

It is assumed that the PacketScan[™] Analyzer Software and License installations (PKV100, PKV107) are already performed referring to the Software Quick Installation Guide (Packetscan-Quick-Install-Guide.pdf). Now proceed with the verification steps below for capturing and analyzing LTE protocol.

PKV107 license supports analysis of LTE eGTP, S1AP, X2AP, and S6a Diameter interfaces.

Note:

Verify that Widows® Firewall is disabled before proceeding with the instructions given below. You should *Turn off Windows Firewall* on Windows® and on any 3rd party Anti-Virus software that may be installed on the PC to make sure that Firewall is not blocking any packets or frames.

Verification



• Right click on the PacketScan shortcut icon PacketScan created on the desktop and select "**Run as Administrator**" to launch the application. The application should invoke without any errors.

Follow the steps below for functional verification of PacketScan[™] Real-time analysis feature.

- From the PacketScan[™] main menu, select Configure → Settings. This will invoke Configure Editor of PacketScan Settings window.
- Expand LTE option, from the drop-down list check the options Enable/Disable VoLTE Processing. Make sure that Release 15 for eGTP protocol version is selected.
- Expand Miscellaneous and check the Enable/Disable LTE Signaling Processing option. Refer to the below screenshot. Click on Apply and Exit.

1	Configuration Editor of PacketScan (All-in-one) Settings.	C:\Program Files\GL Communica	—	×
[> PDA			^
1	PDA Performance Log			
	LTE			
	Enable/Disable VoLTE processing:			
	eGTP Protocol Version:	Release 15		
	S1AP (&NAS) Protocol Version:	Release 15		
	S1AP SCTP Protocol Payload Identifier:	18 18		
	X2AP SCTP Protocol Payload Identifier:	27 27		
	Diameter S6a Release Version:	Release 15		
1	UMTS			
1	IMS			
1	> 5G			
ŀ	MISCELLENEOUS			
	IMSI MNC Digits Length	2		
	Enable/Disbale LTE signalling processing:			
	Number of protocol decoder to be created:	2		
	Point Code Notation:	DOT		
	Number of frames to be processed per second in offline	0		
	Enable/Disbale luPS signalling processing:			
	Enable/Disbale GB signalling processing:			
	Active call timer:	360		¥ .
	MISCELLENEOUS			
3	Settings.			
Γ	Apply Default Expand Collapse	Exit		
				/

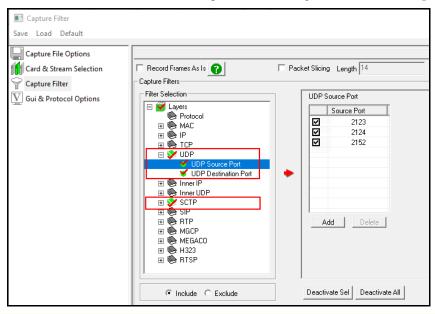


PacketScan[™] LTE (PKV107) Quick Verification Guide

- A warning message will appear to restart the PacketScan Analyzer. Click on OK.
- Close the **PacketScanTM** application and invoke again to apply the changes as per configuration settings.
- Select Capture → Stream/Interface Selection and select the Ethernet card on which packet needs to be captured.
- From the PacketScan main menu, select Capture → Capture File Options → Card and Stream Selection option to choose the particular Cards/ NIC.

📧 Card & Stream Selection		_	□×
Save Load Default			
Capture File Options	Stream / Interface Selection		
Card & Stream Selection	Ethernet Boards		
🌳 Capture Filter	Microsoft0.0.0.0		_
Gui & Protocol Options	Microsoft0.0.0 Microsoft0.0.0 Microsoft0.0.0 Microsoft0.0.0 Microsoft0.0.0 Intel(R) 1211 Gigabit Network Connection192.168.12.87 Intel(R) Ethernet Connection (2) 1219-V192.168.12.88		

- On the left pane, select Capture File Options and verify that Circular Capture Buffer is checked.
- Now, on the left pane, select **Capture Filter** option, under Filter Selection, expand **UDP** option and select **UDP Source Port**. In the **UDP Source Port** option, click on **Add** and enter the following Source Port numbers '2123, 2124, 2152'.
- Similarly, under UDP option, select **UDP Destination Port.** In the **UDP Destination Port** option, click on **Add** and enter the following Destination Port numbers '2123, 2124, 2152'.
- Click on SCTP protocol and check Filter all SCTP data option. After configuration, close the Capture Filter window.



D Note:

Above port settings is applicable to filter LTE traffic. The above mentioned UDP port numbers are applicable in this example only. User can delete the UDP port numbers in the **Capture Filter** to configure the ports as required.





- From the PacketScanTM main menu, select File \rightarrow Start Real-time or click Start Real-time \swarrow icon from the toolbar.
- If the Temp.hdl file already exists in the PacketScan installation directory, a warning message will appear to replace Temp.hdl file, click **Yes** to overwrite the file.
- Generate traffic by playing HDL file using **PacketscanUtilities** application. From the PacketScan installation directory

(C:\Program Files\GL Communications Inc\PacketScan) double-click on PacketScanUtilities application. This will invoke PacketScan Utility application.

> Select Utilities \rightarrow HDL Playback from the menu.

		PacketScan Utilitie	es	×
Utilit	ies			
	HD	LPlayback		
	Ado	dress Translation		
	Exit	:		
_				

- ➤ In the Device option, from the drop-down list, select NIC card on which PacketScanTM Real-time capture is configured. Note: Ensure that selected NIC card is enabled in PacketScanTM under Capture → Stream/Interface Selection.
- In the Select HDL File option click on browse button to browse and select C:\Program Files\GL Communications Inc\PacketScan\SampleTraces\LTE\LTE-EndToEnd-Call.hdl file name and click on Open.
- > Enable Maintain Timing option and click Start.

Playback from	1 File		×
Select HDL File-			ectio 💌 ketScan\Sam
🔲 Continuous Pl	ayback Repe	atCounter : 0	
	24	%	
Start	Stop	Close	Impairment



• In the PacketScanTM, observe the **eGTP** decodes displayed in PacketScanTM analyzer summary and detail views.

PacketScan (IpProt) 64-bit						-	· 🗆	\times
<u>File View</u> Capture <u>Statistics</u> <u>Database</u> Call Detail <u>Records</u> <u>Co</u>	onfigure <u>H</u> elp							
	4 🚮 🔛 🎀 🕱 🚽 🚽		GoTo					
Device Frame# TIME (Relative) Length (Bytes)	Error Packet Type	Source IP Address	Destination IP Address	Source Address	Destination Address	Source Port	Destination	Port 🔺
	MAC	IP	IP	IPv6	IPv6	UDP	UDP	
1 0 00:00:00000000 250		192.168.12.26	192.168.12.111			2123	2123	
√ 1 1 00:00:00.003915000 171		192.168.12.111	192.168.12.26			2123	2123	>
	-							-
eGTP (Version-9)	-							^
002A TEID	=1 TEID Pres							
002A Piggybacking (P) 002A Version	=0 No piggyb = 010 GTP-C	acked message						
002A Version 002B eGTP Message Type	= 00100000 Create Se	ssion Reguest						
002C Message Length	= 204 (x00CC)							
002E Tunnel Endpoint Identifier (TEID) 0032 eGTP Sequence Number	= 0 (x00000000) = 0 (x000000)							
0035 Spare	= 00000000 (0)							
IMSI	=							
0036 Information Element Id 0037 Length	= 00000001 Internati = 8 (x0008)	onal Mobile Subs	criber Identity	(IMSI)				
0039 Instance	=0000 (0)							
eGTP Mobile Identity	= 001013012041631							
MSISDN 0042 Information Element Id	= = 01001100 MSISDN							
0042 Information Element 10	= 5 (x0005)							
0045 Instance	=							
MSISDN User Location Info (ULI)	= 3012041631 =							
004B Information Element Id	- 01010110 User Laca	tion Info(ULI)						
004C Length	= 13 (x000D)							
004E Instance 004F CGI	=0000 (0) =0 Not Prese							
004F SAI	=0. Not Prese	nt						
004F RAI	=0 Not Prese	nt						
004F TAI 004F ECGI	=1 Present =1 Present							
004F ECGI 0050 TAI-MCC	= 001							
0051 TAI-MNC	= 01							
0053 Tracking Area Code (TAC) 0055 ECGI-MCC	= 2 (x0002) = 001							
0055 ECGI-MCC	= 01							
0058 ECI (E-UTRAN Cell Identifier)	= 50456066 (0011	00000001 111001	10 00000010)					
Serving Network 005C Information Element Id	= = 01010011 Serving	Network						
005C Information Element Id 005D Length	= 01010011 Serving = 3 (x0003)	NOUWOIK						
005F Instance	=0000 (0)							~
<								>
Capture Rate : 1.64 Mbps	C:\Program Files\GL Comm	unications Inc\Packe Ca	ptured 38 frames		Missed Frames	: 0		

• From the **PacketScanTM** main toolbar, click on the **PDA** icon to invoke PDA (Packet Data Analyzer). From the dropdown protocol list select **LTE**. Select the call in the call summary to view detail analysis of each session, and call graphs for the captured **LTE** calls.

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all Summary Re	egistraton Summa	ry Alert Summa	w							
# 1	IMSI		M_TMSI	AtttachResult	EmmCause		EsmCause	APN	S 1AuthenticationResult	S6a Authentication Result
1	0010130120416	31	1549201847	ACCEPTED	CS domain not av	ailable	Regular deactivation	internet-ims	S1 Authenticated	Authenticated
olumn Width 🛛 🖡		C Abrokite Tir	ming 🔲 Show Latest							
						<u>^</u>	Find	Complete Stack		
Time	Frame#	192.1		168.12.26	192.168.12.1		MAC Laver		-	
00.00.000	2	36412	InitialUEMessage - Attach Request-PDN	36412			tination Address		= x00241D78871C	
				A discrimination of	formation Request		arce Address		= x00241D78089C	
00.03.633	4		3868	Authentication-In	rormation Hequest		ngth/Protocol Type IP Laver ==		<pre>= x0800 Internet IP(IPv4) =</pre>	
				. Authentication.ls	nformation Answer		rsion		= 0100 (4)	
00.04.081	5		3868				ernet Header Length	(In 32 bit words)	=0101 (5)	
	6	36412	DownlinkNASTransport - Authentication F	3 36412			ferentiated Services		-	
00.04.089	ь	36412		36412			ifferentiated Service		= 000000. Default	
00.04.115	7	36412	UplinkNASTransport - Authentication Res	36412			plicit Congestion No Hdr No TCP Segmentat		=00 Not-ECT (Not E)	CN-Capable Transport)
00.04.115		30412		•			tal Length	cionollioad	= 180 (x00B4)	
00.04.150	8	36412	DownlinkNASTransport - Security Mode C	36412			lentification		= 33434 (x829A)	
	-		U-F-I-NACT				eserved Bit		= 0 Not Set	
00.04.186	10	36412	UplinkNASTransport - Security Mode Con	36412			on't fragment ore fragments		= .0 Not Set =0 Not Set	
			DewnlinkNASTransport - ESM Information				re fragments ragment Offset		= Not Set	
00.04.192	12	36412	A manager - Low momator	36412			ime To Live		= 128 (x80)	
			UplinkNASTransport - ESM Information R	•			rotocol		= 10000100 SCTP	
00.04.218	14	36412		36412			ader Check Sum ource IP Address		= x1DA6	
00.04.225	15		3868	Update-Loc	ation Request		ource IP Address	-	= 192.168.12.27 (xC0A80C1) = 192.168.12.26 (xC0A80C1)	
00.04.225	15		3000				SCIP Laver		=	B/
00.04.281	19		3868	Update-Loc	ation Answer	So	irce Port Number		= 36412 (x8E3C)	
00.01.201							tination Port Number	r	= 36412 (x8E3C)	
00.04.289	20		2123		Create Session F		rification Tag ecksum		= 1467049428 (x577165D4) = 226611505 (x0D81D131)	
							unk Type		= 00000000 DATA Chunk	
00.04.356	23					υ	bit		=0 Ordered DATA c	
00.04.070	~						ginning/Ending bits		=11 Unfragmented Me	essage
00.04.372	24						angth		= 147 (x0093) = 53 (x0000035)	
00.04.377	25		2123	4	Create Session R		ream Identifier		= 0 (x0000)	
00.04.077	20					S	ream Sequence Number		= 53 (x0035)	
00.04.381	26	36412	InitialContextSetupRequest - Attach Acce	36412			ayload Protocol Ident	tifier	= x00000012 S1AP	
			InitialContextSetupResponse				arameter Padding		= x00	
00.04.390	27	36412	milacontexcetupnesponse	36412			AP-PDU		= CHOICE	
			UplinkNASTransport - Attach Complete-A	a.			ensibility Marker		= 0	
00.04.432	28	36412	Parate in the real open August August Complete A	36412		Ch.	ice Index		= 0	