eurofins | Product Service

# FCC TEST REPORT

**FCC 47 CFR Part 15C**
**Industry Canada RSS-210**

**Frequency hopping systems operating within the 2400 – 2483.5 MHz band**

| | |
|---|---|
| **Report Reference No**.....: | G0M-1405-3862-TFC247BT-V01 |
| **Testing Laboratory**.....: | Eurofins Product Service GmbH |
| Address.....: | Storkower Str. 38c<br>15526 Reichenwalde<br>Germany |
| Accreditation.....: | A2LA Accredited Testing Laboratory, Certificate No.: 1983.01<br>FCC Filed Test Laboratory, Reg.-No.: 96970<br>IC OATS Filing assigned code: 3470A |
| **Applicant's name**.....: | Kondo Kagaku Co., Ltd. |
| Address.....: | 4-17-7 Higashi Nippori, Arakawa-Ku<br>Tokyo 116-0014<br>JAPAN |
| **Test specification:** | |
| Standard.....: | 47 CFR Part 15C<br>RSS-210, Issue 8, 2010-12<br>RSS-Gen, Issue 3, 2010-12<br>ANSI C63.4:2009 |
| **Equipment under test (EUT):** | |
| Product description | Radio Control system for Model cars |
| Model No. | Esprit4 |
| Additional Model(s) | None |
| Brand Name(s) | KOPROPO |
| Hardware version | None |
| Firmware / Software version | None |
| | FCC-ID: QH9KTSS-704 IC: N/A |
| **Test result** | **Passed** |

**Possible test case verdicts:**

- neither assessed nor tested .....: N/N
- required by standard but not appl. to test object.....: N/A
- required by standard but not tested.....: N/T
- not required by standard for the test object .....: N/R
- test object does meet the requirement.....: P (Pass)
- test object does not meet the requirement.....: F (Fail)

**Testing:**

Test Lab Temperature.....: 20 – 23 °C

Test Lab Humidity .....: 32 – 38 %

Date of receipt of test item .....: 2014-06-16

Date (s) of performance of tests .....: 2014-06-17 – 2014-09-22

Compiled by ..... : Antje Bartusch

Tested by (+ signature)..... : (Responsible for Test) Wilfried Treffke .....W. Treff.....

Approved by (+ signature) ..... : Christian Weber .....C. Weber.....

Date of issue ..... : 2014-10-28

Total number of pages ..... : 75

**General remarks:**

**The test results presented in this report relate only to the object tested.**
**The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.**

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

**Additional comments:**

# Version History

| Version | Issue Date | Remarks | Revised by |
|---|---|---|---|
| 01 | 2014-10-28 | Initial Release | |

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# 1 Equipment (Test item) Description

| | | |
|---|---|---|
| **Description** | Radio Control system for Model cars | |
| **Model** | Esprit4 | |
| **Additional Model(s)** | None | |
| **Brand Name(s)** | KOPROPO | |
| **Serial number** | None | |
| **Hardware version** | None | |
| **Software / Firmware version** | None | |
| **FCC-ID** | QH9KTSS-704 | |
| **IC** | N/A | |
| **Equipment type** | End product | |
| **Radio type** | Transmitter only | |
| **Radio technology** | Frequency Hopping | |
| **Operating frequency range** | 2402 - 2476 MHz | |
| **Assigned frequency band** | 2400 - 2483.5 MHz | |
| **Main test frequencies** | $F_{LOW}$ | 2404 MHz |
| | $F_{MID}$ | 2440 MHz |
| | $F_{HIGH}$ | 2476 MHz |
| **Spreading** | FHSS | |
| **Modulations** | FSK | |
| **Number of channels** | 29 | |
| **Channel spacing** | 1 MHz | |
| **Number of antennas** | 1 | |
| **Antenna** | Type | Simple wire antenna (1/2 wave antenna) |
| | Model | ANTB18-155A0 |
| | Manufacturer | Sansei Electric Co.Ltd. |
| | Gain | 1.9 dbi |
| **Manufacturer** | Kondo Kagaku Co., Ltd.<br>4-17-7 Higashi Nippori, Arakawa-Ku<br>Tokyo 116-0014<br>JAPAN | |
| **Power supply** | $V_{NOM}$ | 6.0 VDC (NiCd Battery) |
| | $V_{MIN}$ | -- |
| | $V_{MIN}$ | -- |

## 1.4 Supporting Equipment Used During Testing

| Product Type* | Device | Manufacturer | Model No. | Comments |
|---|---|---|---|---|
| AE | Receiver | Kondo | KR431FH | |

***Note:** Use the following abbreviations:

AE : Auxiliary/Associated Equipment, or

SIM : Simulator (Not Subjected to Test)

CABL : Connecting cables

## 1.5 Test Modes

| Mode # | Description | |
|---|---|---|
| Hopping | General conditions: | EUT powered by battery |
| | Radio conditions: | Mode = hopping mode<br>Spreading = FHSS<br>Modulation = FSK<br>Power setting = none |
| Single | General conditions: | EUT powered by battery |
| | Radio conditions: | Mode = hopping mode stopped<br>Spreading = None<br>Modulation = FSK<br>Power setting = none |

### 1.6 Test Equipment Used During Testing

| Measurement Software | | | |
|---|---|---|---|
| Description | Manufacturer | Name | Version |
| EMC Test Software | Dare Instruments | Radimation | 2014.1.15 |

| 20dB Bandwidth | | | | | |
|---|---|---|---|---|---|
| Description | Manufacturer | Model | Identifier | Cal. Date | Cal. Due |
| Spectrum Analyzer | R&S | FSP 30 | EF00312 | 2014-02 | 2015-02 |

| Number of hopping frequencies | | | | | |
|---|---|---|---|---|---|
| Description | Manufacturer | Model | Identifier | Cal. Date | Cal. Due |
| Spectrum Analyzer | R&S | FSP 30 | EF00312 | 2014-02 | 2015-02 |

| Time of occupancy | | | | | |
|---|---|---|---|---|---|
| Description | Manufacturer | Model | Identifier | Cal. Date | Cal. Due |
| Spectrum Analyzer | R&S | FSP 30 | EF00312 | 2014-02 | 2015-02 |

| Maximum peak conducted power | | | | | |
|---|---|---|---|---|---|
| Description | Manufacturer | Model | Identifier | Cal. Date | Cal. Due |
| Spectrum Analyzer | R&S | FSP 30 | EF00312 | 2014-02 | 2015-02 |

| Band edge compliance | | | | | |
|---|---|---|---|---|---|
| Description | Manufacturer | Model | Identifier | Cal. Date | Cal. Due |
| Spectrum Analyzer | R&S | FSP 30 | EF00312 | 2014-02 | 2015-02 |

| Conducted spurious emissions | | | | | |
|---|---|---|---|---|---|
| Description | Manufacturer | Model | Identifier | Cal. Date | Cal. Due |
| Spectrum Analyzer | R&S | FSP 30 | EF00312 | 2014-02 | 2015-02 |

| Radiated spurious emissions | | | | | |
|---|---|---|---|---|---|
| Description | Manufacturer | Model | Identifier | Cal. Date | Cal. Due |
| Semi-anechoic chamber | Frankonia | AC 1 | EF00062 | -- | -- |
| Spectrum Analyzer | R&S | FSIQ26 | EF00242 | 2014-03 | 2015-03 |
| Biconical Antenna | R&S | HK 116 | EF00012 | 2013-02 | 2016-02 |
| LPD Antenna | R&S | HL 223 | EF00187 | 2014-03 | 2017-03 |
| LPD Antenna | R&S | HL 025 | EF00327 | 2013-02 | 2016-02 |

## 1.7 Sample emission level calculation

The following is a description of terms and a sample calculation, as appears in the radiated emissions data table. The numbers used in the calculation are for example only. There is no direct correlation to the specific data taken for the product described in this document:

Reading:

This is the reading obtained on the spectrum analyzer in dBµV. Any external preamplifiers used are taken into account through internal analyzer settings.

A.F.:

This is the antenna factor for the receiving antenna. It is a conversion factor, which converts electric fields strengths to voltages, which can be measured directly on the spectrum analyzer. It is treated as a loss in dB. Cable losses have been included with the A.F. to simplify the calculations. The antenna factor is used in calculations as follows:

Reading on Analyzer (dBµV) + A.F. (dB) = Net field strength (dBµV/m)

Net:

This is the net field strength measurement (as shown above).

Limit:

This is the FCC Class B radiated emission limit (in units of dBµV/m). The FCC limits are given in units of µV/m. The following formula is used to convert the units of µV/m to dBµV/m:

Limit (dBµV/m) = 20*log (µV/m)

Margin:

This is the margin of compliance below the FCC limit. The units are given in dB. A negative margin indicates the emission was below the limit. A positive margin indicates that the emission exceeds the limit.

Example only:

| Reading | + | AF | = | Net Reading | : | Net reading - FCC limit = Margin |
|---|---|---|---|---|---|---|
| 21.5 dBµV | + | 26 dB | = | 47.5 dBµV/m | : | 47.5 dBµV/m - 57.0 dBµV/m = -9.5 dB |

## 2 Result Summary

| FCC 47 CFR Part 15C, IC RSS-210 | | | | |
|---|---|---|---|---|
| **Product Specific Standard Section** | **Requirement – Test** | **Reference Method** | **Result** | **Remarks** |
| RSS-Gen 4.6.1 | Occupied Bandwidth | RSS-Gen 4.6.1 | N/R | Informational only |
| FCC § 15.247(a)(1)<br>IC RSS-210 § A8.1 | 20 dB Bandwidth | Public notice DA 00-705 | PASS | |
| FCC § 15.247(a)(1)(iii)<br>IC RSS-210 § A8.1 | Number of hopping frequencies | Public notice DA 00-705 | PASS | |
| FCC § 15.247(a)(1)<br>IC RSS-210 § A8.1 | Frequency hopping channel separation | Public notice DA 00-705 | PASS | |
| FCC § 15.247(a)(1)(iii)<br>IC RSS-210 § A8.1 | Time of occupancy (Dwell time) | Public notice DA 00-705 | PASS | |
| FCC § 15.247(b)(1)<br>IC RSS-210 § A8.4 | Maximum peak conducted power | Public notice DA 00-705 | PASS | |
| 47 CFR 15.207<br>RSS-Gen 7.2.4 | AC power line conducted emissions | ANSI C63.4 | N/R | |
| FCC § 15.247(d)<br>IC RSS-210 § A8.5 | Band edge compliance | Public notice DA 00-705 | PASS | |
| FCC § 15.247(d)<br>IC RSS-210 § A8.5 | Conducted spurious emissions | Public notice DA 00-705 | PASS | |
| FCC § 15.247(d)<br>FCC § 15.209<br>IC RSS-210 A8.5<br>IC RSS-Gen 4.9<br>IC RSS-Gen 7.2.5 | Transmitter radiated spurious emissions | Public notice DA 00-705 / ANSI C 63.4 | PASS | |
| IC RSS-Gen 4.10<br>IC RSS-Gen 6.1 | Receiver radiated spurious emissions | ANSI C 63.4 | N/R | |
| **Remarks:** | | | | |

# 3 Test Conditions and Results

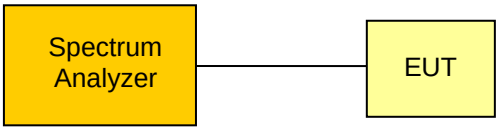
## 3.1 Test Conditions and Results – Occupied Bandwidth

| **Occupied Bandwidth acc. IC RSS-Gen** | **Verdict: PASS** |
|---|---|
| Test according to measurement reference | Reference Method |
| | RSS-Gen 4.6.1 |
| Test frequency range | Tested frequencies |
| | $F_{LOW}$ / $F_{MID}$ / $F_{HIGH}$ |

**Limits**

None (Informational only)

**Test setup**




**Test procedure**

1. EUT set to test mode (Communication tester is used if needed)
2. Span set to at least twice the emission spectrum
3. Resolution bandwidth set to 1 % of span
4. Occupied Bandwidth (99 %) measurement with spectrum analyzer built in measurement function

**Test results**

| Channel | Frequency [MHz] | Mode | Occupied Bandwidth [kHz] |
|---|---|---|---|
| $F_{LOW}$ | 2404 | Single | 1119.7 |
| $F_{MID}$ | 2440 | Single | 1114.7 |
| $F_{HIGH}$ | 2476 | Single | 1119.7 |

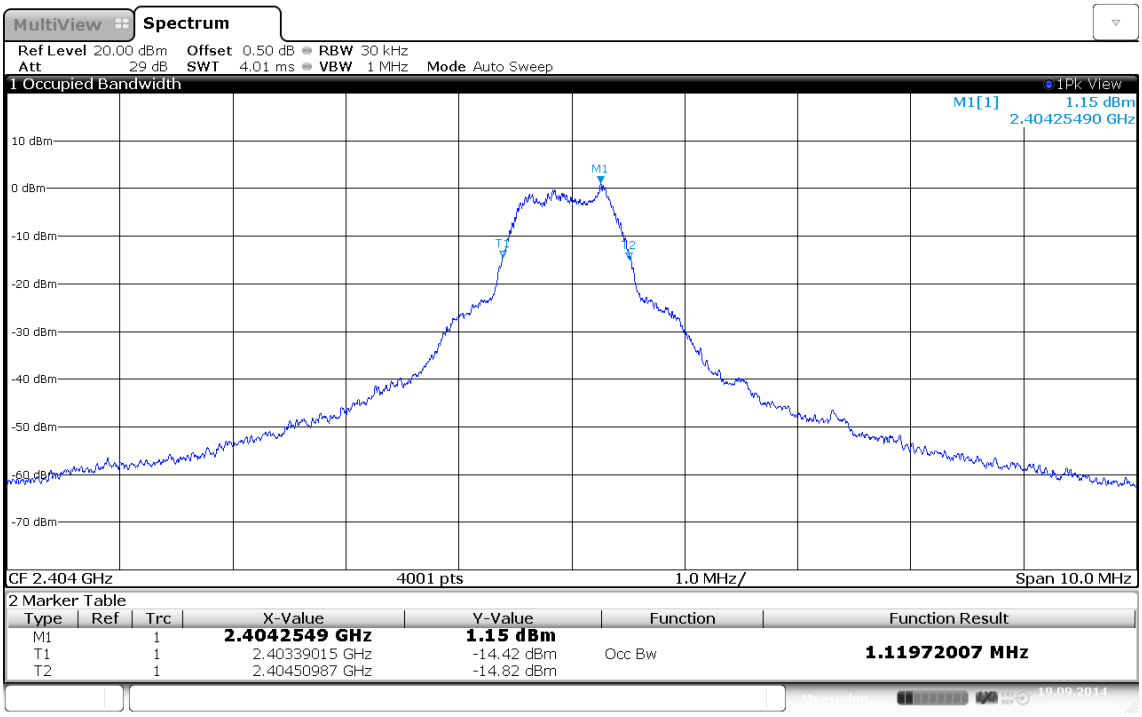
Comments:

**Occupied Bandwidth – $F_{LOW}$**

## Occupied Bandwidth acc. to RSS-Gen

Project Number: G0M-1405-3862

| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD. |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Wilfried Treffke |
| Test Conditions: | Tnom / Vnom |
| Mode: | Tx, FSK, 2404 MHz, modulated |
| Test Date: | 2014-09-19 |
| Verdict: | PASS |
| Note 1: | A spectrum analyzer with an integrated 99% power bandwidth function is used |
| Note 2: | conducted measurement |




Occupied bandwidth: 1119.7 KHz

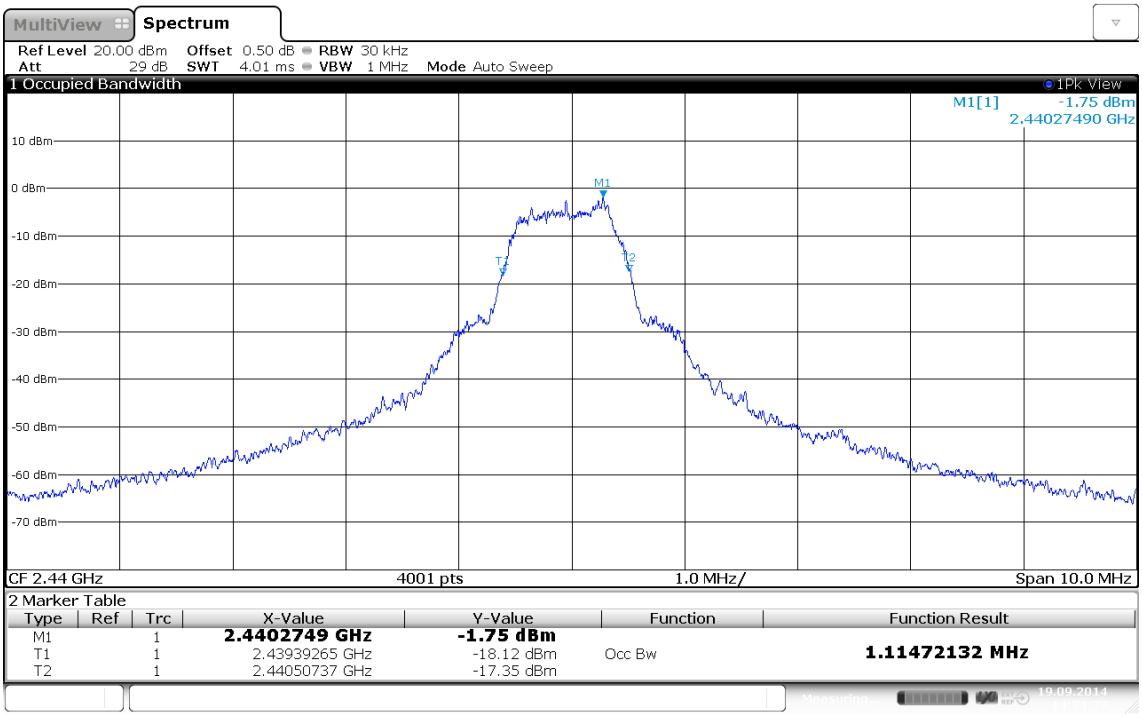
Date: 19.SEP.2014 14:38:03

**Occupied Bandwidth – $F_{MID}$**

## Occupied Bandwidth acc. to RSS-Gen

Project Number: G0M-1405-3862

| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD. |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Wilfried Treffke |
| Test Conditions: | Tnom / Vnom |
| Mode: | Tx, FSK, 2440 MHz, modulated |
| Test Date: | 2014-09-19 |
| Verdict: | PASS |
| Note 1: | A spectrum analyzer with an integrated 99% power bandwidth function is used |
| Note 2: | conducted measurement |




Occupied bandwidth: 1114.7 KHz

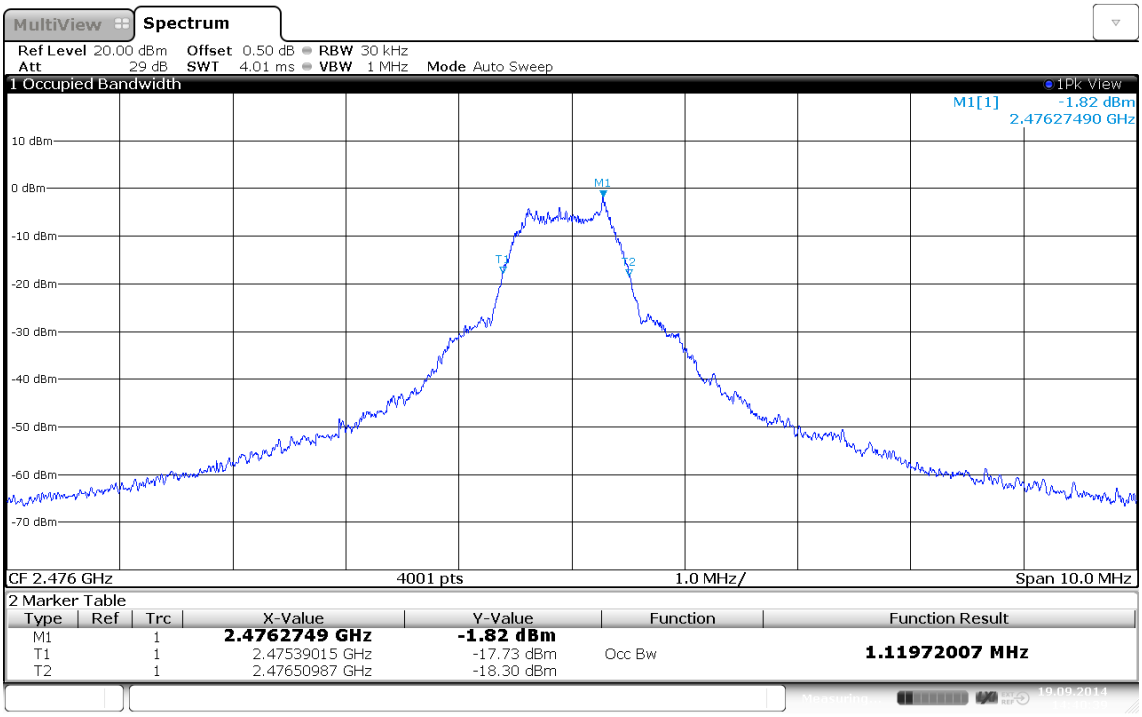
Date: 19.SEP.2014 14:24:36

**Occupied Bandwidth – $F_{HIGH}$**

## Occupied Bandwidth acc. to RSS-Gen

Project Number: G0M-1405-3862

| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD. |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Wilfried Treffke |
| Test Conditions: | Tnom / Vnom |
| Mode: | Tx, FSK, 2476 MHz, modulated |
| Test Date: | 2014-09-19 |
| Verdict: | PASS |
| Note 1: | A spectrum analyzer with an integrated 99% power bandwidth function is used |
| Note 2: | conducted measurement |




Occupied bandwidth: 1119.7 KHz

Date: 19.SEP.2014 14:40:39

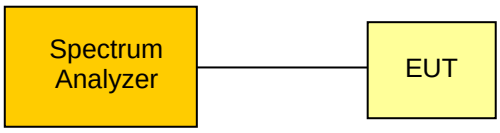
### 3.2 Test Conditions and Results – 20 dB Bandwidth

| **20 dB Bandwidth acc. FCC 15.247 / IC RSS-210** | **Verdict: PASS** |
|---|---|
| EUT requirement rule parts and clause | Reference |
| | FCC 15.247(a)(1) / IC RSS-210 A8.1 |
| Test according to measurement reference | Reference Method |
| | FCC Public Notice DA 00-705 |
| Test frequency range | Tested frequencies |
| | $F_{LOW}$ / $F_{MID}$ / $F_{HIGH}$ |

**Limits**

| Limit | Condition |
|---|---|
| 1.5 · Carrier spacing | Output power ≤ 125 mW / 21 dBm |
| 1.0 · Carrier spacing | 125 mW / 21 dBm < Output power ≤ 1 W / 30 dBm |

**Test setup**




**Test procedure**

1. EUT set to test mode (Communication tester is used if needed)
2. Span set to at least twice the emission spectrum
3. Detector set to peak and max hold
4. Envelope peak value of emission spectrum is selected
5. Marker on envelope of spectrum is set to level of -20 dB to the left of the peak
6. Marker on envelope of spectrum is set to level of -20 dB to the right of the peak
7. 20dB Bandwidth is determined by marker frequency separation

**Test results**

| Channel | Frequency [MHz] | Mode | 20 dB Bandwidth [MHz] | Limit [MHz] | Result |
|---|---|---|---|---|---|
| $F_{LOW}$ | 2404 | Single | 1.1821 | 3.0 | PASS |
| $F_{MID}$ | 2440 | Single | 1.1965 | 3.0 | PASS |
| $F_{HIGH}$ | 2476 | Single | 1.1965 | 3.0 | PASS |

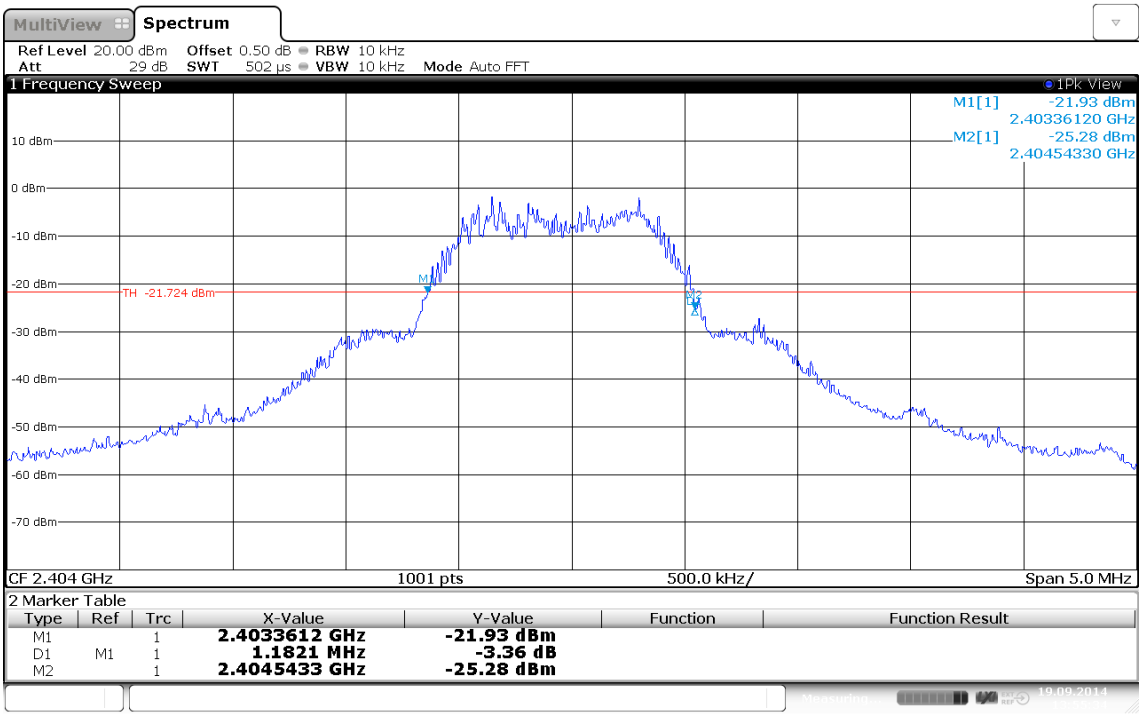
Comments:

**20 dB Bandwidth – $F_{LOW}$**

## 20 dB Bandwidth acc. to FCC 15.247

Project Number: G0M-1405-3862

| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD. |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Wilfried Treffke |
| Test Conditions: | Tnom / Vnom |
| Mode: | Tx, FSK, 2404 MHz, modulated |
| Test Date: | 2014-09-19 |
| Verdict: | PASS |
| Note 1: | FCC part 15 section 247 (a) |
| Note 2: | |




20 dB bandwidth: 1182.1 KHz

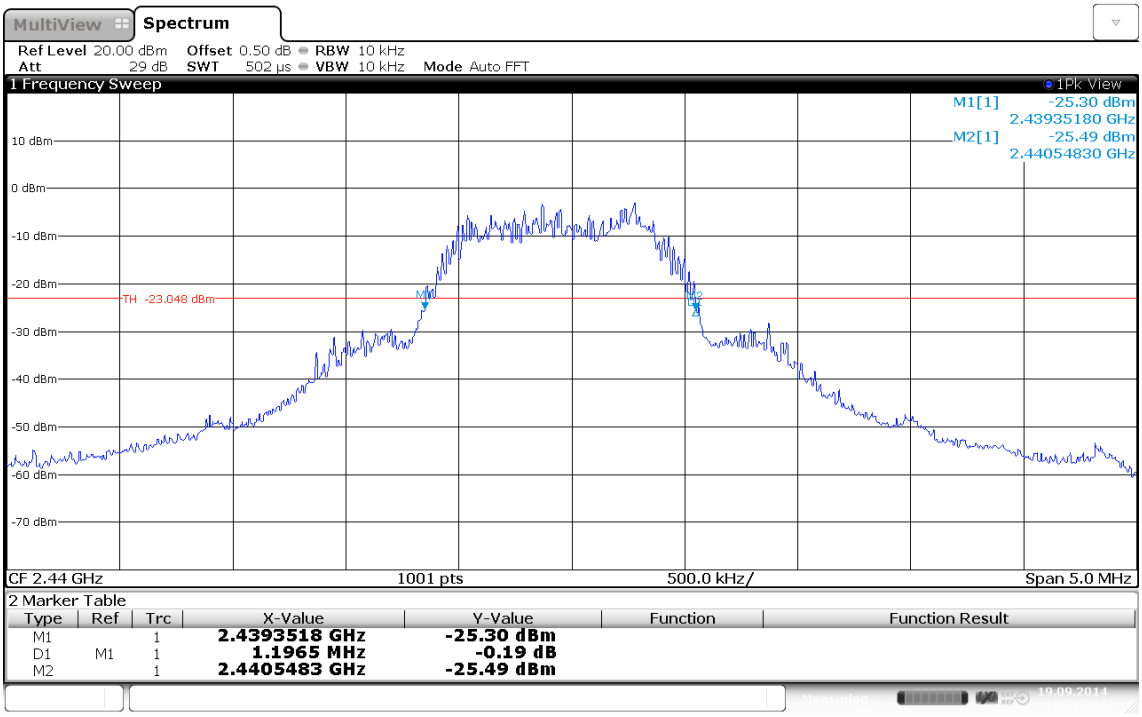
Date: 19.SEP.2014 13:55:34

**20 dB Bandwidth – $F_{MID}$**

## 20 dB Bandwidth acc. to FCC 15.247

Project Number: G0M-1405-3862

| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD. |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Wilfried Treffke |
| Test Conditions: | Tnom / Vnom |
| Mode: | Tx, FSK, 2440 MHz, modulated |
| Test Date: | 2014-09-19 |
| Verdict: | PASS |
| Note 1: | FCC part 15 section 247 (a) |
| Note 2: | |




20 dB bandwidth: 1196.5 KHz

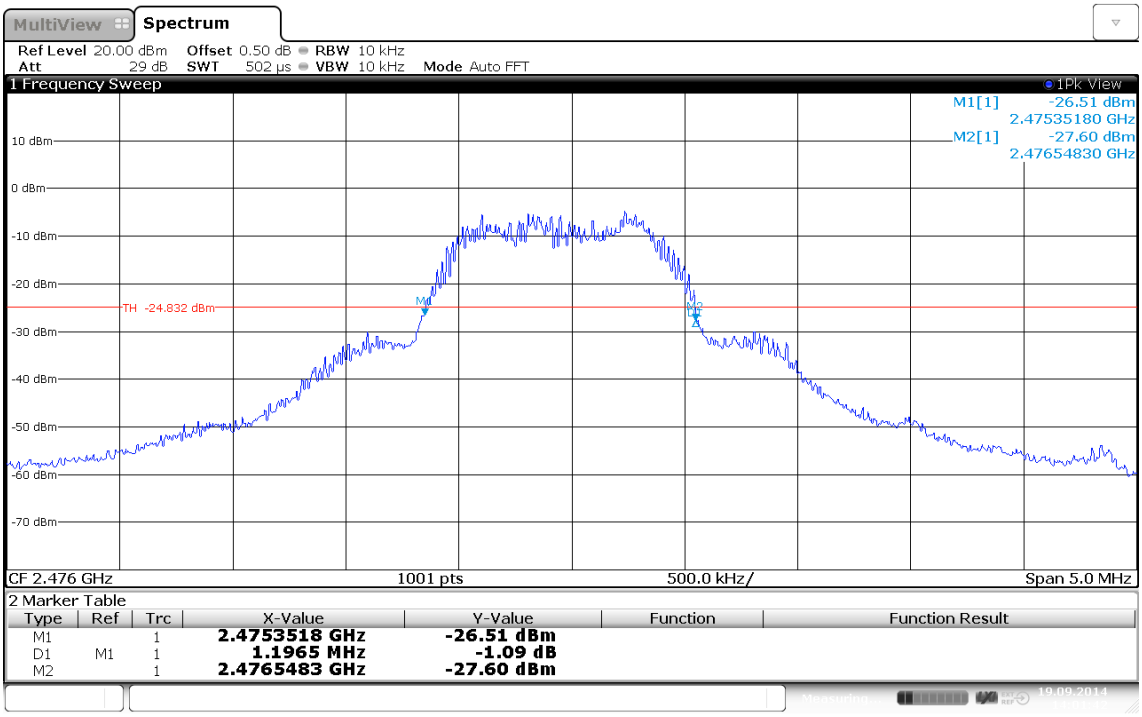
Date: 19.SEP.2014 13:58:56

**20 dB Bandwidth – $F_{HIGH}$**

## 20 dB Bandwidth acc. to FCC 15.247

Project Number: G0M-1405-3862

| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD. |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Wilfried Treffke |
| Test Conditions: | Tnom / Vnom |
| Mode: | Tx, FSK, 2476 MHz, modulated |
| Test Date: | 2014-09-19 |
| Verdict: | PASS |
| Note 1: | FCC part 15 section 247 (a) |
| Note 2: | |




20 dB bandwidth: 1196.5 KHz

Date: 19.SEP.2014 14:01:42

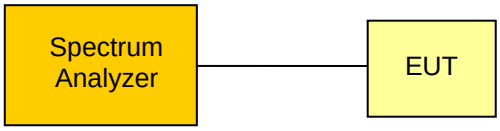
### 3.3 Test Conditions and Results – Number of hopping frequencies

| **Number of hopping frequencies acc. FCC 15.247 / IC RSS-210** | **Verdict: PASS** |
|---|---|
| EUT requirement rule parts and clause | Reference |
| | FCC 15.247(a)(1)(iii) / IC RSS-210 A8.1 |
| Test according to measurement reference | Reference Method |
| | FCC Public Notice DA 00-705 |
| Test frequency range | Tested frequencies |
| | $F_{LOW}$ - $F_{HIGH}$ |
| EUT test mode | Hopping |

**Limits**

| Limit | Condition |
|---|---|
| Number of hopping channels ≥ 15 | Output power ≤ 125 mW / 21 dBm |
| Number of hopping channels ≥ 75 | 125 mW / 21 dBm < Output power ≤ 1 W / 30 dBm |

**Test setup**




**Test procedure**

1. EUT set to test mode (Communication tester is used if needed)
2. Span set to measurement frequency range
3. Detector set to peak and max hold
4. Resolution bandwidth is set small enough to resolve hopping channel emission spectra
5. The number of peaks is counted to determine number of hopping frequencies

**Test results**

| Number of hopping frequencies | Limit | Result |
|---|---|---|
| 29 | ≥ 15 | PASS |

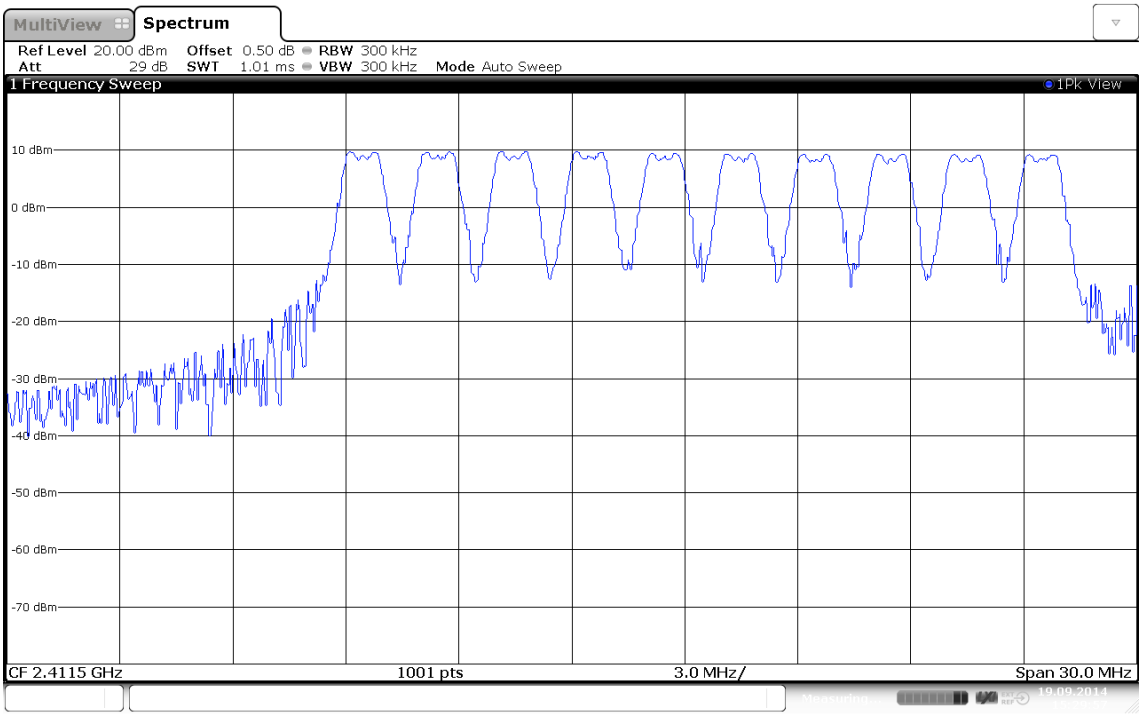
Comments:

**Number of hopping frequencies - Range A**

## Number of Hopping Frequencies acc. to FCC 15.247

Project Number: G0M-1405-3862

| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD. |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Wilfried Treffke |
| Test Conditions: | Tnom / Vnom |
| Mode: | Tx, GFSK, hopping mode |
| Test Date: | 2014-09-19 |
| Verdict: | PASS |
| Note 1: | Number of Hopping Frequencies (DA 00-705 Meas Guidance) |
| Note 2: | conducted measurement; channel 1 -10 |



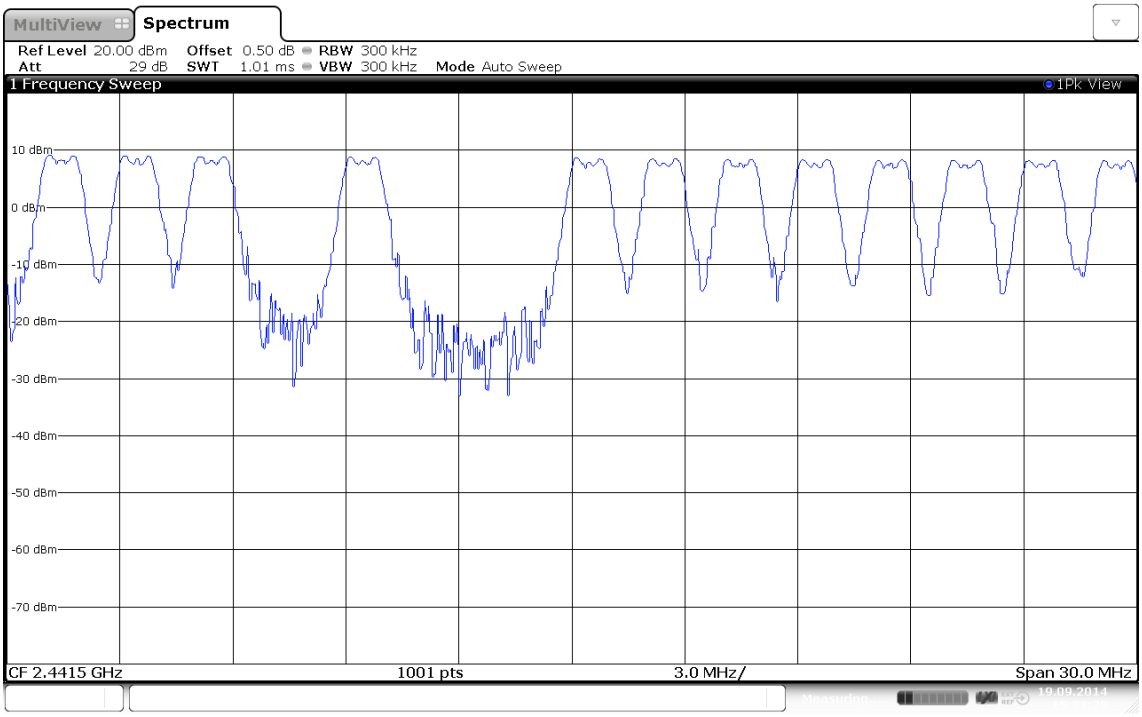

Number of hopping frequencies
Date: 19.SEP.2014 15:29:57

**Number of hopping frequencies - Range B**

## Number of Hopping Frequencies acc. to FCC 15.247

Project Number: G0M-1405-3862

| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD. |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Wilfried Treffke |
| Test Conditions: | Tnom / Vnom |
| Mode: | Tx, FSK, hopping mode |
| Test Date: | 2014-09-19 |
| Verdict: | PASS |
| Note 1: | Number of Hopping Frequencies (DA 00-705 Meas Guidance) |
| Note 2: | conducted measurement; channel 11 - 22 |



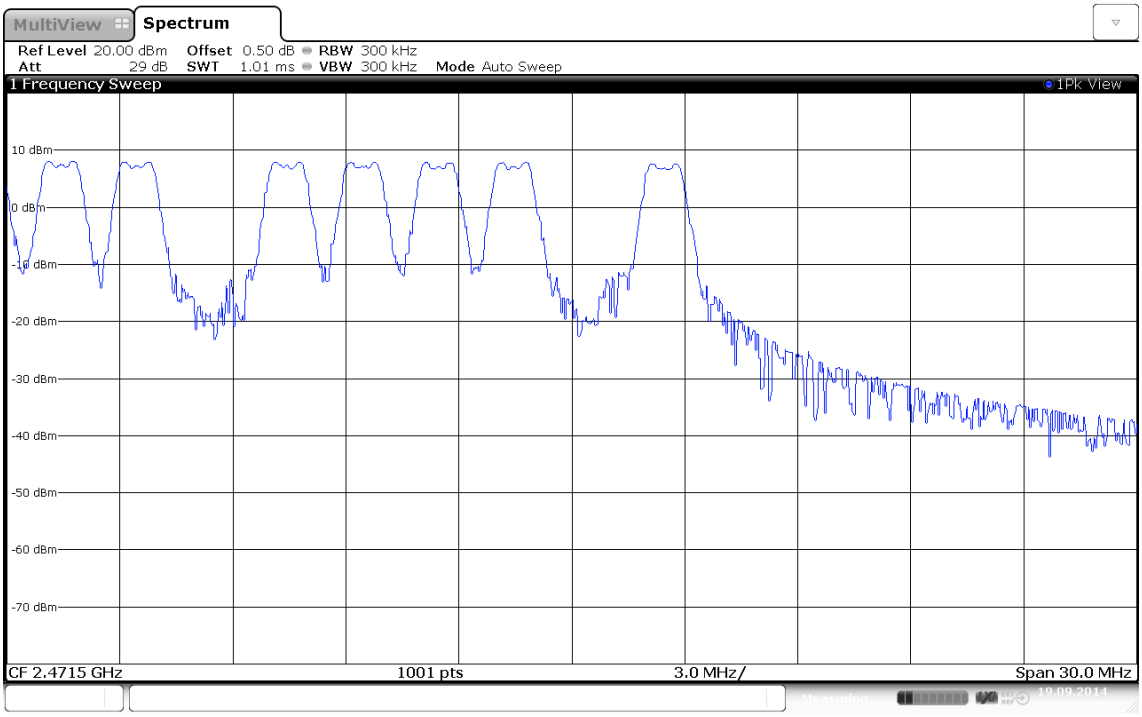

Number of hopping frequencies
Date: 19.SEP.2014 15:31:28

**Number of hopping frequencies - Range C**

## Number of Hopping Frequencies acc. to FCC 15.247

Project Number: G0M-1405-3862

| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD. |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Wilfried Treffke |
| Test Conditions: | Tnom / Vnom |
| Mode: | Tx, GFSK, hopping mode |
| Test Date: | 2014-09-19 |
| Verdict: | PASS |
| Note 1: | Number of Hopping Frequencies (DA 00-705 Meas Guidance) |
| Note 2: | conducted measurement; channel 22 -29 |




Number of hopping frequencies
Date: 19.SEP.2014 15:34:26

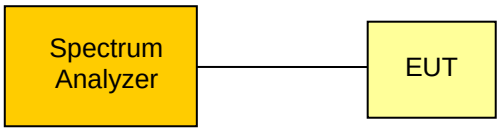
### 3.4 Test Conditions and Results – Frequency hopping channel separation

| **Frequency hopping channel separation acc. FCC 15.247 / IC RSS-210** | **Verdict: PASS** |
|---|---|
| EUT requirement rule parts and clause | Reference |
| | FCC 15.247(a)(1) / IC RSS-210 A8.1 |
| Test according to measurement reference | Reference Method |
| | FCC Public Notice DA 00-705 |
| Test frequency range | Tested frequencies |
| | 2441 & 2442 MHz |
| EUT test mode | Hopping |

**Limits**

| Limit | Condition |
|---|---|
| ≥ 25 kHz or ⅔ of 20 dB bandwidth | Output power ≤ 125 mW / 21 dBm |
| ≥ 25 kHz or 20 dB bandwidth | 125 mW / 21 dBm < Output power ≤ 1 W / 30 dBm |

**Test setup**




**Test procedure**

1. EUT set to test mode (Communication tester is used if needed)
2. Span set to measurement frequency range
3. Detector set to peak and max hold
4. Resolution bandwidth is set small enough to resolve hopping channel emission spectra
5. The two adjacent channel peaks are marked
6. Channel separation is determined from frequency separation of markers

**Test results**

| Channel separation [kHz] | Limit [kHz] | Result |
|---|---|---|
| 2010.0 | ≥ ⅔ · 1196.5 = 797.66 | PASS |

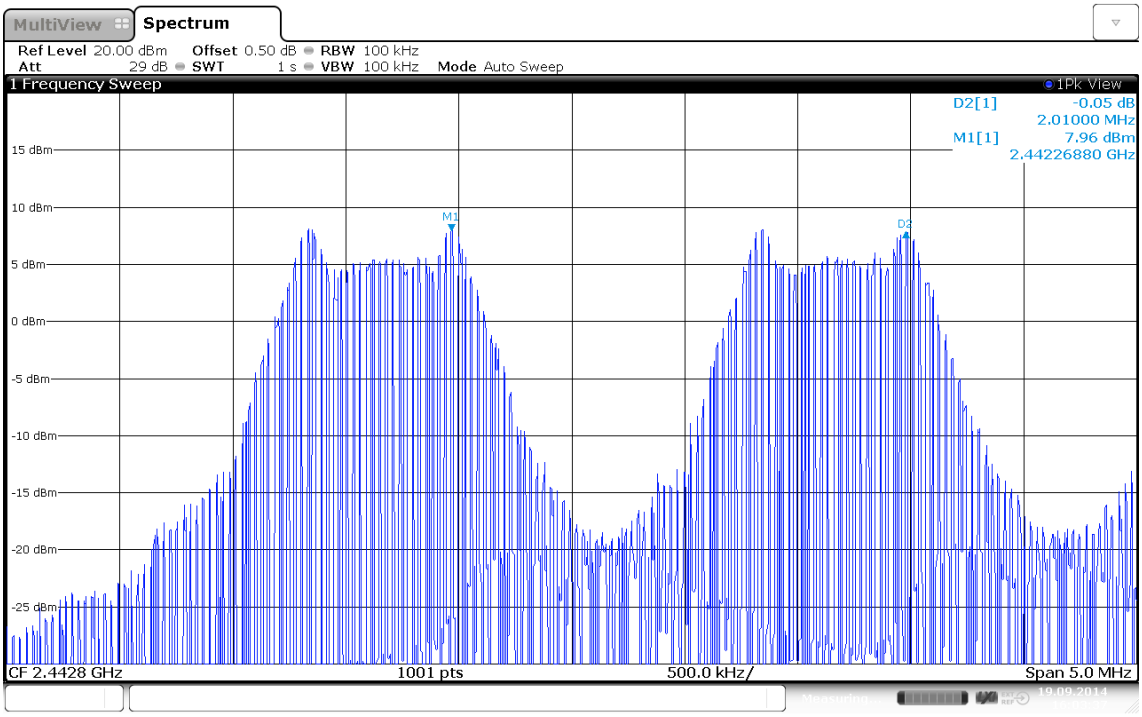
Comments:

**Frequency hopping channel separation**

## Carrier Frequency Separation acc. to FCC 15.247

Project Number: G0M-1405-3862

| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD. |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Wilfried Treffke |
| Test Conditions: | Tnom / Vnom |
| Mode: | Tx, GFSK, hopping mode |
| Test Date: | 2014-09-19 |
| Verdict: | PASS |
| Note 1: | Carrier Frequency Separation (DA 00-705 Meas Guidance) |
| Note 2: | conducted measurement |




Limit: > two-thirds of the 20 dB bandwidth ; Result: Pass

Date: 19.SEP.2014 16:03:37

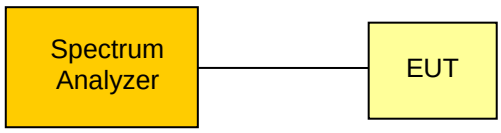
### 3.5 Test Conditions and Results – Time of occupancy (Dwell Time)

| **Time of occupancy (Dwell time) acc. FCC 15.247 / IC RSS-210** | **Verdict: PASS** |
|---|---|
| EUT requirement rule parts and clause | Reference |
| | FCC 15.247(a)(1)(iii) / IC RSS-210 A8.1 |
| Test according to measurement reference | Reference Method |
| | FCC Public Notice DA 00-705 |
| Test frequency range | Tested frequencies |
| | 2442 MHz |
| EUT test mode | Hopping |

**Limits**

| Limit |
|---|
| Time of occupancy ≤ 0.4 s within 0.4 s · Number of hopping channels |

**Test setup**




**Test procedure**

1. EUT set to test mode (Communication tester is used if needed)
2. Center frequency set to test channel center frequency
3. Span set to zero span and detector to peak and max hold
4. Resolution bandwidth is set to 100kHz and sweep time to observation period
5. Time of occupancy determined from number of peaks multiplied by single hop dwell time

**Test results**

| Observation period [s] | No. of hops | Dwell time/hop [s] | Time of occupancy [s] | Limit [s] | Result |
|---|---|---|---|---|---|
| 11.6 | 29 | 0.00052 | 0.0999 | ≤ 0.4 | PASS |

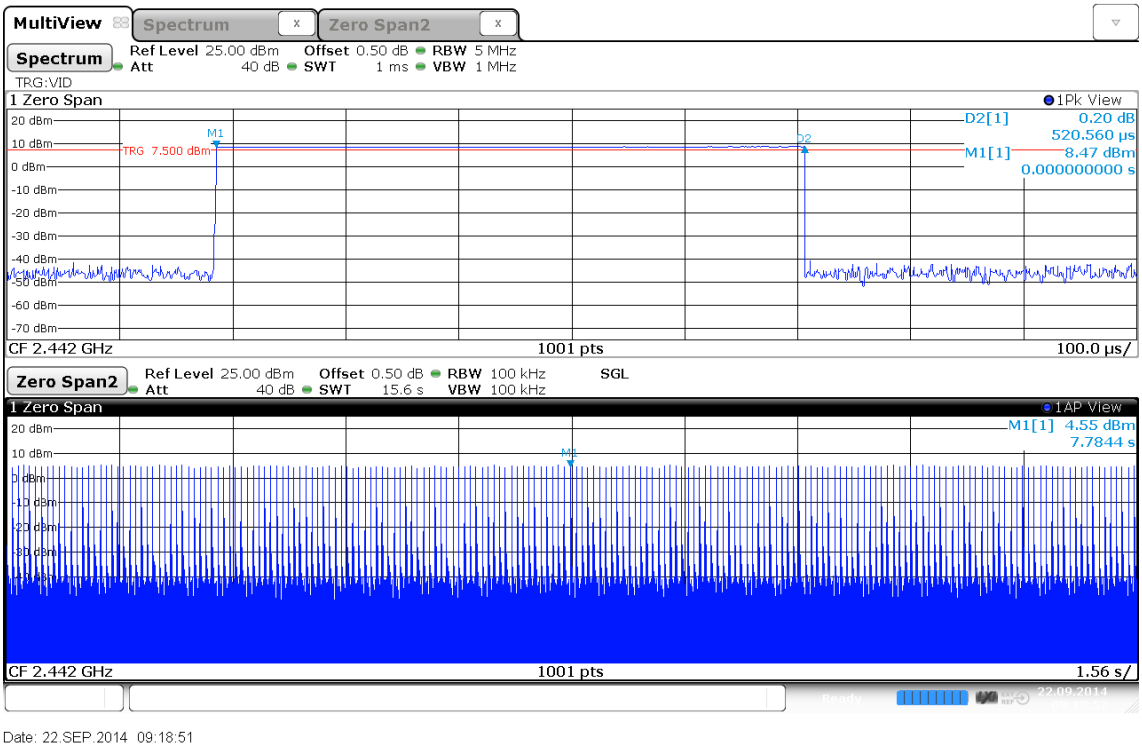
Comments:

**Time of occupancy**

## Time of Occupancy acc. to FCC 15.247

Project Number: G0M-1405-3862

| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD. |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Wilfried Treffke |
| Test Conditions: | Tnom / Vnom |
| Mode: | Tx, FSK, channel 2442MHz, hopping mode |
| Test Date: | 2014-09-22 |
| Verdict: | PASS |
| Note 1: | 192 events * 0.5205ms; Result:99.9ms Limit<0.4s |
| Note 2: | conducted measurement, (DA 00-705 Meas Guidance) |




Date: 22.SEP.2014 09:18:51

### 3.6 Test Conditions and Results – Maximum peak conducted power

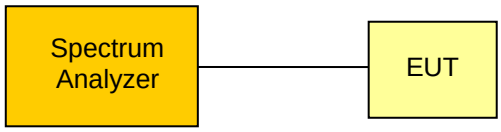
| **Maximum peak conducted power acc. FCC 15.247 / IC RSS-210** | **Verdict: PASS** |
|---|---|
| EUT requirement rule parts and clause | Reference |
| | FCC 15.247(b)(1) / IC RSS-210 A8.4 |
| Test according to measurement reference | Reference Method |
| | FCC Public Notice DA 00-705 |
| Test frequency range | Tested frequencies |
| | $F_{LOW}$ / $F_{MID}$ / $F_{HIGH}$ |
| Measurement mode | Peak |
| Maximum antenna gain | 1.9 dBi ⇒ Limit correction = 0 dB |

**Limits**

| Limit | Condition |
|---|---|
| 1 W (30 dBm) | Number of hopping channels ≥ 75 |
| 0.125 W (21 dBm) | 75 > Number of hopping channels ≥ 15 |

The conducted output power limit specified above is based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in the table, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

**Test setup**




**Test procedure**

1. EUT set to test mode (Communication tester is used if needed)
2. Center frequency set to test channel center frequency
3. Span set to twice the 20 dB bandwidth and detector to peak and max hold
4. Resolution bandwidth is set to 3 MHz
5. Peak conducted power is determined from peak of spectrum envelope

**Test results**

| Channel | Frequency [MHz] | Voltage | Mode | Peak power [dbm] | Peak power [W] | Limit [dBm] | Margin [dB] | Result |
|---|---|---|---|---|---|---|---|---|
| $F_{LOW}$ | 2404 | 6.0 VDC | Single | 3.42 | 0.002 | 30 | -26.58 | PASS |
| $F_{MID}$ | 2440 | 6.0 VDC | Single | 1.76 | 0.001 | 30 | -28.24 | PASS |
| $F_{HIGH}$ | 2476 | 6.0 VDC | Single | 0.63 | 0.001 | 30 | -29.37 | PASS |

Comments:

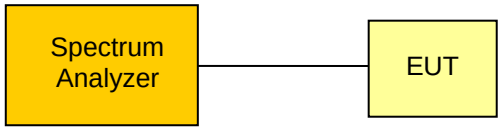
### 3.7 Test Conditions and Results – Band edge compliance

| **Band-edge compliance acc. FCC 15.247 / IC RSS-210** | **Verdict: PASS** |
|---|---|
| EUT requirement rule parts and clause | Reference |
| | FCC 15.247(d) / IC RSS-210 A8.5 |
| Test according to measurement reference | Reference Method |
| | FCC Public Notice DA 00-705 |
| Test frequency range | Tested frequencies |
| | $F_{LOW}$ / $F_{HIGH}$ |
| Measurement mode | Peak |

**Limits**

| Limit | Condition |
|---|---|
| ≤ -20 dB/100 kHz | Peak power measurement detector = Peak |
| ≤ -30 dB/100 kHz | Peak power measurement detector = RMS |

**Test setup**




**Test procedure**

1. EUT set to test mode (Communication tester is used if needed)
2. Span set around lower band edge and detector is set to peak and max hold
3. Resolution bandwidth is set to 100 kHz
4. Markers are set to peak emission levels within frequency band and outside frequency band
5. Band edge attenuation is determined from level difference

**Test results**

| Channel | Frequency [MHz] | Mode | Level [dBc] | Limit [dBc] | Margin [dB] | Result |
|---|---|---|---|---|---|---|
| $F_{LOW}$ | 2404 | Single | -54.91 | -20 | -34.91 | PASS |
| $F_{HIGH}$ | 2476 | Single | -61.53 | -20 | -41.53 | PASS |
| $F_{LOW}$ | 2404 | Hopping | -46.87 | -20 | -26.87 | PASS |
| $F_{HIGH}$ | 2476 | Hopping | -51.61 | -20 | -31.61 | PASS |

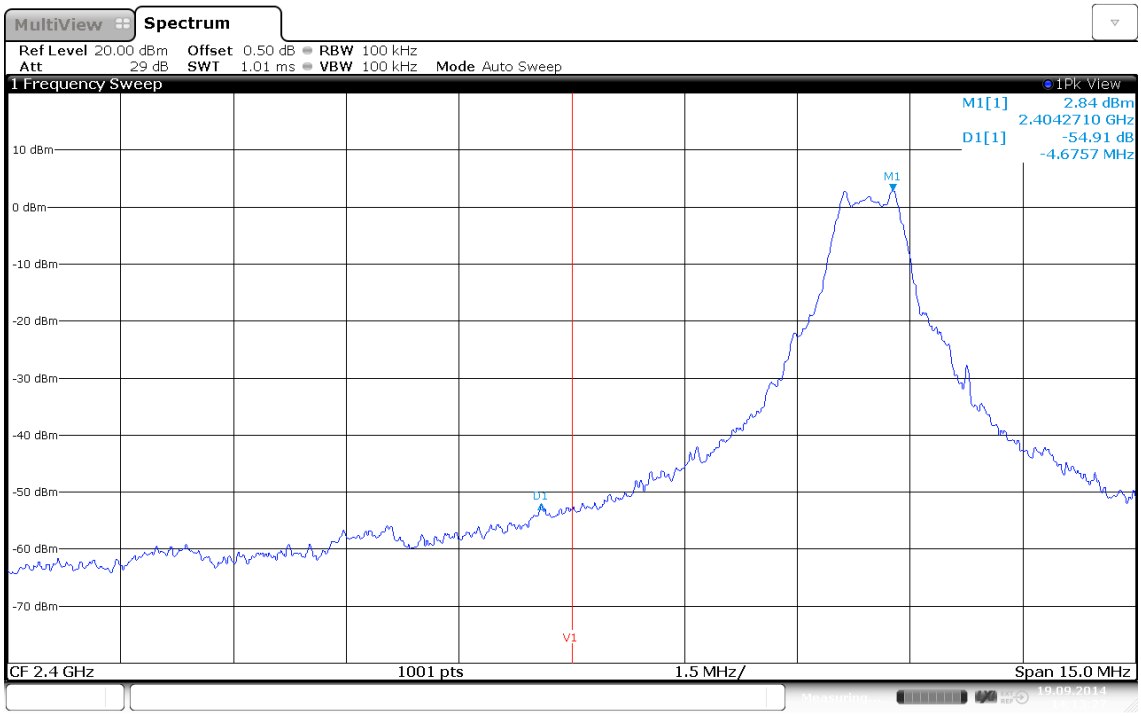
Comments:

**Band-edge compliance – Single $F_{LOW}$**

## Band-edge compliance of RF conducted emission acc. to FCC 15.247

Project Number: G0M-1405-3862

| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD. |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Wilfried Treffke |
| Test Conditions: | Tnom / Vnom |
| Mode: | Tx, FSK, 2404 MHz, modulated |
| Test Date: | 2014-09-19 |
| Verdict: | PASS |
| Note 1: | FCC part 15 section 247 (c) |
| Note 2: | Single frequency mode |




Limit: Marker Delta value >20 dB; Result: PASS

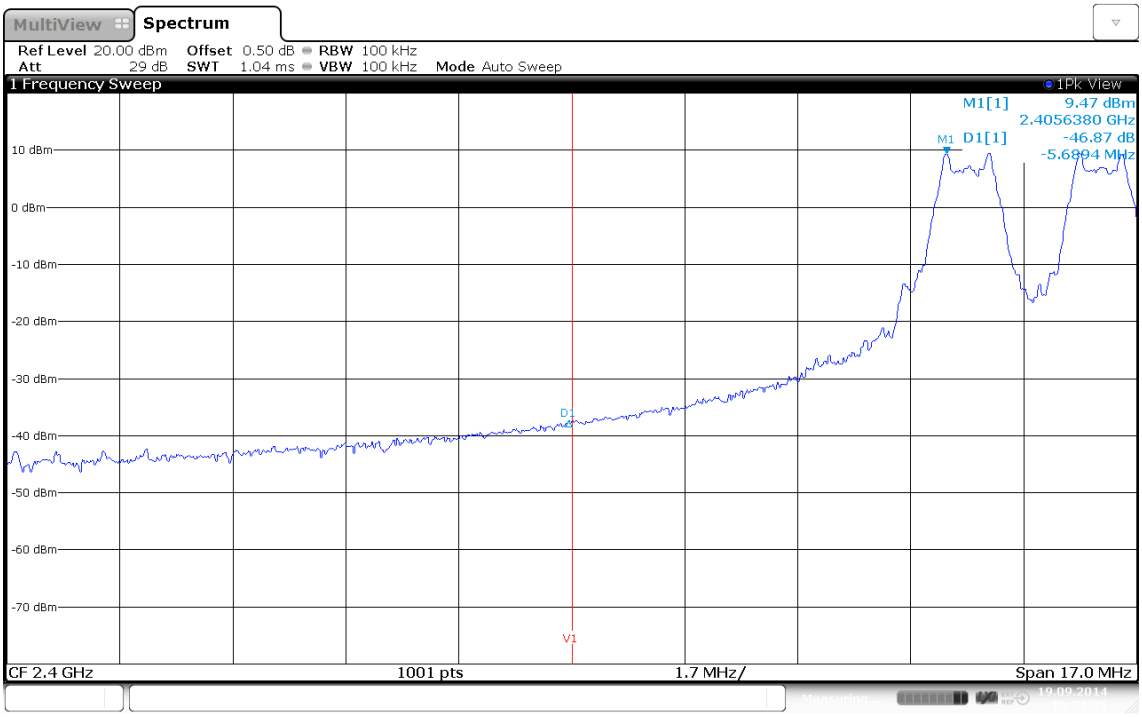
Date: 19.SEP.2014 14:13:26

**Band-edge compliance – Hopping $F_{LOW}$**

## Band-edge compliance acc. to FCC 15.247

Project Number: G0M-1405-3862

| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD. |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Wilfried Treffke |
| Test Conditions: | Tnom / Vnom |
| Mode: | Tx,FSK, 2404 MHz, hopping mode |
| Test Date: | 2014-09-19 |
| Verdict: | PASS |
| Note 1: | Marker-delta method (DA 00-705 Meas Guidance) |
| Note 2: | lower Band-edge, conducted measurement |



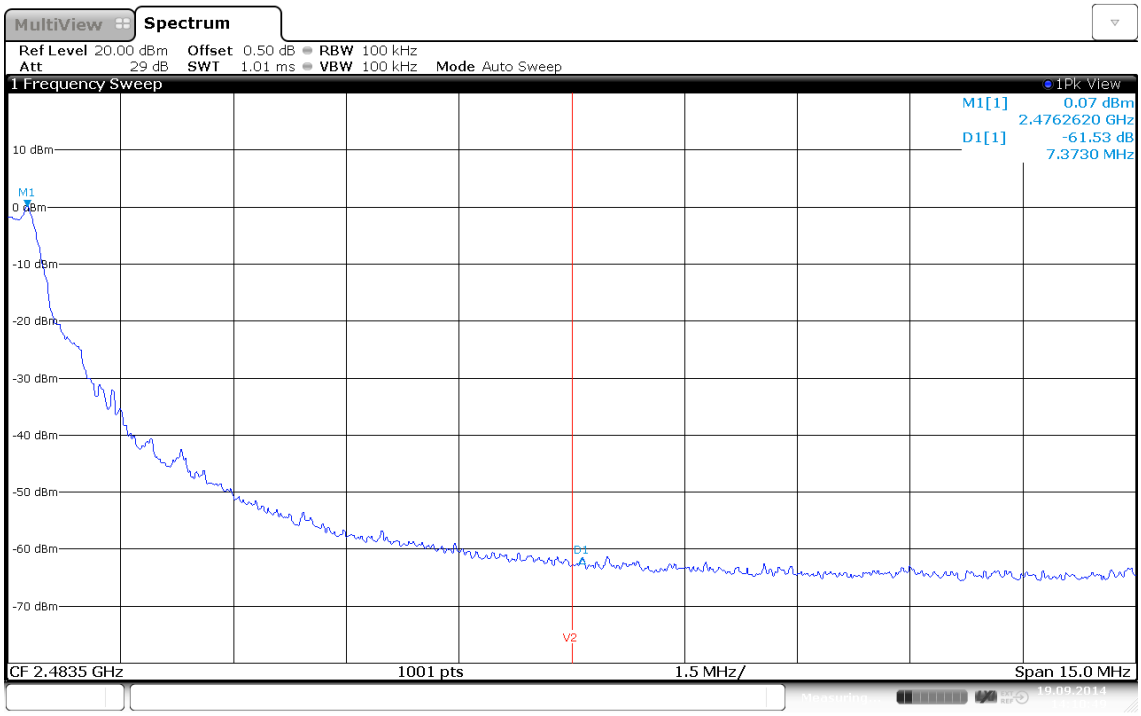

Limit: Marker Delta value >20 dB; Result: PASS
Date: 19.SEP.2014 16:24:21

**Band-edge compliance – Single $F_{HIGH}$**

## Band-edge compliance of RF conducted emission acc. to FCC 15.247

Project Number: G0M-1405-3862

| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD. |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Wilfried Treffke |
| Test Conditions: | Tnom / Vnom |
| Mode: | Tx, FSK, 2476 MHz, modulated |
| Test Date: | 2014-09-19 |
| Verdict: | PASS |
| Note 1: | FCC part 15 section 247 (c) |
| Note 2: | Single frequency mode |




Limit: Marker Delta value >20 dB; Result: PASS

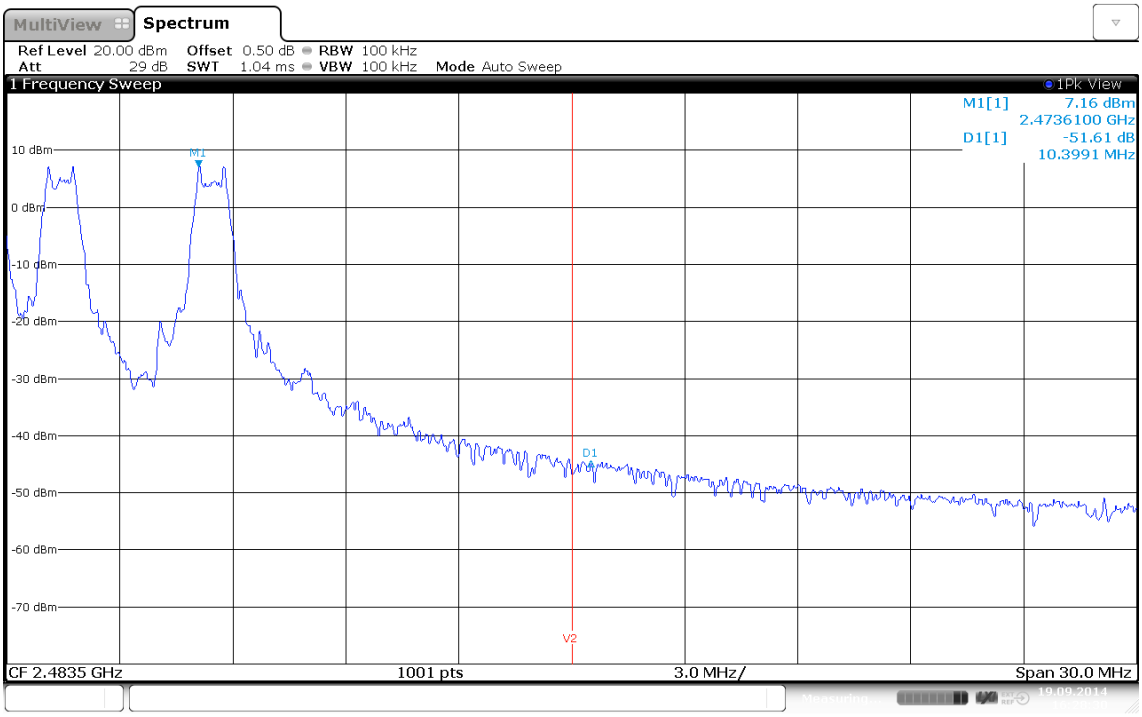
Date: 19.SEP.2014 14:10:49

**Band-edge compliance – Hopping $F_{HIGH}$**

## Band-edge compliance acc. to FCC 15.247

Project Number: G0M-1405-3862

| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD. |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Wilfried Treffke |
| Test Conditions: | Tnom / Vnom |
| Mode: | Tx,FSK, 2476 MHz, hopping mode |
| Test Date: | 2014-09-19 |
| Verdict: | PASS |
| Note 1: | Marker-delta method (DA 00-705 Meas Guidance) |
| Note 2: | upper Band-edge, conducted measurement |




Limit: Marker Delta value >20 dB; Result: PASS
Date: 19.SEP.2014 16:28:30

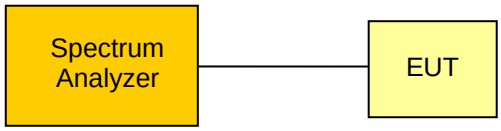
### 3.8 Test Conditions and Results – Conducted spurious emissions

| **Conducted spurious emissions acc. FCC 15.247 / IC RSS-210** | **Verdict: PASS** |
|---|---|
| EUT requirement rule parts and clause | Reference |
| | FCC 15.247(d) / IC RSS-210 A8.5 |
| Test according to measurement reference | Reference Method |
| | FCC Public Notice DA 00-705 |
| Test frequency range | Tested frequencies |
| | 10 MHz – 10th Harmonic |
| Measurement mode | Peak |

**Limits**

| Limit | Condition |
|---|---|
| ≤ -20 dB/100 kHz | Peak power measurement detector = Peak |
| ≤ -30 dB/100 kHz | Peak power measurement detector = RMS |

**Test setup**




**Test procedure**

1. EUT set to test mode (Communication tester is used if needed)
2. Span it set according to measurement range
3. Resolution bandwidth is set to 100 kHz and detector to peak and max hold
4. Markers are set to peak emission levels within frequency band
5. Emission level is determined by second marker on emission peak
6. Attenuation is determined from level difference

**Test results**

| Channel | Frequency [MHz] | Mode | Emission [MHz] | Emission Level [dbm] | Peak power [dBm] | Limit [dBm] | Margin [dB] | Result |
|---|---|---|---|---|---|---|---|---|
| $F_{LOW}$ | 2404 | Single | no significant spurious emissions | | | | | PASS |
| $F_{MID}$ | 2440 | Single | no significant spurious emissions | | | | | PASS |
| $F_{HIGH}$ | 2476 | Single | no significant spurious emissions | | | | | PASS |

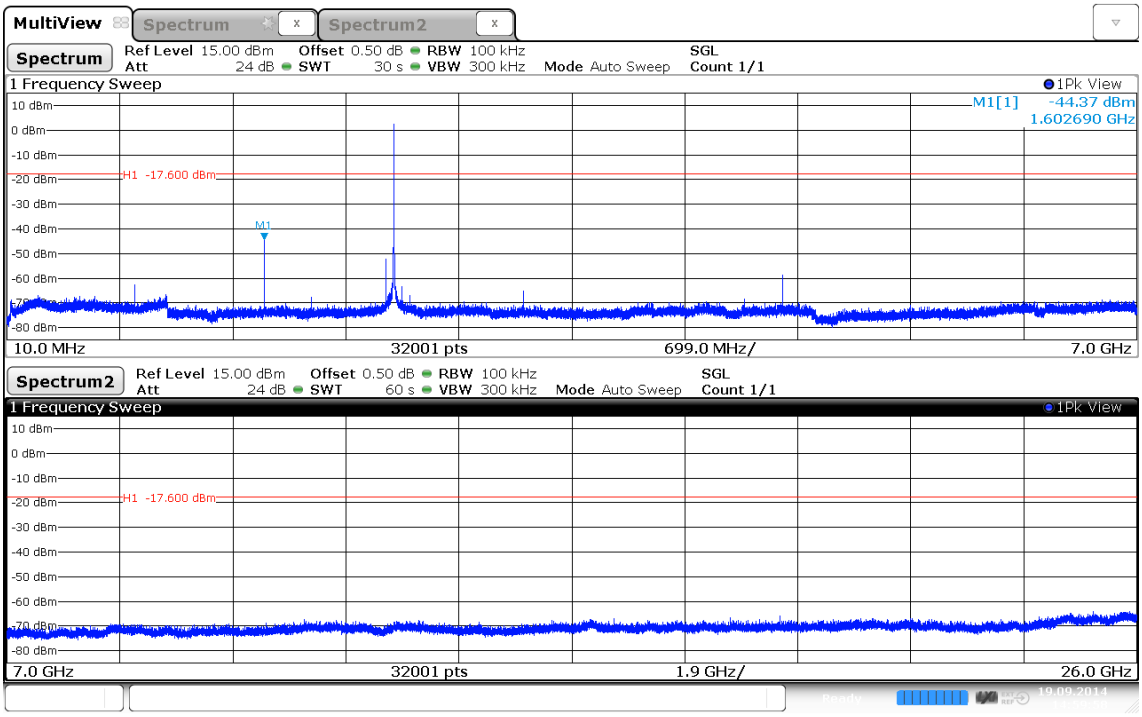
Comments:

**Conducted spurious emissions – $F_{LOW}$**

## Spurious Emissions acc. to FCC 15.247

Project Number: G0M-1405-3862

| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD. |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Wilfried Treffke |
| Test Conditions: | Tnom / Vnom |
| Mode: | Tx, FSK, 2404 MHz, modulated |
| Test Date: | 2014-09-19 |
| Verdict: | PASS |
| Note 1: | Spurious in non-restricted frequency bands (DA 00-705 Meas Guidance) |
| Note 2: | conducted measurement |



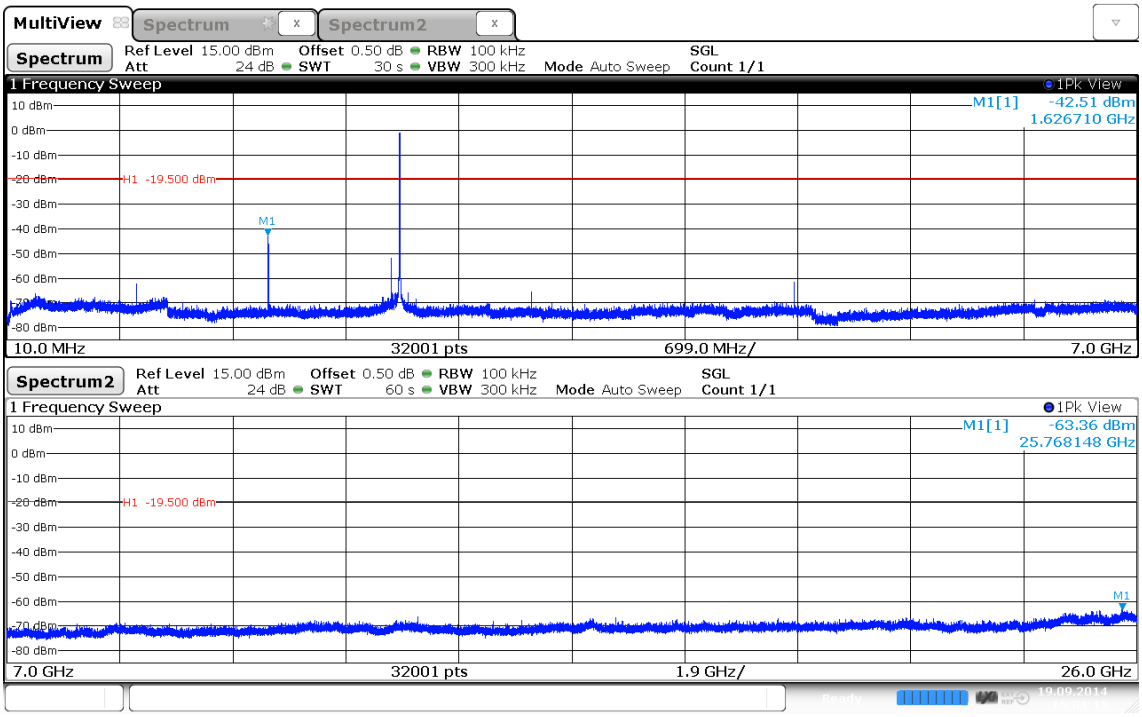

Date: 19.SEP.2014 14:59:58

**Conducted spurious emissions – $F_{MID}$**

## Spurious Emissions acc. to FCC 15.247

Project Number: G0M-1405-3862

| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD. |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Wilfried Treffke |
| Test Conditions: | Tnom / Vnom |
| Mode: | Tx, FSK, 2440 MHz, modulated |
| Test Date: | 2014-09-19 |
| Verdict: | PASS |
| Note 1: | Spurious in non-restricted frequency bands (DA 00-705 Meas Guidance) |
| Note 2: | conducted measurement |



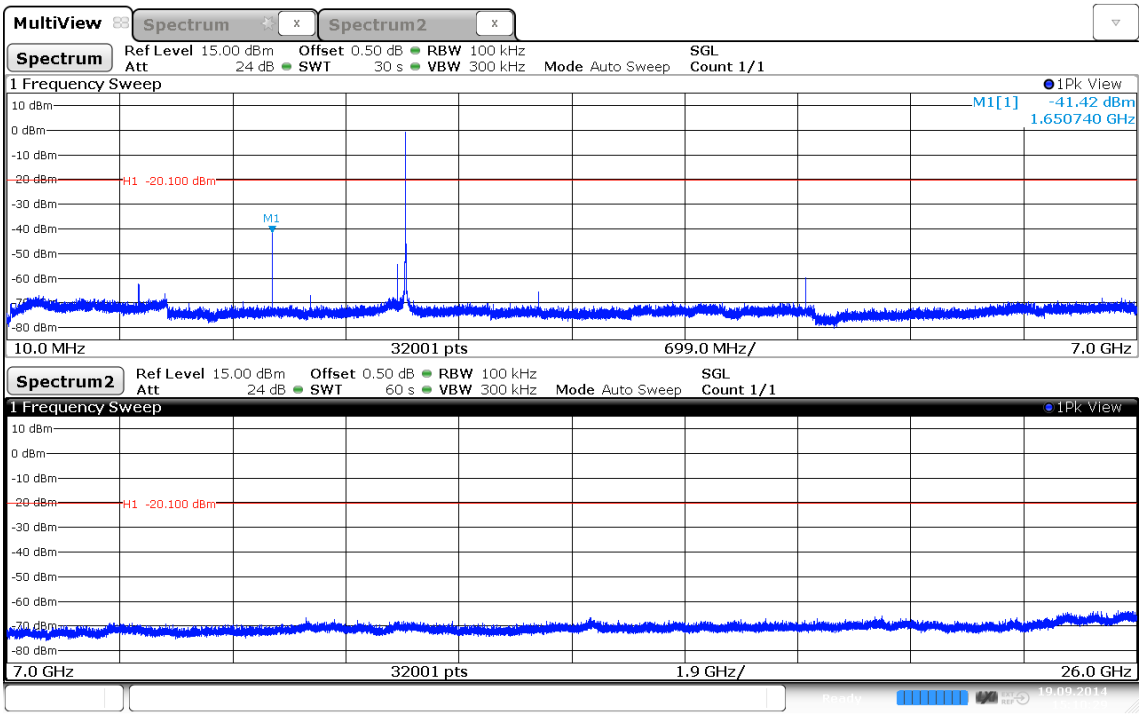

Date: 19.SEP.2014 15:04:14

**Conducted spurious emissions – $F_{HIGH}$**

## Spurious Emissions acc. to FCC 15.247

Project Number: G0M-1405-3862

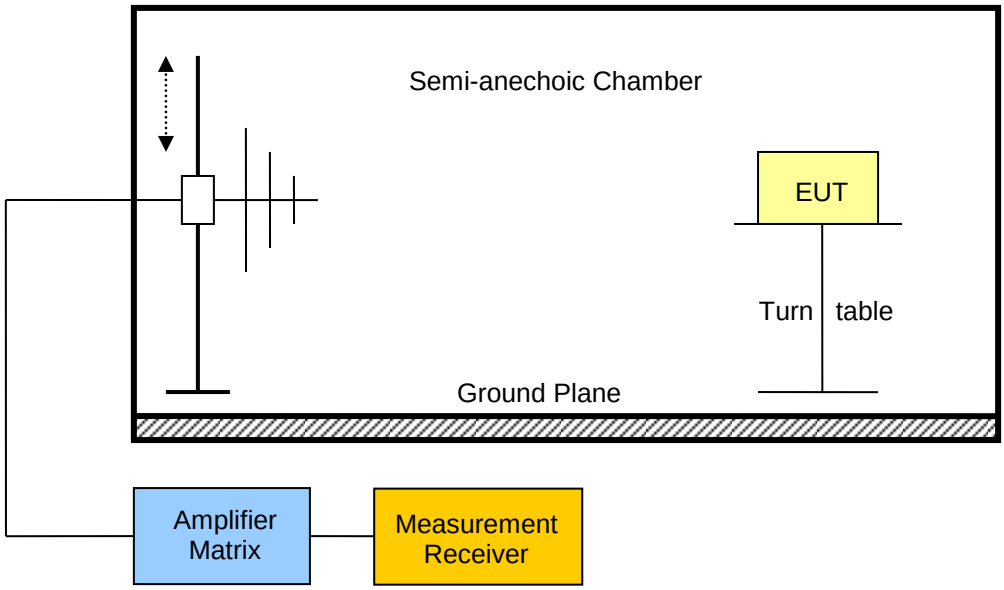
| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD. |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Wilfried Treffke |
| Test Conditions: | Tnom / Vnom |
| Mode: | Tx, FSK, 2476 MHz, modulated |
| Test Date: | 2014-09-19 |
| Verdict: | PASS |
| Note 1: | Spurious in non-restricted frequency bands (DA 00-705 Meas Guidance) |
| Note 2: | conducted measurement |




Date: 19.SEP.2014 15:10:29

### 3.9 Test Conditions and Results – Transmitter radiated emissions

| **Transmitter radiated emissions acc. FCC 47 CFR 15.247 / IC RSS-210** | | | | **Verdict: PASS** |
|---|---|---|---|---|
| Test according referenced standards | | Reference Method | | |
| | | FCC 15.247(d) / IC RSS-210 A8.5 | | |
| Test according to measurement reference | | Reference Method | | |
| | | FCC Public Notice DA 00-705 / ANSI C63.4 | | |
| Test frequency range | | Tested frequencies | | |
| | | 30 MHz – 10th Harmonic | | |
| **Limits** | | | | |
| Frequency range [MHz] | Detector | Limit [µV/m] | Limit [dBµV/m] | Limit Distance [m] |
| 30 – 88 | Quasi-Peak | 100 | 40 | 3 |
| 88 – 216 | Quasi-Peak | 150 | 43.5 | 3 |
| 216 – 960 | Quasi-Peak | 200 | 46 | 3 |
| 960 – 1000 | Quasi-Peak | 500 | 54 | 3 |
| > 1000 | Average | 500 | 54 | 3 |
| Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).<br>When average radiated emission measurements are specified, including average emission measurements below 1000 MHz, there also is a limit on the peak level of the radio frequency emissions. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test. | | | | |
| **Test setup** | | | | |



| Test procedure |
|---|
| 1. EUT set to test mode (Communication tester is used if needed)<br>2. Span it set according to measurement range<br>3. Resolution bandwidth below 1 GHz is set according to CISPR 16 with peak/quasi-peak detector and RBW of 1 MHz with peak/average detector is used above 1 GHz<br>4. Markers are set to peak emission levels within restricted bands |

**Test results**

| Channel | Frequency [MHz] | Mode | Emission [MHz] | Level [dbµV/m] | Det. | Pol. | Limit [dbµV/m] | Limit dist. [m]* | Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|
| $F_{LOW}$ | 2404 | Single | 2355 | 46.98 | pk | ver | 74.00 | 3 | -27.02 |
| $F_{LOW}$ | 2404 | Single | 2355 | 43.45 | RMS | ver | 54.00 | 3 | -10.55 |
| $F_{LOW}$ | 2404 | Single | 4808 | 48.92 | pk | hor | 74.00 | 3 | -25.08 |
| $F_{LOW}$ | 2404 | Single | 4808 | 52.95 | pk | ver | 74.00 | 3 | -21.05 |
| $F_{LOW}$ | 2404 | Single | 4808 | 39.84 | avg | ver | 54.00 | 3 | -14.16 |
| $F_{LOW}$ | 2404 | Single | 4808 | 47.08 | pk | ver | 74.00 | 3 | -26.92 |
| $F_{LOW}$ | 2404 | Single | 4808 | 39.84 | avg | ver | 54.00 | 3 | -14.16 |
| $F_{MID}$ | 2440 | Single | 4875 | 52.46 | pk | ver | 74.00 | 3 | -21.54 |
| $F_{HIGH}$ | 2476 | Single | 4808 | 53.47 | pk | ver | 74.00 | 3 | -20.53 |
| $F_{HIGH}$ | 2476 | Single | 4809 | 46.82 | pk | ver | 74.00 | 3 | -27.18 |
| $F_{HIGH}$ | 2476 | Single | 4809 | 38.23 | avg | ver | 54.00 | 3 | -15.77 |
| $F_{HIGH}$ | 2476 | Single | 4952 | 54.36 | pk | hor | 74.00 | 3 | -19.64 |
| $F_{HIGH}$ | 2476 | Single | 4952 | 50.32 | avg | hor | 54.00 | 3 | -03.68 |

Comments: * Physical distance between EUT and measurement antenna.

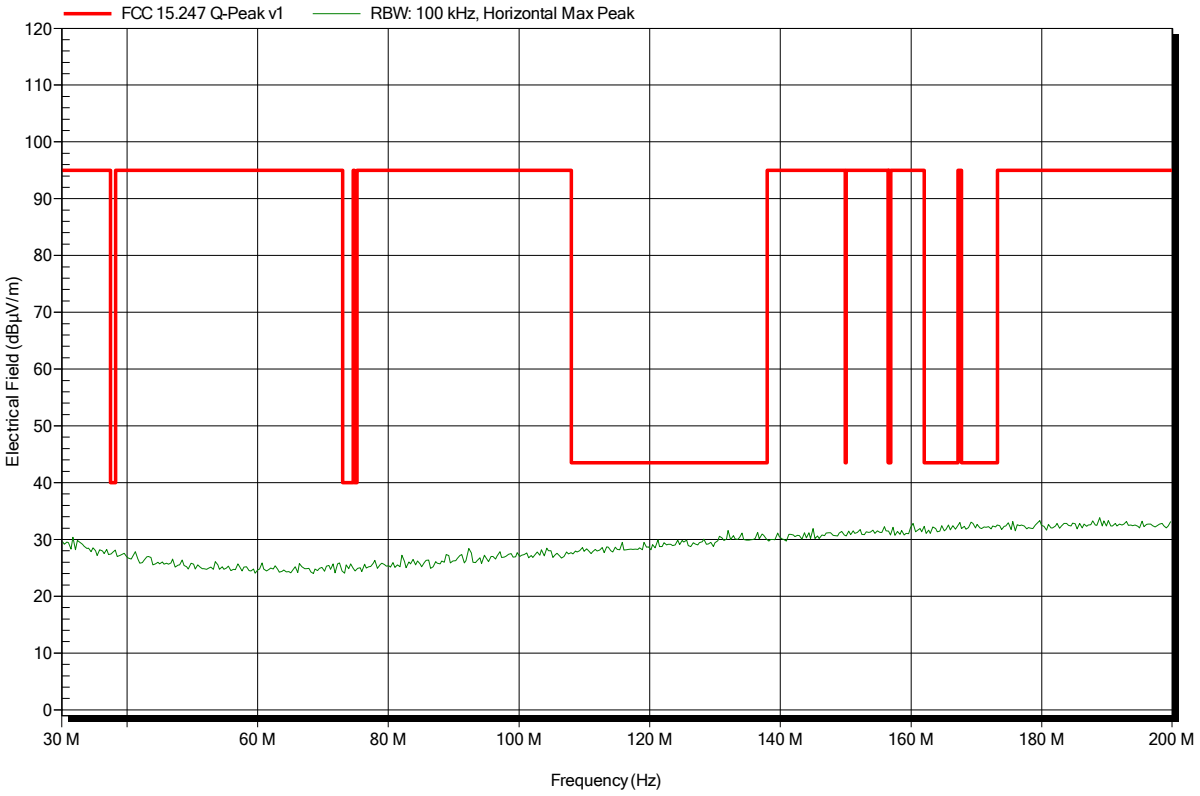
# ANNEX A Transmitter radiated spurious emissions

**Spurious emissions according to FCC 15.247**

Project number: G0M-1405-3862

| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Weber |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Rohde & Schwarz HK 116, Horizontal |
| Measurement distance: | 3 m |
| Mode: | TX; 2404 MHz |
| Test Date: | 2014-09-19 |
| Note: | worst case |

Index 1

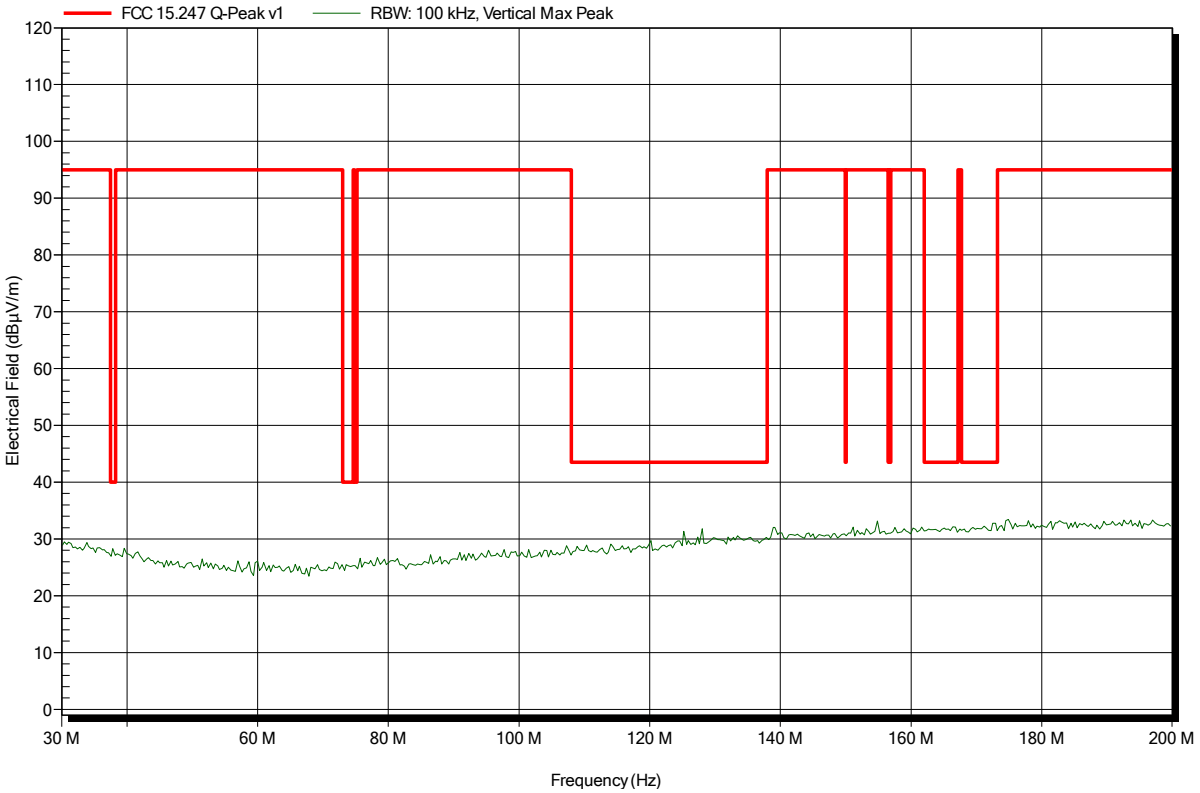


**Spurious emissions according to FCC 15.247**

Project number: G0M-1405-3862

| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Weber |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Rohde & Schwarz HK 116, Vertical |
| Measurement distance: | 3 m |
| Mode: | TX; 2404 MHz |
| Test Date: | 2014-09-19 |
| Note: | worst case |

Index 2

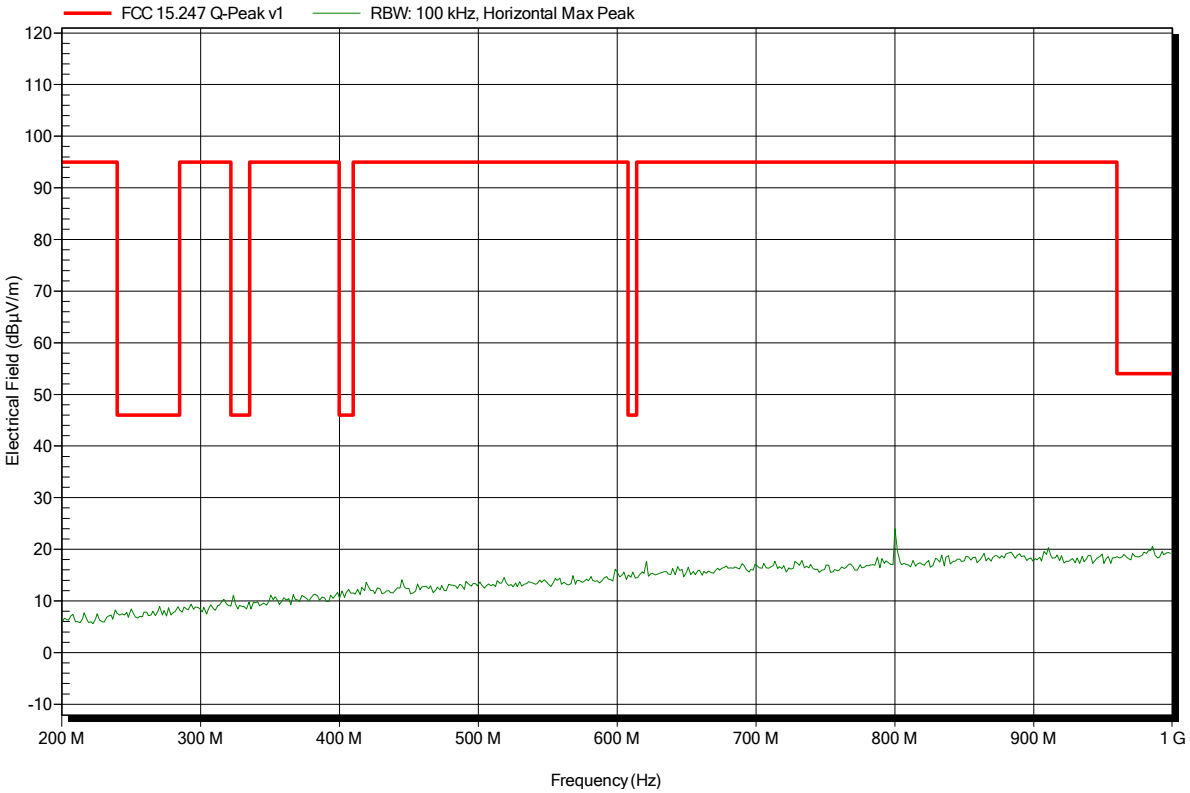


**Spurious emissions according to FCC 15.247**

Project number: G0M-1405-3862

| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Weber |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Rohde & Schwarz HL 223, Horizontal |
| Measurement distance: | 3 m |
| Mode: | TX; 2404 MHz |
| Test Date: | 2014-09-19 |
| Note: | worst case |

Index 3



**Spurious emissions according to FCC 15.247**

Project number: G0M-1405-3862

| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Weber |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Rohde & Schwarz HL 223, Vertical |
| Measurement distance: | 3 m |
| Mode: | TX; 2404 MHz |
| Test Date: | 2014-09-19 |
| Note: | worst case |

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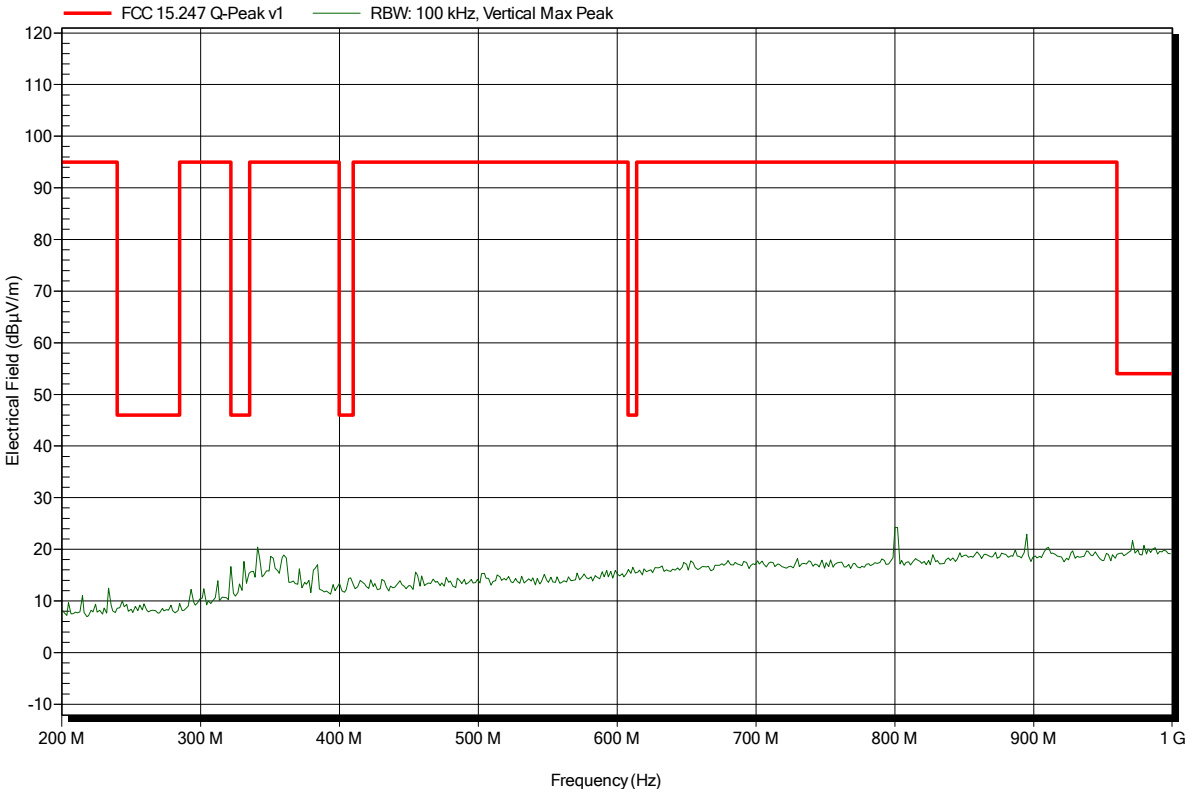

**Spurious emissions according to FCC 15.247**

Project number: G0M-1405-3862

| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Handrik |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Schwarzbeck BBHA 9120D, Horizontal |
| Measurement distance: | 3 m |
| Mode: | TX; 2404 MHz |
| Test Date: | 2014-09-19 |
| Note: | |

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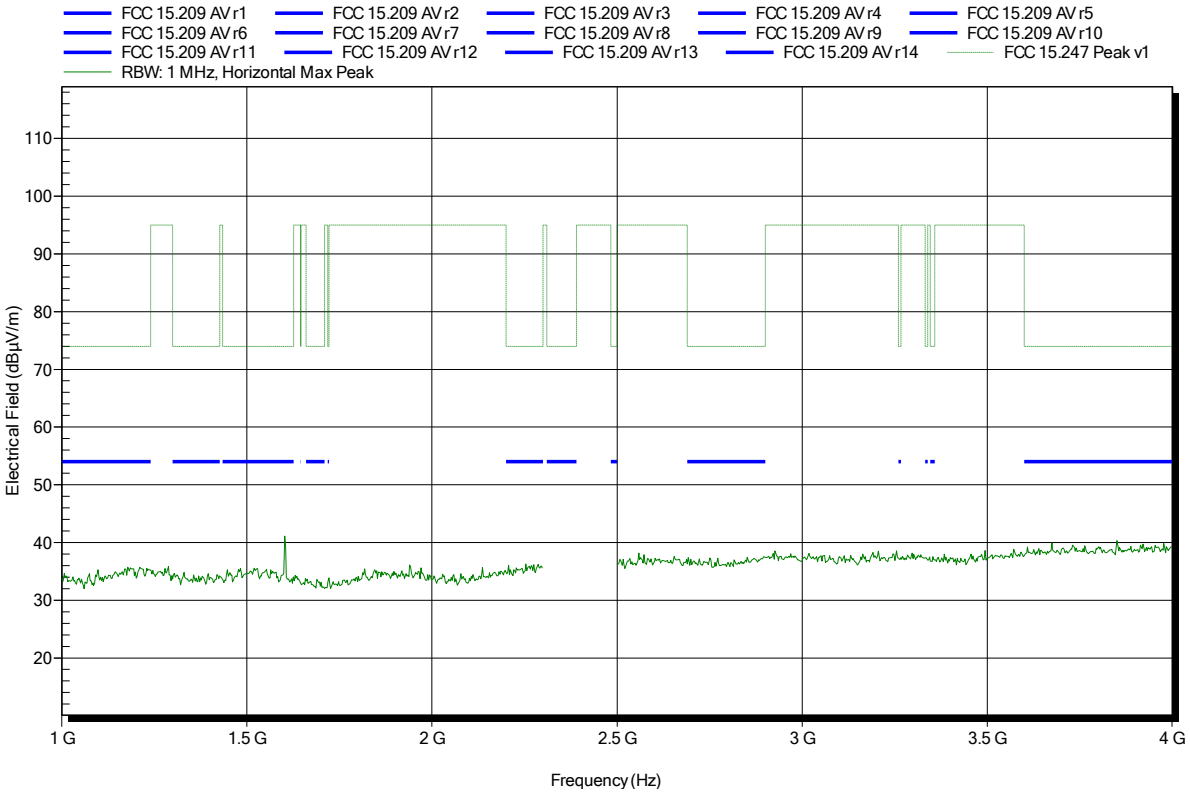

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Project number: G0M-1405-3862

| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Handrik |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Schwarzbeck BBHA 9120D, Vertical |
| Measurement distance: | 3 m |
| Mode: | TX; 2404 MHz |
| Test Date: | 2014-09-19 |
| Note: | |

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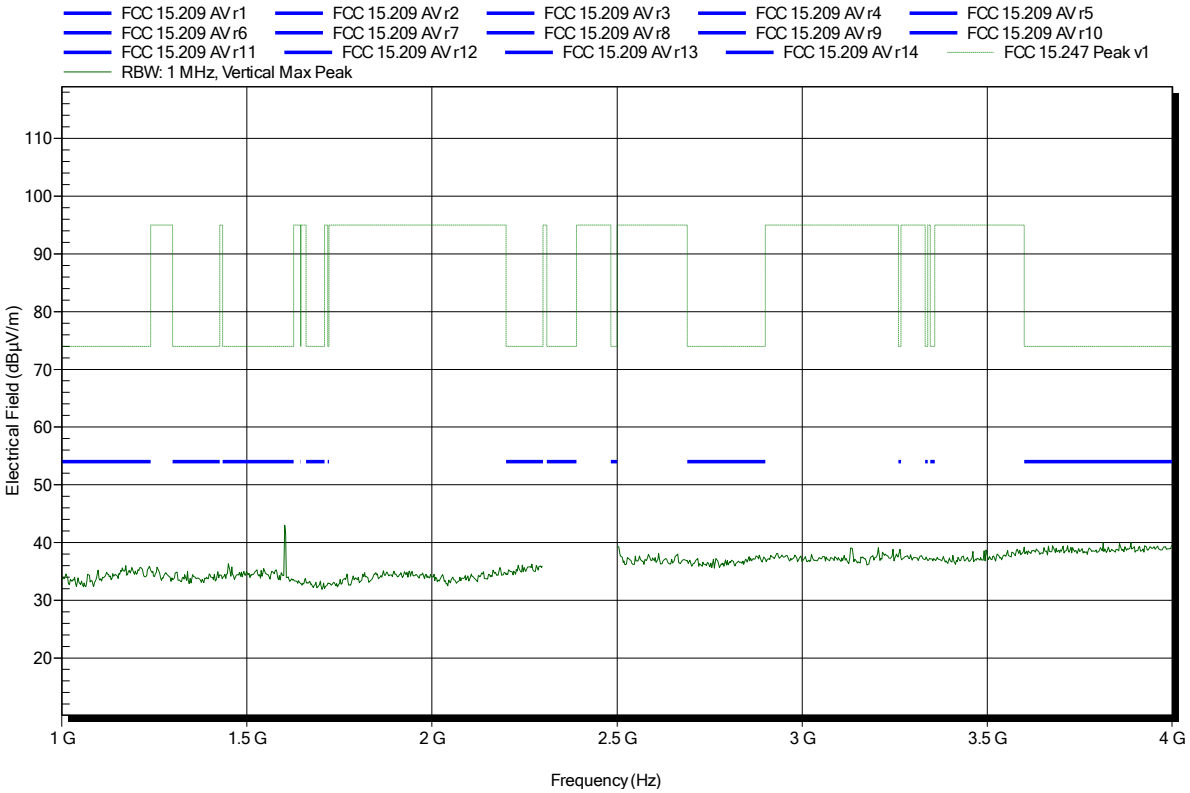

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Project number: G0M-1405-3862

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| Applicant: | KONDO KAGAKU CO., LTD |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Handrik |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Schwarzbeck BBHA 9120D, Horizontal |
| Measurement distance: | 3 m |
| Mode: | TX; 2404 MHz |
| Test Date: | 2014-09-19 |
| Note: | lower bandedge |

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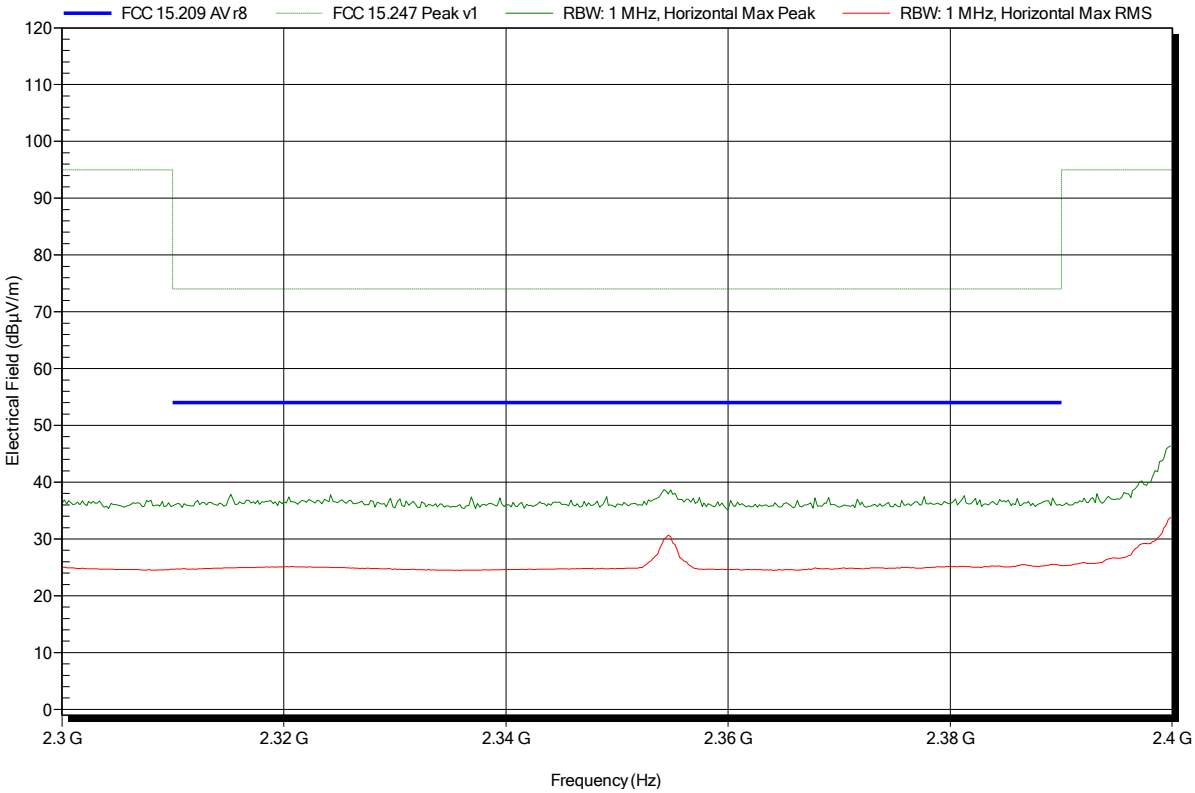

**Spurious emissions according to FCC 15.247**

Project number: G0M-1405-3862

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|---|---|
| Applicant: | KONDO KAGAKU CO., LTD |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Handrik |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Schwarzbeck BBHA 9120D, Vertical |
| Measurement distance: | 3 m |
| Mode: | TX; 2404 MHz |
| Test Date: | 2014-09-19 |
| Note: | lower bandedge |

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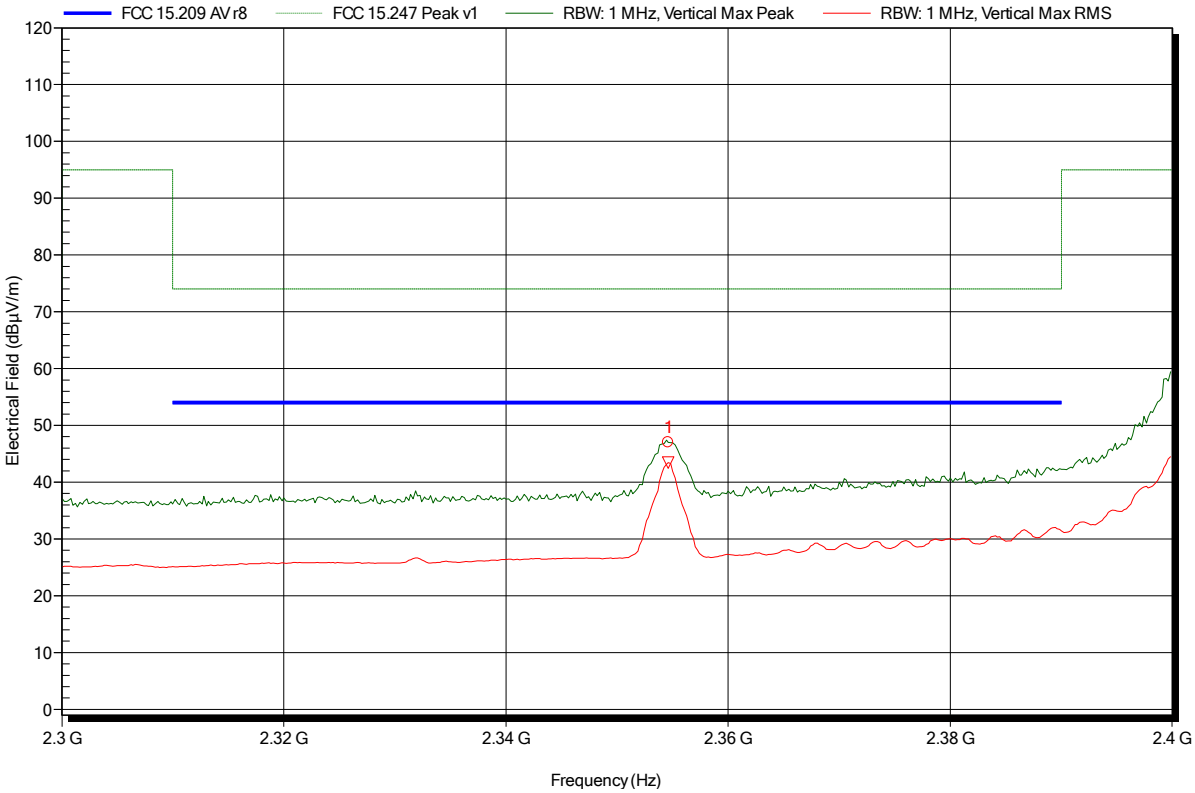


| Frequency | Peak | Peak Limit | Peak Difference | Peak Status |
|---|---|---|---|---|
| 2.355 GHz | 46.98 dBµV/m | 74 dBµV/m | -27.02 dB | Pass |

| Frequency | RMS | RMS Limit | RMS Difference | RMS Status |
|---|---|---|---|---|
| 2.355 GHz | 43.45 dBµV/m | 54 dBµV/m | -10.55 dB | Pass |

**Spurious emissions according to FCC 15.247**

Project number: G0M-1405-3862

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| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Handrik |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Schwarzbeck BBHA 9120D, Horizontal |
| Measurement distance: | 3 m |
| Mode: | TX; 2404 MHz |
| Test Date: | 2014-09-19 |
| Note: | |

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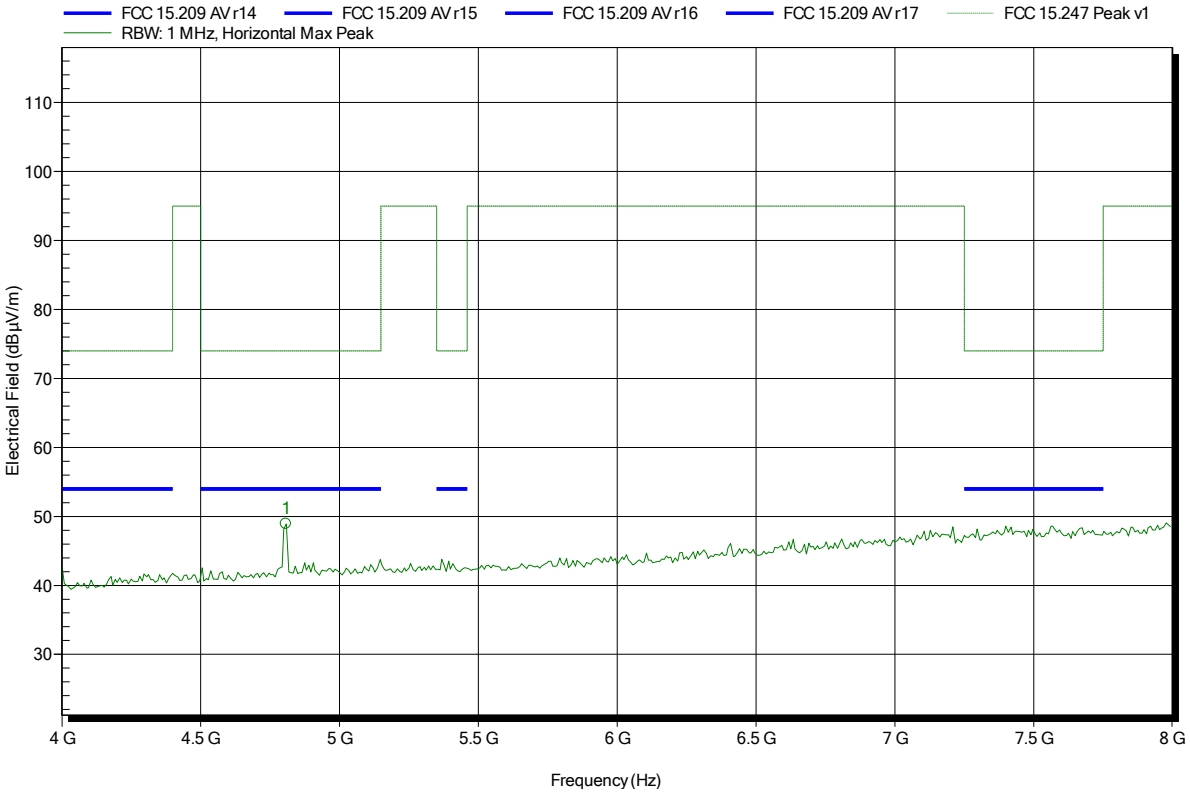


| Frequency | Peak | Peak Limit | Peak Difference | Peak Status |
|---|---|---|---|---|
| 4.808 GHz | 48.92 dBµV/m | 74 dBµV/m | -25.08 dB | Pass |

**Spurious emissions according to FCC 15.247**

Project number: G0M-1405-3862

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| Applicant: | KONDO KAGAKU CO., LTD |
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| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Handrik |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Schwarzbeck BBHA 9120D, Vertical |
| Measurement distance: | 3 m |
| Mode: | TX; 2404 MHz |
| Test Date: | 2014-09-19 |
| Note: | |

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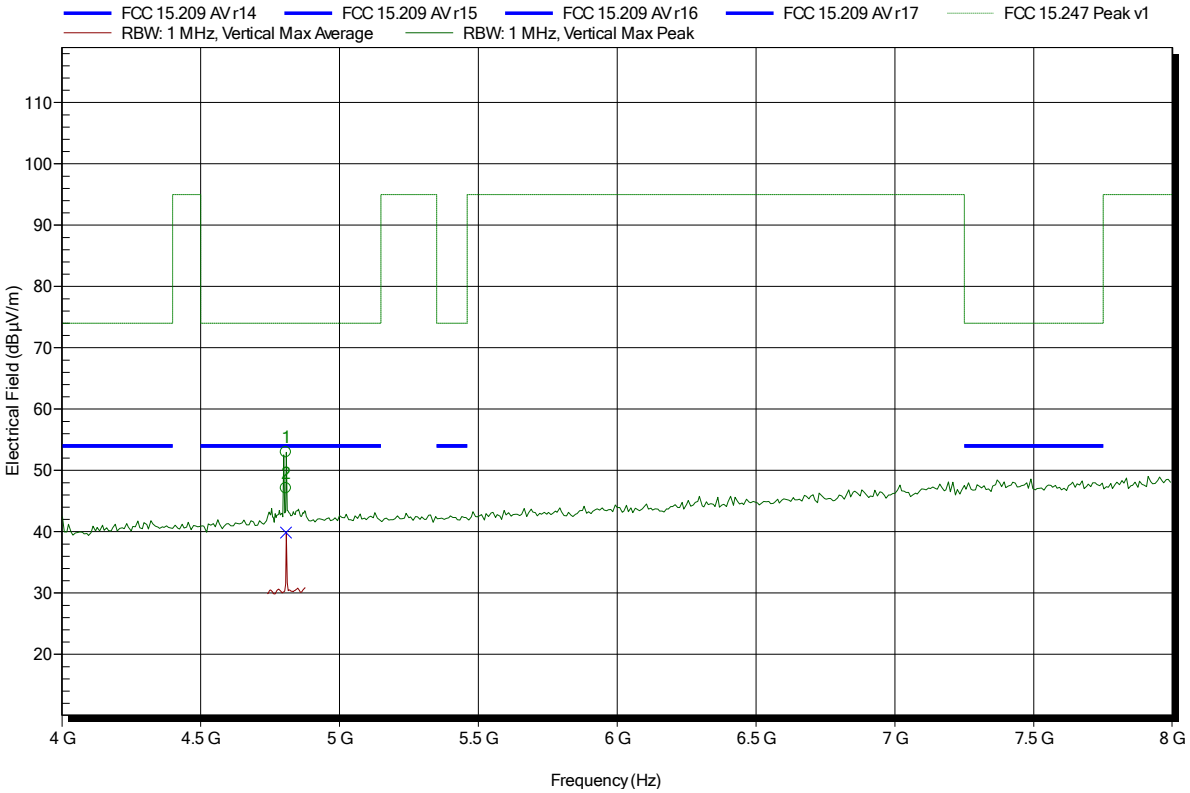


| Frequency | Peak | Peak Limit | Peak Difference | Peak Status |
|---|---|---|---|---|
| 4.808 GHz | 52.95 dBµV/m | 74 dBµV/m | -21.05 dB | Pass |
| 4.808 GHz | 47.08 dBµV/m | 74 dBµV/m | -26.92 dB | Pass |

| Frequency | Average | Average Limit | Average Difference | Average Status |
|---|---|---|---|---|
| 4.808 GHz | 39.84 dBµV/m | 54 dBµV/m | -14.16 dB | Pass |

**Spurious emissions according to FCC 15.247**

Project number: G0M-1405-3862

| | |
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| Applicant: | KONDO KAGAKU CO., LTD |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Handrik |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Schwarzbeck BBHA 9120D, Horizontal |
| Measurement distance: | 1 m converted to 3m |
| Mode: | TX; 2404 MHz |
| Test Date: | 2014-09-19 |
| Note: | |

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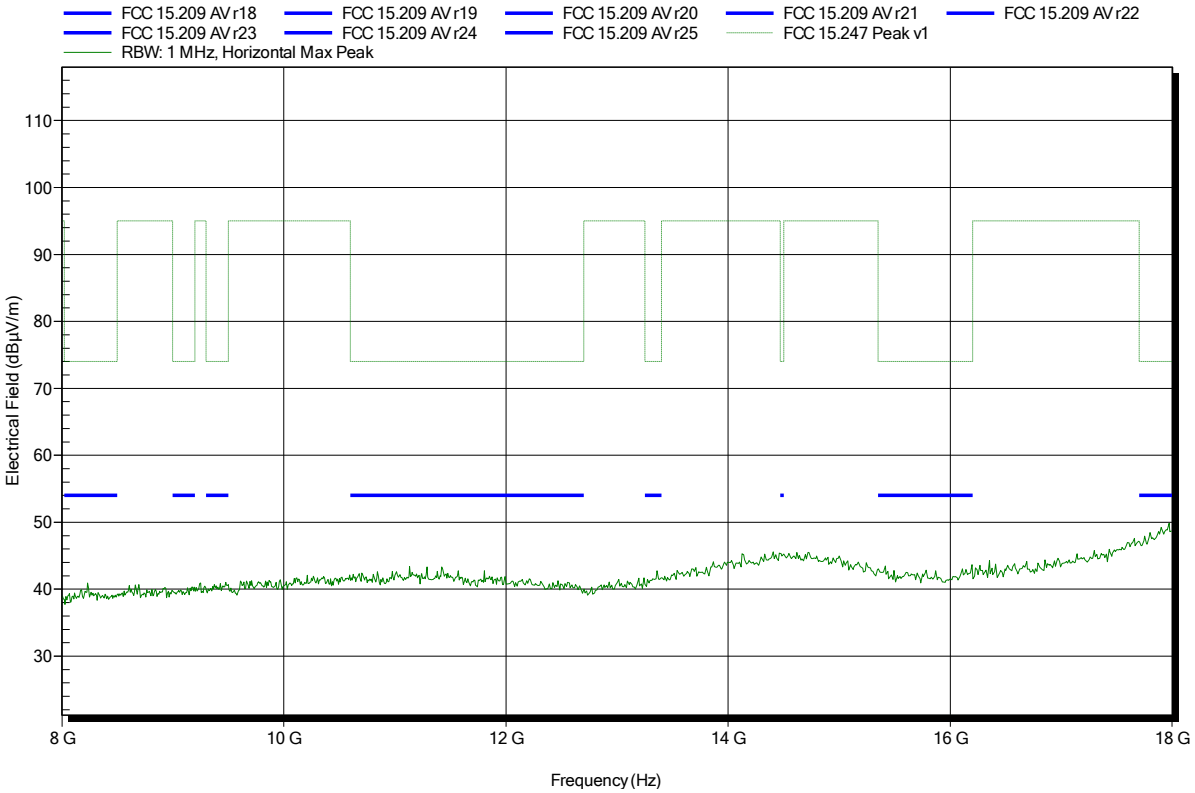

**Spurious emissions according to FCC 15.247**

Project number: G0M-1405-3862

| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Handrik |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Schwarzbeck BBHA 9120D, Vertical |
| Measurement distance: | 1 m converted to 3m |
| Mode: | TX; 2404 MHz |
| Test Date: | 2014-09-19 |
| Note: | |

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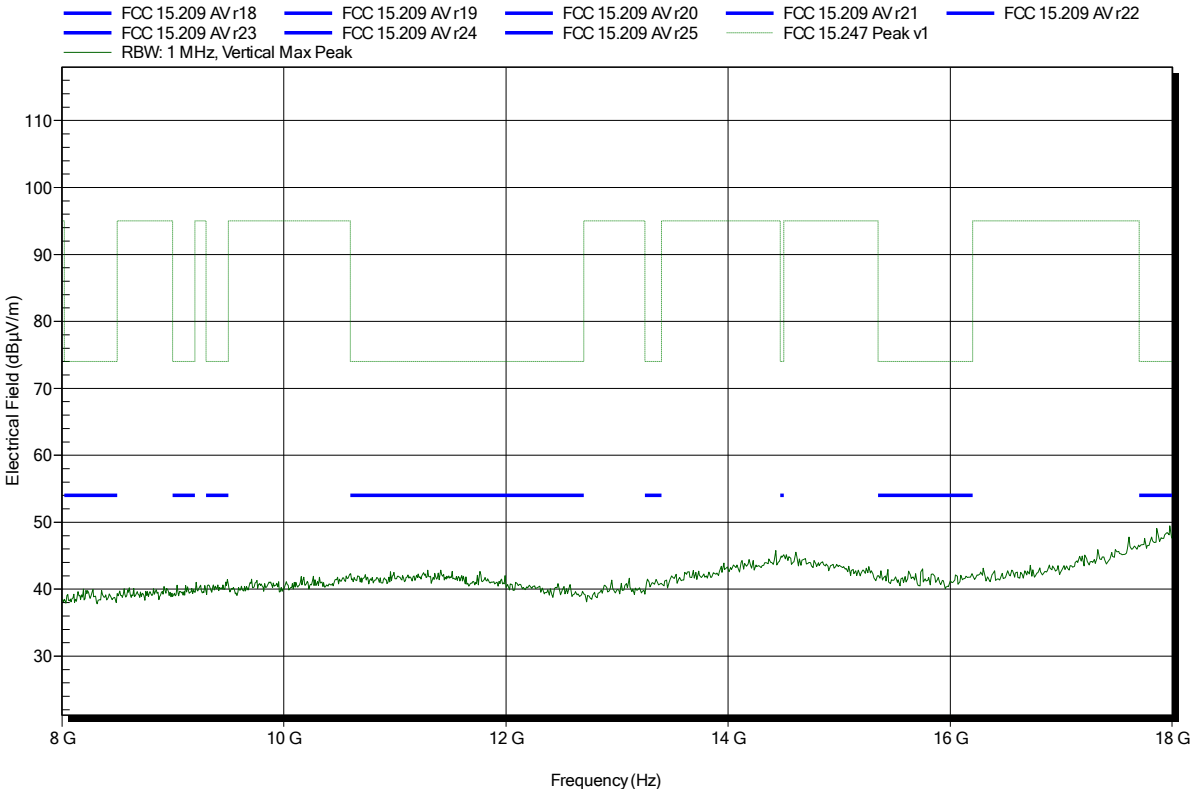

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Project number: G0M-1405-3862

| | |
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| Applicant: | KONDO KAGAKU CO., LTD |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Handrik |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Rohde & Schwarz HL 025, Horizontal |
| Measurement distance: | 1 m |
| Mode: | TX; 2404 MHz |
| Test Date: | 2014-09-19 |
| Note: | |

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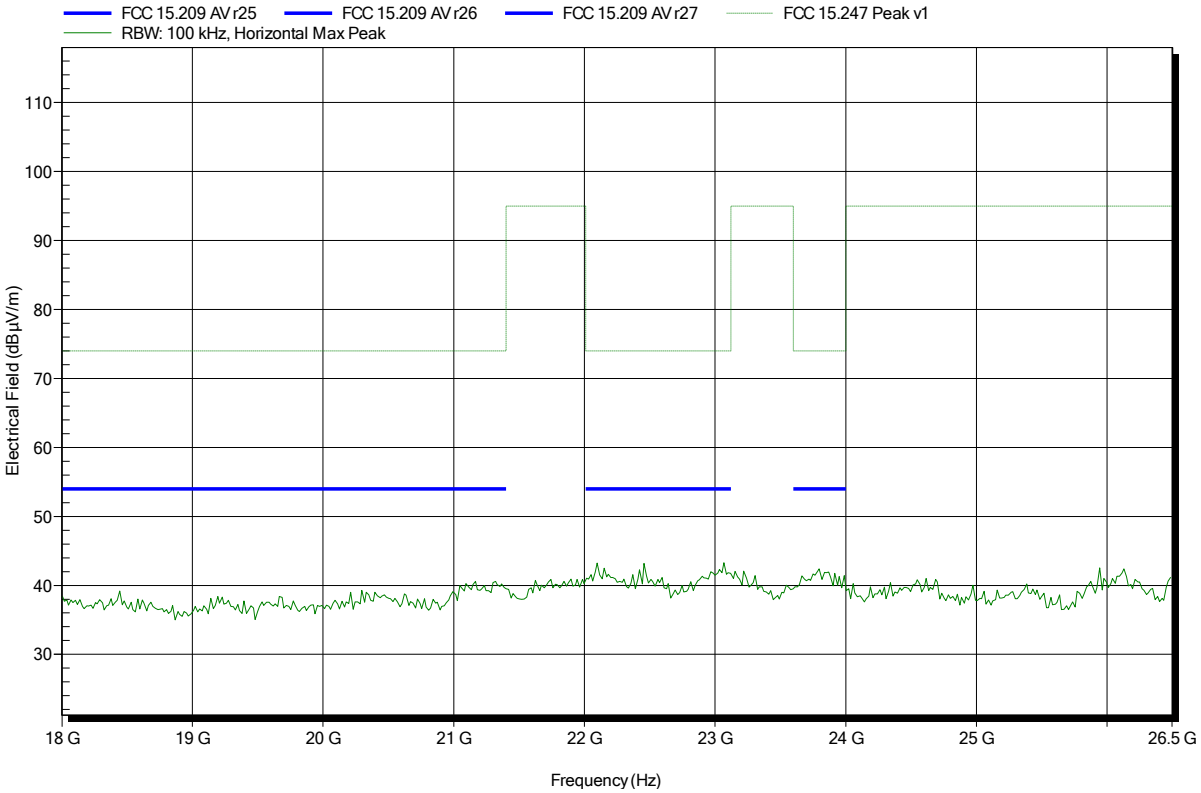

**Spurious emissions according to FCC 15.247**

Project number: G0M-1405-3862

| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Handrik |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Rohde & Schwarz HL 025, Vertical |
| Measurement distance: | 1 m |
| Mode: | TX; 2404 MHz |
| Test Date: | 2014-09-19 |
| Note: | |

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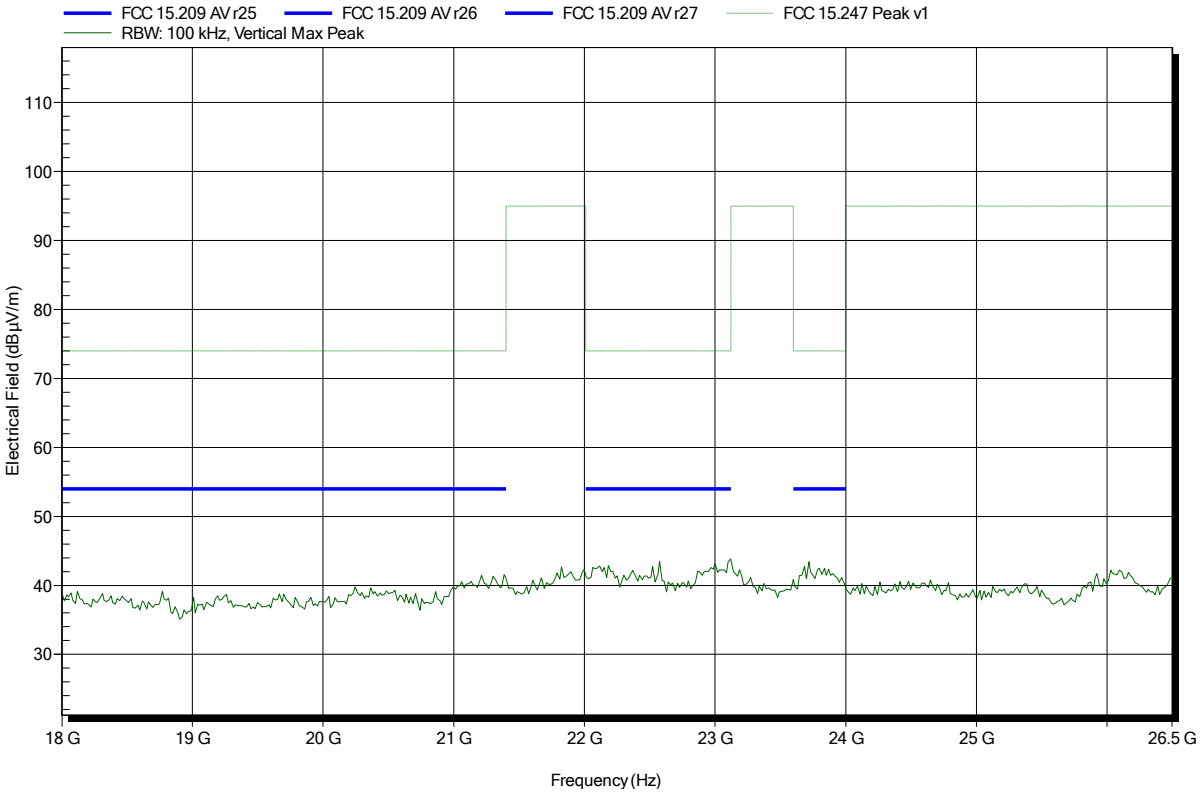

**Spurious emissions according to FCC 15.247**

Project number: G0M-1405-3862

| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Handrik |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Schwarzbeck BBHA 9120D, Horizontal |
| Measurement distance: | 3 m |
| Mode: | TX; 2440 MHz |
| Test Date: | 2014-09-19 |
| Note: | |

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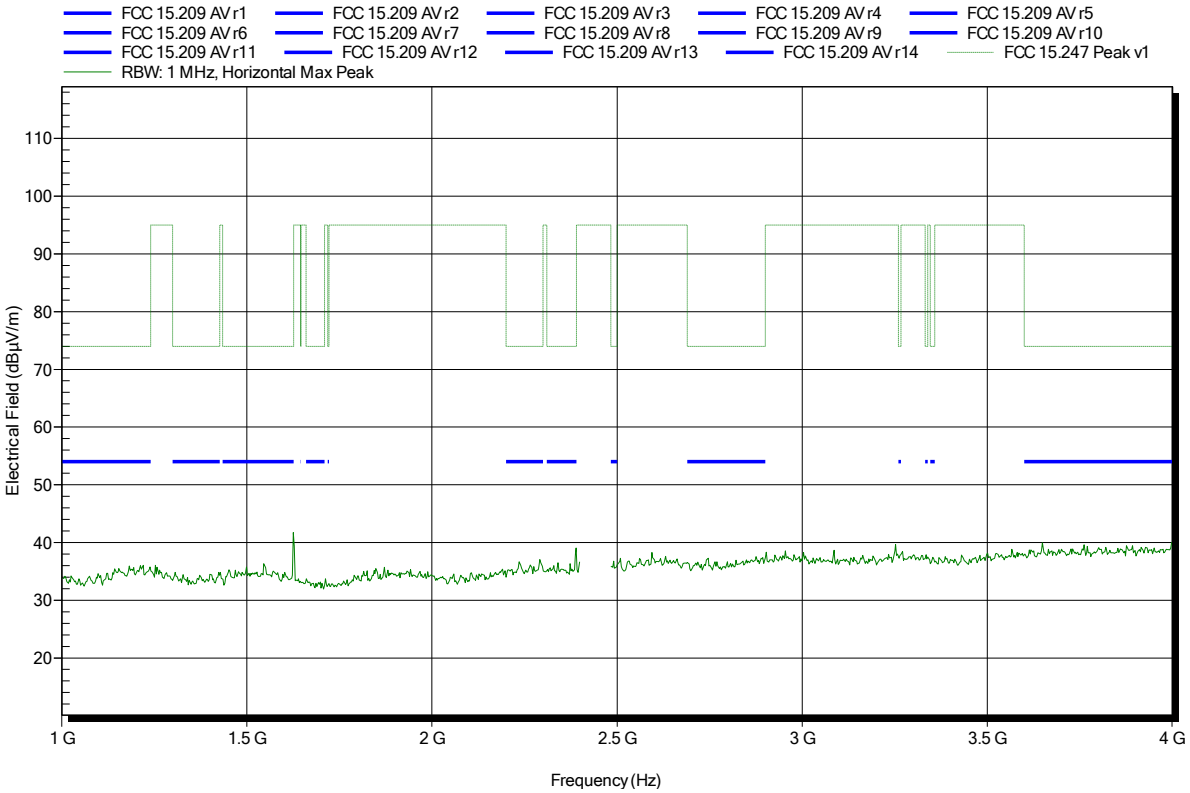

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| Applicant: | KONDO KAGAKU CO., LTD |
| EUT Name: | Radio Control system for Model cars |
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| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Handrik |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Schwarzbeck BBHA 9120D, Vertical |
| Measurement distance: | 3 m |
| Mode: | TX; 2440 MHz |
| Test Date: | 2014-09-19 |
| Note: | |

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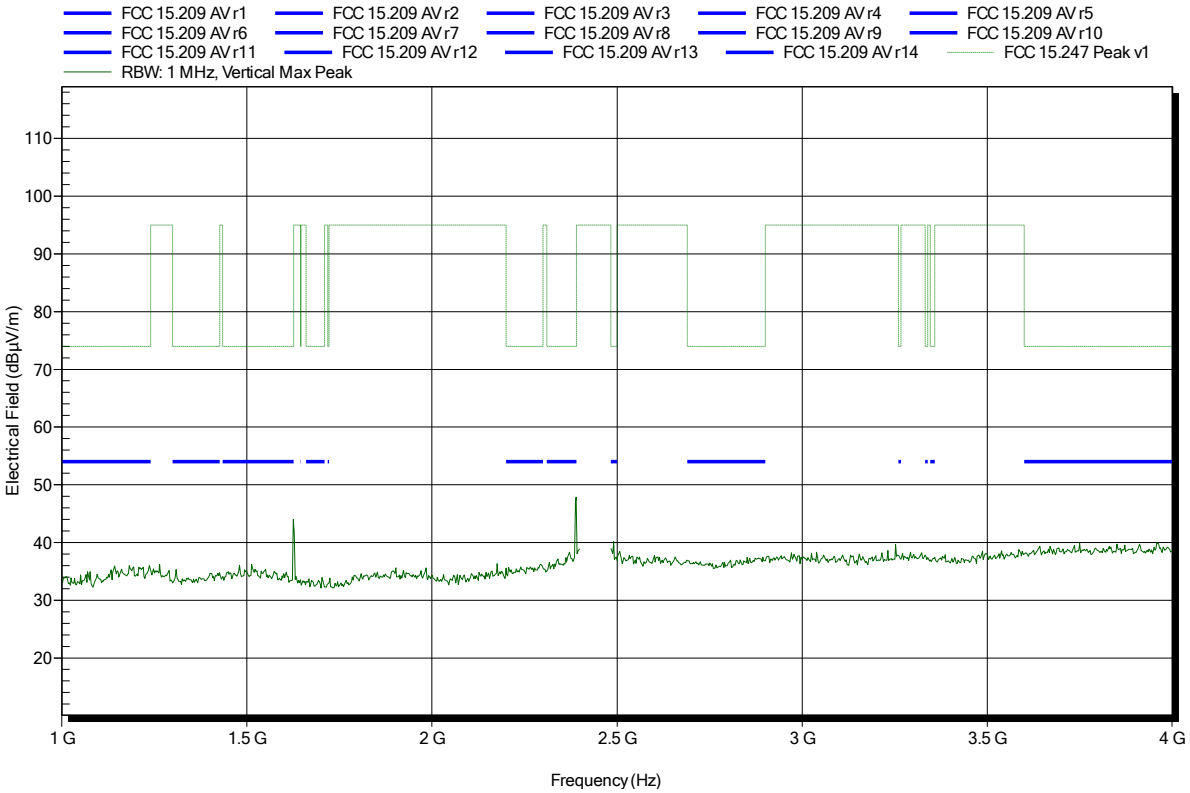

**Spurious emissions according to FCC 15.247**

Project number: G0M-1405-3862

| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Handrik |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Schwarzbeck BBHA 9120D, Horizontal |
| Measurement distance: | 3 m |
| Mode: | TX; 2440 MHz |
| Test Date: | 2014-09-19 |
| Note: | |

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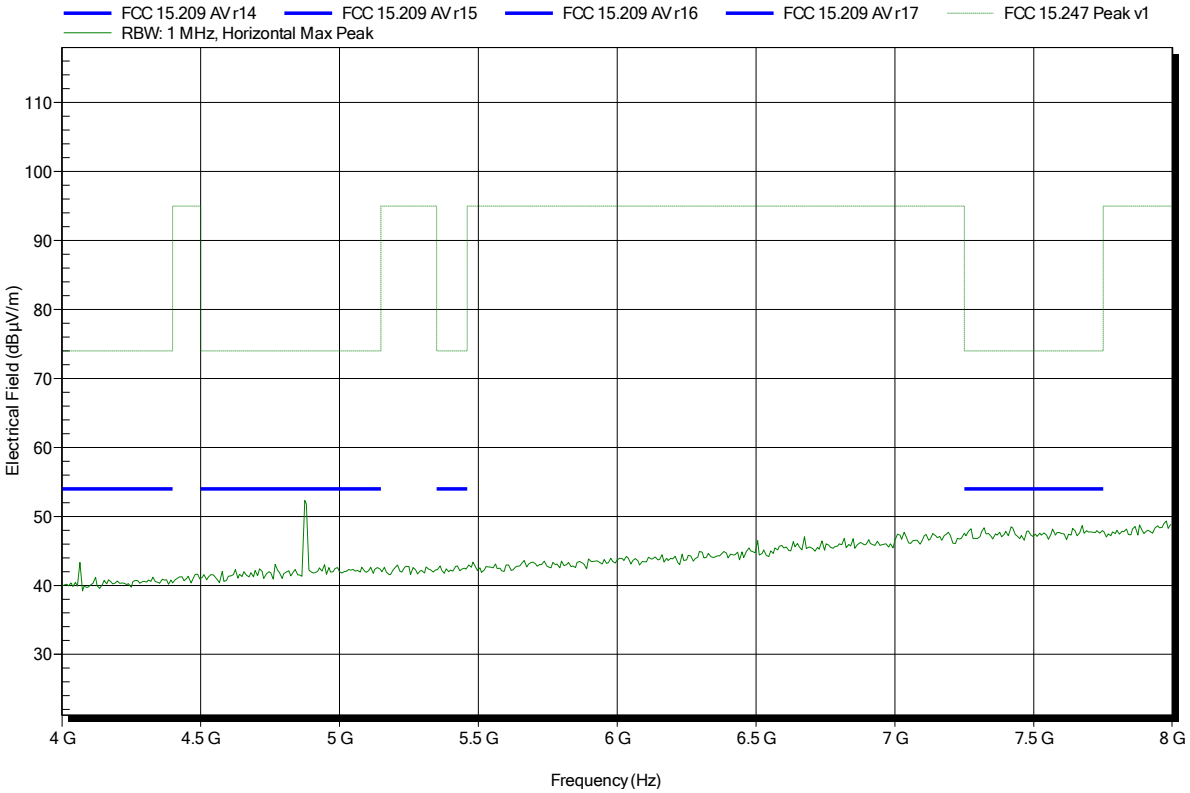

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| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Handrik |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Schwarzbeck BBHA 9120D, Vertical |
| Measurement distance: | 3 m |
| Mode: | TX; 2440 MHz |
| Test Date: | 2014-09-19 |
| Note: | |

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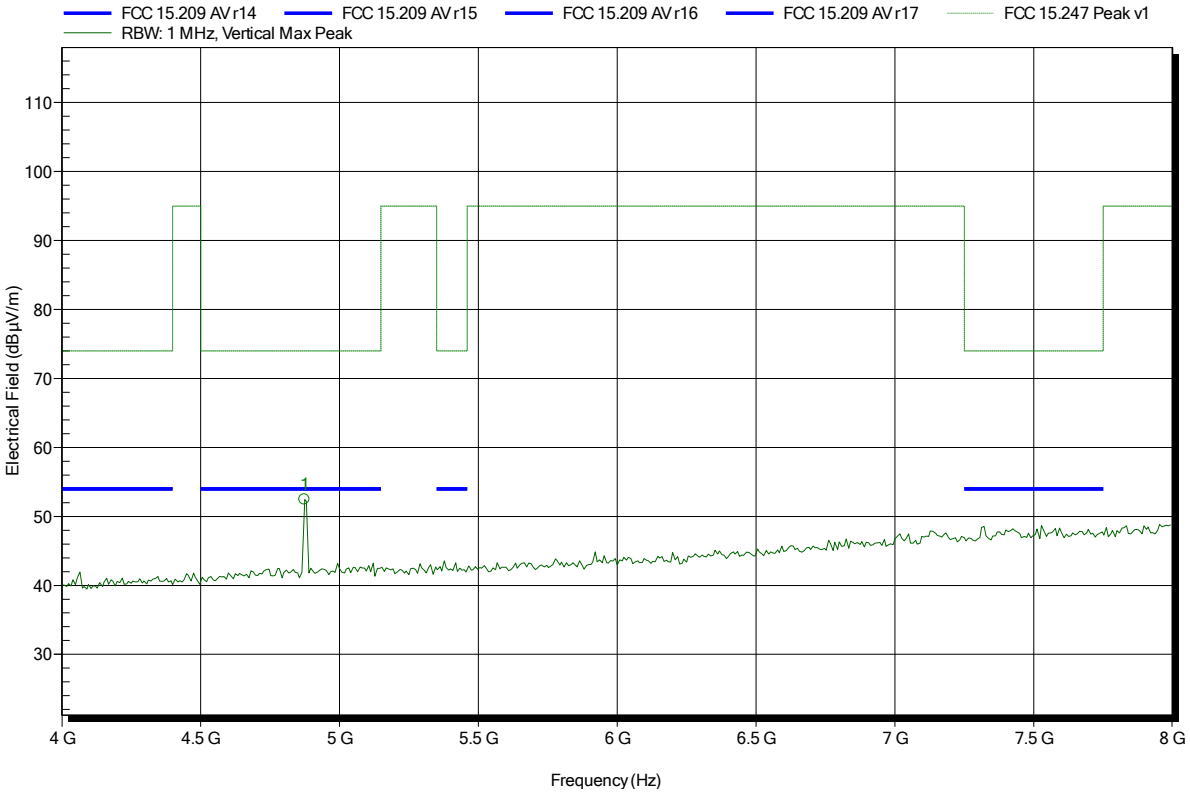


| Frequency | Peak | Peak Limit | Peak Difference | Peak Status |
|---|---|---|---|---|
| 4.875 GHz | 52.46 dBµV/m | 74 dBµV/m | -21.54 dB | Pass |

**Spurious emissions according to FCC 15.247**

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| | |
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| Applicant: | KONDO KAGAKU CO., LTD |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Handrik |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Schwarzbeck BBHA 9120D, Horizontal |
| Measurement distance: | 1 m converted to 3m |
| Mode: | TX; 2440 MHz |
| Test Date: | 2014-09-19 |
| Note: | |

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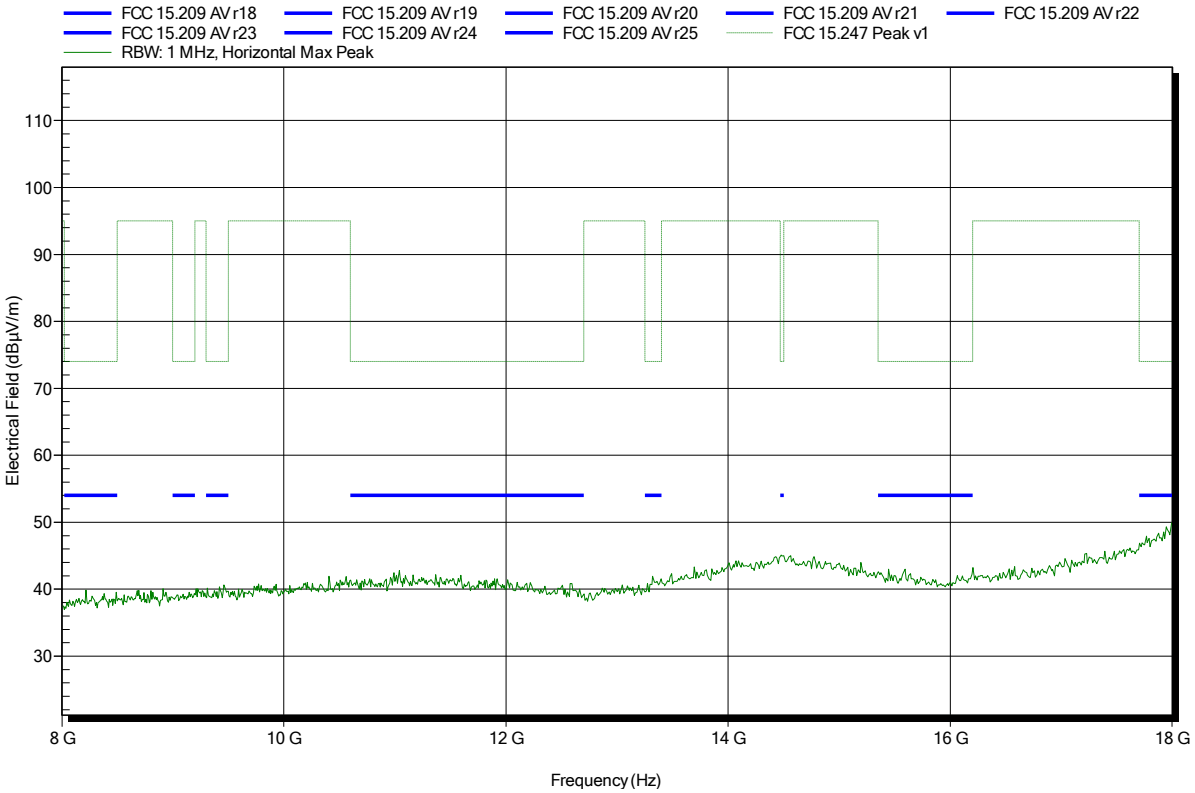

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| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Schwarzbeck BBHA 9120D, Vertical |
| Measurement distance: | 1 m converted to 3m |
| Mode: | TX; 2440 MHz |
| Test Date: | 2014-09-19 |
| Note: | |

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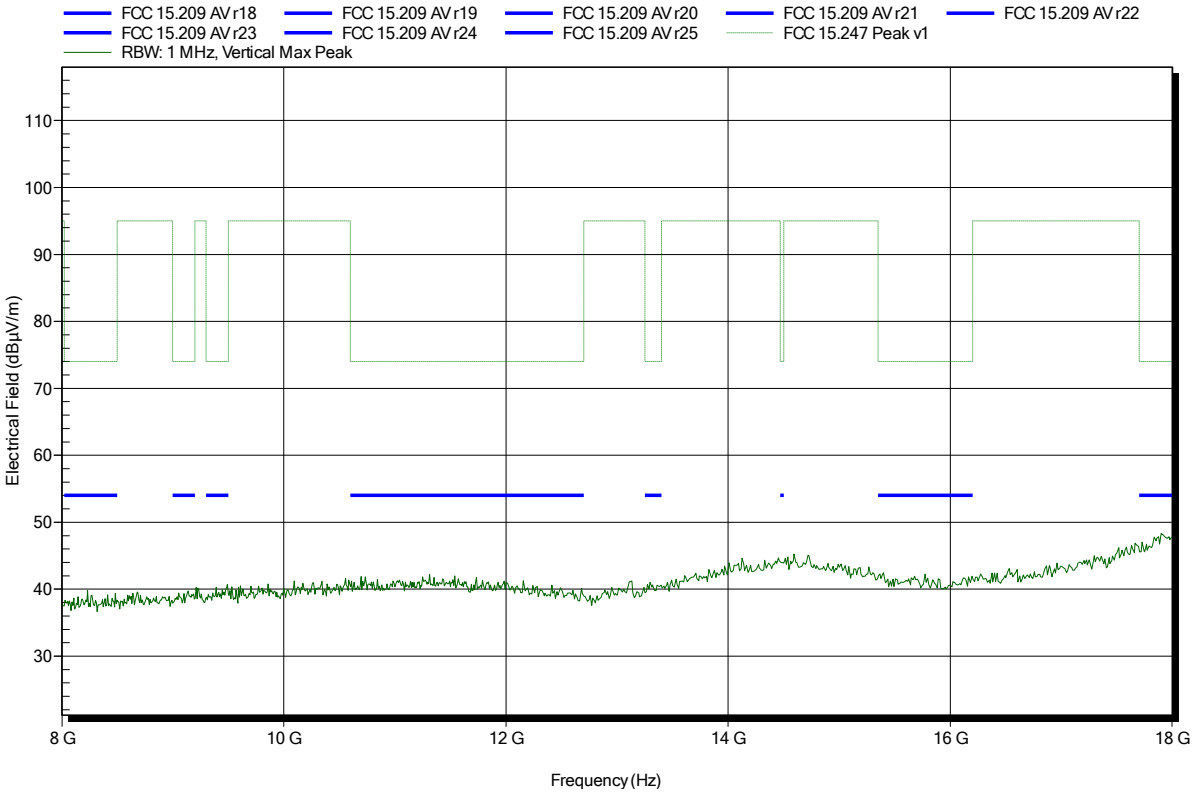

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| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Handrik |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Rohde & Schwarz HL 025, Horizontal |
| Measurement distance: | 1 m |
| Mode: | TX; 2440 MHz |
| Test Date: | 2014-09-19 |
| Note: | |

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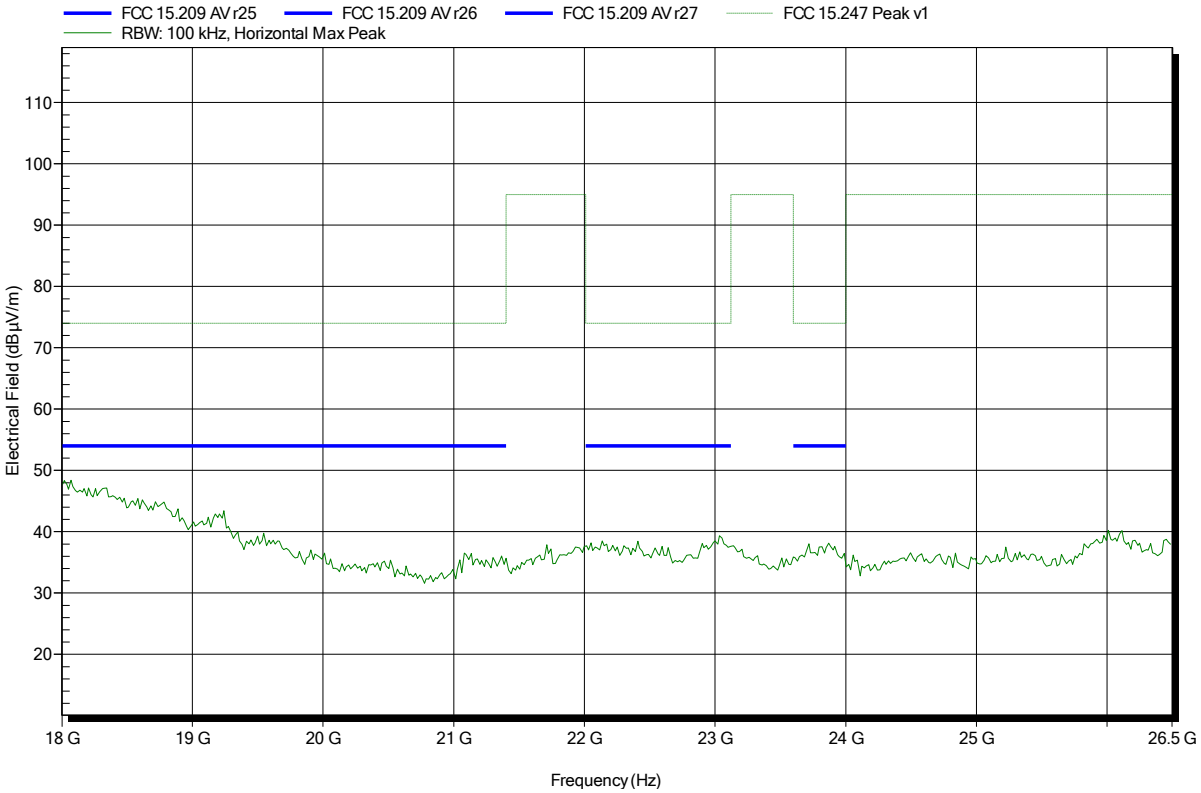

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| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Handrik |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Rohde & Schwarz HL 025, Vertical |
| Measurement distance: | 1 m |
| Mode: | TX; 2440 MHz |
| Test Date: | 2014-09-19 |
| Note: | |

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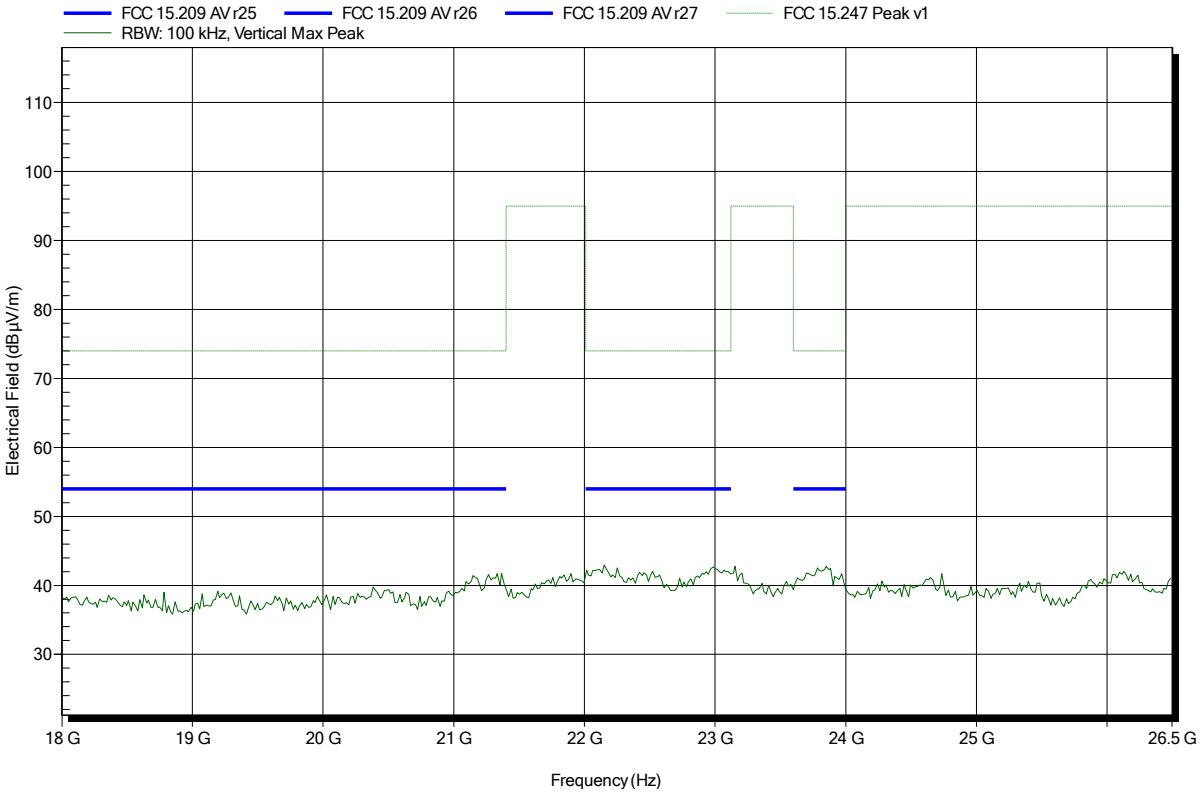

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| Applicant: | KONDO KAGAKU CO., LTD |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Handrik |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Schwarzbeck BBHA 9120D, Horizontal |
| Measurement distance: | 3 m |
| Mode: | TX; 2476 MHz |
| Test Date: | 2014-09-19 |
| Note: | |

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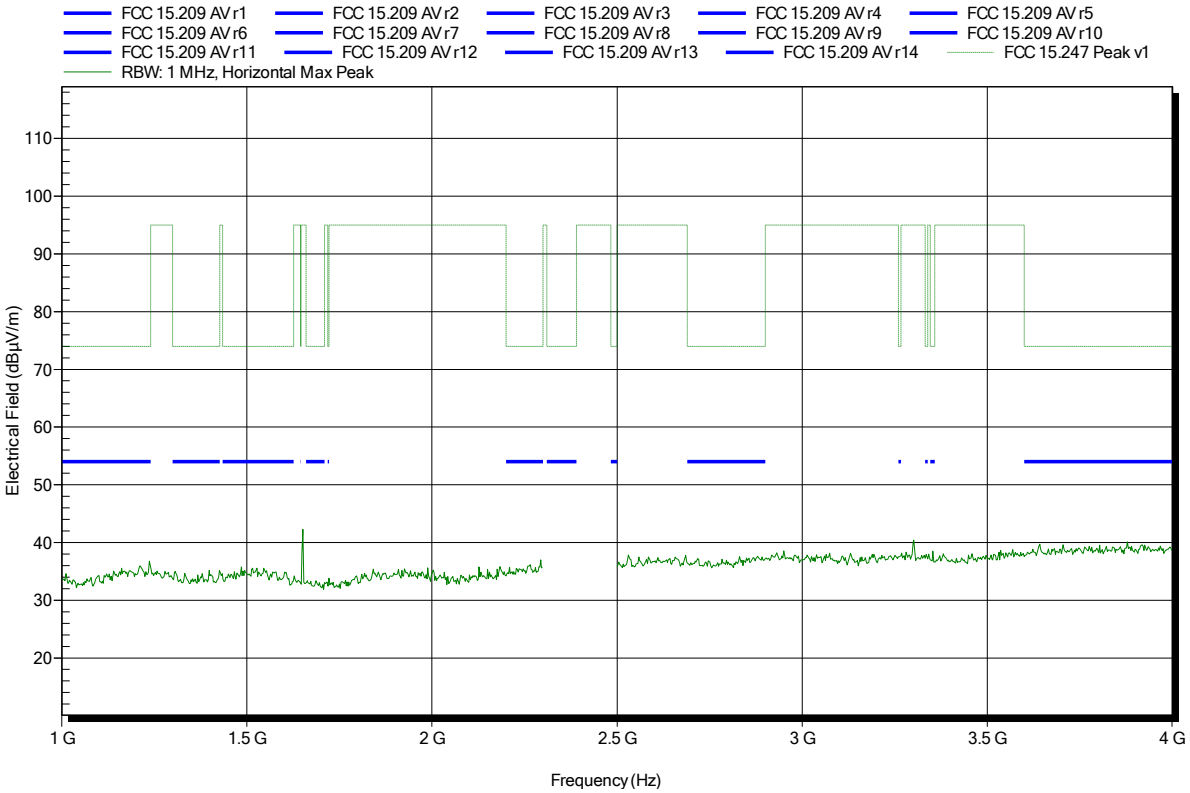

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| Test Site: | Eurofins Product Service GmbH |
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| Antenna: | Schwarzbeck BBHA 9120D, Vertical |
| Measurement distance: | 3 m |
| Mode: | TX; 2476 MHz |
| Test Date: | 2014-09-19 |
| Note: | |

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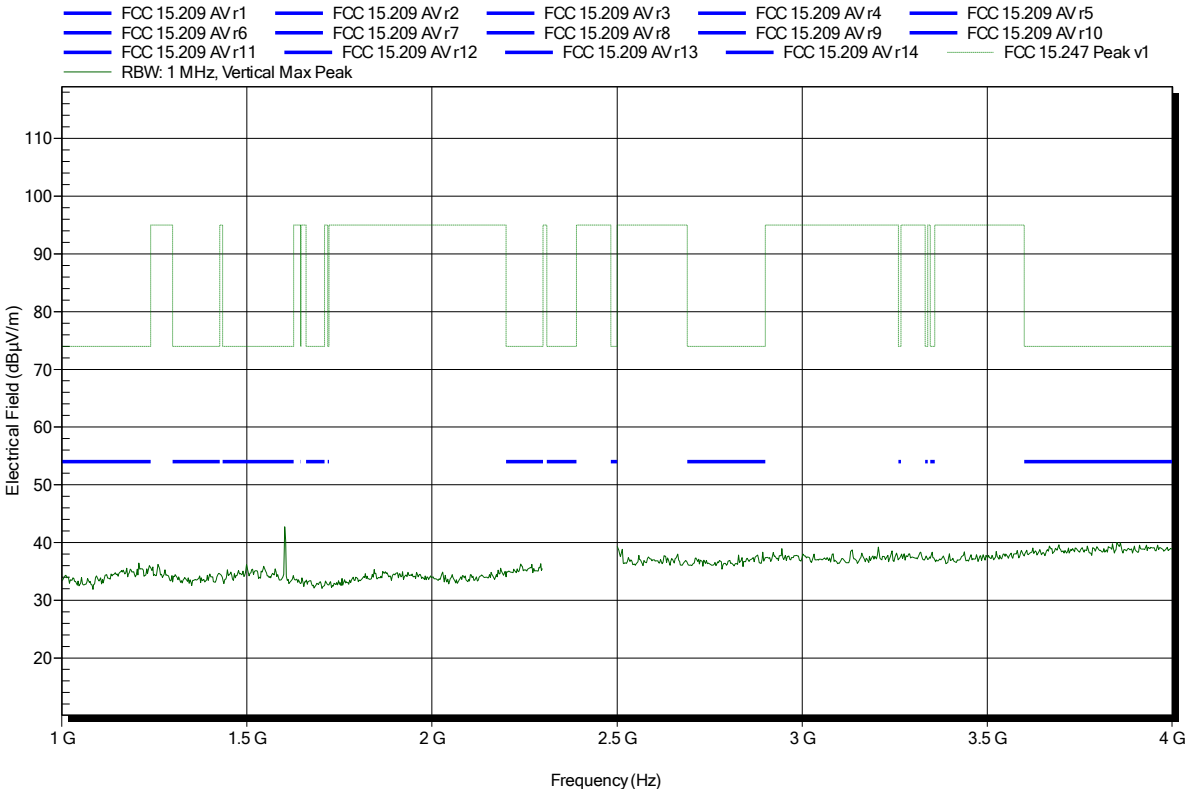

**Spurious emissions according to FCC 15.247**

Project number: G0M-1405-3862

| | |
|---|---|
| Applicant: | KONDO KAGAKU CO., LTD |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Handrik |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Schwarzbeck BBHA 9120D, Horizontal |
| Measurement distance: | 3 m |
| Mode: | TX; 2476 MHz |
| Test Date: | 2014-09-19 |
| Note: | upper bandedge |

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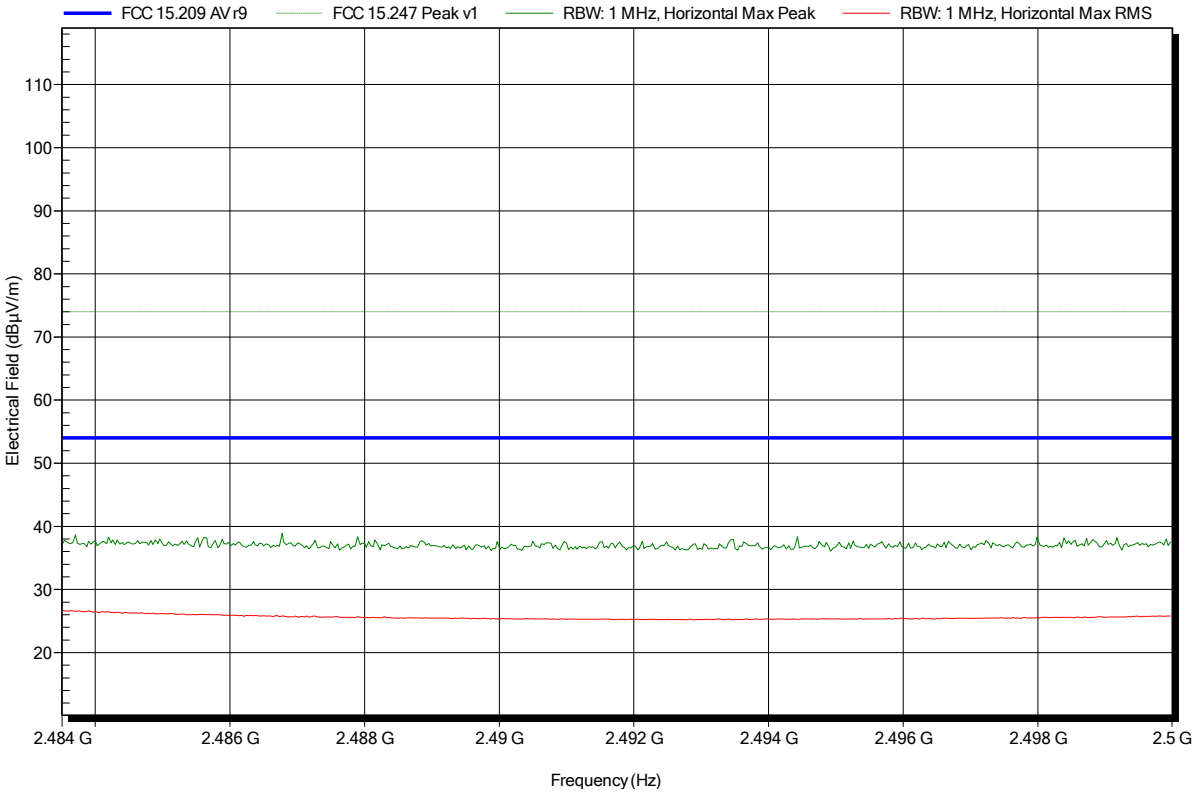

**Spurious emissions according to FCC 15.247**

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| Applicant: | KONDO KAGAKU CO., LTD |
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| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Handrik |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Schwarzbeck BBHA 9120D, Vertical |
| Measurement distance: | 3 m |
| Mode: | TX; 2476 MHz |
| Test Date: | 2014-09-19 |
| Note: | upper bandedge |

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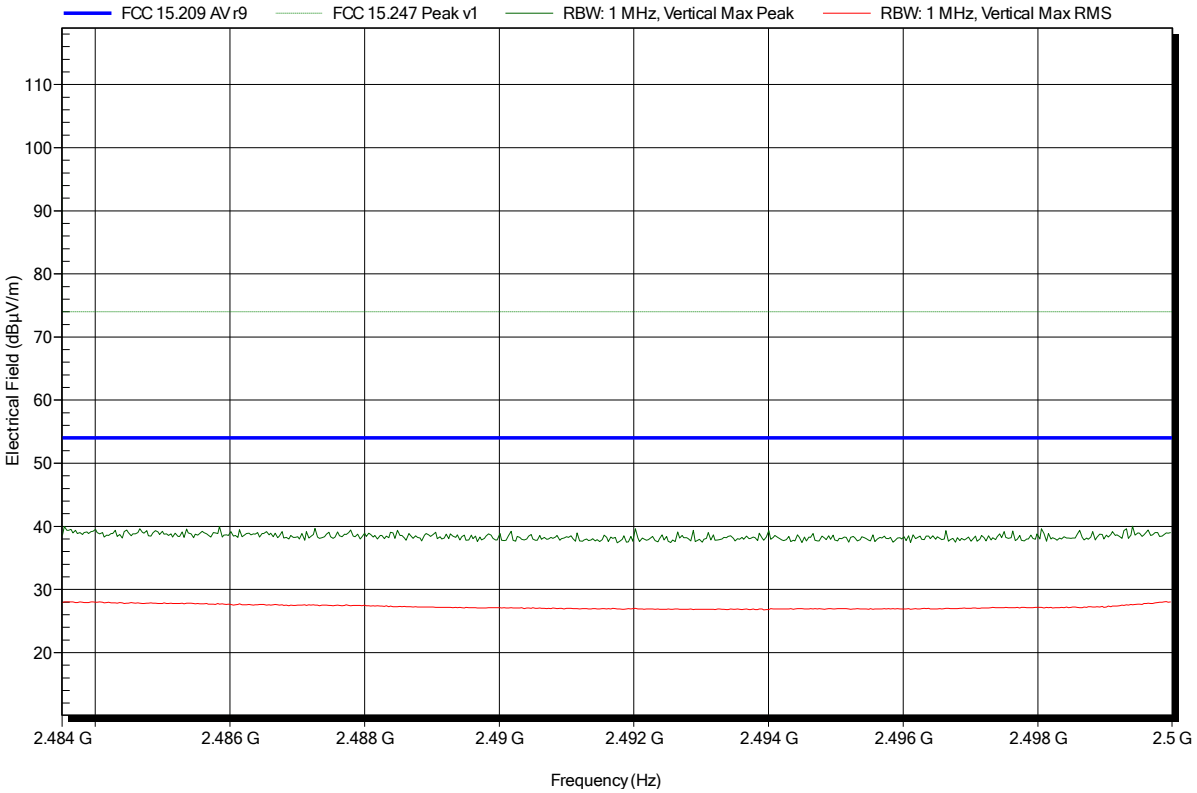

**Spurious emissions according to FCC 15.247**

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| Applicant: | KONDO KAGAKU CO., LTD |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Handrik |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Schwarzbeck BBHA 9120D, Horizontal |
| Measurement distance: | 3 m |
| Mode: | TX; 2476 MHz |
| Test Date: | 2014-09-19 |
| Note: | |

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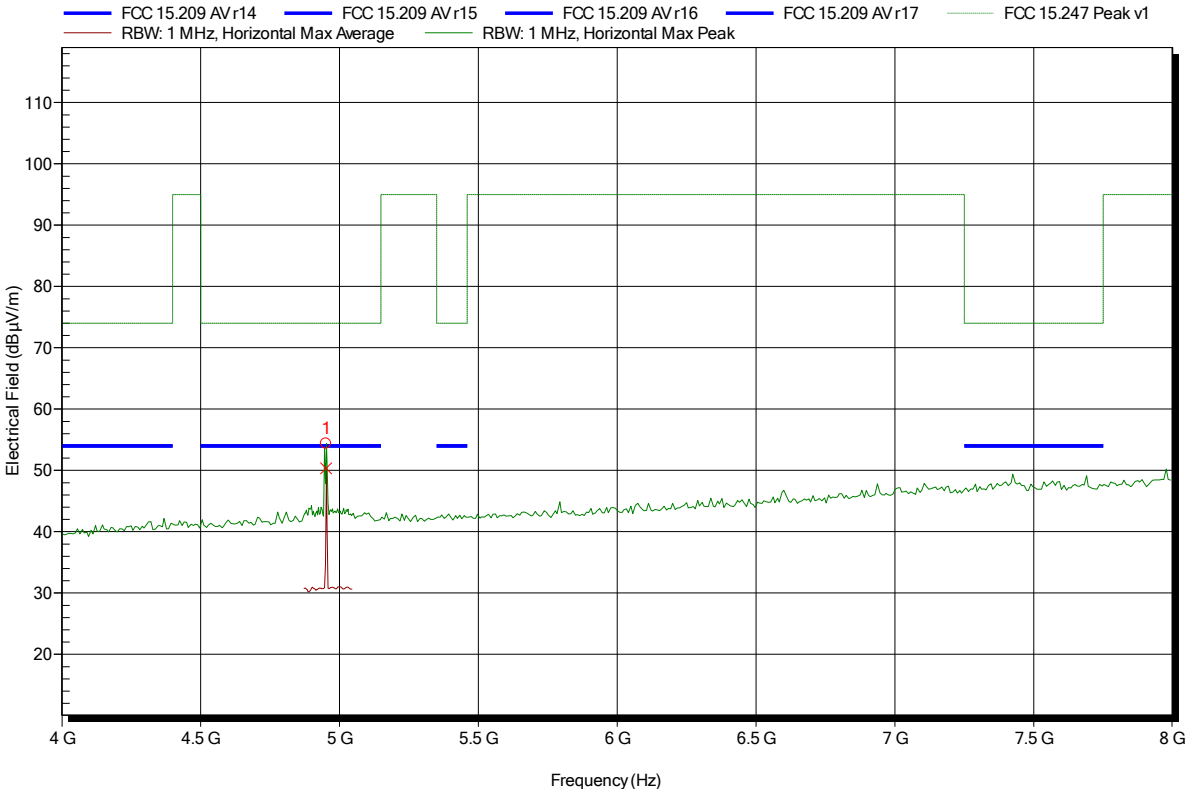


| Frequency | Peak | Peak Limit | Peak Difference | Peak Status |
|---|---|---|---|---|
| 4.952 GHz | 54.36 dBµV/m | 74 dBµV/m | -19.64 dB | Pass |

| Frequency | Average | Average Limit | Average Difference | Average Status |
|---|---|---|---|---|
| 4.952 GHz | 50.32 dBµV/m | 54 dBµV/m | -3.68 dB | Pass |

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| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Handrik |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Schwarzbeck BBHA 9120D, Vertical |
| Measurement distance: | 3 m |
| Mode: | TX; 2476 MHz |
| Test Date: | 2014-09-19 |
| Note: | |

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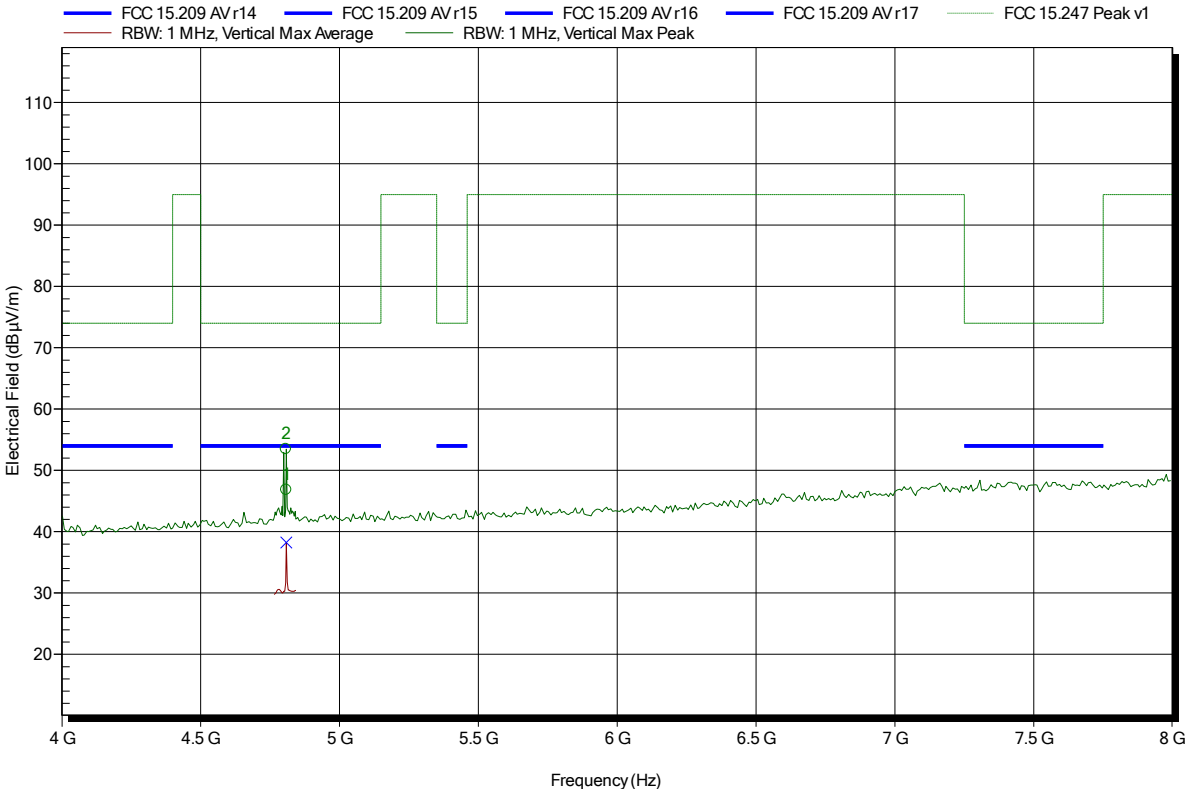


| Frequency | Peak | Peak Limit | Peak Difference | Peak Status |
|---|---|---|---|---|
| 4.808 GHz | 53.47 dBµV/m | 74 dBµV/m | -20.53 dB | Pass |
| 4.809 GHz | 46.82 dBµV/m | 74 dBµV/m | -27.18 dB | Pass |

| Frequency | Average | Average Limit | Average Difference | Average Status |
|---|---|---|---|---|
| 4.809 GHz | 38.23 dBµV/m | 54 dBµV/m | -15.77 dB | Pass |

**Spurious emissions according to FCC 15.247**

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| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Handrik |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Schwarzbeck BBHA 9120D, Horizontal |
| Measurement distance: | 1 m converted to 3m |
| Mode: | TX; 2476 MHz |
| Test Date: | 2014-09-19 |
| Note: | |

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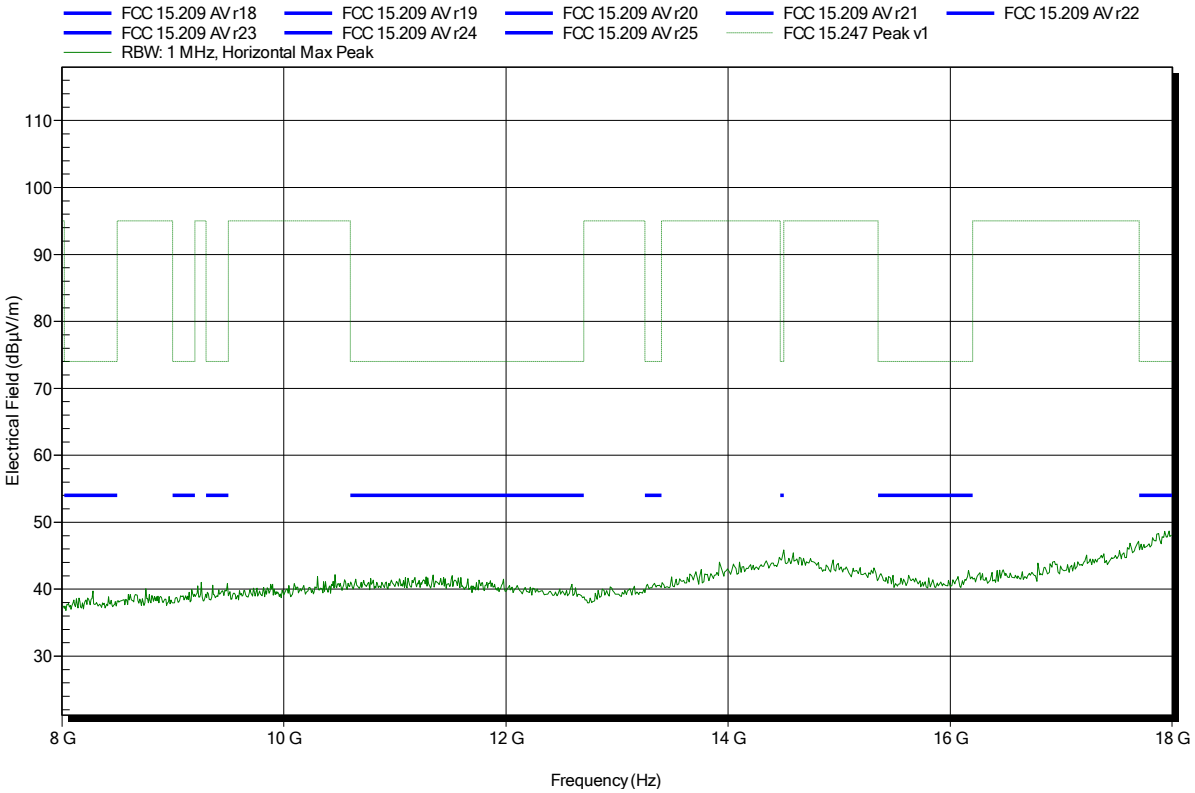

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| Applicant: | KONDO KAGAKU CO., LTD |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Handrik |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Schwarzbeck BBHA 9120D, Vertical |
| Measurement distance: | 1 m converted to 3m |
| Mode: | TX; 2476 MHz |
| Test Date: | 2014-09-19 |
| Note: | |

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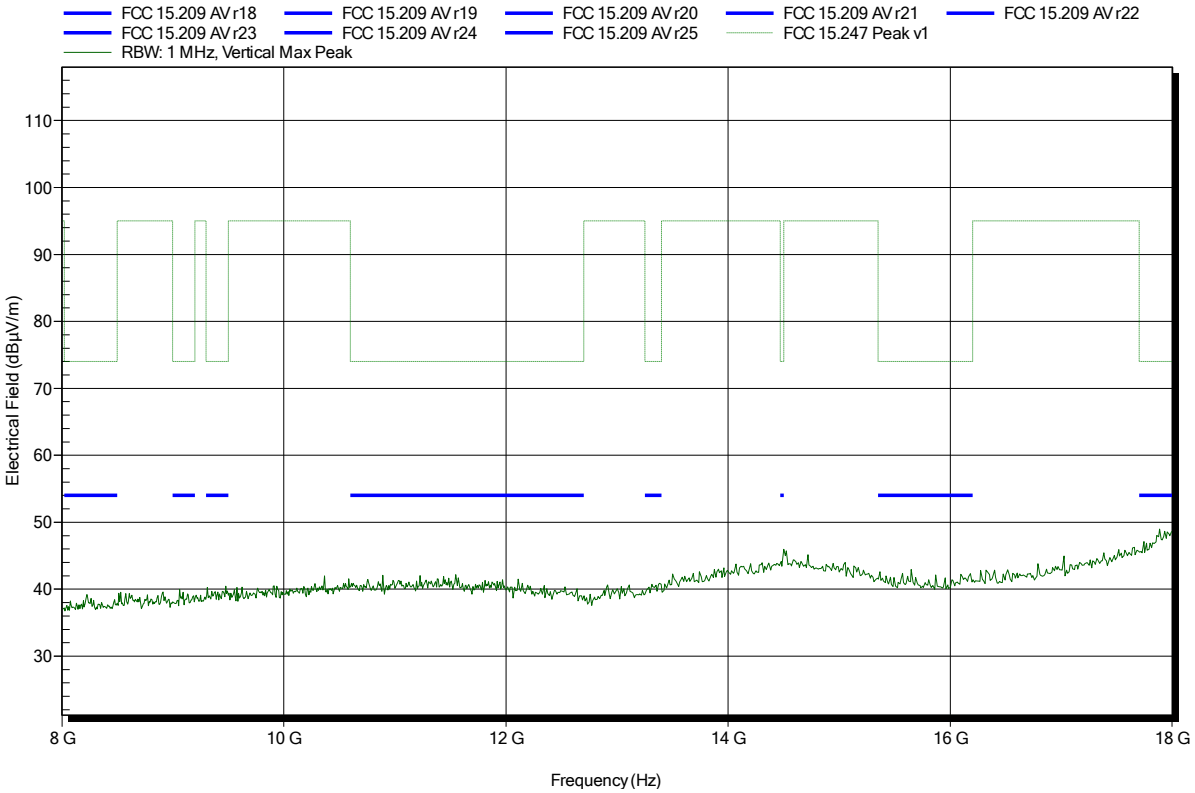

**Spurious emissions according to FCC 15.247**

Project number: G0M-1405-3862

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|---|---|
| Applicant: | KONDO KAGAKU CO., LTD |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Handrik |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Rohde & Schwarz HL 025, Horizontal |
| Measurement distance: | 1 m |
| Mode: | TX; 2476 MHz |
| Test Date: | 2014-09-19 |
| Note: | |

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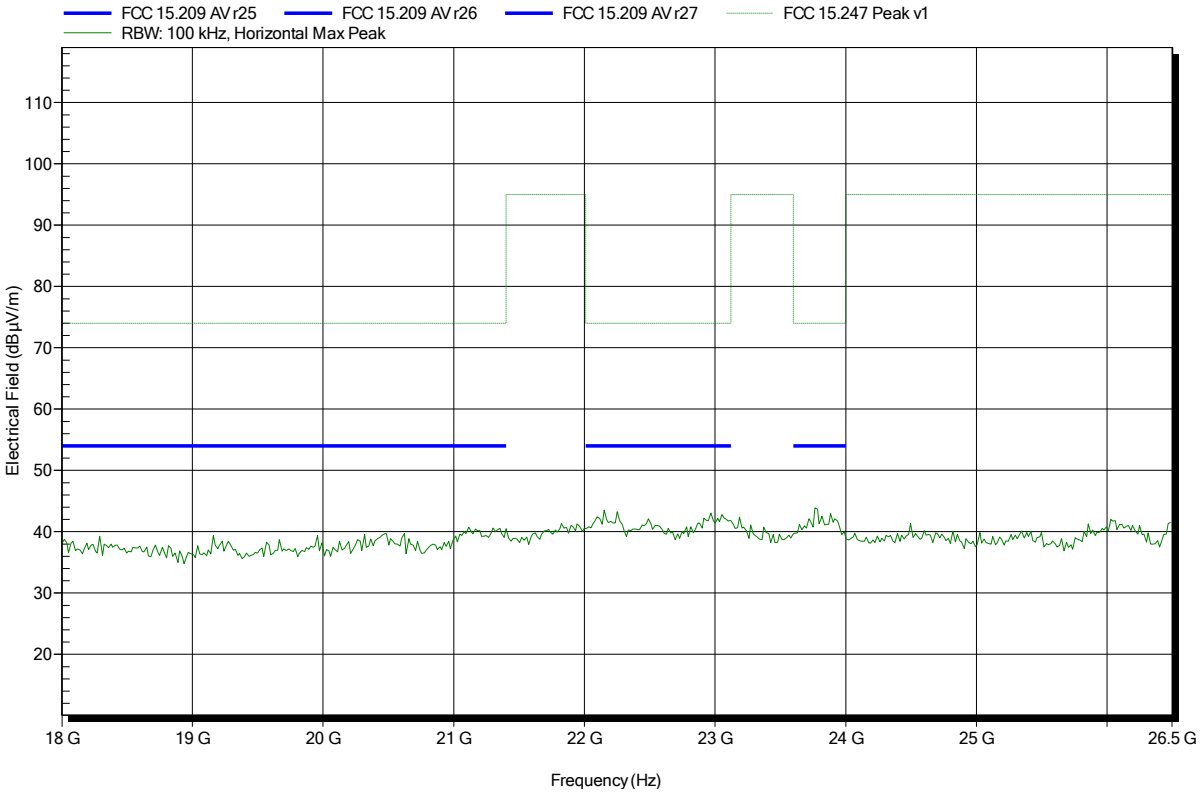

**Spurious emissions according to FCC 15.247**

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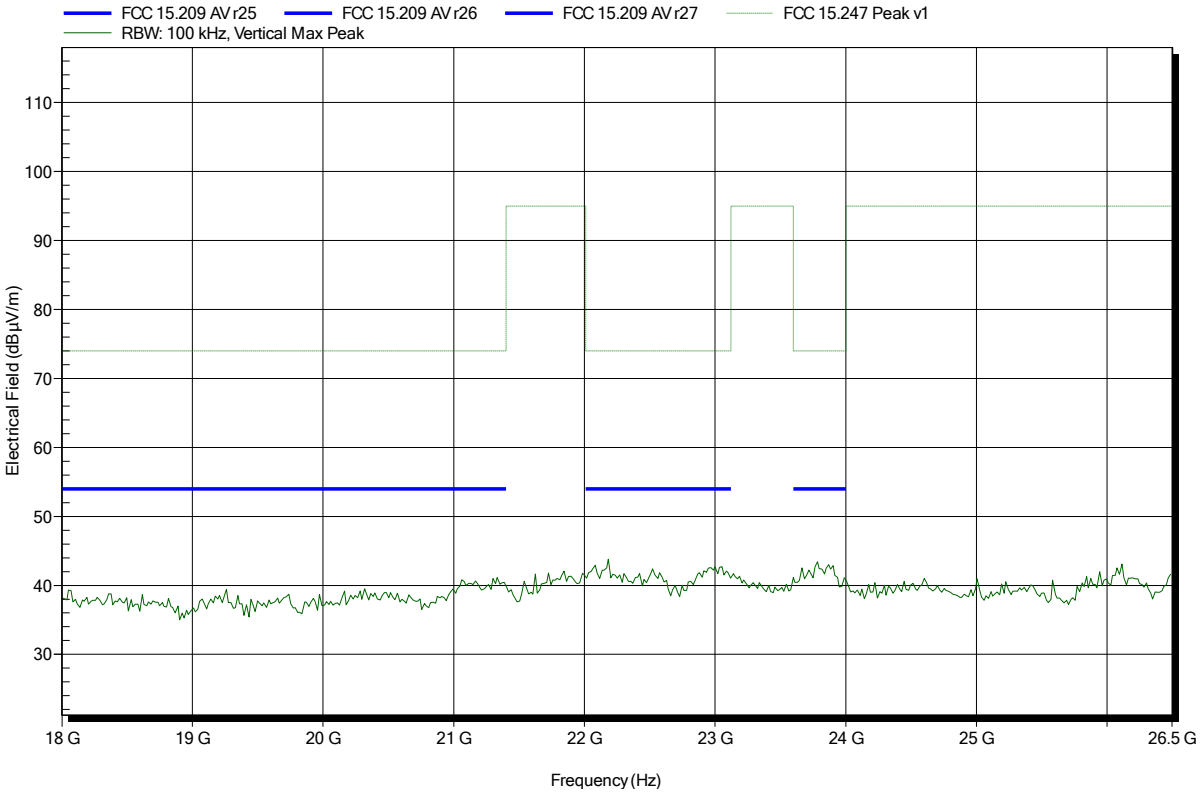
| Applicant: | KONDO KAGAKU CO., LTD |
| EUT Name: | Radio Control system for Model cars |
| Model: | Esprit4 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Handrik |
| Test Conditions: | Tnom: 25°C, Vnom: 6.0V DC (battery) |
| Antenna: | Rohde & Schwarz HL 025, Vertical |
| Measurement distance: | 1 m |
| Mode: | TX; 2476 MHz |
| Test Date: | 2014-09-19 |
| Note: | |

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