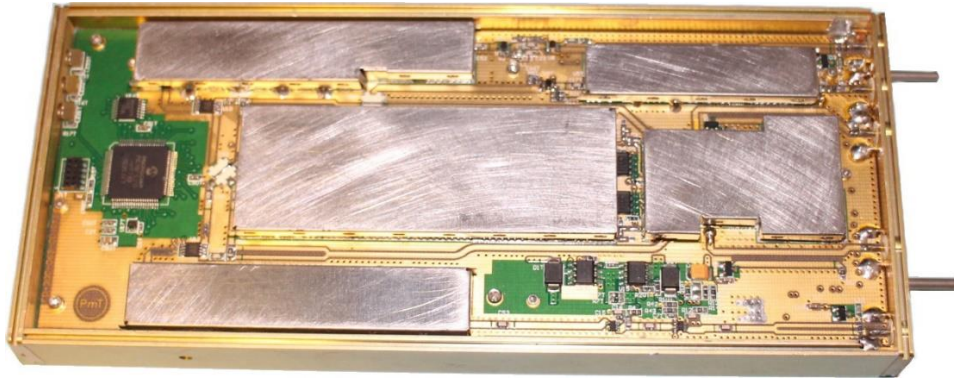


S-Band T/R Module
10.9 to 11.7 GHz
Low Cost

PmT-T/R Module

Model: PmT-T/R-Module

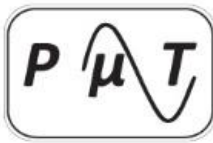


A Multi-Channel S-Band Transmit/Receive Module [T/R] has been designed, and produced for future satellite communication application. The module consists of two independent receive channels and a single transmit channel with dual for the LHCP and RHCP application. The design of the module consists of a large number of MMICs in various technologies which are useful for low noise, power and high efficiency operation. The digital logic for the T/R module is implemented locally using a powerful, low cost microcontroller and has fully capability of on demand telemetry for health status and operational parameters such as low noise and power amplifier currents, temperature and other built in tests.

Electrical Specifications (TA=25°C)

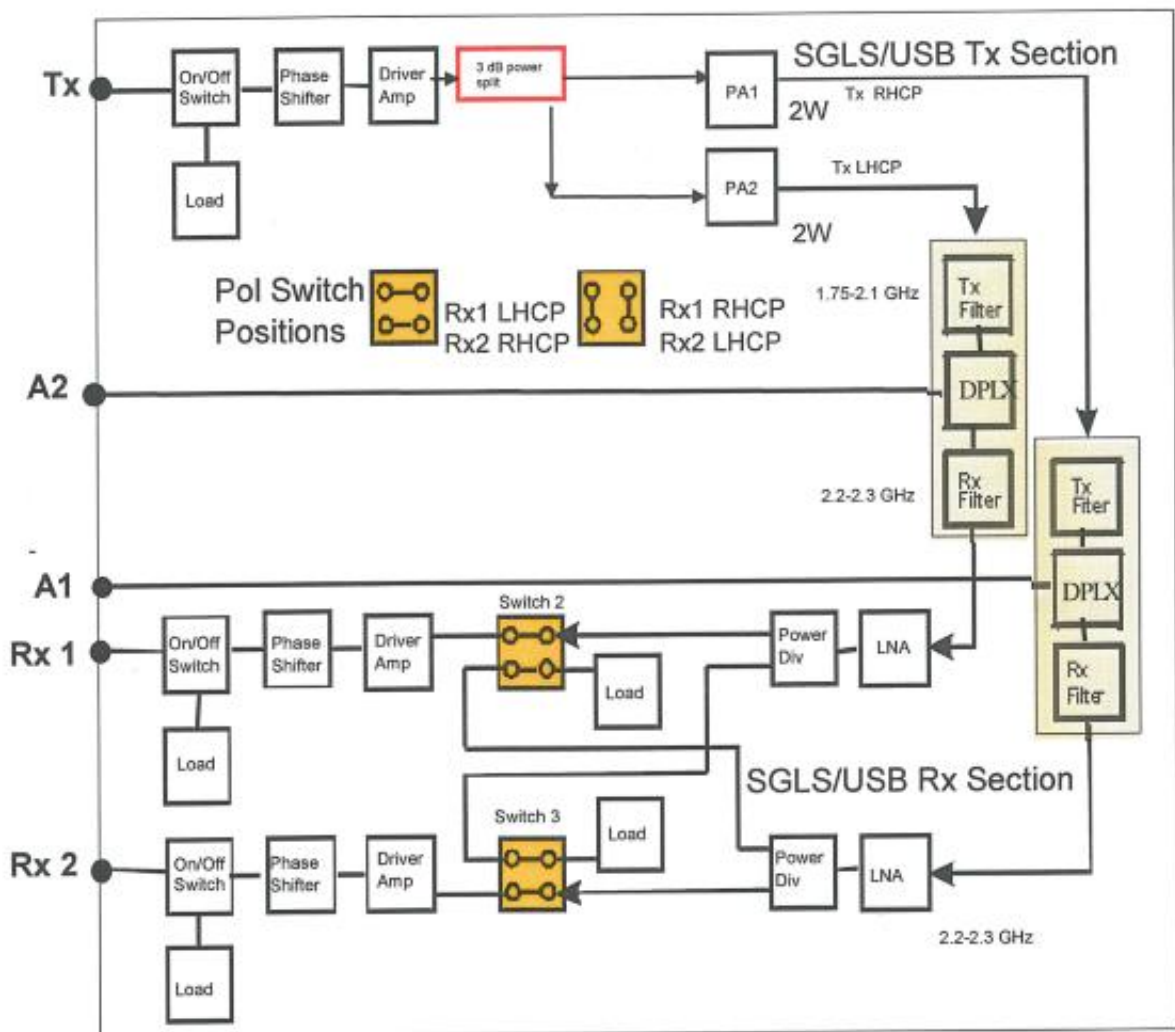
Transmit Section

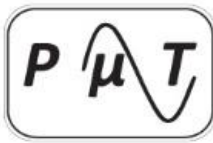
Parameters	Specifications
Frequency	1.75-2.1 GHz
Gain	20 dB
Power output per channel	33 dBm
Phase shift	4 bit
Control	Microcontroller
Retrofit	Hot swap
Efficiency	> 40%
Spurious	< -85
Built in Test	Current monitoring
Isolation at 2.15 GHz	> 45
Tx Rejection at RX band	> 55



Receive Section	
Parameters	Specifications
Frequency	2.2-2.3 GHz
Gain	26 dB
Noise Figure	1.2 dB
Phase Shift	4 bit
Built in Test	Current monitoring
Isolation at 2.15 GHz	>45 dB
Tx Rejection at TX band	>55 dB

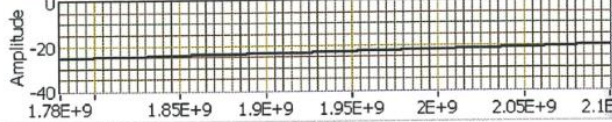
Block Diagram:



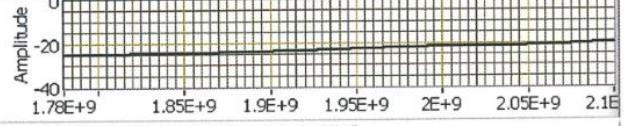


Test Sample of TX

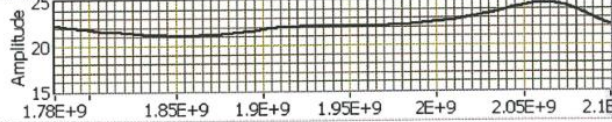
Tx->A1 RF OFF: Isolation [dB]



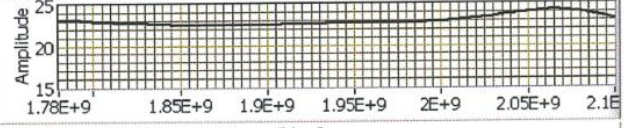
Tx->A2 RF OFF: Isolation [dB]



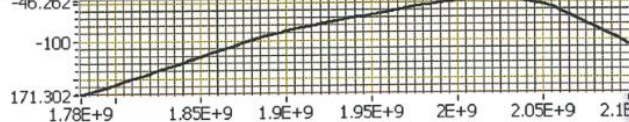
Tx->A1 @ 0 deg: Absolute Magnitude [dB]



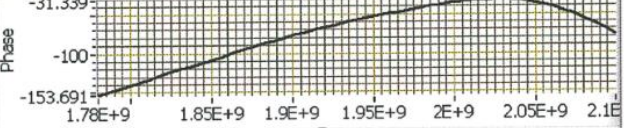
Tx->A2 @ 0 deg: Absolute Magnitude [dB]



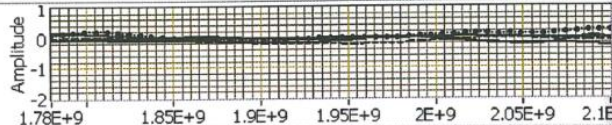
Tx->A1 @ 0deg: Absolute Phase [deg]



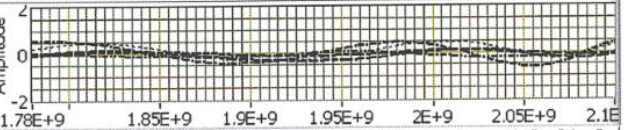
Tx->A2 @ 0deg: Absolute Phase [deg]



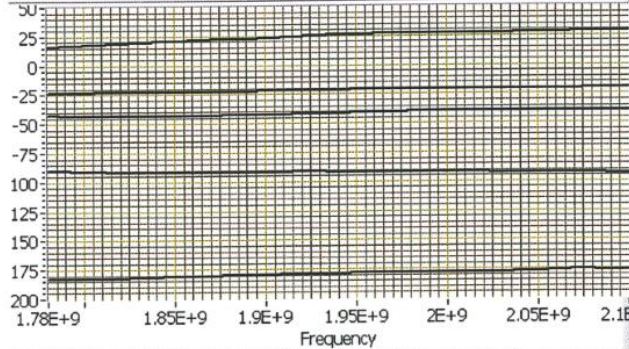
Tx->A1 @ 22.5, 45, 90, 180, and 337.7 deg: Relative Magnitudes [dB]



Tx->A2 @ 22.5, 45, 90, 180, and 337.7 deg: Relative Magnitudes [dB]



Tx->A1 @ 22.5, 45, 90, 180, and 337.7 deg: Relative Phase Shifts [deg]



Tx->A2 @ 22.5, 45, 90, 180, and 337.7 deg: Relative Phase Shifts [deg]

