



Intelligent Channel Optimizer

C4® & C4c™ CMTS



- Optimize modulation profiles and upstream channel parameters for maximum throughput
- ICO runs on laptop or desktop PCs
- May be used remotely via Telnet, Secure Shell v2, and SNMP
- Works with C4 CMTS Release 5.x and 7.1 and later software
- Works with C4c CMTS Release 7.1 and later software
- The ICO calculation is done for a wide range of:
 - Modulation profile types
 - Channel widths
 - Center frequencies
 - Forward Error Correction (FEC) values

Application

The Intelligent Channel Optimizer (ICO) is a GUI-based tool used to maximize the throughput of RF upstream channels connected to C4® and C4c™ CMTS DOCSIS® 2.0 and 3.0 Cable Access Modules (CAMs). After analyzing the noise conditions present for a particular upstream channel, the ICO employs error analysis algorithms to provide guidance on optimal modulation profile and upstream channel settings. The operator may then choose to use the ICO to apply the recommended profile and channel settings to the selected upstream. The ICO runs on a laptop or PC and may be used remotely via Telnet, Secure Shell v2, and SNMP.

Maximizing Upstream Throughput

With the wide array of parameters that must be specified for modulation profiles and upstream channels, operators may be uncertain as to whether the parameters they have selected are maximizing upstream throughput. By looking at the actual noise conditions and employing sophisticated algorithms, ICO takes the guesswork out of selecting the best set of parameters to obtain the maximum channel throughput in the upstream at an acceptably low packet error rate.

Optimal Modulation Profile and Upstream Channel Parameters

Utilizing Fast Fourier Transform (FFT) data from the RF burst receiver, the spectrum from a specific C4 or C4c CMTS upstream is displayed (Power Density vs. Frequency). ICO can then measure the noise level in the upstream channel. Using the upstream noise spectrum data, the ICO calculates the effective Signal-to-Noise Ratio (SNR) and Packet Error Rate (PER) for a wide range of possible modulation profiles and upstream channel parameters. Based on the calculation results, the ICO provides guidance on optimal modulation profile and upstream channel parameter settings. The operator can then use the ICO to apply the optimal settings to the particular CMTS upstream.

ARRIS Intelligent Channel Optimizer

Optimization Within Operator-specified Restrictions and Limitations

As an option, the operator may use the ICO to recommend a new, optimized modulation profile without changing basic parameters such as center frequency, channel width, or channel type (TDMA, ATDMA, TDMA-ATDMA, or SCDMA). The operator can also specify limits for parameters like center frequency and cable modem power level range, and ICO will run the optimization algorithm within the specified limits.

Optimization That Accounts for Changing Noise Conditions

The ICO can be run in an iterative mode in which noise samples are taken at operator-specified time intervals. These noise samples can then be averaged to account for changing noise conditions and the averaged result is used for the optimization calculation. Alternatively, the worst of the noise samples may be used for the optimization calculation for even more robust performance in meeting levels of service committed to subscribers.

Performance Metric Calculations

Using a given modulation profile and the upstream channel noise spectrum data, the ICO calculates important performance metrics such as total available user bandwidth and expected packet error rate. Alternatively, the upstream channel noise level can be specified by the user.

www.arrisi.com

Find more information about ARRIS Intelligent Channel Optimizer and other C4 & C4c products.

- Product Specifications—ARRIS Intelligent Channel Optimizer Technical Specifications (Publication Code: ICO-CMTS_TS.pdf)

Customer Care

Contact Customer Care for product information and sales

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