

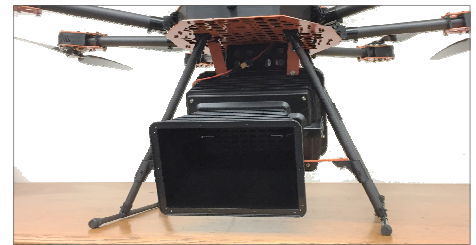


# Airborne Clear Voice

ACV Speakers Broadcasting...“Wide Area Crystal Clear Audio”

**Airborne Clear Voice-MN™ (ACV)** systems are delivering ground breaking capabilities for UAV users who require real-time **voice broadcasting payloads**.

Live broadcasts initiated from the drone’s control position allow law enforcement, search & rescue, or other safety personnel to communicate clear and commanding **verbal** or **recorded** messages to ground level listeners. When attached to an appropriately configured UAV flying at a 200 foot altitude, the ACV speaker can broadcast a highly articulate message beyond a ½ mile\*.



The ACV payloads use the proven, long-range planar magnetic speaker technology (developed for and used by the **US Military** for over a decade) into a **compact audio payload**. Three speaker models ranging from 1.4 lbs. to 8.0 lbs. are adaptable to any UAV with sufficient airframe capacity. The built-in amplification can be powered from built-in rechargeable LiPo batteries, which for some models can provide over **10 hours** of continuous broadcast time.

\*The broadcast coverage area and transmission distances are dependent on the UAV’s altitude, the directional orientation of the ACV waveguide, and prevailing wind conditions. Broadcasting from altitudes above 200 feet will create greater coverage over longer transmission distances.

The RF audio connection from ground control to the drone is provided using commercial-off-the-shelf (COTS) radio links or digital transceivers. Audio messages can be generated from a transmitter’s **microphone** or from **pre-recorded messages** played through the headphone jack on a phone, tablet or other personal device. When necessary, the system’s ground-to-drone RF connection can be adapted with other **user-specified** radio systems.



The **Airborne Clear Voice-MN™ ACV-1** payload on a Theiss Solutions’ “Validus Hex” UAV



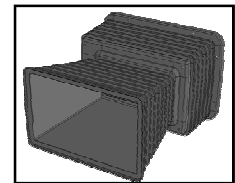
## Airborne Clear Voice...Three Speaker Payloads

Three **Clear Voice-MN™ Aerial Speakers** provide First Responders with a powerful new tool to broadcast real-time, verbal communications to people on the ground. From their flying platform, emergency personnel can quickly broadcast life-saving instructions or warnings to **one individual...or to hundreds of people** who might be in harms way, by integrating the **ACV Speaker** system on to their UAV.

ACV Speaker payloads are available in **three** models adaptable to various UAV structures and lifting capacities. The ACV-1 system can be powered from the UAV power source or from an optional rechargeable battery pack. The ACV-2 & 3 are powered from their system controller.

### ACV-1:

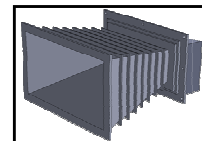
- Includes 1 **MAD-1** planar transducer on a waveguide, Pre-amp and 200 watt Amplifier.
- Audio input: 1/4" TRS balanced mic/line input; 10K ohm input impedance
- System powered from UAV's internal battery<sup>1</sup> or optional rechargeable LiPo battery pack<sup>2</sup>.
- System weight: 8 lbs. w/o battery; 9 lbs. w/optional LiPo battery.
- Dimension: 11.2"w x 7.9"h x 12.4"d
- Performance: At a 200 foot altitude the **broadcast range** is greater than **3,000 feet**.



ACV-1

### ACV-2:

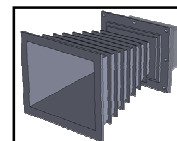
- Includes: one **MAD-2** planar transducer on a waveguide, one System Controller with built-in Preamp, 25 watt Amplifier, LIPO Battery, and external battery charger.
- Audio input: 1/4" TS unbalanced mic/line input; 10K ohm input impedance
- System powered from the ACV2 Controller's internal LiPo battery .
- System weight: 2.1 lbs.
- Dimension: Speaker 5.4"W x 8.6"H x 9.7"D;  
Controller: 7"W x 2.3"H x 4.4"D
- Performance: At a 200 foot altitude the **broadcast range** is greater than **2,000 feet**.



ACV-2 & Preamp-Amplifier Controller

### ACV-3:

- Includes: one **MAD-3** planar transducer on a waveguide, one System Controller with built-in Preamp, 25 watt Amplifier, LIPO Battery, and external battery charger.
- Audio input: 1/4" TS unbalanced mic/line input; 10K ohm input impedance
- System powered from the ACV3 Controller's internal LiPo battery .
- System weight: 1.4 lbs.
- Dimension: Speaker 5.2"W x 6.1"H x 9.7"D;  
Controller: 7"W x 2.3"H x 4.4"D
- Performance: At a 200 foot altitude the **broadcast range** is greater than **1,000 feet**.



ACV-3 & Preamp-Amplifier Controller

### Notes:

1. Contact us for battery requirements when using UAV internal power source.
2. Optional 1 lb. LiPo battery pack can be substituted in lieu of using the UAV's power source.





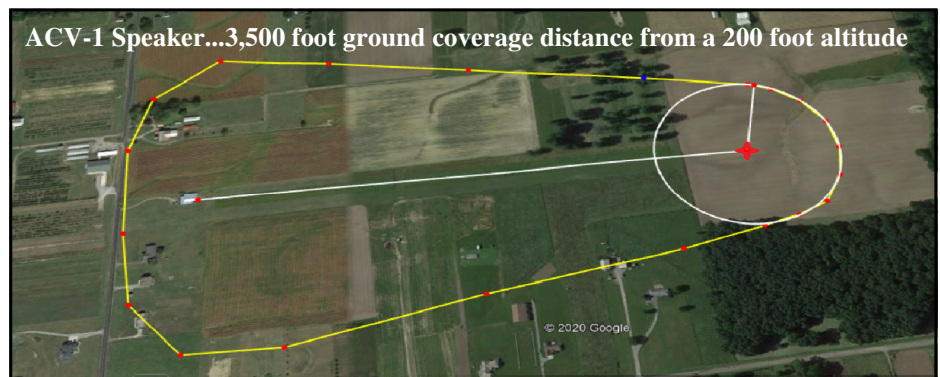
## Airborne Clear Voice ... Aerial Speaker Coverage

The audio coverage footprint for each Aerial Speaker is directly proportional to the altitude of the aircraft. The following photos illustrate the audible coverage area for the ACV-1, ACV-2, and ACV-3 systems when flying at a 200 foot altitude.

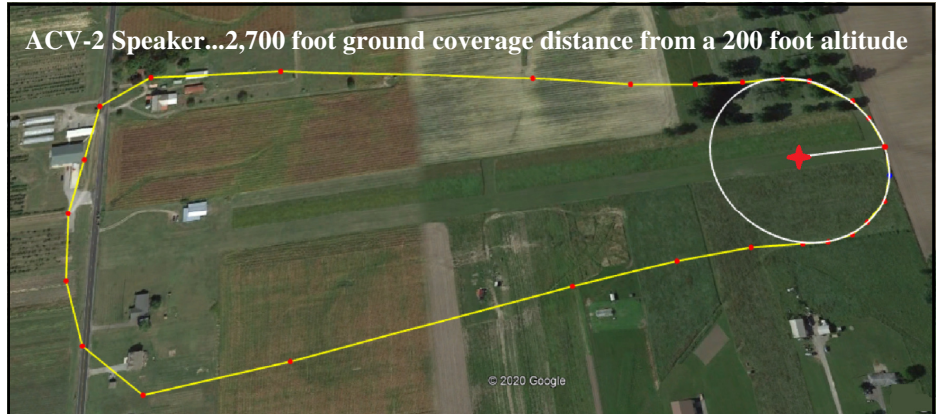
The drone's position is indicated by the **RED X**. The corresponding coverage area, illustrated by the yellow line, extends from behind the drone to a location forward of the drone.

Weather conditions will also influence the audio performance of any airborne speaker payload. These images illustrate the performance achieved with a crosswind that was less than 10 mph.

ACV-1 Speaker System with the MAD-1 transducer



ACV-2 Speaker System with the MAD-2 transducer



ACV-3 Speaker System with the MAD-3 transducer

