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Report Reference ID:	169382-1TRFWL
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Test specification:	Title 47 – Telecommunication Chapter I – Federal Communications Commission Subchapter D – Safety and special radio services Part 90 – Private land mobile services Subpart M – Intelligent transportation systems radio service  Section 90.353 – LMS operations in the 902–928 MHz band.
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Applicant:	Kapsch TrafficCom IVHS Corp. 6020 Ambler Drive Mississauga, ON, Canada L4W 2P1
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Apparatus:	TDMA Transponder
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FCC ID:	JQU801604A
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Model:	802155A-TAB; 801604A-TAB; 801604A-TAB1
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Testing laboratory:	Nemko Canada Inc. 303 River Road Ottawa, ON, Canada K1V 1H2  Telephone: (613) 737-9680 Facsimile: (613) 737-9691
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	Name and title	Date
Tested by:	Andrey Adelberg, Senior Wireless/EMC Specialist	March 16, 2011
Reviewed by:	 David Duchesne, Senior Wireless/EMC Specialist	March 16, 2011



Nemko Canada Inc., a testing laboratory, is accredited by the Standards Council of Canada.  
The tests included in this report are within the scope of this accreditation.



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303 River Rd, Ottawa, ON, Canada, K1V 1H2

Product: TDMA Transponder

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## Section 1: Report summary

### 1.1 Test specification

Specifications	<b>Part 90.353 – LMS operations in the 902–928 MHz band.</b>
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### 1.2 Statement of compliance

Compliance	<p>In the configuration tested the EUT was found compliant</p> <p>This report contains an assessment of apparatus against specifications based upon tests carried out on samples submitted at Nemko Canada Inc. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 90; Subpart I.</p> <p>Radiated tests were conducted in accordance with ANSI C63.4-2003.</p>
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### 1.3 Exclusions

Exclusions	None
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### 1.4 Registration number

Test site FCC ID number	176392 (3 m Semi anechoic chamber)
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### 1.5 Test report revision history

Revision #	Details of changes made to test report
TRF	Original report issued

### 1.6 Limits of responsibility

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contain in this report are within Nemko Canada's ISO/IEC 17025 accreditation.

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Nemko Canada Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

## Section 2: Summary of test results

### 2.1 FCC Part 90 test results

Part	Test description	Verdict
<b>Subpart I</b>		
§90.205(l)	Power and antenna height limits	Pass
§90.209	Bandwidth limitations	Pass
§90.210(k)	Emission masks	Pass
§90.210(k)	Spurious emissions	Pass
§90.213	Frequency stability	Pass*
<b>Subpart M</b>		
§90.353(h)	Authorized bands	Pass
§90.357(b)	Frequencies for LMS systems in the 902–928 MHz band	Pass

\* - The EUT is a mobile transponder therefore it is exempt from this requirement.

## Section 3: Equipment under test (EUT) and application details

### 3.1 Product details

<b>FCC ID</b>	Grantee code:	JQU
	Product code:	801604A
<b>Equipment class</b>	LMS	
<b>Description of product as it is marketed</b>	TDMA Transponder	
	Model name/number:	802155A-TAB; 801604A-TAB; 801604A-TAB1
	Serial number:	ASTCVO-16

### 3.2 Sample information

<b>Receipt date:</b>	February 23, 2011
<b>Nemko sample ID number:</b>	Item # 1, 2

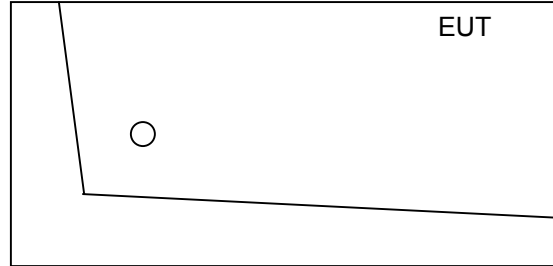
### 3.3 EUT technical specifications

<b>Operating band:</b>	902–928 MHz
<b>Operating frequency:</b>	915 ±0.6 MHz
<b>Modulation type:</b>	OOK
<b>Occupied bandwidth:</b>	3.4 MHz (20 dB BW); 5.48 MHz (99 % OBW)
<b>Emission designator:</b>	5M48P1D
<b>Antenna type:</b>	Printed antenna
<b>Power source:</b>	3.6 Vdc Lithium battery
<b>Model variants:</b>	<p><b>Model 801604A-TAB:</b></p> <ul style="list-style-type: none"> <li>omits the optional push button switch</li> <li>uses the smaller memory micro-controller</li> <li>has model specific firmware that only turns on the LED and buzzer for a short duration (a few seconds)</li> </ul> <p><b>Model 801604A-TAB1:</b></p> <ul style="list-style-type: none"> <li>omits the optional push button switch</li> <li>uses the smaller memory micro-controller</li> <li>has model specific firmware that turns on the LED and buzzer for an extended duration (minutes)</li> </ul> <p><b>Model 802155A-TAB:</b></p> <ul style="list-style-type: none"> <li>includes the optional push button switch</li> <li>uses the larger memory micro-controller</li> <li>has model specific firmware that turns on the LED and buzzer for an extended duration (minutes) and also when the button is pressed</li> </ul>

### 3.4 Operation of the EUT during testing

<b>Details:</b>	The EUT was modified for continuous transmission upon pressing on the button. The EUT is a battery-operated device; therefore all tests were performed using fresh batteries.
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3.5 EUT setup diagram



## Section 4: Engineering considerations

### 4.1 Modifications incorporated in the EUT

**Modifications**

Modifications performed to the EUT during this assessment  
 None  Yes , performed by Client  or Nemko   
 Details:

### 4.2 Deviations from laboratory tests procedures

**Deviations**

Deviations from laboratory test procedures  
 None  Yes  - details are listed below:

### 4.3 Technical judgment

**Judgment**

None

## Section 5: Test conditions

### 5.1 Power source and ambient temperatures

**Normal temperature, humidity and air pressure test conditions**

Temperature: 15–30 °C  
 Relative humidity: 20–75 %  
 Air pressure: 86–106 kPa

When it is impracticable to carry out tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests shall be recorded and stated.

**Power supply range:**

The normal test voltage for equipment to be connected to the mains shall be the nominal mains voltage. For the purpose of the present document, the nominal voltage shall be the declared voltage, or any of the declared voltages  $\pm 5\%$ , for which the equipment was designed.



## Section 6: Measurement uncertainty

Nemko Canada Inc. has calculated measurement uncertainty and is documented in EMC/MUC/001 "Uncertainty in EMC measurements." Measurement uncertainty was calculated using the methods described in CISPR 16-4 Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC measurements; as well as described in UKAS LAB34: The expression of Uncertainty in EMC Testing. Measurement uncertainty calculations assume a coverage factor of  $K=2$  with 95% certainty.



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Section 7: Test equipment


Product: TDMA Transponder

## Section 7: Test equipment

### 7.1 Test equipment list

Equipment	Manufacturer	Model No.	Asset/Serial No.	Next cal.
3 m EMI Test Chamber	TDK	SAC-3	FA002047	Mar. 09/12
Flush Mount Turntable	Sunol	FM2022	FA002082	NCR
Controller	Sunol	SC104V	FA002060	NCR
Antenna Mast	Sunol	TLT2	FA002061	NCR
Receiver/Spectrum Analyzer	Rohde & Schwarz	ESU 26	FA002043	Jan. 14/12
Bilog Antenna	Sunol	JB3	FA002108	Jan. 18/12
Horn Antenna #2	EMCO	3115	FA000825	Jan. 18/12
1-18 GHz Amplifier	JCA	JCA118-503	FA002091	Oct. 07/11
Temperature chamber	Thermotron	SM-16C	FA001030	NCR
Multimeter	Fluke	16	FA001831	Jan. 26/12
International power supply	California inst.	3001I	FA001021	COU
Receiver/spectrum analyzer	Rohde & Schwarz	ESU 40	FA002071	Jan. 04/12
Horn antenna #1	Emco	3115	FA000649	Mar. 08/12

Note: NCR = No cal required, COU = Calibrate on use

 Nemko Canada Inc., 303 River Rd, Ottawa, ON, Canada, K1V 1H2	<b>Section 8:</b> Testing data		<b>Product:</b> TDMA Transponder	
	<b>Test name:</b> Clause 90.205 Effective radiated power of carrier			
	<b>Test date:</b> March 10, 2011		<b>Test engineer:</b> Andrey Adelberg	
	<b>Verdict:</b> Pass		<b>Supply input:</b> Battery	
	<b>Temperature:</b> 22 °C	<b>Air pressure:</b> 1003 mbar	<b>Relative humidity:</b> 30 %	
<b>Specification:</b> FCC Part 90 Subpart I				

## Section 8: Testing data

### 8.1 Clause 90.205 Effective radiated power of carrier

Applicants for licenses must request and use no more power than the actual power necessary for satisfactory operation. Except where otherwise specifically provided for, the maximum power that will be authorized to applicants whose license applications for new stations are filed after August 18, 1995 is as follows:

(l) 902–928 MHz.

LMS systems operating pursuant to subpart M of this part in the 902–927.25 MHz band will be authorized a maximum of 30 watts ERP. LMS equipment operating in the 927.25–928 MHz band will be authorized a maximum of 300 watts ERP. ERP must be measured as peak envelope power. Antenna heights will be as specified in §90.353(h).

Assigned frequency band (MHz)	ERP	
	(W)	(dBm)
902.00–927.25	30	44.8
927.25–928.00	300	54.8

### Special notes

The test was performed using peak detector of the spectrum analyzer with RBW and VBW of 10 MHz. The test was performed conducted on the specially modified sample for that matter. The antenna gain declared by the manufacturer is 0.5 dBd.



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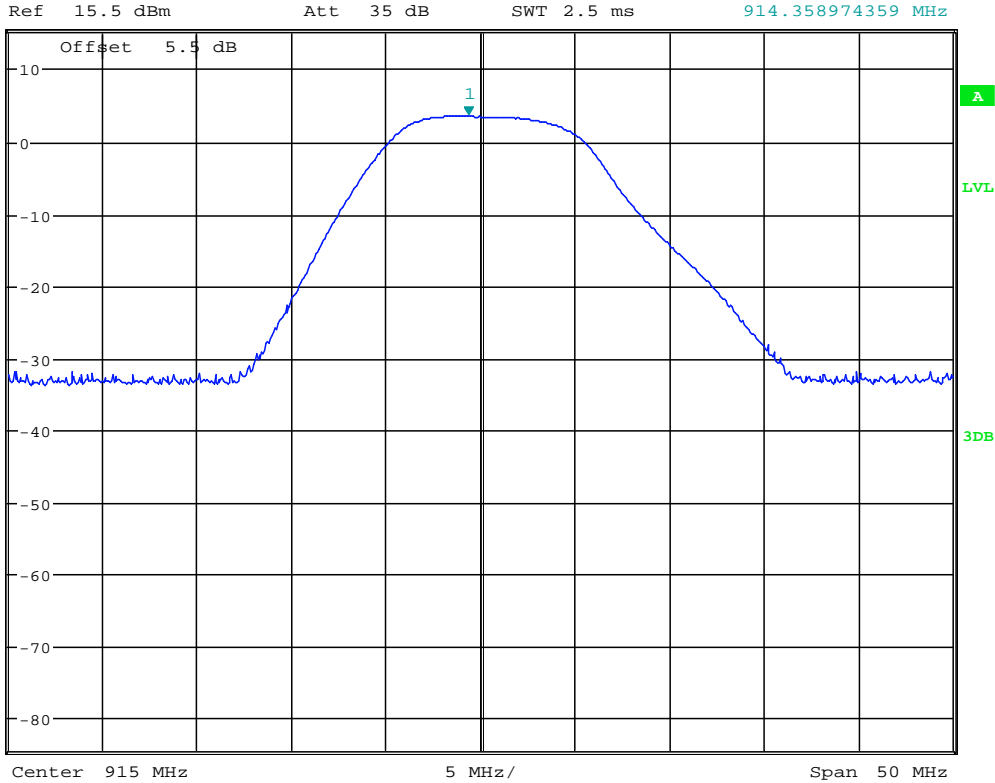
<b>Section 8: Testing data</b>		<b>Product: TDMA Transponder</b>	
<b>Test name: Clause 90.205 Effective radiated power of carrier</b>			
<b>Test date: March 10, 2011</b>		<b>Test engineer: Andrey Adelberg</b>	
<b>Verdict: Pass</b>		<b>Supply input: Battery</b>	
<b>Temperature: 22 °C</b>	<b>Air pressure: 1003 mbar</b>	<b>Relative humidity: 30 %</b>	
<b>Specification: FCC Part 90 Subpart I</b>			

**Test data**

**Measured results**




\*RBW 10 MHz      Marker 1 [T1 ]  
 VBW 10 MHz      3.61 dBm  
 SWT 2.5 ms      914.358974359 MHz



Date: 10.MAR.2011 22:38:52

Frequency (MHz)	Peak output power (dBm)	Antenna gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
915	3.61	0.5	4.11	44.80	40.69

 Nemko Canada Inc., 303 River Rd, Ottawa, ON, Canada, K1V 1H2	<b>Section 8:</b> Testing data		<b>Product:</b> TDMA Transponder	
	<b>Test name:</b> Clause 90.209 Occupied bandwidth			
	<b>Test date:</b> February 24, 2011		<b>Test engineer:</b> Andrey Adelberg	
	<b>Verdict:</b> Pass		<b>Supply input:</b> Battery	
	<b>Temperature:</b> 22 °C		<b>Air pressure:</b> 1003 mbar	<b>Relative humidity:</b> 30 %
	<b>Specification:</b> FCC Part 90 Subpart I			

## 8.2 Clause 90.209 Occupied bandwidth

- (a) Each authorization issued to a station licensed under this part will show an emission designator representing the class of emission authorized. The designator will be prefixed by a specified necessary bandwidth. This number does not necessarily indicate the bandwidth occupied by the emission at any instant. In those cases where §2.202 of this chapter does not provide a formula for the computation of necessary bandwidth, the occupied bandwidth, as defined in part 2 of this chapter, may be used in lieu of the necessary bandwidth.
- (b) The maximum authorized single channel bandwidth of emission corresponding to the type of emission specified in §90.207 is as follows:
- (1) For A1A or A1B emissions, the maximum authorized bandwidth is 0.25 kHz. The maximum authorized bandwidth for type A3E emission is 8 kHz.
  - (2) For operations below 25 MHz utilizing J3E emission, the bandwidth occupied by the emission shall not exceed 3000 Hz. The assigned frequency will be specified in the authorization. The authorized carrier frequency will be 1400 Hz lower in frequency than the assigned frequency. Only upper sideband emission may be used. In the case of regularly available double sideband radiotelephone channels, an assigned frequency for J3E emissions is available either 1600 Hz below or 1400 Hz above the double sideband radiotelephone assigned frequency.
  - (3) For all other types of emissions, the maximum authorized bandwidth shall not be more than that normally authorized for voice operations.
  - (4) Where a frequency is assigned exclusively to a single licensee, more than a single emission may be used within the authorized bandwidth. In such cases, the frequency stability requirements of §90.213 must be met for each emission.
  - (5) Unless specified elsewhere, channel spacings and bandwidths that will be authorized in the following frequency bands are given in the following table:



<b>Section 8: Testing data</b>		<b>Product: TDMA Transponder</b>	
<b>Test name: Clause 90.209 Occupied bandwidth</b>			
<b>Test date: February 24, 2011</b>		<b>Test engineer: Andrey Adelberg</b>	
<b>Verdict: Pass</b>		<b>Supply input: Battery</b>	
<b>Temperature: 22 °C</b>	<b>Air pressure: 1003 mbar</b>	<b>Relative humidity: 30 %</b>	
<b>Specification: FCC Part 90 Subpart I</b>			

Frequency band (MHz)	Channel spacing (kHz)	Authorized bandwidth (kHz)
Below 25*		
25–50	20	20
72–76	20	20
150–174	7.5	**20/11.25/6
216–220****	6.25	20/11.25/6
220–222	5	4
406–512*	6.25	**20/11.25/6
806–809/851–854	12.5	20
809–824/854–869	25	20
896–901/935–940	12.5	13.6
902–928***		
929–930	25	20
1427–1432****	12.5	12.5
2450–2483.5*		
Above 2500*		

\* Bandwidths for radiolocation stations in the 420–450 MHz band and for stations operating in bands subject to this footnote will be reviewed and authorized on a case-by-case basis.

\*\* Operations using equipment designed to operate with a 25 kHz channel bandwidth will be authorized a 20 kHz bandwidth. Operations using equipment designed to operate with a 12.5 kHz channel bandwidth will be authorized a 11.25 kHz bandwidth. Operations using equipment designed to operate with a 6.25 kHz channel bandwidth will be authorized a 6 kHz bandwidth. All stations must operate on channels with a bandwidth of 12.5 kHz or less beginning January 1, 2013, unless the operations meet the efficiency standard of §90.203(j)(3).

\*\*\* The maximum authorized bandwidth shall be 12 MHz for non-multilateration LMS operations in the band 909.75–921.75 MHz and 2 MHz in the band 902.00–904.00 MHz. The maximum authorized bandwidth for multilateration LMS operations shall be 5.75 MHz in the 904.00–909.75 MHz band; 2 MHz in the 919.75–921.75 MHz band; 5.75 MHz in the 921.75–927.25 MHz band and its associated 927.25–927.50 MHz narrowband forward link; and 8.00 MHz if the 919.75–921.75 MHz and 921.75–927.25 MHz bands and their associated 927.25–927.50 MHz and 927.50–927.75 MHz narrowband forward links are aggregated.

\*\*\*\*See §90.259.

**Special notes**

The RBW was set to 1 % of occupied bandwidth. VBW was set wider than RBW. The test was performed using a peak detector of spectrum analyzer. The test was performed radiated at the distance of 3 m.

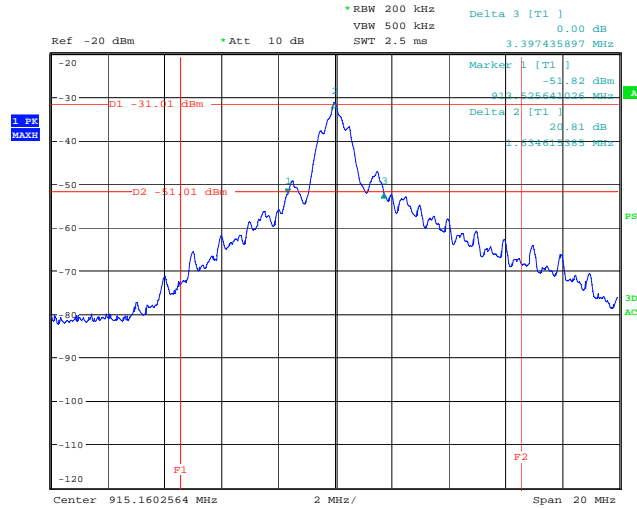


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<b>Section 8: Testing data</b>		<b>Product: TDMA Transponder</b>	
<b>Test name: Clause 90.209 Occupied bandwidth</b>			
<b>Test date: February 24, 2011</b>		<b>Test engineer: Andrey Adelberg</b>	
<b>Verdict: Pass</b>		<b>Supply input: Battery</b>	
<b>Temperature: 22 °C</b>		<b>Air pressure: 1003 mbar</b>	<b>Relative humidity: 30 %</b>
<b>Specification: FCC Part 90 Subpart I</b>			

**Test data**

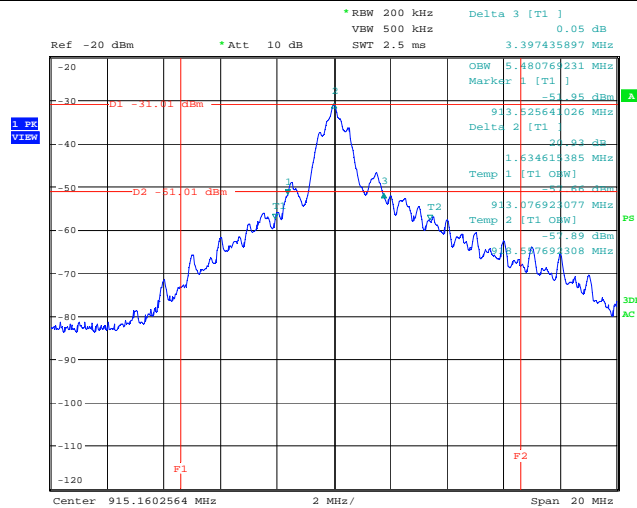
**20 dB bandwidth results:**



Date: 24.FEB.2011 14:18:34


Frequency (MHz)	Occupied bandwidth (MHz)	Limit (MHz)	Margin (MHz)
915	3.397	12.00	8.603

**99 % occupied bandwidth results:**



Date: 24.FEB.2011 14:19:58

Frequency (MHz)	99 % Occupied bandwidth (MHz)
915	5.48

 Nemko Canada Inc., 303 River Rd, Ottawa, ON, Canada, K1V 1H2	<b>Section 8:</b> Testing data		<b>Product:</b> TDMA Transponder	
	<b>Test name:</b> Clause 90.210 Emission mask			
	<b>Test date:</b> February 24, 2011		<b>Test engineer:</b> Andrey Adelberg	
	<b>Verdict:</b> Pass		<b>Supply input:</b> Battery	
	<b>Temperature:</b> 22 °C		<b>Air pressure:</b> 1003 mbar	<b>Relative humidity:</b> 30 %
	<b>Specification:</b> FCC Part 90 Subpart I			

### 8.3 Clause 90.210 Emission mask

Except as indicated elsewhere in this part, transmitters used in the radio services governed by this part must comply with the emission masks outlined in this section. Unless otherwise stated, per paragraphs (d)(4), (e)(4), and (m) of this section, measurements of emission power can be expressed in either peak or average values provided that emission powers are expressed with the same parameters used to specify the unmodulated transmitter carrier power. For transmitters that do not produce a full power unmodulated carrier, reference to the unmodulated transmitter carrier power refers to the total power contained in the channel bandwidth. Unless indicated elsewhere in this part, the table in this section specifies the emission masks for equipment operating in the frequency bands governed under this part.

Frequency band (MHz)	Mask for equipment with Audio low pass filter	Mask for equipment without Audio low pass filter
Below 25	A or B	A or C
25–50	B	C
72–76	B	C
150–174	B, D, or E	C, D, or E
150 Paging only	B	C
220–222	F	F
421–512	B, D, or E	C, D, or E
450 Paging only	B	G
806–809/851–854	B	H
809–824/854–869	B	G
896–901/935–940	I	J
902–928	K	K
929–930	B	G
4940–4990	L or M	L or M
5850–5925		
All other bands	B	C

(k)(3) *Other transmitters.* For all other transmitters authorized under subpart M that operate in the 902–928 MHz band, the peak power of any emission shall be attenuated below the power of the highest emission contained within the licensee's sub-band in accordance with the following schedule:

- (i) On any frequency within the authorized bandwidth: Zero dB.
  - (ii) On any frequency outside the licensee's sub-band edges:  $55 + 10 \log(P)$  dB, where (P) is the highest emission (watts) of the transmitter inside the licensee's sub-band.
- (4) In the 902–928 MHz band, the resolution bandwidth of the instrumentation used to measure the emission power shall be 100 kHz, except that, in regard to paragraph (2) of this section, a minimum spectrum analyzer resolution bandwidth of 300 Hz shall be used for measurement center frequencies with 1 MHz of the edge of the authorized subband. The video filter bandwidth shall not be less than the resolution bandwidth.
- (5) Emission power shall be measured in peak values.
- (6) The LMS sub-band edges for non-multilateration systems for which emissions must be attenuated are 902.00, 904.00, 909.75 and 921.75 MHz.

#### Special notes

The test was performed conducted on the specially modified unit for conducted measurements. The test was done using spectrum analyzer with peak detector and RBW was set to 100 kHz.



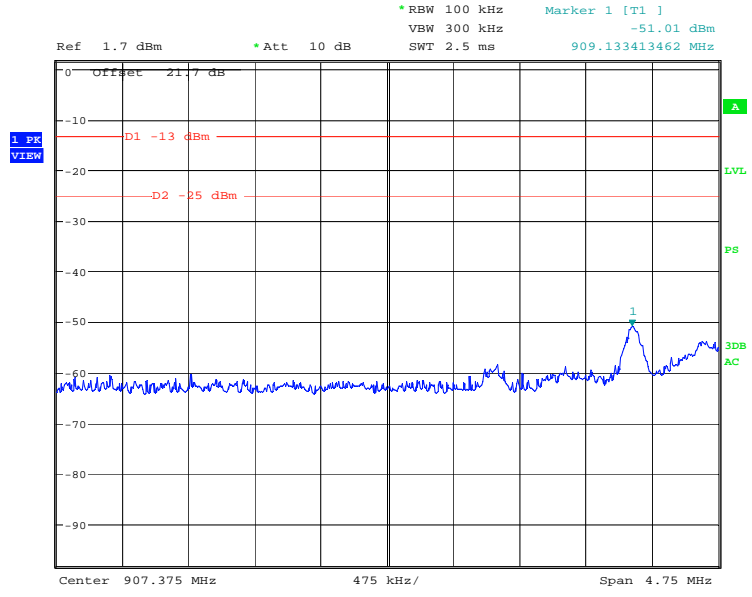


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<b>Section 8: Testing data</b>		<b>Product: TDMA Transponder</b>	
<b>Test name: Clause 90.210 Emission mask</b>			
<b>Test date: February 24, 2011</b>		<b>Test engineer: Andrey Adelberg</b>	
<b>Verdict: Pass</b>		<b>Supply input: Battery</b>	
<b>Temperature: 22 °C</b>	<b>Air pressure: 1003 mbar</b>	<b>Relative humidity: 30 %</b>	
<b>Specification: FCC Part 90 Subpart I</b>			

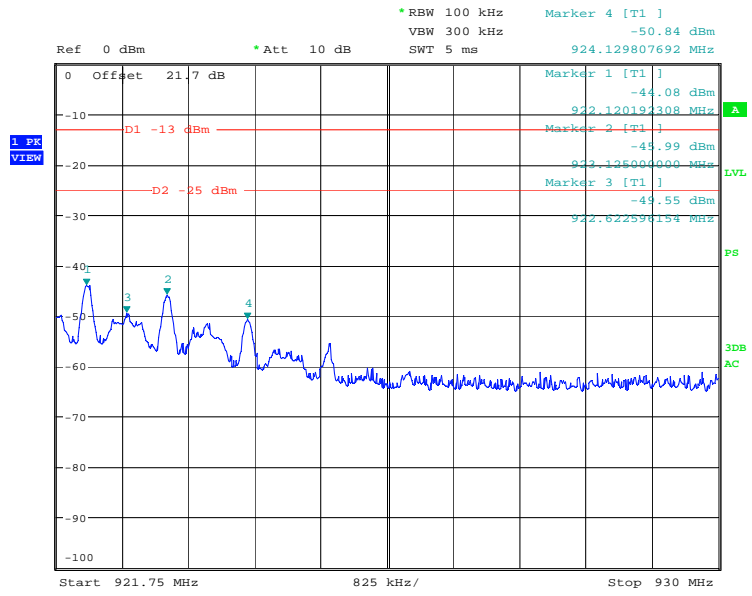
Test data

Lower band edge at 909.75 MHz




Date: 24.FEB.2011 14:25:33

Upper band edge at 921.75 MHz



Date: 24.FEB.2011 14:27:10

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	<b>Test name: Clause 90.210 Spurious emissions</b>			
	<b>Test date: February 24, 2011</b>		<b>Test engineer: Andrey Adelberg</b>	
	<b>Verdict: Pass</b>		<b>Supply input: Battery</b>	
	<b>Temperature: 22 °C</b>	<b>Air pressure: 1003 mbar</b>	<b>Relative humidity: 30 %</b>	
<b>Specification: FCC Part 90 Subpart I</b>				

## 8.4 Clause 90.210 Spurious emissions

(k)(3)(ii) On any frequency outside the licensee's sub-band edges:  $55 + 10 \log(P)$  dB, where (P) is the highest emission (watts) of the transmitter inside the licensee's sub-band.

Frequency range (MHz)	Attenuation below carrier (dBc)	ERP of spurious emissions (dBm)
30–10 <sup>th</sup> harmonic	$55 + 10 \log (P)$	-25

### Special notes

For radiated measurements at the frequencies below 1 GHz the RBW was set to 100 kHz.  
 For radiated measurements at the frequencies above 1 GHz the RBW was set to 1 MHz. VBW was wider than RBW at any time  
 Radiated emissions were tested using substitution method for field strength at 3 m to ERP conversion.  
 Two EUT possible positions were assessed; only worst-case emissions are reported.  
 The test was performed using a substitution method.  
 Conducted measurements were performed on the sample especially modified for that matter.

### Test data

Frequency (MHz)	Field strength (dB $\mu$ V/m)	Substitution method				
		SG-CL (dBm)	Tx antenna gain (dBd)	ERP (dBm)	Margin (dB)	Limit (dBm)
1830.1	70.85	-50.39	6.44	-43.95	18.95	-25.00
2745.5	67.96	-50.14	7.60	-42.54	17.54	-25.00
3660.6	59.75	-54.57	7.32	-47.25	22.25	-25.00

ERP = SG-CL (Signal generator level – cable loss) + antenna gain.

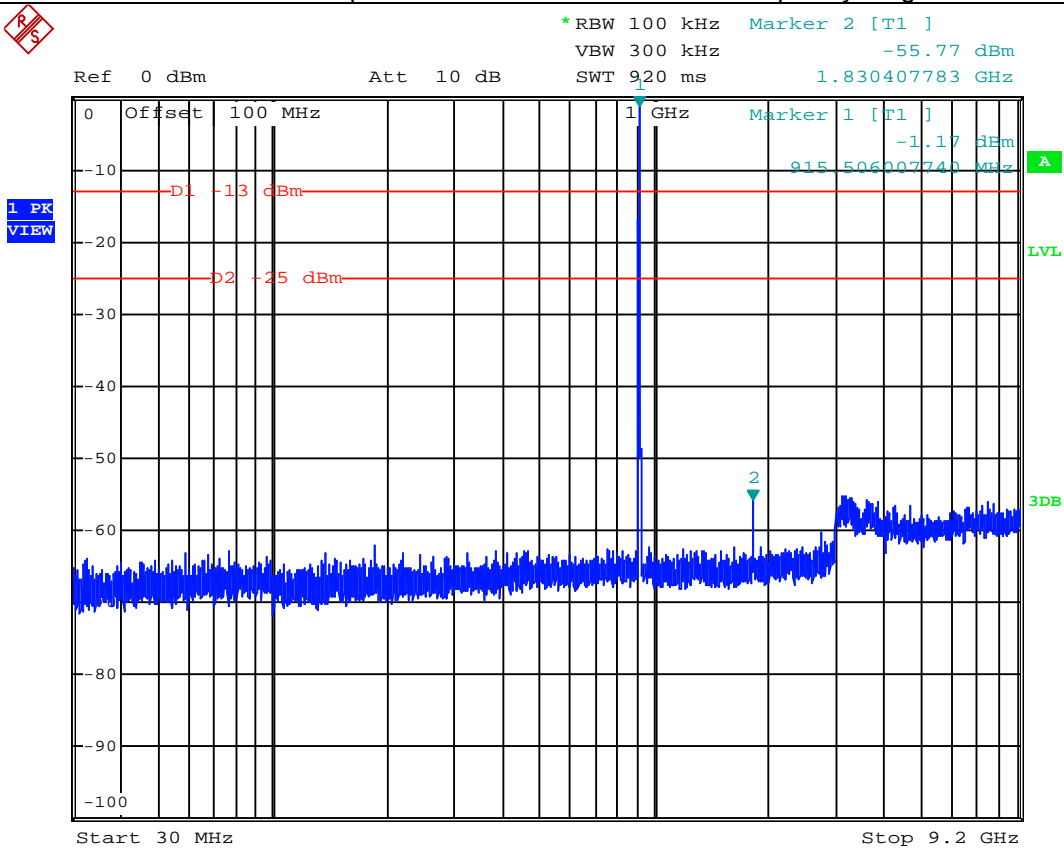


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<b>Section 8: Testing data</b>		<b>Product:</b> TDMA Transponder
<b>Test name:</b> Clause 90.210 Spurious emissions		
<b>Test date:</b> February 24, 2011		<b>Test engineer:</b> Andrey Adelberg
<b>Verdict:</b> Pass		<b>Supply input:</b> Battery
<b>Temperature:</b> 22 °C	<b>Air pressure:</b> 1003 mbar	<b>Relative humidity:</b> 30 %
<b>Specification:</b> FCC Part 90 Subpart I		

Test data, continued

Spurious emissions at the antenna port within 30 MHz to 9200 MHz frequency range



Date: 24.FEB.2011 14:35:28



<b>Section 8: Testing data</b>		<b>Product: TDMA Transponder</b>	
<b>Test name: Clause 90.213 Frequency stability</b>			
<b>Test date: February 24, 2011</b>		<b>Test engineer: Andrey Adelberg</b>	
<b>Verdict: Noted</b>		<b>Supply input: Battery</b>	
<b>Temperature: 23 °C</b>		<b>Air pressure: 1003 mbar</b>	<b>Temperature: 23 °C</b>
<b>Specification: FCC Part 90 Subpart I</b>			

## 8.5 Clause 90.213 Frequency stability

a) Unless noted elsewhere, transmitters used in the services governed by this part must have minimum frequency stability as specified in the following table.

Frequency range (MHz)	Fixed and base stations (ppm)	Mobile stations (ppm)	
		Over 2 W output power	2 W or less output power
Below 25	100	100	200
25–50	20	20	50
72–76	5		50
150–174	5	5	50
216–220	1		1
220–222	0.1	1.5	1.5
421–512	2.5	5	5*
806–809	1	1.5	1.5
809–824	1.5	2.5	2.5
851–854	1	1.5	1.5
854–869	1.5	2.5	2.5
896–901	0.1	1.5	1.5
902–928	2.5	2.5	2.5
902–928*	2.5	2.5	2.5
929–930	1.5		
935–940	0.1	1.5	1.5
1427–1432	300	300	300
Above 2450			

\*- Fixed non-multilateration transmitters with an authorized bandwidth that is more than 40 kHz from the band edge, intermittently operated hand-held readers, and mobile transponders are not subject to frequency tolerance restrictions.


### Special notes

Since the EUT is a mobile transponder it is exempt from this requirement.

### Test data

Test conditions	Frequency (Hz)	Offset* (ppm)
+50 °C, Nominal	915169943.149	1.18
+40 °C, Nominal	915171828.397	3.24
+30 °C, Nominal	915169073.739	0.23
+20 °C, +15 %	915169787.571	1.01
+20 °C, Nominal	915168863.250	Reference
+20 °C, -15 %	915167032.912	-2.00
+10 °C, Nominal	915168634.458	-0.25
0 °C, Nominal	915170821.711	2.14
-10 °C, Nominal	915170117.031	1.37
-20 °C, Nominal	915171700.273	3.10
-30 °C, Nominal	915167765.047	-1.20

\* Note: Offset calculation:  $\frac{F_{Measured} - F_{reference}}{F_{reference}} \times 1 \cdot 10^6$

 Nemko Canada Inc., 303 River Rd, Ottawa, ON, Canada, K1V 1H2	<b>Section 8:</b> Testing data		<b>Product:</b> TDMA Transponder	
	<b>Test name:</b> Clause 90.353 LMS operations in the 902–928 MHz band			
	<b>Test date:</b> February 24, 2011		<b>Test engineer:</b> Andrey Adelberg	
	<b>Verdict:</b> Pass		<b>Supply input:</b> Battery	
	<b>Temperature:</b> 23 °C		<b>Air pressure:</b> 1003 mbar	<b>Temperature:</b> 23 °C
	<b>Specification:</b> FCC Part 90 Subpart M			

## 8.6 Clause 90.353 LMS operations in the 902–928 MHz band


LMS systems may be authorized within the 902–928 MHz band, subject to the conditions in this section. LMS licensees are required to maintain whatever records are necessary to demonstrate compliance with these provisions and must make these records available to the Commission upon request:

(h) Non-multilateration stations are authorized to operate on a shared, non-exclusive basis in the 902–904 MHz and 909.75–921.75 MHz sub-bands. Non-multilateration systems and multilateration systems will share the 919.75–921.75 MHz band on a co-equal basis. Non-multilateration LMS systems may not provide non-vehicular location services. The maximum antenna height above ground for non-multilateration LMS systems is 15 meters.

(i) Non-multilateration LMS licenses will be issued on a site-by-site basis, except that municipalities or other governmental operatives may file jointly for a non-multilateration license covering a given U.S. Department of Commerce Bureau of Economic Analysis Economic Area (EA). Such an application must identify all planned sites. After receiving the license, the non-multilateration EA licensee must notify the Commission if sites are deleted or if new sites are added, before those sites may be put into operation.

### Special notes

The EUT operates within 909.75–921.75 MHz band. The only operational frequency is 915 ±0.6 MHz.

 Nemko Canada Inc., 303 River Rd, Ottawa, ON, Canada, K1V 1H2	<b>Section 8:</b> Testing data		<b>Product:</b> TDMA Transponder	
	<b>Test name:</b> Clause 90.357 Frequencies for LMS systems in the 902–928 MHz band			
	<b>Test date:</b> February 24, 2011		<b>Test engineer:</b> Andrey Adelberg	
	<b>Verdict:</b> Pass		<b>Supply input:</b> Battery	
	<b>Temperature:</b> 23 °C	<b>Air pressure:</b> 1003 mbar	<b>Temperature:</b> 23 °C	
	<b>Specification:</b> FCC Part 90 Subpart I			

## 8.7 Clause 90.357 Frequencies for LMS systems in the 902–928 MHz band

(b) Non-multilateration LMS systems will be authorized in the following frequency bands:

LMS sub-band*
902.00–904.00 MHz
909.75–921.75 MHz

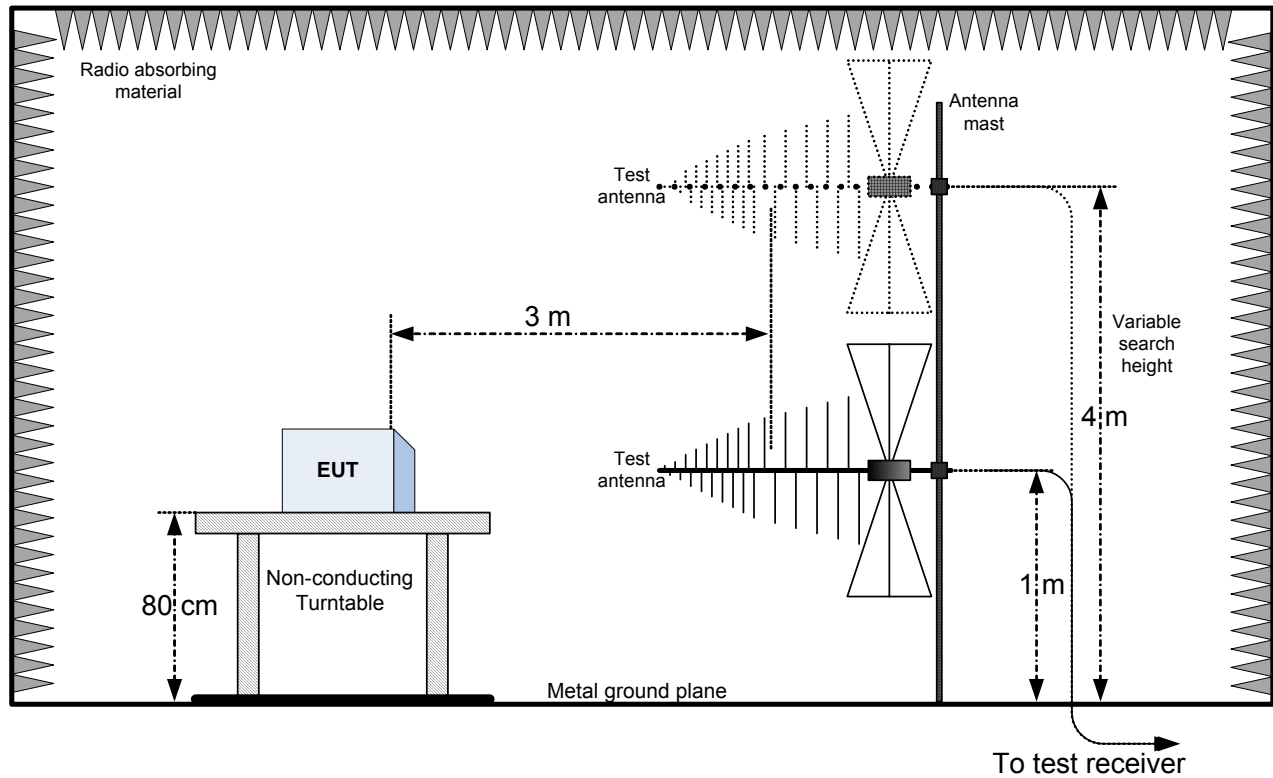
\*- Applicants for non-multilateration LMS systems should request only the minimum amount of bandwidth necessary to meet their operational needs.

### Special notes

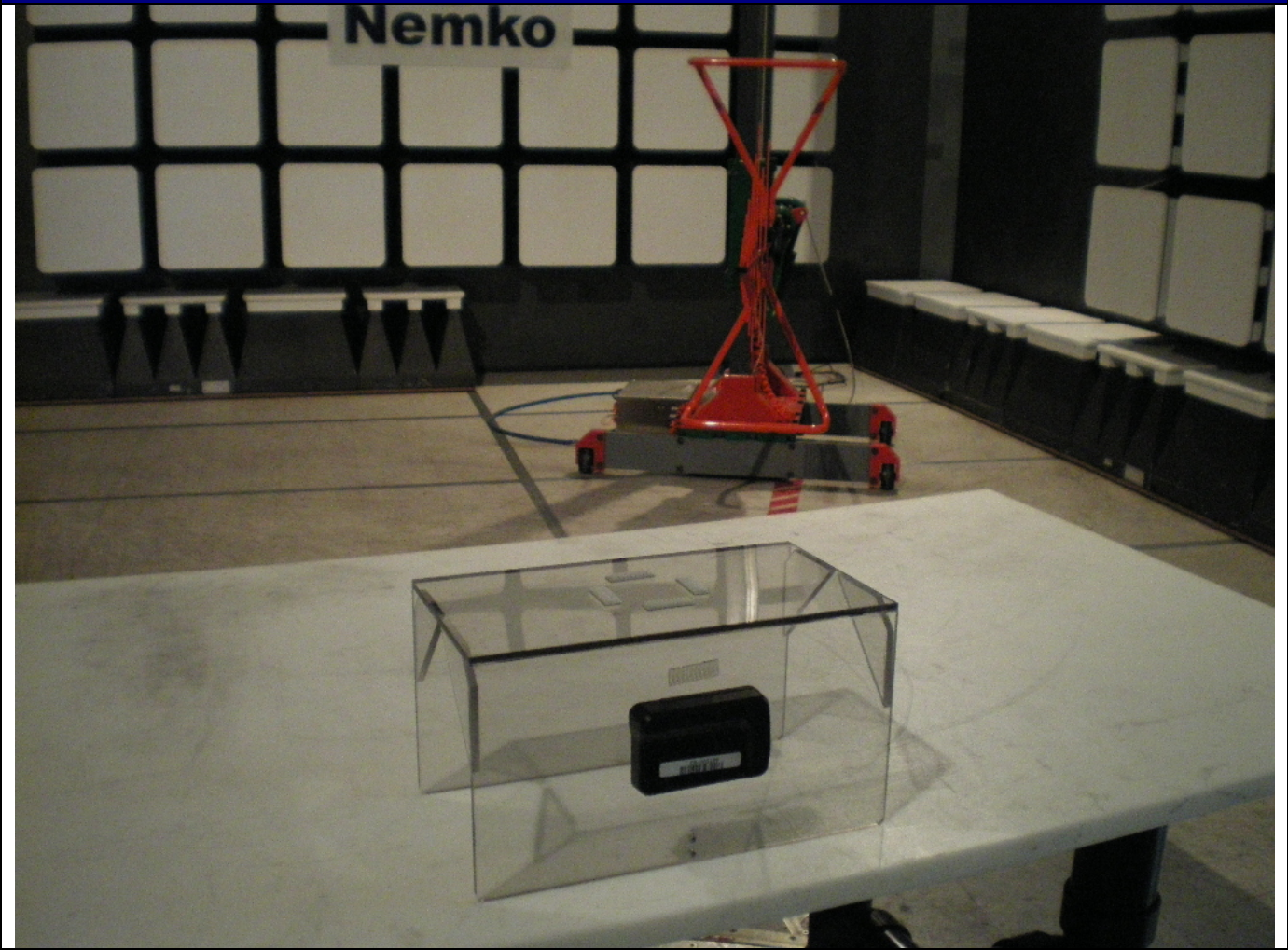
The EUT operates within 909.75–921.75 MHz band. The only operational frequency is 915 ±0.6 MHz.

## Section 9: Block diagram and photos of test set-up

### Radiated emissions set-up

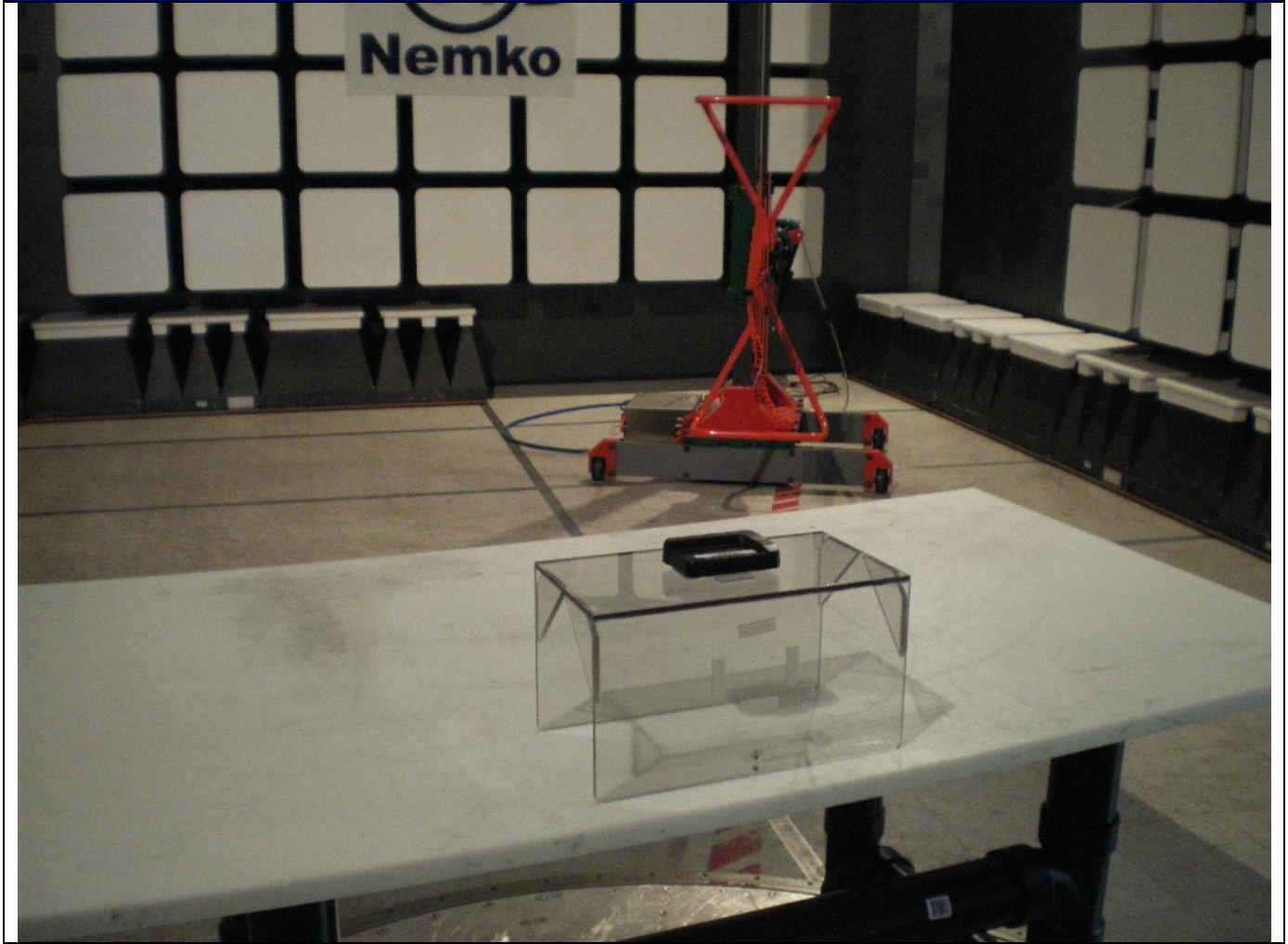


EUT on side position setup





EUT on top position setup



## Section 10: EUT photos

### EUT external photos



EUT external photos, continued

