



# Clarius Ultrasound Scanner

Technical Specifications

# Clarius Ultrasound Scanners

Clarius Ultrasound Scanners are wireless and work with a mobile app that is compatible with most iOS and Android smart devices. Clarius Scanners are designed to be carried around for quick exams and to guide procedures such as nerve blocks and targeted injections.

## Clarius Scanner Specifications

Model	Frequency	Max Depth	# Elements	Radius	Field of View	Pitch
C3	2 - 6 MHz	32 cm	192	45 mm	73°	300 µm
L7	4 - 13 MHz	7 cm	192	N/A	38.4 mm	208 µm
C7	3 - 10 MHz	20 cm	192	20 mm	112°	205 µm
EC7	3 - 10 MHz	15 cm	192	10 mm	164°	150 µm

## Imaging

### Transmission

- 1 to 20 MHz waveforms
- Up to 20 continuous pulses
- Bi-polar output
- 10 to 80V peak-to-peak

### Beamforming & Reception

- 4 Parallel Beamformers
- Synthetic Aperture Beamforming for virtual focal zones
- 60 MHz sampling rate @ 14 bits per channel

### Post-processing

- Adaptive Speckle Reduction
- Edge enhancement
- Persistence

### Total Input Dynamic Range

- 160dB

### Automated Algorithms

- Time-Gain-Compensation (TGC)
- Frequency-Depth Adjustment
- Patient Contact Detection
- Needle Enhancement

## Imaging Modes

B-Mode	Yes
M-Mode	Yes
Power Doppler	Upgradeable
Color Doppler	Upgradeable
Pulsed-wave Doppler	Upgradeable
Needle Enhance (L7)	Upgradeable

## Interface Controls

Depth	Yes
Read Zoom	Yes
3 TGC sliders or Automated TGC	Yes
Flip / Mirror	Yes
Freeze	Yes
Color / Power ROI	Yes
Flow Speed	Yes
Doppler Gate	Yes
Doppler Correction Angle	Yes
Doppler Steer	Yes

## Internally Optimized Parameters

Clarius internally optimizes the following parameters to ensure the scanner is easy to use:

Frequency Range	2 to 13 MHz
Focal Zones Range	1 to 10
Compression Dynamic Range	30 to 90 dB
Reject	Yes
Sector Width Range	50% to 100%
Grey Map	Yes
Frame Rate	15 to 30 FPS

## Pre-set Applications

**C3**

- Abdominal
- Emergency Cardiac
- Obstetrics / Gynecology
- Lung
- Bladder
- Superficial

**L7**

- Breast
- Lung
- Musculoskeletal
- Nerve
- Ocular (excluding Canada)
- Vascular
- Small Parts (e.g. Thyroid)

**C7**

- Abdominal
- Emergency Cardiac
- Small Parts

**EC7**

- Early OB
- IVF
- Pelvic

## Mobile Platforms

**iOS**

iOS 9.0 or later and the following devices:

- iPhone 4s (and later)\*
- iPod Touch 5th gen (and later)
- iPad 3rd gen (and later), iPad mini, iPad Air

**Android**

Android 4.4.2 (API 19) or greater and devices which have the following architectures: x64 and ARM. Devices must be compatible with Wi-Fi 802.11n and BLE 4.1.

**NOTE:** The iPhone 4s doesn't support 5GHz Wi-Fi. For best performance a smart device that supports 5GHz Wi-Fi is recommended.

## Security & Encryption

**Wi-Fi data channel** TLS 1.2

**Bluetooth** AES128 and RSA4096

## Data Management

**Local Export** Yes

**Cloud Export** Yes

**DICOM Store** Yes

**DICOM Worklist** Yes

## Connectivity

**Wi-Fi** 802.11n, dual band 2.4GHz & 5GHz

**Bluetooth** Bluetooth Low Energy 4.1

## Measurements & Calculations

### TOOLS

**Distance** Yes

**Trace** Yes

**Ellipse** Yes

**Heart Rate** Yes

**Time** Yes

**Velocity** Yes

### CALCULATION PACKAGES

**Obstetrics** BDP, HC, FL, AC, CRL, GS, AFI, EFW from GA. Hadlock tables.

**IVF** Left/Right Follicles

### MEASUREMENT ACCURACY

#### Lateral Distance

**Relative Error** < +- 2%

**Minimum Range** <= 0.2mm

**Maximum Range** >= 24cm

#### Axial Distance

**Relative Error** < +- 2%

**Minimum Range** <= 0.2mm

**Maximum Range** >= 24cm

### Doppler Sensitivity

**C3** Depth Sensitivity: 8.2cm  
Flow Sensitivity:  
0.5 mL/sec at a depth of 5.0 cm

**L7** Depth Sensitivity: 5.1cm  
Flow Sensitivity:  
0.8 mL/sec at a depth of 5.0 cm

**C7** Depth Sensitivity: 6.4cm  
Flow Sensitivity:  
0.5 mL/sec at a depth of 5.0 cm

**EC7** Depth Sensitivity: 6.4cm  
Flow Sensitivity:  
0.5 mL/sec at a depth of 5.0 cm

## Mechanical

**Enclosure**

- Light weight magnesium
- Durable
- IP67 rated for probe and battery separately, rated for 1m immersion for 30min

### C3, L7, C7

**Dimensions** - 167(h) x 99(w) x 42(d) mm  
- 6.6" x 3.9" x 1.6"

**Mass (w/battery)** - 540g  
- 1.2 lbs

### EC7

**Dimensions** - 330(h) x 100(w) x 41.5(d) mm  
- 13" x 3.9" x 1.6"

**Mass (w/battery)** - 563g  
- 1.2 lbs

## Battery, Charging & Bootup

**Battery Life** ~60 min scanning

**Standby** ~7 days idle

**Charge Time** ~90 min

**Max Scan Time Per Exam** ~20 min

**Bootup** Platform dependent, generally < 30 seconds

## Cleaning

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### Tested without adverse effects

- Accel® PREvention™ Wipes
- Accel® TB Wipes
- CaviWipes
- CIDEX® OPA
- MetriCide™ OPA Plus High Level Disinfectant Solution
- Sani-Cloth® HB Germicidal Disposable Wipe
- Sani-Cloth® Plus Germicidal Disposable Cloth
- Tristel Trio Wipes System
- Virox™AHP® 5 RTU Wipes

## Standard Configuration

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- Scanner
- 2 Rechargeable Batteries
- 1 Charger with global AC Adapter
- Access to Clarius Cloud platform

## Standards Compliance

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**IEC 60601-1:2012**, Medical Electrical Equipment - Part 1: General requirements for basic safety and essential performance

**IEC 60601-1-2:2014**, Medical Electrical Equipment - Part 1-2: General requirements for basic safety and essential performance - Collateral Standard: Electromagnetic disturbances - Requirements and tests

**IEC 60601-2-37:2007**, Medical Electrical Equipment - Part 2-37: Particular requirements for the basic safety and essential performance of ultrasonic medical diagnostic and monitoring equipment

**NEMA UD-2**, Acoustic Output Measurement Standard For Diagnostic Ultrasound Equipment, Revision 3

**NEMA UD-3**, Standard for Real-Time Display of Thermal and Mechanical Acoustic Output Indices on Diagnostic Ultrasound Equipment, Revision 2

**IEC 60601-1-12:2014**, Medical electrical equipment - Part 1-12: General requirements for basic safety and essential performance - Collateral Standard: Requirements for medical electrical equipment and medical electrical systems intended for use in the emergency medical services environment

**FCC 47CFR Part 15**, Radio frequency devices

**ETSI EN 300 328:2006-05** - Electromagnetic compatibility and Radio spectrum Matters (ERM)

**ETSI EN 301 489-1:2008-02** - Electromagnetic compatibility and Radio spectrum Matters (ERM)

**ETSI EN 301 489-17:2009-05** - Electromagnetic compatibility and Radio spectrum Matters (ERM)

**ISO 10993-1:2009**, Biological evaluation of medical devices

**IEC 60529:2013**, Degrees of protection provided by enclosures (IP Code)

**IEC 62133:2012**, Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications

**UN 38.3**, Transport of dangerous goods - Classification procedures, test methods and criteria relating to class 9 - Lithium metal and lithium ion batteries

## About Us

Clarius Mobile Health was founded by experienced innovators who have played an instrumental role in the ultrasound industry. Our developers were the brains behind the first PC-based platform for ultrasound research. They also introduced the first touch screen ultrasound system with a simplified user interface.

We started with a simple mission: to enable more clinicians to use ultrasound to improve patient care. Thanks to the power of smart phones, advanced technology and decades of collective ultrasound experience, the Clarius team has delivered a high quality, point-and-shoot ultrasound™ scanner that works with virtually any smart device.

### Clarius Mobile Health

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