



FT980 Series Series Demo Kit HW User Guide

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APPLICABILITY TABLE

PRODUCTS

- ■ FT980 - Demo Kit for 3G / 4G / 5G Sub-6
- ■ FT980m - Demo Kit for 3G / 4G / 5G Sub-6 / 5G mmWave

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1. INTRODUCTION

1.1. Scope

This document introduces the Telit FT980 Series Demo Kit and describes features and specifications of the products. All the features and specifications detailed in this document are applicable to all FT980 variants, where 'FT980' 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.



Information – FT980 refers to all modules listed in the Applicability Table.

1.2. Audience

This document is intended for Telit customers about to install and startup their industrial environment using the Telit FT980 demo kit.

1.3. Contact Information, Support

For general contact, technical support services, technical questions and report documentation errors contact Telit Technical Support at:

- TS-EMEA@telit.com
- TS-AMERICAS@telit.com
- TS-APAC@telit.com
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For detailed information about where you can buy the Telit products or for recommendations on accessories and components visit:

<http://www.telit.com>

Our aim is to make this guide as helpful as possible. Keep us informed of your comments and suggestions for improvements.

Telit appreciates feedback from the users of our information.

1.4. Text Conventions



Danger – This information **MUST** be followed or catastrophic equipment failure or bodily injury may occur.



Caution or Warning – Alerts the user to important points about integrating the module, if these points are not followed, the module and end user equipment may fail or malfunction.



Tip or Information – Provides advice and suggestions that may be useful when integrating the module.

All dates are in ISO 8601 format, i.e. YYYY-MM-DD.

1.5. Related Documents

- FN980 Family HW User Guide, 1VV0301603
- FT980 Demo Kit HW User Guide, 1VV0301672
- FT980 SW User Guide, 1VV0301631(TBD)
- FT980 WebCM User Guide, 1VV0301668(TBD)

2. FEATURES AND SPECIFICATIONS

2.1. Overview

The aim of this document is to provide specifications and guides useful for installing a product with the Telit FT980 demo kit.

FT980 is Telit's 5G demo kit embedded FN980 family M.2 module, such as M2M applications and industrial IoT device platforms, based on the following technologies:

- 5G sub-6/4G/3G networks for data communication (FT980/FT980m)
- 5G mmWave networks (FT980m only)
- Gigabit Ethernet and USB 3.1 gen 2
- Designed for industrial grade quality

2.2. Main features

Main functions and features are listed below:

Main Features

Function	Features
Cellular technology	5G: FR1(Sub 6G), optional FR2(mmWave), Rel 15 4G: CAT. 20 (2Gbps) on DL, CAT. 18 (211Mbps) on UL, Rel 14 3G: HSPA+ Rel8 up to 42/5.7Mbps in DL/UL
4x4 MIMO	5G: n1/n2/n3/n7/n25/n38/n40/n41/n48/n66/n77/n78/n79 4G: B1/B2/B3/B4/B7/B25/B30/B66/B38/B39/B40/B41/B42/B48/B46
Diversity/2nd Rx	4G: all operating bands 3G: all operating bands
GNSS	Antenna 4 port: GPS/Glonass/Beidou/Galileo Built-in antenna: Only GPS support
USIM	Embedded SIM
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/5Gbps Base-T 1x RJ-45 port

Function	Features
USB	USB 3.1 Gen2 10Gbps 1x Type C port
RESET	Manual reset button
LED	3 LEDs: <ul style="list-style-type: none"> • Network • Ethernet/USB • Power status
Mechanical Dimension	150*88*39 mm About 670 gram * Mechanical dimension can be changed
Environment and quality requirements	The device is designed and qualified by Telit to satisfy environmental and quality requirements.
Operating temperature	Range -30 °C to +75 °C (conditions as defined in Section 2.8.1 Temperature Range)

2.3. Frequency Bands and CA combinations

2.3.1. Frequency bands

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

Following the list of operating frequencies on 5G, LTE and WCDMA mode.

5G NR Sub 6 Bands supportive

NR BAND	Duplex Mode	Uplink Frequency (MHz)	Downlink Frequency (MHz)	Channels	SCS (kHz)
n1 - 2100	FDD	1920 - 1980	2110 - 2170	Tx: 384000 - 396000 Rx: 422000 - 434000	15

n2 – 1900 PCS	FDD	1850 - 1910	1930 - 1990	Tx: 370000 - 382000 Rx: 386000 - 398000	15
n3 - 1800	FDD	1710 - 1785	1805 - 1880	Tx: 342000 - 357000 Rx: 361000 - 376000	15
n5 - 850	FDD	824 - 849	869 - 894	Tx: 164800 - 169800 Rx: 173800 - 178800	15
n7 - 2600	FDD	2500 - 2570	2620 - 2690	Tx: 500000 - 514000 Rx: 524000 - 538000	15
n8 - 900	FDD	880 - 915	925 - 960	Tx: 176000 - 183000 Rx: 185000 - 192000	15
n12 – 700 a	FDD	699 - 716	729 - 746	Tx: 139800 - 143200 Rx: 145800 - 149200	15
n20 - 800	FDD	832 - 862	791 - 821	Tx: 166400 - 172400 Rx: 158200 - 164200	15
n25 -1900+	FDD	1850 - 1915	1930 - 1995	Tx: 370000 - 383000 Rx: 386000 - 399000	15
n28 - 700 APT	FDD	703 - 748	758 - 803	Tx: 140600 - 149600 Rx: 151600 - 160600	15
n38 - 2600	TDD		2570 - 2620	T/Rx: 514000 - 524000	30
n40 - 2300	TDD		2300 - 2400	T/Rx: 460000 - 480000	30
n41 - 2600+	TDD		2496 - 2690	T/Rx: 499200 - 537996	30
n48 - 3600	TDD		3550 - 3700	T/Rx: 636668 - 646666	30
n66 - AWS-4	FDD	1710 - 1800	2110 - 2200	Tx: 342000 - 356000 Rx: 422000 - 440000	15
n71 - 600	FDD	663 - 698	617 - 652	Tx: 132600 - 139600 Rx: 123400 - 130400	15
n77 - 3700	TDD		3300 - 4200	T/Rx: 620000 - 680000	30
n78 - 3500	TDD		3300 - 3800	T/Rx: 620000 - 653332	30
n79 - 4500	TDD		4400 - 5000	T/Rx: 693334 - 733332	30

5G NR mmWave Bands supportive (Supported by FT980m)

NR BAND	Duplex Mode	Uplink Frequency (MHz)	Downlink Frequency (MHz)	Channels	SCS (kHz)
n257- 28 GHz	TDD	26500 - 29500		T/Rx: 2054167 - 2104168	120
n258 - 26 GHz	TDD	24250 - 27500		T/Rx: 2016667 - 2070831	120
n260 - 39 GHz	TDD	37000 - 40000		T/Rx: 2229167 - 2279165	120
n261- 28 GHz US	TDD	27500 - 28350		T/Rx: 2070833 - 2084999	120

LTE Bands supportive

E-UTRA BAND	Duplex Mode	Uplink Frequency (MHz)	Downlink Frequency (MHz)	Channels
B1 - 2100	FDD	1920 - 1980	2110 - 2170	Tx: 18000 - 18599 Rx: 0 - 599
B2 - 1900 PCS	FDD	1850 - 1910	1930 - 1990	Tx: 18600 - 19199 Rx: 600 - 1199
B3 - 1800+	FDD	1710 - 1785	1805 - 1880	Tx: 19200 - 19949 Rx: 1200 - 1949
B4 - AWS-1	FDD	1710 - 1755	2110 - 2155	Tx: 19950 - 20399 Rx: 1950 - 2399
B5 - 850	FDD	824 - 849	869 - 894	Tx: 20400 - 20649 Rx: 2400 - 2649
B7 - 2600	FDD	2500 - 2570	2620 - 2690	Tx: 20750 - 21449 Rx: 2750 - 3449
B8 - 900 GSM	FDD	880 - 915	925 - 960	Tx: 21450 - 21799 Rx: 3450 - 3799
B12 - 700 a	FDD	699 - 716	729 - 746	Tx : 23010 - 23179 Rx : 5010 - 5179
B13 - 700 c	FDD	777 - 787	746 - 756	Tx : 27210 - 27659 Rx : 9210 - 9659
B14 - 700 PS	FDD	788 - 798	758 - 768	Tx : 23280 - 23379 Rx : 5280 - 5379
B17 - 700 b	FDD	704 - 716	734 - 746	Tx: 23730 - 23849 Rx: 5730 - 5849
B18 - 800 Lower	FDD	815 - 830	860 - 875	Tx: 23850 - 23999 Rx: 5850 - 5999
B19 - 800 Upper	FDD	830 - 845	875 - 890	Tx: 24000 - 24149 Rx: 6000 - 6149
B20 - 800 DD	FDD	832 - 862	791 - 821	Tx: 24150 - 24449 Rx: 6150 - 6449
B25 - 1900+	FDD	1850 - 1915	1930 - 1995	Tx: 8040 - 8689 Rx: 26040 - 26689
B26 - 850+	FDD	814 - 849	859 - 894	Tx: 8690 - 9039 Rx: 26690 - 27039
B28 - 700 APT	FDD	703 - 748	758 - 803	Tx: 9210 - 9659 Rx: 27210 - 27659
B29 - 700 d	FDD	N/A	717 - 728	Rx: 9660 - 9769
B30 - 2300 WCS	FDD	2305 - 2315	2350 - 2360	Tx: 9770 - 9869 Rx: 27660 - 27759

B32 - 1500 L	FDD	N/A	1452 - 1496	Rx: 9920 - 10359
B34 - 2000	TDD		2010 – 2025	T/Rx: 36200 - 36349
B38 - 2600	TDD		2570 - 2620	T/Rx: 37750 - 38250
B39 - 1900+	TDD		1880 - 1920	T/Rx: 38250 - 38649
B40 - 2300	TDD		2300 - 2400	T/Rx: 38650 - 39650
B41 - 2600+	TDD		2496 - 2690	T/Rx: 39650 - 41589
B42 - 3500	TDD		3400 - 3600	T/Rx: 41590 - 43589
B46 - 5200	TDD		5150 – 5925 (DL only)	Rx: 46790 - 54539
B48 - 3600	TDD		3550 - 3700	T/Rx: 55240 - 56739
B66 - AWS-3	FDD	1710 - 1780	2110 - 2200	Tx: 66436 - 67335 Rx: 131972 - 132671
B71 - 600	FDD	663 - 698	617 - 652	Tx: 133122 - 133471 Rx: 68586 - 68935

WCDMA Bands supportive

UTRA BAND	Duplex Mode	Uplink Frequency (MHz)	Downlink Frequency (MHz)	Channels
B1 – 2100	FDD	1920 - 1980	2110 - 2170	Tx: 9612 - 9888 Rx: 10562 - 10838
B2 – 1900 PCS	FDD	1850 - 1910	1930 - 1990	Tx: 9262 - 9538 Rx: 9662 - 9938
B4 – AWS-1	FDD	1710 - 1755	2110 - 2155	Tx: 1537 - 1738 Rx: 1312 - 1513
B5 – 850	FDD	824 - 849	869 - 894	Tx: 4132 - 4233 Rx: 4357 - 4458
B6 – 850 Japan	FDD	830 - 840	875 - 885	Tx: 4162 - 4188 Rx: 4387 - 4413
B8 – 900 GSM	FDD	880 - 915	925 - 960	Tx: 2712 - 2863 Rx: 2937 - 3088
B9 – 1800 Japan	FDD	1750 - 1785	1845 - 1880	Tx: 8762 - 8912 Rx: 9237 - 9387
B19 – 800 Japan	FDD	830 - 845	875 - 890	Tx: 312 - 363 Rx: 712 - 763

2.3.2. CA / MIMO / EN-DC

The FT980 Series supports CA/MIMO/EN-DC configuration.

2.4. Electrical Specification

2.4.1. Power supply requirements

2.4.1.1. DC Power Jack

DC Power Jack Requirements

Nominal supply voltage	12V
Supply voltage range	10.8V – 13.2V

2.4.2. Power Consumption

Below table provides typical current consumption values of FT980 for various operation modes.

FT980 Power Consumption

Mode	Average [Typ.]	Mode Description
IDLE Mode		
CFUN=1	3.5W	No call connection USB or Ethernet is connected to a host
Power Saving Mode		
CFUN=4	2.5W	Tx and Rx are disabled;
CFUN=5	1.2W	Ethernet MAC is disabled; USB is not connected to host;



Information – Power supply for the FT980 router must ensure the peak current output of at least 25W.

2.5. RF performance

The RF performance in 5G, LTE and WCDMA modes conform to the 3GPP specifications.

2.5.1. Conducted Transmit Output Power

TX power follows the measurement conditions and specifications defined in 3GPP.

Band	Power class	RF Power (dBm)
------	-------------	----------------

5G NR Sub-6 n1, n2, n3, n5, n7, n8, n12, n20, n25, n28, n38, n40, n41, n48, n66, n71, n77, n78, n79	3 (0.2W)	23 (+2dB / -2dB)
5G NR mmWave (OTA) _ Supported by FT980m n257, n258, n260, n261	TBD	TBD
LTE All Bands B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B30, B34, B38, B39, B40, B41, B42, B48, B66, B71	3 (0.2W)	23 (+2dB / -2dB)
LTE Band 41 Supports Power Class 2	2 (0.4W)	26 (+2dB / -2dB)
3G WCDMA B1, B2, B3, B4, B5, B6, B8, B9, B19	3 (0.2W)	23 (+2dB / -2dB)

2.5.2. Conducted Receiver Sensitivity

Receiver Sensitivity follows the measurement conditions and specifications defined in 3GPP.

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

E-UTRA Band	Conductive typical Rx Sensitivity (dBm) *					
	Antenna Configuration	PRx	DRx	MIMO 0	MIMO 1	Combined
LTE FDD B1		-96	-97	-96	-96	-102
LTE FDD B2		-96	-96	-96	-96	-102
LTE FDD B3		-96	-97	-96	-96	-102
LTE FDD B4		-96	-97	-96	-96	-102
LTE FDD B5		-98	-98	NA	NA	-101
LTE FDD B7		-96	-96	-96	-96	-101

LTE FDD B8	-98	-98	NA	NA	-101
LTE FDD B12	-98	-98	NA	NA	-101
LTE FDD B13	-98	-98	NA	NA	-101
LTE FDD B14	-98	-98	NA	NA	-101
LTE FDD B17	-98	-98	NA	NA	-101
LTE FDD B18	-98	-98	NA	NA	-101
LTE FDD B19	-98	-98	NA	NA	-101
LTE FDD B20	-98	-98	NA	NA	-101
LTE FDD B25	-96	-96	-96	-96	-102
LTE FDD B26	-98	-98	NA	NA	-101
LTE FDD B28	-98	-98	NA	NA	-101
LTE FDD B29 (DL only)	-98	-98	NA	NA	-101
LTE FDD B30	-96	-97	-96	-96	-101
LTE FDD B32	-97	-97	-96	-96	-101
LTE TDD B34	-97	-98	NA	NA	-100
LTE TDD B38	-97	-97	-96	-96	-102
LTE TDD B39	-97	-97	-96	-96	-102
LTE TDD B40	-96	-97	-96	-96	-101
LTE TDD B41	-96	-97	-96	-96	-101
LTE TDD B42	-96	-97	-96	-96	-101
LTE TDD B46 (DL only)	-93	-92	-92	-93	-98
LTE TDD B48	-96	-97	-96	-97	-101
LTE FDD B66	-97	-97	-96	-96	-102
LTE FDD B71	-98	-98	NA	NA	-101

UTRA Band	Conductive typical Rx Sensitivity (dBm) *				
Antenna Configuration	PRx	DRx	MIMO 0	MIMO 1	Combined
WCDMA FDD B1	-110	-110	NA	NA	NA
WCDMA FDD B2	-110	-110	NA	NA	NA

WCDMA FDD B3	-110	-110	NA	NA	NA
WCDMA FDD B4	-110	-110	NA	NA	NA
WCDMA FDD B5	-110	-110	NA	NA	NA
WCDMA FDD B6	-110	-110	NA	NA	NA
WCDMA FDD B8	-110	-110	NA	NA	NA
WCDMA FDD B9	-110	-110	NA	NA	NA
WCDMA FDD B19	-110	-110	NA	NA	NA

* 12 Voltage / Room temperature



Information – The sensitivity level has a deviation about +/- <2dB, device and channel because the level shows typical value.

LTE level is measured at BW 10 MHz except Band46

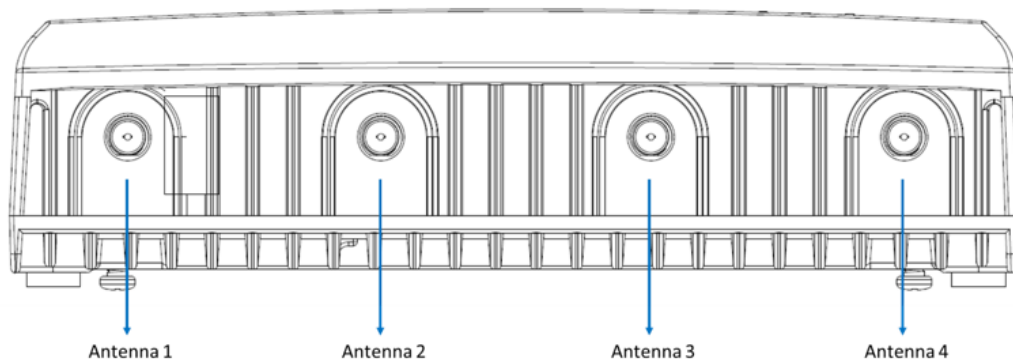
B46 BW = 20 MHz

2.6. Antenna interface

FT980 provides four RF Antennas covering the 5G FR1/LTE/WCDMA bands including, and four mmW antenna module for 5G FR2.

2.6.1. Antenna configuration

See the picture on the below for their position on the interface.



Refer to the following antenna configuration assigned.

Antenna port	Technology	Tx	Rx	GNSS
ANT 1	WCDMA	B1, B2, B4, B5, B6, B8, B9, B19	B1, B2, B4, B5, B6, B8, B9, B19	-
	LTE	B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B30, B34, B38, B39, B40, B41, B66, B71	B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B29, B30, B32, B34, B38, B39, B40, B41, B42, B46, B48, B66, B71	-
	5G NR FR1	n1, n2, n3, n5, n7, n8, n12, n20, n28, n38, n40, n41, n66, n71	n1, n2, n3, n5, n7, n8, n12, n20, n25, n28, n38, n40, n41, n48, n66, n71, n77, n78, n79	-
ANT 2	WCDMA	-	B1, B2, B4, B5, B6, B8, B9, B19	-
	LTE	B5, B20, B42, B48, B71	B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B29, B30, B32, B34, B38, B39, B40, B41, B42, B46, B48, B66, B71	-
	5G NR FR1	n5, n48, n77, n78, n79	n1, n2, n3, n5, n7, n8, n12, n20, n25, n28, n38, n40, n41, n48, n66, n71, n77, n78, n79	-
ANT 3	WCDMA	-	-	-
	LTE	B1, B2, B3, B4, B7, B41, B66	B1, B2, B3, B4, B7, B25, B30, B32, B34, B38, B39, B40, B41, B42, B46, B48, B66	-
	5G NR FR1	n1, n2, n3, n7, n25, n41 n66, n77, n78, n79	n1, n2, n3, n7, n25, n38, n40, n41, n48, n66, n77, n78, n79	-
ANT 4	WCDMA	-	-	-
	LTE	-	B1, B2, B3, B4, B7, B25, B30, B32, B34, B38, B39, B40, B41, B42, B46, B48, B66	GPS L1, Galileo E1, Beidou B1, Glonass G1
	5G NR FR1	-	n1, n2, n3, n7, n25, n38, n40, n41, n48, n66, n77, n78, n79	-
Built-in	GNSS	-	-	GPS L1

2.6.2. Antenna Specification

The antenna for the FT980 device is using below specification:

Tellestar antenna specification for FT980 for WCDMA / LTE / 5G Sub-6

Frequency range	LTE Full Band Antenna 617~960, 1427~2690, 3300~5925MHz
Impedance	50 Ohm
Average VSWR about all band	<=5.0
Gain	<= 2.5dBi

2.6.3. Antenna Module for 5G NR mmW

2.6.3.1. Module description

The QTM525 millimeter-wave module includes an integrated RFIC, power management IC, and phased antenna array.



Information – mmWave is only supported on the FT980m.

Supported bands differ according to the type of QTM525 millimeter-wave module.

QTM525-2 : Dual-band module variants supporting n257 and n258

QTM525-5 : Tri-band module variants supporting n258, n260, and n261

2.7. Mechanical specifications

2.7.1. Dimensions

FT980 overall dimensions are:

- Length: 150.00 mm, +/- 0.15 mm tolerance
- Width: 88.00 mm, +/- 0.15 mm tolerance
- Thickness: 39 mm, +/- 0.15 mm tolerance

2.7.2. Weight

The nominal weight of the FT980 is about 670 grams.

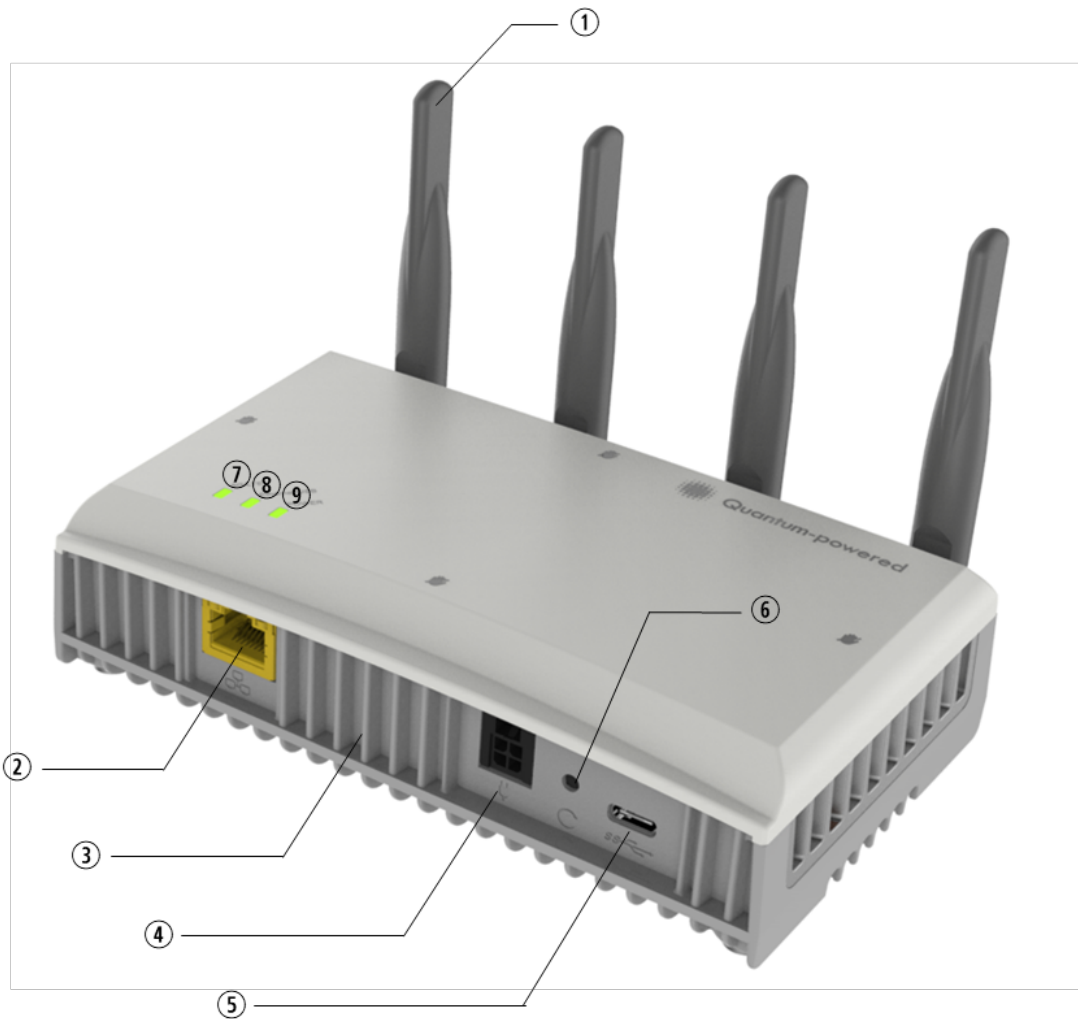
2.8. Environmental Requirements

2.8.1. Temperature Range

Note	
Operating Temperature Range	<p>–20°C ~ +50°C This range is defined by KC. Telit guarantees its modules to comply with all KC requirements and to have full functionality of the module with in this range.</p>
	<p>–20°C ~ +55°C This range is defined by 3GPP (the global standard for wireless mobile communication). Telit guarantees its modules to comply with all 3GPP requirements and to have full functionality of the module with in this range.</p>
	<p>–30°C ~ +75°C Telit guarantees full functionality within this range as well. However, there may possibly be some performance deviations in this extended range relative to 3GPP requirements, which means that some RF parameters may deviate from the 3GPP specification in the order of a few dB. For example: receiver sensitivity or maximum output power may be slightly degraded.</p> <p>Even so, all the functionalities, such as call connection, SMS, USB communication, UART activation etc., will be maintained, and the effect of such degradations will not lead to malfunction.</p>
Storage and non-operating Temperature Range	–30°C ~ +75°C

3. QUICK START GUIDE (TBD)

3.1. Product Overview



- | | | |
|-----------------------|------------------|--------------------|
| ① Antennas | ④ 12V Power Jack | ⑦ Network LED |
| ② 10Gbps Ethernet | ⑤ USB Type C | ⑧ Ethernet/USB LED |
| ③ Micro SIM Card Slot | ⑥ Reset Button | ⑨ Power LED |

3.2. Step 1: Check the Accessories



Please make sure that following items are included in the FT980 box:

- AC/DC power adapter
Input: 100 – 240 VAC
Output: 12V, 4A
- 4 Antennas

3.3. Step 2: Installation

- Connect 4 antennas to front panel
- Please do not place any objects on top of the product. And Install the product where the top of the product is not blocked by other structures. The mmWave is built into the top of the product and may affect to performance.
- After connecting the 12v power adapter to the FT980, connect the power of the adapter to the outlet.
- This product does not have a separate on/off button. It works immediately when the power is connected.
- Before using the product, check whether the mobile communication service is subscribed or activated.

3.4. Step 3: LEDs and Ports Description

3.4.1. LEDs

There are three LEDs on the top of the product.

LED	Color	Description
Network LED	Red : Light On	Mobile communication service is not active
	Red : Blinking	No service
	Green : Light On	Connected to 5G or LTE
	Green : Blinking	Connected to WCDMA
Ethernet/USB LED	Red : Light On	Not connected to both Ethernet and USB
	Green : Light On	Connected to Ethernet or USB
Power LED	Red : Light On	Abnormal operation
	Green : Light On	Normal operation

3.4.2. Ports

- RJ-45 Port
 - Up to 10Gbps
- USB Type C Port
 - Web CM management by connecting to PC.
 - Product setting and control by connecting to PC.
- Reset button
 - Use when product is not responding or the emergency case

3.5. Step 4: Operation

3.5.1. USB Driver (TBD)

- USB Driver Link (<https://www.telit.com/evkevb-drivers/>)
 - Windows 7/8 or 10 (Non-Secured)
Install the WindowsDesktopDriversInstaller_1.12.0003.zip driver.
 - Windows 10 (Secured)
Install the Windows10WHQLDriversInstaller_2.09.0002.zip driver.
- After installation of the driver, the FT980 device is displayed in the Device Manager

3.5.2. Product Setting and Control

Please refer to FT980 SW User Guide, 1VV0301631

4. PACKAGING (TBD)

5. ACRONYMS

TTSC	Telit Technical Support Centre
USB	Universal Serial Bus
HS	High Speed
DTE	Data Terminal Equipment
UMTS	Universal Mobile Telecommunication System
WCDMA	Wideband Code Division Multiple Access
HSDPA	High Speed Downlink Packet Access
HSUPA	High Speed Uplink Packet Access
UART	Universal Asynchronous Receiver Transmitter
PCIE	Peripheral Component Interconnect Express
SIM	Subscriber Identification Module
NR	New Radio
I2S	Inter-IC Sound
I/O	Input Output
GPIO	General Purpose Input Output
CMOS	Complementary Metal – Oxide Semiconductor
CLK	Clock
RTC	Real Time Clock
PCB	Printed Circuit Board
ESR	Equivalent Series Resistance
VSWR	Voltage Standing Wave Ratio

VNA	Vector Network Analyzer
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FDD	Frequency division duplex
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I2C	Inter-integrated circuit
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LTE	Long term evolution
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SOC	System-on-Chip
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6. DOCUMENT HISTORY

Revision	Date	Changes
0	2020-08-19	First draft
1	2020-10-28	Update 1.5 Related Documents
		Update 2.8.1 Temperature Range



SUPPORT INQUIRIES

Link to www.telit.com and contact our technical support team for any questions related to technical issues.

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