RIBRI Security Position Statement

We hereby issue the following statement regarding the potential security risks that may arise when law enforcement agencies use RIBRI device as a communication tool: RIBRI's entire range of device belongs to high-definition acoustic communication devices, not "acoustic weapons". Its core function is to fill the capability gap between traditional sound amplification devices and highly aggressive non lethal means. Compared with traditional speakers, car broadcasting and other devices, RIBRI devices have a longer propagation distance and higher speech intelligibility; Compared with non lethal kinetic methods such as tear gas and rubber bullets, RIBRI device adopts non-contact sound and light intervention, which can achieve regional control while avoiding physical injuries.

RIBRI device, with controllable sound pressure level output and precise directional design, can safely establish isolated control areas and clearly convey instructions, fundamentally avoiding misunderstandings caused by poor communication. Compared to non lethal methods such as tear gas and rubber bullets, its non-contact sound and light intervention mode can achieve scene control without the need for physical force. In high-risk tasks such as border control and emergency warning, it effectively reduces the risk of conflict escalation and provides a safer solution for the public and law enforcement personnel.

The device adopts a graded volume control mechanism, and the sound pressure level decays inversely with distance (the sound pressure level decreases by 6dB for every doubling of distance). Combined with a ± 15 ° directional beam design (directional sound wave device), the sound pressure level on the back is controlled within a safe threshold (20dB lower than the front) while ensuring positive control effect, ensuring operational safety and non harm from a technical perspective.

The operators of RIBRI device have received professional training and are proficient in the correct use of the device. They can accurately adjust the audio output

through the volume control knob located in a prominent position on the device, achieving graded sound pressure management from daily voice announcements to warning and evacuation. Different from non lethal kinetic methods such as tear gas and taser guns, RIBRI adopts a pure acoustic intervention mode and does not launch any physical projectiles, fundamentally avoiding risks such as ballistic injury and chemical stimulation. Its non-contact characteristics have significant advantages in protest activities and other scenarios: through practical verification, the device can help law enforcement personnel convey instructions through high-definition voice, reducing conflict intensity while achieving control effects that minimize property damage and arrest frequency. To ensure operational safety, the back of each RIBRI device is printed with prominent font safety operation guidelines, covering core information such as sound pressure control thresholds and safety distance specifications, to ensure that operators can quickly obtain key guidelines in emergency situations and achieve compliant and safe application of the device.

Consistent with all speakers, the audio output of RIBRI devices is measured in decibels (dB) at a distance of 1 meter in front of the device. Its voice broadcasting and alarm sound propagation strictly follow the inverse square law: when the distance from the sound source doubles, the sound pressure level (SPL) decays by 50% (i.e. 6dB) according to physical laws.

When RIBRI devices are used correctly, their broadcast volume is strictly controlled within a safe threshold to avoid permanent hearing damage caused by momentary exposure. The risk of hearing loss is positively correlated with the exposure time, frequency, and intensity of sound. Through distance attenuation and sound pressure control, the sound pressure level at long distances is significantly reduced in practical applications. Taking RH120Y as an example, the peak sound pressure level at 1 meter is 170dBA, and for every doubling of the distance from the sound source, the sound pressure level decays by 6dB. The peak sound pressure level at 100 meters is 130dBA. Combined with the directional beam design of ± 15 ° of the device, the sound pressure level in non target areas rapidly decays with distance, forming a natural safety boundary. By comparison, it can be seen that the sound

pressure level of the ambulance alarm is 130dB, while the flash bomb used by the police can instantly explode up to 175dB, far exceeding the safe output range of RIBRI device.

If auditory discomfort occurs when in close contact with device, personnel can quickly avoid danger by covering their ears (reducing sound pressure by about 25dB) or staying away from the sound source. For example, at a distance of 10 meters, the sound pressure level can be reduced to below 100dB when covering the ears, which is lower than the live volume of 115dB in rock concerts.

The OSHA standard allows exposure to a 115dB environment for 15 minutes per day, with a sound pressure level of ≤ 105dB at a distance of 1 meter behind RIBRI device. When operating large device (such as the RX1060A model), the target group is required to maintain a distance of at least 75 meters from the device, at which point the sound pressure level attenuates to below 85dB, far below the OSHA's 140dB pulse noise safety threshold. Operators need to wear hearing protection devices (such as earplugs and earmuffs), especially in long-term use or environments with reflected sound, to avoid the risk of sound pressure level accumulation behind the device. It is strongly recommended to receive safety and operational training before deploying RIBRI device and accessories.

Qualified operators must ensure that there are no obstacles in the area directly in front of RIBRI before activating the device, and that the volume control is not set to the maximum value (red area on the volume knob scale). RIBRI operators must ensure that the placement, aiming, and operation of device avoid prolonged exposure to high sound pressure levels by nearby personnel and bystanders. Large device needs to control the target audience at a safe distance (such as 75 meters) according to the operation manual requirements.

Appendix - Risk Criteria for Hearing Loss

The Damage Risk Criteria (DRC) are used to specify the Maximum Allowable Noise Level (MANL) and Maximum Allowable Exposure Time (MAET) to prevent or mitigate the progression of existing noise induced hearing loss (NIHL). MANL depends on the maximum acceptable occupational hearing loss (MAOHL) and excess risk (i.e. the difference between the proportion of occupational noise exposed individuals who exceed MAOHL and those who are not exposed). MAET is typically an 8-hour workday, and if the noise level exceeds MANL, MAET is shortened based on a time/intensity relationship called exchange rate (ER).

The DRC standard used by the Occupational Safety and Health Administration (OSHA) in the United States is: the average MAOHL of both ears at frequencies of 1000, 2000, and 3000Hz is>25dB, the MANL on an 8-hour workday is 90dBA, and the exchange rate is 5dB. That is, if the noise is>90dBA, the MAET decreases by half for every 5dB above MANL (such as 8 hours at 90dBA, 4 hours at 95dBA, 2 hours at 100dBA, etc.). Regardless of MAET, MANL has a maximum of 115dBA. The 5dB exchange rate is based on the premise that 'noise that produces the same temporary threshold shift will also produce the same permanent threshold shift or NIHL'.

The latest DRC standard used by the National Institute for Occupational Safety and Health (NIOSH) in the United States is: the average MAOHL of both ears at frequencies of 1000, 2000, 3000, and 4000Hz is>25dB. The DRC standards used in the American Conference of Government Industrial Hygienists (ACGIH) and MIL-STD-1474D are: the average MAOHL (referred to as threshold value) of both ears at frequencies of 500, 1000, 2000, and 3000Hz is>25dB. NIOSH, ACGIH, and MIL-STD standards are more stringent than OSHA's DRC because they all use a MANL of 85dBA and a 3dB exchange rate on an 8-hour workday. If the noise level is greater than 85dBA, MAET will decrease by half every time it exceeds MANL3dB (such as 8 hours at 85dBA, 4 hours at 88dBA, 2 hours at 91dBA, etc.). The 3dB exchange rate is based on the premise that "sound with the same energy has the same risk", and there is more research support compared to the 5dB exchange rate. The

DRC of ACGIH aims to protect the median population from MAOHL exceeding 2dB after 40 years of occupational noise exposure. In addition, ACGIH stipulates a MANL of 80dBA and an exchange rate of 3dB for a 24-hour workday, resulting in a MAET of 0.11 seconds at 139dBA. Despite conducting multiple studies and developing national and international standards, statistical modeling methods, noise types MAOHL、 Multiple variables such as age, gender, race, exposure level, and exposure duration make it difficult to define excess risk.

Table 1 shows the excess risk estimates (mean and 95% confidence interval, CI) for workers aged 30 and 60 exposed to MANL at 85dBA and 90dBA for 5-10 years and>10 years by NIOSH in 1997 (Prince, M.E. et al., 1997, "Re examining Risk Estimates from NIOSH Occupational Noise and Hearing Surveys," Journal of the Acoustic Society of America, 110 (2), 950-963). Due to the excess risk estimation in Table 1 being based on NIOSH MAOHL containing 4000Hz, while the MAOHL of OSHA, ACGIH, and MIL-STD-1474 does not include 4000Hz, their excess risk estimates are slightly lower.

Table 1- Excess Risk Estimates(95% Confidence Interval)

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		5 to 10 yrs of Exposure		>10 yrs of Exposure	
		30 yrs old	*60 yrs old*	*30 yrs old*	*60 yrs old*
Daily dBA Time Weighted Average Noise Exposure	85	1.4% (.3-3.2%)	4.9% (1.0-11.5%)	2.3% (.7-5.3%)	7.9 (2.3-16.6%)
	90	5.4% (2.1-9.5%)	15.9% (6.2-26.2%)	10.3 (5.8-16.2%)	24.7 (14.9-34.3%

For military personnel, the DRC (85dBA MANL, 3dB ER) of ACGIH/MIL-STD-1474D should be used to determine the safe operating noise level of RIBRI. Considering that the majority of military personnel who may use RIBRI are under 30 years old and have been exposed to occupational noise for less than 10 years, their risk of developing NIHL is extremely low (approximately 0.3-3.2%). If the

RIBRI noise level exceeds the DRC of ACGIH/MIL-STD-1474D, military personnel may use hearing protection devices to maintain NIHL risk at an extremely low level.

For non military personnel, OSHA's DRC (90dBA MANL, 5dB ER) should be used to determine the safe operating noise level of RIBRI. Although the excess risk level of OSHA DRC is higher than that of ACGIH/MIL-STD-1474D DRC, the risk of NIHL for non military personnel is still relatively low, especially for young people and those with shorter occupational noise exposure years (2.1-9.5%). In addition, OSHA DRC is a mandatory standard in the US industry. Therefore, the US Department of Labor (OSHA) has accepted these excess risk estimates to prevent the occurrence or slow down the progression of NIHL caused by occupational noise exposure.

Note: Acoustic safety standards are established relative to the human average hearing threshold (dBA).