12 February 2012

Comat Electronic (Shenzhen) Co., Ltd
No.2 Lane 1, Xin'an 3rd 28 District Baoan
Shenzhen, Guangdong, China

Dear Xiaowen Zhang :

Enclosed you will find your file copy of a Part 15 Certification (FCC ID: RTX-CR707G).

For your reference, TCB will normally take another 5 days for reviewing the report. Approval will then be granted when no query is sorted.

Please contact me if you have any questions regarding the enclosed material.

Sincerely,

Shawn Xing
Manager

Enclosure

**Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch**
6F, D Block, Huahan Building, Langshan Road, Nanshan District, Shenzhen, P. R. China
Tel: (86 755) 8601 6288 Fax: (86 755) 8601 6751 Website: www.china.intertek-etlsemko.com

**Comat Electronic (Shenzhen) Co., Ltd**

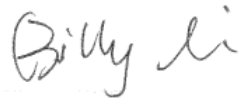
Application
For
Certification
**(FCC ID: RTX-CR707G)**

2.4G wireless receiver

Model: CM9028G

2.4GHz Transceiver

We hereby certify that the sample of the above item is considered to comply with the requirements of FCC Part 15, Subpart C for Intentional Radiator,
Mention 47 CFR [10-1-10]



SZ11120185-2
Billy Li
12 February 2012






**Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch**
6F, D Block, Huahan Building, Langshan Road, Nanshan District, Shenzhen, P. R. China

Tel: (86 755) 8601 6288 Fax: (86 755) 8601 6751 Website: www.china.intertek-etlsemko.com

# LIST OF EXHIBITS

*INTRODUCTION*

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| *EXHIBIT 2*: | System Test Configuration |
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# MEASUREMENT/TECHNICAL REPORT

**Comat Electronic (Shenzhen) Co., Ltd - Model: CM9028G**

**FCC ID: RTX-CR707G**

**12 February 2012**

This report concerns (check one:) Original Grant _X_ Class II Change _____

Equipment Type: DXX - Part 15 Low Power Communication Device Transmitter

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes _____ No __X__

If yes, defer until: _____
date

Company Name agrees to notify the Commission by: _____
date
of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37? Yes _____ No __X__

If no, assumed Part 15, Subpart C for intentional radiator – the new 47 CFR [10-1-10 Edition] provision.

Report prepared by:

Shawn Xing
Intertek Testing Services Shenzhen Ltd.
Kejiyuan Branch
6F, Block D, Huahan Building, Langshan Road,
Nanshan District, Shenzhen, P. R. China
Phone: (86 755) 8601 6288
Fax: (86 755) 8601 6751

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List of attached file

| Exhibit type | File Description | Filename |
|---|---|---|
| Test Report | Test Report | report.pdf |
| Test Setup Photo | Radiated Emission | radiated photos.pdf |
| Test Setup Photo | Conducted Emission | conducted photos.pdf |
| Test Report | Bandedge Plot | bandedge.pdf |
| Test Report | 20dB BW Plot | bw.pdf |
| Test Report | Timing Plot | af.pdf |
| External Photo | External Photo | external photos.pdf |
| Internal Photo | Internal Photo | internal photos.pdf |
| Block Diagram | Block Diagram | block.pdf |
| Schematics | Circuit Diagram | circuit.pdf |
| Operation Description | Technical Description | descri.pdf |
| ID Label/Location | Label Artwork and Location | label.pdf |
| Cover Letter | Confidentiality Request | request.pdf |
| User Manual | User Manual | manual.pdf |
| Cover Letter | Letter of Agency | agency.pdf |

# EXHIBIT 1

# GENERAL DESCRIPTION

## 1.0 General Description

### 1.1 Product Description

The Equipment Under Test (EUT) is a 2.4GHz Wireless receiver unit and is powered by PC USB Port.

Antenna Type: Integral antenna

For electronic filing, the brief circuit description is saved with filename: descri.pdf.

### 1.2 Related Submittal(s) Grants

This is an application for certification of a transceiver for the USB Dongle unit, and the corresponding Mouse unit (2.4GHz transceiver) is subjected to FCC certification with FCC ID: RTX-CM9028G

1.3 Test Methodology

Both AC mains line-conducted and Radiated emission measurement was performed according to the procedures in ANSI C63.4 (2003). Radiated emission measurement was performed in semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application.

1.4 Test Facility

The Semi-Anechoic chamber and shielding room used to collect the radiated data and conducted data are **Interterk Testing Services Shenzhen Ltd. Kejiyuan Branch** and located at 6F, Block D, Huahan Building, Langshan Road, Nanshan District, Shenzhen, P. R. China. This test facility and site measurement data have been fully placed on file with the FCC.

# EXHIBIT 2

# SYSTEM TEST CONFIGURATION

## 2.0 System Test Configuration

### 2.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in ANSI C63.4 (2003).

The EUT was powered by PC USB Port during the testing.

For maximizing emissions, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed. This step by step procedure for maximizing emissions led to the data reported in Exhibit 3.0.

The rear of unit shall be flushed with the rear of the table.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was placed on a turn table, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

### 2.2 EUT Exercising Software

The EUT exercise program (provided by client) used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use.

The parameters of test software setting:
During the test, Channel and power controlling software provided by the applicant was used to control the operating channel.

### 2.3 Special Accessories

No special accessories used.

### 2.4 Equipment Modification

Any modifications installed previous to testing by Comat Electronic (Shenzhen) Co., Ltd will be incorporated in each production model sold / leased in the United States.
No modifications were installed by Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch

2.5 Measurement Uncertainty

When determining the test conclusion, the Measurement Uncertainty of test has been considered.

2.6 Support Equipment List and Description

| Description | Manufacturer | Model No. |
|---|---|---|
| Test PC | HP | 2510P |
| Hard Disk | Smart.drive | HD3-SU2FW |
| USB Cable | Smart.drive | Length 155cm |
| 1394 Cable | Smart.drive | Length 180cm |

All the items listed under section 2.0 of this report are

*Confirmed by:*

*Shawn Xing*
*Manager*
*Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch*
*Agent for Comat Electronic (Shenzhen) Co., Ltd*

Signature

12 February 2012 Date

# EXHIBIT 3

# EMISSION RESULTS

## 3.0 **Emission Results**

Data is included worst-case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.

3.1 **Radiated Test Results**

A sample calculation, configuration photographs and data tables of the emissions are included.

3.1.1 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

FS = RA + AF + CF - AG + PD + AV

Where FS = Field Strength in dBµV/m
RA = Receiver Amplitude (including preamplifier) in dBµV
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB
AG = Amplifier Gain in dB
PD = Pulse Desensitization in dB
AV = Average Factor in -dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

FS = RA + AF + CF - AG + PD + AV

Assume a receiver reading of 62.0 dBµV is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0 dB, and the resultant average factor was -10 dB. The net field strength for comparison to the appropriate emission limit is 32 dBµV/m. This value in dBµV/m was converted to its corresponding level in µV/m.

RA = 62.0 dBµV
AF = 7.4 dB
CF = 1.6 dB
AG = 29.0 dB
PD = 0 dB
AV = -10 dB
FS = 62 + 7.4 + 1.6 - 29 + 0 + (-10) = 32 dBµV/m

Level in µV/m = Common Antilogarithm [(32 dBµV/m)/20] = 39.8 µV/m

3.1.2 Radiated Emission Configuration Photograph

For electronic filing, the worst case radiated emission configuration photograph is saved with filename: radiated photos. pdf.

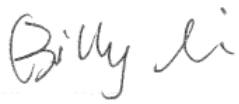
3.1.3 Radiated Emissions

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Worst Case Radiated Emission
at
36.238 MHz

Judgement: Passed by 18.2 dB

***TEST PERSONNEL:***



*Signature*

Billy Li Team Leader
*Typed/Printed Name*

12 February 2012
*Date*

Applicant: Comat Electronic (Shenzhen) Co., Ltd Date of Test: 12 February 2012
Model: CM9028G
Worst Case Operating Mode: Transmit

Table 1

**Radiated Emissions**

| Polarization | Frequency (MHz) | Reading (dBµV) | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m (dBµV/m) | Limit at 3m (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|
| Horizontal | 42.235 | 28.0 | 20.0 | 12.2 | 20.2 | 40.0 | -19.8 |
| Horizontal | 49.568 | 29.0 | 20.0 | 9.2 | 18.2 | 40.0 | -21.8 |
| Horizontal | 66.205 | 29.9 | 20.0 | 7.4 | 17.3 | 40.0 | -22.7 |
| Vertical | 36.238 | 26.5 | 20.0 | 15.3 | 21.8 | 40.0 | -18.2 |
| Vertical | 40.127 | 25.0 | 20.0 | 12.9 | 17.9 | 40.0 | -22.1 |
| Vertical | 46.652 | 25.8 | 20.0 | 10.7 | 16.5 | 40.0 | -23.5 |

NOTES:
1. Quasi-Peak detector is used except for others stated.
2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. All emissions are below the QP limit.

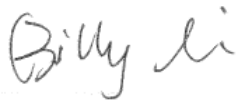
3.1.4 Transmitter Spurious Emissions (Radiated)

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Worst Case Radiated Emission
at
2408.0000 MHz

Judgement: Passed by 14.5 dB

***TEST PERSONNEL:***



*Signature*

Billy Li Team Leader
*Typed/Printed Name*

12 February 2012
*Date*

Applicant: Comat Electronic (Shenzhen) Co., Ltd Date of Test: 12 February 2012
Model: CM9028G
Sample: 1/1
Worst Case Operating Mode: Transmit

Table 2

**Radiated Emissions**

(2408.000MHz)

| Polarization | Frequency (MHz) | Reading (dBµV) | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m (dBµV/m) | Peak Limit at 3m (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|
| Horizontal | 2408.000 | 108.1 | 36.7 | 28.1 | 99.5 | 114.0 | -14.5 |
| Horizontal | 4816.000 | 48.9 | 36.1 | 32.8 | 45.6 | 74.0 | -28.4 |
| Horizontal | 7224.000 | 53.5 | 36.2 | 36.5 | 53.8 | 74.0 | -20.2 |

| Polarization | Frequency (MHz) | Reading (dBµV) | Pre-Amp Gain (dB) | Antenna Factor (dB) | Average Factor (-dB) | Net at 3m (dBµV/m) | Average Limit at 3m (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| Horizontal | 2408.000 | 108.1 | 36.7 | 28.1 | 22.2 | 77.3 | 94.0 | -16.7 |
| Horizontal | 4816.000 | 48.9 | 36.1 | 32.8 | 22.2 | 23.4 | 54.0 | -30.6 |
| Horizontal | 7224.000 | 53.5 | 36.2 | 36.5 | 22.2 | 31.6 | 54.0 | -22.4 |

Notes: 1. Peak Detector Data unless otherwise stated.

2. All measurements were made at 3 meter. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna is used for the emission over 1000MHz.

Test Engineer: Billy Li

Applicant: Comat Electronic (Shenzhen) Co., Ltd Date of Test: 12 February 2012
Model: CM9028G
Sample: 1/1
Worst Case Operating Mode: Transmit

Table 3

**Radiated Emissions**

(2440.000MHz)

| Polarization | Frequency (MHz) | Reading (dBµV) | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m (dBµV/m) | Peak Limit at 3m (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|
| Horizontal | 2440.000 | 107.7 | 36.7 | 28.1 | 99.1 | 114.0 | -14.9 |
| Horizontal | 4880.000 | 46.4 | 36.1 | 35.5 | 45.8 | 74.0 | -28.2 |
| Horizontal | 7320.000 | 52.9 | 36.3 | 37.2 | 53.8 | 74.0 | -20.2 |

| Polarization | Frequency (MHz) | Reading (dBµV) | Pre-Amp Gain (dB) | Antenna Factor (dB) | Average Factor (-dB) | Net at 3m (dBµV/m) | Average Limit at 3m (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| Horizontal | 2440.000 | 107.7 | 36.7 | 28.1 | 22.2 | 76.9 | 94.0 | -17.1 |
| Horizontal | 4880.000 | 46.4 | 36.1 | 35.5 | 22.2 | 23.6 | 54.0 | -30.4 |
| Horizontal | 7320.000 | 52.9 | 36.3 | 37.2 | 22.2 | 31.6 | 54.0 | -22.4 |

Notes: 1. Peak Detector Data unless otherwise stated.

2. All measurements were made at 3 meter. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna is used for the emission over 1000MHz.

Test Engineer: Billy Li

Applicant: Comat Electronic (Shenzhen) Co., Ltd Date of Test: 12 February 2012
Model: CM9028G
Sample: 1/1
Worst Case Operating Mode: Transmit

Table 4

**Radiated Emissions**

(2474.000MHz)

| Polarization | Frequency (MHz) | Reading (dBµV) | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m (dBµV/m) | Limit at 3m (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|
| Horizontal | 2474.000 | 104.8 | 36.7 | 31.1 | 99.2 | 114.0 | -14.8 |
| Horizontal | 4948.000 | 46.4 | 36.1 | 35.5 | 45.8 | 74.0 | -28.2 |
| Horizontal | 7422.000 | 52.7 | 36.3 | 37.2 | 53.6 | 74.0 | -20.4 |

| Polarization | Frequency (MHz) | Reading (dBµV) | Pre-Amp Gain (dB) | Antenna Factor (dB) | Average Factor (-dB) | Net at 3m (dBµV/m) | Average Limit at 3m (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| Horizontal | 2474.000 | 104.8 | 36.7 | 31.1 | 22.2 | 77.0 | 94.0 | -17.0 |
| Horizontal | 4948.000 | 46.4 | 36.1 | 35.5 | 22.2 | 23.6 | 54.0 | -30.4 |
| Horizontal | 7422.000 | 52.7 | 36.3 | 37.2 | 22.2 | 31.4 | 54.0 | -22.6 |

Notes: 1. Peak Detector Data unless otherwise stated.

2. All measurements were made at 3 meter. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna is used for the emission over 1000MHz.

Test Engineer: Billy Li

## 3.2 Conducted Emission at Mains Terminal

### 3.2.1 Conducted Emissions Configuration Photograph

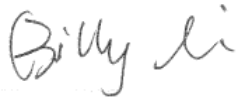
For electronic filing, the worst case conducted emission configuration photograph is saved with filename: conducted photos.pdf.

### 3.2.2 Conducted Emissions

Worst Case Neutral-Conducted Configuration
at
0.198 MHz

Judgement: Passed by 16.9 dB margin

***TEST PERSONNEL:***



*Signature*

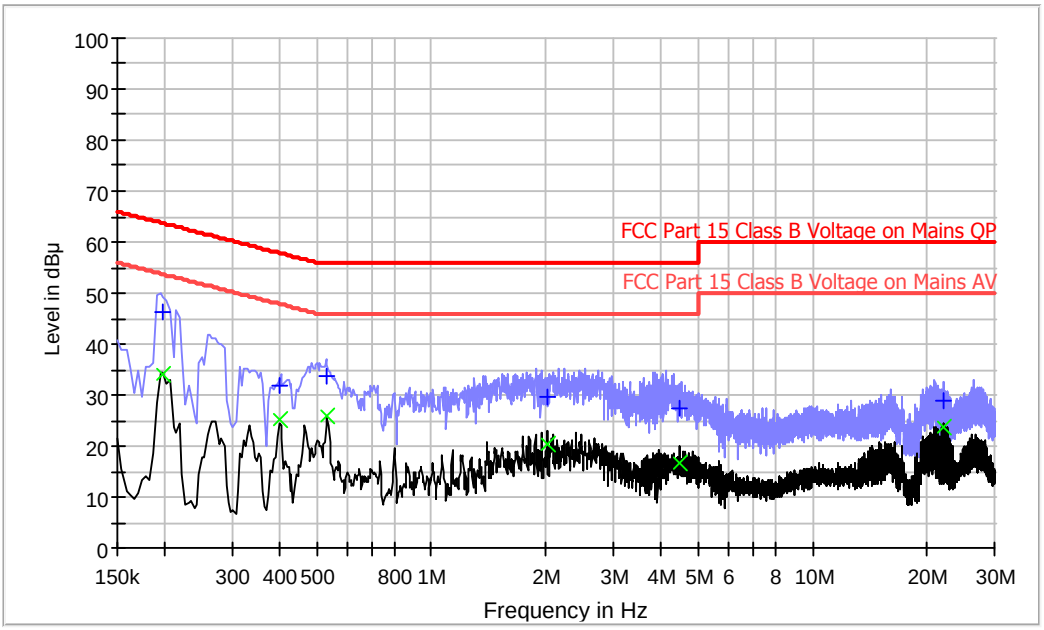
Billy Li Team Leader
*Typed/Printed Name*

12 February 2012
*Date*

Applicant: Comat Electronic (Shenzhen) Co., Ltd Date of Test: 12 February 2012
Model: CM9028G
Sample: 1/1
Worst Case Operating Mode: Transmit
Channel: 2474.000MHz

## Conducted Emissions Graph & Data

Live Line




## Result Table QP

| Frequency (MHz) | QuasiPeak (dB µ V) | Line | Corr. (dB) | Margin (dB) | Limit (dB µ V) |
|---|---|---|---|---|---|
| 0.198 | 46.4 | L1 | 9.6 | 17.3 | 63.7 |
| 0.398 | 31.8 | L1 | 9.6 | 26.1 | 57.9 |
| 0.534 | 33.7 | L1 | 9.6 | 22.3 | 56.0 |
| 2.010 | 29.7 | L1 | 9.8 | 26.3 | 56.0 |
| 4.470 | 27.6 | L1 | 9.8 | 28.4 | 56.0 |
| 21.994 | 28.9 | L1 | 10.1 | 31.1 | 60.0 |

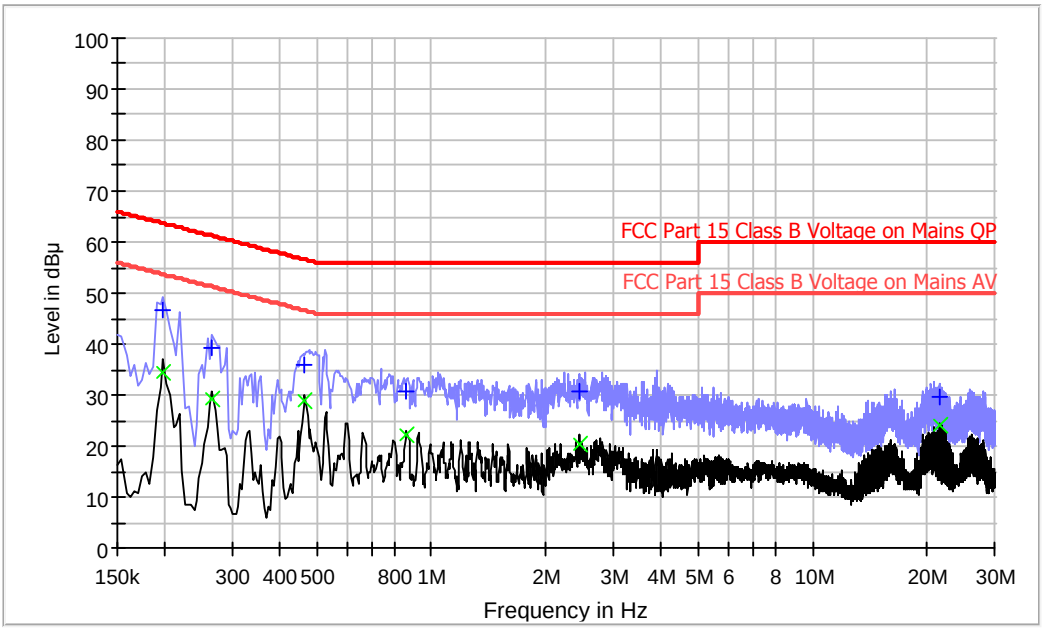
## Result Table AV

| Frequency (MHz) | Average (dB µ V) | Line | Corr. (dB) | Margin (dB) | Limit (dB µ V) |
|---|---|---|---|---|---|
| 0.198 | 34.0 | L1 | 9.6 | 19.7 | 53.7 |
| 0.398 | 25.3 | L1 | 9.6 | 22.6 | 47.9 |
| 0.534 | 25.9 | L1 | 9.6 | 20.1 | 46.0 |
| 2.010 | 20.2 | L1 | 9.8 | 25.8 | 46.0 |
| 4.470 | 16.5 | L1 | 9.8 | 29.5 | 46.0 |
| 21.994 | 23.7 | L1 | 10.1 | 26.3 | 50.0 |

Applicant: Comat Electronic (Shenzhen) Co., Ltd Date of Test: 12 February 2012
Model: CM9028G
Sample: 1/1
Worst Case Operating Mode: Transmit
Channel: 2474.000MHz

**Conducted Emissions Graph & Data**

Neutral Line




## Result Table QP

| Frequency (MHz) | QuasiPeak (dB µ V) | Line | Corr. (dB) | Margin (dB) | Limit (dB µ V) |
|---|---|---|---|---|---|
| 0.198 | 46.8 | N | 9.6 | 16.9 | 63.7 |
| 0.266 | 39.1 | N | 9.6 | 22.1 | 61.2 |
| 0.466 | 35.9 | N | 9.6 | 20.7 | 56.6 |
| 0.862 | 30.9 | N | 9.7 | 25.1 | 56.0 |
| 2.438 | 30.9 | N | 9.8 | 25.1 | 56.0 |
| 21.514 | 29.6 | N | 10.2 | 30.4 | 60.0 |

## Result Table AV

| Frequency (MHz) | Average (dB µ V) | Line | Corr. (dB) | Margin (dB) | Limit (dB µ V) |
|---|---|---|---|---|---|
| 0.198 | 34.5 | N | 9.6 | 19.2 | 53.7 |
| 0.266 | 29.4 | N | 9.6 | 21.8 | 51.2 |
| 0.466 | 28.8 | N | 9.6 | 17.8 | 46.6 |
| 0.862 | 22.4 | N | 9.7 | 23.6 | 46.0 |
| 2.438 | 20.3 | N | 9.8 | 25.7 | 46.0 |
| 21.514 | 24.2 | N | 10.2 | 25.8 | 50.0 |

Test Engineer: Billy Li

# EXHIBIT 4

# EQUIPMENT PHOTOGRAPHS

## 4.0 Equipment Photographs

For electronic filing, the photographs of the tested EUT are saved with filename: external photos.pdf & internal photos.pdf.

# EXHIBIT 5

# PRODUCT LABELLING

## 5.0 **Product Labelling**

For electronic filing, the FCC ID label artwork and the label location are saved with filename: label.pdf.

# EXHIBIT 6

# TECHNICAL SPECIFICATIONS

## 6.0 Technical Specifications

For electronic filing, the block diagram and schematics of the tested EUT are saved with filename: block.pdf and circuit.pdf respectively.

# EXHIBIT 7

# INSTRUCTION MANUAL

## 7.0 Instruction Manual

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

This manual will be provided to the end-user with each unit sold/leased in the United States.

# EXHIBIT 8

# MISCELLANEOUS INFORMATION

## 8.0 Miscellaneous Information

This miscellaneous information includes details of the measured bandedge, the test procedure and calculation of factor such as pulse desensitization.

8.1 Bandedge Plot

For electronic filing, the plot shows the fundamental emission when modulated is saved with filename: be.pdf. From the plot, the field strength of any emissions outside of the specified frequency band are attenuated to the general radiated emission limits in section 15.209. It fulfil the requirement of 15.249(d).

Peak Measurement

Bandedge compliance is determined by applying marker-delta method, i.e ( Bandedge Plot).

**(i) Lower channel 2408.0000MHz:**

Peak Resultant field strength = Fundamental emissions (peak value) – delta from the bandedge plot

= 99.5 dBµv/m – 35.2dB
= 64.3dBµv/m

Average field strength = 64.3 dBµv/m-22.2 dBµv/m
= 42.1 dBµv/m

**(ii) Upper channel 2474.0000MHz:**

Peak Resultant field strength = Fundamental emissions (peak value) – delta from the bandedge plot

= 99.2 dBµv/m – 46.4 dB
= 52.8 dBµv/m

Average field strength = 52.8 dBµv/m-22.2 dBµv/m
= 30.6 dBµv/m

The resultant field strength meets the general radiated emission limit in section 15.209, which does not exceed 74dBµv/m (Peak Limit) and 54dBµv/m (Average Limit).

8.1 Bandedge Plot (cont'd)

Pursuant to FCC part 15 Section 15.215(c), the 20dB bandwidth of the emission was contained within the frequency band designated (mentioned as above) which the EUT operated. The effects, if any, from frequency sweeping, frequency hopping, other modulation techniques and frequency stability over excepted variations in temperature and supply voltage were considered.

Figure 8.1 Bandwidth

8.2 Discussion of Pulse Desensitization

Pulse desensitivity is not applicable for this device.The effective period ($T_{eff}$) is approximately 7.8 ms for a digital "1" bit, as shown in the plots of Exhibit 8.3. With a resolution bandwidth (3 dB) of 100 kHz, the pulse desensitivity factor was 0 dB.

8.3 Calculation of Average Factor

Averaging factor in dB = 20 log (duty cycle)

The specification for output field strengths in accordance with the FCC rules specify measurements with an average detector. During testing, a spectrum analyzer incorporating a peak detector was used. Therefore, a reduction factor can be applied to the resultant peak signal level and compared to the limit for measurement instrumentation incorporating an average detector.

The time period over which the duty cycle is measured is 100 milliseconds, or the repetition cycle, whichever is a shorter time frame. The worst case (highest percentage on) duty cycle is used for the calculation. The duty cycle is measured by placing the spectrum analyzer in zero scan (receiver mode) and linear mode at maximum bandwidth (3 MHz at 3 dB down) and viewing the resulting time domain signal output from the analyzer on a Tektronix oscilloscope. The oscilloscope is used because of its superior time base and triggering facilities.

A plot of the worst-case duty cycle as detected in this manner are saved with filename: af.pdf

The duty cycle is simply the on-time divided by the period:

The duration of one cycle = 100 ms
Effective period of the cycle = 7.8ms

DC = 7.8ms / 100ms = 0.078 or 7.8%

Therefore, the averaging factor is found by $20 \log_{10} 0.078 = -22.2$dB

8.4 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services in the measurements of transmitters operating under Part 15, Subpart C rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.4 - 2003.

The transmitting equipment under test (EUT) is placed on a wooden turntable which is four feet in diameter and approximately one meter in height above the ground plane. During the radiated emissions test, the turntable is rotated and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The EUT is adjust through all three orthogonal axes to obtain maximum emission levels. The antenna height and polarization are varied during the testing to search for maximum signal levels.

Detector function for radiated emissions is in peak mode. Average readings, when required, are taken by measuring the duty cycle of the equipment under test and subtracting the corresponding amount in dB from the measured peak readings.

The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower.

Detector function for conducted emissions is in QP & AV mode and IFBW setting is 9 kHz from the frequency band 150 kHz to 30MHz.

For line-conducted emissions, the range scanned is 150 kHz to 30 MHz.

8.4 Emissions Test Procedures (cont'd)

The EUT is warmed up for 15 minutes prior to the test.

AC power to the unit is varied from 85% to 115% nominal and variation in the fundamental emission field strength is recorded. If battery powered, a new, fully Normal Link d battery is used.

Conducted measurements are made as described in ANSI C63.4 - 2003.

The IF bandwidth used for measurement of radiated signal strength was 10 kHz for emission below 30 MHz and 120 kHz for emission from 30 MHz to 1000 MHz. Where pulsed transmissions of short enough pulse duration warrant, a greater bandwidth is selected according to the recommendations of Hewlett Packard Application Note 150-2. Above 1000 MHz, a resolution bandwidth of 1 MHz is used.

Transmitter measurements are normally conducted at a measurement distance of three meters. However, to assure low enough noise floor in the restricted bands and above 1 GHz, signals are acquired at a distance of one meter or less. All measurements are extrapolated to three meters using inverse scaling, but those measurements taken at a closer distance are so marked.

# EXHIBIT 9

# CONFIDENTIALITY REQUEST

## 9.0 **Confidentiality Request**

For electronic filing, the confidentiality request of the tested EUT is saved with filename: request.pdf.

# EXHIBIT 10

# TEST EQUIPMENT LIST

## 10.0 **Test Equipment List**

| Equipment No. | Equipment | Manufacturer | Model No. | Serial No. | Cal. Date | Due Date |
|---|---|---|---|---|---|---|
| SZ061-03 | BiConiLog Antenna | ETS | 3142C | 00066460 | 02-Jul-11 | 02-Jan-13 |
| SZ185-01 | EMI Receiver | R&S | ESCI | 100547 | 08-Mar-11 | 08-Mar-12 |
| SZ061-08 | Horn Antenna | ETS | 3115 | 00092346 | 06-Jul-11 | 03-Jul-12 |
| SZ061-06 | Active Loop Antenna | Electro-Metrics | 6509 | 00069080 | 17-May-11 | 17-May-12 |
| SZ056-03 | Spectrum Analyzer | R&S | FSP 30 | 101148 | 08-Mar-11 | 08-Mar-12 |
| SZ181-04 | Preamplifier | Agilent | 8449B | 3008A02474 | 08-Mar-11 | 08-Mar-12 |
| SZ188-01 | Anechoic Chamber | ETS | RFD-F/A-100 | 4102 | 06-Mar-11 | 06-Mar-12 |
| SZ067-04 | Notch Filter | Micro-Tronics | BRM50702-02 | -- | 15-Jul-11 | 15-Jul-12 |
| SZ062-02 | RF Cable | RADIALL | RG 213U | -- | 25-Sep-11 | 25-Mar-12 |
| SZ062-06 | RF Cable | RADIALL | 0.04-26.5GHz | -- | 16-Sep-11 | 16-Sep-12 |
| SZ062-12 | RF Cable | RADIALL | 0.04-26.5GHz | -- | 16-Sep-11 | 16-Sep-12 |
| SZ185-02 | EMI Test Receiver | R&S | ESCI | 100692 | 05-Nov-11 | 05-Nov-12 |
| SZ187-01 | Two-Line V-Network | R&S | ENV216 | 100072 | 05-Nov-11 | 05-Nov-12 |
| SZ187-02 | Two-Line V-Network | R&S | ENV216 | 100073 | 05-Nov-11 | 05-Nov-12 |
| SZ188-03 | Shielding Room | ETS | RFD-100 | 4100 | 10-Sep-11 | 10-Sep-12 |