

TEST REPORT FOR CERTIFICATION
Class II Permissive Change
On Behalf for
Chungear Industrial Co., Ltd.
Fan-Light Remote Controller (Transmitter)
Model No.: JY121-5
FCC ID. : KUJCE9202

Prepared for : Chungear Industrial Co., Ltd.
106 Kanho Rd., Taichung,
Taiwan, R.O.C.

Prepared By : Audix Corporation
Technical Division EMC Department
No. 53-11, Tin-Fu Tsun, Lin-Kou,
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File Number : EM931420 (ATM-G92610)
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TEST REPORT CERTIFICATION (Class II Permissive Change)

Applicant : Chungear Industrial Co., Ltd.
Manufacturer #1 : Chungear Industrial Co., Ltd.
Manufacturer #2 : Satellite Electronic (Zhongshan) Ltd.
EUT Description : Fan-Light Remote Controller (Transmitter)
FCC ID. : KUJCE9202
(A) MODEL NO. : JY121-5
(B) SERIAL NO. : N/A
(C) POWER SUPPLY : DC 9V

Measurement Procedure Used:

FCC RULES AND REGULATIONS PART 15 SUBPART C, JULY 2004
AND ANSI C63.4-2003

The device described above was tested by AUDIX CORPORATION to determine the maximum emission levels emanating from the device. The maximum emission levels were compared to the FCC Part 15 subpart C limits both radiated and conducted emissions and output signal levels.

The measurement results are contained in this test report and AUDIX CORPORATION is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the FCC official limits.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of AUDIX CORPORATION

Date of Test : Jul. 02, 2003

Prepared by : Monica Chang Dec. 02, 2004
(Monica Chang/Administrator)

Test Engineer : Allen Wang Dec. 07 '04
(Allen Wang/Manager)

Approved & Authorized Signer : Leon Liu Dec. 7 2004
(Leon Liu/Senior Manager)

1. GENERAL INFORMATION

1.1. Description of Device

Description	:	Fan-Light Remote Controller (Transmitter)
Model Number	:	JY121-5
FCC ID	:	KUJCE9202
Applicant	:	Chungear Industrial Co., Ltd. 160 Kanho Rd., Taichung, Taiwan, R.O.C.
Manufacturer #1	:	Chungear Industrial Co., Ltd. 160 Kanho Rd., Taichung, Taiwan, R.O.C.
Manufacturer #2	:	Satellite Electronic (Zhongshan) Ltd. No. 15, Torch Hi-Tech Industrial Development Zone, Zhongshan City Guangdong Province, P. R. of China
Fundamental Frequency	:	299.6MHz
Power Supply	:	DC 9V
* Fan/Light Remote Controller -Receiver Model No.: JY199 FCC by DoC		

Description of the Change:

The purpose of this report is to add a new manufacturer “Satellite Electronic (Zhongshan) Ltd.”

1.2. Description of Test Facility

Name of Firm : Audix Corporation
 Technical Division EMC Department
 No. 53-11, Tin-Fu Tsun, Lin-Kou,
 Taipei County, Taiwan, R.O.C.

Site Location : No. 53-11, Tin-Fu Tsun, Lin-Kou,
 Taipei County, Taiwan, R.O.C.

Test Site : Semi-Anechoic Chamber

Site Description : May 16, 2003 Re-File on
 (Semi-Anechoic Chamber) Federal Communication Commission
 Registration Number: 90993

NVLAP Lab. Code : 200077-0
 (NVLAP is a NATA accredited body under Mutual Recognition Agreement)

1.3. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty (dB)
Conduction Test	150KHz~30MHz	±2.66dB
Radiation Test (Distance: 3m)	30MHz~300MHz	+4.26dB / -4.22dB
	300MHz~1000MHz	+5.28dB / -4.0dB

Remark : Uncertainty = $K\mu c(y)$

2. POWERLINE CONDUCTED MEASUREMENT

【The EUT only employs battery power for operation, no conductive emissions limits are required according to FCC Part 15 Section §15.207】

3. RADIATED EMISSION MEASUREMENT

3.1. Test Equipment

The following test equipment was used during the radiated emission tests :

3.1.1. For 30MHz~1000MHz Frequency (at Semi-Anechoic Chamber)

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	HP	8593EM	3826A00248	Sep. 23, 02'	Sep. 22, 03'
2.	Test Receiver	R&S	ESVP	879691/036	Jul. 09, 02'	Jul. 08, 03'
3.	Pre-Amplifier	HP	8447D	2944A06305	Mar. 04, 03'	Mar. 03, 04'
4.	Broadband Antenna	Schwarzbeck	BBA 9106	A3L	Feb. 23, 03'	Feb. 22, 04'
5.	Broadband Antenna	Schwarzbeck	UHALP9108-A	0138	Feb. 23, 03'	Feb. 22, 04'

3.1.2. For 1GHz~4GHz frequency (at Semi-Anechoic Chamber)

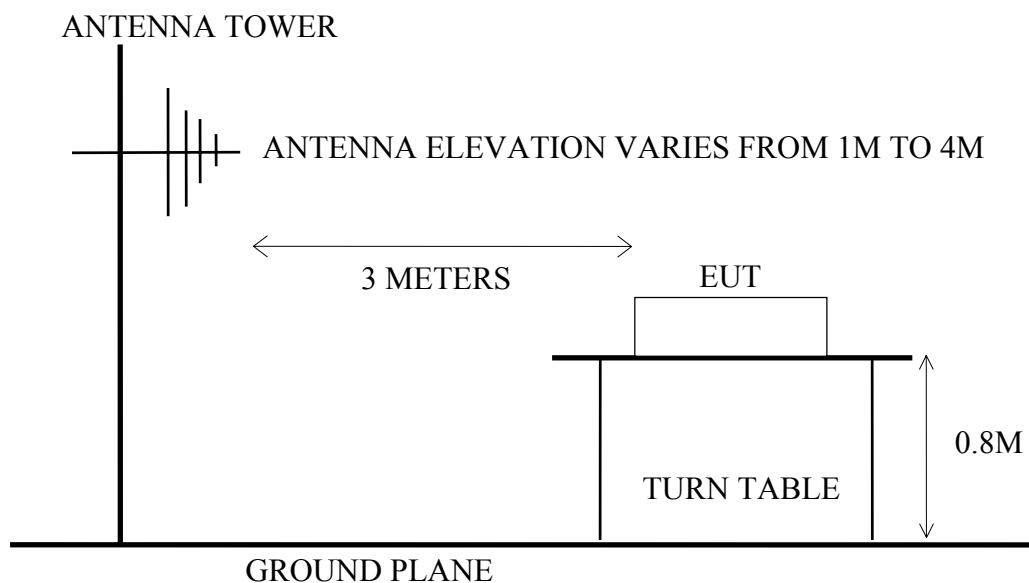
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	HP	8593EM	3826A00248	Sep. 23, 02'	Sep. 22, 03'
2.	Pre-Amplifier	HP	8449B	3008A00529	Jan. 07, 03'	Jan. 06, 04'
3.	Horn Antenna	EMCO	3115	9112-3775	Apr. 21, 03'	Apr. 20, 04'

3.2. Test Setup

3.2.1. Block Diagram of connection between EUT and simulators



3.2.2. Semi-Anechoic Chamber (3M) Setup Diagram



3.3. Radiation Limit (§15.231)

3.3.1. Radiation Limit (§15.231)

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMITS	
		$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$
Fundamental Freq.	3	5400.0	74.64 (Quasi-Peak)
Spurious Emission	3	540.0	54.64 (Quasi-Peak)

Remark : (1) Emission level ($\text{dB}\mu\text{V/m}$) = $20 \log$ Emission level ($\mu\text{V/m}$)

(2) The tighter limit applies at the edge between two frequency bands.

(3) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

(4) Where limit of Fundamental Freq. is calculated by: $41.6667 \times 299.6 - 7083.3333 = 5400.0 \mu\text{V/m} = 74.64 \text{dB}\mu\text{V/m}$

limit of spurious emission is $74.64 \text{dB}\mu\text{V/m} - 20 \text{dB} = 54.64 \text{dB}\mu\text{V/m}$

(5) The limits in this table are based on CFR 47 Part 15.205(a)(b) and Part 15.209(a) and Part 15.231(b).

3.4. EUT's Configuration during Compliance Measurement

The following equipment was installed on radiated measurement to meet the commission requirement and operating in a manner which tended to maximize its emission characteristics in a normal application.

3.4.1. Fan-Light Remote Controller (Transmitter) (EUT)

Model Number : JY121-5
 Serial Number : N/A
 Manufacturer : Chungear Industrial Co., Ltd.
 Fundamental Frequency : 299.6MHz

3.5. Operating Condition of EUT

3.5.1. Setup the EUT and simulator as shown on 3.2.

3.5.2. Turned on the power of all equipment.

3.5.3. The EUT (Fan-Light Remote Controller (Transmitter)) emitted the fundamental frequency with data code.

3.5.4. The EUT was at working on maximum transmitting status (high & Light on) during all testing.

3.5.5. Repeated the above procedures from 3.5.3 to 3.5.4.

3.6. Test Procedure

The EUT and its simulators were placed on a turn table which was 0.8 meter above the ground. The turn table rotated 360 degrees to determine the position of the maximum emission level. For 30MHz to 4GHz frequency range, EUT was set 3 meters away from the receiving antenna which was mounted on a antenna tower. The antenna moved up and down between 1 to 4 meters for 30MHz to 4GHz frequency range to find out the maximum emission level. Broadband antenna such as calibrated biconical and log- periodical antenna or horn antenna were used as a receiving antenna. Both horizontal and vertical polarization of the antenna were set on measurement. In order to find the maximum emission, all of the interface cables were manipulated according to FCC ANSI C63.4-1992 regulation.

The bandwidth of test receiver was set at 120KHz below 1GHz and resolution bandwidth of spectrum analyzer was set at 1MHz above 1GHz.

EUT with three kinds of position (on Stand 、 Side 、 Lie) were done during radiated measurement and all the test results are listed in section 3.7.

3.7. Radiated Emission Noise Measurement Results

PASSED. All emissions not reported below are too low against the prescribed limits.

3.7.1. 30MHz to 1000MHz Frequency Range Measurement Results

Distance: 3 Meters

Date of Test :	Jul. 02, 2003	Temperature :	22°C
EUT :	Fan-Light Remote Controller (Transmitter)	Humidity :	63%
Test Position :	EUT on Stand		

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Horizontal dBμV	Emission Level Horizontal dBμV/m	Limits dBμV/m	Margin dB
Fundamental Freq. (Quasi-Peak Value)						
299.600	26.80	3.90	27.00	57.70	74.64	16.94
Spurious / Harmonic Freq. (Below 1000MHz, Quasi-Peak Value)						
139.890	20.17	2.50	1.75	24.42	54.64	30.22
231.690	23.79	3.30	1.26	28.35	54.64	26.29
* 276.780	25.46	3.70	1.23	30.39	46.00	15.61
599.210	19.50	6.30	10.24	36.04	54.64	18.60
882.400	22.78	7.30	1.14	31.22	54.64	23.42
898.800	23.00	7.30	1.43	31.73	54.64	22.91

- Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. Measurement was up to 10th harmonics (~4GHz), but the emissions level were too low against the official limit and not report.
 3. ‘*’ The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.

Date of Test : Jul. 02, 2003 Temperature : 22°C

EUT : Fan-Light Remote Controller (Transmitter) Humidity : 63%

Test Position : EUT on Side

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Vertical dBμV	Emission Level Vertical dBμV/m	Limits dBμV/m	Margin dB
Fundamental Freq. (Quasi-Peak Value)						
299.600	26.66	3.90	28.73	59.29	74.64	15.35
Spurious / Harmonic Freq. (Below 1000MHz, Quasi-Peak Value)						
37.290	20.80	1.20	3.45	25.45	54.64	29.19
69.690	13.80	1.70	6.11	21.61	54.64	33.03
599.210	20.40	6.30	16.07	42.77	54.64	11.87
898.800	23.04	7.30	0.88	31.22	54.64	23.42
953.800	23.90	7.60	0.27	31.77	54.64	22.87

- Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
2. Measurement was up to 10th harmonics (~4GHz), but the emissions level were too low against the official limit and not report.
3. ‘*’ The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.

Date of Test : Jul. 02, 2003 Temperature : 22°C

EUT : Fan-Light Remote Controller (Transmitter) Humidity : 63%

Test Position : EUT on Lie

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Horizontal dBμV	Emission Level Horizontal dBμV/m	Limits dBμV/m	Margin dB
Fundamental Freq. (Quasi-Peak Value)						
299.600	26.80	3.90	35.82	66.52	74.64	8.12
Spurious / Harmonic Freq. (Below 1000MHz, Quasi-Peak Value)						
43.230	19.76	1.30	9.11	30.17	54.64	24.47
55.380	15.22	1.50	8.90	25.62	54.64	29.02
* 111.540	18.36	2.20	8.46	29.02	43.50	14.48
122.340	19.00	2.30	12.93	34.23	54.64	20.41
* 128.280	19.10	2.40	11.01	32.51	43.50	10.99
142.590	20.47	2.50	8.88	31.85	54.64	22.79
599.210	19.50	6.30	20.26	46.06	54.64	8.58
898.800	23.00	7.30	1.68	31.98	54.64	22.66

- Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
2. Measurement was up to 10th harmonics (~4GHz), but the emissions level were too low against the official limit and not report.
3. ‘*’ The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.

Date of Test : Jul. 02, 2003 Temperature : 22°C

EUT : Fan-Light Remote Controller (Transmitter) Humidity : 63%

Test Position : EUT on Lie

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Vertical dBμV	Emission Level Vertical dBμV/m	Limits dBμV/m	Margin dB

Fundamental Freq. (Quasi-Peak Value)						
299.600	26.66	3.90	31.89	62.45	74.64	12.19
Spurious / Harmonic Freq. (Below 1000MHz, Quasi-Peak Value)						
64.290	14.20	1.67	7.02	22.89	54.64	31.75
66.180	14.01	1.70	8.91	24.62	54.64	30.02
* 135.030	19.16	2.40	5.68	27.24	43.50	16.26
187.140	20.46	2.90	6.90	30.26	54.64	24.38
* 272.730	25.20	3.70	7.52	36.42	46.00	9.58
599.210	20.40	6.30	12.68	39.38	54.64	15.26
898.800	23.04	7.30	2.53	32.87	54.64	21.77

- Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
2. Measurement was up to 10th harmonics (~4GHz), but the emissions level were too low against the official limit and not report.
3. ‘*’ The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.

3.7.2. 1GHz to 4GHz Frequency Range Measurement Results

Distance: 3 Meters

The emission level from the EUT is too low to be measured; therefore, the reading values are not reported. All the scanning waveforms are attached in the following pages.

Date of Test : Jul. 02, 2003 Temperature : 22°C

EUT : Fan-Light Remote Controller (Transmitter) Humidity : 63%

Test Position : EUT on Stand

Spurious / Harmonic Freq. (Above 1GHz, Peak Value)

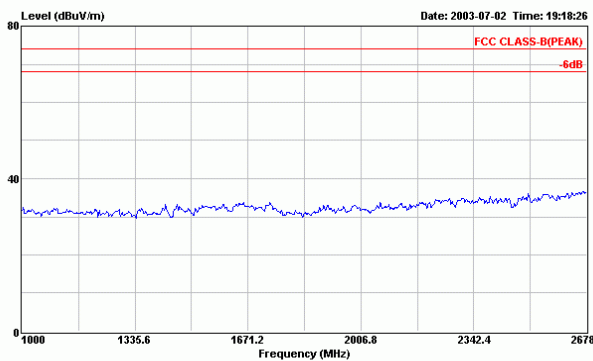


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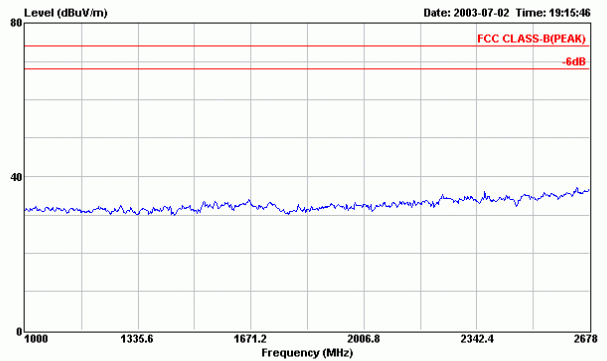
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Data#: 22 File#: D:\Chungear-G920610.EMI



Site : Anechoic Chamber
Condition : FCC CLASS-B(PEAK) 3m 3115 HORIZONTAL
ENVIRONMENT : 22°C/63%
EUT : Fan-Light Remote Controller (TX)
POWER : DC 9V
MEMO : M/N:JY121-5 (Stand)

Data#: 21 File#: D:\Chungear-G920610.EMI



Site : Anechoic Chamber
Condition : FCC CLASS-B(PEAK) 3m 3115 VERTICAL
ENVIRONMENT : 22°C/63%
EUT : Fan-Light Remote Controller (TX)
POWER : DC 9V
MEMO : M/N:JY121-5 (Stand)

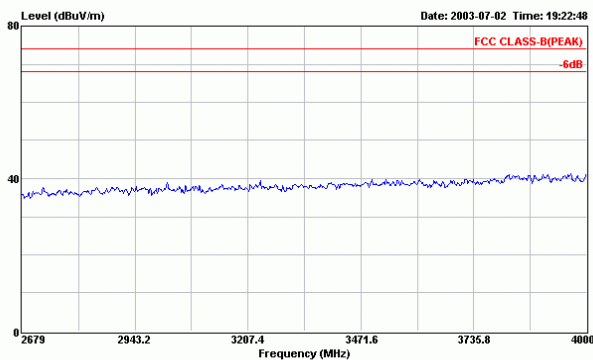


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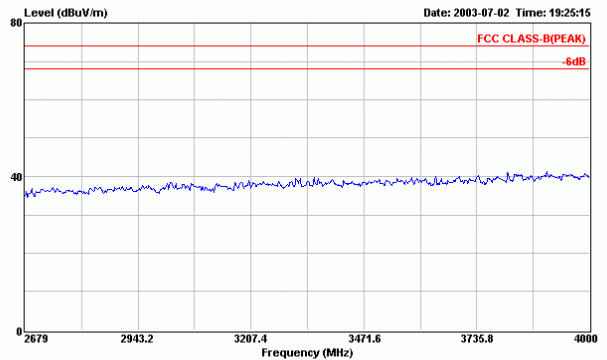
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Data#: 23 File#: D:\Chungear-G920610.EMI



Site : Anechoic Chamber
Condition : FCC CLASS-B(PEAK) 3m 3115 HORIZONTAL
ENVIRONMENT : 22°C/63%
EUT : Fan-Light Remote Controller (TX)
POWER : DC 9V
MEMO : M/N:JY121-5 (Stand)

Data#: 24 File#: D:\Chungear-G920610.EMI



Site : Anechoic Chamber
Condition : FCC CLASS-B(PEAK) 3m 3115 VERTICAL
ENVIRONMENT : 22°C/63%
EUT : Fan-Light Remote Controller (TX)
POWER : DC 9V
MEMO : M/N:JY121-5 (Stand)

Date of Test : Jul. 02, 2003 Temperature : 22℃

EUT : Fan-Light Remote Controller Humidity : 63%
(Transmitter)

Test Position : EUT on Side

Spurious / Harmonic Freq. (Above 1GHz, Peak Value)

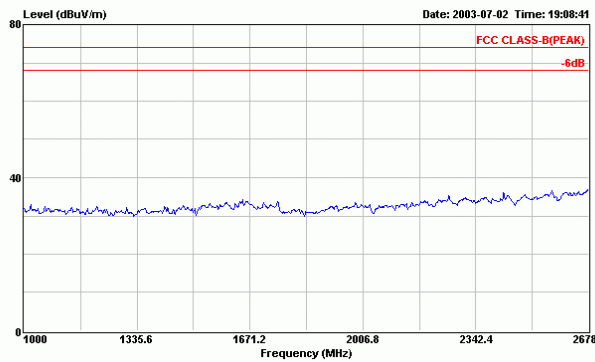


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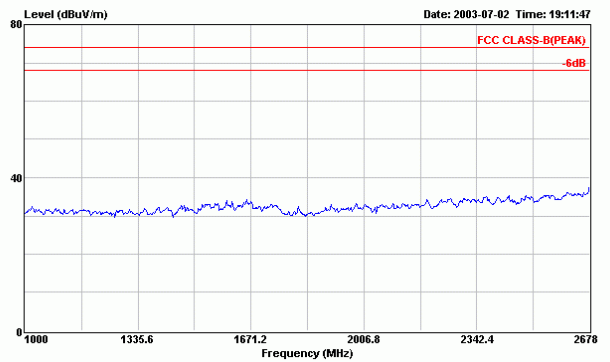
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Data#: 19 File#: D:\Chungear-G920610.EMI



Site : Anechoic Chamber
Condition : FCC CLASS-B(PEAK) 3m 3115 HORIZONTAL
ENVIRONMENT : 22°C/63%
EUT : Fan-Light Remote Controller (TX)
POWER : DC 9V
MEMO : M/N:JY121-5 (Side)

Data#: 20 File#: D:\Chungear-G920610.EMI



Site : Anechoic Chamber
Condition : FCC CLASS-B(PEAK) 3m 3115 VERTICAL
ENVIRONMENT : 22°C/63%
EUT : Fan-Light Remote Controller (TX)
POWER : DC 9V
MEMO : M/N:JY121-5 (Side)

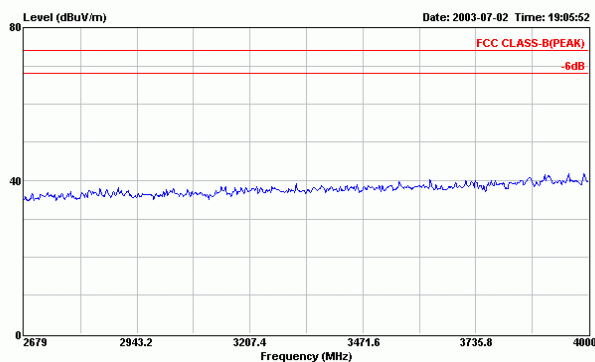


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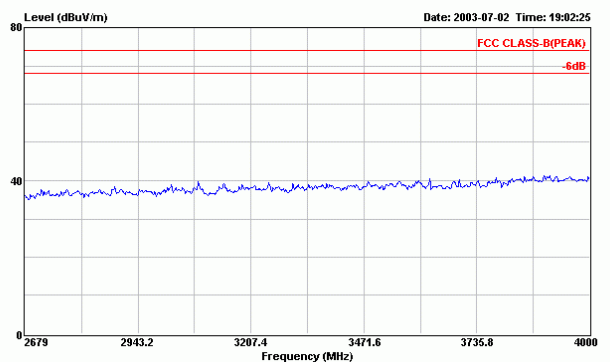
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Data#: 18 File#: D:\Chungear-G920610.EMI



Site : Anechoic Chamber
Condition : FCC CLASS-B(PEAK) 3m 3115 HORIZONTAL
ENVIRONMENT : 22°C/63%
EUT : Fan-Light Remote Controller (TX)
POWER : DC 9V
MEMO : M/N:JY121-5 (Side)

Data#: 17 File#: D:\Chungear-G920610.EMI



Site : Anechoic Chamber
Condition : FCC CLASS-B(PEAK) 3m 3115 VERTICAL
ENVIRONMENT : 22°C/63%
EUT : Fan-Light Remote Controller (TX)
POWER : DC 9V
MEMO : M/N:JY121-5 (Side)

Date of Test : Jul. 31, 2002 Temperature : 22℃

EUT : Fan-Light Remote Controller (Transmitter) Humidity : 63%

Test Position : EUT on Lie

Spurious / Harmonic Freq. (Above 1GHz, Peak Value)

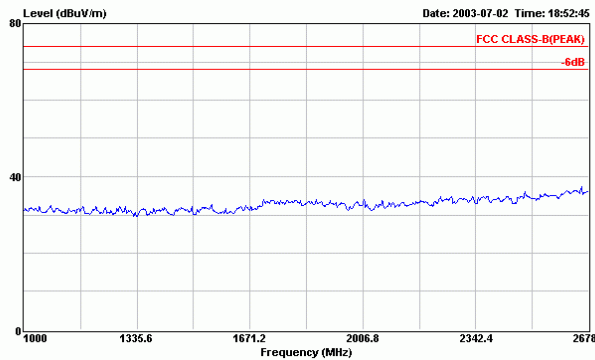


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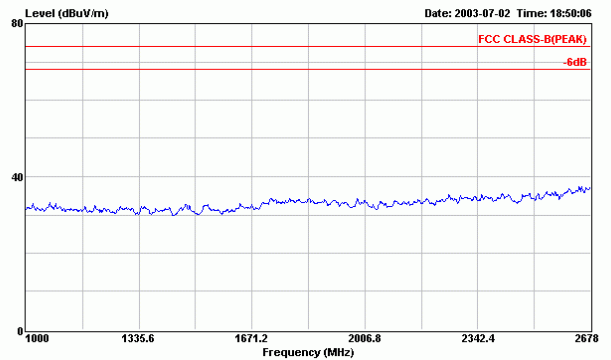
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Data#: 14 File#: D:\Chungear-G920610.EMI



Site : Anechoic Chamber
Condition : FCC CLASS-B(PEAK) 3m 3115 HORIZONTAL
ENVIRONMENT : 22°C/63%
EUT : Fan-Light Remote Controller (TX)
POWER : DC 9V
MEMO : M/N:JV121-5 (Lie)

Data#: 13 File#: D:\Chungear-G920610.EMI



Site : Anechoic Chamber
Condition : FCC CLASS-B(PEAK) 3m 3115 VERTICAL
ENVIRONMENT : 22°C/63%
EUT : Fan-Light Remote Controller (TX)
POWER : DC 9V
MEMO : M/N:JV121-5 (Lie)

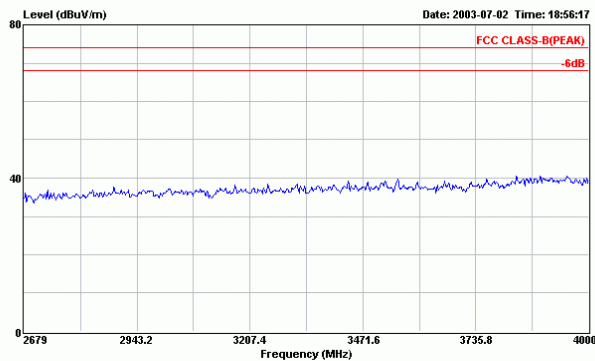


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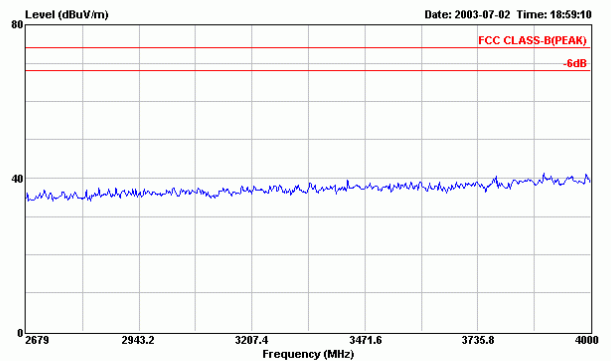
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Site : Anechoic Chamber
Condition : FCC CLASS-B(PEAK) 3m 3115 HORIZONTAL
ENVIRONMENT : 22°C/63%
EUT : Fan-Light Remote Controller (TX)
POWER : DC 9V
MEMO : M/N:JV121-5 (Lie)

Data#: 16 File#: D:\Chungear-G920610.EMI



Site : Anechoic Chamber
Condition : FCC CLASS-B(PEAK) 3m 3115 VERTICAL
ENVIRONMENT : 22°C/63%
EUT : Fan-Light Remote Controller (TX)
POWER : DC 9V
MEMO : M/N:JV121-5 (Lie)

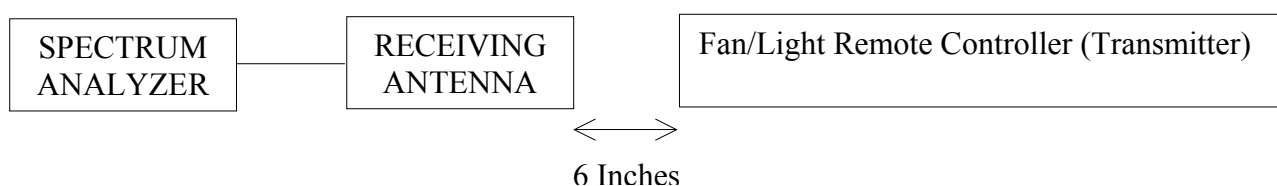
4. EMISSION BANDWIDTH MEASUREMENT

4.1. Test Equipment

The following test equipment was used during the Emission Bandwidth Test :

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
	Spectrum Analyzer	HP	8465EC	3946A00249	Aug. 09, 02'	Aug. 08, 03'
	Antenna	DIAMOND	RH799	2944A06305	N/A'	N/A

4.2. Block Diagram of Test Setup



4.3. Specification Limits (§15.231-(c))

The bandwidth of emission shall be no wider than 0.25% of the center frequency for device operating above 70MHz and below 900MHz. Bandwidth is determined at the points 20dB down from the modulated carrier.

4.4. EUT's Configuration during Compliance Measurement

The configuration of EUT were same as section 3.4.

4.5. Emission Bandwidth Measurement Results

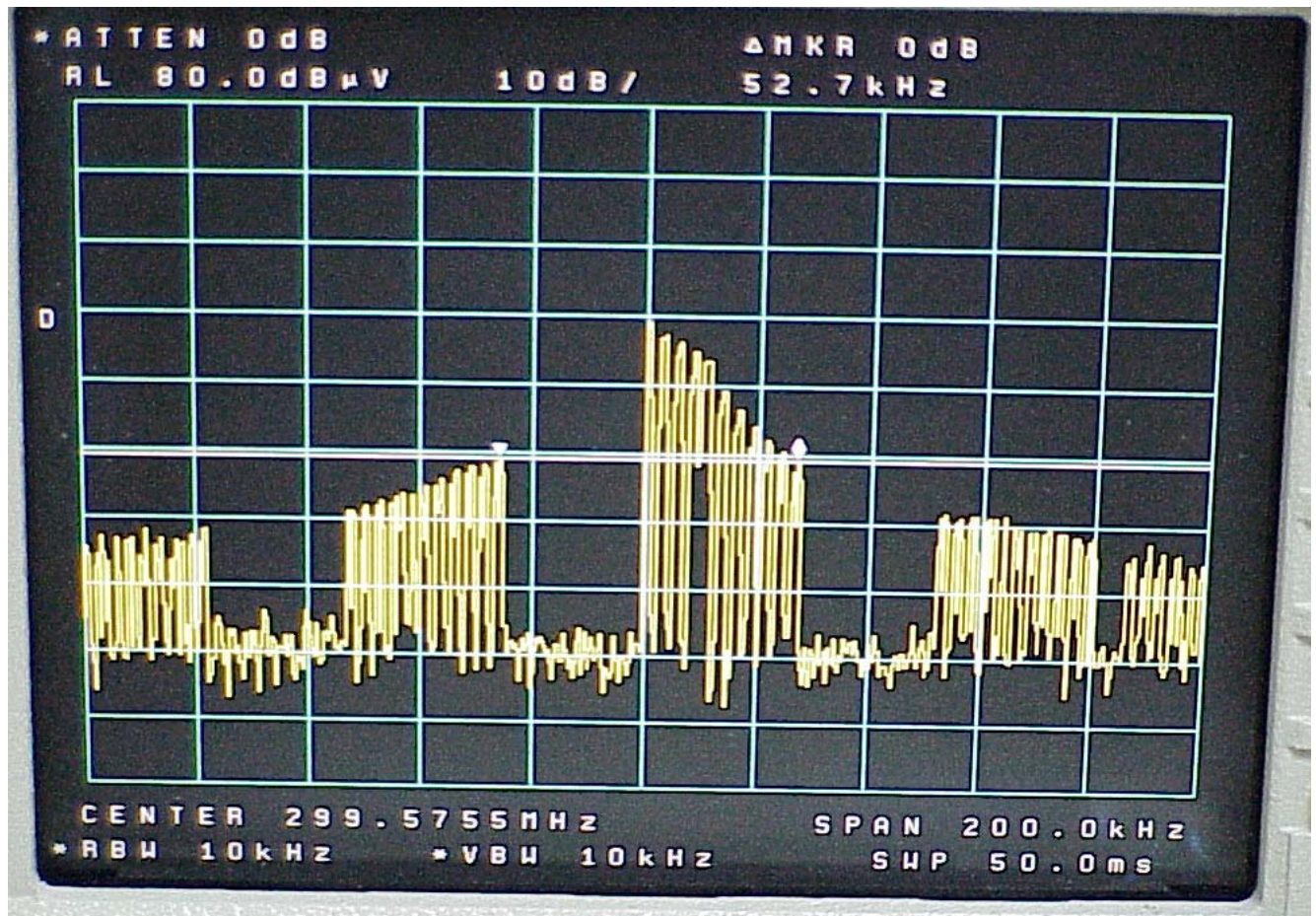
Fundamental Frequency: 299.6MHz

Test Date: Jul. 02, 2003 Temperature: 25.3°C Humidity: 62%

No.	Center Frequency	Bandwidth	Tolerance (%)
1.	299.600MHz	0.0527MHz	0.0175%

The graph of bandwidth measured is attached in next page.

Graph of Bandwidth Measurement



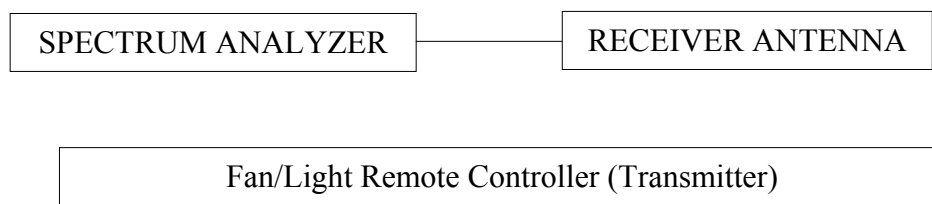
5. PERIODIC OPERATED MEASUREMENT

5.1. Test Equipment

The following test equipment was used during the Emission Bandwidth Test :

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	HP	8465EC	3946A00249	Aug. 09, 02'	Aug. 08, 03'
2.	Antenna	DIAMOND	RH799	2944A06305	N/A'	N/A

5.2. Block Diagram of Test Setup



5.3. Specification Limits [§15.231-(a)-(1)]

The operation of this device is manually operated transmitter that is automatically deactivated the transmitter within not more than 5 seconds of being released, Compliance with §15.231 (a)- (1).

5.4. EUT's Configuration during Compliance Measurement

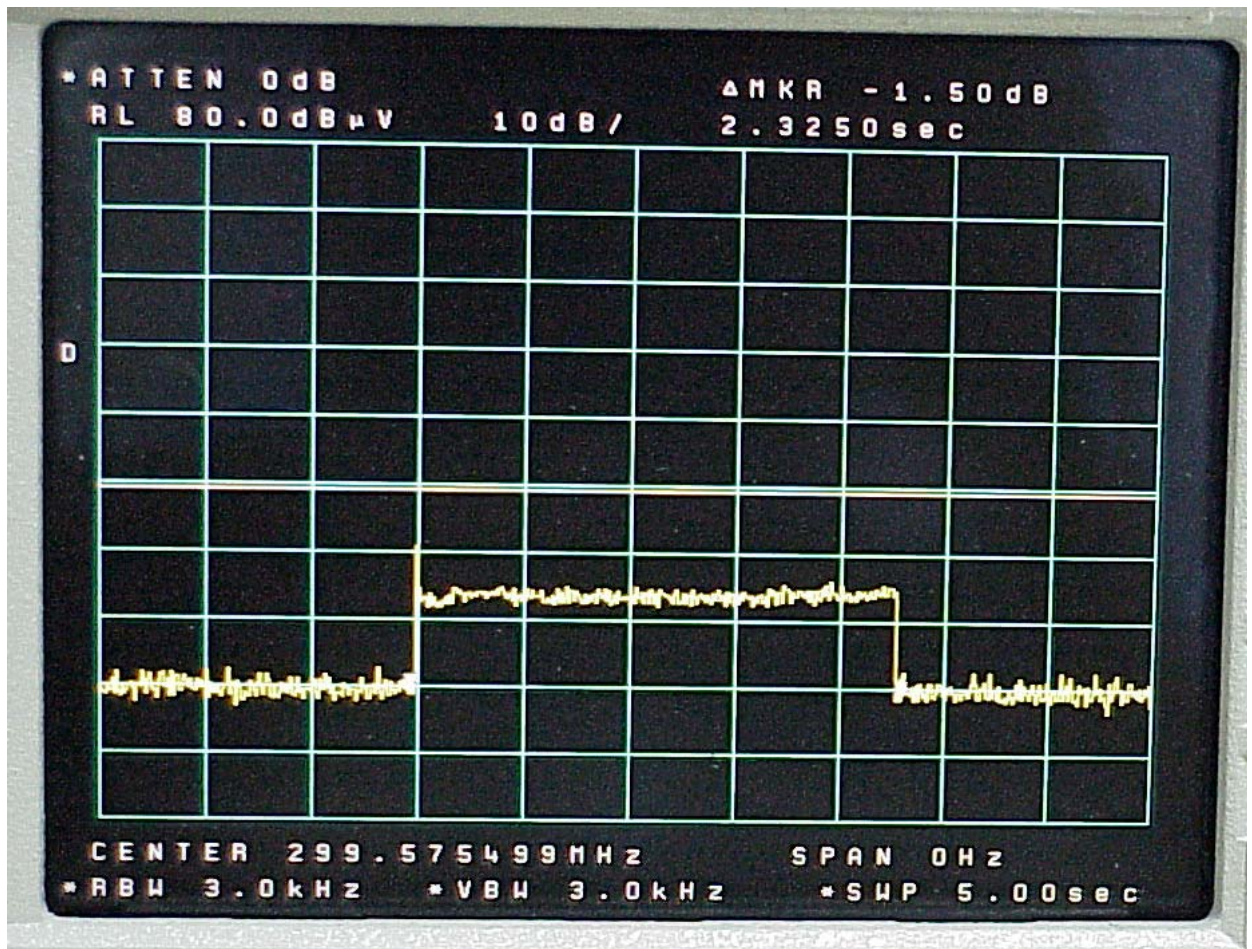
The configuration of EUT were same as section 3.4.

5.5. Periodic Operated Measurement Results

PASS. T=2.325 sec. (< 5sec.)

The graph of testing is attached in next page.

Graph of Periodic Operated Measurement



6. DEVIATION TO TEST SPECIFICATIONS

【NONE】

7. PHOTOGRAPHS

7.1. Photos of Radiated Measurement at Semi-Anechoic Chamber (30~1000MHz) EUT on Stand



EUT on Side



EUT on Lie



7.2. Photos of Radiated Measurement at Semi-Anechoic Chamber (1~4GHz)

EUT on Stand



EUT on Side



EUT on Lie



7.3. Photos of Emission Bandwidth Measurement



7.4. Photos of Periodic Operated Measurement

