



**TEST REPORT OF A WLAN EVALUATION SYSTEM,  
BRAND REDPINE SIGNALS,  
MODEL RS9110-N-11-03,  
TESTED IN CONFORMITY WITH THE DFS  
REQUIREMENTS OF THE STANDARDS  
ETSI EN 301 893 V1.5.1,  
47 CFR PART 15 (10-1-09) AND  
RSS-210 (ISSUE 8, DE 2010)**

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Industry Canada : 2932G-1  
VCCI Registered : R-1518, C-1598  
R&TTE, LVD, EMC Notified Body : 1856

**TÜV Rheinland Electronic Products & Services (EPS) B.V.**  
P.O. Box 15  
9822 ZG Niekerk (NL)  
Smidshornerweg 18  
9822 TL Niekerk (NL)

Telephone: +31 594 505005  
Telefax: +31 594 504804

Internet: [www.tuv-eps.com](http://www.tuv-eps.com)  
E-mail: [info@tuv-eps.com](mailto:info@tuv-eps.com)

### Description of test item

Test item : WLAN dual band EVB  
Manufacturer : Redpine Signals, Inc.  
Brand : Redpine Signals, Inc.  
Model : RS9110-N-11-03  
Receipt date : February 14, 2011


### Applicant information

Applicant's representative : --  
Company : Redpine Signals, Inc.  
Address : 2107 N, First street, #680  
City : San Jose, CA 95131  
Country : USA  
Telephone number : (408) 748-3385  
Telefax number : (408) 705-2019

### Test(s) performed

Location : Niekerk  
Test(s) started : February 16, 2011  
Test(s) completed : February 17, 2011  
Purpose of test(s) : Compliance with DFS requirements of standard  
Test specification(s) : ETSI EN 301893 V1.5.1 (2008-12), Clause 4.7  
47 CFR Part 15 (10-1-09 Edition), section 15.407(h),  
RSS-210 (issue 8, de 2010), Clause A9.3

Project leader : O.H. Hoekstra 

Test engineer(s) : M.C. Edwards van Muyen  
O.H. Hoekstra 

Report written by : O.H. Hoekstra 

Report approved by : H.J. Pieters 

Report date : February 28, 2011

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The test results as indicated in this test report relate only to the item(s) tested.

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## 1 Remarks.

### 1.1 Applied standards.

The WLAN dual band EVB, brand Redpine Signals, Inc., model RS9110-N-11-03, has been tested in conformity with the Dynamic Frequency Selection requirements of the standards:

ETSI EN 301 893 V1.5.1 (2008-12),  
Clause 4.7: "Dynamic Frequency Selection (DFS)"

47 CFR Part 15 (10-1-09 Edition),  
Section 15.407(h): "Transmit Power Control (TPC) and Dynamic Frequency Selection (DFS)"

RSS-210 (issue 8, de 2010),  
Clause A9.3: "Dynamic Frequency Selection (DFS) for devices operating in the bands 5250- 5350 MHz,  
5470-5600 MHz and 5650-5725 MHz"

The uncertainty figures have been calculated in accordance with the methods as described in the ETR 100-028-1 and ETR 100-028-2 for the test methods as laid out in the ETSI EN 301 893 V1.5.1 (2008-12) document. The expansion factor used is 1.96, which provides a confidence level of 95% (Gaussian).

### 1.2 Test facility.

The Federal Communications Commission and Industry Canada has reviewed the technical characteristics of the test facilities at TÜV Rheinland EPS B.V., located in Niekerk, 9822 TL Smidshornerweg 18, The Netherlands, and has found these test facilities to be in compliance with the requirements of 47 CFR Part 15, section 2.948 (10-1-06 edition).

The description of the test facilities has been filed at the Office of the Federal Communications Commission under registration number 90828. The facility has been added to the list of laboratories performing these test services for the public on a fee basis.

The description of the test facilities has been filed to Industry Canada under registration number 2932G-1. The facility has been added to the list of laboratories performing these test services for the public on a fee basis.

### 1.3 Description of the EUT.

The WLAN dual band EVB, brand Redpine Signals, Inc., model RS9110-N-11-03, is designed to operate in the 5 GHz frequency band as a Slave device without radar detection capabilities.

## 2 Test modes of operation, test frequencies and test connection.

### 2.1 General.

A connection was established between the Access Point and the WLAN dual band EVB. Tests are performed in the frequency band 5250 MHz to 5350 MHz and in the frequency band 5470 MHz to 5725 MHz. The frequency in a band is selected by the Dynamic Frequency Selection system of the Access Point.

After the establishment of the connection, the radar signal is applied to the Access Point and the DFS tests for a Slave device are performed.

### 2.2 Radar signal

The reference DFS test signal as given in table D.3 of the ETSI standard EN 301 893 is used during the tests.

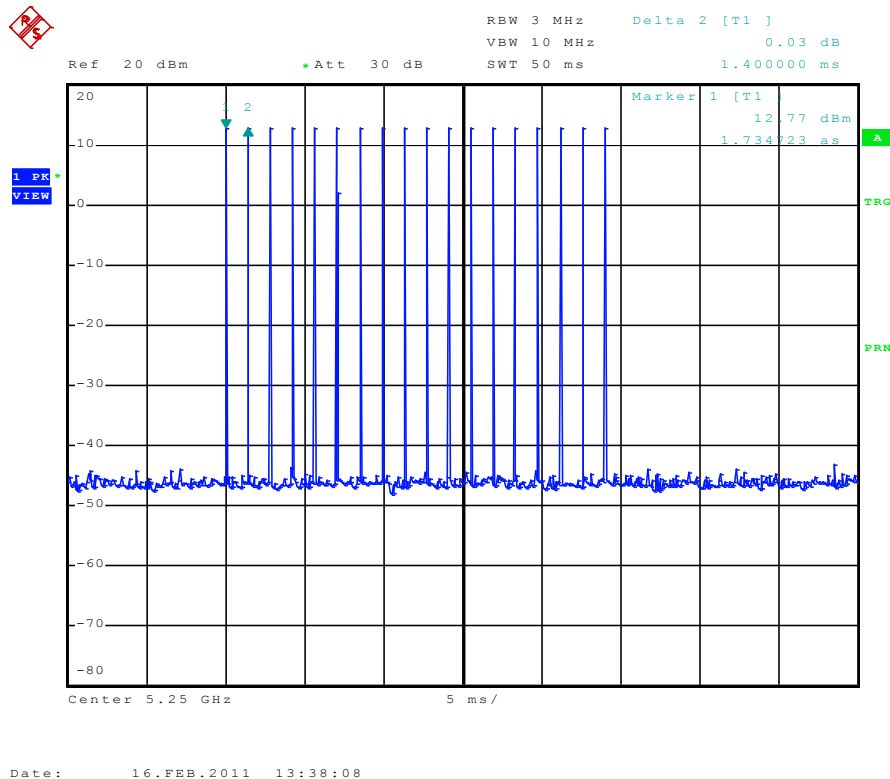


Figure 1.  
Radar burst.

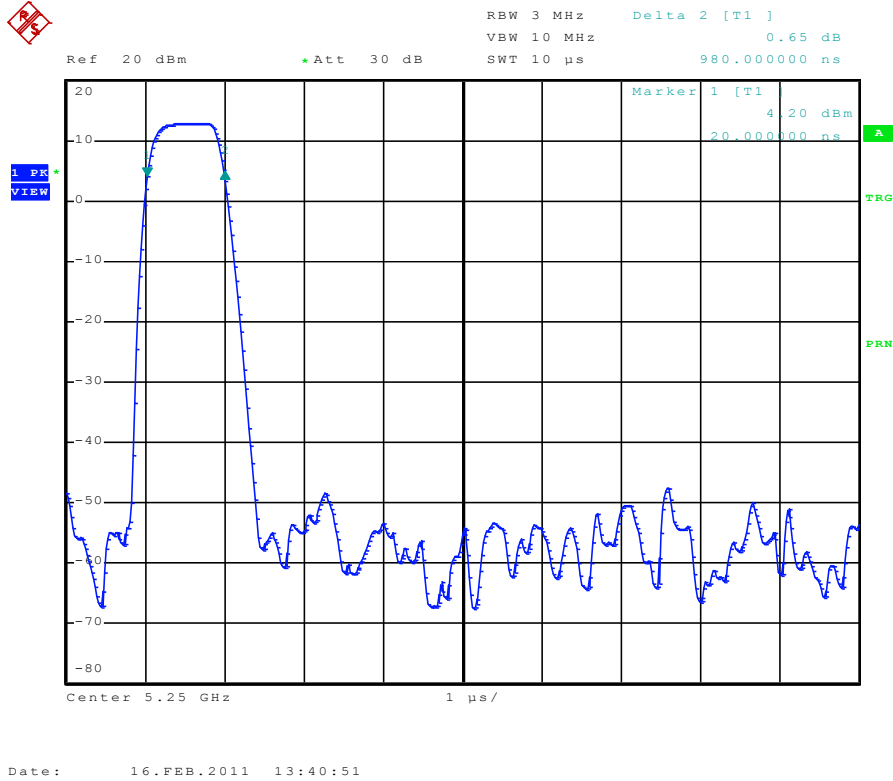


Figure 2.  
Radar pulse.

### 2.3 Description of test configuration.

Test item	:	WLAN dual band EVB
Manufacturer	:	Redpine Signals, Inc.
Brand	:	Redpine Signals, Inc.
Model	:	RS9110-N-11-03
Host equipment	:	PDA (Palmtop)
Manufacturer	:	HTC
Model	:	GENE 100
Access Point	:	5 GHz access Point
Brand	:	Cisco
Model	:	AIR-AP1252AG-E-K9

The WLAN dual band EVB, brand Redpine Signals, Inc., model RS9110-N-11-03, will be referred to as EUT for the purpose of this test report.

### 3 Test conditions.

#### 3.1 Standard test conditions.

Environmental condition	Parameter	Range
Temperature	°C	+20 to +23
Relative humidity	%	40 – 60
Supply voltage (host system)	Volts DC/AC	Internal accu



## 4 Essential test suites (overview).

An overview of DFS radio test suites and a summary of test results is given below.

Essential radio test suite	Applicable	Report clause	Compliance results
DFS: Channel Availability Check	No	7.1	Not applicable
DFS: In service Monitoring	No	7.2	Not applicable
DFS: Channel shutdown	Yes	7.3	Pass
DFS: Non-occupancy period	No	7.4	Not applicable
DFS: Uniform spreading	No	7.5	Not applicable

## 5 Transmitter test results.

No transmitter tests are performed.

## 6 Receiver test results.

Only DFS tests are performed.

## 7 Dynamic frequency selection (DFS).

### 7.1 Channel Availability Check

Not applicable, the EUT is a slave RLAN device without radar detection. Therefore the Channel Availability Check is not required.

### 7.2 In-Service Monitoring

Not applicable, the EUT is a slave RLAN device without radar detection. Therefore the In-Service Monitoring is not required.

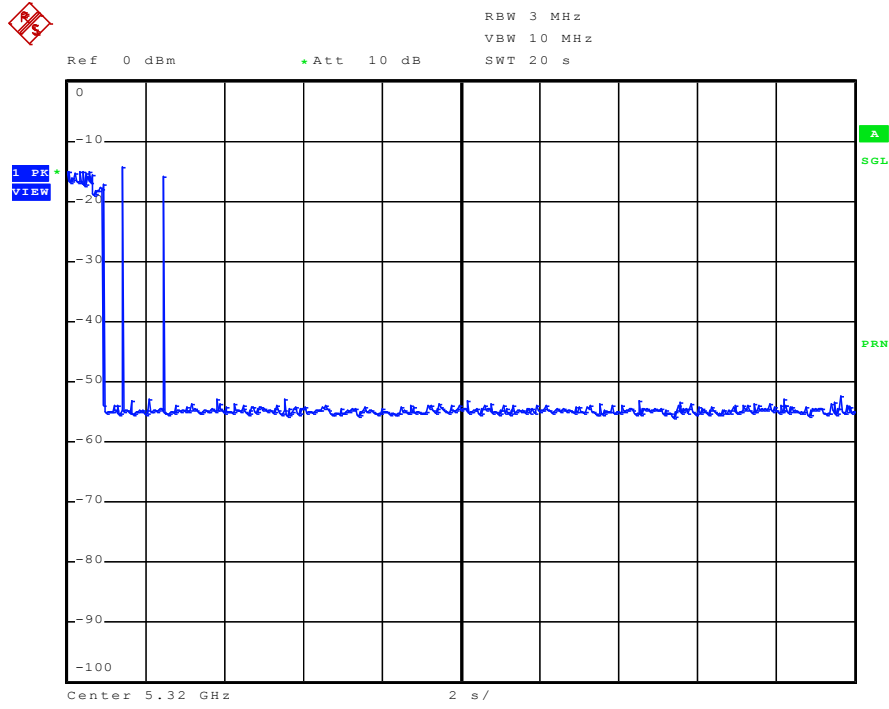
### 7.3 Channel Shutdown

Test frequency band: 5250 to 5350 MHz	Test number		
	1	2	3
Channel Move Time (ms)	1245	0.0	1800
Channel Closing Transmission Time (ms)	1.75	0.0	0.43
Measurement uncertainty	0.1% ± 21 µs		

Note: The tests is repeated 3 times. All 3 test results are given in the table here above.

Test frequency band: 5470 to 5725 MHz	Test number		
	1	2	3
Channel Move Time (ms)	581	2700	2663
Channel Closing Transmission Time (ms)	1.50	59.4	59.2
Measurement uncertainty	0.1% ± 21 µs		

Note: The tests is repeated 3 times. All 3 test results are given in the table here above.



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Figure 3.  
Channel shutdown in the frequency band 5250 MHz to 5350 MHz.

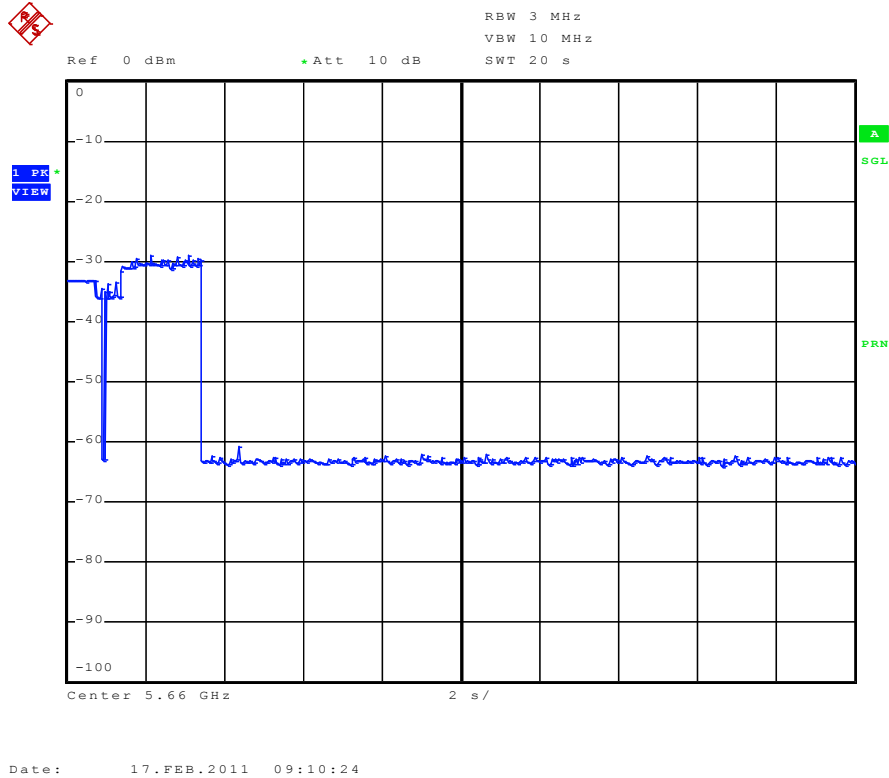


Figure 4.  
Channel shutdown in the frequency band 5470 MHz to 5725 MHz.

### 7.3.1 Limits

The Channel Shutdown process shall start immediately after a radar signal has been detected.  
 The Channel Move Time shall not exceed 10 s.  
 The Channel Closing Transmission Time in accordance with EN 301 893 shall not exceed 1000 ms.  
 The Channel Closing Transmission Time in accordance with 47 CFR Part 15 (10-1-09 Edition) and RSS-210 (issue 8, de 2010) shall not exceed 200 ms plus an aggregate of 60 milliseconds over the remaining 10 second period.

### 7.3.2 Test equipment used (for reference see equipment list).

12483	13526	13664	99733	99737	99738	99798
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## 7.4 Non-Occupancy Period

Not applicable, the EUT is a slave RLAN device without radar detection. Therefore the Non-Occupancy Period is not required, but a graph of the Non-Occupancy Period can be found in figure 5.

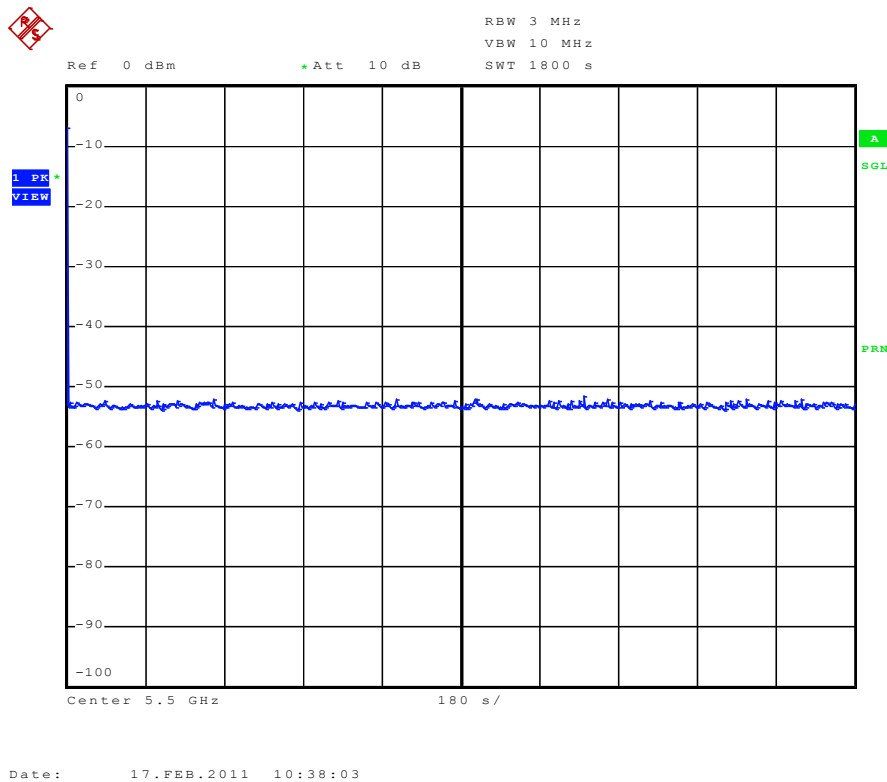


Figure 5.  
Non-Occupancy Period

### 7.4.1 Test equipment used (for reference see equipment list).

12483	13526	13664	99733	99737	99738	99798
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## 7.5 Uniform Spreading

Not applicable, the EUT is a slave RLAN device without radar detection. Therefore the Uniform Spreading is not required.

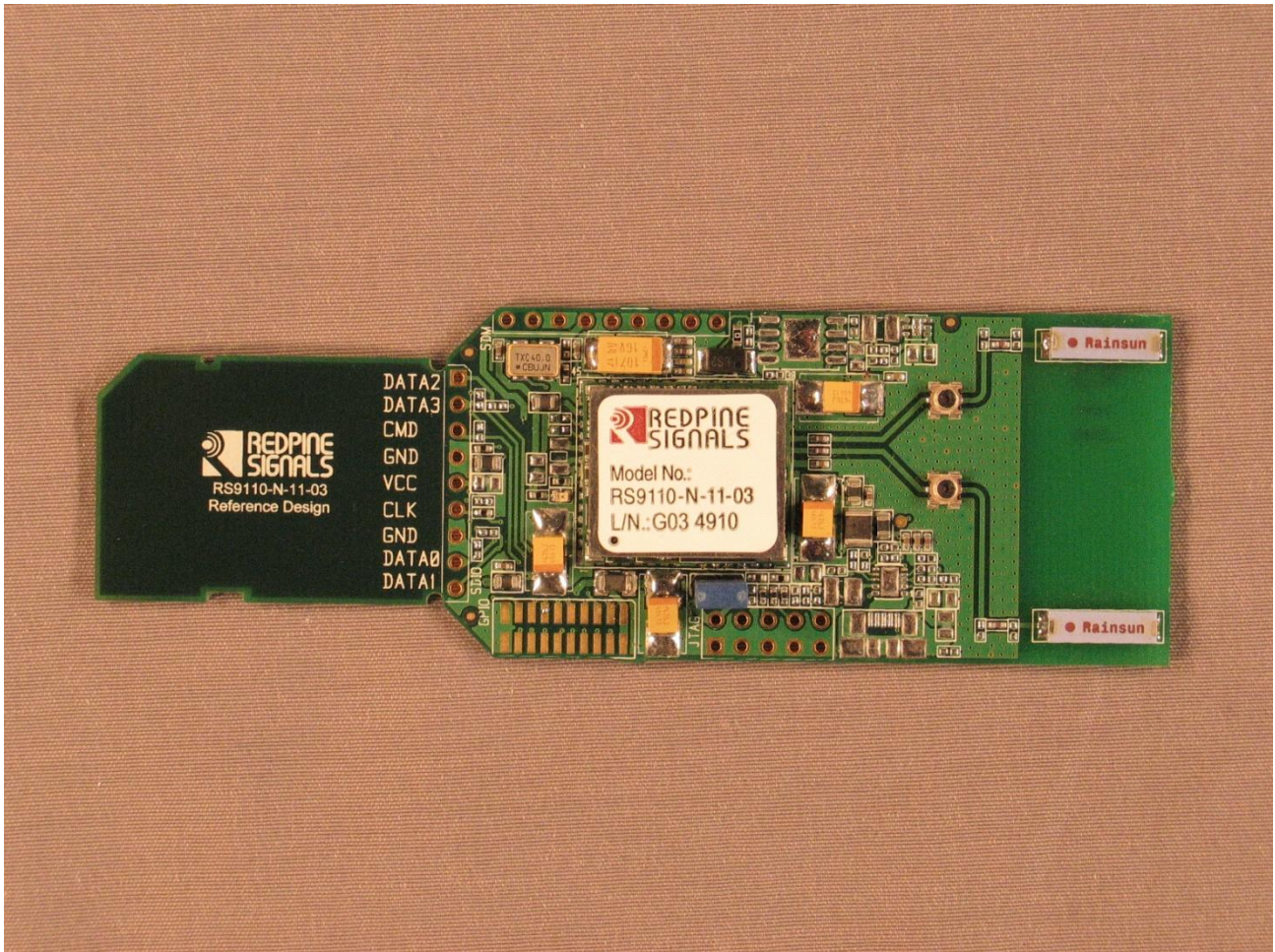
## 8 Test equipment and ancillaries used for tests.

To facilitate inclusion of the test equipment, used for performing the tests, on each page of this test report, each item of test equipment and ancillaries, such as cables, must be identified (numbered) by the test laboratory.

Inventory number	Description	Brand	Model
12483	Guide horn	EMCO	3115
13526	Signal generator 20 GHz	Hewlett & Packard	83620A
13664	Spectrum analyzer	HP	HP8593E
99733	Signal Analyzer/Spectrum Analyzer	Rohde & Schwarz	FSV30
99737	Cable RF	Huber + Suhner	Sucotest 18/Sucoflex 102
99738	Cable RF	Huber + Suhner	Sucotest 18/Sucoflex 102
99798	DFS test tool	TÜV	2

## 9 Photographs of the EUT.

### 9.1 Front view of EUT.





## 9.2 Rear view of EUT.

