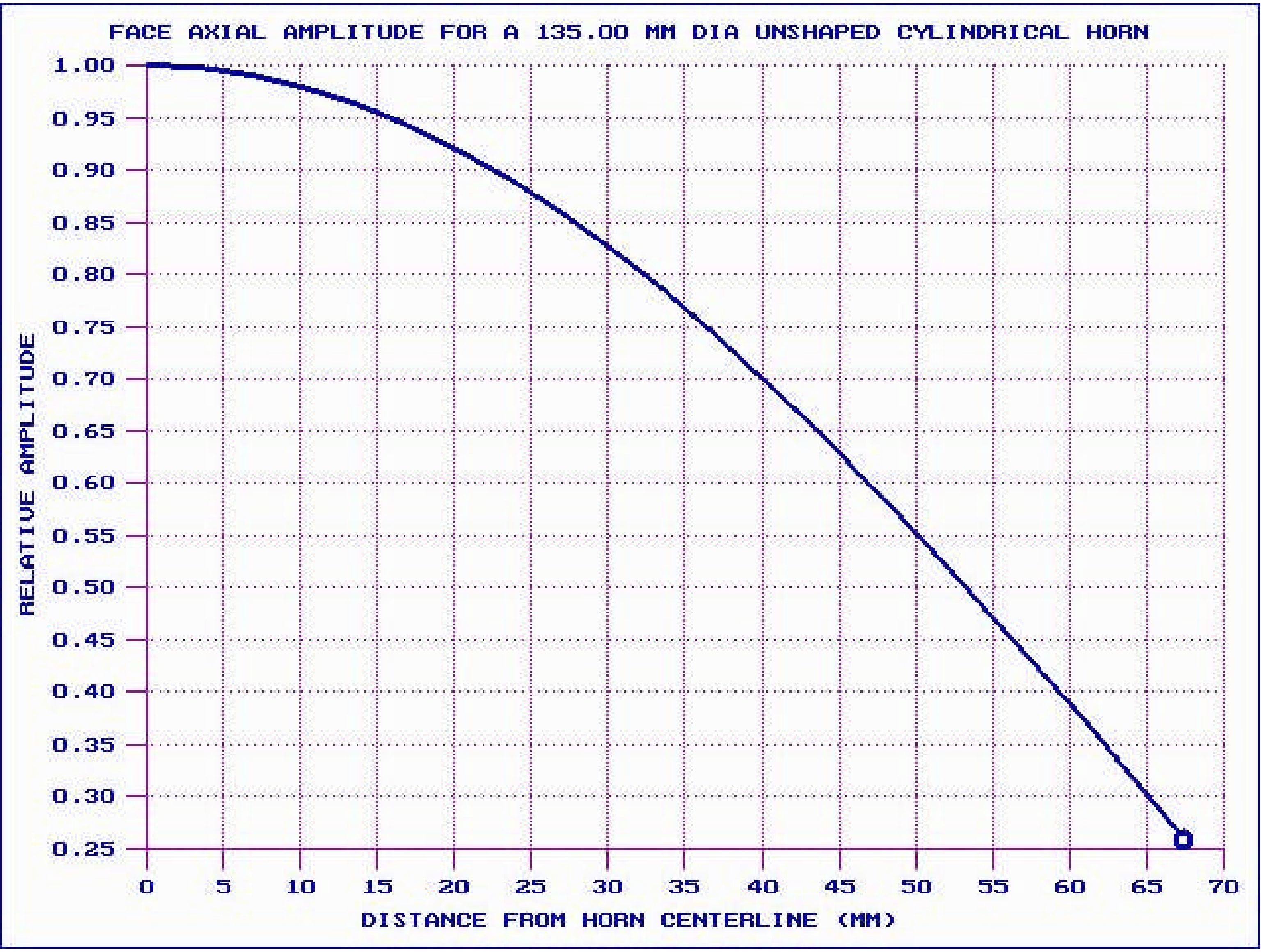
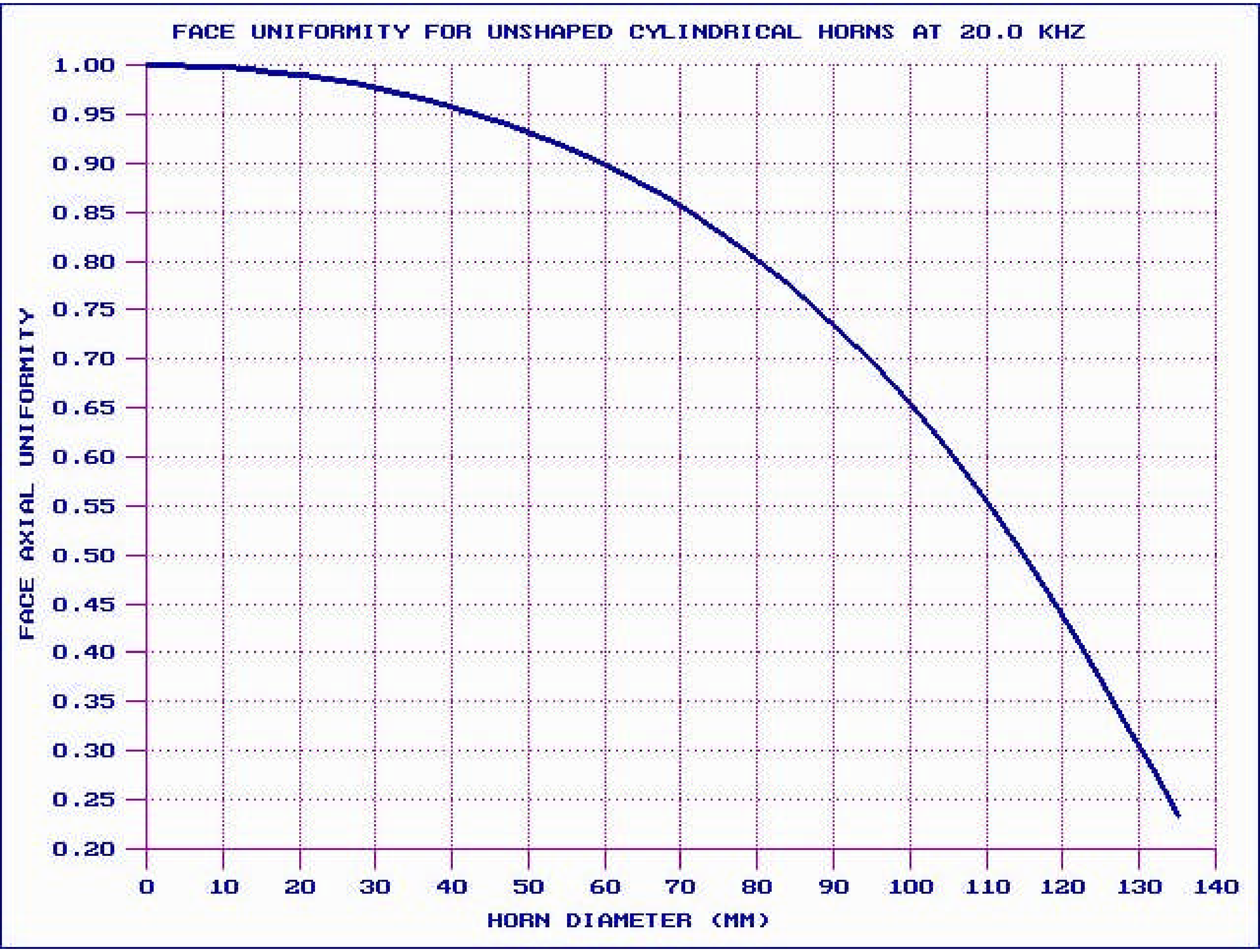
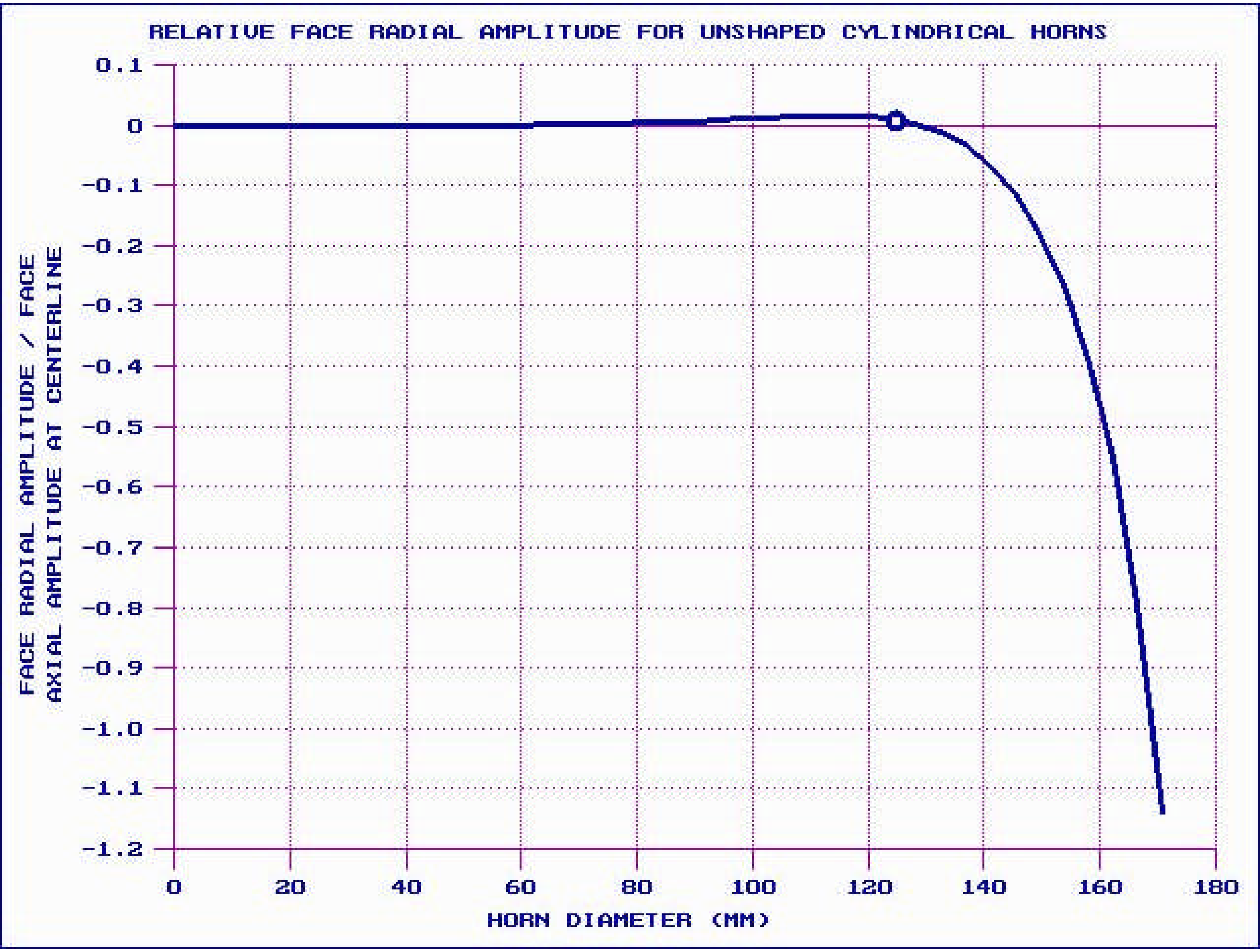

FACE AXIAL AMPLITUDE FOR A 135.00 MM DIA UNSHAPED CYLINDRICAL HORN
RELATIVE AMPLITUDE
1.00
0.95
0.90
0.85
0.80
0.75
0.70
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
DISTANCE FROM HORN CENTERLINE (MM)


FACE UNIFORMITY FOR UNSHAPED CYLINDRICAL HORNS AT 20.0 KHZ
FACE AXIAL UNIFORMITY
1.00
0.95
0.90
0.85
0.80
0.75
0.70
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
HORN DIAMETER (MM)


RELATIVE FACE RADIAL AMPLITUDE FOR UNSHAPED CYLINDRICAL HORNS
FACE RADIAL AMPLITUDE / FACE
AXIAL AMPLITUDE AT CENTERLINE
0.1
0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
-0.8
-0.9
-1.0
-1.1
-1.2
0
20
40
60
80
100
120
140
160
180
HORN DIAMETER (MM)

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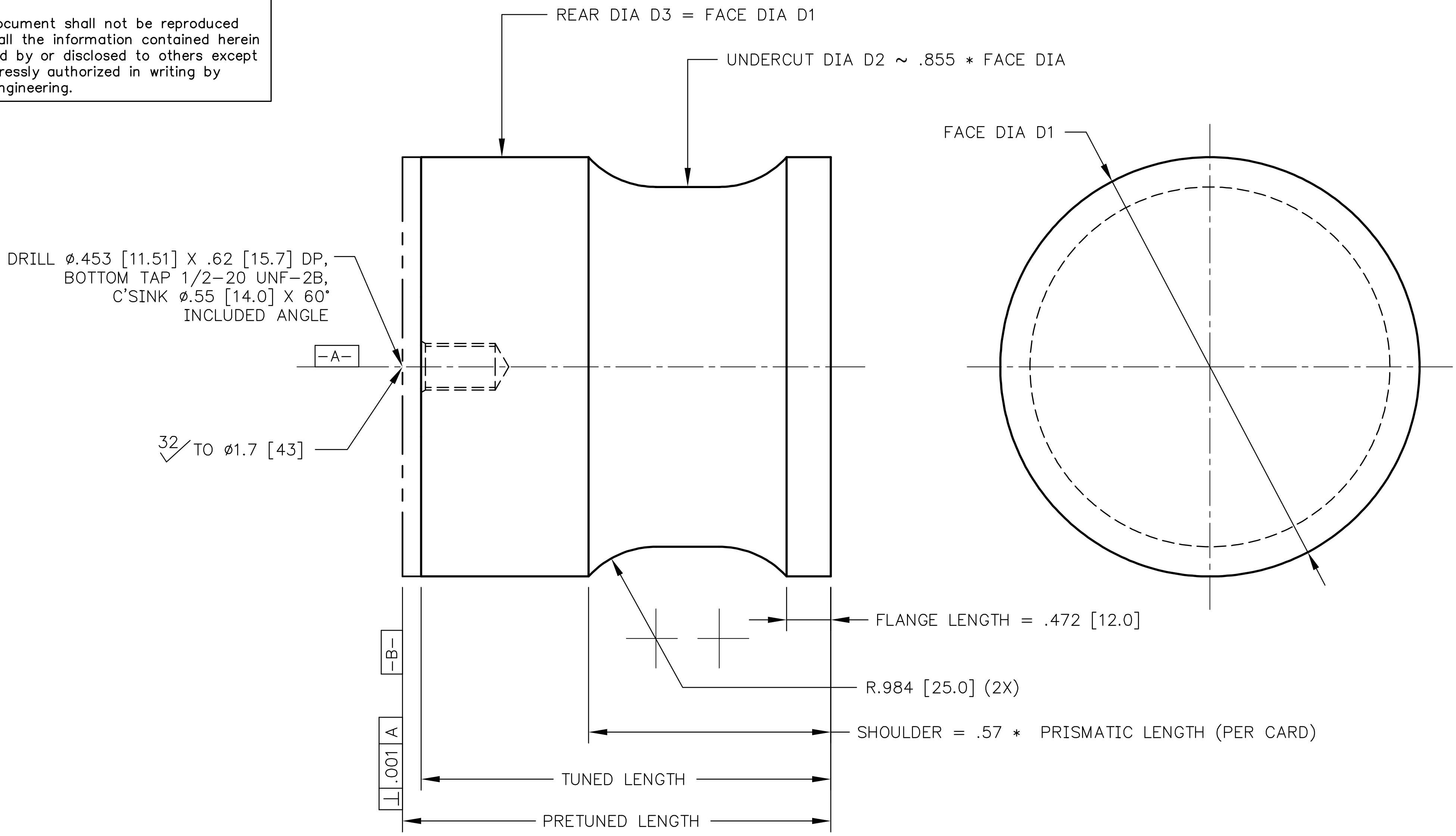

REAR DIA D3 = FACE DIA D1
UNDERCUT DIA D2 ~ .855 * FACE DIA
FACE DIA D1
DRILL ø.453 [11.51] X .62 [15.7] DP,
BOTTOM TAP 1/2-20 UNF-2B,
C'SINK ø.55 [14.0] X 60°
INCLUDED ANGLE
-A-
32 TO ø1.7 [43]
-B-
⊥ .001 A
FLANGE LENGTH = .472 [12.0]
R.984 [25.0] (2X)
SHOULDER = .57 * PRISMATIC LENGTH (PER CARD)
TUNED LENGTH
PRETUNED LENGTH

NOTES:
1. PRISMATIC LENGTH = TUNED LENGTH OF UNSHAPED CYLINDER OF DIAMETER D1 WITHOUT STUD.
2. TUNING PROCEDURE: TUNE FROM -B- TO 20000 ± 100 HZ.
3. CARD = COMPUTER AIDED RESONATOR DESIGN

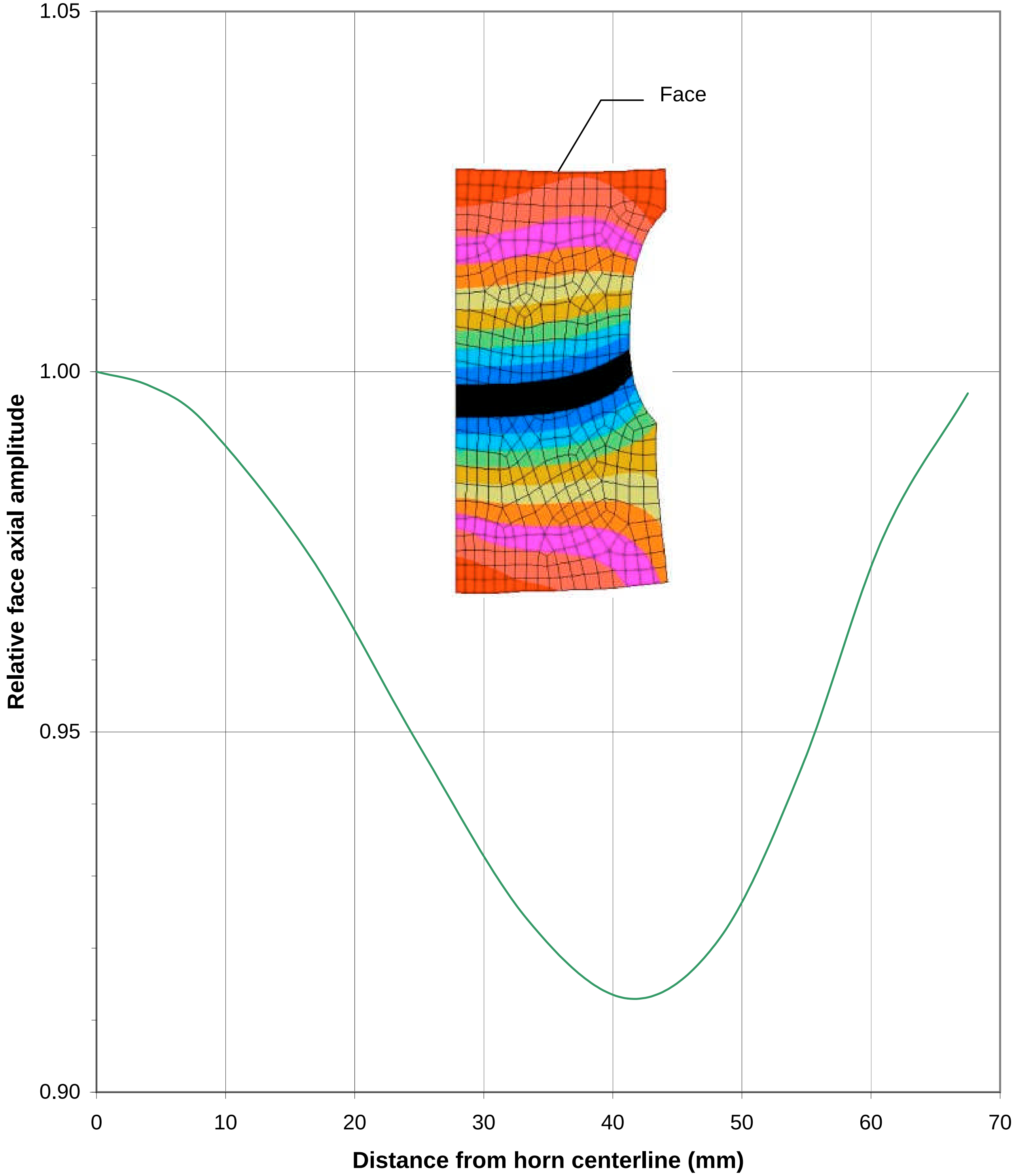
REV.	DATE	REFERENCE	TOLERANCES
0	11/18/06		X.XX ±.01 X.XXX ±.005 ANGLE ± 1° ◎ .001 TIR | 63 ⏥ .0005 TIR ( ) = NOMINAL ALL DIMS TYPICAL

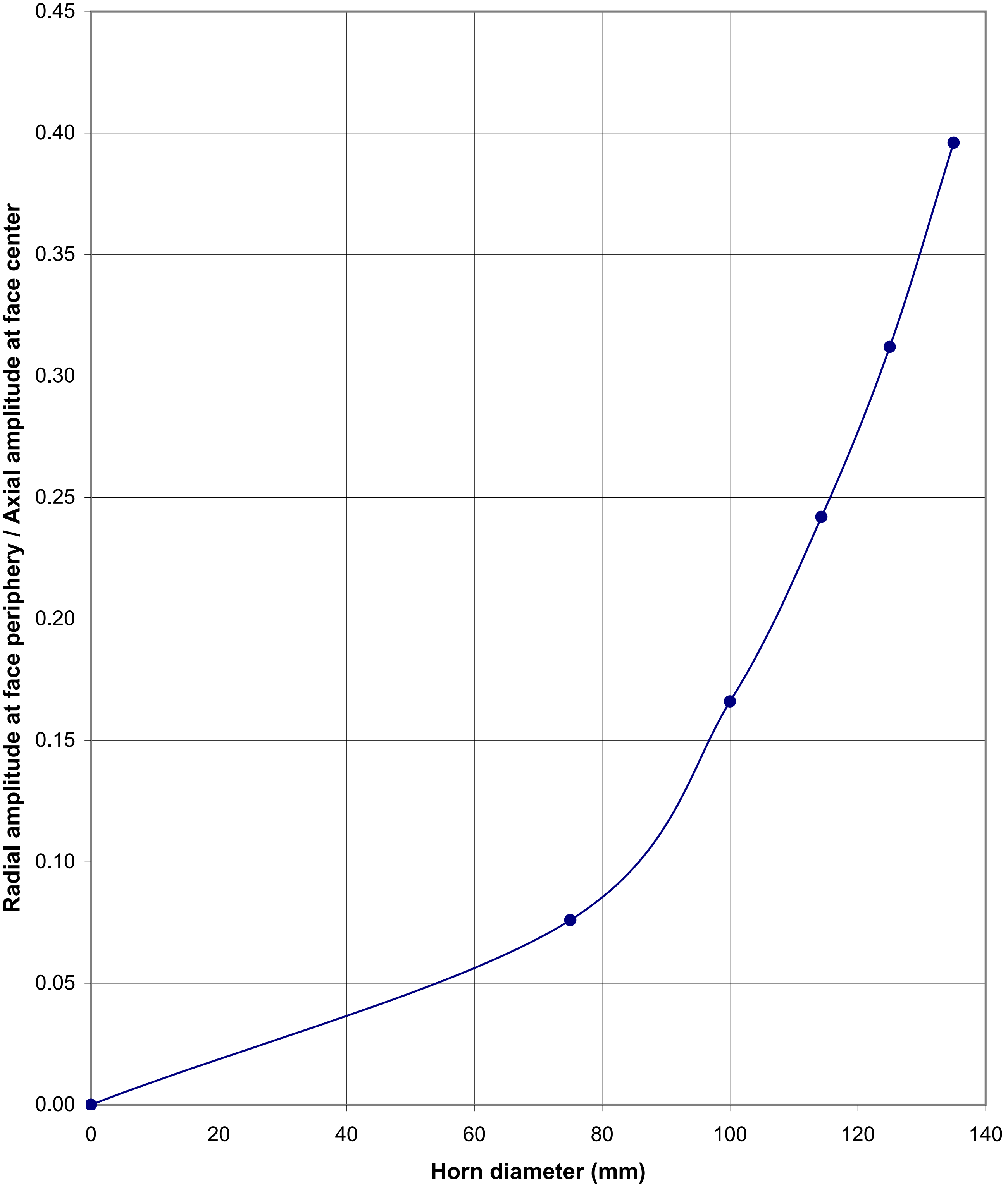
KRELL ENGINEERING
BALTIMORE, MD 21228 (410) 747-5731

20 KHZ SPOOL HORN NOMENCLATURE
AND DIMENSIONS

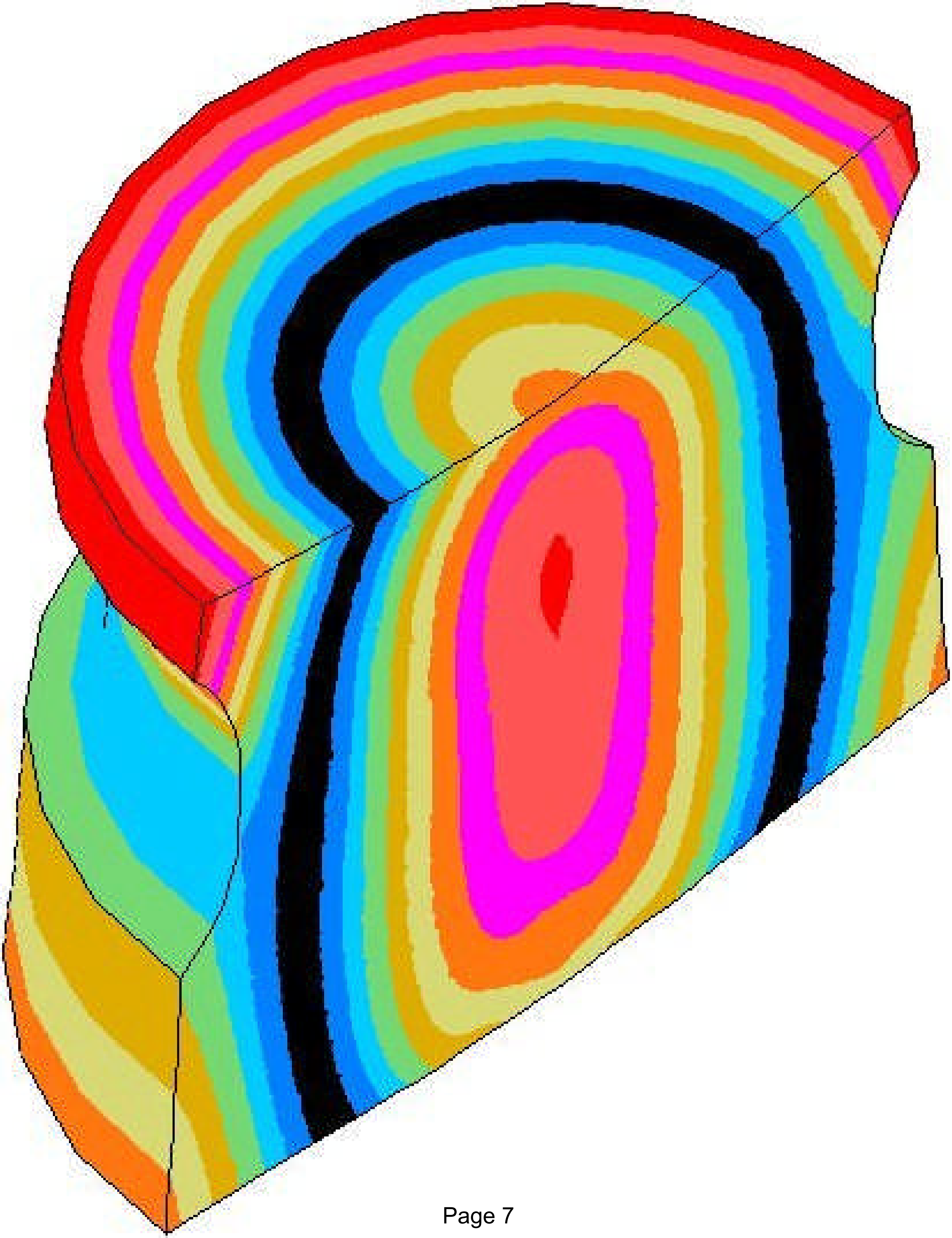
MAT'L: AL 7075-T6
99-037-01-00-0.DWG

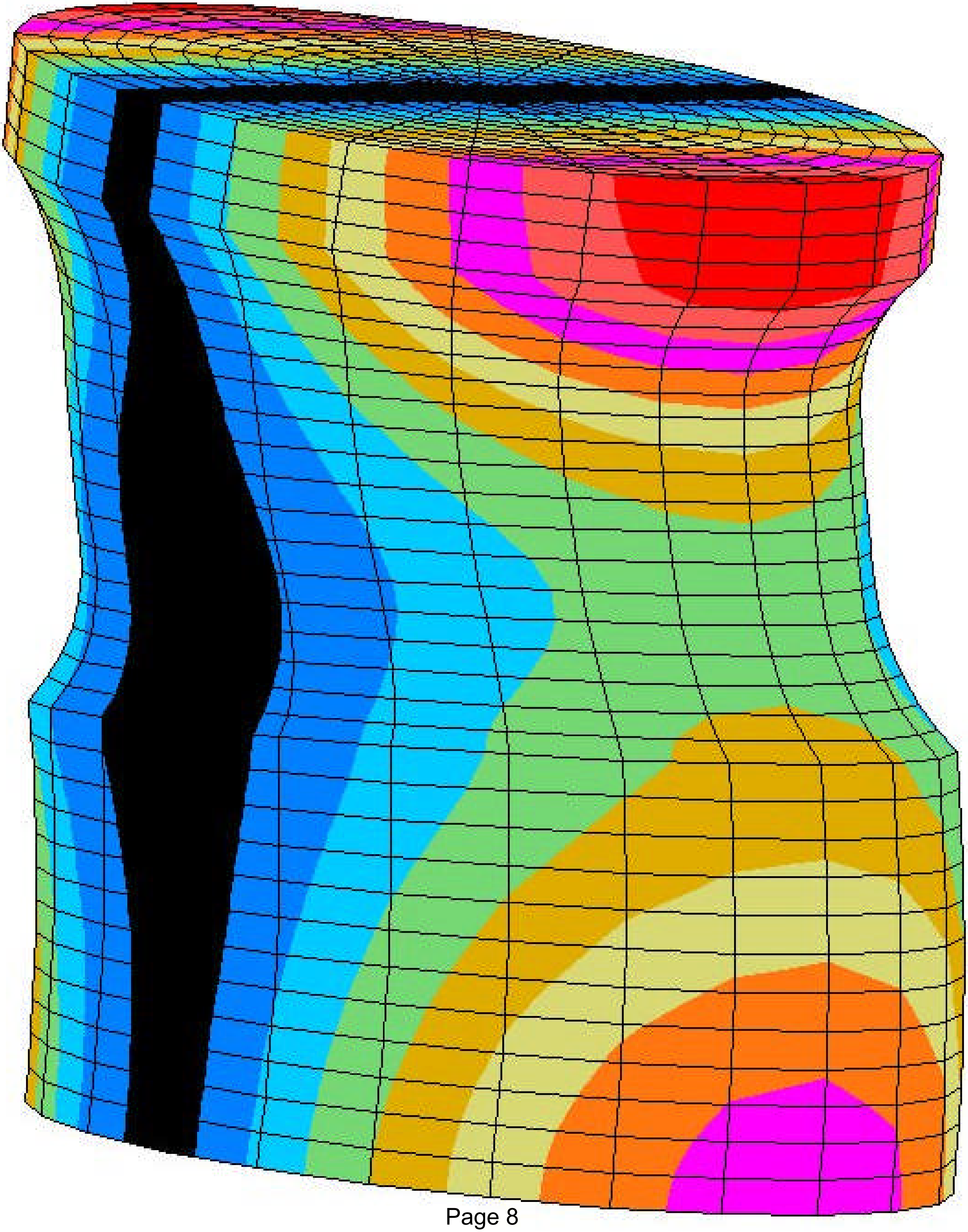
Relative Face Axial Amplitudes of Ø135 mm Al 7075-T6 Spool Horn

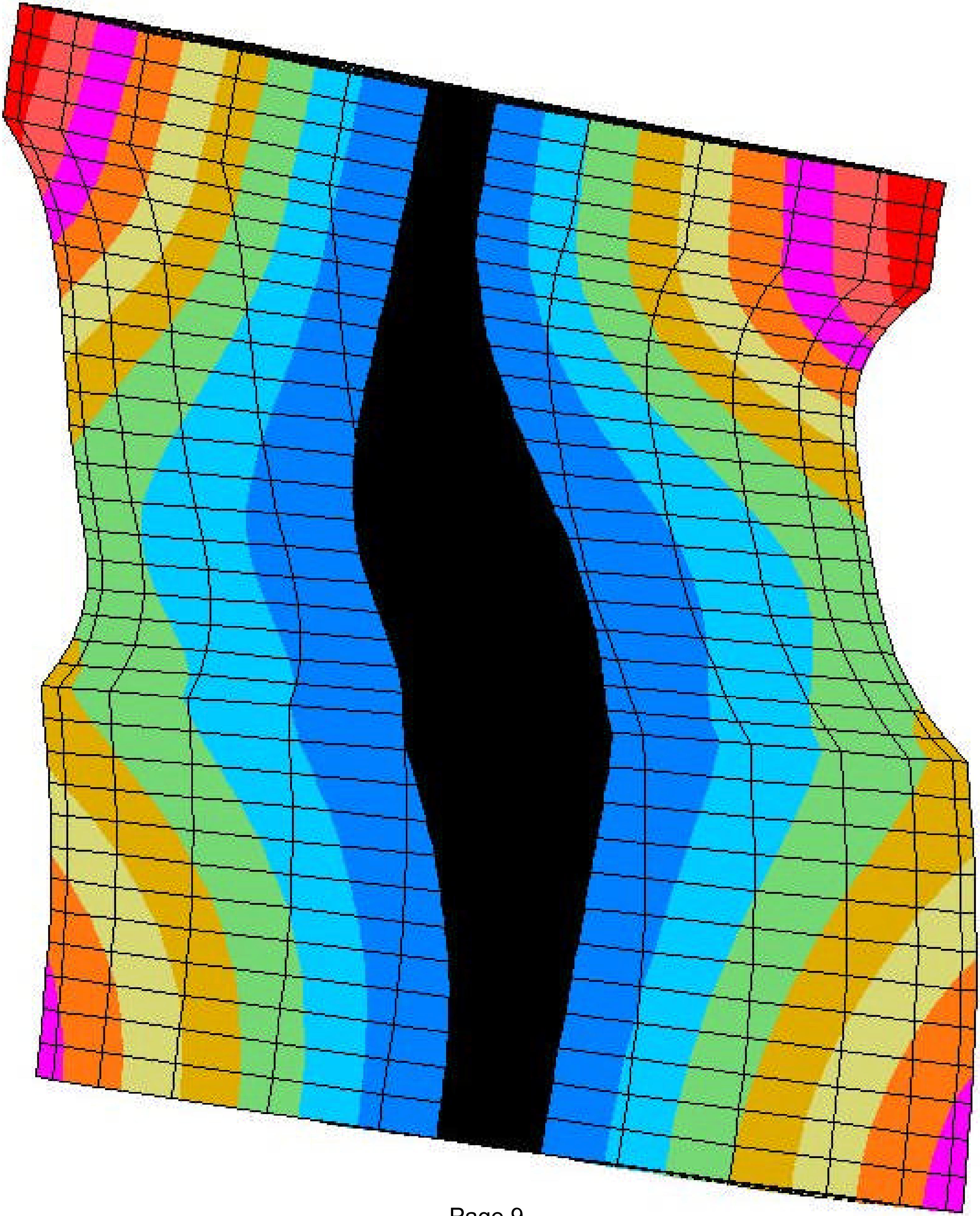


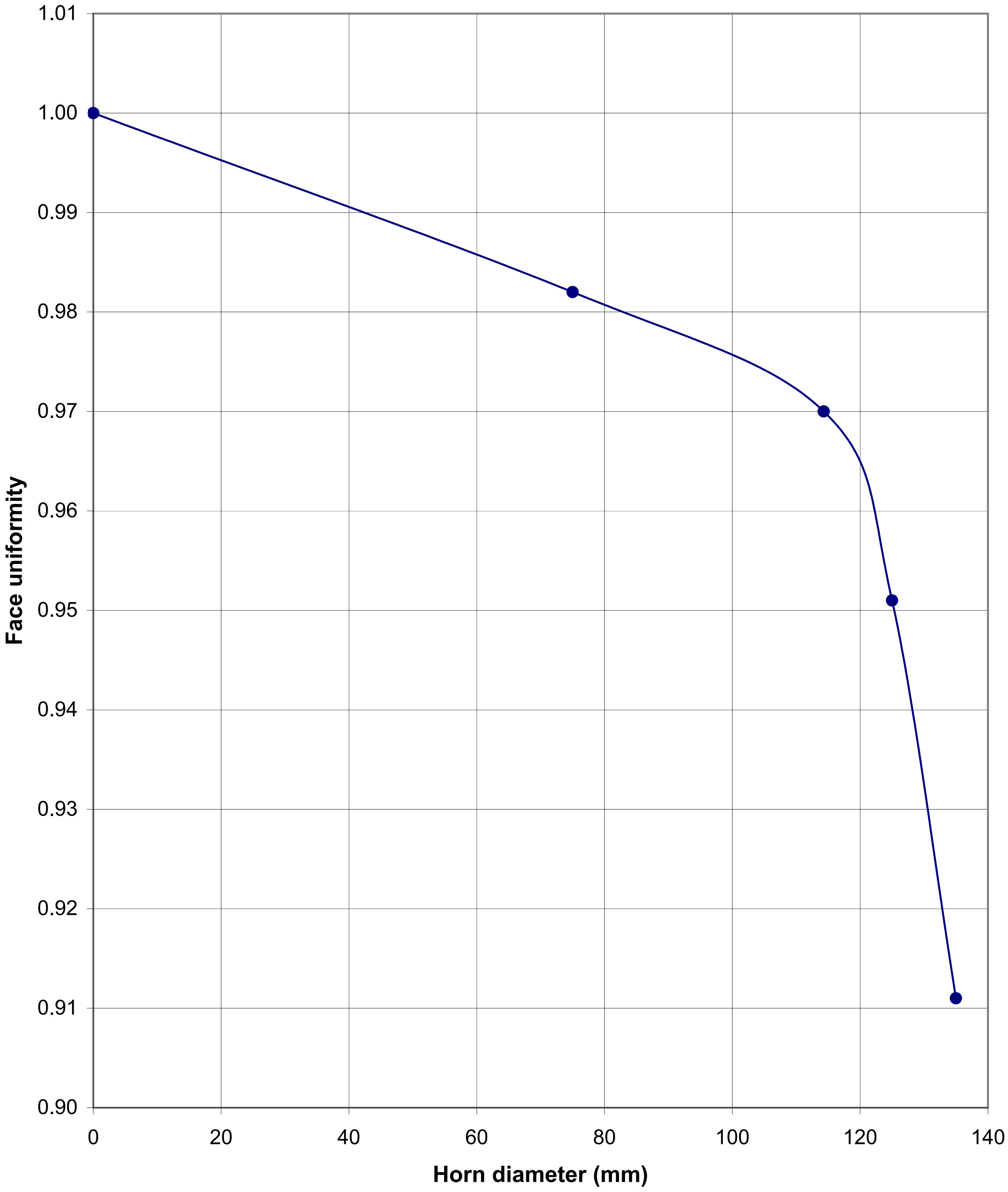


20 kHz Al 7075-T6 Spool Horns - Radial Amplitudes

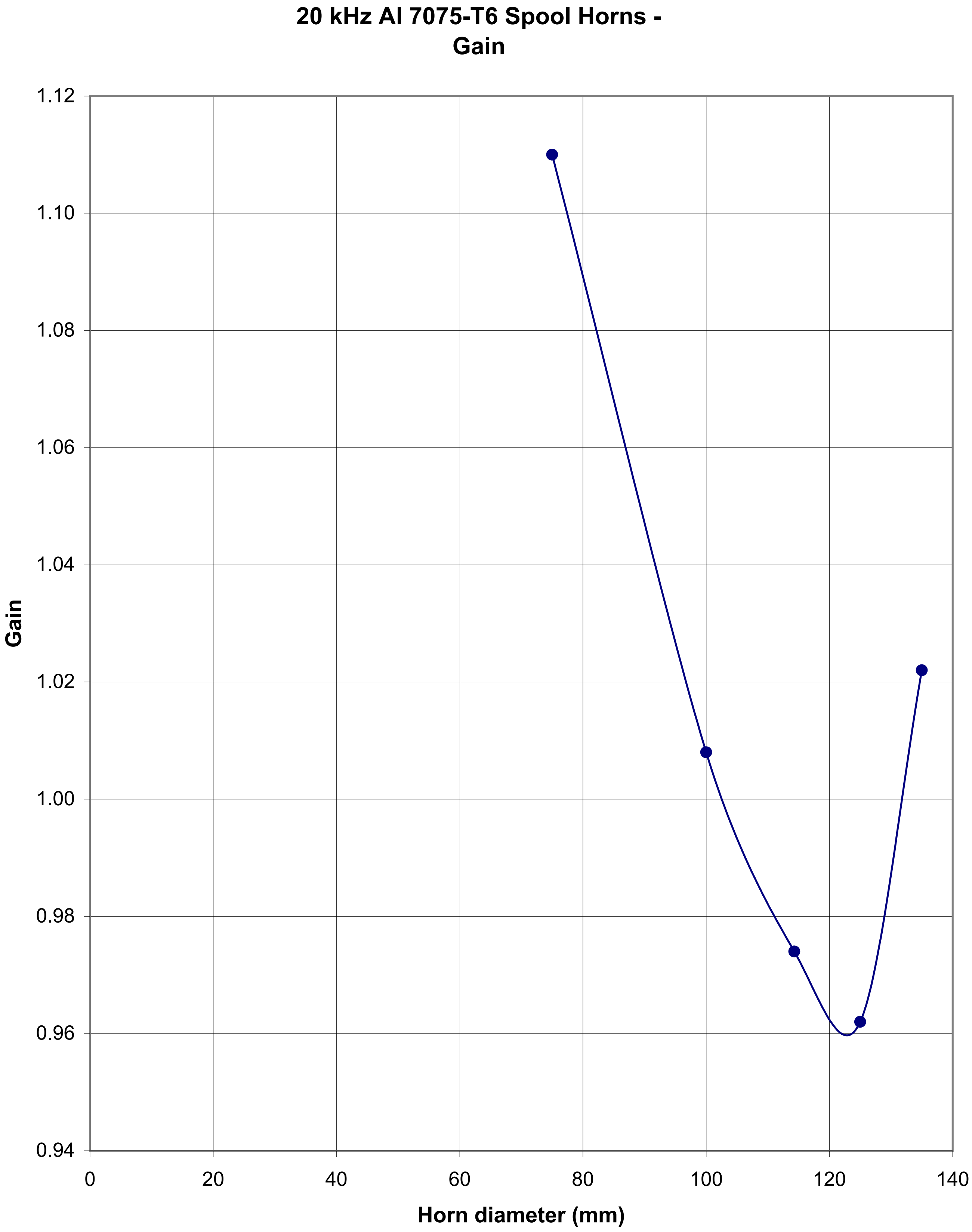




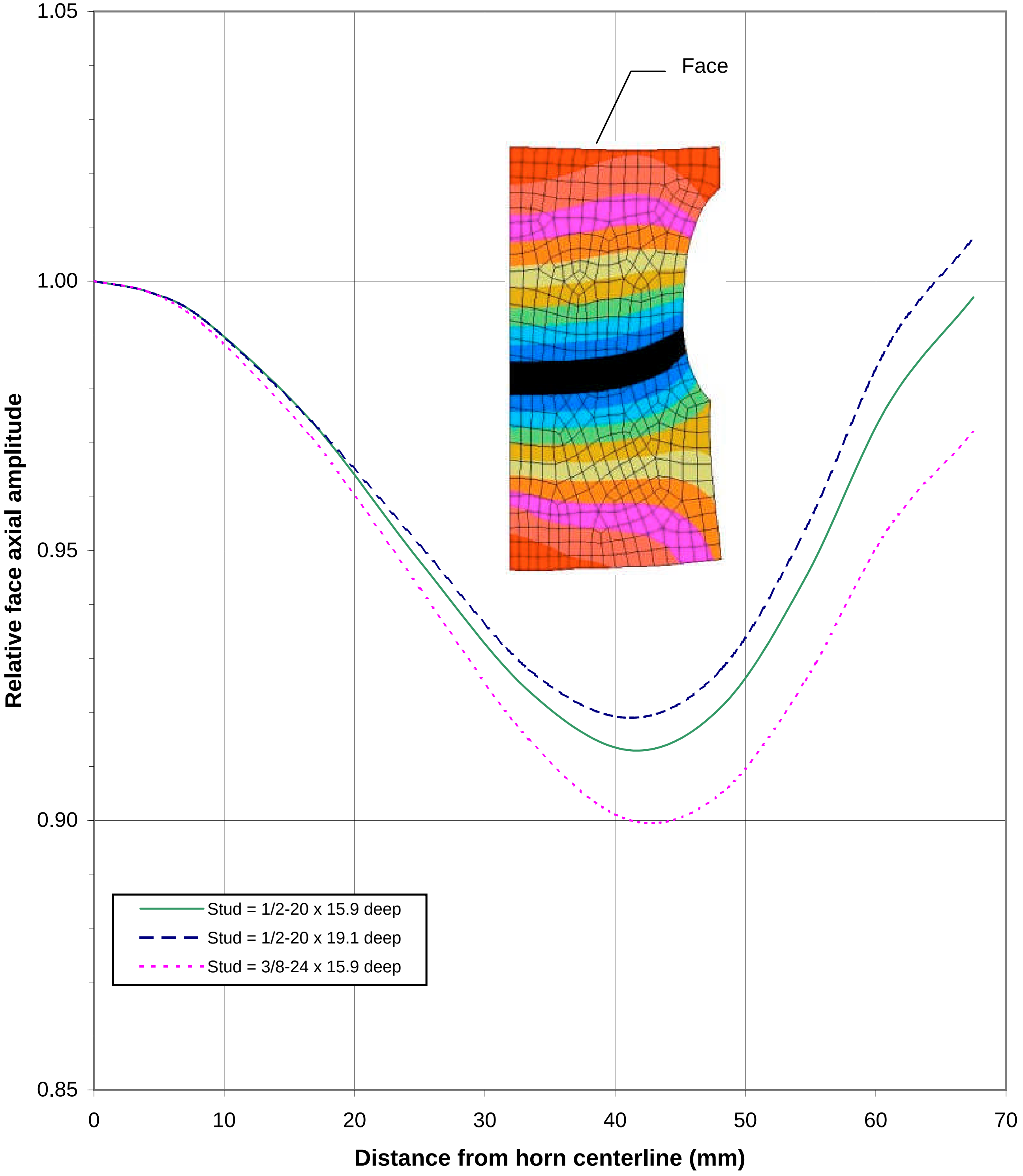




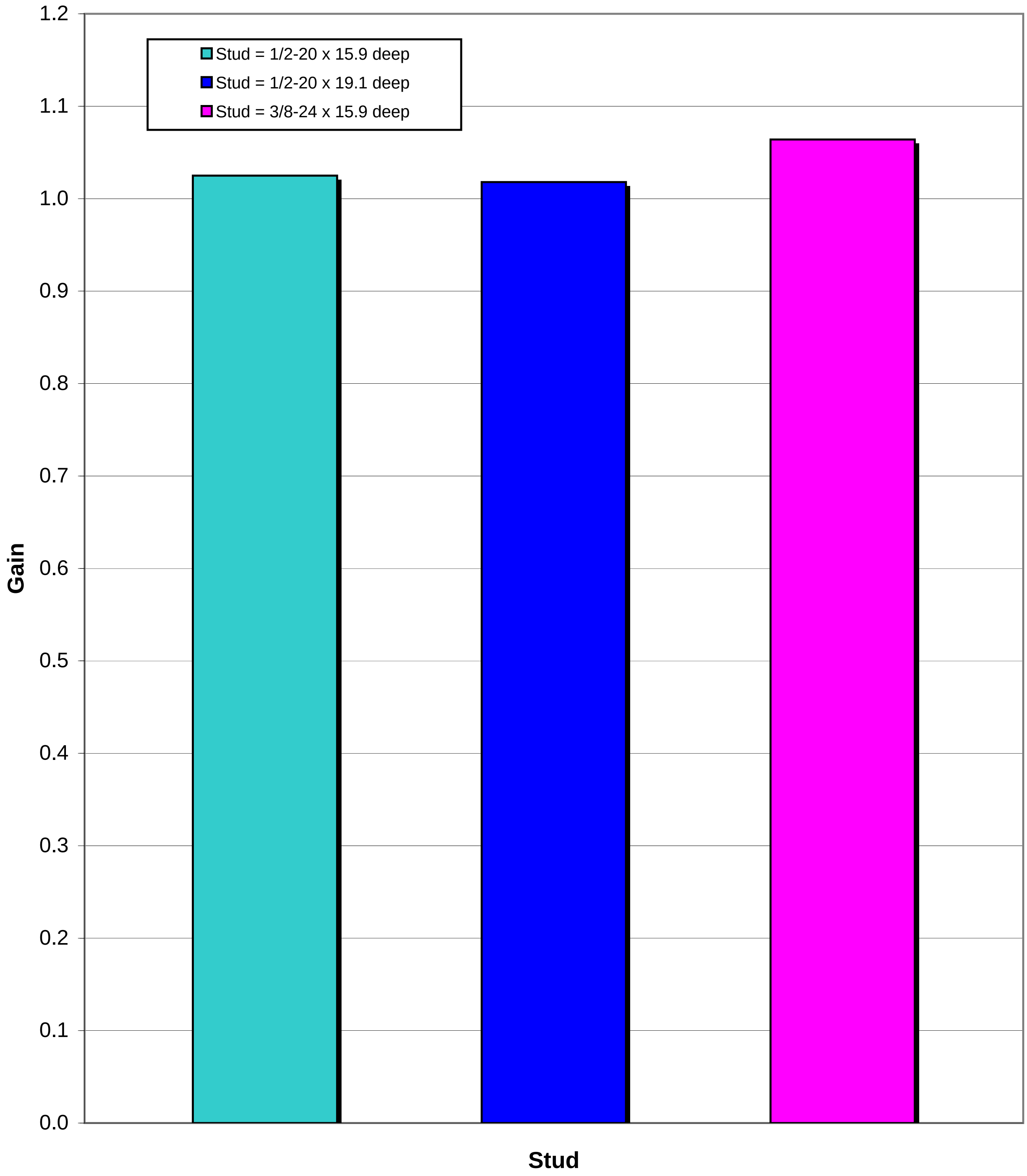
20 kHz Al 7075-T6 Spool Horns -
Face Uniformity


20 kHz Al 7075-T6 Spool Horns -
Gain
Gain
1.12
1.10
1.08
1.06
1.04
1.02
1.00
0.98
0.96
0.94
0
20
40
60
80
100
120
140
Horn diameter (mm)

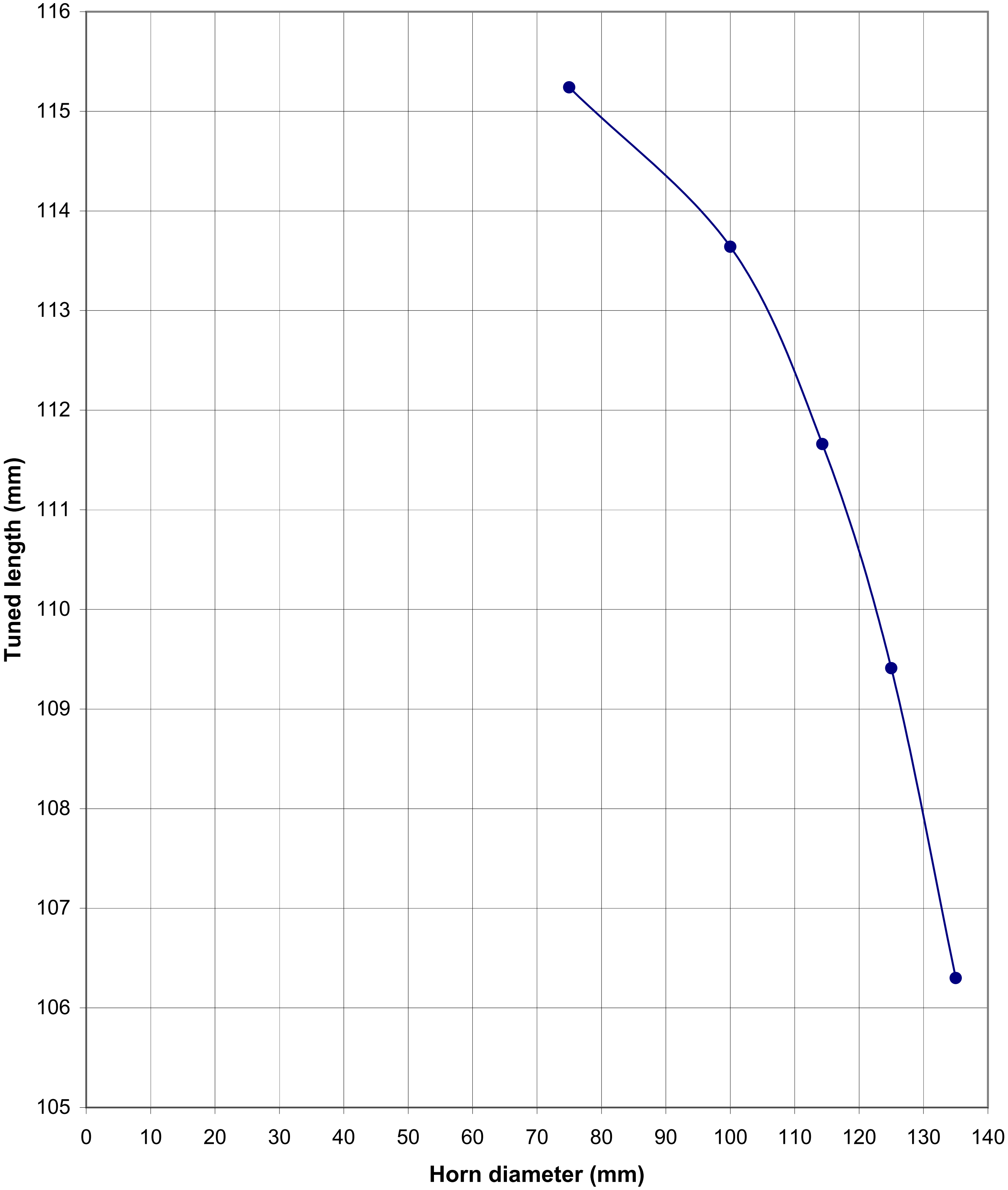
Ø135 mm Al 7075-T6 Spool Horn -
Effect of Stud Size on Relative Face Amplitude



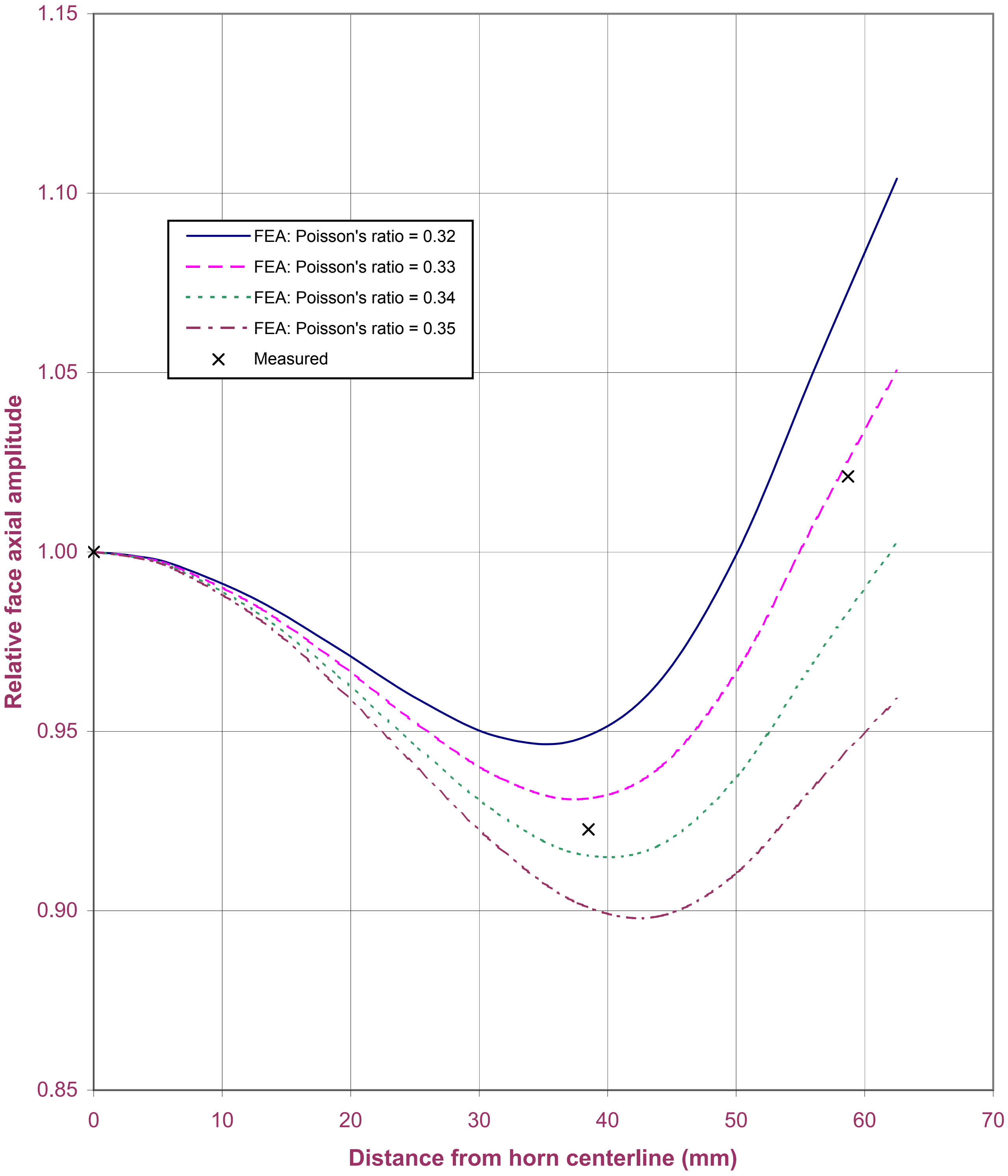
Ø135 mm Al 7075-T6 Spool Horn - Effect of Stud Size on Gain



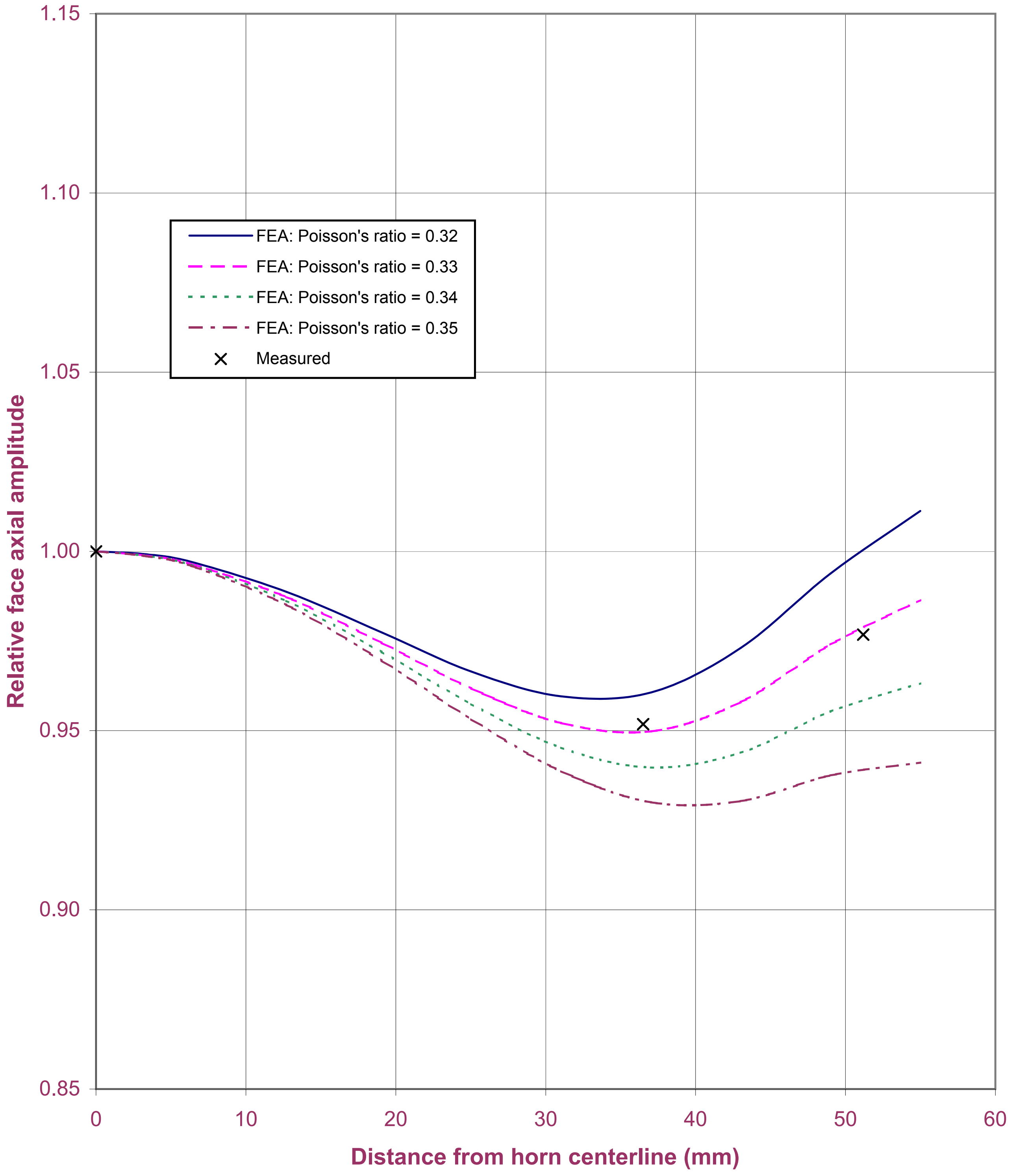
20 kHz Al 7075-T6 Spool Horns - Tuned Lengths



Effect of Poisson's Ratio on Relative Face Axial Amplitudes of Ø125 mm Al 7075-T6 Spool horn



Effect of Poisson's Ratio on Relative Face Axial Amplitudes of Ø110 mm Al 7075-T6 Spool horn


1.15
1.10
1.05
1.00
0.95
0.90
0.85
Relative face axial amplitude
0
10
20
30
40
50
60
Distance from horn centerline (mm)
FEA: Poisson's ratio = 0.32
FEA: Poisson's ratio = 0.33
FEA: Poisson's ratio = 0.34
FEA: Poisson's ratio = 0.35
Measured