

Test Report ITGH09400D4C^{V1} Doherty 920-960MHz

2026-5-14

Introduction

This amplifier is designed with Innogration 28V ITGH09400D4C LDMOS

Demo and Transistor

Frequency band : 920-960 MHz
 Application : Telecom
 Configuration : Doherty
 Test Signal : Pulsed / WCDMA
 Transistor : ITGH09400D4C
 Date code : 261420S
 PCB : 20 Mil Rogers 4350

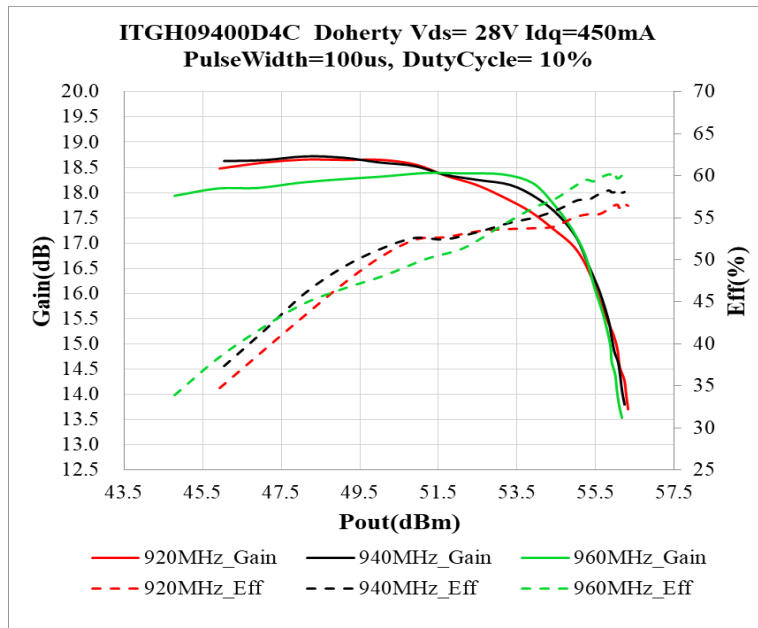
The amplifier has been characterized under the following conditions:

- Network Analyzer plots for gain and IRL.
- Peak power measurement WCDMA_1C, (PAR=10.8dB @ 0.01% probability).
- P3dB and P4.5dB Peak power measurement using the Pulse, 100 us width, 10% duty cycle.
- RF Test Bench 4 (WDTS-300-30-6G)

Note: The PA is tested with a supply voltage of $V_{DS}=28V$, $I_{DQ}=450\text{ mA}$ ($V_{gs-main}=2.54V$, $V_{gs-peak}=1.4V$).all measurements unless otherwise noted.

Test Results:

1. Summary
 - 1) Pulse



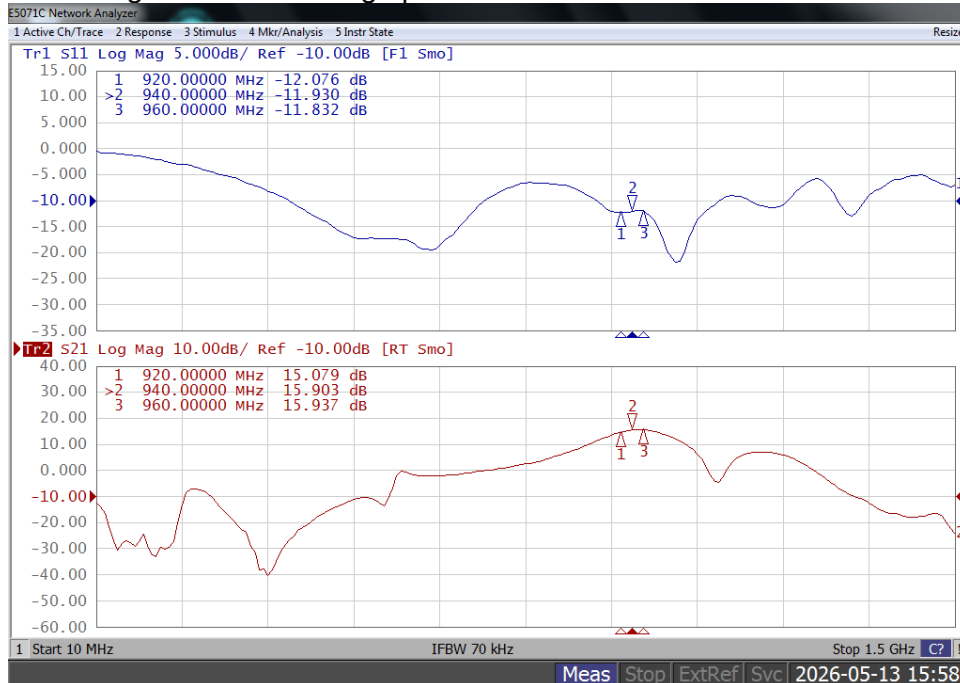
| Freq (MHz) | P3dB (dBm) | P3dB (W) | P3dB Eff(%) | P3dB Gain(dB) | P4.5dB (dBm) | P4.5dB (W) | P4.5dB Eff(%) |
|------------|------------|----------|-------------|---------------|--------------|------------|---------------|
| 920 | 55.71 | 372.3 | 55.7 | 15.67 | 56.26 | 422.5 | 56.7 |
| 940 | 55.73 | 373.9 | 58.1 | 15.72 | 56.15 | 412.0 | 58.1 |
| 960 | 55.74 | 375.1 | 60.0 | 15.39 | 56.07 | 404.4 | 59.7 |

2) WCDMA

| Freq (MHz) | Pout (dBm) | CCDF (dB) | Ppeak (dBm) | Ppeak (W) | ACPR (dBc) | Gain (dB) | Efficiency (%) |
|------------|------------|-----------|-------------|-----------|------------|-----------|----------------|
| 920 | 46 | 8.78 | 54.78 | 300.8 | -35.8 | 18.5 | 38.2 |
| 940 | 46 | 8.98 | 54.98 | 314.6 | -35.9 | 18.5 | 40.7 |
| 960 | 46 | 9.19 | 55.19 | 330.3 | -34.5 | 18.2 | 41.2 |
| 920 | 47 | 8.40 | 55.40 | 347.0 | -35.1 | 18.4 | 41.5 |
| 940 | 47 | 8.44 | 55.44 | 349.6 | -35.1 | 18.5 | 43.9 |
| 960 | 47 | 8.68 | 55.69 | 370.7 | -33.1 | 18.2 | 44.2 |
| 920 | 48 | 7.74 | 55.74 | 375.1 | -34.4 | 18.4 | 44.4 |
| 940 | 48 | 7.88 | 55.88 | 387.0 | -34.1 | 18.5 | 46.6 |
| 960 | 48 | 8.04 | 56.03 | 400.6 | -32.2 | 18.2 | 46.5 |

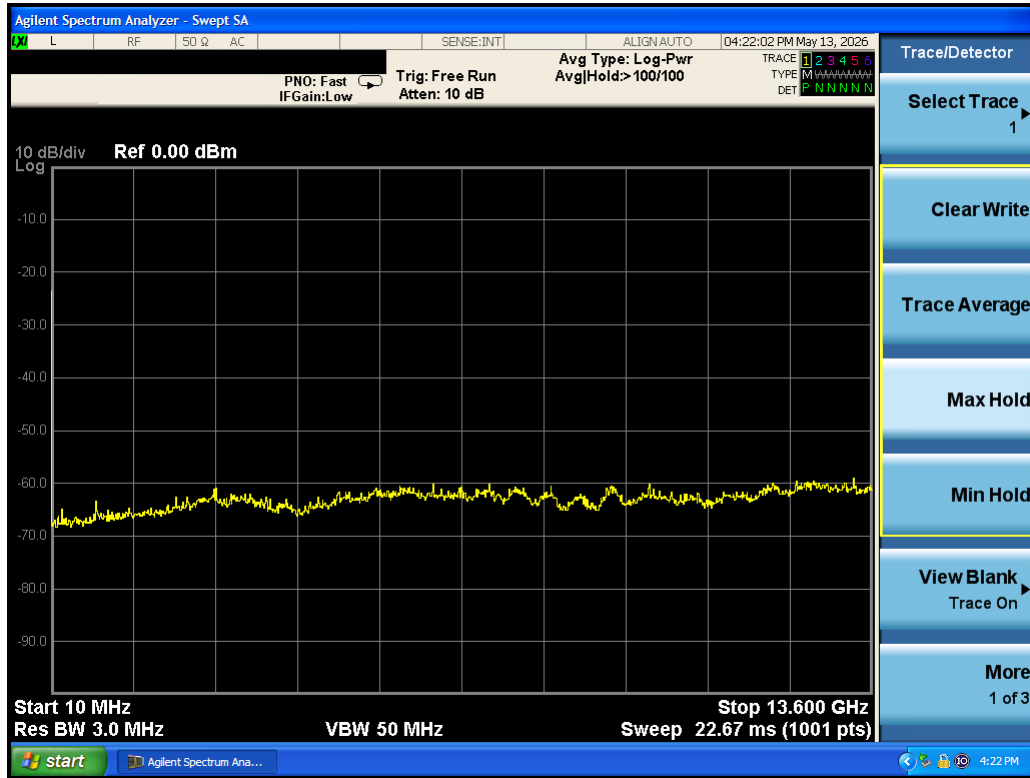
2. Network Analyzer Results

$I_{DQ} = 450 \text{ mA}$ $V_{gs-main} = 2.54 \text{ V}$. $V_{gs-peak} = 1.4 \text{ V}$

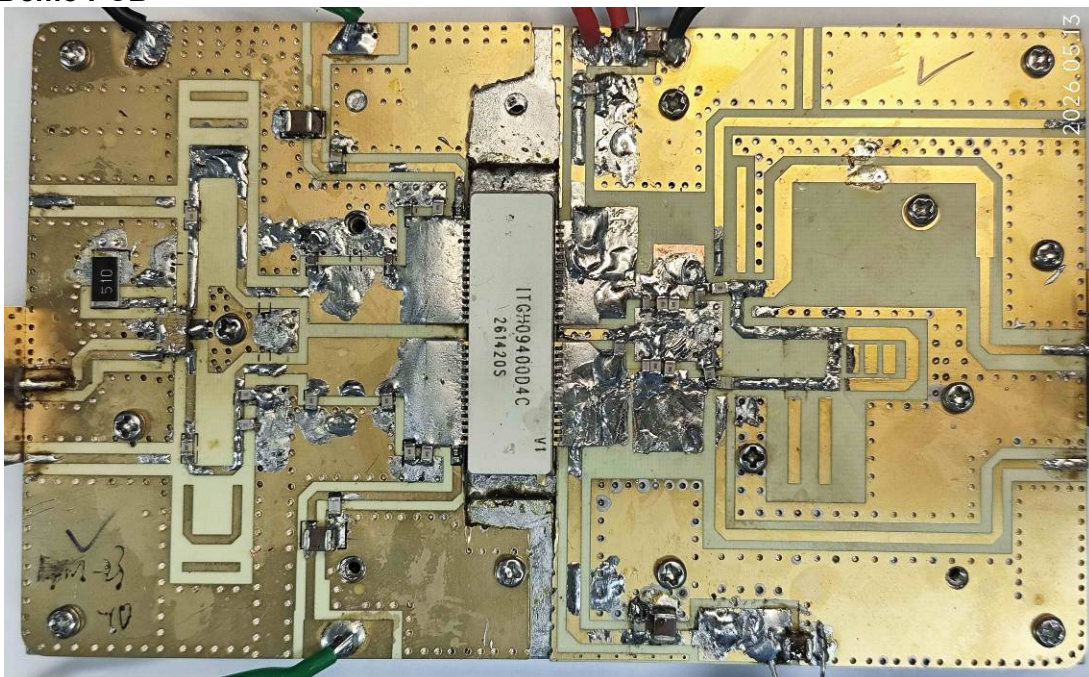


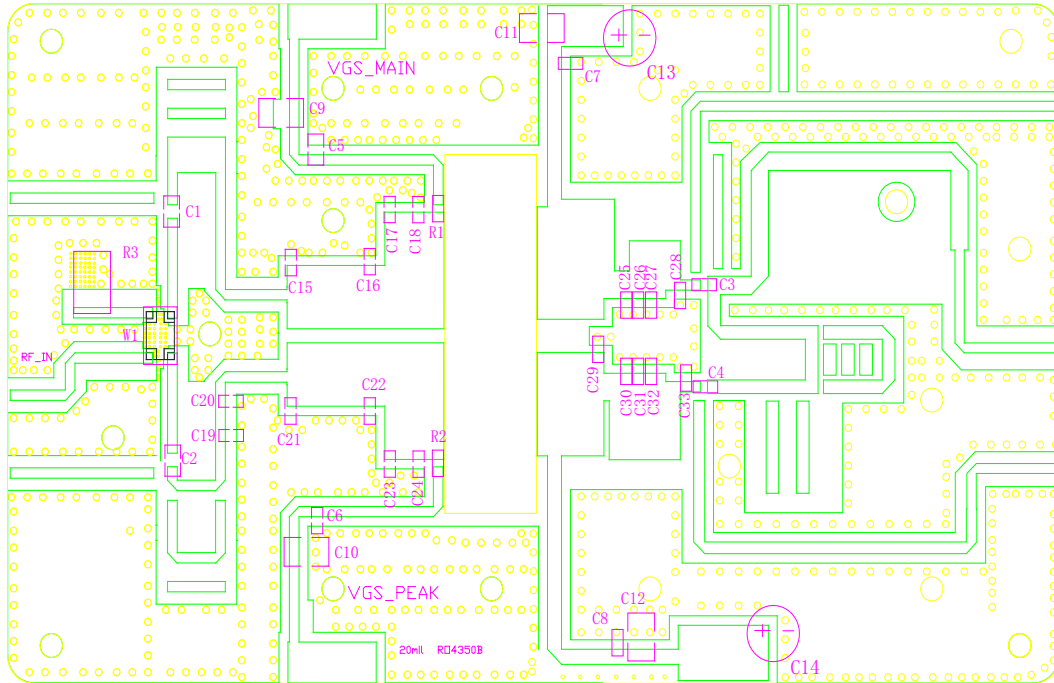
3. spectrum analyzer to show no oscillation or instability issue

Test Condition: $V_{ds}=28V$, $I_{DQ-MAIN}=2A$



4. Demo PCB





BOM of Test Circuit (High Q Capacitors)

| Designator | Footprint | Comment | Quantity |
|--|-----------|-----------|----------|
| C1, C2, C3, C15, C16, C17, C18, C21, C22, C23, C24, C26, C27, C31, C32 | 0805 | 6.8pF | 15 |
| C4, C5, C6, C7, C8 | 0805 | 68pF | 5 |
| C9, C10, C11, C12 | 1210 | 10uF/100V | 4 |
| C13, C14 | | 470uF/63V | 2 |
| C19, C20, C28, C29, C33 | 0805 | 3.3 pF | 5 |
| C25, C30 | 0805 | 2.0 pF | 2 |
| C29, C30 | 0805 | 1.0pF | 2 |
| R1, R2 | 0603 | 10 Ω | 2 |
| R3 | 1210 | 51Ω | 1 |
| W1 | | DC07F02 | 1 |