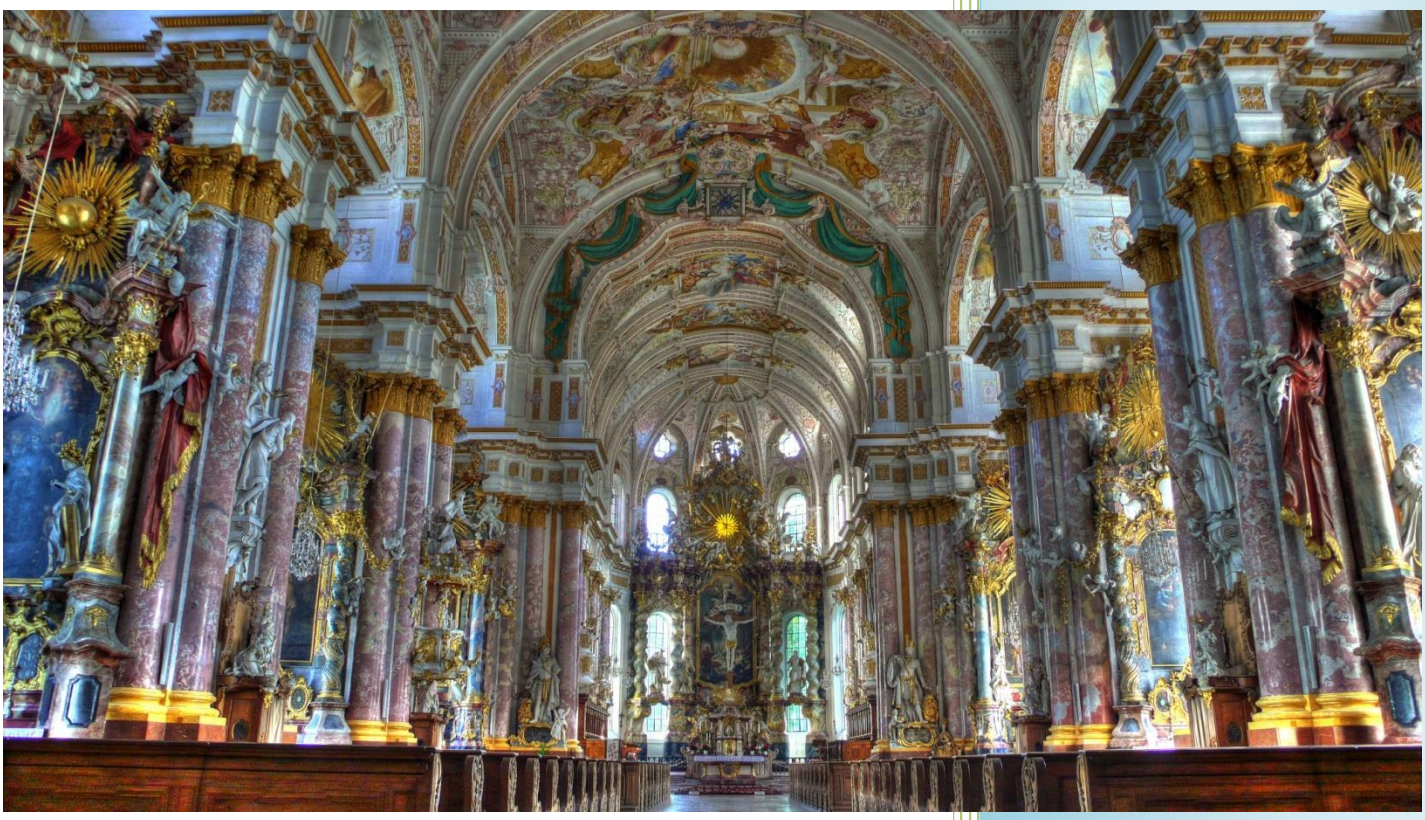
AVE Audio

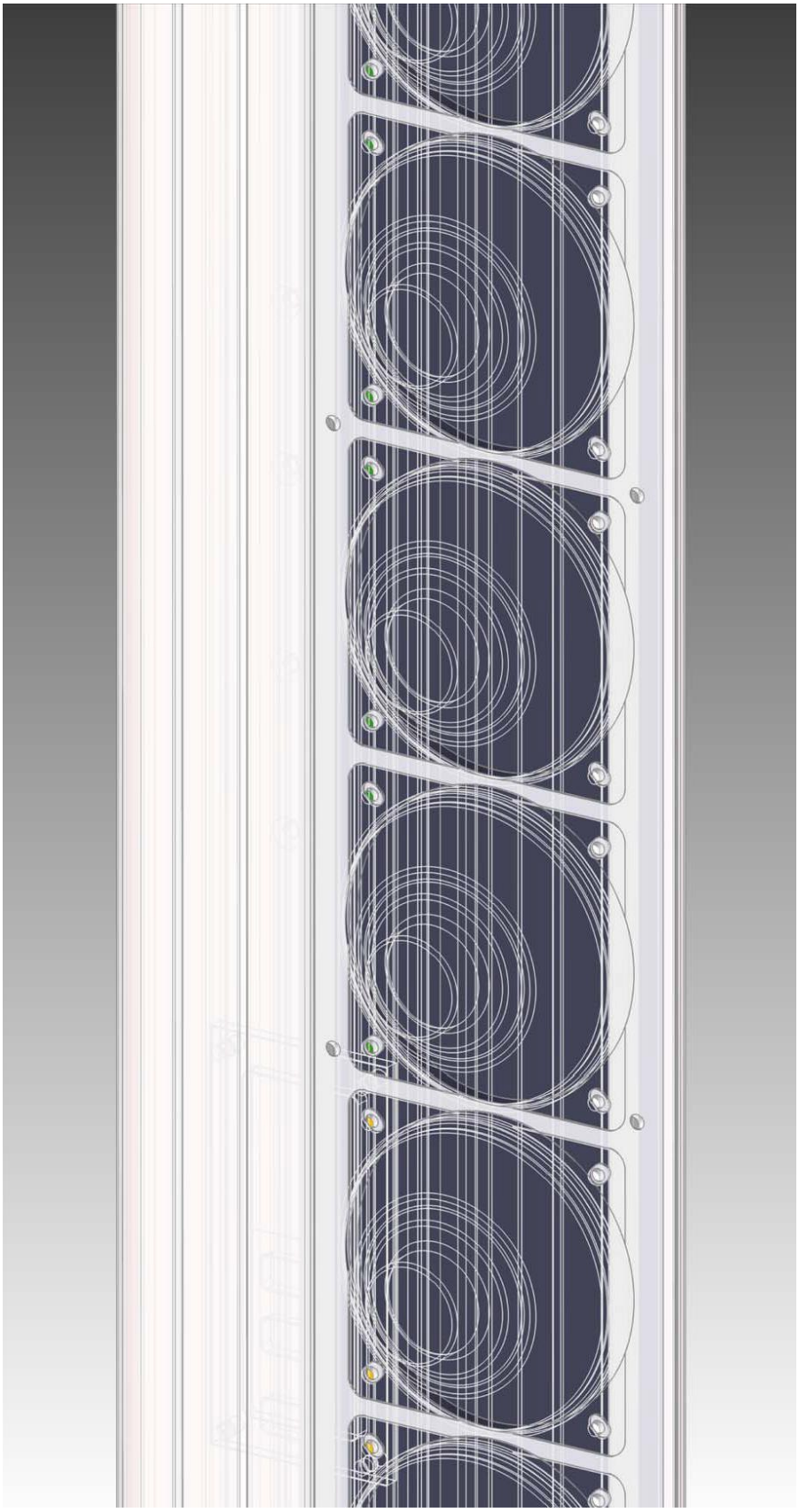
Digitally Steerable Column Speaker
Ascolto®



A.V.E. GmbH

Audio Vertriebs-Entwicklungsgesellschaft

Germany



Digitally Steerable Column Speaker *Ascolto*®

FF1670 Datasheet

Table of Contents

1.0 – Acoustic Specifications

Frequency Bandwidth	
	80 Hz to 20 kHz (±2 dB)

Maximal SPL	
	131 dB (A-Weighted at 1 m)

Nominal SPL	
	115 dB (A-Weighted at 1 m), 105 dB (A-Weighted at 10 m), 102 dB (A-Weighted at 20 m), 100 dB (A-Weighted at 30 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	16 Coaxial Loudspeakers
Diameter	4.0'' Woofer + 1.0 Dome Tweeter
Magnets	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 kΩ 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 kΩ 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 × 70 W_{rms}
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
Setup Network Interface	RS485, Half Duplex, 115200 baud/s 120 Ω Parallel Termination (recommended for long distance)

	This network interface is used by AVE Line Array User Contol software to manage beam setup and other audio features.
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	Socket Wago cod. 770-103 with strain relief housing, 3-pole, 4,00 mm², ratings 250 VAC, 25 A, IEC/EN 60664-1, UL 1977

PSU Module	
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)
Electromagnetic compatibility	EN 55022, class B, FCC part 15, level B
(EMC), Emissions	IEC/EN 61000-3-2 class B

3.0 – 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

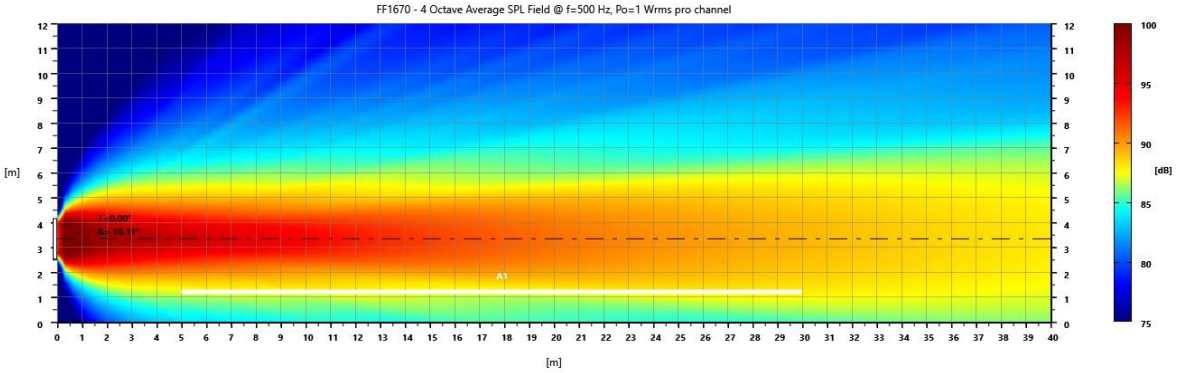
Temperature Range
0°C to 40°C (32°F to 102°F)

Protection Class
IP 54

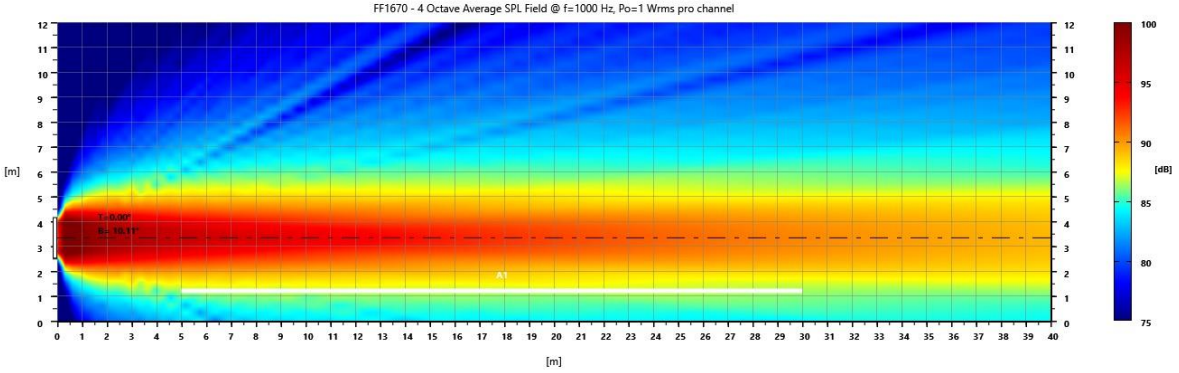
Certificates
CE

1) Rated power measured with pink noise signal, 6 dB crest factor.
2) Polare response: -6 dB average 500 Hz to 8 kHz.

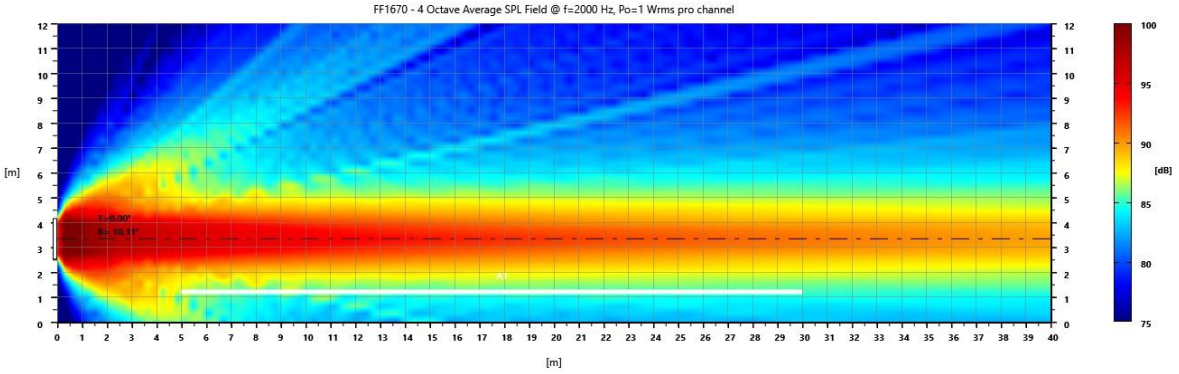
4.0 – Vertical Beam Pattern



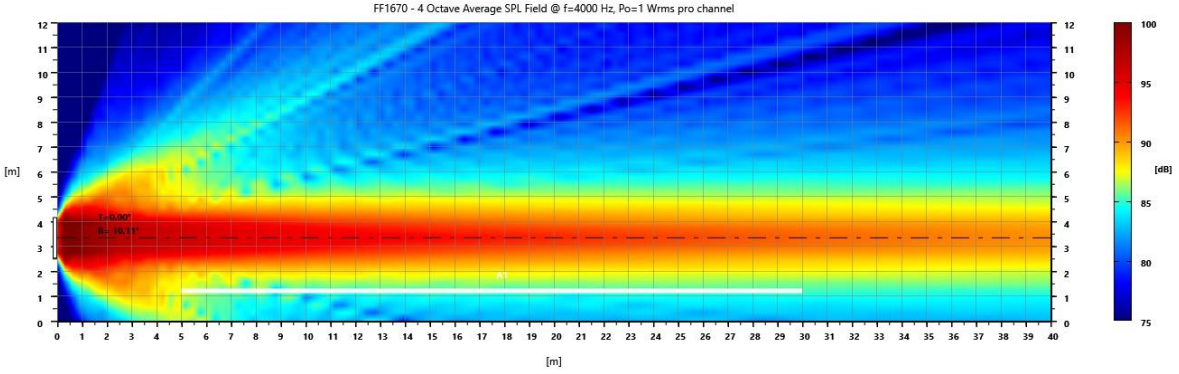
FF1670 – Vertical Beam Shape at 500 Hz, 4 Octaves average



FF1670 – Vertical Beam Shape at 1000 Hz, 4 Octaves average

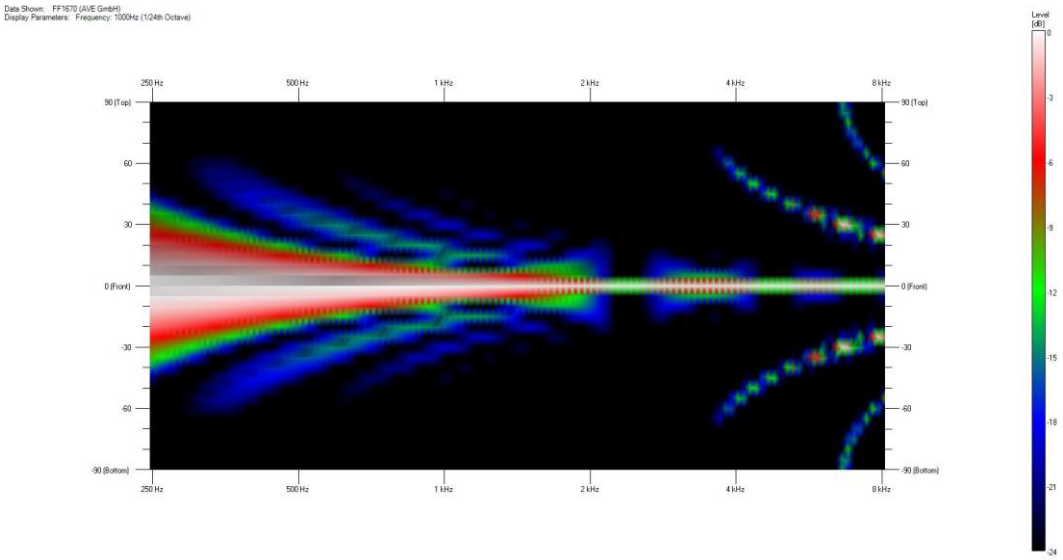


FF1670 – Vertical Beam Shape at 2000 Hz, 4 Octaves average

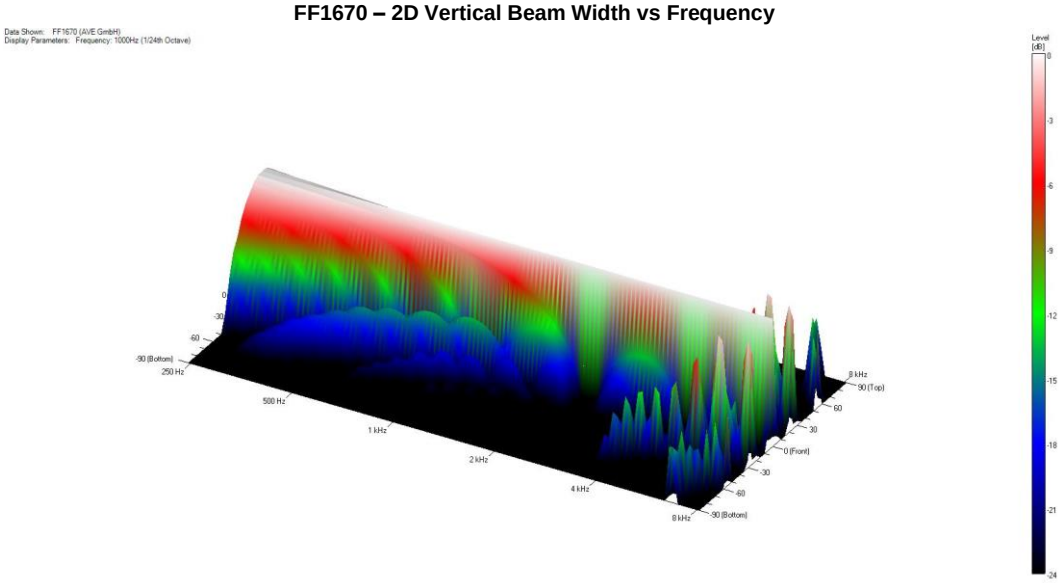


FF1670 – Vertical Beam Shape at 4000 Hz, 4 Octaves average

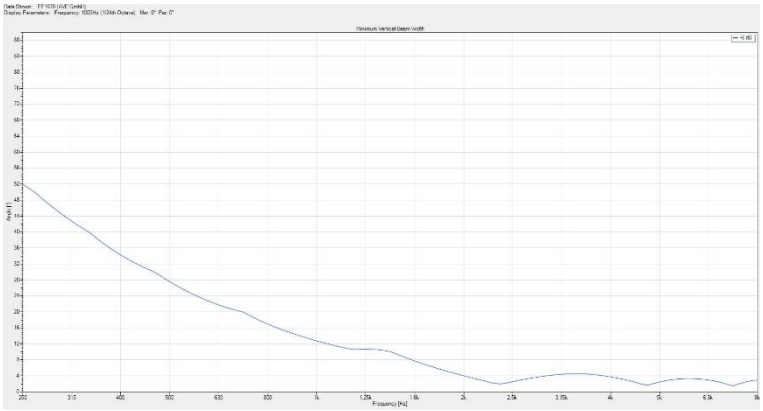
5.0 - Vertical Beam Width



FF1670 – 2D Vertical Beam Width vs Frequency

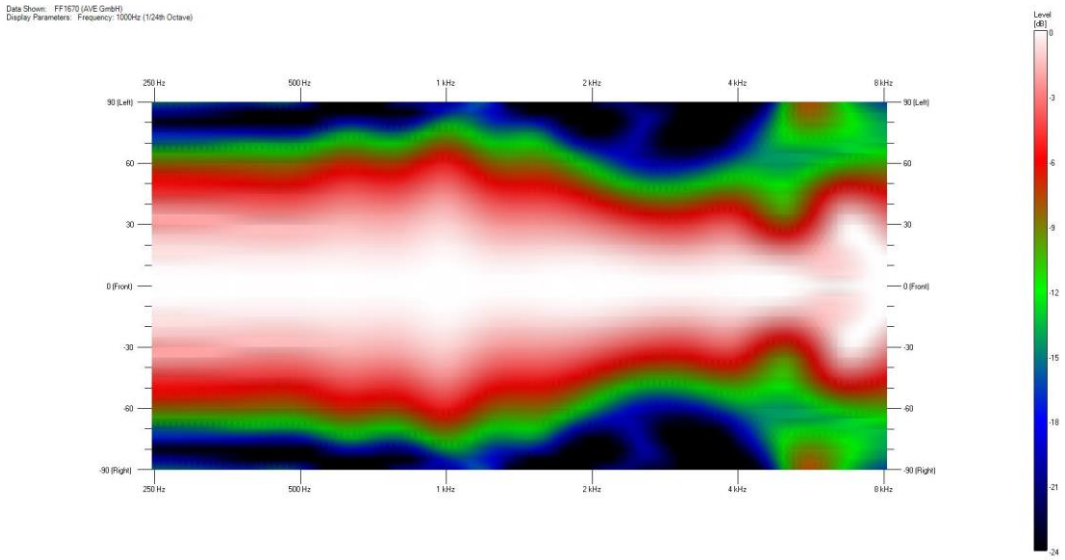


FF1670 – 3D Vertical Beam Width vs Frequency

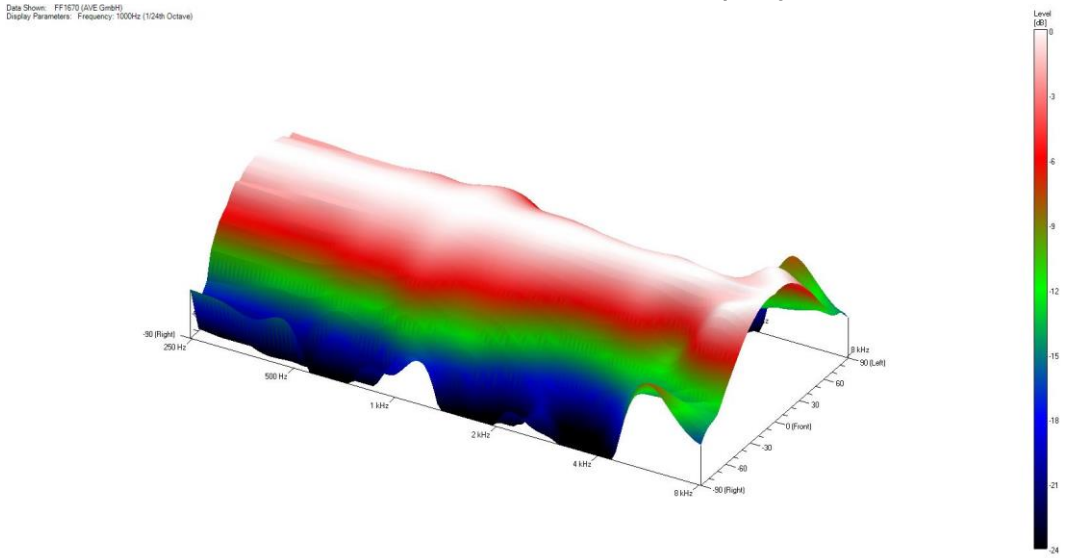


FF1670 – Vertical Beam Width vs Frequency

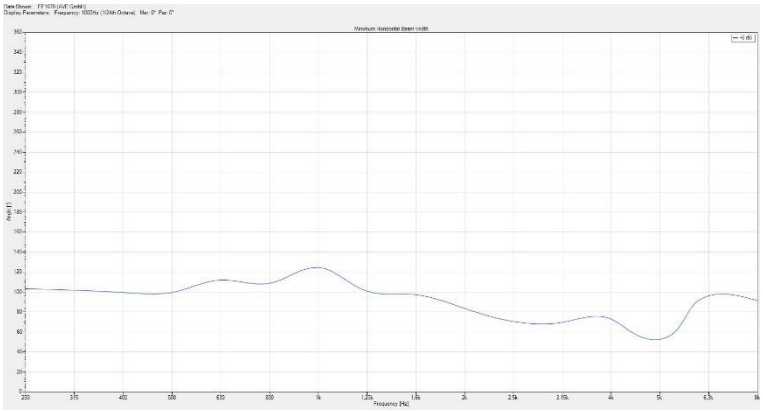
6.0 - Horizontal Beam Width



FF1670 – 2D Horizontal Beam Width vs Frequency



FF1670 – 3D Horizontal Beam Width vs Frequency



FF1670 – Horizontal Beam Width vs Frequency

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