PMCC_DIV60G
60GHz Prescaler

Evaluation Report – White Paper

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OUTLINE

Pacific MicroCHIP Corp.

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Test Objective. DUT Description

Objective: test and characterize 60GHz Frequency divider By2. Device under test (DUT) was fabricated on MPW runs at Jazz Semiconductor. DUT is a 3x1.3mm die on a 5x5mm MPW tile (Figure 1).

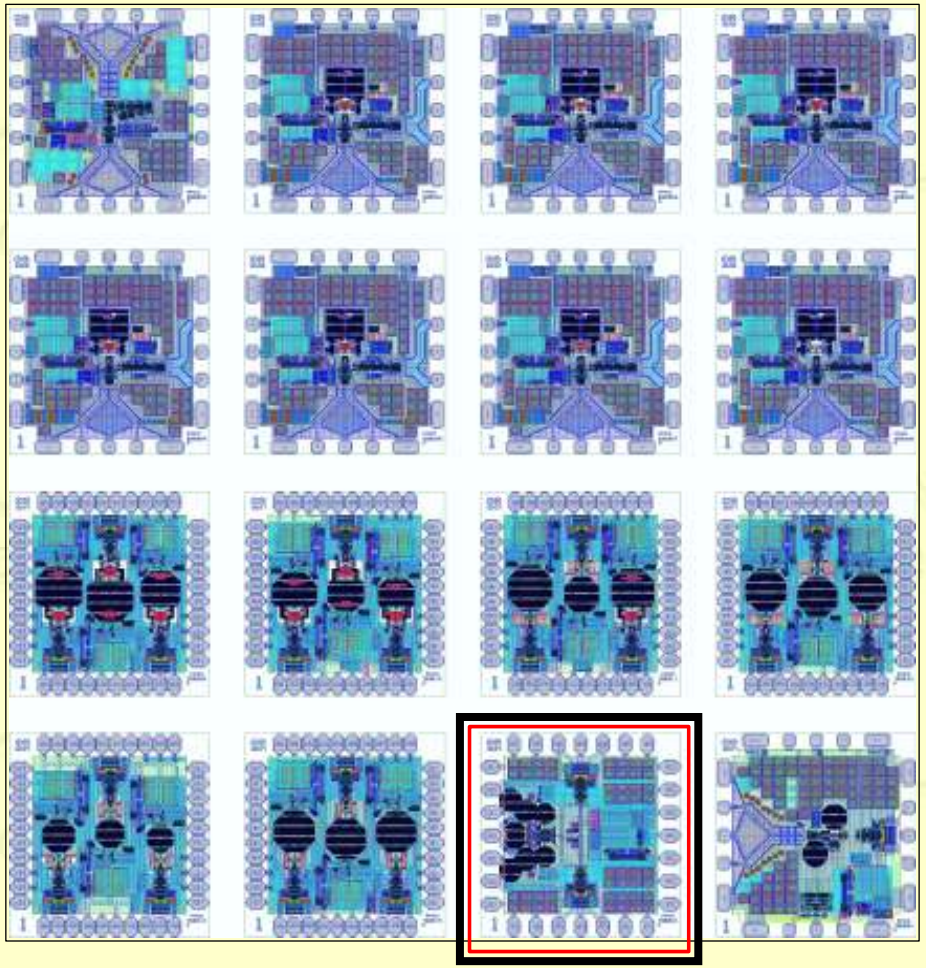
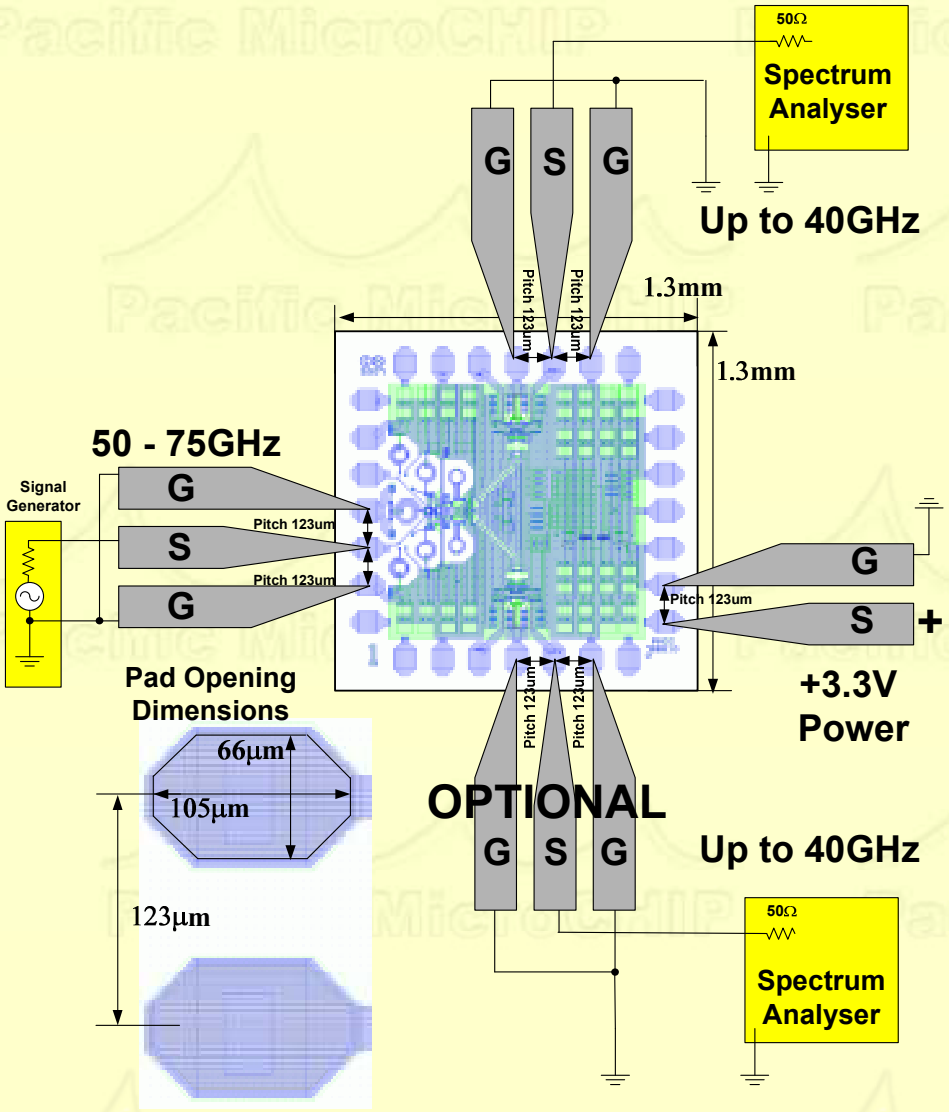
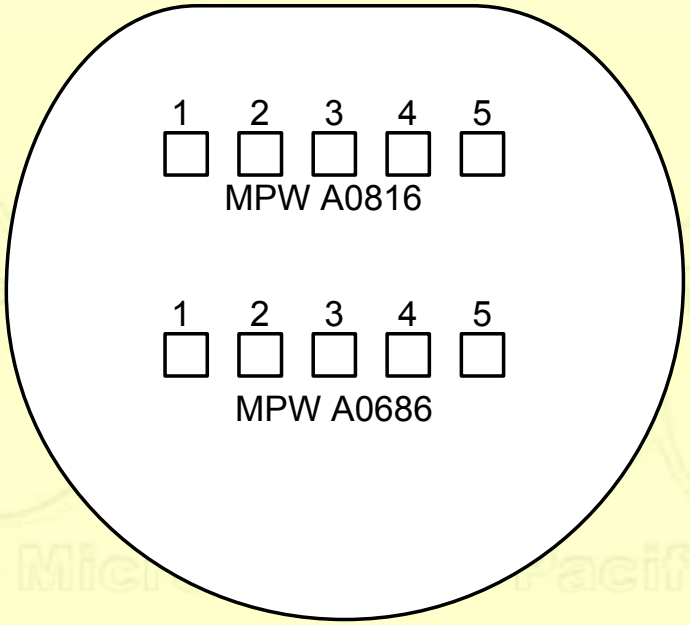


Figure 1. MPW tile and 60GHz divider location on the tile.

On-wafer Probing Setup For Static Frequency Divider



10 DUT Tiles from 2 MPW runs are glued on a blank wafer.



On-wafer Probing Equipment

Equipment used:

1. Cascade Corp RF probe station and supporting equipment.
2. Agilent 83557A Source Module
3. Agilent 8565EC 50 GHz spectrum analyzer
4. HP 83650B Synthesizer

Measurement Equipment Readings.
DUT Input And Output

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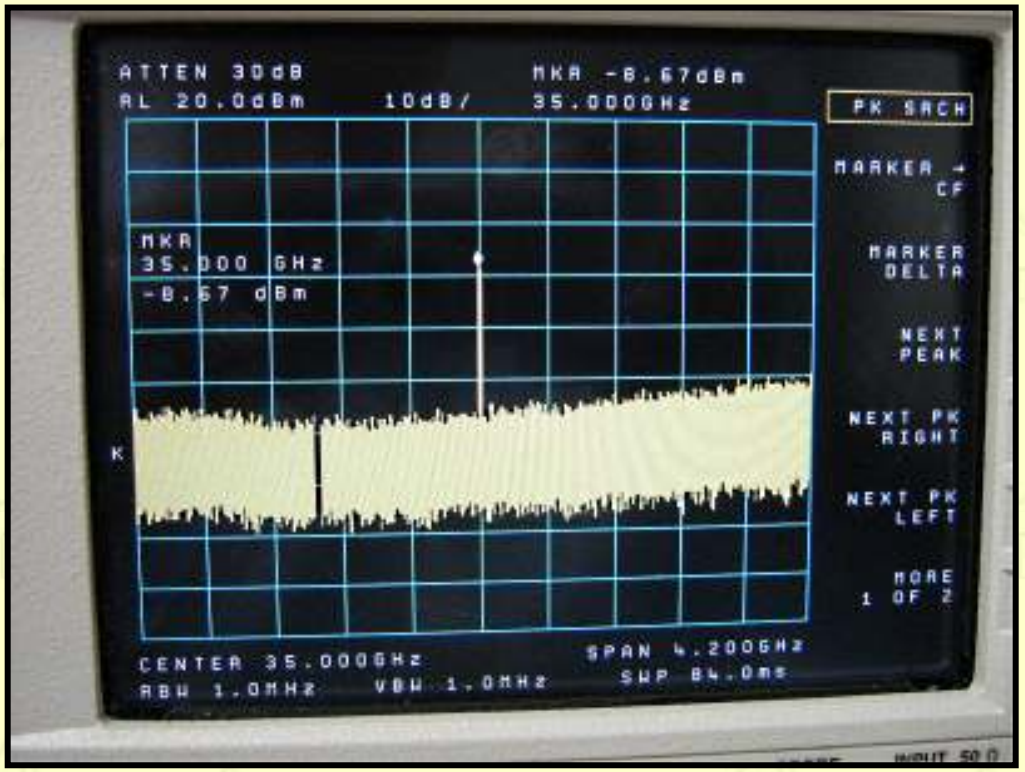
70GHz Input signal.

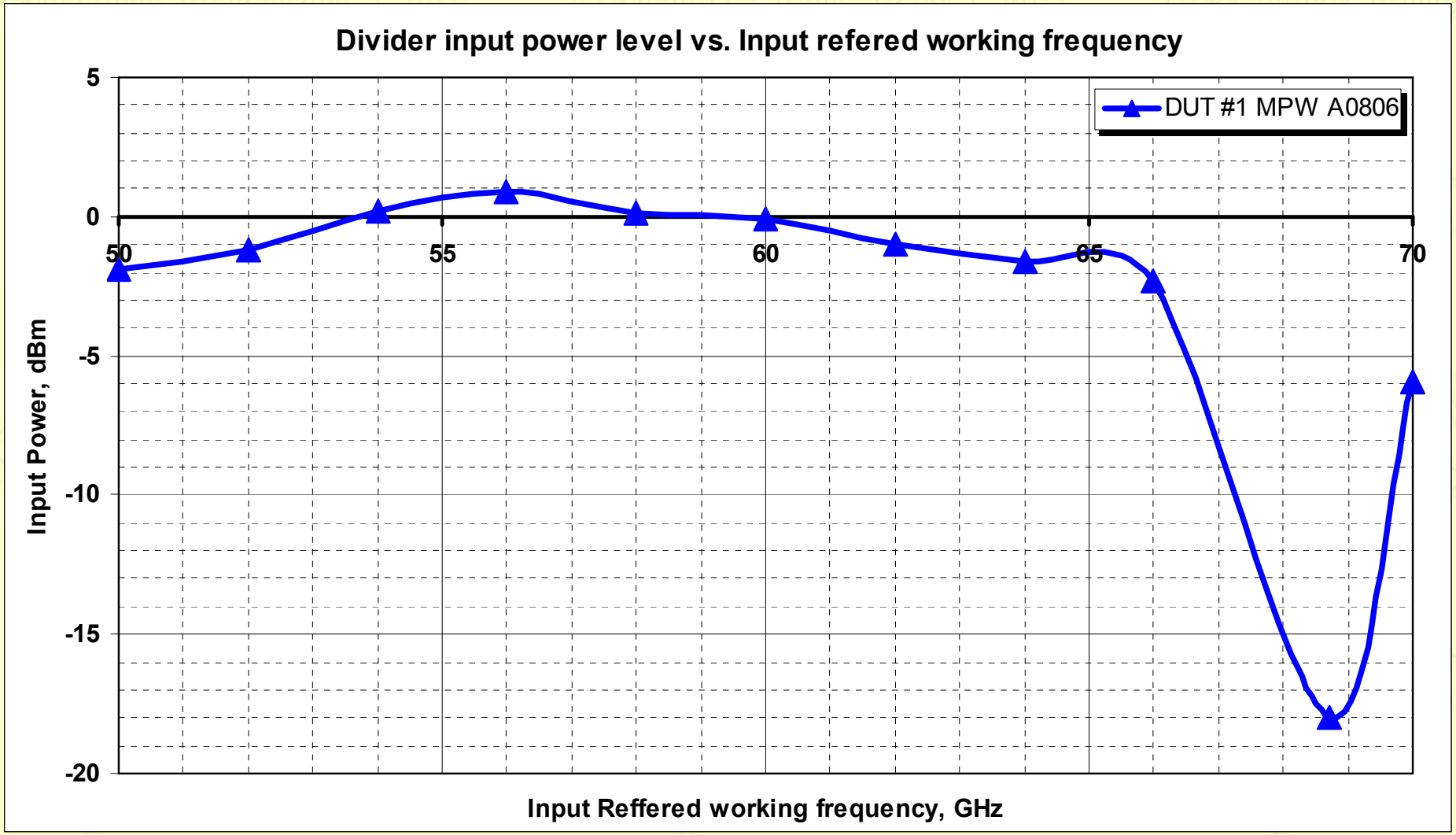
NOTE: in order to calculated power level seen by the IC, subtract 8dB from the source reading.

Divided Output signal.

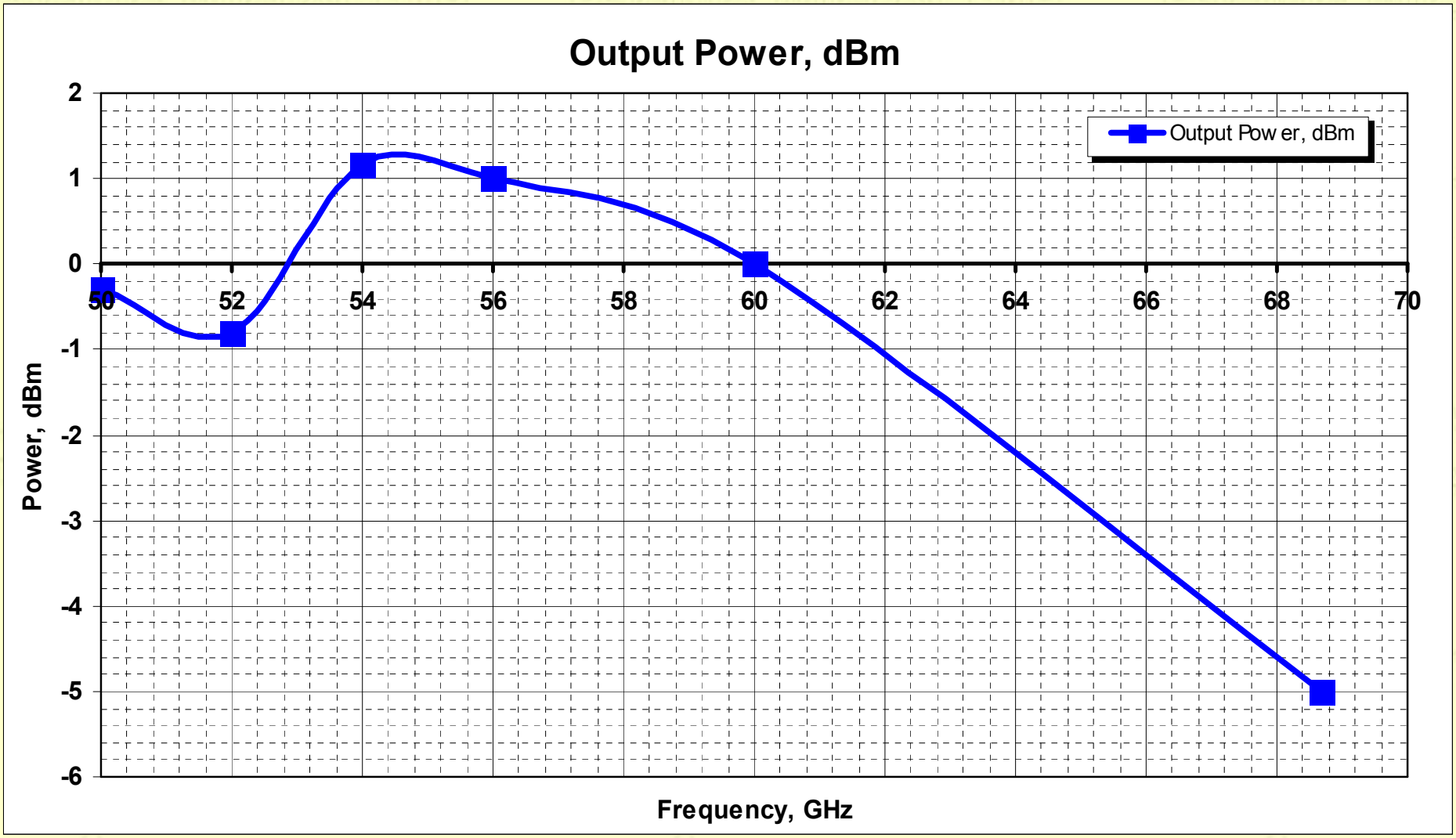
NOTE: in order to calculated power level at the IC output, add 5dB from the spectrum analyzer reading.



Measured Divider Input Power Level vs. Input Refered Working Frequency



Measured Divider Output Power Level vs. Input Refered Working Frequency



Measured Self-Oscillation Frequency over Power Supply Voltage

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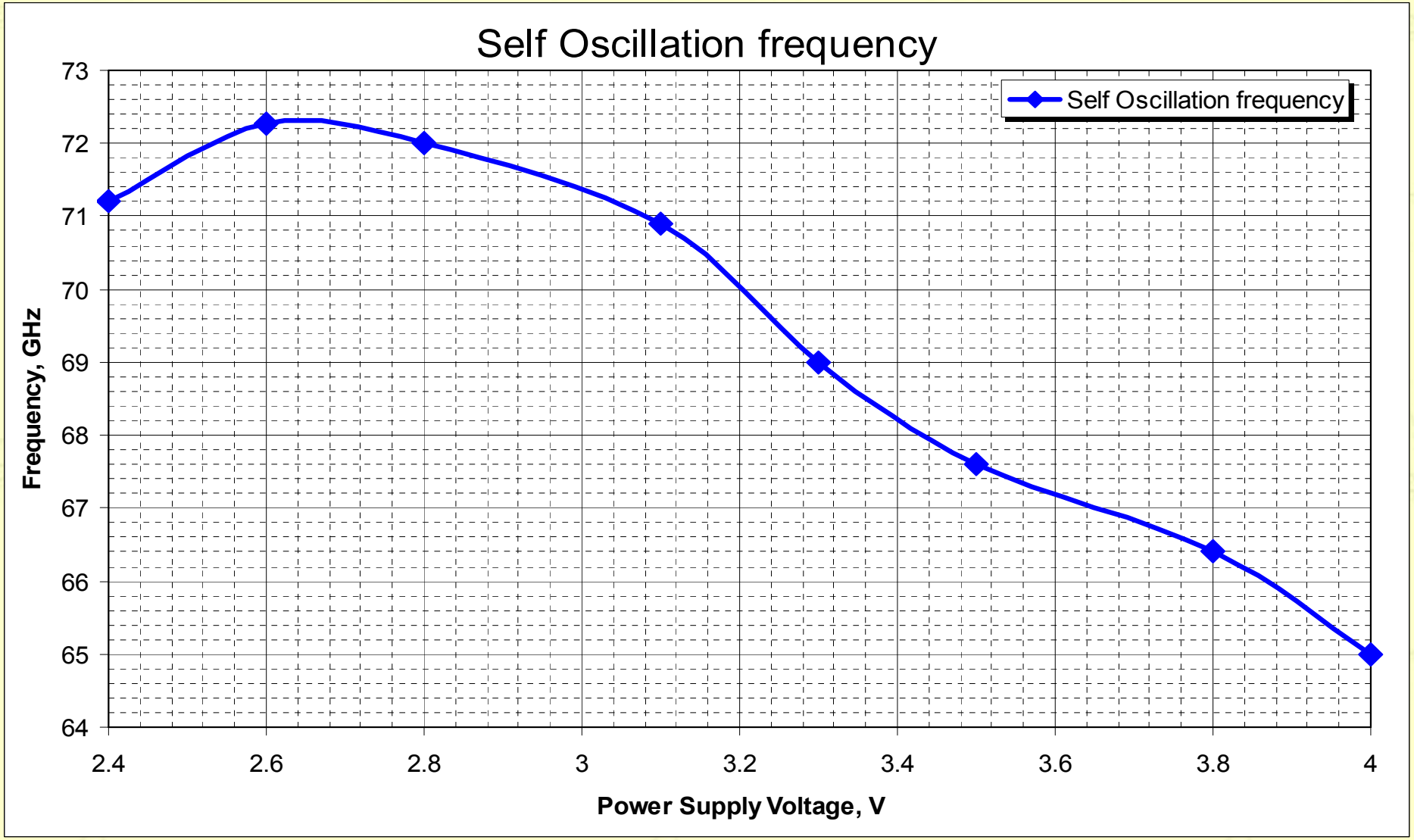

Measured Current Consumption over Power Supply Voltage

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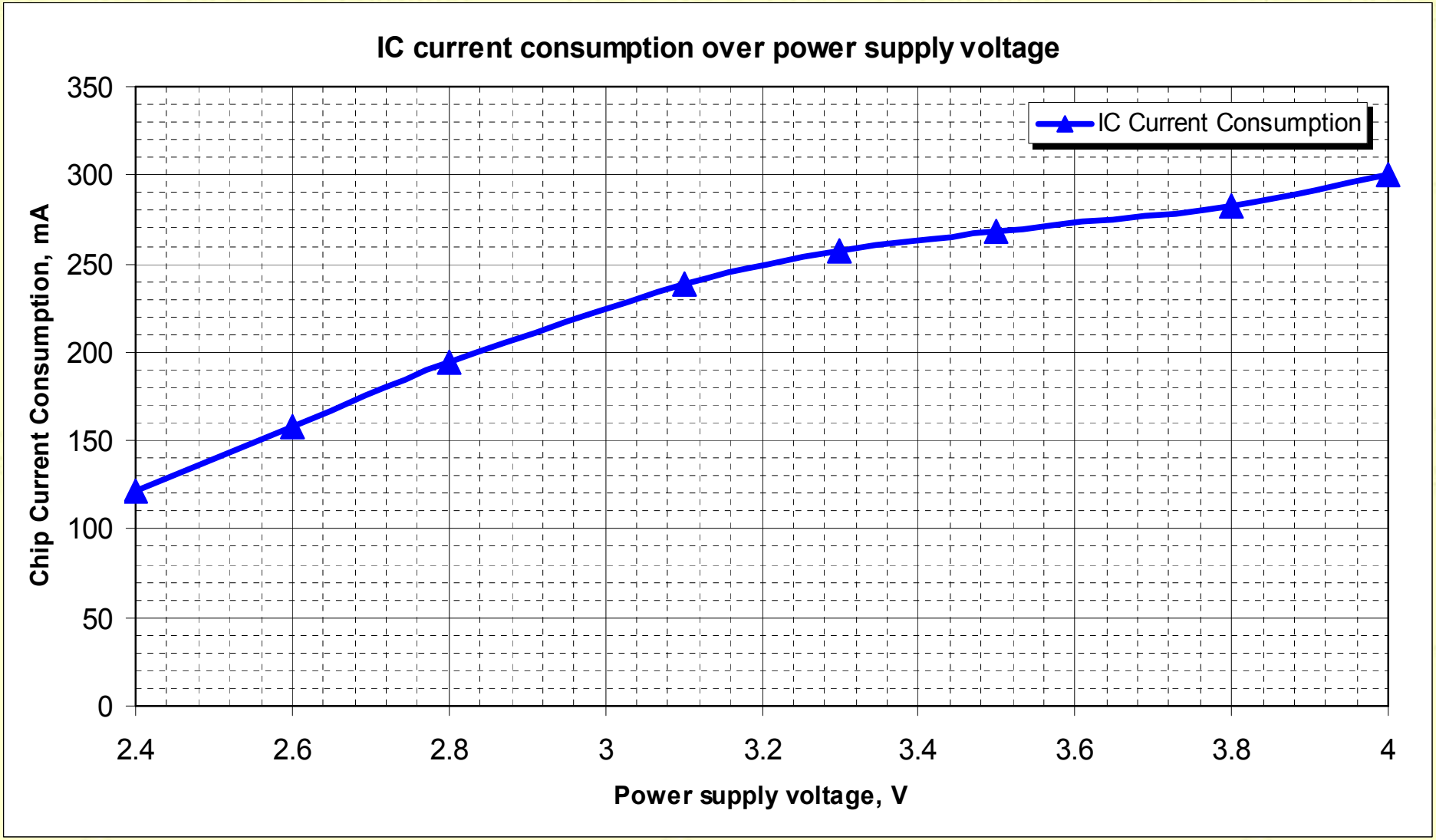

Measured Output Power over Power Supply Voltage in Self-Oscillation Mode

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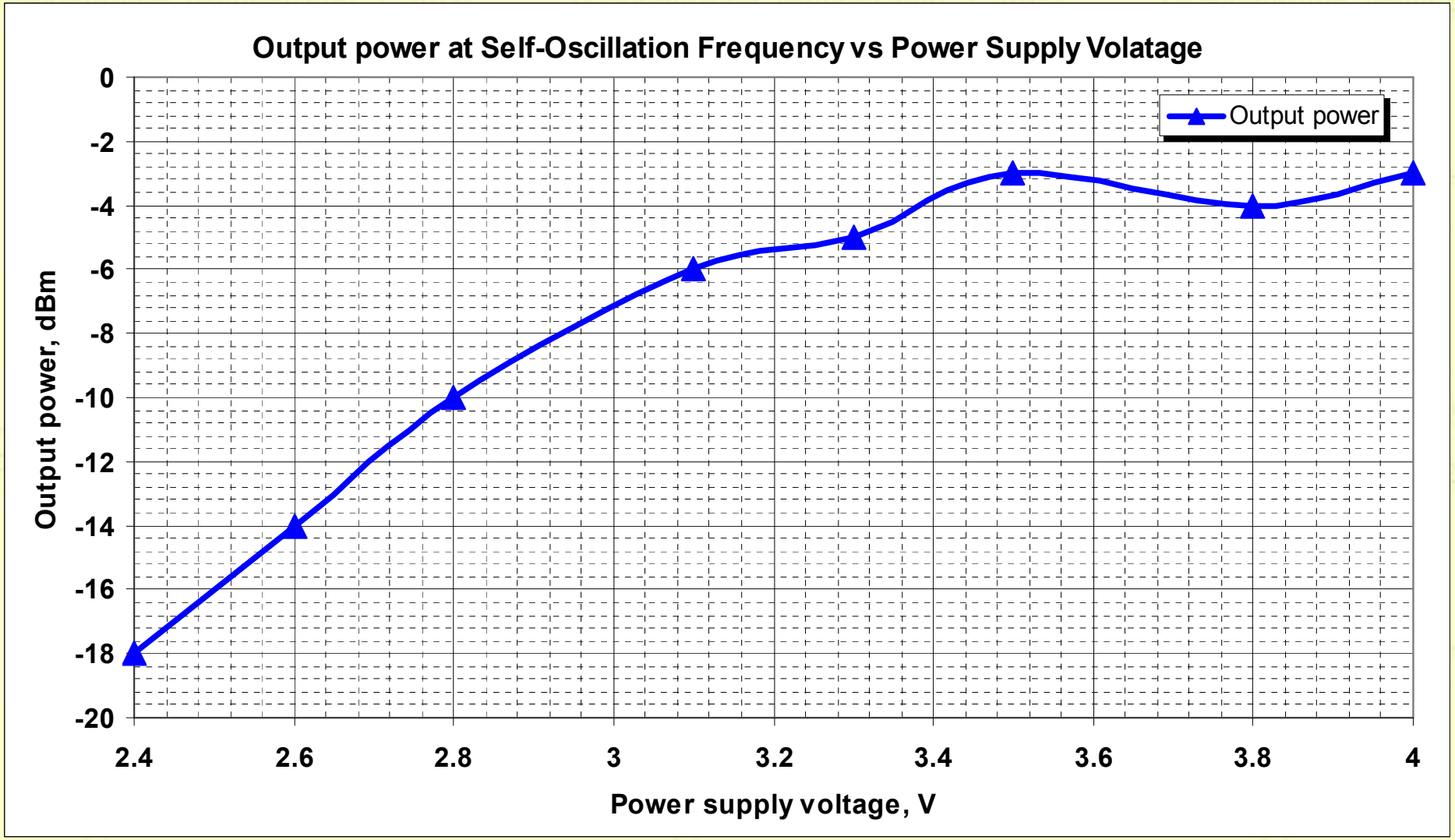

Conclusion

Divider DUTs are measured and found operating at expected 60GHz frequency with sufficient margin up to about 70GHz.