



No. DAT-P-114/01-01



TESTING  
CNAS L0442

# TEST REPORT

## No. 2009BTH0116

**Product name** GSM/GPRS/EDGE 850/1800/1900 Tri-band mobile phone

**Model** Jade A(OT-800A)

**Client** TCT Mobile Limited

**Classification of test** Type Approval

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

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<b>Product Name</b>	GSM/GPRS/EDGE 850/1800/1900 Tri-band mobile phone	<b>Model</b>	Jade A(OT-800A)	
		<b>Trade mark</b>		
<b>Client</b>	TCT Mobile Limited			
<b>Manufacturer</b>	TCT Mobile Limited			
<b>Arrival Date of sample</b>	March 30, 2009	<b>Carrier of the samples</b>	Tong Wei	
<b>Quantity of the samples</b>	2	<b>Date of product</b>	/	
<b>Series number</b>	011851000001977, 011851000001894			
<b>Standard(s)</b>	FCC Part 15, Subpart C: 15.205 Restricted bands of operation; 15.209 Radiated emission limits; general requirements; 15.247 Operation within the bands 902–928MHz, 2400–2483.5 MHz, and 5725–5850 MHz. ANSI C63.4- 2003 FCC Public Notice DA 00-705, March 2000			
<b>Conclusion</b>	Pass 9 test cases were done. The test results are shown in the clause 6 and annex B. The samples passed all the tests required by the client.			
	Date of issue: 2009-05-08			
<b>Comment</b>	The test result relates only to the tested samples.			

Approved by 卢秉松 Reviewed by 高红 Tested by 孙建宇  
 (Lu Bingsong) (Gao Hong) (Sun Zhenyu)

(Lu Bingsong - Deputy Director of the laboratory)

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## **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

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**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

**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 31<sup>st</sup> March, 2009 and finished on 5<sup>th</sup> May, 2009.

## **3. APPLICANT INFORMATION**

### **3.1. Client information**

<b>Name of Company:</b>	TCT Mobile Limited
<b>Address /Post:</b>	4/F, South Building, No.2966, Jinke Road, Zhangjiang High-Tech Park, Pudong, Shanghai, 201203, P.R.China
<b>City:</b>	Shanghai
<b>Postal Code:</b>	201203
<b>Country:</b>	China
<b>Telephone:</b>	86-21-61460876
<b>Fax:</b>	86-21-61460602

### **3.2. Manufacturer information**

<b>Name of Company:</b>	TCT Mobile Limited
<b>Address /Post:</b>	4/F, South Building, No.2966, Jinke Road, Zhangjiang High-Tech

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<b>Postal Code:</b>	201203
<b>Country:</b>	China
<b>Telephone:</b>	86-21-61460876
<b>Fax:</b>	86-21-61460602

**4. EQUIPMENT UNDER TEST(EUT) AND ANCILLARY**

**EQUIPMENT(AE)**

**4.1. About EUT**

Product name:	GSM/GPRS/EDGE 850/1800/1900 Tri-band mobile phone
Model:	Jade A(OT-800A)
FCC ID:	RAD106
With Bluetooth Function:	Yes
EUT operating voltage- Normal:	3.8
Extreme Low Voltage:	3.5
Extreme High Voltage:	4.2
Extreme temperature:	-20°C / + 55°C

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

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

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	011851000001977	PIO	V125
EUT2	011851000001894	PIO	V125

\*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	T5002684AGAC	/
AE2	Li-ion Battery	CAB30P0000C1	/

\*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.

Reference	Title	Version
FCC Part15	FCC CFR 47, Part 15, Subpart C:	July 10, 2008

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	15.205 Restricted bands of operation; 15.209 Radiated emission limits, general requirements; 15.247 Operation within the bands 902–928MHz, 2400–2483.5 MHz, and 5725–5850 MHz.	Edition
ANSI C63.4	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2003
FCC Public Notice DA 00-705	Filing and Measurement Guidelines for Frequency 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

SUMMARY OF MEASUREMENT RESULTS	Sub-clause	Verdict
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 A** for detail.

The measurement is made according to Public notice DA 00-705 and ANSI C63.4.

### 6.2. Statements

TMC has evaluated the test cases requested by the client/manufacturer 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.

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## 7. TEST EQUIPMENTS

### Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date
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	2009-09-02
4	DIODE Power Sensor	NRV-Z15	100103	Rohde & Schwarz	2009-09-02
5	Switch Panel	RSCP	/	Rohde & Schwarz	/
6	Microwave Signal Generator	SMP04	100140	Rohde & Schwarz	2009-10-19
7	Test Receiver	ESS	847151/015	Rohde & Schwarz	2009-10-30
8	LISN	ESH2-Z5	829991/012	Rohde & Schwarz	2009-08-13

### Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date
1	Test Receiver	ESI40	831564/002	Rohde & Schwarz	2010-02-12
2	BiLog Antenna	3142B	9908-1403	EMCO	2010-03-15
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.

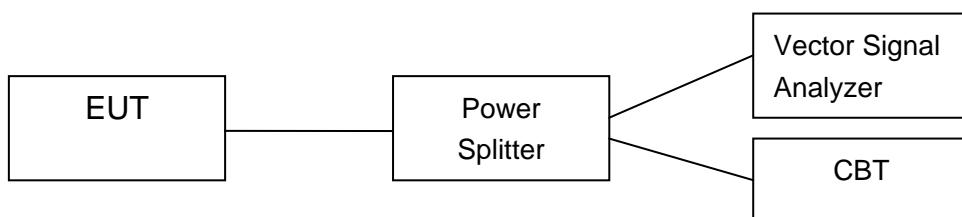
## **ANNEX A: MEASUREMENT RESULTS**

### **A.1. Measurement Method**

#### **A.1.1. Conducted Measurements**

The measurement is made according to Public notice DA 00-705 and ANSI C63.4.

- 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



#### **A.1.2. Radiated Emission Measurements**

In the case of radiated emission, the used settings are as follows,

Sweep frequency from 30 MHz to 1GHz, RBW = 100 kHz, VBW = 300 kHz;

Sweep frequency from 1 GHz to 26GHz, RBW = 1MHz, VBW = 1MHz;

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

#### **Measurement Limit and Method:**

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

The measurement is made according to Public notice DA 00-705 and ANSI C63.4.

#### **Measurement Results:**

Channel	Ch 0 2402 MHz	Ch 39 2441 MHz	Ch 78 2480 MHz	Conclusion
Peak Conducted Output Power (dBm)	1.94	1.97	3.25	P

**Conclusion: PASS**

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**A.3. Frequency Band Edges – Conducted**

**Measurement Limit:**

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

The measurement is made according to Public notice DA 00-705 and ANSI C63.4.

**Measurement Result:**

Channel	Hopping	Band Edge Power ( dBc)		Conclusion
0	Hopping OFF	Fig.1	57.77	P
	Hopping ON	Fig.2	53.69	P
78	Hopping OFF	Fig.3	61.25	P
	Hopping ON	Fig.4	60.99	P

See annex B for test graphs.

Conclusion: PASS

**A.4. Conducted Emission**

**Measurement Limit:**

Standard	Limit
FCC 47 CFR Part 15.247 (d)	20dB below peak output power in 100 kHz bandwidth

The measurement is made according to Public notice DA 00-705 and ANSI C63.4

**Measurement Results:**

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

See annex B for test graphs.

Conclusion: PASS

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### A.5. Radiated Emission

#### Measurement Limit:

Standard	Limit
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)).

The measurement is made according to Public notice DA 00-705 and ANSI C63.4

#### 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.14	P
	1 GHz ~ 4 GHz	Fig.15	P
	4 GHz ~ 18 GHz	Fig.16	P
Ch 39 2441 MHz	30 MHz ~ 1 GHz	Fig.17	P
	1 GHz ~ 4 GHz	Fig.18	P
	4 GHz ~ 18 GHz	Fig.19	P
Ch 78 2480 MHz	30 MHz ~ 1 GHz	Fig.20	P
	1 GHz ~ 4 GHz	Fig.21	P
	4 GHz ~ 18 GHz	Fig.22	P
For all channels	2.45GHz~2.5GHz	Fig.23	P
For all channels	18 GHz ~ 26 GHz	Fig.24	P

See annex B for test graphs.

Conclusion: PASS

### A.6. Time of Occupancy (Dwell Time)

#### Measurement Limit:

Standard	Limit (ms)
FCC 47 CFR Part 15.247(a) (1)(iii)	< 400

The measurement is made according to Public notice DA 00-705 and ANSI C63.4

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**Measurement Result:**

Channel	Packet	Dwell Time (ms)		Conclusion
39	DH1	Fig.25	235.55	P
	DH3	Fig.26	332.09	P
	DH5	Fig.27	351.14	P

See annex B for test graphs.

Conclusion: PASS

### A.7. 20dB Bandwidth

**Measurement Limit:**

Standard	Limit
FCC 47 CFR Part 15.247(a)(1)	NA *

The measurement is made according to Public notice DA 00-705 and ANSI C63.4

\* 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:**

Channel	20dB Bandwidth (kHz)		Conclusion
0	Fig.28	918.46	NA
39	Fig.29	924.80	NA
78	Fig.30	924.80	NA

See annex B for test graphs.

Conclusion: NA

### A.8. Carrier Frequency Separation

**Measurement Limit:**

Standard	Limit(kHz)
FCC 47 CFR Part 15.247(a)(1)	>616.53

The measurement is made according to Public notice DA 00-705 and ANSI C63.4

\* 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 616.53 kHz, and it is greater than 25 kHz.

**Measurement Result:**

Channel	Carrier frequency separation (kHz)		Conclusion
39	Fig.31	1004.81	P

See annex B for test graphs.

Conclusion: PASS

### A.9. Number of Hopping Channels

**Measurement Limit:**

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

The measurement is made according to Public notice DA 00-705 and ANSI C63.4

**Measurement Result:**

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

See annex B for test graphs.

**Conclusion: PASS**

### A.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 (dB $\mu$ V)	Result (dB $\mu$ V)	Conclusion
		With charger	
0.15 to 0.5	66 to 56	Fig. 34	
0.5 to 5	56		P
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 (dB $\mu$ V)	Result (dB $\mu$ V)	Conclusion
		With charger	
0.15 to 0.5	56 to 46	Fig. 34	
0.5 to 5	46		P
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.

The measurement is made according to Public notice DA 00-705 and ANSI C63.4

See annex B for test graphs.

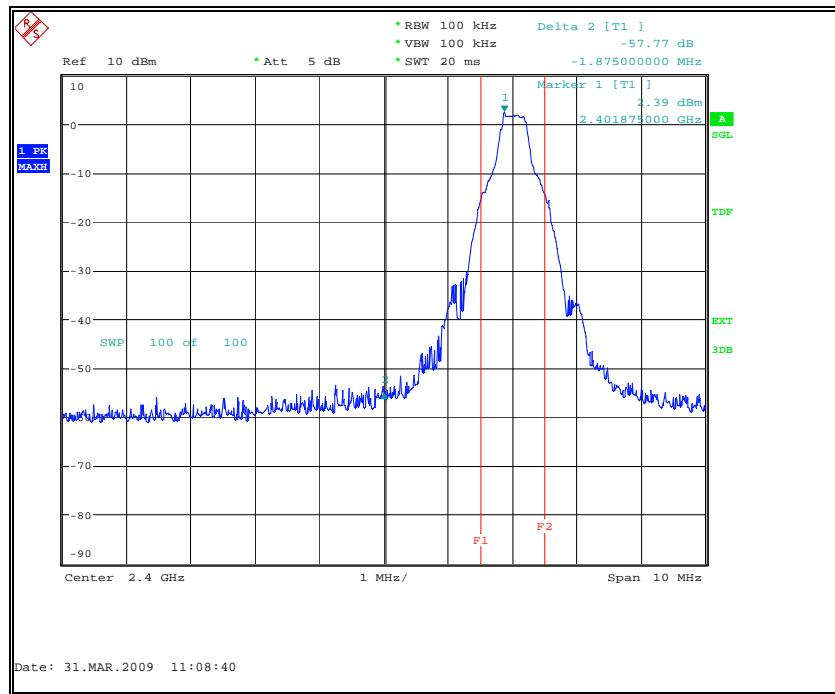
**Conclusion: PASS**

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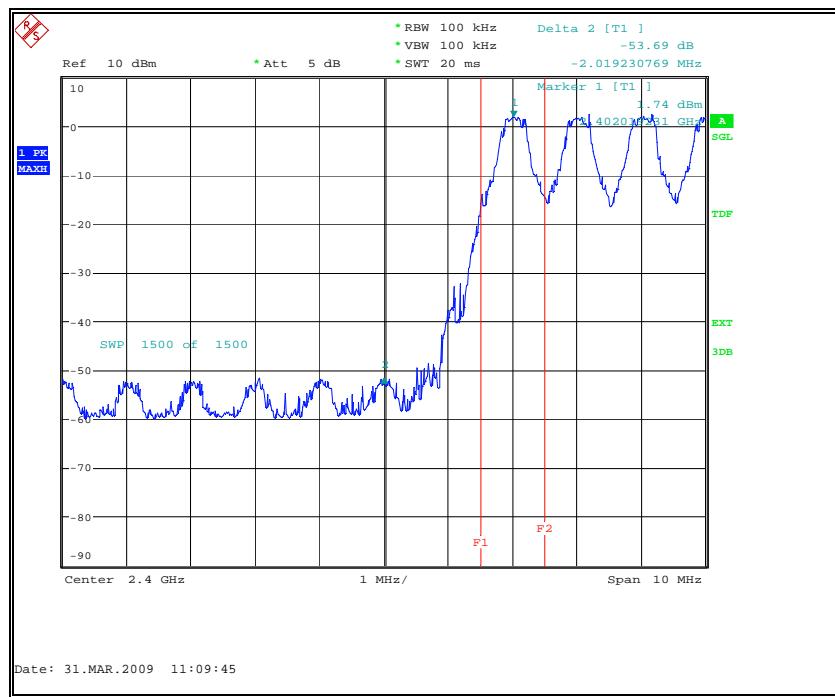
**No. 2009BTH0116**

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**ANNEX B: TEST FIGURE LIST**



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

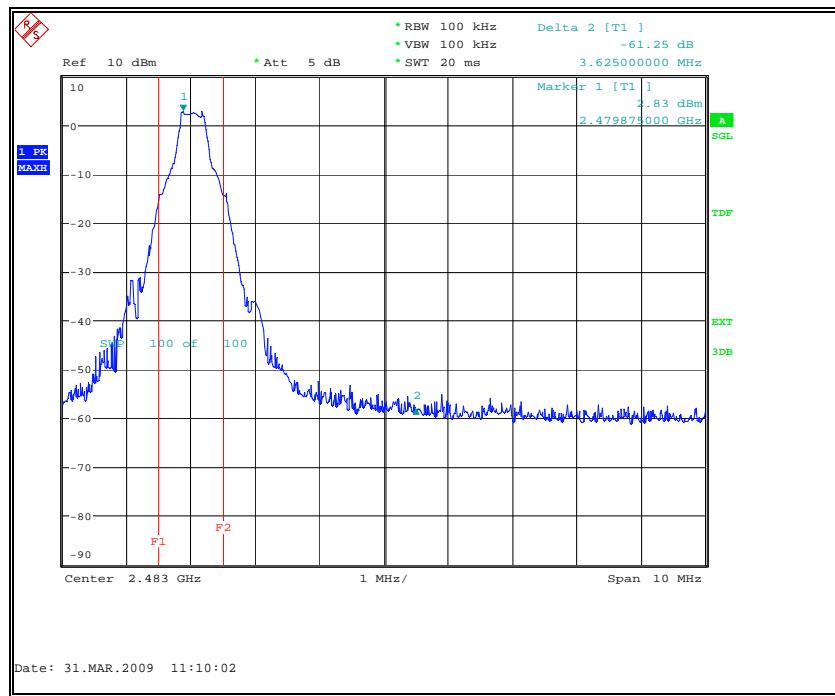


**Fig. 2 Frequency Band Edges: Channel 0, Hopping On**

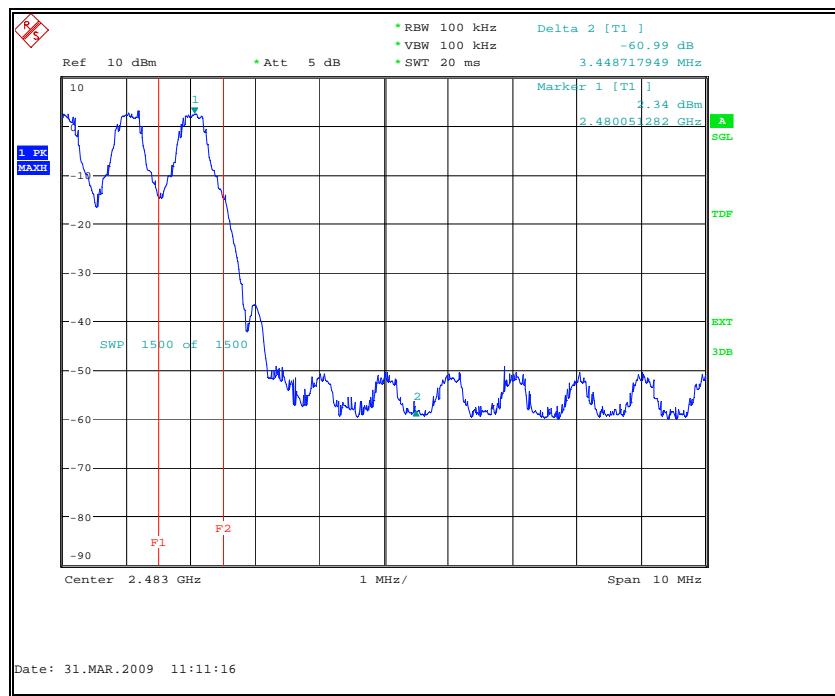
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**Fig. 3 Frequency Band Edges: Channel 78, Hopping Off**

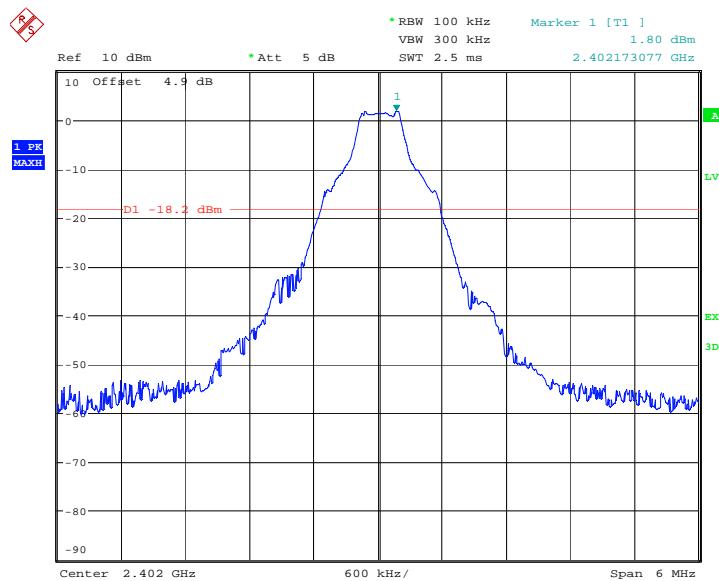


**Fig. 4 Frequency Band Edges: Channel 78, Hopping On**

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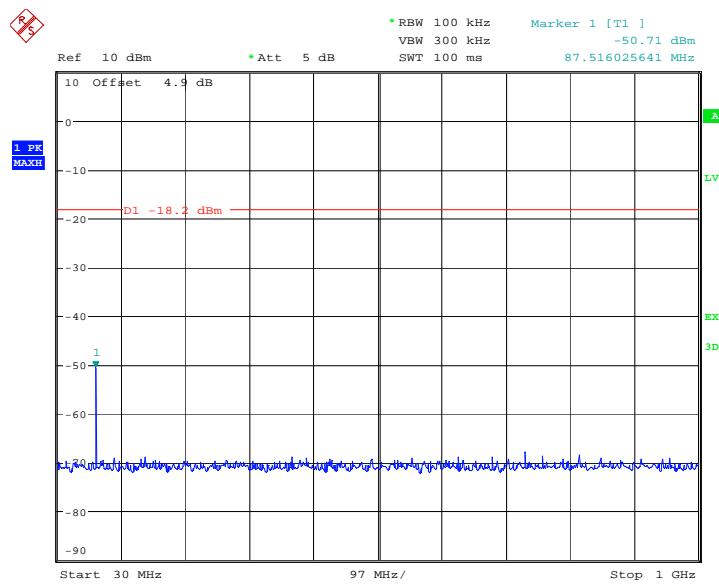
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Date: 31.MAR.2009 17:33:54

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



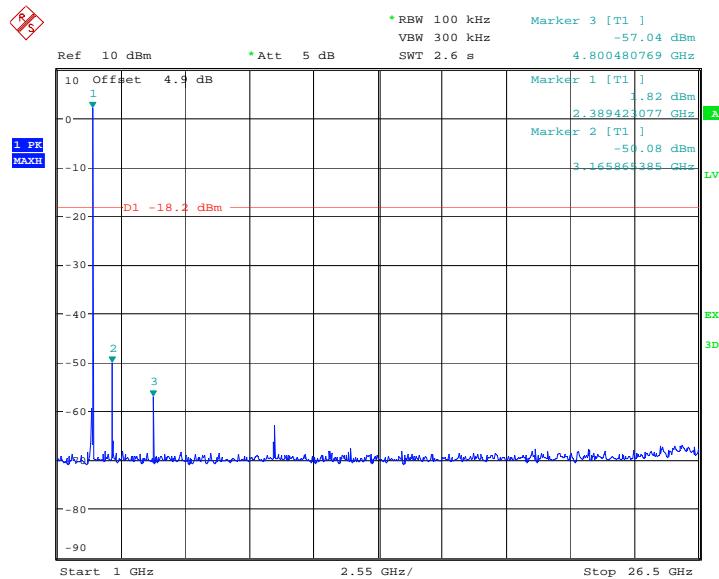
Date: 31.MAR.2009 17:34:14

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

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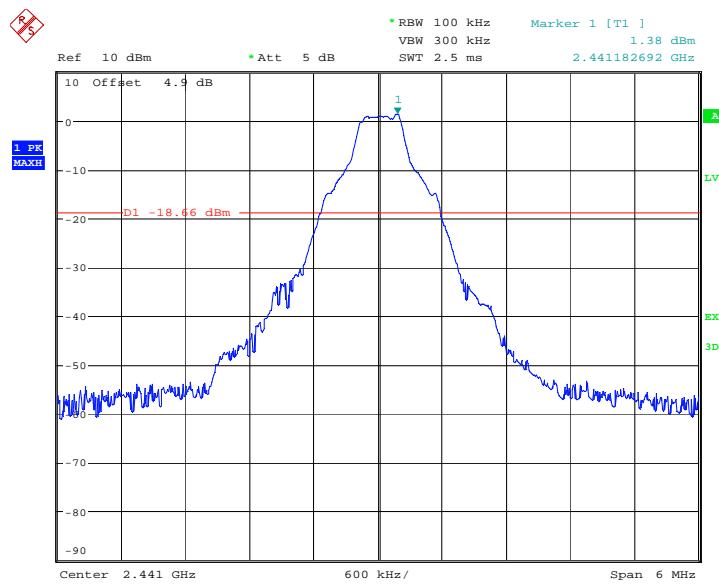
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Date: 31.MAR.2009 17:34:58

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



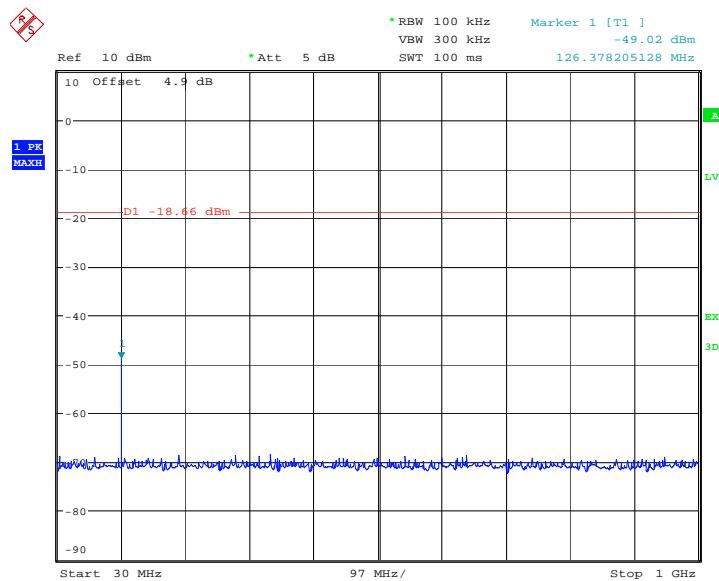
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**Fig. 8 Conducted spurious emission: Channel 39, 2441MHz**

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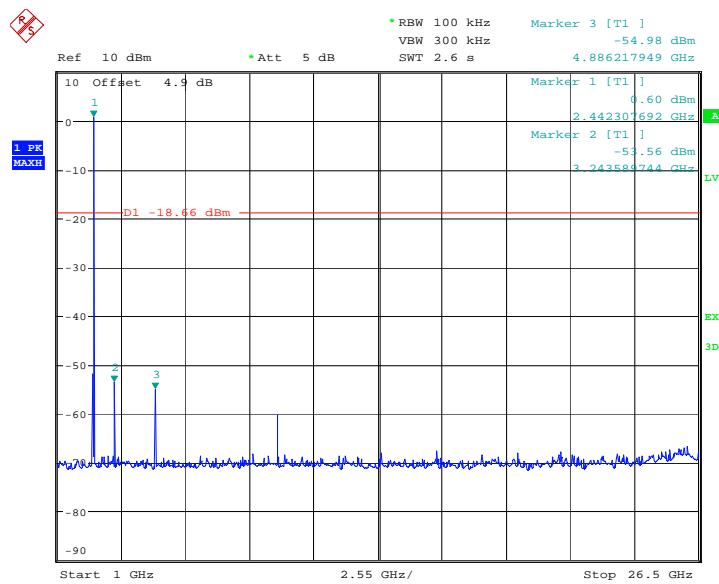
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Date: 31.MAR.2009 17:29:58

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



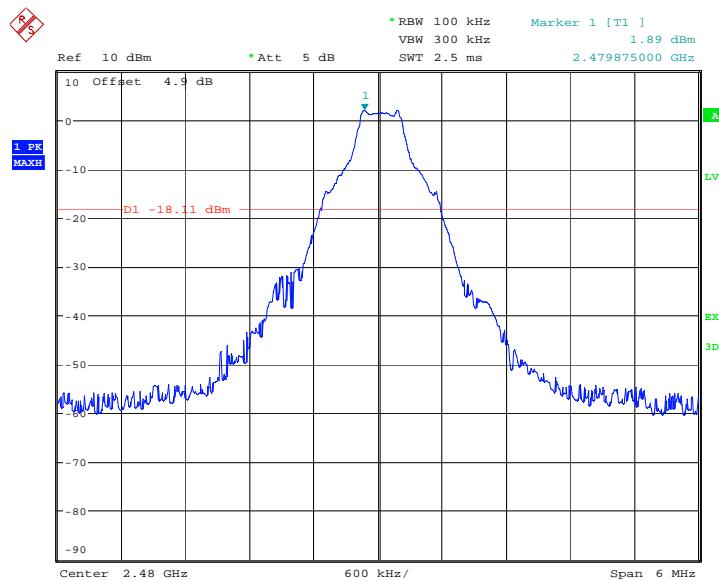
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**Fig. 10 Conducted spurious emission: Channel 39, 1GHz – 26GHz**

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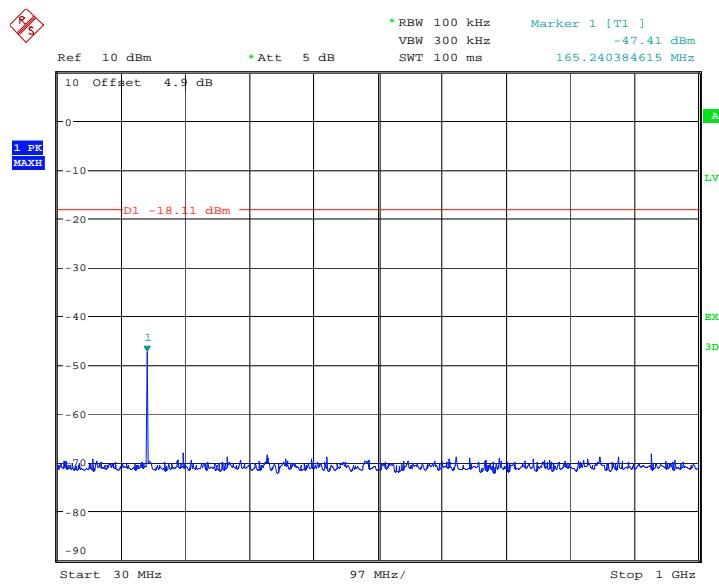
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Date: 31.MAR.2009 17:31:44

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



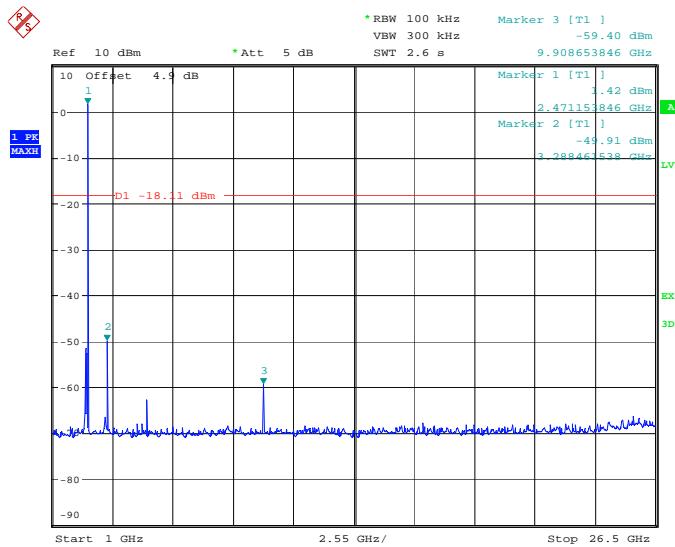
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**Fig. 12 Conducted spurious emission: Channel 78, 30MHz - 1GHz**

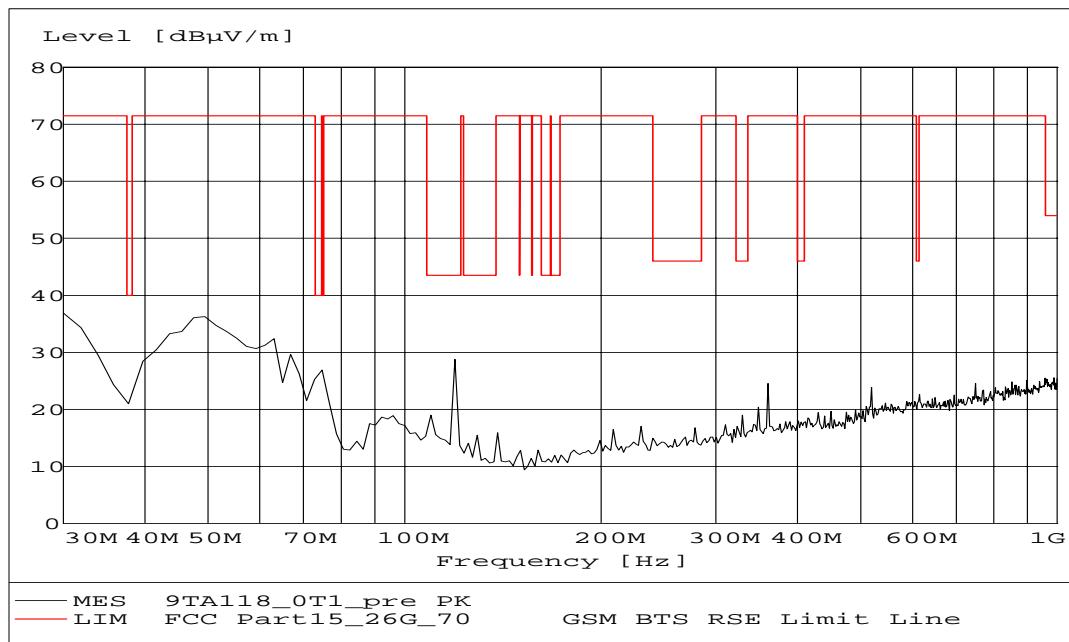
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**Fig. 13 Conducted spurious emission: Channel 78, 1GHz - 26GHz**

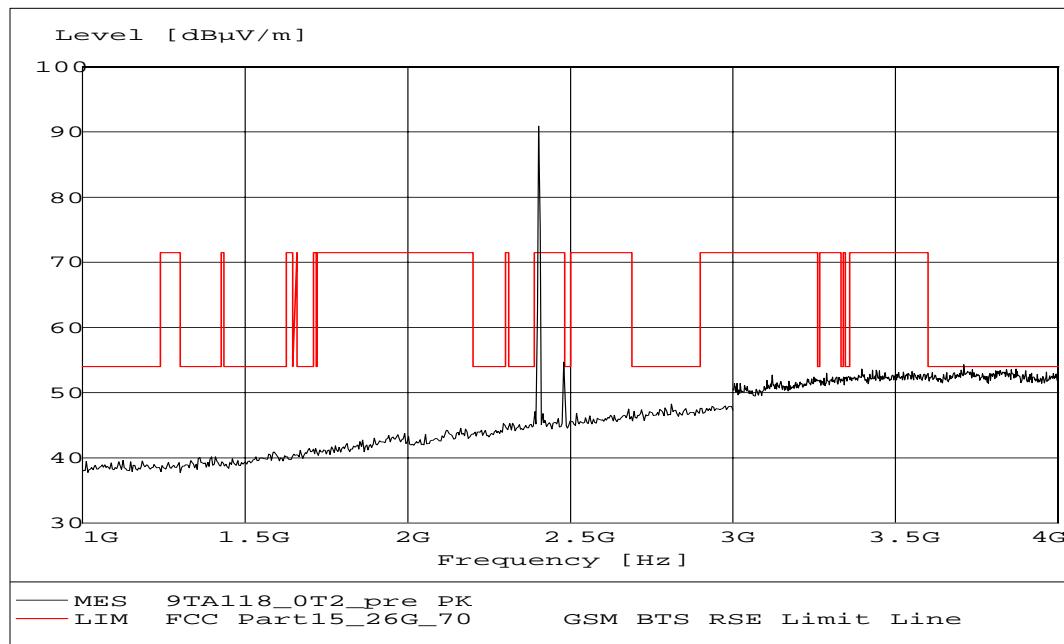


**Fig. 14 Radiated emission: Channel 0, 30 MHz ~ 1 GHz**

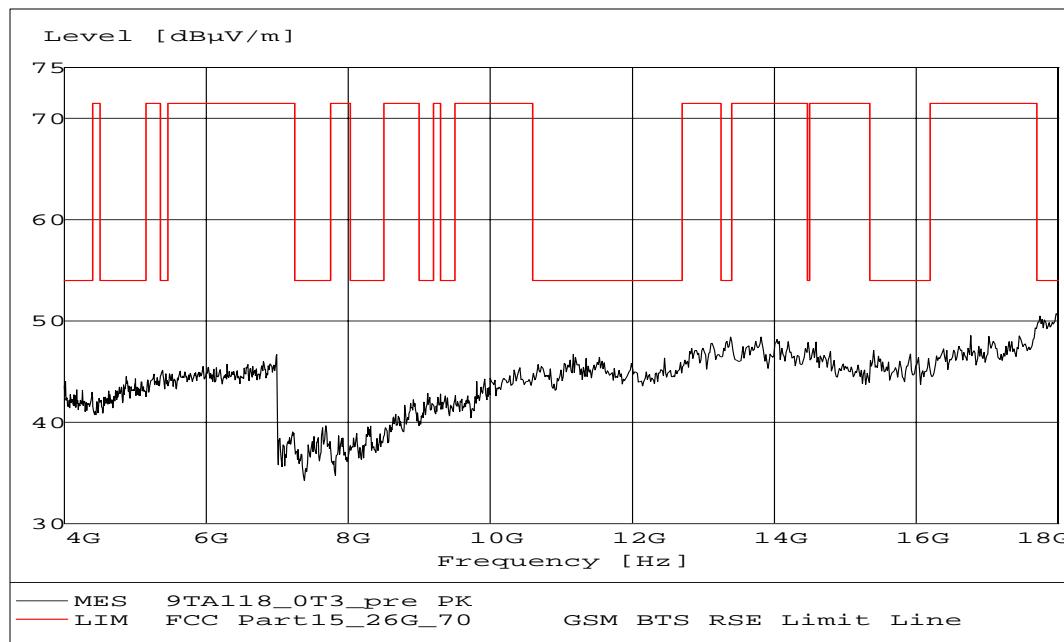
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**Fig. 15 Radiated emission: Channel 0, 1 GHz ~ 4 GHz**

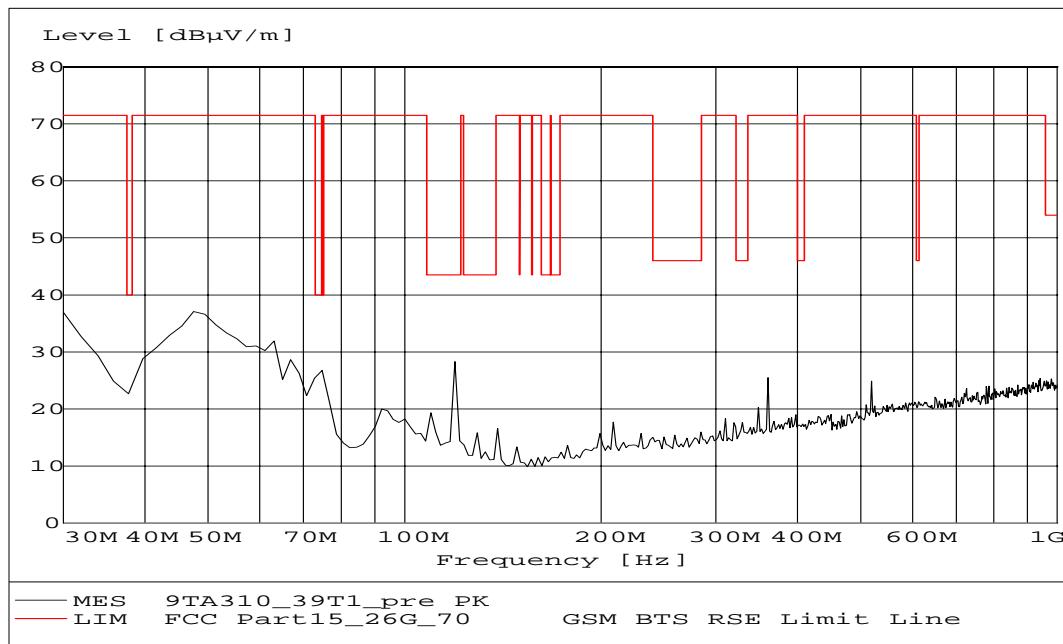


**Fig. 16 Radiated emission: Channel 0, 4 GHz ~ 18 GHz**

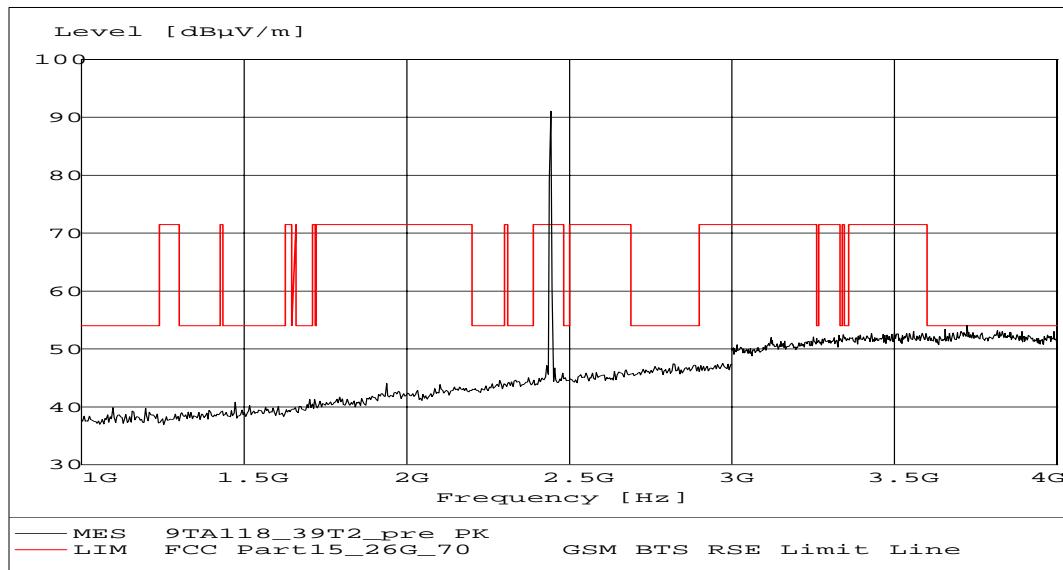
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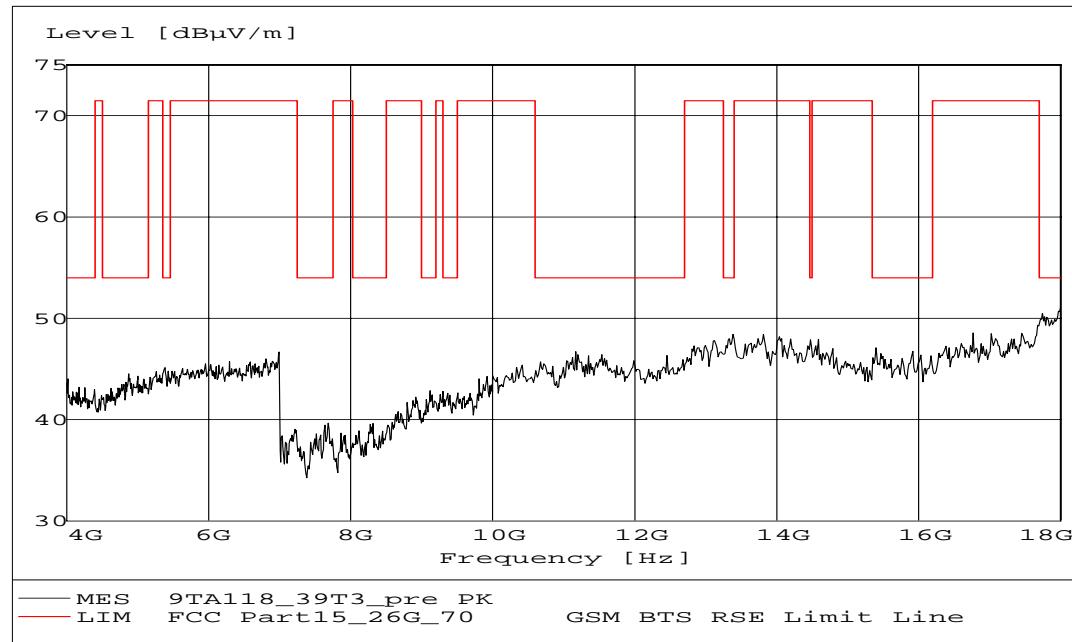
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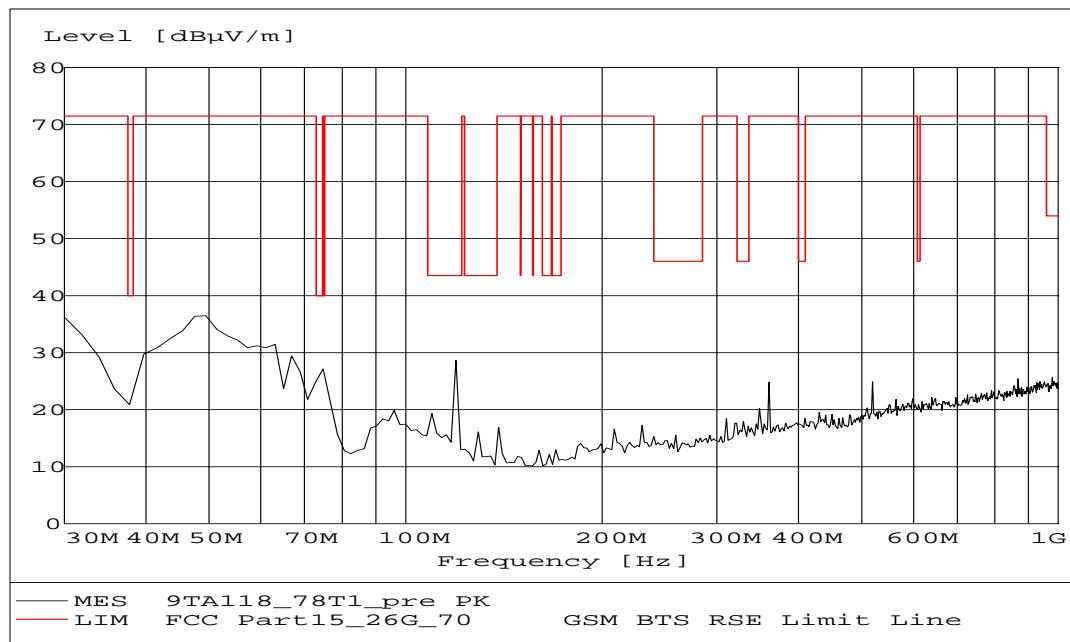
**Fig. 17 Radiated emission: Channel 39, 30 MHz ~ 1 GHz**



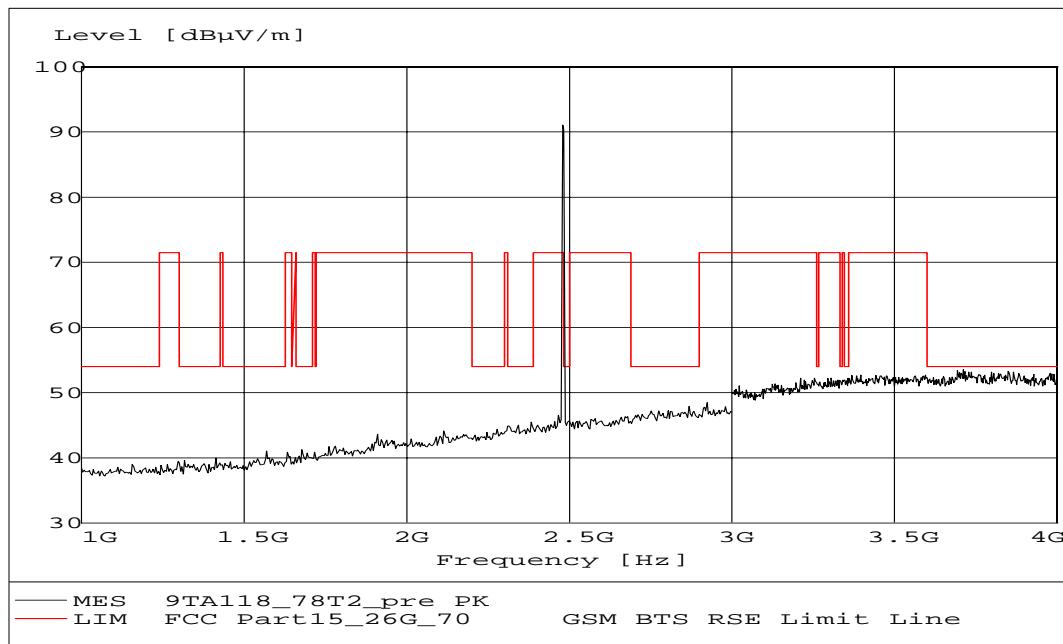
**Fig. 18 Radiated emission: Channel 39, 1 GHz ~ 4 GHz**



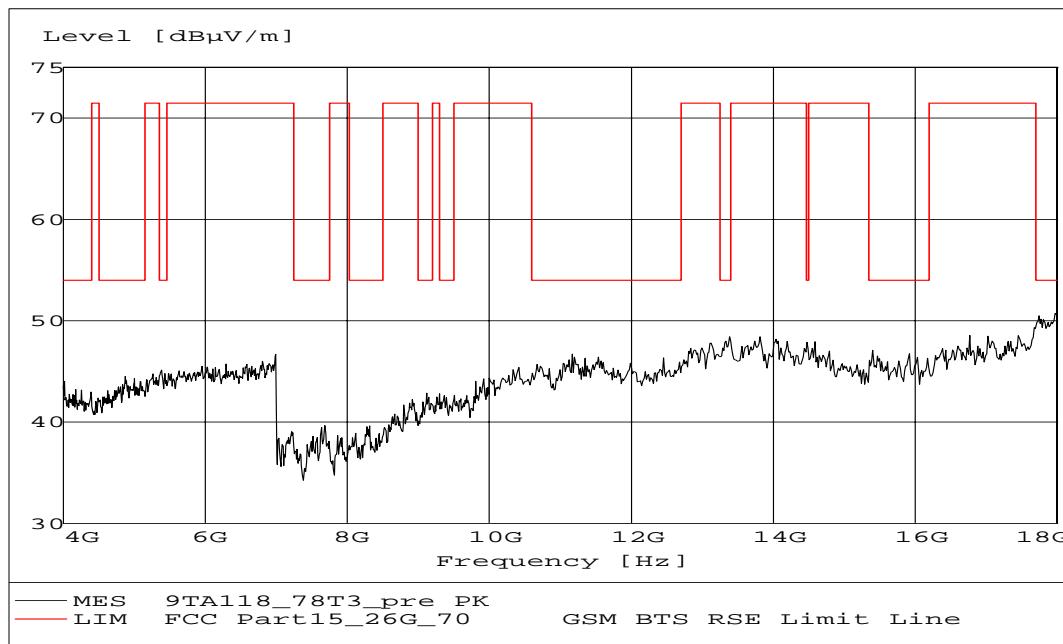
**Fig. 19 Radiated emission: Channel 39, 4 GHz ~ 18 GHz**



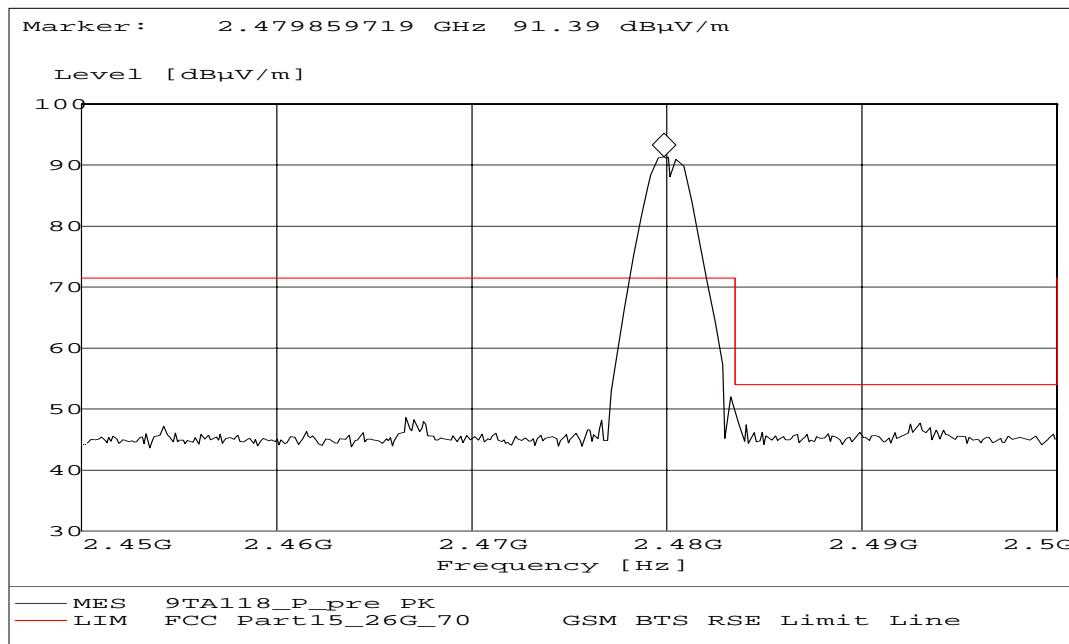
**Fig. 20 Radiated emission: Channel 78, 30 MHz ~ 1 GHz**



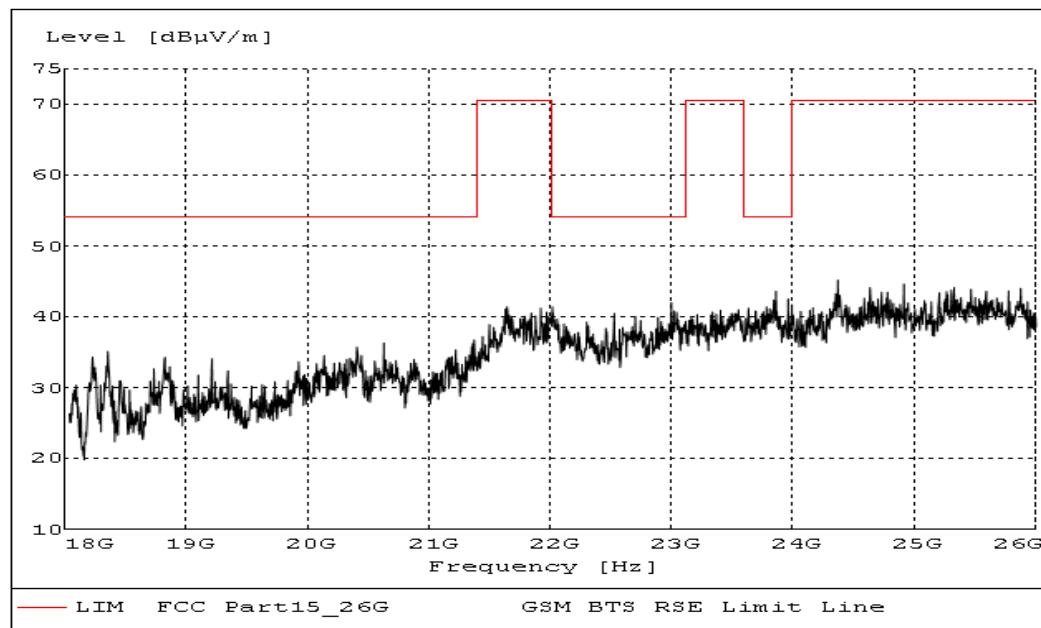
**Fig. 21 Radiated emission: Channel 78, 1 GHz ~ 4 GHz**



**Fig. 22 Radiated emission: Channel 78, 4 GHz ~ 18 GHz**



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

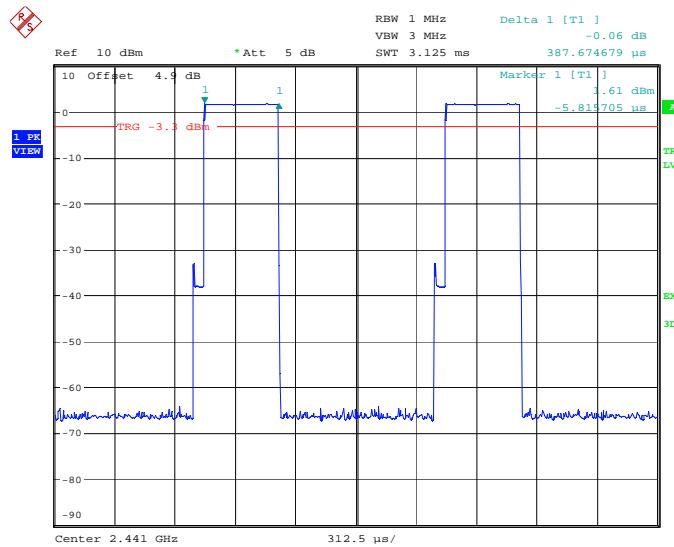


**Fig. 24 Radiated emission: 18 GHz ~ 26 GHz**

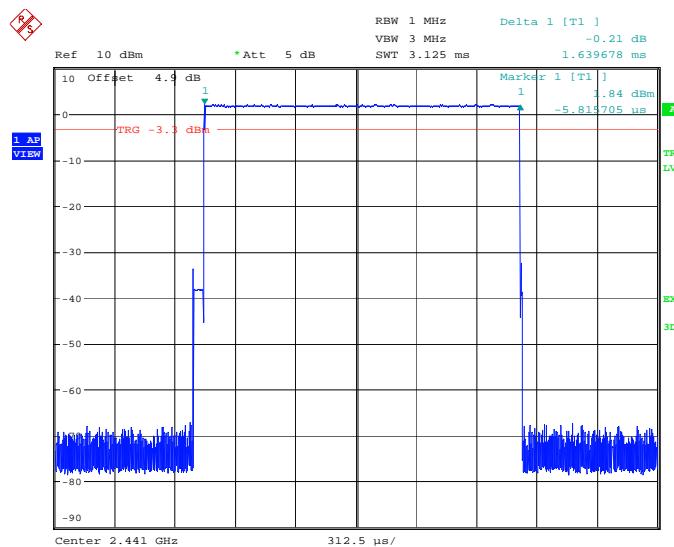
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**Fig. 25 Time of occupancy (Dwell Time): Channel 39, Packet DH1**

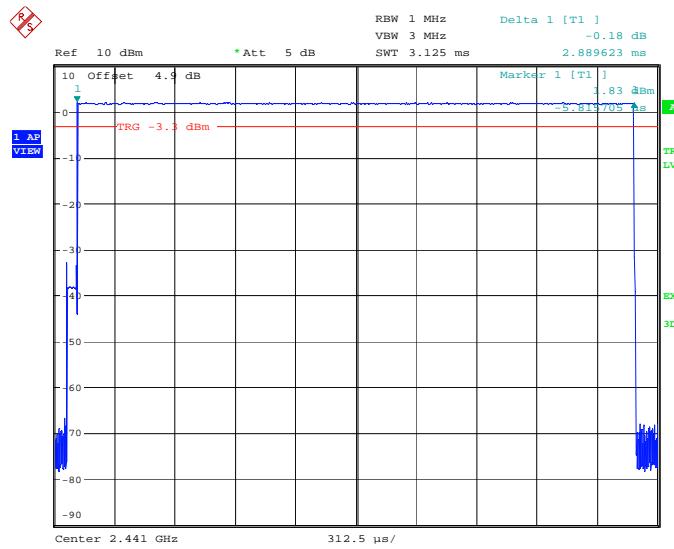


**Fig. 26 Time of occupancy (Dwell Time): Channel 39, Packet DH3**

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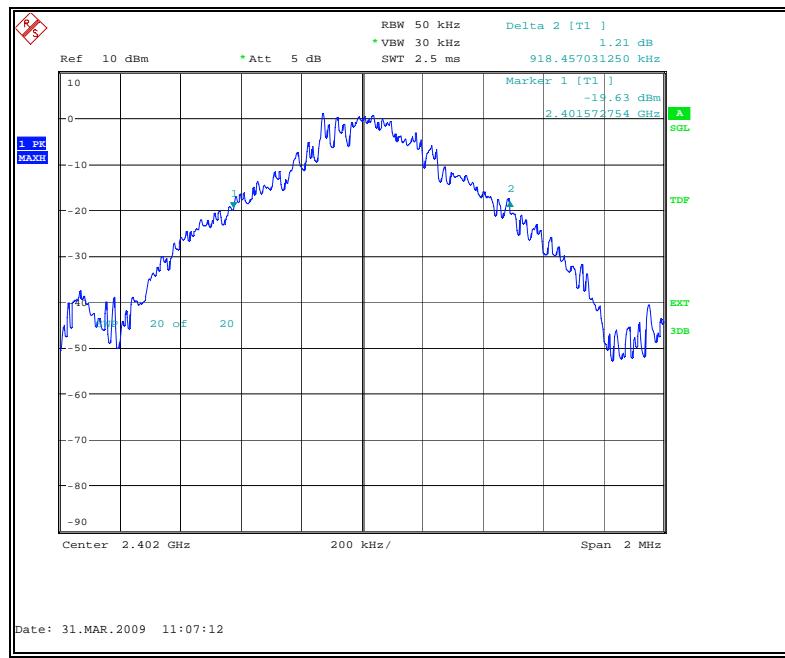
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**Fig. 27 Time of occupancy (Dwell Time): Channel 39, Packet DH5**

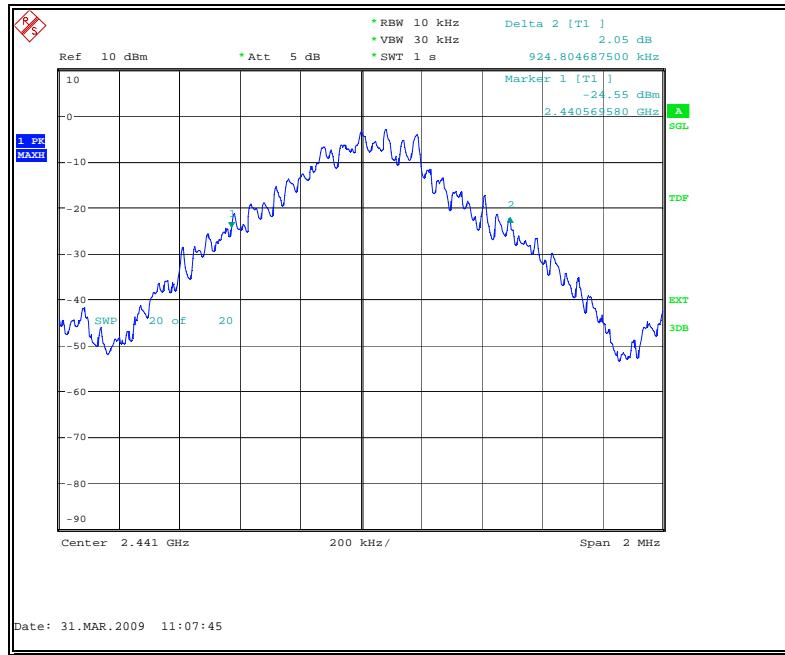


**Fig. 28 20dB Bandwidth: Channel 0**

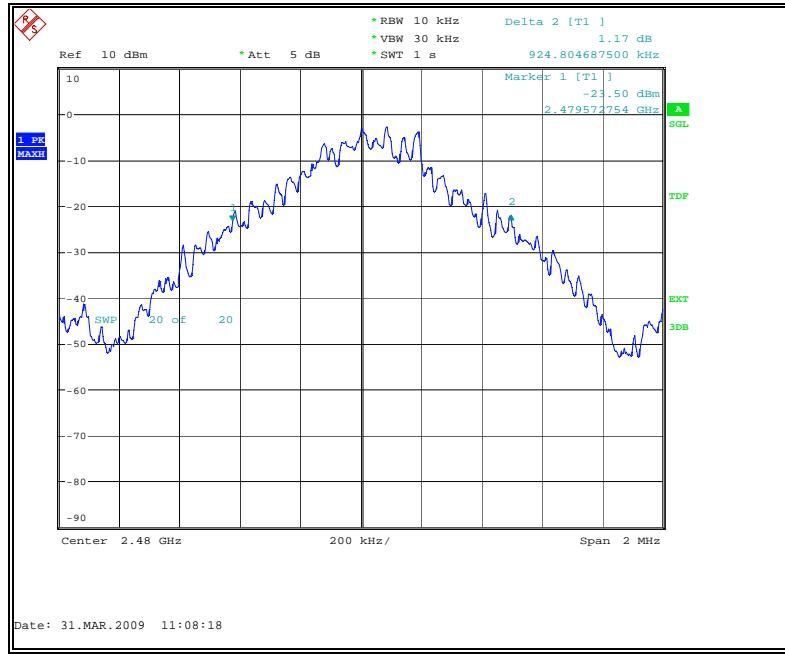
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**Fig. 29 20dB Bandwidth: Channel 39**

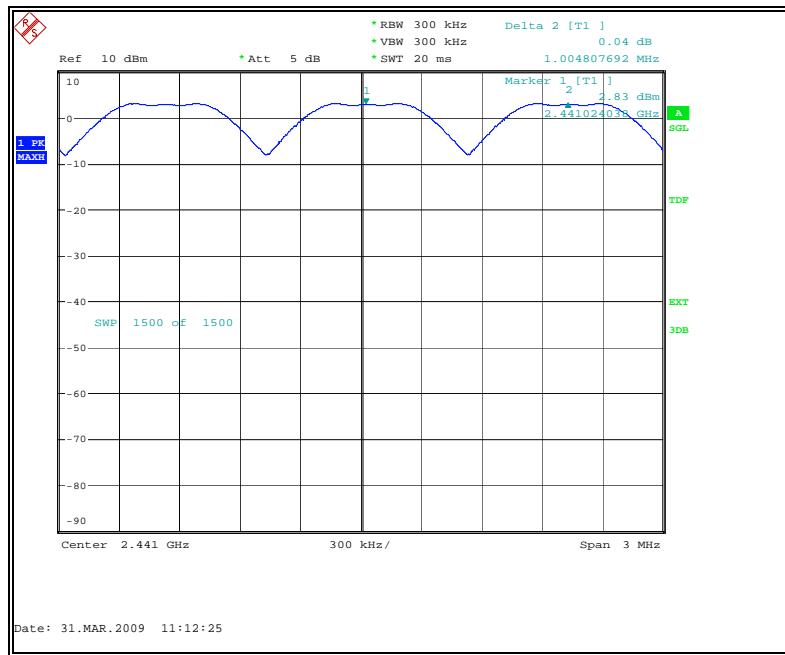


**Fig. 30 20dB Bandwidth: Channel 78**

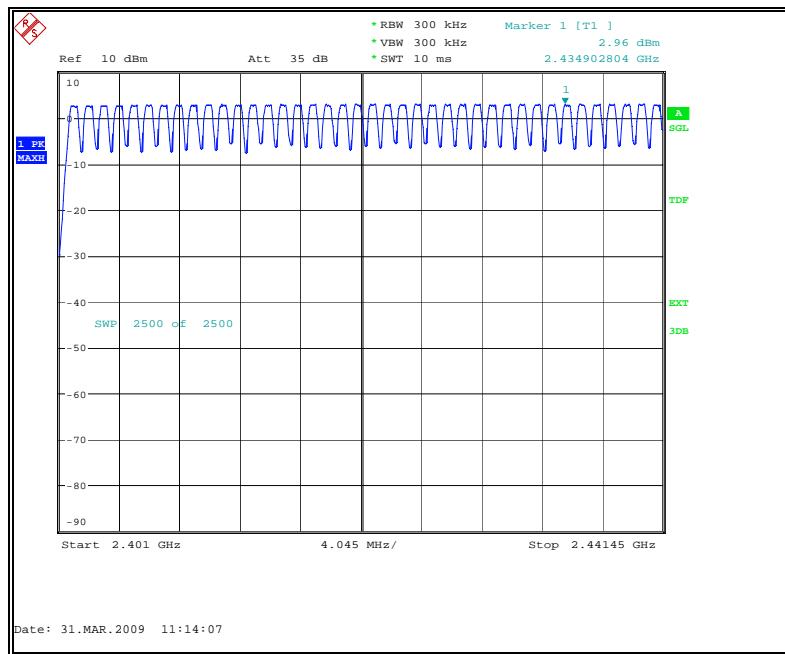
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**Fig. 31 Carrier frequency separation measurement: Channel 39**

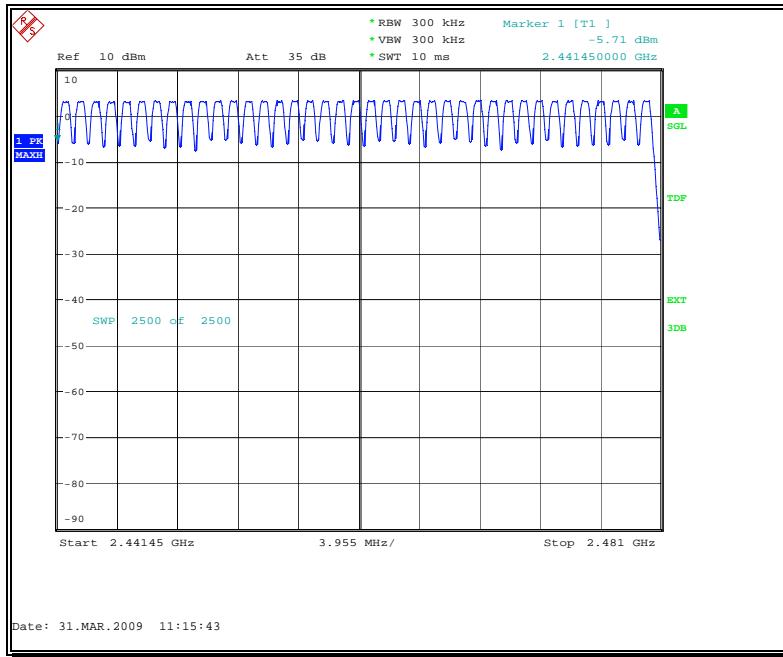


**Fig. 32 Number of hopping frequencies: Channel 0 – 39**

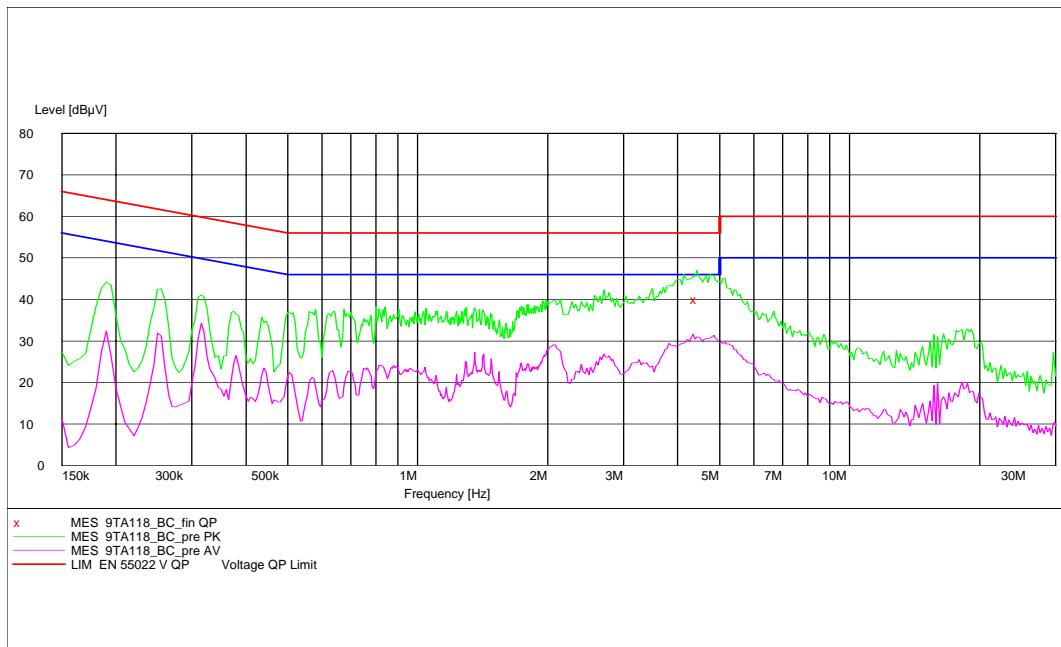
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**Fig. 33 Number of hopping frequencies: Channel 40 - 78**



**Fig. 34 AC Powerline Conducted Emission**

Measurement Result: "BC\_fin QP"

Frequency (MHz)	Level (dB $\mu$ V)	Transd (dB)	Limit (dB $\mu$ V)	Margin (dB)	Line	PE
4.433430	40.10	10.2	56	15.9	L1	FLO

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