



Engineering Services & Marketing



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IEC / ISO 17025 No. 082-TEST

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# TEST REPORT

File Number : MR-142-2007

E.U.T. Name : Traficam Wireless US

Type : 10-6031

Serial n°: 066788

- The Test Report may not be reproduced other than in full except with a written approval of the issuing laboratory.
- The test results relate only to the items tested.

Test Engineer

ESM Manager



## EMC TEST LABORATORY

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ESM Manager  
Test Engineer  
Test Engineer

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If the logo->



is mentioned in front of the standard n° = measurement under accreditation

**- Name and address of the customer .**

Name : **Traficon**  
 Contact person : **Dhr, Peter Vansteelandt**  
 Address : **Vlamingstraat 19**  
               **B-8560 Wevelgem**  
 Tel/Fax : **+32(0) 56 37 22 00**      **+32(0) 56 37 21 96**  
 GSM : **-----**

**- Description of the E.U.T.**

Name : **Traficam Wireless US**  
 Type : **10-6031**  
 Serial N° : **066788**  
 Quotation N° : **-----**  
 Part of : **-----**  
 Short description of the functions : (photo) if applicable  
**None**

PEMC date in : **28/06/2007**  
 PEMC date out : **28/06/2007**  
 Manual : **No**

**- Measurements according following standard(s) :**

**FCC measurements according:**  
**15.209 Radiated emissions**  
**15.207 Conducted emissions**

**- Sampling method.**

**None**

Sampling method :  
 If YES how :

**- Subcontracting.**

**None**

Tests :  
 Name subcontractor :

**- Remarks and actions during measurement:**

**During measurements the wireless module was powered on. Via software the listening mode was active transmit disabled. Included in this report is the FCC Grant for the used module thus covering the complete product.**

For contents of testplan Refer to QP-0017.

**- Uncertainty :**

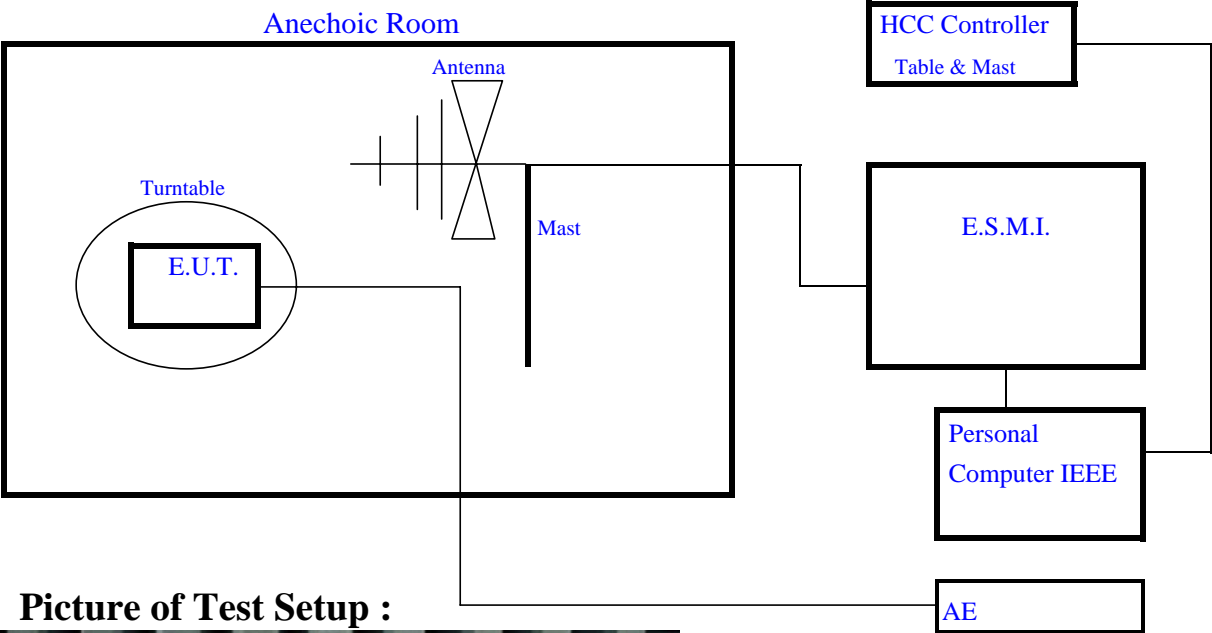
(if the measured value is within the uncertainty of the measuring system, the uncertainty will be indicated into this report. The judge Pass/Fail will not be indicated )

**- Temperature & humidity during measurements was between spec:**

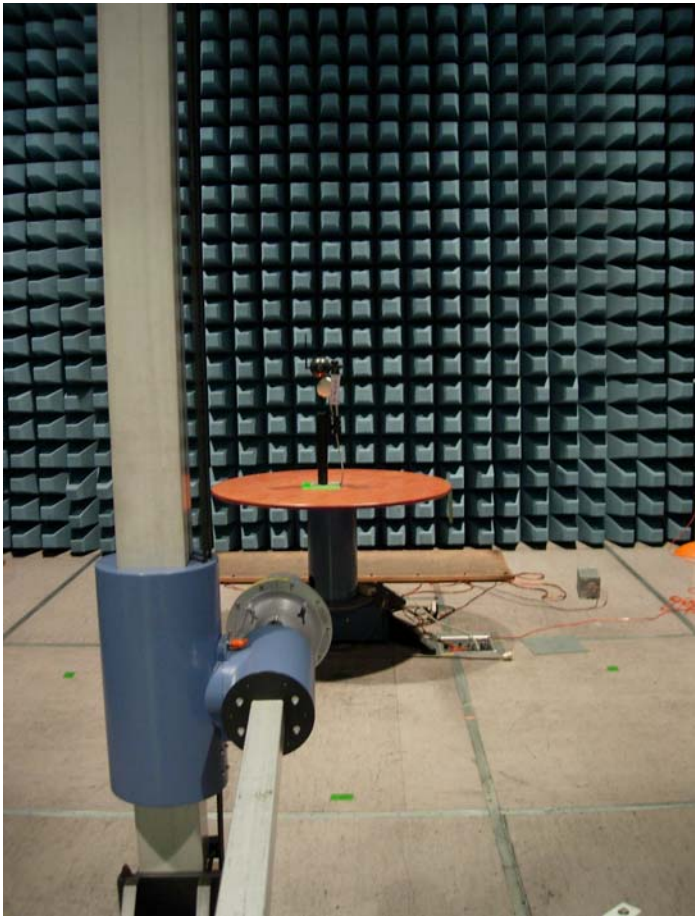
Humidity : _____	→ min.: <b>30%</b>	max.: <b>70 %</b>	Actua <b>-----</b>
Temperature: _____	→ min.: <b>18°C</b>	max.: <b>26 °C</b>	Actual <b>-----</b>
Atmospheric pressure : <b>-----</b>		Spec. :	<b>-----</b>
Mains Voltage : <b>-----</b>		Spec. :	<b>-----</b>
DC Voltage : Value : <b>24V</b>		Spec. :	<b>-----</b>

DRAWING AND/OR PICTURE OF TEST SETUP

Test system : PEMC 01  
According standard N° : FCC15.209 Intentional Radiated Emissions



Picture of Test Setup :



## USED EQUIPMENT DURING MEASUREMENT

Test system : PEMC 01

According standard N° : FCC15.209

Intentional radiated emissions

Pemc N°	Description /type	Type	Serial n°	Certificat n°
01-003 K	Bilog antenna 30 MHz-1GHz	CBL6111A	1556	EHA295/06
01-005 K	Impedance transformer 50 <-> 75 Ohm	RAM	840946/0011	-----
01-006 K	LISN 9 KHz - 30 MHz 2 * 10A, TWO LINE V-NETWORK ESH3-Z5	ESH3-Z5	840730/001	5148600.00
01-007 K	LISN 100 KHz - 200 MHz 100A, 600V DC ESH3-Z6	ESH3-Z6	840522/005	5063900.00
01-012 K	Magnetic Loop Antenna	HFH2-Z2	840762/006	-----
01-014 K	EMI test receiver 20 Hz - 26.5 GHz	ESMI	839699/0010 & 840498/004	6108800.00
01-015K	RF Signal generator 5 kHz - 1500 MHz	SMT02	841067/003	050740
01-020 K	Adjustable DC Power supply for DUT, max. 32 V, 10 A	NGSM	451367/0389	050679
01-038 K	Amplifier A.R. 9 kHz - 2 GHz typ 10 dB	CPA9231A	3205 / 18564	-----
01-039 K	ESH3-Z6 V-network 5µH/50ohm LISN 100 kHz - 200 MHz 100A , 600V DC	ESH3-Z6	846422/027	6108900.00
01-040 K	Active rod antenna 9 kHz - 30 MHz	HFH2-Z6	844857/008	E01080094/1
01-041	RF cable Rod Antenna BNC-BNC	BNC-BNC	None	VR-003-2004
01-042	Power cable rod antenna			
01-043	Antenna probe ROD		4204.1010.02	
01-044 K	Signal divider 1Mhz - 3000Mhz 50 ohm	11N50B	95089	0
01-045 K	SWR bridge 50 Ohm 5 MHz - 2500 MHz		844979/003	-----
01-046	Power cable magnetic loop antenna			
01-052 K	Shielded Calibrated Magnetic field pick-up Coil 5 Hz - 10 MHz	HZ-10	847413/020	0
01-053K	Ultra Broadband Antenna 30MHz ~ 3000MHz	HL562	359524/009	4041.3000.02
01-054K	LISN 50 ohm 5µH 10 KHz-100(200) MHz	NNBM8125	560	5148800.00
01-055K	Passive Probe 250v~/50Hz 1500 Ohm 9pF 30 dB 9kHz-30 MHz	ESH2-Z3	837517/002	0
01-056K	Current Probe 20Hz-100 MHz	EZ-17 /02	837394/015	none
01-057K	Decoupling clamp 1...1000 MHz	FTC40x15E	5310	none
01-058K	LOG-PER Antenna 1 GHz ~ 26GHz	HL 025	100193	EH-A191/06
01-059K	Pre-amplifier 1 GHz ~ 26GHz	AFS	937326	EH-A191/06

OVERVIEW TEST RESULTS

Test System : PEMC -01

According standard : FCC15.209 Intentional Radiated Emission

Test mode used	Antenna Polarisation		Requests from customer	Remarks
	Horizontal	Vertical		
Combined horizontal & Vertical .	X	X		
Used test setup and EUT placement				
1 Connected with DB25 to PC in CR	P	P	Measured from 30MHz ~ 1GHz	DC 24V from ESM
2 Connected with DB25 to PC in CR	P	P	Measured from 1 ~ 10GHz	DC 24V from ESM
3	-	-		
4	-	-		
5	-	-		
6	-	-		
7	-	-		
8	-	-		
9	-	-		
10	-	-		
11	-	-		
12	-	-		
13	-	-		
14	-	-		
15	-	-		

ValidationHardwareSoftware

Legend

P = Test Pass

- = Test not performed/input not used

F = Test Fail

X = Used Input

# Measurement intentional Radiated Emissions

MR-142-2007

EUT: Traficam Wireless US prod 10-6031 sern° 066788  
Manufacturer: Traficon (Witness Peter Vansteelandt)  
Operating Condition: Normal (24 V DC Wireless transmit mod powered / Transmit Off )  
Test Site: ESM EMC centre  
Operator: Meuleman Hendrik  
Test Specification: FCC15.209 (2006) 30MHz ~ 1000MHz  
Comment: Con AE equip Outside PC  
Start of Test: 28/06/2007 / 9:29:39

## SCAN TABLE: "FCC15.209\_30Mhz~1GHz"

Short Description: FCC15.209 AVG préview  
Unit: dBµV/m

Detector: Mode:

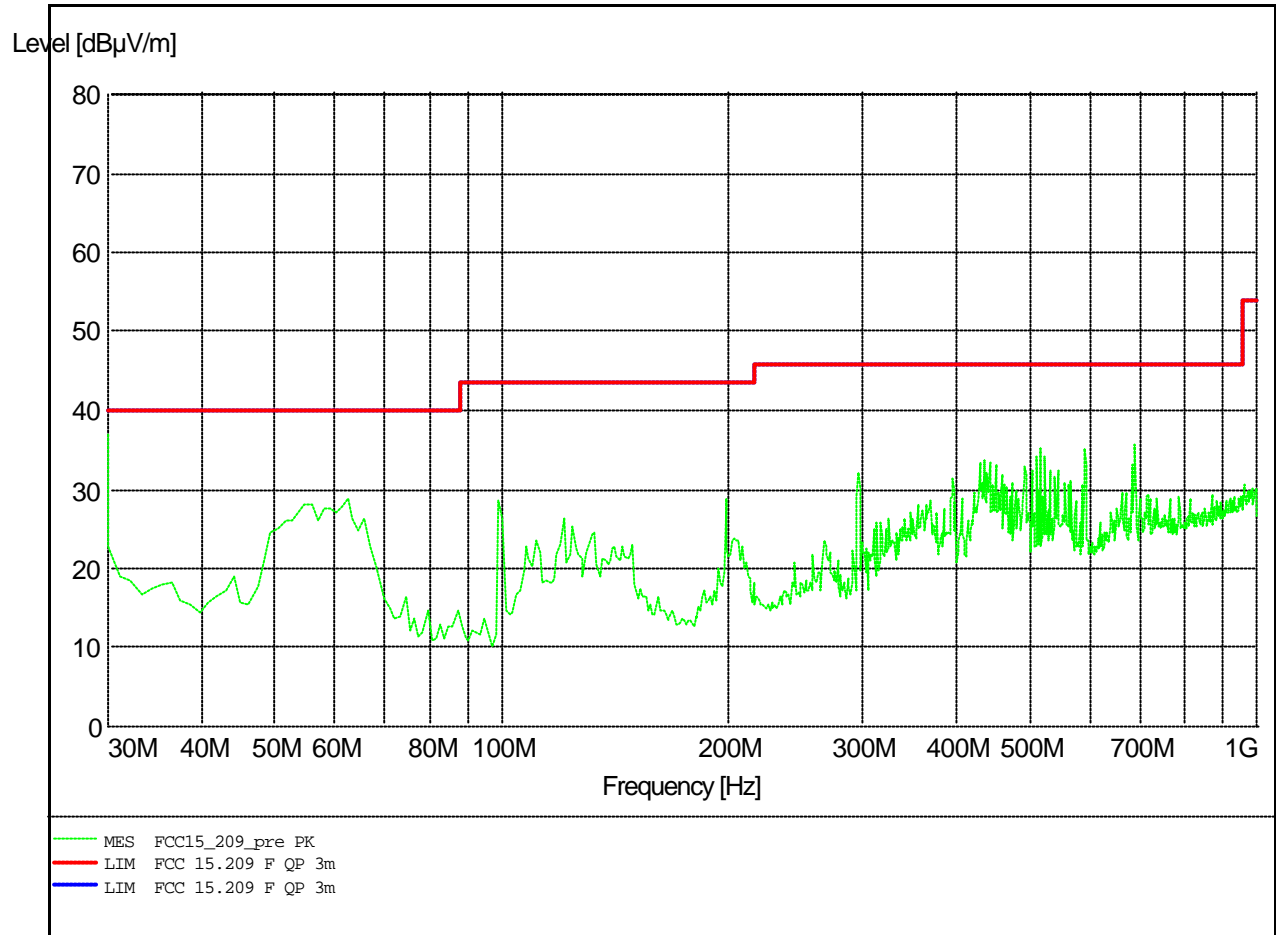
Curve 1: QuasiPeak MaxHold

Subrange 1:

Start Frequency: 30.0 MHz Step Size: 50.0 kHz  
Stop Frequency: 1.0 GHz  
Measure Time: 5.0 ms  
IF Bandwidth: 120 kHz

Receiver: ESXI Transducer: CBL61113M  
Signal Path: None System Transducer: None  
Meas. Mode: Lin Add. Transd. 1: AC CP1 (X12) - RFIN1  
Tracking Gen.: Off Add. Transd. 2: AC CP2 (X10) - ANT  
Input: 2DC Add. Transd. 3: PEMC0160K(D)







# Measurement intentional Radiated Emissions

MR-142-2007

EUT: Traficam Wireless US prod 10-6031 sern° 066788  
Manufacturer: Traficon (Witness Peter Vansteelandt)  
Operating Condition: Normal (24 V DC Wireless module power on / Transmit Off)  
Test Site: ESM EMC centre  
Operator: Meuleman Hendrik  
Test Specification: FCC15.209 (2006) 1GHz~10GHz  
Comment: Con AE equip Outside PC  
Start of Test: 28/06/2007 / 10:25:14

## SCAN TABLE: "FCC15.209\_1~18GHz"

Short Description: FCC15.209 AVG préview  
Unit: dBµV/m

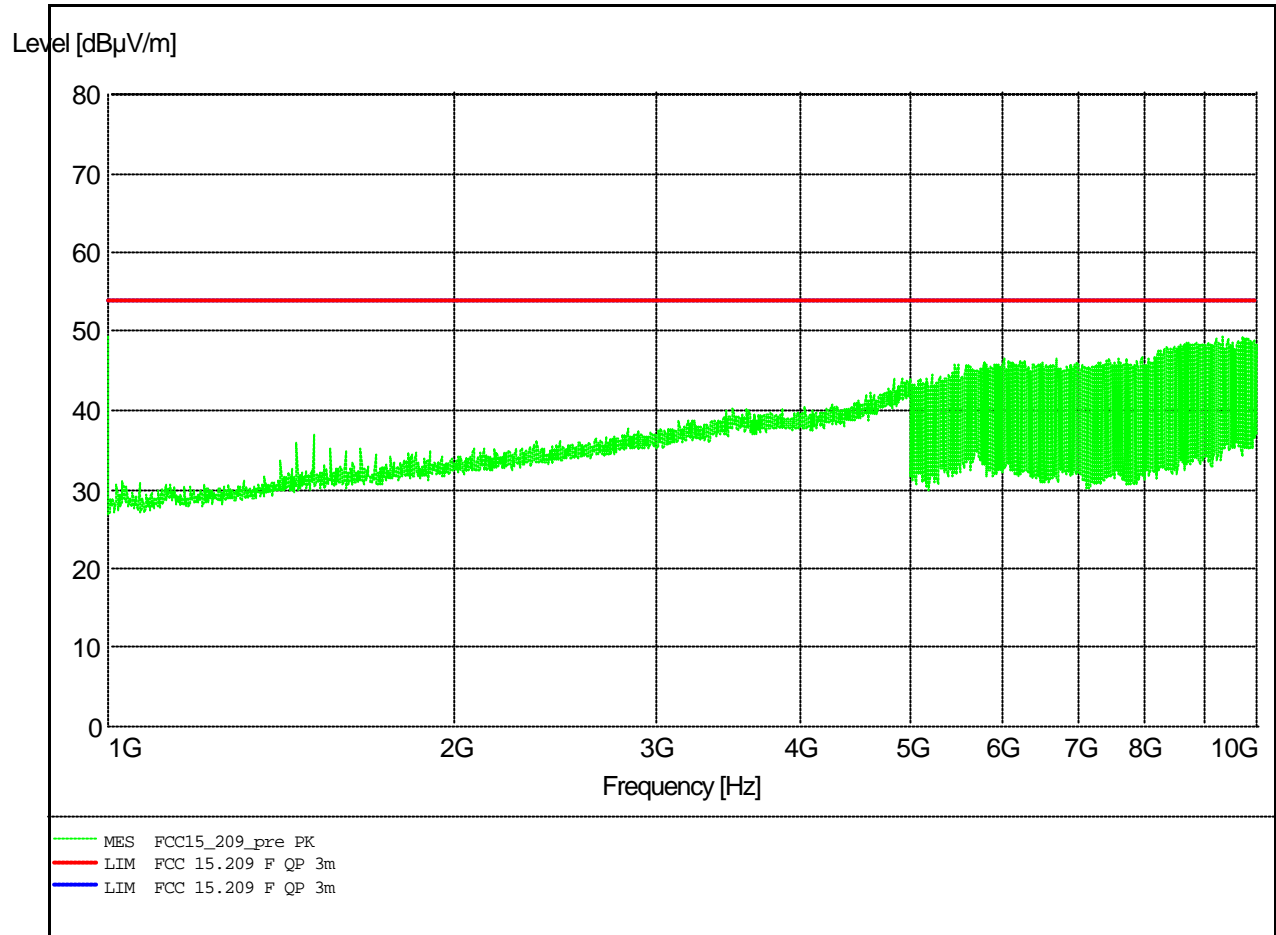
Detector: Mode:

Curve 1: Average MaxHold

Subrange 1:

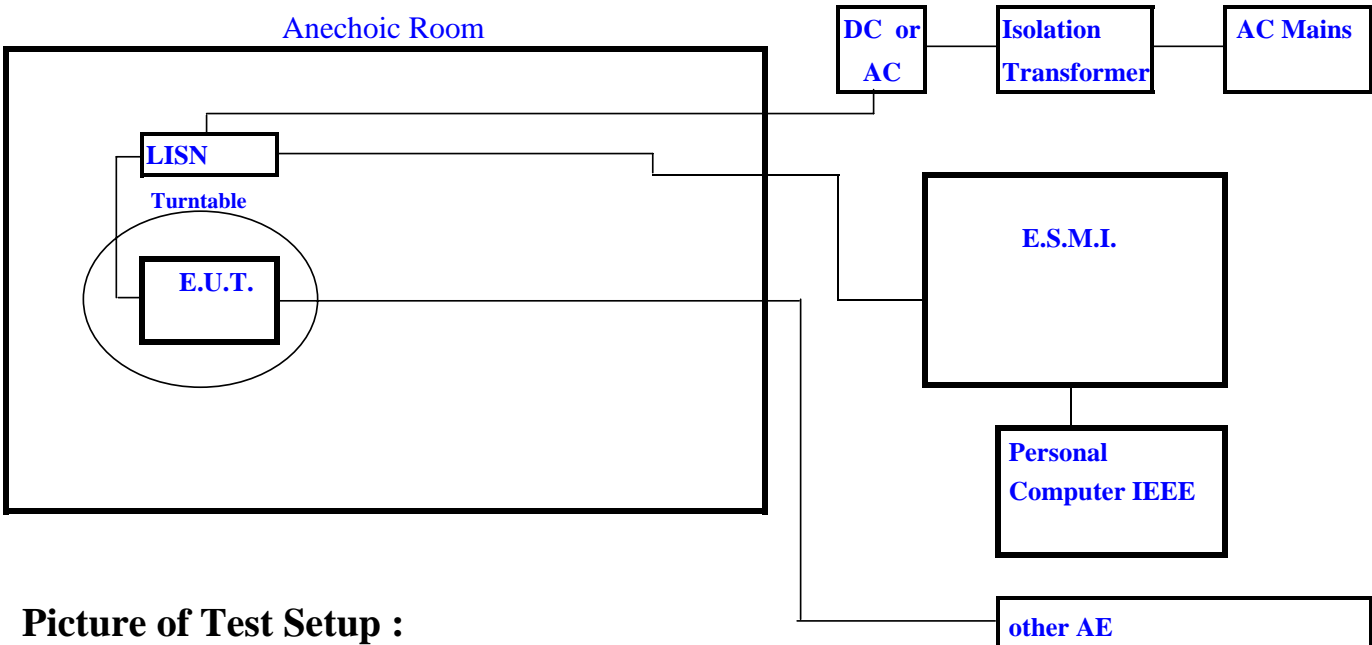
Start Frequency: 1.0 GHz Step Size: 500.0 kHz  
Stop Frequency: 6.0 GHz  
Measure Time: 5.0 ms  
IF Bandwidth: 1 MHz

Receiver: ESXI Transducer: HL025+pre-amp  
Signal Path: None System Transducer: None  
Meas. Mode: Lin Add. Transd. 1: ANT HL025-RFIN2  
Tracking Gen.: Off Add. Transd. 2: None  
Input: 2DC Add. Transd. 3: None

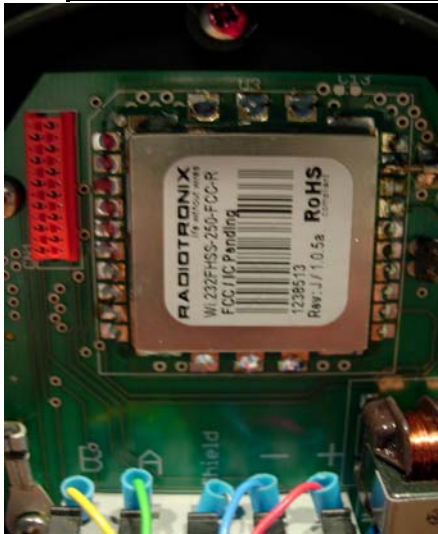


DRAWING AND/OR PICTURE OF TEST SETUP

Test system : PEMC 01 Conducted disturbances  
According standard N° : FCC15.207



Picture of Test Setup :



**USED EQUIPMENT DURING MEASUREMENT**Test system : **PEMC 01**According standard N° : **FCC15.207****Conducted disturbance**


Pemc N°	Description /type	Type	Serial n°	Certificat n°
01-003 K	Bilog antenna 30 MHz-1GHz	CBL6111A	1556	EHA295/06
01-005 K	Impedance transformer 50 <-> 75 Ohm	RAM	840946/0011	-----
01-006 K	LISN 9 KHz - 30 MHz 2 * 10A, TWO LINE V-NETWORK ESH3-Z5	ESH3-Z5	840730/001	5148600.00
01-007 K	LISN 100 KHz - 200 MHz 100A, 600V DC ESH3-Z6	ESH3-Z6	840522/005	5063900.00
01-012 K	Magnetic Loop Antenna	HFH2-Z2	840762/006	-----
01-014 K	EMI test receiver 20 Hz - 26.5 GHz	ESMI	839699/0010 & 840498/004	6108800.00
01-015K	RF Signal generator 5 kHz - 1500 MHz	SMT02	841067/003	050740
01-020 K	Adjustable DC Power supply for DUT, max. 32 V, 10 A	NGSM	451367/0389	050679
01-038 K	Amplifier A.R. 9 kHz - 2 GHz typ 10 dB	CPA9231A	3205 / 18564	-----
01-039 K	ESH3-Z6 V-network 5µH/50ohm LISN 100 kHz - 200 MHz 100A , 600V DC	ESH3-Z6	846422/027	6108900.00
01-040 K	Active rod antenna 9 kHz - 30 MHz	HFH2-Z6	844857/008	E01080094/1
01-041	RF cable Rod Antenna BNC-BNC	BNC-BNC	None	VR-003-2004
01-042	Power cable rod antenna			
01-043	Antenna probe ROD		4204.1010.02	
01-044 K	Signal divider 1Mhz - 3000Mhz 50 ohm	11N50B	95089	0
01-045 K	SWR bridge 50 Ohm 5 MHz - 2500 MHz		844979/003	-----
01-046	Power cable magnetic loop antenna			
01-052 K	Shielded Calibrated Magnetic field pick-up Coil 5 Hz - 10 MHz	HZ-10	847413/020	0
01-053K	Ultra Broadband Antenna 30MHz ~ 3000MHz	HL562	359524/009	4041.3000.02
01-054K	LISN 50 ohm 5µH 10 KHz-100(200) MHz	NNBM8125	560	5148800.00
01-055K	Passive Probe 250v~/50Hz 1500 Ohm 9pF 30 dB 9kHz-30 MHz	ESH2-Z3	837517/002	0
01-056K	Current Probe 20Hz-100 MHz	EZ-17 /02	837394/015	none
01-057K	Decoupling clamp 1...1000 MHz	FTC40x15E	5310	none
01-058K	LOG-PER Antenna 1 GHz ~ 26GHz	HL 025	100193	EH-A191/06
01-059K	Pre-amplifier 1 GHz ~ 26GHz	AFS	937326	EH-A191/06

File Number : MR-142-2007

OVERVIEW TEST RESULTS

Test System : PEMC 01

According standard : FCC15.207 Conducted disturbance

	E.U.T.									
	INPUTS					OUTPUTS				
	DC					DC				
Conducted emissions	X	--	--	--	--	P	--	--	--	--
Legend	P = Test Pass					F = Test Fail				
	= Validation					X = Used Input				
	-- = Test not performed/input not used									

# Measurement of conducted disturbance at DC port

MR-142-2007

EUT: Traficam Wireless US prod 10-6031 sern°066788  
Manufacturer: Traficon ( Witness Peter Vansteelandt)  
Operating Condition: Normal (DC 24V Wireless mod powered no transmit)  
Test Site: ESM EMC Centre  
Operator: Meuleman Hendrik  
Test Specification: FCC part15.207 (2006) Class A device  
Comment: AE in CR (PC )  
Start of Test: 28/06/2007 / 13:39:40

## SCAN TABLE: "FCC15.207 Conducted"

Short Description: FCC15.207 Condcuted  
Unit: dBµV

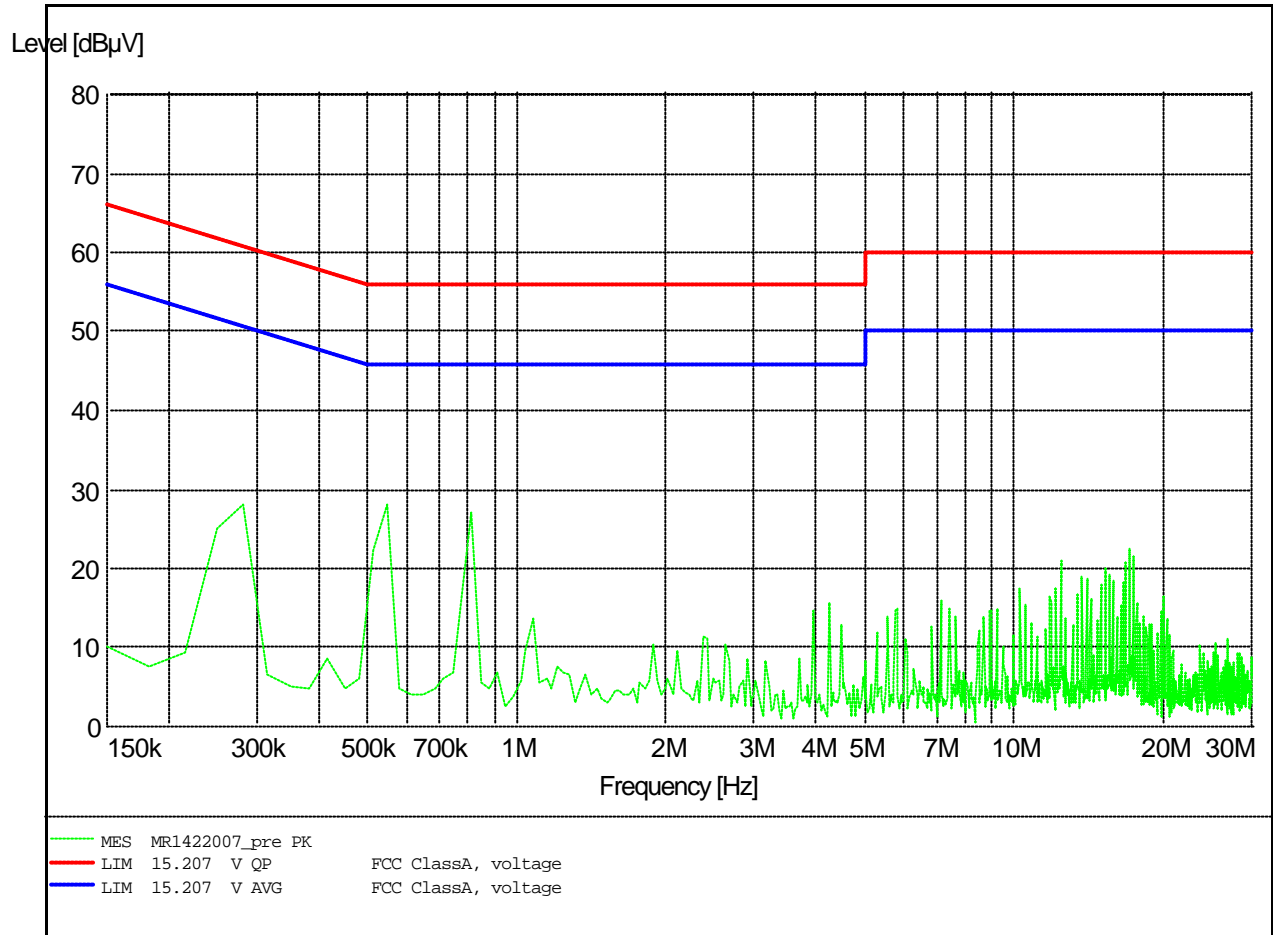
Detector: Mode:

Curve 1: QuasiPeak ClearWrite  
Curve 2: Average ClearWrite

Subrange 1:

Start Frequency: 150.0 kHz Step Size: 6.0 kHz  
Stop Frequency: 30.0 MHz  
Measure Time: 10.0 ms  
IF Bandwidth: 10 kHz

Receiver: ESXI Transducer: ESH3-Z5  
Signal Path: None System Transducer: None  
Meas. Mode: Lin Add. Transd. 1: CR LISN - RFIN1  
Tracking Gen.: Off Add. Transd. 2: None





**TCB****GRANT OF EQUIPMENT  
AUTHORIZATION****TCB****Certification****Issued Under the Authority of the  
Federal Communications Commission****By:****American TCB, Inc.  
6731 Whittier Avenue Suite C110  
McLean, VA 22101****Date of Grant: 05/30/2007****Application Dated: 05/29/2007****Radiotronics Inc.  
207 Industrial Blvd.  
Moore, OK 73160****Attention: Gregg Kepler , Product Manager****NOT TRANSFERABLE**

EQUIPMENT AUTHORIZATION is hereby issued to the named GRANTEE, and is VALID ONLY for the equipment identified hereon for use under the Commission's Rules and Regulations listed below.

**FCC IDENTIFIER:** Q7V-3F090009X**Name of Grantee:** Radiotronics Inc.**Equipment Class:** Part 15 Spread Spectrum Transmitter**Notes:** Wi.232FHSS-250-FCC-R Modular transmitter

<u>Grant Notes</u>	<u>FCC Rule Parts</u>	<u>Frequency Range (MHZ)</u>	<u>Output Watts</u>	<u>Frequency Tolerance</u>	<u>Emission Designator</u>
	15C	902.971 - 926.277	0.225		

Power Output listed is Conducted. Modular approval. This module is approved for use in mobile only configurations. This module must be installed by the OEM or OEM integrator. Instructions on installation of this module may not be provided to the end user. Only those antenna(s) tested with the device or similar antenna(s) with equal or lesser gain may be used with this transmitter. The antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.