GSM Cell Booster

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General Information

Communication Components, Inc. PCS GSM Cell Booster provides the means to add capacity to existing PCS sites by combining multiple channels onto a common antenna port without suffering any combining losses. Consequently, capacity of existing sites can be expanded with the existing cabling and antenna infrastructure. The Cell Booster/Combiner allows the cost efficient implementation of multi-channel high capacity radio networks. The Cell Booster can also be deployed as a booster amplifier without combining, thus increasing the downlink power of the Base Transceiver Station (BTS). When used in conjunction with a Tower Mount Amplifier (TMA), the Cell Booster can significantly increase the footprint of rural sites and improve in-building penetration in urban locations.

Technical Description

The PCS Cell Booster was specifically designed to integrate with GSM base stations without any need for retrofitting the original equipment. The system consists of a 5U 19" rack mount tray which can accommodate up to five individual modules. The core modules include a Dual Amplifier-Booster Module and a Dual Amplifier-Combiner Module. The Cell Booster system is further complemented with a range of Duplexer Modules, Power Supply Modules, and Splitter/VSWR modules. The Cell Booster system can be configured with any combination of the above modules to seamlessly integrate with the carriers BTS equipment and achieve the desired performance results. The Dual Amplifier-Booster Module (DAB) consists of two linear power amplifiers with intermodulation level control circuitry, each capable of generating a 70 Watt GSM signal. The Dual Amplifier-Combiner Module (DAC) is identical to the DAB Module with the exception of a power hybrid combiner at the output which combines both signals to provide two 35 Watt GSM signals on a common output. The Duplexer Modules consist of high power duplexers which combine the transmit (TX) and receive (Rx) signals on a common antenna (ANT) port. A Splitter-Bias-Tee and Low Noise Amplifier (LNA) option is available to provide DC pass-thru and receive diversity for particular BTS equipment such as the Ericsson RBS 2102 configured with CDUA's. The Power Supply Modules are designed to powering up to four DAB or DAC Modules and are available with either 26VDC, -48VDC, or AC inputs. A built-in battery backup circuit is available that can tap into the existing BTS battery bank during the loss of AC power. All of the modules contain alarm and monitoring circuits and provide relay contact closures that can be tied into the BTS alarm circuit.

Ordering Information

Dual Amplifier-Booster Module: CCI Model DAB-1819
Dual Amplifier-Combiner Module: CCI Model DAC-1819
Power Supply Modules: CCI Model PSU-1819-AC, CCI Model PSU-1819-48, CCI Model PDU-1819
Duplexer Modules: CCI Model TDM-1819 (Triple), CCI Model DDM-1819 (Dual)
Options: 01: Low Noise Rx Amplifier, 02: 2-Way Rx Power Splitter, 04: VSWR Monitoring, AD: A & D Band Operation, B: B Band Operation, C: C Band Operation, EF: E & F Band Operation
19" Rack Mount Trays: CCI Model TRA-1819 (5U), CCI Model TRA-1819-2U, CCI Model TRA-1819-2M

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Dual Amplifier-Booster (DAB-1819) Module Electrical Specification

Operating Frequency:	1930-1990 MHz
Maximum GSM Output Power:	60 Watts (Per Channel)
1 dB Compression Point:	48.5 dBm Min.
Pass Band Ripple:	+/-0.5 dB Max.
Power Supply Voltage:	28 VDC Nominal, 22-30VDC
Current Consumption:	12 AMPS Max.
Dimensions:	8.75"L x 3.5"W x 12"D
Number of Inputs/ Outputs:	2 Inputs / 2 Outputs
Connectors	N or SMA female
Weight	13 Lbs. Max.
Operating Temperature:	-25° to +65° C Ambient

Dual Amplifier-Combiner (DAC-1819) Module Electrical Specification

Operating Frequency:	1930-1990 MHz
Maximum GSM Output Power:	25 Watts (Per Channel), 60 Watts Composite
1 dB Compression Point:	45 dBm Min. (Per Channel)
Pass Band Ripple:	+/-0.5 dB Max.
Power Supply Voltage:	28 VDC Nominal, 22-30VDC
Current Consumption:	12 AMPS Max.
Dimensions:	8.75"L x 3.5"W x 12"D
Number of Inputs/ Outputs:	2 Inputs / 1 Outputs
Connectors	N or SMA female
Weight	13 Lbs. Max.
Operating Temperature:	-25° to +65° C Ambient

AC Power Supply (PSU-1819-AC) Module Electrical Specification

Input Voltage	208-230 VAC, Single Phase
Maximum Input Current:	2AMPS per Module, 8 AMPS Max with 4 Modules
Output Voltage:	28 VDC
Output Current:	12 AMPS per Module
Dimensions:	8.75"L x 3.5"W x 12"D
Number of Inputs/ Outputs:	1 Inputs / 4 Outputs
Connectors	Molex
Weight	13 Lbs. Max.
Operating Temperature:	-25° to +65° C Ambient

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48V Power Supply (PSU-1819-48) Module Electrical Specification

Input Voltage	36-72 VDC
Maximum Input Current:	35 AMPS
Output Voltage:	28 VDC
Output Current:	54 AMPS Total (each output protected by 20A breaker)
Dimensions:	8.75"L x 3.5"W x 12"D
Number of Inputs/ Outputs:	1 Inputs / 4 Outputs
Connectors	JST
Weight	13 Lbs. Max.
Operating Temperature:	-25° to +65° C Ambient

Triple Duplexer (TDM-1819) Module Electrical Specification

Operating Frequency:	PCS Band Specific
Insertion Loss:	< 1 dB
Pass Band Ripple:	+/-0.5 dB Max.
Input /Output VSWR:	1.5:1 Max.
Number of Antenna Outputs:	3
Dimensions:	8.75"L x 3.5"W x 12"D
Connectors:	N or SMA female
Weight:	13 Lbs. Max.
Operating Temperature:	-25° to +65° C Ambient

Dual Duplexer/LNA (DDM-1819) Module Electrical Specification

Operating Frequency:	PCS Band Specific
Transmit Insertion Loss:	< 1 dB
Receive Gain:	28 dB +/- .5 dB
Receive Noise Figure:	2.2 dB Max
Tx Rejection in Rx Band:	>85 dB
Pass Band Ripple:	+/-0.5 dB Max.
Input /Output VSWR:	1.5:1 Max.
Number of Antenna Outputs:	2
Dimensions:	8.75"L x 3.5"W x 12"D
Connectors:	N Female (Tx and Ant) ; SMA female (Rx)
Weight:	13 Lbs. Max.
Operating Temperature:	-25° to +65° C Ambient

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Cell Booster / Amplifier Plug-in Module

Mechanical Drawing