# AR181125

## BLA9H0912L(S)-250, 1030MHz to 1090MHz

**v1.0 — 12th December 2018**

AMPLEON

**Application Report**

| Document information | |
|---|---|
| **Status** | Company Public |
| **Author(s)** | Hans Mollee |
| **Abstract** | Measurement results of a Class-AB design for the 1030MHz to 1090MHz band with the BLA9H0912L(S)-250 |

# 1. Revision History

*Table 1: Report revisions*

| Revision | Date | Description | Author |
|---|---|---|---|
| 1.0 | 20180829 | Initial document | Hans Mollee |

# 2. Contents



# 3. List of figures

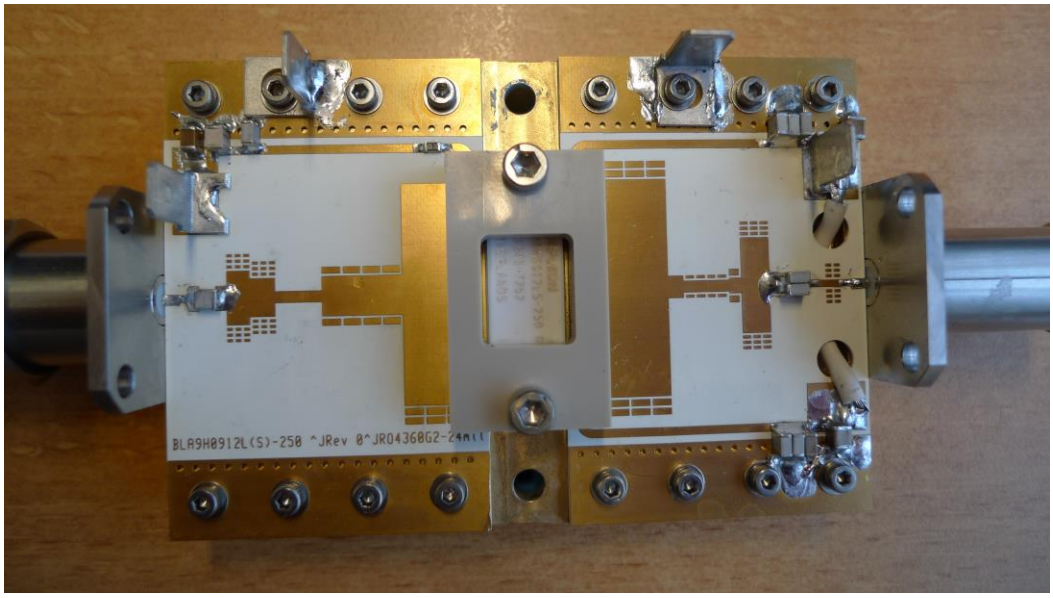


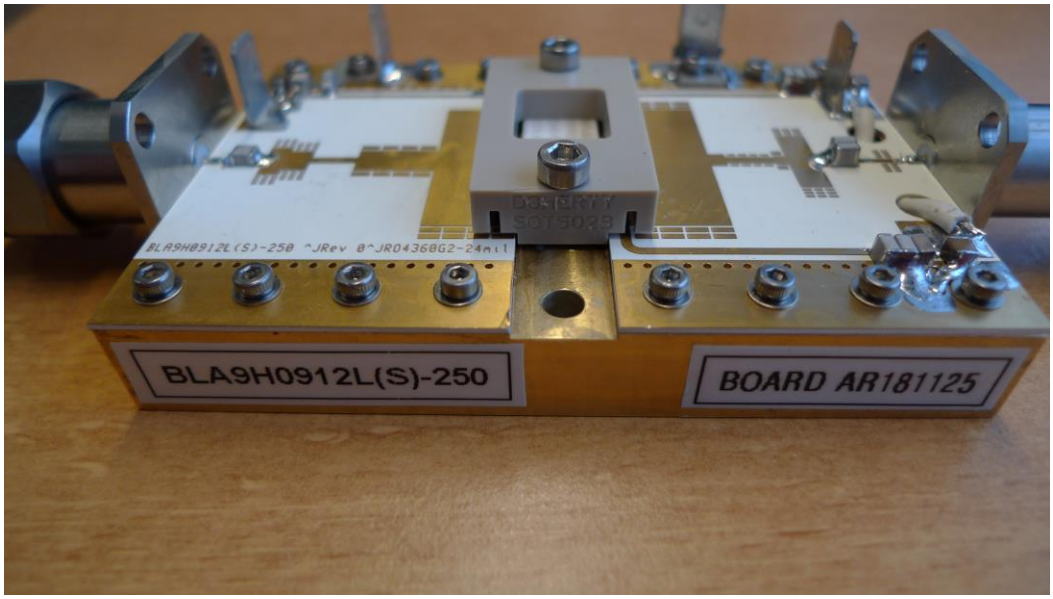
# 4. List of tables

## 5. General description

This report presents the measurement results of the Class-AB demo AR181125. The device used is a BLA9H0912L(S)-250, 9th generation LDMOS in a ceramic SOT502-package. The demo is designed for Mode-S applications in the 1030MHz to 1090MHz frequency band.

The PCB has been designed on Rodgers RO4360G2, h=0.61mm, $\varepsilon_R$=6.15, 35um double sided copper. Supply voltage (drain-source) is 50V.The 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 100 mA, starting at about 1V.





## 6.1 Performance Details.

The pulse format used is for TACAN-applications that use a 128µs pulse with a duty cycle of 10%. The power sweep was performed up to 3 dB gain compression.

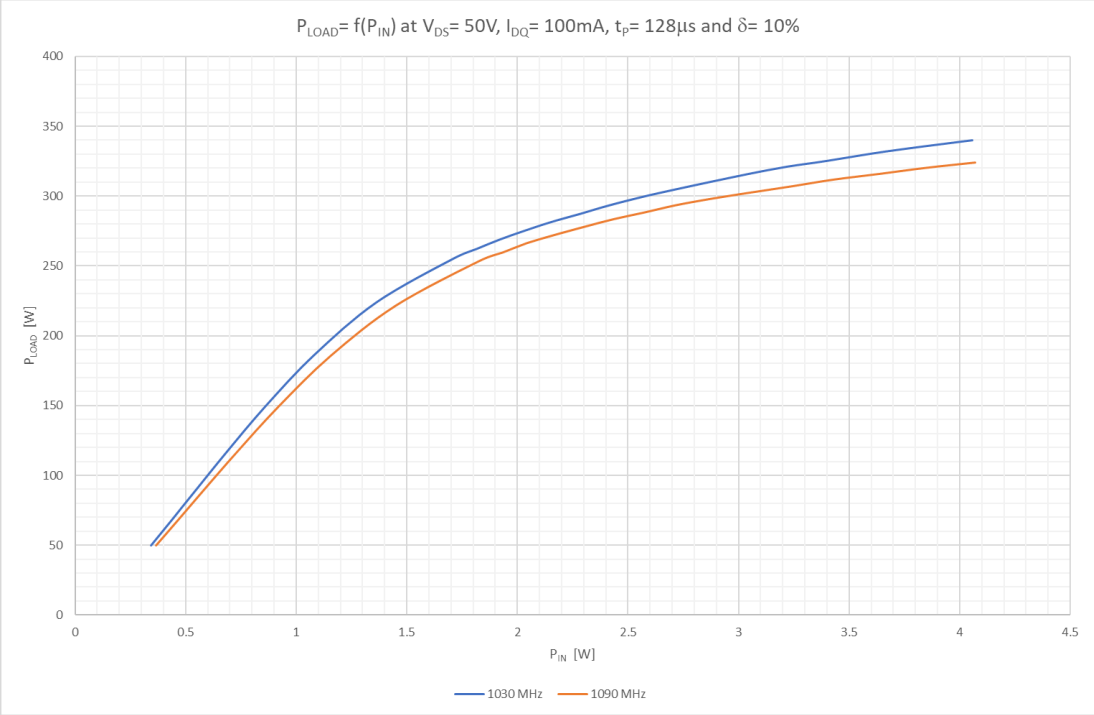



**Figure 1 $P_{LOAD}$ vs $P_{IN}$**

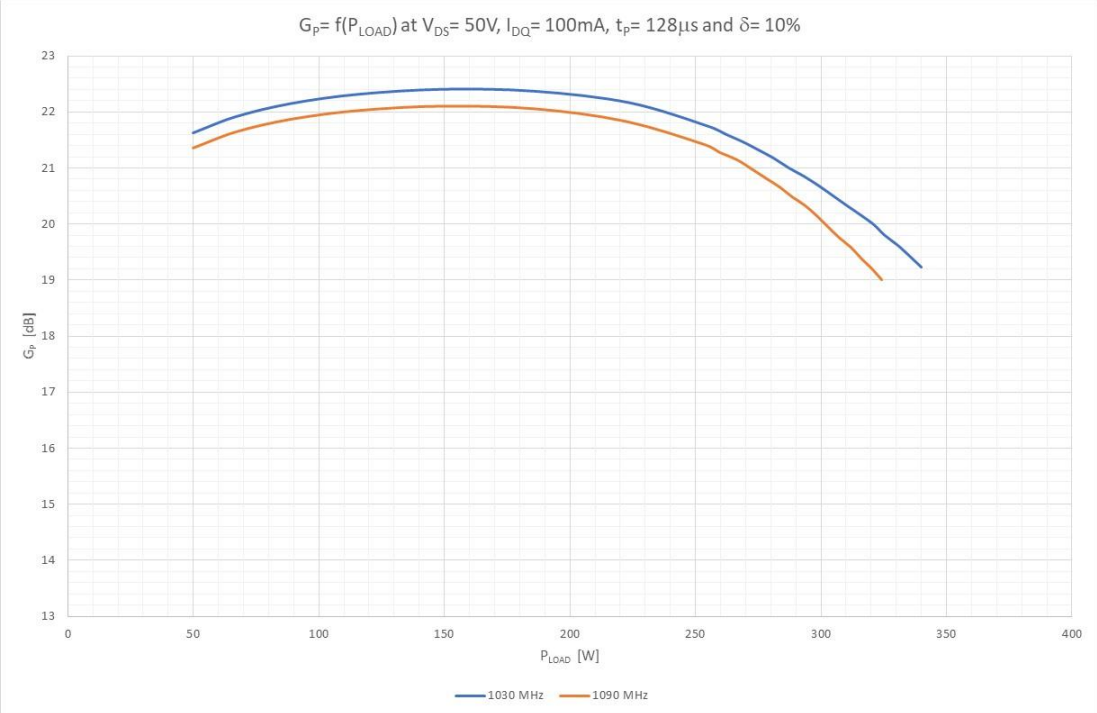



**Figure 2 Gain vs $P_{LOAD}$**

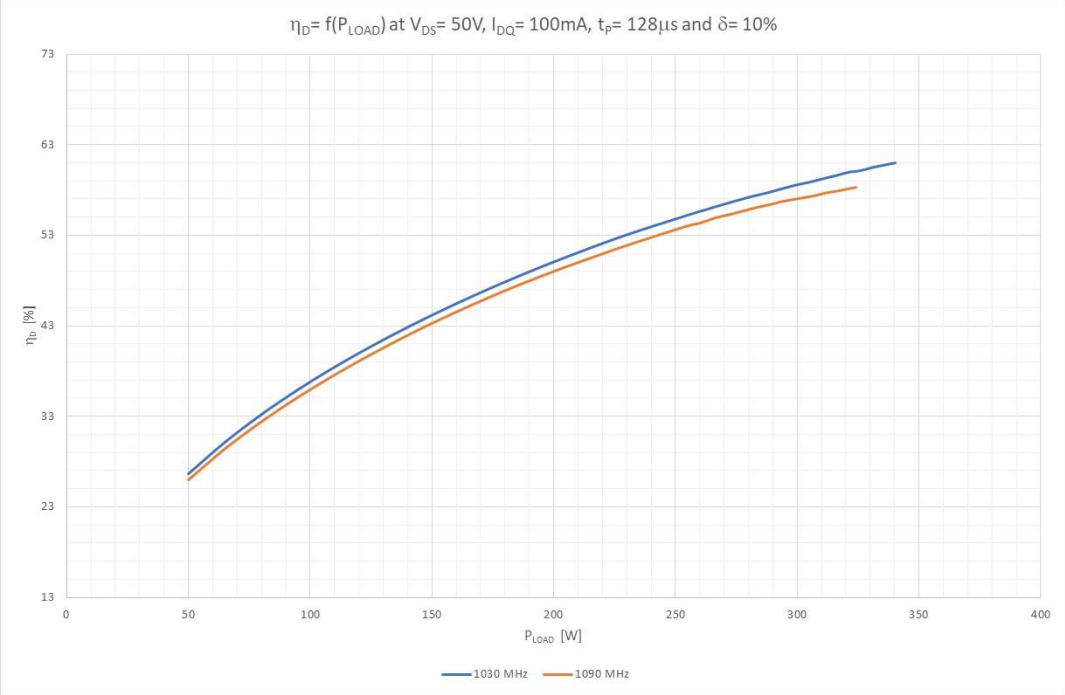



**Figure 3 Drain efficiency vs $P_{LOAD}$**

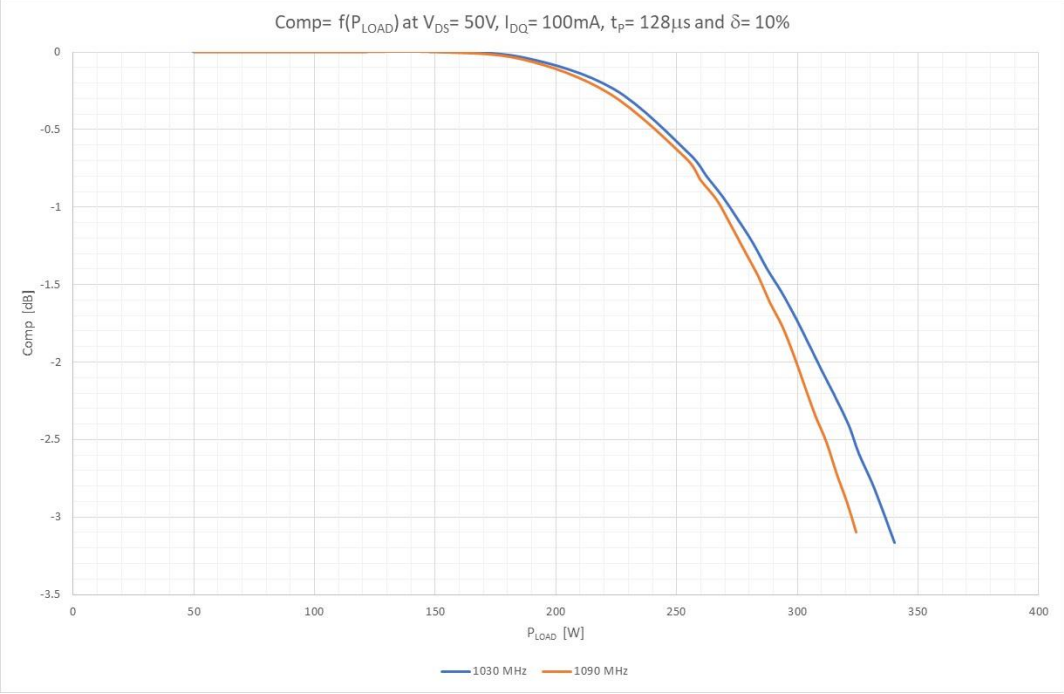



**Figure 4 Compression curve**

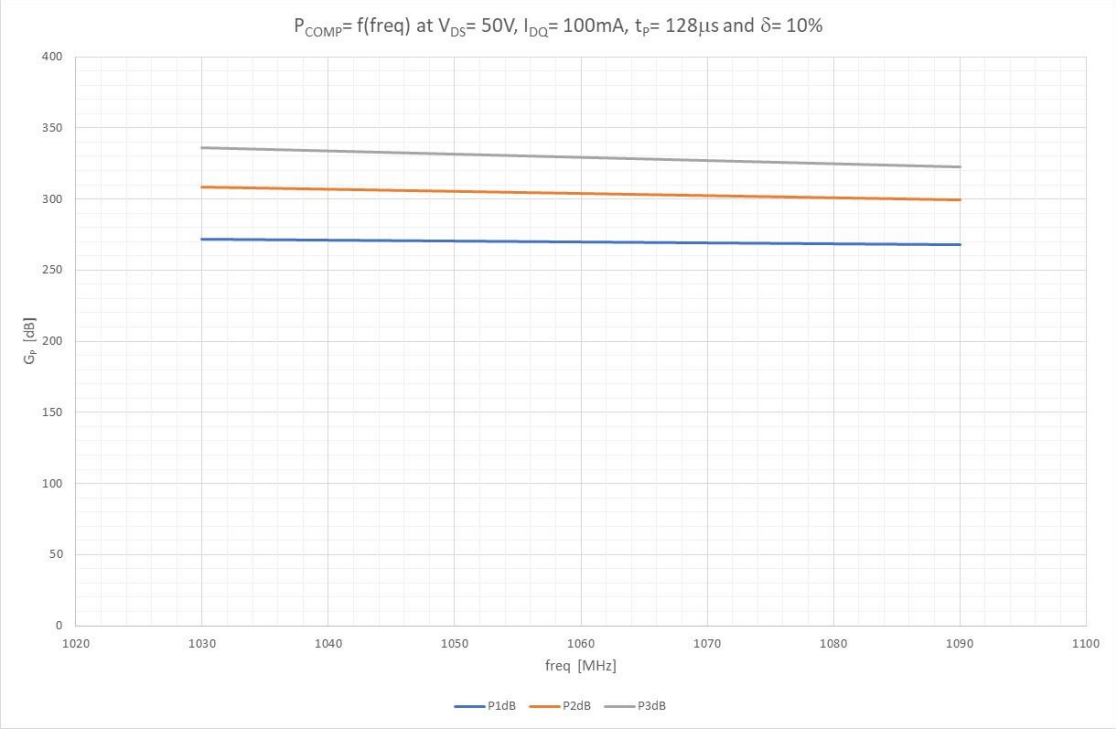



**Figure 5: $P_{XdB}$ curves.**

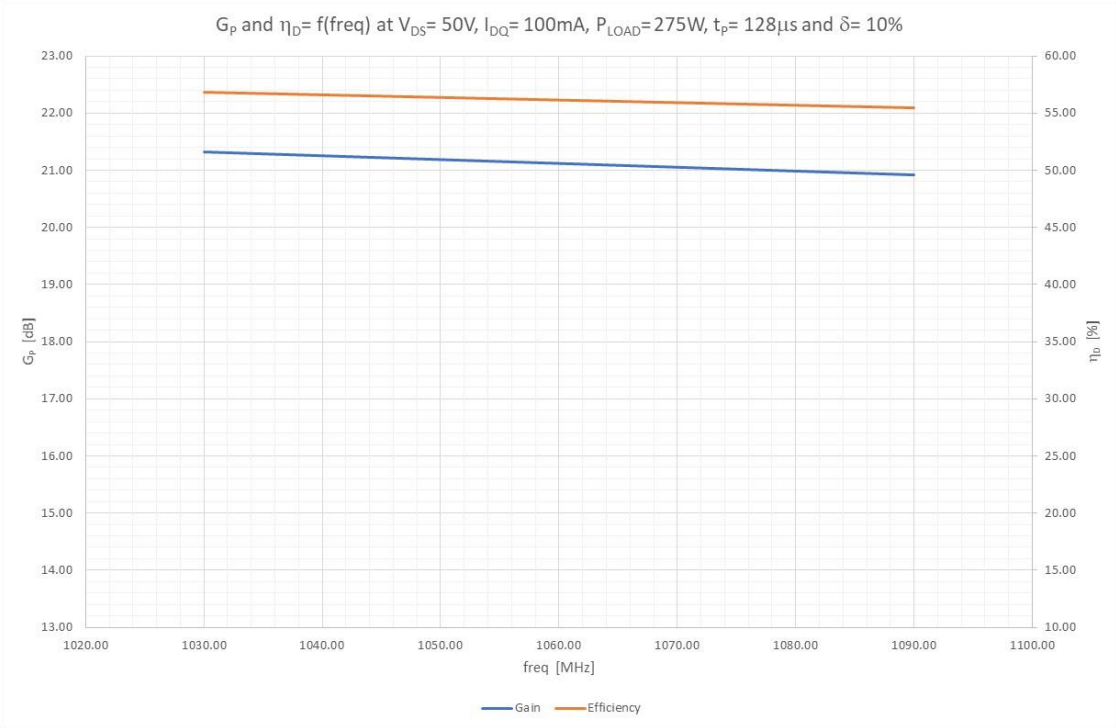
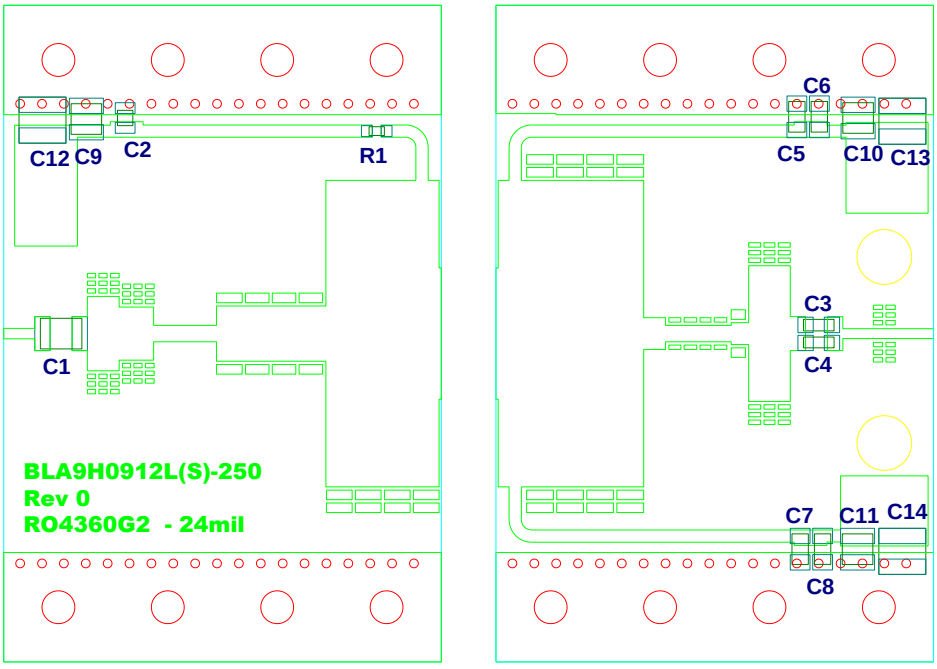



**Figure 6: Performance at 275W.**

# 7 Hardware




| Components list application circuit. | | |
|---|---|---|
| C1, C2 | 200 pF | ATC800B |
| C3, C4 | 180 pF | ATC800B |
| C5, C6, C7, C8 | 75 pF | ATC800B |
| C9, C10, C11 | 1 nF | ATC100B |
| C12, C13, C14 | 4.7 μF – 100V | GMR42 258K7S 475K 100 H53 |
| R1 | 5.1 Ω | 0603 SMD Resistor |

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

*Table 2: Board specifications*

| Parameter | Value |
|---|---|
| **Manufacturer** | Rogers |
| **Type** | RO4360G |
| **Thickness** | 24 mil, 0.61 mm |
| **Layers** | 2, top/bottom. Bottom all copper |

*Table 3: Device specifics*

| Parameter | Value |
|---|---|
| **Manufacturer** | Ampleon |
| **Device** | BLA9H0912L(S)-250 |
| **Marking** | BLA9H0912L(S)-250, wk1845-7262 |
| **Comments** | Engineering sample |

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