

TEST REPORT FOR CERTIFICATION
On Behalf of
Chungear Industrial Co., Ltd.

Fan-Light Remote Controller (Transmitter)

Model : JY167

FCC ID : KUJ9304

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

Prepared by : Audix Corporation
Technical Division EMC Department
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TEST REPORT CERTIFICATION

Applicant : Chungear Industrial Co., Ltd.
Manufacturer : Satellite Electronic (Zhongshan) Ltd.
EUT Description : Fan-Light Remote Controller (Transmitter)
FCC ID : KUJ9304
(A) MODEL NO. : JY167
(B) SERIAL NO. : N/A
(C) POWER SUPPLY : DC 9V

Measurement Procedure Used:

FCC RULES AND REGULATIONS PART 15 SUBPART C, APR. 2004
AND ANSI C63.4-2001
(FCC CFR 47 Part 15C, §15.207, §15.209 and §15.231)

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.

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. 07 ~ Sep.15, 2004

Prepared by : Nita Lee Sep.17.2004
(Nita Lee/Assistant Administrator)

Test Engineer : Ben Cheng Sep.20.2004
(Ben Cheng/Section Manager)

Approve & Authorized Signer : Leon Liu Sep.20.2004
(Leon Liu/Senior Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Description	:	Fan-Light Remote Controller (Transmitter)
Model Number	:	JY167
FCC ID	:	KUJ9304
Applicant	:	Chungear Industrial Co., Ltd. 160 Kanho Rd., Taichung, Taiwan, R.O.C.
Manufacturer	:	Satellite Electronic (Zhongshan) Ltd. No. 15 Zhongshan Troch Hi-Tech Industrial Development Zone, Zhongshan City, Guangdong Province 528437 China.
Fundamental Frequency	:	299.6MHz
Power Supply	:	DC 9V
Date of Receipt of Sample	:	Jun. 29, 2004
Date of Test	:	Jul. 07 ~ Sep.15, 2004

- * Fan/Light Remote Controller -Receiver
 (1)Model No.: JY199, FCC by DoC
 (2)Model No.: JY326B, FCC by DoC

Remark:

Antenna requirement: This EUT's transmitter antenna is designed to be soldered on a printed circuit board, comply with §15.203 and inform to user that any change and modify is prohibited.

1.2. Description of Test Facility

Name of Firm : Audix Corporation
 Technical Division EMC Department
 No. 53-11, Tin-Fu Tsun, Lin-Kou Hsiang,
 Taipei County 24443, Taiwan, R.O.C.

Test Location & Facility (AC) : **Semi-Anechoic Chamber**
 No. 53-11, Tin-Fu Tsun, Lin-Kou Hsiang,
 Taipei County 24443, Taiwan, R.O.C.

May. 16, 2003 Re-File on
 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	$\pm 1.73\text{dB}$
Radiation Test (Distance: 3m)	30MHz~300MHz	$\pm 2.91\text{dB}$
	300MHz~1000MHz	$\pm 2.94\text{dB}$

Remark : Uncertainty = $k_{uc}(y)$

2. CONDUCTED EMISSION 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 Frequency 30MHz~1000MHz (at Semi-Anechoic Chamber)

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	HP	8593EM	3826A00248	Sep. 24, 03'	Sep. 23, 04'
2.	Test Receiver	R&S	ESCS30	100265	Sep. 22, 03'	Sep. 21, 04'
3.	Pre-Amplifier	HP	8447D	2944A06305	Mar. 18, 04'	Mar. 17, 05'
4.	Broadband Antenna	Schwarzbeck	BBA 9106	A3L	Feb. 21, 04'	Feb. 20, 05'
5.	Broadband Antenna	Schwarzbeck	UHALP 9108-A	0138	Feb. 21, 04'	Feb. 20, 05'

3.1.2. For Frequency above 1GHz (at Semi-Anechoic Chamber)

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	HP	8593EM	3826A00248	Sep. 24, 03'	Sep. 23, 04'
2.	Amplifier	HP	8449B	3008A00529	Jan. 29, 04'	Jan. 28, 05'
3.	Horn Antenna	EMCO	3115	9112-3775	May 05, 04'	May 04, 05'

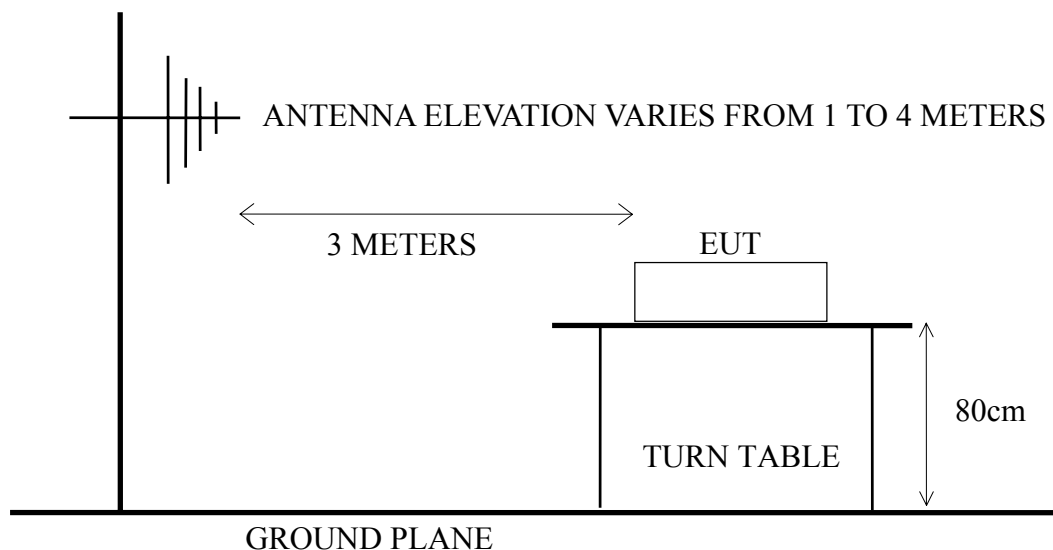
3.2. Test Setup

3.2.1. Block Diagram of connection between EUT and simulators

**FAN-LIGHT REMOTE CONTROLLER (TRANSMITTER)
(EUT)**

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

ANTENNA TOWER



3.3.Radiation Limit (§15.209 & 15.231)

3.3.1.Spurious Emission Limit (§15.209)

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMITS	
		$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$
30 - 88	3	100	40.00
88 - 216	3	150	43.50
216 - 960	3	200	46.00
Above 960	3	500	54.00

- Remarks :
- (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.

3.3.2.Fundamental Frequency Emission Limit (§15.231)

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMITS	
		$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$
Fundamental Frequency	3	5400.01	74.64 (Average)

- Remarks :
- (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:
 $41.6667 \times 299.6 - 7083.3333 = 5400.01 \mu\text{V/m} = 74.64 \text{dB}\mu\text{V/m}$
 - (5) The limits in this table are based on CFR 47 Part 15.231(b).

3.4.EUT's Configuration during Compliance Measurement

The following equipment were 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	:	JY167
Serial Number	:	N/A
Manufacturer	:	Satellite Electronic (Zhongshan) Ltd.
Fundamental Frequency	:	299.6MHz

3.5.Operating Condition of EUT

- 3.5.1.Set up 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 worked on maximum transmitting status (high & Light on) during all testing.
- 3.5.5.The above procedures from 3.5.3 to 3.5.4 were repeated.

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. EUT was set to 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 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 C63.4-2001 regulation.

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

EUT with three kinds of positions (Stand 、 Side 、 Lying) was tested 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.

Date of Test :	Sep. 15, 2004	Temperature :	24°C
EUT :	Fan-Light Remote Controller (Transmitter)	Humidity :	65%
Test Position :	EUT on Stand		

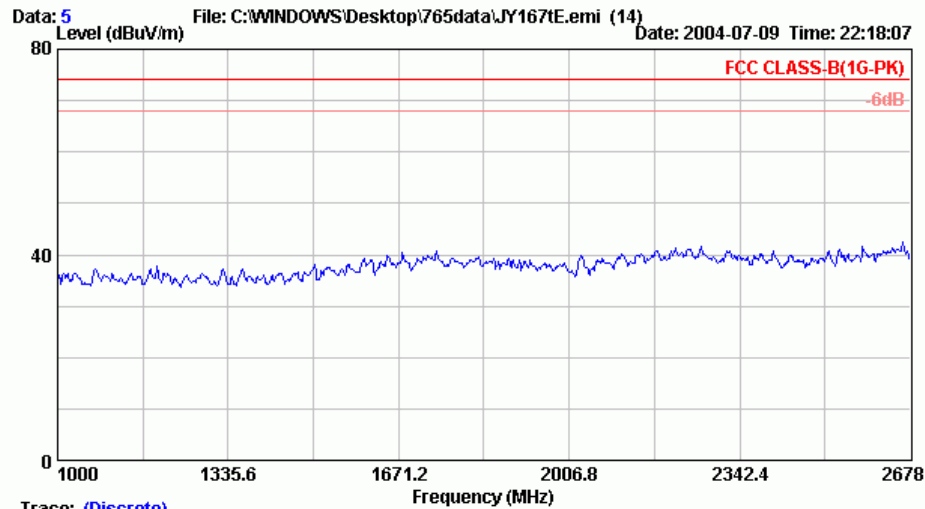
Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Horizontal dBμV	Emission Level Horizontal dBμV/m	Limits dBμV/m	Margin dB
Fundamental Freq. (Quasi-Peak Value)						
299.600	26.77	3.90	34.65	65.32	74.64	9.32
Spurious / Harmonic Freq. (Quasi-Peak Value)						
56.190	14.11	1.60	3.63	19.34	40.00	20.66
91.830	16.08	2.00	5.22	23.29	43.50	20.21
101.280	17.17	2.10	3.62	22.89	43.50	20.61
118.830	19.02	2.30	2.50	23.82	43.50	19.68
142.590	20.26	2.50	2.39	25.15	43.50	18.35
599.200	21.31	6.30	15.20	42.81	46.00	3.19
898.800	24.95	7.40	9.14	41.49	46.00	4.51

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	26.86	3.90	34.98	65.74	74.64	8.09
Spurious / Harmonic Freq. (Quasi-Peak Value)						
56.190	14.11	1.60	3.63	19.34	40.00	20.66
91.830	16.08	2.00	5.22	23.29	43.50	20.21
101.280	17.17	2.10	3.62	22.89	43.50	20.61
118.830	19.02	2.30	2.50	23.82	43.50	19.68
142.590	20.26	2.50	2.39	25.15	43.50	18.35
599.200	21.31	6.30	15.20	42.81	46.00	3.19
898.800	24.95	7.40	9.14	41.49	46.00	4.51

- Remarks : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
2. Measurement was up to 10th harmonics (~5.5GHz), but the emission levels were too low against the official limit and not report.



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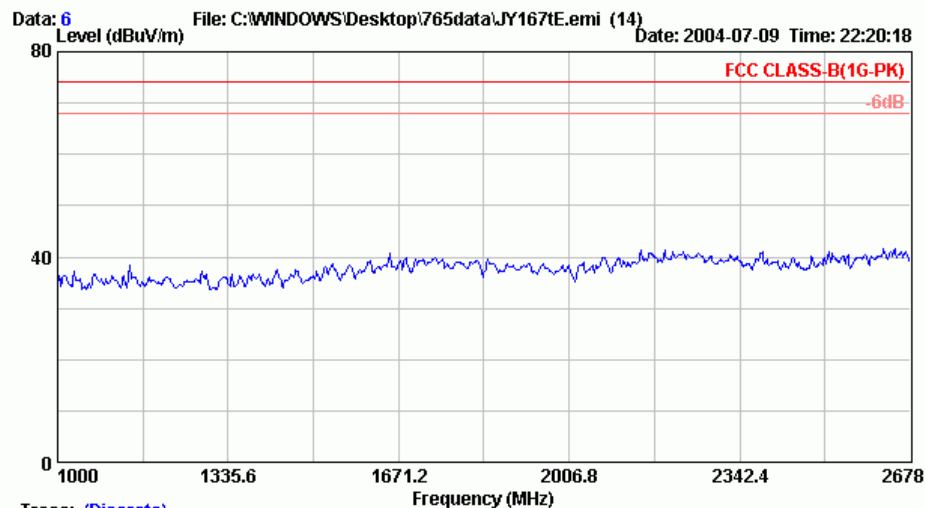


Trace: (Discrete)

Site no.	: A/C Chamber	Data no.	: 5
Ant. / Dis.	: 3115 3m	Ant. pol.	: HORIZONTAL
Limit	: FCC CLASS-B(1G-PK)		
Env. / Ins.	: 8593EM 25°C/68%	Engineer	: henning
EUT	: Fan-Light Remote Controller	M/N:	JY167
Power Rating	: DC 9V		
Test Mode	: TX---stand		



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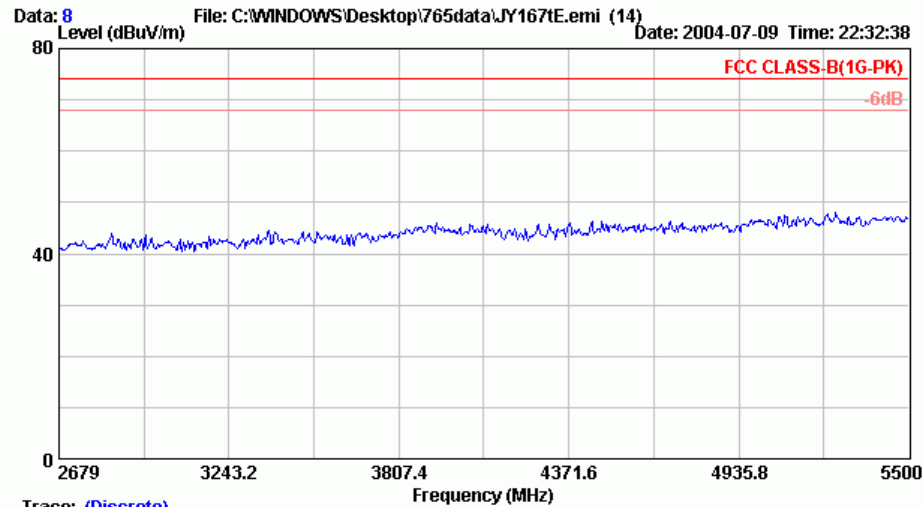


Trace: (Discrete)

Site no.	: A/C Chamber	Data no.	: 6
Ant. / Dis.	: 3115 3m	Ant. pol.	: VERTICAL
Limit	: FCC CLASS-B(1G-PK)		
Env. / Ins.	: 8593EM 25°C/68%	Engineer	: henning
EUT	: Fan-Light Remote Controller	M/N:	JY167
Power Rating	: DC 9V		
Test Mode	: TX---stand		



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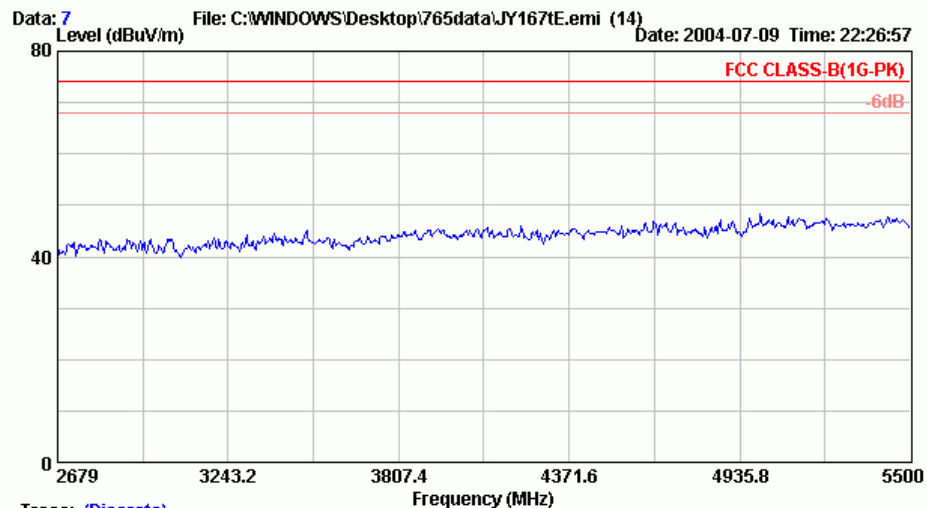


Trace: (Discrete)

Site no. : A/C Chamber	Data no. : 8
Ant. / Dis. : 3115 3m	Ant. pol. : HORIZONTAL
Limit : FCC CLASS-B(1G-PK)	
Env. / Ins. : 8593EM 25°C/68%	Engineer : henning
EUT : Fan-Light Remote Controller	M/N:JY167
Power Rating : DC 9V	
Test Mode : TX---stand	



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Trace: (Discrete)

Site no. : A/C Chamber	Data no. : 7
Ant. / Dis. : 3115 3m	Ant. pol. : VERTICAL
Limit : FCC CLASS-B(1G-PK)	
Env. / Ins. : 8593EM 25°C/68%	Engineer : henning
EUT : Fan-Light Remote Controller	M/N:JY167
Power Rating : DC 9V	
Test Mode : TX---stand	

Date of Test : Sep. 15, 2004 Temperature : 24°C

EUT : Fan-Light Remote Controller (Transmitter) Humidity : 65%

Test Position : EUT on Side

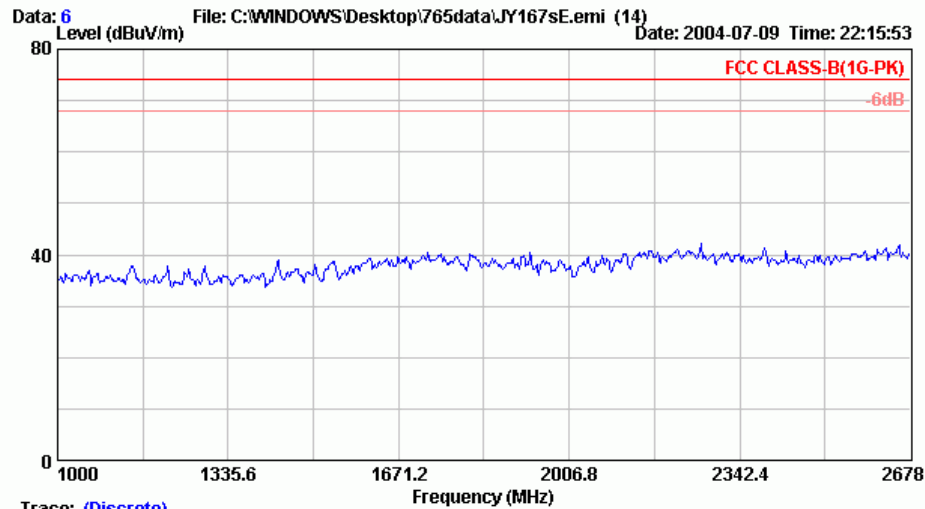
Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Horizontal dBμV	Emission Level Horizontal dBμV/m	Limits dBμV/m	Margin dB
Fundamental Freq. (Quasi-Peak Value)						
299.600	26.77	3.90	28.89	59.56	74.64	15.08
Spurious / Harmonic Freq. (Quasi-Peak Value)						
58.890	13.16	1.60	1.47	16.23	40.00	23.77
91.830	16.08	2.00	2.77	20.84	43.50	22.66
101.280	17.17	2.10	2.17	21.44	43.50	22.06
103.440	17.50	2.10	0.90	20.50	43.50	23.00
262.740	24.58	3.60	-0.41	27.76	46.00	18.24
599.200	21.31	6.30	14.86	42.47	46.00	3.53
898.800	24.98	7.30	-0.50	31.78	46.00	14.22

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	26.86	3.90	34.97	65.73	74.64	8.91
Spurious / Harmonic Freq. (Quasi-Peak Value)						
116.130	17.58	2.30	0.69	20.57	43.50	22.93
131.790	18.94	2.40	1.14	22.48	43.50	21.02
139.890	19.41	2.50	2.49	24.40	43.50	19.10
148.530	21.92	2.60	-0.67	23.85	43.50	19.65
191.190	22.05	3.00	0.77	25.82	43.50	17.68
200.640	22.94	3.00	0.05	25.99	43.50	17.51
599.200	21.65	6.30	14.30	42.25	46.00	3.75
898.800	25.86	7.30	6.23	39.38	46.00	6.62

- Remarks : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
2. Measurement was up to 10th harmonics (~5.5GHz), but the emission levels were too low against the official limit and not report.



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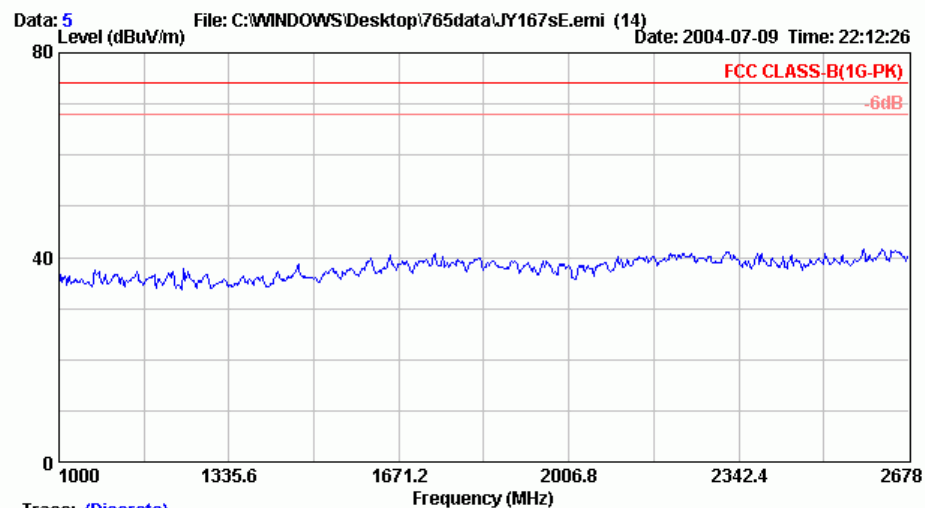


Trace: (Discrete)

Site no.	: A/C Chamber	Data no.	: 6
Ant. / Dis.	: 3115 3m	Ant. pol.	: HORIZONTAL
Limit	: FCC CLASS-B(1G-PK)		
Env. / Ins.	: 8593EM 25°C/68%	Engineer	: henning
EUT	: Fan-Light Remote Controller	M/N:	JY167
Power Rating	: DC 9V		
Test Mode	: TX---side		



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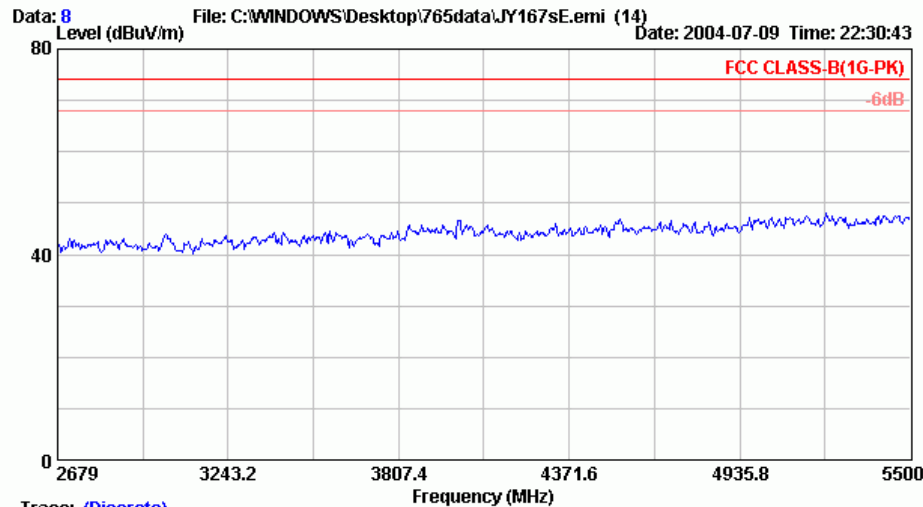


Trace: (Discrete)

Site no.	: A/C Chamber	Data no.	: 5
Ant. / Dis.	: 3115 3m	Ant. pol.	: VERTICAL
Limit	: FCC CLASS-B(1G-PK)		
Env. / Ins.	: 8593EM 25°C/68%	Engineer	: henning
EUT	: Fan-Light Remote Controller	M/N:	JY167
Power Rating	: DC 9V		
Test Mode	: TX---side		



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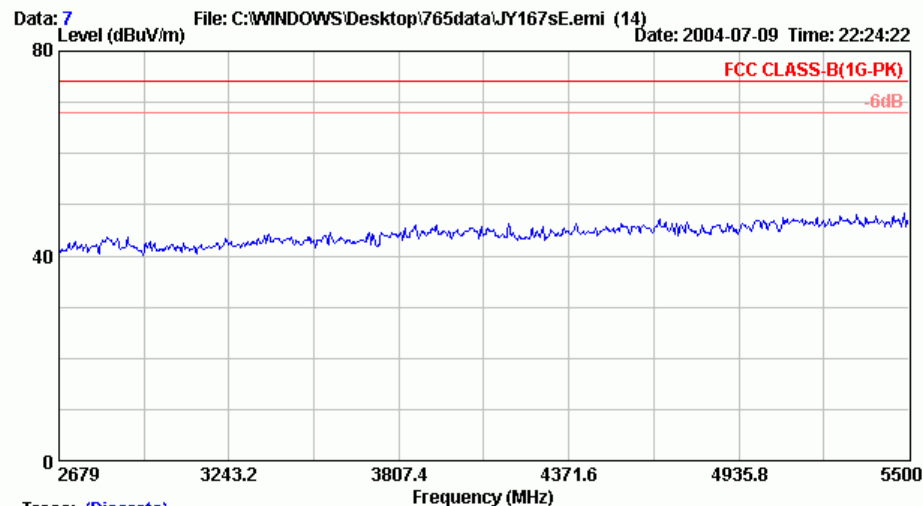


Trace: (Discrete)

Site no.	: A/C Chamber	Data no.	: 8
Ant. / Dis.	: 3115 3m	Ant. pol.	: HORIZONTAL
Limit	: FCC CLASS-B(1G-PK)		
Env. / Ins.	: 8593EM 25°C/68%	Engineer	: henning
EUT	: Fan-Light Remote Controller	M/N:	JY167
Power Rating	: DC 9V		
Test Mode	: TX---side		



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Trace: (Discrete)

Site no.	: A/C Chamber	Data no.	: 7
Ant. / Dis.	: 3115 3m	Ant. pol.	: VERTICAL
Limit	: FCC CLASS-B(1G-PK)		
Env. / Ins.	: 8593EM 25°C/68%	Engineer	: henning
EUT	: Fan-Light Remote Controller	M/N:	JY167
Power Rating	: DC 9V		
Test Mode	: TX---side		

Date of Test : Sep. 15, 2004 Temperature : 24°C

EUT : Fan-Light Remote Controller (Transmitter) Humidity : 65%

Test Position : EUT on Lying

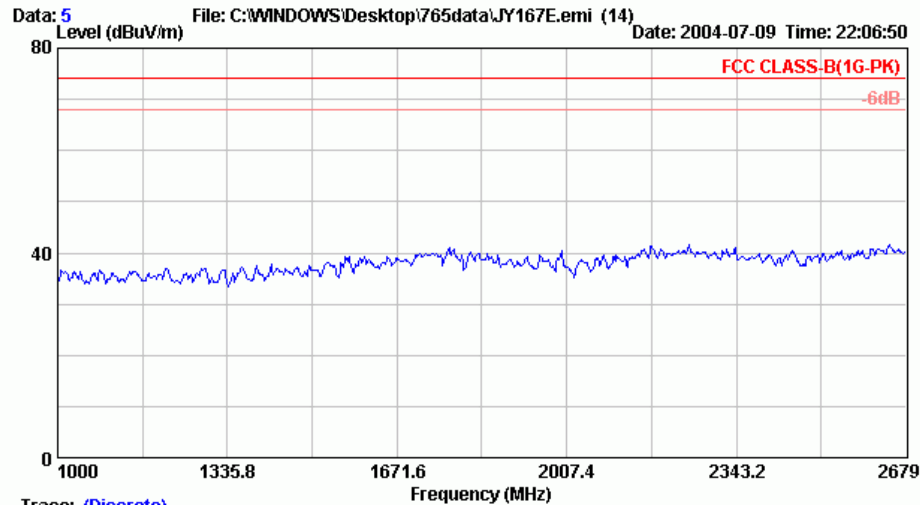
Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Horizontal dBμV	Emission Level Horizontal dBμV/m	Limits dBμV/m	Margin dB
Fundamental Freq. (Quasi-Peak Value)						
299.600	26.77	3.90	40.67	71.34	74.64	3.30
Spurious / Harmonic Freq. (Quasi-Peak Value)						
58.080	13.43	1.60	5.52	20.55	40.00	19.45
63.480	11.90	1.67	5.25	18.82	40.00	21.18
91.830	16.08	2.00	4.12	22.19	43.50	21.31
101.280	17.17	2.10	3.98	23.25	43.50	20.25
104.790	17.58	2.15	2.43	22.15	43.50	21.35
599.200	21.33	6.30	13.94	41.57	46.00	4.43
898.800	24.95	7.40	7.33	39.68	46.00	6.32

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	26.86	3.90	31.79	62.55	74.64	12.09
Spurious / Harmonic Freq. (Quasi-Peak Value)						
55.380	14.36	1.50	6.55	22.41	40.00	17.59
64.290	13.06	1.67	7.98	22.70	40.00	17.30
105.330	17.68	2.20	3.99	23.86	43.50	19.64
129.090	18.43	2.40	6.21	27.04	43.50	16.46
249.780	25.02	3.50	1.33	29.85	46.00	16.15
599.200	21.67	6.30	14.09	42.06	46.00	3.94
898.800	25.86	7.30	6.66	39.81	46.00	6.19

- Remarks : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
2. Measurement was up to 10th harmonics (~5.5GHz), but the emission levels were too low against the official limit and not report.



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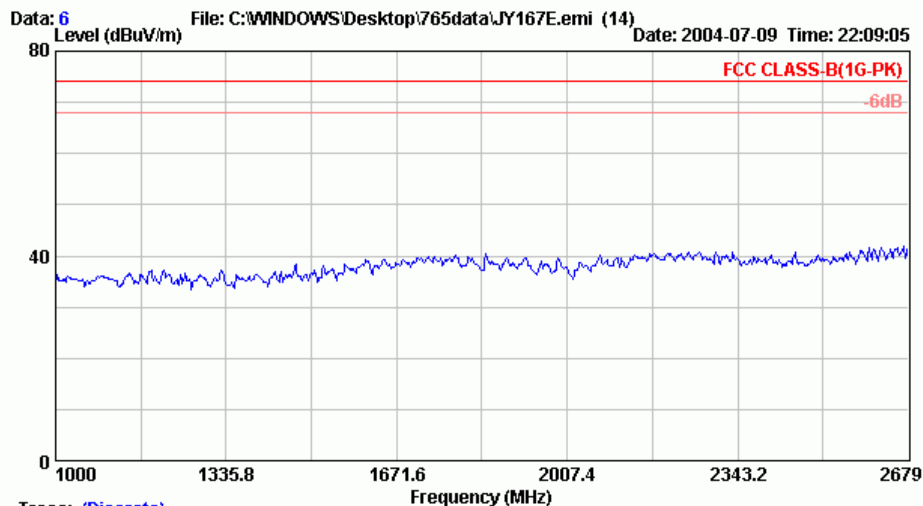


Trace: (Discrete)

Site no.	: A/C Chamber	Data no.	: 5
Ant. / Dis.	: 3115 3m	Ant. pol.	: HORIZONTAL
Limit	: FCC CLASS-B(1G-PK)		
Env. / Ins.	: 8593EM 25°C/68%	Engineer	: henning
EUT	: Fan-Light Remote Controller	M/N:	JY167
Power Rating	: DC 9V		
Test Mode	: TX---Lying		



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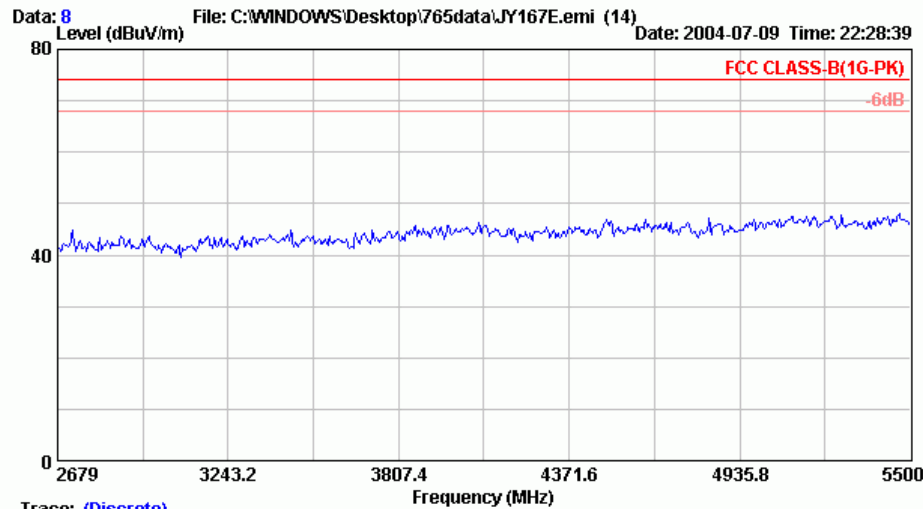


Trace: (Discrete)

Site no.	: A/C Chamber	Data no.	: 6
Ant. / Dis.	: 3115 3m	Ant. pol.	: VERTICAL
Limit	: FCC CLASS-B(1G-PK)		
Env. / Ins.	: 8593EM 25°C/68%	Engineer	: henning
EUT	: Fan-Light Remote Controller	M/N:	JY167
Power Rating	: DC 9V		
Test Mode	: TX---Lying		



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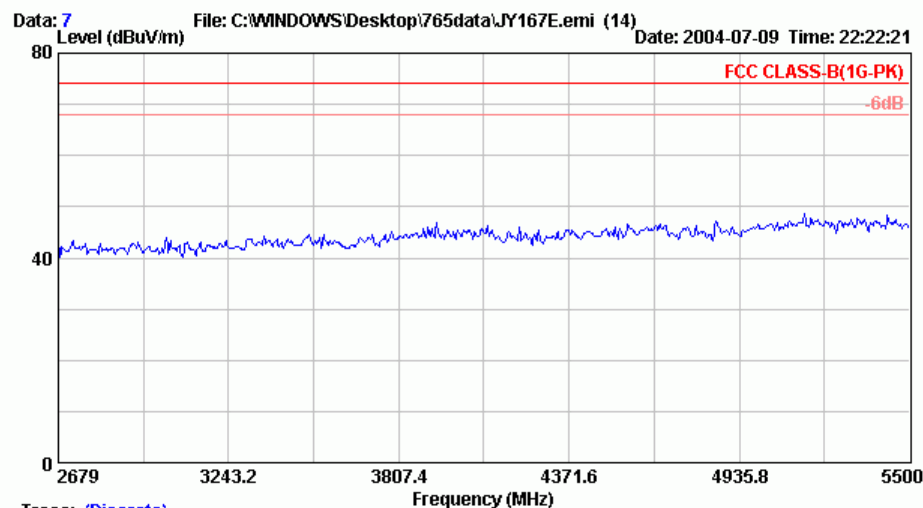


Trace: (Discrete)

Site no. : A/C Chamber	Data no. : 8
Ant. / Dis. : 3115 3m	Ant. pol. : HORIZONTAL
Limit : FCC CLASS-B(1G-PK)	
Env. / Ins. : 8593EM 25°C/68%	Engineer : henning
EUT : Fan-Light Remote Controller	M/N:JY167
Power Rating : DC 9V	
Test Mode : TX---Lying	



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Trace: (Discrete)

Site no. : A/C Chamber	Data no. : 7
Ant. / Dis. : 3115 3m	Ant. pol. : VERTICAL
Limit : FCC CLASS-B(1G-PK)	
Env. / Ins. : 8593EM 25°C/68%	Engineer : henning
EUT : Fan-Light Remote Controller	M/N:JY167
Power Rating : DC 9V	
Test Mode : TX---Lying	

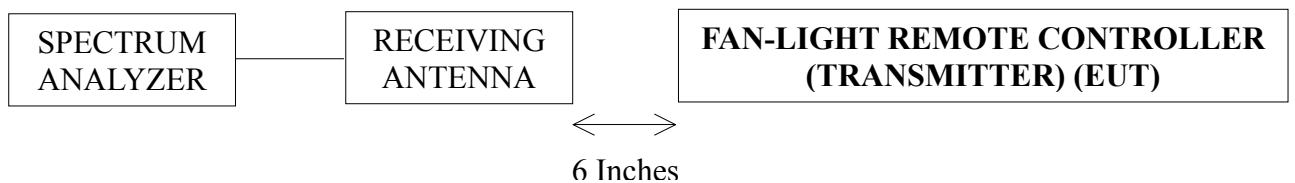
4. EMISSION BANDWIDTH MEASUREMENT

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.
1.	Spectrum Analyzer	HP	8465EC	3946A00249	Aug. 28, 03'	Aug. 27, 04'
2.	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 was same as section 3.4.

4.5. Emission Bandwidth Measurement Results

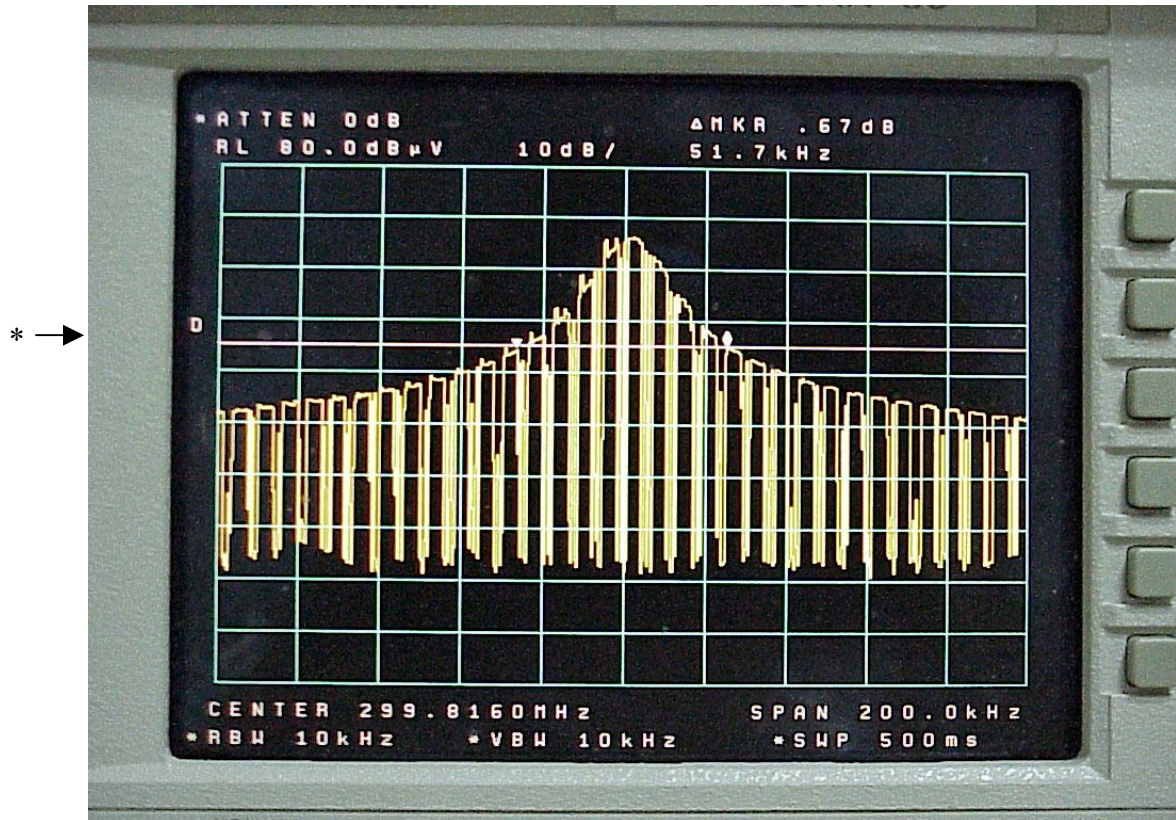
PASS.

Test Date: Jul. 07, 2004 Temperature: 26°C Humidity: 69%

No.	Center Frequency	Bandwidth	Tolerance (%)
1.	299.6MHz	0.0517MHz	0.017%

The bandwidth of emission was measured at the points 20dB down from the center frequency of modulated carrier.

Graph of Bandwidth Measurement



Note: “*” The line is 20dB from the modulated carrier.

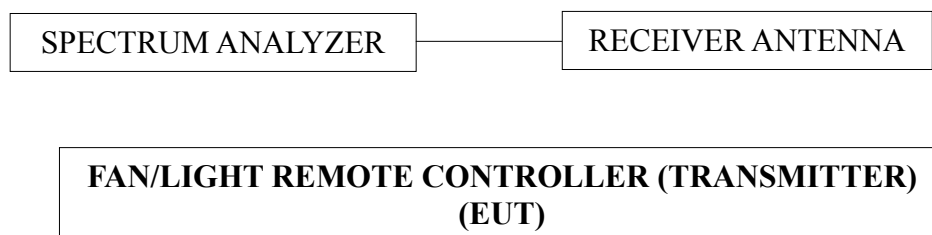
5. PERIODIC OPERATED MEASUREMENT

5.1. Test Equipment

The following test equipment was used during the periodic operated test :

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	HP	8465EC	3946A00249	Aug. 28, 03'	Aug. 27, 04'
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 was same as section 3.4.

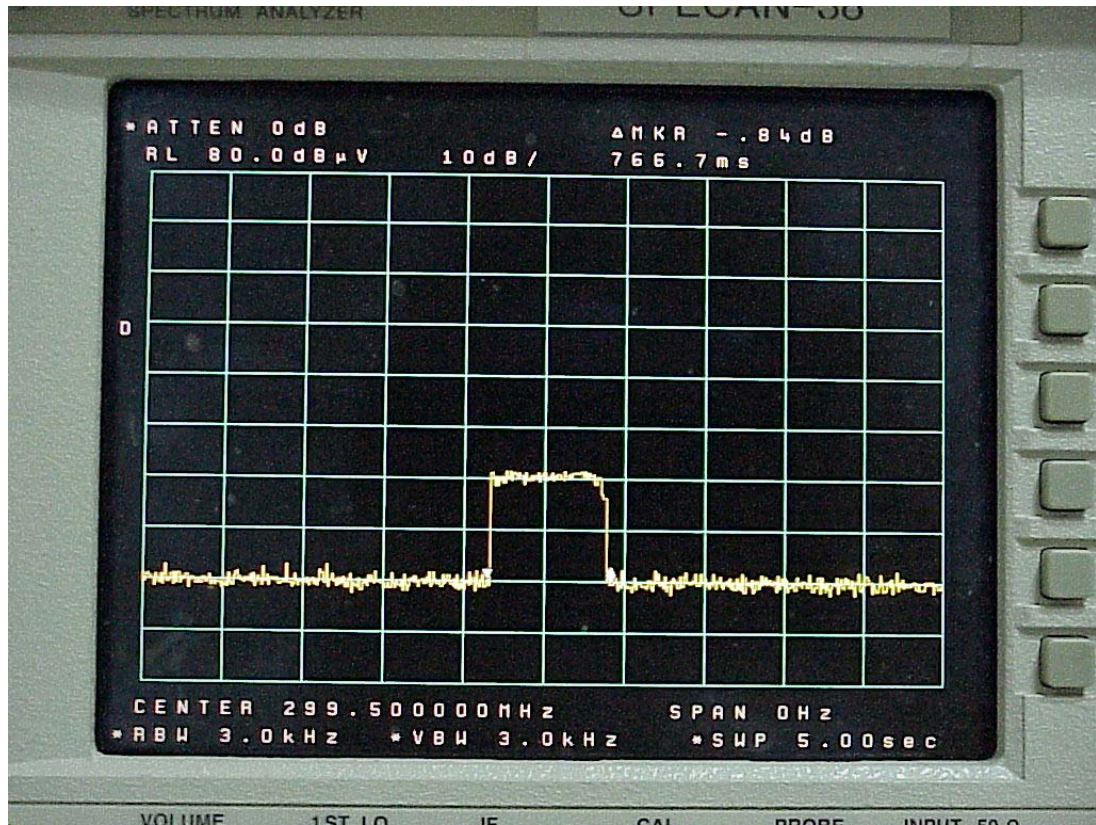
5.5. Periodic Operated Measurement Results

PASS. T=0.7667 sec. (< 5sec.)

Test Date: Jul. 07, 2004 Temperature: 26°C Humidity: 69%

The graph of testing is attached in next page.

Graph of Periodic Operated Measurement



6. DEVIATION TO TEST SPECIFICATIONS

【NONE】