



**TEST REPORT
FOR
ELECTROSTATIC DISCHARGE IMMUNITY**

Report No.: 09-01-MAS-138

Client: **RF Monolithics, Inc**
Product: **916.50 MHz Hybird Transceiver**
Model No.: **TR1000**
Date test item received: 2009/01/15
Date test campaign completed: 2009/01/16
Date of issue: 2009/01/23

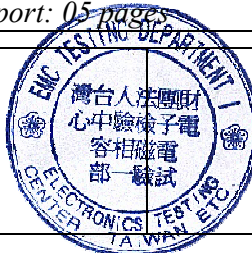
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Total number of pages of this test report: 05 pages

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Laboratory Introduction: Electronics Testing Center, Taiwan is recognized, filed and mutual recognition arrangement as following:

- ① ISO9001: TÜV Product Service
- ② ISO/IEC 17025: BSMI, CNLA, DGT, NVLAP, CCIBLAC, UL, Compliance
- ③ Filing: FCC, Industry Canada, VCCI
- ④ MRA: Australia, Hong Kong, New Zealand, Singapore, USA, Japan, Korea, China, APLAC through CNLA
- ⑤ FCC Registration Number: 90588, 91094, 91095



ELECTROSTATIC DISCHARGE IMMUNITY TEST

Test Date: Jan. 16, 2009

Test Equipment:	ESD Simulator\ ETS \ 910	
Climatic Condition	Ambient Temperature: <u>22</u> °C	Relative Humidity: <u>41</u> %RH
	Atmospheric Pressure: <u>987</u> mbar	
Test Set-up	Table-top Equipment	
Operating Conditions of The Device	static	

Energy-Storage Capacitor : <u>100</u> pF Discharge Resistor : <u>1.5k</u> Ω Discharge Times : <u>1</u> times/each condition																
Times between each pulse: >0.1 sec																
Discharge Mode	Pulse output : #2 GND: ALL OTHER PINTS															
	Pulse output : #16 GND: ALL OTHER PINTS															
\ESD Voltage	<u>250</u> V		<u>500</u> V		<u>1</u> kV		<u>2</u> kV		<u>4</u> kV		<u>6</u> kV		<u>8</u> kV		<u> </u> kV	
\Result\Polarity	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-
#1~#3	A	A	--	--	--	--	--	--	--	--	--	--	--	--	--	--
#4~#6	--	--	A	A	--	--	--	--	--	--	--	--	--	--	--	--
#7~#9	--	--	--	--	A	A	--	--	--	--	--	--	--	--	--	--
#10~#12	--	--	--	--	--	--	A	A	--	--	--	--	--	--	--	--
#13~#15	--	--	--	--	--	--	--	--	A	A	--	--	--	--	--	--
#16~#18	--	--	--	--	--	--	--	--	--	--	A	A	--	--	--	--
#19~#21	--	--	--	--	--	--	--	--	--	--	--	--	A	A	--	--

Note: “ A ” means the EUT function was correct during the test.

EUT performace parameter was given in table 1 .(conformed with manufacturer)

Test condidition of Energy-Storage Capacitor/ Discharge Resistor and discharge times are according in standard JESD22- A114E



Classification Criteria

All samples used must meet the test requirements of section 4 up to a particular voltage level in order for the part to be classified as meeting a particular sensitivity classification.(JESD22-A114E)

Criteria meet: Class 3B

Any part that passes after exposure to an ESD pulse of 8000 Volts.



Test Date: Jan. 16, 2009

Test Equipment: ESD Simulator\ ETS \ 910	
Climatic Condition	Ambient Temperature: <u>22</u> °C Relative Humidity: <u>41</u> %RH
	Atmospheric Pressure: <u>987</u> mbar
Test Set-up	Table-top Equipment
Operating Conditions of The Device	static

Energy-Storage Capacitor : <u>200</u> pF Discharge Resistor : <u>0</u> Ω Discharge Times : <u>1</u> times/each condition								
Times between each pulse: >0.5 sec								
Discharge Mode	Pulse output : #2 GND: OTHER ALL PINTS							
	Pulse output : #16 GND: OTHER ALL PINTS #8							
\ESD Voltage	<u>100</u> V		<u>200</u> V		<u>400</u> V		<u>--</u> V	
\Result\Polarity	+	-	+	-	+	-	+	-
#22~#24	A	A	--	--	--	--	--	--
#25~#27	--	--	A	A	--	--	--	--
#28~#30	--	--	--	--	A	A	--	--

Note: "A" means the EUT function was correct during the test.

EUT performace parameter was given in table 1 .(conformed with manufacturer)

Test condition of Energy-Storage Capacitor/ Discharge Resistor and discharge times are according in standard JESD22-A115-A

Classification Criteria

All samples used must meet the test requirements of section 4 up to a particular voltage level in order for the part to be classified as meeting a particular sensitivity classification.(JESD22-A115-A)

Criteria meet: <u>Class C</u>	Any part that passes after exposure to an ESD pulse of 400 Volts.
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Table 1. EUT performance parameter(measured after test)

A	B	C	D	E	F	G	H	I	J
Dvc	SlpCur	RxCur	Rxfreq	RxSens	RxAgc	TxCur	TxFrq	TxPwrOut	TxModPwr
1	0.002	3.07	916.5	-94	Pass	10.353	916.577	-0.56	-0.74
2	0.002	3.076	916.5	-94	Pass	10.449	916.466	1.43	1.22
3	0.002	3.073	916.5	-94	Pass	10.543	916.447	1.76	1.5
4	0.002	3.103	916.5	-95	Pass	10.404	916.492	1.31	1.06
5	0.002	3.061	916.5	-95	Pass	10.446	916.538	1.73	1.48
6	0.002	3.038	916.5	-95	Pass	10.595	916.459	1.64	1.43
7	0.001	3.092	916.5	-95	Pass	10.573	916.411	1.83	1.6
8	0.002	3.083	916.5	-95	Pass	10.228	916.449	1.08	0.85
9	0.001	3.07	916.5	-95	Pass	10.431	916.504	1.62	1.39
10	0.002	3.02	916.5	-94	Pass	10.333	916.506	1.45	1.24
11	0.002	3.117	916.5	-94	Pass	10.574	916.46	1.69	1.48
12	0.002	3.076	916.5	-94	Pass	10.403	916.44	1.41	1.22
13	0.002	3.108	916.5	-94	Pass	10.401	916.494	1.06	0.82
14	0.001	3.068	916.5	-94	Pass	10.419	916.465	1.73	1.48
15	0.002	3.114	916.5	-95	Pass	10.523	916.499	1.96	1.73
16	0.002	2.99	916.5	-95	Pass	10.519	916.474	1.29	1.08
17	0.002	3.051	916.5	-94	Pass	10.511	916.434	1.39	1.17
18	0.002	3.051	916.5	-93	Pass	10.541	916.392	0.18	-0.11
19	0.002	3.079	916.5	-94	Pass	10.479	916.407	0.7	0.45
20	0.002	3.142	916.5	-93	Pass	10.186	916.411	0.8	0.56
21	0.002	3.028	916.5	-94	Pass	10.544	916.472	1.66	1.45
22	0.002	3.027	916.5	-94	Pass	10.389	916.411	1.06	0.78
23	0.002	3.065	916.5	-94	Pass	10.499	916.488	1.85	1.59
24	0.002	3.063	916.5	-94	Pass	10.445	916.46	1.32	1.06
25	0.002	3.085	916.5	-94	Pass	10.538	916.46	1.59	1.34
26	0.002	3.084	916.5	-95	Pass	10.523	916.538	1.59	1.34
27	0.002	3.032	916.5	-94	Pass	10.421	916.481	1.27	1.03
28	0.002	3.013	916.5	-94	Pass	10.591	916.474	1.66	1.43
29	0.002	3.099	916.5	-95	Pass	10.405	916.474	1.66	1.45
30	0.002	3.09	916.5	-94	Pass	10.451	916.458	1.41	1.22