

 MOTOROLA SOLUTIONS	 MS ISO/IEC 17025 TESTING SAMM No. 0826																														
DECLARATION OF COMPLIANCE: MPE ASSESSMENT																															
Motorola Solutions, Inc. EME Test Laboratory Motorola Solutions Malaysia Sdn Bhd (Innoplex) Plot 2A, Medan Bayan Lepas, Mukim 12 SWD 11900 Bayan Lepas Penang, Malaysia.	Date of Report: 7/27/2018 Report Revision: B																														
<table> <tr> <td>Responsible Engineer:</td> <td>Tiong Nguk Ing</td> </tr> <tr> <td>Report Author:</td> <td>Tiong Nguk Ing</td> </tr> <tr> <td>Assessment Date(s)</td> <td>7/6/2018</td> </tr> <tr> <td>Manufacturer:</td> <td>Alert Technologies</td> </tr> <tr> <td>DUT Description:</td> <td>CB300-D 1W 900MHz DLR Call Box</td> </tr> <tr> <td>Test TX mode(s):</td> <td>Paging</td> </tr> <tr> <td>Max. Power output:</td> <td>1 W</td> </tr> <tr> <td>Tx Frequency Bands:</td> <td>902-928 MHz</td> </tr> <tr> <td>Model(s) Tested:</td> <td>CB300-D</td> </tr> <tr> <td>Model(s) Certified:</td> <td>CB300-D</td> </tr> <tr> <td>Classification:</td> <td>General Population/ Uncontrolled Environment</td> </tr> <tr> <td>FCC ID:</td> <td>AZ489FT5875</td> </tr> <tr> <td>IC:</td> <td>109U-89FT5875</td> </tr> <tr> <td>ISED Test Site Registration:</td> <td>109AK</td> </tr> <tr> <td>FCC Test Firm Registration Number:</td> <td>823256</td> </tr> </table>		Responsible Engineer:	Tiong Nguk Ing	Report Author:	Tiong Nguk Ing	Assessment Date(s)	7/6/2018	Manufacturer:	Alert Technologies	DUT Description:	CB300-D 1W 900MHz DLR Call Box	Test TX mode(s):	Paging	Max. Power output:	1 W	Tx Frequency Bands:	902-928 MHz	Model(s) Tested:	CB300-D	Model(s) Certified:	CB300-D	Classification:	General Population/ Uncontrolled Environment	FCC ID:	AZ489FT5875	IC:	109U-89FT5875	ISED Test Site Registration:	109AK	FCC Test Firm Registration Number:	823256
Responsible Engineer:	Tiong Nguk Ing																														
Report Author:	Tiong Nguk Ing																														
Assessment Date(s)	7/6/2018																														
Manufacturer:	Alert Technologies																														
DUT Description:	CB300-D 1W 900MHz DLR Call Box																														
Test TX mode(s):	Paging																														
Max. Power output:	1 W																														
Tx Frequency Bands:	902-928 MHz																														
Model(s) Tested:	CB300-D																														
Model(s) Certified:	CB300-D																														
Classification:	General Population/ Uncontrolled Environment																														
FCC ID:	AZ489FT5875																														
IC:	109U-89FT5875																														
ISED Test Site Registration:	109AK																														
FCC Test Firm Registration Number:	823256																														
Based on the information and the testing results provided herein, the undersigned certifies that when used as stated in the operating instructions supplied, said product complies with the national and international reference standards and guidelines listed in section 4.0 of this report. This report shall not be reproduced without written approval from an officially designated representative of the Motorola Solutions EME Laboratory. I attest to the accuracy of the data and assume full responsibility for the completeness of these measurements. This reporting format is consistent with the suggested guidelines of the TIA TSB-159 April 2006 The results and statements contained in this report pertain only to the device(s) evaluated herein.																															
<i>Tiong</i> Tiong Nguk Ing Deputy Technical Manager Approval Date: 7/27/2018																															

Table of Contents

1.0	Introduction.....	3
2.0	MPE Summary.....	3
3.0	Abbreviations / Definitions.....	3
4.0	Referenced Standards and Guidelines	3
5.0	Power Density Limits	4
6.0	Product and System Description.....	6
7.0	MPE Assessment	6

Report Revision History

Date	Revision	Comments
7/6/2018	A	Initial release
7/27/2018	B	Update section 6.0 and 7.0

1.0 Introduction

This report contains calculated Maximum Permissible Exposure (MPE) results for product model CB300-D.

2.0 MPE Summary

Table 1

Frequency (MHz)	Power Density (mW/cm ²)	FCC Limit (mW/cm ²)
902	0.173	0.60
928	0.173	0.62

3.0 Abbreviations / Definitions

DUT: Device Under Test

EME: Electromagnetic Energy

MPE: Maximum Permissible Exposure

4.0 Referenced Standards and Guidelines

This product is designed to comply with the following applicable national and international standards and guidelines.

- United States Federal Communications Commission, Code of Federal Regulations; Rule Part 47CFR § 1.1310, § 2.1091 (d) and § 2.1093 for RF Exposure, where applicable.
- Federal Communications Commission, “Evaluating Compliance with FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields”, OET Bulletin 65 (Edition 97-01), FCC, Washington, D.C.: August 1997.
- American National Standards Institute (ANSI) / Institute of Electrical and Electronics Engineers (IEEE) C95. 1-1999
- American National Standards Institute (ANSI) / Institute of Electrical and Electronics Engineers (IEEE) C95. 1-1992. Specific to FCC rules and regulations.
- Institute of Electrical and Electronics Engineers (IEEE) C95.3-2002
- International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1998
- Ministry of Health (Canada) Safety Code 6 (2015), Limits of Human Exposure to Radio frequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz
- RSS-102 (Issue 5) – Radio Frequency (RF) Exposure Compliance of Radio communication Apparatus (All Frequency Bands)
- FCC KDB – 447498 D01 General RF Exposure Guidance v06
- FCC KDB – 865664 D02 RF Exposure Reporting v01r02

5.0 Power Density Limits

Table 2 – Occupational / Controlled Exposure Limits

Frequency Range (MHz)	FCC OET Bulletin 65	ICNIRP	IEEE C95.1 1992/1999	IEEE C95.1 2005	RSS-102 Issue 5 2015
	mW/cm ²	W/m ²	mW/cm ²	W/m ²	W/m ²
10 – 20					10.0
20 – 48					$44.72 / f^{0.5}$
30 – 300	1.0				
48 – 100					6.455
10 – 400		10.0			
100 – 300			1.0	10.0	
100 – 6,000					$0.6455 f^{0.5}$
300 – 1,500	$f/300$				
300 – 3,000			$f/300$	$f/30$	
400 – 2,000		$f/40$			
1,500 – 15,000					
1,500 – 100,000	5.0				
2,000 – 300,000		50.0			
3,000 – 300,000			10.0	100.0	
6,000 – 15,000					50.0
15000 – 150,000					50.0
150000 – 300,000					$3.33 \times 10^{-4} f$

Table 3 – General Population / Uncontrolled Exposure Limits

Frequency Range (MHz)	FCC OET Bulletin 65	ICNIRP	IEEE C95.1 1992/1999	IEEE C95.1 2005	RSS-102 Issue 5 2015
	mW/cm ²	W/m ²	mW/cm ²	W/m ²	W/m ²
10 – 20					2.0
20 – 48					$8.944 / f^{0.5}$
30 – 300	0.2				
48 – 300					1.291
10 – 400		2.0			
100 – 300			0.2		
100 – 400				2.0	
300 – 1,500	$f/1,500$				
300 – 6000					$0.02619 f^{0.6834}$
400 – 2,000		$f/200$		$f/200$	
300 – 15,000			$f/1,500$		
1,500 – 15,000					
1,500 – 100,000	1.0				
2,000 – 100,000				10.0	
2,000 – 300,000		10.0			
6,000 – 15,000					10.0
15,000 – 150,000					10.0
150,000 – 300,000					$6.67 \times 10^{-5} f$

6.0 Product and System Description

CB300-D call box is a battery operated call box typically installed mounted to a wall using 3M DuoLock strips or by using optional wall mounting bracket and also use on a counter top. The message will be prerecorded in call box; recorded message length cannot more than 10 seconds. When the button on the LCD display is pressed and released, the prerecorded local audio message will send over the air. The call cycles to repeat the message can be set from 1 to 30 cycles. Call delay between repeating message can be set from 10 to 180 seconds.

Transmission time will be up to 10 seconds long maximum, the shortest delay is 10 seconds before 2nd transmission of the repeating message. The conservative duty cycle will be 50% with 10 seconds transmission with 20 seconds period.

7.0 MPE Assessment

MPE calculations were used to determine the RF exposure for this device. According to FCC's OET Bulletin 65 Edition 97-01 Section 2, calculations can be made to predict RF field strength and power density levels around typical RF sources.

$$S = \frac{PG}{4\pi R^2}$$

Where: S = power density (mW/cm²)
P = power input to the antenna (mW)
G = power gain of the antenna in the direction of interest relative to an isotropic radiator (dBi)
R = distance to center of radiation of the antenna (cm)

P = 1 W*50% duty cycle = 500 mW;
G = 2.4 dBi; Linear Gain = 10^{^(2.4 dBi/10)} = 1.74;
R = 20 cm

$$S = \frac{500mW*1.74}{4 * \pi * 20^2} = 0.173mW/cm^2$$

Frequency (MHz)	Distance (cm)	Power Density (mW/cm ²)	FCC Limit (mW/cm ²)	ISED Limit (mW/cm ²)
902	20	0.173	0.60	0.27
928	20	0.173	0.62	0.28

The MPE assessment presented in this report concludes that model CB300-D is compliant to FCC and ISED General Population /Uncontrolled RF exposure limits.