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ASTi Link 16 Diagnostic Tool User Guide

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Advanced Simulation Technology inc. 500 A Huntmar Drive, Herndon, Virginia, 20170 USA Revision C (July 2010)

Product Name: Link 16 Diagnostic Tool

ASTi Link 16 Diagnostic Tool User Guide

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ASTi

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1.0. Introduction

The Link 16 Diagnostic Tool (LDT) is a network analysis tool capable of decoding Link 16 formatted transmitter and signal PDU's per the SISO Link 16 Specification. The tool provides the ability to view and examine all Link 16 traffic detected on the connected network. Another feature of the tool is the ability to define signal and transmitter PDU data to transmit over the network.

A significant feature of the tool is the ability for the user to define simulator names instead of using simulator DIS ID numbers and IP addresses. This allows the user to easily view who is and isn't present on the network.

The LDT differs from the Radio Diagnostic Tool (RDT) in that it is capable of showing the details of the Link 16 Tx and signal PDU's. The LDT is an essential tool when running Link 16 on the DIS network, providing insight into what is going on in the Link 16 network.

LDT main features include:

- The ability to define separate Tx and signal PDU networks
- The filtering capabilities based on Exercise ID, Timeout value, Terminal Mode, Net Sync ID, Signal PDU Type, Time Slot Type, etc.
- CVSD audio monitoring
- · Simulator name definitions for easy sorting and understanding
- Detect duplicate radios
- Define and generate Tx and Signal PDUs for a single Link 16 terminal
- Decode key Link 16 PDU parameters in an easy readable format
- Decode key Link 16 Signal PDU parameters in an easy readable format (including details of the 8 message types)
- Understand what is going on in your Link 16 network



Figure 1: LTD GUI

2.0. System Requirements

The following lists the minimum hardware and software system requirements for running LDT.

- Microsoft Windows XP (Home or Pro)
- 1.8GHz MHz Intel compatible PC (P4 recommended, see Note 1 regarding use with Celeron)
- 256 MB of RAM minimum
- 50 MB of available hardrive space
- Standard network interface card (NIC/Ethernet)
- Video resolution with a minimum resolution of 1280 x 1024
- Mouse
- Keyboard
- CD-ROM drive for software installation
- Software installation CD

Note 1: The LDT uses a dynamically updated display of the current radio environment, placing a high load on the computer video display system. Therefore, our recommendation is to use a video expansion card (PCI or AGP depending on your machine configuration). This will ensure optimum system performance, particularly when exploiting the linked operation abilities of RDT and PC'ver. This recommendation becomes a system requirement if using a computer equipped with a Celeron processor.

3.0. Getting Started

3.1. Installation Procedure

1. Insert the software CD, the installer will automatically run, unless the CD-ROM autorun feature is turned off. If the software does not automatically run continue with step 2.

Note: ASTi recommends accepting the default destination directories, but alternative locations may be selected. If the installation is performed under the Windows "Program Files" directory, it may be necessary to change the default directory/file access privileges to allow write access to the sub-directories.

- 2. Click the 'link16 setup.exe' file to run.
- The 'Welcome to ASTi Link 16' wizard screen will open. Press 'Next' to continue.
- 4. Press 'Next' until the Install screen opens.
- 5. Click 'Install' to install the software.
- 6. Click 'Finish' after installation is complete.



Figure 2: Link 16 Diagnostic Tool Icon

3.2. Product Licensing

LDT requires a computer-specific license file that references the PC's ethernet hardware MAC address of the computer it is running on. A separate license file is issued in addition to the product installation CD. Place the license file (.pvl) in the following directory.

```
c:\Documents and Settings \All Users\(Shared)Documents\ASTi
License Files directory
```

Note: If you do not provide ASTi with your PC's MAC address at the time of purchase, contact ASTi at support@asti-usa.com to receive your license file.

3.3. Running the Application for the First Time

When running LDT for the first time the user must set the network parameters. The 'Select **Required Options**' dialog box will open automatically when running LDT for the first time.

- 1. Select the local IP address for the DIS LAN from the drop down list. If there is more than one network connection the 'Allow IP Sharing' checkbox becomes active.
- 2. Enter the DIS UDP port number for the DIS traffic.
- 3. Select the Broadcast Mask setting according to the DIS LAN subnet settings. The user can check the 'User Specified' option to manually enter the corresponding broadcast mask. *It is mandatory that the selected broadcast mask correspond to the Windows TCP/IP sub-net mask for the selected IP address.*
- 4. If DIS traffic is running on multicast check the 'Active' box and manually enter the Multicast Group Address.

If the Tx and Signal PDU's are running on a different network enter the settings under the **'Optional Signal PDU's LAN Details**' section.

Select Required Options	X
UDP Port Number Broadcast Mask 010.002.000.192 53000 53000 000.255.255 010.002.000.192 53000	
Multicast Group Address User Specified Broadcast Mask Active 225 • •	
Optional Signal PDU's LAN Details IP Address UDP Port Number Broadcast Mask	
3000 000.000.255.255 Clear 255.255.255 Clear 0.002.000.255.255	
Multicast Group Address	
Allow IP Sharing Ok Cancel	

Figure 3: Network Settings

3.4. Setting the Network Settings in the GUI

The user can view and change the network parameters by clicking 'Select' in the top section of the GUI labeled 'LAN IP Addresses and Ports.'

LAN IP Addresses and Transmitter PDU LAN IP 010.002.000.192	Ports Tx PDU Port 53000	Broadcast Mask 000.255.255.255	Select	Signal PDU LAN IP	Signal Port	Broadcast Mask
		Save	I AN Configura	tion 🗖		

Figure 4: Network Settings on GUI

4.0. Link 16 Diagnostic Tool Features

4.1. Link 16 Transmitter List

The central 'workstation' of the tool revolves around the Link 16 transmitter list. On initial startup this list will display the Link 16 transmitters on the connected network. This view provides information for each transmitter including the current status, simulator name, transmitter ID, etc. The current transmit state of the Link 16 transmitters are reflected in real-time. If a radio does not issue a data PDU within the user defined time-out period then it will be tagged as 'timed out.' The user can get a snap shot of the network data history. The user may reset the list at any time by using the 'refresh' button. This will rebuild the list from new and update the network status.

		Lat-Lon No	specified	_(Clear	Show Terminal Primary Modes G Both O NTR		© NTR	🔘 Unit Particip	ant	Show Transmitters on Net Synch ID (0			
Status	Simulator Name	Transmitter ID	Originating IP	Ve	Mod Type	S.Spectrum	TSAM	Tx Primary Mode	Tx Secondary Mode	Synchronization Sta	te Network Synch ID	Au		
Stby	ASTi_Trainer	137:20:1:22	010.002.137.020	6	1:7:0:8	1 · Freq Hop	0	2 - JTIDS UP	0 - None	0 · Unknown	0	No		
Stby	ASTi_Trainer	137:20:1:23	010.002.137.020	6	1:7:0:8	1 · Freq Hop	0	2 - JTIDS UP	0 - None	0 · Unknown	0	No		
Stby	ASTi_Trainer	137:20:1:19	010.002.137.020	6	1:7:0:8	1 · Freq Hop	0	2 - JTIDS UP	0 - None	0 · Unknown	0	No		
Γx	ASTi_Trainer	137:20:1:21	010.002.137.020	6	1:7:0:8	1 · Freq Hop	0	2 - JTIDS UP	0 - None	0 · Unknown	0	No		
٢×	Unknown	2:2:2:2	010.002.000.192	6	1:7:0:8	1 · Freq Hop	1	2 - JTIDS UP	0 - None	3 - Fine Synch	1234567890	No		
stoy Tx Tx	ASTI_Trainer ASTi_Trainer Unknown	137:20:1:19	010.002.137.020	6 6	1:7:0:8	1 · Freq Hop 1 · Freq Hop 1 · Freq Hop	0 1	2 - JTIDS UP 2 - JTIDS UP 2 - JTIDS UP	0 - None 0 - None 0 - None	0 - Unknown 0 - Unknown 3 - Fine Synch	0 123456789	90		

Figure 5: Link 16 Transmitters on Network

The user can click on any cells in the list to view the Link 16 transmitter PDU's details from the selected transmitter. These extended details are provided for diagnostic purposes and include the following:

- Transmitter ID
- Originating IP
- Frequency MHz
- Bandwidth MHz
- Power d8m
- Input Source
- Location Latitude-Longitude
- Height Feet-Meters
- Mode Type S: Spectrum
- Mode Type: Major
- Mode Type: System
- Length Mode Parameters in Bytes
- Time Slot Allocated Mode
- Tx Term Primary Mode

- Tx Term Secondary Mode
- Synchronization State
- Network Synch ID
- Range to Datum NM
- Range to Datum KM
- Time of Last Tx PDU

The user can click the '**Del-Sel**' button to deselect the Link 16 transmitter and clear the details. The '**Datum**' button sets the transmitter data for range calculations, clicking this button automatically sets the Datum ID in the box above the Link 16 transmitter list. The user can save the separated values to a file by clicking the '**Export**' button.



Figure 6: Link 16 Transmitter PDU's from Selected Transmitter

4.1.1. Link 16 Signal PDU Details

Another feature of LDT is the ability to view the Link 16 signal PDU's messages from a selected transmitter. Depending on the message type, corresponding information will display to the right of the message type to allow a quick overview of the message types sent by a given transmitter.

The user can choose from seven message types including:

- Message Type 0- JTIDS Header/Mssg
- Message Type 1- RTT A/B
- Message Type 2- RTT Reply
- Message Type 3- JTIDS Voice CVSD
- Message Type 4- JTIDS Voice LPC10
- Message Type 5- JTIDS Voice LPC12
- Message Type 6- JTIDS LET
- Message Type 7- VMF

For details on specific values and meaning of the various fields (e.g. Encoding Class, Number of J-Words, Epoch Time, etc) please refer to the Simulation Interoperability Standards Organization (SISO) Standard for: LINK 16 SIMULATIONS SISO-STD-002-2006 or later.

ik-16 Sigr Link-16 M	ial PDU's essage T	from Sele voes from	cted Tran Selected	ismitter Transmitt	ter				
MT-0	MT-1	MT-2	MT-3	MT-4	MT-5	MT-6	MT-7	Mssg Type 0 - JTIDS Header/Mssg	Value
314	2	1	2	1	2	1	4	Encoding Class	01 - Binary Data
			0.07		1	1		No. of J-words	0
<u></u> Т	otal Signa	al PDU Co	unt 327	^	Llea	r		TDL Type	100 · Link-16
- \								Length of Data in Bits	688
								Length of Data in Bytes	86
	Capture	Matching	Signal PE	00				Network Partcipation Group	31
	Mssn	Tune () - J	TIDS He	ader/Mss	0	-		Network Number	3
	Meen	Tupe () - I	TIDS Her	adar/Mee	9			Transmission Security	8
	Mssq	Type 1 - F	RTT A/B	3001711133	9			Message Security	11
	Mssg	Type 2 - F	ITT Reply	y .				Message Type	4
	Mssg	Type 3 - J	TIDS Voi	ce CVSD				Time Slot Number	0
	Misso	Type 4 - J Type 5	TIDS Vol TIDS Vol	ce LPUIL ce LPUIL)			Epoch Number	0
	Masg	Type 5 - J	TIDS LE1		-			Epoch Time	00:00:00
	Mssg	Type 7 - \	/MF					Perceived Transmit Time	43E88498.8D407C53
								NTP Timestamp Date	07 Feb 2006
	-So	urce Trac	k Notof 9	Sender D	= All			NTP Timestamp Time	10:29:28.551765223
			00000	Clear	1			Timeslot Type	1
			00000					Relay Transmission Indicator	0
	0	- 0	- I D	- 0	- 0			Source Track No. of Sender (octal)	00000
			-	-		-		Secure Data Unit Serial No.	0
								201 (1. 1.1.1.1.) (0. 1.000))	10.00.00

Figure 7: Message Types

4.2. Transmitter Options

The transmitter options box allows the user to choose three options. When the transmitter is turned off or the transmitter is disabled the box will turn green. When the transmitter is in standby or sending Tx PDU's the box is yellow. When the third option is selected the transmitters are sending Tx and signal PDU's and the box will turn red.

ansmitter and Signal PDU D	Tx Options C 0- Off C 1 - Stand 2 - Trans Show Transmitters on Net S	by mit View	
Repeat Rate in Secs Tx PDU Signal PDU 5 + 5 +	Transmitting E Site Ap	ntity ID plication Entity ID Radio ID 2 2	Send Message Type JTIDS Header/Message J Words 1 + Type 0 +
Transmitter PDU Parameters		Signal PDU Parameters	
Deservator	1 Calua	Burneter	No.
Padio Entitu Kind	7 Padio	Financial Class	Value
		Encoding Llass	I - Raw Binary Data
Domain	2 · Alf	No. of J-words	
Country	225	TDL Type	100 - Link 16
Category	21 - JTIDS - Link-16	Sample Rate	0
Nomenclature Version	0	Data Length in Bits	288
Nomenclature	0	Samples	0
Input Source	8 - Dig Data Dev	NPG Number	31
Antenna Location	At centre of earth	Network Number	3
Rel. Antenna Location mtrs	0.0/0.0/0.0	Transmission Security	8
Frequency MHz	1,131.000000	Message Security	11
Bandwidth MHz	240.000000	Message Type	0 - JTIDS Header/Message
Transmit Power dBm	30.00	Timeslot Number	0
Mod. Type - Spread Spectrum	1 · Freq Hop	Epoch Number	0
Mod. Type - Major	7 - Carrier Phase Shift	NTP Timestamp	07 Feb 2006 10:57:19.992194176
Mod. Type - Detail	0	NTP Timestamp - No State	ment Set
Mod. Type - System	8-JTIDS/MIDS	, itt intestanp no state	
Crypto System	0 - Other	JTIDS Headers for Message Type	es
Crypto Key ID	0		
Length of Mod. Params	8 Octets	JTIDS Header	
Time Slot Alloc. Mode	1	Time Slot Type 1 🗎 L	ET ID 0 🕂 Pack Type 0 🕂
Terminal Primary Mode	2 - JTIDS UP		
Terminal Secondary Mode	0 · None	Relay Transmission Indicato	or Secure Data Unit S/N 0
Synchronization State	3 - Fine Synch	Source Track No	o. of Sender
Network Synch ID	1234567890		
	Set		

Figure 8: Transmitter Options

4.2.1. Setting Transmitter and Signal PDU Parameters

Not only can LDT analyze and decode link 16 Tx and signal PDUs, it can also act as a single link 16 terminal for the purposes of generating Tx and Signal PDUs. When you select view option the user is presented with configuration options for the Tx and signal PDU parameters.

For the Tx PDU the user is able to define:

- Domain
- Country
- Nomenclature Version
- Nomenclature
- Antenna Location
- Relative Antenna Location
- Transmit Power d8m
- Time Slot Allocation Mode
- Terminal Secondary Mode
- Synchronization State
- Network Synchronization ID

For the signal PDU the user is able to define the Message Type (0-7). The user can define the associated parameters for each message type.

- Network/Needline Participation Group
- Network Number
- Transmission Security
- Message Security
- Time Slot Number/Epoch Option

Once the link 16 messages have been set to the user defined parameters the '**Tx Options**' selection will determine which PDUs are put on the DIS network. For example:

- Option 0: Off No PDUs are inserted onto the DIS network
- Option 1: Standby Only Tx PDUs are inserted onto the DIS network
- Option 2: Transmit Tx and signal PDUs are inserted onto the DIS network

The rate of PDU transmission is defined by the repeat rate in seconds and is configurable on a per PDU type basis.

Contransmitter and Signal PDU Data to Send	😂 Set Signal PDU JTIDS Net Hdr 🛛 🗙
Transmitting Entity ID Transmitting Entity ID Tx PDU Signal PDU 5 5 2 2 Point 2 2 2	ty ID Radio ID Network/Needline Participation Group 31 - Network/Needline Participation Group 31 - CTransmission Security
Signal PDU Transmitter PDU Parameters Domain 2 · Air Country 225 Nomenclature Version 0 + Nomenclature 0 Anterna Location 0 0 0 mtrs Transmit Power dBm 30 + Transmit Power dBm 40 + Transm	J Parameters J Parameters G Cases G Ca

Figure 9: Setting Transmitter and Signal PDU Parameters

The user can select the transmitter PDU parameters location. Check the box if using the center of the earth.

	🔘 Transı	mitter and Signal PDU	DU Data to Send								
	Pa	nant Pinta in Casa	C Location	X							
	ne	Tx PDU Signal PDU	Height Units Feet	mtrs	ID Radio ID						
🕲 Set Tran	nsmitter PDU Pa	arameters	Values		Parameters						
Transmitter	r PDU Parameters		Lat Lon	Height							
	Domain	2 - Air	C At Centre	of Earth	Class						
	Country	225		or Lakti	ords						
No	menclature Version		Ok _	Cancel	ate						
	Nomenclature			_en;	gth in Bits						
	Autouro I	At centre of earth		Samples NPG Num	ber						
	Antenna Location			Network 1	Number						
Relative	e Antenna Location	0 0 0	Set	Transmiss	ion Security						
Т	ransmit Power dBm	30 +	mtrs	Message	Security						
Time S	lot Allocation Mode	1		Message	Туре						
Time 5	IOC AIRCEACOTT MODE			Timeslot N	lumber						
Ter	minal Primary Mode	2 - JTIDS Unit Participant		NTP Time	stamp						
Termin	al Secondary Mode	0 - None	_		imestamp - No Statemen						
Sy	nchronization State	3 - Fine Synchronization	-	_	intestantp into otatemen						
Network	Superiorization ID	1234567890		JTIDS Head	lers for Message Types						
	oynomonication no	1		JTIDS I	Header						
				Time S	lot Type 1 🕂 LET						
		Ok	Cancel	Belau	Transmission Indicator						
				- Incidy	Source Track No. of						
	IN	etwon									
			Set								

Figure 10: Setting Antenna Location

4.3. Left Column Display

4.3.1. Exercise ID and Time Out Display

Ex ID-The Exercise ID displays the currently selected DIS exercise number for the data currently displayed by the tool. This number is manually selected by the user.

Time Out- The current time value in seconds used by the tool as the maximum period that may elapse between Tx PDU updates before the tool logs a radio as being 'timed out.' Note that a subsequent update will restore an entry from the 'timed out' state to active. The user may modify the settings as required. The typical time out values range from 10 to 20 seconds.

4.3.2. PDU's Received and Transmitted

PDU's Received- Displays the total PDU's received and filters between transmitter and signal socket.

PDU's Transmitted- Displays the total PDU's transmitted and filters between Tx and signal PDU's.



Figure 11: Left Column Display

4.3.3. Radio Display and Audio Monitor

All Radios-Displays all radios on the connected network, those that are timed out, and the number of Link 16 terminals. Select '**Refresh**' to reset the base radio list. This action restarts data logging and rebuilds the 'All Radios' list removing the timed out entries. The 'All Tx' button will display all radios transmitting on the network.

🙄 All T	ransmit	ters													×
Radio	Status	Simulator Name	Transmitter ID	Originating IP	Ver	Frequency MHz	BW KHz	Radio Category	Crypto	Key	Mod Type	Rng NM	Rng Km	Lst Tx PDU	^
1	Stby	Unknown	101:154:1:1	192.168.101.154	4	10.100000	25.00	0 · Other	1 · KY-28	0	0:3:1:1	N/A	N/A	10:48:11	
2	Stby	Unknown	101:154:1:2	192.168.101.154	4	10.200000	25.00	0 · Other	1 · KY-28	0	0:3:1:1	N/A	N/A	10:48:12	
3	Stby	Unknown	101:154:1:3	192.168.101.154	4	10.300000	25.00	0 - Other	1 · KY-28	0	0:3:1:1	N/A	N/A	10:48:15	
4	Stby	Unknown	101:154:1:4	192.168.101.154	4	10.400000	25.00	0 - Other	1 - KY-28	0	0:3:1:1	N/A	N/A	10:48:15	
5	Timeout	Unknown	126:63:1:20	010.002.126.063	4	100.000000	25.00	0 - Other	0 - Other	0	0:1:2:1	N/A	N/A	10:48:03	
6	Timeout	Unknown	126:63:1:25	010.002.126.063	4	100.000000	25.00	0 · Other	0 - Other	0	0:1:2:1	N/A	N/A	10:48:03	
7	Timeout	Unknown	126:63:1:19	010.002.126.063	4	100.000000	25.00	0 - Other	0 - Other	0	0:1:2:1	N/A	N/A	10:48:04	
8	Stby	Unknown	103:2:1:1	010.002.103.002	4	275.000000	25.00	0 - Other	0 - Other	0	0:8:1:1	N/A	N/A	10:48:11	
9	Stby	ASTi_Trainer	137:20:1:22	010.002.137.020	6	1,131.000000	240,000.00	21 - JTIDS - Link-16	0 - Other	0	1:7:0:8	N/A	N/A	10:48:11	
10	Stby	ASTi_Trainer	137:20:1:23	010.002.137.020	6	1,131.000000	240,000.00	21 - JTIDS - Link-16	0 - Other	0	1:7:0:8	N/A	N/A	10:48:11	
11	Stby	ASTi_Trainer	137:20:1:19	010.002.137.020	6	1,131.000000	240,000.00	21 - JTIDS - Link-16	0 - Other	0	1:7:0:8	N/A	N/A	10:48:11	
12	Tx	ASTi_Trainer	137:20:1:21	010.002.137.020	6	1,131.000000	240,000.00	21 - JTIDS - Link-16	0 - Other	0	1:7:0:8	N/A	N/A	10:48:15	
13	Tx	Unknown	2:2:2:2	010.002.000.192	6	1,131.000000	240,000.00	21 - JTIDS - Link-16	0 - Other	0	1:7:0:8	N/A	N/A	10:48:11	
14															
15															
16															
17															
18															
19															

Figure 12: All Transmitters

Audio Monitor- LDT has a stand-alone audio monitor capability. This allows the user to monitor the audio from a selected transmit or network ID or all on network.

Note: Only CVSD voice decoding is supported.

- CVCD Alexaider Description Onlines for Audio Disc
CVSD Algorithm Parameters Uptions for Audio Play
Beta * 10 8 - Reverse CVSD bit order Delta Min 50 - Delta Max 1,000 -

Figure 13: Audio Options

4.3.4. Simulator Details

Simulator Names- View the simulator names and site information by clicking on '**Simulator ID's**.' The user can edit/add names and sort the list by name or site ID. The user can export the simulator ID's in CSV format or 'Save As' to save simulator ID list as a new file.

Simulato	or Identifiers			
Simulato	r Identifier File			
c:VAST	i Link 16 Diagnostic\Simulator ID	Files\Default S	imulator Identifier	s.txt Select
Circulate				
Simulato	i luenulleis	D	ecimal	- C - 1
Sim Id	Simulator Name	Site Id	Application	
1	MaK F18 Simulator	1	2	C Name
2	IOTTF Session No.1	13000	10	Site/Appl
3	IOTTF - Creams Radios	13000	100	
4	IOTTF SEssion No.1 EMC	13000	11	Sort Now
5	IOTTF Session No.2	13000	12	
6	IOTTF Session No.2 EMC	13000	13	
7	ANZAC CSTT	13000	20	
8	ANZAC CSTT Radios	13000	200	Export
9	ASTi_Trainer	137	20	
10	ASTi_Trainer	137	20	
11	Redsim Diagnostic	13900	10	
12	Redwind SG	13900	100	
13	Link-16 Diagnostic	16160	1616	
14	ATIS Transmitter	1677	1678	
15	BFTT - Dam Neck	406	2	
16	BFTT Site 3	409	2	Save As
17	BFFT Radios	409	3	
18	ITSEC HK Sim No 1	41	104	Clear
			Ok	Cancel

Figure 14: Simulator Identifiers

Link 16 Category Transmitters from Selected Simulators- Displays a list view of the current category of selected simulators. The user can create up to eight lists and view the details of the transmitting link 16 terminals on the network. This view is useful for comparing and diagnosing radios on the network by setting up predefined filters based on simulator name or host/site ID.

🙁 Link-	-16 catego	ry Transmitt	ers from Selecte	ed Si	imulators										×
	Selecte	d Simulators													
	List 1		List 2		List 3	Lis	st 4	List	5	List	6 L	.ist 7	List 8		
	None		None		None	No	one	No	ne	Nor	ne N	lone	None		
List 1	List 2 Lis	st 3 List 4 L	.ist 5 List 6 List	t7	List 8										
							None			•					
_ ^{∟Lin}	nk-16 Category	y Transmitters fro	om Selected Simulato	or											
9	Status Tran	nsmitter ID	Originating IP	Ver	Frequency MHz	BW MHz	Mod Type	S.Spectrum	TSAM	Tx Primary Mode	Tx Secondary Mode	Synchronization State	Network Synch ID	Audio	<u> </u>

Figure 15: Link 16 Category Transmitters from Selected Simulators

Duplicate Radios- On a DIS network the DIS ID for any unique simulation object must be unique and any pair of radios that have a common DIS ID will not function correctly. The '**Dis-play**' button will illuminate red when LDT detects that more than one radio is using a DIS ID. Selecting the 'Display' button will bring up a window listing the duplicate radio's details to allow further diagnosis and resolution.

🕲 Duplicate Radio ID's						×
	Juplicate Radios ID's Detected					7
	Date-Time	Radio ID	Source IP No.1	Source IP No.2	^	

Figure 16: Duplicate Radio ID's