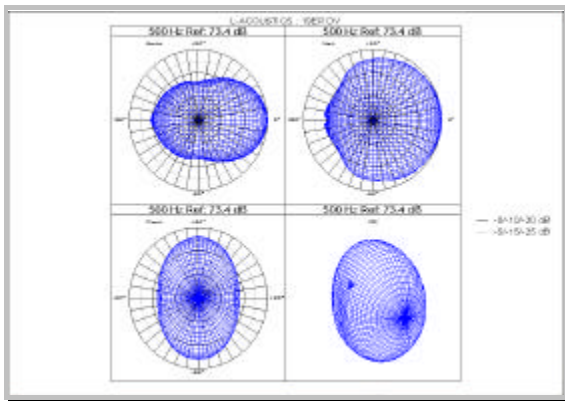


## Ulysses Native Format

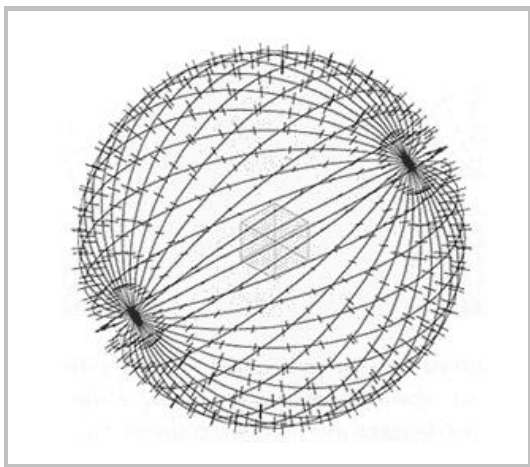
The Ulysses Native Format (\*.UNF) is a file to register data which describe loudspeaker dispersion characteristics. These files are the basis for the Ulysses calculations. They are managed in the Speaker Builder module. Currently only sound pressure levels are registered, phase relations have not been implemented yet.

The data registered in the Ulysses Native Format are shown as balloons when selecting the appropriate display.

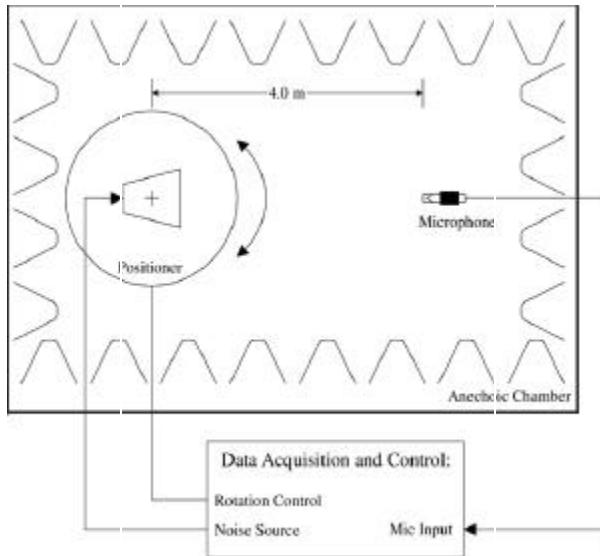


Speaker Builder Balloon Display

The UNF data are measured in a spherical grid of 5° or 10° steps around the loudspeaker. The grid may be envisioned as the longitudinal lines of a globe. A 5° resolution results in 74 degrees of longitude with 37 measuring points each while the loudspeaker axis points to the north pole.



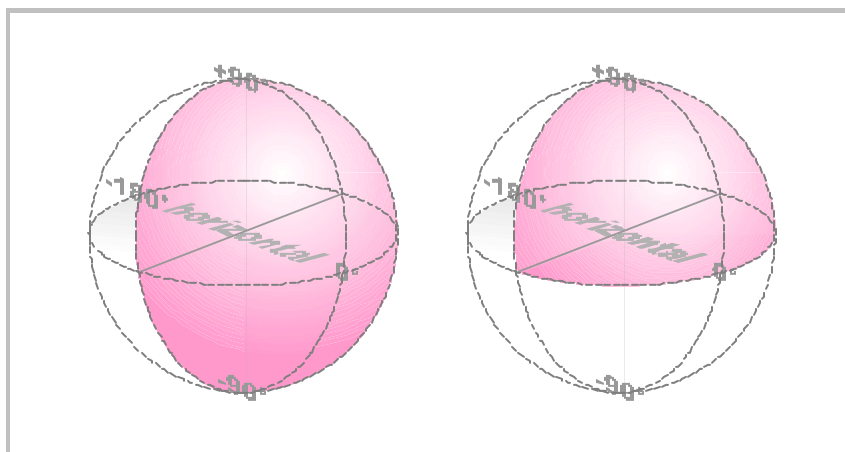
Ulysses Native Format measuring points



**Basic setup for measuring loudspeaker dispersion**

It is important to measure the sound pressure levels for a data balloon in the loudspeaker farfield since the simplified analysis of a loudspeaker as a point source by balloon data is valid only in the farfield. This means that measurements must be made at an adequate distance from the source.

A UNF file header consists of four lines with notes. Blocks for each of the seven octave bands from 125 to 8.000 Hz follow which register the absolute sound pressure levels in dB. The measuring points for each line result from a 180° horizontal turn, i.e. those of the first line result from a 180° horizontal rotation at 0° vertical rotation, those of the second line from a 180° horizontal rotation at 5° (or 10°) vertical rotation and so on.



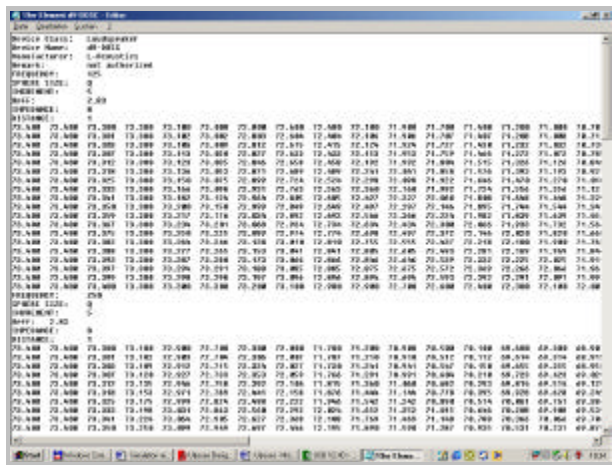
**Half and quarter formats**

If the loudspeaker drivers are aligned symmetrically the number of measuring points can be reduced. Only half the sphere must be measured if the loudspeaker is symmetrical to its vertical axis (half format). If it is symmetrical to both its vertical and horizontal axes – like a coaxial loudspeaker is – only a quarter sphere must be

measured (quarter format). Further reductions are possible for measuring a dynamically balanced ceiling loudspeaker.

The number of lines per block is depending on format and subformat:

- 5° Full:** 72 lines with 37 columns
- 5° Half:** 37 lines with 37 columns
- 5° Quarter:** 19 lines with 37 columns
- 10° Full:** 36 lines with 19 columns
- 10° Half:** 19 lines with 19 columns
- 10° Quarter:** 10 lines with 19 columns



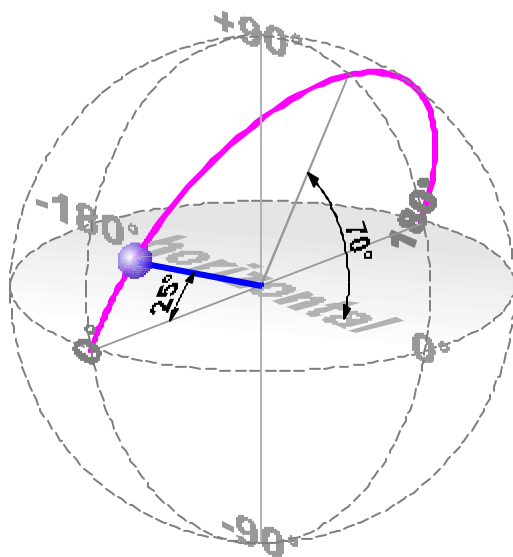
Screenshot: Ulysses Native Format (5° quarter format)

To create a UNF file data can be copied to a standard text file. After replacing the \*.TXT extension by the \*.UNF extension the file can be imported into the Speaker Builder module. It can then be saved together with an enclosure drawing as a loudspeaker file for future reference.

The illustration below shows a 5° solution quarter format measuring point position. It is the 6<sup>th</sup> value (blue, 25° vertical rotation) of the 16<sup>th</sup> horizontal rotation (magenta 70°).

	0°	5°	10°	15°	20°	25°	30°	40°	
Device Class: Loudspeaker									
Device Name: dV-DOSC									
Manufacturer: L-Acoustics									
Remark: nothing									
FREQUENCY: 125									
SPHERE SIZE: Q									
INCREMENT: 5									
Ueff: 2.83									
IMPEDANCE: 8									
DISTANCE: 1									
0°	73.400	73.400	73.300	73.300	73.100	73.000	72.800	72.600	...
5°	73.400	73.400	73.301	73.300	73.102	73.002	72.803	72.604	...
10°	73.400	73.400	73.303	73.300	73.106	73.009	72.812	72.615	...
15°	73.400	73.400	73.307	73.300	73.113	73.020	72.827	72.633	...
20°	73.400	73.400	73.312	73.300	73.123	73.035	72.846	72.658	...
25°	73.400	73.400	73.318	73.300	73.136	73.053	72.871	72.689	...
30°	73.400	73.400	73.325	73.300	73.150	73.075	72.899	72.724	...
35°	73.400	73.400	73.333	73.300	73.166	73.098	72.931	72.763	...
40°	73.400	73.400	73.341	73.300	73.182	73.124	72.964	72.805	...
45°	73.400	73.400	73.350	73.300	73.200	73.150	72.999	72.849	...
50°	73.400	73.400	73.359	73.300	73.217	73.176	73.034	72.892	...
55°	73.400	73.400	73.367	73.300	73.234	73.201	73.068	72.934	...
60°	73.400	73.400	73.375	73.300	73.250	73.225	73.099	72.974	...
65°	73.400	73.400	73.382	73.300	73.264	73.246	73.128	73.010	...
70°	73.400	73.400	73.393	73.300	73.287	73.280	73.173	73.066	...
75°	73.400	73.400	73.388	73.300	73.277	73.265	73.153	73.041	...
85°	73.400	73.400	73.399	73.300	73.298	73.298	73.197	73.096	...
90°	73.400	73.400	73.400	73.300	73.300	73.300	73.200	73.100	...
FREQUENCY: 250									
SPHERE SIZE: Q									
INCREMENT: 5									
Ueff: 2.83									
IMPEDANCE: 8									
DISTANCE: 1									
	73.400	73.400	73.300	73.100	72.900	72.700	72.300	72.000	...
	73.400	73.400	73.301	73.102	72.903	72.704	72.306	72.007	...
	73.400	73.400	73.303	73.109	72.912	72.715	72.324	72.027	...
	73.400	73.400	73.307	73.120	...				...

Measuring data in a Ulysses Native Format file



Measuring point position