

Test Report: RF3000 Processing Gain

Tested on RFMD RD0314 reference design board S/N 0229022F with RF3000 rev 10 Baseband Processor.

Scope: This report presents the test setup and measured data for a FCC Part 15.247 (e) Jamming Margin test for the indirect measurement of processing gain.

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Test Background and Procedure

Material has been previously published, by other organizations supplying Integrated Circuits to implement IEEE802.11b compliant systems, that provides background theoretical calculations and test methods for measuring Jamming Margin, and using the results to infer Processing Gain. As that material, in conjunction with test results, has already been accepted by the FCC as sufficient proof that the systems comply with FCC Part 15.247(e) Processing Gain requirements, no attempt to reproduce that material in another form will be made in this report. The result of those theoretical calculations will be used here, and the same test method (in principle) will be applied.

This method can be summarized as follows:

The Signal-to-Jammer ratio is fixed at 8.4dB, with the Jammer frequency swept through the receiver pass-band (17MHz in this case) in 50kHz increments, and if the number of points at which the PER exceeds 8% is less than 20% of the total points then the test is passed. Otherwise, the test is failed.

This is repeated on each of the following channels:

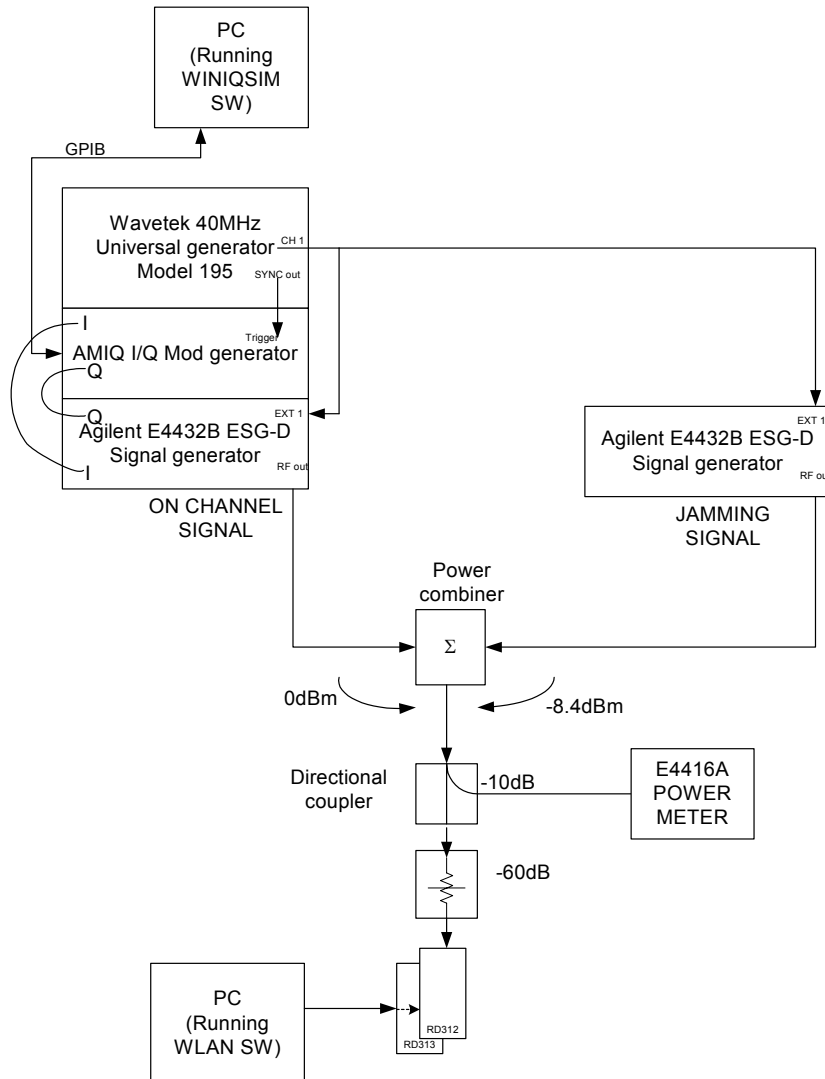
Channel 1: 2412 MHz

Channel 7: 2442 MHz

Channel 11: 2462 MHz

Test setup

RFMD Jamming margin test setup



Wavetek setup:

CH 1: Amplitude 2.5Vpp, Load = 50OHM
Pulse waveform, period 40ms
Pulse delay 12us, pulse width 1290 us
DC offset -1.8VDC, Mode - continuous
Sync ON

AMIQ settings:

Run WinIQSim. Requires PC and GPIB cable for control.
Mod Settings -->Sequence length = 72000.
Mod Settings-->Filter-->User-->file-->LPF9REC.IFL
Set AMIQ Rem-->HW settings-->Type=Single Output
Set AMIQ Rem-->HW settings-->Tracking=OFF
Set AMIQ Rem-->HW settings-->CH I Level = 0.3
Set AMIQ Rem-->HW settings-->CH Q Level = 0.3
Set AMIQ Rem-->HW settings-->Filter=OFF
Set AMIQ Rem-->HW settings-->OFF state = High Z
Set AMIQ Rem-->HW settings-->Output Resolution=14bit
Set AMIQ Rem-->HW settings-->Source/Trigger=GATED
RFMD can provide the following files. Open Settings.IQS (this sets all above settings as listed) then click on Source Data, File 11MbRD0312.DBI

Agilent signal generator setup:

MOD ON, I/Q ON, I/Q source = EXT I/Q, BURST ENVLP ON, High Crest mode OFF,
I/Q adjustments OFF, EXT I/Q Polarity NORMAL, ALC OFF
Set Amplitude Offset to calibrate output level to 0dB for On Channel signal and -8.4dBm for Jamming signal (use Agilent E4416A).

Test Results

Jamming Margin test results.
Tested on RD0314 S/N 0229022F

Jammer level: -8.4dB relative to On channel 11Mbps modulated signal
1/4/2002 Chris Irwin

	Channel 1 2412 MHz	Channel 7 2442 MHz	Channel 11
Number of jammer frequencies exceeding 8%:	14	15	19
Percentage of frequencies exceeding 8%:	4.0%	4.3%	5.4%
Max allowed:	20%	20%	20%
Result:	PASS	PASS	PASS

Conclusion

This data confirms that the device tested complied with FCC Part 15.247(e) requirements that minimum Processing Gain be 10dB.