



OneExpert CATV Best RF & DOCSIS 3.1 Testing & Troubleshooting

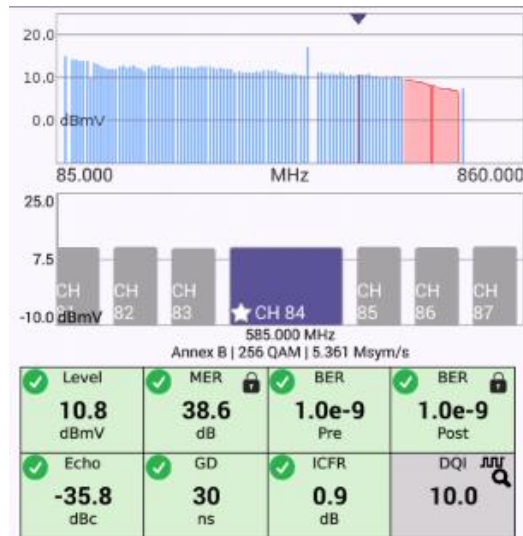
Realtime testing of all DOCSIS and RF Channels



Channel Modes – Live troubleshooting of all RF carriers

- One Application – All analysis and measurements happening simultaneously
- No more guessing which app to run
- Accessible with finger swipe

Full scan with MER & BER on all carriers



MER > 40dB across -5 +20dBmV
full plant with +/- tilt present

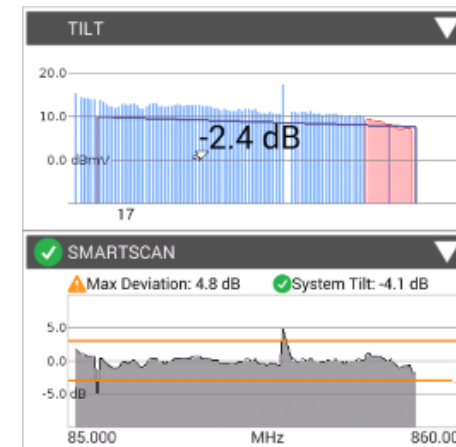
Spectrum and Ingress under carrier including adjacent carriers



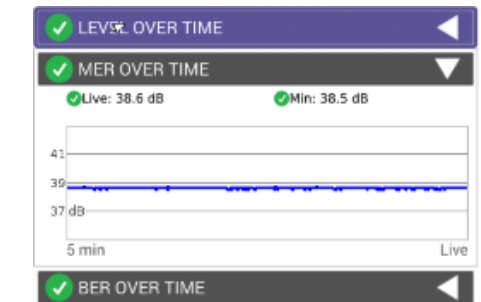
DQI of active selected QAM carrier



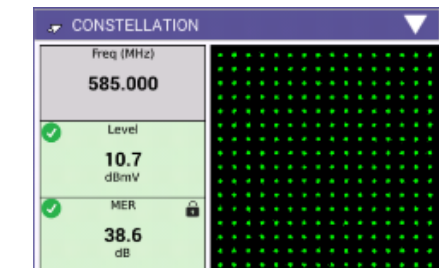
Tilt and SmartScan



Over time measurements (Level, MER, BER) for all carriers

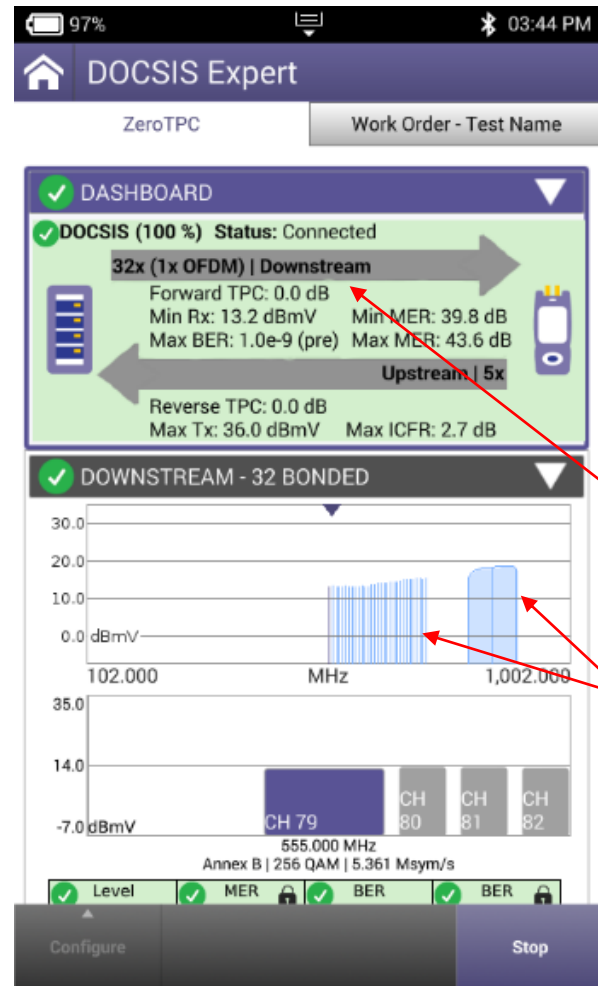


Constellation



DOCSIS Modes – Live troubleshooting of DOCSIS Downstream Analysis

- RF measurements and DOCSIS service measurements – Same Time – Same Quality
- No waiting and toggling between RF and DOCSIS
- Complete RF and DOCSIS testing of HSD services



32x8 Bonding + 2 OFDM

Auto identifies carriers

Focused on DOCSIS carriers

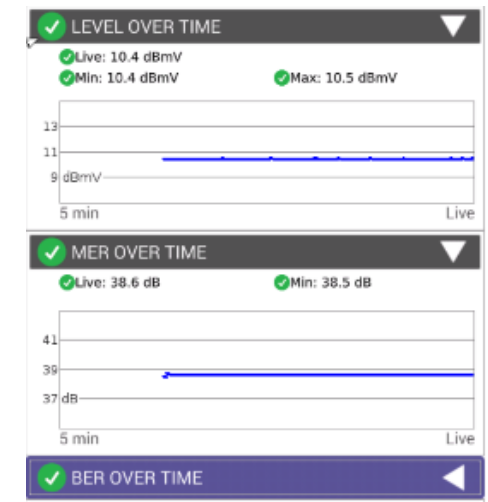
MER to 40dB or greater
-5 to +20dBmV
full channel lineup with
+/- tilt present

Level 10.4 dBmV	MER 38.6 dB	BER 1.0e-9 Pre	BER 1.0e-9 Post
Echo -41.1 dBc	GD 34 ns	ICFR 0.8 dB	DQI 10.0
Channel	Freq (MHz)	Level (dBmV)	MER (dB)
82	573.000	10.6	38.9
83	579.000	10.3	38.7
84	585.000	10.6	38.8
85	591.000	10.5	38.7
86	597.000	10.4	38.6
87	603.000	10.6	38.7
88	609.000	10.2	38.5
89	615.000	10.2	38.5
90	621.000	9.9	38.3

DQI of active selected
QAM carrier

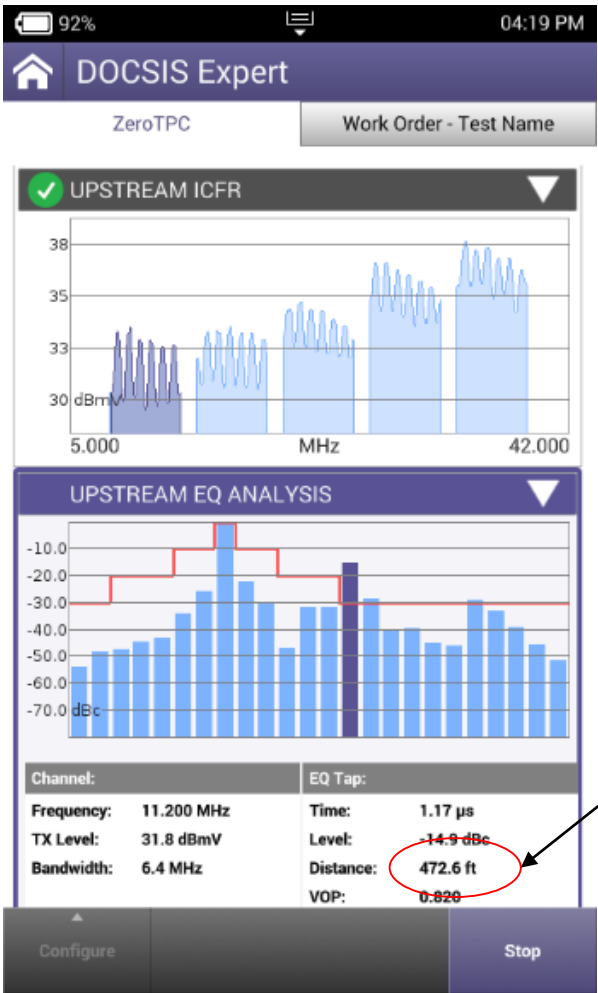
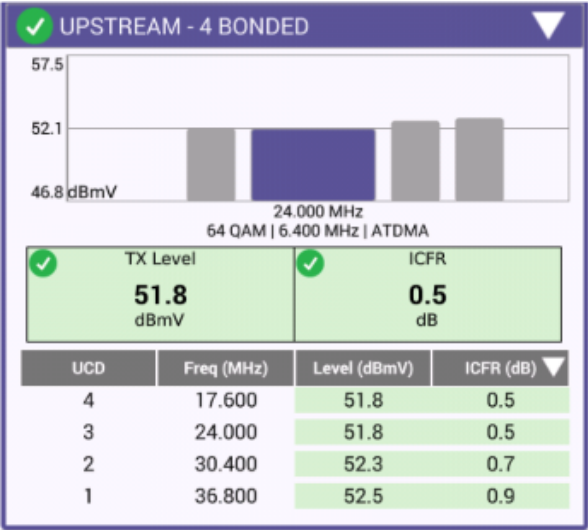


Over time measurements
(Level, MER, BER) for all
carriers



DOCSIS Modes - Upstream Analysis

Measures transmit power levels, type, and ICFR
Support for 8 QAMs and 2 OFDM-A



- Upstream EQ analysis helps isolate problems between the home and the network
- E.g Hi reflection EQ tap showing fault at 472 feet – not in house

DOCSIS - Service Analysis

Registration details

REGISTRATION

Service Plan: 00:07:11:14:2C:00
Config File: d11_walledgarden_v6.cm

Cable Modem

Provisioning Mode
IPv6 Address
IPv6 Gateway Address
IPv6 Config File

IPV6 ONLY
2001:558:40a2:26:207:11ff:fe14:2c00/128
fe80::201:5cff:fe84:d046
d11_walledgarden_v6.cm

CPE

IPv4 Address
IPv4 Subnet Mask
IPv4 Gateway Address

68.58.61.0
255.255.254.0
68.58.60.1

Servers

IPv6 TFTP Server
IPv6 DHCP Server
IPv6 TOD Server

fe80::201:5cff:fe84:d046
fe80::201:5cff:fe84:d046
fe80::201:5cff:fe84:d046

Throughput testing

Downstream >2Gbps
Upstream up to 1Gbps

THROUGHPUT

THROUGHPUT (100 %)
Downstream URL: |
Upstream URL: http

2.01 Gbps

719.99 Mbps

0 500M 1G 1.5G 2G 2.5G

0 200M 400M 600M 800M 1G

Start Throughput

Ping and Traceroute

PING / TRACEROUTE

	Current	Minimum	Average	Maximum
Delay (ms)	41	40	41	50
Destination	www.yahoo.com			
Echoes Sent	400			
Replies Returned	398			
Replies Lost	2			
Replies Lost %	0.50%			
Error				

Test Console

tracroute to www.yahoo.com (2001:4998:58:c02::a9), 30 hops max, 16 byte packets
1 2001:558:600d:26::1 (2001:558:600d:26::1) 7.498 ms 7.140 ms 6.867 ms
2 te0-5-0-8-sur01.beechgrove.in.indiana.comcast.net (2001:558:322:c801::1) 7.681 ms 15.874 ms 6.837 ms
3 te-6-3-ur02.main.in.indiana.comcast.net (2001:558:300:42::1) 8.137 ms 8.042 ms 8.572 ms
4 2001:558:300:2003::1 (2001:558:300:2003::1) 26.750 ms 19.847 ms *

Packet Quality

Identify packet issues between modem and CMTS loop (like VoIP Check)

PACKET QUALITY

Packet Loss

11503 Sent

0.0 % Loss

Max Round Trip Delay

32 ms

Max Jitter

25 ms

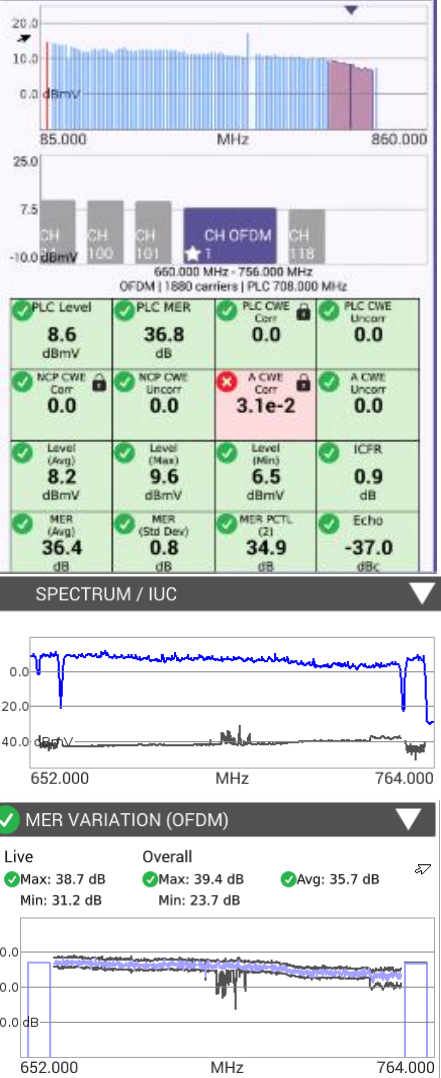
Start Packet Quality

Start Pass Through Cable Modem

DOCSIS pass through modem on Ethernet port 2

ONX-CATV offers complete DOCSIS 3.1 and OFDM testing

DOCSIS 3.1 Software option enables D3.1 testing



Complete carrier analysis validates OFDM

PLC, NCP, Profile A Codeword Errors Level, MER, ICFR and Echo

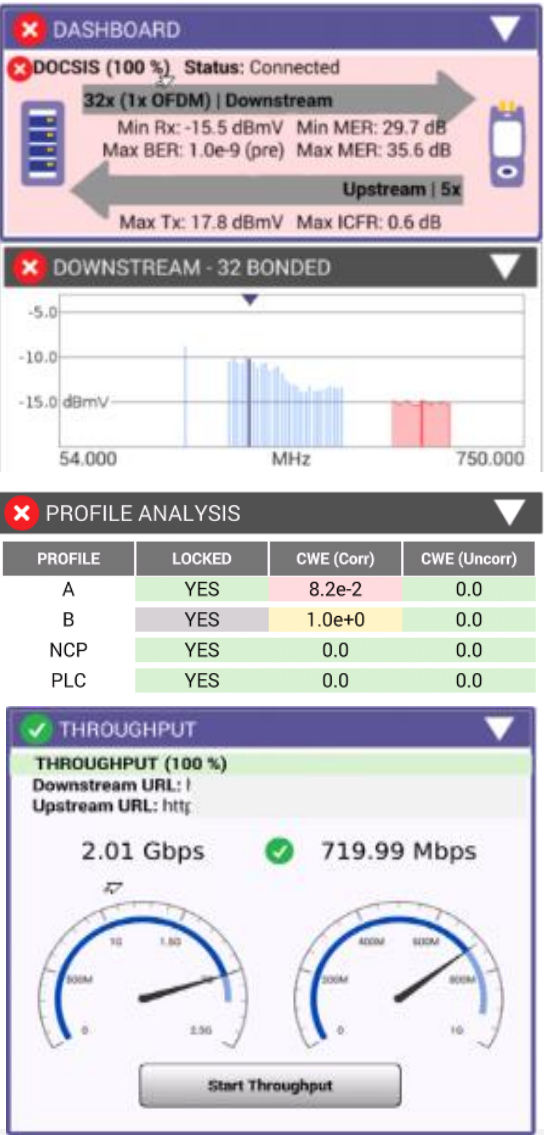
Spectrum with Ingress identifies noise sources

MER across all subcarriers

Range, Register and Bonding – Validates 3.1 operation

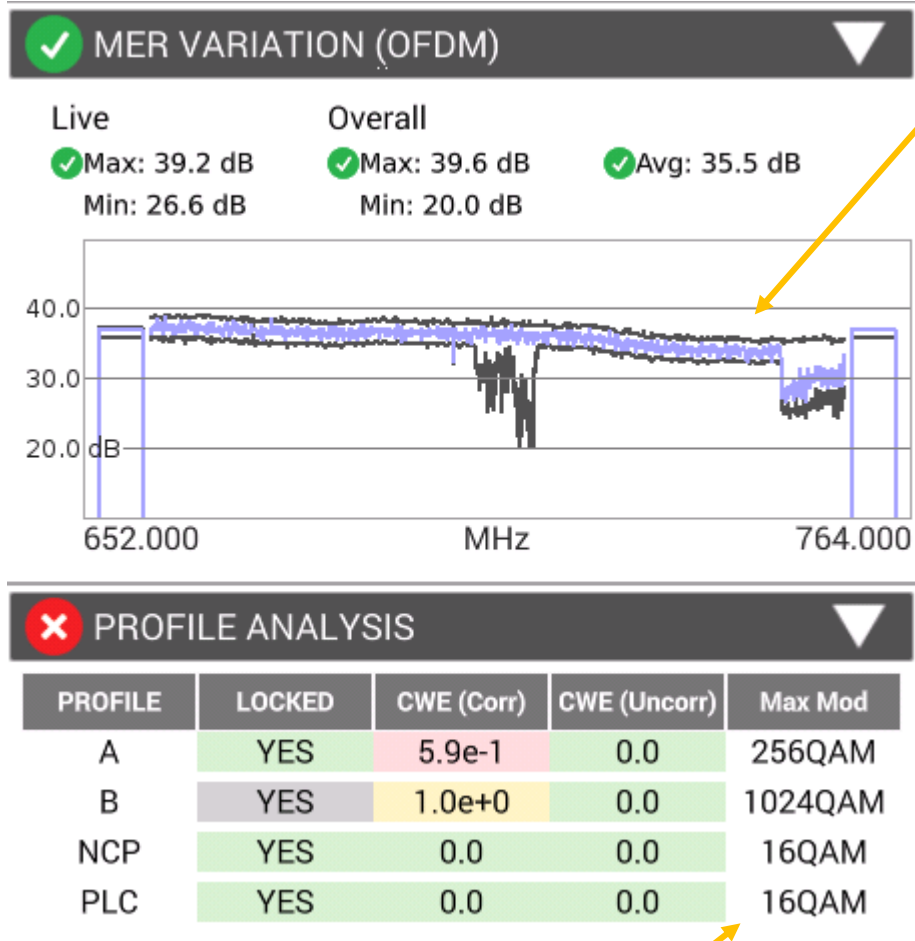
Profile Analysis Ensures maximum efficiency and identifies problems

Speed testing beyond 1 Gbps ensures full DOCSIS 3.1 compliance



Expert Modes - MER Per Subcarrier and Profile Max Modulation

Going Deeper into OFDM Subcarriers

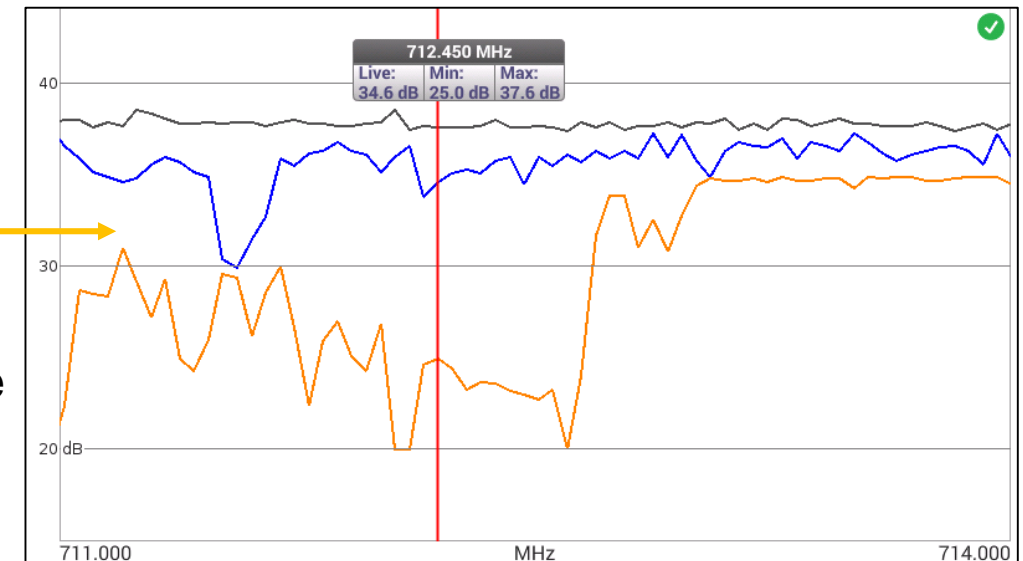
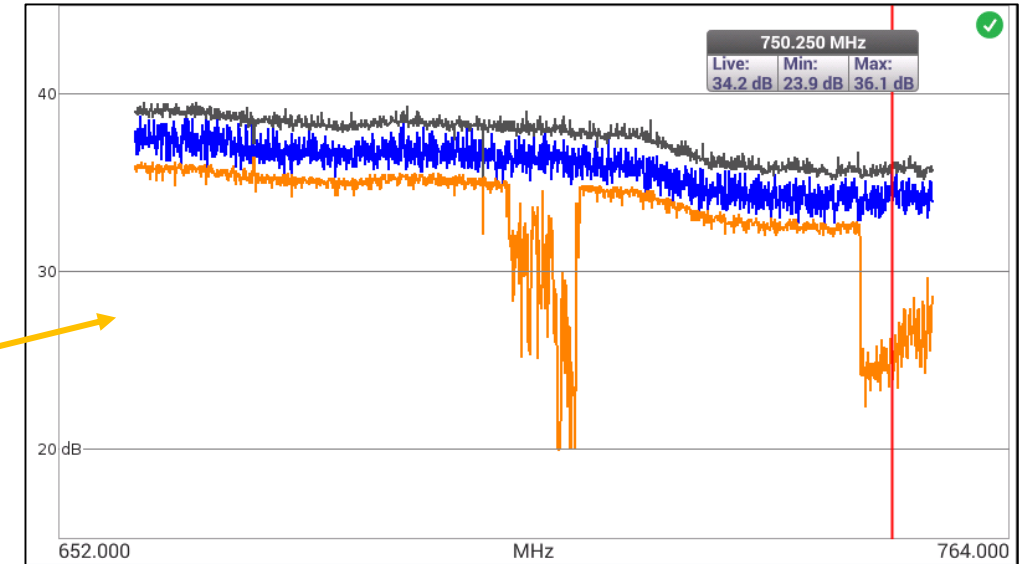


Max Modulation of each profile is listed in Channel & DOCSIS Expert Modes

MER of each subcarrier is plotted side by side

The view can be expanded and a marker added allowing users to see at which frequencies the subcarriers are degraded

With pinch and zoom capabilities users can get all the way down and see more detail of each subcarrier quality





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