



**CERTIFICATE in ACCORDANCE
WITH EN12668-2**

TRANSDUCER: DL4R-3.5X10

Serial No.: 1121709

Description: Dual Transducer, 4 MHz, 3.5 mm x 10 mm Element,
Atlas Series Case Style,
Right Angle Dual Lemo-00 connectors

Principle Parameters

Reference	Frequency	Active Element	Bandwidth
DL4R-3.5X10	4 MHz	3.5X10 mm	45 %

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 CD00546
Digitizer: LECROY LT262 / SN: LT2620032
Cable: RG 174/U Length: 1.83 M



Impulse formation

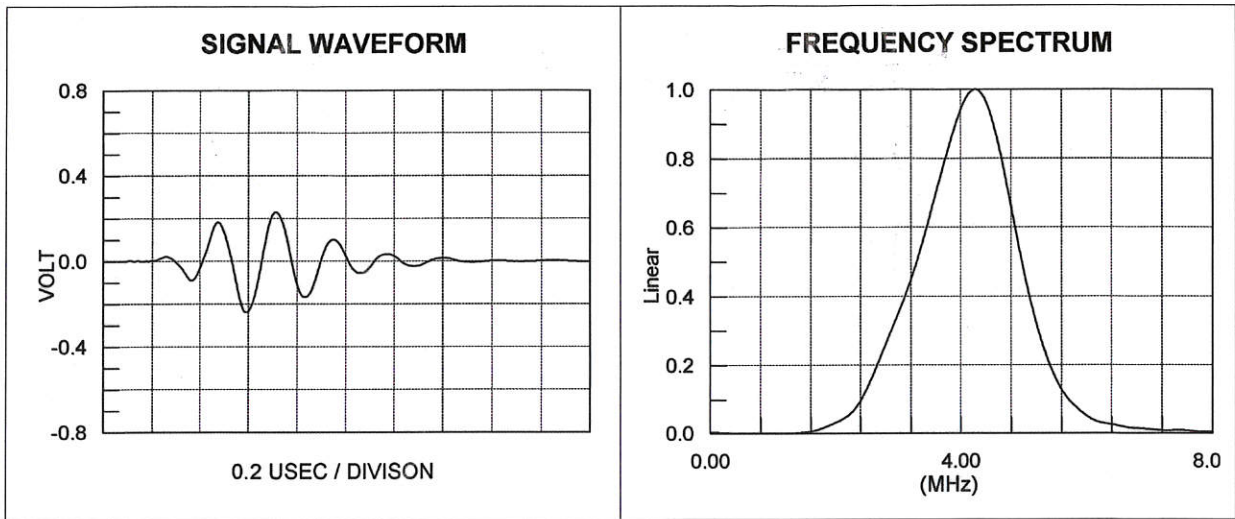
Test conditions:

Pulser Energy: 2 ; Damping: 100 Ohm

Receiver Gain: 40 dB ; Attenuation: 36 dB

Target: Backwall of 12.7 mm steel

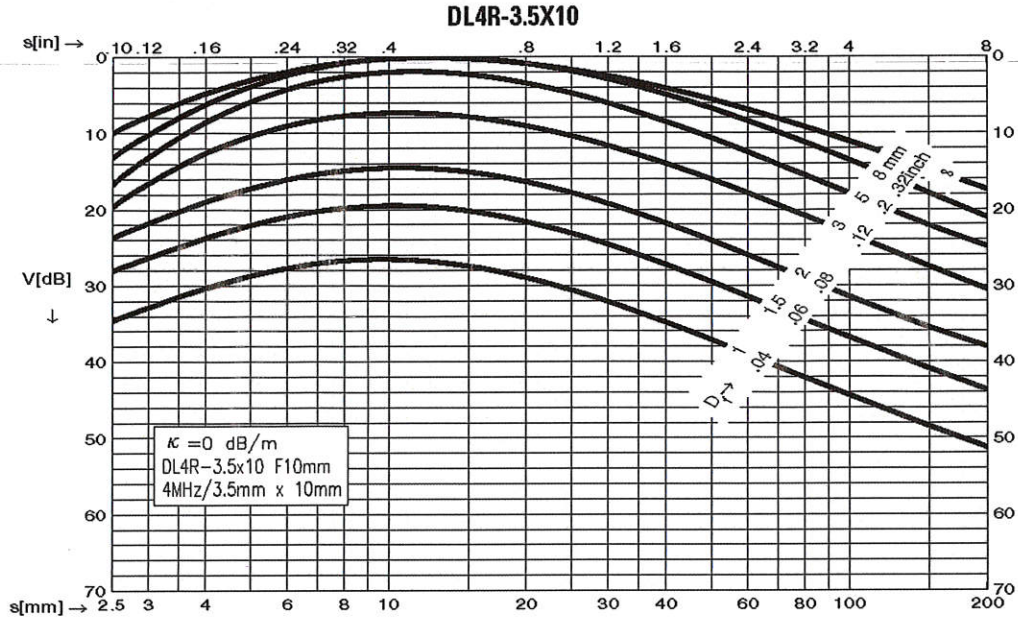
Test Date: 10-19-2017



Effective measurands

Parameter	Designation	Min value	Measure	Max value	Units
-14 dB waveform duration	t_{14}	N/A	0.75	1.05	μs
-20 dB waveform duration	t_{20}	N/A	0.88	1.44	μs
Centre Frequency	F_c	3.6	4.06	4.4	MHz
Relative Bandwidth @ -6dB	Δf_{rel}	30	41.8	60	%

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_e^2	4.0	4.4	3.6	MHz
$BW^1, \Delta f_{ref}^2$	45	60	30	%
F	10	12	8	mm
W_{dB}	3.5	4.2	2.8	mm
W_{dB}	2.2	2.7	1.7	mm
a	10.0	10.0	9.9	mm
b	3.5	3.5	3.4	mm
T_r	-20/60	n/a	n/a	°C
C_r	46	50	42	dB
Z_r	215	265	165	W
ϕ_r	-70	-50	-90	°
Z_r	120	150	90	W
ϕ_r	70	90	50	°
Waveform duration ¹ , Echo width ² , Echobreite ² , Largeur de l'écho ²				
-14dB	0.70	1.05	n/a	us
-20dB	0.96	1.44	n/a	us

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

