



Application Note #023

Explanation of Data Sheet LRA Resonant Frequency Discrepancy

Model: VG0640001D Linear Vibration Motor

210Hz vs. 228Hz

While we are discussing the VG0640001D data sheet, however, this applies to ALL LRA

1. The 210Hz in the Specification Table Is a "Reference Judgment Frequency," Not the Resonance Peak

Per Section 3-2-1 (Vibration force) of the specification sheet:

@1.8Vrms, 210Hz → 0.55 ~ 0.9 Grms

The 210Hz does not represent the peak point of the graph, but rather the reference drive frequency defined for judging

The product's vibration force specification. In the attached graph, the measured value at 210Hz is approximately 0.7~0.8 Grms, which falls correctly within the specified range (0.55~0.9 Grms).

3-2. Mechanical characteristics

No.	Item	Condition	Specification
3-2-1	Vibration force	(1) @1.8Vrms, 210Hz	0.55~0.9 Grms



2. Exact Meaning of 228Hz

The graph represents a frequency response characteristic curve, obtained by sweeping frequency from:

200Hz to 250Hz while holding voltage fixed at 1.8Vrms, and measuring the resulting vibration acceleration (Grms) at each frequency.

228Hz is the point at which this individual sample showed its highest vibration acceleration — i.e., the measured mechanical resonant.

Frequency (f_0) of this particular sample. Due to the spring-mass structure of an LRA (Linear Resonant Actuator), amplitude peaks at a specific frequency, and 228Hz is that point for this sample.

The 210Hz (Rated Frequency) and 228Hz (Measured Peak) Use Different Concepts

Category	210Hz (Rated Frequency)	228Hz (Graph Peak)
Definition	Reference frequency for judging the vibration force spec	Measured resonance point of an individual sample
Basis	Spec sheet Section 3-2-1 (0.55~0.9 Grms judgment condition)	Result of frequency sweep measurement
Characteristic	Fixed reference value for design/judgment	Can vary with sample, voltage, and temperature conditions

Because an LRA's actual resonance point can shift by several Hz depending on individual unit variation, applied voltage, and temperature conditions,

It is common practice to set the rated frequency separately from the resonance peak — with an appropriate margin built in — as a fixed reference for design and judgment purposes,

In order to ensure mass-production reliability.

3. Conclusion

Therefore, revising the Rated Frequency in the specification table (210Hz) to 228Hz simply because the graph's peak appears at 228Hz is considered a request based on conflating two different concepts:

The "reference judgment frequency" and the "measured resonance peak on the curve."

210Hz is not subject to revision, as it serves as the reference point for spec judgment. 228Hz is merely reference measurement data for this particular sample, and does not represent a specification value itself.

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