Conduit® 300 Series IoT Programmable Gateway

MTCDT3AC-L4G1/-EN Hardware Guide

Conduit 300 Series Hardware Guide

Model: MTCDT3AC-EN, MTCDT3AC-L4G1

Part Number: S000785

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Chapter 1 – Product Overview

Introduction

The Conduit® 300 Series (MTCDT3AC) is a flexible programmable gateway which can use a broad array of communication or wireless interfaces including Ethernet, cellular, and LoRa to enable machine-to-machine (M2M) and IoT connectivity. It also provides an online application store as a platform for developers to provision and manage their gateway and associated sensors and end devices. The device has additional connectivity and mounting options to fit a variety of applications.

Documentation

Document	Description	Part Number
Hardware Guide	This document provides overview, safety and regulatory information, design considerations, schematics, and general hardware information.	S000785
Software Guide	This document provides instructions and information on how to properly configure your device through its user interface.	S000786
API Developer Guide	You can use the Conduit API to manage configurations, poll statistics, and issue commands. Documentation is available on the MultiTech Developer Resources website at: http://www.multitech.net/developer/software/aep/conduit-aep-api/.	N/A
Quectel AT Commands Reference Guide	Lists AT Commands and parameters used to configure your device. For EC25, EC21, & EG25G (Applies to L4G1 - Cat 4 devices)	N/A
POE Application Note	Provides information related to using POE (Power Over Ethernet) on this device	S000678

Product Kit Contents

Your Product Kit typically includes the following (varies with model):

Device	1 - Conduit 300 (MTCDT3AC)
Power Supply	1 - 100-240V 12V-2.0 A power supply and cable with removable blades OR 1 - POE connection (NOTE: POE power source is user-supplied) with 10/100/1000TX speed
	1 - NAM blade/plug
	1 - EURO blade/plug
	1 - UK blade/plug
	1 - AU/NZ blade/plug
Cables	1 - DC Power with Terminal block connector
	1 - Micro USB Cable
	1 - Ethernet Cable RJ45 6-ft. with 10/100/1000TX speed (Ethernet Switch)
Antennas (varies with model)	2 - LTE SMA (for Conduit LTE only), 1 or 2 - LoRa Antenna(s) (varies with model), and 1 - Wi-Fi/Bluetooth antenna
Ground Screw	1 - Ground Screw
Mounting Hardware (use either standard mounting or DIN Rail bracket)	2 - Mounting Brackets and 4 - Mounting Screws
	1 -DIN Rail Mounting Bracket and 3 - DIN Rail Bracket Screws
Customer Notices	Quick Start Guide
	Registration Card
Feet	4 - Clear Adhesive Feet

Product Build Options

Product	Description	Region
MTCDT3AC-EN-A300HE-EWM	Ethernet only Programmable Gateway with GNSS, Wi-Fi/BT, and Accessories	AU, EU, UK, NA
MTCDT3AC-EN-A300GE-EWM	Ethernet only Programmable Gateway with GNSS and Accessories	AU, EU, UK, NA
MTCDT3AC-EN-A33UHE-EWM	Ethernet only Programmable Gateway 8-channel, 915 MHz , with GNSS, Wi-Fi/BT, and Accessories	AU, EU, UK, NA
MTCDT3AC-EN-A33UGE-EWM	Ethernet only Programmable Gateway 8-channel, 915 MHz , with GNSS and Accessories	AU, EU, UK, NA
MTCDT3AC-EN-A33EGE-EEM	Ethernet only Programmable Gateway using 8-channel, 868 MHz , with GNSS and Accessories	EU, UK
MTCDT3AC-L4G1-A300HE-EWM	LTE Cat 4 Programmable Gateway with GNSS, Wi-Fi/BT, and Accessories	AU, EU, UK, NA
MTCDT3AC-L4G1-A300GE-EWM	LTE Cat 4 Programmable Gateway with GNSS and Accessories	AU, EU, UK, NA
MTCDT3AC-L4G1-A33UHE-EWM	LTE Cat 4 Programmable Gateway 8-channel, 915 MHz , with GNSS, Wi-Fi/BT, and Accessories	AU, EU, UK, NA
MTCDT3AC-L4G1-A33EHE-EEM	LTE Cat 4 Programmable Gateway 8-channel, 868 MHz, with GNSS, Wi-Fi/BT, and Accessories	EU, UK
MTCDT3AC-L4G1-A36UHE-EWM	LTE Cat 4 Programmable Gateway 16-channel, 915 MHz, with GNSS, Wi-Fi/BT, and Accessories	AU, EU, UK, NA

Chapter 2 – Specifications

MTCDT3AC-L4G1 Specifications

Category	Description
General	
Performance	3GPP Rel. 11 LTE
	UMTS/HSPA+
	GSM/GPRS/EDGE
TCP/IP Functions	FTP, SMTP, SSL, TCP, UDP
	LTE FDD: B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/ B19/B20/B25/B26/B28
Frequency Bands (MHz)	LTE TDD: B38/B39/B40/B41
	WCDMA: B1/B2/B4/B5/B6/B8/B19
	GSM: B2/B3/B5/B8
Speed	
Data Speed	LTE FDD: Max 150Mbps (DL)/Max 50Mbps (UL)
	LTE TDD: Max 130Mbps (DL)/Max 30Mbps (UL)
	UMTS: DC-HSDPA: Max 42Mbps (DL)
	UMTS: HSUPA: Max 5.76Mbps (UL)
	UMTS: WCDMA: Max 384Kbps (DL)/Max 384Kbps (UL)
	GSM: EDGE: Max 296Kbps (DL)/Max 236.8Kbps (UL)
	GSM: GPRS: Max 107Kbps (DL)/Max 85.6Kbps (UL)
Physical Description	
Dimensions	See the drawing in *Dimensions*.
Weight	~2 lbs. (1 kg) with no accessory cards installed
Connectors	

Category	Description
Connectors	1 USB device port with micro B type connector
	4 RJ-45 Ethernet port (1-4) with Gigabit Ethernet 10/100/1000TX speed (Ethernet switch)
	1 USB 2.0 Type A Host Port, 500 mA maximum power draw
	1 Serial Port (RS-232/422/485)
	2 MTAC Accessory Card slots, and if populated with LoRa card(s), 1 or 2 LoRa (RF) Antenna connectors (varies with model)
	POE (Power Over Ethernet) port -Gigabit Ethernet capable
	DC Power (Terminal Block) connector
	2 cellular antenna connectors
	1 Wi-Fi/Bluetooth antenna connector
	1 GPS antenna connector, GNSS capable, supports 3.3V-powered LNA antenna
	USB Serial Debug Port
	3FF SIM (Micro SIM) Card Slot
	Micro SD Slot
	Ground Screw
Power Requirements	
Voltage	POE (Power over Ethernet) IEEE 802.3at POE standard: 37 - 5 (user-supplied POE power source with 25 W minimum)
	Terminal Block Connector: 12 V
Power Draw	See Conduit Power Draw
Environment	
Operating Environment	-40° to +70° C [1]
Storage Environment	-40° to +85° C
Relative Humidity	20 to 90% non-condensing
Certifications	
Radio & EMC Compliance	FCC Part 15 Class A/IC Class A
	CE Mark, RED (EU)
	RCM (AU)
Safety Compliance	UL 62368-1 2nd Ed.
	CSA C22.2 No. 62368-1-14, 2nd Edition
	IEC 62368-1:2014 Second Edition (EU)
Network	Verizon, AT&T, PTCRB

*UL Listed @ 40° C, limited by AC power supply. UL Recognized @ 65° C when used with DC power cable.

UL Certification does not apply or extend to use in outdoor applications.

Optional power must be UL Listed ITE power supply marked LPS or Class 2 rated with rating between 12-57 VDC minimum of 1A .

Certification does not apply or extend to voltages outside certified range, and has not been evaluated by UL for operating voltages beyond tested range.

LoRa Specifications

Depending on the model, your device has one or two LoRa radios. If the model number includes A34 or A36, the device has two LoRa radios.

Category	Description
General	
Standards	LoRaWAN 1.0.3 specifications
Radio Frequency	915 & 868 MHz ISM
Certifications and Compliance	
EMC and Radio Compliance	FCC Part 15A
	FCC Part 15C
	CE, RED
	ICES-003
	RSS 247 Issue 1:2015
Safety Compliance	UL 62368-1 2nd Ed.
	CSA C22.2 No. 62368-1-14, 2nd Edition
	IEC 62368-1:2014 Second Edition (EU)

MTCDT3AC-EN Specifications

Category	Description
Speed	
Data Speed	10/100/1000TX speed
Physical Description	
Dimensions	See the drawing in *Dimensions*.
Weight	~2 lbs. (1 kg) with no accessory cards installed
Connectors	

Category	Description
Connectors	1 USB device port with micro Type B connector
	4 RJ-45 Ethernet port (1-4) with 10/100/1000TX speed (Ethernet switch)
	1 USB 2.0 Type A Host Port, 500 mA maximum power draw
	1 Serial Port (RS-232/422/485)
	2 MTAC Accessory Card slots, and if populated with LoRa card(s), 1 or 2 LoRa (RF) Antenna connectors (varies with model)
	POE (Power Over Ethernet) port - Gigabit Ethernet capable
	DC Power (Terminal Block) connector
	1 Wi-Fi/Bluetooth antenna connector
	1 GPS antenna connector, GNSS capable, supports 3.3V-powered LNA antenna
	USB Serial Debug Port
	Micro SD Slot
	Ground Screw
Power Requirements	
Voltage	POE (Power over Ethernet) IEEE 802.3at POE standard: 37 - 57V (user-supplied POE power source with 25 W minimum)
	Terminal Block Connector: 12 V
Power Draw	See Conduit Power Draw
Environment	
Operating Environment	-40° to +70° C [1]
Storage Environment	-40° to +85° C
Relative Humidity	20 to 90% non-condensing
Certifications	
Safety Compliance	UL 62368-1 2nd Ed.
	CSA C22.2 No. 62368-1-14, 2nd Edition
	IEC 62368-1:2014 Second Edition (EU)

*UL Listed @ 40° C, limited by AC power supply. UL Recognized @ 65° C when used with DC power cable.

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Optional power must be UL Listed ITE power supply marked LPS or Class 2 rated with rating between 12-57 VDC minimum of 1A .

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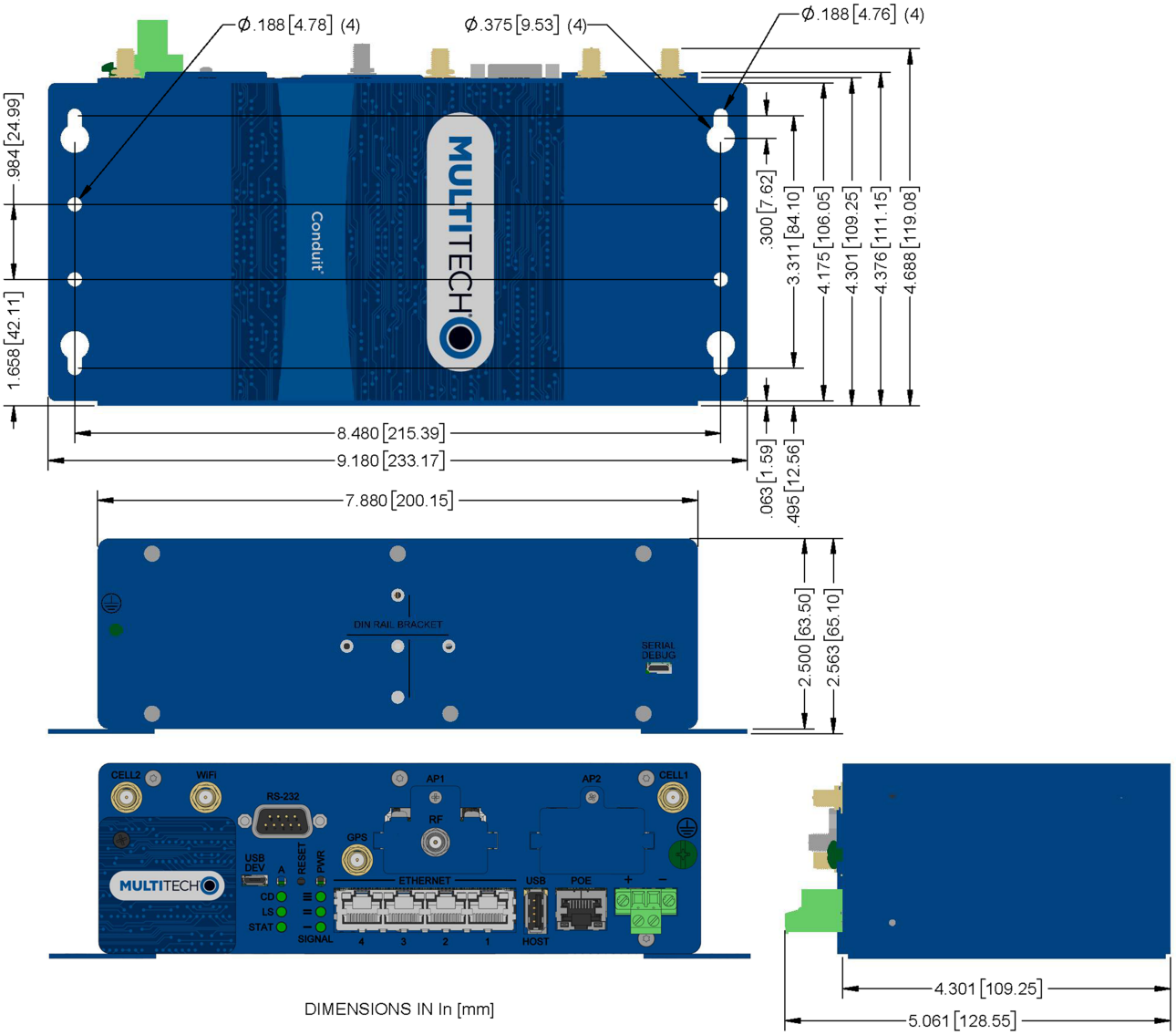
LoRa Specifications

Depending on the model, your device has one or two LoRa radios. If the model number includes A34 or A36, the device has two LoRa radios.

Category	Description
General	
Standards	LoRaWAN 1.0.3 specifications
Radio Frequency	915 & 868 MHz ISM
Certifications and Compliance	
EMC and Radio Compliance	FCC Part 15A
	FCC Part 15C
	CE, RED
	ICES-003
	RSS 247 Issue 1:2015
Safety Compliance	UL 62368-1 2nd Ed.
	CSA C22.2 No. 62368-1-14, 2nd Edition
	IEC 62368-1:2014 Second Edition (EU)

Dimensions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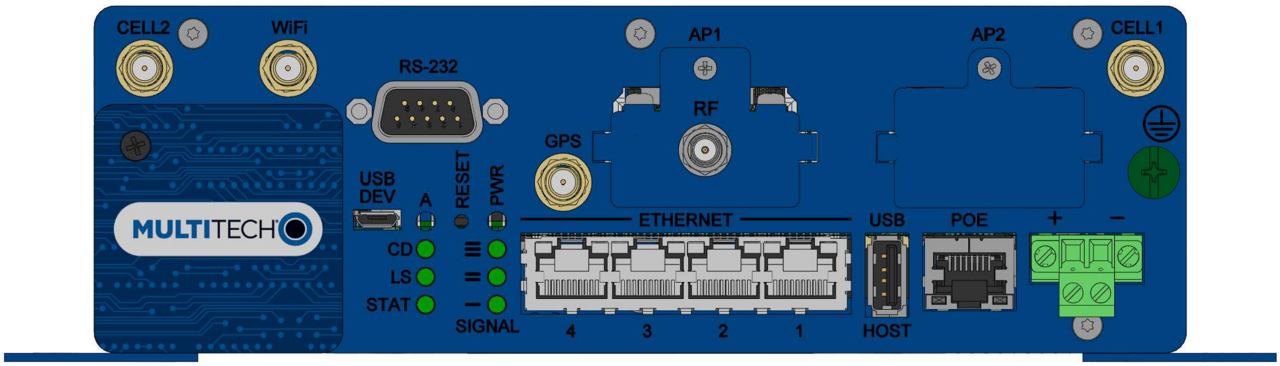
Ø.375 [9.53] (4)
Ø.188 [4.76] (4)
.984 [24.99]
1.658 [42.11]
.300 [7.62]
3.311 [84.10]
4.175 [106.05]
4.301 [109.25]
4.376 [111.15]
4.688 [119.08]
8.480 [215.39]
9.180 [233.17]
.063 [1.59]
.495 [12.56]
7.880 [200.15]
2.500 [63.50]
2.563 [65.10]
DIN RAIL BRACKET
SERIAL DEBUG
CELL2
WIFI
RS-232
AP1
AP2
CELL1
RF
GPS
USB DEV
A
RESET
PWR
ETHERNET
USB
POE
CD
LS
STAT
SIGNAL
HOST
4.301 [109.25]
5.061 [128.55]
DIMENSIONS IN In [mm]

Front Panel Connectors

Label	Description
CELL1, CELL2	Cellular antenna inputs (varies with model). ■ CELL2 - Primary, CELL2 - Diversity
WiFi	Wi-Fi/Bluetooth antenna inputs (varies with model).
GPS	GPS antenna inputs, GNSS capable, supports 3.3 V-powered LNA antenna.
RS-232	RS-232/RS-422/RS-485 serial connector.
AP1, AP2	Slots for MultiTech accessory cards (varies with model). You can install an accessory card in either slot. Both slots can be occupied at one time.
RF	For LoRa gateway accessory cards only (varies with model), LoRa antenna connector.
USB DEV	Standard USB 2.0 Device interface with Micro B connector. Initially setup as USB Gadget Serial Interface but can be user-defined.
ETHERNET 1-4	Ethernet Ports-RJ-45 receptacle for 10/100/1000TX speed (Ethernet Switch).
	Caution: Ethernet ports and command ports are not designed to be connected to a public telecommunication network or used outside the building or campus. **Caution:** Les ports Ethernet et de commande ne sontpas conçus pour être raccordés à un réseau detélécommunications public.
USB HOST	High-speed, standard USB 2.0 Type A connector. 500mA maximum current draw. You can plug into the Host port a device such as a flash drive, camera, or printer if the Linux kernel has the appropriate driver.
POE	POE (Power over Ethernet) receptacle, IEEE 802.3at compatible, 37-57V (user-supplied power source with 25 W minimum) with 10/100/1000TX speed
Power + -	Terminal block connector, 12VDC (Other power option: POE)
SIM	3FF SIM (Micro SIM) card slot
SD Card	SD card slot
⏚	Device ground (install ground screw on either front or back panel).

LED Descriptions

Front Panel



Label	Name	Description
A	User-defined	User-defined.
CD	Carrier Detect	This LED is on when a cellular data connection is made.
LS	Link Status	Varies with radio model.
STAT	Power Status	Default condition: LED turns green (solid) when software is fully loaded.
PWR	Power	Solid (constant) green if unit is on indicating that DC power is present.
Signal	Signal Strength	These 3 LEDs display the strength of the cellular signal.

If a cellular radio is installed, the typical LS (Link Status) LED behavior is the following:

- OFF - No power to the cellular radio
- Continuously Lit - Not registered
- Slow Blink (-0.2Hz) - Registered or connected

For the RJ-45 Ethernet LEDs (located at the top of the connector) are defined as follows:

- Yellow LED (lower-left) indicated activity/link. Blinks when there is transmit and receive on the Ethernet link.
- Green LED (lower-right) when solid indicates link on.

On the front panel, the POE LEDs (located at the bottom of the connector) are defined as follows:

- Yellow LED (lower-left) indicated activity/link. Blinks when there is transmit and receive on the Ethernet link.
- Green LED (lower-right) when solid indicates link on.
- Orange LED (lower-right) indicates POE supply was connected that was not 25W minimum power

Power Draw-MTCDT3AC-L4G1 w/ Modem, Two MTAC-LORA-H Cards

Radio Protocol	Power Down Mode - Shutdown -h now (mA)	Callbox Connection Idle-No Data (mA)	Average Measured Current at Max Power (mA)[1]	TX Pulse (Avg) Amplitude Current (mA)[2]	Total Inrush Charge Measured in MilliCoulombs (mC)[3]	Total Inrush Charge Duration during Powerup-Inrush Duration (mS)
12.0 Volts						
GSM850	45	521	929	2,300	32.8	106.8
WCDMA Band 2 (1854 Mhz)	45	523	1,280	1,350	32.8	106.8
LTE Band 8 (897.5 Mhz)	45	532	1,090	1,210	32.8	106.8
57.0 Volts						
GSM850	30	141	228	292	9.75	182.6
WCDMA Band 2	30	125	250	328	9.75	182.6
LTE Band 8 (897.5 Mhz)	30	127	228	304	9.75	182.6
POE 37.0 volts						
GSM850	31	162	292	416	14.3	226
WCDMA Band 2 (1854 Mhz)	31	162	325	400	14.3	226
LTE Band 8 (897.5 Mhz)	31	164	332	420	14.3	226
POE 57.0 volts						
GSM850	28	113	199	304	10.9	205.5
WCDMA Band 2 (1854 Mhz)	28	113	217	284	10.9	205.5
LTE Band 8 (897.5 Mhz)	28	115	223	272	10.9	205.5

[1]**Max Power:** The continuous current during maximum data rate with the radio transmitter at maximum power.

[2]**TX Pulse:** The average peak current during a GSM850 transmission burst period or HSDPA/LTE connection. The transmission burst duration for GSM850 can vary, depending on what transmission scheme is being deployed (GPRS Class 8, Class 10, GSM, etc.).

[3]**Total Inrush Charge**: The total inrush charge at power on expressed in Millicoulombs (mC).

Note: Multi-Tech Systems, Inc. recommends that you incorporate a 10% buffer into the power source when determining product load.

Power Draw-MTCDT3AC-EN w/ No Modem, one MTAC-LORA-H Card

Voltage	Power Down Mode - Shutdown -h now (mA)	Callbox Connection Idle-No Data (mA)	Average Measured Current at Max Power (mA)[1]	Average Amplitude Current (mA)[2]	Total Inrush Charge Measured in MilliCoulombs (mC)[3]	Total Inrush Charge Duration during Powerup-Inrush Duration (mS)
12 VDC	41	536	752	864	.687	39.3
57 VDC	30	106	165	240	.493	123.4
POE - 37 V	31	148	223	308	6.75	182.8
POE - 57 V	28	104	153	224	2.31	156.5

[1]**Max Power:** The continuous current during maximum data rate at maximum power.

[2]**Average Amplitude:** The average peak current during data transmission.

[3]**Total Inrush Charge**: The total inrush charge at power on expressed in Millicoulombs (mC).

Note: Multi-Tech Systems, Inc. recommends that you incorporate a 10% buffer into the power source when determining product load.

Chapter 3 – Antenna Information

Cellular Antenna

Cellular devices were approved with the following antenna:

Manufacturer:	Wieson
Description:	LTE GY115HT467-017
Model Number:	11320Y11194A1

MultiTech ordering information:

Model	Quantity
ANLTE2-2HRA	1
ANLTE2-10HRA	10
ANLTE2-50HRA	50

Cellular Antenna Specifications

Category	Description
Frequency Range	.069~0.96GHz, 1.71~2.17GHz, 2.3GHz~2.69GHz
Impedance	50 Ohms
VSWR	VSWR should not exceed 3:1 at any point across the bands of operation
Peak Gain	3.8 dBi
Radiation	Omni-directional
Polarization	Linear Vertical

Bluetooth and Wi-Fi Antennas

Manufacturer:	Sinbon
Manufacturer's Model Number:	A9701641-1
Antenna Type:	2.4G / 5.0G Dipole Antenna

Multi-Tech Ordering Information

Model Number	Quantity
ANWF-1HRA	1
ANWF-10HRA	10
ANWF-50HRA	50

Antenna Specifications

Category	Description
Frequency Range	2.4000 to 5.150 GHz
Impedance	50 Ohms
VSWR	VSWR should not exceed 2.0:1 at any point across the bands of operation
Peak Radiated Gain	4.9 dBi for 2.4GHz/ 5.5 dBi for 5 GHz on azimuth plane
Radiation	Omni-directional
Polarization	Linear
Connector	RP-SMA(M)

LoRa Antenna

Manufacturer:	Pulse Electronics
Description:	868-928 MHz RP-SMA Antenna, 8"
Model Number:	W1063

MultiTech ordering information:

Ordering Part Number	Quantity
AN868-915A-1HRA	1
AN868-915A-10HRA	10
AN868-915A-50HRA	50

LoRa Antenna Specifications

Category	Description
Frequency Range	868-928 MHz
Impedance	50 Ohms
VSWR	$\leq$ 2.0
Gain	1.0 dBi
Radiation	Omni
Polarization	Vertical

GPS Antenna

Manufacturer:	Trimble
Description:	GPS Antenna with low noise amplifier
Model Number:	66800-52

MultiTech Ordering Information

Model	Quantity
ANGPS-1MM	1
ANGPS-10MM	10
ANGPS-50MM	50

GPS Antenna Specifications

Category	Description
Frequency Range	1575.24 MHz
Impedance	50 Ohms
VSWR	2.0:1 max
Gain	10-30 dBi
LNA Current Consumption	40 mA max
Noise Figure	< 2dB
Polarization	RHCP
Input voltage	3.0V M M 0.2V

Chapter 4 – Setting up and Configuring the Device

Install and Connect Hardware

To install and cable the device:

1. Disconnect power to the device, if it is connected.
2. Install a Mirco SIM card (3FF).
3. Install a Micro SD card (optional).
4. Connect the supplied antenna(s) to the appropriate connector(s) on the front of the device. Connectors vary with model.
5. Use one of the Ethernet ports to connect your Conduit 300 to the PC designated to administer your device. NOTE: Ethernet ports 1-4 form an Ethernet Switch that connects to an internal IP address and can access the POE IP address.
6. Install any mCard accessory card into slot AP1 or AP2 on the front panel of the device. Refer to **Installing an Accessory Card** (mCard) for instructions.
7. Depending on the accessory card type, attach any antennas or cables for use with the card.
8. Connect the power adapter to the terminal block on the front panel of the device, unless you are using optional POE for power. (NOTE: POE injector or other POE power source is user-supplied.)
9. Connect the power cord to an outlet or power strip and to the power adapter. The Power LED comes on immediately after power is applied. Wait for the STAT LED to light up green (solid).

After powering up, refer to your device's software guide for first-time setup and commissioning.

Installing an Accessory Card

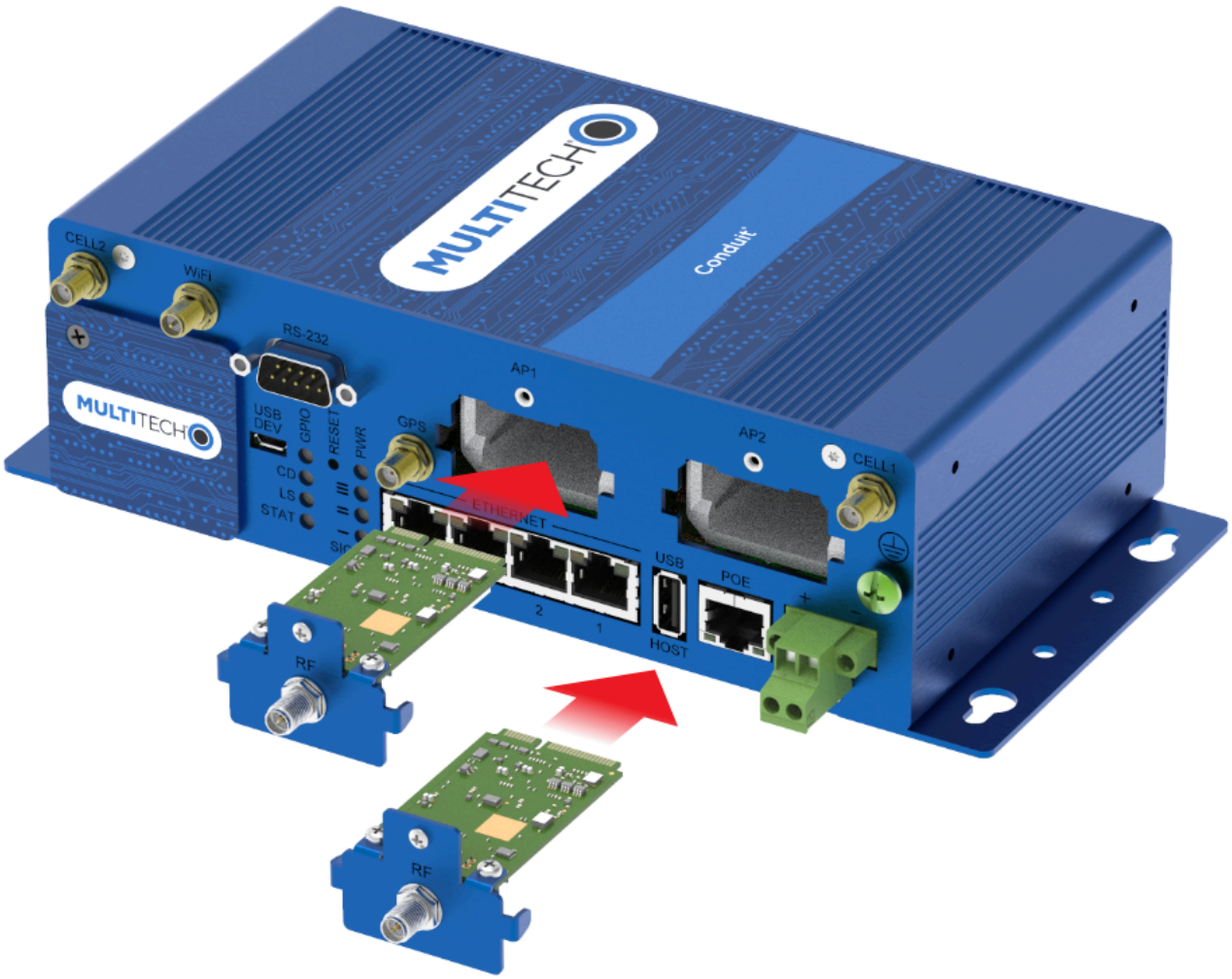
You need:

- Phillips screwdriver
- Accessory card
- Gateway device

To install the accessory card:

1. Disconnect power to the gateway device, if necessary.
2. At the front of the device housing, determine where you want to install the accessory card. You can install the card in either the AP1 or AP2 port. Remove the port cover and retain the screw.
3. Slide the card into the opening and push until you feel the card connector seat fully into the internal connector.*
4. Use a small Phillips screwdriver to attach the card bracket to the housing with the previously used screw. Make sure you tighten the screw completely.*

   ***NOTE:** To ensure card function, verify that the card is fully seated into the internal connector and that the bracket screw is completely tightened against the chassis. Otherwise, not all pins in the card will make sufficient contact causing the card to work intermittently or not at all.



Installing a Micro SIM Card

You need:

- Phillips screwdriver
- Micro SIM card (3FF form factor)

To install or replace the Micro SIM card:

1. Disconnect power to the device, if it is connected.
2. On the front panel, unfasten the screw securing the nameplate and remove it.
3. Locate the SIM card slot above the SD card slot, if device is mounted horizontally (or to the right of it, if vertically). If a SIM card is already installed, gently push on it using your fingernail to release it and remove with your fingers.
4. With the new Micro SIM card cut corner to the right and SIM contacts facing down, if horizontally mounted (or cut corner facing down and contacts to the left, if vertically), gently push the card into the slot using your fingernail to secure it. Check that the card is in the locked position.
5. If not installing a micro SD card, reattach the nameplate using the screw removed in Step 2.

Installing a Micro SD Card

You need:

- Phillips screwdriver
- Micro SD memory card, user-supplied (see multitech.net for SD card details)

To install or replace the Micro SD card:

1. Disconnect power to the device if it is connected.
2. On the front panel, unfasten the screw securing the nameplate and remove it.
3. Locate the SD card slot below the SIM card slot, if device is mounted horizontally (or to the left of it, if vertically). If an SD card is already installed, gently push on it using your fingernail to release it and remove with your fingers.
4. With the new Micro SD card contacts facing up, if horizontally mounted, (or contacts to the right, if vertically), gently push the card into the slot using your fingernail to secure it. Check that the card is in the locked position.
5. Reattach the nameplate using the screw removed in step 2.

Accessory Port (mCard) Interfaces

The accessory card interface on the MTCDT3AC base board has the following interface options:

Interface	Description
I2C	Used by all accessory cards. I2C is required for Electronic Identification (EID) support on the accessory card but can be used for other I2C devices. It should supports standard (100 kHz) and/or fast (400 kHz) clock speeds.
	The I2C interface reserves the full block of EEPROM address space for Electronic ID support, so we recommend that you not attach any other EEPROM devices to the interface. We recommend that you use a 24C04 part, because both address bits of the 24C04 are connected to the AP interface allowing you to identify four separate accessory port (AP) cards in a system.
Serial UART	Serial UART with HW flow control used by Serial interface based Accessory Cards
SPI Interface	AP1 and AP2 have option for SPI interface, based on what Accessory Card is installed.
GPIO	Additional control pins for certain Accessory Cards.
Interrupts	Software defined interrupts. Can also be used as additional control pins.
PPS	GPS generated Pulse-Per-Second signal used for software timing. Default is 1 pulse/sec.
USB 2.0	A standard USB 2.0 High Speed interface for USB based Accessory Cards.
5 VDC 1 Amp supply	Used by all accessory cards.
3.3 VDC 1 Amp supply	Used by all accessory cards.

For accessory card specifications, regulatory content, and installation information, refer to the appropriate product page: www.multitech.com/brands/multiconnect-mcard.

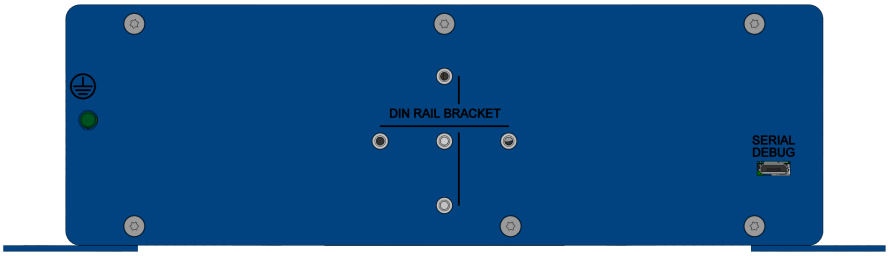
Connecting to the Debug Interface

You need:

- Standard USB Micro B cable

To connect the debug cable:

1. Disconnect power to the Conduit, if it is connected.
2. On the back of the device housing, locate the USB debug cable connector, labeled **SERIAL DEBUG** on the far right of the back panel (or if the device is vertical, at the top of the panel).
3. Connect the USB Micro B cable to the **SERIAL DEBUG** connector.
4. Connect the Type A end of the USB cable to the host.
5. From the host, use an application such as TeraTerm with a baud rate of 115,200. If the USB driver does not automatically install, do the following:
   a. Unplug the USB cable.
   b. Go to the following web site to download and install the appropriate USB driver: https://www.maxlinear.com/support/design-tools/software-drivers
   c. Plug the USB cable back into the housing.
6. From the host, access the device's USB COM port.



Restoring User Defined Settings

You need:

- A pin, paperclip, or similar thin object that can fit into the **RESET** hole.

To restore user defined settings for an **mPower device**:

1. Locate the hole in the panel labeled **RESET** between the **PWR** and **GPIO** LEDs. The reset button is recessed into the housing.
2. Use the pin to press in the button for between 3 to 29 seconds, then release the reset button. The device behavior varies with length of press and configuration saved on your device. Refer to the **Saving and Restoring Settings**in the mPower Software Guide for more details.
   - If you do not press in the button long enough, the device will reset, but the user defined settings will not be restored. **NOTE:** User defined settings must be saved and enabled in device configuration before using the **RESET** button.

- If you hold it too long (30 seconds or longer), factory default settings will be restored provided factory default is enabled in device configuration.

Resetting the Device

You need:

- A pin, paperclip, or similar thin object that can fit into the reset hole.

The following is the default condition for the **RESET** button on the device. You can program a change to the behavior of the button.

1. Find the hole in the front panel labeled **RESET** between the **PWR** and **GPIO** LEDs. The reset button is recessed into the case.
2. Use the pin to press the RESET button for less than 3 seconds, then release. The device reboots. The device behavior varies with length of press and configuration saved on your device. Refer to the **Saving and Restoring Settings** in the mPower Software Guide for more details.
3. The **STAT LED** turns solid (green) when software is fully loaded.

Powering Up the Device

Note: The device may be powered via one of two methods: 1) DC power using power supply provided **OR** 2) POE power using a user-supplied POE injector, router, switch, or other POE power source.
CAUTION: For DC power, use only the power cord provided with the device. Using any other power cord voids the warranty and can damage the device.

To power up the device:

1. Install the desired MultiTech accessory card or cards into the slots at the back of the device. Refer to the appropriate installation documentation for the accessory card.

   Note: Some models already have MTAC cards installed.

2. Connect the power adapter to the green terminal block on the right of the front panel of your device. Or, if available, you can connect to an optional POE port for power (POE power supply and cable are both user-supplied).
3. Connect the power adapter/plug to an outlet or power strip. Again, if available, you can connect your POE cable to your LAN in order to power the device.
4. Verify power.
   - The Power LED comes on immediately after power is applied.
   - The device takes a short time to boot up when you apply power. Wait for the Status LED to light up green (solid).

DIN Rail Installation

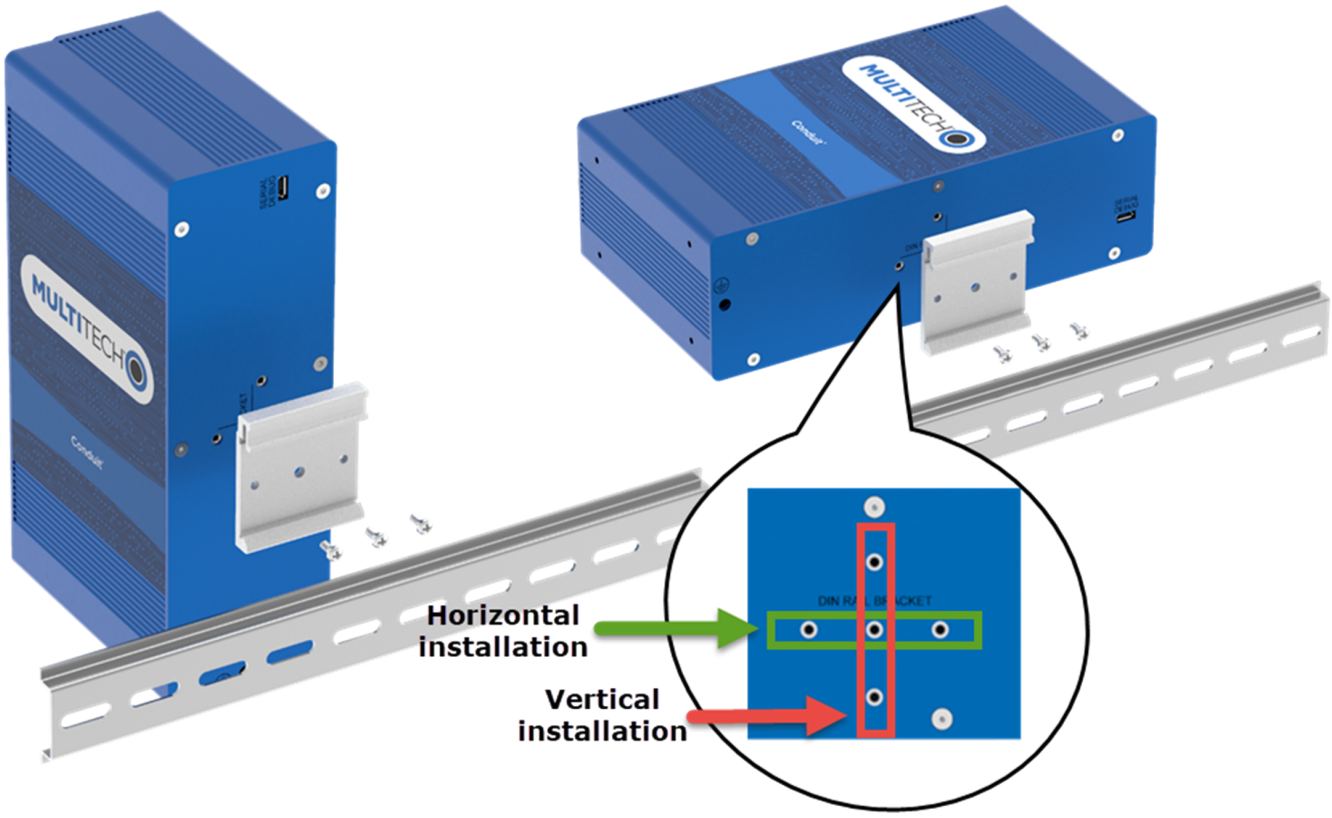
The location to mount the DIN rail bracket is on the back panel of the device labeled **DIN RAIL BRACKET**.

You need:

- Phillips screwdriver
- Bracket Screws (3)
- DIN rail mounting bracket
- DIN rail (user-provided)

To install the device on a DIN rail:

1. If connected, disconnect power and all other cables from the device.
2. On the back panel of the device, locate the screw holes labeled **DIN RAIL BRACKET**.
3. Mount the DIN bracket on the back of the device using the bracket screws. When facing the back panel with the device laying horizontally: a) For horizontal DIN rail installation, use the screw holes in the horizontal row, or b) For vertical installation, use the vertical row.
4. Secure the device bracket onto the DIN rail by hooking the top of clip first, pressing down, and fastening the bottom end. The bracket should click or snap into place when properly secured.
5. Reconnect power, other cables, and all antennas to the device.



Chapter 5 – Regulatory & Safety Information

47 CFR Part 15 Regulation Class A Devices

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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 one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Plug the equipment into 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.

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC Interference Notice

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

FCC Notice

The MultiTech Conduit is an open embedded development product. Configurations of this product may optionally contain a sub GHz radio technology which MultiTech has certified for compliance with US and Foreign compliance bodies including FCC, R&TTE and others. (e.g. FCC 15.247:2015 & IC RSS-210:2010).

MTDOT-x products are open development based products that contain a sub GHz radio technology. MultiTech has certified for compliance with US and Foreign compliance bodies including FCC, R&TTE and others. (e.g. FCC 15.247:2015 & IC RSS-210:2010)

The MTAC-LORA is open development based product that contains a sub GHz radio technology. MultiTech has certified for compliance with US and Foreign compliance bodies including FCC, R&TTE and others. (e.g. FCC 15.247:2015 & IC RSS-210:2010)

MTXDOT-x products are open development based products that contain a sub ghz radio technology. MultiTech has certified for compliance with US and Foreign compliance bodies including FCC, R&TTE and others. (e.g. FCC 15.247:2015 & IC RSS 247:2015)

MultiTech provides software code meant to operate the radio to a level that maintains compliance with the operating modes under which these radio devices were certified. To ensure this level of compliance, the software code is provided in binary form only. Users are prohibited from making any changes that affect the operation of

the radio performance. Accessing or controlling the radio through any means other than the provided binary software will require the user to obtain their own intentional radiator license from the certification body governing their locality, as all pre-certification provided withConduit IP67 Series 200 Base Station. Conduit mDot MTAC-LORA xDot will have been made invalid.

FCC Grant Information

FCC Identifier:	XMR201903EG25G
Equipment Class:	PCS Licensed Transmitter
Notes:	LTE Module
Modular Type:	Single Modular
FCC Rule Parts:	22H, 24E, 27, 90

Rule Parts	Frequency Range	Output Watts	Frequency Tolerance	Emission Designator
22H	824.2 - 848.8	1.8493	0.1 PPM	247KGXW
22H	824.2 - 848.8	0.4797	0.1 PPM	245KG7W
24E	1850.2 - 1909.8	1.3335	0.1 PPM	249KGXW
24E	1850.2 - 1909.8	0.6012	0.1 PPM	249KG7W
24E	1852.4 - 1907.6	0.3524	0.1 PPM	4M15F9W
27	1712.4 - 1752.6	0.3819	0.1 PPM	4M14F9W
22H	826.4 - 846.6	0.2512	0.1 PPM	4M13F9W
24E	1860.0 - 1900.0	0.4198	0.1 PPM	17M9G7D
24E	1860.0 - 1900.0	0.2259	0.1 PPM	17M9W7D
24E	1850.7 - 1909.3	0.2547	0.1 PPM	1M09W7D
27	1720.0 - 1745.0	0.4887	0.1 PPM	17M9G7D
27	1720.0 - 1745.0	0.2612	0.1 PPM	17M9W7D
27	1710.7 - 1754.3	0.2877	0.1 PPM	1M09W7D
22H	829.0 - 844.0	0.2333	0.1 PPM	8M93G7D
22H	829.0 - 844.0	0.1703	0.1 PPM	8M93W7D
22H	825.5 - 847.5	0.235	0.1 PPM	2M70G7D
22H	824.7 - 848.3	0.1936	0.1 PPM	1M09W7D
27	2510.0 - 2560.0	0.4864	0.1 PPM	17M9G7D
27	2510.0 - 2560.0	0.3177	0.1 PPM	17M9W7D
27	2502.5 - 2567.5	0.3192	0.1 PPM	4M49W7D
27	704.0 - 711.0	0.3475	0.1 PPM	8M93G7D
27	704.0 - 711.0	0.2183	0.1 PPM	8M93W7D
27	699.7 - 715.3	0.2472	0.1 PPM	1M09W7D

Rule Parts	Frequency Range	Output Watts	Frequency Tolerance	Emission Designator
27	782.0 - 782.0	0.4217	0.1 PPM	8M91G7D
27	782.0 - 782.0	0.2911	0.1 PPM	8M91W7D
27	779.5 - 784.5	0.4395	0.1 PPM	4M48G7D
27	779.5 - 784.5	0.309	0.1 PPM	4M49W7D
24E	1860.0 - 1905.0	0.3516	0.1 PPM	17M9G7D
24E	1860.0 - 1905.0	0.2489	0.1 PPM	17M9W7D
24E	1855.0 - 1910.0	0.4111	0.1 PPM	8M91G7D
24E	1850.7 - 1914.3	0.2429	0.1 PPM	1M09W7D
90	819.0 - 819.0	0.2198	0.1 PPM	8M91G7D
90	819.0 - 819.0	0.1738	0.1 PPM	8M91W7D
90	814.7 - 823.3	0.2455	0.1 PPM	1M09G7D
90	814.7 - 823.3	0.1972	0.1 PPM	1M09W7D
22H	831.5 - 841.5	0.2582	0.1 PPM	13M5G7D
22H	831.5 - 841.5	0.1828	0.1 PPM	13M4W7D
22H	826.5 - 846.5	0.1945	0.1 PPM	4M49W7D
27	2580.0 - 2610.0	0.3926	0.1 PPM	17M8G7D
27	2580.0 - 2610.0	0.2799	0.1 PPM	17M8W7D
27	2575.0 - 2615.0	0.3936	0.1 PPM	8M91G7D
27	2506.0 - 2680.0	0.4842	0.1 PPM	17M9G7D
27	2506.0 - 2680.0	0.342	0.1 PPM	17M9W7D
27	2501.0 - 2685.0	0.4853	0.1 PPM	8M91G7D
27	2498.5 - 2687.5	0.3451	0.1 PPM	4M50W7D

Single Modular Approval. Power listed is ERP for part 22 and part 27 below 1 GHz, EIRP for part 24 and part 27 above 1 GHz. Approval is limited to OEM installation only. Compliance of this device in all final host configurations is the responsibility of the Grantee. This device is to be used only for mobile and fixed applications. OEM integrators must be provided labeling requirements for finished products. This grant is valid only when the device is sold to OEM integrators and the OEM integrators are instructed to ensure that the end user has no manual instructions to remove or install the device. Separate approval is required for all other operating configurations, including portable configurations with respect to 2.1093 and different antenna configurations. The module antenna(s) must be installed to meet the RF exposure compliance separation distance of 20 cm and any additional testing and authorization process as required. Co-location of this module with other transmitters that operate simultaneously are required to be evaluated using the FCC multi-transmitter procedures. The antenna installation and operating configurations of this transmitter, including any applicable source-based time-averaging duty factor, antenna gain, and cable loss must satisfy MPE categorical Exclusion Requirements of Part 2.1091. Users must be provided with instructions and transmitter operating conditions for satisfying RF exposure compliance. RF exposure compliance may need to be addressed at the time of licensing, as required by the responsible FCC bureau(s), including antenna co-location requirements of Part 1.1307(b)(3). This module can only be used with a host antenna circuit trace layout design in strict compliance with the OEM instructions provided. This device supports: LTE of 1.4,

3, 5, 10, 15, and 20MHz bandwidth modes for LTE Band 2, 4 and 25; and LTE of 1.4 , 3, 5 and 10MHz bandwidth modes for LTE Band 5,12 and 26 (814-824MHz),LTE of 5, 10, 15 and 20MHz bandwidth modes for LTE Band 7, 38 and 41; LTE of 5 and 10 MHz bandwidth modes for LTE Band 13; LTE of 1.4, 3, 5,10 and 15MHz bandwidth mode for LTE Band 26(824-849MHz).

The allowed maximum antenna gain including cable loss in a mobile-only exposure condition must not exceed: 8dBi in WCDMA Band 2/LTE Band 2/7/25/38/41; 5dBi in WCDMA /LTE Band 4, and 8.6dBi in GSM850;10.19dBi in PCS1900; 9.42dBi in WCDMA Band 5; 9.41dBi in LTE Band 5; 8.7dBi in LTE Band 12; 9.16dBi in LTE Band 13; 9.36dBi in LTE Band 26(814-824); 9.41dBi in LTE Band 26(824-849).

This device contains functions that are not operational in U.S. Territories. This filing is only applicable for U.S. operations.

Industry Canada Class A Notice

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Per RSS-Gen, Section 8.4 This device complies with Industry Canada license-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.

Cet appareil numérique de la classe A respecte toutes les exigences du Reglement Canadien sur le matériel brouilleur.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Industry Canada Grant Information

Company Number/Numéro de compagnie:	10224A
Company Name/Nom de compagnie::	Quectel Wireless Solutions Co.,Ltd
Certification Number/Numéro d'homologation:	10224A-201903EG25G
Approval Date/Date d'approbation:	Wed Apr 03 00:00:00 EDT 2019
Hardware Version Identification Number (HVIN)/Numéro d'identification de la version du matériel (NIVM):	EG25-G
Product Marketing Name (PMN)/Nom de marque du produit (NMP):	Quectel EG25-G
Equipment Description/Description de l'équipement:	LTE Module

Type of Radio Equipment/Genre d'équipement radio:	PCS Mobile (1850-1910 MHz)
	Cellular Telephones Employing New Technologies (824-849 MHz)
	Broadband Radio Service (2500-2690 MHz)
	Mobile Broadband Service (MBS) Equipment (698-756/777-787 MHz)
	Advanced Wireless Services Equipment (1710-1780 MHz and 2110-2180 MHz)
	Modular Approval
	Cellular Mobile GSM (824-849 MHz)

RF Exposure Results/Résultats d'exposition humaine aux RF

Type	Value/Valeur	Compliance Distance/Distance de conformité
RF	5.6 W/m2	200 mm

Specification/Cahiers des charges	Issue Number/Numéro de la version	Frequency Range/Gamme de fréquence		Emission Designator/Désignatif d'émission	Power/Puissance		Field Strength/Intensité de champ	Dist.
RSS132	3	From/De	To/À	Min.	Max.			
RSS132	3	825.5 MHz	847.5 MHz	2M69W7D--	137.0 mW	170.0 mW	--	--
RSS132	3	829.0 MHz	844.0 MHz	8M93W7D--	139.0 mW	170.0 mW	--	--
RSS132	3	824.7 MHz	848.3 MHz	1M09W7D--	139.0 mW	194.0 mW	--	--
RSS132	3	826.5 MHz	846.5 MHz	4M49W7D--	145.0 mW	195.0 mW	--	--
RSS132	3	831.5 MHz	841.5 MHz	13M4W7D--	150.0 mW	183.0 mW	--	--
RSS130	2	829.0 MHz	844.0 MHz	8M93G7D--	175.0 mW	233.0 mW	--	--
RSS130	2	699.7 MHz	715.3 MHz	1M09W7D--	175.0 mW	247.0 mW	--	--
RSS133	6	704.0 MHz	711.0 MHz	8M93W7D--	178.0 mW	218.0 mW	--	--
RSS133	6	1850.7 MHz	1909.3 MHz	1M09W7D--	180.0 mW	255.0 mW	--	--

Specification/Cahiers des charges	Issue Number/Numéro de la version	Frequency Range/Gamme de fréquence		Emission Designator /Désignatif d'émission	Power/Puissance		Field Strength/Intensité de champ	Dist.
RSS132	3	From/De	To/À	Min.	Max.			
RSS132	3	1860.0 MHz	1905.0 MHz	17M9W7D--	183.0 mW	249.0 mW	--	--
RSS133	6	831.5 MHz	841.5 MHz	13M5G7D--	186.0 mW	258.0 mW	--	--
RSS133	6	1860.0 MHz	1900.0 MHz	17M9W7D--	187.0 mW	226.0 mW	--	--
RSS133	6	1850.7 MHz	1914.3 MHz	1M09W7D--	196.0 mW	273.0 mW	--	--
RSS133	6	1855.0 MHz	1910.0 MHz	8M91G7D--	198.0 mW	411.0 mW	--	--
RSS139	3	1860.0 MHz	1905.0 MHz	17M9G7D--	203.0 mW	352.0 mW	--	--
RSS139	3	1720.0 MHz	1745.0 MHz	17M9W7D--	208.0 mW	377.0 mW	--	--
RSS199	3	1710.7 MHz	1754.3 MHz	1M09W7D--	212.0 mW	288.0 mW	--	--
RSS133	6	2580.0 MHz	2610.0 MHz	17M8W7D--	215.0 mW	280.0 mW	--	--
RSS130	2	1860.0 MHz	1900.0 MHz	17M9G7D--	218.0 mW	420.0 mW	--	--
RSS130	2	704.0 MHz	711.0 MHz	8M93G7D--	224.0 mW	348.0 mW	--	--
RSS199	3	779.5 MHz	784.5 MHz	4M49W7D--	230.0 mW	309.0 mW	--	--
RSS130	2	2502.5 MHz	2567.5 MHz	4M49W7D--	238.0 mW	319.0 mW	--	--
RSS132	3	782.0 MHz	782.0 MHz	8M91W7D--	244.0 mW	291.0 mW	--	--
RSS199	3	826.4 MHz	846.6 MHz	4M13F9W--	246.0 mW	251.0 mW	--	--
RSS139	3	2510.0 MHz	2560.0 MHz	17M9W7D--	254.0 mW	318.0 mW	--	--
RSS199	3	1720.0 MHz	1745.0 MHz	17M9G7D--	262.0 mW	489.0 mW	--	--
RSS199	3	2575.0 MHz	2615.0 MHz	8M91G7D--	273.0 mW	394.0 mW	--	--

Specification/Cahiers des charges	Issue Number/Numéro de la version	Frequency Range/Gamme de fréquence		Emission Designator/Désignatif d'émission	Power/Puissance		Field Strength/Intensité de champ	Dist.
RSS132	3	From/De	To/À	Min.	Max.			
RSS199	3	2580.0 MHz	2610.0 MHz	17M8G7D--	274.0 mW	393.0 mW	--	--
RSS130	2	2510.0 MHz	2680.0 MHz	17M9W7D--	278.0 mW	348.0 mW	--	--
RSS130	2	782.0 MHz	782.0 MHz	8M91G7D--	302.0 mW	422.0 mW	--	--
RSS199	3	779.5 MHz	784.5 MHz	4M48G7D--	303.0 mW	440.0 mW	--	--
RSS133	6	2510.0 MHz	2560.0 MHz	17M9G7D--	313.0 mW	486.0 mW	--	--
RSS199	3	1852.4 MHz	1907.6 MHz	4M15F9W--	343.0 mW	352.0 mW	--	--
RSS139	3	2510.0 MHz	2680.0 MHz	17M9G7D--	349.0 mW	488.0 mW	--	--
RSS132	3	1712.4 MHz	1752.6 MHz	4M14F9W--	366.0 mW	382.0 mW	--	--
RSS133	6	824.2 MHz	848.8 MHz	245KG7W--	462.0 mW	480.0 mW	--	--
RSS133	6	1850.2 MHz	1909.8 MHz	249KG7W--	532.0 mW	601.0 mW	--	--
RSS132	3	1850.2 MHz	1909.8 MHz	249KGXW--	1194.0 mW	1334.0 mW	--	--
		824.2 MHz	848.8 MHz	247KGXW--	1714.0 mW	1849.0 mW	--	--

EMC, Safety, and Radio Equipment Directive (RED) Compliance

CE

The CE mark is affixed to this product to confirm compliance with the following European Community Directives:

> Council Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment;
> and
> Council Directive 2014/53/EU on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity.

MultiTech declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU. The declaration of conformity may be downloaded at https://www.multitech.com/red

Regulatory Compliance Mark (RCM)

This product complies with the requirements of the Regulatory Compliance Mark (RCM) for Electrical Regulatory Authorities Council (ERAC), Electrical Equipment Safety System (EESS), and the Australian Communications and Media Authority (ACMA) for Electromagnetic Compatibility (EMC).

PoE Safety

Warnings and Cautions

Warning and Caution symbols mean potential danger. You are in a situation that could cause bodily injury. Before working on any equipment, be aware of hazards in the installation area and be knowledgeable about electrical circuitry. Be familiar with standard practices for preventing accidents.

Warning: Only trained and qualified personnel should install, replace, or service this equipment. Installation must comply with local and national electrical codes.

- When installing or replacing the unit, the ground connection must always be made first and disconnected last.
- Externally ground this equipment using a customer-supplied ground wire before applying power. Contact an electrician if you are uncertain that suitable grounding is available. Refer to *Installing the Ground Wire* instructions in the *Installation Guide.*
- Disconnect PoE power (Ethernet PoE port) before servicing the device.
- Do not work on the system or connect or disconnect cables during periods of lightning activity.
- This device is not designed or approved to be used in any Hazardous Locations. Do not install or operate device if area is known to be an explosive environment.
- All wall mounting installations are subject to the acceptance of local jurisdiction. Do not locate antenna near overhead power lines or other electric light or power circuits, or where it can come into contact with such circuits. When installing the antenna, take extreme care not to come into contact with such circuits, because they may cause serious injury or death. For proper installation and grounding of the antenna, please refer to national and local codes.

CAUTION:

Power over Ethernet (PoE) Certification does not apply or extend to voltages outside of standard PoE range. Any PoE voltages outside this range have not been evaluated by UL or MULTITECH. The end user

supplies the PoE cable. If the cable is to be used outdoors, the cable must be certified for outdoor location.

- Recommended PoE: 802.3at-compliant Type 2 Class 4 Power-over-Ethernet (PoE) Powered Devices (PDs) and require PoE Power Supply Equipment (PSE) that is 802.3at-compliant with minimum 25.5W output power capability.
- This is an 802.3at Type 2 device. For more information, refer to the *Conduit PoE Application Note* (S000678).
- Ethernet port is not designed to be connected to a public Telecommunication (PSTN) or any other connection other than IEEE 802.3-2012 power over Ethernet devices.
- Do not remove product labels.

Avertissement et mises en garde

Les symboles d'avertissement et de mise en garde indiquent un danger potentiel. Vous vous trouvez dans une situation qui peut entraîner des blessures corporelles. Avant de travailler sur un équipement, vous devez être conscient des dangers potentiels dans la zone d'installation et connaitre les circuits électriques. Familiarisez-vous avec les pratiques normalisées de prévention des accidents.

AVERTISSEMENTS: Seul un personnel formé et qualifié doit installer, remplacer ou entretenir cet équipement. L'installation doit être conforme aux codes électriques locaux et nationaux.

- Lors de l'installation ou du remplacement de l'appareil, la connexion à la terre doit toujours être effectuée en premier et débranchée en dernier.
- Mettez cet équipement à la terre en utilisant un fil de terre fourni par le client avant de le mettre sous tension. Communiquez avec un électricien si vous n'êtes pas sûr qu'une mise à la terre appropriée soit disponible. Reportez-vous aux instructions relatives à l'*Installation du fil de terre*.
- Déconnectez l'alimentation PoE (port Ethernet PoE) avant de procéder à l'entretien cet appareil.
- Ne travaillez pas sur le système et ne branchez ni débranchez les câbles pendant les périodes d'activité de la foudre.
- Cet appareil n'est ni conçu ni approuvé pour être utilisé dans des endroits dangereux. N'installez pas et ne faites pas fonctionner l'appareil si la zone est connue pour être un environnement où il y a des risques d'explosion.
- Toutes les installations de montage mural sont soumises à l'acceptation de la juridiction locale. Ne placez pas l'antenne à proximité de lignes électriques aériennes ou d'autres feux électriques ou circuits électriques, ou à un endroit où elle peut entrer en contact avec de tels circuits. Lors de l'installation de l'antenne, veillez à ne pas toucher ces circuits, car ils peuvent causer des blessures graves, voire la mort. Pour une installation et une mise à la terre adéquates de l'antenne, veuillez consulter les codes nationaux et locaux.

MISES EN GARDE :

- La certification PoE (Power over Ethernet) ne s'applique pas et ne s'étend pas aux tensions situées en dehors de la plage PoE standard. Toute tension PoE en dehors de la plage indiquée n'a pas été évaluée par UL ou MULTITECH. L'utilisateur final fournit le câble PoE. Ce câble doit être adapté à un emplacement extérieur. Il s'agit d'un appareil 802.3at de type 2. Pour de plus amples renseignements, reportez-vous à la note d'application PoE de Conduit (S000678).

Le port Ethernet n'est pas conçu pour être connecté à un réseau de télécommunication public (PSTN) ou à toute autre connexion autre que les dispositifs Power over Ethernet IEEE 802.3-2012.

- Ne retirez pas les étiquettes du produit.

User Responsibility

Respect all local regulations for operating your wireless device. Use the security features to block unauthorized use and theft.

Power Supply Caution

CAUTION: Do not replace the power supply with one designed for another product; doing so can damage the modem and void your warranty. Adapter shall be installed near the equipment and shall be easily accessible.
CAUTION: Pour garantir une protection continue contre les risques d'incendie, remplacez les fusibles uniquement par des fusibles du même type et du même calibre. L'adaptateur doit être installé à proximité de l'appareil et doit être facilement accessible.

Device Maintenance

Do not attempt to disassemble the device. There are no user serviceable parts inside.

When maintaining your device:

- Do not misuse the device. Follow instructions on proper operation and only use as intended. Misuse could make the device inoperable, damage the device and/or other equipment, or harm users.
- Do not apply excessive pressure or place unnecessary weight on the device. This could result in damage to the device or harm to users.
- Do not use this device in explosive or hazardous environments unless the model is specifically approved for such use. The device may cause sparks. Sparks in explosive areas could cause explosion or fire and may result in property damage, severe injury, and/or death.
- Do not expose your device to any extreme environment where the temperature or humidity is high. Such exposure could result in damage to the device or fire. Refer to the device specifications regarding recommended operating temperature and humidity.
- Do not expose the device to water, rain, or spilled beverages. It is not waterproof. Exposure to liquids could result in damage to the device.
- Do not place the device alongside computer discs, credit or travel cards, or other magnetic media. The information contained on discs or cards may be affected by the device.
- Using accessories, such as antennas, that MultiTech has not authorized or that are not compliant with MultiTech's accessory specifications may invalidate the warranty.

If the device is not working properly, contact MultiTech Technical Support.

Vehicle Safety

When using your device in a vehicle:

- Do not use this device while driving.
- Respect national regulations on the use of cellular devices in vehicles.
- If incorrectly installed in a vehicle, operating the wireless device could interfere with the vehicle’s electronics. To avoid such problems, use qualified personnel to install the device. The installer should verify the vehicle electronics are protected from interference.

- Using an alert device to operate a vehicle's lights or horn is not permitted on public roads.
- UL evaluated this device for use in ordinary locations only. UL did NOT evaluate this device for installation in a vehicle or other outdoor locations. UL Certification does not apply or extend to use in vehicles or outdoor applications.

Notice regarding Compliance with FCC, EU, and Industry Canada Requirements for RF Exposure

The antenna intended for use with this unit meets the requirements for mobile operating configurations and for fixed mounted operations, as defined in 2.1091 of the FCC rules for satisfying RF exposure compliance. This device also meets the European RF exposure requirements of EN 62311. If an alternate antenna is used, consult user documentation for required antenna specifications.

Compliance of the device with the FCC, EU and IC rules regarding RF Exposure was established and is given with the maximum antenna gain as specified above for a minimum distance of 20 cm between the devices radiating structures (the antenna) and the body of users. Qualification for distances closer than 20 cm (portable operation) would require re-certification.

Wireless devices could generate radiation. Other nearby electronic devices, like microwave ovens, may also generate additional radiation to the user causing a higher level of RF exposure.

Radio Frequency (RF) Safety

Due to the possibility of radio frequency (RF) interference, it is important that you follow any special regulations regarding the use of radio equipment. Follow the safety advice given below.

- Operating your device close to other electronic equipment may cause interference if the equipment is inadequately protected. Observe any warning signs and manufacturers' recommendations.
- Different industries and businesses restrict the use of cellular devices. Respect restrictions on the use of radio equipment in fuel depots, chemical plants, or where blasting operations are in process. Follow restrictions for any environment where you operate the device.
- Do not place the antenna outdoors.
- Switch OFF your wireless device when in an aircraft. Using portable electronic devices in an aircraft may endanger aircraft operation, disrupt the cellular network, and is illegal. Failing to observe this restriction may lead to suspension or denial of cellular services to the offender, legal action, or both.
- Switch OFF your wireless device when around gasoline or diesel-fuel pumps and before filling your vehicle with fuel.
- Switch OFF your wireless device in hospitals and any other place where medical equipment may be in use.

Sécurité relative aux appareils à radiofréquence (RF)

À cause du risque d'interférences de radiofréquence (RF), il est important de respecter toutes les réglementations spéciales relatives aux équipements radio. Suivez les conseils de sécurité ci-dessous.

- Utiliser l'appareil à proximité d'autres équipements électroniques peut causer des interférences si les équipements ne sont pas bien protégés. Respectez tous les panneaux d'avertissement et les recommandations du fabricant.
- Certains secteurs industriels et certaines entreprises limitent l'utilisation des appareils cellulaires. Respectez ces restrictions relatives aux équipements radio dans les dépôts de carburant, dans les usines de produits

chimiques, ou dans les zones où des dynamitages sont en cours. Suivez les restrictions relatives à chaque type d'environnement où vous utiliserez l'appareil.

- Ne placez pas l'antenne en extérieur.
- Éteignez votre appareil sans fil dans les avions. L'utilisation d'appareils électroniques portables en avion est illégale: elle peut fortement perturber le fonctionnement de l'appareil et désactiver le réseau cellulaires. S'il ne respecte pas cette consigne, le responsable peut voir son accès aux services cellulaires suspendu ou interdit, peut être poursuivi en justice, ou les deux.
- Éteignez votre appareil sans fil à proximité des pompes à essence ou de diesel avant de remplir le réservoir de votre véhicule de carburant.
- Éteignez votre appareil sans fil dans les hôpitaux ou dans toutes les zones où des appareils médicaux sont susceptibles d'être utilisés.

Interference with Pacemakers and Other Medical Devices

Potential interference

Radio frequency energy (RF) from cellular devices can interact with some electronic devices. This is electromagnetic interference (EMI). The FDA helped develop a detailed test method to measure EMI of implanted cardiac pacemakers and defibrillators from cellular devices. This test method is part of the Association for the Advancement of Medical Instrumentation (AAMI) standard. This standard allows manufacturers to ensure that cardiac pacemakers and defibrillators are safe from cellular device EMI.

The FDA continues to monitor cellular devices for interactions with other medical devices. If harmful interference occurs, the FDA will assess the interference and work to resolve the problem.

Precautions for pacemaker wearers

If EMI occurs, it could affect a pacemaker in one of three ways:

- Stop the pacemaker from delivering the stimulating pulses that regulate the heart's rhythm.
- Cause the pacemaker to deliver the pulses irregularly.
- Cause the pacemaker to ignore the heart's own rhythm and deliver pulses at a fixed rate.

Based on current research, cellular devices do not pose a significant health problem for most pacemaker wearers. However, people with pacemakers may want to take simple precautions to be sure that their device doesn't cause a problem.

- Keep the device on the opposite side of the body from the pacemaker to add extra distance between the pacemaker and the device.
- Avoid placing a turned-on device next to the pacemaker (for example, don’t carry the device in a shirt or jacket pocket directly over the pacemaker).

Chapter 6 – Environmental Notices

Waste Electrical and Electronic Equipment Statement

Note: This statement may be used in documentation for your final product applications.

WEEE Directive

The WEEE Directive places an obligation on EU-based manufacturers, distributors, retailers, and importers to take-back electronics products at the end of their useful life. A sister directive, ROHS (Restriction of Hazardous Substances) complements the WEEE Directive by banning the presence of specific hazardous substances in the products at the design phase. The WEEE Directive covers all MultiTech products imported into the EU as of August 13, 2005. EU-based manufacturers, distributors, retailers and importers are obliged to finance the costs of recovery from municipal collection points, reuse, and recycling of specified percentages per the WEEE requirements.

Instructions for Disposal of WEEE by Users in the European Union

The symbol shown below is on the product or on its packaging, which indicates that this product must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of their waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or where you purchased the product.

July, 2005

Restriction of the Use of Hazardous Substances (RoHS)

Multi-Tech Systems, Inc.

Certificate of Compliance

2015/863

Multi-Tech Systems, Inc. confirms that its embedded products comply with the chemical concentration limitations set forth in the directive 2015/863 of the European Parliament (Restriction of the use of certain Hazardous Substances in electrical and electronic equipment - RoHS 3).

These MultiTech products do not contain the following banned chemicals[1]:

- Lead, [Pb] < 1000 PPM
- Mercury, [Hg] < 100 PPM
- Cadmium, [Cd] < 100 PPM
- Hexavalent Chromium, [Cr+6] < 1000 PPM
- Polybrominated Biphenyl, [PBB] < 1000 PPM
- Polybrominated Diphenyl Ethers, [PBDE] < 1000 PPM
- Bis(2-Ethylhexyl) phthalate (DEHP): < 1000 ppm
- Benzyl butyl phthalate (BBP): < 1000 ppm
- Dibutyl phthalate (DBP): < 1000 ppm
- Diisobutyl phthalate (DIBP): < 1000 ppm

REACH Statement

Registration of Substances

Multi-Tech Systems, Inc. confirms that none of its products or packaging contain any of the Substances of Very High Concern (SVHC) on the REACH Candidate List, in a concentration above the 0.1% by weight allowable limit

The latest **197** substances restricted per the REACH Regulation were **last updated January 2019**. Refer to the following for the most current candidate list of substances: http://echa.europa.eu/candidate-list-table.

Information on HS/TS Substances According to Chinese Standards (in Chinese)

依照中国标准的有毒有害物质信息

根据中华人民共和国信息产业部 (MII) 制定的电子信息产品 (EIP) 标准—中华人民共和国《电子信息产品污染控制管理办法》（第 39 号），也称作中国 RoHS, 下表列出了 Multi-Tech Systems, Inc. 产品中可能含有的有毒物质 (TS) 或有害物质 (HS) 的名称及含量水平方面的信息。

有害/有毒物质/元素

成分名称	铅 (PB)	汞 (Hg)	镉 (CD)	六价铬 (CR6+)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板	O	O	O	O	O	O
电阻器	X	O	O	O	O	O
电容器	X	O	O	O	O	O
铁氧体磁环	O	O	O	O	O	O
继电器/光学部件	O	O	O	O	O	O
ICs	O	O	O	O	O	O
二极管/晶体管	O	O	O	O	O	O
振荡器和晶振	X	O	O	O	O	O
调节器	O	O	O	O	O	O
电压传感器	O	O	O	O	O	O
变压器	O	O	O	O	O	O
扬声器	O	O	O	O	O	O
连接器	O	O	O	O	O	O
LEDs	O	O	O	O	O	O
螺丝、螺母以及其它五金件	X	O	O	O	O	O
交流-直流电源	O	O	O	O	O	O
软件/文档 CD	O	O	O	O	O	O
手册和纸页	O	O	O	O	O	O
底盘	O	O	O	O	O	O

X 表示所有使用类似材料的设备中有害/有毒物质的含量水平高于 SJ/Txxx-2006 限量要求。
O 表示不含该物质或者该物质的含量水平在上述限量要求之内。

Information on HS/TS Substances According to Chinese Standards

In accordance with China's Administrative Measures on the Control of Pollution Caused by Electronic Information Products (EIP) # 39, also known as China RoHS, the following information is provided regarding the names and concentration levels of Toxic Substances (TS) or Hazardous Substances (HS) which may be contained in Multi-Tech Systems Inc. products relative to the EIP standards set by China's Ministry of Information Industry (MII).

Hazardous/Toxic Substance/Elements

Name of the Component	Lead (PB)	Mercury (Hg)	Cadmium (CD)	Hexavalent Chromium (CR6+)	Polybrominated Biphenyl (PBB)	Polybrominated Diphenyl Ether (PBDE)
Printed Circuit Boards	O	O	O	O	O	O
Resistors	X	O	O	O	O	O
Capacitors	X	O	O	O	O	O
Ferrite Beads	O	O	O	O	O	O
Relays/Opticals	O	O	O	O	O	O
ICs	O	O	O	O	O	O
Diodes/ Transistors	O	O	O	O	O	O
Oscillators and Crystals	X	O	O	O	O	O
Regulator	O	O	O	O	O	O
Voltage Sensor	O	O	O	O	O	O
Transformer	O	O	O	O	O	O
Speaker	O	O	O	O	O	O
Connectors	O	O	O	O	O	O
LEDs	O	O	O	O	O	O
Screws, Nuts, and other Hardware	X	O	O	O	O	O
AC-DC Power Supplies	O	O	O	O	O	O
Software /Documentation CDs	O	O	O	O	O	O
Booklets and Paperwork	O	O	O	O	O	O
Chassis	O	O	O	O	O	O

X Represents that the concentration of such hazardous/toxic substance in all the units of homogeneous material of such component is higher than the SJ/Txxx-2006 Requirements for Concentration Limits.
O Represents that no such substances are used or that the concentration is within the aforementioned limits.