



StreamCaster SC4200E OEM Basic Integration Manual

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Notice

Silvus Technologies reserves the right to make changes to its products or discontinue any of its products or offerings without notice.

Silvus warrants the performance of its products to the specifications applicable at the time of sale in accordance with Silvus' standard warranty.

Revision History

Version	Date	Changes
0.1	March 5, 2019	Initial draft
1.0	June 21, 2019	Corrected LED Pinout
1.1	December 14, 2020	Added note that SC42-OEM-1 is included as standard in OEM stack
1.2	January 04, 2023	Added additional information (Section 6) on MPS switch connections/use, updates to I/O pinouts and details for connecting two-color LED; reserved Gig-E pinout for future use; reserved balanced audio pinout for future use; added SC42A0 power consumption; fixed typos
1.3	October 10, 2024	Updated Section 4: Power Consumption and Heat Management; updated I/O table information
1.4	Mar 03, 2025	Added L-band power
1.4.1	July 29, 2025	Created OEM Basic Integration Manual
1.4.2	October 28, 2025	Added FCC IDs' for N2S-SC424-235-OEM, N2S-SC42A-235-OEM

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1 Overview

This document describes the SC4200 OEM board stack.

The SC4200E-OEM board stack contains 5 main parts:

- Bottom shield
- Digital board
- Middle shield
- RF board
- Top shield.

Figure 1 and Figure 2 show the OEM stack from different views. The two PCBs are sandwiched between three metal plates. The metal plates provide EMI shielding to the boards and absorb the heat from the boards. The RF board and the digital board are connected via a 50-pin Hirose DF56 fine coax cable assembly for controls. The RF board receives power from the digital board via a Hirose 2-pin DF57 cable assembly. The IO ports that concern an OEM integration are the two antenna ports on the RF board along with the power and digital IOs on the digital board. Figure 2 shows the locations of these ports. The RF ports are SMP connectors. All the digital IOs are contained in J11 on the digital board. J11 is a 50-contact Hirose DF56 connector. J12 is a 4-contact Hirose DF57 connector for power and ground. Please refer to the included document “DF57 Connection Instructions” before attempting to connect the DF57 cable.

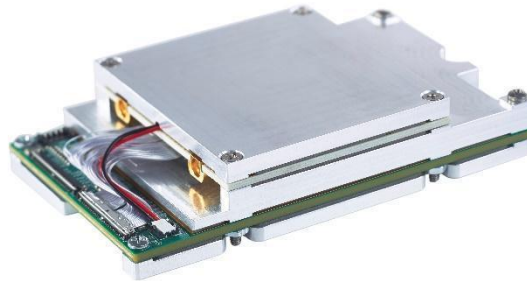


Figure 1. SC4200-OEM Stack

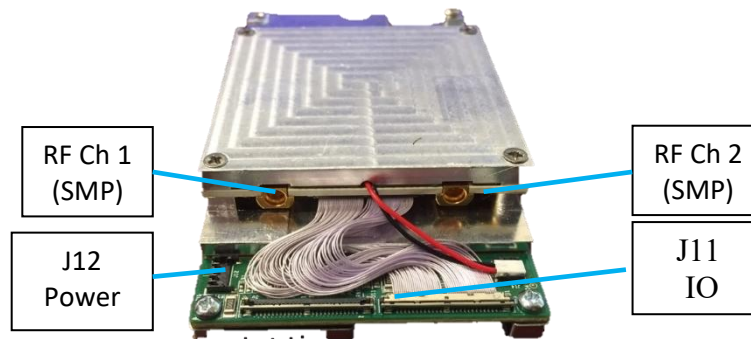


Figure 2. SC4200E-OEM Stack Front View

2 Dimensions

For detailed dimensions of the OEM stack, users should refer to the step file included in the OEM integration guideline package. Figure 3 and Figure 4 show the overall stack for a typical single band version. For dual RF band configuration, the RF board and the top shield expand into the shaded area illustrated in Figure 3.

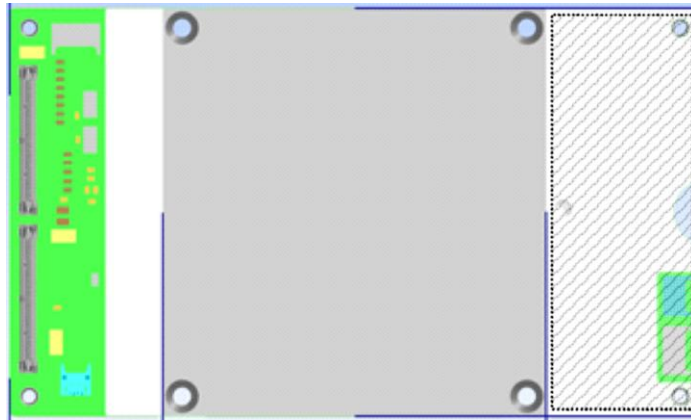


Figure 3. SC4200E OEM Stack Top View

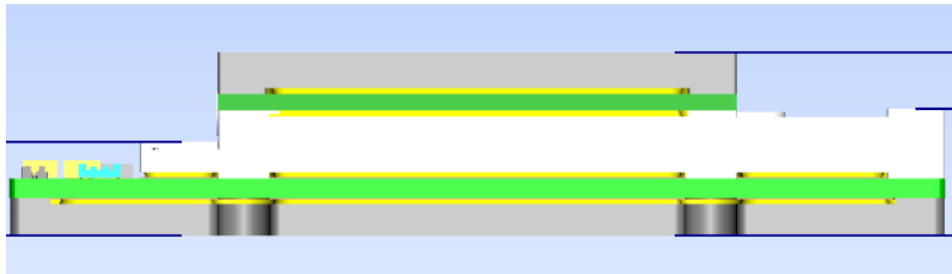


Figure 4. SC4200E OEM Stack Side View

3 Power Consumption and Heat Management

The OEM stack consumes 5W-24W (5W-48W for SC42A0) depending on the transmit duty cycle, transmit power, and frequency band used.

For the SC4x00 OEM modules, we recommend that the case temperature not exceed 70°C to keep internal temperatures below the transmitter limiting thresholds (as discussed above). Use of high efficiency thermal conductive pads from TennVac or their equivalent, or using thermal conductive paste, in attaching properly sized and designed heat sinks will greatly assist in removing heat from the radio module.

As mentioned above, consumed power (and thus heat generated in the radio) is dependent on the transmit duty cycle, transmit output power, frequency band operation, and any connected external USB devices. All key internal heat generating components are tightly coupled to the surrounding metal shields via thermal pad material. The digital board for the SC4200 OEM modules consume approximately 5W of power. The remainder of power is consumed by the RF boards.

Silvus recommends that heat sinks (or an equivalent flat thermal conductive mounting surface) be applied to both sides of the SC4200 OEM unit. The dimensions of the heat sink, height, and shape of the fins, the spacing between fin channels, the thickness of the base material, as well as the thermal conductivity of the metal, all play a role in determining thermal dissipation efficiency. Of course, air movement through and around the heatsink can significantly increase cooling effectiveness.

Once a thermal design is implemented, monitor the case temperature as environmental and operational conditions are reached to ensure that the design provides sufficient thermal cooling indicated by measuring the OEM module case temperature so that it does not exceed 70°C.

For further information and details please refer to our paper entitled “StreamCaster Radio Power Consumption and Profiles”.

4 OEM Accessories

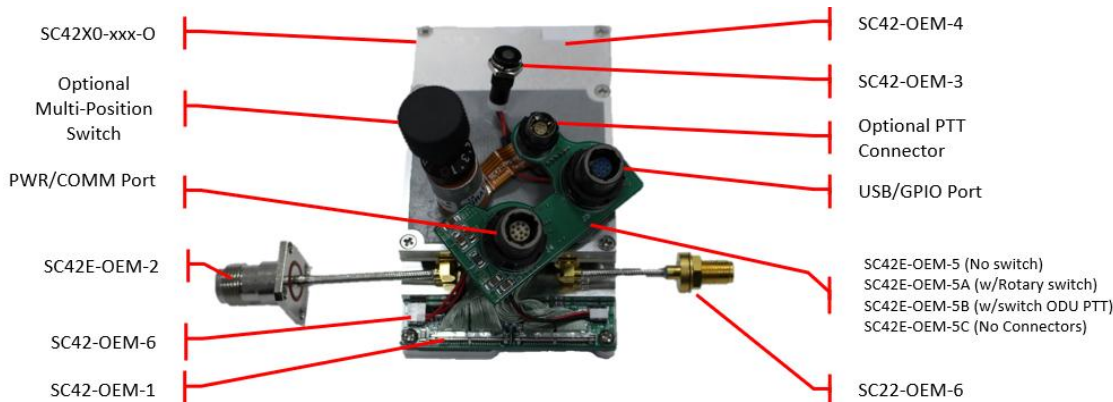


Figure 5. SC4200E-OEM Stack with OEM Accessories

Table 1 SC4200E OEM Accessories

SC4200E OEM Accessories	
Part Number	Description
SC42-OEM-1	SC4200E DF56 Cable for digital I/O (35mm) (included as standard in OEM stack)
SC44-OEM-2F	Right Angle SMP to straight TNC RF Cable (98mm Cable Length)
SC42-OEM-3	SC4200E LED Assembly (30mm cable length)
SC42E-OEM-4	Right Angle SMP to straight TNC RF cable (38mm)
SC42E-OEM-5	SC4200E OEM Adapter Board with 2x ODU Connector (Primary and Auxiliary)
SC42E-OEM-5A	SC4200E OEM Adapter Board with 2x ODU Connector (Primary and Auxiliary) and MPS switch
SC42E-OEM-5B	SC4200E OEM Adapter Board with 3x ODU Connector (Primary, Auxiliary and PTT) and MPS switch
SC42E-OEM-5C	SC4200E OEM Adapter Board with no ODU Connectors, no MPS switch
SC42E-OEM-5D	SC4200E OEM Adapter Board with 3x ODU Connector (Primary, Auxiliary and PTT).
SC42-OEM-6	SC4200 DF57 Cable for DC input to radio (25mm)
SC42-OEM-6H-25mm	DC57 high capacity cable for DC input to radio (25mm)
SC42-OEM-6H-BC3	DC57 high capacity cable for DC input to radio blunt cut (3ft)
SC22-OEM-6	Right Angle SMP to SMA Cable (21mm Cable Length)
SC42E-OEM-9	SC4200 OEM MPS switch with Flex PCBA and knob
SC42-OEM-IOM-ADAPT	Adapter board for integrating SC42 OEM stack.

This accessory list is not all inclusive; for example, cable assemblies of different lengths might be available. Please inquire with the Silvus sales team for more information.

5 FCC Modular Certifications:

5.1 Common Notes

User Manual (Customer End-Product):

Any user documentation that accompanies the customer end-product must include the following information in a location that is easily read:

- To comply with FCC's RF radiation exposure requirements, the antenna(s) used for this transmitter must be installed such that a minimum separation distance of 20 cm is maintained between the reader (antenna) & user's/nearby people's body at all times and must not be collocated or operating in conjunction with another antenna or transmitter.

The finished product manual must contain the following statement:

- **WARNING:** The Federal Communications Commission warns that changes or modifications of the radio module within this device not expressly approved by Silvus Technologies, Inc. could void the user's authority to operate the equipment.

In the case where an OEM seeks class B (residential) limits for the host product, the finished product manual must contain the following statement:

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help

In the case where an OEM seeks the lesser category of a Class A digital device for their finished product, the following statement must be included in the manual of the finished product:

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

5.2 FCC ID: N2S-SC424-235-OEM

The products SC4210P-235-O, SC4240P-235-O are approved for FCC modular certification by FCC ID: N2S-SC424-235-OEM.



Silvus radios models #s:

SC4210P-235-O, SC4210P-235F-O, SC4240P-235-O, SC4240P-235F-O

- Equipment Class: Digital Transmission System
- Operating Frequency: 2418MHz—2462MHz
- Bandwidth: 10MHz
- Maximum Total Output Power @2418MHz: 995mW
- Maximum Total Output Power @2440MHz: 919.4mW
- Maximum Total Output Power @2462MHz: 973mW
- Maximum output power for 10MHz @ operating frequency spectrum should not exceed 27dBm/0.5W/antenna
- Recommended Antennas: 2.4dBi Omni Antennas (Silvus part# AOV2S192G-TM) or equivalent for FCC 2.1091 & 15.247 RF Exposure compliance
- DC supply: the customer provides DC power from their own DC supply source; the supply should be fused for 5-amp circuit.

Modular approval allows installation in different end-use products by an OEM with limited or no additional testing or equipment authorization for the transmitter function provided by the SC4240P-235-O:

- No additional transmitter compliance testing is required if the module is operated with an approved antenna.
- No additional transmitter compliance testing is required if the module is operated with the same general type of antenna listed as approved in the SC4210P-235-O, SC4240P-235-O documentation.
- Acceptable antennas must be of equal or less far field gain than the antenna previously authorized under the same FCC ID and must have similar in band and out of band characteristics.

The end-product must comply with all applicable FCC equipment authorizations, regulations, requirements and equipment functions not associated with the SC4240P-235-O.

- Compliance must be demonstrated to regulations for other transmitter components within the host product, to requirements for unintentional radiators (Part 15B), and to additional authorization requirements for the non-transmitter functions.
- The OEM applying the SC4210P-235-O, SC4240P-235-O is required to include all FCC statements and warnings detailed in the following sections to the end-product labeling and in the finished product manual.

Product Label

A statement must be included on the exterior of the final OEM product which communicates that the device identified by the FCC ID number is contained within the product. Include the statement:

- Contains FCC ID: N2S-SC424-235-OEM

Additionally, the OEM must include the following statements on the exterior of the finished product:

- This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including any interference that may cause undesired operation.

5.3 FCC ID: N2S-SC42A-235-OEM

The product SC42A0P-235-O is approved for FCC modular certification by FCC ID: N2S-SC42A-235-OEM.



Silvus radios models #: SC42A0P-235-O, SC42A0P-235F-O

- Equipment Class: Digital Transmission System
- Operating Frequency: 2419MHz—2454MHz
- Bandwidth: 10MHz
- Maximum Total Output Power @2419MHz: 965mW
- Maximum Total Output Power @2440MHz: 902.2mW
- Maximum Total Output Power @2454MHz: 976mW
- Maximum output power for 10MHz @ operating frequency spectrum should not exceed 27dBm/0.5W/antenna
- Recommended Antennas: 2.4dBi Omni Antennas (Silvus part# AOV2S192G-TM) or equivalent for FCC 2.1091 & 15.247 RF Exposure compliance
- DC supply: the customer provides DC power from their own DC supply source; the supply should be fused for 5-amp circuit.

Modular approval allows installation in different end-use products by an OEM with limited or no additional testing or equipment authorization for the transmitter function provided by the SC42A0P-235-O:

- No additional transmitter compliance testing is required if the module is operated with an approved antenna.
- No additional transmitter compliance testing is required if the module is operated with the same general type of antenna listed as approved in the SC42A0P-235-O documentation.
- Acceptable antennas must be of equal or less far field gain than the antenna previously authorized under the same FCC ID and must have similar in band and out of band characteristics.

The end-product must comply with all applicable FCC equipment authorizations, regulations, requirements and equipment functions not associated with the SC42A0P-235-O.

- Compliance must be demonstrated to regulations for other transmitter components within the host product, to requirements for unintentional radiators (Part 15B), and to additional authorization requirements for the non-transmitter functions.
- The OEM applying the SC42A0P-235-O is required to include all FCC statements and warnings detailed in the following sections to the end-product labeling and in the finished product manual.

Product Label

A statement must be included on the exterior of the final OEM product which communicates that the device identified by the FCC ID number is contained within the product. Include the statement:

- Contains FCC ID: N2S-SC42A-235-OEM

Additionally, the OEM must include the following statements on the exterior of the finished product:

- This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including any interference that may cause undesired operation.