

## CERTIFICATE in ACCORDANCE WITH EN12668-2

**TRANSDUCER: AM4R-8X9-45**

**Serial No.: 1110576**

**Description:** Angle Beam Transducer, 4 MHz, 8 mm X 9 mm Element,  
45 Degree Refracted Shear Wave, Atlas Series Case Style,  
Right Angle Lemo-00 Connector.

### Principle Parameters

Reference	Frequency	Active Element	Bandwidth
AM4R-8X9-45	4 MHz	8X9 mm	40 %

### Reference documents

EN12668-2 : 2001  
ASTM E-1065  
ISO 9001 : 2008  
Internal procedure: TP105 V17

### Quality system

Fabricant: Olympus Scientific Solutions America Corp. certified per Intertek

### Instrumentation used

Pulser/Receiver: Epoch III: 3EP055  
Digitizer: Epoch III: 3EP055  
Cable: LCB-74-4 Length:



## Impulse formation

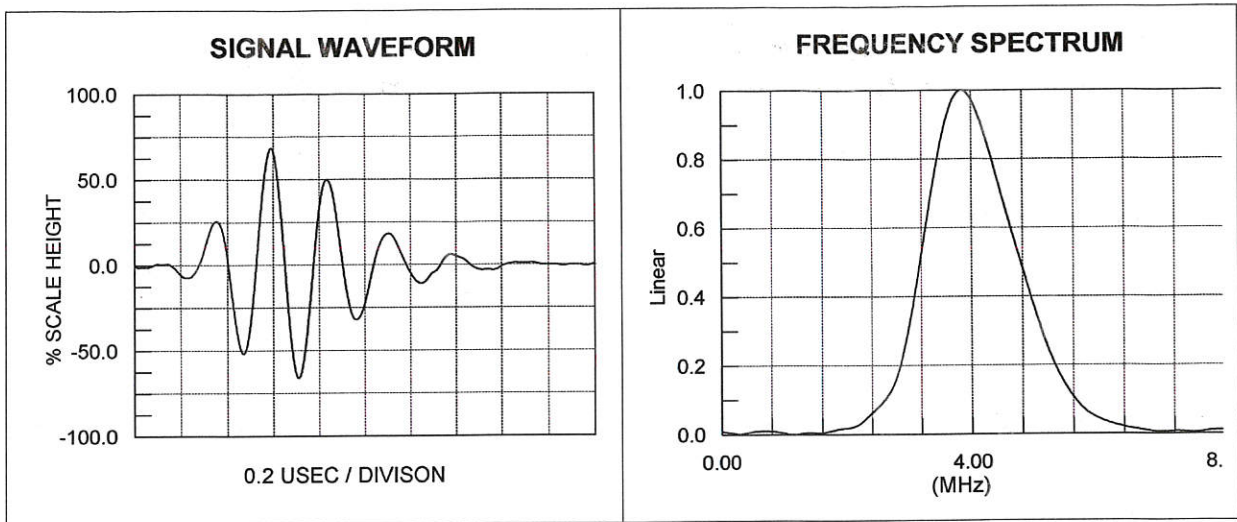
Test conditions:

Pulser Energy: HIGH ; Damping: 50 Ohm

Receiver Gain: 26.9 dB ; Filter: STD

Target: 100 mm steel radius

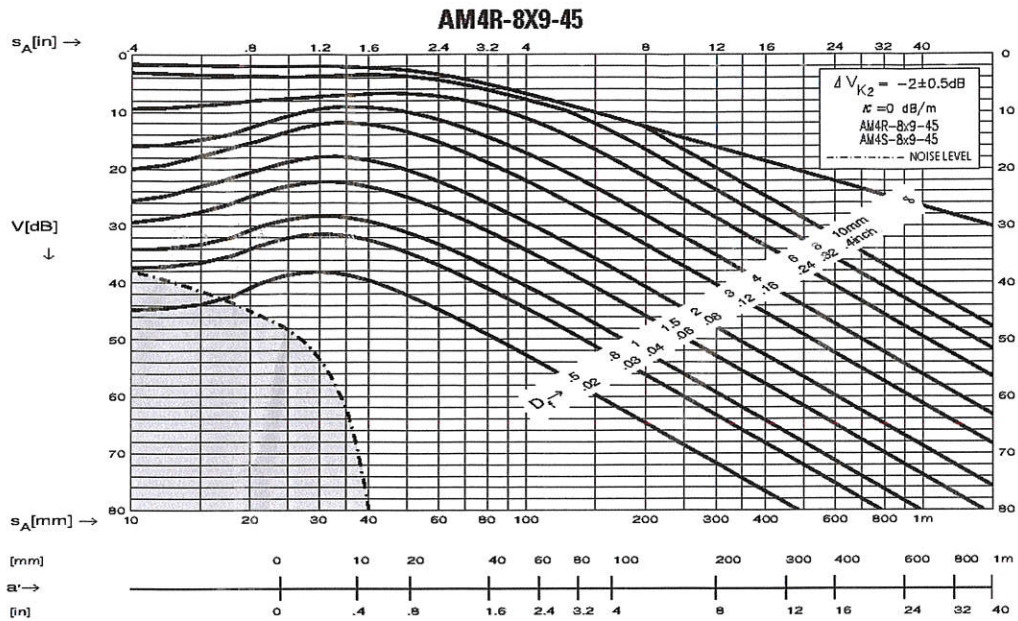
Test Date: 07-27-2017



## Effective measurands

Parameter	Designation	Min value	Measure	Max value	Units
-14 dB waveform duration	$t_{14}$	N/A	0.82	N/A	$\mu$ s
-20 dB waveform duration	$t_{20}$	N/A	1.07	1.5	$\mu$ s
Centre Frequency	$F_c$	3.6	3.90	4.4	MHz
Relative Bandwidth @ -6dB	$\Delta f_{rel}$	25	40.0	55	%
Refraction Angle	$\alpha$	43	45.3	47	$^\circ$

## DGS Curve, equivalent Flat Bottomed Hole curves (DAC)

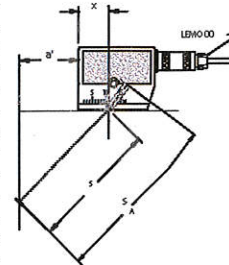


PARAMETER parameter/paramètre	NOMINAL nennwert/nominal	UPPER (+) ober bereich/supérieure	LOWER (-) unterer bereich/inférieure	UNIT meßeinheit/unité
$f_c^1, f_b^2$	4.0	4.4	3.6	MHz
$BW^1, \Delta f_{rel}^2$	40	55	25	%
Z	75	100	50	$\Omega$
$\Phi$	60	80	40	°
N	30	34.5	26.5	mm
$W_{ab}$	1.6	1.8	1.4	mm
$W_{te}^3 / W_{ts}^4$	1.7 / 1.7	1.9 / 1.9	1.5 / 1.5	mm
a	9.0	9.0	8.9	mm
$a_{eff}$	8.6	8.8	8.4	mm
b	8.0	8.0	7.9	mm
$b_{eff}$	7.6	7.8	7.4	mm
$\alpha_{(255m/s)}$	45	47	43	°
$\Delta\alpha/\Delta T$	0.5	0.6	0.4	°/10°C
$lv_{(2743m/s)}$	7.0	8.0	6.0	mm
$\delta$	0	+1	-1	°
e	0	+1	-1	mm
x	12	14	10	mm
$\gamma_{ab}$	2.3	2.8	1.8	°
$\gamma_{te}$	5.9	6.9	4.9	°
$\gamma_{te}^3 / \gamma_{ts}^4$	3.0 / 2.9	3.5 / 3.4	2.5 / 2.4	°
M	2	n/a	n/a	mm
$T_r$	-20/+60	n/a	n/a	°C
Waveform duration <sup>1</sup> , Echo width <sup>2</sup> , Echobreite <sup>2</sup> , Largeur de l'écho <sup>2</sup>	-20dB	1.0	1.5	n/a
				us

1: ASTM E1065; 2: prEN 12668-2; 3: EN 1330-4:2000; 4: EN 583-2:2001

### AM4R-8X9-45

AM4R HAS RIGHT LEMO CONNECTOR  
AM4S HAS STRAIGHT LEMO CONNECTOR



$s_v = 6.0 \pm 1 \text{ mm}$   
 $s = s_A - s_v$

$s_v$  is the sound field equivalent of delay path length (lv)  
 $s_v$  entspricht im Schallfeld der Länge der Vorlaufstrecke lv  
 $s_v$  est l'équivalent du champ acoustique de la longueur de la ligne de retard



