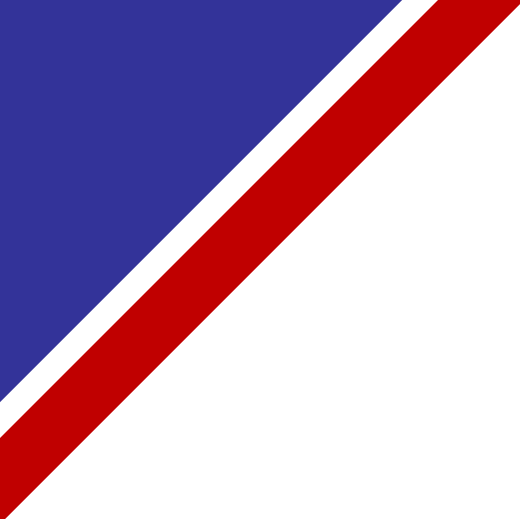




MSD-A3 User Manual (Include Operation Description)

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1. MSD-A3 Product Description



Product Type : V2X OBU (Vehicle to Everything On Board Unit)

Model Name : MSD-A3

Model Name : MSD-A3



Front View

Rear View

1. MSD-A3 Product Description



Product Front Configuration



- LED : Power & Warning

- ANT : GPS Antenna

- ANT : V2X Antenna 1 & V2X Antenna 2

- LED : GPS LED and Status LED

- ANT : Internal BT Antenna (Optional, It is not use at this time)

1. MSD-A3 Product Description



Product Rear Configuration



- Bracket : Installation Bracket
- Speaker
- Button : Factory Reset Button
- Ant Port : External GPS Ant Port
(Optional, It is not use at this time)

2. MSD-A3 Product Operation Description



1.2. MSD-A3 Modulation Signal Transmission



1. Connect Debug Cable and power to MSD-A3 product as shown. (For debug ports, it is used for debugging by developers and is not used for real users of the product.)

2. MSD-A3 Product Operation Description



1.2. MSD-A3 Modulation Signal Transmission

```
COM6 - Tera Term VT
메뉴(F) 수정(E) 설정(S) 제어(O) 창(W) 도움말(H)

Time: 2025-09-16T02:12:31.000Z
Latitude: 37.37428967 N
Longitude: 126.94930650 E
Altitude: 397.310 ft
Speed: 0.02 mph
Heading: n/a
Climb: -78.74 ft/min
Status: 3D FIX (4 secs)
Long Err (XDOOP, EPV): 1.98, +/- 97.2 ft
Lat Err (YDOOP, EPV): 1.45, +/- 71.2 ft
Alt Err (ZDOOP, EPV): 2.41, +/- 181 ft
2D Err (XDOOP, CEP): 2.47, +/- 153 ft
3D Err (PDOOP, SEP): 3.45, +/- 215 ft
Time Err (TDOOP): 1.83
Geo Err (GDOOP): 3.90
ECEF X, Y, Z: n/a
Speed Err (EPS): +/- 132 mph
Head Err (EPD): n/a
Time offset: 0.012 sec
Grid Square: PM37Li

PRN Elev Azim SNR Use
GP 5 51 87 23 Y
GP 24 35 187 31 Y
GL 67 20 54 28 Y
GL 78 24 106 31 Y
GL 82 14 180 38 Y
GL 83 54 222 0 N
GL 84 41 315 0 N
GL 85 0 340 0 N

41 "az":315,"ss":0,"used":false,"gnssid":6,"svid":20},{ "PRN":85,"el":0,"az":340,"ss":0,"used":false,"gnssid":6,"svid":21}}
{"class":"SKY","device":"/dev/ttyLP3","xdop":1.98,"ydoop":1.45,"zdoop":2.41,"tdop":1.83,"hdop":2.47,"gdop":3.90,"pdop":3.45,"satellites":[{"PR
N":5,"el":51,"az":87,"ss":24,"used":true,"gnssid":0,"svid":5},{ "PRN":24,"el":35,"az":187,"ss":31,"used":true,"gnssid":0,"svid":24},{ "PRN":67
N":20,"az":54,"ss":28,"used":true,"gnssid":6,"svid":3},{ "PRN":78,"el":24,"az":106,"ss":31,"used":true,"gnssid":6,"svid":14},{ "PRN":82,"el
":14,"az":180,"ss":38,"used":true,"gnssid":6,"svid":18},{ "PRN":83,"el":54,"az":222,"ss":0,"used":false,"gnssid":6,"svid":19},{ "PRN":84,"el":
41,"az":315,"ss":0,"used":false,"gnssid":6,"svid":20},{ "PRN":85,"el":0,"az":340,"ss":0,"used":false,"gnssid":6,"svid":21}}]
```

2. If the equipment has been booted, enter the command "cgps" in the command window to check if the GPS signal is coming in normally.

2. MSD-A3 Product Operation Description



1.2. MSD-A3 Modulation Signal Transmission

```
oot@mx8qpmek:~# ./csr -a add -i 0 -c 173 -t 2
[0] action parameters
Action: Add, netifIndex: 0, channel: 173, timeSlot: 2, OOBChannel: 0
Success to request SDN
oot@mx8qpmek:~# ./wsm tx 0 ff:ff:ff:ff:ff 0x11 1000 1 2 173 500 20 50000 100000 1
Success to execute tx
Netif: 0, Len: 1000, Priority: 1, timeSlot: 2, channel: 173, datarate: 500*500kbps, txpower: 20dBm, pktNum: 50000, interval: 100000usec,
op: 1
Pcid: 0, DestMac: ff:ff:ff:ff:ff:ff
Initializing shared memory
Success to initialize shared memory
Success to initialize signal handler
Initializing tx timer
Success to initialize timer
Position info - Valid: 1, Long: 1269533598, Lat: 373699400, Speed: 0, Elevation: 1645, Heading: 0
Sending 1-th WSM(len: 1000) - channel: 173, timeSlot: 2, PSID: 0
Position info - Valid: 1, Long: 1269533598, Lat: 373699400, Speed: 1, Elevation: 1645, Heading: 0
Sending 2-th WSM(len: 1000) - channel: 173, timeSlot: 2, PSID: 0
Position info - Valid: 1, Long: 1269533598, Lat: 373699400, Speed: 1, Elevation: 1645, Heading: 0
Sending 3-th WSM(len: 1000) - channel: 173, timeSlot: 2, PSID: 0
Position info - Valid: 1, Long: 1269533632, Lat: 373699402, Speed: 1, Elevation: 1647, Heading: 0
Sending 4-th WSM(len: 1000) - channel: 173, timeSlot: 2, PSID: 0
Position info - Valid: 1, Long: 1269533662, Lat: 373699403, Speed: 0, Elevation: 1648, Heading: 0
Sending 5-th WSM(len: 1000) - channel: 173, timeSlot: 2, PSID: 0
Position info - Valid: 1, Long: 1269533684, Lat: 373699404, Speed: 1, Elevation: 1648, Heading: 0
Sending 6-th WSM(len: 1000) - channel: 173, timeSlot: 2, PSID: 0
Position info - Valid: 1, Long: 1269533705, Lat: 373699404, Speed: 0, Elevation: 1648, Heading: 0
Sending 7-th WSM(len: 1000) - channel: 173, timeSlot: 2, PSID: 0
Position info - Valid: 1, Long: 1269533724, Lat: 373699405, Speed: 1, Elevation: 1648, Heading: 0
Sending 8-th WSM(len: 1000) - channel: 173, timeSlot: 2, PSID: 0
Position info - Valid: 1, Long: 1269533742, Lat: 373699405, Speed: 0, Elevation: 1648, Heading: 0
Sending 9-th WSM(len: 1000) - channel: 173, timeSlot: 2, PSID: 0
```

3. After that, you can set up a channel by entering the command " ./csr -a add -i 0 -c 173 -t 2" as shown in the photo, and then transmit packets using the command ". /wsm tx 0 ff:ff:ff:ff:ff 0x11 1000 1 2 173 500 20 500 10000 100000 1".

2. MSD-A3 Product Operation Description



1.2. MSD-A3 Modulation Signal Transmission

```
192.168.2.198 - Tera Term VT
메뉴(F) 수정(E) 설정(S) 제어(O) 창(W) 도움말(H)
root@inx8qxpnek:~# ./wsm rx all
setting rx parameters
  Psid: -1, dbg: 0
Initializing shared memory
Success to initialize shared memory
Success to initialize signal handler
Success to register PSID -1 for WSM service - LSI: 0
█
```

4. If you want to proceed with signal reception, you can enter the reception mode using the command **"./wsm rx all 1"**.



FCC Statement

Regulatory Compliance

C-V2X OBU

IMPORTANT NOTE:

FCC RF exposure statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. This transmitter must be at least 20 cm from the user and must not be co-located or operating in conjunction with any other antenna or transmitter.

The FCC ID of the product is: ZO9-MSD-A3

OBU firmware prevents the end user from adjusting power or channel settings that could result in a violation of FCC rules.

The end user is warned that any un-authorized adjustment to OBU firmware could result in a violation of FCC rules.

Firmware update may only be performed by or under the immediate supervision and responsibility of a person certified as technically qualified to perform transmitter maintenance by IT TELECOM Co., Ltd.

Any modifications made to this product, including the use of unauthorized antennas could result in violation of the FCC regulations and is strictly prohibited.

This product is operated under FCC license, please contact IT TELECOM Co., Ltd. regarding all licensing requirements to ensure ongoing regulatory compliance during use.



Caution

Any changes or modifications (including the antenna) made to this device that are not expressly approved by the manufacturer may void the user's authority to operate the equipment.

Antenna Information

Antenna Type: External dipole antenna (MHF-1 Plug)

Antenna Max Gain: 2.0 dBi

FCC Compliance 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 harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant 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 in accordance with 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 one of the following measures:

- **Reorient or relocate the receiving antenna.**
- **Increase the separation between the equipment and receiver.**
- **Connect 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**