

Automatic uplink power control

LTN M&C

Take control of your rain fade with flexible software base power control.

The LTN M&C software-based Automatic Uplink Power Control (AUPC) solution ensures proper uplink power during times of atmospheric interference and offers key advantages over hardware-based solutions:

- Continuous monitoring of a “beacon” receiver gives the operator real time data allowing for increase or decrease of uplink power to compensate for atmospheric interference
- The AUPC module excels in the application of uplink power control because it has access to the necessary inputs (beacon receiver or radiometer signal) and outputs (HPA or converter gain/attenuation) required to provide power adjustment
- Because LTN can monitor other devices in a facility the AUPC module can account for scenarios with primary and backup chains, driving AUPC for the chain currently online
- The process is automated and continuous eliminating the need for manual intervention on the part of the operator
- Reduced capital cost: significant savings can be realized over competing solutions
- Flexibility: Can work with your existing multi-vendor equipment
- Reliability: The solution is redundant in every respect
- Simplicity and reduced costs: less equipment to install, order, process, cool, and operate

The LTN M&C AUPC solution give your operators a dashboard view of key operational elements of the system - something that NO hardware system can deliver.

For example, this AUPC strip-chart shows at a glance all of the key readings for the full AUPC operation: power levels on all HPAs time-matched with the Beacon Receiver attenuation.



The Uplink Dashboard makes it easy for operators to know if they are transmitting the right amount of power to each transponder. This dashboard displays:

- Ideal power settings and the actual output of an amplifier
- Alarms when the actual value deviates from ideal

The dashboard also displays **Waveguide Over-power Alarming**: The value displayed is the summed power (in this example) of the total RF moving through the waveguide. The “Limit Settings” button launches a screen that allows users to set a max limit for this summed value - thereby protecting key facilities infrastructure from serious damage.

All readings are stored in the Activity Log database where events can be reviewed, trends observed and multiple variables compared and filtered in a powerful, customizable environment complete with a full set of graphing/coloring tools.

AUPC

Operational Mode Ownership Notes

Device Status

Operation

Beacon Attenuation: 3.5 dB

Additional Uplink Power Needed: 5.6 dB

Calibration

Clear Sky HPA Gain (dB): 0

Max HPA Gain (dB): 15

Adjustment Deadband (ms): 100

Downlink to Uplink Attenuation Factor: 1.6

Required change in Beacon Atten. which triggers a power change (dB): 0.1

Amount of Beacon Atten. that'll trigger the default HPA Power setting (dB): -15

HPA Gain During Unknown Situations (dB): 0

Atten Factor = $\frac{\text{Uplink Frequency}^2}{\text{Downlink Frequency}^2}$

Instructions: During clear sky conditions set beacon rx attenuator and enter zero and confirm. Then, add an 'n' db pad and enter 'n' and confirm.

0

Major AUPC Calibration Fault

Settings

Downlink Signal Attribute: receiver-1-signal

Uplink Gain (Attenuator) Attribute: hpa-1-1-gain

Uplink Gain (Attenuator) Setting: 0.0

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