

## Exhibit 3

### SmartICE/CDPD

Point of Sale Device

**Hypercom**

**FCC ID: NVA010164-005A**

**Technical Descriptions and Tune-up Procedure**

**Ref: FCC Parts 2 paragraph 2.983(d)**

## **TECHNICAL DESCRIPTION OF THE EQUIPMENT**

**Ref.: FCC Part 2 paragraph 2.983(d)**

### **Hypercom**

Point of Sale Device SmartICE

with a

Novatel NRM-6832 Transmitter CDPD

#### **Tune-up Procedure at Nominal Operating Power:**

Limiting Power:

The unit integrates the Novatel CDPD module which complies with part 22 under FCCID NBZ NRM-6832 which will not allow us to exceed the max allowable limit.

#### **Circuitry and Devices for Determining and Stabilizing Frequency**

Frequency Stabilization:

The unit integrates the Novatel CDPD module which complies with part 22 under FCCID NBZ NRM-6832 which has demonstrated a stability of 2.5 ppm.

#### **Circuits for Suppression of Spurious Radiation, Limiting of Modulation, and Limiting of Power**

Suppression of Spurious Radiation:

Spurious and harmonic suppression is achieved by proper board layout, power distribution among ground planes and good filtering. We have demonstrated continuous compliance in our factory.

#### **Limiting Modulation:**

The unit integrates the Novatel CDPD module which complies with part 22 under FCCID NBZ NRM-6832 which will not allow us to alter modulation from the GMSK.

# SmartICE

**fast, powerful, mobile, compact, revenue-generating terminal platform**

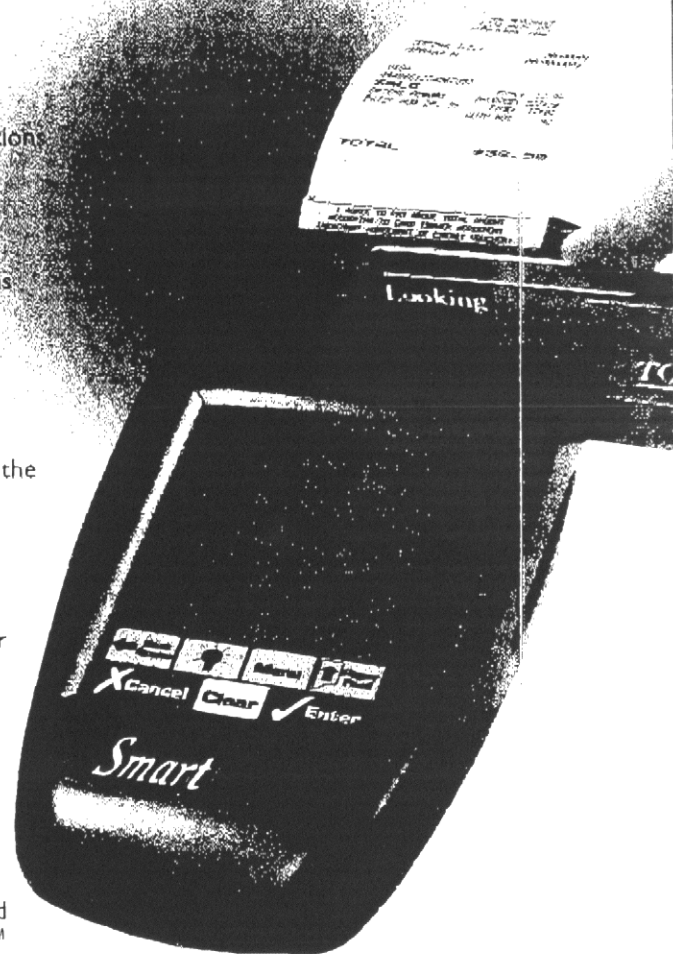
## SmartICE Features:

- ☐ Full function terminal has debit PINpad and signature capture pad
- ☐ Fast 9600 bps modem lowers costs and supports new data-rich applications
- ☐ Available with Mobitex, CDPD and GSM900 for wide-area portability, 900 MHZ local area
- ☐ Powerful lithium ion battery with built in charger for long life
- ☐ Easy-to-use interactive touch-screen delivers advertising and promotions
- ☐ Fast thermal printer with paper cutter

## The Most Advanced POS Solution in the Industry Generates Profits

SmartICE™ is a streamlined, lightweight, powerful point-of-sale terminal. As the most versatile and unique POS terminal in the industry, SmartICE gives merchants the exceptional flexibility and mobility they need.

The SmartICE point-of-sale terminal provides the ultimate intuitive user interface. The backlit, interactive touch-screen display uses a new, high-contrast, wide-viewing angle technology to achieve a sharp, crystal-clear image. The terminal is presented at the point-of-sale. The transaction is complete when the customer swipes a card, then signs the interactive screen or enters the PIN. The SmartICE terminal prints a customer receipt complete with the merchants logo and promotional messages. During idle times the terminal presents advertisements and customer promotions on the display screen. The process is convenient, professional and efficient. Customers like the security of keeping their card and controlling the transaction. The terminal processes debit, credit and smart cards, EBT, priority cards, fleet cards, check authorization, signature capture, loyalty card applications and all forms of cash payments. Using the Hypercom FastPOS™ technology communication costs are reduced and new data rich applications are supported.



SmartICE is the new platform for electronic receipt capture, advertising and customer loyalty programs. With Ascendent™ software, it supports new and profitable merchant business applications. Merchant receipts are captured at the point-of-sale, and stored and retrieved electronically, creating a completely paperless environment. On-screen graphics display the merchant logo and message to inform, cross-sell, motivate and build brand image. SmartICE supports frequency and loyalty programs that keep merchants in touch with their customers. These value-added services are absolutely indispensable to the merchant.

By combining the Hypercom Ascendent software, FastPOS and the innovative SmartICE terminals, these fee-based services generate a lucrative, recurring revenue stream for the acquirer processor and the Independent Sales Organization (ISO).

## Profitable New Merchant Applications with SmartICE and Ascendent

### Electronic Receipt Capture (ERC)

Electronic receipts save thousands of dollars a year in paper costs, help settle disputed transactions and eliminate or significantly reduce charge-backs.

### POS Advertising and Branding

Customized receipts and personalized advertising build the merchant brand, communicate promotions and encourage repeat business.

### Loyalty Management System

Loyalty Management builds a valuable database for reward programs and event marketing that generates increased sales revenue.



*The Global Leader in Electronic Transaction Solutions*

# Technical Description

## Hypercom Smart ICE

### Main Power Supply:

The main power supply for the Smart ICE consists of an LTC1143 controller IC along with bipolar drivers, FET switches and a Schottky commutation diode. The chip is able to control two (2) buck mode regulators at different output voltages. Both regulators are similar except for the voltage setpoint, only one circuit will be described. An on chip linear regulator supplies chip power with an input voltage of 6 - 16VDC. The regulator senses voltage at the output of the regulator, and current being fed to the load. The voltage is controlled by pulse width modulation of the drive pulses in a constant off time configuration so the frequency of operation varies around 150 kHz. The drive pulses are current boosted by the driver transistors and applied to the gate of a p-channel FET switch. The drain of the FET is tied to the commutating diode and the energy storage inductor. The output of the inductor is tied to a current sense resistor, then to the filter capacitor and out to the powered circuitry.

### Battery Charger:

The battery charger consists of a single chip charger IC (BQ2000) which runs as a current controlled buck mode regulator at a frequency of approximately 120 kHz. The width of the output pulses is controlled to give a constant charge current of 1/3 amp. Once the battery has reached approximately 90% charge the mode is changed to a burst mode holding a constant voltage and the battery is topped off to about 98-100% charge level. The charge can also be stopped by a timer built into the chip or by sensing the battery temperature via a thermistor built in to the battery pack.

### Magnetic Card Reader:

The F/2F Read/Decode IC will recover clock and data signals from an F/2F data stream generated from a magnetic head. The IC will function for data rates from 150 to more than 12,000 bits per second.

### Display and Display Driver:

The system display consists of a 160 x 160 pixel FSTN LCD module, driven by an Epson SED1335 graphic LCD controller IC. The SED1335 is driven by the 9.83 MHz system clock.

The LCD display is powered by an LT1303 DC/DC converter, which boosts the 5 volt system power up to 22 VDC. The DC/DC converter switches at approximately 150 kHz.

The LCD display has an EL backlight. The backlight is driven by a Durel D355A driver IC. It produces an AC voltage of approximately 75 Volts RMS at a frequency of approximately 220 Hz.

### Touchscreen Controller:

# Technical Description

The display's touchscreen is controlled by a Burr Brown ADS7843. The ADS7843 runs from a 1.2 MHz clock. The ADS7843 samples the touch screen at a rate of 1000 points per second (500 X-Y pairs per second).

## **System FPGA:**

The system FPGA is a Xilinx Spartan 10XL. It acts as glue logic for the system. It is connected to the 9.8 MHz system clock, which it divides down in to the 1.22 MHz touchscreen controller clock, and also produces the 1.2 kHz, 1.6 kHz, and 2.4kHz clocks to drive the piezo buzzer.

## **System ASIC:**

The system ASIC performs memory and I/O decoding functions for the Z80 microcontroller. It protects the SRAM from being written to during power up and power down, and contains a 16-bit timer for the Z80's operating system. It also contains registers that identify the amount of system memory and system clock frequency. It also performs serial to parallel conversion for one track of magnetic card data.

## **System Processor and Memory:**

The main system processor is a Zilog Z84C15. It is a member of the Z80 family, and runs with a system clock of 9.83 MHz. It can access up to 1.5 MB of static RAM memory plus 128 KB of FLASH memory.

## **RS232 / 485 Communications:**

The TTL level serial communication ports on the Z80 are converted to RS232 / RS485 levels with an LTC1387 Multiprotocol Transceiver I.C. with on board charge pump.

## **CDPD Radio:**

This radio consists of a Radio Module Wireless IP Modem, Expidite 6832, manufactured by Novatel. The module supports asynchronous data rates up to 38.4K and an airlink data rate of 19.2K using Reed Solomon error correction. The transmitter is a class III (0.6Watt) transmitter using Modulation of GMSK. The transmit frequency band is 824 - 849 Mhz and the receive band is 869 to 894 Mhz. The main power supply requires 3.6 Vdc and the RF power amp is also a nominal 3.6 Vdc. The current usage of the module is apx 10 uA in sleep mode and up to 175 mA for the main supply and up to 725 mA for the Power Amp in transmit mode. The Antenna connection is 50 Ohm impedance.

## **Printer:**

The system prints using a Panasonic EPLZ2050 thermal printer. The printer is controlled by a PIC16C74, which is driven by the 9.83 MHz system clock. The printer's paper feed and cutter motors are driven by both Rohm BA6845 and Sanyo LB1836 stepper motor driver ICs, which are also controlled by the PIC16C74.

# Technical Description

## **Antenna:**

The Antenna consists of a  $\frac{1}{4}$  Wavelength Retractable Helical over Whip Antenna. The SWR is less than 2.0 across the required bandwidth of 824 MHz to 896MHz. The Antenna maintains a gain of 0 dBi in the extended position. Polarization of the antenna is Vertical and maintains an omnidirectional radiation pattern.

## **Matching Board:**

The RF enters the matching board via a OSMT connector and is routed through an RF switch to either a matching network that connects to the retractable antenna or to the external antenna jack.

The matching network supports various passive configurations of series and shunt components to tune the antenna. After the matching network, the RF is routed to a copper finger contact that connects to the retractable Antenna.