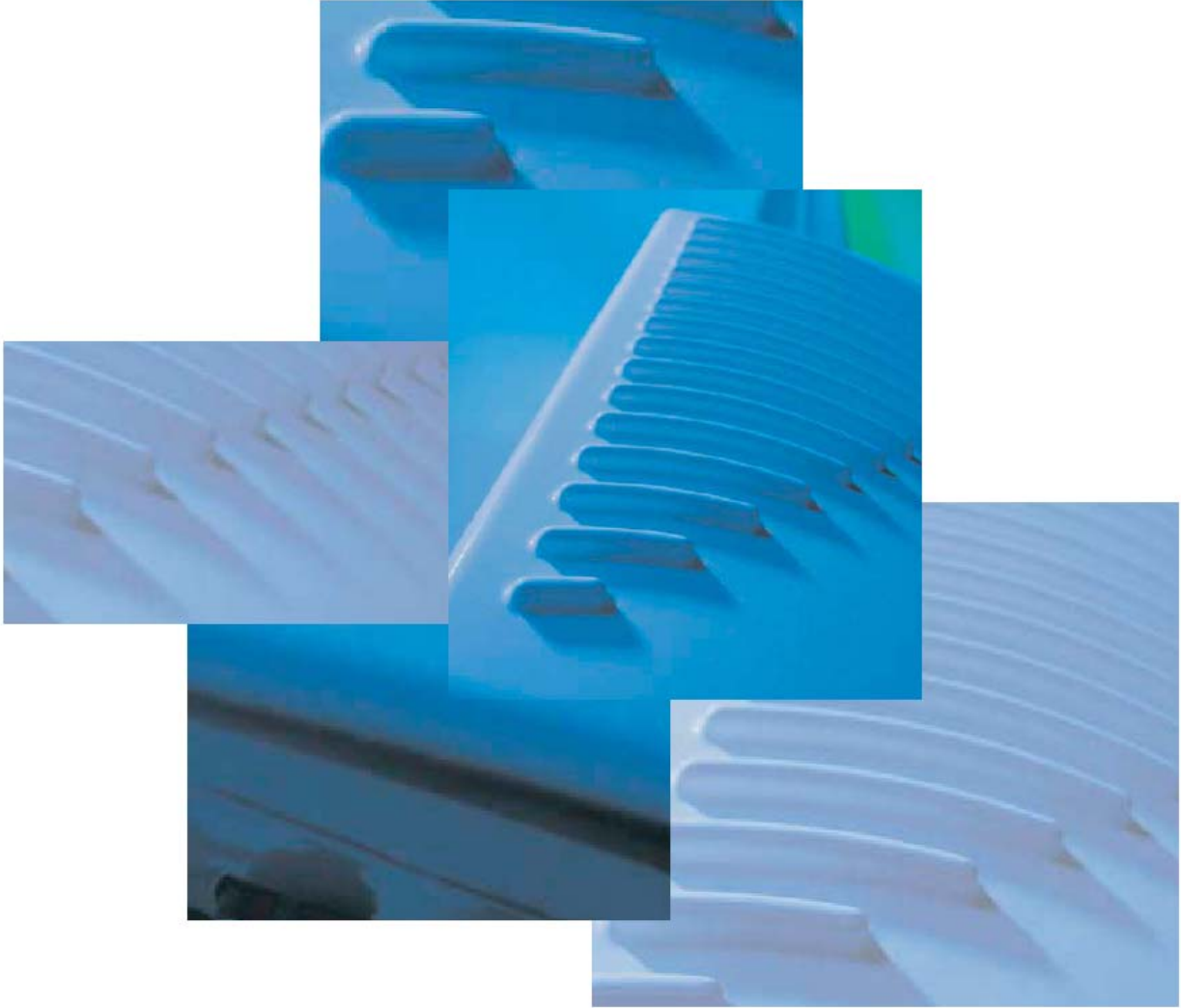




SPEEDLAN 9200, 4.9GHZ PSB USER GUIDE ADDENDUM



ADDITION TO 34357-MNL (FOR 4.9GHZ PSB)

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1. Background Information on the 4.9 GHz Public Safety Band (PSB)

The Federal Communication Commission (FCC) has allocated 50 megahertz (MHz) of spectrum in the 4940-4990 MHz band (4.9 GHz band) for fixed and mobile wireless data communications, designating the band for use in support of public safety (Public Safety Band, PSB). Specifically, the Commission adopted two emission masks limiting interference potential for the band, one for low power and one for high-power operations. These changes will allow public safety licensees to leverage commercial off-the-shelf (COTS) technologies available for the U-NII and ITS frequency bands. The FCC action allows for a nationwide focus on homeland security, and will ensure that all state and federal agencies possess the required communications resources to adequately protect the public.

This allocation will provide public safety users the additional spectrum required to support broadband applications such as high-speed data transitions and video over wireless, which in turn enhances local area networks for incident monitoring and supervision. The spectrum can also be used to support the dispatch operations communications as well as safety vehicle communications. Public safety agencies will be able to implement on-scene wireless networks for streaming video, rapid Internet and database access, and transfers of large files such as maps, building layouts, medical files, and missing person images. It also allows these agencies to establish temporary or permanent links to support surveillance operations. This allocation gives every jurisdiction in the country access to spectrum for deployable, interoperable, broadband communications.

The spirit behind the creation of the band was to allow the public safety organizations access to inexpensive hardware already available for the ISM bands, but in a section of the spectrum that is not available to the general public.

1.1. Key Facts of the 4.9 GHz PSB band

- The FCC allocates the 4.9 GHz band for fixed and mobile communication.
- The FCC designates the 4.9 GHz band for use solely in the support of public safety encompassing the protection of life, health and property
- Users must be a state or local government entity or non-government entity authorized by a local or state public safety entity.
- Provide services that are not commercially available to the public.
- The FCC rules allow a maximum total power output of 33 dBm (2 W) per channel and a maximum antenna gain of 9 dBi for a maximum EIRP of 42 dBm.
- Public safety agencies can apply for licenses to use the spectrum within their areas of jurisdiction.
- The FCC rules permit broadband mobile operations, fixed hotspot use and temporary fixed links.

- Fixed point-to-point operations are also permitted but this use requires a separate license from the FCC for each station.
- The FCC rules prohibit use for services that are made commercially available to the public
- The new looser emissions mask is designed to allow users to utilize off the shelf technology to significantly reduce cost and time

1.2. Eligibility for 4.9 GHz PSB Use

All state and local government entities that provide public safety services, this is defined as their primary focus being the protection for the safety of life, health, or property; are eligible to apply for a 4.9-GHz license. The control of the licensing is being managed at the state and local level to facilitate priority and availability of the 4.9 GHz band. Entities that do not meet these eligibility requirements, but that provide services in support of public safety, such as private infrastructure companies, can negotiate sharing agreements with license holders.

1.3. 4.9 GHz PSB Frequency Band Plan

The 4.9 GHz band ranges from 4940.5-4989.5 MHz and can be segregated out using 1, 5, 10, 15, and 20 MHz of bandwidth.

1.4. 4.9 GHz PSB Licensing Requirements

A 4.9 GHz band license gives the licensee authority to operate on any authorized channel in this band within the applicant's legal jurisdiction such as city, county, or state. The 4.9 GHz band is shared by all licensees, who must coordinate their usage of the band with other licensees within their areas of authority. The 4.9 GHz licenses are granted for a 10-year term.

The license gives authority to construct and operate:

- Any number of base stations anywhere within the area authorized by the license
- Base and mobile units, including portable and handheld units

A 4940-4990 MHz band license does not give the licensee authority to operate permanent fixed point-to-point stations. Licensees choosing to operate such fixed stations must license them individually on a site-by-site basis. Such fixed operation will be authorized only on a secondary, non-interference basis to base, mobile and temporary fixed operations.

1.5. 4.9 GHz PSB Peak Power Limits

The transmitting power of radios operating in the 4940-4990 MHz band must not exceed the following maximum limits:

Channel Bandwidth in MHz	Class A peak output power in dBm	Class B peak output power in dBm
1	20	7
5	27	14
10	30	17
15	31.8	18.8
20	33	20

1.6. 4.9 GHz PSB Emission Mask

The FCC has adopted two emission masks for use in the 4.9 GHz band. The first being DSRC-A, is a mask strictly for low-power applications. The second being the DSRC-C mask is strictly for high-power applications. The DSRC-A mask is identical to the mask defined in the widely used 802.11 Wi-Fi standard, which is most commonly used in-home wireless LANs and consumer hotspots. These 802.11 devices are readily available for purchase and significantly reduce cost and time to market for wireless deployments.

Higher power units that are above 20 dBm of output power are required for deploying mobile networks and need to employ the DSRC-C mask.

2. SPEEDLAN 4.9 GHz PSB Introduction

The SPEEDLAN 9200 wireless router is now certified to operate under Part 90, Subpart Y of the FCC Rules to operate as a high power device in the 4.9 GHz PSB band with 5, 10 and 20MHz channel bandwidths.

All of the features available in SPEEDLAN including Point to Multipoint, Point to Point and Mesh topologies and all security features as presented in the User guide are available for use in the 4.9PSB.

The wireless configuration screen was added to the router functionality to allow configuring the RF to operate in this band.

In fact the SPEEDLAN 9200 hardware is the same for 2.4GHz, 5.8GHz and 4.9GHz and only the software has been changed to enable 4.9GHz PSB operation.

- 20 MHz bandwidth settings may operate at signaling rates up to 54 Mbps,
- 10 MHz bandwidth settings may operate at signaling rates up to 54/2 (27) Mbps and
- 5 MHz bandwidth settings may operate at signaling rates up to 54/4 (13.5) Mbps.

3. SPEEDLAN 4.9 GHz PSB Wireless Configuration using the https:// Configurator

Follow the guidelines in the user guide to establish communications with the SPEEDLAN router. Bring up the web based SPEEDLAN Configurator.

Select Wireless | Configuration from the menus in the Configurator.

The following screen will appear to allow configuration of the 4.9PSB in the SPEEDLAN 9200

Wireless Configuration

Wireless Mode: 4.9 GHz PSB

Channel Width: 5 MHz

Turbo: ☐

Preamble: Long Only

Channel / Central Frequency: 50 / 4.965 GHz

TX Power: 17 dBm (50 mW)

SSID: SPEEDLAN9200

Signaling Rates (Mb/s): 6/4 ☒ 9/4 ☐ 12/4 ☐ 18/4 ☐ 24/4 ☐ 36/4 ☐ 48/4 ☐ 54/4 ☐

Callouts:

- Channel BW Selection, 5,10,20 MHz
- Channel Center Frequency Selection
- Transmit Power Selection
- TX signaling Rate Selection

Network Nodes	Current Settings								Select
	Mode	Width	Turbo	Preamble	Channel	Power	SSID	Rates	
10.1.43.201	4.9 GHz PSB	5 MHz	Off	Long Only	50	13	SPEEDLAN9200	6/4	☒
10.1.42.103	4.9 GHz PSB	5 MHz	Off	Long Only	50	17	SPEEDLAN9200	6/4	☒

Apply to Selected Nodes Select All Clear All

4. SPEEDLAN 4.9 GHz PSB Channel Plan

Table of Channel Center Frequencies vs. Channel Bandwidth:

WW Chan Number	5 MHz BW Frequency	FCC Channel Number	10 MHz BW Available? X=yes	20 MHz BW Available? X=yes	Band Edge Delta, 4940 Plus (MHz):
5	4942.5	3	N/A	N/A	2.5
10	4945.0		X	N/A	5.0
15	4947.5	6	X	N/A	7.5
20	4950.0		X	X	10.0
25	4952.5	7	X	X	12.5
30	4955.0		X	X	15.0
35	4957.5	8	X	X	17.5
40	4960.0		X	X	20.0
45	4962.5	9	X	X	22.5
50	4965.0		X	X	25.0
55	4967.5	10	X	X	27.5
60	4970.0		X	X	30.0
65	4972.5	11	X	X	32.5
70	4975.0		X	X	35.0
75	4977.5	12	X	X	37.5
80	4980.5		X	X	40.0
85	4982.5	13	X	N/A	42.5
90	4985.0		X	N/A	45.0
95	4987.5	16	N/A	N/A	47.5