Lumino | Lumino +

Full Specification Sheet

Specs in brackets [] apply for Lumino if there is a difference.

WARNING: This product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

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Table of Contents

General Physical Parameters

Dimensions (LxWxH)	5.6” x 5.5” x 10”
Weight	3.85 [3.65] lbs
Water Resistance Rating	None

Materials

Specs with an asterisk(*) indicate a 3D printed part.

Top Speaker Body*	Wood Polylactic Acid (PLA) [Polyethylene Terephthalate Glycol (PETG)]
Bottom Speaker Body*	Polyethylene Terephthalate Glycol (PETG)
Carrying Handle*	Thermoplastic Polyurethane (TPU)
Transparent Elements*	Clear Polylactic Acid (PLA) or Clear [Polyethylene Terephthalate Glycol (PETG)]
Feet	Rubber
Main Driver Cone	Aluminum Alloy
Passive Radiator Cones	Aluminum Alloy
Driver Surround	Rubber
Magnet (Tweeter and Driver)	Neodymium
Voice Coil Wire	Copper
Voice Coil Former	Kapton® / Polyimide
Driver Basket/Frame	Steel
Tuning Weights	Zinc Composite

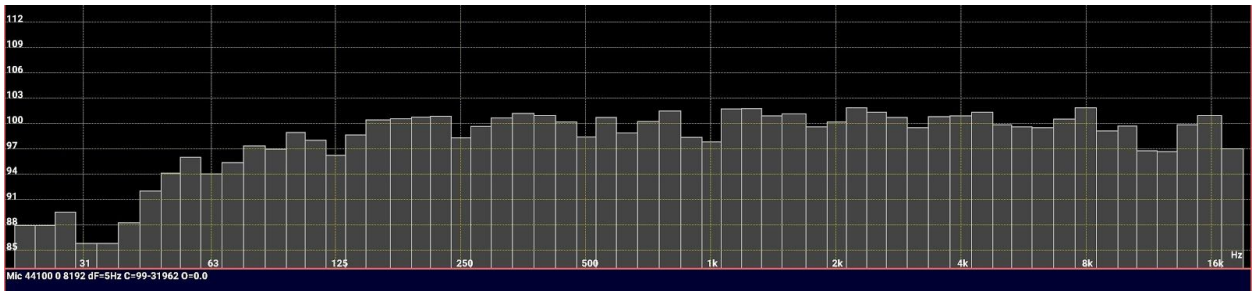
Audio System Specifications

Frequency Response	40Hz - 20000Hz
Maximum SPL[1]	103dB
System F3[2]	52Hz
Total Harmonic Distortion + Noise [3] THD+N @ 103dB THD+N @ 97dB	 □ 1.00% □ 0.06%
Speaker Directivity	On-axis (60 ° Effective)
Speaker Type	2-way (Woofer/Tweeter)
Audio Output	Mono
Active Driver Count	2
Passive Radiator Count	2
Internal Acoustic Volume	0.13ft^3

1: Maximum SPL recorded at 500Hz @ ▪3ft
2: System F3 is the frequency at which response decays at 3db/decade.
3: Performed at 200Hz and 1kHz respectively

System Frequency Response

-Fast Fourier Transform, Non-Averaged, 3ft away



Note that the dB scale on the vertical axis starts at 83dB. Response below 40Hz should be ignored.

Bluetooth and Connectivity

Audio Input	Bluetooth/3.5mm AUX
Audio Output	3.5mm AUX (Parallel)
Bluetooth Name	Sunset Sounds - Lumino
Bluetooth Codecs	APTx, APTx LL, AAC, SBC
Bluetooth Version	4.2
Simultaneous Connected Devices	2 (AVRCP)
Paired Devices List	8
A2DP Mode	Play Next/In Queue
Media Controls	Play/Pause, Skip/Back, Volume Up/Down
Automatic Bluetooth Pairing	Yes for 8 most recently paired
Auto Power Saving Amp Mute[1]	30 seconds
Bluetooth Chip	CSRA64215 A11
Bluetooth Range[2]	30 feet
Bluetooth Antenna Type	Flat Pack 2.4Ghz - 4dBi

1: When audio is not played through bluetooth for more than this time, the bluetooth receiver disengages the amp and goes to standby, saving power. An audible thump may be heard.
2: Estimated line-of-sight range,

Battery and Charging

Operating Voltage	10.25V - 12.60V
Nominal Voltage[1]	10.70V

Battery Chemistry	Lithium Ion
Battery Type	21700 [18650]
Battery Configuration	3S 1P
Maximum Capacity	5000mAh [2380mAh]
Effective Battery Life[2]	≅50 Hours [25 hours]
Maximum Current	10A
BMS Protection	Yes
Charging Port	2.1mm x 5.5mm DC Jack Center Positive
AC/DC Charger Type	US Plug 120V AC
Charger Voltage	12.60V
Max Charging Current	2A [1A] (Dynamic)
Effective Charge Time[3]	≅1.5 hours
Trickle Charge[4]	>12.00V

1: Nominal Voltage is the best voltage to store the speaker in if not used for a long time. (Orange LED)
2: Estimated with moderate volume (70dB-80dB). Playback time may depend on volume.
3: Charge time is estimated from 0% to 90% capacity and no playback during charging. (Red to Green LED)
4: When this threshold voltage is reached, charging current is reduced to extend the battery's life cycle.

UI/UX Electronic Subsystem

Onboard Processor	ATmega328P
Processor Architecture	AVR
Clock Speed	16MHz
Flash Memory	32 KB

SRAM	2 KB
Step Down Converter	DC-DC LM2596
Switching Frequency	150KHz
Subsystem Voltage	5.00V
LED Type	3x WS2812B
LED Sound Reactive Modes	4
LED Color Resolution	16 bit
Sound Sensor	LM393 Threshold Detector
Interface Button Count	5

Technical Parameters - Amplifier and DSP

Amplifier Chip	TPA3116
Amplifier Type	Class D
Efficiency	88%
Power Output	2 x 50W
Signal-to-Noise Ratio (SNR)	88 dB
DSP Chip	ADAU1701
Crossover Type	2nd Order Butterworth
Limiting/Compression Algorithm	None
Dynamic Bass Boost	A-weighted -32dB Max Boost

Technical Parameters - Main Woofer

Nominal Diameter	4”
Peak Power Handling	60W
Sensitivity	86.8 dB 2.83V/1m
Peak Xmax	20mm
Resonant Frequency (Fs)	78.7Hz
Voice Coil Inductance (Le)	0.76mH
Total Q (Qtc)	0.61
Compliance Equivalent Volume (Vas)	0.069ft^3
Mech. Compliance Suspension (Cms)	0.55mm/N
Diaphragm Mass Inc. Airload (Mms)	7.4g
BL Product (BL)	4.52Tm
Surface Area of Cone (Sd)	51.5cm^2
Voice Coil	1” 4-layer Underhung

Technical Parameters - Tweeter

Dome Diameter	1-1/8”
Tweeter Type	Soft Dome
RMS Power Handling	30W
Sensitivity	88.4 dB 1W/1m

Resonant Frequency (Fs)	1097Hz
Voice Coil Inductance (Le)	0.08mH
Total Q (Qts)	1.24

Technical Parameters - Passive Radiator

Passive Radiator Count	2
Nominal Diameter	4”
Peak Xmax	12mm
Resonant Frequency (Fs)	51.5Hz
Compliance Equivalent Volume (Vas)	$0.09ft^3$
Mech. Compliance Suspension (Cms)	0.68mm/N
Mechanical Q (Qms)	5.93
Diaphragm Mass Inc. Airload (Mms)	13.9g
Surface Area of Cone (Sd)	$51.5cm^2$

Fasteners

Main Body	#6-½”
Electronic Plate	M2 x 4mm