# AR122278

## Test Report CLF1G0060-30 3100-3500MHz board 2099

**Rev. <0.0> — 30 Oct 12** **Test Report**

### Document information

| Info | Content |
|---|---|
| **Keywords** | CLF1G0060-30, AB, Pulse |
| **Abstract** | RF Performance CLF1G0060-30; 3100-3500 MHz; Board 2099 |

### Revision history

| Rev | Date | Description |
|---|---|---|
| <0> | <10-30-2012> | Original |

## Contact information

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# 1. Table of Contents



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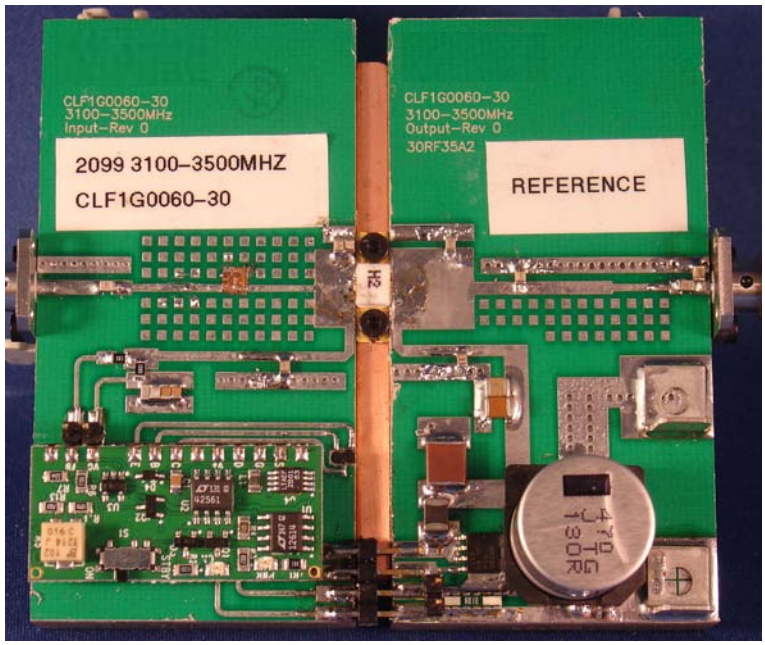
## 2. Demo and Transistor Details

| | |
|---|---|
| Frequency Band | 3100-3500 MHz |
| Modulation | Pulsed 100uSec 10% |
| Transistor | CLF1G0060-30 |
| Date Code | H2 |
| Board Number | 2099 |

## 3. Introduction

This report gives the test results for a CLF1G0060-30, 30W, GaN, single ended class AB demo amplifier.



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The following tests have been performed:

- NWA - Gain/ Return loss
- Pulsed Peak Power sweep
- Pulse Profile

All testing has been performed at $V_{DS}$ =50V, $I_{DQ}$ = 70mA, and $T_H$ = 25°C unless otherwise specified

## 4. Test Circuit

A description of this circuit can be found in **Appendix A.** The test circuit has been designed on Taconic RF35 30mil er=3.5

Supply voltage (drain-source) is typically 50V. an external bias module supplies the sequenced gate bias voltage and can be found in CA-167-11

## 5. RF Performance

| Frequency (MHz) | Gain (dB) @ Pout= 32W (45dBm) | | Eff(%) @ Pout= 32W (45dBm) | $P_{3dB}$ (dBm) | $P_{PEAK}$(W) |
|---|---|---|---|---|---|
| 3100 | 12.5 | | 59 | 45.7 | 37.5 |
| 3200 | 13.7 | | 63 | 46 | 39.6 |
| 3300 | 13.25 | | 58 | 45.7 | 37.5 |
| 3400 | 13.5 | | 59 | 46 | 39.8 |
| 3500 | 12.5 | | 57 | 46 | 40.1 |

**Table 1. RF Performance Summary $V_{ds}$ = 50V, $I_{dq}$ = 70mA, Pulsed 100usec 10% duty cycle**



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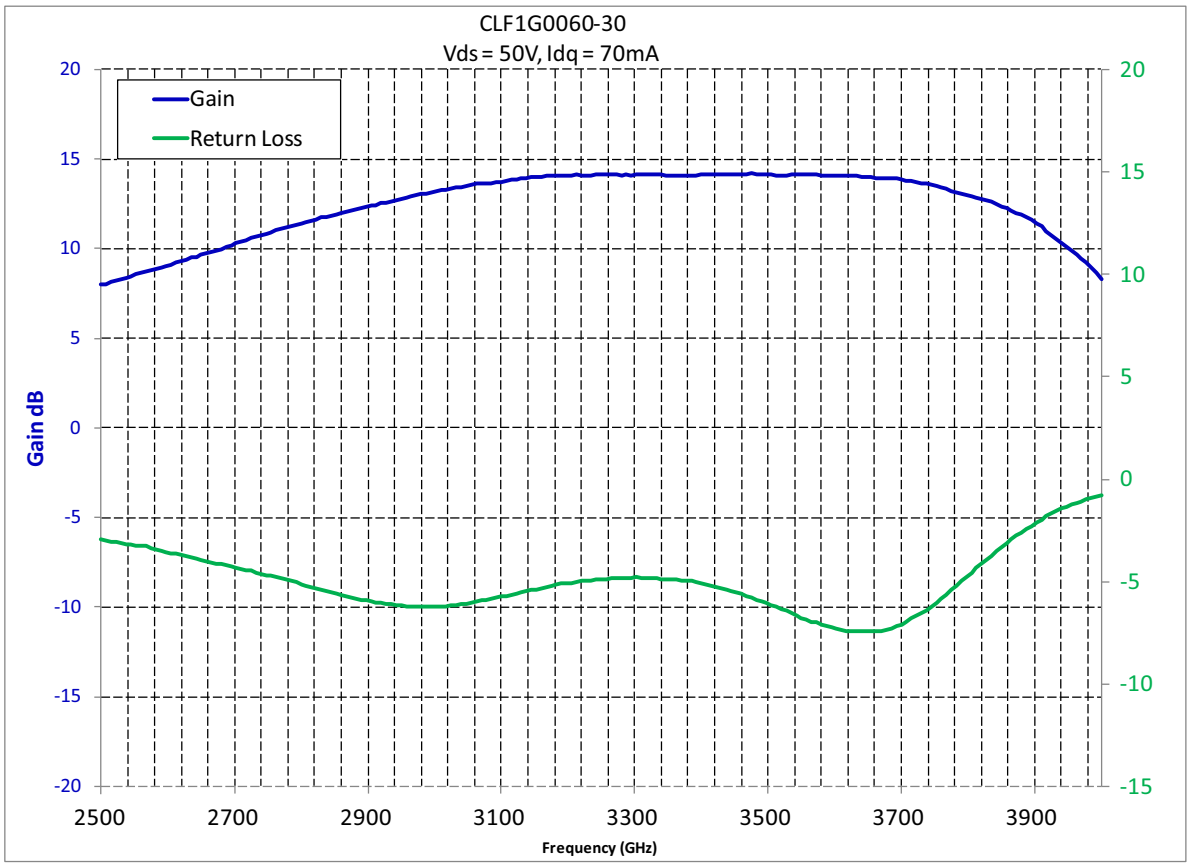


**Fig 1. Gain RL pin = 20dBm CW**



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**Fig 2. Gain RL pin = 10dBm CW broad band**



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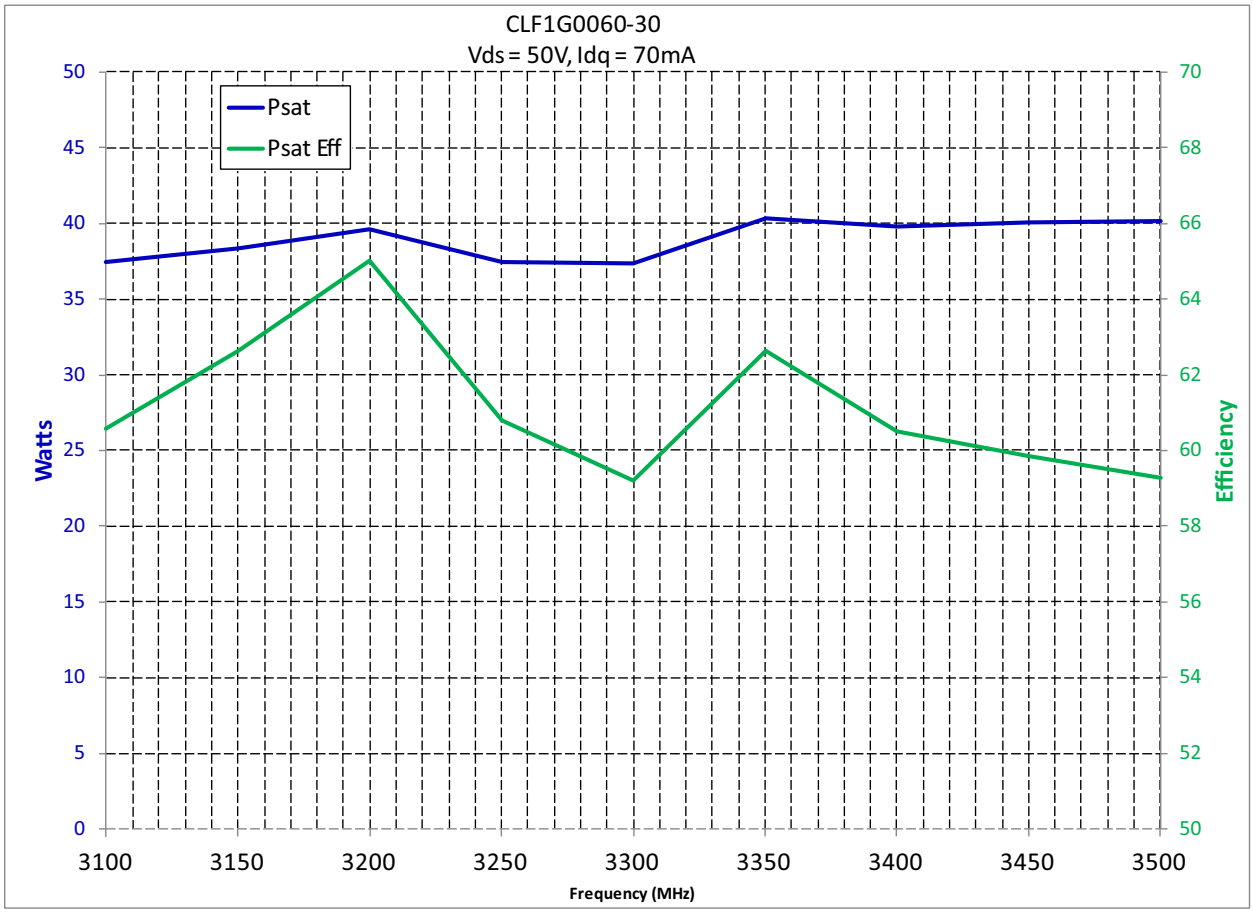


**Fig 3. Peak Power / peak efficiency Pulsed 100usec 10% duty cycle**



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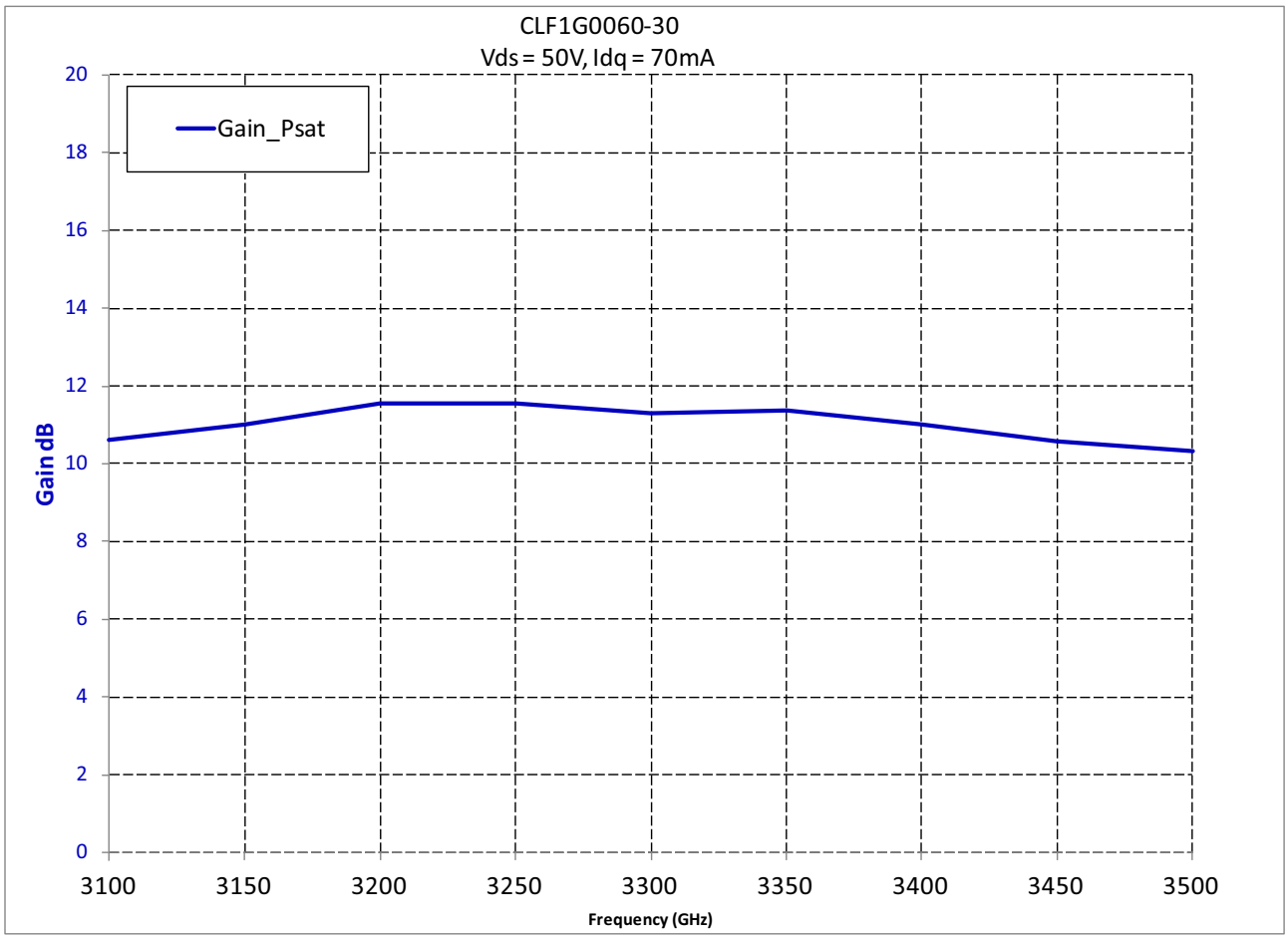


**Fig 4. Gain at Psat Pulsed 100usec 10% duty cycle**



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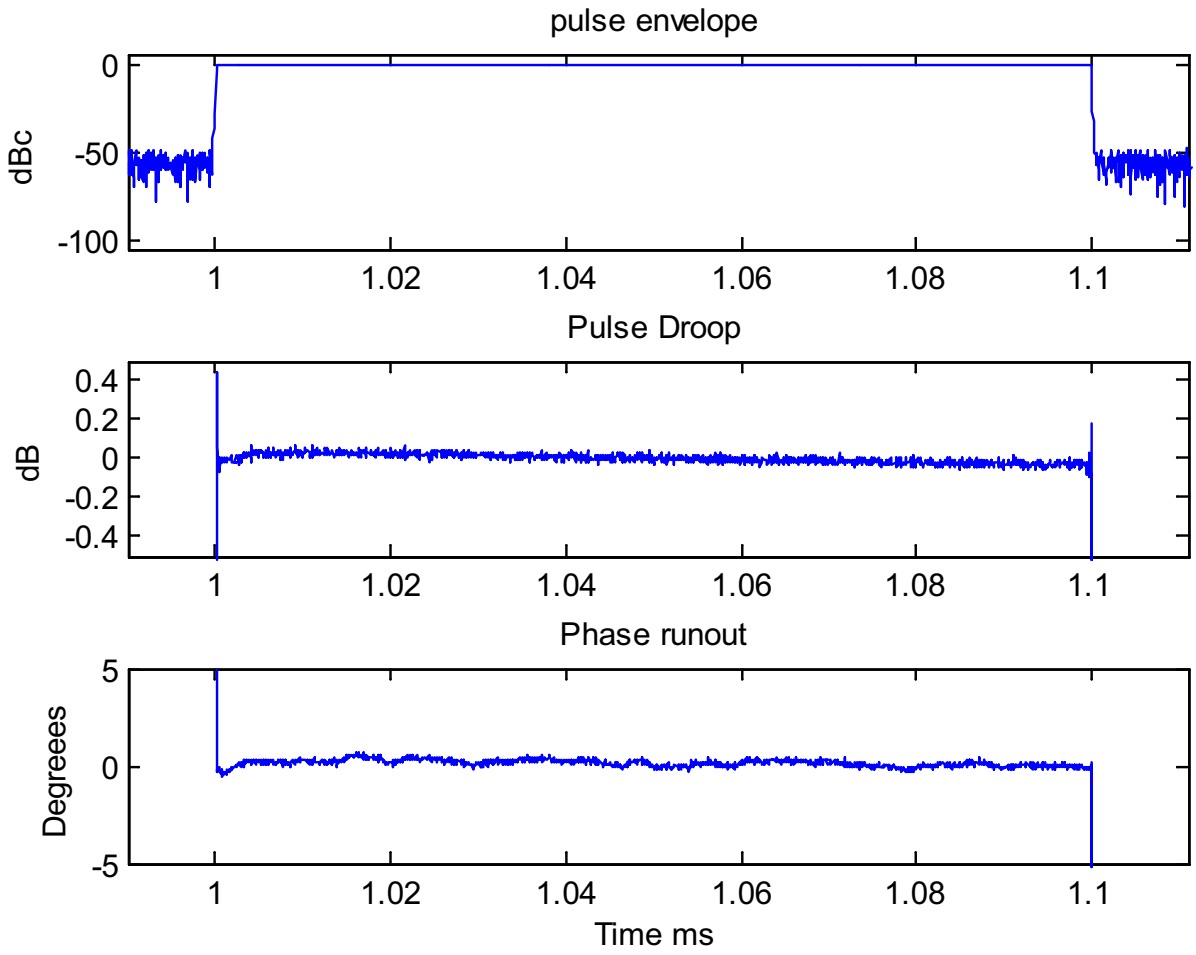
**Fig 5. Pulse profile – 3.3GHz 30W**



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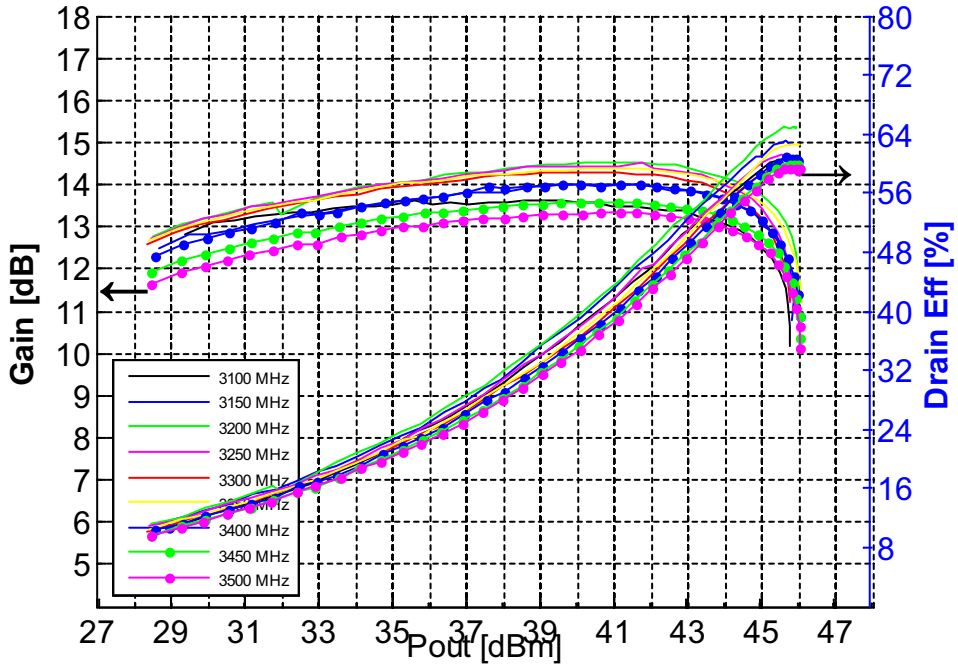


**Fig 6. Power sweeps Pulsed 100usec 10% duty cycle**



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# 6. Data Files

Board2099 Data.zip



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## 7. Appendix A: Test Circuit and Component List

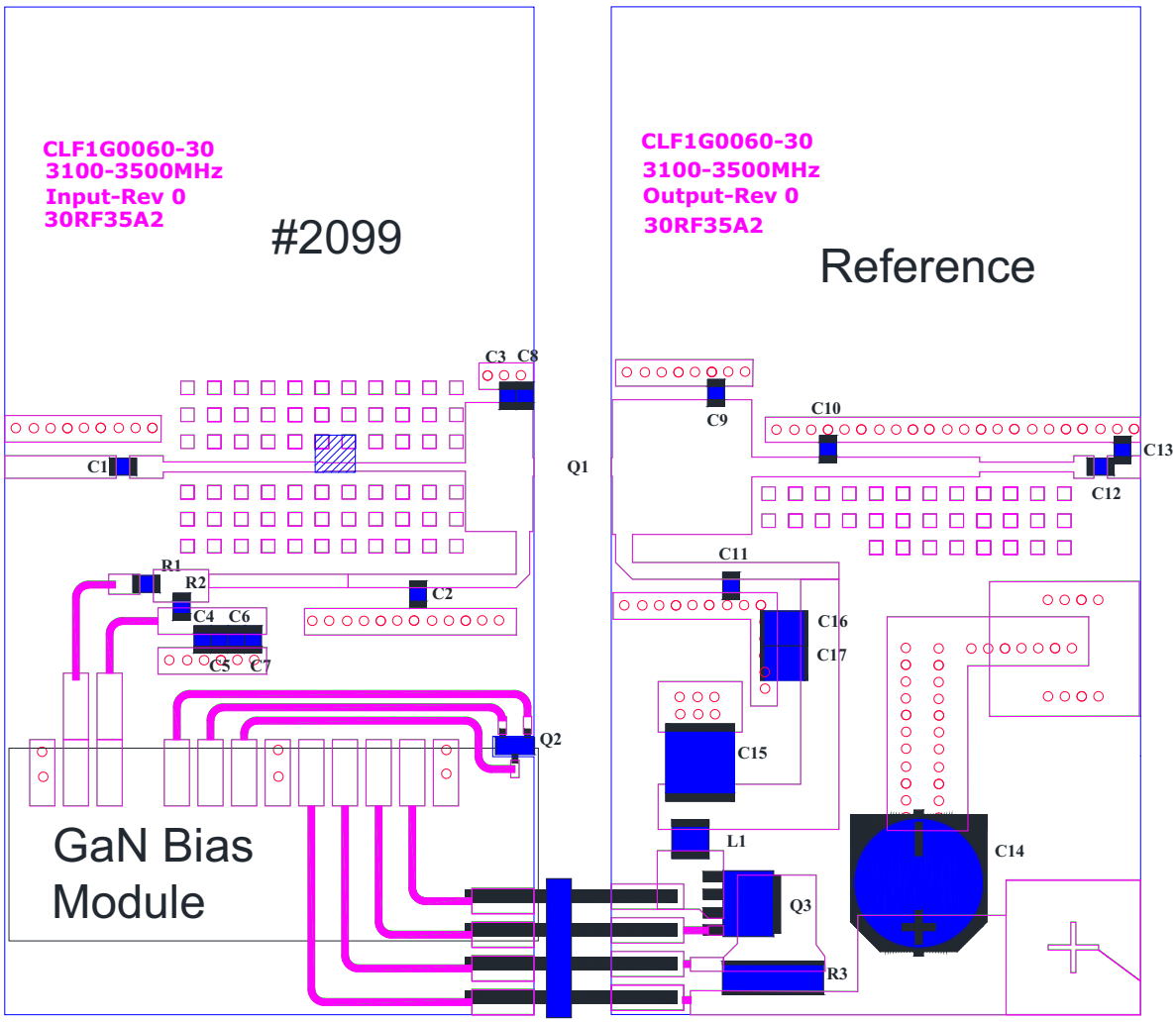


**Fig 7. Test Circuit**



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| Designator | Description | Manufacturer | Part # |
|---|---|---|---|
| Input PCB | CLF1G3060-30 3100-3500 Input Rev0 | Avanti | |
| Output PCB | CLF1G3060-30 3100-3500Output Rev0 | Avanti | |
| | | | |
| Q1 | 30W GaN | Ampleon | CLF1G0060-30 |
| Q2 | Transistor, PNP 45V 100mA GP | NXP | BC857B |
| Q3 | Transistor, N-ch MOS 80V 80A | NXP | BSMN8R2-80YS |
| | | | |
| R1 | 10kΩ | Vishay Dale | 0805 |
| R2 | 10Ω | Vishay Dale | 0805 |
| R3 | 0.010 Ω 1% 100ppm MF, 2W, 3008 | Susumu | RL7520WT-R010-F |
| | | | |
| | | | |
| C14 | 470uF, 63V Electrolytic SM | Panasonic | PCE3667CT-ND |
| | | | |
| C1 | 15pF | Passive Plus | 0805N |
| C2 | 8.2pF | Passive Plus | 0805N |
| C3, C8,C10,C13 | 0.3pF | Passive Plus | 0805N |
| C7 | 22pF | Passive Plus | 0805N |
| C9 | 0.5pF | Passive Plus | 0805N |
| C11 | 6.8pF | Passive Plus | 0805N |
| C12 | 12pF | Passive Plus | 0805N |
| C4 | 100nF Capacitor, 50V 10% X7R, 0805 | Generic | |
| C5 | 10nF Capacitor, 50V 10% X7R, 0805 | Generic | |
| C6 | 1nF Capacitor, 100V 5% NP0, 0805 | Generic | |
| C16 | 10nF Capacitor, 200V 5% NP0, 1210 | Generic | |
| C15 | 10uF Capacitor, 100V 10% X7S, 2220 | TDK | C5750X7S2A106M |
| C17 | 2.2uF 100V | Murata | GRM32ER72A225KA35L |
| | | | |
| L1 | Ferrite bead, 10A | laird | HI1612X560R-10 |
| | | | |
| PC-board Material: Taconic RF35A2, $\varepsilon_r$ = 3.5 , thickness 30mils, 1oz copper each side | | | |

**Fig 8. BOM**



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