

THE **BLACK SWAN Be** PRO-ACTIVE EXT

Report of BLACK SWAN Be PRO-ACTIVE EXT

ASCENDO

Date	Author	Changes	Version
22/12/2023	GL		V1

Summary

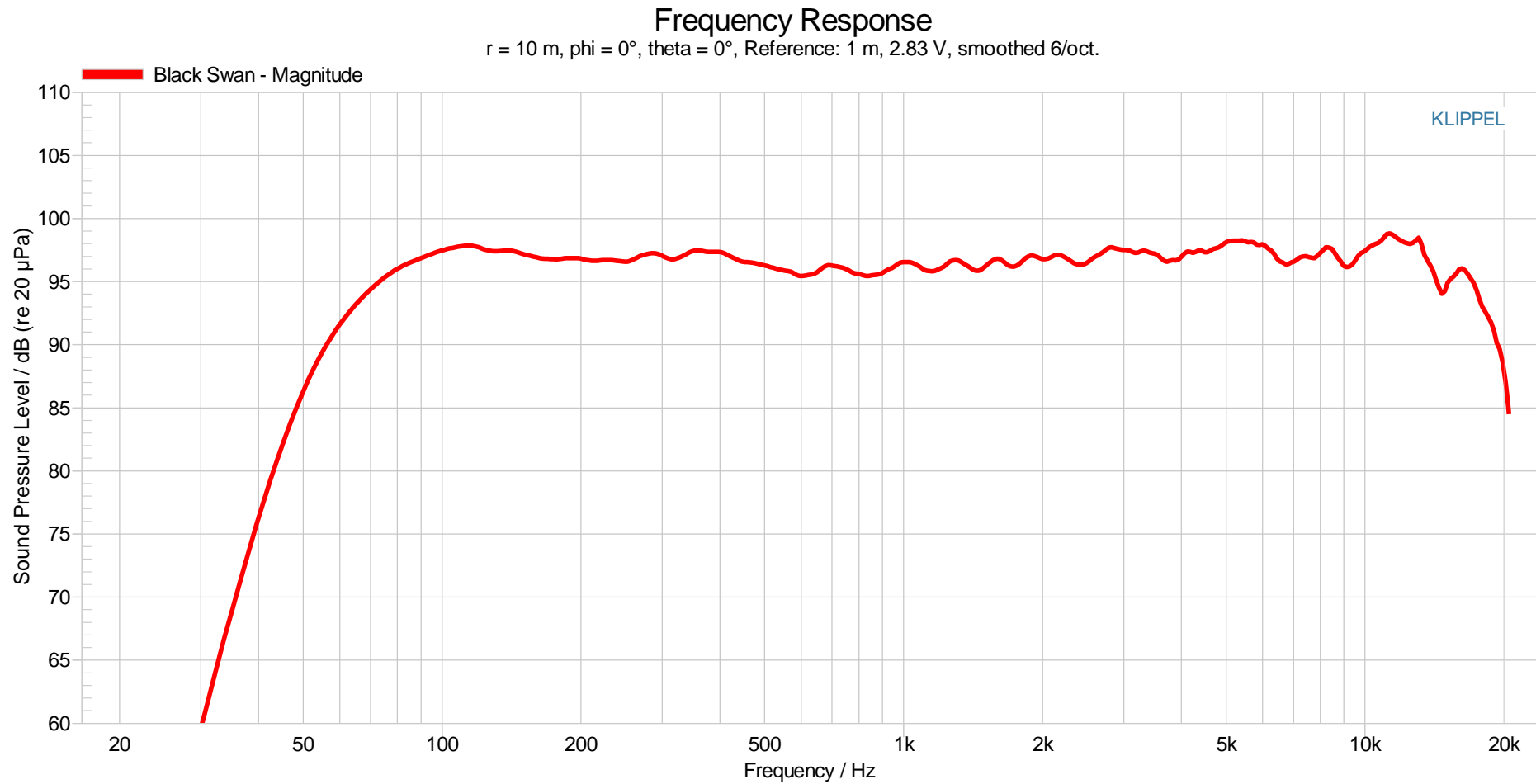
1. Pictures of measurements	3
2. Frequency Response	4
3. Impedance Curve.....	5
4. Contour Plot	6
4.1. Horizontal	6
4.2. Vertical.....	7
5. CEA2034 Spinorama	8
5.1. Directivity Index.....	9
5.2. In-Room response	10
5.3. Early reflections.....	11
5.4. Horizontal Reflections	12
5.5. Vertical Reflections.....	13
5.6. Horizontal Frequency Response.....	14
5.7. Vertical Frequency Response	15
6. Harmonic Distortion	16
7. MTON Max SPL – 1s Stimulus.....	17
7.1. Results	17
7.2. Compression Chart	18
7.3. Multi Tone Distortion Chart	19
8. CEA2010B.....	20
8.1. Max Peak SPL.....	20
8.2. Max Peak Voltage.....	21
8.3. THD on Burst.....	22

1. Pictures of measurements



2. Frequency Response

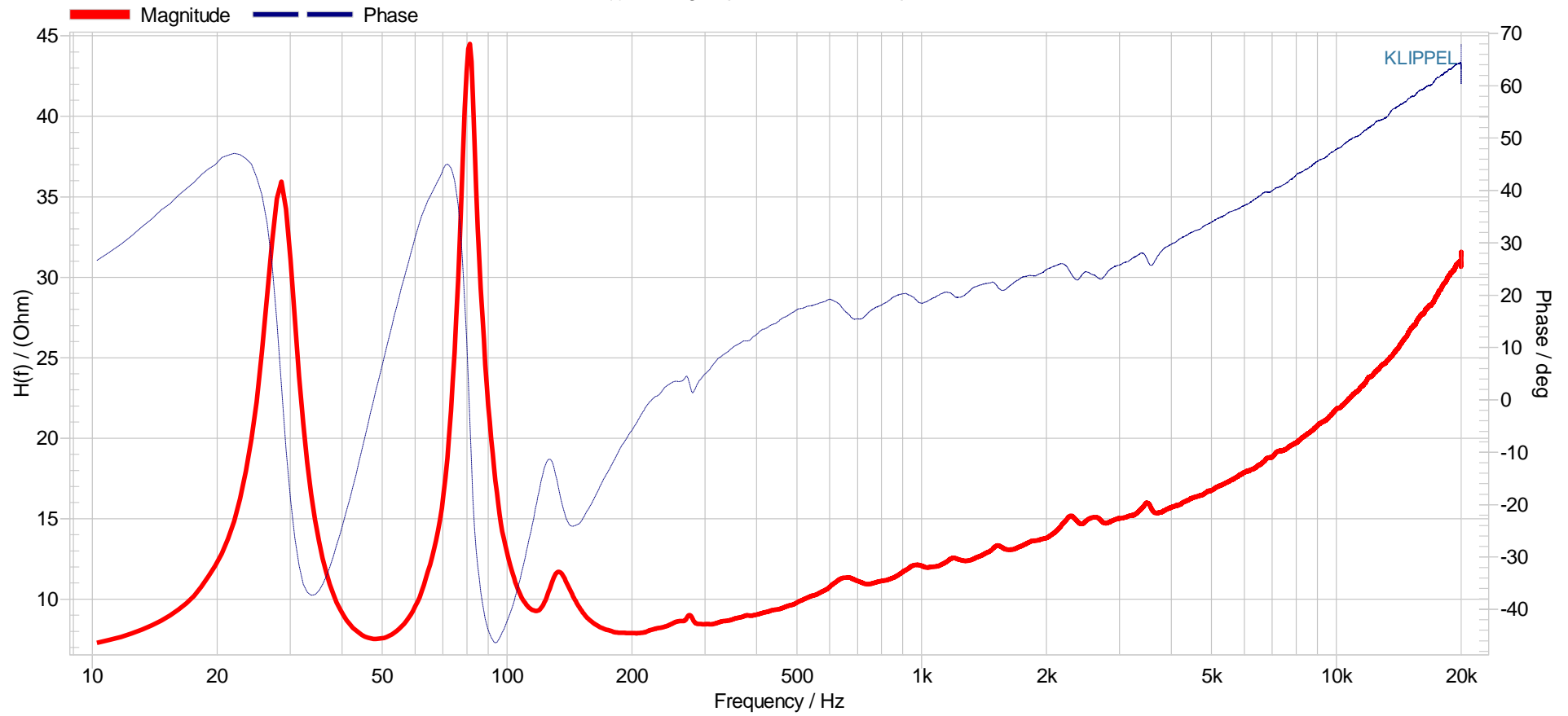
2,83v @1m – 1/6 oct. Smoothing



3. Impedance Curve

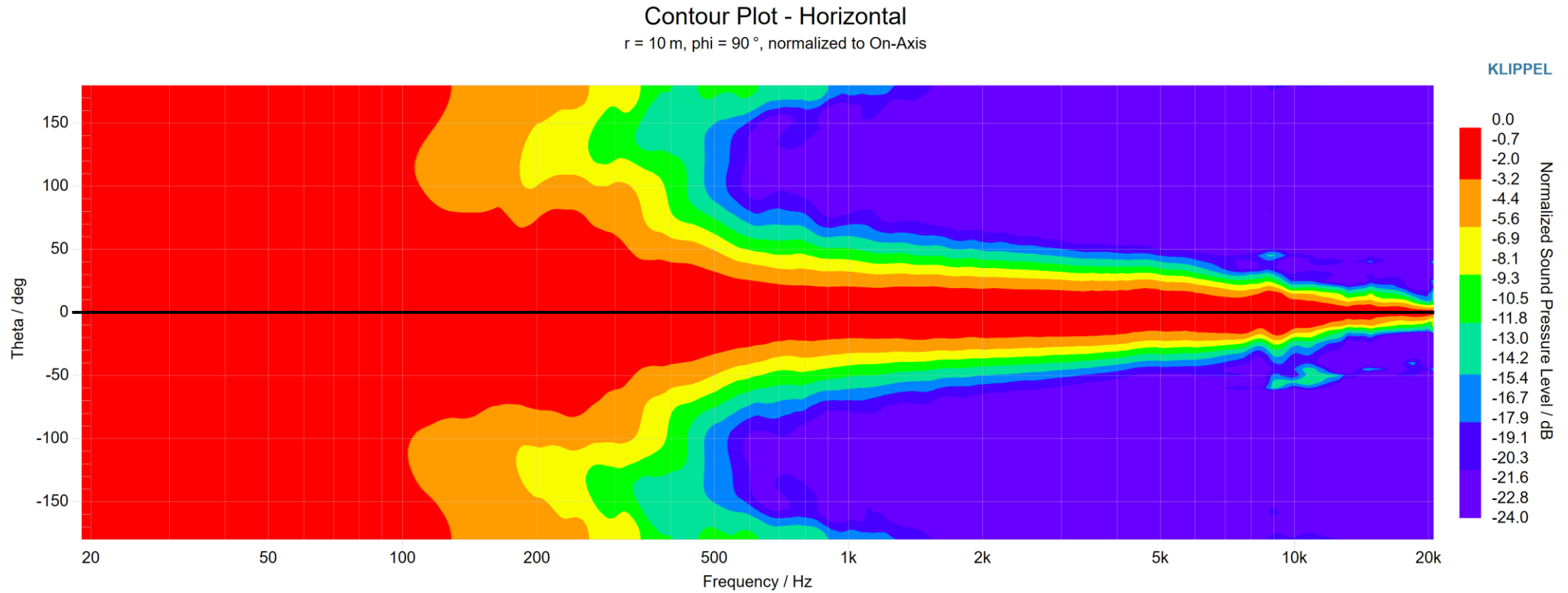
2,83v @1m – No Smoothing

Magnitude of transfer function $H(f)$
 $H(f) = \text{Voltage Speaker 1} / \text{Current Speaker 1}$



4. Contour Plot

4.1. Horizontal



xReferenced @10m – Baffle loaded (2π steradians)

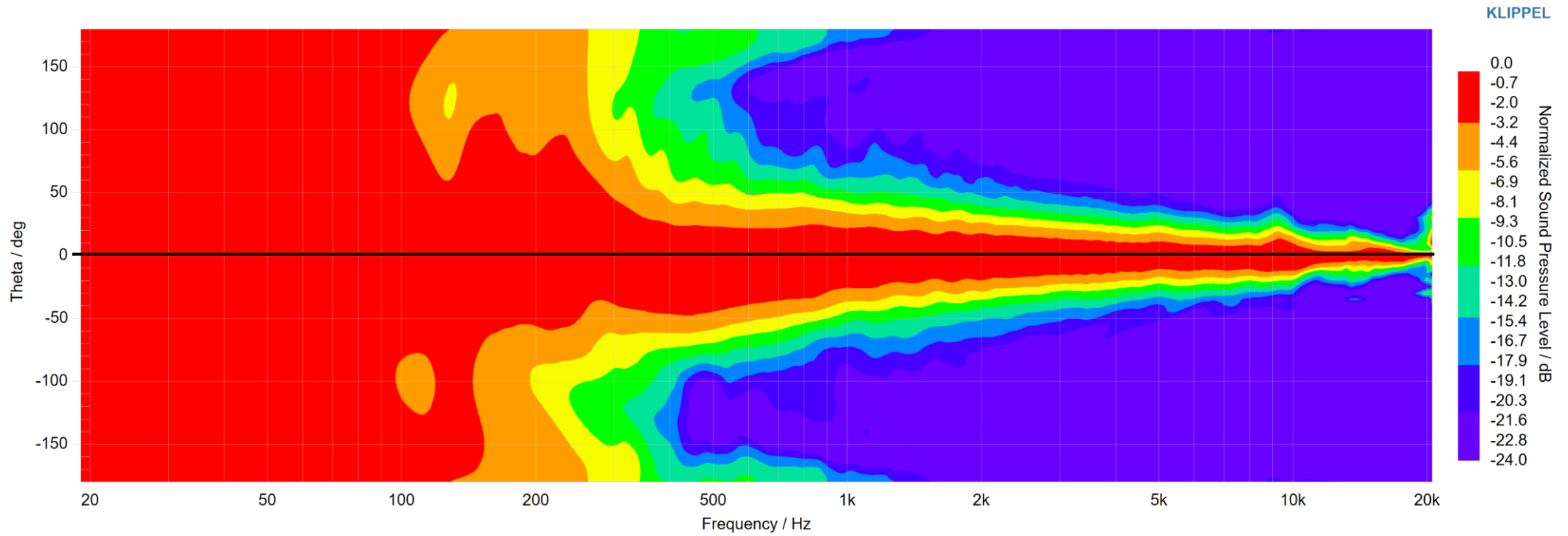
Normalized on Axis – 1/6 oct. Smoothing

4.2. Vertical

Referenced @10m – Baffle loaded (2π steradians)

Contour Plot - Vertical

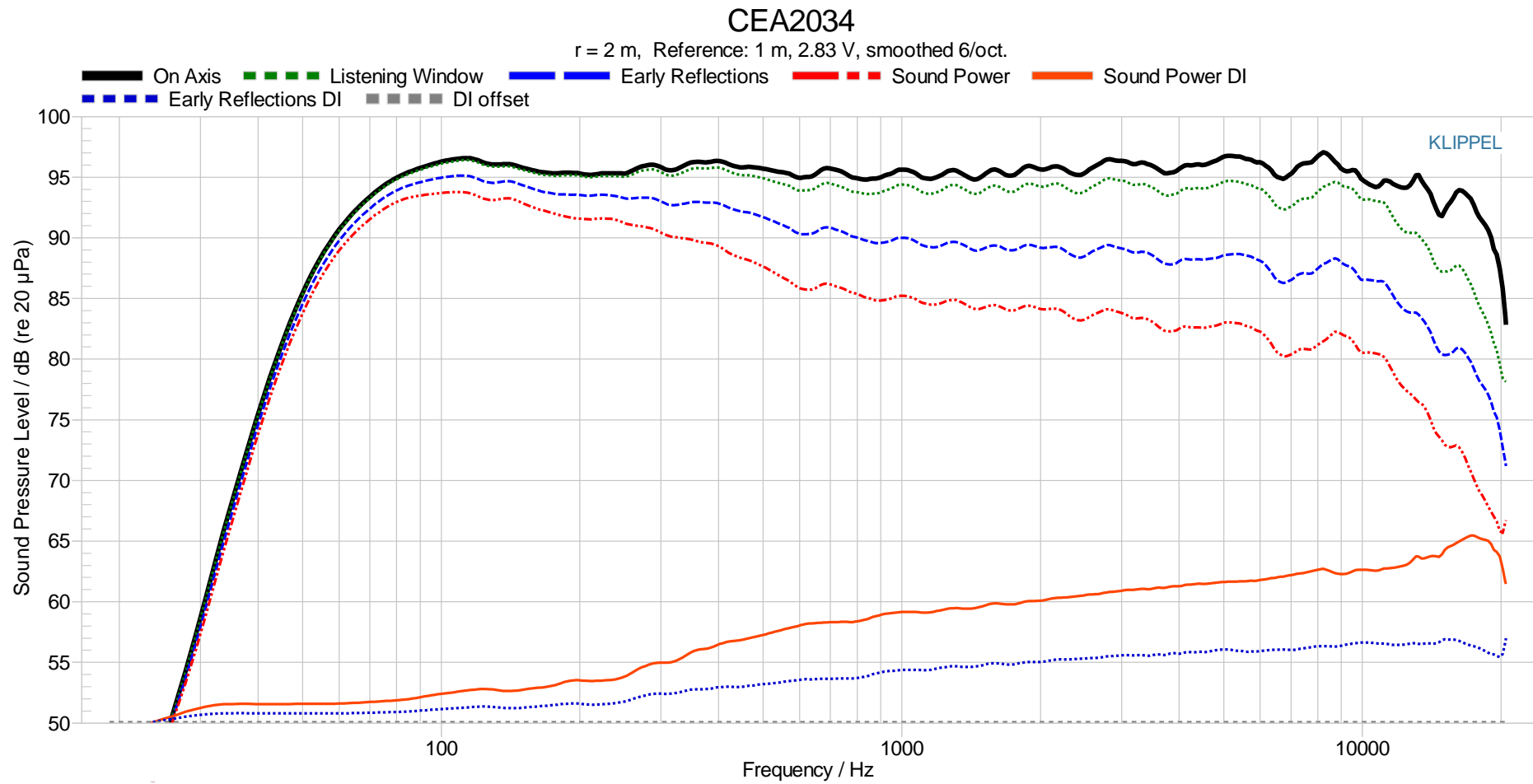
$r = 10\text{ m}$, $\phi = 0^\circ$, normalized to On-Axis



Normalized on Axis – 1/6 oct. Smoothing

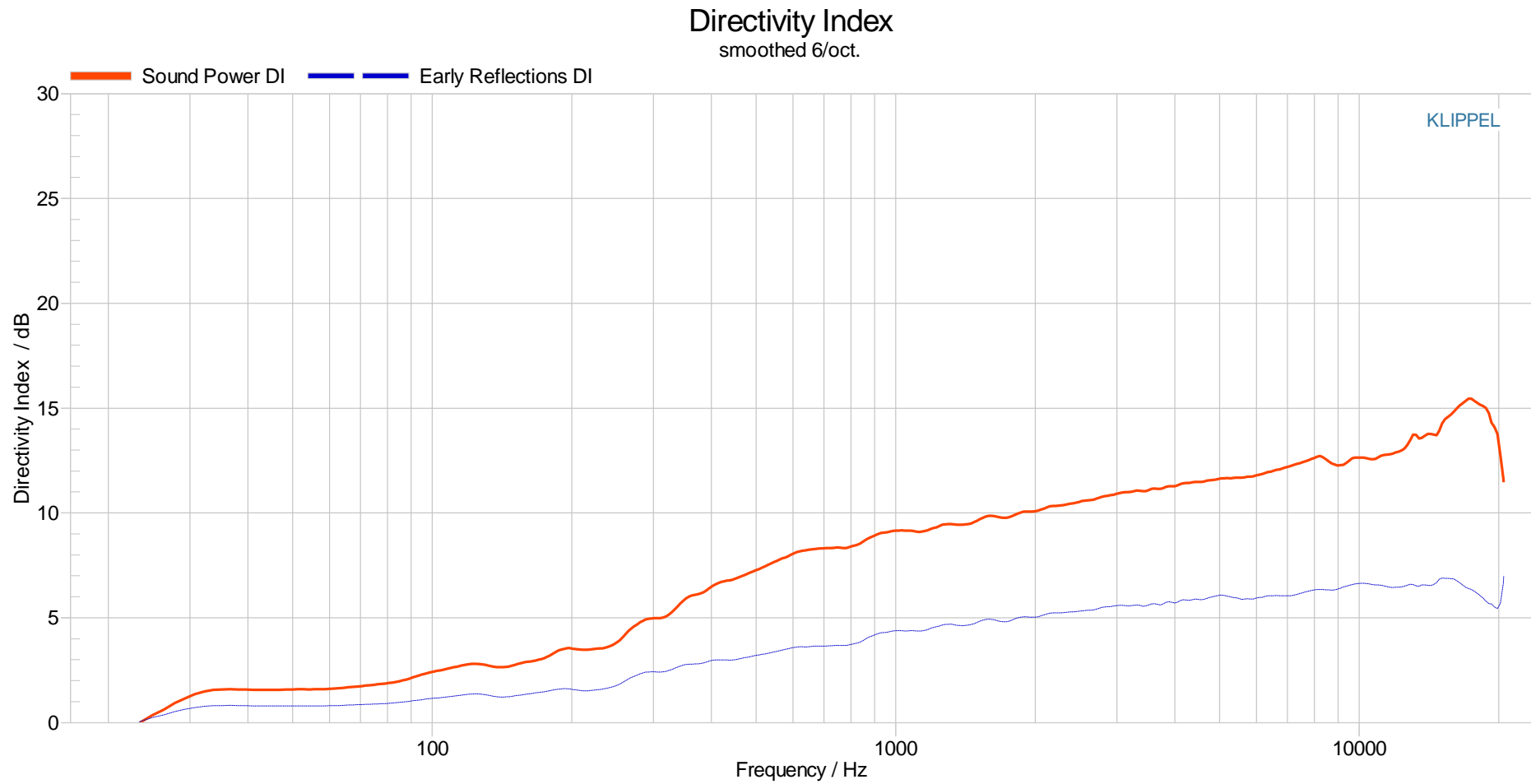
5. CEA2034 Spinorama

2,83v @1m – 1/6 oct. Smoothing



5.1. Directivity Index

1/6 oct. Smoothing

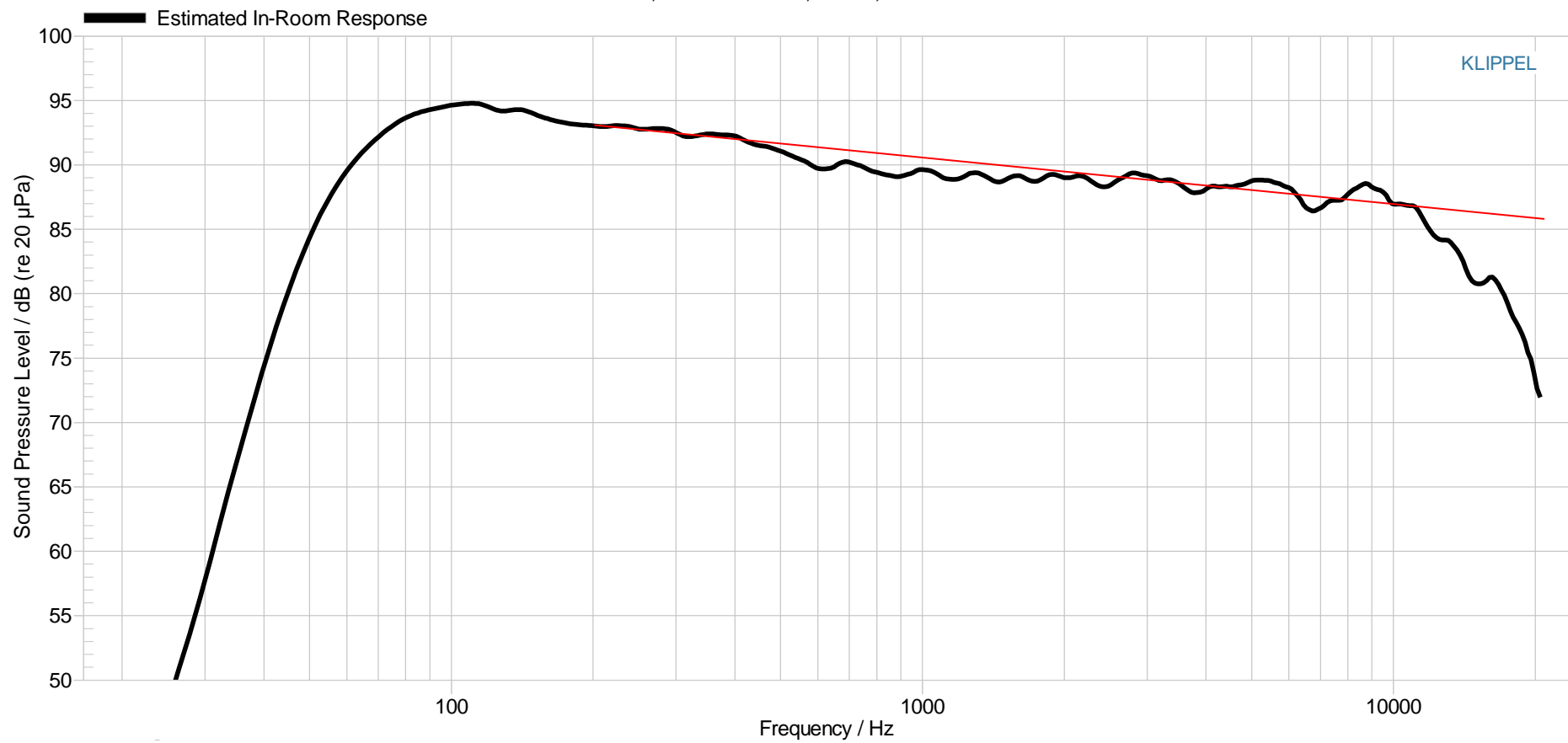


5.2. In-Room response

1/6 oct. Smoothing

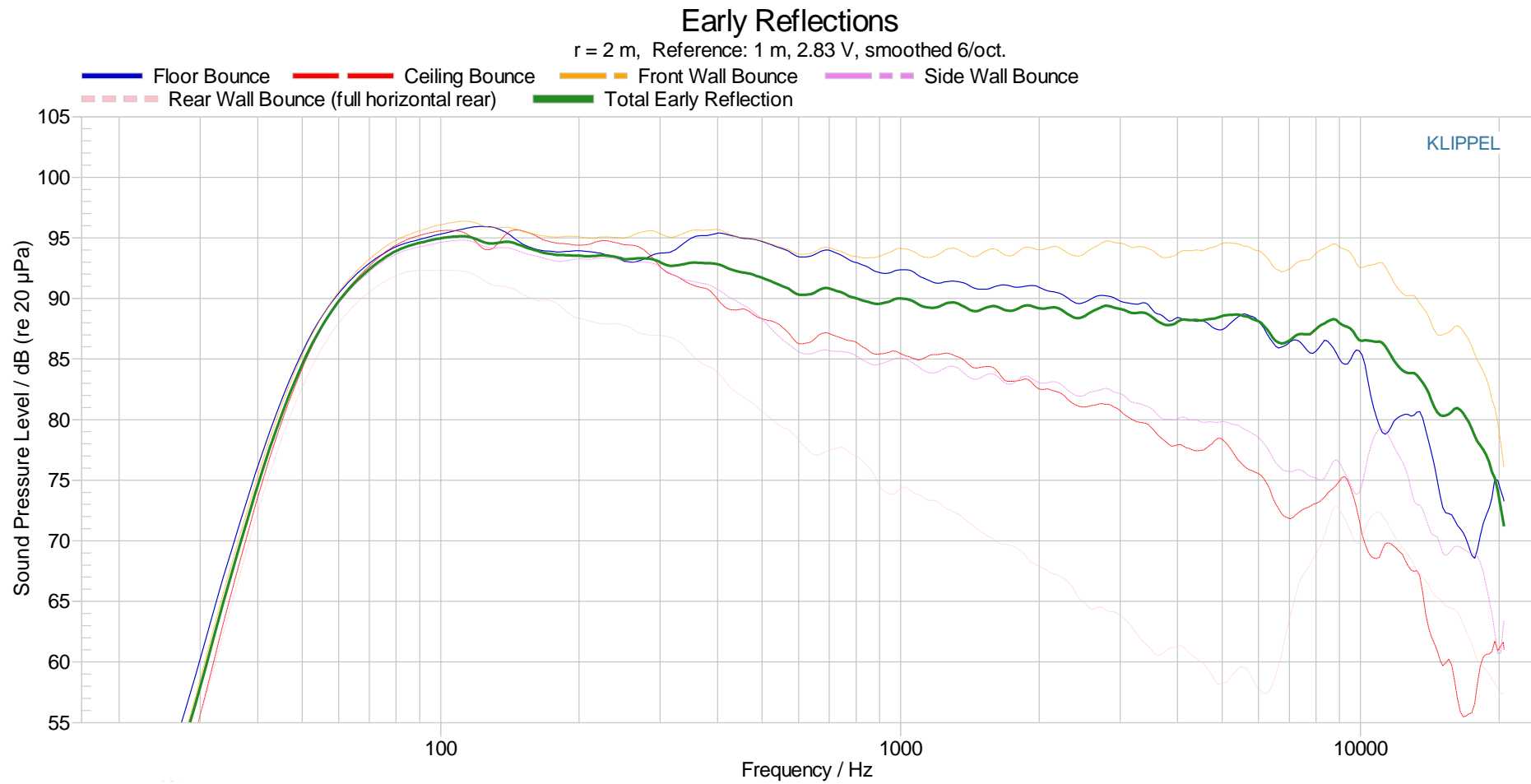
Estimated In-Room Response

$r = 2$ m, Reference: 1 m, 2.83 V, smoothed 6/oct.



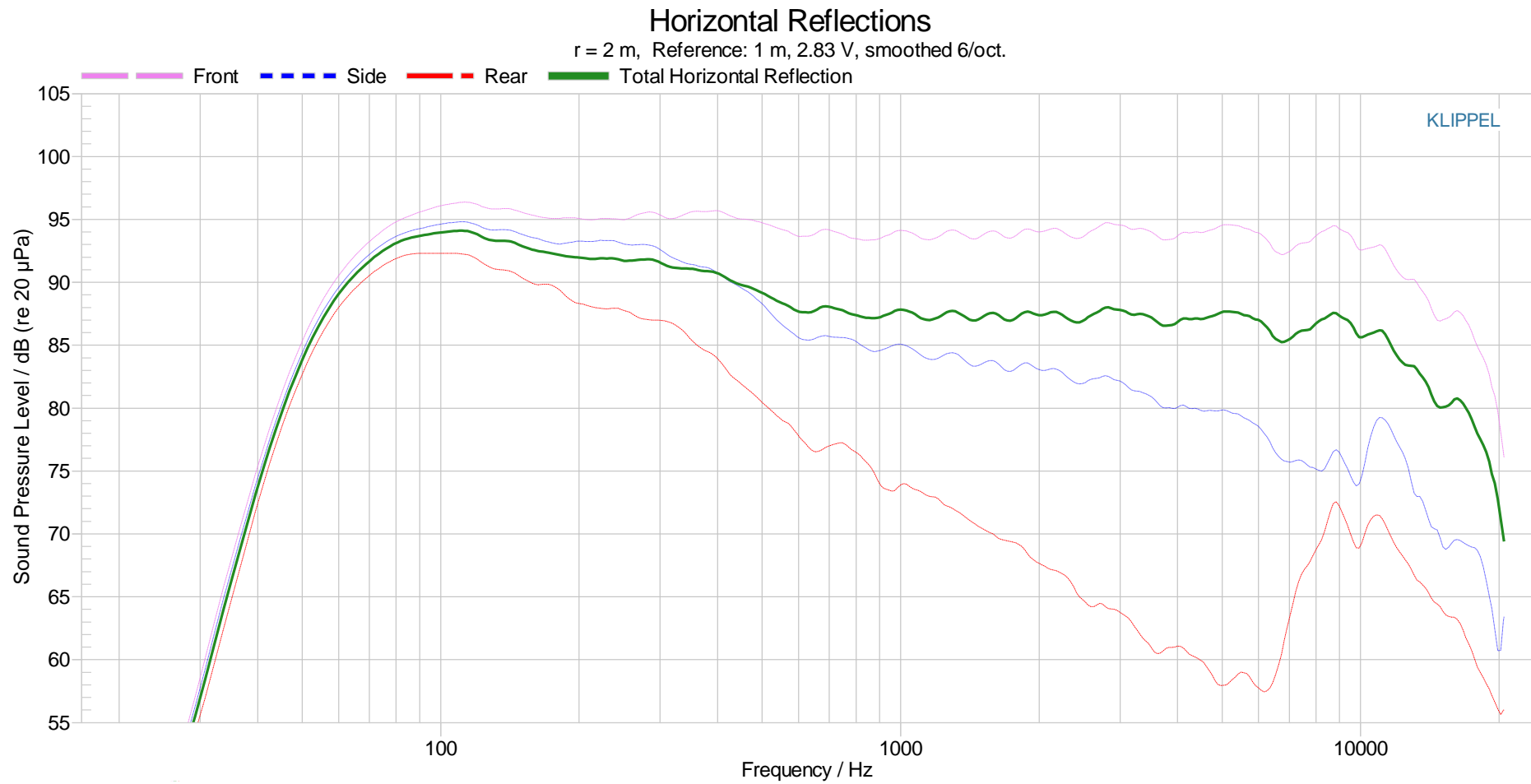
5.3. Early reflections

1/6 oct. Smoothing



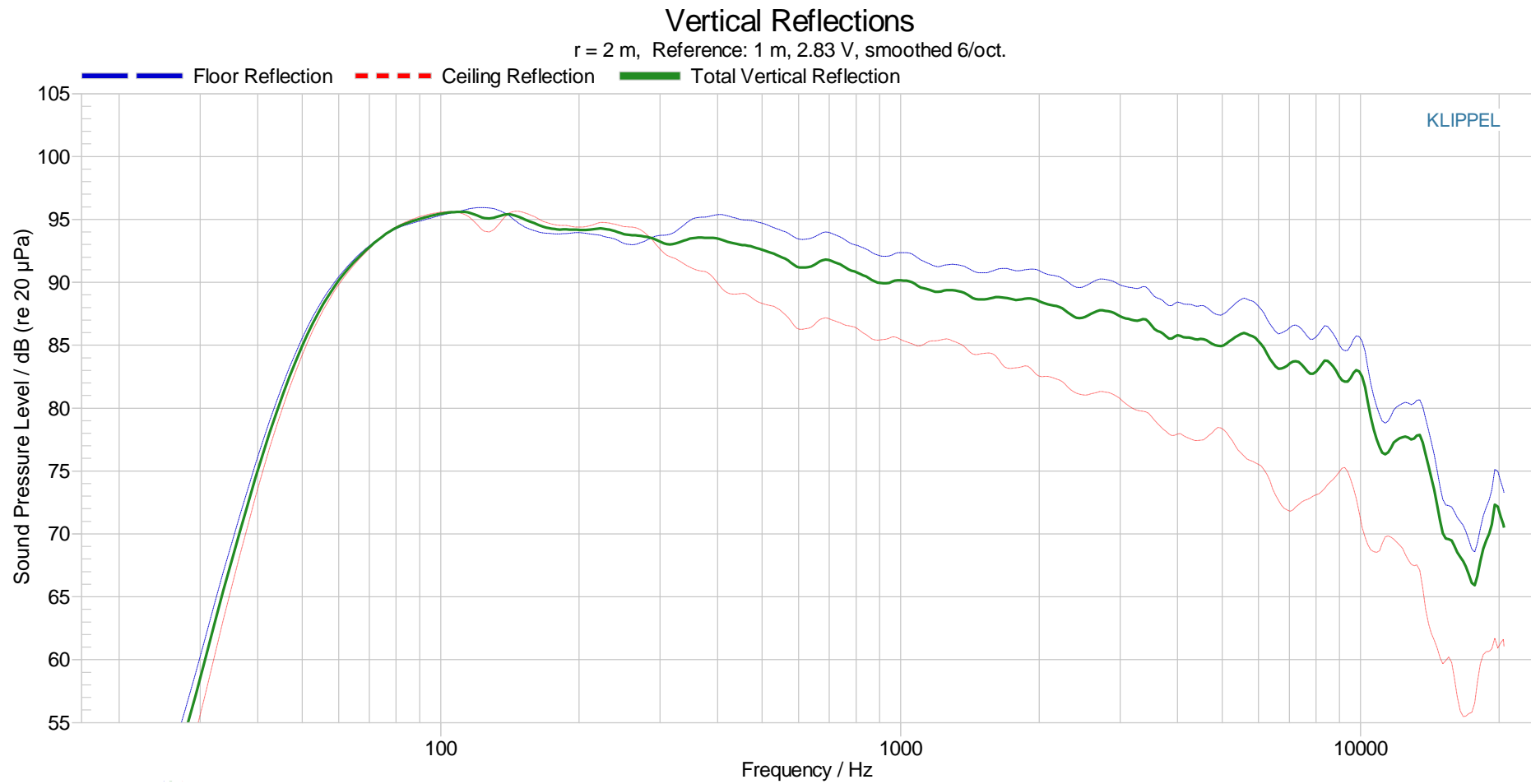
5.4. Horizontal Reflections

1/6 oct. Smoothing



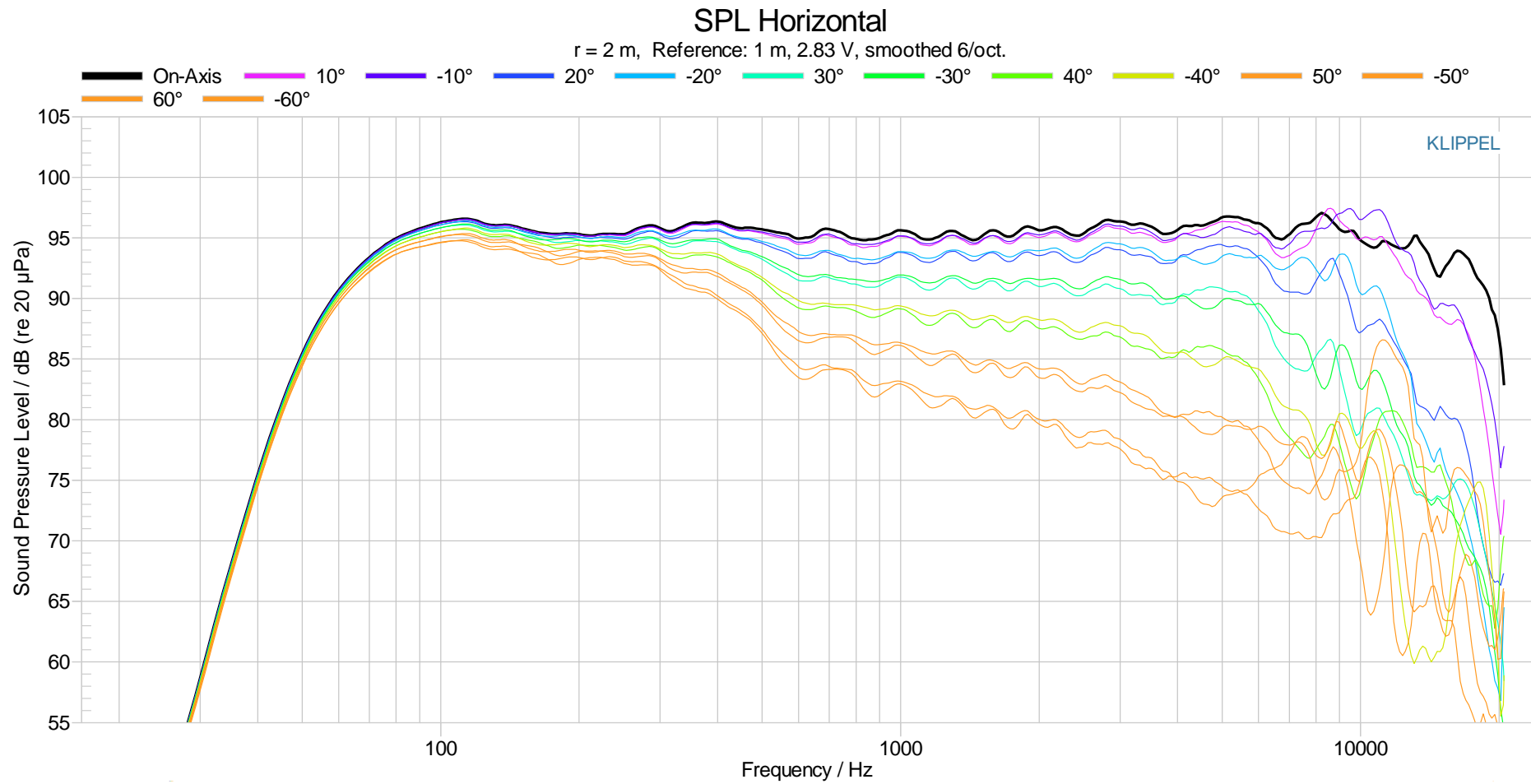
5.5. Vertical Reflections

1/6 oct. Smoothing



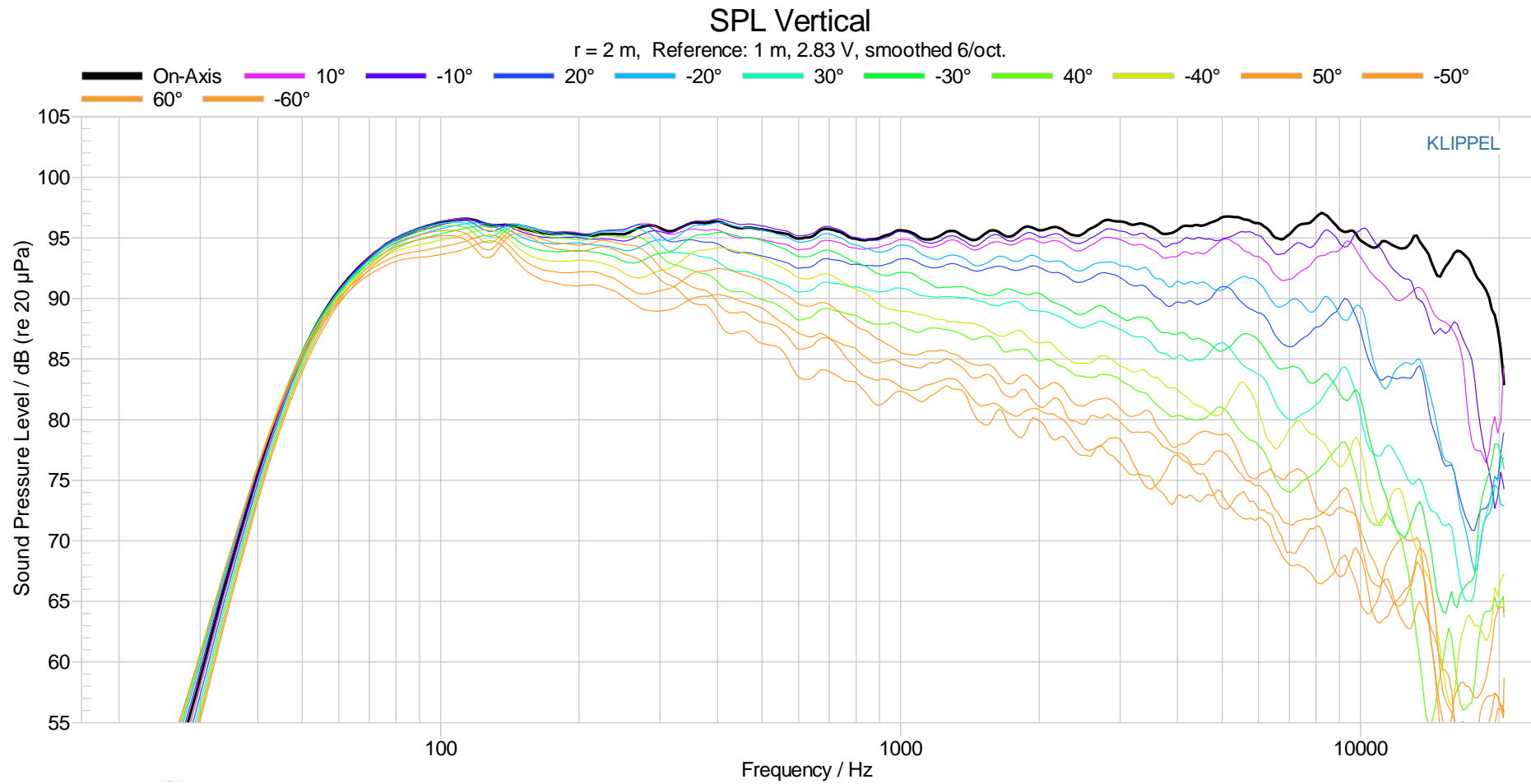
5.6. Horizontal Frequency Response

1/6 oct. Smoothing



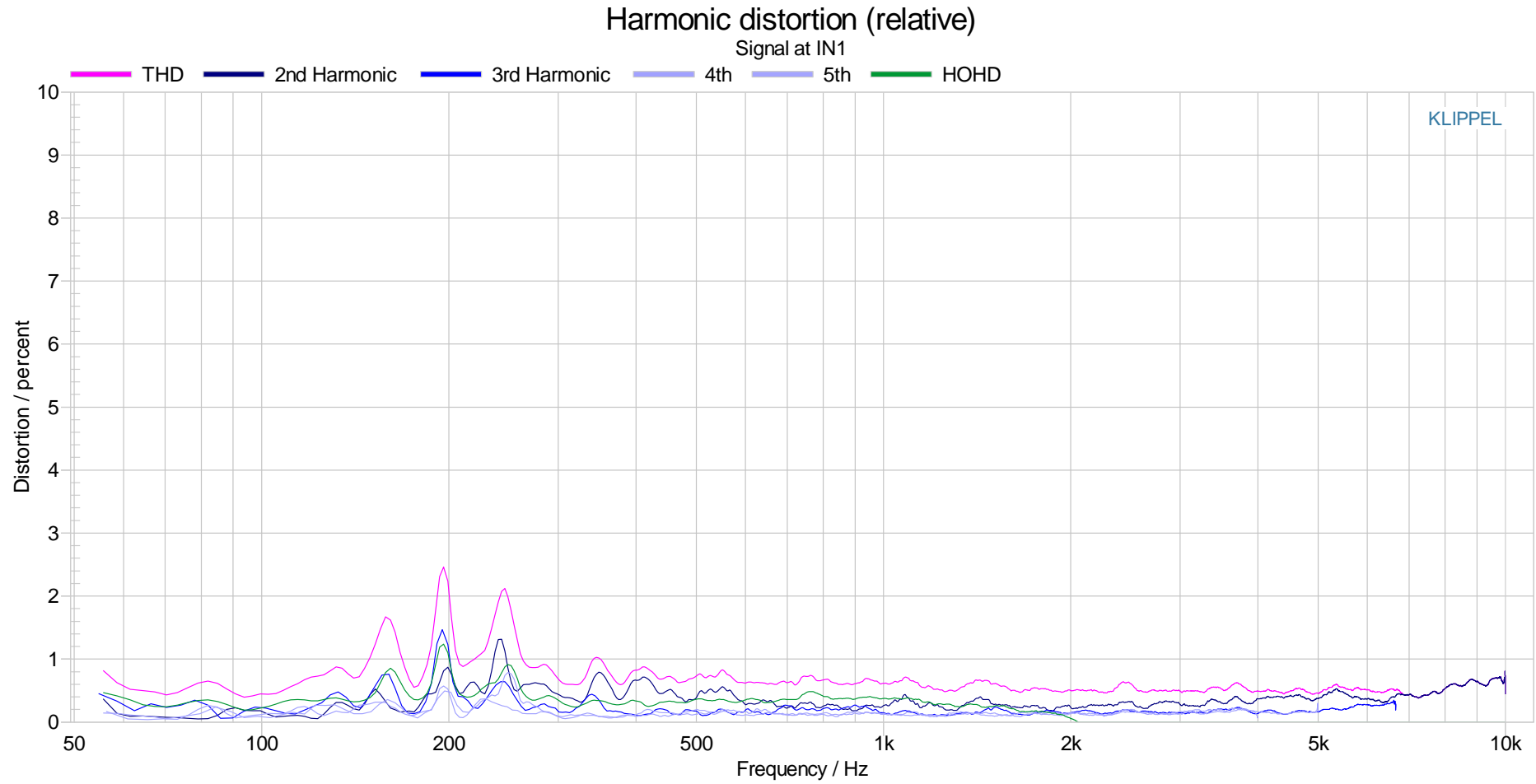
5.7. Vertical Frequency Response

1/6 oct. Smoothing



6. Harmonic Distortion

1/6 oct. Smoothing – +7dBu Stimulus



7. MTON Max SPL – 1s Stimulus

7.1. Results

Results of last passed measurement

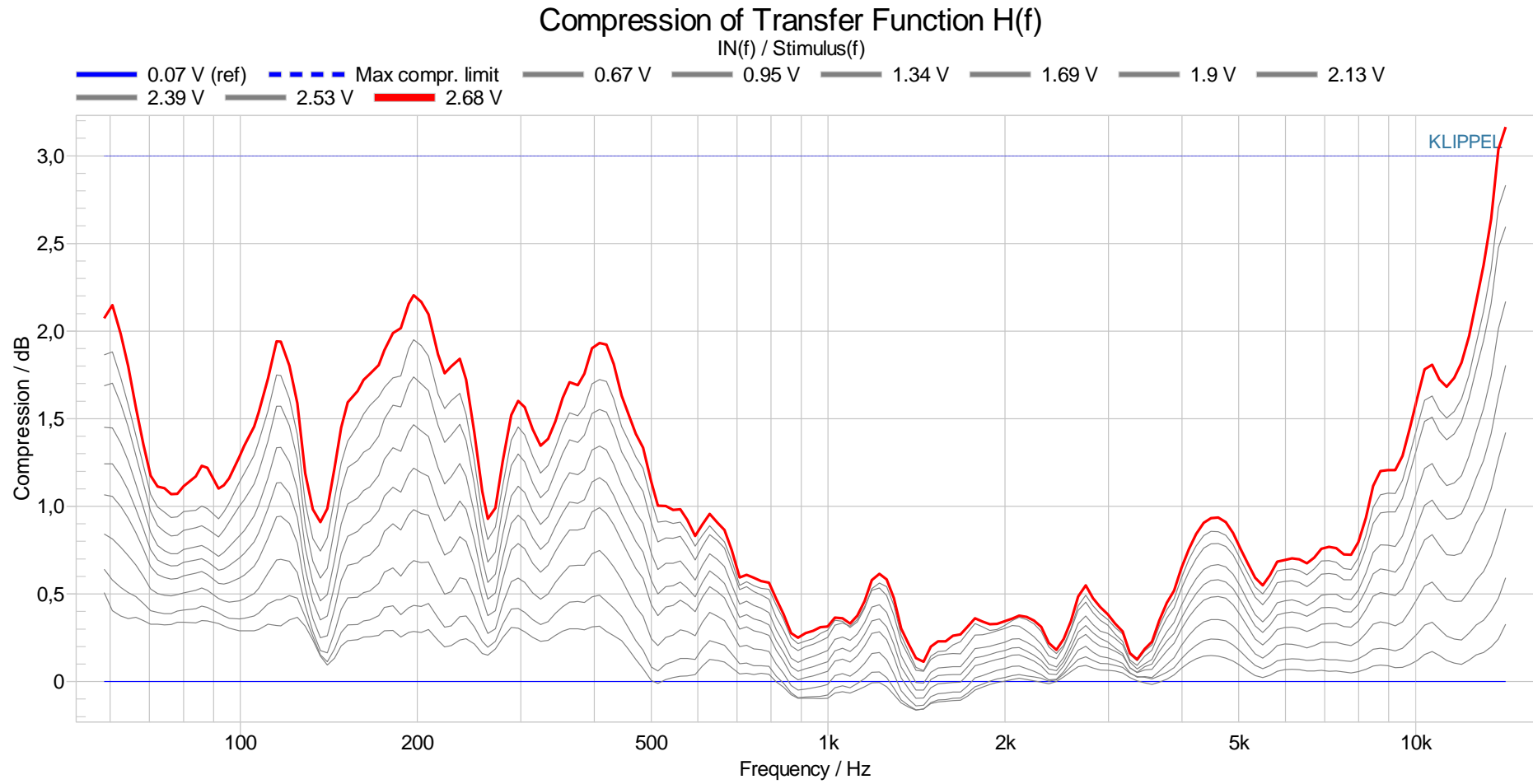
Parameter	Value	Unit	Description
U_{\max}	2.53	V	Root mean square of stimulus.
SPL_{\max}	121.5	dB	Sum level of fundamentals in microphone signal.
Eff. Freq. Range	258 - 13436	Hz	Effective frequency range (freq. response > SPL value - 10 dB).
C_{\max}	2.7	dB	Max compression in the frequency range 59 - 13828 Hz.
RMD_{\max}	-21.54 (8.4)	dB(%)	Maximum multi-tone distortion of microphone signal relative to mean value.
TMDR	-14.92 (18)	dB(%)	Total multi-tone distortion ratio of microphone signal.

Stimulus properties

Parameter	Value	Unit	Description
f_{\min}	58.59	Hz	Lowest multi-tone frequency line
f_{\max}	14234.38	Hz	Highest multi-tone frequency line
t	0.51	s	Signal duration
K	3	-	Kurtosis
C	12.28	dB	Crest factor

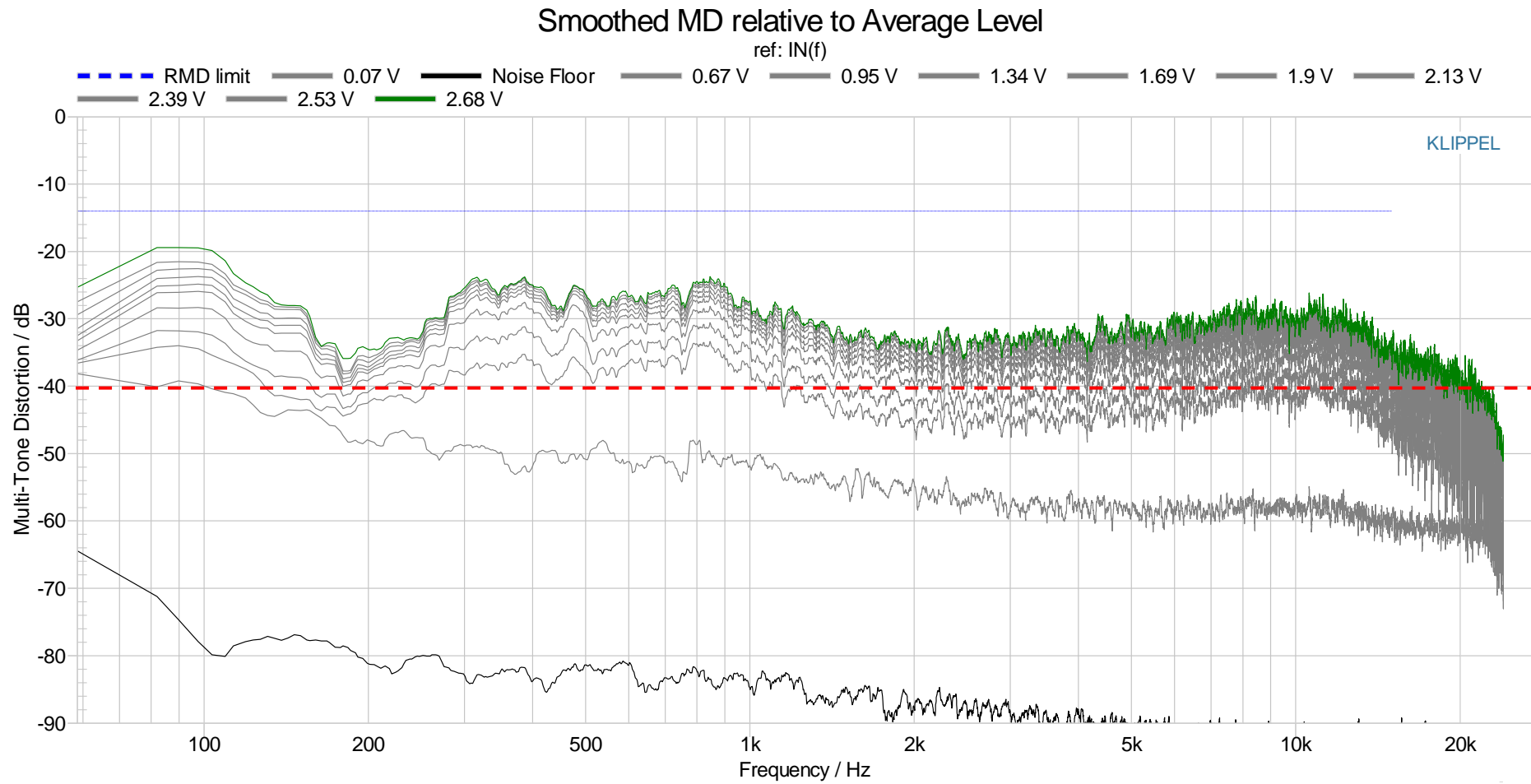
7.2. Compression Chart

-32dB Voltage Values – 1/6 Smoothing



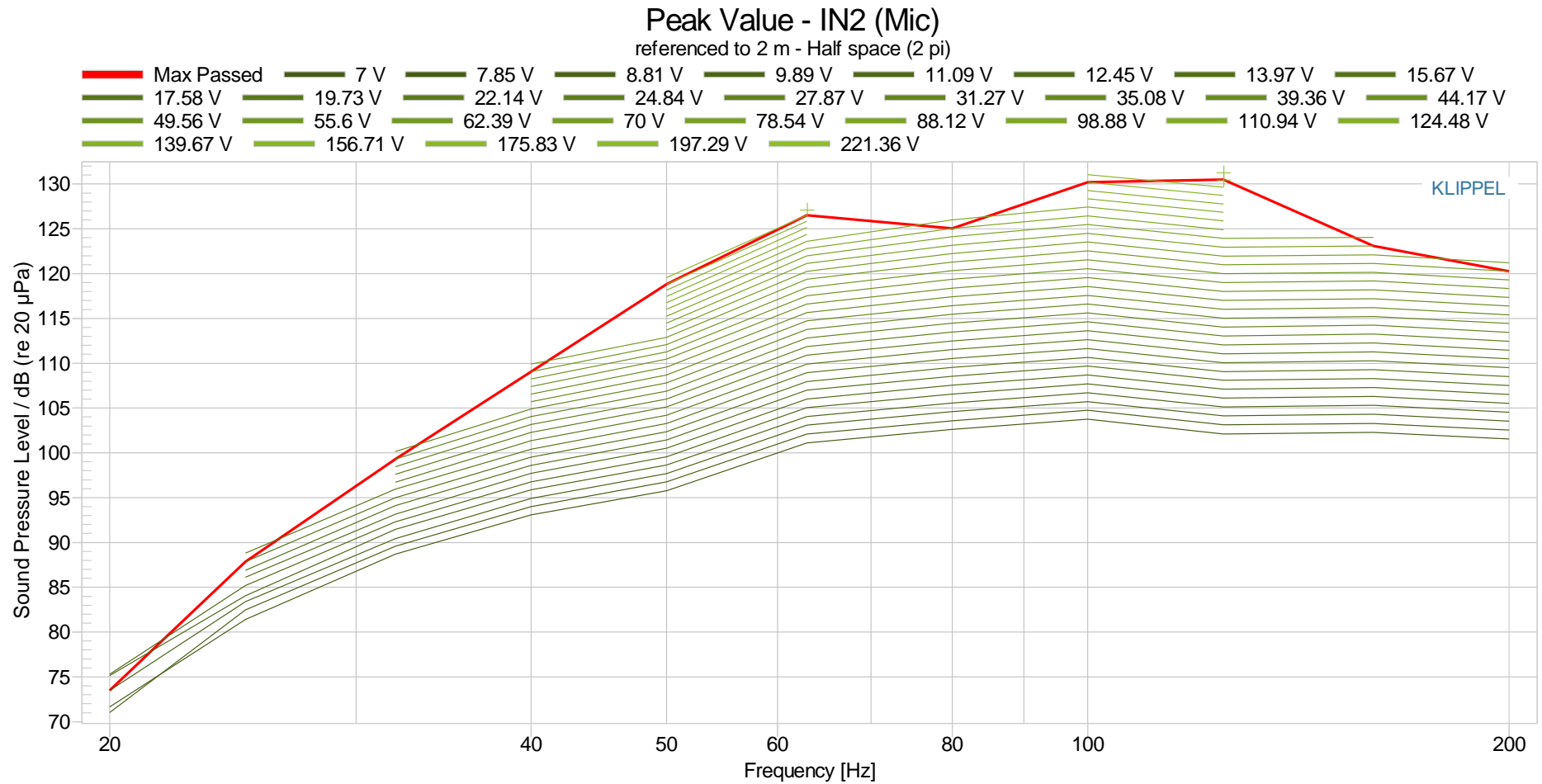
7.3. Multi Tone Distortion Chart

-32dB Voltage Values – No Smoothing



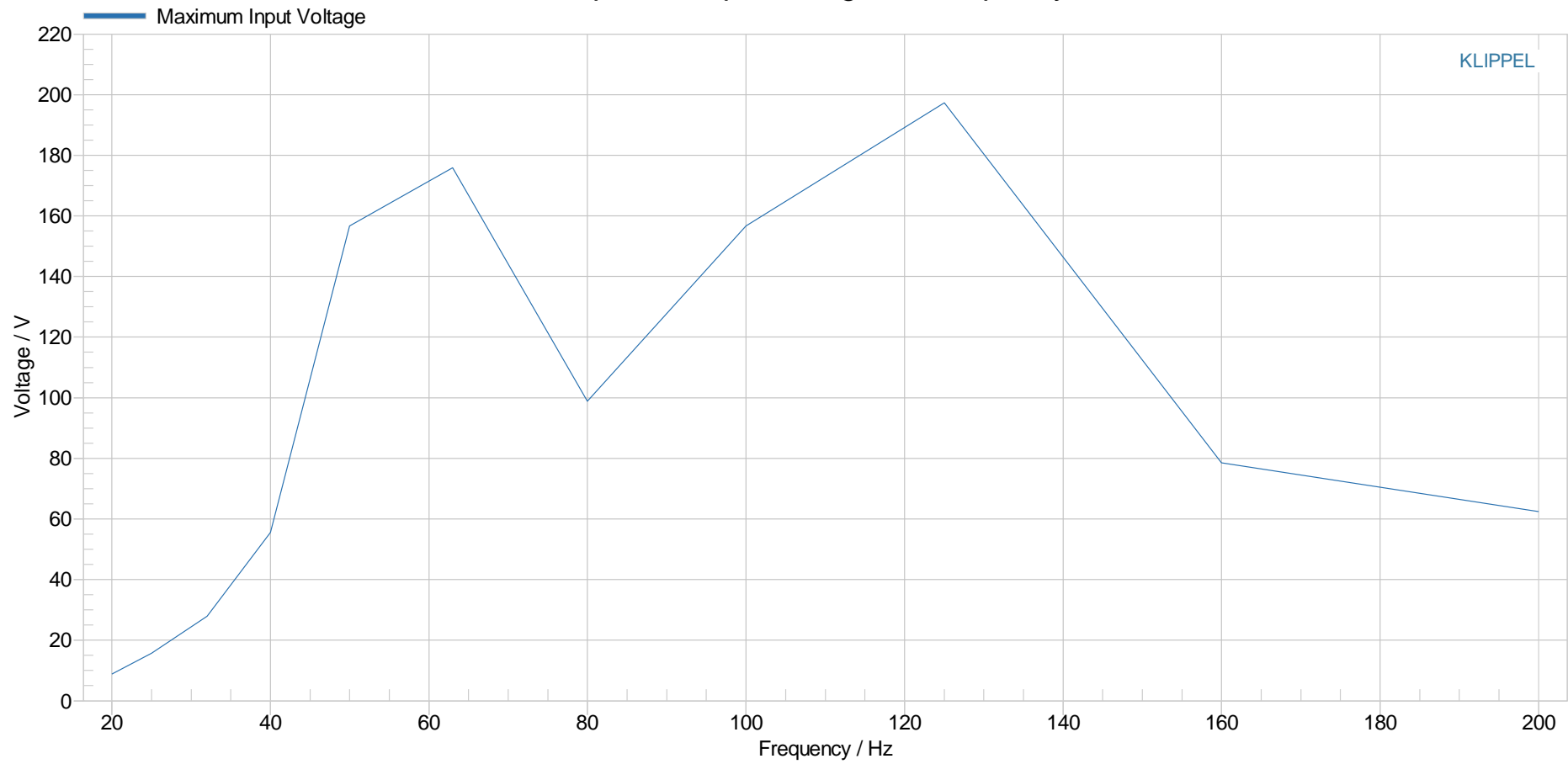
8. CEA2010B

8.1. Max Peak SPL



8.2. Max Peak Voltage

Maximum passed Input Voltage vs. Frequency Profile



8.3. THD on Burst

