



Antenna Reference Guide

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Introduction

This antenna reference guide provides best practices for selecting and installing antennas with Cradlepoint hardware, regulations for specific Cradlepoint products to ensure FCC compliance, and references to supporting resources.

Best Practices for Selecting & Installing Antennas on Cradlepoint Hardware

Cradlepoint endpoints are unique in their form and function and therefore not all antennas will be the best fit for each device. Cradlepoint recommends considering the following as you determine which antenna(s) will best suite your needs.

LTE, Wi-Fi, and MIMO

LTE and Wi-Fi are Multiple Input, Multiple Output (MIMO) technologies, which means that all LTE and Wi-Fi antennas are sending and receiving data. For proper operation, all LTE and Wi-Fi antenna ports on the Cradlepoint endpoint need an attached antenna.

Attaching only a portion of the LTE or Wi-Fi antennas will impact the device's functionality, up to and including reduced throughput, signal drops, and instability. For example, attaching two antennas to a Cradlepoint endpoint with two LTE ports may provide 40 Mbps throughput while only attaching one antenna may provide 25 Mbps. The device modem will experience connectivity issues such as completely dropping the LTE signal for periods of time or dropping the signal as the modem is trying to cycle through available technologies (i.e. fallback to 3G), up to and including fully disconnecting.

For the 1200M modems (with four LTE antennas), we highly recommend all four LTE antennas be attached for the best performance. However, they can be used with only two antennas (either connected to main0/aux0 or main1/aux1) with reduced throughput, reduced band support, and the service connectivity is not guaranteed and is, therefore, not recommended.

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Cellular Reception

Without sufficient cellular reception, the router may behave as though there are no antennas attached. The following describe how reception may be impacted:

- A paddle (direct attach) antenna is attached to a router inside of a metal box (i.e. kiosk) with no cellular reception
- A paddle (direct attach) antenna is used inside a building behind metal walls and/or brick with no reception
- A long coax cable with insufficient shielding/rating is run too far from the router
 - Higher frequencies are more susceptible to signal loss when using longer cables
 - Each coax cable fitting will add some signal loss.
 - Actual dBm loss values are provided by the fitting manufacturer.
- The antenna does not support the frequency the device is trying to connect to
 - Most antennas made before 2H 2019 or 2020 do not provide adequate gain for LTE bands 71 (600Mhz), 48/CBRS (3.5GHz) and/or 46/LAA (5GHz)
 - NOTE: All of the antennas in the Cradlepoint Antenna Program are required to support all the frequencies of all our modems
- An antenna doesn't have proper separation from other radiation sources
 - Example: Antennas from 2 radios that are simultaneously transmitting and receiving are positioned too close to each other and are de-sensing
- Direct attach paddle antennas aren't positioned for optimal reception
 - Example: The antennas are laying on top of each other or not properly spaced
- An antenna has an insufficient ground plane to function properly
 - Example: Mobile antennas are meant to be mounted on top of a metal roof with a sufficient ground plane to function properly. If mounted on a non-metallic surface or on a metal surface that is too small, they may provide insufficient gain.
 - NOTE: Antenna spec sheets will call out if a ground plane is included or if needed and the minimum size.

Refer to <https://customer.cradlepoint.com/s/article/Modem-Signal-Strength-and-Signal-Quality> to determine if the signal strength is sufficient.

NOTE: Antenna types may be mixed and matched so long as they all have sufficient reception and do not exceed FCC regulations (i.e. remote/wired-out antennas for 2 LTE antenna ports on main/aux0 and GPS on the 1200M-B modem, and direct attached paddle antennas on main/aux1 of the 1200M-B modem and the Wi-Fi RP-SMA ports of an AER2200).

Refer to the FCC Regulations section of this guide for more information.

GNSS Reception

Most customers use multi-purpose antennas that incorporate Wi-Fi, GNSS, and Cellular and have acceptable performance. However, for best performance, a physically separate GNSS antenna is required.

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Cables & Ports

The following are best practices for connecting antenna cables to the Cradlepoint ports:

- Ensure cable ends are connected to the correct ports.
- LTE and GPS ports use SMA connectors and WI-FI ports use RP-SMA. Check cable ends to ensure they are the appropriate connection type for the port you're attaching them to.
- GPS/GNSS connectors can be either active or passive. An active antenna requires an active port with suitable ratings to work. A passive antenna may be used on a passive port and can often be used on an active port, as long as the antenna is not a DC short-circuit type (e.g., Loop and PIFA antennas are typically DC short circuit).
- Do not over-torque the SMA connector on the modem. Finger-tight is sufficient (maximum torque is 4 in-lbs).
- Plan cable runs to minimize signal loss. Use the fewest number of coax cable fittings to avoid unnecessary signal loss.
- Coax cable has signal loss, especially for higher frequencies. For cable runs 15 feet or longer, use low loss LMR400. They generally connect using a larger, N-type connector, which requires a convertor to connect to the smaller SMA connectors on Cradlepoint endpoints.
- Use cable clamps or other cable-holding mechanisms to secure low-loss cables against a wall or pole.
- Use at least two clamps on the cable near the Cradlepoint endpoint. This construction helps reduce stress on the cable/modem connection and increases product reliability.
- Use lightning protection.

Positioning Antennas

To avoid signal loss, ensure the appropriate cables and direct attach antennas are connected to their applicable ports on the Cradlepoint endpoint.

Antennas connected by cables

Ensure the antennas are installed according to the manufacturer's installation requirements and that the power, gain, and other applicable signal settings are configured in compliance with the specifications dictated in the Antenna selection guide.

Paddle and direct attach antennas

Stagger the angles of the paddles so that they are not in alignment with each other. Use the antenna alignment tool with applicable endpoints. For positioning examples, refer to [How to Position 1200M Antennas](#).

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FCC Regulations

The FCC requires that antennas attached to Cradlepoint products meet certain standards. Using antennas not sold by Cradlepoint places the burden of confirming that the antenna meets FCC regulations on the customer. The following specifies the acceptable frequency ranges, antenna types, and gains to assist with identifying third party antennas to use with specific Cradlepoint products.

IBR1700-1200M-B Specific Regulations

Antennas connected to the MAIN and AUX ports on products that include 1200M-B modems must have a system gain (antenna gain minus cable loss) less than the following values:

Table 1. IBR1700-1200M-B Cellular Antennas - Maximum Gain by Frequency Range.

Frequency	Maximum Gain
617-698 MHz	9 dBi
699-787 MHz	6 dBi
788-798 MHz	6.4 dBi
1710-1785 MHz	5.5 dBi
1850-1920 MHz	8.51 dBi
2000-2020 MHz	9 dBi
2300-2400 MHz*	1.08 dBi
2496-2690 MHz	5.5 dBi

**Operation in the 2300-2400 MHz band is allowed indoors only, and the antenna must be more than 50' from any roadway. If the antenna is installed outdoors, within 50' of any roadway, or if the antenna system gain is greater than 1.08 dBi in this band, the installer must disable LTE Band 30 in the Connection Manager>Modem properties>Modem tab.*

Antennas connected to the Wi-Fi ports on IBR1700 series devices must have system gain (antenna gain minus cable loss) less than the following values:

Table 2.. IBR1700-1200M-B Wi-Fi Antennas - Maximum Gain by Frequency Range.

Frequency	Dipole Antennas	Other Antennas
2402-2843.5 MHz	5 dBi	Not allowed
5150-5250 MHz	5 dBi	Not allowed
5250-5350 MHz	5 dBi	Not allowed
5475-5725 MHz	5 dBi	Not allowed
5725-5850 MHz	5 dBi	Not allowed

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IBR1700-600M Specific Regulations

Antennas connected to the MAIN and AUX ports on products that include 600M modems must have a system gain (antenna gain minus cable loss) less than the following values:

Table 3. IBR1700-600M Cellular Antennas - Maximum Gain by Frequency Range.

Frequency	Maximum Gain
600-800 MHz	Cannot exceed FCC EIRP Limits
800-1000 MHz	Cannot exceed FCC EIRP Limits
1700-1800 MHz	Cannot exceed FCC EIRP Limits
1800-2000 MHz	Cannot exceed FCC EIRP Limits
2300-2400 MHz*	1.0 dBi
2500-2600 MHz	Cannot exceed FCC EIRP Limits

**Operation in the 2300-2400 MHz band is allowed indoors only, and the antenna must be more than 50' from any roadway. If the antenna is installed outdoors, within 50' of any roadway, or if the antenna system gain is greater than 1.08 dBi in this band, the installer must disable LTE Band 30 in the Connection Manager>Modem properties>Modem tab.*

Antennas connected to the Wi-Fi ports on IBR1700 series devices must have system gain (antenna gain minus cable loss) less than the following values:

Table 4. IBR1700-600M Wi-Fi Antennas - Maximum Gain by Frequency Range.

Frequency	Dipole Antennas	Other Antennas
2402-2843.5 MHz	5 dBi	Not allowed
5150-5250 MHz	5 dBi	Not allowed
5250-5350 MHz	5 dBi	Not allowed
5475-5725 MHz	5 dBi	Not allowed
5725-5850 MHz	5 dBi	Not allowed

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IBR900-1200M-B Specific Regulations

Antennas connected to the MAIN and AUX ports on products that include 1200M-B modems must have a system gain (antenna gain minus cable loss) less than the following values:

Table 5. IBR900-1200M-B Cellular Antennas - Maximum Gain by Frequency Range.

Frequency	Maximum Gain
617-698 MHz	9 dBi
699-787 MHz	6 dBi
788-798 MHz	6.4 dBi
1710-1785 MHz	5.5 dBi
1850-1920 MHz	8.51 dBi
2000-2020 MHz	9 dBi
2300-2400 MHz*	1.08 dBi
2496-2690 MHz	5.5 dBi

*Operation in the 2300-2400 MHz band is allowed indoors only, and the antenna must be more than 50' from any roadway. If the antenna is installed outdoors, within 50' of any roadway, or if the antenna system gain is greater than 1.08 dBi in this band, the installer must disable LTE Band 30 in the Connection Manager>Modem properties>Modem tab.

Antennas connected to the Wi-Fi ports on IBR900 series devices must have system gain (antenna gain minus cable loss) less than the following values:

Table 6. IBR900-1200M-B Wi-Fi Antennas - Maximum Gain by Frequency Range.

Frequency	Dipole Antennas	Monopole Antennas	PIFA antennas	Other Antennas
2402-2843.5 MHz	2.47 dBi	1.5 dBi	1.5 dBi	Not allowed
5150-5250 MHz	2.47 dBi	1.0 dBi	2 dBi	Not allowed
5250-5350 MHz	2.47 dBi	1.0 dBi	2 dBi	Not allowed
5475-5725 MHz	2.47 dBi	0.9 dBi	1.9 dBi	Not allowed
5725-5850 MHz	2.47 dBi	0.9 dBi	1.9 dBi	Not allowed

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IBR900-600M Specific Regulations

Antennas connected to the MAIN and AUX ports on products that include 600M modems must have a system gain (antenna gain minus cable loss) less than the following values:

Table 7. IBR900-600M Cellular Antennas - Maximum Gain by Frequency Range.

Frequency	Maximum Gain
600-800 MHz	Cannot exceed FCC EIRP Limits
800-1000 MHz	Cannot exceed FCC EIRP Limits
1700-1800 MHz	Cannot exceed FCC EIRP Limits
1800-2000 MHz	Cannot exceed FCC EIRP Limits
2300-2400 MHz*	1.0 dBi
2500-2600 MHz	Cannot exceed FCC EIRP Limits

**Operation in the 2300-2400 MHz band is allowed indoors only, and the antenna must be more than 50' from any roadway. If the antenna is installed outdoors, within 50' of any roadway, or if the antenna system gain is greater than 1.08 dBi in this band, the installer must disable LTE Band 30 in the Connection Manager>Modem properties>Modem tab.*

Antennas connected to the Wi-Fi ports on IBR900 series devices must have system gain (antenna gain minus cable loss) less than the following values:

Table 8. IBR900-600M Wi-Fi Antennas - Maximum Gain by Frequency Range.

Frequency	Dipole Antennas	Monopole Antennas	PIFA antennas	Other Antennas
2402-2843.5 MHz	2.47 dBi	1.5 dBi	1.5 dBi	Not allowed
5150-5250 MHz	2.47 dBi	1.0 dBi	2 dBi	Not allowed
5250-5350 MHz	2.47 dBi	1.0 dBi	2 dBi	Not allowed
5475-5725 MHz	2.47 dBi	0.9 dBi	1.9 dBi	Not allowed
5725-5850 MHz	2.47 dBi	0.9 dBi	1.9 dBi	Not allowed

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IBR600C-150M-D Specific Regulations

Antennas connected to the MAIN and AUX ports on products that include 150M-D modems must have a system gain (antenna gain minus cable loss) less than the following values:

Table 9. IBR600C-150M-D Cellular Antennas - Maximum Gain by Frequency Range.

Frequency	Maximum Gain
617-698 MHz	8.55 dBi
699-787 MHz	8.55 dBi
788-798 MHz	8.73 dBi
1710-1785 MHz	5 dBi
1850-1920 MHz	8 dBi
2000-2020 MHz	9 dBi
2300-2400 MHz*	1.08 dBi

**Operation in the 2300-2400 MHz band is allowed indoors only, and the antenna must be more than 50' from any roadway. If the antenna is installed outdoors, within 50' of any roadway, or if the antenna system gain is greater than 1.08 dBi in this band, the installer must disable LTE Band 30 in the Connection Manager>Modem properties>Modem tab.*

Antennas connected to the Wi-Fi ports on IBR900 series devices must have system gain (antenna gain minus cable loss) less than the following values:

Table 10. IBR600C-150M-D Wi-Fi Antennas - Maximum Gain by Frequency Range.

Frequency	Dipole Antennas	Monopole Antennas	PIFA antennas	Other Antennas
2402-2843.5 MHz	2.47 dBi	1.5 dBi	1.5 dBi	Not allowed

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IBR600B-LP4 Specific Regulations

Antennas connected to the MAIN and AUX ports on products that include LP4 modems must have a system gain (antenna gain minus cable loss) less than the following values:

Table 11. IBR600B-LP4 Cellular Antennas - Maximum Gain by Frequency Range.

Frequency	Maximum Gain
777-862 MHz	9.72 dBi
1710-1785 MHz	5.78 dBi
1850-1920 MHz	7.51 dBi

**Operation in the 2300-2400 MHz band is allowed indoors only, and the antenna must be more than 50' from any roadway. If the antenna is installed outdoors, within 50' of any roadway, or if the antenna system gain is greater than 1.08 dBi in this band, the installer must disable LTE Band 30 in the Connection Manager>Modem properties>Modem tab.*

Antennas connected to the Wi-Fi ports on IBR600B series devices must have system gain (antenna gain minus cable loss) less than the following values:

Table 12. IBR600B-LP4 Wi-Fi Antennas - Maximum Gain by Frequency Range.

Frequency	Dipole Antennas	Other Antennas
2402-2843.5 MHz	5.0 dBi	Not allowed

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Cradlepoint Antennas

Cradlepoint carries a limited selection of antennas for use with Cradlepoint products. Refer to the following table for more information.

Table 13. Cradlepoint Antennas.

Part Number	Description	Compatible Products
170659-001	Cellular Antenna, White, 700MHz - 2.7GHz, SMA, 210mm	CBA850-LP6, CBA850-LP4
170706-000	Cellular Antenna, Black, 700MHz - 2.7GHz, SMA, 160mm	LP6 modems, IBR600B-LP4, LP4 modems
170704-002	Cellular Antenna, Black mini, 600MHz - 6GHz, SMA, 140mm	600M, 150M, 10M modems
170760-000	Cellular Antenna, Black, 600MHz - 6GHz, SMA, 180mm	1200M-B modems
170761-000	Cellular Antenna, White, 600MHz - 6GHz, SMA, 180mm	CBA850-1200M-B
170765-000	Cellular Antenna, White mini, 600MHz - 2.7GHz, SMA, 145mm	CBA550, LP6 modem
170801-000	Cellular Antenna, Gray, 600MHz - 6GHz, SMA, 152mm	E300, E3000, MC400 in E300 or E3000, 1200M-B modems
170628-000	Wi-Fi Antenna, Black, Dual-band 2.4/5GHz, RPSMA, 194mm	All black Wi-Fi products
170836-000	Wi-Fi Antenna, Gray, Dual-band 2.4/5GHz, RPSMA, 194mm	E3000

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Cradlepoint Antenna Program

The Cradlepoint Antenna Program consists of antennas provided by vendors who have met the requirements to be included in the program. The program establishes a specific set of criteria to ensure the antennas meet compatibility and regulatory standards, including:

- Frequency range: 600MHz – 6 GHz with minimum 10 MHz steps
- Supporting technical documents including data sheets and installation guides
- Support for the Cradlepoint Support team and Cradlepoint customers
- Marketing materials

The program replaces the previous selection and sales process by connecting customers with our approved vendors to find and purchase the antenna(s) that best meet their needs. This allows our sales teams and partners more options and the newest antennas as they are made available from the vendors.

The approved antenna vendors will manage customer antenna purchases, with the exception of specific antennas (and their replacements) that Cradlepoint provides as part of certain subscription packages.

While there are many quality antenna vendors, Cradlepoint cannot qualify and approve them all. If customers choose to use other antenna vendors or other antennas not currently listed on the approved antenna tables in this document, they are responsible for qualifying their performance to meet FCC regulations. Cradlepoint will be unable to troubleshoot non-approved antennas.

For support-related customer service, Cradlepoint Support will follow the standard procedure for troubleshooting and diagnosing endpoint connectivity issues. If the issue appears to be related to the antenna (i.e., poor signal strength, drops, poor throughput, etc.) the customer may be asked to connect an approved antenna before further debugging.

Vendors interested in the program must be recommended by Cradlepoint sales team members, partners, or customers and have an established, consistently positive relationship with them. Recommended vendors are communicated through Cradlepoint internal requests only. External requests will not be considered.

Approved Antenna Vendors

The following are the Approved Antenna Vendors in the Cradlepoint Antenna Program. This section includes lists of each vendor's antennas approved to work with Cradlepoint products and the required cable lengths to meet FCC compliance. For vendor contact information, refer to the appendices in this document.

NOTE: The column that delineates between installations with or without ground planes refers to the following scenarios:

- **W/ ground plane:** When the antenna is installed on a metal surface (aluminum, steel, etc.), 1 to 1 1/4 ft larger than the size of the antenna or greater.
- **W/O ground plane:** When the antenna is installed on any non-metallic surface (such as fiberglass).

Approved Panorama Antennas



For contact information refer to Appendix A: Panorama.

Table 14. Cradlepoint Approved Panorama Antennas & Required Cable Lengths (in Meters).

Cradlepoint Approved Panorama Antennas & Required Cable Lengths (in Meters)																		
Cradlepoint Endpoints				IBR1700		IBR900			IBR600C		IBR600B	IBR200	AER2200		E300		E3000	NOTES
Embedded Modem				1200M-B	600M	1200M-B	600M	LP6	150M-D	LPE	LP4		1200M-B	600M	1200M-B	150M-D	1200M-B	
Panorama Antennas	2-in-1 5G Dome	LG-IN2455 (Black or White)	w/o ground plane	2m	2m	5m	5m	5m	5m	5m	2m	2m	2m	2m	2m	2m	5m	
			w/ ground plane	5m	5m	8m	8m	8m	8m	8m	5m	5m	5m	5m	5m	5m	8m	
	3-in-1 5G Dome	LG-IN2456 (Black or White)	w/o ground plane	2m	2m	5m	5m	5m	5m	5m	2m	2m	2m	2m	2m	2m	5m	
			w/ ground plane	5m	5m	8m	8m	8m	8m	8m	5m	5m	5m	5m	5m	5m	8m	
	5-in-1 5G Dome	LG-IN2457 (Black or White)	w/o ground plane	2m	2m	5m	5m	5m	5m	5m	2m	2m	2m	2m	2m	2m	5m	
			w/ ground plane	5m	5m	8m	8m	8m	8m	8m	5m	5m	5m	5m	5m	5m	8m	
		LG-IN2444 (Black or White)	w/o ground plane	3m	3m	5m	5m	5m	5m	5m	3m	3m	3m	3m	3m	3m	5m	
			w/ ground plane	4m	4m	7m	7m	7m	7m	7m	4m	4m	4m	4m	4m	4m	7m	
	7-in-1 5G Dome	LG-IN2445 (Black or White)	w/o ground plane	3m	3m	5m	5m	5m	5m	5m	3m	3m	3m	3m	3m	3m	5m	
			w/ ground plane	4m	4m	7m	7m	7m	7m	7m	4m	4m	4m	4m	4m	4m	7m	
		LG-IN2458 (Black or White)	w/o ground plane	1m	1m	4m	4m	4m	4m	4m	1m	1m	1m	1m	N/A	N/A	N/A	
			w/ ground plane	4m	4m	8m	8m	8m	8m	8m	4m	4m	4m	4m	N/A	N/A	N/A	
	9-in-1 5G Dome	LG-IN2446 (Black or White)	w/o ground plane	3m	3m	5m	5m	5m	5m	5m	3m	3m	3m	3m	3m	3m	5m	<ul style="list-style-type: none"> • Standalone GNSS antenna recommended • Ground plane may impact LTE <900MHz • LTE isolation <1 GHz best with ground plane
			w/ ground plane	4m	4m	7m	7m	7m	7m	7m	4m	4m	4m	4m	4m	4m	7m	
		LG-IN2448 (Black or White)	w/o ground plane	1m	1m	4m	4m	4m	4m	4m	1m	1m	1m	1m	N/A	N/A	N/A	<ul style="list-style-type: none"> • Limited Wi-Fi isolation • Standalone GNSS antenna recommended
			w/ ground plane	4m	4m	8m	8m	8m	8m	8m	4m	4m	4m	4m	N/A	N/A	N/A	

NOTE: N/A designations indicate that there is not enough information currently available and is not approved for the associated endpoint.

Approved Parsec Antennas

For contact information, refer to Appendix B: Parsec.



Table 15. Cradlepoint Approved Parsec Antennas & Required Cable Lengths (in Feet).

Cradlepoint Approved Parsec Antennas & Required Cable Lengths (in Feet)																	
Cradlepoint Endpoints			IBR1700		IBR900			IBR600C		IBR600B	IBR200	AER2200		E300		E3000	NOTES
Embedded Modem			1200M-B	600M	1200M-B	600M	LP6	150M-D	LPE	LP4		1200M-B	600M	1200M-B	150M-D	1200M-B	
Parsec Antenna Families	Akita	w/ or w/o ground plane	6 ft	1 ft	6 ft	1 ft	1 ft	15 ft	1 ft	3 ft	1 ft	6 ft	1 ft	6 ft	15 ft	6 ft	
	Belgian Shepherd LTE + Wi-Fi	w/o ground plane	10 ft	10 ft	16 ft	16 ft	16 ft	16 ft	16 ft	10 ft	10 ft	10 ft	10 ft	10 ft	12 ft	N/A	<ul style="list-style-type: none"> Standalone GNSS antenna recommended Limited efficiency for Bands 8 & 46 and LTE isolation IBR900 and IBR600C models with a ground plane must use the RG-58 cable option
		w/ ground plane	15 ft	15 ft	20 ft*	20 ft*	20 ft*	20 ft*	20 ft*	10 ft	10 ft	15 ft	15 ft	15 ft	15 ft	N/A	
	Belgian Shepherd LTE Only	w/o ground plane	10 ft	Any	10 ft	Any	6 ft	12 ft	Any	6 ft	Any	10 ft	Any	10 ft	6 ft	10 ft	<ul style="list-style-type: none"> IBR600C-150M-D with a ground plane must use the RG-58 cable option
		w/ ground plane	15 ft	Any	15 ft	Any	6 ft	15 ft*	Any	10 ft	Any	15 ft	Any	15 ft	10 ft	15 ft	
	Doberman LTE + Wi-Fi	w/o ground plane	15 ft	15 ft	16 ft	16 ft	16 ft	6 ft	Any	15 ft	15 ft	15 ft	15 ft	15 ft	15 ft	N/A	<ul style="list-style-type: none"> Standalone GNSS antenna recommended Limited efficiency for Bands 8 & 71
		w/ ground plane	10 ft	Any	18 ft	18 ft	18 ft	6 ft	Any	Any	Any	10 ft	Any	15 ft	15 ft	N/A	
	Doberman LTE Only	w/o ground plane	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any	6 ft	Any	
		w/ ground plane	10 ft	Any	10 ft	Any	Any	6 ft	Any	Any	Any	10 ft	Any	10 ft	6 ft	10 ft	
	Husky LTE + Wi-Fi	w/o ground plane	Any	Any	12 ft*	12 ft*	12 ft*	10 ft*	10 ft*	Any	Any	Any	Any	Any	6 ft	N/A	<ul style="list-style-type: none"> Limited VSWR for Band 46 IBR900 and IBR600C models, with and without a ground plane, must use the RG-58 cable option
		w/ ground plane	15 ft	10ft	15 ft*	15 ft*	15 ft*	15 ft*	15 ft*	10 ft	10ft	15 ft	10ft	15 ft	6ft	N/A	
	Husky LTE Only	w/o ground plane	Any	Any	Any	Any	Any	6 ft	Any	Any	Any	Any	Any	Any	6 ft	Any	
		w/ ground plane	15 ft	1 ft	15 ft	1 ft	Any	6 ft	Any	Any	Any	15 ft	Any	15 ft	6 ft	15 ft	

Cradlepoint Approved Parsec Antennas & Required Cable Lengths (in Feet)																	
Cradlepoint Endpoints			IBR1700		IBR900			IBR600C		IBR600B	IBR200	AER2200		E300		E3000	NOTES
Embedded Modem			1200M-B	600M	1200M-B	600M	LP6	150M-D	LPE	LP4		1200M-B	600M	1200M-B	150M-D	1200M-B	
Parsec Antenna Families	K-9 LTE + Wi-Fi	w/o ground plane	15 ft	15 ft	15 ft*	15 ft*	15 ft*	10 ft	10 ft	15 ft	15 ft	15 ft	15 ft	15 ft	15 ft	N/A	<ul style="list-style-type: none"> Limited VSWR for Bands 1, 2/25, 3, 4/66, 39, 71, 42, 46, 48 Limited efficiency for Bands 7, 38, 41, 46 Limited isolation for LTE <1 GHz Standalone GNSS antenna recommended IBR900 models, with and without a ground plane, must use the RG-58 cable option IBR600C models with a ground plane must use the RG-58 cable option
		w/ ground plane	10 ft	10 ft	20 ft*	20 ft*	20 ft*	20 ft*	20 ft*	10 ft	10 ft	10 ft	10 ft	15 ft	15 ft	N/A	
	K9 LTE Only	w/o ground plane	6 ft	Any	6 ft	Any	Any	10 ft	Any	Any	Any	6 ft	Any	6 ft	10 ft	6 ft	
		w/ ground plane	10 ft	Any	10 ft	Any	Any	10 ft	Any	Any	Any	6 ft	Any	6 ft	10 ft	6 ft	
	Rottweiler LTE + Wi-Fi	w/o ground plane	10 ft	10 ft	N/A	N/A	N/A	N/A	N/A	10 ft	10 ft	10 ft	10 ft	10 ft	10 ft	N/A	
		w/ ground plane	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10 ft	10 ft	N/A	
	Rottweiler LTE Only	w/o ground plane	10 ft	Any	10 ft	Any	10 ft	12 ft	Any	6 ft	Any	10 ft	Any	10 ft	12 ft	N/A	
		w/ ground plane	10 ft	Any	10 ft	Any	10 ft	15 ft	Any	10 ft	Any	10 ft	Any	10 ft	15 ft	N/A	

NOTE: N/A designations indicate that there is not enough information currently available and is not approved for the associated endpoint. * Denotes the antenna/endpoint combination requires ordering the RG-58 cable option.