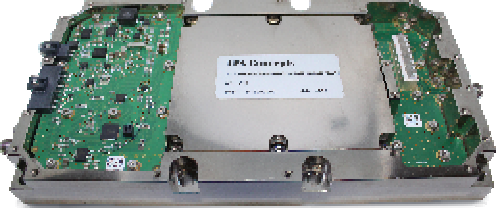
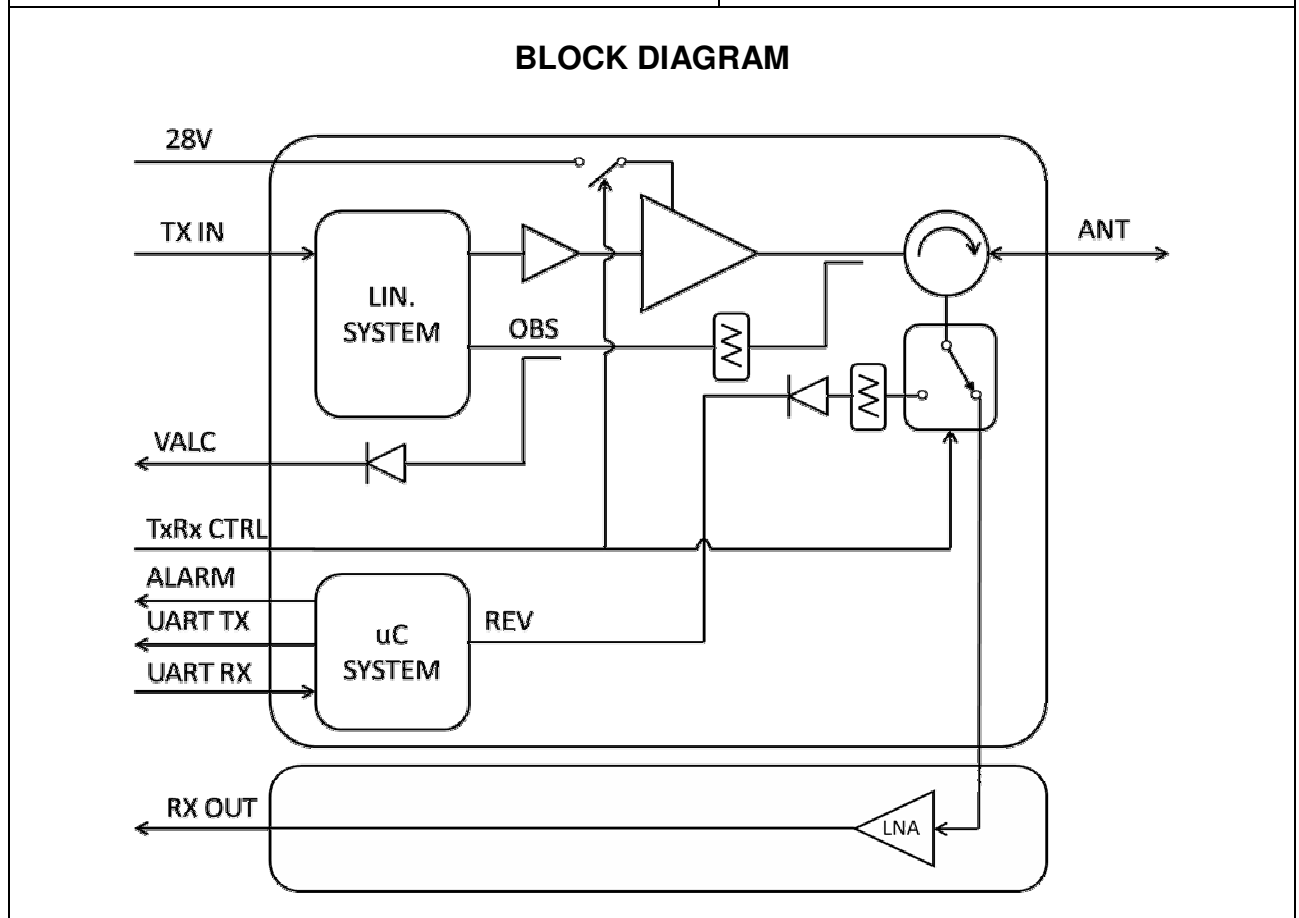


<b>15W BAND 40 TDD RF HEAD</b>	<b>LPA-AH2-15DO-2300M-2400M-T0-00</b>
<b>LPA Code: P1920</b>	
<b>FEATURES</b> <ul style="list-style-type: none"> <li>◆ 2300-2400MHz; 150W Tx PEAK POWER</li> <li>◆ 40MHz INSTANTANEOUS Tx BANDWIDTH</li> <li>◆ Rx NF=2.0dB 2300-2400MHz</li> <li>◆ Rx SENSITIVITY &lt; -101.8dBm TO MEET 3GPP MED. RANGE SPECIFICATIONS</li> <li>◆ SINGLE +28V POWER SUPPLY</li> <li>◆ Tx MODE : 0.7A IDLE; 2.5A AT 15W OUT</li> <li>◆ Rx MODE : 0.3A</li> <li>◆ UART MONITORING &amp; CONTROL</li> <li>◆ RoHS COMPLIANT</li> </ul>	<p style="text-align: center;"><b>PACKAGE</b></p>  <p style="text-align: center;"><b>APPLICATIONS</b></p> <ul style="list-style-type: none"> <li>◆ DAS RF HEADS</li> </ul>



Specifications and information are subject to change without notice

## TX Electrical characteristics: 50 ohms; +28V; -25°C to +85°C (1)

Ref	parameter	conditions	note	min	typ	max	units
1	Bandwidth		2	2300		2400	MHz
2	Instantaneous bandwidth			5		40	MHz
3	Gain small signal	2350MHz			45.0		dB
4	Gain variation vs frequency	2300-2400MHz	2		1.5		dBpp
5	Gain variation vs temperature	2350MHz, 0°C à +85°C			1.5		dB
6	Input return loss	50 ohms				-16	dB
7	Output return loss	50 ohms				-16	dB
8	Peak power	Output Signal PAR = 7dB @ 0.01% Probability on CCDF	3		150		Wp
9	Peak Power variation vs frequency	Output Signal PAR = 7dB @ 0.01% Probability on CCDF	3		15		W
10	ACLR 1 for single carrier LTE	15W Average Output Power	3		-50		dBc
	ACLR 2 for single carrier LTE	Signal Bandwidth 5, 10, 20MHz			-55		dBc
11	ACLR1 4c LTE 5MHz	15W Average Output Power	3		-48		dBc
	ACLR2 4c LTE 5MHz				-50		dBc
12	Max power 1 carrier LTE	Spectrum Emission Mask	3		18		W
13	Harmonic suppression	CW 15W	2		-45		dBc
14	Voltage supply			27	28	29	V
15	Consumption idle (during Tx)	+28V			0.73		A
16	Consumption at 15W Tx	+28V; 1c-LTE 20MHz PAPR=9dB			2.4		A
17	Linearization system convergence time	15W Average Output Power Signal Bandwidth 5, 10, 20MHz	3, 4			TBD	s

## RX Electrical characteristics: 50 ohms; +28V; -25°C to +85°C (1)

Ref	parameter	conditions	note	min	typ	max	units
1	Bandwidth		2	2300		2400	MHz
2	Gain small signal	2350MHz (ALCRX=0, bypass On)			12.0		dB
		2350MHz (ALCRX=0, bypass Off)			33.0		dB
3	Gain flatness	2300-2400MHz			1	2.5	dBpp
4	Gain variation vs temperature	2350MHz, 0°C à +85°C		-2	0	+2	dB
5	Input return loss	50 ohms				-15	dB
6	Output return loss	50 ohms				-15	dB
7	Noise figure	2350MHz			2.0	3.0	dB
8	Inband Input IP3	2350MHz (bypass On)			+18		dBm
		2350MHz (bypass Off)			+3		dBm
9	Inband Output IP3	2350MHz (bypass On)			+30		dBm
		2350MHz (bypass Off)			+36		dBm
10	OP1dB	2350MHz			+22		dBm
12	Reference sensitivity power level		5,6		TBD		
13	Consumption during Rx	+28V			0.3		A

1. unless otherwise specified
2. -10°C to +85°C (temperature sensor indication)
3. LTE E-TM1.1 input Signal PAR = 9dB @ 0.01% Probability on CCDF
4. Time for ACLR1<-45dBc and ACLR2<-50dBc
5. Reference sensitivity level is measured as defined in 3GPP 36.104 §7.2 using signal in Annexe A.1
6. Throughput is measured and averaged using 100 consecutive frames

Specifications and information are subject to change without notice

## TDD Tx-Rx control

Ref	Parameter	Conditions	Note	min	nom	max	units
1	TxRx level for Tx mode		8	1.5		3.3	V
2	TxRx level for Rx mode		8	0V		0.2	V
3	Tx mode to Rx mode switching time	Complete cycle			3		µs
4	Rx mode to Tx mode switching time	Complete cycle			5		µs

7. TxRx pulled up (Tx state) internally

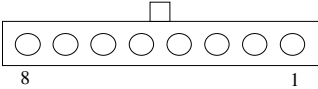
## Maximum ratings & Protections

Ref	characteristic	description	remarks
1	Output mismatch	∞:1 at 10W output	Infinite duration, no shutdown
2	Overvoltage	Shut down if supply>32V	Transients<40V
3	Overcurrent	Shut down if current> 4 A	Output power > +46dBm CW
4	Temperature	Shut down if temp>90°C	Auto recovery (at 70°C)


## Monitoring & control

Ref	characteristic	description	remarks
1	µC	PIC18F25K40	
2	Serial bus	µC UART	Synchronous, 8 bits, 9600bds, 5V CMOS
3	Output power limitation	Analog output (Pdetect) on DC connector	TBD V at 15W CW output
4	Temperature	Through serial bus	-40°C to +100°C
5	Output power	Through serial bus	+35dBm to +45dBm +/-1 dBm +25dBm to +35dBm +/-2 dBm

## Communication DC Connector Molex NanoFit 105313-1108

Pin description		Mate with 105307-1208	PINOUT
Pin 8 : pin 14 µC (UART Tx)	Pin 4 : Alarm		
Pin 7 : pin 15 µC (UART Rx)	Pin 3 : Gnd		
Pin 6 : Gnd	Pin 2 : NC		
Pin 5 : Valc (Pdetect)	Pin 1 : TxRx control		

## Power Supply DC Connector Molex NanoFit 105313-1102

Pin description		Mate with 105307-1202	PINOUT
Pin 2 : Supply +28V			
Pin 1 : Gnd			

Note : use AWG 20-22 supply wire with 105300-2100 inserts

## MTBF

Temperature (sensor)	MTBF	First year failure rate
65°C (10)	>300 000 hours	TBD%

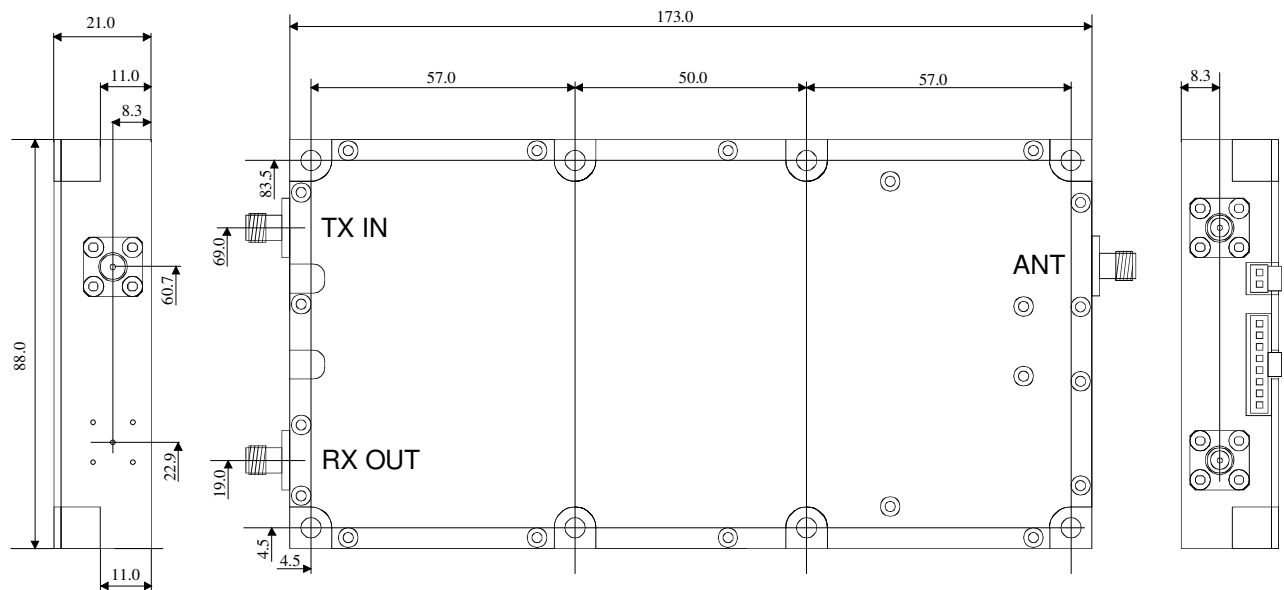
10. Although specified up to 85°C, this calculation assumes an average temperature of 65°C

Specifications and information are subject to change without notice

## Mechanical characteristics

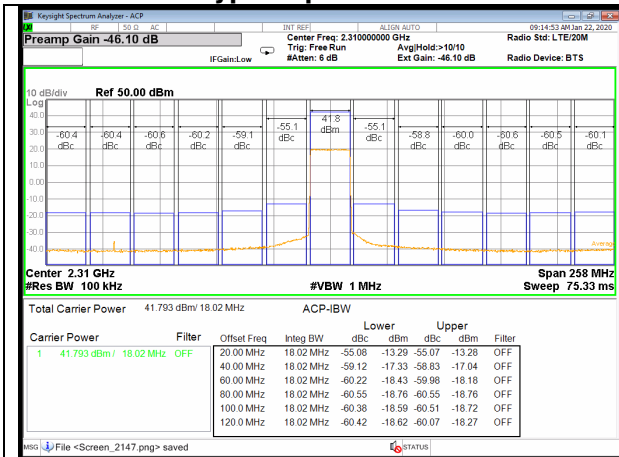
Ref	characteristic	description	remarks
1	Housing dimensions	173.0mm x 88mm x 21mm	
2	Housing cover finish	Electroless nickel	
3	Mounting	8 M4 screws	
4	Input/Output/Antenna RF connectors	SMA	
5	DC supply connector	Molex 105313-1102	Male type
6	DC controls connector	Molex 105313-1108	Male type
7	Weight	700 grams	

## Package outline:

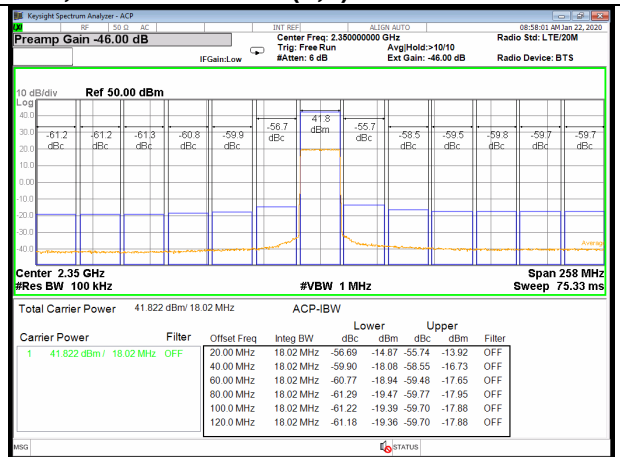


Specifications and information are subject to change without notice

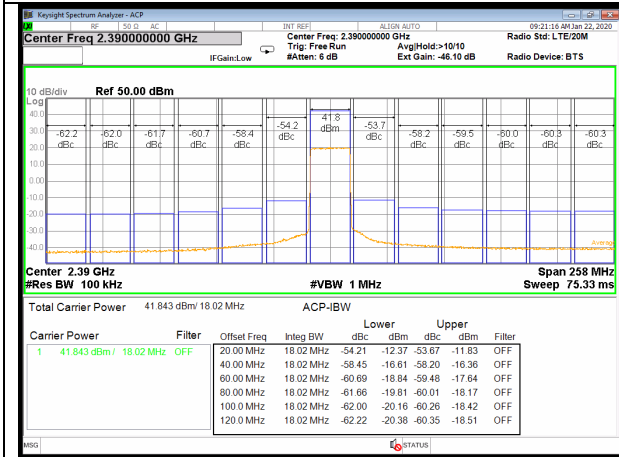
## Transmitter typical performance: 50 ohms; +28V; -25 °C to +85 °C (1,2)



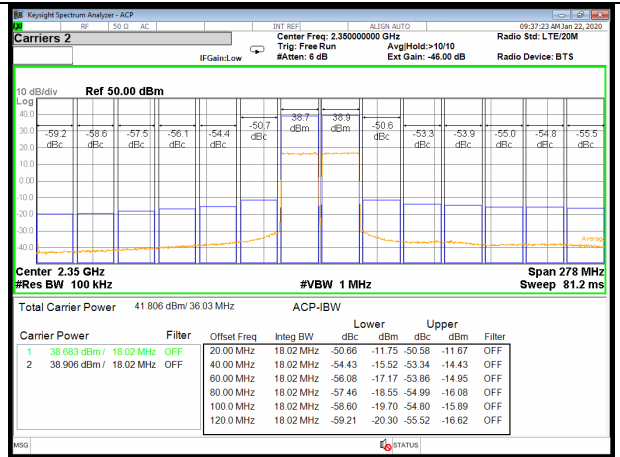
1c-LTE20MHz @2310MHz,  
15W/28V/2.3A



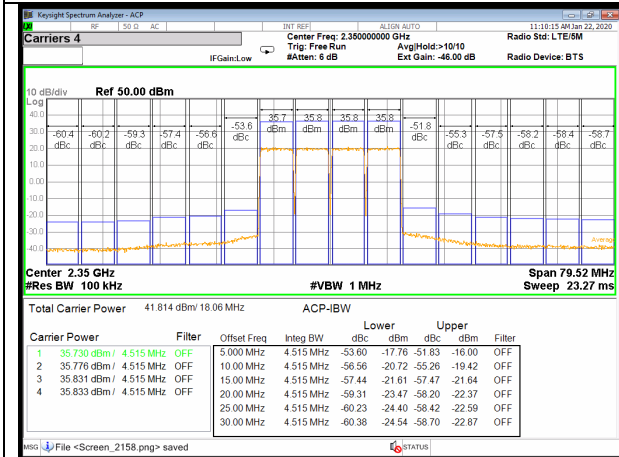
1c-LTE20MHz @2350MHz,  
15W/28V/2.2A



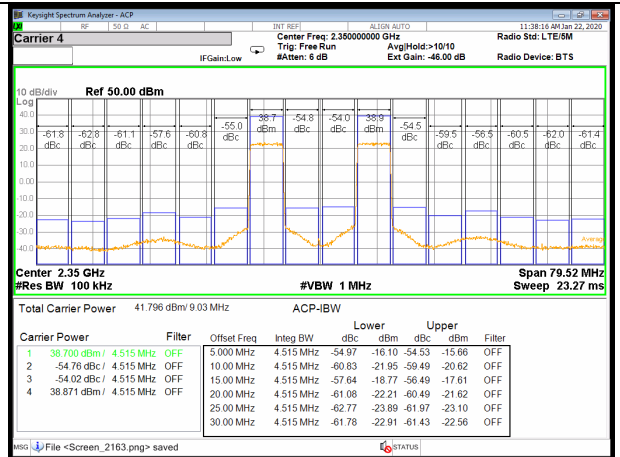
1c-LTE20MHz @2390MHz,  
15W/28V/2.1A



2c-LTE20MHz @2350MHz,  
15W/28V/2.2A



4c-LTE5MHz @2350MHz,  
15W/28V/2.2A



4c-LTE5MHz [1001] @2350MHz  
15W/28V/2.2A

1. unless otherwise specified
2. LTE E-TM1.1 input Signal PAR = 9dB @ 0.01% Probability on CCDF

Specifications and information are subject to change without notice

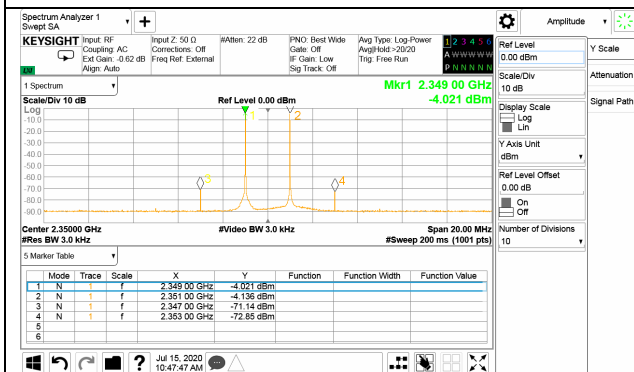
## Receiver typical performance



Gain vs Frequency, Bypass On

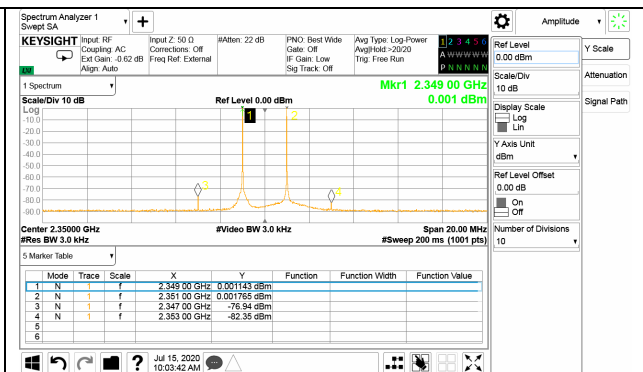


Gain vs Frequency, Bypass Off



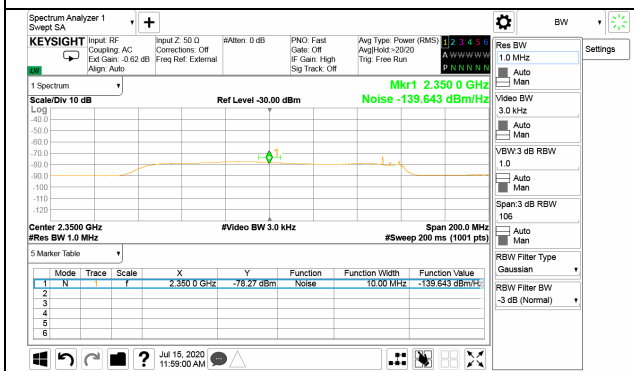
2 tones at 2350MHz, bypass On

Pinput = -16 dBm/tone  
 $\Rightarrow$  IIP3 = 17.5dBm    OIP3 = 29.5dBm



2 tones at 2350MHz, bypass Off

Pinput = -33dBm/tone  
 $\Rightarrow$  IIP3 = 5dBm    OIP3 = 38dBm

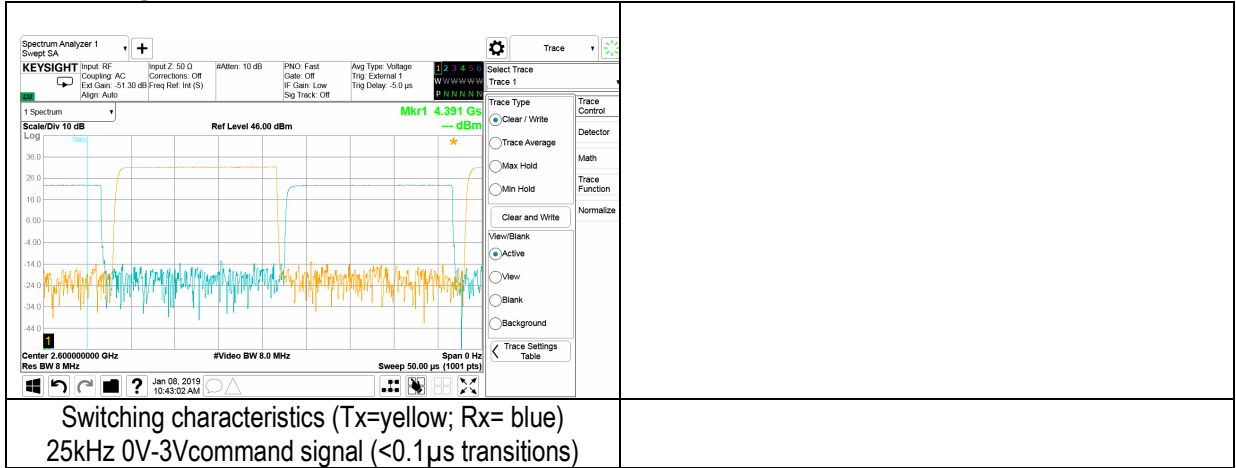


Output Noise vs Frequency, bypass Off

Measure at  $\approx 25^{\circ}\text{C}$   
 Analyzer noise floor = -152.1 dBm/Hz  
 Amplifier Gain  $\approx 32.9\text{dB}$   $\rightarrow$   $\text{NF}_{\text{RX}} \approx 1.6\text{dB}$

Specifications and information are subject to change without notice

## Switching characteristics



Specifications and information are subject to change without notice