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**FCC PART 15.249 AND IC RSS-210
CLASS II PERMISSIVE
CHANGE TEST REPORT**

| | |
|-----------------------------|--|
| Applicant | T&D CORPORATION |
| Address | 817-1 SHIMADACHI MATSUMOTO 390-0852 JAPAN |
| FCC ID | SRDRTR50 |
| Model Number | RTR-50 |
| Product Description | WIRELESS COMMUNICATION PORT |
| Date Sample Received | 8/3/2011 |
| Date Tested | 8/15/2011 |
| Tested By | Joe Scoglio |
| Approved By | Mario R. de Aranzeta |
| Report Number | 1729AT11TestReport.doc |
| Test Results | <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL |

**THE ATTACHED REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL
WITHOUT THE WRITTEN APPROVAL OF TIMCO ENGINEERING, INC.**



Testing Certificate # 0955-01

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FCC ID: SRDRTR50
IC: 5558A-RTR50
REPORT: T\T&D CORP_SRD\1729AT11\1729AT11TestReport.doc

GENERAL REMARKS

The attached report shall not be reproduced except in full without the written permission of Timco Engineering Inc.

The test results relate only to the items tested.

Summary

The device under test does:

- fulfill the general approval requirements as identified in this test report
- not fulfill the general approval requirements as identified in this test report

Attestations

This equipment has been tested in accordance with the standards identified in this test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report.

All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025: 2005 requirements.



Testing Certificate # 0955-01

I attest that the necessary measurements were made, under my supervision, at:

Timco Engineering Inc.
849 NW State Road 45
Newberry, Fl 32669



Authorized Signatory Name:

Mario de Aranzeta C.E.T.
Compliance Engineer/ Lab. Supervisor

Date: August 15, 2011

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GENERAL INFORMATION

DUT Specification

| | | | |
|---------------------|--|---|--|
| Applicable Standard | Part 15.249 | | |
| DUT Description | WIRELESS COMMUNICATION PORT | | |
| FCC ID | SRDRTR50 | | |
| IC | 5558A-RTR50 | | |
| DUT Power Source | <input type="checkbox"/> 110-120Vac/50- 60Hz | | |
| | <input checked="" type="checkbox"/> DC Power | | |
| | <input type="checkbox"/> Battery Operated Exclusively | | |
| Test Item | <input type="checkbox"/> Prototype | <input type="checkbox"/> Pre-Production | <input checked="" type="checkbox"/> Production |
| Type of Equipment | <input checked="" type="checkbox"/> Fixed | <input type="checkbox"/> Mobile | <input type="checkbox"/> Portable |
| Test Facility | Timco Engineering Inc. located at 849 NW State Road 45 Newberry, FL 32669 USA. | | |
| Test Conditions | Temperature: 26°C Relative humidity: 50% | | |
| Test Exercise | The DUT was placed in continuous transmit mode of operation. | | |

Test Supporting Equipment

| Supporting Device | Manufacturer | Model / FCC ID | Serial Number |
|-------------------|--------------|----------------|---------------|
| N/A | | | |

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EMC EQUIPMENT LIST

| Device | Manufacturer | Model | Serial Number | Cal/Char Date | Due Date |
|---|-----------------------|------------------|--------------------------|-------------------|-----------|
| 3-Meter Semi-Anechoic Chamber | Panashield | N/A | N/A | Listed 5/10/10 | 5/10/12 |
| AC Voltmeter | HP | 400FL | 2213A14499 | CAL 6/12/11 | 6/12/13 |
| Antenna: Active Loop | ETS-Lindgren | 6502 | 00062529 | CAL 9/23/10 | 9/23/12 |
| Antenna: Passive Loop | EMC Test Systems | EMCO 6512 | 9706-1211 | CAL. 10/1/09 | 10/2/11 |
| Frequency Counter | HP | 5385A | 2730A03025 | CAL 8/17/11 | 8/17/13 |
| Hygro- Thermometer | Extech | 445703 | 0602 | CAL 6/15/11 | 6/15/13 |
| Modulation Analyzer | HP | 8901A | 3435A06868 | CAL 7/18/11 | 7/18/13 |
| Digital Multimeter | Fluke | FLUKE-77 | 35053830 | CAL 11/18/09 | 11/18/11 |
| Analyzer Tan Tower Preamplifier | HP | 8449B-H02 | 3008A00372 | CAL 11/21/09 | 11/21/11 |
| Analyzer Tan Tower Quasi- Peak Adapter | HP | 85650A | 3303A01690 | CAL 11/22/09 | 11/22/11 |
| Analyzer Tan Tower RF Preselector | HP | 85685A | 3221A01400 | CAL 11/21/09 | 11/21/11 |
| Analyzer Tan Tower Spectrum Analyzer | HP | 8566B Opt 462 | 3138A07786 3144A20661 | CAL 11/24/09 | 11/24/11 |
| Temperature Chamber | Tenney Engineering | TTRC | 11717-7 | CHAR 4/25/10 | 4/25/12 |
| Antenna | ETS | 3117 | 41534 | 9/22/2010 | 9/22/2012 |
| Antenna | Electro metrics | LPA-25 | 1122 | 5/04/2011 | 5/04/2013 |
| Antenna | Electro metrics | BIA-25 | 1171 | 1/15/2010 | 1/15/2012 |

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TEST PROCEDURES

Radiation Interference: ANSI C63.4-2003 using a spectrum analyzer, a preselector, a quasi-peak adapter, and an appropriate antenna. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The resolution bandwidth was 100 kHz with an appropriate sweep speed and the video bandwidth was 300 kHz up to 1 GHz and 1 MHz with a video BW of 3 MHz above 1 GHz. When an emission was found, the table was rotated to produce the maximum signal strength. The antenna was placed in both the horizontal and vertical planes and the worse case emissions were reported. The spectrum was searched to at least the tenth (10) harmonic of the fundamental.

Formula Of Conversion Factors: The field strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBμV) to the antenna correction factor supplied by the antenna manufacturer plus the coax loss. The antenna correction factors are stated in terms of dB. The gain of the preselector was accounted for in the spectrum analyzer meter reading.

Example:

| | | | |
|------------|---------------|------------|---------------------------|
| Freq (MHz) | Meter Reading | + ACF | + CL = FS |
| 33 | 20 dBμV | + 10.36 dB | + 0.5 = 30.86 dBμV/m @ 3m |

Power Line Conducted Interference: The procedure used was ANSI C63.4-2003 using a 50uH LISN. Both lines were observed. The bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed. The spectrum was scanned from 0.15 to 30 MHz.

Occupied Bandwidth: A small sample of the transmitter output was fed into the spectrum analyzer and the attached plot was printed. The vertical scale is set to -10 dBm per division.

Bandwidth 6.0dB: The measurements were made with the spectrum analyzer's resolution bandwidth (RBW)=1 MHz and the video bandwidth (VBW) =3 MHz and the span set as shown on plot.

Power Output: The RF power output was measured at the antenna feed point using a peak power meter.

Antenna Conducted Emissions: The RBW=100 kHz, VBW=300 kHz and the span set to 10 MHz and the spectrum was scanned from 30 MHz to the 10th Harmonic of the fundamental. Above 1 GHz the resolution bandwidth was 1 MHz and the VBW = 3 MHz and the span to 50 MHz.

ANSI C63.4-2003 10.1 Measurement Procedures: The DUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The DUT was placed in the center of the table (1.5m side). The table used for radiated measurements is capable of continuous rotation.

When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes. Emissions attenuated more than 20 dB below the permissible value are not reported.

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RADIATION INTERFERENCE

Rules Part No.: 15.249, 15.209

Requirements:

| Frequency | Limits |
|------------------------------|--|
| Part 15.209 | |
| 9 to 490 kHz | 2400/F (kHz) $\mu\text{V}/\text{m}$ @ 300 meters |
| 490 to 1705 kHz | 24000/F (kHz) $\mu\text{V}/\text{m}$ @ 30 meters |
| 1705 kHz to 30 MHz | 29.54 dB $\mu\text{V}/\text{m}$ @ 30 meters |
| 30 – 88 | 40.0 dB $\mu\text{V}/\text{m}$ @ 3 meters |
| 80 – 216 | 43.5 dB $\mu\text{V}/\text{m}$ @ 3 meters |
| 216 – 960 | 46.0 dB $\mu\text{V}/\text{m}$ @ 3 meters |
| Above 960 | 54.0 dB $\mu\text{V}/\text{m}$ @ 3 meters |
| Part 15.249 | |
| Fundamental 902 – 928 MHz | 94.0 dB $\mu\text{V}/\text{m}$ @ 3 meters |
| Fundamental 2.4 – 2.4835 MHz | 94.0 dB $\mu\text{V}/\text{m}$ @ 3 meters |
| Harmonics | 54.0 dB $\mu\text{V}/\text{m}$ @ 3 meters |

Test Data: All values are peak unless noted.
Items mark with an * designate a frequency in a restricted band.

| Tuned Frequency MHz | Emission Frequency MHz | Meter Reading dBuV | Ant. Pol | Coax Loss dB | Correction Factor dB | Field Strength dBuV/m | Margin dB |
|---------------------|------------------------|--------------------|----------|--------------|----------------------|-----------------------|-----------|
| 902.2 | 902.20 | 61.4 | V | 1.95 | 23.80 | 87.15 | 6.85 |
| 902.2 | 902.20 | 64.6 | H | 1.95 | 23.80 | 90.35 | 3.65 |
| 902.2 | 1,804.50 | 19.3 | V | 2.74 | 30.03 | 52.07 | 1.93 |
| 902.2 | 1,804.50 | 20.0 | H | 2.74 | 30.03 | 52.77 | 1.23 |
| 902.2 | 2,706.70 | 10.7 | V | 3.39 | 32.85 | 46.94 | 7.06 |
| 902.2 | 2,706.70 | 11.3 | H | 3.39 | 32.85 | 47.54 | 6.46 |
| 902.2 | 3,609.00 | 7.3 | H | 4.15 | 33.39 | 44.84 | 9.16 |
| 902.2 | 3,609.00 | 8.3 | V | 4.15 | 33.39 | 45.84 | 8.16 |
| 914.0 | 914.00 | 62.6 | V | 1.97 | 23.80 | 88.37 | 5.63 |
| 914.0 | 914.00 | 67.1 | H | 1.97 | 23.80 | 92.87 | 1.13 |
| 914.0 | 1,828.10 | 18.4 | H | 2.76 | 30.17 | 51.33 | 2.67 |
| 914.0 | 1,828.10 | 19.0 | V | 2.76 | 30.17 | 51.93 | 2.07 |
| 914.0 | 2,742.10 | 11.0 | V | 3.42 | 32.89 | 47.31 | 6.69 |
| 914.0 | 2,742.10 | 12.2 | H | 3.42 | 32.89 | 48.51 | 5.49 |
| 914.0 | 3,656.20 | 6.2 | H | 4.19 | 33.42 | 43.81 | 10.19 |
| 914.0 | 3,656.20 | 6.9 | V | 4.19 | 33.42 | 44.51 | 9.49 |
| 927.0 | 927.00 | 62.3 | V | 1.99 | 23.94 | 88.23 | 5.77 |
| 927.0 | 927.00 | 65.1 | H | 1.99 | 23.94 | 91.03 | 2.97 |
| 927.0 | 1,854.10 | 17.3 | V | 2.78 | 30.32 | 50.40 | 3.6 |
| 927.0 | 1,854.10 | 18.4 | H | 2.78 | 30.32 | 51.50 | 2.5 |

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TEST DATA CONTD.

| Tuned Frequency MHz | Emission Frequency MHz | Meter Reading dBuV | Ant. Pol | Coax Loss dB | Correction Factor dB | Field Strength dBuV/m | Margin dB |
|----------------------------|-------------------------------|---------------------------|-----------------|---------------------|-----------------------------|------------------------------|------------------|
| 927.0 | 2,781.10 | 9.0 | V | 3.45 | 32.94 | 45.39 | 8.61 |
| 927.0 | 2,781.10 | 10.2 | H | 3.45 | 32.94 | 46.59 | 7.41 |
| 927.0 | 3,708.20 | 7.4 | H | 4.24 | 33.47 | 45.11 | 8.89 |
| 927.0 | 3,708.20 | 8.0 | V | 4.24 | 33.47 | 45.71 | 8.29 |

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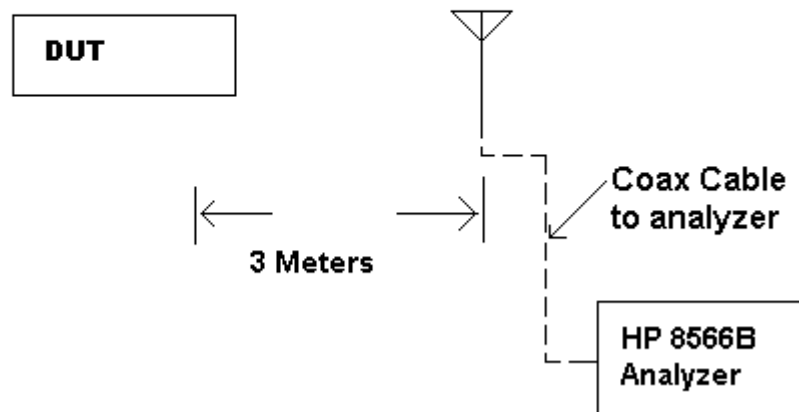
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Method of Measuring Radiated Spurious Emissions

Antenna is Calibrated
and appropriate one.
Raised from 1 to 4 M.



METHOD OF MEASUREMENT: The procedure used was ANSI standard C63.4-2003 & the FCC/OET Guidance on Measurements for Spread Spectrum Systems – Public Notice DA 00-705 dated March 30th, 2000.

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