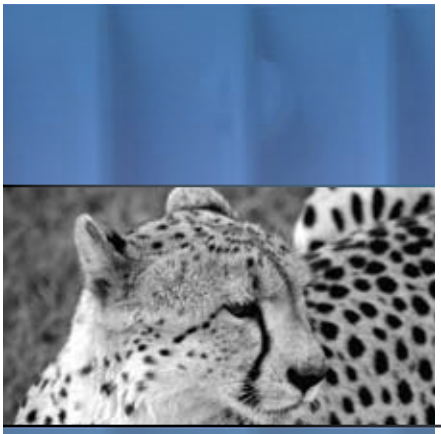
CHEETAH TECHNOLOGIES™



CHEETAH CMD-EL™

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DOCSIS® End-of-Line RF Monitor

The CMD-EL is a strand or pedestal mounted network health test point capable of delivering RF level measurements, digital measurements on the downstream DOCSIS channel, and VoIP metrics. The CMD-EL can provide measurement data in real time to aid in diagnosing network faults and can also provide scheduled measurements to aid in diagnosing intermittent network performance issues. The device can be programmed to monitor and alarm on specific RF characteristics and proactively notify users when RF characteristics are outside of user-defined parameters.

The ability to remotely monitor and manage the physical elements and isolate multi-layered IP services in the HFC network results in increased reliability, greater customer satisfaction, reduced truck rolls and lower network operational support costs.

Measurements

Analog Digital (DOCSIS Carrier)

- Analog Carrier Levels
- Visual/Aural Level Separation
- Digital Carrier Average Power
- Tilt
- Normalized Frequency Response

Digital (DOCSIS Carrier)

- Modulation Error Rate (MER)
- QAM Constellation
- Upstream Microreflections
- Digital Voice (VoIP) Testing

Applications

The typical CMD-EL application involves multiple CMD-EL units strand mounted in the HFC network and a 1RU server, the CMD-EL Controller. The CMD-EL communicates with the Controller via the DOCSIS infrastructure and requires no additional communications equipment. Measurements can be accessed in real time through a configurable web page embedded within the CMD-EL and/or through a web interface to the CMD-EL Controller.

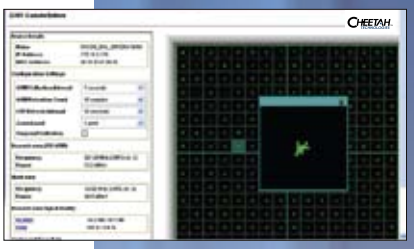
The CMD-EL Controller application software is used to download channel plans, alarm parameters, and hardware configuration data. The controller also configures scheduled measurements and manages alarms received from the CMD-EL devices in the field All data gathered is stored in the controller and is available for report generation.

RF Measurements include Visual and Aural Analog Carrier measurements and the Visual/Aural Level separation. Users can set limits around the measurements and will receive alarms when the carrier levels exceed the alarm parameters. The CMD-EL measures the average in-channel power for digital carriers and alarming is available on that measurement parameter. The user can specify start and end channels to be used for calculating the system tilt.

With the Normalized Frequency Response measurement, users will have the ability to take a snapshot of the RF spectrum frequency response and save it as a reference to subsequent frequency response measurements. Changes observed in the response over time can provide invaluable data about the health of the RF Network and performance of active devices within the network.

Through the use of the Scheduled Measurements function, users can schedule the FCC twenty-four hour level measurements, determine the pass/fail status, and print the appropriate FCC level report. Users can also pinpoint intermittent RF problems by scheduling measurements and plotting the data over time and/or temperature. Network problems can be associated with specific changes in the parameters being measured.

For sales information, please contact your Cheetah Technologies account representative or email us at sales@cheetahtech.com



CMD-EL Specifications

General

DOCSIS . . . . . Version 1.0, 1.1, 2.0
DOCSIS Monitoring Protocol . . . . . SNMP v1, v2, v3
RF Interface. . . . . External
Ethernet Interface RJ45
Operating Temperature . . . . . –40 to +75°C
Temperature Measurement Accuracy. . . . . ± 2°C
Humidity . . . . . 10% to 90% (non-condensing)
EMI/EMC . . . . . FCC Part 15 Class A, CE EN50022 Class A

RF Transmit/Receive

Tx Frequency Range . . . . . 5 to 42 MHz
Tx Output Power
- 32 and 64 QAM. . . . . +8 to +54 dBmV
- 8 and 16 QAM . . . . . +8 to +55 dBmV
- QPSK . . . . . +8 to +58 dBmV
- S-CDMA . . . . . +8 to +53 dBmV

Rx Frequency Range . . . . . 88 MHz to 860 MHz
Rx Input Level . . . . . –15 to +15 dBmV

Power Input

Input Voltage with RF. . . . . 40 to 100 VAC
AC Power Measurement Accuracy . . . . . ± 3%
Current Draw. . . . . 20 Watts @ 60 VAC

RF Measurements

RF Level Input. . . . . 0 to +50 dBmV
RF Level Accuracy. . . . . ± 1.0 dB
Dynamic Range . . . . . 80 dB
RBW . . . . . 200 kHz
RF Scan Rate. . . . . < 90 msec/Channel

Mechanical

Weight (Fully Loaded). . . . . 6.6 lbs
Dimensions. . . . . Depth 4”, Height 9”, Width 11.5”

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