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作者(Originator) : 谢 菊艳 (xiejuyan)　　2019-06-10 11:58:18

审核人(Reviewers) : 陈 云飞 (chenyunfei)　　2019-06-11 15:51:04

审核人(Reviewers) : 唐 青松 (tangqingsong)　　2019-06-10 15:43:38

审核人(Reviewers) : 郭 雪梅 (guoxuemei)　　2019-06-10 17:23:23

审核人(Reviewers) : 郭 欣 (guoxin)　　2019-06-11 08:45:22

审核人(Reviewers) : 李 姣 (lijiao)　　2019-06-10 14:14:54

审核人(Reviewers) : 明 镭 (minglei)　　2019-06-10 14:18:56

审核人(Reviewers) : 冯 丹 (fengdan)　　2019-06-11 09:32:34

批准人(Approvers) : 郭 伟娟 (guoweijuan)　　2019-06-11 16:25:13

批准人(Approvers) : 冀 伟 (jiwei)　　2019-06-11 16:42:41

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Acclarix AX3 Series

Diagnostic Ultrasound System

Version 1.1

User Manual

Advanced Volume

CE 0123

EDAN

Preface

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This User Manual applies to 1.0X releases for Acclarix AX3 series Diagnostic Ultrasound Systems including Acclarix AX3, Acclarix AX3 Exp, Acclarix AX3 Super, Acclarix AX25, Acclarix AX28, Acclarix AX2, Acclarix AX2 Exp, Acclarix AX2 Super, Acclarix AX15 and Acclarix AX18. See Section A.9 in the basic user manual for the difference between these models.

This User Manual Advanced Volume together with the User Manual Basic Volume (P/N: 01.54.458117) contains necessary and sufficient information to use the Acclarix AX3 Series Diagnostic Ultrasound Systems safely for the intended purposes and approved clinical applications.

Not all measurements and features are available for all system models with different transducers. This manual is based on the maximum configuration and therefore some contents may not apply to your product. If you have any question, please contact EDAN.

Contact Information:

For sales or service information please contact your local distributor or the EDAN service department at: support@edan.com.cn

Regulatory Approval Remarks

- The transducer L17-7HQ may not be available at the time of release of this user manual. Consult your local representatives for the availability of this feature.

Content

1 Acoustic Output Data

Table 1-1 Table Key

Abbreviation	Full Name
A_{aprt}	-12dB Output Beam Area
d_{eq}	Equivalent Beam Diameter
f_{awf}	Acoustic Working Frequency
$I_{pa,\alpha}$	Attenuated Pulse-Average Intensity
pii	Pulse-Intensity Integral
pii_{α}	Attenuated Pulse-Intensity Integral
$I_{sppa,\alpha}$	Attenuated Spatial-Peak Pulse-Average Intensity
I_{spta}	Spatial-Peak Temporal-Average Intensity
$I_{spta,\alpha}$	Attenuated Spatial-Peak Temporal-Average Intensity
$I_{ta,\alpha}(Z)$	Attenuated Temporal-Average Intensity
MI	Mechanical Index
P	Output Power
P_{α}	Attenuated Output Power
$P_{r,\alpha}$	Attenuated Peak-Rarefactional Acoustic Pressure
P_r	Peak-Rarefactional Acoustic Pressure
n_{pps}	Number of Pulse per Ultrasonic Scan Line
prr	Pulse Repetition Rate
srr	Scan Repetition Rate
TI	Thermal Index
TIB	Bone Thermal Index
TIC	Cranial-Bone Thermal Index
TIS	Soft-Tissue Thermal Index
t_d	Pulse Duration
X,Y	-12dB Output Beam Dimensions
z_b	Depth for Bone Thermal Index
z_{bp}	Break-Point Depth
z_{pii}	Depth for Peak Pulse-Intensity Integral
z_{MI}	Depth for Mechanical Index
$z_{pii,\alpha}$	Depth for Peak Attenuated Pulse Intensity Integral

z_{sii}	Depth for Peak Sum of pulse intensity intergrals
$z_{sii,\alpha}$	Depth for peak sum of attenuated pulse intensity integrals
z_s	Depth for TIS
FOV	Field of View
PRF	Pulse Repetition Frequency
SV	Sample Volume

1.1. Acoustic Output Table for C5-2Q

Acoustic Output Reporting Table for IEC60601-2-37

Transducer Model: C5-2Q

Operating Mode: B

Index label			MI	*TIS*		*TIB*		*TIC*
				At surface	Below surface	At surface	Below surface	
Maximum index value			1.16	1.37		1.37		N/A
Index Component Value				1.37	1.37	1.37	1.37	
Associated acoustic parameters	$p_{r.\alpha}$ at zMI	*(MPa)*	1.80					
	P	*(mW)*		128.55		128.55		N/A
	P_{1X1}	*(mW)*		98.88		98.88		
	z_S	*(cm)*			-			
	z_b	*(cm)*					-	
	z_{MI}	*(cm)*	0.95					
	$z_{PII,a}$	*(cm)*	0.95					
	f_{awf}	*(MHz)*	2.42	2.41	2.41	2.41	2.41	N/A
Other Information	*prr*	*(Hz)*	-					
	Srr	*(Hz)*	53.00					
	n_{pps}		1.00					
	$I_{pa.\alpha}$ at $z_{PII,a}$	*(W/cm²)*	94.85					
	$I_{spta,a}$ at $z_{PII,a}$ or $z_{SII,a}$	*(mW/cm²)*	12.02					
	I_{spta} at z_{PII} or z_{SII}	*(mW/cm²)*	9.64					
	pr at z_{PII}	*(MPa)*	1.69					
Operating control conditions	B Frequency		Level H1	Level H1		Level H1		N/A
	B Display Depth(mm)		40.00	40.00		40.00		N/A
	B Focus Pos(mm)		30.00	30.00		30.00		N/A
	B FOV		Small	Small		Small		N/A
	B Line Density		Low	Low		Low		N/A

Note:

1. (-) This index or parameter is not required for this operating mode.
2. (N/A) This transducer is not intended for cephalic examination.

Acoustic Output Reporting Table for IEC60601-2-37

Transducer Model: C5-2Q

Operating Mode: B+M

Index label			MI	*TIS*		*TIB*		*TIC*
				At surface	Below surface	At surface	Below surface	
Maximum index value			1.21	1.11		1.63		N/A
Index Component Value				1.04	1.11	1.04	1.63	
Associated acoustic parameters	$p_{r.\alpha}$ *at zMI*	*(MPa)*	2.08					
	P	*(mW)*		96.06		96.06		N/A
	P_{1X1}	*(mW)*		73.89		73.89		
	z_S	*(cm)*			0.30			
	z_b	*(cm)*					1.66	
	z_{MI}	*(cm)*	1.76					
	$z_{PII,a}$	*(cm)*	1.76					
	f_{awf}	*(MHz)*	2.94	2.98	2.98	2.98	2.98	N/A
Other Information	*prr*	*(Hz)*	1000.00					
	Srr	*(Hz)*	-					
	n_{pps}		1.00					
	$I_{pa.\alpha}$ at $z_{PII,a}$	*(W/cm²)*	149.06					
	$I_{spta,a}$ *at* $z_{PII,a}$ *or* $z_{SII,a}$	*(mW/cm²)*	62.97					
	I_{spta} *at* z_{PII} *or* z_{SII}	*(mW/cm²)*	69.76					
	pr at z_{PII}	*(MPa)*	2.16					
Operating control conditions	B Frequency		Level H1	Level H1		Level H1		N/A
	B Display Depth(mm)		40.00	40.00		40.00		N/A
	B Focus Pos(mm)		40.00	40.00		40.00		N/A
	B FOV		Full	Full		Full		N/A
	B Line Density		Low	Low		Low		N/A
	M Sweep Speed		Fast	Fast		Fast		N/A

Note:

1. (-) This index or parameter is not required for this operating mode.
2. (N/A) This transducer is not intended for cephalic examination.

Acoustic Output Reporting Table for IEC60601-2-37

Transducer Model: C5-2Q

Operating Mode: B+C/B+PDI/B+DPDI

Index label			MI	*TIS*		*TIB*		*TIC*
				At surface	Below surface	At surface	Below surface	
Maximum index value			1.18	1.48		1.48		N/A
Index Component Value				1.48	1.48	1.48	1.48	
Associated acoustic parameters	$p_{r.\alpha}$ *at zMI*	*(MPa)*	2.23					
	P	*(mW)*		133.65		133.65		N/A
	P_{1X1}	*(mW)*		102.80		102.80		
	z_s	*(cm)*			-			
	z_b	*(cm)*					-	
	z_{MI}	*(cm)*	1.46					
	$z_{PII,a}$	*(cm)*	1.46					
	f_{awf}	*(MHz)*	3.56	2.96	2.96	2.96	2.96	N/A
Other Information	*prr*	*(Hz)*	-					
	Srr	*(Hz)*	31.17					
	n_{pps}		1.00					
	$I_{pa.\alpha}$ at $z_{PII,a}$	*(W/cm²)*	226.16					
	$I_{spta,a}$ *at* $z_{PII,a}$ *or* $z_{SII,a}$	*(mW/cm²)*	4.03					
	I_{spta} *at* z_{PII} *or* z_{SII}	*(mW/cm²)*	2.83					
	pr at z_{PII}	*(MPa)*	2.29					
Operating control conditions	B Frequency		Level 2	Level 2		Level 2		N/A
	B Display Depth(mm)		240.00	240.00		240.00		N/A
	B FOV		Small	Small		Small		N/A
	B Line Density		High	High		High		N/A
	C Frequency		Level 1	Level 1		Level 1		N/A
	C Left Edge of ROI(mm)		-7.50	-7.50		-7.50		N/A
	C Right Edge of ROI(mm)		7.50	7.50		7.50		N/A
	C Up Edge of ROI(mm)		25.50	25.50		25.50		N/A
	C Down Edge of ROI(mm)		34.50	34.50		34.50		N/A
	C Line Density		Low	Low		Low		N/A
	C PRF(KHz)		0.60	1.90		1.90		N/A

Note:

1. (-) This index or parameter is not required for this operating mode.
2. (N/A) This transducer is not intended for cephalic examination.

Acoustic Output Reporting Table for IEC60601-2-37

Transducer Model: C5-2Q

Operating Mode: PW/B+PW/B+C+PW

Index label			MI	*TIS*		*TIB*		*TIC*
				At surface	Below surface	At surface	Below surface	
Maximum index value			1.22	1.02		2.72		N/A
Index Component Value				0.71	1.02	0.69	2.72	
Associated acoustic parameters	$p_{r.\alpha}$ *at zMI*	*(MPa)*	1.88					
	P	*(mW)*		100.51		79.56		N/A
	P_{1X1}	*(mW)*		50.33		61.20		
	z_S	*(cm)*			1.15			
	z_b	*(cm)*					1.10	
	z_{MI}	*(cm)*	1.86					
	$z_{PII,a}$	*(cm)*	1.86					
	f_{awf}	*(MHz)*	2.36	2.96	2.96	2.36	2.36	N/A
Other Information	*prr*	*(Hz)*	900.00					
	Srr	*(Hz)*	-					
	n_{pps}		1.00					
	$I_{pa.\alpha}$ at $z_{PII,a}$	*(W/cm²)*	139.51					
	$I_{spta,a}$ *at* $z_{PII,a}$ *or* $z_{SII,a}$	*(mW/cm²)*	350.99					
	I_{spta} *at* z_{PII} *or* z_{SII}	*(mW/cm²)*	428.44					
	pr at z_{PII}	*(MPa)*	1.74					
Operating control conditions	B Frequency		-	-		-		N/A
	B Display Depth(mm)		-	-		-		N/A
	B Focus Pos(mm)		-	-		-		N/A
	B FOV		-	-		-		N/A
	B Line Density		-	-		-		N/A
	PW Frequency		Level 0	Level 1		Level 0		N/A
	PW SV Depth(mm)		30.00	160.00		30.00		N/A
	PW PRF(KHz)		0.90	5.90		0.90		N/A

Note:

1. (-) This index or parameter is not required for this operating mode.
2. (N/A) This transducer is not intended for cephalic examination.

1.2. Acoustic Output Table for L12-5Q

Acoustic Output Reporting Table for IEC60601-2-37

Transducer Model: L12-5Q

Operating Mode: B

Index label			MI	TIS		TIB		TIC
				At surface	Below surface	At surface	Below surface	
Maximum index value			1.28	1.33		1.33		N/A
Index Component Value				1.33	1.33	1.33	1.33	
Associated acoustic parameters	$p_{r.\alpha}$ at zMI	(MPa)	2.98					
	P	(mW)		51.52		51.52		N/A
	P_{1X1}	(mW)		51.52		51.52		
	z_s	(cm)			-			
	z_b	(cm)					-	
	z_{MI}	(cm)	0.81					
	$z_{PII,a}$	(cm)	0.81					
	f_{awf}	(MHz)	5.38	5.44	5.44	5.44	5.44	N/A
Other Information	prr	(Hz)	-					
	Srr	(Hz)	114.00					
	n_{pps}		1.00					
	$I_{pa.\alpha}$ at $z_{PII,a}$	(W/cm^2)	342.55					
	$I_{spta,a}$ at $z_{PII,a}$ or $z_{SII,a}$	(mW/cm^2)	20.48					
	I_{spta} at z_{PII} or z_{SII}	(mW/cm^2)	20.91					
	pr at z_{PII}	(MPa)	3.44					
Operating control conditions	B Frequency		Level H1	Level 0		Level 0		N/A
	B Display Depth(mm)		10.00	110.00		110.00		N/A
	B Focus Pos(mm)		7.50	45.00		45.00		N/A
	B FOV		Small	Full		Full		N/A
	B Line Density		Low	Low		Low		N/A

Note:
1. (-) This index or parameter is not required for this operating mode.
2. (N/A) This transducer is not intended for cephalic examination.

Acoustic Output Reporting Table for IEC60601-2-37

Transducer Model: L12-5Q

Operating Mode: B+M

Index label			MI	TIS		TIB		TIC
				At surface	Below surface	At surface	Below surface	
Maximum index value			1.38	0.70		0.91		N/A
Index Component Value				0.70	0.67	0.70	0.91	
Associated acoustic parameters	$p_{r.\alpha}$ at zMI	(MPa)	3.18					
	P	(mW)		26.56		26.56		N/A
	P_{1X1}	(mW)		26.56		26.56		
	z_s	(cm)			0.35			
	z_b	(cm)					1.01	
	z_{MI}	(cm)	0.76					
	$z_{PII,a}$	(cm)	0.76					
	f_{awf}	(MHz)	5.33	5.52	5.52	5.52	5.52	N/A
Other Information	prr	(Hz)	1000.00					
	Srr	(Hz)	-					
	n_{pps}		1.00					
	$I_{pa.\alpha}$ at $z_{PII,a}$	(W/cm^2)	377.86					
	$I_{spta,a}$ at $z_{PII,a}$ or $z_{SII,a}$	(mW/cm^2)	88.91					
	I_{spta} at z_{PII} or z_{SII}	(mW/cm^2)	119.79					
	pr at z_{PII}	(MPa)	3.59					
Operating control conditions	B Frequency		Level H0	Level 0		Level 0		N/A
	B Display Depth(mm)		10.00	110.00		110.00		N/A
	B Focus Pos(mm)		7.50	45.00		45.00		N/A
	B FOV		Small	Small		Small		N/A
	B Line Density		Low	Low		Low		N/A
	M Sweep Speed		Slow	Fast		Fast		N/A

Note:

1. (-) This index or parameter is not required for this operating mode.
2. (N/A) This transducer is not intended for cephalic examination.

Acoustic Output Reporting Table for IEC60601-2-37

Transducer Model: L12-5Q

Operating Mode: B+C/B+PDI/B+DPDI

Index label			MI	TIS		TIB		TIC
				At surface	Below surface	At surface	Below surface	
Maximum index value			1.16	0.80		0.80		N/A
Index Component Value				0.80	0.80	0.80	0.80	
Associated acoustic parameters	$p_{r.\alpha}$ at zMI	(MPa)	2.71					
	P	(mW)		31.42		31.42		N/A
	P_{1X1}	(mW)		31.42		31.42		
	z_s	(cm)			-			
	z_b	(cm)					-	
	z_{MI}	(cm)	1.11					
	$z_{PII,a}$	(cm)	1.11					
	f_{awf}	(MHz)	5.46	5.36	5.36	5.36	5.36	N/A
Other Information	prr	(Hz)	-					
	Srr	(Hz)	29.23					
	n_{pps}		1.00					
	$I_{pa.\alpha}$ at $z_{PII,a}$	(W/cm^2)	299.85					
	$I_{spta,a}$ at $z_{PII,a}$ or $z_{SII,a}$	(mW/cm^2)	15.64					
	I_{spta} at z_{PII} or z_{SII}	(mW/cm^2)	15.83					
	pr at z_{PII}	(MPa)	3.36					
Operating control conditions	B Frequency		Level 0	Level 0		Level 0		N/A
	B Display Depth(mm)		110.00	110.00		110.00		N/A
	B FOV		Small	Small		Small		N/A
	B Line Density		High	High		High		N/A
	C Frequency		Level 0	Level 0		Level 0		N/A
	C Left Edge of ROI(mm)		-4.75	-4.75		-4.75		N/A
	C Right Edge of ROI(mm)		4.75	4.75		4.75		N/A
	C Up Edge of ROI(mm)		40.50	40.50		40.50		N/A
	C Down Edge of ROI(mm)		49.50	49.50		49.50		N/A
	C Line Density		Low	Low		Low		N/A
	C PRF(KHz)		6.10	6.10		6.10		N/A

Note:

1. (-) This index or parameter is not required for this operating mode.
2. (N/A) This transducer is not intended for cephalic examination.

Acoustic Output Reporting Table for IEC60601-2-37

Transducer Model: L12-5Q

Operating Mode: PW/B+PW/B+C+PW

Index label			MI	TIS		TIB		TIC
				At surface	Below surface	At surface	Below surface	
Maximum index value			1.48	0.54		1.27		N/A
Index Component Value				0.49	0.54	0.26	1.27	
Associated acoustic parameters	$p_{r.\alpha}$ at zMI	(MPa)	3.21					
	P	(mW)		25.56		11.55		N/A
	P_{1X1}	(mW)		21.06		11.55		
	z_s	(cm)			0.30			
	z_b	(cm)					0.71	
	z_{MI}	(cm)	0.96					
	$z_{PII,a}$	(cm)	0.96					
	f_{awf}	(MHz)	4.70	4.72	4.72	4.70	4.70	N/A
Other Information	prr	(Hz)	426.30					
	Srr	(Hz)	-					
	n_{pps}		1.00					
	$I_{pa.\alpha}$ at $z_{PII,a}$	(W/cm^2)	530.22					
	$I_{spta,a}$ at $z_{PII,a}$ or $z_{SII,a}$	(mW/cm^2)	176.80					
	I_{spta} at z_{PII} or z_{SII}	(mW/cm^2)	245.64					
	pr at z_{PII}	(MPa)	3.59					
Operating control conditions	B Frequency		Level H0	Level 0		-		N/A
	B Display Depth(mm)		35.00	55.00		-		N/A
	B Focus Pos(mm)		30.00	50.00		-		N/A
	B FOV		Small	Small		-		N/A
	B Line Density		Low	Low		-		N/A
	PW Frequency		Level 0	Level 1		Level 0		N/A
	PW SV Depth(mm)		30.00	50.00		12.50		N/A
	PW PRF(KHz)		0.90	9.80		0.90		N/A

Note:

1. (-) This index or parameter is not required for this operating mode.
2. (N/A) This transducer is not intended for cephalic examination.

1.3. Acoustic Output Table for L17-7Q

Acoustic Output Reporting Table for IEC60601-2-37

Transducer Model: L17-7Q

Operating Mode: B

Index label			MI	*TIS*		*TIB*		*TIC*
				At surface	Below surface	At surface	Below surface	
Maximum index value			1.12	0.67		0.67		N/A
Index Component Value				0.67	0.67	0.67	0.67	
Associated acoustic parameters	$p_{r.\alpha}$ *at zMI*	*(MPa)*	3.57					
	P	*(mW)*		15.27		15.27		N/A
	P_{1X1}	*(mW)*		15.27		15.27		
	z_s	*(cm)*			-			
	z_b	*(cm)*					-	
	z_{MI}	*(cm)*	0.42					
	$z_{PII,a}$	*(cm)*	0.42					
	f_{awf}	*(MHz)*	10.08	9.16	9.16	9.16	9.16	N/A
Other Information	*prr*	*(Hz)*	-					
	Srr	*(Hz)*	99.00					
	n_{pps}		1.00					
	$I_{pa.\alpha}$ at $z_{PII,a}$	*(W/cm²)*	440.21					
	$I_{spta,a}$ *at* $z_{PII,a}$ *or* $z_{SII,a}$	*(mW/cm²)*	9.92					
	I_{spta} *at* z_{PII} *or* z_{SII}	*(mW/cm²)*	7.85					
	pr at z_{PII}	*(MPa)*	3.71					
Operating control conditions	B Frequency		Level 2	Level 2		Level 2		N/A
	B Display Depth(mm)		15.00	50.00		50.00		N/A
	B Focus Pos(mm)		10.00	45.00		45.00		N/A
	B FOV		Med.	Small		Small		N/A
	B Line Density		Low	Low		Low		N/A

Note:

1. (-) This index or parameter is not required for this operating mode.
2. (N/A) This transducer is not intended for cephalic examination.

Acoustic Output Reporting Table for IEC60601-2-37

Transducer Model: L17-7Q

Operating Mode: B+M

Index label			MI	*TIS*		*TIB*		*TIC*
				At surface	Below surface	At surface	Below surface	
Maximum index value			1.19	0.55		0.55		N/A
Index Component Value				0.55	0.54	0.55	0.54	
Associated acoustic parameters	$p_{r.\alpha}$ *at zMI*	*(MPa)*	3.12					
	P	*(mW)*		10.24		10.24		N/A
	P_{1X1}	*(mW)*		10.24		10.24		
	z_S	*(cm)*			0.30			
	z_b	*(cm)*					0.30	
	z_{MI}	*(cm)*	0.96					
	$z_{PII,a}$	*(cm)*	0.96					
	f_{awf}	*(MHz)*	6.90	11.22	11.22	11.22	11.22	N/A
Other Information	*prr*	*(Hz)*	1000.00					
	Srr	*(Hz)*	-					
	n_{pps}		1.00					
	$I_{pa.\alpha}$ at $z_{PII,a}$	*(W/cm²)*	434.89					
	$I_{spta,a}$ *at* $z_{PII,a}$ *or* $z_{SII,a}$	*(mW/cm²)*	154.93					
	I_{spta} *at* z_{PII} *or* z_{SII}	*(mW/cm²)*	241.33					
	pr at z_{PII}	*(MPa)*	3.80					
Operating control conditions	B Frequency		Level 1	Level H1		Level H1		N/A
	B Display Depth(mm)		110.00	50.00		50.00		N/A
	B Focus Pos(mm)		15.00	50.00		50.00		N/A
	B FOV		Small	Full		Full		N/A
	B Line Density		Low	Low		Low		N/A
	M Sweep Speed		Fast	Slow		Slow		N/A

Note:

1. (-) This index or parameter is not required for this operating mode.
2. (N/A) This transducer is not intended for cephalic examination.

Acoustic Output Reporting Table for IEC60601-2-37

Transducer Model: L17-7Q

Operating Mode: B+C/B+PDI/B+DPDI

Index label			MI	*TIS*		*TIB*		*TIC*
				At surface	Below surface	At surface	Below surface	
Maximum index value			0.81	0.69		0.69		N/A
Index Component Value				0.69	0.69	0.69	0.69	
Associated acoustic parameters	$p_{r.\alpha}$ *at zMI*	*(MPa)*	2.49					
	P	*(mW)*		17.98		17.98		N/A
	P_{1X1}	*(mW)*		17.98		17.98		
	z_S	*(cm)*			-			
	z_b	*(cm)*					-	
	z_{MI}	*(cm)*	1.12					
	$z_{PII,a}$	*(cm)*	1.12					
	f_{awf}	*(MHz)*	9.41	8.07	8.07	8.07	8.07	N/A
Other Information	*prr*	*(Hz)*	-					
	Srr	*(Hz)*	28.60					
	n_{pps}		1.00					
	$I_{pa.\alpha}$ at $z_{PII,a}$	*(W/cm²)*	187.28					
	$I_{spta,a}$ *at* $z_{PII,a}$ *or* $z_{SII,a}$	*(mW/cm²)*	1.13					
	I_{spta} *at* z_{PII} *or* z_{SII}	*(mW/cm²)*	1.13					
	pr at z_{PII}	*(MPa)*	3.70					
Operating control conditions	B Frequency		Level 2	Level 2		Level 2		N/A
	B Display Depth(mm)		30.00	30.00		30.00		N/A
	B FOV		Small	Small		Small		N/A
	B Line Density		High	High		High		N/A
	C Frequency		Level 0	Level 0		Level 0		N/A
	C Left Edge of ROI(mm)		-4.75	-4.75		-4.75		N/A
	C Right Edge of ROI(mm)		4.75	4.75		4.75		N/A
	C Up Edge of ROI(mm)		13.00	13.00		13.00		N/A
	C Down Edge of ROI(mm)		22.00	22.00		22.00		N/A
	C Line Density		Low	Low		Low		N/A
	C PRF(KHz)		8.00	8.00		8.00		N/A

Note:

1. (-) This index or parameter is not required for this operating mode.
2. (N/A) This transducer is not intended for cephalic examination.

Acoustic Output Reporting Table for IEC60601-2-37

Transducer Model: L17-7Q

Operating Mode: PW/B+PW/B+C+PW

Index label			MI	*TIS*		*TIB*		*TIC*
				At surface	Below surface	At surface	Below surface	
Maximum index value			1.24	0.35		0.90		N/A
Index Component Value				0.35	0.29	0.35	0.90	
Associated acoustic parameters	$p_{r.\alpha}$ *at zMI*	*(MPa)*	4.03					
	P	*(mW)*		9.06		9.06		N/A
	P_{1X1}	*(mW)*		9.06		9.06		
	z_S	*(cm)*			0.30			
	z_b	*(cm)*					1.01	
	z_{MI}	*(cm)*	0.30					
	$z_{PII,a}$	*(cm)*	0.30					
	f_{awf}	*(MHz)*	10.56	8.06	8.06	8.06	8.06	N/A
Other Information	*prr*	*(Hz)*	-					
	Srr	*(Hz)*	13.84					
	n_{pps}		1.00					
	$I_{pa.\alpha}$ at $z_{PII,a}$	*(W/cm²)*	708.57					
	$I_{spta,a}$ *at* $z_{PII,a}$ *or* $z_{SII,a}$	*(mW/cm²)*	1.64					
	I_{spta} *at* z_{PII} *or* z_{SII}	*(mW/cm²)*	1.51					
	pr at z_{PII}	*(MPa)*	4.70					
Operating control conditions	B Frequency		Level 2	-		-		N/A
	B Display Depth(mm)		10.00	-		-		N/A
	B Focus Pos(mm)		5.00	-		-		N/A
	B FOV		Small	-		-		N/A
	B Line Density		Low	-		-		N/A
	PW Frequency		Level 1	Level 1		Level 1		N/A
	PW SV Depth(mm)		5.00	22.50		22.50		N/A
	PW PRF(KHz)		14.70	3.70		3.70		N/A

Note:

1. (-) This index or parameter is not required for this operating mode.
2. (N/A) This transducer is not intended for cephalic examination.

1.4. Acoustic Output Table for P5-1Q

Acoustic Output Reporting Table for IEC60601-2-37

Transducer Model: P5-1Q

Operating Mode: B

Index label			MI	*TIS*		*TIB*		*TIC*
				At surface	Below surface	At surface	Below surface	
Maximum index value			1.35	0.59		0.59		1.25
Index Component Value				0.59	0.59	0.59	0.59	
Associated acoustic parameters	$p_{r.\alpha}$ at zMI	*(MPa)*	2.22					
	P	*(mW)*		73.95		73.95		73.95
	P_{1X1}	*(mW)*		43.32		43.32		
	z_S	*(cm)*			-			
	z_b	*(cm)*					-	
	z_{MI}	*(cm)*	4.77					
	$z_{PII,a}$	*(cm)*	4.77					
	f_{awf}	*(MHz)*	2.70	2.84	2.84	2.84	2.84	2.84
Other Information	*prr*	*(Hz)*	-					
	Srr	*(Hz)*	62.00					
	n_{pps}		1.00					
	$I_{pa.\alpha}$ at $z_{PII,a}$	*(W/cm²)*	206.10					
	$I_{spta,a}$ at $z_{PII,a}$ or $z_{SII,a}$	*(mW/cm²)*	18.66					
	I_{spta} at z_{PII} or z_{SII}	*(mW/cm²)*	18.21					
	pr at z_{PII}	*(MPa)*	3.49					
Operating control conditions	B Frequency		Level 2	Level 2		Level 2		Level 2
	B Display Depth(mm)		300.00	300.00		300.00		300.00
	B Focus Pos(mm)		80.00	200.00		200.00		200.00
	B FOV		Small	Med.		Med.		Med.
	B Line Density		Low	Low		Low		Low

Note:

1. (-) This index or parameter is not required for this operating mode.

Acoustic Output Reporting Table for IEC60601-2-37

Transducer Model: P5-1Q

Operating Mode: B+M

Index label			MI	*TIS*		*TIB*		*TIC*
				At surface	Below surface	At surface	Below surface	
Maximum index value			1.24	0.69		1.57		1.54
Index Component Value				0.60	0.69	0.55	1.57	
Associated acoustic parameters	$p_{r.\alpha}$ *at zMI*	*(MPa)*	1.77					
	P	*(mW)*		74.45		85.90		85.90
	P_{1X1}	*(mW)*		43.62		56.36		
	z_S	*(cm)*			0.75			
	z_b	*(cm)*					3.32	
	z_{MI}	*(cm)*	3.57					
	$z_{PII,a}$	*(cm)*	3.57					
	f_{awf}	*(MHz)*	2.04	2.89	2.89	2.04	2.04	2.04
Other Information	*prr*	*(Hz)*	1000.00					
	Srr	*(Hz)*	-					
	n_{pps}		1.00					
	$I_{pa.\alpha}$ at $z_{PII,a}$	*(W/cm²)*	130.17					
	$I_{spta,a}$ *at* $z_{PII,a}$ *or* $z_{SII,a}$	*(mW/cm²)*	101.55					
	I_{spta} *at* z_{PII} *or* z_{SII}	*(mW/cm²)*	170.09					
	pr at z_{PII}	*(MPa)*	2.26					
Operating control conditions	B Frequency		Level H1	Level 1		Level H1		Level H1
	B Display Depth(mm)		40.00	200.00		40.00		40.00
	B Focus Pos(mm)		40.00	200.00		40.00		40.00
	B FOV		Small	Full		Small		Small
	B Line Density		Low	Low		Low		Low
	M Sweep Speed		Fast	Fast		Fast		Fast

Note:

1. (-) This index or parameter is not required for this operating mode.

Acoustic Output Reporting Table for IEC60601-2-37

Transducer Model: P5-1Q

Operating Mode: B+C/B+PDI/B+DPDI

Index label			MI	*TIS*		*TIB*		*TIC*
				At surface	Below surface	At surface	Below surface	
Maximum index value			1.19	0.65		0.65		2.67
Index Component Value				0.65	0.65	0.65	0.65	
Associated acoustic parameters	$p_{r.\alpha}$ *at zMI*	*(MPa)*	2.10					
	P	*(mW)*		73.69		73.69		86.94
	P_{1X1}	*(mW)*		59.89		59.89		
	z_S	*(cm)*			-			
	z_b	*(cm)*					-	
	z_{MI}	*(cm)*	4.32					
	$z_{PII,a}$	*(cm)*	4.32					
	f_{awf}	*(MHz)*	3.11	2.21	2.21	2.21	2.21	1.99
Other Information	*prr*	*(Hz)*	-					
	Srr	*(Hz)*	26.72					
	n_{pps}		1.00					
	$I_{pa.\alpha}$ at $z_{PII,a}$	*(W/cm²)*	179.54					
	$I_{spta,a}$ *at* $z_{PII,a}$ *or* $z_{SII,a}$	*(mW/cm²)*	2.64					
	I_{spta} *at* z_{PII} *or* z_{SII}	*(mW/cm²)*	2.48					
	pr at z_{PII}	*(MPa)*	3.24					
Operating control conditions	B Frequency		Level 2	Level 2		Level 2		Level 2
	B Display Depth(mm)		240.00	240.00		240.00		240
	B FOV		Small	Small		Small		Small
	B Line Density		High	High		High		High
	C Frequency		Level 0	Level 1		Level 1		Level 1
	C Left Edge of ROI(mm)		-12.50	-12.50		-12.50		-12.5
	C Right Edge of ROI(mm)		12.50	12.50		12.50		12.5
	C Up Edge of ROI(mm)		63.50	193.50		193.50		193.5
	C Down Edge of ROI(mm)		72.50	202.50		202.50		202.5
	C Line Density		Low	Low		Low		Low
	C PRF(KHz)		4.60	1.90		1.90		1.9

Note:

1. (-) This index or parameter is not required for this operating mode.

Acoustic Output Reporting Table for IEC60601-2-37

Transducer Model: P5-1Q

Operating Mode: PW/B+PW/B+C+PW

Index label			MI	*TIS*		*TIB*		*TIC*
				At surface	Below surface	At surface	Below surface	
Maximum index value			1.40	1.12		3.55		2.54
Index Component Value				0.98	1.12	0.82	3.55	
Associated acoustic parameters	$p_{r.\alpha}$ *at zMI*	*(MPa)*	1.98					
	P	*(mW)*		111.83		103.57		113.52
	P_{1X1}	*(mW)*		93.19		86.31		
	z_S	*(cm)*			0.35			
	z_b	*(cm)*					3.22	
	z_{MI}	*(cm)*	1.15					
	$z_{PII,a}$	*(cm)*	1.15					
	f_{awf}	*(MHz)*	2.00	2.21	2.21	2.00	2.00	2.00
Other Information	*prr*	*(Hz)*	900.00					
	Srr	*(Hz)*	-					
	n_{pps}		1.00					
	$I_{pa.\alpha}$ at $z_{PII,a}$	*(W/cm²)*	141.60					
	$I_{spta,a}$ *at* $z_{PII,a}$ *or* $z_{SII,a}$	*(mW/cm²)*	283.33					
	I_{spta} *at* z_{PII} *or* z_{SII}	*(mW/cm²)*	286.23					
	pr at z_{PII}	*(MPa)*	1.71					
Operating control conditions	B Frequency		-	-		-		-
	B Display Depth(mm)		-	-		-		-
	B Focus Pos(mm)		-	-		-		-
	B FOV		-	-		-		-
	B Line Density		-	-		-		-
	PW Frequency		Level 0	Level 1		Level 0		Level 0
	PW SV Depth(mm)		30.00	150.00		60.00		60.00
	PW PRF(KHz)		0.90	3.70		1.50		1.50

Note:

1. (-) This index or parameter is not required for this operating mode.

Acoustic Output Reporting Table for IEC60601-2-37

Transducer Model: P5-1Q

Operating Mode: CW

Index label			MI	*TIS*		*TIB*		*TIC*
				At surface	Below surface	At surface	Below surface	
Maximum index value			0.08	0.89		3.34		2.19
Index Component Value				0.78	0.89	0.78	3.34	
Associated acoustic parameters	$p_{r.\alpha}$ *at zMI*	*(MPa)*	0.11					
	P	*(mW)*		97.89		97.89		97.89
	P_{1X1}	*(mW)*		81.57		81.57		
	z_s	*(cm)*			0.37			
	z_b	*(cm)*					2.81	
	z_{MI}	*(cm)*	3.36					
	$z_{PII,a}$	*(cm)*	3.36					
	f_{awf}	*(MHz)*	2.00	2.00	2.00	2.00	2.00	2.00
Other Information	*prr*	*(Hz)*	200000.00					
	Srr	*(Hz)*	-					
	n_{pps}		1.00					
	$I_{pa.\alpha}$ at $z_{PII,a}$	*(W/cm²)*	0.44					
	$I_{spta,a}$ *at* $z_{PII,a}$ *or* $z_{SII,a}$	*(mW/cm²)*	439.55					
	I_{spta} *at* z_{PII} *or* z_{SII}	*(mW/cm²)*	699.45					
	pr at z_{PII}	*(MPa)*	0.14					
Operating control conditions	CW Frequency		Level 0	Level 0		Level 0		Level 0
	CW Focus Depth(mm)		40.00	40.00		40.00		40.00
	B Display Depth(mm)		180.00	180.00		180.00		180.00
	B FOV		Full	Full		Full		Full

Note:

1. (-) This index or parameter is not required for this operating mode.

1.5. Acoustic Output Table for E8-4Q

Acoustic Output Reporting Table for IEC60601-2-37

Transducer Model: E8-4Q

Operating Mode: B

Index label			MI	TIS		TIB		TIC
				At surface	Below surface	At surface	Below surface	
Maximum index value			1.40	0.45		0.45		N/A
Index Component Value				0.45	0.45	0.45	0.45	
Associated acoustic parameters	$p_{r.\alpha}$ at zMI	(MPa)	3.05					
	P	(mW)		19.91		19.91		N/A
	P_{1X1}	(mW)		19.91		19.91		
	z_s	(cm)			-			
	z_b	(cm)					-	
	z_{MI}	(cm)	1.26					
	$z_{PII,a}$	(cm)	1.26					
	f_{awf}	(MHz)	4.71	4.71	4.71	4.71	4.71	N/A
Other Information	prr	(Hz)	-					
	Srr	(Hz)	57.00					
	n_{pps}		1.00					
	$I_{pa.\alpha}$ at $z_{PII,a}$	(W/cm^2)	455.62					
	$I_{spta,a}$ at $z_{PII,a}$ or $z_{SII,a}$	(mW/cm^2)	15.43					
	I_{spta} at z_{PII} or z_{SII}	(mW/cm^2)	14.10					
	pr at z_{PII}	(MPa)	3.53					
Operating control conditions	B Frequency		Level 1	Level 1		Level 1		N/A
	B Display Depth(mm)		110.00	110.00		110.00		N/A
	B Focus Pos(mm)		40.00	40.00		40.00		N/A
	B FOV		Full	Full		Full		N/A
	B Line Density		Low	Low		Low		N/A

Note:

1. (-) This index or parameter is not required for this operating mode.
2. (N/A) This transducer is not intended for cephalic examination.

Acoustic Output Reporting Table for IEC60601-2-37

Transducer Model: E8-4Q

Operating Mode: B+M

Index label			MI	TIS		TIB		TIC
				At surface	Below surface	At surface	Below surface	
Maximum index value			1.47	0.34		0.43		N/A
Index Component Value				0.34	0.34	0.34	0.43	
Associated acoustic parameters	$p_{r.\alpha}$ at zMI	(MPa)	3.20					
	P	(mW)		18.32		18.32		N/A
	P_{1X1}	(mW)		18.32		18.32		
	z_s	(cm)			0.30			
	z_b	(cm)					1.36	
	z_{MI}	(cm)	1.26					
	$z_{PII,a}$	(cm)	1.26					
	f_{awf}	(MHz)	4.74	3.93	3.93	3.93	3.92	N/A
Other Information	prr	(Hz)	83.33					
	Srr	(Hz)	-					
	n_{pps}		1.00					
	$I_{pa.\alpha}$ at $z_{PII,a}$	(W/cm^2)	547.76					
	$I_{spta,a}$ at $z_{PII,a}$ or $z_{SII,a}$	(mW/cm^2)	14.34					
	I_{spta} at z_{PII} or z_{SII}	(mW/cm^2)	21.19					
	pr at z_{PII}	(MPa)	3.73					
Operating control conditions	B Frequency		Level 1	Level H0		Level H0		N/A
	B Display Depth(mm)		110.00	60.00		60.00		N/A
	B Focus Pos(mm)		30.00	60.00		60.00		N/A
	B FOV		Small	Full		Full		N/A
	B Line Density		Low	Low		Low		N/A
	M Sweep Speed		Slow	Low		Low		N/A

Note:

1. (-) This index or parameter is not required for this operating mode.
2. (N/A) This transducer is not intended for cephalic examination.

Acoustic Output Reporting Table for IEC60601-2-37

Transducer Model: E8-4Q

Operating Mode: B+C/B+PDI/B+DPDI

Index label			MI	*TIS*		*TIB*		*TIC*
				At surface	Below surface	At surface	Below surface	
Maximum index value			1.08	0.30		0.30		N/A
Index Component Value				0.30	0.30	0.30	0.30	
Associated acoustic parameters	$p_{r.\alpha}$ *at zMI*	*(MPa)*	2.61					
	P	*(mW)*		15.28		15.28		N/A
	P_{1X1}	*(mW)*		15.28		15.28		
	z_S	*(cm)*			-			
	z_b	*(cm)*					-	
	z_{MI}	*(cm)*	0.96					
	$z_{PII,a}$	*(cm)*	0.96					
	f_{awf}	*(MHz)*	5.82	3.65	3.65	3.65	3.65	N/A
Other Information	*prr*	*(Hz)*	-					
	Srr	*(Hz)*	27.40					
	n_{pps}		1.00					
	$I_{pa.\alpha}$ at $z_{PII,a}$	*(W/cm²)*	286.28					
	$I_{spta,a}$ *at* $z_{PII,a}$ *or* $z_{SII,a}$	*(mW/cm²)*	3.59					
	I_{spta} *at* z_{PII} *or* z_{SII}	*(mW/cm²)*	3.54					
	pr at z_{PII}	*(MPa)*	3.04					
Operating control conditions	B Frequency		Level 2	Level 2		Level 2		N/A
	B Display Depth(mm)		115.00	115.00		115.00		N/A
	B FOV		Small	Small		Small		N/A
	B Line Density		High	High		High		N/A
	C Frequency		Level 0	Level 0		Level 0		N/A
	C Left Edge of ROI(mm)		-18.50	-18.50		-18.50		N/A
	C Right Edge of ROI(mm)		18.50	18.50		18.50		N/A
	C Up Edge of ROI(mm)		20.50	5.50		5.50		N/A
	C Down Edge of ROI(mm)		29.50	14.50		14.50		N/A
	C Line Density		Low	Low		Low		N/A
	C PRF(KHz)		8.00	0.60		0.60		N/A

Note:

1. (-) This index or parameter is not required for this operating mode.
2. (N/A) This transducer is not intended for cephalic examination.

Acoustic Output Reporting Table for IEC60601-2-37

Transducer Model: E8-4Q

Operating Mode: PW/B+PW/B+C+PW

Index label			MI	*TIS*		*TIB*		*TIC*
				At surface	Below surface	At surface	Below surface	
Maximum index value			1.46	0.24		0.96		N/A
Index Component Value				0.24	0.22	0.23	0.96	
Associated acoustic parameters	$p_{r.\alpha}$ *at zMI*	*(MPa)*	3.19					
	P	*(mW)*		10.21		13.00		N/A
	P_{1X1}	*(mW)*		10.21		13.00		
	z_S	*(cm)*			0.30			
	z_b	*(cm)*					0.70	
	z_{MI}	*(cm)*	0.81					
	$z_{PII,a}$	*(cm)*	0.81					
	f_{awf}	*(MHz)*	4.79	4.99	4.99	3.66	3.66	N/A
Other Information	*prr*	*(Hz)*	-					
	Srr	*(Hz)*	612.50					
	n_{pps}		1.00					
	$I_{pa.\alpha}$ at $z_{PII,a}$	*(W/cm²)*	502.92					
	$I_{spta,a}$ *at* $z_{PII,a}$ *or* $z_{SII,a}$	*(mW/cm²)*	4.63					
	I_{spta} *at* z_{PII} *or* z_{SII}	*(mW/cm²)*	4.26					
	pr at z_{PII}	*(MPa)*	3.55					
Operating control conditions	B Frequency		Level 0	-		-		N/A
	B Display Depth(mm)		30.00	-		-		N/A
	B Focus Pos(mm)		22.50	-		-		N/A
	B FOV		Small	-		-		N/A
	B Line Density		Low	-		-		N/A
	PW Frequency		Level 0	Level 1		Level 0		N/A
	PW SV Depth(mm)		22.50	70.00		60.00		N/A
	PW PRF(KHz)		0.90	3.70		0.90		N/A

Note:

1. (-) This index or parameter is not required for this operating mode.
2. (N/A) This transducer is not intended for cephalic examination.

1.6. Acoustic Output Table for L17-7HQ

Acoustic Output Reporting Table for IEC60601-2-37

Transducer Model: L17-7HQ

Operating Mode: B

Index label			MI	TIS		TIB		TIC
				At surface	Below surface	At surface	Below surface	
Maximum index value			1.06	1.35		1.35		N/A
Index Component Value				1.35	1.35	1.35	1.35	
Associated acoustic parameters	$p_{r.\alpha}$ at zMI	(MPa)	3.49					
	P	(mW)		27.33		27.33		N/A
	P_{1X1}	(mW)		27.33		27.33		
	z_s	(cm)			-			
	z_b	(cm)					-	
	z_{MI}	(cm)	0.30					
	$z_{PII,a}$	(cm)	0.30					
	f_{awf}	(MHz)	10.80	10.40	10.40	10.40	10.40	N/A
Other Information	prr	(Hz)	-					
	Srr	(Hz)	72.00					
	n_{pps}		1.00					
	$I_{pa.\alpha}$ at $z_{PII,a}$	(W/cm^2)	553.96					
	$I_{spta,a}$ at $z_{PII,a}$ or $z_{SII,a}$	(mW/cm^2)	6.89					
	I_{spta} at z_{PII} or z_{SII}	(mW/cm^2)	6.64					
	pr at z_{PII}	(MPa)	3.58					
Operating control conditions	B Frequency		Level 2	Level 2		Level 2		N/A
	B Display Depth(mm)		110.00	50.00		50.00		N/A
	B Focus Pos(mm)		5.00	45.00		45.00		N/A
	B FOV		Small	Full		Full		N/A
	B Line Density		Low	Low		Low		N/A

Note:

1. (-) This index or parameter is not required for this operating mode.
2. (N/A) This transducer is not intended for cephalic examination.

Acoustic Output Reporting Table for IEC60601-2-37

Transducer Model: L17-7HQ

Operating Mode: B+M

Index label			MI	TIS		TIB		TIC
				At surface	Below surface	At surface	Below surface	
Maximum index value			1.05	0.47		0.51		N/A
Index Component Value				0.47	0.46	0.47	0.51	
Associated acoustic parameters	$p_{r.\alpha}$ at zMI	(MPa)	3.44					
	P	(mW)		13.93		13.93		N/A
	P_{1X1}	(mW)		13.93		13.93		
	z_s	(cm)			0.30			
	z_b	(cm)					1.13	
	z_{MI}	(cm)	0.30					
	$z_{PII,a}$	(cm)	0.30					
	f_{awf}	(MHz)	10.79	7.12	7.12	7.12	7.07	N/A
Other Information	prr	(Hz)	1000.00					
	Srr	(Hz)	-					
	n_{pps}		1.00					
	$I_{pa.\alpha}$ at $z_{PII,a}$	(W/cm^2)	529.35					
	$I_{spta,a}$ at $z_{PII,a}$ or $z_{SII,a}$	(mW/cm^2)	121.91					
	I_{spta} at z_{PII} or z_{SII}	(mW/cm^2)	126.77					
	pr at z_{PII}	(MPa)	3.74					
Operating control conditions	B Frequency		Level 2	Level H0		Level H0		N/A
	B Display Depth(mm)		110.00	45.00		45.00		N/A
	B Focus Pos(mm)		5.00	45.00		45.00		N/A
	B FOV		Small	Full		Full		N/A
	B Line Density		Low	Low		Low		N/A
	M Sweep Speed		Slow	High		High		N/A

Note:

1. (-) This index or parameter is not required for this operating mode.
2. (N/A) This transducer is not intended for cephalic examination.

Acoustic Output Reporting Table for IEC60601-2-37

Transducer Model: L17-7HQ

Operating Mode: B+C/B+PDI/B+DPDI

Index label			MI	TIS		TIB		TIC
				At surface	Below surface	At surface	Below surface	
Maximum index value			0.95	0.69		0.69		N/A
Index Component Value				0.69	0.69	0.69	0.69	
Associated acoustic parameters	$p_{r.\alpha}$ at zMI	(MPa)	3.08					
	P	(mW)		17.33		17.33		N/A
	P_{1X1}	(mW)		17.33		17.33		
	z_s	(cm)			-			
	z_b	(cm)					-	
	z_{MI}	(cm)	0.30					
	$z_{PII,a}$	(cm)	0.30					
	f_{awf}	(MHz)	10.44	8.05	8.05	8.05	8.05	N/A
Other Information	prr	(Hz)	-					
	Srr	(Hz)	29.05					
	n_{pps}		1.00					
	$I_{pa.\alpha}$ at $z_{PII,a}$	(W/cm^2)	321.12					
	$I_{spta,a}$ at $z_{PII,a}$ or $z_{SII,a}$	(mW/cm^2)	1.59					
	I_{spta} at z_{PII} or z_{SII}	(mW/cm^2)	1.31					
	pr at z_{PII}	(MPa)	3.26					
Operating control conditions	B Frequency		Level H0	Level 2		Level 2		N/A
	B Display Depth(mm)		110.00	110.00		110.00		N/A
	B FOV		Small	Small		Small		N/A
	B Line Density		High	High		High		N/A
	C Frequency		Level 0	Level 1		Level 1		N/A
	C Left Edge of ROI(mm)		0.50	45.50		45.50		N/A
	C Right Edge of ROI(mm)		9.50	54.50		54.50		N/A
	C Up Edge of ROI(mm)		4.75	4.75		4.75		N/A
	C Down Edge of ROI(mm)		2.00	2.00		2.00		N/A
	C Line Density		Low	Low		Low		N/A
	C PRF(KHz)		10.20	4.60		4.60		N/A

Note:

1. (-) This index or parameter is not required for this operating mode.
2. (N/A) This transducer is not intended for cephalic examination.

Acoustic Output Reporting Table for IEC60601-2-37

Transducer Model: L17-7HQ

Operating Mode: PW/B+PW/B+C+PW

Index label			MI	TIS		TIB		TIC
				At surface	Below surface	At surface	Below surface	
Maximum index value			1.07	0.21		0.55		N/A
Index Component Value				0.21	0.20	0.15	0.55	
Associated acoustic parameters	$p_{r.\alpha}$ at zMI	(MPa)	3.50					
	P	(mW)		5.91		4.54		N/A
	P_{1X1}	(mW)		5.46		4.54		
	z_s	(cm)			0.30			
	z_b	(cm)					0.80	
	z_{MI}	(cm)	0.30					
	$z_{PII,a}$	(cm)	0.30					
	f_{awf}	(MHz)	10.77	6.72	6.72	6.75	6.75	N/A
Other Information	prr	(Hz)	-					
	Srr	(Hz)	12.50					
	n_{pps}		1.00					
	$I_{pa.\alpha}$ at $z_{PII,a}$	(W/cm^2)	557.30					
	$I_{spta,a}$ at $z_{PII,a}$ or $z_{SII,a}$	(mW/cm^2)	0.96					
	I_{spta} at z_{PII} or z_{SII}	(mW/cm^2)	0.86					
	pr at z_{PII}	(MPa)	3.61					
Operating control conditions	B Frequency		Level 1	Level H0		-		N/A
	B Display Depth(mm)		10.00	50.00		-		N/A
	B Focus Pos(mm)		5.00	45.00		-		N/A
	B FOV		Small	Small		-		N/A
	B Line Density		Low	Low		-		N/A
	PW Frequency		Level 0	Level 0		Level 1		N/A
	PW SV Depth(mm)		5.00	45.00		12.50		N/A
	PW PRF(KHz)		0.90	1.50		0.90		N/A

Note:

1. (-) This index or parameter is not required for this operating mode.
2. (N/A) This transducer is not intended for cephalic examination.

2 Maximum Transducer SurfaceTemperature

In simulated use, the maximum surface temperatures of the transducers is:

- C5-2Q: 41.17 °C in B mode, 41.45 °C in PW/B+PW/B+C+PW mode.
- P5-1Q: 41.22°C in PW/B+PW/B+C+PW mode; 41.32°C in CW mode.
- E8-4Q: 41.28 °C in B mode, 41.17 °C in PW/B+PW/B+C+PW mode.

All other imaging modes and transducers have a steady-state surface temperature below 41°C.

Uncertainty of temperature rise test：

Uncertainty of temperature rise test in simulate use: $\overline{X}$=7.73°C, U=0.26°C, K=2.

Uncertainty of temperature rise test in still air: $\overline{X}$=14.06°C, U=0.24°C, K=2.

The system limits patient contact temperature to 43°C, and the acoustic output below the maximum acoustic output limits for track 3. A power-protection circuit is used to prevent over-current conditions. If the power monitor protection circuit detects an over-current condition, then the drive current to the transducer is cut off promptly, preventing overheating of the transducer surface and limiting acoustic output. Validation of the power protection circuit is performed during normal operation. In single fault condition, when an abnormally large current or voltage is detected the system will automatically limit the current or voltage.

3 Formulas

Table 3-1 Generic Calculation Formulas

No.	Generic Calculation items	Formula
1. B-mode Generic Calculations		
1.1	Volume	Volume(cm^3)=Pi × D1(cm) ×D2(cm) ×D3(cm) / 6
1.2	Stenosis	%Stenosis = |(D1-D2)|/Max(D1, D2) ×100% %Stenosis = |(A1-A2)|/Max(A1, A2) × 100%.
2. Doppler Generic Calculations		
2.1	PG (Pressure Gradient)	PG (mmHg) = 4x(Vel(m/s)^2)
2.2	RI (Resistive Index)	RI= (PS-ED)/PS
2.3	PI (Pulse Index)	PI = (PS-ED)/TAMax
2.4	S/D	S/D = PS/ED
2.5	HR (Heart Rate)	HR (bpm) = 60(s) x N(beats) / Time (s)
2.6	ΔV	ΔV = V2-V1
2.7	Acceleration	Accel = (V2-V1)/(T2-T1)
2.8	PHT (Pressure Half Time)	PHT = (1-0.707) xV1x(T2-T1) / (V1-V2)
2.9	TAMax(Time Averaged Maximum Velocity)	TAMax = $\int_{Ta}^{Tb} V(t)dt \ / \ (Tb-Ta)$ (cm/s or m/s)
2.10	PGmax	PGmax = 4x(PS(m/s)^2) (mmHg)
2.11	PGmean	PGmean = $\int_{Ta}^{Tb} 4(V(t)(m/s))^2 dt \ / \ (Tb-Ta)$ (mmHg)
2.12	VTI (Velocity-time Integral)	VTI = $\int_{Ta}^{Tb} V(t)dt$ (m)

No.	Generic Calculation items	Formula
3. M-mode Generic Calculations		
3.1	Slope	Slope = Distance / Time
3.2	HR (Heart Rate)	HR (bpm) = 60(s) x N(beats) / Time (s)

Table 3-2 Abdominal Calculation Formulas

No.	Calculation Items	Description	Formula
1	Renal-Vol	Renal Volume	Renal-Vol(cm3) = 0.49×L(cm)×W(cm)×H(cm)

Table 3-3 Gynecology Calculation Formulas

No.	Calculation Items	Description	Formula
1	UT-Vol	Uterus volume	UT-Vol(cm^3) = 0.523×UT-L(cm)×UT-W(cm)×UT-H(cm)
2	UT-L/CX-L	Uterus length / Cervix length	UT-L/CX-L = UT-L(cm)/CX-L(cm)
3	OV-Vol	Ovary volume	OV-Vol(cm^3) = 0.523×OV-L(cm)×OV-W(cm)×OV-H(cm)
4	Fol-Vol	Follicle volume	Fol-Vol(ml) = π/6×FOL-L(cm)×FOL-W(cm)×FOL-H(cm)
5	Fol-Mean	Follicle Mean Diameter	Fol.Mean(cm) = (sum of two distances)/2, when measure any two of the three distances. Fol.Mean(cm) = (FOL-L(cm)+FOL-W(cm)+FOL-H(cm))/3, when measure these three distances.

Table 3-4 Obesteric Calculation Formulas

No.	Calculation Items	Formula (See Section 4 for references)
1	GS GA	Rempen(default), Hellman, Tokyo, China
2	CRL GA	Hadlock (default); Robinson, Hansmann, Tokyo, China
3	BPD GA	Hadlock (default),Merz, Rempen, Osaka, Tokyo, China
4	HC GA	Hadlock (default) , Merz
5	AC GA	Hadlock (default) , Merz
6	FL GA	Hadlock (default), Merz, Jeanty, Tokyo, Osaka, China
7	HUM GA	Jeanty
8	FTA GA	Osaka
9	CER GA	Goldstein
10	THD GA	Hansmann
11	EFW	Tokyo, Osaka, Hadlock 1, Hadlock 2, Hadlock 3, Hadlock 4, Shepard, Merz, Hansmann, Campbell
12	CUA	Hadlock

Table 3-5 Cardiac Calculation Formulas

No.	Calculation Items		Description	Formula
1	LV Simpson	SV(A4C)	Stroke Volume	SV(ml) = EDV(ml) - ESV(ml)
		EF(A4C)	Ejection Fraction	EF = SV(ml) / EDV(ml)
		CO(A4C)	Cardiac Output	CO(l/min) = SV(ml) × HR(bpm) / 1000
		CI(A4C)	Cardiac Output Index	CI = CO(l/min) / BSA(m^2)
		SI(A4C)	Stroke Volume Index	SI= SV(ml) / BSA(m^2)
		SV(A2C)	Stroke Volume	SV(ml) = EDV(ml) - ESV(ml)
		EF(A2C)	Ejection Fraction	EF = SV(ml) / EDV(ml)

No.	Calculation Items		Description	Formula
		CO(A2C)	Cardiac Output	CO(l/min) = SV(ml) × HR(bpm) / 1000
		CI(A2C)	Cardiac Output Index	CI = CO(l/min) / BSA(m^2)
		SI(A2C)	Stroke Volume Index	SI= SV(ml) / BSA(m^2)
		EDV(BP)	End-diastole Left Ventricular Volume	See table 3-6
		ESV(BP)	End-systole Left Ventricular Volume	
		SV(BP)	Stroke Volume	SV(ml) = EDV(ml) - ESV(ml)
		CO(BP)	Cardiac Output	CO(l/min) = SV(ml) × HR(bpm) / 1000
		EF(BP)	Ejection Fraction	EF = SV(ml) / EDV(ml)
		SI(BP)	Stroke Volume Index	SI= SV(ml) / BSA(m^2)
		CI(BP)	Cardiac Output Index	CI = CO(l/min) / BSA(m^2)
2	Mitral Valve	E/A	E-wave Velocity/ A-wave Velocity	E/A = E Vel(cm/s) / A Vel(cm/s)
3	Mitral Valve	MV Area	Mitral Valve Area	PHT(ms) = (1-0.707)× V1(cm/s)× Time(ms) / (V1(cm/s)-V2(cm/s)) MV Area(cm^2) = 220/MV PHT(ms)
4	P Vein	PVein S/D	Pulmonic Veins Systole/Diastole Velocity	S/D = S Vel(cm/s) / D Vel(cm/s)
5	Vent. Dim (Ventricular Diameter)	EDV	End-diastolic Left Ventricular	see table 6-3
		ESV	End-systolic Left Ventricular	
		SV	Stroke Volume	SV(ml) = EDV(ml) - ESV(ml)
		CO	Cardiac Output	CO(l/min) = SV(ml) × HR(bpm) / 1000

No.	Calculation Items		Description	Formula
		EF	Ejection Fraction	EF(no unit) = SV(ml) / EDV(ml)
		SI	Stroke Volume Index	SI(no unit) = SV(ml) / BSA(m^2)
		CI	Cardiac Output Index	CI(no unit) = CO(l/min) / BSA(m^2)
		MVCF	Mean Velocity of Circumferential Fiber Shortening	MVCF = (LVIDd - LVIDs)/(LVIDd × LVET(sec))
		FS	Fractional Shortening	FS(no unit) = (LVIDd - LVIDs) / LVIDd
6	LA/Ao	LAD/AoD	Left Atrial Diameter/ Aortic Toot Diameter	LA/Ao (no unit) = LAD(cm) / AoD(cm)

Table 3-6 EDV and ESV Calculation Formulas

Calc	Input	Formula
EDV A4C	LVLd	$EDV4[ml] = \pi \times {LVLd_{4i}[cm]}/{20} \times \sum_{i=1}^{20} r_{4i}^2[cm]$
ESV A4C	LVLs	$ESV4[ml] = \pi \times {LVLs_{4i}[cm]}/{20} \times \sum_{i=1}^{20} r_{4i}^2[cm]$
EDV A2C	LVLd	$EDV2[ml] = \pi \times {LVLd_{2i}[cm]}/{20} \times \sum_{i=1}^{20} r_{2i}^2[cm]$
ESV A2C	LVLs	$ESV2[ml] = \pi \times {LVLs_{2i}[cm]}/{20} \times \sum_{i=1}^{20} r_{2i}^2[cm]$
EDV (BP)	LVLd	$EDV[ml] = \pi \times {MAX\{LVLd_{2i}[cm], LVLd_{4i}[cm]\}}/{20} \times \sum_{i=1}^{20} (r_{2i}[cm] \times r_{4i}[cm])$
ESV (BP)	LVLs	$ESV[ml] = \pi \times {MAX\{LVLs_{2i}[cm], LVLs_{4i}[cm]\}}/{20} \times \sum_{i=1}^{20} (r_{2i}[cm] \times r_{4i}[cm])$
EDV(Teichholz)	LVIDd	EDV(ml) = (7×(LVIDd(cm))^3)/(2.4+LVIDd(cm))
ESV(Teichholz)	LVIDs	ESV(ml) = (7×(LVIDs(cm))^3)/(2.4+LVIDs(cm))
EDV(Cube)	LVIDd	EDV(ml) = LVIDd(cm)^3
ESV(Cube)	LVIDs	ESV(ml) = LVIDs(cm)^3

EDV(Gibson)	LVIDd	$EDV(ml) = \pi/6 \times (0.98 \times LVIDd(cm) + 5.90) \times LVIDd(cm)^2$
ESV(Gibson)	LVIDs	$ESV(ml) = \pi/6 \times (1.14 \times LVIDs(cm) + 4.18) \times LVIDs(cm)^2$

Table 3-7 Small Parts Calculation Formulas

No.	Calculation items	Description	Formula
1	THY-Vol	Thyroid volume	THY-Vol(cm^3) = 0.479×L(cm)×W(cm)×H(cm)

Table 3-8 Urology Calculation Formulas

No.	Calculation items	Description	Formula
1	Renal-Vol	Renal Volume	Renal-Vol(cm^3) = 0.49×L(cm)×W(cm)×H(cm)
2	Pre-BL Vol	Pre-void Bladder Volume	Pre-BL Vol(ml) = π/6×L(cm)×W(cm)×H(cm)
3	Post-BL Vol	Post-void Bladder Volume	Post-BL Vol(ml) = π/6×L(cm)×W(cm)×H(cm)
4	Mictur. Vol	Micturated Volume	Mictur. Vol(ml) = (Pre-BL Vol)–(Post-BL Vol)
5	Prostate-Vol	Prostate Volume	Prostate -Vol(cm^3) = 0.52×Pros-L(cm)×Pros-W(cm)×Pros-H(cm)
6	Testis-Vol	Testicle Volume	Testis-Vol(cm^3) = 0.65×L(cm)×W(cm)×H(cm)

Table 3-7 Vascular Calculation Formulas

No.	Calculation items	Formula
1	Volume Flow Area	Volume Flow Area =π * (VF Diam (cm)/2)^2
2	ICA/CCA	ICA/CCA =ICA PS / CCA PS
3	Volume Flow (TAMean)	Volume Flow (TAMean) = VF Area (cm^2) * |VF TAMean| (cm/s)* 60(s)
4	Volume Flow(TAMax)	Volume Flow(TAMax) = VF Area (cm^2) * |VF TAMax| (cm/s)* 60(s)

4 Obstetrical References

4.1. Application Table of Obstetrical Reference Formulas

Parameter	Formula	Measurement range (mm)	MA range	±2 SD
GS	Tokyo	[10, 68]	4w0d ~ 12w1d	See table GS, Tokyo
	Hellman	[17, 60]	6w0d ~ 12w1d	0
	Rempen	[2, 73]	4w6d ~ 14w1d	±12 days See table GS, Rempen for details
	China	[10, 68]	5w0d ~ 12w0d	See table GS, China
CRL	Tokyo	[6, 100]	6w3d ~ 16w0d	See table CRL, Tokyo
	Hadlock	[2, 121.1]	5w5d ~ 18w0d	8.826%
	Robinson	[6.7, 82.4]	6w3d ~ 13w6d	±5 days
	Hansmann	[6, 150]	6w1d ~ 21w3d	See table CRL, Hansmann
	China	[9, 105]	7w0d ~ 17w0d	See table CRL, China
BPD	Tokyo	[16, 92]	11w3d ~ 40w0d	See table BPD, Tokyo
	Hadlock	[15, 102]	12w1d ~ 42w1d	12-18 wk ± 1.19 wk (8 days) 18-24 wk ± 1.73 wk (12 days) 24-30 wk ± 2.18 wk (15 days) 30-36 wk ± 3.08 wk (22 days) 36-42 wk ± 3.20 wk (22 days)
	Merz	[21, 102]	12w1d ~ 40w2d	See table BPD, Merz
	Rempen	[3, 27]	6w6d ~ 13w5d	±10 days See table BPD, Rempen for details
	Osaka	[13.3, 93.6]	10w0d ~ 40w0d	See table BPD, Osaka
	China	[19, 94]	12w0d ~ 40w0d	See table BPD, China
HC	Hadlock	[56, 358]	12w0d ~ 41w6d	12-18 wk ± 1.19 wk (8 days) 18-24 wk ± 1.48 wk (10 days) 24-30 wk ± 2.06 wk (14 days) 30-36 wk ± 2.98 wk (21 days) 36-42 wk ± 2.70 wk (19 days)
	Merz	[72, 364]	12w1d ~ 40w4d	See table HC, Merz
AC	Hadlock	[50, 381]	11w6d ~ 41w6d	12-18 wk ± 1.66 wk (12 days)

				18-24 wk ± 2.06 wk (14 days) 24-30 wk ± 2.18 wk (15 days) 30-36 wk ± 2.96 wk (21 days) 36-42 wk ± 3.04 wk (19 days)
	Merz	[56, 348]	12w1d ~ 39w6d	See table AC, Merz
FL	Tokyo	[8, 72]	12w3d ~ 40w2d	See table FL, Tokyo
	Hadlock	[7, 82]	12w1d ~ 42w0d	12-18 wk ± 1.38 wk (10 days) 18-24 wk ± 1.80 wk (13 days) 24-30 wk ± 2.08 wk (15 days) 30-36 wk ± 2.96 wk (21 days) 36-42 wk ± 3.12 wk (22 days)
	Jeanty	[10, 80]	12w4d ~ 40w0d	±19 days
	Merz	[10, 80]	12w2d ~ 40w1d	See table FL, Merz
	Osaka	[9.4, 71.2]	13w0d ~ 40w0d	See table FL, Osaka
	China	[6, 75]	12w4d ~ 40w2d	See table FL, China
HUM	Jeanty	[9, 69]	12w0d ~ 40w0d	±23 days (±3.3104 wks)
FTA	Osaka	[5.6, 86.6] (cm^2)	14w0d ~ 40w0d	See table FTA, Osaka
CER	Goldstein	[14, 52] mm	/	/
THD	Hansmann	[20, 105] mm	/	/

4.2. GS

Hellman:

Hellman LM, Kobayashi M, Fillisti L et al. “Growth and development of the human fetus prior to the 20th week of gestation.” Am J Obstetrics Gynecology 103:789, 1969

MA (GS mm) = (GS+25.43)/7.02

Rempen:

Rempen A. “Biometrie in der Frühgravidität” (I. Trimenon) (Biometry in Early Pregnancy (1st Trimester)).” Der Frauenarzt 32:425, 1991

Table GS, **Rempen**

GS mm	MA	+/- 2SD	GS mm	MA	+/- 2SD	GS mm	MA	+/- 2SD	GS mm	MA	+/- 2SD
02.0	4w6d	12	20.0	6w6d	12	38.0	9w1d	12	56.0	11w4d	12
03.0	5w0d	12	21.0	7w0d	12	39.0	9w2d	12	57.0	11w5d	12
04.0	5w1d	12	22.0	7w1d	12	40.0	9w3d	12	58.0	11w6d	12
05.0	5w1d	12	23.0	7w2d	12	41.0	9w4d	12	59.0	12w0d	12
06.0	5w2d	12	24.0	7w3d	12	42.0	9w5d	12	60.0	12w1d	12

07.0	5w3d	12	25.0	7w4d	12	43.0	9w6d	12	61.0	12w2d	12
08.0	5w4d	12	26.0	7w4d	12	44.0	9w6d	12	62.0	12w3d	12
09.0	5w5d	12	27.0	7w5d	12	45.0	10w0d	12	63.0	12w4d	12
10.0	5w5d	12	28.0	7w6d	12	46.0	10w1d	12	64.0	12w5d	12
11.0	5w6d	12	29.0	8w0d	12	47.0	10w2d	12	65.0	12w6d	12
12.0	6w0d	12	30.0	8w1d	12	48.0	10w3d	12	66.0	13w0d	12
13.0	6w1d	12	31.0	8w2d	12	49.0	10w4d	12	67.0	13w1d	12
14.0	6w2d	12	32.0	8w3d	12	50.0	10w5d	12	68.0	13w2d	12
15.0	6w2d	12	33.0	8w3d	12	51.0	10w6d	12	69.0	13w3d	12
16.0	6w3d	12	34.0	8w4d	12	52.0	11w0d	12	70.0	13w4d	12
17.0	6w4d	12	35.0	8w5d	12	53.0	11w1d	12	71.0	13w5d	12
18.0	6w5d	12	36.0	8w6d	12	54.0	11w2d	12	72.0	14w0d	12
19.0	6w6d	12	37.0	9w0d	12	55.0	11w3d	12	73.0	14w1d	12

Tokyo:

Studies on Fetal Growth and Functional Developments, Takashi Okai, Department of Obstetrics and Gynecology, Faculty of Medicine, University of Tokyo

Table GS, **Tokyo**

GS cm	MA	+/- 2SD	GS cm	MA	+/- 2SD	GS cm	MA	+/- 2SD	GS cm	MA	+/- 2SD
1	4w0d	7	2.6	6w6d	12	4.2	9w1d	14	5.8	11w1d	16
1.2	4w1d	7	2.8	7w1d	12	4.4	9w3d	14	6	11w3d	16
1.4	4w4d	7	3	7w3d	12	4.6	9w4d	14	6.2	11w4d	16
1.6	5w0d	8	3.2	7w4d	12	4.8	10w0d	15	6.4	11w6d	16
1.8	5w1d	8	3.4	8w0d	13	5	10w1d	15	6.6	11w6d	16
2	5w4d	8	3.6	8w1d	13	5.2	10w3d	15	6.8	12w1d	17
2.2	6w0d	11	3.8	8w3d	13	5.4	10w4d	15			
2.4	6w1d	11	4	8w6d	13	5.6	10w6d	15			

China:

Wu Zhongyu, “Ultrasound Diagnosis in Obstetrics and Gynecology”, Tianjin Science and Technology Publisher, 1995

Table GS, **China**

GS cm	MA	+/- 2SD	GS cm	MA	+/- 2SD	GS cm	MA	+/- 2SD	GS cm	MA	+/- 2SD
1	5w0d	4	2.5	6w6d	7	4	8w3d	11	5.5	10w3d	12
1.1	5w1d	5	2.6	7w0d	7	4.1	8w4d	11	5.6	10w4d	12
1.2	5w2d	5	2.7	7w0d	7	4.2	8w5d	11	5.7	10w5d	12
1.3	5w3d	5	2.8	7w1d	8	4.3	8w6d	12	5.8	10w5d	12
1.4	5w4d	5	2.9	7w2d	8	4.4	9w0d	12	5.9	10w6d	12
1.5	5w5d	5	3	7w3d	8	4.5	9w1d	12	6	11w0d	12

1.6	5w6d	5	3.1	7w4d	8	4.6	9w2d	12	6.1	11w1d	12
1.7	6w0d	6	3.2	7w4d	9	4.7	9w3d	12	6.2	11w2d	13
1.8	6w0d	6	3.3	7w5d	9	4.8	9w4d	12	6.3	11w3d	13
1.9	6w1d	6	3.4	7w6d	9	4.9	9w4d	12	6.4	11w4d	13
2	6w2d	6	3.5	8w0d	9	5	9w5d	12	6.5	11w5d	13
2.1	6w3d	6	3.6	8w0d	10	5.1	9w6d	12	6.6	11w5d	13
2.2	6w4d	6	3.7	8w1d	10	5.2	10w0d	12	6.7	11w6d	13
2.3	6w4d	6	3.8	8w2d	10	5.3	10w1d	12	6.8	12w0d	13
2.4	6w5d	7	3.9	8w3d	10	5.4	10w2d	12			

4.3. CRL

Hadlock:

Hadlock FP, Shah YP, Kanon DJ etc. “Fetal Crown-Rump Length: Reevaluation of Relation to Menstrual Age (5-18 weeks) with High-Resolution Real-Time US.” Radiology 182(2):501, 1992

MA (CRL mm) = exp(1.684969 +0.0315646*CRL - 0.00049306*CRL^2 +0.000004057 *CRL ^3 - 0.0000000120456*CRL ^4)

Robinson:

Robinson HP and Fleming JEE. “A critical evaluation of sonar ‘crown-rump length’ measurements.” British Journal of Obstetrics and Gynecology 82:702, 1975

$MA = (8.052*CRL^{1/2} + 23.73) / 7$

Hansmann:

Hansmann M, Hackelöer B-J, Staudach A. Ultrasound Diagnosis in Obstetrics and Gynecology. New York: Spring-Verlag, 1985, P. 439

Table CRL, **Hansmann**

CRL mm	MA	+/- 2SD	CRL mm	MA	+/- 2SD	CRL mm	MA	+/- 2SD	CRL mm	MA	+/- 2SD
6.0	6w1d	6	22.0	9w1d	7	52.0	12w2d	9	100.0	15w5d	12
7.0	6w2d	7	23.0	9w2d	7	54.0	12w3d	9	103.0	16w0d	13
8.0	6w4d	6	24.0	9w3d	7	56.0	12w4d	9	106.0	16w2d	13
9.0	6w6d	7	26.0	9w5d	7	58.0	12w5d	9	110.0	16w4d	14
10.0	7w0d	7	28.0	10w0d	7	60.0	12w6d	9	113.0	17w0d	14
11.0	7w2d	6	30.0	10w2d	7	63.0	13w0d	10	116.0	17w2d	14
12.0	7w3d	7	32.0	10w3d	8	66.0	13w2d	10	120.0	17w4d	14
13.0	7w4d	7	34.0	10w5d	7	70.0	13w3d	11	123.0	18w0d	14
14.0	7w6d	7	36.0	10w6d	8	73.0	13w5d	10	126.0	18w2d	15
15.0	8w0d	7	38.0	11w1d	8	76.0	13w6d	11	130.0	18w6d	14
16.0	8w2d	6	40.0	11w2d	8	80.0	14w1d	11	133.0	19w1d	15
17.0	8w3d	6	42.0	11w3d	8	83.0	14w2d	12	136.0	19w4d	16
18.0	8w4d	7	44.0	11w4d	9	86.0	14w4d	12	140.0	20w0d	16

19.0	8w5d	7	46.0	11w6d	8	90.0	14w6d	12	143.0	20w3d	16
20.0	8w6d	7	48.0	12w0d	9	93.0	15w1d	12	146.0	20w6d	16
21.0	9w0d	7	50.0	12w1d	9	96.0	15w3d	12	150.0	21w3d	16

Tokyo:

Studies on Fetal Growth and Functional Developments, Takashi Okai, Department of Obstetrics and Gynecology, Faculty of Medicine, University of Tokyo

Table CRL, Tokyo

CRL cm	MA	+/- 2SD	CRL cm	MA	+/- 2SD	CRL cm	MA	+/- 2SD	CRL cm	MA	+/- 2SD
0.6	6w3d	7	3	10w3d	7	5.4	12w4d	7	7.8	14w3d	8
0.8	6w6d	7	3.2	10w4d	7	5.6	12w5d	7	8	14w4d	8
1	7w1d	7	3.4	10w6d	7	5.8	13w0d	7	8.2	14w5d	8
1.2	7w4d	7	3.6	11w0d	7	6	13w1d	7	8.4	14w6d	8
1.4	7w6d	7	3.8	11w1d	7	6.2	13w2d	7	8.6	15w0d	14
1.6	8w1d	7	4	11w3d	7	6.4	13w3d	7	8.8	15w1d	14
1.8	8w4d	7	4.2	11w4d	7	6.6	13w4d	7	9	15w2d	14
2	9w1d	7	4.4	11w6d	7	6.8	13w5d	7	9.2	15w3d	14
2.2	9w2d	7	4.6	12w0d		7	13w6d	7	9.4	15w4d	14
2.4	9w4d	7	4.8	12w1d		7.2	14w0d	7	9.6	15w5d	14
2.6	9w6d	7	5	12w2d		7.4	14w1d	7	9.8	15w6d	14
2.8	10w2d	7	5.2	12w3d		7.6	14w2d	7	10	16w0d	14

China:

Wu Zhongyu, “Ultrasound Diagnosis in Obstetrics and Gynecology”, Tianjin Science and Technology Publisher, 1995

Table CRL, **China**

CRL cm	MA	+/- 2SD	CRL cm	MA	+/- 2SD				CRL cm	MA	+/- 2SD
0.9	7w0d	6	3.4	10w3d	7	5.9	12w6d	10	8.4	15w1d	12
1	7w1d	6	3.5	10w4d	7	6	13w0d	10	8.5	15w1d	13
1.1	7w2d	6	3.6	10w5d	7	6.1	13w0d	10	8.6	15w2d	13
1.2	7w3d	6	3.7	10w5d	7	6.2	13w1d	10	8.7	15w2d	13
1.3	7w4d	6	3.8	10w6d	7	6.3	13w2d	11	8.8	15w3d	13
1.4	7w5d	6	3.9	11w0d	7	6.4	13w2d	11	8.9	15w4d	13
1.5	7w6d	6	4	11w1d	8	6.5	13w3d	11	9	15w4d	13
1.6	8w0d	6	4.1	11w1d	8	6.6	13w3d	11	9.1	15w5d	13
1.7	8w1d	6	4.2	11w2d	8	6.7	13w4d	11	9.2	15w6d	13
1.8	8w2d	6	4.3	11w3d	8	6.8	13w5d	11	9.3	15w6d	13
1.9	8w3d	6	4.4	11w4d	8	6.9	13w5d	11	9.4	16w0d	13
2	8w4d	6	4.5	11w4d	8	7	13w6d	11	9.5	16w1d	13

2.1	8w5d	6	4.6	11w5d	8	7.1	14w0d	11	9.6	16w1d	13
2.2	8w6d	6	4.7	11w6d	9	7.2	14w0d	12	9.7	16w2d	14
2.3	9w0d	6	4.8	11w6d	9	7.3	14w1d	12	9.8	16w3d	14
2.4	9w1d	6	4.9	12w0d	9	7.4	14w1d	12	9.9	16w3d	14
2.5	9w2d	6	5	12w0d	9	7.5	14w2d	12	10	16w4d	14
2.6	9w3d	6	5.1	12w1d	9	7.6	14w3d	12	10.1	16w5d	14
2.7	9w4d	7	5.2	12w2d	9	7.7	14w3d	12	10.2	16w6d	14
2.8	9w5d	7	5.3	12w2d	9	7.8	14w4d	12	10.3	16w6d	14
2.9	9w6d	7	5.4	12w3d	9	7.9	14w5d	12	10.4	17w0d	14
3	10w0d	7	5.5	12w3d	9	8	14w5d	12	10.5	17w0d	14
3.1	10w1d	7	5.6	12w4d	9	8.1	14w6d	12			
3.2	10w2d	7	5.7	12w5d	10	8.2	15w0d	12			
3.3	10w3d	7	5.8	12w5d	10	8.3	15w0d	12			

4.4. BPD

Hadlock:

Hadlock FP, Deter RL etc. “Estimation Fetal Age: Computer-Assisted Analysis of Multiple Fetal Growth Parameters.” Radiology 152:497, 1984

MA (BPD cm)= 9.54 + 1.482*(BPD) + 0.1676 * (BPD^2)

Merz:

Merz E. Ultrasound in Gynecology and Obstetrics. Stuttgart and New York: Thieme Medical Publishers, Inc., 1991, p. 326

Table **BPD**, Merz

BPD mm	MA	+/- 2SD	BPD mm	MA	+/- 2SD	BPD mm	MA	+/- 2SD	BPD mm	MA	+/- 2SD
21.0	12w1d	13	41.0	17w5	16	61.0	23w6d	17	82.0	31w2d	19
22.0	12w3d	12	42.0	18w0	16	62.0	24w1d	17	83.0	31w5d	18
23.0	12w5d	12	43.0	18w2	16	63.0	24w4d	17	84.0	32w1d	18
24.0	13w0d	13	44.0	18w4	16	64.0	24w6d	17	85.0	32w4d	18
25.0	13w1d	13	45.0	18w6	16	65.0	25w1d	17	86.0	32w6d	19
26.0	13w4d	12	46.0	19w1	13	66.0	25w4d	17	87.0	33w2d	19
27.0	13w6d	13	47.0	19w3	15	67.0	25w6d	17	89.0	34w1d	21
28.0	14w1d	13	48.0	19w5	16	68.0	26w1d	18	90.0	34w4d	19
29.0	14w2d	13	49.0	20w0	16	69.0	26w4d	17	91.0	35w1d	19
30.0	14w4d	13	50.0	20w3	15	70.0	26w6d	17	92.0	35w4d	19
31.0	14w6d	15	51.0	20w5	16	71.0	27w1d	18	93.0	35w6d	19
32.0	15w1d	15	52.0	21w0	16	72.0	27w4d	18	94.0	36w3d	21
33.0	15w3d	13	53.0	21w2	16	73.0	27w6d	18	95.0	36w6d	21
34.0	15w5d	15	54.0	21w4	17	74.0	28w2d	18	96.0	37w2d	21

35.0	16w0d	15	55.0	21w6	17	75.0	28w4d	18	97.0	37w6d	19
36.0	16w2d	15	56.0	22w1	17	76.0	29w0d	18	98.0	38w2d	21
37.0	16w4d	13	57.0	22w3	16	77.0	29w3d	18	99.0	38w6d	19
38.0	16w6d	15	58.0	22w6	16	78.0	29w6d	18	100.0	39w2d	22
39.0	17w1d	15	59.0	23w1	17	79.0	30w1d	18	101.0	39w6d	21
40.0	17w3d	15	60.0	23w4	17	81.0	30w6d	19	102.0	40w2d	22

Rempen:

Rempen A. “Biometrie in der Frühgravidität” (I. Trimenon) (Biometry in Early Pregnancy (1st Trimester)).” Der Frauenarzt 32:425, 1991

Table **BPD**, Rempen

BPD mm	MA	+/- 2SD	BPD mm	MA	+/- 2SD	BPD mm	MA	+/- 2SD	BPD mm	MA	+/- 2SD
03.0	6w6d	10	10.0	8w6d	10	17.0	10w6d	10	24.0	12w6d	10
04.0	7w1d	10	11.0	9w1d	10	18.0	11w1d	10	25.0	13w1d	10
05.0	7w3d	10	12.0	9w3d	10	19.0	11w3d	10	26.0	13w3d	10
06.0	7w5d	10	13.0	9w5d	10	20.0	11w5d	10	27.0	13w5d	10
07.0	8w0d	10	14.0	10w0d	10	21.0	12w0d	10			
08.0	8w2d	10	15.0	10w2d	10	22.0	12w2d	10			
09.0	8w4d	10	16.0	10w4d	10	23.0	12w4d	10			

Osaka:

Fetal Growth Chart Using the Ultrasonotomographic Technique, Keiichi Kurachi, Mineo Aoki, Department of Obstetrics and Gynecology, Osaka University Medical School Revision 3 (September 1983)

Table **BPD**, Osaka

BPD cm	MEAN	MIN	MAX	BPD cm	MEAN	MIN	MAX	BPD cm	MEAN	MIN	MAX
1.33	10w0d	9w4d	10w3d	4.94	20w2d	19w3d	21w1d	7.88	30w4d	29w0d	32w1d
1.44	10w2d	9w6d	10w5d	5.03	20w4d	19w5d	21w3d	7.95	30w6d	29w2d	32w3d
1.55	10w4d	10w0d	11w0d	5.12	20w6d	20w0d	21w5d	8.02	31w1d	29w4d	32w5d
1.66	10w6d	10w2d	11w2d	5.21	21w1d	20w1d	22w0d	8.08	31w3d	29w6d	33w0d
1.77	11w1d	10w4d	11w4d	5.30	21w3d	20w3d	22w2d	8.15	31w5d	30w1d	33w3d
1.88	11w3d	10w6d	11w6d	5.39	21w5d	20w5d	22w4d	8.21	32w0d	30w3d	33w5d
1.99	11w5d	11w1d	12w2d	5.48	22w0d	21w0d	22w6d	8.27	32w2d	30w4d	34w0d
2.09	12w0d	11w3d	12w3d	5.57	22w2d	21w2d	23w2d	8.34	32w4d	30w6d	34w3d
2.20	12w2d	11w5d	12w6d	5.66	22w4d	21w4d	23w4d	8.40	32w6d	31w1d	34w5d

2.31	12w4d	12w0d	13w1d	5.74	22w6d	21w5d	23w6d	8.46	33w1d	31w3d	35w1d
2.41	12w6d	12w1d	13w3d	5.83	23w1d	22w1d	24w1d	8.51	33w3d	31w4d	35w3d
2.52	13w1d	12w3d	13w5d	5.92	23w3d	22w3d	24w3d	8.57	33w5d	31w6d	35w6d
2.62	13w3d	12w5d	14w0d	6.00	23w5d	22w4d	24w5d	8.62	34w0d	32w1d	36w1d
2.72	13w5d	13w0d	14w2d	6.09	24w0d	22w6d	25w0d	8.68	34w2d	32w3d	36w4d
2.82	14w0d	13w2d	14w4d	6.17	24w2d	23w1d	25w2d	8.73	34w4d	32w4d	37w0d
2.93	14w2d	13w4d	14w6d	6.26	24w4d	23w3d	25w4d	8.78	34w6d	32w6d	37w3d
3.03	14w4d	13w6d	15w1d	6.34	24w6d	23w5d	25w6d	8.83	35w1d	33w0d	38w0d
3.13	14w6d	14w1d	15w3d	6.43	25w1d	24w0d	26w2d	8.87	35w3d	33w2d	38w2d
3.23	15w1d	14w3d	15w6d	6.51	25w3d	24w2d	26w4d	8.92	35w5d	33w4d	39w0d
3.33	15w3d	14w5d	16w1d	6.59	25w5d	24w4d	26w6d	8.96	36w0d	33w5d	39w4d
3.42	15w5d	14w6d	16w3d	6.67	26w0d	24w6d	27w1d	9.00	36w2d	34w0d	40w0d
3.52	16w0d	15w1d	16w5d	6.75	26w2d	25w0d	27w3d	9.04	36w4d	34w1d	40w1d
3.62	16w2d	15w3d	17w0d	6.84	26w4d	25w3d	27w5d	9.08	36w6d	34w3d	40w2d
3.72	16w4d	15w6d	17w2d	6.92	26w6d	25w4d	28w0d	9.12	37w1d	34w4d	40w3d
3.81	16w6d	16w0d	17w4d	6.99	27w1d	25w6d	28w2d	9.15	37w3d	34w5d	40w4d
3.91	17w1d	16w2d	17w6d	7.07	27w3d	26w1d	28w4d	9.18	37w5d	35w0d	40w5d
4.01	17w3d	16w4d	18w1d	7.15	27w5d	26w3d	29w0d	9.21	38w0d	35w1d	40w6d
4.10	17w5d	16w6d	18w3d	7.23	28w0d	26w5d	29w2d	9.24	38w2d	35w2d	41w0d
4.20	18w0d	17w1d	18w5d	7.30	28w2d	27w0d	29w5d	9.27	38w4d	35w3d	41w0d
4.29	18w2d	17w3d	19w0d	7.38	28w4d	27w2d	29w6d	9.29	38w6d	35w4d	41w0d
4.39	18w4d	17w5d	19w2d	7.45	28w6d	27w3d	30w1d	9.31	39w1d	35w5d	41w0d
4.48	18w6d	18w0d	19w5d	7.53	29w1d	27w5d	30w4d	9.33	39w3d	35w6d	41w0d
4.57	19w1d	18w2d	20w0d	7.60	29w3d	28w0d	30w6d	9.35	39w5d	36w0d	41w0d
4.67	19w3d	18w4d	20w2d	7.67	29w5d	28w2d	31w1d	9.36	40w0d	36w0d	41w0d
4.76	19w5d	18w6d	20w4d	7.74	30w0d	28w4d	31w3d				
4.85	20w0d	19w1d	20w6d	7.81	30w2d	28w6d	31w5d				

Tokyo:

Studies on Fetal Growth and Functional Developments, Takashi Okai, Department of Obstetrics and Gynecology, Faculty of Medicine, University of Tokyo

Table **BPD**, Tokyo

BPD cm	MA	+/- 2SD	BPD cm	MA	+/- 2SD	BPD cm	MA	+/- 2SD	BPD cm	MA	+/- 2SD
1.6	11w3d	7	3.6	16w3d	8	5.6	23w0d	11	7.6	30w1d	15
1.8	11w6d	7	3.8	17w0d	8	5.8	23w5d	11	7.8	31w0d	16
2	12w0d	7	4	17w5d	8	6	24w2d	12	8	32w0d	16
2.2	12w4d	7	4.2	18w2d	9	6.2	25w0d	12	8.2	33w0d	16
2.4	13w0d	7	4.4	19w0d	9	6.4	25w6d	12	8.4	34w0d	20
2.6	13w6d	7	4.6	19w5d	10	6.6	26w3d	13	8.6	35w5d	25
2.8	14w2d	7	4.8	20w2d	10	6.8	27w3d	13	8.8	37w0d	25
3	14w6d	7	5	21w0d	10	7	28w0d	13	9	39w0d	25
3.2	15w2d	7	5.2	21w4d	10	7.2	29w0d	14	9.2	40w0d	25
3.4	16w0d	8	5.4	22w2d	10	7.4	29w5d	14			

China:

Wu Zhongyu, “Ultrasound Diagnosis in Obstetrics and Gynecology”, Tianjin Science and Technology Publisher, 1995

Table **BPD**, China

BPD cm	MA	+/- 2SD	BPD cm	MA	+/- 2SD	BPD cm	MA	+/- 2SD	BPD cm	MA	+/- 2SD
1.9	12w0d	7	3.8	17w3d	9	5.7	23w1d	13	7.6	30w0d	20
2	12w2d	7	3.9	17w5d	9	5.8	23w3d	14	7.7	30w3d	20
2.1	12w4d	7	4	18w0d	9	5.9	23w5d	14	7.8	30w6d	21
2.2	12w6d	7	4.1	18w2d	9	6	24w0d	14	7.9	31w3d	21
2.3	13w1d	7	4.2	18w4d	9	6.1	24w2d	15	8	31w6d	21
2.4	13w3d	7	4.3	18w6d	10	6.2	24w5d	15	8.1	32w3d	22
2.5	13w5d	7	4.4	19w1d	10	6.3	25w0d	15	8.2	32w6d	22
2.6	14w0d	7	4.5	19w4d	10	6.4	25w2d	15	8.3	33w2d	23
2.7	14w2d	7	4.6	19w6d	10	6.5	25w5d	16	8.4	33w6d	23
2.8	14w4d	7	4.7	20w1d	11	6.6	26w0d	16	8.5	34w3d	23
2.9	14w6d	8	4.8	20w3d	11	6.7	26w3d	16	8.6	34w6d	24
3	15w1d	8	4.9	20w5d	11	6.8	26w5d	16	8.7	35w4d	24
3.1	15w3d	8	5	21w0d	11	6.9	27w1d	18	8.8	36w1d	24
3.2	15w5d	8	5.1	21w2d	11	7	27w3d	18	8.9	36w5d	24
3.3	16w0d	8	5.2	21w4d	12	7.1	27w6d	18	9	37w1d	25
3.4	16w2d	8	5.3	21w6d	12	7.2	28w1d	18	9.1	37w1d	25
3.5	16w4d	8	5.4	22w1d	12	7.3	28w4d	19	9.2	38w4d	25
3.6	16w6d	8	5.5	22w3d	13	7.4	29w1d	19	9.3	39w2d	25
3.7	17w1d	8	5.6	22w5d	13	7.5	29w4d	20	9.4	40w0d	25

4.5. HC

Hadlock:

Hadlock FP, Deter RL etc. “Estimation Fetal Age: Computer-Assisted Analysis of Multiple Fetal Growth Parameters.” Radiology 152:497, 1984

MA(HC cm) = 8.96 + 0.540 * (HC) + 0.0003 * (HC^3)

Merz:

Merz E. Ultrasound in Gynecology and Obstetrics. Stuttgart and New York: Thieme Medical Publishers, Inc., 1991, p. 326

Table **HC**, Merz

HC mm	MA	+/- 2SD	HC mm	MA	+/- 2SD	HC mm	MA	+/- 2SD	HC mm	MA	+/- 2SD
72	12w1	9	146	17w2	12	220	23w2	15	294	30w5	16
74	12w2	11	148	17w4	12	222	23w4	15	296	30w6	17
76	12w3	10	150	17w4	13	224	23w4	15	298	31w1	16
78	12w4	10	152	17w6	12	226	23w6	15	300	31w3	17
80	12w5	10	154	17w6	13	228	24w0	16	302	31w4	17
82	12w6	10	156	18w1	12	230	24w1	16	304	31w6	17
84	12w6	11	158	18w1	13	232	24w3	15	306	32w1	17
86	13w1	10	160	18w3	12	234	24w4	15	308	32w2	17
88	13w1	11	162	18w4	12	236	24w4	15	310	32w4	17
90	13w2	11	164	18w5	12	238	24w6	16	312	32w6	17
92	13w4	10	166	18w6	12	240	25w1	15	314	33w1	17
94	13w4	11	168	19w0	13	242	25w2	16	316	33w3	17
96	13w5	10	170	19w1	12	244	25w4	15	318	33w4	17
98	13w6	11	172	19w2	13	246	25w5	16	320	33w6	18
100	14w0	10	174	19w3	12	248	25w6	16	322	34w1	17
102	14w1	12	176	19w4	13	250	26w0	16	324	34w3	18
104	14w2	11	178	19w6	13	252	26w1	16	326	34w5	18
106	14w3	11	180	19w6	15	254	26w3	15	328	34w6	18
108	14w4	11	182	20w1	13	256	26w4	16	330	35w1	18
110	14w5	11	184	20w1	15	258	26w6	15	332	35w4	18
112	14w6	11	186	20w3	13	260	27w0	16	334	35w6	18
114	15w0	11	188	20w4	13	262	27w1	16	336	36w1	18
116	15w1	11	190	20w5	13	264	27w3	15	338	36w3	18
118	15w2	11	192	20w6	15	266	27w4	16	340	36w4	19
120	15w3	11	194	21w1	13	268	27w6	15	342	36w6	19
122	15w4	12	196	21w1	15	270	28w1	16	344	37w1	19
124	15w5	12	198	21w3	13	272	28w2	16	346	37w4	18
126	15w6	11	200	21w4	15	274	28w4	16	348	37w6	19

128	16w0	12	202	21w5	15	276	28w5	16	350	38w1	21
130	16w1	12	204	21w6	15	278	28w6	17	352	38w4	19
132	16w2	12	206	22w1	15	280	29w1	16	354	38w6	19
134	16w3	12	208	22w1	15	282	29w2	16	356	39w1	19
136	16w4	12	210	22w3	15	284	29w4	17	358	39w4	19
138	16w5	12	212	22w3	15	286	29w6	16	360	39w6	19
140	16w6	12	214	22w5	15	288	30w0	16	362	40w1	19
142	17w0	12	216	22w6	15	290	30w1	17	364	40w4	19
144	17w1	12	218	23w1	15	292	30w4	16			

4.6. AC

Hadlock:

Hadlock FP, Deter RL etc. “Estimation Fetal Age: Computer-Assisted Analysis of Multiple Fetal Growth Parameters.” Radiology 152:497, 1984

MA (AC cm) = 8.14 + 0.753 * (AC) + 0.0036 * (AC^2)

Merz:

Merz E. Ultrasound in Gynecology and Obstetrics. Stuttgart and New York: Thieme Medical Publishers, Inc., 1991, p. 326

Table AC, Merz

AC mm	MA	+/- 2SD	AC mm	MA	+/- 2SD	AC mm	MA	+/- 2SD	AC mm	MA	+/- 2SD
56	12w1	10	130	19w1	12	206	26w3	15	280	33w3	17
58	12w2	11	132	19w2	12	208	26w4	15	282	33w4	17
60	12w4	10	134	19w3	12	210	26w6	15	284	33w6	17
62	12w5	10	136	19w5	12	212	27w0	15	286	34w0	17
64	12w6	11	138	19w6	12	214	27w1	15	288	34w1	18
66	13w1	11	140	20w1	12	216	27w2	15	290	34w3	18
68	13w2	11	142	20w2	13	218	27w4	15	292	34w4	18
70	13w4	11	144	20w4	12	220	27w5	16	294	34w5	18
72	13w4	11	146	20w5	12	222	27w6	16	296	34w6	19
74	13w6	11	148	20w6	13	224	28w1	15	298	35w1	17
76	14w0	11	150	21w1	15	226	28w2	16	300	35w2	18
78	14w1	12	152	21w1	15	228	28w4	16	302	35w4	17
80	14w3	11	154	21w3	15	230	28w5	16	304	35w5	18
82	14w4	11	156	21w4	13	232	28w6	16	306	35w6	18
84	14w6	11	158	21w6	13	234	29w0	16	308	36w1	17
86	15w0	11	160	22w0	13	236	29w1	17	310	36w2	18
88	15w1	11	162	22w1	15	238	29w3	16	312	36w4	17
90	15w3	11	164	22w3	13	240	29w4	17	314	36w4	19

92	15w4	11	168	22w6	13	242	29w6	16	316	36w6	18
94	15w5	12	170	23w0	13	244	30w0	16	318	37w0	18
96	15w6	12	172	23w1	15	246	30w1	17	320	37w1	18
98	16w1	12	174	23w2	15	248	30w3	16	322	37w3	18
100	16w2	12	176	23w4	13	250	30w4	17	324	37w4	19
102	16w4	11	178	23w5	15	252	30w6	16	326	37w6	18
104	16w5	12	180	23w6	15	254	30w6	17	328	38w0	18
106	16w6	12	182	24w1	15	256	31w1	17	330	38w1	18
108	17w1	11	184	24w2	15	258	31w2	17	332	38w3	18
110	17w2	11	186	24w4	15	260	31w4	17	334	38w4	18
112	17w3	12	188	24w5	15	262	31w5	17	336	38w5	18
114	17w4	12	190	24w6	16	264	31w6	17	338	38w6	19
116	17w6	12	192	25w0	16	266	32w1	17	340	39w1	19
118	18w0	12	194	25w1	16	268	32w2	17	342	39w2	19
120	18w1	12	196	25w3	15	270	32w4	17	344	39w4	19
122	18w3	12	198	25w4	16	272	32w5	17	346	39w5	19
124	18w4	12	200	25w6	15	274	32w6	17	348	39w6	19
126	18w6	12	202	26w0	16	276	33w0	17			
128	19w0	12	204	26w1	15	278	33w1	17			

4.7. FL

Hadlock:

Hadlock FP, Deter RL etc. “Estimation Fetal Age: Computer-Assisted Analysis of Multiple Fetal Growth Parameters.” Radiology 152:497, 1984

MA (FL cm) = 10.35 + 2.460 * (FL) + 0.170 * (FL^2)

Merz:

Merz E. Ultrasound in Gynecology and Obstetrics. Stuttgart and New York: Thieme Medical Publishers, Inc., 1991, p. 326

Table FL, Merz

FL mm	MA	+/- 2SD	FL mm	MA	+/- 2SD	FL mm	MA	+/- 2SD	FL mm	MA	+/- 2SD
10	12w2d	11	28	18w4d	13	47	25w6d	15	65	33w1d	17
11	12w5d	10	29	19w0d	12	48	26w1d	16	66	33w4d	17
12	13w2d	10	30	19w3d	12	49	26w4d	15	68	34w4d	17
13	13w4d	11	31	19w5d	12	50	26w6d	16	69	35w0d	18
14	13w5d	11	32	20w1d	12	51	27w2d	16	70	35w3d	18
15	14w0d	11	33	20w4d	13	52	27w5d	16	71	35w6d	18
16	14w3d	11	34	20w6d	13	53	28w1d	16	72	36w2d	18
17	14w5d	11	35	21w1d	15	54	28w4d	17	73	36w6d	18

18	15w1d	11	36	21w4d	13	55	29w0d	17	74	37w2d	19
19	15w3d	11	37	21w6d	15	56	29w3d	17	75	37w5d	18
20	15w6d	11	38	22w2d	13	57	29w6d	17	76	38w1d	19
21	16w1d	11	40	23w1d	15	58	30w1d	17	77	38w5d	19
22	16w4d	11	41	23w3d	15	59	30w4d	17	78	39w1d	19
23	16w4d	11	42	23w5d	15	60	31w0d	17	79	39w4d	19
24	17w1d	12	43	24w1d	15	61	31w4d	17	80	40w1d	18
25	14w7d	13	44	24w4d	16	62	31w6d	17			
26	17w6d	13	45	25w0d	16	63	32w2d	17			
27	18w2d	13	46	25w3d	15	64	32w6d	17			

Jeanty:

Jeanty P, Rodesch F etc. “Estimation of Gestational Age from measurement of Fetal Long Bones.” Journal of Ultrasound in Medicine 3:75, 1984

MA (FL mm) = (9.5411757+0.2977451 * FL) + (0.0010388013 * FL^2)

Tokyo:

Studies on Fetal Growth and Functional Developments, Takashi Okai, Department of Obstetrics and Gynecology, Faculty of Medicine, University of Tokyo

Table **FL**, Tokyo

FL cm	MA	+/- 2SD	FL cm	MA	+/- 2SD	FL cm	MA	+/- 2SD	FL cm	MA	+/- 2SD
0.8	12w3d	10	2.6	17w6d	10	4.4	25w2d	25	6.2	34w0d	42
1	13w0d	10	2.8	18w4d	14	4.6	26w0d	25	6.4	35w0d	46
1.2	13w4d	10	3	19w2d	17	4.8	27w0d	25	6.6	36w0d	50
1.4	14w1d	10	3.2	20w5d	17	5	28w0d	25	6.8	38w0d	57
1.6	14w5d	10	3.4	21w5d	18	5.2	29w0d	30	7	40w0d	64
1.8	15w2d	10	3.6	22w3d	19	5.4	29w5d	30	7.2	40w2d	64
2	16w0d	10	3.8	23w0d	21	5.6	30w2d	30			
2.2	16w4d	10	4	24w0d	22	5.8	31w3d	32			
2.4	17w1d	10	4.2	24w5d	24	6	33w0d	38			

China:

Wu Zhongyu, “Ultrasound Diagnosis in Obstetrics and Gynecology”, Tianjin Science and Technology Publisher, 1995

Table **FL**, China

FL cm	MA	+/- 2SD	FL cm	MA	+/- 2SD	FL cm	MA	+/- 2SD	FL cm	MA	+/- 2SD
0.6	12w4d	7	2.4	18w0d	9	4.2	24w0d	16	6	33w0d	18
0.7	12w5d	7	2.5	18w2d	9	4.3	24w3d	16	6.1	33w3d	18

0.8	13w0d	8	2.6	18w4d	10	4.4	24w6d	16	6.2	34w0d	18
0.9	13w2d	8	2.7	18w6d	10	4.5	25w2d	16	6.3	34w3d	19
1	13w5d	8	2.8	19w2d	11	4.6	25w6d	16	6.4	35w0d	20
1.1	14w0d	8	2.9	19w4d	11	4.7	26w3d	16	6.5	35w3d	20
1.2	14w2d	8	3	19w6d	12	4.8	26w6d	16	6.6	35w6d	20
1.3	14w4d	8	3.1	20w1d	13	4.9	27w4d	17	6.7	36w3d	20
1.4	14w6d	8	3.2	20w3d	13	5	27w6d	17	6.8	37w0d	21
1.5	15w1d	8	3.3	20w5d	14	5.1	28w3d	17	6.9	37w3d	22
1.6	15w3d	8	3.4	21w1d	14	5.2	28w6d	17	7	38w0d	23
1.7	15w5d	8	3.5	21w3d	15	5.3	29w3d	17	7.1	38w3d	23
1.8	16w0d	8	3.6	21w6d	15	5.4	29w6d	17	7.2	38w6d	23
1.9	16w3d	8	3.7	22w2d	15	5.5	30w3d	17	7.3	39w3d	23
2	16w5d	8	3.8	22w4d	15	5.6	30w6d	17	7.4	39w6d	23
2.1	17w0d	8	3.9	23w0d	15	5.7	31w3d	17	7.5	40w2d	23
2.2	17w2d	8	4	23w2d	16	5.8	31w6d	18			
2.3	17w4d	8	4.1	23w4d	16	5.9	32w3d	18			

Osaka:

Osaka University (2002/April/08)

Table FL, Osaka

FL cm	Mean	Min	Max	FL cm	Mean	Min	Max	FL cm	Mean	Min	Max
0.94	13w0d	12w3d	13w4d	3.61	22w1d	21w1d	23w1d	5.69	31w2d	29w6d	32w5d
1.03	13w2d	12w5d	13w6d	3.68	22w3d	21w3d	23w3d	5.74	31w4d	30w1d	33w0d
1.12	13w4d	12w6d	14w1d	3.75	22w5d	21w5d	23w4d	5.80	31w6d	30w2d	33w3d
1.21	13w6d	13w1d	14w3d	3.83	23w0d	22w0d	24w0d	5.85	32w1d	30w4d	33w5d
1.30	14w1d	13w3d	14w5d	3.90	23w2d	22w2d	24w2d	5.90	32w3d	30w6d	34w0d
1.39	14w3d	13w5d	15w1d	3.97	23w4d	22w4d	24w4d	5.96	32w5d	31w1d	34w2d
1.48	14w5d	14w0d	15w3d	4.04	23w6d	22w6d	24w6d	6.01	33w0d	31w3d	34w4d
1.57	15w0d	14w2d	15w5d	4.11	24w1d	23w0d	25w1d	6.06	33w2d	31w5d	34w6d
1.66	15w2d	14w4d	16w0d	4.18	24w3d	23w2d	25w3d	6.11	33w4d	32w0d	35w1d
1.75	15w4d	14w6d	16w2d	4.25	24w5d	23w4d	25w5d	6.16	33w6d	32w1d	35w3d
1.83	15w6d	15w1d	16w4d	4.32	25w0d	23w6d	26w0d	6.21	34w1d	32w3d	35w6d
1.92	16w1d	15w3d	16w6d	4.39	25w2d	24w1d	26w3d	6.26	34w3d	32w5d	36w1d
2.01	16w3d	15w4d	17w1d	4.45	25w4d	24w3d	26w4d	6.31	34w5d	33w0d	36w3d
2.09	16w5d	15w6d	17w3d	4.52	25w6d	24w5d	27w0d	6.36	35w0d	33w2d	36w6d

2.18	17w0d	16w1d	17w5d	4.59	26w1d	25w0d	27w2d	6.41	35w2d	33w4d	37w1d
2.26	17w2d	16w3d	18w0d	4.65	26w3d	25w2d	27w4d	6.46	35w4d	33w6d	37w3d
2.34	17w4d	16w5d	18w2d	4.72	26w5d	25w4d	27w6d	6.50	35w6d	34w0d	37w5d
2.43	17w6d	17w0d	18w4d	4.78	27w0d	25w5d	28w1d	6.55	36w1d	34w2d	38w0d
2.51	18w1d	17w2d	18w6d	4.85	27w2d	26w0d	28w3d	6.60	36w3d	34w4d	38w3d
2.59	18w3d	17w4d	19w1d	4.91	27w4d	26w2d	28w5d	6.64	36w5d	34w6d	38w5d
2.67	18w5d	17w6d	19w3d	4.97	27w6d	26w4d	29w0d	6.69	37w0d	35w0d	39w1d
2.75	19w0d	18w1d	19w6d	5.04	28w1d	26w6d	29w3d	6.73	37w2d	35w2d	39w3d
2.83	19w2d	18w3d	20w1d	5.10	28w3d	27w1d	29w5d	6.77	37w4d	35w4d	39w5d
2.91	19w4d	18w5d	20w3d	5.16	28w5d	27w3d	30w0d	6.82	37w6d	35w6d	40w0d
2.99	19w6d	19w0d	20w5d	5.22	29w0d	27w5d	30w2d	6.86	38w1d	36w1d	40w1d
3.07	20w1d	19w2d	21w0d	5.28	29w2d	27w6d	30w4d	6.90	38w3d	36w2d	40w2d
3.15	20w3d	19w4d	21w2d	5.34	29w4d	28w1d	30w6d	6.94	38w5d	36w4d	40w3d
3.23	20w5d	19w6d	21w4d	5.40	29w6d	28w3d	31w1d	6.98	39w0d	36w6d	40w4d
3.30	21w0d	20w0d	21w6d	5.46	30w1d	28w5d	31w4d	7.02	39w2d	37w1d	40w5d
3.38	21w2d	20w2d	22w1d	5.52	30w3d	29w0d	31w6d	7.06	39w4d	37w2d	40w6d
3.46	21w4d	20w4d	22w3d	5.57	30w5d	29w2d	32w1d	7.10	39w6d	37w4d	41w0d
3.53	21w6d	20w6d	22w5d	5.63	31w0d	29w4d	32w3d	7.12	40w0d	37w5d	41w0d

4.8. FTA

Osaka:

Osaka University (2002/April/08)

Table FTA, Osaka

FTA cm^2	MEAN	MIN	MAX	FTA cm^2	MEAN	MIN	MAX	FTA cm^2	MEAN	MIN	MAX
5.6	14w0d	13w2d	14w5d	26.4	22w6d	21w5d	23w6d	57.2	31w5d	29w6d	33w3d
6.0	14w2d	13w4d	14w6d	27.2	23w1d	22w0d	24w1d	58.3	32w0d	30w1d	33w5d
6.5	14w4d	13w6d	15w2d	28.1	23w3d	22w1d	24w3d	59.4	32w2d	30w3d	34w0d
7.1	14w6d	14w1d	15w4d	29.0	23w5d	22w3d	24w6d	60.4	32w4d	30w5d	34w2d
7.6	15w1d	14w2d	15w6d	29.9	24w0d	22w5d	25w1d	61.5	32w6d	31w0d	34w5d
8.1	15w3d	14w4d	16w1d	30.8	24w2d	23w0d	25w3d	62.6	33w1d	31w1d	35w0d

8.7	15w5d	14w6d	16w3d	31.7	24w4d	23w2d	25w5d	63.7	33w3d	31w3d	35w2d
9.2	16w0d	15w1d	16w5d	32.6	24w6d	23w4d	26w0d	64.7	33w5d	31w5d	35w4d
9.8	16w2d	15w3d	17w0d	33.6	25w1d	23w6d	26w2d	65.8	34w0d	32w0d	36w0d
10.4	16w4d	15w5d	17w2d	34.5	25w3d	24w1d	26w5d	66.9	34w2d	32w1d	36w2d
11.0	16w6d	16w0d	17w5d	35.5	25w5d	24w2d	26w6d	67.9	34w4d	32w3d	36w5d
11.6	17w1d	16w2d	17w6d	36.5	26w0d	24w4d	27w2d	69.0	34w6d	32w5d	37w0d
12.2	17w3d	16w3d	18w2d	37.4	26w2d	24w6d	27w4d	70.1	35w1d	33w0d	37w2d
12.8	17w5d	16w5d	18w4d	38.4	26w4d	25w1d	27w6d	71.1	35w3d	33w1d	37w5d
13.5	18w0d	17w0d	18w6d	39.4	26w6d	25w3d	28w1d	72.2	35w5d	33w3d	38w0d
14.1	18w2d	17w2d	19w1d	40.4	27w1d	25w5d	28w3d	73.2	36w0d	33w5d	38w3d
14.8	18w4d	17w4d	19w3d	41.4	27w3d	26w0d	28w5d	74.2	36w2d	33w6d	38w5d
15.5	18w6d	17w6d	19w5d	42.4	27w5d	26w2d	29w1d	75.2	36w4d	34w1d	39w1d
16.2	19w1d	18w1d	20w0d	43.4	28w0d	26w3d	29w2d	76.2	36w6d	34w3d	39w3d
16.9	19w3d	18w3d	20w2d	44.5	28w2d	26w5d	29w5d	77.3	37w1d	34w4d	39w6d
17.6	19w5d	18w4d	20w4d	45.5	28w4d	27w0d	30w0d	78.2	37w3d	34w6d	40w0d
18.4	20w0d	19w0d	20w6d	46.6	28w6d	27w2d	30w2d	79.2	37w5d	35w0d	40w1d
19.1	20w2d	19w1d	21w1d	47.6	29w1d	27w4d	30w4d	80.2	38w0d	35w2d	40w2d
19.9	20w4d	19w3d	21w4d	48.7	29w3d	27w6d	30w6d	81.1	38w2d	35w3d	40w3d
20.6	20w6d	19w5d	21w6d	49.7	29w5d	28w1d	31w1d	82.1	38w4d	35w5d	40w4d
21.4	21w1d	20w0d	22w1d	50.8	30w0d	28w3d	31w3d	83.0	38w6d	36w0d	40w5d
22.2	21w3d	20w2d	22w3d	51.8	30w2d	28w4d	31w6d	83.9	39w1d	36w1d	40w6d
23.0	21w5d	20w4d	22w5d	52.9	30w4d	28w6d	32w1d	84.8	39w3d	36w3d	41w0d
23.8	22w0d	20w6d	23w0d	54.0	30w6d	29w1d	32w3d	85.7	39w5d	36w4d	41w0d
24.7	22w2d	21w1d	23w2d	55.0	31w1d	29w3d	32w5d	86.6	40w0d	36w6d	41w0d
25.5	22w4d	21w3d	23w4d	56.1	31w3d	29w5d	33w0d				

4.9. HUM

Jeanty:

Jeanty P, Rodesch F etc. “Estimation of Gestational Age from measurement of Fetal Long Bones.” Journal of Ultrasound in Medicine 3:75, 1984

MA (HUM mm) = 9.6519438 + (0.26200391 * HUM) + (0.0026105367 * HUM^2)

4.10. CER

Goldstein:

MA（CER mm）=6.329+4.807*(CER)/10+1.484*(CER/10)²-0.2474*(CER/10)³

4.11. THD

Hansmann:

MA（THD mm）=6.963496+3.829853*(THD/10)-0.443065*$(THD/10)^2$+0.1010238*$(THD/10)^3$-0.0099702*$(THD/10)^4$+ 0.0003773* $(THD/10)^5$

4.12. Estimated Fetal Weight

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P/N: 01.54.458118
MPN: 01.54.458118011

EDAN INSTRUMENTS, INC.
#15 Jinhui Road, Jinsha Community, Kengzi Sub-District
Pingshan District, 518122 Shenzhen, P.R.China
Email: info@edan.com.cn
TEL: +86-755-2689 8326 FAX: +86-755-2689 8330
Website: www.edan.com.cn

EC REPRESENTATIVE
Shanghai International Holding Corp. GmbH
Eiffestrasse 80, 20537 Hamburg Germany
TEL: +49-40-2513175
E-mail: shholding@hotmail.com