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# Report On

FCC and Industry Canada Testing of the  
Motorola Inc  
Bluetooth Imager Scanner DS6878

COMMERCIAL IN CONFIDENCE

FCC ID: UZ7DS6878  
IC ID: 109AN-DS6878

Document 75908220 Report 04 Issue 3

February 2010



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**REPORT ON**

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**PREPARED FOR**

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**PREPARED BY**

**R Johnston**  
EMC Test Engineer

**APPROVED BY**

**DC West**  
Authorised Signatory

**DATED**

25 February 2010

**This report has been up-issued to Issue 3 to remove photos.**

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**ENGINEERING STATEMENT**

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47: Part 15B and RSS-Gen. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

**B Logan**





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## **SECTION 1**

### **REPORT SUMMARY**

FCC Emissions Testing of the  
Motorola Inc  
Bluetooth Imager Scanner DS6878



## 1.1 INTRODUCTION

The information contained in this report is intended to show verification of compliance for the Motorola Inc, Bluetooth Imager Scanner DS6878 to FCC CFR 47 Part 15B and Industry Canada RSS-Gen.

Objective	To perform FCC and Industry Canada Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	Motorola Inc
Model Number	DS6878
Serial Number	MXAUV88
Software Version	REV A
Hardware Version	Not Applicable
Number of Samples Tested	One
Test Specification	FCC CFR47: Part 15B: 2009 RSS-Gen Issue 2: 2007
Incoming Release Date	Declaration of Build Status 26 January 2010
Disposal Reference Number Date	Held Pending Disposal Not Applicable Not Applicable
Order Number Date	NP4981057 24 November 2009
Start of Test	19 January 2010
Finish of Test	26 January 2010
Name of Engineer	B Logan
Related Documents	ANSI C63.4 2001. Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz.



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## 1.2 BRIEF SUMMARY OF RESULTS

A brief summary of results in accordance with FCC CFR 47 Part 15B and RSS-Gen is shown below.

Configuration 1 - Charge							
Section	Spec Clause		Test Description	Mode	Mod State	Result	Base Standard
	FCC	IC					
2.1	15.109	7.2.3	Radiated Emissions (Enclosure Port)	Normal	0	Pass	ANSI 63.4
2.2	15.107	7.2.2	Conducted Emissions (AC Power Port)	Normal	0	Pass	ANSI 63.4



### 1.3 DECLARATION OF BUILD STATUS

<b>Manufacturer</b>	<u>Motorola Inc</u>
<b>Country of origin</b>	<u>Mexico</u>
<b>UK Agent</b>	<u>Not Applicable</u>
<b>Technical Description</b>	<u>DS6878 Bluetooth Imager scanner, power supply 50-14000-253R (100-240 Vac, 50/60Hz), Cradle STB4278</u>
<b>Model No</b>	<u>DS6878</u>
<b>Serial No</b>	<u>MXAUV88</u>
<b>Drawing Number</b>	<u>17-121130-01</u>
<b>Build Status</b>	<u>REV A</u>
<b>Software Issue</b>	<u>REV A</u>
<b>Hardware Issue</b>	<u>Not Applicable</u>
<b>FCC ID</b>	<u>UZ7DS6878</u>
<b>Industry Canada ID</b>	<u>109AN-DS6878</u>
<b>Signature</b>	<u>Xinjian Zhang</u>
<b>Date</b>	<u>26 January 2010</u>
<b>D of B S Serial No</b>	<u>75908220</u>

Note: This document has been prepared to enable manufacturers with no mechanism for producing their own Declaration of Build Status, to declare the build state of the equipment submitted for test.

No responsibility will be accepted by TÜV Product Service as to the accuracy of the information declared in this document by the manufacturer.



## 1.4 PRODUCT INFORMATION

### 1.4.1 Technical Description

The Equipment Under Test (EUT) was a Motorola Inc, Bluetooth Imager Scanner DS6878.

A full technical description can be found in the manufacturer's documentation.

### 1.4.2 Test Configurations

#### Configuration 1: Charge

The EUT was placed in the charging cradle. The cradle was then connected to a drive laptop (not powered up) as a load via a data lead.

### 1.4.3 Auxiliary Equipment List

Equipment Type	Manufacturer	Model	Serial Number
AC Power Supply Unit	Motorola	50-14000-253R	N/A
Charging Cradle	Symbol Technologies Inc.	STB4278	9244000502116

### 1.4.4 EUT Cable / Port Identification

Port	Max Cable Length specified	Usage	Type	Screened
AC Power	3m	Mains Lead	2 core	No
USB	3m	Signal	Multi-core	No

### 1.4.5 Modes of Operation

For each test configuration the EUT was operating normally.

#### Mode 1 - Normal





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## **1.5 TEST CONDITIONS**

For all tests the EUT was set up and operating in Configuration 1 – Mode 1.

Emissions testing were performed with the EUT situated in a shielded enclosure and open test area as appropriate.

The AC Mains power was obtained from a 120V 60Hz filtered supply.

FCC Accreditation  
90986 Bearley, Birmingham Test Facility

Industry Canada Accreditation  
IC2932E-1 Bearley, Birmingham Test Facility

## **1.6 DEVIATIONS FROM THE STANDARD**

No deviations from the applicable test standards were made.

## **1.7 MODIFICATION RECORD**

No modifications were made to the EUT during testing.



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## **SECTION 2**

### **TEST DETAILS**

EMC Testing of the  
Motorola Inc  
Bluetooth Imager Scanner DS6878



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## **2.1 CONDUCTED EMISSIONS**

### **2.1.1 Specification Reference**

FCC Part 15 Subpart B Section 107, Un-intentional Radiator  
RSS-Gen, Clause 7.2.2

### **2.1.2 Equipment Under Test**

Bluetooth Imager Scanner DS6878, S/N: MXAUV88

### **2.1.3 Date of Test and Modification State**

22 January 2010 - Modification State 0

### **2.1.4 Test Equipment Used**

The major items of test equipment used for the above tests are identified in Section 3.1.

### **2.1.5 Test Method and Operating Modes**

The test was applied in accordance with the test method requirements of ANSI C63.4.

The test was performed with the EUT in the following configurations and modes of operation:

Configuration 1 - Mode 1

### **2.1.6 Environmental Conditions**

22 January 2010

Ambient Temperature 15.4 - 16.3°C

Relative Humidity 52 - 53%

Atmospheric Pressure 1002mbar



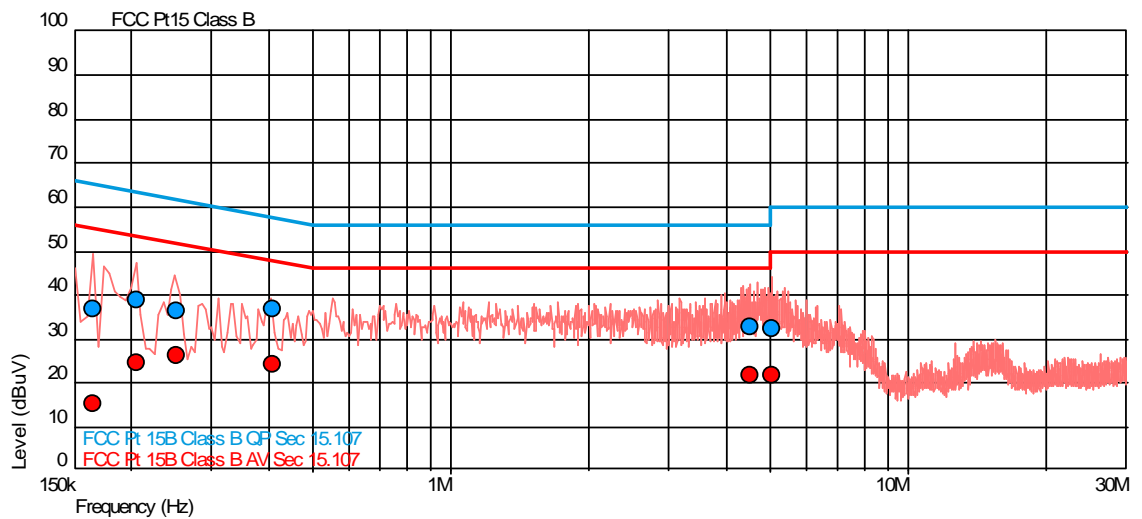
## 2.2.7 Test Results

Equipment Designation: Un-intentional Radiator

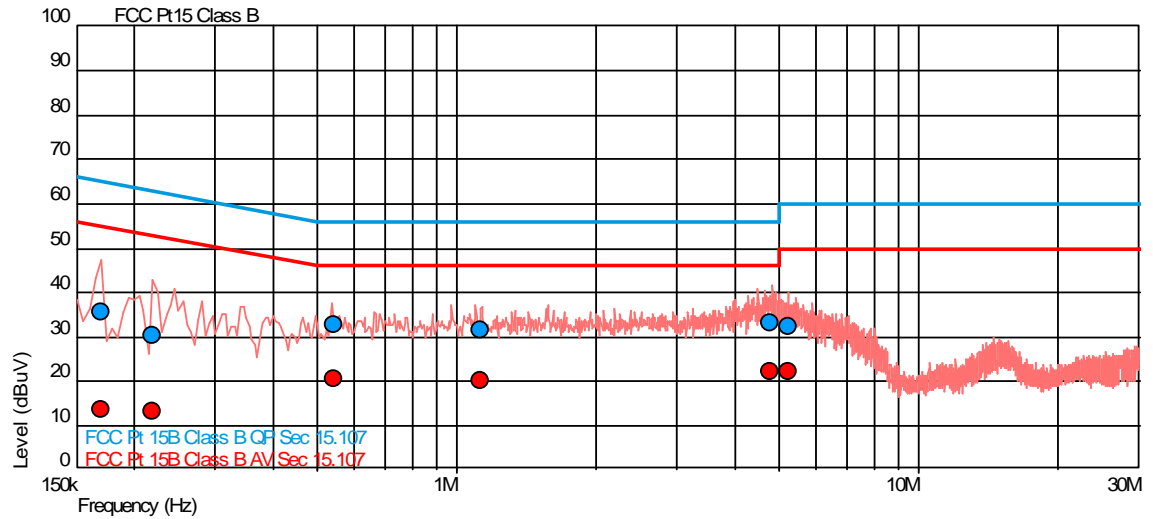
The EUT met the Class B requirements of FCC Part 15 Subpart B, Section 15.107 (a) and RSS-Gen, Clause 7.2.2 for Conducted Emissions on the Live and Neutral Lines.

Test results obtained are shown in the graphic results and tables of results that follow.

### Live Line



Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.165	36.6	65.2	-28.6	15.3	55.2	-39.9
0.205	38.7	63.4	-24.7	24.4	53.4	-29.0
0.251	36.5	61.7	-25.2	26.1	51.7	-25.6
0.408	36.8	57.7	-20.9	24.1	47.7	-23.6
4.521	32.8	56.0	-23.2	21.9	46.0	-24.1
5.020	32.5	60.0	-27.5	21.8	50.0	-28.2

Neutral Line

Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.170	35.6	65.0	-29.3	13.6	55.0	-41.3
0.220	30.2	62.8	-32.6	13.0	52.8	-39.8
0.542	32.7	56.0	-23.3	20.5	46.0	-25.5
1.120	31.7	56.0	-24.3	20.0	46.0	-26.0
4.758	33.1	56.0	-22.9	22.0	46.0	-24.0
5.224	32.2	60.0	-27.8	22.0	50.0	-28.0



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## 2.2 RADIATED EMISSIONS

### 2.2.1 Specification Reference

FCC Part 15 Subpart B Section 109, Un-intentional Radiator  
RSS-Gen, Clause 7.2.3

### 2.2.2 Equipment Under Test

Bluetooth Imager Scanner DS6878, S/N: MXAUV88

### 2.2.3 Date of Test and Modification State

25 to 26 January 2010 - Modification State 0

### 2.2.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

### 2.2.5 Test Method and Operating Modes

The test was applied in accordance with the test method requirements of ANSI 63.4.

The test was performed with the EUT in the following configurations and modes of operation:

Configuration 1 - Mode 1

### 2.2.6 Environmental Conditions

	25 January 2010	26 January 2010
Ambient Temperature	19.3 - 19.8°C	16.7°C
Relative Humidity	51.2 - 51.6%	47%
Atmospheric Pressure	1026mbar	1026mbar



## 2.1.7 Test Results

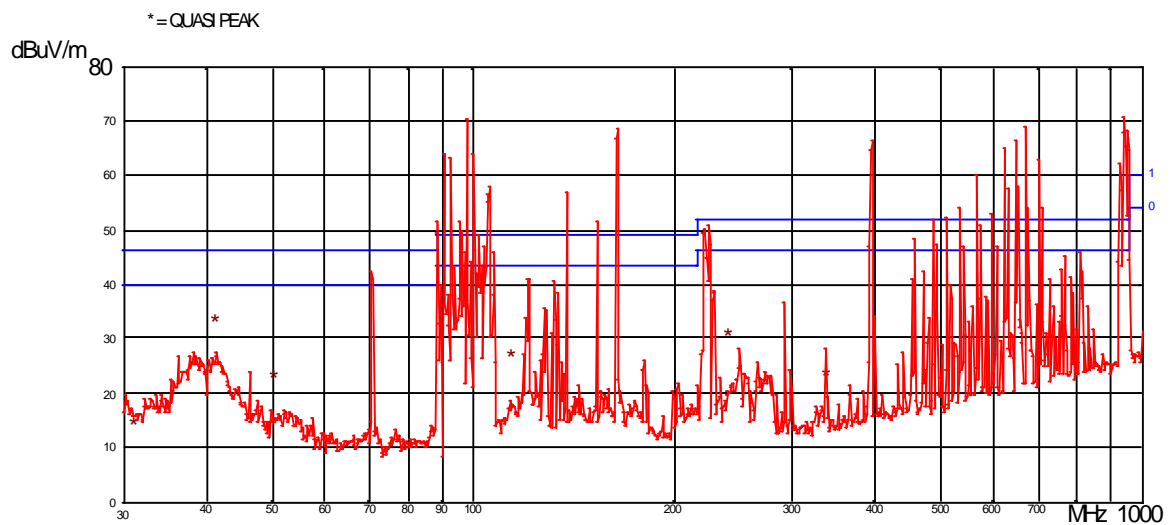
Equipment Designation: Un-intentional Radiator.

The EUT met the requirements of FCC CFR47: Part 15 Subpart B Section 109(a) and RSS-Gen, Clause 7.2.3 for Class B Radiated Electric Field Emissions, 30MHz – 12GHzHz.

The graphic results and the numeric results obtained during the test are shown below.

### Radiated Emissions 30MHz to 1000MHz

#### Graphic Results



Note: Due to the nature of Open Field Testing, the majority of emissions shown on the above graphic are ambient, due to Local and National Broadcast stations, Emergency Services, Taxi radio services and PMR, Aircraft Radio transmissions/ILS, Television Broadcast stations and Mobile phone transmissions

#### Table of Results

m e a s u r e d			Q P			v a l u e s	
Frequency	Level.	Margin	Pol	Height	Azimuth		
MHz	dBuV/m	dB	h/v	m	deg.		
31.0000	14.4	-25.6	h	1.00	0		
41.0000	33.2	-6.8	v	1.00	0		
50.0000	22.8	-17.2	v	1.00	92		
113.6540	26.8	-16.6	v	1.00	173		
240.0000	31.1	-14.9	h	1.00	95		
336.4730	23.2	-22.8	v	1.00	152		

Table of Results in uV/m

Freq (MHz)	Level (uV/m)	Limit (uV/m)	Margin (uV/m)	Pol (V/H)	Height (m)	Azimuth (deg)
31.0000	5.25	100	94.75	H	1.00	0
41.0000	45.7	100	54.30	V	1.00	0
50.0000	13.8	100	86.20	V	1.00	92
113.6540	21.9	150	128.10	V	1.00	173
240.0000	35.9	200	164.1	H	1.00	95
336.4730	14.5	200	185.5	V	1.00	152

Radiated Emissions 1GHz to 12GHz

There were no emissions attributable to the EUT found between 1GHz and 12GHz and therefore Graphic or Table of results presented.





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### **SECTION 3**

#### **TEST EQUIPMENT USED**



### 3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
<b>Section 2.1 EMC - Conducted Emissions</b>					
Test Receiver	Rohde & Schwarz	ESIB26	242	12	23-Jan-2010
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	376	-	TU
Single Phase LISN	Rohde & Schwarz	ESH3-Z5	1674	12	11-Aug-2010
LISN	Rohde & Schwarz	ESH3-Z5	1820	12	7-May-2010
<b>Section 2.2 EMC - Radiated Emissions</b>					
Test Receiver	Rohde & Schwarz	ESIB40	1006	6	26-May-2010
Test Receiver	Rohde & Schwarz	ESVP	1669	12	12-Nov-2010
Antenna Mast	EMCO	1050	1707	-	TU
Turntable Controller	Various	RH253	1708	-	TU
Antenna (Double Ridge Guide)	EMCO	3115	1711	12	22-Aug-2010
Spectrum Analyser	Rohde & Schwarz	EZM	1823	-	TU
Antenna (Bilog, 20MHz-2GHz)	York Electronics	CBL6111B	1868	24	20-Aug-2010

TU – Traceability Unscheduled



### 3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:-

Test Discipline	Frequency / Parameter	MU
Radiated Emissions, Bilog Antenna, AOATS	30MHz to 1GHz Amplitude	5.2dB*
Radiated Emissions, Horn Antenna, AOATS	1GHz to 40GHz Amplitude	6.3dB*
Conducted Emissions, LISN	150kHz to 30MHz Amplitude	3.2dB*
Conducted Emissions, ISN	150kHz to 30MHz Amplitude	2.1dB
Substitution Antenna, Radiated Field	30MHz to 18GHz Amplitude	2.6dB
Discontinuous Interference	150kHz to 30MHz Amplitude	3.0dB*
Interference Power	30MHz to 300MHz Amplitude	3.0dB*
Radiated E-Field Susceptibility	10MHz to 6GHz Test Amplitude	2.0dB†
Conducted Susceptibility RF	50kHz to 1000MHz Amplitude	3.1dB• 1.2dB• 1.1dB• 1.2dB•
	EM Clamp Method of Test	
	CDN Method of Test	
	BCI Clamp Method of Test	
Conducted Susceptibility LF	DC to 150kHz	1.0%†
Power Frequency Magnetic Field	50Hz/60Hz Amplitude	0.45%
Magnetic Emissions	9kHz to 30MHz Amplitude	3.4dB*
Magnetic Field/Flux iaw EN 50366	10Hz to 400kHz	2.64%
Harmonics and Flicker	The test was applied using proprietary equipment that meets the requirements of EN 61000-3-2 and EN 61000-3-3	—
Mains Voltage Variations and Interrupts	The test was applied using proprietary equipment that meets the requirements of EN 61000-4-11	—
Fast Transient Burst	The test was applied using proprietary equipment that meets the requirements of EN 61000-4-4	—
Electrostatic Discharge	The test was applied using proprietary equipment that meets the requirements of EN 61000-4-2	—
Surge	The test was applied using proprietary equipment that meets the requirements of EN 61000-4-5	—
Vehicle Transients	The test was applied using proprietary equipment that meets the requirements of ISO 7637-1 and 2	—
Compass Safe Distance	Azimuth Accuracy	0.10°

Worst case error for both Time and Frequency measurement 12 parts in  $10^6$ .

- \* In accordance with CISPR 16-4-2
- † In accordance with UKAS Lab 34
- In accordance with EN61000-4-6: 2009



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## **SECTION 4**

### **ACCREDITATION, DISCLAIMERS AND COPYRIGHT**



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#### 4.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT



This report relates only to the actual item/items tested.

Our UKAS Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our UKAS Accreditation.

Results of tests not covered by our UKAS Accreditation Schedule are marked NUA (Not UKAS Accredited).

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## **ANNEX A**

### **BEARLEY FCC SITE COMPLIANCE LETTER**

**FEDERAL COMMUNICATIONS COMMISSION**

**Laboratory Division  
7435 Oakland Mills Road  
Columbia, MD 21046**

June 03, 2009

Registration Number: 90986

TUV Product Service  
Snitterfield Road,  
Bearley, Stratford-upon-Avon,  
Warwickshire, CV37 0EX  
United Kingdom

Attention: David West,  
  
Re: Measurement facility located at Bearley  
3 & 10 meter site  
Date of Renewal: June 03, 2009

Dear Sir or Madam:

Your request for renewal of the registration of the subject measurement facility has been received. The information submitted has been placed in your file and the registration has been renewed. The name of your organization will remain on the list of facilities whose measurement data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Please note that the file must be updated for any changes made to the facility and the registration must be renewed at least every three years.

Measurement facilities that have indicated that they are available to the public to perform measurement services on a fee basis may be found on the FCC website [www.fcc.gov](http://www.fcc.gov) under E-Filing, OET Equipment Authorization Electronic Filing, Test Firms.

Sincerely,  
  
Phyllis Parrish  
Industry Analyst