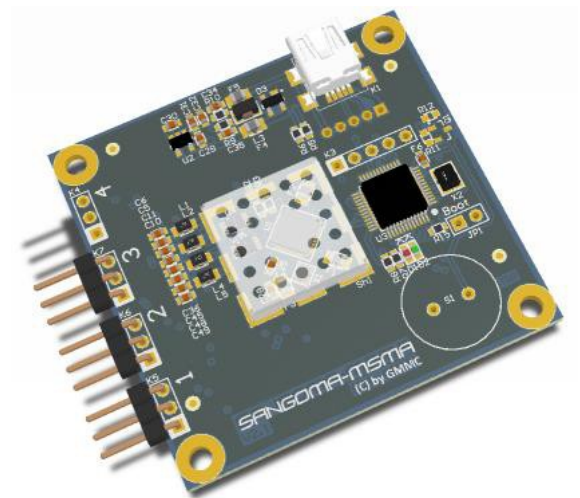




Integration Manual
SANGOMA-MSMA
2V3

13.56 Mhz Multi Standard - Multi Antenna Reader/Writer

Manual version 1.0

1. Short description

Power supply

USB : 5V (+0,25V -0,6V) via Mini USB Connector and cable

Note: it is recommended to use a clip on ferrite on the USB cable on module side.

Operating temperature: 0°C – 65°C

Storage temperature: 0°C-75°C

Supported 13,56MHz RF standards

- ISO/IEC 14443 – ASK modulation
- ISO/IEC 15693 – ASK modulation

USB host communication (via VCP Virtual COM port)

Antenna connection

via 3 pin gold plated header and connector

Note: Only antenna channel 1 is operational in this version. The other channels are blocked by firmware and / or are not equipped with components / connectors.

Short functional description:

Once the reader device is connected and USB power is available the device boots up. The RF field remains switched OFF. The reader firmware has Reader and RFID tag related commands implemented.

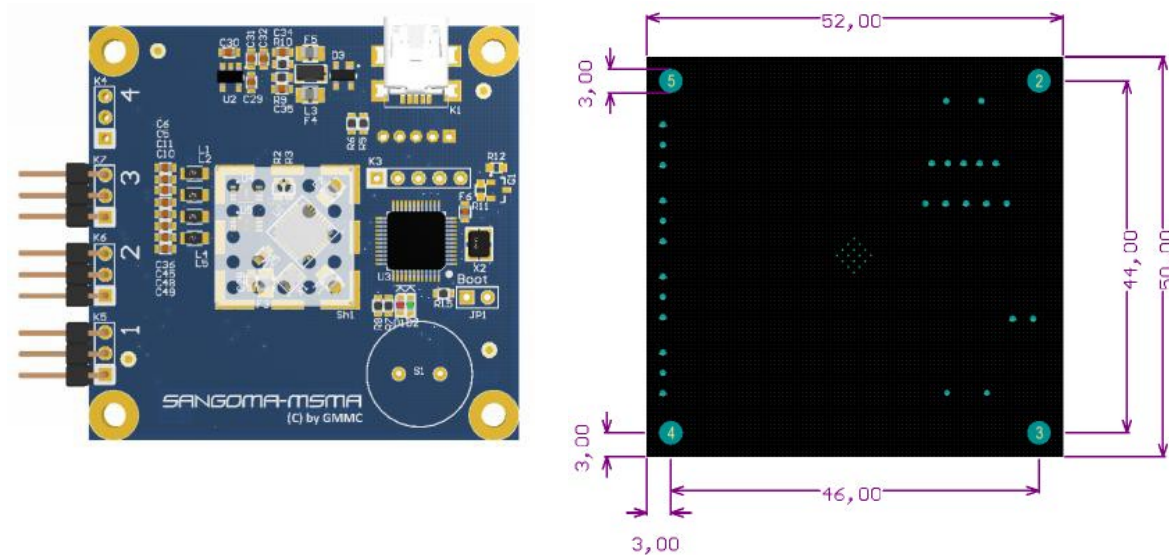
If a tag command is sent to the specified antenna port the RF Field is switched on during tag processing and will be automatically switched off after the tag response has been received.

The two on board status LEDs (red/green) are disabled after boot and need to be switched on using the DO command as described at a later stage in this manual. Reader related commands do not switch on the RF field. For the full command description refer to the SANGOMA-MSMA user manual.

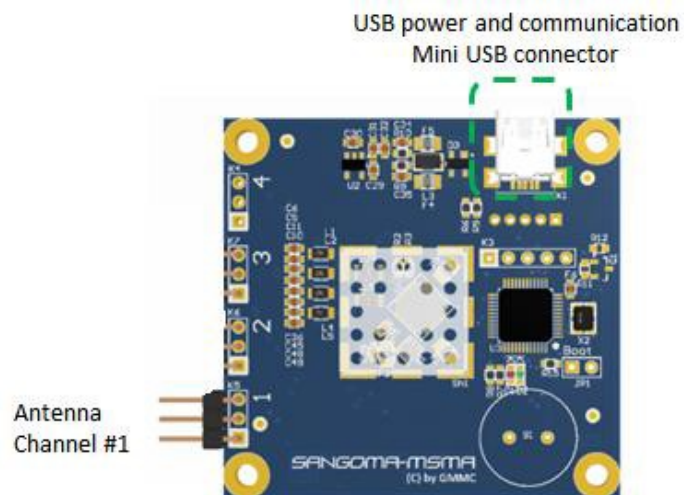
2. Hardware

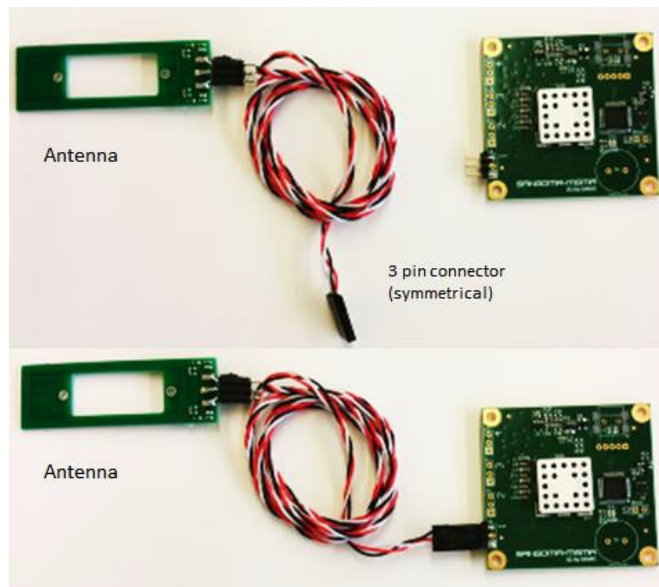
2.1 Physical dimensions

- Outer dimensions 52mm (2,05 inch) x 50 (2,97 inch)
- Mounting Holes (diameter 3mm/0,012inch) are connected to system ground.



3. Module and antenna installation





- Mount the Module properly into the end device
- Mounting holes are connected to system ground – its recommended to connect at least one mounting whole the end-device system ground
- Connect the antenna to channel one of the module as shown in the above illustration – note the connector is symmetrical and the direction 0° or 180° do not matter for functionality or RF compliance..
- Attach power to the Module via USB cable to the end device application host – it is recommended to apply a click on ferrite on the USB cable on the system side

4. Antenna specification:

The antenna to be used is SANGOMA-Jay 1v1 with 75cm twisted 3 wire cable and connector.
(GMMC part number : SANGOMA-ANTJAY602075)



5. Compliance statements

FCC COMPLIANCE STATEMENT

NOTE:

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.

Caution!

The Federal Communications Commission (FCC) warns the users that changes or modifications to the unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC §15.105 (b):

Note: 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 or more 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.

RSS COMPLIANCE STATEMENT

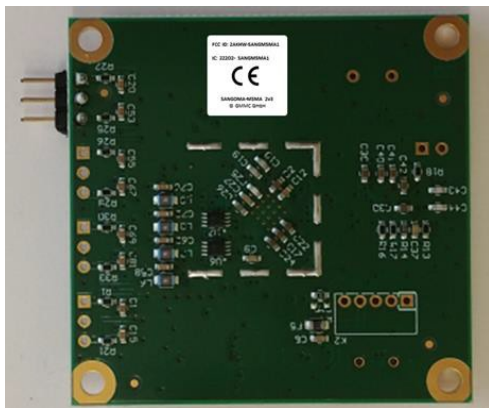
This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

- (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 CNR d'Industrie 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'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

6. Module label location



Module back side

7. End device labeling instructions

FCC notes for all hosts devices. The end device must be labeled with:

Contains FCC ID: 2AKHW-SANGMSMA1

Contains IC: 22202-SANGMSMA1

Labelling Requirements

In addition following statement shall be placed on the device:

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.

Where the product is so small or for such use that it is not practicable to place the statement on it, the statement can be placed in a prominent location in the instruction manual.

Information to the user

- For Class A devices the manual of the host shall include the following statement:

NOTE: 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.

- For Class B devices the manual of the host shall include the following statement:

Note: 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 or more 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.

Modification of equipment

The instruction manual of the host shall include the following statement: Changes or modifications made to this equipment not expressly approved by the party responsible for compliance may void the FCC authorization to operate this equipment.

Special accessories

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

Final Compliance of end product

The integrator is responsible for the final compliance of the end product including this certified transmitter module. CFR 47 §15.101 give guidance in terms of applicable equipment authorization procedures of different end-products. Typically compliance to subpart 15 B (§15.107 and 15.109) Class A or B including verification of the subpart 15 C compliance (field strength of fundamental and out-of-band emissions) of the transmitter parameters apply.

Simultaneous transmission

When the host product supports simultaneous-transmission operations the host manufacturer needs to check if there are additional RF exposure filing requirements due to the simultaneous transmissions. When additional application filing for RF exposure compliance demonstration is not required (e. g. if the SANGOMA-MSMA 2V3 module in combination with all simultaneously operating transmitters complies with the RF exposure simultaneous transmission SAR test exclusion requirements), the host manufacturer may do his own evaluation without any filing, using reasonable engineering judgment and testing for confirming compliance with out-of-band, restricted band, and spurious emission requirements in the simultaneous-transmission operating modes.

If additional filing is required please contact the person at GMMC GmbH responsible for certification of the SANGOMA-MSMA 2V3 module.

8. Revision history

Version	Remarks
V1.0	Initial released version
V1.1	Updates regarding temperature range and antenna (usage and installation)