



Global Product Certification
EMC-EMF Safety Approvals

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FIELD STRENGTH TEST REPORT

Report Number: M161126

Test Sample: Cellsafe/Lif3 Chip

Host Model number: Apple iPhone 7,
Apple iPhone 7 Plus,

Tested For: Panasales Clearance Centre Pty Ltd
(trading as Cellsafe)

Date of Issue: 25 November 2016

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EMC Technologies Report No: M161136

Issue Date: 25 November 2016

Test Sample: Cellsafe/Lif3 Chip
Host Model number: Apple iPhone 7 / 7 Plus

Tested for: Panasales Clearance Centre Pty Ltd (trading as Cellsafe)
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Test Requirements: Field strength measurements performed on Apple iPhone 7 / 7 Plus, with and without Cellsafe/Lif3 Chip

Test Dates: 22nd November 2016



Test Engineer: Mahan Ghassempouri



Authorised Signatory: Andrew Whiteford
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Electric Field Strength Measurement Report

EMC Technologies Report M161126

1.0 INTRODUCTION

Electric Field Strength Measurements (Peak and Polar) were made from an Apple iPhone 7 and iPhone 7 plus, with and without the Cellsafe/Lif3 Chip fitted. The results were compared to determine if there was a reduction in the peak transmitted electric field strength when the mobile phones were fitted with the Cellsafe/Lif3 Chip.

The Cellsafe/Lif3 Chips (test samples) and mobile phones were provided and installed on the phones by the client. The results herein apply only to the test samples.

2.0 TEST SAMPLE DESCRIPTION and TEST SETUP DETAILS

(Information supplied by the Client)

Test Sample:	Cellsafe/Lif3 Chip		
Host Model Number:	1. Apple iPhone 7	Model No: MN8X2X/A	Serial No: C6KSC3BQHG7F
	2. Apple iPhone 7 Plus	Model No: MN4W2X/A	Serial No: C39SGABDHFYF

2.1 Product Description

(Information supplied by the Client)

The Cellsafe/Lif3 Chip contains a micro-thin printed circuit board designed to channel radiation away from the user's head and body without adversely affecting the signal field strength (connectivity).

2.2 Operating Conditions

The mobile phones (Equipment Under Test) were operated using an Anritsu MT8820A Radio Communication Analyzer to simulate a call made by the EUT. The channel bands utilised in the measurements are shown in the table below. The power level was set to maximum.

Band (MHz)	Uplink Frequency	Channel	Nominal Power (dBm)
850	836.6 MHz	4183	26
1900	1880 MHz	9400	26

2.3 Test Setup

Measurements were made inside a compliant CISPR 16-1-4 semi-anechoic chamber meeting the requirements for a test volume of 2m x 2m x 2m at 3 and 10 metre distances over the frequency range 30 MHz to 6000 MHz. Measurements below 1 GHz were performed at 10 m and measurements above 1 GHz were performed at 3 m separation distance.

The EUT was placed vertically upright using a holder provided by the client at a height of 1.5 m above the ground plane at the centre of the turn table with the front face of the EUT facing the 0° angle of the turn table. Antenna height was scanned from 1 to 4 m (with a fixed angle of turntable) and positioned at the height where the highest peak of the signal had been detected. The turntable was rotated through 360° to measure the peak field strength at different angles. The measurement antenna was tilted to direct to the EUT for above 1 GHz measurements. Tilt angle was maintained during all tests (with and without chip).

RF absorbers were placed on the floor for all measurements above 1 GHz.

The placement of the Cellsafe/Lif3 chip on the EUT was performed by the client.

3.0. RESULTS

The results of the tests are shown in polar plot graphs 1 and 2 in Appendix C. In each graph, the difference between the two traces is the difference in the peak electric field strength measured from the EUT during transmission.

3.1 Peak Field Strength Measurement Results

Model	Uplink Frequency (MHz)	E-field (Highest peak) (dB μ V/m)		Δ Average*
		No Chip	With Chip	
iPhone 7	836.6	97.05	96.53	-0.56
	1880	68.76	68.18	-0.75
iPhone 7 Plus	836.6	96.10	95.28	-0.29
	1880	65.90	64.17	-1.06

*Averaging was performed on peak measured E-field values over 360 °.

4.0 CONCLUSION

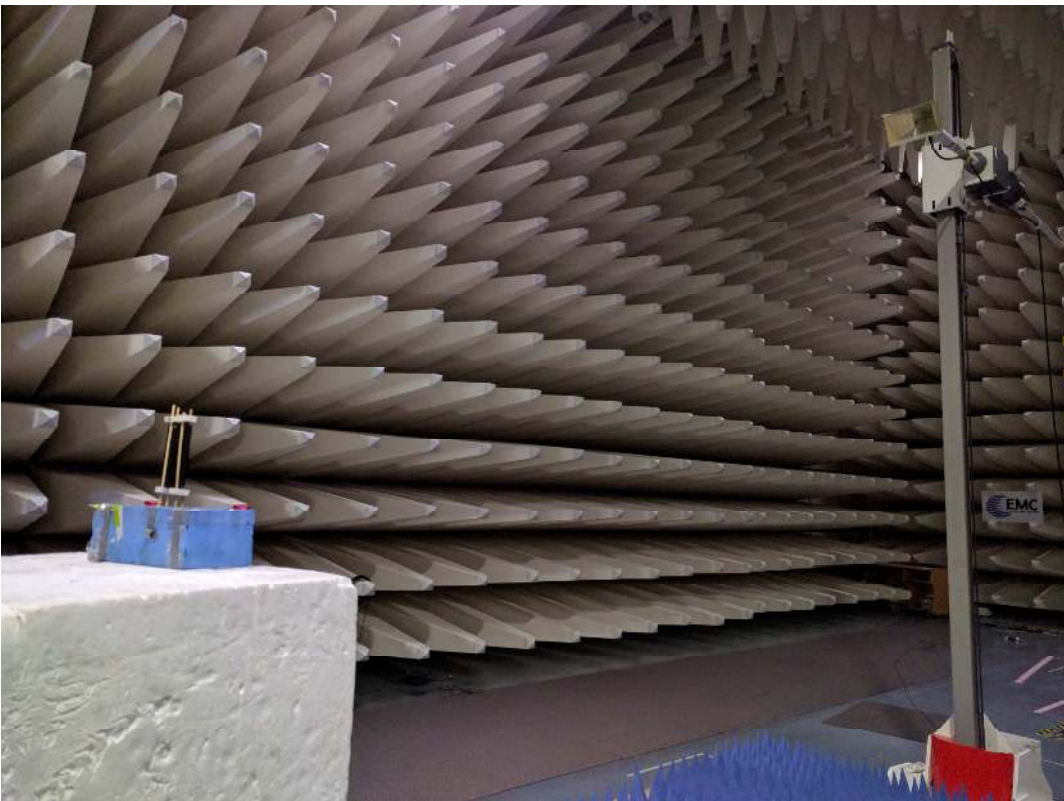
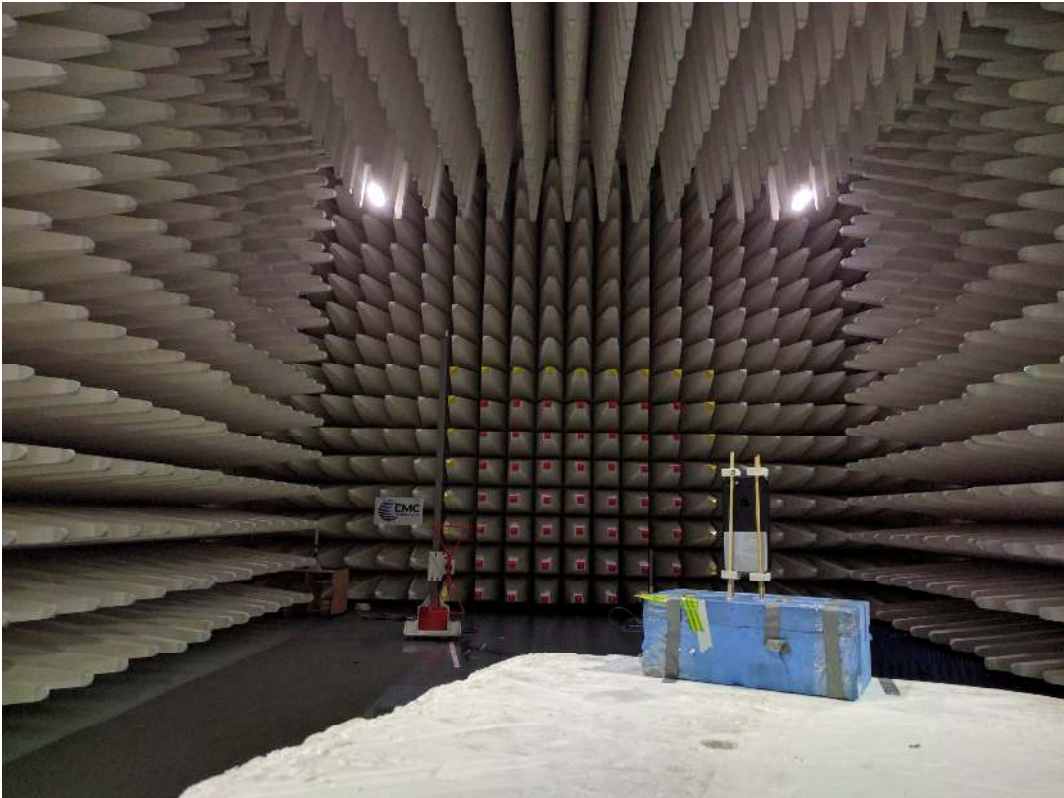
The Cellsafe/Lif3 Chip, tested on behalf of Panasales Clearance Centre Pty Ltd (trading as Cellsafe), was found to have a minimal impact on the average E-field strength (up to 1 dB reduction) from the Apple iPhone 7 and iPhone 7 Plus at the tested Uplink Frequencies.

**APPENDIX A
TEST EQUIPMENT LIST**

EQUIPMENT TYPE	DESCRIPTION	LAST CAL. DD/MM/YY	DUE DATE DD/MM/YY	CAL. INTERVAL
Receiver	EMI Test Receiver (9 KHz – 6.5 GHz) Asset Number: R-017 Manufacturer: Hewlett Packard Model Number: HP8546A Serial Number: 3520A00249 & 3448A00287	Nov 2015	Nov 2016	1 year
Antennas	30 MHz to 6 GHz Hybrid Antenna Asset Number: A-363 Manufacturer: Sunol Sciences Corporation Model Number: JB6 Serial Number: A012312	May 2016	May 2018	2 years
	Small Double Ridged Horn Antenna (1 - 18) GHz Asset Number: A-004 Manufacturer: EMCO Model Number: 3115 Serial Number: 8908-3282	July 2016	July 2019	3 years

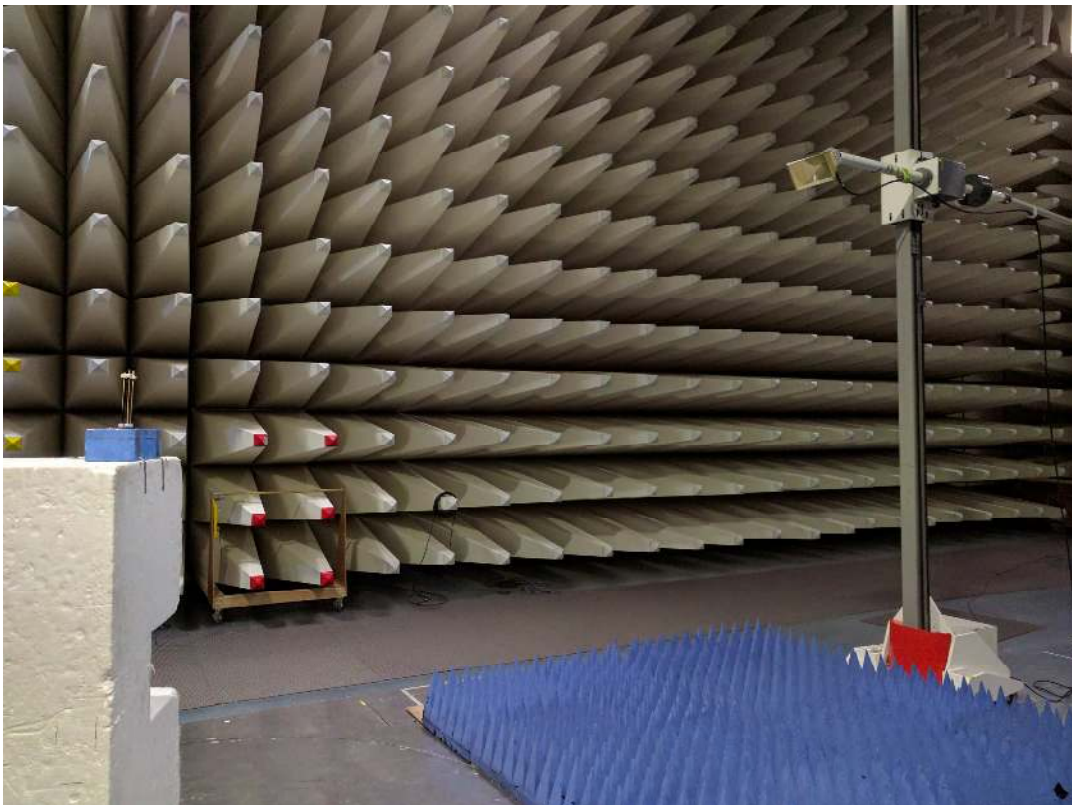
APPENDIX B1 TEST SETUP & SAMPLE PHOTOGRAPHS

Test Setup Apple iPhone 7

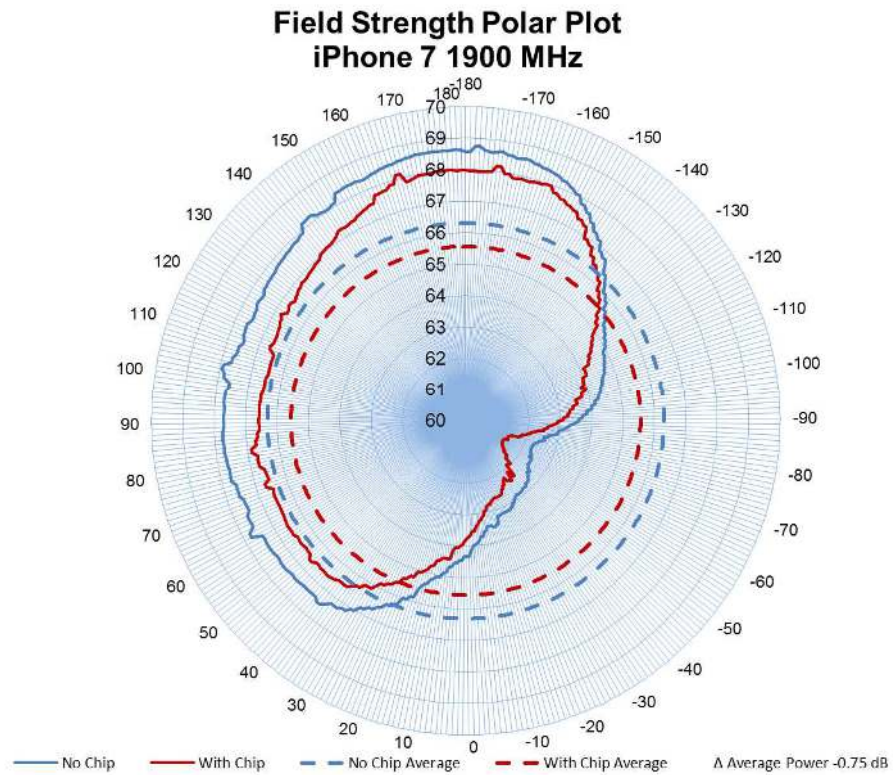
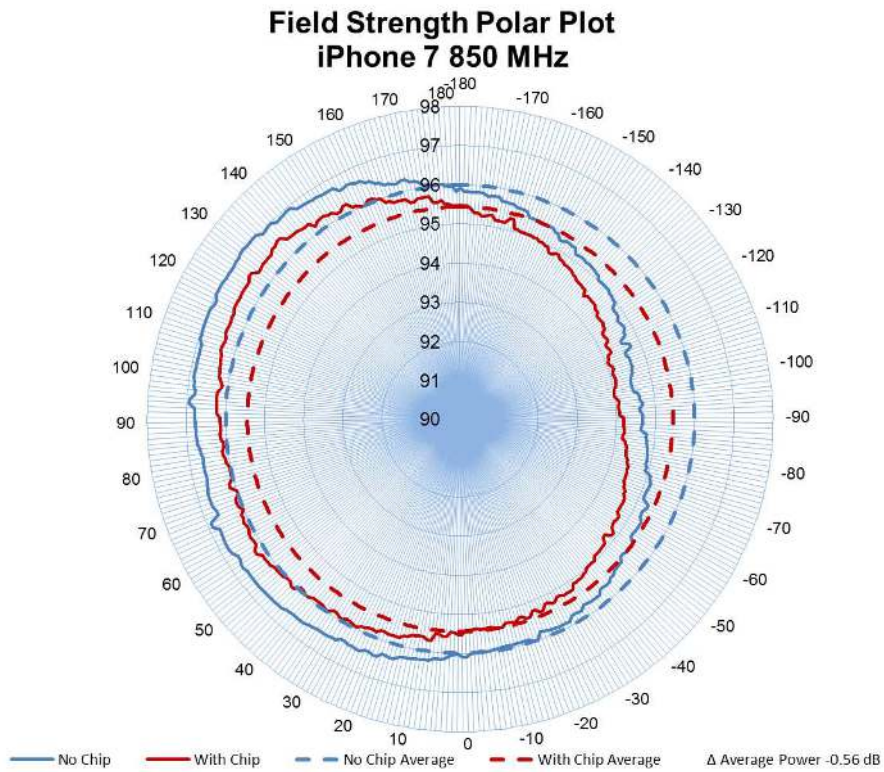


APPENDIX B2 TEST SETUP & SAMPLE PHOTOGRAPHS

Test Setup Apple iPhone 7 plus

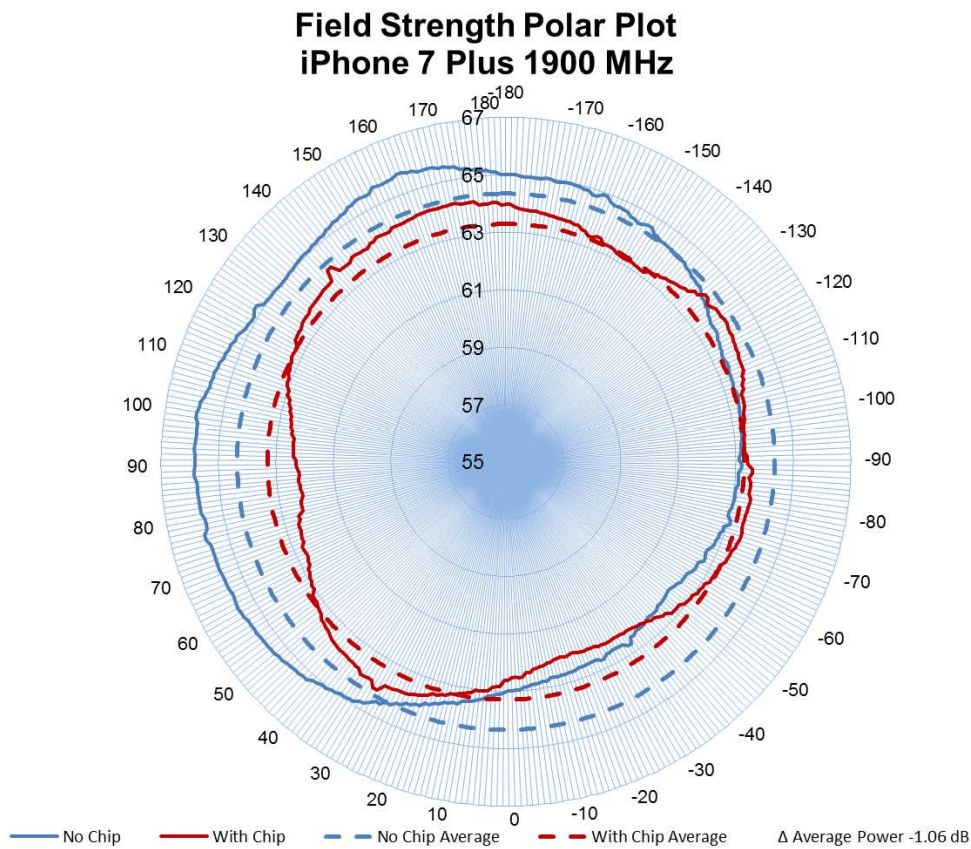
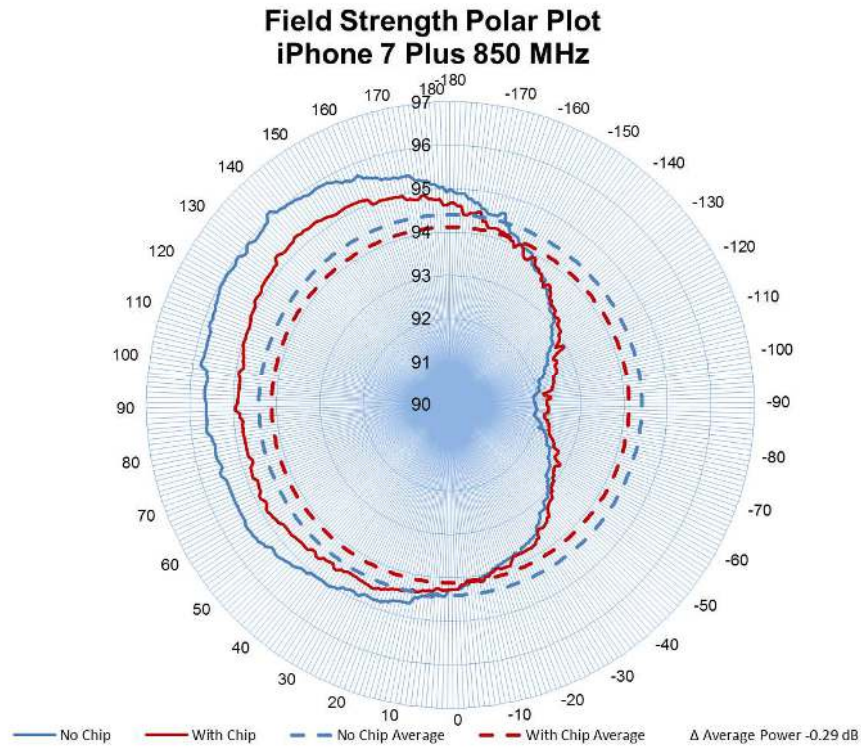


APPENDIX C1 POLAR RADIATION PATTERN MEASUREMENT



Graph 1 – Apple iPhone 7

APPENDIX C2 POLAR RADIATION PATTERN MEASUREMENT



Graph 2 – Apple iPhone 7 plus