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ELATEC TWN4 MultiTech 2 M LF HF Desktop Reader and Universal Smart Cards Instruction Manual

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Contents

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INTRODUCTION

ABOUT THIS MANUAL

This integration manual explains how to integrate ELATEC RFID module TWN4 MultiTech 2 M LF HF into a host device and is mainly intended for integrators and host manufacturers. Before installing the product, the integrators should read and understand the content of this manual and other relevant installation documents.

The content of this manual is subject to changes without prior notice and printed versions might be obsolete. Integrators and host manufacturers are required to use the latest version of this manual.

For the sake of better understanding and readability, this manual might contain exemplary pictures, drawings and other illustrations. Depending on your product configuration, these pictures might differ from the actual design of your product.

The original version of this manual has been written in English. Wherever the manual is available in another language, it is considered as a translation of the original document for information purposes only. In case of discrepancy, the original version in English will prevail.

ELATEC SUPPORT

In case of any technical questions or product malfunction, refer to the ELATEC website (**www.elatec.com**) or contact ELATEC technical support at **support-rfid@elatec.com**

SAFETY INFORMATION

- Before unpacking and installing the product, this manual and all relevant installation instructions must be read carefully and understood.

- The product is an electronic device whose installation requires specific skills and expertise.
  The installation of the product should be done by trained and qualified personnel only.

- Before installing the product into a host device, the integrator should make sure that he/she has read and understood the ELATEC technical documentation related to the product, as well as the technical documentation related to the host device. In particular, the instructions and safety information given in the user manual of the TWN4 MultiTech 2 family should be read carefully and listed in the technical documentation of the host manufacturer as well, as soon as these instructions and safety information are required for a safe and proper use of the host device containing TWN4 MultiTech 2 M LF HF.

- ELATEC also recommends the integrators to follow general ESD protective measures during the installation of the product into a host device, e.g. the use of an antistatic wristband or special gloves.
- The product might show sharp edges or corners and requires a particular attention during the unpacking and installation.
  Unpack the product carefully and do not touch any sharp edges or corners, or any sensitive components on the product.
  If necessary, wear safety gloves.
- The integrator should not touch the antennas (if not shielded), printed circuit boards, connectors or other sensitive components on the product.
- Metallic materials on or in direct vicinity to the product might reduce the reading performance of the product. Refer to the installation instructions or contact ELATEC for more information.
- In case the product is equipped with a cable, do not twist or pull the cable excessively.
- In case the product is equipped with a cable, the cable may not be replaced or extended.
  ELATEC excludes any liability for damages or injuries resulting from the use of the product with a cable extension or a replaced cable.
- To comply with the applicable RF exposure requirements, the product should be installed and operated with a minimum distance of 20 cm to any user's/nearby person's body at all times. Refer to Chapter "RF exposure considerations" for further information about RF exposure compliance.
- The use of other RFID readers or modules in direct vicinity to the product, or in combination with the product might damage the product or alter its reading performance. In case the host device already contains other RFID devices, observe a minimum distance of 30 cm between all RFID devices to achieve the best performance for each device. In case of doubts, contact ELATEC for more information.
- Before installing the product into the host device, the power supply of the host device must be turned off.

If you are unsure about any part of the safety information above, contact ELATEC support.
Any failure to comply with the safety information given in this document is considered improper use. ELATEC excludes any liability in case of improper use or faulty product installation.

INTEGRATION INSTRUCTIONS

GENERAL
TWN4 MultiTech 2 M LF HF may be installed into any host device, as long as it is operated under the operational conditions stated in the product user manual and other technical documents (e.g. data sheet). The product is equipped with two integrated RFID antennas. Thus, no antenna installation is required.

LIST OF APPLICABLE RULES
Refer to the approval certificates, grants and declarations of conformity issued for TWN4 MultiTech 2 M LF HF, and to the following rules applicable to TWN4 MultiTech 2 M LF HF:

- 47 CFR 15.207
- 47 CFR 15.209
- 47 CFR 15.225
- RSS-Gen
- RSS-210

SPECIFIC OPERATIONAL USE CONDITIONS

There are no specific operational use conditions for TWN4 MultiTech 2 M LF HF other than the conditions mentioned in the product user manual and data sheet. The host manufacturer and integrator must ensure that these use conditions comply with the use conditions of the host device. In addition, these use conditions must be stated in the user manual of the host device.

LIMITED MODULE PROCEDURES
n/a

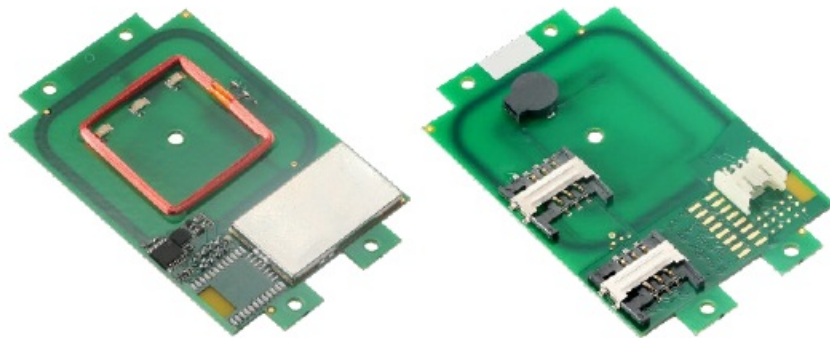## TRACE ANTENNA DESIGN
n/a

RF EXPOSURE CONSIDERATIONS
The antennas of TWN4 MultiTech 2 M LF HF must be installed to meet the applicable RF exposure compliance requirements and any additional testing and authorization process as required.
Refer to Chapter "Safety information" for detailed information about the radio frequency exposure conditions applicable to the product. These RF exposure conditions must be stated in the end-product manual(s) of the host device manufacturer.

ANTENNAS
TWN4 MultiTech 2 M LF HF is equipped with the following antennas:

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Integrated RFID LF antenna (125 kHz)

- Dimensions: 28.00 x 28.00 mm / 1.10 x 1.10 inch
- Number of turns: 151
- Integrated RFID HF antenna (13.56 MHz)

Dimensions: 42.00 x 44.00 mm / 1.65 x 1.73 inch

- Number of turns: 3
- For more information, refer to the related product data sheet or other relevant technical documents.

LABEL AND COMPLIANCE INFORMATION
Refer to Chapter "Compliance statements" in the user manual of the TWN4 MultiTech 2 family and to Chapter "Integrator and host requirements" in this integration manual for detailed label and compliance information.

TEST MODES AND ADDITIONAL TESTING REQUIREMENTS
No specific testing method has been defined by ELATEC for TWN4 MultiTech 2 M LF HF.
The product has been tested and found in compliance with the specifications noted on the approval certificates and other relevant approval documents. However, the integrator is still responsible for any additional testing and authorization process required for the end product.

It is recommended that the host device manufacturer installing the modular transmitter perform some investigative measurements to confirm that the resulting composite system does not exceed the spurious emissions limits or band edge limits (e.g., where a different antenna may be causing additional emissions). Detailed information regarding test procedure is described in the relevant rule parts (refer to Chapter "List of applicable rules").

ADDITIONAL TESTING, PART 15 SUBPART B DISCLAIMER
TWN4 MultiTech 2 M LF HF is only FCC authorized for the specific rule parts (i.e., FCC transmitter rules) listed on the grant, and the host device manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. In addition, the final host system still requires Part 15 Subpart B compliance testing with TWN4 MultiTech 2 M LF HF installed.

INSTALLATION
TWN4 MultiTech 2 M LF HF can be fixed into the host device with four screws M2.5. Observe the minimum separation distance recommended by ELATEC when the host device already contains other RFID devices (refer to Chapter "Safety information") and avoid the use of ferromagnetic screws, as these screws could reduce the reading performance of TWN4 MultiTech 2 M LF HF.

ELECTRICAL CONNECTION
TWN4 MultiTech 2 M LF HF can be connected to the host with a DF11 connector1.

Pin	Pin name	Function
1	UGND	USB Ground. Fed to main Ground through noise-reduction circuit.
2	USB_D+	USB Data +
3	UVCC	USB VCC (5V). When using RS-232, connect this to external 5V supply.
4	USB_D-	USB Data –
5	V24_RXD	RS-232 RXD (Input)
6	GND	Ground
7	V24_TXD	RS-232 TXD (Output)
8	Hostsense	Active-low, enables RS-232 transceiver. Short to Pin 6 (GND) when using RS-232.

PROGRAMMATION/SOFTWARE INTEGRATION
n/a

REQUIREMENTS

AUTHORIZATION REQUIREMENTS
TWN4 MultiTech 2 M LF HF has been certified as a module and does not need further approval, provided that the module is used in accordance with the FCC grant conditions and no limitations or usage conditions have been defined by ELATEC. However, the host manufacturer must ensure that the host device still complies with all applicable regulations after the module integration.
In particular, the host integrator installing TWN4 MultiTech 2 M LF HF into their device must ensure that the final composite product complies with the FCC requirements by a technical assessment or evaluation to the FCC rules, including the transmitter operation and should refer to guidance in KDB 996369.

LABELING REQUIREMENTS
 FCC AND ISED CANADA

- Using a permanently affixed label, TWN4 MultiTech 2 M LF HF must be labeled with its own FCC and IC identification numbers.
- FCC ID: WP5TWN4F3
- IC: 7948A-TWN4F3
- In case this label is not visible anymore after integration into the host device, it is necessary to bring a label on the host device (on a visible and accessible place) stating the FCC and IC identification numbers of the integrated TWN4 MultiTech 2 M LF HF:
- Contains FCC ID: WP5TWN4F3
- Contains IC: 7948A-TWN4F3
- In case several modules have been integrated into the host device, the label should state all FCC and IC identification numbers of the integrated modules.

Example:
"Contains FCC IDs: XXX-XXXXXXX, YYY-YYYYYYY, ZZZ-ZZZZZZZ"
"Contains transmitter modules IC: XXXXX-XXXXXX, YYYYY-YYYYYY, ZZZZZ-ZZZZZZ"

ARGENTINA
If the RAMATEL identification number is not visible when the module is installed inside another device, then the external part of the main device must also have a label that refers to the module it contains. This external label must contain the RAMATEL identification data of the approved product preceded by the legend "CONTIENE" (contains), for example:

CONTIENE RAMATEL H-28225

BRAZIL
The end device itself or its manual must contain the following information:
Incorpora produto homologado pela ANATEL sob número 09035-22-07558.

SOUTH KOREA
In case the module is not visible anymore after integration in the host device, the host device manufacturer shall bring a label on the host device (on a visible and accessible place) stating the KCC identification number of the module, e.g.:
Contains KCC ID: R-R-EPH-TWN4MT2MLFH

TAIWAN
The end device must show the NCC ID of the integrated module, e.g.:

Contains CCAH22Y10160T7or
Contains NCC ID: CCAH22Y10160T7

SPECIAL ACCESSORIES
Where special accessories, such as shielded cables and/or special connectors, are required to comply with the emission limits, the instruction manual shall include appropriate instructions on the first page of the text describing the installation of the device.

SIMULTANEOUS TRANSMISSION
When the host product supports simultaneous-transmission operations, the host manufacturer needs to check if there are additional RF exposure filing requirements due to the simultaneous transmissions. When additional application filing for RF exposure compliance demonstration is not required (e. g. the RF module in combination with all simultaneously operating transmitters complies with the RF exposure simultaneous transmission SAR test exclusion requirements), the host manufacturer may do his own evaluation without any filing, using reasonable

engineering judgment and testing for confirming compliance with out-of-band, restricted band, and spurious emission requirements in the simultaneous-transmission operating modes. If additional filing is required, please contact the person at ELATEC GmbH responsible for certification of the RF module.

APPENDIX

A – RELEVANT DOCUMENTATION

ELATEC documentation

- TWN4 MultiTech 2 family, user manual
- TWN4 MultiTech 2 M LF HF data sheet

External documentation

Document name	Document title/description	Source
n/a	Technical documentation related to the host device	Host device manufacturer
784748 D01 General labeling and Notification	General Guidelines for Labeling and Other Information Required to be Provided to Users	Federal Communications Commission Office of Engineering and Technology Laboratory Division
996369 D01 Module Equip Auth Guide	Transmitter Module Equipment Authorization Guide	Federal Communications Commission Office of Engineering and Technology Laboratory Division
996369 D02 Module Q and A	Frequently Asked Questions and Answers about Modules	Federal Communications Commission Office of Engineering and Technology Laboratory Division
996369 D03 OEM Manual	Guidance for Modular Transmitter Instruction Manuals and TCB Certification Application Reviews	Federal Communications Commission Office of Engineering and Technology Laboratory Division

996369 D04 Module Integration Guide	Modular Transmitter Integration Guide—Guidance for Host Product Manufacturers	Federal Communications Commission Office of Engineering and Technology Laboratory Division
RSS-Gen	General Requirements for Compliance of Radio Apparatus	Innovation, Science and Economic Development Canada
RSS-210	Licence-Exempt Radio Apparatus: Category I Equipment	Innovation, Science and Economic Development Canada
Title 47 of the Code of Federal Regulations (CFR)	FCC's rules and regulations	Federal Communications Commission

B – TERMS AND ABBREVIATIONS

TERM	EXPLANATION
ESD	electrostatic discharge
HF	high frequency
LF	low frequency
n/a	not applicable
RFID	radio frequency identification
SAR	specific absorption rate

C – REVISION HISTORY

VERSION	CHANGE DESCRIPTION	EDITION
09	Editorial changes, chapters "Introduction", "Safety information", "Integration instructions" and "Integrator and host requirements" updated, chapter "Compliance statements" deleted.	05/2024
08	Editorial changes, chapters "Introduction", "Safety Information", "Antennas" and "Compliance Statements" updated	07/2023
07	Chapter "Compliance Statements" updated	08/2022
06	Chapter "Compliance Statements" updated	06/2022
05	Chapter "Electrical Connection" updated	03/2022
04	Chapters "Compliance Statements" and "Integrator and Host Requirements" updated	03/2022
03	Chapters "About this Manual", "Safety Information" and "Compliance Statements" updated	01/2022
02	Chapters "Safety Information" and "Compliance Statements" updated	07/2021
01	First edition	05/2021

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Documents / Resources

ELATEC TWN4 MultiTech 2 M LF HF Desktop Reader and Universal Smart Cards [pdf] Instruction Manual

TWN4 MultiTech 2 M LF HF Desktop Reader and Universal Smart Cards, TWN4 MultiTech 2 M LF HF, Desktop Reader and Universal Smart Cards, Reader and Universal Smart Cards, Universal Smart Cards, Smart Cards, Cards

References

- **User Manual**