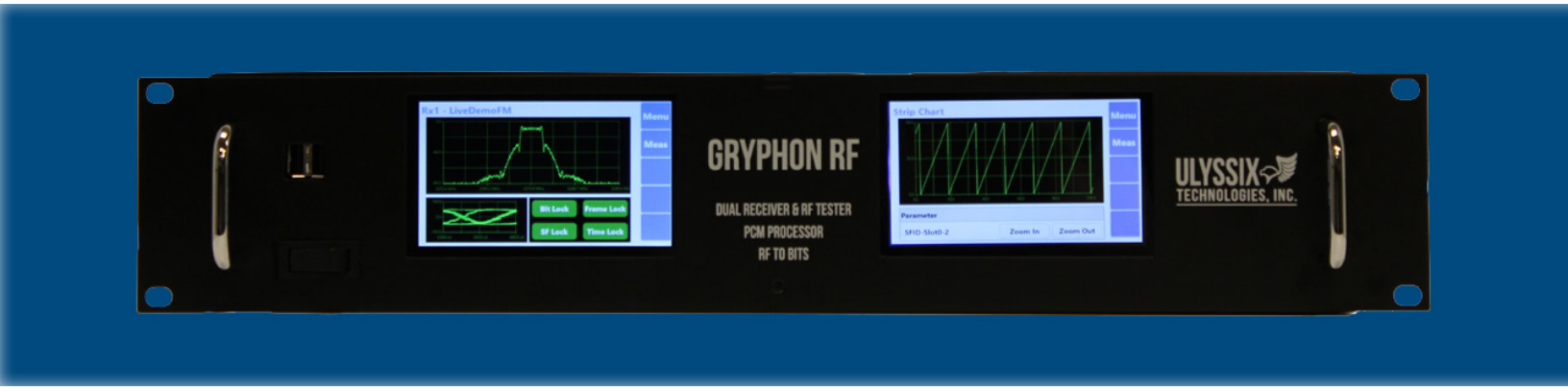
Gryphon RF

"RF to Bits" Rackmount Dual Multi-Mode Receivers with Diversity Combiner, RF Modulating Signal Generator and full Dual PCM Processing and Ethernet Data Output with full BERT Functionality



Two Independent C/S/L/Extended P/P/IF Band Multi-Mode Demodulating Receivers with optional RF Modulating Signal Generator

Two full Dual Bit Sync/Frame Sync/PCM Decommutator/IRIG Time Code Reader/PCM Baseband Simulator with optional Chapter 10 storage/RF PCM Signal Generation/BERT RF Tester

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Gryphon RF

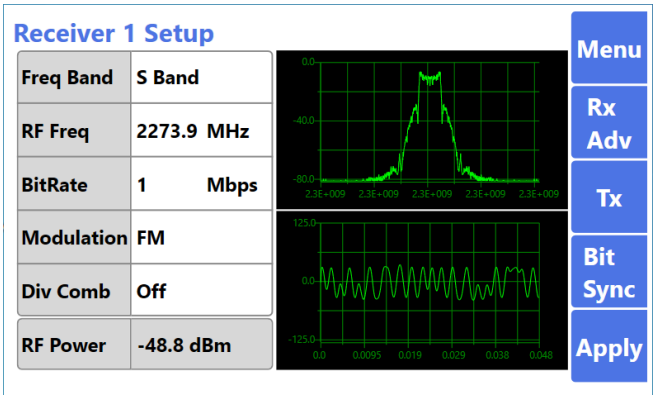
Ulyssix's "RF to Bits" 2U rackmount complete ground-based telemetry system. The Gryphon RF is a custom rackmount solution using the combined advanced Ulyssix Bald Eagle RF and Tarsus3-PCIe-02 with an embedded processor. The full functionality of the combined Ulyssix solution gives the user complete RF and baseband data acquisition with data processing in this single solution. The Gryphon RF is set-up and controlled by dual high-resolution color touchscreen displays for complete flexibility using the front panel touchscreen interface. The Gryphon RF solution is powered by the latest INTEL FPGA technology with user upgradable DSP firmware algorithms.

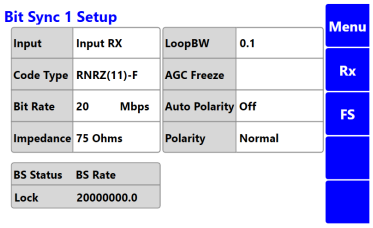
Gryphon RF Features:

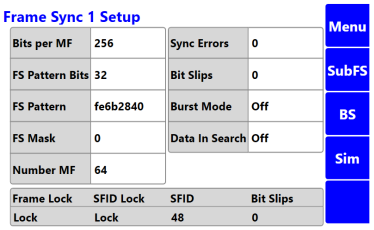
Features Included:
Dual Multi-Mode Receivers
Dual PCM Baseband
IRIG Time Code Reader
PCM Simulator Setup
Internal BERT Operation

Optional Features:

RF Modulating Generator
IRIG CH10 Recorder/Playback
UDP Frame and Parameter Broadcasting
TMoIP Interface







Basic Feature

The Gryphon RF is a 2U rackmount solution based on the state-of-the-art Ulyssix Bald Eagle RF and Tarsus3 PCM Processing product.

Dual multi-mode receivers with diversity combiners are the basis for the product.

All RF IP algorithms are in FPGA firmware which is customer upgradable giving the end user endless upgrade for future features.

Ulyssix offers extended warranty support which also includes no charge upgrade for future development receiver and PCM processing algorithms.

Optional RF Generation

Allows user to RF modulate the internal PCM simulator output or use either stored Ulyssix .tad file formats or Chapter 10 format packet PCM data files.

User can perform a full RF through bits BERT analysis using stored pseudo-random patterns or internal stored data files.

RF Multi-mode modulation capability using C/S/L/Extended P/P/IF frequency bands.

Gryphon RF can also be used as a frequency translator both within the same RF frequency band or between RF frequency bands.

Storage & Diagnostics

PCM bit sync data is able to be stored using either the built-in USB connectors to external CD/jump drives or out the Ethernet connector.

Diagnostic feature used to aid Ulyssix in trouble-shooting FPGA firmware internal control register configuration from user setup configuration.

Retrieval popup form built-in to the Gryphon RF embedded software which outputs diagnostic file for transfer to Ulyssix for quick system analysis for card configuration errors, setup errors, or actual hardware failures.

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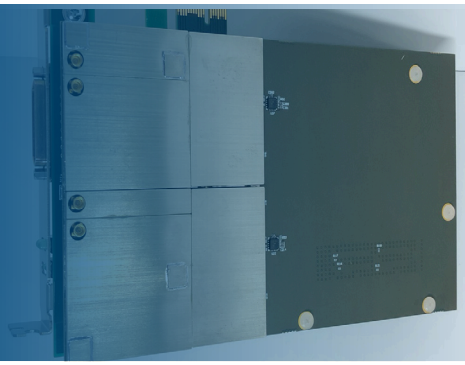
Gryphon RF
RF Specifications*



Receiver Specifications

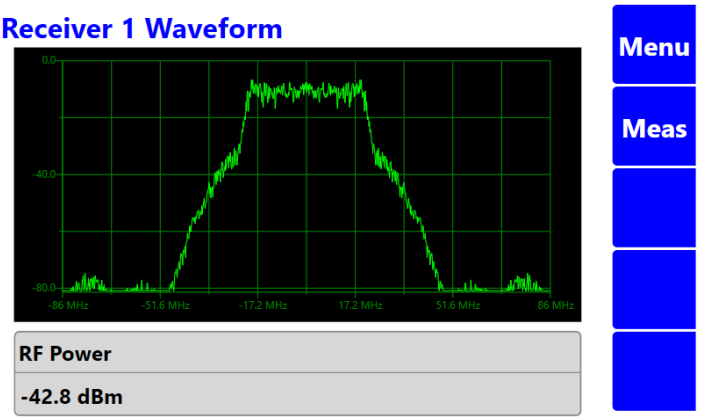
Input RF Frequency Range	C-Band 4400 – 5250 MHz S-Band 2185 – 2485 MHz U/L L-Band 1420 - 1850 MHz P-Band Extended 500 - 1250 MHz P-Band 200-500 MHz IF 70 MHz
RF Inputs	2
Frequency Tuning Resolution	50 kHz
Dynamic Range	-10 dBm to -104 dBm
VSWR Ratio	2:1 typical, 2.5:1 maximum
Noise Figure	5 dB typical, 8 dB max
Maximum Safe RF Input Level	+20 dBm without damage
Input Impedance	50 ohms into SMA connectors
Spurious signal rejection	> 60 dBc

Signal Processing Specifications

IF Bandwidth	20 kHz to 56 MHz
Demodulation Modes	FM/SOQPSK/BPSK/QPSK/GMSK
Diversity Combiner	Optimal Ratio and Best Source
Combiner Mode:	Pre-D
AFC Tracking	Maximum AFC acquisition range is +/- 50 MHz for C and S Band; +/- 25 MHz for L-Band; +/- 12.5 MHz for EP Band; +/- 6.25 MHz for P-Band/ IF 70 MHz
AFC Frequency Resolution	1 kHz for all bands
AFC Acquisition	≤ 100 msec for all bands
AGC Time Constants	1.0 msec, 0.1msec, 0.01msec, selectable
AGC Modes	Automatic, Manual, Freeze
AM AGC Out	AC coupled AM AGC detector output, 50 kHz frequency response, 5 Vpp bipolar or unipolar out
AGC DC Level Detector	DC coupled form 0 to +/- 3.5 VDC for min to max RF AGC attenuation

Physical Specifications

Dimensions	2U 19" rackmount chassis with 100V-240V AC input capability
Interface Connectors	RF inputs and outputs through N-Channel connectors, baseband PCM inputs and outputs through single ended 75 ohm BNC rackmount connectors
Manufacturing	The design utilizes Surface Mount Technology (SMT) manufactured with robotic assembly techniques to IPC-610B Class 2 manufacturing standards
Temperature Range	Operating: 0°C to 50°C Storage: -20°C to 60°C
Power Consumption:	Less than 300 Watts



RF Generator Specifications (Optional)

Output RF Frequency Range	C-Band 4400 – 5250 MHz S-Band 2185 – 2485 MHz Upper L-Band 1700 – 1850 MHz Lower L-Band 1420 – 1590 MHz P-Band Extended 500 –1250 MHz P-Band 200– 500 MHz IF 70 MHz
Transmit Outputs:	1
IF Bandwidth	1 kHz to 40 MHz
Modulation Modes	FM/SOQPSK/BPSK/QPSK/GMSK
Modulation Source	Tarsus3 PCM simulator running stored PN-11/15 patterns, user defined PCM frame, archived user data, or external TTL Input PCM stream
Output Dynamic Range	-20 dB to -90 dB
Output Impedance	50 ohms using SMA connector

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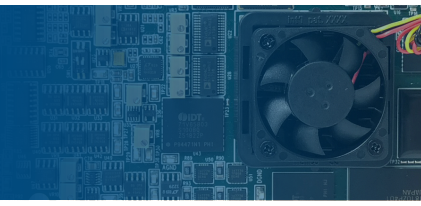
PCM Baseband Specifications*



Bit Synchronizer Input Specifications

Input Data Rate	Bit Sync programmable input tunable rates from 1 bps to 40 Mbps for NRZ-L/M/S, RNRZ-L and 1 bps to 20 Mbps for Bi-Φ L/M/S
Input Source	2 independent inputs per bits (Receiver direct internal input, 1 single ended BNC)
Input Impedance	Hi-Z/75Ω/50Ω, single ended input, software selectable
Maximum Safe Input	± 35 VDC
Input Signal Level	30 mVp-p to 5 Vp-p
DC Input Level	+/- 5 VDC
Input PCM Codetypes Modes	NRZ-L/M/S, RNRZ-L, RZ, Bi-Φ L/M/S, program selectable (consult factory for other codetypes)
Derandomizer Input	RNRZ-11/15, forward/reverse, program selectable
Input Polarity	Normal, inverted or auto selectable using frame sync correlator

Bit Synchronizer Data Specifications

Loop Bandwidth	0.01% to 3.0%, to the programmed bit rate
Capture Range	+/-3 times of the programmed loop bandwidth
Data Tracking Range	+/-5 times of the programmed loop bandwidth
Sync Acquisition	Less than 200 bits, typically 100 bits max
Bit Error Probability	Less than 1 dB to theoretical bit sync BER performance for bit rates up to 25 Mbps, less than 2 dB to theoretical from 25 Mbps to 33 Mbps, less than 2.7 dB to theoretical to 40 Mbps
PCM Encoder Output	TTL and RS422 Level driven
PCM Encoder Code Types	NRZ-L/M/S, RNRZ-L, RZ, Bi-Φ L/M/S or RNRZ 11/15, program selectable
Clock Output	0°, 90°, 180°, 270°

Frame Sync/Decommutator Specifications

Input Data Rate	Up to 50 Mbps
Input Signals	TTL Level single ended, RS-422 differential or direct from Bit Sync section of the PCM Processor, NRZ-L and clock
Word Lengths	3 to 64 bits variable from channel to channel
Minor Frame Length	3 to 16,777,216 bits
Major Frame Length	1 to 1024 minor frames per major frame
PCM bit word order	MSB or LSB, word by word basis, program selectable
Frame Sync Pattern	16 to 64 bits
Frame Sync Location	Leading the minor frame
Frame Sync Strategy	Search-Check-Lock, programmable counts per step
Subframe Sync	FCC or SFID
Sync Error Tolerance	0 to 8 bits, program selectable
Bit Slip Window	0 to 9999 bits, program selectable
Data Polarity	Normal or inverted on a channel by channel basis
Asynchronously Embedded Formats	Supports up 8 asynchronous embedded formats based on computer CPU capability
Bit Concatenation/Fragmented Words	Software decommutator can combine individual bits from separate PCM words

DAC Output Specifications

Number of Channels	2
Output Level	1 Vpp to 5 Vpp, selectable in 0.1 Vpp steps, ± 2.5V offset in 0.1 VDC steps

Time Code Reader Specifications

IRIG Codetypes	Supports DC Level IRIG-B and AM Modulated IRIG A, B, G & NASA-36

Gryphon RF Diagnostics

Version Control	All current software, firmware and driver version numbers stored for easy retrieval
Latest Setup	Current card setup configuration is stored for verification of proper setup
Diagnostic Download	Direct download to file for transfer to Ulyssix for evaluation and recommendations

Physical Specifications

Dimensions	2U 19" rackmount chassis with 100V-240V AC input capability
Interface Connectors	RF inputs and outputs through N-Channel connectors, baseband PCM inputs and outputs through single ended 75 ohm BNC rackmount connectors
Manufacturing	The design utilizes Surface Mount Technology (SMT), manufactured with robotic assembly techniques to IPC-610B Class 2 manufacturing standards
Temperature Range	Operating: 0°C to 50°C Storage: -20°C to 60°C
Power Consumption:	Less than 300 Watts

Ordering Options

Gryphon-RF	2U rackmount Dual Multi-Mode RF Receiver with Diversity Combiner C/S/L-Band/Extended-P/P-Band, and Dual PCM Processing capability, IRIG Time Code Reader, PCM Simulation and BERT Tester Option for Bit Error Tester of RF and PCM Data Stream
ULX-OPT-Gryphon TX	RF Modulating Multi-Mode/Multi-Band transmitter/generator also with frequency translation capability
ULX-OPT-CH10	Chapter 10 recording and reproducer for both Chapter 10 disk files and UDP-CH10-Ethernet packets
ULX-OPT-TMoIP	TMoIP Ethernet output capability to IRIG standard TMoIP receiver station and processor
ULX-OPT-UDP PARAM/FRAME BROADCAST	UDP Frame and/or decom parameter multicast or unicast broadcast for external ALTAIR software networking or external data transfer

PCM Simulator Specifications

Output Data Rate	1 bps to 40 Mbps for NRZ-x, RNRZ-L, or 20 Mbps for all others
Output PCM Codetypes	NRZ-L/M/S, RNRZ-L 11/15, RZ, Bi-Φ L/M/S, RNRZ 11/15/, forward/reverse, program selectable
Output Signal Levels	Data and Clock, TTL, and RS422 level driven
Word Lengths	3 to 64 bits, variable length
Frame Length	Same as decommutator specs
Data Words	Fixed or math functions (sine wave, triangle, square wave, sawtooth, counter) with programmable sample rate

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Specifications are subject to change without notice.
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