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EMC-EMF Safety Approvals

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## **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

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**FCC RF Exposure Evaluation Report**  
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**Model: UT430**

**Report Number: M160643-1**

**Test Sample:** Unattended Payment Terminal  
**Model Number:** UT430  
**Serial Number:** 55000045  
**Manufacturer:** Quest Payment Systems Pty Ltd

**Tested for:** Quest Payment Systems Pty Ltd  
**Address:** 227 Burwood Rd,  
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**Phone:** +61 3 8807 4400  
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**Test Standard/s:** **FCC KDB 447498 D01 General RF Exposure Guidance v6**  
Mobile and Portable Devices RF Exposure Procedures and  
Equipment Authorization Policies.

**FCC Title 47, Part 2.1091, Part 1.1310**

**Result of Test:** Unattended Payment Terminal model UT430 complies with the  
requirement of KDB 447498 D01 and with FCC Title 47, Part  
2.1091, Part 1.1310

**Test Dates** 18 August 2016



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## 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

- 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 <sup>2</sup> )	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 <sup>2</sup> )	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

## 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  $0.9789 mW/cm^2$ .

## 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.