

APPLICATION FOR CERTIFICATION

On Behalf of
Chungear Industrial Co., Ltd.

Fan/Light Remote Control (Transmitter)

Model : BCF-00I9X2

FCC ID : KUJCE9001

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

Prepared by : Taiwan Tokin EMC Eng. Corp.
No. 53-11, Tin-Fu Tsun, Lin-Kou,
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TABLE OF CONTENTS

Description	Page
Test Report Certification	3
1.GENERAL INFORMATION	4
1.1. Description of Device (EUT)	4
1.2. Description of Test Facility	5
1.3. Measurement Uncertainty	5
2.POWERLINE CONDUCTED TEST	6
3.RADIATED EMISSION TEST	7
3.1. Test Equipment	7
3.2. Test Setup	7
3.3. Radiation Limit (§15.231)	8
3.4. EUT's Configuration during Compliance Measurement	8
3.5. Operating Condition of EUT	8
3.6. Test Procedure	8
3.7. Test Results	9
3.8. Radiated Emission Noise Measurement Results	10
4.EMISSION BANDWIDTH TEST	22
4.1. Test Equipment	22
4.2. Block Diagram of Test Setup	22
4.3. Specification Limits (§15.231-(c))	22
4.4. EUT's Configuration during Compliance Measurement	22
4.5. Emission Bandwidth Measurement Results	22
5.DEVIATION TO TEST SPECIFICATIONS	24
6.PHOTOGRAPHS	25
6.1. Photos of Radiated Measurement at Open Field Test Site(30~1000MHz)	25
6.2. Photos of Radiated Measurement at Open Field Test Site(1~3GHz)	27
6.3. Photos of Emission Bandwidth Measurement	28

TEST REPORT CERTIFICATION

Applicant : Chungear Industrial Co., Ltd.
 Manufacturer : Chungear Industrial Co., Ltd.
 FCC ID : KUJCE9001
 EUT Description : Fan/Light Remote Control (Transmitter)
 (A) MODEL NO. : BCF-00I9X2
 (B) SERIAL NO. : N/A
 (C) POWER SUPPLY : DC 9V

Measurement Procedure Used:

FCC RULES AND REGULATIONS PART 15 SUBPART C, MAY 2001
 AND FCC/OET MP-4

The device described above was tested by TAIWAN TOKIN EMC ENG. CORP. 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 TAIWAN TOKIN EMC ENG. CORP. 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 Taiwan Tokin EMC Eng. corp.

Date of Test : Aug. 10 ~ 16, 2001

Prepared by : Cherry Wang 9/10/01
 (CHERRY WANG)

Test Engineer : Allen Wang Sep. 10. 2001
 (ALLEN WANG)

Approve & Authorized Signer : Leon Liu Sep. 10 2001
 (LEON LIU)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Description	:	Fan/Light Remote Control (Transmitter)
Model Number	:	BCF-00I9X2
FCC ID	:	KUJCE9001
Applicant	:	Chungear Industrial Co., Ltd. 160 Kanho Rd., Taichung, Taiwan, R.O.C.
Manufacturer	:	Chungear Industrial Co., Ltd. 160 Kanho Rd., Taichung, Taiwan, R.O.C.
Fundamental Frequency	:	299.6MHz
Power Supply	:	DC 9V
Date of Receipt of Sample	:	May 29, 2001
Date of Test	:	Aug. 10 ~ 16, 2001

Fan/Light Remote Control -Receiver
 Model No.: BCF-2DI162
 FCC ID : By DoC

1.2. Description of Test Facility

Site Description (No. 5 Open Site)	:	Jan. 29, 2001 Re-File on Federal Communication Commission FCC Engineering Laboratory 7435 Oakland Mills Road Columbia, MD 21046, U.S.A. Registration Number: 90992
Name of Firm	:	Taiwan Tokin EMC Eng. Corp.
Site Location #1	:	No. 53-11, Tin-Fu Tsun, Lin-Kou, Taipei Hsien, Taiwan, R.O.C.
Site Location #2	:	No. 67-4, Tin-Fu Tsun, Lin-Kou, Taipei Hsien, Taiwan, R.O.C.
NVLAP Lab Code	:	200077-0

1.3. Measurement Uncertainty

- (1) Radiation Uncertainty $U_r = \pm 4.01\text{dB}$
- (2) Conduction Uncertainty $U_c = \pm 2.26\text{dB}$

2. POWERLINE CONDUCTED TEST

【This EUT input voltage is DC power operated, so no conductive emissions were performed according to FCC Part 15 C section § 15.207】

3. RADIATED EMISSION TEST

3.1. Test Equipment

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

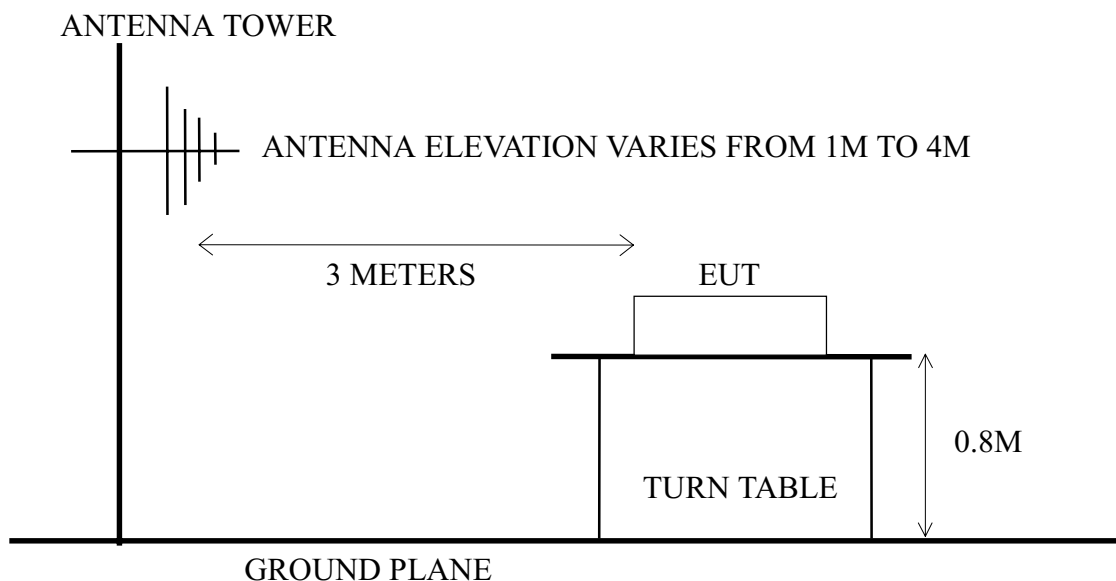
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer (for 30MHz~3GHz)	HP	8595E	3829A03778	Aug. 17, 01'	1 Year
2.	Test Receiver	R&S	ESVS10	849231/017	Dec. 01, 00'	1 Year
3.	Biconical Antenna	Chase	VBA6106A	1227	Apr. 16, 01'	1 Year
4.	Log Periodic Antenna	Chase	UPA6109	1061	Apr. 16, 01'	1 Year
5.	Amplifier (for 1~3GHz)	HP	8449B	3008A01284	Jul.04, 01'	1 Year
6.	Horn Antenna (for 1~3GHz)	EMCO	3115	9112-3775	Apr.17, 01'	1 Year

3.2. Test Setup

3.2.1. Block Diagram of connection between EUT and simulators



3.2.2. Open Field Test Site (3M) Setup Diagram



3.3. 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	74.65 (Quasi-Peak)
Spurious Emission	3	540	54.65 (Peak)

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

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

3.4. 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 Control (Transmitter) (EUT)

Model Number : BCF-00I9X2
 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 Control (Transmitter)) was emitted the fundamental frequency with data code.
- 3.5.4. The EUT was at worked on Fan and Light function mode.
- 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 3GHz 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 3GHz 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/OET MP-4 regulation.

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

EUT with the following test modes were done during radiated measurement and all the test results are listed in section 3.8.

No.	Test Model No.	Test Modes
1.	BCF-00I9X2	EUT on Stand, Fan Mode/Hi Speed
2.		EUT on Stand, Fan Mode/Medium Speed
3.		EUT on Stand, Fan Mode/Low Speed
4.		EUT on Stand, Light Mode
5.		EUT on Side, Fan Mode/Hi Speed
6.		EUT on Side, Fan Mode/Medium Speed
7.		EUT on Side, Fan Mode/Low Speed
8.		EUT on Side, Light Mode
9.		EUT on Lie, Fan Mode/Hi Speed
10.		EUT on Lie, Fan Mode/Medium Speed
11.		EUT on Lie, Fan Mode/Low Speed
12.		EUT on Lie, Light Mode

3.7. Test Results

PASSED. Please refer to the following pages.

3.8. Radiated Emission Noise Measurement Results

The frequency spectrum from 30 MHz to 3GHz is investigated. All the emissions not reported below are too low against the FCC part 15 subpart C limit.

Date of Test :	Aug. 10, 2001	Temperature :	26°C
EUT :	Fan/Light Remote Control (Transmitter), M/N: BCF-0019X2	Humidity :	64%
Test Mode :	EUT on Stand, Fan Mode/Hi Speed		

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	(Pre-Amp) Factor dB	Meter Reading Horizontal dBμV	Emission Level Horizontal dBμV/m	Limits dBμV/m	Margin dB
Fundamental Frequency (Quasi-Peak Values)							
299.559	26.09	3.13	0.00	35.99	65.21	74.64	9.43
Spurious Frequency							
599.559	20.48	4.79	0.00	23.28	48.55	54.64	6.09
898.620	23.62	6.23	0.00	16.70	46.55	54.64	8.09
1198.236	25.17	4.42	32.41	48.41	45.59	54.64	9.05
1497.795	25.88	4.80	32.26	43.51	41.93	54.64	12.71
1797.353	26.46	5.58	32.13	44.19	44.10	54.64	10.54
2096.912	26.98	6.21	32.09	41.98	43.08	54.64	11.56
2396.471	27.47	6.68	32.17	40.21	42.19	54.64	12.45
2696.030	27.90	7.10	32.25	39.24	41.99	54.64	12.65
2995.589	28.30	7.48	32.33	39.92	43.37	54.64	11.27
Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	(Pre-Amp) Factor dB	Meter Reading Vertical dBμV	Emission Level Vertical dBμV/m	Limits dBμV/m	Margin dB
Fundamental Frequency (Quasi-Peak Values)							
299.559	25.30	3.13	0.00	34.79	63.22	74.64	11.42
Spurious Frequency							
599.118	20.54	4.79	0.00	19.22	44.55	54.64	10.09
898.620	24.99	6.23	0.00	9.30	40.52	54.64	14.12
1198.236	25.17	4.42	32.41	48.36	45.54	54.64	9.10
1497.795	25.88	4.80	32.26	43.47	41.89	54.64	12.75
1797.353	26.46	5.58	32.13	46.28	46.19	54.64	8.45
2096.912	26.98	6.21	32.09	43.12	44.22	54.64	10.42
2396.471	27.47	6.68	32.17	40.99	42.97	54.64	11.67
2696.030	27.90	7.10	32.25	39.26	42.01	54.64	12.63
2995.589	28.30	7.48	32.33	38.40	41.85	54.64	12.79

- Remark :
1. For Fundamental Frequency, the readings are Quasi-Peak values below 1000MHz; For Spurious Frequency, the readings are Quasi-Peak values below 1000MHz; the readings are peak values above 1GHz.
 2. Emission Level = Antenna Factor + Cable Loss + Meter Reading – Pre-Amp Factor.
 3. Measurement was up to 10th harmonic (~3GHz), but the emissions level were too low against the official limit and not report.

Date of Test :	Aug. 10, 2001	Temperature :	26°C
EUT :	Fan/Light Remote Control (Transmitter), M/N: BCF-0019X2	Humidity :	64%
Test Mode :	EUT on Stand, Fan Mode/Medium Speed		

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	(Pre-Amp) Factor dB	Meter Reading Horizontal dBμV	Emission Level Horizontal dBμV/m	Limits dBμV/m	Margin dB
Fundamental Frequency (Quasi-Peak Values)							
299.605	26.09	3.13	0.00	37.20	66.42	74.64	8.22
Spurious Frequency							
599.211	20.48	4.79	0.00	22.98	48.25	54.64	6.39
898.816	23.62	6.23	0.00	16.67	46.52	54.64	8.12
1198.422	25.17	4.42	32.41	50.13	47.31	54.64	7.33
1498.027	25.88	4.80	32.26	47.61	46.03	54.64	8.61
1797.632	26.46	5.58	32.13	42.15	42.06	54.64	12.58
2097.238	26.98	6.21	32.09	43.22	44.32	54.64	10.32
2396.843	27.47	6.68	32.17	44.06	46.04	54.64	8.60
2696.448	27.90	7.10	32.25	42.21	44.96	54.64	9.68
2996.054	28.30	7.48	32.33	38.60	42.05	54.64	12.59

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	(Pre-Amp) Factor dB	Meter Reading Vertical dBμV	Emission Level Vertical dBμV/m	Limits dBμV/m	Margin dB
Fundamental Frequency (Quasi-Peak Values)							
299.605	25.30	3.13	0.00	33.79	62.22	74.64	12.42
Spurious Frequency							
599.211	20.54	4.79	0.00	22.21	47.54	54.64	7.10
898.813	24.99	6.23	0.00	13.23	44.45	54.64	10.19
1198.422	25.17	4.42	32.41	48.27	45.45	54.64	9.19
1498.027	25.88	4.80	32.26	43.49	41.91	54.64	12.73
1797.632	26.46	5.58	32.13	43.92	43.83	54.64	10.81
2097.238	26.98	6.21	32.09	43.15	44.25	54.64	10.39
2396.843	27.47	6.68	32.17	40.43	42.41	54.64	12.23
2696.448	27.90	7.10	32.25	41.80	44.55	54.64	10.09
2296.054	28.30	7.48	32.33	38.61	42.06	54.64	12.58

- Remark :
1. For Fundamental Frequency, the readings are Quasi-Peak values below 1000MHz; For Spurious Frequency, the readings are Quasi-Peak values below 1000MHz; the readings are peak values above 1GHz.
 2. Emission Level = Antenna Factor + Cable Loss + Meter Reading – Pre-Amp Factor.
 3. Measurement was up to 10th harmonic (~3GHz), but the emissions level were too low against the official limit and not report.

Date of Test : Aug. 10, 2001 Temperature : 26°C

EUT : Fan/Light Remote Control Humidity : 64%
(Transmitter), M/N: BCF-0019X2

Test Mode : EUT on Stand, Fan Mode/Low Speed

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	(Pre-Amp) Factor dB	Meter Reading Horizontal dBμV	Emission Level Horizontal dBμV/m	Limits dBμV/m	Margin dB
Fundamental Frequency (Quasi-Peak Values)							
299.633	26.09	3.13	0.00	36.23	65.45	74.64	9.19
Spurious Frequency							
599.265	20.48	4.79	0.00	20.18	45.45	54.64	9.19
898.898	23.62	6.23	0.00	12.30	42.15	54.64	12.49
1198.530	25.17	4.42	32.41	49.36	46.54	54.64	8.10
1498.163	25.88	4.80	32.26	45.65	44.07	54.64	10.57
1797.796	26.46	5.58	32.13	44.28	44.19	54.64	10.45
2097.428	26.98	6.21	32.09	44.25	45.35	54.64	9.29
2397.061	27.47	6.68	32.17	41.99	43.97	54.64	10.67
2696.693	27.90	7.10	32.25	42.09	44.84	54.64	9.80
2996.326	28.30	7.48	32.33	39.89	43.34	54.64	11.30

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	(Pre-Amp) Factor dB	Meter Reading Vertical dBμV	Emission Level Vertical dBμV/m	Limits dBμV/m	Margin dB
Fundamental Frequency (Quasi-Peak Values)							
299.633	25.30	3.13	0.00	35.78	64.21	74.64	10.43
Spurious Frequency							
599.265	20.54	4.79	0.00	19.31	44.64	54.64	10.00
898.898	24.99	6.23	0.00	11.23	42.45	54.64	12.19
1198.530	25.17	4.42	32.41	49.22	46.40	54.64	8.24
1498.163	25.88	4.80	32.26	47.03	45.45	54.64	9.19
1797.796	26.46	5.58	32.13	44.88	44.79	54.64	9.85
2097.428	26.98	6.21	32.09	46.31	47.41	54.64	7.23
2397.061	27.47	6.68	32.17	44.19	46.17	54.64	8.47
2696.693	27.90	7.10	32.25	41.99	44.74	54.64	9.90
2996.326	28.30	7.48	32.33	41.47	44.92	54.64	9.72

- Remark :
1. For Fundamental Frequency, the readings are Quasi-Peak values below 1000MHz; For Spurious Frequency, the readings are Quasi-Peak values below 1000MHz; the readings are peak values above 1GHz.
 2. Emission Level = Antenna Factor + Cable Loss + Meter Reading – Pre-Amp Factor.
 3. Measurement was up to 10th harmonic (~3GHz), but the emissions level were too low against the official limit and not report.

Date of Test : Aug. 10, 2001 Temperature : 26°C

EUT : Fan/Light Remote Control Humidity : 64%
(Transmitter), M/N: BCF-0019X2

Test Mode : EUT on Stand, Light Mode

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	(Pre-Amp) Factor dB	Meter Reading Horizontal dBμV	Emission Level Horizontal dBμV/m	Limits dBμV/m	Margin dB
Fundamental Frequency (Quasi-Peak Values)							
299.540	26.09	3.13	0.00	37.24	66.46	74.64	8.18
Spurious Frequency							
599.080	20.48	4.79	0.00	23.24	48.51	54.64	6.13
898.620	23.62	6.23	0.00	16.93	46.78	54.64	7.86
1198.147	25.17	4.42	32.41	48.27	45.45	54.64	9.19
1497.688	25.88	4.80	32.26	41.84	40.26	54.64	14.38
1797.228	26.46	5.58	32.13	42.15	42.06	54.64	12.58
2096.768	26.97	6.20	32.08	43.86	44.95	54.64	9.69
2396.308	27.47	6.68	32.17	40.07	42.05	54.64	12.59
2696.847	27.90	7.10	32.25	39.90	42.65	54.64	11.99
2995.387	28.30	7.48	32.33	39.62	43.07	54.64	11.57

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	(Pre-Amp) Factor dB	Meter Reading Vertical dBμV	Emission Level Vertical dBμV/m	Limits dBμV/m	Margin dB
Fundamental Frequency (Quasi-Peak Values)							
299.540	25.30	3.13	0.00	36.10	64.53	74.64	10.11
Spurious Frequency							
599.080	20.54	4.79	0.00	21.56	46.89	54.64	7.75
898.620	24.99	6.23	0.00	13.34	44.56	54.64	10.08
1198.147	25.17	4.42	32.41	49.36	46.54	54.64	8.10
1497.688	25.88	4.80	32.26	44.44	42.86	54.64	11.78
1797.228	26.46	5.58	32.13	44.26	44.17	54.64	10.47
2096.768	26.97	6.20	32.08	38.77	39.86	54.64	14.78
2396.308	27.47	6.68	32.17	41.36	43.34	54.64	11.30
2695.847	27.90	7.10	32.25	41.26	44.01	54.64	10.63
2995.387	28.30	7.48	32.33	41.66	45.11	54.64	9.53

- Remark :
1. For Fundamental Frequency, the readings are Quasi-Peak values below 1000MHz; For Spurious Frequency, the readings are Quasi-Peak values below 1000MHz; the readings are peak values above 1GHz.
 2. Emission Level = Antenna Factor + Cable Loss + Meter Reading – Pre-Amp Factor.
 3. Measurement was up to 10th harmonic (~3GHz), but the emissions level were too low against the official limit and not report.

Date of Test : Aug. 10, 2001 Temperature : 26°C

EUT : Fan/Light Remote Control Humidity : 64%
(Transmitter), M/N: BCF-0019X2

Test Mode : EUT on Side, Fan Mode/Hi Speed

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	(Pre-Amp) Factor dB	Meter Reading Horizontal dBμV	Emission Level Horizontal dBμV/m	Limits dBμV/m	Margin dB
Fundamental Frequency (Quasi-Peak Values)							
299.559	26.09	3.13	0.00	35.41	64.63	74.64	10.01
Spurious Frequency							
599.118	20.48	4.79	0.00	20.05	45.32	54.64	9.32
898.620	23.62	6.23	0.00	11.40	41.25	54.64	13.39
1198.236	25.17	4.42	32.41	49.41	46.59	54.64	8.05
1497.795	25.88	4.80	32.26	45.51	43.93	54.64	10.71
1797.353	26.46	5.58	32.13	43.19	43.10	54.64	11.54
2096.912	26.98	6.21	32.09	41.98	43.08	54.64	11.56
2396.471	27.47	6.68	32.17	38.21	40.19	54.64	14.45
2696.030	27.90	7.10	32.25	42.24	44.99	54.64	9.65
2995.589	28.30	7.48	32.33	38.92	42.37	54.64	12.27
Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	(Pre-Amp) Factor dB	Meter Reading Vertical dBμV	Emission Level Vertical dBμV/m	Limits dBμV/m	Margin dB
Fundamental Frequency (Quasi-Peak Values)							
299.559	25.30	3.13	0.00	35.21	63.64	74.64	11.00
Spurious Frequency							
599.118	20.54	4.79	0.00	23.32	48.65	54.64	5.99
898.620	24.99	6.23	0.00	14.20	45.42	54.64	9.22
1198.236	25.17	4.42	32.41	49.36	46.54	54.64	8.10
1497.795	25.88	4.80	32.26	47.47	45.89	54.64	8.75
1797.353	26.46	5.58	32.13	43.28	43.19	54.64	11.45
2096.912	26.98	6.21	32.09	42.12	43.22	54.64	11.42
2396.471	27.47	6.68	32.17	42.99	44.97	54.64	9.67
2696.030	27.90	7.10	32.25	40.26	43.01	54.64	11.63
2995.589	28.30	7.48	32.33	42.40	45.85	54.64	8.79

- Remark :
1. For Fundamental Frequency, the readings are Quasi-Peak values below 1000MHz; For Spurious Frequency, the readings are Quasi-Peak values below 1000MHz; the readings are peak values above 1GHz.
 2. Emission Level = Antenna Factor + Cable Loss + Meter Reading – Pre-Amp Factor.
 3. Measurement was up to 10th harmonic (~3GHz), but the emissions level were too low against the official limit and not report.

Date of Test : Aug. 10, 2001 Temperature : 26°C

EUT : Fan/Light Remote Control Humidity : 64%
(Transmitter), M/N: BCF-0019X2

Test Mode : EUT on Side, Fan Mode/Medium Speed

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	(Pre-Amp) Factor dB	Meter Reading Horizontal dBμV	Emission Level Horizontal dBμV/m	Limits dBμV/m	Margin dB
Fundamental Frequency (Quasi-Peak Values)							
299.605	26.09	3.13	0.00	37.11	66.33	74.64	8.31
Spurious Frequency							
599.211	20.48	4.79	0.00	19.04	44.31	54.64	10.33
898.816	23.62	6.23	0.00	12.50	42.35	54.64	12.29
1198.422	25.17	4.42	32.41	48.59	45.77	54.64	8.87
1498.027	25.88	4.80	32.26	44.77	43.19	54.64	11.45
1797.632	26.46	5.58	32.13	43.03	42.94	54.64	11.70
2097.238	26.98	6.21	32.09	41.99	43.09	54.64	11.55
2396.843	27.47	6.68	32.17	42.51	44.49	54.64	10.15
2696.448	27.90	7.10	32.25	41.94	44.69	54.64	9.95
2996.054	28.30	7.48	32.33	37.75	41.20	54.64	13.44

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	(Pre-Amp) Factor dB	Meter Reading Vertical dBμV	Emission Level Vertical dBμV/m	Limits dBμV/m	Margin dB
Fundamental Frequency (Quasi-Peak Values)							
299.605	25.30	3.13	0.00	36.73	65.16	74.64	9.48
Spurious Frequency							
599.211	20.54	4.79	0.00	21.79	47.12	54.64	7.52
898.816	24.99	6.23	0.00	11.23	42.45	54.64	12.19
1198.422	25.17	4.42	32.41	50.29	47.47	54.64	7.17
1498.027	25.88	4.80	32.26	43.70	42.12	54.64	12.52
1797.632	26.46	5.58	32.13	45.22	45.13	54.64	9.51
2097.238	26.98	6.21	32.09	43.92	45.02	54.64	9.62
2396.843	27.47	6.68	32.17	43.30	45.28	54.64	9.36
2696.448	27.90	7.10	32.25	42.82	45.57	54.64	9.07
2296.054	28.30	7.48	32.33	39.07	42.52	54.64	12.12

- Remark :
1. For Fundamental Frequency, the readings are Quasi-Peak values below 1000MHz; For Spurious Frequency, the readings are Quasi-Peak values below 1000MHz; the readings are peak values above 1GHz.
 2. Emission Level = Antenna Factor + Cable Loss + Meter Reading – Pre-Amp Factor.
 3. Measurement was up to 10th harmonic (~3GHz), but the emissions level were too low against the official limit and not report.

Date of Test : Aug. 10, 2001 Temperature : 26°C

EUT : Fan/Light Remote Control Humidity : 64%
(Transmitter), M/N: BCF-0019X2

Test Mode : EUT on Side, Fan Mode/Low Speed

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	(Pre-Amp) Factor dB	Meter Reading Horizontal dBμV	Emission Level Horizontal dBμV/m	Limits dBμV/m	Margin dB
Fundamental Frequency (Quasi-Peak Values)							
299.633	26.09	3.13	0.00	37.21	66.43	74.64	8.21
Spurious Frequency							
599.265	20.48	4.79	0.00	22.14	47.41	54.64	7.23
898.898	23.62	6.23	0.00	14.30	44.15	54.64	10.49
1198.530	25.17	4.42	32.41	48.41	45.59	54.64	9.05
1498.163	25.88	4.80	32.26	44.70	43.12	54.64	11.52
1797.796	26.46	5.58	32.13	41.51	41.42	54.64	13.22
2097.428	26.98	6.21	32.09	40.03	41.13	54.64	13.51
2397.061	27.47	6.68	32.17	38.10	40.08	54.64	14.56
2696.693	27.90	7.10	32.25	40.00	42.75	54.64	11.89
2996.326	28.30	7.48	32.33	36.84	40.29	54.64	14.35

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	(Pre-Amp) Factor dB	Meter Reading Vertical dBμV	Emission Level Vertical dBμV/m	Limits dBμV/m	Margin dB
Fundamental Frequency (Quasi-Peak Values)							
299.633	25.30	3.13	0.00	34.99	63.42	74.64	11.22
Spurious Frequency							
599.265	20.54	4.79	0.00	19.29	44.62	54.64	10.02
898.898	24.99	6.23	0.00	11.23	42.45	54.64	12.19
1198.533	25.17	4.42	32.41	49.06	46.24	54.64	8.40
1498.166	25.88	4.80	32.26	45.81	44.23	54.64	10.41
1797.798	26.46	5.58	32.13	44.17	44.08	54.64	10.56
2097.431	26.98	6.21	32.09	39.74	40.84	54.64	13.80
2397.063	27.47	6.68	32.17	40.99	42.97	54.64	11.67
2696.696	27.90	7.10	32.25	41.10	43.85	54.64	10.79
2996.326	28.30	7.48	32.33	41.70	45.15	54.64	9.49

- Remark :
1. For Fundamental Frequency, the readings are Quasi-Peak values below 1000MHz; For Spurious Frequency, the readings are Quasi-Peak values below 1000MHz; the readings are peak values above 1GHz.
 2. Emission Level = Antenna Factor + Cable Loss + Meter Reading – Pre-Amp Factor.
 3. Measurement was up to 10th harmonic (~3GHz), but the emissions level were too low against the official limit and not report.

Date of Test : Aug. 10, 2001 Temperature : 26°C

EUT : Fan/Light Remote Control Humidity : 64%
(Transmitter), M/N: BCF-0019X2

Test Mode : EUT on Side, Light Mode

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	(Pre-Amp) Factor dB	Meter Reading Horizontal dBμV	Emission Level Horizontal dBμV/m	Limits dBμV/m	Margin dB
Fundamental Frequency (Quasi-Peak Values)							
299.540	26.09	3.13	0.00	38.11	67.33	74.64	7.31
Spurious Frequency							
599.080	20.48	4.79	0.00	22.28	47.55	54.64	7.09
898.620	23.62	6.23	0.00	14.71	44.56	54.64	10.08
1198.147	25.17	4.42	32.41	47.22	44.40	54.64	10.24
1497.688	25.88	4.80	32.26	42.84	41.26	54.64	13.38
1797.228	26.46	5.58	32.13	41.17	41.08	54.64	13.56
2096.768	26.97	6.20	32.08	37.87	38.96	54.64	15.68
2396.308	27.47	6.68	32.17	40.07	42.05	54.64	12.59
2696.847	27.90	7.10	32.25	38.90	41.65	54.64	12.99
2995.387	28.30	7.48	32.33	42.62	46.07	54.64	8.57

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	(Pre-Amp) Factor dB	Meter Reading Vertical dBμV	Emission Level Vertical dBμV/m	Limits dBμV/m	Margin dB
Fundamental Frequency (Quasi-Peak Values)							
299.540	25.30	3.13	0.00	38.10	66.53	74.64	8.11
Spurious Frequency							
599.080	20.54	4.79	0.00	23.32	48.65	54.64	5.99
898.620	24.99	6.23	0.00	13.93	45.15	54.64	9.49
1198.147	25.17	4.42	32.41	47.36	44.54	54.64	10.10
1497.688	25.88	4.80	32.26	41.44	39.86	54.64	14.78
1797.228	26.46	5.58	32.13	40.26	40.17	54.64	14.47
2096.768	26.97	6.20	32.08	38.77	39.86	54.64	14.78
2396.308	27.47	6.68	32.17	38.36	40.34	54.64	14.30
2695.847	27.90	7.10	32.25	36.26	39.01	54.64	15.63
2995.387	28.30	7.48	32.33	36.66	40.11	54.64	14.53

- Remark :
1. For Fundamental Frequency, the readings are Quasi-Peak values below 1000MHz; For Spurious Frequency, the readings are Quasi-Peak values below 1000MHz; the readings are peak values above 1GHz.
 2. Emission Level = Antenna Factor + Cable Loss + Meter Reading – Pre-Amp Factor.
 3. Measurement was up to 10th harmonic (~3GHz), but the emissions level were too low against the official limit and not report.

Date of Test : Aug. 10, 2001 Temperature : 26°C

EUT : Fan/Light Remote Control Humidity : 64%
(Transmitter), M/N: BCF-0019X2

Test Mode : EUT on Lie, Fan Mode/Hi Speed

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	(Pre-Amp) Factor dB	Meter Reading Horizontal dBμV	Emission Level Horizontal dBμV/m	Limits dBμV/m	Margin dB
Fundamental Frequency (Quasi-Peak Values)							
299.559	26.09	3.13	0.00	34.33	63.55	74.64	11.09
Spurious Frequency							
599.118	20.48	4.79	0.00	19.18	44.45	54.64	10.19
898.620	23.62	6.23	0.00	10.30	40.15	54.64	14.49
1198.236	25.17	4.42	32.41	48.41	45.59	54.64	9.05
1497.795	25.88	4.80	32.26	41.51	39.93	54.64	14.71
1797.353	26.46	5.58	32.13	43.19	43.10	54.64	11.54
2096.912	26.98	6.21	32.09	41.98	43.08	54.64	11.56
2396.471	27.47	6.68	32.17	40.21	42.19	54.64	12.45
2696.030	27.90	7.10	32.25	39.24	41.99	54.64	12.65
2995.589	28.30	7.48	32.33	39.92	43.37	54.64	11.27
Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	(Pre-Amp) Factor dB	Meter Reading Vertical dBμV	Emission Level Vertical dBμV/m	Limits dBμV/m	Margin dB
Fundamental Frequency (Quasi-Peak Values)							
299.559	25.30	3.13	0.00	33.69	62.12	74.64	12.52
Spurious Frequency							
599.118	20.54	4.79	0.00	20.82	46.15	54.64	8.49
898.620	24.99	6.23	0.00	9.40	40.62	54.64	14.02
1198.236	25.17	4.42	32.41	50.36	47.54	54.64	7.10
1497.795	25.88	4.80	32.26	43.47	41.89	54.64	12.75
1797.353	26.46	5.58	32.13	44.28	44.19	54.64	10.45
2096.912	26.98	6.21	32.09	40.12	41.22	54.64	13.42
2396.471	27.47	6.68	32.17	39.99	41.97	54.64	12.67
2696.030	27.90	7.10	32.25	41.26	44.01	54.64	10.63
2995.589	28.30	7.48	32.33	40.40	43.85	54.64	10.79

- Remark :
1. For Fundamental Frequency, the readings are Quasi-Peak values below 1000MHz; For Spurious Frequency, the readings are Quasi-Peak values below 1000MHz; the readings are peak values above 1GHz.
 2. Emission Level = Antenna Factor + Cable Loss + Meter Reading – Pre-Amp Factor.
 3. Measurement was up to 10th harmonic (~3GHz), but the emissions level were too low against the official limit and not report.

Date of Test : Aug. 10, 2001 Temperature : 26°C

EUT : Fan/Light Remote Control Humidity : 64%
(Transmitter), M/N: BCF-0019X2

Test Mode : EUT on Lie, Fan Mode/Medium Speed

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	(Pre-Amp) Factor dB	Meter Reading Horizontal dBμV	Emission Level Horizontal dBμV/m	Limits dBμV/m	Margin dB
Fundamental Frequency (Quasi-Peak Values)							
299.605	26.09	3.13	0.00	37.35	66.57	74.64	8.07
Spurious Frequency							
599.211	20.48	4.79	0.00	21.88	47.15	54.64	7.49
898.816	23.62	6.23	0.00	13.77	43.62	54.64	11.02
1198.422	25.17	4.42	32.41	48.29	45.47	54.64	9.17
1498.027	25.88	4.80	32.26	45.61	44.03	54.64	10.61
1797.632	26.46	5.58	32.13	44.15	44.06	54.64	10.58
2097.238	26.98	6.21	32.09	41.90	43.00	54.64	11.64
2396.843	27.47	6.68	32.17	42.25	44.23	54.64	10.41
2696.448	27.90	7.10	32.25	40.21	42.96	54.64	11.68
2996.054	28.30	7.48	32.33	38.64	42.09	54.64	12.55

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	(Pre-Amp) Factor dB	Meter Reading Vertical dBμV	Emission Level Vertical dBμV/m	Limits dBμV/m	Margin dB
Fundamental Frequency (Quasi-Peak Values)							
299.605	25.30	3.13	0.00	34.19	62.62	74.64	12.02
Spurious Frequency							
599.211	20.54	4.79	0.00	20.19	45.52	54.64	9.12
898.816	24.99	6.23	0.00	11.30	42.52	54.64	12.12
1198.422	25.17	4.42	32.41	50.13	47.31	54.64	7.33
1498.027	25.88	4.80	32.26	47.56	45.98	54.64	8.66
1797.632	26.46	5.58	32.13	44.38	44.29	54.64	10.35
2097.238	26.98	6.21	32.09	43.11	44.21	54.64	10.43
2396.843	27.47	6.68	32.17	40.10	42.08	54.64	12.56
2696.448	27.90	7.10	32.25	39.40	42.15	54.64	12.49
2296.054	28.30	7.48	32.33	37.64	41.09	54.64	13.55

- Remark :
1. For Fundamental Frequency, the readings are Quasi-Peak values below 1000MHz; For Spurious Frequency, the readings are Quasi-Peak values below 1000MHz; the readings are peak values above 1GHz.
 2. Emission Level = Antenna Factor + Cable Loss + Meter Reading – Pre-Amp Factor.
 3. Measurement was up to 10th harmonic (~3GHz), but the emissions level were too low against the official limit and not report.

Date of Test : Aug. 10, 2001 Temperature : 26°C

EUT : Fan/Light Remote Control Humidity : 64%
(Transmitter), M/N: BCF-0019X2

Test Mode : EUT on Lie, Fan Mode/Low Speed

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	(Pre-Amp) Factor dB	Meter Reading Horizontal dBμV	Emission Level Horizontal dBμV/m	Limits dBμV/m	Margin dB
Fundamental Frequency (Quasi-Peak Values)							
299.633	26.09	3.13	0.00	36.93	66.15	74.64	8.49
Spurious Frequency							
599.265	20.48	4.79	0.00	20.97	46.24	54.64	8.40
898.898	23.62	6.23	0.00	15.27	45.12	54.64	9.52
1198.530	25.17	4.42	32.41	48.52	45.70	54.64	8.94
1498.163	25.88	4.80	32.26	43.68	42.10	54.64	12.54
1797.796	26.46	5.58	32.13	45.17	45.08	54.64	9.56
2097.428	26.98	6.21	32.09	40.08	41.18	54.64	13.46
2397.061	27.47	6.68	32.17	43.08	45.06	54.64	9.58
2696.693	27.90	7.10	32.25	44.00	46.75	54.64	7.89
2996.326	28.30	7.48	32.33	39.07	42.52	54.64	12.12

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	(Pre-Amp) Factor dB	Meter Reading Vertical dBμV	Emission Level Vertical dBμV/m	Limits dBμV/m	Margin dB
Fundamental Frequency (Quasi-Peak Values)							
299.633	25.30	3.13	0.00	38.78	67.21	74.64	7.43
Spurious Frequency							
599.265	20.54	4.79	0.00	23.32	48.65	54.64	5.99
898.898	24.99	6.23	0.00	14.23	45.45	54.64	9.19
1198.530	25.17	4.42	32.41	50.13	47.31	54.64	7.33
1498.163	25.88	4.80	32.26	47.15	45.57	54.64	9.07
1797.797	26.46	5.58	32.13	46.95	46.86	54.64	7.78
2097.428	26.98	6.21	32.09	41.57	42.67	54.64	11.97
2397.061	27.47	6.68	32.17	42.89	44.87	54.64	9.77
2696.693	27.90	7.10	32.25	43.70	46.45	54.64	8.19
2996.326	28.30	7.48	32.33	40.66	44.11	54.64	10.53

- Remark :
1. For Fundamental Frequency, the readings are Quasi-Peak values below 1000MHz; For Spurious Frequency, the readings are Quasi-Peak values below 1000MHz; the readings are peak values above 1GHz.
 2. Emission Level = Antenna Factor + Cable Loss + Meter Reading – Pre-Amp Factor.
 3. Measurement was up to 10th harmonic (~3GHz), but the emissions level were too low against the official limit and not report.

Date of Test :	Aug. 10, 2001	Temperature :	26°C
EUT :	Fan/Light Remote Control (Transmitter), M/N: BCF-0019X2	Humidity :	64%
Test Mode :	EUT on Lie, Light Mode		

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	(Pre-Amp) Factor dB	Meter Reading Horizontal dBμV	Emission Level Horizontal dBμV/m	Limits dBμV/m	Margin dB
Fundamental Frequency (Quasi-Peak Values)							
299.540	26.09	3.13	0.00	33.94	63.16	74.64	11.48
Spurious Frequency							
599.080	20.48	4.79	0.00	23.48	48.75	54.64	5.89
898.620	23.62	6.23	0.00	15.50	45.35	54.64	9.29
1198.147	25.17	4.42	32.41	45.26	42.44	54.64	12.20
1497.688	25.88	4.80	32.26	40.85	39.27	54.64	15.37
1797.228	26.46	5.58	32.13	40.17	40.08	54.64	14.56
2096.768	26.97	6.20	32.08	39.87	40.96	54.64	13.68
2396.308	27.47	6.68	32.17	37.07	39.05	54.64	15.59
2696.847	27.90	7.10	32.25	35.89	38.64	54.64	16.00
2995.387	28.30	7.48	32.33	36.60	40.05	54.64	14.59

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	(Pre-Amp) Factor dB	Meter Reading Vertical dBμV	Emission Level Vertical dBμV/m	Limits dBμV/m	Margin dB
Fundamental Frequency (Quasi-Peak Values)							
299.540	25.30	3.13	0.00	36.80	65.23	74.64	9.41
Spurious Frequency							
599.080	20.54	4.79	0.00	22.19	47.52	54.64	7.12
898.620	24.99	6.23	0.00	14.93	46.15	54.64	8.49
1198.147	25.17	4.42	32.41	44.37	41.55	54.64	13.09
1497.688	25.88	4.80	32.26	42.43	40.85	54.64	13.79
1797.228	26.46	5.58	32.13	38.24	38.15	54.64	16.49
2096.768	26.97	6.20	32.08	39.77	40.86	54.64	13.78
2396.308	27.47	6.68	32.17	39.37	41.35	54.64	13.29
2695.847	27.90	7.10	32.25	38.81	41.56	54.64	13.08
2995.387	28.30	7.48	32.33	36.11	39.56	54.64	15.08

- Remark :
1. For Fundamental Frequency, the readings are Quasi-Peak values below 1000MHz; For Spurious Frequency, the readings are Quasi-Peak values below 1000MHz; the readings are peak values above 1GHz.
 2. Emission Level = Antenna Factor + Cable Loss + Meter Reading – Pre-Amp Factor.
 3. Measurement was up to 10th harmonic (~3GHz), but the emissions level were too low against the official limit and not report.

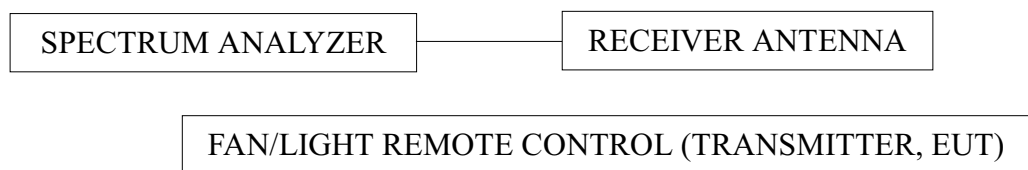
4. EMISSION BANDWIDTH TEST

4.1. Test Equipment

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

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	HP	8590L	3710A01838	Aug.06, 01'	1 Year

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

Date of Test: Aug. 16, 2001

No.	Test Model	Mode	Center Frequency	Bandwidth	Tolerance (%)
1.	BCF-00I9X2	Fan	299.6330MHz	69.0kHz	0.023%
2.		Light	299.5400MHz	54.5kHz	0.018%

The bandwidth test graphs are attached in next page.

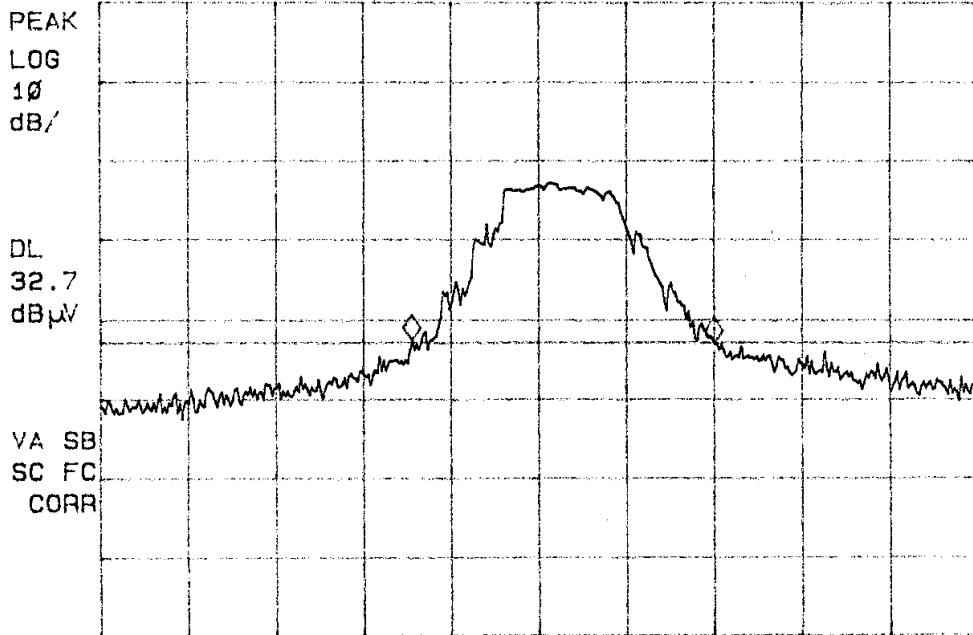
(1) BCF-00I9X2/Fan Mode (2) BCF-00I9X2/Light Mode

20:29:20 AUG 16, 2001

1/2

MKR Δ 69.0 kHzREF 75.5 dB μ V #AT 20 dB

-.37 dB



CENTER 299.6330 MHz

SPAN 200.0 kHz

#RES BW 10 kHz

#VBW 10 kHz

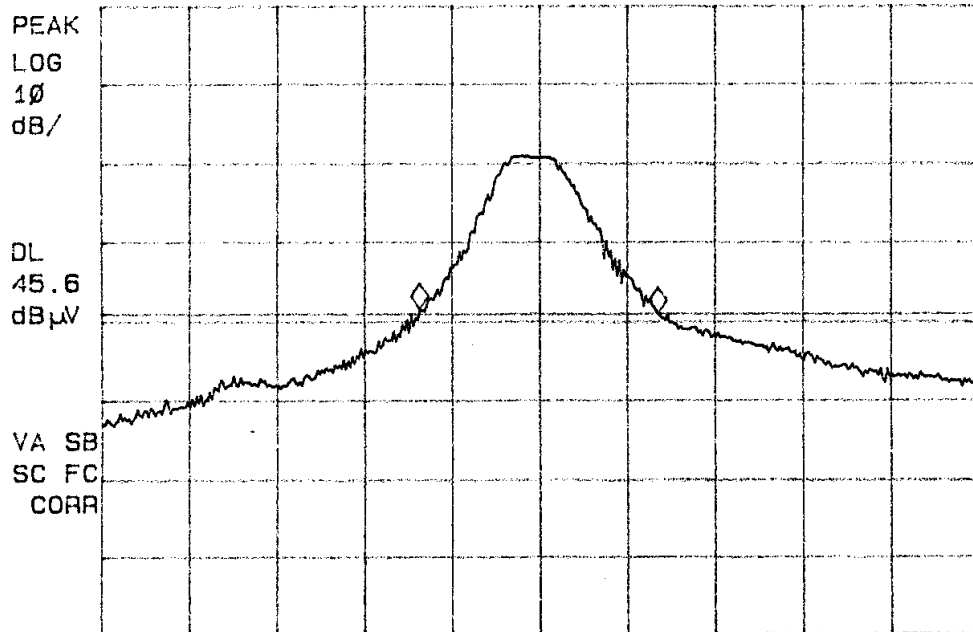
#SWP 150 msec

20:24:47 AUG 16, 2001

1/2

MKR Δ 54.5 kHzREF 84.5 dB μ V #AT 20 dB

-.57 dB



CENTER 299.5400 MHz

SPAN 200.0 kHz

#RES BW 10 kHz

#VBW 10 kHz

#SWP 150 msec

5. DEVIATION TO TEST SPECIFICATIONS

【NONE】