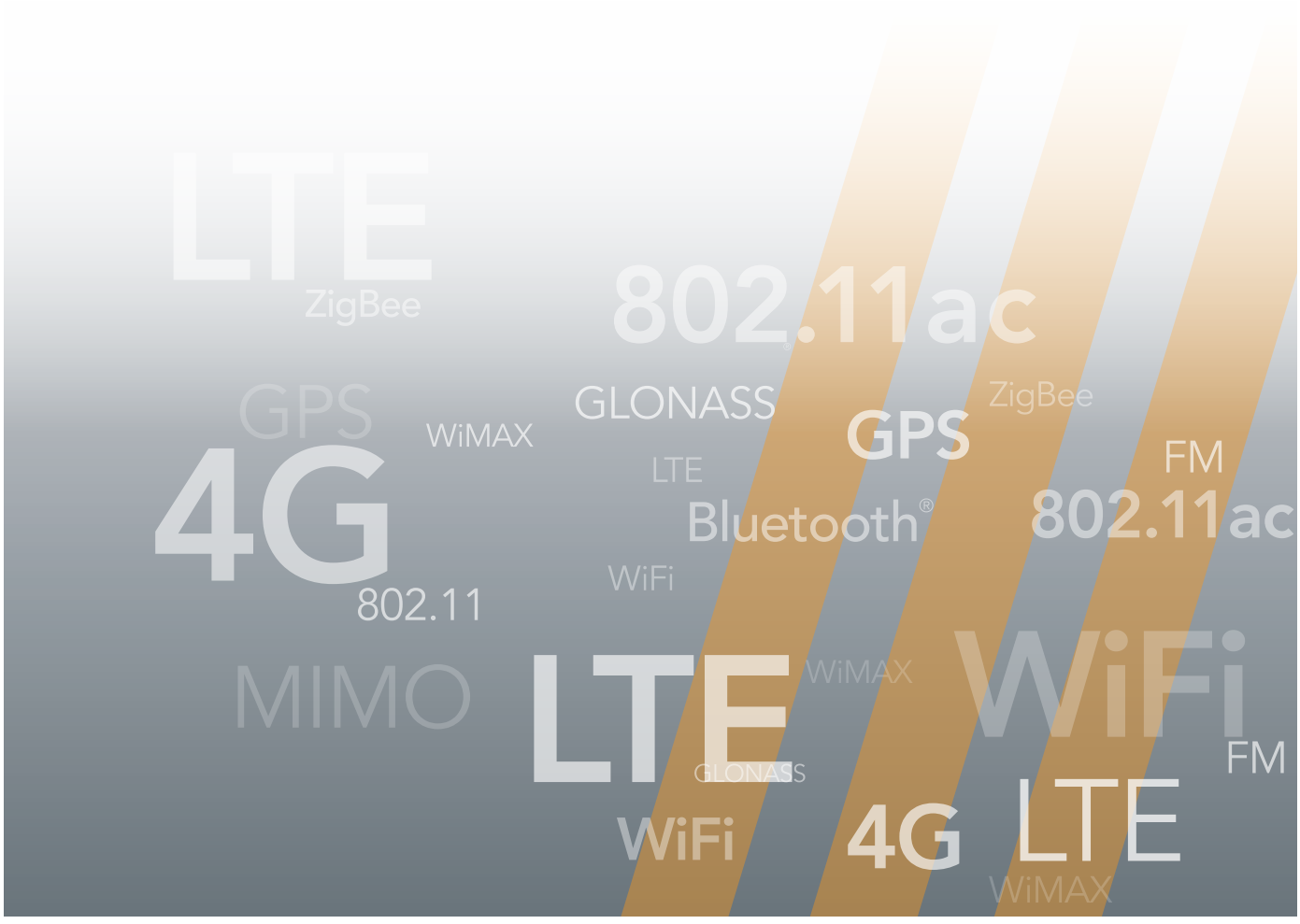
8811 FEM

TECHNICAL SPECIFICATIONS

z8811
RF Front End Module
PXI



LITEPOINT

Port Descriptions

Front Panel

Label	Type	Description
RF 1 IN	SMA	RF1 Input
RFT/R IN/OUT	SMA	RF Transmit/Receive
RF2 OUT	SMA	RF2 Output

RF Input

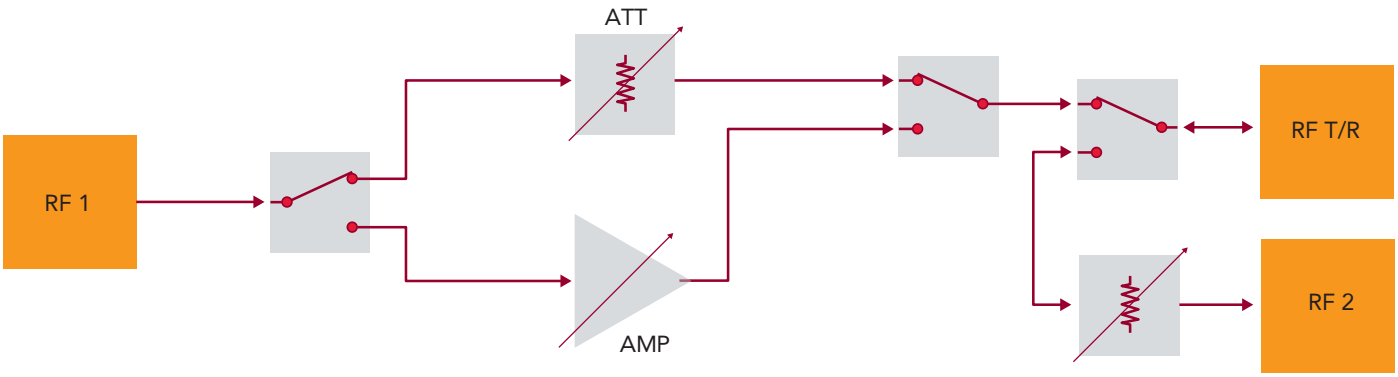


Figure 1: Simplified Block Diagram Showing RF Channels

RF1 Input

Specification	Value
Input Impedance	50 Ω
Frequency Range	250 MHz to 6 GHz
Input VSWR Attenuator Path (0 dB ATT) 500 MHz to 3 GHz 3 GHz to 4 GHz 4 GHz to 6 GHz Attenuator Path (10 dB ATT) 500 MHz to 3 GHz 3 GHz to 6 GHz Amplifier Path 500 MHz to 3 GHz 3 GHz to 6 GHz	 ≤ 1.2:1 (-20.8 dB RL) ≤ 1.4:1 (-15.5 dB RL) ≤ 1.9:1 (-10.1 dB RL) ≤ 1.2:1 (-20.8 dB RL) ≤ 1.5:1 (-14.0 dB RL) ≤ 1.5:1 (-14.0 dB RL) ≤ 1.7:1 (-11.7 dB RL)
Typical Configuration Attenuator Path Amplifier Path	Gain: Typical settings -30 to -7 dB -7 to +20 dB
Absolute Maximum Input (no damage)	+25 dBm
Connectors	SMA

RF1 Input Programmable Gain

Specification	Value
Gain Range (0.5 dB steps) 500 MHz to 2000 MHz 2000 MHz to 5800 MHz 5800 MHz to 6000 MHz	 -35 dB to +20 dB -37 dB to +17 dB -38 dB to +16 dB
Gain Accuracy (at 25°C ambient)	≤ ±0.5 dB ≤ ±0.25 dB typical
Gain Temperature Drift	< -0.01 dB/°C
Gain Switching Speed	≤ 1 ms

RF T/R Input

Specification	Value
Input Impedance	50 Ω
Frequency Range	250 MHz to 6 GHz
Input VSWR 500 MHz to 3 GHz 3 GHz to 4 GHz 4 GHz to 6 GHz	 ≤ 1.2:1 (-20.8 dB RL) ≤ 1.4:1 (-15.5 dB RL) ≤ 2.0:1 (-9.5 dB RL)
Typical Configuration Attenuator OFF Attenuator ON	Gain: 0 dB + Insertion Loss -10 dB + Insertion Loss
Absolute Maximum Input (no damage)	+30 dBm
Connectors	SMA

RF T/R Input Programmable Gain

Specification	Value
Gain Range	-10 to 0 dB + Insertion Loss 1 Bit Step Attenuator
Gain Accuracy (at 25°C ambient)	≤ ±0.5 dB
Gain Temperature Drift	< -0.01 dB/°C
Gain Switching Speed	≤ 1 ms

RF Output

RFT/R Output

Specification	Value
Output Impedance	50 Ω
Frequency Range	250 MHz to 6 GHz
Output VSWR 500 MHz to 4 GHz 4 GHz to 5.4 GHz 5.4 GHz to 6 GHz	 ≤ 1.2:1 (-20.8 dB RL) ≤ 1.4:1 (-15.5 dB RL) ≤ 2.0:1 (-9.5 dB RL)
Absolute Maximum Output	+32 dBm
Connectors	SMA

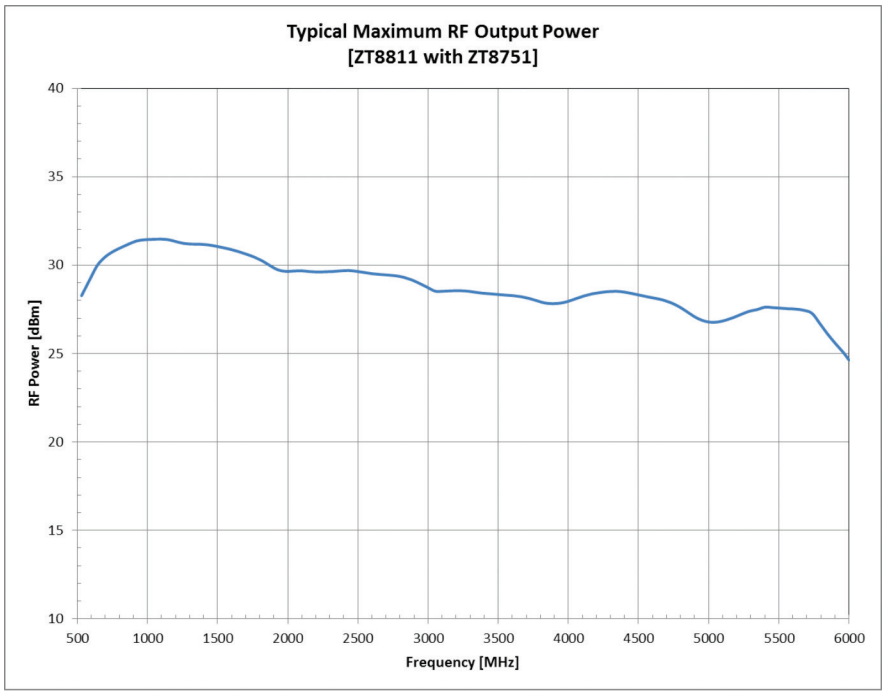
RF 2 Output

Specification	Value
Output Impedance	50 Ω
Frequency Range	250 MHz to 6 GHz
Output VSWR Attenuator Path (0 dB ATT) 500 MHz to 3 GHz 3 GHz to 4 GHz 4 GHz to 6 GHz Attenuator Path (10 dB ATT) 500 MHz to 3 GHz 3 GHz to 6 GHz	 ≤ 1.2:1 (-20.8 dB RL) ≤ 1.4:1 (-15.5 dB RL) ≤ 1.9:1 (-10.1 dB RL) ≤ 1.2:1 (-20.8 dB RL) ≤ 1.5:1 (-14.0 dB RL)
Absolute Maximum Output	+27 dBm
Connectors	SMA

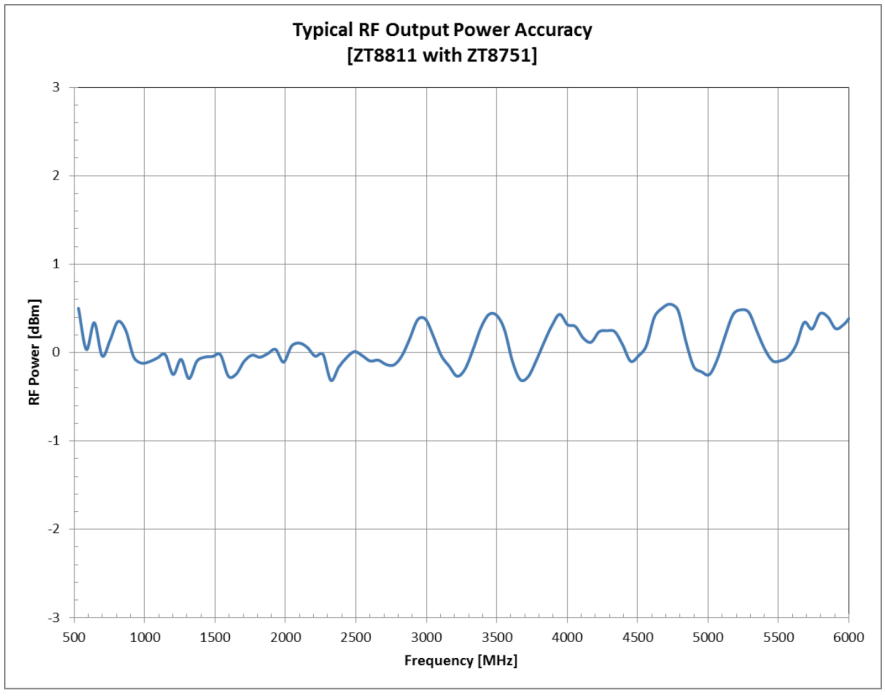
RF T/R MAX Output Level (Saturated Output Power)

Specification	Value
Saturated Output Power (Peak Power) 500 MHz to 2000 MHz 2000 MHz to 4000 MHz 4000 MHz to 5800 MHz 5800 MHz to 6000 MHz	 +31.25 dBm +29.75 dBm +27.75 dBm +25.50 dBm

RF T/R Typical MAX Output Power when used with z8751



RF T/R Typical Output Level Accuracy when used with z8751 (< +/- 0.5 dB)



RF Programmable Amplifier/Attenuator

Noise Figure

Specification	Value
500 MHz to 6000 MHz	< 5 dB (Max Gain Setting)

OIP3

Specification	Value
500 MHz to 750 MHz 750 MHz to 1500 MHz 1500 MHz to 5800 MHz 5800 MHz to 6000 MHz	+37.00 dBm +38.00 dBm +37.00 dBm +36.00 dBm

P1dB

Specification	Value
500 MHz to 750 MHz 750 MHz to 1500 MHz 1500 MHz to 4500 MHz 4500 MHz to 5800 MHz 5800 MHz to 6000 MHz	+26.00 dBm +27.25 dBm +26.25 dBm +25.75 dBm +25.00 dBm

Backplane Trigger 0-7

Specification	Value
Functionality	Not supported
Direction	Input

Instrument Stored States

Specification	Value
Functionality	Non-volatile storage of instrument setup configuration
Stored States	30 State 0 is Reset State Power-On State programmable

LED Indicators

Specification	Value
RDY (Ready)	OFF: Hardware failure ON: Passed power-up self-test TOGGLE: Error pending in queue
HST (Host)	ON: Idle PULSE: Instrument Identify enabled

PXI Interface

Specification	Value
PXI Slot Compatibility	PXI Standard Slot and PXIe Hybrid Slot Compatible
PXI Timing & Triggering Signals (XJ4 Connector)	PXI_TRIG[0:7] input/output PXI_STAR input PXI_CLK10 input

Power & Cooling

Power Supplies

Platform	Voltage	Typical Current	Maximum Current
PXI	+3.3 VDC +5 VDC +12 VDC -12 VDC	0.25 A 3.12 A 0.03 A 0.00 A	0.25 A 3.33 A 0.03 A 0.00 A

Total Cooling & Power Consumption

Platform	Typical Cooling & Power	Maximum Cooling & Power
PXI	16.7 W	17.8 W

Physical & Environmental

Size & Weight

Specification	Value
Physical Size	Single-Wide 3U PXI Instrument
Dimensions	8.25″ x 0.79″ x 5.25″ (L x W x H) 20.96 cm x 2.01 cm x 13.34 cm (L x W x H)
Weight	12.35 oz or 350 g

Temperature Range

Specification	Value
Operating	0°C to +50°C ambient (MIL-PRF28800F Class 3)
Storage	-40°C to +75°C ambient (MIL-PRF28800F Class 3)
Calibration Range	+20°C to +30 °C ambient, after 20 minute warm-up period, to meet all specification accuracies
Over-Temperature	Automatic shutdown if internal temperature exceeds +70°C

Relative Humidity

Specification	Value
Operating or Storage < +30 °C +30 °C to +40 °C > 40 °C	 5 to 95 ± 5%, non-condensing 5 to 75 ± 5%, non-condensing 5 to 45 ± 5%, non-condensing

Altitude

Specification	Value
Operating	Up to 5 km
Storage	Up to 15 km

Terminology

Numeric Prefixes

When referring to numeric values, this document will use SI (International System of Units) and IEC (International Electrotechnical Commission) standard prefixes. Prefix definitions are in the following table.

Prefix	Multiplier
n (nano)	1/(1000x1000x1000)
µ (micro)	1/(1000x1000)
m (milli)	1/1000
k/K (kilo)	1000
M (Mega)	1000x1000
G (Giga)	1000x1000x1000
Ki (Kibi)	1024
Mi (Mebi)	1024x1024
Gi (Gibi)	1024x1024x1024

Differential Outputs

Single-Ended is used to refer to the output on either the + or – output pin

Differential is used to refer to the output between the + and- output pins

Vd indicates Volts differential

Vppd indicates Volts peak-to-peak differential

Safety

This product is designed to meet the requirements of the following standard of safety for electrical equipment for measurement, control and laboratory use: EN 61010-1

Electromagnetic Compatibility

CE Marking EN 61326-1:1997 with A1:1998 and A2:2001 Compliant

FCC Part 15 (Class A) Compliant

Emissions

EN 55011	Radiated Emissions, ISM Group 1, Class A, distance 10 m, emissions < 1 GHz
EN 55011	Conducted Emissions, Class A, emissions < 30 MHz Immunity
EN 61000-4-2	Electrostatic Discharge (ESD), 4 kV by Contact, 8 kV by Air
EN 61000-4-3	RF Radiated Susceptibility, 10 V/m
EN 61000-4-4	Electrical Fast Transient Burst (EFTB), 2 kV AC Power Lines
EN 61000-4-5	Surge
EN 61000-4-6	Conducted Immunity
EN 61000-4-8	Power Frequency Magnetic Field, 30 A/m
EN 61000-4-11	Voltage Dips and Interrupts

CE Compliance

This product meets the necessary requirements of applicable European Directives for CE Marking as follows:

73/23/EEC Low Voltage Directive (Safety)
89/336/EEC Electromagnetic Compatibility Directive (EMC)

See Declaration of Conformity for this product for additional regulatory compliance information.

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