SAR EVALUATION REPORT

IEEE Std 1528-2013

For
SMARTPHONE

FCC ID: BCG-E8726A, BCG-E8727A, BCG-E8728A

Model Name: A3408, A3409, A3410

Report Number: 15457332-S1V1
Issue Date: 1/14/2025

Prepared for
APPLE INC.
1 APPLE PARK WAY
CUPERTINO, CA 95014-2084

Prepared by
UL VERIFICATION SERVICES INC.
47173 BENICIA STREET
FREMONT, CA 94538, U.S.A.
TEL: (510) 319-4000
FAX: (510) 661-0888

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ACCREDITED
CERT #0751.05

Revision History

Rev.	Date	Revisions	Revised By
V1	1/14/2025	Initial Issue	

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1. Attestation of Test Results

Applicant Name		APPLE INC.						
FCC ID		BCG-E8726A, BCG-E8727A, BCG-E8728A						
Model Name		A3408, A3409, A3410						
Applicable Standards		Published RF exposure KDB procedures IEEE Std 1528-2013						
Exposure Category		SAR Limits (W/Kg)						
		Peak spatial-average (1g of tissue)			Extremities (hands, wrists, ankles, etc.) (10g of tissue)			
General population / Uncontrolled exposure		1.6			4			
RF Exposure Conditions		Equipment Class - Highest Reported SAR (W/kg)						
		TNE	PCE	CBE	DTS	NII	DSS	DXX
Worst Case from **BCG-E8725A** (A3212)	1g	1.153	1.200	1.197	1.195	1.122	0.736	N/A
	10g	1.730	N/A	N/A	N/A	N/A	N/A	0.006
Variant Models		Worst-Case SAR for Variant Models						
BCG-E8726A (A3408)	1g	1.183	0.945	1.038	1.007	0.905	0.588	N/A
	10g	2.061	N/A	N/A	N/A	N/A	N/A	0.006
BCG-E8727A (A3409)	1g	1.147	1.192	0.875	1.076	1.014	0.715	N/A
	10g	2.048	N/A	N/A	N/A	N/A	N/A	0.006
BCG-E8728A (A3410)	1g	N/A	1.040	1.003	0.871	0.849	0.426	N/A
	10g	N/A	N/A	N/A	N/A	N/A	N/A	0.007
Date Tested		11/20/2024 to 12/6/2024						
Test Results		Pass						

This application for certification is leveraging the data reuse procedure from TCB workshop April 2021; RF Exposure Procedures (Remarks on Test Reductions via Data Referencing for Closely Related Products) based on reference FCC ID: **BCG-E8725A** (UL report# 15175342-S1) to cover variants FCC ID: **BCG-E8726A, BCG-E8727A and BCG-E8728A.** The major difference between the reference model and the variant models is the depopulation for some LTE/5GNR bands and MSS is disabled via software in the variant models. All other circuitry and features are identical. The data reuse test plan was approved via manufacturer KDB inquiry.

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested can demonstrate compliance with the requirements as documented in this report.

This report contains data provided by the customer which can impact the validity of results. UL Verification Services Inc. is only responsible for the validity of results after the integration of the data provided by the customer.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not considered unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, any agency of the Federal Government, or any agency of the U.S. government.

Approved & Released By:	Prepared By:
	
Devin Chang Senior Test Engineer UL Verification Services Inc.	Christopher Kuwatani Laboratory Engineer UL Verification Services Inc.

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2. Test Specification, Methods and Procedures

The tests documented in this report were performed in accordance with FCC 47 CFR § 2.1093, IEEE Std 1528-2013, the following FCC Published RF exposure KDB procedures:

SAR

- 248227 D01 802.11 Wi-Fi SAR v02r02
- 447498 D01 General RF Exposure Guidance v06
- 447498 D03 Supplement C Cross-Reference v01
- 484596 D01 Referencing Test Data v02r03
- 648474 D04 Handset SAR v01r03
- 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04
- 865664 D02 RF Exposure Reporting v01r02
- 941225 D01 3G SAR Procedures v03r01
- 941225 D05 SAR for LTE Devices v02r05
- 941225 D05A LTE Rel.10 KDB Inquiry Sheet v01r02
- 941225 D06 Hotspot Mode v02r01

In addition to the above, the following information was used:

- **TCB workshop** October 2014; RF Exposure Procedures (Other LTE Considerations)
- **TCB workshop** April 2015; RF Exposure Procedures (Overlapping LTE Bands)
- **TCB workshop** October 2015; RF Exposure Procedures (KDB 941225 D05A)
- **TCB workshop** April 2016; RF Exposure Procedures (LTE Carrier Aggregation for DL)
- **TCB workshop** October 2016; RF Exposure Procedures (LTE Carrier Aggregation for UL)
- **TCB workshop** October 2016; RF Exposure Procedures (Bluetooth Duty Factor)
- **TCB workshop** October 2016; RF Exposure Procedures (DUT Holder Perturbations)
- **TCB workshop** May 2017; RF Exposure Procedures (Broadband Liquid Above 3 GHz)
- **TCB workshop** May 2017; RF Exposure Procedures (LTE Band 41 Power Class 2)
- **TCB workshop** November 2017; RF Exposure Procedures (LTE UL/DL Carrier Aggregation SAR)
- **TCB workshop** April 2018; RF Exposure Procedures (LTE DL CA SAR Test Exclusion)
- **TCB workshop** October 2018; RF Exposure Procedures (LTE Inter-Band Uplink Carrier Aggregation – Interim Procedures)
- **TCB workshop** April 2019; RF Exposure Procedures (802.11ax SAR Testing)
- **TCB workshop** November 2019; RF Exposure Policy Updates (5G NR FR1 NSA EN-DCUE SAR Evaluations)
- **TCB workshop** April 2021; RF Exposure Procedures (Remarks on Test Reductions via Data Referencing for Closely Related Products)
- **TCB workshop** April 2022; RF Exposure Procedures (Sum-Peak Location Separation Ratio)

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3. Facilities and Accreditation

The test sites and measurement facilities used to collect data are located at

47266 Benicia Street
SAR Labs 1 to 19

UL Verification Services Inc. is accredited by A2LA, Certificate Number 0751.05

The Test Lab Conformity Assessment Body Identifier (CABID)

Location	CABID	Company Number
47266 Benicia Street, Fremont, CA, 94538 UNITED STATES	US0104	2324A

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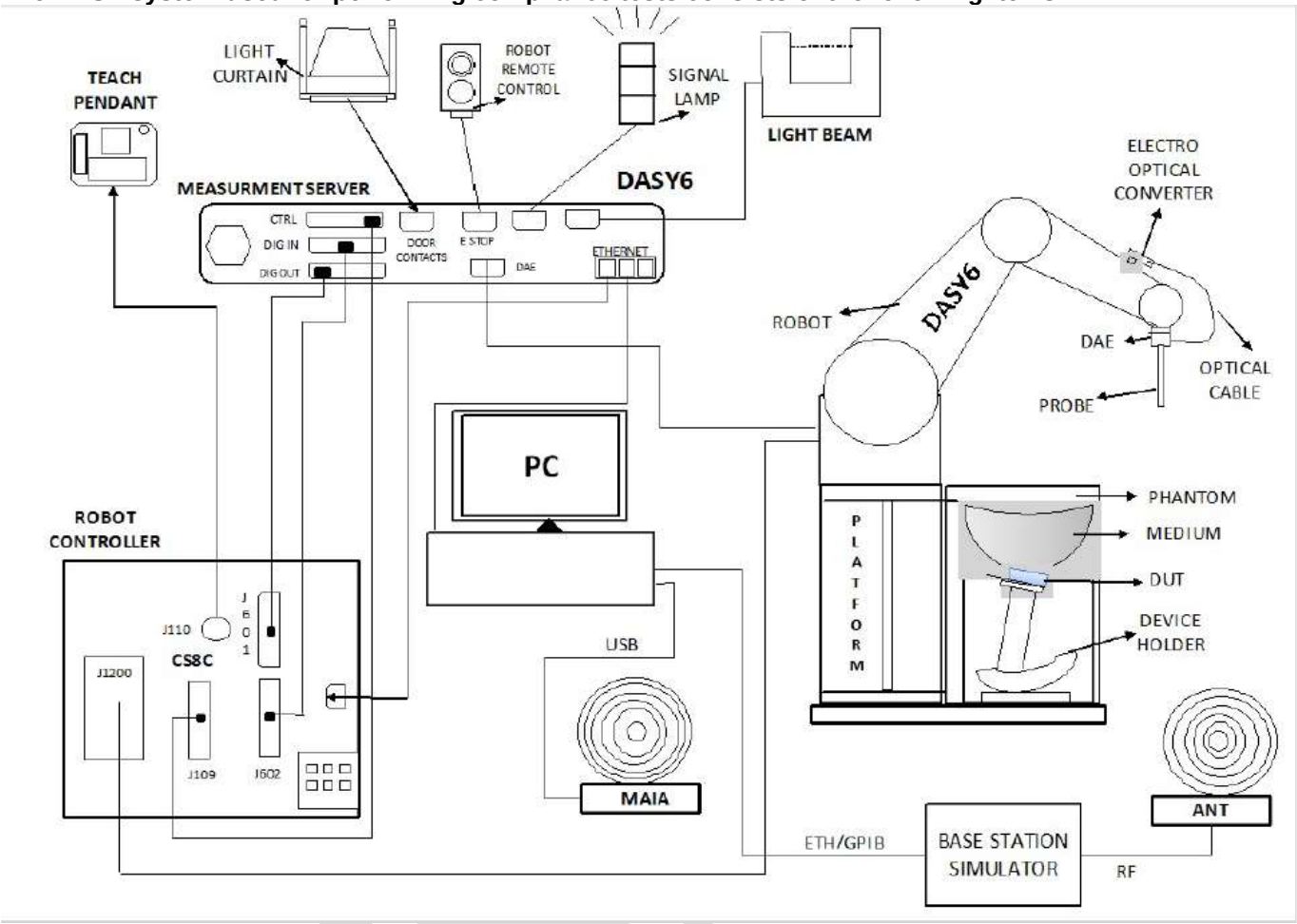
4. SAR Measurement System & Test Equipment

4.1. SAR Measurement System

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



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running Win10 and the DASY6/8[1] software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder, and other accessories according to the targeted measurement.

[1] DASY6/8 software used: DASY6.16.2 or DASY8.16.2 and older generations.

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4.2. SAR Scan Procedures

Step 1: Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. The minimum distance of probe sensors to surface is 2.1 mm. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

Step 2: Area Scan

The Area Scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum locations even in relatively coarse grids. When an Area Scan has measured all reachable points, it computes the field maximal found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEC/IEEE 62209-1528, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan). If only one Zoom Scan follows the Area Scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of Zoom Scans has to be increased accordingly.

Area Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 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 ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

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Step 3: Zoom Scan

Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. The Zoom Scan measures points (refer to table below) within a cube whose base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the Zoom Scan evaluates the averaged SAR for 1 g and 10 g and displays these values next to the job's label.

Zoom Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

			≤ 3 GHz	> 3 GHz
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 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ $1.5 \cdot \Delta z_{Zoom}(n-1)$	
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 draft standard IEEE P1528-2011 for details.

* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB 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.

Step 4: Power drift measurement

The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1.

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4.3. Test Equipment

The measuring equipment used to perform the tests documented in this report has been calibrated in accordance with the manufacturers' recommendations and is traceable to recognized national standards.

SAR

Dielectric Property Measurements

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Vector Network Analyzer	ROHDE & SCHWARZ	ZNLE6	101274-mn	2/28/2025
Vector Network Analyzer	ROHDE & SCHWARZ	ZNLE6	101273-va	2/28/2025
Vector Network Analyzer	Copper Mountain Tech	R140N	21130078	2/28/2025
Dielectric Probe Kit	SPEAG	DAK-3.5	1082	4/15/2025
Dielectric Probe Kit	SPEAG	DAK-3.5	1103	2/12/2025
Dielectric Probe Kit	SPEAG	DAK-12	1128	1/16/2025
Shorting Block	SPEAG	DAK-3.5 Short	SM DAK 200 BA	1/16/2025
Shorting Block*	SPEAG	DAK-1.2/3.5 Short	SM DAK 200 DA	11/1/2024
Shorting Block	SPEAG	DAK-12 Short	SM DAK 220 AC	1/16/2025
Thermometer	Fisher Scientific	Traceable	240029160	1/31/2025
Thermometer	Fisher Scientific	Traceable	240054866	1/31/2025

Note(s):

*Equipment not used past calibration due date.

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System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Signal Generator	ROHDE & SHWARZ	SMB 100A	180168-gX	2/28/2025
Signal Generator	ROHDE & SHWARZ	SMB 100A	180970-zC	2/28/2025
Signal Generator	Rohde & Schwarz	SMB 100A	180969-Yc	2/28/2025
MXG Analog Signal Generator	Agilent	N5181A	MY50140630	1/31/2025
Power Meter	Agilent	N1912A	MY50001018	2/28/2025
Power Meter	Keysight	N1912A	MY55196009	1/31/2025
Power Meter	Hewlett Packard	437B	3125U11347	1/31/2025
Power Meter	Hewlett Packard	437B	3125U09516	1/31/2025
Power Meter	Keysight	N1912A	MY55196007	1/31/2025
Power Sensor	Rohde & Schwarz	NRP18A	100992-iu	2/28/2025
Power Sensor	Keysight	N1921A	MY55200004	1/31/2025
Power Sensor	Agilent	8481A POW	2237A31744	1/31/2025
Power Sensor	Agilent	N1921A	MY52270022	1/31/2025
Power Sensor	ROHDE & SHWARZ	NRP18A	100995-hs	2/28/2025
Power Sensor	Agilent	N1921A	MY53260001	1/31/2025
Bi-Directional Coupler	Mini-Circuits	ZUDC10-83-S	2026?	N/A
Bi-Directional Coupler	Werlatone	C8060-102	4062	N/A
Bi-Directional Coupler	Mini-Circuits	ZUDC10-183+	1722	N/A
Amplifier	Mini-Circuits	ZHL-42W	212352	N/A
Amplifier	MITEQ	AMF-4D-00400600-50-30P	1795093	N/A
DC Power Supply	Sorenson	XT 15-4	1802A01877	N/A
DC Power Supply	Sorenson	XT 15-4	1817A02680	N/A
Attenuator	Pasternack	PE7018-20	212352	N/A
Directional Coupler	Anatech Electronics	AM0R-100DC869	4	N/A

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Lab Equipment

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
E-Field Probe (SAR Lab 1)	SPEAG	EX3DV4	3989	1/9/2025
E-Field Probe (SAR Lab 7)	SPEAG	EX3DV4	3990	2/28/2025
E-Field Probe (SAR Lab 8)	SPEAG	EX3DV4	7335	1/9/2025
E-Field Probe (SAR Lab 15)	SPEAG	EX3DV4	3991	1/16/2025
E-Field Probe (SAR Lab 17)	SPEAG	EX3DV4	3686	1/12/2025
Data Acquisition Electronics (SAR Lab 1)	SPEAG	DAE4	1674	5/31/2025
Data Acquisition Electronics (SAR Lab 7)	SPEAG	DAE4	1433	2/8/2025
Data Acquisition Electronics (SAR Lab 8)	SPEAG	DAE4	1799	5/2/2025
Data Acquisition Electronics (SAR Lab 15)	SPEAG	DAE4	1544	1/16/2025
Data Acquisition Electronics (SAR Lab 17)	SPEAG	DAE4	1357	1/9/2025
Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
System Validation Dipole	SPEAG	D1640V2	324	6/13/2025
System Validation Dipole	SPEAG	D2300V2	1002	4/11/2025
System Validation Dipole	SPEAG	D2450V2	748	4/10/2025
System Validation Dipole	SPEAG	D2600V2	1036	4/11/2025
System Validation Dipole	SPEAG	D3500V2	1060	2/7/2025
System Validation Dipole	SPEAG	D3900V2	1102	10/17/2025
System Validation Dipole	SPEAG	D5GHzV2	1168	11/15/2025
System Validation Dipole	SPEAG	CLA13	1008	1/12/2025
Thermometer	Fisher Scientific	Traceable	240466064	6/30/2025
Thermometer	Fisher Scientific	Traceable	181175331	1/31/2025
Thermometer	Fisher Scientific	Traceable	181073773	1/31/2025
Thermometer	Fisher Scientific	Traceable	181163673	1/31/2025
Thermometer	Fisher Scientific	Traceable	170024398	6/30/2025
Thermometer	Fisher Scientific	Traceable	170251204	6/30/2025
Thermometer	Fisher Scientific	Traceable	181062319	10/31/2025

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Other

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	171872-XJ	2/28/2025
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	137875-DZ	2/28/2025
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	135390-WS	2/28/2025
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	170416--Lb	2/28/2025
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	137877-ms	2/28/2025
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	171873-pw	2/28/2025
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	135393-VQ	2/28/2025
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	170269-HX	2/28/2025
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	170417-Bp	2/28/2025
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	171871-Gd	2/28/2025
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	171875-WG	2/28/2025
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	132910-cp	2/28/2025
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	134853-ud	2/28/2025
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	171874-Fb	2/28/2025
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	147543-Bg	2/28/2025
EXA Signal Analyzer	Keysight	EXA	MY60240521	8/31/2025
EXA Signal Analyzer	Keysight	EXA	MY55460216	8/31/2025
Power Meter	Keysight	N1911A	MY55916014	1/31/2025
Power Meter	Keysight	N1911A	MY55196015	2/28/2025
Power Sensor	Agilent	N1921A	MY52200012	1/31/2025
Power Sensor	Agilent	N10149	MY53260010	2/28/2025
PSA Series Spectrum Analyzer	Agilent	E4446A	MY45300064	2/28/2025

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5. Measurement Uncertainty

SAR

Per KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be ≤ 30%, for a confidence interval of k = 2. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval.

Therefore, the measurement uncertainty is not required.

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6. Dielectric Property Measurements & System Check

6.1. SAR Dielectric Property Measurements and System Checks

The temperature of the tissue-equivalent medium used during measurement must also be within 18°C to 25°C and within ± 2°C of the temperature when the tissue parameters are characterized.
The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements. The parameters should be re-measured after each 3 – 4 days of use; or earlier if the dielectric parameters can become out of tolerance; for example, when the parameters are marginal at the beginning of the measurement series.
Tissue dielectric parameters were measured at the low, middle and high frequency of each operating frequency range of the test device.
The dielectric constant (εr) and conductivity (σ) of typical tissue-equivalent media recipes are expected to be within ± 5% of the required target values; but for SAR measurement systems that have implemented the SAR error compensation algorithms documented in IEEE Std 1528-2013, to automatically compensate the measured SAR results for deviations between the measured and required tissue dielectric parameters, the tolerance for εr and σ may be relaxed to ± 10%. This is limited to frequencies ≤ 3 GHz.

Tissue Dielectric Parameters

FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

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
5000	36.2	4.45	49.3	5.07
5100	36.1	4.55	49.1	5.18
5200	36.0	4.66	49.0	5.30
5300	35.9	4.76	48.9	5.42
5400	35.8	4.86	48.7	5.53
5500	35.6	4.96	48.6	5.65
5600	35.5	5.07	48.5	5.77
5700	35.4	5.17	48.3	5.88
5800	35.3	5.27	48.2	6.00

System Verification

SAR system verification is required to confirm measurement accuracy, according to the tissue dielectric media, probe calibration points and other system operating parameters required for measuring the SAR of a test device. The system verification must be performed for each frequency band and within the valid range of each probe calibration point required for testing the device. The same SAR probe(s) and tissue-equivalent media combinations used with each specific SAR system for system verification must be used for device testing. When multiple probe calibration points are required to cover substantially large transmission bands, independent system verifications are required for each probe calibration point. A system verification must be performed before each series of SAR measurements using the same probe calibration point and tissue-equivalent medium. Additional system verification should be considered according to the conditions of the tissue-equivalent medium and measured tissue dielectric parameters, typically every three to four days when the liquid parameters are re-measured or sooner when marginal liquid parameters are used at the beginning of a series of measurements.

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System Performance Check Measurement Conditions:

- The measurements were performed in the flat section of the TWIN SAM or ELI phantom, shell thickness: 2.0 ±0.2 mm (bottom plate) filled with Body or Head simulating liquid of the following parameters.
- The depth of tissue-equivalent liquid in a phantom must be ≥ 15.0 cm for SAR measurements ≤ 3 GHz and ≥ 10.0 cm for measurements > 3 GHz.
- The DASY system with an E-Field Probe was used for the measurements.
- The dipole was mounted on the small tripod so that the dipole feed point was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10 mm (above 1 GHz) and 15 mm (below 1 GHz) from dipole center to the simulating liquid surface.
- The coarse grid with a grid spacing of 15 mm was aligned with the dipole.
  For 5 GHz band - The coarse grid with a grid spacing of 10 mm was aligned with the dipole.
- Special 7x7x7 (below 3 GHz) and/or 8x8x7 (above 3 GHz) fine cube was chosen for the cube.
- Distance between probe sensors and phantom surface was set to 3 mm.
  For 5 GHz band - Distance between probe sensors and phantom surface was set to 2.5 mm
- The dipole input power (forward power) was 100 mW.
- The results are normalized to 1 W input power.

Liquid and System Check Results

Liquid Check											System Check											
					Relative Permittivity (εr)			Conductivity (σ)							Measured results for 1-g SAR				Measured results for 10-g SAR				
SAR Lab	Date	Tissue Type	Band (MHz)	Freq. (MHz)	Measured	Target	Delta	Measured	Target	Delta	Date	Dipole Type & Serial Number	Dipole Cal. Due Date	Input Power (dBm)	Meas. Zoom Scan	Normalize to 1 W	Target (Ref. Value)	Delta ±10%	Meas. Zoom Scan	Normalize to 1 W	Target (Ref. Value)	Delta ±10%	Plot No.
SAR 1	11/20/2024	Head	13	13	54.69	55.00	-0.56%	0.69	0.75	-8.40%	11/20/2024	CLA13 SN: 1008	1/12/2025	30.0	0.490	0.490	0.544	**-9.93%**	0.305	0.305	0.338	-9.76%	1
				12	55.10	55.00	0.18%	0.69	0.75	-8.41%													
				14	54.38	55.00	-1.13%	0.69	0.75	-8.40%													
SAR 1	12/3/2024	Head	3500	3500	39.15	37.93	3.22%	2.72	2.91	-6.68%	12/3/2024	D3500V2 SN: 1060	2/7/2025	17.0	3.200	63.848	65.700	**-2.82%**	1.250	24.941	24.900	0.16%	2
				3400	39.33	38.04	3.38%	2.63	2.81	-6.38%													
				3700	38.81	37.70	2.94%	2.90	3.12	-6.97%													
SAR 1	12/3/2024	Head	3900	3900	38.51	37.47	2.77%	3.09	3.32	-6.95%	12/3/2024	D3900V2 SN: 1102	10/23/2025	17.0	3.380	67.440	69.300	**-2.68%**	1.230	24.542	24.100	1.83%	3
				3800	38.66	37.59	2.85%	2.99	3.22	-7.04%													
				4000	38.35	37.36	2.65%	3.19	3.42	-6.96%													
Liquid Check											System Check											
					Relative Permittivity (εr)			Conductivity (σ)							Measured results for 1-g SAR				Measured results for 10-g SAR				
SAR Lab	Date	Tissue Type	Band (MHz)	Freq. (MHz)	Measured	Target	Delta	Measured	Target	Delta	Date	Dipole Type & Serial Number	Dipole Cal. Due Date	Input Power (dBm)	Meas. Zoom Scan	Normalize to 1 W	Target (Ref. Value)	Delta ±10%	Meas. Zoom Scan	Normalize to 1 W	Target (Ref. Value)	Delta ±10%	Plot No.
SAR 7	12/3/2024	Head	2300	2300	38.35	39.47	-2.84%	1.53	1.66	-8.34%	12/3/2024	D2300V2 SN: 1002	4/11/2025	20.0	4.800	48.000	48.700	**-1.44%**	2.380	23.800	23.800	0.00%	4
				2350	38.40	39.38	-2.50%	1.56	1.71	-8.59%													
				2400	38.26	39.30	-2.64%	1.60	1.75	-8.66%													
SAR 7	12/5/2024	Head	2450	2450	39.16	39.20	-0.10%	1.69	1.80	-5.94%	12/5/2024	D2450V2 SN: 748	2/8/2025	20.0	5.120	51.200	51.700	**-0.97%**	2.420	24.200	24.200	0.00%	5
				2400	39.24	39.30	-0.14%	1.66	1.75	-5.52%													
				2500	39.08	39.14	-0.15%	1.73	1.85	-6.96%													
SAR 7	12/2/2024	Head	2600	2600	42.10	39.01	7.92%	1.81	1.96	-7.60%	12/2/2024	D2600V2 SN: 1036	4/11/2025	20.0	5.270	52.700	55.400	**-4.87%**	2.440	24.400	24.900	-2.01%	6
				2495	42.24	39.14	7.91%	1.73	1.85	-6.53%													
				2690	41.96	38.90	7.87%	1.89	2.06	-8.42%													
Liquid Check											System Check											
					Relative Permittivity (εr)			Conductivity (σ)							Measured results for 1-g SAR				Measured results for 10-g SAR				
SAR Lab	Date	Tissue Type	Band (MHz)	Freq. (MHz)	Measured	Target	Delta	Measured	Target	Delta	Date	Dipole Type & Serial Number	Dipole Cal. Due Date	Input Power (dBm)	Meas. Zoom Scan	Normalize to 1 W	Target (Ref. Value)	Delta ±10%	Meas. Zoom Scan	Normalize to 1 W	Target (Ref. Value)	Delta ±10%	Plot No.
SAR 8	12/5/2024	Head	1640	1640	41.21	40.25	2.38%	1.23	1.31	-6.04%	12/5/2024	D1640V2 SN: 324	6/13/2025	20.0	3.230	32.300	33.900	**-4.72%**	1.780	17.800	18.300	-2.73%	7
				1610	41.21	40.30	2.26%	1.21	1.29	-6.20%													
				1665	41.09	40.22	2.17%	1.24	1.32	-6.13%													
Liquid Check											System Check											
					Relative Permittivity (εr)			Conductivity (σ)							Measured results for 1-g SAR				Measured results for 10-g SAR				
SAR Lab	Date	Tissue Type	Band (MHz)	Freq. (MHz)	Measured	Target	Delta	Measured	Target	Delta	Date	Dipole Type & Serial Number	Dipole Cal. Due Date	Input Power (dBm)	Meas. Zoom Scan	Normalize to 1 W	Target (Ref. Value)	Delta ±10%	Meas. Zoom Scan	Normalize to 1 W	Target (Ref. Value)	Delta ±10%	Plot No.
SAR 15	12/5/2024	Head	5250	5250	38.08	35.93	5.97%	4.39	4.70	-6.66%	12/5/2024	D5GHzV2 SN: 1168 (5.25 GHz)	11/15/2025	20.0	7.460	74.600	77.000	**-3.12%**	2.170	21.700	22.300	-2.69%	8
				5150	38.15	36.05	5.83%	4.26	4.60	-7.30%													
				5350	37.72	35.82	5.31%	4.45	4.80	-7.38%													
Liquid Check											System Check											
					Relative Permittivity (εr)			Conductivity (σ)							Measured results for 1-g SAR				Measured results for 10-g SAR				
SAR Lab	Date	Tissue Type	Band (MHz)	Freq. (MHz)	Measured	Target	Delta	Measured	Target	Delta	Date	Dipole Type & Serial Number	Dipole Cal. Due Date	Input Power (dBm)	Meas. Zoom Scan	Normalize to 1 W	Target (Ref. Value)	Delta ±10%	Meas. Zoom Scan	Normalize to 1 W	Target (Ref. Value)	Delta ±10%	Plot No.
SAR 17	12/5/2024	Head	2600	2600	38.44	39.01	-1.46%	1.92	1.96	-2.05%	12/5/2024	D2600V2 SN: 1036	4/11/2025	20.0	5.650	56.500	55.400	**1.99%**	2.580	25.800	24.900	3.61%	9
				2495	38.60	39.14	-1.39%	1.84	1.85	-0.52%													
				2690	38.27	38.90	-1.61%	1.99	2.06	-3.23%													

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7. SAR Measurements

7.1. Test Rationale

This application for certification is leveraging the data reuse procedure from TCB workshop April 2021; RF Exposure Procedures (Remarks on Test Reductions via Data Referencing for Closely Related Products) based on reference FCC ID: **BCG-E8725A** (UL report# 15175342-S1) to cover variants FCC ID: **BCG-E8726A, BCG-E8727A and BCG-E8728A.** The major difference between the reference model and the variant models is the depopulation of and support for some LTE/5GNR bands and MSS is disabled via software in the variant models. All other circuitry and features are identical.

7.2. Data Reuse Approach

The data reuse test plan was approved via manufacturer KDB inquiry. Full RF exposure testing was performed on the reference model. The configurations with the highest SAR results for each equipment class were identified. These configurations were tested on the variant models.

The variation in SAR results was well within the uncertainty budget of the SAR test equipment. The variant SAR results and worst-case reference model SAR results are summarized in § 1.

7.3. Measured and Reported (Scaled) SAR Results

7.3.1. A3408 Spot Check Results

															AA2309				AA2319				Plot No.
Equipment Class	Technology	Band	Antenna(s)	RF Exposure Condition(s)	Mode(s)	Power Mode(s)	Dist. (mm)	Duty Cycle (%)	Test Position(s)	Channel	Freq. (MHz)	RB Allocation	RB Offset	Maximum Output Power	Meas. Output Power	1-g Meas. (W/kg)	1-g Scaled (W/kg)	10-g Meas. (W/kg)	10-g Scaled (W/kg)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	10-g Meas. (W/kg)	10-g Scaled (W/kg)	
TNE	FR1	FR1 n53	ANT 2	Head	DFT-s-OFDM π/2 BPSK	Mode A	0		Left Tilt	497860	2489.3	1	1	18.3	17.0	0.855	1.153	0.316	0.426	0.877	1.183	0.311	0.420	1
TNE	MSS	L-Band	ANT 4	Extremity	1-PRB SC-FDMA	Mode B	0		Front	262391	1617.6			23.4	22.3	4.110	5.295	1.730	2.229	3.680	4.741	1.600	2.061	2
PCE	LTE	LTE B7	ANT 4	Hotspot	QPSK	Mode B	5		Edge Right	20850	2510.0	1	49	21.2	20.0	0.910	1.200	0.417	0.550	0.717	0.945	0.338	0.446	3
CBE	LTE	LTE B48	ANT 4	Hotspot	QPSK	Mode B	5		Edge Right	55340	3560.0	50	0	22.4	20.6	0.791	1.197	0.294	0.445	0.686	1.038	0.251	0.380	4
DTS	Wi-Fi	DTS	ANT 4	Head	802.11b	Mode A	0	99.95%	Left Cheek	6	2437.0			20.5	19.9	1.040	1.195	0.459	0.527	0.877	1.007	0.393	0.451	5
NII	Wi-Fi	UNII 1 & 2A	ANT 6	Head	802.11n (HT40)	Mode A	0	97.62%	Right Cheek	46	5230.0			20.0	18.8	0.831	1.122	0.328	0.443	0.670	0.905	0.227	0.307	6
DSS	Bluetooth	Bluetooth	ANT 4	Head	GFSK (BDR)	Pstandalone Mode A	0	76.94%	Left Cheek	39	2441.0			20.0	19.0	0.585	0.736	0.266	0.335	0.467	0.588	0.216	0.272	7
DXX	NFC	NFC	Primary	Extremity	Type A	N/A	0		Back		13.6					0.017		0.006		0.018		0.006		8

7.3.2. A3409 Spot Check Results

															AA2309				AA2329				Plot No.
Equipment Class	Technology	Band	Antenna(s)	RF Exposure Condition(s)	Mode(s)	Power Mode(s)	Dist. (mm)	Duty Cycle (%)	Test Position(s)	Channel	Freq. (MHz)	RB Allocation	RB Offset	Maximum Output Power	Meas. Output Power	1-g Meas. (W/kg)	1-g Scaled (W/kg)	10-g Meas. (W/kg)	10-g Scaled (W/kg)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	10-g Meas. (W/kg)	10-g Scaled (W/kg)	
TNE	FR1	FR1 n53	ANT 2	Head	DFT-s-OFDM π/2 BPSK	Mode A	0		Left Tilt	497860	2489.3	1	1	18.3	17.0	0.855	1.153	0.316	0.426	0.850	1.147	0.316	0.426	9
TNE	MSS	L-Band	ANT 4	Extremity	1-PRB SC-FDMA	Mode B	0		Front	262391	1617.6			23.4	22.3	4.110	5.295	1.730	2.229	3.630	4.676	1.590	2.048	10
PCE	LTE	LTE B7	ANT 4	Hotspot	QPSK	Mode B	5		Edge Right	20850	2510.0	1	49	21.2	20.0	0.910	1.200	0.417	0.550	0.904	1.192	0.390	0.514	11
CBE	LTE	LTE B48	ANT 4	Hotspot	QPSK	Mode B	5		Edge Right	55340	3560.0	50	0	22.4	20.6	0.791	1.197	0.294	0.445	0.578	0.875	0.213	0.322	12
DTS	Wi-Fi	DTS	ANT 4	Head	802.11b	Mode A	0	99.95%	Left Cheek	6	2437.0			20.5	19.9	1.040	1.195	0.459	0.527	0.937	1.076	0.424	0.487	13
NII	Wi-Fi	UNII 1 & 2A	ANT 6	Head	802.11n (HT40)	Mode A	0	97.62%	Right Cheek	46	5230.0			20.0	18.8	0.831	1.122	0.328	0.443	0.751	1.014	0.250	0.338	14
DSS	Bluetooth	Bluetooth	ANT 4	Head	GFSK (BDR)	Pstandalone Mode A	0	76.94%	Left Cheek	39	2441.0			20.0	19.0	0.585	0.736	0.266	0.335	0.568	0.715	0.266	0.335	15
DXX	NFC	NFC	Primary	Extremity	Type A	N/A	0		Back		13.6					0.017		0.006		0.017		0.006		16

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7.3.3. A3410 Spot Check Results

															AA2309				AA2339				
Equipment Class	Technology	Band	Antenna(s)	RF Exposure Condition(s)	Mode(s)	Power Mode(s)	Dist. (mm)	Duty Cycle (%)	Test Position(s)	Channel	Freq. (MHz)	RB Allocation	RB Offset	Maximum Output Power	Meas. Output Power	1-g Meas. (W/kg)	1-g Scaled (W/kg)	10-g Meas. (W/kg)	10-g Scaled (W/kg)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	10-g Meas (W/kg)	10-g Scaled (W/kg)	Plot No.
PCE	LTE	LTE B7	ANT 4	Hotspot	QPSK	Mode B	5		Edge Right	20850	2510.0	1	49	21.2	20.0	0.910	1.200	0.417	0.550	0.789	1.040	0.351	0.463	17
CBE	LTE	LTE B48	ANT 4	Hotspot	QPSK	Mode B	5		Edge Right	55340	3560.0	50	0	22.4	20.6	0.791	1.197	0.294	0.445	0.663	1.003	0.248	0.375	18
DTS	Wi-Fi	DTS	ANT 4	Head	802.11b	Mode A	0	99.95%	Left Cheek	6	2437.0			20.5	19.9	1.040	1.195	0.459	0.527	0.758	0.871	0.353	0.406	19
NII	Wi-Fi	UNII 1 & 2A	ANT 6	Head	802.11n (HT40)	Mode A	0	97.62%	Right Cheek	46	5230.0			20.0	18.8	0.831	1.122	0.328	0.443	0.629	0.849	0.230	0.311	20
DSS	Bluetooth	Bluetooth	ANT 4	Head	GFSK (BDR)	Pstandalone Mode A	0	76.94%	Left Cheek	39	2441.0			20.0	19.0	0.585	0.736	0.266	0.335	0.338	0.426	0.160	0.201	21
DXX	NFC	NFC	Primary	Extremity	Type A	N/A	0		Back		13.6					0.017		0.006		0.020		0.007		22

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Appendixes

Refer to separated files for the following appendixes.

Appendix A: Setup Photos

Appendix B: System Check Plots

Appendix C: Highest Test Plots

Appendix D: SAR Tissue Ingredients

Appendix E: Probe Certificates

Appendix F: Dipole Certificates

END OF REPORT

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