



Configuration Guide

Configuring AP Tx Power Settings in vWLAN

This configuration guide explains the concepts behind configuring your Bluesocket Access Point (AP) transmit (Tx) power settings in your virtual wireless local area network (vWLAN). For additional support and resources, refer to the Bluesocket support community at <https://supportforums.adtran.com/community/bluesocket>.

This guide consists of the following sections:

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Overview

Prior to vWLAN firmware release 2.9, the AP Tx power of ADTRAN's APs could be set to anything between 1dBm and 30dBm. However, this power range was misleading because the actual power level transmitted from the radio, called Equivalent Isotropic Radiated Power (EIRP), is a combination of the maximum (max) AP Tx power and the antenna gain. Additionally, not all of the BSAP radios can transmit as high as 30dBm. In addition, regulatory domains such as the Federal Communications Commission (FCC) and European Telecommunications Standards Institute (ETSI), do not allow transmissions as high as 30dBm EIRP based on the configured channel and frequency space. Therefore, in some cases the AP may have been actually transmitting at a power level below the value specified.

Firmware release 2.9 incorporated changes so that you now see a breakdown of the max AP Tx power, antenna gain, and the maximum allowed EIRP. Displaying the AP power setting values in this way provides a more accurate representation of the transmit power level of the AP. However, being able to see these individual values is only beneficial if you understand the definition of these terms and how they relate to each other.

Max AP Tx Power, Antenna Gain, and EIRP

The Max AP Tx Power is the maximum power possible of the AP radio specified on the data sheet.



*AP data sheets are available on the ADTRAN support forum here:
<https://portal.adtran.com/web/page/portal/Adtran/group/4043>. Scroll down and select your AP model and then select the Product Literature tab to access the data sheet.*

Antenna gain for a transmitting antenna describes how well the antenna converts input power into radio waves headed in a specified direction. Antenna gain is usually expressed as a ratio, where the antenna's performance is compared to the performance of a hypothetical lossless isotropic antenna, which transmits equally in all directions. The units of measurement for this ratio are decibels-isotropic (dBi).

EIRP is the measure of the max AP Tx power plus antenna gain.

$$\text{EIRP} = \text{max Tx power} + \text{antenna gain}$$

Consider a Bluesocket 2030 operating with a 3x3 antenna array with a gain of 5dBi. ETSI allows a max EIRP of 20dBm at 2.4GHz. Therefore, the max AP Tx power allowed in this example is 15dBm.



Cable loss/gain is another factor that is considered when determining EIRP.

Regulatory domains, such as the FCC and ETSI, have published standards that define the maximum allowed EIRP based on operating frequency and modulation type. In vWLAN 2.9.0+, the max AP Tx power can not be set to a value that results in an EIRP that is higher than is allowed in the APs configured regulatory domain. These values are viewable in the User Interface (UI) (see [Viewing Max AP Tx Power, Antenna Gain, and EIRP](#) on page 3)

Viewing Max AP Tx Power, Antenna Gain, and EIRP

From the **Status** tab select **Access Points** and select the name of the AP for which you would like to view information.

Name	SysLocation	MAC Address	Mesh Portal	Serial Number	IP Address	Uptime	Locations	Firmware	Channel (Channel Width)	TX Power	Total Clients
19254212050692				19254212050692		Unknown				5GHz=	
BSAP-19300313050377				19300313050377		Unknown				2.4GHz= 5GHz=	0
BSAP-19301413050413				19301413050413		Unknown				2.4GHz= 5GHz=	0
BSAP-19354112050009				19354112050009		Unknown				2.4GHz= 5GHz=	0
BSAP-19400813050298				19400813050298		Unknown				2.4GHz= 5GHz=	0
BSAP-20302414050141				20302414050141		Unknown				2.4GHz= 5GHz=	0
BSAP2035-00-19-92-3b-a1-40		00:19:92:3b:a1:40		20351914050419		Unknown				2.4GHz= 5GHz=	0

Scroll down to **Interfaces** to view a breakdown of the values for Max AP Tx Power, Antenna Gain, and Max Allowed EIRP.

Type	Radio Mode	Wireless Mode	Channel	TX power	Max Allowed TX Power	Antenna Gain	EIRP	Max Allowed EIRP
802.11b/g/n (2.4 GHz)	AP Mode	b/g/n			19 dBm	4 dBi		23 dBm
802.11a/n/ac (5 GHz)	AP Mode	a/n/ac			20 dBm	5 dBi		25 dBm
Unified Access								
Total								

Modifying Antenna Gain

Some ADTRAN APs, such as the Bluesocket 1925, 2035, and 3045, use an external antenna vs. a built-in antenna. You will need to manually configure the gain of the external antenna for these APs. From the **Configuration** tab select **Wireless>Access Points**. Under **Per Radio Settings** is a field called **Antenna Gain**. Enter the gain of the external antenna in dBi.

Edit Access Point

Serial Number: 20351914050419
 AP MAC Address: 00:19:92:3b:a1:40
 Country: United States
 Name: BSAP2035-00-19-92-3b-a1-40
 SysLocation: Note the physical location of the AP
 Location: vLoc-0-172.30.11.192/28
 Access Point Template: default
 Installed: Indoor

Per Radio Settings

	802.11b/g/n (2.4 GHz)	802.11a/n/ac (5 GHz)
Channel	Auto (6)	Auto (48)
Transmit Power	Auto (19 dBm [80 mW])	Auto (20 dBm [100 mW])
Antenna Gain (dBi)	5	5

Verify your hardware antenna gain and enter only that value. Values 1-13

Verify your hardware antenna gain and enter only that value. Values 1-7

Update Access Point

NOTE *The Antenna Gain field will also show up in the configuration menu for APs that have a built-in antenna. However, you will not be able to modify the antenna gain value for these units.*

NOTE *Remember to make sure that the maximum calculated EIRP is not higher than what is allowed by regulatory agencies such as the FCC and ETSI. Refer to [Max AP Tx Power](#), [Antenna Gain](#), and [EIRP](#) on page 2 for details on calculating EIRP using antenna gain.*