

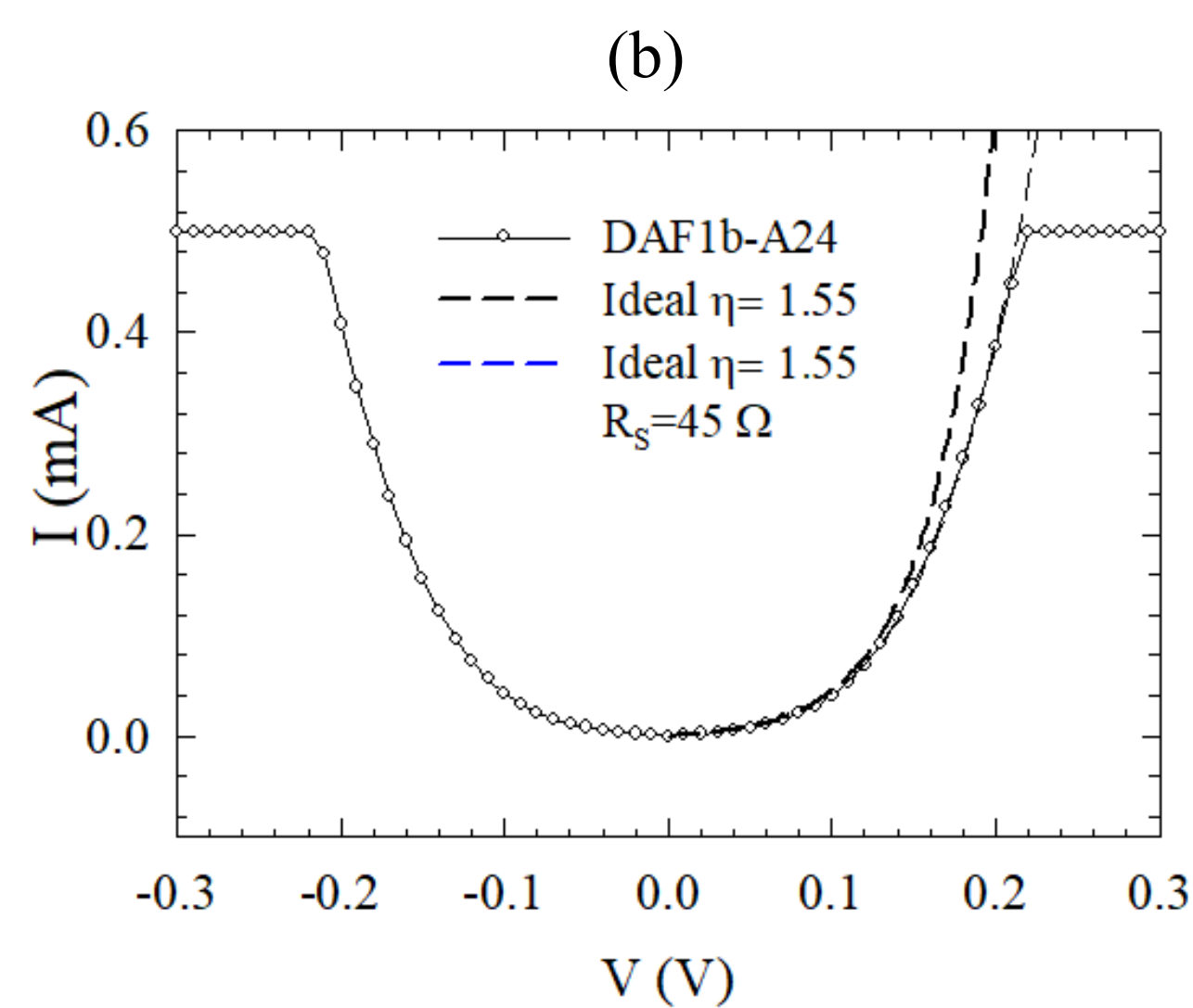
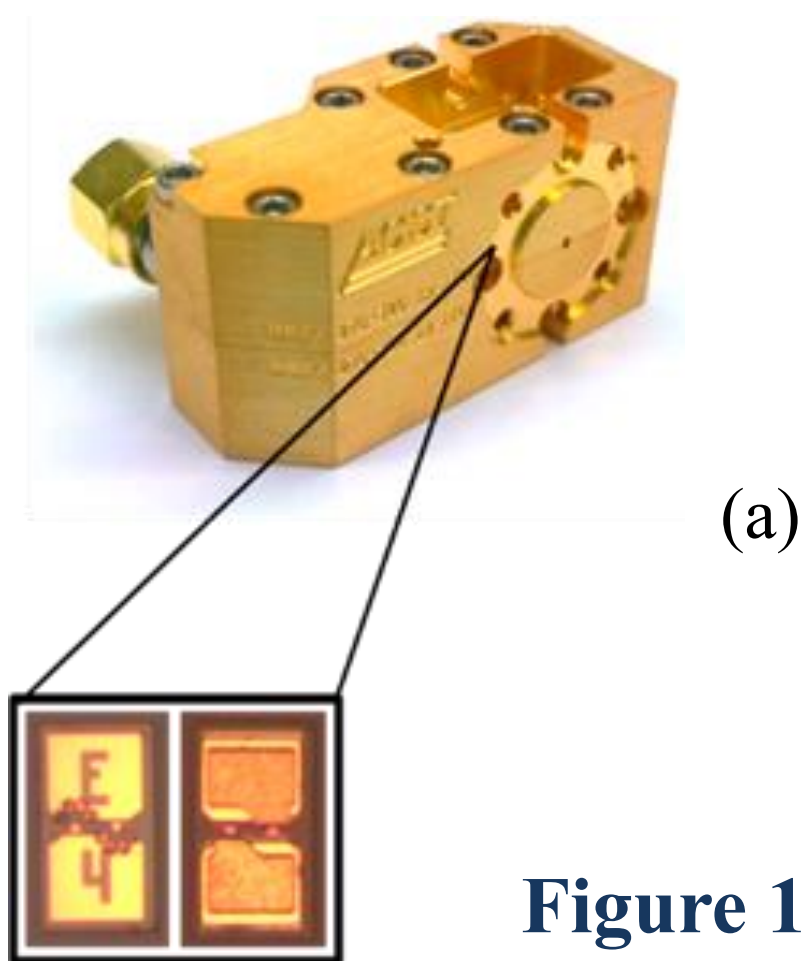
270-320 GHz Low Barrier Schottky Diode Mixer

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Introduction: We report the fabrication of a sub-harmonic Mixer at 270-320 GHz, featuring discrete anti-parallel Low Barrier Schottky Diodes. The mixer has been fully designed and developed by ACST GmbH. The reduction of barrier height on these diodes allows the use of the device in a wide range of applications where the power consumption is critical. The mixer presents a typical Noise Figure of 16 dB with 170 μ W of LO input power, the mixer noise performance remains low when additional LO input power of 500 μ W is applied.

Low Barrier Schottky Mixer



Mixer main features:

- LO Frequency: 135-160GHz
- LO Input Power: -7.5 dBm
- IF Frequency: 0-18 GHz

Figure 1:

(a) Mechanical block and diodes of the Low Barrier Schottky Diode Mixer (b) I-V curve of the mixer.

Experimental Performances

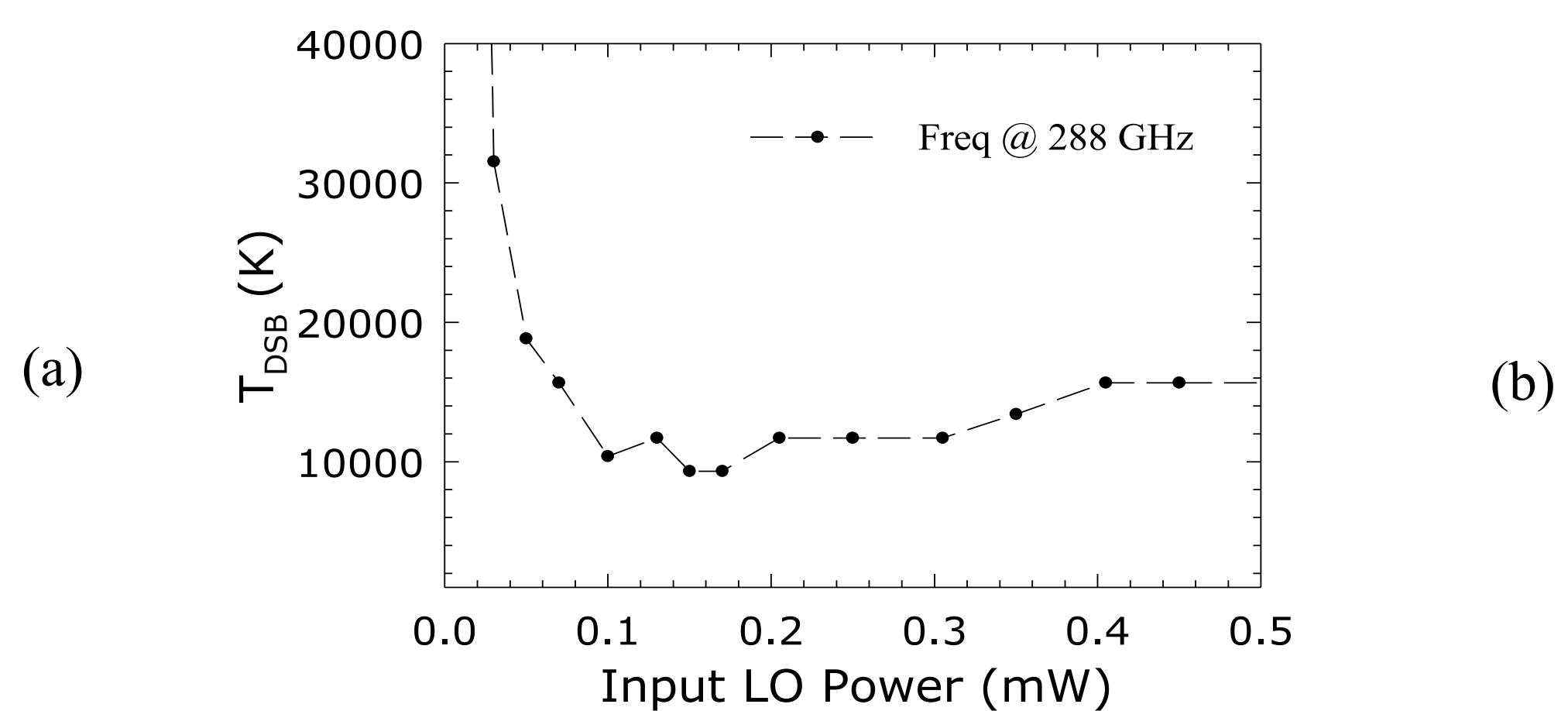
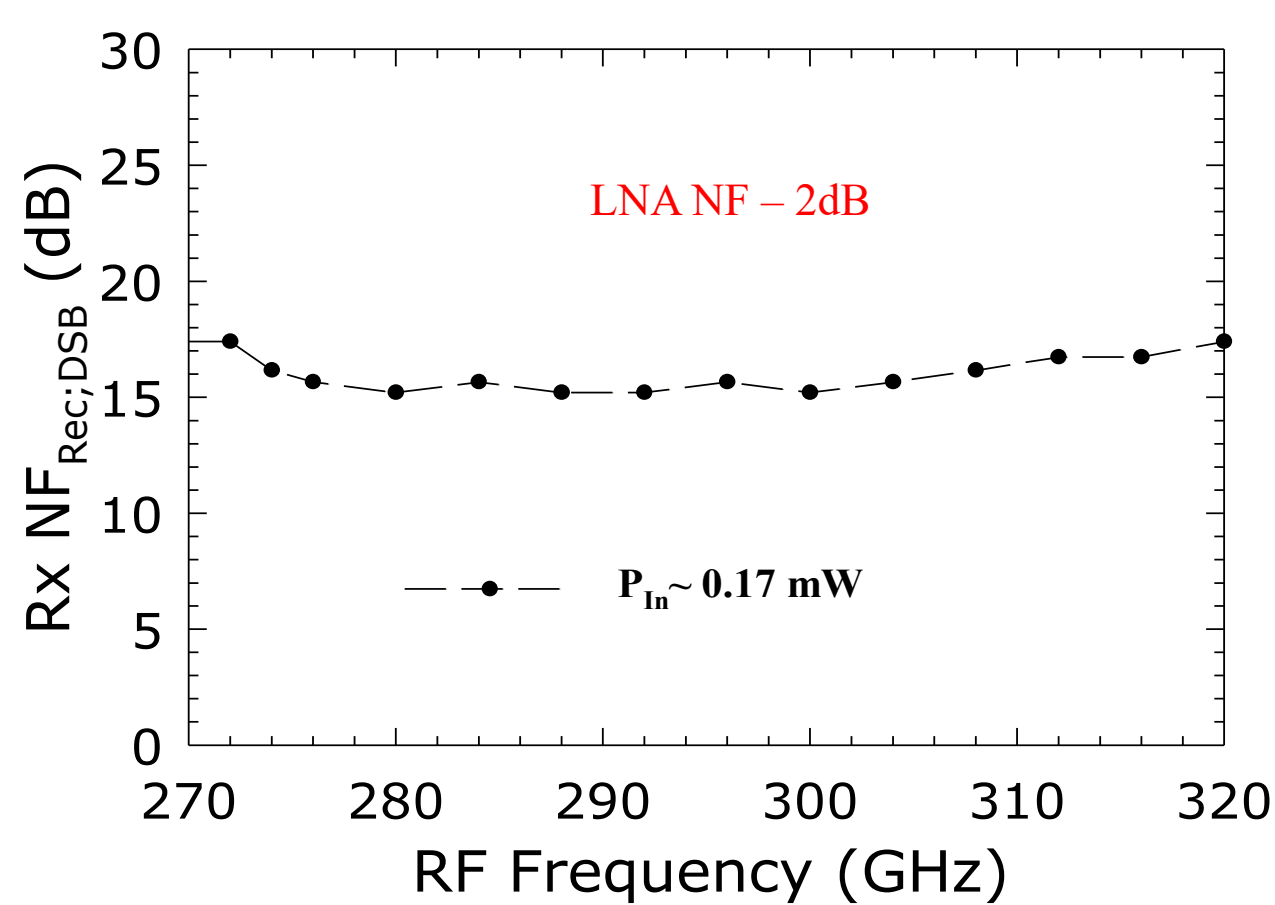


Figure 2: (a) Measured DSB NF (b) Measured DSB Noise Temperature.

Mixer tested as a receiver using optical pumping:

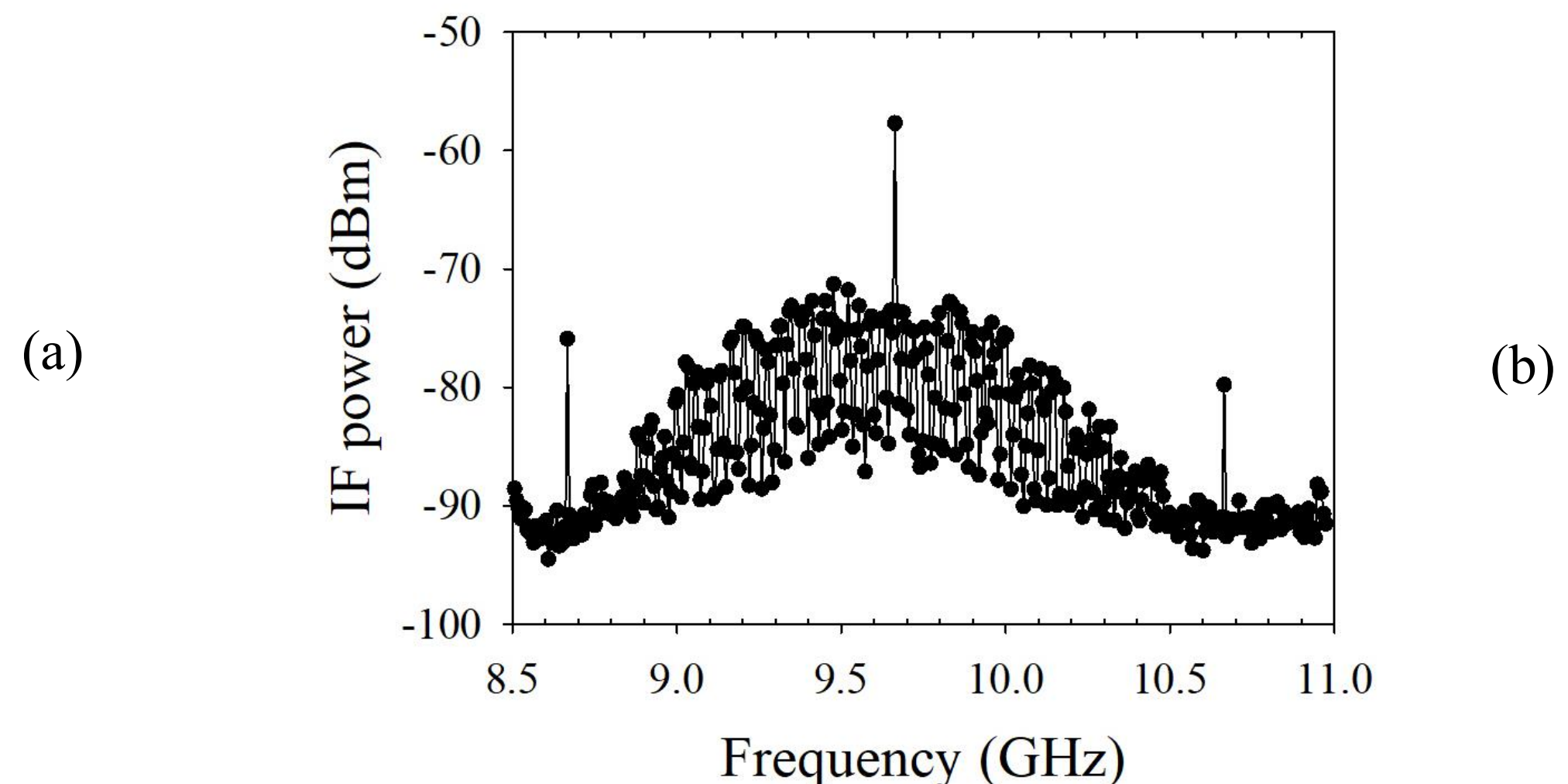
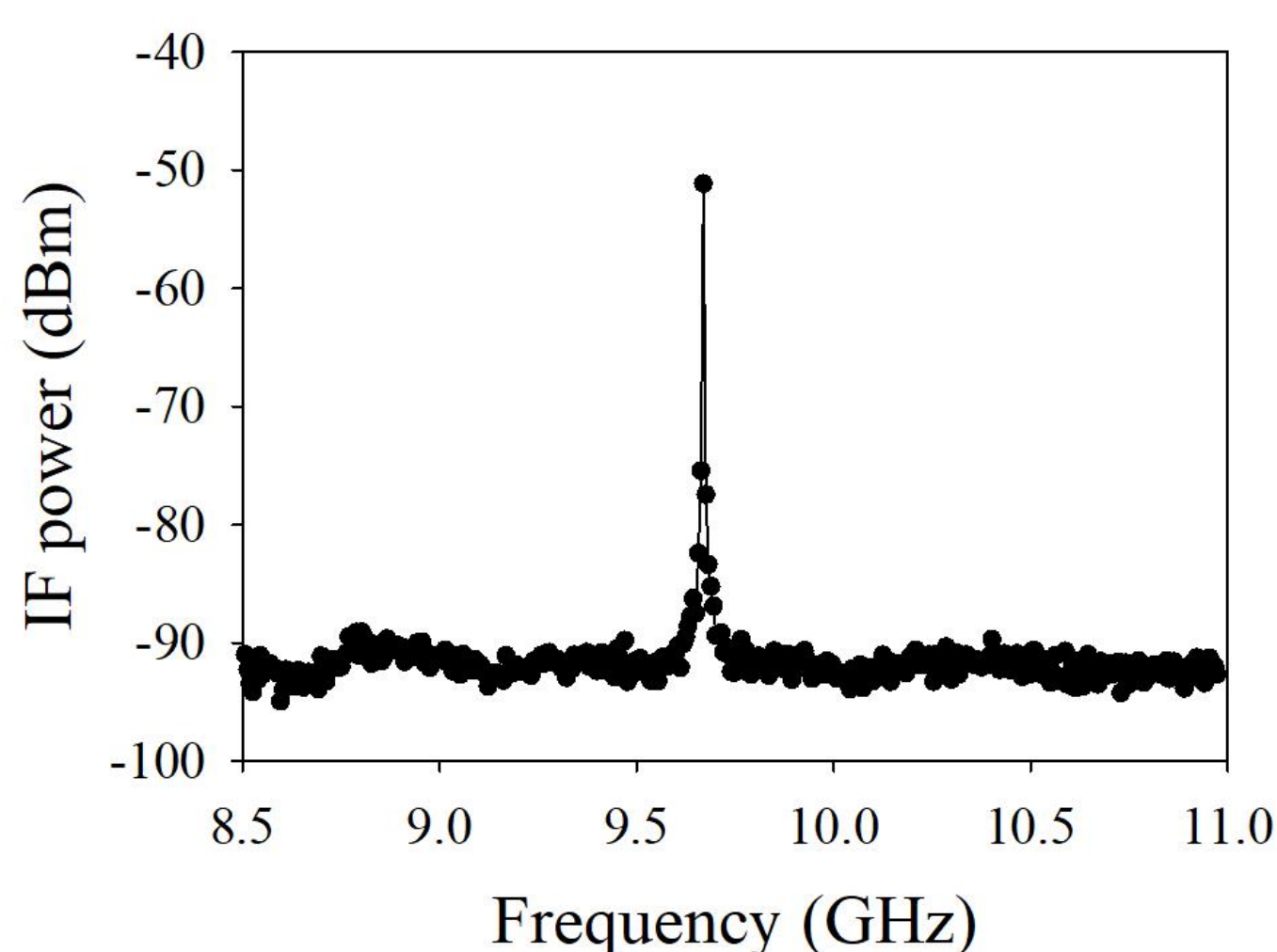


Figure 3: (a) Detected IF with no modulation (b) Detected IF with OOK 1Gbps modulation.