

IVR-10G-Dual

Test Module



IVR-10G-Dual Ethernet tester is a test solution for the installation and maintenance for Metro/Carrier Ethernet, IP services, and SDH/SONET circuit from 1 Gbps to 10 Gbps. It supplies a compact test solution for 1G/10G Ethernet, RFC-2544, ITU-T Y.1564 Standard for SLA test features, and also for SDH/SONET it supports Out-of Service test, Round Trip Delay, In-service test, overhead controlling and decoding, troubleshooting, APS timing, from 2.5 G to 10 G.

This module is compatible with IVR-10G Test Platform.

- 10 Gbit/s data stream in layers 1, 2, 3 and 4
- RFC2544 test includes throughput, latency, frame loss, and back-to-back
- Y.1564 test according to ITU-T
- BERT and loopback test from layer 1 to layer 4 with or without VLAN and MPLS tags
- Generate up to 512 traffic flows with different MAC address, VLAN tags, MPLS, IP address, TCP/UDP, payload, and bandwidth
- Service disruption test, IPV6
- STM-16/STM-64 and OC-48/OC-192 SDH/SONET (SFP+ port)
- Support bit error ration test and performance analysis
- Support SDH/SONET overhead control and decode
- Pointer monitoring and adjustment, G.783 pointer test sequences generation
- APS time measurement

Platform Briefs



- Compact and lightweight designed;
- Graphical user interface, easy to operate;
- 6.5inches outdoor-enhanced LCD colour touch screen;
- Ultra-high capacity field-exchangeable Li-ion battery pack extends testing time;
- Powerful modular intelligent network test platform;
- Dial, number keys and function keys for flexible scrolling and selecting;
- Remote control by PC using 10/100M Base-T port.

Key Features

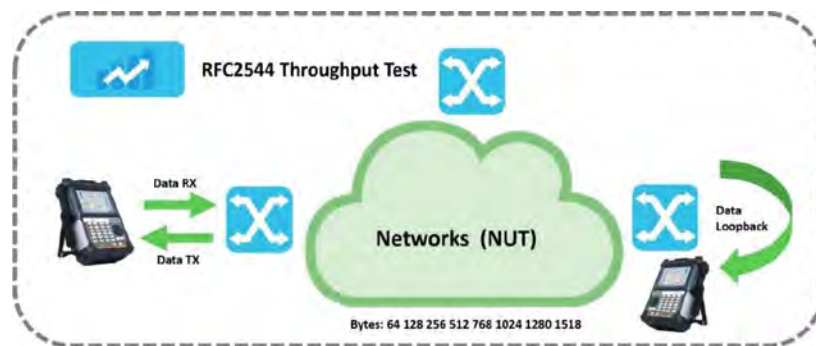
- Dual 10G Base-X test interfaces
- Dual 10/100/1000M Base-T and 100/1000M Base-X dual media test interfaces
- Network configuration testing and performance testing per standard ITU-T Y.1564
- RFC2544 and Y.1564 Bidirectional testing
- Traffic scan according with MAC, IP, VLAN, MPLS label, and so on
- Smart loop mode for layer 1, layer 2, layer 3, and layer 4
- SFP+ port for STM-16/STM-64
- SFP+ port for OC-48/OC-192
- SDH/SONET overhead control and decode
- Pointer monitoring and adjustment, G.783 pointer test sequences generation
- Perform throughput, latency, frame loss, and back-to-back measurements per industry-standard RFC2544
- Generate up to 512 traffic flows with different MAC address, VLAN tags, MPLS, IP address, TCP/UDP, payload, and bandwidth
- IPv4 and IPv6 traffic generation
- Ethernet BERT and loopback testing at layer 1, layer 2, layer 3, and layer 4
- MAC and VLAN flooding
- Service disruption test
- Bit error ratio and performance analysis

Ethernet Applications

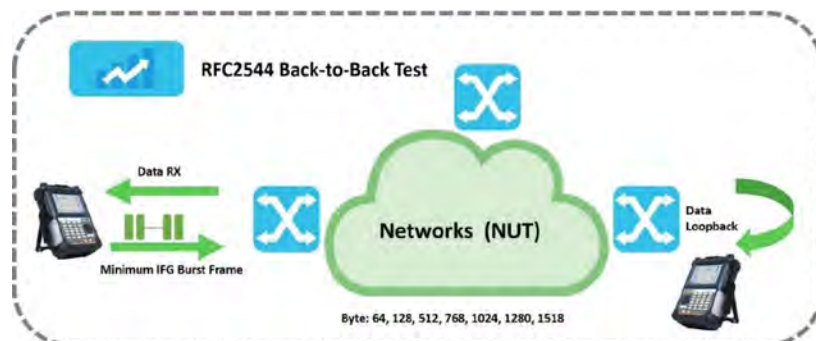
RFC2544 Test:

IVR-10G-Dual fully meets RFC2544 standard, supports Throughput; Latency; Frame loss; and Back-to-Back test in metro network, and can be able to generate a complete test report.

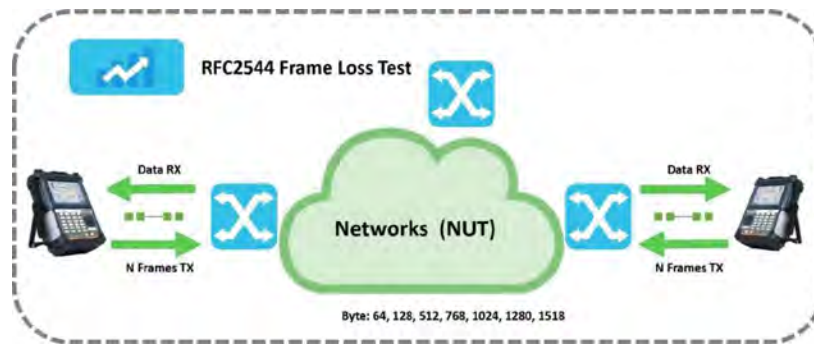
Throughput



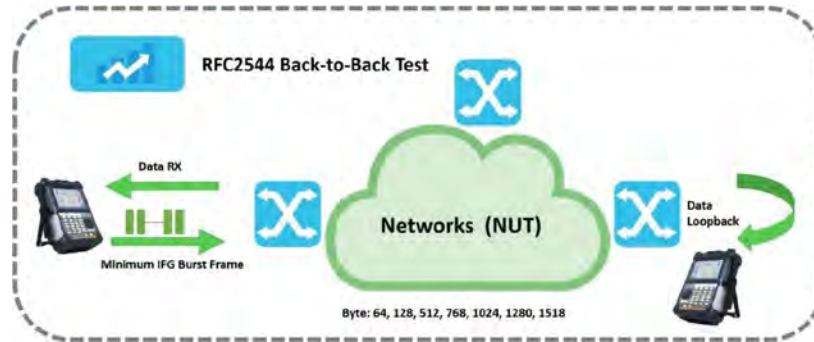
Latency



Frame Loss Test

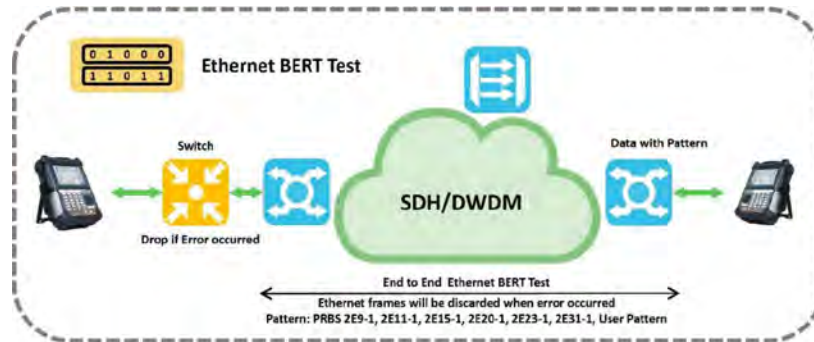


Back-to-back Test



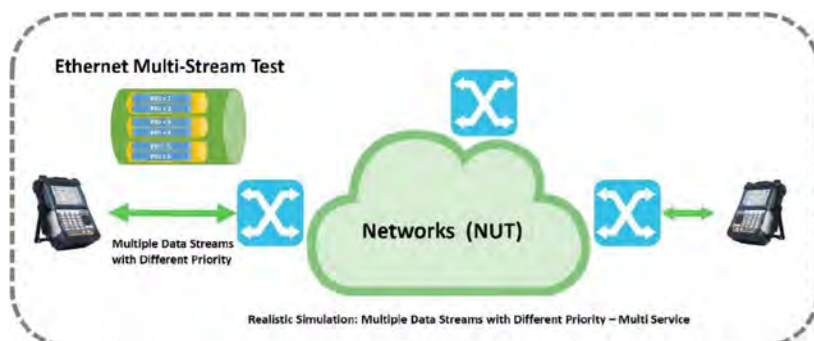
BERT Test:

Ethernet BERT test adopts the similar principle of SDH BERT test. It is by transferring the Ethernet frames with special test code, then analyse these frames at the receiver to test the network.



Multi-Stream Test:

IVR-10G-Dual supports to generate multiple data streams to test the forward ability of these service in Ethernet network. In addition, multiple data streams can be set as different priority.

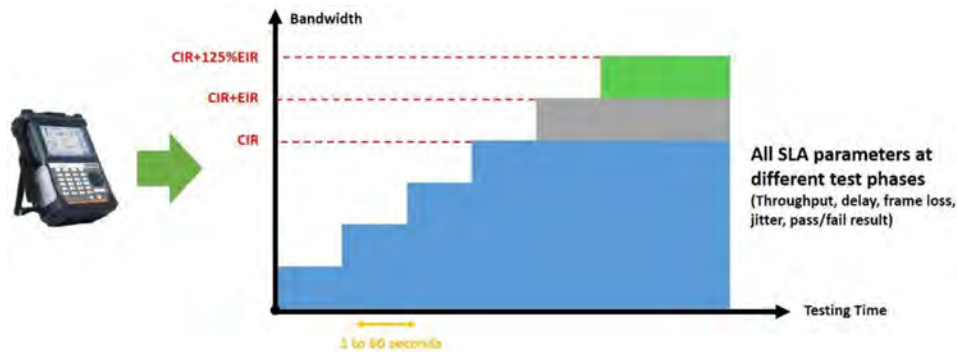


Y.1564 Test:

RFC2544 was the most popular standard for Ethernet test. However, it is specially designed for indoor network facilities test, not suitable for outdoor field test. Hence, ITU-T Y.1564 is particularly introduced for telecom operator to do Ethernet network service launch and fault diagnosis. Compared with RFC2544, it includes critical SLA standards such as packet jitter identification and QoS measurements, which could increase test speed promptly, save test time and resources, and optimize QoS.

Network Configuration Test

Network configuration test will conduct a test for every service to verify whether the service configuration is correct or not, and whether all specific KPI or SLA parameters have been satisfied.



Performance Test

When the configuration of each and every service has been checked one by one, and all of them have been successfully verified, IVR-10G-Dual will conduct a test for the quality of all services simultaneously.



RFC6349 Test:

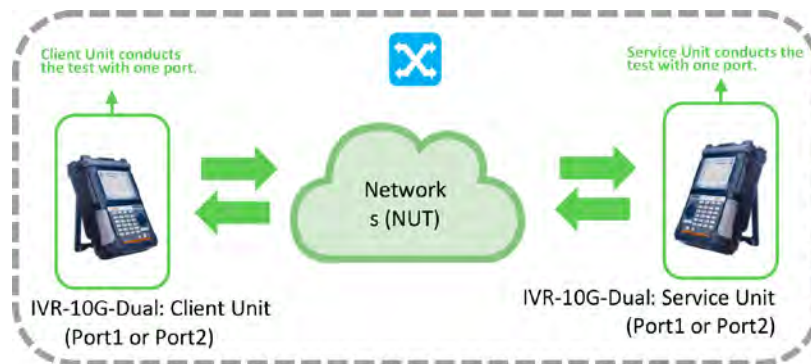
RFC6349 provides a practical method for end-to-end testing of TCP throughput speed on IP networks, aiming to improve user experience. InterVRE has researched and developed a detail test method for RFC6349 in IVR-10G-Dual. Therefore Operators just need to load the relevant test configurations and start the test button, and then will get the test report.

Single Port Test

Operators need to prepare two IVR-10G-Dual instruments, and then one instrument is as Client Unit, another one is as Service Unit. Meanwhile select one port (Port1 or Port2) to test port separately from the

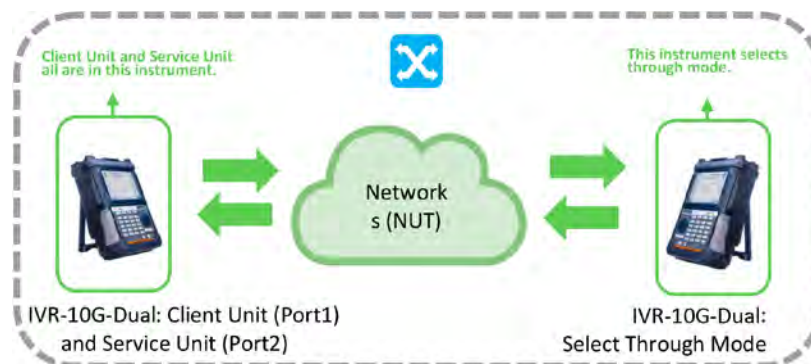
IVR-10G-Dual

instruments. And then build the connection and Client Unit transports the data information to Service Unit, also Service Unit transports the its data information to Client Unit, Finally Client Unit will complete the data statistics and generate the report.



Dual Ports Test

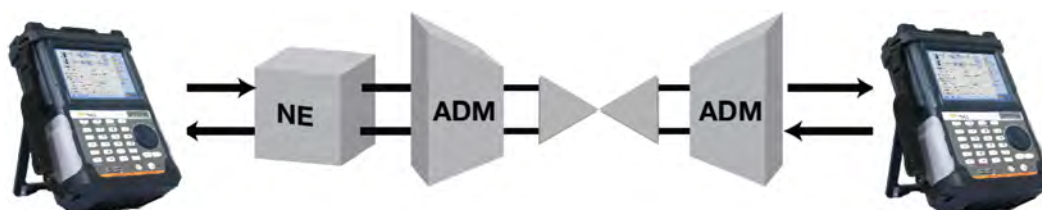
Also because IVR-10G-Dual have two ports, Now In order to operate conveniently, IVR-10G-Dual provides that Port 1 is as Client Unit and Port 2 is as Service Unit. Meanwhile Use one IVR-10G-Dual to select through mode in the remote terminal. And then build the connection, Client Unit transports the data information to the Networks, after go through the remote instrument, return Service Unit. Finally Client Unit will complete the data statistics and generate the report.



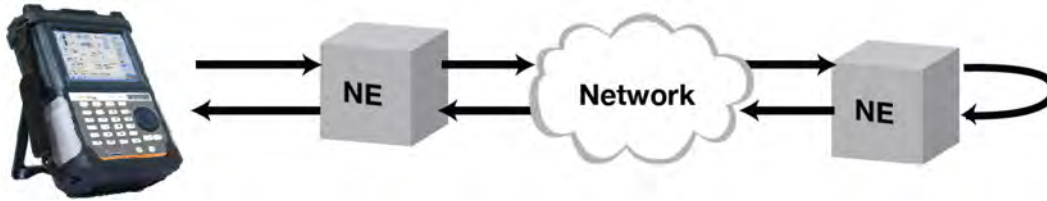
SDH/SONET Applications:

Out of Service

- End-to-end error free transmission verification
- Automatic protection switching verification
- SDH/SONET mapping verification down to VC12/VT1.5

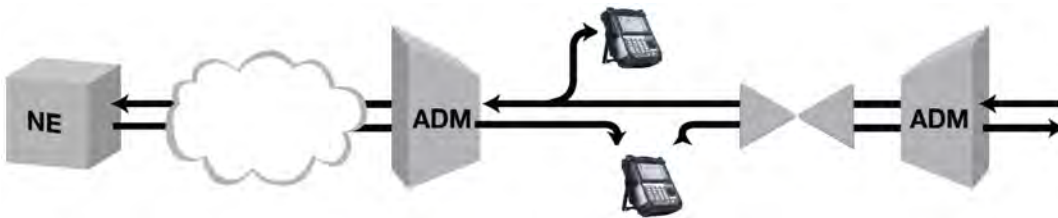


Round Trip Delay



In-Service Test

- Through mode
- In-service monitoring protected monitoring points or optical splitters
- Overhead bytes monitoring and decoding
- Pointer monitoring



IVR-10G-Dual Specifications

GENERAL SPECIFICATIONS	
User Interface	
Screen	6.5 Inch TFT Touch Screen (640 x 480)
Other Interface	
USB	<ul style="list-style-type: none"> ▪ USB2.0, A type, 2 ▪ USB2.0 Mini B type, 1
Ethernet	Ethernet 10/100M, RJ45
Audio	3.5mm Audio Interface
Storage	8G
Physical Specifications	
Temperature	<ul style="list-style-type: none"> ▪ Operating: -10°C to 50°C ▪ Storage: -40°C to 70°C
Relative Humidity	0% to 95% (non-condensing)
Size(H×W×D)	<ul style="list-style-type: none"> ▪ IVR-10G: 319 mm x 202 mm x 105 mm ▪ IVR-10G-Dual: 25 mm x 97 mm x 259 mm

Weight	<ul style="list-style-type: none"> IVR-10G: 2.8 kg IVR-10G-Dual: 0.4 kg
Vibrancy	10Hz to 500Hz < 1.5g (on 3 main axes)
Mechanical Shock	6 sides, 8 edges < 760 cm, according to GR-196-CORE
EMC	<ul style="list-style-type: none"> EN55022/CIPSR22 EN61000-3-2 EN55024
Battery and Power Supply	
Battery	<ul style="list-style-type: none"> Rechargeable Li-Ion batteries Working time: 4 hours (typical for 10G Ethernet test) Charging time: 3.5 hours (typical 25°C)
Power Source	<ul style="list-style-type: none"> Input: 100-240 VAC, 50-60 Hz, 2 A Output: 19 VDC, 4 A

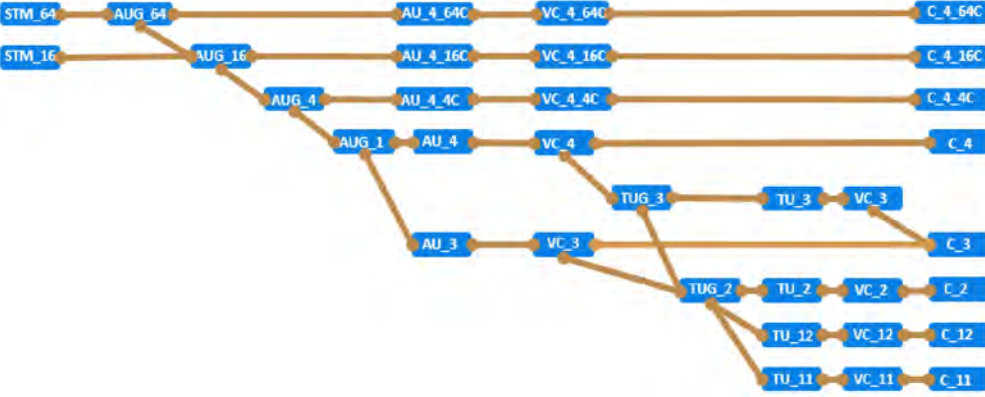
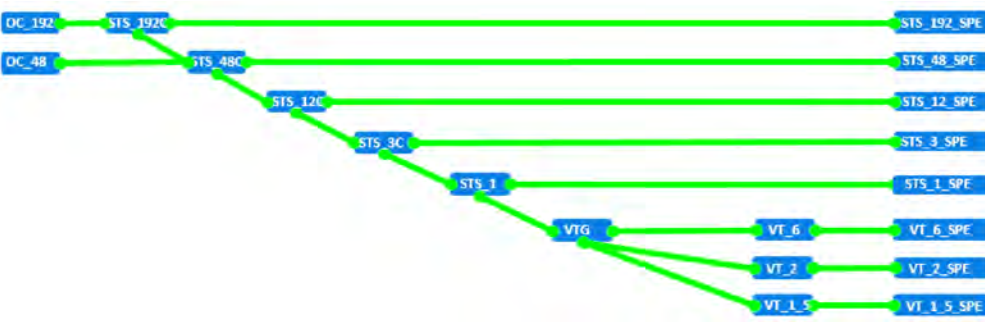
TECHNICAL SPECIFICATIONS

Ethernet	
Port	<ul style="list-style-type: none"> Optical interface: 2 ports, 10G Base-X with SFP+ Optical interface: 2 ports, 100/1000M Base-X Electrical interface: 2 ports, 10/100/1000M Base-T <i>User selectable optical module: 850nm, 1310nm, 1550nm</i>
Ethernet Feature	Auto negotiation, flow control
Configuration	Monitor/Generate, pass-through
Encapsulation	Ethernet type II, IEEE802.3 with 802.2, IEEE802.3 with SNAP
Configuration, Monitoring, and Generation	
Traffic Generation	<ul style="list-style-type: none"> Variable line rate traffic generation, up to full line rate Traffic generate mode: continuous, burst, ramp, n-frame, n-burst, n-ramp Adjustable frame size: 46bytes to 16000 bytes Frame size: fixed, increase, decrease, random User-defined traffic mix of unicast and broadcast frames Fixed, increase, decrease, random MAC/IP identifier User programmable DSCP/TOS byte Configurable IP and Ethernet source and destination addresses (<i>support IPv4 and IPv6 addressing</i>) User programmable TCP/UDP address Generate pause frames, respond to pause frames Answer incoming ARP, ping requests

Stacked VLAN	<ul style="list-style-type: none"> ▪ Up to 3 user-settable VLAN tags ▪ Parameters per VLAN tag: <ul style="list-style-type: none"> ▪ Ethernet type II 0x8100 (802.1Q), 0x88a8 (802.1ad), 0x9100, 0x9200, 0x9300 ▪ User-defined VLAN ID, CFI, VLAN priority ▪ Address fixed, increments,decrement, random generation supported
Multi stream	Number of streams: up to 512streams per port can be activated
Error Injection	FCS, IP check sum error, UDP/TCP check sum Error, bit error, BERT test sequence error
Alarm generation	No link
Result, Monitoring and Generation	
Status	<ul style="list-style-type: none"> ▪ Link status, interface type, jabber detected, frames present, MPLS/VLAN, speed, full or half duplex, signal present, bit rate of incoming Ethernet signal, auto negotiation complete ▪ Link partner abilities: speed/duplex ▪ Indicators of utilisation, throughput, errored frames ▪ Signal level indication for optical Ethernet interfaces
Performance Statistics	Utilization, throughput, frame rate
Frame Statistics	<ul style="list-style-type: none"> ▪ Total frames, total testing frames, total not testing frames, Unicast/multicast/broadcast frames, number of pause frames ▪ Total VLAN frames ▪ Total MPLS frames ▪ Total errored frames, number of oversized, normal, and runt frame, number of FCS errored
Frame Distribution Statistics	Total valid/frames, <64, 64-127, 128-511, 512-1023, 1024-1518, >1518
Multi stream	Display information per steam: <ul style="list-style-type: none"> ▪ Frame loss count/rate, throughput, latency, packetjitter, frames and bytes received and transmitted
Transmit Statistics	<ul style="list-style-type: none"> ▪ Total frames, unicast/multicast/broadcast
Filter	Filter condition support: <ul style="list-style-type: none"> ▪ Source and destination MAC/IP, IPv6, VLAN ID and VLAN Priority, MPLS, IP TOS, TCP/UDP source and destination port, Ethernet type and IP protocol
BER Test and Service Disruption Test	
BER Test	<ul style="list-style-type: none"> ▪ Generation and detection of test pattern, count of errors in received test pattern ▪ Pattern generation: layer 1 to layer 4 ▪ Frame loss count and frame loss seconds ▪ BER measurement results ▪ Test pattern: PRBS9, PRBS11, PRBS15, PRBS20, PRBS23, PRBS31, CRPRJ, JTPAT, SPAT, 32bits user defined
Error Injection	FCS, IP check sum error, UDP/TCP check sumerror, BIT error, BERT test sequence error

Service Disruption Test	<ul style="list-style-type: none"> Service disruption test activated as part of BERT test: <ul style="list-style-type: none"> Max/Avg service disruption test, resolution: 0.1us Number of service disruption
Loopback	
Loopback Test	<ul style="list-style-type: none"> Layer 1 to layer 4 loopback test Advanced loopback test: <ul style="list-style-type: none"> Packet loss setting: percentage, packetcount, time Loopback drop enable: protocol loss, protocol pass, control, CRC error
RFC2544	
RFC2544 Test	<ul style="list-style-type: none"> Switch/Router test and single ended network test mode: <ul style="list-style-type: none"> Throughput, frame loss, latency, back-to-back End-to-End network test mode (2 units in local-remote setup): <ul style="list-style-type: none"> Throughput, frameloss, back-to-back
Service Activation Test (Y.1564)	
Service Activation Test	<p>ITU-T Y.1564 service activation test:</p> <ul style="list-style-type: none"> Up to 512 services per port Colour-aware and non-colour-aware in combinations Verification against service acceptance criteria: information rate, frame transfer delay, frame delay variation, frame loss rate, availability
Service Configuration Test	<ul style="list-style-type: none"> Subtest for: CIR, EIR, traffic policing Step duration: 1-60s (user define) Number of steps: 1 to 4 Result: pass/fail indication, IR (min/avg/max), FL (Count/FLR), FTD,FDV (min/Avg/max (during measurement))
Service Performance Test	<ul style="list-style-type: none"> All services tested simultaneously at CIR Duration 15 min, 2 hours, 24 hours, or user defined Result: pass/fail indication, IR (min/avg/max), FL (count/FLR), FTD, FDV (min/avg/max (during measurement))
Remote Smart Loopback Test	
Remote Smart Loopback	<ul style="list-style-type: none"> Use as local unit control another remote unit for RFC2544 and Y.1564 bi-directional testing Support layer 1 to layer 4 smart loopback test
Advanced IP Tools	
PING	<p>For connectivity and configuration check:</p> <ul style="list-style-type: none"> Round trip time (RTT) Support IPv4, TTL, URL
Trace Route	<p>Trace IP route over IP network:</p> <ul style="list-style-type: none"> Information per hop: PING time, number of ping timeouts
VCT Cable Test	<p>Use for CAT5 cable connectivity check:</p> <ul style="list-style-type: none"> Status: pass/fail Channel Fault location Polarity Pair Skew

Flow Control	<p>Flow control time, us:</p> <ul style="list-style-type: none"> Pause time: total, last, max, min Pause frame count: TX, RX
FTP Upload/Download	<p>Use for FTP server and client emulation:</p> <ul style="list-style-type: none"> Support IPv4 and URL Username/password File upload/download Result: pass/fail indication, upload/download time display
HTTP	<p>WEB access:</p> <ul style="list-style-type: none"> Support IPv4 and URL HTTP access pass/fail
Advanced PING (Topology)	<p>Advance/fast PING, PING segments of the IP one by one in one time:</p> <ul style="list-style-type: none"> IP address range: start, end Send count Timeout (ms) Status: pass/fail indication
MPLS	
Number of MPLS Header	Up to 3 MPLS header set by user
Parameter per MPLS Header	<p>User defined label, exp and TLL fields in each MPLS header:</p> <ul style="list-style-type: none"> Label fixed, increment, decrement, random generation
Statistics	MPLS frame count
Ethernet Frame Capture	
Capture Buffer Size	<ul style="list-style-type: none"> 16 Kbytes When capture buffer full: stop
Capture Frame Slicing	Can capture frame length by user defined
Capture Data	CAP format for display in Wireshark
SDH and SONET Test	
Port	<p>STM-64/STM-16, OC-192/OC-48 optical interface: (10G with SFP+ ; 1G with SFP/SFP+), 1 port</p> <p><i>User selectable optical module: 850nm/1310nm, 1550nm</i></p>
Measurement	<ul style="list-style-type: none"> Out-of-service mode In-service mode
Operation	<ul style="list-style-type: none"> Through mode Pointer-to-pointer mode Enhance through mode <p><i>SOH/TOH can be changed, and under Enhance Through Mode, alarms and errors can be injected</i></p>
Frame and Scramble	<ul style="list-style-type: none"> SDH: complies with latest version ITU-T G.707 SONET: complied with latest version Telcordia GR-253
Line Code	NRZ

<p>Transmitter Clock</p>	<ul style="list-style-type: none"> ▪ Internal clock: <ul style="list-style-type: none"> ▪ Accuracy: 4.6 ppm, up to 2 ppm ▪ Clock Offset: ±70ppm (1ppm steps) ▪ TTL level external 2.048MHz clock ▪ E1: 2.048 Mbps ▪ DS1: 1.544 Mbps
<p>Receive Single Rate</p>	<ul style="list-style-type: none"> ▪ ±100ppm ▪ Frequency deviation indication resolution: ±1ppm
<p>TCM Frame Format</p>	<ul style="list-style-type: none"> ▪ ITU-T G.783, G.707 Annex D and Annex E, POH bytes: <ul style="list-style-type: none"> ▪ HP-N1 (SDH) ▪ LP-N1 (SDH) ▪ LP-N2 (SDH) ▪ Z5 (SONET) ▪ Z6 (SONET) ▪ TCM access point identifier (Apid): 15 bytes ASCII sequence, CRC-7
<p>SDH Mapping</p>	 <p>The diagram illustrates the SDH mapping hierarchy. It starts with two STM inputs: STM_64 and STM_16. STM_64 is mapped to AUG_64, which then branches into AU_4_64C and AU_3_64C. STM_16 is mapped to AUG_16, which branches into AU_4_16C and AU_3_16C. Further down, AUG_4 and AUG_1 are shown, leading to AU_4 and AU_3. These are then mapped to VC_4 and VC_3. The VC_4s are further mapped to TUG_3 and TUG_2, which then lead to TU_3, TU_2, and TU_12. Finally, these are mapped to VC_3, VC_2, and VC_11, which are then mapped to C_4, C_3, C_2, and C_11.</p>
<p>SONET Mapping</p>	 <p>The diagram illustrates the SONET mapping hierarchy. It starts with two DC inputs: DC_192 and DC_48. DC_192 is mapped to STS_192C, which then branches into STS_192_SPE and STS_48C. DC_48 is mapped to STS_48C, which branches into STS_48_SPE and STS_12C. STS_12C branches into STS_12_SPE and STS_3C. STS_3C branches into STS_3_SPE and STS_1. STS_1 branches into VTG, which then leads to VT_6, VT_3, and VT_1_5. Finally, these are mapped to VT_6_SPE, VT_3_SPE, and VT_1_5_SPE.</p>
<p>Alarm</p>	<p>Alarms can be detected and generated:</p> <ul style="list-style-type: none"> ▪ SDH: LOS, LOF, OOF, MS-AIS, MS-RDI, AU-AIS, AU-LOP, HP-PLM, HP-UNEQ, HP-TIM, HP-RDI, TU-LOM, TU-AIS, TU-LOP, LP-PLM, LP-UNEQ, LP-TIM, LP-RDI, LP-RFI, LSS ▪ SONET: LOS, LOF, OOF, AIS-L, RDI-L, AIS-P, LOP-P, TIM-P, PLM-P, UNEQ-P, RDI-P, LOM-V, AIS-V, LOP-V, PLM-V, UNEQ-V, RDI-V, TIM-V, LSS ▪ TCM: TC-LTC, TC-TIM, TC-UNEQ, TC-AIS, TC-RDI, TC-ODI <p>Alarm generation mode:</p> <ul style="list-style-type: none"> ▪ Continuous ▪ Alternate ▪ Burst

<p>Error</p>	<p>Errors can be detected and generated:</p> <ul style="list-style-type: none"> ▪ SDH: FAS, B1, B2, MS-REI, HP-B3, HP-REI, LP-B3, LP-BIP2, LP-REI, Bit Error ▪ SONET: FAS, B1, B2, REI-L, B3, REI-P, B3-V, BIP2-V, REI-V, Bit Error ▪ TCM: TC-IEC, TC-BIP2, TC-REI, TC-OEI <p>Error generation mode:</p> <ul style="list-style-type: none"> ▪ Single; ▪ Continuous; ▪ Alternate; ▪ Burst; ▪ Rate; ▪ N-frame;
<p>BERT Pattern</p>	<ul style="list-style-type: none"> ▪ Pattern generation and monitor for O.181 bulk test pattern ▪ Supports to generate and detect: <ul style="list-style-type: none"> ▪ PRBS9, PRBS11, PRBS15, PRBS20, PRBS23, PRBS31 ▪ Supports reversed PRBS pattern: <ul style="list-style-type: none"> ▪ 16bit user define pattern
<p>Pointer</p>	<ul style="list-style-type: none"> ▪ Supports AU/TU, STS/VT pointer monitor and generation ▪ Supports ITU-T G.783 pointer test sequences ▪ Display pointer value of receiver side
<p>Overhead</p>	<ul style="list-style-type: none"> ▪ Generation of section/transport and path overhead bytes ▪ Display of current section/transport and path overhead bytes ▪ All overhead can be decoded, including decoded J0, J1, J2 byte ▪ All overhead and anyone overhead PRBS BER testing ▪ Just All overhead and anyone overhead PRBS BER (Including with DCC) testing ▪ 256 frames overhead capture and decode
<p>SDH Tributary Scan</p>	<ul style="list-style-type: none"> ▪ DS1 embedded in selected VC-11 ▪ E1 embedded in selected VC-12 ▪ E2 embedded in selected VC-2 ▪ E3/DS3 embedded in selected VC-3 ▪ E4 embedded in selected VC-4
<p>SONET Tributary Scan</p>	<ul style="list-style-type: none"> ▪ DS1 embedded in selected VT-1.5 ▪ E1 embedded in selected VT-2 ▪ E3/DS3 embedded in selected STS-1 ▪ E4 embedded in selected STS-3c
<p>Smart Scan</p>	<p>Remote single auto detects and auto setup for SDH analyser</p>
<p>SDH and SONET Result</p>	
<p>Status</p>	<p>Display information of current status:</p> <ul style="list-style-type: none"> ▪ Alarms and errors ▪ Frequency deviation ▪ Actual bit rate ▪ Frequency ▪ Input power of optical signal

<p>Statistics</p>	<p>Event log display:</p> <ul style="list-style-type: none"> ▪ Alarms (seconds) ▪ Errors (count and rate) ▪ Pointer operations ▪ Start/stop time ▪ All events refresh with 1 second resolution
<p>Histogram</p>	<p>All alarms and errors detected can be display in histogram</p>
<p>Error Performance</p>	<p>G.821/G.826/G.828/G.829/M.2100/M.2110 analysis of received signals based on detected errors and alarms: ES, SES, BBE, AS, UAS, and so on</p>
<p>APS</p>	<ul style="list-style-type: none"> ▪ APS (Automatic protection switching): <ul style="list-style-type: none"> ▪ Independently select start and complete trigger ▪ All SDH/SONET alarms and errors, Bit error, errors with threshold ▪ Number of switchovers indicated by APS protocol ▪ K1/K2 bytes set and displayed ▪ Display and save APS time, frequency, pass/fail, minimum/maximum/average value ▪ APS time resolution: 1 μs
<p>Propagation Delay Measurement</p>	<ul style="list-style-type: none"> ▪ Resolution: 0.1 μs ▪ Measurement max time: 10.0 s

Ordering Information

General Specifications	
ETH	Dual 10 Gigabit Ethernet test module
	Dual 10G Base-X optical interfaces
	Dual 10/100/1000M Base-T electrical interfaces
	Dual 1000M Base-X optical interfaces
	Layer 1 to Layer 4 BERT test
	Up to 16 (512 optional) streams generation and analysis with MAC/VLAN/IP/TCP/UDP
	RFC2544 standard test with Throughput, Latency, Frame Loss, Back-to-Back
	Layer 1 to Layer 4 loopback and smart loopback test
	Enable to drop data packet under loopback mode
	Up to 10G streams generation with 3 Layer VLAN
	Ping, Trace Route, FTP Download/Upload, and HTTP tools
	Ethernet service disruption test
	Packet capture and analysis to 10G rate
	Enable to generate frame with increment, decrement, random length
	Enable to generate data streams with increment, decrement, random MAC, IP, VLAN, MPLS, and Port Number
	Bi-directional test
	Layer 1 bandwidth statistics
Remote control by PC	
SDH	Single 2.5/10G Base-X optical interface(2.5G with SFP/SFP+, 10G with SFP+)
	One SMA clock interface (input and output share)
	STM16/STM64 and OC-48/OC-192 test by the optical interface
	Mapping and Conciliatory Mapping from VC4-64c/STS-192c to VC11/VC12 and VC1.5/VT2
	Control and decoding of SDH/SONET overhead
	Pointer monitoring and adjustment, the generation of G.783 pointer test sequence
	Measurement of APS (Service interruption)
	Full channel loading and scanning of background information flow
	Full path intelligent scanning

Optional Configuration

Optional Software (ETH)

IVR-Y1564TGeEth	Y.1564 standard service configuration and performance test for SLA QoS with CIR/EIR/Traffic Dropped up to 10GE
IVR-DPY1564TGeEth <i>(Need to order IVR-Y1564TGeEth first)</i>	Bi-directional Y.1564 test
IVR-RFC6349TGeEth	RFC6349 TCP throughput test features
IVR-IPv6TGeEth	IPv6 feature, the test interface can set IPv6 address and can generate stream with IPv6
IVR-ScanTGeEth	Traffic scan according with destination MAC/IP, source MAC/IP, 3 Layer VLAN, 3 Layer MPLS in-service test
IVR-EPINGTGeEth	Advance/Fast PING, PING segments of the IP one by one in one time
IVR-3MPLSTGeEth	Up to 10G rates generation with 3 Layer MPLS label
IVR-128StreamsTGeEth	Up to 128 streams generation and analysis with MAC/VLAN/IP/TCP/UDP for 10G port
IVR-512StreamsTGeEth	Up to 512 streams generation and analysis with MAC/VLAN/IP/TCP/UDP for 10G port
IVR-EautoAGeEth	Advance auto-negotiation, can set the remote equipment auto-negotiation the speed and duplex as you want
IVR-DPRFC2544AGeEth	Enhancement RFC2544 test, support different upstream and downstream rates set-up for Throughput, Frame Loss and Back-to- Back test
IVR-FXAGeEth	Dual 100M Base-X optical ports
IVR-10GWANATGeEth	10GE WAN Test Function
Optional Software (SDH and SONET)	
IVR-ThroughTGeSDH	SDH/OTN Enhanced Through Function
IVR-RTDTGeSDH	Round-Trip Delay Time
IVR-TCMTGeSDH	TCM Test
Optional Hardware	
43160031	Lithium polymer rechargeable battery
IVR-Onewarranty	One year extended warranty service
IVR-Twowarranty	Two years extended warranty service

Standard Configuration

Accessories Code	Accessories Description
LC/LC	1, LC/PC to LC/PC full-duplex single-mode fibre, 3 m
CAT5	1, CAT5 cable, 3 m
SFP+ (850/1310/1550)	2, 10 G 1310 nm 10 Km LC SFP + optical modules (850/1550nm optical module optional; ETH supports Port1 and Port2; SDH only Supports Port 1 for use)
SFP+ cap	2, SFP/SFP+ optical port dust proof cap - black - rubber
RJ45 cap	2, RJ45 electrical port dust proof cap - black - rubber
Cable	1, Tree pins adapter cable
SMA	1, SMA test connection cable (50Ω), 3 m (only for SDH use)
Adapter	1, Power adapter 100-240V input and 19V output AC/DC
CD	1, Disc, include user manual and remote control software
Package	1, Package
Report	1, Factory test report
Certificate	1, Calibration certificate
Onewarranty	1, One year warranty service

- *InterVRE reserves the right to alter and amend the design, characteristics and specifications without notice or obligation.*

Sales Contact and Technical Support

Tel: +52 5584374485 / +52 5621385218 / +52 5514749712

Email: jessica.garcia@intervre.com / heber.vallejo@intervre.com

Address: Av. Río Consulado 1674, Vallejo, Gustavo A. Madero, P.C. 07870, Ciudad de México, México

Web: www.intervre.com