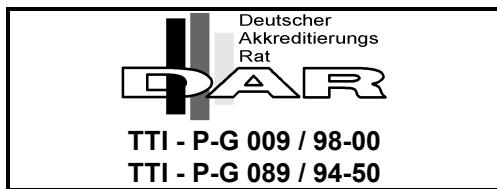


FCC ID: KPU41701



## EMISSION -- TEST REPORT

Testreport file no. : T17375-1-01 SM Date : Jan. 17, 2000  
of issue

Model : Tx 41701

Type : Transmitter for Keyless Entry System

Applicant : Naldec Corporation

Manufacturer : Naldec Corporation

Licence holder : Naldec Corporation

Address : 3-1 Shinchi Fuchu-cho Aki-gun

Hiroshima 735-0028 Japan

**Test result** accr<sup>d</sup>g.  
to the regulation(s)  
at page 3

**POSITIV**

This testreport with appendix consists of **37** pages.  
The testresult only responds to the tested sample. It is not allowed to copy  
this report even partly without the allowance of the testlaboratory.

D I R E C T O R Y

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**TEST REGULATIONS**

The tests were performed according to following regulations :

- - EN 50081-1 / 2.1991
- - EN 50081-2 / 7.1993

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- - EN 55011 / 3.1991

- - Group 1
- - class A

- - Group 2
- - class B

- - EN 55014 / 4.1993

- - Household appliances and similar
- - tools
- - Semiconductor devices

- - EN 55014 / A2:1990

Category:

- - EN 55104 / 5.1995

- - EN 55015 / A1:1990

- - EN 55015 / 12.1993

- - EN 55022 / 5.1995

- - class A

- - class B

- - prEN 55103-1 / 3.1995

- - prEN 50121-3-2 / 3.1995

- - EN 60601-1-2 / 4.1994

- - VCCI

- - class 1

- - class 2

- - 47 CFR Part 15 Subpart C (15.231)

**ADDRESS OF THE TEST LABORATORY**

- - MIKES BABT PRODUCT SERVICE GmbH  
Ohmstrasse 2-4  
D - 94342 Strasskirchen
- - \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**ENVIRONMENTAL CONDITIONS**

Temperature: 15-35 ° C  
Humidity 45-60 %  
Atmospheric pressure 860-1060 mbar

**POWER SUPPLY SYSTEM UTILIZED**

Power supply system : Internal batteries DC 3.0 V

**STATEMENT OF MEASUREMENT UNCERTAINTY**

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities that can account for a nominal measurement error of  $\pm 4$ dB. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

**SHORT DESCRIPTION OF THE EQUIPMENT UNDER TEST (EuT)**

The EuT is a transmitter for a keyless entry system.

Number of received/tested samples: 1 / 1

**DEFINITIONS FOR SYMBOLS USED IN THIS TEST REPORT**

- - Black box indicates that the listed condition, standard or equipment is applicable for this Report.
- - Blank box indicates that the listed condition, standard or equipment was not applicable for this Report.

**M E A S U R E M E N T   P R O T O C O L   F O R   F C C ,   V C C I**  
**A N D   A U S T E L**

**Test Methodology**

Conducted and radiated emission testing is performed according to the procedures in International Special Committee on Radio Interference (CISPR) Publication 22 (1993), European Standard EN 55022 and Australian Standard AS 3548 (which are based on CISPR 22).

The Japanese standard, "Voluntary Control Council for Interference (VCCI) by Data Processing Equipment and Electronic Office Machines, Technical Requirements" is technically equivalent to CISPR 22 (1993). For official compliance, a conformance report must be sent to and accepted by the VCCI.

**In compliance with FCC Docket 92-152, "Harmonization of Rules for Digital Devices Incorporate International Standards", testing for FCC compliance may be done following the ANSI C63.4-1992 procedures and using the FCC limits or the CISPR 22 Limits.**

**Measurement Error**

The test system for conducted emissions is defined as the LISN, tuned receiver and coaxial cable. The test system for spurious emissions is defined as the antenna, the pre-amplifier, the tuned receiver and the coaxial cable. These test systems have an expected error of  $\pm 3$  dB. The equipment comprising the test systems are calibrated on an annual basis.

**Justification**

The Equipment Under Test (EuT) is configured in a typical user arrangement in accordance with the manufacturer's instructions. A cable is connected to each available port and either terminated with a peripheral into its characteristic impedance or left unterminated. When appropriate, the cables are manually manipulated with respect to each other to obtain maximum emissions from the unit.

**General Standard Information**

The test methods used comply with CISPR Publication 22 (1993), EN 55022 (1987) and AS 3548 (1992) - "Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment" and with ANSI C63.4-1992 - "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz."

For detailed description of each measurement please refer to section testresults.

**T E S T R E S U L T****CONDUCTED EMISSIONS - 10/150 kHz - 30 MHz**

■ - Test not applicable
-------------------------

**Testlocation :**

- - Shielded room no. 1
- - Shielded room no. 2
- - Shielded room no. 3
- - Shielded room no. 4
- - Shielded room no. 5
- - Shielded room no. 6
- - Shielded room no. 7
- - Anechoic chamber
- - Full compact chamber

For TEST EQUIPMENT USED please refer to ATTACHMENT B:

**Description of Measurement**

The final level, expressed in dB $\mu$ V, is arrived at by taking the reading directly from the EMI receiver. This level is compared directly to the FCC Limit or to the CISPR limit, which is equivalent to the Australian AS 3548 limit.

To convert between dB $\mu$ V and  $\mu$ V, the following conversions apply:

$$\text{dB}\mu\text{V} = 20(\log \mu\text{V})$$

$$\mu\text{V} = \text{Inverse log}(\text{dB}\mu\text{V}/20)$$

Conducted emissions on the 50 Hz and/or 60 Hz power interface of the EuT are measured in the frequency range of 450 kHz to 30 MHz. The measurements are performed using a receiver, which has CISPR characteristic bandwidth and quasipeak detection, and a Line Impedance Stabilization Network (LISN), with  $50\Omega$  /  $50 \mu\text{H}$  (CISPR 16) characteristics. Table top equipment is placed on a non-conducting table 80 centimeters above the floor and is positioned 40 centimeters from the vertical ground plane (wall) of the screen room. If the minimum passing margin appears to be less than 20 dB with a peak mode measurement, the emissions are remeasured using a tuned receiver with quasipeak and average detection and recorded on the data sheets.

**Testresult**

The requirements are

**O - MET**

**O - NOT MET**

Min. limit margin

\_\_\_\_\_ dB at \_\_\_\_\_ MHz

Max. limit exceeding

\_\_\_\_\_ dB at \_\_\_\_\_ MHz

Remarks: The EuT is battery powered.

**SPURIOUS EMISSION**

Spurious emissions from the EuT are measured in the frequency range of 30 to **10 times the highest used frequency** using a tuned receiver and appropriate broadband linearly polarized antennas. Measurements between 30 MHz and 1000 MHz are made with 120 kHz/6 dB bandwidth and quasipeak detection and measurements above 1000 MHz are made with a 1 MHz/6 dB bandwidth and peak detection, remeasurement of results which may be critical will be repeated in average mode. Table top equipment is placed on a 1.0 X 1.5 meter non-conducting table 80 centimeters above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. Interface cables that are closer than 40 centimeters to the ground plane are bundled in the center in a serpentine fashion so they are at least 40 centimeters from the ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screen room located outside the test area. The antenna was positioned 3, 10 or 30 meters horizontally from the EuT. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 meters, measurement scans are made with both horizontal and vertical antenna polarizations and the EuT are rotated 360 degrees.

**SPURIOUS EMISSION (MAGNETIC FIELD) 10 kHz - 30 MHz**

■ - **Test not applicable**

- - in a shielded room
- - at a non - reflecting open-site and
- - in a testdistance of 3 meters.
- - in a testdistance of 30 meters.

For TEST EQUIPMENT USED please refer to ATTACHMENT B:

**Description of Measurement**

The final level, expressed in dB $\mu$ V/m, is arrived at by taking the reading from the EMI receiver (Level dB $\mu$ V) and adding the antenna correction factor and cable loss factor (Factor dB) to it. This result then has to be compared with the relevant FCC limit.

Example:

Frequency (MHz)	Level (dB $\mu$ V)	+	Factor (dB)	=	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	=	Delta (dB)
1.705	5	+	20	=	25	30	=	5

**Testresult**

The requirements are

**O - MET****O - NOT MET**

Min. limit margin	_____	dB	at	_____	MHz
Max. limit exceeding	_____	dB	at	_____	MHz

Remarks: Not applicable according 47 CFR Part 15 Subpart C (15.231).**SPURIOUS EMISSIONS (electric field) 30 MHz - 1000 MHz****o - Test not applicable**

- - Open-site 1
- o - Open-site 2
- - 3 meters
- o - 10 meters
- o - 30 meters

For TEST EQUIPMENT USED please refer to ATTACHMENT B: SER2

**Description of Measurement**

The final level, expressed in dB $\mu$ V/m, is arrived by taking the reading from the EMI receiver (Level dB $\mu$ V) and adding the correction factors and cable loss factor (Factor dB) to it. This is done automatically in the EMI receiver, where the correction factors are stored. This result then has the FCC or CISPR limit subtracted from it to provide the Delta which gives the tabular data as shown in the data sheets at page 24 - 25. The CISPR 22 limit is equivalent to the Australian AS 3548 limit.

Example:

Frequency (MHz)	Level (dB $\mu$ V)	+	Factor (dB)	=	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	=	Delta (dB)
719	75	+	32.6	=	107.6	110	=	-2.4

**Testresult**

The requirements are

**■ - MET**

**O - NOT MET**

Min. limit margin 6.7 dB at 630 MHz

Max. limit exceeding        dB at        MHz

Remarks: The limits are kept. Please see attachment Testdata A2

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**SPURIOUS EMISSION 1 GHz - 18 GHz**

**○ - Test not applicable**

**Testlocation :**

- - Open-site 1
- - Open-site 2
- - Anechoic chamber
- - Full compact chamber
  
- - 1 meters
- - 3 meters
- - 10 meters

For TEST EQUIPMENT USED please refer to ATTACHMENT B: SER3

**Description of Measurement**

The final level, expressed in dB $\mu$ V/m, is arrived by taking the reading from the Spectруmanalyzer in dB $\mu$ V and adding the correction factors of the test setup incl. cables.

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Example of the correction value at 1.8236 GHz

Level reading at 1.5 GHz	correction EMCO 3115	correction Amplifier AWT 8035 + cable	correction factor (summarized)	corrected level
56 dB $\mu$ V	+25.7	-41.7	-16	40 dB $\mu$ V

### Testresult

The requirements are

- MET

- NOT MET

Min. limit margin > 20 dB at 1-4 GHz

Max. limit exceeding \_\_\_\_\_ dB at \_\_\_\_\_ GHz

Remarks: The limits are met. The measurement has been performed in Peak-mode for 1GHz to 4 GHz. For critical results, the measurement would be repeated in average mode.

### Testresult in detail:

Frequency GHz	L: Peak dB $\mu$ V	L: AV dB $\mu$ V	Correct.	L: Peak dB $\mu$ V/m	L: AV dB $\mu$ V/m	Limit dB $\mu$ V/m
1-4	--	--	--	< 40	--	62

**Radiated field strength of fundamental**

Radiated field strength of fundamental from the EuT are measured using a tuned receiver and appropriate broadband linearly polarized antennas. Measurements between 30 MHz and 1000 MHz are made with 120 kHz/6 dB bandwidth and quasipeak detection and measurements above 1000 MHz are made with a 1 MHz/6 dB bandwidth and peak detection, remeasurement of results which may be critical will be repeated in average mode. Table top equipment is placed on a 1.0 X 1.5 meter non-conducting table 80 centimeters above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. Interface cables that are closer than 40 centimeters to the ground plane are bundled in the center in a serpentine fashion so they are at least 40 centimeters from the ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screen room located outside the test area. The antenna was positioned 3 meters horizontally from the EuT. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 meters, measurement scans are made with both horizontal and vertical antenna polarizations and the EuT are rotated 360 degrees.

**Radiated field strength of fundamental**

- Test not applicable

**Test location :**

- Open-site 1
- Open-site 2
- Anechoic chamber
- Full compact chamber
  
- 1 meters
- 3 meters
- 10 meters

For TEST EQUIPMENT USED please refer to ATTACHMENT B: CPR2

**Description of Measurement**

The final level, expressed in dB $\mu$ V/m, is arrived by taking the reading from the EMI receiver (Level dB $\mu$ V) and adding the correction factors and cable loss factor (Factor dB) to it. This is done automatically in the EMI receiver, where the correction factors are stored. This result then has the FCC or CISPR limit subtracted from it to provide the Delta which gives the tabular data as shown in the data sheets at page 24 - 25. The CISPR 22 limit is equivalent to the Australian AS 3548 limit.

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Example:

Frequency (MHz)	Level (dB $\mu$ V)	+	Factor (dB)	=	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	=	Delta (dB)
719	75	+	32.6	=	107.6	110	=	-2.4

**Testresult**

The requirements are

- MET       - NOT MET

Min. limit margin      3.4      dB      at      315      MHz

Max. limit exceeding                  dB      at                  MHz

Remarks: The limits are kept. Please see attachment Testdata A1.

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**MODULATION LIMITING DATA**

■ - Test not applicable

**Testlocation :**

- - Shielded room no. 1
- - Shielded room no. 2
- - Shielded room no. 3
- - Shielded room no. 4
- - Shielded room no. 5
- - Shielded room no. 6
- - Shielded room no. 7
- - Anechoic chamber
- - Full compact chamber
- - Climatic test chamber VLK

For TEST EQUIPMENT USED please refer to ATTACHMENT B:

**Description of Measurement**

The modulation limiting data were measured on the antenna terminals for EuT's with external connector. Other EuT's are tested via an adequate coupling device with antenna jack. The antenna jack was connected to the input of a communication test receiver. The internal batteries of the EuT, have been removed also and an external DC power supply was used instead. The data have been taken by feeding the connectors used for connecting the microphone with different audio frequencies. These frequencies are generated in the communication test receiver. The level was varied in 10 dB steps from 20 dB $\mu$ V to the maximum audio input level specified by the manufacturer. The frequency deviation at this levels have been recorded.

PFD: Positive frequency deviation

NFD: Negative frequency deviation

For the occupied bandwidth plot the value of 50 % of the maximum frequency deviation was calculated. The level on the audio input was increased until this 50 % frequency deviation was achieved. To this level 16 dB have been added and a plot was made as described in the next chapter under section occupied bandwidth.

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## Testresult

The requirements are

O - MET

O - NOT MET

Remarks: Not applicable according 47 CFR Part 15 Subpart C (15.231).

### Occupied bandwidth:

version of EuT				
audio test level				
shape of emission mask				
min. limit margin/dB				

Remarks: Not applicable according 47 CFR Part 15 Subpart C (15.231).

**FREQUENCY ERROR**

**■ - Test not applicable**

**Testlocation :**

- - Shielded room no. 1
- - Shielded room no. 2
- - Shielded room no. 3
- - Shielded room no. 4
- - Shielded room no. 5
- - Shielded room no. 6
- - Shielded room no. 7
- - Anechoic chamber
- - Full compact chamber
- - Climatic test chamber VLK

For TEST EQUIPMENT USED please refer to ATTACHMENT B: \_\_\_\_\_

**Description of Measurement**

The frequency error was measured with antenna jack in a climatic test chamber. The antenna jack was connected to the input of a communication test receiver. The internal batteries have been removed also and a variable DC power supply was used instead. The measurements have been made with the EuT unmodulated. During the test the supply voltage and the temperature were varied and applied simultaneously. The lower supply voltage was given by the manufacturer. In case the equipment was switching off before, the switch off voltage was used instead. The frequency error is defined as the deviation of the transmitting frequency from the nominal frequency.

**Testresult:**

The requirements are

**O - MET****O - NOT MET**

Frequency range of equipment								
Tempera- ture/°C	DC supply voltage/V	Frequency error/kHz						
-30								
-20								
-10								
0								
+10								
+20								
+30								
+40								
+50								

Remarks: Not applicable according 47 CFR Part 15 Subpart C (15.231).**KEEPING THE REQUIREMENTS OF THE EMISSION MASK**

<b>■ - Test not applicable</b>
--------------------------------

**Testlocation :**

- - Shielded room no. 1
- - Shielded room no. 2
- - Shielded room no. 3
- - Shielded room no. 4
- - Shielded room no. 5
- - Shielded room no. 6
- - Shielded room no. 7
- - Anechoic chamber
- - Full compact chamber
- - Climatic test chamber VLK

For TEST EQUIPMENT USED please refer to ATTACHMENT B:

**Description of Measurement**

The keeping of the requirements of the emission mask was measured with an antenna jack in Climatic test chamber. The antenna jack was connected to the input of a spectrum analyzer. The spectrum analyzer was set up as following:

- video and resolution bandwidth: 10 kHz
- attenuation: automatic, low noise
- center frequency: nominal transmit frequency
- frequency span: 100 kHz

The reference level was set to the maximum value of the unmodulated carrier. The internal batteries have been removed also and a variable DC power supply was used instead. The measurements have been made with a modulation frequency and voltage accdg. to the specification of the manufacturer. During the test the supply voltage and the temperature were varied and applied simultaneously. The lower supply voltage was given by the manufacturer. In case the equipment was switching off before, the switch off voltage was used instead.

**Testresult**

The requirements are

**O - MET**

**O - NOT MET**

The **requirements** are as following:

Attenuation on any frequencies removed from the transmit frequency between 50 and 100 % of the authorized bandwidth: at least 25 dB  
 between 100 and 250 % of the authorized bandwidth: at least 35 dB  
 more than 250 % of the authorized bandwidth: see spurious emissions

The following table is showing the minimal margin to the required attenuations:

Temperature /°C	DC supply voltage /V	±50-100% [dB]	±100-250% [dB]	±50-100% [dB]	±100-250% [dB]	±50-100% [dB]	±100-250% [dB]
-30							
-20							
-10							
0							
10							
20							
30							
40							
50							

Remarks: Not applicable according 47 CFR Part 15 Subpart C (15.231).

**EQUIPMENT UNDER TEST**

**Operation - mode of the EuT.:**

The equipment under test was operated during the measurement under following conditions:

- Standby
- Testprogram (H - Pattern)
- Testprogram (color bar)
- Testprogram (customer specific)
- Transmit (modulated)

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**Configuration of the equipment under test:** see appendix  
Following periphery devices and interface cables were connected during the measurement:

- \_\_\_\_\_ Type : \_\_\_\_\_
- unshielded power cable
- unshielded cables
- shielded cables MPS.No. : \_\_\_\_\_
- customer specific cables (wireless microphone)
- no cables
- \_\_\_\_\_

**S U M M A R Y**

**GENERAL REMARKS:**

**FINAL JUDGEMENT:**

The requirements according to the technical regulations and tested operation modes are

- - met.
- - **not** met.

The equipment under test

- - **Fulfills** the general approval requirements cited on page 3.
- - **Does not** fulfill the general approval requirements cited on page 3.

Date of receipt of test sample : accdg. to storage record

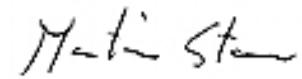
Testing Start Date : February 16, 2000

Testing End Date : February 18, 2000

- MIKES BABT PRODUCT SERVICE GmbH - Test-engineer



Günter Mikes  
Dipl.-Ing. (FH)



Martin Stern  
Dipl.-Ing. (FH)

# Radiation-Test

accdg. FCC Part 15

Typ: Tx 41701 Testdistance: 3 m  
Manufacturer: Naldec Corporation Testreceiver: ESVP  
Client: Naldec Corporation Antenna: UHALP  
Regulation: FCC Part 15 Testengineer: SM  
Order No.: T 17375-1-01 SM Date 18-02-2000  
Operation Tx  
Mode:  
Remarks: The limits are kept.

*M. L. Sten*

Math. sta.

Result	Frequency [MHz]	Reading [dBuV/m]	Korr [dB]	Final [dBuV/m]	Limit [dBuV/m]	DLimit [dBuV/m]	Polarisation	Noise
	315.00	51.5	20.69	72.19	75.6	3.41	Ver	Diskret
	315.00	35.9	20.69	56.59	75.6	19.01	Hor.	Diskret

# Radiation-Test

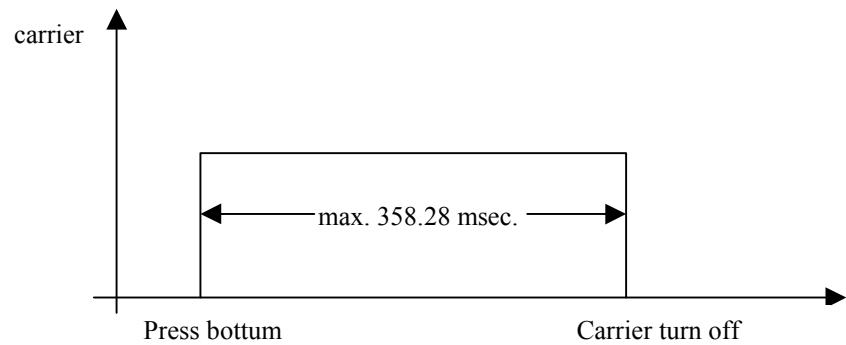
## accdg. FCC Part 15

Typ: Tx 41701 Testdistance: 3 m  
Manufacturer: Naldec Corporation Testreceiver: ESVP  
Client: Naldec Corporation Antenna: BBA / UHALP  
Regulation: FCC Part 15 Testengineer: SM  
Order No.: T 17375-1-01 SM Date 18-02-2000  
Operation Tx  
Mode:  
Remarks: The limits are kept.

Matteo Sturz

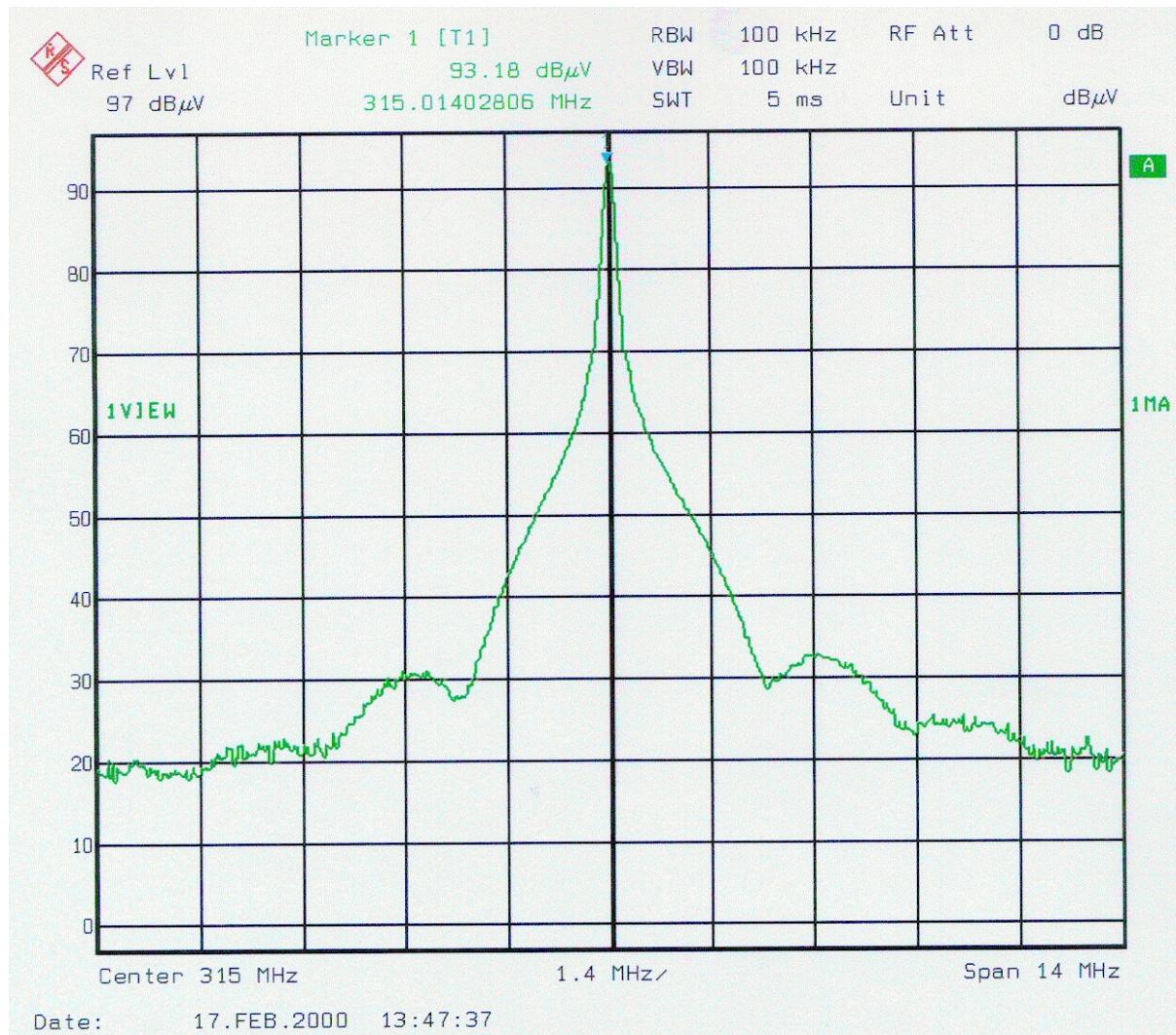
Result	Frequency [MHz]	Reading [dBuV/m]	Korr [dB]	Final [dBuV/m]	Limit [dBuV/m]	DLimit [dBuV/m]	Polarisation	Noise
	630.00	9.00	27.78	36.78	55.60	18.82	Ver	Diskret
	630.00	21.10	27.78	48.88	55.60	6.72	Hor.	Diskret
	945.00	1.10	36.81	37.91	55.60	17.69	Ver	Diskret
	945.00	9.90	36.81	46.71	55.60	8.89	Hor.	Diskret

Diagram of the duty cycle



**Emission Bandwidth**

Centre frequency 315.00 MHz

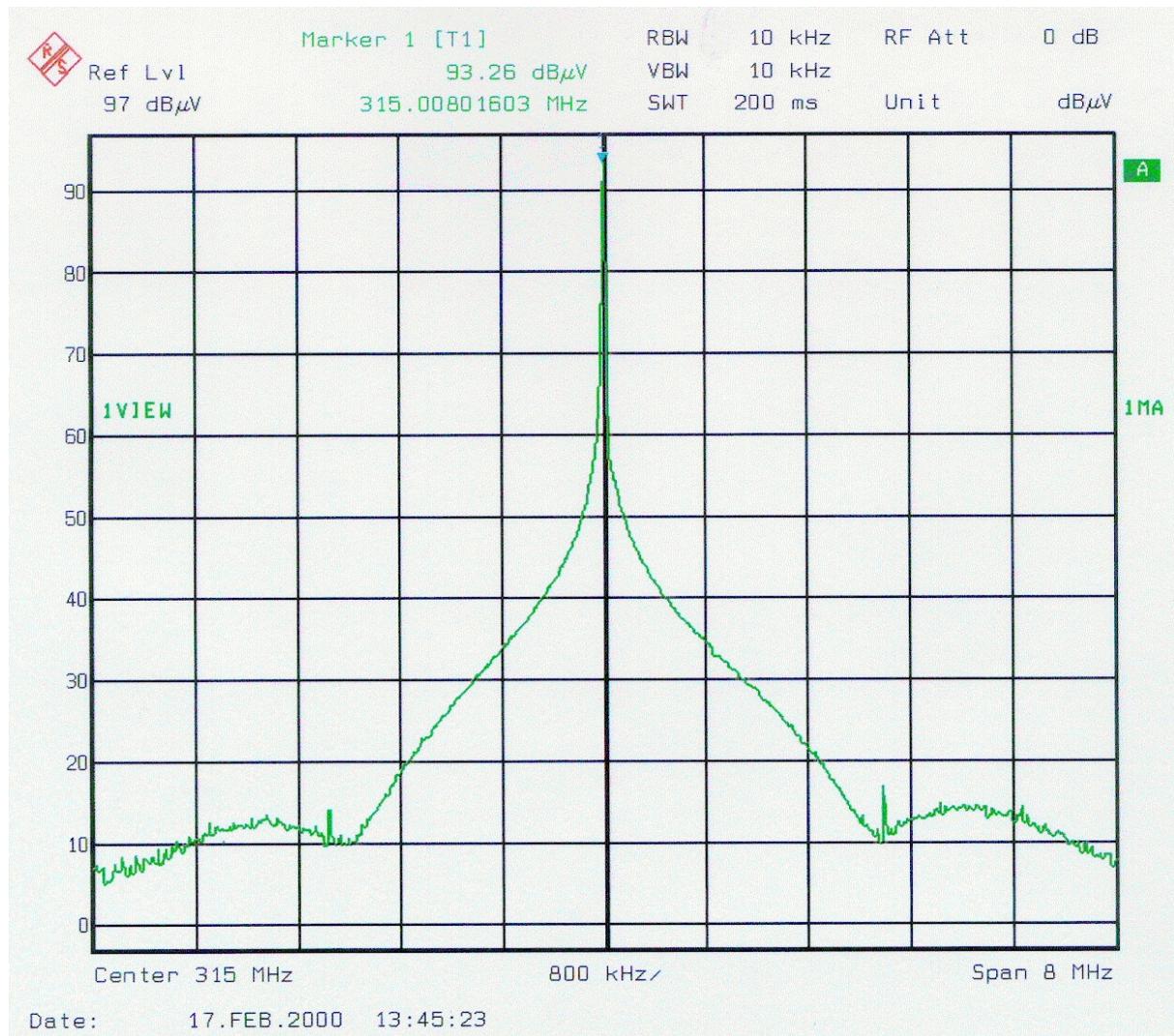


*Malte Stu*

FCC ID: KPU41701

### Emission Bandwidth

Centre frequency 315.00 MHz

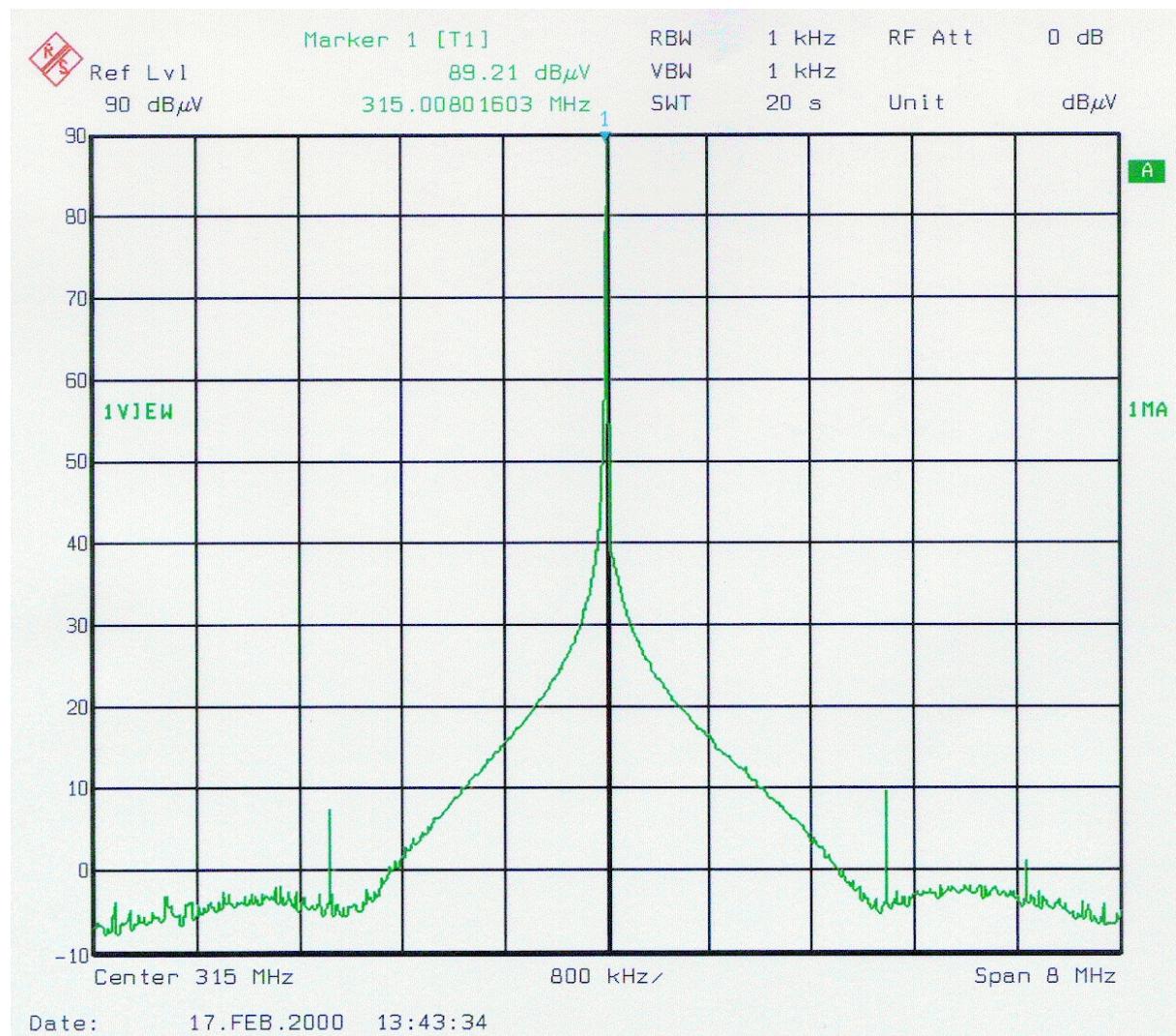


*Martin Stein*

FCC ID: KPU41701

### Emission Bandwidth

Centre frequency 315.00 MHz



*Martin Stein*

**Attachment : B****List of Test Equipment**

All test instruments used, in addition to the test accessories, are calibrated and verified regularly.

Test Report No: T 17375-1-01 SM  
 Beginning of Testing: 16-Februar-2000

Test ID	Model Type	Kind of Equipment	Manufacturer	Equipment No.
CPR2	UHALP-9108A	Antenna	Schwarzbeck G.	04-07/62-97-009
	ESVP	Test Receiver	Rohde & Schwarz	04-07/63-89-008
SER2	BBA-9106	Antenna	Schwarzbeck G.	04-07/62-92-048
	UHALP-9108A	Antenna	Schwarzbeck G.	04-07/62-97-009
	ESVP	Test Receiver	Rohde & Schwarz	04-07/63-89-008
SER3	Sucoflex 104, SMA	RF-cable 2 m	Huber+Suhner	04-07/60-97-485
	Sucoflex 104, N	RF-cable 3 m	Huber+Suhner	04-07/60-97-492
	Model 3115	Hornantenna	EMCO Elektronik GmbH	04-07/62-96-458
	AWT-4534	Microwave-Amplifier	TransTech Hochfrequenztechnik	04-07/66-90-217

**Attachment: B**

**Calibration of Test Equipment**

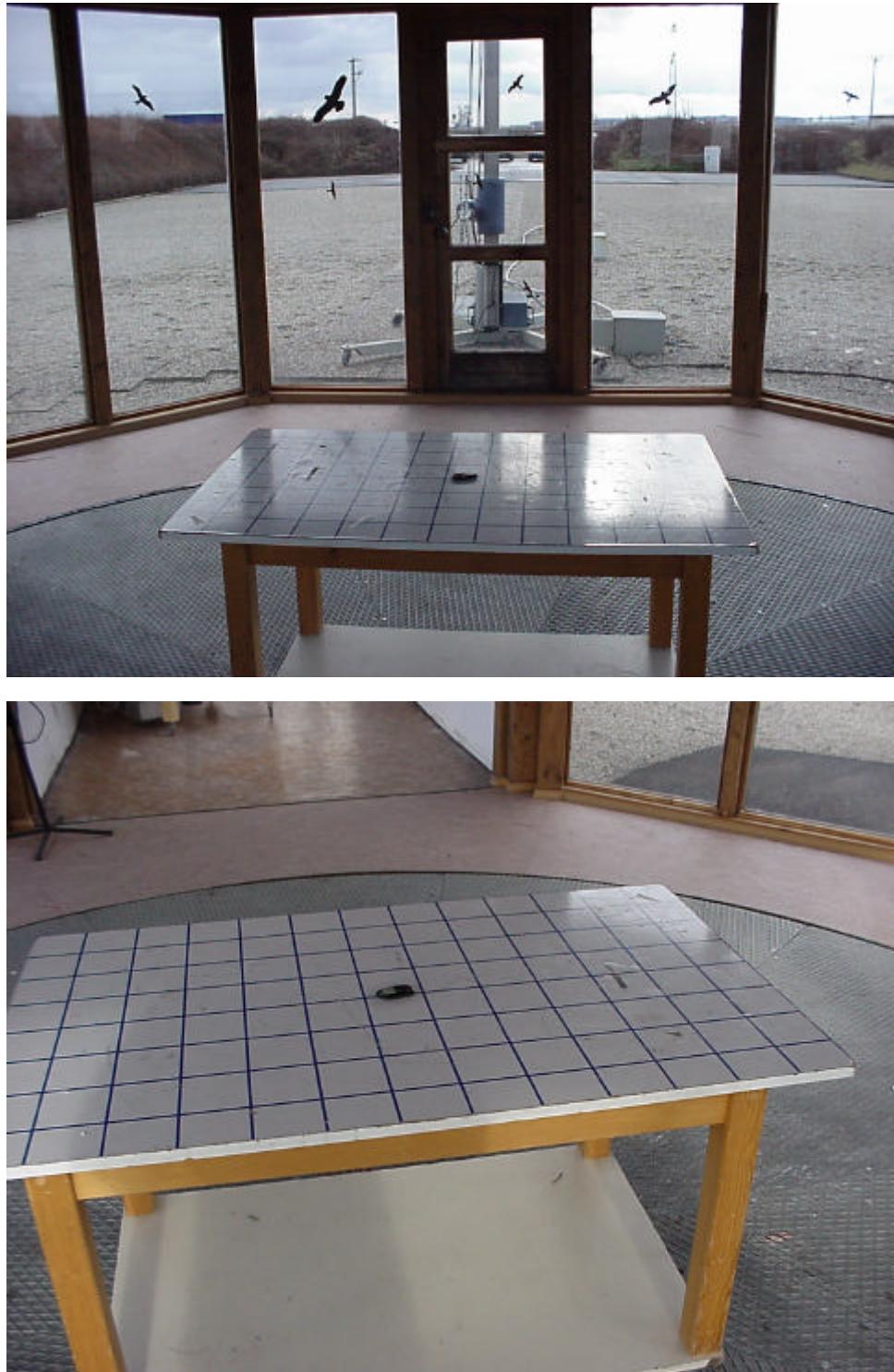
<b>Project ID</b>	<b>Serial Number</b>	<b>Last Calibration date</b>	<b>Next Calibration date</b>
T 17375-1-01 SM	04-07/62-97-009	12.02.2000	12.02.2001
T 17375-1-01 SM	04-07/63-89-008	17.01.2000	17.01.2001
T 17375-1-01 SM	04-07/62-92-048	12.02.2000	12.02.2001
T 17375-1-01 SM	04-07/60-97-485	Not necessary	Not necessary
T 17375-1-01 SM	04-07/60-97-492	Not necessary	Not necessary
T 17375-1-01 SM	04-07/62-96-458	Not necessary	Not necessary
T 17375-1-01 SM	04-07/66-90-217	Not necessary	Not necessary

FCC ID: KPU41701

**Attachment C1 of C2: Photos of the test setup**

Test-Setup:

Radiated emission: 30 MHz - 1000 MHz



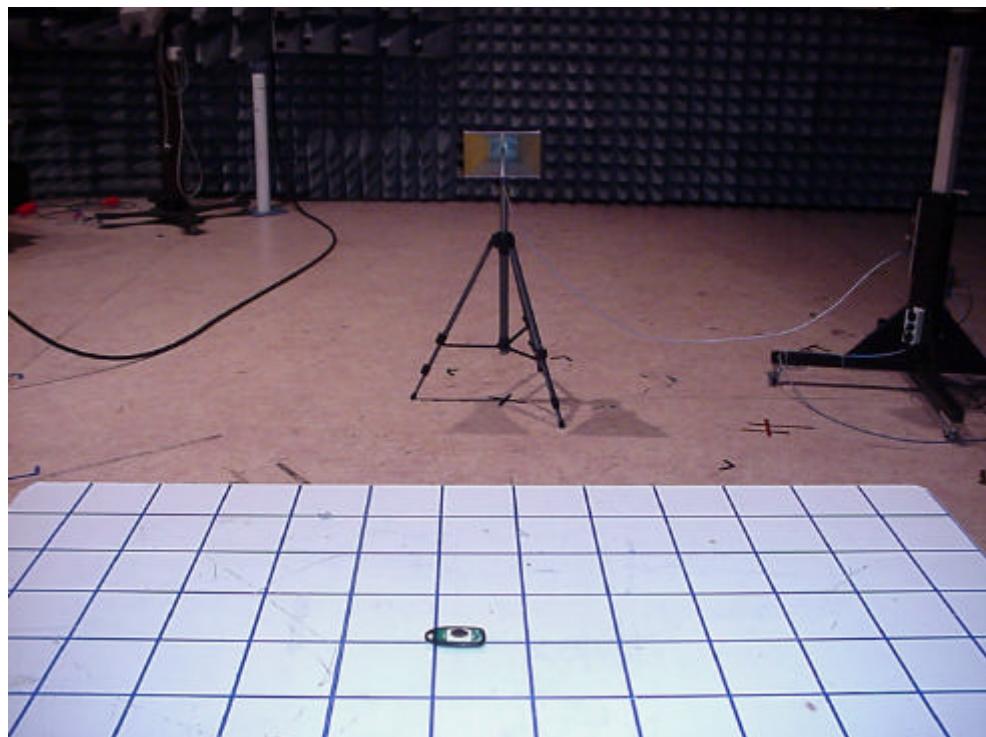
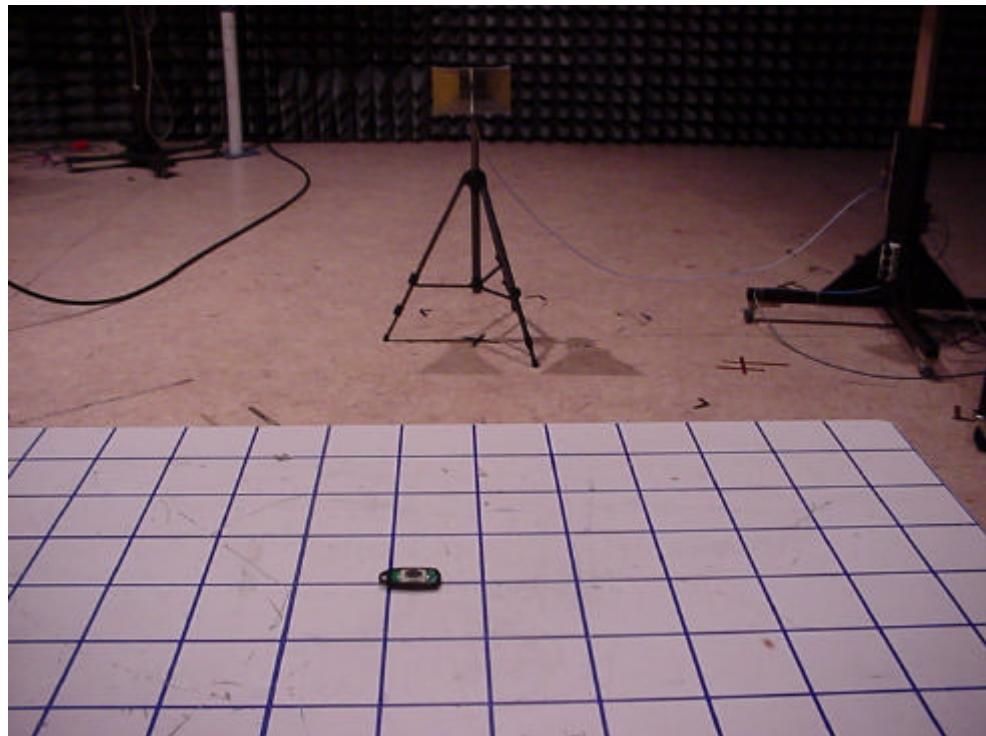
File No. T 17375-1-01 SM

FCC ID: KPU41701

**Attachment C2 of C2: Photos of the test setup**

Test-Setup:

Radiated emission: 1 GHz - 4 GHz



File No. T 17375-1-01 SM

**CONSTRUCTIONAL DATAFORM FOR TESTING OF RADIO EQUIPMENT**

Licence holder:	Naldec Corporation		
Address:	3-1 Shinchi Fuchu-cho Aki-gun Hiroshima 735-0028 Japan		
Manufacturer:	Naldec Corporation		
Address:	3-1 Shinchi Fuchu-cho Aki-gun Hiroshima 735-0028 Japan		
Type:	Remote Keyless Entry for Vehicle		
Model:	Tx 41701 & Rx 41702		
Serial-No.:	N/A	Protection class:	N/A

**Application for getting**

national approval in the following countries: \_\_\_\_\_  
 EC-type examination

**Additional informations to the above named model:**

Antenna:	Integrated		
transmitter:	Type: Model 41701		
receiver:	Length/size: L58.2 x W30.7 x H12.6 mm		
Power supply of the transmitter:	Type: Model 41702		
Length/size: L73 x W63 x H33.5 mm			
Type:	Lithium battery	nominal voltage:	DC 3.0 V
		lowest voltage:	DC 2.55 V
		highest voltage:	DC 3.3 V
Power supply of the receiver:	Type: Car battery		
	nominal voltage: DC 12 V		

**Ancillary equipment:**

Description:	Check Box for Rx	Type:	N/A	Serial-no.:	N/A
Description:		Type:		Serial-no.:	

**Extreme temperature range in which the approval test should be performed:**

Category I: General (-20°C to +55°C)  Category II: Portable (-10°C to +55°C)  
 Category III: Equipment for normal indoor use (0°C to +55°C)

**Connectable cables:**

Name of the cable	Digital	Length/m	shielded
Battery Plus	<input type="radio"/> yes <input checked="" type="checkbox"/> no	1m	<input type="radio"/> yes <input checked="" type="checkbox"/> no
Ground	<input type="radio"/> yes <input checked="" type="checkbox"/> no	1m	<input type="radio"/> yes <input checked="" type="checkbox"/> no
Ignition Status Input	<input checked="" type="checkbox"/> yes <input type="radio"/> no	0.4m	<input type="radio"/> yes <input checked="" type="checkbox"/> no
Door Status Input	<input checked="" type="checkbox"/> yes <input type="radio"/> no	0.4m	<input type="radio"/> yes <input checked="" type="checkbox"/> no
Door Lock Output	<input checked="" type="checkbox"/> yes <input type="radio"/> no	0.4m	<input type="radio"/> yes <input checked="" type="checkbox"/> no
Trunk output	<input checked="" type="checkbox"/> yes <input type="radio"/> no	0.4m	<input type="radio"/> yes <input checked="" type="checkbox"/> no

 **If applicable, if necessary complete overleaf****Page D 1**

<b>Type designation:</b> <b>Tx 41701 &amp; Rx 41702</b>			
<b>Name and type designation of individual units comprising the radio equipment:</b>			
<b>Type of equipment:</b>			
<input type="checkbox"/> Radiotelephone equipment <input checked="" type="checkbox"/> Remote-control equipment <input type="checkbox"/> Radiomaritime equipment <input type="checkbox"/> LPD <input type="checkbox"/> One-way radiotelephone equipment <input type="checkbox"/> Inductive loop system <input type="checkbox"/> Inland waterways equipment <input type="checkbox"/> RLAN <input type="checkbox"/> Personal paging system <input type="checkbox"/> Radio-relay system <input type="checkbox"/> Radionavigation equipm. <input type="checkbox"/> <input type="checkbox"/> Satellite earth station <input type="checkbox"/> CB radiotelephone equipment <input type="checkbox"/> Antenna <input type="checkbox"/> <input type="checkbox"/> Data transmission equipment <input type="checkbox"/> Movement detector <input type="checkbox"/> Aeronautical equipment <input type="checkbox"/>			
<b>Technical characteristics:</b>			
Frequency range	Transmitter-receiver	Transmitter	Receiver
Maximum no. of channels		<b>315MHz</b>	<b>315MHz</b>
Channel spacing		<b>1</b>	<b>1</b>
Class of emission (type of modulation)		<b>N/A</b>	<b>N/A</b>
Maximum RF output power		<b>AM 100%</b>	<b>N/A</b>
Maximum effective radiated power (ERP)		< 85 dBuV	<b>N/A</b>
Output power variable		< -40 dBm	<b>N/A</b>
Channel switching frequency range		<b>N/A</b>	<b>N/A</b>
Method of frequency generation	<input type="checkbox"/> Synthesizer	<input type="checkbox"/> Crystal	<input checked="" type="checkbox"/> Other
Frequency generation TX	<b>SAW resonator</b>		
Frequency generation RX	<b>SAW resonator for Local Oscillator</b>		
IF	1st IF 74.00 MHz	2nd IF <b>N/A</b>	3rd IF <b>N/A</b>
Integral selective calling	<b>N/A</b>		
Audio-frequency interface level at external data socket	<b>N/A</b>		
Modes of operation	<input type="checkbox"/> Duplex mode	<input type="checkbox"/> Semi-duplex mode	<input checked="" type="checkbox"/> Simplex mode
Power source	<input type="checkbox"/> Mains	<input checked="" type="checkbox"/> Vehicle-regulated	<input type="checkbox"/> Integral
Antenna socket	<input type="checkbox"/> BNC	<input type="checkbox"/> TNC	<input type="checkbox"/> N
	<input type="checkbox"/> M	<input type="checkbox"/> UHF	<input type="checkbox"/> Adapter
	<input checked="" type="checkbox"/> None	<input type="checkbox"/>	<input type="checkbox"/>
<b>Type approval specifications:</b>			

**O If applicable, if necessary complete overleaf****Page D 2**

**Declarations:**

We declare that the above information are correct and the named model was supplied with the maximum configuration to the accredited test laboratory.



Manager, Technical Development Division

**Naldec Corporation**

3-1 Shinchi Fuchu-cho Aki-gun

Hiroshima 735-0028 Japan

Kazutomo Sasaki, date Nov. 25, 1999

place of issue

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Seal and signature of applicant

FCC ID: KPU41701

**Attachment E1**

**TX 41701**

**File-No. T 17375-01 SM**



FCC ID: KPU41701

Attachment E2

TX 41701

File-No. T 17375-01 SM

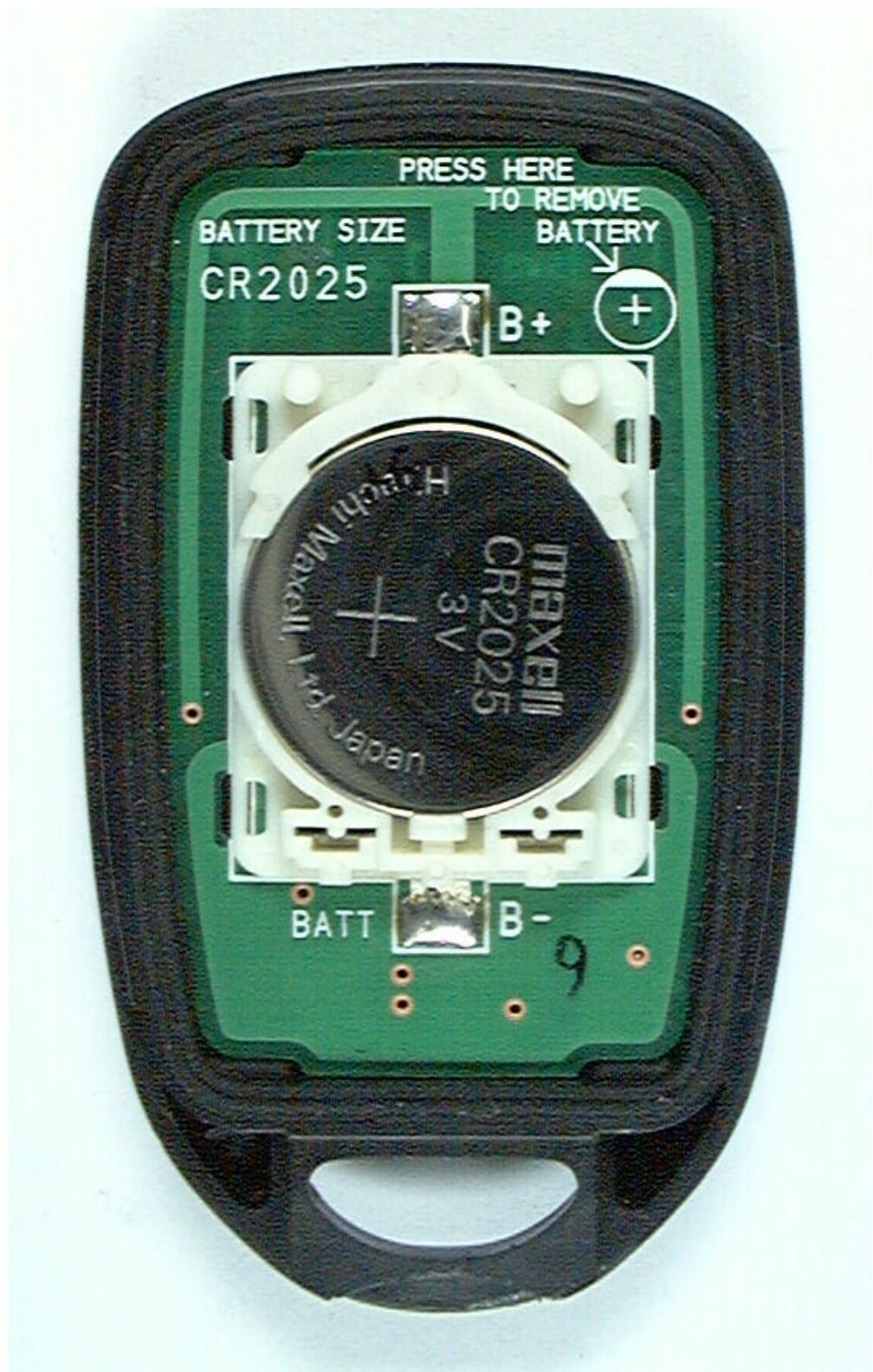


FCC ID: KPU41701

Attachment E3

TX 41701

File-No. T 17375-01 SM

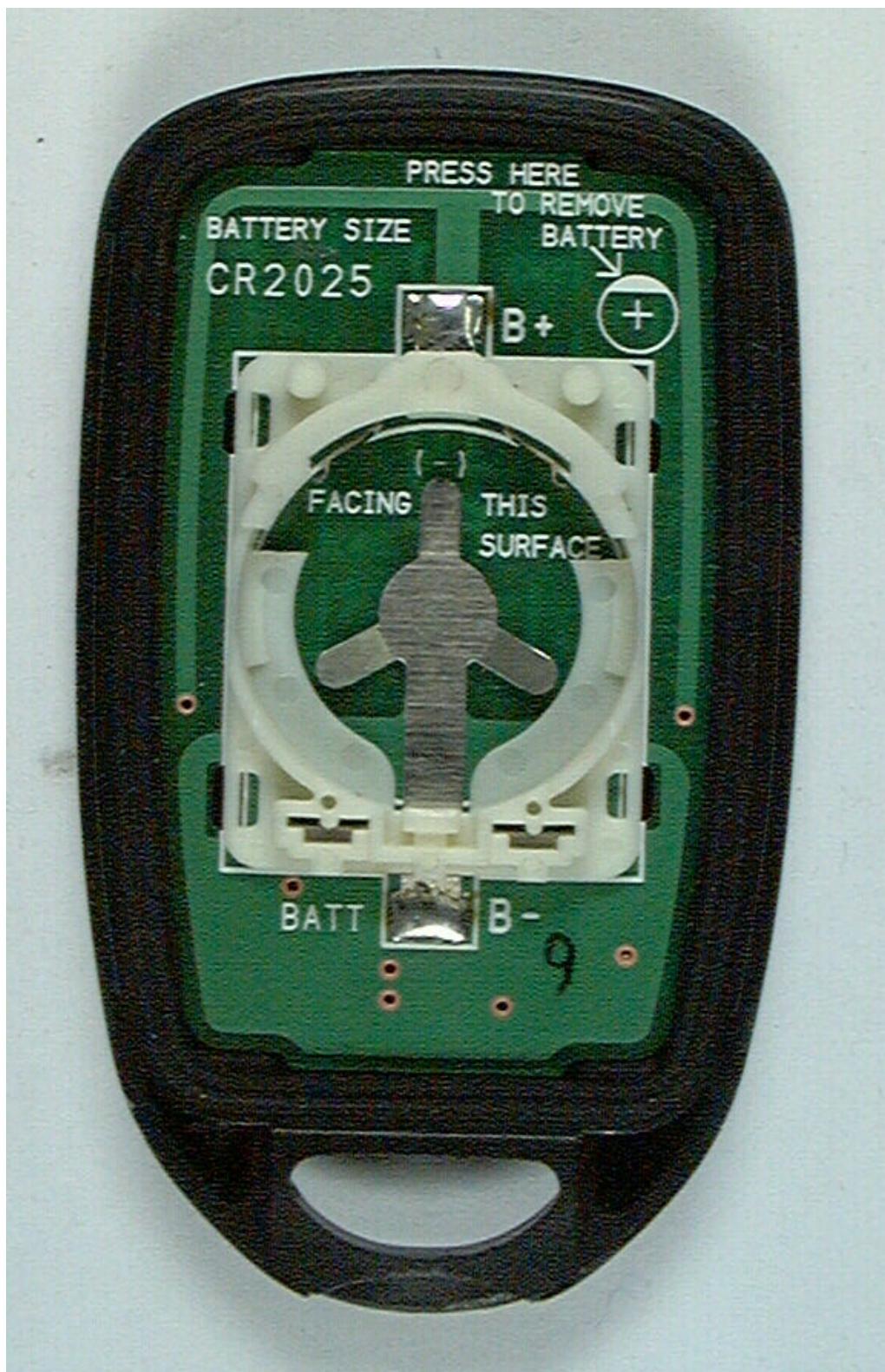


FCC ID: KPU41701

Attachment E4

TX 41701

File-No. T 17375-01 SM



FCC ID: KPU41701

Attachment E5

TX 41701

File-No. T 17375-01 SM

