

Knowles TWS Development Platform

Knowles TWS Development Platform Specification

PRODUCT OVERVIEW

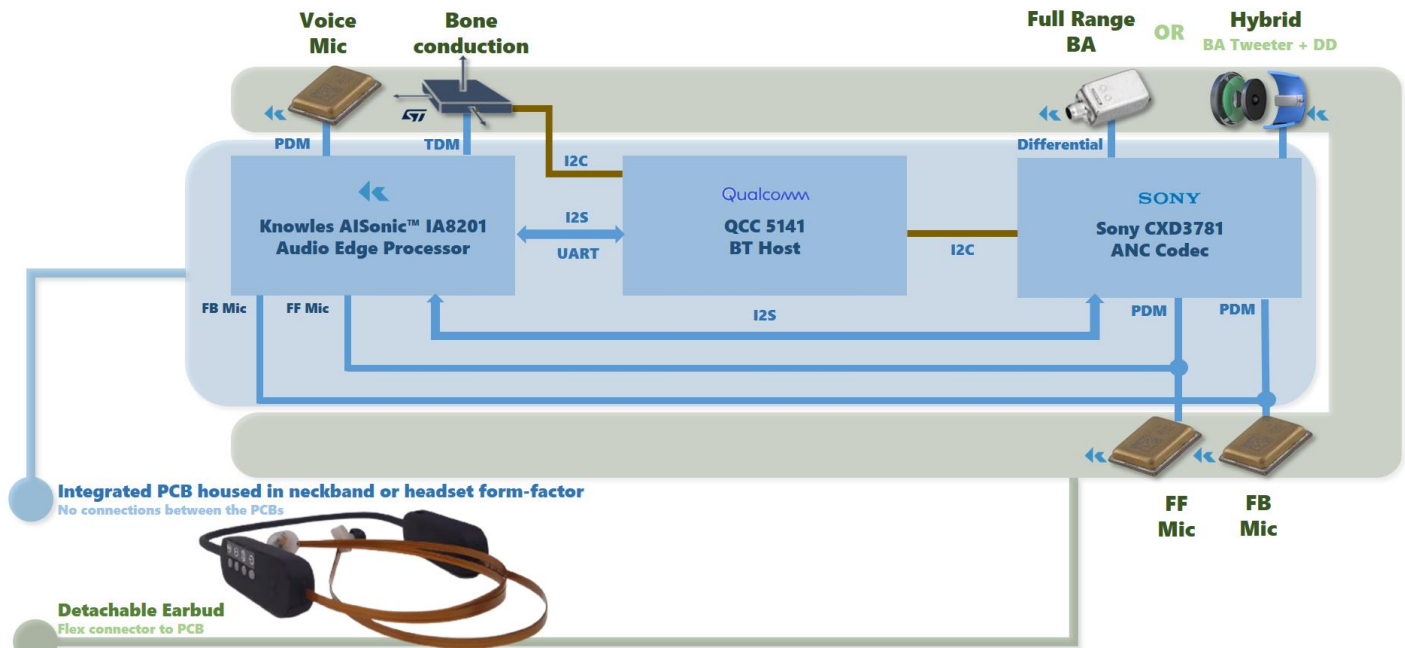
The Knowles TWS development platform is a flexible and powerful platform for developing advanced TWS design. It supports design, integration, and evaluation of multiple advanced features with TWS earbuds. The development platform includes the following components:

- Knowles pre-configured and pre-tuned earbuds with multiple microphone configurations and speaker driver assemblies.
- Knowles AiSonic™ IA8201 High Performance Audio Edge Processor.
- Sony CXD3781 Hybrid (FF + FB) DNC Codec.
- STM LIS25BA MEMS Digital Output Motion Sensor.
- QCC 5141 BT Host

PRODUCT IMAGE



PRODUCT BLOCK DIAGRAM



DISCLAIMER

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples given herein, any typical values stated herein and/or any information regarding the application of the device, Knowles Electronics, LLC hereby disclaims any and all warranties and liabilities of any kind, including without limitation warranties of non-infringement of intellectual property rights of any third party.

INFORMATION

For further information on technology, delivery terms, conditions, and prices, please contact a Knowles representative.

© 2021, Knowles Electronics, LLC, Itasca, IL USA. All Rights Reserved. Knowles and the logo are trademarks of Knowles Electronics, LLC.



KEY FEATURES

- Hybrid ANC (FF + FB)
- Transparency
- Premium Audio
- Advanced voice call features such as beamforming, echo cancellation, noise suppression, and voice vibration sensor fusion
- Conversation enhancement

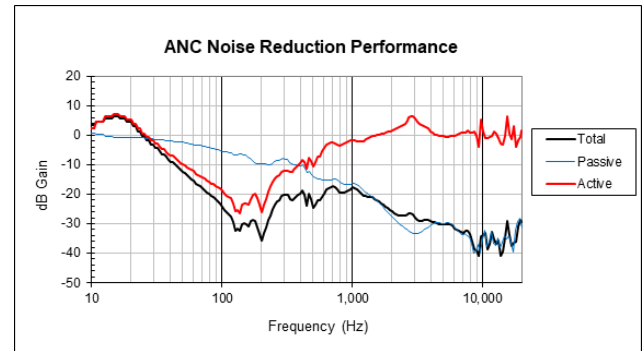
SYSTEM SPECIFICATIONS

System	
IC Solution	Knowles IA8201 Sony CXD3781 Qualcomm QCC 5141
Operating Mode	Selectable using buttons
Bluetooth Version Number	V5.2
Transmission Frequency	2.4GHz
Bluetooth Profile	HFP, A2DP
Audio Codec	SBC, AptX
Transmission Power	13dB
Wireless Range	≥10m
Power Voltage	3.1V-4.25V
Charging Voltage	5V
Charging Current	650mA max
BT Music Current	14mA
BT Call Working Current	24mA
Standby Time	10H
Talk Time	5H
BT Music Play Time (ANC On)	9H
Charging Time	Approx. 0.5H

Microphone Options	
High performance microphones	Knowles Everest SPH0690LMH4H
Microphone Sensitivity/Mic	As per Knowles microphone specifications

ANC SPECIFICATIONS

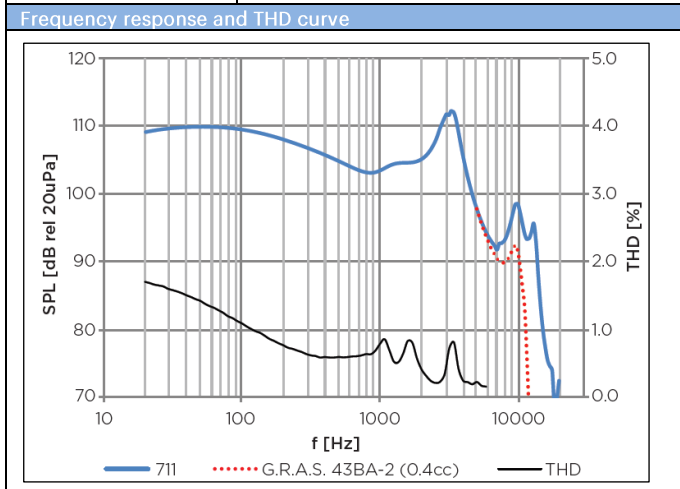
ANC Performance Plot (Earbud with BA Only Speaker Driver and Everest Microphone)



ANC Performance Summary	
Metric	Value
Maximum Suppression	36dB @ 200Hz
Noticeable Suppression	>20dB from 80Hz to 600Hz

MIC AND SPEAKER DRIVER SPECIFICATIONS

Speaker Options	
Speaker Driver Assembly	Two versions available with the kit <ul style="list-style-type: none"> • Full range BA only • Hybrid
Sound pressure level (Sensitivity at 1mW)	112 dB SPL
BA only	Knowles Full Range BA RAB-32257
Hybrid	Knowles BA Tweeter RAN-34264-P183 10mm DD



DISCLAIMER

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples given herein, any typical values stated herein and/or any information regarding the application of the device, Knowles Electronics, LLC hereby disclaims any and all warranties and liabilities of any kind, including without limitation warranties of non-infringement of intellectual property rights of any third party.

INFORMATION

For further information on technology, delivery terms, conditions, and prices, please contact a Knowles representative.

© 2021, Knowles Electronics, LLC, Itasca, IL USA. All Rights Reserved. Knowles and the logo are trademarks of Knowles Electronics, LLC.



KNOWLES PRODUCT FEATURES

Form Factor, Fit and Comfort

- TWS development platform is only intended for development and debugging.
- It is not a form factor or a reference design.
- Two separate electrically isolated PCBs housed in a neckband or headset mechanical ID for increased PCB area for debug electronics.
- MP-ready core PCB area.

Connectivity

- Bluetooth® 5.1 / 5.2.
- Pairs with any Bluetooth® 5.1 / 5.2 device.

Battery Life & Charging

Using 129mAh batteries, included with the kit –

- Up to 9 hours of listening time with ANC
- Up to 5 hours of talk time with ANC

Charging

The TWS development platform (L and R units) include USB-C® charging ports.

Sensors

A bone conduction sensor to improve voice call quality.

Audio Playback

Full range BA only

- Knowles BA RAB-32257
- Warm Bass
- Excellent bandwidth
- THD at 94dB SPL: 0.3%
- THD at 100dB SPL: 0.5%
- Codecs: SBC, AptX (licensed upgrade available)

Hybrid Configuration

- TBD

Voice

Use two mic Sony DNC solution subject to performance/matching limitation of blending digital with analog MEMS mics.

- Three Knowles Everest SPH0690LMH4H bottom-port digital microphone
- Transparency mode
- Two microphone Sony Digital ANC
- Multi-microphone beam forming and voice vibration processing running on IA8201
- Ultra low-latency DNN-based conversation enhancement algorithm running on IA8201

DISCLAIMER

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples given herein, any typical values stated herein and/or any information regarding the application of the device, Knowles Electronics, LLC hereby disclaims any and all warranties and liabilities of any kind, including without limitation warranties of non-infringement of intellectual property rights of any third party.

INFORMATION

For further information on technology, delivery terms, conditions, and prices, please contact a Knowles representative.

© 2021, Knowles Electronics, LLC, Itasca, IL USA. All Rights Reserved. Knowles and the logo are trademarks of Knowles Electronics, LLC.

