



No. DAT-P-114/01-01



TESTING  
CNAS L0442

# TEST REPORT

No. 2008BTH0043

Product name WCDMA/ GSM /GPRS Mobile Handset

Model F165

Client ZTE Corporation

Classification of test Type Approval

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

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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)

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<b>Product Name</b>	WCDMA/ GSM /GPRS Mobile Handset	<b>Model</b>	F165
		<b>Trade mark</b>	
<b>Client</b>	ZTE Corporation		
<b>Manufacturer</b>	ZTE Corporation		
<b>Arrival Date of sample</b>	September 10, 2008	<b>Carrier of the samples</b>	Li Dezi
<b>Quantity of the samples</b>	2	<b>Date of product</b>	/
<b>Series number</b>	357407010004188, 357407010004121		
<b>Standard(s)</b>	FCC Part 15, Subpart C; ANSI C63.4; RSS-210;		
<b>Conclusion</b>	<p>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.</p> <p align="right">Date of issue: 2008-09-28</p>		
<b>Comment</b>	The test result relates only to the tested samples.		

Approved by 陆冰松 Reviewed by 高洪 Tested by 张莹  
 (Lu Bingsong) (Gao Hong) (Zhang Ying)

(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

**Shielding room2** did not exceed following limits along the EMC testing:

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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

**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. = 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

**Fully-anechoic chamber2** (6.0 meters×4.0 meters×3.67 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

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

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 20 %, Max. = 80 %
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. = 35 %, 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 80MHz to 3000 MHz

### 2.3. Testing Period

The performed test started on 10<sup>th</sup> September, 2008 and finished on 26<sup>th</sup> September, 2008.

### 3. Applicant Information

#### 3.1. Client information

<b>Name of Company:</b>	ZTE Corporation
<b>Address /Post:</b>	ZTE Plaza, Keji Road South, Hi-Tech Industrial Park,Nanshan District,Shenzhen, Guangdong, 518057, P.R.China
<b>City:</b>	Shanghai
<b>Postal Code:</b>	518057
<b>Country:</b>	China
<b>Telephone:</b>	021-68895196
<b>Fax:</b>	021-50801070

#### 3.2. Manufacturer information

<b>Name of Company:</b>	ZTE Corporation
<b>Address /Post:</b>	ZTE Plaza, Keji Road South, Hi-Tech Industrial Park,Nanshan District,Shenzhen, Guangdong, 518057, P.R.China
<b>City:</b>	Shanghai
<b>Postal Code:</b>	518057
<b>Country:</b>	China
<b>Telephone:</b>	021-68895196
<b>Fax:</b>	021-50801070

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

#### 4.1. About EUT

Product Name:	WCDMA/ GSM /GPRS Mobile Handset
Model:	F165
FCC ID:	Q78-ZTEF165
IC ID:	5200A-ZTEF165
With Bluetooth	Yes
EUT operating voltage- Normal:	3.7
Extreme Low Voltage:	3.4
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

<b>EUT ID*</b>	<b>SN or IMEI</b>	<b>HW Version</b>	<b>SW Version</b>
EUT1	357407010004188	wk6B	F165 T01
EUT2	357407010004121	wk6B	F165 T01

\*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	Li-ion Battery	Li3713T42P3h614057	/
AE2	Adaptor	STC-A22O50U8	/

\*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: 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.	May 4, 2007 Edition
RSS210	Spectrum Management and Telecommunications Radio Standards Specification, Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment	July, 2007
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

**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); RSS-210:A8.2(a)	<b>P</b>
Frequency Band Edges	15.247 (d); RSS-210:A8.5	<b>P</b>
Conducted Emission	15.247 (d); RSS-210:A8.5	<b>P</b>

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Radiated Emission	15.247, 15.205, 15.209; RSS-210:A8.5	<b>P</b>
Time of Occupancy (Dwell Time)	15.247 (a) (1)(iii); RSS-210:A8.1(4)	<b>P</b>
20dB Bandwidth	15.247 (a)(1) ; RSS-210:A8.1(1)	<b>NA</b>
Carrier Frequency Separation	15.247 (a)(1) ; RSS-210:A8.1(2)	<b>P</b>
Number of hopping channels	15.247 (a)(b)(iii) ; RSS-210:A8.1(4)	<b>P</b>
AC Powerline Conducted Emission	15.107, 15.207; RSS-210:A7.2.2	<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**

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date
1	Vector Signal Analyzer	FSQ26	200136	Rohde & Schwarz	2009-01-15
2	Bluetooth Tester	CBT	100135	Rohde & Schwarz	2008-11-12
3	Test Receiver	ESS	847151/015	Rohde & Schwarz	2008-10-30
4	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	2009-02-12
2	BiLog Antenna	3142B	9908-1403	EMCO	2009-03-15
3	Dual-Ridge Waveguide Horn Antenna	3115	9906-5827	EMCO	2008-12-25
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**



Adaptor



Tag on the adaptor



Battery



Battery

Internal Photo



Mobile Phone Disassembly



Mobile Phone Disassembly

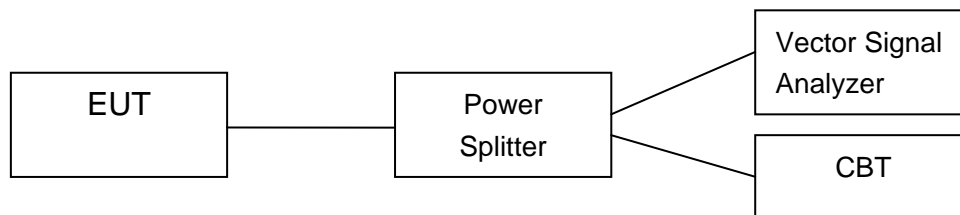


Mobile Phone Disassembly

## **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); RSS-210:A8.2(a);	< 30

**Measurement Results:**

Channel	Ch 0 2402 MHz	Ch 39 2441 MHz	Ch 78 2480 MHz	Conclusion
<b>Peak Conducted Output Power (dBm)</b>	-4.25	-5.36	-5.44	<b>P</b>

See annex C for test graphs.

**Conclusion: PASS**

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

**Measurement Limit:**

Standard	Limit (dBc)
FCC 47 CFR Part 15.247 (d); RSS-210:A8.5;	> 20

**Measurement Result:**

Channel	Hopping	Band Edge Power ( dBc)		Conclusion
0	Hopping OFF	Fig.1	52.14	<b>P</b>
	Hopping ON	Fig.2	52.14	<b>P</b>



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78	Hopping OFF	Fig.3	45.41	<b>P</b>
	Hopping ON	Fig.4	43.75	<b>P</b>

See annex C for test graphs.

**Conclusion: PASS**

**B.4 Conducted Emission**

**Measurement Limit:**

Standard	Limit
FCC 47 CFR Part 15.247 (d); RSS-210:A8.5;	20dB below peak output power in 100 kHz bandwidth

**Measurement Results:**

Channel	Frequency Range	Test Results	Conclusion
Ch 0 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 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 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:**

Standard	Limit
FCC 47 CFR Part 15.247, 15.205, 15.209 RSS-210:A8.5	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

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**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
Power	2.35GHz ~ 2.45GHz	Fig.23	P
For all channels	18 GHz ~ 26 GHz	Fig.24	P

See annex C for test graphs.

**Conclusion: PASS**

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

**Measurement Limit:**

Standard	Limit (ms)
FCC 47 CFR Part 15.247(a) (1)(iii); RSS-210:A8.1(4);	< 400

**Measurement Result:**

Channel	Packet Type	Dwell Time (ms)		Conclusion
39	DH1	Fig.25	252.19	P
	DH3	Fig.26	338.20	P
	DH5	Fig.27	355.11	P

See annex C for test graphs.

**Conclusion: PASS**

**B.7 20dB Bandwidth**

**Measurement Limit:**

Standard	Limit
FCC 47 CFR Part 15.247(a)(1); RSS-210:A8.1(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:**

Channel	20dB Bandwidth (kHz)		Conclusion
0	Fig.28	825.68	NA
39	Fig.29	851.32	NA
78	Fig.30	902.59	NA

See annex C for test graphs.

**Conclusion: NA**

**B.8 Carrier Frequency Separation**

**Measurement Limit:**

Standard	Limit(kHz)
FCC 47 CFR Part 15.247(a)(1); RSS-210:A8.1(2);	> 567.55

\* 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 851.32 kHz) is 567.55 kHz, and it is greater than 25 kHz.

**Measurement Result:**

Channel	Carrier frequency separation (kHz)	Conclusion
39	Fig.31 1024.04	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); RSS-210:A8.1(4);	> 75

**Measurement Result:**

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

See annex C for test graphs.

**Conclusion: PASS**

**B.10 AC Powerline Conducted Emission**

**Standard:**

FCC 47 CFR Part 15.107, 15.207; RSS-210:A7.2.2

**Test Condition**

Voltage (V)	Frequency (Hz)
110	60

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**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	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 (dB $\mu$ V)	Result (dB $\mu$ V)	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

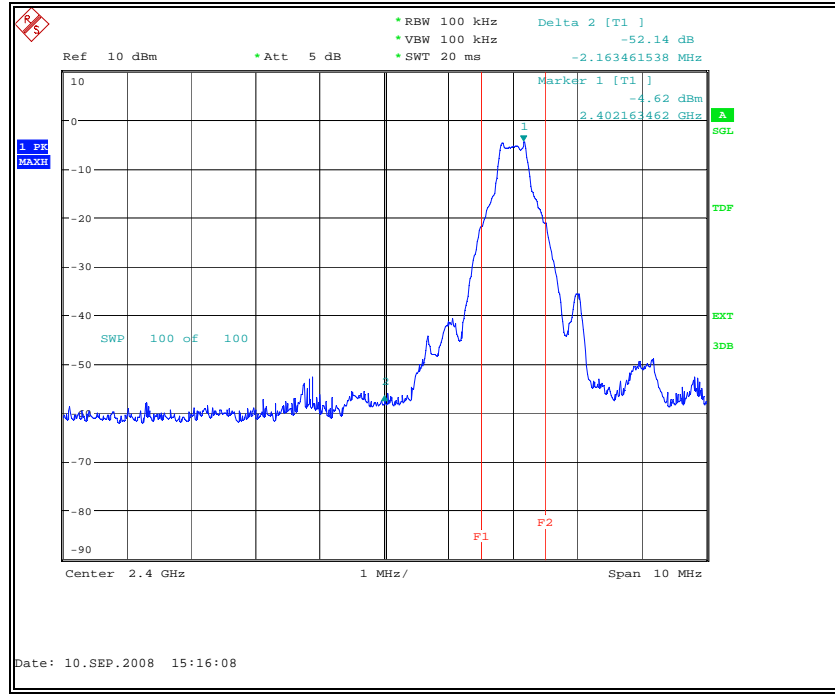


Fig. 1 Frequency Band Edges: Channel 0, Hopping Off

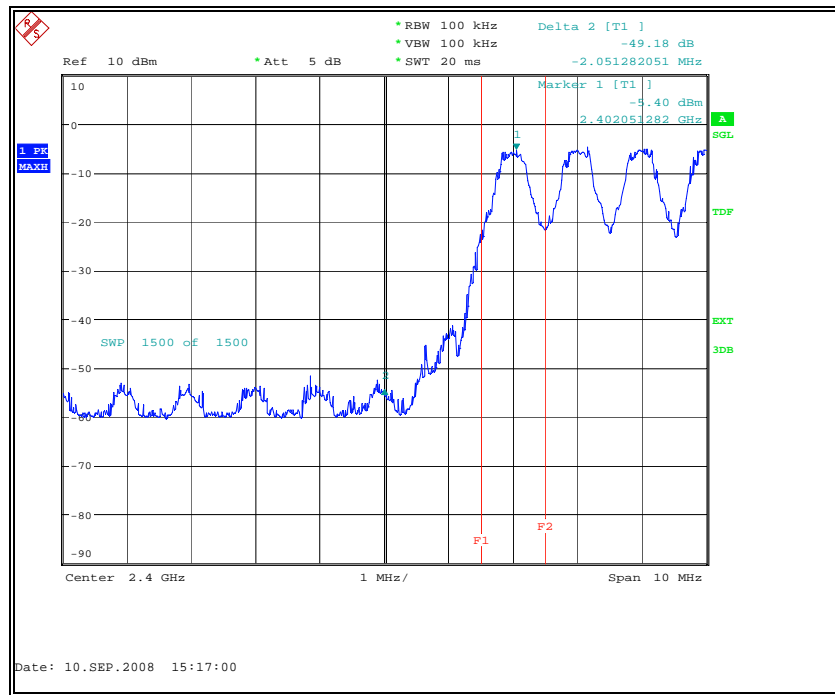


Fig. 2 Frequency Band Edges: Channel 0, Hopping On

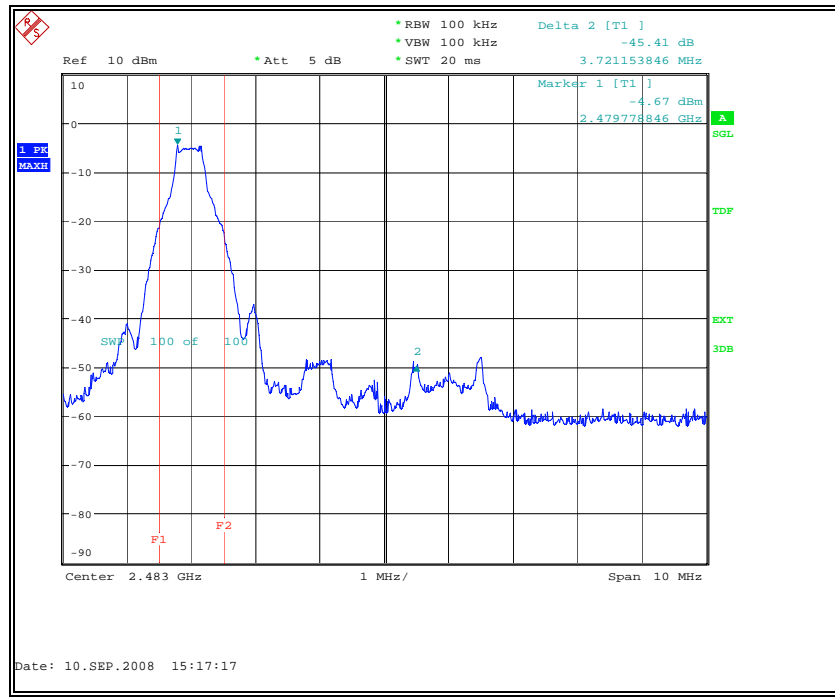


Fig. 3 Frequency Band Edges: Channel 78, Hopping Off

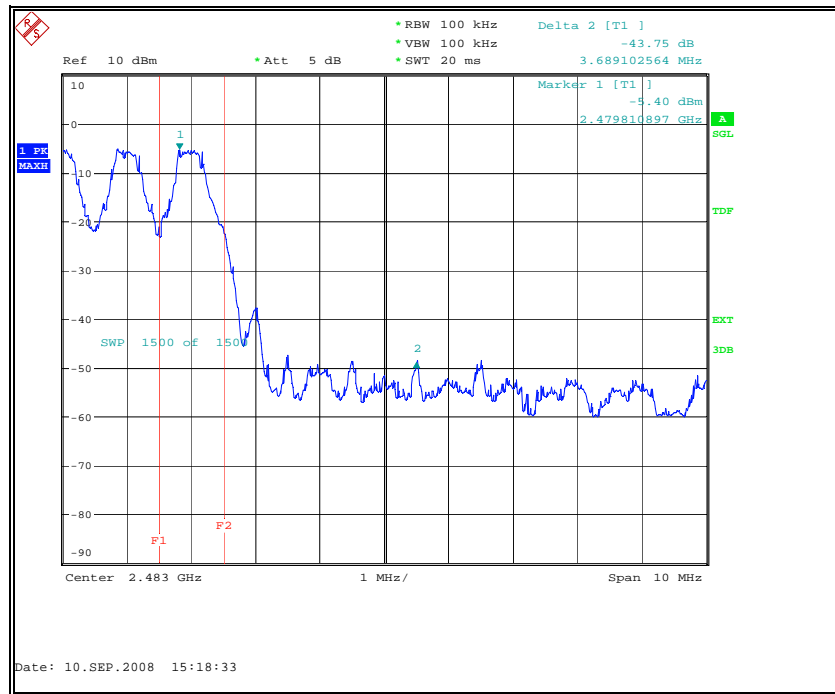
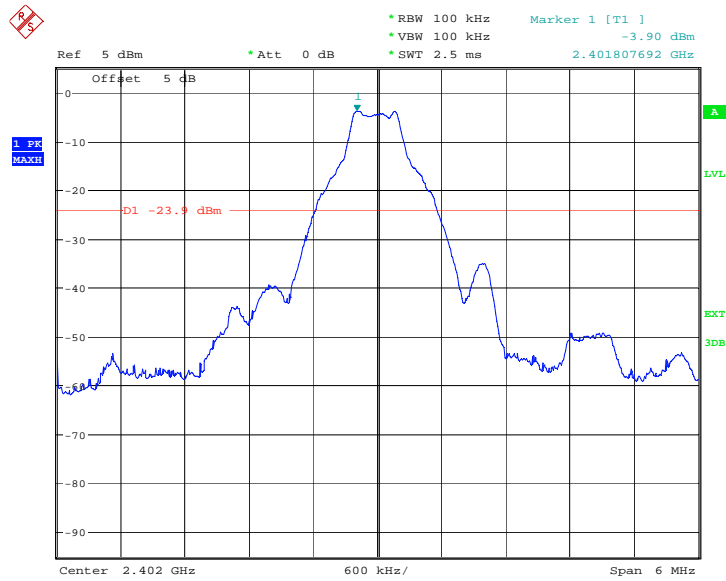
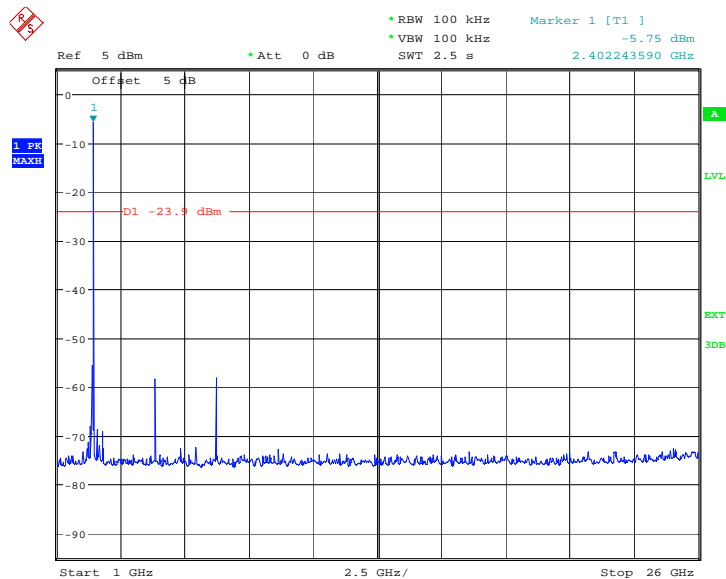


Fig. 4 Frequency Band Edges: Channel 78, Hopping On



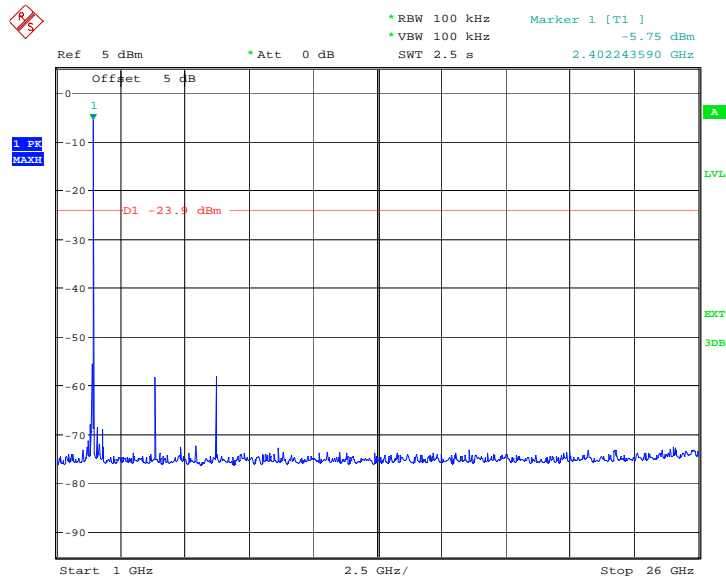
Date: 26.SEP.2008 10:26:19

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



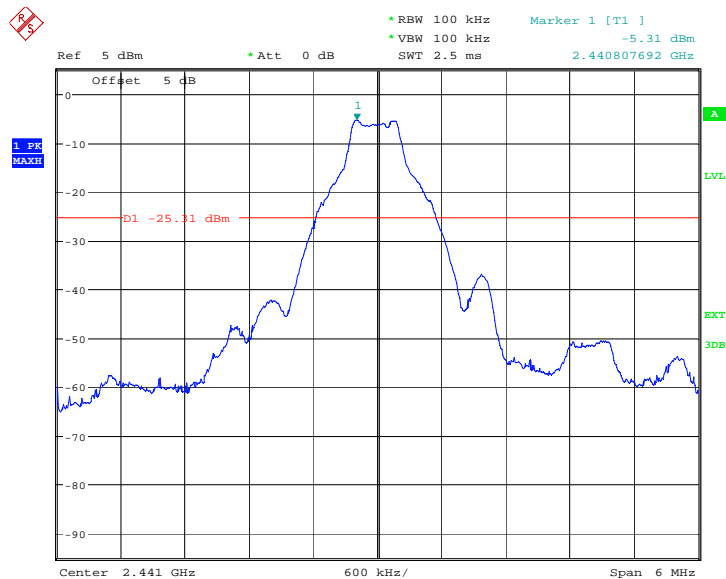
Date: 26.SEP.2008 10:27:25

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



Date: 26.SEP.2008 10:27:25

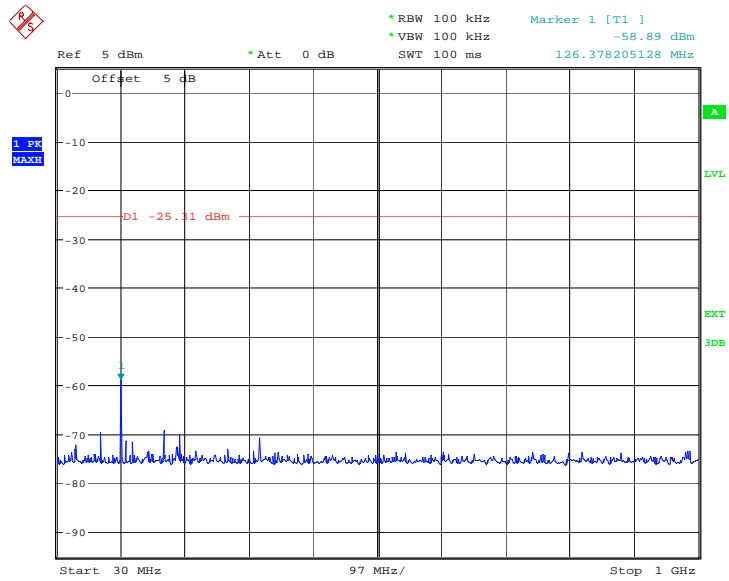
Fig. 7 Conducted spurious emission: Channel 0,1GHz – 26GHz



Date: 17.SEP.2008 15:28:27

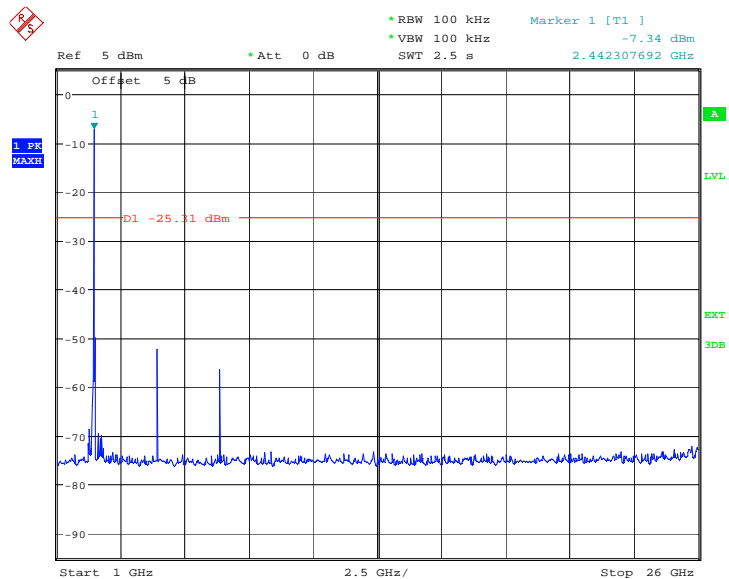
Fig. 8 Conducted spurious emission: Channel 39, 2441MHz





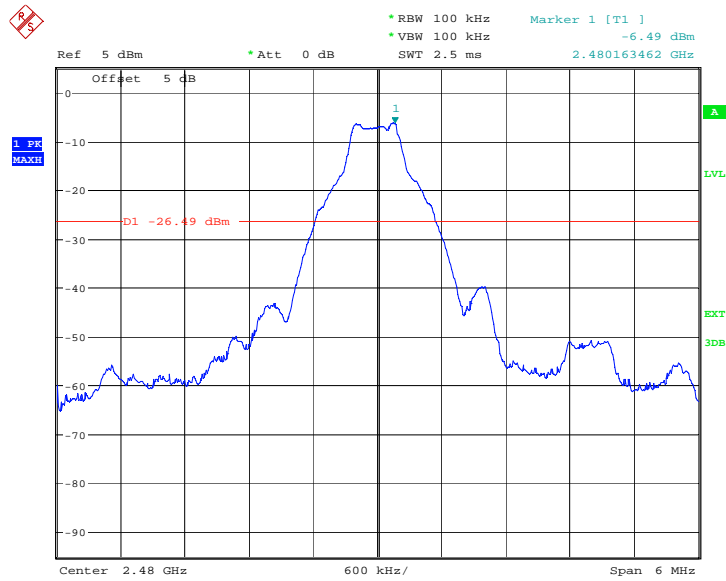
Date: 17.SEP.2008 15:29:07

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



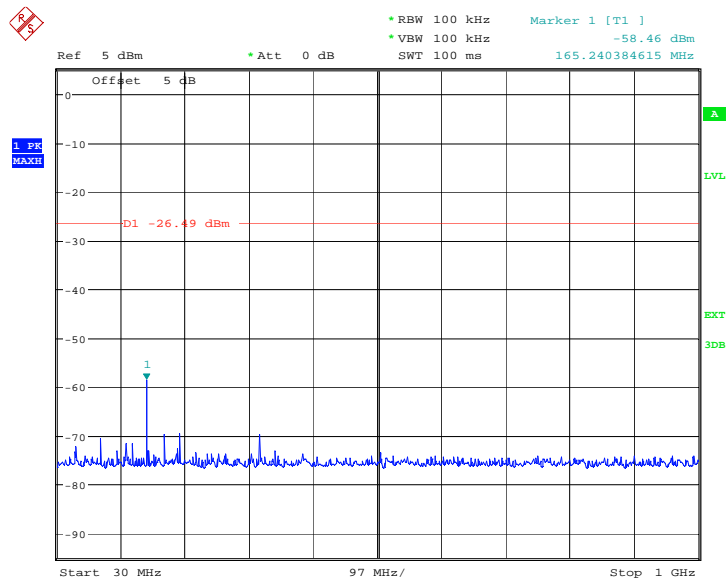
Date: 17.SEP.2008 15:29:44

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



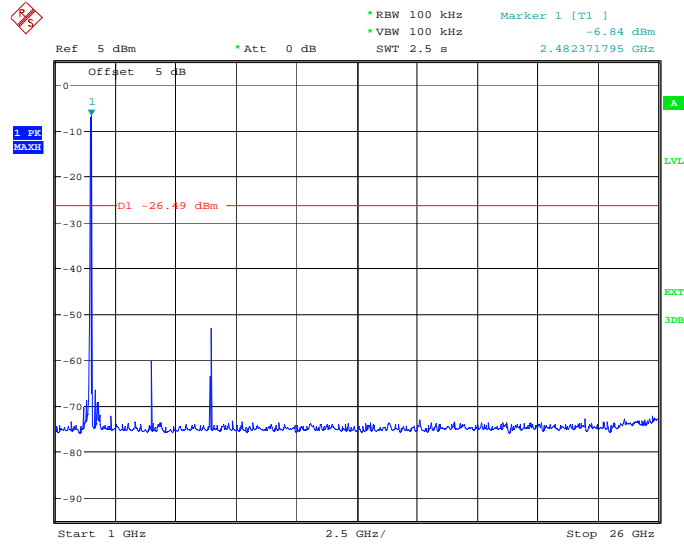
Date: 17.SEP.2008 15:31:42

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



Date: 17.SEP.2008 15:32:08

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



Date: 17.SEP.2008 15:33:07

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

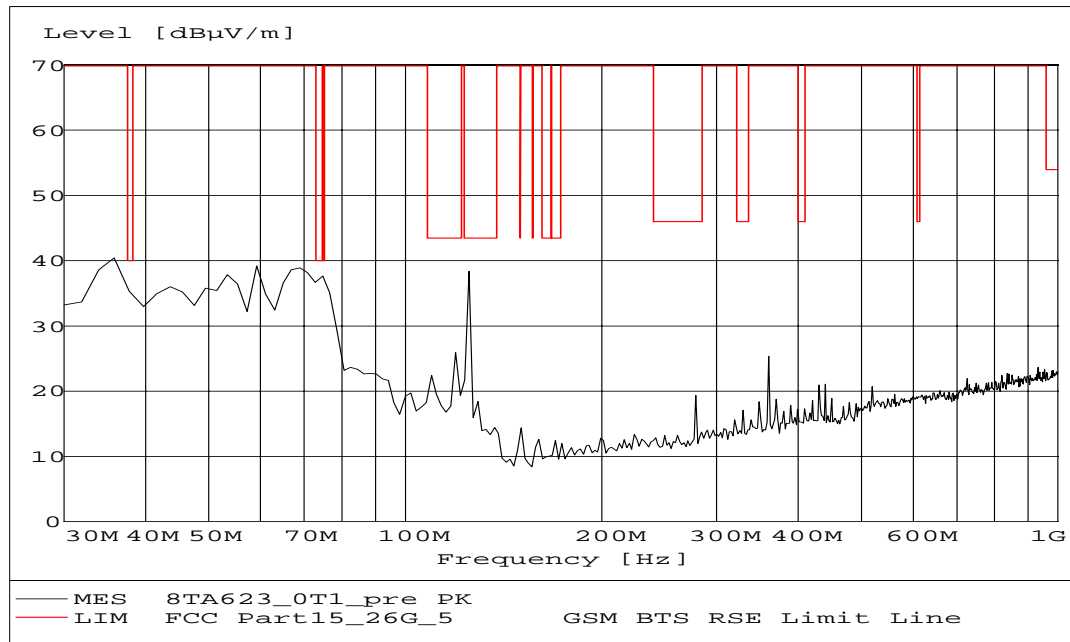


Fig. 14 Radiated emission: Channel 0, 30 MHz ~ 1 GHz

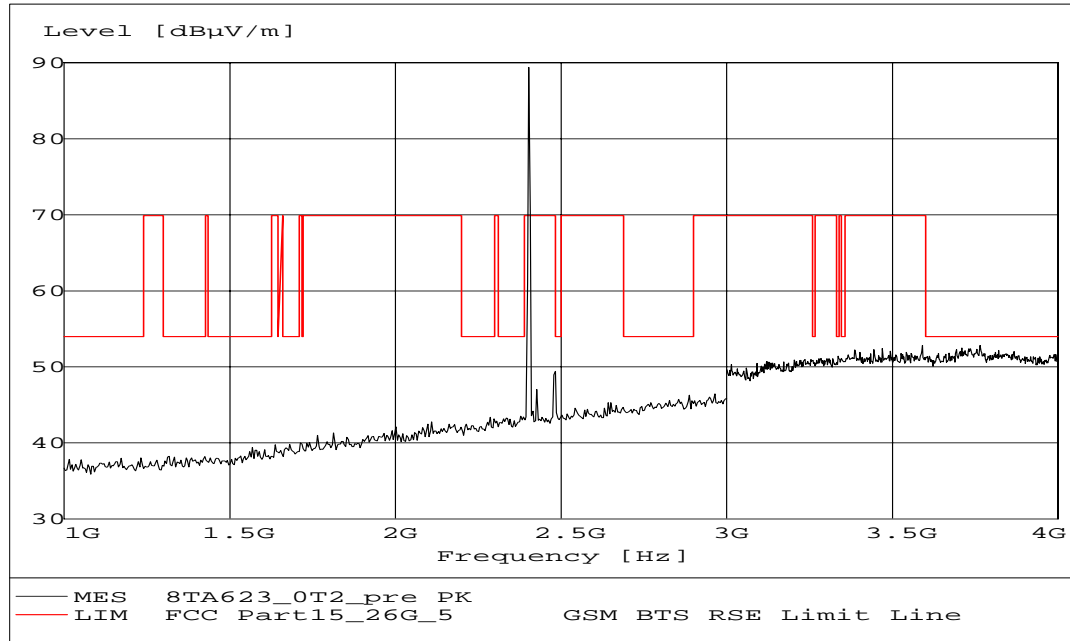


Fig. 15 Radiated emission: Channel 0, 1 GHz ~ 4 GHz

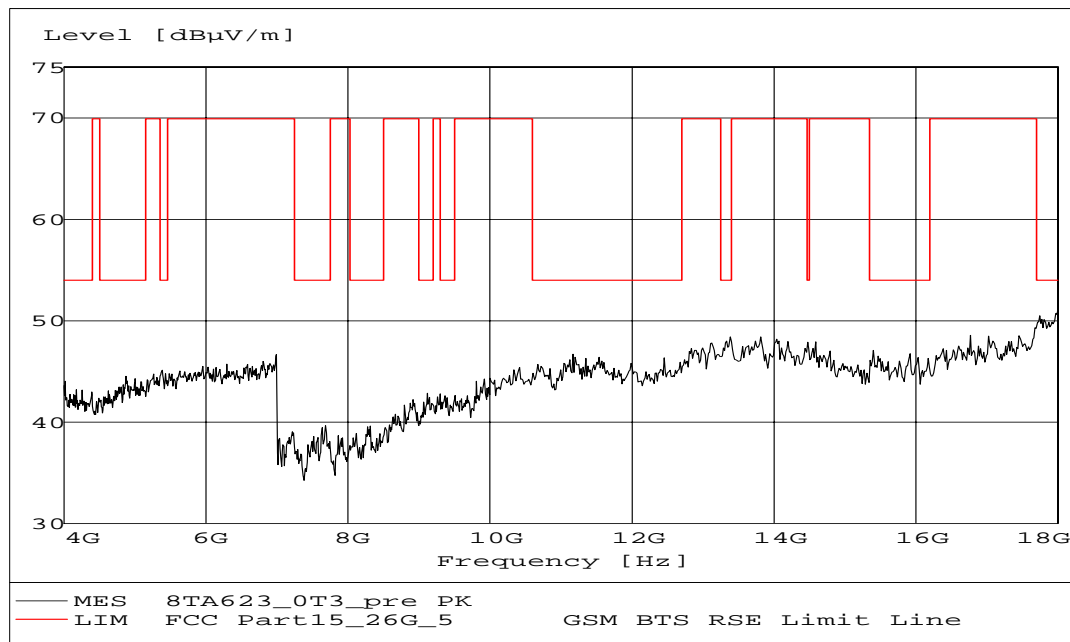


Fig. 16 Radiated emission: Channel 0, 4 GHz ~ 18 GHz

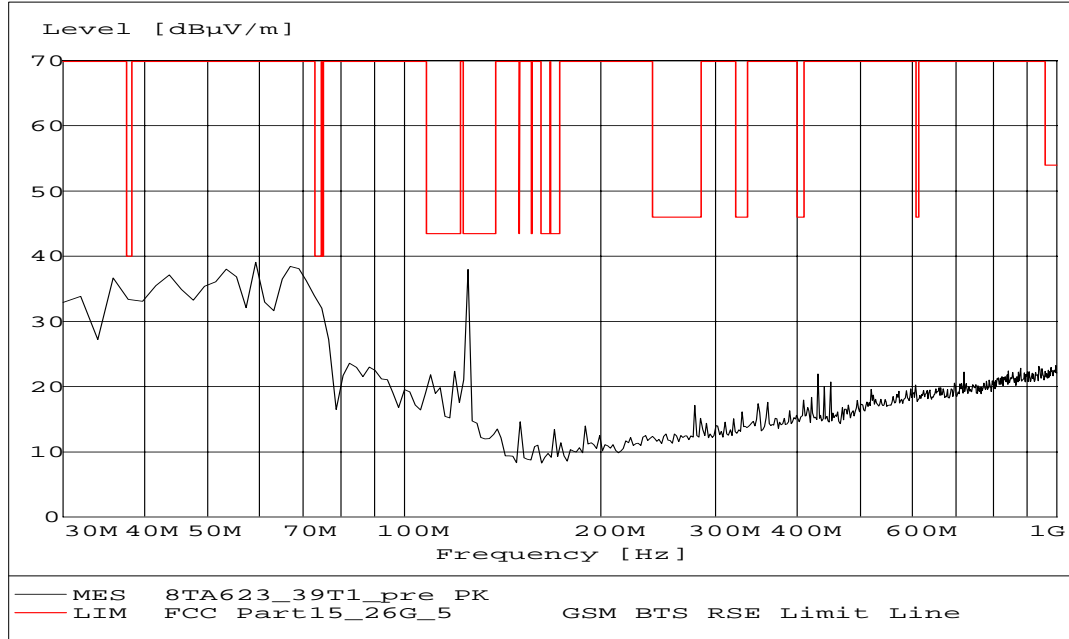


Fig. 17 Radiated emission: Channel 39, 30 MHz ~ 1 GHz

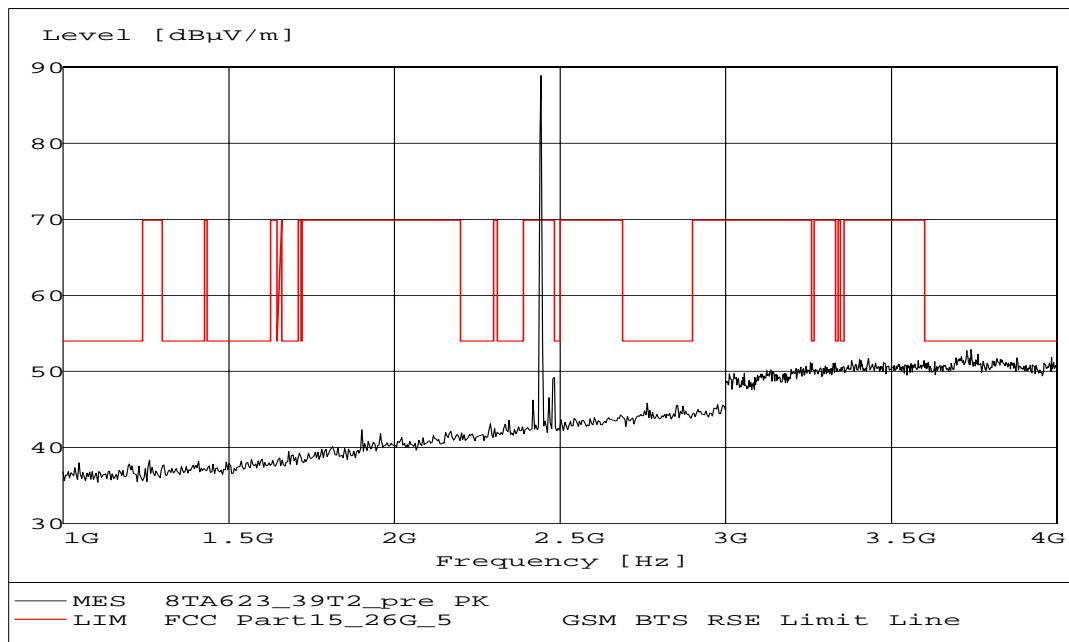


Fig. 18 Radiated emission: Channel 39, 1 GHz ~ 4 GHz

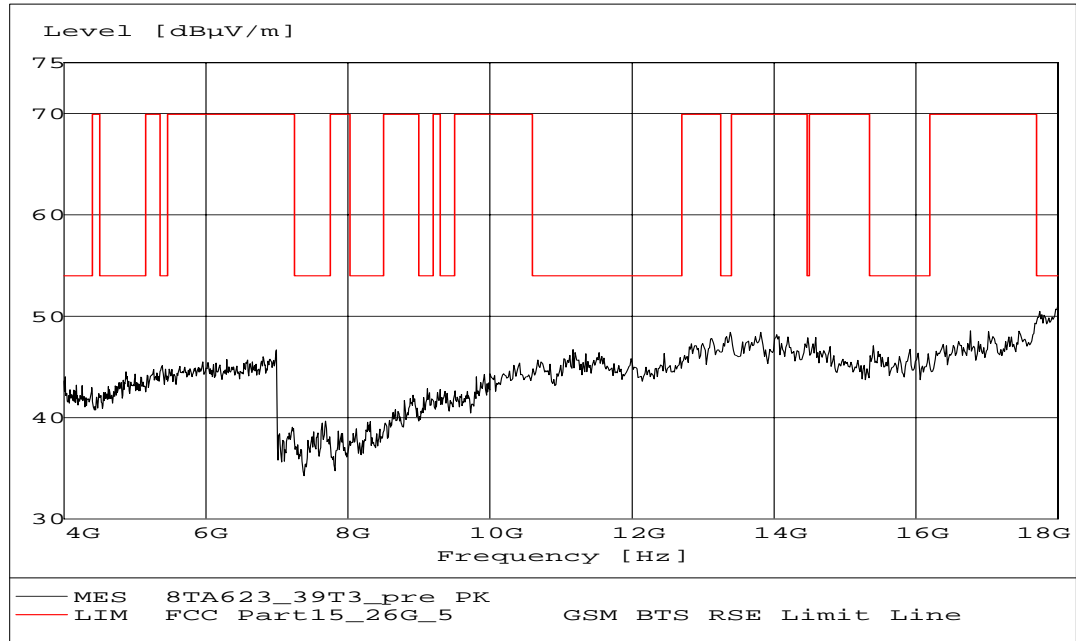


Fig. 19 Radiated emission: Channel 39, 4 GHz ~ 18 GHz

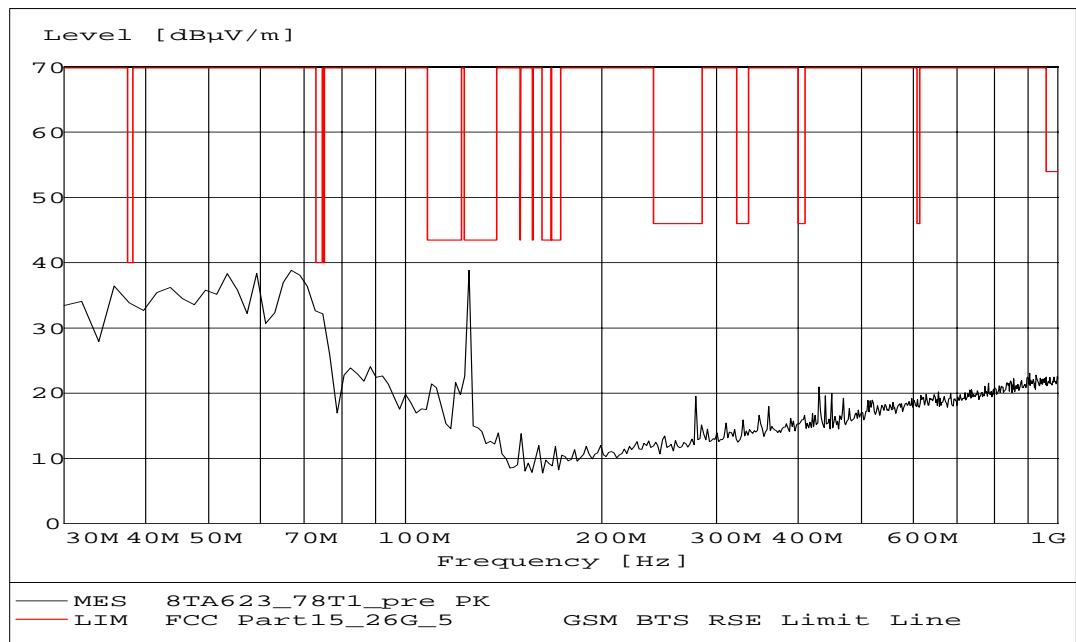


Fig. 20 Radiated emission: Channel 78, 30 MHz ~ 1 GHz

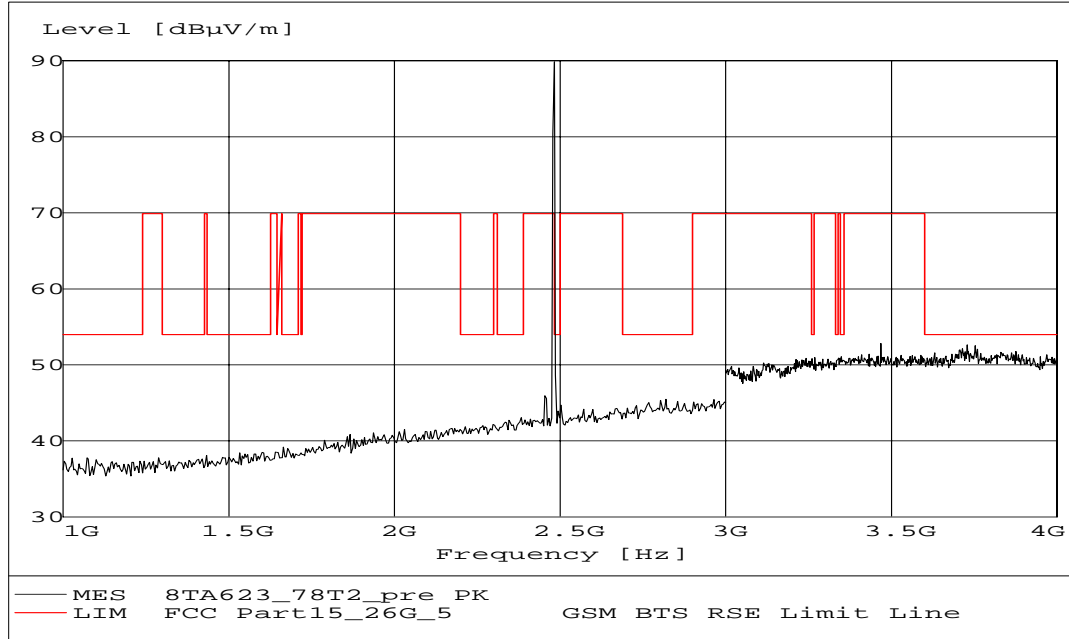


Fig. 21 Radiated emission: Channel 78, 1 GHz ~ 4 GHz

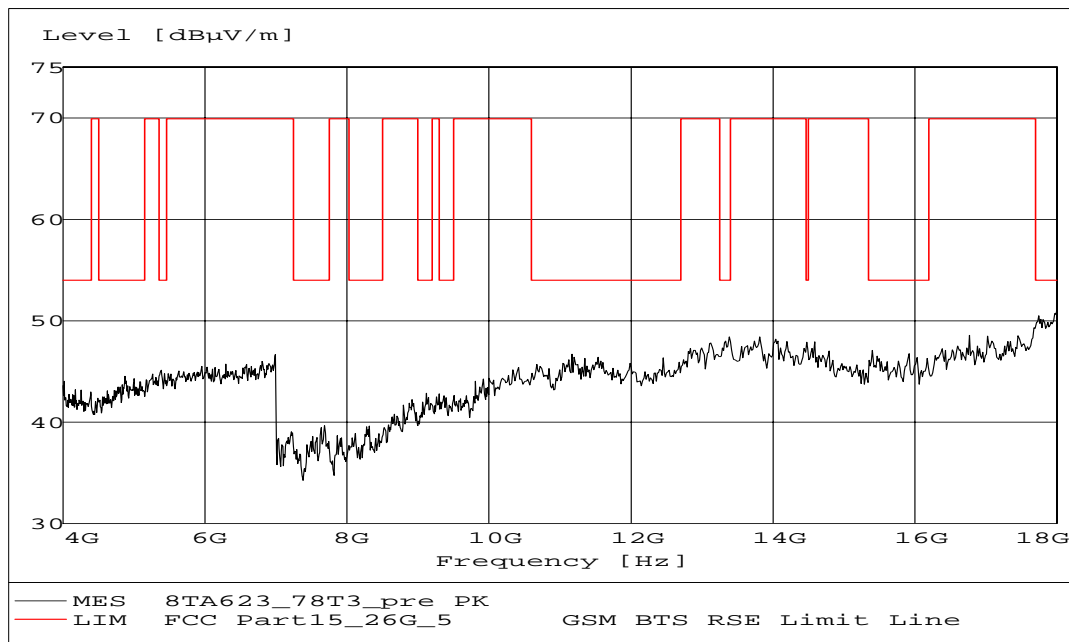


Fig. 22 Radiated emission: Channel 78, 4 GHz ~ 18 GHz

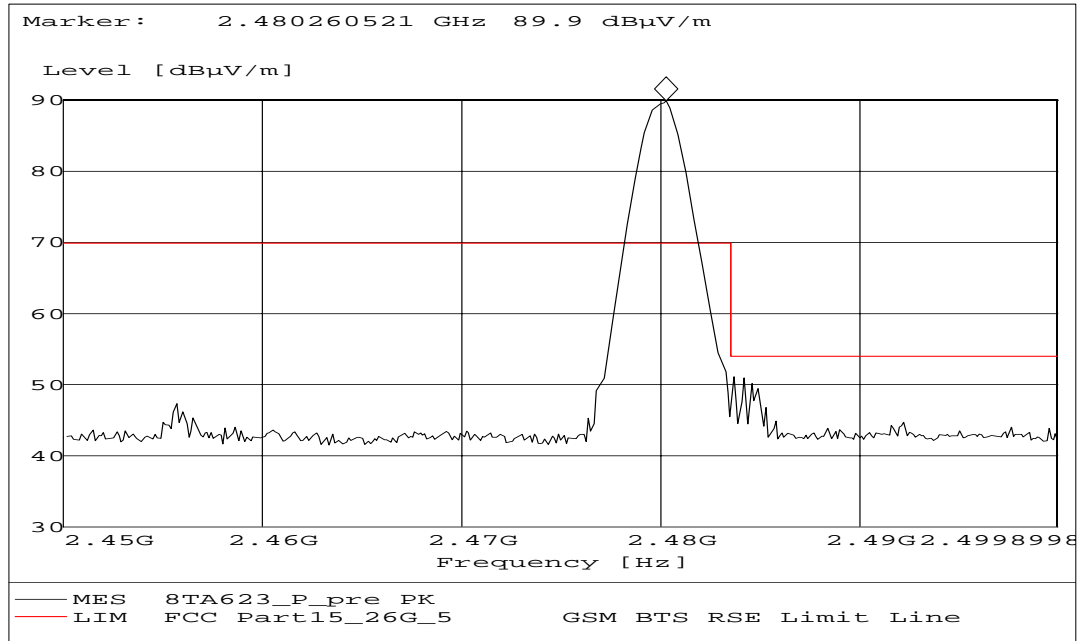


Fig. 23 Radiated emission: 2.45 GHz ~ 2.49 GHz

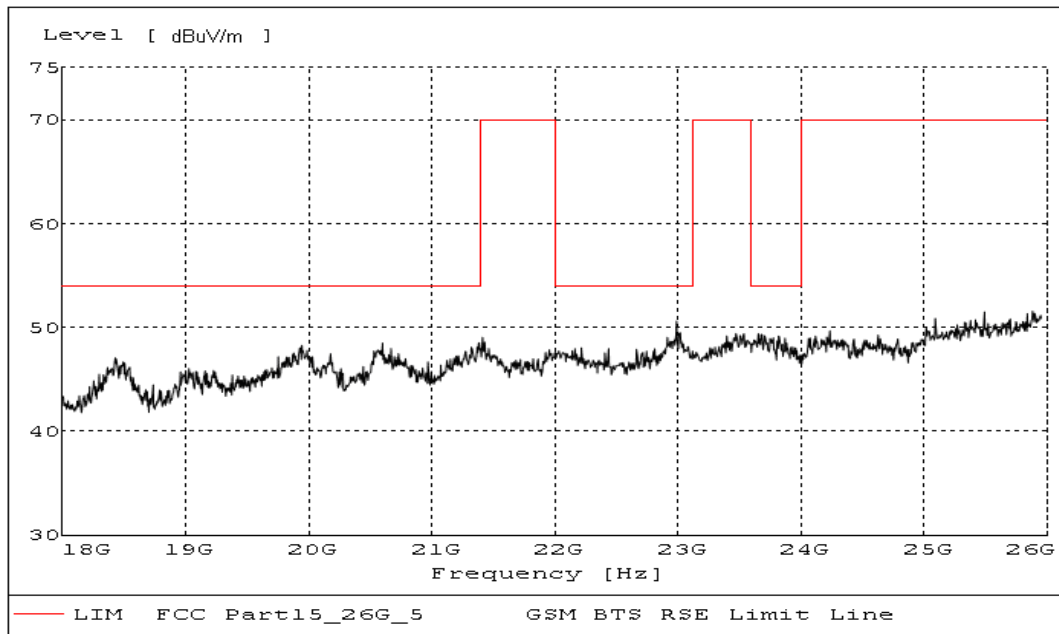
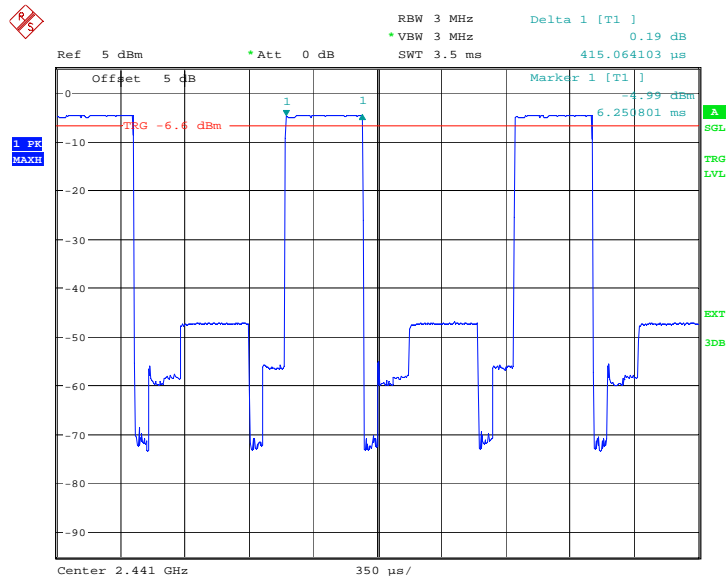


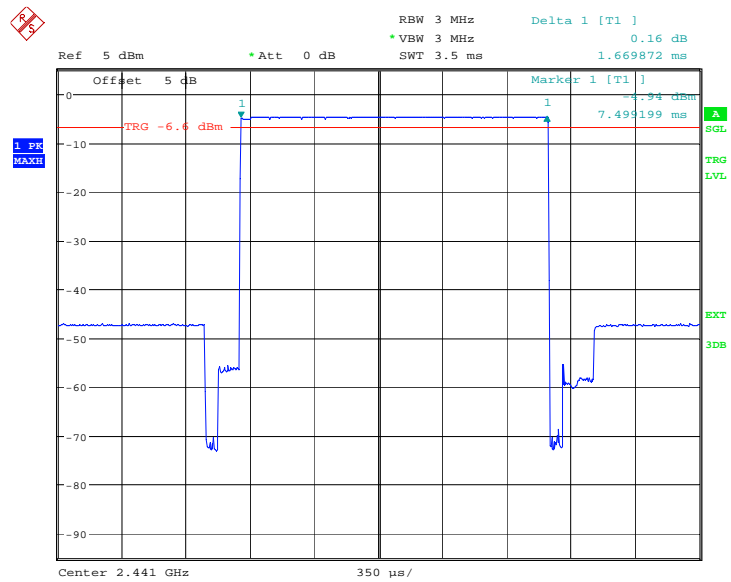
Fig. 24 Radiated emission: 18 GHz ~ 26 GHz





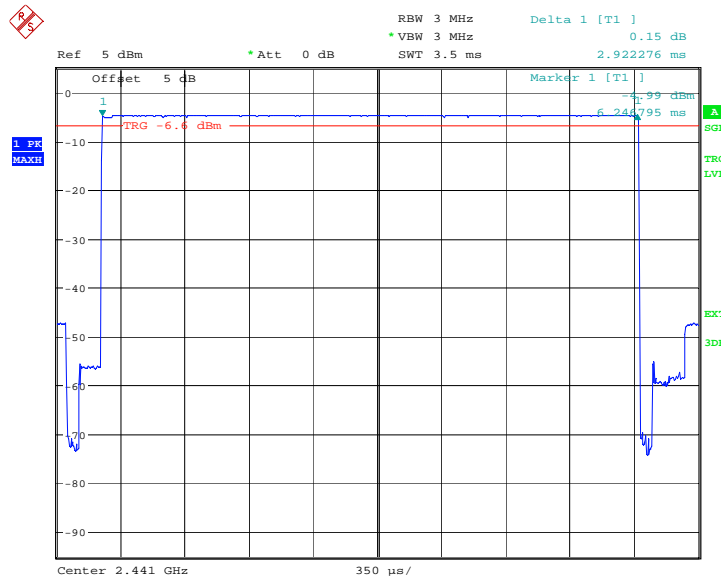
Date: 26.SEP.2008 16:45:25

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



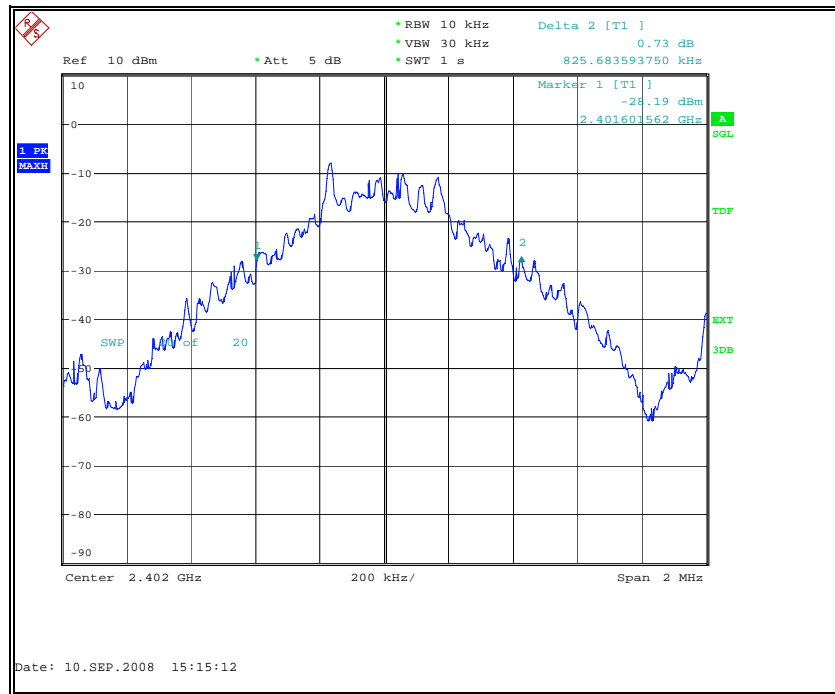
Date: 26.SEP.2008 16:43:34

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



Date: 26.SEP.2008 16:42:06

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



Date: 10.SEP.2008 15:15:12

Fig. 28 20dB Bandwidth: Channel 0

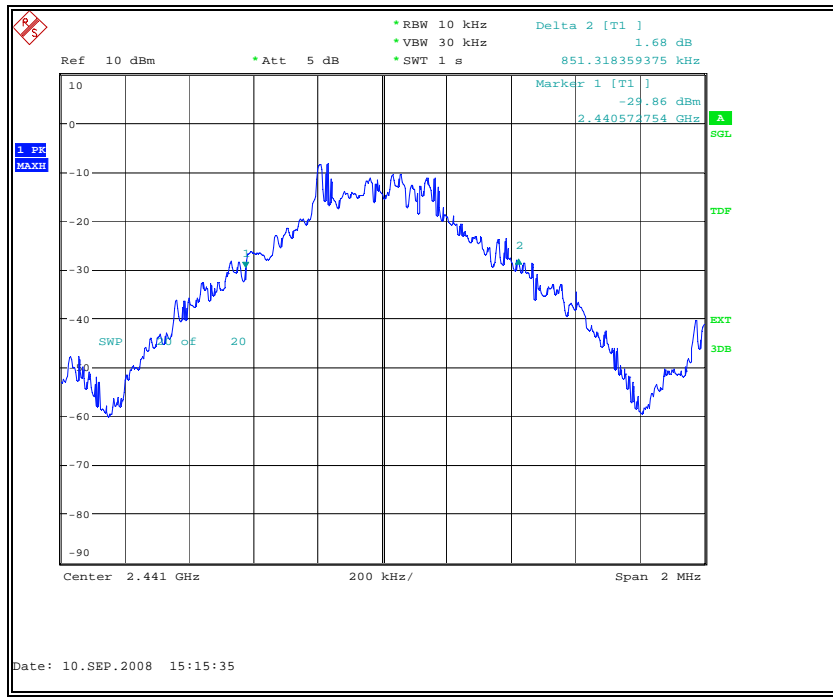


Fig. 29 20dB Bandwidth: Channel 39

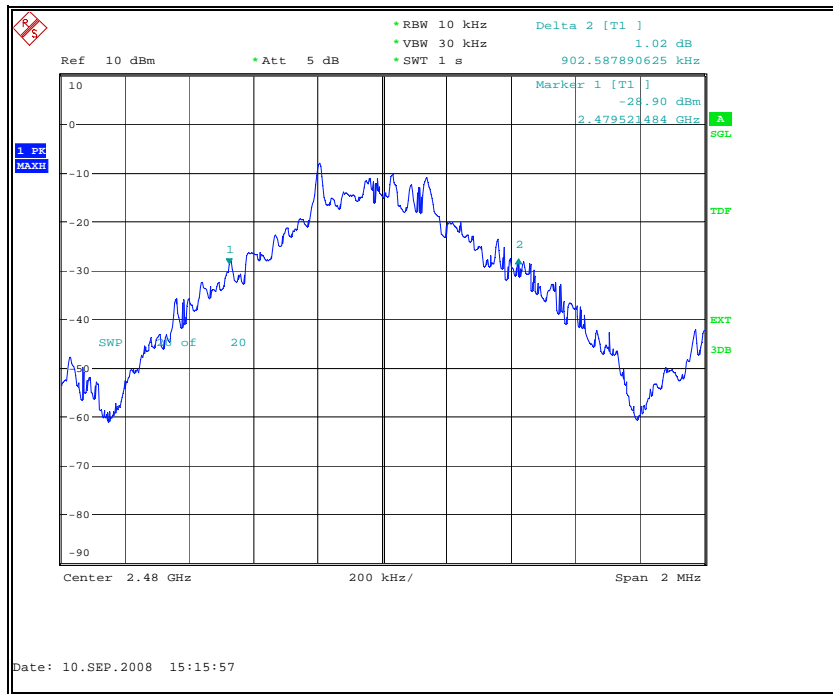


Fig. 30 20dB Bandwidth: Channel 78

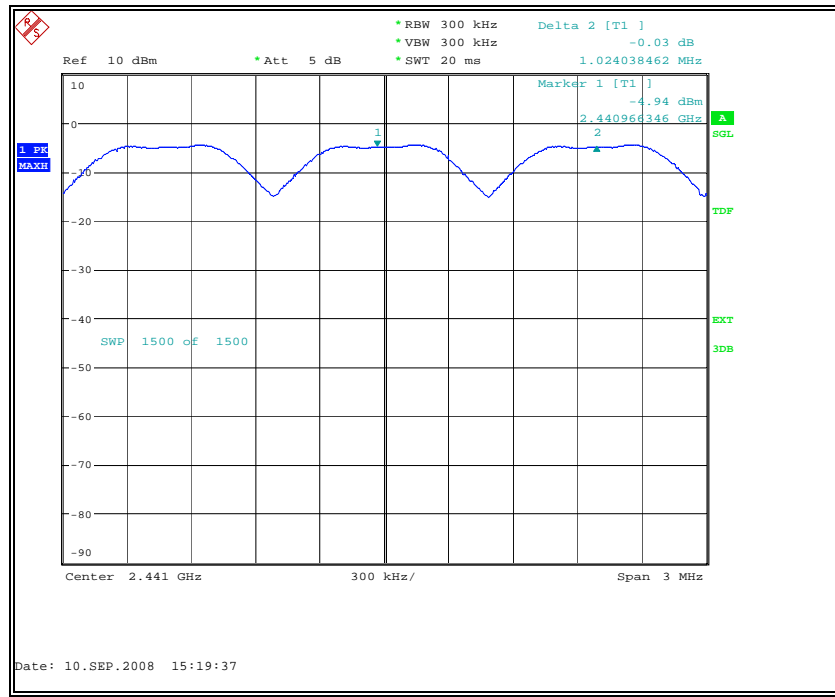


Fig. 31 Carrier frequency separation measurement: Channel 39

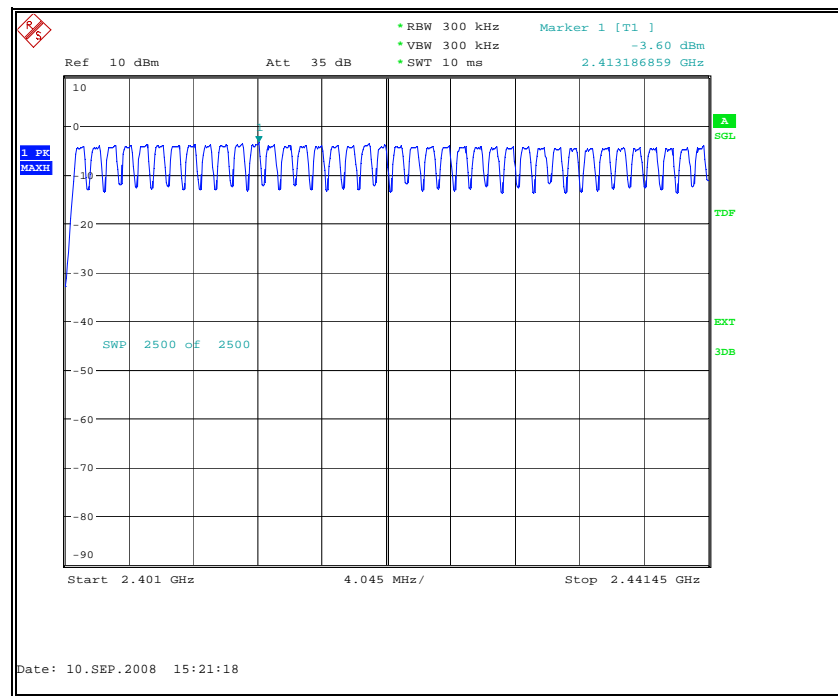


Fig. 32 Number of hopping frequencies: Channel 0 – 39

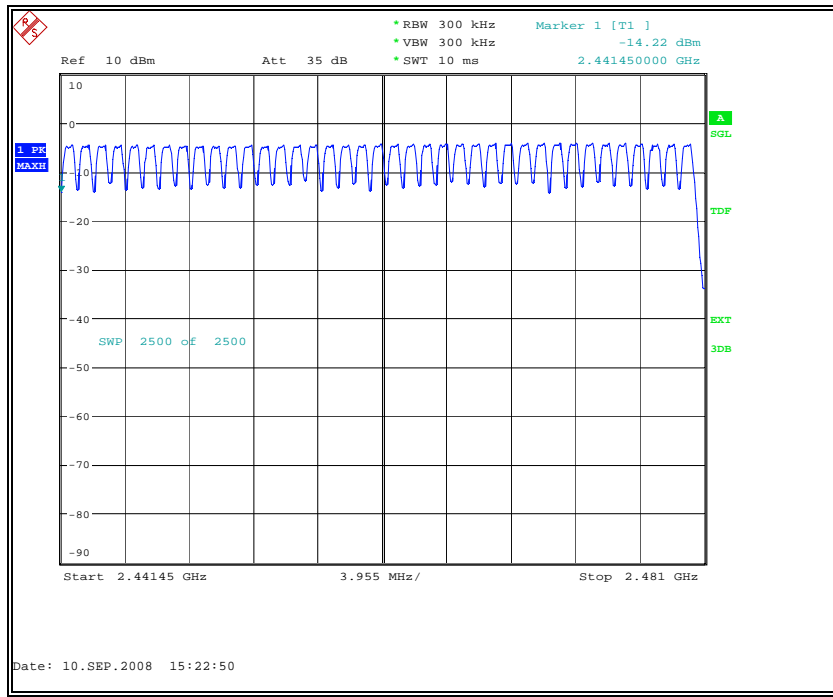


Fig. 33 Number of hopping frequencies: Channel 40 - 78

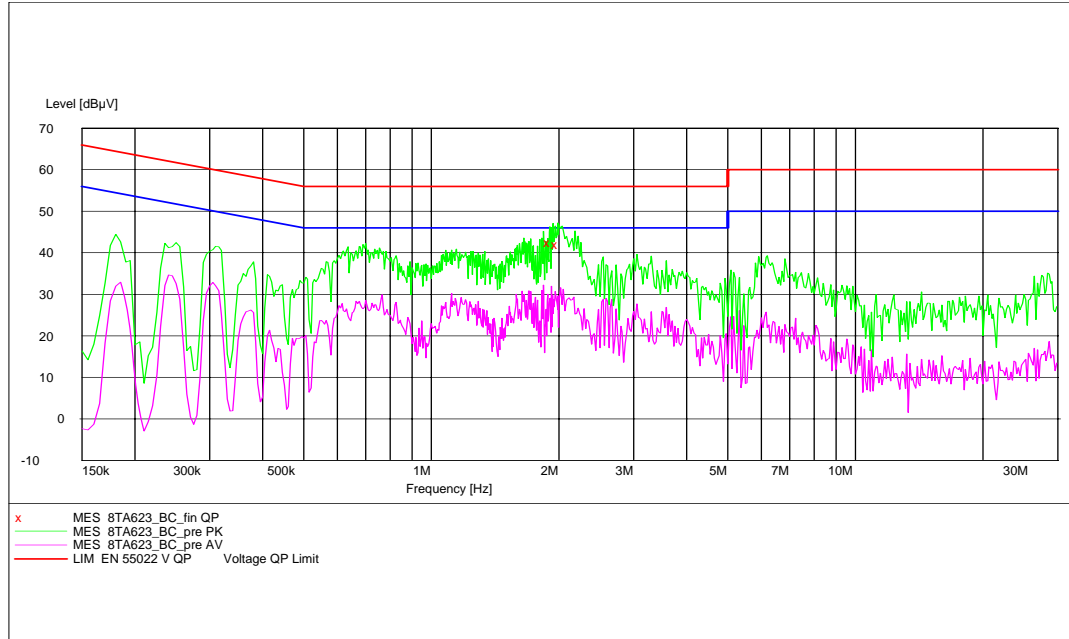
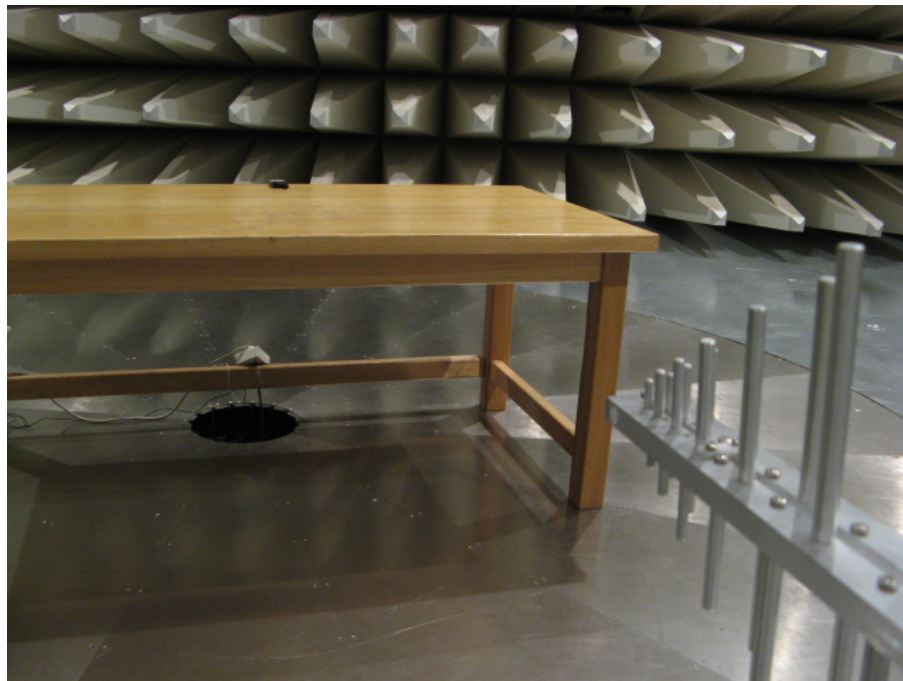


Fig. 34 AC Powerline Conducted Emission

Frequency (MHz)	Level (dBµV)	Transd (dB)	Limit (dBµV)	Margin (dB)	Line	PE
1.900000	42.6	10.1	56	13.4	L1	GND
1.985000	42	10.1	56	14	L1	GND

**ANNEX D: TEST LAYOUT**



**Photo of Radiated Emission Test**



**Photo of AC Powerline Conducted Emission Test**

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