



Global Product Certification  
EMC-EMF Safety Approvals

**EMC Technologies Pty Ltd**

ABN 82 057 105 549  
157 Harrick Road  
Keilor Park Victoria 3042 Australia

**Telephone** +61 3 9365 1000  
**Facsimile** +61 3 9331 7455  
**Email** sales@emctech.com.au  
**www.emctech.com.au**

## FCC RF Exposure Report

### Report Number: M160643-1

**Test Sample:** Unattended Payment Terminal  
**Model Number:** UT430  
**Tested For:** Quest Payment Systems Pty Ltd

**Date of Issue:** 18 August 2016

EMC Technologies Pty Ltd reports apply only to the specific samples tested under stated test conditions. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. EMC Technologies Pty Ltd shall have no liability for any deductions, inferences or generalisations drawn by the client or others from EMC Technologies Pty Ltd issued reports. This report shall not be used to claim, constitute or imply product endorsement by EMC Technologies Pty Ltd.

This document must not be copied or reproduced, except in full without the written permission of the Manager, EMC Technologies Pty Ltd

[www.emctech.com.au](http://www.emctech.com.au)



## Contents

### Table of Contents

1	INTRODUCTION .....	4
2	EXPOSURE EVALUATION FOR MOBILE DEVICE .....	4
3	GENERAL INFORMATION .....	4
4	TEST SAMPLE DESCRIPTION and TEST SETUP DETAILS .....	4
5	MAXIMUM PERMISSIBLE EXPOSURE (MPE) LIMITS .....	5
6	RF EXPOSURE EVALUATION .....	6
7	CONCLUSION .....	7

---

This document must not be copied or reproduced, except in full without the written permission of the Manager, EMC Technologies Pty Ltd

[www.emctech.com.au](http://www.emctech.com.au)



EMC-EMF Safety Approvals

**FCC RF Exposure Evaluation Report**  
**Error! No text of specified style in document.**  
**Model: UT430**

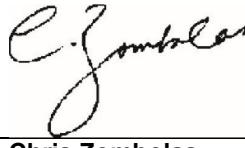
**Report Number: M160643-1**

<b>Test Sample:</b>	Unattended Payment Terminal
<b>Model Number:</b>	UT430
<b>Serial Number:</b>	55000045
<b>Manufacturer:</b>	Quest Payment Systems Pty Ltd
<b>Tested for:</b>	Quest Payment Systems Pty Ltd
<b>Address:</b>	227 Burwood Rd, Hawthorn VIC 3122
<b>Phone:</b>	+61 3 8807 4400
<b>Fax:</b>	+61 3 8807 4411
<b>Contact:</b>	Zivko Jovanovski
<b>Email:</b>	<a href="mailto:zivkoj@questps.com.au">zivkoj@questps.com.au</a>
<b>Test Standard/s:</b>	<b>FCC KDB 447498 D01 General RF Exposure Guidance v6</b> Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies.
	<b>FCC Title 47, Part 2.1091, Part 1.1310</b>
<b>Result of Test:</b>	Unattended Payment Terminal model UT430 complies with the requirement of KDB 447498 D01 and with FCC Title 47, Part 2.1091, Part 1.1310
<b>Test Dates</b>	18 August 2016



**Test Engineer:**   
Emad Mansour  
EMC/EMR/SAR Engineer  
M.Sc. in Telecommunication

**Authorised Signature:**



Chris Zombolas  
Technical Director  
EMC Technologies Pty Ltd

This document must not be copied or reproduced, except in full without the written permission of the Manager, EMC Technologies Pty Ltd

[www.emctech.com.au](http://www.emctech.com.au)

## 1 INTRODUCTION

This report shows the Maximum permissible exposure (MPE) on the Unattended Payment Terminal, Model No. UT430, in accordance with the Federal Communications Commission (FCC) regulations as detailed in KDB 447498 D01,

The test sample was provided by the Client. The conclusion herein is based on the information provided by the client.

## 2 EXPOSURE EVALUATION FOR MOBILE DEVICE

A mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons.

Radio frequency radiation exposure evaluation for mobile devices as defined by (47 CFR §2.1091).

## 3 GENERAL INFORMATION

(Information supplied by the Client)

The Equipment Under Test (EUT) was identified as follows:

<b>Test Sample:</b>	Unattended Payment Terminal
<b>Model Number:</b>	UT430
<b>Manufacturer:</b>	Quest Payment Systems Pty Ltd
<b>Radio Module:</b>	Contactless RFID
<b>Operating frequency (MHz):</b>	13.56
<b>EIRP*</b>	4μW

\*For EIRP value refer to test report M160625-1 drafted by EMC Technologies

## 4 TEST SAMPLE DESCRIPTION and TEST SETUP DETAILS

(Information supplied by the Client)

The UT430 was Quest's new Unattended Payment Terminal.

The main relevant features of the UT430 were:

- All-in-one unit providing EMV chip (contact), RFID contactless (including NFC) and magnetic stripe card acceptance
- The contactless card reader operating at 13.56MHz based on the AMS AS3911 chipset
- A highest internal clock frequency of 96MHz
- The following communication interfaces: RS232 to a POS terminal; USB 2.0; Ethernet; and MDB (Multi Drop Bus) for vending applications

---

This document must not be copied or reproduced, except in full without the written permission of the Manager, EMC Technologies Pty Ltd

[www.emctech.com.au](http://www.emctech.com.au)



EMC-EMF Safety Approvals

- Interfaces on the rear panel for future use: external contactless reader; external receipt printer; and external card reader. They are all asynchronous serial with the contactless interface being 3.3V-level and the other two RS232-level
- The optional 3G communications module is not implemented and not present in the product; the SMA antenna and SIM card slots will be blocked by rubber plugs
- A Removal Detection feature which alerts the software that the UT430 has been removed from its installation, and disables PIN entry
- Powered from 240V 50Hz AC via a supplied AC/DC plugpack
- Physical dimensions of 104mm (W) x 137mm (H) x 120mm (D)
- Weight of 500g
- All plastic enclosure

## 5 MAXIMUM PERMISSIBLE EXPOSURE (MPE) LIMITS

The criteria listed in table 1 shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation

Table 1:

Frequency range(MHz)	Electric field strength(V/m)	Magnetic field strength(A/m)	Power density( $mW/cm^2$ )	Averaging time(minutes)
A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	$^*(100)$	6
3.0-30	$1842/f$	$4.89/f$	$^*(900/f^2)$	6
30-300	61.4	0.163	1	6
300-1500			$f/300$	6
1500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	$^*(100)$	30
1.34-30	$824/f$	$2.19/f$	$^*(180/f^2)$	30
30-300	27.5	0.073	0.2	30
300-1500			$f/1500$	30
1500-100,000			1	30

f = frequency in MHz

\* = Plane-wave equivalent power density

This document must not be copied or reproduced, except in full without the written permission of the Manager, EMC Technologies Pty Ltd

[www.emctech.com.au](http://www.emctech.com.au)



## 6 RF EXPOSURE EVALUATION

The MPE was evaluated at 20 cm to show compliance with the power density listed in table 1,

The following formula was used to calculate the power density at 20 cm

$$S = \frac{P * G}{4\pi R^2}$$

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

Where

(S): Power density ( $mW/cm^2$ )

(P): Output power at antenna terminal ( $mW$ )

(G): Gain (ratio)

(R): Minimum test separation distance (20 cm)

The calculated power density at 20 cm is  $0.8\mu W/cm^2$ , while the general public limit at 20 cm is  $0.9789\ mW/cm^2$ .

---

This document must not be copied or reproduced, except in full without the written permission of the Manager, EMC Technologies Pty Ltd

[www.emctech.com.au](http://www.emctech.com.au)

## 7 CONCLUSION

Unattended Payment Terminal model UT430 complies with the requirement of KDB 447498 D01 and with FCC Title 47, Part 2.1091 and Part 1.1310 in mobile exposure condition.

---

This document must not be copied or reproduced, except in full without the written permission of the Manager, EMC Technologies Pty Ltd

[www.emctech.com.au](http://www.emctech.com.au)



EMC-EMF Safety Approvals