16066	16639

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	0.97	0.05	1.95	0.35
Channel Y	-0.00	-1.10	0.66	0.35
Channel Z	-0.47	-1.49	1.44	0.49

6. Input Offset Current

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

7. Input Resistance (Typical values for information)

	Zeroing (kΩ)	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)	+7.8
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	+8	+14
Supply (- Vcc)	-0.01	-8	-9

Appendix C.2 Calibration certificate for EX3DV4_7574

Calibration Laboratory of
Schmid & Partner
Engineering AG
 Zeughausstrasse 43, 8004 Zurich, Switzerland

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 S Swiss Calibration Service

Accreditation No.: **SCS 0108**

Client: **SGS**
 Gyeonggi-do, Republic of Korea

Certificate No.: **EX-7574_May24**

CALIBRATION CERTIFICATE

Object: **EX3DV4 - SN:7574**

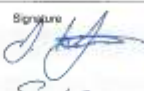
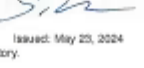
Calibration procedure(s): **QA CAL-01.v10, QA CAL-12.v10, QA CAL-14.v7, QA CAL-23.v6, QA CAL-25.v6**
 Calibration procedure for dosimetric E-field probes

Calibration date: **May 23, 2024**

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)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP2	SN: 104778	26-Mar-24 (No. 217-04036/04037)	Mar-25
Power sensor NRP-Z81	SN: 103244	26-Mar-24 (No. 217-04036)	Mar-25
OCP DAK-3.5 (weighted)	SN: 1249	05-Oct-23 (OCP-DAK3.5-1249_Oct23)	Oct-24
OCP DAK-12	SN: 1016	05-Oct-23 (OCP-DAK12-1016_Oct23)	Oct-24
Reference 20 dB Attenuator	SN: CC2552 (20v)	26-Mar-24 (No. 217-04046)	Mar-25
DAE4	SN: 690	23-Feb-24 (No. DAE4-690_Feb24)	Feb-25
Reference Probe EX3DV4	SN: 7349	03-Nov-23 (No. EX3-7349_Nov23)	Nov-24

Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41250874	06-Apr-16 (in house check Jun-22)	In house check: Jun-24
Power sensor E4412A	SN: MY41699387	06-Apr-16 (in house check Jun-22)	In house check: Jun-24
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-22)	In house check: Jun-24
RF generator HP 8648C	SN: US3842U01700	04-Aug-99 (in house check Jun-22)	In house check: Jun-24
Network Analyzer 8356A	SN: US41080477	31-Mar-14 (in house check Oct-22)	In house check: Oct-24

	Name	Function	Signature
Calibrated by	Jeffrey Katzman	Laboratory Technician	
Approved by	Gwen Kohn	Technical Manager	

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

Issued: May 23, 2024

Calibration Laboratory of
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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Glossary

TSL	tissue simulating liquid
NORM _{x,y,z}	sensitivity in free space
ConvF	sensitivity in TSL / NORM _{x,y,z}
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C, D	modulation dependent linearization parameters
Polarization 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:

- 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.
- KDB 885654, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- NORM_{x,y,z}: Assessed for E-field polarization $\theta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not affect the E²-field uncertainty inside TSL (see below ConvF).
- NORM₁(_{x,y,z}) = NORM_{x,y,z} * frequency_response (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- DCP_{x,y,z}: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal. 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 characteristic
- A_{x,y,z}; B_{x,y,z}; C_{x,y,z}; D_{x,y,z}; VR_{x,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. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ 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 NORM_{x,y,z} * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- Spherical isotropy (3D deviation from isotropy): is 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_x (no uncertainty required).

EX3DV4 - SN:7574

May 23, 2024

Parameters of Probe: EX3DV4 - SN:7574

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k = 2)
Norm ($\mu\text{W}/(\text{V/m})^2$) ^A	0.50	0.52	0.48	±10.1%
DCP (mV) ^B	106.2	103.5	106.6	±4.7%

Calibration Results for Modulation Response

UID	Communication System Name		A dB	B dB/√μV	C	D dB	VR mV	Max dev.	Max Unc ^C k = 2
0	CW	X	0.00	0.00	1.00	0.00	167.9	±1.9%	±4.7%
		Y	0.00	0.00	1.00		148.8		
		Z	0.00	0.00	1.00		157.8		
10352	Pulse Waveform (200Hz, 10%)	X	1.77	61.89	7.14	10.00	60.0	±2.3%	±9.6%
		Y	12.00	74.00	11.00		60.0		
		Z	1.72	61.82	7.22		60.0		
10353	Pulse Waveform (200Hz, 20%)	X	0.79	60.00	5.13	8.99	80.0	±1.9%	±9.6%
		Y	0.78	60.00	4.89		80.0		
		Z	0.77	60.00	5.13		80.0		
10354	Pulse Waveform (200Hz, 40%)	X	0.01	124.29	1.79	3.98	85.0	±2.5%	±9.6%
		Y	0.20	147.71	0.37		85.0		
		Z	0.37	60.00	3.76		85.0		
10355	Pulse Waveform (200Hz, 60%)	X	0.44	60.00	2.71	2.22	120.0	±2.2%	±9.6%
		Y	0.00	153.16	39.40		120.0		
		Z	0.01	60.00	100.00		120.0		
10357	QPSK Waveform, 1 MHz	X	0.58	65.25	13.84	1.00	150.0	±3.4%	±9.6%
		Y	0.87	69.80	16.76		150.0		
		Z	20.00	149.18	45.11		150.0		
10368	QPSK Waveform, 10 MHz	X	1.42	67.16	14.81	0.00	150.0	±2.5%	±9.6%
		Y	1.62	70.38	16.07		150.0		
		Z	20.00	112.28	30.39		150.0		
10395	64-QAM Waveform, 100 kHz	X	1.63	64.04	15.87	3.01	150.0	±2.3%	±9.6%
		Y	1.69	64.90	16.34		150.0		
		Z	1.99	69.54	19.62		150.0		
10399	64-QAM Waveform, 40 MHz	X	2.85	66.55	15.39	0.00	150.0	±2.4%	±9.6%
		Y	2.90	67.56	15.96		150.0		
		Z	3.44	71.85	18.49		150.0		
10414	WLAN CCDF, 64-QAM, 40 MHz	X	3.94	66.68	15.72	0.00	150.0	±2.3%	±9.6%
		Y	3.77	66.93	15.80		150.0		
		Z	4.20	69.93	17.57		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%.

^A The uncertainties of Norm X,Y,Z do not affect the E₂-field uncertainty inside TSL (see Pages 5 and 6).

^B Linearization parameter uncertainty for maximum specified field strength.

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

EX3DV4 - SN:7574

May 23, 2024

Parameters of Probe: EX3DV4 - SN:7574

Sensor Model Parameters

	C1 fF	C2 fF	α $^{\circ}$	T1 mV^{-2}	T2 mV^{-1}	T3 mV	T4 V^{-2}	T5 V^{-1}	T6
x	9.5	68.87	33.68	2.89	0.00	4.92	0.36	0.00	1.00
y	7.8	55.83	34.24	2.00	0.00	4.90	0.40	0.00	1.00
z	6.9	50.58	34.69	2.45	0.00	4.96	0.47	0.00	1.00

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle	-29.2°
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.

EX3DV4 - SN:7574

May 23, 2024

Parameters of Probe: EX3DV4 - SN:7574

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity ^F (S/m)	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Unc (k=2)
750	41.9	0.89	9.57	9.57	9.57	0.46	0.84	±11.0%
835	41.5	0.90	9.30	9.30	9.30	0.46	0.80	±11.0%
900	41.5	0.97	9.12	9.12	9.12	0.37	0.91	±11.0%
1750	40.1	1.37	8.08	8.08	8.08	0.28	0.86	±11.0%
1900	40.0	1.40	7.92	7.92	7.92	0.32	0.86	±11.0%
1950	40.0	1.40	7.87	7.87	7.87	0.33	0.86	±11.0%
2300	39.5	1.67	7.64	7.64	7.64	0.32	0.90	±11.0%
2450	39.2	1.80	7.34	7.34	7.34	0.34	0.90	±11.0%
2600	39.0	1.96	7.31	7.31	7.31	0.40	0.90	±11.0%
3300	38.2	2.71	6.81	6.81	6.81	0.30	1.35	±13.1%
3500	37.9	2.91	6.49	6.49	6.49	0.40	1.35	±13.1%
3700	37.7	3.12	6.45	6.45	6.45	0.40	1.35	±13.1%
3900	37.5	3.32	6.32	6.32	6.32	0.40	1.60	±13.1%
4100	37.2	3.53	6.31	6.31	6.31	0.40	1.60	±13.1%
4400	36.9	3.84	5.88	5.88	5.88	0.40	1.70	±13.1%
4600	36.7	4.04	5.82	5.82	5.82	0.40	1.70	±13.1%
4800	36.4	4.25	5.88	5.88	5.88	0.40	1.70	±13.1%
4950	36.3	4.40	5.64	5.64	5.64	0.40	1.80	±13.1%
5200	36.0	4.66	5.22	5.22	5.22	0.40	1.80	±13.1%
5300	35.9	4.76	5.06	5.06	5.06	0.40	1.80	±13.1%
5500	35.6	4.96	4.75	4.75	4.75	0.40	1.80	±13.1%
5600	35.5	5.07	4.60	4.60	4.60	0.40	1.80	±13.1%
5800	35.3	5.27	4.58	4.58	4.58	0.40	1.80	±13.1%

^C Frequency validity above 300 MHz of a 100 MHz only applies for DASY v4.4 and higher (see Page 21), 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. Frequency validity below 300 MHz is <10, 25, 40, 50 and 70 MHz for ConvF assessments at 20, 34, 128, 156 and 220 MHz respectively. Validity of ConvF assessed at 6 MHz is 4-9 MHz, and ConvF assessed at 13 MHz is 9-19 MHz. Above 5 GHz frequency validity can be extended to <110 MHz.

^F The probes are calibrated using tissue simulating liquids (TSL) that deviate for ϵ and σ by less than ±5% from the target values (typically better than ±3%) and are valid for TSL with deviations of up to ±10% if SAR correction is applied.

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

EX3DV4 - SN:7574

May 23, 2024

Parameters of Probe: EX3DV4 - SN:7574

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity ^F (S/m)	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Unc (k = 2)
6500	34.5	6.07	5.25	5.25	5.25	0.20	2.00	±18.6%
7000	33.9	6.66	5.05	5.05	5.05	0.30	2.80	±18.6%

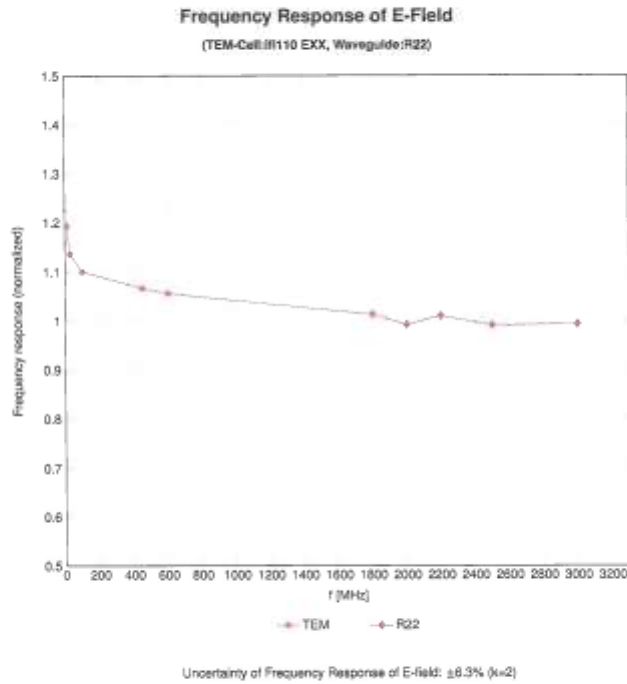
^C Frequency validity at 6.5 GHz is -600/+700 MHz, and a 700 MHz at or above 7 GHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

^F The probe are calibrated using tissue simulating liquids (TSL) that deviate for ϵ and σ by less than ±10% from the target values (typically better than ±6%) and are valid for TSL with deviations of up to ±10%.

^G Alpha/Depth are determined during calibration. SP5AD 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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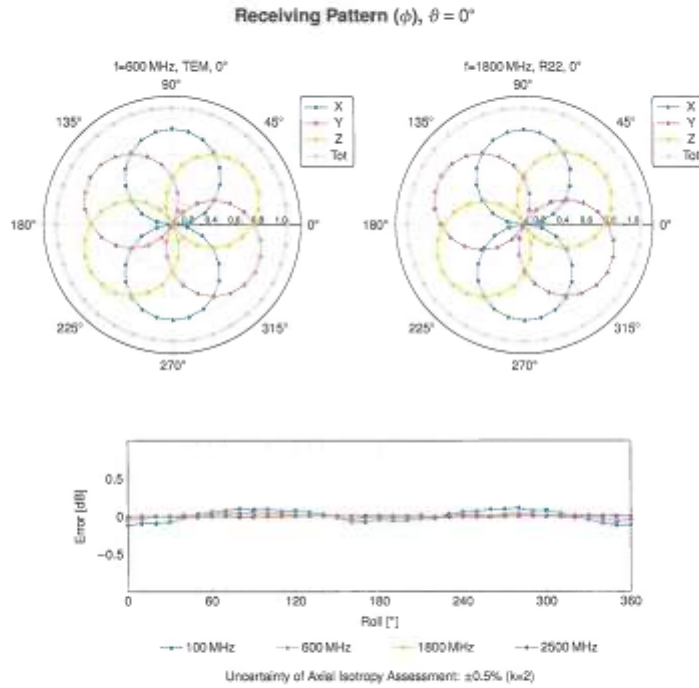


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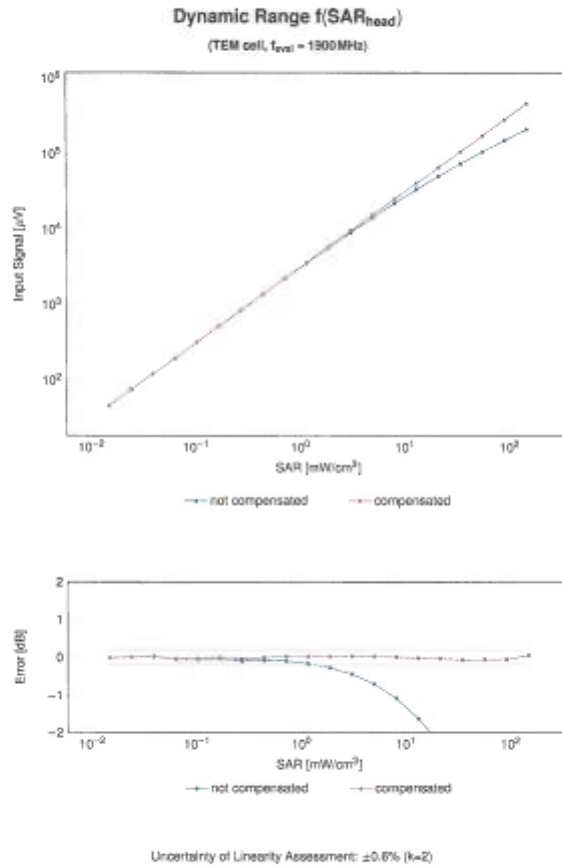


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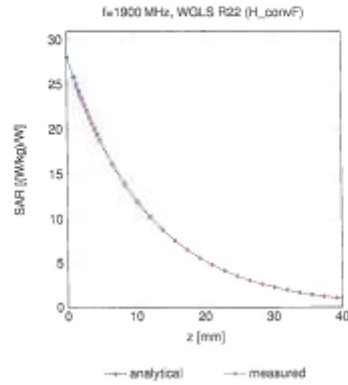
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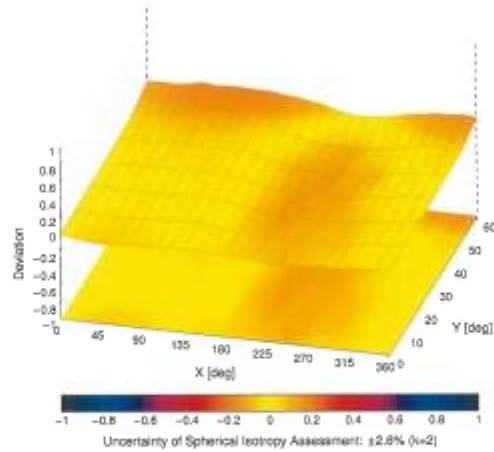
May 23, 2024

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ, θ), $f = 900 \text{ MHz}$



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Appendix: Modulation Calibration Parameters

Mod	Rev	Communication System Name	Group	PAR (dB)	Unc ² R = 2
9		CW	CW	0.00	±4.7
10101	CAB	SAR Validation (Square, 100ms, 10ms)	Test	10.00	±9.6
10101	CAC	UMTS-FDD (WCDMA)	WCDMA	2.91	±9.6
10102	CAB	IEEE 802.11b WLAN 2.4 GHz (DSSS, 1 Mbps)	WLAN	1.87	±9.6
10103	CAB	IEEE 802.11g WLAN 2.4 GHz (DSSS-OFDM, 6 Mbps)	WLAN	9.49	±9.6
10104	DAC	GSM-FDD (TDMA, GMSK)	GSM	9.39	±9.6
10105	DAC	GPRS-FDD (TDMA, GMSK, TN 0)	GSM	9.57	±9.6
10106	DAC	GPRS-FDD (TDMA, GMSK, TN 0-1)	GSM	6.56	±9.6
10108	DAC	EDGE-FDD (TDMA, GMSK, TN 0)	GSM	12.62	±9.6
10109	DAC	EDGE-FDD (TDMA, GMSK, TN 0-1)	GSM	9.55	±9.6
10110	DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	GSM	4.65	±9.6
10111	DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-3)	GSM	3.56	±9.6
10112	DAC	EDGE-FDD (TDMA, GMSK, TN 0-1-2)	GSM	7.76	±9.6
10113	CAA	IEEE 802.15.1 Bluetooth (GFSK, DH)	Bluetooth	5.30	±9.6
10114	CAA	IEEE 802.15.1 Bluetooth (GFSK, DH)	Bluetooth	1.07	±9.6
10115	CAA	IEEE 802.15.1 Bluetooth (GFSK, DH)	Bluetooth	1.16	±9.6
10116	CAA	IEEE 802.15.1 Bluetooth (P4-DQPSK, DH)	Bluetooth	7.74	±9.6
10117	CAA	IEEE 802.15.1 Bluetooth (P4-DQPSK, DH)	Bluetooth	4.53	±9.6
10118	CAA	IEEE 802.15.1 Bluetooth (P4-DQPSK, DH)	Bluetooth	3.83	±9.6
10119	CAA	IEEE 802.15.1 Bluetooth (B-DQPSK, DH)	Bluetooth	9.91	±9.6
10120	CAA	IEEE 802.15.1 Bluetooth (B-DQPSK, DH)	Bluetooth	4.77	±9.6
10121	CAA	IEEE 802.15.1 Bluetooth (B-DQPSK, DH)	Bluetooth	4.10	±9.6
10122	CAB	CDMA2000 (1xRTT, RC1)	CDMA2000	4.87	±9.6
10123	CAB	IS-54 / IS-136 FDD (TDMA/FDD, P4-DQPSK, Fullrate)	AMPS	7.78	±9.6
10124	CAA	IS-95A/1A-253 FDD (TDMA, FM)	AMPS	0.00	±9.6
10125	CAA	DECT (TDD, TDMA/FDD, GFSK, Full Slot, 3s)	DECT	12.85	±9.6
10126	CAA	DECT (TDD, TDMA/FDD, GFSK, Double Slot, 1s)	DECT	12.79	±9.6
10127	CAA	UMTS-TDD (TD-SCDMA, 1.28 Mbps)	TD-SCDMA	11.01	±9.6
10128	DAC	EDGE-FDD (TDMA, GFSK, TN 0-1-2-3)	GSM	8.52	±9.6
10129	CAB	IEEE 802.11b WLAN 2.4 GHz (DSSS, 2 Mbps)	WLAN	2.12	±9.6
10130	CAB	IEEE 802.11b WLAN 2.4 GHz (DSSS, 5.5 Mbps)	WLAN	2.03	±9.6
10131	CAB	IEEE 802.11g WLAN 2.4 GHz (DSSS, 11 Mbps)	WLAN	3.60	±9.6
10132	CAB	IEEE 802.11a WLAN 5 GHz (OFDM, 6 Mbps)	WLAN	6.66	±9.6
10133	CAB	IEEE 802.11a WLAN 5 GHz (OFDM, 9 Mbps)	WLAN	6.63	±9.6
10134	CAB	IEEE 802.11a WLAN 5 GHz (OFDM, 12 Mbps)	WLAN	9.09	±9.6
10135	CAB	IEEE 802.11a WLAN 5 GHz (OFDM, 18 Mbps)	WLAN	9.00	±9.6
10136	CAB	IEEE 802.11a WLAN 5 GHz (OFDM, 24 Mbps)	WLAN	9.38	±9.6
10137	CAB	IEEE 802.11a WLAN 5 GHz (OFDM, 36 Mbps)	WLAN	10.12	±9.6
10138	CAB	IEEE 802.11a WLAN 5 GHz (OFDM, 48 Mbps)	WLAN	10.34	±9.6
10139	CAB	IEEE 802.11a WLAN 5 GHz (OFDM, 54 Mbps)	WLAN	10.55	±9.6
10140	CAB	IEEE 802.11g WLAN 2.4 GHz (DSSS-OFDM, 9 Mbps)	WLAN	9.83	±9.6
10141	CAB	IEEE 802.11g WLAN 2.4 GHz (DSSS-OFDM, 18 Mbps)	WLAN	9.82	±9.6
10142	CAB	IEEE 802.11g WLAN 2.4 GHz (DSSS-OFDM, 24 Mbps)	WLAN	9.84	±9.6
10143	CAB	IEEE 802.11g WLAN 2.4 GHz (DSSS-OFDM, 36 Mbps)	WLAN	10.35	±9.6
10144	CAB	IEEE 802.11g WLAN 2.4 GHz (DSSS-OFDM, 48 Mbps)	WLAN	10.77	±9.6
10145	CAB	IEEE 802.11g WLAN 2.4 GHz (DSSS-OFDM, 54 Mbps)	WLAN	10.94	±9.6
10146	CAB	IEEE 802.11g WLAN 2.4 GHz (DSSS-OFDM, 54 Mbps)	WLAN	11.00	±9.6
10147	CAB	CDMA2000 (1xRTT, RC3)	CDMA2000	3.07	±9.6
10148	CAB	IS-54 / IS-136 FDD (TDMA/FDD, P4-DQPSK, Fullrate)	AMPS	4.77	±9.6
10149	DAC	GPRS-FDD (TDMA, GMSK, TN 0-4)	GSM	6.56	±9.6
10150	CAC	UMTS-FDD (WCDMA)	WCDMA	3.98	±9.6
10151	CAC	UMTS-FDD (WCDMA)	WCDMA	3.98	±9.6
10152	CAC	EDGE-FDD (TDMA, GMSK, TN 0-4)	GSM	9.55	±9.6
10153	CAH	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	LTE-FDD	5.07	±9.6
10154	CAH	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	LTE-FDD	6.42	±9.6
10155	CAH	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	LTE-FDD	6.90	±9.6
10156	CAH	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	LTE-TDD	9.29	±9.6
10157	CAH	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	LTE-TDD	9.97	±9.6
10158	CAH	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	LTE-TDD	10.01	±9.6
10159	CAH	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	LTE-FDD	5.90	±9.6
10160	CAH	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	LTE-FDD	6.43	±9.6
10161	CAH	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	LTE-FDD	5.75	±9.6
10162	CAH	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	LTE-FDD	6.44	±9.6

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UID	Rev	Communication System Name	Group	PAR (dB)	Ung ² A = 2
10112	CAH	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	LTE-FDD	5.59	±0.6
10113	CAH	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	LTE-FDD	5.62	±0.6
10114	CAB	IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)	WLAN	8.15	±0.6
10115	CAB	IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)	WLAN	8.46	±0.6
10116	CAB	IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM)	WLAN	8.15	±0.6
10117	CAB	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	WLAN	8.07	±0.6
10118	CAB	IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)	WLAN	8.59	±0.6
10119	CAB	IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)	WLAN	8.15	±0.6
10140	CAF	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	LTE-FDD	6.40	±0.6
10141	CAF	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	LTE-FDD	6.83	±0.6
10142	CAF	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	LTE-FDD	5.73	±0.6
10143	CAF	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	LTE-FDD	6.35	±0.6
10144	CAF	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	LTE-FDD	6.65	±0.6
10145	CAG	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	LTE-FDD	5.70	±0.6
10146	CAG	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	LTE-FDD	6.41	±0.6
10147	CAG	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	LTE-FDD	6.72	±0.6
10148	CAF	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	LTE-FDD	6.43	±0.6
10150	CAF	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	LTE-FDD	6.83	±0.6
10151	CAH	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	LTE-TDD	9.39	±0.6
10152	CAH	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	LTE-TDD	9.92	±0.6
10153	CAH	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	LTE-TDD	10.05	±0.6
10154	CAH	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	LTE-FDD	6.76	±0.6
10155	CAH	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	LTE-FDD	6.43	±0.6
10156	CAH	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	LTE-FDD	5.79	±0.6
10157	CAH	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	LTE-FDD	6.40	±0.6
10158	CAH	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	LTE-FDD	6.62	±0.6
10159	CAH	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	LTE-FDD	6.95	±0.6
10160	CAF	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	LTE-FDD	5.82	±0.6
10161	CAF	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	LTE-FDD	6.43	±0.6
10162	CAF	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	LTE-FDD	6.83	±0.6
10166	CAG	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	LTE-FDD	5.40	±0.6
10167	CAG	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	LTE-FDD	6.21	±0.6
10168	CAG	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	LTE-FDD	6.79	±0.6
10169	CAF	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	LTE-FDD	5.73	±0.6
10170	CAF	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	LTE-FDD	6.52	±0.6
10171	CAF	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	LTE-FDD	6.49	±0.6
10172	CAH	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	LTE-TDD	9.21	±0.6
10173	CAH	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	LTE-TDD	9.48	±0.6
10174	CAH	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	LTE-TDD	10.25	±0.6
10175	CAH	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	LTE-FDD	5.72	±0.6
10176	CAH	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	LTE-FDD	6.50	±0.6
10177	CAJ	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	LTE-FDD	5.73	±0.6
10179	CAH	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	LTE-FDD	6.52	±0.6
10179	CAH	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	LTE-FDD	6.50	±0.6
10180	CAH	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	LTE-FDD	6.50	±0.6
10181	CAF	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	LTE-FDD	5.72	±0.6
10182	CAF	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	LTE-FDD	6.52	±0.6
10183	AAE	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	LTE-FDD	6.50	±0.6
10184	CAF	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	LTE-FDD	5.73	±0.6
10185	CAF	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	LTE-FDD	6.51	±0.6
10186	AAH	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	LTE-FDD	6.50	±0.6
10187	CAG	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	LTE-FDD	5.73	±0.6
10188	CAG	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	LTE-FDD	6.52	±0.6
10189	AAG	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	LTE-FDD	6.50	±0.6
10190	CAB	IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)	WLAN	8.09	±0.6
10194	CAB	IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM)	WLAN	8.12	±0.6
10195	CAB	IEEE 802.11n (HT Greenfield, 89 Mbps, 64-QAM)	WLAN	8.21	±0.6
10196	CAB	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	WLAN	8.10	±0.6
10197	CAB	IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)	WLAN	8.13	±0.6
10198	CAB	IEEE 802.11n (HT Mixed, 89 Mbps, 64-QAM)	WLAN	8.27	±0.6
10219	CAB	IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)	WLAN	8.03	±0.6
10220	CAB	IEEE 802.11n (HT Mixed, 43.2 Mbps, 16-QAM)	WLAN	8.13	±0.6
10221	CAB	IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)	WLAN	8.27	±0.6
10223	CAB	IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)	WLAN	8.09	±0.6
10223	CAB	IEEE 802.11n (HT Mixed, 50 Mbps, 16-QAM)	WLAN	8.48	±0.6
10224	CAB	IEEE 802.11n (HT Mixed, 105 Mbps, 64-QAM)	WLAN	8.03	±0.6

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102025	CAG	UMTS-FDD (HSPA+)	WCDMA	5.67	+0.0
102026	CAG	LTE-TDD (SC-FDMA, 1 RB, 1.4MHz, 16-QAM)	LTE-TDD	9.48	+0.0
102027	CAG	LTE-TDD (SC-FDMA, 1 RB, 1.4MHz, 64-QAM)	LTE-TDD	10.26	+0.0
102028	CAG	LTE-TDD (SC-FDMA, 1 RB, 1.4MHz, QPSK)	LTE-TDD	8.22	+0.0
102029	CAE	LTE-TDD (SC-FDMA, 1 RB, 3MHz, 16-QAM)	LTE-TDD	9.48	+0.0
102030	CAE	LTE-TDD (SC-FDMA, 1 RB, 3MHz, 64-QAM)	LTE-TDD	10.26	+0.0
102031	CAE	LTE-TDD (SC-FDMA, 1 RB, 3MHz, QPSK)	LTE-TDD	8.19	+0.0
102032	CAH	LTE-TDD (SC-FDMA, 1 RB, 5MHz, 16-QAM)	LTE-TDD	9.48	+0.0
102033	CAH	LTE-TDD (SC-FDMA, 1 RB, 5MHz, 64-QAM)	LTE-TDD	10.25	+0.0
102034	CAH	LTE-TDD (SC-FDMA, 1 RB, 5MHz, QPSK)	LTE-TDD	9.01	+0.0
102035	CAH	LTE-TDD (SC-FDMA, 1 RB, 10MHz, 16-QAM)	LTE-TDD	9.48	+0.0
102036	CAH	LTE-TDD (SC-FDMA, 1 RB, 10MHz, 64-QAM)	LTE-TDD	10.20	+0.0
102037	CAH	LTE-TDD (SC-FDMA, 1 RB, 10MHz, QPSK)	LTE-TDD	9.21	+0.0
102038	CAG	LTE-TDD (SC-FDMA, 1 RB, 15MHz, 16-QAM)	LTE-TDD	9.48	+0.0
102039	CAG	LTE-TDD (SC-FDMA, 1 RB, 15MHz, 64-QAM)	LTE-TDD	10.20	+0.0
102040	CAG	LTE-TDD (SC-FDMA, 1 RB, 15MHz, QPSK)	LTE-TDD	9.21	+0.0
102041	CAG	LTE-TDD (SC-FDMA, 50% RB, 1.4MHz, 16-QAM)	LTE-TDD	9.82	+0.0
102042	CAG	LTE-TDD (SC-FDMA, 50% RB, 1.4MHz, 64-QAM)	LTE-TDD	9.88	+0.0
102043	CAG	LTE-TDD (SC-FDMA, 50% RB, 1.4MHz, QPSK)	LTE-TDD	9.40	+0.0
102044	CAE	LTE-TDD (SC-FDMA, 50% RB, 3MHz, 16-QAM)	LTE-TDD	10.08	+0.0
102045	CAE	LTE-TDD (SC-FDMA, 50% RB, 3MHz, 64-QAM)	LTE-TDD	10.08	+0.0
102046	CAE	LTE-TDD (SC-FDMA, 50% RB, 3MHz, QPSK)	LTE-TDD	8.38	+0.0
102047	CAH	LTE-TDD (SC-FDMA, 50% RB, 5MHz, 16-QAM)	LTE-TDD	9.91	+0.0
102048	CAH	LTE-TDD (SC-FDMA, 50% RB, 5MHz, 64-QAM)	LTE-TDD	10.09	+0.0
102049	CAH	LTE-TDD (SC-FDMA, 50% RB, 5MHz, QPSK)	LTE-TDD	8.29	+0.0
102050	CAH	LTE-TDD (SC-FDMA, 50% RB, 10MHz, 16-QAM)	LTE-TDD	9.81	+0.0
102051	CAH	LTE-TDD (SC-FDMA, 50% RB, 10MHz, 64-QAM)	LTE-TDD	10.17	+0.0
102052	CAH	LTE-TDD (SC-FDMA, 50% RB, 10MHz, QPSK)	LTE-TDD	9.24	+0.0
102053	CAG	LTE-TDD (SC-FDMA, 50% RB, 15MHz, 16-QAM)	LTE-TDD	9.90	+0.0
102054	CAG	LTE-TDD (SC-FDMA, 50% RB, 15MHz, 64-QAM)	LTE-TDD	10.14	+0.0
102055	CAG	LTE-TDD (SC-FDMA, 50% RB, 15MHz, QPSK)	LTE-TDD	9.20	+0.0
102056	CAG	LTE-TDD (SC-FDMA, 100% RB, 1.4MHz, 16-QAM)	LTE-TDD	9.94	+0.0
102057	CAG	LTE-TDD (SC-FDMA, 100% RB, 1.4MHz, 64-QAM)	LTE-TDD	10.08	+0.0
102058	CAG	LTE-TDD (SC-FDMA, 100% RB, 1.4MHz, QPSK)	LTE-TDD	8.34	+0.0
102059	CAH	LTE-TDD (SC-FDMA, 100% RB, 3MHz, 16-QAM)	LTE-TDD	9.98	+0.0
102060	CAH	LTE-TDD (SC-FDMA, 100% RB, 3MHz, 64-QAM)	LTE-TDD	9.97	+0.0
102061	CAE	LTE-TDD (SC-FDMA, 100% RB, 3MHz, QPSK)	LTE-TDD	8.24	+0.0
102062	CAH	LTE-TDD (SC-FDMA, 100% RB, 5MHz, 16-QAM)	LTE-TDD	9.83	+0.0
102063	CAH	LTE-TDD (SC-FDMA, 100% RB, 5MHz, 64-QAM)	LTE-TDD	10.16	+0.0
102064	CAH	LTE-TDD (SC-FDMA, 100% RB, 5MHz, QPSK)	LTE-TDD	8.23	+0.0
102065	CAH	LTE-TDD (SC-FDMA, 100% RB, 10MHz, 16-QAM)	LTE-TDD	9.82	+0.0
102066	CAH	LTE-TDD (SC-FDMA, 100% RB, 10MHz, 64-QAM)	LTE-TDD	10.07	+0.0
102067	CAH	LTE-TDD (SC-FDMA, 100% RB, 10MHz, QPSK)	LTE-TDD	8.30	+0.0
102068	CAG	LTE-TDD (SC-FDMA, 100% RB, 15MHz, 16-QAM)	LTE-TDD	10.06	+0.0
102069	CAG	LTE-TDD (SC-FDMA, 100% RB, 15MHz, 64-QAM)	LTE-TDD	10.13	+0.0
102070	CAG	LTE-TDD (SC-FDMA, 100% RB, 15MHz, QPSK)	LTE-TDD	8.00	+0.0
102074	CAG	UMTS-FDD (HSPA+, Subnet 5, 3GPP Release 8)	WCDMA	4.87	+0.0
102075	CAG	UMTS-FDD (HSPA+, Subnet 5, 3GPP Release 4)	WCDMA	4.36	+0.0
102077	CXA	PHS (QPSK)	PHS	11.81	+0.0
102078	CXA	PHS (QPSK, BW 800 MHz, Roll-off 0.5)	PHS	11.81	+0.0
102079	CXA	PHS (QPSK, BW 800 MHz, Roll-off 0.38)	PHS	12.17	+0.0
102080	AAB	CDMA2000, RC1, SCFS, Full Rate	CDMA2000	3.51	+0.0
102081	AAB	CDMA2000, RC3, SCFS, Full Rate	CDMA2000	3.48	+0.0
102082	AAB	CDMA2000, RC3, SCFS, Full Rate	CDMA2000	3.39	+0.0

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10307	AAA	IEEE 802.16e WMAX (20-18, 10 ms, 10 MHz, QPSK, PUSC, 16 symbols)	WMAX	14.48	±0.6
10308	AAA	IEEE 802.16e WMAX (20-18, 10 ms, 10 MHz, 16QAM, PUSC)	WMAX	14.48	±0.6
10309	AAA	IEEE 802.16e WMAX (20-18, 10 ms, 10 MHz, 16QAM, AMC 2x3, 16 symbols)	WMAX	14.58	±0.6
10310	AAA	IEEE 802.16e WMAX (20-18, 10 ms, 10 MHz, QPSK, AMC 2x3, 16 symbols)	WMAX	14.57	±0.6
10311	AAE	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	LTE-FDD	8.06	±0.6
10313	AAA	IDEN 1.3	IDEN	10.51	±0.6
10314	AAA	IDEN 1.3	IDEN	13.48	±0.6
10315	AAE	IEEE 802.11a WiFi 5.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)	WLAN	1.71	±0.6
10316	AAE	IEEE 802.11a WiFi 5.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle)	WLAN	8.36	±0.6
10317	AAE	IEEE 802.11a WiFi 5.4 GHz (OFDM, 6 Mbps, 99pc duty cycle)	WLAN	8.36	±0.6
10382	AAA	Pulse Waveform (200-Hz, 10%)	Generic	10.00	±0.6
10383	AAA	Pulse Waveform (200-Hz, 30%)	Generic	6.99	±0.6
10384	AAA	Pulse Waveform (200-Hz, 40%)	Generic	3.98	±0.6
10385	AAA	Pulse Waveform (200-Hz, 60%)	Generic	2.32	±0.6
10386	AAA	Pulse Waveform (200-Hz, 90%)	Generic	0.97	±0.6
10387	AAA	QPSK Waveform, 1 MHz	Generic	5.10	±0.6
10388	AAA	QPSK Waveform, 10 MHz	Generic	5.32	±0.6
10389	AAA	64-QAM Waveform, 100 kHz	Generic	6.37	±0.6
10389	AAA	64-QAM Waveform, 40 MHz	Generic	6.37	±0.6
10402	AAE	IEEE 802.11ac WiFi (20 MHz, 64-QAM, 99pc duty cycle)	WLAN	8.37	±0.6
10401	AAE	IEEE 802.11ac WiFi (40 MHz, 64-QAM, 99pc duty cycle)	WLAN	8.60	±0.6
10402	AAE	IEEE 802.11ac WiFi (80 MHz, 64-QAM, 99pc duty cycle)	WLAN	8.53	±0.6
10403	AAE	CDMA2000 (1xEV-DO, Rev. 0)	CDMA2000	3.78	±0.6
10404	AAE	CDMA2000 (1xEV-DO, Rev. A)	CDMA2000	3.77	±0.6
10406	AAE	CDMA2000, RCS, SCSS, SCHD, Full Rate	CDMA2000	5.22	±0.6
10410	AAE	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9, Subframe Cont=4)	LTE-TDD	7.62	±0.6
10416	AAA	WLAN 802.11ac WiFi (20 MHz, 64-QAM, 99pc duty cycle)	Generic	8.54	±0.6
10415	AAA	IEEE 802.11a WiFi 5.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)	WLAN	1.64	±0.6
10416	AAA	IEEE 802.11a WiFi 5.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle)	WLAN	8.23	±0.6
10417	AAE	IEEE 802.11a WiFi 5.4 GHz (OFDM, 6 Mbps, 99pc duty cycle)	WLAN	8.23	±0.6
10418	AAE	IEEE 802.11a WiFi 5.4 GHz (DSSS OFDM, 6 Mbps, 99pc duty cycle, Long preamble)	WLAN	8.14	±0.6
10419	AAE	IEEE 802.11a WiFi 5.4 GHz (DSSS OFDM, 6 Mbps, 99pc duty cycle, Short preamble)	WLAN	8.19	±0.6
10422	AAE	IEEE 802.11n HT Greenfield, 7.2 Mbps, BPSK	WLAN	8.32	±0.6
10423	AAE	IEEE 802.11n HT Greenfield, 48.3 Mbps, 64-QAM	WLAN	8.47	±0.6
10424	AAE	IEEE 802.11n HT Greenfield, 72.3 Mbps, 64-QAM	WLAN	8.40	±0.6
10425	AAE	IEEE 802.11n HT Greenfield, 15 Mbps, BPSK	WLAN	8.41	±0.6
10426	AAE	IEEE 802.11n HT Greenfield, 60 Mbps, 16-QAM	WLAN	8.45	±0.6
10427	AAE	IEEE 802.11n HT Greenfield, 160 Mbps, 64-QAM	WLAN	8.41	±0.6
10430	AAE	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1)	LTE-FDD	8.28	±0.6
10431	AAE	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1)	LTE-FDD	8.38	±0.6
10432	AAE	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1)	LTE-FDD	8.54	±0.6
10433	AAE	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1)	LTE-FDD	8.34	±0.6
10434	AAE	WCDMA (BS Test Model 1, 64 DPCH)	WCDMA	8.60	±0.6
10436	AAE	LTE-TDD (SC-FDMA, 1 RB, 30 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	LTE-TDD	7.62	±0.6
10437	AAE	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	LTE-FDD	7.58	±0.6
10440	AAE	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)	LTE-FDD	7.53	±0.6
10449	AAE	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)	LTE-FDD	7.61	±0.6
10450	AAE	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	LTE-FDD	7.48	±0.6
10451	AAE	WCDMA (BS Test Model 1, 64 DPCH, Clipping 44%)	WCDMA	7.59	±0.6
10453	AAE	Waddell (Square, 10 ms, 1 ms)	Test	10.00	±0.6
10455	AAE	IEEE 802.11ac WiFi (20 MHz, 64-QAM, 99pc duty cycle)	WLAN	8.60	±0.6
10457	AAE	UMTS-FDD (DC-HSPA)	WCDMA	6.92	±0.6
10458	AAA	CDMA2000 (1xEV-DO, Rev. B, 3 carriers)	CDMA2000	6.95	±0.6
10459	AAA	CDMA2000 (1xEV-DO, Rev. B, 3 carriers)	CDMA2000	6.25	±0.6
10460	AAE	UMTS-FDD (WCDMA, AMR)	WCDMA	2.39	±0.6
10461	AAE	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	LTE-TDD	7.82	±0.6
10462	AAE	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	LTE-TDD	8.30	±0.6
10463	AAE	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	LTE-TDD	8.56	±0.6
10464	AAE	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	LTE-TDD	7.82	±0.6
10465	AAE	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	LTE-TDD	8.32	±0.6
10466	AAE	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	LTE-TDD	8.57	±0.6
10467	AAE	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	LTE-TDD	7.82	±0.6
10468	AAE	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	LTE-TDD	8.32	±0.6
10469	AAE	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	LTE-TDD	8.56	±0.6
10470	AAE	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	LTE-TDD	7.62	±0.6
10471	AAE	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	LTE-TDD	8.32	±0.6

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10472	AAI	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM, UL Subframe-2.3.4.7.8.9)	LTE-TDD	8.57	±0.6
10473	AAI	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK, UL Subframe-2.3.4.7.8.9)	LTE-TDD	7.82	±0.6
10474	AAI	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM, UL Subframe-2.3.4.7.8.9)	LTE-TDD	8.32	±0.6
10475	AAI	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM, UL Subframe-2.3.4.7.8.9)	LTE-TDD	8.57	±0.6
10477	AAI	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM, UL Subframe-2.3.4.7.8.9)	LTE-TDD	8.32	±0.6
10478	AAI	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM, UL Subframe-2.3.4.7.8.9)	LTE-TDD	8.57	±0.6
10479	AAI	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL Subframe-2.3.4.7.8.9)	LTE-TDD	7.74	±0.6
10480	AAI	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL Subframe-2.3.4.7.8.9)	LTE-TDD	8.19	±0.6
10481	AAI	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL Subframe-2.3.4.7.8.9)	LTE-TDD	8.45	±0.6
10482	AAI	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL Subframe-2.3.4.7.8.9)	LTE-TDD	7.71	±0.6
10483	AAI	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL Subframe-2.3.4.7.8.9)	LTE-TDD	8.39	±0.6
10484	AAI	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL Subframe-2.3.4.7.8.9)	LTE-TDD	8.47	±0.6
10485	AAI	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK, UL Subframe-2.3.4.7.8.9)	LTE-TDD	7.68	±0.6
10486	AAI	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM, UL Subframe-2.3.4.7.8.9)	LTE-TDD	8.38	±0.6
10487	AAI	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM, UL Subframe-2.3.4.7.8.9)	LTE-TDD	8.60	±0.6
10488	AAI	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL Subframe-2.3.4.7.8.9)	LTE-TDD	7.70	±0.6
10489	AAI	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL Subframe-2.3.4.7.8.9)	LTE-TDD	8.31	±0.6
10490	AAI	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL Subframe-2.3.4.7.8.9)	LTE-TDD	8.54	±0.6
10491	AAI	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK, UL Subframe-2.3.4.7.8.9)	LTE-TDD	7.74	±0.6
10492	AAI	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL Subframe-2.3.4.7.8.9)	LTE-TDD	8.41	±0.6
10493	AAI	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL Subframe-2.3.4.7.8.9)	LTE-TDD	8.55	±0.6
10494	AAI	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL Subframe-2.3.4.7.8.9)	LTE-TDD	7.74	±0.6
10495	AAI	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM, UL Subframe-2.3.4.7.8.9)	LTE-TDD	8.37	±0.6
10496	AAI	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL Subframe-2.3.4.7.8.9)	LTE-TDD	8.54	±0.6
10497	AAI	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL Subframe-2.3.4.7.8.9)	LTE-TDD	7.67	±0.6
10498	AAI	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL Subframe-2.3.4.7.8.9)	LTE-TDD	8.43	±0.6
10499	AAI	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL Subframe-2.3.4.7.8.9)	LTE-TDD	8.68	±0.6
10500	AAI	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL Subframe-2.3.4.7.8.9)	LTE-TDD	7.67	±0.6
10501	AAI	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Subframe-2.3.4.7.8.9)	LTE-TDD	8.44	±0.6
10502	AAI	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL Subframe-2.3.4.7.8.9)	LTE-TDD	8.52	±0.6
10503	AAI	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK, UL Subframe-2.3.4.7.8.9)	LTE-TDD	7.72	±0.6
10504	AAI	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM, UL Subframe-2.3.4.7.8.9)	LTE-TDD	8.31	±0.6
10505	AAI	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM, UL Subframe-2.3.4.7.8.9)	LTE-TDD	8.54	±0.6
10506	AAI	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL Subframe-2.3.4.7.8.9)	LTE-TDD	7.74	±0.6
10507	AAI	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL Subframe-2.3.4.7.8.9)	LTE-TDD	8.39	±0.6
10508	AAI	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL Subframe-2.3.4.7.8.9)	LTE-TDD	8.55	±0.6
10509	AAI	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL Subframe-2.3.4.7.8.9)	LTE-TDD	7.89	±0.6
10510	AAI	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL Subframe-2.3.4.7.8.9)	LTE-TDD	8.49	±0.6
10511	AAI	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL Subframe-2.3.4.7.8.9)	LTE-TDD	8.51	±0.6
10512	AAI	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL Subframe-2.3.4.7.8.9)	LTE-TDD	7.74	±0.6
10513	AAI	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL Subframe-2.3.4.7.8.9)	LTE-TDD	8.43	±0.6
10514	AAI	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL Subframe-2.3.4.7.8.9)	LTE-TDD	8.45	±0.6
10515	AAA	IEEE 802.11a WFI 2.4 GHz (CSSS, 2 Mbps, 90% duty cycle)	WLAN	1.58	±0.6
10516	AAA	IEEE 802.11a WFI 2.4 GHz (CSSS, 5.5 Mbps, 90% duty cycle)	WLAN	1.57	±0.6
10517	AAA	IEEE 802.11a WFI 2.4 GHz (CSSS, 11 Mbps, 90% duty cycle)	WLAN	1.58	±0.6
10518	AAI	IEEE 802.11a WFI 5 GHz (OFDM, 9 Mbps, 90% duty cycle)	WLAN	8.20	±0.6
10519	AAI	IEEE 802.11a WFI 5 GHz (OFDM, 12 Mbps, 90% duty cycle)	WLAN	8.36	±0.6
10520	AAI	IEEE 802.11a WFI 5 GHz (OFDM, 18 Mbps, 90% duty cycle)	WLAN	8.12	±0.6
10521	AAI	IEEE 802.11a WFI 5 GHz (OFDM, 24 Mbps, 90% duty cycle)	WLAN	7.97	±0.6
10522	AAI	IEEE 802.11a WFI 5 GHz (OFDM, 36 Mbps, 90% duty cycle)	WLAN	8.45	±0.6
10523	AAI	IEEE 802.11a WFI 5 GHz (OFDM, 48 Mbps, 90% duty cycle)	WLAN	8.08	±0.6
10524	AAI	IEEE 802.11a WFI 5 GHz (OFDM, 54 Mbps, 90% duty cycle)	WLAN	8.27	±0.6
10525	AAI	IEEE 802.11ac WFI (20 MHz, MCS0, 90% duty cycle)	WLAN	8.39	±0.6
10526	AAI	IEEE 802.11ac WFI (20 MHz, MCS1, 90% duty cycle)	WLAN	8.42	±0.6
10527	AAI	IEEE 802.11ac WFI (20 MHz, MCS2, 90% duty cycle)	WLAN	8.21	±0.6
10528	AAI	IEEE 802.11ac WFI (20 MHz, MCS3, 90% duty cycle)	WLAN	8.35	±0.6
10529	AAI	IEEE 802.11ac WFI (20 MHz, MCS4, 90% duty cycle)	WLAN	8.36	±0.6
10530	AAI	IEEE 802.11ac WFI (20 MHz, MCS5, 90% duty cycle)	WLAN	8.43	±0.6
10531	AAI	IEEE 802.11ac WFI (20 MHz, MCS6, 90% duty cycle)	WLAN	8.29	±0.6
10532	AAI	IEEE 802.11ac WFI (20 MHz, MCS7, 90% duty cycle)	WLAN	8.38	±0.6
10533	AAI	IEEE 802.11ac WFI (20 MHz, MCS8, 90% duty cycle)	WLAN	8.38	±0.6
10534	AAI	IEEE 802.11ac WFI (40 MHz, MCS0, 90% duty cycle)	WLAN	8.45	±0.6
10535	AAI	IEEE 802.11ac WFI (40 MHz, MCS1, 90% duty cycle)	WLAN	8.45	±0.6
10536	AAI	IEEE 802.11ac WFI (40 MHz, MCS2, 90% duty cycle)	WLAN	8.32	±0.6
10537	AAI	IEEE 802.11ac WFI (40 MHz, MCS3, 90% duty cycle)	WLAN	8.44	±0.6
10538	AAI	IEEE 802.11ac WFI (40 MHz, MCS4, 90% duty cycle)	WLAN	8.54	±0.6
10540	AAI	IEEE 802.11ac WFI (40 MHz, MCS5, 90% duty cycle)	WLAN	8.39	±0.6

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UID	Rev	Communication System Name	Group	PAR (dB)	Use ¹⁾ R = 2
10541	AAD	IEEE 802.11ac WFI (40 MHz, MCS7, 90pc duty cycle)	WLAN	8.40	±0.6
10542	AAD	IEEE 802.11ac WFI (40 MHz, MCS8, 90pc duty cycle)	WLAN	8.95	±0.6
10543	AAD	IEEE 802.11ac WFI (40 MHz, MCS9, 90pc duty cycle)	WLAN	8.95	±0.6
10544	AAD	IEEE 802.11ac WFI (80 MHz, MCS9, 90pc duty cycle)	WLAN	8.47	±0.6
10545	AAD	IEEE 802.11ac WFI (80 MHz, MCS1, 90pc duty cycle)	WLAN	8.55	±0.6
10546	AAD	IEEE 802.11ac WFI (80 MHz, MCS2, 90pc duty cycle)	WLAN	8.35	±0.6
10547	AAD	IEEE 802.11ac WFI (80 MHz, MCS3, 90pc duty cycle)	WLAN	8.49	±0.6
10548	AAD	IEEE 802.11ac WFI (80 MHz, MCS4, 90pc duty cycle)	WLAN	8.37	±0.6
10550	AAD	IEEE 802.11ac WFI (80 MHz, MCS6, 90pc duty cycle)	WLAN	8.38	±0.6
10551	AAD	IEEE 802.11ac WFI (80 MHz, MCS7, 90pc duty cycle)	WLAN	8.50	±0.6
10552	AAD	IEEE 802.11ac WFI (80 MHz, MCS8, 90pc duty cycle)	WLAN	8.42	±0.6
10553	AAD	IEEE 802.11ac WFI (80 MHz, MCS9, 90pc duty cycle)	WLAN	8.45	±0.6
10554	AAD	IEEE 802.11ac WFI (160 MHz, MCS0, 90pc duty cycle)	WLAN	8.48	±0.6
10555	AAD	IEEE 802.11ac WFI (160 MHz, MCS1, 90pc duty cycle)	WLAN	8.47	±0.6
10556	AAD	IEEE 802.11ac WFI (160 MHz, MCS2, 90pc duty cycle)	WLAN	8.50	±0.6
10557	AAD	IEEE 802.11ac WFI (160 MHz, MCS3, 90pc duty cycle)	WLAN	8.52	±0.6
10558	AAD	IEEE 802.11ac WFI (160 MHz, MCS4, 90pc duty cycle)	WLAN	8.61	±0.6
10560	AAD	IEEE 802.11ac WFI (160 MHz, MCS6, 90pc duty cycle)	WLAN	8.73	±0.6
10561	AAD	IEEE 802.11ac WFI (160 MHz, MCS7, 90pc duty cycle)	WLAN	8.56	±0.6
10562	AAD	IEEE 802.11ac WFI (160 MHz, MCS8, 90pc duty cycle)	WLAN	8.69	±0.6
10563	AAD	IEEE 802.11ac WFI (160 MHz, MCS9, 90pc duty cycle)	WLAN	8.77	±0.6
10564	AAA	IEEE 802.11g WFI 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc duty cycle)	WLAN	8.25	±0.6
10565	AAA	IEEE 802.11g WFI 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc duty cycle)	WLAN	8.45	±0.6
10566	AAA	IEEE 802.11g WFI 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc duty cycle)	WLAN	8.13	±0.6
10567	AAA	IEEE 802.11g WFI 2.4 GHz (DSSS-OFDM, 24 Mbps, 90pc duty cycle)	WLAN	8.00	±0.6
10568	AAA	IEEE 802.11g WFI 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc duty cycle)	WLAN	8.37	±0.6
10569	AAA	IEEE 802.11g WFI 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc duty cycle)	WLAN	8.10	±0.6
10570	AAA	IEEE 802.11g WFI 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc duty cycle)	WLAN	8.30	±0.6
10571	AAA	IEEE 802.11b WFI 2.4 GHz (DSSS, 1 Mbps, 90pc duty cycle)	WLAN	1.98	±0.6
10572	AAA	IEEE 802.11b WFI 2.4 GHz (DSSS, 2 Mbps, 90pc duty cycle)	WLAN	1.98	±0.6
10573	AAA	IEEE 802.11b WFI 2.4 GHz (DSSS, 3 Mbps, 90pc duty cycle)	WLAN	1.98	±0.6
10574	AAA	IEEE 802.11b WFI 2.4 GHz (DSSS, 4 Mbps, 90pc duty cycle)	WLAN	1.98	±0.6
10575	AAA	IEEE 802.11b WFI 2.4 GHz (DSSS, 5 Mbps, 90pc duty cycle)	WLAN	1.98	±0.6
10576	AAA	IEEE 802.11b WFI 2.4 GHz (DSSS, 6 Mbps, 90pc duty cycle)	WLAN	1.98	±0.6
10577	AAA	IEEE 802.11b WFI 2.4 GHz (DSSS, 7 Mbps, 90pc duty cycle)	WLAN	1.98	±0.6
10578	AAA	IEEE 802.11b WFI 2.4 GHz (DSSS, 8 Mbps, 90pc duty cycle)	WLAN	1.98	±0.6
10579	AAA	IEEE 802.11b WFI 2.4 GHz (DSSS, 9 Mbps, 90pc duty cycle)	WLAN	1.98	±0.6
10580	AAA	IEEE 802.11b WFI 2.4 GHz (DSSS, 10 Mbps, 90pc duty cycle)	WLAN	1.98	±0.6
10581	AAA	IEEE 802.11b WFI 2.4 GHz (DSSS, 11 Mbps, 90pc duty cycle)	WLAN	1.98	±0.6
10582	AAA	IEEE 802.11b WFI 2.4 GHz (DSSS, 12 Mbps, 90pc duty cycle)	WLAN	1.98	±0.6
10583	AAA	IEEE 802.11b WFI 2.4 GHz (DSSS, 13 Mbps, 90pc duty cycle)	WLAN	1.98	±0.6
10584	AAD	IEEE 802.11ah WFI 5 GHz (OFDM, 9 Mbps, 90pc duty cycle)	WLAN	8.40	±0.6
10585	AAD	IEEE 802.11ah WFI 5 GHz (OFDM, 12 Mbps, 90pc duty cycle)	WLAN	8.39	±0.6
10586	AAD	IEEE 802.11ah WFI 5 GHz (OFDM, 18 Mbps, 90pc duty cycle)	WLAN	8.48	±0.6
10587	AAD	IEEE 802.11ah WFI 5 GHz (OFDM, 24 Mbps, 90pc duty cycle)	WLAN	8.38	±0.6
10588	AAD	IEEE 802.11ah WFI 5 GHz (OFDM, 36 Mbps, 90pc duty cycle)	WLAN	8.76	±0.6
10589	AAD	IEEE 802.11ah WFI 5 GHz (OFDM, 48 Mbps, 90pc duty cycle)	WLAN	8.38	±0.6
10590	AAD	IEEE 802.11ah WFI 5 GHz (OFDM, 54 Mbps, 90pc duty cycle)	WLAN	8.67	±0.6
10591	AAD	IEEE 802.11n (HT Mixed, 20 MHz, MCS0, 90pc duty cycle)	WLAN	8.03	±0.6
10592	AAD	IEEE 802.11n (HT Mixed, 20 MHz, MCS1, 90pc duty cycle)	WLAN	8.79	±0.6
10593	AAD	IEEE 802.11n (HT Mixed, 20 MHz, MCS2, 90pc duty cycle)	WLAN	8.64	±0.6
10594	AAD	IEEE 802.11n (HT Mixed, 20 MHz, MCS3, 90pc duty cycle)	WLAN	8.74	±0.6
10595	AAD	IEEE 802.11n (HT Mixed, 20 MHz, MCS4, 90pc duty cycle)	WLAN	8.74	±0.6
10596	AAD	IEEE 802.11n (HT Mixed, 20 MHz, MCS5, 90pc duty cycle)	WLAN	8.71	±0.6
10597	AAD	IEEE 802.11n (HT Mixed, 20 MHz, MCS6, 90pc duty cycle)	WLAN	8.72	±0.6
10598	AAD	IEEE 802.11n (HT Mixed, 20 MHz, MCS7, 90pc duty cycle)	WLAN	8.50	±0.6
10599	AAD	IEEE 802.11n (HT Mixed, 40 MHz, MCS0, 90pc duty cycle)	WLAN	8.79	±0.6
10600	AAD	IEEE 802.11n (HT Mixed, 40 MHz, MCS1, 90pc duty cycle)	WLAN	8.80	±0.6
10601	AAD	IEEE 802.11n (HT Mixed, 40 MHz, MCS2, 90pc duty cycle)	WLAN	8.82	±0.6
10602	AAD	IEEE 802.11n (HT Mixed, 40 MHz, MCS3, 90pc duty cycle)	WLAN	8.94	±0.6
10603	AAD	IEEE 802.11n (HT Mixed, 40 MHz, MCS4, 90pc duty cycle)	WLAN	8.94	±0.6
10604	AAD	IEEE 802.11n (HT Mixed, 40 MHz, MCS5, 90pc duty cycle)	WLAN	8.79	±0.6
10605	AAD	IEEE 802.11n (HT Mixed, 40 MHz, MCS6, 90pc duty cycle)	WLAN	8.97	±0.6
10606	AAD	IEEE 802.11n (HT Mixed, 40 MHz, MCS7, 90pc duty cycle)	WLAN	8.82	±0.6
10607	AAD	IEEE 802.11ac WFI (20 MHz, MCS0, 90pc duty cycle)	WLAN	8.64	±0.6
10608	AAD	IEEE 802.11ac WFI (20 MHz, MCS1, 90pc duty cycle)	WLAN	8.77	±0.6

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10809	AAD	IEEE 802.11ac WPI (20 MHz, MCS2, 90pc duty cycle)	WLAN	8.53	±0.8
10810	AAD	IEEE 802.11ac WPI (20 MHz, MCS3, 90pc duty cycle)	WLAN	8.76	±0.8
10811	AAD	IEEE 802.11ac WPI (20 MHz, MCS4, 90pc duty cycle)	WLAN	8.70	±0.8
10812	AAD	IEEE 802.11ac WPI (20 MHz, MCS5, 90pc duty cycle)	WLAN	8.77	±0.8
10813	AAD	IEEE 802.11ac WPI (20 MHz, MCS6, 90pc duty cycle)	WLAN	8.94	±0.8
10814	AAD	IEEE 802.11ac WPI (20 MHz, MCS7, 90pc duty cycle)	WLAN	8.59	±0.8
10815	AAD	IEEE 802.11ac WPI (20 MHz, MCS8, 90pc duty cycle)	WLAN	8.82	±0.8
10816	AAD	IEEE 802.11ac WPI (40 MHz, MCS1, 90pc duty cycle)	WLAN	8.82	±0.8
10817	AAD	IEEE 802.11ac WPI (40 MHz, MCS2, 90pc duty cycle)	WLAN	8.81	±0.8
10818	AAD	IEEE 802.11ac WPI (40 MHz, MCS3, 90pc duty cycle)	WLAN	8.59	±0.8
10819	AAD	IEEE 802.11ac WPI (40 MHz, MCS5, 90pc duty cycle)	WLAN	8.85	±0.8
10820	AAD	IEEE 802.11ac WPI (40 MHz, MCS4, 90pc duty cycle)	WLAN	8.87	±0.8
10821	AAD	IEEE 802.11ac WPI (40 MHz, MCS5, 90pc duty cycle)	WLAN	8.77	±0.8
10822	AAD	IEEE 802.11ac WPI (40 MHz, MCS6, 90pc duty cycle)	WLAN	8.68	±0.8
10823	AAD	IEEE 802.11ac WPI (40 MHz, MCS7, 90pc duty cycle)	WLAN	8.62	±0.8
10824	AAD	IEEE 802.11ac WPI (40 MHz, MCS8, 90pc duty cycle)	WLAN	8.96	±0.8
10825	AAD	IEEE 802.11ac WPI (40 MHz, MCS9, 90pc duty cycle)	WLAN	8.06	±0.8
10826	AAD	IEEE 802.11ac WPI (80 MHz, MCS0, 90pc duty cycle)	WLAN	8.03	±0.8
10827	AAD	IEEE 802.11ac WPI (80 MHz, MCS1, 90pc duty cycle)	WLAN	8.80	±0.8
10828	AAD	IEEE 802.11ac WPI (80 MHz, MCS2, 90pc duty cycle)	WLAN	8.71	±0.8
10829	AAD	IEEE 802.11ac WPI (80 MHz, MCS3, 90pc duty cycle)	WLAN	8.95	±0.8
10830	AAD	IEEE 802.11ac WPI (80 MHz, MCS4, 90pc duty cycle)	WLAN	8.72	±0.8
10831	AAD	IEEE 802.11ac WPI (80 MHz, MCS5, 90pc duty cycle)	WLAN	8.81	±0.8
10832	AAD	IEEE 802.11ac WPI (80 MHz, MCS6, 90pc duty cycle)	WLAN	8.74	±0.8
10833	AAD	IEEE 802.11ac WPI (80 MHz, MCS7, 90pc duty cycle)	WLAN	8.83	±0.8
10834	AAD	IEEE 802.11ac WPI (80 MHz, MCS8, 90pc duty cycle)	WLAN	8.83	±0.8
10835	AAD	IEEE 802.11ac WPI (80 MHz, MCS9, 90pc duty cycle)	WLAN	8.81	±0.8
10836	AAD	IEEE 802.11ac WPI (160 MHz, MCS0, 90pc duty cycle)	WLAN	8.83	±0.8
10837	AAD	IEEE 802.11ac WPI (160 MHz, MCS1, 90pc duty cycle)	WLAN	8.79	±0.8
10838	AAD	IEEE 802.11ac WPI (160 MHz, MCS2, 90pc duty cycle)	WLAN	8.66	±0.8
10839	AAD	IEEE 802.11ac WPI (160 MHz, MCS3, 90pc duty cycle)	WLAN	8.85	±0.8
10840	AAD	IEEE 802.11ac WPI (160 MHz, MCS4, 90pc duty cycle)	WLAN	8.96	±0.8
10841	AAD	IEEE 802.11ac WPI (160 MHz, MCS5, 90pc duty cycle)	WLAN	9.06	±0.8
10842	AAD	IEEE 802.11ac WPI (160 MHz, MCS6, 90pc duty cycle)	WLAN	9.06	±0.8
10843	AAD	IEEE 802.11ac WPI (160 MHz, MCS7, 90pc duty cycle)	WLAN	9.09	±0.8
10844	AAD	IEEE 802.11ac WPI (160 MHz, MCS8, 90pc duty cycle)	WLAN	9.05	±0.8
10845	AAD	IEEE 802.11ac WPI (160 MHz, MCS9, 90pc duty cycle)	WLAN	9.11	±0.8
10846	AAD	LTE-TDD (FDD-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2.7)	LTE-TDD	11.99	±0.8
10847	AAD	LTE-TDD (FDD-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2.7)	LTE-TDD	11.99	±0.8
10848	AAD	CDMA2000 (1x Advanced)	CDMA2000	3.45	±0.8
10849	AAD	LTE-TDD (FDD-FDMA, 5 MHz, E-TM 3.1, Clipping 44%)	LTE-TDD	8.91	±0.8
10850	AAD	LTE-TDD (FDD-FDMA, 5 MHz, E-TM 3.1, Clipping 44%)	LTE-TDD	7.42	±0.8
10851	AAD	LTE-TDD (FDD-FDMA, 5 MHz, E-TM 3.1, Clipping 44%)	LTE-TDD	4.96	±0.8
10852	AAD	LTE-TDD (FDD-FDMA, 5 MHz, E-TM 3.1, Clipping 44%)	LTE-TDD	7.21	±0.8
10853	AAD	Pulse Waveform (200Hz, 10%)	Test	10.00	±0.8
10854	AAD	Pulse Waveform (200Hz, 20%)	Test	6.59	±0.8
10855	AAD	Pulse Waveform (200Hz, 40%)	Test	3.96	±0.8
10856	AAD	Pulse Waveform (200Hz, 60%)	Test	2.32	±0.8
10857	AAD	Pulse Waveform (200Hz, 80%)	Test	0.97	±0.8
10858	AAD	Bluetooth Low Energy	Bluetooth	2.10	±0.8
10859	AAD	IEEE 802.11ac (20 MHz, MCS0, 90pc duty cycle)	WLAN	9.09	±0.8
10860	AAD	IEEE 802.11ac (20 MHz, MCS1, 90pc duty cycle)	WLAN	9.57	±0.8
10861	AAD	IEEE 802.11ac (20 MHz, MCS2, 90pc duty cycle)	WLAN	8.78	±0.8
10862	AAD	IEEE 802.11ac (20 MHz, MCS3, 90pc duty cycle)	WLAN	8.74	±0.8
10863	AAD	IEEE 802.11ac (20 MHz, MCS4, 90pc duty cycle)	WLAN	8.90	±0.8
10864	AAD	IEEE 802.11ac (20 MHz, MCS5, 90pc duty cycle)	WLAN	8.77	±0.8
10865	AAD	IEEE 802.11ac (20 MHz, MCS6, 90pc duty cycle)	WLAN	8.73	±0.8
10866	AAD	IEEE 802.11ac (20 MHz, MCS7, 90pc duty cycle)	WLAN	8.78	±0.8
10867	AAD	IEEE 802.11ac (20 MHz, MCS8, 90pc duty cycle)	WLAN	8.89	±0.8
10868	AAD	IEEE 802.11ac (20 MHz, MCS9, 90pc duty cycle)	WLAN	8.85	±0.8
10869	AAD	IEEE 802.11ac (20 MHz, MCS10, 90pc duty cycle)	WLAN	8.82	±0.8
10870	AAD	IEEE 802.11ac (20 MHz, MCS11, 90pc duty cycle)	WLAN	8.63	±0.8
10871	AAD	IEEE 802.11ac (20 MHz, MCS12, 90pc duty cycle)	WLAN	8.42	±0.8
10872	AAD	IEEE 802.11ac (20 MHz, MCS13, 90pc duty cycle)	WLAN	8.26	±0.8
10873	AAD	IEEE 802.11ac (20 MHz, MCS14, 90pc duty cycle)	WLAN	8.33	±0.8
10874	AAD	IEEE 802.11ac (20 MHz, MCS15, 90pc duty cycle)	WLAN	8.38	±0.8

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10687	AAC	IEEE 802.11ax (20 MHz, MCS4, 90pc duty cycle)	WLAN	8.45	+0.6
10688	AAC	IEEE 802.11ax (20 MHz, MCS5, 90pc duty cycle)	WLAN	8.29	+0.6
10689	AAC	IEEE 802.11ax (20 MHz, MCS6, 90pc duty cycle)	WLAN	8.56	+0.6
10690	AAC	IEEE 802.11ax (20 MHz, MCS7, 90pc duty cycle)	WLAN	8.29	+0.6
10691	AAC	IEEE 802.11ax (20 MHz, MCS8, 90pc duty cycle)	WLAN	8.25	+0.6
10692	AAC	IEEE 802.11ax (20 MHz, MCS9, 90pc duty cycle)	WLAN	8.29	+0.6
10693	AAC	IEEE 802.11ax (20 MHz, MCS10, 90pc duty cycle)	WLAN	8.25	+0.6
10694	AAC	IEEE 802.11ax (20 MHz, MCS11, 90pc duty cycle)	WLAN	8.57	+0.6
10695	AAC	IEEE 802.11ax (40 MHz, MCS2, 90pc duty cycle)	WLAN	8.79	+0.6
10696	AAC	IEEE 802.11ax (40 MHz, MCS3, 90pc duty cycle)	WLAN	8.91	+0.6
10697	AAC	IEEE 802.11ax (40 MHz, MCS4, 90pc duty cycle)	WLAN	8.91	+0.6
10698	AAC	IEEE 802.11ax (40 MHz, MCS5, 90pc duty cycle)	WLAN	8.89	+0.6
10699	AAC	IEEE 802.11ax (40 MHz, MCS6, 90pc duty cycle)	WLAN	8.92	+0.6
10700	AAC	IEEE 802.11ax (40 MHz, MCS7, 90pc duty cycle)	WLAN	8.73	+0.6
10701	AAC	IEEE 802.11ax (40 MHz, MCS8, 90pc duty cycle)	WLAN	8.86	+0.6
10702	AAC	IEEE 802.11ax (40 MHz, MCS9, 90pc duty cycle)	WLAN	8.70	+0.6
10703	AAC	IEEE 802.11ax (40 MHz, MCS10, 90pc duty cycle)	WLAN	8.82	+0.6
10704	AAC	IEEE 802.11ax (40 MHz, MCS11, 90pc duty cycle)	WLAN	8.58	+0.6
10705	AAC	IEEE 802.11ax (40 MHz, MCS10, 90pc duty cycle)	WLAN	8.69	+0.6
10706	AAC	IEEE 802.11ax (40 MHz, MCS11, 90pc duty cycle)	WLAN	8.68	+0.6
10707	AAC	IEEE 802.11ax (40 MHz, MCS9, 90pc duty cycle)	WLAN	8.32	+0.6
10708	AAC	IEEE 802.11ax (40 MHz, MCS2, 90pc duty cycle)	WLAN	8.55	+0.6
10709	AAC	IEEE 802.11ax (40 MHz, MCS3, 90pc duty cycle)	WLAN	8.33	+0.6
10710	AAC	IEEE 802.11ax (40 MHz, MCS4, 90pc duty cycle)	WLAN	8.29	+0.6
10711	AAC	IEEE 802.11ax (40 MHz, MCS5, 90pc duty cycle)	WLAN	8.39	+0.6
10712	AAC	IEEE 802.11ax (40 MHz, MCS6, 90pc duty cycle)	WLAN	8.67	+0.6
10713	AAC	IEEE 802.11ax (40 MHz, MCS8, 90pc duty cycle)	WLAN	8.33	+0.6
10714	AAC	IEEE 802.11ax (40 MHz, MCS7, 90pc duty cycle)	WLAN	8.26	+0.6
10715	AAC	IEEE 802.11ax (40 MHz, MCS9, 90pc duty cycle)	WLAN	8.45	+0.6
10716	AAC	IEEE 802.11ax (40 MHz, MCS10, 90pc duty cycle)	WLAN	8.30	+0.6
10717	AAC	IEEE 802.11ax (40 MHz, MCS11, 90pc duty cycle)	WLAN	8.32	+0.6
10718	AAC	IEEE 802.11ax (40 MHz, MCS11, 90pc duty cycle)	WLAN	8.34	+0.6
10719	AAC	IEEE 802.11ax (80 MHz, MCS0, 90pc duty cycle)	WLAN	8.81	+0.6
10720	AAC	IEEE 802.11ax (80 MHz, MCS1, 90pc duty cycle)	WLAN	8.97	+0.6
10721	AAC	IEEE 802.11ax (80 MHz, MCS2, 90pc duty cycle)	WLAN	8.79	+0.6
10722	AAC	IEEE 802.11ax (80 MHz, MCS3, 90pc duty cycle)	WLAN	8.55	+0.6
10723	AAC	IEEE 802.11ax (80 MHz, MCS4, 90pc duty cycle)	WLAN	8.70	+0.6
10724	AAC	IEEE 802.11ax (80 MHz, MCS5, 90pc duty cycle)	WLAN	8.90	+0.6
10725	AAC	IEEE 802.11ax (80 MHz, MCS6, 90pc duty cycle)	WLAN	8.74	+0.6
10726	AAC	IEEE 802.11ax (80 MHz, MCS7, 90pc duty cycle)	WLAN	8.72	+0.6
10727	AAC	IEEE 802.11ax (80 MHz, MCS8, 90pc duty cycle)	WLAN	8.88	+0.6
10728	AAC	IEEE 802.11ax (80 MHz, MCS9, 90pc duty cycle)	WLAN	8.85	+0.6
10729	AAC	IEEE 802.11ax (80 MHz, MCS10, 90pc duty cycle)	WLAN	8.54	+0.6
10730	AAC	IEEE 802.11ax (80 MHz, MCS11, 90pc duty cycle)	WLAN	8.67	+0.6
10731	AAC	IEEE 802.11ax (80 MHz, MCS8, 90pc duty cycle)	WLAN	8.42	+0.6
10732	AAC	IEEE 802.11ax (80 MHz, MCS1, 90pc duty cycle)	WLAN	8.48	+0.6
10733	AAC	IEEE 802.11ax (80 MHz, MCS2, 90pc duty cycle)	WLAN	8.40	+0.6
10734	AAC	IEEE 802.11ax (80 MHz, MCS3, 90pc duty cycle)	WLAN	8.25	+0.6
10735	AAC	IEEE 802.11ax (80 MHz, MCS4, 90pc duty cycle)	WLAN	8.30	+0.6
10736	AAC	IEEE 802.11ax (80 MHz, MCS5, 90pc duty cycle)	WLAN	8.27	+0.6
10737	AAC	IEEE 802.11ax (80 MHz, MCS6, 90pc duty cycle)	WLAN	8.26	+0.6
10738	AAC	IEEE 802.11ax (80 MHz, MCS7, 90pc duty cycle)	WLAN	8.42	+0.6
10739	AAC	IEEE 802.11ax (80 MHz, MCS8, 90pc duty cycle)	WLAN	8.29	+0.6
10740	AAC	IEEE 802.11ax (80 MHz, MCS9, 90pc duty cycle)	WLAN	8.48	+0.6
10741	AAC	IEEE 802.11ax (80 MHz, MCS10, 90pc duty cycle)	WLAN	8.40	+0.6
10742	AAC	IEEE 802.11ax (80 MHz, MCS11, 90pc duty cycle)	WLAN	8.43	+0.6
10743	AAC	IEEE 802.11ax (160 MHz, MCS0, 90pc duty cycle)	WLAN	8.94	+0.6
10744	AAC	IEEE 802.11ax (160 MHz, MCS1, 90pc duty cycle)	WLAN	9.16	+0.6
10745	AAC	IEEE 802.11ax (160 MHz, MCS2, 90pc duty cycle)	WLAN	8.93	+0.6
10746	AAC	IEEE 802.11ax (160 MHz, MCS3, 90pc duty cycle)	WLAN	9.11	+0.6
10747	AAC	IEEE 802.11ax (160 MHz, MCS4, 90pc duty cycle)	WLAN	9.04	+0.6
10748	AAC	IEEE 802.11ax (160 MHz, MCS5, 90pc duty cycle)	WLAN	8.83	+0.6
10749	AAC	IEEE 802.11ax (160 MHz, MCS6, 90pc duty cycle)	WLAN	8.80	+0.6
10750	AAC	IEEE 802.11ax (160 MHz, MCS7, 90pc duty cycle)	WLAN	8.79	+0.6
10751	AAC	IEEE 802.11ax (160 MHz, MCS8, 90pc duty cycle)	WLAN	8.82	+0.6
10752	AAC	IEEE 802.11ax (160 MHz, MCS9, 90pc duty cycle)	WLAN	8.81	+0.6

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10753	AAC	IEEE 802.11ax (160 MHz, MCS10, 90pc duty cycle)	WLAN	8.06	±0.5
10754	AAC	IEEE 802.11ax (160 MHz, MCS11, 90pc duty cycle)	WLAN	8.64	±0.5
10756	AAC	IEEE 802.11ax (160 MHz, MCS3, 90pc duty cycle)	WLAN	8.68	±0.5
10756	AAC	IEEE 802.11ax (160 MHz, MCS1, 90pc duty cycle)	WLAN	8.77	±0.5
10757	AAC	IEEE 802.11ax (160 MHz, MCS2, 90pc duty cycle)	WLAN	8.77	±0.5
10756	AAC	IEEE 802.11ax (160 MHz, MCS3, 90pc duty cycle)	WLAN	8.68	±0.5
10759	AAC	IEEE 802.11ax (160 MHz, MCS4, 90pc duty cycle)	WLAN	8.58	±0.5
10760	AAC	IEEE 802.11ax (160 MHz, MCS5, 90pc duty cycle)	WLAN	8.49	±0.5
10761	AAC	IEEE 802.11ax (160 MHz, MCS6, 90pc duty cycle)	WLAN	8.58	±0.5
10762	AAC	IEEE 802.11ax (160 MHz, MCS7, 90pc duty cycle)	WLAN	8.49	±0.5
10763	AAC	IEEE 802.11ax (160 MHz, MCS8, 90pc duty cycle)	WLAN	8.50	±0.5
10764	AAC	IEEE 802.11ax (160 MHz, MCS9, 90pc duty cycle)	WLAN	8.54	±0.5
10765	AAC	IEEE 802.11ax (160 MHz, MCS10, 90pc duty cycle)	WLAN	8.54	±0.5
10766	AAC	IEEE 802.11ax (160 MHz, MCS11, 90pc duty cycle)	WLAN	8.51	±0.5
10767	AAC	5G NR (CP-OFDM, 1 RB, 5 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	7.99	±0.5
10768	AAC	5G NR (CP-OFDM, 1 RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.01	±0.5
10769	AAC	5G NR (CP-OFDM, 1 RB, 15 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.01	±0.5
10770	AAC	5G NR (CP-OFDM, 1 RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.02	±0.5
10771	AAC	5G NR (CP-OFDM, 1 RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.02	±0.5
10772	AAC	5G NR (CP-OFDM, 1 RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.23	±0.5
10773	AAC	5G NR (CP-OFDM, 1 RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.03	±0.5
10774	AAC	5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.02	±0.5
10775	AAC	5G NR (CP-OFDM, 50% RB, 5 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.31	±0.5
10776	AAC	5G NR (CP-OFDM, 50% RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.35	±0.5
10777	AAC	5G NR (CP-OFDM, 50% RB, 15 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.36	±0.5
10778	AAC	5G NR (CP-OFDM, 50% RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.34	±0.5
10779	AAC	5G NR (CP-OFDM, 50% RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.42	±0.5
10780	AAC	5G NR (CP-OFDM, 50% RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.38	±0.5
10781	AAC	5G NR (CP-OFDM, 50% RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.38	±0.5
10782	AAC	5G NR (CP-OFDM, 50% RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.43	±0.5
10783	AAC	5G NR (CP-OFDM, 100% RB, 5 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.31	±0.5
10784	AAC	5G NR (CP-OFDM, 100% RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.28	±0.5
10785	AAC	5G NR (CP-OFDM, 100% RB, 15 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.40	±0.5
10786	AAC	5G NR (CP-OFDM, 100% RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.38	±0.5
10787	AAC	5G NR (CP-OFDM, 100% RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.44	±0.5
10788	AAC	5G NR (CP-OFDM, 100% RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.39	±0.5
10789	AAC	5G NR (CP-OFDM, 100% RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.37	±0.5
10790	AAC	5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.39	±0.5
10791	AAC	5G NR (CP-OFDM, 1 RB, 5 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.83	±0.5
10792	AAC	5G NR (CP-OFDM, 1 RB, 10 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.92	±0.5
10793	AAC	5G NR (CP-OFDM, 1 RB, 15 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.95	±0.5
10794	AAC	5G NR (CP-OFDM, 1 RB, 20 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.82	±0.5
10795	AAC	5G NR (CP-OFDM, 1 RB, 25 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.94	±0.5
10796	AAC	5G NR (CP-OFDM, 1 RB, 30 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.82	±0.5
10797	AAC	5G NR (CP-OFDM, 1 RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.01	±0.5
10798	AAC	5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.89	±0.5
10799	AAC	5G NR (CP-OFDM, 1 RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.93	±0.5
10800	AAC	5G NR (CP-OFDM, 1 RB, 80 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.89	±0.5
10802	AAC	5G NR (CP-OFDM, 1 RB, 90 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.87	±0.5
10803	AAC	5G NR (CP-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.83	±0.5
10805	AAC	5G NR (CP-OFDM, 50% RB, 15 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.34	±0.5
10806	AAC	5G NR (CP-OFDM, 50% RB, 20 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.37	±0.5
10809	AAC	5G NR (CP-OFDM, 50% RB, 30 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.34	±0.5
10810	AAC	5G NR (CP-OFDM, 50% RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.34	±0.5
10812	AAC	5G NR (CP-OFDM, 50% RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.35	±0.5
10817	AAC	5G NR (CP-OFDM, 100% RB, 5 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.35	±0.5
10818	AAC	5G NR (CP-OFDM, 100% RB, 10 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.34	±0.5
10819	AAC	5G NR (CP-OFDM, 100% RB, 15 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.33	±0.5
10820	AAC	5G NR (CP-OFDM, 100% RB, 20 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.30	±0.5
10821	AAC	5G NR (CP-OFDM, 100% RB, 25 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.41	±0.5
10822	AAC	5G NR (CP-OFDM, 100% RB, 30 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.41	±0.5
10823	AAC	5G NR (CP-OFDM, 100% RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.36	±0.5
10824	AAC	5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.36	±0.5
10825	AAC	5G NR (CP-OFDM, 100% RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.41	±0.5
10827	AAC	5G NR (CP-OFDM, 100% RB, 80 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.42	±0.5
10828	AAC	5G NR (CP-OFDM, 100% RB, 90 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.40	±0.5

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10029	AAE	5G NR (CP-OFDM, 100% RB, 100 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.45	±0.5
10030	AAE	5G NR (CP-OFDM, 1 RB, 10 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.63	±0.5
10031	AAE	5G NR (CP-OFDM, 1 RB, 10 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.33	±0.5
10032	AAE	5G NR (CP-OFDM, 1 RB, 20 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.34	±0.5
10033	AAE	5G NR (CP-OFDM, 1 RB, 25 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.32	±0.5
10034	AAE	5G NR (CP-OFDM, 1 RB, 30 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.35	±0.5
10035	AAE	5G NR (CP-OFDM, 1 RB, 40 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.35	±0.5
10036	AAE	5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.66	±0.5
10037	AAE	5G NR (CP-OFDM, 1 RB, 60 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.66	±0.5
10039	AAE	5G NR (CP-OFDM, 1 RB, 80 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.70	±0.5
10040	AAE	5G NR (CP-OFDM, 1 RB, 90 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.67	±0.5
10041	AAE	5G NR (CP-OFDM, 1 RB, 100 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.71	±0.5
10043	AAE	5G NR (CP-OFDM, 50% RB, 15 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.49	±0.5
10044	AAE	5G NR (CP-OFDM, 50% RB, 20 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.34	±0.5
10046	AAE	5G NR (CP-OFDM, 50% RB, 30 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.41	±0.5
10048	AAE	5G NR (CP-OFDM, 100% RB, 10 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.34	±0.5
10055	AAE	5G NR (CP-OFDM, 100% RB, 15 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.36	±0.5
10056	AAE	5G NR (CP-OFDM, 100% RB, 20 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.37	±0.5
10057	AAE	5G NR (CP-OFDM, 100% RB, 25 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.35	±0.5
10058	AAE	5G NR (CP-OFDM, 100% RB, 30 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.35	±0.5
10059	AAE	5G NR (CP-OFDM, 100% RB, 40 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.34	±0.5
10060	AAE	5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.41	±0.5
10061	AAE	5G NR (CP-OFDM, 100% RB, 60 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.42	±0.5
10063	AAE	5G NR (CP-OFDM, 100% RB, 80 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.41	±0.5
10064	AAE	5G NR (CP-OFDM, 100% RB, 90 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.37	±0.5
10065	AAE	5G NR (CP-OFDM, 100% RB, 100 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.41	±0.5
10066	AAE	5G NR (CP-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.66	±0.5
10069	AAE	5G NR (DFT-s-OFDM, 100% RB, 100 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.66	±0.5
10069	AAE	5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	6.75	±0.5
10070	AAE	5G NR (DFT-s-OFDM, 100% RB, 100 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	6.66	±0.5
10071	AAE	5G NR (DFT-s-OFDM, 1 RB, 100 MHz, 180QAM, 120 kHz)	5G NR FR2 TDD	5.75	±0.5
10075	AAE	5G NR (DFT-s-OFDM, 100% RB, 100 MHz, 180QAM, 120 kHz)	5G NR FR2 TDD	6.52	±0.5
10075	AAE	5G NR (DFT-s-OFDM, 1 RB, 100 MHz, 84QAM, 120 kHz)	5G NR FR2 TDD	6.61	±0.5
10074	AAE	5G NR (DFT-s-OFDM, 100% RB, 100 MHz, 84QAM, 120 kHz)	5G NR FR2 TDD	6.65	±0.5
10075	AAE	5G NR (CP-OFDM, 1 RB, 100 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	7.76	±0.5
10076	AAE	5G NR (CP-OFDM, 1 RB, 100 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	6.59	±0.5
10077	AAE	5G NR (CP-OFDM, 1 RB, 100 MHz, 180QAM, 120 kHz)	5G NR FR2 TDD	7.06	±0.5
10078	AAE	5G NR (CP-OFDM, 100% RB, 100 MHz, 180QAM, 120 kHz)	5G NR FR2 TDD	6.41	±0.5
10079	AAE	5G NR (CP-OFDM, 1 RB, 100 MHz, 84QAM, 120 kHz)	5G NR FR2 TDD	6.12	±0.5
10083	AAE	5G NR (CP-OFDM, 100% RB, 100 MHz, 84QAM, 120 kHz)	5G NR FR2 TDD	6.30	±0.5
10081	AAE	5G NR (DFT-s-OFDM, 1 RB, 50 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	6.75	±0.5
10082	AAE	5G NR (DFT-s-OFDM, 100% RB, 50 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	5.96	±0.5
10083	AAE	5G NR (DFT-s-OFDM, 1 RB, 50 MHz, 180QAM, 120 kHz)	5G NR FR2 TDD	6.57	±0.5
10084	AAE	5G NR (DFT-s-OFDM, 100% RB, 50 MHz, 180QAM, 120 kHz)	5G NR FR2 TDD	6.53	±0.5
10085	AAE	5G NR (DFT-s-OFDM, 1 RB, 50 MHz, 84QAM, 120 kHz)	5G NR FR2 TDD	6.81	±0.5
10086	AAE	5G NR (DFT-s-OFDM, 100% RB, 50 MHz, 84QAM, 120 kHz)	5G NR FR2 TDD	6.89	±0.5
10087	AAE	5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	7.79	±0.5
10088	AAE	5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	8.35	±0.5
10089	AAE	5G NR (CP-OFDM, 1 RB, 50 MHz, 180QAM, 120 kHz)	5G NR FR2 TDD	8.52	±0.5
10090	AAE	5G NR (CP-OFDM, 100% RB, 50 MHz, 180QAM, 120 kHz)	5G NR FR2 TDD	8.45	±0.5
10091	AAE	5G NR (CP-OFDM, 1 RB, 50 MHz, 84QAM, 120 kHz)	5G NR FR2 TDD	8.13	±0.5
10092	AAE	5G NR (CP-OFDM, 100% RB, 50 MHz, 84QAM, 120 kHz)	5G NR FR2 TDD	8.41	±0.5
10097	AAE	5G NR (DFT-s-OFDM, 1 RB, 5 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.66	±0.5
10098	AAE	5G NR (DFT-s-OFDM, 1 RB, 10 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.67	±0.5
10099	AAE	5G NR (DFT-s-OFDM, 1 RB, 15 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.67	±0.5
10100	AAE	5G NR (DFT-s-OFDM, 1 RB, 20 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	±0.5
10101	AAE	5G NR (DFT-s-OFDM, 1 RB, 25 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	±0.5
10102	AAE	5G NR (DFT-s-OFDM, 1 RB, 30 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.66	±0.5
10103	AAE	5G NR (DFT-s-OFDM, 1 RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.66	±0.5
10104	AAE	5G NR (DFT-s-OFDM, 1 RB, 50 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.66	±0.5
10105	AAE	5G NR (DFT-s-OFDM, 1 RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.66	±0.5
10106	AAE	5G NR (DFT-s-OFDM, 1 RB, 80 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.66	±0.5
10107	AAE	5G NR (DFT-s-OFDM, 50% RB, 5 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.76	±0.5
10108	AAE	5G NR (DFT-s-OFDM, 50% RB, 10 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.93	±0.5
10109	AAE	5G NR (DFT-s-OFDM, 50% RB, 15 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.96	±0.5
10110	AAE	5G NR (DFT-s-OFDM, 50% RB, 20 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.83	±0.5

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10911	AAB	5G NR (DFT-s-OFDM, 50% RB, 25 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.33	±0.5
10912	AAC	5G NR (DFT-s-OFDM, 50% RB, 30 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.64	±0.5
10913	AAD	5G NR (DFT-s-OFDM, 50% RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.64	±0.5
10914	AAC	5G NR (DFT-s-OFDM, 50% RB, 50 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.65	±0.5
10915	AAD	5G NR (DFT-s-OFDM, 50% RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.63	±0.5
10916	AAD	5G NR (DFT-s-OFDM, 50% RB, 80 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.67	±0.5
10917	AAD	5G NR (DFT-s-OFDM, 50% RB, 100 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.94	±0.5
10918	AAC	5G NR (DFT-s-OFDM, 100% RB, 5 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.66	±0.5
10919	AAC	5G NR (DFT-s-OFDM, 100% RB, 10 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.66	±0.5
10920	AAB	5G NR (DFT-s-OFDM, 100% RB, 15 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.67	±0.5
10921	AAC	5G NR (DFT-s-OFDM, 100% RB, 20 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.64	±0.5
10922	AAB	5G NR (DFT-s-OFDM, 100% RB, 25 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.62	±0.5
10923	AAC	5G NR (DFT-s-OFDM, 100% RB, 30 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.64	±0.5
10924	AAD	5G NR (DFT-s-OFDM, 100% RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.64	±0.5
10925	AAC	5G NR (DFT-s-OFDM, 100% RB, 50 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.95	±0.5
10926	AAD	5G NR (DFT-s-OFDM, 100% RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.64	±0.5
10927	AAD	5G NR (DFT-s-OFDM, 100% RB, 80 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.94	±0.5
10928	AAD	5G NR (DFT-s-OFDM, 1 RB, 5 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.52	±0.5
10929	AAD	5G NR (DFT-s-OFDM, 1 RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.52	±0.5
10930	AAC	5G NR (DFT-s-OFDM, 1 RB, 15 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.52	±0.5
10931	AAC	5G NR (DFT-s-OFDM, 1 RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.51	±0.5
10932	AAC	5G NR (DFT-s-OFDM, 1 RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.51	±0.5
10933	AAC	5G NR (DFT-s-OFDM, 1 RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.51	±0.5
10934	AAC	5G NR (DFT-s-OFDM, 1 RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.51	±0.5
10935	AAD	5G NR (DFT-s-OFDM, 1 RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.51	±0.5
10936	AAD	5G NR (DFT-s-OFDM, 50% RB, 5 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.80	±0.5
10937	AAD	5G NR (DFT-s-OFDM, 50% RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.77	±0.5
10938	AAC	5G NR (DFT-s-OFDM, 50% RB, 15 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.90	±0.5
10939	AAC	5G NR (DFT-s-OFDM, 50% RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.62	±0.5
10940	AAC	5G NR (DFT-s-OFDM, 50% RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.69	±0.5
10941	AAC	5G NR (DFT-s-OFDM, 50% RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.63	±0.5
10942	AAC	5G NR (DFT-s-OFDM, 50% RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.65	±0.5
10943	AAD	5G NR (DFT-s-OFDM, 50% RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.66	±0.5
10944	AAD	5G NR (DFT-s-OFDM, 100% RB, 5 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.61	±0.5
10945	AAD	5G NR (DFT-s-OFDM, 100% RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.65	±0.5
10946	AAC	5G NR (DFT-s-OFDM, 100% RB, 15 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.63	±0.5
10947	AAC	5G NR (DFT-s-OFDM, 100% RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.67	±0.5
10948	AAD	5G NR (DFT-s-OFDM, 100% RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.94	±0.5
10949	AAC	5G NR (DFT-s-OFDM, 100% RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.67	±0.5
10950	AAD	5G NR (DFT-s-OFDM, 100% RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.64	±0.5
10951	AAD	5G NR (DFT-s-OFDM, 100% RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.95	±0.5
10952	AAA	5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 64-QAM, 15 kHz)	5G NR FR1 FDD	6.25	±0.5
10953	AAA	5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 15 kHz)	5G NR FR1 FDD	6.15	±0.5
10954	AAA	5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 15 kHz)	5G NR FR1 FDD	6.23	±0.5
10955	AAA	5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 15 kHz)	5G NR FR1 FDD	6.42	±0.5
10956	AAA	5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD	6.14	±0.5
10957	AAA	5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD	6.31	±0.5
10958	AAA	5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD	6.61	±0.5
10959	AAA	5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD	6.33	±0.5
10960	AAC	5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 64-QAM, 15 kHz)	5G NR FR1 TDD	6.32	±0.5
10961	AAC	5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 15 kHz)	5G NR FR1 TDD	6.35	±0.5
10962	AAB	5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 15 kHz)	5G NR FR1 TDD	6.40	±0.5
10963	AAC	5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 15 kHz)	5G NR FR1 TDD	6.55	±0.5
10964	AAC	5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	6.39	±0.5
10965	AAC	5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	6.37	±0.5
10966	AAB	5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	6.55	±0.5
10967	AAC	5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	6.42	±0.5
10968	AAC	5G NR DL (CP-OFDM, TM 3.1, 100 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	6.69	±0.5
10969	AAC	5G NR (CP-OFDM, 1 RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	11.59	±0.5
10970	AAD	5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	9.95	±0.5
10971	AAA	5G NR (CP-OFDM, 100% RB, 100 MHz, 256-QAM, 30 kHz)	5G NR FR1 TDD	10.28	±0.5
10972	AAA	ULLA HDR4	ULLA	1.18	±0.5
10973	AAA	ULLA HDR8	ULLA	8.59	±0.5
10974	AAA	ULLA HDR16	ULLA	10.32	±0.5
10975	AAA	ULLA HDR32	ULLA	3.19	±0.5
10976	AAA	ULLA HDR64	ULLA	3.43	±0.5

Certificate No: EX-7574_May24

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EX30V4 - SN:7574

May 23, 2024

UID	Rev	Communication System Name	Group	PAR (dB)	Unc ^F k=2
10983	AAC	5G NR DL (CP-OFDM, TM 3.1, 40MHz, 64-QAM, 15kHz)	5G NR FR1 TDD	9.31	±0.6
10984	AAB	5G NR DL (CP-OFDM, TM 3.1, 60MHz, 64-QAM, 15kHz)	5G NR FR1 TDD	9.42	±0.6
10985	AAC	5G NR DL (CP-OFDM, TM 3.1, 40MHz, 64-QAM, 30kHz)	5G NR FR1 TDD	9.54	±0.6
10986	AAB	5G NR DL (CP-OFDM, TM 3.1, 60MHz, 64-QAM, 30kHz)	5G NR FR1 TDD	9.50	±0.6
10987	AAC	5G NR DL (CP-OFDM, TM 3.1, 60MHz, 64-QAM, 30kHz)	5G NR FR1 TDD	9.53	±0.6
10988	AAB	5G NR DL (CP-OFDM, TM 3.1, 70MHz, 64-QAM, 30kHz)	5G NR FR1 TDD	9.38	±0.6
10989	AAC	5G NR DL (CP-OFDM, TM 3.1, 60MHz, 64-QAM, 30kHz)	5G NR FR1 TDD	9.33	±0.6
10990	AAB	5G NR DL (CP-OFDM, TM 3.1, 60MHz, 64-QAM, 30kHz)	5G NR FR1 TDD	9.52	±0.6
11000	AAA	5G NR DL (CP-OFDM, TM 3.1, 30MHz, 64-QAM, 15kHz)	5G NR FR1 TDD	10.24	±0.6
11004	AAA	5G NR DL (CP-OFDM, TM 3.1, 30MHz, 64-QAM, 30kHz)	5G NR FR1 TDD	10.73	±0.6
11005	AAA	5G NR DL (CP-OFDM, TM 3.1, 25MHz, 64-QAM, 15kHz)	5G NR FR1 FDD	8.70	±0.6
11006	AAA	5G NR DL (CP-OFDM, TM 3.1, 30MHz, 64-QAM, 15kHz)	5G NR FR1 FDD	8.55	±0.6
11007	AAA	5G NR DL (CP-OFDM, TM 3.1, 40MHz, 64-QAM, 15kHz)	5G NR FR1 FDD	8.46	±0.6
11008	AAA	5G NR DL (CP-OFDM, TM 3.1, 50MHz, 64-QAM, 15kHz)	5G NR FR1 FDD	8.51	±0.6
11009	AAA	5G NR DL (CP-OFDM, TM 3.1, 25MHz, 64-QAM, 30kHz)	5G NR FR1 FDD	8.70	±0.6
11010	AAA	5G NR DL (CP-OFDM, TM 3.1, 30MHz, 64-QAM, 30kHz)	5G NR FR1 FDD	8.66	±0.6
11011	AAA	5G NR DL (CP-OFDM, TM 3.1, 40MHz, 64-QAM, 30kHz)	5G NR FR1 FDD	8.66	±0.6
11012	AAA	5G NR DL (CP-OFDM, TM 3.1, 50MHz, 64-QAM, 30kHz)	5G NR FR1 FDD	8.68	±0.6
11013	AAB	IEEE 802.11be (320MHz, MCS1, 96ps duty cycle)	WLAN	8.47	±0.6
11014	AAB	IEEE 802.11be (320MHz, MCS2, 96ps duty cycle)	WLAN	8.55	±0.6
11015	AAB	IEEE 802.11be (320MHz, MCS3, 96ps duty cycle)	WLAN	8.64	±0.6
11016	AAB	IEEE 802.11be (320MHz, MCS4, 96ps duty cycle)	WLAN	8.44	±0.6
11017	AAB	IEEE 802.11be (320MHz, MCS5, 96ps duty cycle)	WLAN	8.41	±0.6
11018	AAB	IEEE 802.11be (320MHz, MCS6, 96ps duty cycle)	WLAN	8.60	±0.6
11019	AAB	IEEE 802.11be (320MHz, MCS7, 96ps duty cycle)	WLAN	8.29	±0.6
11020	AAB	IEEE 802.11be (320MHz, MCS8, 96ps duty cycle)	WLAN	8.27	±0.6
11021	AAB	IEEE 802.11be (320MHz, MCS9, 96ps duty cycle)	WLAN	8.46	±0.6
11022	AAB	IEEE 802.11be (320MHz, MCS10, 96ps duty cycle)	WLAN	8.36	±0.6
11023	AAB	IEEE 802.11be (320MHz, MCS11, 96ps duty cycle)	WLAN	8.09	±0.6
11024	AAB	IEEE 802.11be (320MHz, MCS12, 96ps duty cycle)	WLAN	8.42	±0.6
11025	AAB	IEEE 802.11be (320MHz, MCS13, 96ps duty cycle)	WLAN	8.37	±0.6
11026	AAB	IEEE 802.11be (320MHz, MCS14, 96ps duty cycle)	WLAN	8.38	±0.6

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

Appendix C.3 Calibration certificate for D835V2_490

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**
 Gyeonggi-do, Republic of Korea




Schweizerischer Kalibrierdienst
 Service suisse d'étalonnage
 Servizio svizzero di taratura
 Swiss Calibration Service

Accreditation No.: **SCS 0106**

Certificate No.: **D835V2-490_Jun24**

CALIBRATION CERTIFICATE

Object: **D835V2 - SN:490**

Calibration procedure(s): **QA CAL-05.v12**
 Calibration Procedure for SAR Validation Sources between 0.7-3 GHz

Calibration date: **June 07, 2024**

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&PE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP2	SN: 104778	26-Mar-24 (No. 217-04036/04037)	Mar-25
Power sensor NRP-Z81	SN: 103244	26-Mar-24 (No. 217-04036)	Mar-25
Power sensor NRP-Z81	SN: 103245	26-Mar-24 (No. 217-04037)	Mar-25
Reference 20 dB Attenuator	SN: B-H2304 (20k)	26-Mar-24 (No. 217-04046)	Mar-25
Type-N mismatch combination	SN: 310882 / 05327	26-Mar-24 (No. 217-04047)	Mar-25
Reference Probe EK3D/V4	SN: 7349	05-Nov-23 (No. EK3-7349_Nov23)	Nov-24
QAG4	SN: 601	22-May-24 (No. QAG4-601_May24)	May-25

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: 0839512475	30-Oct-14 (in house check Oct-22)	In house check: Oct-24
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-22)	In house check: Oct-24
Power sensor HP 8481A	SN: MY41093315	07-Oct-15 (in house check Oct-22)	In house check: Oct-24
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-22)	In house check: Oct-24
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-22)	In house check: Oct-24

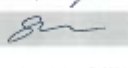
Calibrated by: **Leif Köysner**

Approved by: **Sven Kühn**

Name: _____ Function: **Laboratory Technician**

Name: _____ Function: **Technical Manager**

Signature: 

Signature: 

Issued: June 7, 2024

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

Certificate No: D835V2-490_Jun24

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Calibration Laboratory of

Schmid & Partner

Engineering AG

Zeughausstrasse 43, 8604 Zurich, Switzerland

Accredited by the Swiss Accreditation Service (SAS)

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Multilateral Agreement for the recognition of calibration certificates



S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accreditation No.: SCS 0108

Glossary:

TSL	tissue 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:

- 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.
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- DASY 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%.

Measurement Conditions

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

DASY Version	DASY52	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	42.2 $\pm$ 6 %	0.93 mho/m $\pm$ 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	2.46 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	9.64 W/kg $\pm$ 17.0 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.60 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	6.28 W/kg $\pm$ 16.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	48.7 Ω - 5.2 jΩ
Return Loss	- 25.3 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.383 ns
----------------------------------	----------

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 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 feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
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DASY5 Validation Report for Head TSL

Date: 07.06.2024

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:490

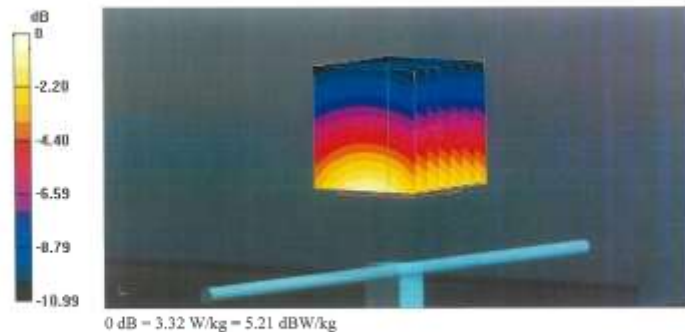
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: $f = 835$ MHz; $\sigma = 0.93$ S/m; $\epsilon_r = 42.2$; $\rho = 1000$ kg/m³
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(9.69, 9.69, 9.69) @ 835 MHz; Calibrated: 03.11.2023
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 22.05.2024
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

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

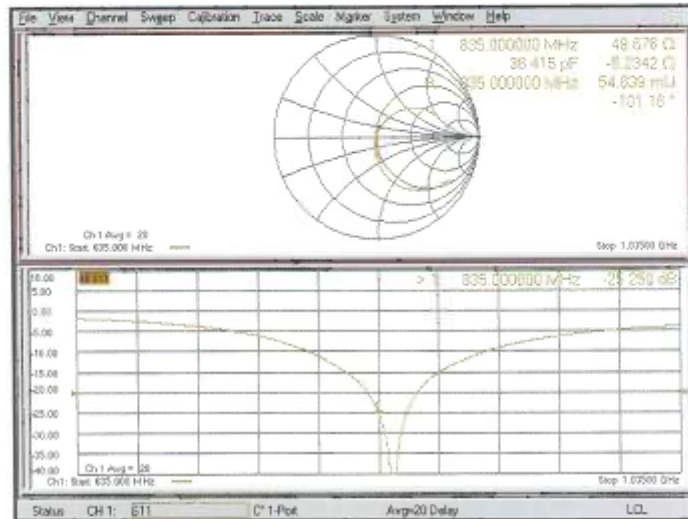
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 63.88 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 3.75 W/kg
SAR(1 g) = 2.46 W/kg; SAR(10 g) = 1.60 W/kg
Smallest distance from peaks to all points 3 dB below = 16.1 mm
Ratio of SAR at M2 to SAR at M1 = 65.4%
Maximum value of SAR (measured) = 3.32 W/kg



Certificate No: D835V2-490_Jun24

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Impedance Measurement Plot for Head TSL



Appendix C.4 Calibration certificate for D1900V2_5d033

Calibration Laboratory of
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Zürghausstrasse 43, 8004 Zurich, Switzerland

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Multilateral Agreement for the recognition of calibration certificates

Client: **SGS**
Gyeonggi-do, Republic of Korea

Certificate No.: **D1900V2-5d033_Jun24**

SGS
Schweizerischer Kalibrierdienst
Service suisse d'étalonnage
Servizio svizzero di taratura
Swiss Calibration Service
Accreditation No.: SCS 0106

CALIBRATION CERTIFICATE

Object: **D1900V2 - SN:5d033**

Calibration procedure(s): **QA CAL-05.v12**
Calibration Procedure for SAR Validation Sources between 0.7-3 GHz

Calibration date: **June 13, 2024**

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 ± 0.5°C and humidity < 70%.

Calibration Equipment used (M&E critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP2	SN: 104778	26-Mar-24 (No. 217-04036/04037)	Mar-25
Power sensor NRP-291	SN: 103244	26-Mar-24 (No. 217-04036)	Mar-25
Power sensor NRP-291	SN: 103245	26-Mar-24 (No. 217-04037)	Mar-25
Reference 20 dB Attenuator	SN: 88-9334 (20K)	26-Mar-24 (No. 217-04046)	Mar-25
Type-N mismatch combination	SN: 310662 / 06327	26-Mar-24 (No. 217-04047)	Mar-25
Reference Probe EX3DV4	SN: 7349	03-Nov-23 (No. EK3-7349_Nov23)	Nov-24
DAE4	SN: 601	22-May-24 (No. DAE4-601_May24)	May-25

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4410B	SN: GB36512475	30-Oct-14 (in house check Oct-22)	In house check: Oct-24
Power sensor HP 8481A	SN: US37252783	07-Oct-15 (in house check Oct-22)	In house check: Oct-24
Power sensor HP 8481A	SN: MY41093315	07-Oct-15 (in house check Oct-22)	In house check: Oct-24
RF generator RMS SMT-06	SN: 100972	15-Jun-15 (in house check Oct-22)	In house check: Oct-24
Network Analyzer Agilent E8358A	SN: US41060477	31-Mar-14 (in house check Oct-22)	In house check: Oct-24

Calibrated by: **Koelimir Phangic** Function: **Laboratory Technician** Signature: *[Signature]*

Approved by: **Sven Kuhn** Technical Manager Signature: *[Signature]*

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

Issued: June 13, 2024

Certificate No: D1900V2-5d033_Jun24 Page 1 of 6

Calibration Laboratory of
Schmid & Partner
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Multilateral Agreement for the recognition of calibration certificates



S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service
Accreditation No.: SCS 0106

Glossary:

TSL tissue 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:

- 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.
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- DASY 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%.

Measurement Conditions

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

DASY Version	DASY52	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
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.

	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	41.2 ± 6 %	1.40 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	10.1 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	40.6 W/kg ± 17.0 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.29 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	21.3 W/kg ± 16.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.4 Ω + 6.0 j Ω
Return Loss	- 24.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.205 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 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 feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
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DASY5 Validation Report for Head TSL

Date: 13.06.2024

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d033

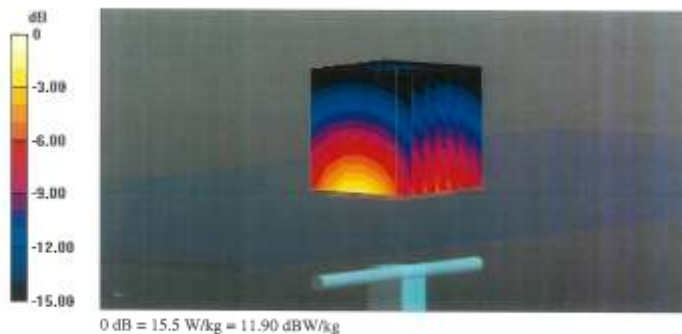
Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: $f = 1900$ MHz; $\sigma = 1.4$ S/m; $\epsilon_r = 41.2$; $\rho = 1000$ kg/m³
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.43, 8.43, 8.43) @ 1900 MHz; Calibrated: 03.11.2023
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 22.05.2024
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

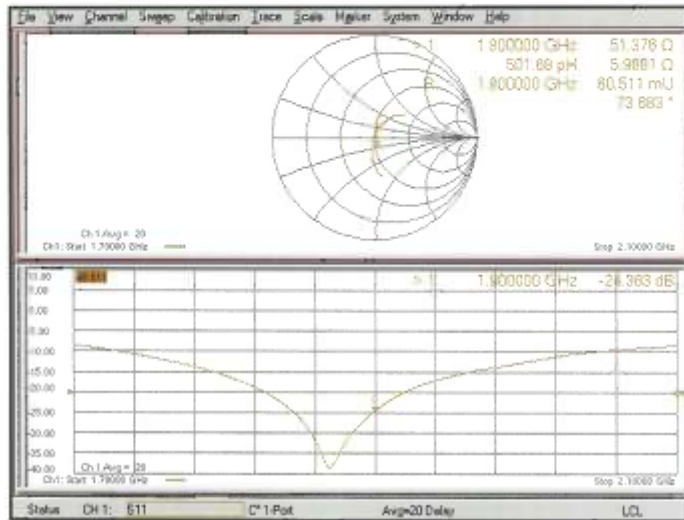
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 111.0 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 18.7 W/kg
SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.29 W/kg
Smallest distance from peaks to all points 3 dB below = 9 mm
Ratio of SAR at M2 to SAR at M1 = 55%
Maximum value of SAR (measured) = 15.5 W/kg



Certificate No: D1900V2-5d033_Jun24

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Impedance Measurement Plot for Head TSL



Appendix C.5 Calibration certificate for D2600V2_1124

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

Client: **SGS**
Gyeonggi-do, Republic of Korea

Certificate No.: **D2600V2-1124_Jul24**

CALIBRATION CERTIFICATE

Object: D2600V2 - SN: 1124

Calibration procedure(s): QA CAL-05.v12
Calibration Procedure for SAR Validation Sources between 0.7 - 3 GHz

Calibration date: July 22, 2024

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 (Certificate No.)	Scheduled Cal
Power Sensor R&S NRP-33T	SN: 103867	26-Mar-24 (No. 217-34038)	Mar-25
Power Sensor R&S NRP18A	SN: 101858	21-Mar-24 (No. 403DA315007801)	Mar-25
Spectrum Analyzer R&S FSV40	SN: 101832	25-Jan-24 (No. 4030-315007951)	Jan-25
Mismatch: Short [SA188] Attenuator [SA4423]	SN: 11152	26-Mar-24 (No. 217-34038)	Mar-25
CCP DAK-12	SN: 1016	09-Oct-23 (No. CCP-DAK12-1016_Cp23)	Oct-24
CCP DAK-3.6	SN: 1249	09-Oct-23 (No. CCP-DAK3.6-1249_Oct23)	Oct-24
Reference Probe EX30V4	SN: 7349	09-Jun-24 (No. EX3-7349_Jun24)	Jun-25
DWE4ip	SN: 1836	10-Jan-24 (No. DWE4ip-1836_Jan24)	Jan-25

Secondary Standards	ID	Check Date (in house)	Scheduled Check
ACAD Source Box	SN: 1000	22-May-24 (No. 675-ACAD_Source_Box-240522)	May-25
Signal Generator R&S SMB100A	SN: 182081	22-May-24 (No. 6001-3001159034)	May-25
Mismatch: SMA	SN: 1102	22-May-24 (No. 675-Mismatch_SMA-240522)	May-25

	Name	Function	Signature
Calibrated by	Kristinir Pranjić	Laboratory Technician	
Approved by	Sven Kohn	Technical Manager	

Issued: July 22, 2024

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

Certificate No: D2600V2-1124_Jul24

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Calibration Laboratory of
Schmid & Partner
Engineering AG

Zeughausstrasse 43, 8504 Zurich, Switzerland



S Schweizerischer Kalibrierdienst
 C Service suisse d'étalonnage
 S Servizio svizzero di taratura
 S 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

TSL tissue 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

- 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.
- KDB 885664, "SAR Measurement Requirements for 100 MHz to 8 GHz"

Additional Documentation

- DASY 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%.

D2600V2 - SN: 1124

July 22, 2024

Measurement Conditions

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

DASY Version	DASY8 Module SAR	18.4.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with spacer
Zoom Scan Resolution	dx, dy = 5mm, dz = 1.5mm	Graded Ratio = 1.5 mm (Z direction)
Frequency	2600MHz ±1MHz	

Head TSL parameters at 2600 MHz

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	37.2 ±6%	1.98 mho/m ±6%
Head TSL temperature change during test	< 0.5 °C		

SAR result with Head TSL at 2600 MHz

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR for nominal Head TSL parameters	24 dBm input power	13.7 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	54.5 W/kg ±17.0% (k = 2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	Condition	
SAR for nominal Head TSL parameters	24 dBm input power	6.15 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	24.5 W/kg ±16.5% (k = 2)

D2600V2 - SN: 1124

July 22, 2024

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL at 2600 MHz

Impedance	49.9 Ω - 7.3 j Ω
Return Loss	-22.6 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.152 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 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 feedpoint may be damaged.

Additional EUT Data

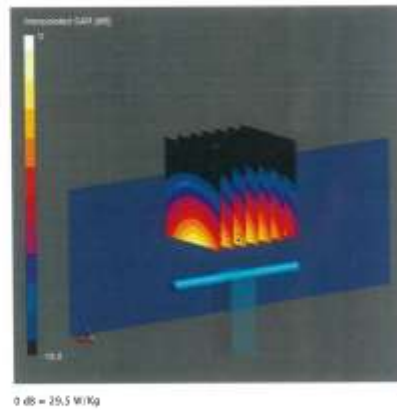
Manufactured by	SPEAG
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D2600V2 - SN: 1124

July 22, 2024

System Performance Check Report

Summary			
Device	Frequency (MHz)	TSL	Power (dBm)
D2600V2 - SN1124	2608	HSL	24
Exposure Conditions			
Phantom Section, TSL	Trial Distance (mm)	Ball	Group, U/D
File	10	CM, 0--	2600, 0
			7.29
			1.85
			07.2
Hardware Setup			
Phantom	TSL, Measured Date	Probe, Calibration Date	QAG, Calibration Date
MFP VLO Contact	HSL, 2024-07-22	EXDCA - SN749, 2024-06-09	QAGHP SN1036, 2024-01-10
Scan Setup		Measurement Results	
Zoom Scan		Zoom Scan	
Grid Size (mm)	30 x 30 x 30	Date	2024-07-22
Grid Steps (mm)	1.0 x 1.0 x 1.0	ptSAR (g [W/Kg])	13.7
Scatter Surface (mm)	1.4	ptSAR (g [W/Kg])	6.15
Cooled Grid	Yes	Power Dens (dB)	-0.01
Cooling Rate	1.5	Power Scaling	Disabled
MMA	N/A	Scaling Factor (dB)	
Surface Selection	WEG + Gp	TSL Correction	Positive / Negative
Scan Method	Measured		



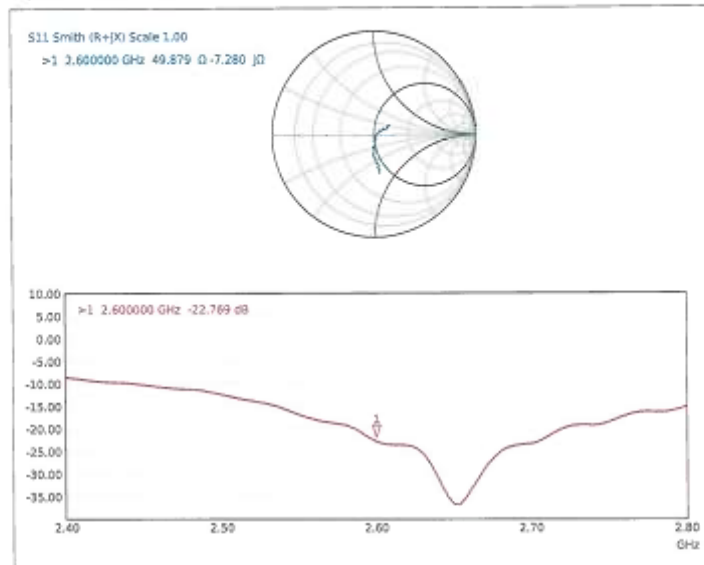
Certificate No: D2600V2-1124_Jul24

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D2600V2 - SN: 1124

July 22, 2024

Impedance Measurement Plot for Head TSL



Certificate No: D2600V2-1124_Jul24

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