S or L BAND Digital BIFSK

Or Analog FM

ON-BOARD TRANSMITTER

Ref. DTX5563-BiFSK-20-SBand

Version: R1.

Special Features:

• Modulation signal input interface agility

The modulation signal input can be either RS232 or RS485, programmable by RS232

•Modulation polarity (BiFSK)

Positive or Negative, programmable by RS232

• Intuitive Control

Straightforward configuration and control and platform-independence with serial terminal programming

• Variable RF Power.

5 steps and RF power off (30 dBm, 33 dBm, 36 dBm, 39 dBm and 43 dBm) (accuracy ± 1 dB).

• Analog FM

Include linear FM modulation for video, analog signal or analog PCM transmission.
Emphasis filter CCIR405 for Video PAL signal.

• Temperatutre monitoring.

The user can read the internal power supply and RF boards temperatutre.

RF SPECIFICATIONS

Carrier frequency range: 2200 to 2400 MHz S band.

RF output power: up to 20 W (43 dBm ± 1 dB) all conditions.

VSWR : 1.5:1

Load mismatch (RF = open or short): no degradation.

Spurious outputs: In accordance IRIG106-96 (-60 dBc typical).

Harmonic: In accordance IRIG106-96.

Carrier frequency tuning step: 125 kHz

Carrier frequency stability: ± 2.5 ppm over temperature range. ± 7.5 ppm all clauses including aging over 5 years.

Modulation: BIFSK or Analog FM.

ANALOG FM MODULATION SPECIFICATIONS

Modulation input impedance: 50 or 75 ohms, AC or DC selectable.
Analog input Bandwidth: DC to 10 MHz – 3dB or 30Hz to 10 MHz – 3 dB.
Composite video signal PAL with or without CCIR 405 emphasis, 1Vpp 75 ohms.
Any signal: 0.25,0.5,1,2,5 or 10V Vpp programmable
Deviation sensitivity: 0.5, 1, 2 or 5 MHz / Vpp programmable.

DIGITAL BIFSK MODULATION SPECIFICATIONS

Modulation: FSK/FM, BIFSK/FM.

Data rate: up to 350 kbits/s (others on request).

ON/OFF and inversion, IRIG channel or user frequency.

**Specifications are subject to change without notice.*

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Tél 33 (0)4 42 82 77 47 - Fax 33 (0)4 42 82 77 62 – e-mail : sales@ dmradiocom.fr

POWER REQUIREMENT

28 V DC (18 V min to 36 V max)
Current: 3A under 28 V @ 20 W RF.
Reverse polarity protection
Thermal protection.

ENVIRONMENTAL CONDITIONS

Operating temperature range: - 30 to +85° C. (baseplate).
Operating Humidity: 0 to 95 % non condensing.
Vibration: 20 Hz to 2000 Hz: 19.6 g random 3 axes.
Shock: ½ sinus 5 ms, 60 g 3 axes.
Acceleration: 70 g 3 axes.
Altitude: 100 000 ft maximum.

PHYSICAL SECTION

Dimensions (L x h x l): 99 x 63.5 x 33 mm without heatsink, need thermal resistance below 0.35°K/W for reliable operating without permanent damage and keep baseplate below 85°C.

Weight: 370 g (without heatsink)

RF output connector: SMA(F)

Mod Input Connectors:

- *1x SMA(M) for analog input*

Power connector, Signal and Control interfaces : single connector MDM 15 type.

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A.1. CONFIGURATION

A very convenient configuration application software, called *DTX_CONFIG.exe* is supplied with modules.

User can now apply power supply to transmitter with suitable RF load at antenna port.

At the first launch, user should configure COM Port connected to transmitter as following:

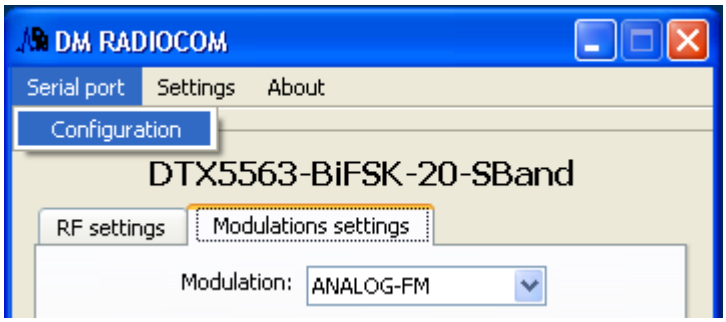


Figure 1: COM port configuration.

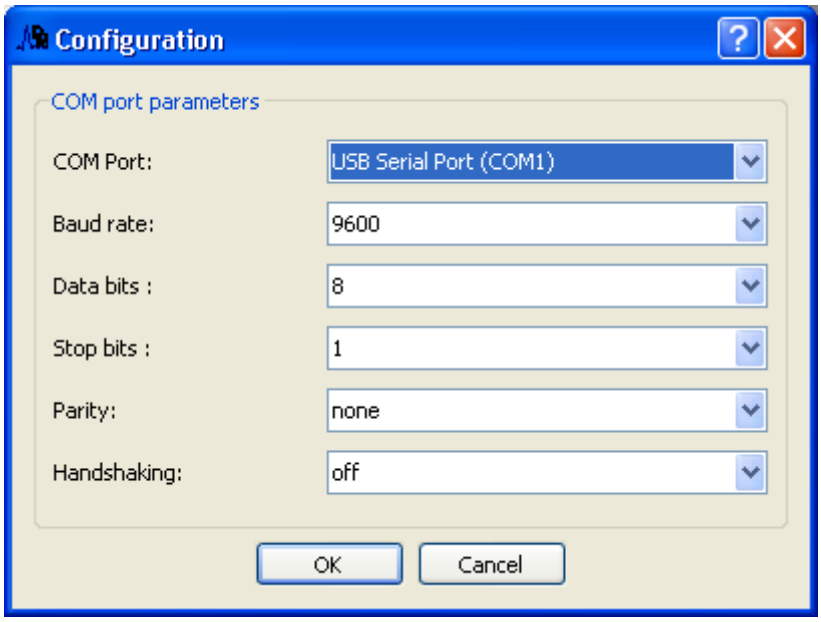


Figure 2: COM port detailled configuration.

COM Port : select COM port which is wired to DTX transmitter
When every options are similar to the figure above, user should press “Ok”.
COM port is now open and ready to receive and transmit data.

A.2. SETTING FREQUENCY and RF OUTPUT

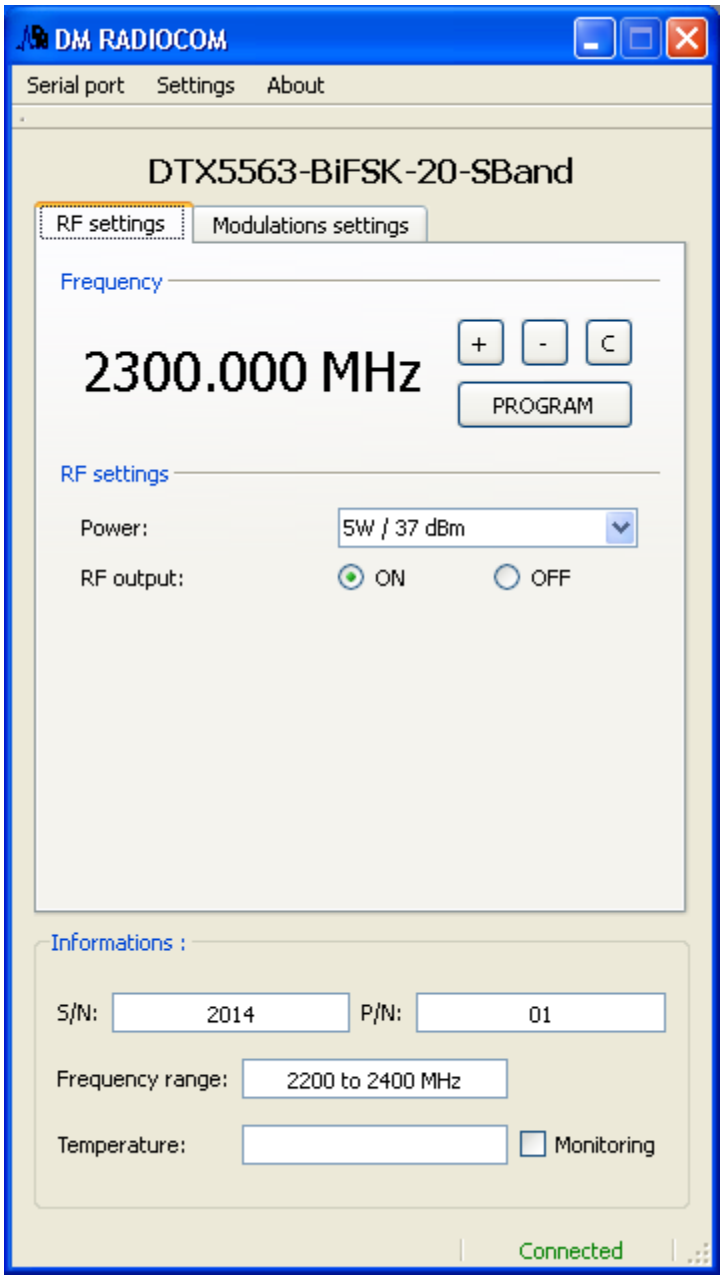


Figure 3: Setting transmit frequency

For frequency set, user can type with keyboard the transmit frequency, then Enter or Program.

For RF power output set, user can select between 33, 37, 40 and 43dBm in scroll list.
Power level 40 and 43 dBm (10 and 20W) are protected by password ('*DMR2015*').

Shut down RF output is achieve by using command ON/OFF.

A.3. ANALOG FM SETTING

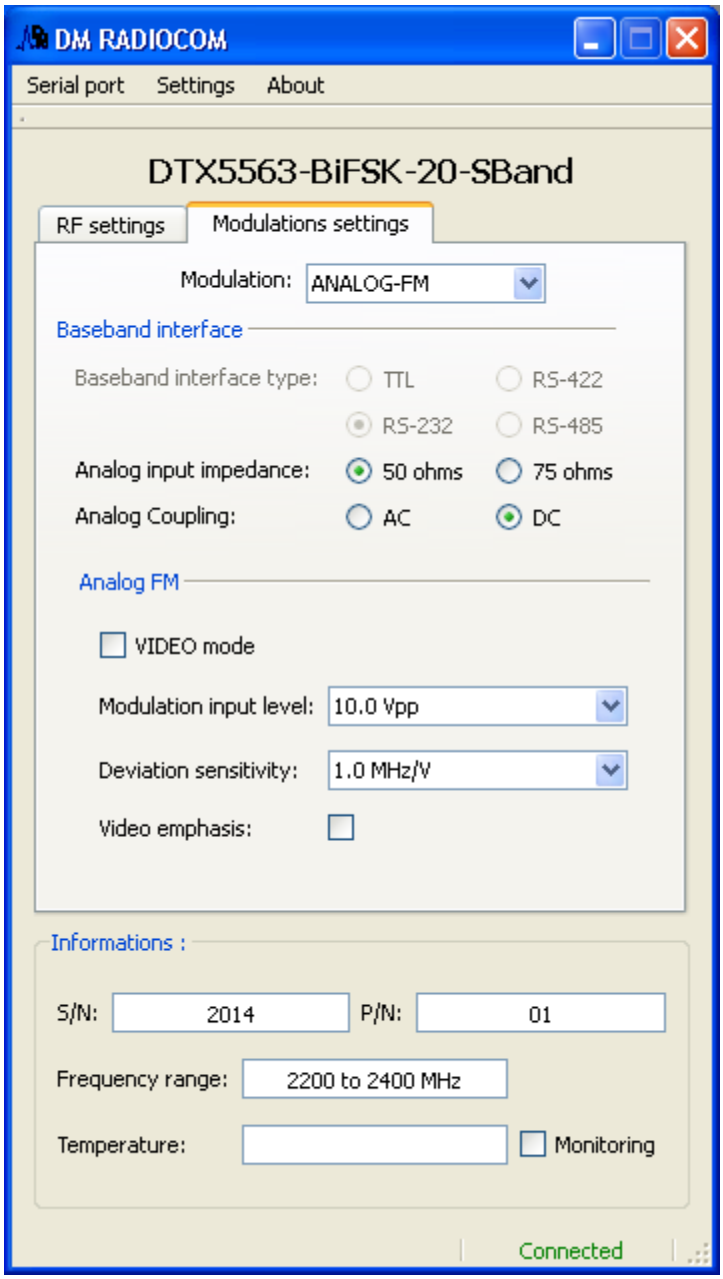


Figure 4: Setting analog FM modulation

With this tab, user can set or read:

- Analog input impedance (50 or 75 ohms)
- Input coupling (AC or DC coupling)
- Modulation input level (0.25Vpp to 10Vpp)
- Deviation sensitivity (0.5 to 5 MHz/V)
- Video Emphasis CCIR405

Video mode button presets transmitter with these parameters: Impedance : 75ohms, Coupling : DC, Input level : 2Vpp, Sensitivity : 5MHz/V and Video emphasis ON.

A.4. BiFSK SETTING

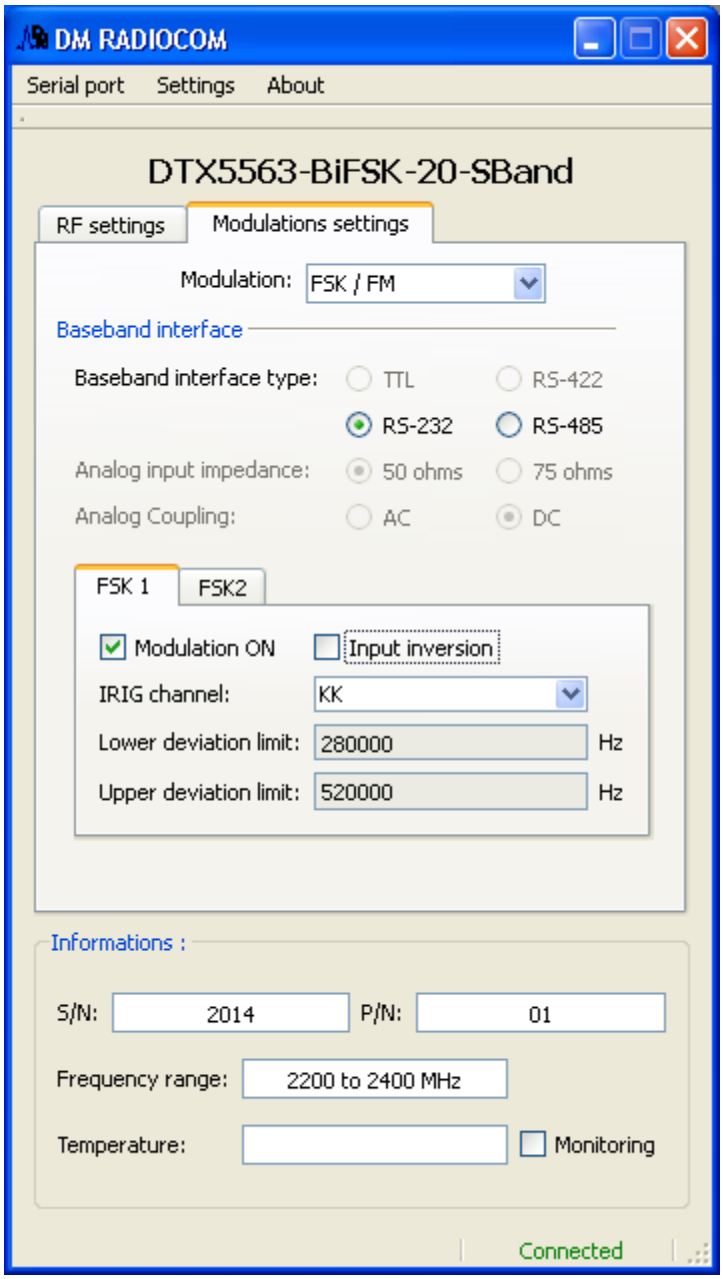


Figure 5: Setting BiFSK configuration

With this tab, user can set or read:

- Input interface type (RS232 or RS485)
- For each subcarrier : ON/OFF and inversion, IRIG channel or user frequency.

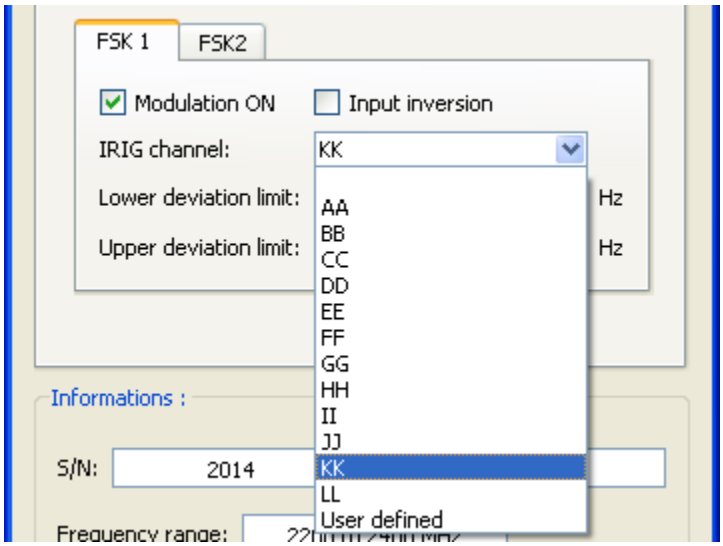


Figure 6: IRIG Channel select

When *User defined* is selected, each subcarrier frequency is typed in the 2 fields below.

A.5. VSWR AND TEMPERATURE MONITORING

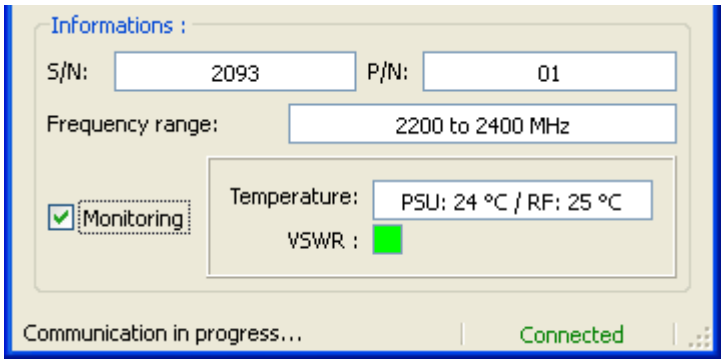


Figure 7: VSWR and Internal Temperature monitor

When *Monitoring* is selected, VSWR alarm and internal temperatures are reported.
For temperatures, RF means baseplate (bottom side) temperature and PSU means opposite side (top side).

For VSWR alarm, green led means VSWR lower than 3:1 at RF outpout connector. Red led means VSWR higher than 3:1 at RF output connector.

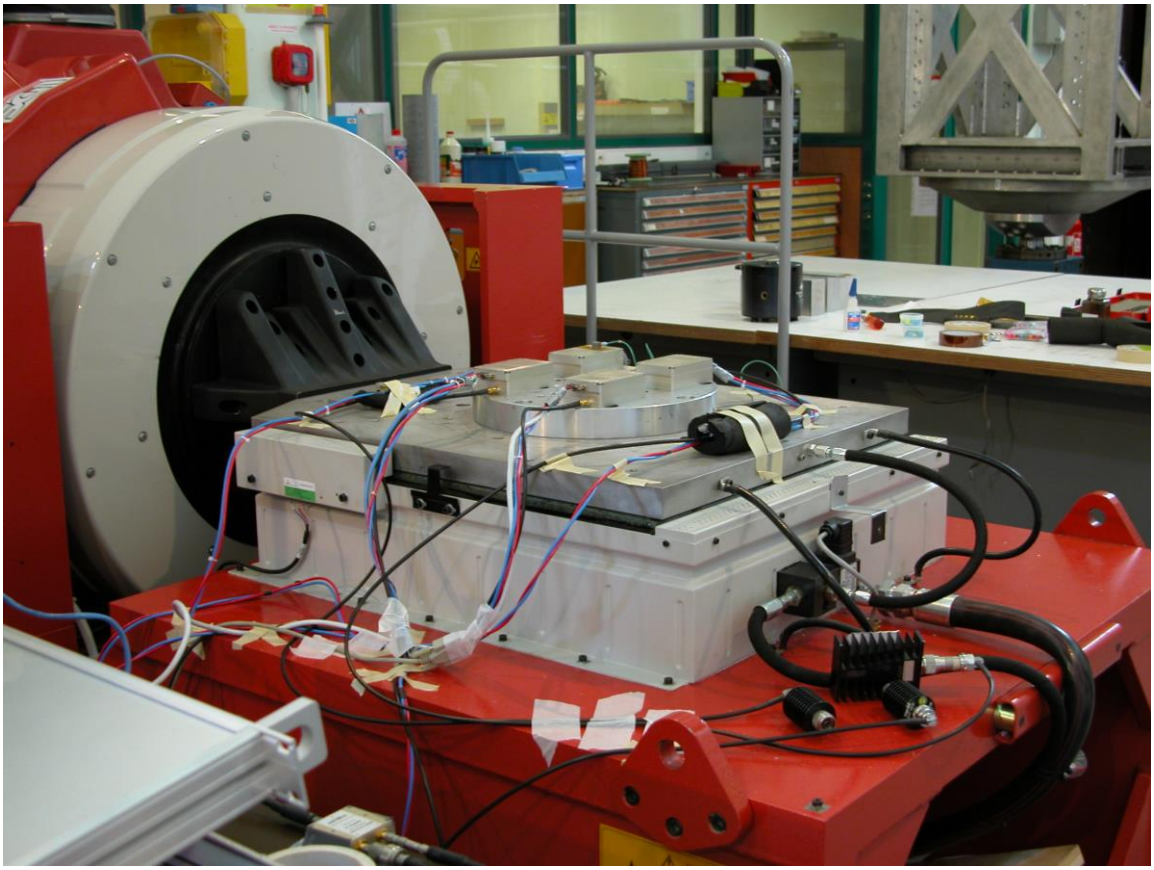
EMC EMI Tests.

Désignation
MIL STD 461F CE102
MIL STD 461F CE106
MIL STD 461F RE101
MIL STD 461F RE102
MIL STD 461F CS101
MIL STD 461F CS114
MIL STD 461F CS115
MIL STD 461F CS116
MIL STD 461F RS101
MIL STD 461F RS103

EMC Tests.

Désignation
MIL STD 704F Figure 13
MIL STD 704F Figure 14

Example of Environmental Test made on the 20 W S band transmitter.



Random Vibrations Axes X, Y, Z.

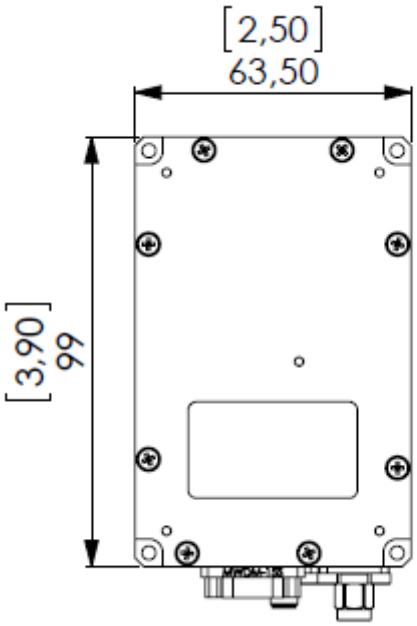
20 – 80Hz :0. $1g^2/Hz$
80 – 350Hz: 0. $4g^2/Hz$
350 – 2000Hz: 0. $1g^2/Hz$.
Global Level 20.4g RMS, Test duration 10min each axe.

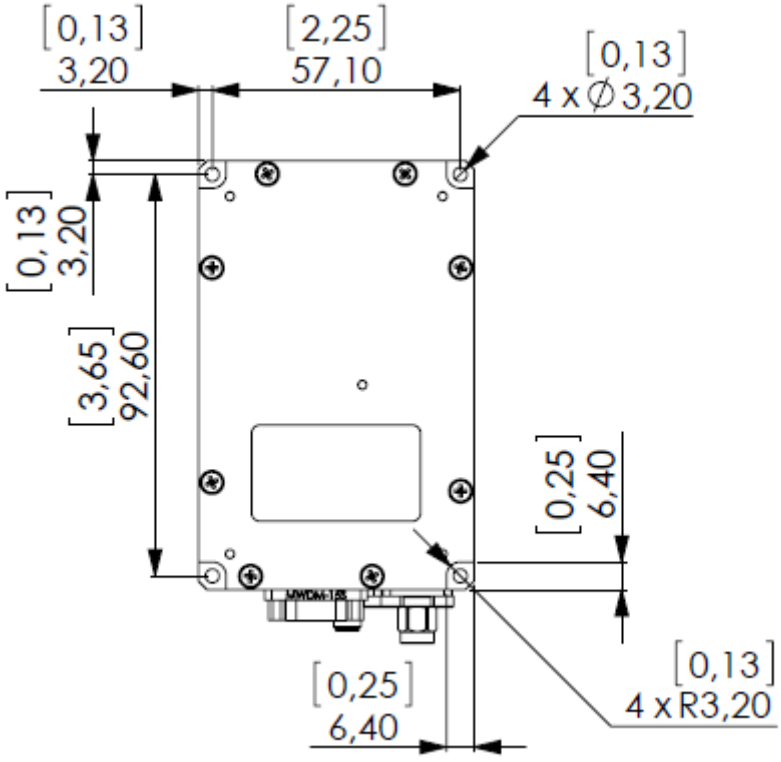
Schoc ½ Sinus X, Y, Z

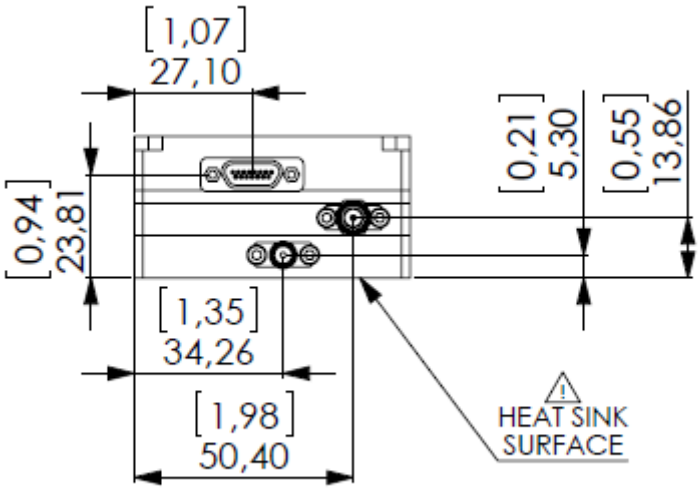
Acceleration : 70g, Test duration 6ms each axe.

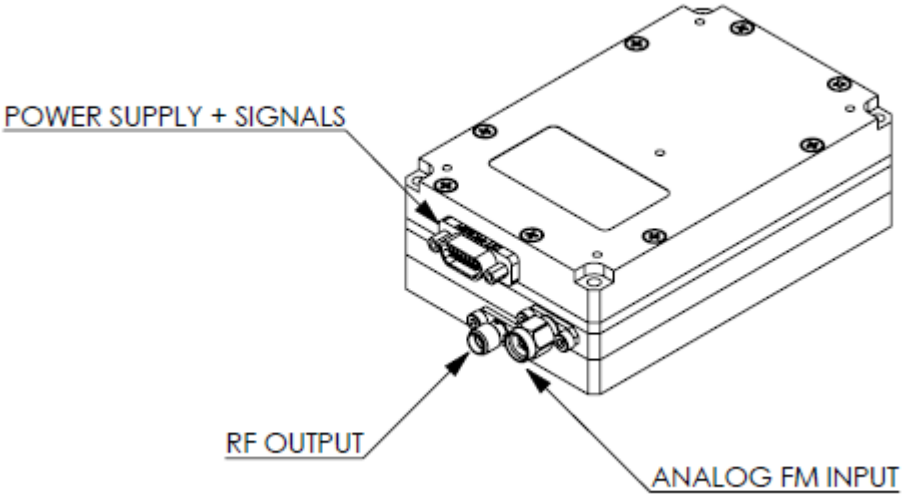
Mechanical Drawing.

A rectangular wedge could be added on the heatsink side to increase the height of 5 mm.









The dimensions in brackets are in inches, the others are in mm.