

## CERTIFICATE in ACCORDANCE WITH EN12668-2

**TRANSDUCER: PF4R-10**

**Serial No.: 1130516**

**Description:** Protected Face Transducer, 4 MHz, 10 mm Element Diameter,  
Atlas Series Case Style,  
Right Angle Lemo-00 connector

### Principle Parameters

Reference	Frequency	Active Element	Bandwidth
PF4R-10	4 MHz	10 mm	35 %

### Reference documents

EN12668-2 : 2001  
ASTM E-1065  
ISO 9001 : 2008  
Internal procedure: TP200

### Quality system

Fabricant: Olympus Scientific Solutions America Corp. certified per Intertek

### Instrumentation used

Pulser/Receiver: PANAMETRICS 5052 3EPO23  
Digitizer: LECROY LT342 / SN: LT34201891  
Cable: RG 174/U Length: 1.22 M



## Impulse formation

Test conditions:

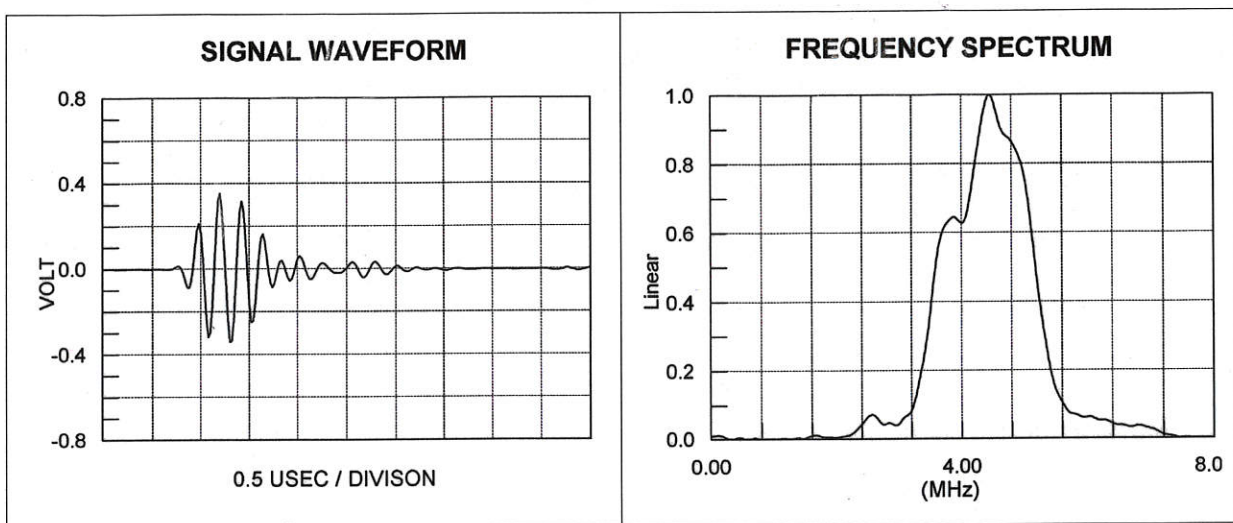
Pulser Energy: 1 ; Damping: 50 Ohm

Receiver Gain: 40 dB ; Attenuation: 20 dB

Target: Backwall of 25.4 mm steel

Tested with protective membrane

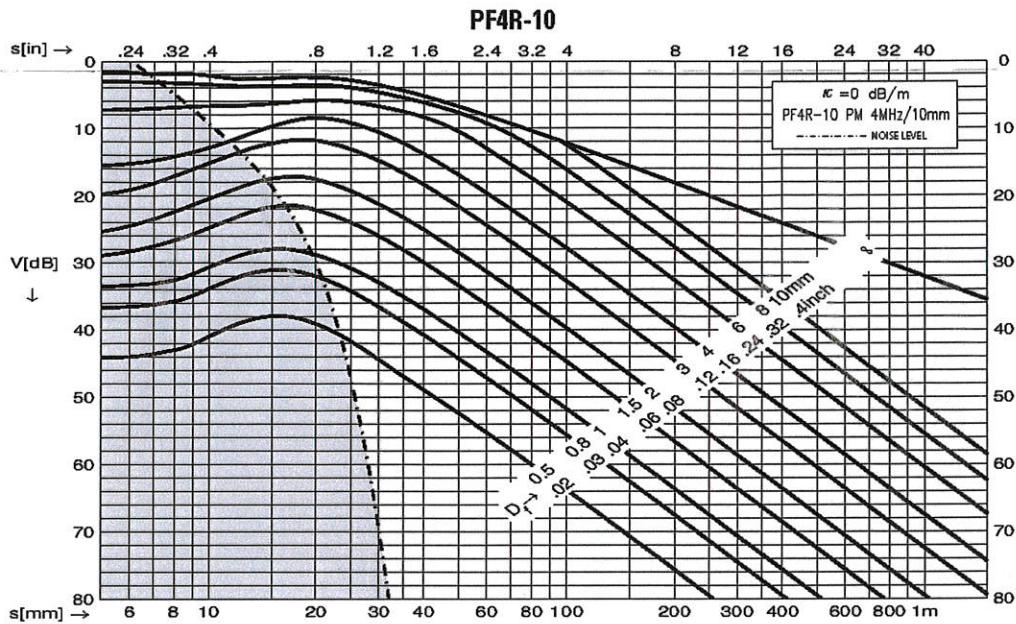
Test Date: 12-13-2017



## Effective measurands

Parameter	Designation	Min value	Measure	Max value	Units
-14 dB waveform duration	$t_{14}$	N/A	0.90	2.3	$\mu$ s
-20 dB waveform duration	$t_{20}$	N/A	1.86	3.5	$\mu$ s
Centre Frequency	$F_c$	3.6	4.32	4.4	MHz
Relative Bandwidth @ -6dB	$\Delta f_{rel}$	25	37.4	45	%

## 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
$f_c^1, f_0^2$	4.0	4.4	3.6	MHz
$BW^1, \Delta f_{RF}^2$	35	45	25	%
N	15.6	17.2	14.0	mm
$W_0$	1.2	1.3	1.1	mm
D	10.0	10.0	9.9	mm
$D_{eff}$	9.7	9.9	9.5	mm
d	0	0.8	0	°
e	0	0.6	0	mm
$g_0$	4.4	4.8	4.0	°
$T_r$	-20/60	n/a	n/a	°C
-14dB: Waveform duration <sup>1</sup> , Echo width <sup>2</sup> , Echobreite <sup>3</sup> , Largeur de l'écho <sup>2</sup>	1.5	2.3	n/a	us
-20dB: Waveform duration <sup>1</sup> , Echo width <sup>2</sup> , Echobreite <sup>3</sup> , Largeur de l'écho <sup>2</sup>	2.4	3.5	n/a	us

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

