

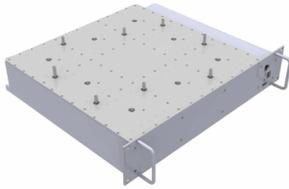


Filters & Combiners

DATA SHEET

Low Loss Combiner

LLC-850-IN



- Combines Technologies onto a Single Feed Line
- Low Loss Combining
- Combining for Multiple Technologies (GSM/UMTS, UMTS/UMTS, UMTS/LTE, CDMA/LTE, etc.)
- Minimal or No Guard Band
- High Reliability Design
- High Power Handling
- Cascadable for higher levels of combining
- Excellent Filter Response
- Occupies only 2U of Rack Space
- Built-In Software
- Control via Ethernet TCP/IP
- DC Block
- Critical & Non-Critical Alarm Status LED's

Overview

CCI's Remote Tunable Narrow Guard Band Filter-Combiner (LLC) combines multiple Cellular Band signals onto a single feeder without the insertion loss normally associated with passive combiners. This new highly compact model requires little or no guard band depending on the technologies being combined thus maximizing the usage of allocated spectrum. A precisely matched filter which is wide enough for a UMTS or three CDMA channels allows the carrier to be positioned anywhere in the Cellular band and provides high rejection of unwanted spurious emissions and noise. Transmit paths are fully isolated to prevent interference and intermodulation products. Note that any technology (including GSM/UMTS, UMTS/UMTS, LTE/UMTS, LTE/LTE, CDMA/LTE) can be combined when utilizing this LLC. Multiple units can also be cascaded for deployment of additional channels. When not tuning, no power is required, effectively becoming a pure passive low loss filter combiner. The LLC can be controlled locally or remotely via TCP/IP or Ethernet requiring only a web browser for simple access. All software is resident internally; no extra software or controller is required. Note that the Bandpass port "only" passes Tx signals, but the Bandstop port is fully duplexed and passes Tx/Rx signals. The unit is housed in a single rack-mounted 19" by 2U assembly.



Filters & Combiners

SPECIFICATIONS

Low Loss Combiner

LLC-850-IN

Electrical

RF Parameters	Ports	Frequency(MHz)	Specification
Return Loss	Bandstop TX/RX	824 - 894	18 dB min.
	Bandpass TX Only	869 - 894	18 dB min.
	ANT	824 - 894	18 dB min.
Insertion Loss	Bandstop TX/RX to ANT	824 to (fc - 2.5)	0.5 dB typ.
		(fc + 2.5) to 894	0.5 dB typ.
	Bandpass TX Only to ANT	(fc - 2.5) to (fc + 2.5)	0.5 dB typ.
Isolation	Bandstop TX/RX to Bandpass TX Only	869 to (fc - 2.5)	≥ 45 dB typ.
		(fc - 2.5) to (fc + 2.5)	≥ 27 dB typ.
		(fc + 2.5) to 894	≥ 45 dB typ.
Tuning Range	Any 5 MHz segment (center frequency - fc) in 869 - 894 MHz		

General Characteristics	
Impedance	50 ohms
Guard Band:	
GSM/UMTS Combining	500 kHz each side of Bandpass required
UMTS/UMTS Combining	"0" Guard Band required
UMTS/LTE Combining	"0" Guard Band required for 5 MHz or greater LTE carrier
CDMA/LTE Combining	"0" Guard Band required
Group Delay variation	50 nS typ.
Continuous Average Power	500 W max. (all ports)
Peak Envelope Power	2 kW max. (all ports)
IMD	< -110 dBm (-153 dBc) typical (2 x +43 dBm tones) all bands

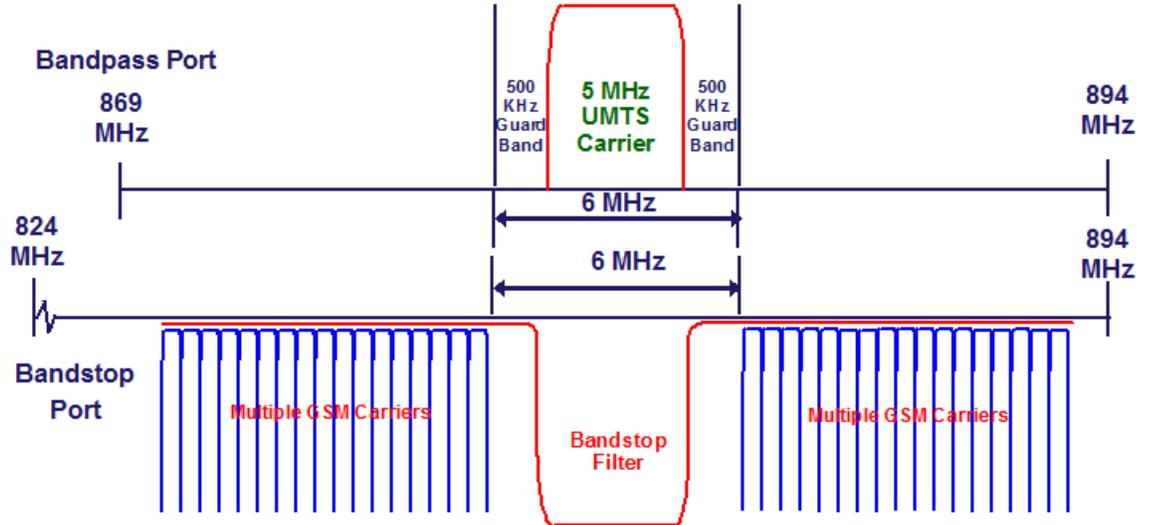


Filters & Combiners

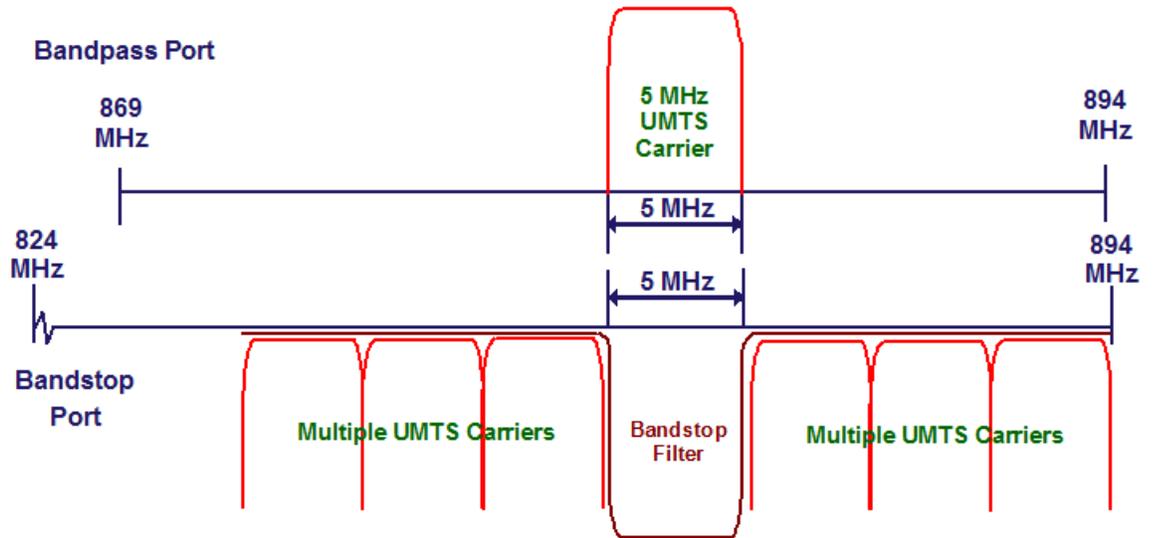
SPECIFICATIONS

Low Loss Combiner

LLC-850-IN



GSM/UMTS Combining: 500 kHz guard band required



UMTS/UMTS Combining: "0" guard band required

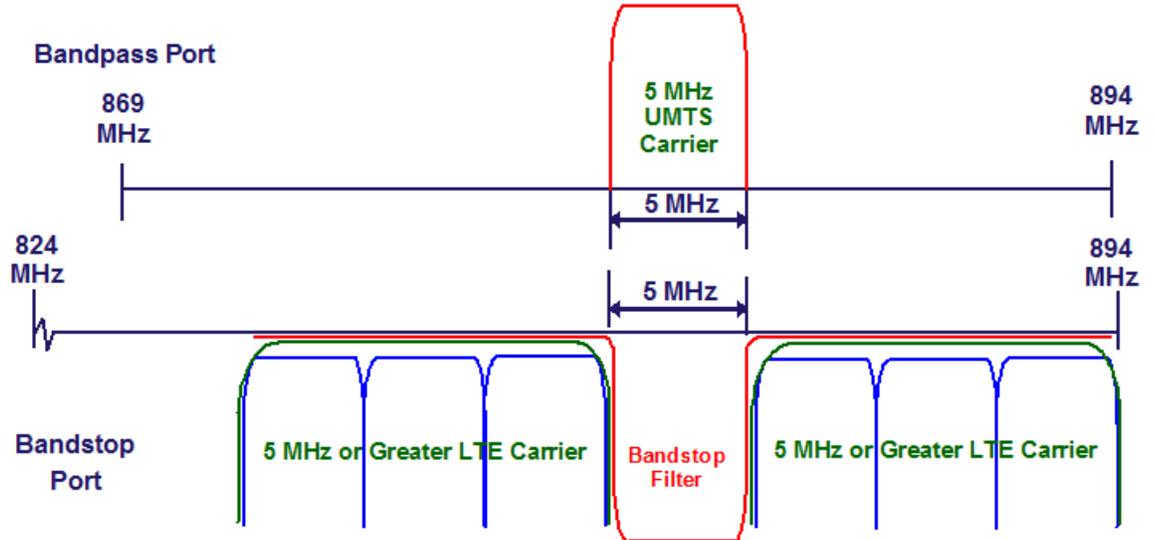


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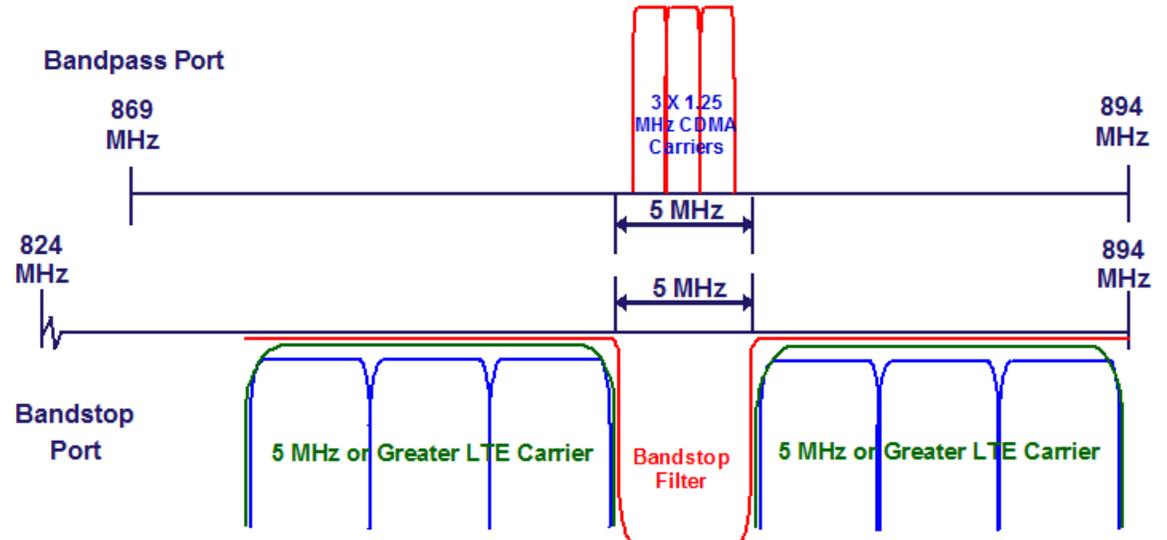
SPECIFICATIONS

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LLC-850-IN



UMTS/LTE Combining: "0" guard band required for 5 MHz or greater LTE carrier



CDMA/LTE Combining: "0" guard band required for 5 MHz or greater LTE carrier

Environmental

Operating Temperature 0° C to +55° C

Enclosure Indoor

Lightning Protection Surge > 30 KA, 20 KA Mult, Res. Pulse < 250 uJ



Filters & Combiners

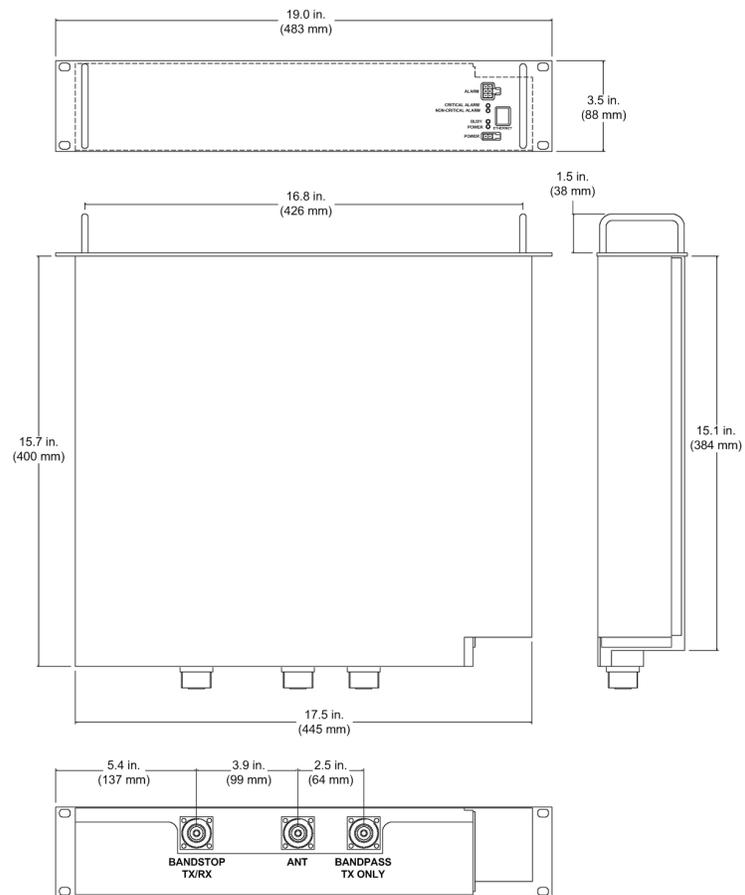
SPECIFICATIONS

Low Loss Combiner

LLC-850-IN

Mechanical

Connectors	3 x 7-16 DIN female
Data Connection	RJ45 Ethernet
Alarm Connection	6 pin Molex connector (4.2 mm)
Power Connection	2 pin Molex connector (4.2 mm)
DC Power Requirement	2A @ +24VDC (only required when tuning)
DC Voltage	±18 to ±76 VDC
Dimensions (incl. connectors)(HxWxD)	3.5 x 19 x 16.995 in. (88.9 x 482.6 x 431.67 mm)
Dimensions (incl. connectors and handles)(HxWxD)	3.5 x 19 x 18.175 in. (88.9 x 482.6 x 461.65 mm)
Weight	28.5 lbs (12.9 kg)



Low Loss Combiner Outline Drawing



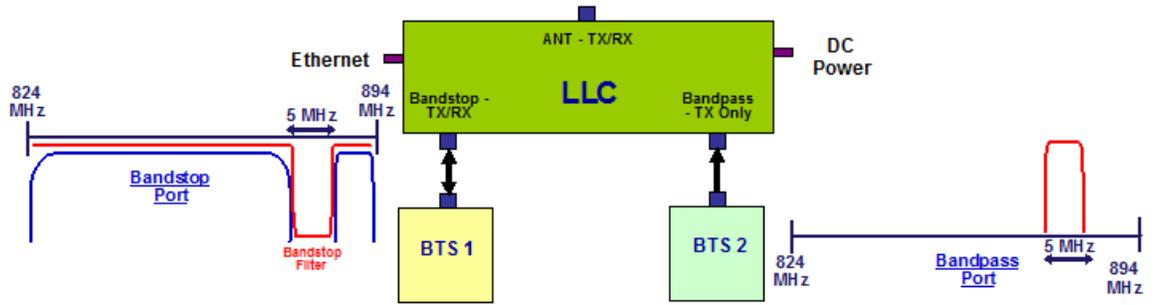
Filters & Combiners

SPECIFICATIONS

Low Loss Combiner

LLC-850-IN

Block Diagram



Low Loss Combiner Block Diagram



Filters & Combiners

STANDARDS & CERTIFICATIONS

Low Loss Combiner

LLC-850-IN

Parts & Accessories

LLC-850-IN 850 Band Narrow Guard Band Tunable LLC

Certifications

Safety EN 60950-1, UL 60950-1

Emission EN 55022

Immunity EN 55024

Environmental IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-5, IEC 60068-2-6, IEC-60068-2-11, IEC 60068-2-14, IEC 60068-2-18, IEC 60068-2-27, IEC 60068-2-29, IEC 60068-02-30, IEC 60068-2-52, IEC 60068-2-64, IEC61000-4-5, GR-63-CORE 4.3.1, EN 60529 IP67, IP68

Certifications

Federal Communication Commission (FCC) Part 15 Class B, CE, CSA US, ISO 9001



CCI Communication Components Inc.
EXTENDING WIRELESS PERFORMANCE