1   GENERAL INFORMATION

1.1   Product description

The Conveyor Antenna (Figure 1) has been optimized for use with the TAGSYS Medio L100 readers for garment tracking applications.

For Textile Rental and Laundry applications, the Conveyor Antenna is recommended for:

- • On-the-fly garment identification for automatic sorting

- • Automatic reading at loading points

An optional signal box is available that indicates a correct tag reading with a buzzer or a flashing light.

Optimal performance is achieved when the tags to be read are presented in parallel to the conveyor antenna and centered on the active area antenna according to the internal antenna configuration.
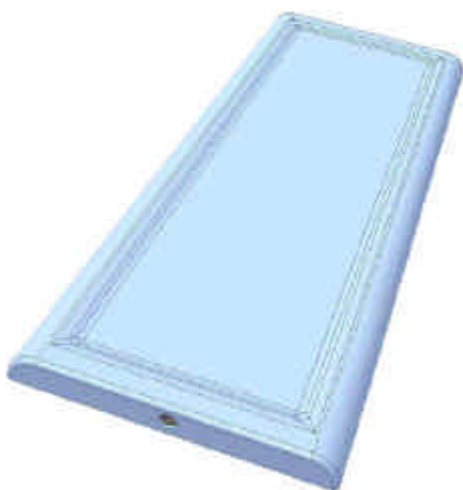
Figure 1: Conveyor Antenna

TAGSYS Conveyor Antenna is an RFID reading system made up of an industrial packaged RFID antenna set connected to a powerful RFID reader. It has been designed to be easily integrated onto all kinds of conveyor systems to offer optimal identification performance.

The Conveyor Antenna (RFID antennas with MEDIO L100) is a contactless smart label (flexible tag set input garments) reader connected to a Personal Computer or programmable logical controller. It is a serial interface reader for smart label (flexible tag which consists of a chip connected to an antenna).

Successful read of the chip can be confirmed by a buzzer and/or by an external Display Box.

Note - The equipment is professionally installed, and the operator can't access to the MEDIO L100.

The Conveyor Antenna uses the coupler's RF output to radiate the magnetic field and power up the smart label, the signal is modulated by the coupler (MEDIO L100) to communicate commands to the smart label. The antenna also receives modulation from the smart label acting as a field disturbing device. This signal is then delivered to the coupler. The Conveyor Antenna can communicate to the Personal Computer via the RS232 serial port. The antennas (see setup antenna for more details) are tuned in the factory at 13.56 MHz.

Antenna Casing description: L998Xw418xD38 mm (39.3x16.4x1.5x in)
Several configurations of antennas can be set (a couple of antennas 200x200 & 140x140 (TR-CA1 setup) or dual antennas 470x120 (TR-CA3 setup), see details measure to the TestReport file). The antennas are placed inside the antenna casing and cannot be changed by the user.

MEDIO L100 description :
The TAGSYS' MEDIO L100 smart label packaged coupler is intended for used with Conveyor Antenna. It has therefore specifically been designed to simplify system integration.
It incorporates hardware, software and other components that manage the Radio Frequency (RF) interface as well as external connections for power, data exchange and for various communication protocols.

The Laundry Conveyor Station is a product developed by the TAGSYS Company

For more information, see product's data sheet at section 1.6.

1.2 Related Submittal(s) / Grant(s)

All host equipment used in the test configuration are FCC granted, when relevant.

1.3 Tested System Details

The FCC IDs for all equipment, plus description of all cables used in the tested system are:

See test report files.

1.4 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4(1992+2000), CISPR22-1997/A1:2000 and EN55022:1998/A1:2000.

Radiated testing was performed at an antenna to EUT distance of 10 meters. During testing, all equipment's and cables were moved relative to each other in order to identify the worst case set-up.

1.5 Test facility

Tests have been performed on November 27th, 2002 and October 17th, 2002.

The test facility used to collect all the radiated and conducted data is the SMEE *Actions Mesures* facility, located ZI des Blanchisseries, 38500 VOIRON, France.

This test facility has been fully described in a report and accepted by FCC as compliant with the radiated and AC line conducted test site criteria in ANSI C63.4-1992 in a letter dated July 19, 2002 (registration number 94821).

This test facility has also been accredited by COFRAC (French accreditation authority for European Union test lab accreditation organization) according to NF EN ISO/IEC 17025, accreditation number 1-0844 as compliant with test site criteria and competence in 47 CFR Part 15/ANSI C63.4 and EN55022/CISPR22 norms for 89/336/EEC European EMC Directive application. All pertinent data for this test facility remains unchanged.

1.6   Data sheet of the Laundry Conveyor Station

1.6.1   Conveyor Antenna

<u>Mechanical Characteristics</u>

Description	Value
Housing	Plastic ABS UL 94-V0
Dimensions	998 x 418 x 34 mm. (39　x 16　x 1½ in.)
Weight	8 kg. (17.6 lb.)
Color	Pantone P536 Blue
Protection Class	IP 21
Operating Temperature	0 °C to 55 °C (32 °F to 131 °F)
Storage Temperature	-25 °C to +60 °C (-130 °F to 140 °F)

Figure 8: Conveyor Antenna Mechanical Diagram (Mounting Hole Dimensions)

Electrical Characteristics

Description	Value
Input Power	
Absolute Maximum Rating	8.0 W
Max. with TR-CA1 Configuration	1.5 W
Max. with TR-CA3 Configuration	2.0 W
Operating Frequency	13.56 MHz
Impedance	50±5 and 0°±5°
Antenna Connection	Standard 50-Ohm, BNC connection
Antenna Connection cables	Standard 50-Ohm, RG-58 cable (3 m. long)
Typical Performances (*)	Reading: 140 mm.

(*) Laboratory test results using a Medio L100 reader and an Ario 10TL tag in a standard upright configuration. Tag placed in the middle of any of two active areas of the dual 120 x 470 mm. configuration.

1.6.2   MEDIO L100

MEDIO L100 Key Features

- 13.56 MHz RF packaged coupler
- Multiple tag compatibility (TAGSYS and ISO15693 chips)
- Standard application softwares
- Software-configurable multiplex operating mode
- Two dedicated processing units, namely a microcontroller for the customer application and a Digital Signal Processor (DSP) unit for real-time signal processing
- Serial communication with an embedded end-user application
- Multi-purpose configurable industrial I/O Port
- Parallel port monitoring

Power Supply

The MEDIO L100 packaged coupler must be powered with 100V-240V AC 47/63Hz.

RF Channel 1

MEDIO L100 used with Laundry Conveyor Station
The MEDIO L100 in this packaged coupler can drive two antenna. The RF channel can drive up to 8 watts .
Channel LEDs indicate whether the RF field is transmitting (in which case the green light is on) or not (no light).

Warning: *Switching the RF field on over a channel without connecting an antenna beforehand can cause permanent damage to the packaged coupler.*

I/O Port Connector

The MEDIO L100 packaged coupler provides four Inputs/Outputs (I/O).
When configured as outputs, I/Os are open drain (250mA). A pull-up supply must be connected to the I/O port reference input (VIN).
The pull up supply range is 5V-28V.
When configured as input, the I/Os input range signal is 0V-28V.
I/O port LEDs indicate whether the I/O is configured for input (green light) or output (red light).
Please refer to I/O Port chapter for further information.

Note: Each input can independently trigger microcontroller interrupts. This can be used to trigger smart
label reading processes in accordance with the input signals applied to the I/O port. In this case,
a specific application software such as ModBus is required.
Note: Industrial I/O ports can only be accessed via the Data Processing Unit (DPU).

Serial Connector

The serial connector is used to communicate with the external environment. User commands and data
exchanges are transmitted through this port which can be set to RS-232, RS-485 or RS-422 mode by the software. Different Baud rates can be defined for each mode.
The Default Mode is defined by the application software which is downloaded in the MEDIO L100.
Tx (Transmit data) and Rx (Receive Data) LEDs display the activity of the serial port.
Note: The RS-232 cable is null modem cable.
Note: Please refer to Embedded Application chapter for further information about Application Software.

Monitoring Port (Parallel Port)

The monitoring port communicates directly with the Radio Processing Unit (RPU). When the parallel cable is plugged in, the Data
Processing Unit (DPU) is automatically deselected. The parallel port can be used as a monitoring tool or as a means to upgrade the
Medio L200/L100 firmware.
Note: The parallel cable is pin-to-pin DB25. A shielded cable must be used to prevent disruptions when high output power is used on antennas.

Note: Please refer to MEDIO L100 Architecture chapter for further information about RPU and DPU. Please refer to "MEDIO L100 Firmware Reference" for further information about MEDIO L100 Firmware.

Antennas

The L- L100 is primarily designed for use with Aero-LC antennas. Nonetheless, it is also operational with other TAGSYS antennas (ex RFID antennas), provided that the power applied to the antenna does not exceed antenna specifications.

Note: The performances of the packaged coupler have been characterized for a three-meter antenna
cable. Optimized operation is not guaranteed with a cable length other than three meters.