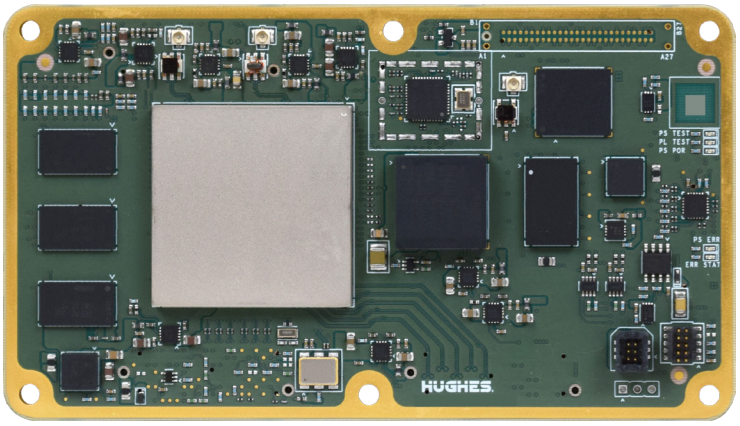
HUGHES
An EchoStar Company

DATASHEET

Software-defined Core Module

The Software-defined Core Module (SCM) is the Hughes next generation small form-factor modem building block for use in fixed, land/aero/maritime, and portable satellite communication (SATCOM) terminals and gateways for government and commercial applications. The SCM is frequency band agnostic. Equipped with dual RX/TX paths, the SCM is ideally suited to support resilient communication links, higher throughput data links to meet the wide range of mobility and portability requirements that government users demand. The SCM can meet 3U OpenVPX standards or integrate into various product configurations to support embedded, integrated, or chassis variants. It meets strict environmental and military standards. The SCM can host multiple waveforms that can be activated at runtime based on operational needs.



Hardware Specifications	
Dimensions	2.9" W x 5.1" L x 0.6" H
Weight	3.7 oz
Input Power	12 VDC
TX Output Power	-40 to 0 dBm in 0.1 step
RX Input Power	-55 to 10 dBm
Input Clock	10/50/100 MHz Reference Clock
Environment Standards	MIL-STD-810, MIL-STD-461/462
Operating Temperature	-40 °C to 71 °C
Analog IF Interfaces	Tx (x2), Rx (x2)
Digital IF Interfaces	40/100 Gbps CAUI (x1) DIFI
Data Interfaces	1 Gbps SGMII (x2), 10 Gbps SGMII (x1)
Management Interfaces	1 Gbps SGMII (x2), RS-485 (x1), GPIOs, I2C
TRANSEC Interfaces	1 Gbps SGMII (x1 Data), 1Gbps SGMII (x1 Management)
Operating Frequency	950 MHz to 2,250 MHz in 0.1 Hz steps
Instantaneous Bandwidth	500 MHz

Packaging Options

- 3U OpenVPX
- 1/2 ATR
- 1 RU
- Integrated in Antennas and other custom packaging options

Resilient Multi-Orbit Capable Satellites

- Geostationary Earth Orbit (GEO)
- Medium Earth Orbit (MEO)
- Transponded Low Earth Orbit (LEO)

Host Multiple Waveforms

- Hughes Advanced Microsat Waveform (AMW), Scrambled Code Multiple Access (SCMA), fast acquisition, low latency
- DVB-S2X
- STANAG 4486/EBEM waveform with the addition of a Transmission Security (TRANSEC) module
- Direct-Sequence Spread Spectrum (DSSS)
- Protected Tactical Waveform (PTW)
- Custom Waveforms

For additional information, please visit hughes.com.

Waveform Specifications

Hughes AMW Waveform	
Symbol Rate (Max)	188 Msps to 325 Msps*
Data Rate (Max)	380 Mbps to 550 Mbps*
Chip Rate (Max)	325 Mcps to 400 Mcps*
Modulation	BPSK, QPSK, 8PSK, 16APSK*
Code Rates	LDPC: 1/9, 2/9, 1/3, 4/9, 5/9, 2/3, 7/9
Spreading	1 to 512*
Roll-off Factor	0.05, 0.1, 0.15, 0.2, 0.35
Network Modes	SCPC or DAMA
TRANSEC	Yes, AES-256 Link layer encryption, LPI/LPD modes
Orbits	GEO, MEO (O3B, mPOWER*)
Adaptive Coding and Modulation/Automatic Beam Handover	Yes
Mobility Support	Yes
Antenna Interface	OpenAMIP, OpenBMIP*, KAMP*, DIFI*
Management Interface	REST/HTTPS, HTTPS GUI
Cyber Security	NIST 800-53 Compliance

DSSS Waveform*	
Symbol Rate (Max)	45 Msps
Data Rate (Max)	15 Mbps
Chip Rate (Max)	64 Mcps
Modulation	BPSK
Code Rates	1/3, 1/2, 0.378, 0.451, 0.541
Spreading	1 to 512
Roll-off Factor	0.2
Network Modes	SCPC
TRANSEC	Yes, with external FIPS-certified crypto module
Orbits	GEO
Adaptive Coding and Modulation	No
Mobility Support	Yes
Antenna Interface	None
Management Interface	SNMPv3, HTTPS GUI
Cyber Security	NIST 800-53 Compliance

EBEM Waveform*	
Symbol Rate (Max)	30 Msps
Data Rate (Max)	83 Mbps
Modulation	BPSK, QPSK, 8PSK
Code Rates	1/2, 2/3, 3/4, 7/8, 19/20
Spreading	1
Roll-off Factor	0.2
Network Modes	SCPC
TRANSEC	Yes, with external FIPS-certified crypto module
Orbits	GEO
Adaptive Coding and Modulation	Yes
Mobility Support	Yes
Antenna Interface	None
Management Interface	SNMPv3, HTTPS GUI
Cyber Security	NIST 800-53 Compliance

DVB-S2X Waveform*	
Symbol Rate (Max)	100 Msps
Data Rate (Max)	300 Mbps
Modulation	QPSK, 8PSK, 16APSK, 32APSK, 64APSK, 128APSK, 256APSK
Code Rates	DVB-S2X standard FEC code rates
Spreading	No
Roll-off Factor	0.05, 0.1, 0.2
Network Modes	SCPC
TRANSEC	Yes, AES-256 link layer encryption
Orbits	GEO
Adaptive Coding and Modulation	Yes
Mobility Support	Yes
Antenna Interface	OpenAMIP, OpenBMIP
Management Interface	REST/HTTPS, HTTPS GUI
Cyber Security	NIST 800-53 Compliance

* Implementation on roadmap

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