

TEST REPORT

Report Number : 14982489-E22V1

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

Model : A3082 (Parent Model)
A3289, A3290, A3291 (Variant Models)

FCC ID : BCG-E8692A (Parent Model)
BCG-E8693A, BCG-E8694A, BCG-E8695A (Variant Models)

EUT Description : SMARTPHONE

Test Standard(s) : FCC PART 96.47

Date Of Issue:
August 21, 2024

Prepared by:
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Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V1	8/21/2024	Initial Issue	Steven Tran

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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	A3082 (Parent Model) A3289, A3290, A3291 (Variant Models)	
Brand	APPLE	
FCC ID	BCG-E8692A (Parent Model) BCG-E8693A, BCG-E8694A, BCG-E8695A (Variant Models)	
EUT Description	SMARTPHONE	
Serial Number	THVY70QKM3	
Sample Receipt Date	06/17/24	
Date Tested	06/18/24	
Applicable Standards	FCC Title 47 CFR PART 96.47	
Test Results	COMPLIES	
<p>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.</p> <p>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.</p> <p>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.</p>		
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
<input type="checkbox"/>	Building 1: 47173 Benicia Street, Fremont, CA 94538, USA	US0104	2324A	550739
<input checked="" type="checkbox"/>	Building 2: 47266 Benicia Street, Fremont, CA 94538, USA			
<input type="checkbox"/>	Building 3: 843 Auburn Court, Fremont, CA 94538 USA			
<input type="checkbox"/>	Building 4: 47658 Kato Rd, Fremont, CA 94538 USA			
<input type="checkbox"/>	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 and AC/DC adapte	Lenovo	20NYS1GL00	MJOC6F8E	-

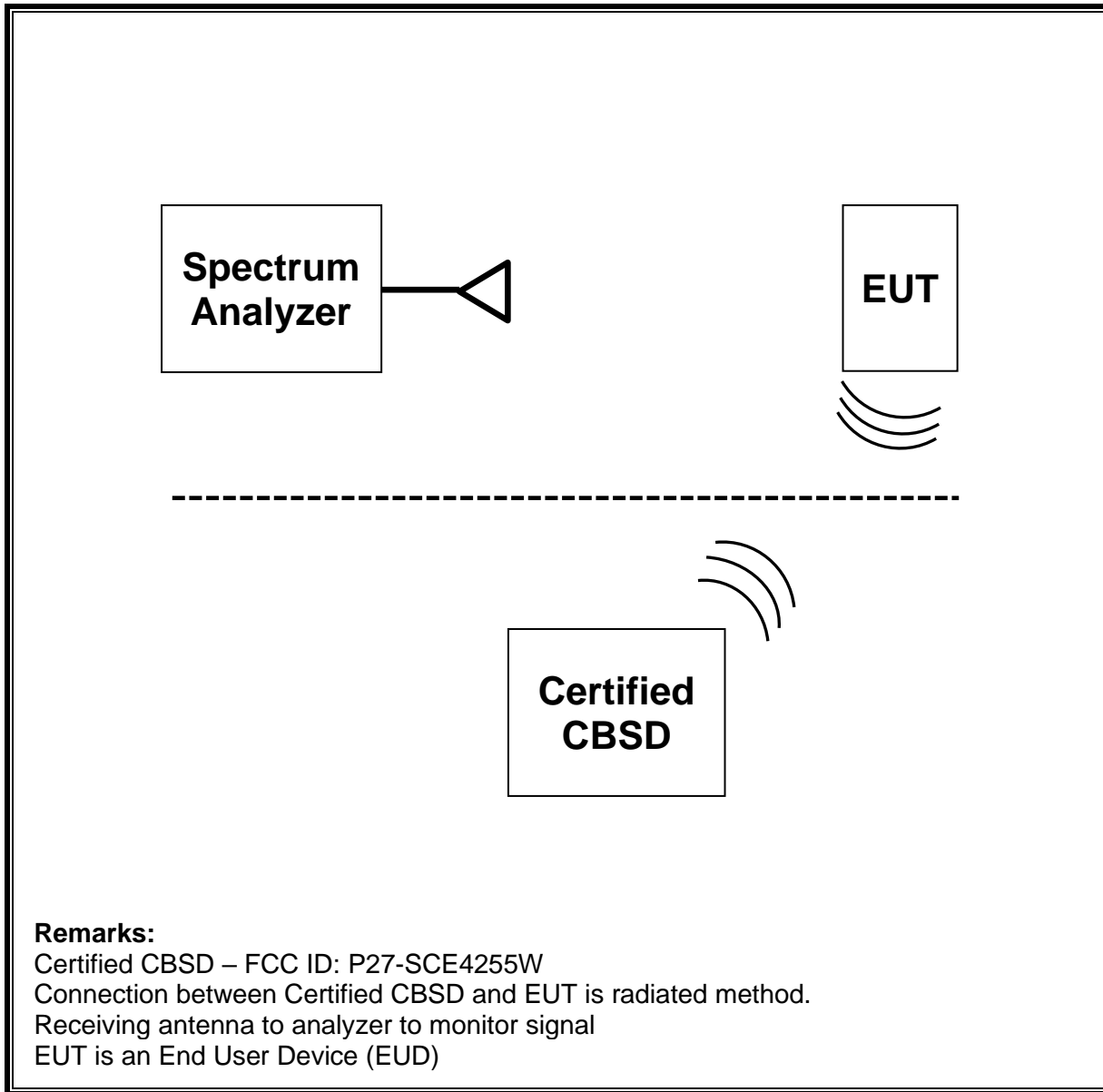
I/O CABLES

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	N9030B	248453	05/03/2025
Mount Antenna	Wilson Amplifiers	301126	-	-
Mosolabs Englewood B48 LTE AP	Mosolabs	SCE4255W	2206CW6000010	-

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: P27-SCE4255W) 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	3670	15	20
2	3690	10	20

Configuration 1

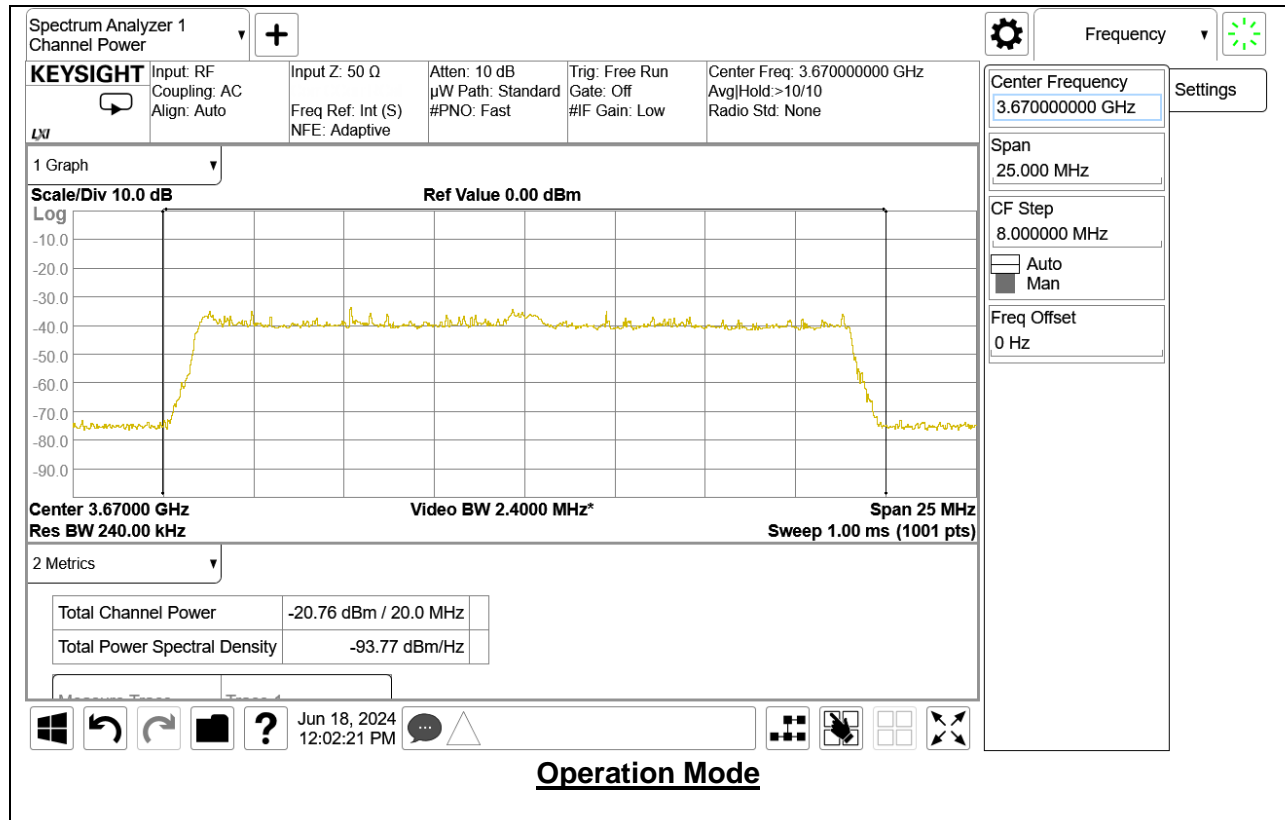
- a) Setup CBSD with 3670MHz and power level 15 dBm/MHz
- b) Enable B48 service from CBSD admin control panel
- c) Check EUT Transmitter Frequency and power
- d) Disable B48 service from CBSD admin control panel and check EUT stop transmission within 10s.

Configuration 2

- a) Enable B48 service on radio admin control panel, so that the frequency 3690MHz and power level 10 dBm/MHz come up automatically.
- b) Check EUT Transmitter Frequency and power
- c) Disable B48 service from CBSD admin control panel and check EUT stop transmission within 10s.

TEST RESULTS

8.1. END USER DEVICE CONFIGURATION 1 (3670MHz; MaxEIRP: 15 dBm/MHz)



Spectrum Analyzer 1
Swept SA
Frequency

KEYSIGHT Input: RF Input Z: 50 Ω Atten: 10 dB PNO: Fast #Avg Type: Power (RMS)

Coupling: AC μW Path: Standard Gate: Off IF Gain: Low Trig: Free Run

Align: Auto Freq Ref: Int (S) NFE: Adaptive Sig Track: Off

Center Frequency
3.670000000 GHz

Span
0.000000000 Hz

Start Freq
3.670000000 GHz

Stop Freq
3.670000000 GHz

AUTO TUNE

CF Step
8.000000 MHz

Freq Offset
0 Hz

X Axis Scale
Log

Signal Track
(Span Zoom)

1 Spectrum **ΔMkr3 10.00 s**
-37.05 dB

Scale/Div 10 dB Ref Level 0.00 dBm

Center 3.670000000 GHz #Video BW 50 MHz* Span 0 Hz
Res BW 8 MHz Sweep 25.0 s (1001 pts)

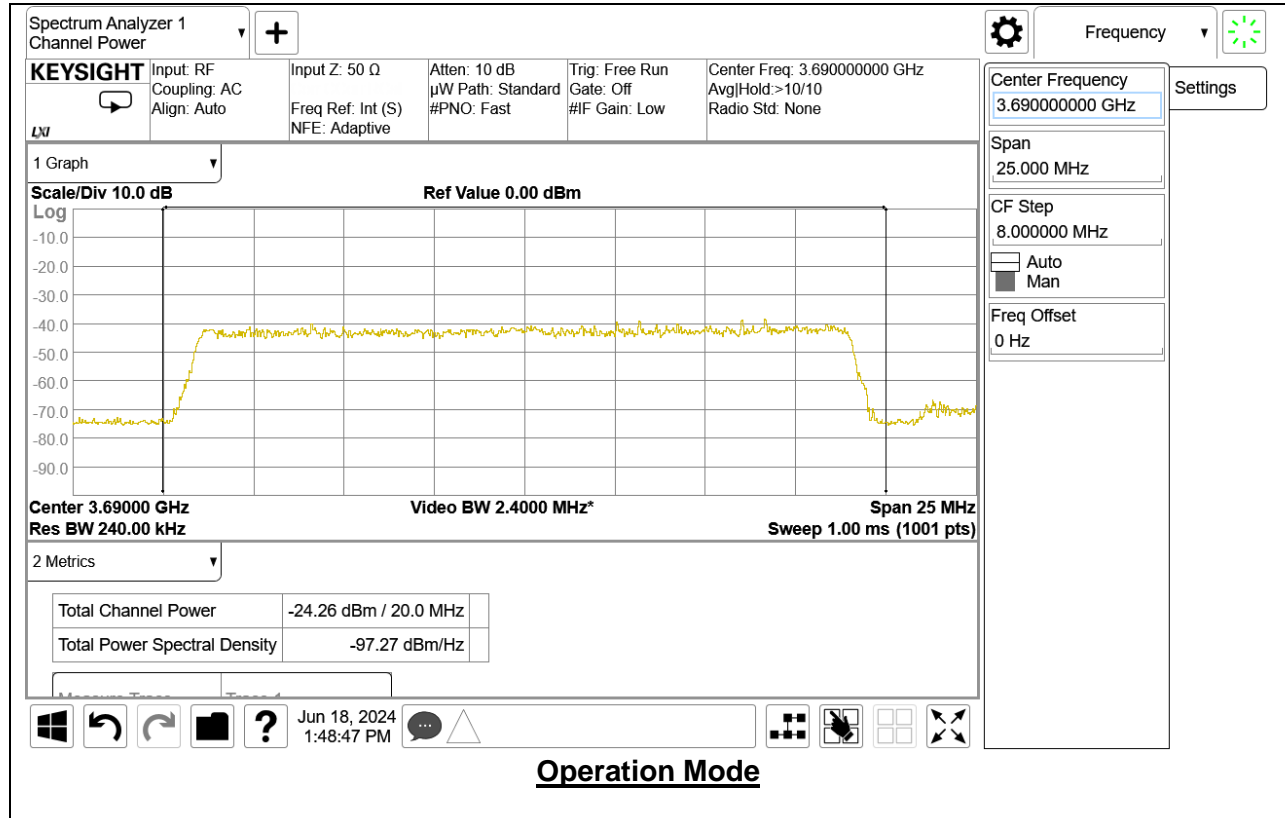
5 Marker Table

	Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	Δ2	1	t	(Δ) 2.000 s	(Δ) -37.10 dB			
2	F	1	t	7.800 s	-38.99 dBm			
3	Δ4	1	t	(Δ) 10.00 s	(Δ) -37.05 dB			
4	F	1	t	7.800 s	-38.99 dBm			
5								
6								

Stop Operation Within 10 second Mode

NOTE:
 Marker 1: Authorized CBSD sends a signal to stop B48 transmission.
 Marker 2: Time elapsed since signal to stop B48 transmission. EUD has stopped transmission.
 Marker 3-4 Delta: 10 seconds has elapsed since CBSD has sent a signal to stop B48 transmission to EUT.

8.2. END USER DEVICE CONFIGURATION 2 (3690MHz; MaxEIRP: 10 dBm/MHz)



Spectrum Analyzer 1
Swept SA
Frequency

KEYSIGHT
Input: RF
Coupling: AC
Align: Auto
Input Z: 50 Ω
Atten: 10 dB
μW Path: Standard
PNO: Fast
Gate: Off
IF Gain: Low
Sig Track: Off
#Avg Type: Power (RMS)
Trig: Free Run

WWW WWW
NNNNN

1 Spectrum

Scale/Div 10 dB Ref Level 0.00 dBm

Center 3.690000000 GHz #Video BW 50 MHz* Span 0 Hz
Res BW 8 MHz Sweep 25.0 s (1001 pts)

5 Marker Table

	Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	Δ2	1	t	(Δ) 2.150 s	(Δ) -31.88 dB			
2	F	1	t	6.750 s	-43.82 dBm			
3	Δ4	1	t	(Δ) 10.00 s	(Δ) -31.89 dB			
4	F	1	t	6.750 s	-43.82 dBm			
5								
6								

Settings

Center Frequency: 3.690000000 GHz

Span: 0.00000000 Hz

Start Freq: 3.690000000 GHz

Stop Freq: 3.690000000 GHz

AUTO TUNE

CF Step: 8.000000 MHz

Freq Offset: 0 Hz

X Axis Scale: Log

Signal Track (Span Zoom)

Windows icons and system tray: Jun 18, 2024 3:00:35 PM

Stop Operation Within 10 second Mode

NOTE:
 Marker 1: Authorized CBSD sends a signal to stop B48 transmission.
 Marker 2: Time elapsed since signal to stop B48 transmission. EUD has stopped transmission.
 Marker 3-4 Delta: 10 seconds has elapsed since CBSD has sent a signal to stop B48 transmission to EUT.

9. SETUP PHOTOS

Please refer to 14982489-EP1V1 for setup photos

END OF REPORT