



**Nemko Test Report:** 2014 258170 FCC PT90 rev3

**Applicant:** E.F. Johnson  
1440 Corporate Drive  
Irving, TX 75038

**Equipment Under Test:  
(E.U.T.)** 242-5720

**In Accordance With:** **CFR 47 Part 90, Subpart I and  
Industry Canada RSS-119, Issue 11**  
Private Land Mobile Transmitters

**FCC Identifier:** ATH2425720

**IC Identifier:** 933B-2425720

**Tested By:** Nemko USA Inc.  
2210 Faraday Ave.  
Suite 150  
Carlsbad, CA 92008

**TESTED BY:**   
David Light, Wireless Engineer

**DATE:** 08 Sept. 2014  
Date

**APPROVED BY:**   
TB Ketterling, EMC Manager

**DATE:** 08 Sept. 2014  
Date

**Number of Pages: 12**

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EQUIPMENT: 242-5720PROJECT NO.: 2014 258170 FCC PT90 rev3**Section 1. Summary of Test Results**

Manufacturer: E.F. Johnson

Model No.: 242-5720

Serial No.: None

General: **All measurements are traceable to national standards.**

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with CFR Part 90, Subpart I and Industry Canada RSS-119, Issue 11. EIA/TIA 603 and ANSI C63.4:2003 were used as a test method for these measurements.



New Submission



Production Unit



Class II Permissive Change



Pre-Production Unit

THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATIONS HAVE BEEN MADE.

See " Summary of Test Data".



NVLAP Lab Code

200116-0

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**Summary of Test Data**

| NAME OF TEST                            | PARA. NO.        | RESULT   |
|-----------------------------------------|------------------|----------|
| RF Power Output                         | 90.205 / 5.4.5   | NT(1)    |
| Audio Frequency Response                | TIA EIA-6.3.2.6  | NT(1)    |
| Audio Low Pass Filter Response          | TIA EIA-6.3.2.6  | NT(1)    |
| Modulation Limiting                     | TIA EIA-6.3.2.6  | NT(1)    |
| Spurious Emissions at Antenna Terminals | 90.210 / 5.8.9.2 | Complies |
| Field Strength of Spurious Emissions    | 90.210 / 5.8.9.2 | NT(1)    |
| Frequency Stability                     | 90.213 / 5.3     | NT(1)    |
| Transient Frequency Behavior            | 90.214 / 5.9     | NA(1)    |
| Adjacent Channel Power                  | 90.543 / 5.8.9.1 | NA(1)    |
| Receiver Spurious Emissions             | RSS-Gen 6.1      | NT(1)    |

**Footnotes For N/A's:**

NA(1) Not required for this frequency band.

NT(1) Class II permissive change. Adding emission designator 8K10F7E. The only test needed were spurious emissions at antenna.

**Revisions:**

- 1) Applied emission mask 90.210(d) to test. Section 3.
- 2) Remeasured spurious using filter to reduce drive on analyzer front end. Page 8.
- 3) Revised model number and ID numbers.

## **Section 2.        General Equipment Specification**

|                                                       |                                                   |
|-------------------------------------------------------|---------------------------------------------------|
| <b>Supply Voltage Input:</b>                          | 7.5 Vdc                                           |
| <b>Frequency Range:</b>                               | 380 - 470 MHz                                     |
| <b>Emission Designator:</b>                           | 8K10F7E                                           |
| <b>Output Impedance:</b>                              | 50 Ohms                                           |
| <b>RF Power Output (rated):</b>                       | <div><div>4.5    W</div><div>3.5    W</div></div> |
| <b>Operator Selection of<br/>Operating Frequency:</b> | Pre-programmed channel selection                  |
| <b>Power Output Adjustment<br/>Capability:</b>        | None                                              |

## **System Description**

4.5 Watt UHF Land Mobile Radio transceiver

EQUIPMENT: 242-5720PROJECT NO.: 2014 258170 FCC PT90 rev3**Section 3. Spurious Emissions at Antenna Terminals**

|                                                      |                    |
|------------------------------------------------------|--------------------|
| NAME OF TEST: Spurious Emissions @ Antenna Terminals | PARA. NO.: 2.1051  |
| TESTED BY: David Light                               | DATE: 31 July 2014 |

**Test Results:** Complies.**Test Data:** See attached plot(s).**Equipment Used:**

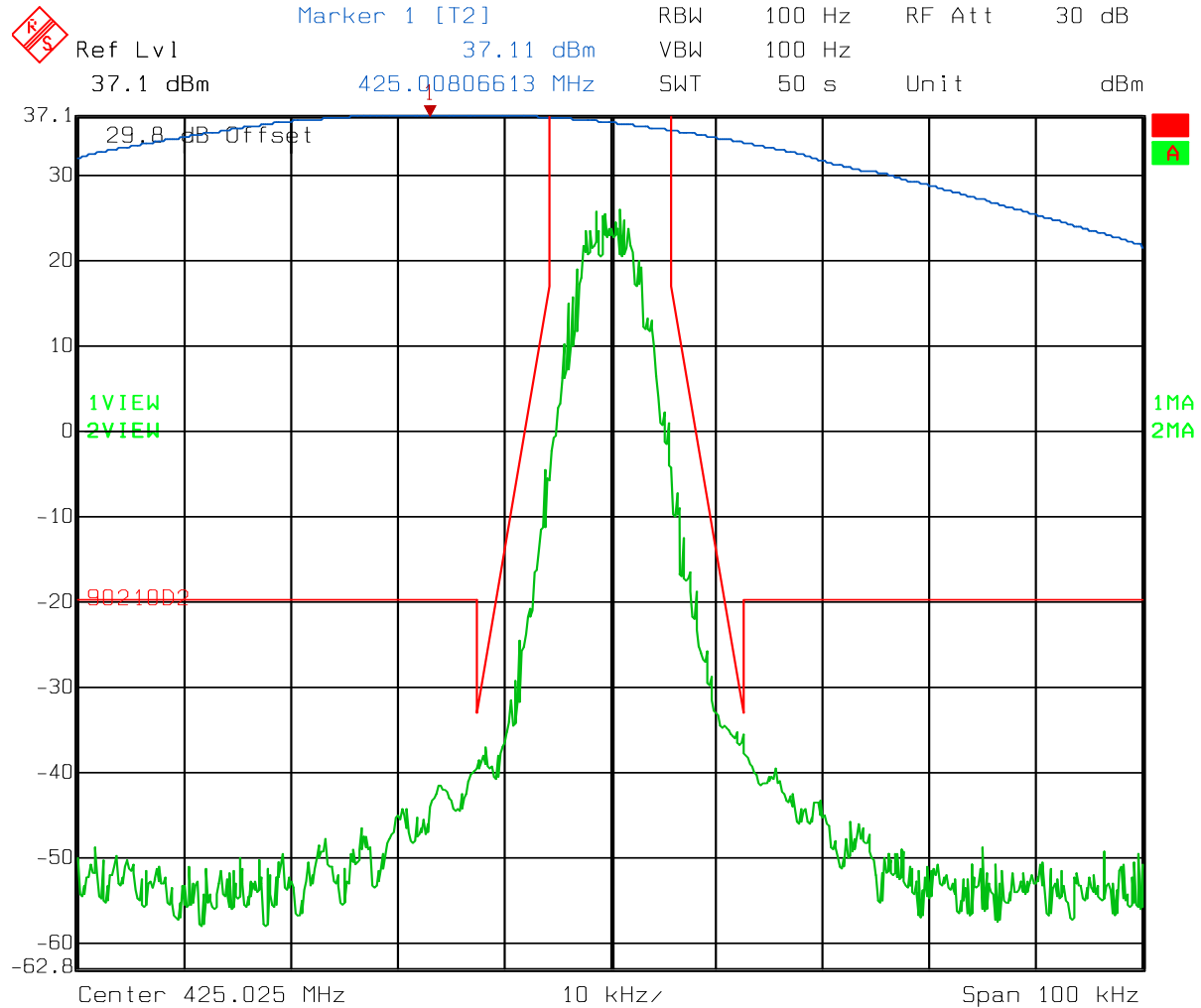
| Asset Tag | Description       | Manufacturer     | Model  | Serial #   | Last Cal    | Next Cal    |
|-----------|-------------------|------------------|--------|------------|-------------|-------------|
| 1036      | Spectrum Analyzer | Rohde & Schwartz | FSEK30 | 830844/006 | 15-Jul-2013 | 15-Jul-2015 |

**Measurement Uncertainty:** +/- 1.7 dB**Temperature:** 22 °C**Relative Humidity:** 35 %

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# Test Data Spurious Emissions at Antenna Port

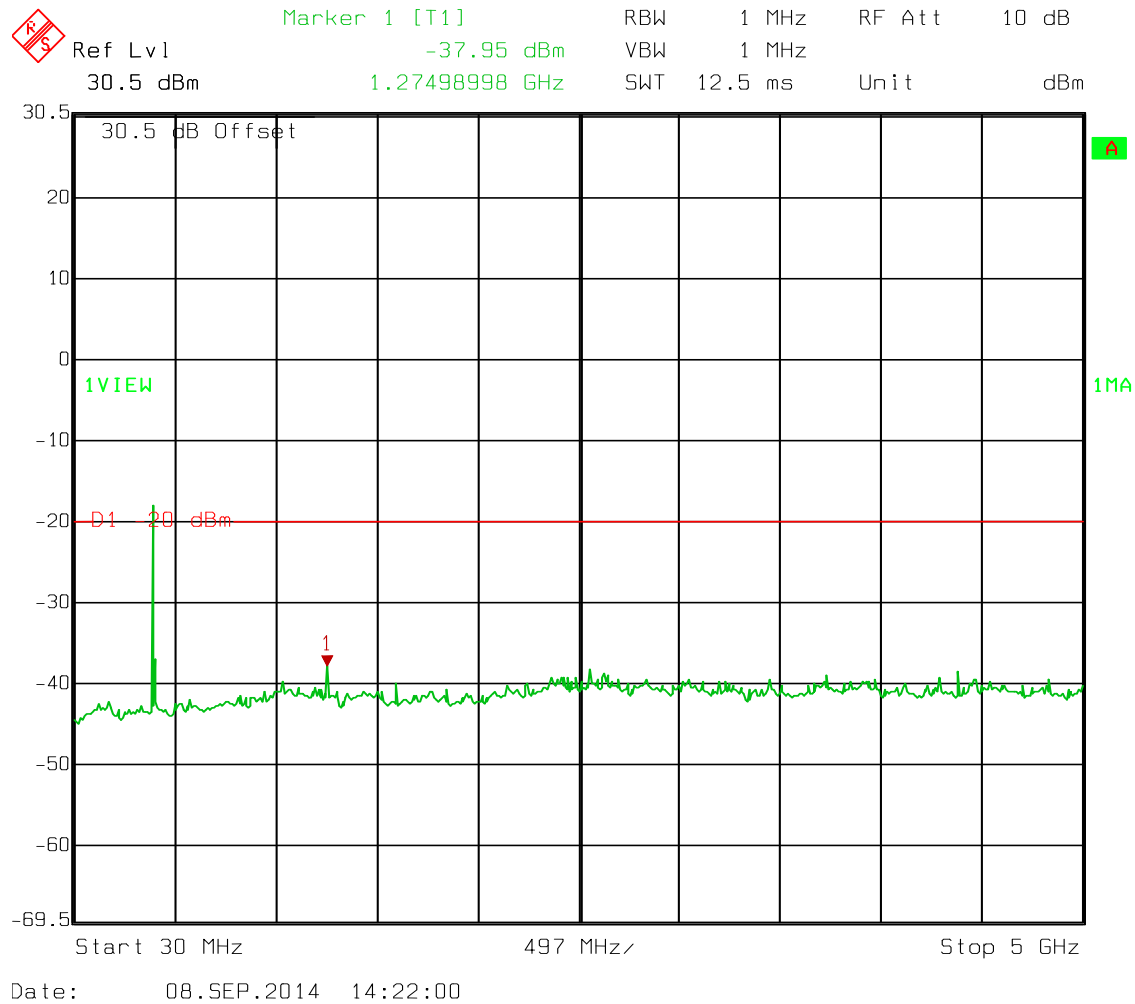


Date: 31.JUL.2014 09:16:40

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## Test Data Spurious Emissions at Antenna Port



Carrier filtered.

## **ANNEX A - TEST METHODOLOGIES**

EQUIPMENT: 242-5720

PROJECT NO.: 2014 258170 FCC PT90 rev3

**NAME OF TEST: Spurious Emissions at Antenna  
Terminals****PARA. NO.: 2.991****Minimum Standard:**

90.210, Table 1

**Table 1**

| Frequency Band (MHz) | Mask for equipment with Low Pass Filter | Mask for equipment without 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                                       | H                                          |
| 806 - 821/ 851 - 866 | B                                       | G                                          |
| 821 - 824/ 866 - 869 | B                                       | H                                          |
| 896 - 901/ 935 - 940 | I                                       | J                                          |
| 902 - 928            | K                                       | K                                          |
| 929 - 930            | B                                       | G                                          |
| Above 940            | B                                       | C                                          |
| All other bands      | B                                       | C                                          |

| MASK        | Spurious Limit | FS Limit Below 1 GHz | FS Limit Above 1 GHz |
|-------------|----------------|----------------------|----------------------|
| A,B,C,G,H,I | -13dBm         | 84.4 dB $\mu$ V/m@3m | 82.2 dB $\mu$ V/m@3m |
| D,J         | -20dBm         | 77.4 dB $\mu$ V/m@3m | 75.2 dB $\mu$ V/m@3m |
| E,F,K       | -25dBm         | 72.4 dB $\mu$ V/m@3m | 70.2 dB $\mu$ V/m@3m |

**Test Method:**

RBW: 1% of emission bandwidth in the 0 - 1 GHz range.  
1 MHz at frequencies above 1 GHz.  
VBW:  $\Rightarrow$  RBW

The spectrum is searched up to 10 times the fundamental frequency.

## **ANNEX B - TEST DIAGRAMS**

**Para. No. 2.991 - Spurious Emissions at Antenna Terminals**

