

**ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
INTENTIONAL RADIATOR CERTIFICATION TO
FCC PART 15 SUBPART C REQUIREMENT
OF**

Bluetooth Dongle

MODEL No.: BT-DG02

BRAND NAME: EPoX

FCC ID: QLHQAB0802

REPORT NO: 020034-RF-ID

ISSUE DATE: Aug 6, 2002

Prepared for

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Prepared by

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VERIFICATION OF COMPLIANCE

Applicant: **EPoX Computer Co., Ltd.**
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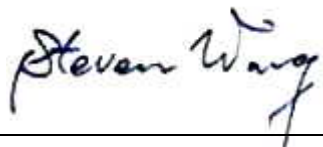
Equipment Under Test: Bluetooth Dongle
BRAND NAME: EPoX
MODEL No.: BT-DG02
Serial Number: N/A
File Number: 020034-RF-ID
Date of test: July 29 ~ Aug. 2, 2000

We hereby certify that:

The above equipment was tested by C&C Laboratory Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (1992) and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.

The test results of this report relate only to the tested sample identified in this report.

Approved By



Steven Wang / RF Dept. Manager
C&C Laboratory Co., Ltd

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1. GENERAL INFORMATION

1.1 Product Description

The EPOX Computer Co., Ltd. Model: BT-DG02 (referred to as the EUT in this report) is a USB Bluetooth .

The EUT is compliance with Bluetooth Standard.

A major technical descriptions of EUT is described as following:

A). Operation Frequency: 2402 – 2480MHz 79 channels

B). Modulation type: Frequency Hopping Sequence Spread Spectrum (FHSS)

C). Antenna Designation: Non-User Replaceable (Fixed)

D). Power Supply: 5Vdc via USB port of Notebook PC.

E). Receiver type : Super heterodyne

1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: QLHQAB0802 filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules. The composite system(receiver) is compliance with Subpart B is authorized under a DoC procedure.

1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (1992). Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located on the address of C&C Laboratory, Co., Ltd. No. 81-1, 210 Lane, Pa-de 2nd Road, Lu-Chu Hsiang, Taoyuan, Taiwan, R.O.C.. The Open Area Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 1992 and CISPR 22/EN 55022 requirements.

1.5 Special Accessories

Not available for this EUT intended for grant.

1.6 Equipment Modifications

Not available for this EUT intended for grant.

2. SYSTEM TEST CONFIGURATION

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The EUT (Transmitter) was operated in the engineering mode to fix the Tx frequency which was for the purpose of the measurements.

2.3 Test Procedure

2.3.1 Conducted Emissions

The EUT is placed on a turn table which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4-1992. Conducted emissions from the EUT measured in the **frequency range between 0.45 MHz and 30MHz** using **CISPR Quasi-Peak detector mode**.

2.3.2 Radiated Emissions

The EUT is placed on a turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter(EUT) was rotated through three orthogonal axes according to the requirements in Section 13.1.4.1 of ANSI C63.4-1992.

2.4 Configuration of Tested System

Fig. 2-1 Configuration of Tested System

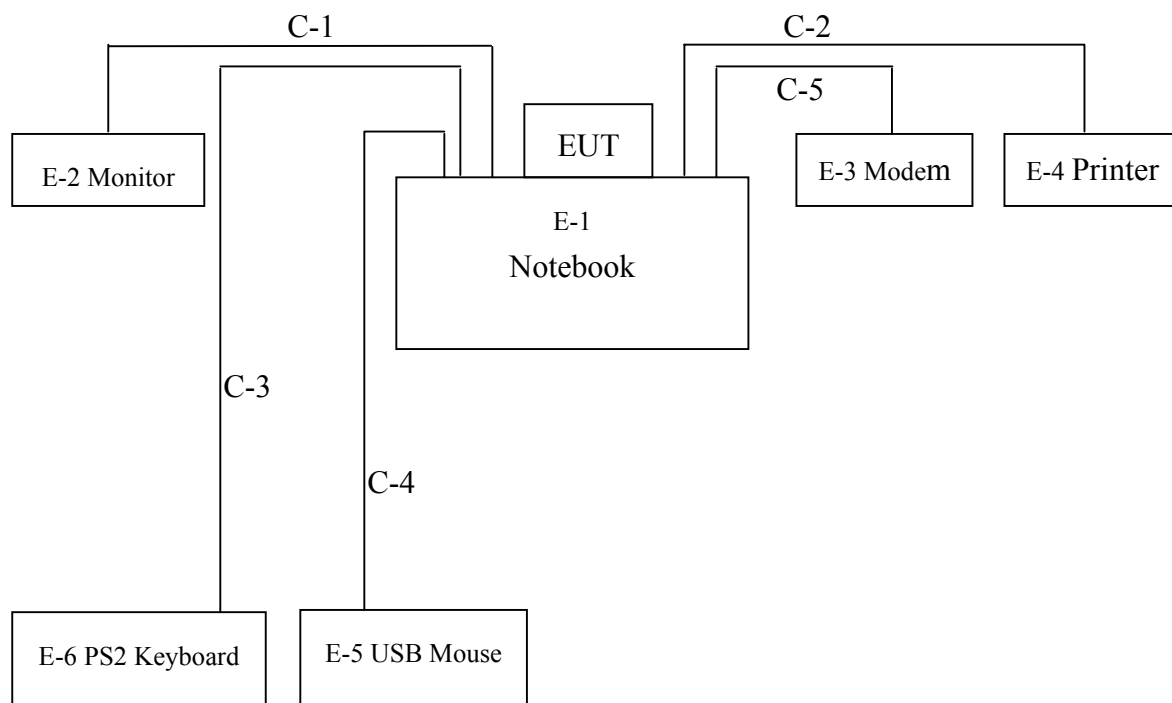


Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
E-1	Notebook	LEO	M285	DOC	N/A	
E-2	MONITOR	SONY	CPD-G200	DOC	2715884	
E-3	MODEM	Computer Peripherals	2400	DK467GSM24	94-364-176273	
E-4	PRINTER	EPSON	STYLUS C20SX	DOC	DW4E126664	
E-5	USB-MOUSE	LOGITECH	M-BB48	DOC	LZE2250259	
E-6	PS2 KEYBORAD	COMPAQ	SK-2800C	GYUR79SK	B1C790BCPJ73JQ	

Table 2-2 Information of Interface Cable

Item	I/O Cable	Device Connected	Shielded Type	Ferrite Core	Detachable/ Permanently	Length	Note
C-1	Video Cable	Notebook-PC	Yes	Yes	Permanently attached on Monitor	150cm	
C-2	Centronics Cable	PC-Printer	Yes	No	Part of Printer, Detachable	200cm	
C-3	Keyboard Cable	PC-Keyboard	Yes	No	Permanently attached on Keyboard	200cm	
C-4	Mouse Cable	PC-Mouse	Yes	No	Permanently attached on Mouse	180cm	
C-5	Interface Cable	PC-Modem	Yes	No	Permanently attached on Mouse	180cm	

Note:

- (1) Unless otherwise marked as ※ in 『Remark』 column, Neutron consigns the support equipment to the tested system.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

3. SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§15.207(a)	Conducted Emission	Compliant
§15.247(b)	Peak Output Power	Compliant
§15.247(a)(1)(ii)	20dB Bandwidth	Compliant
§15.247(c)	100 KHz Bandwidth Of Frequency Band Edges	Compliant
§15.209(a) (f)	Spurious Emission	Compliant
§15.247(a)(1)	Frequency Separation	Compliant
§15.247(a)(1)(ii)	Number of hopping frequency	Compliant
§15.247(a)(1)(ii)	Time of Occupancy	Compliant
§15.203	Antenna Requirement	Compliant
§1.1310	RF Exposure	Compliant

4. DESCRIPTION OF TEST MODES

The EUT (USB Bluetooth) has been tested under operating condition.

Software used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

Channel low(2402MHz) 、mid(2441MHz) and high(2480MHz) with 741k highest data rate are chosen for testing.

5. CONDUCTED EMISSION TEST

5.1 Standard Applicable

According to §15.207. frequency within 450KHz to 30MHz shall not exceed 250microvolts(48dBuV).

5.2 EUT Setup

1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.4-1992.
2. The EUT was plug-in the host PC via USB port. The host PC system was placed on the center of the back edge on the test table. The peripherals like modem, monitor printer, K/B, and mouse were placed on the side of the host PC system. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
3. The keyboard was placed directly in the front of the monitor, flushed with the front tabletop. The mouse was placed next to the Keyboard, flushed with the back of keyboard.
4. The spacing between the peripherals was 10 centimeters.
5. External I/O cables were draped along the edge of the test table and bundle when necessary.
6. The host PC system was connected with 110Vac/60Hz power source.

5.3 Measurement Procedure

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

5.4 Measurement Equipment Used:

Conducted Emission Test Site # 3					
EQUIPMENT TYPE	MFR	MODEL NO.	SERIAL NO.	LAST CAL.	CAL DUE.
EMI Test Receiver	R&S	ESCS30	847793/012	12/19/2001	12/18/2002
LISN	R&S	ESH2-Z5	843285/010	12/10/2001	12/09/2002
LISN	EMCO	3825/2	9003-1628	07/26/2002	07/25/2003
Spectrum Analyzer	ADVANTEST	R3261C	71720533	08/06/2002	08/05/2003
2X2 WIRE ISN	R&S	ENY22	100020	06/20/2002	06/19/2003
FOUR WIRE ISN	R&S	ENY41	100006	06/20/2002	06/19/2003

5.5 Measurement Result

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

LINE CONDUCTED TEST

Model Number: BT-DG02

Tested by: Markba Lee

Test Mode: TX CH-Low

Detector Function: Quasi-Peak

Temperature: 33°C

Humidity: 65%RH

(The chart below shows the highest readings taken from the final data)

FREQ MHz	Q.P. Raw dBuV	AVG Raw dBuV	Q.P. Limit dBuV	AVG Limit dBuV	Q.P. Margin dB	AVG Margin dB	NOTE
0.330	47.80	47.40	59.45	49.45	-11.65	-2.05	L1
0.393	45.60	---	58.00	48.00	-12.40	---	L1
0.463	44.00	43.60	56.64	46.64	-12.64	-3.04	L1
0.527	43.20	42.50	56.00	46.00	-12.80	-3.50	L1
0.657	44.20	43.10	56.00	46.00	-11.80	-2.90	L1
0.721	43.00	---	56.00	46.00	-13.00	---	L1
0.513	43.60	---	56.00	46.00	-12.40	---	L2
0.655	42.80	---	56.00	46.00	-13.20	---	L2
0.726	43.60	---	56.00	46.00	-12.40	---	L2
0.860	43.40	---	56.00	46.00	-12.60	---	L2
0.926	43.80	---	56.00	46.00	-12.20	---	L2
1.039	43.60	---	56.00	46.00	-12.40	---	L2

L1 = Line One (Hot side) / L2 = Line Two (Neutral side)

****NOTE: “---” denotes the emission level was or more than 2dB below the Average limit, so no re-check anymore.**

LINE CONDUCTED TEST

Model Number: BT-DG02

Tested by: Markba Lee

Test Mode: TX CH-Mid

Detector Function: Quasi-Peak

Temperature: 33°C

Humidity: 65%RH

(The chart below shows the highest readings taken from the final data)

FREQ	Q.P.	AVG	Q.P.	AVG	Q.P.	AVG	NOTE
MHz	Raw dBuV	Raw dBuV	Limit dBuV	Limit dBuV	Margin dB	Margin dB	
0.328	48.40	48.20	59.50	49.50	-11.10	-1.30	L1
0.392	46.20	45.70	58.02	48.02	-11.82	-2.32	L1
0.458	46.50	46.00	56.73	46.73	-10.23	-0.73	L1
0.585	46.50	45.80	56.00	46.00	-9.50	-0.20	L1
0.654	43.80	43.20	56.00	46.00	-12.20	-2.80	L1
0.722	43.20	42.70	56.00	46.00	-12.80	-3.30	L1
0.523	44.20	43.30	56.00	46.00	-11.80	-2.70	L2
0.656	42.80	42.40	56.00	46.00	-13.20	-3.60	L2
0.785	43.80	43.10	56.00	46.00	-12.20	-2.90	L2
0.857	43.40	---	56.00	46.00	-12.60	---	L2
0.916	44.00	43.00	56.00	46.00	-12.00	-3.00	L2
1.182	41.60	40.20	56.00	46.00	-14.40	-5.80	L2

L1 = Line One (Hot side) / L2 = Line Two (Neutral side)

**NOTE: "---" denotes the emission level was or more than 2dB below the Average limit, so no re-check anymore.

LINE CONDUCTED TEST

Model Number: BT-DG02

Tested by: Markba Lee

Test Mode: TX CH-High

Detector Function: Quasi-Peak

Temperature: 33°C

Humidity: 65%RH

(The chart below shows the highest readings taken from the final data)

FREQ MHz	Q.P. Raw dBuV	AVG Raw dBuV	Q.P. Limit dBuV	AVG Limit dBuV	Q.P. Margin dB	AVG Margin dB	NOTE
0.326	47.90	47.50	59.55	49.55	-11.65	-2.05	L1
0.393	46.60	46.10	57.94	47.94	-11.34	-1.84	L1
0.459	46.00	45.70	56.71	46.71	-10.71	-1.01	L1
0.588	45.00	44.50	56.00	46.00	-11.00	-1.50	L1
0.654	44.00	43.30	56.00	46.00	-12.00	-2.70	L1
0.719	44.20	43.30	56.00	46.00	-11.80	-2.70	L1
0.522	46.60	43.00	56.00	46.00	-9.40	-3.00	L2
0.654	43.30	42.70	56.00	46.00	-12.70	-3.30	L2
0.783	42.10	41.20	56.00	46.00	-13.90	-4.80	L2
0.856	43.20	---	56.00	46.00	-12.80	---	L2
0.915	43.60	42.90	56.00	46.00	-12.40	-3.10	L2
1.178	44.10	43.90	56.00	46.00	-11.90	-2.10	L2

L1 = Line One (Hot side) / L2 = Line Two (Neutral side)

****NOTE:** "---" denotes the emission level was or more than 2dB below the Average limit, so no re-check anymore.

LINE CONDUCTED TEST

Model Number: BT-DG02

Tested by: Markba Lee

Test Mode: RX CH-Low

Detector Function: Quasi-Peak

Temperature: 33°C

Humidity: 65%RH

(The chart below shows the highest readings taken from the final data)

FREQ MHz	Q.P. Raw dBuV	AVG Raw dBuV	Q.P. Limit dBuV	AVG Limit dBuV	Q.P. Margin dB	AVG Margin dB	NOTE
0.328	48.00	47.70	59.50	49.50	-11.50	-1.80	L1
0.392	46.50	46.00	58.00	48.00	-11.50	-2.00	L1
0.456	46.40	45.80	56.77	46.77	-10.37	-0.97	L1
0.524	45.40	44.80	56.00	46.00	-10.60	-1.20	L1
0.655	44.10	43.30	56.00	46.00	-11.90	-2.70	L1
0.720	44.00	43.30	56.00	46.00	-12.00	-2.70	L1
0.522	43.90	43.00	56.00	46.00	-12.10	-3.00	L2
0.654	43.80	43.10	56.00	46.00	-12.20	-2.90	L2
0.785	43.70	43.00	56.00	46.00	-12.30	-3.00	L2
0.856	43.60	---	56.00	46.00	-12.40	---	L2
0.916	43.90	43.20	56.00	46.00	-12.10	-2.80	L2
1.441	44.30	43.20	56.00	46.00	-11.70	-2.80	L2

L1 = Line One (Hot side) / L2 = Line Two (Neutral side)

****NOTE:** "---" denotes the emission level was or more than 2dB below the Average limit, so no re-check anymore.

LINE CONDUCTED TEST

Model Number: BT-DG02

Tested by: Markba Lee

Test Mode: RX CH-Mid

Detector Function: Quasi-Peak

Temperature: 33°C

Humidity: 65%RH

(The chart below shows the highest readings taken from the final data)

FREQ MHz	Q.P. Raw dBuV	AVG Raw dBuV	Q.P. Limit dBuV	AVG Limit dBuV	Q.P. Margin dB	AVG Margin dB	NOTE
0.328	47.60	47.50	59.50	49.50	-11.90	-2.00	L1
0.392	46.40	46.00	58.02	48.02	-11.62	-2.02	L1
0.457	46.40	46.00	56.75	46.75	-10.35	-0.75	L1
0.524	45.50	44.70	56.00	46.00	-10.50	-1.30	L1
0.653	43.10	42.80	56.00	46.00	-12.90	-3.20	L1
0.720	44.00	43.30	56.00	46.00	-12.00	-2.70	L1
0.522	43.80	42.80	56.00	46.00	-12.20	-3.20	L2
0.654	43.70	43.00	56.00	46.00	-12.30	-3.00	L2
0.783	43.30	41.80	56.00	46.00	-12.70	-4.20	L2
0.854	43.80	---	56.00	46.00	-12.20	---	L2
0.916	43.90	43.30	56.00	46.00	-12.10	-2.70	L2
1.569	43.90	41.90	56.00	46.00	-12.10	-4.10	L2

L1 = Line One (Hot side) / L2 = Line Two (Neutral side)

****NOTE:** “---” denotes the emission level was or more than 2dB below the Average limit, so no re-check anymore.

LINE CONDUCTED TEST

Model Number: BT-DG02

Tested by: Markba Lee

Test Mode: RX CH-High

Detector Function: Quasi-Peak

Temperature: 33°C

Humidity: 65%RH

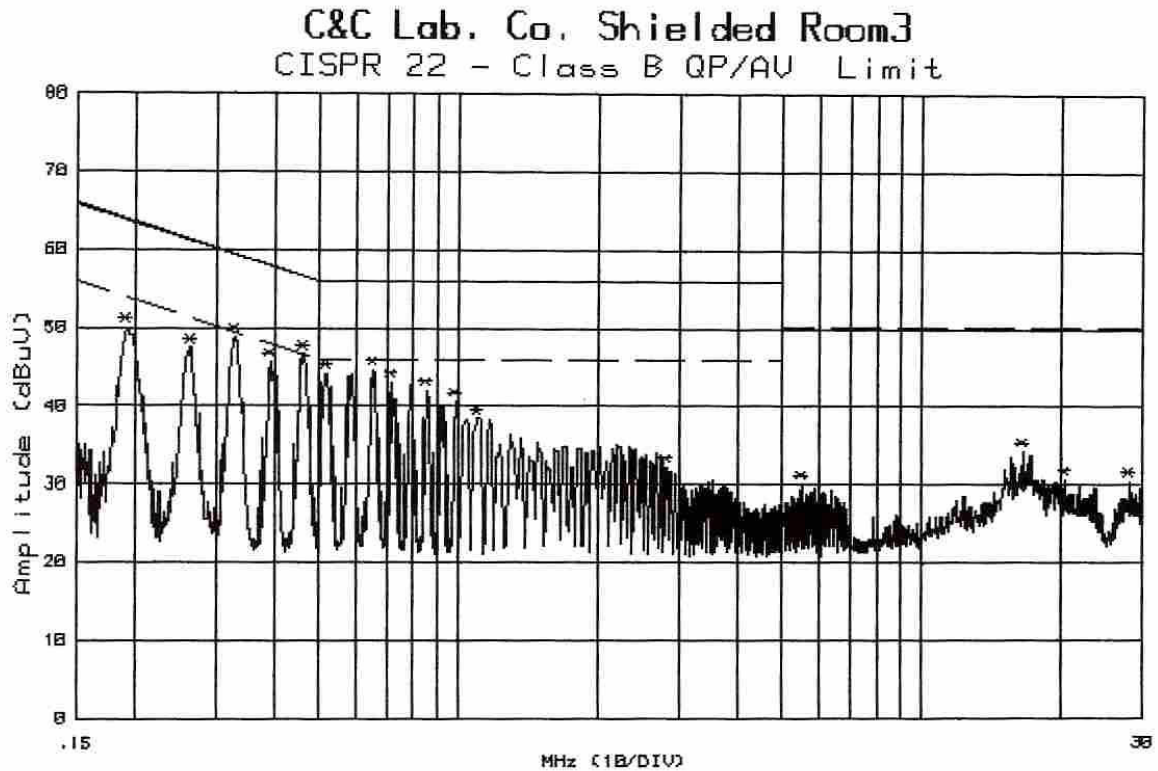
(The chart below shows the highest readings taken from the final data)

FREQ MHz	Q.P. Raw dBuV	AVG Raw dBuV	Q.P. Limit dBuV	AVG Limit dBuV	Q.P. Margin dB	AVG Margin dB	NOTE
0.329	47.20	---	59.50	49.50	-12.30	---	L1
0.394	45.40	44.60	57.98	47.98	-12.58	-3.38	L1
0.456	45.80	45.30	56.77	46.77	-10.97	-1.47	L1
0.589	44.80	44.30	56.00	46.00	-11.20	-1.70	L1
0.653	43.30	43.00	56.00	46.00	-12.70	-3.00	L1
0.718	43.50	42.40	56.00	46.00	-12.50	-3.60	L1
0.519	43.80	43.10	56.00	46.00	-12.20	-2.90	L2
0.653	43.80	43.20	56.00	46.00	-12.20	-2.80	L2
0.784	43.40	42.50	56.00	46.00	-12.60	-3.50	L2
0.855	43.80	---	56.00	46.00	-12.20	---	L2
0.917	43.80	43.10	56.00	46.00	-12.20	-2.90	L2
1.179	43.80	43.00	56.00	46.00	-12.20	-3.00	L2

L1 = Line One (Hot side) / L2 = Line Two (Neutral side)

****NOTE:** “---” denotes the emission level was or more than 2dB below the Average limit, so no re-check anymore.

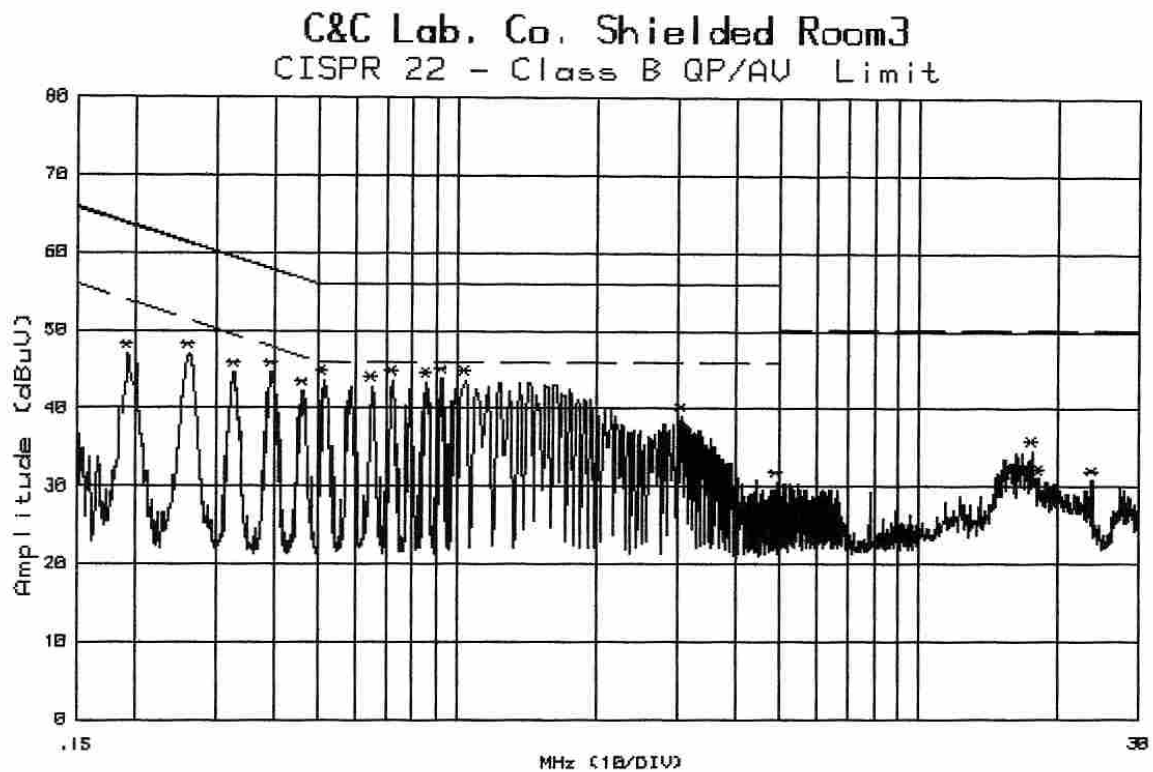
Conducted Test Data TX CH-Low L1



Customer: EPOX File#: 373 Date : 29 Jul 2002 15:57:50
 Model : BT-DG02 Humd.: 65 (%) Temp. : 33 (C)
 Mode : . Port : L1 Tested by: MARKBA LEE
 Reading : Peak (R3261C SPA)
 Remark : TX CH-LOW (2402MHz)

No.	Freq. (MHz)	Reading (dBuV)	I_Loss (dB)	Total (dBuV)	QP.Lmt (dBuV)	Margin (dB)	Warning Mark
1	.192	49.5	.5	50.0	63.9	-13.9	
2	.265	46.9	.5	47.4	61.3	-13.9	
3	.330	48.4	.4	48.8	59.5	-10.7	
4	.393	45.2	.4	45.6	58.0	-12.4	
5	.466	46.2	.4	46.6	56.6	-10.0	
6	.520	43.8	.4	44.2	56.0	-11.8	
7	.657	44.2	.4	44.6	56.0	-11.4	
8	.721	42.6	.4	43.0	56.0	-13.0	
9	.859	41.6	.4	42.0	56.0	-14.0	
10	.994	40.2	.4	40.6	56.0	-15.4	
11	1.103	38.0	.4	38.4	56.0	-17.6	
12	2.813	31.9	.3	32.2	56.0	-23.8	
13	5.539	29.5	.5	30.0	60.0	-30.0	
14	16.543	33.7	.5	34.2	60.0	-25.8	
15	20.514	30.2	.4	30.6	60.0	-29.4	
16	28.229	29.7	.7	30.4	60.0	-29.6	

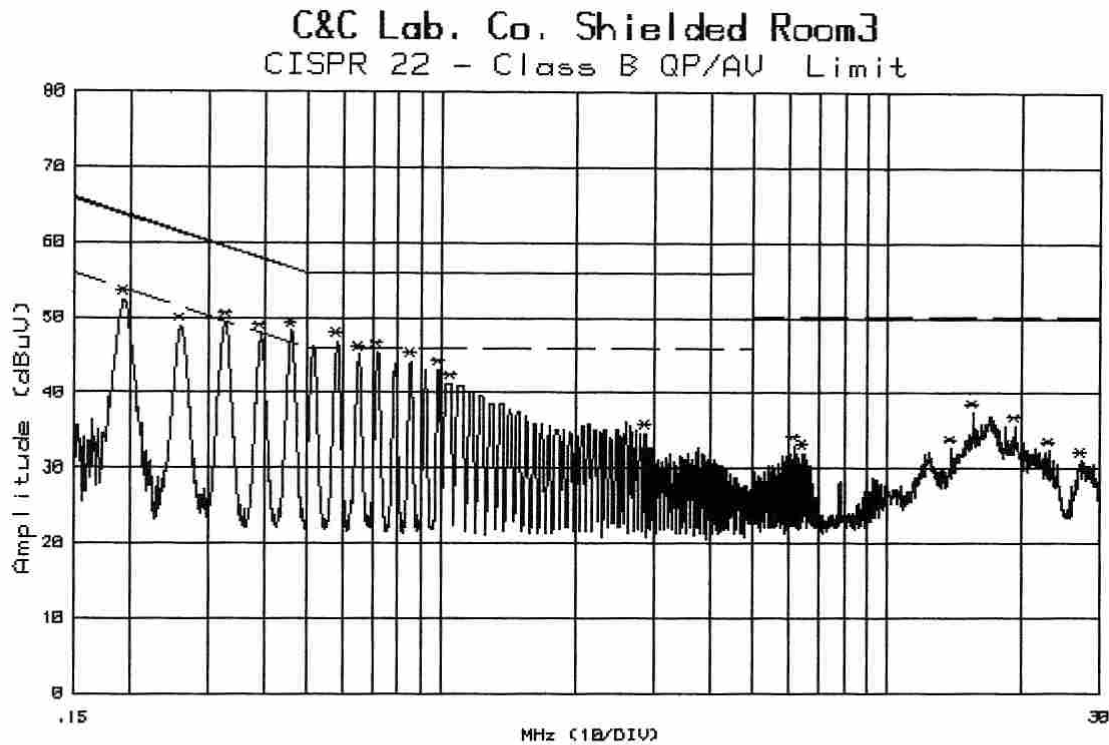
Conducted Test Data TX CH-Low L2



Customer: EPOX	File#: 372	Date :29 Jul 2002 15:56:09
Model :BT-DG02	Humd.:65 (%)	Temp. :33 (C)
Mode :.	Port :L2	Tested by:MARKBA LEE
Reading :Peak(R3261C SPA)		
Remark :TX CH-LOW(2402MHz)		

No.	Freq. (MHz)	Reading (dBuV)	I_Loss (dB)	Total (dBuV)	QP.Lmt (dBuV)	Margin (dB)	Warning Mark
1	.194	46.5	.5	47.0	63.9	-16.9	
2	.263	46.5	.5	47.0	61.4	-14.4	
3	.329	44.2	.4	44.6	59.5	-14.9	
4	.398	44.2	.4	44.6	57.9	-13.3	
5	.463	41.8	.4	42.2	56.6	-14.4	
6	.513	43.1	.5	43.6	56.0	-12.4	
7	.655	42.3	.5	42.8	56.0	-13.2	
8	.726	43.1	.5	43.6	56.0	-12.4	
9	.860	42.9	.5	43.4	56.0	-12.6	
10	.926	43.3	.5	43.8	56.0	-12.2	
11	1.039	43.1	.5	43.6	56.0	-12.4	
12	3.070	38.7	.3	39.0	56.0	-17.0	
13	4.934	30.2	.4	30.6	56.0	-25.4	
14	17.657	34.4	.2	34.6	60.0	-25.4	
15	18.314	30.8	.2	31.0	60.0	-29.0	
16	23.771	30.7	.1	30.8	60.0	-29.2	

Conducted Test Data TX CH-Mid L1



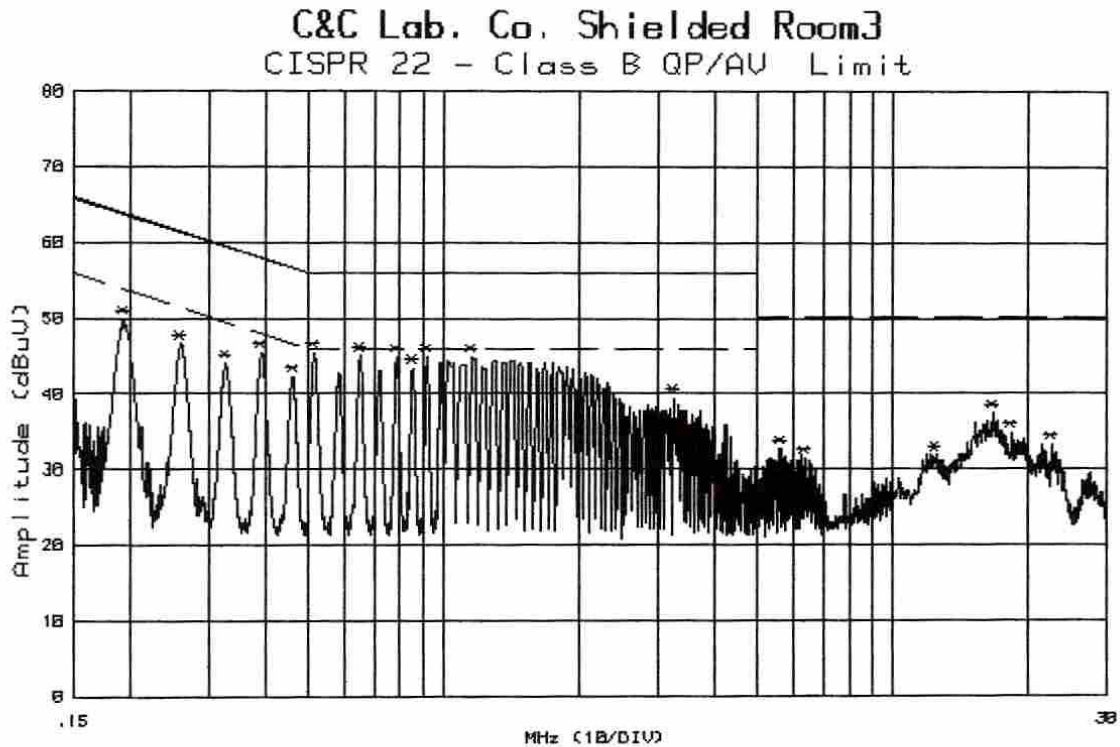
Customer: EPOX
Model : BT-DG02
Mode :
Reading : Peak (R3261C SPA)
Remark : TX CH-MID (2441MHz)

File#: 374
Humd.: 65 (%)
Port : L1

Date : 29 Jul 2002 16:09:49
Temp. : 33 (C)
Tested by: MARKBA LEE

No.	Freq. (MHz)	Reading (dBuV)	I_Loss (dB)	Total (dBuV)	QP.Lmt (dBuV)	Margin (dB)	Warning Mark
1	.195	51.9	.5	52.4	63.8	-11.4	
2	.261	48.3	.5	48.8	61.4	-12.6	
3	.329	49.0	.4	49.4	59.5	-10.1	
4	.395	47.4	.4	47.8	58.0	-10.2	
5	.462	47.8	.4	48.2	56.7	-8.5	
6	.585	46.4	.4	46.8	56.0	-9.2	
7	.655	44.6	.4	45.0	56.0	-11.0	
8	.721	45.0	.4	45.4	56.0	-10.6	
9	.856	43.8	.4	44.2	56.0	-11.8	
10	.986	42.6	.4	43.0	56.0	-13.0	
11	1.051	40.8	.4	41.2	56.0	-14.8	
12	2.877	34.3	.3	34.6	56.0	-21.4	
13	6.207	32.5	.5	33.0	60.0	-27.0	
14	6.490	31.5	.5	32.0	60.0	-28.0	
15	13.971	32.1	.5	32.6	60.0	-27.4	
16	15.571	36.9	.5	37.4	60.0	-22.6	
17	19.343	35.1	.5	35.6	60.0	-24.4	
18	23.143	32.0	.4	32.4	60.0	-27.6	
19	27.229	30.3	.7	31.0	60.0	-29.0	

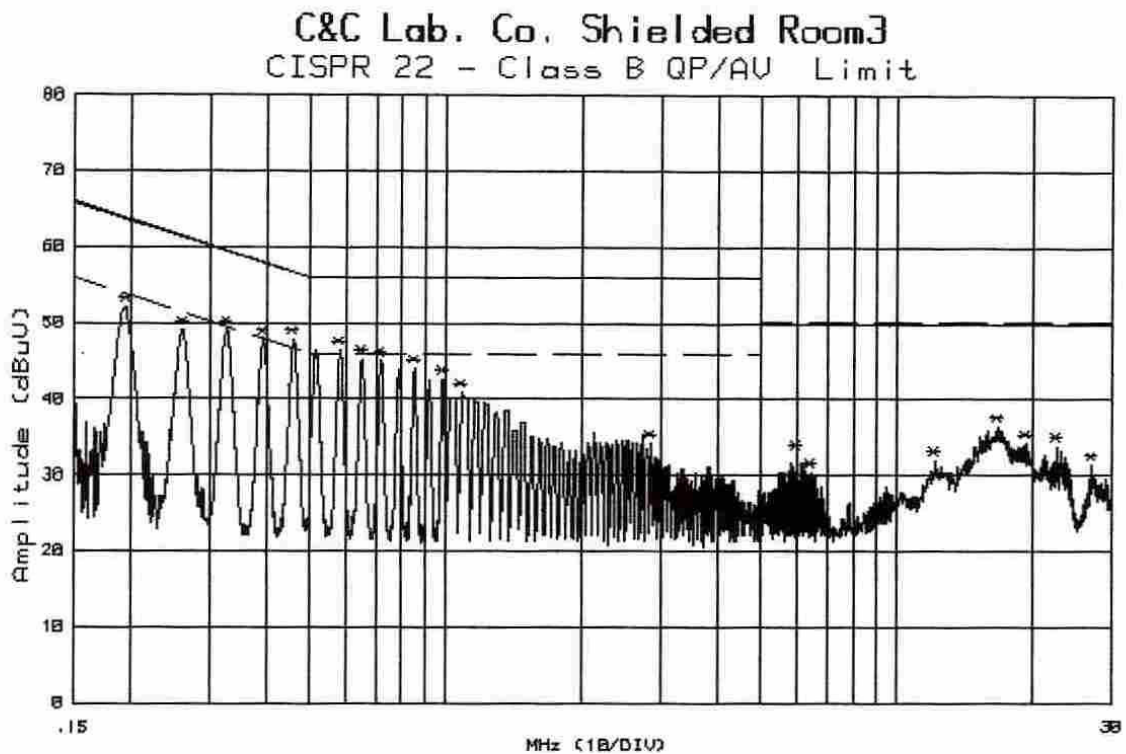
Conducted Test Data TX CH-Mid L2



Customer: EPOX File#: 375 Date : 29 Jul 2002 16:20:15
 Model : BT-DG02 Humd.: 65 (%) Temp. : 33 (C)
 Mode : . Port : L2 Tested by: MARKBA LEE
 Reading : Peak (R3261C SPA)
 Remark : TX CH-MID (2441MHz)

No.	Freq. (MHz)	Reading (dBuV)	I_Loss (dB)	Total (dBuV)	QP.Lmt (dBuV)	Margin (dB)	Warning Mark
1	.195	49.3	.5	49.8	63.8	-14.0	
2	.260	46.1	.5	46.6	61.4	-14.8	
3	.328	43.6	.4	44.0	59.5	-15.5	
4	.395	45.0	.4	45.4	58.0	-12.6	
5	.463	41.8	.4	42.2	56.6	-14.4	
6	.517	44.9	.5	45.4	56.0	-10.6	
7	.653	44.5	.5	45.0	56.0	-11.0	
8	.787	44.3	.5	44.8	56.0	-11.2	
9	.857	42.9	.5	43.4	56.0	-12.6	
10	.922	44.3	.5	44.8	56.0	-11.2	
11	1.154	44.3	.5	44.8	56.0	-11.2	
12	3.250	39.1	.3	39.4	56.0	-16.6	
13	5.629	32.2	.4	32.6	60.0	-27.4	
14	6.413	31.0	.4	31.4	60.0	-28.6	
15	12.486	31.5	.3	31.8	60.0	-28.2	
16	16.800	37.2	.2	37.4	60.0	-22.6	
17	18.429	34.6	.2	34.8	60.0	-25.2	
18	22.714	33.1	.1	33.2	60.0	-26.8	

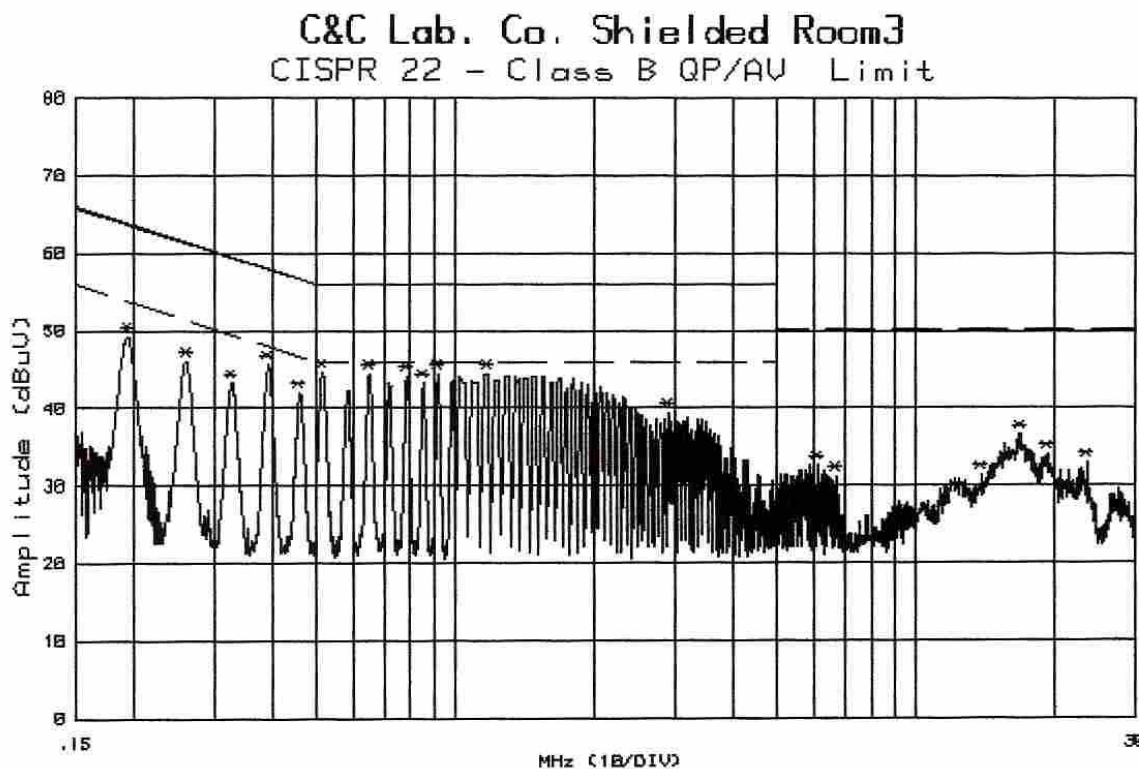
Conducted Test Data TX CH-High L1



Customer: EPOX File#: 377 Date :29 Jul 2002 16:38:12
 Model :BT-DG02 Humd.:65 (%) Temp. :33 (C)
 Mode :. Port :L1 Tested by:MARKBA LEE
 Reading :Peak(R3261C SPA)
 Remark :TX CH-HIGH(2480MHz)

No.	Freq. (MHz)	Reading (dBuV)	I_Loss (dB)	Total (dBuV)	QP.Lmt (dBuV)	Margin (dB)	Warning Mark
1	.196	51.5	.5	52.0	63.8	-11.8	
2	.262	48.5	.5	49.0	61.4	-12.4	
3	.328	48.6	.4	49.0	59.5	-10.5	
4	.396	47.4	.4	47.8	57.9	-10.1	
5	.462	47.4	.4	47.8	56.7	-8.9	
6	.584	46.0	.4	46.4	56.0	-9.6	
7	.654	44.8	.4	45.2	56.0	-10.8	
8	.721	44.6	.4	45.0	56.0	-11.0	
9	.854	43.6	.4	44.0	56.0	-12.0	
10	.987	42.2	.4	42.6	56.0	-13.4	
11	1.090	40.4	.4	40.8	56.0	-15.2	
12	2.851	33.9	.3	34.2	56.0	-21.8	
13	6.001	32.3	.5	32.8	60.0	-27.2	
14	6.464	29.9	.5	30.4	60.0	-29.6	
15	12.200	31.5	.5	32.0	60.0	-28.0	
16	16.829	35.9	.5	36.4	60.0	-23.6	
17	19.371	33.7	.5	34.2	60.0	-25.8	
18	22.743	33.4	.4	33.8	60.0	-26.2	
19	27.143	30.7	.7	31.4	60.0	-28.6	

Conducted Test Data TX CH-High L2



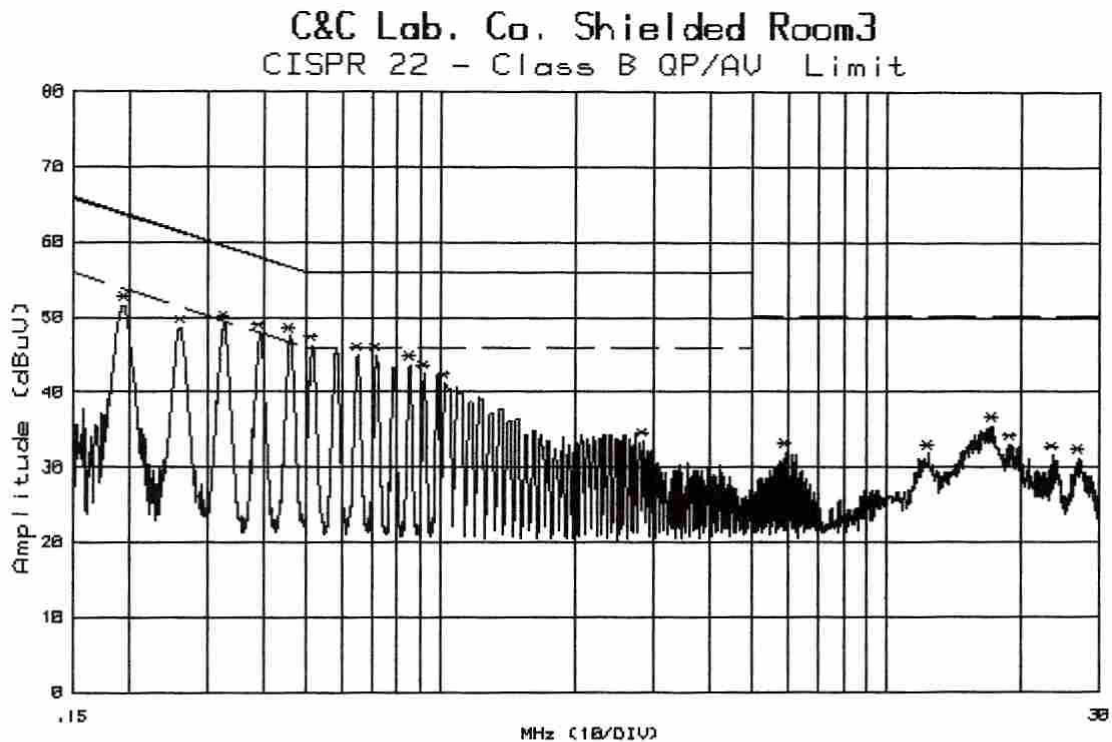
Customer: EPOX
Model : BT-DG02
Mode :
Reading : Peak (R3261C SPA)
Remark : TX CH-HIGH (2480MHz)

File#: 376
Humd.: 65 (%)
Port : L2

Date : 29 Jul 2002 16:30:23
Temp. : 33 (C)
Tested by: MARKBA LEE

No.	Freq. (MHz)	Reading (dBuV)	I_Loss (dB)	Total (dBuV)	QP.Lmt (dBuV)	Margin (dB)	Warning Mark
1	.196	48.7	.5	49.2	63.8	-14.6	
2	.263	45.5	.5	46.0	61.4	-15.4	
3	.329	42.8	.4	43.2	59.5	-16.3	
4	.395	45.2	.4	45.6	58.0	-12.4	
5	.461	41.6	.4	42.0	56.7	-14.7	
6	.518	44.1	.5	44.6	56.0	-11.4	
7	.653	43.9	.5	44.4	56.0	-11.6	
8	.789	43.7	.5	44.2	56.0	-11.8	
9	.856	42.7	.5	43.2	56.0	-12.8	
10	.922	43.9	.5	44.4	56.0	-11.6	
11	1.180	43.9	.5	44.4	56.0	-11.6	
12	2.916	39.1	.3	39.4	56.0	-16.6	
13	6.143	32.2	.4	32.6	60.0	-27.4	
14	6.721	30.8	.4	31.2	60.0	-28.8	
15	13.914	31.1	.3	31.4	60.0	-28.6	
16	16.914	36.4	.2	36.6	60.0	-23.4	
17	19.343	33.8	.2	34.0	60.0	-26.0	
18	23.657	32.9	.1	33.0	60.0	-27.0	

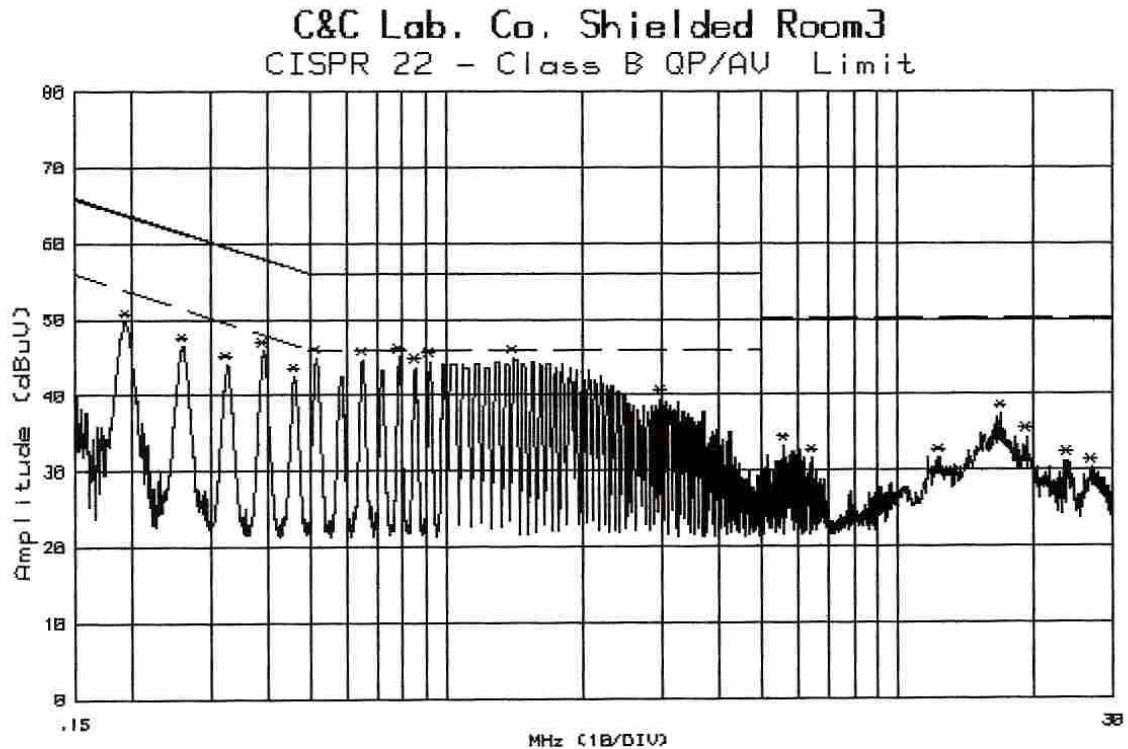
Conducted Test Data RX CH-Low L1



Customer: EPOX File#: 378 Date :29 Jul 2002 16:48:29
 Model :BT-DG02 Humd.:65 (%) Temp. :33 (C)
 Mode :. Port :L1 Tested by:MARKBA LEE
 Reading :Peak(R3261C SPA)
 Remark :RX CH-LOW(2402MHz)

No.	Freq. (MHz)	Reading (dBuV)	I_Loss (dB)	Total (dBuV)	QP.Lmt (dBuV)	Margin (dB)	Warning Mark
1	.197	51.1	.5	51.6	63.8	-12.2	
2	.262	48.1	.5	48.6	61.4	-12.8	
3	.329	48.6	.4	49.0	59.5	-10.5	
4	.395	47.4	.4	47.8	58.0	-10.2	
5	.462	47.0	.4	47.4	56.7	-9.3	
6	.517	45.8	.4	46.2	56.0	-9.8	
7	.653	44.4	.4	44.8	56.0	-11.2	
8	.721	44.4	.4	44.8	56.0	-11.2	
9	.854	43.2	.4	43.6	56.0	-12.4	
10	.921	42.0	.4	42.4	56.0	-13.6	
11	1.026	40.8	.4	41.2	56.0	-14.8	
12	2.851	33.1	.3	33.4	56.0	-22.6	
13	5.963	31.5	.5	32.0	60.0	-28.0	
14	12.429	31.3	.5	31.8	60.0	-28.2	
15	17.257	34.9	.5	35.4	60.0	-24.6	
16	18.971	32.5	.5	33.0	60.0	-27.0	
17	23.657	31.2	.4	31.6	60.0	-28.4	
18	27.029	30.5	.7	31.2	60.0	-28.8	

Conducted Test Data RX CH-Low L2



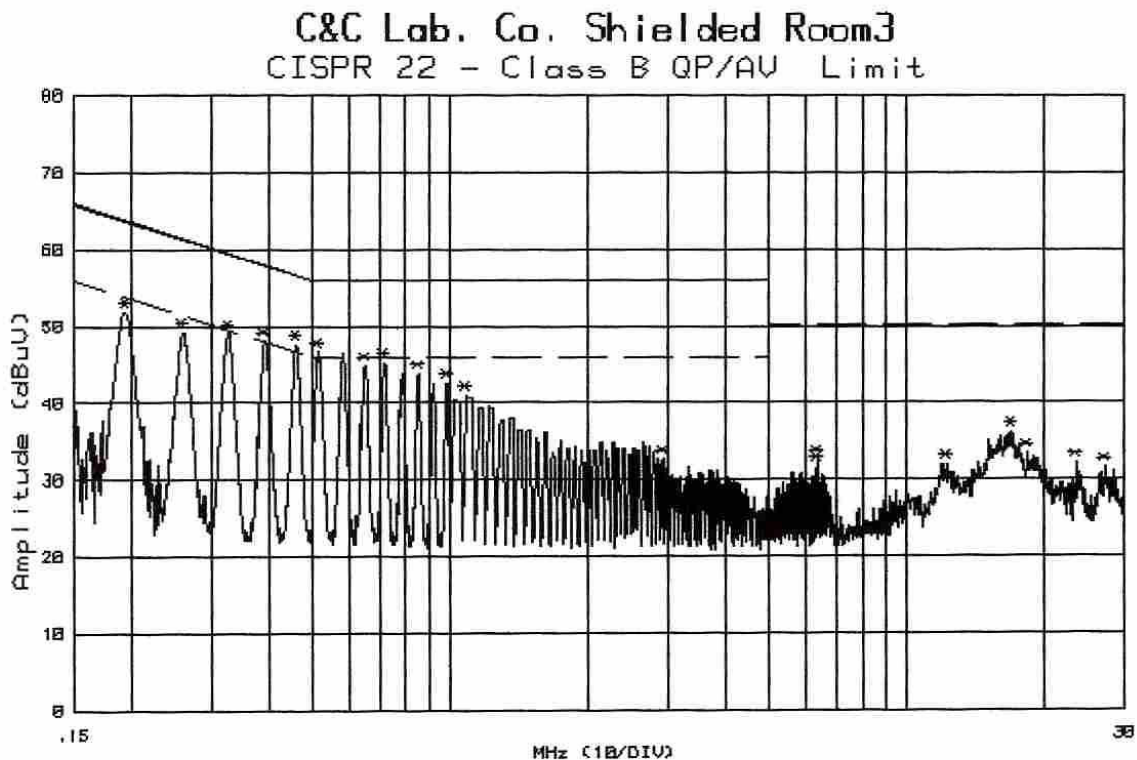
Customer: EPOX
 Model : BT-DG02
 Mode :
 Reading : Peak(R3261C SPA)
 Remark : RX CH-LOW(2402MHz)

File#: 379
 Humd.: 65 (%)
 Port : L2

Date : 29 Jul 2002 16:56:50
 Temp. : 33 (C)
 Tested by: MARKBA LEE

No.	Freq. (MHz)	Reading (dBuV)	I_Loss (dB)	Total (dBuV)	QP.Lmt (dBuV)	Margin (dB)	Warning Mark
1	.196	49.1	.5	49.6	63.8	-14.2	
2	.262	45.9	.5	46.4	61.4	-15.0	
3	.328	43.6	.4	44.0	59.5	-15.5	
4	.395	45.4	.4	45.8	58.0	-12.2	
5	.462	42.0	.4	42.4	56.7	-14.3	
6	.516	44.3	.5	44.8	56.0	-11.2	
7	.653	44.1	.5	44.6	56.0	-11.4	
8	.789	44.5	.5	45.0	56.0	-11.0	
9	.856	43.1	.5	43.6	56.0	-12.4	
10	.921	43.9	.5	44.4	56.0	-11.6	
11	1.411	44.3	.5	44.8	56.0	-11.2	
12	3.006	39.1	.3	39.4	56.0	-16.6	
13	5.616	32.8	.4	33.2	60.0	-26.8	
14	6.490	31.2	.4	31.6	60.0	-28.4	
15	12.371	31.3	.3	31.6	60.0	-28.4	
16	17.029	37.2	.2	37.4	60.0	-22.6	
17	19.457	34.2	.2	34.4	60.0	-25.6	
18	23.771	31.1	.1	31.2	60.0	-28.8	
19	27.086	29.9	.3	30.2	60.0	-29.8	

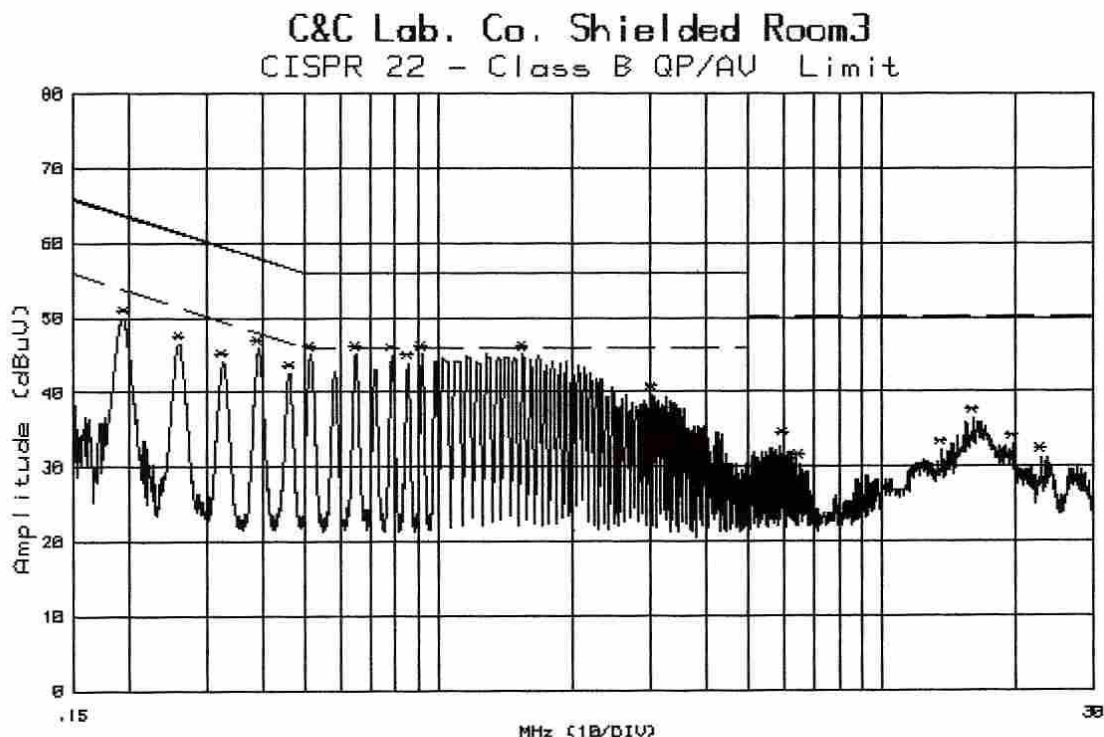
Conducted Test Data RX CH-Mid L1



Customer: EPOX File#: 381 Date :29 Jul 2002 17:11:58
 Model :BT-DG02 Humd.:65 (%) Temp. :33 (C)
 Mode :. Port :L1 Tested by:MARKBA LEE
 Reading :Peak(R3261C SPA)
 Remark :RX CH-MID(2441MHz)

No.	Freq. (MHz)	Reading (dBuV)	I_Loss (dB)	Total (dBuV)	QP.Lmt (dBuV)	Margin (dB)	Warning Mark
1	.196	51.3	.5	51.8	63.8	-12.0	
2	.261	48.7	.5	49.2	61.4	-12.2	
3	.329	48.6	.4	49.0	59.5	-10.5	
4	.395	47.6	.4	48.0	58.0	-10.0	
5	.462	47.2	.4	47.6	56.7	-9.1	
6	.517	46.2	.4	46.6	56.0	-9.4	
7	.654	44.4	.4	44.8	56.0	-11.2	
8	.721	44.8	.4	45.2	56.0	-10.8	
9	.854	43.4	.4	43.8	56.0	-12.2	
10	.986	42.2	.4	42.6	56.0	-13.4	
11	1.090	40.6	.4	41.0	56.0	-15.0	
12	2.941	32.3	.3	32.6	56.0	-23.4	
13	6.400	32.1	.5	32.6	60.0	-27.4	
14	6.413	31.3	.5	31.8	60.0	-28.2	
15	12.286	31.5	.5	32.0	60.0	-28.0	
16	17.029	35.7	.5	36.2	60.0	-23.8	
17	18.429	32.9	.5	33.4	60.0	-26.6	
18	23.657	31.8	.4	32.2	60.0	-27.8	
19	27.200	30.9	.7	31.6	60.0	-28.4	

Conducted Test Data RX CH-Mid L2



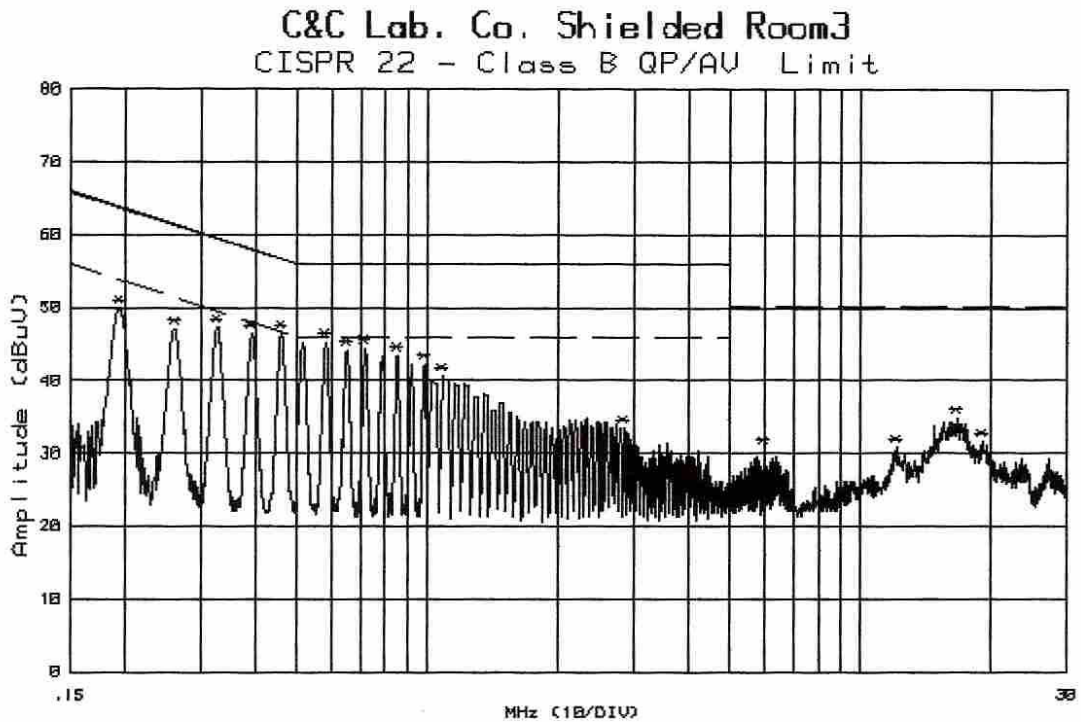
Customer: EPOX
Model : BT-DG02
Mode :
Reading : Peak (R3261C SPA)
Remark : RX CH-MID (2441MHz)

File#: 380
Humd.: 65 (%)
Port : L2

Date : 29 Jul 2002 17:04:32
Temp. : 33 (C)
Tested by: MARKBA LEE

No.	Freq. (MHz)	Reading (dBuV)	I_Loss (dB)	Total (dBuV)	QP.Lmt (dBuV)	Margin (dB)	Warning Mark
1	.196	49.3	.5	49.8	63.8	-14.0	
2	.262	45.9	.5	46.4	61.4	-15.0	
3	.328	43.6	.4	44.0	59.5	-15.5	
4	.395	45.4	.4	45.8	58.0	-12.2	
5	.463	42.0	.4	42.4	56.6	-14.2	
6	.516	44.5	.5	45.0	56.0	-11.0	
7	.652	44.5	.5	45.0	56.0	-11.0	
8	.788	44.3	.5	44.8	56.0	-11.2	
9	.854	43.3	.5	43.8	56.0	-12.2	
10	.921	44.5	.5	45.0	56.0	-11.0	
11	1.553	44.5	.5	45.0	56.0	-11.0	
12	3.044	39.3	.3	39.6	56.0	-16.4	
13	6.001	33.0	.4	33.4	60.0	-26.6	
14	6.529	30.0	.4	30.4	60.0	-29.6	
15	13.686	31.9	.3	32.2	60.0	-27.8	
16	16.114	36.2	.2	36.4	60.0	-23.6	
17	19.743	32.8	.2	33.0	60.0	-27.0	
18	22.971	31.1	.1	31.2	60.0	-28.8	

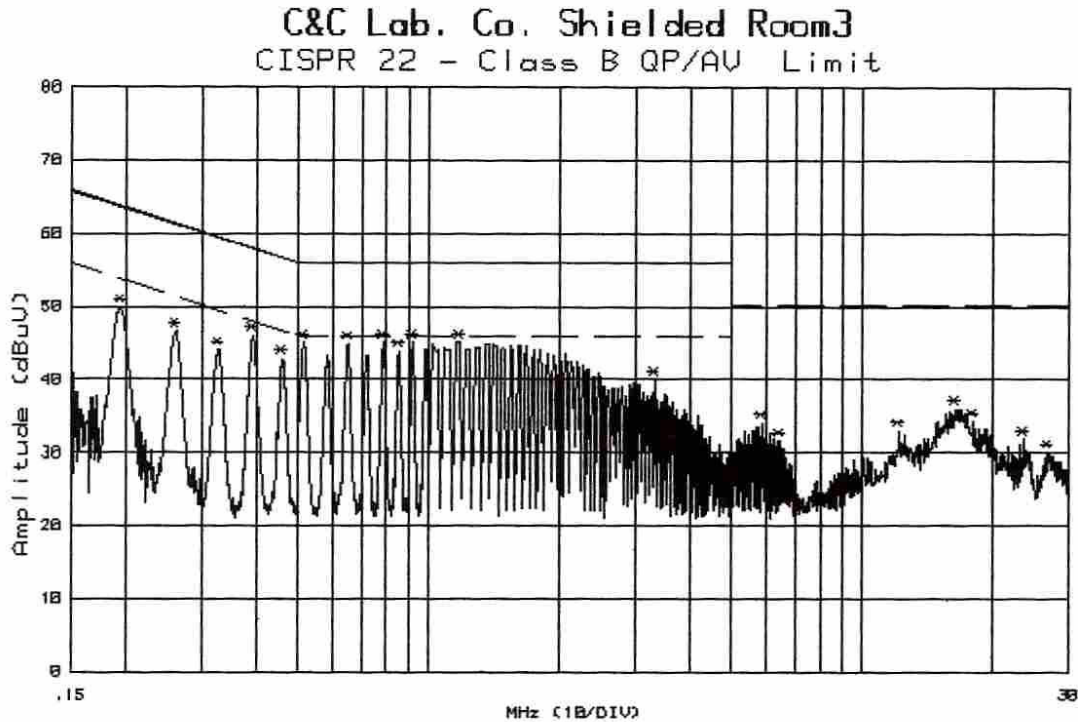
Conducted Test Data RX CH-High L1



Customer: EPOX File#: 382 Date :29 Jul 2002 17:21:00
 Model :BT-DG02 Humd.:65 (%) Temp. :33 (C)
 Mode :. Port :L1 Tested by:MARKBA LEE
 Reading :Peak(R3261C SPA)
 Remark :RX CH-HIGH(2480MHz)

No.	Freq. (MHz)	Reading (dBuV)	I_Loss (dB)	Total (dBuV)	QP.Lmt (dBuV)	Margin (dB)	Warning Mark
1	.196	49.3	.5	49.8	63.8	-14.0	
2	.262	46.5	.5	47.0	61.4	-14.4	
3	.329	46.8	.4	47.2	59.5	-12.3	
4	.395	46.0	.4	46.4	58.0	-11.6	
5	.462	46.0	.4	46.4	56.7	-10.3	
6	.585	44.8	.4	45.2	56.0	-10.8	
7	.654	43.8	.4	44.2	56.0	-11.8	
8	.721	44.0	.4	44.4	56.0	-11.6	
9	.854	43.0	.4	43.4	56.0	-12.6	
10	.986	41.8	.4	42.2	56.0	-13.8	
11	1.090	40.2	.4	40.6	56.0	-15.4	
12	2.851	33.1	.3	33.4	56.0	-22.6	
13	6.014	30.1	.5	30.6	60.0	-29.4	
14	12.171	30.3	.5	30.8	60.0	-29.2	
15	16.800	34.3	.5	34.8	60.0	-25.2	
16	19.171	31.1	.5	31.6	60.0	-28.4	

Conducted Test Data RX CH-High L2



Customer: EPOX
 Model : BT-DG02
 Mode :
 Reading : Peak (R3261C SPA)
 Remark : RX CH-HIGH (2480MHz)

File#: 383
 Humd.: 65 (%)
 Port : L2

Date : 29 Jul 2002 17:30:06
 Temp. : 33 (C)
 Tested by: MARKBA LEE

No.	Freq. (MHz)	Reading (dBuV)	I_Loss (dB)	Total (dBuV)	QP.Lmt (dBuV)	Margin (dB)	Warning Mark
1	.196	49.3	.5	49.8	63.8	-14.0	
2	.262	46.1	.5	46.6	61.4	-14.8	
3	.329	43.6	.4	44.0	59.5	-15.5	
4	.394	45.6	.4	46.0	58.0	-12.0	
5	.461	42.4	.4	42.8	56.7	-13.9	
6	.516	44.5	.5	45.0	56.0	-11.0	
7	.654	44.3	.5	44.8	56.0	-11.2	
8	.789	44.5	.5	45.0	56.0	-11.0	
9	.855	43.3	.5	43.8	56.0	-12.2	
10	.920	44.5	.5	45.0	56.0	-11.0	
11	1.180	44.5	.5	45.0	56.0	-11.0	
12	3.314	39.7	.3	40.0	56.0	-16.0	
13	5.886	33.6	.4	34.0	60.0	-26.0	
14	6.464	31.2	.4	31.6	60.0	-28.4	
15	12.171	32.7	.3	33.0	60.0	-27.0	
16	16.400	35.8	.2	36.0	60.0	-24.0	
17	18.086	34.0	.2	34.2	60.0	-25.8	
18	23.571	31.7	.1	31.8	60.0	-28.2	
19	26.886	29.7	.3	30.0	60.0	-30.0	

6. PEAK OUTPUT POWER MEASUREMENT

6.1 Standard Applicable

According to §15.247(b)(2), for direct sequence systems, the maximum peak output power of the intentional radiator shall not exceed 1 Watt.

6.2 Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter or spectrum.
3. Record the max. reading.
4. Repeat above procedures until all frequency measured were complete.

6.3 Measurement Result

CH	Frequency (MHz)	Reading Power	Cable Loss	Output Power dBm	Output Power W	Limit (W)
LOWER (2402MHz)	2402.00	2.69	0.56	3.25	0.00211	1
MID (2441MHz)	2441.00	3.15	0.43	3.58	0.00228	1
HIGHER (2480MHz)	2480.00	1.66	0.52	2.18	0.00165	1

6.4 Measurement Equipment Used:

EQUIPMENT TYPE	MFR	Model No.	Serial No.	LAST CAL.	Cal. Due.
Power Meter	HP	436A	2709A29027	03/16/2002	03/15/2003
Power Sensor	HP	8481A	2702A61366	03/16/2002	03/15/2003
low loss cable	Huber + Suhner	Sucoflex 104	N/A	N/A	N/A

7. 20dB BAND WIDTH

7.1 Standard Applicable

According to §15.247(a)(1)(ii), Frequency hopping systems operating in the 2400MHz-2483.5 MHz and 5725MHz – 5850MHz bands. The Maximum 20dB bandwidth of the hopping channel is 1MHz.

7.2 Measurement Procedure

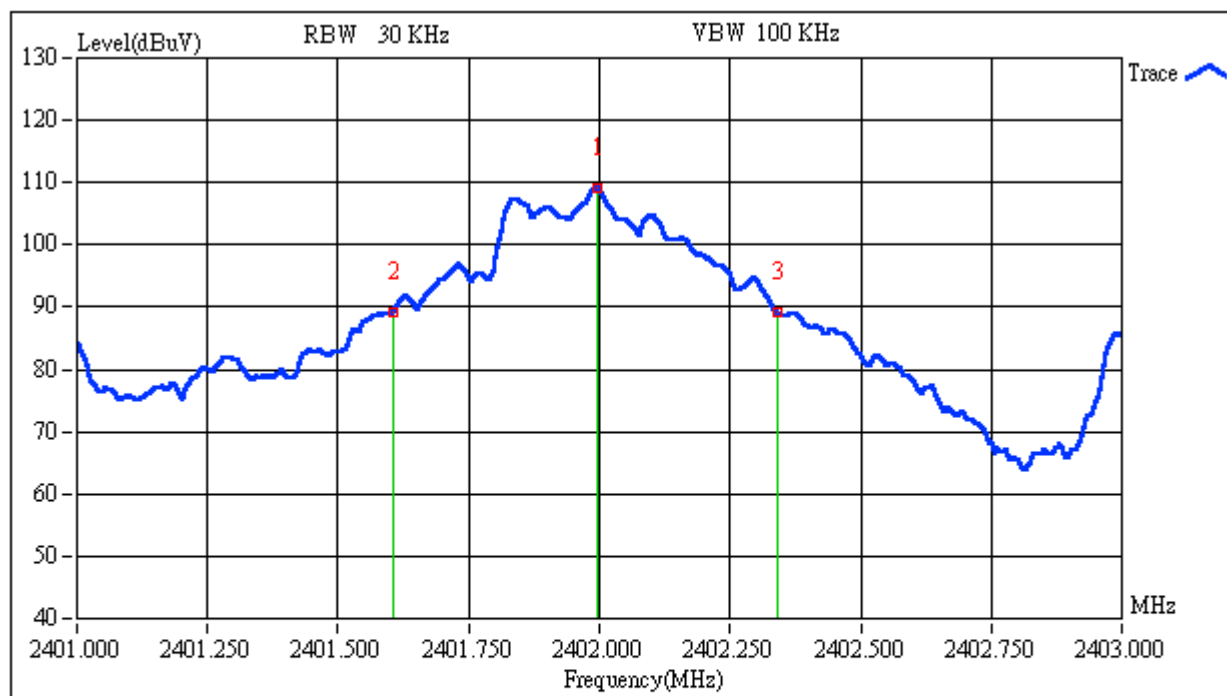
1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW=30KHz(10 % of Bandwidth.), Span= 2MHz, Sweep=auto
4. Mark the peak frequency and –20dB (upper and lower) frequency.
5. Repeat above procedures until all frequency measured were complete.

7.3 Measurement Result

CH	Upper Frequency (MHz)	Lower Frequency (MHz)	Bandwidth (MHz)	Bandwidth Limit (MHz)	Result
Lower (2402MHz)	2402.34	2401.60	0.736	1	PASS
Mid (2441MHz)	2441.37	2440.61	0.764	1	PASS
Higher (2480MHz)	2480.33	2479.61	0.724	1	PASS

7.4 Measurement Equipment Used:

EQUIPMENT TYPE	MFR	Model No.	Serial No.	LAST CAL.	Cal. Due.
Spectrum Analyzer	ADVANTEST	R3271A	NA	10/15/2001	10/14/2002
low loss cable	Huber + Suhner	Sucoflex 104	N/A	N/A	N/A

20dB Band Width Test Data CH-Low

Custom Name:

EPOX

Engineer:

markba_lee

Peak 2402.00 MHz

Band Width

109.16 dBuV

0.736 MHz

Model Name:

BT-DG02

Report No.:

020034-R

Delta1 2401.60 MHz

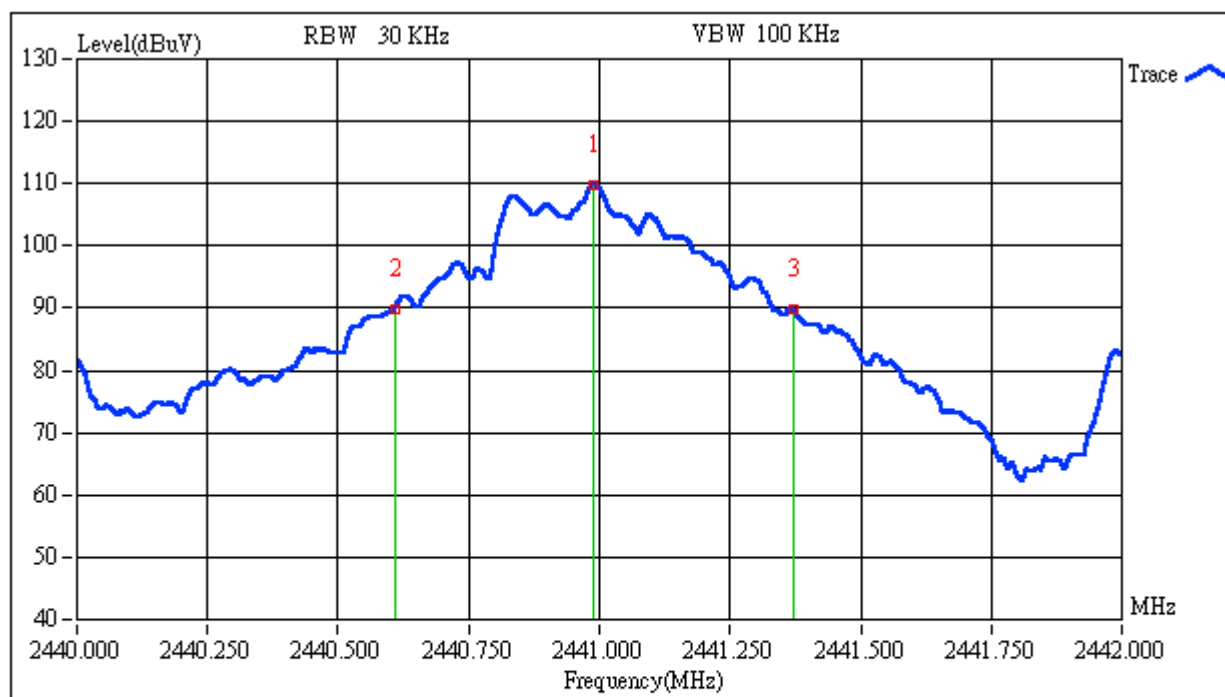
Delta2 2402.34 MHz

Test Mode:

TX CH-LOW(2402MHz)

89.04 dBuV

89.11 dBuV

20dB Band Width Test Data CH-Mid

Custom Name:

EPOX

Engineer:

markba_lee

Peak 2440.99 MHz

Band Width

109.78 dBuV

0.764 MHz

Model Name:

BT-DG02

Report No.:

020034-R

Delta1 2440.61 MHz Delta2 2441.37 MHz

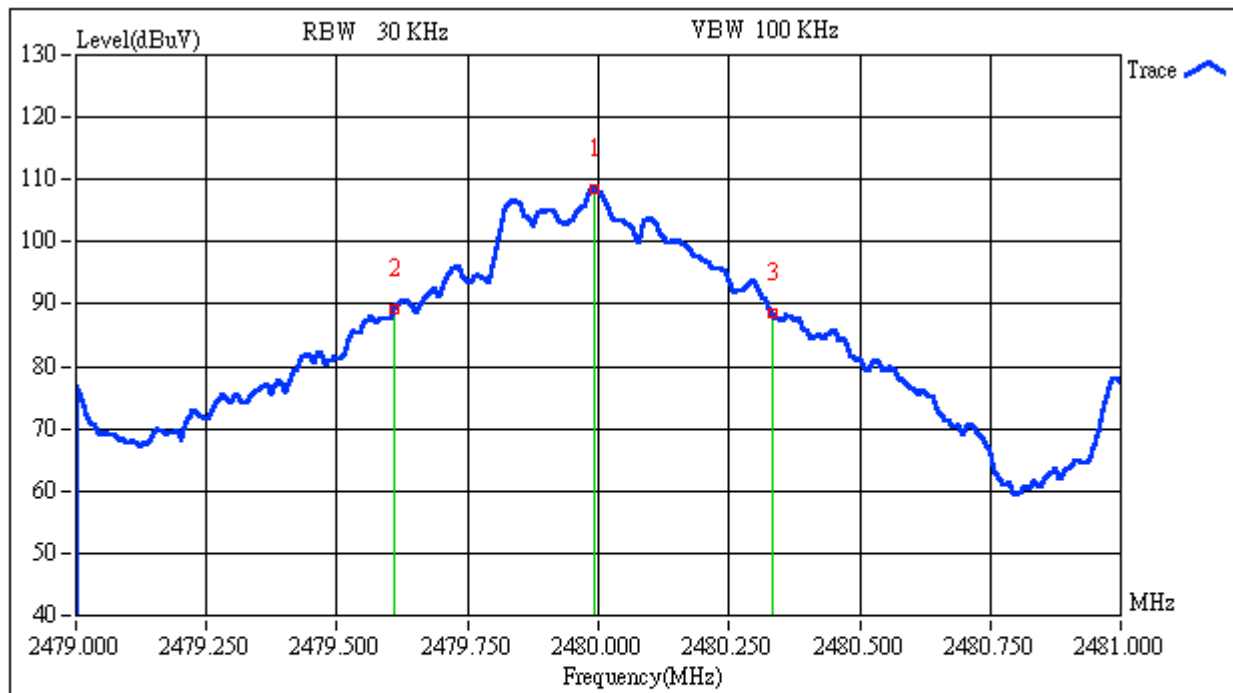
Test Mode:

TX CH-MID(2441MHz)

89.96 dBuV

89.76 dBuV

20dB Band Width Test Data CH-High



Custom Name:

EPOX

Engineer:

markba_lee

Peak 2479.99 MHz

Band Width

108.44 dBuV

0.724 MHz

Model Name:

BT-DG02

Report No.:

020034-R

Delta1 2479.61 MHz

Delta2 2480.33 MHz

Test Mode:

TX CH-HIGH(2480MHz)

89.18 dBuV

88.54 dBuV