

Features

- Fully integrated 71-76 to 81-86 GHz TRx modules
- Supports Tx output power in excess of 35dBm
- Supports >2GHz channel bandwidth
- Low phase noise -112dBc/Hz at 1MHz
- Supports up to 512QAM modulation
- Integrated Diplexer
- Single T/R port for antenna interface
- Simple interface with modem
- 100% calibrated & tested
- Low noise figure receiver
- Compact low mass form factor
- Ideal for long range applications and high-power, low latency private networks
- Field proven technology

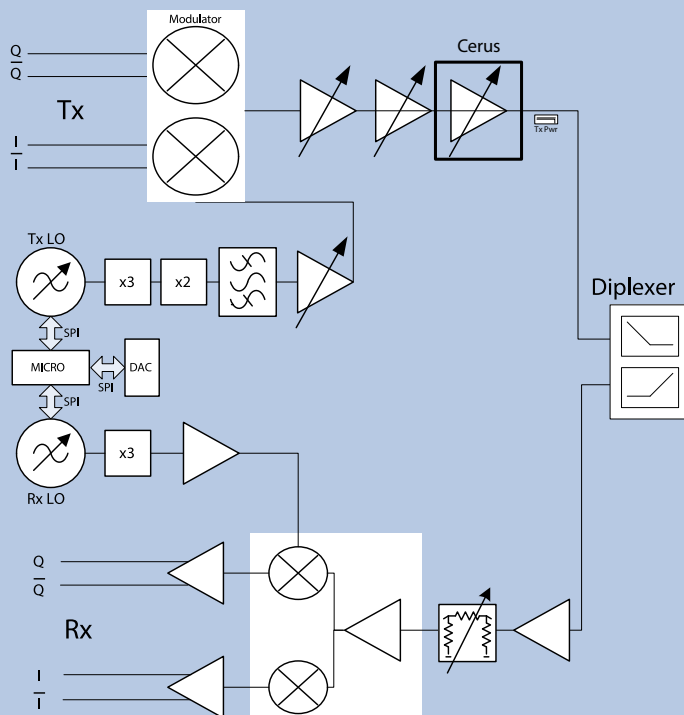
Description

Hercules II E-band high power transceiver modules incorporate Filtronic's latest generation E-band Transceiver the Morpheus II, plus it is integrated with either a Cerus 8 or Cerus 4 Solid State Power Amplifier. Ideal for long range terrestrial and non terrestrial applications and high-power private networks. Each module contains all the transmit and receive functions necessary for the RF section of an E-band link and provides a simple connection to a high data rate full duplex modem. The integrated diplexer connects directly to an antenna of choice via a standard WR12 interface. Internal, low phase noise VCOs are settable via an SPI interface in 31.25MHz steps to support ECC/ITU channel arrangements.

- Proven system performance
 - 10 Gbps demonstrated with spectral efficient 256QAM modulation.
- Field proven technology
 - tens of thousands of Filtronic millimetre wave transceivers deployed worldwide.

Hercules II modules are designed for easy incorporation into ODUs for rapid time to market with minimal customer engineering resource.

Hercules II high-power transceiver module block diagram



TA417-F1V2 Outline Specification

Over Baseplate operating temperature -33 to $+70^{\circ}\text{C}$
Heatsink face heat flux requirements TBD. All RF parameters
referenced to antenna port (inclusive of diplexer loss)

Function	Parameter	Min	Typ	Max	Units
Transmitter	Tx Frequency	71		76	GHz
	Tx Power control range	13		34	dBm
	Output IP3 @29dBm Pout		41		dBm
	Tx ALC accuracy	-2		2	dB
	Tx LO Cancellation		-30		dBc
	Tx Sideband suppression		-40	-20	dBc
	Tx Baseband input power	-12.5		-2	dBm
	I/Q Gain imbalance	-3		+3	dB
	I/Q Phase imbalance	-7		+7	degrees
	I/Q impedance - differential		100		Ohms
Receiver	Rx Frequency	81		86	GHz
	Rx Noise Figure (High gain mode)		5		dB
	Rx Gain in High gain mode		28		dB
	Rx Gain in Low gain mode		20.5		dB
	Rx Gain accuracy reported over SPI	-1.5		+1.5	dB
	RF input power			-23	dBm
	Input IP3 in Low gain mode		-7		dBm
	I/Q Gain imbalance	-3		+3	dB
	I/Q Phase imbalance	-10		+10	degrees
Both	Phase Noise @ 100KHz		-89		dBc/Hz
	Phase Noise @ 1MHz		-112		dBc/Hz
	LO frequency step		31.25		MHz

Power Supplies

Connector	Voltage (V)	Max Current (mA)	Tolerance ($\pm$)	Abs' max voltage (V)
Modem	5.1	3600	2%	5.5
Modem	3.3	160	2%	3.6
Modem	2.8	300	2%	3.0
Modem	18	25	2%	20
Modem	-5	50	2%	-5.5
Cerus	5	10,000	2%	5.5

TA418-F1V2 Outline Specification

Over Baseplate operating temperature -33 to $+70^{\circ}\text{C}$
 Heatsink face heat flux requirements TBD. All RF parameters
 referenced to antenna port (inclusive of diplexer loss)

Function	Parameter	Min	Typ	Max	Units
Transmitter	Tx Frequency	81		86	GHz
	Tx Power control range	13		34	dBm
	Output IP3 @24dBm		40.5		dBm
	Tx ALC accuracy	-2		2	dB
	Tx LO Cancellation		-30		dBc
	Tx Sideband suppression		-40	-20	dBc
	Tx Baseband input power	-12.5		-2	dBm
	I/Q Gain imbalance	-3		+3	dB
	I/Q Phase imbalance	-7		+7	degrees
	I/Q impedance - differential		100		Ohms
Receiver	Rx Frequency	71		76	GHz
	Rx Noise Figure (High gain mode)		4.5		dB
	Rx Gain in High gain mode		28		dB
	Rx Gain in Low gain mode		20.5		dB
	Rx Gain accuracy reported over SPI	-1.5		+1.5	dB
	RF input power			-23	dBm
	Input IP3 in Low gain mode		-7		dBm
	I/Q Gain imbalance	-3		+3	dB
	I/Q Phase imbalance	-10		+10	degrees
Both	Phase Noise @ 100KHz		-89		dBc/Hz
	Phase Noise @ 1MHz		-112		dBc/Hz
	LO frequency step		31.25		MHz

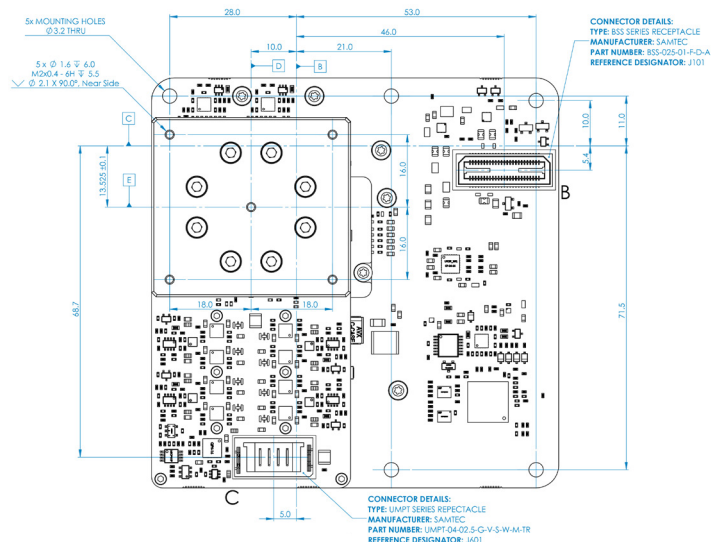
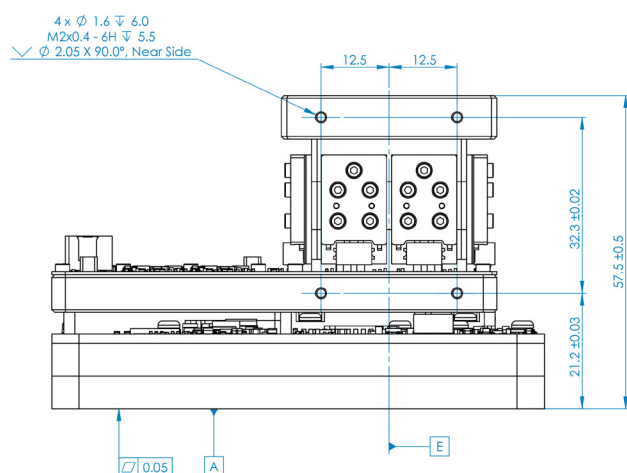
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Cerus	5	10,000	2%	5.5

Environmental

Parameter	
Operating Temperature	-33 to 70 °C
Storage Temperature	-45 to +80 °C
Mechanical shock and vibration	ETS 300 019-2-4 Class 4M3
MTBF	>10 ⁶ Hours (per Bellcore TR-332 with ambient temperature of +40°C)
ROHS & REACH	COC for ROHS & REACH Compliance available

Mechanical Outline



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