The DSA 1491 is an all format TV/RF signal analyzer providing today’s engineer a complete, portable tool for resolving digital video broadcast, transport, or reception challenges. Capable of testing and analyzing digital satellite signals, digital TV broadcast channels, cable QAM channels, and ASI MPEG streams, it is a true all-in-one analyzer. The DSA 1491 features a color touchscreen, which eliminates the need for multiple menus and pushbuttons, and achieves the ultimate in user friendliness. The large 9 inch screen provides unprecedented resolution so the user won’t miss problems when analyzing critical constellation and spectrum analyzer test screens. An HDMI interface permits viewing on a larger HDMI monitor or for interface to a multi-viewer system.

The DSA 1491 provides powerful digital TV/RF analysis including MER, BER, PER, EVM, noise margin, constellation, and spectral analysis tests. A pass or fail quality indication simplifies interpretation. Additionally, the modulation type, FEC value, encryption type, MPEG services, video/audio program IDs and MPEG format descriptors are displayed providing advanced RF and MPEG signal analysis.

The DSA 1491 provides a full arsenal of unique tests and control features to assist technicians in troubleshooting all satellite, cable and TV reception systems. Advanced features include an integrated spectrum analyzer, Auto Discovery, SatFinder, DiSEqC commands, dual LNB monitoring, SCR commands, BarScan, tilt, leakage, ingress and logger tests. The DSA 1491 comes equipped with a protective case, AC power adapter, USB cable, various RF adapters and SMART software.

**APPLICATIONS**

- Satellite dish installation and precision alignment for broadcast, military, or government communications facilities
- Maintenance and troubleshooting of satellite or antenna farms, and broadcast, telco, cable, and satellite head-ends
- Satellite or broadcast signal analyzing/monitoring where space conservation is critical, such as in remote satellite trucks
- Troubleshooting of digital TV broadcasts, CATV digital or analog reception and distribution paths
- Maintenance and testing of digital or analog equipment, such as modulators, receivers, decoders

**KEY FEATURES**

- Nine inch high-resolution touch screen user interface simplifies navigation and makes complex measurement tasks simple
- Analyzes MPEG 2/4 SD and HD signals, showing services list, PIDs and decoding free-to-air video
- H.264 and MPEG-2 video decoding; MPEG, AAC, HE-AAC, Dolby AC3 and E-AC3 (DD+) audio decoding
- Descrambling capabilities with interface slot for conditional access module
- Built-in ASI I/O and optional IP I/O interfaces for PID information, decoding and ETR290 analysis. Outputs provide demodulated RF signal to external equipment
- Up to 6 hours active battery life with automatic battery saver

**SATELLITE ANALYSIS FEATURES**

- Satellite tuning from 930 to 2250MHz with transponder navigation available for all worldwide satellites
- Automatically discovers a channel’s modulation type, frequency, bandwidth and symbol rate eliminating guesswork
- Digital satellite measurements including constellation, MER, EVM, BER, noise margin, level/power and spectrum analysis
- Unique satellite dish pointing and alignment features ensure dish installation ease and accuracy
- All DiSEqC commands supported - SCR with automatic search, USALS motor protocol

**BROADCAST/CABLE ANALYSIS FEATURES**

- TV/CATV Tuner 4-1000 MHz analyzes both analog and digital broadcast and cable TV/RF signals
- All units include QAM analysis and support one of the digital terrestrial standards - 8VSB, DVB-T/T2, or ISDB-T
- Data Logger for automatic testing and data captures
- SMART PC software for firmware updates, channel/transponder tuning plans and log file management

**ORDERING INFORMATION**

DSA 1491-ATSC6 – ASI, DVB-S/S2, 8VSB, QAM-B/DVB-C Input
DSA 1491-DVBS6 – ASI, DVB-S/S2, DVB-T/T2 and DVB-C input 6MHz filter
DSA 1491-DVB8 – ASI, DVB-S/S2, DVB-T/T2 and DVB-C input 8MHz filter
DSA 1491-ISDB6 – ASI, DVB-S/S2, ISDB-T(b), QAM-B/DVB-C input
DSA 1491-OPTICAL-OPT – Add-on optical input option
DSA 1491-GPS-OPT – Add-on GPS receiver option
DSA 1491-IPTV-OPT – Add-on IPTV input option
DSA 1491-REMOTE-OPT – License to enable remote Ethernet control
### SATELLITE MEASUREMENT
- **Frequency Range:** SAT: 930 - 2250 MHz
- **Measure Tuning:** By satellite transponder or freq.
- **Digital Modulation types:** DVB-S, DVB-S2 Single Stream, DVB-S2 Multi-Stream
- **Digital Measurements:** Power, Noise Margin, Pre/Post-FEC BER, PER, MER, EVM, Constellation Diagram
- **Dynamic range:** 30 to 130 dBμV
- **Measurement Accuracy:** 1.5 dB typical
- **LNB Control:** V(13V) or H(18V), 22kHz tone, DiSEqC 1.0 and 2.0 SCR and MOTOR
- **Symbol Rate:** DVB-S- 1 to 45MS/s, DVB-S2- 2 to 45MS/s

### TV/CABLE MEASUREMENT
#### Analog Measurement
- **Frequency Range:** 47 to 1000MHz
- **Dynamic range:** 5 to 126 dBµV (-50 to 66 dBmV)
- **Measure Tuning:** By RF channel or freq.
- **Freq. Resolution:** 50kHz
- **Analog Measurement:** Video level, audio level, A/V ratio, C/N
- **Measurement Accuracy:** +/- 1.5 dB (1.0 dB typical)
- **Level Measurement Resolution:** 0.1 dB
- **A/V Ratio:** 4 to 26dB
- **C/N Ratio:** 5 to 45dB
- **Measure Filter Bandwidth:** 100 KHz @ -3 dB

#### Digital Measurement
- **Frequency Range:** 4 to 1000MHzDigital Cable
- **Frequency Resolution:** 50kHz
- **Digital TV Modulation types:** 8VSB (optional)
- **Digital Modulation types:** DVB-T/T2 (optional)
- **ISDB-T (optional)
- **Digital Measurements:** Level, Noise Margin, Pre-Viterbi (bBER), After-Viterbi (aBER), MER, Constellation Diagram
- **BER Measurement:** bBER/aBER up to 1 x 10^-9
- **MER Measurement:** up to 40dB
- **Constellation Diagram:** 16-32-64-128-256 QAM

### SPECTRUM ANALYZER
- **Frequency Range:** 4 to 2250 MHz
- **RF Level Range:** 5 to 130 dBuV
- **Resolution Bandwidth:**
  - **TV/CATV:** 100kHz
  - **SAT:** 4MHz/1MHz selectable
  - **Span:**
    - **TV/CATV:** 5MHz to Full TV/CATV Band
    - **SAT:** 50MHz to Full Sat Band
  - **Frequency Sweep:** max hold, spectrum save/ recall, markers

### ASI INPUT
- **ASI Packet Length:** 188 or 204 bytes
- **ASI Bitrate:** 0 to 216Mb/s

### TRANSPORT STREAM FUNCTIONS
- **ETR101290 v1.2.1 Analysis**
  - **Modulation Parameters ID:** Modulation type, FEC, symbol rate
  - **Video Decoding:** MPEG-2, MPEG-4, AVC/H.264
  - **Audio Decoding:** MPEG, AAC, HE-AAC, Dolby AC3 and E-AC3 (DD+)
  - **Bitrate measurement**
  - **MPEG Program/Services ID:** A/V PIDs, service ID #, video services name list
  - **Modulation Parameters ID:** Modulation type, FEC, symbol rate
  - **Encryption/CA System ID:** Encryption type indicated
  - **MPEG Header Data:** Video format, aspect ratio, MPEG profile/level, audio format, language

### GENERAL SPECIFICATIONS
- **Dimensions:** 12.7 x 6.9 x 2.4in (323 x 175 x 60mm)
- **Weight**
  - Bare instrument: 4.9lbs (2.2kg)
  - Instrument with battery: 5.7lbs (2.6kg)
  - Instrument with battery and bag: 6.8lbs (3.1kg)
- **Environmental**
  - Operating Temperature: 0 to 50C
  - Storage Temperature: -25 to 70C
  - Humidity: Up to 90% non-condensing
- **Power:**
  - External adapter 110-240VAC 50-60Hz, 12VDC/3A output
  - Battery: Li-Polymer 10A with up to 6 hours of run time
- **Display:** 9 inch 16:10 800x480 LCD backlit touchscreen display

### STANDARD ACCESSORIES
- Soft padded case
- AC power adapter
- USB cable
- F to F, F to BNC, F to N adapters
## OPTIONS
All Format TV Digital Signal Analyzer DSA 1491

### OPTICAL INPUT
- **Wavelength Range:** WL 1310 – 1490 (1625 for US) – 1550
- **Input Level Range:** -40dBm to +10dBm
- **Level Resolution:** 0.1dB
- **Level Measurement Accuracy:** 0.5dB

### LAN IPTV
- **Protocols:** Unicast, Multicast, RTP, UDP
- **FEC:** ProMPEG COP3/SMPTE2022
- **Packet Size:** 1 to 7 MPEG TS Packets
- **TS Bitrate:** 0 to 216Mb/s
- **IP Stream Jitter:** 0 to 1000ms

### GPS RECIEVER
- **DC at RF input:** 5VDC automatic
- **RF Level Sensitivity:** -160dBm
- **Frequency:** L1 (1575, 42MHz)
- **Noise Figure:** 1.5dB typ.
- **Position Accuracy:** 2.5M
- **Hotstart Autonomous:** 1s
- **Timepulse Frequency:** 10MHz and 1pps
- **Received SAT:** up to 12

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