

# Gfast Xpert<sup>™</sup>

# Multi-Layer Analyzer for G.fast

Complete analysis of the G.fast and Handshake protocols

Neutral unbiased testing tool – no G.fast chipset

Multi-layer analysis including upper layers

Intuitive rich user interface, data export and reports

#### **Unique Multi-layer G.fast Analyzer**

Are you ready to test and analyze G.fast products? The Gfast Xpert is a unique, non-intrusive multi-layer protocol analyzer for G.fast networks and products.

The Gfast Xpert analyzer tests and compares the functionality of DPUs, DSLAMs and CPEs and tests the standard compliance and interoperability of G.fast products from different vendors. It is a powerful tool for G.fast service providers, equipment vendors and technology and chipset companies.

The Gfast Xpert connects to the copper line between the DSLAM /DPU and the CPE. Using multi-layer probing capability it lays out a comprehensive picture of the signals, protocols and traffic running on the line.

Specifically designed for R&D, laboratory and field application engineers, the Gfast Xpert is a neutral, unbiased testing tool that helps operators and equipment vendors accelerate time-to-market by cutting significant time from development, deployment and troubleshooting of G.fast solutions.

## **Independent Multi-Layer Analysis**

As an independent and unbiased testing platform, Gfast Xpert is built without using any G.fast chipset. Using its unique multi-layer probing capability, it lays out a comprehensive picture of the protocols and traffic running line. It analyzes and displays the Handshake and G.fast protocol layers as well as the upper layers, including Ethernet, PPP, PPPoE, IPv4/IPv6, TCP, UDP, DHCP, IGMP, HTTP, RTP and TR-069.

**Passive Connection to the Line** Gfast Xpert connects to the copper line between the DSLAM /DPU and the CPE and monitors the signals and the message exchange on the line.

#### **Reverse Power Feeding Support**

Gfast Xpert supports reverse power feeding of the DPU. The optional RPF adaptor separates the feeding current from the G.fast signal and passes it directly to the DPU, thus allowing the Gfast Xpert to be used with CPEs that are integrated with an RPF unit.





# Analysis from the Physical Layer and Up

The Gfast Xpert analyzer captures the signals from the line and provides comprehensive analysis of the physical layer as analog signal graphs in the time domain and the frequency domain.

By further analyzing the signals it identifies the messages and their contents and simultaneously presents the message exchange in both the downstream and upstream directions as well as the relations between the two.

#### **Intuitive User-Friendly Tool**

The Gfast Xpert features a rich array of intuitive displays, graphs and tables for testing and troubleshooting of the G.fast components. The displayed information includes signals, downstream and upstream messages, events, sequences, statistics and more.



	Value	Description		
🗏 🗰 Identification				
— 🚥 Туре	0x00			
- Exercision	0x03			
🖃 🇰 bitencoded				
- 🖓 🇰 npar(1)				
🕞 🖬 Non-standard-field	0			
🖃 🖷 Net-data-rate-upstream	0			
	0			
- Data-flow-characteristics-upstream	0			
T Data-flow-characteristics-downstream	0			
- 🐨 🗖 xTU-R-splitter-information	0			
- TU-C-splitter-information	0			
Transceiver-ID	0			
= 🗰 Standard-Information				
□ □ III bitencoded				
— 🝽 ■ Voiceband:V-8	0			
📧 🗖 Voiceband:V-8bis	0			
- 🕫 🖬 Silent-Period	0			
- + = G997-1	0			
	0			
Teserved14	0			

lame	Downstream	Upstream		
G.fast				
Super Frames	1890	1890		
Total Rate (Mbits/s)	689	236		
CRC Errors (OHS)	0	0		
Number of FEC attempts	3828744	1278515		
Number of FEC failures	0	0		
- PTM				
Total Bytes	914423285	305158075		
Total Sync Cells	14064689	4693794		
Sync Cells/Second	115860	38667		
Sync All Data Cells	6935110	1173050		
Sync Not All Data Cells	332739	62815		
Sync Idle Cells	6796834	3457926		
Out Of Sync Cells	0	1		
Sync Unknown Type Cells	6	3		
Ethernet				
Total Frames	304940	51603		
Number of VLANs	0	0		
- IP				
Total Packets	304940	51603		
TCP Packets	0	0		
UDP Packets	304940	51603		
ICMP Packets	0	0		
IGMP Packets	0	0		
Other	0	0		
Bytes	458011360	77503416		
Bytes/Second	3772948	638528		

Multi-layer Statistics View Number of Frames, Data Rates and Errors at Every Layer

		D	lownStrea	m							UpSt	réam			
Line # P	Packet A	t T	ime	Total Le_	Pr	otocol	Source Address	Line #	p	Packet #	Time	Total Le.	Pr	otocol	So *
40	37	0:00:01:0	08,837	353	UDP (0	(11)	10.249.0.1	40	-	-			-		
41	38	0.00.01.0	08.898	353	UDP (0x11)		10,249,0,1	41							
42								42	1		0.00.01.09,268	974	UDP (0	(11)	105
43	39	0.00-01-0	09 271	317	UDP (0	v11)	213 209 115 117	43	-					,	-
44	40	0.00.01.0		533	UDP (0		213,209,115,117	44	-						
45	049-40	0000013	09.271	233	ODP (0	XII)	213-209-113-117	44	-	<b>\$</b> 5	0.00.01.09.278	974			
	-								-	щ5	0400401409.278	9/4	UDP (0	611)	10.2
46	41	0:00:01:0		317	UDP (0		213.209.115.117	46	-						
7 📖							,	7				_			
4 / 0	etails View	Event	s View				b	4 /	De	tails View	Events View	1			
Name	a comp a real		Value			Descrip	tion	Name		the state of the s	Value			Descript	tine
Version			4			Descrip	uvii	Versio			A			Descript	uyii
Header L	ength		20					Heade		noth	20				
ToS				Type of Service		ToS		0x00		Type of Service					
Total Length 353			.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		Total Length		974								
Identifica	tion		0x00					Identif	licat	ion	0x7FC6				
Flags: RF 0			Reserved Fragment flag		Flags: RF		0		Reserved Fra						
Flags: DF				Don't Frament flag		Flags: DF		0		Don't Frament					
Flags: Mi				More Framents flag		Flags: MF		0		More Framents					
	gment Offset 0			in units of 8 octets		Fragment Offset		0		in units of 8 oct					
TTL	64			Time To Live		TTL Protocol		64 UDP (0x11)			Time To	Live			
Protocol			UDP (0x1	1)											
	hecksum		0x2058 10.249.0.	<u> (</u>						lecksum	0x9FD7				
	iource Address 10.249.0.1 Destination Address 10.249.3.66			Source IP Address Desination IP Address		Source Address Destination Address		10.249.3.66 213.209.115.117		Source IP Addre					
Options	on Address		10.249.33	80			Length	Option		n address	0	1112111		Options	
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# **Standard Compliance Verification and Interoperability Testing**

Ensuring proper operation of the G.fast network elements enables equipment manufacturers and chipset vendors to build high-quality products and shorten timeto-market. It also provides flexibility to operators in providing reliable high-bandwidth services to their customers.

Gfast Xpert clearly indicates abnormal behaviors and deviations from the relevant standards, thus verifying standard compliance and interoperability between different vendors' DSLAMs or DPUs and CPEs.

#### **Extensive Reporting and Exporting Capabilities**

Gfast Xpert supports the generation of detailed analysis reports in a user-friendly HTML format. Selected information can also be exported for further analysis in various formats, such as PCAP and CSV.

## **Test Automation**

Gfast Xpert includes a Command Line Interface (CLI), enabling its integration into an automated test environment. The built-in Command Line Wizard application eases the generation of CLI command for various test scenarios, thus speeding up the testing process, saving time and labor and minimizing human errors.

# **Specifications**

Standards Compatibility	G.9700 – G.fast Power Spectral Density Specification G.9701 – G.fast Physical Layer Specification G.994.1 – Handshake Procedures
Profiles support	106x and 212x
EMC Standards	FCC 47CFR Part 15, Subpart B, Class A EN 61326-1, Class A
Safety Standards	IEC 61010-1, EN 61010-1



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