

TEST REPORT

Report Number : 14982484-E23V1

Applicant : APPLE, INC.
1 APPLE PARK WAY
CUPERTINO, CA 95014, U.S.A.

Model : A3081 (Parent Model)
A3286, A3287, A3288 (Variant Models)

Brand : APPLE

FCC ID : BCG-E8688A (Parent Model)
BCG-E8689A, BCG-E8690A, BCG-E8691A (Variant Models)

EUT Description : SMARTPHONE

Test Standard(s) : FCC PART 96.47

Date Of Issue:
JULY 08, 2024

Prepared by:
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Revision History

Rev.	Issue Date	Revisions	Revised By
V1	7/8/2024	Initial Issue	Steven Tran

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1. ATTESTATION OF TEST RESULTS

Applicant Name and Address	APPLE INC. 11 APPLE PARK WAY CUPERTINO, CA 95014, U.S.A.	
Model	A3081 (Parent Model) A3286, A3287, A3288 (Variant Models)	
Brand	APPLE	
FCC ID	BCG-E8688A (Parent Model) BCG-E8689A, BCG-E8690A, BCG-E8691A (Variant Models)	
EUT Description	SMARTPHONE	
Serial Number	CPH3F074DH	
Sample Receipt Date	03/12/24	
Date Tested	03/12/24 – 03/15/24	
Applicable Standards	FCC Title 47 CFR PART 96.47	
Test Results	COMPLIES	
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 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 Verification Services Inc. and all revisions are duly 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.		
Approved & Released By:	Tested By:	
		
Thu Chan Staff Engineer UL Verification Services Inc.	Steven Tran Project Engineer UL Verification Services Inc.	

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC Part 96.47, KDB 940660 D01 Part 96 CBRS Eqpt v03 and WINNF-TS-0122-v1.0.2.

3. FACILITIES AND ACCREDITATION

UL Verification Services Inc. 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
☒	Building 2: 47266 Benicia Street, Fremont, CA 94538, USA			
☐	Building 3: 843 Auburn Court, Fremont, CA 94538 USA			
☐	Building 4: 47658 Kato Rd, Fremont, CA 94538 USA			
☐	Building 5: 47670 Kato Rd, Fremont, CA 94538 USA			

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 _{Lab}
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.78 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.40 dB
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

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

4.4. MEASURING INSTRUMENT CALIBRATION

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The Apple iPhone is a smartphone with cellular GSM, GPRS, EGPRS, WCDMA, LTE, 5G NR1, 5G NR2, IEEE 802.11a/b/g/n/ac/ax/be, Bluetooth (BT), Ultra-Wideband (UWB), Global Positioning System (GPS), Near-Field Communication (NFC), Narrow-Band (NB) UNII, 802.15.4, 802.15.4ab-Narrow Band (NB), Wireless Power Transfer (WPT) and Mobile Satellite Service (MSS) technologies. The rechargeable battery is not user accessible. This device is not user-serviceable and requires special tools to disassemble.

5.2. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

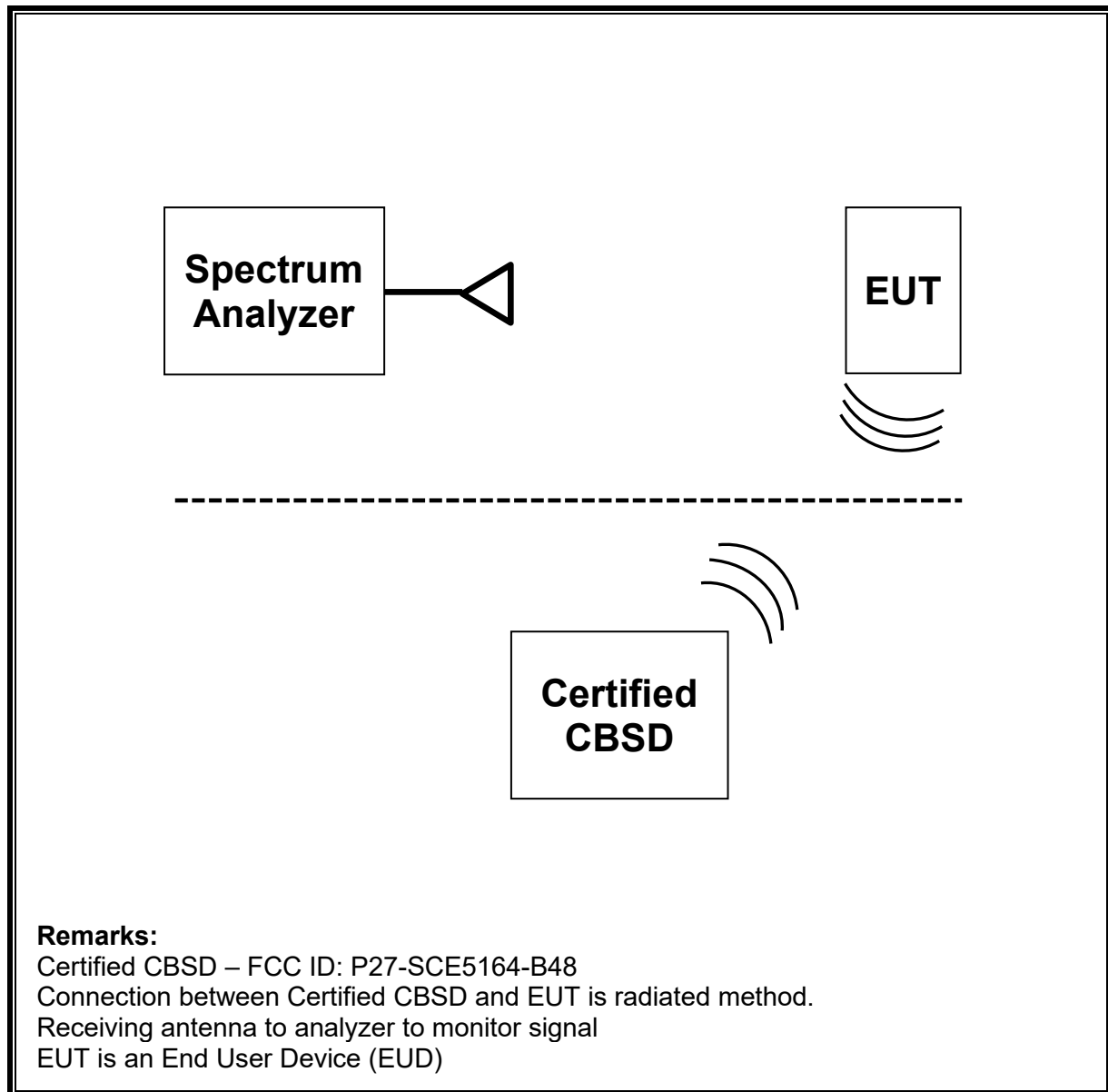
Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop AC/DC adapter	Lenovo	20NYS1GL00	MJ0C6F8E	-

I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	AC	Un-Shielded	1	N/A
3	RJ45	3	Ethernet	Un-Shielded	1	N/A
2	RF Port	2	SMA	Shielded	0.5	N/A

TEST SETUP

The standalone EUT connected to a certified CBSD and Spectrum Analyzer via air and an RF cable respectively.

SETUP DIAGRAM OF TEST SYSTEM

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	ID Num	Cal Due
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	80396	02/28/2025
Mount Antenna	Wilson Amplifiers	301126	-	-
Sercomm 5G Bridgestone	Sercomm Corp.	SCE5164-B48	-	-

7. END USER DEVICE ADDITIONAL REQUIREMENT

7.1. TEST REQUIREMENT

FCC Part 96.47

- (a) End User Devices may operate only if they can positively receive and decode an authorization signal transmitted by a CBSD, including the frequencies and power limits for their operation.
- (1) An End User Device must discontinue operations, change frequencies, or change its operational power level within 10 seconds of receiving instructions from its associated CBSD.

8. TEST PROCEDURE AND EUT CONFIGURATION

KDB 940660 D01 Part 96 CBRS v03, WINNF-TS-0122 V1.0.2

Additional requirements are required to End-User Device n48 device base on CBSD protocol. During the test, the EUT and its companion certified CBSD (FCC ID: 0) device communicate with each other via air. Plots are captured and measurements are done over the air, in which the path loss is not accounted for the correction of the output power.

Configuration	Frequency (MHz)	Power (dBm/MHz)	Bandwidth (MHz)
1	3625	17	20
2	3670	12	20

Configuration 1

- a) Setup Sercom with 3625MHz and power level 17 dBm/MHz
- b) Enable n48 service from admin control panel
- c) Check EUT Transmitter Frequency and power
- d) Disable n48 service from admin control panel and check EUT stop transmission within 10s.

Configuration 2

- a) Setup Sercom with 3670MHz and power level 12 dBm/MHz
- b) Enable n48 service from admin control panel
- c) Check EUT Transmitter Frequency and power
- d) Disable n48 service from admin control panel and check EUT stop transmission within 10s.

TEST RESULTS

Agilent Spectrum Analyzer - Channel Power

RF 50 Ω DC SENSE:INT ALIGN AUTO 03:26:01 PM Mar 15, 2024

Center Freq: 3.625000000 GHz Radio Std: None
Trig: Free Run Avg/Hold: >10/10
#IF Gain: Low #Atten: 10 dB Radio Device: BTS

10 dB/div Ref 0.00 dBm

Log

Center 3.625 GHz Span 30 MHz
Res BW 270 kHz VBW 2.7 MHz Sweep 1 ms

Channel Power Power Spectral Density

-17.26 dBm / 20 MHz -90.27 dBm / Hz

MSG STATUS

Operation Mode

Frequency

Center Freq
3.625000000 GHz

CF Step
3.000000 MHz
Auto Man

Freq Offset
0 Hz



Stop Operation Within 10 second Mode

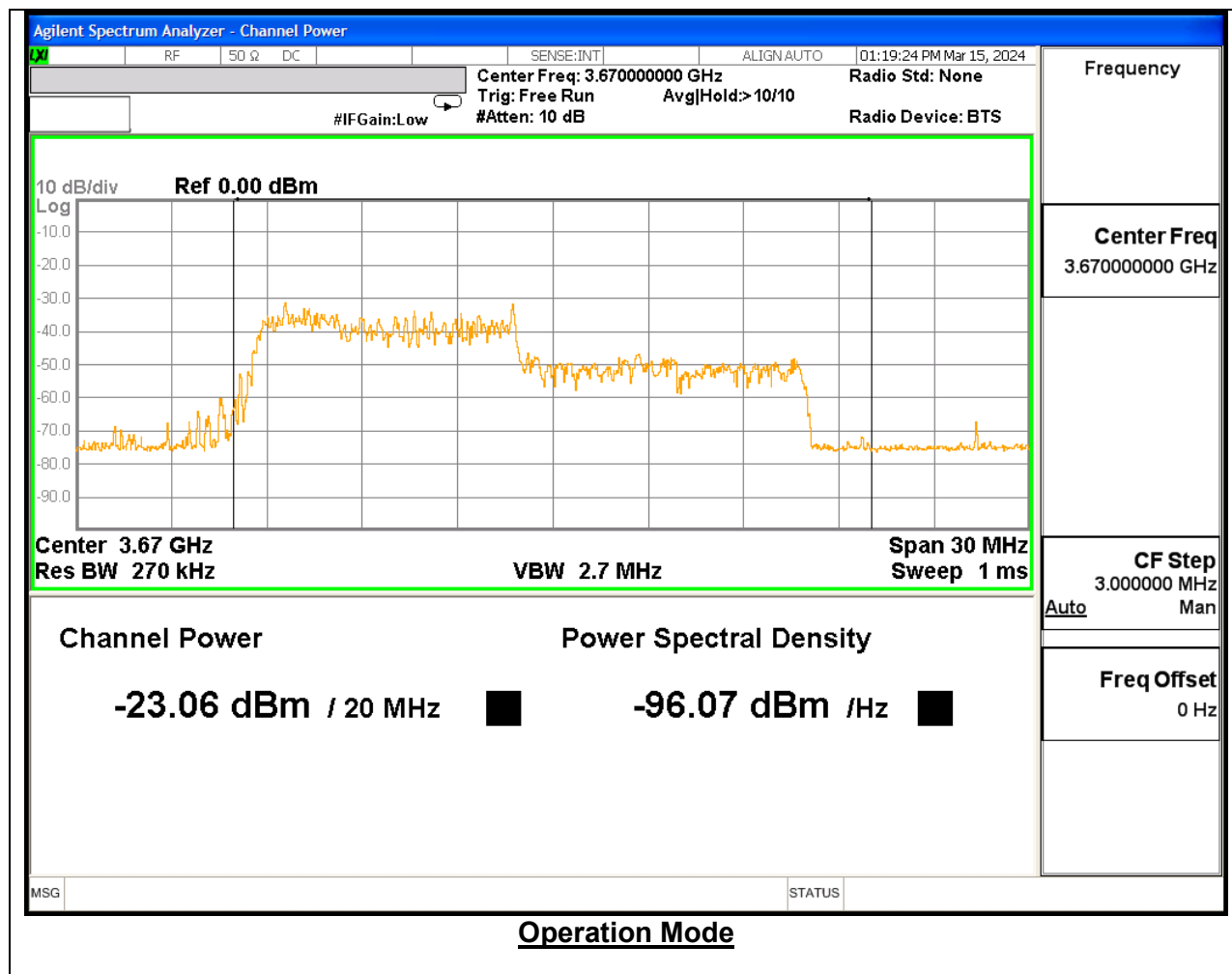
NOTE:

Marker 1: Authorized CBSD sends a signal to stop n48 transmission.

Marker 2: Time elapsed since signal to stop n48 transmission. EUD has stopped transmission.

Marker 3-4 Delta: 10 seconds has elapsed since CBSD has sent a signal to stop n48 transmission to EUT.

8.2. END USER DEVICE CONFIGURATION 2 (3670MHz; MaxEIRP: 12 dBm/MHz)





Stop Operation Within 10 second Mode

NOTE:

Marker 1: Authorized CBSD sends a signal to stop n48 transmission.

Marker 2: Time elapsed since signal to stop n48 transmission. EUD has stopped transmission.

Marker 3-4 Delta: 10 seconds has elapsed since CBSD has sent a signal to stop n48 transmission to EUT.

9. SETUP PHOTOS

Please refer to 14982484-EP1V1 for setup photos.

END OF REPORT