

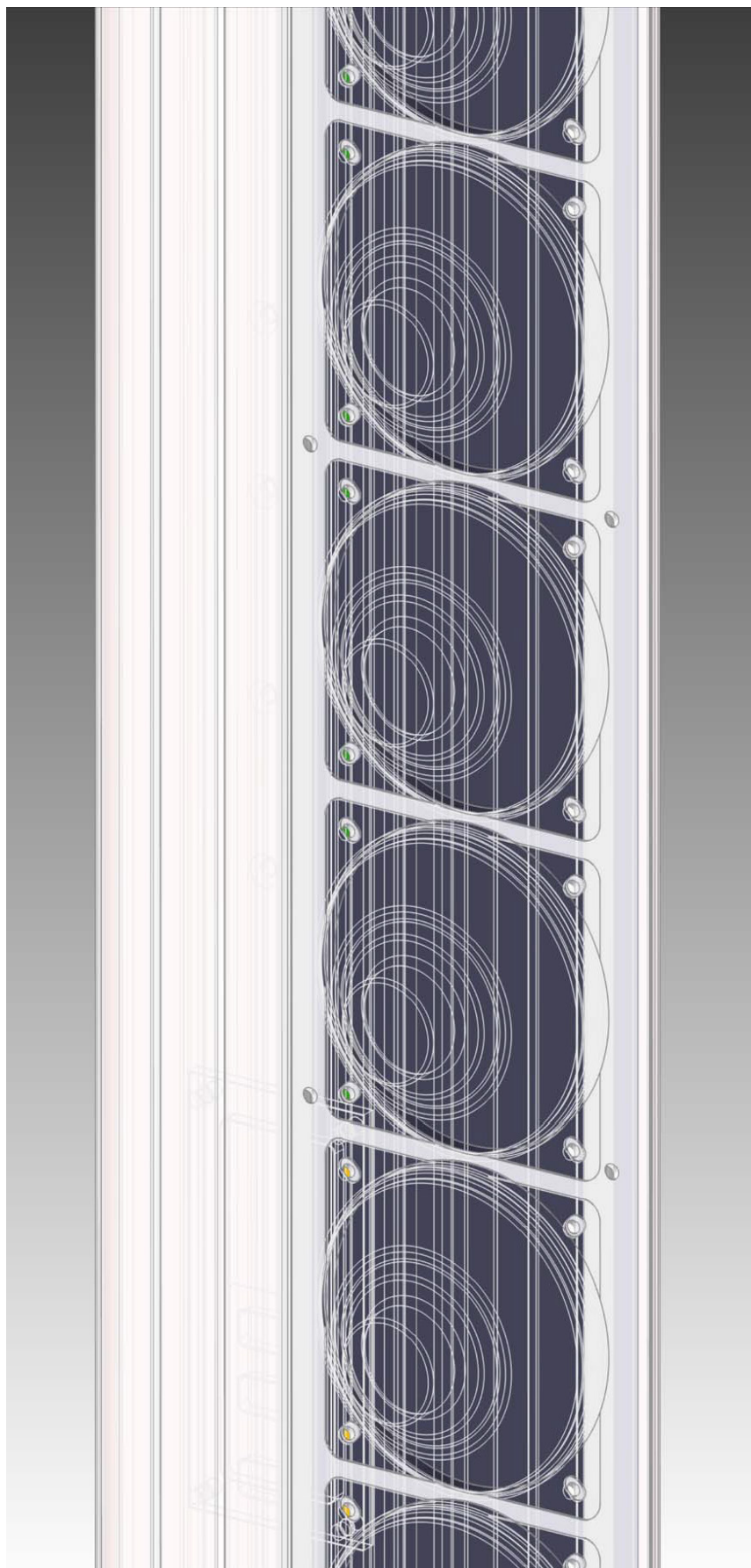
AVE Audio

Digitally Steerable Column Speaker
Ascolto



**A.V.E. GmbH
Audio Vertriebs-
Entwicklungsgesellschaft**

Germany



**Digitally
Steerable
Column
Speaker**

Ascolto

FF1670

Datasheet

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1.0 – Acoustic Specifications¹

Frequency Bandwidth²

80 Hz to 20 kHz (± 2 dB)

Peak SPL³

136 dB at 1 m,
108 dB at 30 m,
107 dB at 35 m

Coverage

Horizontal (fixed)	110° (-6 dB average 500 Hz to 8 kHz)
Vertical (adjustable)	Tilting Up/Down Angle: -60° to 60° in 0.1° intervals Opening Angle: 10° to 40° in 0.1° intervals
Typical Throw	30 m
Maximum Throw	35 m

Dynamic Range

102 dB (f=1 kHz, AES17 filter)

Transducers Type

Number of Transducers	16 Coaxial Loudspeakers
Diameter	4.0" Woofer + 1.0 Dome Tweeter
Magnets Material	Neodymium

2.0 – Electrical Specifications

Audio Input 1: Line 0 dBu

Input Level Nominal	0 dBu (2.19 Vpp)
Input Level Maximum	10 dBu (6.92 Vpp)
Type	Balanced
Impedance	20 k Ω at 1 kHz

Audio Input 2: 100 V (not available in Ascolto – Dante Series)

Input Level Nominal	39.2 dBu (200 Vpp)
Type	Balanced with Transformer
Impedance	20 k Ω at 1 kHz

Audio Input 3: Dante Audio Networking (available only in Ascolto – Dante Series)

Network	Dante Audio over IP
Transport Layer	Ethernet
Dante Latency	1, 2, or 5 ms (configurable using Dante Controller)
Support for AES67	Yes
Sample Rates	48 kHz
Bit Depths	24

Power Amplifiers

Type	PWM (Class D)
Output Power	16 × 140 W _{max}
Power Efficiency	92%
THD+N	0.025% at 10 W _{rms/channel} , 1 kHz
Input Signal	Balanced
Channel Protections	Thermal Shutdown (T _{junction} >150°C)

Output Short Circuit

DSP Module

DSP Processors	48 bit Fixed Point DSP
	76-bit Internal Accumulator
	145 MHz
Sample Rate	48 kHz
A/D Conversion	Resolution: 24 bit Linear PCM
	Conversion: 1-bit delta-sigma 512×
	Sample Rate: 48 kHz
	SNR: 112 dB (A-Weighted)
D/A Conversion	Resolution: 24 bit Linear PCM
	Conversion: upsampling 128×
	Sample Rate: 48 kHz
	SNR: 105 dB (A-Weighted)
Signal Processing	Beam Forming Filtering
	Input Equalization (10 Biquad)
	Volume (-120 dB _{FS} to 0 dB _{FS})
	Delay (0 m to 30 m, step 0.1 m)
	Dynamic Compressor 2-Bands
	Input Signal Activity Detector

Control Module

Processor	32 bit ARM-Cortex M3
	RISC
	50 MHz
AVE Network Interface	RS485, Half Duplex, 115200 baud/s

	120 Ω Parallel Termination (recommended for long distance)
Dante Network Interface	Ethernet, 100 Mbit/s (available only in Ascolto – Dante Series).
Processor Activities	DSP Firmware Booting DSP Status Monitoring PWM Power Amplifier Functions Controlling PWM Power Amplifier Status Monitoring Audio Input Channel Functions Controlling Dante-Chip Ultimo XXT Control (in Ascolto – Dante Series) Auto Stand-By Controlling RS485 Communication Infrared Communication Panel LEDs Controlling Firmware Updating

Connectors

Audio Inputs Connector	3-pole, 3.81 mm-pitch
Audio Inputs Pinout	pin 1: hot signal (+) pin 2: cold signal (-) pin 3: earth (chassis ground)
RS485 Network Connector	3-pole, 3.81 mm-pitch
RS485 Network Pinout	pin 1: data + pin 2: data - pin 3: digital ground
Dante Network Connector	8 pin Ethernet RJ45, female connector
Mains Connector	Plug with strain relief housing Wago cod. 770-213/035-000, 3-pole, 4,00 mm ² , ratings 250 VAC, 25 A, IEC/EN 60664-1, UL 1977

Switched-Mode Power Supply Unit

AC Range	90 VAC to 264 VAC (Universal Input)
Input Frequency	47 Hz to 67 Hz
Efficiency	91% typ at 230 VAC
Power Factor Correction	Yes
Input Current at Full Load	8.0 A typ at 115 VAC 4.0 A typ at 230 VAC
Power Consumption	Continuous: 720 VA Peak: 936 VA Idle: 24 VA Stand-By: 8 VA
Protection	Thermal Protection Short Circuit Protection Output Current Limiting Under-Voltage Lock Out
Main Fuse	1 × 6.3 A (slow blow)

3.0 – Electromagnetic compatibility

Electromagnetic Interference (EMI)

Complete System	EN 55032
Switched-Mode	EN 55024
Power Supply Unit	EN 60601-1-2 (Medical Devices)
	EN 61000-4-2, -4-3, -4-4, -4-5, -4-6, -4-8, -4-11

Electromagnetic Susceptibility (EMS)

Complete System	EN 61000-3-2, -3-3
	EN 61000-4-2, -4-3, -4-4, -4-5, -4-6, -4-11
Switched-Mode	EN 60601-1-2 (Medical Devices)
Power Supply Unit	EN 55011 class A, B
	EN 55032 class A, B
	EN 61000-3-2, class A, D
	EN 61000-3-3

4.0 – General Specifications

Mechanical

Height	2014 mm
Width	122 mm
Depth	120 mm
Weight	18.8 Kg (41.4 lbs)
Cabinet	Powder Coated Aluminum Extrusion
Colour	RAL 9010
Special colour	Available for an additional charge

Temperature Range

0°C to 40°C (32°F to 102°F)

Dust and Water Protection Class

IP 54

Electrical Protection Class

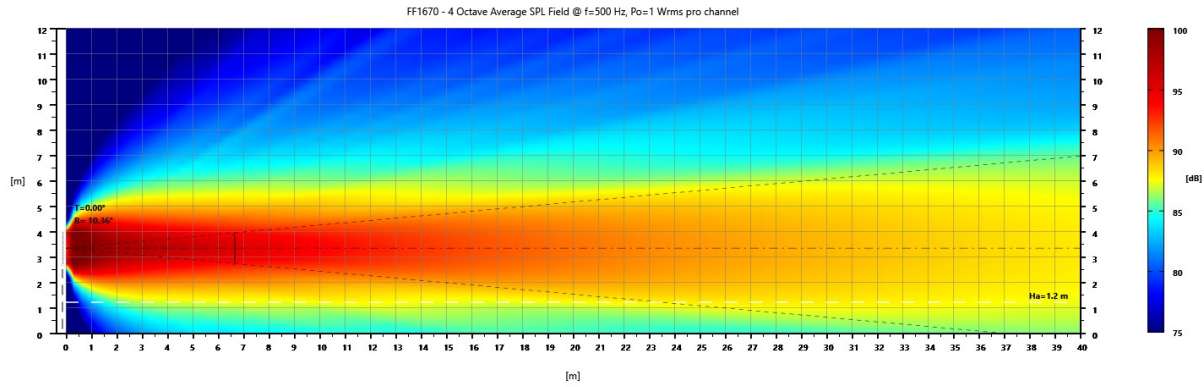
IEC 61140 - Class 1

Certificates

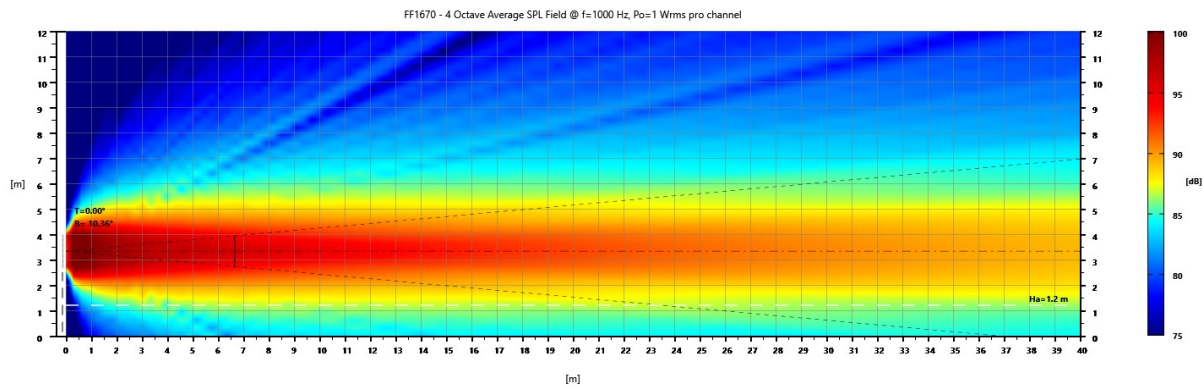
CE

- 1) Measured outdoors under semi-anechoic full-space conditions using typical filter and delay settings, unless noted.
- 2) Column speaker data is 1/3-octave averaged, measured on-axis at 1 meter with 1 W per channel. Specified bandwidth assumes full-space conditions.
- 3) Levels refer to pink noise (100 Hz–20 kHz, 6 dB crest), at limiter onset.

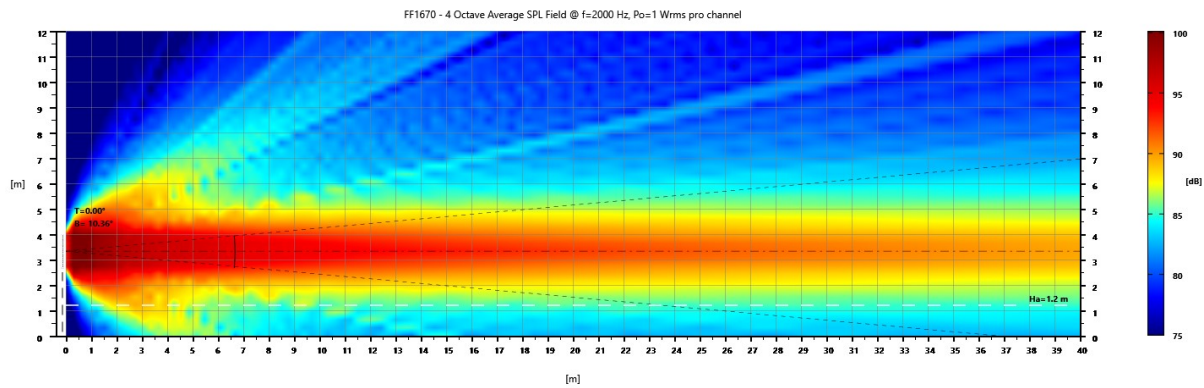
5.0 – Vertical Beam Pattern



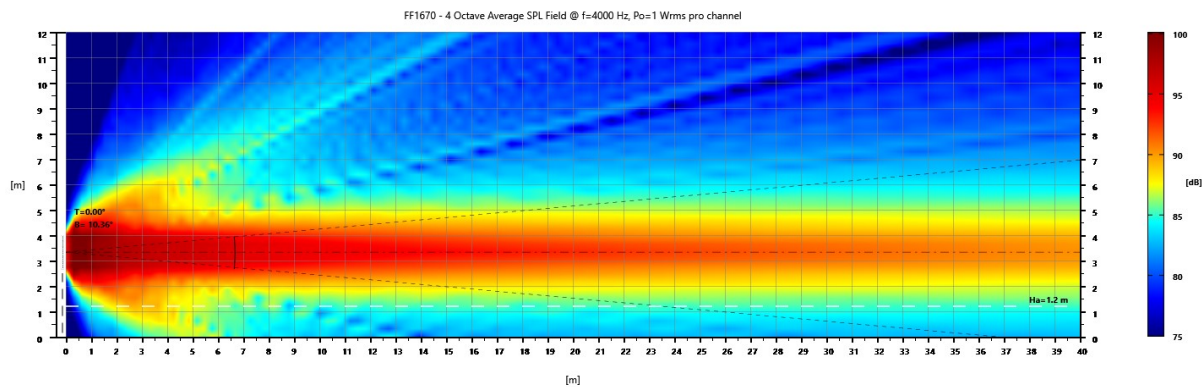
FF1624 – Vertical Beam Shape at 500 Hz, 4 Octaves average



FF1624 – Vertical Beam Shape at 1000 Hz, 4 Octaves average



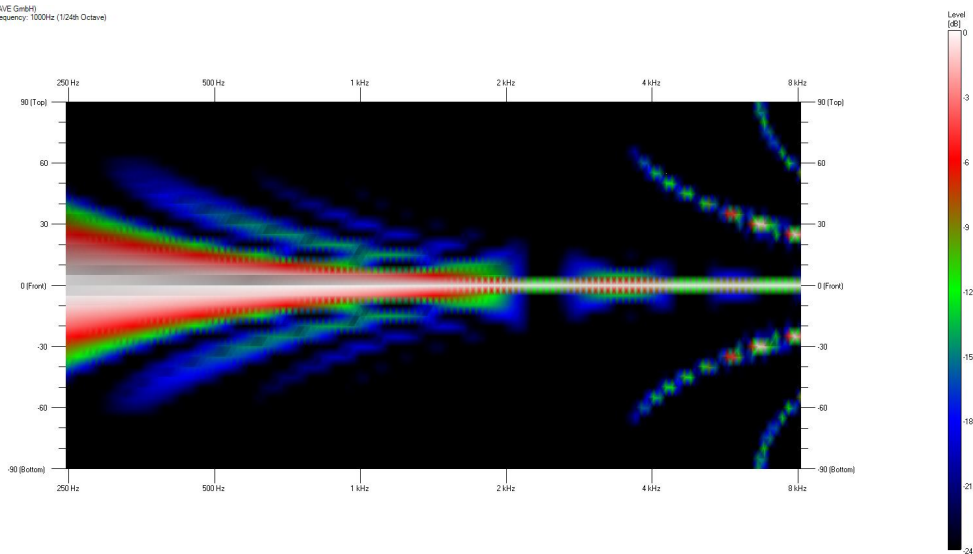
FF1624 – Vertical Beam Shape at 2000 Hz, 4 Octaves average



FF1624 – Vertical Beam Shape at 4000 Hz, 4 Octaves average

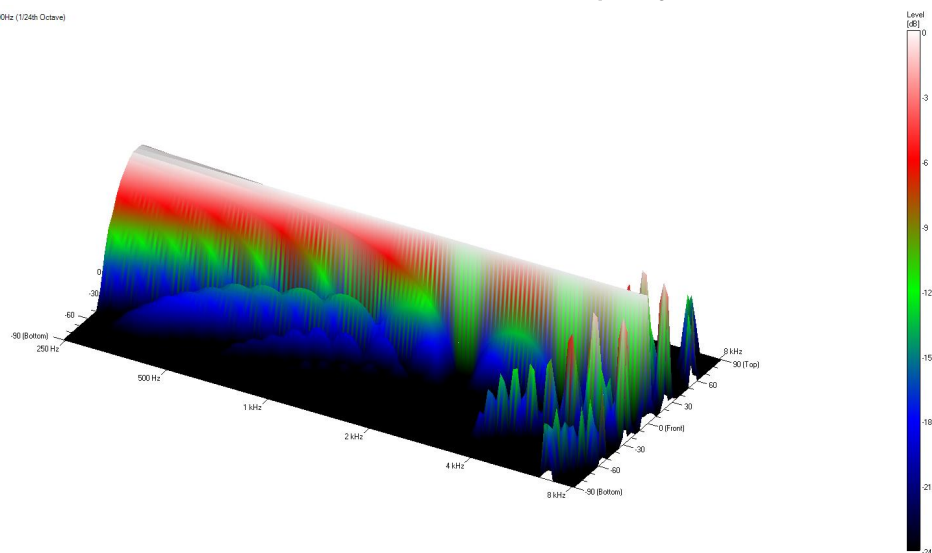
6.0 - Vertical Beam Width

Data Shown: FF1670 (A/E GmbH)
Display Parameters: Frequency: 1000Hz (1/24th Octave)

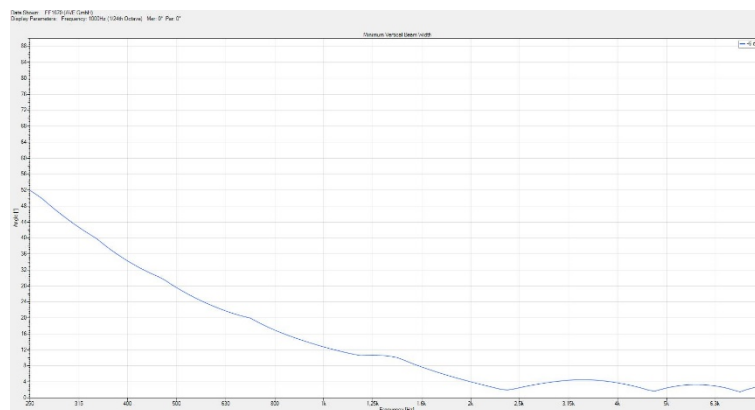


FF1624 – 2D Vertical Beam Width vs Frequency

Data Shown: FF1670 (A/E GmbH)
Display Parameters: Frequency: 1000Hz (1/24th Octave)



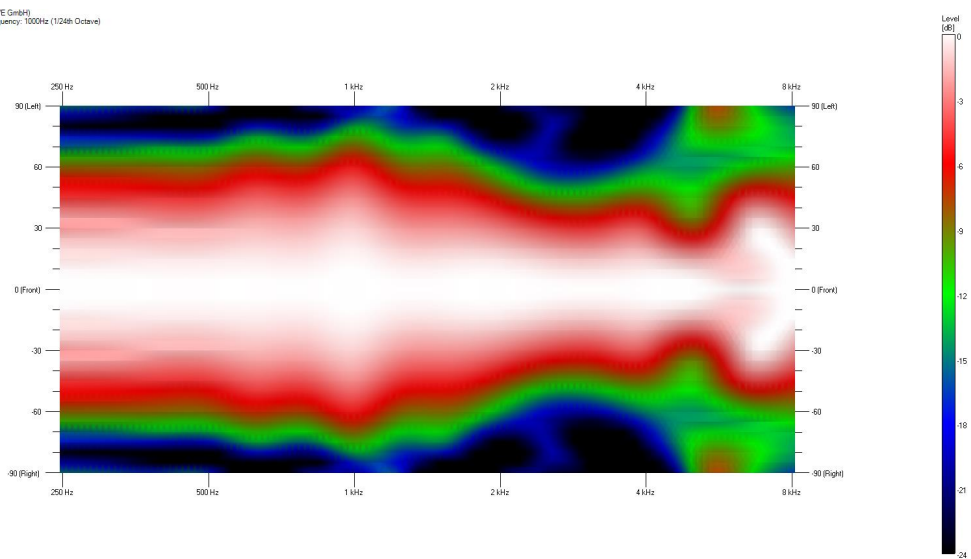
FF1624 – 3D Vertical Beam Width vs Frequency



FF1624 – Vertical Beam Width vs Frequency

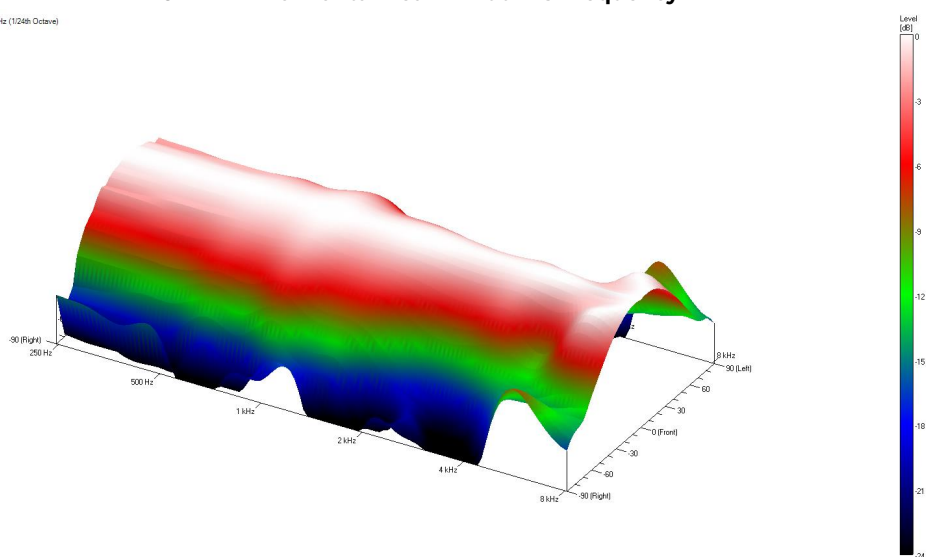
7.0 - Horizontal Beam Width

Data Shown: FF1670 (AVE GbH)
Display Parameters: Frequency: 1000Hz (1/24th Octave)

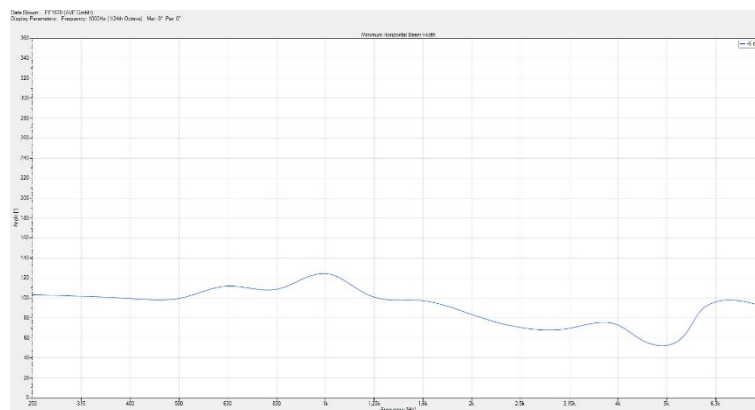


FF1624 – 2D Horizontal Beam Width vs Frequency

Data Shown: FF1670 (AVE GbH)
Display Parameters: Frequency: 1000Hz (1/24th Octave)



FF1624 – 3D Horizontal Beam Width vs Frequency



FF1624 – Horizontal Beam Width vs Frequency

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A.V.E. GmbH - Germany

Document Version 1.5 – November 2025

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