TTRM4310

5000-6000 MHz 40 W Bi-Directional Amplifier

Bi-Directional Amplifiers

Description

This class AB GaN module is designed for both military and commercial applications. It is capable of supporting any signal type and modulation format, including but not limited to 3-4G telecom, WLAN, OFDM, DVB, and CW/AM/FM. The latest device technologies and design methods are employed to offer high power density, efficiency, and linearity in a small, lightweight package.

Features

- Forward Power Measurement
- Temp. Monitor Output
- Manual or Automatic Tx/Rx Switching Available
- Over-Temperature Protection
- Optional Heatsink
- Tx / Rx Status Monitor

Specifications subject to change without notice. Typical performance at +12VDC at 25°C in a 50Ω system

Tx Specifications				
Parameter	**Min**	**Typ.**	**Max**	**Unit**
Operating Frequency	5000		6000	MHz
PSat Power Output		+46.0		dBm
Gain		28.0		dB
Gain Flatness		1.0		± dB
Input Return Loss	-15			dB
Operating Voltage	+10	+12	+30	VDC
Current Draw		6.0	15.0	A
Tx / Rx Switching Time		1.0	2.0	uS
Rx Specifications				
Parameter	**Min**	**Typ.**	**Max**	**Unit**
P1dB Power Output		+5.0		dBm
Gain		12.0		dB
Gain Flatness			1.0	± dB
Noise Figure		3.0		dB
OIP3		+15.0		dBm
Input Return Loss	-10			dB
Current Draw		100.0		mA

Revision: 02/17/2022

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Mechanical		
Parameter	**Value**	**Unit**
Dimensions (L x W x H)	5.3 x 3.25 x 0.6	in
RF Connectors (Input / Output)	SMA-F / SMA-F	--
DC / Control Connector	21 Pin Micro-D	--
Cooling	Baseplate Conduction - Optional Heatsink Available	--
Mounting	4-40 Thru Holes	--
Weight	13	oz.
Weight With Heatsink	35	oz.

Environmental / Protections			
Parameter	**Min**	**Max**	**Unit**
Operating Temperature (Housing Temp.)	-40	+85	°C
Humidity Range	0-95		%
Altitude	0-30,000		ft.
Shock / Vibration	MIL-STD-810 and equivalents		--
Max RF Input	17		dBm
PA Baseplate Shutoff Temperature	+85		°C

Input/Output Pins		
Amplifier Connector Type:	**21 Pin Micro-D**	
Triad Cable Part Number:	**CBL45**	
Pin Label	**Name**	**Description**
1-3,12-13	+VDC	Supply Voltage - Range Specified in Datasheet
4	FWD DET	Tx Amp RMS Power Detector
5	TEMP	Temp Monitor: Temp in DegC = (Vout - 0.5V) * 100
6	RAD DET	Radio Input RMS Power Detector
9-11,20-21	GND	+VDC Supply Return
7	Status	BDA Status - TTL High = Normal Operation, TTL Low = Error Condition
8	Tx/Rx	TTL High or No Connection = Tx, TTL Low = Rx
19	SGND	Signal Ground
14-18	Reserved	Reserved for future use

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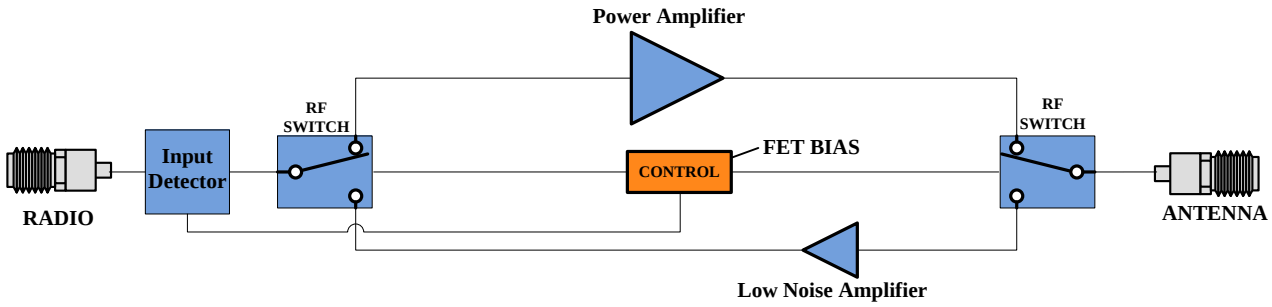
802-11g (20 MHz BW) Data Rate vs. Output Power			
OFDM Modulation	**Data Rate**	**POut (W) Typ.**	**EVM**
64QAM	54 Mbps	10	≤ -27 dB
16QAM	36 Mbps	16	≤ -21 dB
QPSK	12 Mbps	25	≤ -15 dB
BPSK	9 Mbps	40	≤ -7 dB
See our application note that describes how this table was calculated and provides notes on in-system performance			

High-Level Block Diagram



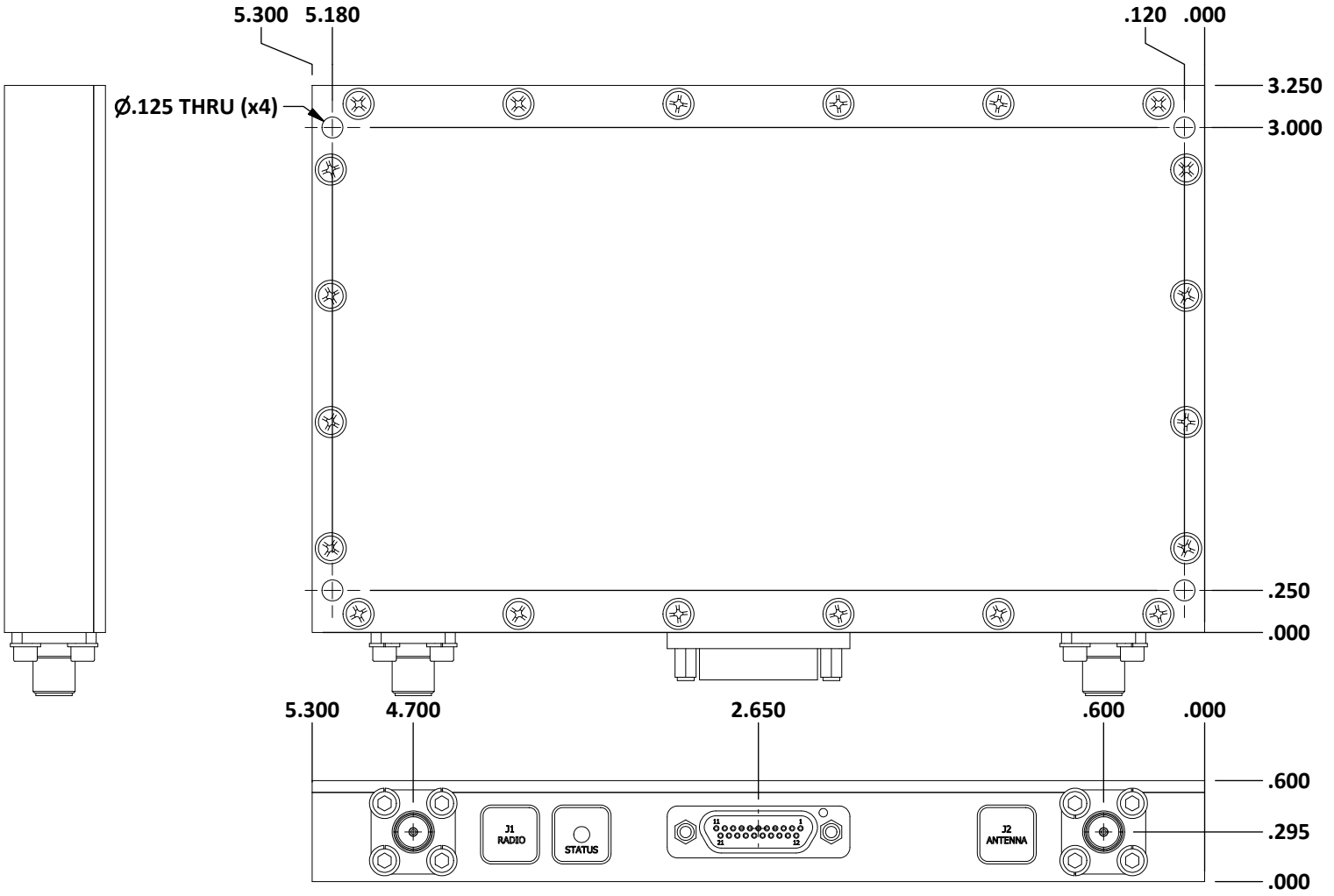
Amplifier Options	
Suffix	**Description**
D01	Automatic Tx/Rx Switching
D02	Manual Tx/Rx Switching
DXX	Custom Amplifier Configuration (issued by Triad upon customer request)

Please confirm with Triad that the desired configuration is available prior to ordering.

Heat Sink Options	
Suffix	**Description**
(none)	No Heat Sink Included
HS	Standard Heat Sink
HSF	Heat Sink with Integrated Cooling Fan
HSX	Custom Heat Sink Configuration

MATERIAL: ALLOY 6061	FINISH: MIL-DTL-5541 TYPE 2 CLASS 3

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
0	INITIAL RELEASE	01/31/18	SC
1	E18365	08/13/18	SC
2	E20567	02/18/20	AK



DRAWN	Anthony	2/18/2020
DESIGNED	DMC	5/11/2017
CHECKED		
ENG APPROVED		11/27/2019
MFG APPROVED		11/27/2019

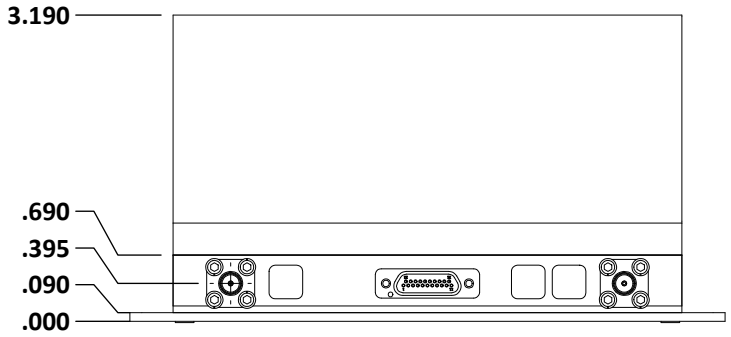
DIMENSIONS ARE IN INCHES
UNLESS SPECIFIED OTHERWISE
TOLERANCES
DECIMALS .XX ±.01 .XXX ±.005 | FRACTIONS ±1/32 | ANGLES ±2°

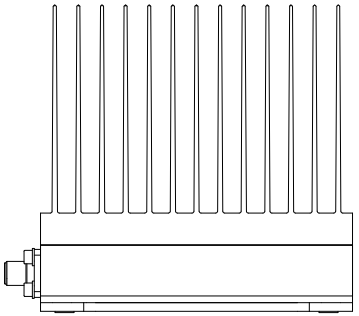
TRIAD RF SYSTEMS
11 HARTS LANE SUITE I
EAST BRUNSWICK, NJ 08816
855-558-1001

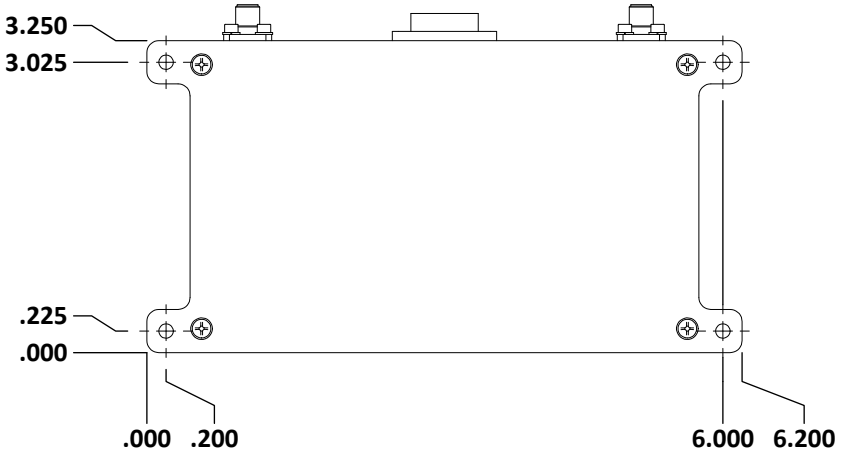
SIZE	DWG NO.	REV
A	OL_170	

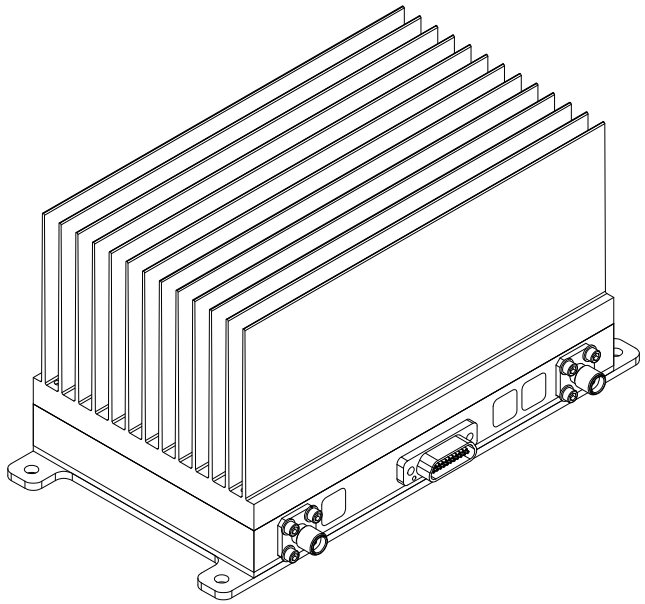
SCALE: NONE	CAGE CODE 67DZ3	SHEET 1 OF 5

HEATSINK









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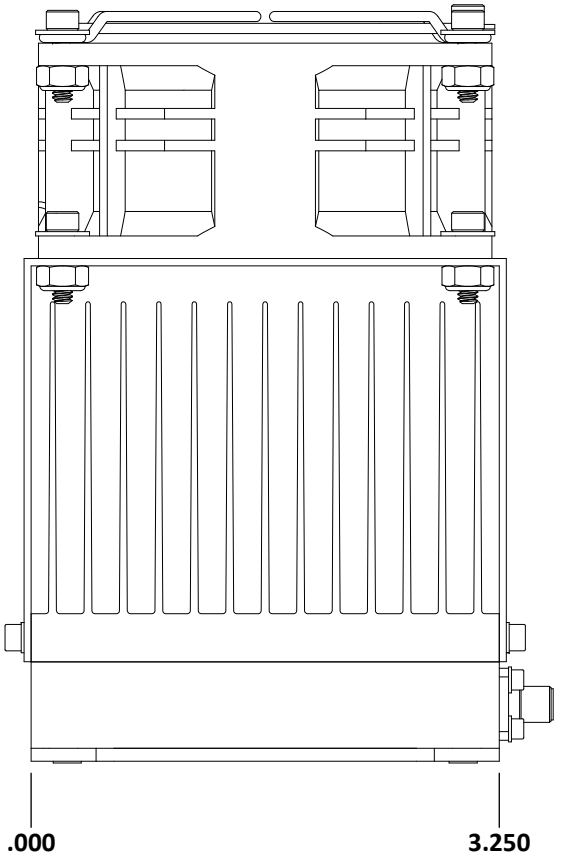
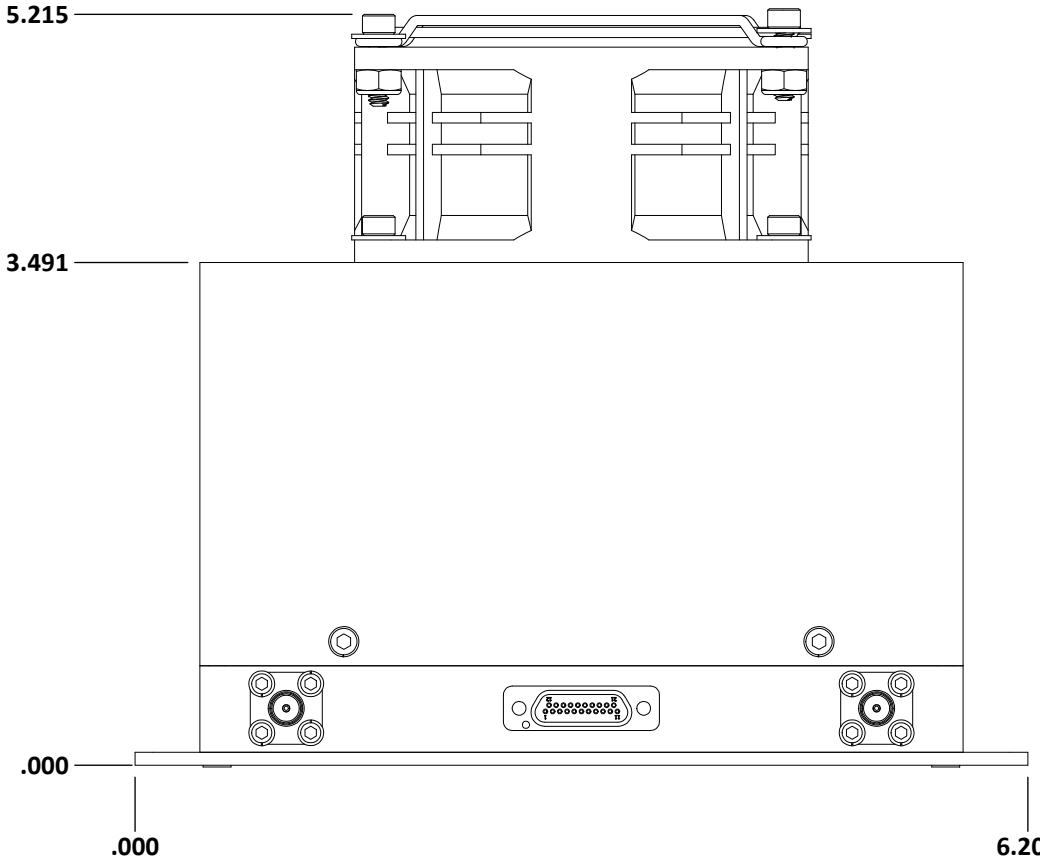
ENG APPROVED		11/27/2019			
MFG APPROVED		11/27/2019	SCALE: NONE	CAGE CODE 67DZ3	SHEET 2 OF 5





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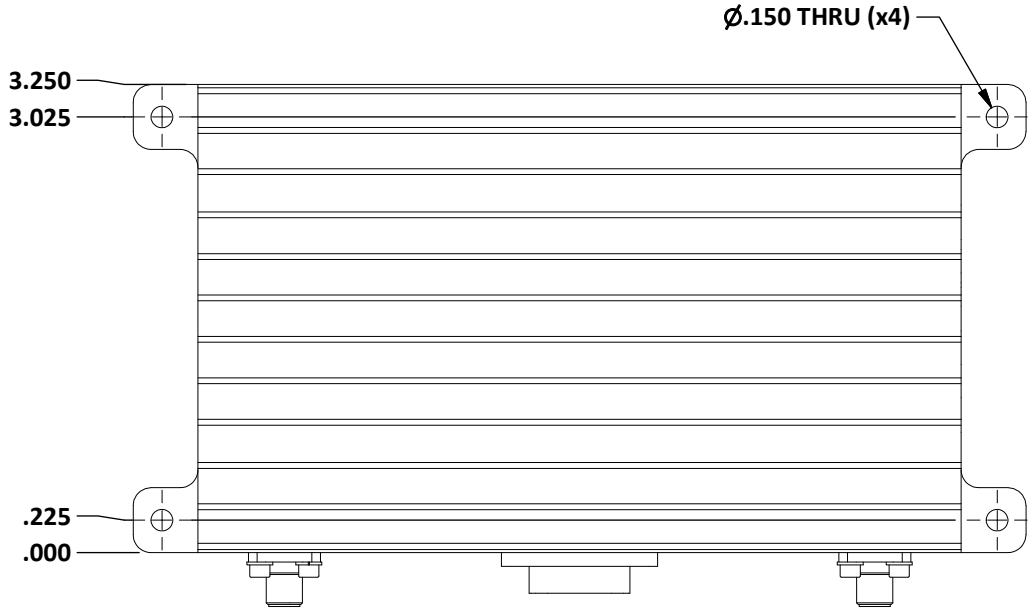
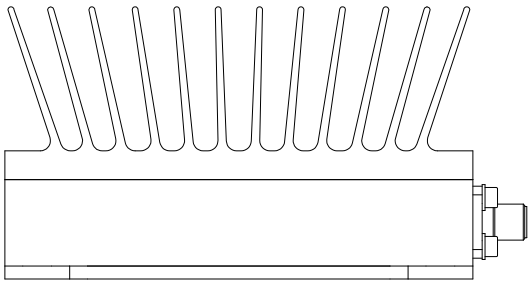
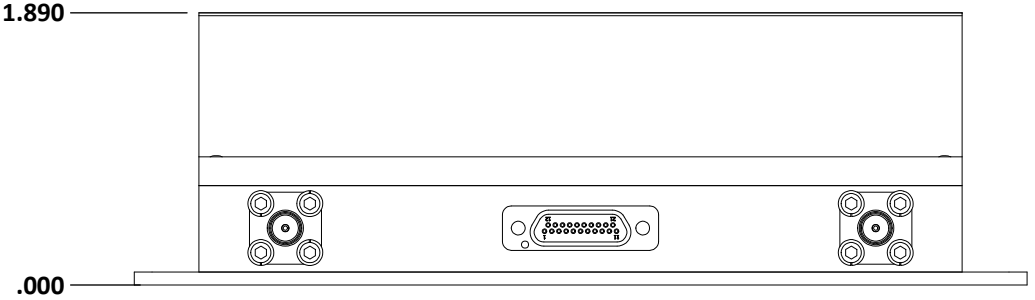
LOW PROFILE OPTION
CONFIRM USABILITY WITH TRIAD BEFORE ORDERING







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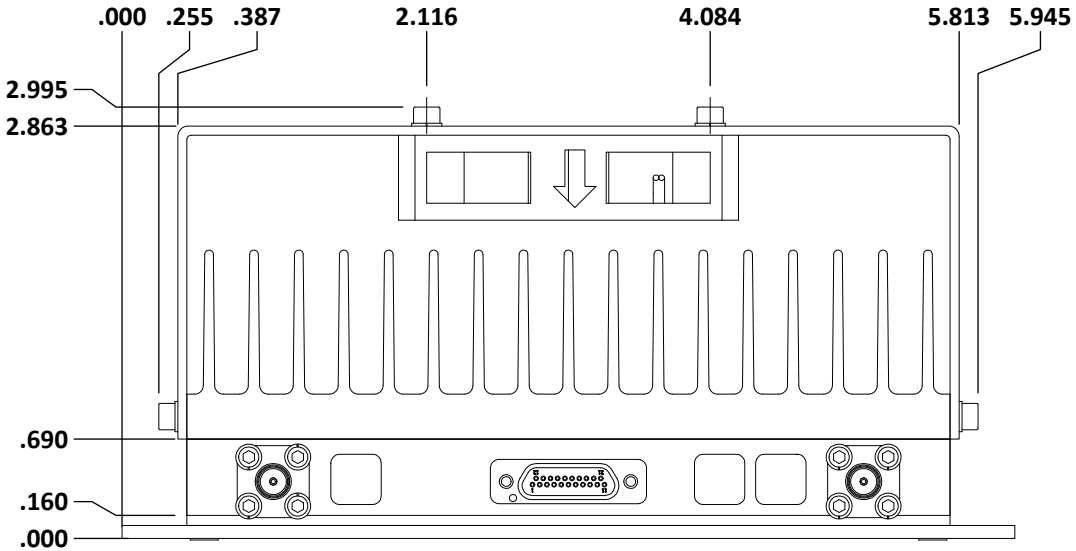
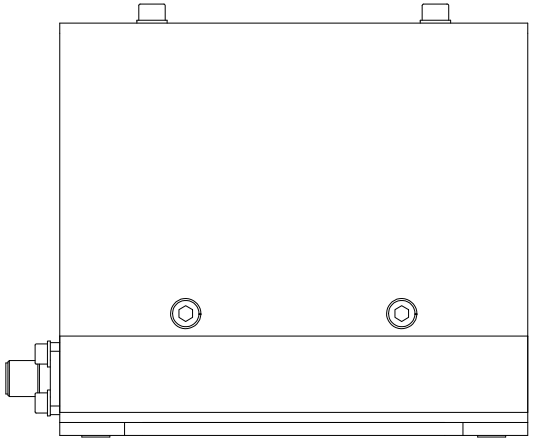
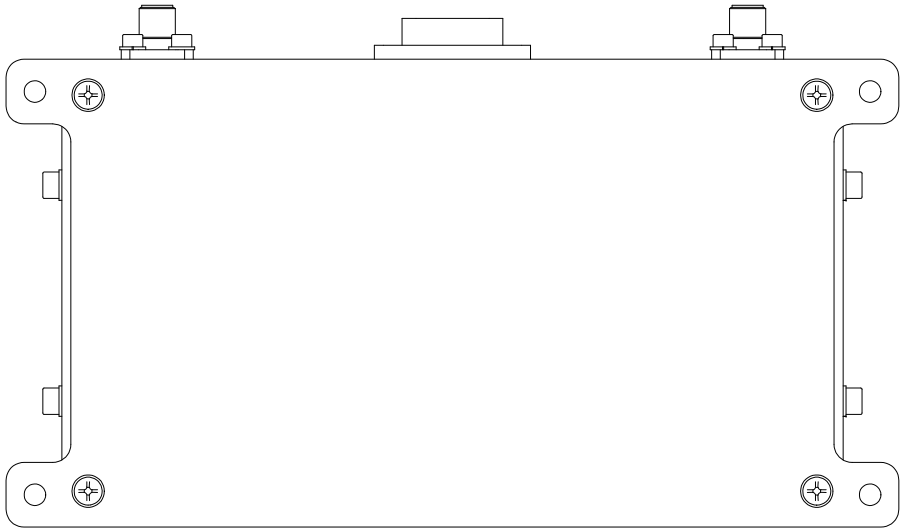
ENG APPROVED		11/27/2019			
MFG APPROVED		11/27/2019	SCALE: NONE	CAGE CODE 67DZ3	SHEET 4 OF 5

LOW PROFILE HEATSINK FAN







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