C2PC TEST REPORT

Report Number : 14790383-E2V1

Applicant	:	APPLE, INC. 1 APPLE PARK WAY CUPERTINO, CA. 95014, U.S.A.
Model	:	A2651 (Parent Model) A2893, A2894, A2895, A2896 (Variant Models)
FCC ID	:	BCG-E8141A (Parent Model) BCG-E8154A, BCG-E8155A, BCG-E8156A (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.
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ACCREDITED
CERT #0751.05

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	5/5/2023	Initial Issue	Steven Tran

TABLE OF CONTENTS

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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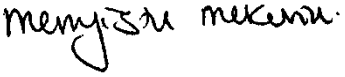
1. ATTESTATION OF TEST RESULTS

Applicant Name and Address	APPLE INC. 1 APPLE PARK WAY CUPERTINO CA 95104, U.S.A.
Model	A2651 (Parent Model, Full Test) A2893, A2894, A2895, A2896 (Variant Models)
Model Of Testing	A2893
Brand	APPLE
FCC ID	BCG-E8141A (Parent Model) BCG-E8154A, BCG-E8155A, BCG-E8156A (Variant Models)
EUT Description	SMART PHONE
Serial Number	MF6YG576G6
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. 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:
		
Thu Chan Staff Engineer UL Verification Services Inc.	Mengistu Mekuria Staff Lab 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 4: 47658 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 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**
A2651	BCG-E8141A
Variant Models	**FCC ID**
A2893	BCG-E8154A
A2894	BCG-E8155A
A2895, A2896	BCG-E8156A

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	-

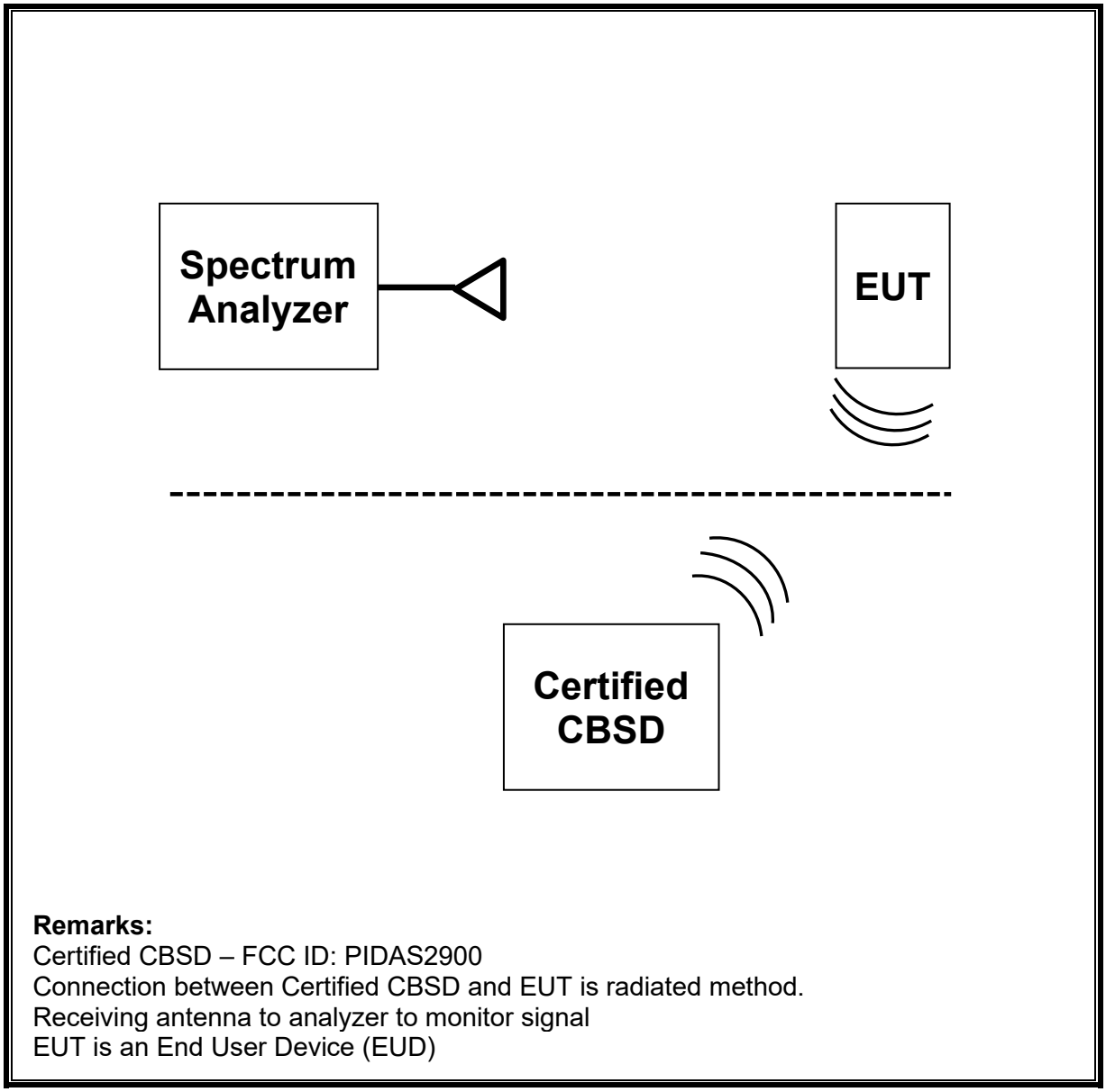
I/O CABLES

I/O Cable List						
Cable 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



Remarks:
Certified CBSD – FCC ID: PIDAS2900
Connection between Certified CBSD and EUT is radiated method.
Receiving antenna to analyzer to monitor signal
EUT is an End User Device (EUD)

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	-

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

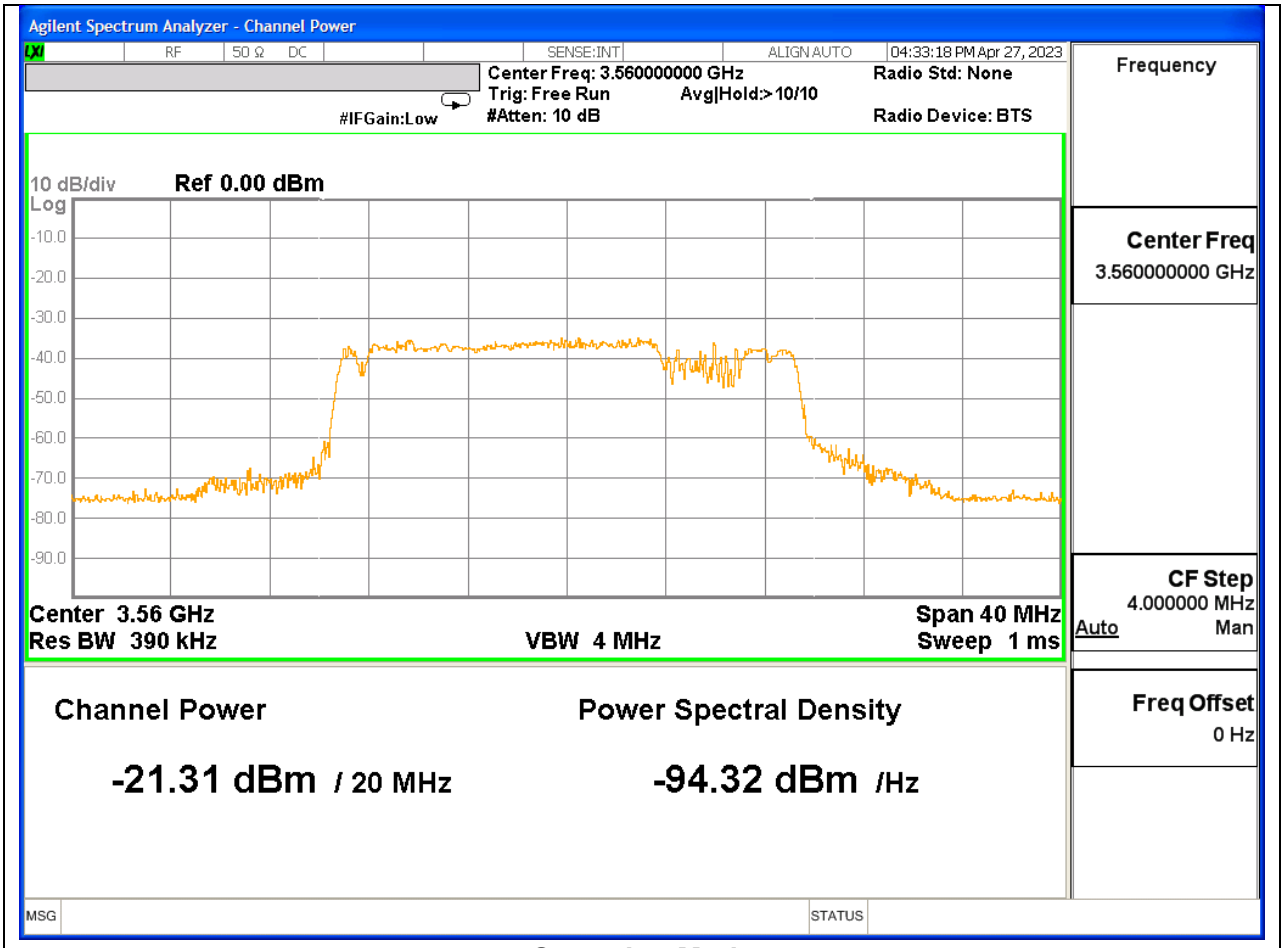
a) Setup Airspeed 2900 with 3560MHz and power level 13 dBm/MHz
b) Enable n48 service from Airspan admin control panel
c) Check EUT Transmitter Frequency and power
d) Disable n48 service from Airspan admin control panel and check EUT stop transmission within 10s.

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

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



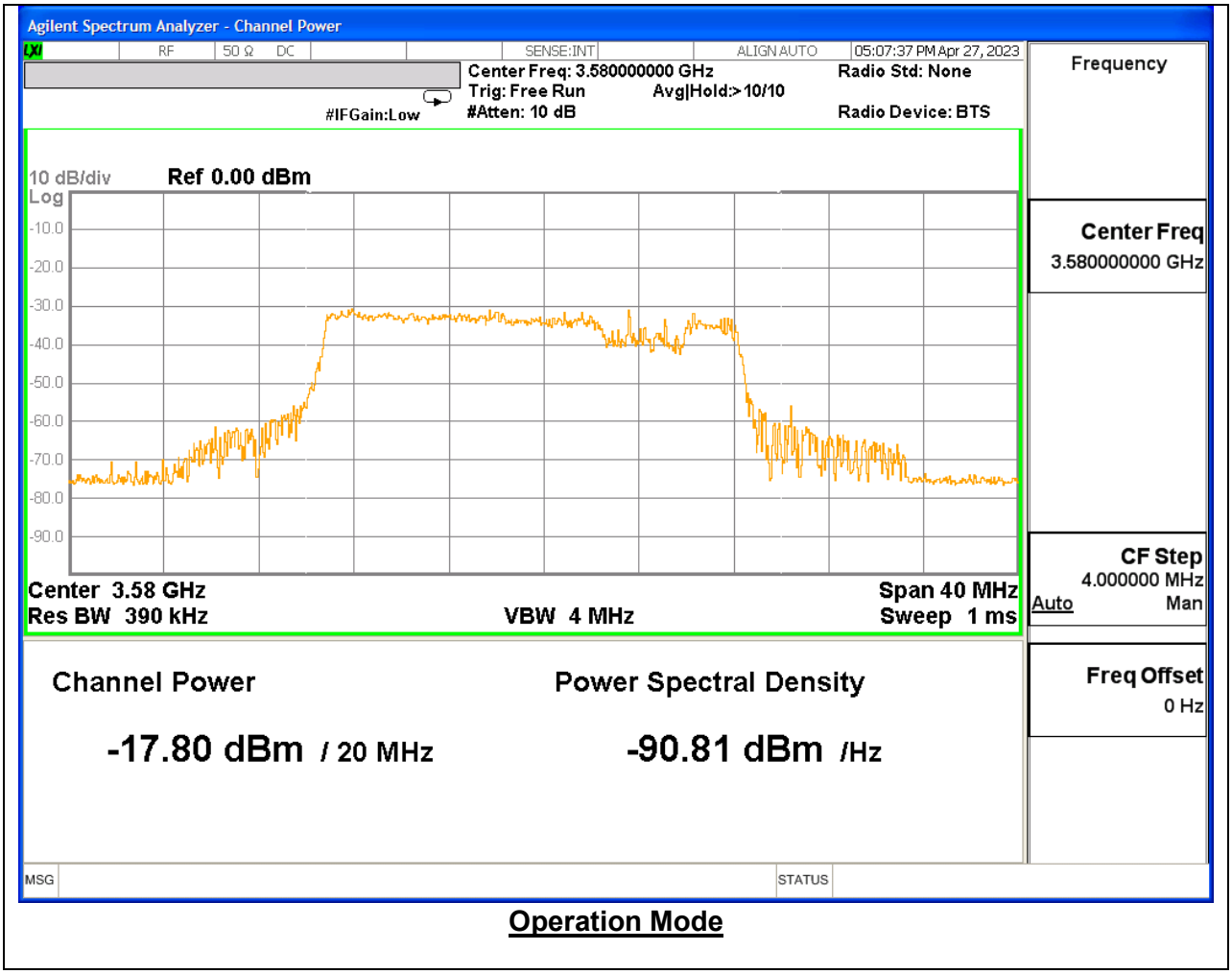
Operation Mode

Stop Operation Within 10 second Mode

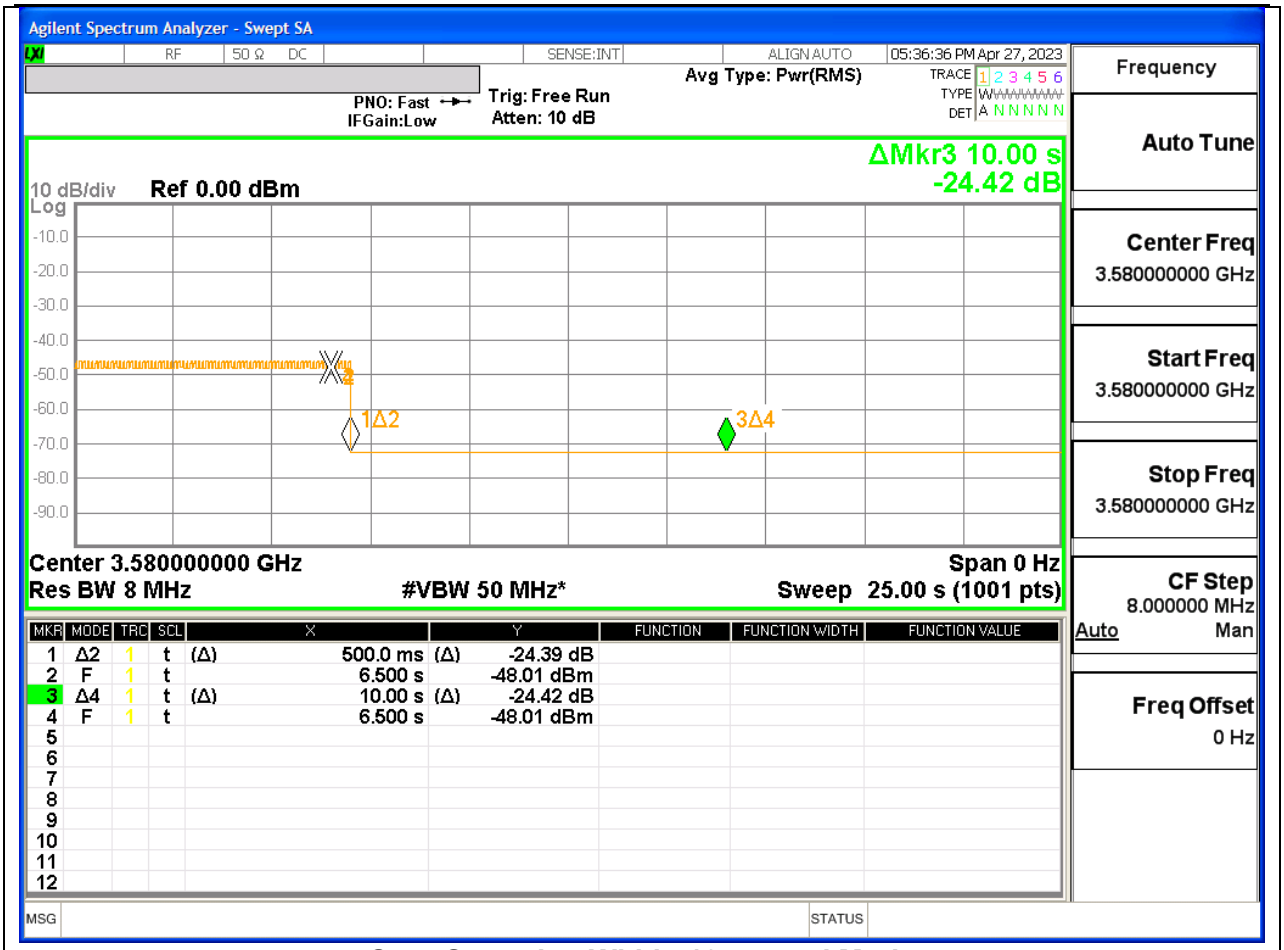
NOTE:

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 (3580MHz; MaxEIRP: 17 dBm/MHz)



Operation Mode



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.