

F C C - TEST REPORT

REPORT NO.: 31912/2/400F

FCC – Test Report

Date: 2002-10-25

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FCC listed testlab
acc. to Section 2.948 of the FCC - Rules
in compliance with the requirements of
ANSI C63.4 - 1992

Product : Transmitter
Product Class : Low Power Communication Device
Transmitter
Model : K-2002-6TV
Applicant : KIN SUN ELECTRONICS LIMITED

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LABORATORY - REPORT

APPLICANT: KIN SUN ELECTRONICS LIMITED
ADDRESS: Unit P, Q & R, 4/F, Haribest Ind. Building
45-47 Au Pui Wan Street
Fo Tan, Shatin, NT
HONG KONG

DATE OF SAMPLE RECEIVED: 2002-10-07

DATE OF TESTING: 2002-10-24

DESCRIPTION OF SAMPLE:

Product: Transmitter
Product class: Low Power Communication Device Transmitter
Model number: K-2002-6TV
Rating: DC 3V ('AAA' Size Battery x 2)
Country of Origin: P.R. CHINA

INVESTIGATIONS REQUESTED: Measurements to the relevant clauses of F.C.C. Rules and Regulations
Part 15 Subpart C - Intentional Radiators

RESULTS: See the attached test sheets

CONCLUSIONS From the measurement data obtained, the tested sample was considered to have COMPLIED with the requirements for the relevant clauses of Federal Communications Commission Rules as specified above.

Authorized Signature

Remark: Purpose of those tests in this report is to provide the applicant with the necessary test data of their device for the submission to FCC with application for Equipment Authorization under the FCC Equipment Authorization Program. The tests themselves are not Approval Tests

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Summary of Test Results

Interference Radiation:

Test result: O.K.
Test data: See attached data sheet

Interference Voltage:

Test result: N.A.
Test data: N.A.

Measurement of Emissions within Band Edges

Test result: O.K.
Test data: See attached data sheet

PHOTOGRAPH OF THE SAMPLE



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TEST EQUIPMENT LIST

| Equipment | Manufacturer | Model | Serial No. | Remark |
|---------------------------------|-----------------|--------------------------|---------------------|-----------------------------------|
| Test Receiver | Rohde & Schwarz | ESH 3 | 863497/015 | 10KHz – 30MHz |
| Test Receiver | Rohde & Schwarz | ESVP | 860688/022 | 25MHz – 1,300 MHz |
| Artificial Mains Network (LISN) | Schwarzbeck | NSLK 8127 | -- | 2 x 10A, 50Ω, 50μH 10KHz-30MHz |
| Antenna System | Schwarzbeck | BBA 9106 / UHALP 9107 | -- | 30MHz – 1000MHz |
| Antenna Mast System | Schwarzbeck | AM9104 | -- | Max. 4 meters height |
| Spectrum Analyzer with Q. Peak | Tektronix | 2712 | B023006 | 9KHz – 1.8GHz |
| Interface for Spectrum 2712 | Tektronix | TD3F14A | -- | |
| Loop Antenna | Rohde & Schwarz | HFH2-Z2 | 871336/48 | 9KHz-30MHz |
| Test Receiver | Rohde & Schwarz | ESH 3 | 892580/006 | 10KHz – 30MHz |
| Test Receiver | Rohde & Schwarz | ESVP | 863512/012 | 25MHz – 1,300 MHz |
| Impulse Limiter | Rohde & Schwarz | ESH-3-Z2 | -- | |
| Antenna System | Schwarzbeck | BBA 9106 / UHALP 9107 | -- | 30MHz – 1000MHz |
| Signal Generator | Rohde & Schwarz | SWS 2 | 879113/42 | 100KHz – 1040 MHz |
| Digital Multimeter | Tektronix | DM2510G | DM- 2510GTW10555 | 10KHz – 30MHz |
| Turntable with Controller | Drehtisch | DT312 | -- | φ120 cm |

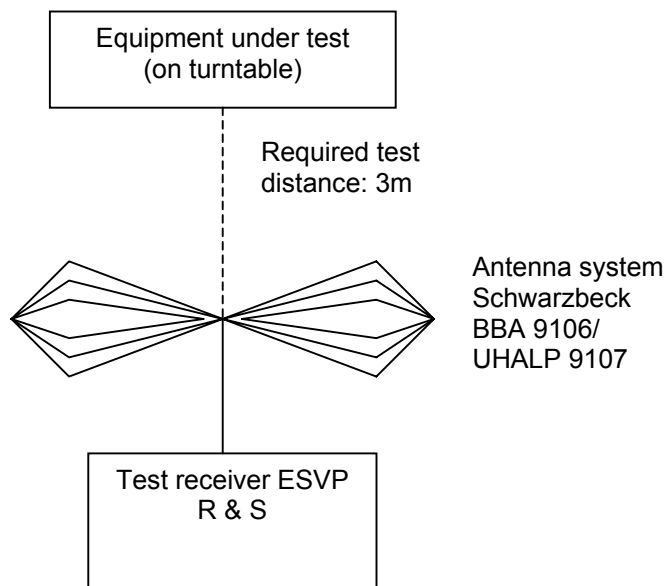
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Radiated Emission Test Procedure (> 30MHz)



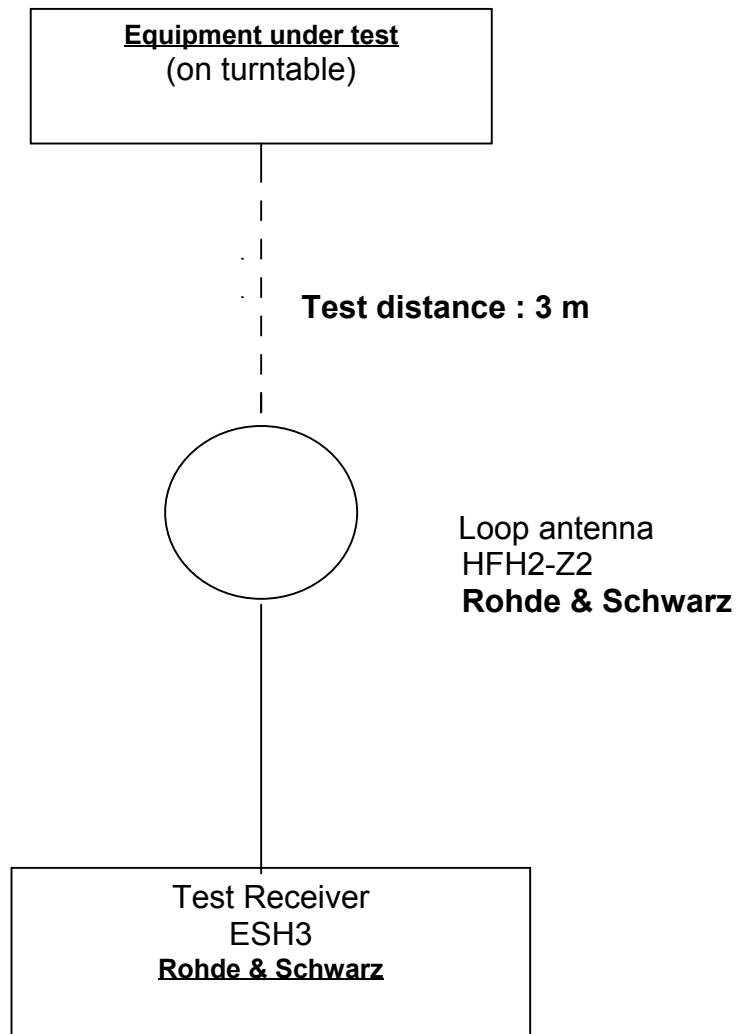
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Radiated Emission Test Procedure (9kHz – 30MHz)



Interference Radiation

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Measurement of Radiated Emissions

Acc: FCC Part 15 Subpart C

| | | |
|------------------------|-----------------------------|---|
| IECC Ref: | 31912/2/400F | Test Equipment |
| Model: | K-2002-6TV | Receiver: ESVP Rohde & Schwarz |
| Applicant: | KIN SUN ELECTRONICS LIMITED | Antenna: Schwarzbeck BBA 9106 and UHALP 9107 |
| Ser.Nr.: | 1 | |
| Set under test: | Transmitter | |
| Connected sets: | - | |
| Operating mode: | Operate | |

Radiation Measurement (Fundamental Frequency = 88.57 MHz)

1. Fundamental Frequency

| Frequency (MHz) | Maximum Test Result (dB(μV/m)) | | FCC Limit (dB(μV/m)) | |
|-----------------|--------------------------------|---------|----------------------|---------|
| | Peak | Average | Peak | Average |
| 88.57 | 49 | 41 | 68 | 48 |

2. Other Frequencies

| Frequency (MHz) | Horz. Reading dB(μV) | Vert. Reading dB(μV) | Antenna Factor (dB) | Horiz. Test Result dB(μV/m) | Vert. Test Result dB(μV/m) | Limit dB(μV/m) |
|-----------------|----------------------|----------------------|---------------------|-----------------------------|----------------------------|----------------|
| 30.00 | < 16 | < 16 | 18.4 | < 34.4 | < 34.4 | 40.0 |
| 150.00 | < 16 | < 16 | 15.1 | < 31.1 | < 31.1 | 43.5 |
| 177.10 | < 16 | < 16 | 16.0 | < 32.0 | < 32.0 | 43.5 |
| 265.70 | < 16 | < 16 | 18.2 | < 34.2 | < 34.2 | 46.0 |
| 354.30 | < 16 | < 16 | 17.5 | < 33.5 | < 33.5 | 46.0 |
| 442.90 | < 16 | < 16 | 18.9 | < 34.9 | < 34.9 | 46.0 |
| 500.00 | < 16 | < 16 | 19.7 | < 35.7 | < 35.7 | 46.0 |
| 1000.00 | < 16 | < 16 | 26.5 | < 42.5 | < 42.5 | 54.0 |

Remark:

ALL EMISSIONS MEASUREMENT RECORDED WITH VALUES WITH "<" SIGN MEANS NO SIGNIFICANT EMISSION. THESE EMISSIONS ARE IN THE NOISE FLOOR OF THE RHODE & SCHWARZ ANALYZER.

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Notes for Radiation Measurement

1. Measurement facility:

Measurement facility located at Fanling (Hong Kong), placed on file with the FCC Pursuant to Section 2.948 of the FCC Rules.

2. Distance between the EUT and measuring antenna:

3 meters.

3. Measuring instrumentations:

Rohde & Schwarz ESVP Test Receiver (20 - 1300 MHz) with a CISPR weighting QP detector, 6 dB bandwidth set at 120 KHz.

In the frequency range above 1000 MHz Spectrum Analyzer FMSM26 and Analyzer Display Unit FSA-D are used, bandwidth set at 100 kHz.

4. Measuring antenna:

Broad-band antenna for the frequency range 30 - 300 MHz and frequency range 300 - 1000 MHz, connected with 10 meters coaxial cable. Cable loss of the coaxial cable included in the Antenna Factor for measurement data. The antennas are capable of measuring both horizontal and vertical polarizations.

Loop antenna for the frequency range 9KHz – 30MHz, connected with 10 meters coaxial cable. Cable loss of the coaxial cable included in the measurement data. The center of the loop 1 m above the ground plane, positioned with its plane vertical at the specified distance and rotated about its vertical axis and placed horizontal for maximum response at each azimuth about the EUT.

In the frequency range above 1 GHz horn-antenna RGA 50/60 is used.

5. Frequency range scanned:

The frequency range 30 - 5000 MHz has been scanned. Readings of the highest emissions relating to the limit were reported as above.

6. Arrangement of EUT:

During the test, the sample was operated at rated supply voltage and arranged for maximum emissions. To find the maximum emission, the antenna was raised from 1 to 4 meters and was stopped at the maximum emission point.

7. Measuring Procedure:

In accordance with the relevant sections of the American National Standards Institute (ANSI) C63.4-1992 'Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9KHz to 40GHz'.

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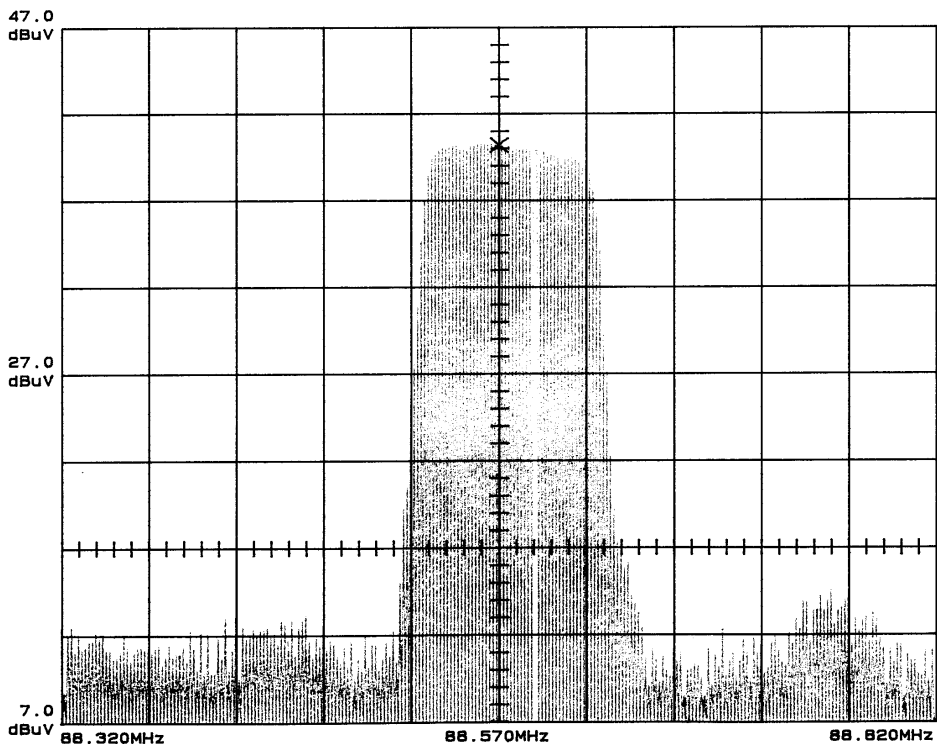
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Measurement Data of Emissions within Band Edges

Tek
2712



88.570MHz
47.0dBuV
50.0kHz/
30KHz RBW

ATTN 0dB
VF 30kHz
5 dB/
M 88.570MHz
M 40.5dBuV

TIME: 100 ms/DIV

X -- MARKER 1

MAX/MIN MODE

Note: Readouts
correspond to
waveform 'C'

Result : The occupied bandwidth at the lowest frequency was found to lie within the frequency range of 88 – 108 MHz.

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Notes for Measurement of Emissions within Band Edges

1. **Measurement facility:**
Measurement facility located at Fanling (Hong Kong) placed on file with the FCC Pursuant to Section 2.948 of the FCC Rules.
2. **Measuring instrumentations:**
Spectrum Analyzer: Tektronix 2712
3. **Frequency range scanned:**
The frequency range acc. to FCC rules and regulations part 15 subpart C - Intentional Radiators.
4. **Arrangement of EUT:**
During the test, the sample was operated.
5. **Measuring Procedure:**
In accordance with the relevant sections of American National Standards Institute (ANSI) C63.4 - 1992 'Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz'.