

Straubing, 08 February 2006

TEST - REPORT

No. 55503-060034 (Edition 1)

for

FX-40 with FX-FM 72 MHz

Transmitter Module for Model Control

Applicant: Futaba Corporation

Test Specifications: FCC Code of Federal Regulations,
CFR 47, Part 95, Subpart C&E

FCC Code of Federal Regulations,
CFR 47, Part 2, Subpart J

Note:

The test data of this report is related only to the individual item which has been tested. This report shall not be reproduced except in full extent without the written approval of the testing laboratory.

Table of Contents

| | | |
|-----|--|----|
| 1 | Description of the Equipment Under Test (EUT) | 3 |
| 2 | Administrative Data | 4 |
| 3 | Identification of the Test Laboratory | 5 |
| 4 | Summary | 6 |
| 5 | Operation Mode and Configuration of EUT..... | 7 |
| 6 | Measurement Procedures..... | 9 |
| 6.1 | Maximum Transmitter Power..... | 9 |
| 6.2 | Frequency tolerance | 12 |
| 6.3 | Emission Bandwidth | 14 |
| 6.4 | Unwanted Emission 30 MHz - 1 GHz | 15 |
| 7 | Photographs Taken During Testing | 17 |
| 8 | Test Results..... | 21 |
| 8.1 | Maximum transmitter power | 22 |
| 8.2 | Carrier Frequency Stability | 24 |
| 8.3 | Emission Bandwidth | 27 |
| 8.4 | Unwanted Radiation 30 MHz - 1 GHz..... | 31 |
| 9 | Referenced Regulations | 35 |
| 10 | Additional Information supplementary to the Test Report..... | 36 |

1 Description of the Equipment Under Test (EUT)

| General data of EUT | |
|---------------------------------|---|
| Type designation ¹ : | FX-40 with FX-FM 72 MHz |
| Parts ² : | Transmitter Module : FX-FM72 Frame : FX-40 |
| Serial number(s): | FX-FM: 0001 FX-40: 0001 |
| Manufacturer: | Futaba Corporation |
| Type of equipment: | Transmitter Module for Model Control |
| Version: | As delivered |
| FCC ID: | FX-FM: AZPFX-FM72 |
| Additional parts/accessories: | |

| Technical data of EUT | |
|---|--|
| Application frequency range: | 72.010 - 72.990 MHz |
| Frequency range: | 72.010 – 72.990 MHz |
| Operating frequency: | 72.510 MHz |
| Type of modulation: | FM |
| Pulse train: | --- |
| Pulse width: | --- |
| Number of RF-channels: | 50 |
| Channel spacing: | 20 kHz |
| Designation of emissions ³ : | 5k0F1D |
| Type of antenna: | Telescope Antenna |
| Size/length of antenna: | 110 cm |
| Connection of antenna: | <input type="checkbox"/> detachable <input checked="" type="checkbox"/> not detachable |
| Type of power supply: | Battery supply |
| Specifications for power supply: | nominal voltage: 7.40 V minimum voltage: 6.29 V maximum voltage: 8.51 V |

¹ Type designation of the system if EUT consists of more than one part.

² Type designations of the parts of the system, if applicable.

³ Also known as "Class of Emission".

2 Administrative Data

| Application details | |
|---------------------------|---|
| Applicant (full address): | Futaba Corporation 1080, Yabutsuka Chosei-mura, Chosei-gun, Chiba-ken 299-4395 Japan |
| Contact person: | Mr. Susumu Sakuma |
| Contract identification: | --- |
| Receipt of EUT: | 3 February 2006 |
| Date(s) of test: | February 2006 |
| Note(s): | --- |

| Report details | |
|----------------|------------------|
| Report number: | 55503-060034 |
| Edition: | 1 |
| Issue date: | 08 February 2006 |

3 Identification of the Test Laboratory

| Details of the Test Laboratory | |
|---|--|
| Company name: | Senton GmbH EMI/EMC Test Center |
| Address: | Aeussere Fruehlingstrasse 45 D-94315 Straubing Germany |
| Laboratory accreditation: | DAR-Registration No. DAT-P-171/94-02 |
| FCC test site registration number | 90926 |
| Industry Canada test site registration: | IC 3050 |
| Contact person: | Mr. Johann Roidt |
| | Phone: (+49) (0)9421 5522-0 Fax: (+49) (0)9421 5522-99 |

4 Summary

Summary of test results

The tested sample complies with the requirements set forth in the
Code of Federal Regulations CFR 47, Part 95, Subpart C & E
and the
Code of Federal Regulations CFR 47 Part 2, Subpart J
of the Federal Communication Commission (FCC).

Personnel involved in this report

Laboratory Manager:



Mr. Johann Roidt

Responsible for testing:



Mr. Martin Steindl

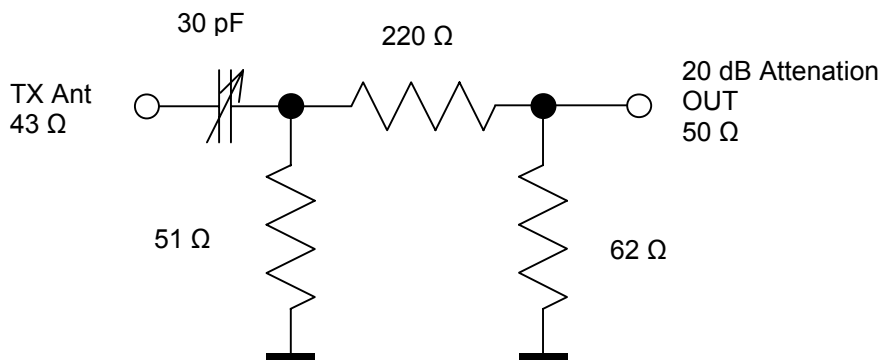
Responsible for test report:

Mr. Martin Steindl

5 Operation Mode and Configuration of EUT

Operation Mode(s)

- Transmitting continuously with 72.510 MHz, modulation as indicated in appropriate test record.
- Antenna extended to maximum. ⁴
- It was not possible to deactivate modulation completely, thus the frequency-error-measurement was done with PPM-modulation.
- The applicant provided a dummy load for conducted measurements.



⁴ For radiated measurement only.

Configuration(s) of EUT

The EUT was configured as stand alone device.

List of ports and cables

| <i>Port</i> | <i>Description</i> | <i>Classification⁵</i> | <i>Cable type</i> | <i>Cable length</i> |
|-------------|--------------------|-----------------------------------|-------------------|---------------------|
| | Not Applicable | | | |

List of devices connected to EUT

| <i>Item</i> | <i>Description</i> | <i>Type Designation</i> | <i>Serial no. or ID</i> | <i>Manufacturer</i> |
|-------------|--------------------|-------------------------|-------------------------|---------------------|
| | Not Applicable | | | |

List of support devices

| <i>Item</i> | <i>Description</i> | <i>Type Designation</i> | <i>Serial no. or ID</i> | <i>Manufacturer</i> |
|-------------|--------------------|-------------------------|-------------------------|---------------------|
| | Not Applicable | | | |

⁵ Ports shall be classified as ac power, dc power or signal/control port

6 Measurement Procedures

6.1 Maximum Transmitter Power

The maximum transmitter power was measured conducted and radiated.

6.1.1 Conducted Maximum Transmitter Power

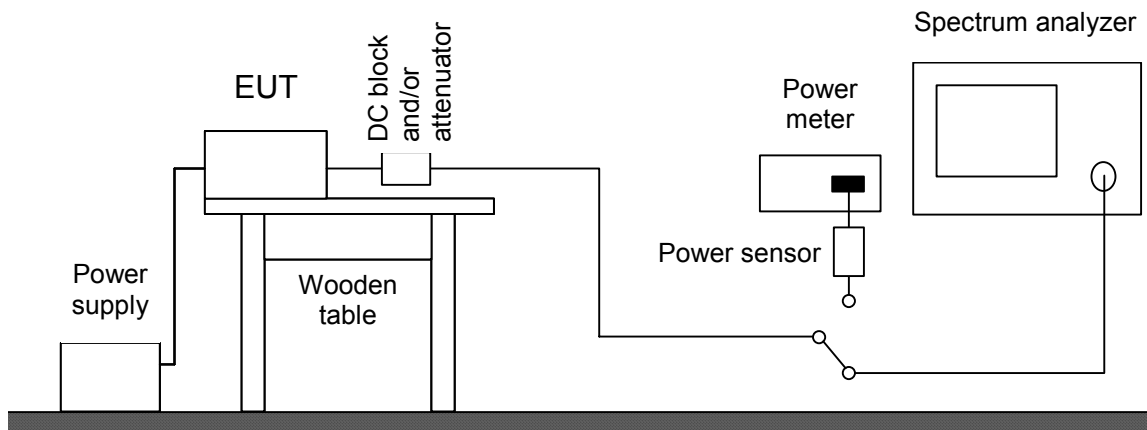
Measurement Procedure:

Rules and specifications: CFR 47 Part 95, section 95.639

Guide: CFR 47 Part 2, section 2.1046

Conducted output power is measured at the RF output terminals (e.g. antenna connector if antenna is detachable) when the transmitter is adjusted in accordance with the tune-up procedure, if applicable. The RF output terminals are connected to a spectrum analyzer and/or a power meter with appropriate sensor. If required, a resistive matching network equal to the impedance specified or employed for the antenna is used as well as dc block and appropriate attenuators (50 Ohms). The electrical characteristics of the radio frequency load attached to the output terminals shall be stated, if applicable.

If a spectrum analyzer is used and no other settings are specified resolution bandwidth shall be selected according to the carrier frequency f_c and set to 100 kHz. The video bandwidth shall be at least three times greater than the resolution bandwidth. The settings used have to be indicated within the appropriate test record(s).



Test instruments used:

| Used | Type | Model | Serial No. or ID | Manufacturer |
|-------------------------------------|--|---------|--------------------------|-----------------|
| <input type="checkbox"/> | Spectrum Analyzer | FSP 30 | 100063 | Rohde & Schwarz |
| <input type="checkbox"/> | EMI test receiver | ESPI7 | 836914/0002 | Rohde & Schwarz |
| <input type="checkbox"/> | EMI test receiver | ESMI | 839379/013 839587/006 | Rohde & Schwarz |
| <input checked="" type="checkbox"/> | Radio Communication Service Monitor | CMS 54 | 838384/030 | Rohde & Schwarz |
| <input checked="" type="checkbox"/> | Power meter | NRVS | 836856/015 | Rohde & Schwarz |
| <input type="checkbox"/> | Peak power sensor | NRV-Z31 | 8579604.03 | Rohde & Schwarz |
| <input checked="" type="checkbox"/> | Power sensor | NRV-Z52 | 837901/030 | Rohde & Schwarz |
| <input type="checkbox"/> | Power sensor | NRV-Z4 | 863828/015 | Rohde & Schwarz |
| <input checked="" type="checkbox"/> | DC-block | 7006 | A2798 | Weinschel |
| <input type="checkbox"/> | Attenuator | 4776-10 | 9412 | Narda |
| <input type="checkbox"/> | Attenuator | 4776-20 | 9503 | Narda |
| <input checked="" type="checkbox"/> | Dummy Load | LD 01 | 001 | Futaba |

6.1.2 Radiated Maximum Transmitter Power

Measurement Procedure:

For measurement setup and procedure see section *Unwanted Emission 30 MHz - 1 GHz* (6.4)

6.2 Frequency tolerance

Measurement Procedure:

Rules and specifications: CFR 47 Part 95, section 95.623

Guide: ANSI C63.4

The frequency tolerance of the carrier signal is measured over a temperature variation of $-30\text{ }^{\circ}\text{C}$ to $+50\text{ }^{\circ}\text{C}$ at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of $+20\text{ }^{\circ}\text{C}$.

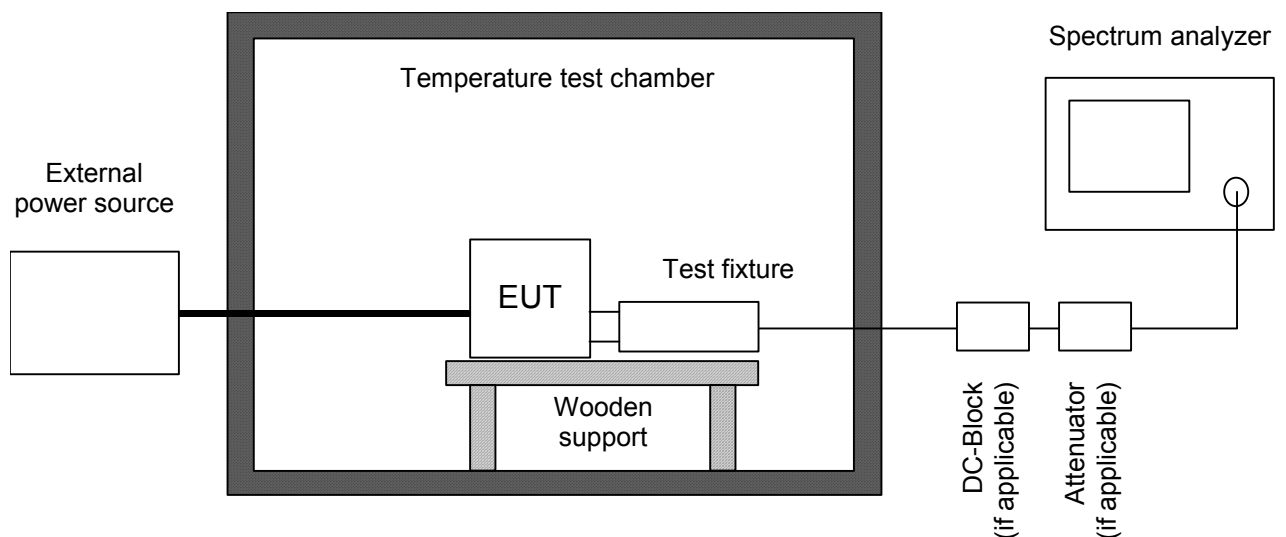
If the EUT provides an antenna connector the spectrum analyzer is connected to this port. If required, a resistive matching network equal to the impedance specified or employed for the antenna is used as well as dc block and appropriate attenuators (50 Ohms). In cases where the EUT does not provide an antenna connector a test fixture is used.

For battery operated equipment, the test is performed using a new battery. Alternatively, an external supply voltage can be used and is at least set to:

- the maximum battery voltage as delivered by a new battery or 115% of the battery nominal voltage
- the battery nominal voltage
- 85% of the battery nominal voltage
- the battery operating end point voltage which shall be specified by the equipment manufacturer

The EUT is operating providing an unmodulated carrier. The peak detector of the spectrum analyzer is selected and resolution as well as video bandwidth are set to values appropriate to the shape of the spectrum of the EUT. The frequency counter mode of the spectrum analyzer is used to maximize the accuracy of the measured frequency tolerance.

If an unmodulated carrier is not available a significant and stable point on the spectrum is selected and the span is reduced to a value that delivers an accuracy which shall be better than 1% of the maximum frequency tolerance allowed for the carrier signal. This method may be performed as long as the margin to the frequency tolerance allowed is larger than the uncertainty of the measured frequency tolerance.

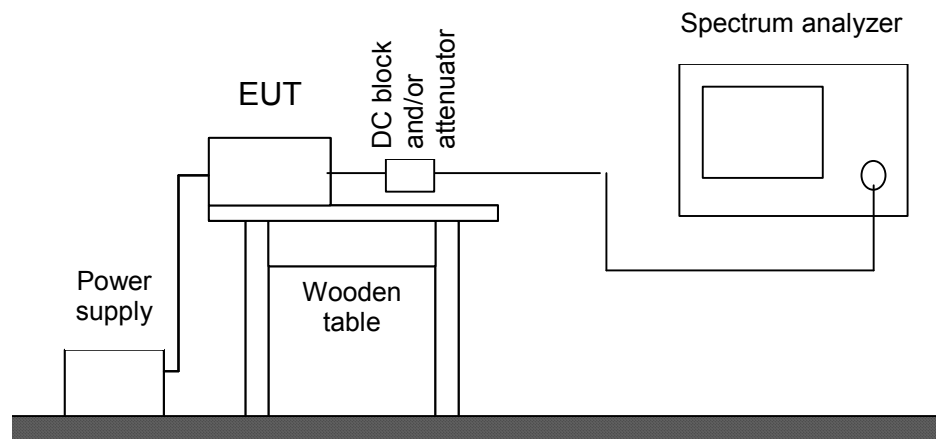


Test instruments used:

| Used | Type | Model | Serial No. or ID | Manufacturer |
|-------------------------------------|--|------------|--------------------------|-----------------|
| <input type="checkbox"/> | Spectrum Analyzer | FSP 30 | 100063 | Rohde & Schwarz |
| <input checked="" type="checkbox"/> | EMI test receiver | ESPI7 | 836914/0002 | Rohde & Schwarz |
| <input type="checkbox"/> | EMI test receiver | ESMI | 839379/013 839587/006 | Rohde & Schwarz |
| <input type="checkbox"/> | Radio Communication Service Monitor | CMS 54 | 838384/030 | Rohde & Schwarz |
| <input type="checkbox"/> | DC-block | 7006 | A2798 | Weinschel |
| <input type="checkbox"/> | Attenuator | 4776-10 | 9412 | Narda |
| <input type="checkbox"/> | Attenuator | 4776-20 | 9503 | Narda |
| <input type="checkbox"/> | Test probe | TP01 | 001 | Senton |
| <input checked="" type="checkbox"/> | DC power supply | NGSM 32/10 | 203 | Rohde & Schwarz |
| <input type="checkbox"/> | Isolating transformer | RT 5A | 10387 | Grundig |
| <input type="checkbox"/> | Isolating transformer | RT 5A | 10416 | Grundig |
| <input checked="" type="checkbox"/> | Temperature test chamber | HT4010 | 07065550 | Heraeus |
| <input checked="" type="checkbox"/> | Dummy Load | LD 01 | 001 | Futaba |

6.3 Emission Bandwidth

| Measurement Procedure: | |
|---|----------------------------------|
| Rules and specifications: | CFR 47 Part 2, section 2.1046(a) |
| Guide: | TIA/EI-603 |
| <p>Emission bandwidth is measured at the RF output terminals (e.g. antenna connector if antenna is detachable) when the transmitter is adjusted in accordance with the tune-up procedure, if applicable. The RF output terminals are connected to a spectrum analyzer. If required, a resistive matching network equal to the impedance specified or employed for the antenna is used as well as dc block and appropriate attenuators (50 Ohms). The electrical characteristics of the radio frequency load attached to the output terminals shall be stated, if applicable.</p> <p>The occupied bandwidth measurement was performed referring to 99% of total power with RBW as close to, but not less than 1% of the 99% power bandwidth.</p> | |

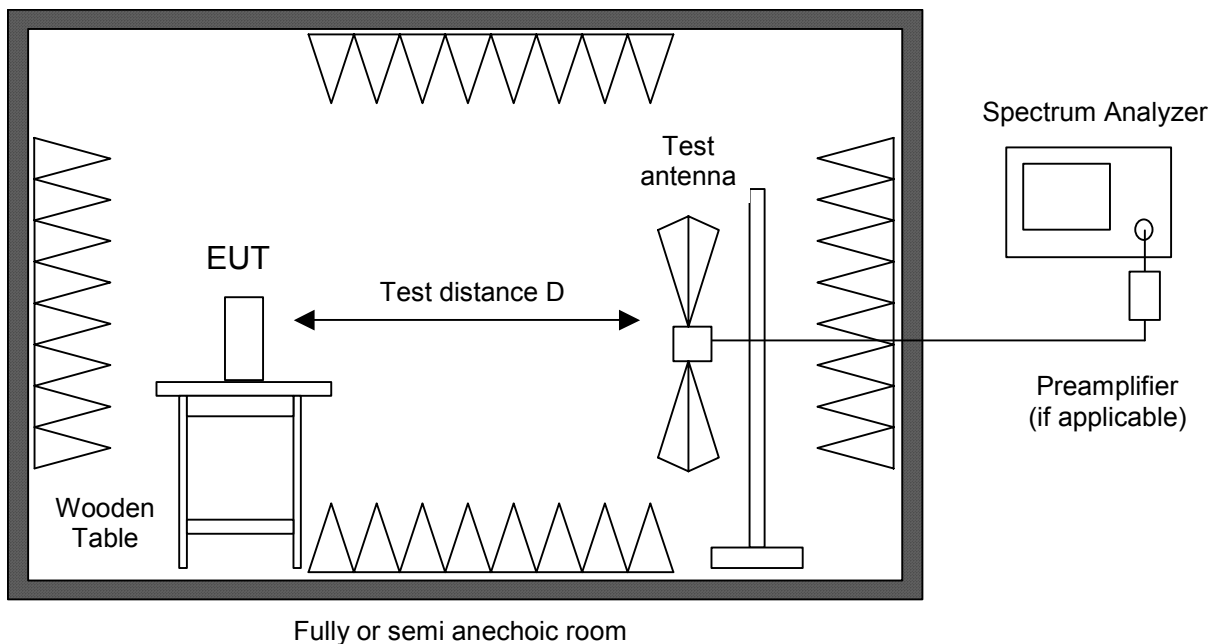


Test instruments used:

| Used | Type | Model | Serial No. or ID | Manufacturer |
|-------------------------------------|-------------------|---------|--------------------------|-----------------|
| <input type="checkbox"/> | Spectrum Analyzer | FSP 30 | 100063 | Rohde & Schwarz |
| <input checked="" type="checkbox"/> | EMI test receiver | ESPI7 | 836914/0002 | Rohde & Schwarz |
| <input type="checkbox"/> | EMI test receiver | ESMI | 839379/013 839587/006 | Rohde & Schwarz |
| <input type="checkbox"/> | Power meter | NRVS | 836856/015 | Rohde & Schwarz |
| <input type="checkbox"/> | Peak power sensor | NRV-Z31 | 8579604.03 | Rohde & Schwarz |
| <input type="checkbox"/> | Power sensor | NRV-Z52 | 837901/030 | Rohde & Schwarz |
| <input type="checkbox"/> | Power sensor | NRV-Z4 | 863828/015 | Rohde & Schwarz |
| <input checked="" type="checkbox"/> | DC-block | 7006 | A2798 | Weinschel |
| <input type="checkbox"/> | Attenuator | 4776-10 | 9412 | Narda |
| <input type="checkbox"/> | Attenuator | 4776-20 | 9503 | Narda |
| <input checked="" type="checkbox"/> | Dummy Load | LD 01 | 001 | Futaba |

6.4 Unwanted Emission 30 MHz - 1 GHz

| Measurement Procedure: | |
|---|---|
| Rules and specifications: | CFR 47 Part 95, section 95.635 |
| Guide: | ANSI C63.4 TIA/EIA-603, section 2.2.12 |
| <p>Measurements are made in both the horizontal and vertical planes of polarization in a fully anechoic room using a spectrum analyzer with the detector function set to peak and resolution bandwidth set to 30 kHz, video bandwidth set to 100 kHz.</p> <p>Testing up to 1 GHz is performed with a linear polarized logarithmic periodic antenna combined with a 4:1 broadband dipole ("Trilog broadband antenna"). For testing above 1 GHz horn antennas are used.</p> <p>Hand-held or body-worn devices are rotated through three orthogonal axes to determine which attitude and configuration produces the highest emission relative to the limit and therefore shall be used for final testing.</p> <p>During testing the EUT is rotated all around to find the maximum levels of emissions. Equipment and cables are placed and moved within the range of position likely to find their maximum emissions.</p> <p>Final testing was performed referring to substitution method as described in TIA/EIA-603, section 2.2.12 ("Radiated Spurious Emissions").</p> | |



Test instruments used:

| Used | Type | Model | Serial No. or ID | Manufacturer |
|-------------------------------------|--------------------------|----------------------|--------------------------|--------------------|
| <input checked="" type="checkbox"/> | Spectrum Analyzer | FSP 30 | 100063 | Rohde & Schwarz |
| <input type="checkbox"/> | Spectrum analyzer | R 3271 | 05050023 | Advantest |
| <input type="checkbox"/> | EMI test receiver | ESMI | 839379/013 839587/006 | Rohde & Schwarz |
| <input checked="" type="checkbox"/> | Preamplifier | CPA9231A | 3393 | Schaffner |
| <input type="checkbox"/> | Preamplifier | R14601 | | Advantest |
| <input type="checkbox"/> | Preamplifier 1-8 GHz | AFS3-00100800-32-LN | 847743 | Miteq |
| <input type="checkbox"/> | Preamplifier 0.5-8 GHz | AMF-4D-005080-25-13P | 860149 | Miteq |
| <input type="checkbox"/> | Preamplifier 8-18 GHz | ACO/180-3530 | 32641 | CTT |
| <input type="checkbox"/> | External Mixer | WM782A | 845881/005 | Tektronix |
| <input type="checkbox"/> | Harmonic Mixer | FS-Z30 | 843389/007 | Rohde & Schwarz |
| | Accessories | | | |
| <input checked="" type="checkbox"/> | Trilog broadband antenna | VULB 9163 | 9163-188 | Schwarzbeck |
| <input type="checkbox"/> | Horn antenna | 3115 | 9508-4553 | EMCO |
| <input type="checkbox"/> | Horn antenna | 3160-03 | 9112-1003 | EMCO |
| <input type="checkbox"/> | Horn antenna | 3160-04 | 9112-1001 | EMCO |
| <input type="checkbox"/> | Horn antenna | 3160-05 | 9112-1001 | EMCO |
| <input type="checkbox"/> | Horn antenna | 3160-06 | 9112-1001 | EMCO |
| <input type="checkbox"/> | Horn antenna | 3160-07 | 9112-1008 | EMCO |
| <input type="checkbox"/> | Horn antenna | 3160-08 | 9112-1002 | EMCO |
| <input type="checkbox"/> | Horn antenna | 3160-09 | 9403-1025 | EMCO |
| <input type="checkbox"/> | Horn antenna | 3160-10 | 399185 | EMCO |
| <input checked="" type="checkbox"/> | Fully anechoic room | No. 2 | 1452 | Albatross Projects |
| <input type="checkbox"/> | Semi-anechoic room | No. 3 | 1453 | Siemens |

7 Photographs Taken During Testing

**Test setup for radiated emission measurement
(fully anechoic room)**



Figure 1: EUT in upright position

**Test setup for radiated emission measurement
(fully anechoic room) - continued -**

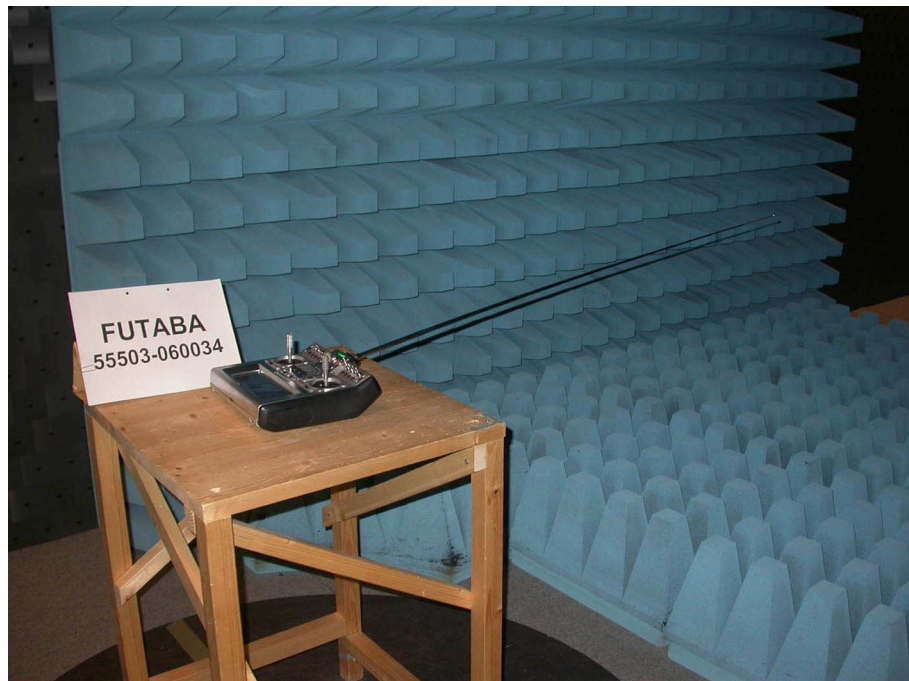


Figure 2: EUT on rear side

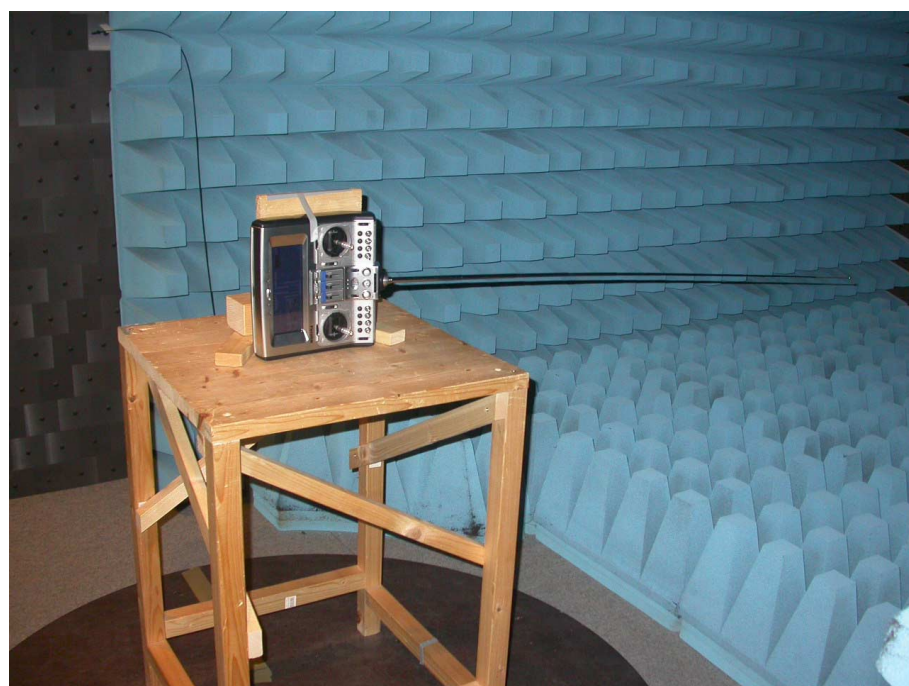
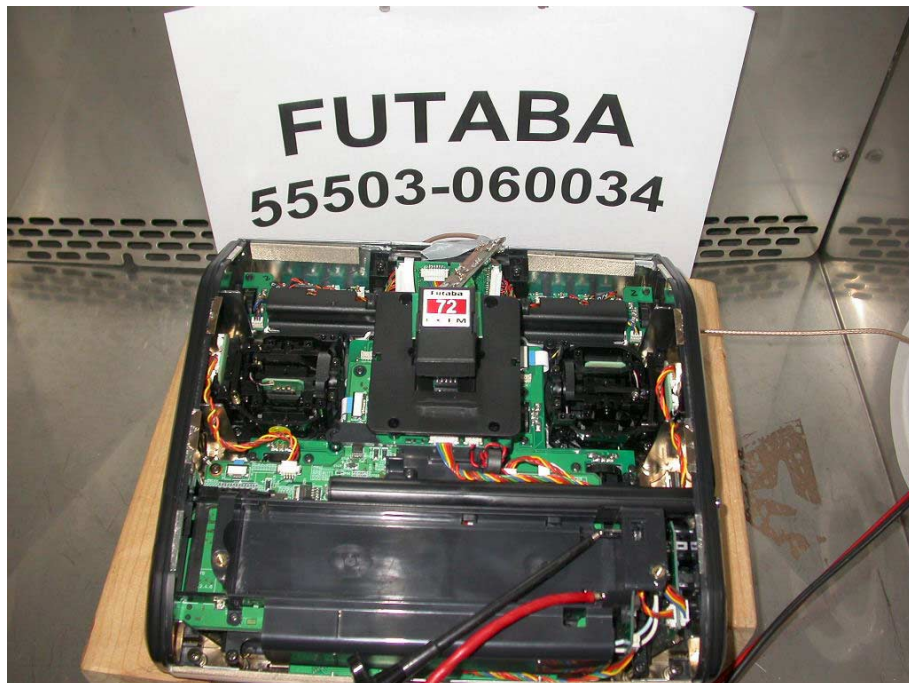


Figure 3: EUT on right side

Test setup for carrier frequency stability measurement



8 Test Results

| CFR 47 Part 95 Subpart C / E CFR 47 Part 2 Subpart J | | | |
|---|--------------------------------------|-------------|---------------|
| <i>Section(s):</i> | <i>Test</i> | <i>Page</i> | <i>Result</i> |
| 95.639 | Maximum transmitter power | 22 | Passed |
| 95.623 | Frequency tolerance | 24 | Passed |
| 95.633 | Emission bandwidth | 27 | Passed |
| 95.635 | Unwanted radiation 30 MHz - 1 GHz | 31 | Passed |

8.1 Maximum transmitter power

8.1.1 Maximum transmitter power - Conducted

| | |
|---------------------------|---|
| Rules and specifications: | CFR 47 Part 95, section 95.639(b)(3) |
| Guide: | CFR 47 Part 2, section 2.1046 |
| Limit: | 0.75 W in the 72 – 76 MHz frequency band |
| Measurement procedure: | Conducted Maximum Transmitter Power (6.1.1) |

| | |
|------------------|---|
| Comment: | |
| Date of test: | 7 February 2006 |
| Test site: | Fully anechoic room, cabin no. 2 |
| Test conditions: | Temperature + 20 °C Nominal supply voltage: 7.40 V |
| Specifications: | Voltage range: ±15 % of nominal supply voltage |

| Supply voltage (V) | Modulation | Transmitter power (dBm) | Transmitter power (W) | Limit (W) |
|--------------------|------------|-------------------------|-----------------------|-----------|
| 6,29 | PPM | 19,84 | 0,096 | 0,750 |
| 7,40 | PPM | 20,70 | 0,117 | 0,750 |
| 8,51 | PPM | 21,52 | 0,142 | 0,750 |
| | | | | |
| 6,29 | PCM1024 | 19,74 | 0,094 | 0,750 |
| 7,40 | PCM1024 | 20,85 | 0,122 | 0,750 |
| 8,51 | PCM1024 | 21,27 | 0,134 | 0,750 |
| | | | | |
| 6,29 | PCM-G3 | 19,50 | 0,089 | 0,750 |
| 7,40 | PCM-G3 | 20,52 | 0,113 | 0,750 |
| 8,51 | PCM-G3 | 21,06 | 0,128 | 0,750 |

| | |
|--------------|-------------|
| Test Result: | Test passed |
|--------------|-------------|

8.1.2 Maximum transmitter power - Radiated

| | |
|---------------------------|---|
| Rules and specifications: | CFR 47 Part 95, section 95.635 |
| Guide: | ANSI C63.4 TIA/EIA-603, section 2.2.12 |
| Limit: | 0.75 W (28.8 dBm) in the 72 – 76 MHz frequency band |
| Measurement procedure: | Radiated Maximum Transmitter Power (6.1.2) |

| | |
|------------------|--|
| Comment: | |
| Mode: | Transmitting continuously, Modulation: PPM |
| Date of test: | 7 February 2006 |
| Test site: | Fully anechoic room, cabin no. 2 |
| Test conditions: | Temperature + 20 °C Nominal supply voltage: 7.40 V |
| Note: | For calculation of correction factors see table "Test Site Calibration Data Sheets", supplied as additional information summarized on page 36. |

| Position of EUT | Antenna polarization | Frequency (MHz) | Reading value (dBm) | Correction factor (dB) | E(I)RP (dBm) | Limit (dBm) | Margin to limit (dB) |
|--|----------------------|-----------------|---------------------|------------------------|--------------|-------------|----------------------|
| EUT in vertical position, Antenna to the top | Vertical | 72.510 | -8.4 | 27.9 | 19.5 | 28.8 | +9.4 |
| EUT in horizontal position, Rear side on table | Horizontal | 72.510 | -7.4 | 27.0 | 19.6 | 28.8 | +9.2 |
| EUT in horizontal position, Left side on table | Horizontal | 72.510 | -7.6 | 27.0 | 19.4 | 28.8 | +9.4 |

| | |
|--------------|-------------|
| Test Result: | Test passed |
|--------------|-------------|

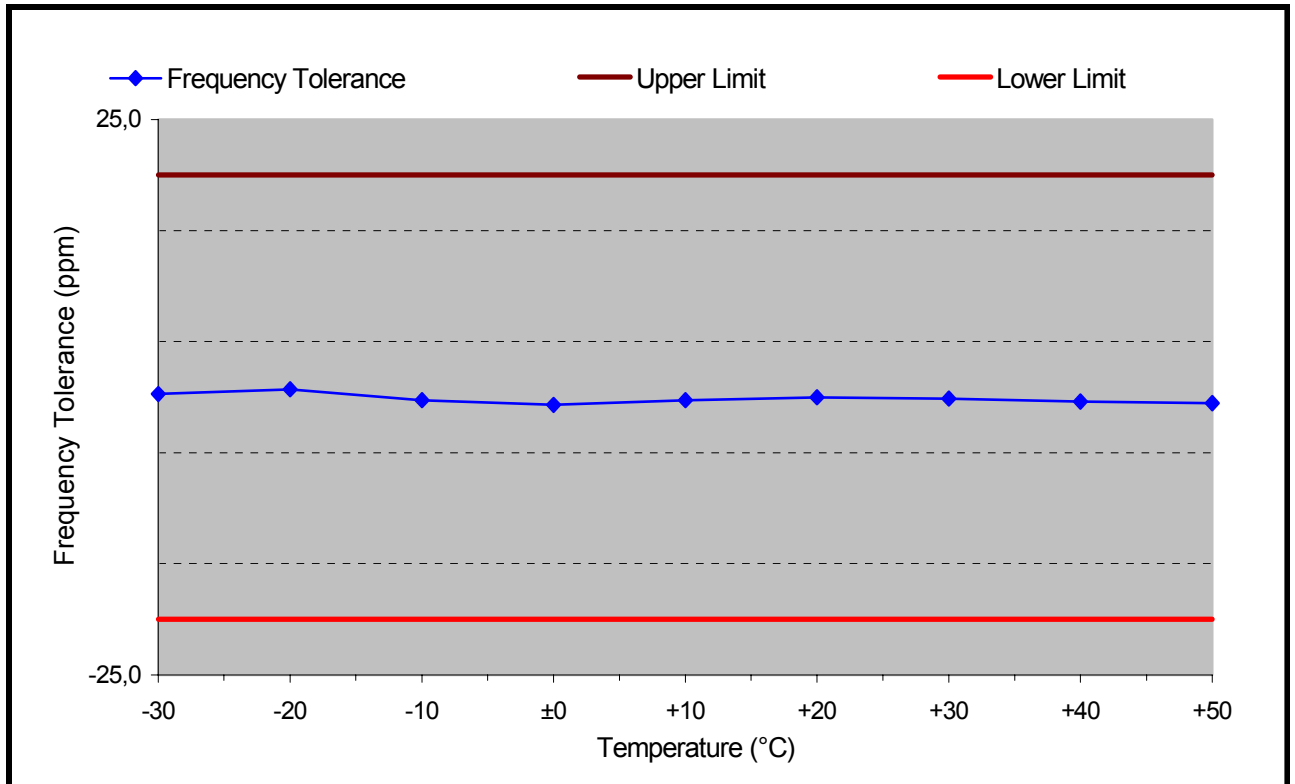
8.2 Carrier Frequency Stability

| | |
|---------------------------|---|
| Rules and specifications: | CFR 47 Part 95, section 95.623(c) |
| Guide: | ANSI C63.4 |
| Limit: | The frequency tolerance of the carrier signal shall be maintained within $\pm 0.002\%$ (± 20 ppm) of the carrier frequency under nominal conditions. |
| Temperature range: | -30°C to +50°C (at normal supply voltage) |
| Voltage range: | 85% to 115% of the rated supply voltage (at a temperature of +20 °C) |
| Measurement procedure: | Frequency tolerance (6.2) |

| | |
|---------------|---|
| Comment: | |
| Mode: | Transmitting continuously, Modulation: PPM. |
| Date of test: | 7 February 2006 |

| | |
|--------------|-------------|
| Test Result: | Test passed |
|--------------|-------------|

8.2.1 Frequency Stability vs. Temperature



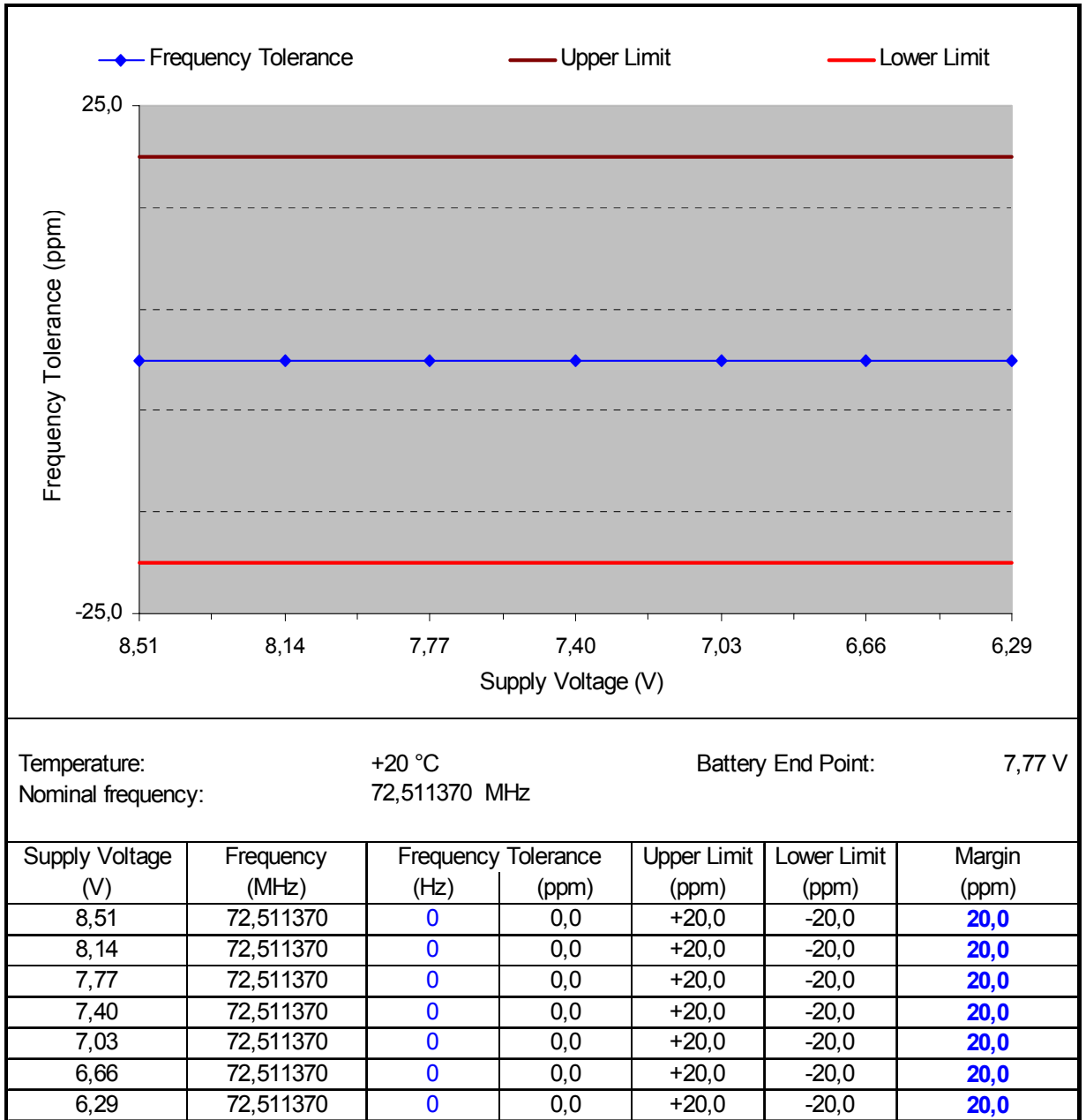
Supply voltage: 7,4 V

Nominal frequency: 72,511370 MHz

| Temperature (°C) | Frequency (MHz) | Frequency Tolerance (Hz) | Frequency Tolerance (ppm) | Upper Limit (ppm) | Lower Limit (ppm) | Margin (ppm) |
|------------------|-----------------|--------------------------|---------------------------|-------------------|-------------------|--------------|
| -30 | 72,511390 | 20 | 0,3 | +20,0 | -20,0 | 19,7 |
| -20 | 72,511420 | 50 | 0,7 | +20,0 | -20,0 | 19,3 |
| -10 | 72,511350 | -20 | -0,3 | +20,0 | -20,0 | 19,7 |
| ±0 | 72,511320 | -50 | -0,7 | +20,0 | -20,0 | 19,3 |
| +10 | 72,511350 | -20 | -0,3 | +20,0 | -20,0 | 19,7 |
| +20 | 72,511370 | 0 | 0,0 | +20,0 | -20,0 | 20,0 |
| +30 | 72,511360 | -10 | -0,1 | +20,0 | -20,0 | 19,9 |
| +40 | 72,511340 | -30 | -0,4 | +20,0 | -20,0 | 19,6 |
| +50 | 72,511330 | -40 | -0,6 | +20,0 | -20,0 | 19,4 |

Test Result: Test passed

8.2.2 Frequency Stability vs. Supply Voltage



Note: EUT is equipped with a low battery warning indicator, starting at 8.52 V

Test Result: Test passed

8.3 Emission Bandwidth

| | |
|---------------------------|----------------------------------|
| Rules and specifications: | CFR 47 Part 2, section 2.1046(a) |
| Guide: | TIA/EI-603 |
| Limit: | Authorized bandwidth: 8 kHz |
| Measurement procedure: | Emission Bandwidth (6.3) |

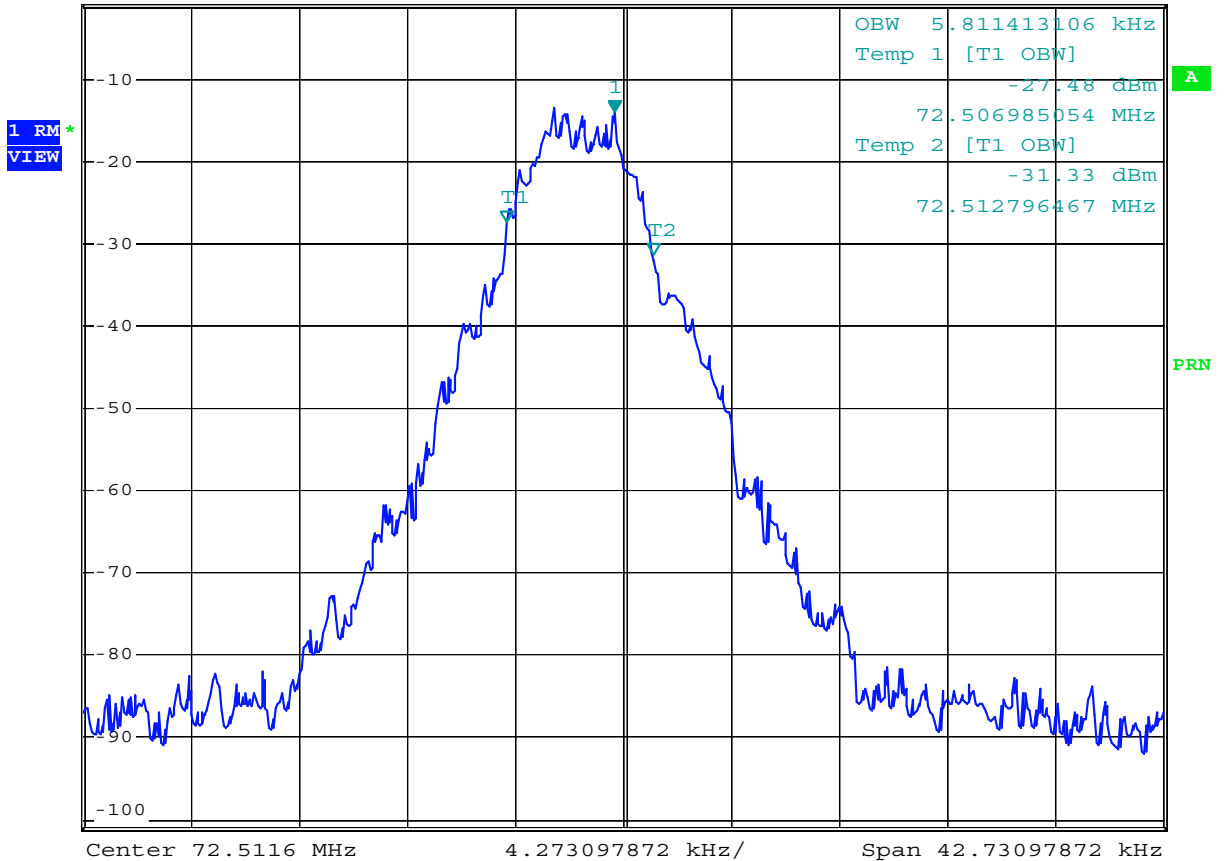
| | |
|------------------------------|---|
| Calculation | $B_n = 2 \cdot B \cdot K$ |
| B = modulation rage | B = 2.5 kHz |
| K = Overall numerical factor | K = 1 |
| | $B_n = 2 \cdot 2.5 \text{ kHz} \cdot 1 = 5.0 \text{ kHz}$ |
| Type of Emission | 5K0F1D |

| | |
|--------------|-------------|
| Test Result: | Test passed |
|--------------|-------------|

Comment:
 Modulation: PCM-G3
 Date of test: 7 February 2006



*RBW 300 Hz Marker 1 [T1 CNT] -14.14 dBm
 *VBW 1 kHz 72.51122 MHz
 Ref -1 dBm *Att 10 dB SWT 480 ms



Comment: Futaba060034: PCM-G3
 Date: 7.FEB.2006 16:30:47

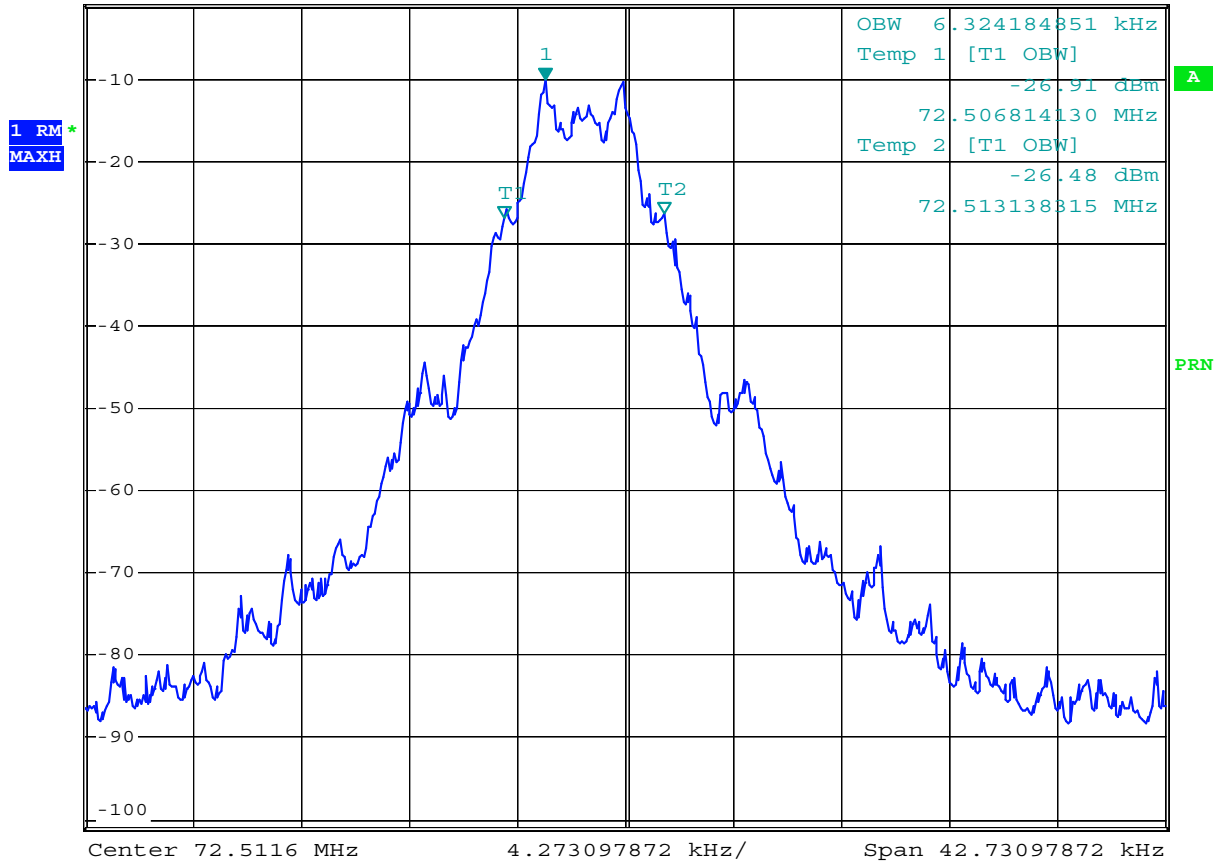
Occupied Bandwidth (99 %): **5.81 kHz**

Test Result: **Test passed**

Comment:
 Modulation: PCM1024
 Date of test: 7 February 2006



*RBW 300 Hz Marker 1 [T1 CNT] -10.19 dBm
 *VBW 1 kHz 72.50849 MHz
 Ref -1 dBm *Att 10 dB SWT 480 ms



Comment: Futaba060034: PCM1024
 Date: 7.FEB.2006 16:31:32

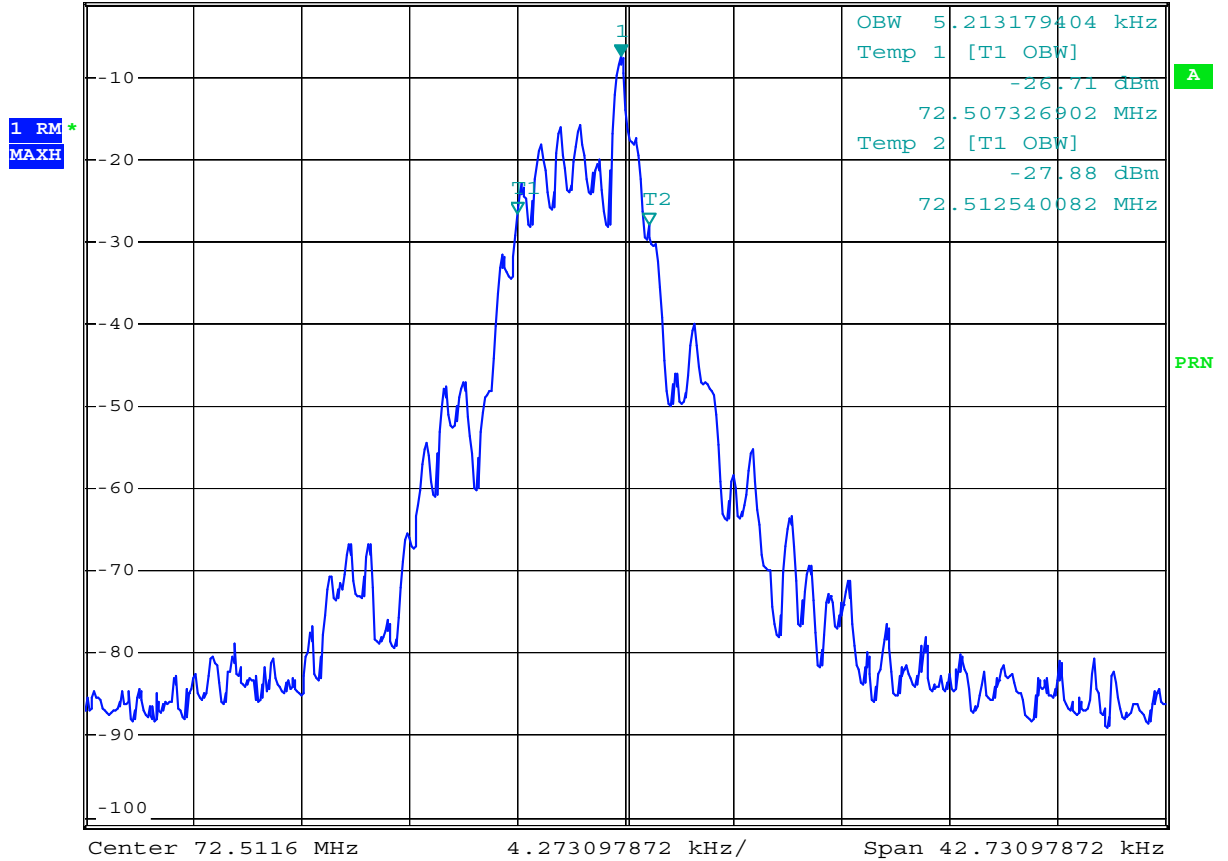
Occupied Bandwidth (99 %): **6.32 kHz**

Test Result: Test passed

Comment:
 Modulation: PPM
 Date of test: 7 February 2006



*RBW 300 Hz Marker 1 [T1 CNT] -7.38 dBm
 *VBW 1 kHz 72.51132 MHz
 Ref -1 dBm *Att 10 dB SWT 480 ms



Comment: Futaba060034: PPM
 Date: 7.FEB.2006 16:32:25

Occupied Bandwidth (99 %): **5.21kHz**

Test Result: Test passed

8.4 Unwanted Radiation 30 MHz - 1 GHz

| | |
|---------------------------|--|
| Rules and specifications: | CFR 47 Part 95, section 95.635 |
| Guide: | ANSI C63.4 TIA/EIA-603, section 2.2.12 |
| Limit: | $10 \log(P_{\text{carrier}}) - 56 \text{ dB}$ with P_{carrier} as the maximum transmitter power limit in W for the unmodulated carrier according to §95.639; that is -26.0 dBm . |
| Note | For calculation of correction factors see tables "Test Site Calibration Data Sheets" (supplied as additional information summarized on page 36) |
| Measurement procedure: | Unwanted Emission 30 MHz - 1 GHz (6.4) |

| | |
|--------------|-------------|
| Test Result: | Test passed |
|--------------|-------------|

| | |
|----------------|--|
| Position: | EUT in upright position |
| Mode: | Transmitting continuously, Modulation: PPM |
| Date of test: | 6 February 2006 |
| Test site: | Fully anechoic room, cabin no. 2 |
| Test distance: | 3 meters |

| | | |
|--|-----------|---------|
| Maximum transmitter power (conducted): | 20.7 dBm | 0.117 W |
| Maximum transmitter power (radiated): | 19.5 dBm | 0.089 W |
| Calculated limit (referring to TP): | -26.0 dBm | |

| Frequency (MHz) | Antenna Polarization | Detector | Receiver Reading (dBm) | Correction Factor (dB) | Final Value (dBm) | Limit (dBm) | Margin (dB) |
|-----------------|----------------------|----------|------------------------|------------------------|-------------------|-------------|-------------|
| 145.000 | vertical | Peak | -87.6 | 19.6 | -68.0 | -26.0 | 42.0 |
| 174.000 | vertical | Peak | -90.5 | 19.4 | -71.1 | -26.0 | 45.1 |
| 217.200 | vertical | Peak | -90.1 | 20.5 | -69.6 | -26.0 | 43.6 |
| 384.000 | horizontal | Peak | -87.0 | 30.1 | -56.9 | -26.0 | 30.9 |
| 396.000 | horizontal | Peak | -88.5 | 30.7 | -57.7 | -26.0 | 31.7 |
| 432.000 | horizontal | Peak | -89.5 | 30.9 | -58.6 | -26.0 | 32.6 |
| 533.200 | vertical | Peak | -90.8 | 30.4 | -60.3 | -26.0 | 34.3 |
| 576.000 | vertical | Peak | -88.6 | 32.3 | -56.4 | -26.0 | 30.4 |
| 648.400 | vertical | Peak | -90.7 | 31.8 | -58.9 | -26.0 | 32.9 |
| 666.800 | horizontal | Peak | -93.5 | 32.2 | -61.3 | -26.0 | 35.3 |
| 695.600 | vertical | Peak | -88.8 | 31.2 | -57.7 | -26.0 | 31.7 |
| 768.000 | vertical | Peak | -92.1 | 33.8 | -58.2 | -26.0 | 32.2 |
| 800.000 | horizontal | Peak | -93.3 | 34.3 | -59.0 | -26.0 | 33.0 |
| 840.400 | vertical | Peak | -93.5 | 35.4 | -58.1 | -26.0 | 32.1 |
| 960.000 | vertical | Peak | -100.7 | 34.9 | -65.7 | -26.0 | 39.7 |

| | |
|--------------|-------------|
| Test Result: | Test passed |
|--------------|-------------|

| | |
|----------------|--|
| Position: | EUT on rear side |
| Mode: | Transmitting continuously, Modulation: PPM |
| Date of test: | 6 February 2006 |
| Test site: | Fully anechoic room, cabin no. 2 |
| Test distance: | 3 meters |

| | | |
|--|-----------|---------|
| Maximum transmitter power (conducted): | 20.7 dBm | 0.117 W |
| Maximum transmitter power (radiated): | 19.6 dBm | 0.091 W |
| Calculated limit (referring to TP): | -26.0 dBm | |

| Frequency (MHz) | Antenna Polarization | Detector | Receiver Reading (dBm) | Correction Factor (dB) | Final Value (dBm) | Limit (dBm) | Margin (dB) |
|-----------------|----------------------|----------|------------------------|------------------------|-------------------|-------------|-------------|
| 145.000 | horizontal | Peak | -89.1 | 21.3 | -67.7 | -26.0 | 41.7 |
| 174.000 | horizontal | Peak | -87.3 | 19.4 | -67.9 | -26.0 | 41.9 |
| 217.200 | horizontal | Peak | -82.8 | 21.5 | -61.3 | -26.0 | 35.3 |
| 400.000 | vertical | Peak | -99.1 | 29.5 | -69.7 | -26.0 | 43.7 |
| 408.000 | horizontal | Peak | -94.4 | 30.9 | -63.5 | -26.0 | 37.5 |
| 432.000 | horizontal | Peak | -93.5 | 30.9 | -62.6 | -26.0 | 36.6 |
| 503.600 | vertical | Peak | -92.5 | 29.1 | -63.4 | -26.0 | 37.4 |
| 507.600 | horizontal | Peak | -92.7 | 30.4 | -62.3 | -26.0 | 36.3 |
| 576.000 | vertical | Peak | -91.4 | 32.3 | -59.1 | -26.0 | 33.1 |
| 648.400 | vertical | Peak | -91.5 | 31.8 | -59.7 | -26.0 | 33.7 |
| 695.600 | horizontal | Peak | -93.7 | 32.8 | -60.9 | -26.0 | 34.9 |
| 768.000 | vertical | Peak | -91.6 | 33.8 | -57.8 | -26.0 | 31.8 |
| 800.000 | vertical | Peak | -93.7 | 35.2 | -58.5 | -26.0 | 32.5 |
| 840.400 | vertical | Peak | -96.3 | 35.4 | -60.9 | -26.0 | 34.9 |
| 887.600 | vertical | Peak | -99.8 | 35.5 | -64.3 | -26.0 | 38.3 |
| 960.000 | horizontal | Peak | -102.2 | 36.4 | -65.8 | -26.0 | 39.8 |

| | |
|--------------|-------------|
| Test Result: | Test passed |
|--------------|-------------|

| | |
|----------------|--|
| Position: | EUT on right side |
| Mode: | Transmitting continuously, Modulation: PPM |
| Date of test: | 6 February 2006 |
| Test site: | Fully anechoic room, cabin no. 2 |
| Test distance: | 3 meters |

| | | |
|--|-----------|---------|
| Maximum transmitter power (conducted): | 20.7 dBm | 0.117 W |
| Maximum transmitter power (radiated): | 19.4 dBm | 0.087 W |
| Calculated limit (referring to TP): | -26.0 dBm | |

| Frequency (MHz) | Antenna Polarization | Detector | Receiver Reading (dBm) | Correction Factor (dB) | Final Value (dBm) | Limit (dBm) | Margin (dB) |
|-----------------|----------------------|----------|------------------------|------------------------|-------------------|-------------|-------------|
| 145.000 | horizontal | Peak | -84.8 | 21.3 | -63.4 | -26.0 | 37.4 |
| 174.000 | horizontal | Peak | -85.5 | 19.4 | -66.1 | -26.0 | 40.1 |
| 217.200 | horizontal | Peak | -82.8 | 21.5 | -61.3 | -26.0 | 35.3 |
| 396.000 | horizontal | Peak | -94.9 | 30.7 | -64.2 | -26.0 | 38.2 |
| 432.000 | vertical | Peak | -88.6 | 28.8 | -59.8 | -26.0 | 33.8 |
| 456.000 | vertical | Peak | -89.0 | 28.8 | -60.1 | -26.0 | 34.1 |
| 480.000 | vertical | Peak | -89.3 | 28.7 | -60.6 | -26.0 | 34.6 |
| 576.000 | horizontal | Peak | -89.5 | 31.3 | -58.2 | -26.0 | 32.2 |
| 648.400 | horizontal | Peak | -89.1 | 31.8 | -57.3 | -26.0 | 31.3 |
| 695.600 | horizontal | Peak | -89.7 | 32.8 | -56.8 | -26.0 | 30.8 |
| 768.000 | vertical | Peak | -92.4 | 33.8 | -58.6 | -26.0 | 32.6 |
| 800.000 | vertical | Peak | -91.4 | 35.2 | -56.3 | -26.0 | 30.3 |
| 840.400 | vertical | Peak | -93.5 | 35.4 | -58.1 | -26.0 | 32.1 |
| 887.600 | vertical | Peak | -99.4 | 35.5 | -63.9 | -26.0 | 37.9 |
| 960.000 | vertical | Peak | -101.0 | 34.9 | -66.0 | -26.0 | 40.0 |

| | |
|--------------|-------------|
| Test Result: | Test passed |
|--------------|-------------|

9 Referenced Regulations

All tests were performed with reference to the following regulations and standards:

| | | | |
|-------------------------------------|----------------------------|---|--|
| <input checked="" type="checkbox"/> | CFR 47 Part 2 | Code of Federal Regulations Part 2 (Frequency allocation and radio treaty matters; General rules and regulations) of the Federal Communication Commission (FCC) | October 10, 2004 |
| <input type="checkbox"/> | CFR 47 Part 15 | Code of Federal Regulations Part 15 (Radio Frequency Devices) of the Federal Communication Commission (FCC) | April 5, 2005 |
| <input checked="" type="checkbox"/> | CFR 47 Part 95 Subpart C/E | Code of Federal Regulations Part 95 (Personal Radio Services), Subpart C/E (Radio Control(R/C) Radio Service) of the Federal Communication Commission (FCC) | October 1, 2003 |
| <input checked="" type="checkbox"/> | ANSI C63.4 | American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz | December 11, 2003 (published on January 30, 2004) |
| <input type="checkbox"/> | ICES-003 | Interference-Causing Equipment Standard ICES-003 Issue 4 for Digital Apparatus, published by Industry Canada | February 2004 |
| <input type="checkbox"/> | CISPR 22 | Third Edition of the International Special Committee on Radio Interference (CISPR), Pub. 22, "Information Technology Equipment – Radio Disturbance Characteristics – Limits and Methods of Measurement" | 1997 |
| <input type="checkbox"/> | CAN/CSA-CEI/IEC CISPR 22 | Limits and Methods of Measurement of Radio Disturbance Characteristics of Information Technology Equipment | 2002 |
| <input checked="" type="checkbox"/> | TIA/EIA-603 | Land Mobile FM or PM Communications Equipment Measurement and Performance Standards | February 1993 |
| <input checked="" type="checkbox"/> | TIA/EIA-603-1 | Addendum to TIA/EIA-603 | March 4, 1998 |
| <input type="checkbox"/> | TRC-43 | Notes Regarding Designation of Emission (Including Necessary Bandwidth and Classification), Class of Station and Nature of Service, published by Industry Canada | October 9, 1982 |

10 Additional Information supplementary to the Test Report

| Item | Description | No. of Pages |
|-------------|-----------------------------------|---------------------|
| 1 | Test Site Calibration Data Sheets | 4 |
| 2 | Charts taken during testing | 12 |

Test Site Calibration 25 MHz - 1 GHz for ERP Measurements (Substitution Method)

Test site: Fully anechoic room, cabin no. 2
 Test distance: Standard position [m]: 3.5
 Date: 11/07/2003
 Operator: J. Roidt
 Transmit antennae: Biconical antenna HK 116, Rohde & Schwarz, inv.-no. A-1261
 Log.-per. antenna HL 223, Rohde & Schwarz, inv.-no. A-1262
 Horn antenna EMCO 3115, EMCO, inv.-no. B-1516
 Receiving antenna: Trilog Antenna VULB 9163
 Signal source: SMY 01, Rohde & Schwarz, inv.-no. A-1627,
 connected to transmit antenna via cables inv.-no. 1683, port 2 of AP 1
 and 1657, nominal power at signal generator set to 0 dBm
 Receiving cables: Inv.-no. 1656, 1681 and 1592
 Test receiver: FSP 30, Rohde & Schwarz, inv.-no. A-1666
 Antenna heights: TX antenna (h1): 1.5 metre
 RX antenna (h2): 1.5 metre
 Antenna position: TX antenna: center of turn table
 Polarization: horizontal

| Frequency [MHz] | Transmit signal P tx [dBm] | TX antenna gain | | True transmit signal P true [dBm] | Analyzer reading P site [dBm] | Attenuation RELAX Matrix [dB] | Correction for reading in "dBm" [dB] |
|--------------------|-------------------------------------|----------------------|-------------------|--|--|--|---|
| | | (isotropic) [dBi] | (dipole) [dBd] | | | | |
| 25.0 | -0.7 | -17.0 | -19.2 | -19.8 | -44.6 | 0.1 | 24.8 |
| 30.0 | -0.9 | -13.8 | -16.0 | -16.9 | -39.6 | 0.1 | 22.8 |
| 35.0 | -1.0 | -11.1 | -13.3 | -14.3 | -39.0 | 0.1 | 24.9 |
| 40.0 | -1.0 | -8.8 | -11.0 | -12.0 | -39.8 | 0.2 | 27.9 |
| 45.0 | -1.1 | -6.7 | -8.9 | -10.0 | -41.5 | 0.2 | 31.7 |
| 50.0 | -1.1 | -5.1 | -7.3 | -8.4 | -39.3 | 0.1 | 31.0 |
| 55.0 | -1.2 | -3.8 | -6.0 | -7.1 | -39.2 | 0.1 | 32.2 |
| 60.0 | -1.2 | -2.8 | -5.0 | -6.2 | -37.0 | 0.2 | 31.0 |
| 65.0 | -1.2 | -2.0 | -4.2 | -5.4 | -35.5 | 0.2 | 30.3 |
| 70.0 | -1.3 | -1.3 | -3.5 | -4.7 | -32.1 | 0.2 | 27.6 |
| 75.0 | -1.2 | -0.7 | -2.9 | -4.1 | -30.3 | 0.2 | 26.4 |
| 80.0 | -1.3 | -0.1 | -2.3 | -3.6 | -29.3 | 0.2 | 25.9 |
| 85.0 | -1.4 | 0.2 | -2.0 | -3.3 | -31.3 | 0.2 | 28.1 |
| 90.0 | -1.4 | 0.5 | -1.7 | -3.1 | -31.2 | 0.2 | 28.3 |
| 95.0 | -1.5 | 0.6 | -1.6 | -3.0 | -32.2 | 0.3 | 29.4 |
| 100.0 | -1.4 | 0.7 | -1.5 | -2.9 | -30.5 | 0.3 | 27.9 |
| 110.0 | -1.5 | 0.9 | -1.3 | -2.8 | -29.0 | 0.3 | 26.6 |
| 120.0 | -1.5 | 1.0 | -1.2 | -2.7 | -27.5 | 0.3 | 25.1 |
| 130.0 | -1.6 | 1.1 | -1.1 | -2.6 | -25.5 | 0.3 | 23.2 |
| 140.0 | -1.7 | 1.4 | -0.8 | -2.4 | -24.1 | 0.3 | 22.0 |
| 150.0 | -1.7 | 1.8 | -0.4 | -2.0 | -22.4 | 0.3 | 20.7 |
| 160.0 | -1.7 | 1.9 | -0.3 | -2.0 | -21.3 | 0.4 | 19.7 |
| 170.0 | -1.8 | 2.0 | -0.2 | -1.9 | -21.0 | 0.3 | 19.4 |
| 180.0 | -1.8 | 2.1 | 0.0 | -1.9 | -20.9 | 0.4 | 19.4 |
| 190.0 | -1.9 | 2.3 | 0.2 | -1.8 | -22.1 | 0.4 | 20.7 |
| 200.0 | -1.7 | 2.3 | 0.2 | -1.6 | -22.4 | 0.4 | 21.2 |
| 200.1 | -1.8 | 6.5 | 4.4 | 2.5 | -18.5 | 0.4 | 21.5 |
| 220.0 | -2.1 | 6.9 | 4.8 | 2.7 | -18.5 | 0.4 | 21.5 |
| 240.0 | -2.2 | 7.0 | 4.9 | 2.7 | -20.0 | 0.4 | 23.0 |

Test Site Calibration 25 MHz - 1 GHz for ERP Measurements (Substitution Method)

Test site: Fully anechoic room, cabin no. 2
 Test distance: Standard position [m]: 3.5
 Date: 11/07/2003
 Operator: J. Roidt
 Transmit antennae: Biconical antenna HK 116, Rohde & Schwarz, inv.-no. A-1261
 Log.-per. antenna HL 223, Rohde & Schwarz, inv.-no. A-1262
 Horn antenna EMCO 3115, EMCO, inv.-no. B-1516
 Receiving antenna: Trilog Antenna VULB 9163
 Signal source: SMY 01, Rohde & Schwarz, inv.-no. A-1627,
 connected to transmit antenna via cables inv.-no. 1683, port 2 of AP 1
 and 1657, nominal power at signal generator set to 0 dBm
 Receiving cables: Inv.-no. 1656, 1681 and 1592
 Test receiver: FSP 30, Rohde & Schwarz, inv.-no. A-1666
 Antenna heights: TX antenna (h1): 1.5 metre
 RX antenna (h2): 1.5 metre
 Antenna position: TX antenna: center of turn table
 Polarization: horizontal

| Frequency [MHz] | Transmit signal P tx [dBm] | TX antenna gain | | True transmit signal P true [dBm] | Analyzer reading P site [dBm] | Attenuation RELAX Matrix [dB] | Correction for reading in "dBm" [dB] |
|--------------------|-------------------------------------|----------------------|-------------------|--|--|--|---|
| | | (isotropic) [dBi] | (dipole) [dBd] | | | | |
| 260.0 | -2.2 | 7.1 | 5.0 | 2.7 | -20.9 | 0.4 | 24.0 |
| 280.0 | -2.4 | 7.3 | 5.1 | 2.8 | -21.5 | 0.4 | 24.7 |
| 300.0 | -2.4 | 7.2 | 5.1 | 2.6 | -22.6 | 0.5 | 25.7 |
| 325.0 | -2.5 | 7.2 | 5.1 | 2.6 | -23.8 | 0.4 | 26.9 |
| 350.0 | -2.6 | 7.1 | 5.0 | 2.3 | -26.0 | 0.5 | 28.8 |
| 375.0 | -2.7 | 7.2 | 5.1 | 2.4 | -26.7 | 0.5 | 29.6 |
| 400.0 | -2.5 | 6.8 | 4.7 | 2.2 | -28.2 | 0.6 | 31.0 |
| 425.0 | -2.8 | 6.7 | 4.6 | 1.7 | -28.5 | 0.6 | 30.8 |
| 433.9 | -2.8 | 6.8 | 4.7 | 1.8 | -28.5 | 0.6 | 30.9 |
| 450.0 | -2.8 | 7.0 | 4.9 | 2.0 | -27.9 | 0.6 | 30.5 |
| 475.0 | -3.0 | 6.9 | 4.8 | 1.8 | -27.6 | 0.7 | 30.0 |
| 500.0 | -3.1 | 7.0 | 4.9 | 1.8 | -27.9 | 0.7 | 30.4 |
| 550.0 | -3.2 | 7.5 | 5.4 | 2.2 | -27.7 | 0.6 | 30.6 |
| 600.0 | -3.2 | 7.0 | 4.9 | 1.7 | -29.6 | 0.7 | 32.0 |
| 650.0 | -3.4 | 6.9 | 4.8 | 1.3 | -29.7 | 0.7 | 31.8 |
| 700.0 | -3.6 | 6.5 | 4.4 | 0.8 | -31.4 | 0.7 | 32.9 |
| 750.0 | -3.6 | 7.2 | 5.1 | 1.4 | -32.4 | 0.8 | 34.6 |
| 800.0 | -3.6 | 7.1 | 5.0 | 1.3 | -32.2 | 0.8 | 34.3 |
| 850.0 | -4.0 | 6.7 | 4.6 | 0.5 | -32.6 | 0.9 | 34.0 |
| 867.8 | -3.8 | 6.6 | 4.5 | 0.6 | -32.7 | 0.8 | 34.2 |
| 900.0 | -4.0 | 7.0 | 4.9 | 0.9 | -33.6 | 0.9 | 35.4 |
| 950.0 | -4.0 | 7.7 | 5.6 | 1.5 | -33.8 | 0.9 | 36.2 |
| 1000.0 | -4.1 | 7.0 | 4.9 | 0.8 | -35.0 | 1.0 | 36.8 |

Test Site Calibration 25 MHz - 1 GHz for ERP Measurements (Substitution Method)

Test site: Fully anechoic room, cabin no. 2
 Test distance: Standard position [m]: 3.5
 Date: 11/07/2003
 Operator: J. Roidt
 Transmit antennae: Biconical antenna HK 116, Rohde & Schwarz, inv.-no. A-1261
 Log.-per. antenna HL 223, Rohde & Schwarz, inv.-no. A-1262
 Horn antenna EMCO 3115, EMCO, inv.-no. B-1516
 Receiving antenna: Trilog Antenna VULB 9163
 Signal source: SMY 01, Rohde & Schwarz, inv.-no. A-1627,
 connected to transmit antenna via cables inv.-no. 1683, port 2 of AP 1
 and 1657, nominal power at signal generator set to 0 dBm
 Receiving cables: Inv.-no. 1656, 1681 and 1592
 Test receiver: FSP 30, Rohde & Schwarz, inv.-no. A-1666
 Antenna heights: TX antenna (h1): 1.5 metre
 RX antenna (h2): 1.5 metre
 Antenna position: TX antenna: center of turn table
 Polarization: vertical

| Frequency [MHz] | Transmit signal P tx [dBm] | TX antenna gain | | True transmit signal P true [dBm] | Analyzer reading P site [dBm] | Attenuation RELAX Matrix [dB] | Correction for reading in "dBm" [dB] |
|--------------------|-------------------------------------|----------------------|-------------------|--|--|--|---|
| | | (isotropic) [dBi] | (dipole) [dBd] | | | | |
| 25.0 | -0.7 | -17.0 | -19.2 | -19.8 | -44.8 | 0.1 | 25.0 |
| 30.0 | -0.9 | -13.8 | -16.0 | -16.9 | -38.8 | 0.1 | 22.0 |
| 35.0 | -1.0 | -11.1 | -13.3 | -14.3 | -36.7 | 0.1 | 22.6 |
| 40.0 | -1.0 | -8.8 | -11.0 | -12.0 | -36.4 | 0.2 | 24.6 |
| 45.0 | -1.1 | -6.7 | -8.9 | -10.0 | -41.4 | 0.2 | 31.6 |
| 50.0 | -1.1 | -5.1 | -7.3 | -8.4 | -39.5 | 0.1 | 31.2 |
| 55.0 | -1.2 | -3.8 | -6.0 | -7.1 | -37.9 | 0.1 | 30.9 |
| 60.0 | -1.2 | -2.8 | -5.0 | -6.2 | -39.3 | 0.2 | 33.3 |
| 65.0 | -1.2 | -2.0 | -4.2 | -5.4 | -36.5 | 0.2 | 31.3 |
| 70.0 | -1.3 | -1.3 | -3.5 | -4.7 | -33.8 | 0.2 | 29.3 |
| 75.0 | -1.2 | -0.7 | -2.9 | -4.1 | -30.5 | 0.2 | 26.6 |
| 80.0 | -1.3 | -0.1 | -2.3 | -3.6 | -29.6 | 0.2 | 26.2 |
| 85.0 | -1.4 | 0.2 | -2.0 | -3.3 | -30.9 | 0.2 | 27.8 |
| 90.0 | -1.4 | 0.5 | -1.7 | -3.1 | -31.8 | 0.2 | 29.0 |
| 95.0 | -1.5 | 0.6 | -1.6 | -3.0 | -31.9 | 0.3 | 29.1 |
| 100.0 | -1.4 | 0.7 | -1.5 | -2.9 | -31.3 | 0.3 | 28.6 |
| 110.0 | -1.5 | 0.9 | -1.3 | -2.8 | -28.7 | 0.3 | 26.2 |
| 120.0 | -1.5 | 1.0 | -1.2 | -2.7 | -26.9 | 0.3 | 24.5 |
| 130.0 | -1.6 | 1.1 | -1.1 | -2.6 | -24.0 | 0.3 | 21.7 |
| 140.0 | -1.7 | 1.4 | -0.8 | -2.4 | -22.0 | 0.3 | 19.9 |
| 150.0 | -1.7 | 1.8 | -0.4 | -2.0 | -20.9 | 0.3 | 19.2 |
| 160.0 | -1.7 | 1.9 | -0.3 | -2.0 | -20.8 | 0.4 | 19.2 |
| 170.0 | -1.8 | 2.0 | -0.2 | -1.9 | -21.0 | 0.3 | 19.4 |
| 180.0 | -1.8 | 2.1 | 0.0 | -1.9 | -20.9 | 0.4 | 19.4 |
| 190.0 | -1.9 | 2.3 | 0.2 | -1.8 | -22.0 | 0.4 | 20.6 |
| 200.0 | -1.7 | 2.3 | 0.2 | -1.6 | -22.1 | 0.4 | 20.9 |
| 200.1 | -1.8 | 6.5 | 4.4 | 2.5 | -17.1 | 0.4 | 20.0 |
| 220.0 | -2.1 | 6.9 | 4.8 | 2.7 | -17.5 | 0.4 | 20.5 |
| 240.0 | -2.2 | 7.0 | 4.9 | 2.7 | -19.0 | 0.4 | 22.1 |

Test Site Calibration 25 MHz - 1 GHz for ERP Measurements (Substitution Method)

Test site: Fully anechoic room, cabin no. 2
 Test distance: Standard position [m]: 3.5
 Date: 11/07/2003
 Operator: J. Roidt
 Transmit antennae: Biconical antenna HK 116, Rohde & Schwarz, inv.-no. A-1261
 Log.-per. antenna HL 223, Rohde & Schwarz, inv.-no. A-1262
 Horn antenna EMCO 3115, EMCO, inv.-no. B-1516
 Receiving antenna: Trilog Antenna VULB 9163
 Signal source: SMY 01, Rohde & Schwarz, inv.-no. A-1627,
 connected to transmit antenna via cables inv.-no. 1683, port 2 of AP 1
 and 1657, nominal power at signal generator set to 0 dBm
 Receiving cables: Inv.-no. 1656, 1681 and 1592
 Test receiver: FSP 30, Rohde & Schwarz, inv.-no. A-1666
 Antenna heights: TX antenna (h1): 1.5 metre
 RX antenna (h2): 1.5 metre
 Antenna position: TX antenna: center of turn table
 Polarization: vertical

| Frequency [MHz] | Transmit signal P tx [dBm] | TX antenna gain | | True transmit signal P true [dBm] | Analyzer reading P site [dBm] | Attenuation RELAX Matrix [dB] | Correction for reading in "dBm" [dB] |
|--------------------|-------------------------------------|----------------------|-------------------|--|--|--|---|
| | | (isotropic) [dBi] | (dipole) [dBd] | | | | |
| 260.0 | -2.2 | 7.1 | 5.0 | 2.7 | -20.5 | 0.4 | 23.7 |
| 280.0 | -2.4 | 7.3 | 5.1 | 2.8 | -22.4 | 0.4 | 25.7 |
| 300.0 | -2.4 | 7.2 | 5.1 | 2.6 | -24.5 | 0.5 | 27.6 |
| 325.0 | -2.5 | 7.2 | 5.1 | 2.6 | -25.1 | 0.4 | 28.2 |
| 350.0 | -2.6 | 7.1 | 5.0 | 2.3 | -27.0 | 0.5 | 29.8 |
| 375.0 | -2.7 | 7.2 | 5.1 | 2.4 | -26.4 | 0.5 | 29.3 |
| 400.0 | -2.5 | 6.8 | 4.7 | 2.2 | -26.7 | 0.6 | 29.5 |
| 425.0 | -2.8 | 6.7 | 4.6 | 1.7 | -26.4 | 0.6 | 28.7 |
| 433.9 | -2.8 | 6.8 | 4.7 | 1.8 | -26.4 | 0.6 | 28.8 |
| 450.0 | -2.8 | 7.0 | 4.9 | 2.0 | -26.3 | 0.6 | 28.9 |
| 475.0 | -3.0 | 6.9 | 4.8 | 1.8 | -26.2 | 0.7 | 28.7 |
| 500.0 | -3.1 | 7.0 | 4.9 | 1.8 | -26.5 | 0.7 | 29.0 |
| 550.0 | -3.2 | 7.5 | 5.4 | 2.2 | -28.3 | 0.6 | 31.2 |
| 600.0 | -3.2 | 7.0 | 4.9 | 1.7 | -30.9 | 0.7 | 33.3 |
| 650.0 | -3.4 | 6.9 | 4.8 | 1.3 | -29.7 | 0.7 | 31.7 |
| 700.0 | -3.6 | 6.5 | 4.4 | 0.8 | -29.7 | 0.7 | 31.2 |
| 750.0 | -3.6 | 7.2 | 5.1 | 1.4 | -30.9 | 0.8 | 33.1 |
| 800.0 | -3.6 | 7.1 | 5.0 | 1.3 | -33.1 | 0.8 | 35.2 |
| 850.0 | -4.0 | 6.7 | 4.6 | 0.5 | -34.0 | 0.9 | 35.4 |
| 867.8 | -3.8 | 6.6 | 4.5 | 0.6 | -34.5 | 0.8 | 36.0 |
| 900.0 | -4.0 | 7.0 | 4.9 | 0.9 | -33.4 | 0.9 | 35.2 |
| 950.0 | -4.0 | 7.7 | 5.6 | 1.5 | -32.4 | 0.9 | 34.8 |
| 1000.0 | -4.1 | 7.0 | 4.9 | 0.8 | -33.5 | 1.0 | 35.3 |

Radiated Power Test 25 MHz - 100 MHz acc. to FCC Part 95 Subpart C/E

Model:
FX-FM 72 MHz

Serial no.:
0001

Applicant:
Futaba Corporation

Test site:
Fully anechoic room, cabin no. 2

Tested on:
Test distance 3 metres
Horizontal Polarization

Date of test:
02/06/2006

Operator:
M. Steindl

Test performed:
automatically

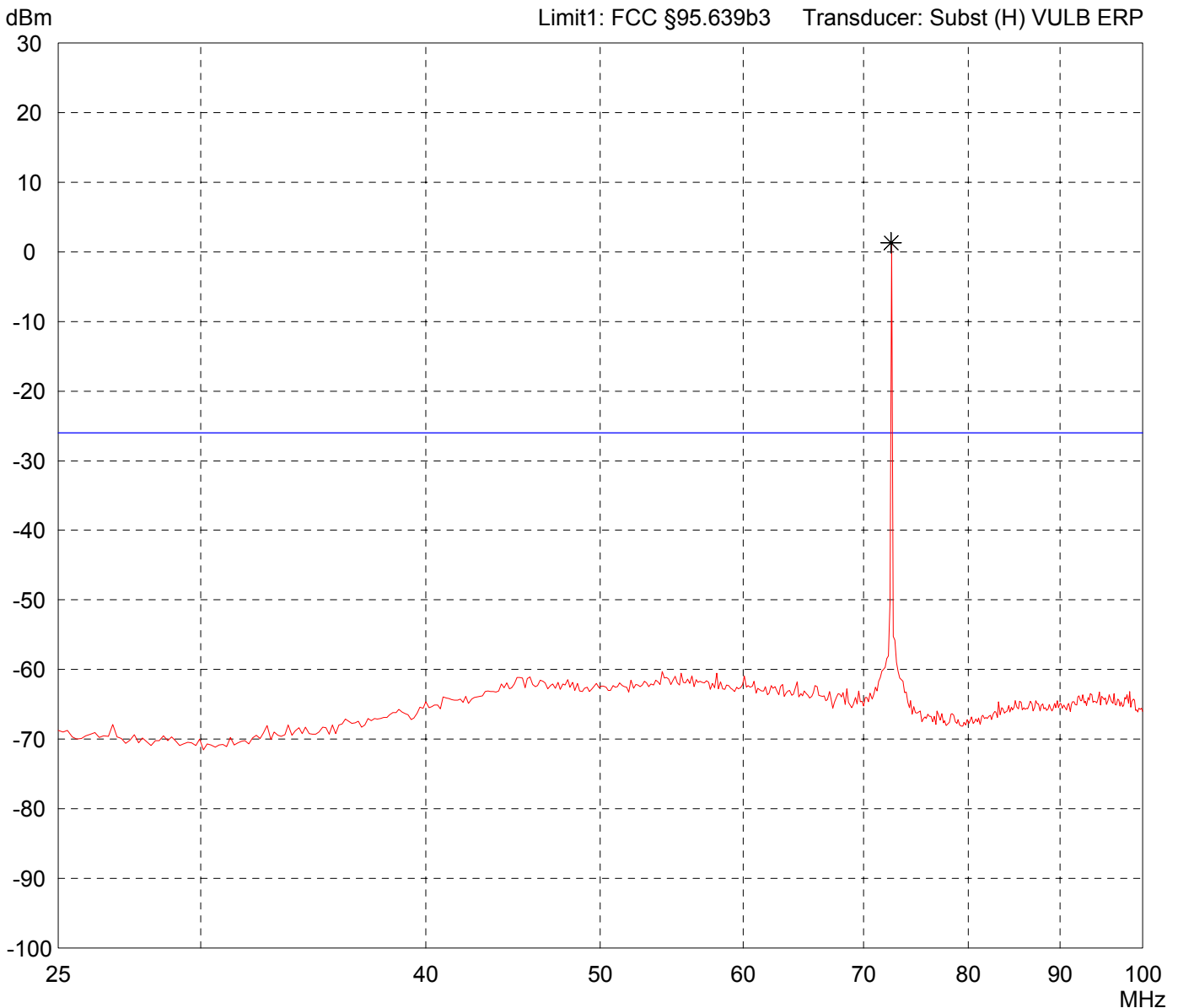
File name:
default.emi

Comment:

- 7.4 V battery supply
- Frequency: 72.510 MHz
- EUT in upright position (P1)

Detector:
Peak

List of values:
Selected by hand



Result:
Limit kept (Carrier excluded)

Project file:
55503-60034

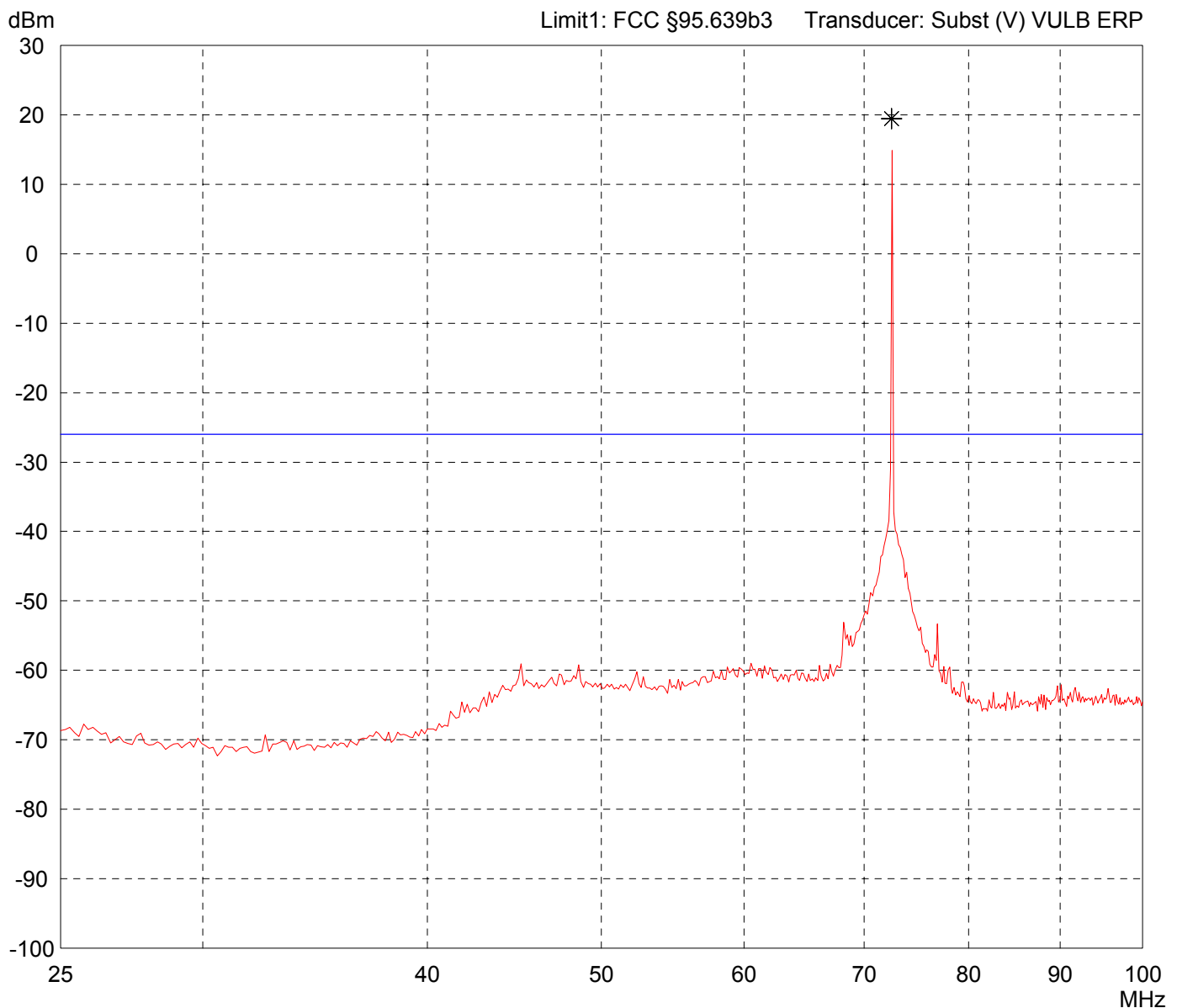
Radiated Power Test 25 MHz - 100 MHz acc. to FCC Part 95 Subpart C/E

| | |
|---|---------------------------|
| Model: FX-FM 72 MHz | |
| Serial no.: 0001 | |
| Applicant: Futaba Corporation | |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres Vertical Polarization | |
| Date of test: 02/06/2006 | Operator: M. Steindl |
| Test performed: automatically | File name: default.emi |

Comment:
- 7.4 V battery supply
- Frequency: 72.510 MHz
- EUT in upright position (P1)

| |
|-------------------|
| Detector: Peak |
|-------------------|

List of values:
Selected by hand



| |
|--|
| Result: Limit kept (Carrier excluded) |
|--|

| |
|------------------------------|
| Project file: 55503-60034 |
|------------------------------|

Radiated Power Test 100 MHz - 1 GHz acc. to FCC Part 95 Subpart C/E

Model:
FX-FM 72 MHz

Serial no.:
0001

Applicant:
Futaba Corporation

Test site:
Fully anechoic room, cabin no. 2

Tested on:
Test distance 3 metres
Horizontal Polarization

Date of test:
02/06/2006

Operator:
M. Steindl

Test performed:
automatically

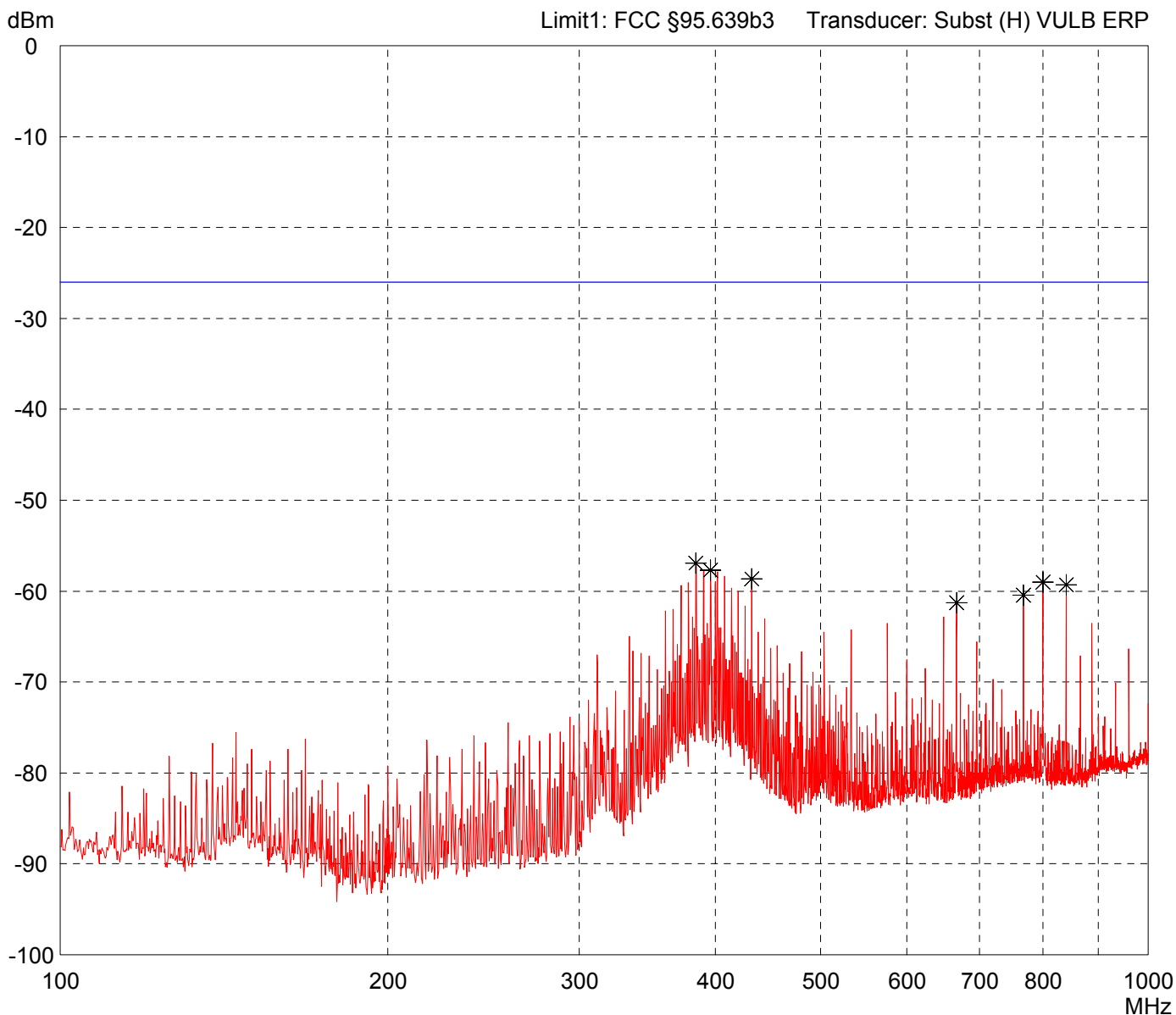
File name:
default.emi

Comment:

- 7.4 V battery supply
- Frequency: 72.510 MHz
- EUT in upright position (P1)

Detector:
Peak

List of values:
Selected by hand



Result:
Limit kept

Project file:
55503-60034

Radiated Power Test 100 MHz - 1 GHz acc. to FCC Part 95 Subpart C/E

Model:
FX-FM 72 MHz

Serial no.:
0001

Applicant:
Futaba Corporation

Test site:
Fully anechoic room, cabin no. 2

Tested on:
Test distance 3 metres
Vertical Polarization

Date of test:
02/06/2006

Operator:
M. Steindl

Test performed:
automatically

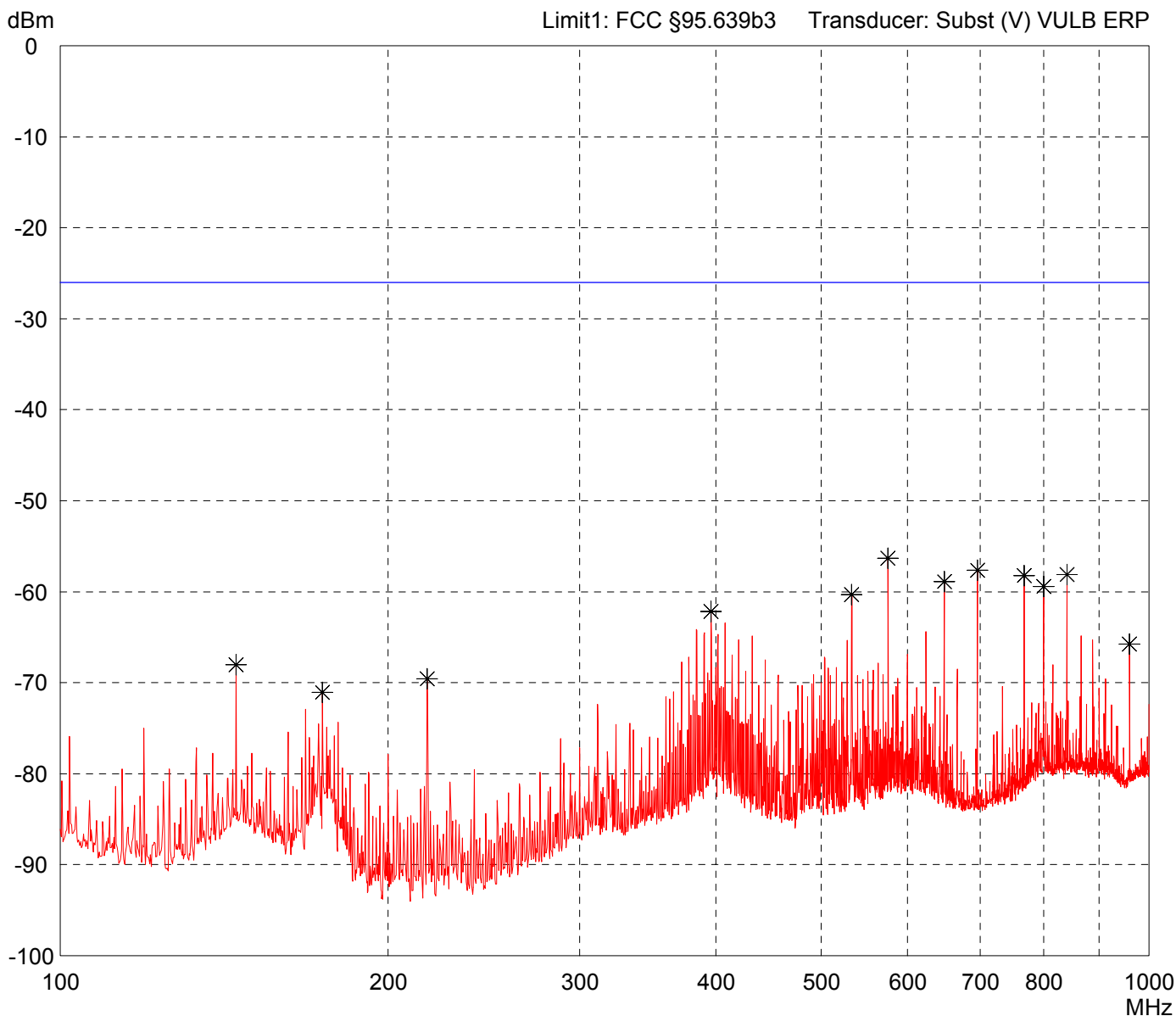
File name:
default.emi

Comment:

- 7.4 V battery supply
- Frequency: 72.510 MHz
- EUT in upright position (P1)

Detector:
Peak

List of values:
Selected by hand



Result:
Limit kept

Project file:
55503-60034

Radiated Power Test 25 MHz - 100 MHz acc. to FCC Part 95 Subpart C/E

Model:
FX-FM 72 MHz

Serial no.:
0001

Applicant:
Futaba Corporation

Test site:
Fully anechoic room, cabin no. 2

Tested on:
Test distance 3 metres
Horizontal Polarization

Date of test:
02/06/2006

Operator:
M. Steindl

Test performed:
automatically

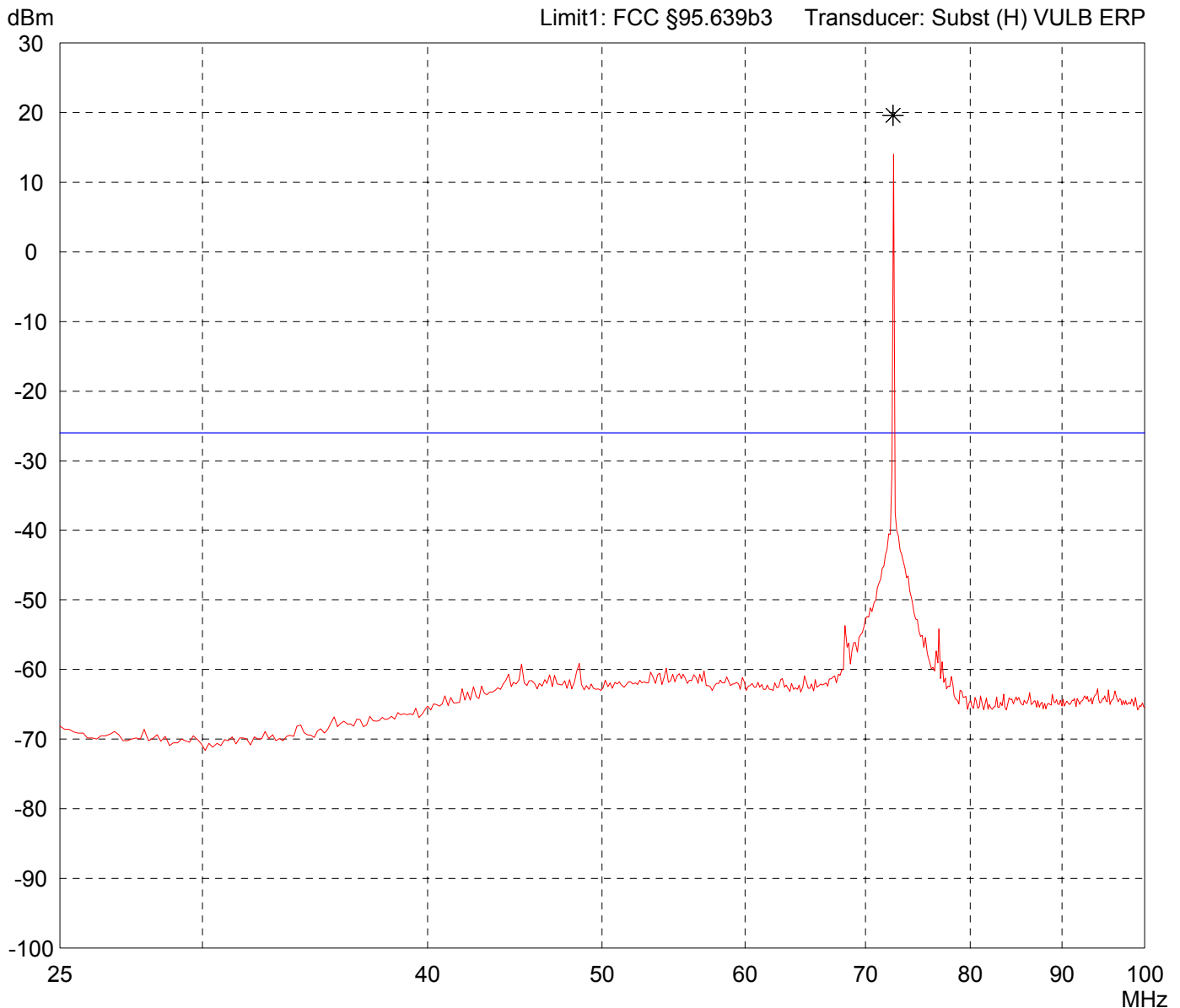
File name:
default.emi

Comment:

- 7.4 V battery supply
- Frequency: 72.510 MHz
- EUT flat on table (P2)

Detector:
Peak

List of values:
Selected by hand



Result:
Limit kept (Carrier excluded)

Project file:
55503-60034

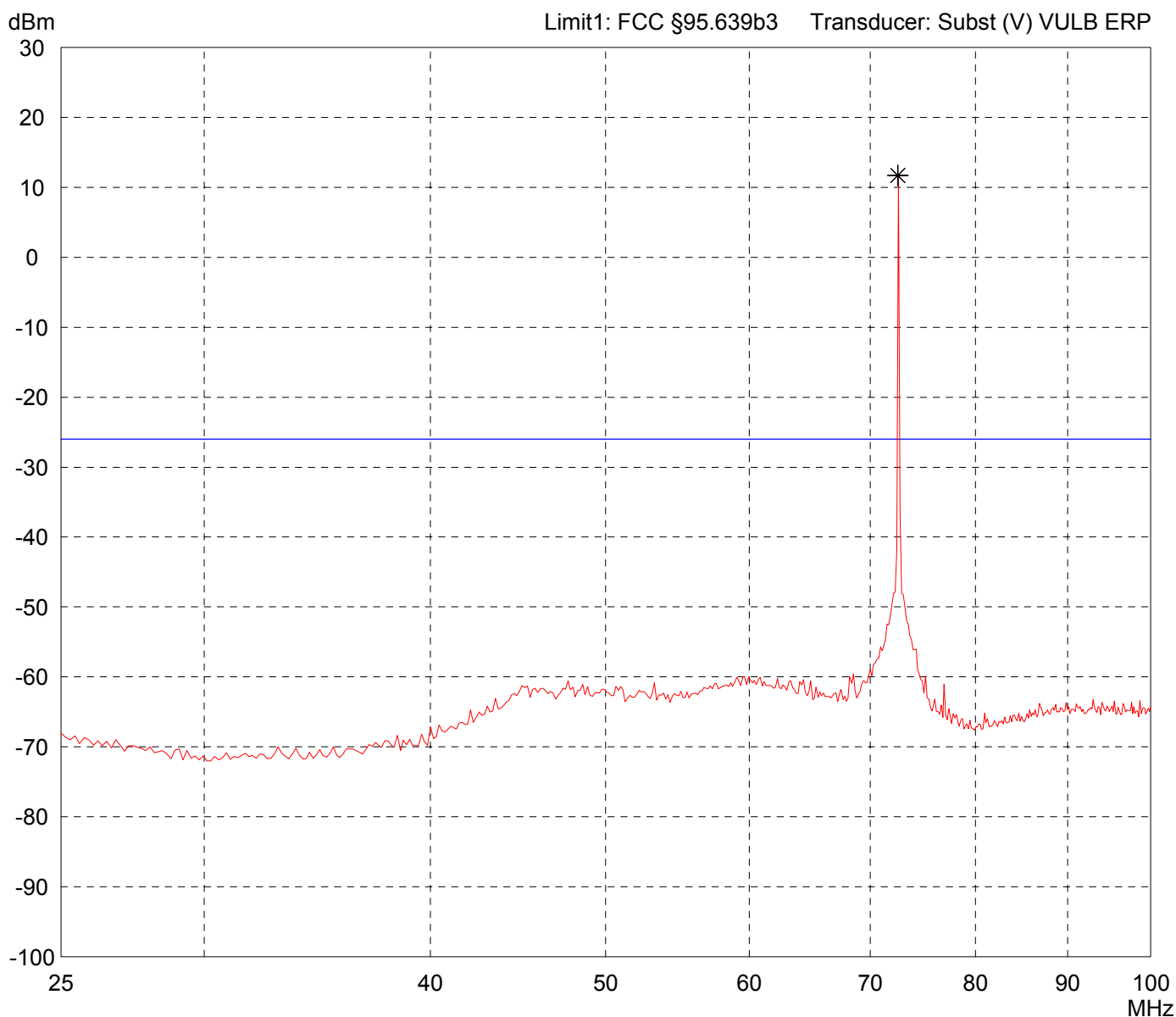
Radiated Power Test 25 MHz - 100 MHz acc. to FCC Part 95 Subpart C/E

| | |
|---|---------------------------|
| Model: FX-FM 72 MHz | |
| Serial no.: 0001 | |
| Applicant: Futaba Corporation | |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres Vertical Polarization | |
| Date of test: 02/06/2006 | Operator: M. Steindl |
| Test performed: automatically | File name: default.emi |

| |
|---|
| Comment: - 7.4 V battery supply - Frequency: 72.510 MHz - EUT flat on table (P2) |
|---|

| |
|-------------------|
| Detector: Peak |
|-------------------|

| |
|-------------------------------------|
| List of values: Selected by hand |
|-------------------------------------|



| |
|--|
| Result: Limit kept (Carrier excluded) |
|--|

| |
|------------------------------|
| Project file: 55503-60034 |
|------------------------------|

Radiated Power Test 100 MHz - 1 GHz acc. to FCC Part 95 Subpart C/E

Model:
FX-FM 72 MHz

Serial no.:
0001

Applicant:
Futaba Corporation

Test site:
Fully anechoic room, cabin no. 2

Tested on:
Test distance 3 metres
Horizontal Polarization

Date of test:
02/06/2006

Operator:
M. Steindl

Test performed:
automatically

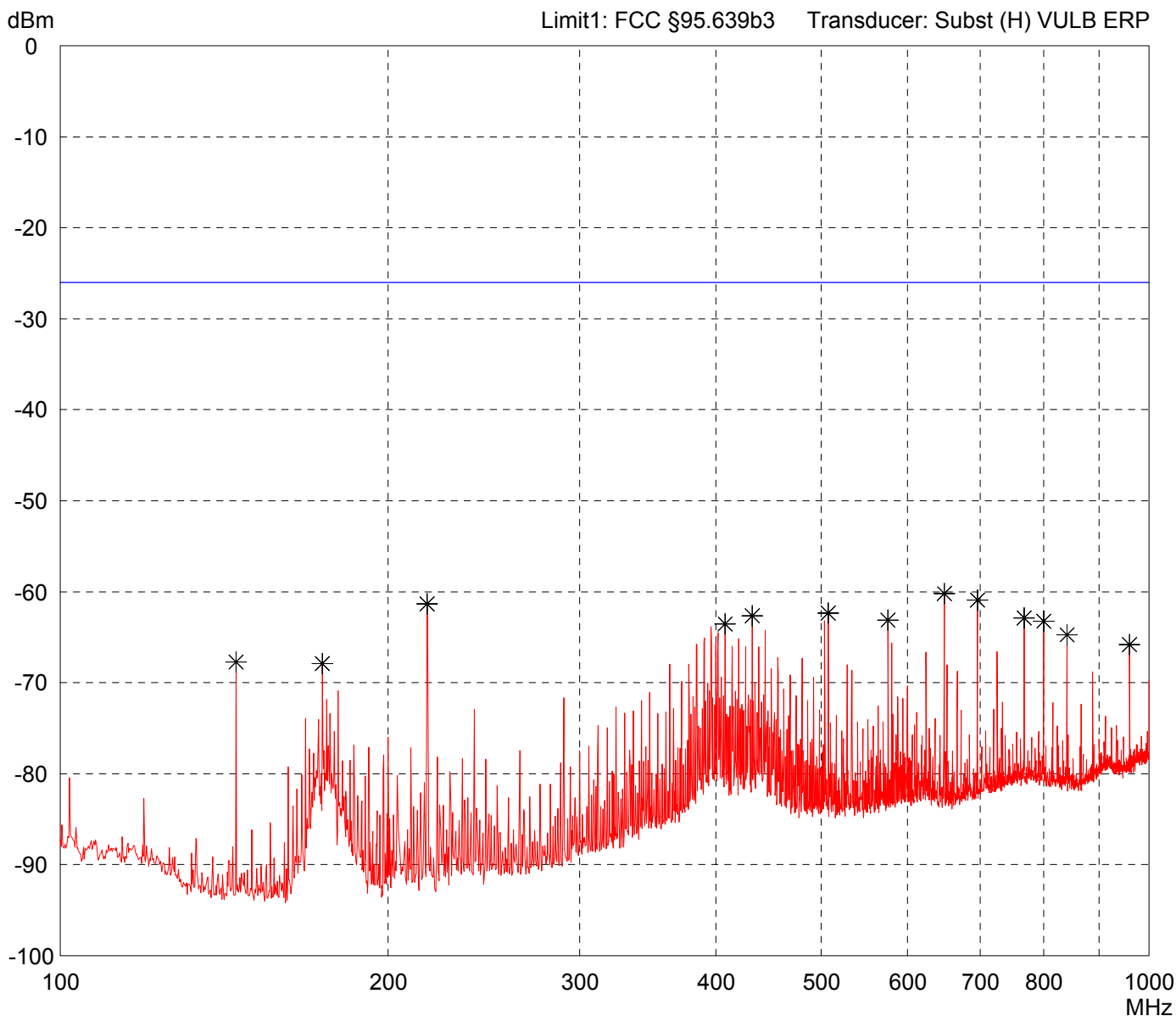
File name:
default.emi

Comment:

- 7.4 V battery supply
- Frequency: 72.510 MHz
- EUT flat on table (P2)

Detector:
Peak

List of values:
Selected by hand



Result:
Limit kept

Project file:
55503-60034

Radiated Power Test 100 MHz - 1 GHz acc. to FCC Part 95 Subpart C/E

Model:
FX-FM 72 MHz

Serial no.:
0001

Applicant:
Futaba Corporation

Test site:
Fully anechoic room, cabin no. 2

Tested on:
Test distance 3 metres
Vertical Polarization

Date of test:
02/06/2006

Operator:
M. Steindl

Test performed:
automatically

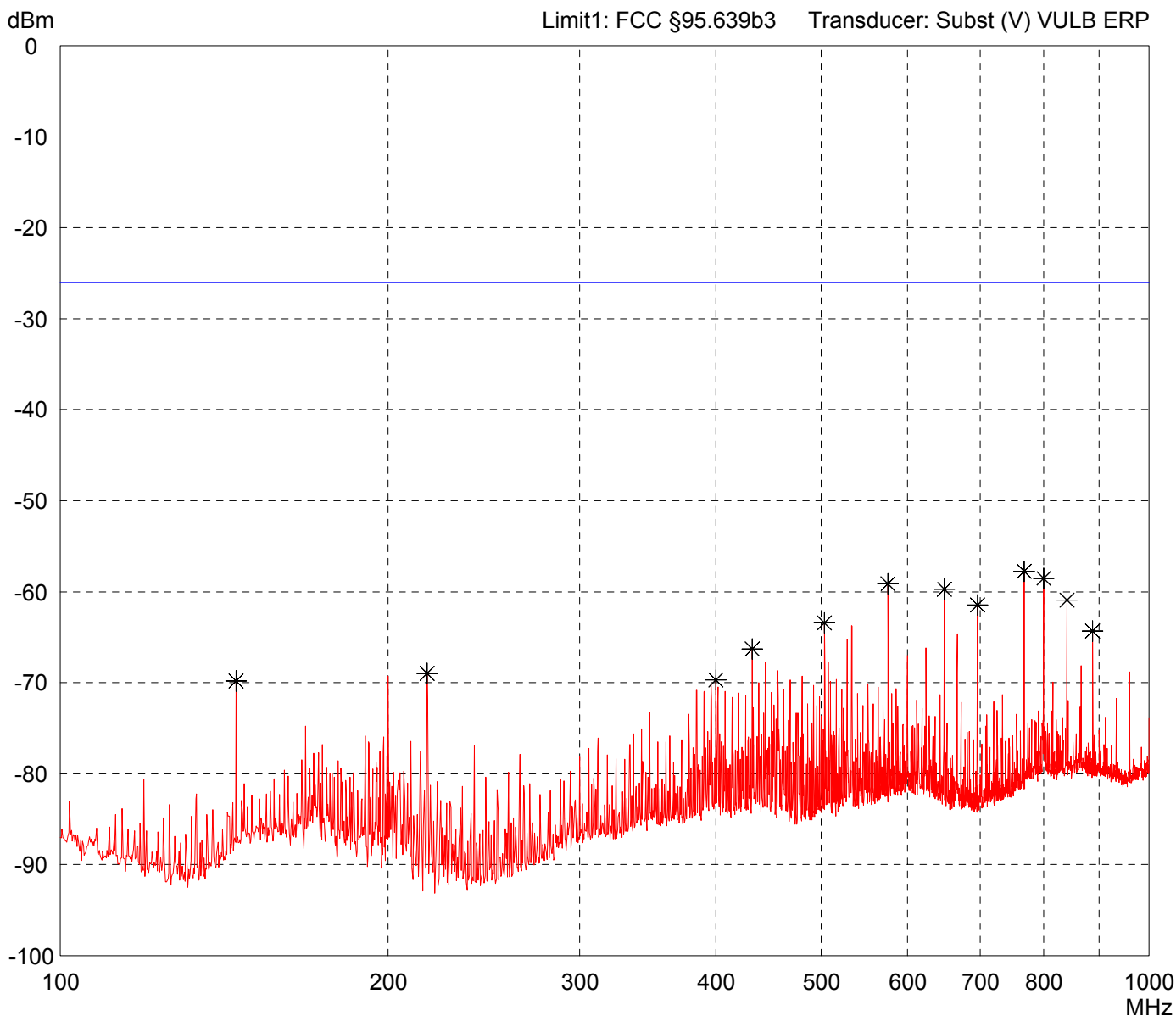
File name:
default.emi

Comment:

- 7.4 V battery supply
- Frequency: 72.510 MHz
- EUT flat on table (P2)

Detector:
Peak

List of values:
Selected by hand



Result:
Limit kept

Project file:
55503-60034

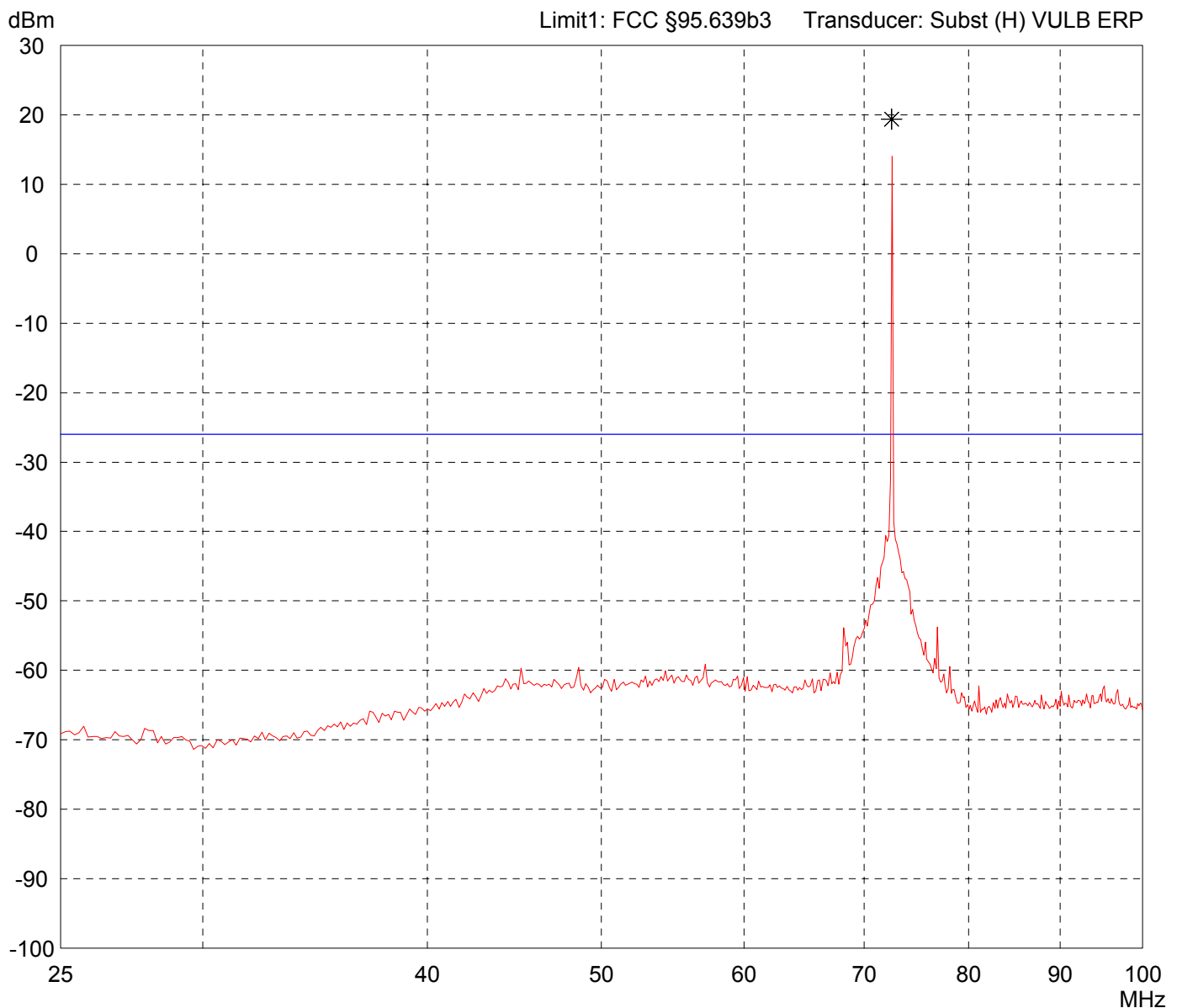
Radiated Power Test 25 MHz - 100 MHz acc. to FCC Part 95 Subpart C/E

| | |
|---|---------------------------|
| Model: FX-FM 72 MHz | |
| Serial no.: 0001 | |
| Applicant: Futaba Corporation | |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres Horizontal Polarization | |
| Date of test: 02/06/2006 | Operator: M. Steindl |
| Test performed: automatically | File name: default.emi |

Comment:
- 7.4 V battery supply
- Frequency: 72.510 MHz
- EUT on right side (P3)

| |
|-------------------|
| Detector: Peak |
|-------------------|

List of values:
Selected by hand



| |
|--|
| Result: Limit kept (Carrier excluded) |
|--|

Project file:
55503-60034

Radiated Power Test 25 MHz - 100 MHz acc. to FCC Part 95 Subpart C/E

Model:
FX-FM 72 MHz

Serial no.:
0001

Applicant:
Futaba Corporation

Test site:
Fully anechoic room, cabin no. 2

Tested on:
Test distance 3 metres
Vertical Polarization

Date of test:
02/06/2006

Operator:
M. Steindl

Test performed:
automatically

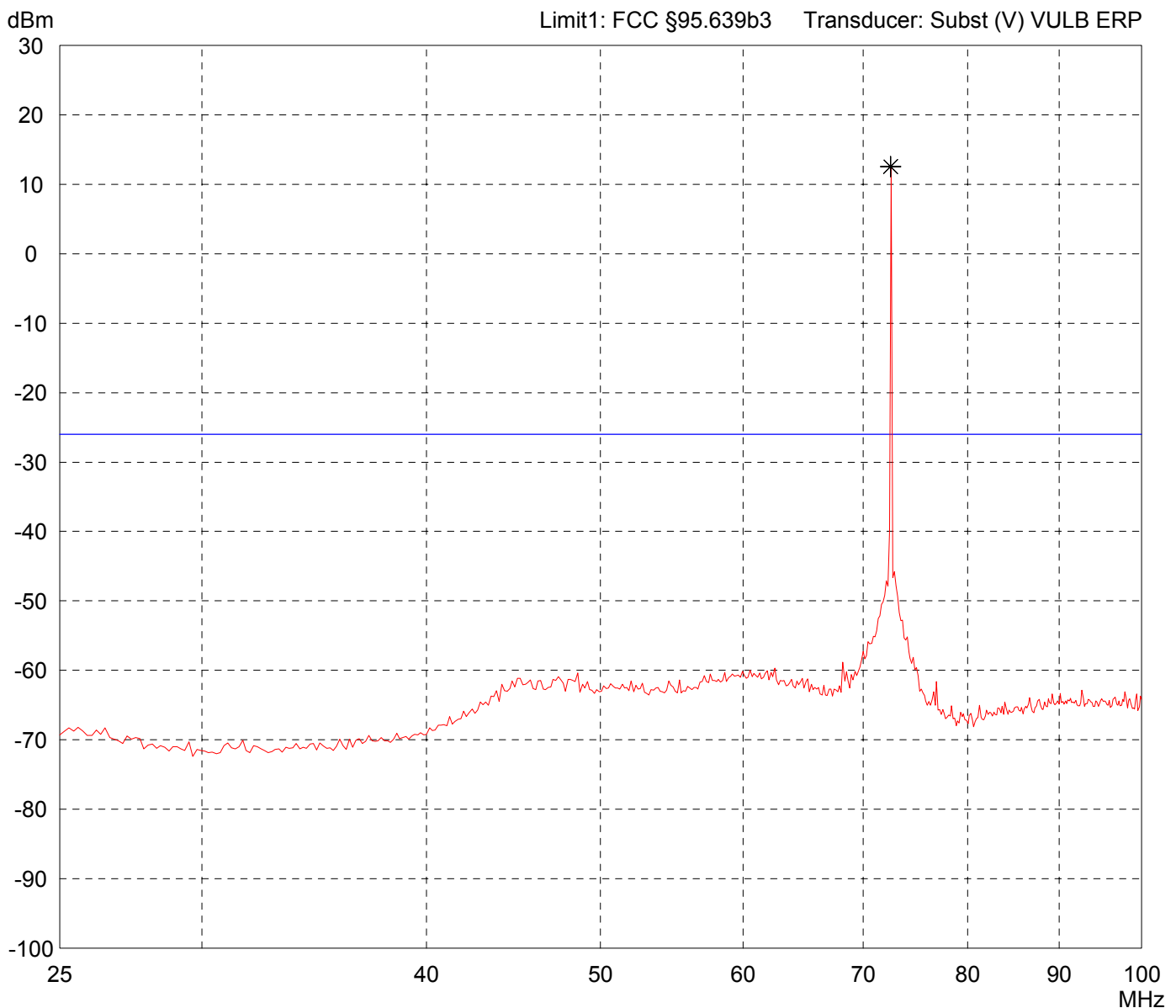
File name:
default.emi

Comment:

- 7.4 V battery supply
- Frequency: 72.510 MHz
- EUT on right side (P3)

Detector:
Peak

List of values:
Selected by hand



Result:
Limit kept (Carrier excluded)

Project file:
55503-60034

Radiated Power Test 100 MHz - 1 GHz acc. to FCC Part 95 Subpart C/E

Model:
FX-FM 72 MHz

Serial no.:
0001

Applicant:
Futaba Corporation

Test site:
Fully anechoic room, cabin no. 2

Tested on:
Test distance 3 metres
Horizontal Polarization

Date of test:
02/06/2006

Operator:
M. Steindl

Test performed:
automatically

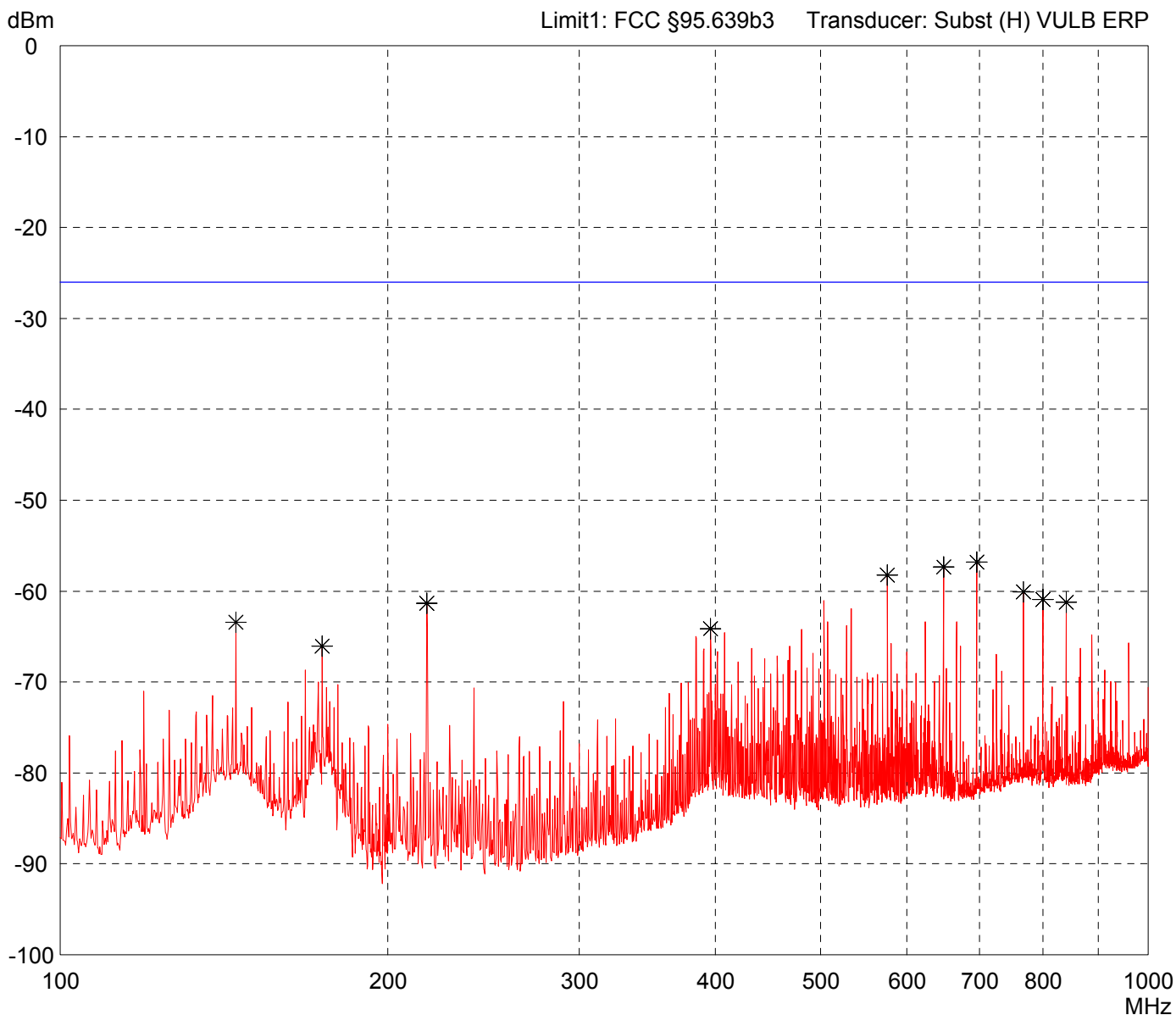
File name:
default.emi

Comment:

- 7.4 V battery supply
- Frequency: 72.510 MHz
- EUT on right side (P3)

Detector:
Peak

List of values:
Selected by hand



Result:
Limit kept

Project file:
55503-60034

Radiated Power Test 100 MHz - 1 GHz acc. to FCC Part 95 Subpart C/E

Model:
FX-FM 72 MHz

Serial no.:
0001

Applicant:
Futaba Corporation

Test site:
Fully anechoic room, cabin no. 2

Tested on:
Test distance 3 metres
Vertical Polarization

Date of test:
02/06/2006

Operator:
M. Steindl

Test performed:
automatically

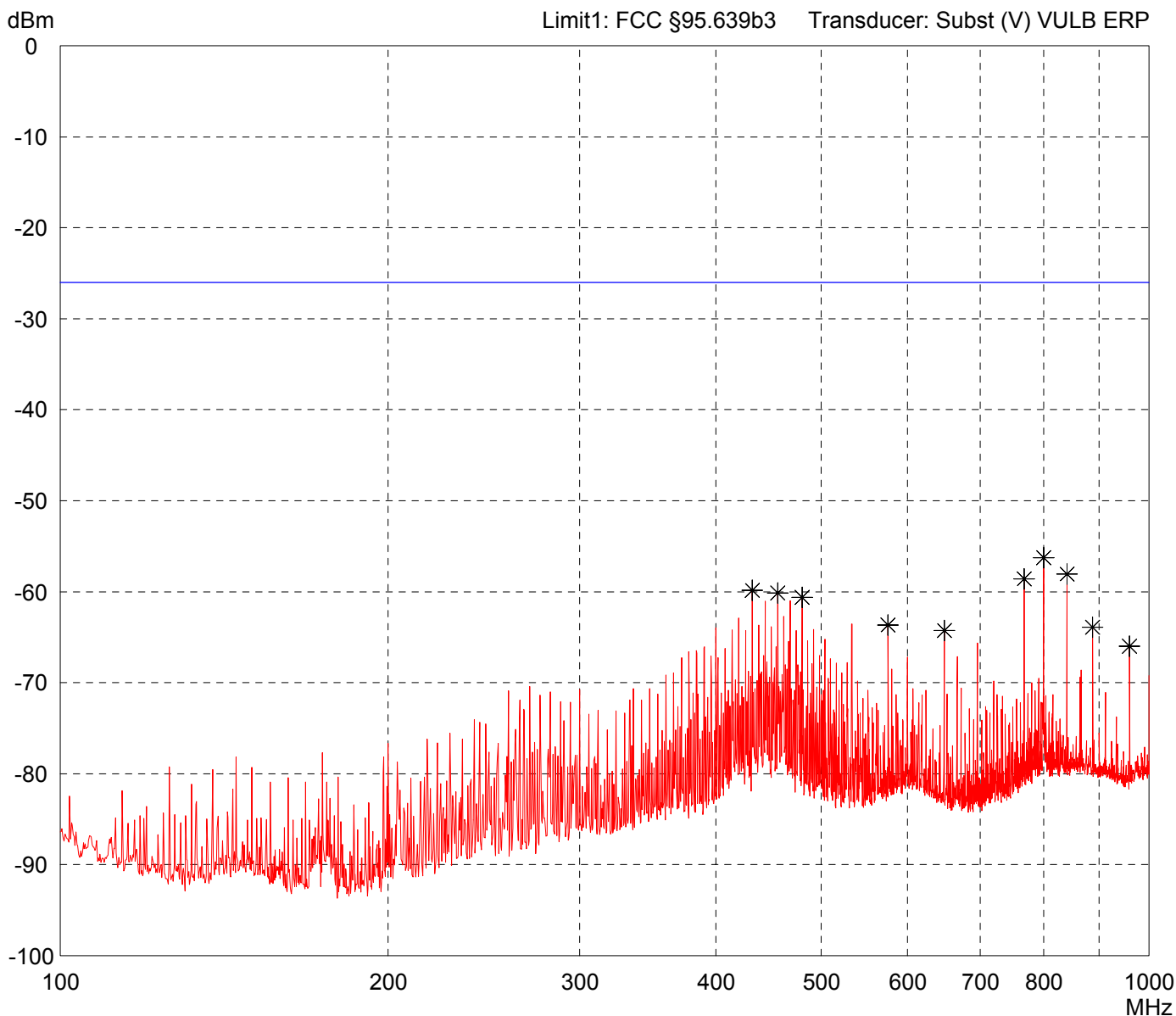
File name:
default.emi

Comment:

- 7.4 V battery supply
- Frequency: 72.510 MHz
- EUT on right side (P3)

Detector:
Peak

List of values:
Selected by hand



Result:
Limit kept

Project file:
55503-60034