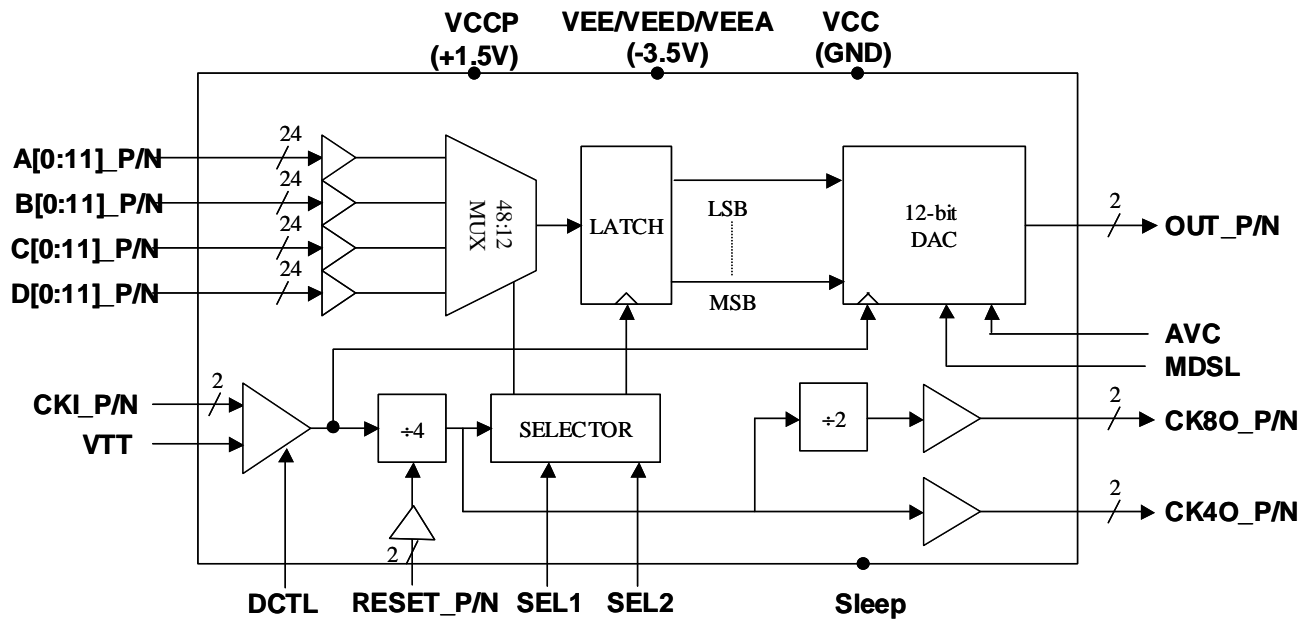


MD657B (7p0G) – Analog Output Mode Selectable MUXDAC



KEY FEATURES

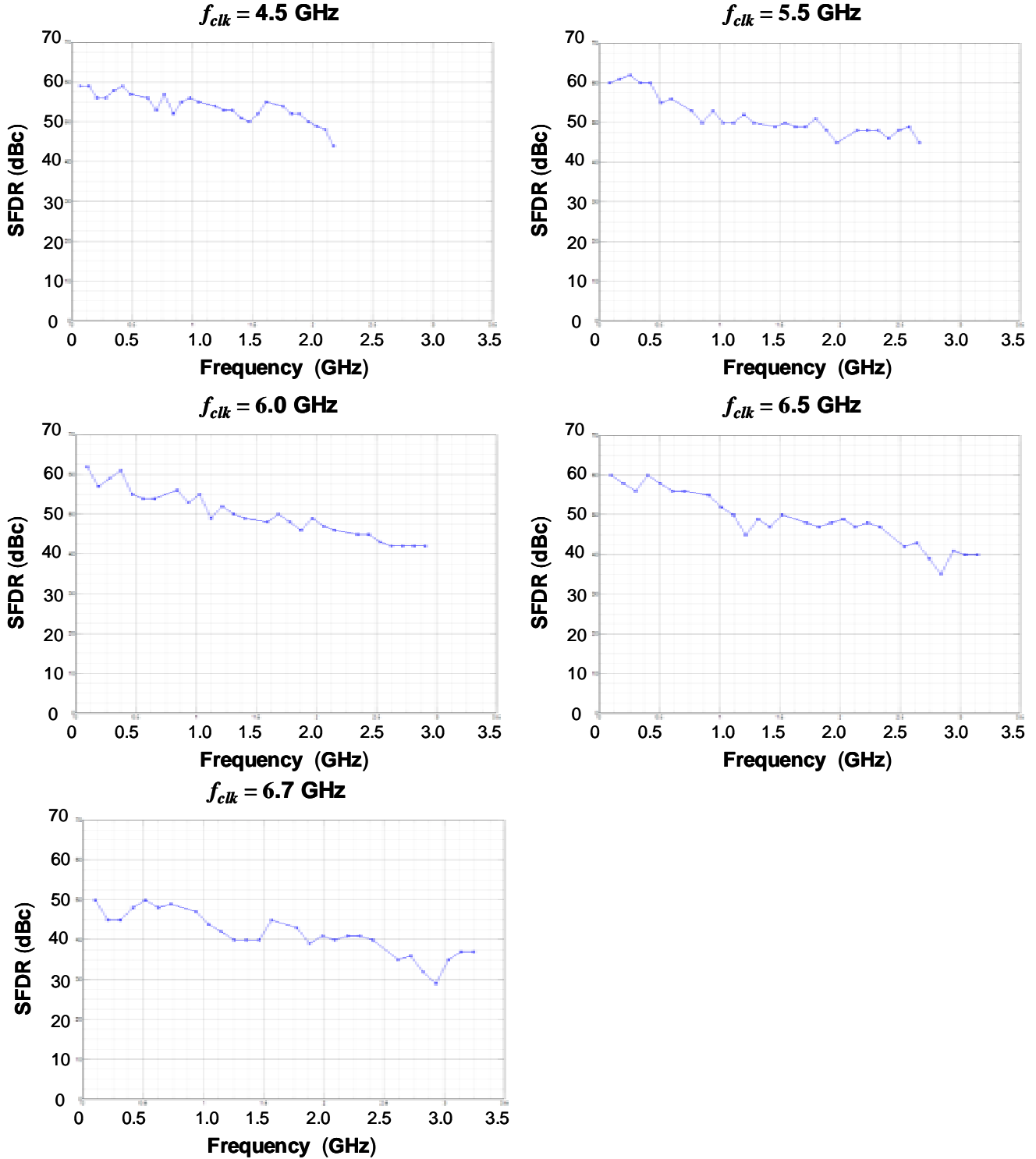
- 4:1 multiplexing ratio for each input bit of DAC
- 12-bit resolution DAC up to **7 Gsps rate** for high dynamic range applications
- For digital applications, low output jitter (< 10 ps) up to 7.8 Gsps.
- DAC analog output format can be selected between Normal-Hold (NH) mode or Return-to-Zero (RZ) mode
- Complementary outputs with 50-Ω back terminations
- Both complementary divide-by-4 and divide-by-8 clock outputs are provided for data synchronization
- 2.8 W power consumption
- Variable 400~800 mV_{pp} single-ended output swing
- On-chip 100 ohm termination between each differential input data and RESET pair
- LQFP package with exposed pad

Description

MD657B_7p0G is a high-speed 12-bit Digital to Analog Converter (DAC) integrated with a 48:12 (12 channels of 4:1) input multiplexer. The on-chip DAC can be operated at a sampling rate up to 7 Gsps for analog applications and up to 7.8 Gsps for digital applications with low output jitters. The analog outputs of DAC can be selected between Normal-Hold mode (for the 1st Nyquist band) or Return-to-Zero mode (for the 1st, 2nd and 3rd Nyquist band) operation. The differential digital data input interfaces are LVPECL, LVDS, and CML compatible. After the 48 pairs of differential data inputs were multiplexed up to 4 times of speed, the 12 high speed data bits are latched and encoded to drive DAC output stage. Complementary outputs are available with 50-Ω output back terminations. Divided-by-4 clock outputs and sampling phase selection (SEL1 and SEL2) are provided to ease the alignment of sampling phase relative to the input data. Divided-

by-8 clock outputs are also provided. A RESET function is provided for system applications which need to synchronize the outputs from multiple MD657B's.

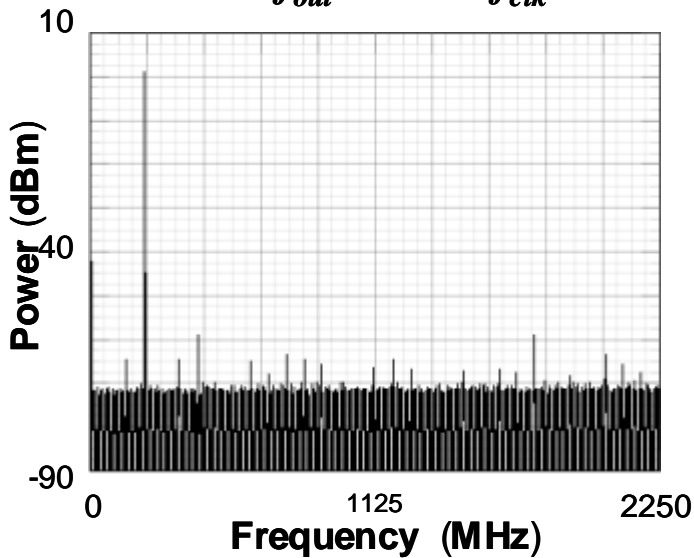
Spur Free Dynamic Range Performance



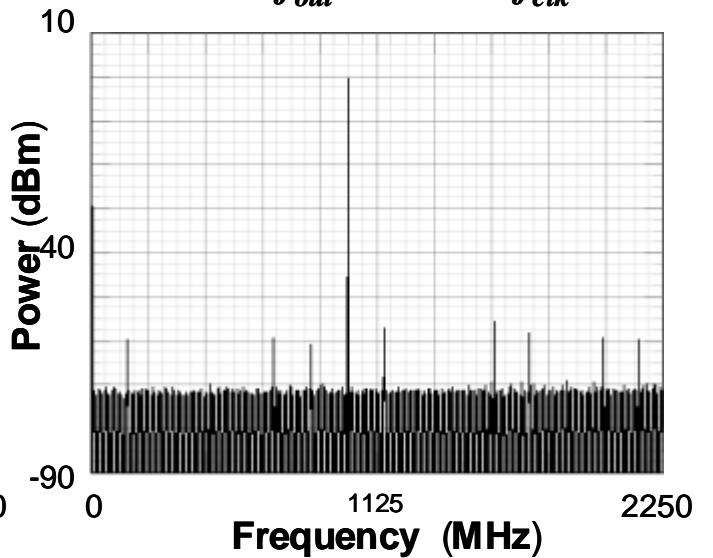
Representative Measured RF Spectrum

$$f_{clk} = 4.5 \text{ GHz}$$

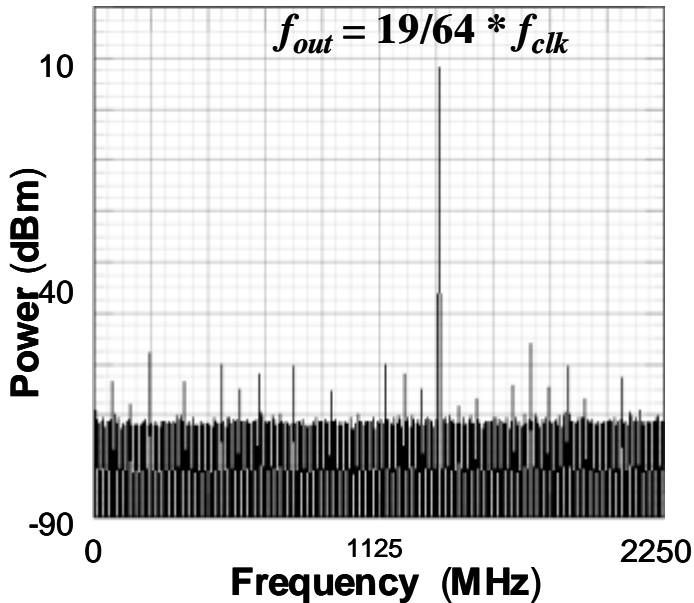
$$f_{out} = 3/64 * f_{clk}$$



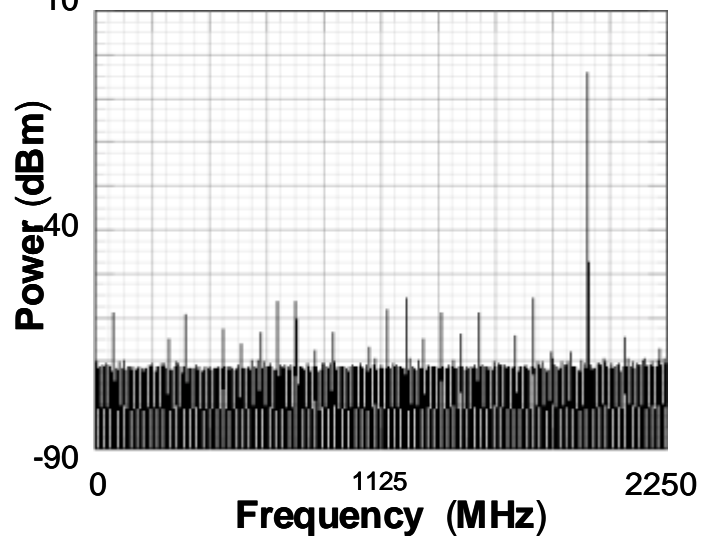
$$f_{out} = 14/64 * f_{clk}$$



$$f_{out} = 19/64 * f_{clk}$$

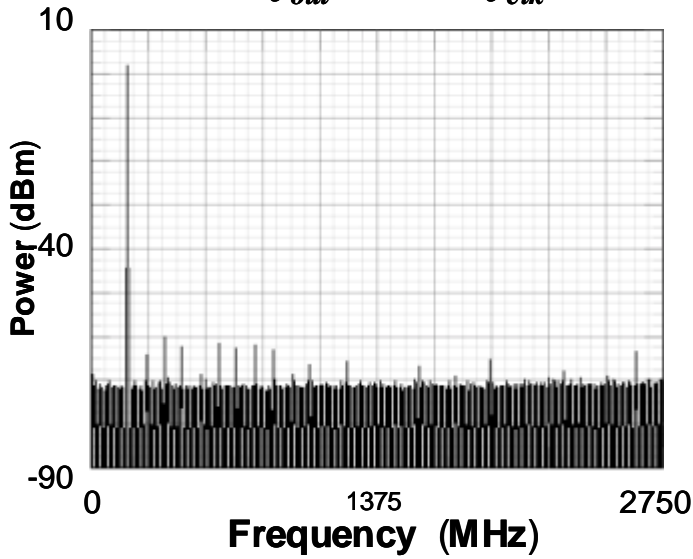


$$f_{out} = 27/64 * f_{clk}$$

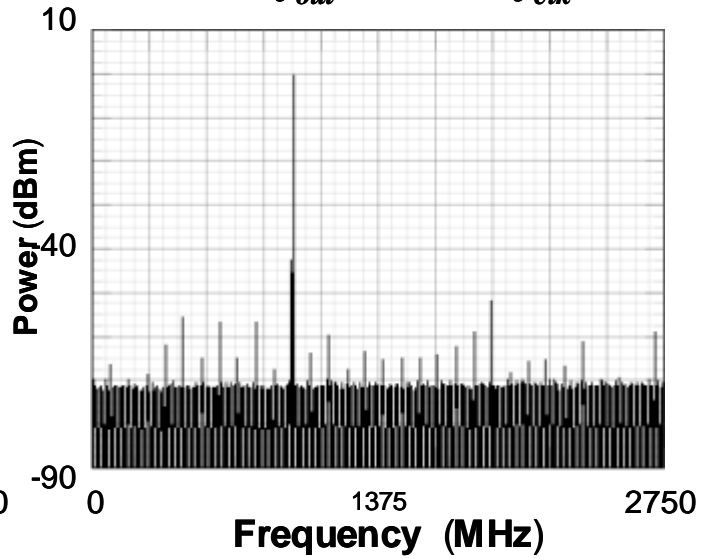


$$f_{clk} = 5.5 \text{ GHz}$$

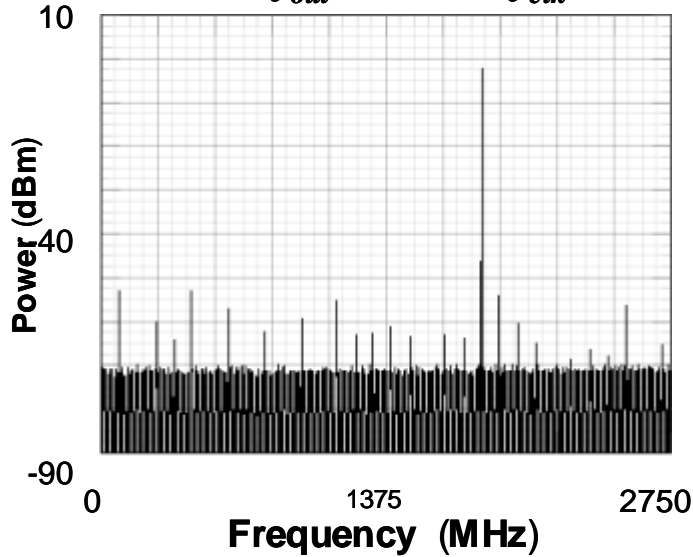
$$f_{out} = 3/64 * f_{clk}$$



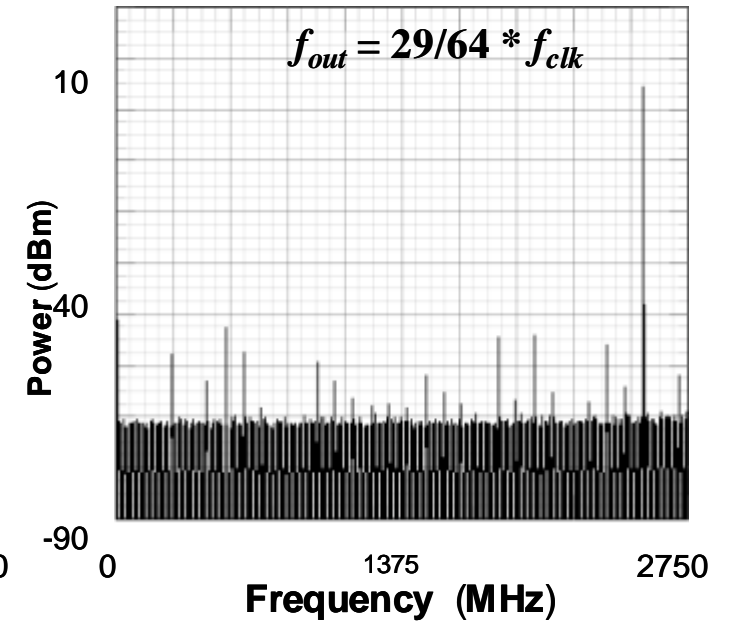
$$f_{out} = 11/64 * f_{clk}$$



$$f_{out} = 21/64 * f_{clk}$$

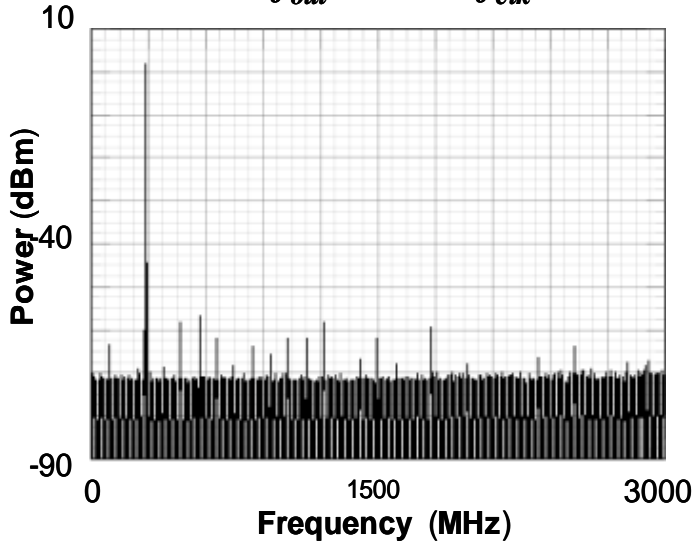


$$f_{out} = 29/64 * f_{clk}$$

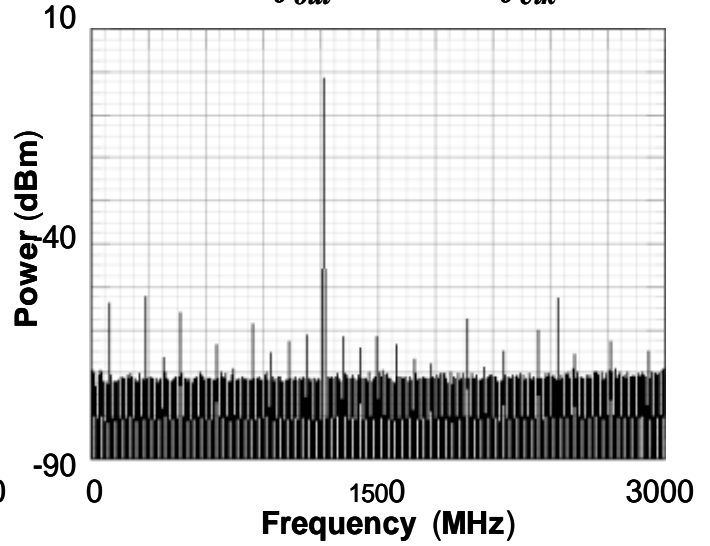


$f_{clk} = 6.0 \text{ GHz}$

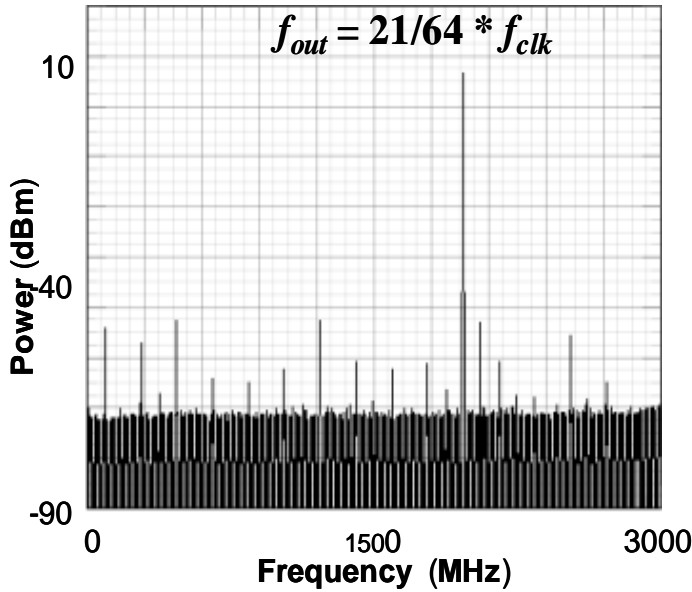
$f_{out} = 3/64 * f_{clk}$



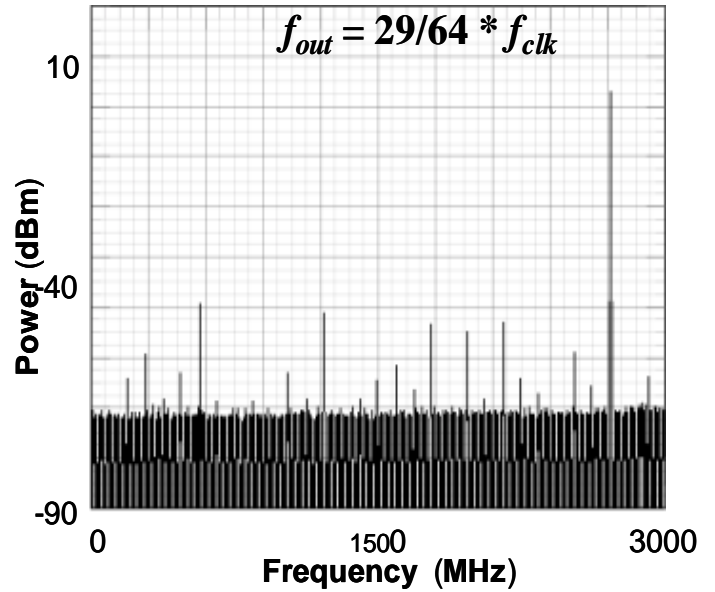
$f_{out} = 13/64 * f_{clk}$



$f_{out} = 21/64 * f_{clk}$

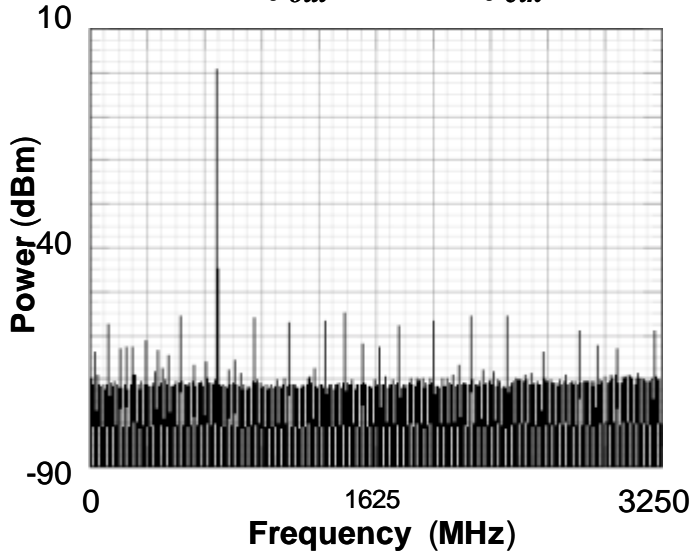


$f_{out} = 29/64 * f_{clk}$

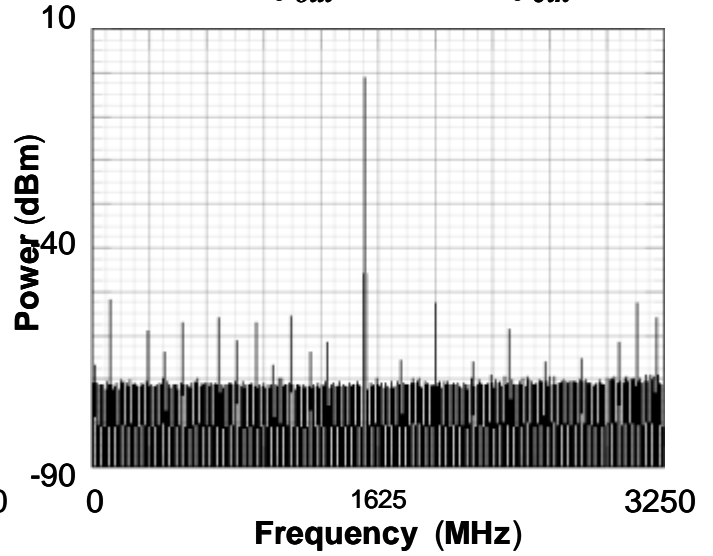


$$f_{clk} = 6.5 \text{ GHz}$$

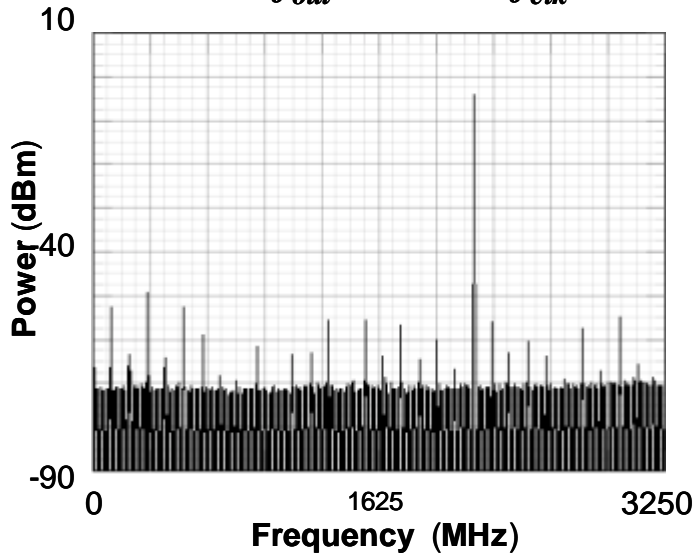
$$f_{out} = 7/64 * f_{clk}$$



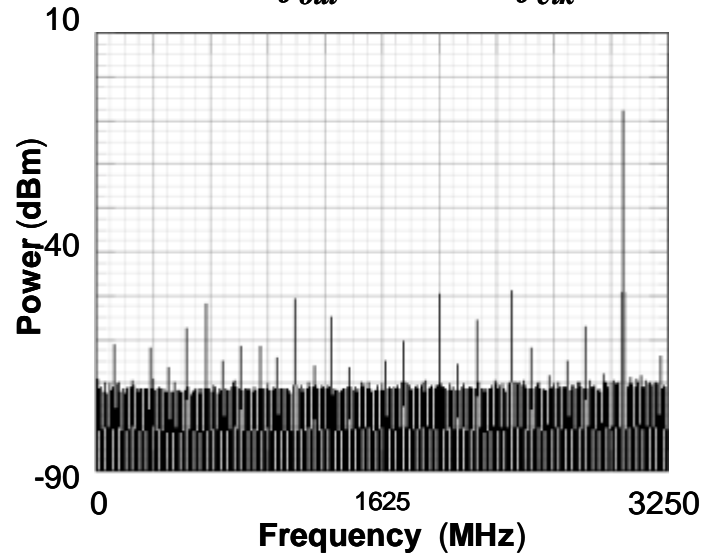
$$f_{out} = 15/64 * f_{clk}$$



$$f_{out} = 21/64 * f_{clk}$$



$$f_{out} = 29/64 * f_{clk}$$



$$f_{clk} = 6.7 \text{ GHz}$$

$$f_{out} = 7/64 * f_{clk}$$

$$f_{out} = 15/64 * f_{clk}$$

