



3M™ Wireless Drive Thru Communication System G5 Technical Bulletin - #157

Optimizing Inbound Audio volume level

Overview:

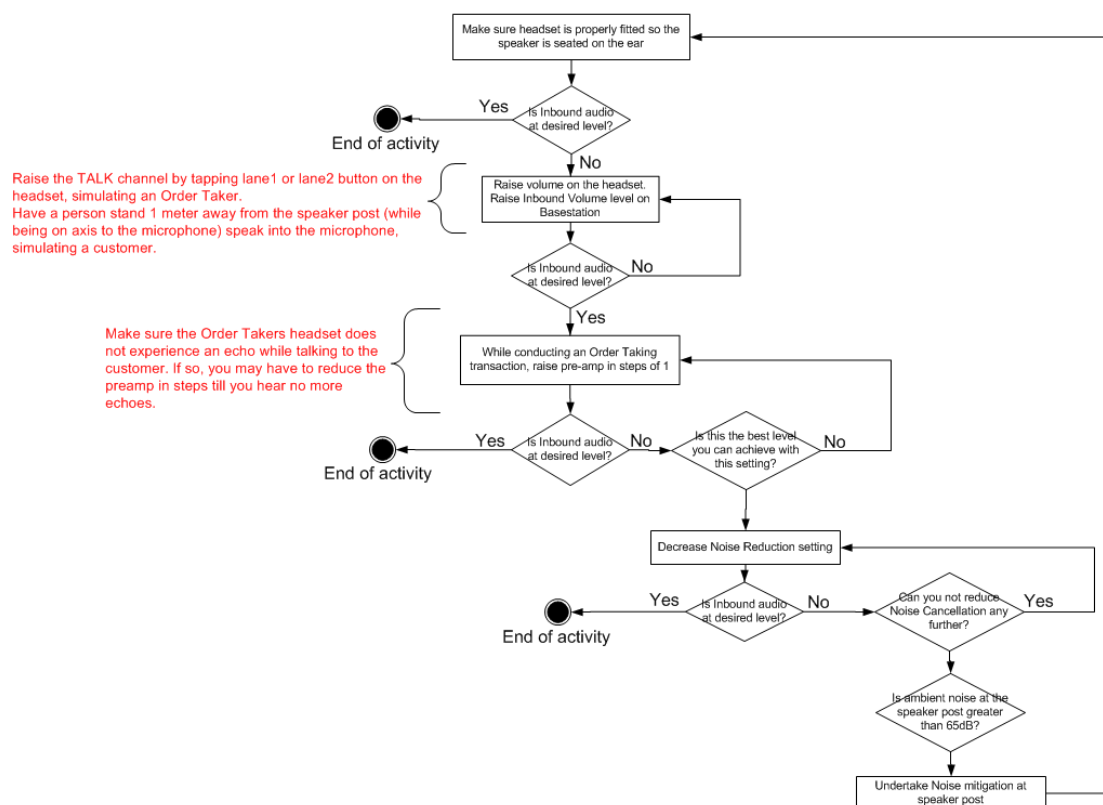
The default (or Factory) settings on the basestation have been optimized to provide the best Inbound audio level for a typical drive thru operation. Every installation and store is unique and as such several factors affect the level of the inbound audio. The purpose of this technical bulletin is to explain the effects of these factors and understand how to mitigate them.

Factors affecting Inbound audio level:

- Fitting of the headset.
- Volume setting on the headset.
- Settings on the basestation (Microphone Preamp Gain, Inbound Volume and Inbound Mic Noise Reduction)
- Ambient noise level at the order point.
- Where the speaker post is located in the drive thru lane

Recommended sequence of steps to optimize Inbound Volume (detailed in sub-sections below):

1. Make sure headset is properly fitted so the speaker is seated on the ear. – Check for levels
 2. Raise volume on the headset – Check for levels
 3. Raise the Inbound volume settings on the basestation – Check for levels
 4. Raise Microphone Preamp Gain in steps. – Check for levels and ensure there is no echo while taking into the headset mic.
 5. Decrease Inbound Mic Noise Reduction setting – Check Inbound volume level, does the system pickup more background noise?
 6. Measure ambient noise at the speaker post - 1 meter away (~ 3 feet) on axis to the microphone.
- If the Sound Meter measure more than 65dB, you may have to create a barrier between the speaker post and the noise source.

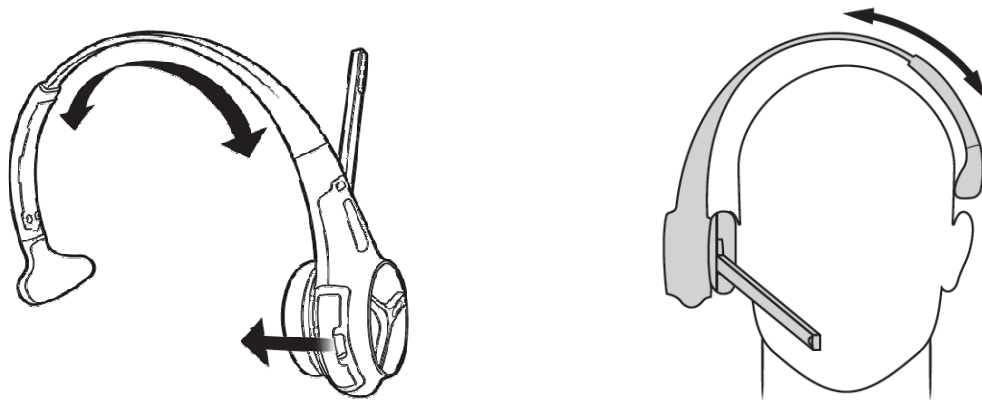


Optimizing Inbound audio level:

1. Proper fitting of headset

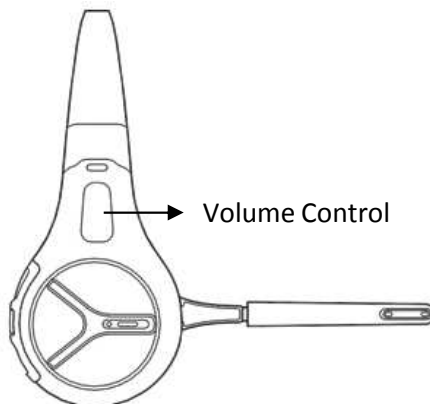
Make the following adjustments to the headset to make sure it is not only comfortable, less likely to fall off and easy for you to hear and speak clearly; but to also make sure the *speaker on the headset is properly aligned to your ear*.

- Adjust the size of the headband until the ear pad rests against one ear and the comfort pad cushion rests just above the other ear.
- To create a tighter fit, hold the headset with one hand on the Pod area and the other hand on the Comfort Pad area. Gently bring the two hands close to one another, then past one another. Slowly move one end back and forth.
- This ensures pressure is applied equally along the length of the headband. Applying excessive force in one area alone will create a crease on the headband.
- Rotate the microphone boom up or down so its tip is in line with the corner of your mouth. Do not bend the boom.
- Make sure the headset speaker foam covers your ear.



2. Volume setting on headset

Slide your finger up the Volume control area to raise the volume on the headset.



3. Inbound Volume setting on basestation

Changing the inbound microphone volume affects the sound volume coming from the customer order point microphone. The range is 0 (silent) to 20 (maximum). The default factory setting for the Inbound Volume is at 17.

To turn up the inbound microphone volume:

- From the Run mode menu
- Enter your user passcode. (The default user passcode is 1234)
- Press Mode once to get to System Menu
The display will show the user name and ID number (e.g., User1 ID = 1).
- Now press Mode 2 times to get to System Menu
- Select **01 Drivethru Volume**. Then press ENTER.
- Navigate **Inbound Mic Volume** using the ▲, ▼, ◀, ▶ keys
- Raise in steps of 1, the value for **Inbound Mic Volume** until the desired Inbound Volume level is achieved.

```
          :SYSTEM MENU:  
01 Drivethru Volume 02 Registration  
02 Monitor Volume   05 Noise Reduction  
03 Night Volume     06 Set Time & Date
```

```
          :DRIVETHRU VOLUME SETTINGS:  
          Inbound Mic Volume <17>  
Outbound Talk Mic Volume <15>  
          Vehicle Alert Volume <10>
```

4. Microphone Preamp Gain setting on basestation

The Mic Preamp Gain is the first stage of amplification from the microphone in the order point and can be adjusted to affect and achieve the desired quality and level of the inbound audio volume.

You need to log into the basestation as an Installer to access to this setting. The basestation's Microphone PreAmp is factory set at 8 and can be changed to a maximum of 20. However, we do not recommend setting the pre-amp beyond 10.

Raising the preamp setting too high can introduce echo into the system and can be experienced on the Order Taker's headset while conducting an active transaction.

To change the microphone preamp gain

- From the Run mode menu
- Enter your Installer passcode.
(The default Installer passcode is 12345)
- Press Mode 3 times to get to System Menu
The display will show the user name and ID number (e.g., Installer ID = 1).
- Select **01 Drivethru Volume**. Then press ENTER.
- Navigate **Mic Preamp Gain.(Installer Only!) <08>** using the ▲, ▼, ◀, ▶ keys
- Raise in steps of 1, the value for **Inbound Mic Volume** until the desired Inbound Volume level is achieved.

```
          :DRIVETHRU VOLUME SETTINGS:  
Outbound Greeter Message Volume <15>  
          Ext Audio Input Volume <10>  
          Mic Preamp Gain(Installer Only!) <08>
```

NOTE::

- This setting must be increased in steps.
- At each step you should check the inbound volume level to determine if the desired volume level has been achieved
- At each step, make sure you open up the Outbound on a headset (by pressing the Lane1 or Lane2 buttons) and observe for any echoes while speaking into the headset microphone.
- If you do experience an echo, drop the Preamp setting by 1 and confirm the new setting on the basestation by pressing the ENTER key.

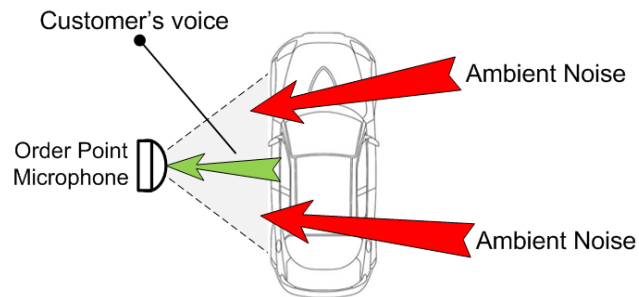
5. Inbound Mic Noise Reduction Level setting on basestation

The inbound microphone noise reduction level setting helps remove the background (ambient) noise that is picked up by the microphone at the Order Point, when a customer is placing an order. The basestation's noise reduction level is factory set to Medium.

The way Noise Reduction works can be better understood by imagining a cone being present in front of the microphone.

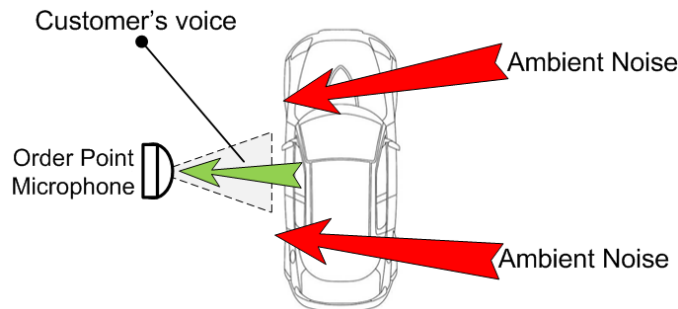
--- NR being set to OFF is akin to having the cone wide open.

This allows more of the ambient sound into the microphone and thus



--- NR being set to MAX is similar to constricting the cone to a smaller angle

This limits the angle to where the customer is most probably located. A small amount of ambient noise may still make it's way into the microphone. The system's noise cancellation algorithm will be able to minimize such small ambient noise.



A customer's voice level is usually around ~62dB. If the ambient noise, measured at 1 meter from the axis of the Order Point microphone, is greater than, say 65dB, there is very good probability for the customer's audio to be mixed in with the ambient noise. In this event, you may have to reduce the Noise Reduction setting so as to allow more of the audio into the microphone, otherwise the system may reduce the customer's audio while trying to minimize the ambient noise.

Perform the following steps to decrease the noise reduction level.

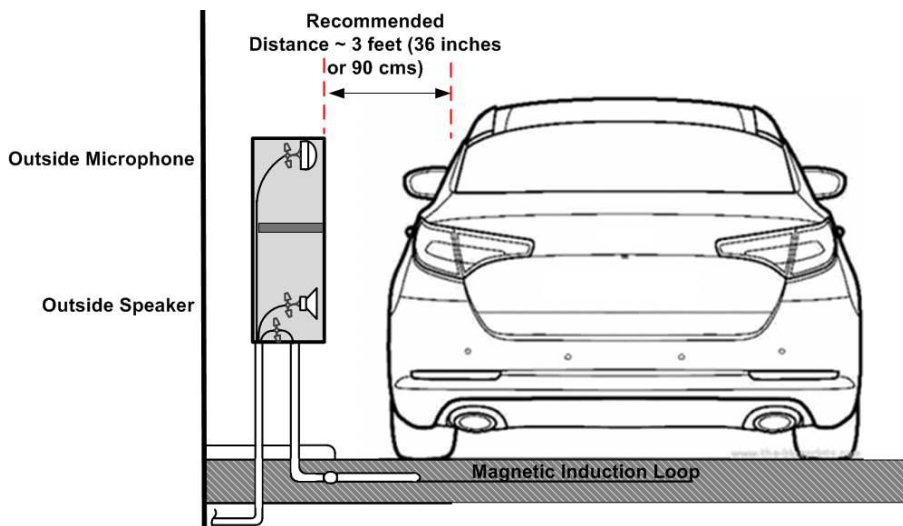
- From the Run mode menu
- Enter your user passcode. (The default user passcode is 1234)
- Press Mode again. The display will show the user name and ID number (e.g., User1 ID = 1).
- Make a new selection for **05 Noise Reduction > Inbound Mic Noise Reduction Level**.
Options are Off, Min, Low, Med, Hi, and Max.
You may need to experiment for a setting that works best for your ambient noise environment.

5. Location of the speaker post viz-a-viz the drive thru lane

The ideal distance between the microphone and the customer (in the car) is about 3 feet (*on axis to the microphone*).

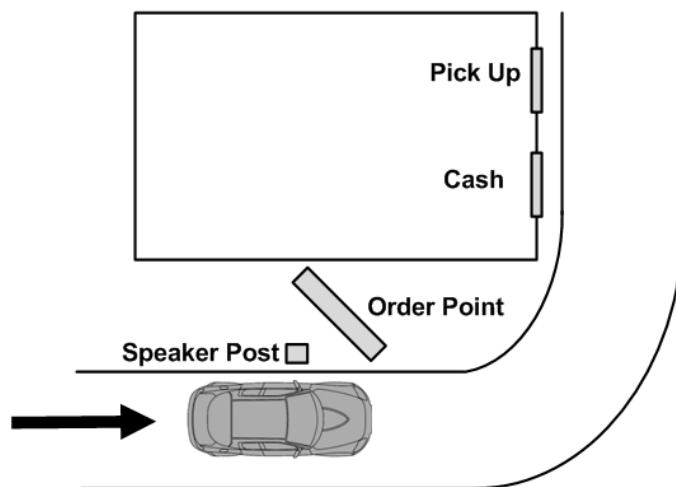
A customer's ability to park himself or herself right in front of the speaker post's microphone, at the recommended distance, depends on the following:

- Where the Speaker post is located on a drive thru and
- A car's turn radius

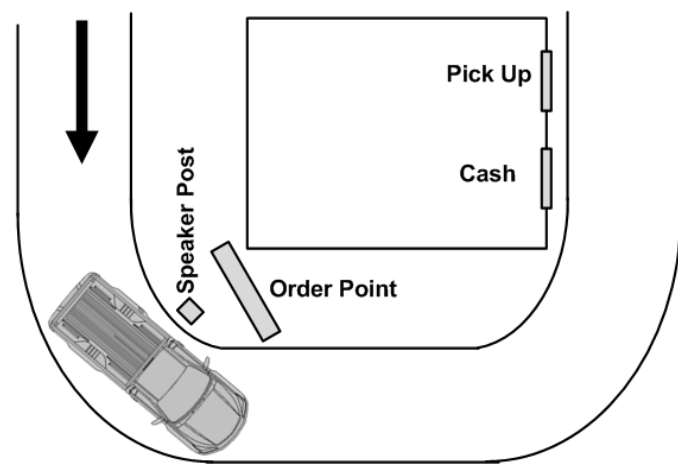


It is recommended that the speaker post be located on the straight edge of a drive thru as illustrated below and NOT situated on a corner. While vehicles with smaller turn radius may not have much difficulty maneuvering to a correct position in front of the speaker post, vehicles with large turn radius tend to park

- Ahead of the speaker post or
- Short of the speaker post or
- Away from the speaker post.



Recommended Speaker Post position



Incorrect Speaker Post position

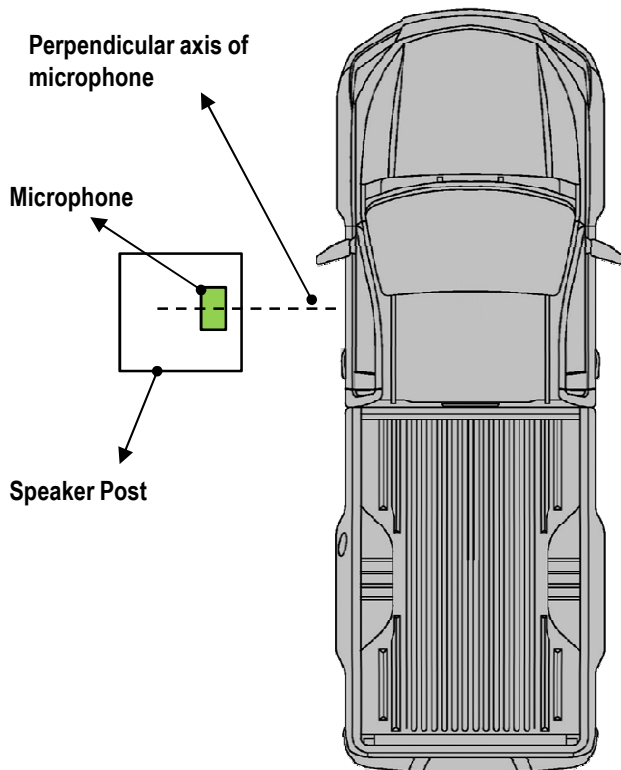
6. Microphone angles inside the speaker post

Inspect the speaker post to see if the microphone

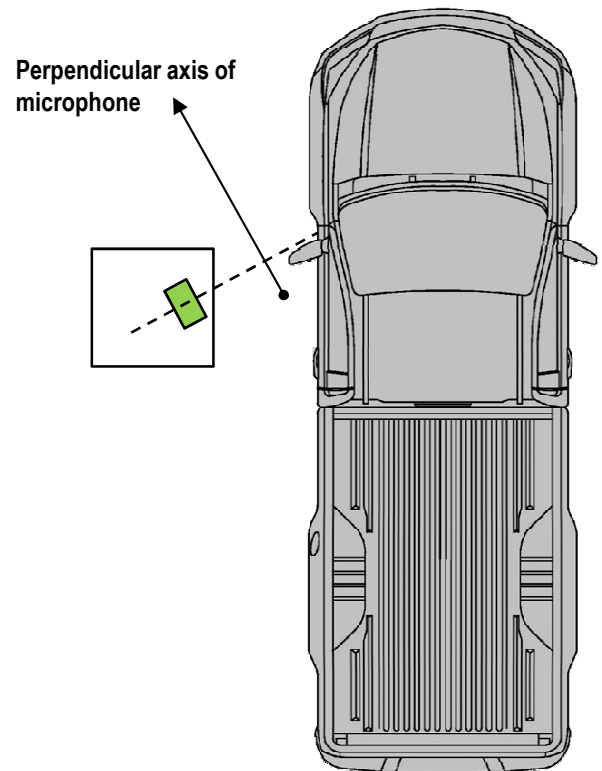
- The microphone has moved out of position or
- Any speaker post acoustic treatment material has slipped in front of the microphone
- The microphone is angled in such a way that it's perpendicular axis is no longer in line with the customer in the vehicle.

In such cases, the directional microphone will be unable to pickup all of the customer's voice. On the contrary it may pickup more of the ambient noise.

Correct positioning of microphone



Incorrect positioning of microphone



Technical Information: The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

Product Use: Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. Given the variety of factors that can affect the use and performance of a 3M product, user is solely responsible for evaluating the 3M product and determining whether it is fit for user's particular purpose and suitable for user's method of application.

Warranty, Limited Remedy, and Disclaimer: 3M warrants that its intercom products will be free from defects in material and manufacture for the period indicated in product literature from the date of shipment to purchaser by 3M or its authorized dealer. 3M MAKES NO OTHER EXPRESS OR IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. If the 3M intercom product does not conform to this warranty, the sole and exclusive remedy is, at 3M's option, repair or replacement of the 3M product or refund of the purchase price. This warranty does not cover: (1) the cost of shipping products to or from 3M for repair, (2) repair or replacement of existing cable or wiring, (3) product failure caused by misuse, abuse, improper installation, or unapproved modifications, or (4) intercom products that are installed or serviced by a non-3M authorized party. To obtain warranty service, please contact your authorized 3M dealer or 3M Building & Commercial Services Division, 3M Center, Building 500-01-01, St. Paul, Minnesota 55144-1000.

Limitation of Liability: Except where prohibited by law, 3M will not be liable for any loss or damage arising from its intercom products, whether direct, indirect, special, incidental or consequential, regardless of the legal theory asserted.



Commercial Solutions Division
3M Center, Building 223-2N-21
St. Paul, MN 55144-1000
USA
www.3M.com/drivethru

Contact your local dealer or 3M to learn more
about how we can improve your business.
www.3M.com/drivethru

3M is a trademark of 3M. Used under license in Canada
Please recycle. Printed in USA.
© 3M 2015. All rights reserved.