ODMR-840B Remote Router (Board Set)

Advanced VSAT Solutions



Overview

Comtech EF Data's Advanced VSAT Solutions portfolio provides high-performance satellitebased communication solutions for a diverse range of applications, including broadband maritime, offshore communications, mobile backhaul with RAN optimization, IP trunking and backhaul, corporate and enterprise networks, emergency and disaster recovery. Incorporating advanced technologies developed by Comtech EF Data, AHA Products Group, Memotec and Stampede, the solutions provide unmatched performance, industry-leading bandwidth efficiencies and network optimization – while minimizing Total Cost of Ownership.

Typical Users

- Government & Military
 - Common Applications
- Flyaway & Portable Terminals

Intended for use in portable VSAT terminals, the ODMR-840 board set combines a wide range of advanced technologies for efficient bandwidth utilization for hub-spoke networks:

- High-performance packet processing
- Lossless Payload compression
- Header compression
- Advanced Quality of Service (QoS)
- Dynamic SCPC with VMS
- DVB-S2 and VersaFEC® low-latency LDPC Forward Error Correction
- Ultra low overhead encapsulation

Features

- High-Performance Integrated Packet Processing
 - Layer 3 (Routed) operation
 - Advanced Quality of Service (QoS)
 - Header compression
 - Lossless payload compression
 - Ultra low overhead Streamline Encapsulation (TX)
 - Low overhead Enhanced Generic Stream Encapsulation (GSE) (RX)
- Advanced Forward Error Correction
 - VersaFEC low-latency LDPC transmit
 - DVB-S2 receive
- Adaptive Coding and Modulation (ACM) for Transmit and Receive
- Variable Coding and Modulation (VCM) for Receive
- Transmit
 - Data rate: 16 kbps to 15.35 Mbps
 - Symbol rate: 16 ksps to 4.5 Msps
 - Modulation: BPSK, QPSK, 8-QAM, 16-QAM
 - Rolloff : 20%, 25%, 35%

- Ultra low overhead Streamline Encapsulation
 - ReceiveData rate: 1 Mbps to 160 Mbps
 - Symbol rate: 1 Msps to 62 Msps
 - Rolloff : 20%, 25%, 35%
 - Demodulation: QPSK, 8PSK, 16APSK, 32APSK
 - Low overhead enhanced Generic Stream Encapsulation
- Operating Frequency: 950 to 2150 MHz
- Ethernet interface for traffic and management
- Integrated with NetVue Integrated Management System and Vipersat Management System



Specifications Transmit

Data Rate	16 kbps to 15.35 Mbps, in 1 bps step (CCM mode) (Modulation and FEC dependent)
Symbol Rate	16 ksps – 4.5 Msps
FEC	VersaFEC encoder (ACM and CCM modes)
Modulation & Code Rate	Data Rate Range
BPSK 0.488	16.00 kbps – 2.19 Mbps
QPSK 0.533	17.07 kbps – 4.80 Mbps
QPSK 0.631	20.19 kbps – 5.67 Mbps
QPSK 0.706	22.577 kbps – 6.34 Mbps
QPSK 0.803	25.69 kbps – 7.22 Mbps
8-QAM 0.642	30.83 kbps – 8.67 Mbps
8-QAM 0.711	34.14 kbps – 9.60 Mbps
8-QAM 0.780	37.44 kbps – 10.53 Mbps
16-QAM 0.731	46.80 kbps – 13.16 Mbps
16-QAM 0.780	49.92 kbps – 14.04 Mbps
16-QAM 0.829	53.04 kbps – 14.91 Mbps
16-QAM 0.853	54.60 kbps – 15.35 Mbps
Encapsulation	Ultra low overhead Streamline Encapsulation

Receive

	QPSK	0.479 – 108.255 Mbps
Receive Data Rate	8PSK	1.740 – 160.0 Mbps
(Pilots On)	16APSK	2.575 – 160.0 Mbps
	32APSK	3.623 – 160.0 Mbps
	QPSK	1 to 62 Msps
Roccivo Symbol Pato	8PSK	1 to 62 Msps
Receive Symbol Rate	16APSK	1 to 47 Msps
	32APSK	1 to 37 Msps
FEC	DVB-S2 decoder	(ACM, CCM and VCM
	modes) short fran	ne, normal frame
Modulation & FEC	Data Rate Range	•
0.001/ 1/1	(Normal FEC fra	me, pilots off)
QPSK 1/4	0.479 – 29.672 M	bps
QPSK 1/3	0.641 – 39.731 M	bps
QPSK 2/5	0.//1 – 4/.//9 M	bps
QPSK 1/2	0.965 – 59.850 M	bps
QPSK 3/5	1.160 – /1.922 M	bps
QPSK 2/3	1.291 – 80.029 M	bps
QPSK 3/4	1.452 – 90.029 M	bps
QPSK 4/5	1.549 – 96.064 M	bps
QPSK 5/6	1.615 - 100.148	Vibps
	1.724 - 106.914	VIDPS
QPSK 9/10	1.746 - 108.255	VIDPS
8PSK 3/5	1.740 - 107.853	VIDPS
8PSK 2/3	1.936 - 120.0111	VIDPS
	2.176 - 135.0071	Vibps
	2.422 - 150.1611	Vibps
0FSK 0/9	2.300 - 100.000 1	Mbps
16ADSK 2/2	2.010 - 100.000	Mbps
164 PSK 3/4	2.375 - 121.007	Mbps
164 PSK 1/5	2.030 - 130.127	Mbps
164 PSK 5/6	3 222 - 151 428	Mbps
164PSK 8/9	3 440 - 160 000 1	Mbps
164PSK 9/10	3 483 - 160 000 1	Mbps
32APSK 3/4	3 623 - 134 063	Mbps
32APSK 4/5	3.866 - 143.051	Vbps
32APSK 5/6	4 031 - 149 132	Vbps
32APSK 8/9	4.303 - 159.207	Vbps
32APSK 9/10	4.357 - 160.000	Vbps
Pilots	On	
Encapsulation	Low overhead En	hanced GSE

Modulator Specifications

Frequency100 Hz frequency resolutionFrequency $\pm 0.06 \text{ ppm} (\pm 6 \times 10-8), 0^{\circ} \text{ to } 50^{\circ}\text{C}$ Stability(32° to 122° F)FrequencyInternalReferenceScramblingScramblingComtech, disabledSpectral InversionNormal or invertedTransmit Filter20%, 25% and 35%Rolloff (Alpha)0Output Power0 to -40 dBm, in 0.1 dB stepsPower Accuracy $\pm 1.0 dB$ over frequency, data rate, modulation type and temperature range of 0 to 50° CTransmit On/Off Ratio60 dBc minimumRatioBetter than -60 dBc/4 kHz (typically < -65 dBc/4KHz) Measured from Fo +1.300 MHzOutput Phase Noise<1° ms double sided, 100 Hz to 1MHz (minimum of 6 dB better overall than the Intelsat IESS-308/309 requirement) $\frac{dB/Hz}{DE}$ Frequency Offset -66.0-66.0100 Hz -76.0-76.01 kHz -86.0-86.0100 kHz-96.0100 kHz-76.01 kHz -96.0-86.010 kHz -96.0-76.01 kHz -96.0-76.0	Operating	950 to 2150 MHz I -Band
Frequency $\pm 0.06 \text{ ppm} (\pm 6 \times 10-8), 0^{\circ} \text{ to } 50^{\circ}\text{C}$ Stability(32° to 122° F)FrequencyInternalReferenceScramblingScramblingComtech, disabledSpectral InversionNormal or invertedTransmit FilteringPer IESS-308/-309 spectral maskTransmit Filter20%, 25% and 35%Rolloff (Alpha)Output PowerOutput Power0 to -40 dBm, in 0.1 dB stepsPower Accuracy $\pm 1.0 \text{ dB over frequency, data rate, modulation type and temperature range of 0 to 50° CTransmit On/Off-60 dBc minimumRatioBetter than -60 dBc/4 kHzHarmonics andBetter than -60 dBc/4 kHz)Spurious(typically < -65 dBc/4KHz)$	Frequency	100 Hz frequency resolution
Stability $(32^\circ \text{ to } 122^\circ \text{ F})$ Frequency ReferenceInternalScramblingComtech, disabledSpectral InversionNormal or invertedTransmit FilteringPer IESS-308/-309 spectral maskTransmit Filter Rolloff (Alpha)20%, 25% and 35%Output Power0 to -40 dBm, in 0.1 dB stepsPower Accuracy ± 1.0 dB over frequency, data rate, modulation type and temperature range of 0 to 50° CTransmit On/Off Ratio-60 dBc minimumHarmonics and SpuriousBetter than -60 dBc/4 kHz (typically < -65 dBc/4KHz) Measured from Fo +/- 300 MHzOutput Phase Noise< 1° rms double sided, 100 Hz to 1MHz (minimum of 6 dB better overall than the Intelsat IESS-308/309 requirement) $\frac{dB/Hz}{-66.0}$ 100 Hz -76.0Frequency Offset -66.0-60.0100 Hz -76.0-76.01 kHz -96.0-96.0100 kHz -96.0-96.0100 kHz -96.0Fundamental AC line spurious is -42 dBc or lower. The sum of all other single sideband spurious, from 0 to 0.75 x symbol rate, is -48 dBc or lower.ConnectorSMA (Type-N option)Impedance Test ModesCW, 1/0 pattern, 2^23-1 and 2047 patternsBUC Reference (10 MHz)Via TX IF center conductor, 10.0 MHz ± 0.06 ppm, selectable on/off, 0.0 dBm ± 3 dB	Frequency	± 0.06 ppm (± 6 x 10-8), 0° to 50°C
Frequency ReferenceInternalScramblingComtech, disabledSpectral InversionNormal or invertedTransmit FilteringPer IESS-308/-309 spectral maskTransmit Filter Rolloff (Alpha)20%, 25% and 35%Output Power0 to -40 dBm, in 0.1 dB stepsPower Accuracy \pm 1.0 dB over frequency, data rate, modulation type and temperature range of 0 to 50° CTransmit On/Off Ratio-60 dBc minimumHarmonics and SpuriousBetter than -60 dBc/4 kHz (typically < -65 dBc/4KHz) Measured from Fo +/- 300 MHzOutput Phase Noise< 1° ms double sided, 100 Hz to 1MHz (minimum of 6 dB better overall than the Intelsat IESS-308/309 requirement) $\frac{dB/Hz}{-66.0}$ -76.01 kHz -76.0-76.01 kHz -96.0-96.0100 Hz -96.0-96.0100 kHzFundamental AC line spurious is -42 dBc or lower. The sum of all other single sideband spurious, from 0 to 0.75 x symbol rate, is -48 dBc or lower.ConnectorSMA (Type-N option)Impedance50 ΩExternal TX BUC ReferenceCW, 1/0 pattern, 2^23-1 and 2047 patternsBUC Reference (10 MHz)Via TX IF center conductor, 10.0 MHz ± 0.06 ppm, selectable on/off, 0.0 dBm ± 3 dB	Stability	(32° to 122° F)
ReferenceScramblingComtech, disabledSpectral InversionNormal or invertedTransmit FilteringPer IESS-308/-309 spectral maskTransmit Filter20%, 25% and 35%Rolloff (Alpha)0 to -40 dBm, in 0.1 dB stepsOutput Power0 to -40 dBm, in 0.1 dB stepsPower Accuracy \pm 1.0 dB over frequency, data rate, modulation type and temperature range of 0 to 50° CTransmit On/Off Ratio-60 dBc minimumHarmonics and SpuriousBetter than -60 dBc/4 kHz (typically < -65 dBc/4KHz) Measured from Fo +/- 300 MHzOutput Phase Noise<1° rms double sided, 100 Hz to 1MHz (minimum of 6 dB better overall than the Intelsat IESS-308/309 requirement) $\frac{dB/Hz}{-66.0}$ Frequency Offset -66.0-66.0100 Hz -76.0-76.01 kHz -86.0-86.0100 kHzFundamental AC line spurious is -42 dBc or lower. The sum of all other single sideband spurious, from 0 to 0.75 x symbol rate, is -48 dBc or lower.ConnectorSMA (Type-N option)Impedance50 Ω External TX Carrier OffBy TTL 'low' signal Carrier OffTest ModesCW, 1/0 pattern, 2^23-1 and 2047 patternsBUC Reference (10 MHz)Via TX IF center conductor, 10.0 MHz \pm 0.06 ppm, selectable on/off, 0.0 dBm \pm 3 dB	Frequency	Internal
ScramblingComtech, disabledSpectral InversionNormal or invertedTransmit FilteringPer IESS-308/-309 spectral maskTransmit Filter20%, 25% and 35%Poloff (Alpha)0 to -40 dBm, in 0.1 dB stepsOutput Power0 to -40 dBm, in 0.1 dB stepsPower Accuracy \pm 1.0 dB over frequency, data rate, modulation type and temperature range of 0 to 50° CTransmit On/Off Ratio-60 dBc minimumHarmonics and SpuriousBetter than -60 dBc/4 kHz (typically < -65 dBc/4KHz) Measured from Fo +/- 300 MHzOutput Phase Noise< 1° rms double sided, 100 Hz to 1MHz (minimum of 6 dB better overall than the Intelsat IESS-308/309 requirement) $\frac{dB/Hz}{-66.0}$ -76.0 Frequency Offset -66.0 100 Hz-76.01 kHz -96.0 100 kHz-96.0100 kHzFundamental AC line spurious is -42 dBc or lower. The sum of all other single sideband spurious, from 0 to 0.75 x symbol rate, is -48 dBc or lower.ConnectorSMA (Type-N option)Impedance External TX Carrier OffBy TTL 'low' signal Carrier Conductor, 10.0 MHz \pm 0.06 ppm, selectable on/off, 0.0 dBm \pm 3 dB	Reference	
Spectral InversionNormal or invertedTransmit FilteringPer IESS-308/-309 spectral maskTransmit Filter20%, 25% and 35%Rolloff (Alpha)0 to -40 dBm, in 0.1 dB stepsPower Accuracy \pm 1.0 dB over frequency, data rate, modulation type and temperature range of 0 to 50° CTransmit On/Off Ratio-60 dBc minimumHarmonics and SpuriousBetter than -60 dBc/4 kHz (typically < -65 dBc/4KHz) Measured from Fo +/- 300 MHzOutput Phase Noise<1° rms double sided, 100 Hz to 1MHz (minimum of 6 dB better overall than the Intelsat IESS-308/309 requirement) $\frac{dB/Hz}{-66.0}$ Frequency Offset -66.0-76.01 kHz -96.0-96.0100 kHzFundamental AC line spurious is -42 dBc or lower. The sum of all other single sideband spurious, from 0 to 0.75 x symbol rate, is -48 dBc or lower.ConnectorSMA (Type-N option)Impedance50 Ω External TX Carrier OffBy TTL 'low' signal Carrier OffTest ModesCW, 1/0 pattern, 2^23-1 and 2047 patternsBUC Reference (10 MHz)Via TX IF center conductor, 10.0 MHz ± 0.06 ppm, selectable on/off, 0.0 dBm ± 3 dB	Scrambling	Comtech, disabled
Transmit FilteringPer IESS-308/-309 spectral maskTransmit Filter Rolloff (Alpha)20%, 25% and 35%Output Power0 to -40 dBm, in 0.1 dB stepsPower Accuracy \pm 1.0 dB over frequency, data rate, modulation type and temperature range of 0 to 50° CTransmit On/Off Ratio-60 dBc minimumRatioBetter than -60 dBc/4 kHz (typically < -65 dBc/4KHz) Measured from Fo +/- 300 MHzOutput Phase Noise< 1° rms double sided, 100 Hz to 1MHz (minimum of 6 dB better overall than the Intelsat IESS-308/309 requirement) $\frac{dB/Hz}{-66.0}$ Frequency Offset -66.0-60.0100 Hz-76.01 kHz -96.0-96.0100 kHz-96.0100 kHz </td <td>Spectral Inversion</td> <td>Normal or inverted</td>	Spectral Inversion	Normal or inverted
Transmit Filter Rolloff (Alpha)20%, 25% and 35%Output Power0 to -40 dBm, in 0.1 dB stepsPower Accuracy \pm 1.0 dB over frequency, data rate, modulation type and temperature range of 0 to 50° CTransmit On/Off Ratio-60 dBc minimumHarmonics and SpuriousBetter than -60 dBc/4 kHz (typically < -65 dBc/4KHz) Measured from Fo +/- 300 MHzOutput Phase Noise< 1° rms double sided, 100 Hz to 1MHz (minimum of 6 dB better overall than the Intelsat IESS-308/309 requirement) $\frac{dB/Hz}{-66.0}$ Frequency Offset -66.0-66.0100 Hz -76.0-76.01 kHz -86.0-86.010 kHz-96.0100 kHzFundamental AC line spurious is -42 dBc or lower. The sum of all other single sideband spurious, from 0 to 0.75 x symbol rate, is -48 dBc or lower.ConnectorSMA (Type-N option)Impedance50 ΩExternal TX Carrier OffBy TTL 'low' signal Carrier OffTest ModesCW, 1/0 pattern, 2^23-1 and 2047 patternsBUC Reference (10 MHz)Via TX IF center conductor, 10.0 dBm ± 3 dB	Transmit Filtering	Per IESS-308/-309 spectral mask
Rolloff (Alpha)Output Power0 to -40 dBm, in 0.1 dB stepsPower Accuracy \pm 1.0 dB over frequency, data rate, modulation type and temperature range of 0 to 50° CTransmit On/Off Ratio-60 dBc minimumRatio-60 dBc minimumHarmonics and SpuriousBetter than -60 dBc/4 kHz (typically < -65 dBc/4KHz) Measured from Fo +/- 300 MHzOutput Phase Noise< 1° rms double sided, 100 Hz to 1MHz (minimum of 6 dB better overall than the Intelsat IESS-308/309 requirement) $\frac{dB/Hz}{dB/Hz}$ Frequency Offset -66.0-60.0100 Hz -76.0-76.01 kHz -86.0-86.010 kHz-96.0100 kHzFundamental AC line spurious is -42 dBc or lower. The sum of all other single sideband spurious, from 0 to 0.75 x symbol rate, is -48 dBc or lower.ConnectorSMA (Type-N option)Impedance50 ΩExternal TX Carrier OffBy TTL 'low' signal Carrier OffTest ModesCW, 1/0 pattern, 2^23-1 and 2047 patternsBUC Reference (10 MHz)Via TX IF center conductor, 10.0 dBm ± 3 dB	Transmit Filter	20%, 25% and 35%
Output Power0 to -40 dBm, in 0.1 dB stepsPower Accuracy \pm 1.0 dB over frequency, data rate, modulation type and temperature range of 0 to 50° CTransmit On/Off Ratio-60 dBc minimumHarmonics and SpuriousBetter than -60 dBc/4 kHz (typically < -65 dBc/4KHz) Measured from Fo +/- 300 MHzOutput Phase Noise< 1° rms double sided, 100 Hz to 1MHz (minimum of 6 dB better overall than the Intelsat IESS-308/309 requirement) $\frac{dB/Hz}{-66.0}$ -66.0 $100 Hz$ Frequency Offset -66.0 $100 Hz$ -76.0 -96.0 $100 kHz$ Fundamental AC line spurious is -42 dBc or lower. The sum of all other single sideband spurious, from 0 to 0.75 x symbol rate, is -48 dBc or lower.ConnectorSMA (Type-N option)Impedance External TX Carrier OffBy TTL 'low' signal Carrier OffTest ModesCW, 1/0 pattern, 2^23-1 and 2047 patternsBUC Reference (10 MHz)Via TX IF center conductor, 10.0 MHz ± 0.06 ppm, selectable on/off, 0.0 dBm ± 3 dB	Rolloff (Alpha)	
Power Accuracy \pm 1.0 dB over frequency, data rate, modulation type and temperature range of 0 to 50° CTransmit On/Off Ratio-60 dBc minimumHarmonics and SpuriousBetter than -60 dBc/4 kHz (typically < -65 dBc/4KHz) Measured from Fo +/- 300 MHzOutput Phase Noise< 1° rms double sided, 100 Hz to 1MHz (minimum of 6 dB better overall than the Intelsat IESS-308/309 requirement) $\frac{dB/Hz}{-66.0}$ Frequency Offset -66.0-66.0100 Hz -76.0-76.01 kHz -96.0-96.0100 kHz-96.0100 kHz <td>Output Power</td> <td>0 to -40 dBm, in 0.1 dB steps</td>	Output Power	0 to -40 dBm, in 0.1 dB steps
type and temperature range of 0 to 50° CTransmit On/Off Ratio-60 dBc minimumHarmonics and SpuriousBetter than -60 dBc/4 kHz (typically < -65 dBc/4KHz) Measured from Fo +/- 300 MHzOutput Phase Noise< 1° rms double sided, 100 Hz to 1MHz (minimum of 6 dB better overall than the Intelsat IESS-308/309 requirement) $\frac{dB/Hz}{-66.0}$ Frequency Offset -66.0 -66.0 100 Hz -76.0 -76.0 1 kHz -86.0 -96.0 100 kHzFundamental AC line spurious is -42 dBc or lower. The sum of all other single sideband spurious, from 0 to 0.75 x symbol rate, is -48 dBc or lower.ConnectorSMA (Type-N option)Impedance50 Ω External TX Carrier OffBy TTL 'low' signal Carrier OffTest ModesCW, 1/0 pattern, 2^23-1 and 2047 patternsBUC Reference (10 MHz)Via TX IF center conductor, 10.0 MHz ± 0.06 ppm, selectable on/off, 0.0 dBm ± 3 dB	Power Accuracy	± 1.0 dB over frequency, data rate, modulation
Transmit On/Off Ratio-60 dBc minimumHarmonics and SpuriousBetter than -60 dBc/4 kHz (typically < -65 dBc/4KHz) Measured from Fo +/- 300 MHzOutput Phase Noise< 1° rms double sided, 100 Hz to 1MHz (minimum of 6 dB better overall than the Intelsat IESS-308/309 requirement) $\frac{dB/Hz}{-66.0}$ Frequency Offset -66.0-66.0100 Hz -76.0-76.01 kHz -96.0-96.0100 kHz-96.0100 kHz-96.0100 kHz-96.0100 kHz-96.0100 kHz-96.0100 kHzSurious, from 0 to 0.75 x symbol rate, is -48 dBc or lower.ConnectorSMA (Type-N option)Impedance50 Ω External TX Carrier OffBy TTL 'low' signal Carrier OffTest ModesCW, 1/0 pattern, 2^23-1 and 2047 patternsBUC Reference (10 MHz)Via TX IF center conductor, 10.0 MHz ± 0.06 ppm, selectable on/off, 0.0 dBm ± 3 dB	T :: 0 :01	type and temperature range of 0 to 50° C
Harmonics and SpuriousBetter than -60 dBc/4 kHz (typically < -65 dBc/4KHz) Measured from Fo +/- 300 MHzOutput Phase Noise< 1° rms double sided, 100 Hz to 1MHz (minimum of 6 dB better overall than the Intelsat IESS-308/309 requirement) $\frac{dB/Hz}{dESS-308/309}$ requirement] $\frac{dB/Hz}{dESS-308/309}$ requirement] $\frac{dB/Hz}{dESS-308/309}$ requirement] $\frac{dB/Hz}{dESS-308/309}$ requirement] $\frac{dB/Hz}{dESS-300}$ for 0 to 0.75 x symbol rate, is -48 dBC or lower. $\frac{dB/Hz}{dESS-309}$ requirement] $\frac{dB/Hz}{dESS-300}$ for 0 to 0.75 x symbol rate, is -48 dESS-300 $\frac{dB/Hz}{dESS-309}$ requirement] $\frac{dB/Hz}{dESS-300}$ for 0 to 0.75 x symbol rate, is -48 dESS-300 $\frac{dB/Hz}{dESS-309}$ requirement] $\frac{dB/Hz}{dE$	Ratio	-60 dBc minimum
Spurious(typically < -65 dBc/4KHz) Measured from Fo +/- 300 MHzOutput Phase Noise< 1° rms double sided, 100 Hz to 1MHz (minimum of 6 dB better overall than the Intelsat IESS-308/309 requirement) $\frac{dB/Hz}{dESS-308/309}$ Frequency Offset -66.0-66.0100 Hz -76.0-76.01 kHz -86.0-86.0100 kHz-96.0100 kHz-96.0100 kHz-96.0100 kHz-96.0100 kHzSpurious, from 0 to 0.75 x symbol rate, is -48 dBc or lower.ConnectorSMA (Type-N option)Impedance50 Ω External TX Carrier OffBy TTL 'low' signal Carrier OffTest ModesCW, 1/0 pattern, 2^23-1 and 2047 patternsBUC Reference (10 MHz)Via TX IF center conductor, 10.0 MHz ± 0.06 ppm, selectable on/off, 0.0 dBm ± 3 dB	Harmonics and	Better than -60 dBc/4 kHz
Measured from Fo +/- 300 MHzOutput Phase Noise< 1° rms double sided, 100 Hz to 1MHz (minimum of 6 dB better overall than the Intelsat IESS-308/309 requirement) $\frac{dB/Hz}{dB/Hz}$ -66.0Frequency Offset -66.0-66.0100 Hz -76.0-76.01 kHz -86.0-86.0100 kHz -96.0-96.0100 kHz-96.0100 kHz -96.0Fundamental AC line spurious is -42 dBc or lower. The sum of all other single sideband spurious, from 0 to 0.75 x symbol rate, is -48 dBc or lower.ConnectorSMA (Type-N option)Impedance50 Ω External TX Carrier OffBy TTL 'low' signal Carrier OffTest ModesCW, 1/0 pattern, 2^23-1 and 2047 patternsBUC Reference (10 MHz)Via TX IF center conductor, 10.0 MHz ± 0.06 ppm, selectable on/off, 0.0 dBm ± 3 dB	Spurious	(typically < -65 dBc/4KHz)
Output Phase Noise< 1° rms double sided, 100 Hz to 1MHz (minimum of 6 dB better overall than the Intelsat IESS-308/309 requirement) $\frac{dB/Hz}{dB/Hz}$ Frequency Offset -66.0-66.0100 Hz-76.01 kHz-86.010 kHz-96.0100 kHz-96.0100 kHz-96.0100 kHzSurious, from 0 to 0.75 x symbol rate, is -48 dBc or lower.ConnectorSMA (Type-N option)Impedance50 Ω External TX Carrier OffBy TTL 'low' signal Carrier OffTest ModesCW, 1/0 pattern, 2^23-1 and 2047 patternsBUC Reference (10 MHz)via TX IF center conductor, 10.0 MHz ± 0.06 ppm, selectable on/off, 0.0 dBm ± 3 dB		Measured from Fo +/- 300 MHz
$\begin{array}{c c} \frac{dB/Hz}{-66.0} & \frac{Frequency Offset}{100 \ Hz} \\ -66.0 & 100 \ Hz \\ -76.0 & 1 \ kHz \\ -86.0 & 10 \ kHz \\ -96.0 & 100 \ kHz \\ \end{array}$ Fundamental AC line spurious is -42 dBc or lower. The sum of all other single sideband spurious, from 0 to 0.75 x symbol rate, is -48 dBc or lower. \\ \hline Connector & SMA (Type-N option) \\ \hline Impedance & 50 \ \Omega \\ \hline External TX \\ Carrier Off \\ \hline Test Modes & CW, 1/0 \ pattern, 2^23-1 \ and 2047 \ patterns \\ BUC \ Reference \\ (10 \ MHz) & ppm, \ selectable \ on/off, 0.0 \ dBm \pm 3 \ dB \\ \hline \end{array}	Output Phase Noise	< 1º rms double sided, 100 Hz to 1MHz (minimum of 6 dB better overall than the Intelsat IESS-308/309 requirement)
$\begin{array}{c cccc} -66.0 & 100 \mbox{ Hz} \\ -76.0 & 1 \mbox{ kHz} \\ -86.0 & 10 \mbox{ kHz} \\ -96.0 & 100 \mbox{ kHz} \\ \hline & & Fundamental \mbox{ AC} \mbox{ line spurious is -42 \mbox{ dBc or} \\ & & lower. \mbox{ The sum of all other single sideband} \\ & & spurious, from 0 \mbox{ to } 0.75 \mbox{ x symbol rate, is -48} \\ & & \mbox{ dBc or lower.} \\ \hline & & \mbox{ Connector } & \mbox{ SMA (Type-N option)} \\ \hline & & \mbox{ Impedance } & 50 \ \Omega \\ \hline & & \mbox{ External TX } \\ \hline & & \mbox{ Carrier Off } \\ \hline \hline & & \mbox{ Test Modes } & \mbox{ CW, 1/0 pattern, 2^23-1 and 2047 patterns} \\ \hline & & \mbox{ BUC Reference } \\ & & \mbox{ Via TX IF center conductor, 10.0 \ MHz \pm 0.06} \\ & & \mbox{ ppm, selectable on/off, 0.0 \ dBm \pm 3 \ dB \\ \hline \end{array}$		dB/Hz Frequency Offset
$\begin{array}{cccc} -76.0 & 1 \ \text{kHz} \\ -86.0 & 10 \ \text{kHz} \\ -96.0 & 100 \ \text{kHz} \\ -96.0 & 100 \ \text{kHz} \\ \end{array}$ Fundamental AC line spurious is -42 dBc or lower. The sum of all other single sideband spurious, from 0 to 0.75 x symbol rate, is -48 dBc or lower. \\ \hline Connector & SMA (Type-N option) \\ \hline Impedance & 50 \ \Omega \\ \hline External TX & By TTL 'low' signal \\ \hline Carrier Off & \\ \hline Test Modes & CW, 1/0 pattern, 2^23-1 and 2047 patterns \\ \hline BUC Reference & Via TX IF center conductor, 10.0 \ \text{MHz} \pm 0.06 \\ ppm, selectable on/off, 0.0 \ \text{dBm} \pm 3 \ \text{dB} \\ \hline \end{array}		-66.0 100 Hz
$\begin{array}{c c} -86.0 & 10 \text{ kHz} \\ -96.0 & 100 \text{ kHz} \\ \hline \\ & -96.0 & 100 \text{ kHz} \\ \hline \\ & Fundamental AC line spurious is -42 dBc or lower. The sum of all other single sideband spurious, from 0 to 0.75 x symbol rate, is -48 dBc or lower. \\ \hline \\ & Connector & SMA (Type-N option) \\ \hline \\ & Impedance & 50 \Omega \\ \hline \\ & External TX \\ Carrier Off \\ \hline \\ \hline \\ & Test Modes & CW, 1/0 pattern, 2^23-1 and 2047 patterns \\ \hline \\ & BUC Reference \\ (10 \text{ MHz}) & ppm, selectable on/off, 0.0 dBm \pm 3 dB \\ \hline \end{array}$		-76.0 1 kHz
$\begin{array}{c c} -96.0 & 100 \text{ kHz} \\ \hline \\ Fundamental AC line spurious is -42 dBc or lower. The sum of all other single sideband spurious, from 0 to 0.75 x symbol rate, is -48 dBc or lower. \\ \hline \\ \hline \\ \hline \\ Connector & SMA (Type-N option) \\ \hline \\ Impedance & 50 \Omega \\ \hline \\ External TX \\ Carrier Off \\ \hline \\ \hline \\ Test Modes & CW, 1/0 pattern, 2^23-1 and 2047 patterns \\ \hline \\ BUC Reference \\ (10 \text{ MHz}) & ppm, selectable on/off, 0.0 dBm \pm 3 dB \\ \hline \end{array}$		-86.0 10 kHz
$ \begin{array}{c} \mbox{Fundamental AC line spurious is -42 dBc or} \\ \mbox{lower. The sum of all other single sideband} \\ \mbox{spurious, from 0 to 0.75 x symbol rate, is -48} \\ \mbox{dBc or lower.} \end{array} \\ \hline \label{eq:connector} \\ \hline \mbox{SMA (Type-N option)} \\ \hline \mbox{Impedance} \\ \hline \mbox{50 } \Omega \\ \hline \mbox{External TX} \\ \mbox{Carrier Off} \\ \hline \hline \mbox{Test Modes} \\ \hline \mbox{CW, 1/0 pattern, 2^23-1 and 2047 patterns} \\ \hline \mbox{BUC Reference} \\ \mbox{Via TX IF center conductor, 10.0 MHz \pm 0.06} \\ \mbox{ppm, selectable on/off, 0.0 dBm \pm 3 dB} \\ \hline \end{array}$		-96.0 100 kHz
Connector SMA (Type-N option) Impedance 50 Ω External TX By TTL 'low' signal Carrier Off		Fundamental AC line spurious is -42 dBc or lower. The sum of all other single sideband spurious, from 0 to 0.75 x symbol rate, is -48 dBc or lower.
Impedance 50 Ω External TX By TTL 'low' signal Carrier Off	Connector	SMA (Type-N option)
External TX By TTL 'low' signal Carrier Off By TTL 'low' signal Test Modes CW, 1/0 pattern, 2^23-1 and 2047 patterns BUC Reference Via TX IF center conductor, 10.0 MHz ± 0.06 (10 MHz) ppm, selectable on/off, 0.0 dBm ± 3 dB	Impedance	50 Ω
Carrier OffTest ModesCW, 1/0 pattern, 2^23-1 and 2047 patternsBUC ReferenceVia TX IF center conductor, 10.0 MHz ± 0.06(10 MHz)ppm, selectable on/off, 0.0 dBm ± 3 dB	External TX	By TTL 'low' signal
Test ModesCW, 1/0 pattern, 2^23-1 and 2047 patternsBUC ReferenceVia TX IF center conductor, 10.0 MHz ± 0.06(10 MHz)ppm, selectable on/off, 0.0 dBm ± 3 dB	Carrier Off	
BUC ReferenceVia TX IF center conductor, 10.0 MHz ± 0.06(10 MHz)ppm, selectable on/off, 0.0 dBm ± 3 dB	Test Modes	CW, 1/0 pattern, 2^23-1 and 2047 patterns
(10 MHz) ppm, selectable on/off, 0.0 dBm \pm 3 dB	BUC Reference	Via TX IF center conductor, 10.0 MHz ± 0.06
	(10 MHz)	ppm, selectable on/off, 0.0 dBm \pm 3 dB

Demodulator Specifications

Operating Frequency	950 to 2150 MHz L-Band, 100 Hz frequency resolution
Connector	SMA (Type-N option)
Impedance	50 Ω
Input Power Range, Desired Carrier	-65 dBm + 10 log (symbol rate in Msps) to -25 dBm
Maximum Composite Operating Level	-5 dBm total composite power 20 dBc within 10 MHz band from the desired carrier for QPSK, 8PSK, and 16APSK 10 dBc within 10 MHz band from the desired carrier for 32APSK 30 dBc outside of 10 MHz from carrier
Absolute Maximum, No Damage	-10 dBm
Rolloff	20%, 25%, 35%
Acquisition Range	+/- 100 kHz
Adaptive Equalizer	Corrects up to 3 dB tilt
LNB Reference (10 MHz)	Via RX IF center conductor, 10.0 MHz ± 0.06 ppm Selectable on/off, -3.0 dBm ± 3 dB
LNB Voltage	Selectable on/off, 13 VDC, 18 VDC, 24 VDC
LNB Current	500 mA, maximum
Monitor Functions	Es/No estimate, receive signal level, frequency offset
Es/No Monitor Accuracy	+/- 0.3 dB
Receive Signal Level Monitor Accuracy	+/- 6 dB (typical)

Packet Processor

Supported Protocols

RFC 768 – UDP	RFC 768 – UDP
RFC 791 – IP	RFC 791 – IP
RFC 792 – ICMP	RFC 792 – ICMP
RFC 793 – TCP	RFC 793 – TCP
RFC 826 – ARP	RFC 826 – ARP
RFC 856 – Telnet	RFC 856 – Telnet
RFC 862 – Ping	RFC 862 – Ping
RFC 894 – IP	RFC 894 – IP
RFC 959 – FTP	RFC 959 – FTP
RFC 1112 – IP Multicast	RFC 1112 – IP Multicast
RFC 1213 – SNMP MIB II	RFC 1213 – SNMP MIB II
Statistics	Statistics

Connectors

L-Band Transmit and Receive	2 x SMA (Type-N option)
10/100/1000 Base-T Ethernet interface for traffic and management	1 x RJ-45
Console (RS-232), Summary Alarm, AGC and HW Mute	2x13-pin (Adam Tech FCS-26-SG)

Available Options

Option	Туре
L-band Transmit & Receive	Hardware
(SMA or Type-N)	
Heatsink	Hardware
Integrated Power Supply	Hardware
Transmit Data Rate	FAST
Dynamic SCPC (with VMS)	FAST

Physical, Power, & Environmental

	Approx Dimensions (SMA connector, without heatsink)	10.5 (L) x 8.4 (W) x 1.5 (H) (including SMA connector)
	Weight	2.41 lbs
	Power Supply	-24 VDC -48 VDC
	Operating Ambient Enclosure Temperature	–30° to 60°C
	Storage Temperature	–40° to 70°C



Request A Quote