SP2305

Link-11 System

The Airborne Link-11 system provides modem and network control functions to operate in a tactical digital information link. It employs netted communication techniques and a standard message format for the exchange of information among airborne, land-based and shipboard tactical data systems using either HF or UHF equipment.

Link-11 functions and performances are in accordance with MIL-STD-188-203-1A, STANAG 5511 (limited to Link 11A) and SPAWAR-S-850 with the exception of stored sync mode that is not applicable.

The Link-11 provides for conversion of digital data received from Mission computer to a composite audio signal of a phase modulated tone or tones suitable for radio transmission in either HF or UHF range and provides for conversion of a composite audio signal of a phase modulated tone or tones to digital data suitable for Mission computer use.

Link-11 can operate in both SLEW and CLEW configuration and also interface crypto device KG40 in order to provide conversion of cipher data into audio signal.

According to MIL-BUS-1553 bus commands, Link-11 can operate as either a net control station (NCS) or a participating unit (picket) in the Link-11 net providing the following functionalities:

- Roll Call: data is disseminated throughout the net by the automatic reporting of pickets in response to the interrogations by the NCS
- NCS shall be able to interrogate all station in any sequence and inserting its own data transmission at any point of the sequence
- Short Broadcast: any station in short broadcast mode can transmit a single message with a predefined format
- Long Broadcast: any station in long broadcast mode can transmit a series of short broadcast messages.Net Test: the NCS transmits a known test signal and all pickets verifies their performances by comparing the transmitted signal with an identical locally generated one
- Net Sync: the NCS continuously transmits a message and the pickets shall synchronize their internal time with the received message.

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All the functions required for Link-11 operation of the SP-2305 are configured into a 1/4 ATR-short LRU designated as Data Terminal Set (DTS) SP-2304, complete with a Mounting Tray which provides mechanical interface for installation onboard the host platform.

When used in integrated avionic systems where all the control, monitoring and data transfer interconnections are supported by the mission bus, the SP-2305 configuration includes two LRUs. The DTS SP-2304 and the Data Link Interface (DLI) SP-2301, a 3/8 ATR-short unit which interfaces the mission bus protocol to the DTS protocol.

The DLI is connected to the DTS via an ATDS interface. KG-40 crypto equipment shall be installed in between. BITE facilities are provided in two different modes, continuous or initiated by external command, and include several loopback functions to verify correct operation of the DTS plus a fault isolation routine which identifies failures down to replaceable card level.

MAIN FEATURES

- STANAG-5511 LINK-11 functions in avionic configuration
- Conventional (CLEW) and Single-tone (SLEW)
- Link-11 operation
- Interoperability at European and NATO level
- Advanced design based on new technologies backed by past experience
- Software-oriented design based
- Expandability at hardware and software level for addition of optional functions
- No mechanical /electrical adjustment for LRU replacement
- No scheduled preventive maintenance necessary
- Error Detection and Correction code
- Use of standard components easily procurable on the market
- Continuous BITE testing during normal operation to isolate failures at LRU level
- Initiated BITE test to isolate failures at replaceable card level
- Extended Link Quality Analysis available as option.

TECHNICAL SPECIFICATION

· **Data rates**	1364 bit/sec and 2250bit/sec
· **Tone library**	15 data tones plus Doppler tone
· **Computer Interface**	ATDS or MIL-STD-1553B (via DLI SP 2301)
· **Preamble**	2 tones (605Hz and 2915Hz), 5 frame duration
· **Doppler correction**	±75Hz acquisition
	3.5Hz/sec tracking rate
· **Synchronisation**	1 millisec. max resolution with respect to the 2915 sync tone acquired during the preamble
· **Error Detection**	Code Hamming code
· **Channel bandwidth**	3kHz nominal
· **Audio Interface**	Impedance: 600 ohm balanced
	Audio Output: -22dBm to +2dBm (adjust.)
	Audio input: 0dBm ±3dB
	Keyline Level 1: +6VDC Tx
	0VDC Rx
	Keyline Level 2 0VDC Tx
	Open circuit Rx
· **Primary power**	+28Vdc, 30W
· **Diversity reception**	USB, LSB, Manual or Automatic Diversity, operator selectable
· **Temperature Operating**	-40°C to +75°C
· **Storage**	-55°C to +85°C
· **Altitude**	35,000ft max
· **Humidity**	Up to 95%
· **EMC**	As per Mil-STD-461/462
· **Size and weight**	DTS SP-2304 1/4 ATR short, 3.2Kg
	DLI SP-2301 3/8 ATR short, 5Kg
· **MTBF**	5000 hrs
· **MTTR**	3 min

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