

TEST REPORT FOR CERTIFICATION

On Behalf of
Chungear Industrial Co., Ltd.

Ceiling Fan Remote Controller

Model : JY20325

FCC ID : KUJ9401

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 Hsiang,
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Report Number : EM-F940257
Date of Test : Oct. 26 ~ 31, 2005
Date of Report : Nov. 03, 2005

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TEST REPORT CERTIFICATION

Applicant : Chungear Industrial Co., Ltd.
Manufacturer #1 : Satellite Electronic (Zhongshan) Ltd.
Manufacturer #2 : Zhong Shan Amity Electronic Ltd.
Manufacturer #3 : Chungear Industrial Co., Ltd.
EUT Description : Ceiling Fan Remote Controller
FCC ID : KUJ9401
(A) MODEL NO. : JY20325
(B) SERIAL NO. : N/A
(C) POWER SUPPLY : BATTERY
AAA 12V *1 or AAA 1.5V*2
(D) TEST VOLTAGE : DC 12V

Measurement Procedure Used:

FCC RULES AND REGULATIONS PART 15 SUBPART C, SEPTEMBER 2005
AND ANSI C63.4/2003

(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 : Oct. 26 ~ 31, 2005

Prepared by : Monica Chang Nov. 09, 2005
(Monica Chang/Administrator)

Test Engineer : Alex Deng Nov. 09, 2005
(Alex Deng/Section Manager)

Approved & Authorized Signer : Ben Cheng Nov. 11, 2005
(Ben Cheng/Section Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Description	:	Ceiling Fan Remote Controller
Model Number	:	JY20325
FCC ID	:	KUJ9401
Applicant	:	Chungear Industrial Co., Ltd. 160 Kanho Rd., Taichung, Taiwan, R.O.C.
Manufacturer #1	:	Satellite Electronic (Zhongshan) Ltd. No. 15, Torch Hi-Tech Industrial Development Zone, Zhongshan City Guangdong Province China.
Manufacturer #2	:	Zhong Shan Amity Electronic Ltd. No. 16, Torch Hi-Tech Industrial Development Zone, Zhongshan City Guangdong Province China.
Manufacturer #3	:	Chungear Industrial Co., Ltd. 160 Kanho Rd., Taichung, Taiwan, R.O.C.
Fundamental Frequency	:	304MHz
Power Supply	:	BATTERY AAA 12V *1 or AAA 1.5V*2
Date of Receipt of Sample	:	Oct. 24, 2005
Date of Test	:	Oct. 26 ~ 31, 2005
* Ceiling Fan 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)
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 emission 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 Range 30MHz~1000MHz (Semi-Anechoic Chamber)

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	HP	8593EM	3826A00248	Sep. 26, 05'	Sep. 25, 06'
2.	Test Receiver	R&S	ESCS30	100265	Sep. 27, 05'	Sep. 26, 06'
3.	Pre-Amplifier	HP	8447D	2944A06305	Mar. 10, 05'	Mar. 09, 06'
4.	Broadband Antenna	Schwarzbeck	BBA 9106	A3L	Feb. 18, 05'	Feb. 17, 06'
5.	Broadband Antenna	Schwarzbeck	UHALP9108-A	0139	Dec. 14, 04'	Dec. 13, 05'

3.1.2. For Frequency Range Above 1GHz (Semi-Anechoic Chamber)

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	HP	8593EM	3826A00248	Sep. 26, 05'	Sep. 25, 06'
2.	Amplifier	HP	8449B	3008A00529	Jan. 14, 05'	Jan. 13, 06'
3.	Horn Antenna	EMCO	3115	9112-3775	May 04, 05'	May 03, 06'

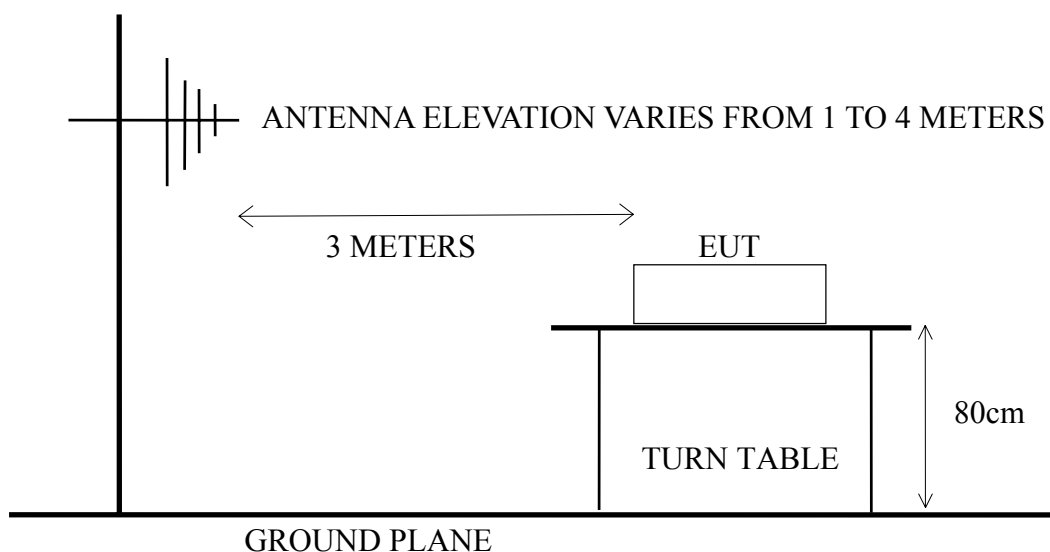
3.2. Test Setup

3.2.1. Block Diagram of connection between EUT and simulators

CEILING FAN REMOTE CONTROLLER (EUT)

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

ANTENNA TOWER



3.3.Radiation Emission Limits (§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	5400.0	74.94 (Quasi-Peak)

- 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: $41.6667 \times 304 - 7083.3333 = 5583.3435 \mu\text{V/m} = 74.9378 \text{dB}\mu\text{V/m}$
 - (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 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.Ceiling Fan Remote Controller (EUT)

Model Number : JY20325
 Serial Number : N/A
 FCC ID : KUJ9401
 Manufacturer : Satellite Electronic (Zhongshan) Ltd.
 Fundamental Frequency : 304MHz

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 (Ceiling Fan Remote Controller) 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 C63.4-2003 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.

The frequency range from 30MHz to 1000MHz was measured with Quasi-Peak detector.

The frequency range from 1GHz to 5.5GHz was pre-scanned with Peak detector.

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.

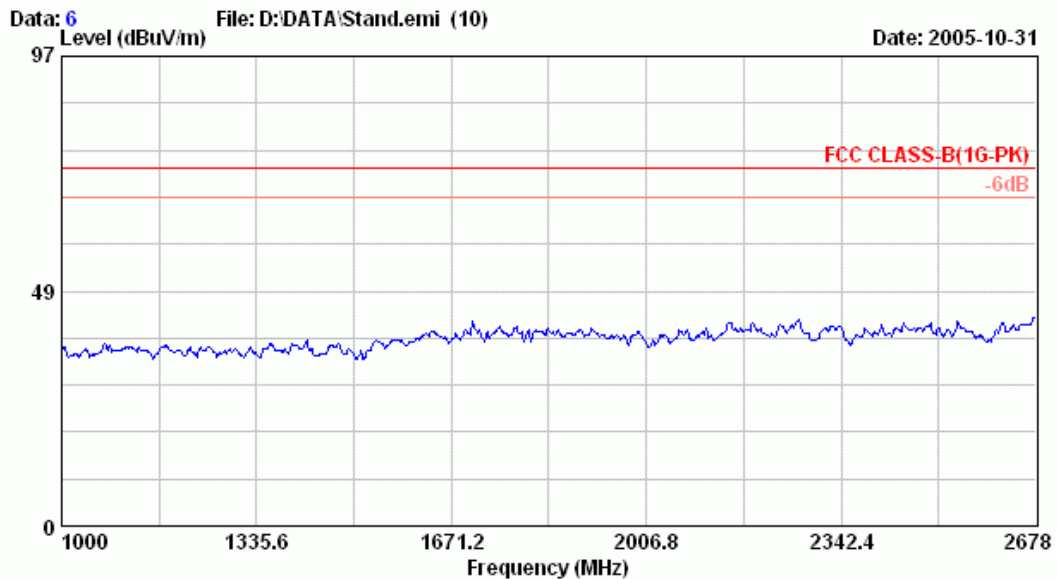
Date of Test : Oct. 31, 2005 Temperature : 26°C
 EUT : Ceiling Fan Remote Controller Humidity : 62%
 Test Position : EUT on Stand

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)						
304.200	14.94	3.90	33.28	52.12	74.94	22.82
Spurious / Harmonic Freq. (Quasi-Peak Value)						
30.970	24.81	1.10	2.85	28.76	40.00	11.24
206.540	21.91	3.10	0.77	25.78	43.50	17.72
501.420	18.95	6.52	1.78	27.26	46.00	18.74
525.670	19.66	6.90	-0.05	26.51	46.00	19.49
* 608.400	21.45	6.20	7.02	34.68	46.00	11.32
912.600	24.98	7.40	-1.85	30.52	46.00	15.48
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)						
304.200	15.26	3.90	43.21	62.37	74.94	12.57
Spurious / Harmonic Freq. (Quasi-Peak Value)						
30.970	23.39	1.10	2.49	26.98	40.00	13.02
147.370	21.85	2.58	1.35	25.77	43.50	17.73
400.540	17.58	4.80	0.57	22.95	46.00	23.05
501.420	19.91	6.52	1.64	28.07	46.00	17.93
* 608.400	21.64	6.20	13.94	41.79	46.00	4.21
912.600	25.69	7.40	-2.22	30.87	46.00	15.13

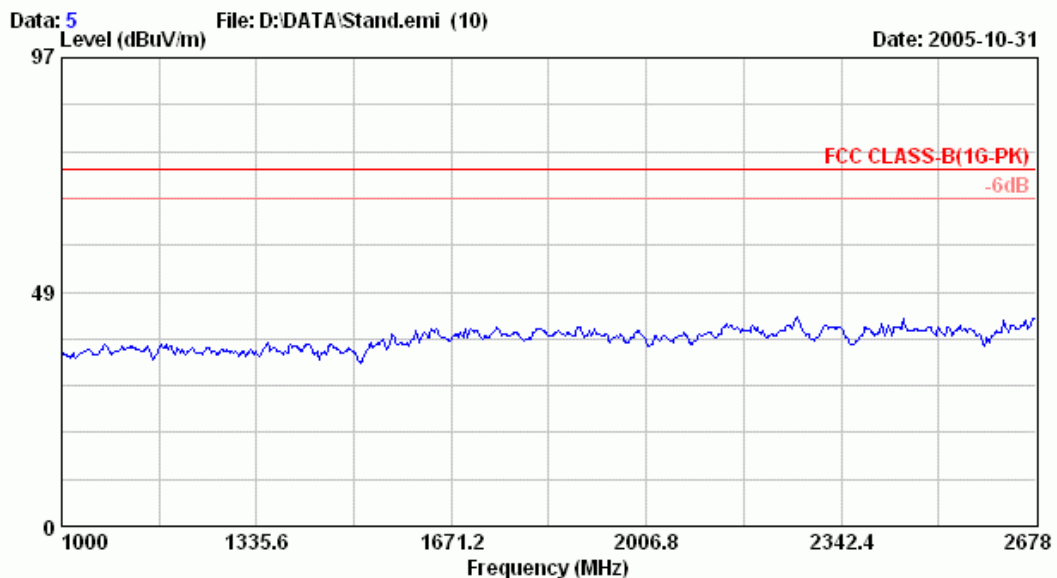
- Remarks :
1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. Measurement was up to 10th harmonics (~5.5GHz), but the emission levels were too low against the official limit and not report.
 3. "*" The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.



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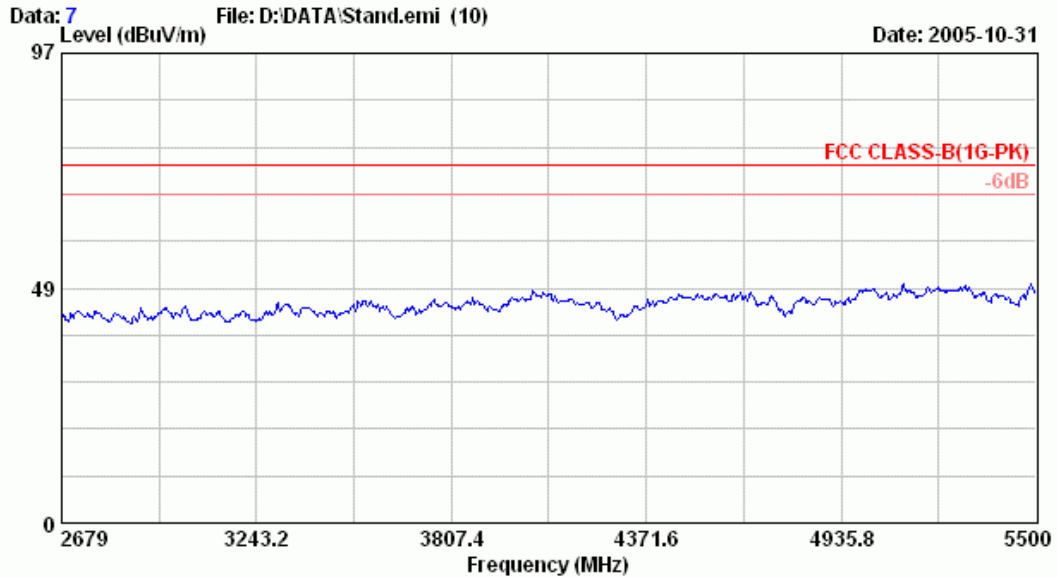
Site : A/C Chamber Date : 6
 Condition : 3m 3115 Polarity: HORIZONTAL
 Limit : FCC CLASS-B(1G-PK)
 Env. / Ins. : 8593EM 26°C/62% Engineer: Alvin_Yang
 EUT : Ceiling Fan Remote Controller
 Power Rating : DC 12V M/N:JY20325
 Test Mode : Tx---Stand



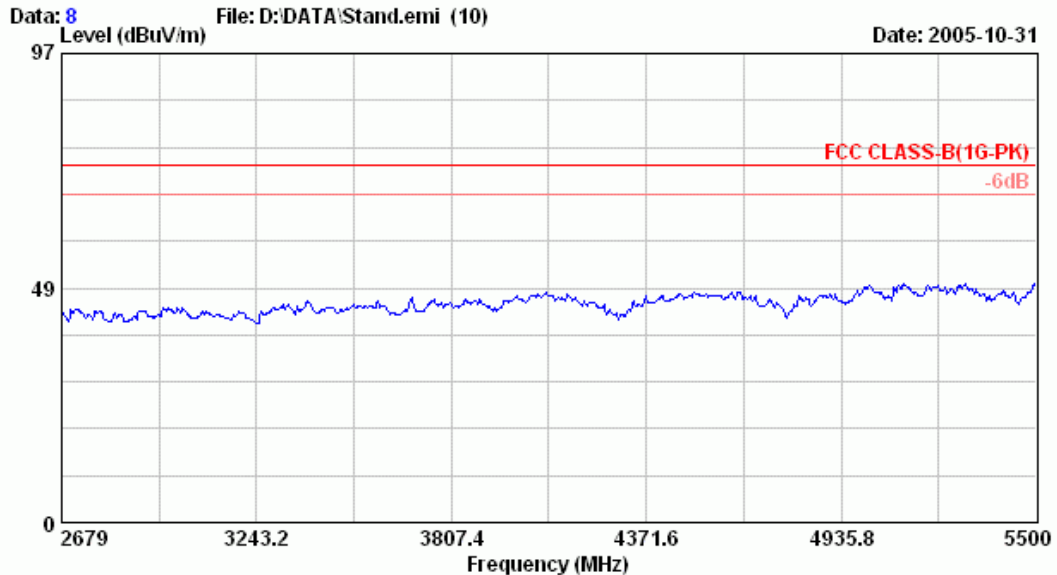
Site : A/C Chamber Date : 5
 Condition : 3m 3115 Polarity: VERTICAL
 Limit : FCC CLASS-B(1G-PK)
 Env. / Ins. : 8593EM 26°C/62% Engineer: Alvin_Yang
 EUT : Ceiling Fan Remote Controller
 Power Rating : DC 12V M/N:JY20325
 Test Mode : Tx---Stand



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Site : A/C Chamber Date : 7
 Condition : 3m 3115 Polarity: HORIZONTAL
 Limit : FCC CLASS-B(1G-PK)
 Env. / Ins. : 8593EM 26°C/62% Engineer: Alvin_Yang
 EUT : Ceiling Fan Remote Controller
 Power Rating : DC 12V M/N:JY20325
 Test Mode : Tx---Stand



Site : A/C Chamber Date : 8
 Condition : 3m 3115 Polarity: VERTICAL
 Limit : FCC CLASS-B(1G-PK)
 Env. / Ins. : 8593EM 26°C/62% Engineer: Alvin_Yang
 EUT : Ceiling Fan Remote Controller
 Power Rating : DC 12V M/N:JY20325
 Test Mode : Tx---Stand

Date of Test : Oct. 31, 2005 Temperature : 26°C

EUT : Ceiling Fan Remote Controller Humidity : 62%

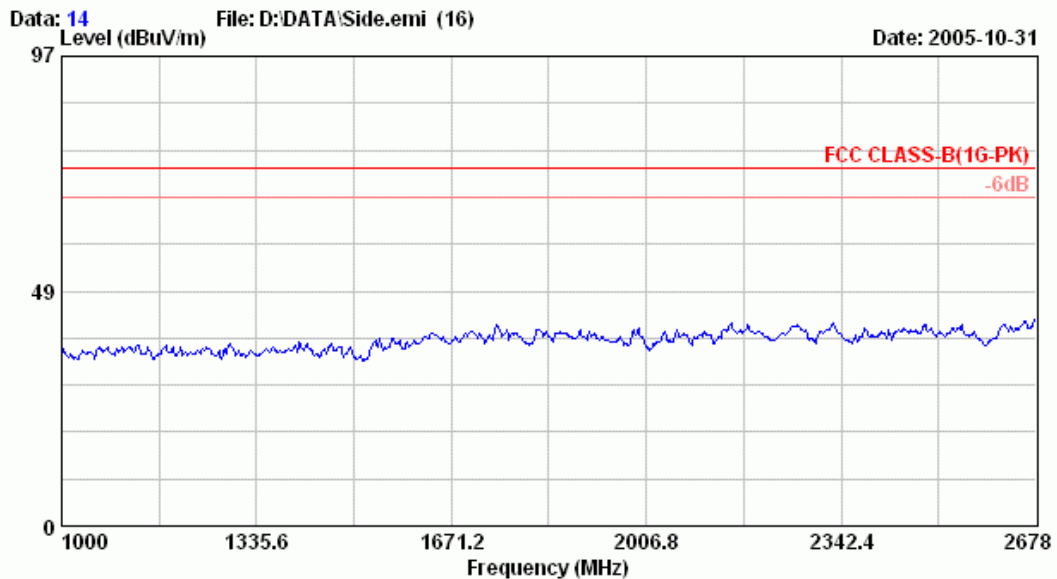
Test Position : EUT on Side

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)						
304.200	14.94	3.90	48.13	66.97	74.94	7.97
Spurious / Harmonic Freq. (Quasi-Peak Value)						
30.970	24.81	1.10	2.33	28.24	40.00	11.76
* 137.670	20.01	2.43	2.05	24.50	43.50	19.00
350.100	15.44	4.30	3.27	23.01	46.00	22.99
501.420	18.95	6.52	1.84	27.32	46.00	18.68
608.400	21.45	6.20	10.17	37.83	46.00	8.17
* 912.600	24.98	7.40	-1.53	30.85	46.00	15.15
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)						
304.200	15.26	3.90	36.12	55.28	74.94	19.66
Spurious / Harmonic Freq. (Quasi-Peak Value)						
151.250	21.87	2.60	2.45	26.91	43.50	16.59
504.330	20.21	6.62	0.96	27.78	46.00	18.22
* 608.400	21.64	6.20	6.41	34.26	46.00	11.74
841.890	26.62	7.10	-1.08	32.64	46.00	13.36
912.600	25.69	7.40	-2.45	30.64	46.00	15.36

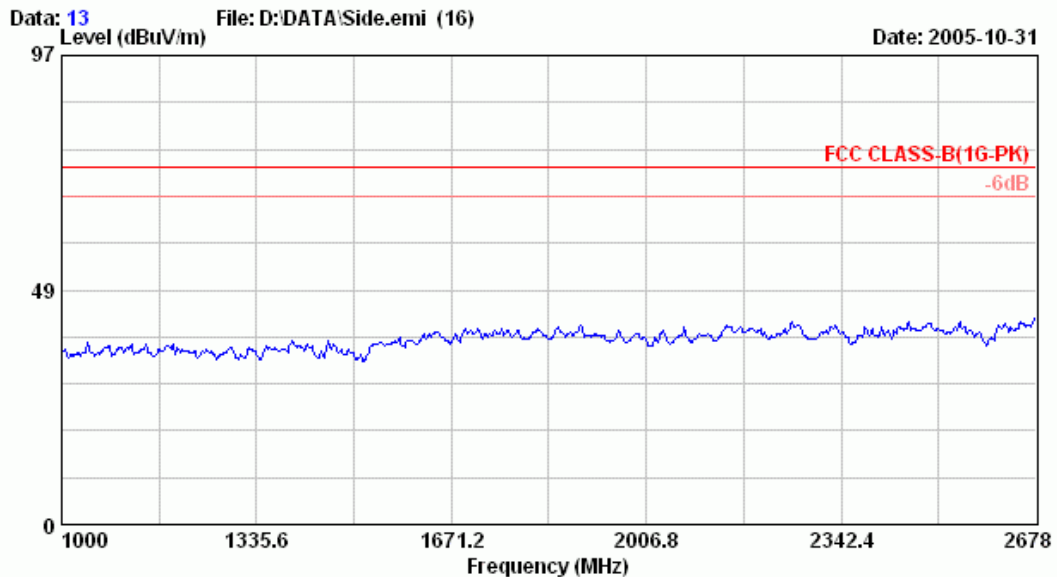
- Remarks :
1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. Measurement was up to 10th harmonics (~5.5GHz), but the emission levels were too low against the official limit and not report.
 3. "*" The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.



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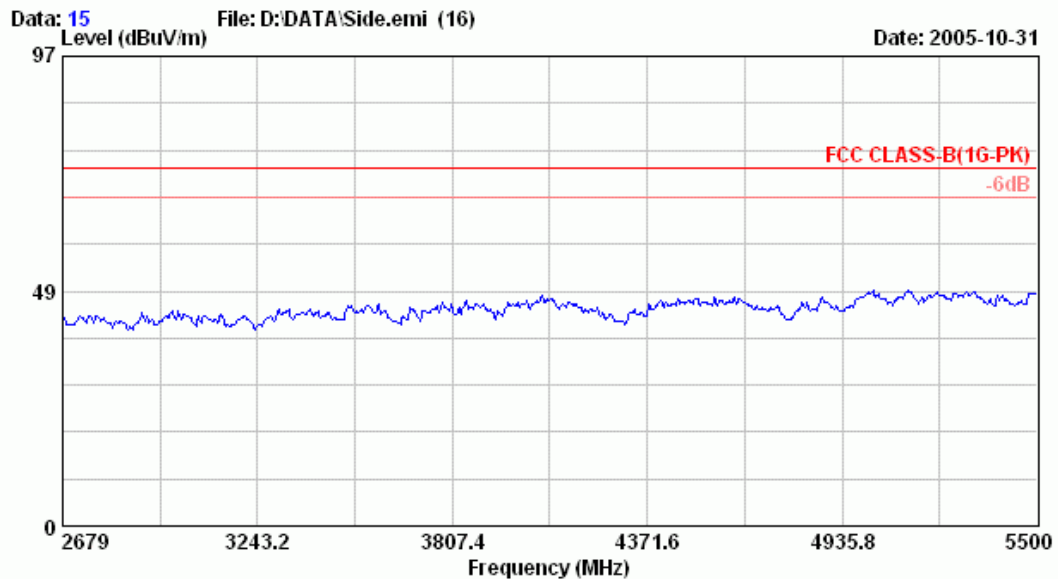
Site : A/C Chamber Date : 14
 Condition : 3m 3115 Polarity: HORIZONTAL
 Limit : FCC CLASS-B(1G-PK)
 Env. / Ins. : 8593EM 26°C/62% Engineer: Alvin_Yang
 EUT : Ceiling Fan Remote Controller
 Power Rating : DC 12V M/N:JY20325
 Test Mode : Tx---Side



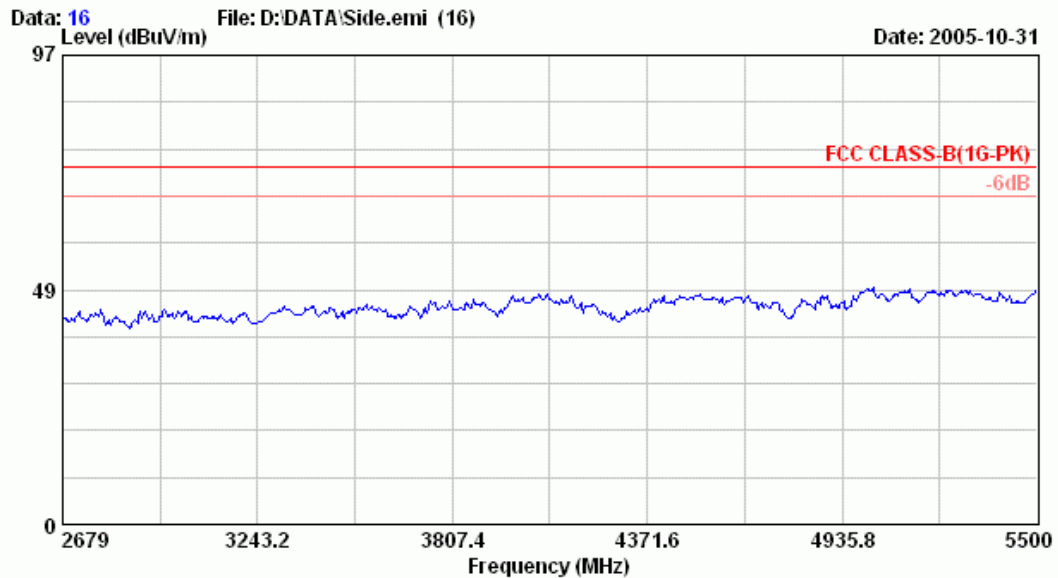
Site : A/C Chamber Date : 13
 Condition : 3m 3115 Polarity: VERTICAL
 Limit : FCC CLASS-B(1G-PK)
 Env. / Ins. : 8593EM 26°C/62% Engineer: Alvin_Yang
 EUT : Ceiling Fan Remote Controller
 Power Rating : DC 12V M/N:JY20325
 Test Mode : Tx---Side



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Site : A/C Chamber Date : 15
 Condition : 3m 3115 Polarity: HORIZONTAL
 Limit : FCC CLASS-B(1G-PK)
 Env. / Ins. : 8593EM 26°C/62% Engineer: Alvin_Yang
 EUT : Ceiling Fan Remote Controller
 Power Rating : DC 12V M/N:JY20325
 Test Mode : Tx---Side



Site : A/C Chamber Date : 16
 Condition : 3m 3115 Polarity: VERTICAL
 Limit : FCC CLASS-B(1G-PK)
 Env. / Ins. : 8593EM 26°C/62% Engineer: Alvin_Yang
 EUT : Ceiling Fan Remote Controller
 Power Rating : DC 12V M/N:JY20325
 Test Mode : Tx---Side

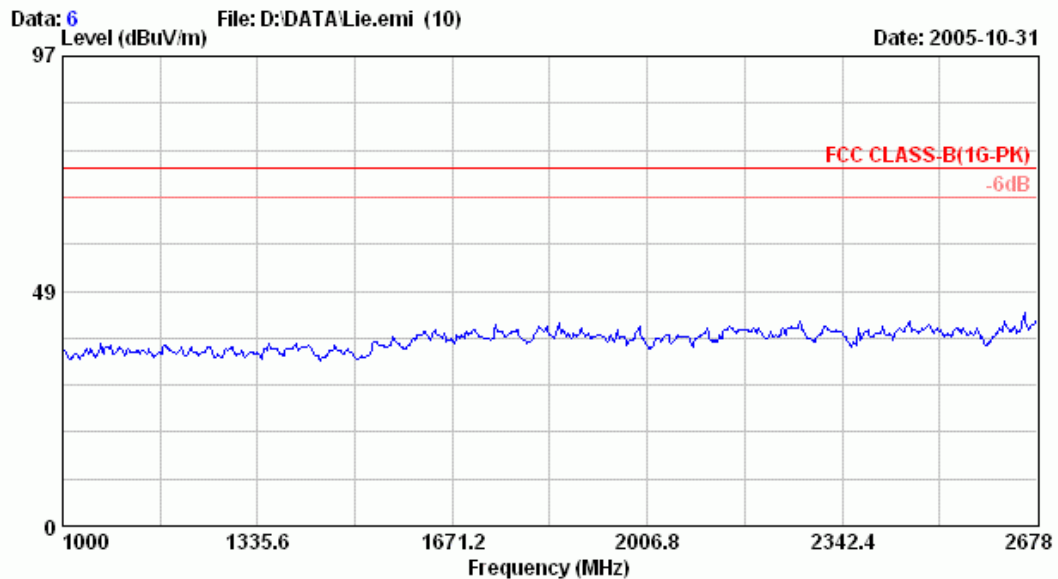
Date of Test : Oct. 31, 2005 Temperature : 26°C
 EUT : Ceiling Fan Remote Controller Humidity : 62%
 Test Position : EUT on Lying

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)						
304.200	14.94	3.90	48.01	66.85	74.94	8.09
Spurious / Harmonic Freq. (Quasi-Peak Value)						
30.970	24.81	1.10	2.87	28.78	40.00	11.22
191.020	21.55	3.00	1.36	25.91	43.50	17.59
400.540	17.66	4.80	1.39	23.85	46.00	22.15
501.420	18.95	6.52	2.21	27.69	46.00	18.31
* 608.400	21.45	6.20	14.63	42.29	46.00	3.71
912.600	24.82	7.40	-1.46	30.76	46.00	15.24
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)						
304.200	15.26	3.90	30.73	49.89	74.94	25.05
Spurious / Harmonic Freq. (Quasi-Peak Value)						
30.970	23.39	1.10	4.51	29.00	40.00	11.00
151.250	21.87	2.60	1.97	26.43	43.50	17.07
501.420	19.91	6.52	2.59	29.02	46.00	16.98
581.930	21.72	6.30	2.29	30.31	46.00	15.69
* 608.400	21.64	6.20	5.52	33.37	46.00	12.63
912.600	25.69	7.40	-2.12	30.97	46.00	15.03

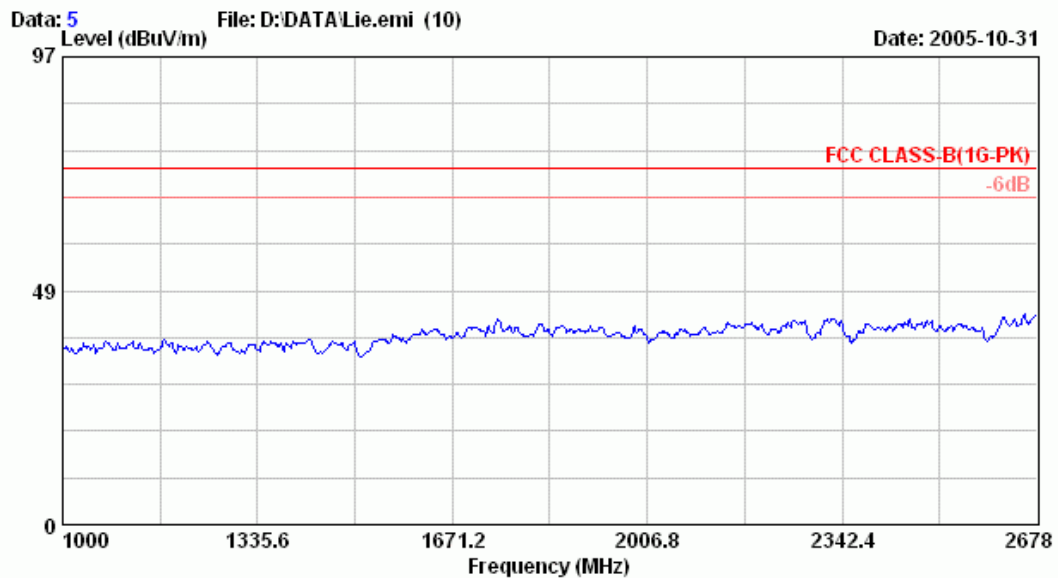
- Remarks : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. Measurement was up to 10th harmonics (~5.5GHz), but the emission levels were too low against the official limit and not report.
 3. The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.



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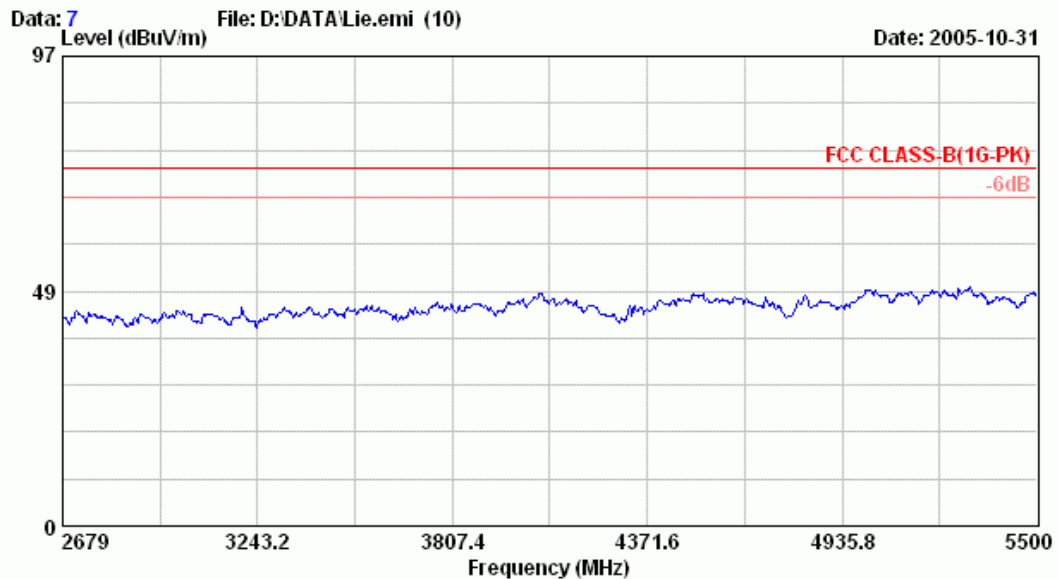
Site : A/C Chamber Date : 6
 Condition : 3m 3115 Polarity: HORIZONTAL
 Limit : FCC CLASS-B(1G-PK)
 Env. / Ins. : 8593EM 26°C/62% Engineer: Alvin_Yang
 EUT : Ceiling Fan Remote Controller
 Power Rating : DC 12V M/N:JY20325
 Test Mode : Tx---Lying



Site : A/C Chamber Date : 5
 Condition : 3m 3115 Polarity: VERTICAL
 Limit : FCC CLASS-B(1G-PK)
 Env. / Ins. : 8593EM 26°C/62% Engineer: Alvin_Yang
 EUT : Ceiling Fan Remote Controller
 Power Rating : DC 12V M/N:JY20325
 Test Mode : Tx---Lying



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Site : A/C Chamber Date : 7
 Condition : 3m 3115 Polarity: HORIZONTAL
 Limit : FCC CLASS-B(1G-PK)
 Env. / Ins. : 8593EM 26°C/62% Engineer: Alvin_Yang
 EUT : Ceiling Fan Remote Controller
 Power Rating : DC 12V M/N:JY20325
 Test Mode : Tx---Lying



Site : A/C Chamber Date : 8
 Condition : 3m 3115 Polarity: VERTICAL
 Limit : FCC CLASS-B(1G-PK)
 Env. / Ins. : 8593EM 26°C/62% Engineer: Alvin_Yang
 EUT : Ceiling Fan Remote Controller
 Power Rating : DC 12V M/N:JY20325
 Test Mode : Tx---Lying

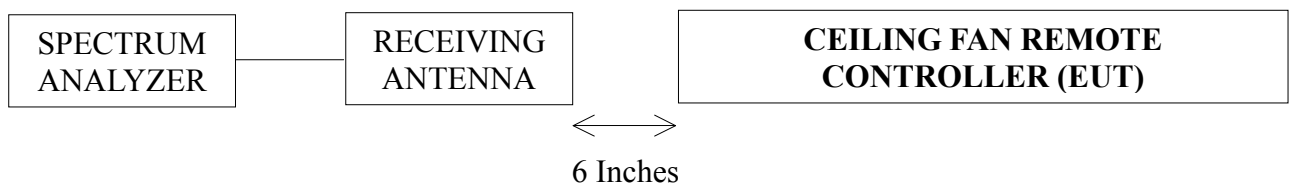
4. EMISSION BANDWIDTH MEASUREMENT

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	Agilent	E4446A	US44300366	Aug. 23, 05'	Aug. 22, 06'
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.

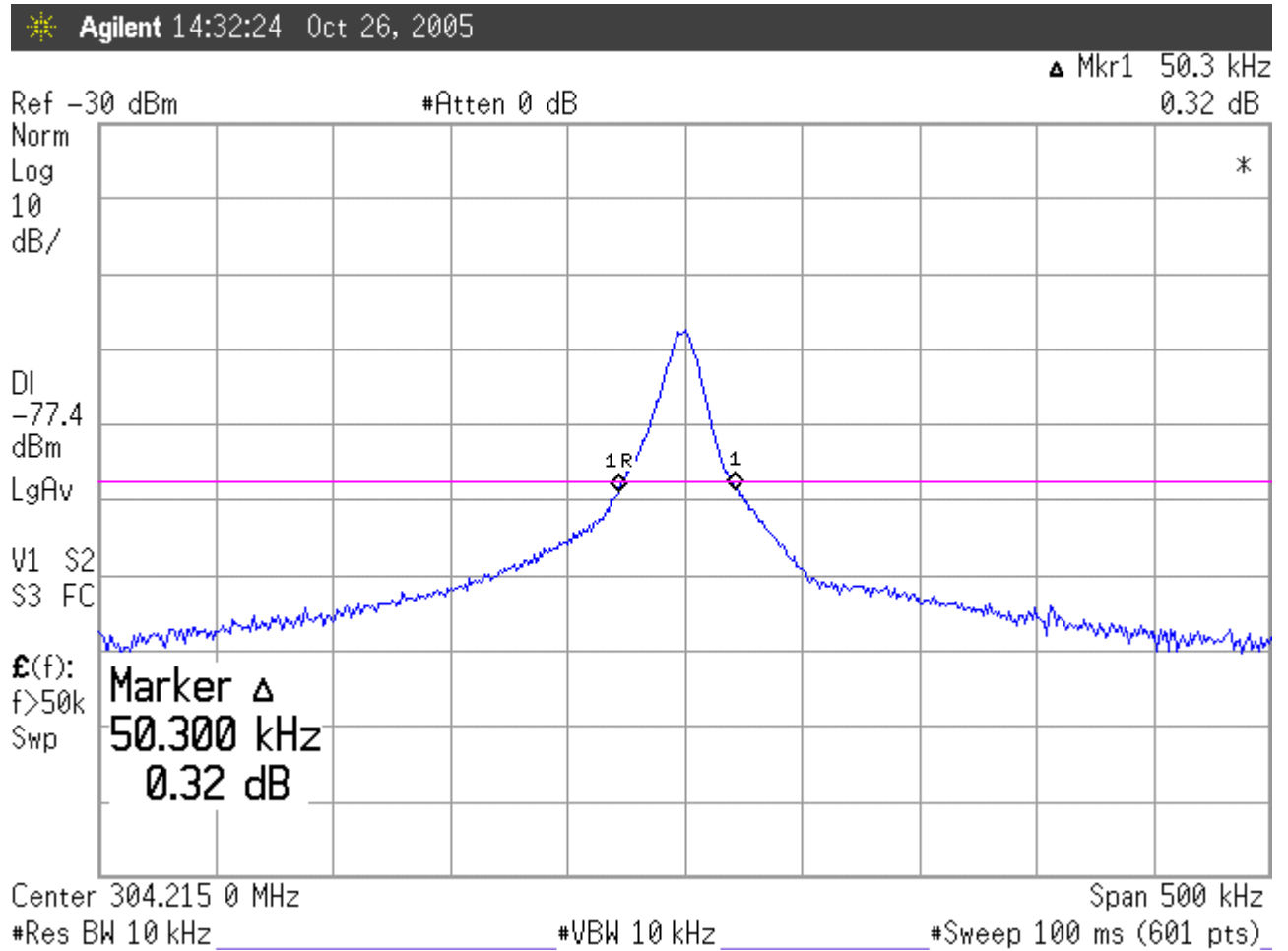
Fundamental Frequency: 304MHz

Test Date: Oct. 26, 2005 Temperature: 22°C Humidity: 62%

No.	Center Frequency	Bandwidth	Tolerance (%)
1.	304MHz	0.0503MHz	0.0165%

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

Graph of Bandwidth Measurement



Note: "◇" The line is 20dB from the modulated carrier.

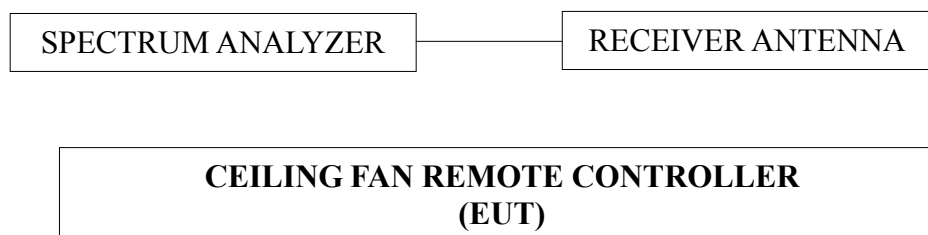
5. PERIODIC OPERATED MEASUREMENT

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	Agilent	E4446A	US44300366	Aug. 23, 05'	Aug. 22, 06'
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.

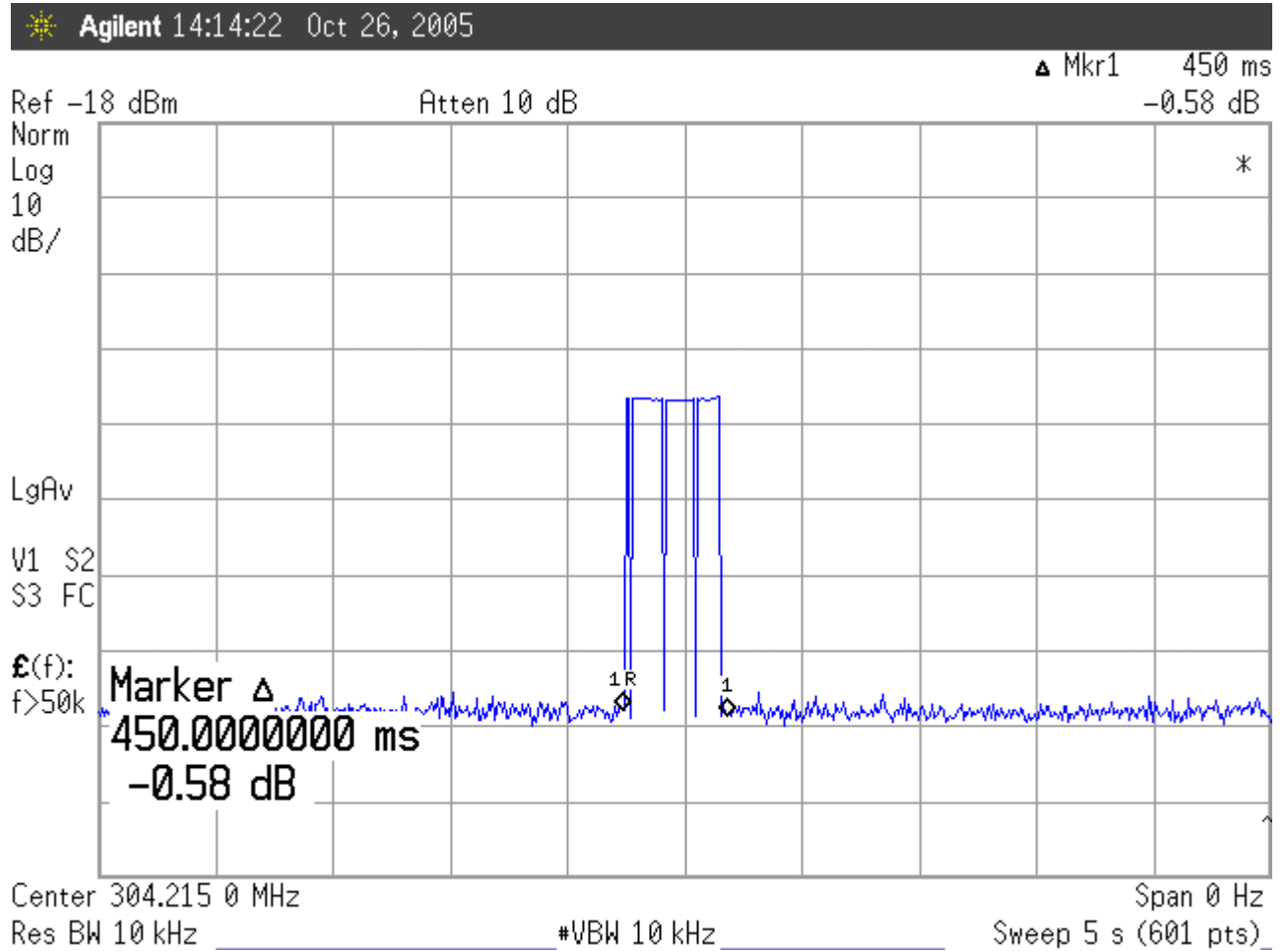
5.5. Periodic Operated Measurement Results

PASS. T = 0.45 sec. (< 5sec.)

Test Date: Oct. 26, 2005 Temperature: 22°C Humidity: 62%

The graph of testing is attached in next page.

Graph of Periodic Operated Measurement



6. DEVIATION TO TEST SPECIFICATIONS

【NONE】