

TF275

Frequency=30-512 MHz

Pout=100W

Gain= 18 dB

Vds=28Vdc

Idq=1.2A

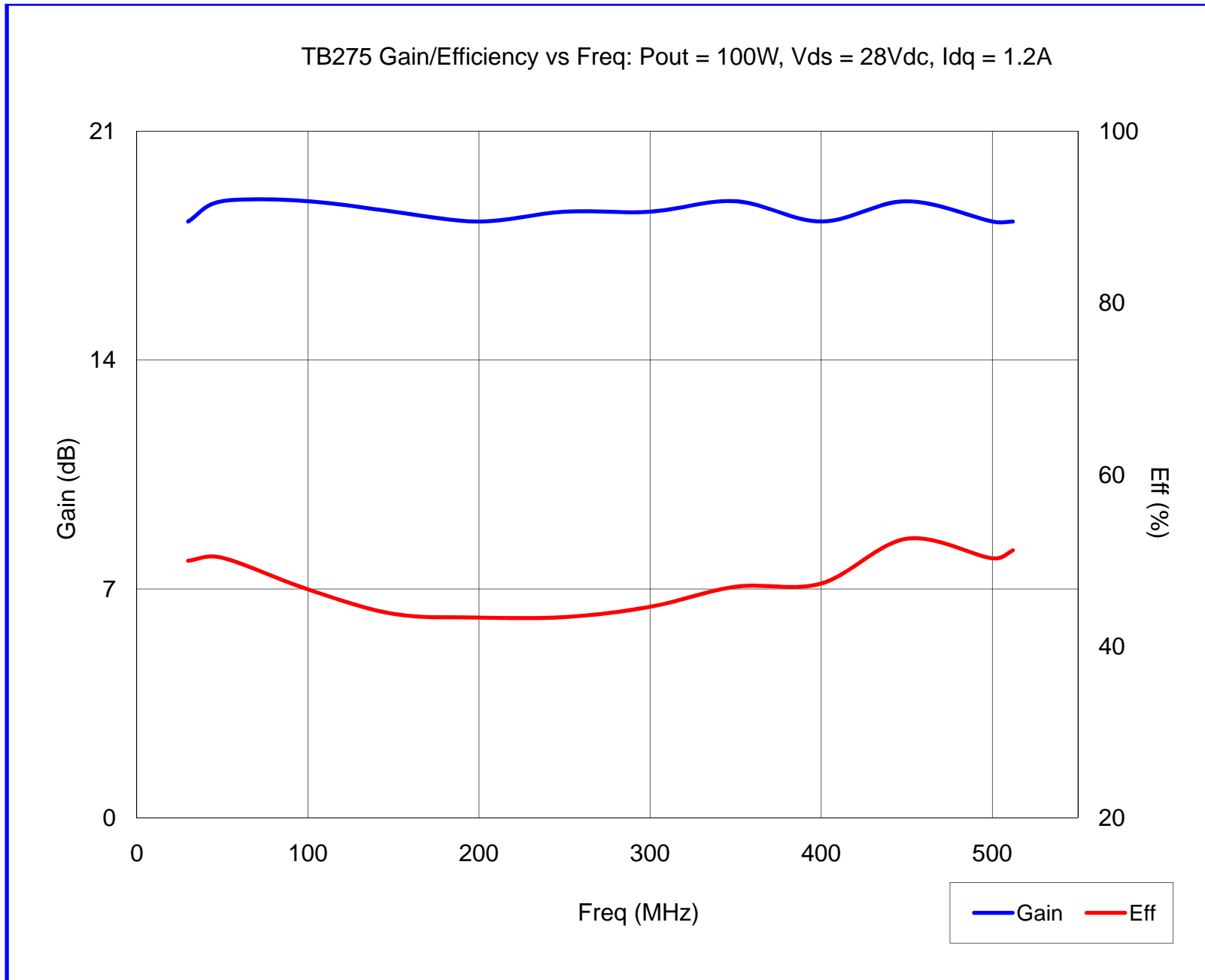
Efficiency= 43%

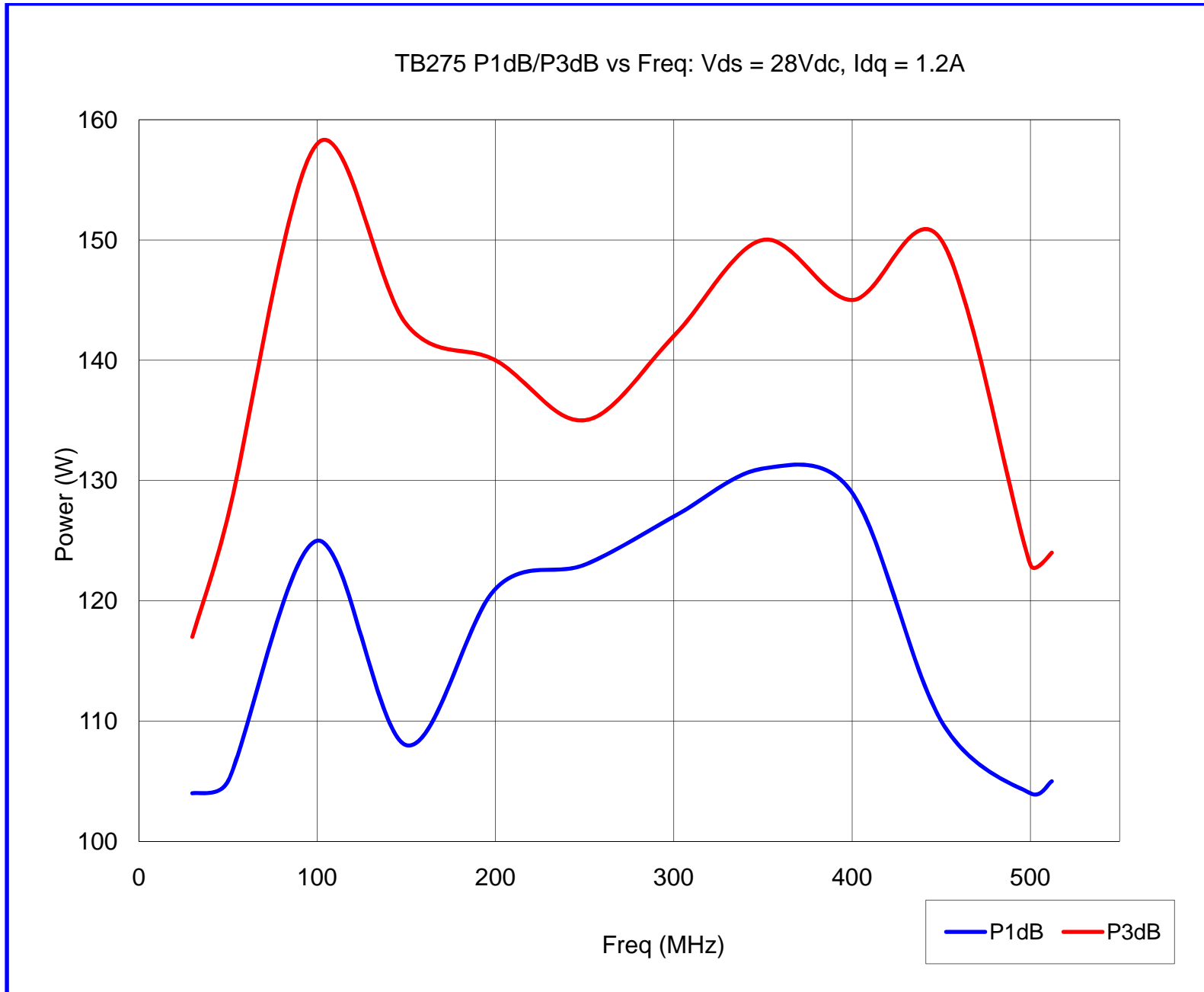
LR2301

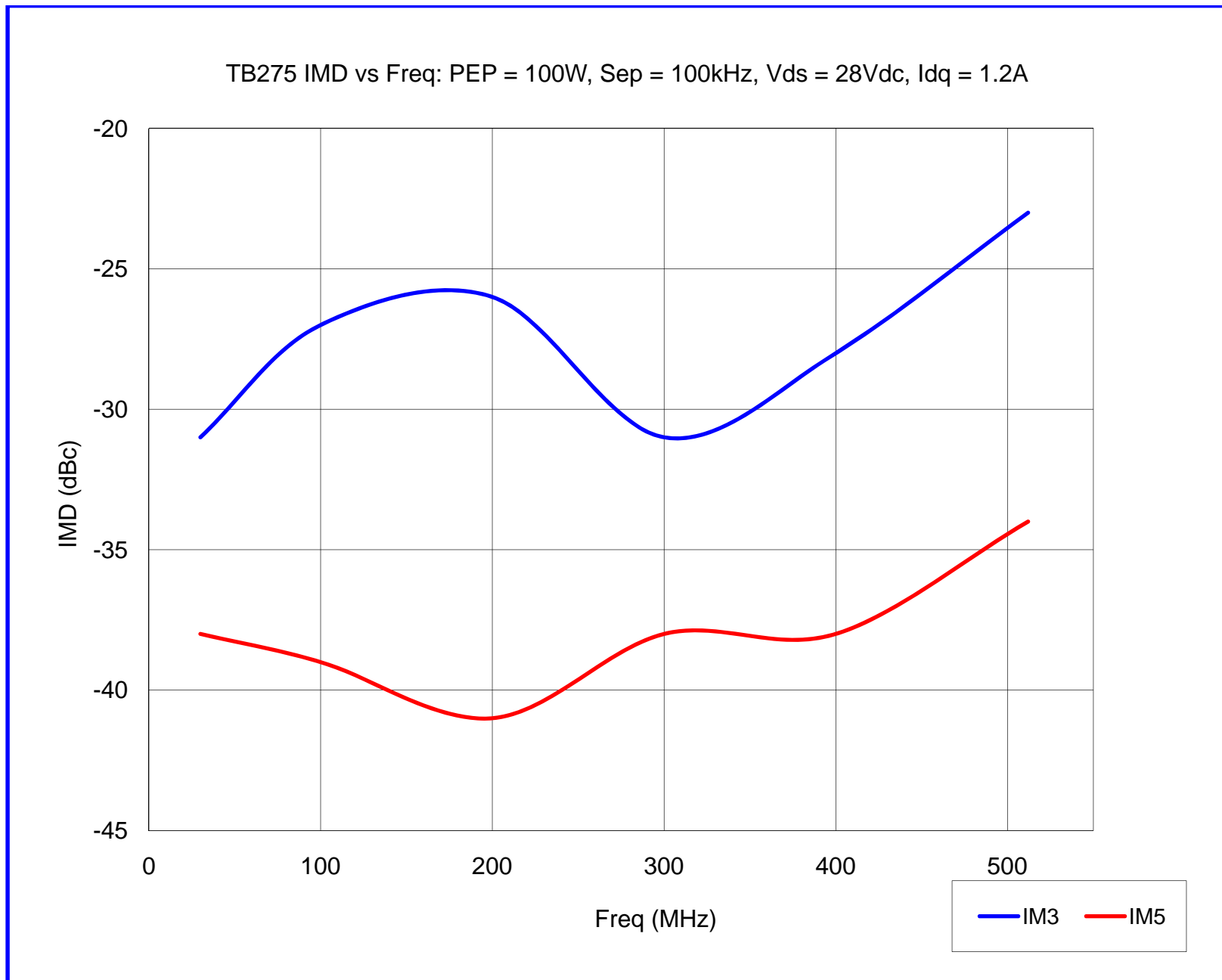


Order of Operations:

1. Review amplifier's performance curves in the data package to learn its RF power limitations.
2. Terminate the RF In/Out connectors to 50 ohm source and load impedance.
3. Connect Ground and Vds power supply to TB275 banana jacks.
4. Apply 28Vdc to Vds banana jack.
5. Apply RF drive signal (refer to curves in data package to avoid overdrive).
6. Avoid allowing the base plate to reach 85 deg C by using proper cooling techniques (aluminum heat sink and min 22CFM fan).



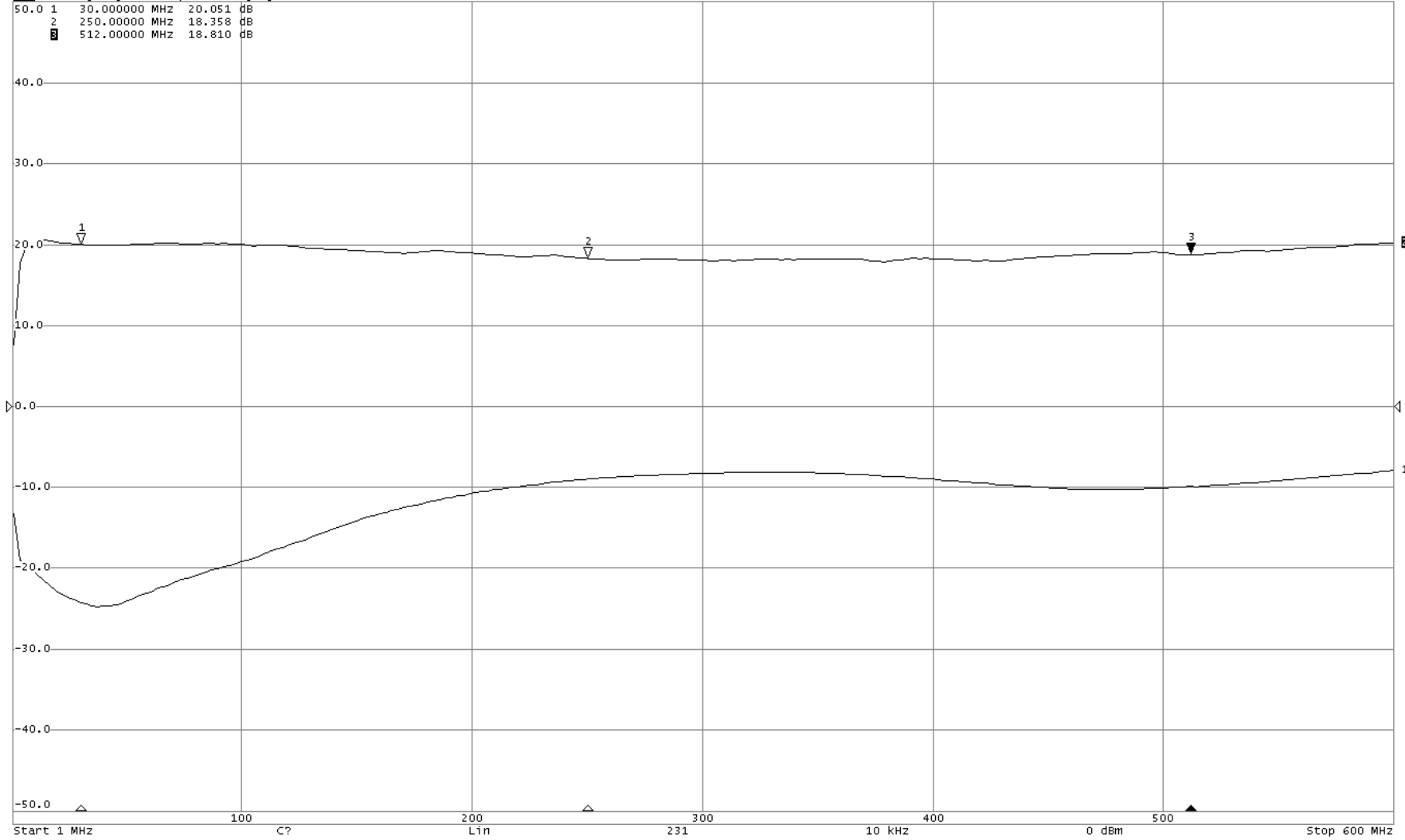




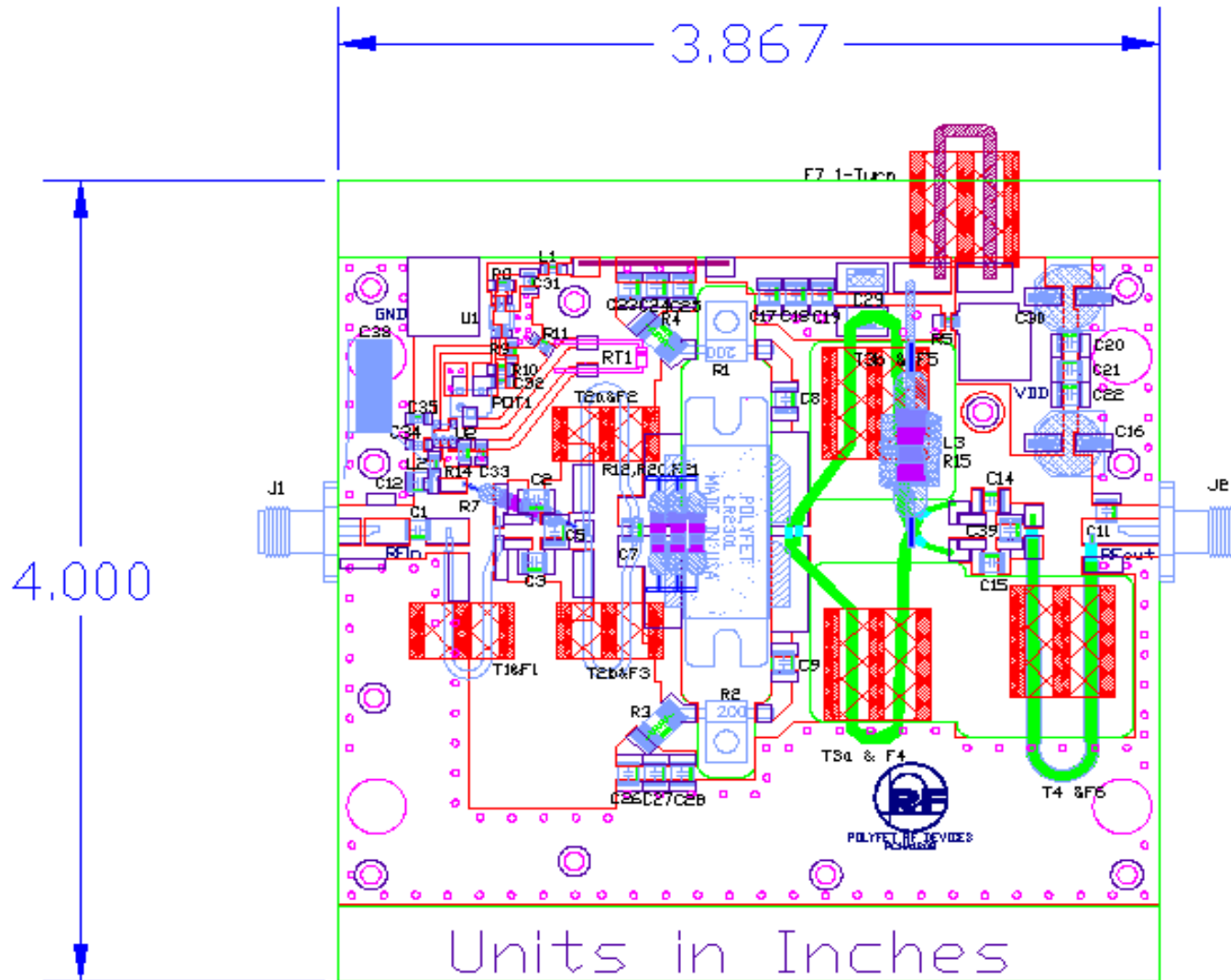


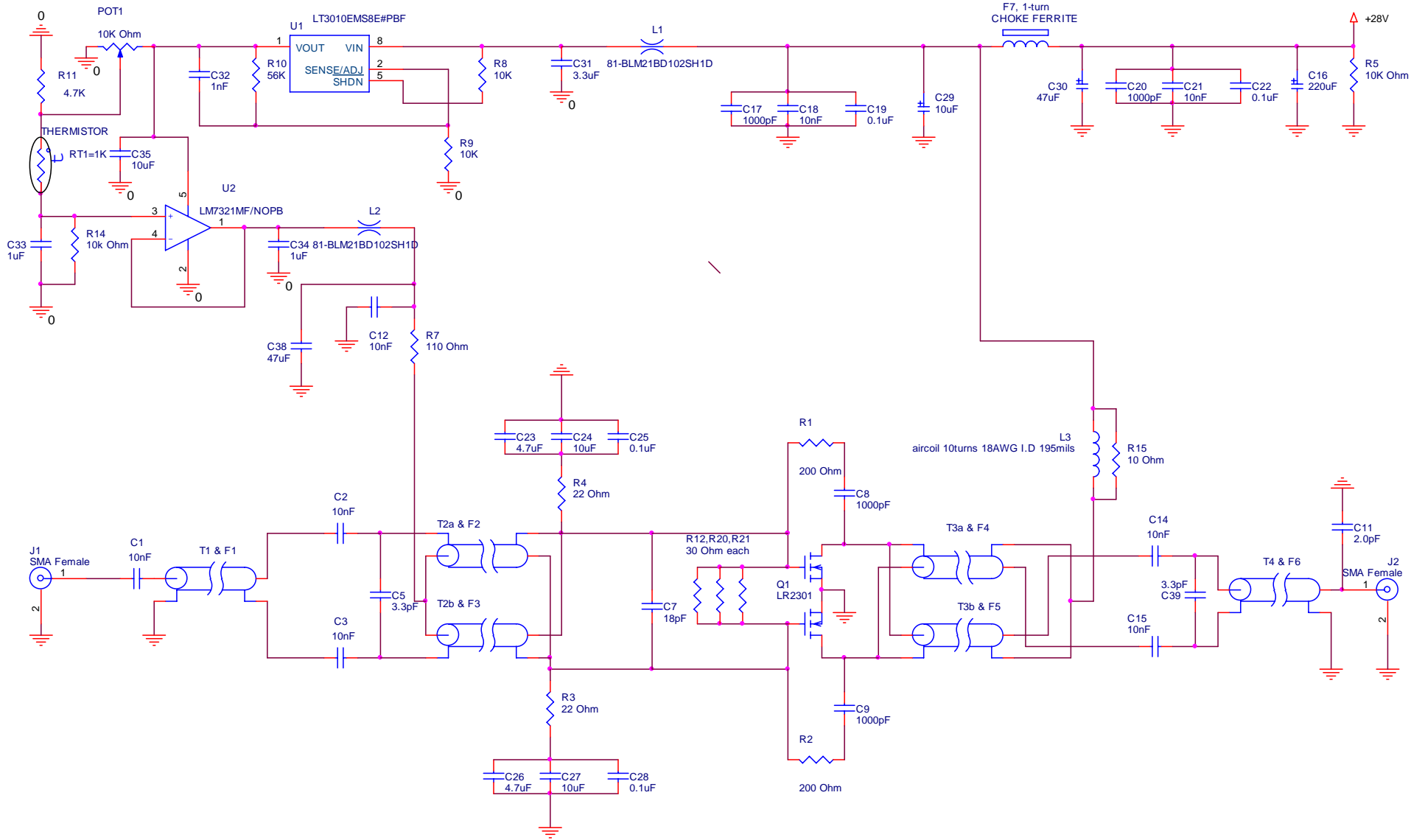
9/26/2019 8:57:00 AM

Tr1 S11 Log Mag 10.0 dB/ 0.0 dB [DP]
 Tr2 S21 Log Mag 10.0 dB/ 0.0 dB [DP]
 50.0 1 30.000000 MHz 20.051 dB
 2 250.000000 MHz 18.358 dB
 3 512.000000 MHz 18.810 dB



TB275 small signal 28vdc, 1.20A, Pin=0dBm





TB275
Schematic

| TB275 BOM | | | |
|----------------------------------|--|----------------------------------|----------------------|
| NOMENCLATURE | DESCRIPTION | VENDER | VENDER PART # |
| C39 | 3.3pF +/-2% Ultra-low ESR, Microwave Cap., 1111N | Passive Plus, Inc | 1111N3R3BW501 |
| C5 | 3.3pF +/-2% Ultra-low ESR, Microwave Cap., 1111N | Passive Plus, Inc | 1111N3R3BW501 |
| C7 | 18pF +/-2% Ultra-low ESR, Microwave Cap., 1111N | Passive Plus, Inc | 1111N180BW501 |
| C11 | 2pF +/-2% Ultra-low ESR, Microwave Cap., 1111N | Passive Plus, Inc | 1111N2R0BW501 |
| C16 | Aluminum Electrolytic Capacitors - SMD 35Volts 220uF 20% | United Chemi-Con | EMZJ350ADA221MHA0G |
| C19,C22,C25,C28 | 0.1uF +/-10% RF By-Pass Capacitors,1111X | Passive Plus, Inc | 1111X104KW500 |
| C24,C27 | 10uF TANCERAM HIGH CAP. SMD 1206 | Passive Plus, Inc | PPI-GMC31X5R106K10 |
| C23,C26 | 4.7uF TANCERAM HIGH CAP. SMD 1206 | Passive Plus, Inc | PPI-GMC31X7R475K25NT |
| C8,C9,C17,C20 | 1000pF +/-2% Ultra-low ESR, Microwave Cap., 1111N | Passive Plus, Inc | 1111N102GW500 |
| C1,C2,C3,C12,C14,C15, C18,C21 | 10,000pF +/-10% RF By-Pass Capacitors,1111X | Passive Plus, Inc | 111X103KW500 |
| C29 | 10uF 63V 20% AVX Tantalum Capacitors | AVX | TCJE106M063R0100 |
| C30 | Aluminum Electrolytic Capacitors - SMD 47UF 35V TK SMD | Panasonic | EE-TK1V470P |
| C31 | 3.3uF TANCERAM HIGH CAP. SMD 1206 | Johanson Dielectrics | 100r18x335KV4E |
| C32 | 1nF 10% Hi-Q/Low ESR | Passive Plus, Inc | 0505x102KW500 |
| C33,C34 | 1uF 10%TAMCERAM HIGH CAP. SMD 603 | Johanson Dielectrics | 250r14x105kv4t |
| C35 | 10uF 10%TAMCERAM HIGH CAP. SMD 805 | Johanson Dielectrics | 100r15x106kv4e |
| C38 | 47uF electrolytic 25V cap. | Digikey | P10375TB-ND |
| F1,F2,F3 | 950uF BINOCULAR FERRITE | Ceramic Magnetic, Inc | 003212-02 |
| F4,F5,F6 | 125uF BINOCULAR FERRITE | Ferronic | 12-365-K |
| F7 | Material 4B1 250ui,EMI Supressor | Ferroxcube | MHB2-14/8.5/14-4B1 |
| J1,J2 | PE4000-SF SMA Female; 4 Hole Panel Mount | Pasternack | PE4000-SF |
| L1,L2 | 0805 1kohms HiSpeed EMI Filter Beads,Chokes & Arrays | Murata Electronics North America | 81-BLM21BD102SH1D |
| L3 | 10turns 18AWG I.D 195mils | www.electromechaniconline.com | MW280SPNRD |
| PCB | material RO4350B 60mils(1.524mm) 2oz/2oz (70um/70um) | Rogers. Corp | RO4350B |
| POT1 | Trimmer Resistors - 10K OHM 0.25W SMD | Murata Electronics North America | PVG5A103C03R00 |
| Q1 | LDMOS | Polyfet RF Devices | LR2301 |
| R1,R2 | 30W, 200OHM | Innovative Power Products-IPP | IPP-RB201-200 |
| R3,R4 | RES 22ohm 2W 1% 2512 SMD | Stackpole Electronics Inc | RHC2512FT22R0 |
| R5 | RES 10K OHM 1/4W 5% 1206 SMD | Rohm Semiconductor | MCR18EZPJ103 |
| R7 | RES 110 1/2W 5% CARBON FILM | Stackpole Electronics Inc | CF12JT1110 |
| R8,R9,R14 | 10K 1/4W 0805 SMD | Rohm Semiconductor | MCR10EZHJ103 |
| R10 | 56K 1/4W 0805 SMD | Rohm Semiconductor | MCR10EZPJ563 |
| R11 | 4.7K 1/4W 0805 SMD | Rohm Semiconductor | MCR10EZPF4701 |
| R12, R20, R21 | RES 100 OHM 2W 5% METAL OXIDE | Xicon | 282-100-RC |
| R15 | RES 10 OHM 1W 5% METAL OXIDE | Xicon | 281-10-RC |

| | | | |
|---------|-----------------------------------|------------------------|-----------------|
| RT1 | 1000 OHM TEMP SENSOR AXIAL | NXP Semiconductors | KTY83/110,113 |
| T1 | Semi-ridge Coax ,1.8 inch, 50ohm | MICROWAVE | UT-34-M17 |
| T2a,T2b | Semi-ridge Coax ,1.8 inch, 25ohm | MICROWAVE | UT-34-25 |
| T3a,T3b | Semi-ridge Coax ,2.5 inch, 10ohm | MICROWAVE | UT-70-10 |
| T4 | Semi-ridge Coax , 2.8 inch, 50ohm | MICROWAVE | UT-85-50 |
| U1 | IC REG LDO ADJ 50mA 8-MSOP | Linear Technology | LT3010EMS8E#PBF |
| U2 | IC OP AMP R-R I/O SOT23-5 | National Semiconductor | LM7321MF/NOPB |
| WIRE | 18 AWG Hook-up Wire UL | Belden | 83029 0061000 |