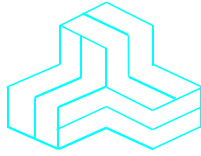


ENGINEERING TEST REPORT



Portable point of sales electronic payment terminal Model No.: i7770 & i7780

Tested For

Ingenico Canada Ltd.
79 Torbarrie Road
Mississauga, On
Canada M3L 1G5

In Accordance With

**SAR (Specific Absorption Rate) Requirements
using guidelines established in IEEE C95.1-1991,
FCC OET Bulletin 65 (Supplement C),
Industry Canada RSS-102(Issue 1) and
ACA Radiocommunications (Electromagnetic Radiation – Human Exposure)
Amendment Standard 2000 (No. 1)**

UltraTech's File No.: IVI-140-VERI-SAR

UltraTech

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File #: IVI-140-VERI-SAR
June 10, 2005

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EXHIBIT 1. INTRODUCTION

The test configuration which was found to be the worst case during the original test was repeated for i7770 and i7780 respectively as verification purpose per applicant’s request. Refer to the original test report (UltraTech File # IVI-140-a-SAR and IVI-140-b-SAR) for test details.

EXHIBIT 2. TEST SETUP

D.U.T. Information		Condition	
Product Name	Portable point of sales electronic payment terminal	Robot Type	6 Axis
Model Number	i7770	Scan Type	SAR – Area/Zoom/Att Vs Depth
Serial Number	2	Measured Field	E
Frequency Band [MHz]	2400 ~ 2483.5	Phantom Type	2 _{mm} base Flat Phantom
Frequency Tested [MHz]	2441	Phantom Position	Waist
Measured Power [W]	17.88 dBm i7770 18.45 dBm i7780	Room Temperature [°C]	21 ± 1
Antenna Type	Polyester flex integrated dipole antenna (0 dBi)	Room Humidity [%]	40 ± 10
Modulation	GFSK	Tissue Temperature [°C]	21 ± 1
Worst Case Duty Cycle	100 % (1 : 1)		
Duty Cycle Tested	100 % (1 : 1)		
Source(or usage)-Based Time-Average Factor	1.0**		

Type of Tissue	Brain	Muscle
Test Frequency [MHz]	2450	2450
Measured Dielectric Constant	37.6 (-4.0 %)	50.4 (-4.3 %)
Target Dielectric Constant	39.2	52.7
Measured Conductivity [S/m]	1.82 (1.4 %)	1.92 (-1.7 %)
Target Conductivity [S/m]	1.80	1.95
Penetration Depth (Plane Wave Excitation) [mm]	18.0	19.3
Probe Model Number	ET20	ET20
Probe Serial Number	03JUN-0028	03JUN-0028
Probe Orientation	Isotropic	Isotropic
Probe Offset [mm]	2.00	2.00
Probe Tip Diameter [mm]	4.00	4.00
Sensor Factor (η_{pd}) [mV/(mW/cm ²)]	10.8	10.8
Conversion Factor (γ)	4.539	4.068
Sensitivity (ζ) [W/Kg/mV]	1.400E-01	1.648E-01

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EXHIBIT 3. POWER MEASUREMENT

3.1. RF CONDUCTED POWER FOR I7770

Frequency [MHz]	Measured conducted power [dBm]
2402	17.88
2441	17.50
2480	17.11

3.2. RF CONDUCTED POWER FOR I7780

Frequency [MHz]	Measured conducted power [dBm]
2402	18.45
2441	18.15
2480	17.63

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EXHIBIT 4. SAR MEASUREMENT

4.1. BODY CONFIGURATION

4.1.1. Original test results

#	Configuration	Antenna Position	Frequency [MHz]	Channel	SAR _{local} Before [W/Kg]	SAR _{local} After [W/Kg]	MAX SAR _{1g} [W/Kg]
*	General Population/Uncontrolled Exposure Category Limit						1.6
01	Back side in parallel to the phantom and in contact Rechargeable Li-Ion battery Leather carrying case i7770	Integrated	2441	Middle	0.19	0.18	0.37
02	Back side in parallel to the phantom and in contact Rechargeable Li-Ion battery Leather carrying case i7780	Integrated	2441	Middle	0.73	0.72	1.01

4.1.2. Repeated test results

#	Configuration	Antenna Position	Frequency [MHz]	Channel	SAR _{local} Before [W/Kg]	SAR _{local} After [W/Kg]	MAX SAR _{1g} [W/Kg]
*	General Population/Uncontrolled Exposure Category Limit						1.6
01	Back side in parallel to the phantom and in contact Rechargeable Li-Ion battery Leather carrying case i7770	Integrated	2441	Middle	0.25	0.25	0.42
02	Back side in parallel to the phantom and in contact Rechargeable Li-Ion battery Leather carrying case i7780	Integrated	2441	Middle	0.68	0.67	1.08

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SPECIFIC ABSORPTION RATE (SAR)

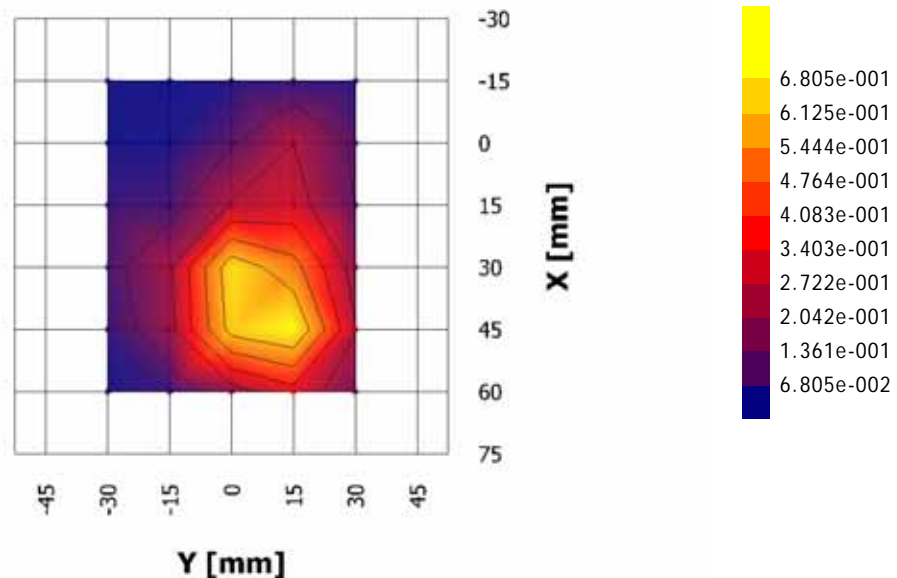
IEEE C95.1-1991, FCC OET Bulletin 65 (Supplement C), Industry Canada RSS-102(Issue 1) and ACA Radiocommunications (Electromagnetic Radiation – Human Exposure) Amendment Standard 2000 (No. 1)

Portable point of sales electronic payment terminal M/N: i7770 & i7780

FCC ID: O34-I7770HH & O34-I7780HH

4.1.2.1. Back side in parallel to the phantom and in contact, 2441 MHz, i7770; #01

Test date [MM/DD/YYYY]	06/08/2005
Test by	Carolyn Luu
Room temperature [°C]	21
Room humidity [%]	40
Simulated tissue temperature [°C]	21
Separation distance, d [mm]	0
Test frequency [MHz]	2441
E-field Probe	M/N: ET20, S/N:03JUN-0028, Sensor Offset: 2.0 mm
Sensor Factor (η_{Pd}) [mV/(mW/cm ²)]	10.8
Amplifier Settings (AS ₁ , AS ₂ , AS ₃)	0.0055211224, 0.0059622436, 0.0056122209
Tissue Type	Muscle
Measured conductivity [S/m]	1.92 (-1.7 %)
Measured dielectric constant	50.4 (-4.3 %)
Conversion Factor (γ)	4.068
Sensitivity (ζ) [W/Kg/mV]	1.648E-01
Measurement Area Specification (X × Y)	60 mm × 75 mm; Resolution: 15 mm × 15 mm
Measurement Volume Specification (X × Y × Z)	7 pts × 7 pts × 7 pts, 30 mm × 30 mm × 30 mm; Resolution: 5 mm × 5 mm × 5 mm
SAR _{1g} [W/Kg]	0.42

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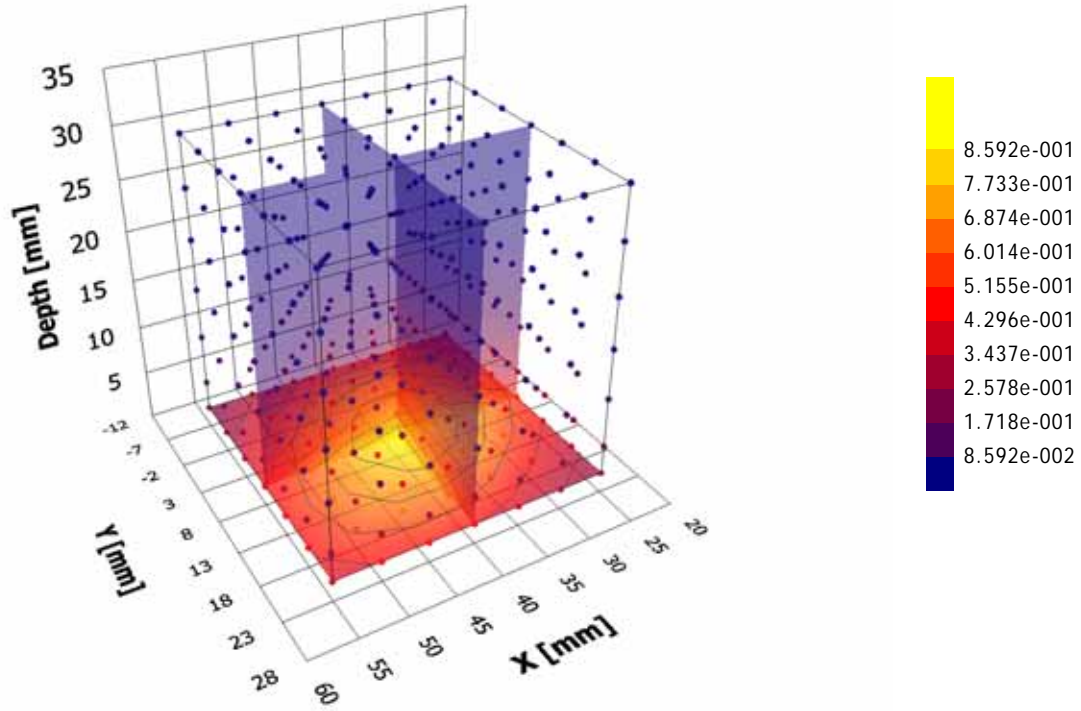
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Portable point of sales electronic payment terminal M/N: i7770 & i7780

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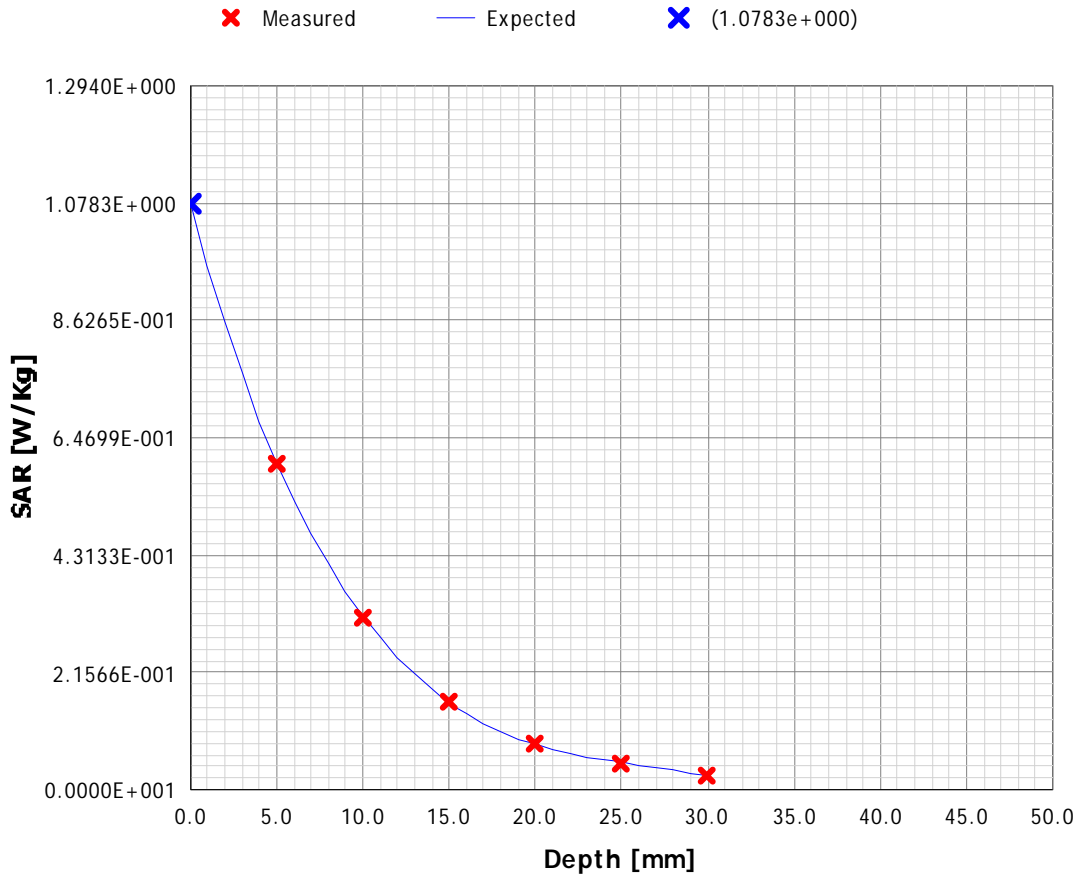
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Portable point of sales electronic payment terminal M/N: i7770 & i7780

FCC ID: O34-I7770HH & O34-I7780HH



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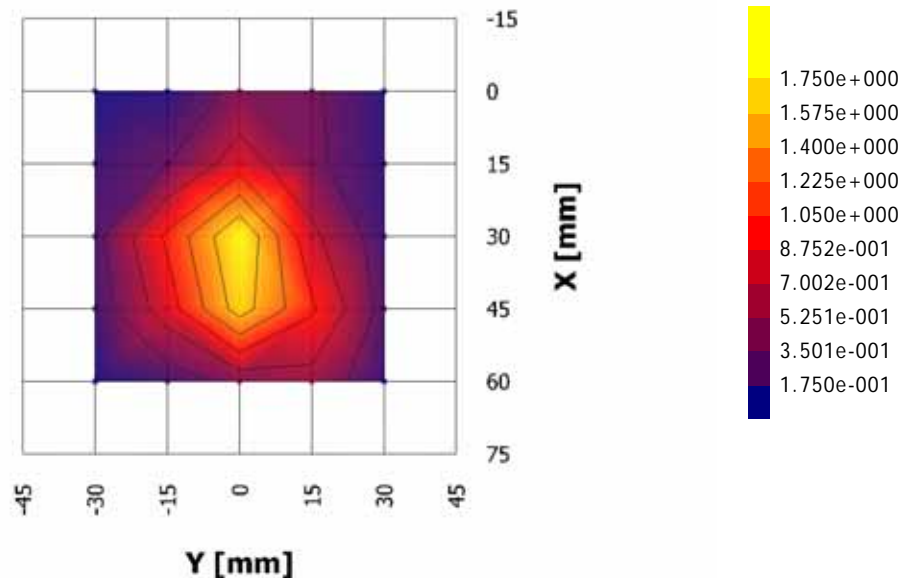
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Portable point of sales electronic payment terminal M/N: i7770 & i7780

FCC ID: O34-I7770HH & O34-I7780HH

4.1.2.2. Back side in parallel to the phantom and in contact, 2441 MHz, i7780; #02

Test date [MM/DD/YYYY]	06/08/2005
Test by	Carolyn Luu
Room temperature [°C]	21
Room humidity [%]	40
Simulated tissue temperature [°C]	21
Separation distance, d [mm]	0
Test frequency [MHz]	2441
E-field Probe	M/N: ET20, S/N:03JUN-0028, Sensor Offset: 2.0 mm
Sensor Factor (η_{Pd}) [mV/(mW/cm ²)]	10.8
Amplifier Settings (AS ₁ , AS ₂ , AS ₃)	0.0055211224, 0.0059622436, 0.0056122209
Tissue Type	Muscle
Measured conductivity [S/m]	1.92 (-1.7 %)
Measured dielectric constant	50.4 (-4.3 %)
Conversion Factor (γ)	4.068
Sensitivity (ζ) [W/Kg/mV]	1.648E-01
Measurement Area Specification (X × Y)	60 mm × 60 mm; Resolution: 15 mm × 15 mm
Measurement Volume Specification (X × Y × Z)	7 pts × 7 pts × 7 pts, 30 mm × 30 mm × 30 mm; Resolution: 5 mm × 5 mm × 5 mm
SAR _{1g} [W/Kg]	1.08

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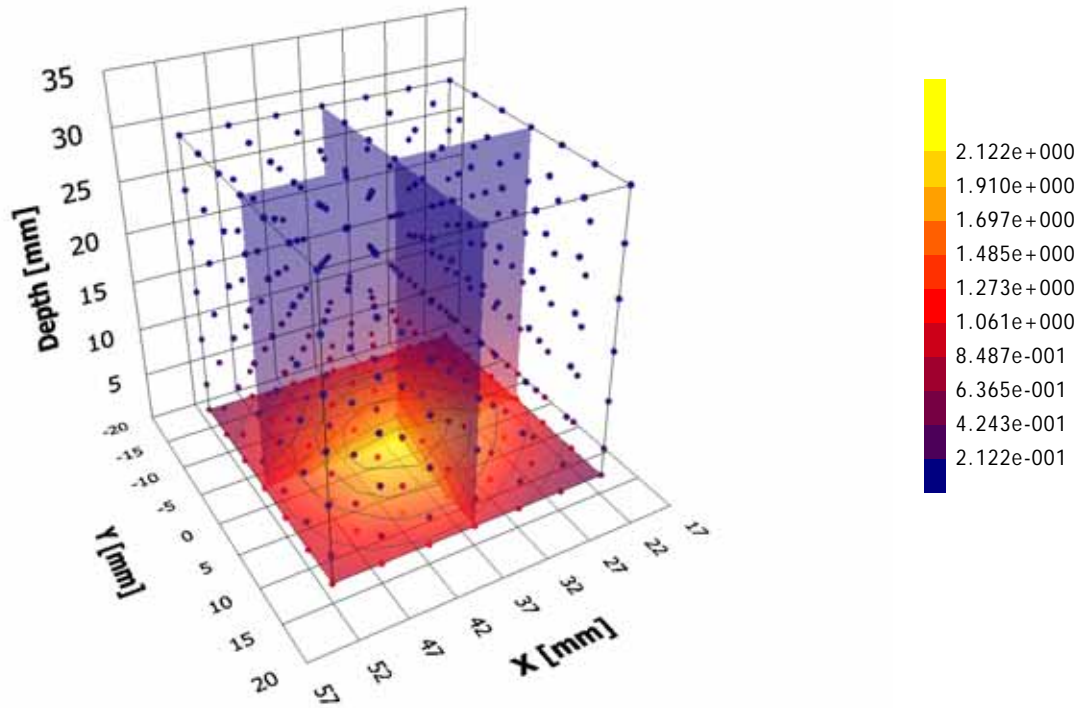
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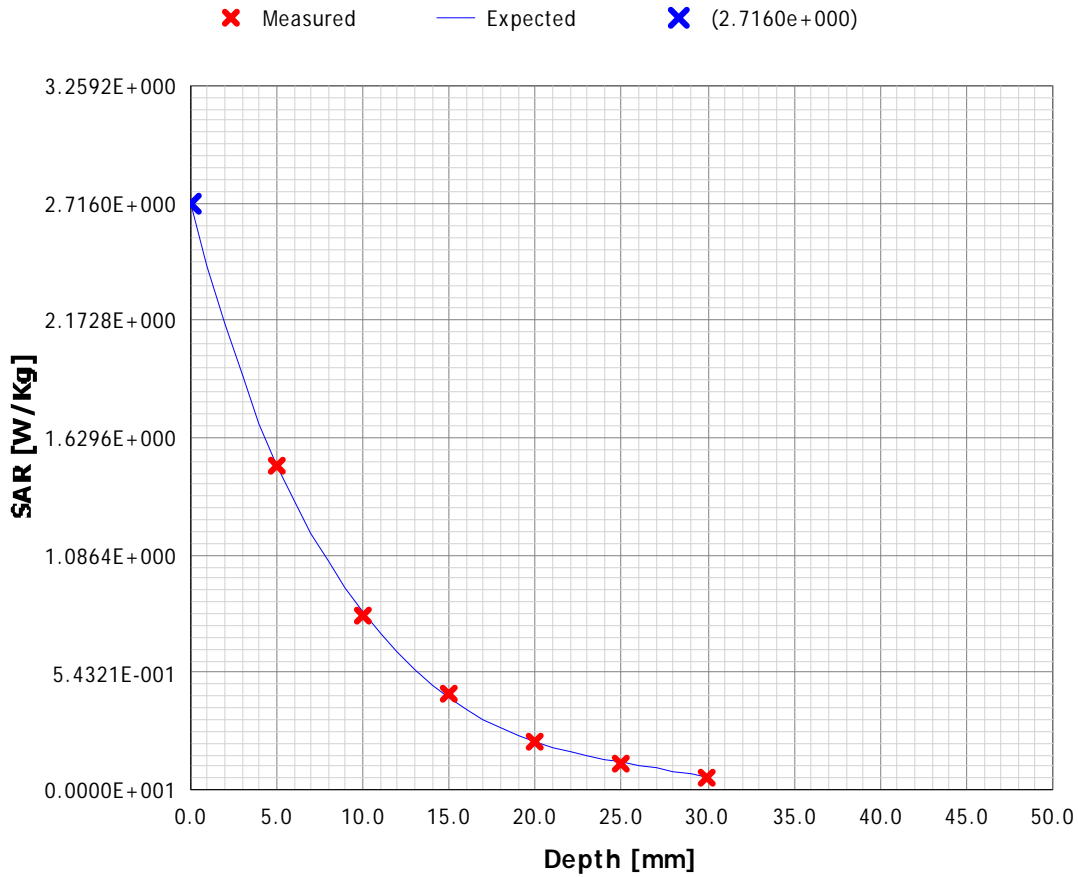
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