

# StreamCaster™ 3500

MIMO Radio — Dual Band

Overview



**SILVUS**  
TECHNOLOGIES

The SC3500 is the world's first MIMO radio ruggedized for military and public safety applications. MIMO is the breakthrough technology that is ushering in the 4G revolution in commercial wireless data communications and enabling WLANs of supporting high definition video. The SC3500 borrows the best of these commercial technologies while extending and improving the capacity, range and reliability of wireless communications for mission critical needs in the military, first responder and industrial markets.

The SC3500 transceiver, a stand-alone IP based packet MIMO radio, will surpass the capabilities of traditional single antenna solutions in many aspects and will deliver capabilities unique to the target end user such as:

- Connectivity in NLOS (non-line-of-sight) multipath rich environments typical of urban canyons
- Connectivity under highly mobile conditions on the ground, water, and in the air
- High data throughput rates
- Mesh network (self-forming, or managed)
- Multiple antenna configurations available; omnidirectional, high-gain directional, or hybrid.
- GPS and Multicast Support

Compared to conventional single antenna solutions, field trials have validated the benefits of MN-MIMO:

- 4.5x coverage increase in dense urban terrain
- 10x less transmit power for same range and throughput
- 2x increase in LOS range
- 2-4x increase in data rate



## Missions Benefitting from the SC3500

The SC3500 is ideal for missions that require superior communications of voice/video/data in NLOS multipath rich environments. Examples of such missions include:

- Telerobotic / UGV for EOD / IED, recon, surveillance
- Below-deck wireless networking / ship-boarding
- Air-to-air & air-to-ground (manned, or unmanned)
- Urban ops, requiring video links within a building and with units outside the building
- Autonomous convoy
- Ship-to-shore high data rate transfer / comms
- First Responder urban network / relay

## Ease of Use

Each transceiver enables bidirectional networking to simplify logistics. As an Ethernet bridge, the SC3500 can be interfaced with countless third party applications, and a multitude of configurations are accessed via web pages within the radio.

StreamScape™ allows for real-time management of all the radios in the network for TX power, frequency, channel bandwidth, link adaptation and other parameters.

Automatic link adaptation changes the radio operating parameters in real-time to provide performance as close to capacity as possible while not losing the link when abrupt changes in channel conditions occur such as moving around a corner or entering a building.

# StreamCaster™ 3500

MIMO Radio — Dual Band

Technical Specifications



## General

• <b>Waveform</b>	Mobile Networked MIMO (MN-MIMO™)
• <b>Modulation</b>	C-OFDM; BPSK, QPSK, 16-QAM, 64-QAM
• <b>Channel Bandwidth</b>	5, 10 & 20 MHz
• <b>Encryption</b>	AES 128 or AES 256 (optional)
• <b>Frequency Stability</b>	1 PPM over temp -40° - +85° C
• <b>Tuning Step Size</b>	1 KHz
• <b>Data Rates</b>	85 Mbps UDP & 70 Mbps TCP
• <b>Error Correction</b>	1/2, 2/3, 3/4, 5/6
• <b>Antenna Processing</b>	Spatial Multiplexing, Space-Time Coding, Eigen Beam Forming
• <b>No. of Spatial Streams</b>	1-4
• <b>No. of Antennas</b>	4
• <b>Total Power Output</b>	10mW – 1W (variable)

## Performance

• <b>Latency</b>	7 ms average
• <b>Sensitivity</b>	Varies with MCS index Maximum = -102 dBm (5 MHz BW, MCS 0)
• <b>Cognitive Interference Avoidance</b>	Contact sales for additional information

## Frequency Band Specifics

	S Band	C Band
• <b>Frequency Code '245540'</b>	2.400 – 2.500 GHz	4.940 – 5.875 GHz
• <b>Frequency Code '245551'</b>	2.400 – 2.500 GHz	5.150 – 5.875 GHz
• <b>Frequency Code '243578'</b>	2.417 – 2.457 GHz	5.735 – 5.840 GHz

## Ordering Information

There are three mechanical versions of the SC3500: standard, extended temperature and OEM PCB. Note the operating temperature and mechanical differences under "Environmental, and "Mechanical".

Applications are diverse and we have a variety of cables, antennas, mounts, and accessories to meet your needs. Please consult with your salesperson to identify the appropriate accessories for your application.

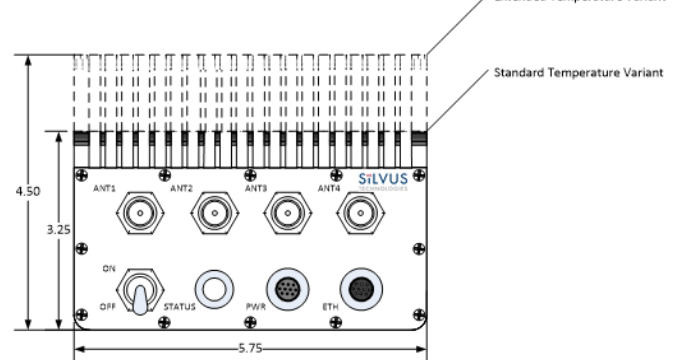
## Environmental

	Standard	Extended Temperature
• <b>Ambient Temp.</b>	-40° - +55° C	-40° - +65° C
• <b>IP Rating</b> (Ingress Protection)	IP-67 (Dust / Immersion in water up to 1m) *	*Must have all connectors mated and use IP67 or better cables/antennas

## Mechanical – Chassis

In addition to the physical system package described here, Silvus offers the core board-stack for integration into an OEM product

	Standard	Extended Temperature
• <b>Dimensions</b>	3.25" x 5.75" x 4"	4.5" x 5.75" x 4"
	H x L x W	H x L x W
• <b>Weight</b>	3.7 Pounds	4.0 Pounds
• <b>Color Options</b>	a. FED-STD-595B-34094 (green 383) b. Black anodized c. CARC (Chemical Agent Resistant Coating)	
• <b>Mounting</b>	4-hole mounting patterns (non penetrating located on both rear and bottom sides)	



## Connectors

• <b>RF</b>	TNC (f) (4 each)
• <b>Data / Control</b>	Ethernet cable, Mighty-Mouse 801 Heavy-Duty, Double-Start 10 conductor (f)
• <b>Power</b>	Mighty-Mouse 801 Heavy-Duty, Double-Start 10 conductor (m), (RS232 / GPS Support)

## Controls and Indicators

• <b>Power</b>	On / Off Toggle with detent
• <b>Status Indicator</b>	Tri-Color LED
• <b>Web Browser</b>	Web GUI StreamScape™ Network Utility

## Power Requirements

• <b>Voltage</b>	9 – 20 VDC
• <b>Consumption</b>	12 W – 22.5 W (frequency & duty cycle dependent)

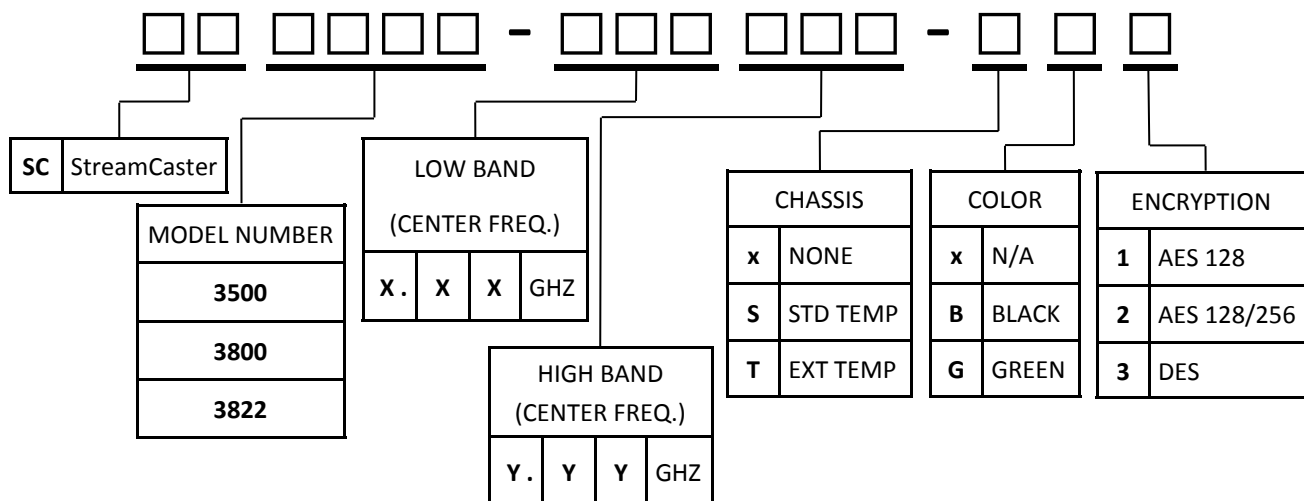
## Mechanical – OEM Board Stack

• <b>Dimensions</b>	1.9" x 5.25" x 2.9" H x L x W
• <b>Weight</b>	8 oz
• <b>RF Connectors</b>	SMP (m)
• <b>Data Connector</b>	Harwin M80 8-pin (m), (RS232 optional)
• <b>Power Connector</b>	Harwin M80 8-pin (m)

# StreamCaster™ 3500

MIMO Radio — Dual Band

Part Numbering Scheme



# StreamCaster™ 3800

MIMO Radio — Dual Band

Overview



The SC3800 dual band radio is the next generation in the Silvus StreamCaster™ family of MIMO radios. The SC3800 has an all new band flexible RF section, providing dual band capability across a much wider range of frequencies. A lower band is provided within the range 400 MHz to 2.7 GHz, and an upper band falls between 4 and 6 GHz. A list of current bands supported is provided in the specifications section. This list will expand as market demands are identified.

The SC3800 transceiver, a stand-alone IP based packet MIMO radio, will surpass the capabilities of traditional SISO (single antenna) solutions and will deliver the following capabilities:

- Connectivity in extreme NLOS (non-line-of-sight) multipath rich environments such as urban canyons and within buildings
- Connectivity under highly mobile conditions on the ground, water, and in the air
- High data throughput rates
- Mesh network (self-forming, or managed)
- Multiple antenna configurations available; omnidirectional, high-gain directional or hybrid
- GPS and Multicast Support

Compared to conventional single antenna solutions, field trials have validated the benefits of MN-MIMO:

- 4.5x coverage increase in dense urban terrain
- 10x less transmit power for same range and throughput
- 2x increase in LOS range
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## Missions Benefitting from the SC3800

The SC3800 is ideal for missions that require superior communications of voice/video/data in NLOS multipath rich environments. Examples of such missions include:

- Telerobotic / UGV for EOD / IED, recon, surveillance
- Below-deck wireless networking / ship-boarding
- Air-to-air & air-to-ground (manned, or unmanned)
- Urban ops, requiring video links within a building and with units outside the building
- Autonomous convoy
- Ship-to-shore high data rate transfer / comms
- First Responder urban network / relay
- Connectivity within mines / tunnels / caves

## Ease of Use

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StreamScape™ allows for real-time management of all the radios in the network for TX power, frequency, channel bandwidth, link adaptation and other parameters.

Automatic link adaptation changes the radio operating parameters in real-time to provide performance as close to capacity as possible while not losing the link when abrupt changes in channel conditions occur such as moving around a corner or entering a building.

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MIMO Radio — Dual Band

Technical Specifications



## General

• <b>Waveform</b>	Mobile Networked MIMO (MN-MIMO™)
• <b>Modulation</b>	C-OFDM; BPSK, QPSK, 16-QAM, 64-QAM
• <b>Channel Bandwidth</b>	5, 10 & 20 MHz (1.25*, 2.5*)
• <b>Encryption</b>	AES 128 or AES 256 (optional)
• <b>Frequency Stability</b>	1 PPM over temp -40° - +85° C
• <b>Tuning Step Size</b>	1 KHz
• <b>Data Rates</b>	Max 85 Mbps UDP & 70 Mbps TCP
• <b>Error Correction</b>	1/2, 2/3, 3/4, 5/6
• <b>Antenna Processing</b>	Spatial Multiplexing, Space-Time Coding, Eigen Beam Forming
• <b>No. of Spatial Streams</b>	1-4
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• <b>Total Power Output</b>	10mW – 1W (variable)

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## Ordering Information

There are three mechanical versions of the SC3800: standard, extended temperature and OEM PCB. Note the operating temperature and mechanical differences under “Environmental, and “Mechanical”.

Additionally, bands must be specified at time of order in accordance with the table shown under ‘Frequency Band Specifics’ below. If your band of interest is not listed, please contact your sales person.

## Frequency Band Specifics

Please note: this table reflects standard frequency bands available, additional bands are frequently added as demands dictate. If your band of interest is not listed, please contact your sales person. (All bands listed in MHz)

Low Band		High Band	
Band (Freq. Code)	Frequency Range	Band (Freq. Code)	Frequency Range
UHF (042)	400-450	Low C Band (455)	4400-4700
ISM 900 (091)	902-928	High C Band (485)	4700-5000
L Band (137)	1350-1390	5.2GHz ISM (520)	5150-5250
Broadcast A (209)	1980-2200	5.8GHz ISM (580)	5725-5875
Broadcast B (206)	2025-2110		
Federal ‘S’ (225)	2200-2300		
Federal ‘S’ +	2200-2500		
2.4GHz ISM (235)			
2.4GHz ISM (245)	2400-2500		

(\*) in development

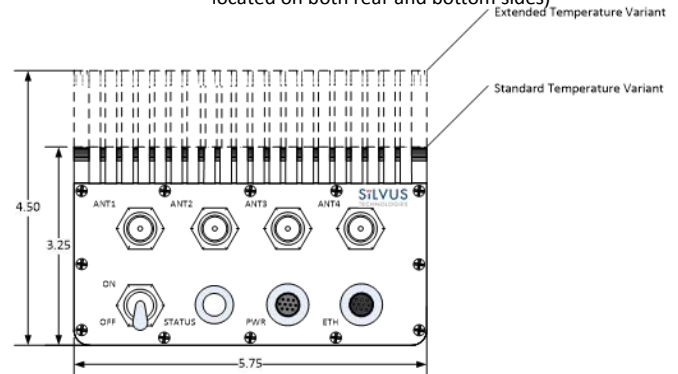
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