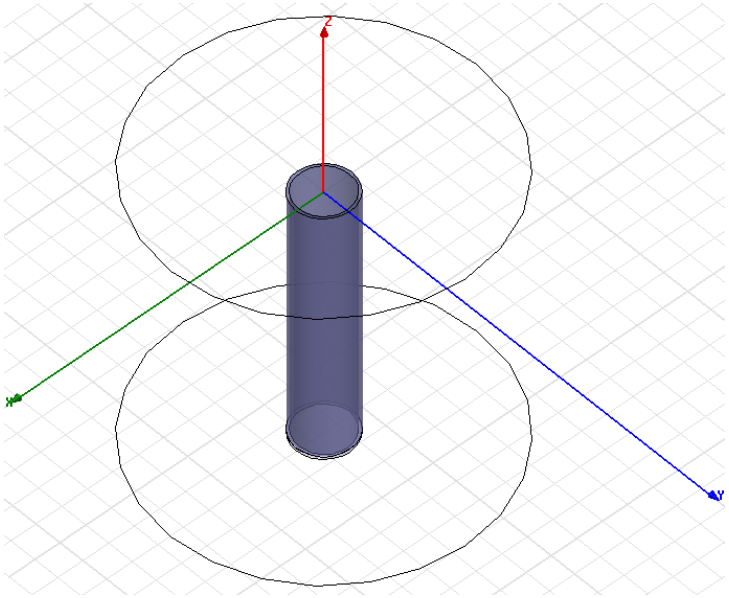
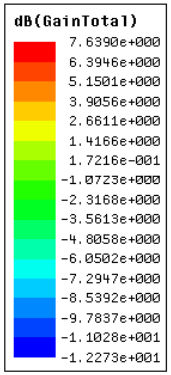
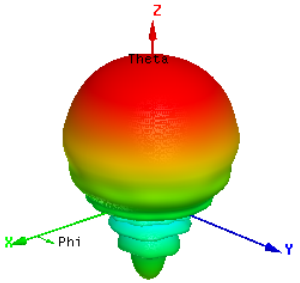
Studie ozařovačů parabolického zrcadla v pásmu 10 GHz

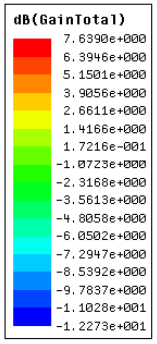
Miroslav Kasal 30. 7. 2012

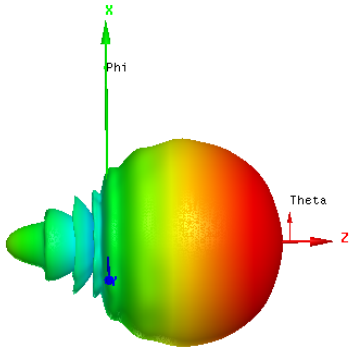
Samotný kruhový vlnovod (22/20 mm, 10 GHz)

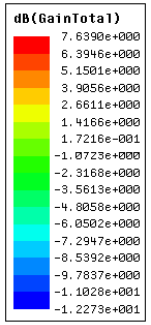


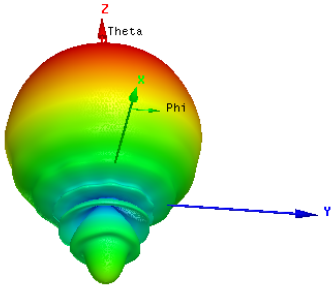












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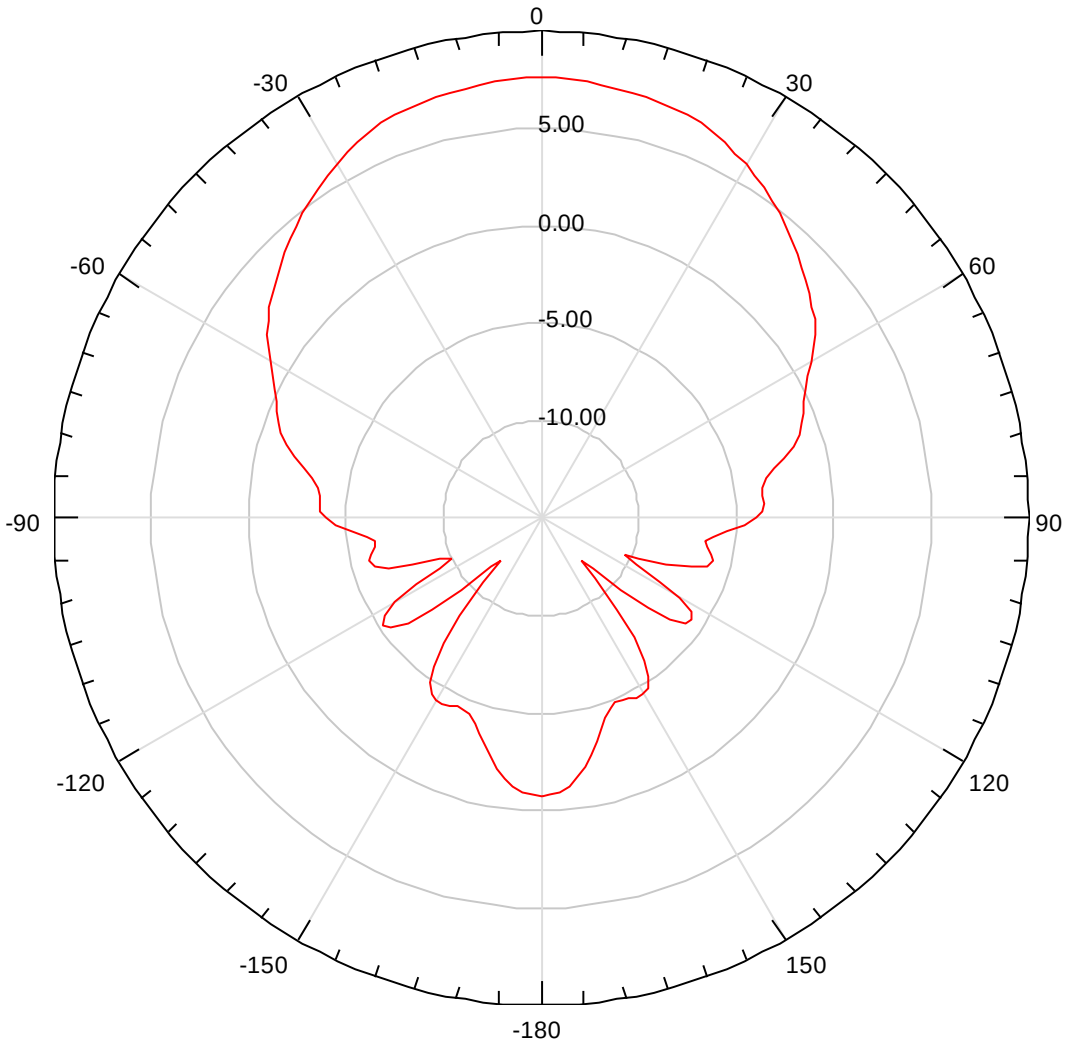
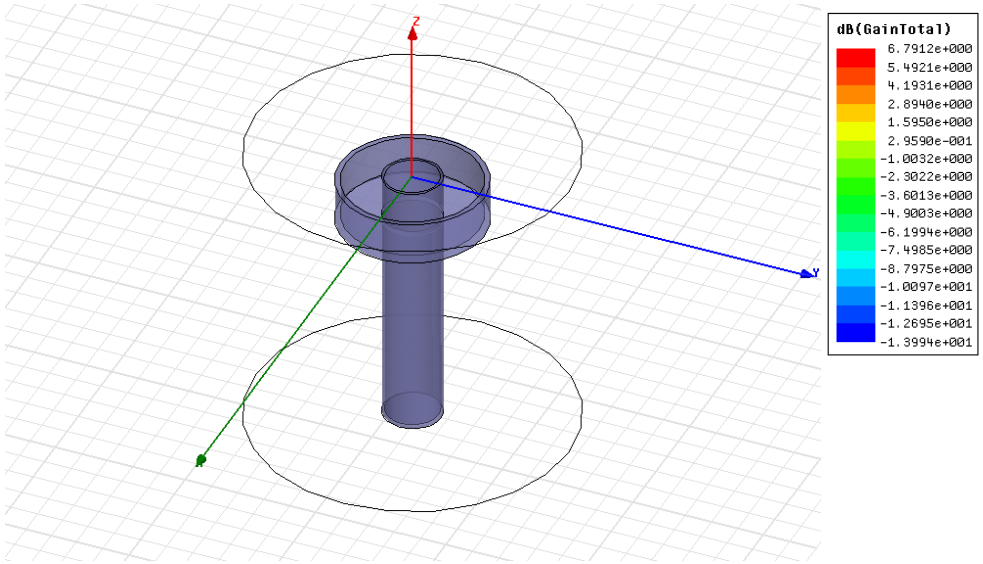
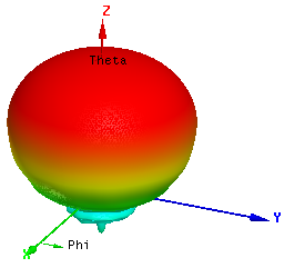
Radiation Pattern 1

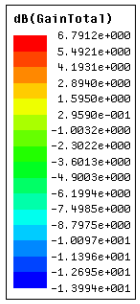
CircularWG_Antenna_ADKv1

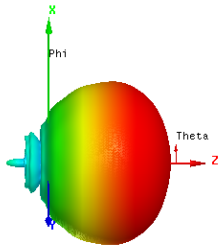


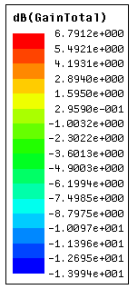
Simple Choke (22/20 mm, posunutí 18 mm – zadní stěna vůči čelu vlnovodu)

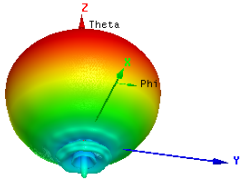












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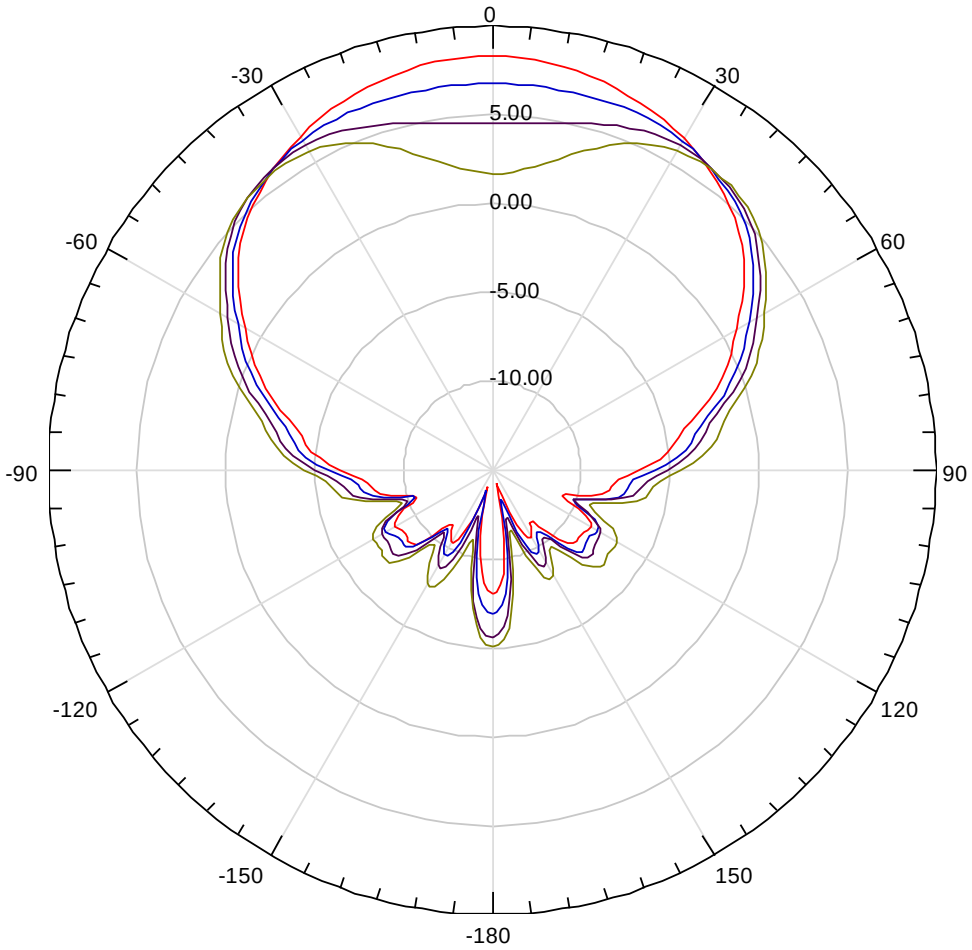
Radiation Pattern 1

CircularWG_Antenna_ADKv1



Curve Info

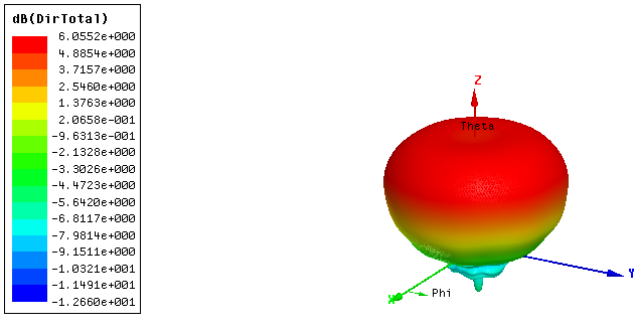
dB(GainTotal)
Setup1 : LastAdaptive
a='17mm' Freq='10GHz' Phi='0deg'

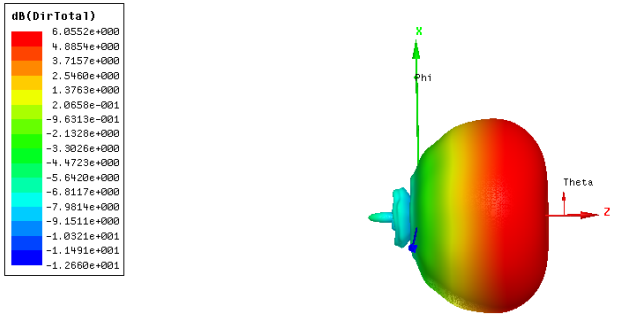
dB(GainTotal)
Setup1 : LastAdaptive
a='18mm' Freq='10GHz' Phi='0deg'

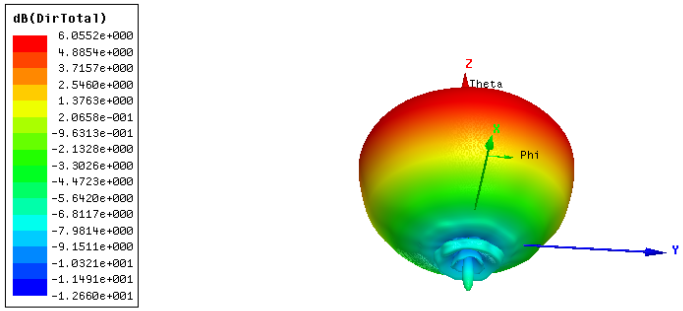
dB(GainTotal)
Setup1 : LastAdaptive
a='19mm' Freq='10GHz' Phi='0deg'

dB(GainTotal)
Setup1 : LastAdaptive
a='20mm' Freq='10GHz' Phi='0deg'

Simple Choke (22/20 mm, posunutí 19 mm)







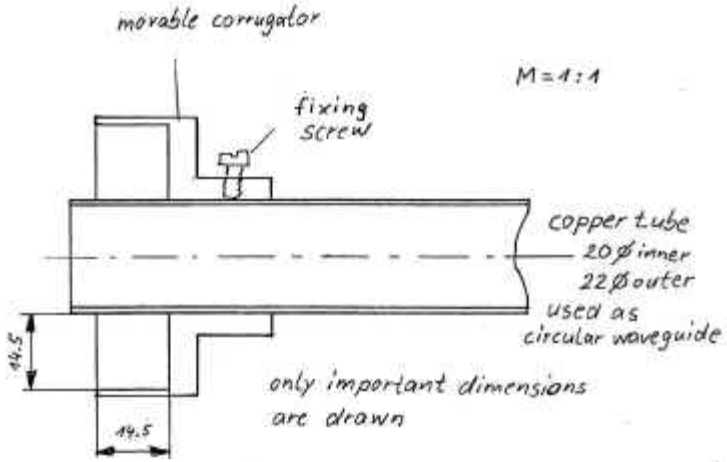
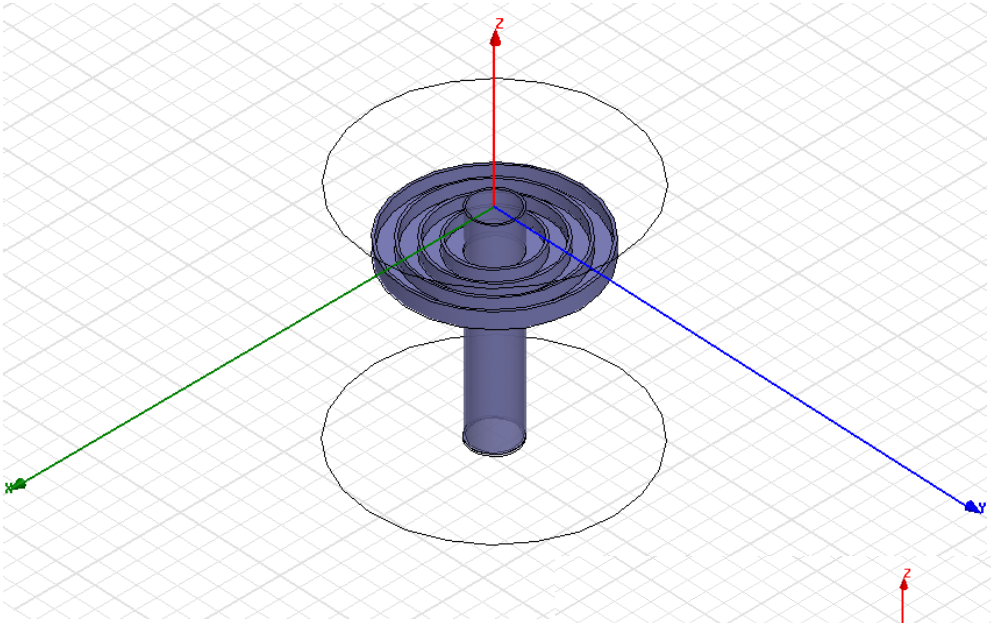
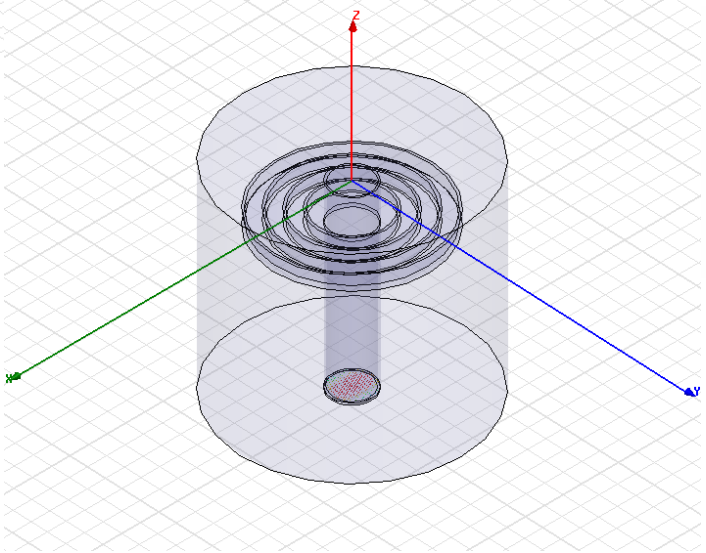


fig 5 DJ7FJ's 10GHz-Horn as modification from VE4MA corrugated horn

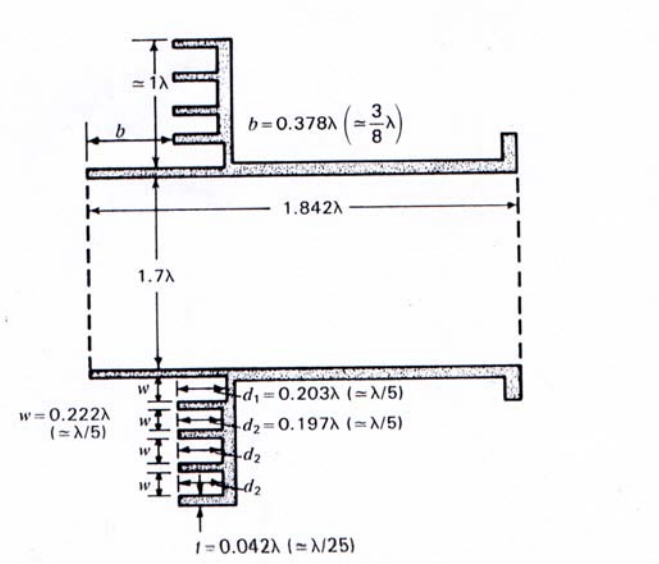
Scalar Feed (22/20 mm, posunutí 19,3 mm)

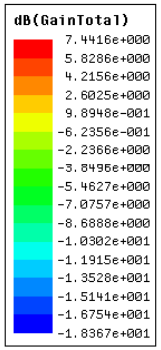


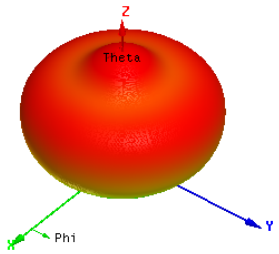


Rozměry (mm)

Rozměr w	6,7
Rozměr d1	6,2
Rozměr d2	5,9
Rozměr t	1,25
Rozměr b	11,4







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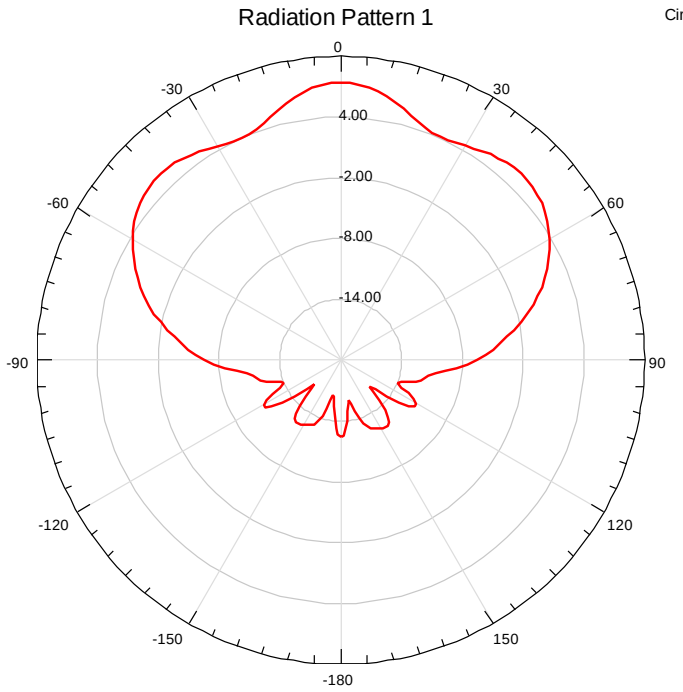
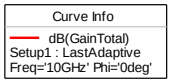
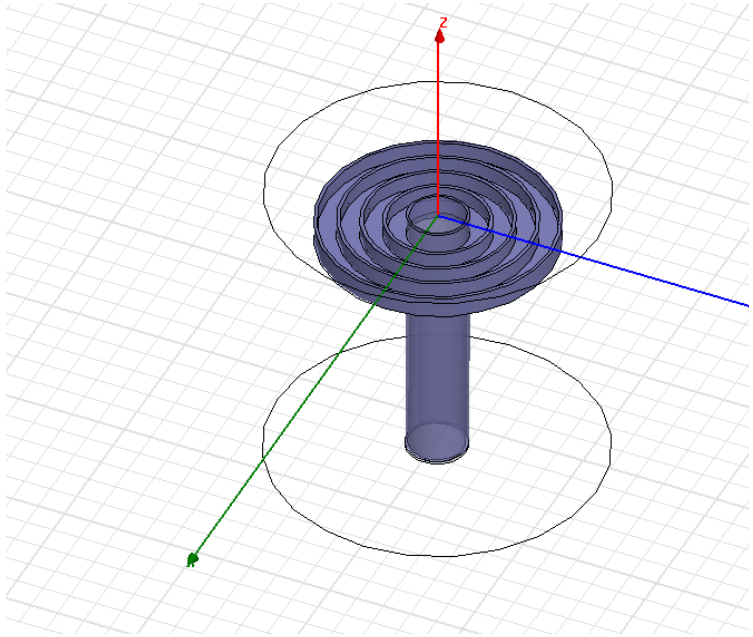


CircularWG_Antenna_ADKv1



Scalar Feed (22/20 mm, posunutí 7,9 mm)



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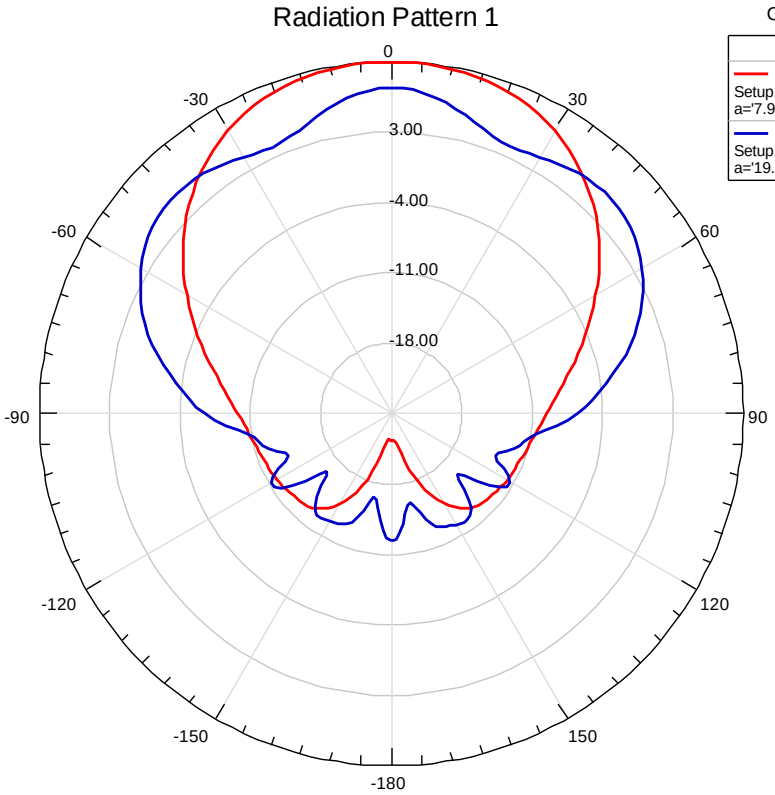
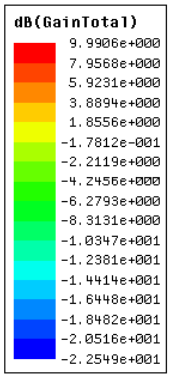
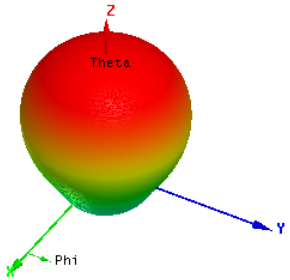
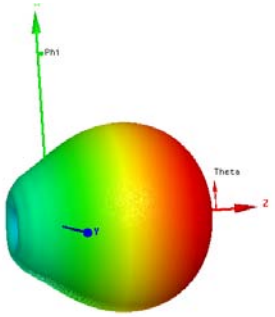


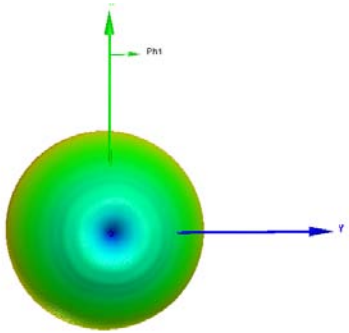
CircularWG_Antenna_ADKv1

Curve Info
dB(GainTotal)
Setup1 : LastAdaptive
a='7.9mm' Freq='10GHz' Phi='0deg'
dB(GainTotal)
Setup1 : LastAdaptive
a='19.3mm' Freq='10GHz' Phi='0deg'



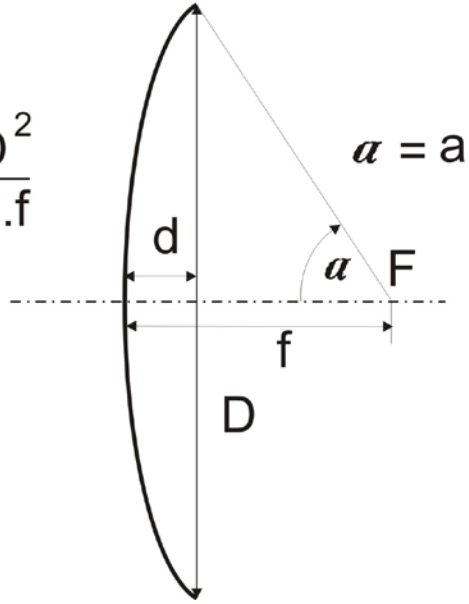






$$d = \frac{D^2}{16.f}$$

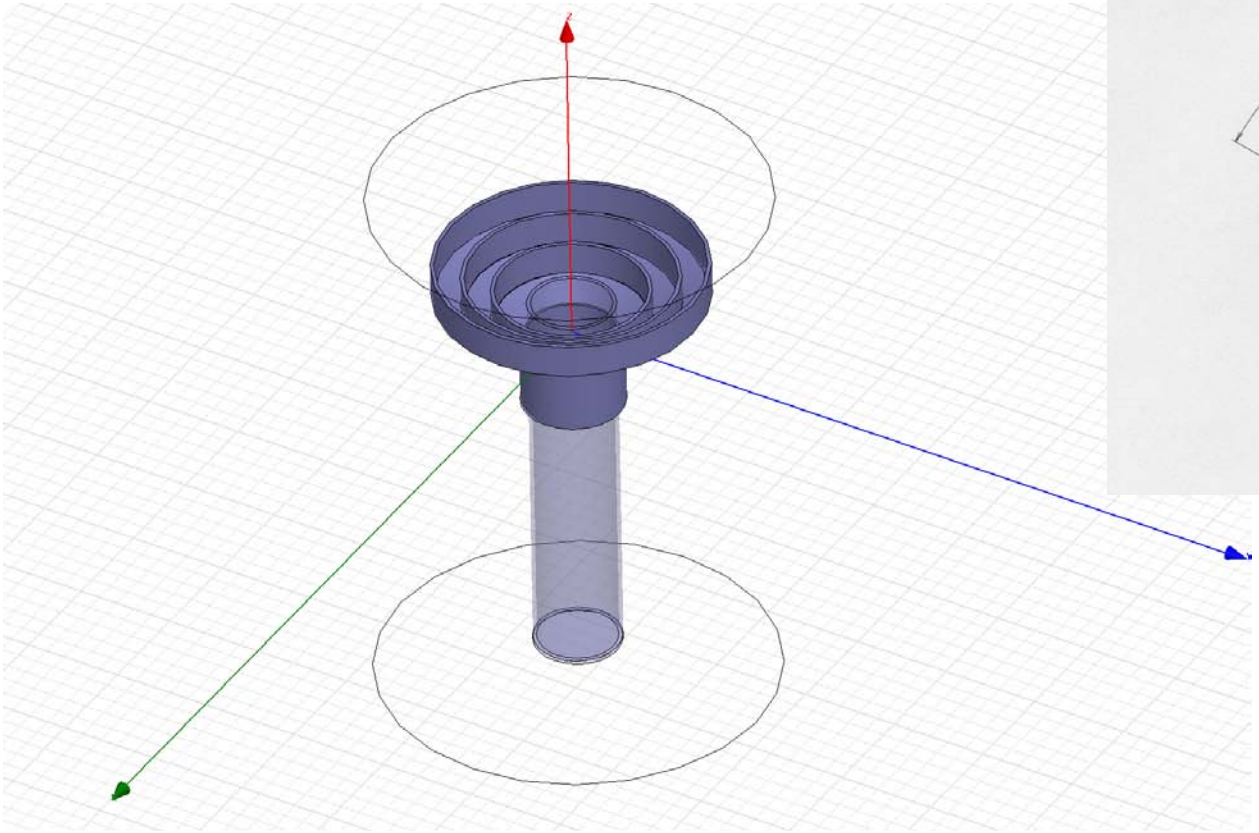
$$\alpha = \operatorname{arctg} \frac{8(f/D)}{16(f/D)^2 - 1}$$

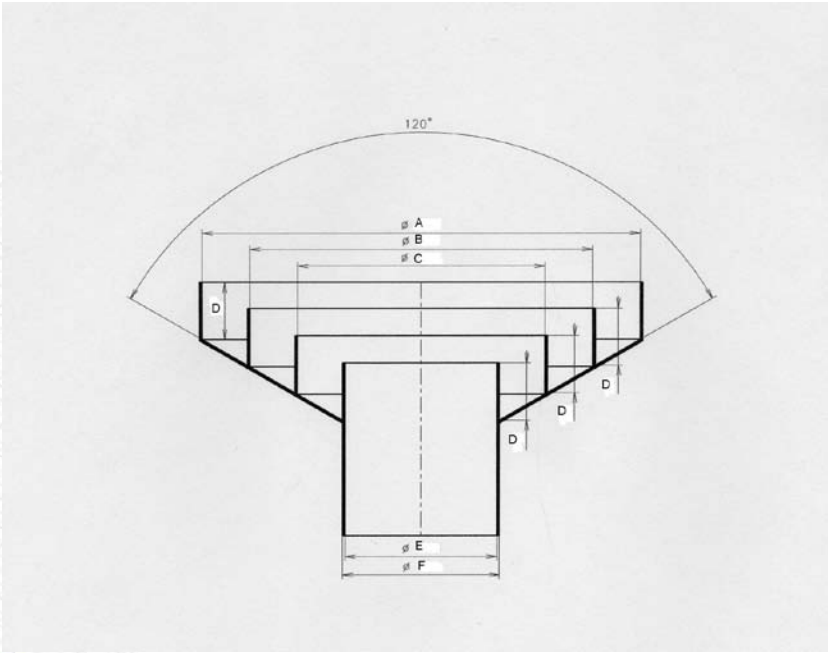


Tato charakteristika je téměř ideální s bezvadným potlačením vyzařování v ose –z, obr. 9. Pro zrcadlo s f/D = 0,4 vychází poloviční středový úhel $\alpha = 64^{o}$. Z obrázku lze pro tento úhel odečíst úroveň na hraně apertury -13 dB. Toto zrcadlo je tedy ozářeno optimálně s ohledem na dosažení minimální šumové teploty antény.

Pro mělčí zrcadlo f/D = 0,5 vychází poloviční středový úhel $\alpha = 53^{o}$. A z obrázku odečteme -9 dB na okrajích apertury. Taková anténa je tedy mírně přezářená, bude mít větší účinnost ale také větší šumovou teplotu.

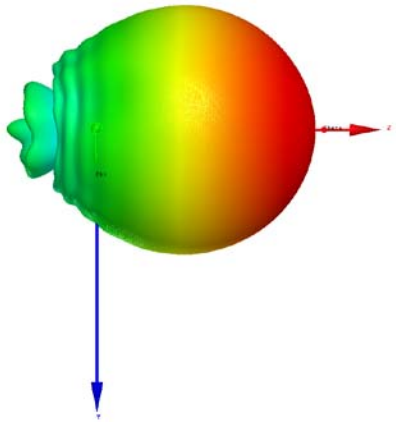
Chaparral OK1CA_OM6AA

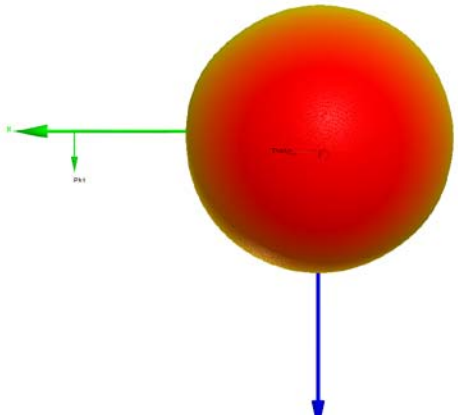


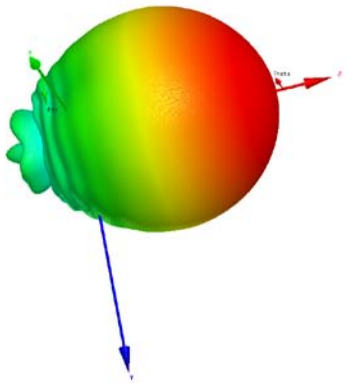


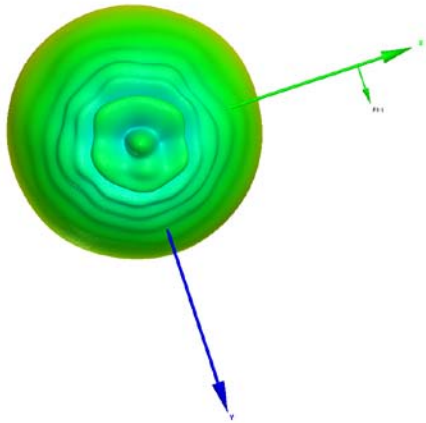
Rozměr	Lambda	mm 10368MHz
A	2,3	66,5
B	1,8	52
C	1,3	37,5
D	0,3	8,65
E	0,69	20
F	0,9	26

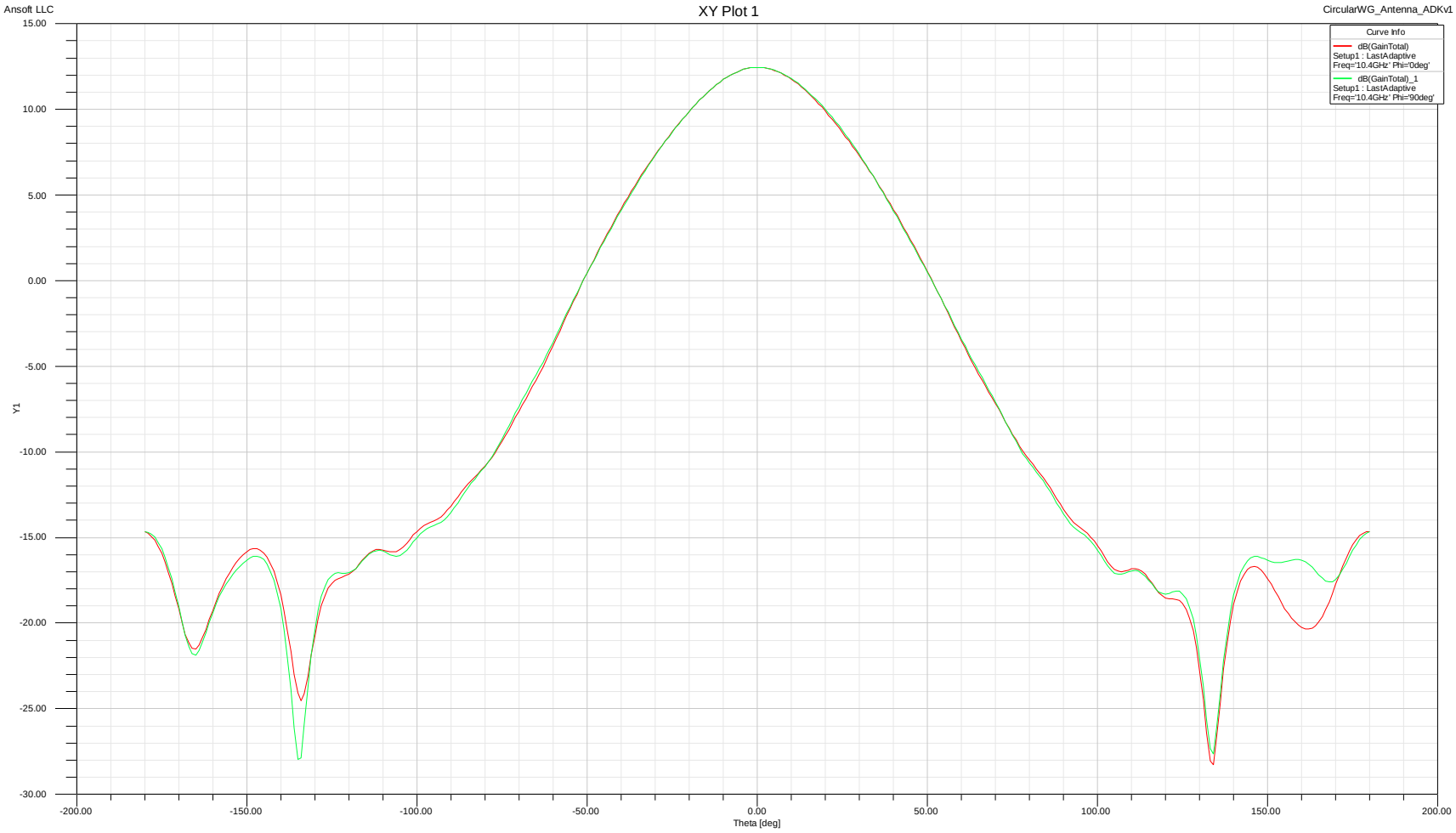
Síla stěny límců = 1 mm



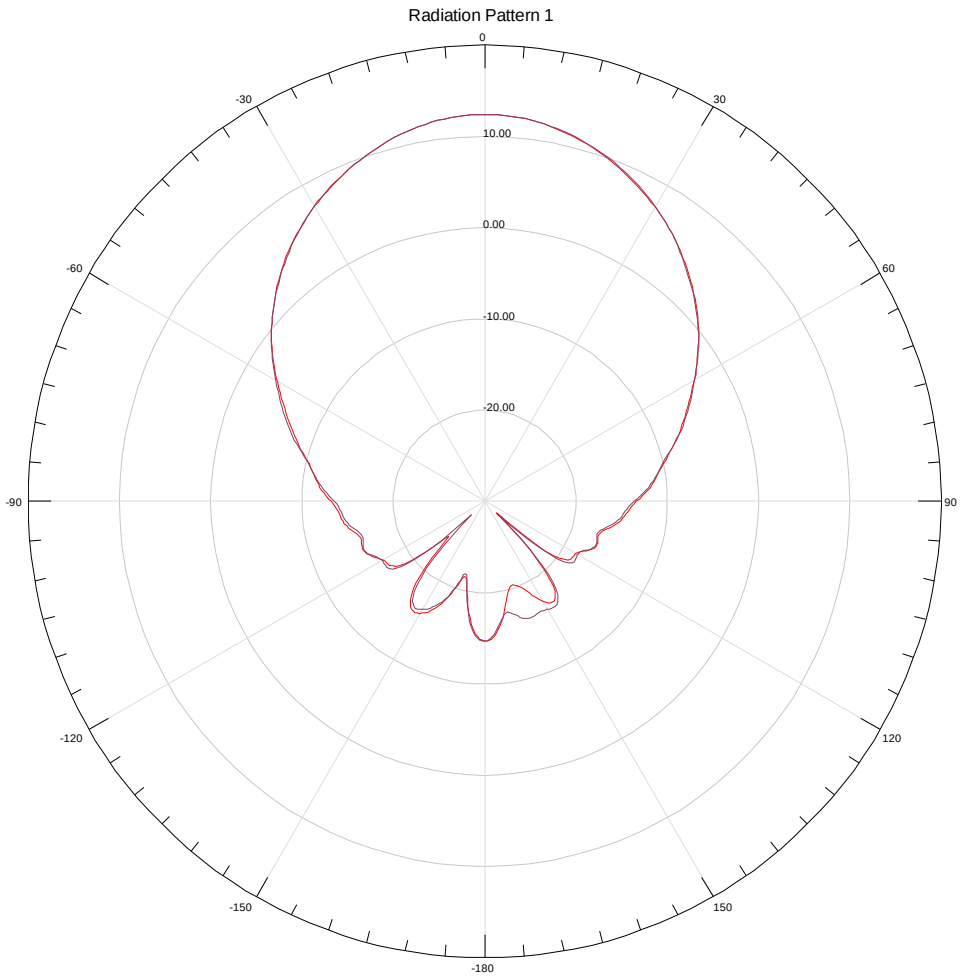







Ansoft LLC
XY Plot 1
CircularWG_Antenna_ADKv1
Curve Info
dB(GainTotal)
Setup1 : LastAdaptive
Freq='10.4GHz' Phi='0deg'
dB(GainTotal)_1
Setup1 : LastAdaptive
Freq='10.4GHz' Phi='90deg'
15.00
10.00
5.00
0.00
-5.00
-10.00
-15.00
-20.00
-25.00
-30.00
Y1
-200.00
-150.00
-100.00
-50.00
0.00
50.00
100.00
150.00
200.00
Theta [deg]

Ansoft LLC



CircularWG_Antenna_ADKv1

Curve Info

dB(GainTotal)
Setup1 : LastAdaptive
Freq='10.4GHz' Phi='0deg'

dB(GainTotal)_1
Setup1 : LastAdaptive
Freq='10.4GHz' Phi='90deg'