

AR201041

ART1K6PH, 325MHz

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AMPLEON

Application Report

Document information

Status v1.0

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Abstract Measurement results of the ART1K6PH at 325MHz

Demo number AR201041

1. Revision History

Table 1 – Report revisions

Revision	Date	Description	Author
1.0	2020.02.28	Initial document	Paul Hunneman

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5. General description

This report presents the measurement results of a demo using the ART1K6PH transistor at 325MHz. The demo is matched to 50 Ω at in- and output.

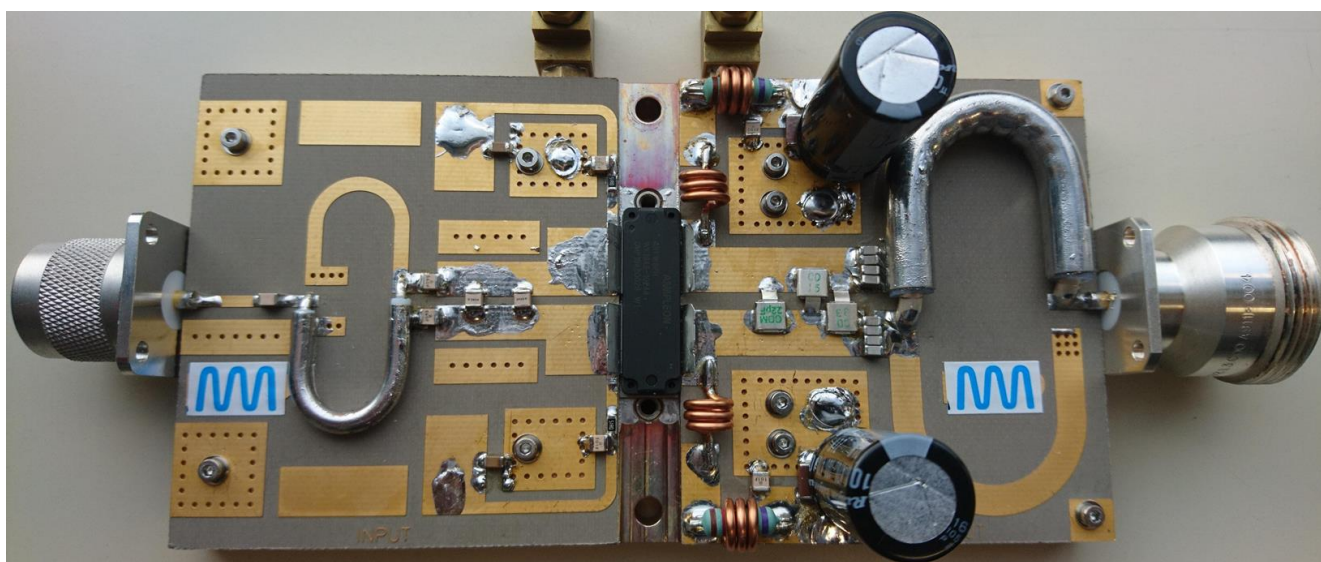


Figure 1 – Demo view of the ART1K6PH

6. RF characteristics

Table 2 – RF characteristics

RF performance at $V_{DS}=53V$; Total $I_{Dq}=100mA^{[1]}$; $T_{amb}=25^{\circ}C$

Symbol	Parameter	Conditions	Typ	Unit
f	Frequency		325	MHz
V_{DS}	Drain-source voltage		53	V
V_{GS}	Gate-source voltage	Total $I_{Dq} = 100mA^{[1]}$	1.9	V
G_p	Power gain	$P_L = 1520W$ pulsed ^[2]	20.2	dB
η_D	Drain efficiency	$P_L = 1520W$ pulsed ^[2]	73.6	%
G_p	Power gain	$P_L = 1390W$ CW	19.5	dB
η_D	Drain efficiency	$P_L = 1390W$ CW	68.4	%

[1] Total I_{Dq} of both transistor sections combined

[2] $t_p = 100\mu s$; $\delta = 10\%$

7. Performance Details

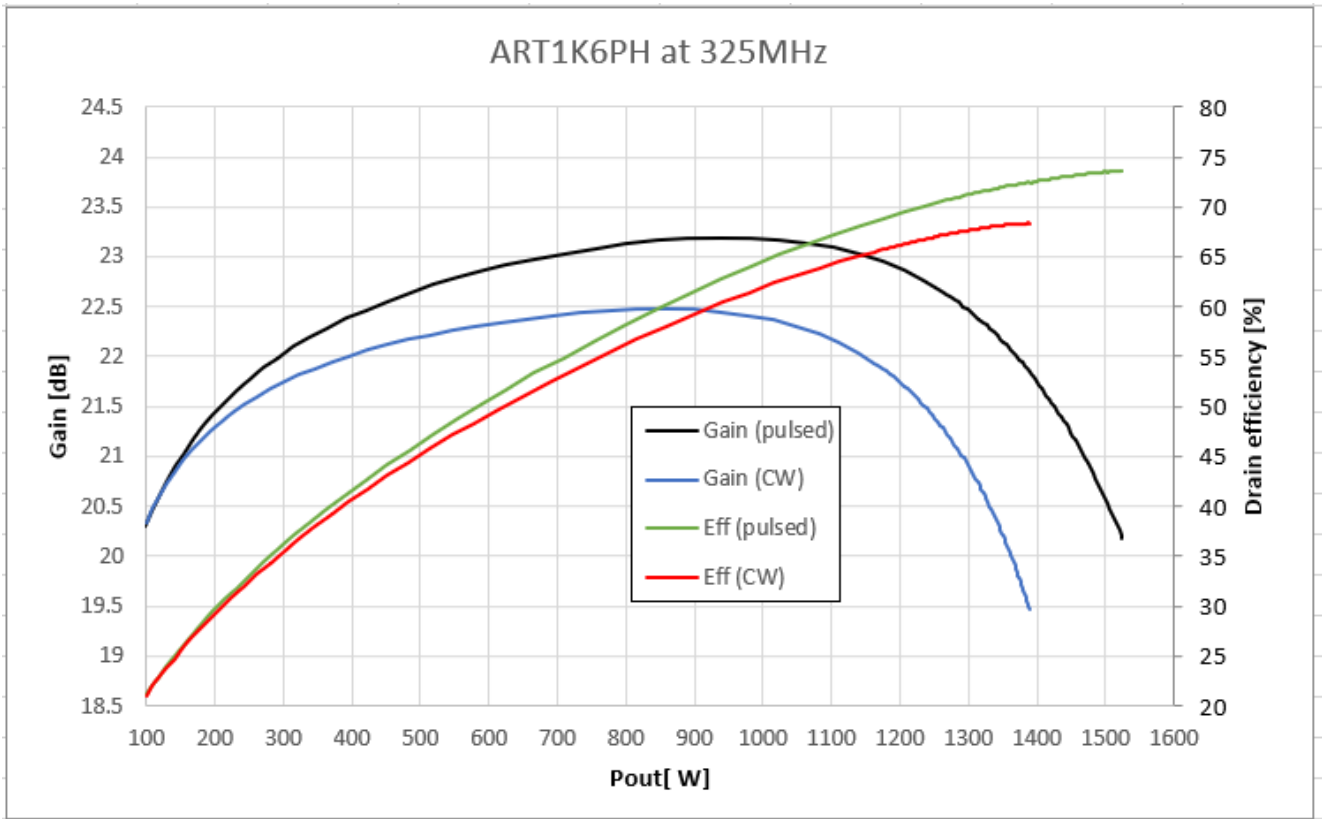


Figure 2 – ART1K6PH demo board performance at 325MHz and Vds = 53V

8. User Guide

8.1 Biasing

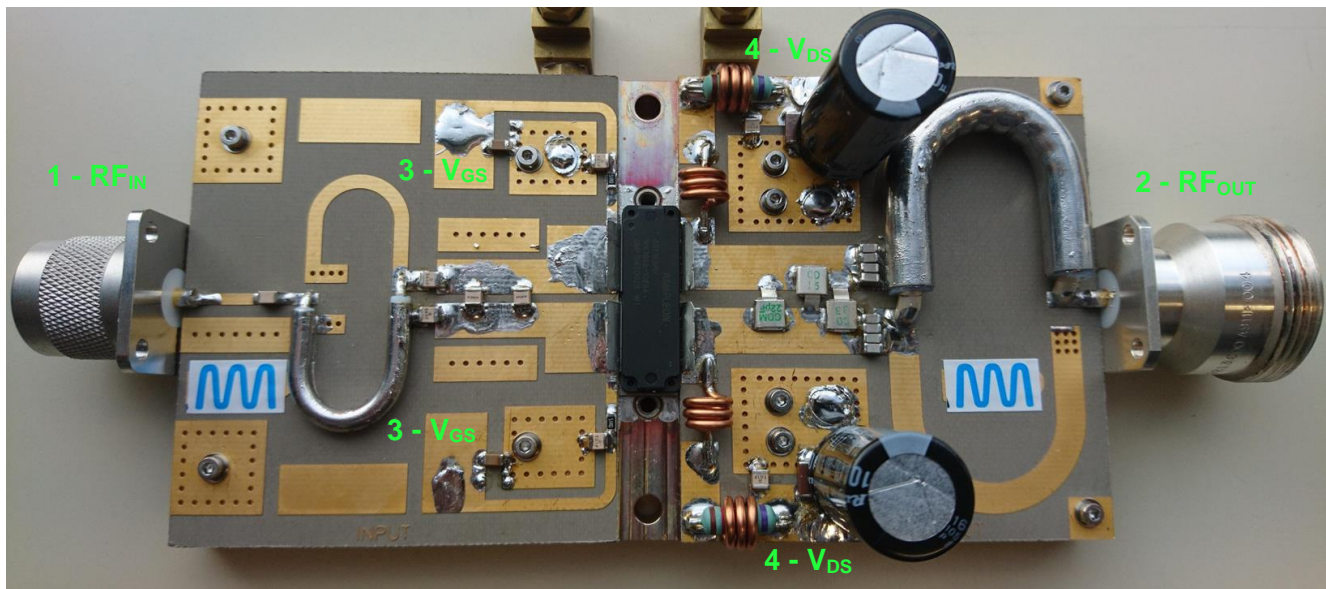


Figure 3 – ART1K6PH demo board pin configuration

Table 3 – Pin description

Symbol	Pin	Description
RF _{IN}	1	RF input
RF _{OUT}	2	RF output
V _{GS}	3	Gate-source voltage
V _{DS}	4	Drain-source voltage

8.2 Bill of Materials

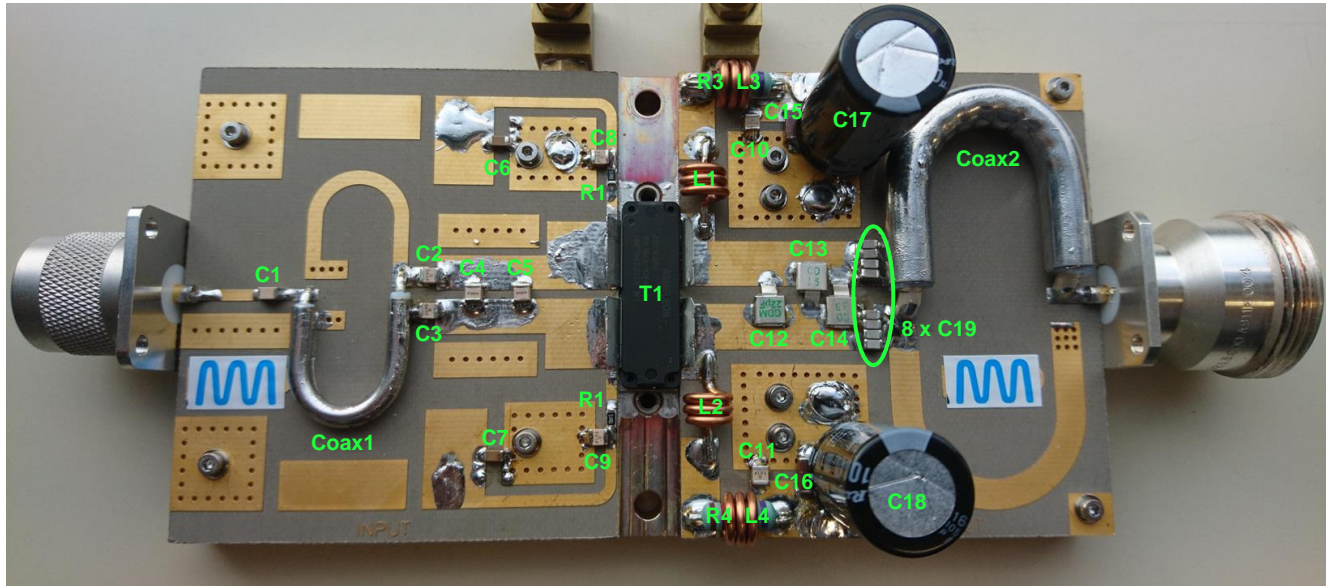


Figure 4 – ART1K6PH demo board component description

Table 4 – Bill of Materials

Part	Description	Part number	Value
C1, C8, C9, C10, C11	Chip capacitor	ATC100B101JT500XT	100pF
C2, C3	Chip capacitor	ATC100B560JT500XT	56pF
C4	Chip capacitor	ATC100B390JT500XT	39pF
C5	Chip capacitor	ATC100B470JT500XT	47pF
C6, C7	Chip capacitor	GRM31CC72A475KE11L	4.7uF
C12	Mica capacitor	MIN02-002CC220J-F	22pF
C13	Mica capacitor	MIN02-002CC150J-F	15pF
C14	Mica capacitor	MIN02-002CC330J-F	33pF
C15, C16	Chip capacitor	C5750X7S2A106K230KB	10uF/100V
C17, C18	Electrolytic capacitor	100ZLH470MEFC16X31.5	470uF/100V
8 x C19	Chip capacitor	ATC800B470JT500XT	47pF
R1, R2	Chip resistor	1206	51Ohm
R3, R4	Resistor		120hm/3W

L1, L2, L3, L4	Hand-wound coil	3-turn 5mm diameter 15AWG	
T1	LDMOS transistor	ART1K6PH	
Coax1	Coaxial line	UT-090C-25	45mm
Coax2	Coaxial line	UT-300C-25	72mm
Input board	Taconic RF35		30mil thickness
Output board	Taconic RF35		30mil thickness

8.3 Device markings

Table 5 – Device specifics

Parameter	Value
Manufacturer	Ampleon
Device	ART1K6PH
Comments	WK1948-10244 #10

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