

SAR Report

Applicant : Qualcomm Atheros, Inc.
Applicant Address : 1700 Technology Dr, San Jose, California, United States, 95110
Product Type : 2x2 802.11A/B/G/N/AC WiFi + Bluetooth Module
Trade Name : Qualcomm Atheros
Model Number : QCNFA324
Applicable Standard : 47 CFR Part §2.1093
Received Date : Apr. 12, 2021
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Taiwan Accreditation Foundation accreditation number: 1330
Test Firm MRA designation number: TW0010

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Revision History

Rev.	Issued Date	Revisions	Revised By
00	May 03, 2021	Initial Issue	Nicole Chu
01	May 26, 2021	Revised Applicant (P.01) Revised 2 chapter (P.05~ P.07) Revised 7.4 chapter (P.22~P.28) Revised 7.5 chapter (P.31) Revised 7.6 chapter (P.32) Revised 7.7.1 chapter (P.33) Revised 7.7.2 chapter (P.34~P.35) Revised 12.1 chapter (P.46~P.49)	Nicole Chu
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1. General Information

1.1 Reference Applicable Standard

Standard	Description	Version
IEEE 1528	IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head From Wireless Communications Devices: Measurement Techniques.	2013
IEEE C95.1	American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 300 KHz to 100 GHz, New York.	1992
47 CFR Part §2.1093	Radiofrequency radiation exposure evaluation: portable devices.	---
KDB 248227 D01	SAR guidance for IEEE 802.11 (Wi-Fi) transmitters	v02r02
KDB 447498 D01	RF exposure procedures and equipment authorization policies for mobile and portable devices	v06
KDB 616217 D04	SAR evaluation considerations for laptop, notebook and tablet computers.	v01r02
KDB 865664 D01	SAR measurement requirement for 100 MHz to 6 GHz.	v01r04
KDB 865664 D02	RF exposure compliance reporting and documentation considerations.	v01r02

1.2 Test Site Environment

Items	Required (IEEE 1528-2013)	Actual
Temperature (°C)	18-25	21-23



2. Summary of Maximum Reported SAR Value

Equipment Class	Mode	Highest Reported 1g SAR (W/kg)	
		Body standalone SAR 1 g(W/kg)	Highest Simultaneous Transmission SAR
DTS	WLAN2.4GHz Ant Main	0.56	1.41
	WLAN2.4GHz Ant Aux	0.85	
U-NII	WLAN5GHz Ant Main	1.17	1.28
	WLAN5GHz Ant Aux	0.64	
DSS	BluetoothAnt Aux	0.11	1.28

Note:

1. The SAR limit (Head & Body: SAR_{1g} 1.6 W/kg) for general population / uncontrolled exposure is specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992.
2. The test procedures, as described in American National Standards, Institute ANSI/IEEE C95.1 ANSI/IEEE C95.3 (For IC) were employed and they specify the maximum exposure limit (SAR_{1g} 1.6 W/kg for Head & Body, SAR_{10g} 4.0 W/kg for Extremity) of tissue for portable devices being used within 20 cm between user and EUT in the uncontrolled environment. A description of the product and operating configuration, detailed summary of the test results, methodology and procedures used in the equipment used are included within this test report.



3. Description of Equipment under Test (EUT)

Applicant	Qualcomm Atheros, Inc. 1700 Technology Dr, San Jose, California, United States, 95110	
Manufacturer	Qualcomm Atheros, Inc. 1700 Technology Dr, San Jose, California, United States, 95110	
Product Type	2x2 802.11A/B/G/N/AC WiFi + Bluetooth Module	
Trade Name	Qualcomm Atheros	
Model Number	QCNFA324	
FCC ID	PPD-QCNFA324	
Class II Permissive Change	<p>(1) This is to request a Class II permissive change for FCC ID: PPD-QCNFA324 , originally granted on 2014/11/21</p> <p>Modification:</p> <p>-Change #1: Additional chassis added, ASUSTeK, model number: CZ1000DV,CL1000DV</p> <p>Models differences: All models are electrically identical, different model names are for marketing purpose.</p> <p>-Change #2: Reduces WIFI output power through BIOS that cannot be changed by end user and SAR were evaluated accordingly.</p> <p>-Change #3: Adds new antennas that meet FCC Part 15 equivalent-type</p>	
Host Information	<p>Product Type: Chromebook</p> <p>Trade Name: ASUS</p> <p>Model Name: CZ1000DV,CL1000DV</p> <p>All models are electrically identical, different model names are for marketing purpose.</p>	
Frequency Range	Operate Modes	Operate Frequency (MHz)
	IEEE 802.11b/g/n 2.4 GHz 20 MHz	2412 - 2462
	IEEE 802.11n 2.4 GHz 40 MHz	2422 - 2452
	IEEE 802.11a/n/ac 5 GHz 20 MHz U-NII Band I	5180 - 5240
	IEEE 802.11a/n/ac 5 GHz 20 MHz U-NII Band II-A	5260 - 5320
	IEEE 802.11a/n/ac 5 GHz 20 MHz U-NII Band II-C	5500 - 5720
	IEEE 802.11a/n/ac 5 GHz 20 MHz U-NII Band III	5745 - 5825
	IEEE 802.11n/ac 5 GHz 40 MHz U-NII Band I	5190 - 5230
	IEEE 802.11n/ac 5 GHz 40 MHz U-NII Band II-A	5270 - 5310
	IEEE 802.11n/ac 5 GHz 40 MHz U-NII Band II-C	5510 - 5710
	IEEE 802.11n/ac 5 GHz 40 MHz U-NII Band III	5755 - 5795
	IEEE 802.11ac 80 MHz U-NII Band I	5210
	IEEE 802.11ac 80 MHz U-NII Band II-A	5290
	IEEE 802.11ac 80 MHz U-NII Band II-C	5530 - 5690
	IEEE 802.11ac 80 MHz U-NII Band III	5775
Bluetooth BR/EDR	2402 - 2480	
Bluetooth LE	2402 - 2480	

Modulations	802.11b : DSSS 802.11a/g/n/ac : OFDM Bluetooth : GFSK
Device Category	Portable Device
Application Type	Certification

Note:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

Antenna list :

Antenna Source	ANT	Manufacturer	Part No. (Vendor)	Type	Frequency	Max. Gain
						(dBi)
1	Chain 0	AWAN	AYF5Y-100004	PIFA Antenna	2402 - 2480	-0.47
					5150 - 5250	-0.34
					5250 - 5350	-1.41
					5470 - 5725	-1.05
					5725 - 5850	-1.54
	Chain 1	AWAN	AYF5Y-100005	PIFA Antenna	2402 - 2480	2.52
					5150 - 5250	2.71
					5250 - 5350	2.71
					5470 - 5725	1.67
					5725 - 5850	0.63
2	Chain 0	INPAQ	WA-F-LB-02-268	PIFA Antenna	2402 - 2480	1.78
					5150 - 5250	1.92
					5250 - 5350	2.67
					5470 - 5725	2.79
					5725 - 5850	2.09
	Chain 1	INPAQ	WA-F-LB-02-269	PIFA Antenna	2402 - 2480	2.57
					5150 - 5250	2.73
					5250 - 5350	2.73
					5470 - 5725	2.77
					5725 - 5850	2.70

Note :

1. Antenna Source 2 (INPAQ) gain is worst case. We tested and recorded it in this report.
2. Antenna Source 1 (AWAN) and Antenna Source 2 (INPAQ) are the same type of antenna, only different in manufacturer.
3. The Chain 1 is connected to AUX port / Chain 0 is connected to Main port of module.

4. Introduction

The A Test Lab Techno Corp. has performed measurements of the maximum potential exposure to the user. The test procedures, as described in American National Standards, Institute C95.1-1999 [1] were employed and they specify the maximum exposure limit of 1.6 W/kg as averaged over any 1 gram of tissue for portable devices being used within 20 cm between user and EUT in the uncontrolled environment. A description of the product and operating configuration, detailed summary of the test results, methodology and procedures used in the equipment used are included within this test report.

4.1 SAR Definition

Specific Absorption Rate (SAR) is defined as the time derivative (rate) of the incremental energy (dw) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below :

$$\text{SAR} = \frac{d}{dt} \left(\frac{dw}{dm} \right) = \frac{d}{dt} \left(\frac{dw}{\rho dv} \right)$$

SAR is expressed in units of Watts per kilogram (W/kg)

SAR measurement can be related to the electrical field in the tissue by

$$\text{SAR} = \frac{\sigma |E|^2}{\rho}$$

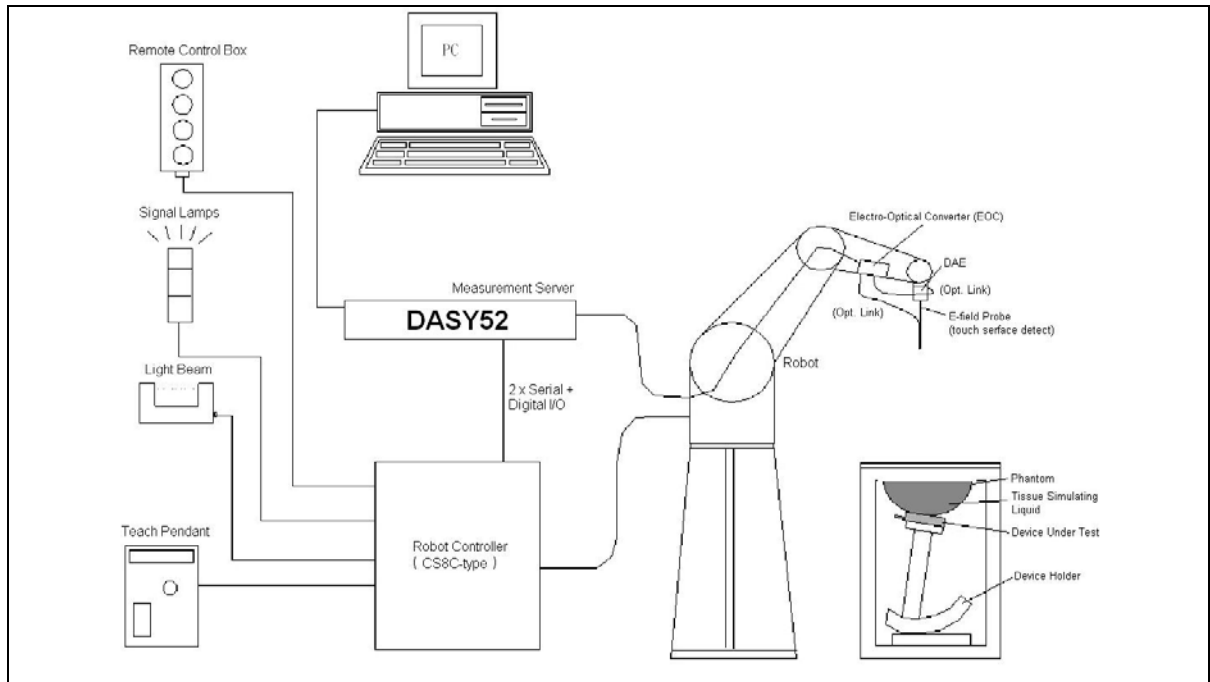
Where :

σ = conductivity of the tissue (S/m)

ρ = mass density of the tissue (kg/m³)

E = RMS electric field strength (V/m)

5. SAR Measurement Setup





The DASY52 system for performing compliance tests consists of the following items:

1. A standard high precision 6-axis robot (Stäubli TX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
2. An isotropic field probe optimized and calibrated for the targeted measurements.
3. A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
4. The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
5. The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
6. The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
7. A computer running Win7/Win8 professional operating system and the cDASY6 and DASY5 V5.2 software.
8. Remote controls with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
9. The phantom, the device holder and other accessories according to the targeted measurement.
10. Tissue simulating liquid mixed according to the given recipes.
11. The validation dipole has been calibrated within and the system performance check has been successful.


5.1 DASY E-Field Probe System

The SAR measurements were conducted with the dosimetric probe (manufactured by SPEAG), designed in the classical triangular configuration [3] and optimized for dosimetric evaluation. The probes is constructed using the thick film technique; with printed resistive lines on ceramic substrates. The probe is equipped with an optical multi-fiber line ending at the front of the probe tip. It is connected to the EOC box on the robot arm and provides an automatic detection of the phantom surface. Half of the fibers are connected to a pulsed infrared transmitter, the other half to a synchronized receiver. As the probe approaches the surface, the reflection from the surface produces a coupling from the transmitting to the receiving fibers. This reflection increases first during the approach, reaches maximum and then decreases. If the probe is flatly touching the surface, the coupling is zero. The distance of the coupling maximum to the surface is independent of the surface reflectivity and largely independent of the surface to probe angle. The DASY software reads the reflection during a software approach and looks for the maximum using a 2nd order fitting. The approach is stopped when reaching the maximum.


5.1.1 E-Field Probe Specification

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Frequency	10 MHz to > 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.3 dB in brain tissue (rotation around probe axis) ± 0.5 dB in brain tissue (rotation normal probe axis)
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm
Calibration	ISO/IEC 17025 calibration service available
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>EX3DV4 E-Field Probe</p> </div> <div style="text-align: center;">  <p>Probe setup on robot</p> </div> </div>	

5.2 Data Acquisition Electronic (DAE) System

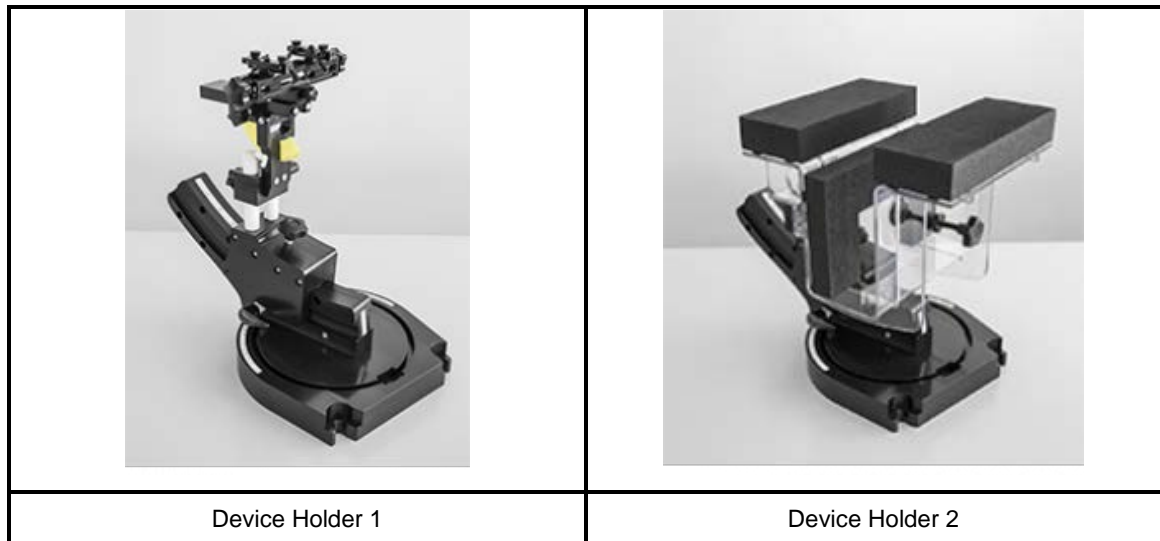
Model	DAE4	
Construction	Signal amplifier, multiplexer, A/D converter and control logic. Serial optical link for communication with DASY embedded system (fully remote controlled). Two step probe touch detector for mechanical surface detection and emergency robot stop.	
Measurement Range	-100 to +300 mV (16 bit resolution and two range settings: 4 mV, 400 mV)	
Input Offset Voltage	< 5 μ V (with auto zero)	
Input Bias Current	< 50 fA	
Dimensions	60 x 60 x 68 mm	

5.3 Robot

Positioner	Stäubli Unimation Corp.	
Robot Model	TX90XL	
Number of Axes	6	
Norminal Load	5 kg	
Reach	1450 mm	
Repeatability	\pm 0.035 mm	

5.4 Device Holder

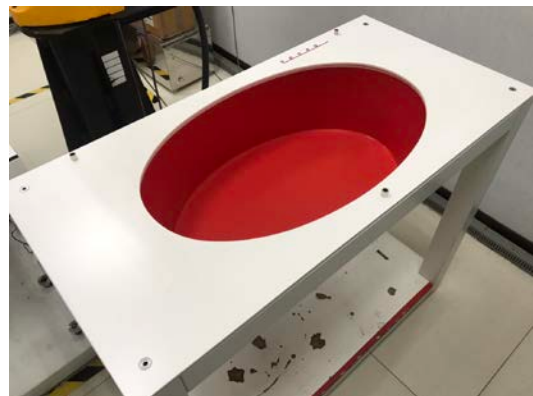
The DASY device holder is constructed of low-loss POM material having the following dielectric parameters: relative permittivity $\epsilon=3$ and loss tangent $\delta=0.02$. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.



5.5 Oval Flat Phantom - ELI

The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (Oval Flat) phantom defined in IEEE 1528-2013, CENELEC 50361 and IEC 62209-2. It enables the dosimetric evaluation of wireless portable device usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points with the robot.

Shell Thickness	2 ±0.2 mm
Filling Volume	Approx. 30 liters
Dimensions	190×600×400 mm (H×L×W)
Table 1. Specification of ELI	



6. Tissue Simulating Liquids

IEEE SCC-34/SC-2 in 1528 recommended Tissue Dielectric Parameters

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in 1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in human head. Other head and body tissue parameters that have not been specified in 1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equation and extrapolated according to the head parameter specified in 1528.

Target Frequency (MHz)	Head		Body	
	ϵ_r	σ (S/m)	ϵ_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800 - 2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5800	35.3	5.27	48.2	6.00
(ϵ_r = relative permittivity, σ = conductivity and $\rho = 1000 \text{ kg/m}^3$)				

Table 2. Tissue dielectric parameters for head and body phantoms

6.1 The composition of the tissue simulating liquid

Ingredients (% by weight)	Frequency (MHz)												Frequency (GHz)	
	750		835		1750		1900		2450		2600		5 GHz	
Tissue Type	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Water	39.28	51.30	41.45	52.40	54.50	40.20	54.90	40.40	62.70	73.20	60.30	71.40	65.5	78.6
Salt (NaCl)	1.47	1.42	1.45	1.50	0.17	0.49	0.18	0.50	0.50	0.10	0.60	0.20	0.00	0.00
Sugar	58.15	46.18	56.00	45.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HEC	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bactericide	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triton X-100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.2	10.7
DGBE	0.00	0.00	0.00	0.00	45.33	59.31	44.92	59.10	36.80	26.70	39.10	28.40	0.00	0.00
Diethylene Glycol Mono-hexlether	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.3	10.7
Dielectric Constant	41.88	54.60	42.54	56.10	40.10	53.60	39.90	54.00	39.80	52.50	39.80	52.50	35.1~ 36.2	47.9~ 49.3
Conductivity (S/m)	0.90	0.97	0.91	0.95	1.39	1.49	1.42	1.45	1.88	1.78	1.88	1.78	4.45~ 5.48	5.07~ 6.23

6.2 Liquid Parameters

- The dielectric parameters of the liquids were verified prior to the SAR evaluation using an DAKS 3.5 Probe Kit.
- The SAR testing with IEC tissue parameters as an alternative option to Head and body parameters. We used head TSL for body SAR tests. There are some limitations though:
 - The mixing and matching of head TSL and body TSL for body SAR testing in a single application are not permitted. For example, we cannot start testing body SAR with head TSL and then switch to testing Body SAR with Body TSL.
 - The TSL used for body SAR testing can be changed via a Permissive Change. However, if the body SAR increases and the original Body SAR was > 1.2 W/kg, additional SAR measurements may be required.

Tissue Temp (°C)	Liquid Type	Frequency (MHz)	Cond.	Perm.	target Cond.	target Perm.	σ (Delta) (%)	ϵ_r (Delta) (%)	Limit (%)	Date
			σ	ϵ_r	σ	ϵ_r				
22.7	Head	5180 MHz	4.65	36.78	4.64	36.02	0.20	2.11	±5	Apr. 13, 2021
22.7	Head	5190 MHz	4.66	36.77	4.65	36.01	0.16	2.10	±5	Apr. 13, 2021
22.7	Head	5200 MHz	4.67	36.75	4.66	36.00	0.12	2.08	±5	Apr. 13, 2021
22.7	Head	5220 MHz	4.68	36.70	4.68	35.98	0.07	2.01	±5	Apr. 13, 2021
22.7	Head	5230 MHz	4.69	36.68	4.69	35.97	0.07	1.98	±5	Apr. 13, 2021
22.7	Head	5240 MHz	4.71	36.65	4.70	35.96	0.12	1.93	±5	Apr. 13, 2021
22.7	Head	5250 MHz	4.72	36.63	4.71	35.95	0.17	1.90	±5	Apr. 13, 2021
22.7	Head	5260 MHz	4.73	36.61	4.72	35.94	0.23	1.88	±5	Apr. 13, 2021
22.7	Head	5270 MHz	4.74	36.60	4.73	35.93	0.26	1.86	±5	Apr. 13, 2021



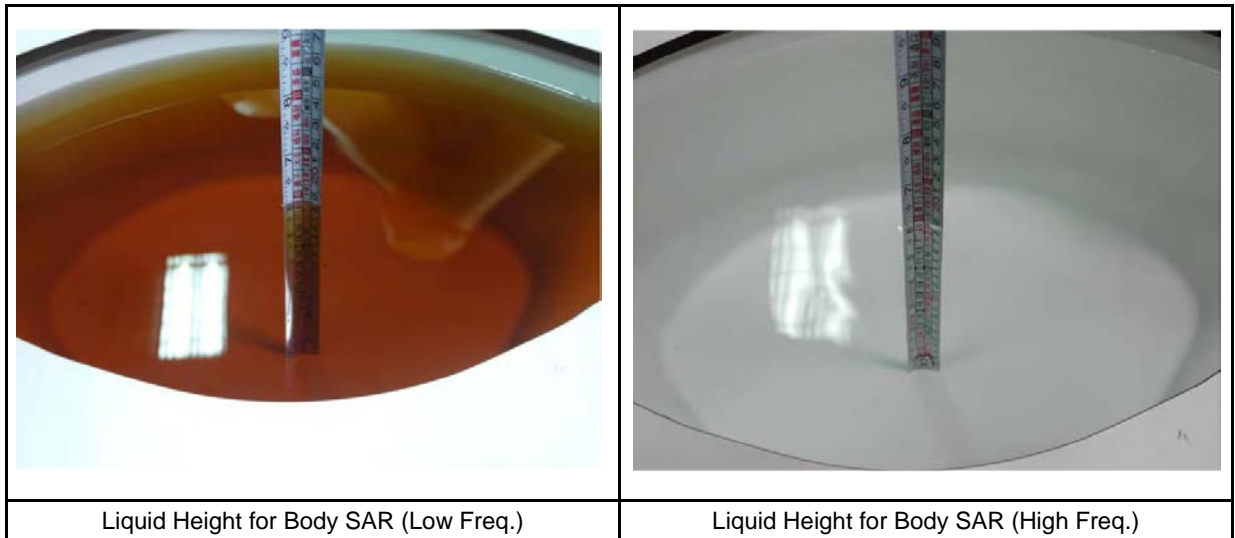
Tissue Temp (°C)	Liquid Type	Frequency (MHz)	Cond.	Perm.	target Cond.	target Perm.	σ (Delta) (%)	ϵ_r (Delta) (%)	Limit (%)	Date
			σ	ϵ_r	σ	ϵ_r				
22.7	Head	5280 MHz	4.75	36.59	4.74	35.92	0.27	1.86	±5	Apr. 13, 2021
22.7	Head	5290 MHz	4.76	36.57	4.75	35.91	0.24	1.84	±5	Apr. 13, 2021
22.7	Head	5300 MHz	4.77	36.55	4.76	35.90	0.18	1.82	±5	Apr. 13, 2021
22.7	Head	5310 MHz	4.78	36.53	4.77	35.89	0.13	1.79	±5	Apr. 13, 2021
22.7	Head	5320 MHz	4.78	36.51	4.78	35.88	0.10	1.74	±5	Apr. 13, 2021
22.7	Head	5500 MHz	4.98	36.17	4.97	35.65	0.25	1.45	±5	Apr. 13, 2021
22.7	Head	5510 MHz	4.98	36.15	4.98	35.64	0.17	1.44	±5	Apr. 13, 2021
22.7	Head	5530 MHz	5.00	36.11	5.00	35.61	0.03	1.40	±5	Apr. 13, 2021
22.7	Head	5550 MHz	5.02	36.05	5.02	35.58	0.03	1.31	±5	Apr. 13, 2021
22.7	Head	5570 MHz	5.05	36.00	5.04	35.55	0.13	1.27	±5	Apr. 13, 2021
22.7	Head	5580 MHz	5.06	35.99	5.05	35.53	0.18	1.30	±5	Apr. 13, 2021
22.7	Head	5610 MHz	5.09	35.96	5.08	35.49	0.16	1.32	±5	Apr. 13, 2021
22.7	Head	5620 MHz	5.10	35.94	5.09	35.48	0.11	1.31	±5	Apr. 13, 2021
22.7	Head	5630 MHz	5.10	35.92	5.10	35.47	0.07	1.27	±5	Apr. 13, 2021
22.7	Head	5660 MHz	5.13	35.84	5.13	35.44	0.08	1.14	±5	Apr. 13, 2021
22.7	Head	5670 MHz	5.15	35.82	5.14	35.43	0.11	1.10	±5	Apr. 13, 2021
22.7	Head	5690 MHz	5.17	35.79	5.16	35.41	0.16	1.06	±5	Apr. 13, 2021
22.7	Head	5700 MHz	5.18	35.77	5.17	35.40	0.15	1.04	±5	Apr. 13, 2021
22.7	Head	5710 MHz	5.19	35.75	5.18	35.39	0.13	1.02	±5	Apr. 13, 2021
22.7	Head	5720 MHz	5.20	35.73	5.19	35.38	0.11	1.00	±5	Apr. 13, 2021
22.3	Head	2412 MHz	1.75	39.64	1.77	39.27	-0.71	0.95	±5	Apr. 14, 2021
22.3	Head	2422 MHz	1.77	39.61	1.78	39.25	-0.54	0.90	±5	Apr. 14, 2021
22.3	Head	2437 MHz	1.78	39.57	1.79	39.22	-0.28	0.88	±5	Apr. 14, 2021
22.3	Head	2452 MHz	1.80	39.53	1.80	39.20	-0.07	0.85	±5	Apr. 14, 2021
22.3	Head	2462 MHz	1.81	39.50	1.81	39.18	0.00	0.82	±5	Apr. 14, 2021
22.3	Head	2467 MHz	1.82	39.49	1.82	39.18	0.06	0.79	±5	Apr. 14, 2021
22.3	Head	2472 MHz	1.83	39.47	1.82	39.17	0.12	0.78	±5	Apr. 14, 2021
22.3	Head	2402 MHz	1.73	39.55	1.76	39.28	-1.29	0.69	±5	Apr. 14, 2021
22.3	Head	2441 MHz	1.80	39.70	1.79	39.22	0.45	1.22	±5	Apr. 14, 2021
22.3	Head	2480 MHz	1.83	39.33	1.83	39.16	-0.23	0.42	±5	Apr. 14, 2021
22.3	Head	2402 MHz	1.73	39.55	1.76	39.28	-1.29	0.69	±5	Apr. 14, 2021
22.3	Head	2440 MHz	1.78	39.43	1.79	39.22	-0.68	0.53	±5	Apr. 14, 2021
22.3	Head	2480 MHz	1.83	39.33	1.83	39.16	-0.23	0.42	±5	Apr. 14, 2021
22.6	Head	5745 MHz	5.20	35.55	5.22	35.36	-0.34	0.54	±5	Apr. 15, 2021
22.6	Head	5755 MHz	5.21	35.53	5.23	35.35	-0.36	0.51	±5	Apr. 15, 2021
22.6	Head	5775 MHz	5.23	35.49	5.25	35.33	-0.33	0.45	±5	Apr. 15, 2021
22.6	Head	5785 MHz	5.24	35.47	5.26	35.32	-0.30	0.43	±5	Apr. 15, 2021
22.6	Head	5795 MHz	5.25	35.46	5.27	35.31	-0.28	0.42	±5	Apr. 15, 2021
22.6	Head	5825 MHz	5.28	35.42	5.30	35.28	-0.36	0.41	±5	Apr. 15, 2021
22.4	Head	2412 MHz	1.74	39.37	1.77	39.27	-1.57	0.26	±5	Apr. 16, 2021
22.4	Head	2422 MHz	1.75	39.34	1.78	39.25	-1.40	0.22	±5	Apr. 16, 2021
22.4	Head	2437 MHz	1.77	39.30	1.79	39.22	-1.17	0.20	±5	Apr. 16, 2021
22.4	Head	2452 MHz	1.79	39.26	1.80	39.20	-0.93	0.16	±5	Apr. 16, 2021



Tissue Temp (°C)	Liquid Type	Frequency (MHz)	Cond.	Perm.	target Cond.	target Perm.	σ (Delta) (%)	ϵ_r (Delta) (%)	Limit (%)	Date
			σ	ϵ_r	σ	ϵ_r				
22.4	Head	2462 MHz	1.80	39.23	1.81	39.18	-0.86	0.14	±5	Apr. 16, 2021
22.4	Head	2467 MHz	1.80	39.22	1.82	39.18	-0.77	0.10	±5	Apr. 16, 2021
22.4	Head	2472 MHz	1.81	39.20	1.82	39.17	-0.74	0.09	±5	Apr. 16, 2021
22.4	Head	2402 MHz	1.73	39.41	1.76	39.28	-1.74	0.34	±5	Apr. 16, 2021
22.4	Head	2441 MHz	1.77	39.29	1.79	39.22	-1.12	0.17	±5	Apr. 16, 2021
22.4	Head	2480 MHz	1.82	39.19	1.83	39.16	-0.67	0.07	±5	Apr. 16, 2021
22.4	Head	2402 MHz	1.73	39.41	1.76	39.28	-1.74	0.34	±5	Apr. 16, 2021
22.4	Head	2440 MHz	1.77	39.29	1.79	39.22	-1.13	0.18	±5	Apr. 16, 2021
22.4	Head	2480 MHz	1.82	39.19	1.83	39.16	-0.67	0.07	±5	Apr. 16, 2021
22.1	Head	5180 MHz	4.61	36.47	4.64	36.02	-0.53	1.25	±5	Apr. 17, 2021
22.1	Head	5190 MHz	4.62	36.46	4.65	36.01	-0.57	1.24	±5	Apr. 17, 2021
22.1	Head	5200 MHz	4.63	36.44	4.66	36.00	-0.61	1.22	±5	Apr. 17, 2021
22.1	Head	5220 MHz	4.65	36.39	4.68	35.98	-0.67	1.15	±5	Apr. 17, 2021
22.1	Head	5230 MHz	4.66	36.37	4.69	35.97	-0.66	1.11	±5	Apr. 17, 2021
22.1	Head	5240 MHz	4.67	36.34	4.70	35.96	-0.61	1.07	±5	Apr. 17, 2021
22.1	Head	5250 MHz	4.68	36.32	4.71	35.95	-0.56	1.04	±5	Apr. 17, 2021
22.1	Head	5260 MHz	4.70	36.30	4.72	35.94	-0.51	1.01	±5	Apr. 17, 2021
22.1	Head	5270 MHz	4.71	36.29	4.73	35.93	-0.47	1.00	±5	Apr. 17, 2021
22.1	Head	5280 MHz	4.72	36.28	4.74	35.92	-0.47	0.99	±5	Apr. 17, 2021
22.1	Head	5290 MHz	4.73	36.26	4.75	35.91	-0.49	0.98	±5	Apr. 17, 2021
22.1	Head	5300 MHz	4.73	36.24	4.76	35.90	-0.55	0.96	±5	Apr. 17, 2021
22.1	Head	5310 MHz	4.74	36.22	4.77	35.89	-0.60	0.92	±5	Apr. 17, 2021
22.1	Head	5320 MHz	4.75	36.20	4.78	35.88	-0.63	0.88	±5	Apr. 17, 2021
22.1	Head	5500 MHz	4.94	35.86	4.97	35.65	-0.48	0.58	±5	Apr. 17, 2021
22.1	Head	5510 MHz	4.95	35.84	4.98	35.64	-0.56	0.57	±5	Apr. 17, 2021
22.1	Head	5530 MHz	4.96	35.80	5.00	35.61	-0.69	0.53	±5	Apr. 17, 2021
22.1	Head	5550 MHz	4.98	35.74	5.02	35.58	-0.70	0.44	±5	Apr. 17, 2021
22.1	Head	5570 MHz	5.01	35.69	5.04	35.55	-0.59	0.40	±5	Apr. 17, 2021
22.1	Head	5580 MHz	5.02	35.68	5.05	35.53	-0.54	0.42	±5	Apr. 17, 2021
22.1	Head	5610 MHz	5.05	35.65	5.08	35.49	-0.56	0.44	±5	Apr. 17, 2021
22.1	Head	5620 MHz	5.06	35.63	5.09	35.48	-0.61	0.43	±5	Apr. 17, 2021
22.1	Head	5630 MHz	5.07	35.61	5.10	35.47	-0.66	0.40	±5	Apr. 17, 2021
22.1	Head	5660 MHz	5.10	35.53	5.13	35.44	-0.65	0.26	±5	Apr. 17, 2021
22.1	Head	5670 MHz	5.11	35.51	5.14	35.43	-0.61	0.23	±5	Apr. 17, 2021
22.1	Head	5690 MHz	5.13	35.48	5.16	35.41	-0.56	0.18	±5	Apr. 17, 2021
22.1	Head	5700 MHz	5.14	35.46	5.17	35.40	-0.57	0.16	±5	Apr. 17, 2021
22.1	Head	5710 MHz	5.15	35.44	5.18	35.39	-0.59	0.15	±5	Apr. 17, 2021
22.1	Head	5720 MHz	5.16	35.42	5.19	35.38	-0.62	0.12	±5	Apr. 17, 2021
22.9	Head	5745 MHz	5.18	35.39	5.22	35.36	-0.70	0.09	±5	Apr. 18, 2021
22.9	Head	5755 MHz	5.19	35.37	5.23	35.35	-0.72	0.05	±5	Apr. 18, 2021
22.9	Head	5775 MHz	5.21	35.33	5.25	35.33	-0.69	-0.01	±5	Apr. 18, 2021
22.9	Head	5785 MHz	5.22	35.31	5.26	35.32	-0.66	-0.02	±5	Apr. 18, 2021
22.9	Head	5795 MHz	5.23	35.30	5.27	35.31	-0.64	-0.03	±5	Apr. 18, 2021
22.9	Head	5825 MHz	5.26	35.26	5.30	35.28	-0.72	-0.05	±5	Apr. 18, 2021

6.3 Liquid Depth

According to KDB865664, the depth of tissue-equivalent liquid in a phantom must be ≥ 15.0 cm. Which is shown in Figure 7 & 8.



7. SAR Testing with RF Transmitters

7.1 Positioning of the DUT in relation to the phantom

The following measurement procedure shall be according to RSS-102 Supplementary procedures (SPR-001):

Unless the side(s)/edge(s) of the laptop type computer (laptop mode/tablet mode) containing the built-in antenna(s) was already tested against the flat phantom.

Industry Canada requires SAR measurements to be performed with the side(s)/edge(s) of the display screen containing the built-in antenna(s) pointing towards the flat phantom.

i) If the integrated antenna(s) are located in the back side of the display screen, the back side shall be facing towards the flat phantom at a distance not exceeding 25 mm.

ii) If the integrated antenna(s) are installed along the edge(s) of the display screen, the edge(s) shall be facing towards the flat phantom at a distance not exceeding 25 mm.

According to KDB616217 D04

iii) When antennas are incorporated in the keyboard section of a laptop computer, SAR is required for the bottom surface of the keyboard. Provided tablet use conditions are not supported by the laptop computer, SAR tests for bystander exposure from the edges of the keyboard.

iv) Some 2-in-1 tablets may operate with the display folded on top of the keyboard. Most recent tablets are designed with an interactive display that may not require a physical keyboard. Both configurations are used in similar manners and require SAR evaluation for the back surface and edges of the tablet. For keyboards that can be unfolded like a laptop, the procedures for laptop platform should also be applied.

7.2 SAR Testing with WLAN

A Wi-Fi device must be configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools for SAR measurement. The test frequencies established using test mode must correspond to the actual channel frequencies.

For WLAN SAR testing, the EUT has installed WLAN engineering testing software which can provide continuous transmitting RF signal. And the RF signal utilized in SAR measurement has almost 100 % duty cycle and crest factor is 1.

SAR test reduction for 802.11 Wi-Fi transmission mode configurations are considered separately for DSSS and OFDM. An initial test position is determined to reduce the number of tests required for certain exposure configurations with multiple test positions. An initial test configuration is determined for each frequency band and aggregated band according to maximum output power, channel bandwidth, wireless mode configurations and other operating parameters to streamline the measurement requirements. For 2.4 GHz DSSS, either the initial test position or DSSS procedure is applied to reduce the number of SAR tests; these are mutually exclusive. For OFDM, an initial test position is only applicable to next to the ear, UMPC mini-tablet and hotspot mode configurations, which is tested using the initial test configuration to facilitate test reduction. For other exposure conditions with a fixed test position, SAR test reduction is determined using only the initial test configuration.

The multiple test positions require SAR measurements in head, hotspot mode or UMPC mini-tablet configurations may be reduced according to the highest reported SAR determined using the initial test position(s) by applying the DSSS or OFDM SAR measurement procedures in the required wireless mode test configuration(s). The initial test position(s) is measured using the highest measured maximum output power channel in the required wireless mode test configuration(s). When the reported SAR for the initial test position is:

- ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and wireless mode combination within the frequency band or aggregated band. DSSS and OFDM configurations are considered separately according to the required SAR procedures.
- > 0.4 W/kg, SAR is repeated using the same wireless mode test configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position, on the highest maximum output power channel, until the reported SAR is ≤ 0.8 W/kg or all required test positions are tested.
 - ※ For subsequent test positions with equivalent test separation distance or when exposure is dominated by coupling conditions, the position for maximum coupling condition should be tested.
 - ※ When it is unclear, all equivalent conditions must be tested.
- For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, measure the SAR for these positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required test channels are considered.
 - ※ The additional power measurements required for this step should be limited to those necessary for identifying subsequent highest output power channels to apply the test reduction.

- When the specified maximum output power is the same for both UNII 1 and UNII 2A, begin SAR measurements in UNII 2A with the channel with the highest measured output power. If the reported SAR for UNII 2A is ≤ 1.2 W/kg, SAR is not required for UNII 1; otherwise treat the remaining bands separately and test them independently for SAR.
- When the specified maximum output power is different between UNII 1 and UNII 2A, begin SAR with the band that has the higher specified maximum output. If the highest reported SAR for the band with the highest specified power is ≤ 1.2 W/kg, testing for the band with the lower specified output power is not required; otherwise test the remaining bands independently for SAR.

To determine the initial test position, Area Scans were performed to determine the position with the Maximum Value of SAR (measured). The position that produced the highest Maximum Value of SAR is considered as the worst case position; thus used as the initial test position.

- After an initial test configuration is determined, if multiple test channels have the same measured maximum output power, the channel chosen for SAR measurement is determined according to the following:
 - (1) The channel closest to mid-band frequency is selected for SAR measurement.
 - (2) For channels with equal separation from mid-band frequency; for example, high and low channels or two mid-band channels, the higher frequency (number) channel is selected for SAR measurement.These channel selection procedures apply to both the initial test configuration and subsequent test configuration(s) selection.

7.3 Conducted Power Measurements

Maximum Conducted Output Power Measurement:

The testing follows the Measurement Procedure of ANSI C63.10:2013 section 11.9.2.3.2 Method AVGPM.

The conducted RF output power for each chain was adjusted according to the client's supplied target values using the Qualcomm QRCT tool and measuring the power by using a spectrum analyser with the channel integration method. The tests below are run with the EUT's transmitter set at high power in TX mode. The EUT is needed to force selection of output power level and channel number. While testing, EUT was set to transmit continuously. Remove the Subjective device's antenna and connect the RF output port to power sensor.

11.9.2.3.2 Method AVGPM-G

Method AVGPM-G is a measurement using a gated RF average power meter.

Alternatively, measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted

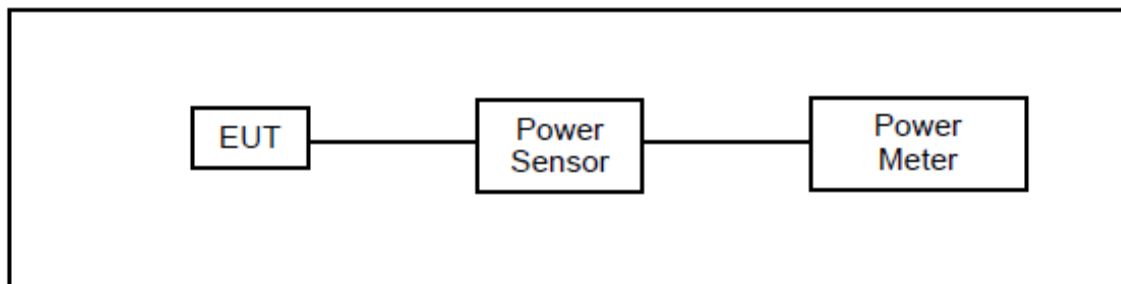
such that the power is measured only when the EUT is transmitting at its maximum power control level. Because the measurement is

made only during the ON time of the transmitter, no duty cycle correction factor is required.

11.9.1.3 PKPM1 Peak power meter method

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall use a fast-responding diode detector.

Test Setup:





7.4 Conducted Power Measurements

§15.247 (2.4 GHz)								
Mode	Channel	Frequency (MHz)	Main			Aux		
			Peak power (dBm)	Average power (dBm)	Tune-Up Limit	Peak power (dBm)	Average power (dBm)	Tune-Up Limit
802.11b 1Mbps	1	2412	16.2	13.35	15.00	16.87	13.30	15.00
	6	2437	16.19	13.46	15.00	16.64	13.22	15.00
	11	2462	16.08	13.44	15.00	16.9	13.48	15.00
802.11g 6Mbps	1	2412	18.95	11.22	13.00	19.07	11.30	13.00
	6	2437	20.9	13.37	15.00	21.49	13.47	15.00
	11	2462	19.43	13.46	15.00	19.33	13.21	15.00
802.11n-20 HT0	1	2412	20.02	12.97	14.50	19.59	12.62	14.50
	6	2437	19.97	13.12	15.00	20.25	13.27	15.00
	11	2462	19	12.24	14.00	19.15	12.45	14.00
802.11n-40 HT0	3	2422	18.17	10.81	12.50	18.01	10.74	12.50
	6	2437	20.62	13.05	15.00	20.55	13.24	15.00
	9	2452	15.52	8.16	10.00	15.49	8.46	10.00
802.11ac-20 VHT0	1	2412	18.9	12.58	14.50	19.07	12.64	14.50
	6	2437	20.32	13.11	15.00	20.44	13.26	15.00
	11	2462	18.96	12.24	14.00	18.33	12.41	14.00
802.11ac-40 VHT0	3	2422	16.7	10.51	12.50	17.12	10.72	12.50
	6	2437	20.58	13.09	15.00	18.88	13.22	15.00
	9	2452	15.21	8.12	10.00	14.8	8.47	10.00



§15.247 (2.4 GHz)					
Mode	Channel	Frequency (MHz)	MIMO		
			Peak power (dBm)	Average power (dBm)	Tune-Up Limit
802.11n-20 HT0	1	2412	23.65	15.70	17.50
	6	2437	24	16.18	18.00
	11	2462	22.91	15.28	17.00
802.11n-40 HT0	3	2422	22.01	13.64	15.50
	6	2437	24.43	16.01	18.00
	9	2452	19.4	11.29	13.00
802.11ac-20 VHT0	1	2412	22.81	15.52	17.50
	6	2437	24.26	16.05	18.00
	11	2462	22.47	15.21	17.00
802.11ac-40 VHT0	3	2422	20.73	13.55	15.50
	6	2437	23.72	16.09	18.00
	9	2452	18.83	11.24	13.00

- As per FCC OET KDB 248227 D01, conducted output power and SAR testing are not required for 802.11g/n20/n40/ax channels when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is $\leq 1.2\text{W/kg}$.

When the reported SAR of the initial test configuration is $> 0.8\text{ W/kg}$, SAR measurement is required for subsequent next highest measured output power channel(s) in the initial test configuration until reported SAR is $\leq 1.2\text{ W/kg}$ or all required channels are tested.



U-NII-1						
Mode	Channel	Frequency (MHz)	Main		Aux	
			Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit
802.11a 6Mbps	36	5180	12.31	13.50	12.37	13.50
	40	5200	12.38	13.50	12.43	13.50
	44	5220	12.22	13.50	12.31	13.50
	48	5240	12.26	13.50	11.96	13.50
802.11n-20 HT0	36	5180	12.16	13.50	12.16	13.50
	40	5200	12.17	13.50	12.28	13.50
	44	5220	11.99	13.50	11.93	13.50
	48	5240	12.47	13.50	12.40	13.50
802.11n-40 HT0	38	5190	11.25	12.50	11.32	12.50
	46	5230	12.10	13.50	12.42	13.50
802.11ac-20 VHT0	36	5180	12.15	13.50	12.12	13.50
	40	5200	12.16	13.50	12.11	13.50
	44	5220	11.98	13.50	11.90	13.50
	48	5240	12.47	13.50	12.33	13.50
802.11ac-40 VHT0	38	5190	11.16	12.50	11.23	12.50
	46	5230	12.08	13.50	12.43	13.50
802.11ac-80 VHT0	42	5210	10.06	12.00	10.08	12.00

U-NII-1				
M0de	Channel	Frequency (MHz)	MIMO	
			Average power (dBm)	Tune-Up Limit
802.11n-20 HT0	36	5180	15.05	16.50
	40	5200	15.14	16.50
	44	5220	14.80	16.50
	48	5240	15.33	16.50
802.11n-40 HT0	38	5190	14.16	15.50
	46	5230	15.18	16.50
802.11ac-20 VHT0	36	5180	15.00	16.50
	40	5200	15.03	16.50
	44	5220	14.87	16.50
	48	5240	15.40	16.50
802.11ac-40 VHT0	38	5190	14.13	15.50
	46	5230	15.15	16.50
802.11ac-80 VHT0	42	5210	13.00	15.00



U-NII-2A						
Mode	Channel	Frequency (MHz)	Main		Aux	
			Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit
802.11a 6Mbps	52	5260	12.36	13.50	12.42	13.50
	56	5280	12.03	13.50	12.19	13.50
	60	5300	12.43	13.50	12.49	13.50
	64	5320	12.24	13.50	12.47	13.50
802.11n-20 HT0	52	5260	12.24	13.50	12.23	13.50
	56	5280	12.31	13.50	12.42	13.50
	60	5300	12.41	13.50	12.28	13.50
	64	5320	12.16	13.50	12.24	13.50
802.11n-40 HT0	54	5270	12.96	14.50	12.86	14.50
	62	5310	11.08	12.50	11.26	12.50
802.11ac-20 VHT0	52	5260	12.18	13.50	12.08	13.50
	56	5280	12.32	13.50	12.32	13.50
	60	5300	12.14	13.50	12.21	13.50
	64	5320	12.18	13.50	12.16	13.50
802.11ac-40 VHT0	54	5270	12.61	14.50	12.55	14.50
	62	5310	11.14	12.50	11.43	12.50
802.11ac-80 VHT0	58	5290	9.84	11.50	10.31	11.50

U-NII-2A				
M0de	Channel	Frequency (MHz)	MIMO	
			Average power (dBm) MIMO	Tune-Up Limit
802.11n-20 HT0	52	5260	15.15	16.50
	56	5280	15.27	16.50
	60	5300	15.27	16.50
	64	5320	15.19	16.50
802.11n-40 HT0	54	5270	15.85	17.50
	62	5310	14.02	15.50
802.11ac-20 VHT0	52	5260	15.02	16.50
	56	5280	15.27	16.50
	60	5300	15.07	16.50
	64	5320	15.06	16.50
802.11ac-40 VHT0	54	5270	15.51	17.50
	62	5310	14.14	15.50
802.11ac-80 VHT0	58	5290	12.98	14.50



U-NII-2C						
Mode	Channel	Frequency (MHz)	Main		Aux	
			Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit
802.11a 6Mbps	100	5500	12.46	13.50	12.25	13.50
	116	5580	12.28	13.50	12.15	13.50
	124	5620	12.33	13.50	12.16	13.50
	132	5660	12.41	13.50	12.38	13.50
	140	5700	12.16	13.50	12.32	13.50
	144	5720	10.35	11.50	10.19	11.50
802.11n-20 HT0	100	5500	12.12	13.50	12.33	13.50
	116	5580	12.02	13.50	12.34	13.50
	124	5620	12.09	13.50	12.38	13.50
	132	5660	12.14	13.50	12.23	13.50
	140	5700	12.42	13.50	12.12	13.50
	144	5720	10.16	11.50	10.47	11.50
802.11n-40 HT0	102	5510	11.83	13.00	11.94	13.00
	110	5550	12.22	13.50	12.41	13.50
	126	5630	12.20	13.50	12.31	13.50
	134	5670	12.23	13.50	12.45	13.50
	142	5710	12.30	13.50	12.13	13.50
802.11ac-20 VHT0	100	5500	12.20	13.50	12.30	13.50
	116	5580	12.46	13.50	12.24	13.50
	124	5620	12.04	13.50	12.31	13.50
	132	5660	12.21	13.50	12.42	13.50
	140	5700	12.43	13.50	12.36	13.50
	144	5720	10.06	11.50	10.32	11.50
802.11ac-40 VHT0	102	5510	11.48	13.00	11.93	13.00
	110	5550	12.27	13.50	12.14	13.50
	126	5630	12.18	13.50	12.38	13.50
	134	5670	12.26	13.50	12.16	13.50
	142	5710	12.34	13.50	12.02	13.50
802.11ac-80 VHT0	106	5530	10.56	12.50	10.62	12.50
	122	5610	12.16	13.50	12.24	13.50
	138	5690	12.07	13.50	12.25	13.50



U-NII-2C				
M0de	Channel	Frequency (MHz)	MIMO	
			Average power (dBm) MIMO	Tune-Up Limit
802.11n-20 HT0	100	5500	15.11	16.50
	116	5580	15.04	16.50
	124	5620	15.19	16.50
	132	5660	15.08	16.50
	140	5700	15.20	16.50
	144	5720	13.28	14.50
802.11n-40 HT0	102	5510	14.79	16.00
	110	5550	15.20	16.50
	126	5630	15.12	16.50
	134	5670	15.24	16.50
	142	5710	15.10	16.50
802.11ac-20 VHT0	100	5500	15.17	16.50
	116	5580	15.20	16.50
	124	5620	15.03	16.50
	132	5660	15.20	16.50
	140	5700	15.39	16.50
	144	5720	13.10	14.50
802.11ac-40 VHT0	102	5510	14.65	16.00
	110	5550	15.20	16.50
	126	5630	15.16	16.50
	134	5670	15.15	16.50
	142	5710	15.10	16.50
802.11ac-80 VHT0	106	5530	13.53	15.50
	122	5610	15.10	16.50
	138	5690	15.00	16.50



U-NII-3/§15.247 (5.8 GHz)						
Mode	Channel	Frequency (MHz)	Main		Aux	
			Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit
802.11a MCS0	149	5745	12.24	13.50	12.46	13.50
	157	5785	12.37	13.50	12.23	13.50
	165	5825	12.36	13.50	11.96	13.50
802.11n-20 HT0	149	5745	12.44	13.50	12.16	13.50
	157	5785	12.16	13.50	12.04	13.50
	165	5825	12.14	13.50	12.47	13.50
802.11n-40 HT0	151	5755	12.38	13.50	11.92	13.50
	159	5795	12.41	13.50	12.22	13.50
802.11ac-20 VHT0	149	5745	12.43	13.50	12.14	13.50
	157	5785	12.12	13.50	12.46	13.50
	165	5825	12.11	13.50	12.42	13.50
802.11ac-40 VHT0	151	5755	12.49	13.50	12.27	13.50
	159	5795	12.56	13.50	12.35	13.50
802.11ac-80 VHT0	155	5775	11.56	13.00	11.52	13.00

U-NII-3/§15.247 (5.8 GHz)				
M0de	Channel	Frequency (MHz)	MIMO	
			Average power (dBm) MIMO	Tune-Up Limit
802.11n-20 HT0	149	5745	15.28	16.50
	157	5785	15.00	16.50
	165	5825	15.24	16.50
802.11n-40 HT0	151	5755	15.06	16.50
	159	5795	15.30	16.50
802.11ac-20 VHT0	149	5745	15.15	16.50
	157	5785	15.20	16.50
	165	5825	15.13	16.50
802.11ac-40 VHT0	151	5755	15.24	16.50
	159	5795	15.33	16.50
802.11ac-80 VHT0	155	5775	14.45	16.00

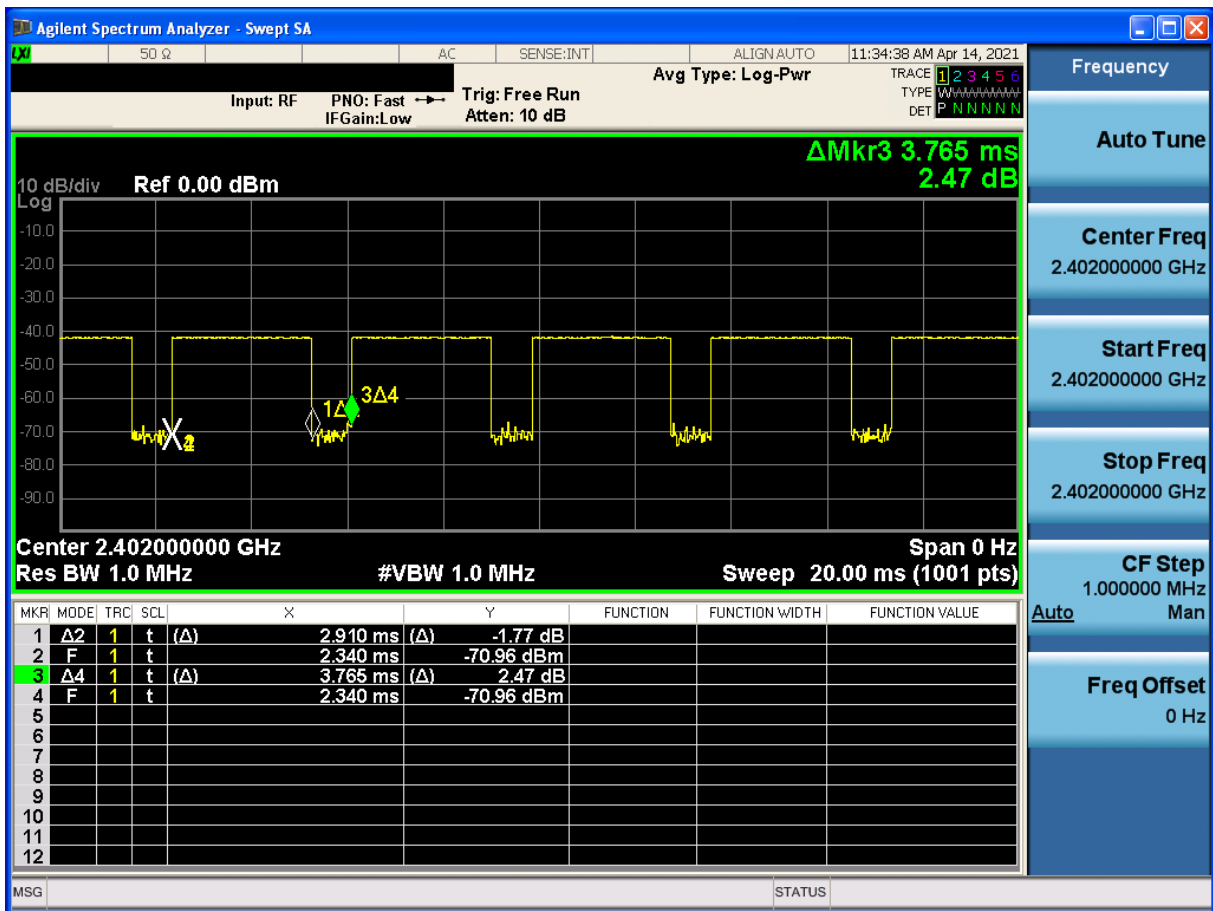
Additional conducted power measurement is required when reported SAR is $> 1.2\text{W/kg}$. In case the subsequent test configuration and the channel bandwidth is smaller than the initial test configuration, all channels that overlap with the larger channel bandwidth in the initial configuration should be tested.

1. The initial test configuration for 2.4 GHz and 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band. SAR for the initial test configuration is measured using the highest maximum output power channel determined by the default power measurement procedures. When multiple transmission modes (802.11a/g/n/ac/ax) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, lowest order 802.11 mode is selected (i.e. a, g, n, ac then ax)
2. When the highest reported SAR for the initial test configuration (when applicable, include subsequent highest output channels), according to the initial test position or fixed exposure requirements, is adjusted by the ratio of the subsequent test configuration to the initial test configuration specified maximum output power and the adjusted SAR is $\leq 1.2\text{ W/Kg}$, SAR is not required for that subsequent test configuration.



Band	CH	Frequency (MHz)	Peak Power (dBm)	Average Power (dBm)	
			Aux	Aux	Tune-Up Limit
Bluetooth BR GFSK	0	2402	6.58	5.96	7
	39	2441	6.73	6.81	7
	78	2480	7.05	6.99	7
Bluetooth EDR 8DPSK	0	2402	7.78	5.55	7
	39	2441	8.37	6.39	7
	78	2480	8.58	6.71	7

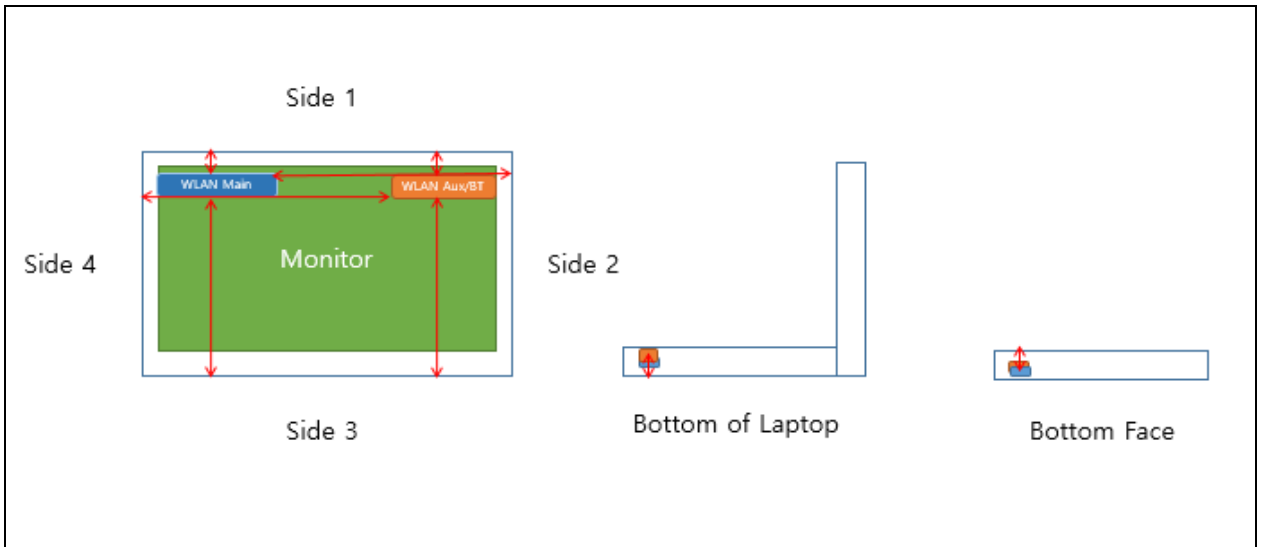
Band	CH	Frequency (MHz)	Peak Power (dBm)	Average Power (dBm)	
			Aux	Aux	Tune-Up Limit
Bluetooth LE	0	2402	2.66	2.55	4.5
	19	2440	2.88	2.73	4.5
	39	2480	2.81	2.71	4.5



The SAR evaluation of this device selected 1M with the highest average power and the duty cycle is 77.3.

7.5 Antenna location

Antenna	Bottom of Laptop (mm)	Bottom Face (mm)	Side 1 (mm)	Side 2 (mm)	Side 3 (mm)	Side 4 (mm)
WLAN Main	6.265	<5	6.08	146.46	148.39	64.26
WLAN Aux/BT	5.355	<5	5.85	64.25	151.49	141.43





7.6 Standalone SAR Test Exclusion Calculation

Body SAR test reduction															
Ant. Used	Band	Frequency	Tune-Power		Distance of Ant. To User (mm)					Calculated value and evaluated result					exclusion threshold
		(GHz)	(dBm)	(mW)	Bottom Face	Side1	Side2	Side3	Side4	Bottom Face	Side1	Side2	Side3	Side4	
Bluetooth Antenna	BT Ant-Aux	2.480	7	5	5.355	5.85	64.25	151.49	141.43	1.6	1.4	238.0	1110.0	1010.0	3
										EXEMPT	EXEMPT	EXEMPT	EXEMPT	EXEMPT	
WLAN Antenna	2.4GHz WLAN Ant-Main	2.462	15	32	6.265	6.08	146.46	148.39	64.26	10.0	8.3	1060.0	1079.0	238.0	3
	2.4GHz WLAN Ant-Aux	2.462	15	32	5.355	5.85	64.25	151.49	141.43	10.0	8.6	238.0	1110.0	1010.0	3
										MEASURE	MEASURE	EXEMPT	EXEMPT	EXEMPT	
	5GHz WLAN Ant-Main	5.825	13.5	22	6.265	6.08	146.46	148.39	64.26	10.6	8.7	1027.0	1046.0	205.0	3
										MEASURE	MEASURE	EXEMPT	EXEMPT	EXEMPT	
	5GHz WLAN Ant-Aux	5.825	13.5	22	5.355	5.85	64.25	151.49	141.43	10.6	9.1	205.0	1077.0	976.0	3
										MEASURE	MEASURE	EXEMPT	EXEMPT	EXEMPT	

Note:

1. The test reduction for distance less than 50mm and more than 50mm. Use the max power to make sure minimum distance by evaluated for SAR testing.
2. For 100 MHz to 6 GHz and test separation distances > 50 mm, According to KDB 447498, if the calculated Power threshold is less than the output power then SAR testing is required.
3. For 100 MHz to 6 GHz and test separation distances ≤ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:According to KDB 447498, if the calculated threshold value are >3 then Body SAR and >7.5 then Limbs SAR testing are required. Calculated Value only include number format, that is mean through compare output power with threshold, if the Calculated value more than 3, the SAR test should be perform. Otherwise, the SAR test could be exempt. (<50mm)
4. When an antenna qualifies for the standalone SAR test exclusion of KDB 447498 section 4.3.1 and also transmits simultaneously with other antennas, the standalone SAR value must be estimated according to KDB 447498 section "4.3.2. Simultaneous transmission SAR test exclusion considerations b)"
5. The highest frequency and output power were performed, and evaluated the results in the worst case.
6. Power and distance are rounded to the nearest mW and mm before calculation.
7. The result is rounded to one decimal place for comparison.
8. The SAR tests were performed including the exemption part in practice.

7.7 Simultaneous Transmitting Evaluate

Simultaneous transmission configurations as below:

Condition	Band				
	WLAN 2.4GHz Ant Main	WLAN 2.4GHz Ant Aux	WLAN 5GHz Ant Main	WLAN 5GHz Ant Aux	Bluetooth Ant Aux
1	V	V	-	-	-
2	V	-	-	-	V
3	-	-	V	V	-
4	-	-	V	-	V
5	-	-	V	V	V

7.7.1 Sum of 1-g SAR of all simultaneously transmitting

When the sum of 1-g SAR of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit, SAR test exclusion applies to that simultaneous transmission configuration.

Sum of 1-g SAR of summary as below:

Exposure Position	1	2	3	4	5	1+2 Σ 1g SAR (W/kg)	1+5 Σ 1g SAR (W/kg)	3+4 Σ 1g SAR (W/kg)	3+5 Σ 1g SAR (W/kg)	3+4+5 Σ 1g SAR (W/kg)
	WLAN2.4GHz Ant Main	WLAN2.4GHz Ant Aux	WLAN5GHz Ant Main	WLAN5GHz Ant Aux	Bluetooth Ant Aux					
	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)					
Bottom of laptop at 0mm -	0.014	0.014	0.015	0.015	0.013	0.028	0.027	0.030	0.028	0.043
Bottom Face at 0mm -	0.563	0.846	1.168	0.584	0.112	1.409	0.675	1.752	1.280	1.864
side 1 at 0mm -	0.289	0.282	1.011	0.714	0.045	0.571	0.334	1.725	1.056	1.770
side 2 at 0mm -	0.014	0.014	0.015	0.015	0.013	0.028	0.027	0.030	0.028	0.043
side 3 at 0mm -	0.014	0.014	0.015	0.015	0.013	0.028	0.027	0.030	0.028	0.043
side 4 at 0mm -	0.014	0.014	0.015	0.015	0.013	0.028	0.027	0.030	0.028	0.043

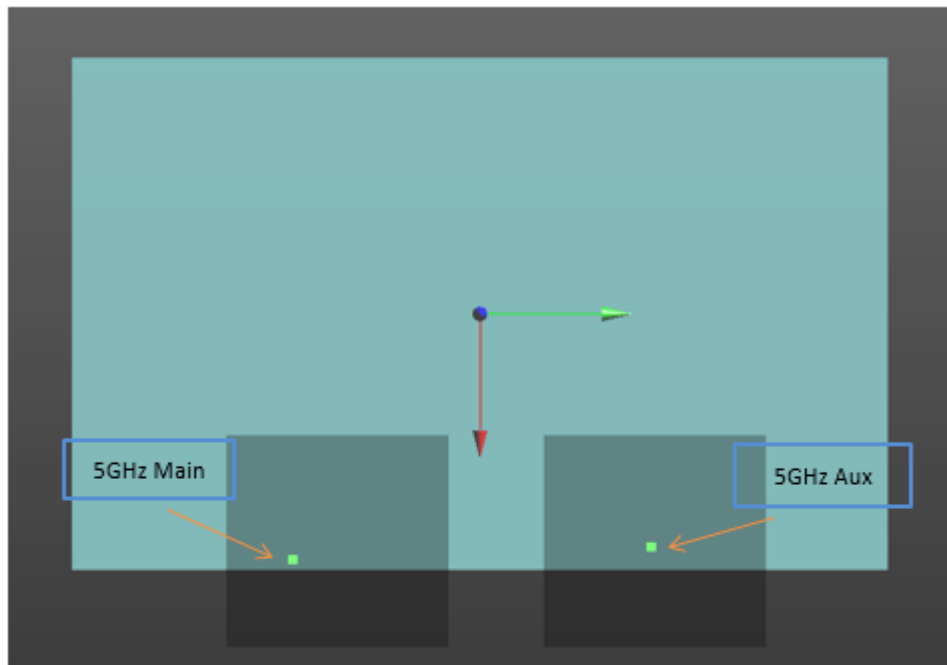
7.7.2 SAR to peak location separation ratio (SPLSR)

When the sum of SAR is larger than the limit, SAR test exclusion is determined by the SAR to peak location separation ratio. The ratio is determined by $(SAR1 + SAR2)^{1.5}/R_i$, rounded to two decimal digits, and must be ≤ 0.04 for all antenna pairs in the configuration to qualify for 1-g SAR test exclusion..

5GHz Main + 5GHz Aux

Bottom Face

Antenna	Index	Frequency (GHz)	Reported SAR _{1g} (W/Kg)	Σ Reported SAR _{1g} (W/Kg)	Antenna pair (mm)	Peak location separation ratio
5GHz Main	#15	5610	1.17	1.75	115.47	0.02
5GHz Aux	#4	5270	0.58			

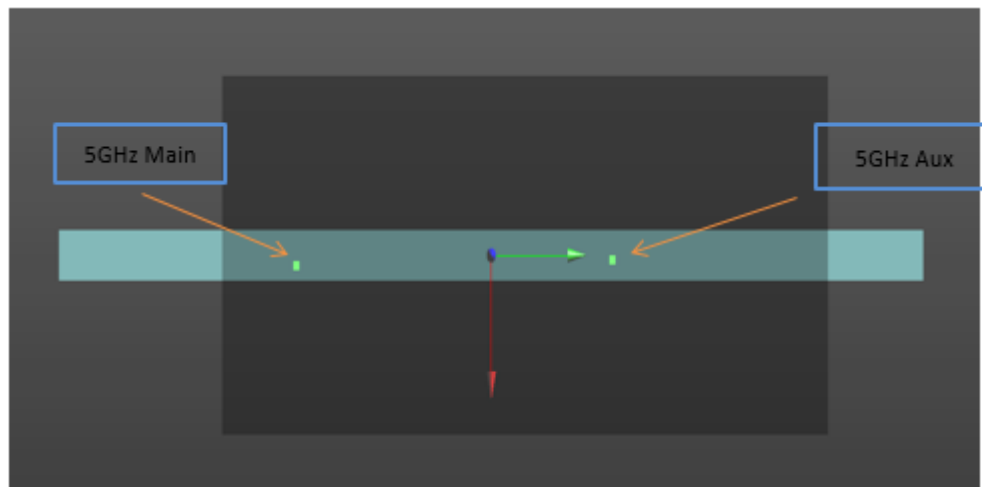


<input type="checkbox"/> Maxima and position w.r.t. Grid Reference Point associated 1g averages	
<input type="checkbox"/> Zoom Scan (C:\Users\SAR3-PC\Desktop\123\15_IEEE 802.11ac 80 CH 122_VHT0_Bottom Face_0mm_Ant Main....	Max. 1 at (80.00, -57.20, 1.91) mm 1.17 W/kg (Power Scale Factor: 1.464)
<input type="checkbox"/> Zoom Scan (C:\Users\SAR3-PC\Desktop\123\4_IEEE 802.11n 40 CH 54_HT0_Bottom Face_0mm_Ant Aux.da53:...	Max. 2 at (76.00, 58.20, 1.45) mm 0.58 W/kg (Power Scale Factor: 1.511)
<input type="checkbox"/> Distances and Separation Ratios	
Max. 1 - Max. 2	Distance [mm]: 115.47 / Separation ratio [W/kg/mm]: 0.02

5GHz Main + 5GHz Aux

Side 1

Antenna	Index	Frequency (GHz)	Reported SAR _{1g} (W/Kg)	Σ Reported SAR _{1g} (W/Kg)	Antenna pair (mm)	Peak location separation ratio
5GHz Main	#26	5270	1.01	1.72	94.01	0.02
5GHz Aux	#12	5270	0.71			

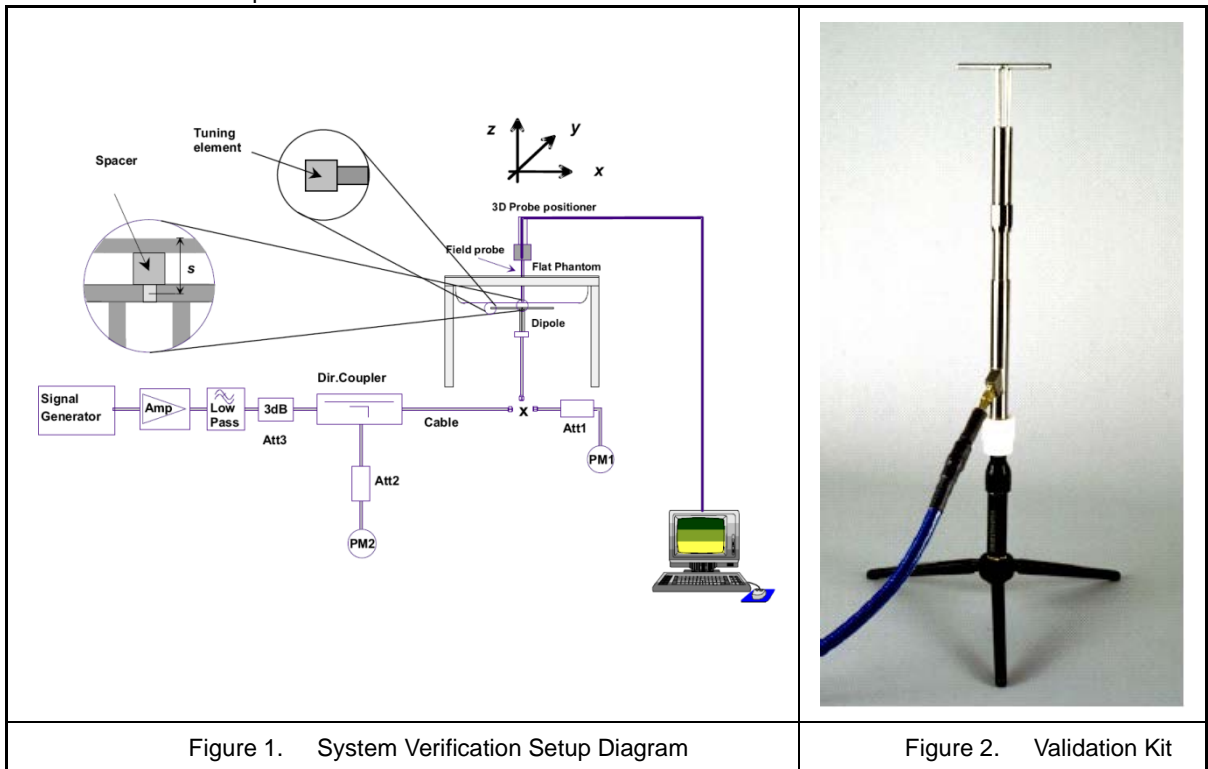


<input type="checkbox"/> Maxima and position w.r.t. Grid Reference Point associated 1g averages	
<input type="checkbox"/> Zoom Scan (C:\Users\SAR3-PC\Desktop\123\Side 1\26_IEEE 802.11n 40 CH 54_HT0_Side 1_0mm_Ant Main.da5...	Max. 1 at (1.80, -57.80, 1.32) mm 1.01 W/kg (Power Scale Factor: 1.475)
<input type="checkbox"/> Zoom Scan (C:\Users\SAR3-PC\Desktop\123\Side 1\12_IEEE 802.11n 40 CH 54_HT0_Side 1_0mm_Ant Aux.da53...	Max. 2 at (0.80, 36.20, 1.15) mm 0.71 W/kg (Power Scale Factor: 1.511)
<input type="checkbox"/> Distances and Separation Ratios	
Max. 1 - Max. 2	Distance [mm]: 94.01 / Separation ratio [W/kg/mm]: 0.02

8. System Verification and Validation

8.1 Symmetric Dipoles for System Verification

Construction	Symmetrical dipole with 1/4 balun enables measurement of feed point impedance with NWA matched for use near flat phantoms filled with head simulating solutions Includes distance holder and tripod adaptor Calibration Calibrated SAR value for specified position and input power at the flat phantom in head simulating solutions.
Return Loss	> 20 dB at specified verification position
Options	Dipoles for other frequencies or solutions and other calibration conditions are available upon request





8.2 Verification Summary

Prior to the assessment, the validation data compared to the original value provided by SPEAG should be within its specifications of $\pm 10\%$. The measured SAR will be normalized to 1 W input power. The result indicates the system check can meet the variation criterion and plots can be referred to Appendix A of this report.

Mixture Type	Frequency (MHz)	Power	Probe	Dipole	SAR _{1g} (W/Kg)	Normalize to 1 Watt 1 g (W/Kg)	1 W Target SAR _{1g} (W/Kg)	SAR _{10g} (W/Kg)	Normalize to 1 Watt 10 g (W/Kg)	1 W Target SAR _{10g} (W/Kg)	Difference percentage 1 g	Difference percentage 10 g	Date
			Model / Serial No.	Model / Serial No.									
Head	2450	250 mW	EX3DV4-S N3847	D2450V2 - SN903	12.8	51.2	52.20	5.96	23.84	24.00	-1.9%	-0.7%	Apr. 14, 2021
Head	2450	250 mW	EX3DV4-S N3847	D2450V2 - SN903	13	52	52.20	6.11	24.44	24.00	-0.4%	1.8%	Apr. 16, 2021
Head	5250	100 mW	EX3DV4-S N3847	D5250V2 - SN1145	7.92	79.2	77.50	2.19	21.9	22.10	2.2%	-0.9%	Apr. 13, 2021
Head	5250	100 mW	EX3DV4-S N3847	D5250V2 - SN1145	7.74	77.4	77.50	2.15	21.5	22.10	-0.1%	-2.7%	Apr. 17, 2021
Head	5600	100 mW	EX3DV4-S N3847	D5600V2 - SN1145	8.46	84.6	80.30	2.35	23.5	22.90	5.4%	2.6%	Apr. 13, 2021
Head	5600	100 mW	EX3DV4-S N3847	D5600V2 - SN1145	8.59	85.9	80.30	2.37	23.7	22.90	7.0%	3.5%	Apr. 17, 2021
Head	5750	100 mW	EX3DV4-S N3847	D5750V2 - SN1145	7.65	76.5	77.50	2.11	21.1	22.10	-1.3%	-4.5%	Apr. 15, 2021
Head	5750	100 mW	EX3DV4-S N3847	D5750V2 - SN1145	7.5	75	77.50	2.07	20.7	22.10	-3.2%	-6.3%	Apr. 18, 2021



9. Test Equipment List

Testing Engineer: Jason Tsao, Ted Hsieh

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Cal. Date	Cal.Period
SPEAG	2450MHz System Validation Kit	D2450V2	903	2020/11/10	1 year
SPEAG	5GHz System Validation Kit	D5GHzV2	1145	2020/11/09	1 year
SPEAG	Dosimetric E-Field Probe	EX3DV4	3847	2021/03/26	1 year
SPEAG	Dosimetric E-Field Probe	EX3DV4	3847	2020/05/20	1 year
SPEAG	Data Acquisition Electronics	DAE4	541	2020/03/18	1 year
SPEAG	Data Acquisition Electronics	DAE4	541	2021/03/22	1 year
SPEAG	Measurement Server	SE UMS 011 AA	1025	NCR	
SPEAG	Phantom	ELI V4.0	1036	NCR	
SPEAG	Robot	Staubli TX90XL	F16/54FTA1/A/01	NCR	
SPEAG	Software	DASY52 V52.10 (3)	N/A	NCR	
SPEAG	Software	SEMCAD X V14.6.10(7331)	N/A	NCR	
SPEAG	Network Analyzer	DAKS_VNA R140	0010318	2020/05/26	1 year
SPEAG	Dielectric Probe Kit	DAKS-3.5	1101	2020/05/26	1 year
HILA	Digital Thermometer	TM-906A	1500033	2020/10/28	1 year
Agilent	Power Sensor	8481H	3318A20779	2020/06/09	1 year
Anritsu	Power Sensor	MA2411B	1126022	2020/09/01	1 year
Agilent	Power Meter	EDM Series E4418B	GB40206143	2020/06/09	1 year
Anritsu	Power Meter	ML2495A	1135009	2020/09/01	1 year
Agilent	Signal Generator	E8257D	MY44320425	2021/02/18	1 year
Agilent	Dual Directional Coupler	778D	50334	NCR	
Woken	Dual Directional Coupler	0100AZ20200801O	11012409517	NCR	
Mini-Circuits	Power Amplifier	EMC014225P	980292	NCR	
Mini-Circuits	Power Amplifier	EMC2830P	980293	NCR	
Aisi	Attenuator	IEAT 3dB	N/A	NCR	

Table 1. Test Equipment List

10. **Measurement Uncertainty**

Decision Rule

- Uncertainty is not included.
- Uncertainty is included.

1. The SAR measurement system of uncertainty less than to 30% according to IEEE 1528 the test requirements specified in this document.

2. The measured SAR was <1.5 W/kg for 1g for all frequency bands. Therefore, per KDB Publication 865664 D01v01r04, the extended measurement uncertainty analysis per IEEE 1528-2013 was not required.

11. Measurement Procedure

The measurement procedures are as follows:

1. For WLAN function, engineering testing software installed on DUTs can provide continuous transmitting signal.
2. Measure output power through RF cable and power meter
3. Set scan area, grid size and other setting on the DASY software
4. Find out the largest SAR result on these testing positions of each band
5. Measure SAR results for other channels in worst SAR testing position if the SAR of highest power channel is larger than 0.8 W/kg

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

1. Power reference measurement
2. Area scan
3. Zoom scan
4. Power drift measurement

11.1 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1 g and 10 g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1 g and 10 g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1 g and 10 g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages

1. Extraction of the measured data (grid and values) from the Zoom Scan
2. Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
3. Generation of a high-resolution mesh within the measured volume
4. Interpolation of all measured values from the measurement grid to the high-resolution grid
5. Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
6. Calculation of the averaged SAR within masses of 1 g and 10 g

11.2 Area & Zoom Scan Procedures

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan measures points and step size follow as below. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g.

		≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface		5 mm \pm 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2)$ mm \pm 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location		30° \pm 1°	20° \pm 1°
Maximum area scan spatial resolution: Δx_{Area} , Δy_{Area}		≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
		When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be \leq the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: Δx_{Zoom} , Δy_{Zoom}		≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$	≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1 st two points closest to phantom surface	≤ 4 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$ mm
Minimum zoom scan volume	x, y, z	≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see IEEE Std 1528-2013 for details. * When zoom scan is required and the <i>reported</i> SAR from the <i>area scan based 1-g SAR estimation</i> procedures of KDB Publication 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.			

(Our measure settings are refer KDB Publication 865664 D01v01r04)

11.3 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1 g aggregate SAR, the DUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

11.4 Power Drift Monitoring

All SAR testing is under the DUT install full charged battery and transmit maximum output power. In DASYS measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of DUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drifts more than 5 %, the SAR will be retested.



12. SAR Test Results Summary

12.1 Body SAR Measurement

Index.	Band	Mode	Frequency		Data Rate	Test Position	Spacing (mm)	SAR _{1g} (W/Kg)	Burst Avg Power (dBm)	Max tune-up (dBm)	Duty Cycle (%)	Reported SAR _{1g}	Note	Antenna
			Ch.	MHz										
	WLAN2.4GHz	802.11b	6	2437	1 Mbps	Bottom of laptop	0	0.01	13.46	15	98.74	0.014	Ant Main	INPAQ
#1	WLAN2.4GHz	802.11b	6	2437	1 Mbps	Bottom Face	0	0.39	13.46	15	98.74	0.563	Ant Main	INPAQ
	WLAN2.4GHz	802.11b	1	2412	1 Mbps	Bottom Face	0	0.364	13.35	15	98.74	0.539	Ant Main	INPAQ
	WLAN2.4GHz	802.11b	11	2462	1 Mbps	Bottom Face	0	0.327	13.44	15	98.74	0.474	Ant Main	INPAQ
	WLAN2.4GHz	802.11b	6	2412	1 Mbps	Side 1	0	0.2	13.46	15	98.74	0.289	Ant Main	INPAQ
	WLAN2.4GHz	802.11b	6	2412	1 Mbps	Side 2	0	0.01	13.46	15	98.74	0.014	Ant Main	INPAQ
	WLAN2.4GHz	802.11b	6	2412	1 Mbps	Side 3	0	0.01	13.46	15	98.74	0.014	Ant Main	INPAQ
	WLAN2.4GHz	802.11b	6	2412	1 Mbps	Side 4	0	0.01	13.46	15	98.74	0.014	Ant Main	INPAQ
	WLAN2.4GHz	802.11b	6	2437	1 Mbps	Bottom of laptop	0	0.01	13.46	15	98.74	0.014	Ant Main	AWAN
#9	WLAN2.4GHz	802.11b	6	2437	1 Mbps	Bottom Face	0	0.387	13.46	15	98.74	0.559	Ant Main	AWAN
	WLAN2.4GHz	802.11b	1	2412	1 Mbps	Bottom Face	0	0.37	13.35	15	98.74	0.548	Ant Main	AWAN
	WLAN2.4GHz	802.11b	11	2462	1 Mbps	Bottom Face	0	0.221	13.44	15	98.74	0.321	Ant Main	AWAN
	WLAN2.4GHz	802.11b	6	2437	1 Mbps	Side 1	0	0.189	13.46	15	98.74	0.273	Ant Main	AWAN
	WLAN2.4GHz	802.11b	6	2437	1 Mbps	Side 2	0	0.01	13.46	15	98.74	0.014	Ant Main	AWAN
	WLAN2.4GHz	802.11b	6	2437	1 Mbps	Side 3	0	0.01	13.46	15	98.74	0.014	Ant Main	AWAN
	WLAN2.4GHz	802.11b	6	2437	1 Mbps	Side 4	0	0.01	13.46	15	98.74	0.014	Ant Main	AWAN
	WLAN2.4GHz	802.11b	11	2462	1 Mbps	Bottom of laptop	0	0.01	13.48	15	98.66	0.014	Ant Aux	INPAQ
#2	WLAN2.4GHz	802.11b	11	2462	1 Mbps	Bottom Face	0	0.588	13.48	15	98.66	0.846	Ant Aux	INPAQ
	WLAN2.4GHz	802.11b	1	2412	1 Mbps	Bottom Face	0	0.392	13.3	15	98.66	0.588	Ant Aux	INPAQ
	WLAN2.4GHz	802.11b	6	2437	1 Mbps	Bottom Face	0	0.449	13.22	15	98.66	0.686	Ant Aux	INPAQ
	WLAN2.4GHz	802.11b	11	2462	1 Mbps	Side 1	0	0.186	13.48	15	98.66	0.268	Ant Aux	INPAQ
	WLAN2.4GHz	802.11b	11	2462	1 Mbps	Side 2	0	0.01	13.48	15	98.66	0.014	Ant Aux	INPAQ
	WLAN2.4GHz	802.11b	11	2462	1 Mbps	Side 3	0	0.01	13.48	15	98.66	0.014	Ant Aux	INPAQ
	WLAN2.4GHz	802.11b	11	2462	1 Mbps	Side 4	0	0.01	13.48	15	98.66	0.014	Ant Aux	INPAQ



Index.	Band	Mode	Frequency		Data Rate	Test Position	Spacing (mm)	SAR _{1g}	Burst Avg Power (dBm)	Max tune-up (dBm)	Duty Cycle (%)	Reported SAR _{1g}	Note	Antenna
			Ch.	MHz				(W/Kg)						
	WLAN2.4GHz	802.11b	11	2462	1 Mbps	Bottom of laptop	0	0.01	13.48	15	98.66	0.014	Ant Aux	AWAN
#10	WLAN2.4GHz	802.11b	11	2462	1 Mbps	Bottom Face	0	0.536	13.48	15	98.66	0.771	Ant Aux	AWAN
	WLAN2.4GHz	802.11b	1	2412	1 Mbps	Bottom Face	0	0.305	13.3	15	98.66	0.457	Ant Aux	AWAN
	WLAN2.4GHz	802.11b	6	2437	1 Mbps	Bottom Face	0	0.346	13.22	15	98.66	0.528	Ant Aux	AWAN
	WLAN2.4GHz	802.11b	11	2462	1 Mbps	Side 1	0	0.196	13.48	15	98.66	0.282	Ant Aux	AWAN
	WLAN2.4GHz	802.11b	11	2462	1 Mbps	Side 2	0	0.01	13.48	15	98.66	0.014	Ant Aux	AWAN
	WLAN2.4GHz	802.11b	11	2462	1 Mbps	Side 3	0	0.01	13.48	15	98.66	0.014	Ant Aux	AWAN
	WLAN2.4GHz	802.11b	11	2462	1 Mbps	Side 4	0	0.01	13.48	15	98.66	0.014	Ant Aux	AWAN
	Bluetooth		78	2480	1 Mbps	Bottom of laptop	0	0.01	6.99	7	77.30	0.013	Ant Aux	INPAQ
	Bluetooth		78	2480	1 Mbps	Bottom Face	0	0.052	6.99	7	77.30	0.067	Ant Aux	INPAQ
#23	Bluetooth		0	2402	1 Mbps	Bottom Face	0	0.068	5.96	7	77.30	0.112	Ant Aux	INPAQ
	Bluetooth		39	2441	1 Mbps	Bottom Face	0	0.065	6.81	7	77.30	0.088	Ant Aux	INPAQ
	Bluetooth		78	2480	1 Mbps	Side 1	0	0.035	6.99	7	77.30	0.045	Ant Aux	INPAQ
	Bluetooth		78	2480	1 Mbps	Side 2	0	0.01	6.99	7	77.30	0.013	Ant Aux	INPAQ
	Bluetooth		78	2480	1 Mbps	Side 3	0	0.01	6.99	7	77.30	0.013	Ant Aux	INPAQ
	Bluetooth		78	2480	1 Mbps	Side 4	0	0.01	6.99	7	77.30	0.013	Ant Aux	INPAQ
	Bluetooth		78	2480	1 Mbps	Bottom of laptop	0	0.01	6.99	7	77.30	0.013	Ant Aux	AWAN
#24	Bluetooth		78	2480	1 Mbps	Bottom Face	0	0.068	6.99	7	77.30	0.088	Ant Aux	AWAN
	Bluetooth		0	2402	1 Mbps	Bottom Face	0	0.032	5.96	7	77.30	0.053	Ant Aux	AWAN
	Bluetooth		39	2441	1 Mbps	Bottom Face	0	0.041	6.81	7	77.30	0.055	Ant Aux	AWAN
	Bluetooth		78	2480	1 Mbps	Side 1	0	0.01	6.99	7	77.30	0.013	Ant Aux	AWAN
	Bluetooth		78	2480	1 Mbps	Side 2	0	0.01	6.99	7	77.30	0.013	Ant Aux	AWAN
	Bluetooth		78	2480	1 Mbps	Side 3	0	0.01	6.99	7	77.30	0.013	Ant Aux	AWAN
	Bluetooth		78	2480	1 Mbps	Side 4	0	0.01	6.99	7	77.30	0.013	Ant Aux	AWAN



Index.	Band	Mode	Frequency		Data Rate	Test Position	Spacing (mm)	SAR _{1g}	Burst Avg Power (dBm)	Max tune-up (dBm)	Duty Cycle (%)	Reported SAR _{1g}	Note	Antenna
			Ch.	MHz				(W/Kg)						
	WLAN5GHz	802.11n 40 MHz	54	5270	HT0	Bottom of laptop	0	0.01	12.96	14.5	96.60	0.015	Ant Main	INPAQ
#3	WLAN5GHz	802.11n 40 MHz	54	5270	HT0	Bottom Face	0	0.634	12.96	14.5	96.60	0.936	Ant Main	INPAQ
	WLAN5GHz	802.11n 40 MHz	62	5310	HT0	Bottom Face	0	0.573	11.08	12.5	96.60	0.823	Ant Main	INPAQ
	WLAN5GHz	802.11n 40 MHz	54	5270	HT0	Side 1	0	0.375	12.96	14.5	96.60	0.553	Ant Main	INPAQ
	WLAN5GHz	802.11n 40 MHz	54	5270	HT0	Side 2	0	0.01	12.96	14.5	96.60	0.015	Ant Main	INPAQ
	WLAN5GHz	802.11n 40 MHz	54	5270	HT0	Side 3	0	0.01	12.96	14.5	96.60	0.015	Ant Main	INPAQ
	WLAN5GHz	802.11n 40 MHz	54	5270	HT0	Side 4	0	0.01	12.96	14.5	96.60	0.015	Ant Main	INPAQ
	WLAN5GHz	802.11n 40 MHz	54	5270	HT0	Bottom of laptop	0	0.01	12.96	14.5	96.60	0.015	Ant Main	AWAN
#11	WLAN5GHz	802.11n 40 MHz	54	5270	HT0	Bottom Face	0	0.758	12.96	14.5	96.60	1.119	Ant Main	AWAN
	WLAN5GHz	802.11n 40 MHz	62	5310	HT0	Bottom Face	0	0.652	11.08	12.5	96.60	0.936	Ant Main	AWAN
#26	WLAN5GHz	802.11n 40 MHz	54	5270	HT0	Side 1	0	0.685	12.96	14.5	96.60	1.011	Ant Main	AWAN
	WLAN5GHz	802.11n 40 MHz	54	5270	HT0	Side 2	0	0.01	12.96	14.5	96.60	0.015	Ant Main	AWAN
	WLAN5GHz	802.11n 40 MHz	54	5270	HT0	Side 3	0	0.01	12.96	14.5	96.60	0.015	Ant Main	AWAN
	WLAN5GHz	802.11n 40 MHz	54	5270	HT0	Side 4	0	0.01	12.96	14.5	96.60	0.015	Ant Main	AWAN
	WLAN5GHz	802.11n 40 MHz	54	5270	HT0	Bottom of laptop	0	0.01	12.86	14.5	96.50	0.015	Ant Aux	INPAQ
#4	WLAN5GHz	802.11n 40 MHz	54	5270	HT0	Bottom Face	0	0.386	12.86	14.5	96.50	0.584	Ant Aux	INPAQ
	WLAN5GHz	802.11n 40 MHz	62	5310	HT0	Bottom Face	0	0.348	11.26	12.5	96.50	0.480	Ant Aux	INPAQ
	WLAN5GHz	802.11n 40 MHz	54	5270	HT0	Side 1	0	0.329	12.86	14.5	96.50	0.497	Ant Aux	INPAQ
	WLAN5GHz	802.11n 40 MHz	54	5270	HT0	Side 2	0	0.01	12.86	14.5	96.50	0.015	Ant Aux	INPAQ
	WLAN5GHz	802.11n 40 MHz	54	5270	HT0	Side 3	0	0.01	12.86	14.5	96.50	0.015	Ant Aux	INPAQ
	WLAN5GHz	802.11n 40 MHz	54	5270	HT0	Side 4	0	0.01	12.86	14.5	96.50	0.015	Ant Aux	INPAQ



Index.	Band	Mode	Frequency		Data Rate	Test Position	Spacing (mm)	SAR _{1g}	Burst Avg Power (dBm)	Max tune-up (dBm)	Duty Cycle (%)	Reported SAR _{1g}	Note	Antenna
			Ch.	MHz				(W/Kg)						
	WLAN5GHz	802.11n 40 MHz	54	5270	HT0	Bottom of laptop	0	0.01	12.86	14.5	96.50	0.015	Ant Aux	AWAN
	WLAN5GHz	802.11n 40 MHz	54	5270	HT0	Bottom Face	0	0.369	12.86	14.5	96.50	0.558	Ant Aux	AWAN
#12	WLAN5GHz	802.11n 40 MHz	54	5270	HT0	Side 1	0	0.472	12.86	14.5	96.50	0.714	Ant Aux	AWAN
	WLAN5GHz	802.11n 40 MHz	62	5310	HT0	Side 1	0	0.452	11.26	12.5	96.50	0.623	Ant Aux	AWAN
	WLAN5GHz	802.11n 40 MHz	54	5270	HT0	Side 2	0	0.01	12.86	14.5	96.50	0.015	Ant Aux	AWAN
	WLAN5GHz	802.11n 40 MHz	54	5270	HT0	Side 3	0	0.01	12.86	14.5	96.50	0.015	Ant Aux	AWAN
	WLAN5GHz	802.11n 40 MHz	54	5270	HT0	Side 4	0	0.01	12.86	14.5	96.50	0.015	Ant Aux	AWAN
	WLAN5GHz	802.11ac 80 MHz	138	5690	VHT0	Bottom of laptop	0	0.01	12.07	13.5	92.90	0.015	Ant Main	INPAQ
	WLAN5GHz	802.11ac 80 MHz	138	5690	VHT0	Bottom Face	0	0.211	12.07	13.5	92.90	0.316	Ant Main	INPAQ
#5	WLAN5GHz	802.11ac 80 MHz	106	5530	VHT0	Bottom Face	0	0.335	10.56	12.5	92.90	0.564	Ant Main	INPAQ
	WLAN5GHz	802.11ac 80 MHz	122	5610	VHT0	Bottom Face	0	0.304	12.16	13.5	92.90	0.446	Ant Main	INPAQ
	WLAN5GHz	802.11ac 80 MHz	138	5690	VHT0	Side 1	0	0.157	12.07	13.5	92.90	0.235	Ant Main	INPAQ
	WLAN5GHz	802.11ac 80 MHz	138	5690	VHT0	Side 2	0	0.01	12.07	13.5	92.90	0.015	Ant Main	INPAQ
	WLAN5GHz	802.11ac 80 MHz	138	5690	VHT0	Side 3	0	0.01	12.07	13.5	92.90	0.015	Ant Main	INPAQ
	WLAN5GHz	802.11ac 80 MHz	138	5690	VHT0	Side 4	0	0.01	12.07	13.5	92.90	0.015	Ant Main	INPAQ
	WLAN5GHz	802.11ac 80 MHz	138	5690	VHT0	Bottom of laptop	0	0.01	12.07	13.5	92.90	0.015	Ant Main	AWAN
	WLAN5GHz	802.11ac 80 MHz	138	5690	VHT0	Bottom Face	0	0.688	12.07	13.5	92.90	1.029	Ant Main	AWAN
	WLAN5GHz	802.11ac 80 MHz	106	5530	VHT0	Bottom Face	0	0.586	10.56	12.5	92.90	0.986	Ant Main	AWAN
#15	WLAN5GHz	802.11ac 80 MHz	122	5610	VHT0	Bottom Face	0	0.797	12.16	13.5	92.90	1.168	Ant Main	AWAN
	WLAN5GHz	802.11ac 80 MHz	138	5690	VHT0	Side 1	0	0.335	12.07	13.5	92.90	0.502	Ant Main	AWAN
	WLAN5GHz	802.11ac 80 MHz	138	5690	VHT0	Side 2	0	0.01	12.07	13.5	92.90	0.015	Ant Main	AWAN
	WLAN5GHz	802.11ac 80 MHz	138	5690	VHT0	Side 3	0	0.01	12.07	13.5	92.90	0.015	Ant Main	AWAN
	WLAN5GHz	802.11ac 80 MHz	138	5690	VHT0	Side 4	0	0.01	12.07	13.5	92.90	0.015	Ant Main	AWAN



Index.	Band	Mode	Frequency		Data Rate	Test Position	Spacing (mm)	SAR _{1g}	Burst Avg Power (dBm)	Max tune-up (dBm)	Duty Cycle (%)	Reported SAR _{1g}	Note	Antenna
			Ch.	MHz				(W/Kg)						
	WLAN5GHz	802.11ac 80 MHz	138	5690	VHT0	Bottom of laptop	0	0.01	12.25	13.5	93.10	0.014	Ant Aux	INPAQ
#6	WLAN5GHz	802.11ac 80 MHz	138	5690	VHT0	Bottom Face	0	0.5	12.25	13.5	93.10	0.716	Ant Aux	INPAQ
	WLAN5GHz	802.11ac 80 MHz	106	5530	VHT0	Bottom Face	0	0.425	10.62	12.5	93.10	0.704	Ant Aux	INPAQ
	WLAN5GHz	802.11ac 80 MHz	122	5610	VHT0	Bottom Face	0	0.488	12.24	13.5	93.10	0.701	Ant Aux	INPAQ
	WLAN5GHz	802.11ac 80 MHz	138	5690	VHT0	Side 1	0	0.444	12.25	13.5	93.10	0.636	Ant Aux	INPAQ
	WLAN5GHz	802.11ac 80 MHz	138	5690	VHT0	Side 2	0	0.01	12.25	13.5	93.10	0.014	Ant Aux	INPAQ
	WLAN5GHz	802.11ac 80 MHz	138	5690	VHT0	Side 3	0	0.01	12.25	13.5	93.10	0.014	Ant Aux	INPAQ
	WLAN5GHz	802.11ac 80 MHz	138	5690	VHT0	Side 4	0	0.01	12.25	13.5	93.10	0.014	Ant Aux	INPAQ
	WLAN5GHz	802.11ac 80 MHz	138	5690	VHT0	Bottom of laptop	0	0.01	12.25	13.5	93.10	0.014	Ant Aux	AWAN
	WLAN5GHz	802.11ac 80 MHz	138	5690	VHT0	Bottom Face	0	0.270	12.25	13.5	93.10	0.386	Ant Aux	AWAN
	WLAN5GHz	802.11ac 80 MHz	138	5690	VHT0	Side 1	0	0.278	12.25	13.5	93.10	0.398	Ant Aux	AWAN
	WLAN5GHz	802.11ac 80 MHz	106	5530	VHT0	Side 1	0	0.238	10.62	12.5	93.10	0.394	Ant Aux	AWAN
#18	WLAN5GHz	802.11ac 80 MHz	122	5610	VHT0	Side 1	0	0.346	12.24	13.5	93.10	0.497	Ant Aux	AWAN
	WLAN5GHz	802.11ac 80 MHz	138	5690	VHT0	Side 2	0	0.01	12.25	13.5	93.10	0.014	Ant Aux	AWAN
	WLAN5GHz	802.11ac 80 MHz	138	5690	VHT0	Side 3	0	0.01	12.25	13.5	93.10	0.014	Ant Aux	AWAN
	WLAN5GHz	802.11ac 80 MHz	138	5690	VHT0	Side 4	0	0.01	12.25	13.5	93.10	0.014	Ant Aux	AWAN
	WLAN5GHz	802.11n 40 MHz	159	5795	HT0	Bottom of laptop	0	0.01	12.56	13.5	92.90	0.013	Ant Main	INPAQ
#21	WLAN5GHz	802.11n 40 MHz	159	5795	HT0	Bottom Face	0	0.24	12.56	13.5	96.60	0.308	Ant Main	INPAQ
	WLAN5GHz	802.11n 40 MHz	151	5755	HT0	Bottom Face	0	0.161	12.49	13.5	92.90	0.219	Ant Main	INPAQ
	WLAN5GHz	802.11n 40 MHz	159	5795	HT0	Side 1	0	0.123	12.56	13.5	92.90	0.164	Ant Main	INPAQ
	WLAN5GHz	802.11n 40 MHz	159	5795	HT0	Side 2	0	0.01	12.56	13.5	92.90	0.013	Ant Main	INPAQ
	WLAN5GHz	802.11n 40 MHz	159	5795	HT0	Side 3	0	0.01	12.56	13.5	92.90	0.013	Ant Main	INPAQ
	WLAN5GHz	802.11n 40 MHz	159	5795	HT0	Side 4	0	0.01	12.56	13.5	92.90	0.013	Ant Main	INPAQ



Index.	Band	Mode	Frequency		Data Rate	Test Position	Spacing (mm)	SAR _{1g}	Burst Avg Power (dBm)	Max tune-up (dBm)	Duty Cycle (%)	Reported SAR _{1g}	Note	Antenna
			Ch.	MHz				(W/Kg)						
	WLAN5GHz	802.11n 40 MHz	159	5795	HT0	Bottom of laptop	0	0.01	12.56	13.5	92.90	0.013	Ant Main	AWAN
#19	WLAN5GHz	802.11n 40 MHz	159	5795	HT0	Bottom Face	0	0.742	12.56	13.5	96.60	0.954	Ant Main	AWAN
	WLAN5GHz	802.11n 40 MHz	151	5755	HT0	Bottom Face	0	0.456	12.49	13.5	92.90	0.619	Ant Main	AWAN
	WLAN5GHz	802.11n 40 MHz	159	5795	HT0	Side 1	0	0.289	12.56	13.5	92.90	0.386	Ant Main	AWAN
	WLAN5GHz	802.11n 40 MHz	159	5795	HT0	Side 2	0	0.01	12.56	13.5	92.90	0.013	Ant Main	AWAN
	WLAN5GHz	802.11n 40 MHz	159	5795	HT0	Side 3	0	0.01	12.56	13.5	92.90	0.013	Ant Main	AWAN
	WLAN5GHz	802.11n 40 MHz	159	5795	HT0	Side 4	0	0.01	12.56	13.5	92.90	0.013	Ant Main	AWAN
	WLAN5GHz	802.11n 40 MHz	159	5795	HT0	Bottom of laptop	0	0.01	12.35	13.5	93.10	0.014	Ant Aux	INPAQ
#22	WLAN5GHz	802.11n 40 MHz	159	5795	HT0	Bottom Face	0	0.386	12.35	13.5	96.50	0.521	Ant Aux	INPAQ
	WLAN5GHz	802.11n 40 MHz	151	5755	HT0	Bottom Face	0	0.098	12.49	13.5	93.10	0.133	Ant Aux	INPAQ
	WLAN5GHz	802.11n 40 MHz	159	5795	HT0	Side 1	0	0.084	12.27	13.5	93.10	0.120	Ant Aux	INPAQ
	WLAN5GHz	802.11n 40 MHz	159	5795	HT0	Side 2	0	0.01	12.35	13.5	93.10	0.014	Ant Aux	INPAQ
	WLAN5GHz	802.11n 40 MHz	159	5795	HT0	Side 3	0	0.01	12.35	13.5	93.10	0.014	Ant Aux	INPAQ
	WLAN5GHz	802.11n 40 MHz	159	5795	HT0	Side 4	0	0.01	12.35	13.5	93.10	0.014	Ant Aux	INPAQ
	WLAN5GHz	802.11n 40 MHz	159	5795	HT0	Bottom of laptop	0	0.01	12.35	13.5	93.10	0.014	Ant Aux	AWAN
	WLAN5GHz	802.11n 40 MHz	159	5795	HT0	Bottom Face	0	0.192	12.35	13.5	93.10	0.269	Ant Aux	AWAN
#20	WLAN5GHz	802.11n 40 MHz	159	5795	HT0	Side 1	0	0.345	12.35	13.5	96.50	0.466	Ant Aux	AWAN
	WLAN5GHz	802.11n 40 MHz	151	5755	HT0	Side 1	0	0.213	12.27	13.5	93.10	0.304	Ant Aux	AWAN
	WLAN5GHz	802.11n 40 MHz	159	5795	HT0	Side 2	0	0.01	12.35	13.5	93.10	0.014	Ant Aux	AWAN
	WLAN5GHz	802.11n 40 MHz	159	5795	HT0	Side 3	0	0.01	12.35	13.5	93.10	0.014	Ant Aux	AWAN
	WLAN5GHz	802.11n 40 MHz	159	5795	HT0	Side 4	0	0.01	12.35	13.5	93.10	0.014	Ant Aux	AWAN

12.2 SAR Exposure Limit

Human Exposure	Population Uncontrolled Exposure (W/kg)	Occupational Controlled Exposure (W/kg)
Spatial Peak SAR* (head or Body)	1.60	8.00
Spatial Peak SAR** (Whole Body)	0.08	0.40
Spatial Peak SAR*** (Hands / Feet / Ankle / Wrist)	4.00	20.00

Table 2. Safety Limits for Controlled / Uncontrolled Environment Exposure

Notes :

- * The Spatial Peak value of the SAR averaged over any 1 gram of tissue.
(defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.
- ** The Spatial Average value of the SAR averaged over the whole – body.
- *** The Spatial Peak value of the SAR averaged over any 10 grams of tissue.
(defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

Population / Uncontrolled Environments : are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

Occupational / Controlled Environments : are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation).

Appendix A - System Performance Check

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/4/14

System Performance Check at 2450MHz_Head

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:903

Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.791$ S/m; $\epsilon_r = 39.408$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.59, 7.59, 7.59) @ 2450 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASYS2, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

System Performance Check at 2450MHz/Area Scan (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 21.3 W/kg

System Performance Check at 2450MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 108.4 V/m; Power Drift = -0.16 dB

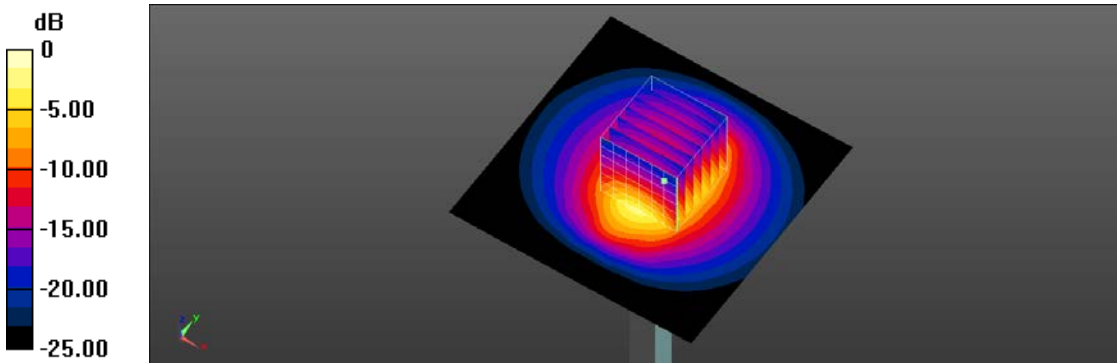
Peak SAR (extrapolated) = 26.8 W/kg

SAR(1 g) = 12.8 W/kg; SAR(10 g) = 5.96 W/kg

Smallest distance from peaks to all points 3 dB below = 9 mm

Ratio of SAR at M2 to SAR at M1 = 48.1%

Maximum value of SAR (measured) = 21.6 W/kg



0 dB = 21.6 W/kg = 13.34 dBW/kg

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/4/16

System Performance Check at 2450MHz_Head

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:903

Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.783$ S/m; $\epsilon_r = 39.268$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.59, 7.59, 7.59) @ 2450 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASYS2, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

System Performance Check at 2450MHz/Area Scan (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 21.6 W/kg

System Performance Check at 2450MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 113.7 V/m; Power Drift = -0.01 dB

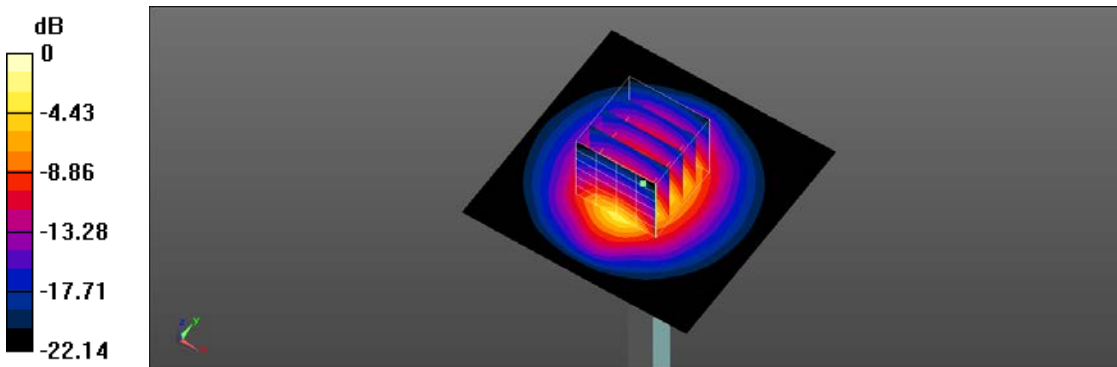
Peak SAR (extrapolated) = 26.7 W/kg

SAR(1 g) = 13 W/kg; SAR(10 g) = 6.11 W/kg

Smallest distance from peaks to all points 3 dB below = 9.6 mm

Ratio of SAR at M2 to SAR at M1 = 48.7%

Maximum value of SAR (measured) = 21.8 W/kg



0 dB = 21.8 W/kg = 13.38 dBW/kg

Test Laboratory: A Test Lab Techno Corp.
Date: 2021/4/13
System Performance Check at 5250MHz_Head
DUT: Dipole 5GHzV2; Type: D5GHz; Serial: 1145

Communication System: UID 0, CW (0); Frequency: 5250 MHz;Duty Cycle: 1:1
Medium parameters used: $f = 5250$ MHz; $\sigma = 4.718$ S/m; $\epsilon_r = 36.633$; $\rho = 1000$ kg/m³
Phantom section: Flat Section
Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5.34, 5.34, 5.34) @ 5250 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASYS2, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

System Performance Check at 5250MHz/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 17.9 W/kg

System Performance Check at 5250MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 67.12 V/m; Power Drift = 0.07 dB

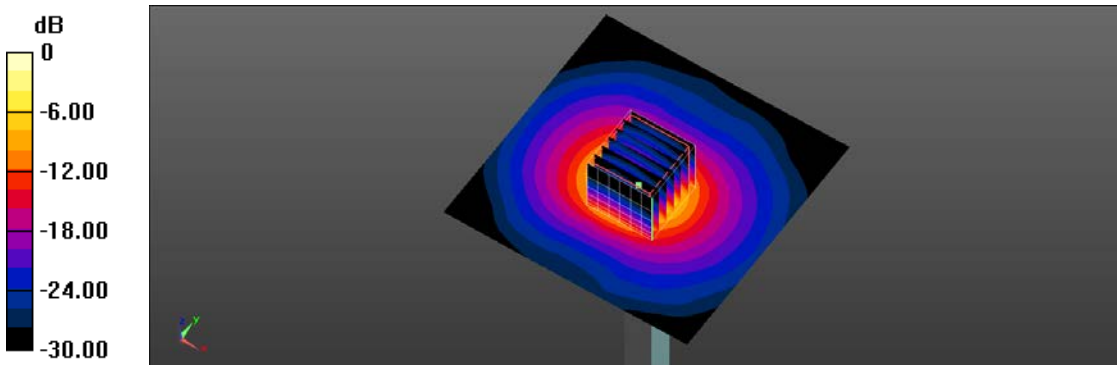
Peak SAR (extrapolated) = 32.2 W/kg

SAR(1 g) = 7.92 W/kg; SAR(10 g) = 2.19 W/kg

Smallest distance from peaks to all points 3 dB below = 7.2 mm

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

Maximum value of SAR (measured) = 19.3 W/kg



0 dB = 19.3 W/kg = 12.86 dBW/kg

Test Laboratory: A Test Lab Techno Corp.
Date: 2021/4/17
System Performance Check at 5250MHz_Head
DUT: Dipole 5GHzV2; Type: D5GHz; Serial: 1145

Communication System: UID 0, CW (0); Frequency: 5250 MHz;Duty Cycle: 1:1
Medium parameters used: $f = 5250$ MHz; $\sigma = 4.684$ S/m; $\epsilon_r = 36.322$; $\rho = 1000$ kg/m³
Phantom section: Flat Section
Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5.34, 5.34, 5.34) @ 5250 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASYS2, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

System Performance Check at 5250MHz/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 18.4 W/kg

System Performance Check at 5250MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 71.04 V/m; Power Drift = -0.01 dB

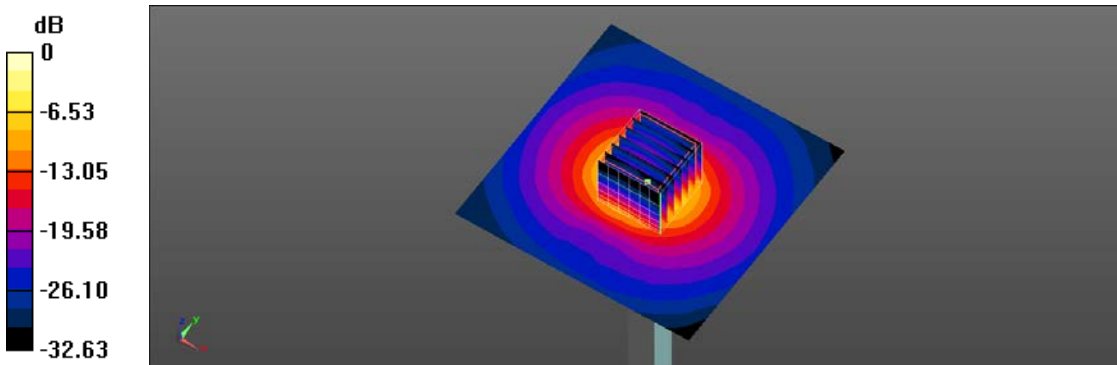
Peak SAR (extrapolated) = 31.5 W/kg

SAR(1 g) = 7.74 W/kg; SAR(10 g) = 2.15 W/kg

Smallest distance from peaks to all points 3 dB below = 7.2 mm

Ratio of SAR at M2 to SAR at M1 = 64.7%

Maximum value of SAR (measured) = 18.8 W/kg



Test Laboratory: A Test Lab Techno Corp.
Date: 2021/4/13
System Performance Check at 5600MHz_Head
DUT: Dipole 5GHzV2; Type: D5GHz; Serial: 1145

Communication System: UID 0, CW (0); Frequency: 5600 MHz;Duty Cycle: 1:1
Medium parameters used: $f = 5600$ MHz; $\sigma = 5.08$ S/m; $\epsilon_r = 35.967$; $\rho = 1000$ kg/m³
Phantom section: Flat Section
Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(4.75, 4.75, 4.75) @ 5600 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASYS2, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

System Performance Check at 5600MHz/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 19.9 W/kg

System Performance Check at 5600MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 68.05 V/m; Power Drift = 0.14 dB

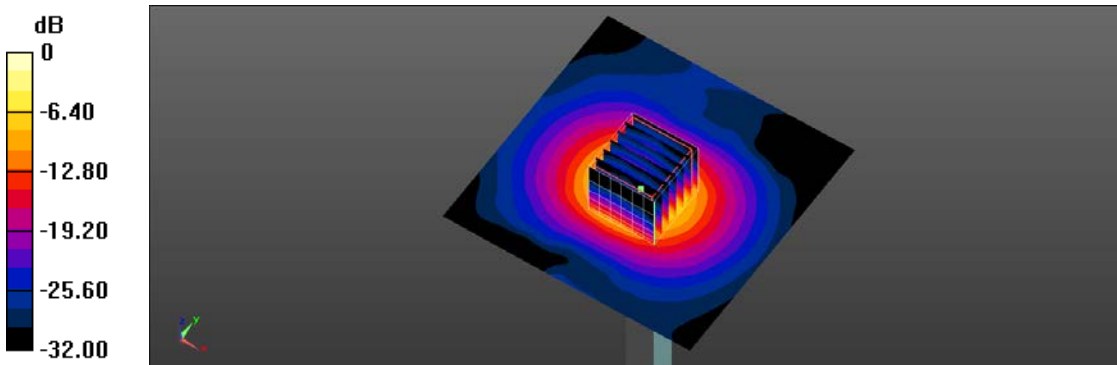
Peak SAR (extrapolated) = 37.0 W/kg

SAR(1 g) = 8.46 W/kg; SAR(10 g) = 2.35 W/kg

Smallest distance from peaks to all points 3 dB below = 7.4 mm

Ratio of SAR at M2 to SAR at M1 = 62.2%

Maximum value of SAR (measured) = 21.2 W/kg



0 dB = 21.2 W/kg = 13.26 dBW/kg

Test Laboratory: A Test Lab Techno Corp.
Date: 2021/4/17
System Performance Check at 5600MHz_Head
DUT: Dipole 5GHzV2; Type: D5GHz; Serial: 1145

Communication System: UID 0, CW (0); Frequency: 5600 MHz;Duty Cycle: 1:1
Medium parameters used: $f = 5600$ MHz; $\sigma = 5.043$ S/m; $\epsilon_r = 35.657$; $\rho = 1000$ kg/m³
Phantom section: Flat Section
Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(4.75, 4.75, 4.75) @ 5600 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

System Performance Check at 5600MHz/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 21.5 W/kg

System Performance Check at 5600MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 73.68 V/m; Power Drift = 0.05 dB

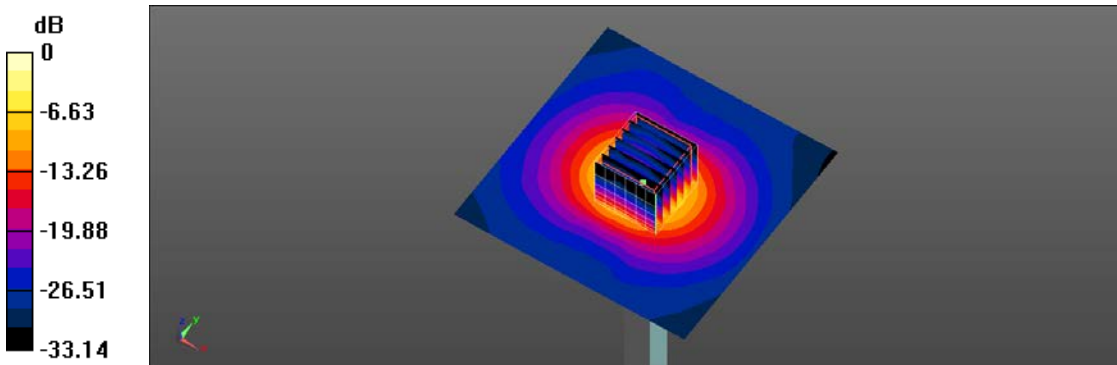
Peak SAR (extrapolated) = 38.4 W/kg

SAR(1 g) = 8.59 W/kg; SAR(10 g) = 2.37 W/kg

Smallest distance from peaks to all points 3 dB below = 7.4 mm

Ratio of SAR at M2 to SAR at M1 = 61.6%

Maximum value of SAR (measured) = 21.7 W/kg



0 dB = 21.7 W/kg = 13.36 dBW/kg

Test Laboratory: A Test Lab Techno Corp.
Date: 2021/4/15
System Performance Check at 5750MHz_Head
DUT: Dipole 5GHzV2; Type: D5GHz; Serial: 1145

Communication System: UID 0, CW (0); Frequency: 5750 MHz;Duty Cycle: 1:1
Medium parameters used: $f = 5750$ MHz; $\sigma = 5.202$ S/m; $\epsilon_r = 35.541$; $\rho = 1000$ kg/m³
Phantom section: Flat Section
Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5, 5, 5) @ 5750 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASYS2, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

System Performance Check at 5750MHz/Area Scan (91x91x1): Interpolated grid: $dx=1.000$ mm, $dy=1.000$ mm
Maximum value of SAR (interpolated) = 18.3 W/kg

System Performance Check at 5750MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=4$ mm, $dy=4$ mm, $dz=1.4$ mm

Reference Value = 64.08 V/m; Power Drift = 0.09 dB

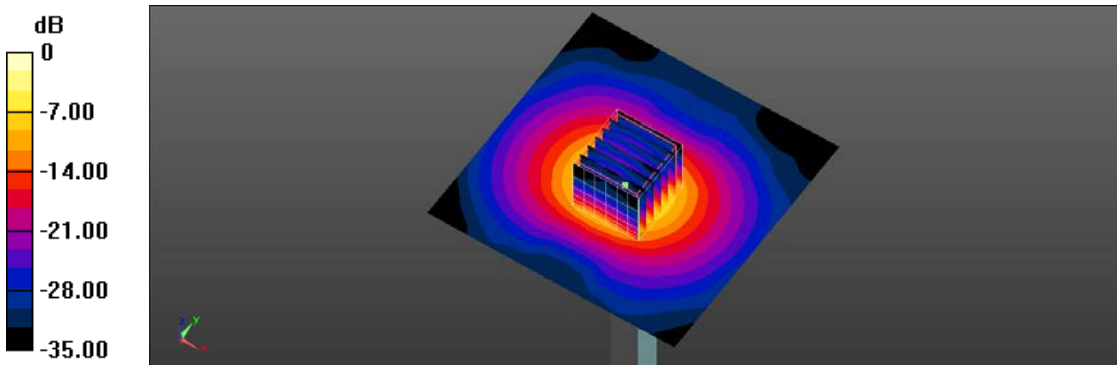
Peak SAR (extrapolated) = 35.4 W/kg

SAR(1 g) = 7.65 W/kg; SAR(10 g) = 2.11 W/kg

Smallest distance from peaks to all points 3 dB below = 7.4 mm

Ratio of SAR at M2 to SAR at M1 = 60.7%

Maximum value of SAR (measured) = 19.5 W/kg



0 dB = 19.5 W/kg = 12.90 dBW/kg

Test Laboratory: A Test Lab Techno Corp.
Date: 2021/4/18
System Performance Check at 5750MHz_Head
DUT: Dipole 5GHzV2; Type: D5GHz; Serial: 1145

Communication System: UID 0, CW (0); Frequency: 5750 MHz;Duty Cycle: 1:1
Medium parameters used: $f = 5750$ MHz; $\sigma = 5.183$ S/m; $\epsilon_r = 35.381$; $\rho = 1000$ kg/m³
Phantom section: Flat Section
Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5, 5, 5) @ 5750 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASYS2, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

System Performance Check at 5750MHz/Area Scan (91x91x1): Interpolated grid: $dx=1.000$ mm, $dy=1.000$ mm
Maximum value of SAR (interpolated) = 18.9 W/kg

System Performance Check at 5750MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=4$ mm, $dy=4$ mm, $dz=1.4$ mm

Reference Value = 68.61 V/m; Power Drift = 0.02 dB

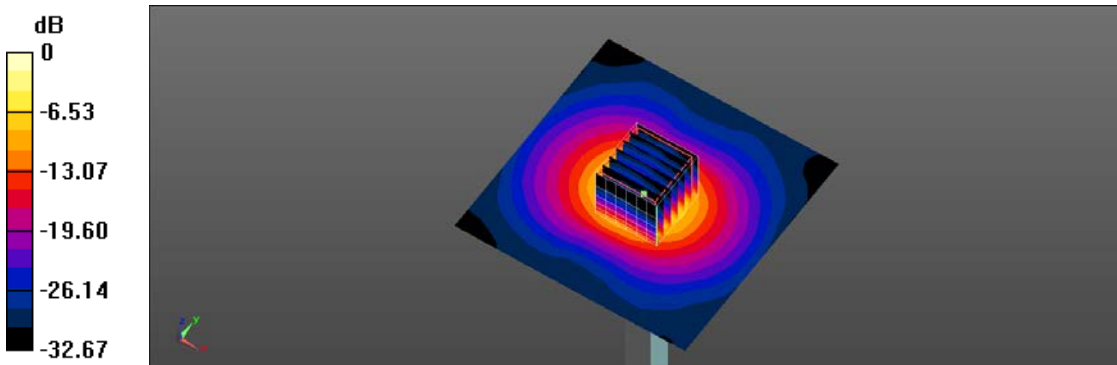
Peak SAR (extrapolated) = 35.0 W/kg

SAR(1 g) = 7.5 W/kg; SAR(10 g) = 2.07 W/kg

Smallest distance from peaks to all points 3 dB below = 7.4 mm

Ratio of SAR at M2 to SAR at M1 = 60.3%

Maximum value of SAR (measured) = 19.2 W/kg



0 dB = 19.2 W/kg = 12.83 dBW/kg

Appendix B - SAR Measurement Data

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/4/14

1_ IEEE 802.11b CH 6_1M_Bottom Face_0mm_Ant Main

DUT: CZ1000DV,CL1000DV; Type: Chromebook

Communication System: UID 0, IEEE 802.11b (0); Frequency: 2437 MHz;Duty Cycle: 1:1.013

Medium parameters used (interpolated): $f = 2437$ MHz; $\sigma = 1.775$ S/m; $\epsilon_r = 39.437$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.59, 7.59, 7.59) @ 2437 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASYS2, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (51x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.705 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 15.54 V/m; Power Drift = -0.14 dB

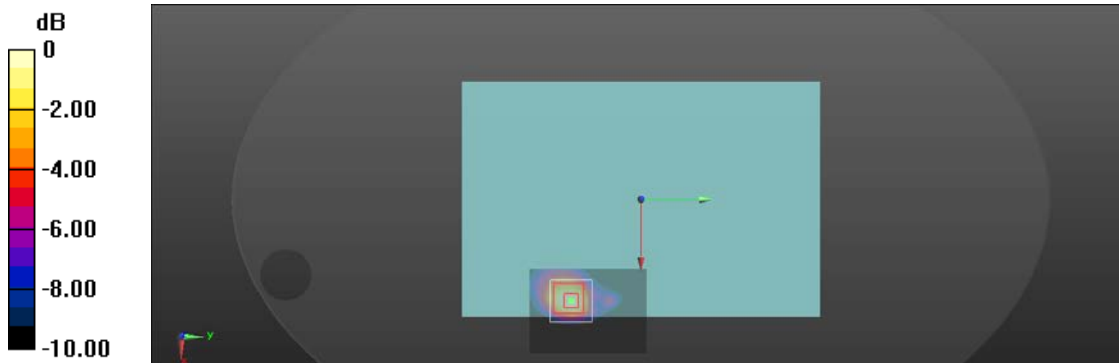
Peak SAR (extrapolated) = 0.867 W/kg

SAR(1 g) = 0.390 W/kg; SAR(10 g) = 0.177 W/kg

Smallest distance from peaks to all points 3 dB below = 7 mm

Ratio of SAR at M2 to SAR at M1 = 47.5%

Maximum value of SAR (measured) = 0.652 W/kg



0 dB = 0.652 W/kg = -1.86 dBW/kg

Test Laboratory: A Test Lab Techno Corp.
Date: 2021/4/16
9_IEEE 802.11b CH 6_1M_Bottom Face_0mm_Ant Main
DUT: CZ1000DV,CL1000DV; Type: Chromebook

Communication System: UID 0, IEEE 802.11b (0); Frequency: 2437 MHz;Duty Cycle: 1:1.013
Medium parameters used (interpolated): $f = 2437$ MHz; $\sigma = 1.767$ S/m; $\epsilon_r = 39.297$; $\rho = 1000$ kg/m³
Phantom section: Flat Section
Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.59, 7.59, 7.59) @ 2437 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASYS2, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (51x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.729 W/kg

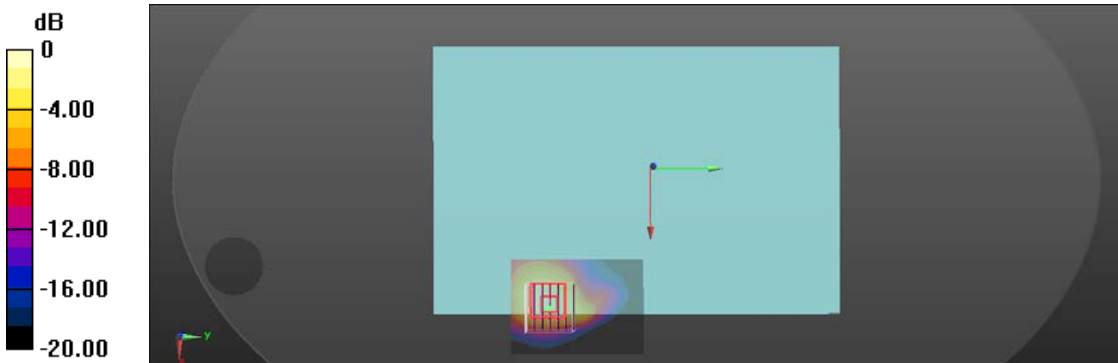
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.67 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.883 W/kg

SAR(1 g) = 0.387 W/kg; SAR(10 g) = 0.184 W/kg

Smallest distance from peaks to all points 3 dB below = 8.9 mm

Ratio of SAR at M2 to SAR at M1 = 42.7%

Maximum value of SAR (measured) = 0.658 W/kg



0 dB = 0.658 W/kg = -1.82 dBW/kg

Test Laboratory: A Test Lab Techno Corp.
Date: 2021/4/14
2_ IEEE 802.11b CH 11_1M_Bottom Face_0mm_Ant Aux
DUT: CZ1000DV,CL1000DV; Type: Chromebook

Communication System: UID 0, IEEE 802.11b (0); Frequency: 2462 MHz;Duty Cycle: 1:1.014
Medium parameters used: $f = 2462$ MHz; $\sigma = 1.806$ S/m; $\epsilon_r = 39.373$; $\rho = 1000$ kg/m³
Phantom section: Flat Section
Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.59, 7.59, 7.59) @ 2462 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASYS2, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (51x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 1.31 W/kg

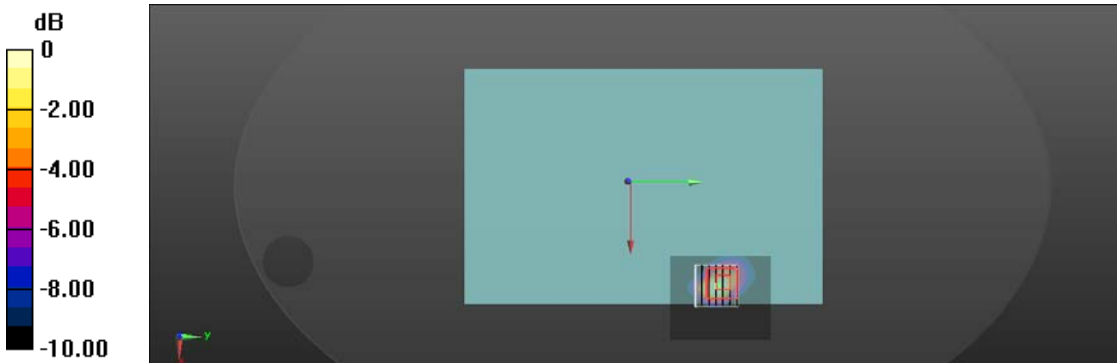
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.68 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 1.55 W/kg

SAR(1 g) = 0.588 W/kg; SAR(10 g) = 0.219 W/kg

Smallest distance from peaks to all points 3 dB below = 2 mm

Ratio of SAR at M2 to SAR at M1 = 43.7%

Maximum value of SAR (measured) = 1.14 W/kg



0 dB = 1.14 W/kg = 0.57 dBW/kg

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/4/16

10_IEEE 802.11b CH 11_1M_Bottom Face_0mm_Ant Aux

DUT: CZ1000DV,CL1000DV; Type: Chromebook

Communication System: UID 0, IEEE 802.11b (0); Frequency: 2462 MHz;Duty Cycle: 1:1.014

Medium parameters used: $f = 2462$ MHz; $\sigma = 1.797$ S/m; $\epsilon_r = 39.233$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.59, 7.59, 7.59) @ 2462 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASYS2, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (51x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 1.20 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 20.55 V/m; Power Drift = -0.06 dB

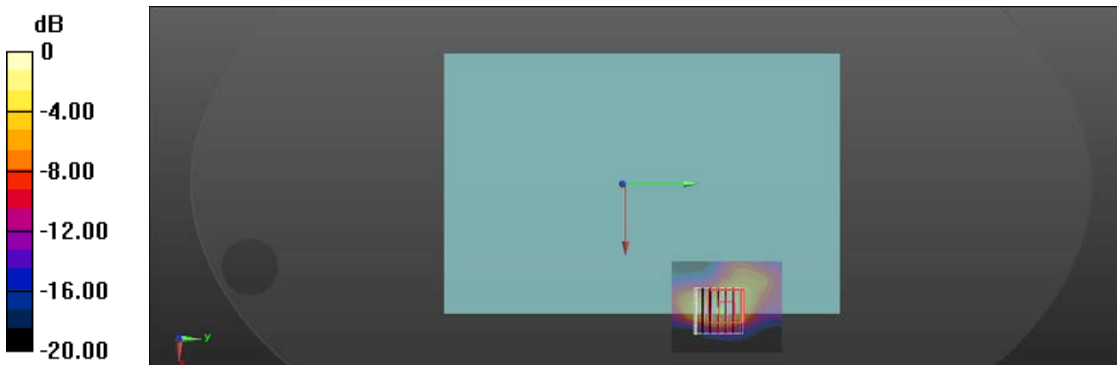
Peak SAR (extrapolated) = 1.51 W/kg

SAR(1 g) = 0.536 W/kg; SAR(10 g) = 0.214 W/kg

Smallest distance from peaks to all points 3 dB below = 7.2 mm

Ratio of SAR at M2 to SAR at M1 = 45%

Maximum value of SAR (measured) = 0.988 W/kg



0 dB = 0.988 W/kg = -0.05 dBW/kg

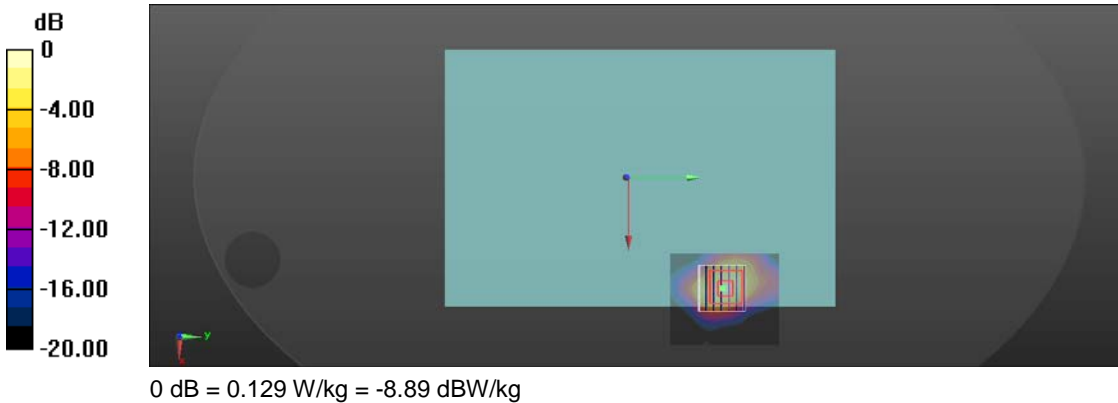
Test Laboratory: A Test Lab Techno Corp.
Date: 2021/4/14
23_Bluetooth CH 0_1M_Bottom Face_0mm_Ant Aux
DUT: CZ1000DV,CL1000DV; Type: Chromebook

Communication System: UID 0, Bluetooth 3.0 (0); Frequency: 2402 MHz;Duty Cycle: 1:1.294
Medium parameters used: $f = 2402$ MHz; $\sigma = 1.734$ S/m; $\epsilon_r = 39.552$; $\rho = 1000$ kg/m³
Phantom section: Flat Section
Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.59, 7.59, 7.59) @ 2402 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASYS2, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (51x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.132 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.112 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.164 W/kg
SAR(1 g) = 0.068 W/kg; SAR(10 g) = 0.027 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 40.8%
Maximum value of SAR (measured) = 0.129 W/kg



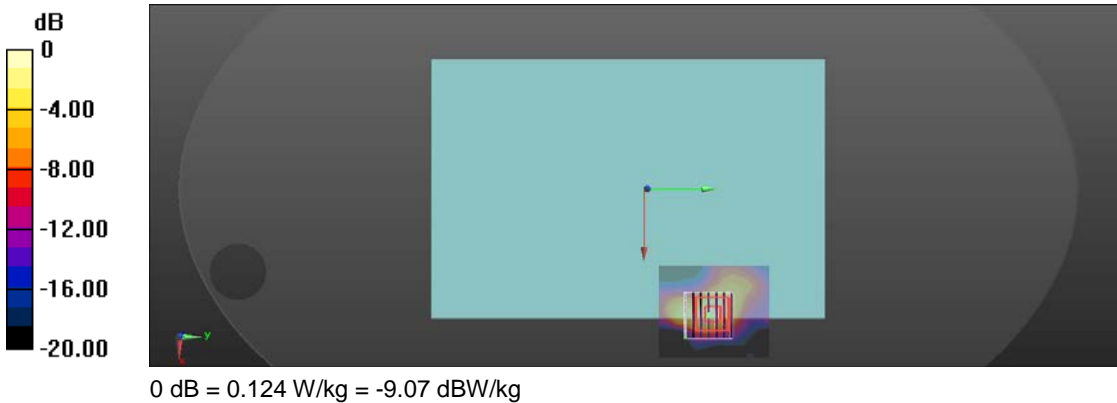
Test Laboratory: A Test Lab Techno Corp.
Date: 2021/4/16
24_Bluetooth CH 78_1M_Bottom Face_0mm_Ant Aux
DUT: CZ1000DV,CL1000DV; Type: Chromebook

Communication System: UID 0, Bluetooth 3.0 (0); Frequency: 2480 MHz;Duty Cycle: 1:1.294
Medium parameters used: $f = 2480$ MHz; $\sigma = 1.82$ S/m; $\epsilon_r = 39.186$; $\rho = 1000$ kg/m³
Phantom section: Flat Section
Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.59, 7.59, 7.59) @ 2480 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASYS2, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (51x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.145 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.749 V/m; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 0.193 W/kg
SAR(1 g) = 0.068 W/kg; SAR(10 g) = 0.027 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 39.1%
Maximum value of SAR (measured) = 0.124 W/kg



Test Laboratory: A Test Lab Techno Corp.

Date: 2021/4/13

3_IEEE 802.11n 40 CH 54_HT0_Bottom Face_0mm_Ant Main

DUT: CZ1000DV,CL1000DV; Type: Chromebook

Communication System: UID 0, IEEE 802.11n(5GHz)HT40 (0); Frequency: 5270 MHz;Duty Cycle: 1:1.035

Medium parameters used: $f = 5270$ MHz; $\sigma = 4.742$ S/m; $\epsilon_r = 36.599$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5.34, 5.34, 5.34) @ 5270 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASYS2, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 1.46 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 11.77 V/m; Power Drift = -0.13 dB

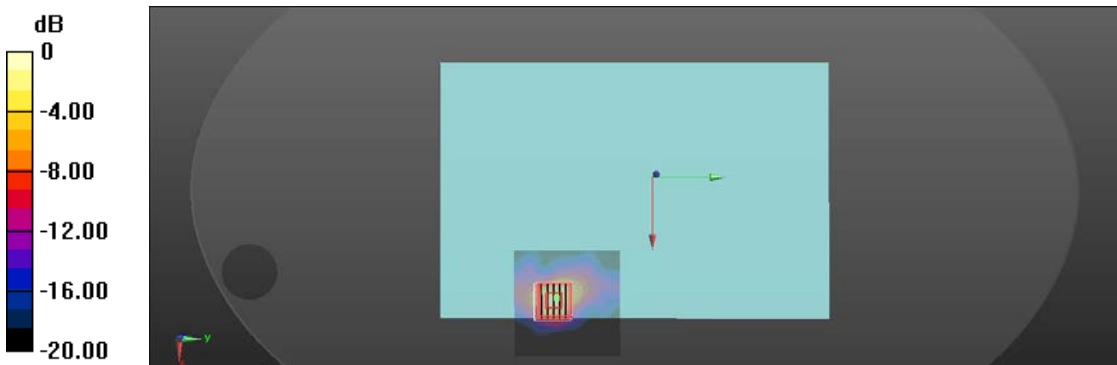
Peak SAR (extrapolated) = 3.07 W/kg

SAR(1 g) = 0.634 W/kg; SAR(10 g) = 0.172 W/kg

Smallest distance from peaks to all points 3 dB below = 5.8 mm

Ratio of SAR at M2 to SAR at M1 = 60.6%

Maximum value of SAR (measured) = 1.65 W/kg



0 dB = 1.65 W/kg = 2.17 dBW/kg

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/4/17

11_IEEE 802.11n 40 CH 54_HT0_Bottom Face_0mm_Ant Main

DUT: CZ1000DV,CL1000DV; Type: Chromebook

Communication System: UID 0, IEEE 802.11n(5GHz)HT40 (0); Frequency: 5270 MHz;Duty Cycle: 1:1.035

Medium parameters used: $f = 5270$ MHz; $\sigma = 4.708$ S/m; $\epsilon_r = 36.289$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5.34, 5.34, 5.34) @ 5270 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASYS2, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 1.76 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 13.95 V/m; Power Drift = 0.18 dB

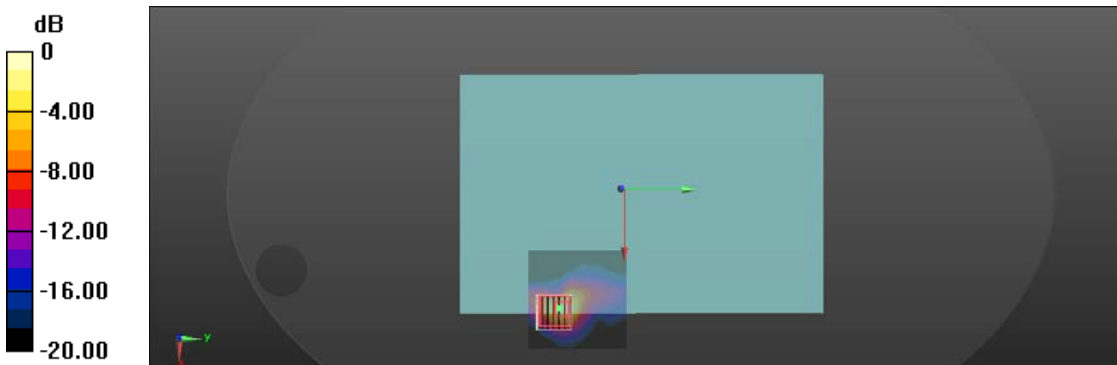
Peak SAR (extrapolated) = 3.66 W/kg

SAR(1 g) = 0.758 W/kg; SAR(10 g) = 0.182 W/kg

Smallest distance from peaks to all points 3 dB below = 5.1 mm

Ratio of SAR at M2 to SAR at M1 = 60.5%

Maximum value of SAR (measured) = 2.04 W/kg



0 dB = 2.04 W/kg = 3.10 dBW/kg

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/4/13

4_ IEEE 802.11n 40 CH 54_HT0_Bottom Face_0mm_Ant Aux

DUT: CZ1000DV,CL1000DV; Type: Chromebook

Communication System: UID 0, IEEE 802.11n(5GHz)HT40 (0); Frequency: 5270 MHz;Duty Cycle: 1:1.036

Medium parameters used: $f = 5270$ MHz; $\sigma = 4.742$ S/m; $\epsilon_r = 36.599$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5.34, 5.34, 5.34) @ 5270 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASYS2, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.914 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 11.94 V/m; Power Drift = -0.17 dB

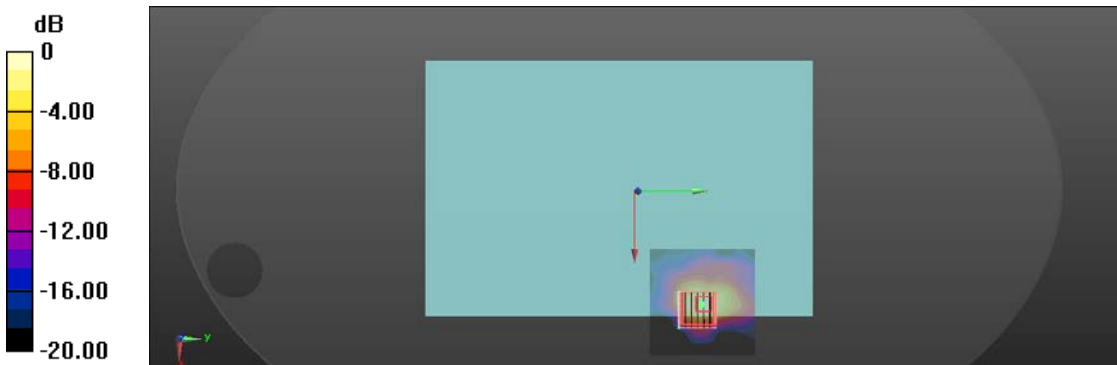
Peak SAR (extrapolated) = 1.82 W/kg

SAR(1 g) = 0.386 W/kg; SAR(10 g) = 0.108 W/kg

Smallest distance from peaks to all points 3 dB below = 6.4 mm

Ratio of SAR at M2 to SAR at M1 = 57.6%

Maximum value of SAR (measured) = 0.965 W/kg



0 dB = 0.965 W/kg = -0.15 dBW/kg

Test Laboratory: A Test Lab Techno Corp.
Date: 2021/4/17
12_IEEE 802.11n 40 CH 54_HT0_Side 1_0mm_Ant Aux
DUT: CZ1000DV,CL1000DV; Type: Chromebook

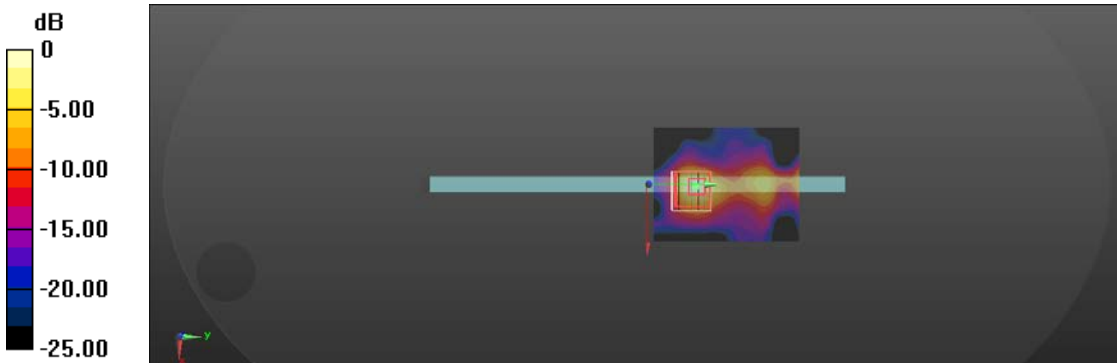
Communication System: UID 0, IEEE 802.11n(5GHz)HT40 (0); Frequency: 5270 MHz;Duty Cycle: 1:1.036
Medium parameters used: $f = 5270 \text{ MHz}$; $\sigma = 4.708 \text{ S/m}$; $\epsilon_r = 36.289$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section
Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5.34, 5.34, 5.34) @ 5270 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (71x91x1): Interpolated grid: $dx=1.000 \text{ mm}$, $dy=1.000 \text{ mm}$
Maximum value of SAR (interpolated) = 1.24 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$
Reference Value = 12.05 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 2.06 W/kg

SAR(1 g) = 0.472 W/kg; SAR(10 g) = 0.125 W/kg
Smallest distance from peaks to all points 3 dB below = 6.1 mm
Ratio of SAR at M2 to SAR at M1 = 62.3%
Maximum value of SAR (measured) = 1.18 W/kg



0 dB = 1.18 W/kg = 0.72 dBW/kg

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/4/13

5_ IEEE 802.11ac 80 CH 106_VHT0_Bottom Face_0mm_Ant Main

DUT: CZ1000DV,CL1000DV; Type: Chromebook

Communication System: UID 0, IEEE 802.11ac(5GHz)VHT80 (0); Frequency: 5530 MHz;Duty Cycle: 1:1.076

Medium parameters used: $f = 5530$ MHz; $\sigma = 4.999$ S/m; $\epsilon_r = 36.108$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(4.75, 4.75, 4.75) @ 5530 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASYS2, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.842 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 5.292 V/m; Power Drift = -0.17 dB

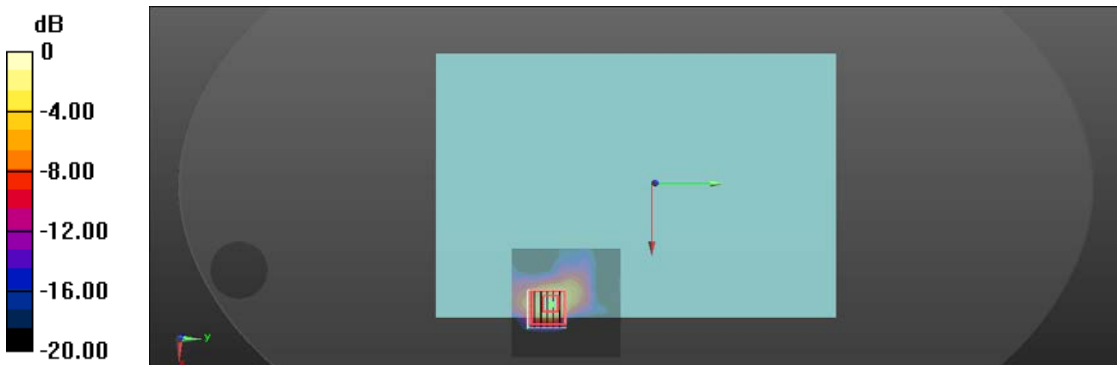
Peak SAR (extrapolated) = 1.76 W/kg

SAR(1 g) = 0.335 W/kg; SAR(10 g) = 0.086 W/kg

Smallest distance from peaks to all points 3 dB below = 5.4 mm

Ratio of SAR at M2 to SAR at M1 = 58.2%

Maximum value of SAR (measured) = 0.924 W/kg



0 dB = 0.924 W/kg = -0.34 dBW/kg

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/4/17

15_IEEE 802.11ac 80 CH 122_VHT0_Bottom Face_0mm_Ant Main

DUT: CZ1000DV,CL1000DV; Type: Chromebook

Communication System: UID 0, IEEE 802.11ac(5GHz)VHT80 (0); Frequency: 5610 MHz;Duty Cycle: 1:1.076

Medium parameters used: $f = 5610$ MHz; $\sigma = 5.051$ S/m; $\epsilon_r = 35.647$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(4.75, 4.75, 4.75) @ 5610 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 2.10 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 14.40 V/m; Power Drift = 0.15 dB

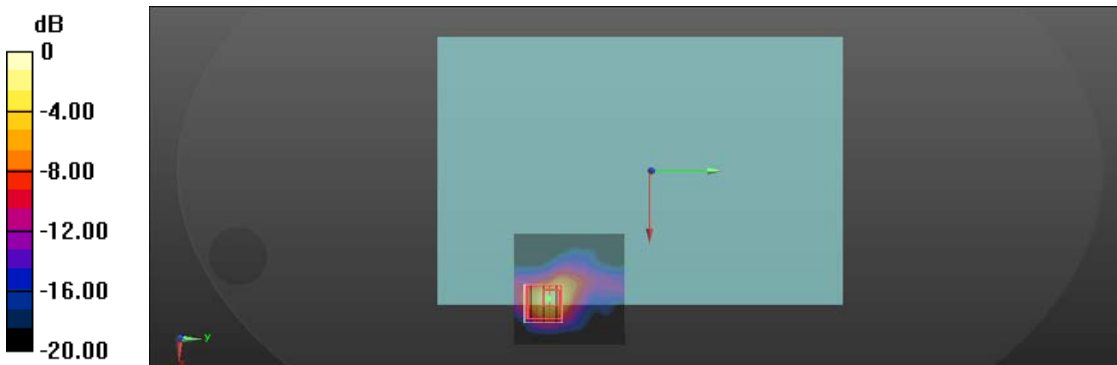
Peak SAR (extrapolated) = 4.42 W/kg

SAR(1 g) = 0.797 W/kg; SAR(10 g) = 0.197 W/kg

Smallest distance from peaks to all points 3 dB below = 5.4 mm

Ratio of SAR at M2 to SAR at M1 = 56.7%

Maximum value of SAR (measured) = 2.28 W/kg



0 dB = 2.28 W/kg = 3.58 dBW/kg

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/4/13

6_ IEEE 802.11ac 80 CH 138_VHT0_Bottom Face_0mm_Ant Aux

DUT: CZ1000DV,CL1000DV; Type: Chromebook

Communication System: UID 0, IEEE 802.11ac(5GHz)VHT80 (0); Frequency: 5690 MHz;Duty Cycle: 1:1.074

Medium parameters used: $f = 5690$ MHz; $\sigma = 5.168$ S/m; $\epsilon_r = 35.785$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5, 5, 5) @ 5690 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASYS2, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 1.27 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 8.941 V/m; Power Drift = -0.07 dB

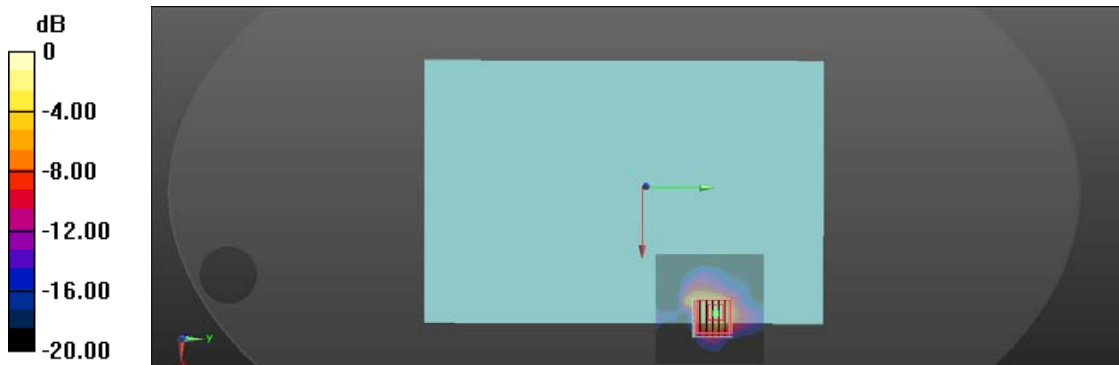
Peak SAR (extrapolated) = 2.99 W/kg

SAR(1 g) = 0.500 W/kg; SAR(10 g) = 0.125 W/kg

Smallest distance from peaks to all points 3 dB below = 5.7 mm

Ratio of SAR at M2 to SAR at M1 = 55%

Maximum value of SAR (measured) = 1.45 W/kg



0 dB = 1.45 W/kg = 1.61 dBW/kg

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/4/17

18_IEEE 802.11ac 80 CH 122_VHT0_Side 1_0mm_Ant Aux

DUT: CZ1000DV,CL1000DV; Type: Chromebook

Communication System: UID 0, IEEE 802.11ac(5GHz)VHT80 (0); Frequency: 5610 MHz;Duty Cycle: 1:1.074

Medium parameters used: $f = 5610 \text{ MHz}$; $\sigma = 5.051 \text{ S/m}$; $\epsilon_r = 35.647$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(4.75, 4.75, 4.75) @ 5610 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASYS2, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (71x91x1): Interpolated grid: $dx=1.000 \text{ mm}$, $dy=1.000 \text{ mm}$

Maximum value of SAR (interpolated) = 0.824 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$

Reference Value = 12.11 V/m; Power Drift = 0.19 dB

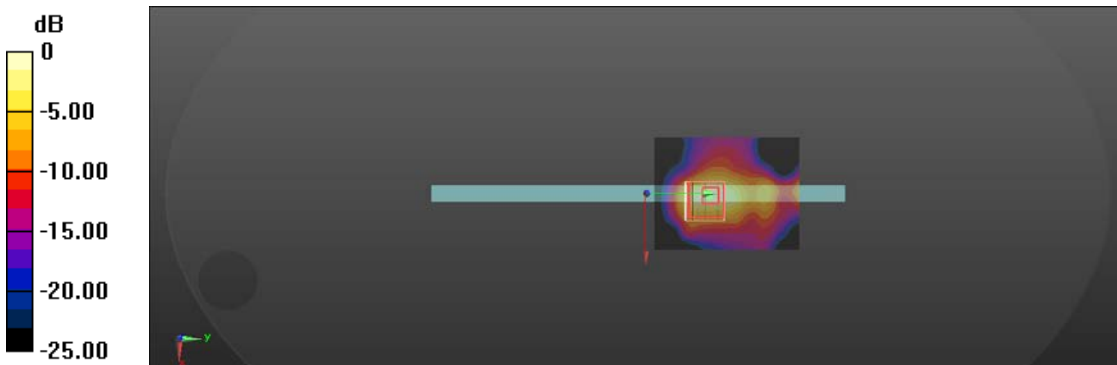
Peak SAR (extrapolated) = 1.71 W/kg

SAR(1 g) = 0.346 W/kg; SAR(10 g) = 0.106 W/kg

Smallest distance from peaks to all points 3 dB below = 6.8 mm

Ratio of SAR at M2 to SAR at M1 = 57.3%

Maximum value of SAR (measured) = 0.911 W/kg



0 dB = 0.911 W/kg = -0.40 dBW/kg

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/4/15

21_IEEE 802.11n 40 CH 159_HT0_Bottom Face_0mm_Ant Main

DUT: CZ1000DV,CL1000DV; Type: Chromebook

Communication System: UID 0, IEEE 802.11n(5GHz)HT40 (0); Frequency: 5795 MHz;Duty Cycle: 1:1.035

Medium parameters used: $f = 5795 \text{ MHz}$; $\sigma = 5.25 \text{ S/m}$; $\epsilon_r = 35.459$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5, 5, 5) @ 5795 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASYS2, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (71x71x1): Interpolated grid: $dx=1.000 \text{ mm}$, $dy=1.000 \text{ mm}$

Maximum value of SAR (interpolated) = 0.657 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$

Reference Value = 10.20 V/m; Power Drift = -0.12 dB

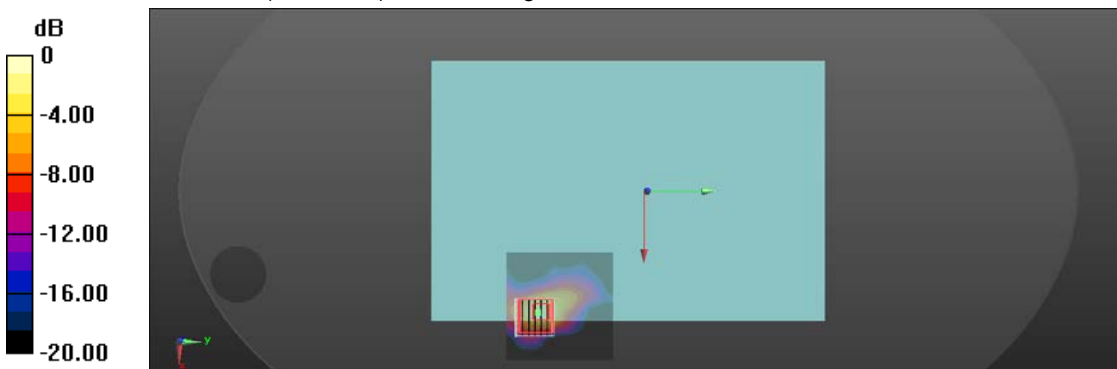
Peak SAR (extrapolated) = 1.43 W/kg

SAR(1 g) = 0.240 W/kg; SAR(10 g) = 0.061 W/kg

Smallest distance from peaks to all points 3 dB below = 5.7 mm

Ratio of SAR at M2 to SAR at M1 = 54.9%

Maximum value of SAR (measured) = 0.724 W/kg



0 dB = 0.724 W/kg = -1.40 dBW/kg

Test Laboratory: A Test Lab Techno Corp.
Date: 2021/4/18
19_IEEE 802.11n 40 CH 159_HT0_Bottom Face_0mm_Ant Main
DUT: CZ1000DV,CL1000DV; Type: Chromebook

Communication System: UID 0, IEEE 802.11n(5GHz)HT40 (0); Frequency: 5795 MHz;Duty Cycle: 1:1.035
Medium parameters used: $f = 5795 \text{ MHz}$; $\sigma = 5.231 \text{ S/m}$; $\epsilon_r = 35.299$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section
Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5, 5, 5) @ 5795 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (71x71x1): Interpolated grid: $dx=1.000 \text{ mm}$, $dy=1.000 \text{ mm}$
Maximum value of SAR (interpolated) = 2.07 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$

Reference Value = 16.64 V/m; Power Drift = 0.12 dB

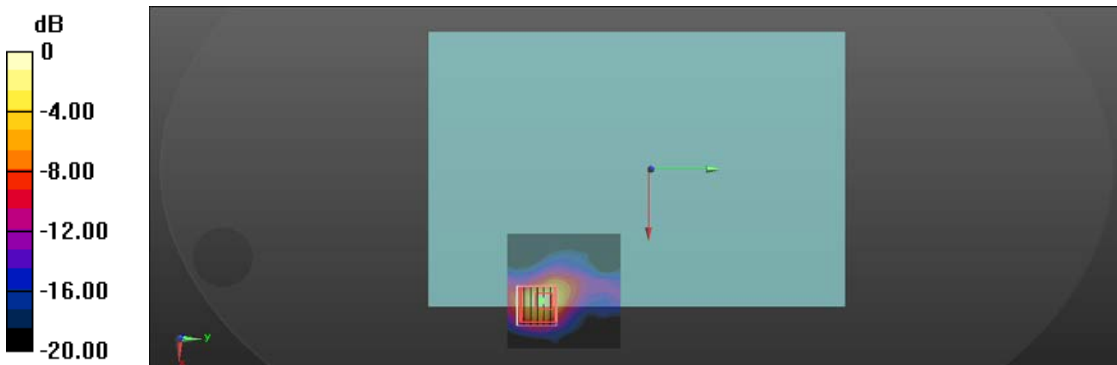
Peak SAR (extrapolated) = 4.34 W/kg

SAR(1 g) = 0.742 W/kg; SAR(10 g) = 0.191 W/kg

Smallest distance from peaks to all points 3 dB below = 5.4 mm

Ratio of SAR at M2 to SAR at M1 = 55.5%

Maximum value of SAR (measured) = 2.16 W/kg



0 dB = 2.16 W/kg = 3.34 dBW/kg

Test Laboratory: A Test Lab Techno Corp.

Date: 2021/4/15

22_IEEE 802.11n 40 CH 159_HT0_Bottom Face_0mm_Ant Aux

DUT: CZ1000DV,CL1000DV; Type: Chromebook

Communication System: UID 0, IEEE 802.11n(5GHz)HT40 (0); Frequency: 5795 MHz;Duty Cycle: 1:1.035

Medium parameters used: $f = 5795$ MHz; $\sigma = 5.25$ S/m; $\epsilon_r = 35.459$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5, 5, 5) @ 5795 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASYS2, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 1.05 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 7.113 V/m; Power Drift = -0.05 dB

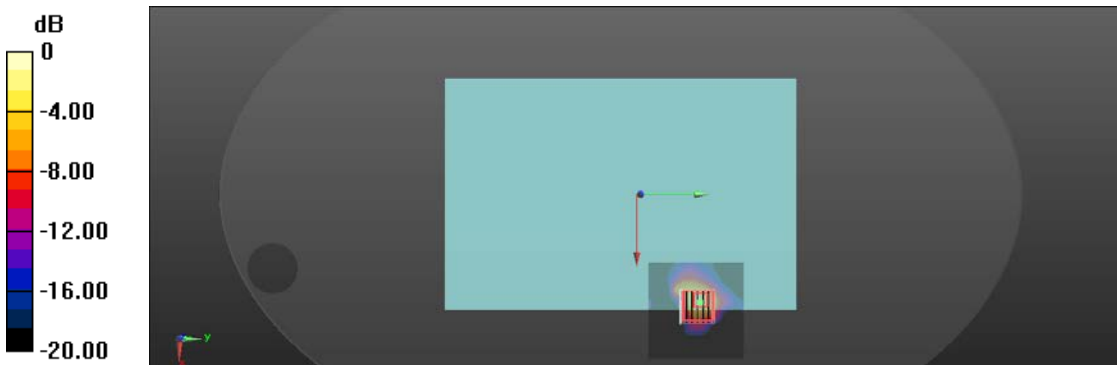
Peak SAR (extrapolated) = 2.40 W/kg

SAR(1 g) = 0.386 W/kg; SAR(10 g) = 0.096 W/kg

Smallest distance from peaks to all points 3 dB below = 6.2 mm

Ratio of SAR at M2 to SAR at M1 = 53.9%

Maximum value of SAR (measured) = 1.16 W/kg



0 dB = 1.16 W/kg = 0.64 dBW/kg

Test Laboratory: A Test Lab Techno Corp.
Date: 2021/4/18
20_IEEE 802.11n 40 CH 159_HT0_Side 1_0mm_Ant Aux
DUT: CZ1000DV,CL1000DV; Type: Chromebook

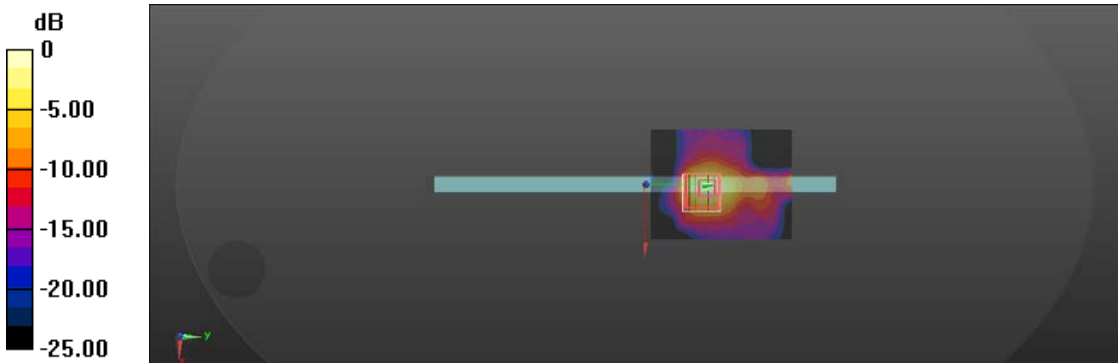
Communication System: UID 0, IEEE 802.11n(5GHz)HT40 (0); Frequency: 5795 MHz;Duty Cycle: 1:1.036
Medium parameters used: $f = 5795 \text{ MHz}$; $\sigma = 5.231 \text{ S/m}$; $\epsilon_r = 35.299$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section
Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(5, 5, 5) @ 5795 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASYS2, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (71x91x1): Interpolated grid: $dx=1.000 \text{ mm}$, $dy=1.000 \text{ mm}$
Maximum value of SAR (interpolated) = 0.881 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$
Reference Value = 6.995 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 1.85 W/kg

SAR(1 g) = 0.345 W/kg; SAR(10 g) = 0.098 W/kg
Smallest distance from peaks to all points 3 dB below = 6.8 mm
Ratio of SAR at M2 to SAR at M1 = 55.5%
Maximum value of SAR (measured) = 0.951 W/kg



0 dB = 0.951 W/kg = -0.22 dBW/kg



Appendix C - Calibration

All of the instruments Calibration information are listed below.

- Dipole _ D2450V2 SN: 903
- Dipole _ D5GHzV2 SN: 1145
- Probe _ EX3DV4 SN: 3847
- DAE _ DAE4 SN: 541



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CALIBRATION
CNAS L0570

Client **AUDEN**

Certificate No: **Z20-60429**

CALIBRATION CERTIFICATE

Object: D2450V2 - SN: 903

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



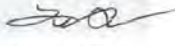
Calibration date: November 10, 2020

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	106276	12-May-20 (CTTL, No.J20X02965)	May-21
Power sensor NRP6A	101369	12-May-20 (CTTL, No.J20X02965)	May-21
ReferenceProbe EX3DV4	SN 3617	30-Jan-20(SPEAG, No.EX3-3617_Jan20)	Jan-21
DAE4	SN 771	10-Feb-20(CTTL-SPEAG, No.Z20-60017)	Feb-21
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	25-Feb-20 (CTTL, No.J20X00516)	Feb-21
NetworkAnalyzer E5071C	MY46110673	10-Feb-20 (CTTL, No.J20X00515)	Feb-21

	Name	Function	Signature
Calibrated by:	Zhao Jing	SAR Test Engineer	
Reviewed by:	Lin Hao	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: November 19, 2020

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Tel: +86-10-62304633-2079 Fax: +86-10-62304633-2504
E-mail: ettl@chinattl.com http://www.chinattl.cn**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:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Measurement procedure for assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices- Part 1: Device used next to the ear (Frequency range of 300MHz to 6GHz)", July 2016
- IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010
- KDB865664, SAR Measurement Requirements for 100 MHz to 6 GHz

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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



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Measurement Conditions

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

DASY Version	DASY52	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.2 ± 6 %	1.78 mho/m ± 6 %
Head TSL temperature change during test	<1.0 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.0 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	52.2 W/kg ± 18.8 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	5.98 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	24.0 W/kg ± 18.7 % (k=2)



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Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	53.6Ω+ 2.66 jΩ
Return Loss	- 27.2dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.025 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

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DASY5 Validation Report for Head TSL

Date: 11.10.2020

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 903

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.784$ S/m; $\epsilon_r = 39.22$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3617; ConvF(7.65, 7.65, 7.65) @ 2450 MHz; Calibrated: 2020-01-30
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn771; Calibrated: 2020-02-10
- Phantom: MFP_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 104.5 V/m; Power Drift = -0.06 dB

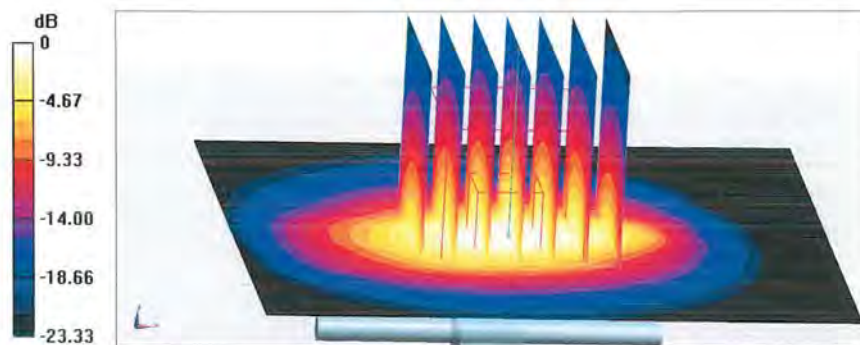
Peak SAR (extrapolated) = 27.8 W/kg

SAR(1 g) = 13 W/kg; SAR(10 g) = 5.98 W/kg

Smallest distance from peaks to all points 3 dB below = 9 mm

Ratio of SAR at M2 to SAR at M1 = 47.1%

Maximum value of SAR (measured) = 22.2 W/kg



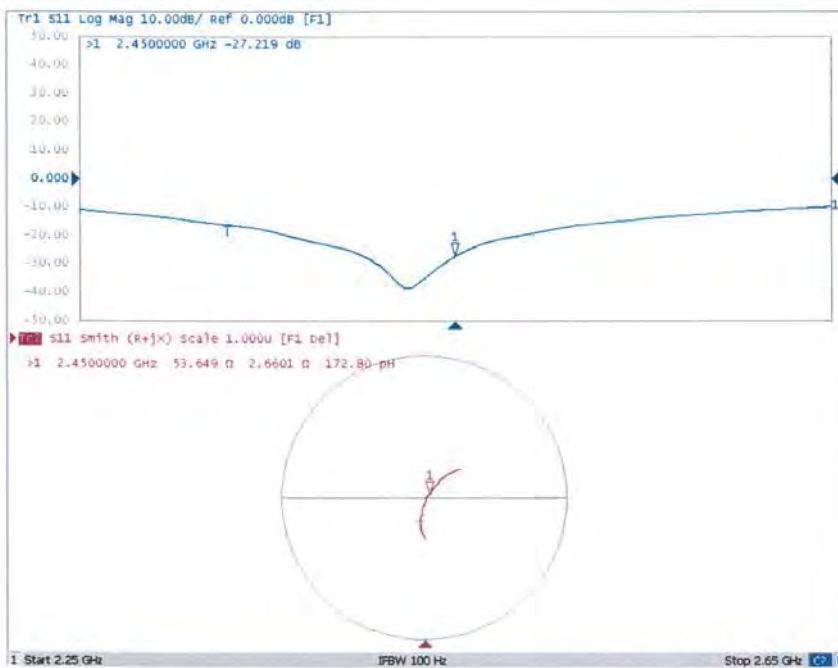
0 dB = 22.2 W/kg = 13.46 dBW/kg



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Impedance Measurement Plot for Head TSL





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CALIBRATION
CNAS L0570

Client **AUDEN**

Certificate No: **Z20-60430**

CALIBRATION CERTIFICATE



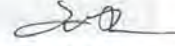
Object: D5GHzV2 - SN: 1145
Calibration Procedure(s): FF-Z11-003-01
Calibration Procedures for dipole validation kits
Calibration date: November 9, 2020

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	106276	12-May-20 (CTTL, No.J20X02965)	May-21
Power sensor NRP6A	101369	12-May-20 (CTTL, No.J20X02965)	May-21
ReferenceProbe EX3DV4	SN 3617	30-Jan-20(SPEAG, No.EX3-3617_Jan20)	Jan-21
DAE4	SN 771	10-Feb-20(CTTL-SPEAG, No.Z20-60017)	Feb-21
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	25-Feb-20 (CTTL, No.J20X00516)	Feb-21
NetworkAnalyzerE5071C	MY46110673	10-Feb-20 (CTTL, No.J20X00515)	Feb-21

	Name	Function	Signature
Calibrated by:	Zhao Jing	SAR Test Engineer	
Reviewed by:	Lin Hao	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: November 19, 2020

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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:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Measurement procedure for assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices- Part 1: Device used next to the ear (Frequency range of 300MHz to 6GHz)", July 2016
- IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010
- KDB865664, SAR Measurement Requirements for 100 MHz to 6 GHz

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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



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Measurement Conditions

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

DASY Version	DASY52	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy = 4 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	5250 MHz ± 1 MHz 5600 MHz ± 1 MHz 5750 MHz ± 1 MHz	

Head TSL parameters at 5250 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.9	4.71 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.1 ± 6 %	4.76 mho/m ± 6 %
Head TSL temperature change during test	<1.0 °C	---	---

SAR result with Head TSL at 5250 MHz

SAR averaged over 1 cm ² (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	7.78 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	77.5 W/kg ± 24.4 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Head TSL	Condition	
SAR measured	100 mW input power	2.22 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	22.1 W/kg ± 24.2 % (k=2)



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Head TSL parameters at 5600 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.5	5.07 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.5 ± 6 %	5.14 mho/m ± 6 %
Head TSL temperature change during test	<1.0 °C	---	---

SAR result with Head TSL at 5600 MHz

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.07 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	80.3 W/kg ± 24.4 % (k=2)
SAR averaged over 10 cm³ (10 g) of Head TSL	Condition	
SAR measured	100 mW input power	2.30 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	22.9 W/kg ± 24.2 % (k=2)

Head TSL parameters at 5750 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.4	5.22 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.4 ± 6 %	5.31 mho/m ± 6 %
Head TSL temperature change during test	<1.0 °C	---	---

SAR result with Head TSL at 5750 MHz

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	7.79 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	77.5 W/kg ± 24.4 % (k=2)
SAR averaged over 10 cm³ (10 g) of Head TSL	Condition	
SAR measured	100 mW input power	2.22 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	22.1 W/kg ± 24.2 % (k=2)



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Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL at 5250 MHz

Impedance, transformed to feed point	53.1Ω - 9.17jΩ
Return Loss	- 20.6dB

Antenna Parameters with Head TSL at 5600 MHz

Impedance, transformed to feed point	58.7Ω - 0.77jΩ
Return Loss	- 21.9dB

Antenna Parameters with Head TSL at 5750 MHz

Impedance, transformed to feed point	56.5Ω - 2.83jΩ
Return Loss	- 23.5dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.067 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: 11.09.2020

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1145Communication System: CW; Frequency: 5250 MHz, Frequency: 5600 MHz,
Frequency: 5750 MHz,Medium parameters used: $f = 5250$ MHz; $\sigma = 4.756$ S/m; $\epsilon_r = 35.12$; $\rho = 1000$ kg/m³, Medium parameters used: $f = 5600$ MHz; $\sigma = 5.14$ S/m; $\epsilon_r = 34.53$; $\rho = 1000$ kg/m³, Medium parameters used: $f = 5750$ MHz; $\sigma = 5.306$ S/m; $\epsilon_r = 34.41$; $\rho = 1000$ kg/m³,

Phantom section: Center Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3617; ConvF(5.39, 5.39, 5.39) @ 5250 MHz; ConvF(4.99, 4.99, 4.99) @ 5600 MHz; ConvF(5.1, 5.1, 5.1) @ 5750 MHz; Calibrated: 2020-01-30
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn771; Calibrated: 2020-02-10
- Phantom: MFP_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

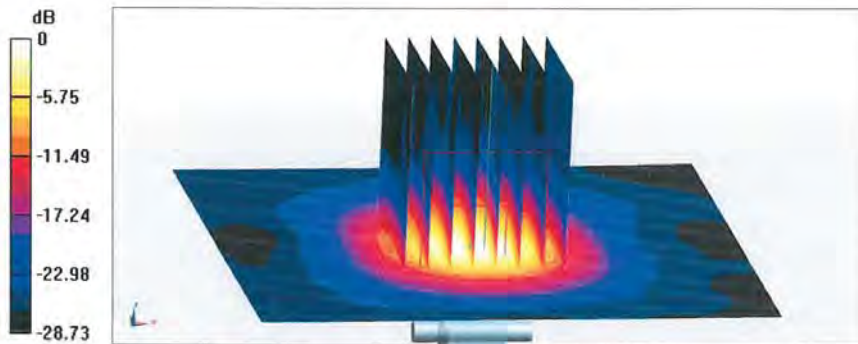
Dipole Calibration /Pin=100mW, d=10mm, f=5250 MHz/Zoom Scan,
dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 71.55 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 31.1 W/kg
SAR(1 g) = 7.78 W/kg; SAR(10 g) = 2.22 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 65.5%
Maximum value of SAR (measured) = 17.9 W/kg

Dipole Calibration /Pin=100mW, d=10mm, f=5600 MHz/Zoom Scan,
dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 70.50 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 35.7 W/kg
SAR(1 g) = 8.07 W/kg; SAR(10 g) = 2.3 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 62%
Maximum value of SAR (measured) = 19.6 W/kg



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Dipole Calibration /Pin=100mW, d=10mm, f=5750 MHz/Zoom Scan,
dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
 Reference Value = 68.32 V/m; Power Drift = 0.00 dB
 Peak SAR (extrapolated) = 34.7 W/kg
SAR(1 g) = 7.79 W/kg; SAR(10 g) = 2.22 W/kg
 Smallest distance from peaks to all points 3 dB below = 7.4 mm
 Ratio of SAR at M2 to SAR at M1 = 61.8%
 Maximum value of SAR (measured) = 19.0 W/kg

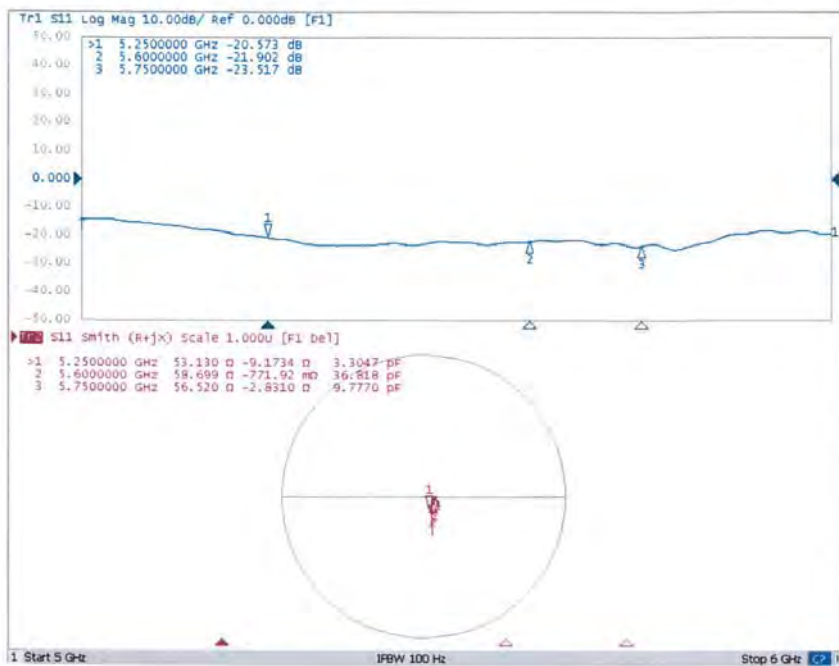


0 dB = 19.0 W/kg = 12.79 dBW/kg



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Impedance Measurement Plot for Head TSL



Calibration Laboratory of
Schmid & Partner
Engineering AG *Ex-042-21-069*
Zeughausstrasse 43, 8004 Zurich, Switzerland



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Accreditation No.: **SCS 0108**

Client **ATL (Auden)**

Certificate No: **EX3-3847_Mar21**

CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:3847**

Calibration procedure(s) **QA CAL-01.v9, QA CAL-14.v6, QA CAL-23.v5, QA CAL-25.v7
Calibration procedure for dosimetric E-field probes**

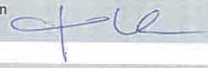

Calibration date: **March 26, 2021**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	01-Apr-20 (No. 217-03100/03101)	Apr-21
Power sensor NRP-Z91	SN: 103244	01-Apr-20 (No. 217-03100)	Apr-21
Power sensor NRP-Z91	SN: 103245	01-Apr-20 (No. 217-03101)	Apr-21
Reference 20 dB Attenuator	SN: CC2552 (20x)	31-Mar-20 (No. 217-03106)	Apr-21
DAE4	SN: 660	23-Dec-20 (No. DAE4-660_Dec20)	Dec-21
Reference Probe ES3DV2	SN: 3013	30-Dec-20 (No. ES3-3013_Dec20)	Dec-21
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-20)	In house check: Jun-22
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-20)	In house check: Jun-22
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-20)	In house check: Jun-22
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-20)	In house check: Jun-22
Network Analyzer E8358A	SN: US41080477	31-Mar-14 (in house check Oct-20)	In house check: Oct-21

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: March 27, 2021

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

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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 φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- **NORM_{x,y,z}**: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ 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*).
- **NORM(f)_{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 (no uncertainty required). DCP does not depend on frequency nor media.
- **PAR**: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- **A_{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)**: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- **Sensor Offset**: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- **Connector Angle**: The angle is assessed using the information gained by determining the NORM_x (no uncertainty required).



EX3DV4 – SN:3847

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DASY/EASY - Parameters of Probe: EX3DV4 - SN:3847

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	0.55	0.48	0.41	$\pm 10.1\%$
DCP (mV) ^B	100.2	99.2	99.3	

Calibration Results for Modulation Response

UID	Communication System Name		A dB	B dB $\sqrt{\mu\text{V}}$	C	D dB	VR mV	Max dev.	Max Unc ^E (k=2)
0	CW	X	0.00	0.00	1.00	0.00	173.3	$\pm 2.5\%$	$\pm 4.7\%$
		Y	0.00	0.00	1.00		163.6		
		Z	0.00	0.00	1.00		179.8		
10352-AAA	Pulse Waveform (200Hz, 10%)	X	20.00	90.53	19.88	10.00	60.0	$\pm 3.9\%$	$\pm 9.6\%$
		Y	20.00	94.87	22.91		60.0		
		Z	2.21	65.08	9.82		60.0		
10353-AAA	Pulse Waveform (200Hz, 20%)	X	20.00	92.51	19.90	6.99	80.0	$\pm 2.3\%$	$\pm 9.6\%$
		Y	20.00	98.54	23.63		80.0		
		Z	1.52	64.80	8.92		80.0		
10354-AAA	Pulse Waveform (200Hz, 40%)	X	20.00	95.92	20.40	3.98	95.0	$\pm 1.1\%$	$\pm 9.6\%$
		Y	20.00	106.24	25.94		95.0		
		Z	2.01	70.17	10.38		95.0		
10355-AAA	Pulse Waveform (200Hz, 60%)	X	20.00	103.73	23.01	2.22	120.0	$\pm 1.0\%$	$\pm 9.6\%$
		Y	20.00	115.68	28.95		120.0		
		Z	20.00	90.57	15.99		120.0		
10387-AAA	QPSK Waveform, 1 MHz	X	1.82	66.51	15.47	1.00	150.0	$\pm 1.7\%$	$\pm 9.6\%$
		Y	1.76	65.40	15.01		150.0		
		Z	1.69	66.33	14.93		150.0		
10388-AAA	QPSK Waveform, 10 MHz	X	2.40	68.65	16.15	0.00	150.0	$\pm 1.2\%$	$\pm 9.6\%$
		Y	2.30	67.70	15.65		150.0		
		Z	2.22	67.80	15.60		150.0		
10396-AAA	64-QAM Waveform, 100 kHz	X	2.95	70.36	18.92	3.01	150.0	$\pm 0.8\%$	$\pm 9.6\%$
		Y	3.05	70.39	18.81		150.0		
		Z	2.58	69.31	18.28		150.0		
10399-AAA	64-QAM Waveform, 40 MHz	X	3.52	66.86	15.73	0.00	150.0	$\pm 0.7\%$	$\pm 9.6\%$
		Y	3.60	67.06	15.78		150.0		
		Z	3.40	66.54	15.43		150.0		
10414-AAA	WLAN CCDF, 64-QAM, 40MHz	X	4.88	65.38	15.44	0.00	150.0	$\pm 1.6\%$	$\pm 9.6\%$
		Y	5.02	65.65	15.56		150.0		
		Z	4.74	65.35	15.31		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 Numerical linearization parameter: uncertainty not required.

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



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DASY/EASY - Parameters of Probe: EX3DV4 - SN:3847

Sensor Model Parameters

	C1 fF	C2 fF	α V ⁻¹	T1 ms.V ⁻²	T2 ms.V ⁻¹	T3 ms	T4 V ⁻²	T5 V ⁻¹	T6
X	49.6	369.68	35.38	13.56	0.00	5.03	0.88	0.28	1.01
Y	55.4	414.48	35.65	12.93	0.17	5.07	1.21	0.29	1.01
Z	40.5	295.92	34.11	8.19	0.00	4.96	1.22	0.07	1.01

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-79.8
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

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



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DASY/EASY - Parameters of Probe: EX3DV4 - SN:3847

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth (mm) ^G	Unc (k=2)
750	41.9	0.89	9.73	9.73	9.73	0.59	0.83	± 12.0 %
835	41.5	0.90	9.52	9.52	9.52	0.55	0.80	± 12.0 %
900	41.5	0.97	9.38	9.38	9.38	0.40	0.99	± 12.0 %
1450	40.5	1.20	9.06	9.06	9.06	0.44	0.80	± 12.0 %
1750	40.1	1.37	8.88	8.88	8.88	0.30	0.86	± 12.0 %
1810	40.0	1.40	8.61	8.61	8.61	0.38	0.86	± 12.0 %
1900	40.0	1.40	8.43	8.43	8.43	0.30	0.86	± 12.0 %
2000	40.0	1.40	8.35	8.35	8.35	0.40	0.85	± 12.0 %
2300	39.5	1.67	7.89	7.89	7.89	0.30	0.90	± 12.0 %
2450	39.2	1.80	7.59	7.59	7.59	0.35	0.90	± 12.0 %
2600	39.0	1.96	7.37	7.37	7.37	0.35	0.90	± 12.0 %
3300	38.2	2.71	7.10	7.10	7.10	0.30	1.35	± 13.1 %
3500	37.9	2.91	6.82	6.82	6.82	0.30	1.35	± 13.1 %
3700	37.7	3.12	6.79	6.79	6.79	0.30	1.35	± 13.1 %
3900	37.5	3.32	6.38	6.38	6.38	0.40	1.70	± 13.1 %
4100	37.2	3.53	6.33	6.33	6.33	0.40	1.70	± 13.1 %
4200	37.1	3.63	6.32	6.32	6.32	0.40	1.60	± 13.1 %
4400	36.9	3.84	6.20	6.20	6.20	0.40	1.60	± 13.1 %
4600	36.7	4.04	6.13	6.13	6.13	0.40	1.80	± 13.1 %
4800	36.4	4.25	6.09	6.09	6.09	0.40	1.80	± 13.1 %
4950	36.3	4.40	5.91	5.91	5.91	0.40	1.80	± 13.1 %
5250	35.9	4.71	5.34	5.34	5.34	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.75	4.75	4.75	0.40	1.80	± 13.1 %
5750	35.4	5.22	5.00	5.00	5.00	0.40	1.80	± 13.1 %

^C Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. 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 At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

^G Alpha/Depth are determined during calibration. SPEAG 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.



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DASY/EASY - Parameters of Probe: EX3DV4 - SN:3847

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth (mm) ^G	Unc (k=2)
6500	34.5	6.07	5.60	5.60	5.60	0.20	2.50	± 18.6 %

^C Frequency validity above 6GHz is ± 700 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

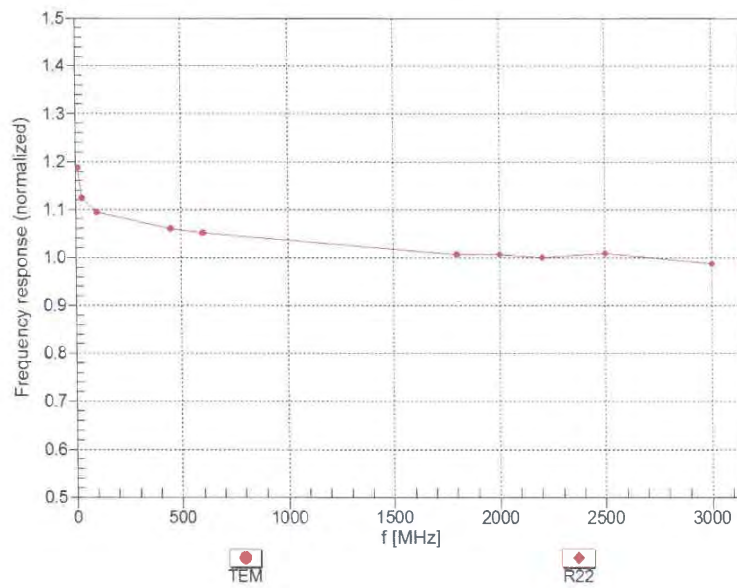
^F At frequencies 6-10 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

^G Alpha/Depth are determined during calibration. SPEAG 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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Frequency Response of E-Field (TEM-Cell:ifi110 EXX, Waveguide: R22)

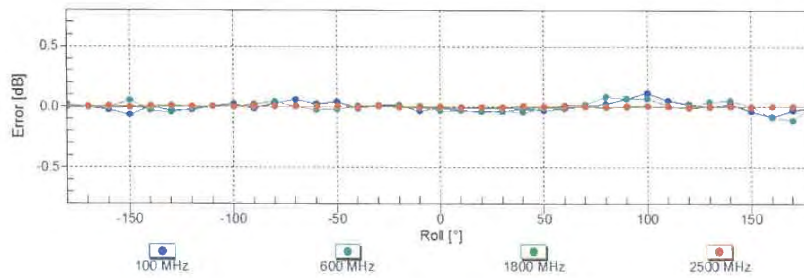
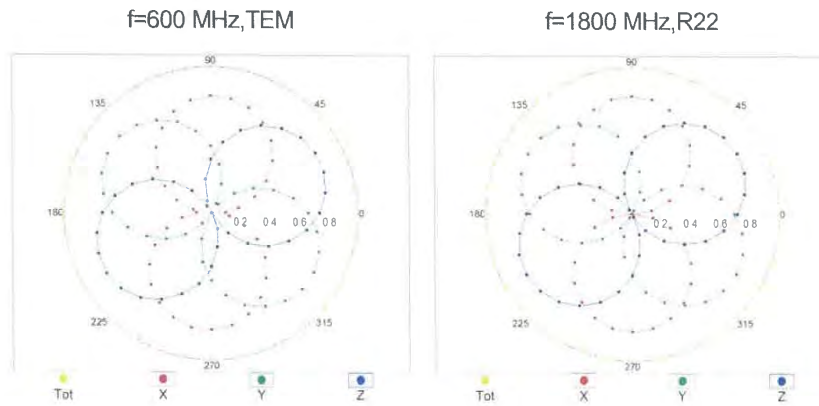


Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ (k=2)

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Receiving Pattern (ϕ), $\vartheta = 0^\circ$

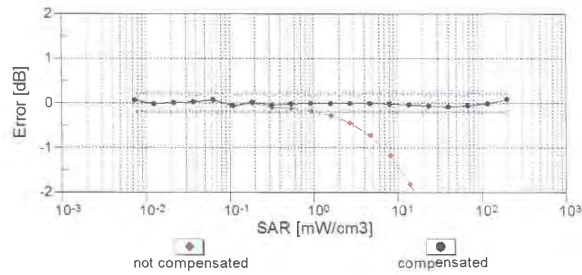
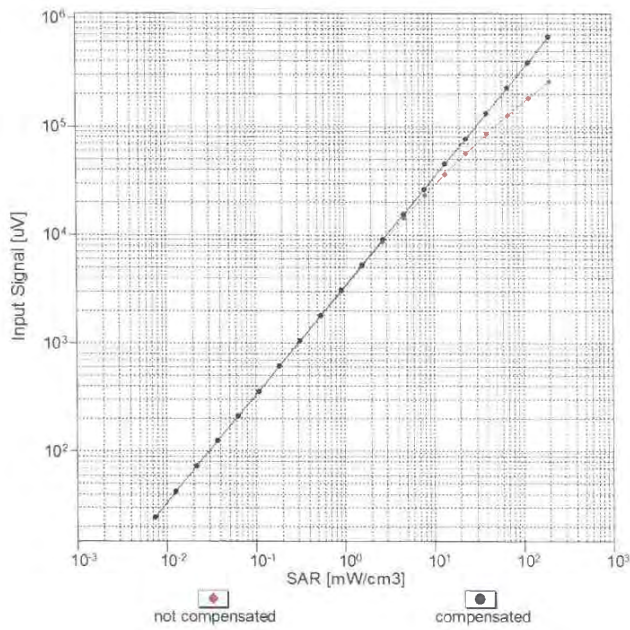


Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

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Dynamic Range f(SAR_{head}) (TEM cell , f_{eval}= 1900 MHz)

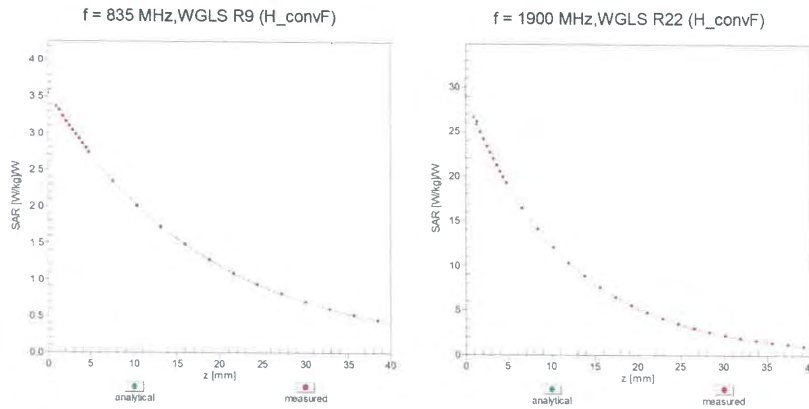


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

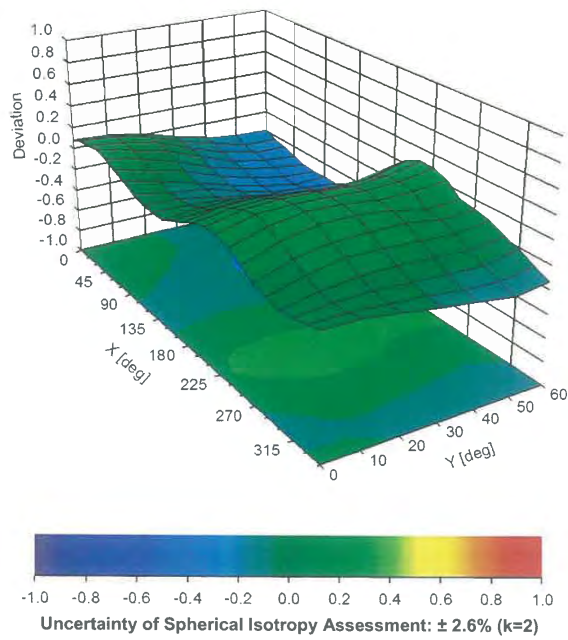
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Conversion Factor Assessment



Deviation from Isotropy in Liquid Error (ϕ, θ), f = 900 MHz





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Appendix: Modulation Calibration Parameters

UID	Rev	Communication System Name	Group	PAR (dB)	Unc ^e (k=2)
0		CW	CW	0.00	± 4.7 %
10010	CAA	SAR Validation (Square, 100ms, 10ms)	Test	10.00	± 9.6 %
10011	CAB	UMTS-FDD (WCDMA)	WCDMA	2.91	± 9.6 %
10012	CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	WLAN	1.87	± 9.6 %
10013	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	WLAN	9.46	± 9.6 %
10021	DAC	GSM-FDD (TDMA, GMSK)	GSM	9.39	± 9.6 %
10023	DAC	GPRS-FDD (TDMA, GMSK, TN 0)	GSM	9.57	± 9.6 %
10024	DAC	GPRS-FDD (TDMA, GMSK, TN 0-1)	GSM	6.56	± 9.6 %
10025	DAC	EDGE-FDD (TDMA, 8PSK, TN 0)	GSM	12.62	± 9.6 %
10026	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1)	GSM	9.55	± 9.6 %
10027	DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	GSM	4.80	± 9.6 %
10028	DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	GSM	3.55	± 9.6 %
10029	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	GSM	7.78	± 9.6 %
10030	CAA	IEEE 802.15.1 Bluetooth (GFSK, DH1)	Bluetooth	5.30	± 9.6 %
10031	CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	Bluetooth	1.87	± 9.6 %
10032	CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	Bluetooth	1.16	± 9.6 %
10033	CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)	Bluetooth	7.74	± 9.6 %
10034	CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)	Bluetooth	4.53	± 9.6 %
10035	CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)	Bluetooth	3.83	± 9.6 %
10036	CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	Bluetooth	8.01	± 9.6 %
10037	CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH3)	Bluetooth	4.77	± 9.6 %
10038	CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	Bluetooth	4.10	± 9.6 %
10039	CAB	CDMA2000 (1xRTT, RC1)	CDMA2000	4.57	± 9.6 %
10042	CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate)	AMPS	7.78	± 9.6 %
10044	CAA	IS-91/EIA/TIA-553 FDD (FDMA, FM)	AMPS	0.00	± 9.6 %
10048	CAA	DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)	DECT	13.80	± 9.6 %
10049	CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	DECT	10.79	± 9.6 %
10056	CAA	UMTS-TDD (TD-SCDMA, 1.28 Mcps)	TD-SCDMA	11.01	± 9.6 %
10058	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	GSM	6.52	± 9.6 %
10059	CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)	WLAN	2.12	± 9.6 %
10060	CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)	WLAN	2.83	± 9.6 %
10061	CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	WLAN	3.60	± 9.6 %
10062	CAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)	WLAN	8.68	± 9.6 %
10063	CAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)	WLAN	8.63	± 9.6 %
10064	CAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	WLAN	9.09	± 9.6 %
10065	CAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)	WLAN	9.00	± 9.6 %
10066	CAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)	WLAN	9.38	± 9.6 %
10067	CAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)	WLAN	10.12	± 9.6 %
10068	CAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)	WLAN	10.24	± 9.6 %
10069	CAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	WLAN	10.56	± 9.6 %
10071	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)	WLAN	9.83	± 9.6 %
10072	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps)	WLAN	9.62	± 9.6 %
10073	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps)	WLAN	9.94	± 9.6 %
10074	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps)	WLAN	10.30	± 9.6 %
10075	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps)	WLAN	10.77	± 9.6 %
10076	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps)	WLAN	10.94	± 9.6 %
10077	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	WLAN	11.00	± 9.6 %
10081	CAB	CDMA2000 (1xRTT, RC3)	CDMA2000	3.97	± 9.6 %
10082	CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate)	AMPS	4.77	± 9.6 %
10090	DAC	GPRS-FDD (TDMA, GMSK, TN 0-4)	GSM	6.56	± 9.6 %
10097	CAC	UMTS-FDD (HSDPA)	WCDMA	3.98	± 9.6 %
10098	DAC	UMTS-FDD (HSUPA, Subtest 2)	WCDMA	3.98	± 9.6 %



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10099	CAC	EDGE-FDD (TDMA, 8PSK, TN 0-4)	GSM	9.55	± 9.6 %
10100	CAC	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	LTE-FDD	5.67	± 9.6 %
10101	CAB	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	LTE-FDD	6.42	± 9.6 %
10102	CAB	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	LTE-FDD	6.60	± 9.6 %
10103	DAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	LTE-TDD	9.29	± 9.6 %
10104	CAE	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	LTE-TDD	9.97	± 9.6 %
10105	CAE	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	LTE-TDD	10.01	± 9.6 %
10108	CAE	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	LTE-FDD	5.80	± 9.6 %
10109	CAG	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	LTE-FDD	6.43	± 9.6 %
10110	CAG	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	LTE-FDD	5.75	± 9.6 %
10111	CAG	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	LTE-FDD	6.44	± 9.6 %
10112	CAG	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	LTE-FDD	6.59	± 9.6 %
10113	CAG	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	LTE-FDD	6.62	± 9.6 %
10114	CAG	IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)	WLAN	8.10	± 9.6 %
10115	CAG	IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)	WLAN	8.46	± 9.6 %
10116	CAG	IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM)	WLAN	8.15	± 9.6 %
10117	CAG	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	WLAN	8.07	± 9.6 %
10118	CAD	IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)	WLAN	8.59	± 9.6 %
10119	CAD	IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)	WLAN	8.13	± 9.6 %
10140	CAD	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	LTE-FDD	6.49	± 9.6 %
10141	CAD	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	LTE-FDD	6.53	± 9.6 %
10142	CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	LTE-FDD	5.73	± 9.6 %
10143	CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	LTE-FDD	6.35	± 9.6 %
10144	CAC	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	LTE-FDD	6.65	± 9.6 %
10145	CAC	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	LTE-FDD	5.76	± 9.6 %
10146	CAC	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	LTE-FDD	6.41	± 9.6 %
10147	CAC	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	LTE-FDD	6.72	± 9.6 %
10149	CAE	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	LTE-FDD	6.42	± 9.6 %
10150	CAE	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	LTE-FDD	6.60	± 9.6 %
10151	CAE	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	LTE-TDD	9.28	± 9.6 %
10152	CAE	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	LTE-TDD	9.92	± 9.6 %
10153	CAE	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	LTE-TDD	10.05	± 9.6 %
10154	CAF	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	LTE-FDD	5.75	± 9.6 %
10155	CAF	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	LTE-FDD	6.43	± 9.6 %
10156	CAF	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	LTE-FDD	5.79	± 9.6 %
10157	CAE	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	LTE-FDD	6.49	± 9.6 %
10158	CAE	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	LTE-FDD	6.62	± 9.6 %
10159	CAG	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	LTE-FDD	6.56	± 9.6 %
10160	CAG	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	LTE-FDD	5.82	± 9.6 %
10161	CAG	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	LTE-FDD	6.43	± 9.6 %
10162	CAG	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	LTE-FDD	6.58	± 9.6 %
10166	CAG	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	LTE-FDD	5.46	± 9.6 %
10167	CAG	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	LTE-FDD	6.21	± 9.6 %
10168	CAG	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	LTE-FDD	6.79	± 9.6 %
10169	CAG	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	LTE-FDD	5.73	± 9.6 %
10170	CAG	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	LTE-FDD	6.52	± 9.6 %
10171	CAE	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	LTE-FDD	6.49	± 9.6 %
10172	CAE	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	LTE-TDD	9.21	± 9.6 %
10173	CAE	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	LTE-TDD	9.48	± 9.6 %
10174	CAF	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	LTE-TDD	10.25	± 9.6 %
10175	CAF	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	LTE-FDD	5.72	± 9.6 %
10176	CAF	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	LTE-FDD	6.52	± 9.6 %
10177	CAE	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	LTE-FDD	5.73	± 9.6 %
10178	CAE	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	LTE-FDD	6.52	± 9.6 %
10179	AAE	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	LTE-FDD	6.50	± 9.6 %
10180	CAG	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	LTE-FDD	6.50	± 9.6 %

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10181	CAG	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	LTE-FDD	5.72	± 9.6 %
10182	CAG	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	LTE-FDD	6.52	± 9.6 %
10183	CAG	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	LTE-FDD	6.50	± 9.6 %
10184	CAG	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	LTE-FDD	5.73	± 9.6 %
10185	CAI	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	LTE-FDD	6.51	± 9.6 %
10186	CAG	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	LTE-FDD	6.50	± 9.6 %
10187	CAG	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	LTE-FDD	5.73	± 9.6 %
10188	CAG	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	LTE-FDD	6.52	± 9.6 %
10189	CAE	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	LTE-FDD	6.50	± 9.6 %
10193	CAE	IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)	WLAN	8.09	± 9.6 %
10194	AAD	IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM)	WLAN	8.12	± 9.6 %
10195	CAE	IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM)	WLAN	8.21	± 9.6 %
10196	CAE	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	WLAN	8.10	± 9.6 %
10197	AAE	IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)	WLAN	8.13	± 9.6 %
10198	CAF	IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)	WLAN	8.27	± 9.6 %
10219	CAF	IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)	WLAN	8.03	± 9.6 %
10220	AAF	IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM)	WLAN	8.13	± 9.6 %
10221	CAC	IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)	WLAN	8.27	± 9.6 %
10222	CAC	IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)	WLAN	8.06	± 9.6 %
10223	CAD	IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM)	WLAN	8.48	± 9.6 %
10224	CAD	IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM)	WLAN	8.08	± 9.6 %
10225	CAD	UMTS-FDD (HSPA+)	WCDMA	5.97	± 9.6 %
10226	CAD	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	LTE-TDD	9.49	± 9.6 %
10227	CAD	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	LTE-TDD	10.26	± 9.6 %
10228	CAD	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	LTE-TDD	9.22	± 9.6 %
10229	DAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	LTE-TDD	9.48	± 9.6 %
10230	CAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	LTE-TDD	10.25	± 9.6 %
10231	CAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	LTE-TDD	9.19	± 9.6 %
10232	CAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	LTE-TDD	9.48	± 9.6 %
10233	CAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	LTE-TDD	10.25	± 9.6 %
10234	CAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	LTE-TDD	9.21	± 9.6 %
10235	CAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	LTE-TDD	9.48	± 9.6 %
10236	CAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	LTE-TDD	10.25	± 9.6 %
10237	CAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	LTE-TDD	9.21	± 9.6 %
10238	CAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	LTE-TDD	9.48	± 9.6 %
10239	CAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	LTE-TDD	10.25	± 9.6 %
10240	CAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	LTE-TDD	9.21	± 9.6 %
10241	CAB	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	LTE-TDD	9.82	± 9.6 %
10242	CAD	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	LTE-TDD	9.86	± 9.6 %
10243	CAD	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	LTE-TDD	9.46	± 9.6 %
10244	CAD	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	LTE-TDD	10.06	± 9.6 %
10245	CAG	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	LTE-TDD	10.06	± 9.6 %
10246	CAG	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	LTE-TDD	9.30	± 9.6 %
10247	CAG	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	LTE-TDD	9.91	± 9.6 %
10248	CAG	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	LTE-TDD	10.09	± 9.6 %
10249	CAG	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	LTE-TDD	9.29	± 9.6 %
10250	CAG	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	LTE-TDD	9.81	± 9.6 %
10251	CAF	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	LTE-TDD	10.17	± 9.6 %
10252	CAF	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	LTE-TDD	9.24	± 9.6 %
10253	CAF	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	LTE-TDD	9.90	± 9.6 %
10254	CAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	LTE-TDD	10.14	± 9.6 %
10255	CAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	LTE-TDD	9.20	± 9.6 %
10256	CAB	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	LTE-TDD	9.96	± 9.6 %
10257	CAD	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	LTE-TDD	10.08	± 9.6 %
10258	CAD	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	LTE-TDD	9.34	± 9.6 %
10259	CAD	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	LTE-TDD	9.98	± 9.6 %

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10260	CAG	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	LTE-TDD	9.97	± 9.6 %
10261	CAG	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	LTE-TDD	9.24	± 9.6 %
10262	CAG	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	LTE-TDD	9.83	± 9.6 %
10263	CAG	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	LTE-TDD	10.16	± 9.6 %
10264	CAG	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	LTE-TDD	9.23	± 9.6 %
10265	CAG	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	LTE-TDD	9.92	± 9.6 %
10266	CAF	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	LTE-TDD	10.07	± 9.6 %
10267	CAF	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	LTE-TDD	9.30	± 9.6 %
10268	CAF	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	LTE-TDD	10.06	± 9.6 %
10269	CAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	LTE-TDD	10.13	± 9.6 %
10270	CAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	LTE-TDD	9.58	± 9.6 %
10274	CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10)	WCDMA	4.87	± 9.6 %
10275	CAD	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)	WCDMA	3.96	± 9.6 %
10277	CAD	PHS (QPSK)	PHS	11.81	± 9.6 %
10278	CAD	PHS (QPSK, BW 884MHz, Rolloff 0.5)	PHS	11.81	± 9.6 %
10279	CAG	PHS (QPSK, BW 884MHz, Rolloff 0.38)	PHS	12.18	± 9.6 %
10290	CAG	CDMA2000, RC1, SO55, Full Rate	CDMA2000	3.91	± 9.6 %
10291	CAG	CDMA2000, RC3, SO55, Full Rate	CDMA2000	3.46	± 9.6 %
10292	CAG	CDMA2000, RC3, SO32, Full Rate	CDMA2000	3.39	± 9.6 %
10293	CAG	CDMA2000, RC3, SO3, Full Rate	CDMA2000	3.50	± 9.6 %
10295	CAG	CDMA2000, RC1, SO3, 1/8th Rate 25 fr.	CDMA2000	12.49	± 9.6 %
10297	CAF	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	LTE-FDD	5.81	± 9.6 %
10298	CAF	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	LTE-FDD	5.72	± 9.6 %
10299	CAF	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	LTE-FDD	6.39	± 9.6 %
10300	CAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	LTE-FDD	6.60	± 9.6 %
10301	CAC	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC)	WiMAX	12.03	± 9.6 %
10302	CAB	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC, 3CTRL)	WiMAX	12.57	± 9.6 %
10303	CAB	IEEE 802.16e WiMAX (31:15, 5ms, 10MHz, 64QAM, PUSC)	WiMAX	12.52	± 9.6 %
10304	CAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, 64QAM, PUSC)	WiMAX	11.86	± 9.6 %
10305	CAA	IEEE 802.16e WiMAX (31:15, 10ms, 10MHz, 64QAM, PUSC)	WiMAX	15.24	± 9.6 %
10306	CAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 64QAM, PUSC)	WiMAX	14.67	± 9.6 %
10307	AAB	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, PUSC)	WiMAX	14.49	± 9.6 %
10308	AAB	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, PUSC)	WiMAX	14.46	± 9.6 %
10309	AAB	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, AMC 2x3)	WiMAX	14.58	± 9.6 %
10310	AAB	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, AMC 2x3)	WiMAX	14.57	± 9.6 %
10311	AAB	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	LTE-FDD	6.06	± 9.6 %
10313	AAD	iDEN 1:3	iDEN	10.51	± 9.6 %
10314	AAD	iDEN 1:6	iDEN	13.48	± 9.6 %
10315	AAD	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 96pc dc)	WLAN	1.71	± 9.6 %
10316	AAD	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc dc)	WLAN	8.36	± 9.6 %
10317	AAA	IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc dc)	WLAN	8.36	± 9.6 %
10352	AAA	Pulse Waveform (200Hz, 10%)	Generic	10.00	± 9.6 %
10353	AAA	Pulse Waveform (200Hz, 20%)	Generic	6.99	± 9.6 %
10354	AAA	Pulse Waveform (200Hz, 40%)	Generic	3.98	± 9.6 %
10355	AAA	Pulse Waveform (200Hz, 60%)	Generic	2.22	± 9.6 %
10356	AAA	Pulse Waveform (200Hz, 80%)	Generic	0.97	± 9.6 %
10387	AAA	QPSK Waveform, 1 MHz	Generic	5.10	± 9.6 %
10388	AAA	QPSK Waveform, 10 MHz	Generic	5.22	± 9.6 %
10396	AAA	64-QAM Waveform, 100 kHz	Generic	6.27	± 9.6 %
10399	AAA	64-QAM Waveform, 40 MHz	Generic	6.27	± 9.6 %
10400	AAD	IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc dc)	WLAN	8.37	± 9.6 %
10401	AAA	IEEE 802.11ac WiFi (40MHz, 64-QAM, 99pc dc)	WLAN	8.60	± 9.6 %
10402	AAA	IEEE 802.11ac WiFi (80MHz, 64-QAM, 99pc dc)	WLAN	8.53	± 9.6 %
10403	AAB	CDMA2000 (1xEV-DO, Rev. 0)	CDMA2000	3.76	± 9.6 %
10404	AAB	CDMA2000 (1xEV-DO, Rev. A)	CDMA2000	3.77	± 9.6 %
10406	AAD	CDMA2000, RC3, SO32, SCH0, Full Rate	CDMA2000	5.22	± 9.6 %

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10410	AAA	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Sub=2,3,4,7,8,9)	LTE-TDD	7.82	± 9.6 %
10414	AAA	WLAN CCDF, 64-QAM, 40MHz	Generic	8.54	± 9.6 %
10415	AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc dc)	WLAN	1.54	± 9.6 %
10416	AAA	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc dc)	WLAN	8.23	± 9.6 %
10417	AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 99pc dc)	WLAN	8.23	± 9.6 %
10418	AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc, Long)	WLAN	8.14	± 9.6 %
10419	AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc, Short)	WLAN	8.19	± 9.6 %
10422	AAA	IEEE 802.11n (HT Greenfield, 7.2 Mbps, BPSK)	WLAN	8.32	± 9.6 %
10423	AAA	IEEE 802.11n (HT Greenfield, 43.3 Mbps, 16-QAM)	WLAN	8.47	± 9.6 %
10424	AAE	IEEE 802.11n (HT Greenfield, 72.2 Mbps, 64-QAM)	WLAN	8.40	± 9.6 %
10425	AAE	IEEE 802.11n (HT Greenfield, 15 Mbps, BPSK)	WLAN	8.41	± 9.6 %
10426	AAE	IEEE 802.11n (HT Greenfield, 90 Mbps, 16-QAM)	WLAN	8.45	± 9.6 %
10427	AAB	IEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM)	WLAN	8.41	± 9.6 %
10430	AAB	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1)	LTE-FDD	8.28	± 9.6 %
10431	AAC	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1)	LTE-FDD	8.38	± 9.6 %
10432	AAB	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1)	LTE-FDD	8.34	± 9.6 %
10433	AAC	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1)	LTE-FDD	8.34	± 9.6 %
10434	AAG	W-CDMA (BS Test Model 1, 64 DPCH)	WCDMA	8.60	± 9.6 %
10435	AAA	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 9.6 %
10447	AAA	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	LTE-FDD	7.56	± 9.6 %
10448	AAA	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1, Clippin 44%)	LTE-FDD	7.53	± 9.6 %
10449	AAC	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)	LTE-FDD	7.51	± 9.6 %
10450	AAA	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	LTE-FDD	7.48	± 9.6 %
10451	AAA	W-CDMA (BS Test Model 1, 64 DPCH, Clipping 44%)	WCDMA	7.59	± 9.6 %
10453	AAC	Validation (Square, 10ms, 1ms)	Test	10.00	± 9.6 %
10456	AAC	IEEE 802.11ac WiFi (160MHz, 64-QAM, 99pc dc)	WLAN	8.63	± 9.6 %
10457	AAC	UMTS-FDD (DC-HSDPA)	WCDMA	6.62	± 9.6 %
10458	AAC	CDMA2000 (1xEV-DO, Rev. B, 2 carriers)	CDMA2000	6.55	± 9.6 %
10459	AAC	CDMA2000 (1xEV-DO, Rev. B, 3 carriers)	CDMA2000	8.25	± 9.6 %
10460	AAC	UMTS-FDD (WCDMA, AMR)	WCDMA	2.39	± 9.6 %
10461	AAC	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 9.6 %
10462	AAC	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM, UL Sub)	LTE-TDD	8.30	± 9.6 %
10463	AAD	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM, UL Sub)	LTE-TDD	8.56	± 9.6 %
10464	AAD	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 9.6 %
10465	AAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM, UL Sub)	LTE-TDD	8.32	± 9.6 %
10466	AAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM, UL Sub)	LTE-TDD	8.57	± 9.6 %
10467	AAA	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 9.6 %
10468	AAF	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM, UL Sub)	LTE-TDD	8.32	± 9.6 %
10469	AAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM, UL Sub)	LTE-TDD	8.56	± 9.6 %
10470	AAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 9.6 %
10471	AAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM, UL Sub)	LTE-TDD	8.32	± 9.6 %
10472	AAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM, UL Sub)	LTE-TDD	8.57	± 9.6 %
10473	AAA	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 9.6 %
10474	AAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM, UL Sub)	LTE-TDD	8.32	± 9.6 %
10475	AAD	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM, UL Sub)	LTE-TDD	8.57	± 9.6 %
10477	AAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM, UL Sub)	LTE-TDD	8.32	± 9.6 %
10478	AAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM, UL Sub)	LTE-TDD	8.57	± 9.6 %
10479	AAC	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL Sub)	LTE-TDD	7.74	± 9.6 %
10480	AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL Sub)	LTE-TDD	8.18	± 9.6 %
10481	AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL Sub)	LTE-TDD	8.45	± 9.6 %
10482	AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL Sub)	LTE-TDD	7.71	± 9.6 %
10483	AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, Sub)	LTE-TDD	8.39	± 9.6 %
10484	AAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL Sub)	LTE-TDD	8.47	± 9.6 %
10485	AAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK, UL Sub)	LTE-TDD	7.59	± 9.6 %
10486	AAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM, UL Sub)	LTE-TDD	8.38	± 9.6 %
10487	AAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM, UL Sub)	LTE-TDD	8.60	± 9.6 %

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10488	AAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL Sub)	LTE-TDD	7.70	± 9.6 %
10489	AAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL Sub)	LTE-TDD	8.31	± 9.6 %
10490	AAF	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL Sub)	LTE-TDD	8.54	± 9.6 %
10491	AAF	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK, UL Sub)	LTE-TDD	7.74	± 9.6 %
10492	AAF	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL Sub)	LTE-TDD	8.41	± 9.6 %
10493	AAF	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL Sub)	LTE-TDD	8.55	± 9.6 %
10494	AAF	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL Sub)	LTE-TDD	7.74	± 9.6 %
10495	AAF	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM, UL Sub)	LTE-TDD	8.37	± 9.6 %
10496	AAE	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL Sub)	LTE-TDD	8.54	± 9.6 %
10497	AAE	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL Sub)	LTE-TDD	7.67	± 9.6 %
10498	AAE	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL Sub)	LTE-TDD	8.40	± 9.6 %
10499	AAC	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL Sub)	LTE-TDD	8.68	± 9.6 %
10500	AAF	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL Sub)	LTE-TDD	7.67	± 9.6 %
10501	AAF	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Sub)	LTE-TDD	8.44	± 9.6 %
10502	AAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL Sub)	LTE-TDD	8.52	± 9.6 %
10503	AAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK, UL Sub)	LTE-TDD	7.72	± 9.6 %
10504	AAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM, UL Sub)	LTE-TDD	8.31	± 9.6 %
10505	AAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM, UL Sub)	LTE-TDD	8.54	± 9.6 %
10506	AAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL Sub)	LTE-TDD	7.74	± 9.6 %
10507	AAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL Sub)	LTE-TDD	8.36	± 9.6 %
10508	AAF	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL Sub)	LTE-TDD	8.55	± 9.6 %
10509	AAF	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL Sub)	LTE-TDD	7.99	± 9.6 %
10510	AAF	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL Sub)	LTE-TDD	8.49	± 9.6 %
10511	AAF	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL Sub)	LTE-TDD	8.51	± 9.6 %
10512	AAF	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL Sub)	LTE-TDD	7.74	± 9.6 %
10513	AAF	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL Sub)	LTE-TDD	8.42	± 9.6 %
10514	AAE	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL Sub)	LTE-TDD	8.45	± 9.6 %
10515	AAE	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 99pc dc)	WLAN	1.58	± 9.6 %
10516	AAE	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 99pc dc)	WLAN	1.57	± 9.6 %
10517	AAF	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 99pc dc)	WLAN	1.58	± 9.6 %
10518	AAF	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 99pc dc)	WLAN	8.23	± 9.6 %
10519	AAF	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 99pc dc)	WLAN	8.39	± 9.6 %
10520	AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 99pc dc)	WLAN	8.12	± 9.6 %
10521	AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 99pc dc)	WLAN	7.97	± 9.6 %
10522	AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 99pc dc)	WLAN	8.45	± 9.6 %
10523	AAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 99pc dc)	WLAN	8.08	± 9.6 %
10524	AAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 99pc dc)	WLAN	8.27	± 9.6 %
10525	AAC	IEEE 802.11ac WiFi (20MHz, MCS0, 99pc dc)	WLAN	8.36	± 9.6 %
10526	AAF	IEEE 802.11ac WiFi (20MHz, MCS1, 99pc dc)	WLAN	8.42	± 9.6 %
10527	AAF	IEEE 802.11ac WiFi (20MHz, MCS2, 99pc dc)	WLAN	8.21	± 9.6 %
10528	AAF	IEEE 802.11ac WiFi (20MHz, MCS3, 99pc dc)	WLAN	8.36	± 9.6 %
10529	AAF	IEEE 802.11ac WiFi (20MHz, MCS4, 99pc dc)	WLAN	8.36	± 9.6 %
10531	AAF	IEEE 802.11ac WiFi (20MHz, MCS6, 99pc dc)	WLAN	8.43	± 9.6 %
10532	AAF	IEEE 802.11ac WiFi (20MHz, MCS7, 99pc dc)	WLAN	8.29	± 9.6 %
10533	AAE	IEEE 802.11ac WiFi (20MHz, MCS8, 99pc dc)	WLAN	8.38	± 9.6 %
10534	AAE	IEEE 802.11ac WiFi (40MHz, MCS0, 99pc dc)	WLAN	8.45	± 9.6 %
10535	AAE	IEEE 802.11ac WiFi (40MHz, MCS1, 99pc dc)	WLAN	8.45	± 9.6 %
10536	AAF	IEEE 802.11ac WiFi (40MHz, MCS2, 99pc dc)	WLAN	8.32	± 9.6 %
10537	AAF	IEEE 802.11ac WiFi (40MHz, MCS3, 99pc dc)	WLAN	8.44	± 9.6 %
10538	AAF	IEEE 802.11ac WiFi (40MHz, MCS4, 99pc dc)	WLAN	8.54	± 9.6 %
10540	AAA	IEEE 802.11ac WiFi (40MHz, MCS6, 99pc dc)	WLAN	8.39	± 9.6 %
10541	AAA	IEEE 802.11ac WiFi (40MHz, MCS7, 99pc dc)	WLAN	8.46	± 9.6 %
10542	AAA	IEEE 802.11ac WiFi (40MHz, MCS8, 99pc dc)	WLAN	8.65	± 9.6 %
10543	AAC	IEEE 802.11ac WiFi (40MHz, MCS9, 99pc dc)	WLAN	8.65	± 9.6 %
10544	AAC	IEEE 802.11ac WiFi (80MHz, MCS0, 99pc dc)	WLAN	8.47	± 9.6 %
10545	AAC	IEEE 802.11ac WiFi (80MHz, MCS1, 99pc dc)	WLAN	8.55	± 9.6 %



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10546	AAC	IEEE 802.11ac WiFi (80MHz, MCS2, 99pc dc)	WLAN	8.35	± 9.6 %
10547	AAC	IEEE 802.11ac WiFi (80MHz, MCS3, 99pc dc)	WLAN	8.49	± 9.6 %
10548	AAC	IEEE 802.11ac WiFi (80MHz, MCS4, 99pc dc)	WLAN	8.37	± 9.6 %
10550	AAC	IEEE 802.11ac WiFi (80MHz, MCS6, 99pc dc)	WLAN	8.38	± 9.6 %
10551	AAC	IEEE 802.11ac WiFi (80MHz, MCS7, 99pc dc)	WLAN	8.50	± 9.6 %
10552	AAC	IEEE 802.11ac WiFi (80MHz, MCS8, 99pc dc)	WLAN	8.42	± 9.6 %
10553	AAC	IEEE 802.11ac WiFi (80MHz, MCS9, 99pc dc)	WLAN	8.45	± 9.6 %
10554	AAC	IEEE 802.11ac WiFi (160MHz, MCS0, 99pc dc)	WLAN	8.48	± 9.6 %
10555	AAC	IEEE 802.11ac WiFi (160MHz, MCS1, 99pc dc)	WLAN	8.47	± 9.6 %
10556	AAC	IEEE 802.11ac WiFi (160MHz, MCS2, 99pc dc)	WLAN	8.50	± 9.6 %
10557	AAC	IEEE 802.11ac WiFi (160MHz, MCS3, 99pc dc)	WLAN	8.52	± 9.6 %
10558	AAC	IEEE 802.11ac WiFi (160MHz, MCS4, 99pc dc)	WLAN	8.61	± 9.6 %
10560	AAC	IEEE 802.11ac WiFi (160MHz, MCS6, 99pc dc)	WLAN	8.73	± 9.6 %
10561	AAC	IEEE 802.11ac WiFi (160MHz, MCS7, 99pc dc)	WLAN	8.56	± 9.6 %
10562	AAC	IEEE 802.11ac WiFi (160MHz, MCS8, 99pc dc)	WLAN	8.69	± 9.6 %
10563	AAC	IEEE 802.11ac WiFi (160MHz, MCS9, 99pc dc)	WLAN	8.77	± 9.6 %
10564	AAC	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 99pc dc)	WLAN	8.25	± 9.6 %
10565	AAC	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 99pc dc)	WLAN	8.45	± 9.6 %
10566	AAC	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 99pc dc)	WLAN	8.13	± 9.6 %
10567	AAC	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 99pc dc)	WLAN	8.00	± 9.6 %
10568	AAC	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 99pc dc)	WLAN	8.37	± 9.6 %
10569	AAC	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 99pc dc)	WLAN	8.10	± 9.6 %
10570	AAC	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 99pc dc)	WLAN	8.30	± 9.6 %
10571	AAC	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 90pc dc)	WLAN	1.99	± 9.6 %
10572	AAC	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 90pc dc)	WLAN	1.99	± 9.6 %
10573	AAC	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 90pc dc)	WLAN	1.98	± 9.6 %
10574	AAC	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 90pc dc)	WLAN	1.98	± 9.6 %
10575	AAC	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc dc)	WLAN	8.59	± 9.6 %
10576	AAC	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc dc)	WLAN	8.60	± 9.6 %
10577	AAC	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc dc)	WLAN	8.70	± 9.6 %
10578	AAD	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc dc)	WLAN	8.49	± 9.6 %
10579	AAD	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 90pc dc)	WLAN	8.36	± 9.6 %
10580	AAD	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc dc)	WLAN	8.76	± 9.6 %
10581	AAD	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc dc)	WLAN	8.35	± 9.6 %
10582	AAD	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc dc)	WLAN	8.67	± 9.6 %
10583	AAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 90pc dc)	WLAN	8.59	± 9.6 %
10584	AAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 90pc dc)	WLAN	8.60	± 9.6 %
10585	AAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 90pc dc)	WLAN	8.70	± 9.6 %
10586	AAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 90pc dc)	WLAN	8.49	± 9.6 %
10587	AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 90pc dc)	WLAN	8.36	± 9.6 %
10588	AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 90pc dc)	WLAN	8.76	± 9.6 %
10589	AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 90pc dc)	WLAN	8.35	± 9.6 %
10590	AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 90pc dc)	WLAN	8.67	± 9.6 %
10591	AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS0, 90pc dc)	WLAN	8.63	± 9.6 %
10592	AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS1, 90pc dc)	WLAN	8.79	± 9.6 %
10593	AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS2, 90pc dc)	WLAN	8.64	± 9.6 %
10594	AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS3, 90pc dc)	WLAN	8.74	± 9.6 %
10595	AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS4, 90pc dc)	WLAN	8.74	± 9.6 %
10596	AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS5, 90pc dc)	WLAN	8.71	± 9.6 %
10597	AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS6, 90pc dc)	WLAN	8.72	± 9.6 %
10598	AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS7, 90pc dc)	WLAN	8.50	± 9.6 %
10599	AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS0, 90pc dc)	WLAN	8.79	± 9.6 %
10600	AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS1, 90pc dc)	WLAN	8.88	± 9.6 %
10601	AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS2, 90pc dc)	WLAN	8.82	± 9.6 %
10602	AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS3, 90pc dc)	WLAN	8.94	± 9.6 %
10603	AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS4, 90pc dc)	WLAN	9.03	± 9.6 %



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10604	AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS5, 90pc dc)	WLAN	8.76	± 9.6 %
10605	AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS6, 90pc dc)	WLAN	8.97	± 9.6 %
10606	AAC	IEEE 802.11n (HT Mixed, 40MHz, MCS7, 90pc dc)	WLAN	8.82	± 9.6 %
10607	AAC	IEEE 802.11ac WiFi (20MHz, MCS0, 90pc dc)	WLAN	8.64	± 9.6 %
10608	AAC	IEEE 802.11ac WiFi (20MHz, MCS1, 90pc dc)	WLAN	8.77	± 9.6 %
10609	AAC	IEEE 802.11ac WiFi (20MHz, MCS2, 90pc dc)	WLAN	8.57	± 9.6 %
10610	AAC	IEEE 802.11ac WiFi (20MHz, MCS3, 90pc dc)	WLAN	8.78	± 9.6 %
10611	AAC	IEEE 802.11ac WiFi (20MHz, MCS4, 90pc dc)	WLAN	8.70	± 9.6 %
10612	AAC	IEEE 802.11ac WiFi (20MHz, MCS5, 90pc dc)	WLAN	8.77	± 9.6 %
10613	AAC	IEEE 802.11ac WiFi (20MHz, MCS6, 90pc dc)	WLAN	8.94	± 9.6 %
10614	AAC	IEEE 802.11ac WiFi (20MHz, MCS7, 90pc dc)	WLAN	8.59	± 9.6 %
10615	AAC	IEEE 802.11ac WiFi (20MHz, MCS8, 90pc dc)	WLAN	8.82	± 9.6 %
10616	AAC	IEEE 802.11ac WiFi (40MHz, MCS0, 90pc dc)	WLAN	8.82	± 9.6 %
10617	AAC	IEEE 802.11ac WiFi (40MHz, MCS1, 90pc dc)	WLAN	8.81	± 9.6 %
10618	AAC	IEEE 802.11ac WiFi (40MHz, MCS2, 90pc dc)	WLAN	8.58	± 9.6 %
10619	AAC	IEEE 802.11ac WiFi (40MHz, MCS3, 90pc dc)	WLAN	8.86	± 9.6 %
10620	AAC	IEEE 802.11ac WiFi (40MHz, MCS4, 90pc dc)	WLAN	8.87	± 9.6 %
10621	AAC	IEEE 802.11ac WiFi (40MHz, MCS5, 90pc dc)	WLAN	8.77	± 9.6 %
10622	AAC	IEEE 802.11ac WiFi (40MHz, MCS6, 90pc dc)	WLAN	8.68	± 9.6 %
10623	AAC	IEEE 802.11ac WiFi (40MHz, MCS7, 90pc dc)	WLAN	8.82	± 9.6 %
10624	AAC	IEEE 802.11ac WiFi (40MHz, MCS8, 90pc dc)	WLAN	8.96	± 9.6 %
10625	AAC	IEEE 802.11ac WiFi (40MHz, MCS9, 90pc dc)	WLAN	8.96	± 9.6 %
10626	AAC	IEEE 802.11ac WiFi (80MHz, MCS0, 90pc dc)	WLAN	8.83	± 9.6 %
10627	AAC	IEEE 802.11ac WiFi (80MHz, MCS1, 90pc dc)	WLAN	8.88	± 9.6 %
10628	AAC	IEEE 802.11ac WiFi (80MHz, MCS2, 90pc dc)	WLAN	8.71	± 9.6 %
10629	AAC	IEEE 802.11ac WiFi (80MHz, MCS3, 90pc dc)	WLAN	8.85	± 9.6 %
10630	AAC	IEEE 802.11ac WiFi (80MHz, MCS4, 90pc dc)	WLAN	8.72	± 9.6 %
10631	AAC	IEEE 802.11ac WiFi (80MHz, MCS5, 90pc dc)	WLAN	8.81	± 9.6 %
10632	AAC	IEEE 802.11ac WiFi (80MHz, MCS6, 90pc dc)	WLAN	8.74	± 9.6 %
10633	AAC	IEEE 802.11ac WiFi (80MHz, MCS7, 90pc dc)	WLAN	8.83	± 9.6 %
10634	AAC	IEEE 802.11ac WiFi (80MHz, MCS8, 90pc dc)	WLAN	8.80	± 9.6 %
10635	AAC	IEEE 802.11ac WiFi (80MHz, MCS9, 90pc dc)	WLAN	8.81	± 9.6 %
10636	AAC	IEEE 802.11ac WiFi (160MHz, MCS0, 90pc dc)	WLAN	8.83	± 9.6 %
10637	AAC	IEEE 802.11ac WiFi (160MHz, MCS1, 90pc dc)	WLAN	8.79	± 9.6 %
10638	AAC	IEEE 802.11ac WiFi (160MHz, MCS2, 90pc dc)	WLAN	8.86	± 9.6 %
10639	AAC	IEEE 802.11ac WiFi (160MHz, MCS3, 90pc dc)	WLAN	8.85	± 9.6 %
10640	AAC	IEEE 802.11ac WiFi (160MHz, MCS4, 90pc dc)	WLAN	8.98	± 9.6 %
10641	AAC	IEEE 802.11ac WiFi (160MHz, MCS5, 90pc dc)	WLAN	9.06	± 9.6 %
10642	AAC	IEEE 802.11ac WiFi (160MHz, MCS6, 90pc dc)	WLAN	9.06	± 9.6 %
10643	AAC	IEEE 802.11ac WiFi (160MHz, MCS7, 90pc dc)	WLAN	8.89	± 9.6 %
10644	AAC	IEEE 802.11ac WiFi (160MHz, MCS8, 90pc dc)	WLAN	9.05	± 9.6 %
10645	AAC	IEEE 802.11ac WiFi (160MHz, MCS9, 90pc dc)	WLAN	9.11	± 9.6 %
10646	AAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Sub=2,7)	LTE-TDD	11.96	± 9.6 %
10647	AAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Sub=2,7)	LTE-TDD	11.96	± 9.6 %
10648	AAC	CDMA2000 (1x Advanced)	CDMA2000	3.45	± 9.6 %
10652	AAC	LTE-TDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	LTE-TDD	6.91	± 9.6 %
10653	AAC	LTE-TDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)	LTE-TDD	7.42	± 9.6 %
10654	AAC	LTE-TDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)	LTE-TDD	6.96	± 9.6 %
10655	AAC	LTE-TDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	LTE-TDD	7.21	± 9.6 %
10658	AAC	Pulse Waveform (200Hz, 10%)	Test	10.00	± 9.6 %
10659	AAC	Pulse Waveform (200Hz, 20%)	Test	6.99	± 9.6 %
10660	AAC	Pulse Waveform (200Hz, 40%)	Test	3.98	± 9.6 %
10661	AAC	Pulse Waveform (200Hz, 60%)	Test	2.22	± 9.6 %
10662	AAC	Pulse Waveform (200Hz, 80%)	Test	0.97	± 9.6 %
10670	AAC	Bluetooth Low Energy	Bluetooth	2.19	± 9.6 %
10671	AAD	IEEE 802.11ax (20MHz, MCS0, 90pc dc)	WLAN	9.09	± 9.6 %

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10672	AAD	IEEE 802.11ax (20MHz, MCS1, 90pc dc)	WLAN	8.57	± 9.6 %
10673	AAD	IEEE 802.11ax (20MHz, MCS2, 90pc dc)	WLAN	8.78	± 9.6 %
10674	AAD	IEEE 802.11ax (20MHz, MCS3, 90pc dc)	WLAN	8.74	± 9.6 %
10675	AAD	IEEE 802.11ax (20MHz, MCS4, 90pc dc)	WLAN	8.90	± 9.6 %
10676	AAD	IEEE 802.11ax (20MHz, MCS5, 90pc dc)	WLAN	8.77	± 9.6 %
10677	AAD	IEEE 802.11ax (20MHz, MCS6, 90pc dc)	WLAN	8.73	± 9.6 %
10678	AAD	IEEE 802.11ax (20MHz, MCS7, 90pc dc)	WLAN	8.78	± 9.6 %
10679	AAD	IEEE 802.11ax (20MHz, MCS8, 90pc dc)	WLAN	8.89	± 9.6 %
10680	AAD	IEEE 802.11ax (20MHz, MCS9, 90pc dc)	WLAN	8.80	± 9.6 %
10681	AAG	IEEE 802.11ax (20MHz, MCS10, 90pc dc)	WLAN	8.62	± 9.6 %
10682	AAF	IEEE 802.11ax (20MHz, MCS11, 90pc dc)	WLAN	8.83	± 9.6 %
10683	AAA	IEEE 802.11ax (20MHz, MCS0, 99pc dc)	WLAN	8.42	± 9.6 %
10684	AAC	IEEE 802.11ax (20MHz, MCS1, 99pc dc)	WLAN	8.26	± 9.6 %
10685	AAC	IEEE 802.11ax (20MHz, MCS2, 99pc dc)	WLAN	8.33	± 9.6 %
10686	AAC	IEEE 802.11ax (20MHz, MCS3, 99pc dc)	WLAN	8.28	± 9.6 %
10687	AAE	IEEE 802.11ax (20MHz, MCS4, 99pc dc)	WLAN	8.45	± 9.6 %
10688	AAE	IEEE 802.11ax (20MHz, MCS5, 99pc dc)	WLAN	8.29	± 9.6 %
10689	AAD	IEEE 802.11ax (20MHz, MCS6, 99pc dc)	WLAN	8.55	± 9.6 %
10690	AAE	IEEE 802.11ax (20MHz, MCS7, 99pc dc)	WLAN	8.29	± 9.6 %
10691	AAB	IEEE 802.11ax (20MHz, MCS8, 99pc dc)	WLAN	8.25	± 9.6 %
10692	AAA	IEEE 802.11ax (20MHz, MCS9, 99pc dc)	WLAN	8.29	± 9.6 %
10693	AAA	IEEE 802.11ax (20MHz, MCS10, 99pc dc)	WLAN	8.25	± 9.6 %
10694	AAA	IEEE 802.11ax (20MHz, MCS11, 99pc dc)	WLAN	8.57	± 9.6 %
10695	AAA	IEEE 802.11ax (40MHz, MCS0, 90pc dc)	WLAN	8.78	± 9.6 %
10696	AAA	IEEE 802.11ax (40MHz, MCS1, 90pc dc)	WLAN	8.91	± 9.6 %
10697	AAA	IEEE 802.11ax (40MHz, MCS2, 90pc dc)	WLAN	8.61	± 9.6 %
10698	AAA	IEEE 802.11ax (40MHz, MCS3, 90pc dc)	WLAN	8.89	± 9.6 %
10699	AAA	IEEE 802.11ax (40MHz, MCS4, 90pc dc)	WLAN	8.82	± 9.6 %
10700	AAA	IEEE 802.11ax (40MHz, MCS5, 90pc dc)	WLAN	8.73	± 9.6 %
10701	AAA	IEEE 802.11ax (40MHz, MCS6, 90pc dc)	WLAN	8.86	± 9.6 %
10702	AAA	IEEE 802.11ax (40MHz, MCS7, 90pc dc)	WLAN	8.70	± 9.6 %
10703	AAA	IEEE 802.11ax (40MHz, MCS8, 90pc dc)	WLAN	8.82	± 9.6 %
10704	AAA	IEEE 802.11ax (40MHz, MCS9, 90pc dc)	WLAN	8.56	± 9.6 %
10705	AAA	IEEE 802.11ax (40MHz, MCS10, 90pc dc)	WLAN	8.69	± 9.6 %
10706	AAC	IEEE 802.11ax (40MHz, MCS11, 90pc dc)	WLAN	8.66	± 9.6 %
10707	AAC	IEEE 802.11ax (40MHz, MCS0, 99pc dc)	WLAN	8.32	± 9.6 %
10708	AAC	IEEE 802.11ax (40MHz, MCS1, 99pc dc)	WLAN	8.55	± 9.6 %
10709	AAC	IEEE 802.11ax (40MHz, MCS2, 99pc dc)	WLAN	8.33	± 9.6 %
10710	AAC	IEEE 802.11ax (40MHz, MCS3, 99pc dc)	WLAN	8.29	± 9.6 %
10711	AAC	IEEE 802.11ax (40MHz, MCS4, 99pc dc)	WLAN	8.39	± 9.6 %
10712	AAC	IEEE 802.11ax (40MHz, MCS5, 99pc dc)	WLAN	8.67	± 9.6 %
10713	AAC	IEEE 802.11ax (40MHz, MCS6, 99pc dc)	WLAN	8.33	± 9.6 %
10714	AAC	IEEE 802.11ax (40MHz, MCS7, 99pc dc)	WLAN	8.26	± 9.6 %
10715	AAC	IEEE 802.11ax (40MHz, MCS8, 99pc dc)	WLAN	8.45	± 9.6 %
10716	AAC	IEEE 802.11ax (40MHz, MCS9, 99pc dc)	WLAN	8.30	± 9.6 %
10717	AAC	IEEE 802.11ax (40MHz, MCS10, 99pc dc)	WLAN	8.48	± 9.6 %
10718	AAC	IEEE 802.11ax (40MHz, MCS11, 99pc dc)	WLAN	8.24	± 9.6 %
10719	AAC	IEEE 802.11ax (80MHz, MCS0, 90pc dc)	WLAN	8.81	± 9.6 %
10720	AAC	IEEE 802.11ax (80MHz, MCS1, 90pc dc)	WLAN	8.87	± 9.6 %
10721	AAC	IEEE 802.11ax (80MHz, MCS2, 90pc dc)	WLAN	8.76	± 9.6 %
10722	AAC	IEEE 802.11ax (80MHz, MCS3, 90pc dc)	WLAN	8.55	± 9.6 %
10723	AAC	IEEE 802.11ax (80MHz, MCS4, 90pc dc)	WLAN	8.70	± 9.6 %
10724	AAC	IEEE 802.11ax (80MHz, MCS5, 90pc dc)	WLAN	8.90	± 9.6 %
10725	AAC	IEEE 802.11ax (80MHz, MCS6, 90pc dc)	WLAN	8.74	± 9.6 %
10726	AAC	IEEE 802.11ax (80MHz, MCS7, 90pc dc)	WLAN	8.72	± 9.6 %
10727	AAC	IEEE 802.11ax (80MHz, MCS8, 90pc dc)	WLAN	8.66	± 9.6 %

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10728	AAC	IEEE 802.11ax (80MHz, MCS9, 90pc dc)	WLAN	8.65	± 9.6 %
10729	AAC	IEEE 802.11ax (80MHz, MCS10, 90pc dc)	WLAN	8.64	± 9.6 %
10730	AAC	IEEE 802.11ax (80MHz, MCS11, 90pc dc)	WLAN	8.67	± 9.6 %
10731	AAC	IEEE 802.11ax (80MHz, MCS0, 99pc dc)	WLAN	8.42	± 9.6 %
10732	AAC	IEEE 802.11ax (80MHz, MCS1, 99pc dc)	WLAN	8.46	± 9.6 %
10733	AAC	IEEE 802.11ax (80MHz, MCS2, 99pc dc)	WLAN	8.40	± 9.6 %
10734	AAC	IEEE 802.11ax (80MHz, MCS3, 99pc dc)	WLAN	8.25	± 9.6 %
10735	AAC	IEEE 802.11ax (80MHz, MCS4, 99pc dc)	WLAN	8.33	± 9.6 %
10736	AAC	IEEE 802.11ax (80MHz, MCS5, 99pc dc)	WLAN	8.27	± 9.6 %
10737	AAC	IEEE 802.11ax (80MHz, MCS6, 99pc dc)	WLAN	8.36	± 9.6 %
10738	AAC	IEEE 802.11ax (80MHz, MCS7, 99pc dc)	WLAN	8.42	± 9.6 %
10739	AAC	IEEE 802.11ax (80MHz, MCS8, 99pc dc)	WLAN	8.29	± 9.6 %
10740	AAC	IEEE 802.11ax (80MHz, MCS9, 99pc dc)	WLAN	8.48	± 9.6 %
10741	AAC	IEEE 802.11ax (80MHz, MCS10, 99pc dc)	WLAN	8.40	± 9.6 %
10742	AAC	IEEE 802.11ax (80MHz, MCS11, 99pc dc)	WLAN	8.43	± 9.6 %
10743	AAC	IEEE 802.11ax (160MHz, MCS0, 90pc dc)	WLAN	8.94	± 9.6 %
10744	AAC	IEEE 802.11ax (160MHz, MCS1, 90pc dc)	WLAN	9.16	± 9.6 %
10745	AAC	IEEE 802.11ax (160MHz, MCS2, 90pc dc)	WLAN	8.93	± 9.6 %
10746	AAC	IEEE 802.11ax (160MHz, MCS3, 90pc dc)	WLAN	9.11	± 9.6 %
10747	AAC	IEEE 802.11ax (160MHz, MCS4, 90pc dc)	WLAN	9.04	± 9.6 %
10748	AAC	IEEE 802.11ax (160MHz, MCS5, 90pc dc)	WLAN	8.93	± 9.6 %
10749	AAC	IEEE 802.11ax (160MHz, MCS6, 90pc dc)	WLAN	8.90	± 9.6 %
10750	AAC	IEEE 802.11ax (160MHz, MCS7, 90pc dc)	WLAN	8.79	± 9.6 %
10751	AAC	IEEE 802.11ax (160MHz, MCS8, 90pc dc)	WLAN	8.82	± 9.6 %
10752	AAC	IEEE 802.11ax (160MHz, MCS9, 90pc dc)	WLAN	8.81	± 9.6 %
10753	AAC	IEEE 802.11ax (160MHz, MCS10, 90pc dc)	WLAN	9.00	± 9.6 %
10754	AAC	IEEE 802.11ax (160MHz, MCS11, 90pc dc)	WLAN	8.94	± 9.6 %
10755	AAC	IEEE 802.11ax (160MHz, MCS0, 99pc dc)	WLAN	8.64	± 9.6 %
10756	AAC	IEEE 802.11ax (160MHz, MCS1, 99pc dc)	WLAN	8.77	± 9.6 %
10757	AAC	IEEE 802.11ax (160MHz, MCS2, 99pc dc)	WLAN	8.77	± 9.6 %
10758	AAC	IEEE 802.11ax (160MHz, MCS3, 99pc dc)	WLAN	8.69	± 9.6 %
10759	AAC	IEEE 802.11ax (160MHz, MCS4, 99pc dc)	WLAN	8.58	± 9.6 %
10760	AAC	IEEE 802.11ax (160MHz, MCS5, 99pc dc)	WLAN	8.49	± 9.6 %
10761	AAC	IEEE 802.11ax (160MHz, MCS6, 99pc dc)	WLAN	8.58	± 9.6 %
10762	AAC	IEEE 802.11ax (160MHz, MCS7, 99pc dc)	WLAN	8.49	± 9.6 %
10763	AAC	IEEE 802.11ax (160MHz, MCS8, 99pc dc)	WLAN	8.53	± 9.6 %
10764	AAC	IEEE 802.11ax (160MHz, MCS9, 99pc dc)	WLAN	8.54	± 9.6 %
10765	AAC	IEEE 802.11ax (160MHz, MCS10, 99pc dc)	WLAN	8.54	± 9.6 %
10766	AAC	IEEE 802.11ax (160MHz, MCS11, 99pc dc)	WLAN	8.51	± 9.6 %
10767	AAC	5G NR (CP-OFDM, 1 RB, 5 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	7.99	± 9.6 %
10768	AAC	5G NR (CP-OFDM, 1 RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.01	± 9.6 %
10769	AAC	5G NR (CP-OFDM, 1 RB, 15 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.01	± 9.6 %
10770	AAC	5G NR (CP-OFDM, 1 RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.02	± 9.6 %
10771	AAC	5G NR (CP-OFDM, 1 RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.02	± 9.6 %
10772	AAC	5G NR (CP-OFDM, 1 RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.23	± 9.6 %
10773	AAC	5G NR (CP-OFDM, 1 RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.03	± 9.6 %
10774	AAC	5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.02	± 9.6 %
10775	AAC	5G NR (CP-OFDM, 50% RB, 5 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.31	± 9.6 %
10776	AAC	5G NR (CP-OFDM, 50% RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.30	± 9.6 %
10777	AAC	5G NR (CP-OFDM, 50% RB, 15 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.30	± 9.6 %
10778	AAC	5G NR (CP-OFDM, 50% RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.34	± 9.6 %
10779	AAC	5G NR (CP-OFDM, 50% RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.42	± 9.6 %
10780	AAC	5G NR (CP-OFDM, 50% RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.38	± 9.6 %
10781	AAC	5G NR (CP-OFDM, 50% RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.38	± 9.6 %
10782	AAC	5G NR (CP-OFDM, 50% RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.43	± 9.6 %
10783	AAC	5G NR (CP-OFDM, 100% RB, 5 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.31	± 9.6 %

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10784	AAC	5G NR (CP-OFDM, 100% RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.29	± 9.6 %
10785	AAC	5G NR (CP-OFDM, 100% RB, 15 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.40	± 9.6 %
10786	AAC	5G NR (CP-OFDM, 100% RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.35	± 9.6 %
10787	AAC	5G NR (CP-OFDM, 100% RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.44	± 9.6 %
10788	AAC	5G NR (CP-OFDM, 100% RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.39	± 9.6 %
10789	AAC	5G NR (CP-OFDM, 100% RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.37	± 9.6 %
10790	AAC	5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.39	± 9.6 %
10791	AAC	5G NR (CP-OFDM, 1 RB, 5 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.83	± 9.6 %
10792	AAC	5G NR (CP-OFDM, 1 RB, 10 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.92	± 9.6 %
10793	AAC	5G NR (CP-OFDM, 1 RB, 15 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.95	± 9.6 %
10794	AAC	5G NR (CP-OFDM, 1 RB, 20 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.82	± 9.6 %
10795	AAC	5G NR (CP-OFDM, 1 RB, 25 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.84	± 9.6 %
10796	AAC	5G NR (CP-OFDM, 1 RB, 30 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.82	± 9.6 %
10797	AAC	5G NR (CP-OFDM, 1 RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.01	± 9.6 %
10798	AAC	5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.89	± 9.6 %
10799	AAC	5G NR (CP-OFDM, 1 RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.93	± 9.6 %
10801	AAC	5G NR (CP-OFDM, 1 RB, 80 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.89	± 9.6 %
10802	AAC	5G NR (CP-OFDM, 1 RB, 90 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.87	± 9.6 %
10803	AAE	5G NR (CP-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.93	± 9.6 %
10805	AAD	5G NR (CP-OFDM, 50% RB, 10 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.34	± 9.6 %
10806	AAD	5G NR (CP-OFDM, 50% RB, 15 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.37	± 9.6 %
10809	AAD	5G NR (CP-OFDM, 50% RB, 30 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.34	± 9.6 %
10810	AAD	5G NR (CP-OFDM, 50% RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.34	± 9.6 %
10812	AAD	5G NR (CP-OFDM, 50% RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.35	± 9.6 %
10817	AAD	5G NR (CP-OFDM, 100% RB, 5 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.35	± 9.6 %
10818	AAD	5G NR (CP-OFDM, 100% RB, 10 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.34	± 9.6 %
10819	AAD	5G NR (CP-OFDM, 100% RB, 15 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.33	± 9.6 %
10820	AAD	5G NR (CP-OFDM, 100% RB, 20 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.30	± 9.6 %
10821	AAC	5G NR (CP-OFDM, 100% RB, 25 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.41	± 9.6 %
10822	AAD	5G NR (CP-OFDM, 100% RB, 30 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.41	± 9.6 %
10823	AAC	5G NR (CP-OFDM, 100% RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.36	± 9.6 %
10824	AAD	5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.39	± 9.6 %
10825	AAD	5G NR (CP-OFDM, 100% RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.41	± 9.6 %
10827	AAD	5G NR (CP-OFDM, 100% RB, 80 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.42	± 9.6 %
10828	AAE	5G NR (CP-OFDM, 100% RB, 90 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.43	± 9.6 %
10829	AAD	5G NR (CP-OFDM, 100% RB, 100 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.40	± 9.6 %
10830	AAD	5G NR (CP-OFDM, 1 RB, 10 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.63	± 9.6 %
10831	AAD	5G NR (CP-OFDM, 1 RB, 15 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.73	± 9.6 %
10832	AAD	5G NR (CP-OFDM, 1 RB, 20 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.74	± 9.6 %
10833	AAD	5G NR (CP-OFDM, 1 RB, 25 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.70	± 9.6 %
10834	AAD	5G NR (CP-OFDM, 1 RB, 30 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.75	± 9.6 %
10835	AAD	5G NR (CP-OFDM, 1 RB, 40 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.70	± 9.6 %
10836	AAE	5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.66	± 9.6 %
10837	AAD	5G NR (CP-OFDM, 1 RB, 60 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.68	± 9.6 %
10839	AAD	5G NR (CP-OFDM, 1 RB, 80 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.70	± 9.6 %
10840	AAD	5G NR (CP-OFDM, 1 RB, 90 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.67	± 9.6 %
10841	AAD	5G NR (CP-OFDM, 1 RB, 100 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.71	± 9.6 %
10843	AAD	5G NR (CP-OFDM, 50% RB, 15 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.49	± 9.6 %
10844	AAD	5G NR (CP-OFDM, 50% RB, 20 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.34	± 9.6 %
10846	AAD	5G NR (CP-OFDM, 50% RB, 30 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.41	± 9.6 %
10854	AAD	5G NR (CP-OFDM, 100% RB, 10 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.34	± 9.6 %
10855	AAD	5G NR (CP-OFDM, 100% RB, 15 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.36	± 9.6 %
10856	AAD	5G NR (CP-OFDM, 100% RB, 20 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.37	± 9.6 %
10857	AAD	5G NR (CP-OFDM, 100% RB, 25 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.35	± 9.6 %
10858	AAD	5G NR (CP-OFDM, 100% RB, 30 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.36	± 9.6 %
10859	AAD	5G NR (CP-OFDM, 100% RB, 40 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.34	± 9.6 %

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10860	AAD	5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.41	± 9.6 %
10861	AAD	5G NR (CP-OFDM, 100% RB, 60 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.40	± 9.6 %
10863	AAD	5G NR (CP-OFDM, 100% RB, 80 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.41	± 9.6 %
10864	AAE	5G NR (CP-OFDM, 100% RB, 90 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.37	± 9.6 %
10865	AAD	5G NR (CP-OFDM, 100% RB, 100 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.41	± 9.6 %
10866	AAD	5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	± 9.6 %
10868	AAD	5G NR (DFT-s-OFDM, 100% RB, 100 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.89	± 9.6 %
10869	AAD	5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	5.75	± 9.6 %
10870	AAD	5G NR (DFT-s-OFDM, 100% RB, 100 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	5.86	± 9.6 %
10871	AAD	5G NR (DFT-s-OFDM, 1 RB, 100 MHz, 16QAM, 120 kHz)	5G NR FR2 TDD	5.75	± 9.6 %
10872	AAD	5G NR (DFT-s-OFDM, 100% RB, 100 MHz, 16QAM, 120 kHz)	5G NR FR2 TDD	6.52	± 9.6 %
10873	AAD	5G NR (DFT-s-OFDM, 1 RB, 100 MHz, 64QAM, 120 kHz)	5G NR FR2 TDD	6.61	± 9.6 %
10874	AAD	5G NR (DFT-s-OFDM, 100% RB, 100 MHz, 64QAM, 120 kHz)	5G NR FR2 TDD	6.65	± 9.6 %
10875	AAD	5G NR (CP-OFDM, 1 RB, 100 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	7.78	± 9.6 %
10876	AAD	5G NR (CP-OFDM, 100% RB, 100 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	8.39	± 9.6 %
10877	AAD	5G NR (CP-OFDM, 1 RB, 100 MHz, 16QAM, 120 kHz)	5G NR FR2 TDD	7.95	± 9.6 %
10878	AAD	5G NR (CP-OFDM, 100% RB, 100 MHz, 16QAM, 120 kHz)	5G NR FR2 TDD	8.41	± 9.6 %
10879	AAD	5G NR (CP-OFDM, 1 RB, 100 MHz, 64QAM, 120 kHz)	5G NR FR2 TDD	8.12	± 9.6 %
10880	AAD	5G NR (CP-OFDM, 100% RB, 100 MHz, 64QAM, 120 kHz)	5G NR FR2 TDD	8.38	± 9.6 %
10881	AAD	5G NR (DFT-s-OFDM, 1 RB, 50 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	5.75	± 9.6 %
10882	AAD	5G NR (DFT-s-OFDM, 100% RB, 50 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	5.96	± 9.6 %
10883	AAD	5G NR (DFT-s-OFDM, 1 RB, 50 MHz, 16QAM, 120 kHz)	5G NR FR2 TDD	6.57	± 9.6 %
10884	AAD	5G NR (DFT-s-OFDM, 100% RB, 50 MHz, 16QAM, 120 kHz)	5G NR FR2 TDD	6.53	± 9.6 %
10885	AAD	5G NR (DFT-s-OFDM, 1 RB, 50 MHz, 64QAM, 120 kHz)	5G NR FR2 TDD	6.61	± 9.6 %
10886	AAD	5G NR (DFT-s-OFDM, 100% RB, 50 MHz, 64QAM, 120 kHz)	5G NR FR2 TDD	6.65	± 9.6 %
10887	AAD	5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	7.78	± 9.6 %
10888	AAD	5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	8.35	± 9.6 %
10889	AAD	5G NR (CP-OFDM, 1 RB, 50 MHz, 16QAM, 120 kHz)	5G NR FR2 TDD	8.02	± 9.6 %
10890	AAD	5G NR (CP-OFDM, 100% RB, 50 MHz, 16QAM, 120 kHz)	5G NR FR2 TDD	8.40	± 9.6 %
10891	AAD	5G NR (CP-OFDM, 1 RB, 50 MHz, 64QAM, 120 kHz)	5G NR FR2 TDD	8.13	± 9.6 %
10892	AAD	5G NR (CP-OFDM, 100% RB, 50 MHz, 64QAM, 120 kHz)	5G NR FR2 TDD	8.41	± 9.6 %
10897	AAD	5G NR (DFT-s-OFDM, 1 RB, 5 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.66	± 9.6 %
10898	AAD	5G NR (DFT-s-OFDM, 1 RB, 10 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.67	± 9.6 %
10899	AAD	5G NR (DFT-s-OFDM, 1 RB, 15 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.67	± 9.6 %
10900	AAD	5G NR (DFT-s-OFDM, 1 RB, 20 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	± 9.6 %
10901	AAD	5G NR (DFT-s-OFDM, 1 RB, 25 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	± 9.6 %
10902	AAD	5G NR (DFT-s-OFDM, 1 RB, 30 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	± 9.6 %
10903	AAD	5G NR (DFT-s-OFDM, 1 RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	± 9.6 %
10904	AAD	5G NR (DFT-s-OFDM, 1 RB, 50 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	± 9.6 %
10905	AAD	5G NR (DFT-s-OFDM, 1 RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	± 9.6 %
10906	AAD	5G NR (DFT-s-OFDM, 1 RB, 80 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	± 9.6 %
10907	AAD	5G NR (DFT-s-OFDM, 50% RB, 5 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.78	± 9.6 %
10908	AAD	5G NR (DFT-s-OFDM, 50% RB, 10 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.93	± 9.6 %
10909	AAD	5G NR (DFT-s-OFDM, 50% RB, 15 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.96	± 9.6 %
10910	AAD	5G NR (DFT-s-OFDM, 50% RB, 20 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.83	± 9.6 %
10911	AAD	5G NR (DFT-s-OFDM, 50% RB, 25 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.93	± 9.6 %
10912	AAD	5G NR (DFT-s-OFDM, 50% RB, 30 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.84	± 9.6 %
10913	AAD	5G NR (DFT-s-OFDM, 50% RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.84	± 9.6 %
10914	AAD	5G NR (DFT-s-OFDM, 50% RB, 50 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.85	± 9.6 %
10915	AAD	5G NR (DFT-s-OFDM, 50% RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.83	± 9.6 %
10916	AAD	5G NR (DFT-s-OFDM, 50% RB, 80 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.87	± 9.6 %
10917	AAD	5G NR (DFT-s-OFDM, 50% RB, 100 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.94	± 9.6 %
10918	AAD	5G NR (DFT-s-OFDM, 100% RB, 5 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.86	± 9.6 %
10919	AAD	5G NR (DFT-s-OFDM, 100% RB, 10 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.86	± 9.6 %
10920	AAD	5G NR (DFT-s-OFDM, 100% RB, 15 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.87	± 9.6 %
10921	AAD	5G NR (DFT-s-OFDM, 100% RB, 20 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.84	± 9.6 %

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10922	AAD	5G NR (DFT-s-OFDM, 100% RB, 25 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.82	± 9.6 %
10923	AAD	5G NR (DFT-s-OFDM, 100% RB, 30 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.84	± 9.6 %
10924	AAD	5G NR (DFT-s-OFDM, 100% RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.84	± 9.6 %
10925	AAD	5G NR (DFT-s-OFDM, 100% RB, 50 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.95	± 9.6 %
10926	AAD	5G NR (DFT-s-OFDM, 100% RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.84	± 9.6 %
10927	AAD	5G NR (DFT-s-OFDM, 100% RB, 80 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.94	± 9.6 %
10928	AAD	5G NR (DFT-s-OFDM, 1 RB, 5 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.52	± 9.6 %
10929	AAD	5G NR (DFT-s-OFDM, 1 RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.52	± 9.6 %
10930	AAD	5G NR (DFT-s-OFDM, 1 RB, 15 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.52	± 9.6 %
10931	AAD	5G NR (DFT-s-OFDM, 1 RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.51	± 9.6 %
10932	AAB	5G NR (DFT-s-OFDM, 1 RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.51	± 9.6 %
10933	AAA	5G NR (DFT-s-OFDM, 1 RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.51	± 9.6 %
10934	AAA	5G NR (DFT-s-OFDM, 1 RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.51	± 9.6 %
10935	AAA	5G NR (DFT-s-OFDM, 1 RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.51	± 9.6 %
10936	AAC	5G NR (DFT-s-OFDM, 50% RB, 5 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.90	± 9.6 %
10937	AAB	5G NR (DFT-s-OFDM, 50% RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.77	± 9.6 %
10938	AAB	5G NR (DFT-s-OFDM, 50% RB, 15 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.90	± 9.6 %
10939	AAB	5G NR (DFT-s-OFDM, 50% RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.82	± 9.6 %
10940	AAB	5G NR (DFT-s-OFDM, 50% RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.89	± 9.6 %
10941	AAB	5G NR (DFT-s-OFDM, 50% RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.83	± 9.6 %
10942	AAB	5G NR (DFT-s-OFDM, 50% RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.85	± 9.6 %
10943	AAB	5G NR (DFT-s-OFDM, 50% RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.95	± 9.6 %
10944	AAB	5G NR (DFT-s-OFDM, 100% RB, 5 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.81	± 9.6 %
10945	AAB	5G NR (DFT-s-OFDM, 100% RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.85	± 9.6 %
10946	AAC	5G NR (DFT-s-OFDM, 100% RB, 15 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.83	± 9.6 %
10947	AAB	5G NR (DFT-s-OFDM, 100% RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.87	± 9.6 %
10948	AAB	5G NR (DFT-s-OFDM, 100% RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.94	± 9.6 %
10949	AAB	5G NR (DFT-s-OFDM, 100% RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.87	± 9.6 %
10950	AAB	5G NR (DFT-s-OFDM, 100% RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.94	± 9.6 %
10951	AAB	5G NR (DFT-s-OFDM, 100% RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.92	± 9.6 %
10952	AAB	5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 64-QAM, 15 kHz)	5G NR FR1 FDD	8.25	± 9.6 %
10953	AAB	5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 15 kHz)	5G NR FR1 FDD	8.15	± 9.6 %
10954	AAB	5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 15 kHz)	5G NR FR1 FDD	8.23	± 9.6 %
10955	AAB	5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 15 kHz)	5G NR FR1 FDD	8.42	± 9.6 %
10956	AAB	5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD	8.14	± 9.6 %
10957	AAC	5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD	8.31	± 9.6 %
10958	AAB	5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD	8.61	± 9.6 %
10959	AAB	5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD	8.33	± 9.6 %
10960	AAB	5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 64-QAM, 15 kHz)	5G NR FR1 TDD	9.32	± 9.6 %
10961	AAB	5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 15 kHz)	5G NR FR1 TDD	9.36	± 9.6 %
10962	AAB	5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 15 kHz)	5G NR FR1 TDD	9.40	± 9.6 %
10963	AAB	5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 15 kHz)	5G NR FR1 TDD	9.55	± 9.6 %
10964	AAB	5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.29	± 9.6 %
10965	AAB	5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.37	± 9.6 %
10966	AAB	5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.55	± 9.6 %
10967	AAB	5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.42	± 9.6 %
10968	AAB	5G NR DL (CP-OFDM, TM 3.1, 100 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.49	± 9.6 %
10972	AAB	5G NR (CP-OFDM, 1 RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	11.59	± 9.6 %
10973	AAB	5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	9.06	± 9.6 %
10974	AAB	5G NR (CP-OFDM, 100% RB, 100 MHz, 256-QAM, 30 kHz)	5G NR FR1 TDD	10.28	± 9.6 %

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



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EX-042-20-107

Client **ATL**

Certificate No: **Z20-60165**

CALIBRATION CERTIFICATE

Object **EX3DV4 - SN : 3847**

Calibration Procedure(s) **FF-Z11-004-01**
Calibration Procedures for Dosimetric E-field Probes

Calibration date: **May 20, 2020**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	101919	18-Jun-19(CTTL, No.J19X05125)	Jun-20
Power sensor NRP-Z91	101547	18-Jun-19(CTTL, No.J19X05125)	Jun-20
Power sensor NRP-Z91	101548	18-Jun-19(CTTL, No.J19X05125)	Jun-20
Reference 10dBAttenuator	18N50W-10dB	10-Feb-20(CTTL, No.J20X00525)	Feb-22
Reference 20dBAttenuator	18N50W-20dB	10-Feb-20(CTTL, No.J20X00526)	Feb-22
Reference Probe EX3DV4	SN 3617	30-Jan-20(SPEAG, No.EX3-3617_Jan20/2)	Jan-21
DAE4	SN 1556	4-Feb-20(SPEAG, No.DAE4-1556_Feb20)	Feb-21
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
SignalGenerator MG3700A	6201052605	18-Jun-19(CTTL, No.J19X05127)	Jun-20
Network Analyzer E5071C	MY46110673	10-Feb-20(CTTL, No.J20X00515)	Feb-21

	Name	Function	Signature
Calibrated by:	Yu Zongying	SAR Test Engineer	
Reviewed by:	Lin Hao	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: May 22, 2020

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



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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 Φ	Φ rotation around probe axis
Polarization θ	θ rotation around an axis that is in the plane normal to probe axis (at measurement center), i $\theta=0$ is normal to probe axis

Connector Angle information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- KDB 865664, "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: waveguide). *NORM_{x,y,z}* are only intermediate values, i.e., the uncertainties of *NORM_{x,y,z}* does not effect the E^2 -field uncertainty inside TSL (see below ConvF).
- NORM(f)_{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 (no uncertainty required). DCP does not depend on frequency nor media.
- PAR: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics.
- A_{x,y,z}*; *B_{x,y,z}*; *C_{x,y,z}*; *VR_{x,y,z}*; *A,B,C* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters*: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ 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 valued 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)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle*: The angle is assessed using the information gained by determining the *NORM_x* (no uncertainty required).



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DASY/EASY – Parameters of Probe: EX3DV4 – SN:3847

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	0.56	0.50	0.44	±10.0%
DCP(mV) ^B	98.7	99.2	102.8	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB $\sqrt{\mu\text{V}}$	C	D dB	VR mV	Unc ^E (k=2)
0	CW	X	0.0	0.0	1.0	0.00	172.6	±2.1%
		Y	0.0	0.0	1.0		166.4	
		Z	0.0	0.0	1.0		151.0	

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 E^2 -field uncertainty inside TSL (see Page 4).

^B Numerical linearization parameter: uncertainty not required.

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



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DASY/EASY – Parameters of Probe: EX3DV4 – SN:3847

Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz] ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Unct. (k=2)
750	41.9	0.89	9.54	9.54	9.54	0.40	0.80	±12.1%
835	41.5	0.90	9.26	9.26	9.26	0.13	1.41	±12.1%
900	41.5	0.97	9.30	9.30	9.30	0.27	0.94	±12.1%
1450	40.5	1.20	8.35	8.35	8.35	0.30	0.83	±12.1%
1750	40.1	1.37	8.14	8.14	8.14	0.22	1.11	±12.1%
1810	40.0	1.40	7.96	7.96	7.96	0.22	1.07	±12.1%
1900	40.0	1.40	7.78	7.78	7.78	0.22	1.17	±12.1%
2000	40.0	1.40	7.86	7.86	7.86	0.19	1.23	±12.1%
2300	39.5	1.67	7.57	7.57	7.57	0.51	0.71	±12.1%
2450	39.2	1.80	7.38	7.38	7.38	0.55	0.72	±12.1%
2600	39.0	1.96	7.20	7.20	7.20	0.63	0.69	±12.1%
3300	38.2	2.71	6.79	6.79	6.79	0.43	0.96	±13.3%
3500	37.9	2.91	6.74	6.74	6.74	0.48	0.90	±13.3%
3700	37.7	3.12	6.52	6.52	6.52	0.46	0.93	±13.3%
3900	37.5	3.32	6.43	6.43	6.43	0.40	1.15	±13.3%
4100	37.2	3.53	6.29	6.29	6.29	0.40	1.20	±13.3%
4200	37.1	3.63	6.20	6.20	6.20	0.40	1.20	±13.3%
4400	36.9	3.84	6.06	6.06	6.06	0.40	1.20	±13.3%
4600	36.7	4.04	6.00	6.00	6.00	0.55	1.01	±13.3%
4800	36.4	4.25	5.95	5.95	5.95	0.55	1.11	±13.3%
4950	36.3	4.40	5.80	5.80	5.80	0.55	1.11	±13.3%
5250	35.9	4.71	5.19	5.19	5.19	0.50	1.20	±13.3%
5600	35.5	5.07	4.71	4.71	4.71	0.55	1.23	±13.3%
5750	35.4	5.22	4.65	4.65	4.65	0.60	1.20	±13.3%

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

^F At frequency below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ±10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ±5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

^G Alpha/Depth are determined during calibration. SPEAG 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 the frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

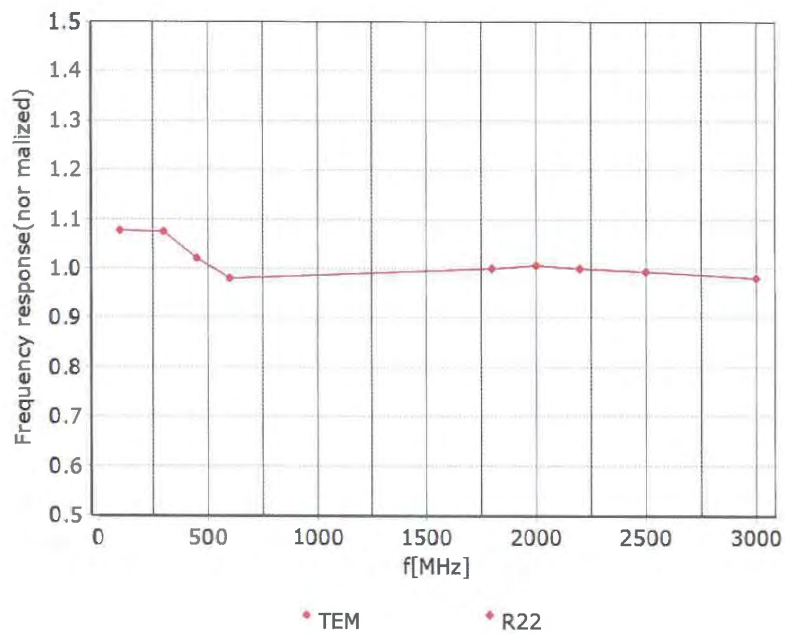
Certificate No:Z20-60165

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



Uncertainty of Frequency Response of E-field: $\pm 7.4\%$ ($k=2$)

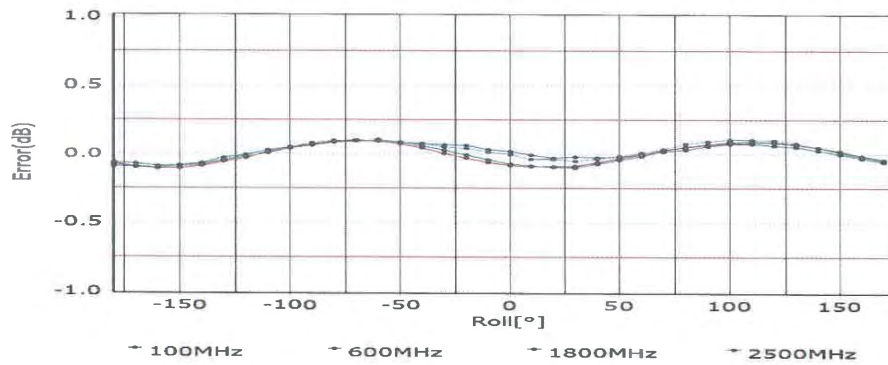
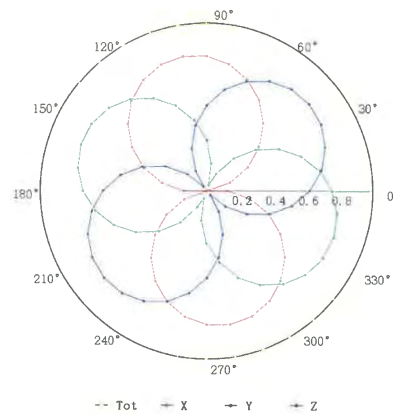
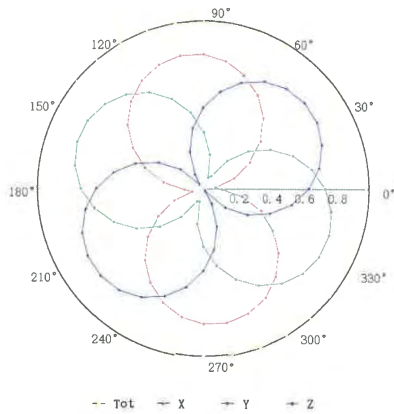


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Receiving Pattern (Φ), $\theta=0^\circ$

f=600 MHz, TEM

f=1800 MHz, R22

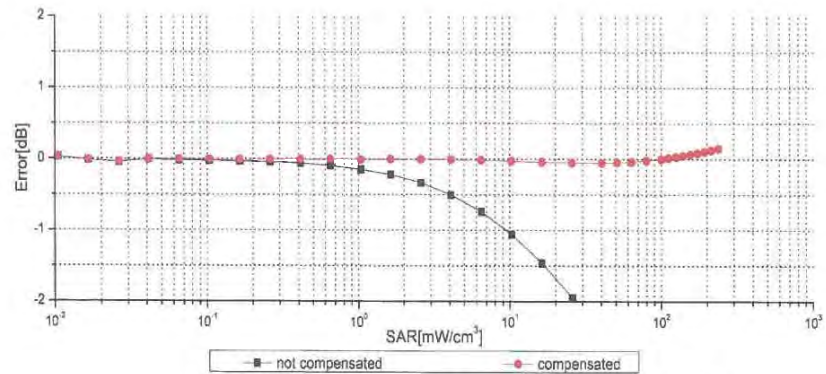
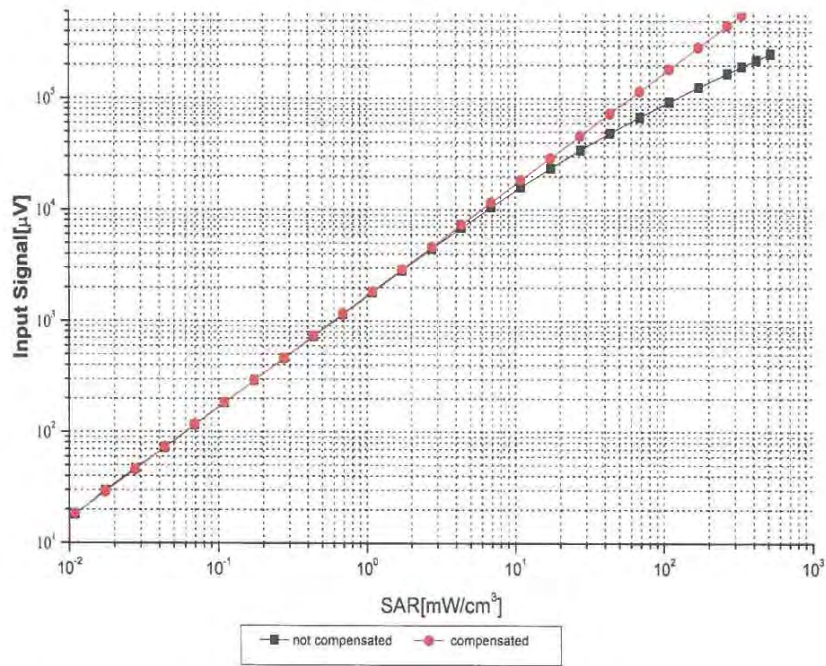


Uncertainty of Axial Isotropy Assessment: $\pm 1.2\%$ ($k=2$)



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Dynamic Range f(SAR_{head}) (TEM cell, f = 900 MHz)



Uncertainty of Linearity Assessment: ±0.9% (k=2)

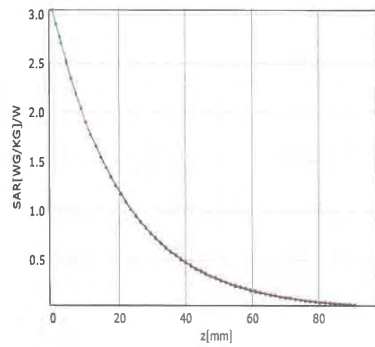


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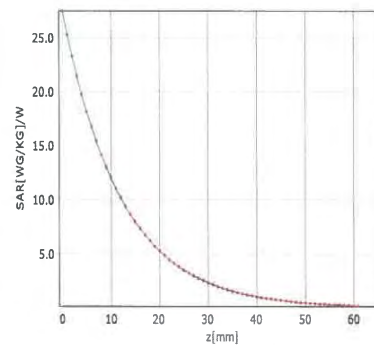
Conversion Factor Assessment

f=750 MHz,WGLS R9(H_convF)

f=1750 MHz,WGLS R22(H_convF)

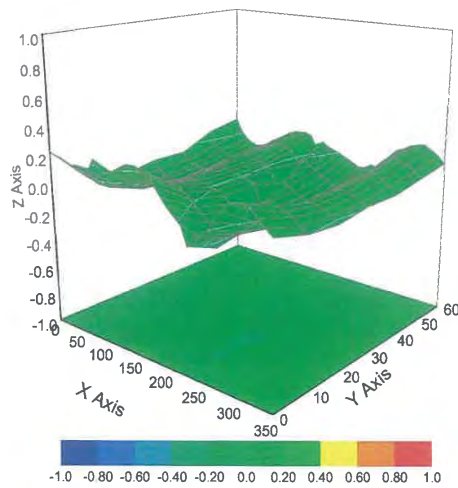


* analytical * measured



* analytical * measured

Deviation from Isotropy in Liquid



Uncertainty of Spherical Isotropy Assessment: $\pm 3.2\%$ ($k=2$)



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DASY/EASY – Parameters of Probe: EX3DV4 – SN:3847

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	100.7
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disable
Probe Overall Length	337mm
Probe Body Diameter	10mm
Tip Length	10mm
Tip Diameter	2.5mm
Probe Tip to Sensor X Calibration Point	1mm
Probe Tip to Sensor Y Calibration Point	1mm
Probe Tip to Sensor Z Calibration Point	1mm
Recommended Measurement Distance from Surface	1.4mm



MR-008_20-041



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Client : **ATL**

Certificate No: **Z20-60115**

CALIBRATION CERTIFICATE			
Object	DAE4 - SN: 541		
Calibration Procedure(s)	FF-Z11-002-01 Calibration Procedure for the Data Acquisition Electronics (DAEx)		
Calibration date:	March 18, 2020		
This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements(SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.			
All calibrations have been conducted in the closed laboratory facility: environment temperature(22±3)°C and humidity<70%.			
Calibration Equipment used (M&TE critical for calibration)			
Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Process Calibrator 753	1971018	24-Jun-19 (CTTL, No.J19X05126)	Jun-20
Calibrated by:	Name	Function	Signature
	Yu Zongying	SAR Test Engineer	
Reviewed by:	Lin Hao	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	
			Issued: March 20, 2020
This calibration certificate shall not be reproduced except in full without written approval of the laboratory.			



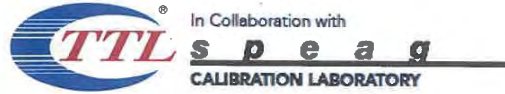
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E-mail: cttl@chinattl.com Http://www.chinattl.cn

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 report provide only calibration results for DAE, it does not contain other performance test results.



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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	404.553 ± 0.15% (k=2)	404.412 ± 0.15% (k=2)	404.179 ± 0.15% (k=2)
Low Range	3.96888 ± 0.7% (k=2)	3.93481 ± 0.7% (k=2)	3.97551 ± 0.7% (k=2)

Connector Angle

Connector Angle to be used in DASY system	288° ± 1 °
---	------------



Calibration Laboratory of
Schmid & Partner
Engineering AG *MR-008_21-068*
Zeughausstrasse 43, 8004 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**

Client **ATL (Auden)**

Certificate No: **DAE4-541_Mar21**

CALIBRATION CERTIFICATE

Object **DAE4 - SD 000 D04 BM - SN: 541**

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

Calibration date: **March 22, 2021**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Keithley Multimeter Type 2001	SN: 0810278	07-Sep-20 (No:28647)	Sep-21
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Auto DAE Calibration Unit	SE UWS 053 AA 1001	07-Jan-21 (in house check)	In house check: Jan-22
Calibrator Box V2.1	SE UMS 006 AA 1002	07-Jan-21 (in house check)	In house check: Jan-22

Calibrated by:	Name Adrian Gehring	Function Laboratory Technician	Signature
Approved by:	Name Sven Kühn	Deputy Manager	

Issued: March 22, 2021

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

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



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Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Glossary

DAE data acquisition electronics
Connector angle information used in DASY system to align probe sensor X to the robot coordinate system.

Methods Applied and Interpretation of Parameters

- *DC Voltage Measurement:* Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- *Connector angle:* The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty.
 - *DC Voltage Measurement Linearity:* Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
 - *Common mode sensitivity:* Influence of a positive or negative common mode voltage on the differential measurement.
 - *Channel separation:* Influence of a voltage on the neighbor channels not subject to an input voltage.
 - *AD Converter Values with inputs shorted:* Values on the internal AD converter corresponding to zero input voltage
 - *Input Offset Measurement:* Output voltage and statistical results over a large number of zero voltage measurements.
 - *Input Offset Current:* Typical value for information; Maximum channel input offset current, not considering the input resistance.
 - *Input resistance:* Typical value for information; DAE input resistance at the connector, during internal auto-zeroing and during measurement.
 - *Low Battery Alarm Voltage:* Typical value for information. Below this voltage, a battery alarm signal is generated.
 - *Power consumption:* Typical value for information. Supply currents in various operating modes.



DC Voltage Measurement

A/D - Converter Resolution nominal

High Range: 1LSB = 6.1 μ V , 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	404.542 \pm 0.02% (k=2)	404.400 \pm 0.02% (k=2)	404.167 \pm 0.02% (k=2)
Low Range	3.96928 \pm 1.50% (k=2)	3.93561 \pm 1.50% (k=2)	3.97602 \pm 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	288.5 \pm 1 $^{\circ}$
---	--------------------------



Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

High Range	Reading (μV)	Difference (μV)	Error (%)
Channel X + Input	199991.77	-1.28	-0.00
Channel X + Input	20005.70	3.92	0.02
Channel X - Input	-19996.75	4.78	-0.02
Channel Y + Input	199993.75	0.77	0.00
Channel Y + Input	19998.37	-3.37	-0.02
Channel Y - Input	-20000.55	1.01	-0.01
Channel Z + Input	199991.03	-1.77	-0.00
Channel Z + Input	20003.65	1.94	0.01
Channel Z - Input	-19998.09	3.49	-0.02

Low Range	Reading (μV)	Difference (μV)	Error (%)
Channel X + Input	2001.15	0.12	0.01
Channel X + Input	202.21	0.71	0.35
Channel X - Input	-198.03	0.42	-0.21
Channel Y + Input	2000.85	-0.19	-0.01
Channel Y + Input	200.80	-0.72	-0.36
Channel Y - Input	-199.36	-0.80	0.40
Channel Z + Input	2001.20	0.31	0.02
Channel Z + Input	201.05	-0.24	-0.12
Channel Z - Input	-198.95	-0.32	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	9.55	8.11
	- 200	-7.60	-9.22
Channel Y	200	2.86	2.30
	- 200	-3.90	-4.28
Channel Z	200	1.51	2.36
	- 200	-2.36	-3.04

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	-	2.54	-1.02
Channel Y	200	10.03	-	4.64
Channel Z	200	4.59	7.80	-



4. AD-Converter Values with inputs shorted

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

	High Range (LSB)	Low Range (LSB)
Channel X	15984	17038
Channel Y	15791	15554
Channel Z	16000	16003

5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec
Input 10MΩ

	Average (μV)	min. Offset (μV)	max. Offset (μV)	Std. Deviation (μV)
Channel X	1.15	0.31	1.84	0.29
Channel Y	-0.24	-1.59	0.82	0.45
Channel Z	0.02	-1.06	1.25	0.39

6. Input Offset Current

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

7. Input Resistance (Typical values for information)

	Zeroing (kOhm)	Measuring (MOhm)
Channel X	200	200
Channel Y	200	200
Channel Z	200	200

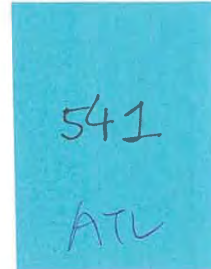
8. Low Battery Alarm Voltage (Typical values for information)

Typical values	Alarm Level (VDC)
Supply (+ Vcc)	+7.9
Supply (- Vcc)	-7.6

9. Power Consumption (Typical values for information)

Typical values	Switched off (mA)	Stand by (mA)	Transmitting (mA)
Supply (+ Vcc)	+0.01	+6	+14
Supply (- Vcc)	-0.01	-8	-9

Schmid & Partner Engineering AG

s p e a gZeughausstrasse 43, 8004 Zurich, Switzerland
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www.speag.swiss, info@speag.swiss**IMPORTANT NOTICE****USAGE OF THE DAE4**

The DAE unit is a delicate, high precision instrument and requires careful treatment by the user. There are no serviceable parts inside the DAE. Special attention shall be given to the following points:

Battery Exchange: The battery cover of the DAE4 unit is fixed using a screw, over tightening the screw may cause the threads inside the DAE to wear out.

Shipping of the DAE: Before shipping the DAE to SPEAG for calibration, remove the batteries and pack the DAE in an antistatic bag. This antistatic bag shall then be packed into a larger box or container which protects the DAE from impacts during transportation. The package shall be marked to indicate that a fragile instrument is inside.

E-Stop Failures: Touch detection may be malfunctioning due to broken magnets in the E-stop. Rough handling of the E-stop may lead to damage of these magnets. Touch and collision errors are often caused by dust and dirt accumulated in the E-stop. To prevent E-stop failure, the customer shall always mount the probe to the DAE carefully and keep the DAE unit in a non-dusty environment if not used for measurements.

Repair: Minor repairs are performed at no extra cost during the annual calibration. However, SPEAG reserves the right to charge for any repair especially if rough unprofessional handling caused the defect.

DASY Configuration Files: Since the exact values of the DAE input resistances, as measured during the calibration procedure of a DAE unit, are not used by the DASY software, a nominal value of 200 MOhm is given in the corresponding configuration file.

Important Note:

Warranty and calibration is void if the DAE unit is disassembled partly or fully by the Customer.

Important Note:

Never attempt to grease or oil the E-stop assembly. Cleaning and readjusting of the E-stop assembly is allowed by certified SPEAG personnel only and is part of the annual calibration procedure.

Important Note:

To prevent damage of the DAE probe connector pins, use great care when installing the probe to the DAE. Carefully connect the probe with the connector notch oriented in the mating position. Avoid any rotational movement of the probe body versus the DAE while turning the locking nut of the connector. The same care shall be used when disconnecting the probe from the DAE.

TN_EH190306AE DAE4.docx

07.03.2019

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