

ThinkSmart Bar Deployment and Configuration Guide

Table of Contents

1. Specs	3
Features and Specifications	3
Windows Logo Requirements	4
Microphone algorithm specification.....	5
1.1 ThinkSmart Bar Default Mode:.....	5
Satellite Microphone	6
Cascading operation.....	7
2.1 Function Switch in Soundbar	8
Description of Each Button	8
2.2 Embed Microphone Structure	9
2. Satellite Microphone Structure	Error! Bookmark not defined.
3. IO port definition	Error! Bookmark not defined.

The Lenovo ThinkSmart bar is a smart USB based audio external speaker with built in array microphones. There are two options for the ThinkSmart Bar. The first option supports MTR application as stand-alone system. The second option supports MTR application with two pieces of daisy chain-connected satellite microphones to cover a X-large room size and beyond with best capturing performance. This Sound bar system has USB-C connector and supports USB 2.0. This Sound bar will use a unique AC adaptor for the power source which is included in the bundle. Basic function of this Sound bar should be used with/for MTR application based on USB connection. However, user can access and use this Sound bar as a Bluetooth audio adaptor. In addition, this Sound bar has an analog 3.5mm jack to input sound signal but this function is only available without USB connection mode.

1. Specs

Features and Specifications

Over all	
Supported OS	Windows 10, Windows 10 IOT 19H1, 19H2 or later version Not supported Mac OS all version.
Supported USB version	USB 2.0, 2.1 (3.0)
External satellite microphone	SKU-2 only. Supported 2 pcs of satellite microphone with daisy chain connection.
External 2 nd speaker connection	Not supported this function.
Supported Analog input. (AUX Input)	This Sound bar can be operated as powered speaker mode. Analog speaker input jack is enabled inly in USB cable disconnected case.
Speaker	
Sound Pressure level	97dB at 0.5m @ White Noise
Sound Power rating	20+20W
Frequency response and distortion	FR: 100Hz to 8KHz (+- 5dB) Distortion: Less than 0.3%
Speaker Dynamic Range	60dB
Speaker sound enhancement	Supported by XMOS algorithm Frequency Equalizer Dynamic Range Compensation
Microphone	
Microphone array configuration	4 microphones in line array.
Microphone capturing angle and range	+/-60deg for horizontal, +/- 60deg for vertical Not supported behind sode
Microphone SNR	64dB (element part)

Satellite microphone	Supported in SKU-2 (Option 2) products. Recommend to place over 2m from sound bar and each satellite mics.
Full Duplex	Supported
Acoustic Echo canceller	Supported (Stereo / Mono)
Microphone Noise suppression	Supported. (from 300Hz to 8KHz BPF implemented.)
Microphone enhancement	High and Low-cut filter, Frequency equalizing. Stational noise suppression.
Blue tooth	
BT version	Ver 4.0 BT audio version 2.0
Power	
Power adaptor	20V 2 pole 65W type (ThinkPad connector type)
Power consumption	60W in operation mode 0.5W in standby mode
Function button	
Function button	Power On/Off Bluetooth Enable Volume + Volume – Microphone Mute
Dimension	
Dimension	800(W)x55(H)x90(D)mm
weight	1.9Kg (SIT)
Satellite microphone	
Capturing range	1m 360 deg Omni direction
Dimension	100(W)x 20(H) cylindrical 220g
Function button	Microphone Mute
Indicator	LED Mute indicator. (Supported only with MTR app.) In the sound bar: Light Off: unmute Red: in Mute with MTR In the Satellite microphone: Green: call is ongoing and not muted. Red: Call is ongoing, and Microphone muted.

Windows Logo Requirements

Windows Logo Program	Must support Windows 10 or Windows 10 IOT version Detailed OS version should be checked. (19H1 or later.)
USB native device driver	Must support

Microphone algorithm specification

Capturing frequency response	Follow Microsoft Teams audio specifications
Frequency flatness	Follow Microsoft Teams audio specifications
SNR	Follow Microsoft Teams audio specifications
MOS	Follow Microsoft Teams audio specifications

1.1 ThinkSmart Bar Default Mode:

- When connecting USB cable to PC: USB enabled mode.
- When not connecting USB cable to PC: Ready to use analog input mode.
- When not connecting USB cable to PC and you push BT button: Ready to use Bluetooth mode.

Please regularly check TV and wall mount/bracket to ensure screws are not loose

***To avoid cable-related issues, it is recommended to use only the bundled USB cable or a ThinkSmart 10m Cable. ***

Volume gain set level:

- Speaker volume level: 80%
- 50% (With MTR usage case.)

Mute

Unmute

Satellite Microphone

USB Conference Speaker / Microphone Mode

- This bar could be used as a USB external audio peripheral like a speaker and microphone integrated device.
- The Bar is designed to archive best quality for Microsoft Teams Rooms application.
- The Bar is Microsoft Teams Room Certified and supports Large room size meeting rooms. (8.5m x 4.5m)

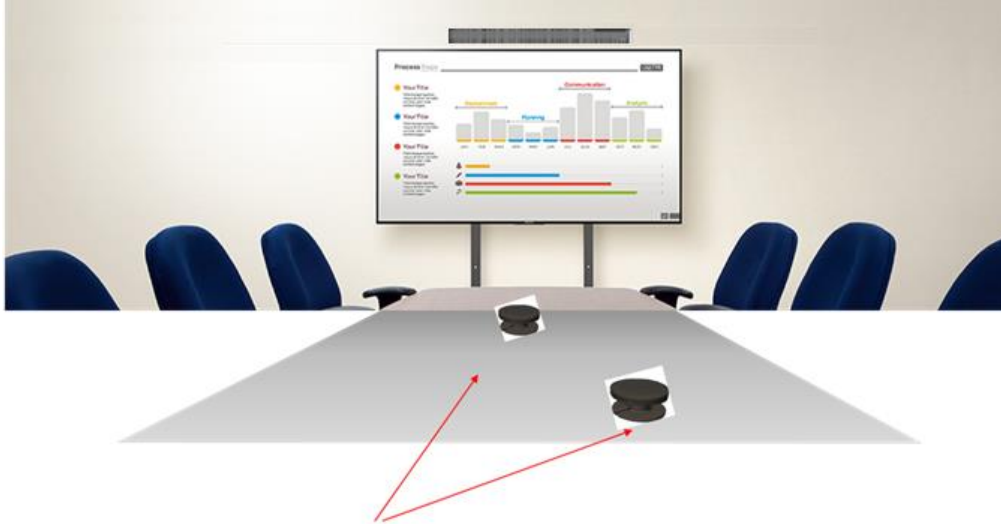
External Speaker Operation Mode

- This Sound bar can be used as external powered speaker mode connecting analog signal via AUX input jack. If so, it is recommended to be supported by analog signal amplitude less than 1Vrmsat AUX input jack.
- This external speaker function can be supported without USB connection mode when connecting USB cable to PC/system. However, it is then not supported in AUX input function. This means it is no longer supported in MTR application with USB connection. (MTR app needs to connect to USB connection.)



Satellite Microphone Supported by SKU-2 (Option 2)

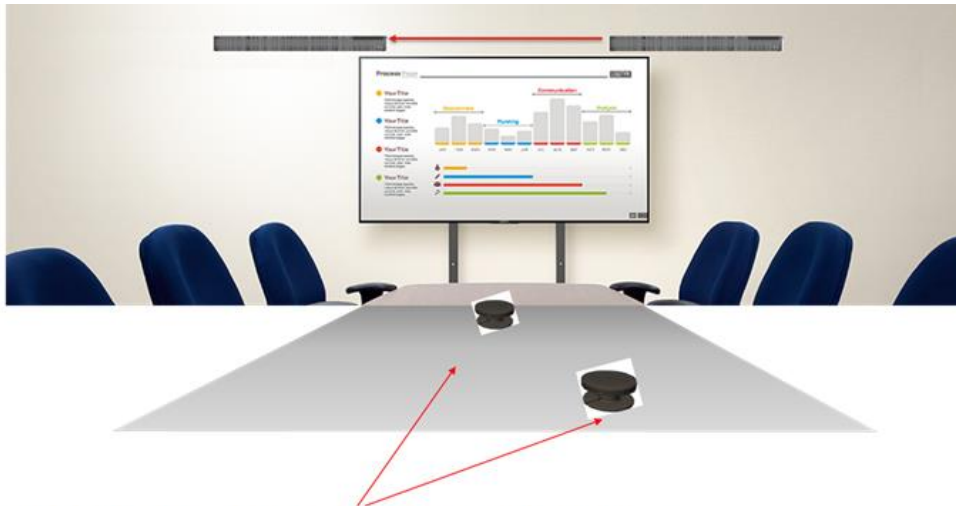
- Sound bar SKU-2 (Option 2) can only support the connection of 2pcs of satellite microphones **as shown in below picture**.
- Each satellite microphone can capture users voice from the microphone. Most of the users in the room can be captured by main system integrated microphone.



Capturing far end voice by satellite microphones.

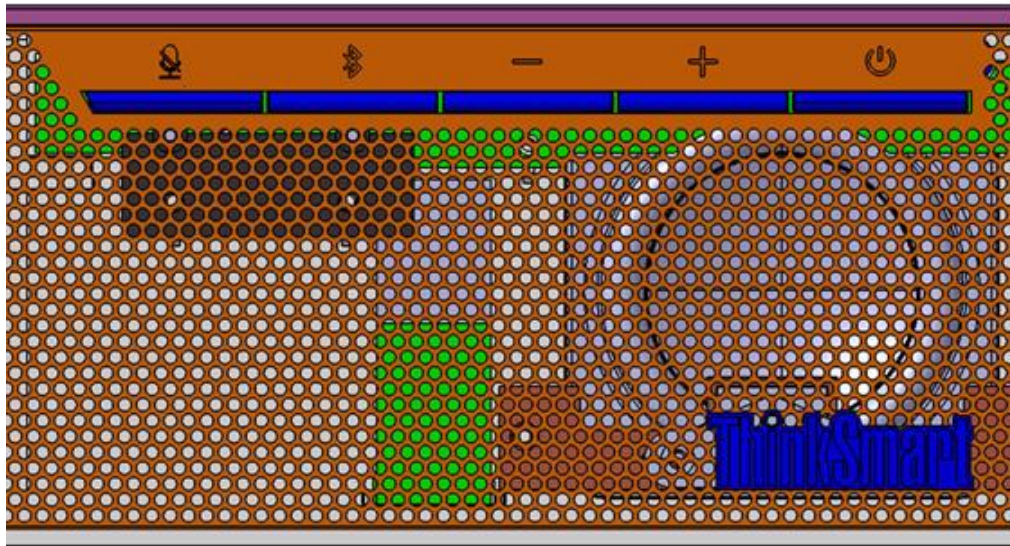
Cascading operation

- The Sound bar can be used in cascading mode with any 2nd sound bar. (Not supported to connect other type of sound bar.) The Sound bar can be supported to connect 2pcs of satellite microphones **as shown in below picture.**
- Each satellite microphone can capture users voice from the microphone. Most of the users in the room can be captured by main system microphone.



Capturing far end voice by satellite microphones.

2.1 Function Switch in Soundbar



The Position of each button on the Bar:

Mic Mute

BT

Vol -

Vol +

Power

Description of Each Button

Mic Mute: You can enable mute function mode of embedded microphone and satellite microphone if it is connected. Also check the application side to indicate muting when using with Microsoft MTR and Zoom Room application. This mute function is related with mute button on satellite microphone. This button is operating with alternative mode.

Bluetooth (BT): You can enable blue tooth external speaker when it is not connected as USB cable into a PC/audio equipment. To enable BT mode, push this button and then it will start pairing mode. After pushing this button, set your smartphone or Personal computer (PC) into Bluetooth mode and look for the name ThinkSmart Bar in the smartphone or PC Bluetooth area. Click and connect. Add the pin code (now set as 5678) into smartphone, PC, then complete pairing procedure with this ThinkSmart Bar. While using USB mode, after removing USB cable, it is not automatically enabled BT mode even though activated pairing system is near the sound bar. It is required to push

BT button to connect the sound bar via BT. BT function is not supported with using Teams and Zoom application via USB connection.

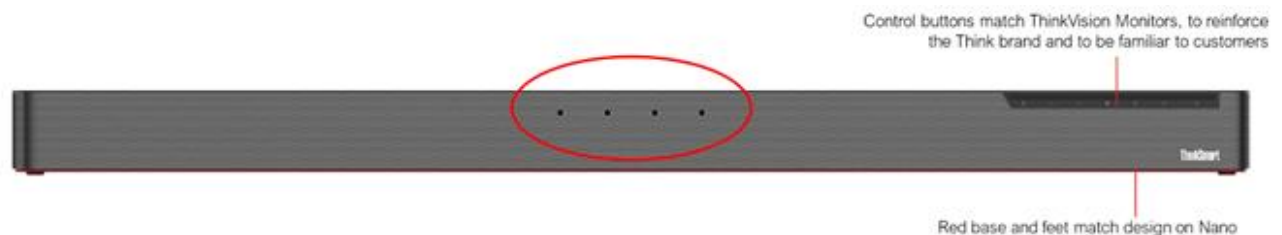
Vol - / Vol +: This button controls the volume level by using Windows audio property.

Default volume level is now set at **80%**.

If you change the software volume through the controls in the Windows application of audio driver property, then change the volume level of this ThinkSmart Bar also.

Power: This is the main power on/off button. After power on, ThinkSmart Bar should work with USB mode and turn on an LED indicator on the “i” mark of “ThinkSmart” logo located in the front of this system.

2.2 Embed Microphone Structure



This soundbar has 4 elements in beamforming microphone array behind the mesh cover. It can't be shown where the microphone is mounted in this front part. It is not supported by conventional beam forming algorithm to capture single direction user. However, this microphone array can have below sound enhancement:

Beam forming (BF)

- DSP algorithm supports adaptive beam forming to separate user voice and environment noise effectively.
- Capture range of this BF function is covered by 60deg in the front of system. It can eliminate stational noise out of range, this is located in the back side of system.

Voice Activity Detection (VAD):

DSP algorithm detects human voice and enables microphone for human voice. Without the voice, the microphone would be disabled automatically. (Muted)

Frequency Equalizer (EQ):

DSP algorithm has compensation function of the microphone frequency peak and can dip to get a flatness capturing quality.

Adaptive Noise Suppression (ANS):

Usual noise suppression can eliminate any stationary noise.

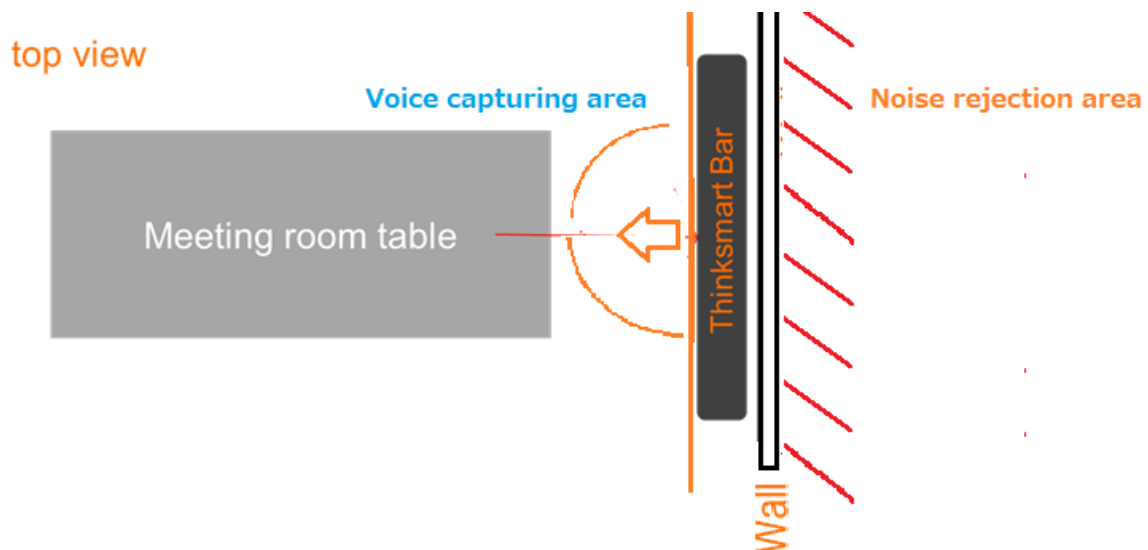
This DSP algorithm can detect voice range of pure tone noise, white noise and cafeteria noise to then reduce it.

Far Fields Pick up (FFP):

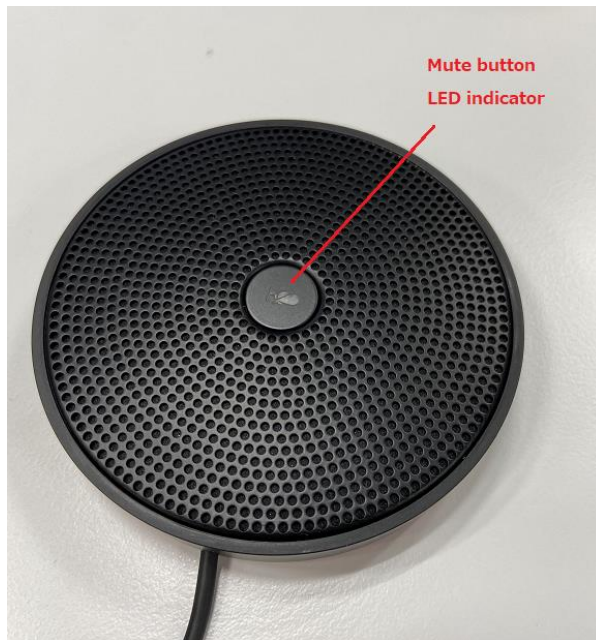
DSP algorithm can support near-end to far-end (6m) distance without additional satellite mics.

Capturing angle

Embed microphone can capture 180 degrees (horizontal angle) in the front of the sound bar as shown in below chart:



Satellite Microphone Structure



The Satellite microphone has one ECM (Electret condenser microphone) inside the mesh panel.

This microphone can capture user voice with omni direction mode. (360 degrees of captured angles supported)

There is one push button for the mute function and this button has two color LED to indicate this operation and the mute status. While using MTR, the system will be in call mode and this LED light is turned on green. Once you enable mute by pushing this

mute button or the ThinkSmart Bar mute button, then the LED light will change to a Red color.

IO port definition

Rear side view:



Rear side view 2:



Mechanical placement of Bar:

The bar should be placed as shown below on a monitor screen or mounted on the wall:

