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VTM745

Dual-mode CEN/TC278 and ETSI 200 674-1 DSRC module

Features

- Compact size
- Field-proven
- Compliant to all relevant standards
- Easy integration into host system
- Mounted within host system housing
- Multiple power modes for minimum power consumption
- One-chip design
- Powerful SPI-based interface to host system
- Firmware and module configuration can be updated from host system
- Support for CEN DSRC (TC278) and optionally for ETSI 200 674-1 (´Italian EETS´)
- Host system can dynamically add DSRC application types
- Host system can access and update DSRC attributes
- Support for up to 12 DSRC application elements
- Loadable DSRC application definitions available for a wide range of DSRC applications types (AIDs), including EFC, CCC, LAC, AVI and RTM
- Support for EFC variants such as EN 15509, PISTA, A1, CARDME and various national standards
- Optional integrated MMI buzzer
- Flexible configuration

Applications

- Integration into GNSS-based 2004/52/EC compliant (EETS) OBUs
- Factory integration into new vehicles
- Custom housing OBUs

Description

Norbit DSRC Module VTM745 is a multi-application transponder (On-Board Unit) designed for Dedicated Short Range Communication (DSRC) compliant to both CEN/TC278 and ETSI 200 674-1 standards. It is designed to be integrated into Customer's equipment, enabling this to support European DSRC functionality.

A single chip provides analogue signal handling, CPU, encryption algorithms and secure storing of program, application parameters and security keys. This ensures maximum reliability, flexibility and security. The VTM745 contains non-volatile memory allowing power down without data or program loss.

Norbit DSRC Module VTM745 supports a variety of DSRC Electronic Fee Collection (EFC) application types. Non-EFC DSRC application types supported include CCC, LAC, AVI, AutoPASS Parking and more. DSRC application types can be dynamically loaded over the host interface.

The VTM745 can be delivered with pre-mounted antenna patch, or antenna patch may be integrated into Customer's housing.

The VTM745 can optionally be delivered pre-configured and pre-personalised.

VTM745

VTM745 technical features

Physical

Size	60 x 41 x 4.1 mm (excluding antenna patch)
Weight	Approx. 5 g

Electrical

Frequency	5.8 GHz
Conversion gain	> +7 dBi [1]
Sensitivity	< - 43 dBm [1]
Antenna beamwidth	> 70 degrees [1]
Input power	3.3V ±0.3V
Current	12 μA (sleep) [2]
	12 mA (active) [2]

Environmental

Operating temperature	-25 °C - +85 °C
Storage temperature	-40 °C - +90 °C

Performance

Encryption	DES and AES-128 in hardware
Transaction speed	Downlink frames give immediate response (EN13372 'late response' normally not required)

SPI protocol

Firmware update	Encrypted image
Configuration	Can updated by host system [3]
Attributes	Can be read/updated by host system
Transactions	Host system can be alerted of any transaction attempts

Marking

Serial number/PAN	Printed in text and bar code
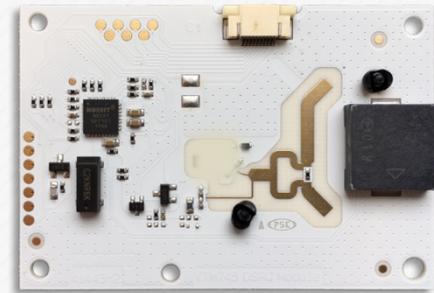
CEN DSRC Communication

Physical layer	EN 12253
Data link layer	EN 12795
Application layer	EN 12834
EFC application profile	EN/ISO 14906
DSRC Profile	EN 13372 (Profile 0/1, Set L1-B)
Interoperability	GSS 3.2, EN 15509

CEN DSRC compliance verification

Data link layer	ETSI TS 102 486-1
Application layer	ETSI TS 102 486-2
EN 14906 compliance	ISO/TS 14907
EN 15509 compliance	EN 15876

Conformance [4]

RED[5]	Ref. 2014/53/EU
EMR	ETSI EN 300 674-2-2
EMC	Ref. 2014/30/EU
	ETSI EN 301 489
RoHS	Ref. 2011/65/EU
WEEE	Ref. 2012/19/EU

Lifetime

Transaction capacity	ISO 14815 Class A2
MTBF	> 200.000 hours

[1] Typical, depending on Customer housing
[2] Maximum value over operating temperature range
[3] Except during DSRC transactions
[4] Customer's product may require separate conformance certification
[5] The VTM745 is RED assessed only. For use within EU, a RED certificate is required for the complete host system containing the VTM745

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