

AR161047

BLS9G3135LS-400, 3100 to 3500MHz

v1.0 — 30 March 2016

AMPLEON

Application
Report

Document information	
Status	Company Public
Author(s)	Hans Mollee
Abstract	Measurement results of a Class-AB design for the 3100 to 3500MHz band with the BLS9G3135LS-400

1. Revision History

Table 1: Report revisions

Revision	Date	Description	Author
1.0	20160330	Initial document	Hans Mollee

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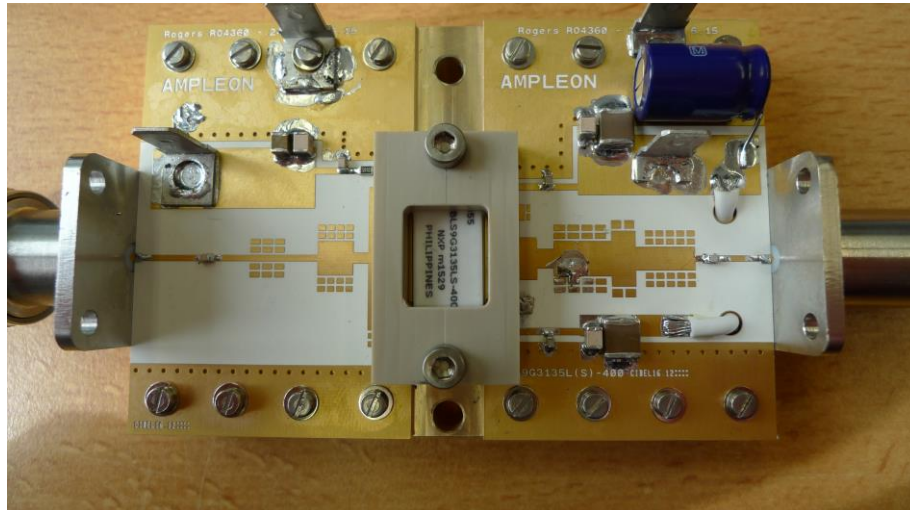
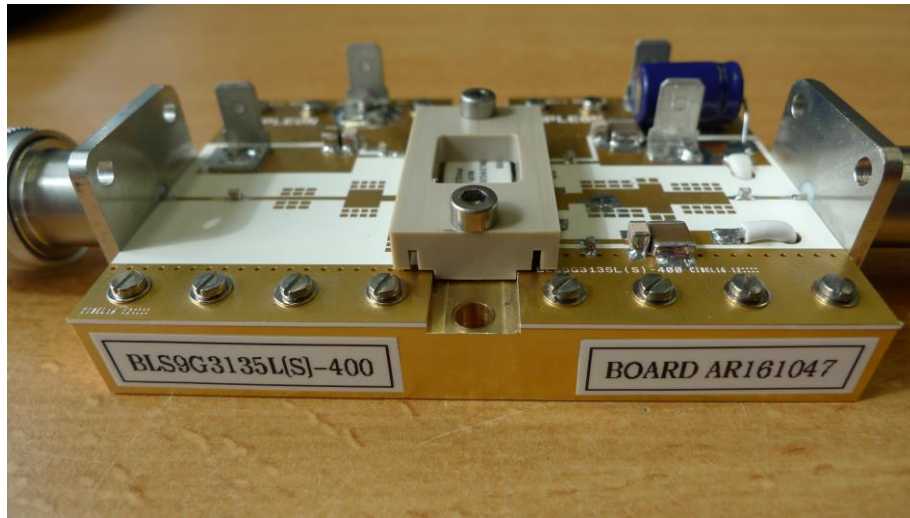
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5. General description

This report presents the measurement results of the Class-AB demo AR161047. The device used is a 9th generation LDMOS single ended package, the BLS9G3135LS-400. The presented demo is tuned for the frequency band 3100 to 3500MHz.



The PCB has been designed on Rogers RO4360G2, h=0.61mm, $\epsilon_R=6.2$, 35um double sided copper. Supply voltage (drain-source) is 32V. Gate bias voltage is connected to the Vg terminals on the input board. To set the drain quiescent current, slowly increase V_{GS} until the I_{DQ} will be 400 mA, starting at about 1V.

When switching of the RF-pulse a spike may appear on the drain supply due to the inductance and the fall time of the pulse. When using signal with a rapid fall time this spike may become (too) large. By placing two 10 μ F SMD capacitors (C7 and C11) on the drain supply. These spikes will be reduced to virtually zero.

Performance Details

The pulse format used is a 300 μs pulse with a duty cycle of 10%. The power sweep was performed up to 3 dB gain compression.

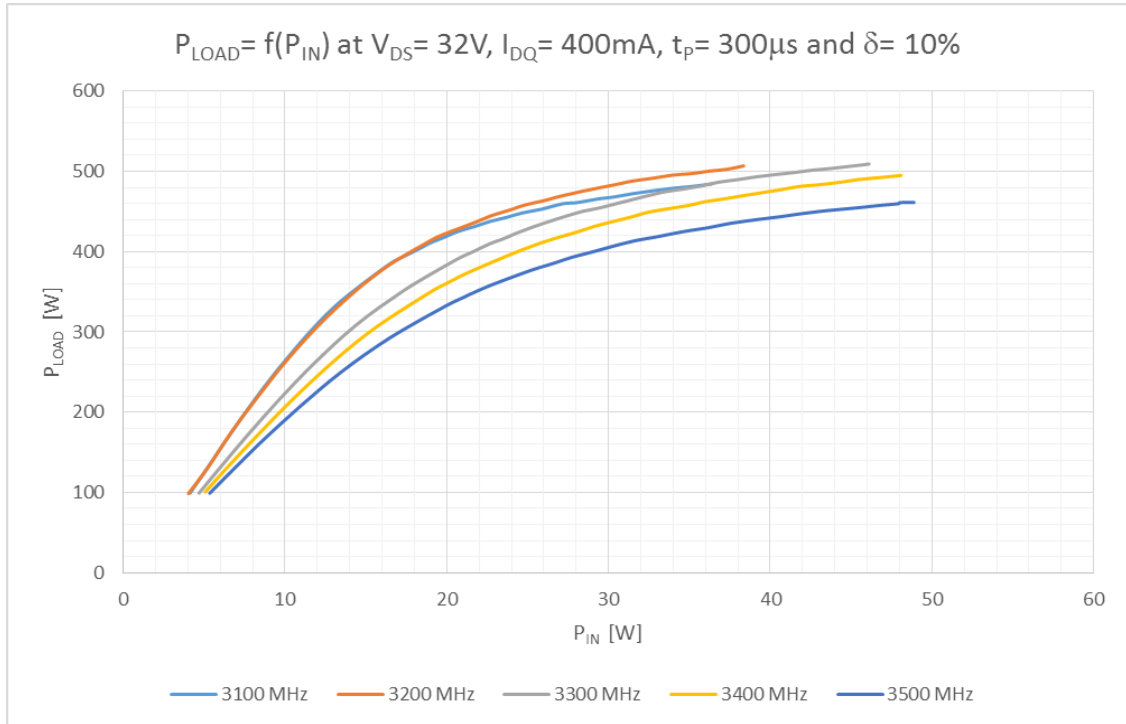


Figure 1 P_LOAD vs P_IN

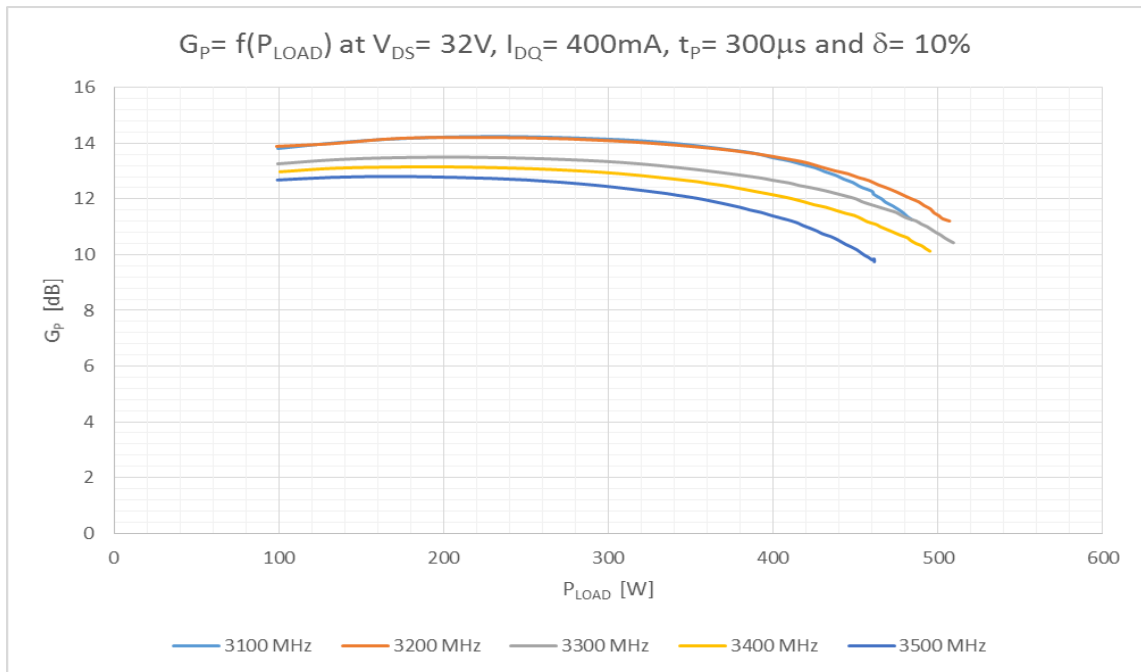


Figure 2 Gain vs P_LOAD

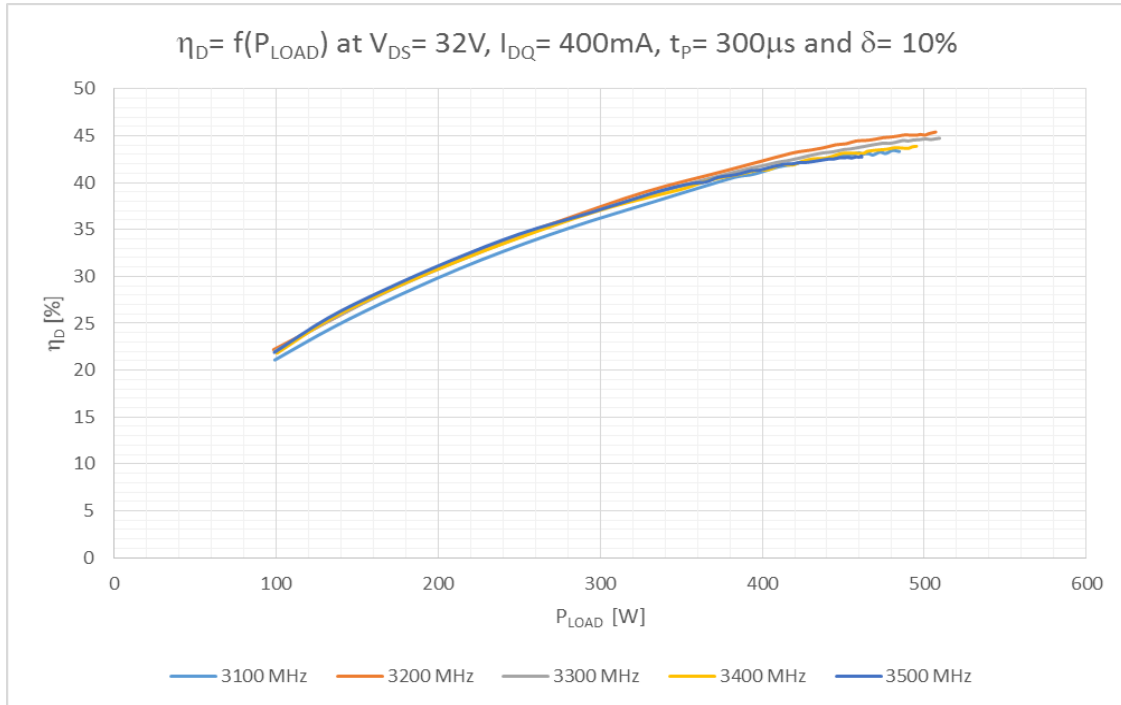


Figure 3 Drain efficiency vs P_LOAD

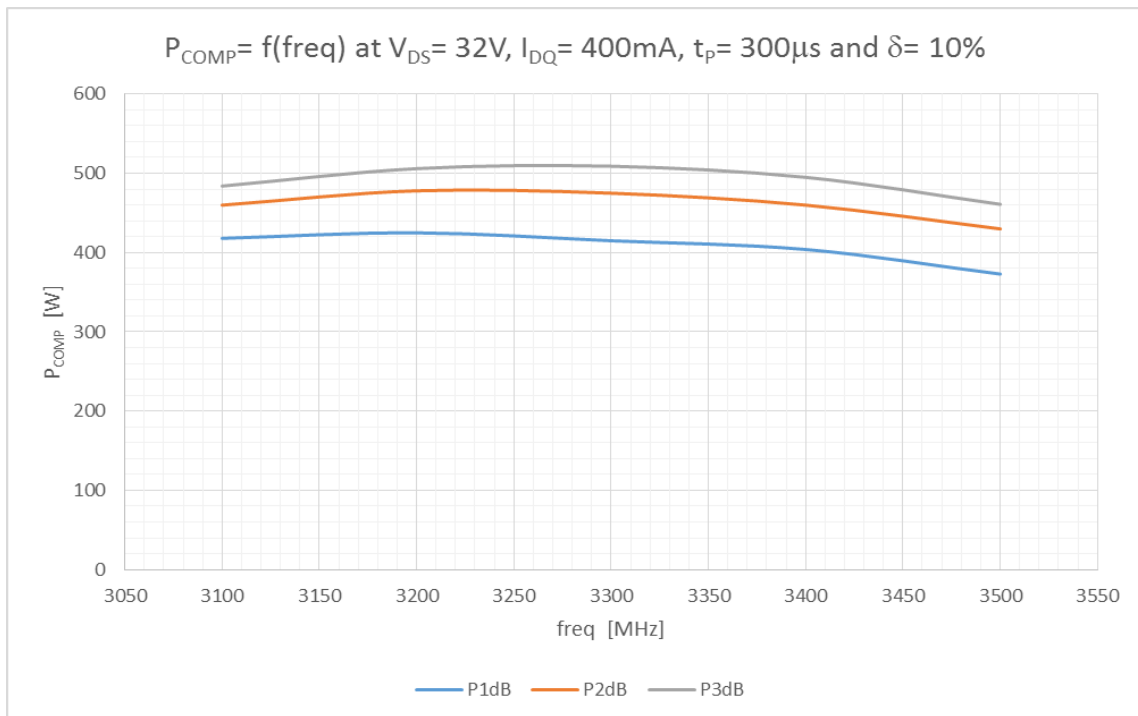


Figure 4 Compressed Power

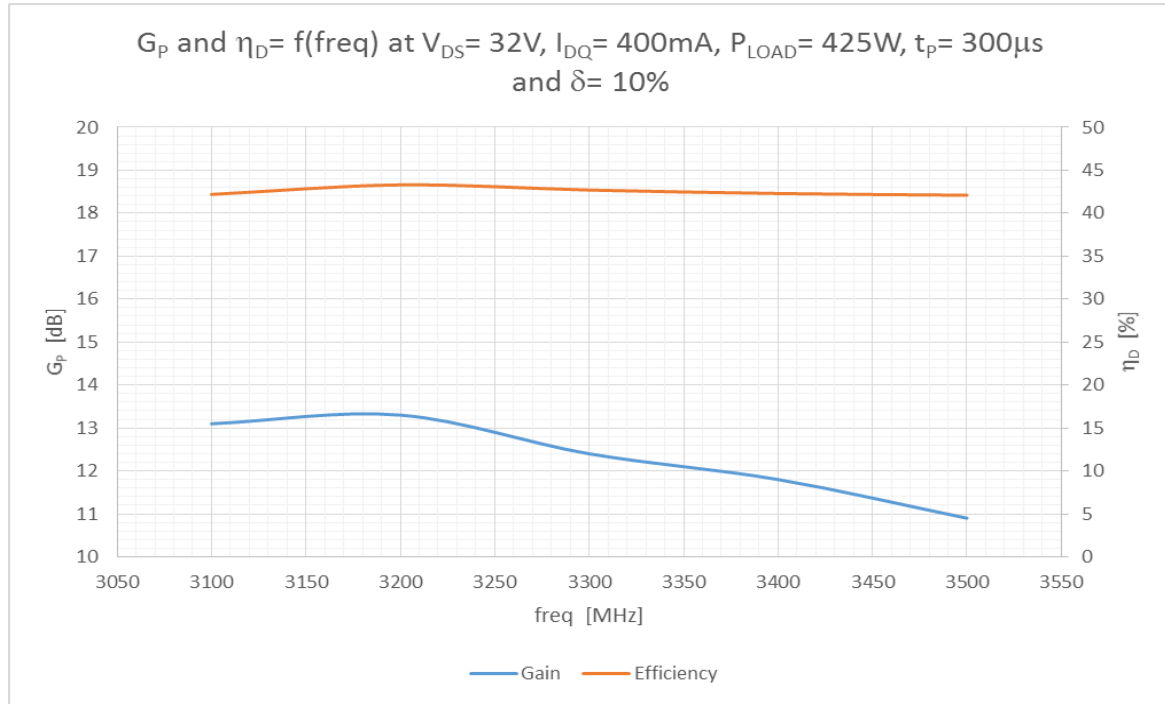
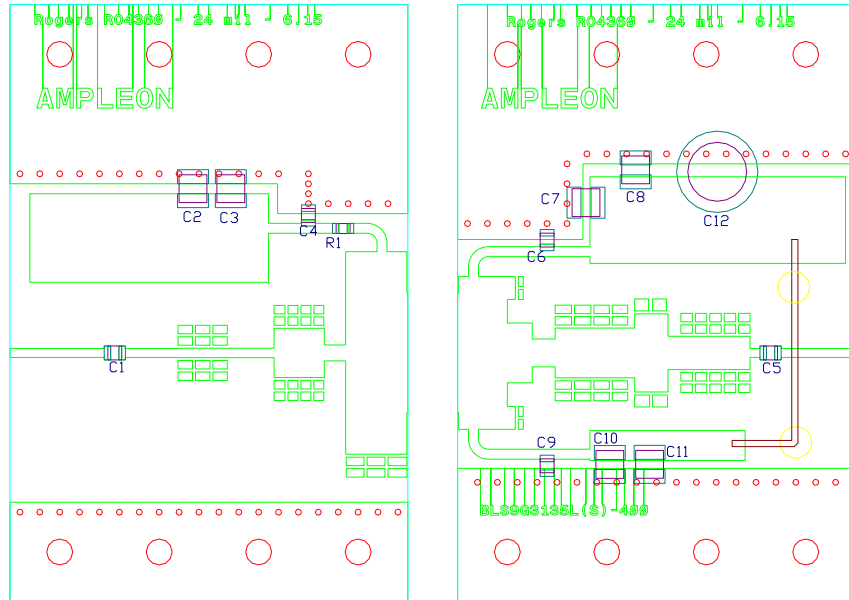


Figure 5 Performance at 425 W

5.1 Hardware



Components list application circuit.

C1, C4	10 pF	ATC100A
C5, C6, C9	10 pF	ATC800A
C3, C8, C10	1 nF	ATC100B
C7, C11	10 μ F – 50 V	GRM55DR61H106KA88L
C12	220 μ F	63 V, Electrolytic capacitor
C2	4.7 μ F	
R1	5 Ω	0603 SMD Resistor

PCB Material: Rogers 4360G2, thickness 0.61 mm (24 mil) or equivalent, $\epsilon_R = 6.15$, Cu = 35 micron

5.2 Board material

Table 2: Board specifications

Parameter	Value
Manufacturer	Rogers
Type	RO4360G2
Thickness	24 mil, 0.61 mm
Layers	2, top/bottom. Bottom all copper

5.3 Device markings

Table 3: Device specifics

Parameter	Value
Manufacturer	Ampleon
Device	BLS9G3135LS-400
Marking	BLS9G3135LS-400, m1529, Philippines
Comments	Engineering sample

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