

# **C2PC TEST REPORT**

**Report Number :** 14790383-E1V1

- Applicant : APPLE, INC. 1 APPLE PARK WAY CUPERTINO, CA. 95014, U.S.A.
  - Model : A2650 (Parent Model) A2889, A2890, A2891, A2892 (Variant Models)
  - FCC ID : BCG-E8140A (Parent Model) BCG-E8150A BCG-E8151A, BCG-E8152A (Variant Models)
- EUT Description : SMARTPHONE
- Test Standard(s) : FCC PART 96.47

Date Of Issue: May 05, 2023

Prepared by: UL Verification Services Inc. 47173 Benicia Street Fremont, CA 94538, U.S.A. TEL: (510) 771-1000 FAX: (510) 661-0888



**Revision History** 

Rev.	Issue Date	Revisions	Revised By
V1	5/5/2023	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 95104, U.S.A.
Model	A2650 (Parent Model, Full Test) A2889, A2890, A2891, A2892 (Variant Models)
Model Of Testing	A2889
Brand	APPLE
FCC ID	BCG-E8140A (Parent Model) BCG-E8150A BCG-E8151A, BCG-E8152A (Variant Models)
EUT Description	SMART PHONE
Serial Number	TK63T9HVJM
Sample Receipt Date	04/26/2023
Date Tested	04/27/2023
Applicable Standards	FCC CFR47 PART 96.47
Test Results	COMPLIES
UL Verification Services Inc. test	ed the above equipment in accordance with the requirements set forth in

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:	Reviewed By:	Tested By:
Nuy	menyiste mekenou.	Steventron
Thu Chan	Mengistu Mekuria	Steven Tran
Staff Engineer	Staff Lab Engineer	Project Engineer
UL Verification Services Inc.	UL Verification Services Inc.	UL Verification Services Inc.

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## 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			
$\boxtimes$	Building 2: 47266 Benicia Street, Fremont, CA 94538, USA	US0104	2324A	550739
	Building 4: 47658 Kato Rd, Fremont, CA 94538, USA			

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## 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 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%.

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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 multimedia functions (music, application support, and video), cellular GSM, GPRS, EGPRS, UMTS, LTE, 5G, CDMA, IEEE 802.11a/b/g/n/ac/ax, Bluetooth, Ultra-Wideband, GPS and NFC. All models 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. However, the test data in this report refers only to n48 Band that operates in the CBRS band.

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. The variant p-SIM model was tested in place to cover the parent e-SIM model.

The Model and FCC ID covered by this report includes:

Parent Model	FCC ID
A2650	BCG-E8140A
Variant Models	FCC ID
A2889	BCG-E8150A
A2890	BCG-E8151A
A2891, A2892	BCG-E8152A

# 5.2. DESCRIPTION OF TEST SETUP

#### SUPPORT EQUIPMENT

Support Equipment List							
Description Manufacturer Model Serial Number FCC ID							
Switch/AC/DC adapter	Trendnet	TEG-S51SFP/A	RA2C511100028	-			
Laptop AC/DC adapter	Lenovo	20NYS1GL00	MJ0C6F8E	-			
Laptop AC/DC adapter	HP	HSN-I12C	5CG8491TSM	-			

#### I/O CABLES

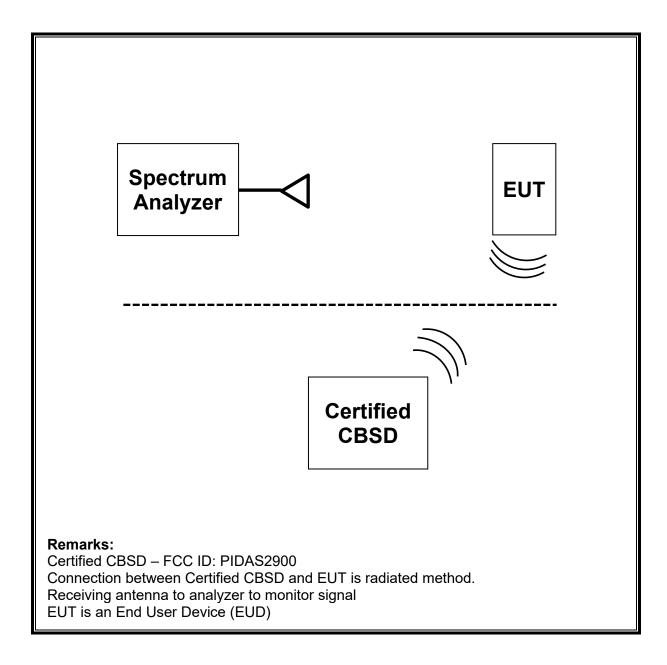
	I/O Cable List								
Cable	Port	# of identical	Connector	Cable Type	Cable	Remarks			
No		ports	Туре		Length (m)				
1	AC	1	AC	Un-Shielded	1	N/A			
3	RJ45	3	Ethernet	Un-Shielded	1	N/A			
2	<b>RF Port</b>	2	SMA	Shielded	0.5	N/A			

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## 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	81188	01/31/2023				
Mount Antenna	Wilson Amplifiers	301126	-	-				
Airspeed 2900 n48 CBSD Radio	Airspan Networks Inc.	AS29-N48- DSC1	F3686B00EF84	-				

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## 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: PIDAS2900) device communicate with each other via air.

Configuration	Frequency (MHz)	Power (dBm/MHz)	Bandwidth (MHz)
1	3560	13	20
2	3580	17	20

## **Configuration 1**

- a) Setup Airspeed 2900 with 3560MHz and power level 13 dBm/MHz
- b) Enable n48 service from Airspan admin control panel
- c) Check EUT Transmitter Frequency and power
- d) Disable n48 service from Airspan admin control panel and check EUT stop transmission within 10s.

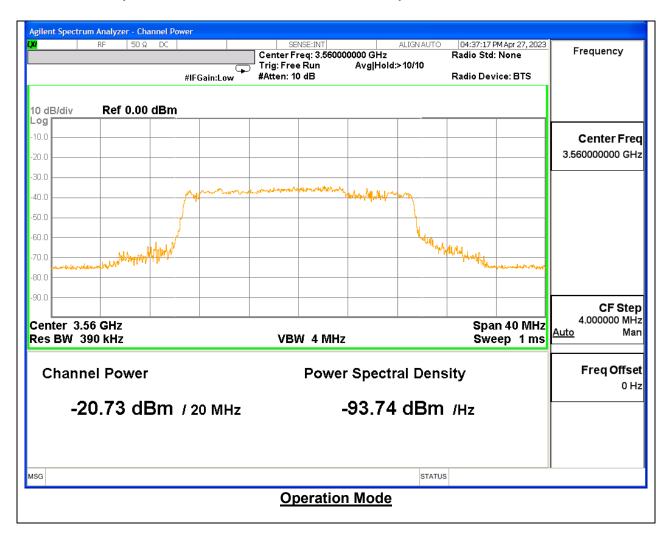
## **Configuration 2**

- a) Setup Airspeed 2900 with 3580MHz and power level 17 dBm/MHz
- b) Enable n48 service from Airspan admin control panel
- c) Check EUT Transmitter Frequency and power
- d) Disable n48 service from Airspan admin control panel and check EUT stop transmission within 10s.

#### TEST RESULTS

#### REPORT NO: 14790383-E1V1

## 8.1. END USER DEVICE CONFIGURATION 1 (3560MHz; MaxEIRP: 13 dBm/MHz)



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#### DATE: 5/5/2023

## REPORT NO: 14790383-E1V1

ilent Spectrum Analy RF	<mark>/zer - Swept SA</mark> 50 Ω DC		SENSE:INT		ALIGN AUTO	04/50/01 PM Mrs 27, 2022	
			Tuin Fund Dura		: Pwr(RMS)	04:52:01 PM Apr 27, 2023 TRACE 1 2 3 4 5 6 TYPE WWWWWW	Frequency
		NO: Fast ↔ Gain:Low	Atten: 10 dB			DET A N N N N N	Auto Tui
	0.00 dBm					∆Mkr3 10.00 s -26.44 dB	
).0							Center Fre
).0							3.560000000 G
.0							
.0	X_						Start Fr
.0	<u></u>	42		3∆4 _			3.560000000 G
.0							Oton Fr
.0							<b>Stop Fr</b> 3.56000000 G
						0.0.0.11-	
enter 3.56000 s BW 8 MHz	UUUU GHZ	#VBW	50 MHz*		Sweep	Span 0 Hz 25.00 s (1001 pts)	CF St 8.000000 M
$\Delta 2$ 1 t (	× ∆) 82	5.0 ms (Δ)	Y	UNCTION FUN	ICTION WIDTH	FUNCTION VALUE	<u>Auto</u> M
2 F 1 t		5.900 s 10.00 s (Δ)	-26.45 dB -46.15 dBm -26.44 dB				
F 1 t	_, _ (	5.900 s	-46.15 dBm				Freq Offs 0
,					STATUS		
3							

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.

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#### REPORT NO: 14790383-E1V1

## 8.2. END USER DEVICE CONFIGURATION 2 (3580MHz; MaxEIRP: 17 dBm/MHz)

RF	50Ω DC		SENSE:INT Center Freg: 3.58000	ALIGN A	UTO 05:10:24 PM Apr 27, 2023 Radio Std: None	Frequency
		#IFGain:Low	┘ Trig: Free Run #Atten: 10 dB	Avg Hold:>10/10	Radio Device: BTS	
dB/div Ref (	).00 dBm					
D.0						<b>Center Fre</b> 3.580000000 GH
0.0		1 and and a second and a second	And Maladan and Market	J <sup>the</sup> r May		
D.0						
0.0	NTHIMP.				they all ployment	
enter 3.58 GHz					Span 40 MHz	CF Ste 4.000000 MH Auto Ma
es BW 390 kHz			VBW 4 MHz		Sweep 1ms	
Channel Pov	ver		Power	Freq Offs 0 H		
-16.87	dBm	/ 20 MHz	-	89.88 dB	m /Hz	
G				S	TATUS	
			<b>Operation</b>	Mode		

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#### DATE: 5/5/2023

## REPORT NO: 14790383-E1V1

			RF	5	50 Ω DC	DNO: Eas			NSE:INT	Avç	ALIGN AUT Type: Pwr(RM	S) TR	4 PM Apr 27, 2023 ACE 1 2 3 4 5 6 IYPE WWWWWWW	Frequency
IFGain:Low Atten: 10 dB DET ANNNN AMKr3 10.00 s											Auto Tur			
dB	/div		Ref	0.00	dBm							-	24.44 dB	
														Center Fr
														3.580000000 G
	umum	mm	mm	<b>%</b>										Start Fr
.0				-//\\										3.580000000 G
				1	Δ2				3∆4					
				_ <u>\/_</u>										01
.0  -														Stop Fr
.0  -														3.580000000 G
⊔ nte	er 3	3.58	300	0000	0 GHz								Span 0 Hz	
s E	ΒW	8 P	MH:	z		#\	/BW	50 MHz*	:		Swee	o 25.00 s	(1001 pts)	CF St 8.000000 M
R MO	DDE	TRC	SCL		×			Y	FU	NCTION	FUNCTION WID	TH FUNC	TION VALUE	Auto N
	2	1	t t	(Δ)		475.0 ms 3.175 s	(Δ)	-24.33 -48.00 d						
Δ	4	1	t	(Δ)		10.00 s	(Δ)	-24.44	dB					Freq Offs
F	-	1	t			3.175 s		-48.00 d	Bm					0
														Ľ
1														
:														
											STAT	us		
_						_					second			

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.