# FCC COMPLIANCE REPORT

**Order No.** : **SKR-04-019/R**
**Reference No.** : **F690501/LF-EMC000514**
**Applicant** : **BLUETEK CO., LTD.**
**Address of Applicant** : **416, Maetan3-dong, Suwon-city, Kyunggi-do, Korea**

**Equipment Under Test (EUT) :**

Name : FM Transmitter
Model No. : YCA-F1
FCC ID : R4LYCA-F1

**Standards** : FCC Part 2 & Part 15, Subpart C
ANSI C63.4:2003

**Date of Receipt** : **24 June 2004**
**Date of Test** : **14 October 2004**
**Date of Issue** : **19 October 2004**

| **Test Result :** | **PASS** |
|---|---|

In the configuration tested, the EUT complied with the standards specified above.

**Remarks :**

This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.



***Kew-Seung, Lim***
***EMC DIV. Manager***
***SGS KES CO., LTD. EMC Laboratory***

# Contents

# 1. General Information

## 1.1 Manufacturer Information

Manufacturer : BLUETEK CO., LTD.
Address : 416, Maetan3-dong, Suwon-city, Kyunggi-do, Korea

## 1.2 General Description of EUT

Name : FM Transmitter
Model No. : YCA-F1
FCC ID : R4LYCA-F1

## 1.3 Details of EUT

Fundamental Frequency : 88 -107.00MHz
Tested Power Supply : DC 12V
Port : DC IN
Description of Operating : Receiving MP3 Audio Signal from MP3 Player and transmitting it to the FM Receiver
Modifications to the EUT : None

## 1.4 Description of Support Units

| Product | Model No. | Serial No. | Manufacturer |
|---|---|---|---|
| MP3 Player | IFP-390T | N/A | AV Chaseway LTD. |
| DC Power Supply | M5P60-10A | 964420 | TET Electronics Corp. |
| | | | |

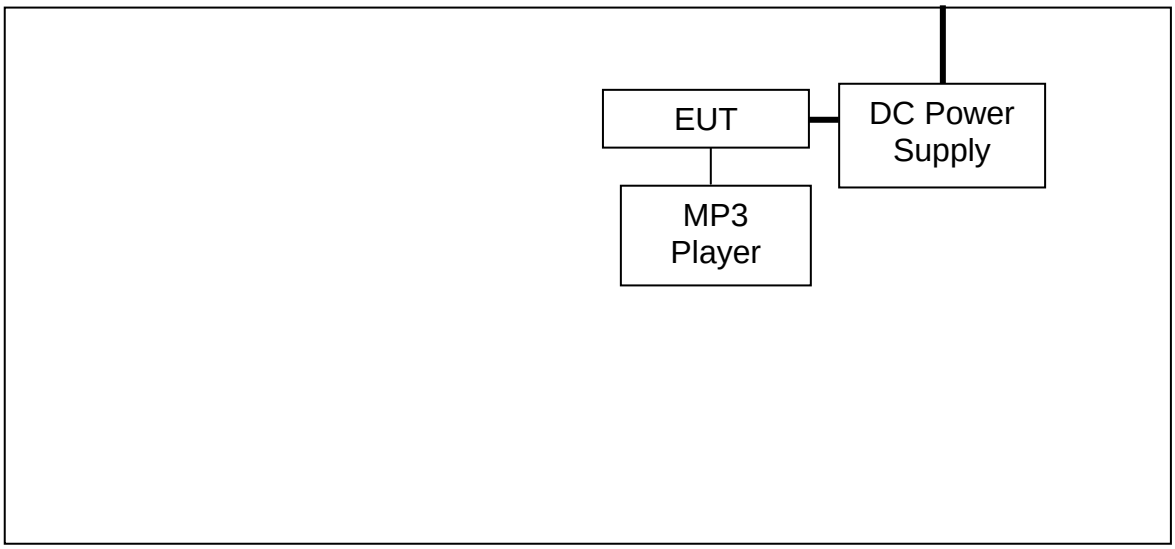
### 1.5 Cable List

| Start | | END | | Cable Spec | |
|---|---|---|---|---|---|
| Name | I/O Port | Name | I/O Port | Length | Shield |
| EUT | DC IN | DC Power Supply | DC Out | 2.0 | Unshielded |
| | - | MP3 Player | - | 0.5 | Unshielded |

### 1.6 System Configuration

| Description | Model | Serial No. | Manufacturer |
|---|---|---|---|
| Main Board | N/A | N/A | N/A |
| DC/DC Converter | N/A | N/A | N/A |
| | | | |

### 1.7 Test Set-Up Configuration



### 1.8 Measurment Procedure

Conducted Emission Testing was performed according ANSI C63.4:2003 in a shielded room with peripherals placed on a table, 0.8m high over a metal floor. It was located more than required distance away from the shielded room wall.

Radiated Emission Testing was performed according to ANSI C63.4:2003 at the open field test site. The EUT was placed in a 0.8m high table along with the peripherals. The turn table was separated from the antenna distance 3 meters. Cables were placed in a position to produce maximum emissions as determined by experimentation, and operation mode was selected for maximum.
The frequencies and amplitudes of maximum emission were measured at varying azimuths, antenna heights and antenna polarities. Reported are maximized emission levels.

### 1.9 Standards Applicable for Testing

Table of tests to be carried out under FCC Part 15, Subpart C

| Test Standards | Status |
|---|---|
| FCC Part 15.209 & 15.239 | Applicable |
| Deviation from Standard | No Deviation |

### 1.10 Summary of Results

The data collected shows that Model **YCA-F1** complies with Part 15.209 and 15.239 of FCC Technical Rules. The highest emission level observed was at 107.00MHz radiated emission with a margin of 2.01dB.
Emissions from the intentional radiator is confined within a band 200 kHz wide centered on the operating frequency. The 200kHz band lies wholly within the frequency range of 88-108 MHz
The field strength of any emissions within the permitted 200kHz band is not Exceed 200μV/m(48dBμV) at 3 meters with average detector and 68dBμV with peak detector.

# Radio Disturbance

## 2.1 Test Results

| | Results |
|---|---|
| Conducted Emission | **N/A** |
| Radiated Emission | **PASS** |

**Not applied because it is powered from an automobile DC 1.5V Battery.**

## 2.2 Frequency Range

Conducted Emission : 450 kHz - 30 MHz

Radiated Emission : 0kHz – 1000 MHz

## 2.3 Limits Of Radiated Emission

### 2.3.1 Limit Of Radiated Emission Of FCC Part 15.109 Class B

| FREQUENCY (MHz) | Class A (at 10m)* uV/m(dBuV/m) | Class B (at 3m)* uV/m(dBuV/m) |
|---|---|---|
| 30 - 88 | 90(39) | 100(40) |
| 88 - 216 | 150(43.5) | 150(43.5) |
| 216 - 960 | 210(46.5) | 200(46) |
| Above 960 | 300(49.0) | 500(54) |

### 2.3.2 Limit Of Radiated Emission Of FCC Part 15.209

| FREQUENCY (MHz) | Field Strength* Microvolts/Meter | Measurement Distance Meters |
|---|---|---|
| 0.009 – 0.490 | 2400/F(kHz) | 300 |
| 0.490 – 1.705 | 2400/F(kHz) | 30 |
| 1.705 – 30.0 | 30 | 30 |
| 30 – 88 | 100** | 3 |
| 88 – 216 | 150** | 3 |
| 216 - 960 | 200** | 3 |
| Above 960 | 500 | 3 |

Note : (1) *Detector Function : Peak

(2) The lower limit shall apply at the transition frequencies.

(3) Emission level (dBuV/m) = 20 log Emission level (uV/m).

(4) “F” Means Frequency

## 2.4.Test of Conducted Emission

### 2.4.1 Test Equipments

| Equipment | Manufacturer | Model No. | Date of Calibration |
|---|---|---|---|
| Test Receiver | R&S | ESPC | Nov. 2003 |
| LISN | 3825/2 | EMCO | Nov. 2003 |
| LISN | 3825/2 | EMCO | Dec. 2003 |
| Pulse Limiter | PMM | PL-01 | Jul. 2004 |
| Shielded Room | Daeil | N/A | Aug 2004 |

### 2.4.2 Test Site

**Name and address : SGS Testing Korea Co., Ltd.**
705, Dongchun-Dong, Yongin, Korea 449-840

### 2.4.3 Operating Environment

Temperature : degree C Humidity : %RH
Atmospheric Pressure : mBar

### 2.4.4 Measurement Data

**Measurment Bandwidth : 9kHz**

**Date of Test :**

| FREQ. | LEVEL(dBμV) | | LINE | LIMIT(dBμV) | | MARGIN(dBμV) | |
|---|---|---|---|---|---|---|---|
| (MHz) | Q-Peak | Average | | Q-Peak | Average | Q-Peak | Average |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

**Note : This test item is not applied because this product is supplied DC Power from a Battery.**

***See – Ho, Lee / Test Engineer***

## 2.5 Test of Radiated Emission

### 2.5.1 Test Instruments

| Description | Manufacturer | Model No. | Date of Calibration |
|---|---|---|---|
| Test Receiver | R & S | ESVS30 | Jan. 2004 |
| Spectrum Analyzer | H.P | E4411A | Oct. 2003 |
| RF Amplifier | H.P | 8447F | Jun. 2004 |
| Bilog Antenna | EMCO | CBL6111C | Jun. 2004 |
| RF Select s/w | DAIWA | CS201 | Apr. 2004 |

### 2.5.2 Test Site

**Name and address : SGS Testing Korea Co., Ltd.**

705, Dongchun-Dong, Yongin, Korea 449-840

### 2.5.3 Operating Environment

Temperature : 15.6 degree C Humidity : 32 %RH

Atmospheric Pressure : 1008 mBar

### 2.5.4 Measurement Data

**Measurment Bandwidth : 100kHz employing average detecter**

**Date of Test : June 25 2004**

**Operating Frequency in Each Channel**

**DC Battery Mode**

| FREQ. (kHz) | LEVEL (dBμV) | POL (H/V) | AF (dB) | CL (dB) | F/S (dBμV/m) | LIMIT (dB) | MARGIN (dB) |
|---|---|---|---|---|---|---|---|
| CH1 88.1MHz | | | | | | | |
| 88.10 | 31.6 | H | 9.09 | 2.36 | 43.05 | 48.0 | 4.95 |
| 176.20 | 17.1 | H | 9.33 | 3.54 | 29.97 | 43.5 | 13.53 |
| 264.30 | 5.9 | H | 12.67 | 4.11 | 22.69 | 46.0 | 23.31 |
| CH2 97.0MHz | | | | | | | |
| 97.00 | 29.5 | H | 10.14 | 2.40 | 42.04 | 48.0 | 5.96 |
| 194.00 | 21.9 | H | 8.90 | 3.60 | 34.40 | 43.5 | 9.10 |
| 291.00 | 6.5 | H | 12.98 | 4.33 | 23.81 | 46.0 | 22.19 |
| CH3 107.00MHz | | | | | | | |
| 107.00 | 30.2 | H | 10.85 | 2.54 | 43.59 | 48.0 | 4.41 |
| 214.00 | 23.3 | H | 9.87 | 3.71 | 36.89 | 43.5 | 6.61 |
| 321.00 | 8.9 | H | 13.67 | 4.65 | 27.22 | 46.0 | 18.78 |

** AF = Antenna Factor. ** CL = Cable Loss.*
**** Margin=Each Frequency Limit Level(dBuV) - (Level+AF+CL)*

***See – Ho, Lee / Test Engineer***

**Operating Frequency in Each Channel**

**DC Power Supply Mode**

| FREQ. (kHz) | LEVEL (dBμV) | POL (H/V) | AF (dB) | CL (dB) | F/S (dBμV/m) | LIMIT (dB) | MARGIN (dB) |
|---|---|---|---|---|---|---|---|
| CH1 88.1MHz | | | | | | | |
| 88.10 | 27.8 | H | 9.09 | 2.36 | 39.25 | 48.0 | 8.75 |
| 176.20 | 21.6 | H | 9.33 | 3.54 | 34.47 | 43.5 | 9.03 |
| 264.30 | 6.9 | H | 12.67 | 4.11 | 23.69 | 46.0 | 22.31 |
| CH2 97.0MHz | | | | | | | |
| 97.00 | 29.3 | H | 10.14 | 2.40 | 41.84 | 48.0 | 6.16 |
| 194.00 | 22.4 | H | 8.90 | 3.60 | 34.90 | 43.5 | 8.60 |
| 291.00 | 9.6 | H | 12.98 | 4.33 | 26.91 | 46.0 | 19.09 |
| CH3 107.00MHz | | | | | | | |
| 107.00 | 32.6 | H | 10.85 | 2.54 | 45.99 | 48.0 | 2.01 |
| 214.00 | 25.1 | H | 9.87 | 3.71 | 38.69 | 43.5 | 4.81 |
| 321.00 | 8.3 | H | 13.67 | 4.65 | 26.62 | 46.0 | 19.38 |

** AF = Antenna Factor. ** CL = Cable Loss.*

**** Margin=Each Frequency Limit Level(dBuV) - (Level+AF+CL)*

***See – Ho, Lee / Test Engineer***

## 3. Photographs of Test

- **Front View of Conducted Emission**

**N/A**

- **Rear View of Conducted Emission**

**N/A**

- **Front View of Radiated Emission**

- **Rear View of Radiated Emission**

## 4. Measured Emission Bandwidth