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# Sonicator<sup>®</sup> 730 Specifications

## 1.1 General Specifications:

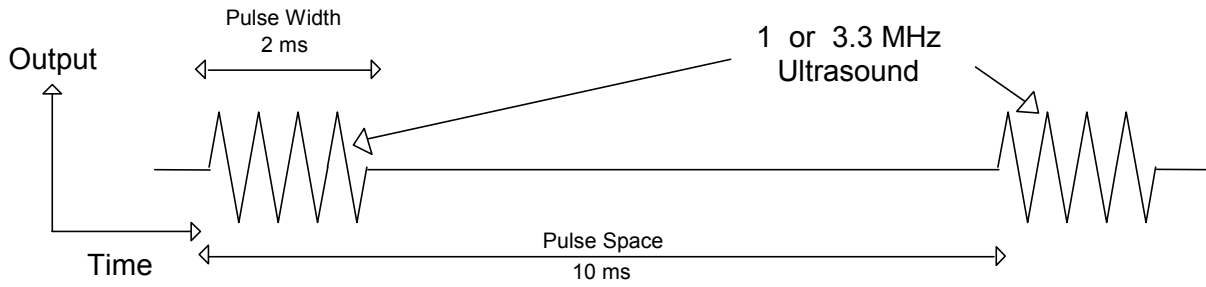
Input:	115 VAC ( $\pm 10\%$ ), 50/60 Hz, 0.6 amperes maximum
Certification:	The Sonicator 730 complies with the ultrasound performance standards set forth in the Code of Federal Regulations, Title 21 (Food and Drugs), Part 1050.10
ETL and C-ETL Listed:	Model ME 730 (9801427)
U.S. Patent Numbers:	4,966,131 and 5,095,890
Treatment Timer Indicator:	The digital timer indicates time set in minutes and seconds prior to the start of treatment and treatment time remaining during treatment or when treatment is temporarily suspended.
Accuracy:	$\pm 0.5$ minutes for times less than 5 minutes $\pm 10\%$ for times from 5 to 10 minutes $\pm 1.0$ minute for times greater than 10 minutes
Maximum treatment time:	29 minutes
Size:	4.3 in (H) x 6 in (D) x 13.4 in (L)
Weight:	5.1 pounds
Operating Temperature:	+50°F to +131°F
Humidity:	Operating, 30% to 75% Relative Humidity at 104°F Nonoperating, up to 90% Relative Humidity at 149°F
Storage Temperature:	-40°F to 167°F

## 1.2 Ultrasonic Generator Specifications:

Frequency:	1.0 MHz $\pm 10\%$ 3.3 MHz $\pm 10\%$
Modes:	Continuous Pulsed – 20% Duty cycle
Pulse Repetition Rate:	100 Hz $\pm 20\%$
Pulse Duration:	2 msec $\pm 20\%$
Temporal Peak/ average intensity ratio:	5:1 $\pm 20\%$
Maximum output power:	22 W with a 10 cm <sup>2</sup> applicator, (ME 7310) 11 W at with either 5 cm <sup>2</sup> applicator, (ME 7305 and ME 7335) 2.2 W with a 1 cm <sup>2</sup> applicator (ME 7331)
Maximum intensity:	2.2 W/cm <sup>2</sup> with all applicators

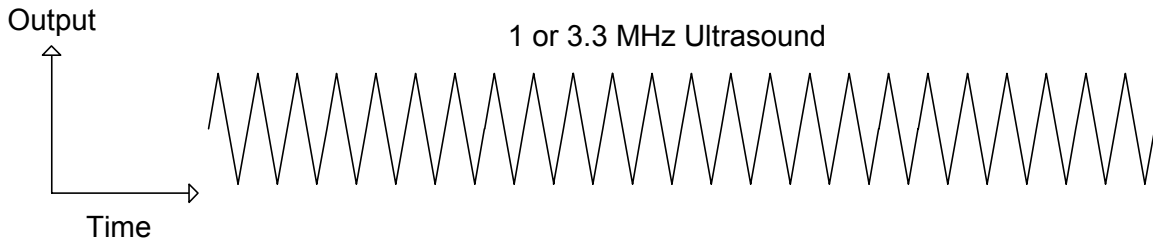
Indication accuracy:  $\pm 20\%$  (for any level above 10% of maximum)

Output description: The output waveform is continuous or pulsed as programmed by the membrane panel control. In the pulse mode the 1 or 3.3 MHz square wave pulses are modulated. The power level is adjusted by varying the pulse amplitude. The pulse waveform is shown below:



Pulsed Waveform

In the continuous mode, the power is on at least 95% of the time the timer is running. The continuous mode waveform is shown below:



Continuous Waveform

### 1.3 Ultrasonic Applicator Specifications:

Piezoelectric discs: The output transducer utilizes a barium titanate disc with a specially coated face.

Individual Applicator Specifications:

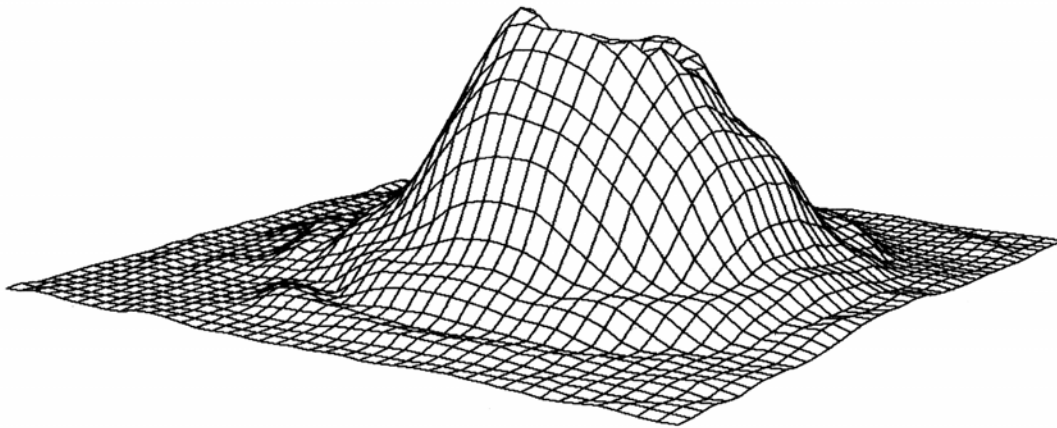
Applicator Part Number	Frequency	Effective Radiating Area
ME 7305	1 MHz $\pm 10\%$	5 cm <sup>2</sup> $\pm 20\%$
ME 7310	1 MHz $\pm 10\%$	10 cm <sup>2</sup> $\pm 20\%$
ME 7331	3.3 MHz $\pm 10\%$	1 cm <sup>2</sup> $\pm 20\%$
ME 7335	3.3 MHz $\pm 10\%$	5 cm <sup>2</sup> $\pm 20\%$

Maximum Beam Non-Uniformity Ratio: 6:1

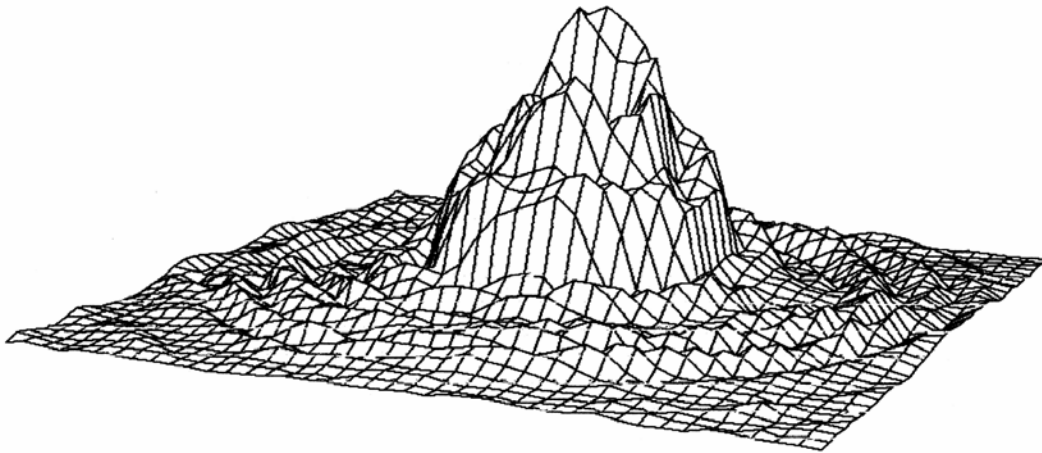
## Spatial Pattern:

The applicator produces a collimated (cylindrical) beam with an area of 1, 5 or 10 cm<sup>2</sup>, measured 5 mm from the ceramic disc surface when the radiation is emitted into the equivalent of an infinite medium of distilled, degassed water at 30° C, and with line voltage variations in the range of ±10% of the rated value.

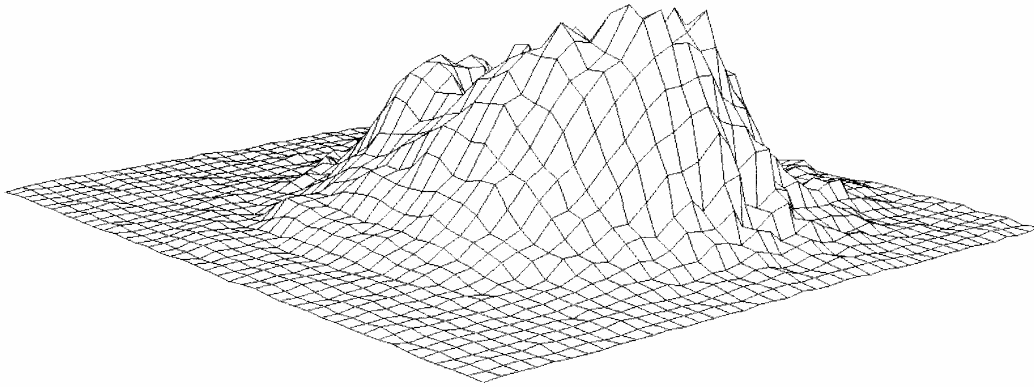
The beam of the applicator is circular in all planes parallel to the applicator face. A few inches from the face, it is a single smooth bell-shaped curve. Nearer the face the pattern varies more due to phase cancellations. Sample curves measured in the far field from the surface are shown in following figures.



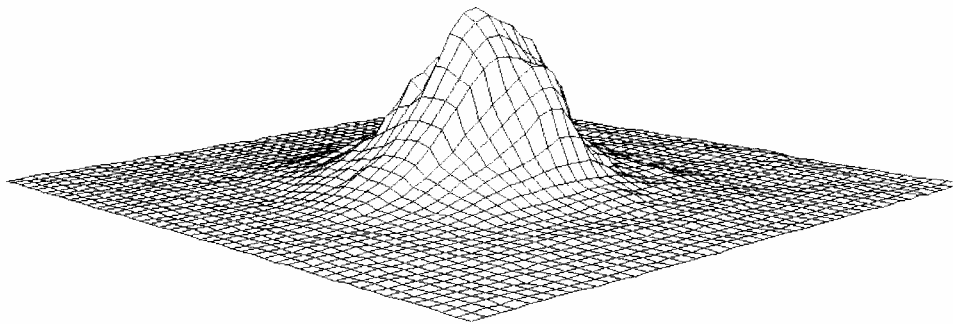
10 cm<sup>2</sup> Applicator (1 MHz), ME 7310, – Three Dimensional Beam Pattern



5 cm<sup>2</sup> Applicator (1 MHz), ME 7305, – Three Dimensional Beam Pattern



5 cm<sup>2</sup> Applicator (3.3 MHz), ME 7335, – Three Dimensional Beam Pattern



1 cm<sup>2</sup> Applicator (3.3 MHz), ME 7331, – Three Dimensional Beam Pattern