



# Declaration of Design and Performance

**DDP No.:** 120-00006

**Issue No.:** 1.1

**DDP Change Control Ref:** JIRA No. BT-412

*Note: Before specifying equipment, check with Flightcell International that this declaration is the currently valid version*

## MANUFACTURER

Flightcell International Ltd

Address: 98 Vickerman St, Nelson, New Zealand 7010

## DECLARATION OF DESIGN AND PERFORMANCE

**System Name:** Flightcell SVS

**Part No.:** HFP\_01-XXX (-XXX represents the dash number).

**Description:** The Flightcell SVS provides dual voice communication over the Iridium satellite network, optionally using the Iridium Safety Voice System.

The Flightcell SVS is built to meet requirements of TSO-C159d and the equipment configuration satisfies the qualification requirement of document RTCA/DO-262e Appendix D, Section 2.2.1.2 for MOPS AES2 when using TSO-C159a Iridium certified antenna.

Data interfaces include General Purpose Inputs and General Purpose Outputs. The product is designed for standard 5.25" DZUS rack mounting faceplate.

**Rev No.:** 2.1

**Weight & Overall Dimensions:** 800g.

| Part Description                     | DZUS mounted |
|--------------------------------------|--------------|
| Faceplate width                      | 146.0mm      |
| Extrusion width                      | 125.7mm      |
| Faceplate height                     | 57.2mm       |
| Extrusion height                     | 54.0mm       |
| Depth (from front face to rear face) | 110.4mm      |

| System Wiring Diagrams |             |
|------------------------|-------------|
| Diagram No.            | Description |
| 114-00001              | SVS ICD     |

#### Performance:

The Flightcell HFP\_01 meets all the specifications and requirements as outlined in this document. The main performance specifications are listed below.

| Item                    | Detail                                                     |                                                            |
|-------------------------|------------------------------------------------------------|------------------------------------------------------------|
| DC Power Source         | +12V - +32VDC (28V nominal)<br>Peak current: ~1.3A @ 28VDC |                                                            |
| Display                 | 2.4" 240 x 320 RGB TFT Graphics IPS LCD                    |                                                            |
| ICS to SVS              | Input Levels (VRMS)                                        | 20mV to 1.15V, adjustable<br>775mV nominal                 |
|                         | Input Impedance                                            | 600 Ohm                                                    |
|                         | Microphone Bias Voltage                                    | 12V via 2.2Kohm                                            |
|                         |                                                            |                                                            |
| SVS to ICS              | Output Levels (VRMS)                                       | Up to 5V, adjustable<br>775mV nominal                      |
|                         | Output Impedance                                           | 150 Ohm                                                    |
|                         |                                                            |                                                            |
| Backlighting            | Input Dimming Control                                      | 0 to 28VDC<br>Scaled from 0-100% based on DC input voltage |
|                         | Colour                                                     | Dual Mode:                                                 |
|                         |                                                            | White (Daylight operation)                                 |
|                         |                                                            | NVIS Green A (Night operation)                             |
| Keypad                  | 16 keys (4x4 matrix)                                       |                                                            |
| General Purpose Inputs  | Input Levels (Vin)                                         | 0 to 28VDC                                                 |
| General Purpose Outputs | Levels (Vout)                                              | 0 to 32VDC                                                 |
|                         | Max Current (Iout)                                         | 500mA                                                      |
| Connectors              | D38999                                                     | D38999/24WE-35PN, mating connector:<br>D38999/26WE-35SN    |

| SVS Power Required                   | Power                    | Peak Current |
|--------------------------------------|--------------------------|--------------|
| Average Power Single Modem (IN CALL) | 7.77W (0.278 A @ 28 VDC) | 1.2 A        |
| Average Power Dual Modem (IN CALL)   | 9W (0.321 A @ 28 VDC)    | 1.3 A        |
| Average Power (Quiescent)            | 6.65W (0.238 A @ 28 VDC) |              |

#### Test Report References:

Software Release V1.2.1 SVS Software Minimum Acceptance Test Plan test verifies the operation of the safety voice functions of the SVS device against the Iridium 9523 modem running on the safety voice network and requirements from the AC20-150B.

#### Test Result from Iridium

Device Verification Test on the Flightcell product passed.

Regarding the isolation requirement between two transceivers, confirmed >25dB is acceptable.

| Requirement                                                        | Result (Pass/Fail) |
|--------------------------------------------------------------------|--------------------|
| Compliant with RTCA DO-262 (MOPS) AES1, AES2, or AES3 requirements | Pass               |
| Isolation between 9523's $\geq$ 25dB with antennas installed       | Pass               |

#### Installation and Operation References:

| Manual No. | Description                        |
|------------|------------------------------------|
| 117-00002  | Flightcell SVS Installation Manual |
| 117-00003  | Flightcell SVS Operator Manual     |

### Declarations:

The limits of declared performance and those implied by the declarations below are not intended to be absolute, but are intended to indicate performance which has been shown by tests.

### Cooling Requirements

The unit is passively cooled. No special cooling required.

### Ingress of fluids, sand and dust

The unit is designed to be protected against fluids, sand and dust to a rating of IP54, however no external testing has been completed.

A rating of IP54 means that the unit is protected against ingress of dust in sufficient quantities to interfere with satisfactory operation of the unit and against harmful ingress of water when subjected to water splashing against the enclosure from any direction). The unit has been tested per MIL-STD-810H Rain Drip and Blowing Dust, see page 5 for details.

### Storage

The unit should be stored at a temperature of not less than -55°C and not more than +85°C.

### Operating temperature

The ambient operating temperature range for the unit is -20°C to +55°C.

### Storage Life

The shelf storage life is not less than 5 years under controlled storage conditions.

### CERTIFICATION

The declaration in this document is made under the authority of Flightcell International Ltd.

Flightcell International Ltd cannot accept responsibility for equipment used outside the limiting conditions stated above without their agreement.

Signed: \_\_\_\_\_

Authorised Signature: John Wyllie

Position: Accountable Manager

Effective Date: 3 September 2024

## REMARKS

**Nameplate Marking:** DO-160G Env. Cat. [(F1)(A2)]XXXXXXXXFSZXXXXXXXXXXXXXAX

The SVS has been tested to the following DO-160G and MIL categories:

| CONDITIONS                      | DO-160G<br>Section#/MIL-<br>STD | Description of Tests                                                                                               |
|---------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Temperature & Altitude          | 4.0                             | Equipment tested to categories A2, F1.                                                                             |
| Low Temperature                 | 4.5.1                           |                                                                                                                    |
| High Temperature                | 4.5.2 & 4.5.3                   |                                                                                                                    |
| In-Flight Loss of Cooling       | 4.5.4                           | No Forced cooling required.                                                                                        |
| Altitude                        | 4.6.1                           |                                                                                                                    |
| Decompression                   | 4.6.2                           | Equipment identified as category X, no test performed.                                                             |
| Overpressure                    | 4.6.3                           |                                                                                                                    |
| Temperature Variation           | 5.0                             | Equipment identified as category X, no test performed.                                                             |
| Humidity                        | MIL-STD-810H                    | Equipment tested to Method 507.6, Procedure II (aggravated).                                                       |
| Functional & Crash Hazard Shock | MIL-STD-810H                    | Equipment tested to Method 516.8, Procedure I (functional) & Procedure V (crash hazard).                           |
| Vibration                       | MIL-STD-810H                    | Equipment tested to Method 514.8, Procedure I (general), tailored per Boeing 901-910-034, Rev C, Vibration Zone 2. |
| Explosive Atmosphere            | MIL-STD-810H                    | Equipment tested to Method 511.7, Procedure I.                                                                     |
| Rain Drip                       | MIL-STD-810H                    | Equipment identified to Method 506.6, Procedure III.                                                               |
| Thermal Shock                   | MIL-STD-810H                    | Equipment identified to Method 503.6, Procedure I-C.                                                               |
| Bench Handling Shock            | MIL-STD-810H                    | Equipment identified to Method 516.8, Procedure VI.                                                                |
| Blowing Dust                    | MIL-STD-810H                    | Equipment identified to Method 510.7, Procedure I.                                                                 |
| Fungus                          | 13.0                            | Equipment tested to category F.                                                                                    |
| Salt Fog                        | 14.0                            | Equipment tested to category S.                                                                                    |
| Magnetic Effect                 | 15.0                            | Equipment identified as category Z, Qualified by similarity to DZP_04 (See 119-00090)                              |
| Power Input                     | 16.0                            | Equipment identified as category X, Pending results.                                                               |
| Voltage Spike                   | 17.0                            | Equipment identified as category X, Pending results.                                                               |
| Audio Frequency Susceptibility  | 18.0                            | Equipment identified as category X, no test performed.                                                             |
| Induced Signal Susceptibility   | 19.0                            | Equipment identified as category X, no test performed.                                                             |
| RF Conducted Susceptibility     | MIL-STD-461G                    | Equipment tested to Method CS114, Bulk Cable Injection, 10KHz to 200MHz.                                           |
| RF Conducted Susceptibility     | MIL-STD-461G                    | Equipment tested to Method CS116, Damped Sinusoidal Transients, Cables and Power Leads.                            |
| RF Conducted Susceptibility     | MIL-STD-461G                    | Equipment tested to Method CS117, Lightening Induced Transients, Cables and Power Leads.                           |
| RF Susceptibility (Radiated)    | MIL-STD-461G                    | Equipment tested to Method RS103 2MHz to 18GHz.                                                                    |
| RF Emissions (Radiated)         | MIL-STD-461G                    | Equipment tested to Method RE102 10KHz to 18GHz.                                                                   |
| RF Emissions (Radiated)         | 21.0                            | Equipment identified as category X, no test performed.                                                             |

|                         |      |                                                                                                                                                     |
|-------------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Electrostatic Discharge | 25.0 | Equipment identified as category X, no test performed. We expect the equipment to pass category A as we have tested the unit to MIL-STD-461G CS117. |
| Fire, Flammability      | 26.0 | Equipment identified as category X, See Flammability declaration 118-00036.                                                                         |

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