Produkte
Products

Prüfbericht - Nr.: *Test Report No.:*	**19660145 003**	**Seite 1 von 21** *Page 1 of 21*
Auftraggeber: *Client:*	**Redpine Signals Inc** **2107 N.First Street, Suite 680,** **San Jose, CA 95131-2019** **United States**	
Gegenstand der Prüfung: *Test item:*	**802.11 abgn WiFi/BT/Zigbee MODULE**	
Bezeichnung: *Identification:*	**RS9113DB**	**Serien-Nr.:** *Serial No.* **Engineering Sample**
Wareneingangs-Nr.: *Receipt No.:*	**1803166512**	**Eingangsdatum:** *Date of receipt:* **19.09.2016**
Prüfort: *Testing location:*	**Refer Page 4 of 21 for test facilities**	
Prüfgrundlage: *Test specification:*	**FCC Part 15: Subpart C Section 15.247** **ANSI C63.10-2013**	
Prüfergebnis: *Test Result:*	**Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n).** *The test items passed the test specification(s).*	
Prüflaboratorium: *Testing Laboratory:*	**TÜV Rheinland (India) Pvt. Ltd.** 82/A, 3rd Main, West Wing, Electronic City Phase 1 Hosur Road, Bangalore – 560 100. India **FCC Registration No.: 176555**	

geprüft / *tested by:*			**kontrolliert** / *reviewed by:*		
29.09.2016	Girish Kumar G Engineer		30.09.2016	Saibaba Siddapur Assistant Manager	
Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*	**Datum** *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*

Sonstiges / *Other Aspects:* **FCC ID : XF6-RS9113DB, Class II Permissive Change**

Abkürzungen:				***Abbreviations:***			
	P(ass)	=	***entspricht Prüfgrundlage***		***P(ass)***	=	***passed***
	F(ail)	=	***entspricht nicht Prüfgrundlage***		***F(ail)***	=	***failed***
	N/A	=	***nicht anwendbar***		***N/A***	=	***not applicable***
	N/T	=	***nicht getestet***		***N/T***	=	***not tested***

Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.

This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.

Test Result Summary

Clause	Test Item	Result
FCC 15.209 / FCC 15.205	Spurious Radiated Emissions and Restricted Bands of Operation	Pass

Note: Conducted measurements are done according to the procedure given in KDB No. **558074 D01 DTS Meas Guidance v03r04**

The Module is originally certified for FCC with FCC ID: **XF6-RS9113DB,** with respect to the changes made to originally certified module Class 2 permissive change has been applied.
Changes made to the originally certified module are listed in the below table.

Application Purpose	Antenna	Wi-Fi (2.4 GHz)	ZigBee	BT LE	Report Number	BT (BR+EDR)
Class II Permissive Change	Redpine Antenna	40MHz Channel added	None	None	19660145 002	None
	Molex Antenna	Additional antenna with 20MHz & 40MHz channel	Additional Antenna	Additional Antenna		Refer Test report 19660144 002
	Fractus Antenna	Additional antenna with 20MHz & 40MHz channel	Additional Antenna	Additional Antenna		
	Radiation Technology Inc.	Additional antenna with 20MHz & 40MHz channel	Additional Antenna	Additional Antenna	19660145 003	Refer Test report 19660144 003

Also, to address the test results for the above changes, the original test report 19660145 001 is been updated to 19660145 002 & 19660145 003

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Appendix 4: Maximum Permissible Exposure Calculation

List of Test and Measurement Instruments

TUV Rheinland (India) Pvt. Ltd. , Bangalore

Equipment	Manufacturer	Model Name	Serial Number	Calibration Due Date	Periodicity	Used for Test Items
EMI Test Receiver	Rohde & Schwarz	ESU 40	100288	29.10.2017	Yearly	Spurious Radiated Emissions
Broadband Antenna	Frankonia	ALX-4000	ALX-4000-806	10.06.2017	Yearly	
Active Loop Antenna	Frankonia	LAX-10	LAX-10-800	22.12.2017	Yearly	
Broadband Horn Antenna	Frankonia	HAX-18	HAX18-802	14.03.2017	Yearly	
Emission Horn Antenna	ETS Lindgren	116706	00107323	02.11.2016	Yearly	
Anechoic Chamber	Frankonia	-	-	-	-	

Testing Facilities:

1) TUV Rheinland (India) Private Limited
No. 108, West Wing
Electronic city Phase I
Bangalore – 560100

General Product Information

Product Function and Intended Use

The RS9113 module integrates a multi-threaded MAC processor with integrated analog peripherals and support for digital peripherals, baseband digital signal processor, analog front-end, crystal oscillator, calibration OTP memory, Dual band RF transceiver, Dual-band high-power amplifiers, baluns, diplexers, diversity switch and Quad-SPI Flash thus providing a fully-integrated solution for embedded wireless applications. The RS9113 based chips and modules leverage and improve upon Redpine's proven low power innovations from Lite-FTM products (RS9110) and provide WLAN 802.11n, BT4.0 and ZigBee convergence solution for integration into mobile and M2M communication devices. It can connect to a host processor through SDIO, USB, SPI or UART interfaces.

Ratings and System Details

Operating Frequency Range	2400MHz – 2483.50MHz	
No. of channel	11 – Wi-Fi (2.4GHz)_20MHz Bandwidth 9 – Wi-Fi (2.4GHz) 40MHz Bandwidth 16 – Zigbee 79 - BT Classic 40 – BT LE	
Channel Spacing	5MHz – Wi-Fi, Zigbee 1MHz – BT Classic 2MHz – BT LE	
Transmit Power (Conducted)	802.11n: 40MHz Channel	5.73 dBm
Modulation and Data Rate	**802.11b**:DBPSK-1Mbps, DQPSK-2Mbps, CCK-5.5Mbps, CCK-11Mbps **802.11g**:BPSK-6Mbps, BPSK-9Mbps, QPSK-12Mbps, QPSK-18Mbps, 16QAM-24Mbps, 16QAM-36Mbps, 64QAM-48Mbps, 64QAM-54Mbps **802.11n**:BPSK-6.5Mbps, QPSK-13Mbps, QPSK-19.5Mbps, 16QAM-26Mbps, 16QAM-39Mbps, 64QAM-52Mbps, 64QAM-58.5Mbps, 64QAM-65Mbps **BLE**:GFSK_1Mbps **Zigbee**:DSSS_250kbps	
Number of antenna	Refer page 7 of 21	
Antenna Gain and Antenna type	Refer page 7 of 21	
Supply Voltage to Module	3.0V – 3.6V DC from Host device	
Environmental	Operational Temperature: -40ºC to 85º C	

Test Conditions:

Supply Voltage: 5V DC from USB

Environmental conditions:

Temperature: +24 º C RH: 62%

Table of frequencies:

Frequency Band	Channel No.	Frequency (MHz)
2400-2483.5 MHz_20MHz BW Channel_802.11	1	2412
	2	2417
	3	2422
	4	2427
	5	2432
	6	2437
	7	2442
	8	2447
	9	2452
	10	2457
	11	2462

Frequency Band	Channel No.	Frequency (MHz)
2400-2483.5 MHz_40MHz Bandwidth Channel_ 802.11	3	2422
	4	2427
	5	2432
	6	2437
	7	2442
	8	2447
	9	2452
	10	2457

Frequency Band	Channel No.	Frequency (MHz)
2400-2483.5_BLE	0	2402
	1	2404
	:	:
	:	:
	19	2440
	20	2442
	21	2444
	:	:
	:	:
	38	2478
	39	2480

Frequency Band	Channel No.	Frequency (MHz)
2400-2483.5_ZigBee	11	2405
	12	2410
	:	:
	:	:
	18	2440
	19	2445
	:	:
	:	:
	25	2475
	26	2480

Table 1: List of Antenna Used

Make	Model/Part #	Antenna Gain at 2.4GHz (dBi)	Antenna Gain at 5 GHz (dBi)	Type of Antenna
Radiation Technology Inc.	C0289-ANG0011	5	5	Dipole

Test Set-up and Operation Mode

Principle of Configuration Selection

Transmission was enabled with 100% duty cycle on low, mid and high channel.

Test Operation and Test Software

Test software was used to enable the transmission with 100% duty cycle, changing channels (low/mid/high) and data rates on the EUT for the tests in this report.

Special Accessories and Auxiliary Equipment

- None

Countermeasures to achieve EMC Compliance

- None

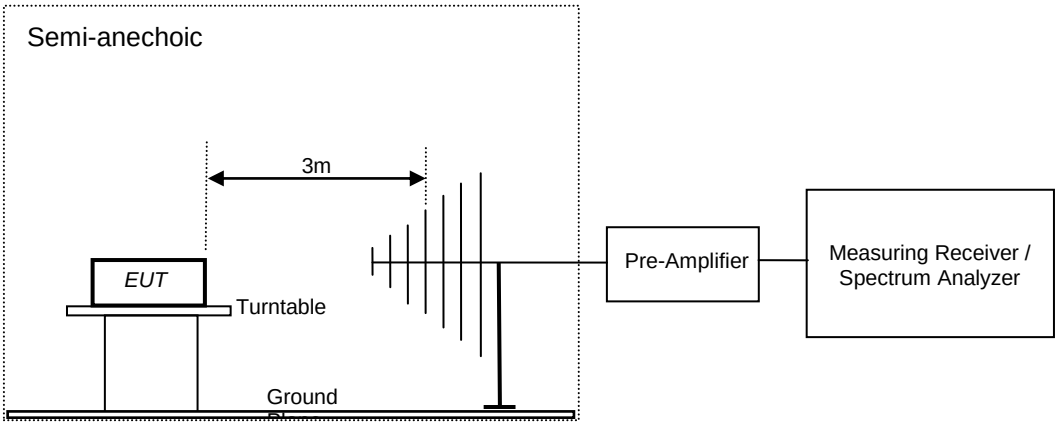
Test Modes – Data Rates and Modulations

For Radiated spurious emissions, the tests were performed for all data rates and only worst case results are reported in this report.

Test Methodology

Radiated Emission Test

The radiated emission measurement was performed according to the procedures in ANSI C63.10-2013. The equipment under test (EUT) was placed at the middle of the 80 cm high turntable, and the EUT is 3 meters far from the measuring antenna for below 1GHz & The equipment under test (EUT) was placed at the middle of the 1.5m high turntable, and the EUT is 3 meters far from the measuring antenna for above 1GHz. The turntable was rotated 360° for obtaining the maximum emission. The height of the measuring antennas was scanned between 1m and 4m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations. Repeat the measurement steps until the maximum emissions were obtained. The measurement above 1000MHz was performed by horn antenna. The measurement below 30MHz was performed by loop antenna.
The EUT was rotated around the X-, Y-, and Z-Axis and the results from worst case axis are recorded.



Test Results

Spurious Radiated Emissions and

Restricted Bands of Operation **Section 15.209 and 15.205**

Result **Pass**

Test Specification	FCC Part 15 Section 15.209 &15.205
Test Method	ANSI C63.4-2009
Measurement Location	Semi Anechoic Chamber
Measuring Distance	3m
Detection	QP for frequency below 1GHz, Average for frequency above 1GHz
Requirement	As per the limits mentioned in the bellow table

Limit for Radiated Emission of Section 15.209:

Frequency (MHz)	Field strength (μV/m)	Field strength (dBμV/m)	Distance of Measurement (m)
0.009 – 0.490	2400/F(kHz)	48.50 – 13.80	300*
0.490 – 1.705	24000/F(kHz)	33.80 – 23.00	30*
1.705 -30	30	29.54	30*
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Remark: * The limit shows in the table above of frequency range 0.009 – 0.490, 0.490 – 1.705 MHz and 1.705-30MHz is at 300 meter, 30 meter and 30 meter range respectively, which corresponds to 88.50 – 53.80, 53.80 – 43.00 and 49.5dBμV/m at 3m range by extrapolation calculation and the measurement of loop antenna.

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz Radiated emission limits in these three bands are based on measurements employing an average detector.

Test results:

For frequency Range 9kHz - 1 GHz

No emissions found in this frequency range.

Test result in the range 1 GHz to 26.5GHz

802.11b: 1Mbps ; Channel bandwidth: 20MHz					
Channel	**Polarization**	**Frequency (MHz)**	**Field Strength (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**
1	V	2390 (Pk)	53.12	74	-20.88
		2390 (Av)	43.40	54	-10.6
		2412 (Pk)	95.84	*	-
		2412 (Av)	93.23	*	-
		4824 (Pk)	51.58	74.00	-22.42
		4824 (Av)	44.28	54.00	-9.72
		7236 (Pk)	57.53	74.00	-16.47
		7236 (Av)	45.06	54.00	-8.94
	H	2390 (Pk)	54.41	74	-19.59
		2390 (Av)	49.54	54	-4.46
		2412 (Pk)	103.00	*	-
		2412 (Av)	100.22	*	-
		4824 (Pk)	51.45	74.00	-22.55
		4824 (Av)	42.71	54.00	-11.29
		7236 (Pk)	56.89	74.00	-17.11
		7236 (Av)	44.96	54.00	-9.04
6	V	2437 (Pk)	95.81	*	-
		2437 (Av)	93.14	*	-
		4874 (Pk)	53.56	74.00	-20.44
		4874 (Av)	46.73	54.00	-7.27
		7311 (Pk)	60.21	74.00	-13.79
		7311 (Av)	46.12	54.00	-7.88
	H	2437 (Pk)	103.1	*	-
		2437 (Av)	100.44	*	-
		4874 (Pk)	51.14	74.00	-22.86
		4874 (Av)	40.98	54.00	-13.02
		7311 (Pk)	60.62	74.00	-13.38
		7311 (Av)	46.38	54.00	-7.62
11	V	2462 (Pk)	95.73	*	-
		2462 (Av)	93.02	*	-
		2483.5 (Pk)	54.54	74.00	-19.46
		2483.5 (Av)	45.22	54.00	-8.78
		4924 (Pk)	54.24	74.00	-19.76

		4924 (Av)	47.87	54.00	-6.13
		7386 (Pk)	60.21	74.00	-13.79
		7386 (Av)	46.45	54.00	-7.55
	H	2462 (Pk)	101.77	*	-
		2462 (Av)	99.16	*	-
		2483.5 (Pk)	57.23	74.00	-16.77
		2483.5 (Av)	51.96	54.00	-2.04
		4924 (Pk)	52.31	74.00	-21.69
		4924 (Av)	42.58	54.00	-11.42
		7386 (Pk)	58.79	74.00	-15.21
		7386 (Av)	46.08	54.00	-7.92

802.11b: 11Mbps ; Channel bandwidth: 20MHz					
Channel	**Polarization**	**Frequency (MHz)**	**Field Strength (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**
1	V	2390 (Pk)	54.36	74	-19.64
		2390 (Av)	39.18	54	-14.82
		2412 (Pk)	100.46	*	-
		2412 (Av)	92.45	*	-
		4824 (Pk)	50.68	74	-23.32
		4824 (Av)	39.45	54	-14.55
	H	2390 (Pk)	57.86	74	-16.14
		2390 (Av)	46.01	54	-7.99
		2412 (Pk)	107.9	*	-
		2412 (Av)	99.89	*	-
		4824 (Pk)	49.56	74	-24.44
		4824 (Av)	39.45	54	-14.55
6	V	2437 (Pk)	100.41	*	-
		2437 (Av)	92.35	*	-
		4874 (Pk)	50.23	74.00	-23.77
		4874 (Av)	39.46	54.00	-14.54
	H	2437 (Pk)	107.58	*	-
		2437 (Av)	99.53	*	-
		4874 (Pk)	50.12	74.00	-23.88
		4874 (Av)	39.23	54.00	-14.77
11	V	2462 (Pk)	100.25	*	-
		2462 (Av)	92.1	*	-
		2483.5 (Pk)	54.32	74.00	-19.68
		2483.5 (Av)	39.39	54.00	-14.61
		4924 (Pk)	50.11	74.00	-23.89
		4924 (Av)	39.35	54.00	-14.65
	H	2462 (Pk)	105.82	*	-
		2462 (Av)	98.07	*	-
		2483.5 (Pk)	56.52	74.00	-17.48
		2483.5 (Av)	44.51	54.00	-9.49
		4924 (Pk)	49.98	74.00	-24.02
		4924 (Av)	39.47	54.00	-14.53

802.11g: 6Mbps ; Channel bandwidth: 20MHz					
Channel	**Polarization**	**Frequency (MHz)**	**Field Strength (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**
1	V	2390 (Pk)	60.15	74.00	-13.85
		2390 (Av)	40.48	54.00	-13.52
		2412 (Pk)	93.06	*	-
		2412 (Av)	84.01	*	-
		4824 (Pk)	50.68	74.00	-23.32
		4824 (Av)	37.98	54.00	-16.02
	H	2390 (Pk)	59.32	74.00	-14.68
		2390 (Av)	40.34	54.00	-13.66
		2412 (Pk)	93.33	*	-
		2412 (Av)	83.91	*	-
		4824 (Pk)	50.08	74.00	-23.92
		4824 (Av)	37.12	54.00	-16.88
6	V	2437 (Pk)	100.54	*	-
		2437 (Av)	91.07	*	-
		2483.5 (Pk)	71.79	74.00	-2.21
		2483.5 (Av)	48.69	54.00	-5.31
		4874 (Pk)	51.37	74.00	-22.63
		4874 (Av)	38.46	54.00	-15.54
		7311 (Pk)	58.98	74.00	-15.02
		7311 (Av)	46.11	54.00	-7.89
	H	2437 (Pk)	106.93	*	-
		2437 (Av)	98.05	*	-
		2483.5 (Pk)	64.44	74.00	-9.56
		2483.5 (Av)	40.92	54.00	-13.08
		4874 (Pk)	50.78	74.00	-23.22
		4874 (Av)	37.45	54.00	-16.55
		7311 (Pk)	59.12	74.00	-14.88
		7311 (Av)	45.32	54.00	-8.68
11	V	2462 (Pk)	93.18	*	-
		2462 (Av)	84.25	*	-
		2483.5 (Pk)	62.76	74.00	-11.24
		2483.5 (Av)	44.37	54.00	-9.63
		4924 (Pk)	50.25	74.00	-23.75
		4924 (Av)	37.67	54.00	-16.33
	H	2462 (Pk)	93.18	*	-
		2462 (Av)	84.26	*	-
		2483.5 (Pk)	63.33	74.00	-10.67
		2483.5 (Av)	44.43	54.00	-9.57
		4924 (Pk)	50.01	74.00	-23.99
		4924 (Av)	36.43	54.00	-17.57

802.11g: 54Mbps ; Channel bandwidth: 20MHz					
Channel	**Polarization**	**Frequency (MHz)**	**Field Strength (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**
1	V	2390 (Pk)	60.86	74.00	-13.14
		2390 (Av)	42.6	54.00	-11.4
		2412 (Pk)	94.61	*	-
		2412 (Av)	84.52	*	-
		4824 (Pk)	50.49	74.00	-23.51
		4824 (Av)	39.45	54.00	-14.55
	H	2390 (Pk)	64.63	74.00	-9.37
		2390 (Av)	46.76	54.00	-7.24
		2412 (Pk)	101.7	*	-
		2412 (Av)	91.51	*	-
		4824 (Pk)	50.57	74.00	-23.43
		4824 (Av)	38.12	54.00	-15.88
6	V	2437 (Pk)	102.02	*	-
		2437 (Av)	91.61	*	-
		2483.5 (Pk)	70.41	74.00	-3.59
		2483.5 (Av)	48.99	54.00	-5.01
		4874 (Pk)	52.33	74.00	-21.67
		4874 (Av)	39.78	54.00	-14.22
	H	2437 (Pk)	107.64	*	-
		2437 (Av)	97.64	*	-
		2483.5 (Pk)	63.34	74.00	-10.66
		2483.5 (Av)	40.93	54.00	-13.07
		4874 (Pk)	51.23	74.00	-22.77
		4874 (Av)	38.45	54.00	-15.55
		7311 (Pk)	59.21	74.00	-14.79
		7311 (Av)	45.78	54.00	-8.22
11	V	2462 (Pk)	92.65	*	-
		2462 (Av)	82.3	*	-
		2483.5 (Pk)	58.85	74.00	-15.15
		2483.5 (Av)	41.11	54.00	-12.89
		4924 (Pk)	51.53	74.00	-22.47
		4924 (Av)	39.12	54.00	-14.88
	H	2462 (Pk)	100.39	*	-
		2462 (Av)	89.84	*	-
		2483.5 (Pk)	65.85	74.00	-8.15
		2483.5 (Av)	47.97	54.00	-6.03
		4924 (Pk)	50.89	74.00	-23.11
		4924 (Av)	37.94	54.00	-16.06

802.11n: MCS0 ; Channel bandwidth: 20MHz					
Channel	**Polarization**	**Frequency (MHz)**	**Field Strength (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**
1	V	2390 (Pk)	61.17	74.00	-12.83
		2390 (Av)	44.22	54.00	-9.78
		2412 (Pk)	94.09	*	-
		2412 (Av)	83.94	*	-
		4824 (Pk)	50.13	74.00	-23.87
		4824 (Av)	37.45	54.00	-16.55
	H	2390 (Pk)	65.34	74.00	-8.66
		2390 (Av)	48.13	54.00	-5.87
		2412 (Pk)	98.38	*	-
		2412 (Av)	88.28	*	-
		4824 (Pk)	50.06	74.00	-23.94
		4824 (Av)	37.12	54.00	-16.88
6	V	2437 (Pk)	102.19	*	-
		2437 (Av)	91.76	*	-
		2483.5 (Pk)	70.97	74.00	-3.03
		2483.5 (Av)	48.24	54.00	-5.76
		4874 (Pk)	52.35	74.00	-21.65
		4874 (Av)	39.89	54.00	-14.11
	H	2437 (Pk)	109.35	*	-
		2437 (Av)	98.48	*	-
		2483.5 (Pk)	62.36	74.00	-11.64
		2483.5 (Av)	39.75	54.00	-14.25
		4874 (Pk)	52.87	74.00	-21.13
		4874 (Av)	38.67	54.00	-15.33
		7311 (Pk)	59.34	74.00	-14.66
		7311 (Av)	45.62	54.00	-8.38
11	V	2462 (Pk)	92.21	*	-
		2462 (Av)	81.62	*	-
		2483.5 (Pk)	62.11	74.00	-11.89
		2483.5 (Av)	42.79	54.00	-11.21
		4924 (Pk)	50.12	74.00	-23.88
		4924 (Av)	38.23	54.00	-15.77
	H	2462 (Pk)	97.11	*	-
		2462 (Av)	87.65	*	-
		2483.5 (Pk)	66.39	74.00	-7.61
		2483.5 (Av)	46.94	54.00	-7.06
		4924 (Pk)	49.79	74.00	-24.21
		4924 (Av)	38.98	54.00	-15.02

802.11n: MCS7 ; Channel bandwidth: 20MHz					
Channel	**Polarization**	**Frequency (MHz)**	**Field Strength (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**
1	V	2390 (Pk)	59.49	74.00	-14.51
		2390 (Av)	42.08	54.00	-11.92
		2412 (Pk)	93.79	*	-
		2412 (Av)	82.65	*	-
		4824 (Pk)	50.13	74.00	-23.87
		4824 (Av)	36.98	54.00	-17.02
	H	2390 (Pk)	64.9	74.00	-9.1
		2390 (Av)	47.34	54.00	-6.66
		2412 (Pk)	99.17	*	-
		2412 (Av)	88.7	*	-
		4824 (Pk)	50.34	74.00	-23.66
		4824 (Av)	37.84	54.00	-16.16
6	V	2437 (Pk)	102.2	*	-
		2437 (Av)	91.78	*	-
		2483.5 (Pk)	69.86	74.00	-4.14
		2483.5 (Av)	48.49	54.00	-5.51
		4874 (Pk)	52.68	74.00	-21.32
		4874 (Av)	38.67	54.00	-15.33
	H	2437 (Pk)	108.26	*	-
		2437 (Av)	97.82	*	-
		2483.5 (Pk)	62.09	74.00	-11.91
		2483.5 (Av)	41.25	54.00	-12.75
		4874 (Pk)	52.45	74.00	-21.55
		4874 (Av)	38.89	54.00	-15.11
		7311 (Pk)	59.34	74.00	-14.66
		7311 (Av)	44.87	54.00	-9.13
11	V	2462 (Pk)	92.55	*	-
		2462 (Av)	82.52	*	-
		2483.5 (Pk)	61.32	74.00	-12.68
		2483.5 (Av)	44.24	54.00	-9.76
		4924 (Pk)	49.76	74.00	-24.24
		4924 (Av)	36.78	54.00	-17.22
	H	2462 (Pk)	97.51	*	-
		2462 (Av)	87.57	*	-
		2483.5 (Pk)	64.65	74.00	-9.35
		2483.5 (Av)	47.48	54.00	-6.52
		4924 (Pk)	49.88	74.00	-24.12
		4924 (Av)	37.22	54.00	-16.78

802.11n: MCS0 ; Channel bandwidth: 40MHz					
Channel	**Polarization**	**Frequency (MHz)**	**Field Strength (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**
3	V	2390 (Pk)	61.40	74.00	-12.60
		2390 (Av)	45.18	54.00	-8.82
		2422 (Pk)	89.29	*	-
		2422 (Av)	79.96	*	-
		4844 (Pk)	49.88	74.00	-24.12
		4844 (Av)	36.32	54.00	-17.68
	H	2390 (Pk)	67.96	74.00	-6.04
		2390 (Av)	51.44	54.00	-2.56
		2422 (Pk)	96.03	*	-
		2422 (Av)	86.31	*	-
		4844 (Pk)	50.11	74.00	-23.89
		4844 (Av)	36.45	54.00	-17.55
7	V	2442 (Pk)	97.11	*	-
		2442 (Av)	87.36	*	-
		2483.5 (Pk)	68.13	74.00	-5.87
		2483.5 (Av)	50.34	54.00	-3.66
		4884 (Pk)	50.32	74.00	-23.68
		4884 (Av)	37.87	54.00	-16.13
	H	2442 (Pk)	87.45	*	-
		2442 (Av)	78.32	*	-
		2483.5 (Pk)	58.32	74.00	-15.68
		2483.5 (Av)	42.11	54.00	-11.89
		4884 (Pk)	50.13	74.00	-23.87
		4884 (Av)	36.11	54.00	-17.89
10	V	2457 (Pk)	96.72	*	-
		2457 (Av)	87.32	*	-
		2483.5 (Pk)	67.34	74.00	-6.66
		2483.5 (Av)	51.56	54.00	-2.44
		4914 (Pk)	50.12	74.00	-23.88
		4914 (Av)	36.21	54.00	-17.79
	H	2457 (Pk)	86.21	*	-
		2457 (Av)	76.98	*	-
		2483.5 (Pk)	59.12	74.00	-14.88
		2483.5 (Av)	43.11	54.00	-10.89
		4914 (Pk)	50.21	74.00	-23.79
		4914 (Av)	36.21	54.00	-17.79

802.11n: MCS7 ; Channel bandwidth: 40MHz					
Channel	**Polarization**	**Frequency (MHz)**	**Field Strength (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**
3	V	2390 (Pk)	58.35	74.00	-15.65
		2390 (Av)	46.14	54.00	-7.86
		2422 (Pk)	90.75	*	-
		2422 (Av)	80.04	*	-
		4844 (Pk)	50.21	74.00	-23.79
		4844 (Av)	35.67	54.00	-18.33
	H	2390 (Pk)	64.07	74.00	-9.93
		2390 (Av)	51.78	54.00	-2.22
		2422 (Pk)	97.22	*	-
		2422 (Av)	86.15	*	-
		4844 (Pk)	49.78	74.00	-24.22
		4844 (Av)	36.12	54.00	-17.88
7	V	2442 (Pk)	92.89	*	-
		2442 (Av)	81.98	*	-
		2483.5 (Pk)	61.85	74.00	-12.15
		2483.5 (Av)	47.53	54.00	-6.47
		4884 (Pk)	50.34	74.00	-23.66
		4884 (Av)	37.88	54.00	-16.12
	H	2442 (Pk)	98.22	*	-
		2442 (Av)	87.48	*	-
		2483.5 (Pk)	70.10	74.00	-3.90
		2483.5 (Av)	53.19	54.00	-0.81
		4884 (Pk)	51.23	74.00	-22.77
		4884 (Av)	36.87	54.00	-17.13
10	V	2457 (Pk)	90.34	*	-
		2457 (Av)	80.18	*	-
		2483.5 (Pk)	62.43	74.00	-11.57
		2483.5 (Av)	47.25	54.00	-6.75
		4914 (Pk)	49.87	74.00	-24.13
		4914 (Av)	35.46	54.00	-18.54
	H	2457 (Pk)	96.25	*	-
		2457 (Av)	85.48	*	-
		2483.5 (Pk)	68.47	74.00	-5.53
		2483.5 (Av)	53.16	54.00	-0.84
		4914 (Pk)	50.12	74.00	-23.88
		4914 (Av)	36.79	54.00	-17.21

ZigBee					
Channel	**Polarization**	**Frequency (MHz)**	**Field Strength (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**
11	V	2390 (Pk)	51.53	74.00	-22.47
		2390 (Av)	31.70	54.00	-22.30
		2405 (Pk)	105.53	*	-
		2405 (Av)	100.91	*	-
		4810 (Pk)	51.80	74.00	-22.20
		4810 (Av)	40.86	54.00	-13.14
		7215 (Pk)	55.78	74.00	-18.22
		7215 (Av)	43.28	54.00	-10.72
	H	2390 (Pk)	47.04	74.00	-26.96
		2390 (Av)	35.09	54.00	-18.91
		2405 (Pk)	111.42	*	-
		2405 (Av)	106.69	*	-
		4810 (Pk)	53.02	74.00	-20.98
		4810 (Av)	42.45	54.00	-11.55
		7215 (Pk)	58.44	74.00	-15.56
		7215 (Av)	45.76	54.00	-8.24
18	V	2440 (Pk)	103.54	*	-
		2440 (Av)	101.82	*	-
		4880 (Pk)	50.89	74.00	-23.11
		4880 (Av)	40.28	54.00	-13.72
		7320 (Pk)	56.29	74.00	-17.71
		7320 (Av)	43.29	54.00	-10.71
	H	2440 (Pk)	110.45	*	-
		2440 (Av)	105.21	*	-
		4880 (Pk)	53.29	74.00	-20.71
		4880 (Av)	42.45	54.00	-11.55
		7320 (Pk)	58.93	74.00	-15.07
		7320 (Av)	45.29	54.00	-8.71
26	V	2480 (Pk)	106.91	*	-
		2480 (Av)	101.94	*	-
		2483.5 (Pk)	55.24	74.00	-18.76
		2483.5 (Av)	42.94	54.00	-11.06
		4960 (Pk)	52.52	74.00	-21.48
		4960 (Av)	41.38	54.00	-12.62
		7440 (Pk)	59.52	74.00	-14.48
		7440 (Av)	46.34	54.00	-7.66
	H	2480 (Pk)	112.42	*	-
		2480 (Av)	107.50	*	-
		2483.5 (Pk)	60.06	74.00	-13.94
		2483.5 (Av)	48.55	54.00	-5.45
		4960 (Pk)	52.30	74.00	-21.70
		4960 (Av)	41.91	54.00	-12.09
		7440 (Pk)	59.82	74.00	-14.18
		7440 (Av)	47.01	54.00	-6.99

Bluetooth Low Energy (BLE)					
Channel Frequency (MHz)	**Polarization**	**Frequency (MHz)**	**Field Strength (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**
2402	V	2390 (Pk)	50.91	74.00	-23.09
		2390 (Av)	37.51	54.00	-16.49
		2402 (Pk)	102.14	*	-
		2402 (Av)	101.01	*	-
		4804 (Pk)	50.46	74.00	-23.54
		4804 (Av)	38.77	54.00	-15.23
		7206 (Pk)	57.83	74.00	-16.17
		7206 (Av)	45.17	54.00	-8.83
	H	2390 (Pk)	51.52	74.00	-22.48
		2390 (Av)	46.72	54.00	-7.28
		2402 (Pk)	112.03	*	-
		2402 (Av)	110.90	*	-
		4804 (Pk)	52.99	74.00	-21.01
		4804 (Av)	43.67	54.00	-10.33
		7206 (Pk)	58.78	74.00	-15.22
		7206 (Av)	45.64	54.00	-8.36
2440	V	2440 (Pk)	104.12	*	-
		2440 (Av)	103.21	*	-
		4880 (Pk)	51.34	74.00	-22.66
		4880 (Av)	39.76	54.00	-14.24
		7320 (Pk)	59.32	74.00	-14.68
		7320 (Av)	46.11	54.00	-7.89
	H	2440 (Pk)	111.34	*	-
		2440 (Av)	110.04	*	-
		4880 (Pk)	53.44	74.00	-20.56
		4880 (Av)	44.11	54.00	-9.89
		7320 (Pk)	59.34	74.00	-14.66
		7320 (Av)	46.21	54.00	-7.79
2480	V	2480 (Pk)	106.91	*	-
		2480 (Av)	105.77	*	-
		2483.5 (Pk)	53.26	74.00	-20.74
		2483.5 (Av)	38.54	54.00	-15.46
		4960 (Pk)	51.09	74.00	-22.91
		4960 (Av)	39.43	54.00	-14.57
		7440 (Pk)	60.27	74.00	-13.73
		7440 (Av)	46.55	54.00	-7.45
	H	2480 (Pk)	110.25	*	-
		2480 (Av)	109.10	*	-
		2483.5 (Pk)	52.28	74.00	-21.72
		2483.5 (Av)	41.55	54.00	-12.45
		4960 (Pk)	54.28	74.00	-19.72
		4960 (Av)	44.05	54.00	-9.95
		7440 (Pk)	59.49	74.00	-14.51
		7440 (Av)	46.82	54.00	-7.18

* - -> Fundamental Frequency
Pk -> Peak Detector
Av -> Average detector, V - > Vertical polarization & H - > Horizontal polarization

Power level Settings used during Radiation Technology Inc. Antenna testing:

		Channels					
		Low		Mid		High	
Mode	Data Rate	Tx Power	Attenuation to antenna Gain	Tx power	Attenuation to antenna Gain	Tx power	Attenuation to antenna Gain
802.11 b	1Mbps	16	3	16	3	16	3
	11Mbps	16	3	16	3	16	3
802.11 g	6Mbps	11	3	18	3	10	3
	24Mbps	11	3	18	3	10	3
	54Mbps	11	3	18	3	10	3
802.11 n_20MHz	MCS0	10	3	18	4	9	3
	MCS4	10	3	18	4	9	3
	MCS7	10	3	18	4	9	3
802.11 n_40MHz	MCS0	6	1	8	2	5	1
	MCS4	6	1	8	2	5	1
	MCS7	6	1	8	2	5	1
Bluetooth LE	1Mbps	15	0	15	0	15	0
Zigbee	250kbps	15	0	15	0	15	0

***** END OF TEST REPORT*****