

Technical Manual



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1 Applicability Table

Table 1: Applicability Table

Products
CMT700A0 Ethernet SKU
CMT700A0 USB SKU – 12V DC EU-PLUG
CMT700A0 USB SKU – 12V DC NA- PLUG

2 Introduction

2.1 Scope

This document introduces the Telit CMT700A0 series routers and describes features and specifications of the product. All features and specifications detailed in this document are applicable to CMT700A0, where “CMT700” refers to the variants listed in the applicability table

If a specific feature is applicable to a specific product only, it will be clearly marked.

CMT700A0 is based on FN990A28 Telit module.

2.2 Audience

This document is intended for Teli-Cinterion customers about to install and startup their industrial environment using the Telit-Cinterion CMT700A0 routers.

2.3 Contact Information, Support

For technical support and general questions, e-mail:

- TS-SOLUTIONS@telit.com

Alternatively, use: <https://www.telit.com/contact-us/>

For Product information and technical documents, visit: <https://www.telit.com>

2.4 Conventions

Note: Provide advice and suggestions that may be useful when integrating the module.

Danger: This information MUST be followed, or catastrophic equipment failure or personal injury may occur.

Warning: Alerts the user on important steps about the module integration.

All dates are in ISO 8601 format, that is YYYY-MM-DD.

2.5 Terms and Conditions

Refer to <https://www.telit.com/hardware-terms-conditions/>.

2.6 Disclaimer

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3 General Product Description

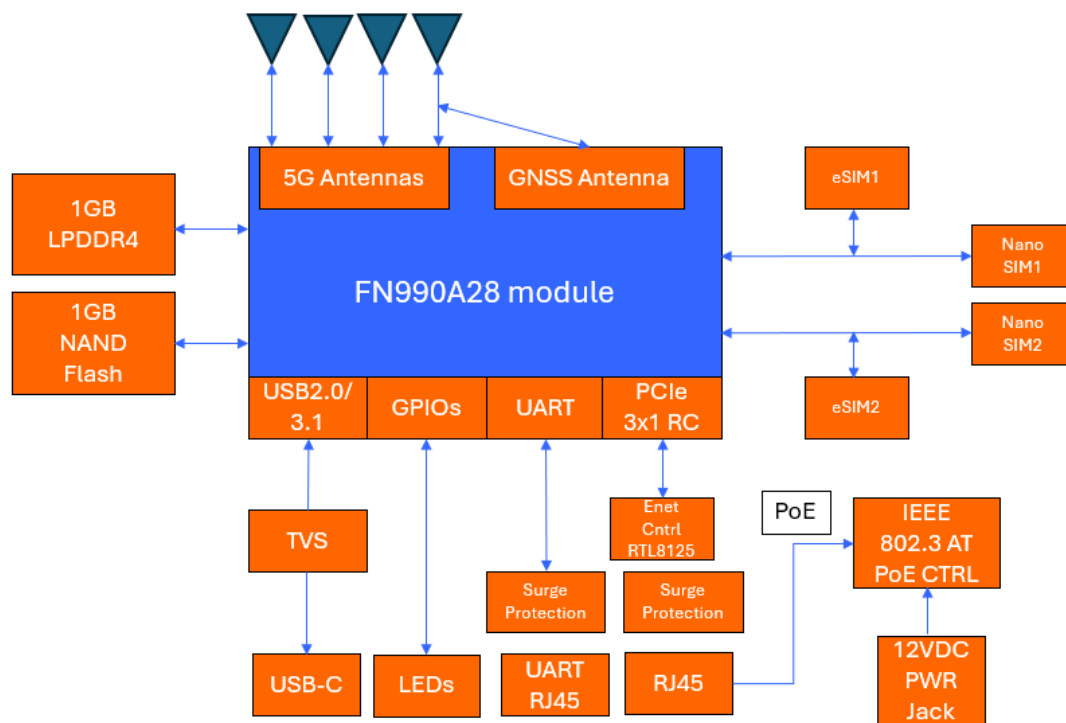
3.1 Overview

The aim of this document is to provide specifications and guides usefull for installing aa product with the Telit-Cinterion CMT700A0 routers.

CMT700A0 is the Telit-cinterion router based on FN990A28M.2 module such as M2M application and industrial IoT SL device platforms, based on the following technologies:

- 5G mmWve and sub-6/4G/3G networks for data communication
- Gigabit Ethernet and USB 3.1 gen2
- Designed for industrial grade quality

Figure 1 CMT700 Block Diagram



3.2 Main Features

Main functions and features are listed below:

•

Table 2: Product Variants and their Frequency Bands

Function	Features
RF	• 3G/4G • 5G mmW which supports TDD only and 64 QAM for UL/DL • 5G sub-6 GHz which supports 256 QAM for UL/DL
SIM	• Dual Nano-Sim card holder
Application processor (Embedded M.2 Module)	• 32 bit ARM Cortex-A7 up to 1.5 GHz running the Linux operating system • 4Gbit NAND Flash + 4Gbit LPDDR4 MCP is supported
Ethernet	• 100/1000/2.5G Base-T • 1x RJ-45 port (with Power Over Ethernet)
Power	• 802.3at POE+ • 12v dc-Jack Power Adapter
USB	• USB 3.1 Gen2 10Gbps • 1x Type C port
RESET	• Remote Reset Capability
LED	• RJ45 integrated Link & Activity LED. Link Speed may be displayed using bi-color LED. • System Power LED • SW driven System Status LED • SW driven Cloud LED
Mechanical Dimensions	• 180mm X 140mm X 36mm • Weight TBD*
Operating Temperature	• -30°C to + 40°C

For details information about frequencies and bands, refer to the [Error! Reference source not found.](#)

Note: Cellular technologies and frequency bands that are enabled may vary based on the firmware version and firmware configuration used.

3.3 Product Description

Figure 2 CMT700A0 Back Panel

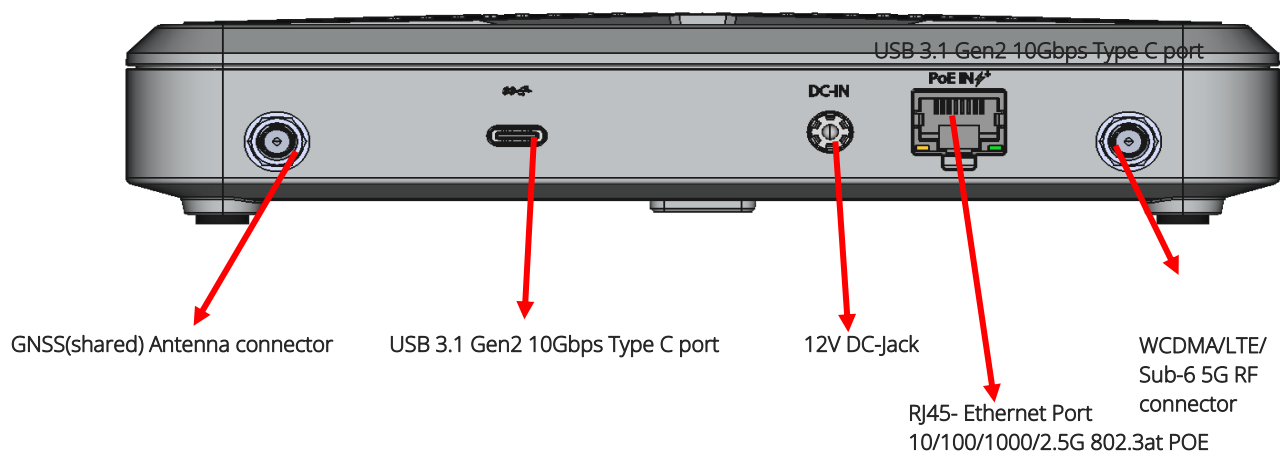


Figure 3 CMT700A0 Front Panel

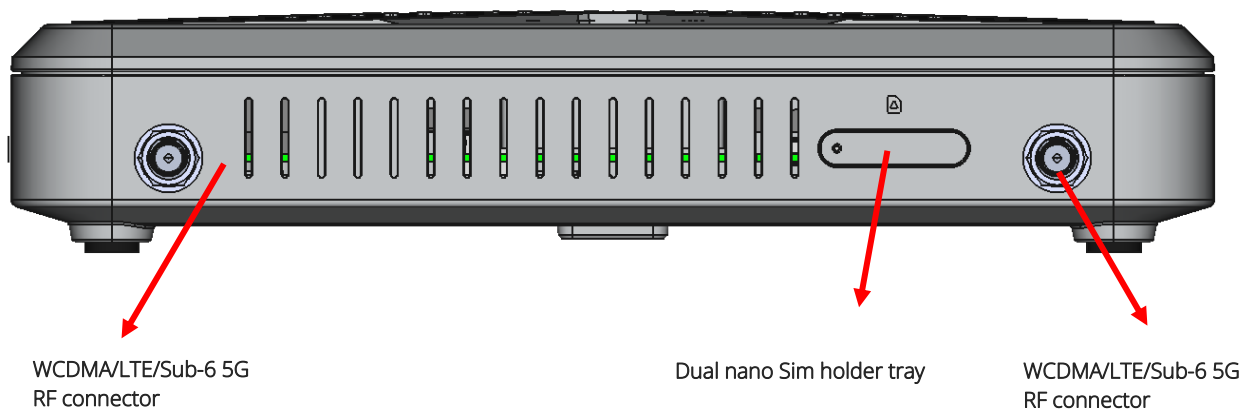
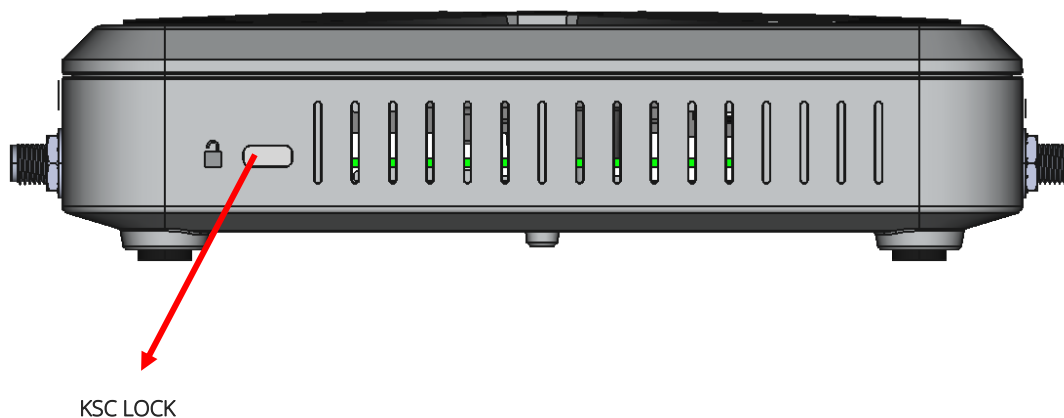


Figure 4 CMT700A0 LEFT SIDE



CMT700A0 comes with three different SKU in terms of accessories and packaging
USB SKU US and EU PLUGS; and Ethernet SKU

The USB SKU contains the following accessories:

- 4 5G/LTE Antennas
- 1mt USB cable
- 12V DC power supply or PoE injector
- Quickstart guide.
- Ceiling mount bracket

The Ethernet SKU contains:

- 4 5G/LTE antennas.
- Quickstart guide.
- Ceiling mount bracket

3.4 Electrical Specifications

3.4.1 Power Supply Requirements

- The CMT700A0 can be powered by using a 12V 1. A DC adapter or a PoE injector.
- CMT700A0 supports POE (Power Over Ethernet) feature:
 - 802.3 at POE + 30W

To supply the CMT700A0 with POW, the PSE (Power Switching Equipment) should be connected via RJ-45.

3.4.2 Power Consumption

The table in the benheat provides the tipycal current consumption of CMT700A0 for various operation modes.

Table 3: Pin-out Information

Mode	Average [Typ.]	Mode Description
IDLE mode		
CFUN=1	35mA	No call connection USB is connected to a host
Airplane Mode (PSMWDISACFG=1, W_DISABLE_N: Low)		
CFUN=4	< 3mA	Tx and Rx are disabled; the module is not registered on the network (Airplane mode) USB is disconnected
Operative Mode (WCDMA)		
WCDMA Voice	850mA	WCDMA B1 voice call (Tx=23dBm)
WCDMA HSPA	650mA	WCDAM data call (DC-HSDPA up to 42Mbps, Max through-put)
Operative Mode (LTE)		
Single-mode (1DL/1UL SISO)	1000mA	Non-CA, B3 BW 10MHz, 1 RB, 23dBm, QPSK DL / QPSK UL
7DLCA (4x4,2x2MIMO) with 1UL(SISO)	1450mA	CA_1A-3C-7C-20A-38A, Full RB, 256QAM DL/ 256QAM UL (1500Mbps DL / 103Mbps UL)
5DLCA (4x4MIMO) with 1UL(SISO)	1150mA	CA_1A-3C-7C, Full RB, 256QAM DL/ 256QAM UL (2Gbps DL / 103Mbps UL)
Operative NSA Mode (NR-FR1)		
1CC+1FR1	900 mA	EN-DC_1A (1DL/UL SISO) -n78A (1DL/1UL SISO)
		LTE: BW 20MHz, 1 RB, QPSK DL / QPSK UL, 23dBm
		FR1: BW 100MHz, Inner RB 137(Number)@64(Position), QPSK DL / QPSK UL, 23 dBm
6CC+1FR1	2000mA	EN-DC_1A (DL2x2/1UL SISO) -3C (DL4x4) -7C (DL4x4) -28A (DL2x2) -n78A (1DL 4x4MIMO/1UL SISO/60M)
		LTE: BW 20MHz, Full RB, 256QAM DL / 256QAM UL (2Gbps DL / 103Mbps UL)
		FR1: BW100MHz, Full RB, 256QAM DL / 256QAM UL (1.6Gbps DL/118Mbps)
Operative SA Mode (NR-FR1)		
1FR1	380mA	FR1(n78A): BW100MHz, Full RB, 256QAM DL / 256QAM UL (1.89Gbps DL/1.25Mbps)
2FR1	730mA	FR1(CA_n78A_n78A): BW200MHz, Full RB, 256QAM DL / 256QAM UL (3.8Gbps DL/1.25Mbps)
PC2 mode Max power	600mA (Typ.) 2400mA (Peak)	FR1(n41): UL-MIMO, CP-OFDM, QPSK, BW100MHz, Inner Full RB / CP-OFDM, QPSK, DL 4x4 MIMO
PC1.5 mode Max power	700mA (Typ.) 2600mA (Peak)	FR1(n41): UL-MIMO, CP-OFDM, QPSK, BW100MHz, Inner Full RB / CP-OFDM, QPSK, DL 4x4 MIMO
PC3 / PC2 / PC1.5 mode UL Max T-put	900mA (Typ.) 1200mA (Peak)	FR1(n41): UL-MIMO, CP-OFDM, 256QAM, BW100MHz, Outer Full RB, Close loop (10dBm), UL (0.9Gbps)

Note: Worst/best-case current consumption values depend on mobile network configuration – not under module control.

3.4.3 Power consumption and Throughput Test

Test Condition	Power Consumption
DL T-put condition from FN990A module - DC_2A-2A-66A-66A_n78A (4DL_1FR1) - DL config LTE : DL 4x4(16Layers) with 256QAM NR : 1CC DL 4x4(100MHz) with 256QAM (DL slots 19, UL slots 1) - UL config LTE: 0dBm with QPSK NR: 0dBm with QPSK (SISO) - T-put: 3.03Gbps	Power consumption(0dBm): $12 \times 352.92 = 4.235W$ Power consumption(23dBm): $12 \times 448.66 = 5.383W$

Figure 5 Power Consumption vs output Power

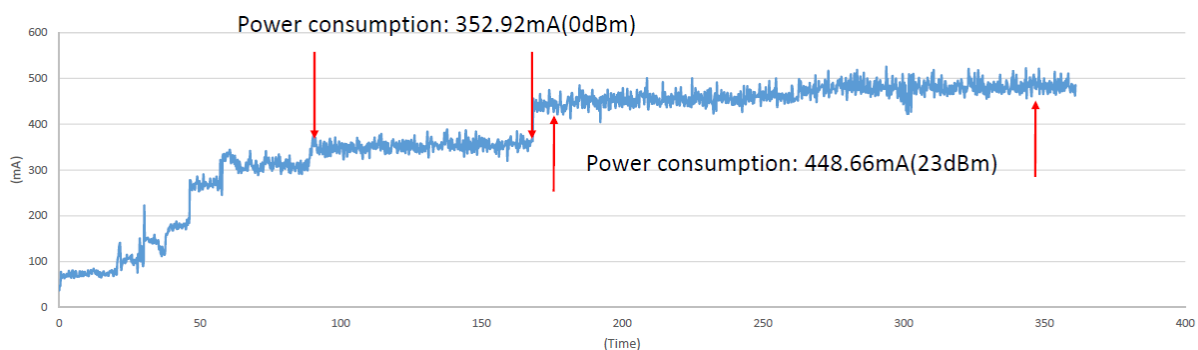
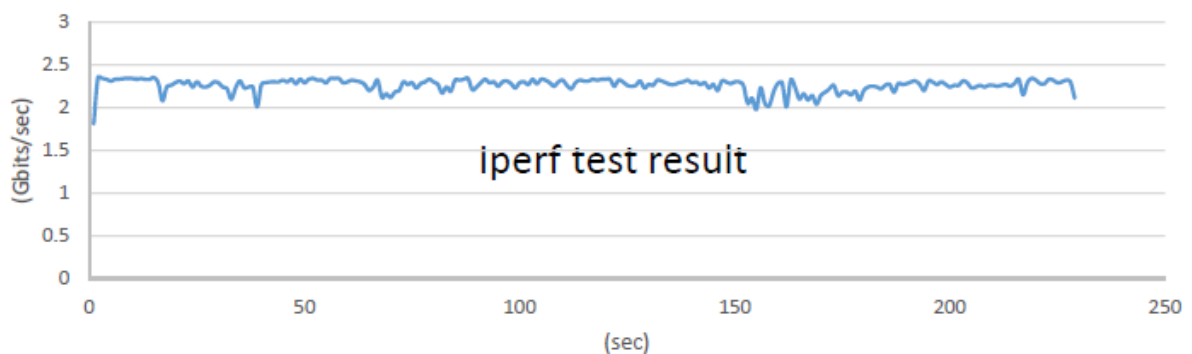


Figure 6 Throughput

Limitation: Ethernet port 2.5Gbps

DL throughput



3.5 RF Specification

The operating frequencies in 5G, LTE and WCDMA modes conform to the 3GPP specifications

Table 4: Conducted Transmit Output Power

Band	Power class	RF Power (dBm) Nominal ¹⁾
5G NR Sub-6 n1, n2, n3, n5, n7, n8, n12, n13, n14, n18, n20, n25, n26, n28, n30 ³⁾ , n38, n40, n41, n48 ²⁾ , n66, n71, n77, n78, n79	3 (0.2W)	23
5G NR Sub-6 n41, n77, n78, n79 Supports Power Class 2	2 (0.4W)	26
5G NR Sub-6 n41, n77, n78, n79 UL MIMO Supports Power Class 1.5 ⁴⁾	1.5 (0.8W)	29 ⁴⁾
LTE All Bands B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B30 ³⁾ , B34, B38, B39, B40, B41, B42 ²⁾ , B43 ²⁾ , B48 ²⁾ , B66, B71	3 (0.2W)	23
LTE B41 Supports Power Class 2	2 (0.4W)	26
3G WCDMA B1, B2, B4, B5, B6, B8, B19	3 (0.2W)	23

Note: ¹⁾ RF Power Nominal : Max output power tolerance according to 3GPP TS 38.521-1, 3GPP TS 36.521-1 and 3GPP TS 34.121-1 or better

Note: ²⁾ LTE B42, B43, B48 / NR n48 : PC 3 Nominal RF Power 22dBm
These bands may show lower power due to Country-type approvals constraints

Note: ³⁾ LTE B30 / NR n30 : PC 3 Nominal RF Power 22dBm
These bands may show lower power due to Country-type approvals constraints

Note: ⁴⁾ NR n41, n77, n78, n79 : PC 1.5 Nominal RF Power 28dBm

These bands may show lower power due to Country-type approvals constraints

Power Class 1.5 : Single NR band has two PC2 Tx paths and UL MIMO capability

For additional info please contact our technical support

For Power Class 1.5, please follow the SW guide documentation to check the F/W version.

Table 5: 3GPP Compliance for Conducted Receiver Sensitivity

Technology	3GPP Compliance
5G NR Sub-6	Throughput >95%
4G LTE	Throughput >95%
3G WCDMA	BER <0.1% 12.2 Kbps

Table 6: Typical Conducted Receiver Sensitivity - NR Bands

NR Band	Typical Conducted Rx Sensitivity (dBm) *						
	SCS (kHz)	BW (MHz)	ANT0	ANT1	ANT2	ANT3	Combined
NR FDD n1	15	20	-95	-94	-96	-95	-100
NR FDD n2	15	20	-95	-94	-95	-95	-100
NR FDD n3	15	20	-94	-94	-96	-95	-100
NR FDD n5	15	20	-96	NA	-98	NA	-99
NR FDD n7	15	20	-93	-94	-94	-95	-99
NR FDD n8	15	20	-96	NA	-98	NA	-99
NR FDD n12	15	15	-98	NA	-98	NA	-100
NR FDD n13	15	10	-99	NA	-100	NA	-102
NR FDD n14	15	10	-99	NA	-100	NA	-102
NR FDD n18	15	15	-98	NA	-98	NA	-100
NR FDD n20	15	20	-96	NA	-98	NA	-100
NR FDD n25	15	20	-94	-94	-95	-95	-100
NR FDD n26	15	20	-96	NA	-98	NA	-99
NR FDD n28	15	20	-96	NA	-98	NA	-100
NR FDD n29	15	10	-96	NA	-98	NA	-100
NR FDD n30	15	10	-96	-96	-98	-98	-102
NR TDD n38	30	20	-95	-94	-94	-94	-99
NR TDD n40	30	80	-88	-88	-88	-89	-93

NR Band	Typical Conducted Rx Sensitivity (dBm) *						
NR TDD n41	30	100	-88	-86	-87	-87	-92
NR TDD n48	30	40	-91	-91	-93	-92	-97
NR FDD n66	15	20	-94	-94	-95	-97	-99
NR FDD n71	15	20	-97	NA	-98	NA	-100
NR SDL n75	30	30	-92	-93	-92	-92	-97
NR SDL n76	30	5	-94	-97	-97	97	-100
NR TDD n77	30	100	-88	-89	-87	-87	-93
NR TDD n78	30	100	-88	-88	-87	-87	-93
NR TDD n79	30	100	-85	-90	-89	-88	-93

*3.3 Voltage / Room temperature

Table 7: Typical Conducted Receiver Sensitivity - LTE Bands

E-UTRA Band	Typical Conducted Rx Sensitivity (dBm) *				
	ANT0	ANT1	ANT2	ANT3	Combined
LTE FDD B1	-97	-96.5	-96.5	-96.5	-103
LTE FDD B2	-97	-96	-96	-96	-103
LTE FDD B3	-97	-96	-96	-96	-103
LTE FDD B4	-97	-96	-96	-96	-103
LTE FDD B5	-99	NA	-99	NA	-102
LTE FDD B7	-97	-96	-96	-96	-103
LTE FDD B8	-99	NA	-99	NA	-102
LTE FDD B12	-99	NA	-99	NA	-102
LTE FDD B13	-99	NA	-99	NA	-102
LTE FDD B14	-99	NA	-99	NA	-102
LTE FDD B17	-99	NA	-99	NA	-102
LTE FDD B18	-99	NA	-99	NA	-102
LTE FDD B19	-99	NA	-99	NA	-102
LTE FDD B20	-99	NA	-99	NA	-102
LTE FDD B25	-97	-96	-96	-96	-103
LTE FDD B26	-99	NA	-99	NA	-102
LTE FDD B28	-99	NA	-99	NA	-102
LTE SDL B29	-99	NA	-99	NA	-101
LTE FDD B30	-96	-95	-95	-95	-102
LTE SDL B32	-97	-97	-97	-97	-101

E-UTRA Band	Typical Conducted Rx Sensitivity (dBm) *				
LTE TDD B34	-96.5	NA	-98	NA	-100
LTE TDD B38	-97	-96.5	-96.5	-96.5	-103
LTE TDD B39	-97	-97	-97	-97	-103
LTE TDD B40	-96.5	-96.5	-96.5	-96.5	-103
LTE TDD B41	-96	-96	-96	-96	-102
LTE TDD B42	-97	-96	-96	-96	-102
LTE TDD B43	-97	-96	-96	-96	-102
LTE SDL B46	-90	NA	-88.5	NA	-91
LTE TDD B48	-97	-96	-96	-96	-103
LTE FDD B66	-97	-96	-96	-96	-103
LTE FDD B71	-99	NA	-99	NA	-102

*3.3 Voltage / Room temperature

Table 8: Typical Conducted Receiver Sensitivity - WCDMA Bands

UTRA Band	Typical Conducted Rx Sensitivity (dBm) *				
	ANT0	ANT1	ANT2	ANT3	Combined
WCDMA FDD B1	-110	NA	-109	NA	NA
WCDMA FDD B2	-110	NA	-110	NA	NA
WCDMA FDD B4	-110	NA	-109	NA	NA
WCDMA FDD B5	-110	NA	-110	NA	NA
WCDMA FDD B6	-110	NA	-110	NA	NA
WCDMA FDD B8	-110	NA	-110	NA	NA
WCDMA FDD B19	-110	NA	-110	NA	NA

*3.3 Voltage / Room temperature

3.6 Mechanical Specifications

Overall dimensions

- Length 180 mm, +/- 0.15mm tolerance
- Width 140 mm, +/- 0.15mm tolerance
- Thickness 36mm, +/- 0.15 mm tolerance
- Weight → TBD

3.7 Environmental Requirements

Table 9: Temperature Range

		Note
Operating Temperature Range	-30°C ~ 40°C	Telit-Cinterion guarantees CMT700A0 full functionality in this range.
Storage Temperature Range	-40°C ~ 85°C	

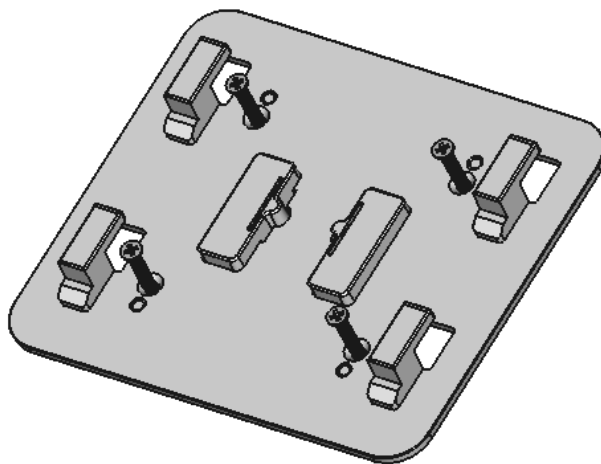
4 Installation Guide

4.1 Mount and Connect

The module can be used on a desk or mounted on a wall or ceiling by using the ceiling mount accessory.

To use ceiling mount or wall mount please ensure using 4 M3 screws.

Figure 7 Ceiling mount



And apply it to the wall or ceiling depending on your application

Figure 8 installation on a wall/ceiling

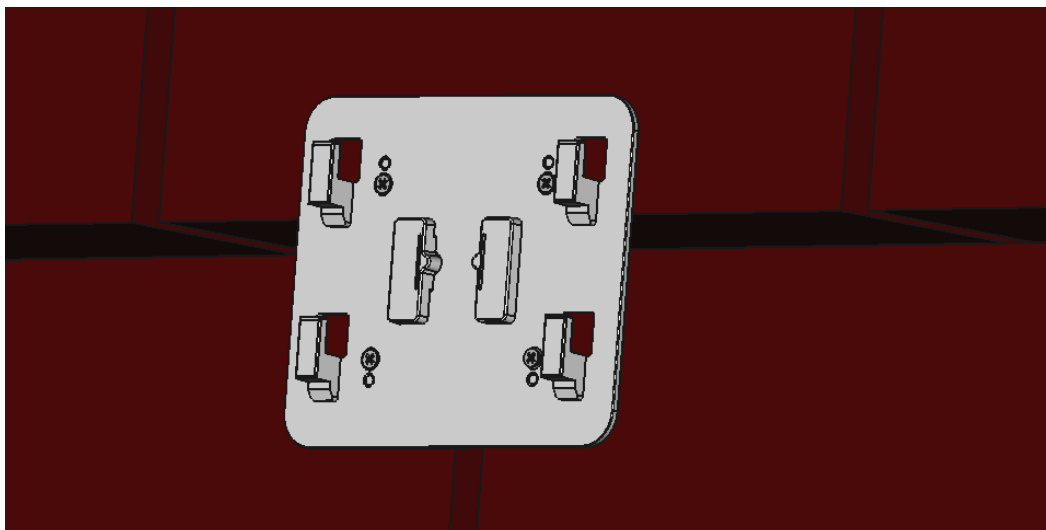
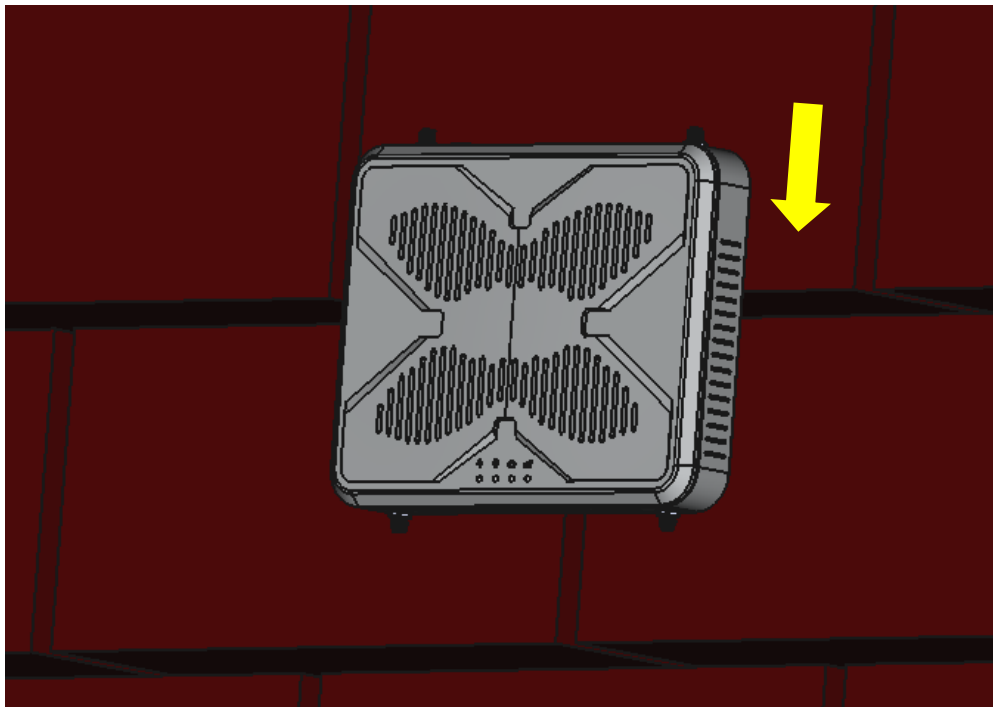
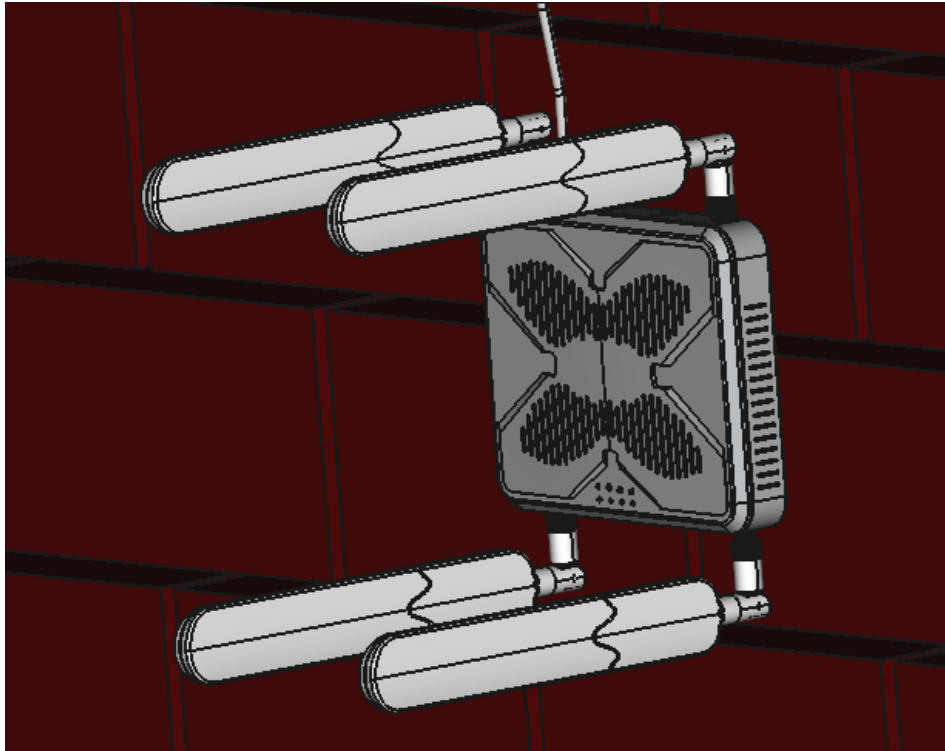


Figure 9 CMT700 plugging



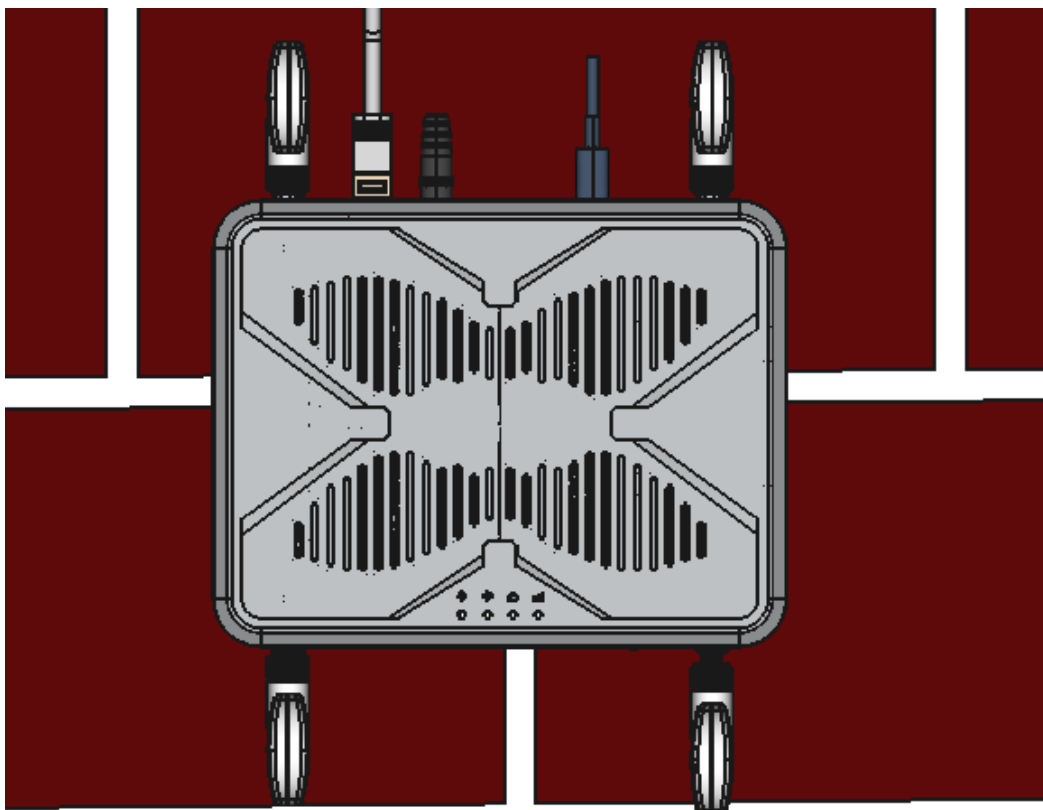
Attach the CMT700 to the wall/ceiling mount using the provided hooks and gently press down to complete the pairing procedure. A mechanical “click” will aware you about correct coupling.

Figure 10 Antennas and ETH cable connection



You can install the antennas and Ethernet cable for PoE injector or to a router switch /PoE for a prompt operation or you can use the 12V DC adapter and the ethernet cable to provide connectivity to other equipment.

Figure 11 USB POWER adapter and Ethernet connection



4.1.1 Check the CMT700A0 Operation

After mounting and connecting process is completed, you can check the proper operation and status of the CMT700A0 in the following ways:

- LED STATUS
- AT COMMANDS via USB

Figure 12 LEDs description

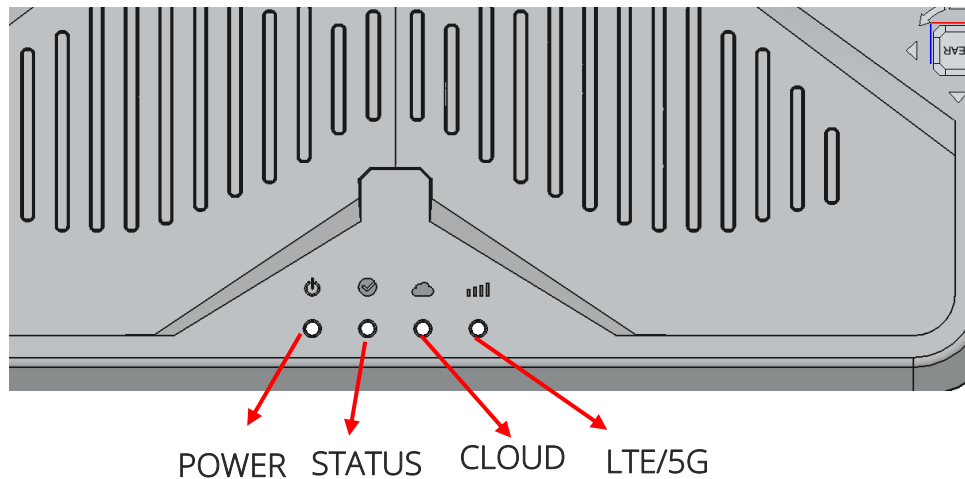


Table 10: LED BEHAVIOR

LED TYPE	COLOR	DESCRIPTION
POWER LED	GREEN	When the router is off the LED is off. When the modem is powered UP the LED is solid green.
STATUS LED	GREEN/ RED	When LED is off the modem is booting up. After the modem boots it blinks the green LED 1x per sec. Solid GREEN indicates system is online - LTE is up, cloud connectivity is up and Eth or USB is connected. Solid RED is system error such as lack of LTE connection, cloud connection. Blinking RED 2x per sec. if temperature within 5C° of thermal limits (-30°C+45°C)
CLOUD LED	GREEN/ RED	When the device is not attached to the network the LED is off. When the device is attached to the network and the establishing a connection with deviceWISE it will blink GREEN 1x per sec. When a connection is established the LED will be solid GREEN . The LED should blink at 2x per sec if the certificate for DW is invalid. (missing RED description)
LTE/5G LED	WHITE	When the router is off the LED is off, When the module is on and attempting to attach to the network it will blink (1x per 2 sec). Once it is attached to the network it will be solid. If the device

LED TYPE	COLOR	DESCRIPTION
		fails to attach to the network or a SIM is not present it will blink 1x per sec.

With AT commands via USB you can:

- Check the CMT700A0 status
- Configure CMT700A0 various settings values

For a complete reference list of AT commands please refer to:

TC_FN990_Family_AT_Commands_Reference_Guide_r4.pdf

5 Conformity Assessment Issues

5.1 Approvals Compliance Summary (TBD)

Table 11: Legend Description

Legend	Description
	The equipment is compliant
	Type approval is in progress
	The equipment is not compliant

Table 12: Americas Approvals Compliance Summary

Region	Americas									
Country & Type Approval	AR ENACOM	BR ANATEL	CA ISED	CO CRC	MX IFETEL	PE MTC	US FCC	BOL ATT	ECU ARCOTEL	PY CONATEL
CMT700A0										

Table 13: APAC Approvals Compliance Summary

Region	APAC				
Country & Type Approval	AU RCM	CH CCC	JP JRL / JTBL	SG IMDA	TW NCC
CMT700A0					

Table 14: EMEA Approvals Compliance Summary

Region	EMEA	
Country & Type Approval	EU RED	UK UKCA
CMT700A0		

Note: For approvals not included in the above, contact Telit support.

5.2 Americas Approvals

5.2.1 USA FCC

5.2.1.1 FCC Certificates

The FCC Grants can be found here: <https://www.fcc.gov/oet/ea/fccid>

5.2.1.2 Supplier's Declaration of Conformity

- Product Name: Certified Modem Terminal
- Model No.: CMT700A0
- Company Name: Telit IoT Solutions Inc.
- Address: 5425 Page Road, Suite 120, Durham, NC 27703, USA
- Contact Name: Russ Cook
- Contact Phone Number: +1 (949) 540-1276

5.2.1.3 Applicable FCC Rules

Table15: Applicable FCC Rules

Model	Applicable FCC rules
CMT700A0	Title 47 CFR Part 2, Part 22H, Part 24E, Part 27, Part 90, Part 96

5.2.1.4 FCC Regulatory Notices

Modification Statement

Telit has not approved any changes or modifications to this device by the user. Any changes or modifications could void the user's authority to operate the equipment.

Interference Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Wireless Notice

This device complies with FCC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines. This transmitter must not be co-located or operate in conjunction with any other antenna or transmitter. The antenna should be installed and operated with a minimum distance of 20 cm between the radiator and your body

FCC Class B digital device notice

This equipment has been tested and found to comply with the limits for a Class B digital device, according to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used per the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by taking one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

5.2.2 Canada ISED

5.2.2.1 ISED Database

The products ISED certified can be found here:

Les produits certifiés ISED peuvent être trouvés ici:

<https://sms-sgs.ic.gc.ca/equipmentSearch/searchRadioEquipments?execution=e1s1&lang=en>

5.2.2.2 Applicable ISED Rules

Table 16: Applicable ISED rules / Règles ISDE applicables

Model	Applicable ISED rules /Règles ISDE applicables 2
CMT700A0	Contains IC: 5131A-FN990A28 RSS: 102 Issue 6, 130 Issue 2, 132 Issue 4, 133 Issue 7, 139 Issue 4, 140 Issue 1, 192 Issue 5, 195 Issue 2, 199 Issue 4, GEN Issue 5 RSS: 198 Issue 1 ICES: 003 Issue 7

5.2.2.3 ISED Regulatory Notices

Modification Statement / Déclaration de modification

Telit has not approved any changes or modifications to this device by the user. Any changes or modifications could void the user's authority to operate the equipment.

Telit n'approuve aucune modification apportée à l'appareil par l'utilisateur, quelle qu'en soit la nature. Tout changement ou modification peuvent annuler le droit d'utilisation de l'appareil par l'utilisateur.

Interference Statement / Déclaration d'interférence

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux applicables RSS standards d'Industrie Canada. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

CAN ICES-3 (B) / NMB-3 (B)

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de classe B est conforme à la norme canadienne ICES-003.

5.2.3 Brazil ANATEL

5.2.3.1 ANATEL Regulatory Notices

Agência Nacional de Telecomunicações (ANATEL) of Brazil

Note: For Wi-Fi or BT modules, insert following lines:

"Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados".

"This equipment is not entitled to protection against harmful interference and must not cause interference in duly authorized systems"



CMT700A0 LA Homologation # TBD

5.2.4 Bolivia ATT Regulatory Notices



Notice for Telit customers:

In case of diffusion of written or audio-visual advertising about the equipment, the ATT logo must be included, and it must be noted that the device was approved by the Authority.

5.2.5 Peru MTC Regulatory Notices

Following MTC rules the model LE910C1-WWXD is also identified with FCC ID: RI7LE910CXWWX on the product and packaging label.

5.2.6 Colombia CRC Regulatory Notices

Following CRC rules the product identification code LE910C1-WWXD, or model name or type name, is used on the product label, and packaging as well on test reports submitted for type approval.

5.2.7 Paraguay CONATEL Regulatory Notices

Following CONATEL rules the product is marked as below evidenced:



LE910C1-WWX Registration Number: NR: XXXX-XX-X-XXXX

Notice for Telit customers:

For equipment imported into Paraguay, a label must be inserted before to enter in Paraguay and include also the following information:

- Supplier name
- Address of the supplier in Paraguay.

5.2.8 Argentina RAMATEL Regulatory Notices (former ENACOM)

Following ENACOM/RAMATEL rules the product is marked as below evidenced:



LE910C1-WWX Registration Number: X-00000

Notice for Telit customers:

If the RAMATEL identification number is not visible upon the module installation inside another device, then the external part of the main device must also carry a label referencing the module it contains.

This external label must include the RAMATEL identification information of the homologated product, preceded by the inscription “CONTIENE”, as shown in the attached file.

The “CONTIENE” inscription must be printed in Arial font with a minimum height of 5 points. Those main devices containing one or more modules subject to homologation and/or coding must include in their identification the registration numbers issued for each module.



5.3 APAC Approvals

5.3.1 Australia RCM

Following the above Approval Compliance Summary table, where applicable (green dot), hereby, Telit Communications S.p.A declares that the equipment complies with the Regulatory Compliance Mark (RCM) of Australia.

Note: The equipment listed may not work when the main power fails.

5.3.2 Japan JRL/JTBL

5.3.2.1 JRL/JTBL Regulatory Notices

Antenna info

According to Japanese regulatory rules, module certification is valid only with the specific antennas registered to and approved by Japan Radio Law (JRL) certified body to module certification. Customers who are going to use modules under JRL are responsible to contact Telit technical support or sales to get the list of these antennas.

Dial Function

The Japan Telecommunication Business Law (JTBL) Module Certification for “LE910C1-AP” is for a “non-Auto Redial Function” device.

In case the customer implements the “Auto Redial” function into the Application Device by controlling LE910C1-AP, the customer cannot utilize LE910C1-AP JTBL certification, and they must apply JTBL as an “Application Device” System.

5.3.3 Taiwan NCC

5.3.3.1 NCC Regulatory Notices

According to National Communication Commission (NCC) Taiwan requirements, the module and the packaging shall be identified as described in the following lines. Shall be added also the specified safety warning statement.

Brand name: Telit

Model name: CMT700A0

Product name: WWAN module

NCC logo:



NCC ID: TBD

NCC safety warning statement: “減少電磁波影響，請妥適使用”

5.4 EMEA Approvals

5.4.1 EU RED

5.4.1.1 EU Declaration of Conformity

Following the above Approval Compliance Summary table, where applicable (green dot), hereby, Telit Communications S.p.A declares that the equipment complies with Directive 2014/53/EU.

The full text of the EU Declaration of Conformity is available at the following internet address: <https://www.telit.com/red>

Text of 2014/53/EU Directive (RED) requirements can be found here:

<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32014L0053>

5.4.1.2 RF Exposure Information

This device has been tested and meets applicable limits for Radio Frequency (RF) exposure. This equipment should be installed and operated to ensure a minimum of 20 cm spacing to any person at all times.

5.4.1.3 WEEE Info

The symbol below means that accordingly to local laws and regulations your product and/or its batter shall be disposed of separately from household waste.

When this product reaches its end of life, take it to a collection point designed by local authorities. Proper recycling of your product will protect human health and the environment.



5.4.1.4 RED Antennas

This radio transmitter has been approved under RED to operate with the antenna types listed below with the maximum permissible gain indicated. The usage of a different antenna in the final hosting device may need a new assessment of host conformity to RED.

Table 173: RED Antenna Type

Model	Antenna Type
CMT700A0	TAOGLAS TG.31.8113 Omnidiretional SMA Male Hinged 90°

Table 18: Antenna GAIN

ANT Gain for RED (dBi)			
Mode	Band	Maximum Average power (dBm)	Frequency (MHz) UL/DW
WCDMA	Band 1	25	1920 – 1980 / 2110 – 2170
WCDMA	Band 8	25	880 – 915 / 925 – 960
LTE	Band 1	24	1920 – 1980 / 2110 – 2170
LTE	Band 3	24	1710 – 1785 / 1805 – 1880
LTE	Band 7	24	2500 – 2570 / 2620 – 2690
LTE	Band 8	24	880 – 915 / 925 – 960
LTE	Band 20	24	832 – 862 / 791 – 821
LTE	Band 28	24	703 – 748 / 758 – 803
LTE	Band 34	24	2010 – 2025
LTE	Band 38	24	2570 – 2620

ANT Gain for RED (dBi)			
LTE	Band 40	24	2300 – 2400
LTE	Band 41	27	2496 – 2690
LTE	Band 42	24	3400 – 3600
LTE	Band 43	24	3600 – 3800
5G	n1	24	1920 – 1980 / 2110 – 2170
5G	n3	24	1710 – 1785 / 1805 – 1880
5G	n7	24	2500 – 2570 / 2620 – 2690
5G	n8	24	880 – 915 / 925 – 960
5G	n20	24	832 – 862 / 791 – 821
5G	n28	24	703 – 748 / 758 – 803
5G	n38	24	2570 – 2620
5G	n40	24	2300 – 2400
5G	n41	27	2496 – 2690
5G	n77	27	3300 – 4200
5G	n78	27	3300 – 3800

5.4.2 UK UKCA

5.4.2.1 UKCA Declaration of Conformity

Following the above Approval Compliance Summary table, where applicable (green dot), hereby, Telit Communications S.p.A declares that the equipment complies with the Radio Equipment Regulations 2017 for UKCA.

The full text of the UKCA declaration of conformity is available at the following internet address: <https://www.telit.com/ukca>

The UKCA requirements can be found here:

<https://www.gov.uk/guidance/using-the-ukca-marking>

5.4.2.2 RF Exposure Information

This device has been tested and meets applicable limits for Radio Frequency (RF) exposure. This equipment should be installed and operated to ensure a minimum of 20 cm spacing to any person at all times.

5.4.2.3 WEEE Info

The symbol below means that accordingly to local laws and regulations your product and/or its batter shall be disposed of separately from household waste.

When this product reaches its end of life, take it to a collection point designed by local authorities. Proper recycling of your product will protect human health and the environment



5.5 RoHS and REACH Info

5.5.1 RoHS Info

Any requests for information related to RoHS certifications can be addressed to Chemical.Certifications@telit.com.

5.5.2 REACH Info

Any requests for information related to REACH certifications can be addressed to Chemical.Certifications@telit.com.

5.5.2.1 Reference Table of RF Bands Characteristics

Table 19: RF Bands Characteristics

Mode	Freq. Tx (MHz)	Freq. Rx (MHz)	Channels	Tx-Rx Offset
PCS 1900	1850.2 ~ 1909.8	1930.2 ~ 1989.8	512 ~ 810	80 MHz
DCS 1800	1710 ~ 1785	1805 ~ 1880	512 ~ 885	95 MHz
GSM 850	824.2 ~ 848.8	869.2 ~ 893.8	128 ~ 251	45 MHz
EGSM 900	890 ~ 915	935 ~ 960	0 ~ 124	45 MHz
	880 ~ 890	925 ~ 935	975 ~ 1023	45 MHz
WCDMA 2100 – B1	1920 ~ 1980	2110 ~ 2170	Tx: 9612 ~ 9888 Rx: 10562 ~ 10838	190 MHz
WCDMA 1900 – B2	1850 ~ 1910	1930 ~ 1990	Tx: 9262 ~ 9538 Rx: 9662 ~ 9938	80 MHz

Mode	Freq. Tx (MHz)	Freq. Rx (MHz)	Channels	Tx-Rx Offset
WCDMA 1800 – B3	1710 ~ 1785	1805 ~ 1880	Tx: 937 ~ 1288 Rx: 1162 ~ 1513	95 MHz
WCDMA AWS – B4	1710 ~ 1755	2110 ~ 2155	Tx: 1312 ~ 1513 Rx: 1537 ~ 1738	400 MHz
WCDMA 850 – B5	824 ~ 849	869 ~ 894	Tx: 4132 ~ 4233 Rx: 4357 ~ 4458	45 MHz
WCDMA 900 – B8	880 ~ 915	925 ~ 960	Tx: 2712 ~ 2863 Rx: 2937 ~ 3088	45 MHz
WCDMA 1800 – B9	1750 ~ 1784.8	1845 ~ 1879.8	Tx: 8762 ~ 8912 Rx: 9237 ~ 9387	95 MHz
WCDMA 800 – B19	830 ~ 845	875 ~ 890	Tx: 312 ~ 363 Rx: 712 ~ 763	45 MHz
TDSCDMA 2000 – B34	2010 ~ 2025	2010 ~ 2025	Tx: 10054 ~ 10121 Rx: 10054 ~ 10121	0 MHz
TDSCDMA 1900 – B39	1880 ~ 1920	1880 ~ 1920	Tx: 9404 ~ 9596 Rx: 9404 ~ 9596	0 MHz
LTE 2100 – B1	1920 ~ 1980	2110 ~ 2170	Tx: 18000 ~ 18599 Rx: 0 ~ 599	190 MHz
LTE 1900 – B2	1850 ~ 1910	1930 ~ 1990	Tx: 18600 ~ 19199 Rx: 600 ~ 1199	80 MHz
LTE 1800 – B3	1710 ~ 1785	1805 ~ 1880	Tx: 19200 ~ 19949 Rx: 1200 ~ 1949	95 MHz
LTE AWS – B4	1710 ~ 1755	2110 ~ 2155	Tx: 19950 ~ 20399 Rx: 1950 ~ 2399	400 MHz
LTE 850 – B5	824 ~ 849	869 ~ 894	Tx: 20400 ~ 20649 Rx: 2400 ~ 2649	45 MHz
LTE 2600 – B7	2500 ~ 2570	2620 ~ 2690	Tx: 20750 ~ 21449 Rx: 2750 ~ 3449	120 MHz
LTE 900 – B8	880 ~ 915	925 ~ 960	Tx: 21450 ~ 21799 Rx: 3450 ~ 3799	45 MHz
LTE 1800 – B9	1749.9 ~ 1784.9	1844.9 ~ 1879.9	Tx: 21800 ~ 2149 Rx: 3800 ~ 4149	95 MHz
LTE AWS+ – B10	1710 ~ 1770	2110 ~ 2170	Tx: 22150 ~ 22749 Rx: 4150 ~ 4749	400 MHz
LTE 700a – B12	699 ~ 716	729 ~ 746	Tx: 23010 ~ 23179 Rx: 5010 ~ 5179	30 MHz
LTE 700c – B13	777 ~ 787	746 ~ 756	Tx: 27210 ~ 27659 Rx: 9210 ~ 9659	-31 MHz
LTE 700b – B17	704 ~ 716	734 ~ 746	Tx: 23730 ~ 23849 Rx: 5730 ~ 5849	30 MHz
LTE 800 – B19	830 ~ 845	875 ~ 890	Tx: 24000 ~ 24149 Rx: 6000 ~ 6149	45 MHz

Mode	Freq. Tx (MHz)	Freq. Rx (MHz)	Channels	Tx-Rx Offset
LTE 800 – B20	832 ~ 862	791 ~ 821	Tx: 24150 ~ 24449 Rx: 6150 ~ 6449	-41 MHz
LTE 1500 – B21	1447.9 ~ 1462.9	1495.9 ~ 1510.9	Tx: 24450 ~ 24599 Rx: 6450 ~ 6599	48 MHz
LTE 850+ – B26	814 ~ 849	859 ~ 894	Tx: 26690 ~ 27039 Rx: 8690 ~ 9039	45 MHz
LTE 700 – B28	703 ~ 748	758 ~ 803	Tx : 27210 ~ 27659 Rx : 9210 ~ 9659	45 MHz
LTE TDD 2600 – B38	2570 ~ 2620	2570 ~ 2620	Tx: 37750 ~ 38250 Rx: 37750 ~ 38250	0 MHz
LTE TDD 1900 – B39	1880 ~ 1920	1880 ~ 1920	Tx: 38250 ~ 38650 Rx: 38250 ~ 38650	0 MHz
LTE TDD 2300 – B40	2300 ~ 2400	2300 ~ 2400	Tx: 38650 ~ 39650 Rx: 38650 ~ 39650	0 MHz
LTE TDD 2500 – B41	2496 ~ 2690	2496 ~ 2690	Tx: 39650 ~ 41590 Rx: 39650 ~ 41590	0 MHz

6 Acronyms and Abbreviations

Table 20: Acronyms and Abbreviations

Acronym	Definition
ADC	Analog – Digital Converter
CLK	Clock
CMOS	Complementary Metal – Oxide Semiconductor
CS	Chip Select
DAC	Digital – Analog Converter
DTE	Data Terminal Equipment
ESR	Equivalent Series Resistance
GPIO	General Purpose Input Output
HS	High Speed
HSDPA	High-Speed Downlink Packet Access
HSIC	High-Speed Inter Chip
HSUPA	High-Speed Uplink Packet Access
I/O	Input Output
MISO	Master Input – Slave Output
MOSI	Master Output – Slave Input
MRDY	Master Ready
PCB	Printed Circuit Board
RTC	Real-Time Clock
SIM	Subscriber Identification Module
SPI	Serial Peripheral Interface
SRDY	Slave Ready
TTSC	Telit Technical Support Centre
UART	Universal Asynchronous Receiver Transmitter
UMTS	Universal Mobile Telecommunication System
USB	Universal Serial Bus
VNA	Vector Network Analyzer
VSWR	Voltage Standing Wave Ratio
WCDMA	Wideband Code Division Multiple Access

7 Related Documents

For current documentation and downloads, refer to <https://dz.telit.com/>.

Table 4: Related Documents

S.no	Doc Code	Document Title
1	80691ST11097A	TC_FN990_Family_AT_Commands_Reference_Guide_r4

8 Document History

Table 22: Document History

Revision	Date	Changes
1	2025-01-16	FIRST DRAFT
2	2025-04-14	Preliminary
3	2025-04-30	First release (updated figure caption, insert Block Diagram)
4	2025-05-02	Minus corrections
5	2025-05-15	Removed all statements that refer to module on FCC and RED as required by notification bodies.
6	2025-05-13	Minus Adjustments on Table, adjusted table references
7	2025-05-16	Removed outdoor sentence

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