



# Clarius Ultrasound Scanner

## Technical Specifications

# Clarius Wireless Handheld Ultrasound Scanners

Clarius Handheld Ultrasound Scanners are wireless and work with a mobile app that is compatible with most iOS and Android smart devices available today. Unlike traditional ultrasound systems, 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	Depth	# Elements	Radius	Pitch
<b>C3</b>	2 - 6 MHz	3 - 30 cm	192	45 mm	300 µm
<b>L7</b>	4 - 13 MHz	1 - 7 cm	192	N/A	200 µm
<b>C7</b>	3 - 10 MHz	2 - 15 cm	192	20 mm	205 µm

## Imaging

### Transmission

- 1 to 20 MHz waveforms
- Up to 20 continuous pulses
- Bi-polar output
- 10 to 100V 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

### Safety - B Mode

- **C3 Scanner**  
Mechanical Index: < 0.64  
Thermal Index: N/A
- **L7 Scanner**  
Mechanical Index: < 0.77  
Thermal Index: N/A
- **C7 Scanner**  
Mechanical Index: < 0.68  
Thermal Index: N/A

## Internally Optimized Parameters

Most ultrasound devices have parameters that the user must adjust to get a good image, Clarius optimizes the following parameters to ensure the product is easy to use:

Frequency Range	1 to 15 MHz
Focal zones Range	1 to 10
Compression	30 to 90 dB
Dynamic Range	
Reject	Yes
Sector width Range	50% to 100%
Grey Map	Yes

## Imaging Modes

B Mode	Yes
Color Doppler	Upgradeable

## Pre-set Applications

**C3** - Abdominal  
- Emergency Cardiac  
- Obstetrics / Gynecology  
- Lung

**L7** - Breast  
- Musculoskeletal  
- Nerve  
- Vascular  
- Small Parts (Thyroid, etc.)

**C7** - Abdomen  
- Emergency Cardiac  
- Small Parts

## Preprogrammed Workflows

**FAST Exam** Yes

**Focused Abdominal Aorta** Yes

## Interface Controls

**Depth** Yes

**Read Zoom** Yes

**3 TGC sliders or Automated TGC** Yes

**Flip / Mirror** Yes

**Freeze** Yes

## 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 4.1 (API 16) or greater and devices which have the following architectures:  
- x86  
- x64  
- ARM

## Measurements & Calculations

### TOOLS

**Distance** Yes

**Area** Yes

**Trace** Yes

**Ellipse** Yes

### CALCULATION PACKAGES

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

### 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

## Connectivity

**WiFi** 802.11a/b/g/n, dual band  
2.4GHz & 5GHz

**Bluetooth** Bluetooth Low Energy 4.1

## Security & Encryption

**WiFi data channel** TLS 1.2

**Bluetooth** - RSA 4096 bits  
- AES 128 bits

**Local Storage** Yes

**Cloud Storage** Yes

**DICOM** Yes

## Mechanical

**Enclosure** - Light weight magnesium  
- Durable  
- IPX7 rated for probe and battery separately, rated for 1m immersion for 30min

**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

## Battery, Charging & Bootup

**Scan Time** ~45 min

**Charge Time** ~90 min

**Standby** ~7 days

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

## Cleaning

**Tested without adverse affects** - Cidex OPA  
- CaviWipes

## Standard Configuration

- Scanner  
- 2 Rechargeable Batteries  
- 1 Charger with global AC Adapter  
- 2 Carrying Cases  
- Access to Clarius Cloud Platform

## Some of Our Certifications

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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 will soon deliver a high quality, point-and-shoot ultrasound™ device that works with virtually any smart device.

Clarius Scanners are pending regulatory clearance from the FDA, CE and Health Canada. Clarius Mobile Health received ISO certification in May 2016.

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