



**FCC PART 15C
TEST REPORT
No. 2013TAR560**

for

TCT Mobile Limited

HSUPA/HSDPA/UMTS triband/GSM quadband mobile phone

Model Name: California 2SIM US

Marketing Name: ONE TOUCH 6012E

FCC ID: RAD391

with

Hardware Version: Proto2

Software Version: 3A0B

Issued Date: 2013-08-21



DAR accreditation (DIN EN ISO/IEC 17025): No. D-PL-12123-01-01

FCC 2.948 Listed: No.733176

IC O.A.T.S listed: No.6629B

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of TMC Beijing.

Test Laboratory:

TMC Beijing, Telecommunication Metrology Center of Ministry of Industry and Information Technology

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CONTENTS

| | |
|---|-----------|
| CONTENTS | 2 |
| 1. TEST LABORATORY | 3 |
| 1.1. TESTING LOCATION | 3 |
| 1.2. TESTING ENVIRONMENT..... | 3 |
| 1.3. PROJECT DATA | 3 |
| 1.4. SIGNATURE | 3 |
| 2. CLIENT INFORMATION..... | 4 |
| 2.1. APPLICANT INFORMATION | 4 |
| 2.2. MANUFACTURER INFORMATION..... | 4 |
| 3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE) | 5 |
| 3.1. ABOUT EUT | 5 |
| 3.2. INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST | 5 |
| 3.3. INTERNAL IDENTIFICATION OF AE USED DURING THE TEST | 5 |
| 3.4. NORMAL ACCESSORY SETTING | 6 |
| 3.5. GENERAL DESCRIPTION..... | 6 |
| 4. REFERENCE DOCUMENTS..... | 7 |
| 4.1. DOCUMENTS SUPPLIED BY APPLICANT | 7 |
| 4.2. REFERENCE DOCUMENTS FOR TESTING..... | 7 |
| 5. LABORATORY ENVIRONMENT..... | 8 |
| 6. SUMMARY OF TEST RESULTS | 9 |
| 6.1. SUMMARY OF TEST RESULTS | 9 |
| 6.2. STATEMENTS..... | 9 |
| 7. TEST EQUIPMENTS UTILIZED | 10 |
| ANNEX A: MEASUREMENT RESULTS..... | 11 |
| A.1. MEASUREMENT METHOD | 11 |
| A.2. 6dB BANDWIDTH..... | 12 |
| A.3. PEAK OUTPUT POWER - CONDUCTED | 14 |
| A.4. MAXIMUM POWER SPECTRAL DENSITY LEVEL | 15 |
| A.5. CONDUCTED EMISSION..... | 17 |
| A.6. RADIATED EMISSION..... | 26 |
| A.7. FREQUENCY BAND EDGES - CONDUCTED..... | 35 |
| A.8. AC POWERLINE CONDUCTED EMISSION..... | 37 |

1. Test Laboratory

1.1. Testing Location

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT
Address: Shouxiang Science Building, No 51, Xueyuan Road, Haidian District,
Beijing, P.R.China
Postal Code: 100191
Telephone: 00861062304633
Fax: 00861062304633

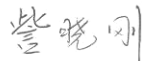
1.2. Testing Environment

Normal Temperature: 15-35°C
Extreme Temperature: -20/+55°C
Relative Humidity: 20-75%

1.3. Project data

Project Leader: Zi Xiaogang
Testing Start Date: 2013-07-11
Testing End Date: 2013-08-20

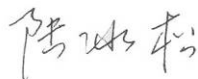
1.4. Signature



Zi Xiaogang
(Prepared this test report)



Sun Xiangqian
(Reviewed this test report)



Lu Bingsong
Deputy Director of the laboratory
(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name: TCT Mobile Limited
Address /Post: 12F/B, TCL Tower, Gaoxin Nanyi Road, Nanshan District, Shenzhen,
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Contact: Lv Meixian
Email: meixian.lv@tcl.com
Telephone: 0086-755-33956929
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2.2. Manufacturer Information

Company Name: TCT Mobile Limited
Address /Post: 12F/B, TCL Tower, Gaoxin Nanyi Road, Nanshan District, Shenzhen,
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Telephone: 0086-755-33956929
Fax: 0086-755-36645072

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

| | |
|-----------------------------|--|
| Description | HSUPA/HSDPA/UMTS triband/GSM quadband mobile phone |
| Model Name | California 2SIM US |
| Marketing Name | ONE TOUCH 6012E |
| FCC ID | RAD391 |
| Frequency Band | ISM 2400MHz~2483.5MHz |
| Type of Modulation(LE mode) | GFSK |
| Number of Channels(LE mode) | 40 |
| Power Supply | 3.8V DC by Battery |

Note: The EUT is a variant model of ONE TOUCH 6012A. All the result is coming from the initial model.

3.2. Internal Identification of EUT used during the test

| EUT ID* | SN or IMEI | HW Version | SW Version |
|---------|-----------------|------------|------------|
| N14 | 013769000100318 | Proto2 | 3A0B |

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

3.3. Internal Identification of AE used during the test

| AE ID* | Description |
|--------|-------------|
| AE1 | Battery |
| AE2 | Battery |
| AE3 | Charger |
| AE4 | Charger |

AE1

| | |
|-----------------|----------|
| Model | TLp017A1 |
| Manufacturer | BYD |
| Capacitance | 1700mAh |
| Nominal Voltage | 3.8V |

AE2

| | |
|-----------------|----------|
| Model | TLp017A2 |
| Manufacturer | SCUD |
| Capacitance | 1700mAh |
| Nominal Voltage | 3.8V |

AE3

| | |
|-------|--------------|
| Model | CBA3007AG0C1 |
|-------|--------------|

Manufacturer BYD

AE4

Model CBA3007AG0C2

Manufacturer Tenpao

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

3.4. Normal Accessory setting

Fully charged battery should be used during the test.

3.5. General Description

The Equipment Under Test (EUT) is a model of HSUPA/HSDPA/UMTS triband/GSM quadband mobile phone with integrated antenna. It consists of normal options: lithium battery, charger. Manual and specifications of the EUT were provided to fulfil the test. Samples undergoing test were selected by the Client.

4. Reference Documents

4.1. Documents supplied by applicant

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

4.2. Reference Documents for testing

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

| | | |
|------------|---|---------|
| | FCC CFR 47, Part 15, Subpart C: | |
| | 15.205 Restricted bands of operation; | |
| FCC Part15 | 15.209 Radiated emission limits, general requirements; | 10-1-12 |
| | 15.247 Operation within the bands 902–928MHz, 2400–2483.5 MHz, and 5725–5850 MHz. | |
| KDB 558074 | Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 | v03r01 |

5. LABORATORY ENVIRONMENT

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

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

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

| | |
|--------------------------|----------------------------|
| Temperature | Min. = 15 °C, Max. = 35 °C |
| Relative humidity | Min. =30 %, Max. = 60 % |
| 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 80 to 2000 MHz |

6. SUMMARY OF TEST RESULTS

6.1. Summary of Test Results

Abbreviations used in this clause:

- P** Pass, The EUT complies with the essential requirements in the standard.
- F** Fail, The EUT does not comply with the essential requirements in the standard
- NA** Not Applicable, The test was not applicable
- NP** Not Performed, The test was not performed by TMC

| SUMMARY OF MEASUREMENT RESULTS | Sub-clause | Verdict |
|--------------------------------------|------------------------|----------|
| 6dB Bandwidth | 15.247 (a)(2) | P |
| Peak Output Power - Conducted | 15.247 (b)(1) | P |
| Maximum Power Spectral Density Level | 15.247(e) | P |
| Conducted Emission | 15.247 (d) | P |
| Radiated Emission | 15.247, 15.205, 15.209 | P |
| Frequency Band Edges | 15.247 (d) | P |
| AC Powerline Conducted Emission | 15.107, 15.207 | P |

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

The measurement is made according to KDB 558074.

6.2. S tatements

TMC has evaluated the test cases requested by the applicant /manufacturer as listed in section 6.1 of this report for the EUT specified in section 3 according to the standards or reference documents listed in section 4.2

7. Test Equipments Utilized

Conducted test system

| No. Equipment | Model | Serial Number | Manufacturer | Calibration Due date | |
|---------------|------------------------|---------------|--------------|----------------------|------------|
| 1 | Vector Signal Analyzer | FSU26 | 200030 | Rohde & Schwarz | 2014-06-12 |

Radiated emission test system

| No. Equipment | Model | Serial Number | Manufacturer | Calibration Due date | |
|---------------|--------------------------------------|---------------|--------------|----------------------|------------|
| 1 | Test Receiver | ESU26 | 100376 | Rohde & Schwarz | 2013-11-07 |
| 2 | EMI Antenna | VULB 9163 | 9163482 | Schwarzbeck | 2014-02-17 |
| 3 | EMI Antenna | 3117 | 00119024 | EMCO | 2014-02-03 |
| 4 | Dual-Ridge Waveguide Horn Antenna | 3116 | 2663 | ETS-Lindgren | 2014-06-30 |
| 5 | Dual-Ridge Waveguide Horn Antenna | 3116 | 2661 | ETS-Lindgren | 2014-06-30 |
| 6 | Bluetooth Tester | CBT | 100153 | Rohde & Schwarz | 2013-09-13 |
| 7 | LISN | ESH2-Z5 | 829991/012 | Rohde & Schwarz | 2014-03-17 |
| 8 | Pre-amplifier(18GHz) | SCU18 | 1005277 | Rohde & Schwarz | / |
| 9 | Pre-amplifier(26.5GHz) | SCU26 | 1006788 | Rohde & Schwarz | / |

Anechoic chamber

Fully anechoic chamber by Frankonia German.

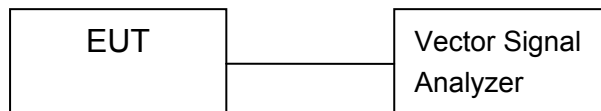
ANNEX A: MEASUREMENT RESULTS

A.1. Measurement Method

A.1.1. Conducted Measurements

The measurement is made according to KDB 558074.

- 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.



A.1.2. Radiated Emission Measurements

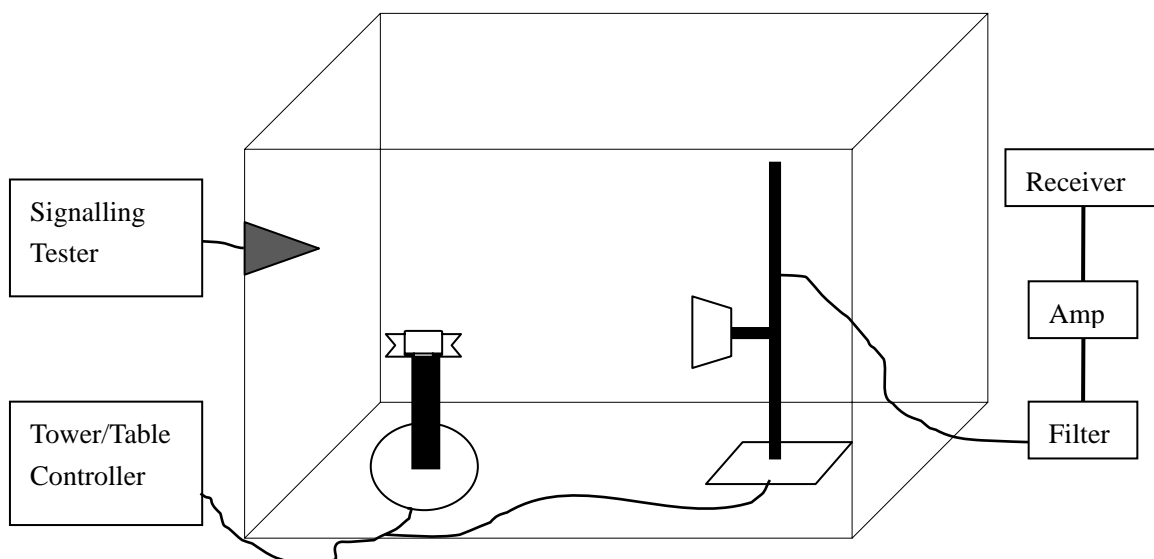
The measurement is made according to KDB 558074 and C63.4.

The radiated emission test is performed in semi-anechoic chamber. The distance from the EUT to the reference point of measurement antenna is 3m. The test is carried out on both vertical and horizontal polarization and only maximization result of both polarizations is kept. During the test, the turntable is rotated 360° and the measurement antenna is moved from 1m to 4m to get the maximization result.

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. 6dB Bandwidth

Measurement Limit:

| Standard | Limit |
|------------------------------|----------------------|
| FCC 47 CFR Part 15.247(a)(2) | $\geq 500\text{KHz}$ |

The measurement is made according to KDB 558074.

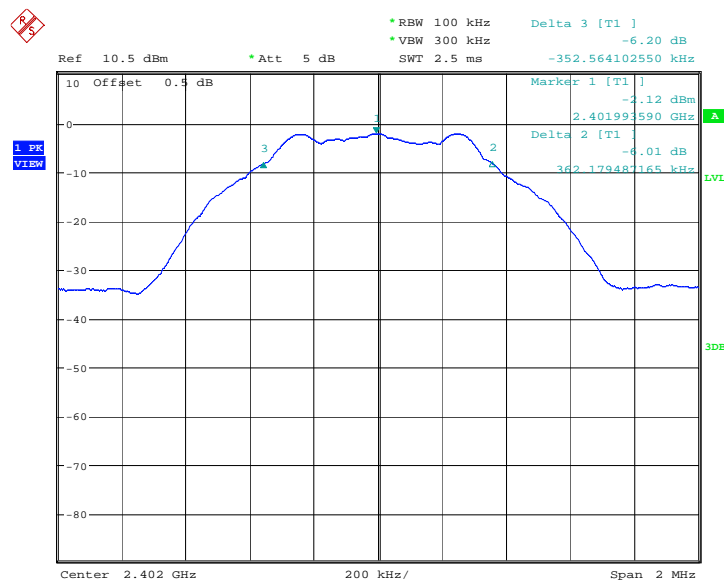
Measurement Results:

For GFSK

| Frequency | 6dB Bandwidth (kHz) | | Conclusion |
|-----------|---------------------|--------|------------|
| 2402MHz | Fig.1 | 714.74 | P |
| 2440MHz | Fig.2 | 714.74 | P |
| 2480MHz | Fig.3 | 717.95 | P |

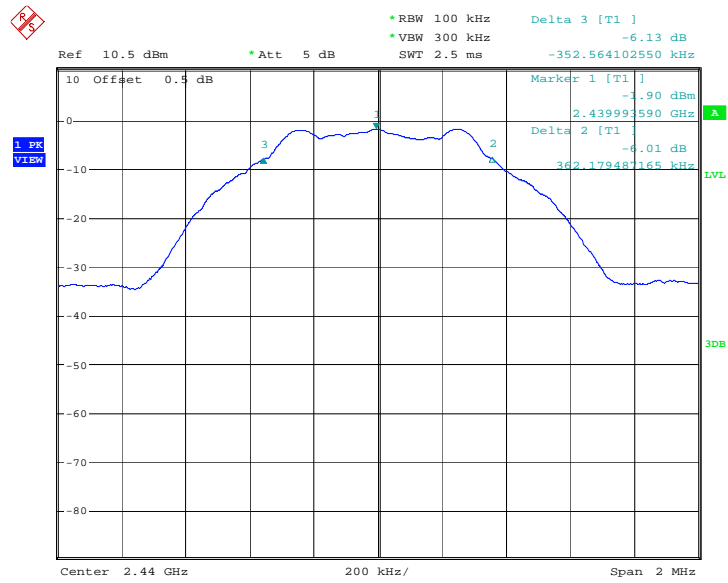
Conclusion: PASS

Test graphs as below:



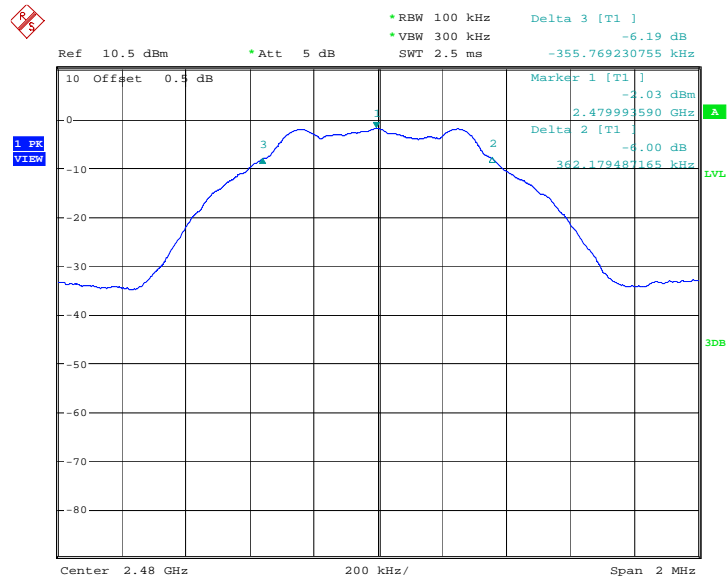
Date: 11.JUL.2013 05:55:33

Fig.1. 6dB Bandwidth: GFSK, 2402 MHz



Date: 11.JUL.2013 09:03:58

Fig.2. 6dB Bandwidth: GFSK, 2440 MHz



Date: 11.JUL.2013 09:05:17

Fig.3. 6dB Bandwidth: GFSK, 2480 MHz

A.3. Peak Output Power - Conducted

Measurement Limit:

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

The measurement is made according to KDB 558074.

Measurement Results:

For GFSK

| Frequency | 2402 MHz | 2440 MHz | 2480 MHz | Conclusion |
|-----------------------------------|----------|----------|----------|------------|
| Peak Conducted Output Power (dBm) | -1.00 | -0.71 | -0.82 | P |

Conclusion: PASS

A.4. Maximum Power Spectral Density Level

Measurement Limit:

| Standard | Limit |
|---------------------------|----------|
| FCC 47 CFR Part 15.247(e) | <=8.0dBm |

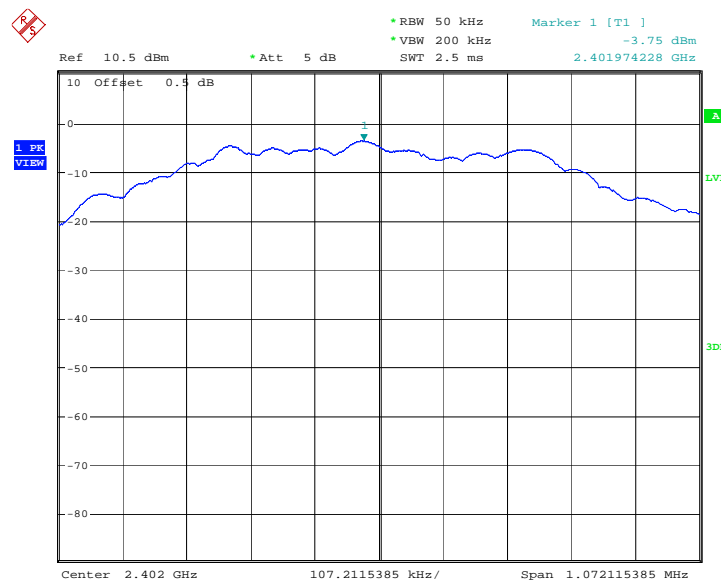
The measurement is made according to KDB 558074 in which the RBW of spectrum analyzer is required to be set between 3 KHz to 100 KHz. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat. The RBW is set to 50KHz in measurement which corresponds to the KDB 558074.

Measurement Results:

For GFSK

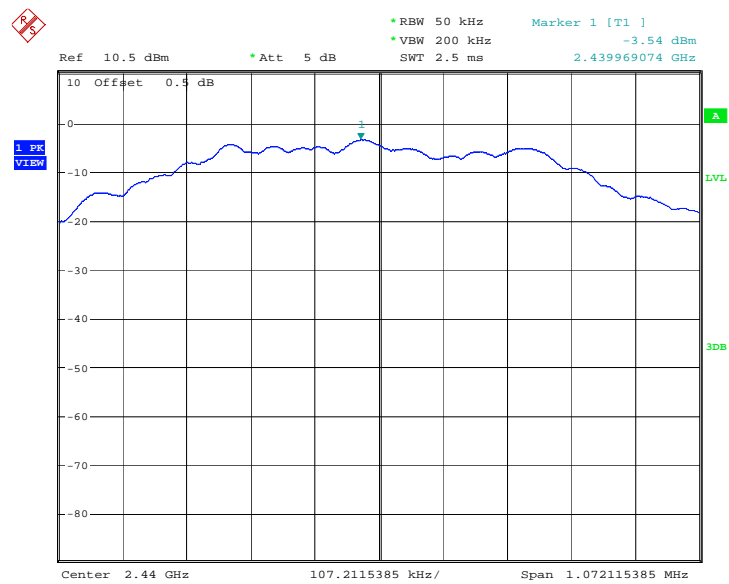
| Frequency | Maximum Power Spectral Density Level(dBm) | Conclusion |
|-----------|---|------------|
| 2402MHz | Fig.4 | P |
| 2440MHz | Fig.5 | P |
| 2480MHz | Fig.6 | P |

Test graphs as below:



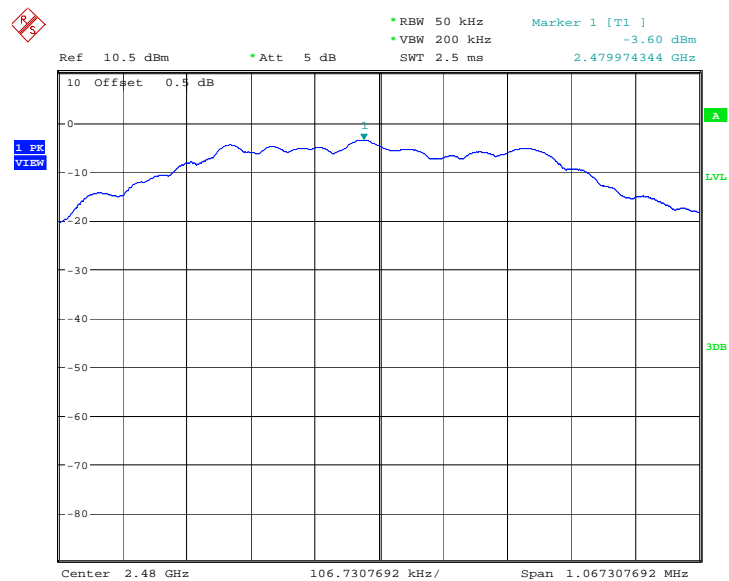
Date: 11.JUL.2013 05:56:00

Fig.4. Maximum Power Spectral Density Level Function: GFSK, 2402 MHz



Date: 11.JUL.2013 06:00:51

Fig.5. Maximum Power Spectral Density Level Function: GFSK, 2440 MHz



Date: 11.JUL.2013 06:05:17

Fig.6. Maximum Power Spectral Density Level Function: GFSK, 2480 MHz

A.5. 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 KDB 558074.

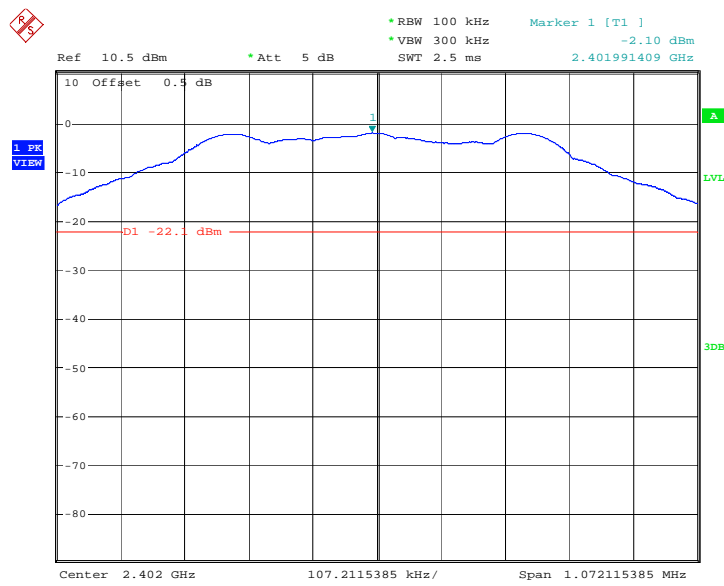
Measurement Results:

For GFSK

| Frequency | Frequency Range | Test Results | Conclusion |
|-----------|------------------|--------------|------------|
| 2402 MHz | Center Frequency | Fig.7 | P |
| | 30 MHz ~ 1 GHz | Fig.8 | P |
| | 1 GHz ~ 3 GHz | Fig.9 | P |
| | 3 GHz ~ 10 GHz | Fig.10 | P |
| | 10GHz ~ 26 GHz | Fig.11 | P |
| 2440 MHz | Center Frequency | Fig.12 | P |
| | 30 MHz ~ 1 GHz | Fig.13 | P |
| | 1 GHz ~ 3 GHz | Fig.14 | P |
| | 3 GHz ~ 10 GHz | Fig.15 | P |
| | 10GHz ~ 26 GHz | Fig.16 | P |
| 2480 MHz | Center Frequency | Fig.17 | P |
| | 30 MHz ~ 1 GHz | Fig.18 | P |
| | 1 GHz ~ 3GHz | Fig.19 | P |
| | 3 GHz ~ 10 GHz | Fig.20 | P |
| | 10 GHz ~ 26 GHz | Fig.21 | P |

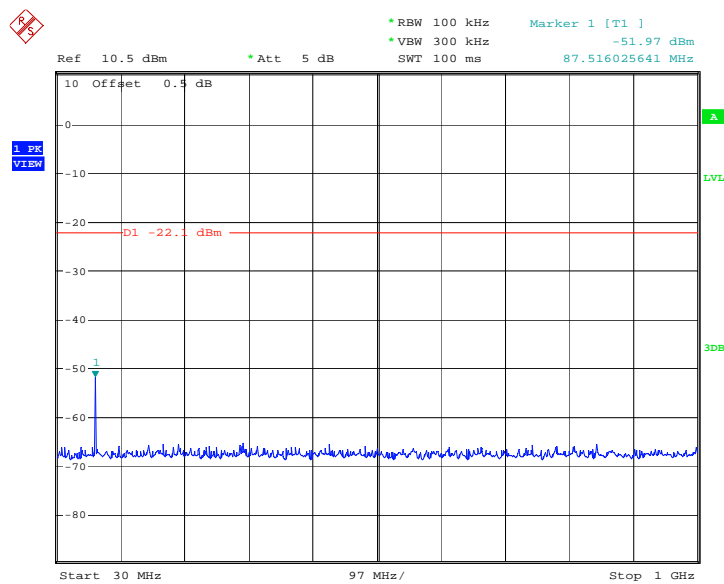
Conclusion: PASS

Test graphs as below



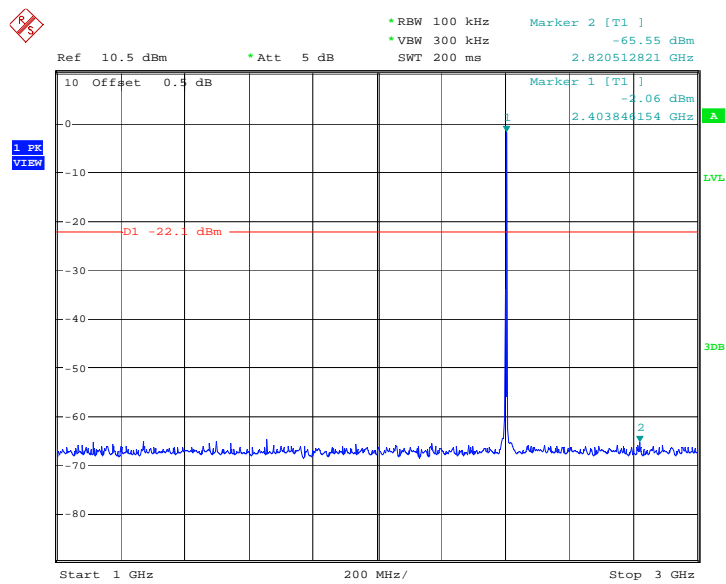
Date: 11.JUL.2013 05:56:18

Fig.7. Conducted spurious emission: GFSK,2402MHz



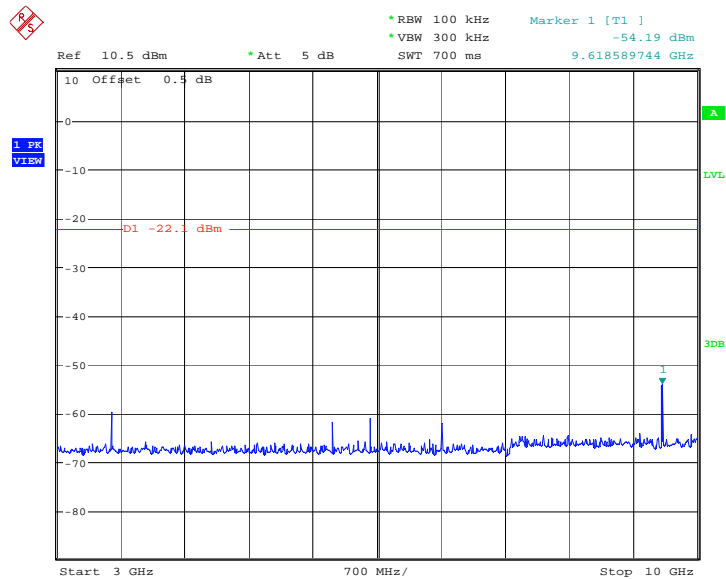
Date: 11.JUL.2013 05:56:35

Fig.8. Conducted spurious emission: GFSK, 2402 MHz, 30MHz - 1GHz



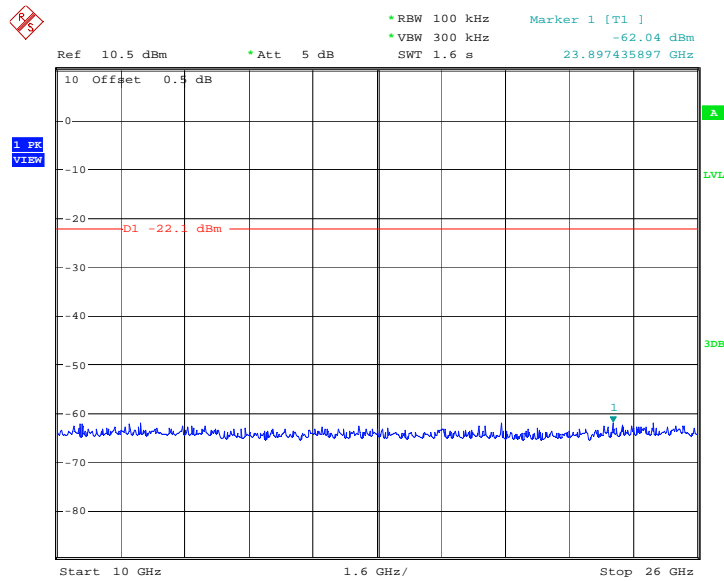
Date: 11.JUL.2013 05:57:06

Fig.9. Conducted spurious emission: GFSK, 2402 MHz, 1GHz - 3GHz



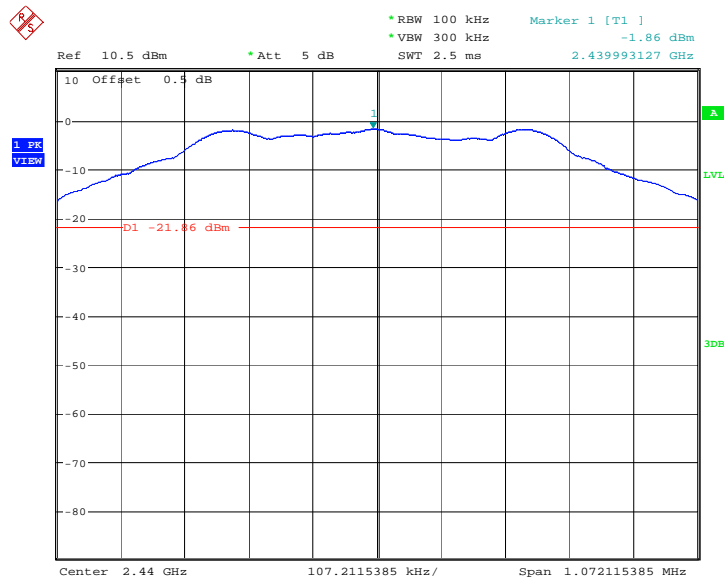
Date: 11.JUL.2013 05:57:23

Fig.10. Conducted spurious emission: GFSK, 2402 MHz, 3GHz - 10GHz



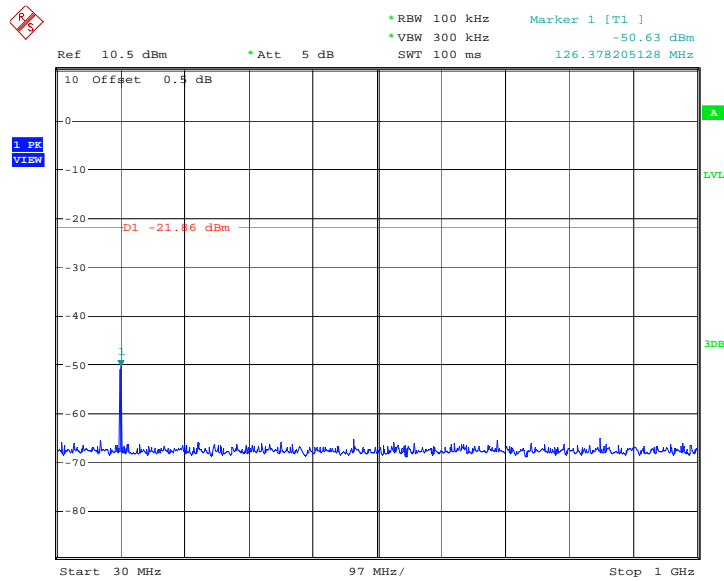
Date: 11.JUL.2013 05:57:40

Fig.11. Conducted spurious emission: GFSK, 2402 MHz, 10GHz - 26GHz



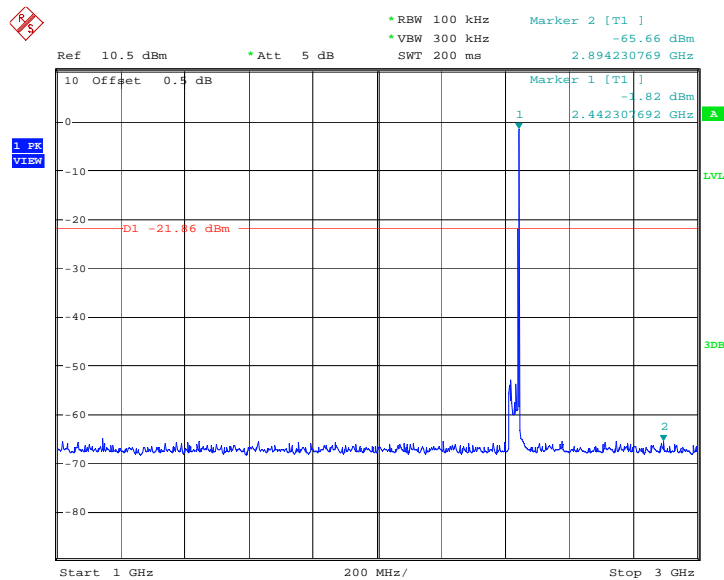
Date: 11.JUL.2013 06:01:10

Fig.12. Conducted spurious emission: GFSK, 2440MHz



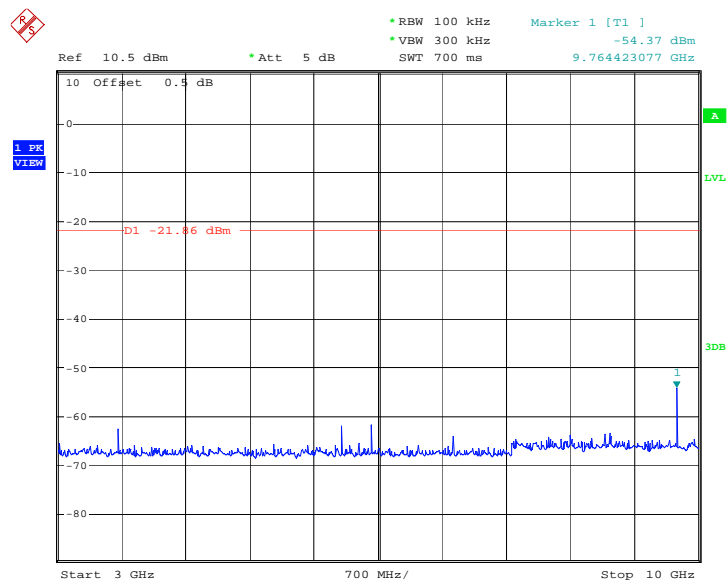
Date: 11.JUL.2013 06:01:27

Fig.13. Conducted spurious emission: GFSK, 2440 MHz, 30MHz - 1GHz



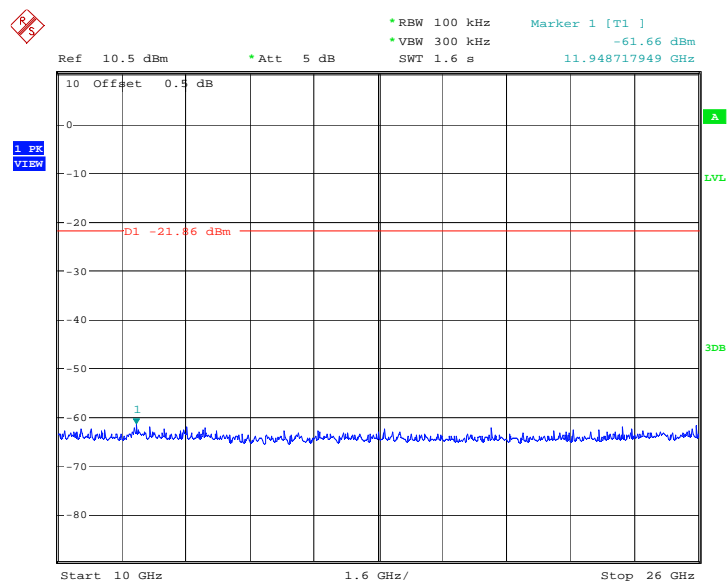
Date: 11.JUL.2013 06:01:58

Fig.14. Conducted spurious emission: GFSK, 2440 MHz, 1GHz - 3GHz



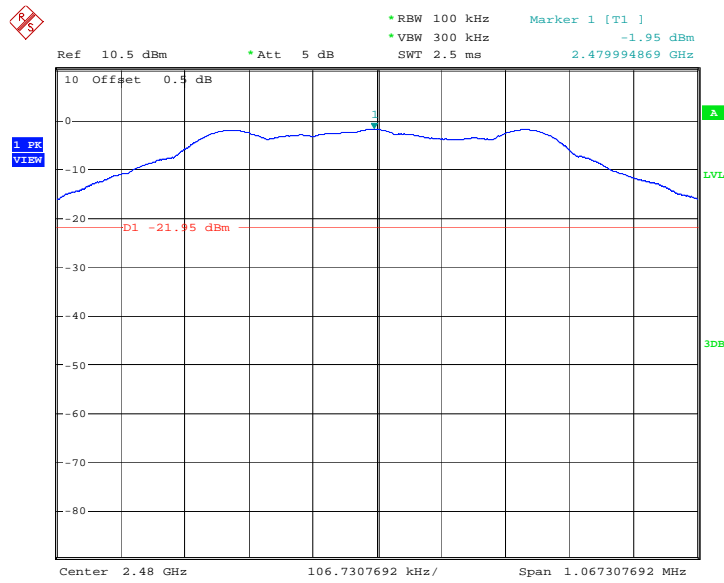
Date: 11.JUL.2013 06:02:15

Fig.15. Conducted spurious emission: GFSK, 2440 MHz, 3GHz – 10GHz



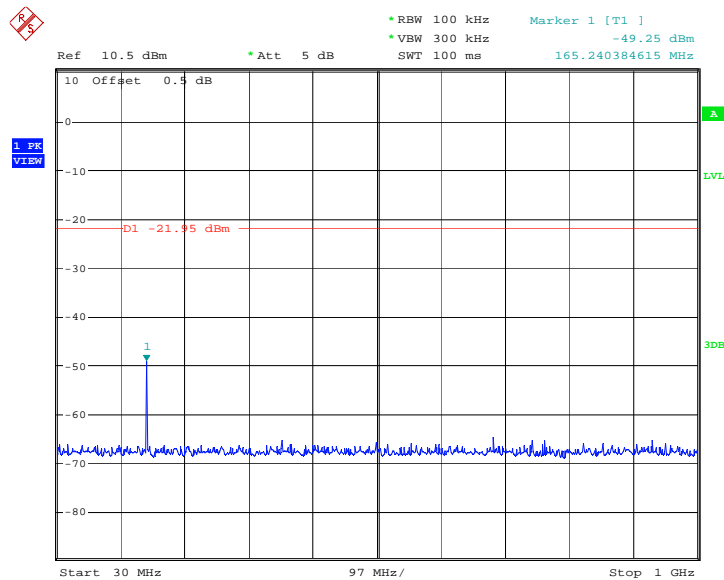
Date: 11.JUL.2013 06:02:32

Fig.16. Conducted spurious emission: GFSK, 2440 MHz, 10GHz – 26GHz



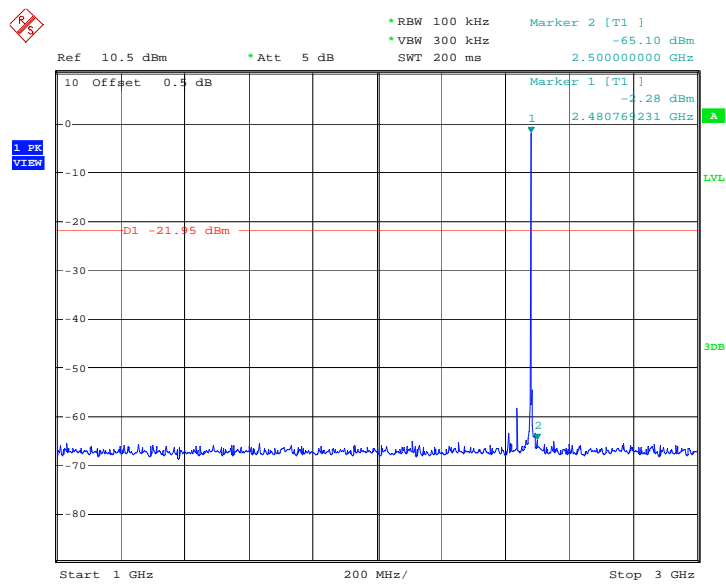
Date: 11.JUL.2013 06:05:36

Fig.17. Conducted spurious emission: GFSK, 2480 MHz



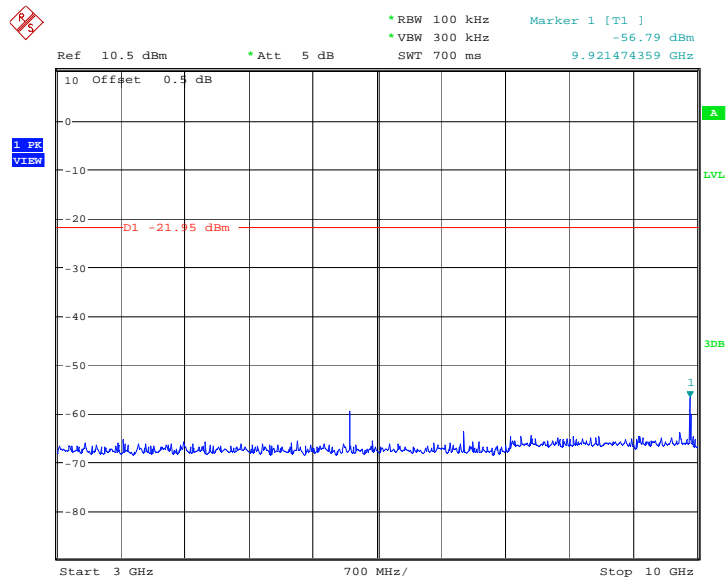
Date: 11.JUL.2013 06:05:52

Fig.18. Conducted spurious emission: GFSK, 2480 MHz, 30MHz - 1GHz



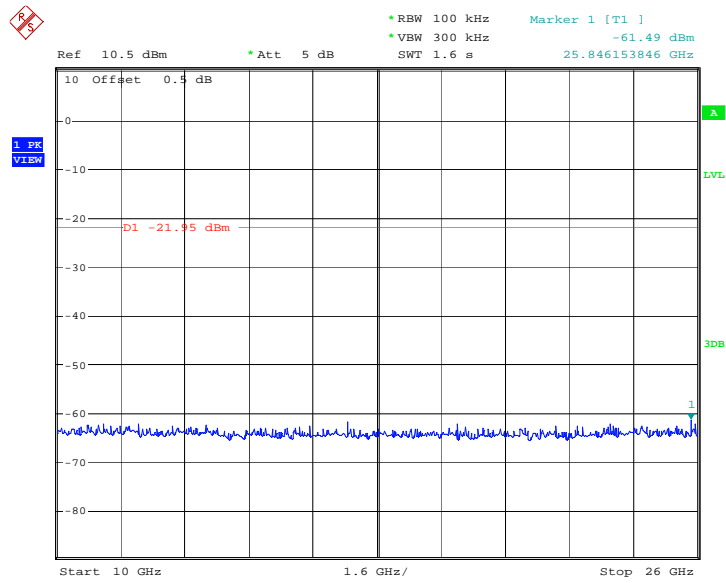
Date: 11.JUL.2013 06:06:24

Fig.19. Conducted spurious emission: GFSK, 2480 MHz, 1GHz - 3GHz



Date: 11.JUL.2013 06:06:41

Fig.20. Conducted spurious emission: GFSK, 2480 MHz, 3GHz - 10GHz



Date: 11.JUL.2013 06:06:58

Fig.21. Conducted spurious emission: GFSK, 2480 MHz, 10GHz - 26GHz

A.6. 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 KDB 558074 and 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 |

Test Condition

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

| Frequency of emission (MHz) | RBW/VBW | Sweep Time(s) |
|-----------------------------|---------------|---------------|
| 30-1000 | 100KHz/300KHz | 5 |
| 1000-4000 | 1MHz/1MHz | 15 |
| 4000-18000 | 1MHz/1MHz | 40 |
| 18000-26500 | 1MHz/1MHz | 20 |

Measurement Results:

A "reference path loss" is established and the A_{Rpl} is the attenuation of "reference path loss", and including the gain of receive antenna, the gain of the preamplifier, the cable los.

The measurement results are obtained as described below:

$$\text{Result} = P_{\text{Mea}} + A_{\text{Rpl}}$$

For GFSK

| Frequency | Frequency Range | Test Results | Conclusion |
|-----------|-----------------|--------------|------------|
| 2402 MHz | 30 MHz ~ 1 GHz | Fig.22 | P |
| | 1 GHz ~ 3 GHz | Fig.23 | P |
| | 3 GHz ~ 18 GHz | Fig.24 | P |
| 2441 MHz | 30 MHz ~ 1 GHz | Fig.25 | P |
| | 1 GHz ~ 3 GHz | Fig.26 | P |
| | 3 GHz ~ 18 GHz | Fig.27 | P |

| | | | |
|------------------|--------------------|--------|---|
| 2480 MHz | 30 MHz ~ 1 GHz | Fig.28 | P |
| | 1 GHz ~ 3 GHz | Fig.29 | P |
| | 3 GHz ~ 18 GHz | Fig.30 | P |
| Power | 2.38GHz~2.4GHz---L | Fig.31 | P |
| Power | 2.45GHz~2.5GHz---H | Fig.32 | P |
| For all channels | 18 GHz ~ 26 GHz | Fig.33 | P |

GFSK 2402MHz-PK

| Frequency(MHz) | Result(dBuV/m) | ARpl (dB) | PMea(dBuV/m) | Polarity |
|----------------|----------------|-----------|--------------|----------|
| 17733.000 | 57.8 | 19.26 | 38.561 | H |
| 17526.000 | 57.8 | 20.12 | 37.655 | H |
| 17510.250 | 57.6 | 20.02 | 37.615 | H |
| 17939.250 | 57.3 | 19.52 | 37.793 | V |
| 17592.750 | 57.3 | 19.92 | 37.375 | V |
| 17748.750 | 57.2 | 19.26 | 37.961 | H |

GFSK 2402MHz-AV

| Frequency(MHz) | Result(dBuV/m) | ARpl (dB) | PMea(dBuV/m) | Polarity |
|----------------|----------------|-----------|--------------|----------|
| 17484.000 | 45.8 | 20.22 | 25.545 | V |
| 17493.000 | 45.8 | 20.22 | 25.545 | H |
| 17485.500 | 45.7 | 20.22 | 25.445 | H |
| 17484.750 | 45.7 | 20.22 | 25.445 | V |
| 17447.250 | 45.7 | 18.98 | 26.683 | H |
| 17467.500 | 45.7 | 19.82 | 25.885 | H |

GFSK 2440MHz-PK

| Frequency(MHz) | Result(dBuV/m) | ARpl (dB) | PMea(dBuV/m) | Polarity |
|----------------|----------------|-----------|--------------|----------|
| 17732.250 | 58.0 | 19.26 | 38.761 | V |
| 16980.750 | 57.7 | 19.33 | 38.420 | H |
| 17629.500 | 57.7 | 19.92 | 37.815 | V |
| 17532.000 | 57.5 | 20.12 | 37.355 | V |
| 17561.250 | 57.5 | 19.52 | 38.025 | V |
| 17398.500 | 57.2 | 19.08 | 38.123 | H |

GFSK 2440MHz-AV

| Frequency(MHz) | Result(dBuV/m) | ARpl (dB) | PMea(dBuV/m) | Polarity |
|----------------|----------------|-----------|--------------|----------|
| 17476.500 | 45.9 | 20.22 | 25.645 | V |
| 17469.750 | 45.9 | 19.82 | 26.085 | H |
| 17454.750 | 45.9 | 18.88 | 27.023 | H |
| 17491.500 | 45.8 | 20.22 | 25.545 | V |
| 17475.750 | 45.8 | 20.22 | 25.545 | V |
| 17463.000 | 45.8 | 19.82 | 25.985 | H |

GFSK 2480MHz-PK

| Frequency(MHz) | Result(dBuV/m) | ARpl (dB) | PMea(dBuV/m) | Polarity |
|----------------|----------------|-----------|--------------|----------|
| 17566.500 | 57.9 | 19.52 | 38.425 | H |
| 17454.750 | 57.6 | 18.88 | 38.723 | V |
| 17586.750 | 57.6 | 19.92 | 37.675 | V |
| 17538.000 | 57.5 | 20.12 | 37.355 | V |
| 17498.250 | 57.4 | 20.22 | 37.145 | H |
| 17556.000 | 57.3 | 19.52 | 37.825 | V |

GFSK 2480MHz-AV

| Frequency(MHz) | Result(dBuV/m) | ARpl (dB) | PMea(dBuV/m) | Polarity |
|----------------|----------------|-----------|--------------|----------|
| 17566.500 | 45.2 | 19.52 | 25.725 | H |
| 17454.750 | 45.4 | 18.88 | 26.523 | V |
| 17538.000 | 45.5 | 20.12 | 25.355 | V |
| 17498.250 | 45.7 | 20.22 | 25.445 | H |
| 17556.000 | 45.1 | 19.52 | 25.625 | V |
| 17351.250 | 44.6 | 19.28 | 25.353 | V |

Conclusion: PASS

Test graphs as below:

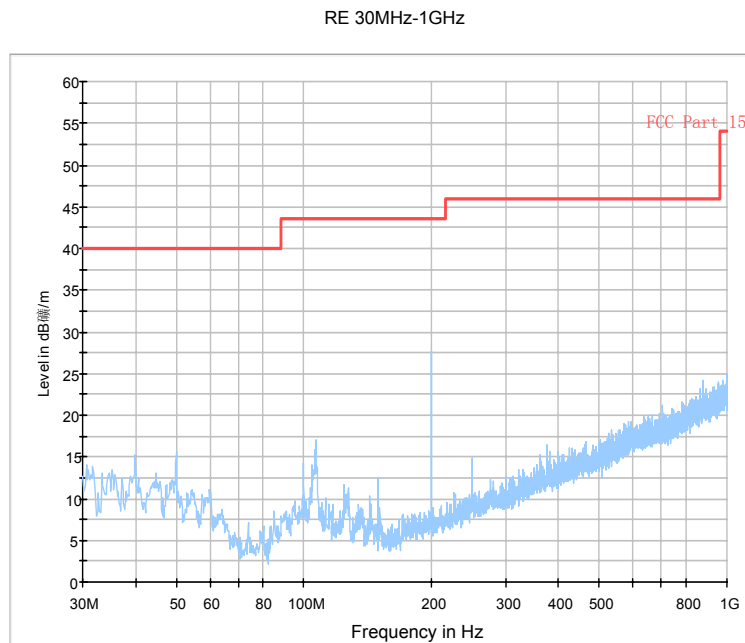


Fig.22. Radiated emission: GFSK, 2402MHz, 30 MHz - 1 GHz

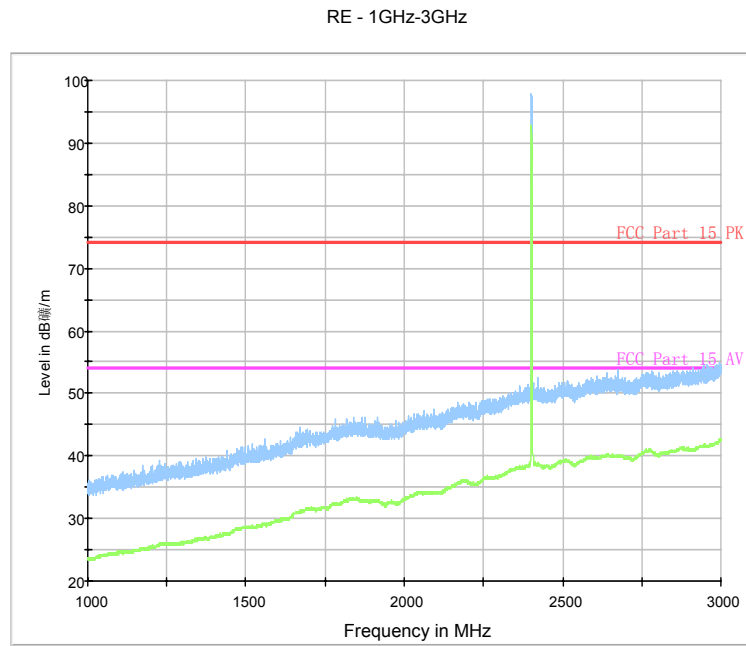


Fig.23. Radiated emission: GFSK, 2402MHz, 1 GHz - 3GHz

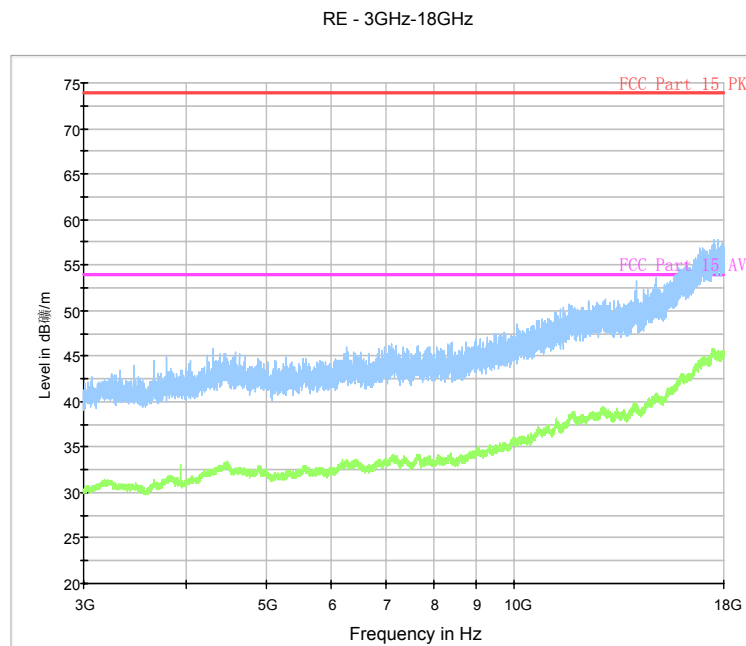


Fig.24. Radiated emission: GFSK, 2402MHz, 3 GHz - 18 GHz

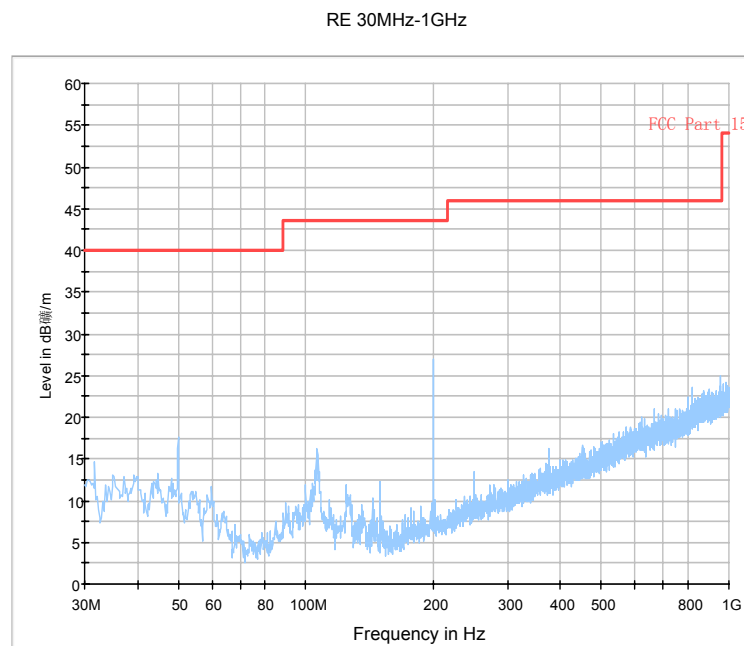


Fig.25. Radiated emission: GFSK, 2440MHz, 30 MHz - 1 GHz

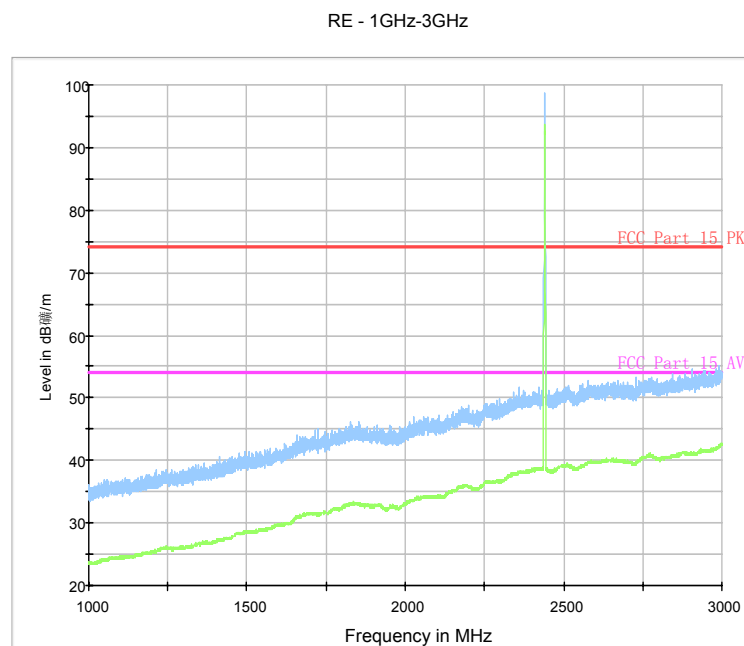


Fig.26. Radiated emission: GFSK, 2440MHz, 1 GHz - 3 GHz

RE - 3GHz-18GHz

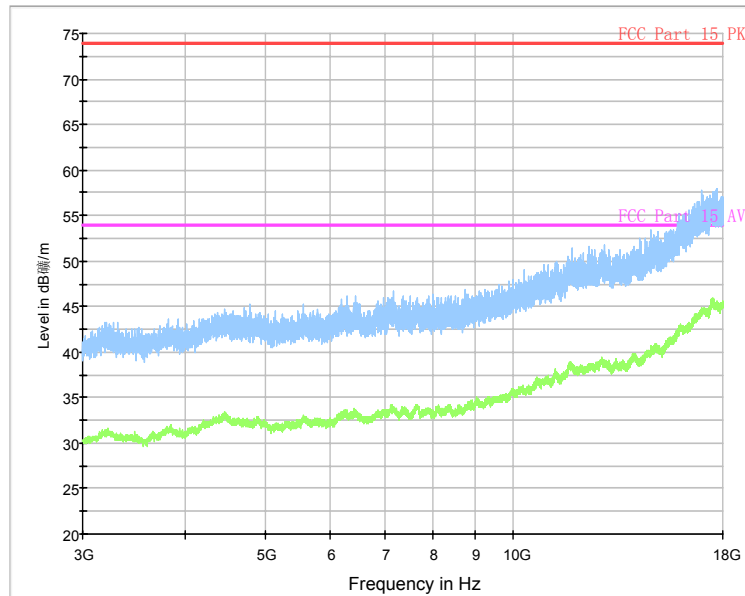


Fig.27. Radiated emission: GFSK, 2440MHz, 3 GHz - 18 GHz

RE 30MHz-1GHz

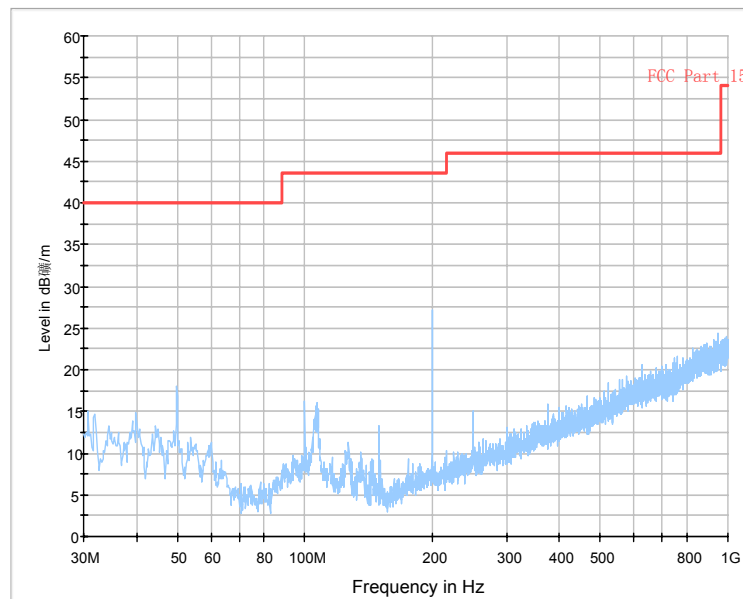


Fig.28. Radiated emission: GFSK, 2480MHz, 30 MHz - 1 GHz

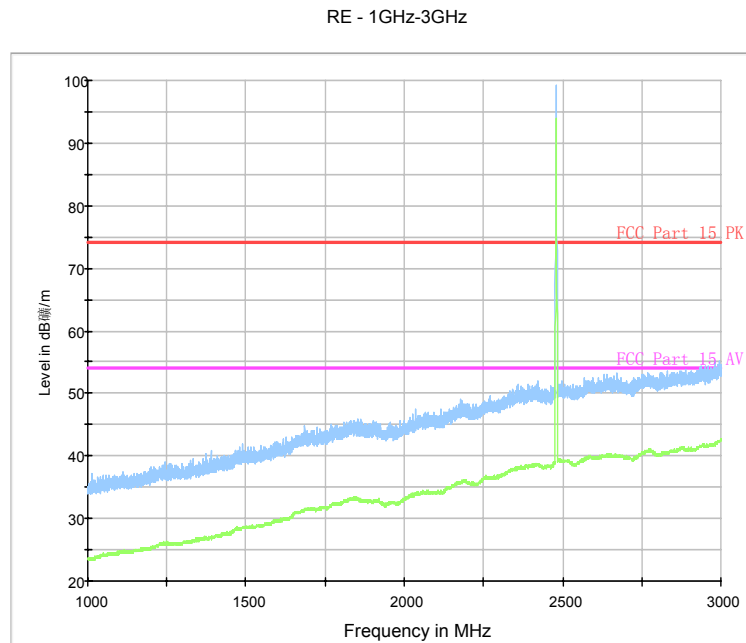


Fig.29. Radiated emission: GFSK, 2480MHz, 1 GHz - 3 GHz

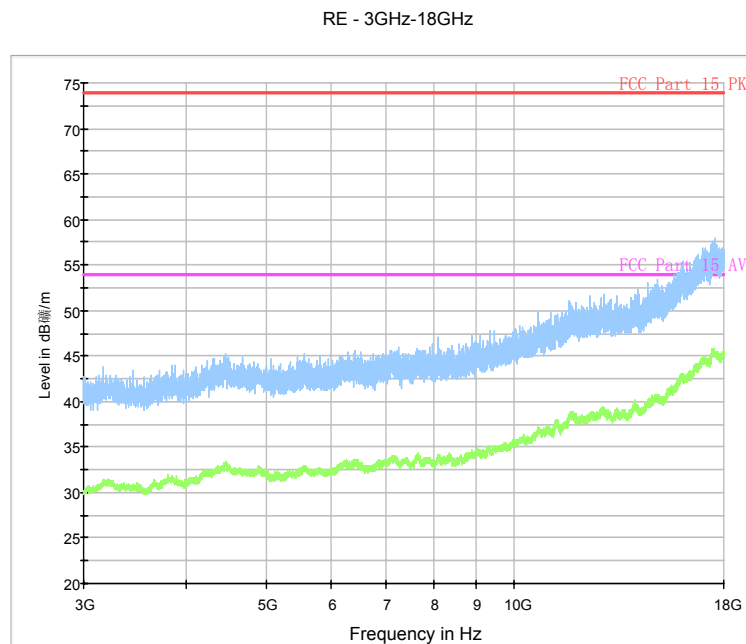


Fig.30. Radiated emission: GFSK, 2480MHz, 3 GHz - 18 GHz

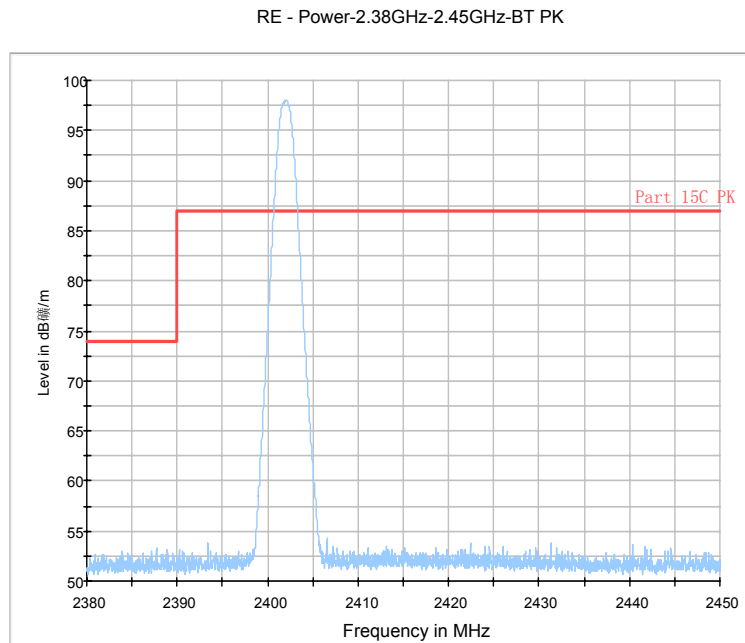


Fig.31. Radiated emission (Power): GFSK low channel

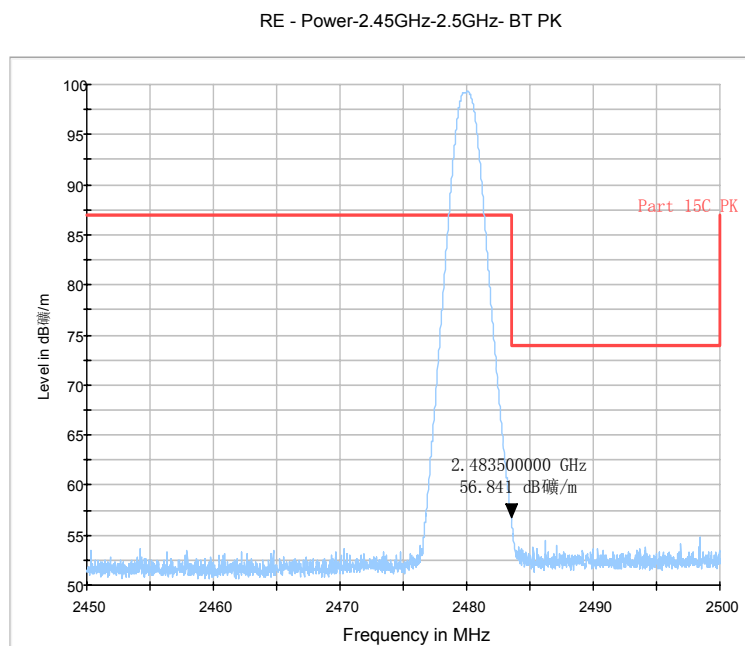


Fig.32. Radiated emission (Power): GFSK high channel

18G-26.5G RE

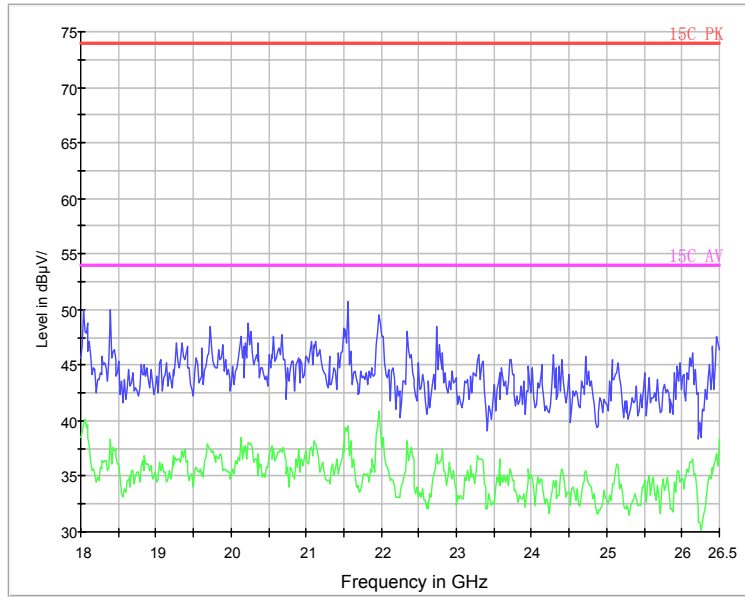


Fig.33. Radiated emission: GFSK, 18 GHz - 26 GHz

A.7. Frequency Band Edges - Conducted

Measurement Limit:

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

The measurement is made according to KDB 558074. Compute the power by integrating the spectrum over 1 MHz using the analyzer's band power measurement function with band limits set equal to the emission frequency ($f_{\text{emission}} \pm 0.5\text{MHz}$). If the instrument does not have a band power function, then sum the amplitude levels (in power units) at 100 kHz intervals extending across the 1 MHz spectrum defined by $f_{\text{emission}} \pm 0.5\text{MHz}$.

The results below are yielded by the result in Fig.34/Fig.35 minus the result in Fig.7/Fig.17.

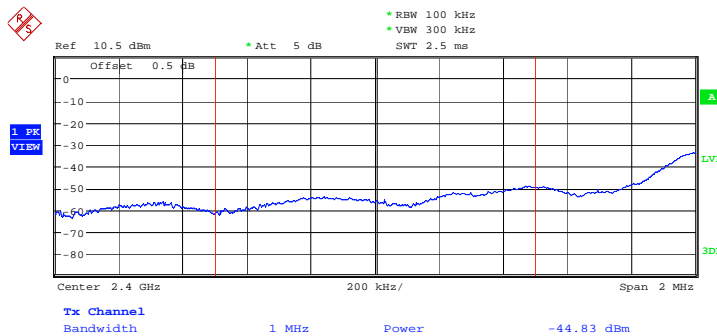
Measurement Result:

For GFSK

| Frequency | Hopping | Band Edge Power (dBc) | | Conclusion |
|-----------|-------------|------------------------|--------|------------|
| 2402MHz | Hopping OFF | Fig.34 | -42.73 | P |
| 2480MHz | Hopping OFF | Fig.35 | -47.41 | P |

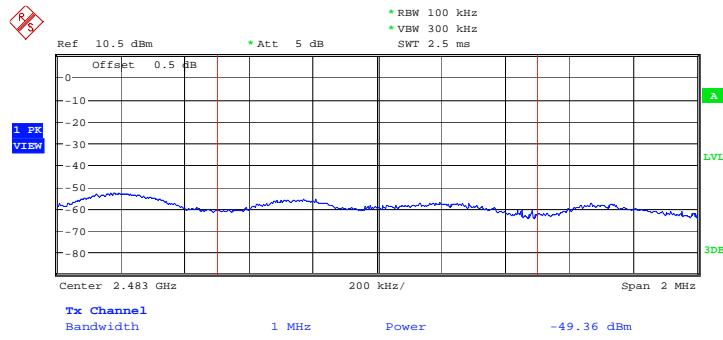
Conclusion: PASS

Test graphs as below



Date: 11.JUL.2013 05:58:03

Fig.34. Frequency Band Edges: GFSK, 2402 MHz, Hopping Off



Date: 11.JUL.2013 06:07:21

Fig.35. Frequency Band Edges: GFSK, 2480 MHz, Hopping Off

A.8. AC Powerline Conducted Emission

Test Condition

| | |
|-------------|----------------|
| Voltage (V) | Frequency (Hz) |
| 120 | 60 |

Measurement Result and limit:

Bluetooth (Quasi-peak Limit)

| Frequency range (MHz) | Quasi-peak Limit (dB μ V) | Conclusion |
|--|-------------------------------|------------|
| 0.15 to 0.5 | 66 to 56 | 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. | | |

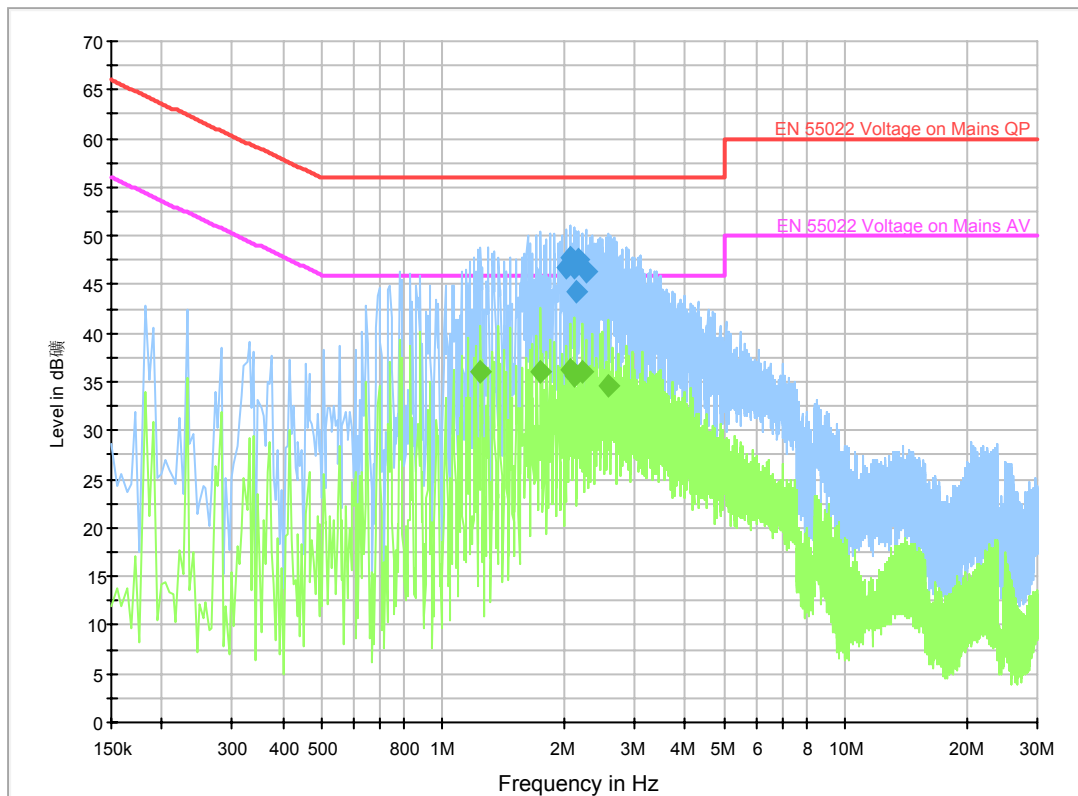
Bluetooth (Average Limit)

| Frequency range (MHz) | Average Limit (dB μ V) | Conclusion |
|--|----------------------------|------------|
| 0.15 to 0.5 | 56 to 46 | 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. | | |

The measurement is made according to KDB 558074 and C63.4.

Conclusion: PASS

Test graphs as below:



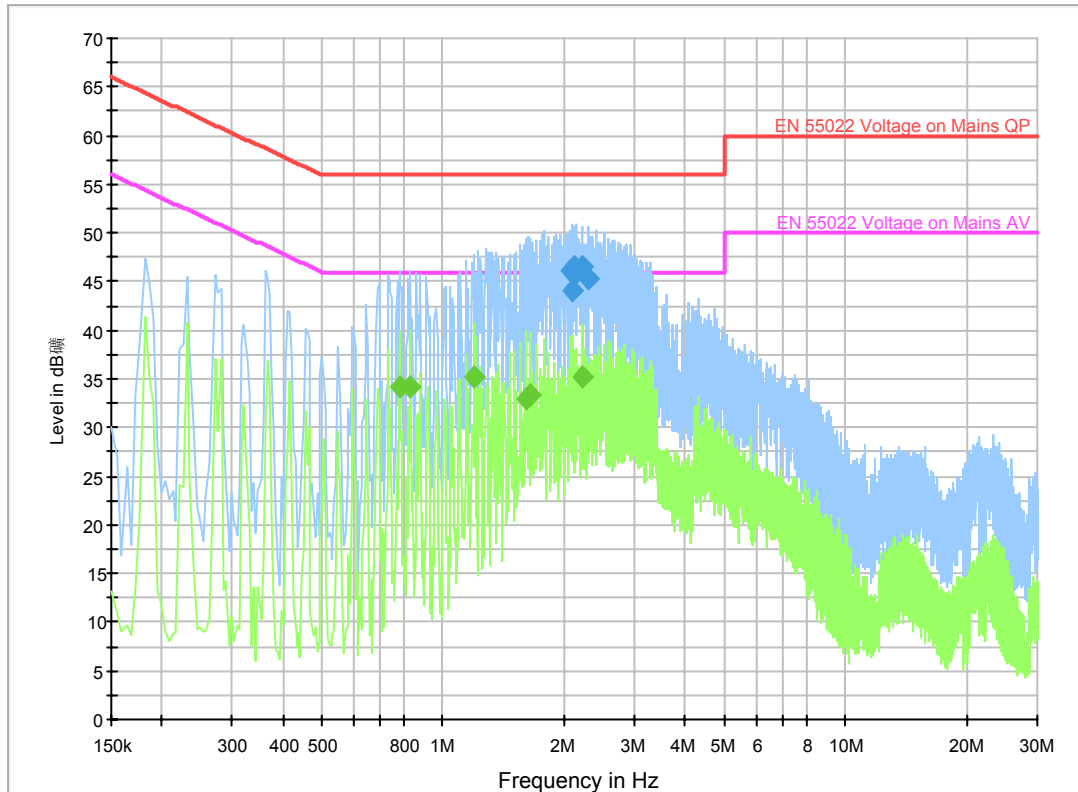
Final Result 1

| Frequency (MHz) | QuasiPeak (dB μ V) | PE | Line | Corr. (dB) | Margin (dB) | Limit (dB μ V) |
|-----------------|------------------------|----|-------|------------|-------------|--------------------|
| 2.026501 | 46. | 8 | GND N | 9.9 | 9.2 | 56.0 |
| 2.076001 | 47. | 7 | GND N | 9.9 | 8.3 | 56.0 |
| 2.121001 | 46. | 8 | GND N | 9.9 | 9.2 | 56.0 |
| 2.152501 | 44. | 2 | GND N | 9.9 | 11.8 | 56.0 |
| 2.166001 | 47. | 6 | GND N | 9.9 | 8.4 | 56.0 |
| 2.260501 | 46. | 3 | GND N | 9.9 | 9.7 | 56.0 |

Final Result 2

| Frequency (MHz) | CAverage (dB μ V) | PE | Line | Corr. (dB) | Margin (dB) | Limit (dB μ V) |
|-----------------|-----------------------|----|-------|------------|-------------|--------------------|
| 1.243501 | 36. | 1 | GND N | 9.9 | 9.9 | 46.0 |
| 1.752001 | 36. | 0 | GND N | 9.9 | 10.0 | 46.0 |
| 2.076001 | 36. | 2 | GND N | 9.9 | 9.8 | 46.0 |
| 2.121001 | 35. | 5 | GND N | 9.9 | 10.5 | 46.0 |
| 2.215501 | 36. | 0 | GND N | 9.9 | 10.0 | 46.0 |
| 2.589001 | 34. | 6 | GND N | 9.9 | 11.4 | 46.0 |

IDLE:

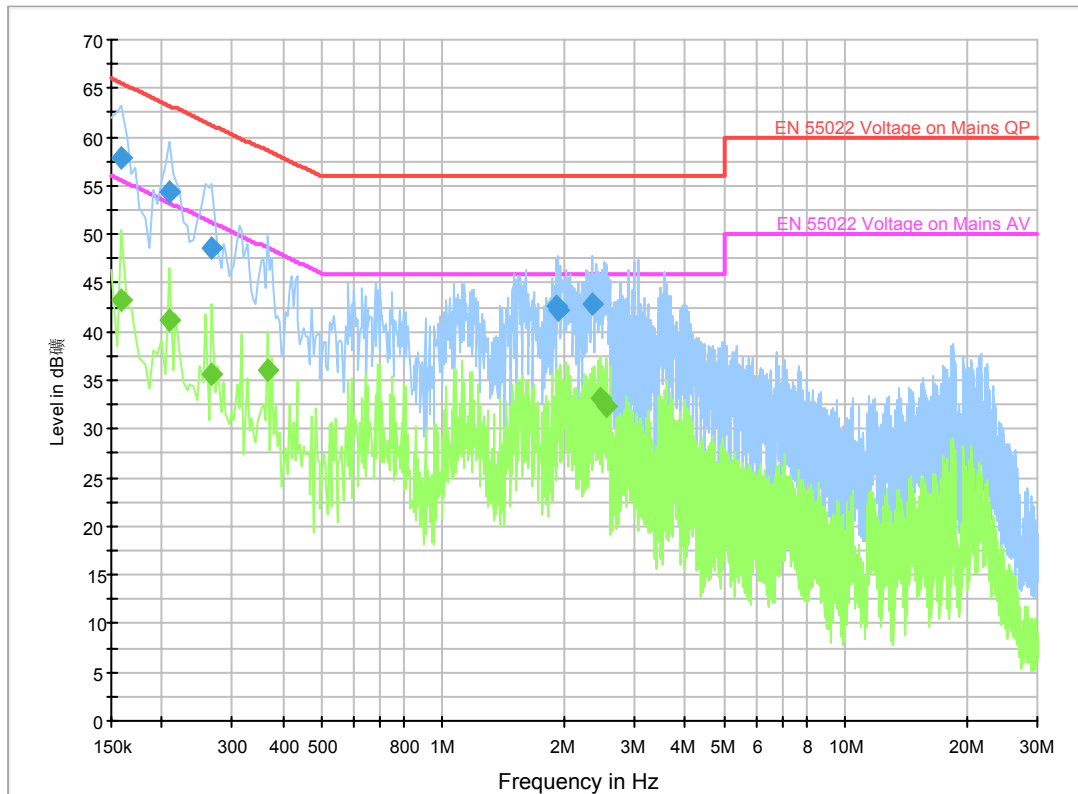


Final Result 1

| Frequency (MHz) | QuasiPeak (dBµV) | PE | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|-----------------|------------------|----|-------|------------|-------------|--------------|
| 2.071501 | 46. | 0 | GND N | 9.9 | 10.0 | 56.0 |
| 2.103001 | 44. | 1 | GND N | 9.9 | 11.9 | 56.0 |
| 2.116501 | 46. | 5 | GND N | 9.9 | 9.5 | 56.0 |
| 2.148001 | 45. | 8 | GND N | 9.9 | 10.2 | 56.0 |
| 2.211001 | 46. | 6 | GND N | 9.9 | 9.4 | 56.0 |
| 2.305501 | 45. | 3 | GND N | 9.9 | 10.7 | 56.0 |

Final Result 2

| Frequency (MHz) | CAverage (dBµV) | PE | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|-----------------|-----------------|----|-------|------------|-------------|--------------|
| 0.780001 | 34. | 2 | GND N | 9.9 | 11.8 | 46.0 |
| 0.829501 | 34. | 1 | GND N | 9.9 | 11.9 | 46.0 |
| 1.194001 | 35. | 2 | GND N | 9.9 | 10.8 | 46.0 |
| 1.603501 | 32. | 9 | GND N | 9.9 | 13.1 | 46.0 |
| 1.653001 | 33. | 4 | GND N | 9.9 | 12.6 | 46.0 |
| 2.211001 | 35. | 3 | GND N | 9.9 | 10.7 | 46.0 |



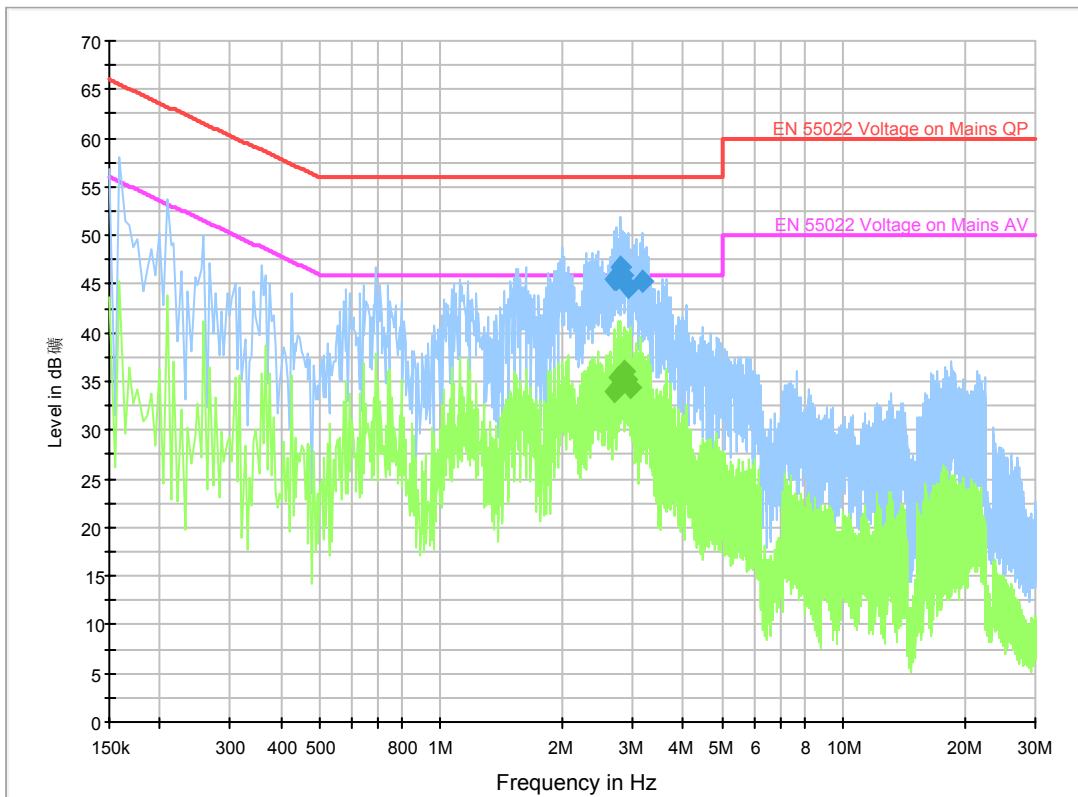
Final Result 1

| Frequency (MHz) | QuasiPeak (dBµV) | PE | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|-----------------|------------------|----|--------|------------|-------------|--------------|
| 0.159001 | 57. | 8 | GND L1 | 9.9 | 7.7 | 65.5 |
| 0.208501 | 54. | 5 | GND L1 | 9.9 | 8.8 | 63.3 |
| 0.267001 | 48. | 5 | GND L1 | 9.9 | 12.7 | 61.2 |
| 1.909501 | 42. | 6 | GND N | 9.9 | 13.4 | 56.0 |
| 1.927501 | 42. | 2 | GND N | 9.9 | 13.8 | 56.0 |
| 2.359501 | 42. | 9 | GND N | 9.9 | 13.1 | 56.0 |

Final Result 2

| Frequency (MHz) | CAverage (dBµV) | PE | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|-----------------|-----------------|----|-------|------------|-------------|--------------|
| 0.159001 | 43. | 2 | GND N | 9.9 | 12.4 | 55.5 |
| 0.208501 | 41. | 2 | GND N | 9.9 | 12.1 | 53.3 |
| 0.267001 | 35. | 7 | GND N | 9.9 | 15.5 | 51.2 |
| 0.366001 | 36. | 0 | GND N | 9.9 | 12.6 | 48.6 |
| 2.454001 | 33. | 1 | GND N | 9.9 | 12.9 | 46.0 |
| 2.562001 | 32. | 4 | GND N | 9.9 | 13.6 | 46.0 |

IDLE:



Final Result 1

| Frequency (MHz) | QuasiPeak (dB μ V) | PE | Line | Corr. (dB) | Margin (dB) | Limit (dB μ V) |
|-----------------|------------------------|----|-------|------------|-------------|--------------------|
| 2.697001 | 45. | 4 | GND N | 9.9 | 10.6 | 56.0 |
| 2.742001 | 45. | 5 | GND N | 9.9 | 10.5 | 56.0 |
| 2.805001 | 46. | 7 | GND N | 9.9 | 9.3 | 56.0 |
| 2.823001 | 46. | 0 | GND N | 9.9 | 10.0 | 56.0 |
| 2.931001 | 44. | 8 | GND N | 9.9 | 11.2 | 56.0 |
| 3.178501 | 45. | 2 | GND N | 9.9 | 10.8 | 56.0 |

Final Result 2

| Frequency (MHz) | CAverage (dB μ V) | PE | Line | Corr. (dB) | Margin (dB) | Limit (dB μ V) |
|-----------------|-----------------------|----|-------|------------|-------------|--------------------|
| 2.697001 | 33. | 9 | GND N | 9.9 | 12.1 | 46.0 |
| 2.760001 | 35. | 4 | GND N | 9.9 | 10.6 | 46.0 |
| 2.791501 | 35. | 3 | GND N | 9.9 | 10.7 | 46.0 |
| 2.868001 | 36. | 0 | GND N | 9.9 | 10.0 | 46.0 |
| 2.899501 | 35. | 2 | GND N | 9.9 | 10.8 | 46.0 |
| 2.962501 | 34. | 4 | GND N | 9.9 | 11.6 | 46.0 |

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