DVB-S2 Mini-Receiver 5100

Low SWaP Digital Satellite Communications Receiver

The Viasat DVB-S2 Mini-Receiver 5100 is an innovative satellite communications device leveraging the power and bandwidth efficiencies of the Digital Video Broadcasting–Second Generation (DVB-S2) waveform standard. The Mini-Receiver is designed and developed to receive TRANSEC covered Global Broadcast Service (GBS) data and images from DVB-S2 satellite transmissions.

This receiver's low size, weight, and power (SWaP) makes it ideal for transportable and small form factor satellite terminals, enabling deployed warfighters to securely access core Global Information Grid (GIG) services while on-the-move.

Part of the Joint IP Modem (JIPM) family of two-way satcom modems, data received is compatible with JIPM Network Control Center protocols and has embedded FIPS 140-2, Level 2 AES-256 TRANSEC encryption.

MINI-RECEIVER AT-A-GLANCE

- DVB-S2 standard compliant
- Symbol rate = 1 to 23 Msps
- Small form factor (W x H x D): 7.9 x 1.75 x 8.7 in.
- Low power: <8 W
- Low weight: 2.2 lb
- Ruggedized, weather tight, and wide temperature range operation
- MOPP-IV and cold weather operations
- FCC part 15, class A
- IPv4 and IPv6 support
- AES 256 TRANSEC approved by NSA
- Certified FIPS 140-2, level 2

Viasat DVB-S2 Mini-Receiver 5100

SPECIFICATIONS

INPUT/OUTPUT INTERFACE	
IF Frequency	950 to 2050 MHz (Rx)
Frequency Step Size	100 KHz
RF Connector	75 Ohm F-type
Rx Power Input Level	-87 to -122 dBm/Hz
DC Input Level	9 to 28 VDC
Data Interface	Auto switching 10/100/1000 BASE-T Ethernet port
Data Encapsulation Method	MPE in MPEG-TS
IPv4 and Ipv6 Support	Yes
Control and Status Information	Auto switching 10/100/1000 BASE-T Ethernet using Web-based GUI
TRANSEC	Open-standard FIPS 140-2 Level 2 AES-256 encryption, NSA approved
Bypass	No encryption, received data bypasses the decryption engine
IP Networking	Layer 3 IP routing and forwarding (Layer 4 and above) to network behind receiver; process IP, IGMP, MLD, ARP, HTTPS traffic destined for receiver
Multicast	IGMPv3 and MLD v2; supports MPEG PID-based filtering
Filter	The receiver can be configured to only forward a set of allowed multicast groups; filtering is done using MPEG PIDS
DVB-S2 WAVEFORM	
Modulation	QPSK only
Roll-Off Factor	0.2, 0.25, 0.35
Symbol Rate	1 to 23 Msym/s
Symbol Rate Step Size	1 Msym/s
FEC	LDPC/BCH per DVB-S2
Code Rates	See Performance Table
FEC Block Size (bits)	16K and 64K
Mode of Operation	CCM and VCM per DVB-S2
PHYSICAL	
Size (W x H x D)	7.9 x 1.75 x 8.7 in.
Weight	2.2 lb
Power Consumption (not including LNB)	<8 W (Rx at 23 Msym/s)

DVB-S2 MINI-RECEIVER PERFORMANCE RATES FOR MODULATION AND CODE RATE (MODCOD) COMBINATIONS

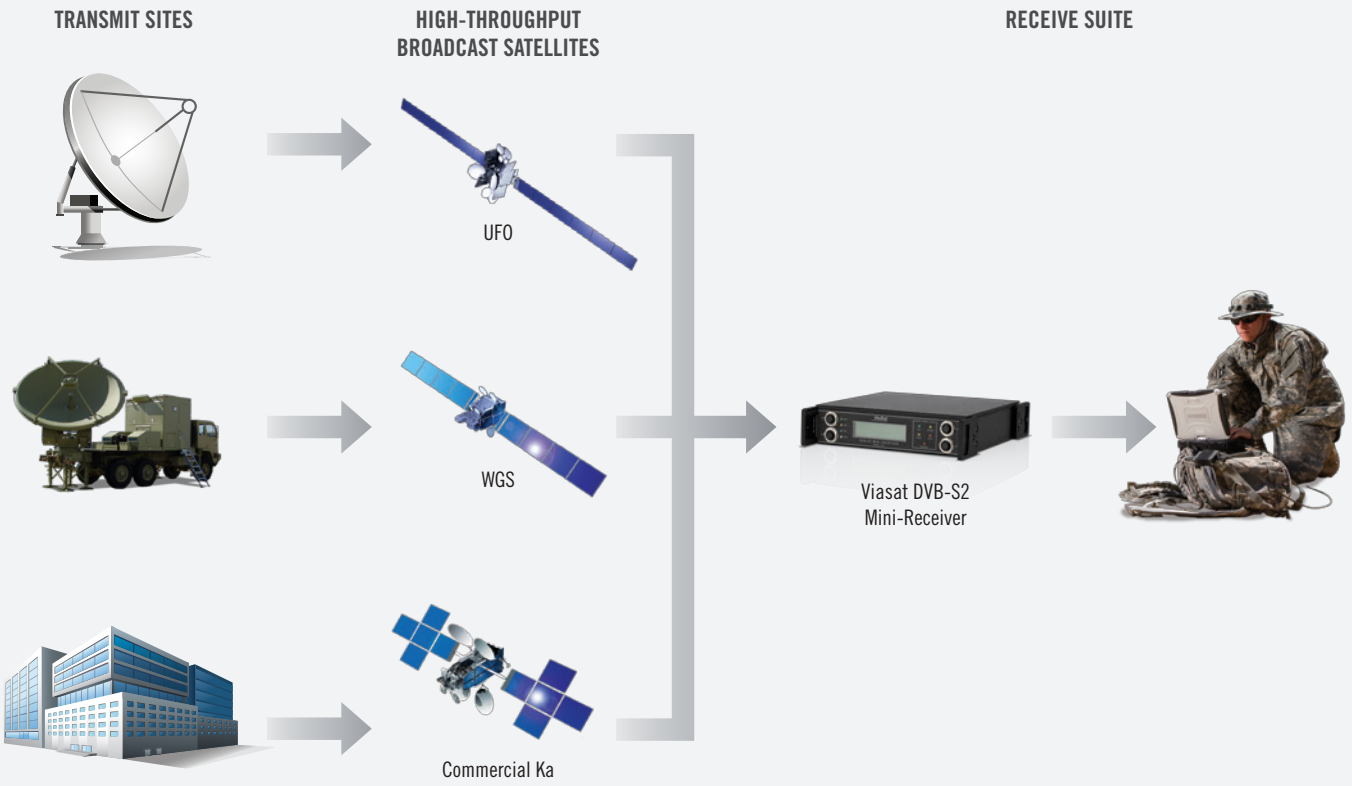
		64K BLOCK SIZE		
Mod	Code Identifier	Spectral Efficiency [bits/sym]	QEF (1e-6 per) (23 Msps)	
			Es/NO [dB]	Eb/NO [dB]
QPSK	1/4	0.49	-1.3	1.8
QPSK	1/3	0.66	-0.24	1.56
QPSK	2/5	0.79	0.70	1.72
QPSK	1/2	0.99	1.87	1.91
QPSK	3/5	1.19	3.20	2.44
QPSK	2/3	1.32	3.75	2.54
QPSK	3/4	1.49	4.71	2.98
QPSK	4/5	1.59	5.35	3.34
QPSK	5/6	1.65	5.85	3.68
QPSK	8/9	1.77	6.87	4.39
QPSK	9/10	1.79	7.07	4.54

DVB-S2 code rates requirements (Eb/NO and Es/NO performance values are specified for AWGN L-band if loopback tests).

Integrated Routing and Security

The Viasat DVB-S2 Mini-Receiver can be locally configured via a dedicated Ethernet control and status port using a HTTPS connection. The front panel includes an LCD display with push buttons for TRANSEC operations and the rear panel includes a U-22p connector for key loading. After the DVB-S2 stream is decrypted, the entire broadband frame is handed off for MPE decapsulation and filtering. Allowable IP packets are sent out the Ethernet data port. This receiver is network address translation-capable and includes multicast and unicast traffic routing for out-of-band return paths.

Viasat DVB-S2 Mini-Receiver 5100



ENVIRONMENTAL—DVB-S2 MINI-RECEIVER CERTIFICATION TESTING

TEST	PARAMETER	METHOD/PROCEDURE	STANDARD
Drop Capability	36 in. drop	516.6 / Procedure IV	MIL-STD-810G
Low Pressure Altitude—Storage	15,000 ft	500.5 / Procedure I	
Storage High Temperature	+160° F chamber	501.5 / Procedure I	
Storage Low Temperature—Non-Operating	-40° F chamber	502.5 / Procedure I	
Solar Radiation High Temperature	120° F max temperature 1120 W/m^2	505.5 / Procedure I	
Low Temperature Operating	-20° F chamber, no solar load	502.5 / Procedure I	
Loose Cargo Transportation	Not operating	514.6 / Procedure II	
Humidity—Operating	Aggravated cycle	507.5 / Procedure II	
Rain—Blowing	Operating no ingress	506.5 / Procedure I	
Dust—Blowing		510.5 / Procedure I	
Conducted Emissions	Emissions	Class A	FCC Part 15 Subpart B
Radiated Emissions			

CONTACT

SALES
TEL +1 216 706 7800 **FAX** +1 216 706 7801 **EMAIL** dvbs2tech@viasat.com **WEB** www.viasat.com/advanced-technology