



# TEST REPORT

An Accredited Technical Test Executed under the Danish Accreditation Scheme

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## Prøvningsrapport

for akkrediteret prøvning i henhold til Dansk Akkrediterings Ordning

No. of annexes 3  
Antal bilag

<b>Test-report No</b> <i>Prøvningsrapport Nr.</i>	UPRF990358-01	<b>Our reference</b> <i>Vor reference</i>	SHALL	<b>Copy No</b> <i>Eksemplar Nr.</i>	1
<b>Equipment</b> <i>Udstyr</i>	Hand sense actuator				
<b>Manufacture</b> <i>Fabrikat</i>	Duelco process A/S				
<b>Type</b> <i>Type</i>	TST-2-42000002				
<b>Serial No</b> <i>Serie Nr.</i>	42431132/42431175	<b>Equipment received</b> <i>Udstyr modtaget</i>	5/10-1999		

<b>Client</b> <i>Rekvirent</i>	Duelco Process A/S				
<b>Address</b> <i>Adresse</i>	Holtvej 10 Høruphav				
<b>Postal code</b> <i>Post Nr.</i>	6400	<b>City</b> <i>By</i>	Sønderborg	<b>Country</b> <i>Land</i>	Denmark

<b>The testing has been carried out in accordance with</b> <i>Prøvningen er udført i henhold til</i>	EN61000-4-3 Immunity to radiated, radio frequency, electromagnetic fields
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<b>Remarks</b> <i>Bemærkninger</i>	Only 450 MHz, the 900 MHz GSM band and 1800 MHz are tested.
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<b>Date and signature</b> <i>Dato og underskrift</i>	15/10-99	 Søren Halling
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**The test result is only valid for the equipment tested.**

*Prøvningsresultatet gælder kun for det afprøvede udstyr.*

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*Prøvningsrapporten må kun gengives i uddrag, såfremt Telelaboratoriet skriftligt har godkendt dette.*

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## TEST REPORT

Date : 15-10-1999  
Object : Delco hand sense actuator  
Object no. : HR 20

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Object : Duelco hand sense actuator  
Object no. : HR 20

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### GENERAL TEST CONDITIONS

**Time for performance of measurement: 5/10 1999**

#### **Climatic conditions:**

Indoor: Relative humidity: 40 %

Ambient temperature: 22° C

**Measurement performed by: Søren Halling**

#### **Operational conditions and connections to auxiliary equipment:**

The two actuators plates were mounted on a sheet of metal. The equipment was powered via the steering relay box type HR-20 ser. no. 42700968. On the front of the box a set of LED's indicate the current status of the relays. During the test the LED's are monitored by a camera.

Photo in annex 1 and 2.

#### **Performance criterion:**

- A: The EUT shall continue to operate as intended. The relays must not change position during immunity test.
- B: The EUT shall continue to operate as intended after test.  
During the test degradation is allowed on condition that the operational status and any stored data are not affected. After the test, the equipment must return to normal performance without manual adjustment.
- C: Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by operation of the controls.

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Date : 15-10-1999  
Object : Duelco hand sense actuator  
Object no. : HR 20

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## Immunity to radiated, radio frequency electromagnetic fields

**Test is performed according to: ENV 50140 // IEC 1000-4-3**

### Requirements:

450, 860 - 990 and 1800 MHz 20 V/m with 80 % AM (1kHz).

Performance criteria A

### Test conditions:

Sweep time: 3 sec./step

Step size: 1 %

See photo in annex 1 for 450 and 900 MHz test and photo annex 2 for 1800 MHz test.

Wires are lifted 1 m above the EUT and routed horizontally to the sides forming a dipole-like system.

### Test results:

Test is performed with the specified test level

The EUT fulfils the requirements. No interference is observed.

### Test procedure and instruments

The test is performed in a fully anechoic chamber. The distance from the antenna to the front of the test object is 3 metres. The centre of the test object is at the same height as the centre of the antenna.

For each orientation of the test object one sweep is made with the antenna in horizontal position, and one sweep with the antenna in vertical position.

The field is AM modulated, 1 kHz modulation frequency, 80 % modulation depth.

The field strength in the set-up is precalibrated before the test object is placed. The field homogeneity meets the requirements of IEC 1000-4-3. The tolerance is less than -0.0 /+6.0 dB measured over a surface of 1.5 x 1.5 metre in the frequency range 20 - 1000 MHz.

The size of the anechoic chamber is: L x W x H: 9.0 x 5.0 x 4.3 metre.

The walls and the ceiling are covered by Rantec combiabsorbers (ferrite tiles and foam pyramids). The floor is fully covered by ferrite tiles and partly covered by foam pyramids.

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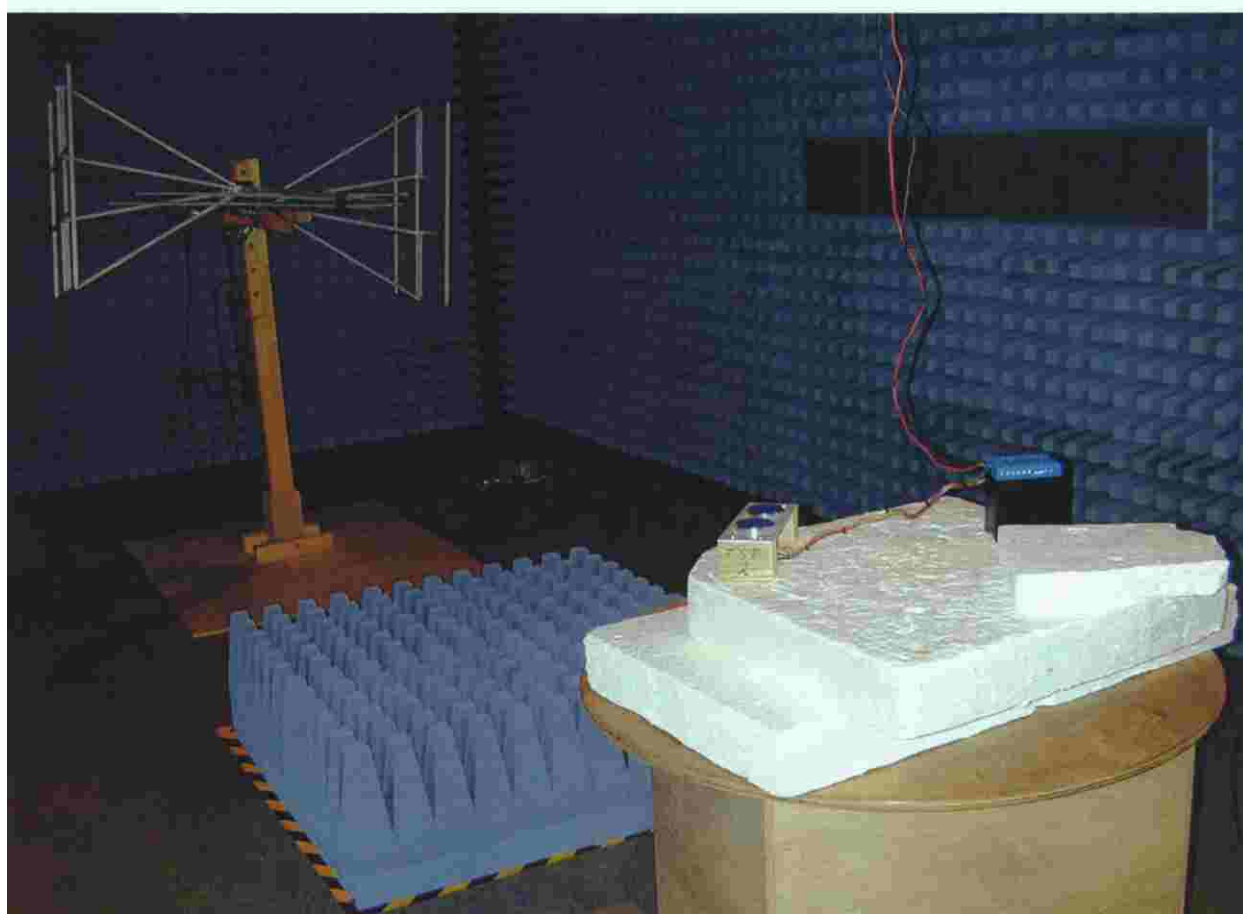
### Instruments:

Generator: R&S type SMG-3B no. 883 554/033 or no. 883 554/034.  
Amplifiers : 80 MHz - 1000 MHz, 500 W AR type 1000M5 no. L202152.  
Antenna: Bilog 80 - 1000 MHz EMCO type EM-6917, no. JT300768.  
Software: M18400.

### 1800 MHz:

Generator: R&S type SMHU no.L-201368  
Amplifier: Keltec LR625-20 no. 17674  
Antenna: EMCO Type 3161-01 no. M18942

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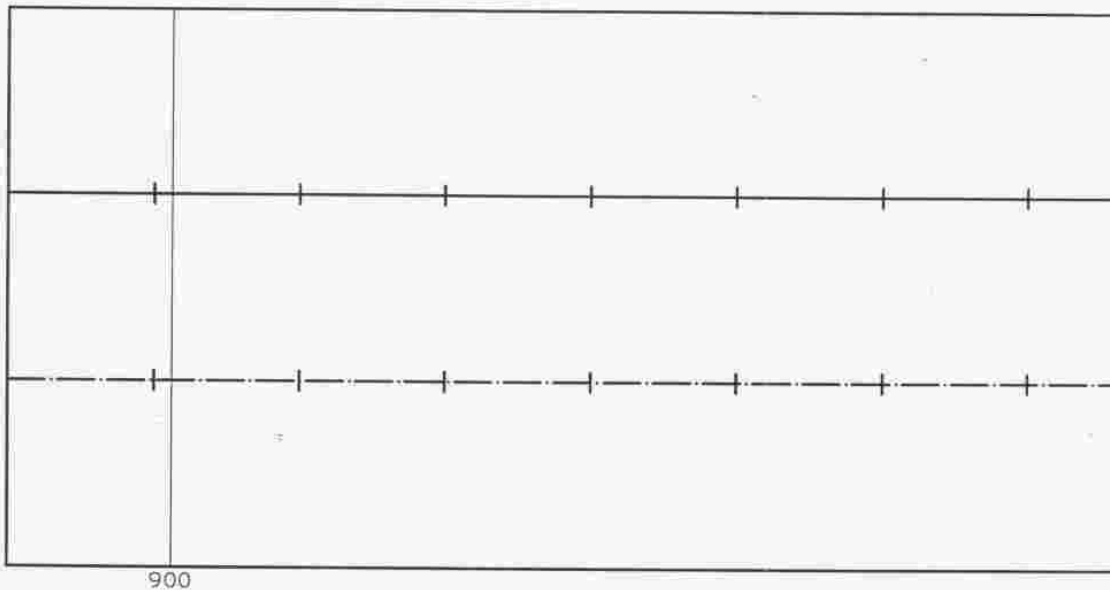
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RF Radiated Immunity  
#1: No recording

Date : 5 Oct 1999  
Object : Duelco  
Object no : HR-20

Time: 17:02:54

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Signature SHALL



Rec. signal, Hor | Rec. signal, Ver

X-axis: Frequency [MHz]

Y-axis: Level [ ]

Measurement conditions:

Recorded signal: No recording

Test setup : Ant, 80 to 1000 MHz, 500W, EMCO Bilog

Test level : 10 V/m

Freq. step : 1 %

Delay : 3 s

Modu. source : External

Modu. comment :

Cal. file #1 : HF17H

Cal. file #2 : HF17V

Cal. ID : 712/16/3, 712/16/3

Meas. offset : 0

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