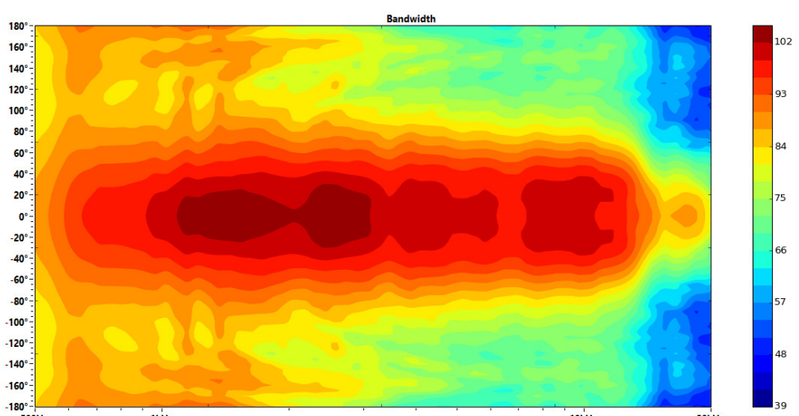
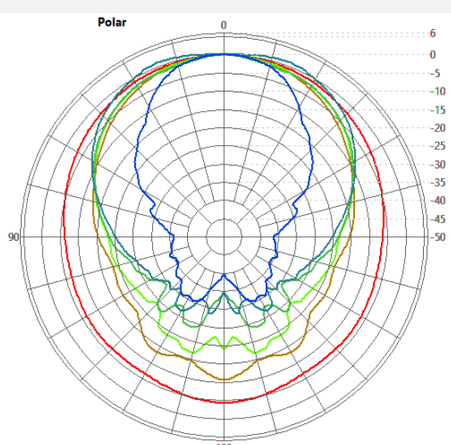


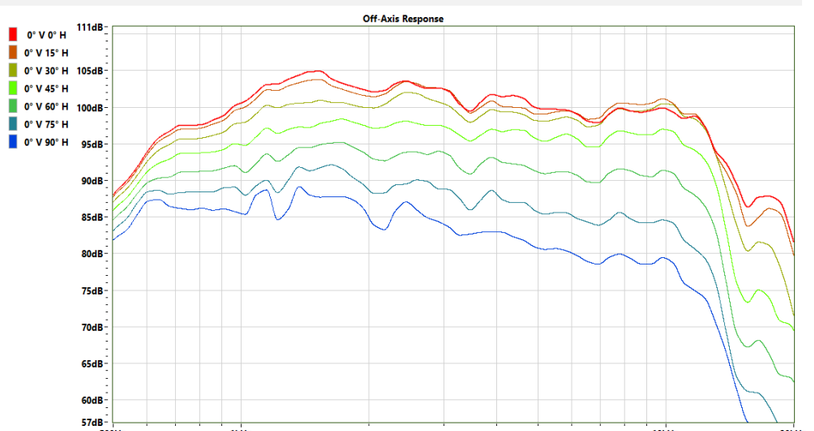



**Nota de Aplicação AN-0002.**
Analise de resposta fora do eixo, Driver Oversound DTi-4630, com corneta Ludovico LC-01.
https://www.ludovico.com.br/264/cornetas/corneta-lc-01-tipo-yamaha-345cm-x-195-cm
http://oversound.com.br/novo/index.php?route=product/product&product_id=91
**Condições:**
Ruído Rosa, 2.83V rms, 1m, medição automatizada em câmara anecóica no laboratório da:
**OVERSOUND ALTO-FALANTES INDÚSTRIA E COMÉRCIO ELETRO ACÚSTICO.**
Horizontal: Quadrante 1 e 2, simetricamente espelhados para quadrantes 3 e 4.
Vertical: Quadrante 1, simetricamente espelhado para quadrantes 2, 3 e 4.
Todas as características dimensionais originais dos e entre componentes foram mantidas, nenhum tipo de modificação visando melhora de desempenho foi efetuada.
**Responsável:**
Eng. Francisco Monteiro, CREA: 260400014-8.
30/10/2020.

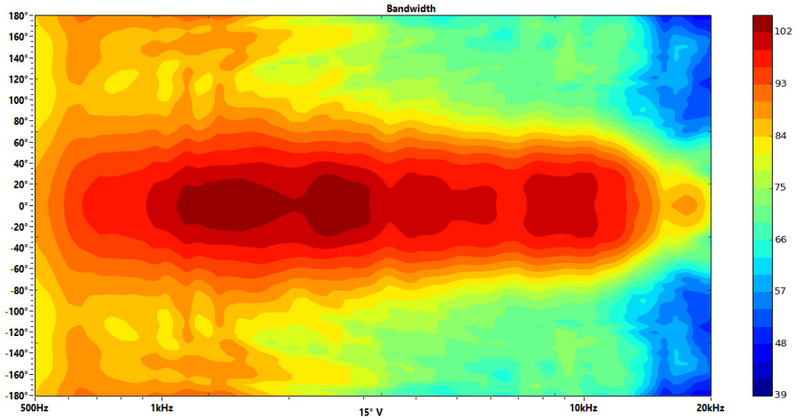



| Ang | Freq | Cov | Q | Di |
|---|---|---|---|---|
| 0° V | 507Hz | 316° | 1,59 | 2,00dB |
| 0° V | 1023Hz | 90° | 2,81 | 4,49dB |
| 0° V | 2054Hz | 98° | 3,01 | 4,79dB |
| 0° V | 4120Hz | 100° | 3,27 | 5,15dB |
| 0° V | 8248Hz | 108° | 2,84 | 4,53dB |
| 0° V | 18527Hz | 52° | 5,79 | 7,62dB |

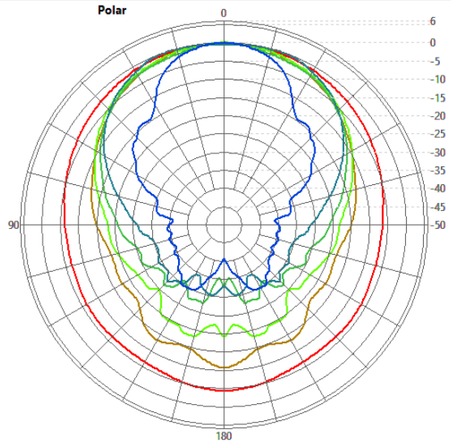


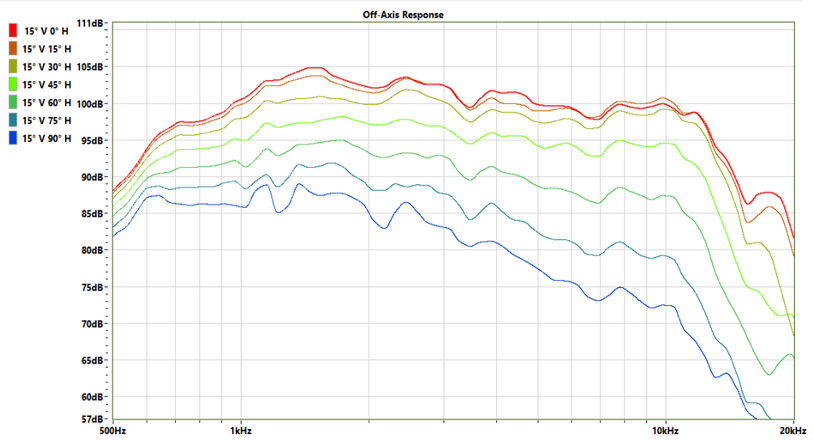




## 0° Vertical

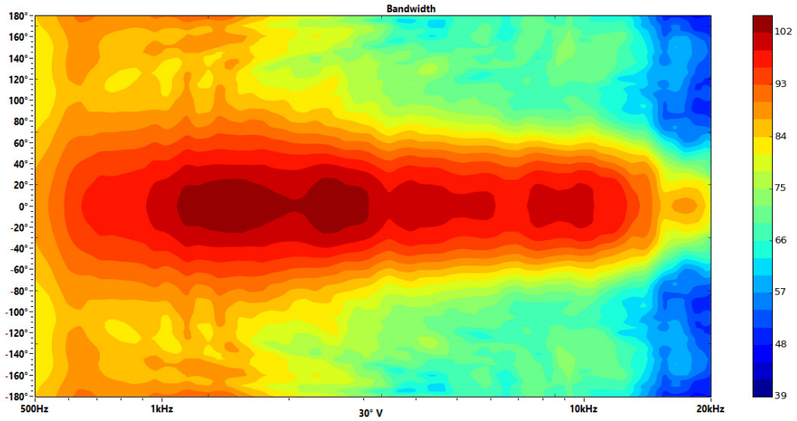



| Ang | Freq | Cov | Q | Di |
|---|---|---|---|---|
| 15° V | 507Hz | 318° | 1,59 | 2,02dB |
| 15° V | 1023Hz | 92° | 2,76 | 4,42dB |
| 15° V | 2054Hz | 98° | 3,05 | 4,85dB |
| 15° V | 4120Hz | 90° | 3,58 | 5,54dB |
| 15° V | 8248Hz | 96° | 3,27 | 5,14dB |
| 15° V | 18527Hz | 46° | 6,22 | 7,94dB |

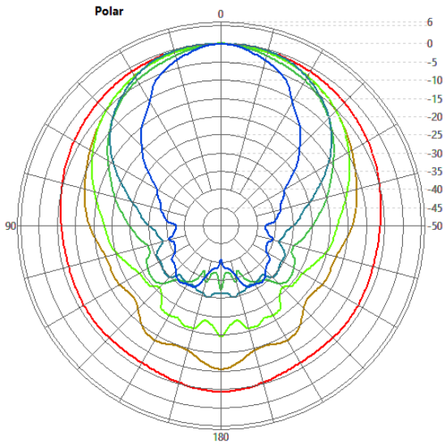


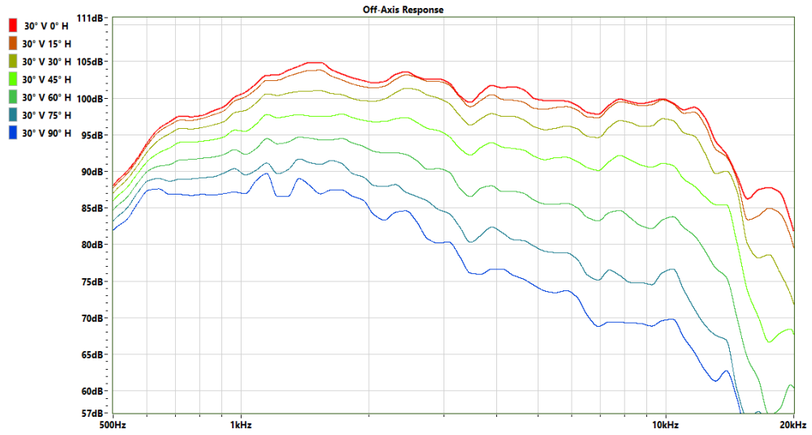




## 15° Vertical

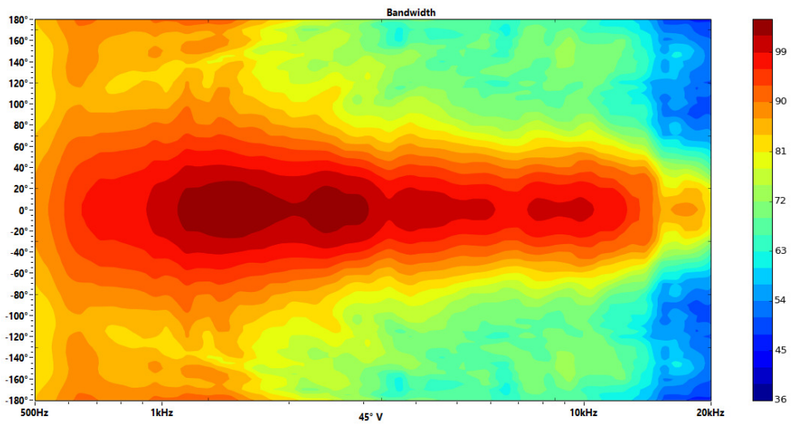



| Ang | Freq | Cov | Q | Di |
|---|---|---|---|---|
| 30° V | 507Hz | 172° | 1,58 | 1,99dB |
| 30° V | 1023Hz | 96° | 2,66 | 4,25dB |
| 30° V | 2054Hz | 96° | 3,16 | 4,99dB |
| 30° V | 4120Hz | 76° | 4,16 | 6,19dB |
| 30° V | 8248Hz | 80° | 4,01 | 6,04dB |
| 30° V | 18527Hz | 48° | 6,63 | 8,21dB |

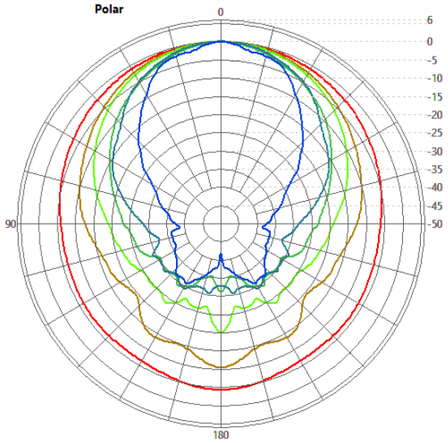


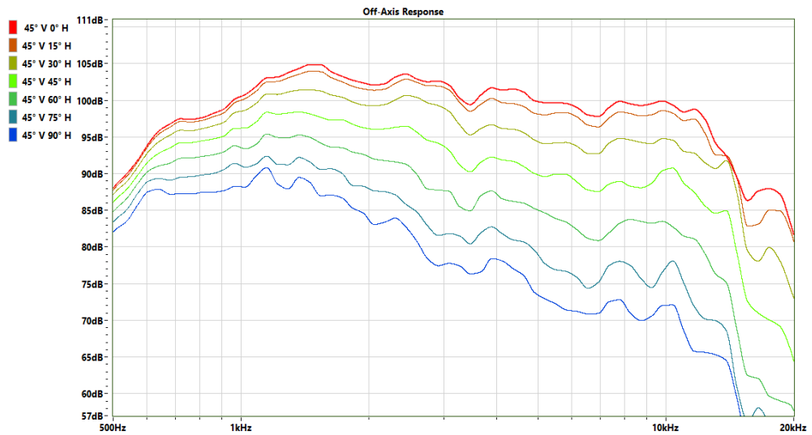




## 30° Vertical

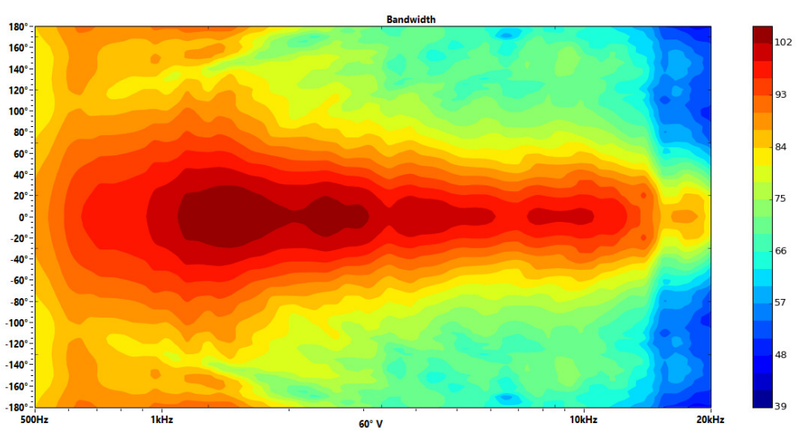



| Ang | Freq | Cov | Q | Di |
|---|---|---|---|---|
| 45° V | 507Hz | 178° | 1,56 | 1,94dB |
| 45° V | 1023Hz | 106° | 2,53 | 4,04dB |
| 45° V | 2054Hz | 90° | 3,33 | 5,23dB |
| 45° V | 4120Hz | 66° | 4,41 | 6,44dB |
| 45° V | 8248Hz | 66° | 4,56 | 6,59dB |
| 45° V | 18527Hz | 52° | 6,30 | 7,99dB |

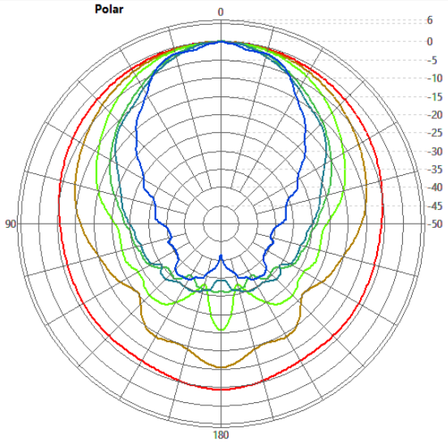


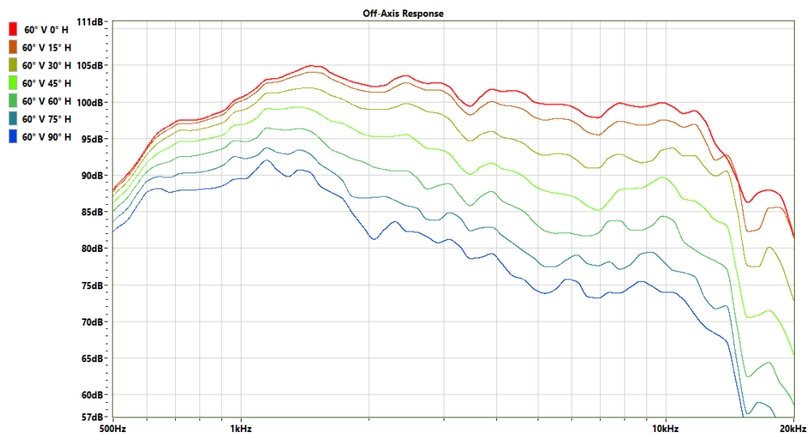




## 45° Vertical

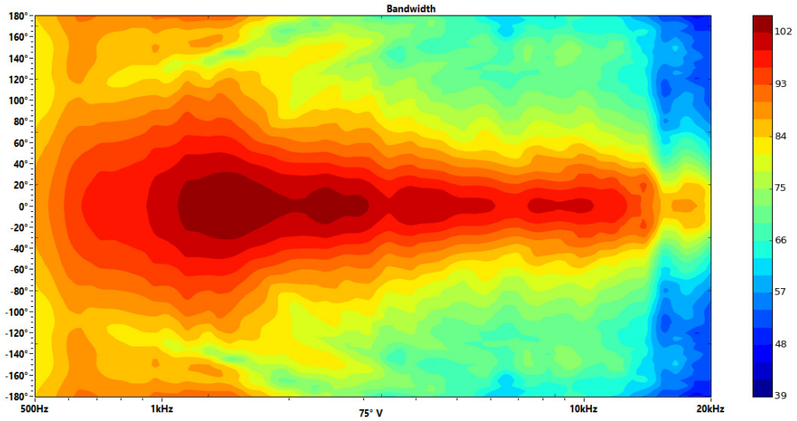



| Ang | Freq | Cov | Q | Di |
|---|---|---|---|---|
| 60° V | 507Hz | 318° | 1,55 | 1,90dB |
| 60° V | 1023Hz | 116° | 2,42 | 3,84dB |
| 60° V | 2054Hz | 84° | 3,47 | 5,41dB |
| 60° V | 4120Hz | 58° | 4,57 | 6,60dB |
| 60° V | 8248Hz | 54° | 4,93 | 6,93dB |
| 60° V | 18527Hz | 52° | 6,03 | 7,80dB |

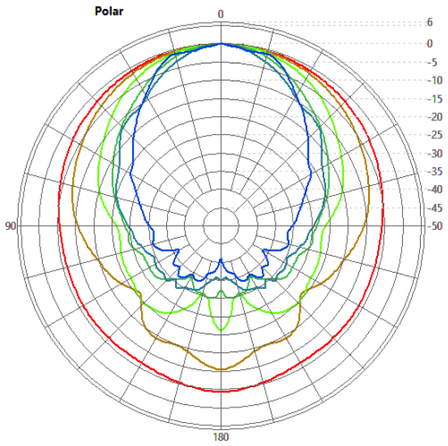


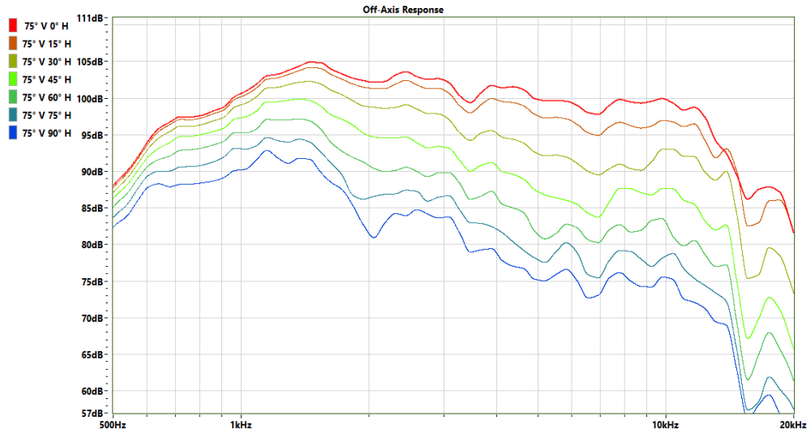




## 60° Vertical

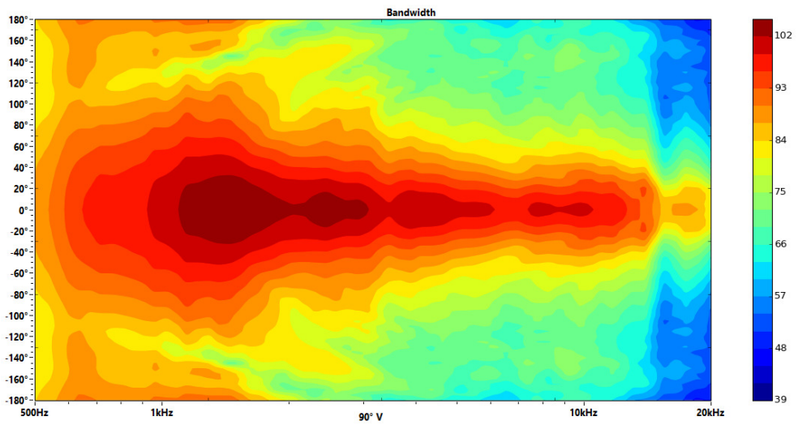



| Ang | Freq | Cov | Q | Di |
|---|---|---|---|---|
| 75° V | 507Hz | 188° | 1,54 | 1,88dB |
| 75° V | 1023Hz | 124° | 2,35 | 3,71dB |
| 75° V | 2054Hz | 80° | 3,50 | 5,44dB |
| 75° V | 4120Hz | 56° | 4,70 | 6,72dB |
| 75° V | 8248Hz | 46° | 5,33 | 7,27dB |
| 75° V | 18527Hz | 52° | 5,69 | 7,55dB |

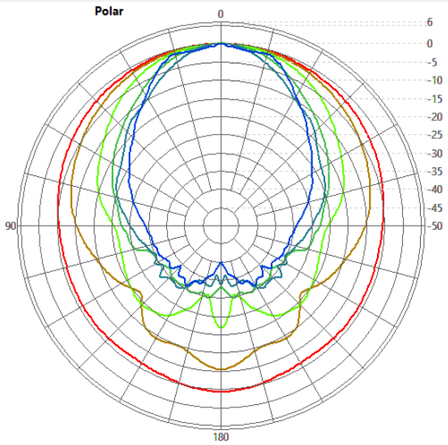


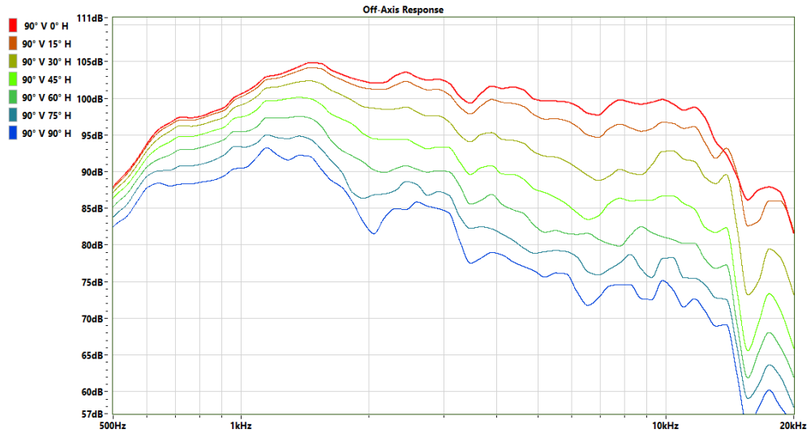




## 75° Vertical

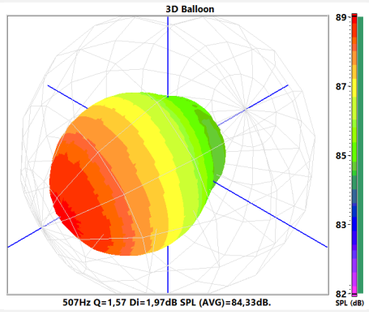


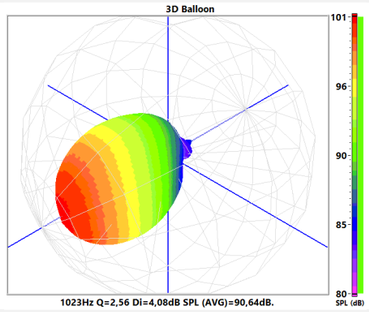

| Ang | Freq | Cov | Q | Di |
|---|---|---|---|---|
| 90° V | 507Hz | 198° | 1,52 | 1,82dB |
| 90° V | 1023Hz | 128° | 2,31 | 3,64dB |
| 90° V | 2054Hz | 80° | 3,47 | 5,40dB |
| 90° V | 4120Hz | 54° | 4,74 | 6,76dB |
| 90° V | 8248Hz | 42° | 5,57 | 7,46dB |
| 90° V | 18527Hz | 50° | 5,63 | 7,51dB |

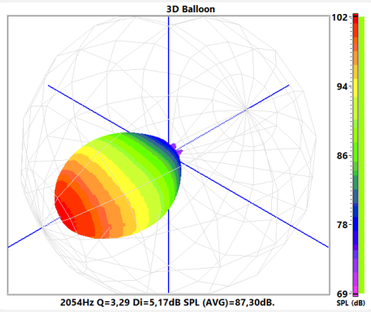


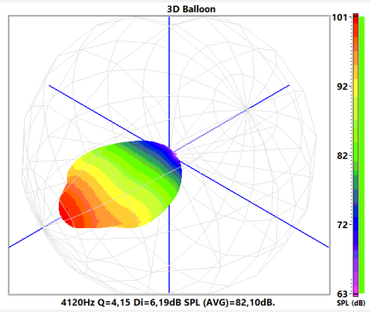



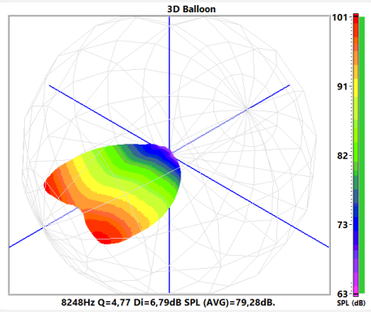

## 90° Vertical

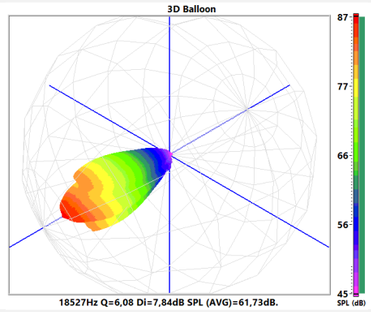


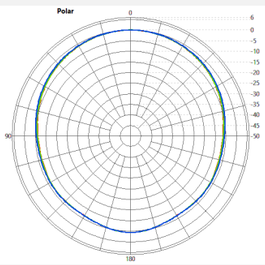



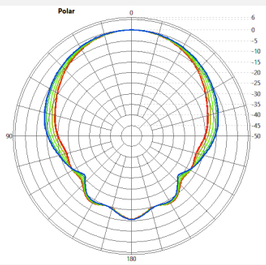




## 3D Balloon

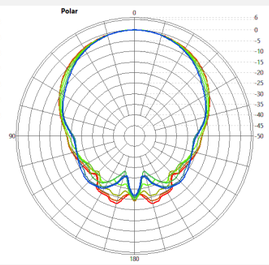
| Ang | Freq | Cov | Q | Di |
|---|---|---|---|---|
| 0° V | 507Hz | 316° | 1,59 | 2,00dB |
| 15° V | 507Hz | 318° | 1,59 | 2,02dB |
| 30° V | 507Hz | 172° | 1,58 | 1,99dB |
| 45° V | 507Hz | 178° | 1,56 | 1,94dB |
| 60° V | 507Hz | 318° | 1,55 | 1,90dB |
| 75° V | 507Hz | 188° | 1,54 | 1,88dB |
| 90° V | 507Hz | 198° | 1,52 | 1,82dB |



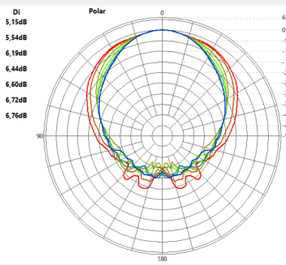

| Ang | Freq | Cov | Q | Di |
|---|---|---|---|---|
| 0° V | 1023Hz | 90° | 2,81 | 4,49dB |
| 15° V | 1023Hz | 92° | 2,76 | 4,42dB |
| 30° V | 1023Hz | 96° | 2,66 | 4,25dB |
| 45° V | 1023Hz | 106° | 2,53 | 4,04dB |
| 60° V | 1023Hz | 116° | 2,42 | 3,84dB |
| 75° V | 1023Hz | 124° | 2,35 | 3,71dB |
| 90° V | 1023Hz | 128° | 2,31 | 3,64dB |



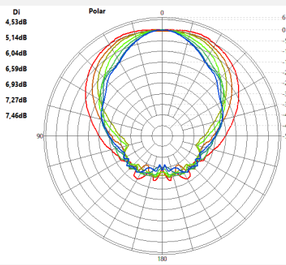

| Ang | Freq | Cov | Q | Di |
|---|---|---|---|---|
| 0° V | 2054Hz | 98° | 3,01 | 4,79dB |
| 15° V | 2054Hz | 98° | 3,05 | 4,85dB |
| 30° V | 2054Hz | 96° | 3,16 | 4,99dB |
| 45° V | 2054Hz | 90° | 3,33 | 5,23dB |
| 60° V | 2054Hz | 84° | 3,47 | 5,41dB |
| 75° V | 2054Hz | 80° | 3,50 | 5,44dB |
| 90° V | 2054Hz | 80° | 3,47 | 5,40dB |



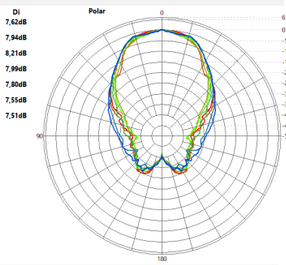

| Ang | Freq | Cov | Q | Di |
|---|---|---|---|---|
| 0° V | 4120Hz | 100° | 3,27 | 5,15dB |
| 15° V | 4120Hz | 90° | 3,58 | 5,54dB |
| 30° V | 4120Hz | 76° | 4,16 | 6,19dB |
| 45° V | 4120Hz | 66° | 4,41 | 6,44dB |
| 60° V | 4120Hz | 58° | 4,57 | 6,60dB |
| 75° V | 4120Hz | 56° | 4,70 | 6,72dB |
| 90° V | 4120Hz | 54° | 4,74 | 6,76dB |




| Ang | Freq | Cov | Q | Di |
|---|---|---|---|---|
| 0° V | 8248Hz | 108° | 2,84 | 4,53dB |
| 15° V | 8248Hz | 96° | 3,27 | 5,14dB |
| 30° V | 8248Hz | 80° | 4,01 | 6,04dB |
| 45° V | 8248Hz | 66° | 4,56 | 6,59dB |
| 60° V | 8248Hz | 54° | 4,93 | 6,93dB |
| 75° V | 8248Hz | 46° | 5,33 | 7,27dB |
| 90° V | 8248Hz | 42° | 5,57 | 7,46dB |




| Ang | Freq | Cov | Q | Di |
|---|---|---|---|---|
| 0° V | 18527Hz | 52° | 5,79 | 7,62dB |
| 15° V | 18527Hz | 46° | 6,22 | 7,94dB |
| 30° V | 18527Hz | 48° | 6,63 | 8,21dB |
| 45° V | 18527Hz | 52° | 6,30 | 7,99dB |
| 60° V | 18527Hz | 52° | 6,03 | 7,80dB |
| 75° V | 18527Hz | 52° | 5,69 | 7,55dB |
| 90° V | 18527Hz | 50° | 5,63 | 7,51dB |

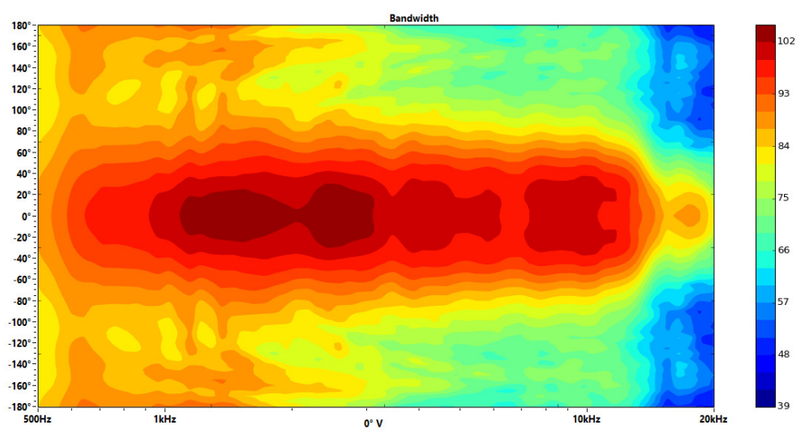



## Polar Comparativa Vertical

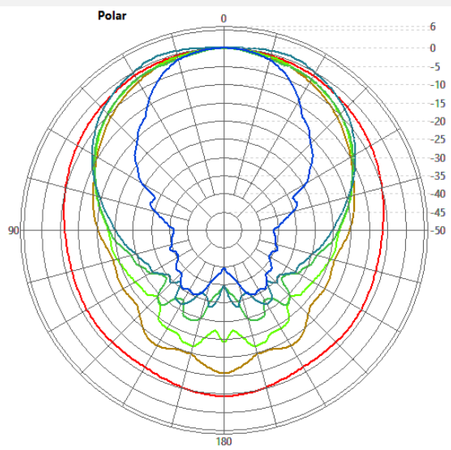


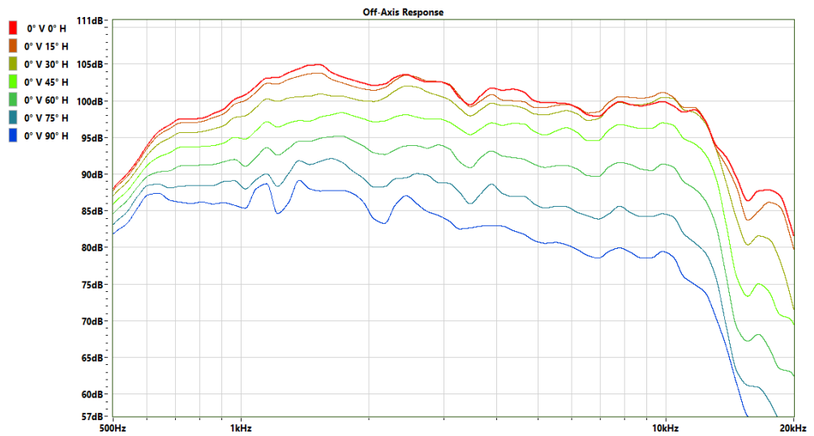



**Application Note AN-0002.**
Off-axis response analysis, Driver Oversound DTi-4630, with Ludovico LC-01 horn.
https://www.ludovico.com.br/264/cornetas/corneta-lc-01-tipo-yamaha-345cm-x-195-cm
http://oversound.com.br/novo/index.php?route=product/product&product_id=91
**Conditions:**
Pink noise, 2.83V rms, 1m, automated measurement in an anechoic chamber at:
**OVERSOUND SPEAKERS AND ELECTRO-ACOUSTIC INDUSTRY.**
Horizontal: Quadrant 1 and 2, symmetrically mirrored for quadrants 3 and 4.
Vertical: Quadrant 1, symmetrically mirrored for quadrants 2, 3 and 4.
All original dimensional characteristics of and between components were maintained, no modifications were made to improve performance.
**Developer:**
Eng. Francisco Monteiro, CREA: 260400014-8.
3/11/2020.

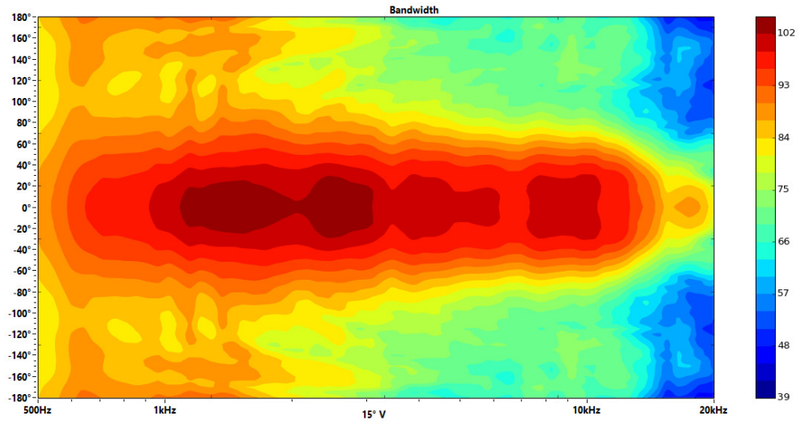



| Ang | Freq | Cov | Q | Di |
|---|---|---|---|---|
| 0° V | 507Hz | 316° | 1,59 | 2,00dB |
| 0° V | 1023Hz | 90° | 2,81 | 4,49dB |
| 0° V | 2054Hz | 98° | 3,01 | 4,79dB |
| 0° V | 4120Hz | 100° | 3,27 | 5,15dB |
| 0° V | 8248Hz | 108° | 2,84 | 4,53dB |
| 0° V | 18527Hz | 52° | 5,79 | 7,62dB |

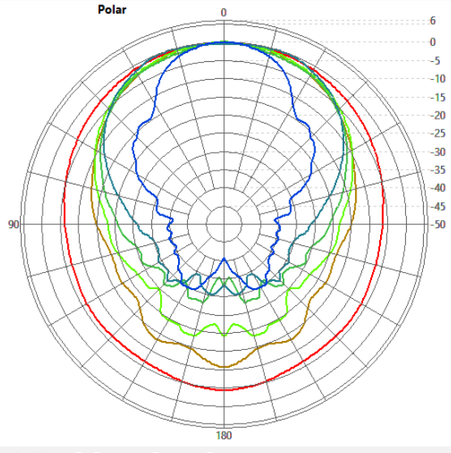


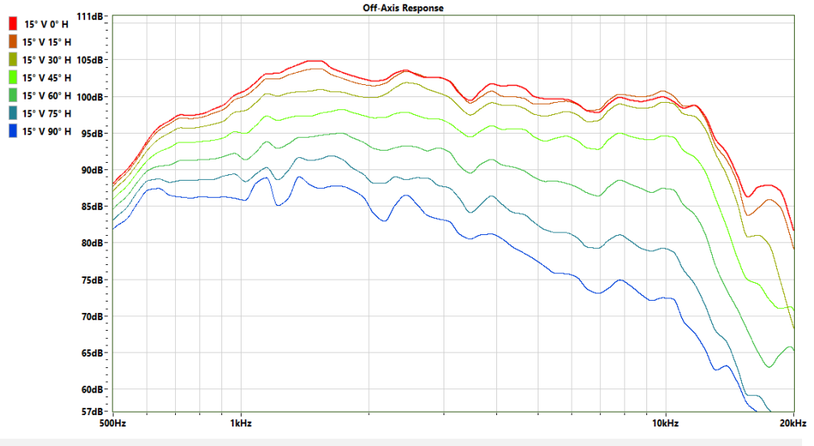




## 0° Vertical

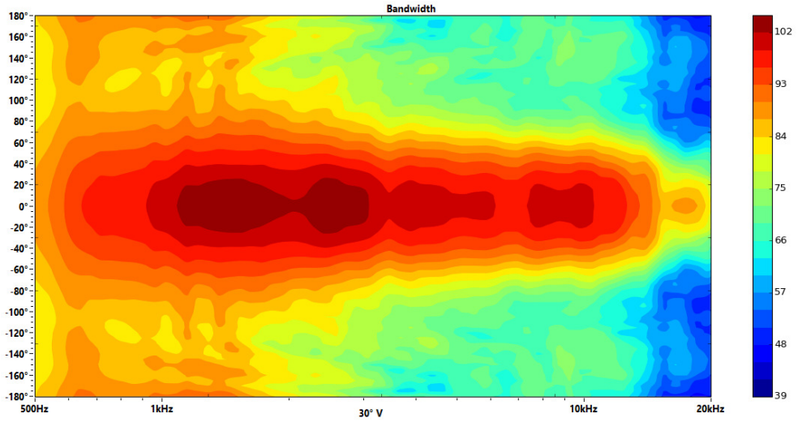



| Ang | Freq | Cov | Q | Di |
|---|---|---|---|---|
| 15° V | 507Hz | 318° | 1,59 | 2,02dB |
| 15° V | 1023Hz | 92° | 2,76 | 4,42dB |
| 15° V | 2054Hz | 98° | 3,05 | 4,85dB |
| 15° V | 4120Hz | 90° | 3,58 | 5,54dB |
| 15° V | 8248Hz | 96° | 3,27 | 5,14dB |
| 15° V | 18527Hz | 46° | 6,22 | 7,94dB |

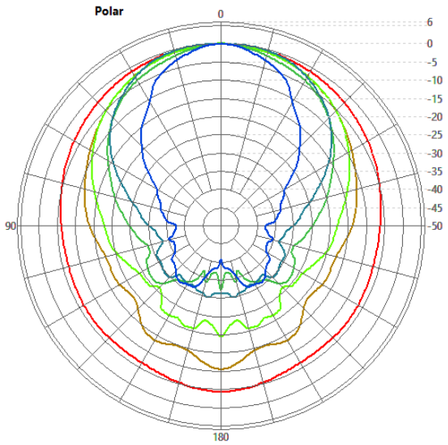


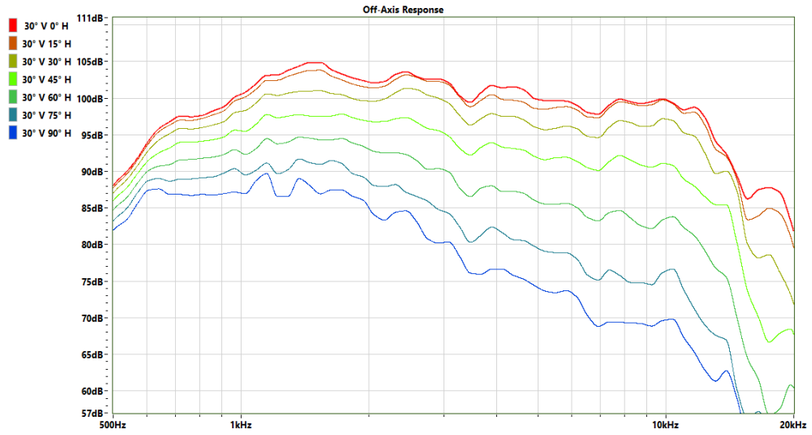




## 15° Vertical

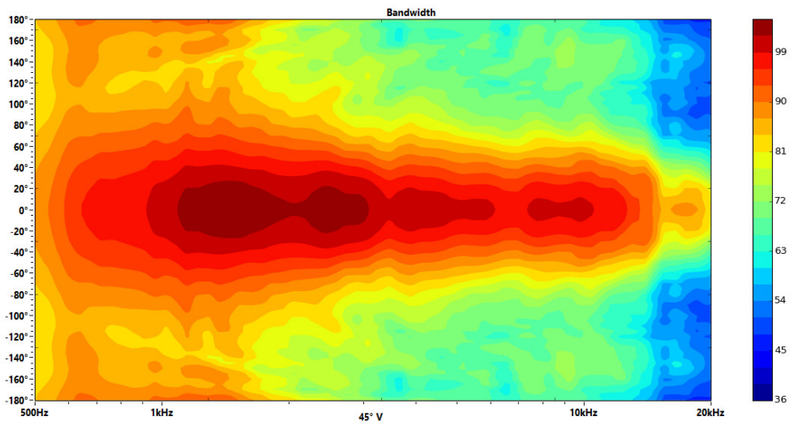



| Ang | Freq | Cov | Q | Di |
|---|---|---|---|---|
| 30° V | 507Hz | 172° | 1,58 | 1,99dB |
| 30° V | 1023Hz | 96° | 2,66 | 4,25dB |
| 30° V | 2054Hz | 96° | 3,16 | 4,99dB |
| 30° V | 4120Hz | 76° | 4,16 | 6,19dB |
| 30° V | 8248Hz | 80° | 4,01 | 6,04dB |
| 30° V | 18527Hz | 48° | 6,63 | 8,21dB |

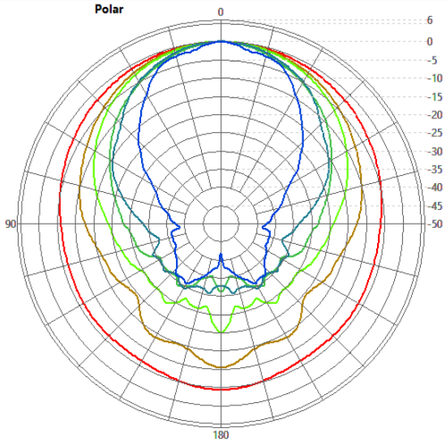


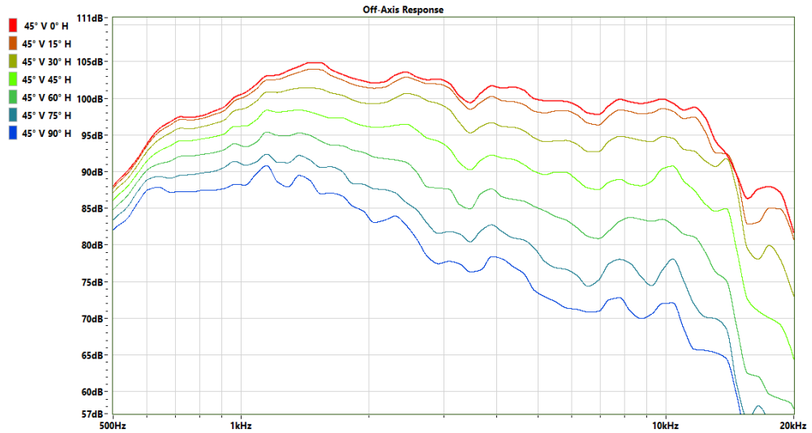




## 30° Vertical

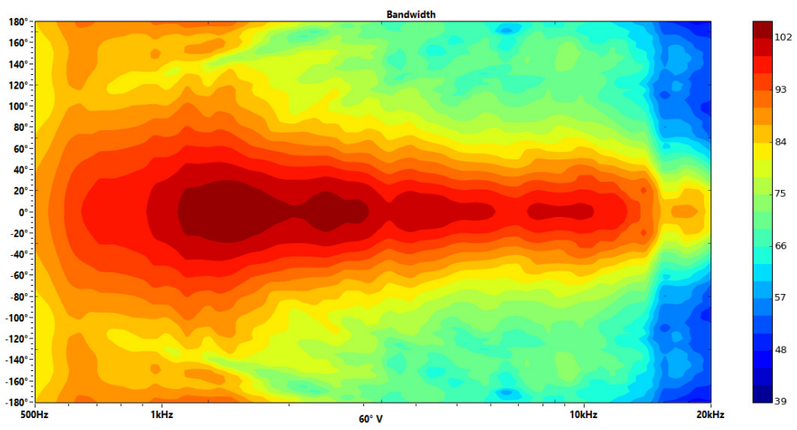



| Ang | Freq | Cov | Q | Di |
|---|---|---|---|---|
| 45° V | 507Hz | 178° | 1,56 | 1,94dB |
| 45° V | 1023Hz | 106° | 2,53 | 4,04dB |
| 45° V | 2054Hz | 90° | 3,33 | 5,23dB |
| 45° V | 4120Hz | 66° | 4,41 | 6,44dB |
| 45° V | 8248Hz | 66° | 4,56 | 6,59dB |
| 45° V | 18527Hz | 52° | 6,30 | 7,99dB |

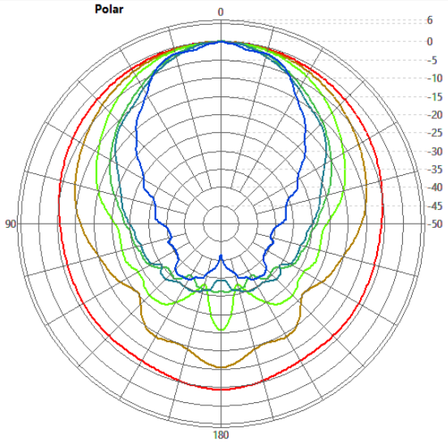


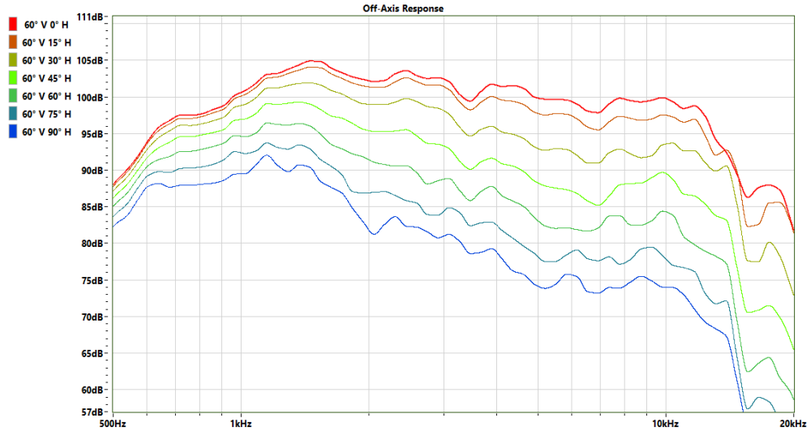




## 45° Vertical

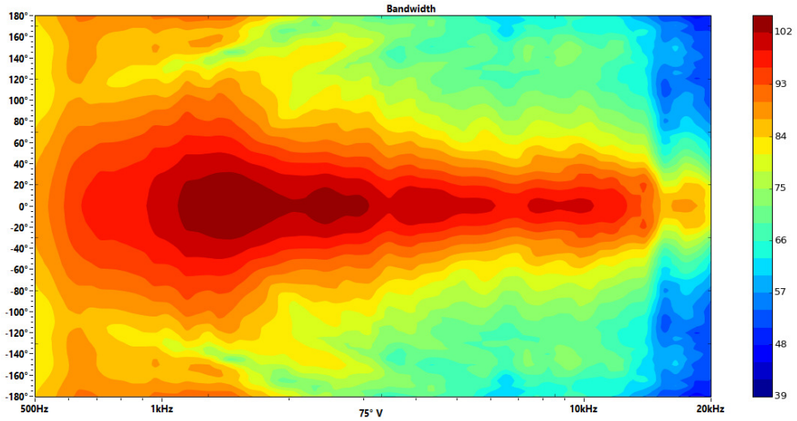



| Ang | Freq | Cov | Q | Di |
|---|---|---|---|---|
| 60° V | 507Hz | 318° | 1,55 | 1,90dB |
| 60° V | 1023Hz | 116° | 2,42 | 3,84dB |
| 60° V | 2054Hz | 84° | 3,47 | 5,41dB |
| 60° V | 4120Hz | 58° | 4,57 | 6,60dB |
| 60° V | 8248Hz | 54° | 4,93 | 6,93dB |
| 60° V | 18527Hz | 52° | 6,03 | 7,80dB |

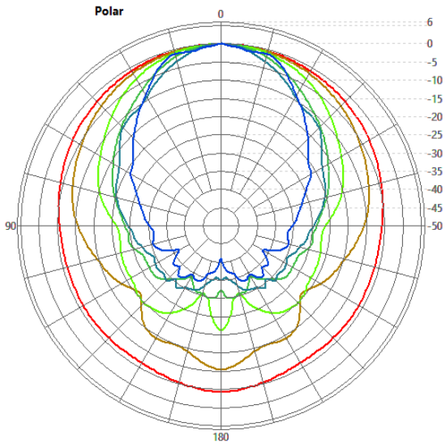


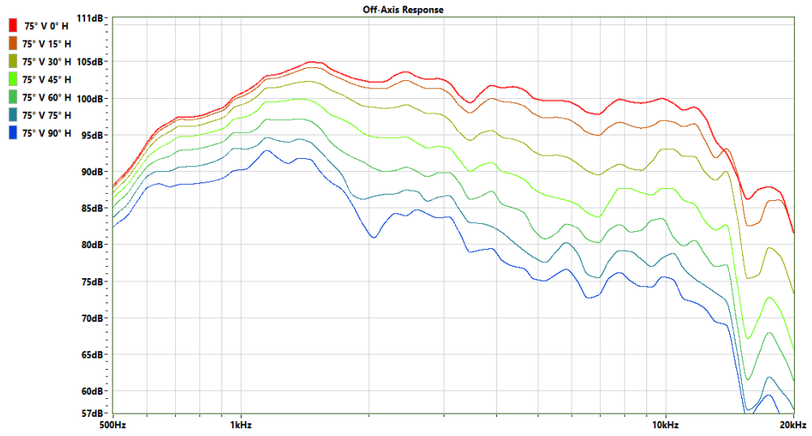




## 60° Vertical

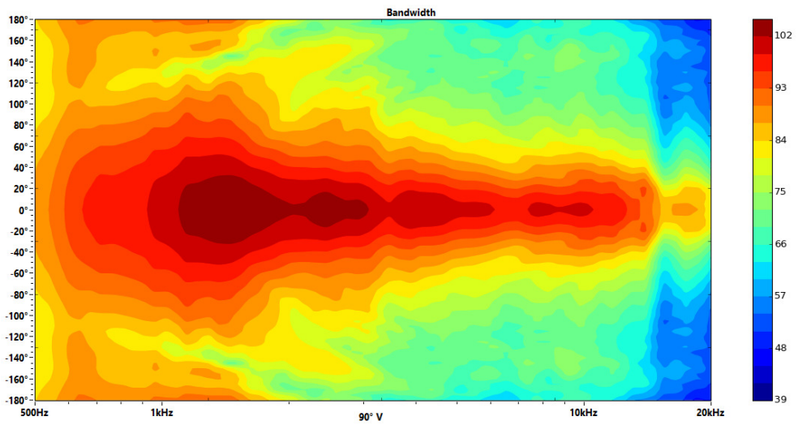



| Ang | Freq | Cov | Q | Di |
|---|---|---|---|---|
| 75° V | 507Hz | 188° | 1,54 | 1,88dB |
| 75° V | 1023Hz | 124° | 2,35 | 3,71dB |
| 75° V | 2054Hz | 80° | 3,50 | 5,44dB |
| 75° V | 4120Hz | 56° | 4,70 | 6,72dB |
| 75° V | 8248Hz | 46° | 5,33 | 7,27dB |
| 75° V | 18527Hz | 52° | 5,69 | 7,55dB |

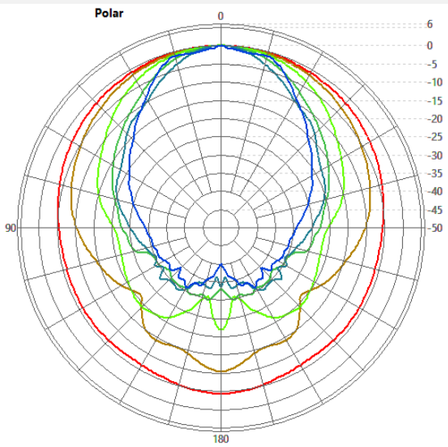


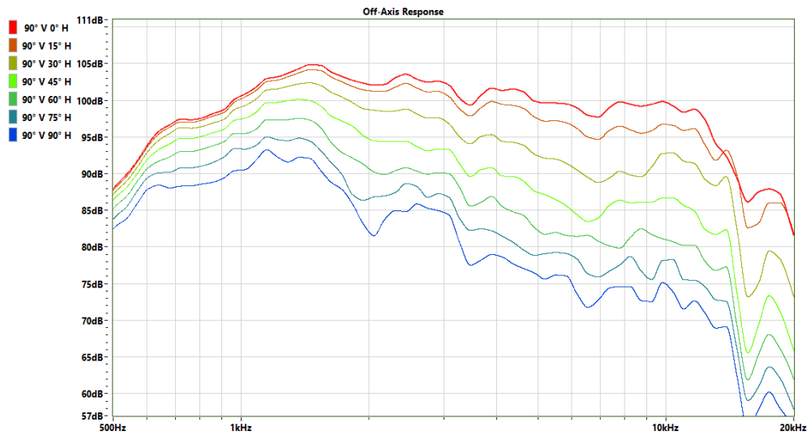




## 75° Vertical

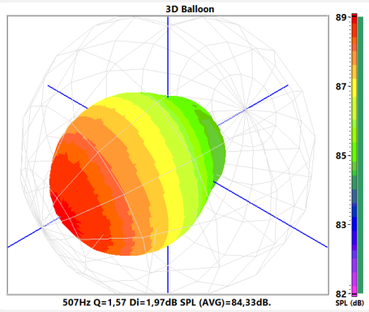



| Ang | Freq | Cov | Q | Di |
|---|---|---|---|---|
| 90° V | 507Hz | 198° | 1,52 | 1,82dB |
| 90° V | 1023Hz | 128° | 2,31 | 3,64dB |
| 90° V | 2054Hz | 80° | 3,47 | 5,40dB |
| 90° V | 4120Hz | 54° | 4,74 | 6,76dB |
| 90° V | 8248Hz | 42° | 5,57 | 7,46dB |
| 90° V | 18527Hz | 50° | 5,63 | 7,51dB |

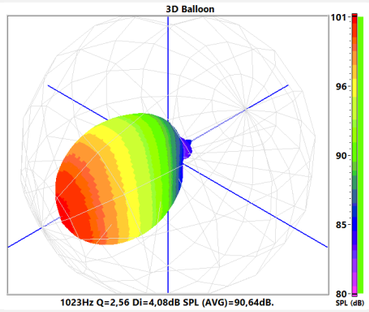


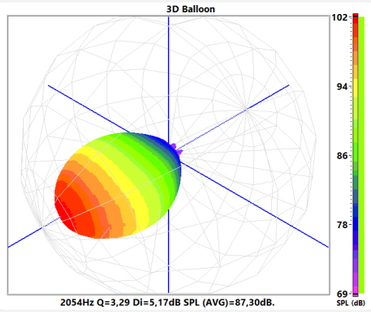

## 90° Vertical



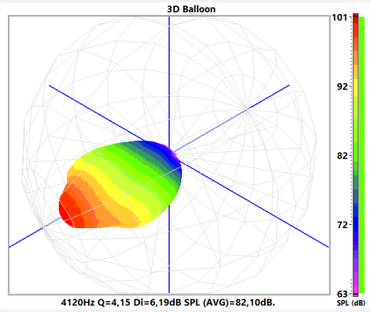

507Hz Q=1,57 Di=1,97dB SPL (AVG)=84,33dB.



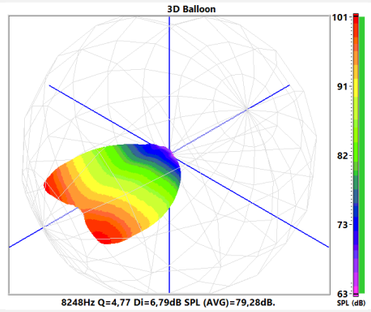

1023Hz Q=2,56 Di=4,08dB SPL (AVG)=90,64dB.



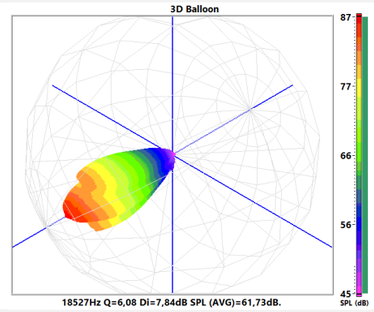

2054Hz Q=3,29 Di=5,17dB SPL (AVG)=87,30dB.




4120Hz Q=4,15 Di=6,19dB SPL (AVG)=82,10dB.



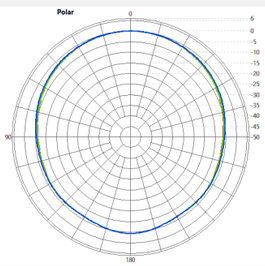

8248Hz Q=4,77 Di=6,79dB SPL (AVG)=79,28dB.



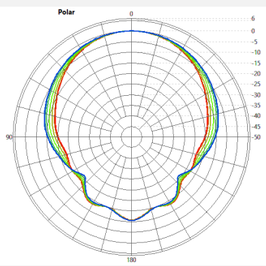

18527Hz Q=6,08 Di=7,84dB SPL (AVG)=61,73dB.

## 3D Balloon

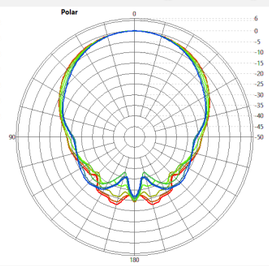
| Ang | Freq | Cov | Q | Di |
|---|---|---|---|---|
| 0° V | 507Hz | 316° | 1,59 | 2,00dB |
| 15° V | 507Hz | 318° | 1,59 | 2,02dB |
| 30° V | 507Hz | 172° | 1,58 | 1,99dB |
| 45° V | 507Hz | 178° | 1,56 | 1,94dB |
| 60° V | 507Hz | 318° | 1,55 | 1,90dB |
| 75° V | 507Hz | 188° | 1,54 | 1,88dB |
| 90° V | 507Hz | 198° | 1,52 | 1,82dB |



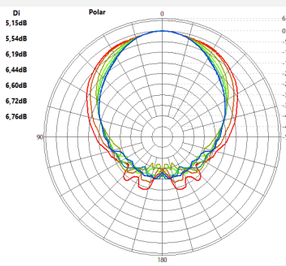

| Ang | Freq | Cov | Q | Di |
|---|---|---|---|---|
| 0° V | 1023Hz | 90° | 2,81 | 4,49dB |
| 15° V | 1023Hz | 92° | 2,76 | 4,42dB |
| 30° V | 1023Hz | 96° | 2,66 | 4,25dB |
| 45° V | 1023Hz | 106° | 2,53 | 4,04dB |
| 60° V | 1023Hz | 116° | 2,42 | 3,84dB |
| 75° V | 1023Hz | 124° | 2,35 | 3,71dB |
| 90° V | 1023Hz | 128° | 2,31 | 3,64dB |



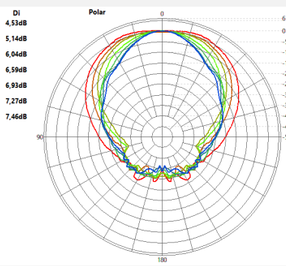

| Ang | Freq | Cov | Q | Di |
|---|---|---|---|---|
| 0° V | 2054Hz | 98° | 3,01 | 4,79dB |
| 15° V | 2054Hz | 98° | 3,05 | 4,85dB |
| 30° V | 2054Hz | 96° | 3,16 | 4,99dB |
| 45° V | 2054Hz | 90° | 3,33 | 5,23dB |
| 60° V | 2054Hz | 84° | 3,47 | 5,41dB |
| 75° V | 2054Hz | 80° | 3,50 | 5,44dB |
| 90° V | 2054Hz | 80° | 3,47 | 5,40dB |



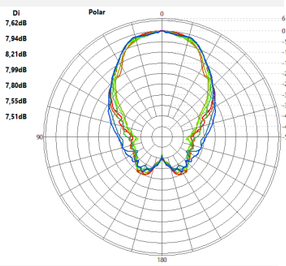

| Ang | Freq | Cov | Q | Di |
|---|---|---|---|---|
| 0° V | 4120Hz | 100° | 3,27 | 5,15dB |
| 15° V | 4120Hz | 90° | 3,58 | 5,54dB |
| 30° V | 4120Hz | 76° | 4,16 | 6,19dB |
| 45° V | 4120Hz | 66° | 4,41 | 6,44dB |
| 60° V | 4120Hz | 58° | 4,57 | 6,60dB |
| 75° V | 4120Hz | 56° | 4,70 | 6,72dB |
| 90° V | 4120Hz | 54° | 4,74 | 6,76dB |




| Ang | Freq | Cov | Q | Di |
|---|---|---|---|---|
| 0° V | 8248Hz | 108° | 2,84 | 4,53dB |
| 15° V | 8248Hz | 96° | 3,27 | 5,14dB |
| 30° V | 8248Hz | 80° | 4,01 | 6,04dB |
| 45° V | 8248Hz | 66° | 4,56 | 6,59dB |
| 60° V | 8248Hz | 54° | 4,93 | 6,93dB |
| 75° V | 8248Hz | 46° | 5,33 | 7,27dB |
| 90° V | 8248Hz | 42° | 5,57 | 7,46dB |




| Ang | Freq | Cov | Q | Di |
|---|---|---|---|---|
| 0° V | 18527Hz | 52° | 5,79 | 7,62dB |
| 15° V | 18527Hz | 46° | 6,22 | 7,94dB |
| 30° V | 18527Hz | 48° | 6,63 | 8,21dB |
| 45° V | 18527Hz | 52° | 6,30 | 7,99dB |
| 60° V | 18527Hz | 52° | 6,03 | 7,80dB |
| 75° V | 18527Hz | 52° | 5,69 | 7,55dB |
| 90° V | 18527Hz | 50° | 5,63 | 7,51dB |




## Polar Vertical Comparative