



No. DAT-P-114/01-01



TESTING  
CNAS L0442

# TEST REPORT

No. 2009BTH0102

|                        |  |
|------------------------|--|
| Product Name           | 900/1800/1900 GSM/GPRS Mobile Phone                |
| Model                  | Xenium X530  |
| Client                 | Shenzhen Sang Fei Consumer Communications Co.,Ltd. |
| Classification of test | Type Approval                                      |

**Telecommunication Metrology Center**  
**of Ministry of Information Industry**

**Notice**

1. The test report shall be invalid if there is no “specified stamp for the test report” or the stamp of the test organization on it.
2. Copies of the test report shall be invalid if there is no “specified stamp for the test report” or the stamp of the test organization on it.
3. The test report shall be invalid if there are no signatures of the testing person, reviewing person and approving person on it.
4. The test report shall be invalid if it is altered.
5. Any demurrals about the test shall be put forward to the testing organization within 15 days after the receiving of the test report.
6. This test report standalone does not constitute or imply by its own an approval of the product by any Certification Authorities or Competent Bodies.
7. This report is only valid if complete, and test report shall not be reproduced except in full, without written approval of the laboratory.
8. This report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of Telecommunication Metrology Center of MII and the Accreditation Bodies, if it applies.

Address: No. 52, Huayuan Bei Road, Haidian District, Beijing, P. R. China  
(Telecommunication Metrology Center of MII)

Post code: 100083

Telephone: +86 10 62302041

Fax: +86 10 62304793

Web site: <http://www.emcite.com>

E-mail: [welcome@emcite.com](mailto:welcome@emcite.com)

**Telecommunication Metrology Center  
of Ministry of Information Industry**

**No.2009BTH0102**

**Page 3of 39**

|                                |   |                               |             |  |
|--------------------------------|---|-------------------------------|-------------|--|
| <b>Product Name</b>            | 900/1800/1900<br>GSM/GPRS Mobile<br>Phone   | <b>Model</b>                  | Xenium X530 |  |
|                                |   | <b>Trade mark</b>             |             |  |
| <b>Client</b>                  | Shenzhen Sang Fei Consumer Communications Co., Ltd.   |                               |             |  |
| <b>Manufacturer</b>            | Shenzhen Sang Fei Consumer Communications Co., Ltd.   |                               |             |  |
| <b>Arrival Date of sample</b>  | December 30, 2008   | <b>Carrier of the samples</b> | Helen Lin   |  |
| <b>Quantity of the samples</b> | 2   | <b>Date of product</b>        | /           |  |
| <b>Series number</b>           | 351675039999739, 351675039999960  |                               |             |  |
| <b>Standard(s)</b>             | FCC Part 15, Subpart C:<br>15.205 Restricted bands of operation;<br>15.209 Radiated emission limits; general requirements;<br>15.247 Operation within the bands 902-928MHz, 2400-2483.5 MHz,<br>and 5725-5850 MHz.<br>ANSI C63.4- 2003<br>FCC Public Notice DA 00-705, March 2000 |                               |             |  |
| <b>Conclusion</b>              | 9 test cases were done.<br>The test results are shown in the clause 6 and annex B. The samples passed all the tests required by the client.<br><br><div align="right">Date of issue: 2009-02-26</div>   |                               |             |  |
| <b>Comment</b>                 | The test result relates only to the tested samples.   |                               |             |  |

Approved by 陆冰松 Reviewed by 高洪 Tested by 孙震宇  
 (Lu Bingsong) (Gao Hong) (Sun Zhenyu)  
 (Lu Bingsong - Deputy Director of the laboratory)

## **CONTENTS**

|  |           |
|--|-----------|
| <b>1. Competence and Warranties .....</b>                              | <b>6</b>  |
| <b>2. Testing Laboratory .....</b>                                     | <b>6</b>  |
| 2.1. Testing Location .....  | 6         |
| 2.2. Testing Environment.....  | 6         |
| 2.3. Testing Period.....   | 7         |
| <b>3. Applicant Information.....</b>                                   | <b>7</b>  |
| 3.1. Client information .....  | 7         |
| 3.2. Manufacturer information .....                                    | 7         |
| <b>4. Equipment Under Test (EUT) and Ancillary Equipment (AE).....</b> | <b>8</b>  |
| 4.1. About EUT.....  | 8         |
| 4.2. Internal Identification of EUT used during the test.....          | 8         |
| 4.3. Internal Identification of AE used during the test .....          | 8         |
| <b>5. Reference Documents.....</b>                                     | <b>8</b>  |
| 5.1. Documents supplied by applicant.....                              | 8         |
| 5.2. Reference Documents.....  | 8         |
| <b>6. Test Results.....</b>  | <b>9</b>  |
| 6.1. Summary of Test Results.....                                      | 9         |
| 6.2. Statements .....  | 9         |
| <b>7. Test Equipments .....</b>  | <b>10</b> |
| <b>ANNEX A: Photograph of EUT.....</b>                                 | <b>11</b> |
| <b>ANNEX B: MEASUREMENT RESULTS.....</b>                               | <b>17</b> |
| B.1 Measurement Method of Conducted Cases.....                         | 17        |
| B.2 Peak Output Power - Conducted .....                                | 17        |
| B.3 Frequency Band Edges – Conducted .....                             | 17        |
| B.4 Conducted Emission.....  | 18        |
| B.5 Radiated Emission.....   | 18        |
| B.6 Time of Occupancy (Dwell Time) .....                               | 19        |
| B.7 20dB Bandwidth.....  | 19        |
| B.8 Carrier Frequency Separation.....                                  | 19        |
| B.9 Number of Hopping Channels.....                                    | 20        |
| B.10 AC Powerline Conducted Emission .....                             | 20        |
| <b>ANNEX C: TEST FIGURE LIST.....</b>                                  | <b>21</b> |
| Fig. 1 Frequency Band Edges: Channel 0, Hopping Off.....               | 21        |

**Telecommunication Metrology Center  
of Ministry of Information Industry**

**No.2009BTH0102**

**Page 5 of 39**

|                                   |  |           |
|-----------------------------------|--|-----------|
| Fig. 2                            | Frequency Band Edges: Channel 0, Hopping On.....             | 21        |
| Fig. 3                            | Frequency Band Edges: Channel 78, Hopping Off.....           | 22        |
| Fig. 4                            | Frequency Band Edges: Channel 78, Hopping On.....            | 22        |
| Fig. 5                            | Conducted spurious emission: Channel 0, 2402MHz.....         | 23        |
| Fig. 6                            | Conducted spurious emission: Channel 0, 30MHz - 1GHz .....   | 23        |
| Fig. 7                            | Conducted spurious emission: Channel 0, 1GHz – 26GHz .....   | 24        |
| Fig. 8                            | Conducted spurious emission: Channel 39, 2441MHz.....        | 24        |
| Fig. 9                            | Conducted spurious emission: Channel 39, 30MHz - 1GHz.....   | 25        |
| Fig. 10                           | Conducted spurious emission: Channel 39, 1GHz – 26GHz.....   | 25        |
| Fig. 11                           | Conducted spurious emission: Channel 78, 2480MHz.....        | 26        |
| Fig. 12                           | Conducted spurious emission: Channel 78, 30MHz - 1GHz.....   | 26        |
| Fig. 13                           | Conducted spurious emission: Channel 78, 1GHz – 26GHz.....   | 27        |
| Fig. 14                           | Radiated emission: Channel 0, 30 MHz ~ 1 GHz .....           | 27        |
| Fig. 15                           | Radiated emission: Channel 0, 1 GHz ~ 4 GHz .....            | 28        |
| Fig. 16                           | Radiated emission: Channel 0, 4 GHz ~ 18 GHz .....           | 28        |
| Fig. 17                           | Radiated emission: Channel 39, 30 MHz ~ 1 GHz .....          | 29        |
| Fig. 18                           | Radiated emission: Channel 39, 1 GHz ~ 4 GHz .....           | 29        |
| Fig. 19                           | Radiated emission: Channel 39, 4 GHz ~ 18 GHz .....          | 30        |
| Fig. 20                           | Radiated emission: Channel 78, 30 MHz ~ 1 GHz .....          | 30        |
| Fig. 21                           | Radiated emission: Channel 78, 1 GHz ~ 4 GHz .....           | 31        |
| Fig. 22                           | Radiated emission: Channel 78, 4 GHz ~ 18 GHz .....          | 31        |
| Fig. 23                           | Radiated emission (Power): channel 78, 2.45GHz ~ 2.5GHz..... | 32        |
| Fig. 24                           | Radiated emission: 18 GHz ~ 26 GHz.....                      | 32        |
| Fig. 25                           | Time of occupancy (Dwell Time): Channel 39, Packet DH1 ..... | 33        |
| Fig. 26                           | Time of occupancy (Dwell Time): Channel 39, Packet DH3 ..... | 33        |
| Fig. 27                           | Time of occupancy (Dwell Time): Channel 39, Packet DH5 ..... | 34        |
| Fig. 28                           | 20dB Bandwidth: Channel 0 .....                              | 34        |
| Fig. 29                           | 20dB Bandwidth: Channel 39 .....                             | 35        |
| Fig. 30                           | 20dB Bandwidth: Channel 78 .....                             | 35        |
| Fig. 31                           | Carrier frequency separation measurement: Channel 39.....    | 36        |
| Fig. 32                           | Number of hopping frequencies: Channel 0 – 39 .....          | 36        |
| Fig. 33                           | Number of hopping frequencies: Channel 40 - 78 .....         | 37        |
| Fig. 34                           | AC Powerline Conducted Emission .....                        | 38        |
| <b>ANNEX D: TEST LAYOUT .....</b> |  | <b>39</b> |

## **1. Competence and Warranties**

**Telecommunication Metrology Center of Ministry of Information Industry** is a test laboratory accredited by DAR (DATEch) – Deutschen Akkreditierungs Rat (The German Accreditation Body Technology) for the tests indicated in the Certificate No. **DAT-P-114/01-01**.

**Telecommunication Metrology Center of Ministry of Information Industry** is a test laboratory accredited by CNAS–China national Accreditation Service for Conformity Assessment, for the tests indicated in the Certificate No. **L0442**.

**Telecommunication Metrology Center of Ministry of Information Industry (hereinafter TMC of MII)** is a test laboratory competent to carry out the tests described in this test report.

**TMC of MII** guarantees the reliability of the data presented in this test report, which is the results of measurements and tests performed for the items under test on the date and under the conditions stated in this test report and is based on the knowledge and technical facilities available at **TMC of MII** at the time of execution of the test.

**TMC of MII** is liable to the client for the maintenance by its personnel of the confidentiality of all information related to the items under test and the results of the test.

## **2. Testing Laboratory**

### **2.1. Testing Location**

|                   |  |
|-------------------|--|
| Name of Company : | Telecommunication Metrology Center of Ministry of Information Industry |
| Address:          | No 52, Hua Yuanbei Road, Haidian District, Beijing, P.R.China          |
| Postal Code:      | 100083   |
| Telephone:        | +86-10-62303288  |
| Fax:              | +86-10-62304793  |

### **2.2. Testing Environment**

**Shielding Room1** (6.0 meters×3.0 meters×2.7 meters) did not exceed following limits along the conducted RF performance testing:

|                              |  |
|------------------------------|--|
| Temperature                  | Min. = 15 °C, Max. = 30 °C                 |
| Relative humidity            | Min. = 30 %, Max. = 60 %                   |
| Shielding effectiveness      | > 110 dB                                   |
| Ground system resistance     | < 0.5 Ω                                    |
| Uniformity of field strength | Between 0 and 6 dB, from 80MHz to 3000 MHz |

**Control room** did not exceed following limits along the EMC testing:

|                   |                            |
|-------------------|----------------------------|
| Temperature       | Min. = 15 °C, Max. = 35 °C |
| Relative humidity | Min. = 30 %, Max. = 60 %   |

**Telecommunication Metrology Center  
of Ministry of Information Industry**

**No.2009BTH0102**

**Page 7 of 39**

|                          |          |
|--------------------------|----------|
| Shielding effectiveness  | > 110 dB |
| Electrical insulation    | > 10 kΩ  |
| Ground system resistance | < 0.5 Ω  |

**Fully-anechoic chamber1** (6.8 meters×3.08 meters×3.53 meters) did not exceed following limits along the EMC testing:

|                              |  |
|------------------------------|--|
| Temperature                  | Min. = 15 °C, Max. = 30 °C                 |
| Relative humidity            | Min. = 30 %, Max. = 60 %                   |
| Shielding effectiveness      | > 110 dB                                   |
| Electrical insulation        | > 10 kΩ                                    |
| Ground system resistance     | < 0.5 Ω                                    |
| Uniformity of field strength | Between 0 and 6 dB, from 80MHz to 3000 MHz |

**Shielding Room2** (7.30 meters×4.00 meters×3.80 meters) did not exceed following limits along the EMC testing:

|                              |  |
|------------------------------|--|
| Temperature                  | Min. = 15 °C, Max. = 30 °C                 |
| Relative humidity            | Min. = 35 %, Max. = 60 %                   |
| Shielding effectiveness      | > 110 dB                                   |
| Electrical insulation        | > 10 kΩ                                    |
| Ground system resistance     | < 0.5 Ω                                    |
| Uniformity of field strength | Between 0 and 6 dB, from 80MHz to 3000 MHz |

### **2.3. Testing Period**

The performed test started on 6<sup>th</sup> January, 2009 and finished on 6<sup>th</sup> February, 2009.

## **3. Applicant Information**

### **3.1. Client information**

|                         |   |
|-------------------------|---|
| <b>Name of Company:</b> | Shenzhen Sang Fei Consumer Communications Co.,Ltd.  |
| <b>Address /Post:</b>   | 11 Science & Technology Rd., Shenzhen Hi-tech Industrial Park,<br>Nanshan District, Shenzhen 518057 |
| <b>City:</b>            | Shenzhen  |
| <b>Postal Code:</b>     | 518057  |
| <b>Country:</b>         | China   |
| <b>Telephone:</b>       | 0755-26633217   |
| <b>Fax:</b>             | 0755-26635272   |

### **3.2. Manufacturer information**

|                         |   |
|-------------------------|---|
| <b>Name of Company:</b> | Shenzhen Sang Fei Consumer Communications Co.,Ltd.  |
| <b>Address /Post:</b>   | 11 Science & Technology Rd., Shenzhen Hi-tech Industrial Park,<br>Nanshan District, Shenzhen 518057 |
| <b>City:</b>            | Shenzhen  |
| <b>Postal Code:</b>     | 518057  |

|                   |               |
|-------------------|---------------|
| <b>Country:</b>   | China         |
| <b>Telephone:</b> | 0755-26633217 |
| <b>Fax:</b>       | 0755-26635272 |

## **4. Equipment Under Test (EUT) and Ancillary Equipment (AE)**

### **4.1. About EUT**

|                                |                                     |
|--------------------------------|-------------------------------------|
| Product name:                  | 900/1800/1900 GSM/GPRS Mobile Phone |
| Model:                         | Xenium X530                         |
| FCC ID:                        | VQRCTX530                           |
| With Bluetooth                 | Yes                                 |
| EUT operating voltage- Normal: | 3.7                                 |
| Extreme Low Voltage:           | 3.5                                 |
| Extreme High Voltage:          | 4.2,                                |
| Extreme temperature:           | -20℃ / + 55℃                        |

Note: please refer to ANNEX A in this test report for Photographs of EUT.

### **4.2. Internal Identification of EUT used during the test**

| <b>EUT ID*</b> | <b>SN or IMEI</b> | <b>HW Version</b> | <b>SW Version</b>         |
|----------------|-------------------|-------------------|---------------------------|
| EUT1           | 351675039999739   | PR1               | X530_N52109_0850D01_V02CN |
| EUT2           | 351675039999960   | PR1               | X530_N52109_0850D01_V02CN |

\*EUT ID is used to identify the test sample in the lab internally.

### **4.3. Internal Identification of AE used during the test**

| <b>AE ID*</b> | <b>Description</b> | <b>Type</b>          | <b>SN</b> |
|---------------|--------------------|----------------------|-----------|
| AE1           | Switching adapter  | DSA-5W-05 FUS 050065 | /         |
| AE2           | Li-ion Battery     | AB0920BWM            | /         |

\*AE ID: is used to identify the test sample in the lab internally.

## **5. Reference Documents**

### **5.1. Documents supplied by applicant**

EUT feature information is supplied by the client or manufacturer, which is the basis of testing.

### **5.2. Reference Documents**

The following documents listed in this section are referred for testing.

| <b>Reference</b> | <b>Title</b>   | <b>Version</b>         |
|------------------|--|------------------------|
| FCC Part15       | FCC CFR 47, Part 15, Subpart C:<br>15.205 Restricted bands of operation;<br>15.209 Radiated emission limits, general requirements;<br>15.247 Operation within the bands 902–928MHz,<br>2400–2483.5 MHz, and 5725–5850 MHz. | May 4, 2007<br>Edition |
| ANSI C63.4       | Methods of Measurement of Radio-Noise Emissions from<br>Low-Voltage Electrical and Electronic Equipment in the<br>Range of 9 kHz to 40 GHz   | 2003                   |



**Telecommunication Metrology Center  
of Ministry of Information Industry**

**No.2009BTH0102**

**Page 9 of 39**

|                                |  |            |
|--------------------------------|--|------------|
| FCC Public Notice<br>DA 00-705 | Filing and Measurement Guidelines for Frequency<br>Hopping Spread Spectrum Systems | March 2000 |
|--------------------------------|--|------------|

## **6. Test Results**

### **6.1. Summary of Test Results**

Abbreviations used in this clause:

**P** Pass

**F** Fail

**NA** not applicable

**NM** not measured

| <b>SUMMARY OF MEASUREMENT RESULTS</b> | <b>Sub-clause</b>      | <b>Verdict</b> |
|---------------------------------------|------------------------|----------------|
| Peak Output Power - Conducted         | 15.247 (b)(1)          | <b>P</b>       |
| Frequency Band Edges                  | 15.247 (d)             | <b>P</b>       |
| Conducted Emission                    | 15.247 (d)             | <b>P</b>       |
| Radiated Emission                     | 15.247, 15.205, 15.209 | <b>P</b>       |
| Time of Occupancy (Dwell Time)        | 15.247 (a) (1)(iii)    | <b>P</b>       |
| 20dB Bandwidth                        | 15.247 (a)(1)          | <b>NA</b>      |
| Carrier Frequency Separation          | 15.247 (a)(1)          | <b>P</b>       |
| Number of hopping channels            | 15.247 (a)(b)(iii)     | <b>P</b>       |
| AC Powerline Conducted Emission       | 15.107, 15.207         | <b>P</b>       |

Please refer to **ANNEX B** for detail.

### **6.2. Statements**

TMC has evaluated the test cases requested by the client/manufacture as listed in section 6.1 of this report for the EUT specified in section 4 according to the standards or reference documents listed in section 5.2.

## **7. Test Equipments**

### **Conducted test system**

| <b>No.</b> | <b>Equipment</b>       | <b>Model</b> | <b>Serial Number</b> | <b>Manufacturer</b> | <b>Calibration Due date</b> |
|------------|------------------------|--------------|----------------------|---------------------|-----------------------------|
| 1          | Vector Signal Analyzer | FSQ26        | 200136               | Rohde & Schwarz     | 2010-01-15                  |
| 2          | Bluetooth Tester       | CBT          | 100135               | Rohde & Schwarz     | 2009-11-12                  |
| 3          | Power Meter            | NRVD         | 101078               | Rohde & Schwarz     | /                           |
| 4          | DIODE Power Sensor     | NRV-Z15      | 100103               | Rohde & Schwarz     | 2009-09-02                  |
| 5          | Test Receiver          | ESS          | 847151/015           | Rohde & Schwarz     | 2009-10-30                  |
| 6          | LISN                   | ESH2-Z5      | 829991/012           | Rohde & Schwarz     | 2009-08-13                  |

### **Radiated emission test system**

| <b>No.</b> | <b>Equipment</b>                     | <b>Model</b> | <b>Serial Number</b> | <b>Manufacturer</b> | <b>Calibration Due date</b> |
|------------|--------------------------------------|--------------|----------------------|---------------------|-----------------------------|
| 1          | Test Receiver                        | ESI40        | 831564/002           | Rohde & Schwarz     | 2010-02-12                  |
| 2          | BiLog Antenna                        | 3142B        | 9908-1403            | EMCO                | 2009-03-15                  |
| 3          | Dual-Ridge Waveguide Horn Antenna    | 3115         | 9906-5827            | EMCO                | 2009-12-25                  |
| 4          | Universal Radio Communication Tester | CMU200       | 105948               | Rohde & Schwarz     | 2009-08-15                  |

### **Anechoic chamber**

Fully anechoic chamber by Frankonia German.

## ANNEX A: Photograph of EUT

### External Photo



Mobile Phone



Mobile Phone



Mobile Phone



Mobile Phone



Battery



Battery



Adapter



Tag on the Adapter

Internal Photo



Mobile Phone Disassembly



Mobile Phone Disassembly





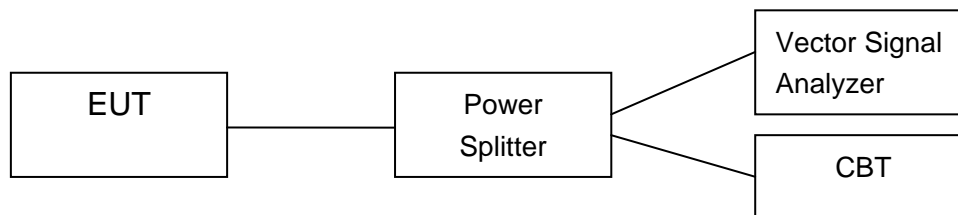
Mobile Phone Disassembly



## **ANNEX B: MEASUREMENT RESULTS**

### **B.1 Measurement Method of Conducted Cases**

- 1). Connect the EUT to the test system correctly.
- 2). Set the EUT to the required work mode (Transmitter, receiver or transmitter & receiver).
- 3). Set the EUT to the required channel.
- 4). Set the EUT hopping mode (hopping or hopping off).
- 5). Set the spectrum analyzer to start measurement.
- 6). Record the values. Vector Signal Analyzer



### **B.2 Peak Output Power - Conducted**

**Measurement Limit:**

| Standard              | Limit (dBm) |
|-----------------------|-------------|
| FCC Part 15.247(b)(1) | < 30        |

**Measurement Results:**

| Channel                                 | Ch 0<br>2402 MHz | Ch 39<br>2441 MHz | Ch 78<br>2480 MHz | Conclusion |
|---|------------------|-------------------|-------------------|------------|
| Peak Conducted<br>Output Power<br>(dBm) | -1.47            | -1.41             | -0.12             | <b>P</b>   |

**Conclusion: PASS**

### **B.3 Frequency Band Edges – Conducted**

**Measurement Limit:**

| Standard                   | Limit (dBc) |
|----------------------------|-------------|
| FCC 47 CFR Part 15.247 (d) | > 20        |

**Measurement Result:**

| Channel | Hopping     | Band Edge Power ( dBc) |       | Conclusion |
|---------|-------------|------------------------|-------|------------|
| 0       | Hopping OFF | Fig.1                  | 54.34 | <b>P</b>   |
|         | Hopping ON  | Fig.2                  | 56.73 | <b>P</b>   |
| 78      | Hopping OFF | Fig.3                  | 60.06 | <b>P</b>   |
|         | Hopping ON  | Fig.4                  | 59.90 | <b>P</b>   |

**See annex C for test graphs.**

**Conclusion: PASS**

#### **B.4 Conducted Emission**

##### **Measurement Limit:**

| <b>Standard</b>            | <b>Limit</b>                                      |
|----------------------------|---|
| FCC 47 CFR Part 15.247 (d) | 20dB below peak output power in 100 kHz bandwidth |

##### **Measurement Results:**

| <b>Channel</b>    | <b>Frequency Range</b> | <b>Test Results</b> | <b>Conclusion</b> |
|-------------------|------------------------|---------------------|-------------------|
| Ch 0<br>2402 MHz  | Center Frequency       | Fig.5               | <b>P</b>          |
|                   | 30 MHz ~ 1 GHz         | Fig.6               | <b>P</b>          |
|                   | 1 GHz ~ 26 GHz         | Fig.7               | <b>P</b>          |
| Ch 39<br>2441 MHz | Center Frequency       | Fig.8               | <b>P</b>          |
|                   | 30 MHz ~ 1 GHz         | Fig.9               | <b>P</b>          |
|                   | 1 GHz ~ 26 GHz         | Fig.10              | <b>P</b>          |
| Ch 78<br>2480 MHz | Center Frequency       | Fig.11              | <b>P</b>          |
|                   | 30 MHz ~ 1 GHz         | Fig.12              | <b>P</b>          |
|                   | 1 GHz ~ 26 GHz         | Fig.13              | <b>P</b>          |

**See annex C for test graphs.**

**Conclusion: PASS**

#### **B.5 Radiated Emission**

##### **Measurement Limit:**

| <b>Standard</b>                        | <b>Limit</b>                 |
|--|------------------------------|
| FCC 47 CFR Part 15.247, 15.205, 15.209 | 20dB below peak output power |

In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

##### **Limit in restricted band:**

| Frequency of emission<br>(MHz) | Field strength(uV/m) | Field strength(dBuV/m) |
|--------------------------------|----------------------|------------------------|
| 30-88                          | 100                  | 40                     |
| 88-216                         | 150                  | 43.5                   |
| 216-960                        | 200                  | 46                     |
| Above 960                      | 500                  | 54                     |

##### **Measurement Results:**

| <b>Channel</b>   | <b>Frequency Range</b> | <b>Test Results</b> | <b>Conclusion</b> |
|------------------|------------------------|---------------------|-------------------|
| Ch 0<br>2402 MHz | 30 MHz ~ 1 GHz         | Fig.14              | <b>P</b>          |
|                  | 1 GHz ~ 4 GHz          | Fig.15              | <b>P</b>          |
|                  | 4 GHz ~ 18 GHz         | Fig.16              | <b>P</b>          |

**Telecommunication Metrology Center  
of Ministry of Information Industry**

**No.2009BTH0102**

**Page 19 of 39**

|                   |                 |        |          |
|-------------------|-----------------|--------|----------|
| Ch 39<br>2441 MHz | 30 MHz ~ 1 GHz  | Fig.17 | <b>P</b> |
|                   | 1 GHz ~ 4 GHz   | Fig.18 | <b>P</b> |
|                   | 4 GHz ~ 18 GHz  | Fig.19 | <b>P</b> |
| Ch 78<br>2480 MHz | 30 MHz ~ 1 GHz  | Fig.20 | <b>P</b> |
|                   | 1 GHz ~ 4 GHz   | Fig.21 | <b>P</b> |
|                   | 4 GHz ~ 18 GHz  | Fig.22 | <b>P</b> |
| For all channels  | 2.45GHz~2.5GHz  | Fig.23 | <b>P</b> |
| For all channels  | 18 GHz ~ 26 GHz | Fig.24 | <b>P</b> |

**See annex C for test graphs.**

**Conclusion: PASS**

### **B.6 Time of Occupancy (Dwell Time)**

**Measurement Limit:**

| <b>Standard</b>                    | <b>Limit (ms)</b> |
|------------------------------------|-------------------|
| FCC 47 CFR Part 15.247(a) (1)(iii) | < 400             |

**Measurement Result:**

| <b>Channel</b> | <b>Packet</b> | <b>Dwell Time (ms)</b> |        | <b>Conclusion</b> |
|----------------|---------------|------------------------|--------|-------------------|
| 39             | DH1           | Fig.25                 | 248.78 | <b>P</b>          |
|                | DH3           | Fig.26                 | 337.39 | <b>P</b>          |
|                | DH5           | Fig.27                 | 354.43 | <b>P</b>          |

**See annex C for test graphs.**

**Conclusion: PASS**

### **B.7 20dB Bandwidth**

**Measurement Limit:**

| <b>Standard</b>              | <b>Limit</b> |
|------------------------------|--------------|
| FCC 47 CFR Part 15.247(a)(1) | NA *         |

\* Comment: This test case is not required according to the latest FCC 47 CFR Part 15.247. But the test results are necessary for “carrier frequency separation” test case, in Annex B.8.

**Measurement Results:**

| <b>Channel</b> | <b>20dB Bandwidth (kHz)</b> |        | <b>Conclusion</b> |
|----------------|-----------------------------|--------|-------------------|
| 0              | Fig.28                      | 924.80 | <b>NA</b>         |
| 39             | Fig.29                      | 924.80 | <b>NA</b>         |
| 78             | Fig.30                      | 924.80 | <b>NA</b>         |

**See annex C for test graphs.**

**Conclusion: NA**

### **B.8 Carrier Frequency Separation**

**Measurement Limit:**

| <b>Standard</b>              | <b>Limit(kHz)</b> |
|------------------------------|-------------------|
| FCC 47 CFR Part 15.247(a)(1) | >616.21           |

**Telecommunication Metrology Center  
of Ministry of Information Industry**

**No.2009BTH0102**

**Page 20 of 39**

\* Comment: This limit should be over 25 kHz or  $(2/3) * 20\text{dB}$  bandwidth, whichever is greater.

The value of  $(2/3) * 20\text{dB}$  bandwidth (value of channel 39 is 924.80 kHz) is 616.21 kHz, and it is greater than 25 kHz.

**Measurement Result:**

| Channel | Carrier frequency separation (kHz) |        | Conclusion |
|---------|------------------------------------|--------|------------|
| 39      | Fig.31                             | 975.96 | P          |

See annex C for test graphs.

**Conclusion: PASS**

**B.9 Number of Hopping Channels**

**Measurement Limit:**

| Standard                           | Limit |
|------------------------------------|-------|
| FCC 47 CFR Part 15.247(a) (1)(iii) | > 75  |

**Measurement Result:**

| Channel | Number of hopping channels |    | Conclusion |
|---------|----------------------------|----|------------|
| 0~39    | Fig.32                     | 79 | P          |
| 40~78   | Fig.33                     |    |            |

See annex C for test graphs.

**Conclusion: PASS**

**B.10 AC Powerline Conducted Emission**

**Test Condition**

| Voltage (V) | Frequency (Hz) |
|-------------|----------------|
| 110         | 60             |

**Measurement Result and limit:**

Bluetooth (Quasi-peak Limit)

| Frequency range (MHz) | Quasi-peak Limit (dBμV) | Result (dBμV) | Conclusion |
|-----------------------|-------------------------|---------------|------------|
|                       |                         | With charger  |            |
| 0.15 to 0.5           | 66 to 56                | Fig. 34       | P          |
| 0.5 to 5              | 56                      |               |            |
| 5 to 30               | 60                      |               |            |

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

Bluetooth (Average Limit)

| Frequency range (MHz) | Average Limit (dBμV) | Result (dBμV) | Conclusion |
|-----------------------|----------------------|---------------|------------|
|                       |                      | With charger  |            |
| 0.15 to 0.5           | 56 to 46             | Fig. 34       | P          |
| 0.5 to 5              | 46                   |               |            |
| 5 to 30               | 50                   |               |            |

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

See annex C for test graphs.

**Conclusion: PASS**

## ANNEX C: TEST FIGURE LIST

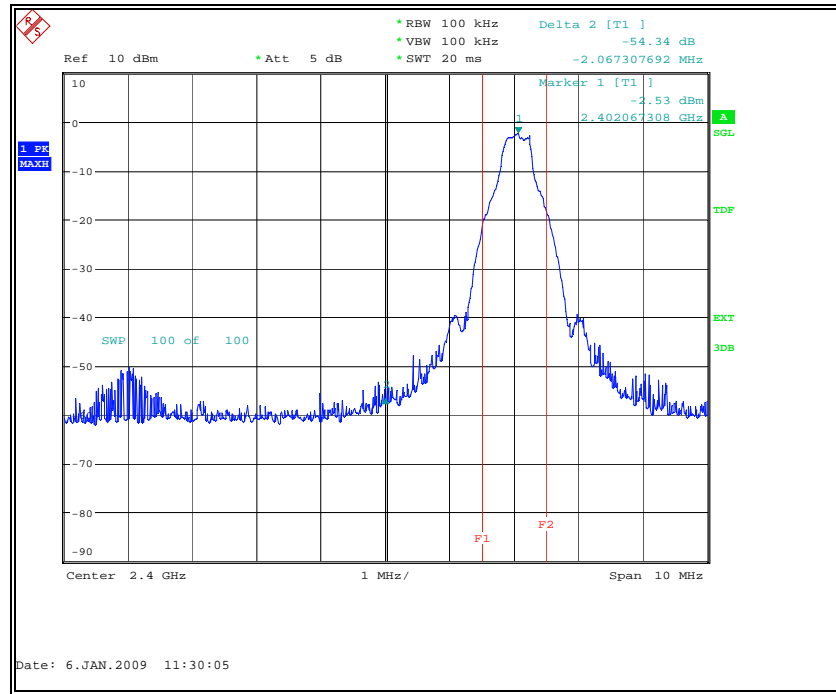


Fig. 1 Frequency Band Edges: Channel 0, Hopping Off

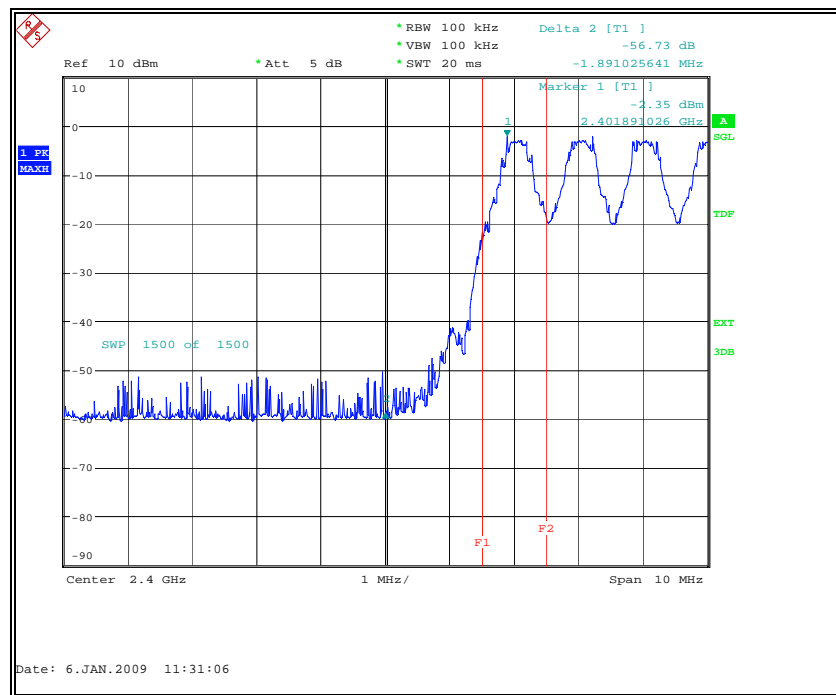


Fig. 2 Frequency Band Edges: Channel 0, Hopping On

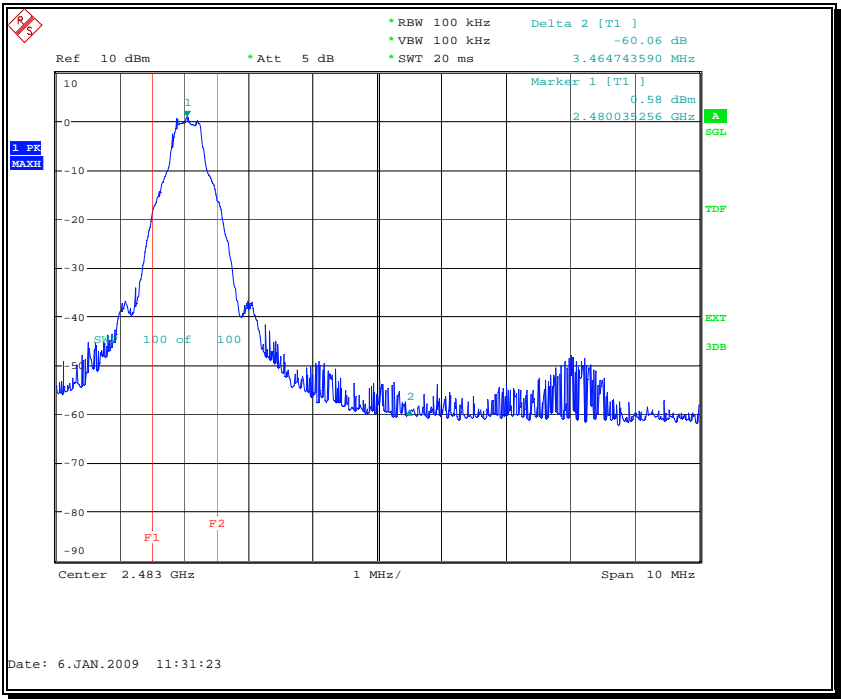


Fig. 3 Frequency Band Edges: Channel 78, Hopping Off

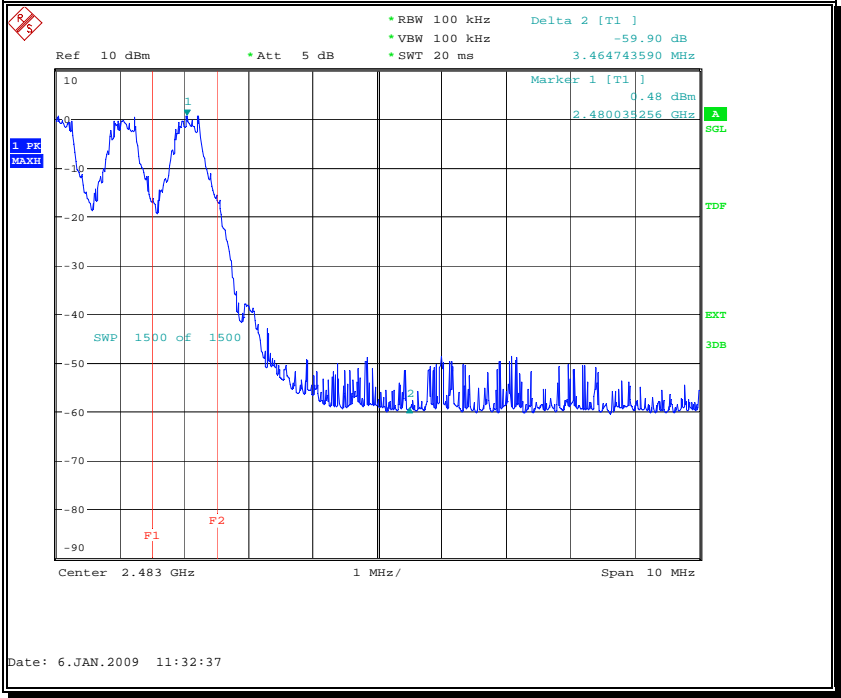
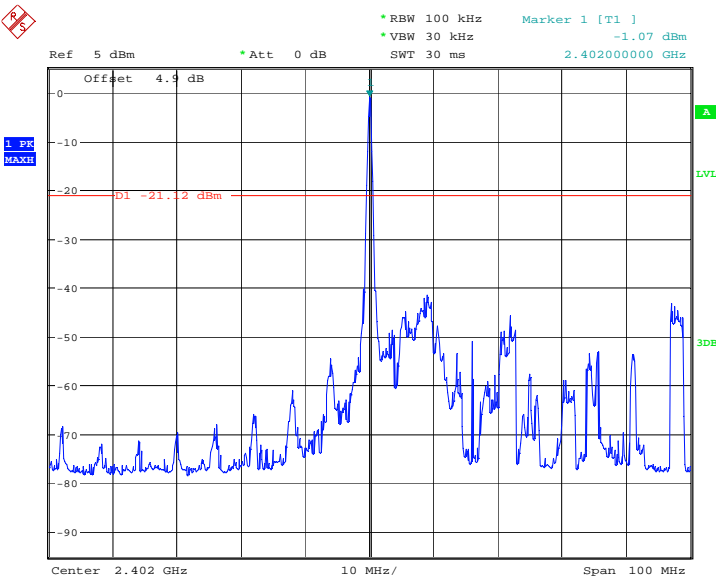
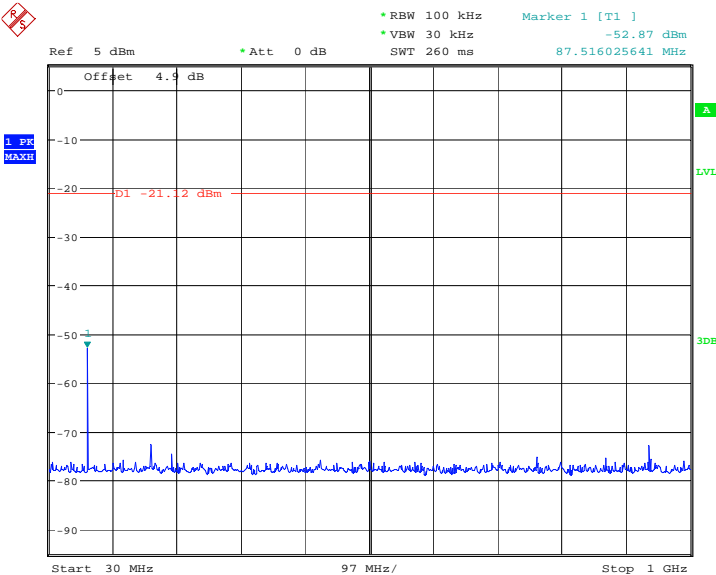


Fig. 4 Frequency Band Edges: Channel 78, Hopping On



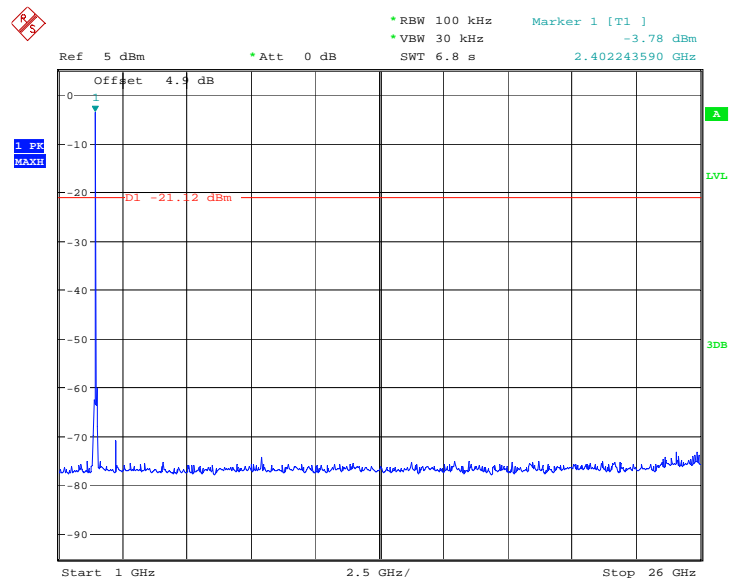
Date: 12.JAN.2009 13:59:13

Fig. 5 Conducted spurious emission: Channel 0,2402MHz



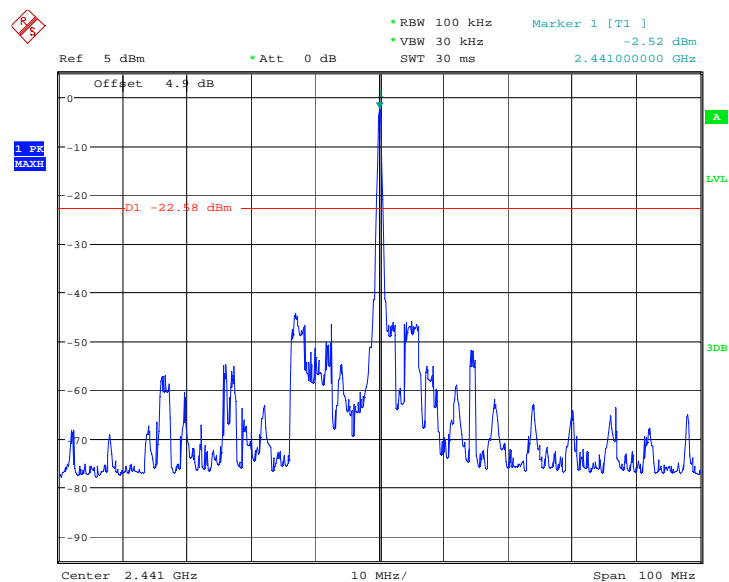
Date: 12.JAN.2009 13:59:36

Fig. 6 Conducted spurious emission: Channel 0, 30MHz - 1GHz



Date: 12.JAN.2009 14:00:10

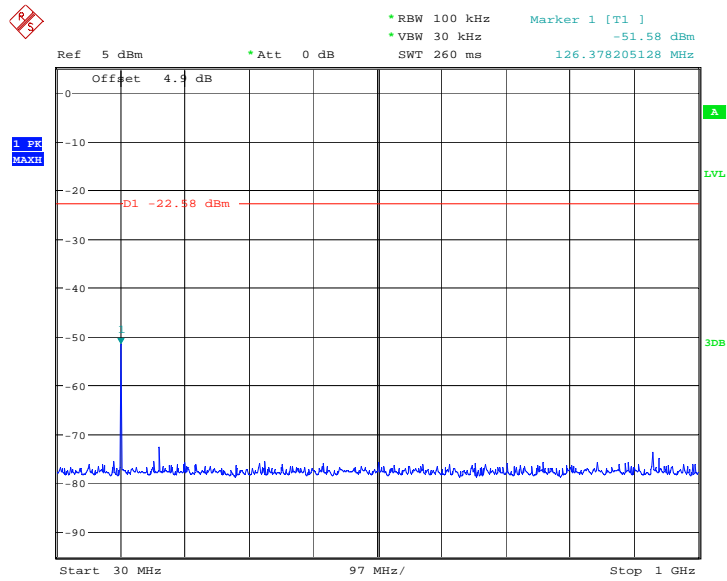
**Fig. 7 Conducted spurious emission: Channel 0, 1GHz – 26GHz**



Date: 12.JAN.2009 14:04:46

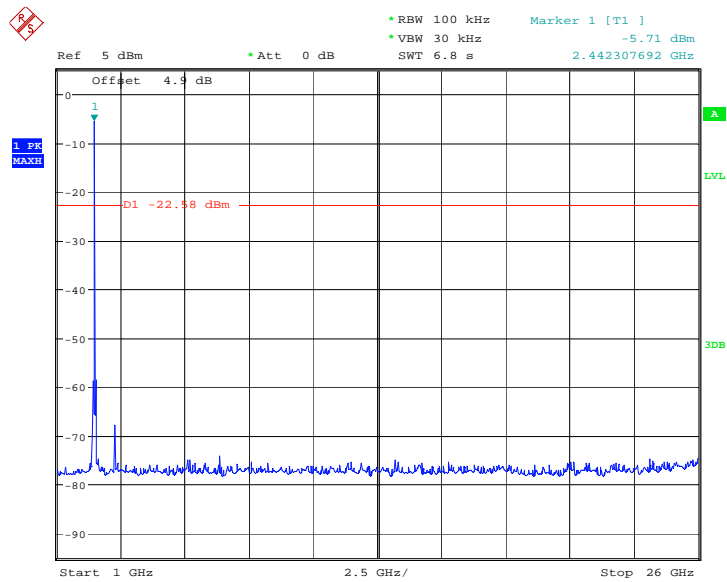
**Fig. 8 Conducted spurious emission: Channel 39, 2441MHz**





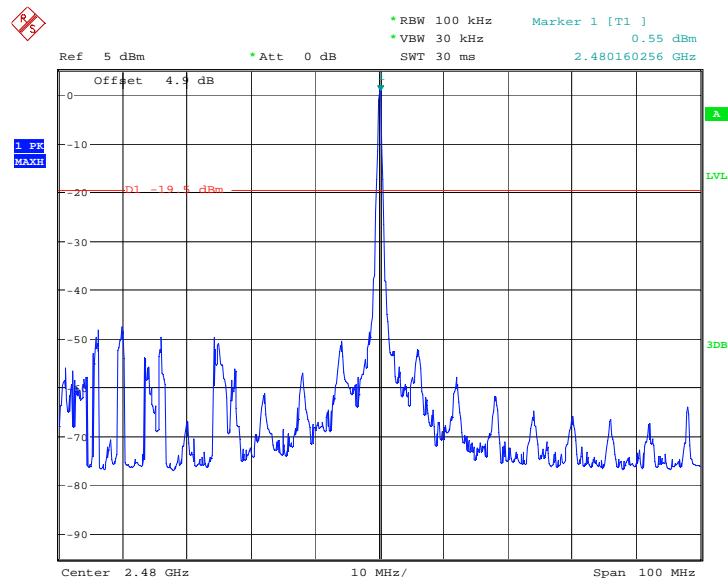
Date: 12.JAN.2009 14:05:03

**Fig. 9    Conducted spurious emission: Channel 39, 30MHz - 1GHz**



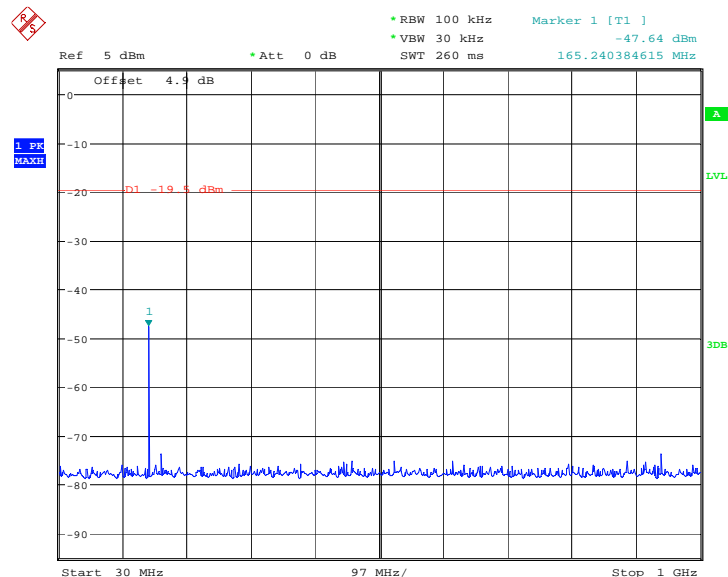
Date: 12.JAN.2009 14:05:27

**Fig. 10    Conducted spurious emission: Channel 39, 1GHz – 26GHz**



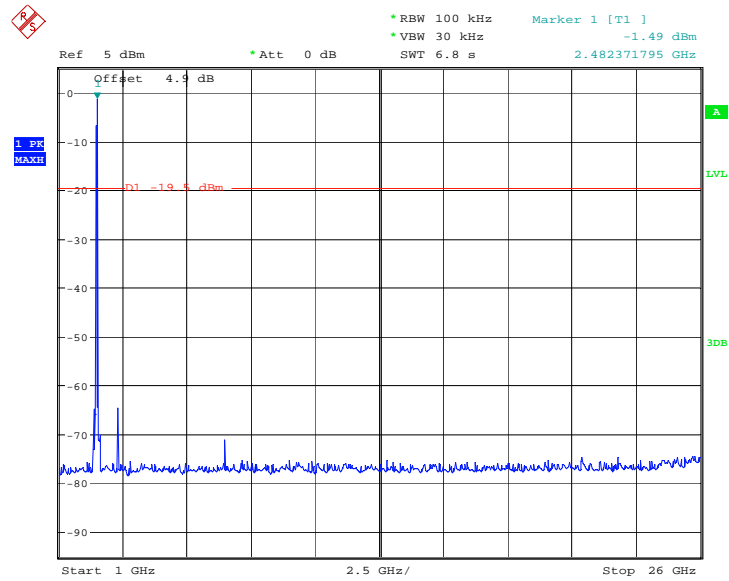
Date: 12.JAN.2009 14:01:30

Fig. 11 Conducted spurious emission: Channel 78, 2480MHz



Date: 12.JAN.2009 14:01:48

Fig. 12 Conducted spurious emission: Channel 78, 30MHz - 1GHz



Date: 12.JAN.2009 14:02:10

Fig. 13 Conducted spurious emission: Channel 78, 1GHz – 26GHz

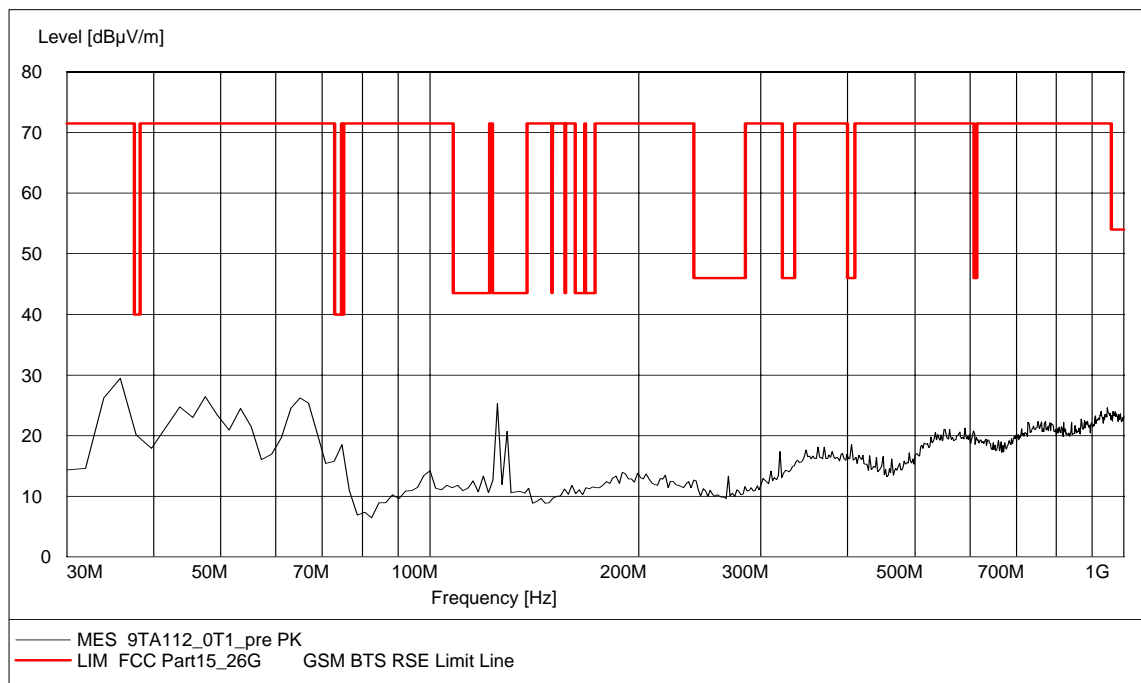


Fig. 14 Radiated emission: Channel 0, 30 MHz ~ 1 GHz

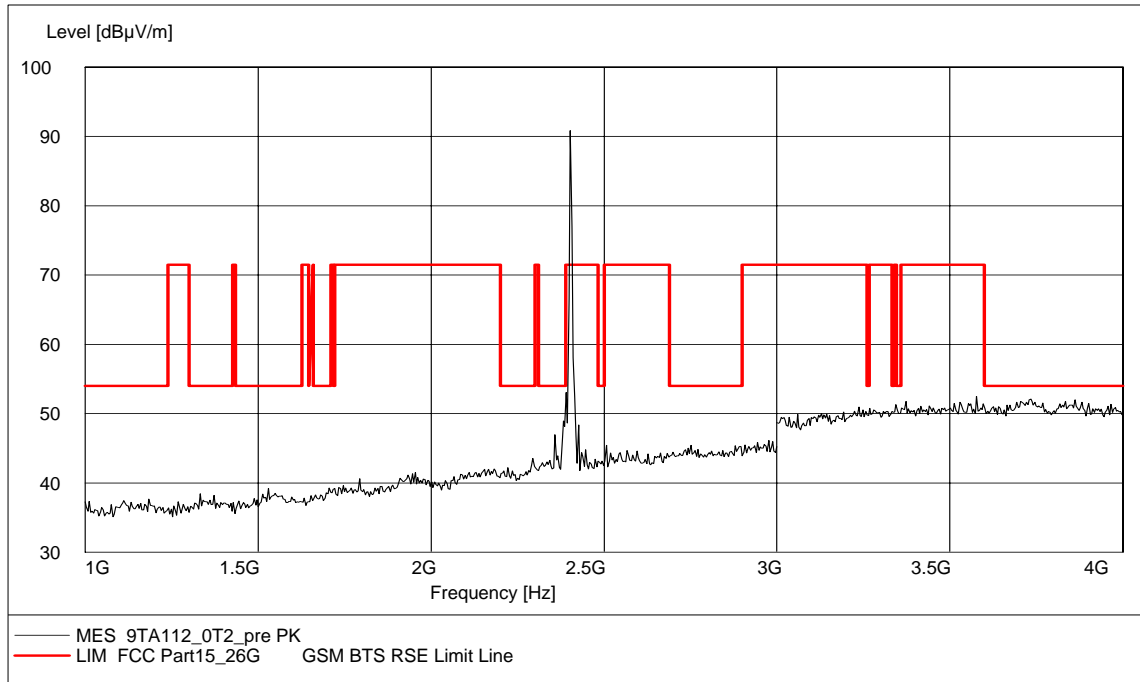


Fig. 15 Radiated emission: Channel 0, 1 GHz ~ 4 GHz

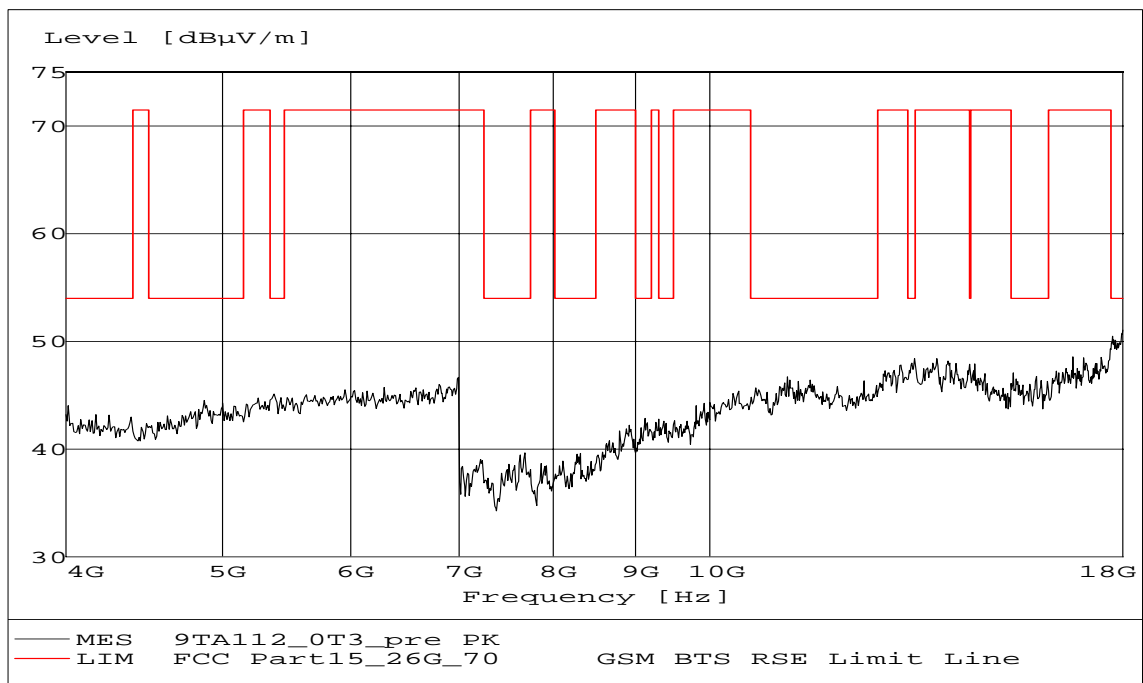


Fig. 16 Radiated emission: Channel 0, 4 GHz ~ 18 GHz

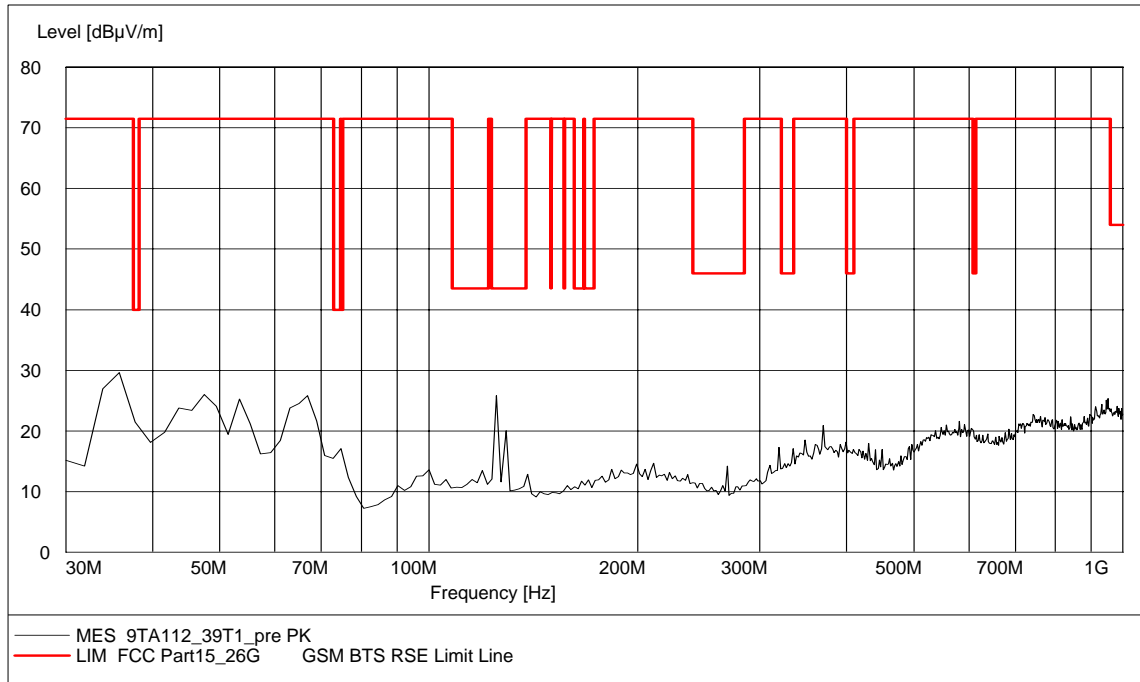


Fig. 17 Radiated emission: Channel 39, 30 MHz ~ 1 GHz

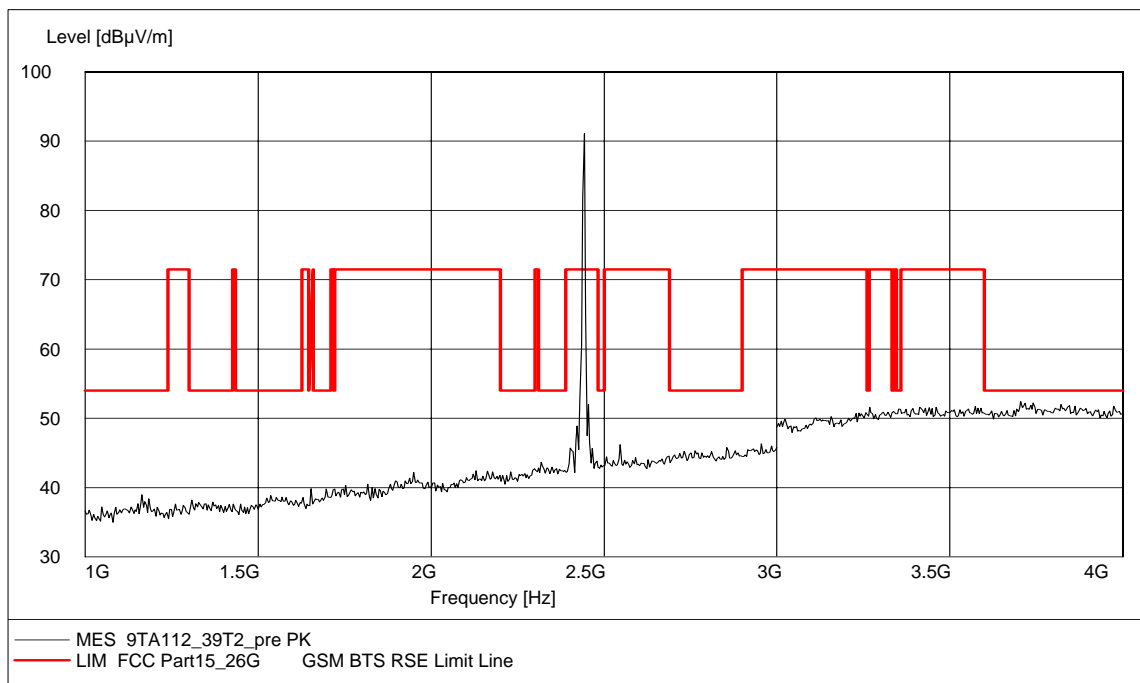


Fig. 18 Radiated emission: Channel 39, 1 GHz ~ 4 GHz

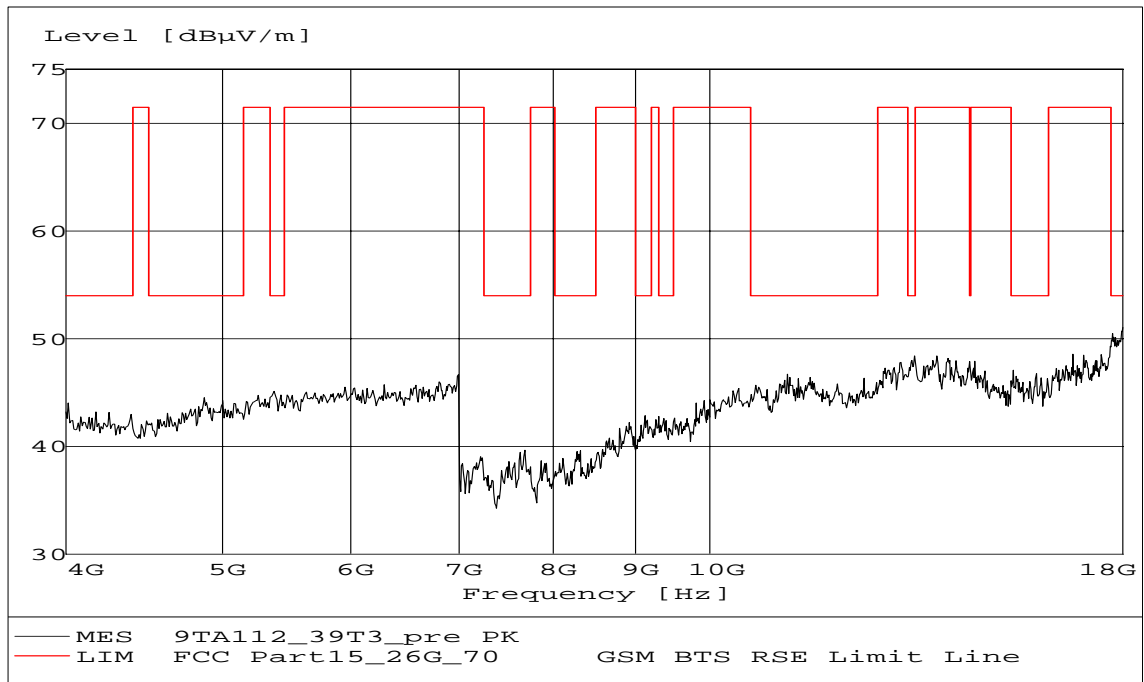


Fig. 19 Radiated emission: Channel 39, 4 GHz ~ 18 GHz

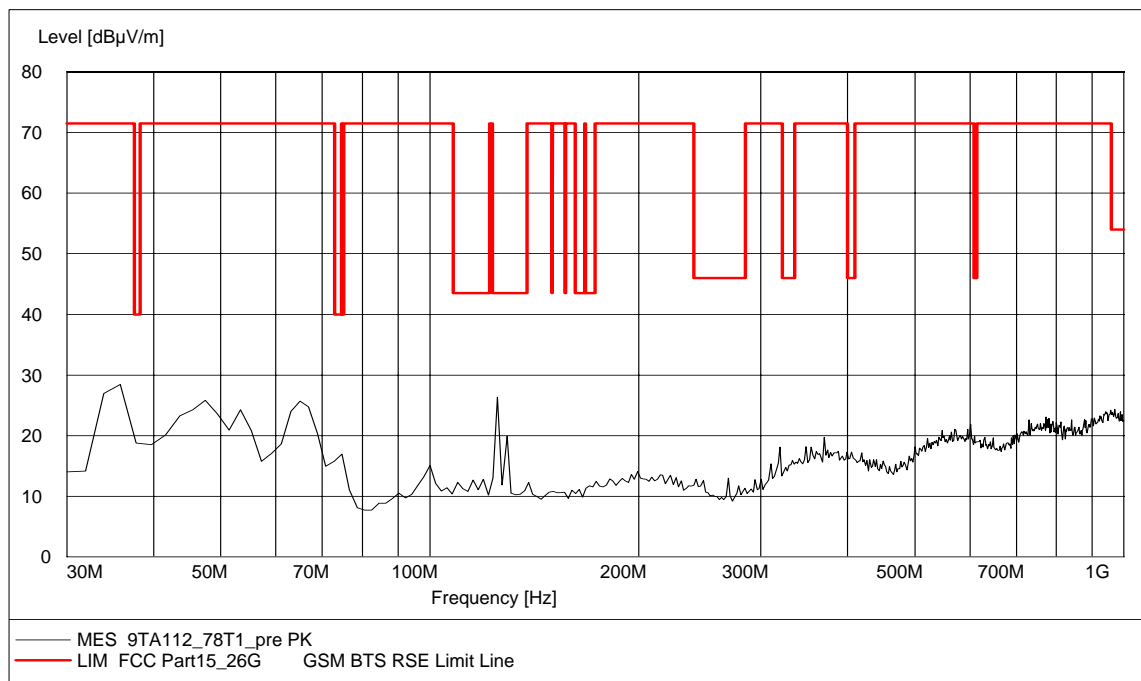
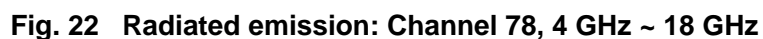


Fig. 20 Radiated emission: Channel 78, 30 MHz ~ 1 GHz



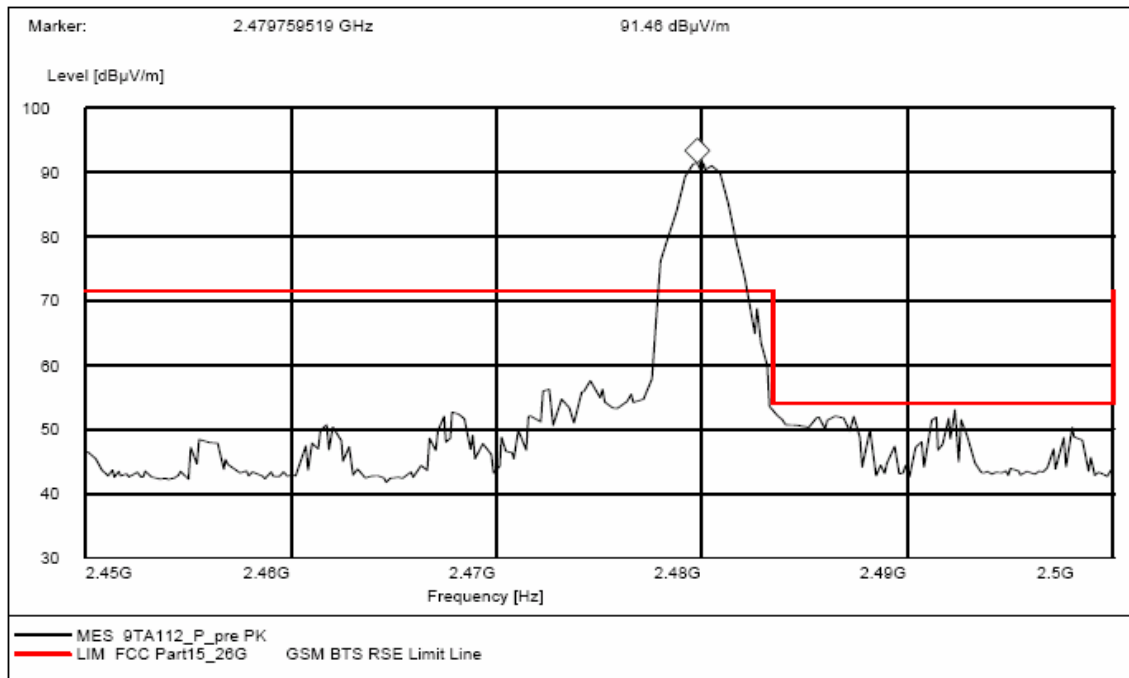


Fig. 23 Radiated emission (Power): channel 78, 2.45GHz ~ 2.5GHz

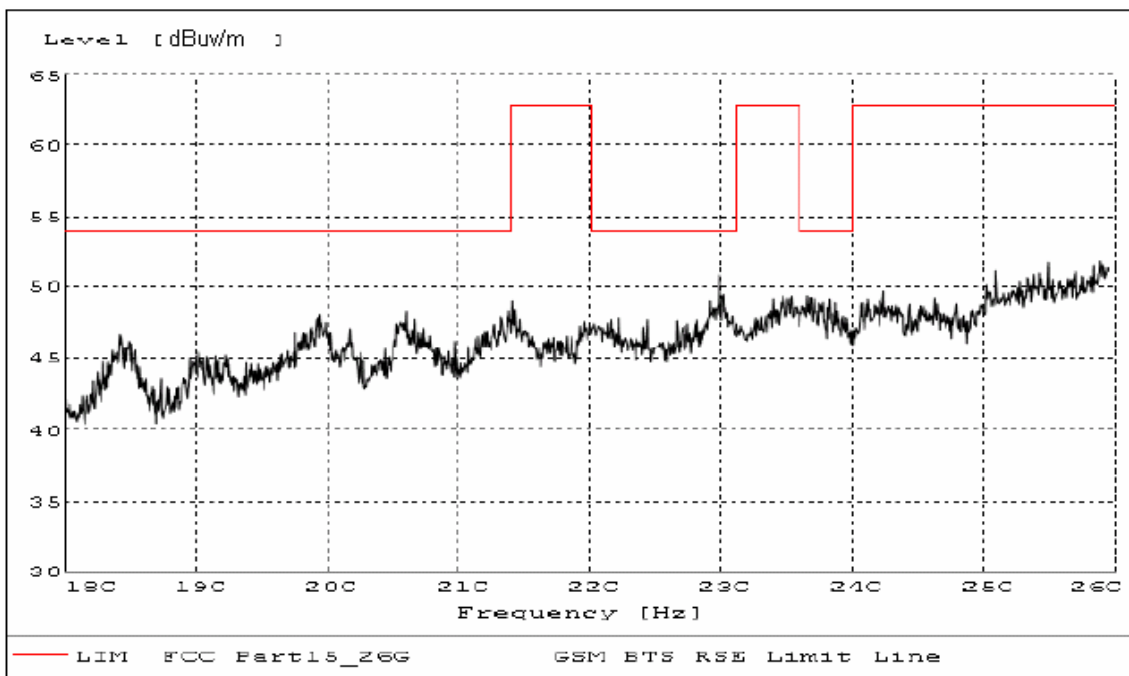


Fig. 24 Radiated emission: 18 GHz ~ 26 GHz



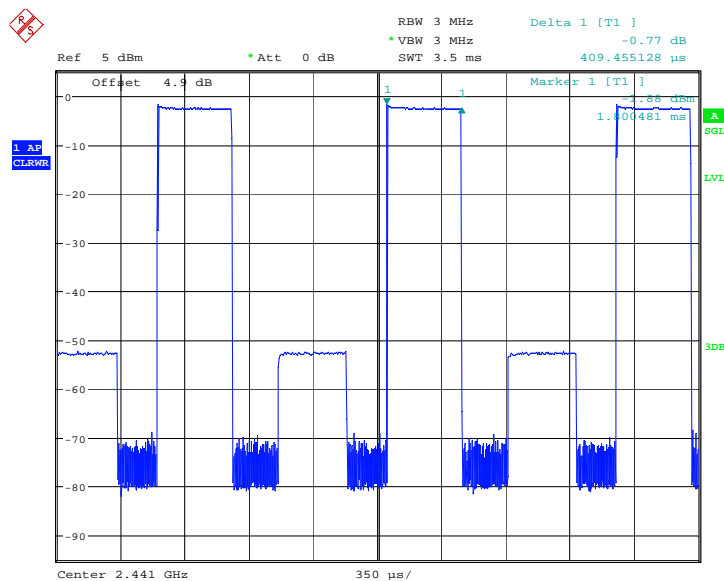


Fig. 25 Time of occupancy (Dwell Time): Channel 39, Packet DH1

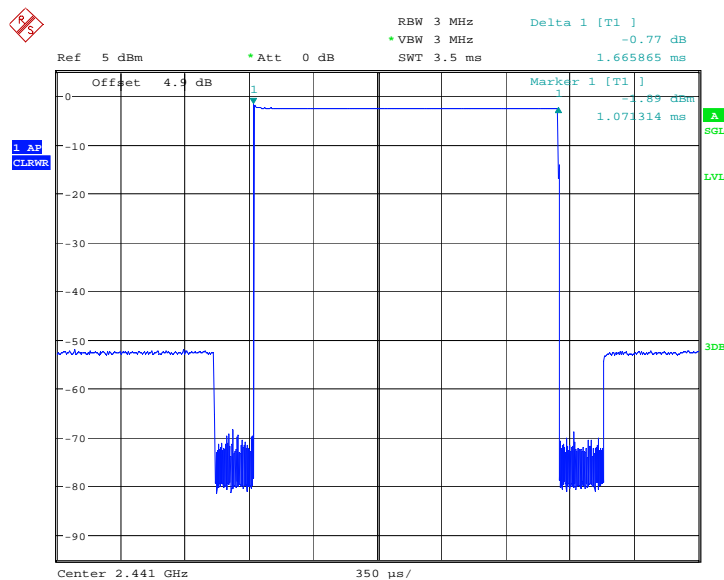
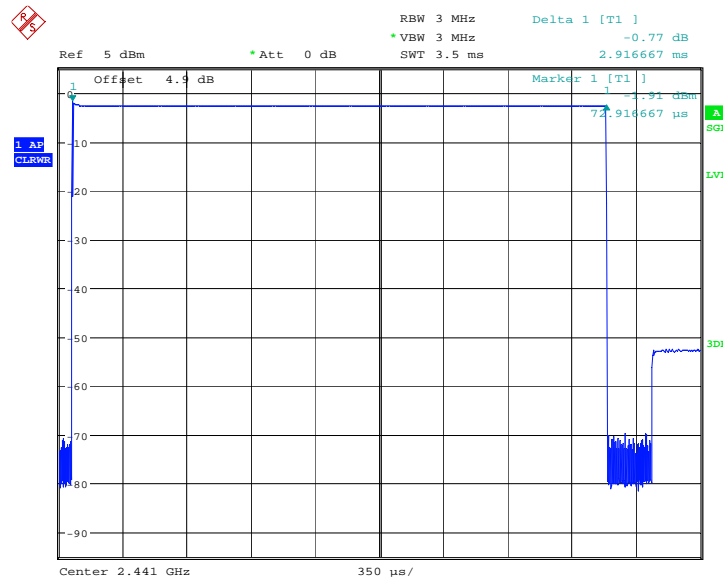
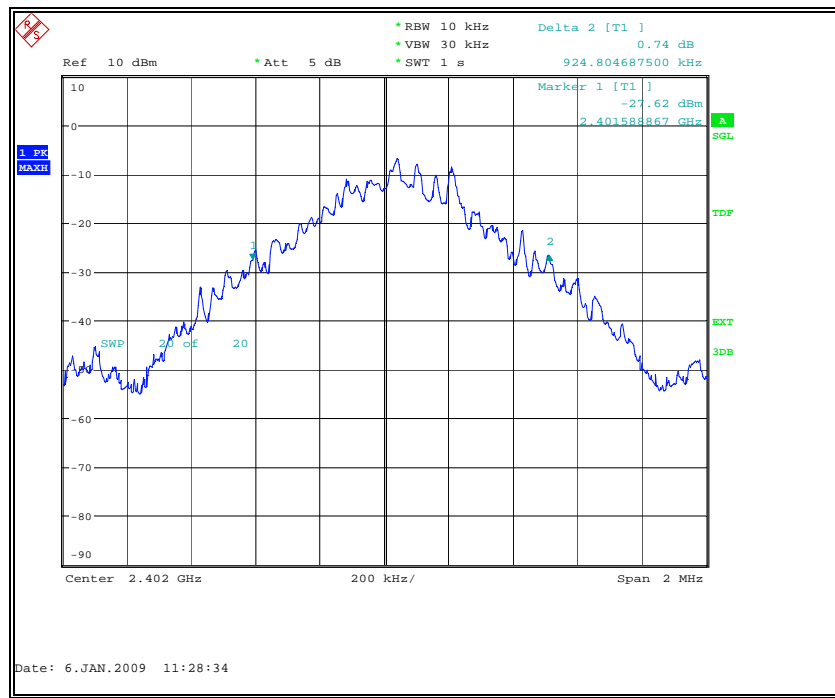


Fig. 26 Time of occupancy (Dwell Time): Channel 39, Packet DH3



Date: 12.JAN.2009 14:11:00

Fig. 27 Time of occupancy (Dwell Time): Channel 39, Packet DH5



Date: 6.JAN.2009 11:28:34

Fig. 28 20dB Bandwidth: Channel 0

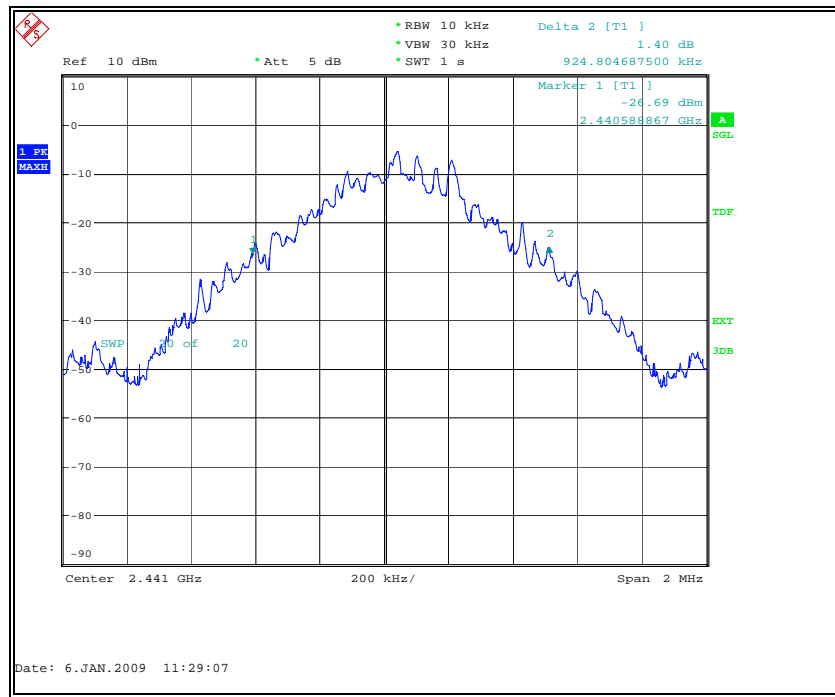


Fig. 29 20dB Bandwidth: Channel 39

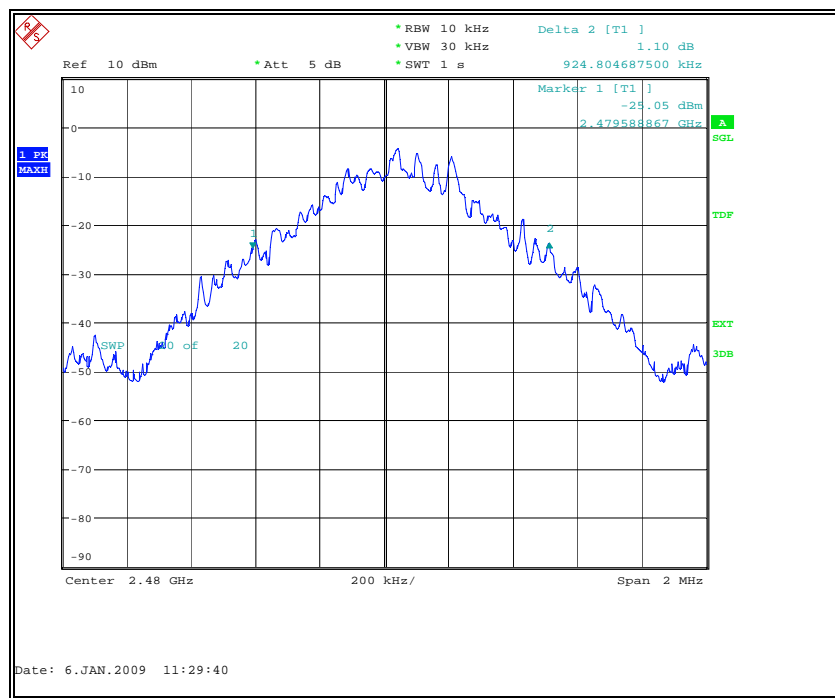


Fig. 30 20dB Bandwidth: Channel 78

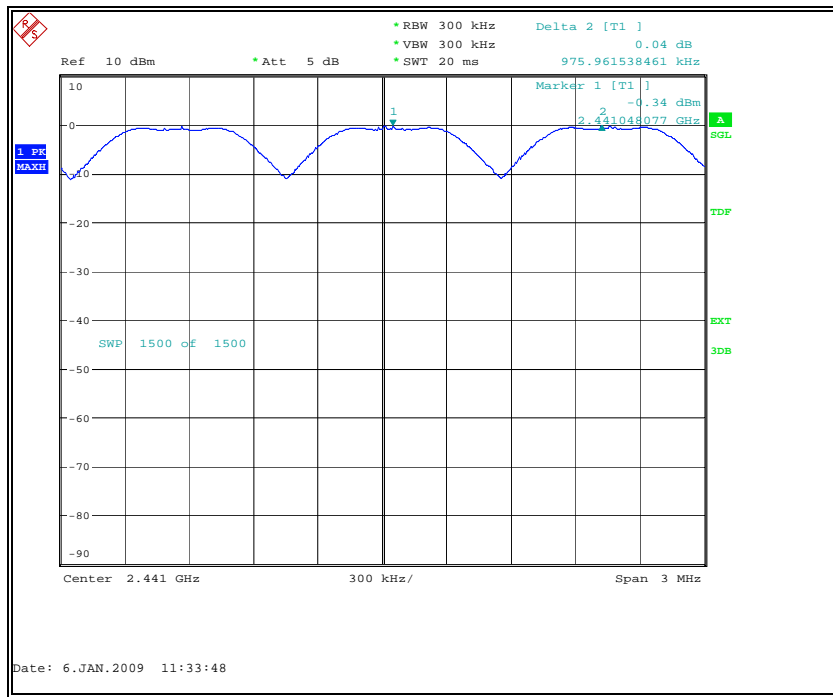


Fig. 31 Carrier frequency separation measurement: Channel 39

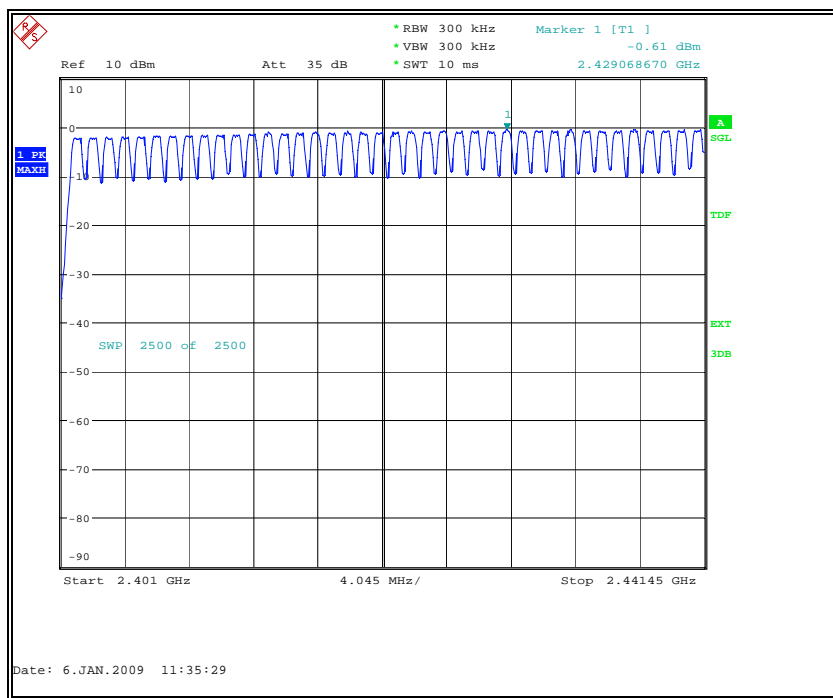


Fig. 32 Number of hopping frequencies: Channel 0 – 39

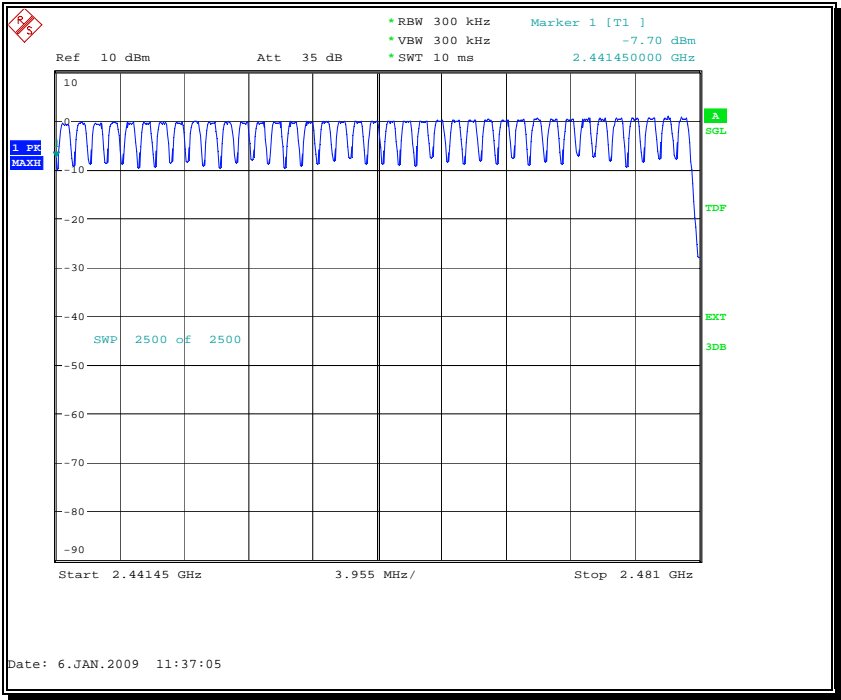
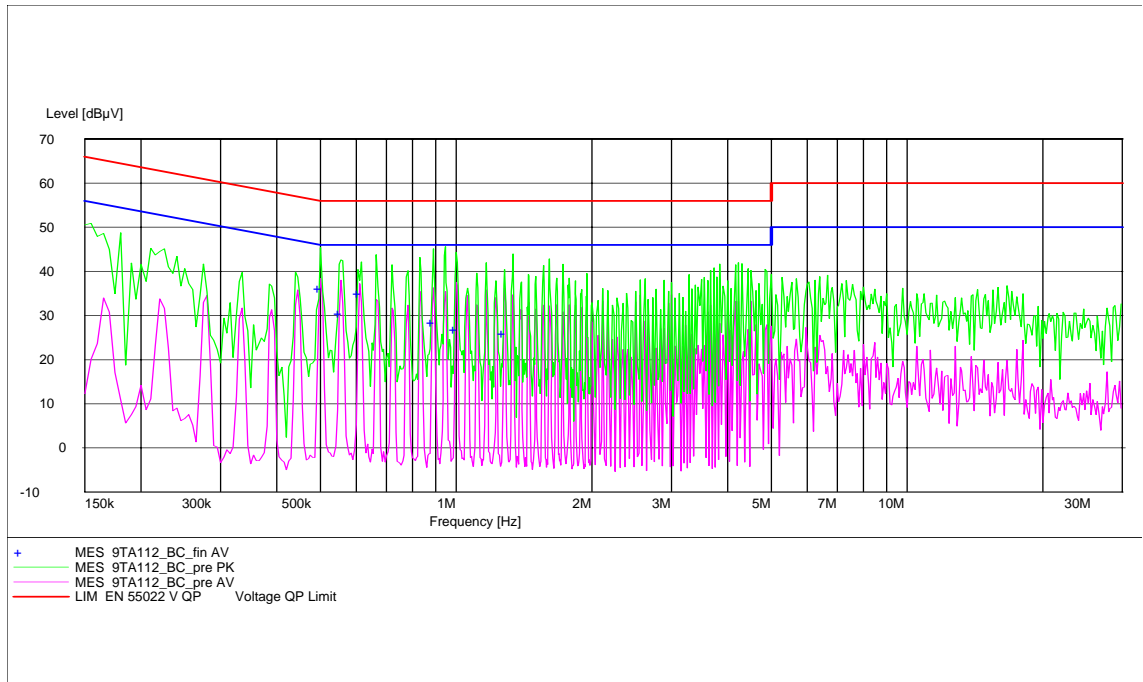


Fig. 33 Number of hopping frequencies: Channel 40 - 78



**Fig. 34 AC Powerline Conducted Emission**

| Frequency<br>(MHz) | Level<br>(dBμV) | Transd<br>(dB) | Limit<br>(dBμV) | Margin<br>(dB) | Line | PE  |
|--------------------|-----------------|----------------|-----------------|----------------|------|-----|
| 0.500000           | 36.20           | 10.1           | 46              | 9.8            | L1   | FLO |
| 0.555000           | 30.60           | 10.1           | 46              | 15.4           | N    | GND |
| 0.610000           | 35.10           | 10.1           | 46              | 10.9           | L1   | FLO |
| 0.890000           | 28.50           | 10.1           | 46              | 17.5           | N    | FLO |
| 1.000000           | 26.80           | 10.1           | 46              | 19.2           | N    | FLO |
| 1.280000           | 26.00           | 10.1           | 46              | 20.1           | N    | GND |

## ANNEX D: TEST LAYOUT



Photo of Radiated Emission Test

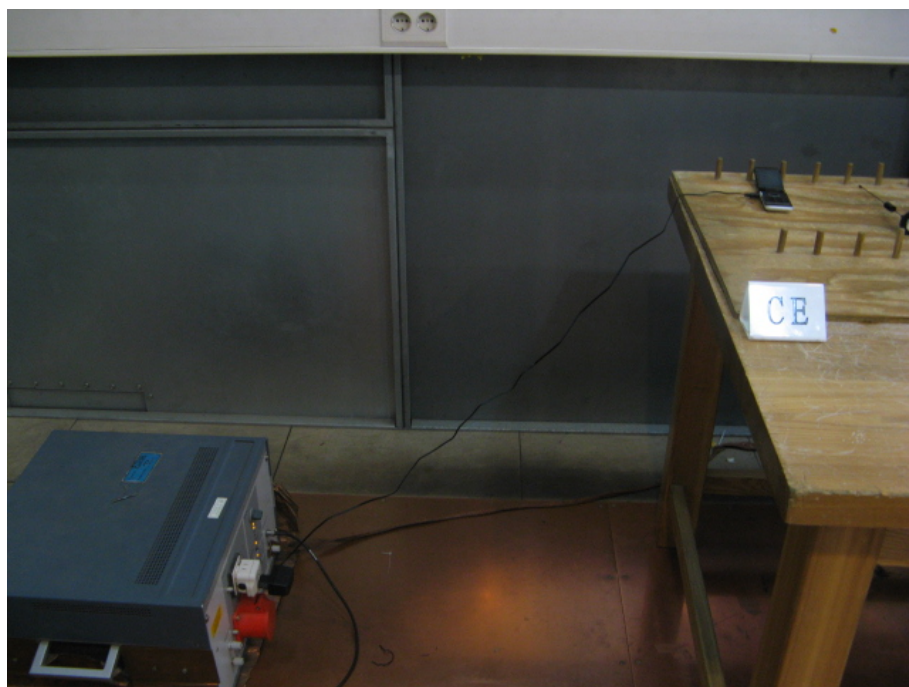


Photo of AC Powerline Conducted Emission Test

\*\*\* END OF REPORT BODY \*\*\*