



DATE: 25 April 2012

I.T.L. (PRODUCT TESTING) LTD.

FCC Radio Test Report

for

Orpak Systems Ltd.

Equipment under test:

uDataPass

- 1. uDATAPASS PLUS (CAN)**
- 2. uDATAPASS PLUS(K-LINE, RED)**

Written by:

D. Shidlowsky, Documentation

Approved by: For/

A. Sharabi, Test Engineer

Approved by:

I. Raz, EMC Laboratory Manager

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This report relates only to items tested.



Measurement/Technical Report for Orpak Systems Ltd.

uDataPass

1. uDATAPASS PLUS (CAN)
2. uDATAPASS PLUS(K-LINE, RED)

FCC ID: W8F819507410

IC: 8264A-819507410

This report concerns:

Original Grant:

Class I Change:

Class II Change: X

Equipment type:

Digital Transmission System

Limits used:

47CFR15 Section 15.247

Measurement procedure used is ANSI C63.4-2003.

Application for Certification
prepared by:

Ishaishou Raz
ITL (Product Testing) Ltd.
Kfar Bin Nun
D.N. Shimshon 99780
Israel
e-mail Sraz@itl.co.il

Applicant for this device:
(different from "prepared by")

Gideon Segal
Orpak Systems Ltd.
31 Lechi St.
P.O.B. 1461
Bnei-Brak 5114
Israel
Tel: +972- 3 - 577 - 6868
Fax: +972- 6 - 579 - 6310
e-mail: gidi@orpak .com

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1. General Information

1.1 Administrative Information

Manufacturer:	Orpak Systems Ltd.
Manufacturer's Address:	31 Lechi St. P.O.B. 1461 Bnei-Brak, 51114 Israel Tel: +972-3-577-6868 Fax: +972-3-579-6310
Manufacturer's Representative:	Gidi Segal
Equipment Under Test (E.U.T):	uDataPass
Equipment Model No.:	1. uDATAPASS PLUS (CAN) 2. uDATAPASS PLUS(K-LINE, RED)
Equipment Part No.:	1. 800907430 2. 800907431
Date of Receipt of E.U.T:	06/03/2012
Start of Test:	06/03/2012
End of Test:	06/03/2012
Test Laboratory Location:	I.T.L (Product Testing) Ltd. Kfar Bin Nun, ISRAEL 99780
Test Specifications:	FCC Part 15 Sub-part C Section 15.247



1.2 List of Accreditations

The EMC laboratory of I.T.L. is accredited by the following bodies:

1. The American Association for Laboratory Accreditation (A2LA) (U.S.A.), Certificate No. 1152.01.
2. The Federal Communications Commission (FCC) (U.S.A.), Registration No. 90715.
3. The Israel Ministry of the Environment (Israel), Registration No. 1104/01.
4. The Voluntary Control Council for Interference by Information Technology Equipment (VCCI) (Japan), Registration Numbers: C-1350, R-1285.
5. Industry Canada (Canada), IC File No.: 46405-4025; Site No. IC 4025B-1.
6. TUV Product Services, England, ASLLAS No. 97201.

I.T.L. Product Testing Ltd. is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this test report have been determined in accordance with I.T.L.'s terms of accreditation unless stated otherwise in the report.

1.3 **Product Description**

μDataPass is a miniature unit that connects to the vehicle bus and captures data from the vehicle CPU/BUS. It then transmits this data to the nearest Wireless Gateway Terminal (WGT).

μDataPass – a connector shaped unit that plugs into the vehicle On Board Diagnostics connector (OBD II) and intended for light and commercial vehicles which has OBD II connector.

μDataPass has two versions:

μDataPass (CAN) for vehicles which are working with CAN Bus protocol,

μDataPass (K-LINE) for vehicles which are working with K-line protocol,

There are four types of μDataPass that plugs into the vehicle diagnostic connector (OBD II):

1. 800907400 uDATAPASS (AT,CAN),
2. 800907405 uDATAPASS (AT,K-LINE,RED)
3. 800907430 uDATAPASS PLUS (CAN),
4. 800907431 uDATAPASS PLUS (K-LINE,RED)

The difference between the 4 models is the protocol used and extended memory. Both the uDATAPASS PLUS (CAN) and uDATAPASS PLUS (K-LINE,RED) have extended memory. The protocol communicates between the μDataPass and the vehicle computer via vehicle computer diagnostic computer. During the tests , the EUT was connected to a Vbis tester simulating the vehicle computer.

μDataPass is constructed from 2 electronic boards:

1. 819507410 PCB ASSY-uDATAPASS-RF (AT)
2. 819507400 PCB ASSY-uDATAPASS-CPU- CAN or
819507420 PCB ASSY-uDATAPASS-K-CPU

Those electronic boards are connected together and build the μDataPass when the transmitters (P/N 819507410) is assembled on the μDATAPASS-CPU- CAN Board or μDATAPASS-K-CPU Board (P/N 819507400 or 819507420) as a complete unit. μDataPass including onboard voltage regulator.

1.4 **Test Methodology**

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4: 2003. Radiated testing was performed at an antenna to EUT distance of 3 meters.

1.5 **Test Facility**

The radiated emissions tests were performed at I.T.L.'s testing facility at Kfar Bin-Nun, Israel. This site is a FCC listed test laboratory (FCC Registration No. 90715, date of listing September 3, 2009).

I.T.L.'s EMC Laboratory is also accredited by A2LA, certificate No. 1152.01.



1.6 *Measurement Uncertainty*

Radiated Emission

Radiated Emission (CISPR 11, EN 55011, CISPR 22, EN 55022, ANSI C63.4)
for open site 30-1000MHz:

Expanded Uncertainty (95% Confidence, K=2):

± 4.96 dB

2. System Test Configuration

2.1 *Justification*

Due to the following changes a C2PC is being applied.

1. Memory on models μ DATAPASS PLUS (CAN) P/N 800907430 and μ DATAPASS PLUS (K-LINE, RED) P/N 800907431.
2. Modifications to minor circuitry for the non-transmitter portions of the CPU PCB Board 819507405 PCB ASSY- μ DATAPASS-CAN CPU or 819507422 PCB ASSY (D)- μ DATAPASS-K-CPU.

The μ DATAPASS(K-LINE, RED) was selected based on the original test report from the two units.

The E.U.T. was tested connected to an SSD simulating a vehicle computer.

2.2 *EUT Exercise Software*

Commands were sent via hyper terminal to the SSD to operate the E.U.T.

2.3 *Special Accessories*

An SSD was used to simulate a vehicle computer. In normal operation the E.U.T. is plugged directly into the vehicle diagnostic connector.

The WGT was used as a receiver only and read the transmitted data from the E.U.T. and displayed it on the laptop screen

2.4 *Equipment Modifications*

No modifications were needed in order to achieve compliance.

2.5 Configuration of Tested System

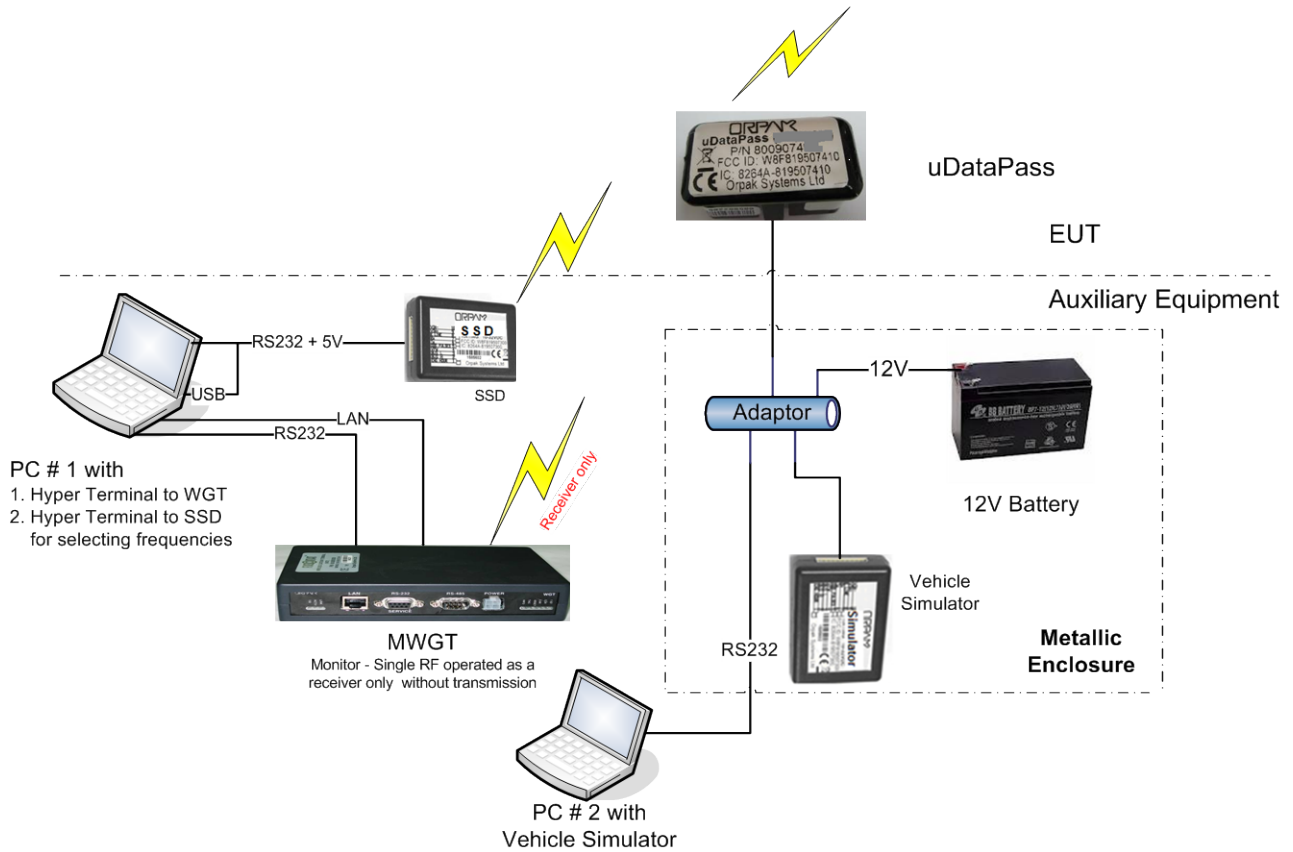


Figure 1. Configuration of Tested System

3. Test Setup Photo



Figure 2. Radiated Emission Test Setup

4. Radiated Power Output

4.1 Test Specification

F.C.C. Part 15, Subpart C: 15.247(b)

4.2 Test procedure

The E.U.T was placed on a non-metallic table, 0.8 meters above the ground plane, on a remote-controlled turntable in the OATS. The test distance was 3 meters. The transmitter unit operated with normal modulation. The EMI receiver was set to 1 MHz resolution BW. The EUT was set up as shown in Figure 3, and its proper operation was checked.

The readings were maximized by adjusting the antenna height between 1-4 meters, the turntable azimuth between 0-360°, and the antenna polarization.

Radiated output power levels were measured at selected operation frequencies and the results were converted to power level according to the formula as shown below:

$$P = \frac{(E_{V/m} \times d)^2}{(30 \times G)} [\text{W}]$$

The E.U.T. was tested in three operating channels and frequencies (11 (2.405 GHz); 18 (2.440 GHz; 26 (2.480 GHz)).

Radiated Power Output

4.3 Tests Results

Frequency	Pol	E	E	Antenna Gain	Antenna Distance	Calculated Results	Limit	Margin
(MHz)		(db μ V/m)	(V/m)	(dBi)	(m)	(W)	(W)	(W)
2405.00	V	102.27	0.13	0	3	0.0051	1	-0.9949
2440.00	V	101.96	0.125	0	3	0.0047	1	-0.9953
2480.00	V	94.43	0.053	0	3	0.0008	1	-0.9992

Figure 3 Radiated Power Output Test Results

See additional details in Figure 4 to Figure 6.

JUDGEMENT: Passed by 0.9949 W

TEST PERSONNEL:

Tester Signature: For/ 

Date: 19.04.12

Typed/Printed Name: A. Sharabi

Radiated Power Output

E.U.T Description uDataPass
Type 1. uDATAPASS PLUS (CAN)
 2. uDATAPASS PLUS(K-LINE, RED)
Part Number: 1. 800907430
 2. 800907431

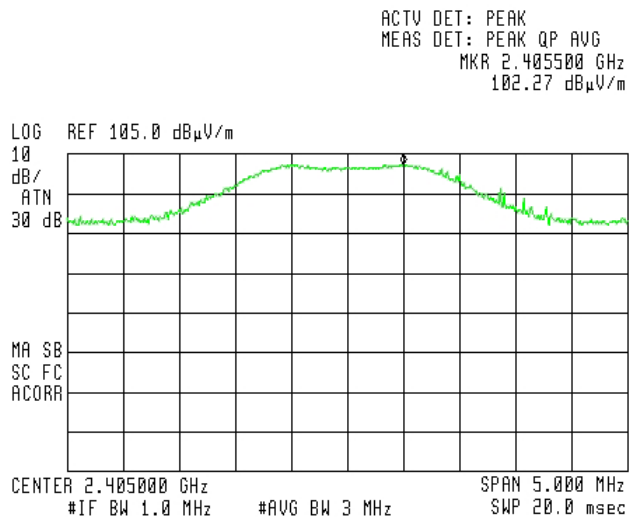


Figure 4 2405 MHz

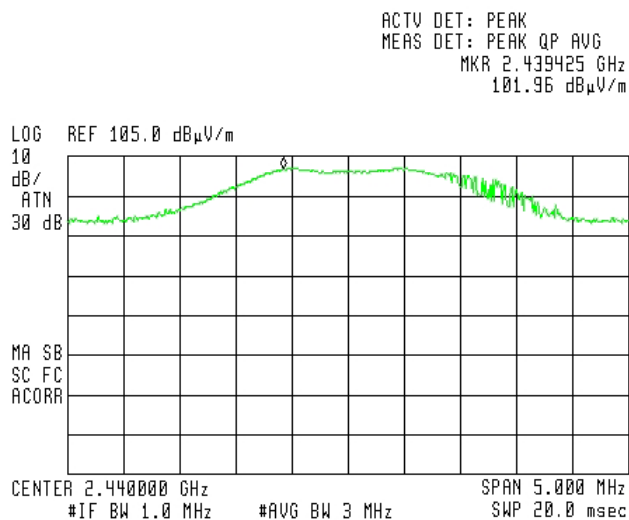


Figure 5 2440 MHz

Radiated Power Output

E.U.T Description uDataPass
Type 1. uDATAPASS PLUS (CAN)
 2. uDATAPASS PLUS(K-LINE, RED)
Part Number: 1. 800907430
 2. 800907431

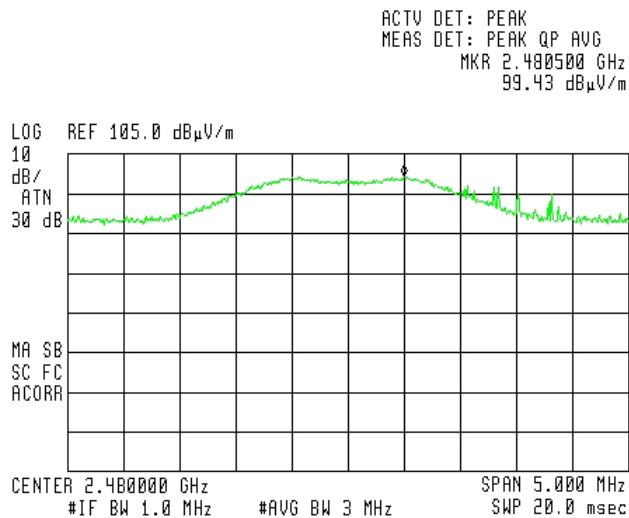


Figure 6 2480 MHz

Radiated Power Output

4.4 Test Equipment Used.

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
EMI Receiver	HP	85422E	3906A00276	December 12, 2011	1 year
RF Section	HP	85420E	3705A00248	December 12, 2011	1 year
Antenna Log Periodic	A.H. Systems	SAS-200/511	253	January 27, 2011	2 year
Antenna Mast	ARA	AAM-4A	1001	N/A	N/A
Turntable	ARA	ART-1001/4	1001	N/A	N/A
Mast & Table Controller	ARA	ACU-2/5	1001	N/A	N/A
Printer	HP	LaserJet 2200	JPKGC19982	N/A	N/A

Figure 7 Radiated Output Power Test Equipment List

5. Spurious Radiated Emission, 9 kHz – 30 MHz

5.1 Test Specification

9 kHz-30 MHz, FCC, Part 15, Subpart C, Section 209

5.2 Test Procedure

The E.U.T. operation mode and test set-up are as described in Section 3.

A preliminary measurement to characterize the E.U.T was performed inside the shielded room at a distance of 3 meters, using peak detection mode and broadband antennas. The preliminary measurements produced a list of the highest emissions. The E.U.T was then transferred to the open site, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 0.8 meters above the ground. The configuration tested is shown in Figure 3.1.

The frequency range 9 kHz-30 MHz was scanned.

The emissions were measured using a computerized EMI receiver complying to CISPR 16 requirements. The specification limits and applicable correction factors are loaded to the receiver via a 3.5" floppy disk.

In the frequency range 9 kHz-30MHz, the loop antenna was rotated on its vertical axis. The antenna height (center of loop) was 1 meter at a distance of 3 meters.

The E.U.T. was tested in three operating channels and frequencies (11 (2.405 GHz); 18 (2.440 GHz; 26 (2.480 GHz)).

5.3 Test Results

JUDGEMENT: Passed

The EUT met the requirements of the F.C.C. Part 15, Subpart C, Section 209 specification.

The results for all three channels were the same.

No signals were detected in the frequency range of 9 kHz – 30 MHz.

TEST PERSONNEL:

Tester Signature: For/ 

Date: 19.04.12

Typed/Printed Name: A. Sharabi

Spurious Radiated Emission, 9 kHz – 30 MHz

5.4 Test Equipment

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
EMI Receiver	HP	85422E	3906A00276	December 12, 2011	1 year
RF Section	HP	85420E	3705A00248	December 12, 2011	1 year
Active Loop Antenna	EMCO	6502	9506-2950	October 19, 2011	1 year
Antenna Mast	ARA	AAM-4A	1001	N/A	N/A
Turntable	ARA	ART-1001/4	1001	N/A	N/A
Mast & Table Controller	ARA	ACU-2/5	1001	N/A	N/A
Printer	HP	LaserJet 2200	JPKGC19982	N/A	N/A

Figure 8 Spurious Radiated Emission 9 kHz -30 MHz Test Equipment List

5.5 Field Strength Calculation

The field strength is calculated directly by the EMI Receiver software, and a "Correction Factors" data disk, using the following equation:

$$FS = RA + AF + CF$$

FS: Field Strength [dB μ V/m]
 RA: Receiver Amplitude [dB μ V]
 AF: Receiving Antenna Correction Factor [dB/m]
 CF: Cable Attenuation Factor [dB]

Example: FS = 30.7 dB μ V (RA) + 14.0 dB (AF) + 0.9 dB (CF) = 45.6 dB μ V

No external pre-amplifiers are used.

6. Spurious Radiated Emission 30 MHz – 25 GHz

6.1 Test Specification

30 MHz-25000 MHz, F.C.C., Part 15, Subpart C

6.2 Test Procedure

The E.U.T. operation mode and test set-up are as described in Section 3.

See Section 3.1 Justification of the System Test Configuration concerning the E.U.T. orientation for this test.

A preliminary measurement to characterize the E.U.T was performed inside the shielded room at a distance of 3 meters, using peak detection mode and broadband antennas. The preliminary measurements produced a list of the highest emissions. The E.U.T was then transferred to the open site, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 0.8 meters above the ground..

The frequency range 30 MHz-1000 MHz was scanned, and the list of the highest emissions was verified and updated accordingly.

The levels of the emissions within the frequency ranges of the restricted bands (Section 15.205 of FCC Part 15) were compared to the limits of the table in Section 15.209 (a), General Requirements.

The emissions were measured using a computerized EMI receiver complying to CISPR 16 requirements. The specification limits and applicable correction factors are loaded to the receiver via a 3.5" floppy disk.

In the frequency range 1-2.9 GHz, a computerized EMI receiver complying to CISPR 16 requirements was used.

In the frequency range 2.9-25.0 GHz, a spectrum analyzer including a low noise amplifier was used. During average measurements, the IF bandwidth was 1 MHz and the video bandwidth was 100Hz. During peak measurements, the IF bandwidth was 1 MHz and the video bandwidth was 3 MHz.

The test distance was 3 meters.

The readings were maximized by adjusting the antenna height between 1-4 meters, the turntable azimuth between 0-360°, and the antenna polarization.

Verification of the E.U.T emissions was based on the following methods: turning the E.U.T on and off; using a frequency span less than 10 MHz; observation of the signal level during turntable rotation. (Background noise is not affected by the rotation of the E.U.T.)

The E.U.T. was tested in three operating channels and frequencies (11 (2.405 GHz); 18 (2.440 GHz; 26 (2.480 GHz)).

Spurious Radiated Emission, 30 MHz – 25 GHz

6.3 Test Results

JUDGEMENT: Passed by 6.8 dB

The EUT met the requirements of the F.C.C. Part 15, Subpart C, specification.
The results for all three operation channels were the same.

The signals in the band 30 MHz – 1.0 GHz were below the spectrum analyzer noise level, at least 20 dB below the specification limit.

For the operation channel 11 (2.405 GHz), the margin between the emission level and the specification limit is 9.6 dB in the worst case at the frequency of 2390.00 MHz, vertical polarization.

For the operation channel 18 (2.440 GHz), the margin between the emission level and the specification limit is 9.0 dB in the worst case at the frequency of 4880.00 MHz, horizontal polarization.

For the operation channel 26 (2.480 GHz), the margin between the emission level and the specification limit is 6.8 dB in the worst case at the frequency of 2483.50 MHz, horizontal vertical.

TEST PERSONNEL:

Tester Signature: For/ 

Date: 19.04.12

Typed/Printed Name: A. Sharabi

Spurious Radiated Emission, 30 MHz – 25 GHz

E.U.T Description uDataPass
Type 1. uDATAPASS PLUS (CAN)
 2. uDATAPASS PLUS(K-LINE, RED)
Part Number: 1. 800907430
 2. 800907431

Specification: FCC, Part 15, Subpart C

Antenna Polarization: Horizontal/Vertical Frequency range: 1.0 GHz to 25.0 GHz
Test Distance: 3 meters Detector: Peak

Operation Frequency (MHz)	Freq. (MHz)	Polarity (H/V)	Peak Reading (dB μ V/m)	Peak Specification (dB μ V/m)	Peak Margin (dB)
2405.00	2390.00	H	57.2	74.0	-16.8
2405.00	2390.00	V	57.1	74.0	-16.9
2405.00	4810.00	H	58.9	74.0	-15.1
2405.00	4810.00	V	64.2	74.0	-9.8
2440.00	4880.00	H	65.0	74.0	-9.0
2440.00	4880.00	V	57.0	74.0	-17.0
2480.00	2483.50	H	58.0	74.0	-16.0
2480.00	2483.50	V	67.2	74.0	-6.8
2480.00	4960.00	H	60.3	74.0	-13.7
2480.00	4960.00	V	57.4	74.0	-16.6

**Figure 9. Radiated Emission. Antenna Polarization: HORIZONTAL / VERTICAL.
Detector: Peak**

Margin refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.

“Peak Reading” includes correction factor.

* “Correction Factor” = Antenna Factor + Cable Loss- Low Noise Amplifier Gain

Spurious Radiated Emission, 30 MHz – 25 GHz

E.U.T Description uDataPass
Type 1. uDATAPASS PLUS (CAN)
 2. uDATAPASS PLUS(K-LINE, RED)
Part Number: 1. 800907430
 2. 800907431

Specification: FCC, Part 15, Subpart C

Antenna Polarization: Horizontal/Vertical

Frequency range: 1.0 GHz to 25.0 GHz

Test Distance: 3 meters

Detector: Average

Operation Frequency (MHz)	Freq. (MHz)	Polarity (H/V)	Average Reading (dB μ V/m)	Average Specification (dB μ V/m)	Average Margin (dB)
2405.00	2390.00	H	44.1	54.0	-9.9
2405.00	2390.00	V	44.4	54.0	-9.6
2405.00	4810.00	H	38.7	54.0	-15.3
2405.00	4810.00	V	40.1	54.0	-13.9
2440.00	4880.00	H	40.3	54.0	-13.7
2440.00	4880.00	V	38.6	54.0	-15.4
2480.00	2483.50	H	45.0	54.0	-9.0
2480.00	2483.50	V	44.0	54.0	-10.0
2480.00	4960.00	H	39.5	54.0	-14.5
2480.00	4960.00	V	39.4	54.0	-14.6

**Figure 10. Radiated Emission. Antenna Polarization: HORIZONTAL / VERTICAL.
Detector: Average**

Notes:

Margin refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.

“Average Reading” includes correction factor.

* Correction Factor = Antenna Factor + Cable Loss- Low Noise Amplifier Gain

Spurious Radiated Emission, 30 MHz – 25 GHz

6.4 Test Equipment Used

Instrument	Manufacturer	Model	Serial No.	Last Calibration Date	Period
EMI Receiver	HP	85422E	3906A00276	December 12, 2011	1 Year
RF Filter Section	HP	85420E	3705A00248	December 12, 2011	1 Year
Antenna Biconical	ARA	BCD 235/B	1041	November 12, 2011	1 Year
Antenna Log Periodic	ARA	LPD-2010/A	1038	March 29, 2011	1 Year
Antenna Log Periodic	A.H. Systems	SAS-200/511	253	January 27, 2011	2 Years
Double Ridged Waveguide Horn Antenna	EMCO	3115	29845	March 14, 2010	2 Years
Horn Antenna	ARA	SWH-28	1008	January 26, 2011	2 Years
Low Noise Amplifier	DBS MICROWAVE	LNA-DBS-0411N313	013	November 5, 2011	1 Year
Low Noise Amplifier	Sophia Wireless	LNA 28-B	232	August 23, 2011	1 Year
Spectrum Analyzer	HP	8592L	3826A01204	March 5, 2012	1 Year
Spectrum Analyzer	HP	8546E	3442A00275	January 11, 2012	1 Year
Antenna Mast	ARA	AAM-4A	1001	N/A	N/A
Turntable	ARA	ART-1001/4	1001	N/A	N/A
Mast & Table Controller	ARA	ACU-2/5	1001	N/A	N/A
Printer	HP	LaserJet 2200	JPKG19982	N/A	N/A

Figure 11 Spurious Radiated Emission 30 MHz -25 GHz Test Equipment List

Spurious Radiated Emission, 30 MHz – 25 GHz

6.5 *Field Strength Calculation 30 MHz – 1000 MHz*

The field strength is calculated directly by the EMI Receiver software, and a "Correction Factors" data disk, using the following equation:

$$[\text{dB}\mu\text{V/m}] \text{ FS} = \text{RA} + \text{AF} + \text{CF}$$

FS:	Field Strength [dB $\mu\text{V/m}$]
RA:	Receiver Amplitude [dB μV]
AF:	Receiving Antenna Correction Factor [dB/m]
CF:	Cable Attenuation Factor [dB]

Example: $\text{FS} = 30.7 \text{ dB}\mu\text{V (RA)} + 14.0 \text{ dB (AF)} + 0.9 \text{ dB (CF)} = 45.6 \text{ dB}\mu\text{V}$

No external pre-amplifiers are used.



7. Antenna Gain/Information

The antenna gain is 0 dBi simulated.

8. R.F Exposure/Safety

The typical placement of the E.U.T. is in a vehicle. The typical distance between the E.U.T. and the user in the worst case application, is 20 cm .

Calculation of Maximum Permissible Exposure (MPE)

Based on Section 1.1307(b)(1) Requirements

(a) FCC limits at 2440 MHz is: $1 \frac{mW}{cm^2}$

Using table 1 of Section 1.1310 limit for general population/uncontrolled exposures, the above level is an average over 30 minutes.

(b) The power density produced by the E.U.T. is

$$S = \frac{P_t G_t}{4\pi R^2}$$

P_t- Transmitted Power 5.1 mw Peak

G_T- Antenna Gain, 0 dBi = 1 (Numeric)

R- Distance from Transmitter using 20 cm worst case

(c) The peak power density is :

$$S_p = \frac{5.1 \times 1}{4\pi(20)^2} = 0.001 \frac{mW}{cm^2}$$

(d) This is below the FCC limit

9. APPENDIX B - CORRECTION FACTORS

9.1 Correction factors for CABLE

from EMI receiver
to test antenna
at 3 meter range.

FREQUENCY (MHz)	CORRECTION FACTOR (dB)	FREQUENCY (MHz)	CORRECTION FACTOR (dB)
10.0	0.3	1200.0	7.3
20.0	0.6	1400.0	7.8
30.0	0.8	1600.0	8.4
40.0	0.9	1800.0	9.1
50.0	1.1	2000.0	9.9
60.0	1.2	2300.0	11.2
70.0	1.3	2600.0	12.2
80.0	1.4	2900.0	13.0
90.0	1.6		
100.0	1.7		
150.0	2.0		
200.0	2.3		
250.0	2.7		
300.0	3.1		
350.0	3.4		
400.0	3.7		
450.0	4.0		
500.0	4.3		
600.0	4.7		
700.0	5.3		
800.0	5.9		
900.0	6.3		
1000.0	6.7		

NOTES:

1. The cable type is RG-214.
2. The overall length of the cable is 27 meters.
3. The above data is located in file 27MO3MO.CBL on the disk marked "Radiated Emission Tests EMI Receiver".

9.2 Correction factors for CABLE

from EMI receiver
to test antenna
at 3 meter range.

FREQUENCY (GHz)	CORRECTION FACTOR (dB)
1.0	1.2
2.0	1.6
3.0	2.0
4.0	2.4
5.0	3.0
6.0	3.4
7.0	3.8
8.0	4.2
9.0	4.6
10.0	5.0
12.0	5.8

NOTES:

1. The cable type is RG-8.
2. The overall length of the cable is 10 meters.

9.3 Correction factors for CABLE

from spectrum analyzer
to test antenna above 2.9 GHz

FREQUENCY (GHz)	CORRECTION FACTOR (dB)	FREQUENCY (GHz)	CORRECTION FACTOR (dB)
1.0	1.9	14.0	9.1
2.0	2.7	15.0	9.5
3.0	3.5	16.0	9.9
4.0	4.2	17.0	10.2
5.0	4.9	18.0	10.4
6.0	5.5	19.0	10.7
7.0	6.0	20.0	10.9
8.0	6.5	21.0	11.2
9.0	7.0	22.0	11.6
10.0	7.5	23.0	11.9
11.0	7.9	24.0	12.3
12.0	8.3	25.0	12.6
13.0	8.7	26.0	13.0

NOTES:

1. The cable type is SUCOFLEX 104 E manufactured by SUHNER.
2. The cable is used for measurements above 2.9 GHz.
3. The overall length of the cable is 10 meters.

9.4 Correction factors for LOG PERIODIC ANTENNA

**Type LPD 2010/A
at 3 and 10 meter ranges.**

Distance of 3 meters

FREQUENCY (MHz)	AFE (dB/m)
200.0	9.1
250.0	10.2
300.0	12.5
400.0	15.4
500.0	16.1
600.0	19.2
700.0	19.4
800.0	19.9
900.0	21.2
1000.0	23.5

Distance of 10 meters

FREQUENCY (MHz)	AFE (dB/m)
200.0	9.0
250.0	10.1
300.0	11.8
400.0	15.3
500.0	15.6
600.0	18.7
700.0	19.1
800.0	20.2
900.0	21.1
1000.0	23.2

NOTES:

1. Antenna serial number is 1038.
2. The above lists are located in file number 38M30.ANT for a 3 meter range, and file number 38M100.ANT for a 10 meter range.
3. The files mentioned above are located on the disk marked "Radiated Emission Test EMI Receiver".

9.5 Correction factors for LOG PERIODIC ANTENNA
Type SAS-200/511
at 3 meter range.

FREQUENCY (GHz)	ANTENNA FACTOR (dB)
1.0	24.9
1.5	27.8
2.0	29.9
2.5	31.2
3.0	32.8
3.5	33.6
4.0	34.3
4.5	35.2
5.0	36.2
5.5	36.7
6.0	37.2
6.5	38.1

FREQUENCY (GHz)	ANTENNA FACTOR (dB)
7.0	38.6
7.5	39.2
8.0	39.9
8.5	40.4
9.0	40.8
9.5	41.1
10.0	41.7
10.5	42.4
11.0	42.5
11.5	43.1
12.0	43.4
12.5	44.4
13.0	44.6

NOTES:

1. Antenna serial number is 253.
2. The above lists are located in file number SAS3M0.ANT for a 3 meter range.
3. The files mentioned above are located on the disk marked "Antenna Factors".

9.6 Correction factors for BICONICAL ANTENNA
Type BCD-235/B,
at 3 meter range

FREQUENCY (MHz)	AFE (dB/m)
20.0	19.4
30.0	14.8
40.0	11.9
50.0	10.2
60.0	9.1
70.0	8.5
80.0	8.9
90.0	9.6
100.0	10.3
110.0	11.0
120.0	11.5
130.0	11.7
140.0	12.1
150.0	12.6
160.0	12.8
170.0	13.0
180.0	13.5
190.0	14.0
200.0	14.8
210.0	15.3
220.0	15.8
230.0	16.2
240.0	16.6
250.0	17.6
260.0	18.2
270.0	18.4
280.0	18.7
290.0	19.2
300.0	19.9
310	20.7
320	21.9
330	23.4
340	25.1
350	27.0

NOTES:

1. Antenna serial number is 1041.
2. The above list is located in file 19BC10M1.ANT on the disk marked "Radiated Emissions Tests EMI Receiver".



9.7 Correction factors for Double-Ridged Waveguide Horn

**Model: 3115, S/N 29845
at 3 meter range.**

FREQUENCY	ANTENNA	ANTENN	FREQUENCY	ANTENNA	ANTENNA
(GHz)	FACTOR	A Gain	(GHz)	FACTOR	Gain
	(dB 1/m)	(dBi)		(dB 1/m)	(dBi)
1.0	24.8	5.4	10.0	38.8	11.4
1.5	26.1	7.6	10.5	38.9	11.8
2.0	28.6	7.7	11.0	39.0	12.1
2.5	29.8	8.4	11.5	39.6	11.8
3.0	31.4	8.4	12.0	39.8	12.0
3.5	32.4	8.7	12.5	39.6	12.5
4.0	33.7	8.6	13.0	40.0	12.5
4.5	33.4	9.9	13.5	39.8	13.0
5.0	34.5	9.7	14.0	40.2	13.0
5.5	35.1	9.9	14.5	40.6	12.9
6.0	35.4	10.4	15.0	41.3	12.4
6.5	35.6	10.8	15.5	39.5	14.6
7.0	36.2	10.9	16.0	38.8	15.5
7.5	37.3	10.4	16.5	40.0	14.6
8.0	37.7	10.6	17.0	41.4	13.4
8.5	38.3	10.5	17.5	44.8	10.3
9.0	38.5	10.8	18.0	47.2	8.1
9.5	38.7	11.1			



9.8 Correction factors for

**Horn Antenna
Model: SWH-28
at 1 meter range.**

FREQUENCY (GHz)	APE (dB /m)	Gain (dB1)
18.0	40.3	16.1
19.0	40.3	16.3
20.0	40.3	16.1
21.0	40.3	16.3
22.0	40.4	16.8
23.0	40.5	16.4
24.0	40.5	16.6
25.0	40.5	16.7
26.0	40.6	16.4



9.9 Correction factors for ACTIVE LOOP ANTENNA

Model 6502

S/N 9506-2950

FREQUENCY	Magnetic Antenna Factor	Electric Antenna Factor
(MHz)	(dB)	(dB)
.009	-35.1	16.4
.010	-35.7	15.8
.020	-38.5	13.0
.050	-39.6	11.9
.075	-39.8	11.8
.100	-40.0	11.6
.150	-40.0	11.5
.250	-40.0	11.6
.500	-40.0	11.5
.750	-40.1	11.5
1.000	-39.9	11.7
2.000	-39.5	12.0
3.000	-39.4	12.1
4.000	-39.7	11.9
5.000	-39.7	11.8
10.000	40.2	11.3
15.000	-40.7	10.8
20.000	-40.5	11.0
25.000	-41.3	10.2
30.000	42.3	9.2



10. Comparison Industry Canada Requirements With FCC

DataPass

M/N : 1. DATAPASS AT OBD-II 2. DATAPASS AT J1708/FMS
IC: 8264A-819507300 FCC ID: W8F819507300

Test	FCC	IC
Radiated Power Output	15.247(b)	RSS 210 Issue 8 A8.4(4)
Spurious radiated emission in the restricted band	15.205(c)	RSS 210 Issue 8 2.7(Table2)
RF Exposure Limits	1.1307(b)(1)	RSS 102 4.4