FCC ID: KPU41704

Deutscher Akkreditierungs Rat

TTI - P-G 009 / 98-00
TTI - P-G 089 / 94-50

E M I S S I O N -- T E S T R E P O R T

Testreport file no. : **T17850-1-02 SM** Date of issue : May 02, 2000

Model : Tx 41704

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 accrdg. 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.

MIKES BABT PRODUCT SERVICE GmbH Ohmstrasse 2-4 94342 Strasskirchen Tel:+9424-9407-0 Fax:+9424-9407-60 Rev.No. 8.0

D I R E C T O R Y

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T E S T R E G U L A T I O N S

The tests were performed according to following regulations :

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

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o - EN 55011	/ 3.1991	o - Group 1 o - class A	o - Group 2 o - class B
o - EN 55014	/ 4.1993	o - Household appliances and similar o - tools o - Semiconductor devices	
o - EN 55014	/ A2:1990		
o - EN 55104	/ 5.1995	Category:	
o - EN 55015	/ A1:1990		
o - EN 55015	/ 12.1993		
o - EN 55022	/ 5.1995	o - class A	o - class B

o - prEN 55103-1/ 3.1995
o - prEN 50121-3-2 / 3.1995
o - EN 60601-1-2 / 4.1994

o - VCCI — o - class 1 — o - 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

o - _____
_____
_____

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 ±4dB. 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.
o - 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 ±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 it’s 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 :
o - Shielded room no. 1
o - Shielded room no. 2
o - Shielded room no. 3
o - Shielded room no. 4
o - Shielded room no. 5
o - Shielded room no. 6
o - Shielded room no. 7
o - Anechoic chamber
o - Full compact chamber

For TEST EQUIPMENT USED please refer to ATTACHMENT B:

Description of Measurement

The final level, expressed in dBµV, 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 dBµV and µV, the following conversions apply:
dBµV = 20(log µV)
µV = Inverse log(dBµV/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 50Ω /50 µH (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**

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

For TEST EQUIPMENT USED please refer to ATTACHMENT B:

Description of Measurement

The final level, expressed in dBµV/m, is arrived at by taking the reading from the EMI receiver (Level dBµV) 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 (dBµV)	+	Factor (dB)	=	Level (dBµV/m)	Limit (dBµV/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 dBµV/m, is arrived by taking the reading from the EMI receiver (Level dBµV) 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 (dBµV)	+	Factor (dB)	=	Level (dBµV/m)	Limit (dBµV/m)	=	Delta (dB)
719	75	+	32.6	=	107.6	110	=	-2.4

Testresult

The requirements are ■ - **MET** **O - NOT MET**

Min. limit margin 16.9 dB at 630.17 MHz

Max. limit exceeding _____ dB at _____ MHz

Remarks: The limits are kept. Please see attachement testdata A2

SPURIOUS EMISSION 1 GHz - 18 GHz

o **- Test not applicable**

Testlocation :
o - Open-site 1
o - Open-site 2
■ - Anechoic chamber
o - Full compact chamber

o - 1 meters
■ - 3 meters
o - 10 meters

For TEST EQUIPMENT USED please refer to ATTACHMENT B: SER3

Description of Measurement

The final level, expressed in dBµV/m, is arrived by taking the reading from the Spectrumanalyzer in dBµV and adding the correction factors of the test setup incl. cables.

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 dBµV	+25.7	-41.7	-16	40 dBµV

Testresult

The requirements are ■ - **MET** O - **NOT MET**

Min. limit margin 3.99 dB at 3152.30 GHz

Max. limit exceeding _____ dB at _____ GHz

Remarks: The limits are met. The measurement has been performed in average mode for 1GHz to 4 GHz. Please see attachement testdata A2

Testresult in detail:

Frequency [MHz]	Reading in AV [dBuV/m]	Korr [dB]	Duty Cycle [dB]	Final [dBuV/m]	Limit [dBuV/m]
1577.20	**61.8**	**-14.9**	**-6.12**	**40.78**	**55.6**
2521.00	**63.1**	**-10.57**	**-6.12**	**46.41**	**55.6**
2839.70	**65.3**	**-10.06**	**-6.12**	**49.12**	**55.6**
3152.30	**67.1**	**-9.37**	**-6.12**	**51.61**	**55.6**

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

o **- Test not applicable**

Testlocation :
o - Open-site 1
o - Open-site 2
■ - Anechoic chamber
o - Full compact chamber

o - 1 meters
■ - 3 meters
o - 10 meters

For TEST EQUIPMENT USED please refer to ATTACHMENT B: CPR2

Description of Measurement

The final level, expressed in dBµV/m, is arrived by taking the reading from the EMI receiver (Level dBµV) 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 (dBµV)	+	Factor (dB)	=	Level (dBµV/m)	Limit (dBµV/m)	=	Delta (dB)
719	75	+	32.6	=	107.6	110	=	-2.4

Testresult

The requirements are ■ **- MET** **O - NOT MET**

Min. limit margin 4.37 dB at 315.09 MHz

Max. limit exceeding _____ dB at _____ MHz

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

MODULATION LIMITING DATA

■ - **Test not applicable**

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

Testresult

The requirements are **O - MET** **O - NOT MET**

Input audio level/dBµV	f_{mod} = 50 Hz		f_{mod} = 1 kHz		f_{mod} = 20kHz	
	PFD/kHz	NFD/kHz	PFD/kHz	NFD/kHz	PFD/kHz	NFD/kHz

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 :
o - Shielded room no. 1
o - Shielded room no. 2
o - Shielded room no. 3
o - Shielded room no. 4
o - Shielded room no. 5
o - Shielded room no. 6
o - Shielded room no. 7
o - Anechoic chamber
o - Full compact chamber
o - 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	Frequency error/kHz	Frequency error/kHz	Frequency error/kHz	Frequency error/kHz	Frequency error/kHz	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

■ - Test not applicable

Testlocation :
o - Shielded room no. 1
o - Shielded room no. 2
o - Shielded room no. 3
o - Shielded room no. 4
o - Shielded room no. 5
o - Shielded room no. 6
o - Shielded room no. 7
o - Anechoic chamber
o - Full compact chamber
0 - 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 anlayzer. 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).

E Q U I P M E N T U N D E R T E S T

Operation - mode of the EuT.:
The equipment under test was operated during the measurement under following conditions:

o - Standby

o - Testprogram (H - Pattern)

o - Testprogram (color bar)

o - Testprogram (customer specific)

■ - Transmit (modulated)

o _____

_____

o - _____

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

o - _____ Type : _____

o - _____ Type : _____

o - _____ Type : _____

o - _____ Type : _____

o - _____ Type : _____

o - _____ Type : _____

o - unshielded power cable

o - unshielded cables

o - shielded cables MPS.No.:

o - customer specific cables (wireless microphone)

■ - no cables

o - _____

S U M M A R Y

GENERAL REMARKS:

The unit measurements mets also the bandwidth requirements.

The EUT complies with the requirements described under 15.231(a) regarding the activation/deactivation of the transmitter.

FINAL JUDGEMENT:

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

■ - met.

o - **not** met.

The equipment under test

■ - **Fulfills** the general approval requirements cited on page 3.

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

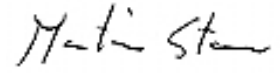
Date of receipt of test sample : accdg. to storage record

Testing Start Date : April 17, 2000

Testing End Date : April 25, 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 41704	Testdistance:	3 m
Manufacturer:	Naldec Corporation	Testreceiver:	ESVP
Client:	Naldec Corporation	Antenna:	UHALP
Regulation:	FCC Part 15	Testengineer:	SM
Order No.:	T 17850-1-02 SM	Date	17-04-2000
Operation Mode:	Tx		
Remarks:	The limits are kept.		

Result	Frequency [MHz]	Reading [dBuV/m]	Korr [dB]	Duty Cycle [dB]	Final [dBuV/m]	Limit [dBuV/m]	DLimit [dBuV/m]	Polarisation
	315.09	40.5	21.25	-6.12	55.63	75.6	19.97	Ver
	315.09	56.1	21.25	-6.12	71.23	75.6	4.37	Hor

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Radiation-Test
accdg. FCC Part 15

Typ:	Tx 41704	Testdistance:	3 m
Manufacturer:	Naldec Corporation	Testreceiver:	ESVP
Client:	Naldec Corporation	Antenna:	BBA / UHALP
Regulation:	FCC Part 15	Testengineer:	SM
Order No.:	T 17850-1-02 SM	Date	17-04-2000
Operation Mode:	Tx		
Remarks:	The limits are kept.		

Result	Frequency [MHz]	Reading [dBuV/m]	Korr [dB]	Duty Cycle [dB]	Final [dBuV/m]	Limit [dBuV/m]	DLimit [dBuV/m]	Polarisation
	630.17	6.0	30.72	-6.12	30.60	55.6	25.00	Ver
	630.17	14.1	30.72	-6.12	38.70	55.6	16.90	Hor

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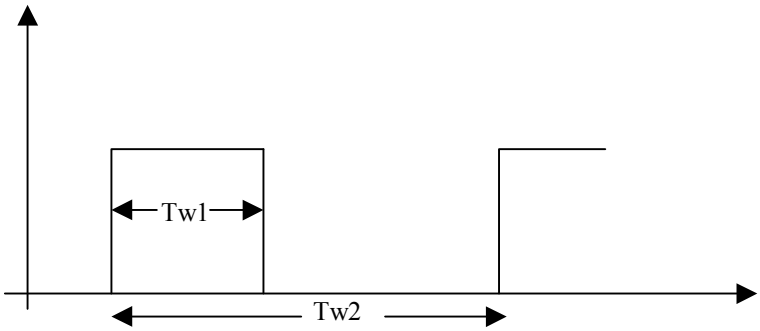
Duty cycle:

Data type:



Data Format:

Pri.header (150bit)	Frame1 (45bit)	Frame2 (45bit)	Stop (1bit)

Frame format:

header (1bit)	Function code (4bit)	ID code (24bit)	Counter (16bit)

Data time:

	Tw1	Tw2
Pri.header pulse	0.6 msec	1.2 msec
Header pulse	0.6 msec	3.24 msec
1 pulse	0.6 msec	2.0 msec
0 pulse	0.6 msec	1.2 msec
Stop pulse	0.6 msec	0.6 msec

Calculation of the duty factor:

Pulse on time = Priheader + Frame1 + Frame2 + Stop = Priheader + 2* (Header + Function code + ID code + Counter) + Stop
=150 * 0.6 msec + 2 * (0.6 msec +4 * 0.6 msec. + 24 * 0.6 msec +16 * 0.6 msec) + 0.6 msec = 144.6 msec

The pulse time will be the shortest, when the 0 pulse will be transmitted.

Data length = Priheader + Frame1 + Frame2 + Stop = Priheader + 2* (Header + Function code + ID code + Counter) + Stop
= 150 * 1.2msec + 2 (3.24 msec + 4* 1.2 msec + 24 * 1.2 msec + 16 * 1.2 msec)+0.6 msec = 292.68 msec

Duty factor = 20 log (pulse on time / data length) = 20 log (144.6 msec / 292.68 msec) = **-6.12**

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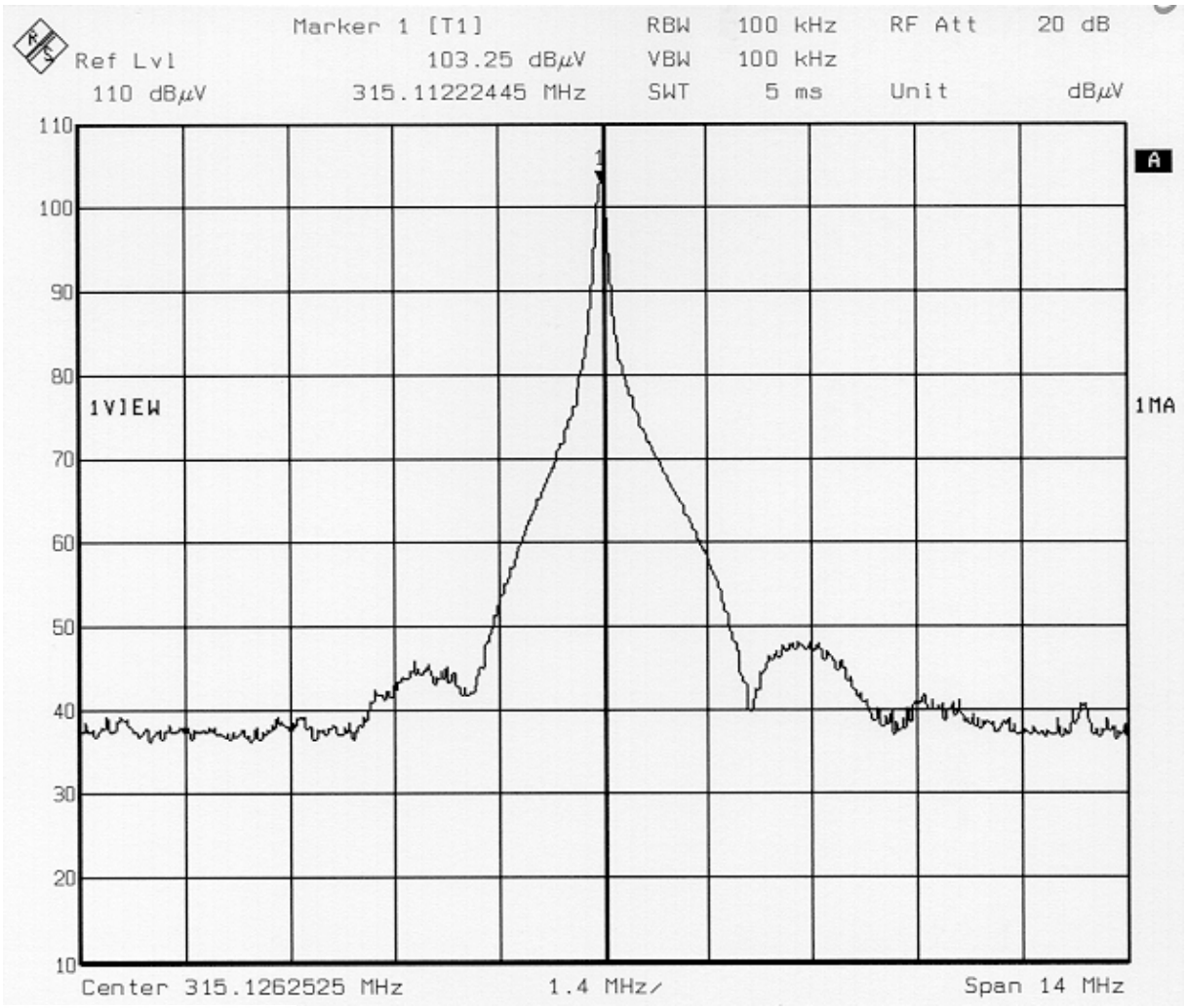
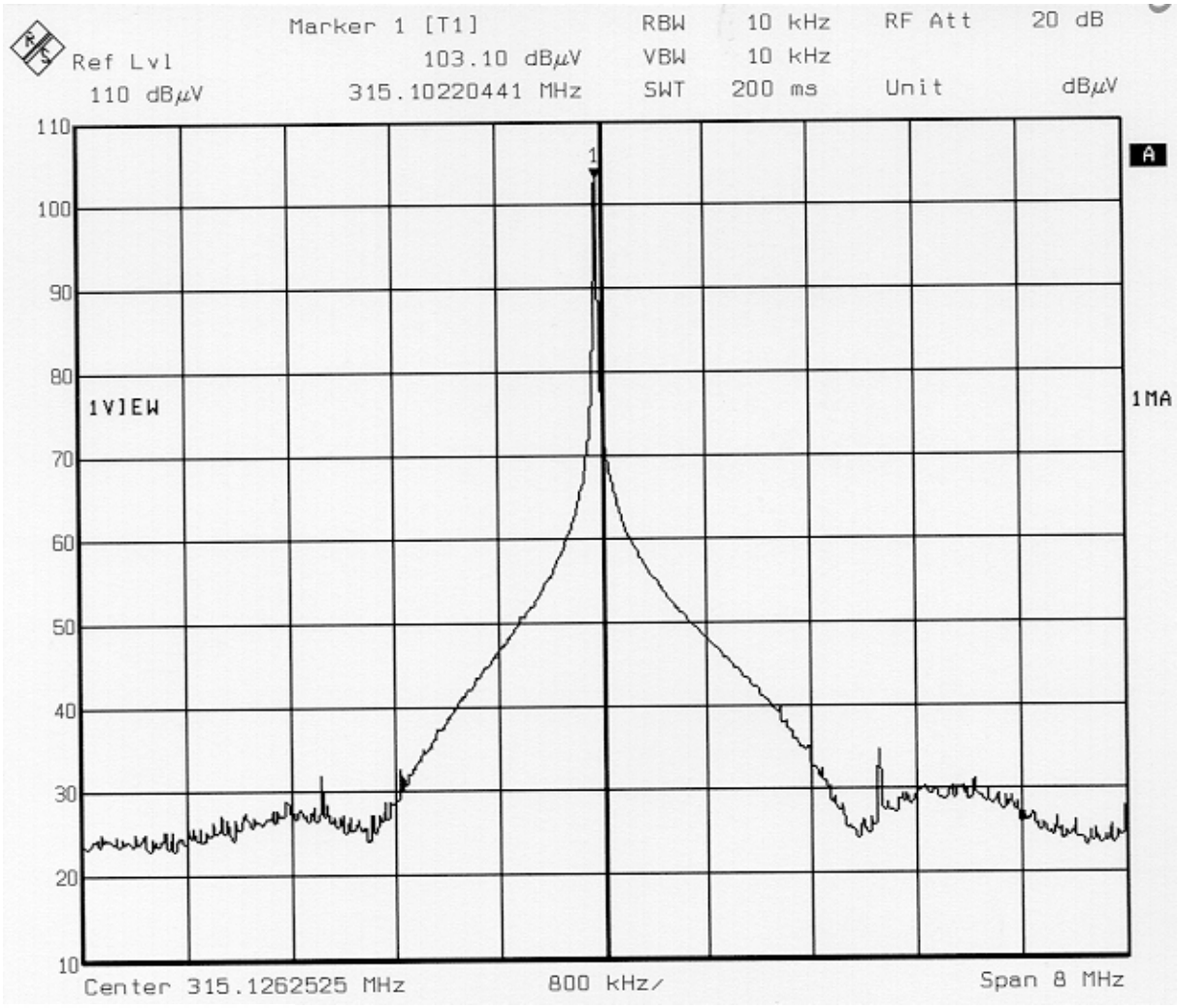
Emission Bandwitdh

Centre frequency 315.12 MHz



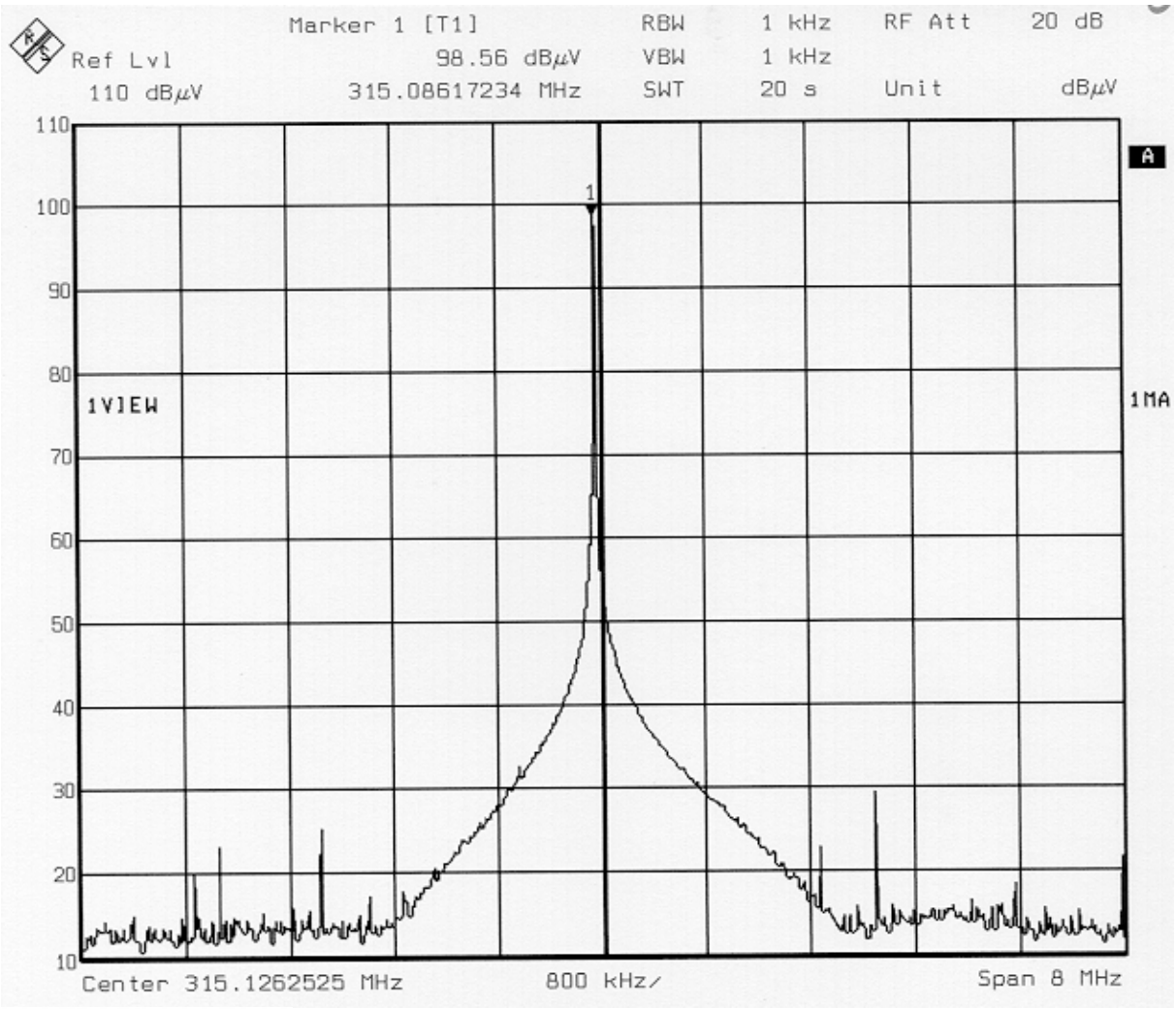
Emission Bandwitdh

Centre frequency 315.12 MHz



Emission Bandwitdh

Centre frequency 315.12 MHz



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 17850-1-02 SM
Beginning of Testing: 17-April-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 Hochfrequenztechn	04-07/66-90-217
	FSEM 30	Spectrum Analyser	Rohde & Schwarz	04-07/74-97-001

Attachment B

Calibration of Test Equipment

Project ID	Serial Number	Last Calibration date	Next Calibration date
T 17850-1-02 SM	04-07/62-97-009	12.02.2000	12.02.2001
T 17850-1-02 SM	04-07/63-89-008	17.01.2000	17.01.2001
T 17850-1-02 SM	04-07/62-92-048	12.02.2000	12.02.2001
T 17850-1-02 SM	04-07/60-97-485	Not necessary	Not necessary
T 17850-1-02 SM	04-07/60-97-492	Not necessary	Not necessary
T 17850-1-02 SM	04-07/62-96-458	Not necessary	Not necessary
T 17850-1-02 SM	04-07/66-90-217	Not necessary	Not necessary

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 41704 and Rx 41705		
Serial-No.:	N/A	Protection class:	N/A

Application for getting
O national approval in the following countries:_____
O EC-type examination

Additional informations to the above named model:
Antenna: Integrated
transmitter: Type: Model 41704
receiver: Type: Model 41705

Power supply of the transmitter:

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

Connectable cables:

Name of the cable	Digital	Length/m	shielded
	O yes O no		O yes O no
	O yes O no		O yes O no
	O yes O no		O yes O no
	O yes O no		O yes O no
	O yes O no		O yes O no
	O yes O no		O yes O no

Type designation:
Tx 41704 & Rx 41705

Name and type designation of individual units comprising the radio equipment:

Type of equipment:

☐ Radiotelephone equipment	■ Remote-control equipment	☐ Radiomaritime equipment	☐ LPD
☐ One-way radiotelephone equipment	☐ Inductive loop system	☐ Inland waterways equipment	☐ RLAN
☐ Personal paging system	☐ Radio-relay system	☐ Radionavigation equipm.	☐
☐ Satellite earth station	☐ CB radiotelephone equipment	☐ Antenna	☐
☐ Data transmission equipment	☐ Movement detector	☐ Aeronautical equipment	☐

Technical characteristics:

	Transmitter-receiver	Transmitter	Receiver
Frequency range		**315MHz**	**315MHz**
Maximum no. of channels		**1**	**1**
Channel spacing		**N/A**	**N/A**
Class of emission (type of modulation)		**AM 100%**	**N/A**
Maximum RF output power			**N/A**
Maximum effective radiated power (ERP)			**N/A**
Output power variable		**N/A**	**N/A**
Channel switching frequency range		**N/A**	**N/A**

Method of frequency generation	☐ Synthesizer	☐ Crystal	■ Other
Frequency generation TX	**SAW resonator**		
Frequency generation RX	**SAW resonator for Local Oscillator**		
IF	1st IF	2nd IF	3rd IF **N/A**
Integral selective calling	**N/A**		
Audio-frequency interface level at external data socket	**N/A**		
Modes of operation	☐ Duplex mode	☐ Semi-duplex mode	■ Simplex mode
Power source	☐ Mains	■ Vehicle-regulated	☐ Integral
Antenna socket	☐ BNC ☐ M ■ None	☐ TNC ☐ UHF ☐	☐ N ☐ Adapter ☐

Type approval specifications:

Declarations:

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

Kazutomo Sasaki

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

Seal and signature of applicant