

No. DAT-P-114/01-01



# TEST REPORT

No. 2008BTH0048

Product Name

850/900/1800/1900 GSM/GPRS Mobile Phone(FCC ID:

VQRCTX700)

Model

Philips X700

Client

Shenzhen SangFei Consumer Communications Co., Ltd.

Classification of test

Type Approval

Telecommunication Metrology Center of Ministry of Information Industry

No.2008BTH0048 Page 2of 39

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No.2008BTH0048

Page 3of 39

	850/900/1800/1900	Model	
Product Name	GSM/GPRS Mobile Phone	Trade mark	Philips X700
Client	Shenzhen Sang Fei Consumer Communications Co., Ltd.		munications Co., Ltd.
Manufacturer	Shenzhen Sang Fei Consumer Communications Co., Ltd.		munications Co., Ltd.
Arrival Date of sample	September 23, 2008	Carrier of the samples	Helen Lin
Quantity of the samples	2	Date of product	1
Series number	356217020001822, 356217020000972		
Standard(s)	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.		
Conclusion	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: 2008-10-30		
Comment	The test result relates only to the tested samples.		

Approved by_	32 ws \$7	Reviewed by W	Tested by_	3/2/3
	(Lu Bingsong)	(Gao Hong)		(Zhang Ying)
(Lu Bingsong	- Deputy Director of th	ne laboratory)		

## **CONTENTS**

1.	Competence and Warranties	6
2.	Testing Laboratory	6
2.1.	Testing Location	6
2.2.	Testing Environment	6
2.3.	Testing Period	7
3.	Applicant Information	8
3.1.	Client information	8
3.2.	Manufacturer information	8
4.	Equipment Under Test (EUT) and Ancillary Equipment (AE)	8
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	9
5.	Reference Documents	9
5.1.	Documents supplied by applicant	9
5.2.	Reference Documents	9
6.	Test Results	9
6.1.	Summary of Test Results	9
6.2.	Statements	9
7.	Test Equipments	. 10
ANN	IEX A: Photograph of EUT	11
ANN	IEX B: MEASUREMENT RESULTS	. 17
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
	Carrier Frequency Separation	
	Number of Hopping Channels	
	0 AC Powerline Conducted Emission	
ANN	IEX C: TEST FIGURE LIST	
Fig.	. 1 Frequency Band Edges: Channel 0, Hopping Off	21

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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
ANNEX	D: TEST LAYOUT	39

### 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 $^{\circ}$ C, Max. = 30 $^{\circ}$ 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:

	0 0
Temperature	Min. = 15 $^{\circ}$ C, Max. = 30 $^{\circ}$ C
Relative humidity	Min. = 35 %, Max. = 60 %

No.2008BTH0048 Page 7of 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 $^{\circ}$ C, Max. = 30 $^{\circ}$ 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 $^{\circ}$ C, Max. = 30 $^{\circ}$ 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 $^{\circ}$ C, Max. = 35 $^{\circ}$ 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:

··· -··· 9·	
Temperature	Min. = 15 $^{\circ}$ C, Max. = 30 $^{\circ}$ 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 25<sup>th</sup> Sept, 2008 and finished on 9<sup>th</sup> Oct, 2008.

### No.2008BTH0048

**Page 8of 39** 

## 3. Applicant Information

#### 3.1. Client information

Name of Company:	Shenzhen Sang Fei Consumer Communications Co., Ltd.		
Address /Dest	11 Science and Technology Road, Shenzhen Hi-tech Industrial Park		
Address /Post:	Nanshan District, Shenzhen, PRC		
City:	Shenzhen		
Postal Code:	518057		
Country:	China		
Telephone:	0755-26633217		
Fax:	0755-26635272		

#### 3.2. Manufacturer information

Name of Company:	Shenzhen Sang Fei Consumer Communications Co., Ltd	
Address /Dest.	11 Science and Technology Road, Shenzhen Hi-tech Industrial Park	
Address /Post:	Nanshan District, Shenzhen, PRC	
City:	Shenzhen	
Postal Code:	518057	
Country:	China	
Telephone:	0755-26633217	
Fax:	0755-26635272	

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

#### 4.1. About EUT

Product name:	850/900/1800/1900 GSM/GPRS Mobile Phone
Model:	Philips X700
FCC ID:	VQRCTX700
With Bluetooth	Yes
EUT operating voltage- Normal:	3.7
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	356217020001822	PR2	XRAZOR2_M6229X_V17
EUT2	356217020000972	PR2	XRAZOR2_M6229X_V17

<sup>\*</sup>EUT ID is used to identify the test sample in the lab internally.

#### No.2008BTH0048

Page 9of 39

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

AE ID*	Description	Туре	SN
AE1	Switching adapter	DSA-5W-05 FUS 050065	/
AE2	Li-ion Battery	A20VDI/IZP	/

<sup>\*</sup>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 CFR 47, Part 15, Subpart C:	
	15.205 Restricted bands of operation;	May 4, 2007
FCC Part15	15.209 Radiated emission limits, general requirements;	Edition
	15.247 Operation within the bands 902-928MHz,	
	2400–2483.5 MHz, and 5725–5850 MHz.	

#### 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)	Р
Frequency Band Edges	15.247 (d)	Р
Conducted Emission	15.247 (d)	Р
Radiated Emission	15.247, 15.205, 15.209	Р
Time of Occupancy (Dwell Time)	15.247 (a) (1)(iii)	Р
20dB Bandwidth	15.247 (a)(1)	NA
Carrier Frequency Separation	15.247 (a)(1)	Р
Number of hopping channels	15.247 (a)(b)(iii)	Р
AC Powerline Conducted Emission	15.107, 15.207	Р

Please refer to ANNEX B for detail.

#### 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.

### No.2008BTH0048

Page 10of 39

## 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	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	2008-10-30
6	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** 



**Mobile Phone** 



**Battery** 



**Battery** 



**Adapter** 



Tag on the Adapter

**Internal Photo** 



**Mobile Phone Disassembly** 



**Mobile Phone Disassembly** 

## No.2008BTH0048

Page 16of 39

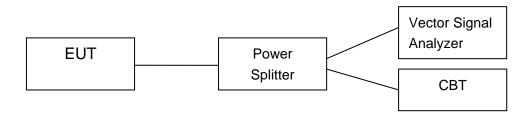


**Mobile Phone Disassembly** 

#### 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 2402 MHz	Ch 39 2441 MHz	Ch 78 2480 MHz	Conclusion
Peak Conducted Output Power (dBm)	-5.77	-6.11	-5.43	Р

**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	45.70	Р
0	Hopping ON	Fig.2	51.62	Р
70	Hopping OFF	Fig.3	54.74	Р
78	Hopping ON	Fig.4	43.44	Р

See annex C for test graphs.

**Conclusion: PASS** 

### No.2008BTH0048

Page 18of 39

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

#### **Measurement Limit:**

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

#### **Measurement Results:**

Channel	Frequency Range	Test Results	Conclusion
Ch O	Center Frequency	Fig.5	Р
Ch 0 2402 MHz	30 MHz ~ 1 GHz	Fig.6	Р
210211112	1 GHz ~ 26 GHz	Fig.7	Р
Ch 39	Center Frequency	Fig.8	Р
2441 MHz	30 MHz ~ 1 GHz	Fig.9	Р
2111111112	1 GHz ~ 26 GHz	Fig.10	Р
Ch 79	Center Frequency	Fig.11	Р
Ch 78 2480 MHz	30 MHz ~ 1 GHz	Fig.12	Р
2 100 1011 12	1 GHz ~ 26 GHz	Fig.13	Р

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	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	Field strength(uV/m)	Field strength(dBuV/m)
(MHz)		
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 O	30 MHz ~ 1 GHz	Fig.14	Р
Ch 0 2402 MHz	1 GHz ~ 4 GHz	Fig.15	Р
2 102 111112	4 GHz ~ 18 GHz	Fig.16	Р

No.2008BTH0048 Page 19of 39

Ch 20	30 MHz ~ 1 GHz	Fig.17	Р
Ch 39 2441 MHz	1 GHz ~ 4 GHz	Fig.18	Р
211111112	4 GHz ~ 18 GHz	Fig.19	Р
Ch 78 2480 MHz	30 MHz ~ 1 GHz	Fig.20	Р
	1 GHz ~ 4 GHz	Fig.21	Р
2 100 111112	4 GHz ~ 18 GHz	Fig.22	Р
For all channels	2.45GHz~2.5GHz	Fig.23	Р
For all channels	18 GHz ~ 26 GHz	Fig.24	Р

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)	< 400

#### **Measurement Result:**

Channel	Packet	Dwell Ti	me (ms)	Conclusion
39	DH1	Fig.25	262.29	Р
	DH3	Fig.26	344.20	Р
	DH5	Fig.27	358.52	Р

See annex C for test graphs.

**Conclusion: PASS** 

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

#### **Measurement Limit:**

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

<sup>\*</sup> 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 Band	width (kHz)	Conclusion
0	Fig.28	883.30	NA
39	Fig.29	883.30	NA
78	Fig.30	918.46	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)	>588.87

#### No.2008BTH0048

Page 20of 39

 $^{*}$  Comment: This limit should be over 25 kHz or (2/3)  $^{*}$  20dB bandwidth, whichever is greater. The value of (2/3)  $^{*}$  20dB bandwidth (value of channel 39 is 883.30 kHz) is 588.87 kHz, and it is greater than 25 kHz.

#### **Measurement Result:**

Channel	Carrier frequency	Conclusion	
39	Fig.31	1000.00	Р

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 hop	Conclusion	
0~39	Fig.32	70	В
40~78	Fig.33	79	F

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	Quasi-peak	Result (dBμV)	Conclusion	
(MHz)	Limit (dBμV)	With charger	Conclusion	
0.15 to 0.5	66 to 56			
0.5 to 5	56	Fig. 34	Р	
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	Average Limit	Result (dBμV)	Canalusian	
(MHz)	(dBμV)	With charger	Conclusion	
0.15 to 0.5	56 to 46			
0.5 to 5	46	Fig. 34	Р	
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**

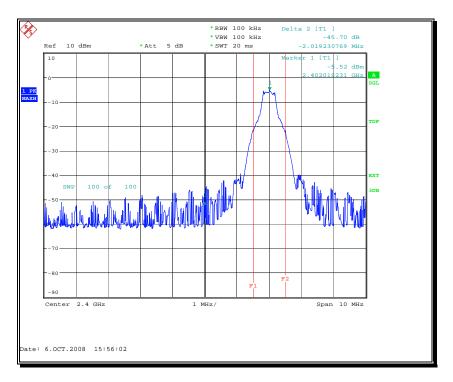


Fig. 1 Frequency Band Edges: Channel 0, Hopping Off

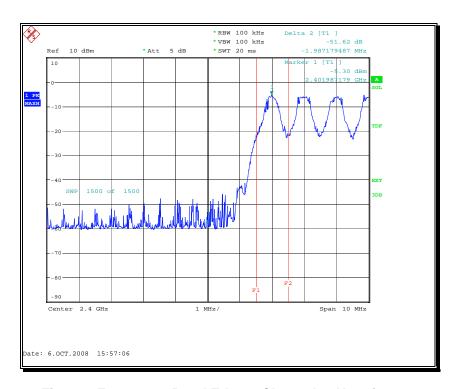


Fig. 2 Frequency Band Edges: Channel 0, Hopping On

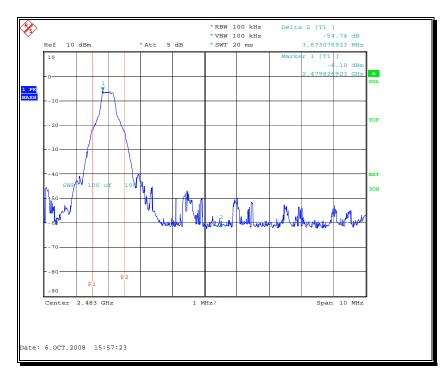


Fig. 3 Frequency Band Edges: Channel 78, Hopping Off

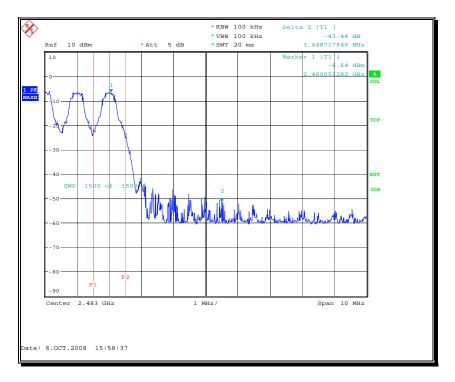


Fig. 4 Frequency Band Edges: Channel 78, Hopping On

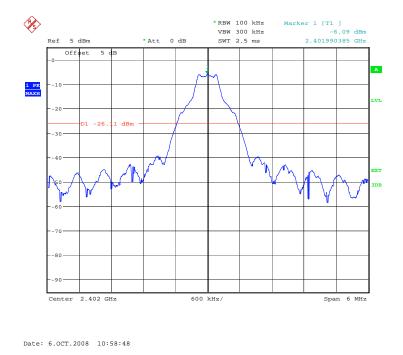


Fig. 5 Conducted spurious emission: Channel 0,2402MHz

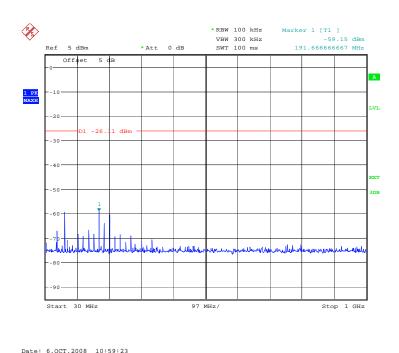


Fig. 6 Conducted spurious emission: Channel 0, 30MHz - 1GHz

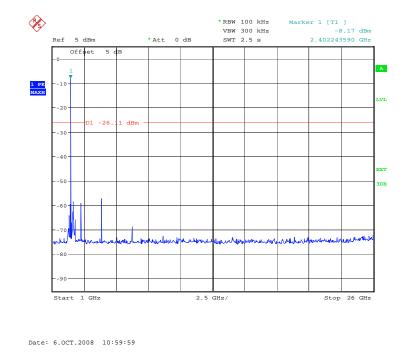


Fig. 7 Conducted spurious emission: Channel 0,1GHz – 26GHz

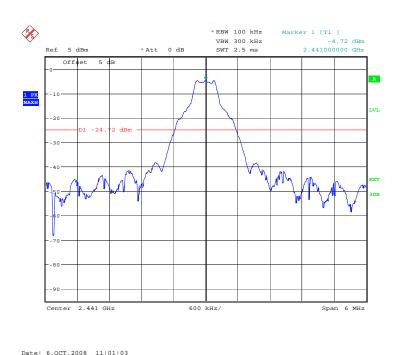


Fig. 8 Conducted spurious emission: Channel 39, 2441MHz

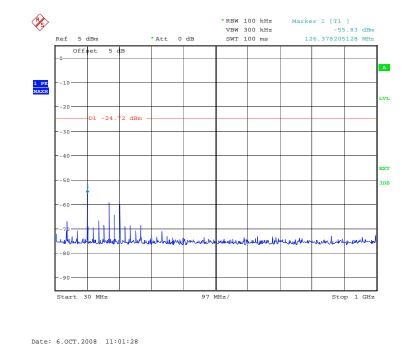


Fig. 9 Conducted spurious emission: Channel 39, 30MHz - 1GHz

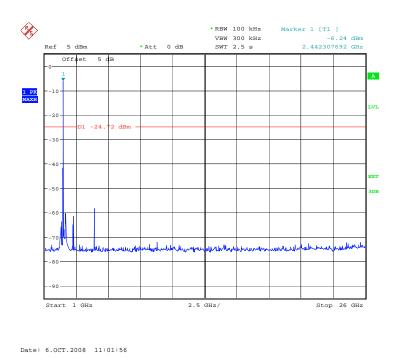


Fig. 10 Conducted spurious emission: Channel 39, 1GHz - 26GHz

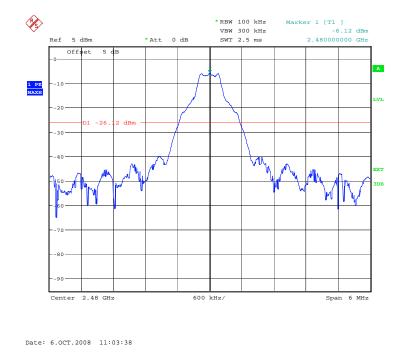


Fig. 11 Conducted spurious emission: Channel 78, 2480MHz

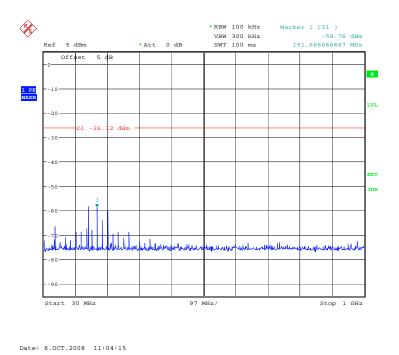


Fig. 12 Conducted spurious emission: Channel 78, 30MHz - 1GHz

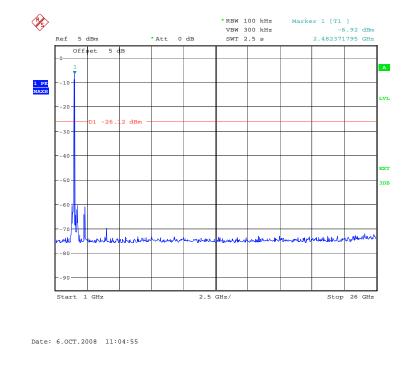


Fig. 13 Conducted spurious emission: Channel 78, 1GHz – 26GHz

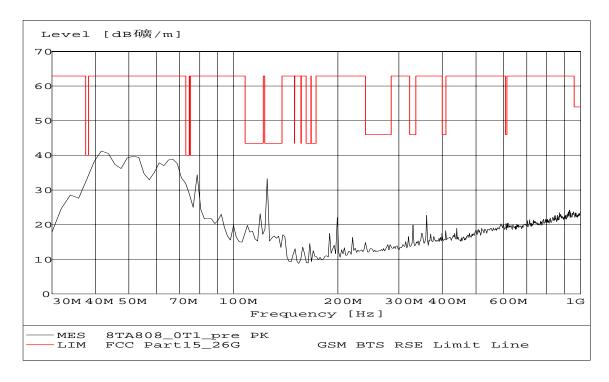


Fig. 14 Radiated emission: Channel 0, 30 MHz ~ 1 GHz

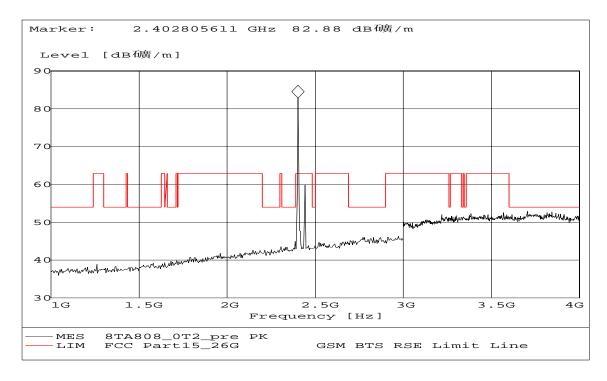


Fig. 15 Radiated emission: Channel 0, 1 GHz ~ 4 GHz

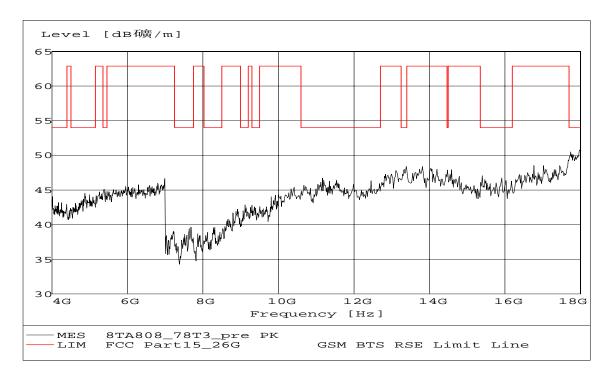


Fig. 16 Radiated emission: Channel 0, 4 GHz ~ 18 GHz

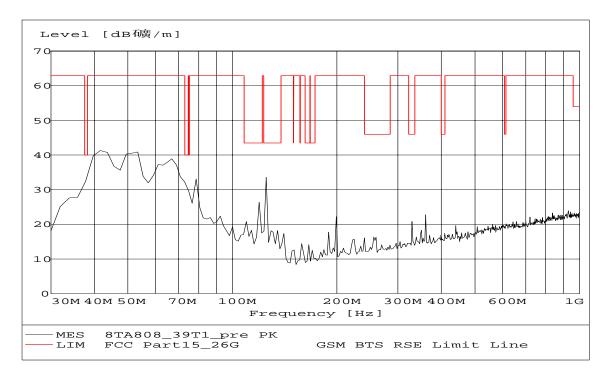


Fig. 17 Radiated emission: Channel 39, 30 MHz ~ 1 GHz

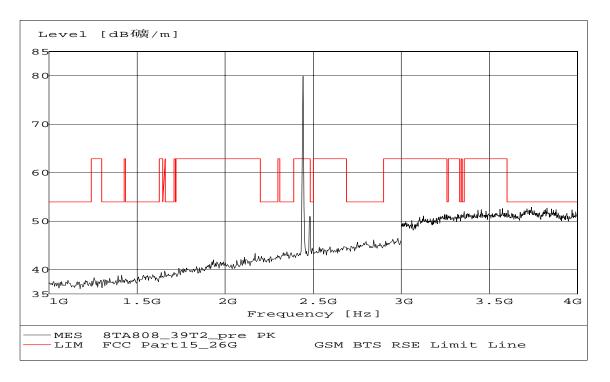


Fig. 18 Radiated emission: Channel 39, 1 GHz ~ 4 GHz

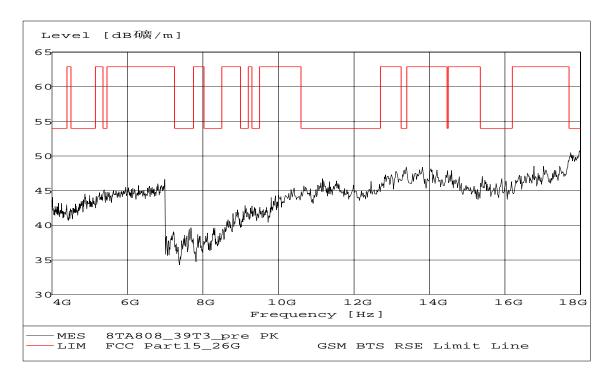


Fig. 19 Radiated emission: Channel 39, 4 GHz ~ 18 GHz

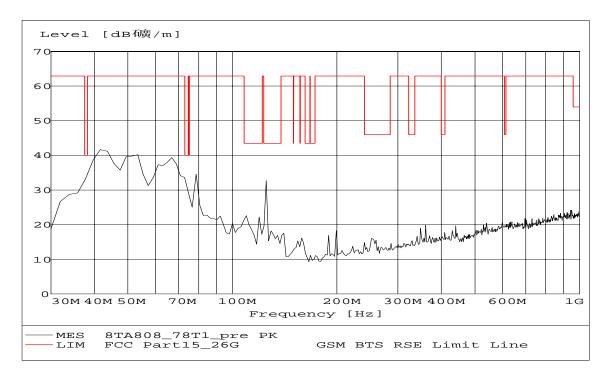


Fig. 20 Radiated emission: Channel 78, 30 MHz ~ 1 GHz

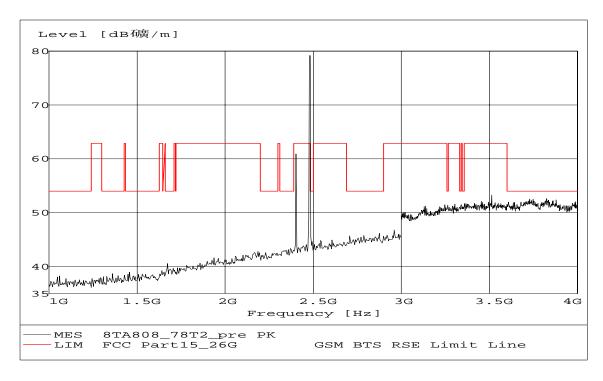


Fig. 21 Radiated emission: Channel 78, 1 GHz ~ 4 GHz

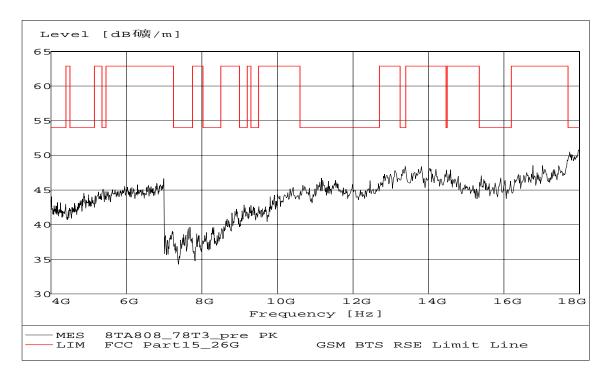


Fig. 22 Radiated emission: Channel 78, 4 GHz ~ 18 GHz

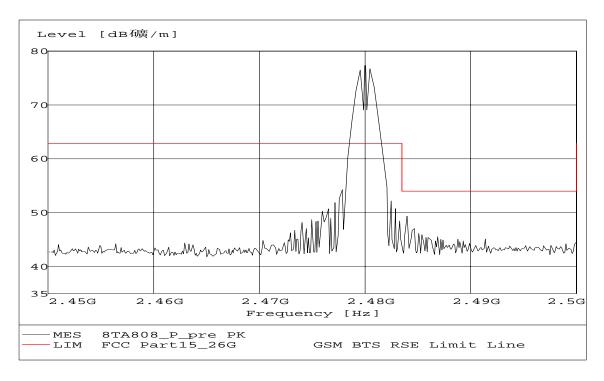


Fig. 23 Radiated emission (Power): channel 78, 2.45GHz ~ 2.5GHz

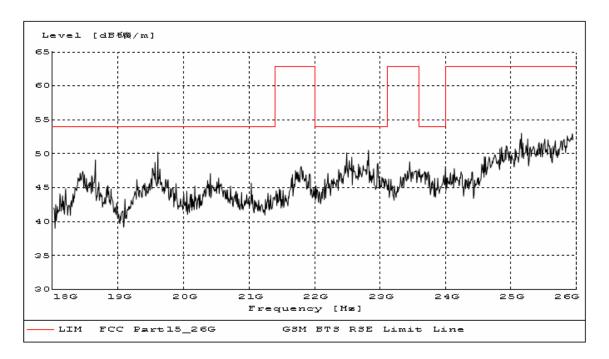


Fig. 24 Radiated emission: 18 GHz ~ 26 GHz

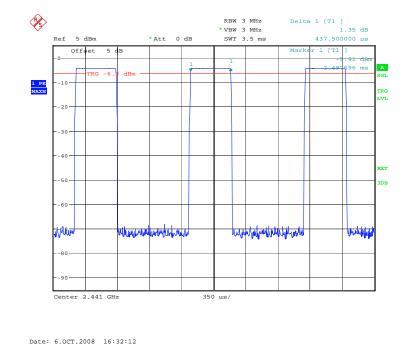


Fig. 25 Time of occupancy (Dwell Time): Channel 39, Packet DH1

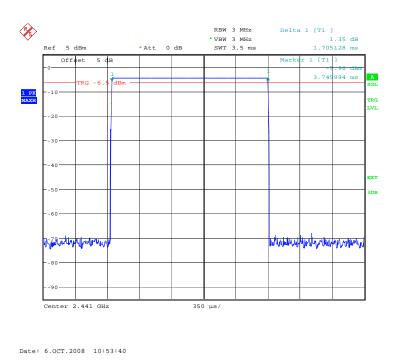


Fig. 26 Time of occupancy (Dwell Time): Channel 39, Packet DH3

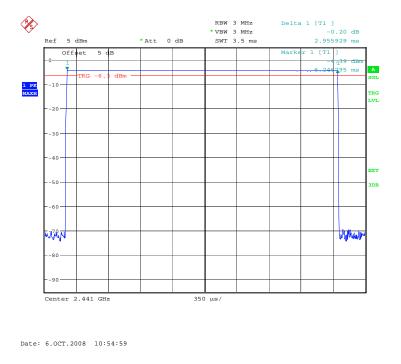


Fig. 27 Time of occupancy (Dwell Time): Channel 39, Packet DH5

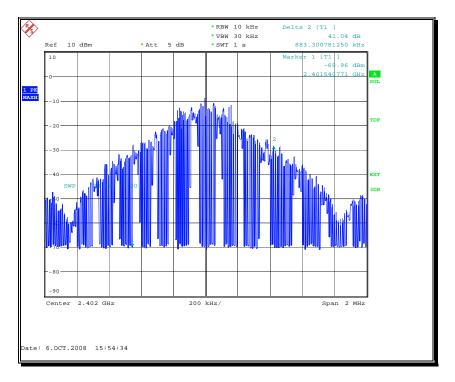


Fig. 28 20dB Bandwidth: Channel 0

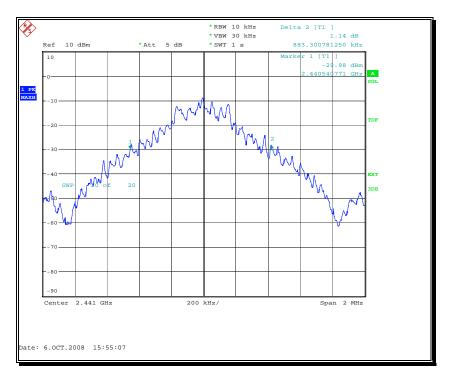


Fig. 29 20dB Bandwidth: Channel 39

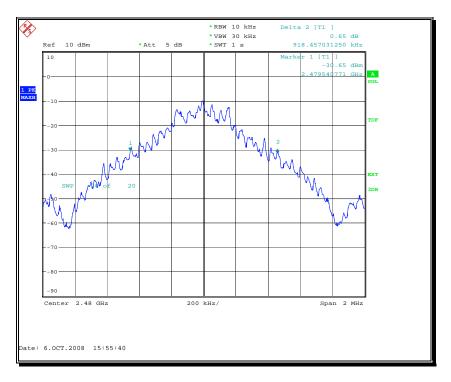


Fig. 30 20dB Bandwidth: Channel 78

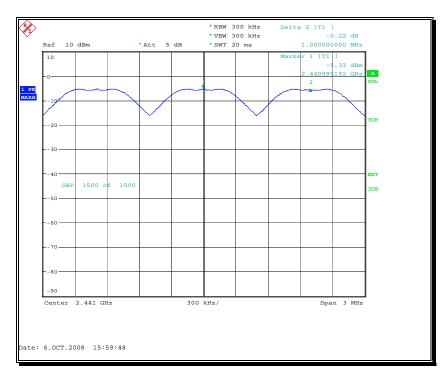


Fig. 31 Carrier frequency separation measurement: Channel 39

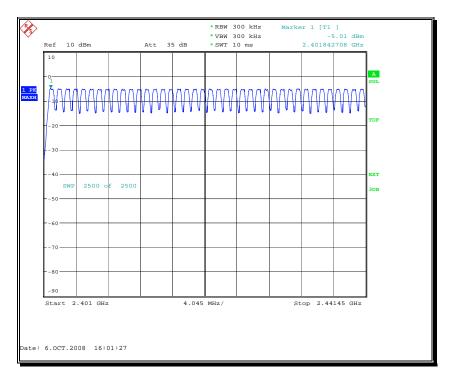


Fig. 32 Number of hopping frequencies: Channel 0 – 39

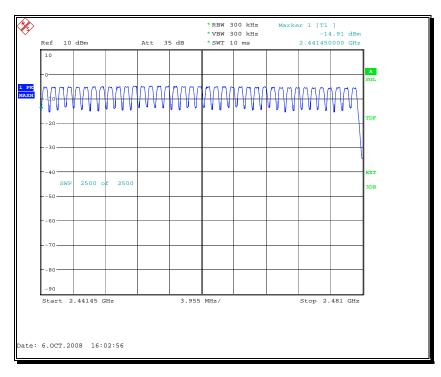


Fig. 33 Number of hopping frequencies: Channel 40 - 78

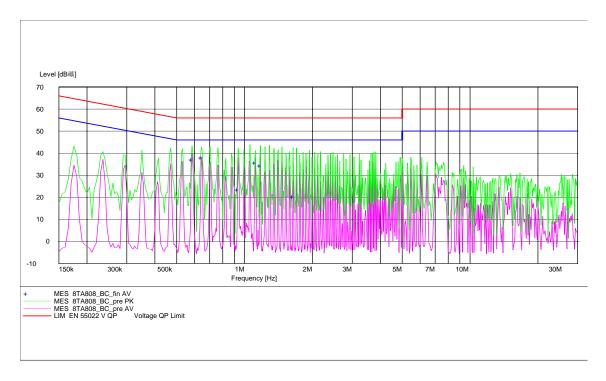


Fig. 34 AC Powerline Conducted Emission

Frequency (MHz)	Level (dBµV)	Transd (dB)	Limit (dBµV)	Margin (dB)	Line	PE
0.585000	37.10	10.1	46	8.9	L1	FLO
0.645000	37.90	10.1	46	8.1	L1	GND
0.935000	23.50	10.1	46	22.5	L1	GND
1.115000	35.60	10.1	46	10.4	L1	GND
1.175000	34.40	10.1	46	11.6	L1	GND
1.640000	20.30	10.1	46	25.7	N	GND

### **ANNEX D: TEST LAYOUT**



**Photo of Radiated Emission Test** 



**Photo of AC Powerline Conducted Emission Test** 

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