



**DATE: 22 April 2012**

**I.T.L. (PRODUCT TESTING) LTD.**  
**FCC Radio Test Report**  
for  
**Orpak Systems Ltd.**

**Equipment under test:**  
**Orpak Payment Terminal (OrPT)**

**OrPT Panel**

Written by:

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This report relates only to items tested.



# Measurement/Technical Report for Orpak Systems Ltd.

## Orpak Payment Terminal (OrPT)

## OrPT Panel

**FCC ID: W8F800922576**

IC: 8264A-800922576

Equipment type: Part 15 Low Power Communication Device Transmitter

47CFR15 Section 15.225

Part 15 Low Power Communication Device Transmitter

Measurement procedure used is ANSI C63.4-2003.

Application for Certification  
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Applicant for this device:  
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## 1. General Information

### 1.1 Administrative Information

Manufacturer: Orpak Systems Ltd.

Manufacturer's Address: 31 Lechi St.  
Bnei-Brak 51114  
Israel  
Tel: +972-3-577-6868  
Fax: +972-3-579-6310

Manufacturer's Representative: Gidi Segal

Equipment Under Test (E.U.T): Orpak Payment Terminal (OrPT)

Equipment Model No.: OrPT Panel

Equipment Part No.: Not designated

Date of Receipt of E.U.T: 01.04.12

Start of Test: 01.04.12

End of Test: 01.04.12

Test Laboratory Location: I.T.L (Product Testing) Ltd.  
Kfar Bin Nun,  
ISRAEL 99780

Test Specifications: FCC Part 15 Subpart C  
Section 15.225



## 1.2 *List of Accreditations*

The EMC laboratory of I.T.L. is accredited by the following bodies:

1. The American Association for Laboratory Accreditation (A2LA) (U.S.A.), Certificate No. 1152.01.
2. The Federal Communications Commission (FCC) (U.S.A.), Registration No. 90715.
3. The Israel Ministry of the Environment (Israel), Registration No. 1104/01.
4. The Voluntary Control Council for Interference by Information Technology Equipment (VCCI) (Japan), Registration Numbers: C-1350, R-1285.
5. Industry Canada (Canada), IC File No.: 46405-4025; Site No. IC 4025B-1.
6. TUV Product Services, England, ASLLAS No. 97201.

I.T.L. Product Testing Ltd. is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this test report have been determined in accordance with I.T.L.'s terms of accreditation unless stated otherwise in the report.



### 1.3 **Product Description**

The OrPT represents a new generation of terminals designed to address new applications at the forecourt. This versatile payment terminal provides several services besides its core function of payment and fueling authorization.

The OrPT is encased in a sealed housing designed to sustain the harsh environment of a gas station. Its modular design enables adding features as requested, and can be upgraded as new capabilities are developed.

To perform as a payment terminal, the OrPT is equipped with a graphic LCD and Keyboard on its front panel. A magnetic card reader and contactless MiFare card reader are also included. These payment means enable the OrPT to accept all common fueling authorization methods in home-base stations such as fueling cards, contact-less tags and others.

Beside the card / tag readers, the front panel includes functional keys and a display panel. The context sensitive keys and the messages on the panel enable the user interaction with the module, and navigation between applications.

The OrPT interfaces with the Station Controller on two types of communication:

RS-485

TCP/IP over Ethernet

The OrPT is designed for fast and easy installation. Its compact size enables easy and fast installation in the pedestal (OrIC 8, OrIT 8, etc.).

The OrPT Panel was tested in the OrTOP fuel control and data acquisition system.

OrTOP is a fuel control and data acquisition system. The system is self contained in a forecourt compatible and weather-resistant cabinet installed on top of Gasboy dispensers.

OrTOP is a core component in Gasboy's solution for small Home Base Gas Stations. OrTOP provides the central function of Site Controller adequate for a maximum of two nozzles in a single dispenser. It also fulfills other essential services on the island such as driver identification system, transaction data storage and more. Its ergonomic design, as well as its user-friendly operating program, enables fast and accurate service for the driver in the refueling site.

OrTOP is equipped with the OrPT, a Payment Terminal and communication receptacle. The Payment Terminal is equipped with an alphanumeric LCD (graphic LCD, optional) and a keyboard to interface with the client. This enables OrTOP to support all common refueling identification devices such as: magnetic cards, contact-less RFID tags (13.56MHz), keypad entry and others.



#### **1.4 *Test Methodology***

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4: 2003. Radiated testing was performed at an antenna to EUT distance of 3 meters.

#### **1.5 *Test Facility***

The radiated emissions tests were performed at I.T.L.'s testing facility at Kfar Bin-Nun, Israel. This site is a FCC listed test laboratory (FCC Registration No. 90715, date of listing September 3, 2009).

I.T.L.'s EMC Laboratory is also accredited by A2LA, certificate No. 1152.01.

#### **1.6 *Measurement Uncertainty***

##### **Conducted Emission**

Conducted Emission (CISPR 11, EN 55011, CISPR 22, EN 55022, ANSI C63.4)

0.15 – 30 MHz:

Expanded Uncertainty (95% Confidence, K=2):

± 3.44 dB

##### **Radiated Emission**

Radiated Emission (CISPR 11, EN 55011, CISPR 22, EN 55022, ANSI C63.4) for open site 30-1000MHz:

Expanded Uncertainty (95% Confidence, K=2):

± 4.96 dB.



## 2. System Test Configuration

### 2.1 ***Justification***

The OrPT panel was originally certified via Limited Modular Approval Route for use in the OrIC8 and OrIC hosts.

The current testing was performed in order to add the new host, OrTOP, to the list of hosts for use with the OrPT Panel

No HW changes were made to the 13.56MHz circuit or plastics.

The OrTOP serves for the same functionality as the OrIC8 and OrIC which were the hosts submitted for the original application.

### 2.2 ***EUT Exercise Software***

The E.U.T. is operated by the OrCU (Orpak Control Unit) located in the OrTOP.

The software applications SiteOmat Linux & Intenet Explorer were used to operate the E.U.T. and OrCU.

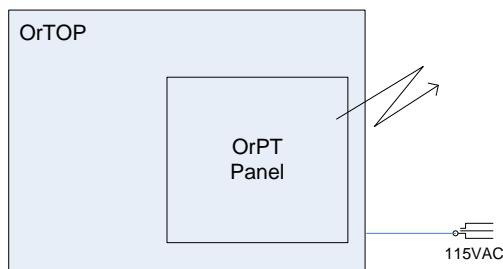
### 2.3 ***Special Accessories***

No special accessories were needed in order to achieve compliance.

### 2.4 ***Equipment Modifications***

No modifications were needed in order to achieve compliance

### 2.5 ***Configuration of Tested System***



**Figure 1. Configuration of Tested System**



### 3. Test Set-up Photos



Figure 2. Conducted Emission Test



Figure 3. Radiated Emission Test



## 4. Conducted Emission

### 4.1 Test Specification

F.C.C., Part 15, Subpart C

### 4.2 Test Procedure

The E.U.T operation mode and test set-up are as described in Section 3. In order to minimize background noise interference, the conducted emission testing was performed inside a shielded room, with the E.U.T placed on an 0.8 meter high wooden table, 0.4 meter from the room's vertical wall.

The E.U.T was powered from 115 V AC / 60 Hz via a 50 Ohm / 50  $\mu$ Hn Line Impedance Stabilization Network (LISN) on the phase and neutral lines. The LISN's were grounded to the shielded room ground plane (floor), and were kept at least 0.8 meters from the nearest boundary of the E.U.T

The center of the E.U.T AC cable was folded back and forth, in order to form a bundle less than 0.40 meters and a total cable length of 1 meter.

The emission voltages at the LISN's outputs were measured using a computerized receiver, complying with CISPR 16 requirements. The specification limits are loaded to the receiver via a 3.5" floppy disk and are displayed on the receiver's spectrum display.

A frequency scan between 0.15 and 30 MHz was performed at 9 kHz I.F. band width, and using peak detection.

The spectral components having the highest level on each line were measured using a quasi-peak and average detector.

### 4.3 Test Results

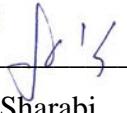
JUDGEMENT: Passed by 4.9 dB

The EUT met the F.C.C. Part 15, Subpart C specification requirements.

The margin between the emission levels and the specification limit is, in the worst case, 4.9 dB for the phase line at 25.00 MHz and 5.4 dB at 25.00 MHz for the neutral line.

The details of the highest emissions are given in *Figure 4* to *Figure 7*.

TEST PERSONNEL:

Tester Signature: For/  Date: 23.04.12

Typed/Printed Name: A. Sharabi



## Conducted Emission

E.U.T Description      Orpak Payment Terminal (OrPT)  
Type                      OrPT Panel  
Part Number:              Not designated

Specification: F.C.C., Part 15, Subpart C  
Lead:                      Phase  
Detectors:                Peak, Quasi-peak, Average

Signal Number	Frequency (MHz)	Peak (dBuV)	QP (dBuV)	QP Delta L 1 (dB)	Avg (dBuV)	Av Delta L 2 (dB)	Corr (dB)
1	0.160756	51.0	43.8	-21.7	6.0	-49.5	0.0
2	0.161239	51.0	43.8	-21.7	6.1	-49.4	0.0
3	0.996401	34.2	33.5	-22.5	33.3	-12.7	0.0
4	3.975426	39.9	38.3	-17.7	36.7	-9.3	0.0
5	24.999470	47.7	45.9	-14.1	45.1	-4.9	0.0
6	26.037169	43.5	40.4	-19.6	32.5	-17.5	0.0

**Figure 4. Detectors: Peak, Quasi-peak, AVERAGE .**

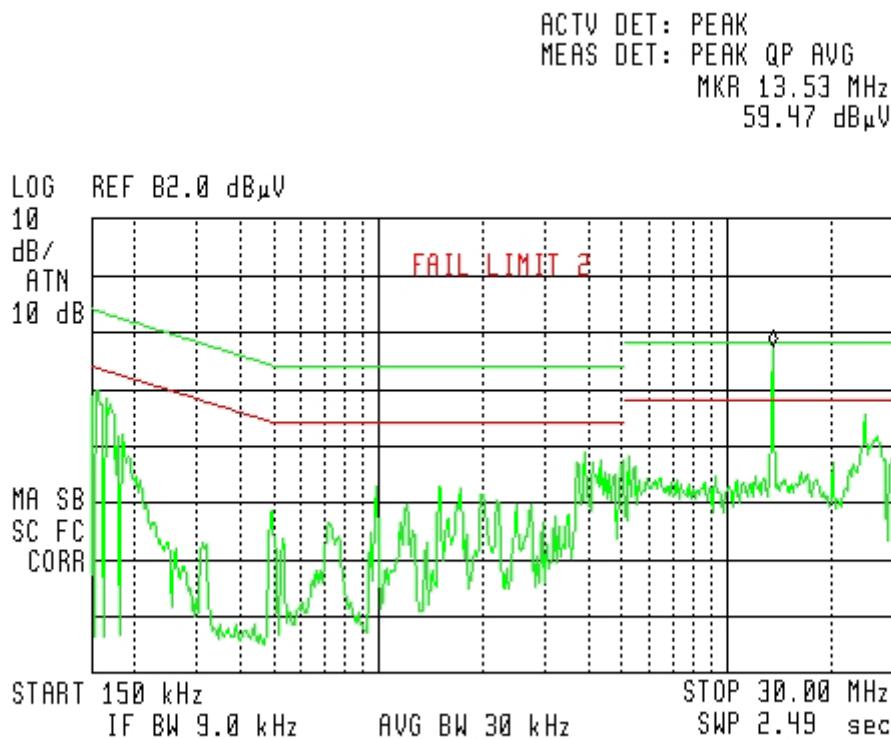
*Note: QP Delta/Av Delta refer to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.*



## Conducted Emission

E.U.T Description      Orpak Payment Terminal (OrPT)  
Type                      OrPT Panel  
Part Number:              Not designated

Specification: F.C.C., Part 15, Subpart C  
Lead:                      Phase  
Detectors:                Peak, Quasi-peak, Average



**Figure 5. Detectors: Peak, Quasi-peak, Average**

Note: Fail indication on the spectral plot results from peak detector level reading above the limit. This indication is for information only and it should not be interpreted as a test failure.



## Conducted Emission

E.U.T Description      Orpak Payment Terminal (OrPT)  
Type                      OrPT Panel  
Part Number:            Not designated

Specification: F.C.C., Part 15, Subpart C  
Lead:                    Neutral  
Detectors:              Peak, Quasi-peak, Average

Signal Number	Frequency (MHz)	Peak (dBuV)	QP (dBuV)	QP Delta L 1 (dB)	Avg (dBuV)	Av Delta L 2 (dB)	Corr (dB)
1	0.160972	51.4	44.2	-21.2	7.0	-48.5	0.0
2	0.497460	30.1	29.1	-26.9	27.6	-18.5	0.0
3	0.995095	34.2	33.4	-22.6	33.3	-12.7	0.0
4	1.493537	33.8	33.2	-22.8	33.1	-12.9	0.0
5	4.009592	40.0	38.0	-18.0	35.6	-10.4	0.0
6	24.999651	47.2	45.6	-14.4	44.6	-5.4	0.0

**Figure 6. Detectors: Peak, Quasi-peak, AVERAGE**

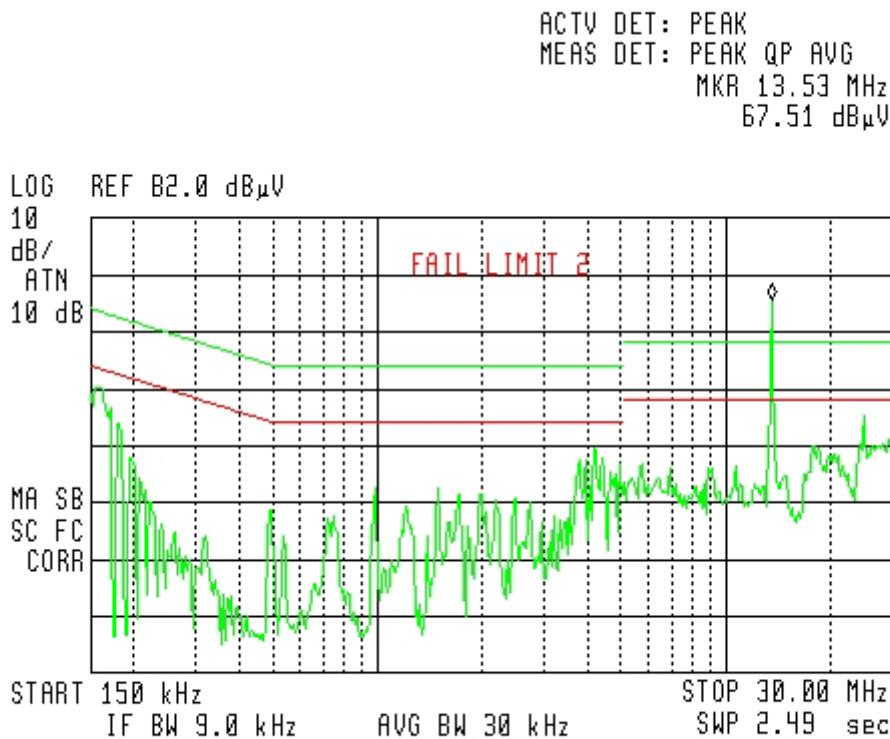
*Note: QP Delta/Av Delta refer to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.*



## Conducted Emission

E.U.T Description: Orpak Payment Terminal (OrPT)  
Type: OrPT Panel  
Part Number: Not designated

Specification: F.C.C., Part 15, Subpart C  
Lead: Neutral  
Detectors: Peak, Quasi-peak, Average



**Figure 7 Conducted Emission: NEUTRAL**  
**Detectors: Peak, Quasi-peak, Average**

Note: Fail indication on the spectral plot results from peak detector level reading above the limit. This indication is for information only and it should not be interpreted as a test failure.



#### **4.4 Test Instrumentation Used, Conducted Measurement**

<b>Instrument</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Serial No.</b>	<b>Last Calibration Date</b>	<b>Period</b>
LISN	Fischer	FCC-LISN-2A	127	March 3, 2012	1 Year
EMI Receiver	HP	85422E	3906A00276	December 12, 2011	1 Year
RF Filter Section	HP	85420E	3705A00248	December 12, 2011	1 Year
Printer	HP	LaserJet 2200	JPKGC19982	N/A	N/A



## 5. Field Strength of Fundamental

### 5.1 **Test Specification**

F.C.C., Part 15, Subpart C, Section 15.225(a) (b)

### 5.2 **Test Procedure**

The E.U.T. operation mode and test set-up are as described in Section 3.

The E.U.T. was placed on a non-conductive table, 0.8 meters above the O.A.T.S. ground plane.

The EMI receiver was set to the E.U.T. Fundamental Frequency (13.56 MHz) and Peak Detection.

The distance between the E.U.T. and test antenna was 3 meters.

The turntable and antenna were adjusted for maximum level reading on the EMI receiver. The loop antenna was rotated on its vertical axis. The antenna height (center of loop) was 1 meter.

The average result is:

Peak Level(dB $\mu$ V/m) + E.U.T. Duty Cycle Factor, in 100msec time window (dB)

### 5.3 **Test Results**

JUDGEMENT: Passed by 73.18 dB (Section 15.225(a))

Passed by 39.68 dB (Section 15.225(b))

Passed by 29.68 dB (Section 15.225(c))

Passed by 18.68 dB (Section 15.209)

The EUT met the FCC Part 15, Subpart C, Sections 15.225(a); (b); (c); Section 15.209; specifications requirements.

The details of the highest emissions are given in Figure 8.

TEST PERSONNEL:

Tester Signature: For/ A. Sharabi

Date: 23.04.12

Typed/Printed Name: A. Sharabi

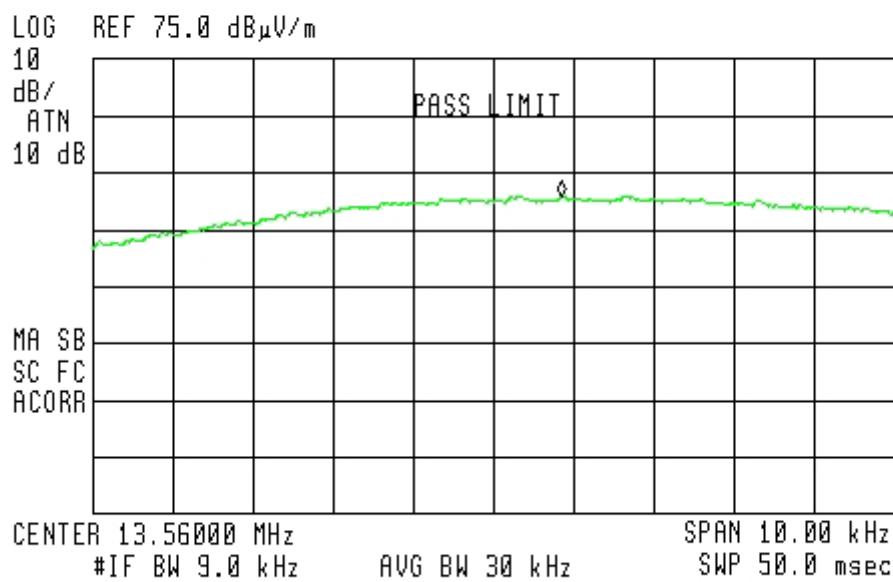


## Field Strength of Fundamental

E.U.T Description      Orpak Payment Terminal  
(OrPT)  
Model Number            OrPT Panel  
Part Number:            Not designated



ACTV DET: PEAK  
MEAS DET: PEAK QP AVG  
MKR 13.56085 MHz  
50.82 dB $\mu$ V/m



**Figure 8. Field Strength of Fundamental  
Detector: Peak**

Section 15.225 (a):  $L_{im30m} = 15848.00 \mu V/m = 84.0 dB\mu V/m$

Section 15.225(a):  $L_{im3m} = 40 + 84.0 dB\mu V/m = 124.0 dB\mu V/m$

Section 15.225 (b):  $L_{im30m} = 334.00 \mu V/m = 50.50 dB\mu V/m$

Section 15.225 (b):  $L_{im3m} = 40 + 50.50 dB\mu V/m = 90.50 dB\mu V/m$

Section 15.225 (c):  $L_{im30m} = 106.00 \mu V/m = 40.50 dB\mu V/m$

Section 15.225 (c)  $L_{im3m} = 40 + 40.50 dB\mu V/m = 80.50 dB\mu V/m$

Section 15.209:  $L_{im30m} = 30.00 \mu V/m = 29.50 dB\mu V/m$

Section 15.209:  $L_{im3m} = 40 + 29.50 dB\mu V/m = 69.50 dB\mu V/m$



#### **5.4 Test Instrumentation Used, Field Strength of Fundamental**

<b>Instrument</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Serial Number</b>	<b>Calibration</b>	<b>Period</b>
EMI Receiver	HP	85422E	3411A00102	December 12, 2011	1 year
EMI Receiver Filter Section	HP	85420E	3427A00103	December 12, 2011	1 year
Active Loop Antenna	EMCO	6502	9506-2950	October 19, 2011	1 year
Antenna Mast	ARA	AAM-4A	1001	N/A	N/A
Turntable	ARA	ART-1001/4	1001	N/A	N/A
Mast & Table Controller	ARA	ACU-2/5	1001	N/A	N/A

## 6. Spurious Radiated Emission, 9 kHz – 30 MHz

### 6.1 ***Test Specification***

9 kHz-30 MHz, FCC, Part 15, Subpart C, Section 209

### 6.2 ***Test Procedure***

The E.U.T. operation mode and test set-up are as described in Section 3.

A preliminary measurement to characterize the E.U.T was performed inside the shielded room at a distance of 3 meters, using peak detection mode and broadband antennas. The preliminary measurements produced a list of the highest emissions. The E.U.T was then transferred to the open site, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 0.8 meters above the ground. The configuration tested is shown in Figure 3.1.

The frequency range 9 kHz-30 MHz was scanned.

The emissions were measured using a computerized EMI receiver complying to CISPR 16 requirements. The specification limits and applicable correction factors are loaded to the receiver via a 3.5" floppy disk.

In the frequency range 9 kHz-30MHz, the loop antenna was rotated on its vertical axis. The antenna height (center of loop) was 1 meter at a distance of 3 meters.

The E.U.T. was operated at the frequency of 13.56 MHz. This frequency was measured using a peak detector.

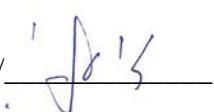
### 6.3 ***Test Results***

JUDGEMENT: Passed

The EUT met the requirements of the F.C.C. Part 15, Subpart C, Section 209 specification.

The signals were more than 20 dB below the specification limit.

TEST PERSONNEL:

Tester Signature: For/ 

Date: 23.04.12

Typed/Printed Name: A. Sharabi

## 6.4 Test Instrumentation Used, Radiated Measurements

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
EMI Receiver	HP	85422E	3906A00276	December 12, 2011	1 year
RF Section	HP	85420E	3705A00248	December 12, 2011	1 year
Active Loop Antenna	EMCO	6502	9506-2950	October 19, 2011	1 year
Antenna Mast	ARA	AAM-4A	1001	N/A	N/A
Turntable	ARA	ART-1001/4	1001	N/A	N/A
Mast & Table Controller	ARA	ACU-2/5	1001	N/A	N/A
Printer	HP	LaserJet 2200	JPKGC19982	N/A	N/A

## 6.5 Field Strength Calculation

The field strength is calculated directly by the EMI Receiver software, and a "Correction Factors" data disk, using the following equation:

$$FS = RA + AF + CF$$

FS: Field Strength [dB $\mu$ V/m]  
 RA: Receiver Amplitude [dB $\mu$ V]  
 AF: Receiving Antenna Correction Factor [dB/m]  
 CF: Cable Attenuation Factor [dB]

Example:  $FS = 30.7 \text{ dB}\mu\text{V (RA)} + 14.0 \text{ dB (AF)} + 0.9 \text{ dB (CF)} = 45.6 \text{ dB}\mu\text{V}$

No external pre-amplifiers are used.

## 7. Spurious Radiated Emission 30 – 1000 MHz

### 7.1 **Test Specification**

30 MHz-1000 MHz, F.C.C., Part 15, Subpart C

### 7.2 **Test Procedure**

The E.U.T. operation mode and test set-up are as described in Section 3. See Section 3.1 Justification of the System Test Configuration concerning the E.U.T. orientation for this test.

A preliminary measurement to characterize the E.U.T was performed inside the shielded room at a distance of 3 meters, using peak detection mode and broadband antennas. The preliminary measurements produced a list of the highest emissions. The E.U.T was then transferred to the open site, and placed on a remote-controlled turntable. The configuration tested is shown in *Figure 3*. The frequency range 30 MHz-1000 MHz was scanned, and the list of the highest emissions was verified and updated accordingly.

The levels of the emissions within the frequency ranges of the restricted bands (Section 15.205 of FCC Part 15) were compared to the limits of the table in Section 15.209 (a), General Requirements.

The emissions were measured using a computerized EMI receiver complying to CISPR 16 requirements. The specification limits and applicable correction factors are loaded to the receiver via a 3.5" floppy disk.

In the frequency range 30-1000 MHz, the readings were maximized by adjusting the antenna height between 1-4 meters, the turntable azimuth between 0-360°, and the antenna polarization.

Verification of the E.U.T emissions was based on the following methods:

Turning the E.U.T on and off.

Using a frequency span less than 10 MHz.

Observation of the signal level during turntable rotation. Background noise is not affected by the rotation of the E.U.T.

### 7.3 **Test Results**

JUDGEMENT: Passed

The EUT met the requirements of the F.C.C. Part 15, Subpart C, specification.

The signals were more than 20 dB below the specification limit.

The tables on the following pages are background noise only.

TEST PERSONNEL:

Tester Signature: For/ AS

Date: 23.04.12

Typed/Printed Name: 'A. Sharabi

# Spurious Radiated Emission 30-1000 MHz

E.U.T Description	Orpak Payment Terminal (OrPT)
Type	OrPT Panel
Part Number:	Not designated

Specification: FCC Part 15, Subpart B, Class B

Antenna Polarization: Horizontal

Frequency range: 30 MHz to 1000 MHz

Antenna: 3 meters distance

Detectors: Peak, Quasi-peak

Signal Number	Frequency (MHz)	Peak dBuV/m	QP dBuV/m	QP Delta L 1 (dB)	Avg dBuV/m	Av Delta L 2 (dB)	Corr (dB)
1	40.765900	17.7	12.4	-27.5	5.7		13.2
2	54.255400	19.3	13.8	-26.2	7.2		11.1
3	67.874300	20.9	15.4	-24.6	9.0		10.2
4	135.610900	33.9	31.8	-11.7	31.0		14.2

**Figure 9. Radiated Emission. Antenna Polarization: HORIZONTAL.  
Detectors: Peak, Quasi-peak**

*Note: QP Delta refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.*

## Spurious Radiated Emission 30-1000 MHz

E.U.T Description      Orpak Payment Terminal  
 (OrPT)  
 Type                      OrPT Panel  
 Part Number:              Not designated

Specification: FCC Part 15, Subpart B, Class B

Antenna Polarization: Vertical              Frequency range: 30 MHz to 1000 MHz  
 Antenna: 3 meters distance              Detectors: Peak, Quasi-peak

Signal Number	Frequency (MHz)	Peak dBuV/m	QP dBuV/m	QP Delta L 1 (dB)	Avg dBuV/m	Av Delta L 2 (dB)	Corr (dB)
1	40.765900	35.3	31.3	-8.7	26.4		13.2
2	54.255400	33.9	29.0	-11.0	23.0		11.1
3	67.874300	35.8	31.2	-8.8	25.0		10.2
4	135.610900	41.2	38.5	-5.1	36.3		14.2

**Figure 10. Radiated Emission. Antenna Polarization: VERTICAL.  
Detectors: Peak, Quasi-peak**

*Note: QP Delta refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.*

#### 7.4 Test Instrumentation Used, Radiated Measurements

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
EMI Receiver	HP	85422E	3906A00276	December 12, 2011	1 year
RF Section	HP	85420E	3705A00248	December 12, 2011	1 year
Antenna Bioconical	ARA	BCD 235/B	1041	November 12, 2011	1 year
Antenna Log Periodic	ARA	LPD-2010/A	1038	March 29, 2011	1 year
Antenna Mast	ARA	AAM-4A	1001	N/A	N/A
Turntable	ARA	ART-1001/4	1001	N/A	N/A
Mast & Table Controller	ARA	ACU-2/5	1001	N/A	N/A
Printer	HP	LaserJet 2200	JPKGC19982	N/A	N/A

#### 7.5 Field Strength Calculation

The field strength is calculated directly by the EMI Receiver software, and a "Correction Factors" data disk, using the following equation:

$$[\text{dB}\mu\text{V}/\text{m}] \text{ FS} = \text{RA} + \text{AF} + \text{CF}$$

FS: Field Strength [dB $\mu$ V/m]  
 RA: Receiver Amplitude [dB $\mu$ V]  
 AF: Receiving Antenna Correction Factor [dB/m]  
 CF: Cable Attenuation Factor [dB]

Example: FS = 30.7 dB $\mu$ V (RA) + 14.0 dB (AF) + 0.9 dB (CF) = 45.6 dB $\mu$ V

No external pre-amplifiers are used.

## 8. APPENDIX A - CORRECTION FACTORS

### 8.1 *Correction factors for CABLE from EMI receiver to test antenna at 3 meter range.*

FREQUENCY (MHz)	CORRECTION FACTOR (dB)	FREQUENCY (MHz)	CORRECTION FACTOR (dB)
10.0	0.3	1200.0	7.3
20.0	0.6	1400.0	7.8
30.0	0.8	1600.0	8.4
40.0	0.9	1800.0	9.1
50.0	1.1	2000.0	9.9
60.0	1.2	2300.0	11.2
70.0	1.3	2600.0	12.2
80.0	1.4	2900.0	13.0
90.0	1.6		
100.0	1.7		
150.0	2.0		
200.0	2.3		
250.0	2.7		
300.0	3.1		
350.0	3.4		
400.0	3.7		
450.0	4.0		
500.0	4.3		
600.0	4.7		
700.0	5.3		
800.0	5.9		
900.0	6.3		
1000.0	6.7		

#### NOTES:

1. The cable type is RG-214.
2. The overall length of the cable is 27 meters.
3. The above data is located in file 27MO3MO.CBL on the disk marked "Radiated Emission Tests EMI Receiver".

## 8.2 Correction factors for LOG PERIODIC ANTENNA

Type LPD 2010/A  
at 3 and 10 meter ranges.

### Distance of 3 meters

FREQUENCY (MHz)	AFE (dB/m)
200.0	9.1
250.0	10.2
300.0	12.5
400.0	15.4
500.0	16.1
600.0	19.2
700.0	19.4
800.0	19.9
900.0	21.2
1000.0	23.5

### Distance of 10 meters

FREQUENCY (MHz)	AFE (dB/m)
200.0	9.0
250.0	10.1
300.0	11.8
400.0	15.3
500.0	15.6
600.0	18.7
700.0	19.1
800.0	20.2
900.0	21.1
1000.0	23.2

#### NOTES:

1. Antenna serial number is 1038.
2. The above lists are located in file number 38M30.ANT for a 3 meter range, and file number 38M100.ANT for a 10 meter range.
3. The files mentioned above are located on the disk marked "Radiated Emission Test EMI Receiver".

### 8.3 Correction factors for

### BICONICAL ANTENNA

Type BCD-235/B,  
at 3 meter range

FREQUENCY (MHz)	AFE (dB/m)
20.0	19.4
30.0	14.8
40.0	11.9
50.0	10.2
60.0	9.1
70.0	8.5
80.0	8.9
90.0	9.6
100.0	10.3
110.0	11.0
120.0	11.5
130.0	11.7
140.0	12.1
150.0	12.6
160.0	12.8
170.0	13.0
180.0	13.5
190.0	14.0
200.0	14.8
210.0	15.3
220.0	15.8
230.0	16.2
240.0	16.6
250.0	17.6
260.0	18.2
270.0	18.4
280.0	18.7
290.0	19.2
300.0	19.9
310	20.7
320	21.9
330	23.4
340	25.1
350	27.0

*NOTES:*

1. Antenna serial number is 1041.
2. The above list is located in file 19BC10M1.ANT on the disk marked "Radiated Emissions Tests EMI Receiver".

**8.4 Correction factors for ACTIVE LOOP ANTENNA**

**Model 6502  
S/N 9506-2950**

FREQUENCY (MHz)	Magnetic Antenna Factor (dB)	Electric Antenna Factor (dB)
.009	-35.1	16.4
.010	-35.7	15.8
.020	-38.5	13.0
.050	-39.6	11.9
.075	-39.8	11.8
.100	-40.0	11.6
.150	-40.0	11.5
.250	-40.0	11.6
.500	-40.0	11.5
.750	-40.1	11.5
1.000	-39.9	11.7
2.000	-39.5	12.0
3.000	-39.4	12.1
4.000	-39.7	11.9
5.000	-39.7	11.8
10.000	40.2	11.3
15.000	-40.7	10.8
20.000	-40.5	11.0
25.000	-41.3	10.2
30.000	42.3	9.2