

# TEST REPORT

No. 2007BTH0004

**Product name** Elle N3 BLUETOOTH JEWEL

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**Model** EL03A

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**Client** T&A Mobile Phones

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

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## 1. Competence and Warranties

**Telecommunication Metrology Center of Ministry of Information Industry** is a test laboratory accredited by CNAL – China National Accreditation Committee for Laboratories, 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

**Fully-anechoic chamber** (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 26 to 1000 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 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω

**Conducted chamber** 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

**Semi-anechoic chamber** (23 meters×17meters×10meters) 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
Normalised site attenuation (NSA)	< ±3.2 dB, 10 m distance, from 30 to 1000 MHz
Uniformity of field strength	Between 0 and 6 dB, from 26 to 1000 MHz

### 2.3. Testing Period

The performed test started on 2007-4-3 and finished on 2007-4-18.

## 3. Applicant Information

### 3.1. Client information

<b>Name of Company:</b>	T&A Mobile Phones
<b>Address /Post:</b>	4F, South Building, No.2966, JinKe Road, Zhangjiang High-Tech Park
<b>City:</b>	Shanghai
<b>Postal Code:</b>	201203
<b>Country:</b>	China
<b>Telephone:</b>	0086-21-61460883
<b>Fax:</b>	0086-21-61460602

### 3.2. Manufacturer information

<b>Name of Company:</b>	T&A Mobile Phones
<b>Address /Post:</b>	4F, South Building, No.2966, JinKe Road, Zhangjiang High-Tech Park
<b>City:</b>	Shanghai
<b>Postal Code:</b>	201203
<b>Country:</b>	China
<b>Telephone:</b>	0086-21-61460883
<b>Fax:</b>	0086-21-61460602

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

### 4.1. About EUT

Description:	Elle N3 BLUETOOTH JEWEL
Type:	EL03A
With BT	Yes
EUT operating voltage- Normal:	3.7V
Extreme Low Voltage:	3.4V
Extreme High Voltage:	4.2V
Extreme temperature:	-20°C / + 55°C

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

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

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	/	PIO	v271
EUT2	/	PIO	v271

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

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

AE ID*	Description	Type	SN
AE1	Travel Charger	T5000436AGAA	/
AE2	Battery	T5000554AAAA	B249650693A
AE2	USB Cable	T5001431AAAA	/

\*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 for testing

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

Reference	Title	Version
FCC Part15	FCC Part 15, Subpart C: 15.205 Restricted bands of operation; 15.207 Conducted limits; 15.209 Radiated emission limits; general requirements; 15.247 Operation within the bands 902–928MHz, 2400–2483.5 MHz, and 5725–5850 MHz.	10–1–06 Edition

## 6. SUMMARY OF TEST RESULTS

Abbreviations used in this clause:

**P** Pass

**F** Fail

**NA** not applicable

**NM** not measured

See **ANNEX B** for detail.

<b>SUMMARY OF MEASUREMENT RESULTS</b>	<b>Sub-clause</b>	<b>Verdict</b>
Peak Output Power - Conducted	FCC Part 15.247 (b)	<b>P</b>
Band Edge Compliance - Conducted	FCC Part 15.247 (c)	<b>P</b>
20dB bandwidth	FCC Part 15.247 (a)	<b>P</b>
Conducted Spurious Emission	FCC Part 15.247 (c)	<b>P</b>
Radiated Emission	FCC Part 15.247, 15.205, 15.209	<b>P</b>
Time of Occupancy (Dwell Ttime)	FCC Part 15.247 (a)	<b>P</b>
Carrier Frequency Separation	FCC Part 15.247 (a)	<b>P</b>
Number of hopping channels	FCC Part 15.247 (a)	<b>P</b>
Powerline conducted emissions	FCC Part 15.207	<b>P</b>

## 7. TEST EQUIPMENTS UTILIZED

<b>No.</b>	<b>Description</b>	<b>Model</b>	<b>Serial Number</b>	<b>Manufacturer</b>
1	Power Supply	TS-LDE	100010	Rohde & Schwarz
2	Vector Signal Analyzer	FSQ26	200136	Rohde & Schwarz
3	Bluetooth Tester	CBT	100135	Rohde & Schwarz
4	Test Receiver	ESI40	831564/002	Rohde & Schwarz
5	BiLog Antenna	3142B	9908-1403	EMCO
6	Dual-Ridge Waveguide Horn Antenna	3115	9906-5827	EMCO
7	Universal Radio Communication Tester	CMU200	105948	Rohde & Schwarz

ANNEX A: EUT photograph

External Photo



Mobile Phone



Mobile Phone



Mobile Phone



Mobile phone



USB Cable



Charger (AC/DC Adapter)



Charger (AC/DC Adapter)



Charger (AC/DC Adapter)



Battery

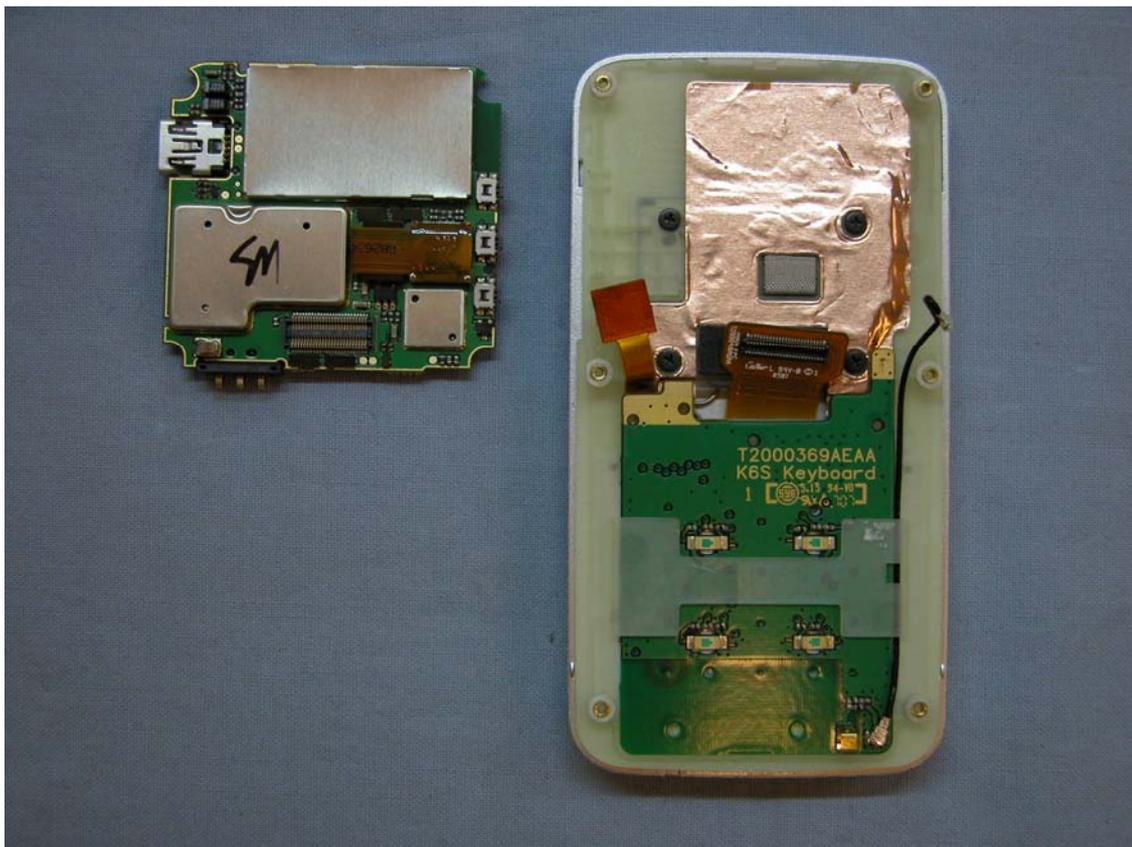
Internal Photo



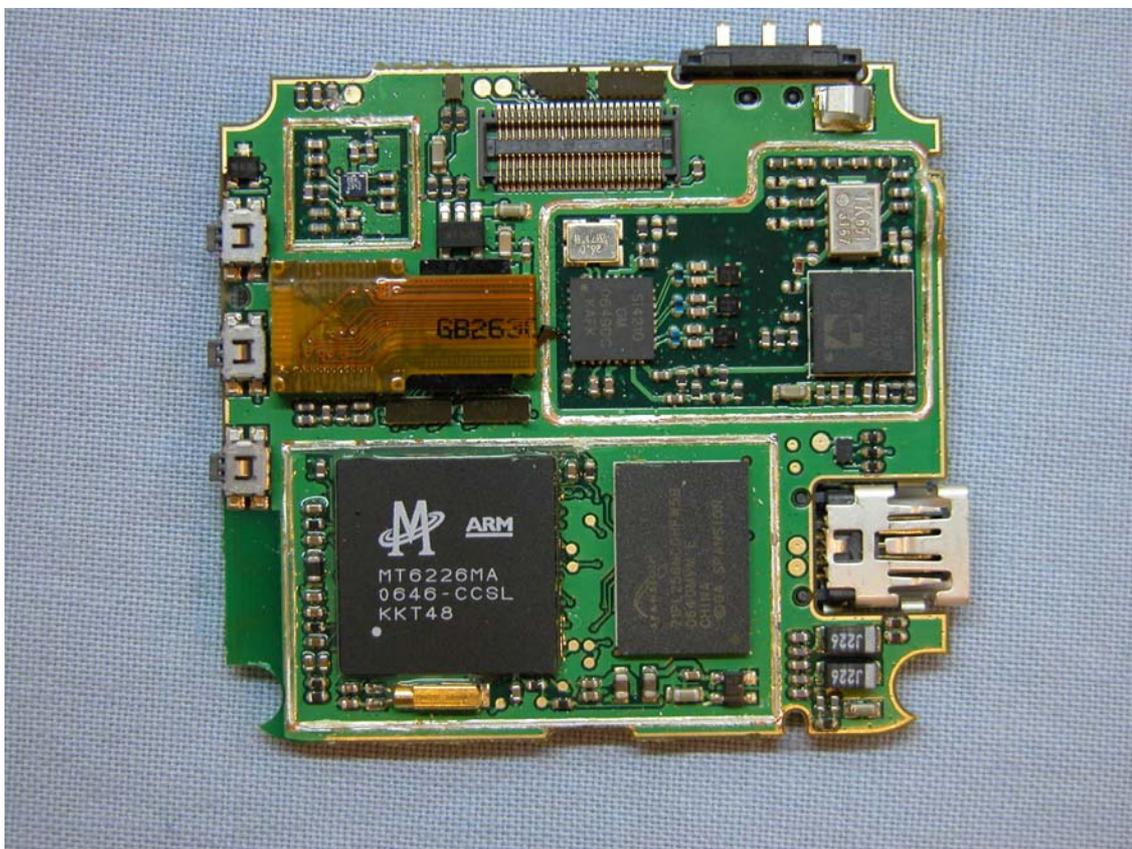
Mobile phone Disassembly



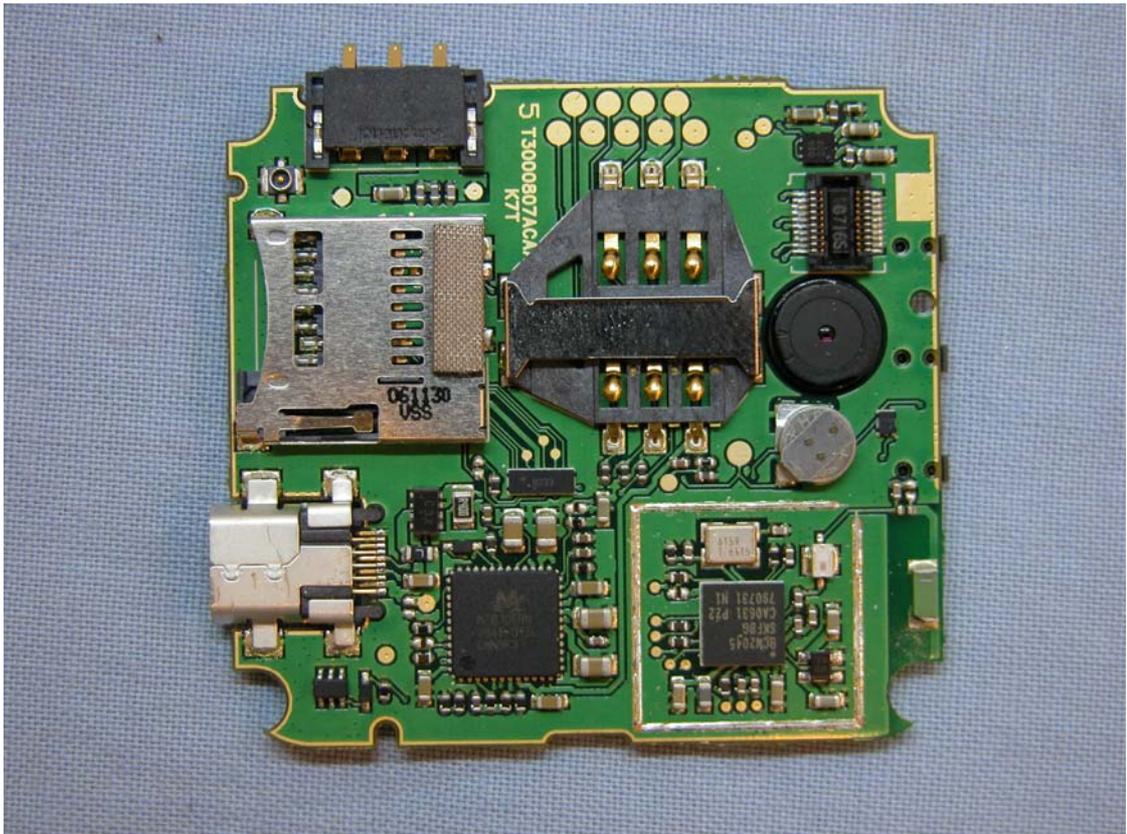
Mobile phone PCB back view



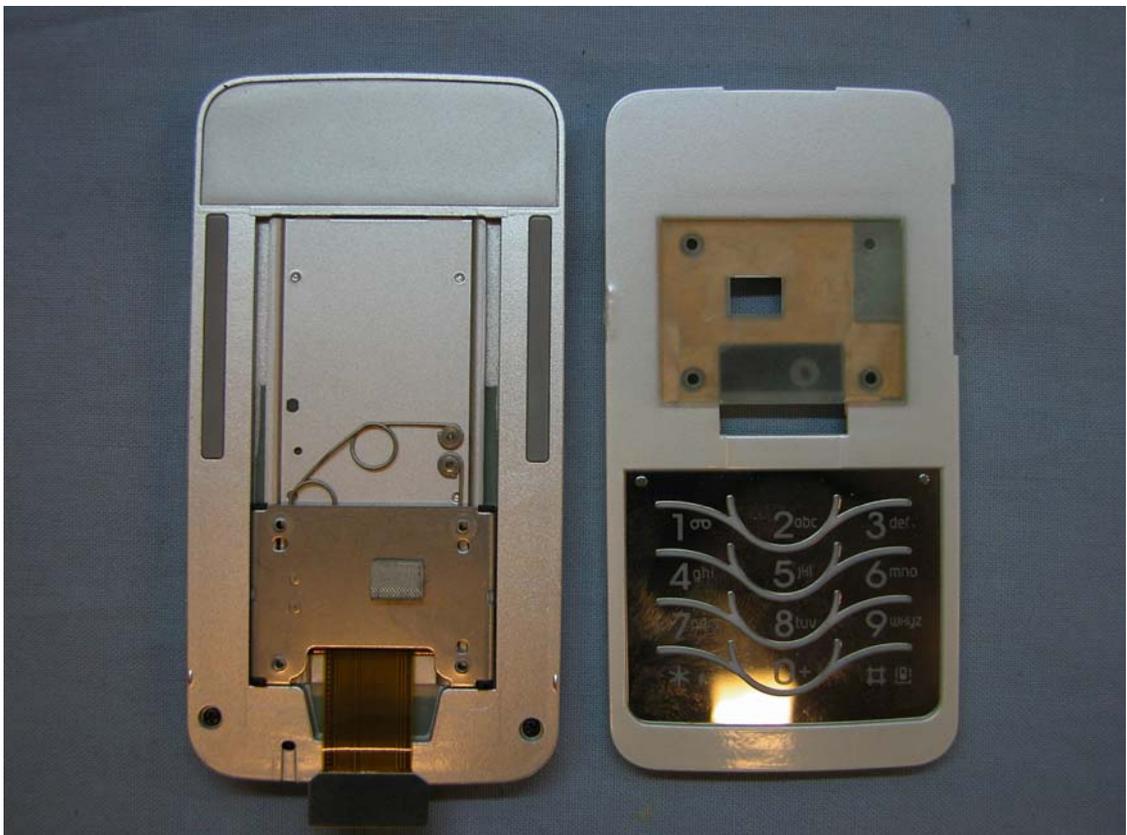
Mobile phone PCB back view



Mobile phone PCB front view



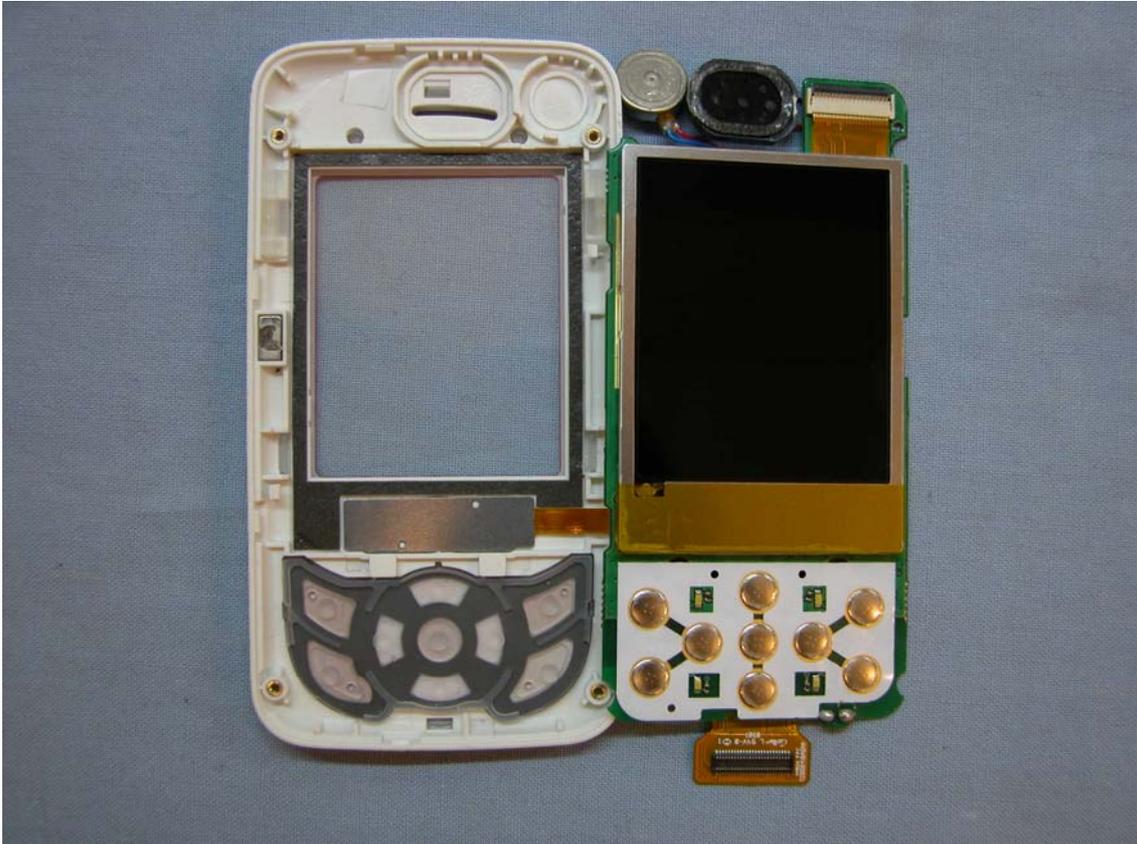
Mobile phone PCB front view



Mobile phone front view



Mobile phone PCB front view



Mobile phone front view

## **ANNEX B: MEASUREMENT RESULTS**

### **B.1 Peak Output Power**

**Measurement Limit:**

Standard	Limit (dBm)
FCC Part 15.247 (b)	< 30

**Measurement Results:**

Channel	Channel 0 (dBm)	Channel 39 (dBm)	Channel 78 (dBm)	Conclusion
Peak Output Power	-0.98	-2.70	-2.93	<b>P</b>

**Conclusion: PASS**

### **B.2 Band Edge Compliance**

**Measurement Limit:**

Standard	Limit (dBc)
FCC Part 15.247 (c)	> 20

**Measurement Result:**

Channel	Hopping	Band Edge Power ( dBc)		Conclusion
0	Hopping OFF	Fig.1	57.65	<b>P</b>
	Hopping ON	Fig.2	58.39	<b>P</b>
78	Hopping OFF	Fig.3	57.52	<b>P</b>
	Hopping ON	Fig.4	58.81	<b>P</b>

**See annex C for test graphs.**

**Conclusion: PASS**

### **B.3 20dB Bandwidth**

**Measurement Limit:**

Standard	Limit (MHz)
FCC Part 15.247(a)(1)(ii)	< 1

**Measurement Results:**

Channel	20dB Bandwidth (kHz)		Conclusion
0	Fig.5	926.282	<b>P</b>
39	Fig.6	926.282	<b>P</b>
78	Fig.7	926.282	<b>P</b>

**See annex C for test graphs.**

**Conclusion: PASS**

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**B.4 Conducted Spurious Emission**

**Measurement Limit:**

Standard	Limit
FCC Part 15.247 (c)	20dB below peak output power

**Measurement Results:**

Channel	Frequency Range	Test Results	Conclusion
Ch 0 2402 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 39 2441 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>
Ch 78 2480 MHz	Center Frequency	Fig.14	<b>P</b>
	30 MHz ~ 1 GHz	Fig.15	<b>P</b>
	1 GHz ~ 26 GHz	Fig.16	<b>P</b>

See annex C for test graphs.

**Conclusion: PASS**

**B.5 Radiated Emission**

**Measurement Limit:**

Standard	Limit
FCC 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 (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:**

Channel	Frequency Range	Test Results	Conclusion
Ch 0 2402 MHz	30 MHz ~ 1 GHz	Fig.17	<b>P</b>
	1 GHz ~ 3 GHz	Fig.18	<b>P</b>
	3 GHz ~ 18 GHz	Fig.19	<b>P</b>

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Ch 39 2441 MHz	30 MHz ~ 1 GHz	Fig.20	<b>P</b>
	1 GHz ~ 3 GHz	Fig.21	<b>P</b>
	3 GHz ~ 18 GHz	Fig.22	<b>P</b>
Ch 78 2480 MHz	30 MHz ~ 1 GHz	Fig.23	<b>P</b>
	1 GHz ~ 3 GHz	Fig.24	<b>P</b>
	3 GHz ~ 18 GHz	Fig.25	<b>P</b>
All of the channels	18 GHz ~ 26 GHz	Fig.26	<b>P</b>

See annex C for test graphs.

**Conclusion: PASS**

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

**Measurement Limit:**

Standard	Limit (ms)
FCC Part 15.247(a) (1)(ii)	< 400

**Measurement Result:**

Channel	Dwell Time (ms)		Conclusion
39	Fig.27	351.14	<b>P</b>

See annex C for test graphs.

**Conclusion: PASS**

**B.7 Carrier Frequency Separation**

**Measurement Limit:**

Standard	Limit
FCC Part 15.247(a)	>25kHz or 20dB bandwidth, whichever is greater

**Measurement Result:**

Channel	Carrier frequency separation (kHz)	Conclusion
39	Fig.28 990.38	<b>P</b>

See annex C for test graphs.

**Conclusion: PASS**

**B.8 Number of Hopping Channels**

**Measurement Limit:**

Standard	Limit
FCC Part 15.247(a) (1)(ii)	> 75

**Measurement Result:**

Channel	Number of hopping channels	Conclusion
0~39	Fig.29	<b>P</b>
40~78	Fig.30	

**B.9 Powerline Conducted Emissions**

**Method of Measurement:** FCC Part 15.207

Frequency of Emission (MHz)	Conducted Limit (dB $\mu$ V)	
	Quasi -Peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30	60	50

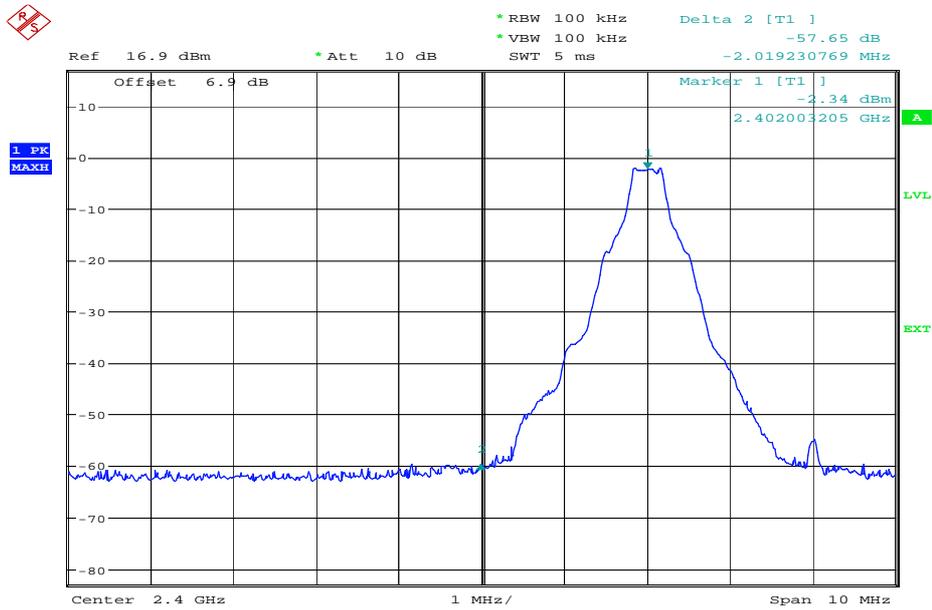
\* Decreases with logarithm of the frequency

**Measurement Results:**

Channel	Test Results	Conclusion
39	Fig.31	<b>P</b>

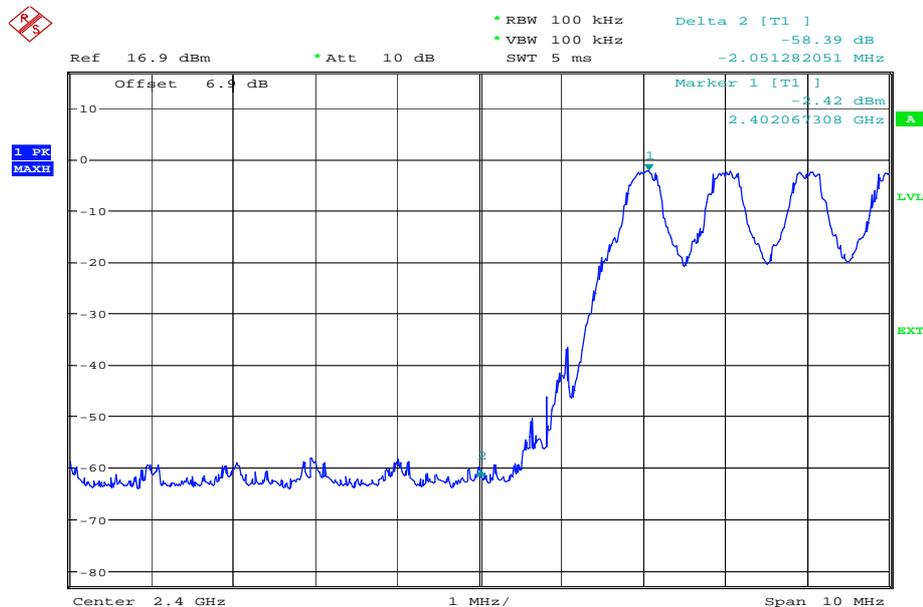
**Conclusion: Pass.**

ANNEX C: TEST FIGURE LIST



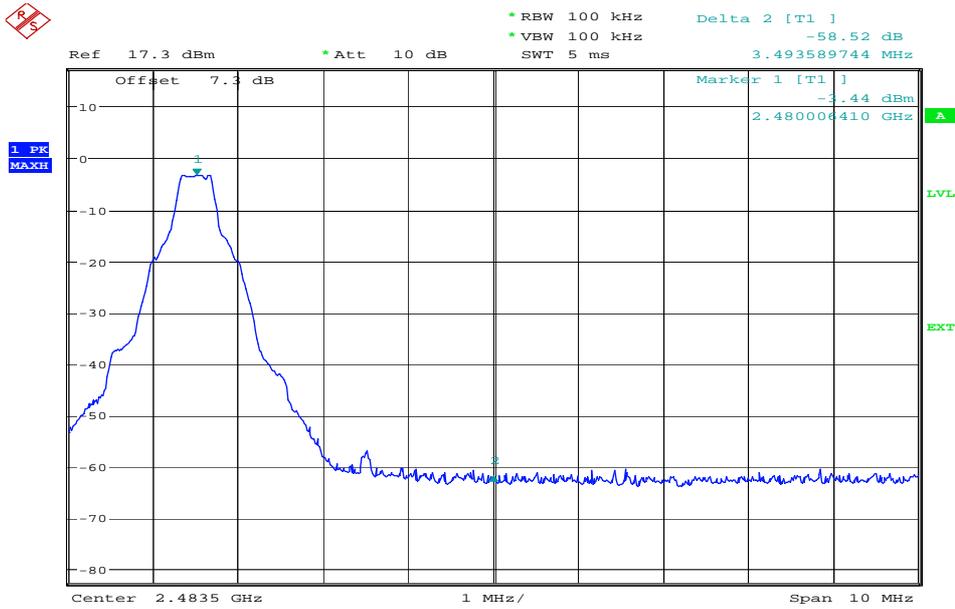
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Fig. 1 Band edge: Channel 0, Hopping Off



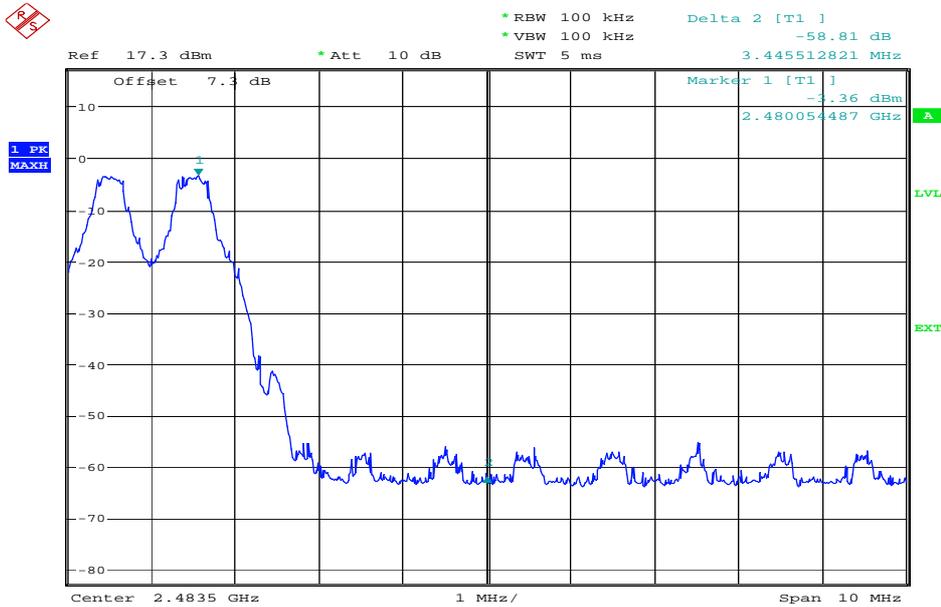
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Fig. 2 Band edge: Channel 0, Hopping On



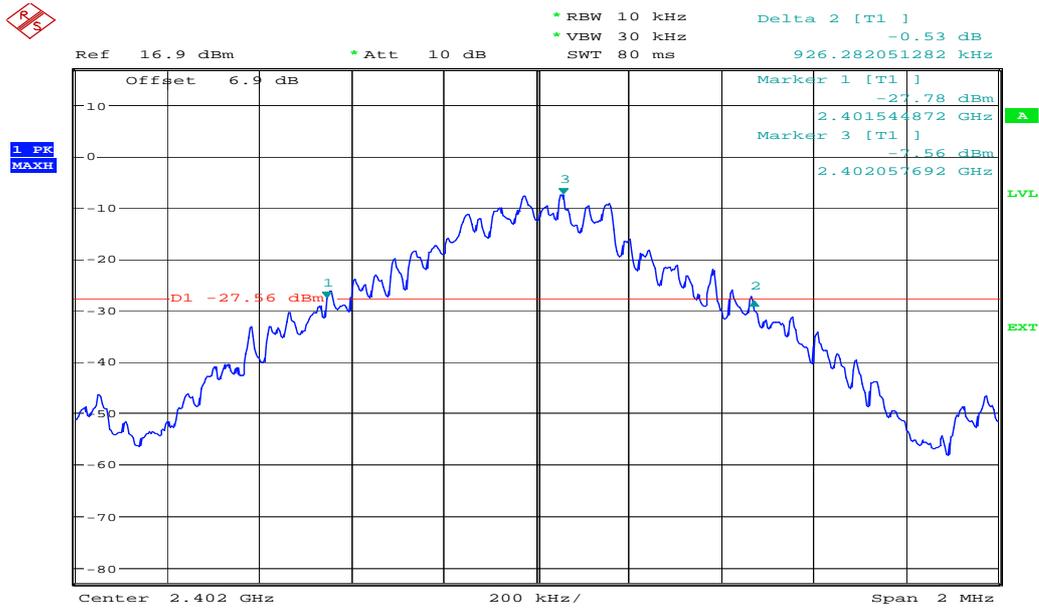
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Fig. 3 Band edge: Channel 78, Hopping Off



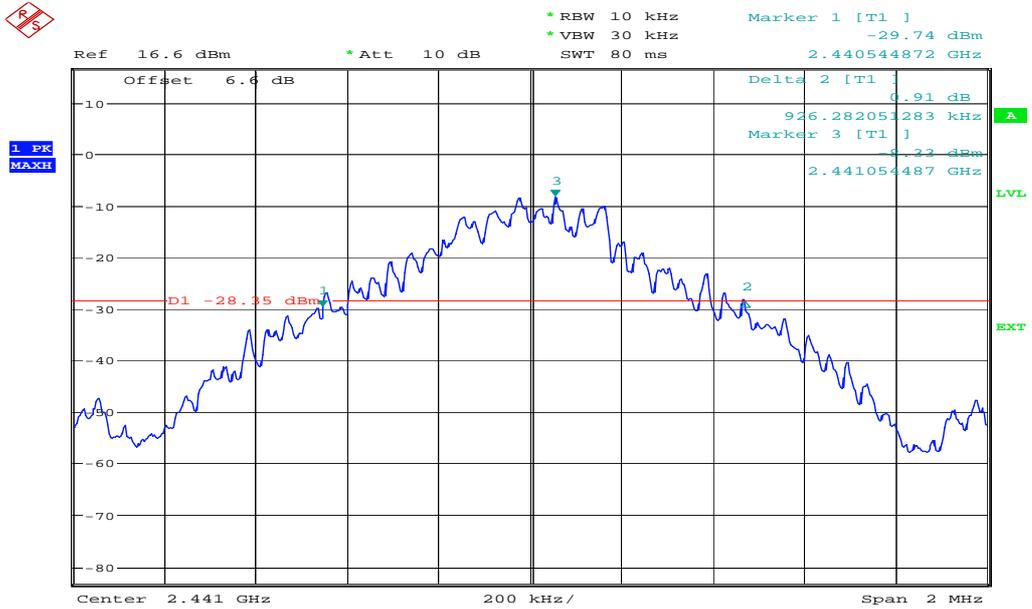
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Fig. 4 Band edge: Channel 78, Hopping On



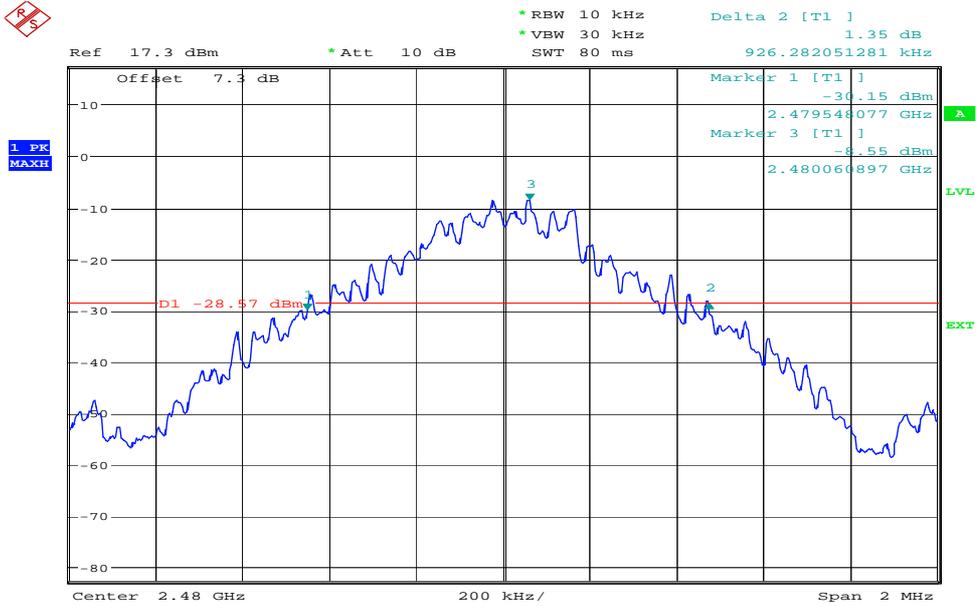
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**Fig. 5 20dB Bandwidth: Channel 0**



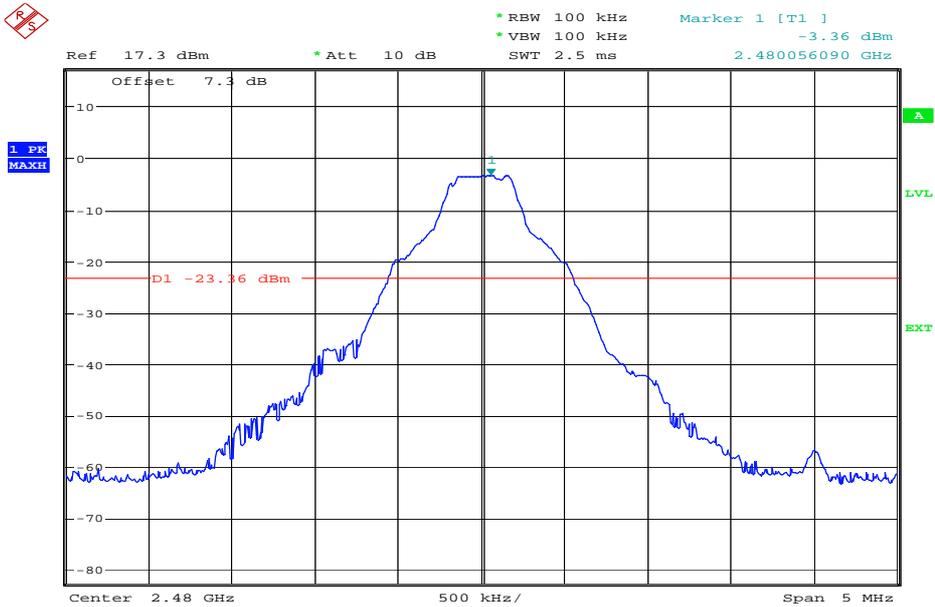
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**Fig. 6 20dB Bandwidth: Channel 39**



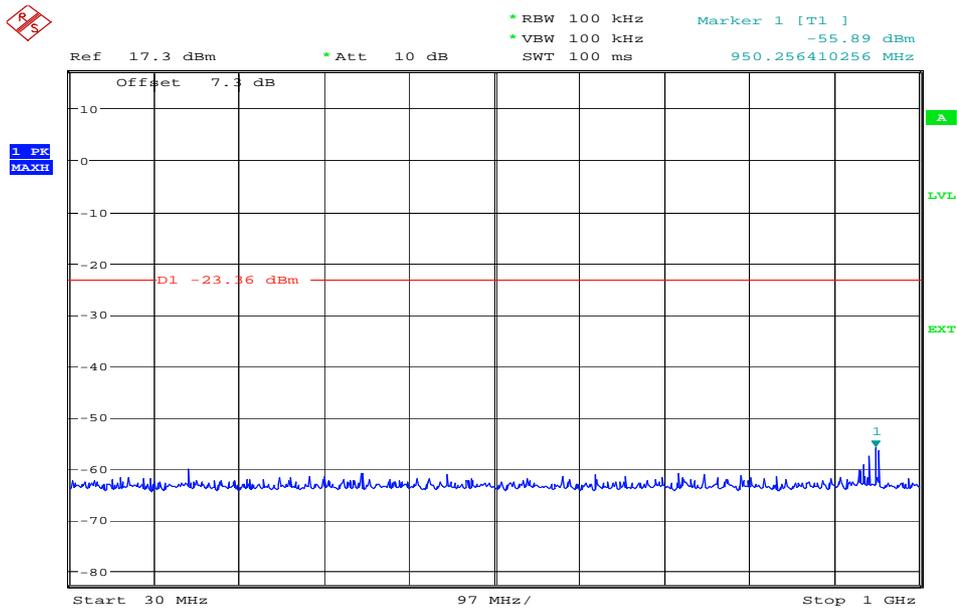
Date: 10.APR.2007 10:03:29

Fig. 7 20dB Bandwidth: Channel 78



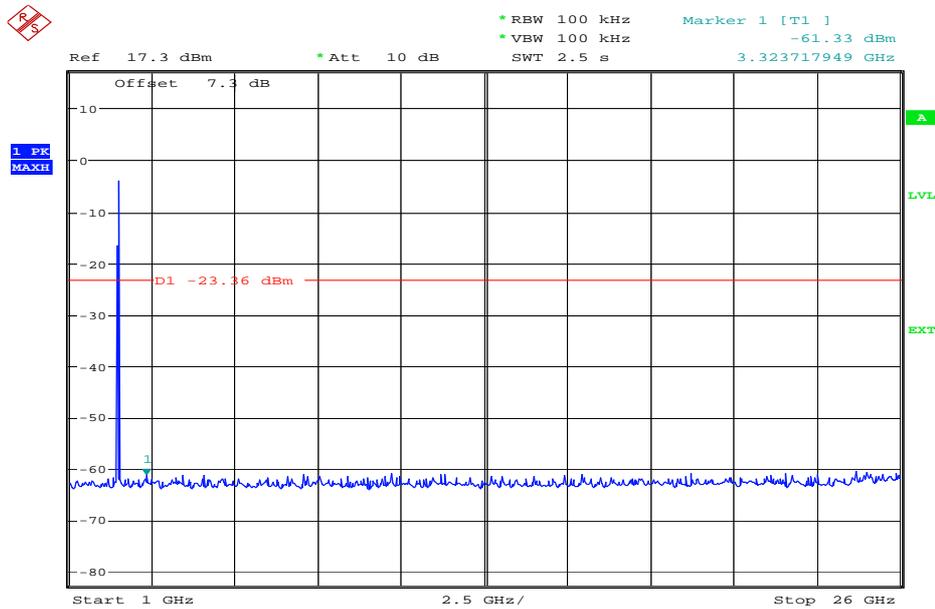
Date: 10.APR.2007 09:18:20

Fig. 8 Conducted spurious emission:, Channel 0,2402MHz



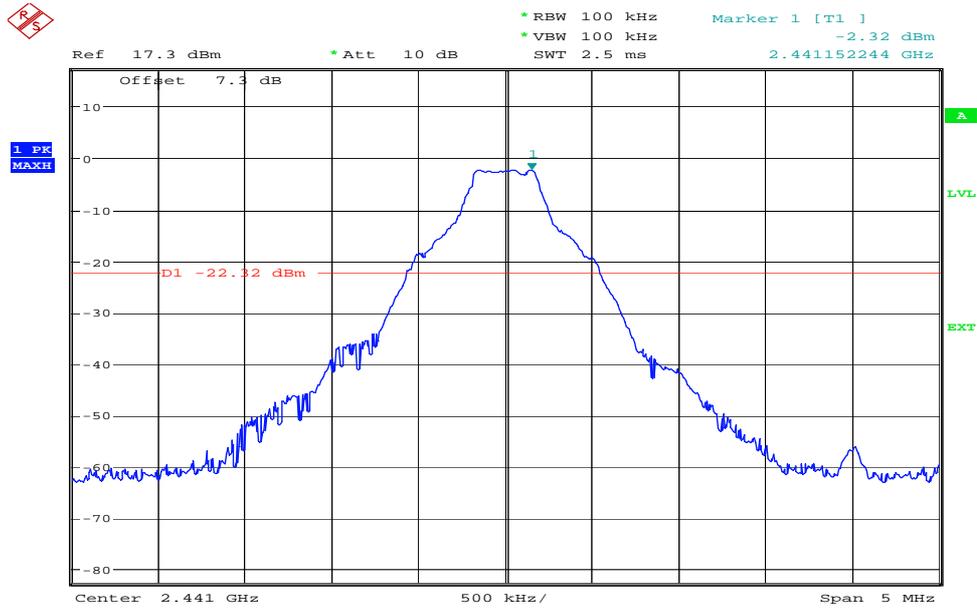
Date: 10.APR.2007 09:18:54

Fig. 9 Conducted spurious emission:, Channel 0, 30MHz - 1GHz



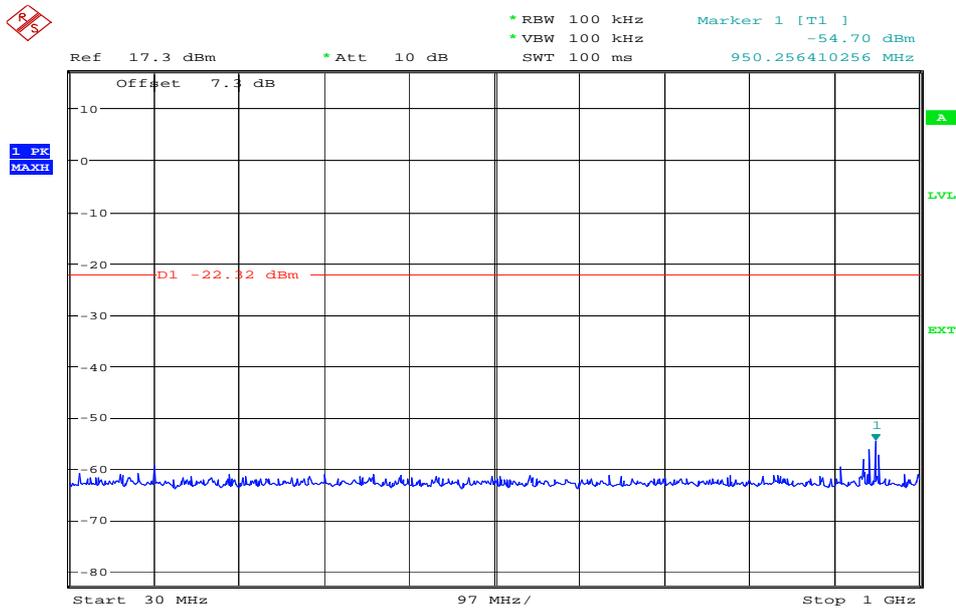
Date: 10.APR.2007 09:19:34

Fig. 10 Conducted spurious emission:, Channel 0,1GHz – 26GHz



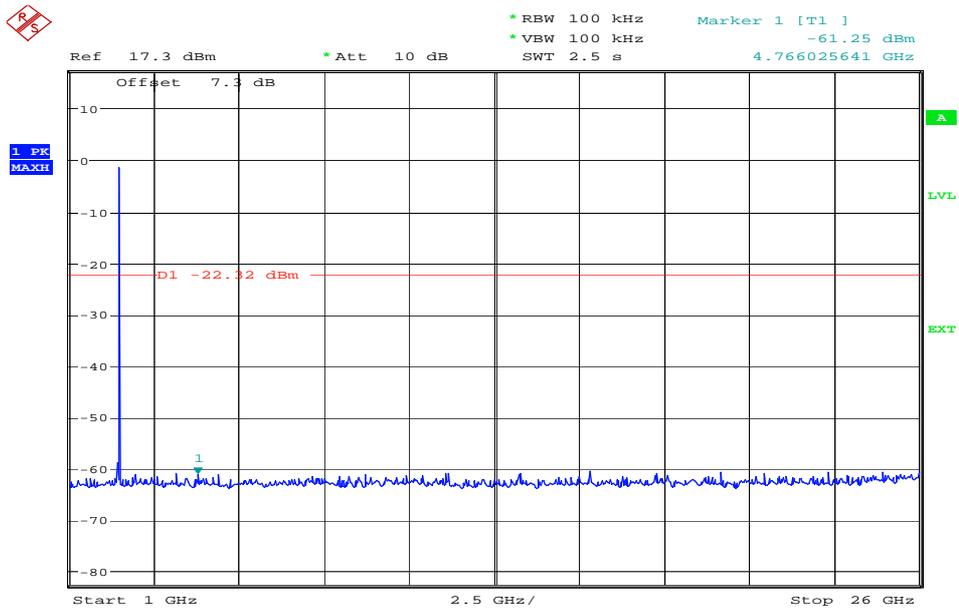
Date: 10.APR.2007 09:20:26

Fig. 11 Conducted spurious emission:, Channel 39, 2441MHz



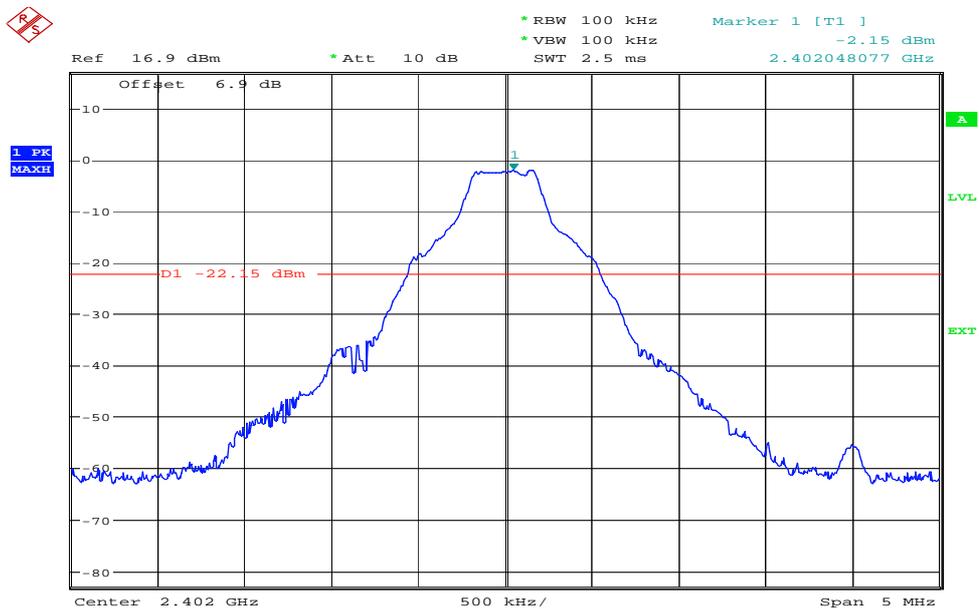
Date: 10.APR.2007 09:21:49

Fig. 12 Conducted spurious emission:, Channel 39, 30MHz - 1GHz



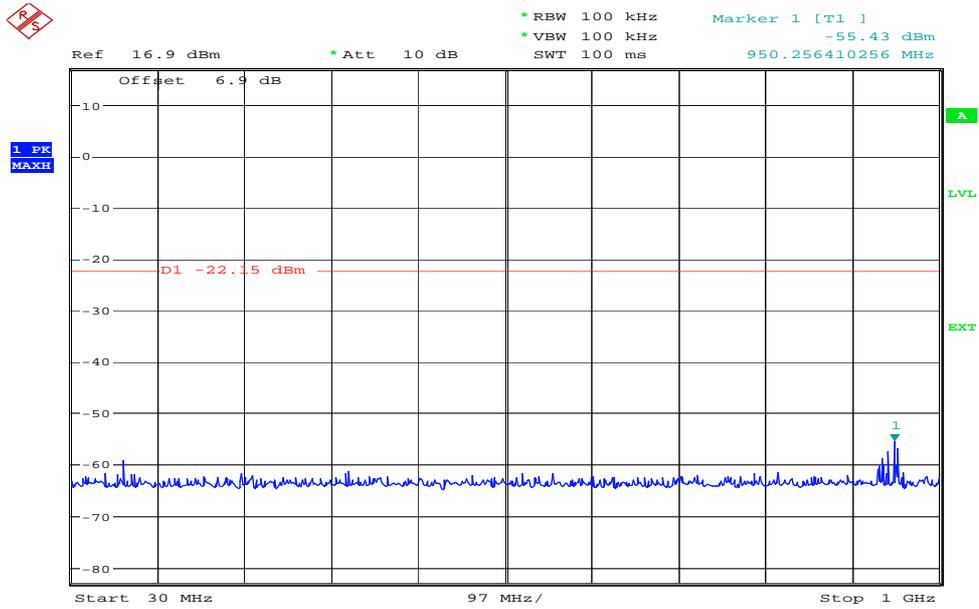
Date: 10.APR.2007 09:23:01

Fig. 13 Conducted spurious emission:, Channel 39, 1GHz – 26GHz



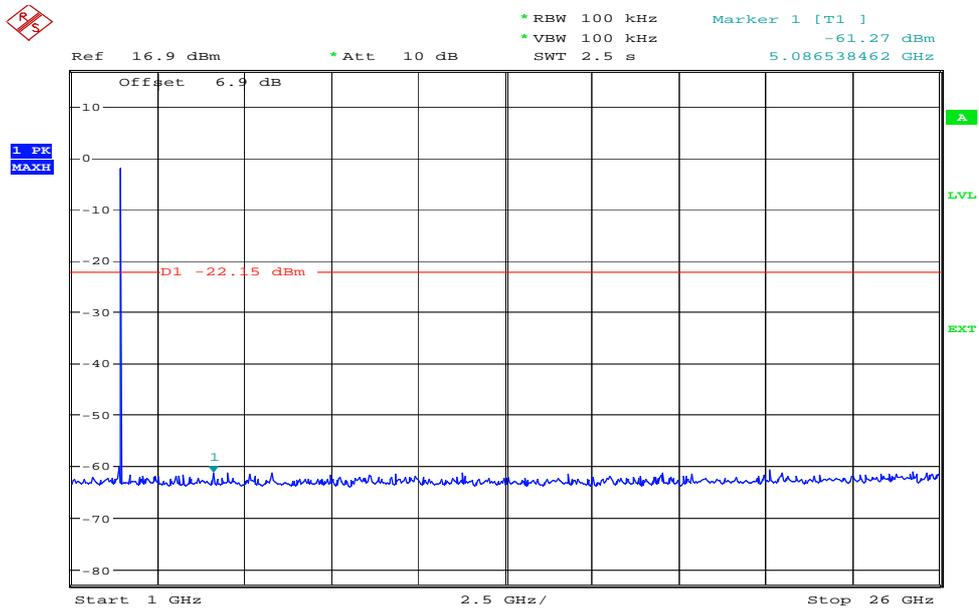
Date: 10.APR.2007 09:26:17

Fig. 14 Conducted spurious emission:, Channel 78, 2480MHz



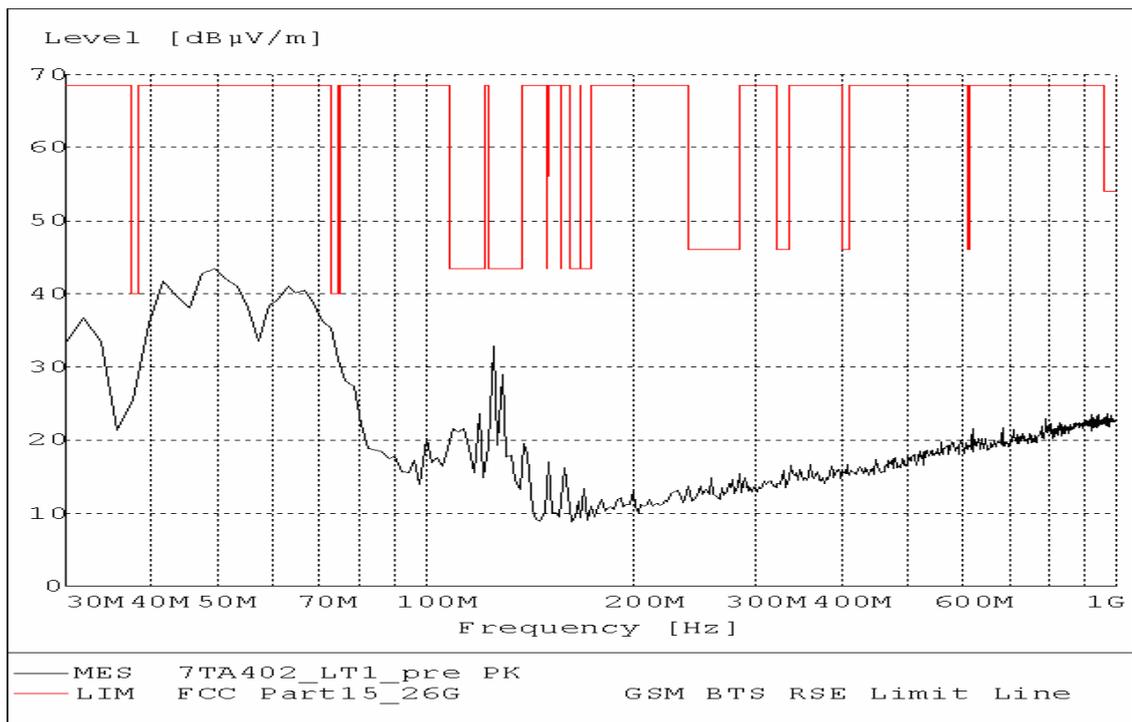
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Fig. 15 Conducted spurious emission:, Channel 78, 30MHz - 1GHz

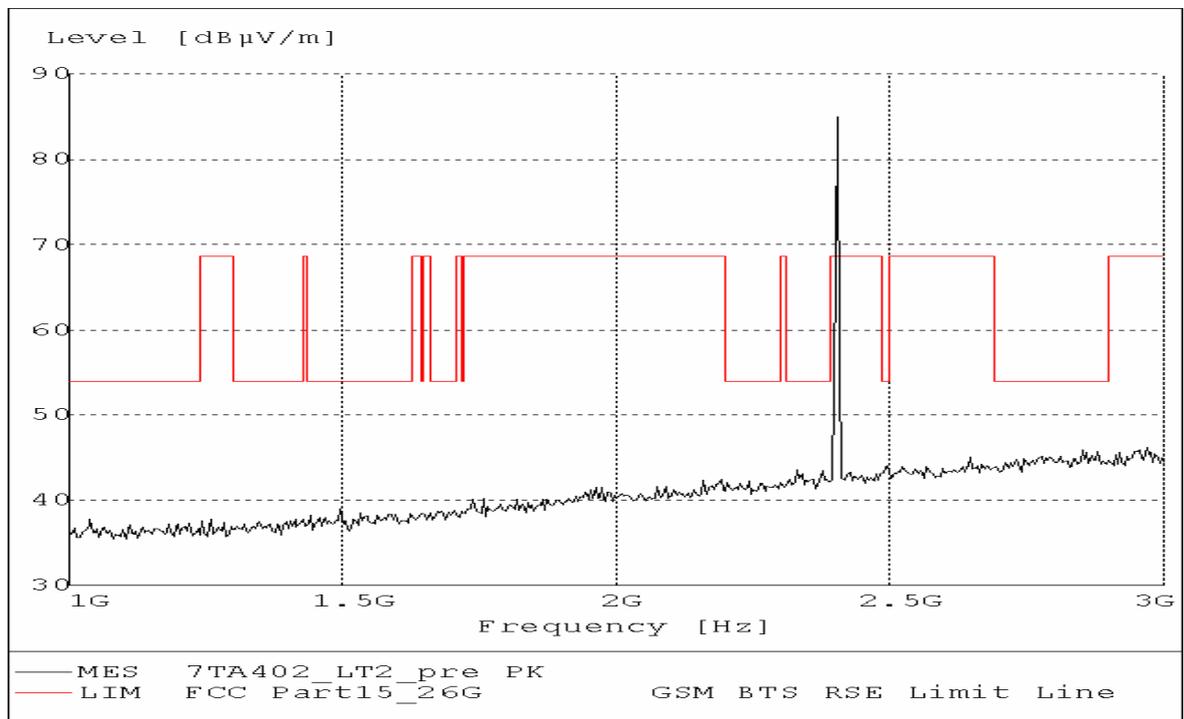


Date: 10.APR.2007 09:28:47

Fig. 16 Conducted spurious emission:, Channel 78, 1GHz – 26GHz



**Fig. 17 Radiated emission:, Channel 0, 30 MHz ~ 1 GHz**



**Fig. 18 Radiated emission:, Channel 0, 1 GHz ~ 3 GHz**

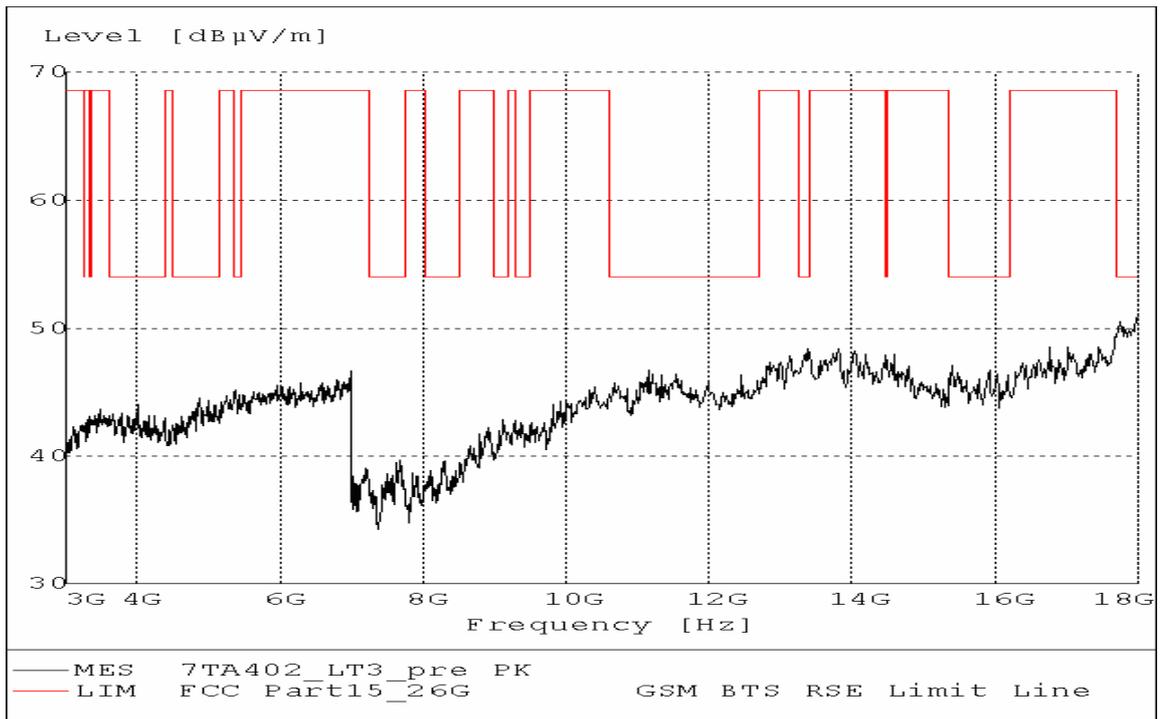


Fig. 19 Radiated emission:, Channel 0, 3 GHz ~ 18 GHz

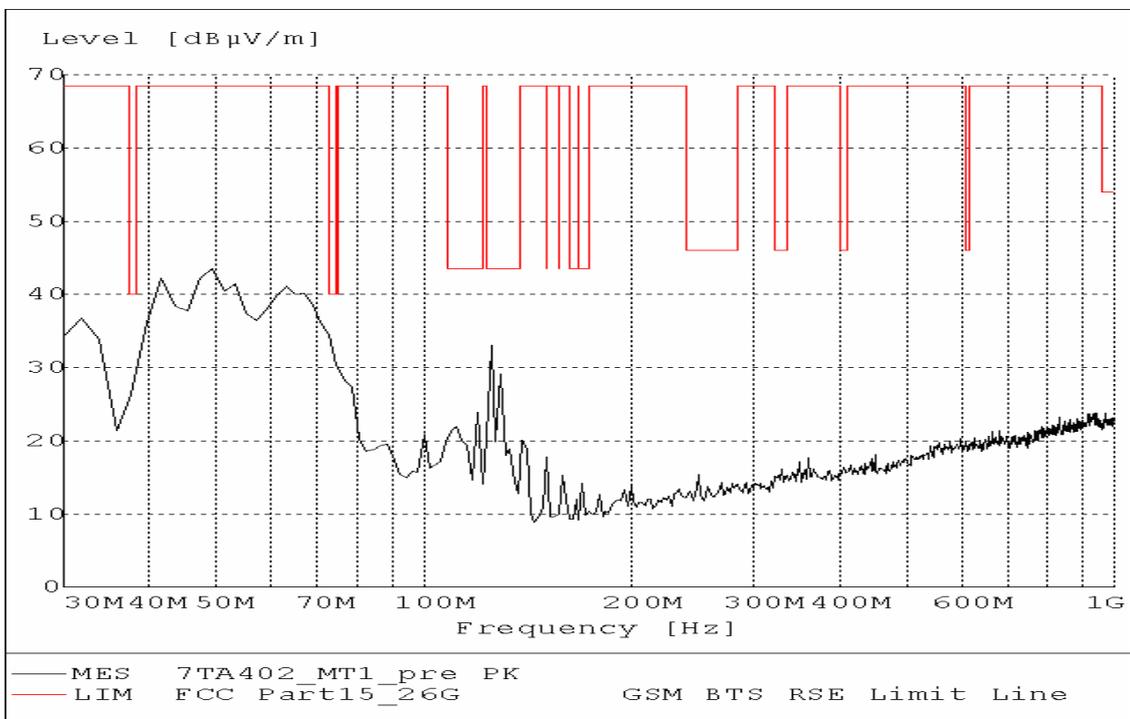


Fig. 20 Radiated emission:, Channel 39, 30 MHz ~ 1 GHz

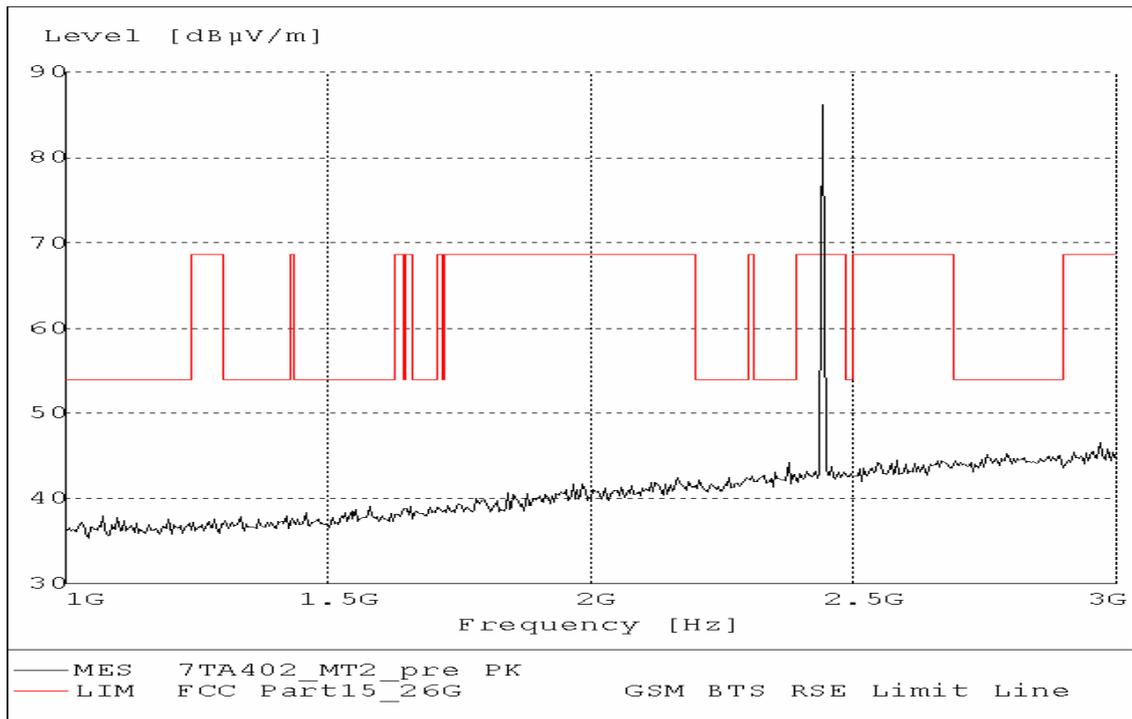


Fig. 21 Radiated emission:, Channel 39, 1 GHz ~ 3 GHz

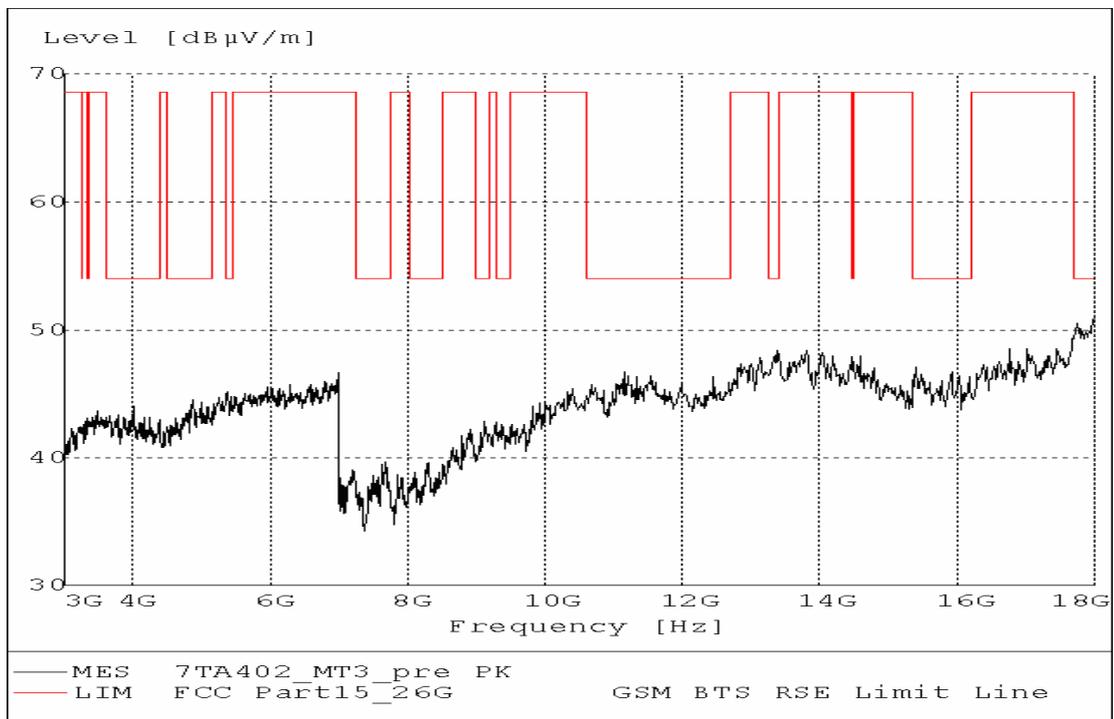


Fig. 22 Radiated emission:, Channel 39, 3 GHz ~ 18 GHz

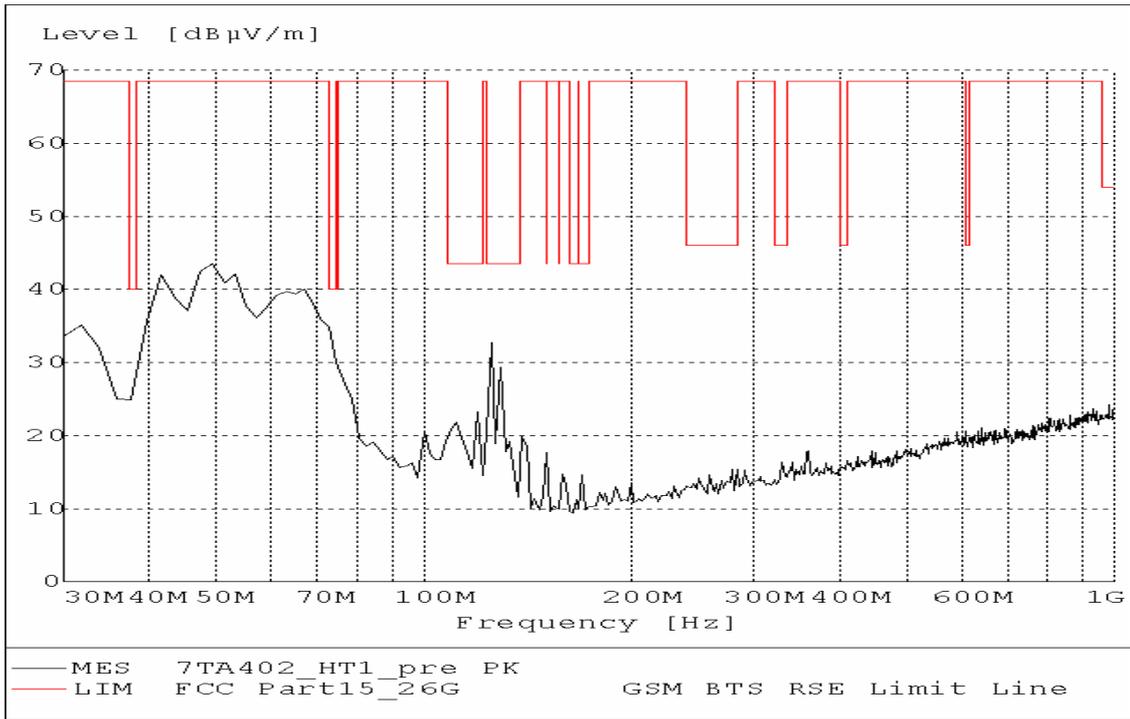


Fig. 23 Radiated emission:, Channel 78, 30 MHz ~ 1 GHz

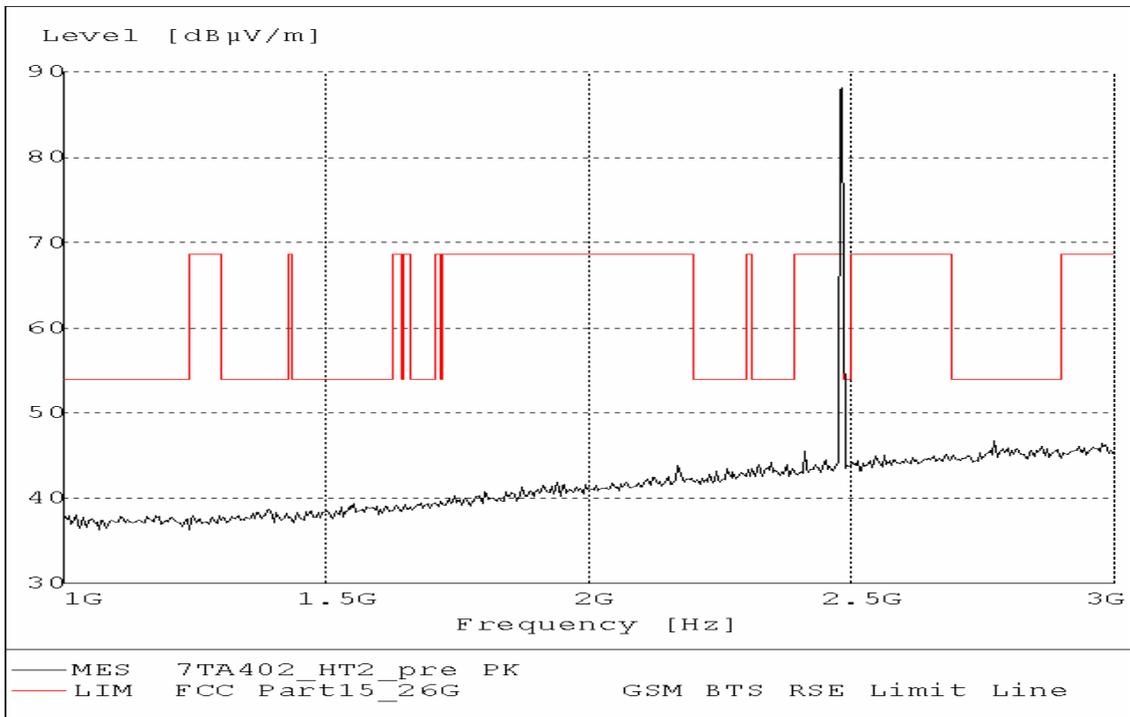


Fig. 24 Radiated emission:, Channel 78, 1 GHz ~ 3 GHz

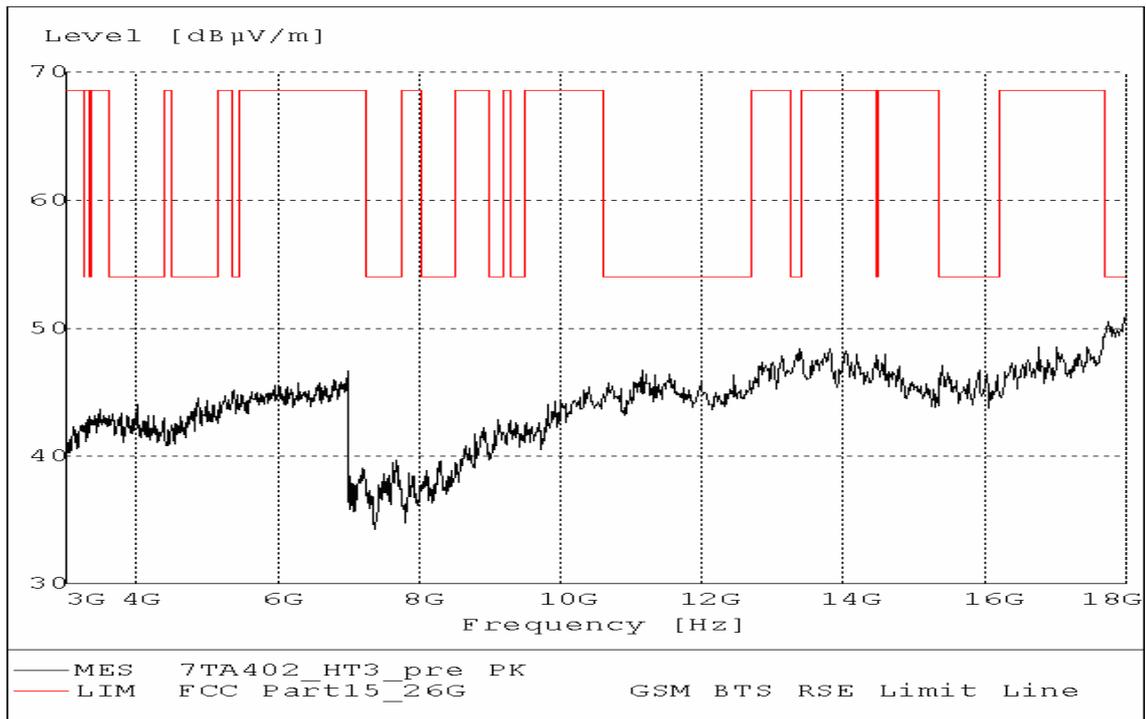


Fig. 25 Radiated emission:, Channel 78, 3 GHz ~ 18 GHz

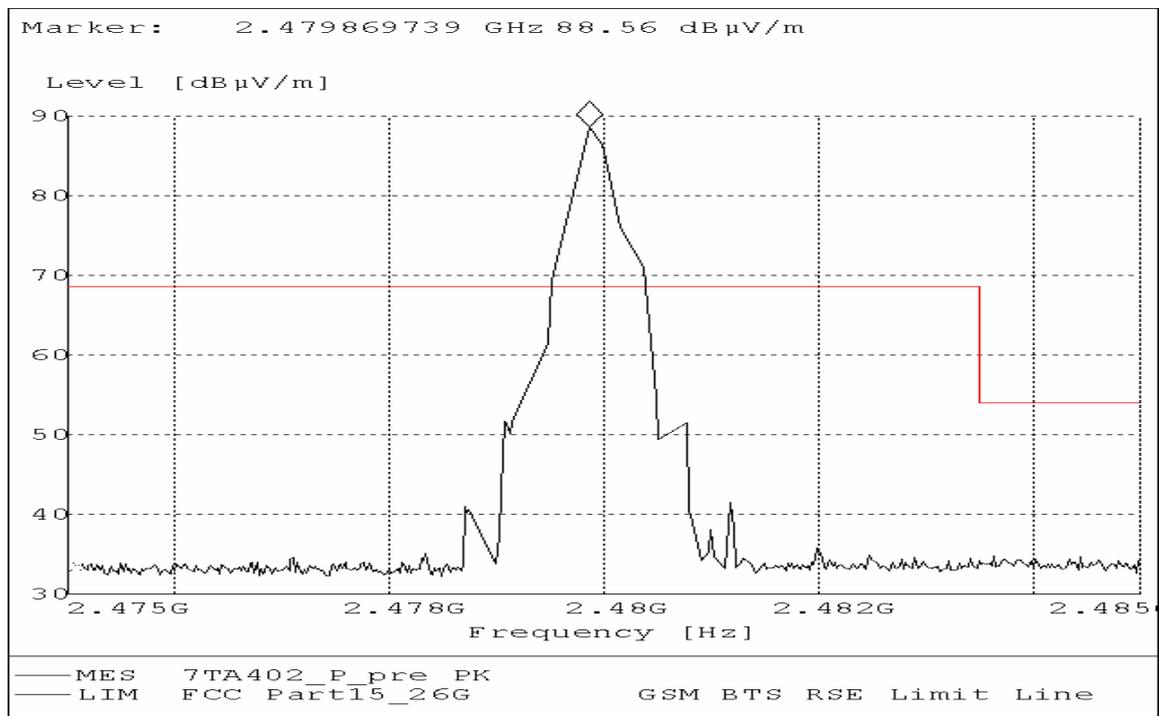


Fig. 26 Radiated emission:, 18 GHz ~ 26 GHz

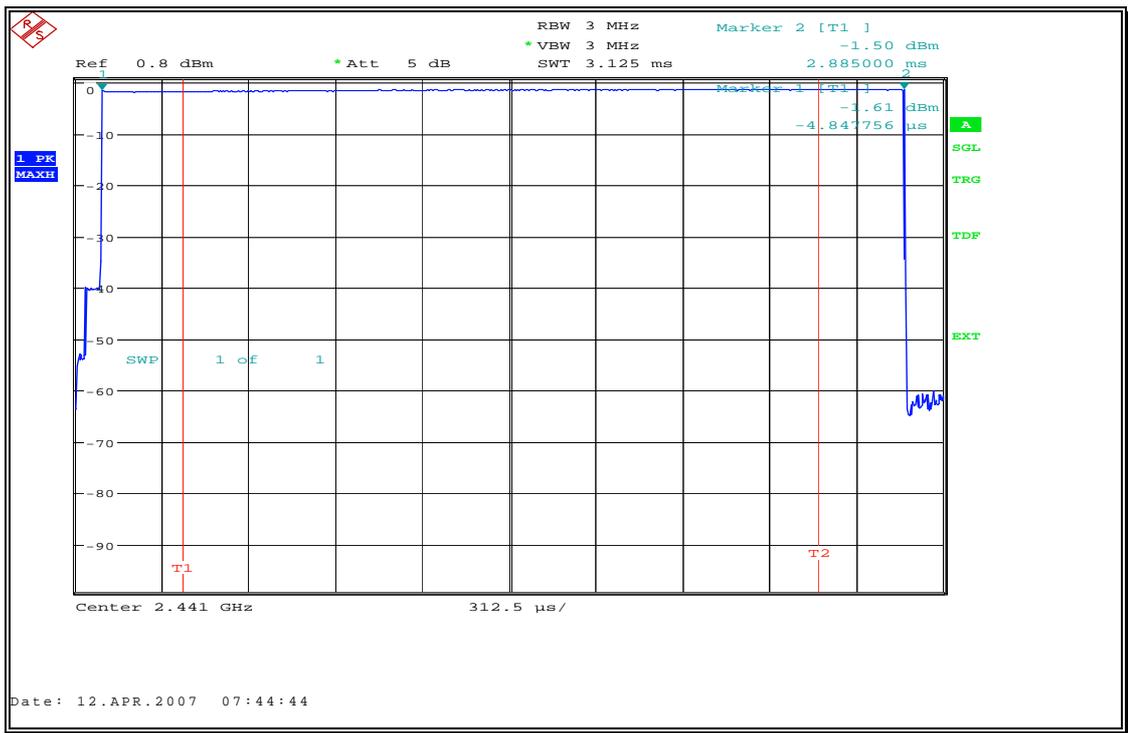


Fig. 27 Time of occupancy (Dwell Time), Channel 39

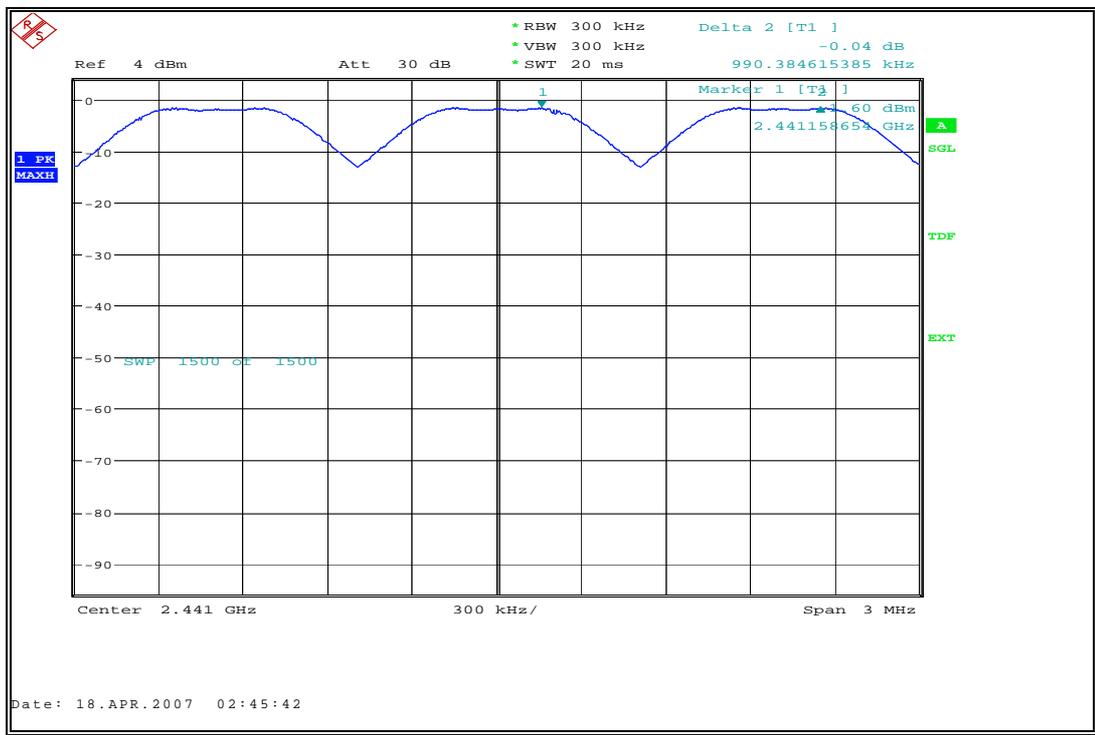


Fig. 28 Carrier frequency separation measurement, Channel 39

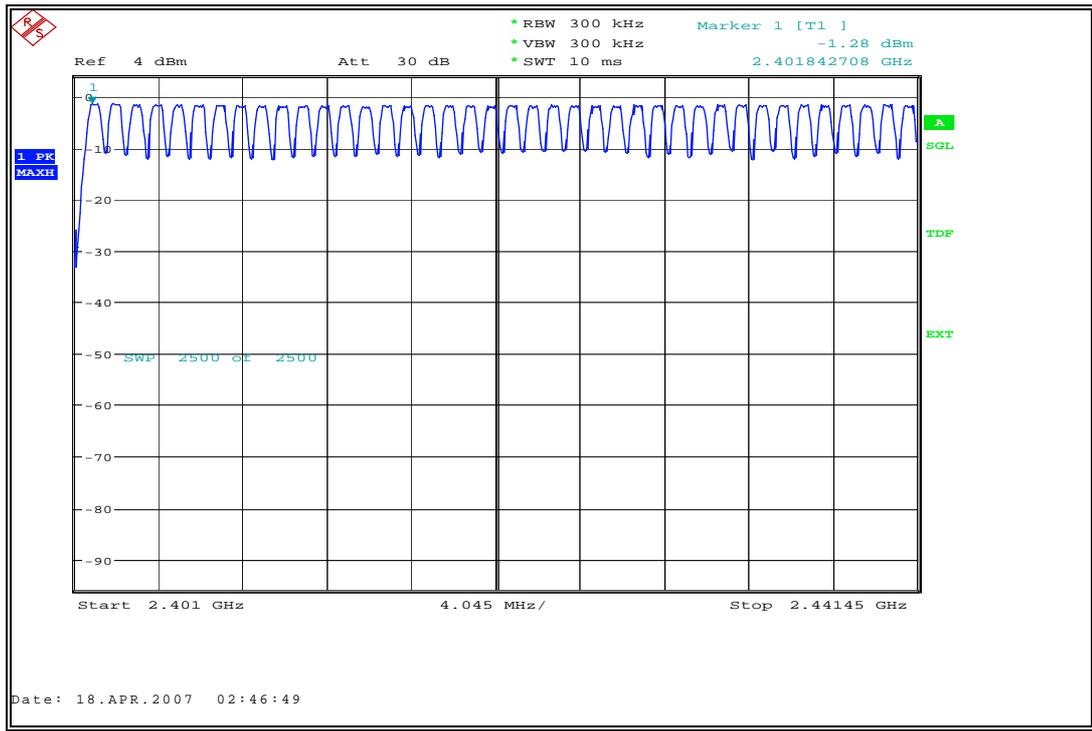


Fig. 29 Number of hopping frequencies, Channel 0 - 39

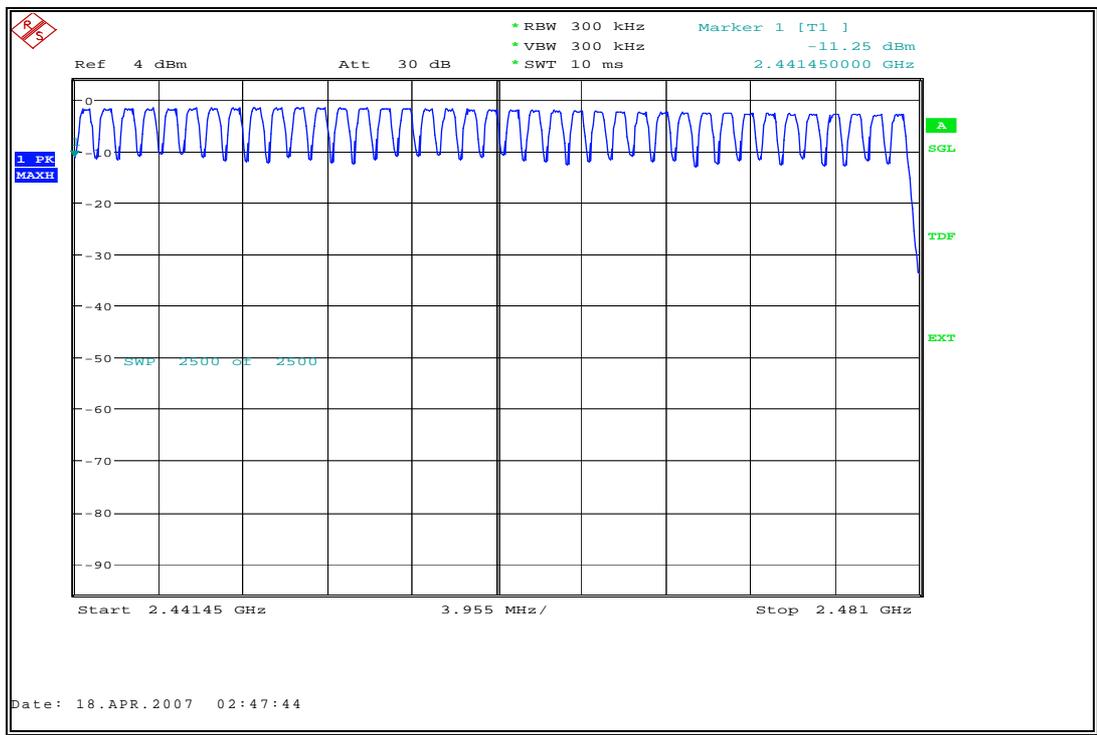


Fig. 30 Number of hopping frequencies, Channel 40 - 78

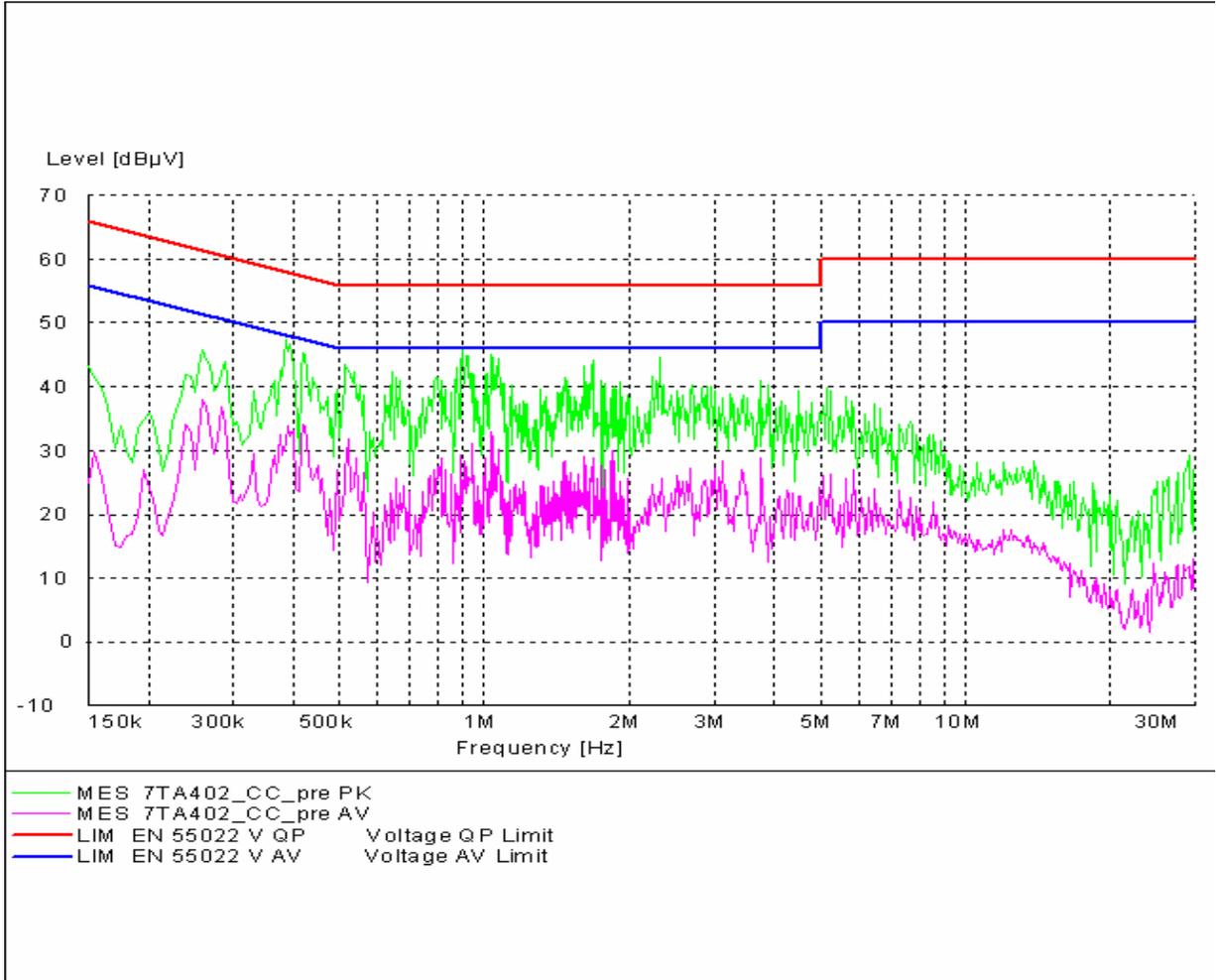


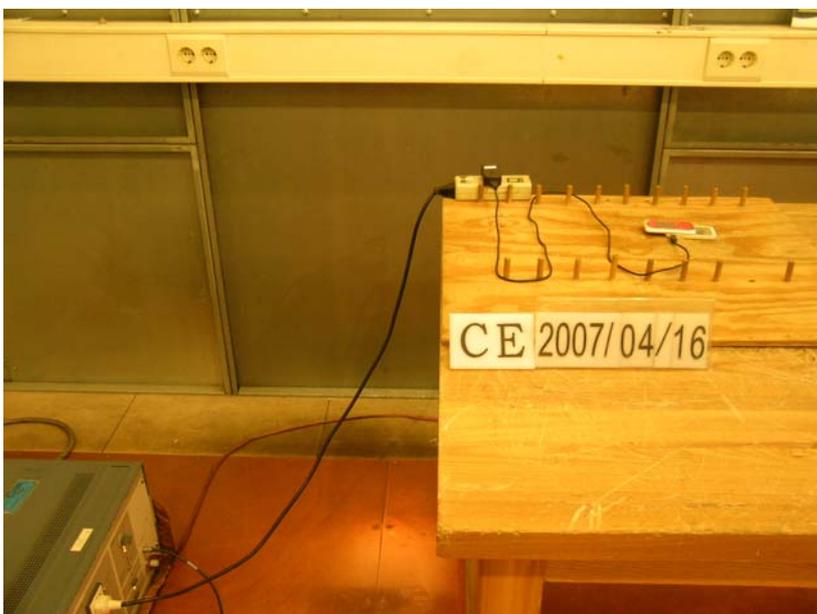
Fig. 31 Powerline conducted emission, Channel 39

## ANNEX D: TEST LAYOUT

Photo of Radiated Emission Test



Photo of powerline conducted Emission Test



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