



# Cisco uBR-MC88V Cable Interface Line Card - Quick Start Guide

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## Overview

The Cisco uBR-MC88V cable interface line card serves as the radio frequency (RF) interface between the cable headend and the Data over Cable Service Interface Specifications (DOCSIS)-compliant cable modems, EuroDOCSIS-compliant cable modems, or set-top boxes (STBs). The uBR-MC88V cable interface line cards have eight RF upstream (US) and two downstream (DS) physical connectors. Each downstream physical connector includes four DS channels. uBR-MC88V is a DOCSIS 3.0 line card for the uBR7246VXR and uBR7225VXR universal broadband router family. [Figure 1](#) shows the Cisco uBR-MC88V cable interface line card faceplate.

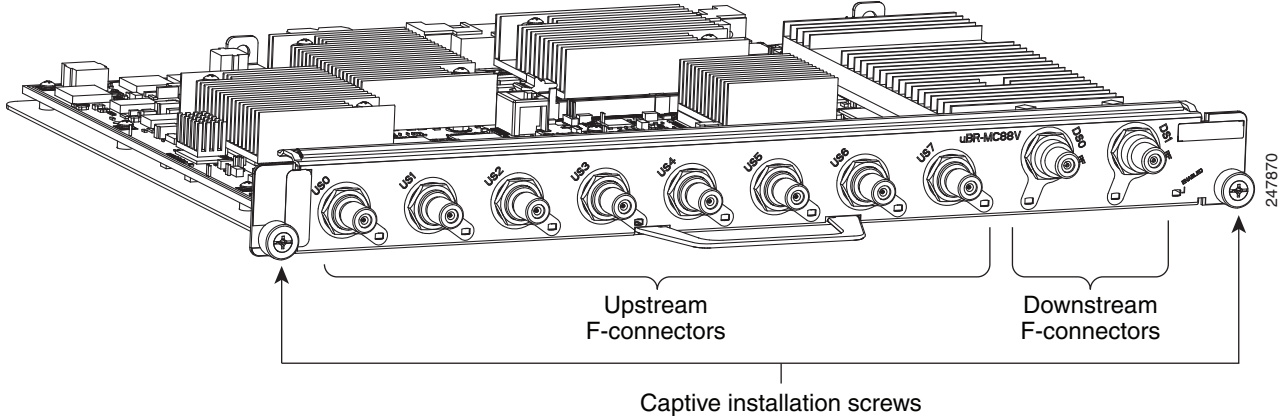


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Figure 1 Cisco uBR-MC88V Cable Interface Line Card Faceplate



## Installing the Cisco uBR-MC88V Cable Interface Line Card

To install a Cisco uBR-MC88V cable interface line card in the Cisco uBR7200 series router, complete the following steps:

  
**Caution**

Make sure that you are grounded using an ESD-preventive wrist or ankle strap.

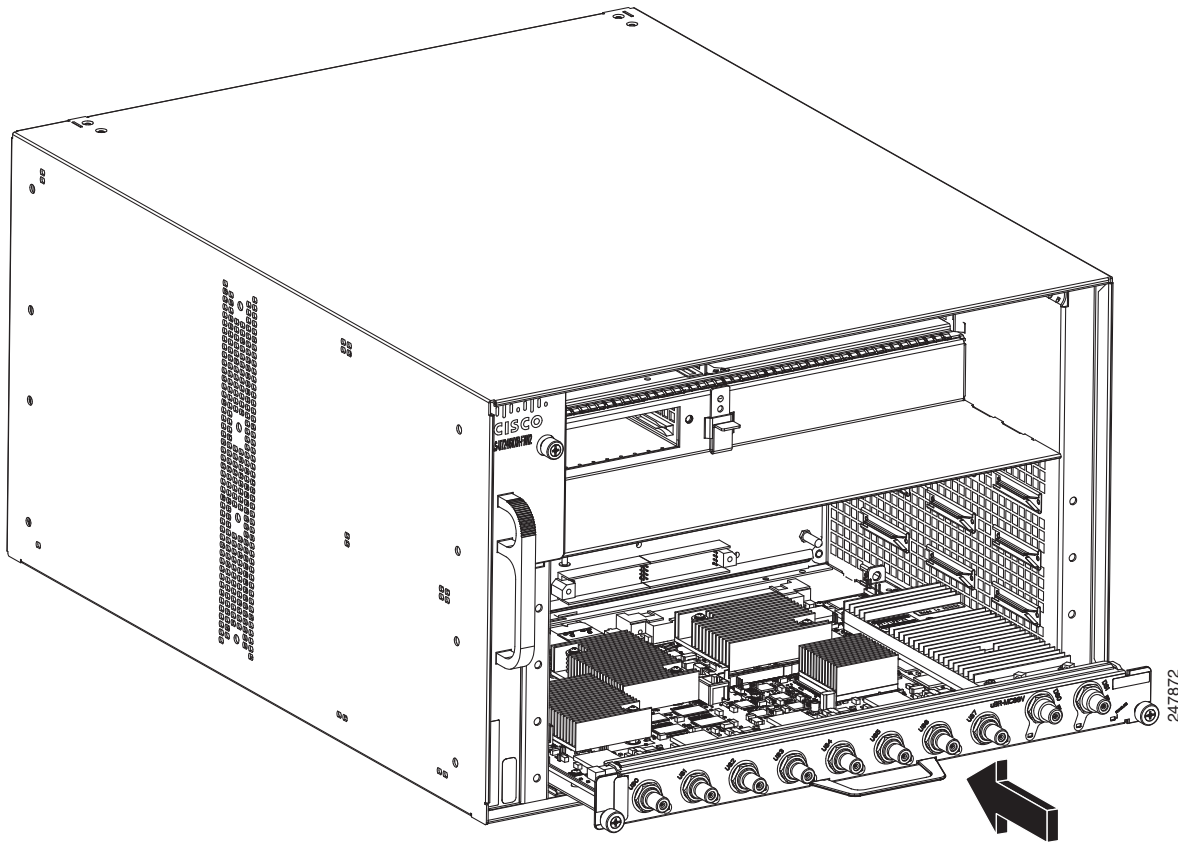
**Step 1** Use both hands to grasp the card by its metal carrier edges and align the left and right edges of the card with the guides in the card slot. The component side of the card must be facing up.

**Step 2** With the metal carrier aligned in the slot guides (see [Figure 2](#)), gently slide the card into the slot until you feel the card seat in the midplane.



**Note** If the card is inserted properly, the enabled LED turns green when the host router recognizes the line card. If the enabled LED does not turn green, see the [Troubleshooting](#) section for details.

**Figure 2** Installing the Cisco uBR-MC88V Cable Interface Line Card



**Note**

Figure 2 shows the chassis with only one line card being installed and the other available card slots are shown as empty, thus revealing the inside of the chassis. This representation is only for illustrative purpose. You should never operate the Cisco uBR7200 series universal broadband router with open card slots. You must fill all card slots either with Cisco cable interface line cards or with blank cards provided by Cisco, to ensure proper airflow through the chassis.

**Step 3**

Tighten the captive installation screws on the card. If the captive screws on the card do not tighten all the way, the card is not completely seated in the midplane. Carefully pull the card out of the slot, reinsert it, and tighten the captive installation screws.



**Caution**

A partially seated card can cause the Cisco uBR7200 series universal broadband router to reboot.

**Step 4**

Connect all the required coaxial cables to the front of the cable interface line card. For more information on cabling, see the [Cabling the Cisco uBR-MC88V Cable Interface Line Card](#) section.

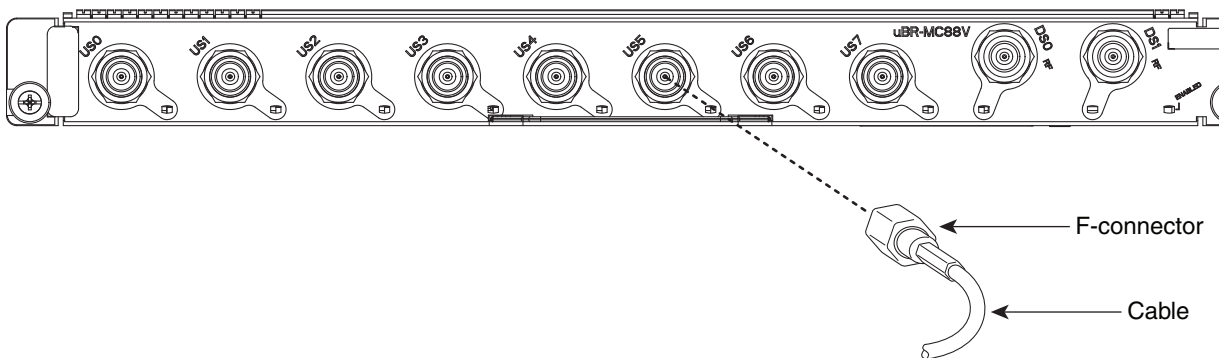
**Note**

After you install the Cisco uBR-MC88V cable interface line card, you must configure the upstream (US) and downstream (DS) ports on the card. For more details on line card configuration, see the *Configuring the Cisco uBR-MC88V Cable Interface Line Card* document at [http://www.cisco.com/en/US/products/hw/modules/ps4969/products\\_installation\\_and\\_configuration\\_guides\\_list.html](http://www.cisco.com/en/US/products/hw/modules/ps4969/products_installation_and_configuration_guides_list.html)

## Cabling the Cisco uBR-MC88V Cable Interface Line Card

To cable the Cisco uBR-MC88V cable interface line card, connect the downstream and upstream ports to a combiner. The card uses coaxial cable F-connectors, as shown in [Figure 3](#).

**Figure 3** Attaching Cable to the F-Connectors



## Removing the Cisco uBR-MC88V Cable Interface Line Card

To remove a Cisco uBR-MC88V cable interface line card from the Cisco uBR7200 series universal broadband router, complete the following steps:

**Caution**

Make sure that you are grounded using an ESD-preventive wrist or ankle strap.

**Step 1**

Disconnect all cables from the front of the card.

**Step 2**

Unscrew the captive installation screws.

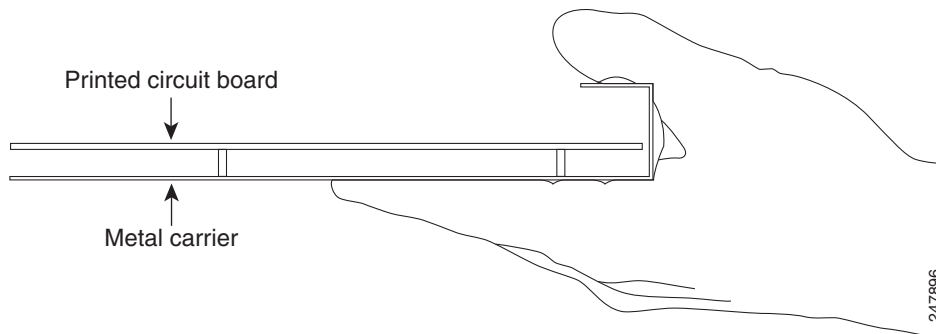
**Step 3**

Grasp the handle on the front of the card and carefully pull the card from the chassis.

**Caution**

Always handle the card by its carrier edges and handle. Do not touch the card components or connector pins. (See [Figure 4](#).)

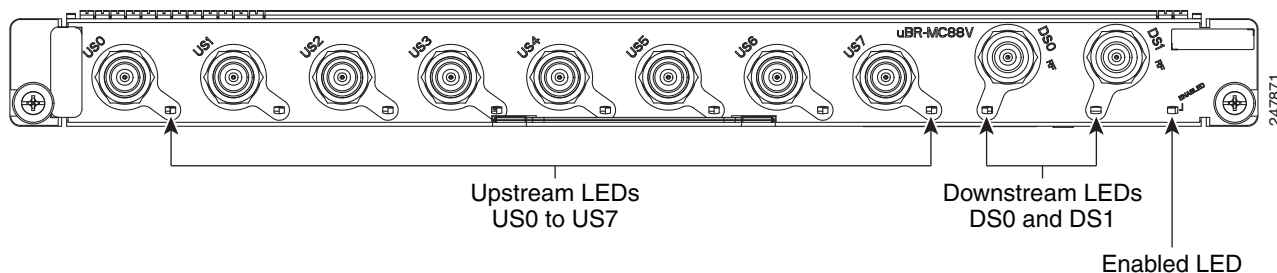
**Figure 4** Removing the Card from the Chassis



## Troubleshooting

If the card is inserted properly, the enabled LED (Figure 5) turns green when the host router recognizes the line card. See Table 1 for LED description.

**Figure 5** LEDs



**Table 1** LED Description

LED/Status	Description
ENABLED—green	Card operating normally
ENABLED—off	Card not enabled
US—green	Upstream enabled
US—off	Upstream not enabled
DS—green	Downstream enabled
DS—off	Downstream not enabled

If the enabled LED does not turn green, check the following:

1. Verify that the card is properly seated in the chassis.
  - a. Release the captive screws.
  - b. Slide the card partially out of the chassis and then slide it back in, making sure that it is properly seated in the midplane.
  - c. Tighten the captive screws.

2. Verify that the captive screws are secure on the faceplate.
3. Verify that the card has been configured for that slot.
4. If the enabled LED remains off after the above checks, it is likely that the system has detected a processor hardware failure. Go to the Cisco TAC website <http://www.cisco.com/tac> for further information and help.

## Technical Specifications

**Table 2** DOCSIS and EuroDOCSIS 2.0 and 3.0 Upstream Data Rates

Upstream Channel Width	Modulation Scheme in bit/symbol	Baud Rate in symbol/sec	Raw Bit Rate in Mb/sec	Throughput (Bit Rate - Overhead) in Mb/sec
6.4 MHz	64-QAM	5.12M	30.96	27.2
	32-QAM		25.80	22.3
	16-QAM		20.54	19.8
	8-QAM		15.48	13.3
	QPSK		10.30	8.9
3.2 MHz	64-QAM	2.56 M	15.48	13.3
	32-QAM		12.90	11
	16-QAM		10.30	8.9
	8-QAM		7.68	6.6
	QPSK		5.12	4.4
1.6 MHz	64-QAM	1.28 M	7.68	6.6
	32-QAM		6.45	5.5
	16-QAM		5.12	4.4
	8-QAM		3.84	3.3
	QPSK		2.56	2.2
800 kHz	64-QAM	640 K	3.84	3.3
	32-QAM		3.20	2.75
	16-QAM		2.56	2.2
	8-QAM		1.92	1.65
	QPSK		1.28	1.1
400 kHz	64-QAM	320 K	1.92	1.65
	32-QAM		1.60	1.38
	16-QAM		1.28	1.1
	8-QAM		0.96	0.83
	QPSK		0.64	0.54

**Table 2** DOCSIS and EuroDOCSIS 2.0 and 3.0 Upstream Data Rates

Upstream Channel Width	Modulation Scheme in bit/symbol	Baud Rate in symbol/sec	Raw Bit Rate in Mb/sec	Throughput (Bit Rate - Overhead) in Mb/sec
200 kHz	64-QAM	160 K	0.96	0.83
	32-QAM		0.80	0.63
	16-QAM		0.64	0.54
	8-QAM		0.48	0.40
	QPSK		0.32	0.27

**Table 3** DOCSIS and EuroDOCSIS Downstream Data Rates

Downstream Channel Width in MHz	Modulation Scheme in bit/symbol	Baud Rate in symbol/sec	Raw Bit Rate in Mb/sec	Throughput (Bit Rate - Overhead) in Mb/sec
6	64 QAM (6)	5.056	30.34	27
	256 QAM (8)	5.360	42.88	39
8	64 QAM (6)	6.592	39.55	36
	256 QAM (8)	6.592	52.74	51

**Table 4** Output Power Level

Output Power per Channel for N Channels Combined on to a Single RF port	Output Power in dBmV per Channel
N=1	52 to 60 <b>Note</b> You can configure the RF output power up to a maximum of 62 dBmV. However, the RF performance is not guaranteed when the power is greater than 60 dBmV.
N=2	48 to 56
N=3	46 to 54
N=4	44 to 52

## Related Documentation

For safety information, refer to:

[Regulatory Compliance and Safety Information for Cisco uBR7200 Series Universal Broadband Routers](#)

For additional hardware installation and software configuration information, go to:

[http://www.cisco.com/en/US/products/hw/cable/ps2217/tsd\\_products\\_support\\_series\\_home.html](http://www.cisco.com/en/US/products/hw/cable/ps2217/tsd_products_support_series_home.html)

For fan tray and power supply replacement instructions, go to:

[http://www.cisco.com/en/US/products/hw/cable/ps2217/prod\\_installation\\_guides\\_list.html](http://www.cisco.com/en/US/products/hw/cable/ps2217/prod_installation_guides_list.html)

# Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

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