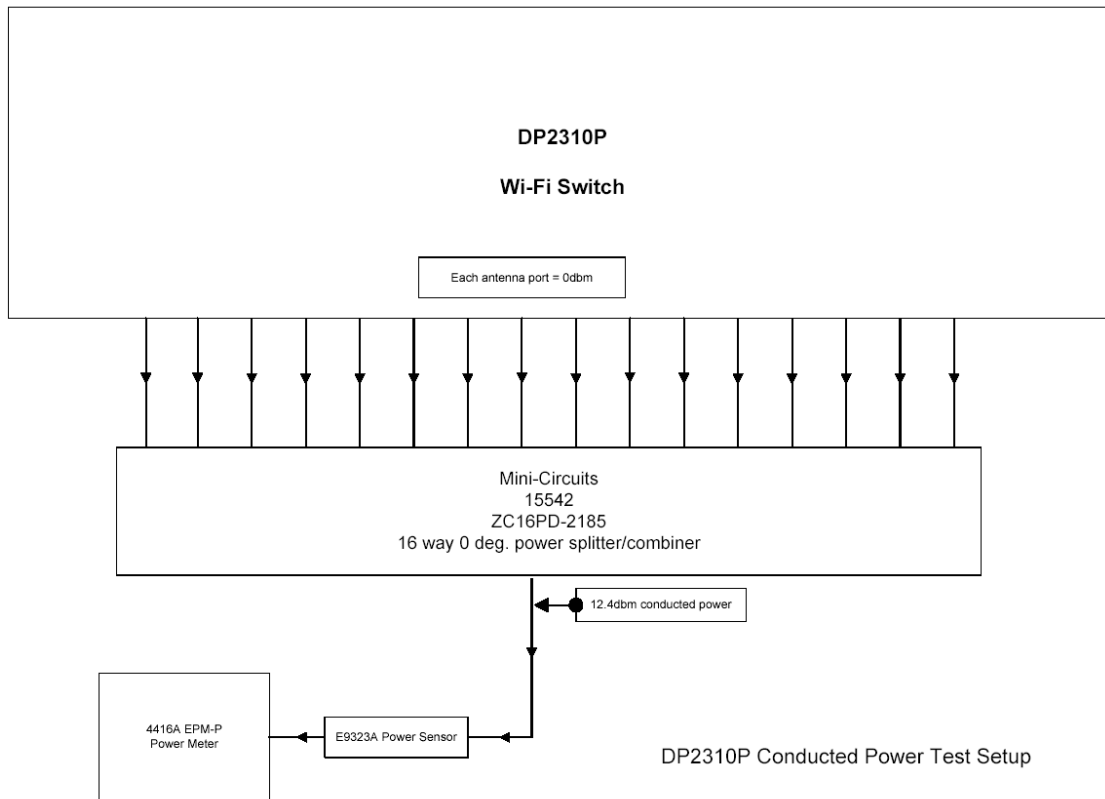


1 Power Output - §15.247(b)

1.1 Power Output Test Procedure

The peak conducted output power of the EUT was measured using an Agilent 4416A EPM-P Series Power Meter with an E9323A Peak and Average Power Sensor. In order to measure the total conducted RF power from the EUT's 16 ports, a 16 input/1 out port-calibrated combiner was connected between the EUT and the power meter. Total power was measured by setting the EUT to 0 degree steering mode, -48 degree steering mode and +48 degree steering mode and recording each power meter reading. These readings were then corrected by adding the combiner loss in order to obtain the final total conducted power. The results for these measurements are listed in the table below.



The values listed in the table represent the maximum conducted power output possible for the 0 degree steering mode.

The 0 degree steering mode, -48 degree steering mode and +48 degree steering modes were investigated and tested. The worst case power values for Channels 1, 6 and 11 in the 1 MBPS, 2 MBPS, 5.5 MBPS and 11 MBPS are included for 0 degree steering mode at a duty cycle greater than 75 percent. Test Equipment used for testing is listed in the table below.

Note: The measurement above with the power meter and sensor was verified using the Substitution Power Measurement Method with a signal generator, power meter, diode detector, and an oscilloscope.

1.2 Calibration Procedure for Combiner and Cable

The 16 ports of the EUT were connected via SMA cables of equal lengths and type to a combiner in order to measure the RF conducted output power. The power listed in the table represent the power at the output of the combiner with all ports driving the combiner. All cables were calibrated to determine the cable loss at the investigated frequency. Furthermore, all 16 ports of the combiner were calibrated to determine the loss between each individual input with respect to the output port. The losses were similar for all the ports and were only frequency dependent. The output power was checked at each of the 16 antenna ports and were measured at 0 dBm for channel 1. This measurement verifies that the insertion loss provided by the manufacturer of 12.4 dB is valid.

1.3 Power Output Test Data

The data in the table below is used to verify the combined EUT output power. When the 16 ports of the EUT were set to 0dBm the combined output power using $10\log_{16}$ equates to 12.4 dBm.

EXAMPLE: Table 1-1

CH: 1

Mode: 11 MBPS

16-port combiner output power: 10 dBm

Cable loss and combiner insertion loss: 2.4dB

Total output power: 12.4 dBm

The total output power was measured at the output of the 16-port combiner using a power meter and sensor at 10dBm. The combiner insertion and cable loss for each port was measured at 2.4 dB. The resulting combined power equates to 12.4 dBm.

Operating Frequency (MHz): 2412, 2437, 2462

Channel: 1, 6 & 11

Measured Cond. Pwr. (dBm): See below


Table 1-1: Power Output Test Data (0 degree steering mode)

Data Rate MBPS	Channel 1			Channel 6			Channel 11		
	Power at the Combiner dBm	Combiner Loss+Cable Loss dB	Power level Corrected dBm	Power at the Combiner dBm	Combiner Loss+Cable Loss dB	Power Level Corrected dBm	Power at the Combiner dBm	Combiner Loss+Cable Loss dB	Power Level Corrected dBm
1	9.8	2.4	12.2	8.7	2.0	10.7	9.4	2.5	11.9
2	9.9	2.4	12.3	8.7	2.0	10.7	9.4	2.5	11.9
5.5	9.9	2.4	12.3	8.7	2.0	10.7	9.3	2.5	11.8
11	10.0	2.4	12.4	8.7	2.0	10.7	9.5	2.5	12.0

Measurement accuracy is +/- 0.5 dB

Test Personnel:

Rachid Sehb
 Test Technician/Engineer


 Signature

08/05/02
 Date Of Test

1.4 Test Equipment used for Testing

Table 1-2: Test Equipment Used for Testing (Conducted RF output)

RTL Asset #	Manufacturer	Model	Part Type	Serial Number
901186	Agilent Technologies	E9323A (50MHz-6GHz)	Peak & Avg. Power Sensor	US40410380
901184	Agilent Technologies	E4416A	EPM-P Power Meter, single channel	GB41050573
N/A	Mini-Circuits	ZC16PD-2185	Power Splitter/Combiner	N/A
901142	Hewlett Packard	HP8660C	Synthesized Signal Generator (9KHZ-3200MHZ)	1947A02956
901263	Agilent Technologies	.01-12 GHZ	SMA Detector	2936A05505
900561	Tektronix	TDS540B	Oscilloscope	B020129
900931	Hewlett Packard	8566B	Spectrum Analyzer (100Hz – 22 GHz)	3138A07771