Exhibit 2

SmartICE/CDPD

Hypercom

FCC ID: NVA010164-005A

ERP Measurement Report

(With Test Set-up Photographs)

APREL Laboratories

Assessment of Compliance

for

Measurement of Effective Radiated Power (ERP) in accordance with the FCC Rules & Regulations Part 2.1046

SmartICE/CDPD
Point of Sale Device

Hypercom

January 2000

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Engineering Report

Subject: **Measurement of Effective Radiated Power (ERP) in accordance with the FCC Rules & Regulations Part 2.1046**

FCC ID: **NVA010164-005A**

Equipment: **Point of Sale Device**

Model: **SmartICE with a Novatel NRM-6832 transmitter, CDPD**

Client: **Hypercom Corporation**
2851 West Kathleen Road
Phoenix, Arizona 85053
U.S.A.

Project #: HYPB-SMARTICE CDPD-3365

Prepared By: **APREL Laboratories,**
Regulatory Compliance Division

Approved by: Jay Sarkar Date: Jan 31, 2000

Jay Sarkar
Director, Standards & Certification

Released by: Date: Jan 31/00

J. J. J. Wojcik

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FCC ID: NVA010164-005A
Applicant: Hypercom Corporation
Equipment: Point of Sale Device
Model: SmartICE with a Novatel NRM-6832 transmitter, CDPD
Standard: FCC Rules and Regulations Part 2.1046

ENGINEERING SUMMARY

This report contains the results of the effective radiated power (ERP) measurement performed on an Hypercom Point of Sale Device operating with a built-in Novatel NRM-6832 radio transmitter. The measurements were carried out in accordance with the FCC Rules and Regulations Part 2.1046. The product was evaluated for ERP when it was set at the maximum power level.

The CDPD version of the SmartICE was tested for ERP at high, middle, and low frequencies with the maximum ERP obtained at channel (No. 383) with the frequency being 836.49 MHz. The test data is presented in this report under the section: Test Results.

Summary of the Results

Test Description	Page No.	Test Set-up Figure No.	Results Summary
RF Power Output as Radiated Ref. Paragraph 2.1046	8	1	**Passed**

INTRODUCTION

General

This report describes the results of the effective radiated power (ERP) measurement conducted on an Hypercom Point of Sale Device model SmartICE operating with a built-in Novatel NRM-6832 radio transmitter.

Test Facility

The tests were performed for Hypercom Corporation by APREL Laboratories at APREL's EMI facility located in Nepean, Ontario, Canada. The laboratory operates an (3m and 10m) Open Area Test Site (OATS). The measurement facility is calibrated in accordance with ANSI C63.4-1992.

A description of the measurement facility in accordance with the radiated and AC line conducted test site criteria per ANSI C63.4-1992 is on file with the Federal Communications Commission and is in compliance with the requirements of Section 2.948 of the Commissions rules and regulations.

APREL's registration number is 31040/SIT (1300F2)

APREL is accredited by Standard Council of Canada, under PALCAN program (ISO Guide 25). APREL is also accredited by Industry Canada (formerly DOC) and recognised by the Federal Communications Commissions (FCC).

Standard

The evaluation and analysis were conducted in accordance with FCC Rules and Regulations Parts 2.1046 and the appropriate limits.

Test Equipment

The test equipment used during the evaluation is listed in Appendix A with calibration due dates.

Environmental Conditions

Measurements were conducted in open area test site.

- Temperature: 3 °C ± 2
- Relative Humidity: 30 - 50 %

- Air Pressure: 101 kPa ± 3

FCC SUBMISSION INFORMATION

FCC ID: **NVA010164-005A**

Equipment: Point of Sale Device

Model: SmartICE with a Novatel NRM-6832 transmitter

For: Certification

Applicant: Hypercom.
2851 West Kathleen Road
Phoenix
Arizona,85053
USA

Manufacturer: Hypercom.
2851 West Kathleen Road
Phoenix
Arizona,85053
USA

Evaluated by: APREL Laboratories
51 Spectrum Way
Nepean, Ontario
Canada K2R 1E6

MANUFACTURER'S DATA

FCC ID No:	NVA010164-005A
Equipment Type:	Point of Sale Device
Model:	SmartICE with a Novatel NRM-6832 transmitter, CDPD
Reference:	FCC Rules and Regulations Parts 2 and Part 22
Manufacturer:	Hypercom Corporation
Power Source:	7.4/8.4 VDC Battery
Development Stage of Unit:	Production

GENERAL SPECIFICATIONS

1. Frequency Range: 824 to 849 MHz (Transmitter)
2. Rated Transmitted Output Power: 0.6 W Class III
3. Frequency Tolerance: ± 2.5 ppm
4. Type of Modulation: GMSK, F1D
5. Emission Designators(See 47 CFR § 2.201 and §2.202): 28K8FXW
6. Antenna Impedance: 50 Ohms

CHANNELS TESTED

Channel	383	Frequency: 836.49 MHz
Channel	799	Frequency: 848.97 MHz
Channel	991	Frequency: 824.04 MHz

TEST RESULTS

FOR

Effective Radiated Power (ERP)
Of
Point of Sale Device
SmartICE with a Novatel NRM-6832
Radio transmitter

Hypercom Corporation

Test: **RF Power Output as Radiated (ERP)**

Ref.: **FCC Part 2 paragraph 2.1046**

Criteria: N/A

Set-up: See Figure No. 1.

Equipment: See Appendix A.

Procedure: RF Power Measurement by Radiated Method (ERP):

Test site: The radiated RF power measurement was taken at APREL Laboratory's open area test site (OATS). This open area test site is calibrated to ANSI C63.4 document and a description of the measurement facility is on file with the Federal Communications Commission and is in compliance with the requirement of Section 2.948 of the Commissions rules and regulations.(FCC File No.: 31040/SIT)

The test was set-up as illustrated in Fig.1. The Point of Sale Device was configured to operate at maximum power with carrier **unmodulated**. The equipment under test was placed on a turntable positioned 3 m away from the calibrated receiving antenna, which in turn was connected to the spectrum analyzer.

For each transmitter frequency, the received signal was **maximised** by rotating the turntable and adjusting the height of the receiving antenna. To obtain the actual ERP, the Point of Sale Device was replaced by a vertically polarised half-wave dipole antenna fed by an RF power amplifier and signal generator. The center of the dipole antenna was placed in the same location as the Point of Sale Device. The signal generator level was adjusted until the reading on the spectrum analyzer was identical to that obtained when the Point of Sale Device was on the turntable. The output of power amplifier was disconnected from the substitute dipole and connected to an RF power meter. **The effective radiated power was read directly form the power meter**.

The process was repeated for two more channels.

Results: See Table 1

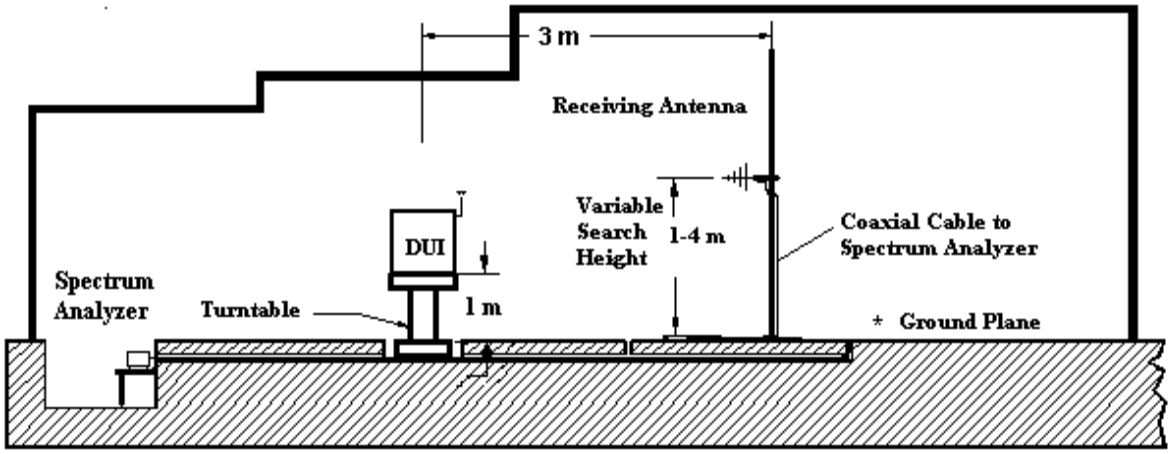


Figure 1.a Test set up for the Radiated Power (ERP) Measurement in OATS (not to scale)

Fig. 1.b APREL's OATS (Open Area Test Site)

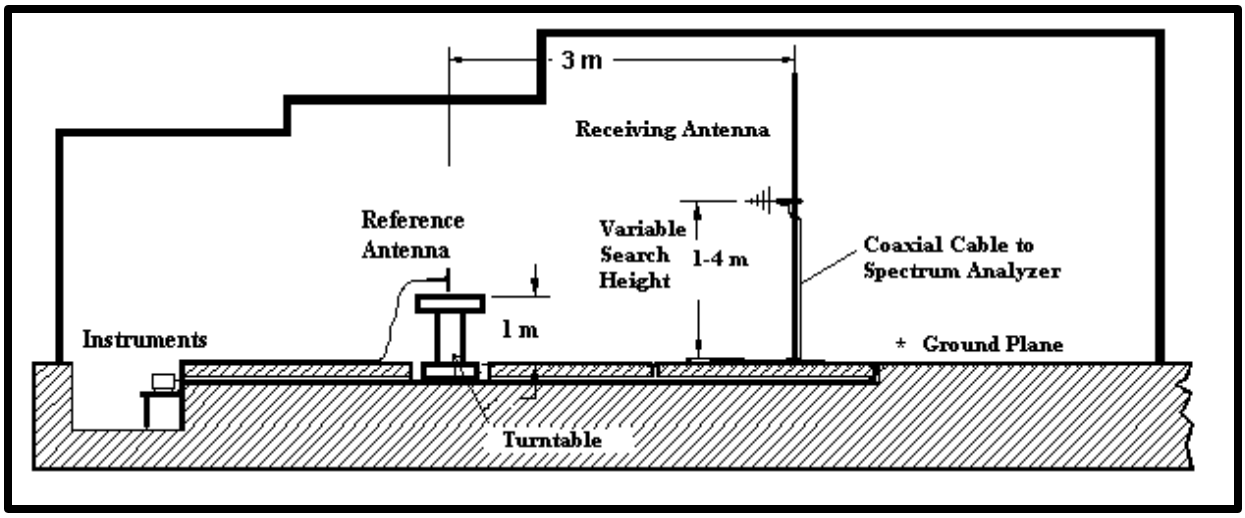


Figure 1.c Test set up for the Radiated Power (ERP) Measurement in OATS (not to scale)
The Handheld PC is replaced by Reference Dipole Antenna.

Table 1.
RF Output Power Measurement
ERP
Power Level : 0

Channel No.	Nominal Transmit Frequency	Manufacturer's Rated Output Power (Power Level: 0)	Measured Output Power ERP (Power Level: 0)	ERP (Power Level: 0)
	(MHz)	(W)	(dBm)	(W)
799	848.97	0.600	24.0	0.251
383	836.49	0.600	24.6	0.288
991	824.04	0.600	24.2	0.263

APPENDIX A

List of Test Equipment

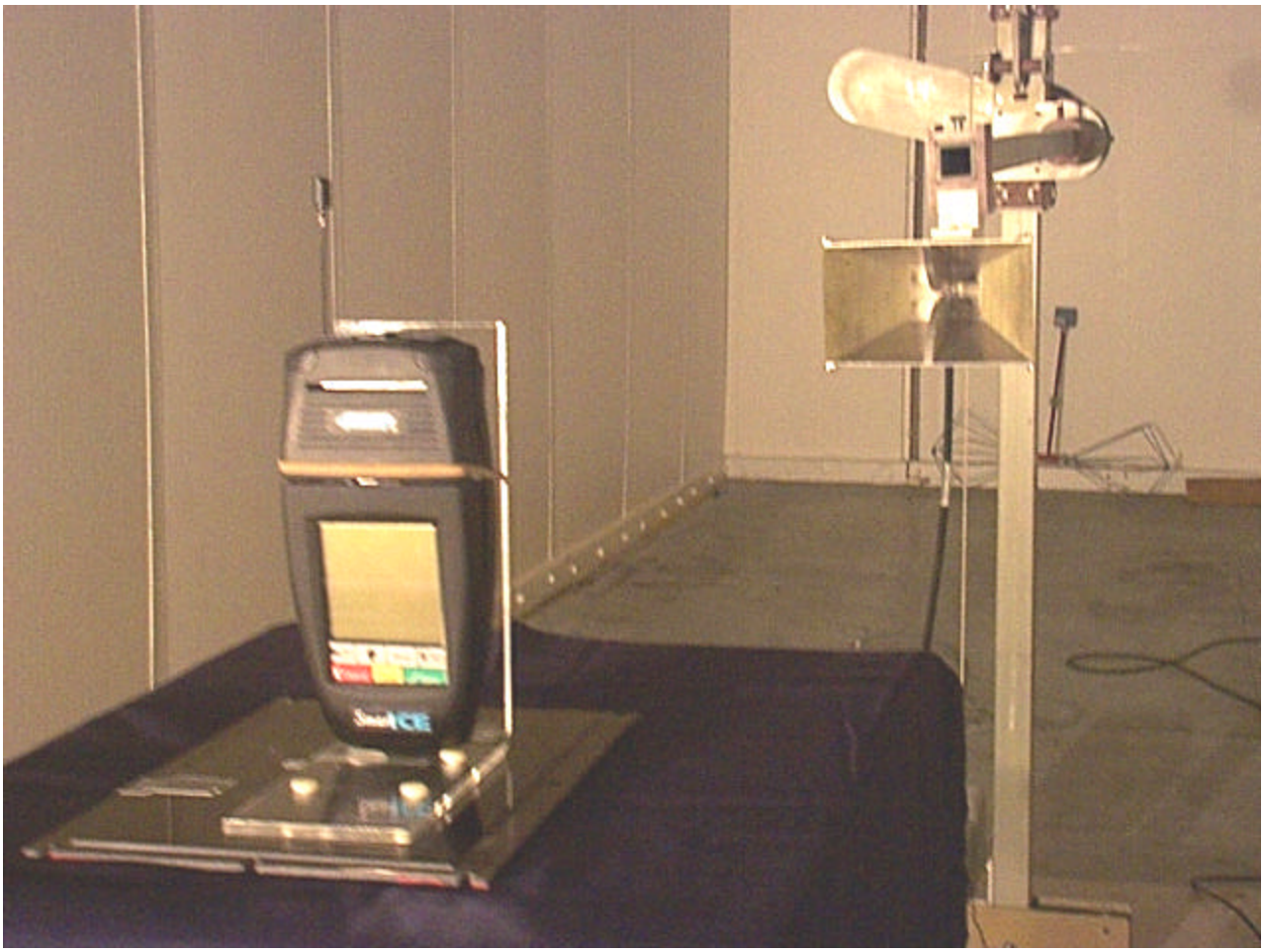
List of Equipment

Description	Manufacturer	Model #	Asset #	Cal . Due Data
Spectrum Analyzer	Anritsu	MS2661C	301330	Dec 10, 2000
20 dB Attenuator	Narda	4779-20	301370	May 18, 2000
Signal Generator	Hewlett-Packard	HP 8662A	100456	Nov 1, 2000
RF Power Amplifier	Amplifier Research	25W100M	100735	Sep 16, 2000
835MHz Dipole	APREL Inc.	D-8355	N/A	Jun 16, 2000
Double Ridged Guided Horn Antenna	APREL Inc.	A1	100400	July 21, 2000
Turntable with Controller	EMCO	1060-1.241	100506	CNR
Computer Controlled Antenna Position Mast	EMCO	1051-12	100507	CNR
OATS	APREL Inc.	3m & 10m	N/A	N/A

APPENDIX B

Photographs

Hypercom Smart Ice CDPD



ERP measurement in OATS

Reference Dipole Antenna Used for ERP Measurement