Small SWaP Digital SIGINT System (SSDSS)

Technical ELINT Collection & Analysis

The SNC SSDSS Receiver Processor Unit (RPU) is a multi-channel Technical ELINT solution, capable of integrating with and controlling various antenna types, RF distributions, recording devices and back end user displays. The SSDSS RPU consists of three independently controlled tuners/digital receivers optimized for Technical ELINT collection, analysis and identification.

Small SWaP Digital SIGINT System (SSDSS)

SNC's SSDSS Receiver Processor Unit (RPU) provides a powerful, multi-channel, multi-operator solution capable of detection, interception, identification and direction finding of complex radar emitters in a small size, weight and power (SWaP) form factor.

SYSTEM ATTRIBUTES

- Multi-channel, Multi-operator signal acquisition
- Three wideband tuners and three digital receivers
- Wideband and narrowband processing, five bandwidths
- Controls RF switch matrix for antenna selection
- Interfaces to one or two spinning DF antennas
- Analog IF outputs from three tuners feed CDIF recorders
- Analyze pulsed, CW and low-powered FMCW signals
- Small form factor, lightweight for flexible installation

TECH ELINT SYSTEM

The SSDSS RPU is the heart of a manual Technical ELINT system and can be configured to meet a wide array of user requirements for frequency coverage, antenna coverage, probability of intercept and system sensitivity. The RPU has three independent Collection Elements (CE). Each CE consists of one microwave tuner and one digital signal processing block. Each CE can be tuned from 0.5 to 18 GHz and each CE can control an RF switch matrix to select inputs from different antennas, block down-converters and block up-converters. The SSDSS controls ELINT system up-converters and down-converters to operate from 20 MHz to 40 GHz. For ELINT systems supporting multiple operators, multiple SSDSS assemblies may be connected to work in parallel.

The SSDSS RPU is at the end of the ELINT system RF processing chain. It receives, digitizes and processes complex pulsed, CW and FMCW signals and generates PDWs with associated IQ samples for signal identification and geolocation.

CONTROL, DISPLAY & ANALYSIS

ELINT operators control antenna input selection to each of their assigned CE's, control the spinning DF antennas, tune CE frequencies from 20 MHz to 40 GHz, set RF and IF gain control, control the processing bandwidths, set the threshold type and level, and control signal isolation tools.

ELINT operators interact with real-time situational awareness displays to detect signal activity, isolate signals in dense RF environments and optimize the system settings for the best signal collection. The SSDSS RPU provides interpulse and intrapulse measurement displays to support signal analysis and identification of complex emitters. Real-time user displays include:

- RF Panoramic Display showing signal activity
- Amplitude vs. Frequency Display with qualification tools
- Waterfall Display showing signal frequency vs. time
- Interpulse & intrapulse analyses
- Polar & Linear DF Display

SSDSS RPU CHARACTERISTICS

• Input frequency	250 MHz to 18.25 GHz
• IF bandwidths	500, 80, 25, 10 and 5 MHz
• Form factor	½ Air Transport Rack (ATR) chassis
• Size	6.25" W x 10.03" H x 19.3" D
• Weight	48 pounds
• Power	+28VDC per MIL-STD-704F, 700W
• Cooling	Forced air cooling via internal fan
• External inputs	10 MHz, 1 PPS, Blanking
• IF outputs	3 Wideband & 3 Narrowband
• Control & Data Interface	Gigabit Ethernet

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