GF-IV

IDD

Cellular Antenna Detailed Design And Simulation For

DCS-1800 and PCS-1900 BW

	Date	Name	Signature
Created	14/02/2006	Assaf Tvito	
Approved	14/02/2006	Ziv Geva	

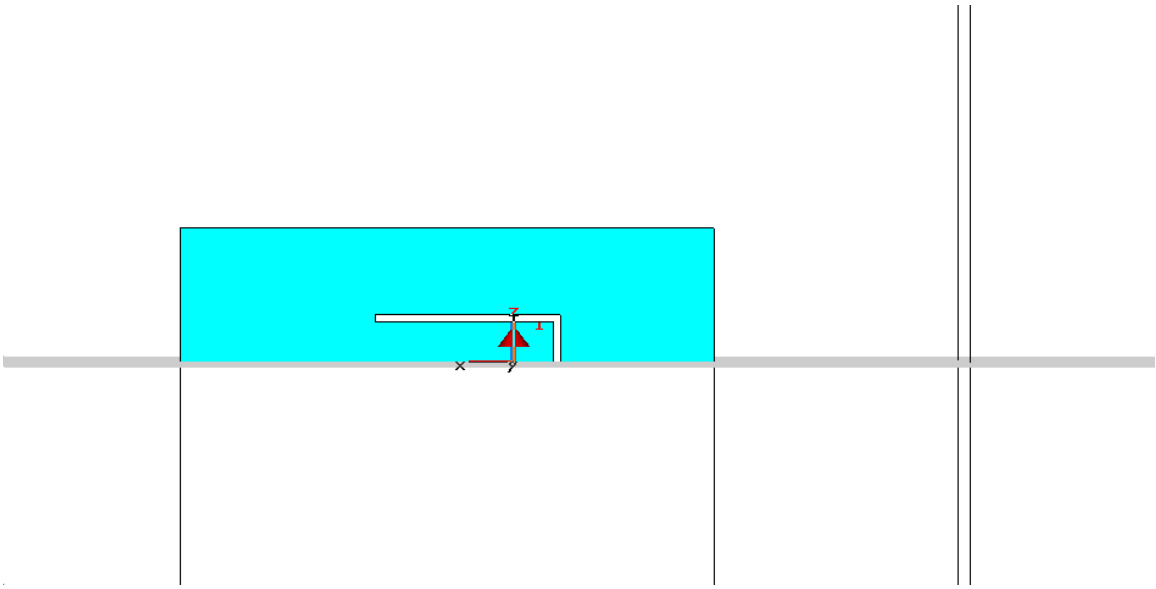
Table of Changes

Revision	Date	Changed By	Description	Paragraphs Changed

Table Of Contents

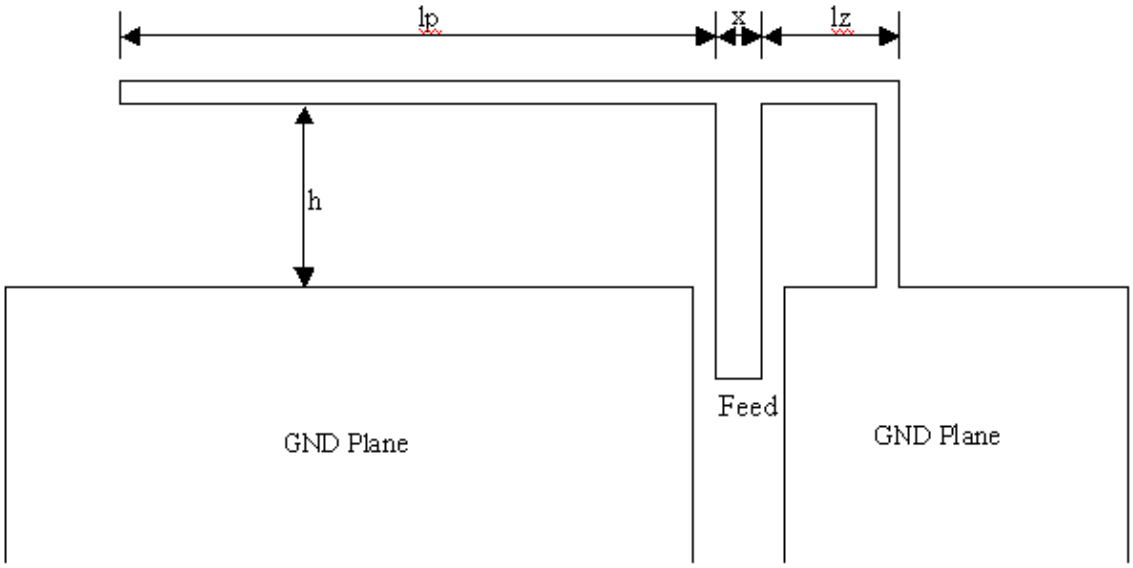
1. Structure Visualization

- The following plot shows the structure investigated in this example. The defined parameters are listed in the table below.



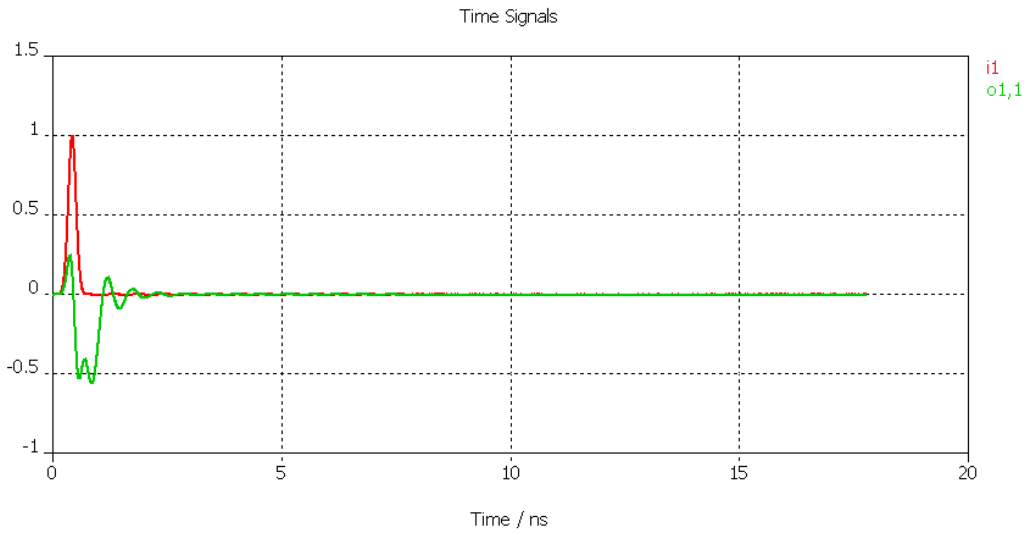
Parameter	Value
h	6
lp	20.8
lz	7

- The feed point (x) should be 3 mm width micro-strip in order to form 50Ω matching on 1.6mm FR4 substrate.



2. Simulation Time Signals

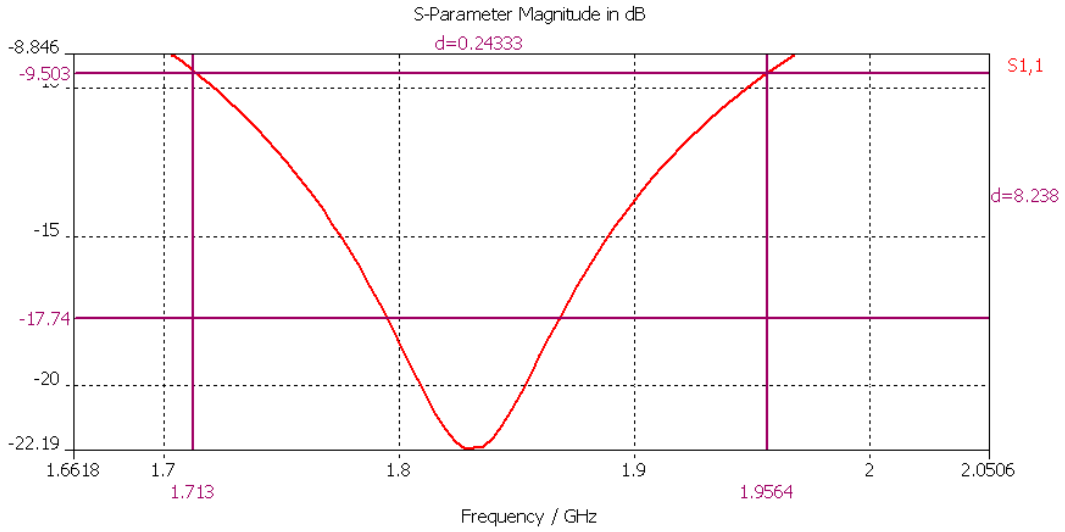
- The following plot shows the time signals which describe the mode amplitudes at the waveguide ports.



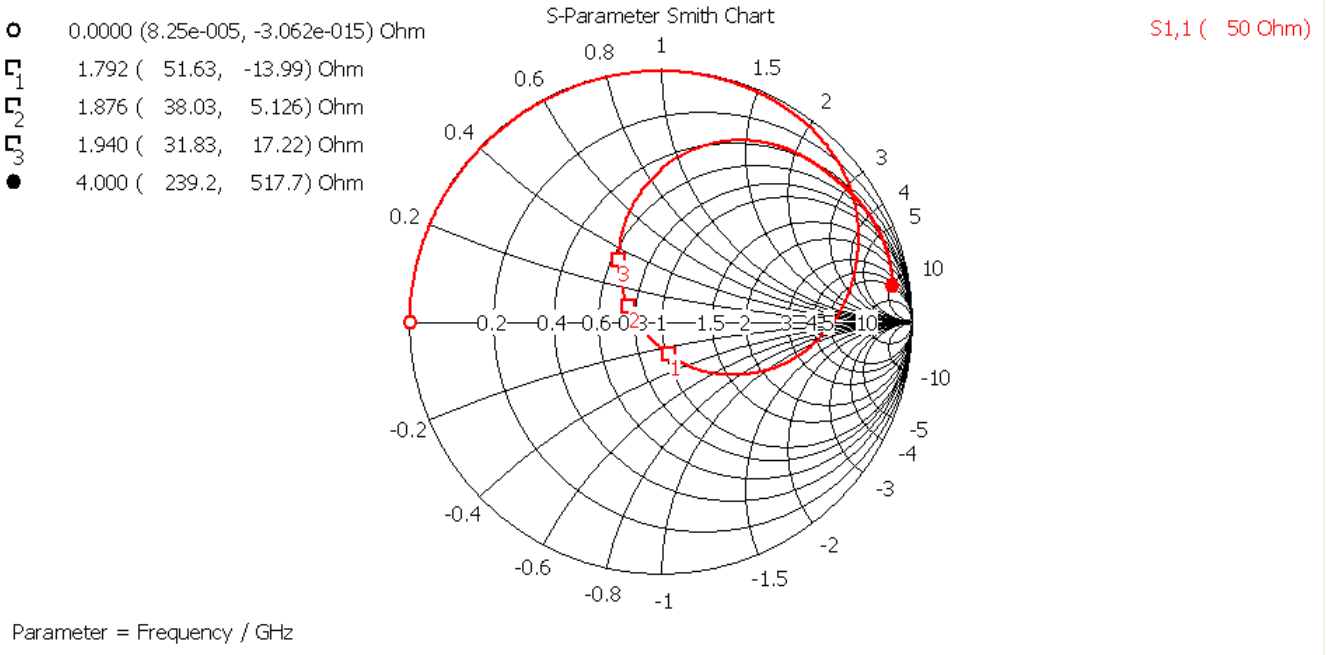
3. S-Parameter Results

- The following plot shows the S-parameters as a function of frequency.
- The antenna calibrated to DCS-1800 and PCS-1900 BW.

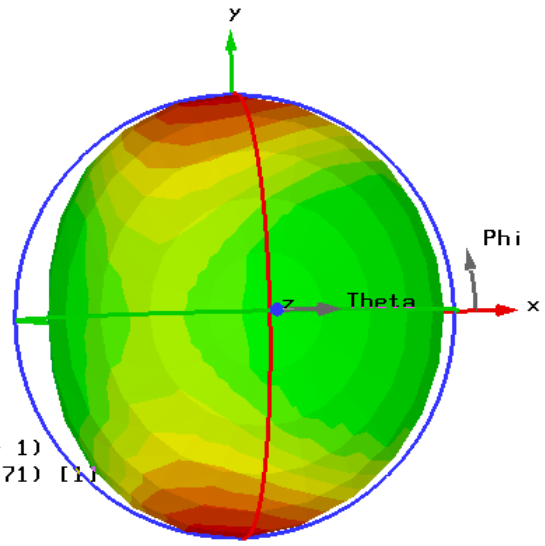
3.1 S-Parameter Magnitude

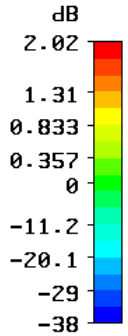


3.2 S-Parameter Smith Chart

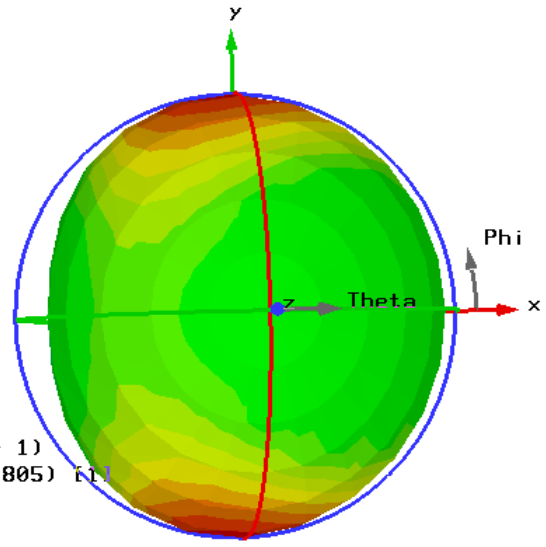


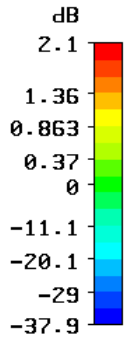
4. Gain Result



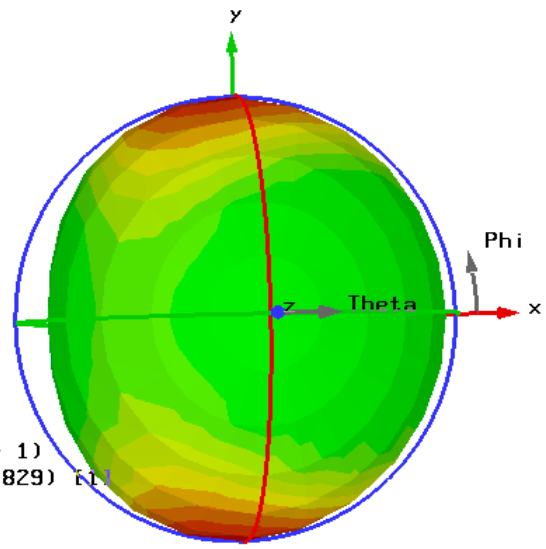


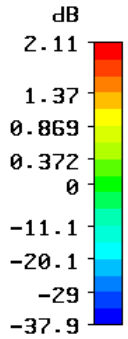

```
Type           = Farfield
Approximation  = enabled (kR >> 1)
Monitor        = farfield (f=1.71) [1]
Component      = Abs
Output         = Gain
Frequency      = 1.71
Rad. effic.    = 0.9091
Tot. effic.    = 0.8001
Gain           =  2.022 dB
```





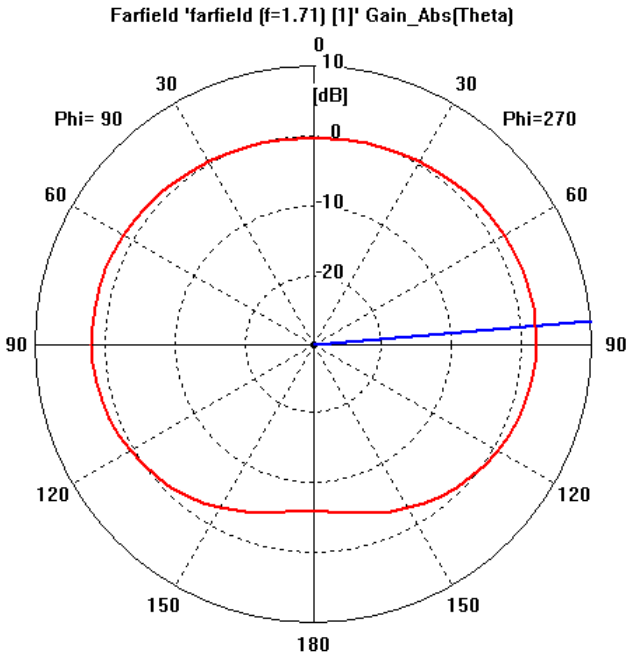

```
Type           = Farfield
Approximation  = enabled (kR >> 1)
Monitor        = farfield (f=1.805) [1]
Component      = Abs
Output         = Gain
Frequency      = 1.805
Rad. effic.    = 0.9119
Tot. effic.    = 0.9011
Gain           =  2.096 dB
```



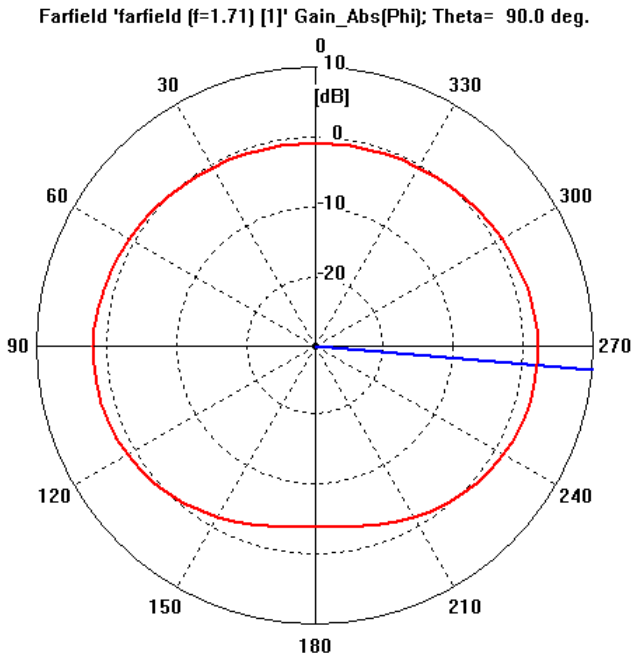



```
Type          = Farfield
Approximation = enabled (kR >> 1)
Monitor       = farfield (f=1.829) [1]
Component     = Abs
Output        = Gain
Frequency     = 1.829
Rad. effic.   = 0.9126
Tot. effic.   = 0.9071
Gain          =  2.110 dB
```

5. E/H-Plane

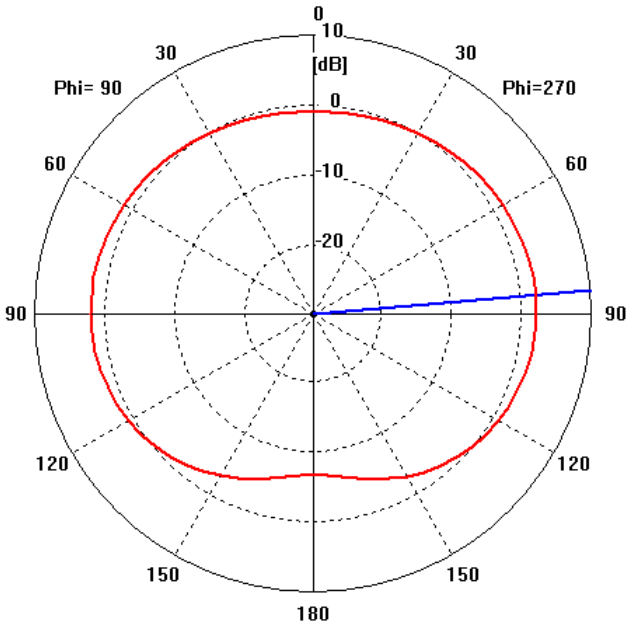


Frequency = 1.71
Main lobe magnitude = 2.1 dB
Main lobe direction = 85.0 deg.



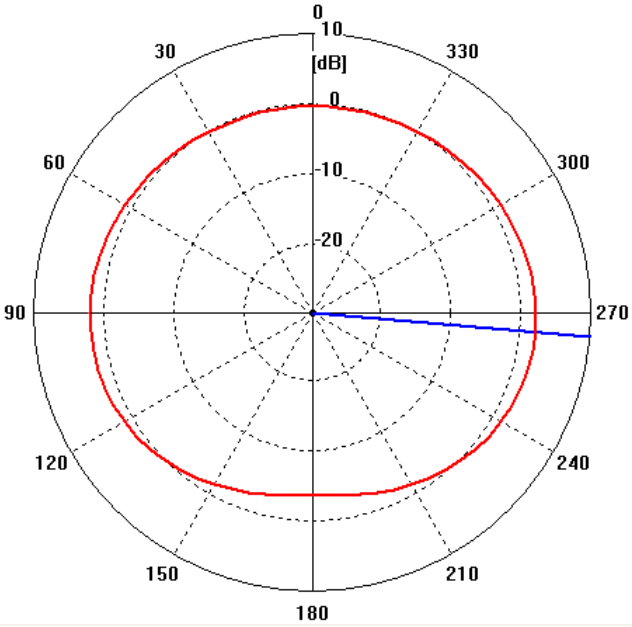
Frequency = 1.71
Main lobe magnitude = 2.0 dB
Main lobe direction = 265.0 deg.

Farfield 'farfield (f=1.805) [1]' Gain_Abs(Theta)

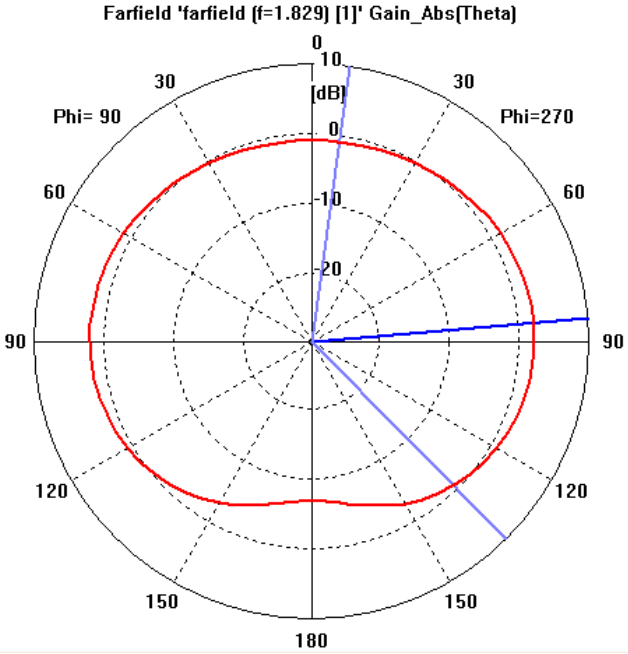


Frequency = 1.805
Main lobe magnitude = 2.1 dB
Main lobe direction = 85.0 deg.

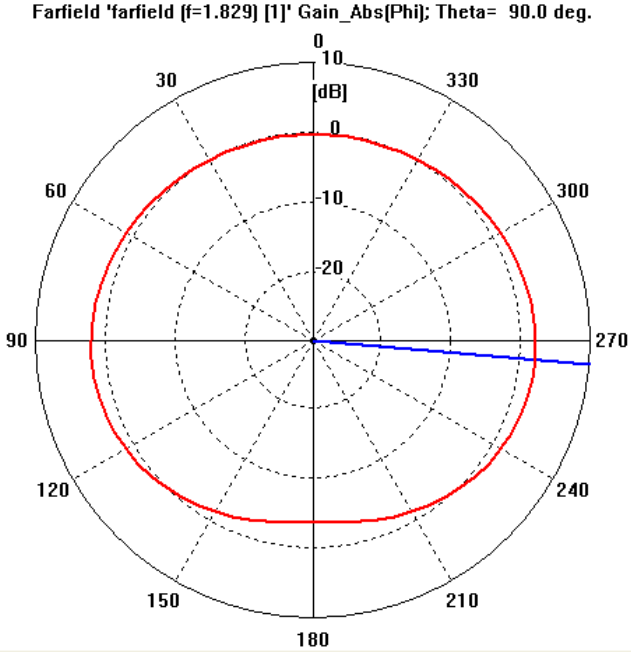
Farfield 'farfield (f=1.805) [1]' Gain_Abs(Phi); Theta= 90.0 deg.



Frequency = 1.805
Main lobe magnitude = 2.1 dB
Main lobe direction = 265.0 deg.



Frequency = 1.829
Main lobe magnitude = 2.1 dB
Main lobe direction = 85.0 deg.
Angular width (3 dB) = 127.3 deg.



Frequency = 1.829
Main lobe magnitude = 2.1 dB
Main lobe direction = 265.0 deg.