Analyze-R™, model 2261A
Total Channel Power Option

Description

This optional feature (option 01) provides front panel observation and calculation of 'Total Channel Power' within a user-defined bandwidth, in real-time—on site. This feature replaces the need for a separate power meter and verifies channel power anomalies due to fading/interference and improper equipment operation—something a power meter cannot do. The user can now check the transmitter, connection cables, antennas, and receiver for proper equipment and path operation. All this is done without the need to post-process the information in Log View-R.

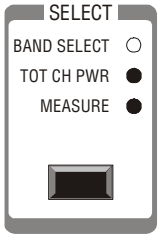
This feature provides field technicians the ability to:

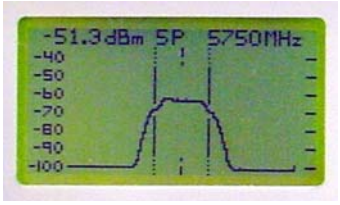
- Troubleshoot, in the field, total transmitter channel-power at the victim receiver, under the pressure of a customer supervised install or analysis/repair; without the luxury of post-processing the measurement in Log View-R.
- Compare the RSL of a dual polarized antenna system with dual transmitters. The two transmitters have the same channel-bandwidth and transmit-power. The signals sent; one horizontal, one vertical; should have similar RSLs.
- Measure insertion loss of cables/connectors.
- Measure, *through an included 60 dB attenuator*, the total channel power output of a transmitter at the transmitter's output connector to verify expected total channel power.
- Deduce the C/I figure from two separate measurements in the field.

User Directions

You can select a marker separation, set to the channel bandwidth of your radio, using the Marker/Frequency knob, from 0 to 100 MHz in 2 MHz step, and display the Total Channel Power and center frequency of the signal contained within these two markers on the front panel display.

The *Band Select pushbutton* has three functions/LEDs. The button will toggle, in rotary fashion, through the three states. The three LEDs associated with this button are:





Band Select. Display is in *numeric* mode. This provides for selection of one of the thirty-eight bands, knob selected. The next push advances to:

Tot Ch Pwr. Display is in *numeric* mode. This is the optional power meter and provides for selection of the marker separation/channel bandwidth. The numeric display indicates the words "Channel Width" and shows a value, knob selected, of 0–100 MHz, in 2 MHz steps (1 MHz steps in the 900 MHz band). The next push advances to:

Measure. Display is in *graphic* mode. This is the graphic screen showing the incoming RF signal, within the selected band. Display is either a single marker (channel width set to 0), or the dual marker TCP display (channel width set to >0). If the channel width has been set to >0, the "TOT CH PWR" LED and the "Measure" LED will both be illuminated indicating that the display is in the 'Total Channel Power' measure mode. The next push advances to Band Select.

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Marker(s)
A zero channel width (bandwidth) setting selects a single marker. The frequency and dBm power values shown are the intercept location of this single marker/RF signal.

If the channel width is set to >0 MHz, the display shows two long markers, locked to the selected channel width setting. These two markers cover the entire vertical signal space. There is also a short center-channel marker. The Marker/Frequency knob will move the locked pair of markers (including the center-marker) back and forth across the screen. The Total Channel Power (TCP) contained within these markers will be computed and the value displayed at the upper left dBm location. The frequency value location, upper right, will indicate the center frequency of the locked marker pair. The 2 MHz marker separation steps eliminate rounding difficulties in the center frequency value displayed. This TCP display is activated when the channel width has been set to greater than 0 MHz and the button is toggled to the Measure position.

In the TCP display, the channel markers cannot be advanced beyond the band edges. If one of the locked markers reaches a band edge, the locked pair cannot be moved beyond this band edge. Markers are always an odd number of MHz apart (center freq ±1 or more MHz–e.g.: 3, 5, 7). For example: setting the "Channel Width" to 20 MHz places the markers 21 MHz apart (center ±10 MHz) and the total channel power is computed over this 21 MHz span. The RF signal intercept values of both channel markers are included when computing TCP. The channel markers have a 2-pixel clearance away from the RF signal so as not to hide the RF trace value.

Defaults. Power-on defaults are the last *legal* settings (in Measure mode) when the instrument was powered down. In the TCP display mode the defaults are Peak power and Band Sweep. Average power can be selected, but Band Sweep is the only allowed display mode–Single Frequency is locked out in TCP display mode.

Data Recording *does not change*. The Record-R feature ignores the marker separation setting/location(s) and marker power/frequency numeric value(s) and records only the RF trace.

Log view-R *is not affected*. Recorded band sweeps will display as RF sweeps only. Total Channel Power can be post processed in Log View-R as well as the C/I auto-computation.

FYI–Modulation Information
Currently, the only frequency hopping radios being manufactured and deployed are low-power Bluetooth type devices. Most Wi-Fi and Wi-Max radios are TDD (Time Division Duplex) with defined channel bandwidths that range from 5 MHz to 85 MHz–with 20 MHz to 30 MHz being the most common. These low-cost/low-end TDD radios (OFDM) represent an increasing % of the RF landscape and interference sources.

Caution!

The Analyze-R™ has a maximum input level of -30 dBm. Many unlicensed transmitters have a 1 watt (+30 dBm) output. To protect the instrument from overload, use the included 60 dB attenuator when connecting the instrument directly to the transmitter's output. Instrument damage level is +10 dBm.

The Analyze-R™ is recommended by both Proxim Radio and Motorola Canopy™ as the ideal solution for resolving interference and multipath issues in their respective broadband wireless networks.