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FCC PART 15.247

CLASS II PERMISSIVE CHANGE

TEST REPORT

APPLICANT	DRS Tactical Systems, Inc.
ADDRESS	1110 West Hibiscus Blvd. Melbourne, FL 32901
FCC ID	UGL980026000WF
PRODUCT DESCRIPTION	NETWORK CARD INSTALLED IN A TABLET PC
DATE SAMPLE RECEIVED	3/4/2008
DATE TESTED	3/14/2008
TESTED BY	Nam Nguyen
APPROVED BY	Mario R. de Aranzeta
TIMCO REPORT NO.	426BUT8TestReport.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.





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APPLICANT: DRS-TACTICAL SYSTEMS, INC.

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ATTESTATION

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

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

I attest that the necessary measurements were made by me or under my supervision, at Timco Engineering, Inc. located at 849 N.W. State Road 45, Newberry, Florida 32669 USA.



Testing Certificate #0955-01

AUTHORIZED BY: Mario de Aranzeta



SIGNATURE:

FUNCTION: Lab Supervisor/ Test Engineer

DATE: April 15, 2008

Applicant: DRS-TACTICAL SYSTEMS, INC.
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REPORT SUMMARY

Disclaimer:	The test results relate only to the items tested.
Purpose of Test:	To show that the 802.11 a/b/g Wlan Card installed in the tablet PC along with a Bluetooth card, continues to meet the requirements while simultaneously transmitting
Applicable Standards:	FCC Pt 15.247, ANSI C63.4: 2003, ANSI TIA-603: 2004

TEST ENVIRONMENT AND TEST SETUP

Test Facilities:	All measurements were made at one or more of the test sites of TIMCO ENGINEERING INC. located at 849 N.W. State Road 45, Newberry, FL 32669.
Laboratory Test Conditions:	Temperature: 26°C, Humidity: 55%
Test Exercise:	The DUT was set in continuous transmit mode of operation.
Deviation to the Standards:	There was no deviation from the standard.
Modification to the DUT:	No modification was made.
Supporting Accessories:	DRS Tablet PC – DSTC1S08U0EFD4 Bluetooth Card – FCC ID: UGL980026000BT

Applicant: DRS-TACTICAL SYSTEMS, INC.

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DUT DESCRIPTION

Applicant:	DRS-Tactical Systems, Inc.
Product Description	Network Connector Card – 802.11 a/b/g Wlan Card
FCC ID:	UGL980026000WF
Operating Frequency:	2412-2462 MHz, 5745-5825 MHz
Max. Output Pwr:	0.318 Watts B/g
Antenna	Skycross WLAN Quad Band Antenna – CBL-EMWQU

Applicant: DRS-TACTICAL SYSTEMS, INC.

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EMC EQUIPMENT LIST

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
3/10-Meter OATS	TEI	N/A	N/A	Listed 3/20/07	3/19/10
3-Meter OATS	TEI	N/A	N/A	Listed 1/11/06	1/10/09
3-Meter Semi-Anechoic Chamber	Panashield	N/A	N/A	Listed 5/11/07	5/10/10
Analyzer Tan Tower Spectrum Analyzer	HP	8566B Opt 452	3138A07786 3144A20661	CAL 11/30/07	11/30/09
Analyzer Tan Tower RF Preselector	HP	85685A	3221A01400	CAL 11/30/07	11/30/09
Analyzer Tan tower Quasi-Peak Adapter	HP	85650A	303A01690	CAL 11/30/07	11/30/09
Antenna: Biconnical	Eaton	94455-1	1057	CAL 12/12/07	12/12/09
Antenna: Biconnical	Eaton	94455-1	1096	CAL 10/11/06	10/11/08
Antenna: Biconnical	Electro-Metrics	BIA-25	1171	CAL 7/18/07	7/18/09
Antenna: Double-Ridged Horn	Electro-Metrics	RGA-180	2319	CAL 7/18/07	7/18/09
LISN	Electro-Metrics	ANS-25/2	2604	CAL 10/5/06	10/5/08
LISN	Electro-Metrics	EM-7820	2682	CAL 7/23/07	7/23/09
Antenna: Log-Periodic	Eaton	96005	1243	CAL 12/14/07	12/14/09
Receiver	R & S	ESIB40		11/25/2007	11/25/2009

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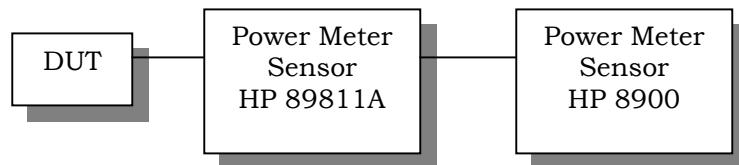
TEST PROCEDURES

POWER LINE CONDUCTED INTERFERENCE: The procedure used was ANSI C63.4-2003 using a 50uH LISN. Both lines were observed with the DUT transmitting. The resolution bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed.

BANDWIDTH 20 dB: 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.

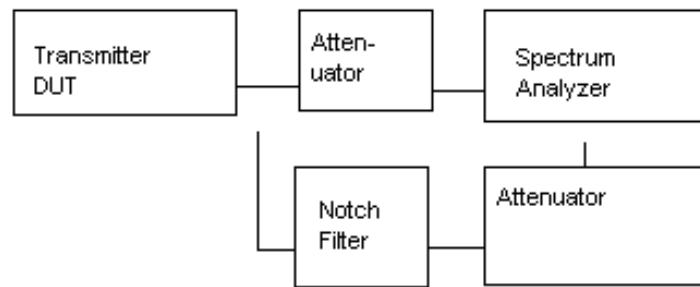
RF Power Output: The RF power output was measured at the antenna feed point using a peak power meter.

Output Power Test Setup Diagram



ANTENNA CONDUCTED EMISSIONS: The RBW = 100 kHz, VBW = 300 kHz and the span set to 10.0 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. Power was measured by disconnecting the antennas and measuring across a 50 ohm load as recommended by the manufacturer using a peak power meter. The antenna is non-directional and doesn't exceed 6 dBi gain. The power output was measured at three places in the band highest is reported below.

Spurious Emissions at
Antenna Terminals





RADIATION INTERFERENCE: The test procedure used was ANSI C63.4-2003 using an Agilent spectrum receiver with preselector. The bandwidth (RBW) of the spectrum receiver was 100 kHz up to 1 GHz and 1 MHz above 1 GHz with an appropriate sweep speed. The VBW above 1 GHz was 3 MHz. The analyzer was calibrated in dB above a microvolt at the output of the antenna.

RADIATED SPURIOUS EMISSIONS INTO ADJACENT RESTRICTED BAND: An in band field strength measurement of the fundamental emission using the RBW and detector function required by ANSI C63.4-2003 and the FCC rules.

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POWER LINE CONDUCTED INTERFERENCE

RULES PART NO.: 15.207

REQUIREMENTS:

Emission Frequency (MHz)	Conducted Limit (dB μ V)	
	Quasi-peak (QP)	Average (AV)
0.15 – 0.5	66 to 56 *	56 to 46 *
0.5 – 5	56	46
5 – 30	60	50

* Decreases with the logarithm of the frequency.

TEST DATA: Not applicable to this device.

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FIELD STRENGTH OF SPURIOUS EMISSIONS

RULES PART NO.: 15.247(c), 15.205 &15.209(b)

REQUIREMENTS:

§15.247(c)& §15.205	
(Fundamental) Frequency	(Field Strength) Limits
902 – 928MHz	127.37dBuV/m
2.4 – 2.4835GHz	
	54 dBuV/m @3m
§15.209	
30 - 88 MHz	40 dBuV/m @3M
88 -216 MHz	43.5 dBuV/m @3M
216 -960 MHz	46 dBuV/m @3M
ABOVE 960 MHz	54dBuV/m

Emissions that fall in the restricted bands (15.205) must be less than or equal to 500 uV/m (54 dBuV/m). Spurious not in a restricted band must be 20 dBc.

Harmonics were measured to the 10th harmonic.

Test Data (with two devices transmitting simultaneously):

802.11b and BT:

Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBuV	Ant. Pol	Coax Loss dB	Correction Factor dB	Field Strength dBuV/m
2,442.1	42.72	20.7	V	0.46	10.12	31.28
2,442.1	45.24	10.5	H	0.48	10.80	21.78
2,442.1	56.62	10.0	H	0.52	10.97	21.49
2,442.1	57.34	19.2	V	0.52	10.82	30.54
2,442.1	70.51	12.8	V	0.57	7.76	21.13
2,442.1	84.40	4.3	H	0.61	6.83	11.74
2,442.1	86.74	12.1	V	0.62	8.38	21.1
2,442.1	130.28	9.8	H	0.68	12.90	23.38
2,442.1	130.29	12.5	V	0.68	12.79	25.97
2,442.1	195.45	6.2	H	0.88	17.18	24.26
2,442.1	260.56	18.2	V	1.02	12.92	32.14
2,442.1	260.57	16.1	H	1.02	12.93	30.05

Applicant: DRS-TACTICAL SYSTEMS, INC.

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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
2,442.1	325.71	17.2	H	1.13	14.94	33.27
2,442.1	325.71	19.2	V	1.13	14.59	34.92
2,442.1	390.87	14.8	H	1.19	15.83	31.82
2,442.1	456.02	15.2	H	1.26	16.84	33.3
2,442.1	456.02	18.4	V	1.26	16.78	36.44
2,442.1	586.29	9.4	H	1.56	19.03	29.99
2,442.1	586.30	9.0	V	1.56	18.56	29.12
2,442.1	716.57	12.4	V	1.73	20.57	34.7
2,442.1	716.58	9.7	H	1.73	21.20	32.63
2,442.1	781.68	7.7	H	1.86	21.52	31.08
2,442.1	781.70	10.2	V	1.86	20.82	32.88
2,442.1	911.98	11.1	V	1.97	22.60	35.67
2,442.1	1,832.60	22.8	H	2.77	30.13	55.7
2,442.1	1,838.70	23.0	H	2.77	30.17	55.94
2,442.1	1,851.80	28.5	H	2.78	30.25	61.53
2,442.1	1,858.40	24.6	H	2.79	30.29	57.68
2,442.1	1,864.30	23.5	H	2.79	30.33	56.62
2,442.1	1,867.60	8.8	V	2.79	30.35	41.94
2,442.1	2442.1	61.3	H	3.21	32.35	96.86

**Test Data (with two devices transmitting simultaneously):
802.11g and BT:**

Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBuV	Ant. Pol	Coax Loss dB	Correction Factor dB	Field Strength dBuV/m
2,442.2	40.56	19.7	V	0.45	9.94	30.09
2,442.2	40.82	7.8	H	0.45	10.80	19.05
2,442.2	45.90	15.9	V	0.48	10.39	26.77
2,442.2	56.02	7.1	H	0.52	10.98	18.6
2,442.2	56.52	16.1	V	0.52	10.92	27.54
2,442.2	85.80	7.4	V	0.61	8.18	16.19
2,442.2	130.28	7.7	H	0.68	12.90	21.28
2,442.2	130.30	10.2	V	0.68	12.79	23.67
2,442.2	144.01	8.1	H	0.69	13.40	22.19
2,442.2	260.57	16.3	H	1.02	12.93	30.25
2,442.2	260.58	17.6	V	1.02	12.92	31.54
2,442.2	325.71	19.7	V	1.13	14.59	35.42
2,442.2	325.72	17.0	H	1.13	14.94	33.07
2,442.2	390.84	13.6	V	1.19	15.61	30.4

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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
2,442.2	390.88	12.8	H	1.19	15.83	29.82
2,442.2	455.98	18.6	V	1.26	16.78	36.64
2,442.2	456.00	14.9	H	1.26	16.84	33
2,442.2	586.30	11.3	V	1.56	18.56	31.42
2,442.2	586.30	12.2	H	1.56	19.03	32.79
2,442.2	716.58	9.7	H	1.73	21.20	32.63
2,442.2	716.60	13.5	V	1.73	20.57	35.8
2,442.2	781.68	8.6	H	1.86	21.52	31.98
2,442.2	781.70	11.9	V	1.86	20.82	34.58
2,442.2	1,833.90	25.2	H	2.77	30.14	58.11
2,442.2	1,845.20	9.3	V	2.78	30.21	42.29
2,442.2	1,845.20	36.0	H	2.78	30.21	68.99
2,442.2	1,852.80	38.7	H	2.78	30.26	71.74
2,442.2	1,855.40	37.2	H	2.78	30.27	70.25
2,442.2	1,862.40	31.5	H	2.79	30.32	64.61
2,442.1	2442.1	61.3	H	3.21	32.35	96.86

All readings are peak unless marked otherwise.

Harmonics were checked through the 10th harmonic.

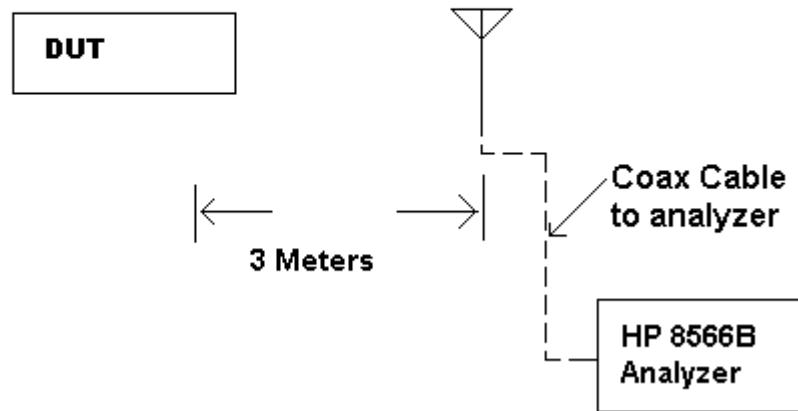
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Method of Measuring Radiated Spurious Emissions

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



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