TECHNOLOGY SOLUTIONS UK LTD

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1166 *BLUETOOTH*® RUGGED UHF RFID READER

PRELIMINARY SPECIFICATION

A Tough-Enough UHF RFID Reader

TSL's new 1166 *Bluetooth*® Rugged UHF RFID reader provides high performance UHF RFID reading in a tough and rugged form factor. The reader is highly resistant to water, dust and mechanical trauma. A high capacity battery enables non-stop operation of the reader over the full working day. Designed to read and write to EPC Class 1 Gen 2 (ISO18000-6C) tags, the 1166 can also be configured with class leading high performance 2D data scanning to bring unparalleled data collection capabilities to any host it is connected to.

Platform Independence

Use existing *Bluetooth*® wireless technology enabled[1] host devices including Enterprise Handhelds, Consumer Phones, Touchscreen MP3 players, Tablets and PC's – the 1166 will bring high performance RFID and 2D scanning to all these devices running a wide range of Operating Systems.

Extensive software support is available for a wide range of platforms including code samples, demonstration applications and source code.

Speedy integration - ASCII 2 Protocol

The new 1166 Rugged *Bluetooth*® UHF RFID reader incorporates TSL's unique ASCII protocol for faster and easier application development. This sophisticated parameterised ASCII protocol provides the developer a powerful set of commands that carry out multiple actions locally within the reader. This approach enables multiple tag operations executed using simple pre-configured ASCII commands which not only speeds integration of the reader into applications but also abstracts the developer from some of the complexities of the underlying Native API and ultimately results in un-paralleled levels of performance.

Customise Your Solution

The choice of host device is yours - from low cost touchscreen MP3 players through to fully featured Enterprise Handheld Terminals. Devices can be mounted on top of the reader using an elegant push-lock adapter, enabling a one-piece solution. EPC data can be stored on the on-board micro SD card (at least 25 million Transponder EPCs on a typical 2GB card). This allows logging of all transponder EPC readings and provides the ability to collect data even if USB or *Bluetooth*® communication channels are not available.

Bluetooth®

Features:

High Performance *Bluetooth*® Multi-modal Data Capture

UHF RFID and 2D barcode data capture in one integrated *Bluetooth*® device.

Hardware Platform Independence

Operates with wide variety of *Bluetooth*® wireless technology enabled host devices including touchscreen MP3 players, phones, tablets, Enterprise Handhelds and PC's.

OS Independence

Operates with iOS (pending), Windows Mobile, Windows Phone 8, WinCE, Windows 10/8/7/Vista/XP and Android™.

Batch Mode Operation

Real time clock for extended batch data collection independent of host connection. Store millions of tags and barcodes with date and time stamping

High Performance barcode scanning

A range of optional barcode engines can be specified to provide 2D data capture up to 15m

Physical and Environmental Characteristics

Dimensions:	177x94x170 mm (LxWxH)
Weight:	800g (inc. battery)
User input:	Single stage trigger
User feedback:	Speaker, vibration motor, LEDs
Power:	Rechargeable Lithium Ion removeable battery pack (11.25V, 2950mAh, 33.2Wh)
Enclosure materials:	Polycarbonate and TPU (Thermoplastic Polyurethane)

Performance Characteristics

RFID engine:	TSL custom module with embedded Impinj R2000
Communication protocols:	TSL ASCII 2 Protocol (Parameterised ASCII command set) Impinj binary
Memory:	Embedded 2GB internal NAND storage
Compatible Host devices (*Bluetooth*®):	Android, iOS (pending), Windows CE, Windows Phone 8, Windows Mobile 5/6.1/6.5 or Windows 10/8/7/Vista/XP. Host device must have *Bluetooth*® wireless technology functionality
Compatible Host devices (USB):	Any USB host with FTDI VCP driver support (Windows, Linux, Mac, Android)

Environmental

Operating Temp.:	-4°F to 140°F / -20°C to 60°C
Charging Temp.:	41°F to 104°F / 5°C to 40°C
Storage Temp.:	-40°F to 158°F / -40°C to 70°C
Humidity:	5% to 95% non-condensing
Drop Spec:	TBD
Tumble:	TBD
Environmental Sealing:	TBD
Electrostatic Discharge (ESD):	± 15kVdc air discharge; ± 8kVdc contact discharge
MIL-STD 810F:	TBD

RFID Performance

Standards supported:	EPC Class 1 Gen 2 and EPC C1G2 (TBD)
Nominal read range[2]:	Up to 6m
Field:	150-degree forward facing (approx.) measured from front of device
Antenna:	Circularly Polarized
Frequency Range:	EU: 865-868MHz; US: 902-928MHz
Output Power:	10mW to 1 W

Barcode Scanning

2D Imager options include:	Motorola SE4500, Intermec EX25, Honeywell EA31
Motorola Imager Specifications:	

Sensor Resolution:	752 x 480 pixels
Field of View:	Horizontal: 40°, Vertical: 25°
Focal Distance:	SR: 8 in. DL: 5.3 in. HD: 2.9 in.
Aiming LED (VLD):	655 ±10 nm Laser
Illumination:	625 ±5 nm LEDs (2x)
Min. Print Contrast:	Minimum 25%
Symbologies Supported:	1D: All major codes 2D: PDF417, MicroPDF417, Composite, RSS, TLC-39, Datamatrix, QR code, Micro QR code, Aztec, MaxiCode Postal Codes: US PostNet, US Planet, UK Postal, Australian Postal, Japan Postal Dutch Postal (KIX)
Ranges[3]:	

DL Focus	Near	Far
5 mil Code 39	36 mm	185 mm
100% UPC	41 mm	305 mm
5 mil PDF417	71 mm	114 mm

Bluetooth® wireless technology

Bluetooth®:	*Bluetooth*® Version 2.1 (optional v4.0 / 4.1 BLE)
Bluetooth® Profiles:	SPP and Apple iApp - or - *Bluetooth*® HID (configurable)
Bluetooth® Class:	Class 1
Bluetooth® Range4:	100m
Bluetooth® pairing:	PIN, Simple Secure Pairing, NFC OOB Pairing (TBA)

Peripherals and Accessories

External interface:	8-way sealed connector with gold plated contacts
Bundled accessories:	Battery
Other accessories available:	Docking Station with power and Mini USB cable. Adapter mounts for a variety of smartphones, handheld terminals and touchscreen devices

Regulatory

General:	Approved for use in the US and EU at launch. (Proposed: Canada, Europe, China, Singapore, Taiwan, Korea and Australia)
Electrical Safety:	(Proposed: UL60950-1, CSA C22.2 No. 60950-1, IEC 60950-1, EN 60950-1)
EMI/RFI:	(Proposed: USA: FCC Part 15, Canada: ICES 003 Class B, EU: EN 301 489-3, EN 301 489-1, EN 301 489-17, EN 302-208, EN55022 Class B, EN55024)
Laser Safety:	(Proposed: IEC Class2/FDA Class II in accordance with IEC60825-1/EN60825-1, 21CFR1040.10)

PART NUMBERS

Part Numbers

1166-EX1 (ETSI/Europe) 1166-AX1 (FCC/North America)	1166 *Bluetooth*® Rugged UHF Reader, no imager, includes battery
1166-ES1 (ETSI/Europe) 1166-AS1 (FCC/North America)	1166 *Bluetooth*® Rugged UHF Reader, 2D imager, includes battery
1166-CRD-01-KIT	1166 Docking Station, 65W PSU and Mini USB cable
IEC-1M-UK (UK Plug, 1m) IEC-1.8M-US (US Plug, 1.8m) IEC-1.8M-EU (EU Plug, 1.8m)	1x region-specific mains power cable

WARRANTY

Warranty

The TSL 1166 reader is warranted against defects in workmanship and materials for a period of one year (12 months) from date of shipment, provided the product remains unmodified and is operated under normal and proper conditions.

[1] Compatible *Bluetooth*® stack required in the Host device
[2] Tag Read/Write performance is dependent on tag type, items tagged, number of tags in the field and other radio and environmental factors
[3] Artificial lighting can affect scanning performance
[4] Open field

Terms

The *Bluetooth*® word mark and logos are registered trademarks owned by *Bluetooth* SIG, Inc. and any use of such marks by Technology Solutions UK Ltd is under license. Other trademarks and trade names are those of their respective owners.

ABOUT TSL

TSL designs and manufactures both standard and custom embedded, snap on and standalone peripherals for handheld computer terminals. Embedded technologies include:

- RFID - Low Frequency, High Frequency & UHF
- *Bluetooth*® wireless technology
- Contact Smartcard
- Fingerprint Biometrics
- 1D and 2D Barcode Scanning
- Magnetic Card Readers
- OCR-B and ePassport

Utilizing class leading Industrial design, TSL develops products from concept through to high volume manufacture for Blue Chip companies around the world. Using the above technologies TSL develops innovative products in a timely and cost effective manner for a broad range of handheld devices.

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