



## Produkte Products

Prüfbericht - Nr.:	19660144 002		Seite 1 von 18
Test Report No.:			Page 1 of 18
Auftraggeber: Client:	Redpine Signals Inc 2107 N.First Street, Suite 6 San Jose, CA 95131-2019 United States	680,	
Gegenstand der Prüfung: Test item:	802.11 abgn WiFi/BT/Zigb	oee MODULE	
Bezeichnung: Identification:	RS9113DB	Serien-Nr.: Serial No.	Engineering Sample
Wareneingangs-Nr.: Receipt No.:	1803095560	Eingangsdatur Date of receipt:	m: 31.08.2015
Prüfort: Testing location:	Refer Page 4 of 18 for tes	st facilities	
Prüfgrundlage: Test specification:	FCC Part 15: Subpart C S ANSI C63.10 – 2013	Section 15.247	
Prüfergebnis: Test Result:	Der Prüfgegenstand ents The test items passed the	spricht oben genannt test specification(s).	er Prüfgrundlage(n).
Prüflaboratorium: Testing Laboratory:	TÜV Rheinland (India) Pv 82/A, 3rd Main, West Wing, Elec Hosur Road, Bangalore – 560 10 FCC Registration No.: 17	etronic City Phase 1 00. India	
geprüft / tested by:		ntrolliert I reviewed by	<i>r</i> :
04.04.2016 Saibaba Siddapu Sr. Engineer Datum Name/Stellung	dailo la	6.04.2016 Raghavendr Sr. Manager tum Name/Stellui	
Date Name/Position	Signature Dat	te Name/Positio	on Signature
Sonstiges IOther Aspects:	FCC ID: XF6-RS9113DB, C		
F(ail) = entsp	oricht Prüfgrundlage oricht nicht Prüfgrundlage anwendbar	Abbreviations: P(ass F(ail) N/A	

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.

TÜV Rheinland India Pvt. Ltd. 82/A, 3rd Main, West Wing Electronic City Phase 1, Hosur Road, Bangalore-560100, India Tel.: +9180 6723 3500 · Fax: +9180 6723 3542 · Web: www.tuv.com



## **Test Result Summary**

Clause	Test Item	Result
Section 15.209 &15.205	Spurious Radiated Emissions and Restricted bands of operation	Pass

Note: Conducted measurements are done according to the procedure given in KDB No. **DA 00-705**March 2000

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	ZigBee	BT LE	BT (BR+EDR)
	Redpine Antenna				None
Class II Permissive Change	Molex Antenna	Refer FCC_DTS & UNII Test Report (19660145 002 & 19660146 002)		Additional Antenna	
	Fractus Antenna				Additional Antenna

Also, to address the test results for the above changes, the original test report  $19660144\,001$  is been updated to  $19660144\,002$ 

Test Report No.: 19660144 02 Date: 04.04.2016 Page 2 of 18



# Content

List of Test and Measurement Instruments	54
General Product Information	5
Product Function and Intended UseRatings and System Details	
Test Set-up and Operation Mode	7
Principle of Configuration Selection	7
Test Operation and Test Software Test Modes – Data Rates and Modulations	
Test Methodology	8
Radiated Emission Test	8
Test Results	9
Spurious Radiated Emissions & Restricted Bands of Operation	Section 15.209 & 15.2059
Appendix 1: Test Setup Photo	
Appendix 2: EUT External Photo	
Appendix 3: EUT Internal Photo	

**Appendix 4: Maximum Permissible Exposure Calculation** 

Test Report No.: 19660144 02 Date: 04.04.2016 Page 3 of 18



## **List of Test and Measurement Instruments**

Equipment	Manufacturer	Model Name	Serial Number	Calibration Due Date	Periodicity	Used for Test Items
EMI Test Receiver	Rohde & Schwarz	ESU 40	100288	23.11.2016	Yearly	
Broadband Antenna	Frankonia	ALX-4000	ALX-4000- 806	10.06.2016	Yearly	
Active Loop Antenna	Frankonia	LAX-10	LAX-10-800	22.12.2016	Yearly	Spurious Radiated
Broadband Horn Antenna	Frankonia	HAX-18	HAX18-802	14.03.2017	Yearly	Emissions
Emission Horn Antenna	ETS Lindgren	116706	00107323	02.11.2016	Yearly	
Anechoic Chamber	Frankonia	-	-	-	-	

## **Testing Facilities:**

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

Test Report No.: 19660144 02 Date: 04.04.2016 Page 4 of 18



## **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	2400 – 2483.5MHz		
No. of channel	79		
Channel Spacing	1MHz		
	1Mbps	GFSK	
Modulation	2Mbps	π/4-DQPSK	
	3Mbps	8DPSK	
Antenna Type	Refer Table	1	
Number of antenna	Refer Table	1	
Antenna Gain	Refer Table	1	
Supply Voltage to Module	3.0V – 3.6V DC from Host device		
Environmental	Operational	Temperature: -40°C to 85° C	

## **Test Conditions:**

Supply Voltage: 5V DC from USB

## **Environmental conditions:**

Temperature: +24 ° C RH: 62%

Test Report No.: 19660144 02 Date: 04.04.2016 Page 5 of 18



**Table 1: List of Antenna Used** 

Make	Model/Part #	Antenna Gain at 2.4GHz (dBi)	Type of Antenna
Redpine	-	0.99	Trace
Molex	PS-47950-001	3	External
Fractus	FR05-S1-NO-1-004	1.8	Chip

Test Report No.: 19660144 02 Date: 04.04.2016 Page 6 of 18



## **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 Report No.: 19660144 02 Date: 04.04.2016 Page 7 of 18

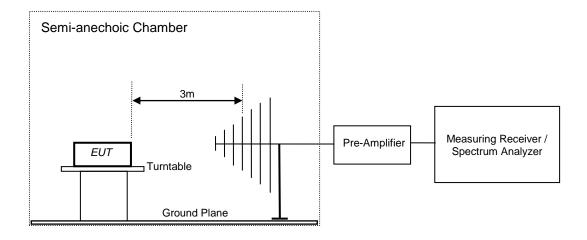


## **Test Methodology**

#### **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 Report No.: 19660144 02 Date: 04.04.2016 Page 8 of 18



## **Test Results**

Spurious Radiated Emissions & Restricted Bands of Operation Result

Section 15.209 & 15.205 Pass

Test Specification FCC Part 15C
Test Method ANSI C63.10-2013
Measurement Location Semi Anechoic Chamber

Measuring Frequency Range 9kHz to 40GHz (Up to 10<sup>th</sup> harmonic of the highest fundamental

frequency)

Measuring Distance 3m

Detection QP for frequency below 1GHz,Peak, 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 49.5dB $\mu$ V/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 Report No.: 19660144 02 Date: 04.04.2016 Page 9 of 18



## Test results:

No emissions were found in the range 9 kHz to 1GHz.

## Test results for frequencies in the range 1 GHz 26.5 GHz

Molex Antenna : Data rate - 1Mbps						
Channel Frequency (MHz)	Polarization	Frequency (MHz)	Field Strength Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	
		2390 (Pk)	52.21	74.00	-21.79	
		2390 (Av)	37.47	54.00	-16.53	
		2402 (Pk)	102.30	*	-	
	Montical	2402 (Av)	101.77	*	-	
	Vertical	4804 (Pk)	50.51	74.00	-23.49	
		4804 (Av)	41.53	54.00	-12.47	
		7206 (Pk)	58.40	74.00	-15.60	
0.400		7206 (Av)	45.16	54.00	-8.84	
2402		2390 (Pk)	51.14	74.00	-22.86	
		2390 (Av)	47.65	54.00	-6.35	
		2402 (Pk)	111.87	*	-	
		2402 (Av)	111.33	*	-	
	Horizontal	4804 (Pk)	55.72	74.00	-18.28	
		4804 (Av)	50.21	54.00	-3.79	
		7206 (Pk)	58.47	74.00	-15.53	
		7206 (Av)	45.57	54.00	-8.43	
		2440 (Pk)	102.12	*	-	
		2440 (Av)	101.24	*	-	
	Montical	4880 (Pk)	51.34	74.00	-22.66	
	Vertical	4880 (Av)	46.21	54.00	-7.79	
		7320 (Pk)	58.79	74.00	-15.21	
		7320 (Av)	46.28	54.00	-7.72	
2440		2440 (Pk)	111.56	*	-	
		2440 (Av)	110.88	*	-	
	l lawina mtal	4880 (Pk)	57.21	74.00	-16.79	
	Horizontal	4880 (Av)	50.78	54.00	-3.22	
		7320 (Pk)	60.32	74.00	-13.68	
		7320 (Av)	46.54	54.00	-7.46	
		2480 (Pk)	102.30	*	-	
2480	Vertical	2480 (Av)	101.77	*	-	
		2483.5 (Pk)	53.21	74.00	-20.79	

Test Report No.: 19660144 02 Date: 04.04.2016 Page 10 of 18



www.tuv.com					
		2483.5 (Av)	35.07	54.00	-18.93
		4960 (Pk)	51.09	74.00	-22.91
		4960 (Av)	40.74	54.00	-13.26
		7440 (Pk)	59.13	74.00	-14.87
		7440 (Av)	46.73	54.00	-7.27
		2480 (Pk)	111.87	*	-
	Horizontal	2480 (Av)	111.33	*	-
		2483.5 (Pk)	50.60	74.00	-23.40
		2483.5 (Av)	43.34	54.00	-10.66
		4960 (Pk)	56.38	74.00	-17.62
		4960 (Av)	50.39	54.00	-3.61
		7440 (Pk)	59.93	74.00	-14.07
		7440 (Av)	47.52	54.00	-6.48

<sup>\* \* -&</sup>gt; Fundamental Frequency Pk - > Peak Detector

Av->Average Detector

Molex Antenna : Data rate - 2Mbps						
Channel Frequency (MHz)	Polarization	Frequency (MHz)	Field Strength Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	
		2390 (Pk)	55.85	74.00	-18.15	
		2390 (Av)	40.47	54.00	-13.53	
		2402 (Pk)	107.63	*	-	
	Vertical	2402 (Av)	104.18	*	-	
	vertical	4804 (Pk)	51.27	74.00	-22.73	
		4804 (Av)	40.51	54.00	-13.49	
		7206 (Pk)	58.77	74.00	-15.23	
2402		7206 (Av)	45.55	54.00	-8.45	
2402		2390 (Pk)	51.71	74.00	-22.29	
		2390 (Av)	46.17	54.00	-7.83	
		2402 (Pk)	113.74	*	-	
	Horizontal	2402 (Av)	110.41	*	-	
	Honzoniai	4804 (Pk)	56.72	74.00	-17.28	
		4804 (Av)	49.88	54.00	-4.12	
		7206 (Pk)	62.36	74.00	-11.64	
	[	7206 (Av)	46.47	54.00	-7.53	
		2440 (Pk)	107.23	*	-	
2440	Vertical	2440 (Av)	103.89	*	-	
		4880 (Pk)	52.67	74.00	-21.33	

Date: 04.04.2016 Test Report No.: 19660144 02 Page 11 of 18



١	٨/١	A/۱	M	tı	IV/	com	١

www.tuv.com					
		4880 (Av)	42.51	54.00	-11.49
		7320 (Pk)	59.64	74.00	-14.36
		7320 (Av)	46.12	54.00	-7.88
		2440 (Pk)	113.34	*	-
		2440 (Av)	110.78	*	-
	l low-cotol	4880 (Pk)	57.45	74.00	-16.55
	Horizontal	4880 (Av)	50.12	54.00	-3.88
		7320 (Pk)	63.12	74.00	-10.88
		7320 (Av)	45.68	54.00	-8.32
	Vertical	2480 (Pk)	98.91	*	-
		2480 (Av)	95.54	*	-
		2483.5 (Pk)	62.78	74.00	-11.22
		2483.5 (Av)	30.00	54.00	-24.00
2400		2480 (Pk)	104.41	*	-
2480		2480 (Av)	100.83	*	-
	l low-cotol	2483.5 (Pk)	73.03	74.00	-0.97
	Horizontal	2483.5 (Av)	34.29	54.00	-19.71
		4960 (Pk)	51.08	74.00	-22.92
		4960 (Av)	38.73	54.00	-15.27

<sup>\* \* -&</sup>gt; Fundamental Frequency

Pk - > Peak Detector

Av->Average Detector

Molex Antenna : Data rate - 3Mbps									
Channel Frequency (MHz)	Polarization	Frequency (MHz)	Field Strength Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)				
		2390 (Pk)	55.42	74.00	-18.58				
		2390 (Av)	41.73	54.00	-12.27				
		2402 (Pk)	107.78	*	-				
	Vertical	2402 (Av)	104.16	*	-				
		4804 (Pk)	51.62	74.00	-22.38				
		4804 (Av)	40.53	54.00	-13.47				
2402		7206 (Pk)	57.80	74.00	-16.20				
		7206 (Av)	45.50	54.00	-8.50				
		2390 (Pk)	52.13	74.00	-21.87				
		2390 (Av)	45.92	54.00	-8.08				
	Horizontal	2402 (Pk)	113.99	*	-				
		2402 (Av)	110.51	*	-				
		4804 (Pk)	57.01	74.00	-16.99				

Test Report No.: 19660144 02 Date: 04.04.2016 Page 12 of 18



www.tuv.com	•			•	
		4804 (Av)	49.82	54.00	-4.18
		7206 (Pk)	59.51	74.00	-14.49
		7206 (Av)	46.36	54.00	-7.64
		2440 (Pk)	107.24	*	-
		2440 (Av)	103.68	*	-
	Mantiaal	4880 (Pk)	52.64	74.00	-21.36
	Vertical	4880 (Av)	41.02	54.00	-12.98
		7320 (Pk)	58.78	74.00	-15.22
2440		7320 (Av)	46.23	54.00	-7.77
2440		2440 (Pk)	113.28	*	-
		2440 (Av)	110.08	*	-
	Harizantal	4880 (Pk)	57.88	74.00	-16.12
	Horizontal	4880 (Av)	50.43	54.00	-3.57
		7320 (Pk)	60.21	74.00	-13.79
		7320 (Av)	47.16	54.00	-6.84
		2480 (Pk)	98.06	*	-
	\/owticel\/	2480 (Av)	95.45	*	-
	Vertical V	2483.5 (Pk)	64.32	74.00	-9.68
		2483.5 (Av)	34.21	54.00	-19.79
2400		2480 (Pk)	103.68	*	-
2480		2480 (Av)	99.83	*	-
	Harizantal	2483.5 (Pk)	72.98	74.00	-1.02
	Horizontal	2483.5 (Av)	33.30	54.00	-20.70
		4960 (Pk)	50.67	74.00	-23.33
		4960 (Av)	37.98	54.00	-16.02

<sup>\* \* -&</sup>gt; Fundamental Frequency

Pk - > Peak Detector

Av->Average Detector

Test Report No.: 19660144 02 Date: 04.04.2016 Page 13 of 18



Fractus Antenna : Data rate - 1Mbps									
Channel Frequency (MHz)	Polarization	Frequency (MHz)	Field Strength Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)				
		2390 (Pk)	52.61	74.00	-21.39				
		2390 (Av)	43.53	54.00	-10.47				
		2402 (Pk)	106.22	*	-				
	\/ti	2402 (Av)	105.69	*	-				
	Vertical	4804 (Pk)	54.94	74.00	-19.06				
		4804 (Av)	46.27	54.00	-7.73				
		7206 (Pk)	59.54	74.00	-14.46				
0.400		7206 (Av)	46.82	54.00	-7.18				
2402		2390 (Pk)	52.19	74.00	-21.81				
		2390 (Av)	48.00	54.00	-6.00				
		2402 (Pk)	110.87	*	-				
	l la sima satal	2402 (Av)	110.31	*	-				
	Horizontal	4804 (Pk)	54.83	74.00	-19.17				
		4804 (Av)	46.18	54.00	-7.82				
		7206 (Pk)	58.89	74.00	-15.11				
		7206 (Av)	46.56	54.00	-7.44				
		2440 (Pk)	106.76	*	-				
	Vertical	2440 (Av)	105.37	*	-				
		4880 (Pk)	55.21	74.00	-18.79				
		4880 (Av)	46.12	54.00	-7.88				
		7320 (Pk)	60.32	74.00	-13.68				
		7320 (Av)	46.32	54.00	-7.68				
2440		2440 (Pk)	110.89	*	-				
2440		2440 (Av)	110.08	*	-				
	Horizontal	4880 (Pk)	55.33	74.00	-18.67				
	Honzoniai	4880 (Av)	47.12	54.00	-6.88				
		7320 (Pk)	60.08	74.00	-13.92				
		7320 (Av)	47.34	54.00	-6.66				
		2480 (Pk)	107.22	*	-				
		2480 (Av)	106.66	*	-				
		2483.5 (Pk)	49.32	74.00	-24.68				
	\/aut!!	2483.5 (Av)	38.86	54.00	-15.14				
2480	Vertical	4960 (Pk)	55.66	74.00	-18.34				
		4960 (Av)	46.32	54.00	-7.68				
		7440 (Pk)	60.43	74.00	-13.57				
		7440 (Av)	45.98	54.00	-8.02				
	Horizontal	2480 (Pk)	111.08	*	-				

Test Report No.: 19660144 02 Date: 04.04.2016 Page 14 of 18



2480 (Av)	110.53	*	-
2483.5 (Pk)	52.66	74.00	-21.34
2483.5 (Av)	42.13	54.00	-11.87
4960 (Pk)	55.61	74.00	-18.39
4960 (Av)	47.21	54.00	-6.79
7440 (Pk)	59.77	74.00	-14.23
7440 (Av)	47.34	54.00	-6.66

<sup>\* \* -&</sup>gt; Fundamental Frequency Pk - > Peak Detector

Av->Average Detector

Fractus Antenna : Data rate - 2Mbps								
Channel Frequency (MHz)	Polarization	Frequency (MHz)	Field Strength Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)			
		2390 (Pk)	52.89	74.00	-21.11			
		2390 (Av)	43.56	54.00	-10.44			
		2402 (Pk)	108.23	*	-			
	Vertical	2402 (Av)	104.83	*	-			
	verticai	4804 (Pk)	52.31	74.00	-21.69			
		4804 (Av)	41.23	54.00	-12.77			
		7206 (Pk)	59.18	74.00	-14.82			
2402		7206 (Av)	46.23	54.00	-7.77			
2402		2390 (Pk)	53.13	74.00	-20.87			
	Horizontal	2390 (Av)	46.99	54.00	-7.01			
		2402 (Pk)	112.82	*	-			
		2402 (Av)	109.25	*	-			
		4804 (Pk)	56.72	74.00	-17.28			
		4804 (Av)	49.88	54.00	-4.12			
		7206 (Pk)	62.36	74.00	-11.64			
		7206 (Av)	46.47	54.00	-7.53			
		2440 (Pk)	108.23	*	-			
		2440 (Av)	104.29	*	-			
	Vertical	4880 (Pk)	53.21	74.00	-20.79			
	vertical	4880 (Av)	42.58	54.00	-11.42			
2440		7320 (Pk)	60.12	74.00	-13.88			
		7320 (Av)	45.72	54.00	-8.28			
		2440 (Pk)	112.98	*	-			
	Horizontal	2440 (Av)	110.24	*	-			
		4880 (Pk)	58.64	74.00	-15.36			

Test Report No.: 19660144 02 Date: 04.04.2016 Page 15 of 18



www.tuv.com	_		_	_	_
		4880 (Av)	49.89	54.00	-4.11
		7320 (Pk)	64.11	74.00	-9.89
		7320 (Av)	46.24	54.00	-7.76
		2480 (Pk)	100.88	*	-
	Vertical	2480 (Av)	97.58	*	-
	vertical	2483.5 (Pk)	70.12	74.00	-3.88
		2483.5 (Av)	31.07	54.00	-22.93
2480		2480 (Pk)	105.34	*	-
2400		2480 (Av)	101.97	*	-
	Horizontal	2483.5 (Pk)	71.69	74.00	-2.31
	Honzoniai	2483.5 (Av)	35.00	54.00	-19.00
		4960 (Pk)	50.67	74.00	-23.33
		4960 (Av)	39.71	54.00	-14.29

<sup>\* \* -&</sup>gt; Fundamental Frequency Pk - > Peak Detector

Av->Average Detector

	Fractus Antenna : Data rate - 3Mbps								
Channel Frequency (MHz)	Polarization	Limit (dBµV/m)	Margin (dB)						
		2390 (Pk)	50.45	74.00	-23.55				
		2390 (Av)	43.94	54.00	-10.06				
		2402 (Pk)	107.89	*	-				
	Vertical	2402 (Av)	104.33	*	-				
	vertical	4804 (Pk)	53.44	74.00	-20.56				
		4804 (Av)	44.01	54.00	-9.99				
		7206 (Pk)	59.69	74.00	-14.31				
2402		7206 (Av)	46.87	54.00	-7.13				
2402		2390 (Pk)	54.20	74.00	-19.80				
		2390 (Av)	49.11	54.00	-4.89				
		2402 (Pk)	112.97	*	-				
	Horizontal	2402 (Av)	109.21	*	-				
	Honzontai	4804 (Pk)	54.43	74.00	-19.57				
		4804 (Av)	46.29	54.00	-7.71				
		7206 (Pk)	60.05	74.00	-13.95				
		7206 (Av)	46.41	54.00	-7.59				
		2440 (Pk)	106.84	*	-				
2440	Vertical	2440 (Av)	103.12	*	-				
		4880 (Pk)	53.21	74.00	-20.79				

Test Report No.: 19660144 02 Date: 04.04.2016 Page 16 of 18



www.tuv.com					_
		4880 (Av)	42.33	54.00	-11.67
		7320 (Pk)	59.32	74.00	-14.68
		7320 (Av)	47.21	54.00	-6.79
		2440 (Pk)	112.88	*	-
		2440 (Av)	109.78	*	-
	l lovimontol	4880 (Pk)	58.46	74.00	-15.54
	Horizontal	4880 (Av)	49.98	54.00	-4.02
		7320 (Pk)	61.23	74.00	-12.77
		7320 (Av)	47.86	54.00	-6.14
	Madian	2480 (Pk)	100.81	*	-
		2480 (Av)	97.26	*	-
	Vertical	2483.5 (Pk)	69.53	74.00	-4.47
		2483.5 (Av)	31.75	54.00	-22.25
2400		2480 (Pk)	105.48	*	-
2480		2480 (Av)	101.76	*	-
	l lovimontol	2483.5 (Pk)	73.17	74.00	-0.83
	Horizontal	2483.5 (Av)	34.87	54.00	-19.13
		4960 (Pk)	51.23	74.00	-22.77
		4960 (Av)	38.68	54.00	-15.32

<sup>\* \* -&</sup>gt; Fundamental Frequency Pk - > Peak Detector Av->Average Detector

Test Report No.: 19660144 02 Date: 04.04.2016 Page 17 of 18



## **Power level Settings used during Fractus Antenna testing:**

			Channels				
		Low		Mid		High	
Mode	Data Rate (Mbps)	Tx Power	Attenuation to antenna Gain	Tx power	Attenuation to antenna Gain		Attenuation to antenna Gain
	1	15	0	15	0	15	0
Bluetooth	2	16	0	16	0	16	8
	3	16	0	16	0	16	8

## **Power level Settings used during Molex Antenna testing:**

			Channels					
		Low		Mid		High		
Mode	Data Rate (Mbps)	Tx Power	Attenuation to antenna Gain	Tx power	Attenuation to antenna Gain		Attenuation to antenna Gain	
	1	15	0	15	0	15	0	
Bluetooth	2	16	0	16	0	16	8	
	3	16	0	16	0	16	7	

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

Test Report No.: 19660144 02 Date: 04.04.2016 Page 18 of 18