Radio Mobile - RF propagation simulation software

MSI is the extension mostly used in combination with antenna radiation patterns in planet antenna format.

Planet is a RF propagation simulation tool initially developed by MSI. Planet was a 2G radio planning tool which has set a standard in the early days of computer aided radio network design. The antenna pattern file and the format which is currently known as ".msi" format or .msi-file has become a standard.

The antenna pattern file is an ASCII Text file and the general information, horizontal data points and vertical data points are stored in one file. The left column label and the data is separated by at least one space. The horizontal data and vertical data can be separated by at least one space or a Tab character.

There must be 360 data points (0 through 359) for the Horizontal data and 360 data points (0 through 359) for the Vertical data. Zero degrees represents North for the Horizontal pattern and Zero degrees represents the horizon for the Vertical pattern. The antenna gain unit is dBd. If the Gain is in dBi, it must be indicated after the Gain value (separated with at least one space). All gain datapoints are relative to maximum gain being zero. Any value below zero is assumed to be negative. Do not include the minus sign for these values.

The name of the antenna should be the first line of the file

antenna.msi

```
NAME <name>
MAKE <make>
FREQUENCY <frequency>
H_WIDTH <h_width>
V_WIDTH <v_width>
FRONT_TO_BACK <front_to_back>
GAIN <gain>
TILT <tilt>
POLARIZATION <polarisation>
COMMENT <comment>
HORIZONTAL 360
0 <0H>
.
.
359 <359H>
VERTICAL 360
0 <0V>
.
.
359 <359V>
```

Variables:

Variable	Comment
NAME	Name of the antenna
MAKE	Name of the manufacturer
FREQUENCY	Frequency in MHz
H_WIDTH	Opening angle in the horizontal plane between the -3 dB points
V_WIDTH	Opening angle in the vertical plane between the -3 dB points
FRONT_TO_BACK	Front to back ratio in dB

0H..359H	Horizontal gain datapoints per horizontal angle relative to maximum gain being zero. Any value below zero is assumed to be negative. *Minus sign is not used with these values*
0V..359V	Horizontal gain datapoints per horizontal angle relative to maximum gain being zero. Any value below zero is assumed to be negative. *Minus sign is not used with these values*

Sample file:

```
mapfile.inf
NAME PCS19HA-11015-2**
MAKE Andrew Corp
FREQUENCY 1920
H_WIDTH 115.97
V_WIDTH 4.77
FRONT_TO_BACK 25.32
GAIN 14.50 dBd
TILT Electrical
POLARIZATION Vertical
COMMENT PCS directional Antenna
HORIZONTAL 360
0 0.000
1 0.096
2 0.096
3 0.096
4 0.096
.
.
.
.
353 0.096
354 0.096
355 0.096
356 0.096
357 0.096
358 0.096
359 0.096
VERTICAL 360
0 1.401
1 0.300
2 0.000
3 0.400
4 1.895
5 4.096
6 8.201
7 10.006
.
.
.
350 17.924
351 17.393
352 19.494
353 21.514
354 23.479
355 24.437
356 20.000
357 13.979
358 7.494
359 3.098
```

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