

# **TEST REPORT**

**Report Number:** 14282070-E1V2

Applicant: APPLE, INC

1 APPLE PARK WAY

CUPERTINO, CA 95014, U.S.A.

**Model :** A2885, A2886, A2887, A2888

**Brand**: APPLE

FCC ID : BCG-E8146A, BCG-E8147A, BCG-E8148A

**EUT Description**: SMARTPHONE

Test Standard(s): FCC CFR47 PART 2, 22H, 24E, 27, 90S, 90R, AND 96

**Date Of Issue:** 

AUGUST 22, 2022

#### Prepared by:

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REPORT NO: 14282070-E1V2 DATE: AUGUST 22, 2022 EUT MODEL: A2885, A2886, A2887, A2888 FCC ID: BCG-E8146A, BCG-E8147A, BCG-E8148A

## **Revision History**

Rev.	Issue Date	Revisions	Revised By
V1	8/11/2022	Initial Review	Eric Ting
V2	8/22/2022	Updated section 5.1, 5.3, 5.7	Eric Ting

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#### 1. ATTESTATION OF TEST RESULTS

Applicant Name and Address	APPLE, INC 1 APPLE PARK WAY CUPERTINO, CA 95014, U.S.A.
Model	A2885, A2886, A2887, A2888
Brand	APPLE
FCC ID	BCG-E8146A, BCG-E8147A, BCG-E8148A
EUT Description	SMARTPHONE
Serial Number	Conducted (C7H205400D11LYT25, WYKGJHG91H, and GL9W399YRH). Radiated (MD92Q6XYG7, JP6R4QLNQG, and GL9W399YRH)
Sample Receipt date	JUNE 03, 2022
Date Tested	JUNE 10, 2022 to JULY 24, 2022
Applicable Standards	FCC CFR47 2, 22H, 24E, 27, 90S, 90R, AND 96
Test Results	COMPLIES

UL LLC tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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 taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC 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:	Reviewed By:	Prepared By:
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Mengistu Mekuria	Eric Ting	Tony Li
Staff Engineer	Test Engineer	Test Engineer
UL LLC	UL LLC	UL LLC

FORM NO: CCSUP4031B

#### 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with the following:

- ANSI C63.26:2015
- FCC CFR 47 Part 2, Part 22, Part 24, Part 27, Part 90, and Part 96
- FCC KDB 971168 D01 v03r01: Power Meas License Digital Systems
- FCC KDB 971168 D02 v02r01: Misc Rev Approv License Devices
- FCC KDB 412172 D01 v01r01. Determining ERP and EIRP

#### 3. FACILITIES AND ACCREDITATION

UL LLC is accredited by A2LA, certification #0751.05, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

	Address	ISED CABID	ISED Company Number	FCC Registration
×	Building 1: 47173 Benicia Street, Fremont, CA 94538, USA	US0104	2324A	550739
$\boxtimes$	Building 2: 47266 Benicia Street, Fremont, CA 94538, USA	US0104	22541	550739
	Building 4: 47658 Kato Rd, Fremont, CA 94538, USA	US0104	2324B	550739

REPORT NO: 14282070-E1V2 DATE: AUGUST 22, 2022 EUT MODEL: A2885, A2886, A2887, A2888 FCC ID: BCG-E8146A, BCG-E8147A, BCG-E8148A

### 4. DECISION RULES AND MEASUREMENT UNCERTAINTY

#### 4.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

#### 4.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

#### 4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	U <sub>Lab</sub>
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.87 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	6.01 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.73 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.51 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.29 dB
Occupied Channel Bandwidth	±1.22 %
Temperature	±2.26%
Supply voltages	±0.57 %
Time	±3.39 %

Uncertainty figures are valid to a confidence level of 95%.

#### 4.4. SAMPLE CALCULATION

#### **RADIATED EMISSIONS**

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB) 36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

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#### 5. INTRODUCTION OF TEST DATA REUSE

#### 5.1. DESCRIPTION OF EUT

The Apple iPhone is a smartphone with multimedia functions (music, application support, and video),cellular GSM, GPRS, EGPRS, UMTS, LTE, 5G FR1, IEEE 802.11a/b/g/n/ac/ax, Bluetooth, Ultra-Wideband, GPS, NFC and MSS. All models except refetence model support at least one UICC based SIM. The second SIM is either an UICC based p-SIM (physical SIM) or e-SIM (electronic SIM). The device supports a built-in inductive charging transmitter and receiver. The rechargeable battery is not user accessible.

Testing was performed on the parent model and is used to support the application for the parent and variants identified in this report based on the test plan submitted and approved via KDB inquiry by the FCC.

#### 5.2. INTRODUCTION

This application for certification is leveraging the data reuse procedures from KDB 484596 D01 based on reference FCC ID: BCG-E8139A to cover variant model FCC ID: BCG-E8146A, BCG-E8147A, and BCG-E8148A. The major difference between the parent/reference model and the variant model is the depopulation in the variant model of the mmWave transmitter, and some LTE and 5G NR Bands. All other circuitry and features are identical. The data reuse test plan was approved via manufacturer KDB inquiry.

#### 5.3. MODEL DIFFERENCES

The manufacturer hereby declares the following for models AA2632, A2885, A2886, A2887, and A2888

A2632, A2885, A2886, A2887, and A2888 are highly similar, with the only differences being listed on the table below:

Model	FCC ID	Model Changes
A2632	BCG-E8139A	Reference Model
A2885	BCG-E8146A	Variant model Remove FR2 from the Reference Model
A2886	BCG-E8147A	Variant model Removed FR2, LTE B11/14/29/71, and 5G NR n14/n71 from the reference model
A2887/A2888	BCG-E8148A	Variant model Removed FR2, LTE B11/14/21/29/53/71, MSS, and 5G NR n14/n53/n71 from the reference model

#### Note:

They have the same PCB layout, design, common components, antennas, antenna locations and housing cases.

More specifically, their cellular modem, Wi-Fi, BT, NFC, WPT and UWB transmitters are identical, and removal of cellular bands is done by software and depopulation of band-specific components associated with the removed bands.

Spot check verification has been done on models A2885, A2886, A2887, and A2888 in accordance with the test plan approved via KDB inquiry. Comparison of the models, upper deviation is within 3dB range, and all tests are under FCC Technical Limits. The results documented for model A2632 may be applied as representative to models A2885, A2886, A2887, and A2888.

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## 5.4. SPOT CHECK VERIFICATION RESULTS SUMMARY FOR A2885

			A2885 SPOT	CHECK RESULTS			
			Measured	Original Model: A2632	Sub Model: A2885		
Technology	Worst Mode	Test Item	Frequency (MHz)	FCC ID: BCG-E8139A (dBm)	FCC ID: BCG-E8146A (dBm)	Delta (dB)	Remarks
LTE	QPSK @10 MHz BW	Cond Power	824-849	25.70	25.70	0.00	
BAND 5	QPSK @ highest BW	RSE		-52.24	-52.91	-0.67	Noise Floor Level
5G NR	QPSK @ 20 MHz BW	Cond Power	824-849	25.70	25.70	0	
BAND N5	QPSK @ highest BW	RSE		-54.83	-52.91	1.92	Noise Floor Level
LTE	QPSK @ 20 MHz BW	Cond Power	2500-2570	25.70	25.70	0	
BAND 7	QPSK @ highest BW	RSE		-49.4	-50.66	-1.26	Noise Floor Level
5G NR BAND N7	BPSK @ 20 MHz BW	Cond Power	2500-2570	25.70	25.70	0	
LTE BAND 12	QPSK @ 10 MHz BW	Cond Power	699-716	25.70	25.70	0.00	
5G NR BAND N12	QPSK @ 15 MHz BW	Cond Power	699-716	25.70	25.70	0	
LTE BAND 13	QPSK @ 10 MHz BW	Cond Power	777-787	25.70	25.70	0	
LTE BAND 14	QPSK @ 10 MHz BW	Cond Power	788-798	25.70	25.70	0	
5G NR BAND N14	QPSK @ 10 MHz BW	Cond Power	788-798	25.70	25.70	0	
LTE BAND 17	QPSK @ 10 MHz BW	Cond Power	704-716	25.70	25.70	0	
LTE BAND 25	QPSK @ 20 MHz BW QPSK @ highest BW	Cond Power RSE	1850-1915	25.70 -50.23	25.70 -51.32	0 -1.09	Noise Floor Level
5G NR BAND N25	QPSK @ 40 MHz BW	Cond Power	1850-1915	25.70	25.70	0	
LTE BAND 26 (90S)	QPSK @10 MHz BW	Cond Power	814-824	25.70	25.70	0	
5G NR BAND N26 (90S)	QPSK @10 MHz BW	Cond Power	814-824	25.70	25.70	0	
LTE BAND 30	QPSK @ 10 MHz BW	Cond Power	2305-2315	25.70	25.70	0	
5G NR BAND N30	QPSK @ 5 MHz BW	Cond Power	2305-2315	25.70	25.70	0	
LTE BAND 41	QPSK @ 20 MHz BW	Cond Power	2496-2690	28.70	28.70	0	
5G NR BAND N41	BPSK @ 100 MHz BW	Cond Power	2496-2690	28.70	28.70	0	Ant2
LTE	OBSK @ 30 MH= BVM	Cond Power	2550 2700	23.30	23.30	0	Ant8
BAND 48	QPSK @ 20 MHz BW	RSE	3550-3700	-46.09	-44.84	1.25	Noise Floor Level
LTE BAND 66	QPSK @ 20 MHz BW	Cond Power	1710-1780	25.70	25.70	0	
5G NR BAND N66	BPSK @ 20 MHz BW	Cond Power	1710-1780	25.70	25.70	0	
5G NR BAND n70	QPSK @ 20 MHz BW	Cond Power	1695-1710	25.70	25.70	0	
LTE BAND 71	QPSK @ 20 MHz BW	Cond Power	663-698	25.70	25.70	0	
5G NR BAND n71	BPSK @ 20 MHz BW	Cond Power	663-698	25.70	25.70	0	
5G NR BAND N77	BPSK @ 100 MHz BW	Cond Power	3450-3550	28.70	28.70	0	Ant7
5G NR BAND N77	BPSK @ 100 MHz BW	Cond Power	3700-3980	28.70	28.70	0	Ant7

## 5.5. SPOT CHECK VERIFICATION RESULTS SUMMARY FOR A2886

			A2886 SPOT	CHECK RESULTS			
			Measured	Original Model: A2632	Sub Model: A2886		
Technology	Worst Mode	Test Item	Frequency (MHz)	FCC ID: BCG-E8139A (dBm)	FCC ID: BCG-E8147A (dBm)	Delta (dB)	Remarks
LTE	QPSK @10 MHz BW	Cond Power	824-849	25.70	25.70	0	
BAND 5	QPSK @ highest BW	RSE		-52.24	-53.95	-1.71	Noise Floor Level
5G NR	QPSK @ 20 MHz BW	Cond Power	824-849	25.70	25.70	0	
BAND N5	QPSK @ highest BW	RSE	024-049	-54.83	-53.95	0.88	Noise Floor Level
LTE	QPSK @ 20 MHz BW	Cond Power		25.70	25.70	0	
BAND 7	QPSK @ highest BW	RSE	2500-2570	-49.4	-49.29	0.11	Noise Floor Level
5G NR BAND N7	BPSK @ 20 MHz BW	Cond Power	2500-2570	25.70	25.70	0	
LTE BAND 12	QPSK @ 10 MHz BW	Cond Power	699-716	25.70	25.70	0.00	
5G NR BAND N12	QPSK @ 15 MHz BW	Cond Power	699-716	25.70	25.70	0	
LTE BAND 13	QPSK @ 10 MHz BW	Cond Power	777-787	25.70	25.70	0	
LTE BAND 14	QPSK @ 10 MHz BW	Cond Power	788-798	25.70	25.70	0	
5G NR BAND N14	QPSK @ 10 MHz BW	Cond Power	788-798	25.70	25.70	0	
LTE BAND 17	QPSK @ 10 MHz BW	Cond Power	704-716	25.70	25.70	0	
LTE	QPSK @ 20 MHz BW	Cond Power	1850-1915	25.70	25.70	0	
BAND 25	QPSK @ highest BW	RSE	1650-1915	-50.23	-52.13	-1.9	Noise Floor Level
5G NR BAND N25	QPSK @ 40 MHz BW	Cond Power	1850-1915	25.70	25.70	0	
LTE BAND 26 (90S)	QPSK @10 MHz BW	Cond Power	814-824	25.70	25.70	0	
5G NR BAND N26 (90S)	QPSK @10 MHz BW	Cond Power	814-824	25.70	25.70	0	
LTE BAND 30	QPSK @ 10 MHz BW	Cond Power	2305-2315	25.70	25.70	0	
5G NR BAND N30	QPSK @ 5 MHz BW	Cond Power	2305-2315	25.70	25.70	0	
LTE BAND 41	QPSK @ 20 MHz BW	Cond Power	2496-2690	28.70	28.70	0	
5G NR BAND N41	BPSK @ 100 MHz BW	Cond Power	2496-2690	28.70	28.70	0	Ant2
LTE BAND 48	QPSK @ 20 MHz BW	Cond Power RSE	3550-3700	23.30 -46.09	23.30 -46.78	0 -0.69	Ant8 Noise Floor Level
LTE BAND 66	QPSK @ 20 MHz BW	Cond Power	1710-1780	25.70	25.70	0	
5G NR BAND N66	BPSK @ 20 MHz BW	Cond Power	1710-1780	25.70	25.70	0	
5G NR BAND n70	QPSK @ 20 MHz BW	Cond Power	1695-1710	25.70	25.70	0	
LTE BAND 71	QPSK @ 20 MHz BW	Cond Power	663-698	25.70	25.70	0	
5G NR BAND n71	BPSK @ 20 MHz BW	Cond Power	663-698	25.70	25.70	0	
5G NR BAND N77	BPSK @ 100 MHz BW	Cond Power	3450-3550	28.70	28.70	0	Ant7
5G NR BAND N77	BPSK @ 100 MHz BW	Cond Power	3700-3980	28.70	28.70	0	Ant7

## 5.6. SPOT CHECK VERIFICATION RESULTS SUMMARY FOR A2887 and A2888

Worst Mode		Measured	Original Model: A2632	Sub Model: A2887 and		
Worst Mode	i		Original Model. A2632			
Worst Wode	Test Item	Frequency (MHz)	FCC ID: BCG-E8139A (dBm)	A2888 FCC ID: BCG-E8148A (dBm)	Delta (dB)	Remarks
			•			•
QPSK @10 MHz BW	Cond Power	824-849	25.70	25.70	0	
QPSK @ highest BW	RSE		-52.22	-53.57	-1.35	Noise Floor Level
QPSK @ 20 MHz BW	Cond Power	924 940	25.70	25.70	0	
QPSK @ highest BW	RSE	024-049	-54.83	-53.57	1.26	Noise Floor Level
QPSK @ 20 MHz BW	Cond Power		25.70	25.70	0	
QPSK @ highest BW	RSE	2500-2570	-49.4	-47.87	1.53	Noise Floor Level
BPSK @ 20 MHz BW	Cond Power	2500-2570	25.70	25.70	0	
QPSK @ 10 MHz BW	Cond Power	699-716	25.70	25.70	0.00	
QPSK @ 15 MHz BW	Cond Power	699-716	25.70	25.70	0	
QPSK @ 10 MHz BW	Cond Power	777-787	25.70	25.70	0	
QPSK @ 10 MHz BW	Cond Power	788-798	25.70	25.70	0	
QPSK @ 10 MHz BW	Cond Power	788-798	25.70	25.70	0	
QPSK @ 10 MHz BW	Cond Power	704-716	25.70	25.70	0	
OPSK @ 20 MHz BW	Cond Power		25.70	25.70	0	
	RSE	1850-1915	-50.23		-0.01	Noise Floor Level
QPSK @ 40 MHz BW	Cond Power	1850-1915	25.70	25.70	0	
QPSK @10 MHz BW	Cond Power	814-824	25.70	25.70	0	
QPSK @10 MHz BW	Cond Power	814-824	25.70	25.70	0	
QPSK @ 10 MHz BW	Cond Power	2305-2315	25.70	25.70	0	
QPSK @ 5 MHz BW	Cond Power	2305-2315	25.70	25.70	0	
QPSK @ 20 MHz BW	Cond Power	2496-2690	28.70	28.70	0	
BPSK @ 100 MHz BW	Cond Power	2496-2690	28.70	28.70	0	Ant2
ODEK @ 20 MILE DIM	Cond Power	2550 2700	23.30	23.30	0	Ant8
QP3N @ 20 MHz BW	RSE	3550-3700	-46.09	-51.95	-5.86	Noise Floor Level
QPSK @ 20 MHz BW	Cond Power	1710-1780	25.70	25.70	0	
BPSK @ 20 MHz BW	Cond Power	1710-1780	25.70	25.70	0	
QPSK @ 20 MHz BW	Cond Power	1695-1710	25.70	25.70	0	
QPSK @ 20 MHz BW	Cond Power	663-698	25.70	25.70	0	
BPSK @ 20 MHz BW	Cond Power	663-698	25.70	25.70	0	
BPSK @ 100 MHz BW	Cond Power	3450-3550	28.70	28.70	0	Ant7
	QPSK @ 10 MHz BW  QPSK @ 20 MHz BW  BPSK @ 20 MHz BW  QPSK @ 20 MHz BW	QPSK @ highest BW         RSE           QPSK @ 20 MHz BW         Cond Power           QPSK @ highest BW         RSE           QPSK @ 10 MHz BW         Cond Power           QPSK @ 20	QPSK @10 MHz BW QPSK @ highest BW         Cond Power RSE         824-849           QPSK @ 20 MHz BW QPSK @ highest BW         Cond Power RSE         824-849           QPSK @ 20 MHz BW QPSK @ 10 MHz BW         Cond Power RSE         2500-2570           BPSK @ 20 MHz BW         Cond Power RSE         2500-2570           BPSK @ 20 MHz BW         Cond Power         699-716           QPSK @ 10 MHz BW         Cond Power         699-716           QPSK @ 10 MHz BW         Cond Power         777-787           QPSK @ 10 MHz BW         Cond Power         788-798           QPSK @ 10 MHz BW         Cond Power         704-716           QPSK @ 10 MHz BW         Cond Power         704-716           QPSK @ 10 MHz BW         Cond Power         1850-1915           QPSK @ 40 MHz BW         Cond Power         1850-1915           QPSK @ 10 MHz BW         Cond Power         814-824           QPSK @ 10 MHz BW         Cond Power         814-824           QPSK @ 10 MHz BW         Cond Power         2305-2315           QPSK @ 10 MHz BW         Cond Power         2496-2690           BPSK @ 100 MHz BW         Cond Power         2496-2690           BPSK @ 20 MHz BW         Cond Power         1710-1780           QPSK @ 20 MHz BW	QPSK @ 10 MHz BW QPSK @ highest BW         Cond Power RSE         824-849         25.70 -52.22           QPSK @ 20 MHz BW QPSK @ 10 MHz BW         Cond Power RSE         25.70 -54.83         25.70 -54.83           QPSK @ 20 MHz BW QPSK @ 10 MHz BW         Cond Power RSE         2500-2570         25.70 -49.4           BPSK @ 20 MHz BW         Cond Power Cond Power         2500-2570         25.70 -49.4           BPSK @ 10 MHz BW         Cond Power         699-716         25.70           QPSK @ 10 MHz BW         Cond Power         699-716         25.70           QPSK @ 10 MHz BW         Cond Power         699-716         25.70           QPSK @ 10 MHz BW         Cond Power         777-787         25.70           QPSK @ 10 MHz BW         Cond Power         788-798         25.70           QPSK @ 10 MHz BW         Cond Power         788-798         25.70           QPSK @ 10 MHz BW         Cond Power         704-716         25.70           QPSK @ 10 MHz BW         Cond Power         1850-1915         25.70           QPSK @ 10 MHz BW         Cond Power         1850-1915         25.70           QPSK @ 10 MHz BW         Cond Power         184-824         25.70           QPSK @ 10 MHz BW         Cond Power         2305-2315         25.70	QPSK @ 10 MHz BW	CPSK @ 10 MHz BW

#### 5.7. REFERENCE DETAIL

Reference application that contains the reused reference data.

Equipment Class	Reference FCC ID	Reference Application	Variant model FCC ID /	Report Title/Section
PCE, CBE, TNE			BCG-E8146A	FCC LTE Report / All Sections
PCE, CBE, TNE	BCG-E8139A	14040868-E8	BCG-E8147A	FCC_LTE Report / All Sections except LTE/5G NR Band B14/71 sections
PCE, CBE			BCG-E8148A	FCC_LTE Report / All Sections except LTE/5G NR Band B14/71 sections

#### 5.8. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was version 0.15.02.

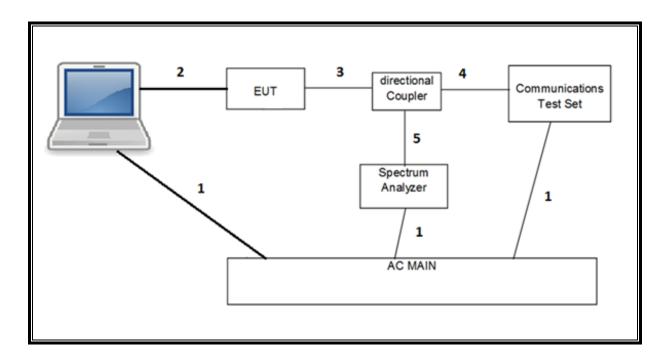
#### 5.9. SPOT CHECK WORST-CASE CONFIGURATION AND MODE

The spot checks were performed on the worst-case orientations and configurations based on the parent model of reference report.

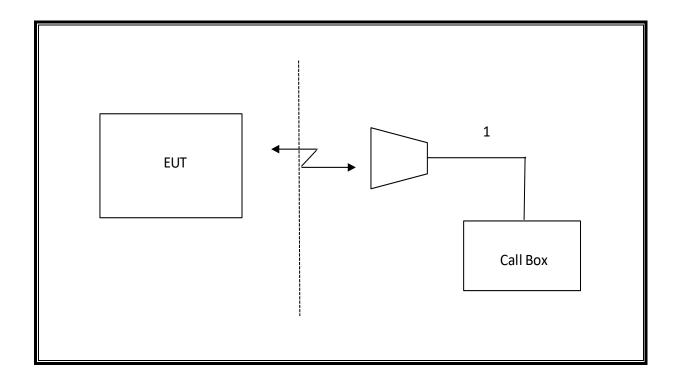
#### 5.10. DESCRIPTION OF TEST SETUP

	SUPPORT TEST EQUIPMENT								
Description Manufacturer			Model	Serial Nu	Serial Number				
	Laptop	Apple	MacBook Pro	HRP08	2673	BCGA1708			
AC	C/DC adapter	Apple	A1718	C4H64450HF	I3GN8RA6	-			
		I/O	CABLES (RF CONDUCTED TEST	Τ)					
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Remarks				
1	AC	3	US 115V	Un-shielded 2.0		N/A			
2	USB	1	DC	Un-shielded	Un-shielded 1.0				
3	RF In/Out	1	EUT	Un-shielded	0.6	N/A			
4	RF In/Out	1	Communication Test Set	Un-shielded	1.2	N/A			
5	RF In/Out	1	Barrel	N/A	N/A	N/A			
		1/0	CABLES (RF RADIATED TEST)						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type Cable Length (m)		Remarks			
1	RF In/Out	1	Antenna	Un-shielded	5.0	N/A			

## **CONDUCTED SETUP**



## **RADIATED SETUP**



## 6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	Asset	Cal Due
Spectrum Analyzer, PXA 3Hz to 44GHz	Keysight	N9030A	85212	01/30/2023
Spectrum Analyzer, PSA, 3Hz to 44GHz	Keysight	N9030A	85213	01/19/2023
Spectrum Analyzer, PSA, 3Hz to 44GHz	Keysight	N9030A	125178	01/24/2023
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight	N9030A	85201	02/01/2023
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight	N9030A	85214	02/02/2023
Spectrum Analyzer, PXA 3Hz to 44GHz	Keysight	N9030A	80400	02/01/2023
Spectrum Analyzer, PXA 3Hz to 44GHz	Keysight	N9030A	80397	02/01/2023
Spectrum Analyzer, PXA, 3Hz to 50GHz w/Ext. Mixer	Keysight	N9030A	T342	02/01/2023
Spectrum Analyzer, PSA 3Hz to 44GHz	Keysight	E4440A	81311	02/02/2023
Directional Coupler	KRYTAR	152610	T1161	09/23/2022
Directional Coupler	KRYTAR	152610	T1536	09/23/2022
Directional Coupler	KRYTAR	152610	T1537	09/23/2022
Power Meter, P-series single channel	Keysight	N1912A	90630	01/24/2023
Power Meter, P-series single channel	Keysight	N1912A	90719	01/24/2023
Power Meter, P-series single channel	Agilent	N1911A	82174	01/24/2023
Power Sensor, P – series, 50MHz to 18GHz, Wideband	Keysight	N1921A	90389	01/25/2023
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight	N9030A	80397	02/01/2023
Wideband Communication Test Set, Call Box	R&S GmbH & Co. KG	CMW500	85827	02/21/2023
Wideband Communication Test Set, Call Box	R&S GmbH & Co. KG	CMW500	80105	02/21/2023
Wideband Communication Test Set, Call Box	R&S GmbH & Co. KG	CMW500	159994	02/23/2023
Wideband Communication Test Set, Call Box	R&S GmbH & Co. KG	CMW500	85806	02/22/2023
Wideband Communication Test Set, Call Box	R&S GmbH & Co. KG	CMW500	85943	02/20/2023
UL AUTOMATION SOFTWARE				
CLT Software	UL	UL RF	Ver 3.4, May 20, 2022	
Power Measurement Software	UL	UL RF	Ver 3.1.4, April 29, 2022	

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## Appendix A – Reference Test Report

Attached is the test report (14040868-E8) containing the reference data from the parent model as detailed in section 5.7.