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

OF

Built in transmitter with CD player

MODEL No.: CX-CD740

BRAND NAME: COBY

FCC ID: BBBCXCD740

REPORT NO: 030040-RF-ID

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Prepared for

Coby Electronics Co., Ltd.
Unit D-E, 8F, Poshau Centre,
115 Hau Ming Street, Kwun Tong, Hong Kong

Prepared by

C&C LABORATORY, CO., LTD.
#B1, 1st Fl., Universal Center,
No. 183, Sec. 1, Tatung Rd., Hsi Chih,
Taipei Hsien, Taiwan, R.O.C.
TEL: (02)8642-2071~3
FAX: (02)8642-2256

TABLE OF CONTENTS

1. GENERAL INFORMATION

1.1 Product Description

Coby Electronics Co., Ltd. Model: CX-CD740 (referred to as the EUT in this report), The EUT is an short range, lower power, Built in transmitter with CD player designed as an " Input Device. It is designed by way of utilizing the FM modulation achieves the system operating.

A major technical descriptions of EUT is described as following:

A). Operation Frequency: 88.5MHz, 88.7MHz, 88.9MHz, 106.7MHz, 106.9MHz, 107.1MHz, 107.3MHz, 107.5MHz, eight channels
B). Modulation: Frequency Modulation
C). Antenna Designation: Non-User Replaceable (Fixed)
D). Power Supply: 1. IC REGULATED DC/DC CONVERTER
INPUT: DC 12V OUTPUT: DC 4.5V 700mA
2. 3 Vdc by AAA *2 battery

1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **P5UCXCD740** filing to comply with Section 15.239 of the FCC Part 15, Subpart C Rules.

1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (2000). 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: 2000 and CISPR 22/EN 55022 requirements.

1.5 Special Accessories

Not available for this EUT intended for grant.

1.6 Equipment Modifications

1. A ferrite core provides at DC/DC power cable. Detail location refer to Appendix 3.
2. A cooper sheet provides under main board. Detail location refer to Appendix 3.

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 Transmitter was operated in the normal operating mode. the Tx frequency was fixed which was for the purpose of the measurements.

2.3 Test Procedure

2.3.1 Conducted Emissions (Not apply in the report)

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4-2000.Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak /Average detector mode.

2.3.2 Radiated Emissions

The EUT is a placed on as 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 C63.4-2000.

2.4 Limitation

(1) Conducted Emission (Not applicable in this report)

According to section 15.207(a) Conducted Emission Limits is as following.

Frequency range MHz	LimitsdB(uV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
Note 1.The lower limit shall apply at the transition frequencies 2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		

(2) Radiated Emission

a. The field strength of any emission within this band (section 15.239 frequency between 88 MHz –108MHz) shall not exceed 250 micro volts/meter at 3 meters. (47.958dBμV at 3m) The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in section 15.35 for limiting peak emissions apply.

b.The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in section 15.209(Intentional Radiators general limit).as below.

Frequency (MHz)	Field strength μV/m	Distance(m)	Field strength at 3m dBμV/m
1.705-30	30	30	69.54
30-88	100	3	40
88-216	150	3	43.5
216-960	200	3	46
Above 960	500	3	54

Remark: 1. Emission level in dBuV/m=20 log (uV/m)
2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
3. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of ξ 15.205
4. Emission spurious frequency which appearing within the Restricted Bands specified in provision of ξ15.205, then the general radiated emission limits in ξ 15.209 apply.

2.5 Configuration of Tested System

Fig. 2-1 Configuration of Tested System

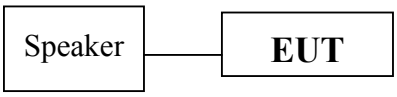


Table 2-1 Equipment Used in Tested System

Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
Speaker	Polkcaudio	Speaker L	N/A	000485	

3. Summary Of Test Results

FCC Rules	Description Of Test	Result
§15.207	Conducted Emission	N/A
§15.239	Radiated Emission	Compliant
§15.239	Occupied Bandwidth	Compliant

4. Description of test modes

The EUT (Built in transmitter with CD player) has been tested under normal operating condition, 1KHz, 1kHz compact disk was used as audio signal source.
The EUT stay in continuous transmitting mode. The Frequency 88.5MHz, 106.7MHz, 107.50MHz are chosen for final testing with dc/dc power cable which is worst case.

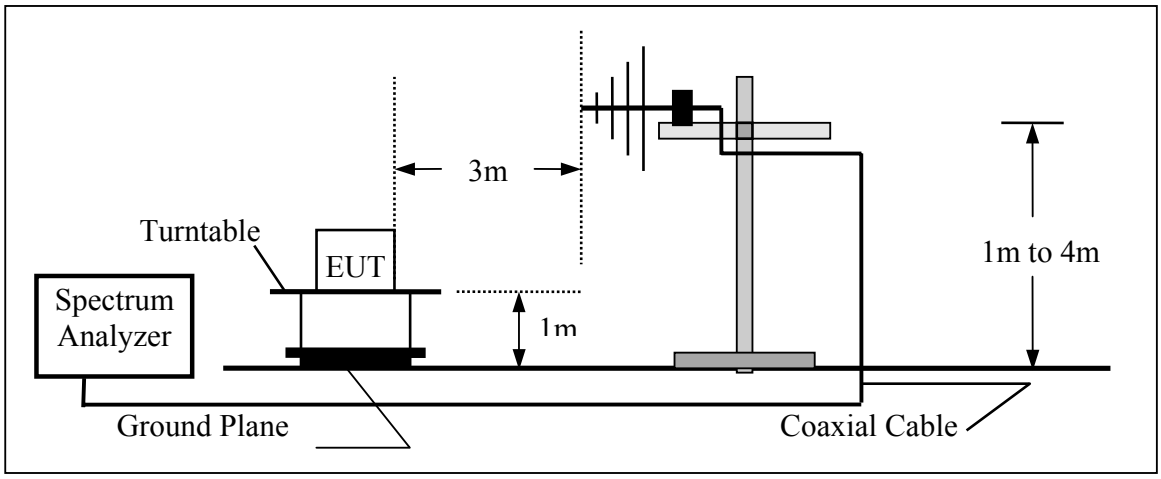
5. Radiated Emission Test

5.1 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured were complete.

5.2 Test SET-UP (Block Diagram of Configuration)

(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



5.3 Measurement Equipment Used:

Open Area Test Site # 3					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Spectrum Analyzer	ADVANTEST	R3261A	N/A	N/A	N/A
EMI Test Receiver	R&S	ESVS20	838804/004	01/09/2003	01/08/2004
Pre-Amplifier	HP	8447D	2944A09173	03/03/2003	03/02/2004
Bilog Antenna	SCHWAZBECK	VULB9163	145	07/06/2002	07/05/2003
Turn Table	EMCO	2081-1.21	9709-1885	N.C.R	N.C.R
Antenna Tower	EMCO	2075-2	9707-2060	N.C.R	N.C.R
Controller	EMCO	2090	9709-1256	N.C.R	N.C.R
RF Switch	ANRITSU	MP59B	M53867	N.C.R	N.C.R
Site NSA	C&C	N/A	N/A	09/07/2002	09/06/2003
Thermo-Hygro Meter	SATO	N/A	SITE3	05/06/2002	05/05/2003

5.4 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where	FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	AG = Amplifier Gain
	AF = Antenna Factor	

5.5 Measurement Result

Radiated Emission Test

Operation Mode: CH Low
Temperature : 26 ℃
Humidity : 68 %

Test Date : Mar. 25, 2003
Test By: Devin
Pol: Vertical

Freq.	Ant.Pol.	DetectorMode	Reading	Ant./CL/	Actual FS	Limit3m	Safe Margin	Note
(MHz)	H/V	(PK/AV)	(dBuV)	Amp. CF(dB)	(dBuV/m)	(dBuV/m)	(dB)	
88.860	V	Peak	28.33	11.80	40.13	47.90	-7.77	F
203.880	V	Peak	21.03	14.98	36.01	46.00	-9.99	H
288.120	V	Peak	17.79	16.22	34.01	46.00	-11.99	H
354.600	V	Peak	15.87	18.28	34.15	46.00	-11.85	H
389.600	V	Peak	14.56	20.16	34.72	46.00	-11.28	H
473.600	V	Peak	12.26	21.27	33.53	46.00	-12.47	H

Remark：

(1) Measuring frequencies from 30 MHz to the 1GHz。

(2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak detector mode.

(3) “F” denotes fundamental frequency; “H” denotes spurious frequency. “E” denotes band edge frequency.

(4) Datas of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(5) The IF bandwidth of 30MHz to 1GHz was 100KHz.

Radiated Emission Test

Operation Mode:	CH Low	Test Date :	Mar. 25, 2003
Temperature :	26 ℃	Test By:	Devin
Humidity :	68 %	Pol:	Horizontal

Freq. (MHz)	Ant.Pol. H/V	DetectorMode (PK/AV)	Reading (dBuV)	Ant./CL/ Amp. CF(dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)	Note
88.860	H	Peak	28.24	11.80	40.04	47.90	-7.86	F
220.620	H	Peak	19.53	15.25	34.78	46.00	-11.22	H
288.120	H	Peak	14.32	16.22	30.54	46.00	-15.46	H
354.600	H	Peak	17.09	18.28	35.37	46.00	-10.63	H
389.600	H	Peak	14.71	20.16	34.87	46.00	-11.13	H
473.600	H	Peak	13.17	21.27	34.44	46.00	-11.56	H

Remark：

(1) Measuring frequencies from 30 MHz to the 1GHz。

(2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak detector mode.

(3) “F” denotes fundamental frequency; “H” denotes spurious frequency. “E” denotes band edge frequency.

(4) Datas of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(5) The IF bandwidth of 30MHz to 1GHz was 100KHz.

Radiated Emission Test

Operation Mode:	CH Mid	Test Date :	Mar. 25, 2003
Temperature :	26 ℃	Test By:	Devin
Humidity :	68 %	Pol:	Vertical

Freq. (MHz)	Ant.Pol. H/V	DetectorMode (PK/AV)	Reading (dBuV)	Ant./CL/ Amp. CF(dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)	Note
106.680	V	Peak	32.01	13.27	45.28	47.90	-2.62	F
203.340	V	Peak	20.91	14.97	35.88	43.50	-7.62	H
288.120	V	Peak	17.50	16.22	33.72	46.00	-12.28	H
354.600	V	Peak	15.85	18.28	34.13	46.00	-11.87	H
406.400	V	Peak	13.75	20.65	34.40	46.00	-11.60	H
473.600	V	Peak	12.2	21.27	33.47	46.00	-12.53	H

Remark：

(1) Measuring frequencies from 30 MHz to the 1GHz。

(2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak detector mode.

(3) “F” denotes fundamental frequency; “H” denotes spurious frequency. “E” denotes band edge frequency.

(4) Datas of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(5) The IF bandwidth of 30MHz to 1GHz was 100KHz.

Radiated Emission Test

Operation Mode:	CH Mid	Test Date :	Mar. 25, 2003
Temperature :	26 ℃	Test By:	Devin
Humidity :	68 %	Pol:	Horizontal

Freq. (MHz)	Ant.Pol. H/V	DetectorMode (PK/AV)	Reading (dBuV)	Ant./CL/ Amp. CF(dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)	Note
106.680	H	Peak	30.58	13.27	43.85	47.90	-4.05	F
220.620	H	Peak	19.43	15.25	34.68	43.50	-8.82	H
288.120	H	Peak	14.47	16.22	30.69	46.00	-15.31	H
354.600	H	Peak	17.18	18.28	35.46	46.00	-10.54	H
389.600	H	Peak	14.86	20.16	35.02	46.00	-10.98	H
473.600	H	Peak	13.10	21.27	34.37	46.00	-11.63	H

Remark：

(1) Measuring frequencies from 30 MHz to the 1GHz。

(2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak detector mode.

(3) “F” denotes fundamental frequency; “H” denotes spurious frequency. “E” denotes band edge frequency.

(4) Datas of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(5) The IF bandwidth of 30MHz to 1GHz was 100KHz.

Radiated Emission Test

Operation Mode: CH High
Temperature : 26 ℃
Humidity : 68 %

Test Date : Mar. 25, 2003
Test By: Devin
Pol: Vertical

Freq. (MHz)	Ant.Pol. H/V	DetectorMode (PK/AV)	Reading (dBuV)	Ant./CL/ Amp. CF(dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)	Note
107.220	V	Peak	32.52	13.21	45.73	47.90	-2.17	F
152.580	V	Peak	18.24	11.19	29.43	43.50	-14.07	H
203.340	V	Peak	20.89	14.97	35.86	43.50	-7.64	H
288.120	V	Peak	17.64	16.22	33.86	46.00	-12.14	H
354.600	V	Peak	16.17	18.28	34.45	46.00	-11.55	H
473.600	V	Peak	12.43	21.27	33.70	46.00	-12.30	H

Remark：

(1) Measuring frequencies from 30 MHz to the 1GHz。

(2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak detector mode.

(3) “F” denotes fundamental frequency; “H” denotes spurious frequency. “E” denotes band edge frequency.

(4) Datas of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(5) The IF bandwidth of 30MHz to 1GHz was 100KHz.

Radiated Emission Test

Operation Mode:	CH High	Test Date :	Mar. 25, 2003
Temperature :	26 ℃	Test By:	Devin
Humidity :	68 %	Pol:	Horizontal

Freq. (MHz)	Ant.Pol. H/V	DetectorMode (PK/AV)	Reading (dBuV)	Ant./CL/ Amp. CF(dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)	Note
107.220	H	Peak	31.21	13.21	44.42	47.90	-3.48	F
152.580	H	Peak	19.17	11.19	30.36	43.50	-13.14	H
220.620	H	Peak	19.60	15.25	34.85	46.00	-11.15	H
288.120	H	Peak	14.24	16.22	30.46	46.00	-15.54	H
354.600	H	Peak	16.63	18.28	34.91	46.00	-11.09	H
389.600	H	Peak	14.38	20.16	34.54	46.00	-11.46	H
473.600	H	Peak	12.73	21.27	34.00	46.00	-12.00	H

Remark：

(1) Measuring frequencies from 30 MHz to the 1GHz。

(2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak detector mode.

(3) “F” denotes fundamental frequency; “H” denotes spurious frequency. “E” denotes band edge frequency.

(4) Datas of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(5) The IF bandwidth of 30MHz to 1GHz was 100KHz.

6. AC POWER LINE CONDUCTED EMISSION TEST

6.1 Standard Applicable

According to §15.207 frequency within 150KHz to 30MHz shall not exceed

Frequency range MHz	LimitsdB(uV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
Note 1.The lower limit shall apply at the transition frequencies 2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		

6.2 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.

6.3 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.

6.4 Measurement Equipment Used:

Conducted Emission Test Site # 3					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
EMI Test Receiver	R&S	ESCS30	847793/012	12/21/2002	12/20/2003
LISN	R&S	ESH2-Z5	843285/010	12/16/2002	12/15/2003
LISN	EMCO	3825/2	9003-1628	07/26/2002	07/25/2003
Spectrum Analyzer	ADVANTEST	R3261A	91720031	N/A	N/A
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

6.5 Measurement Result

N/A, This device is powered from 3Vdc.

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.

7. Occupied Bandwidth

7.1 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set EUT as normal operation
3. Set SPA Center Frequency = fundamental frequency, RBW,VBW= 100KHz, Span =2MHz.
4. Set SPA Max hold. Mark peak, -26dB.

7.2 Test SET-UP (Block Diagram of Configuration)

Same as 4.2 Radiated Emission Measurement.

7.3 Measurement Equipment Used:

Same as 4.2 Radiated Emission Measurement.

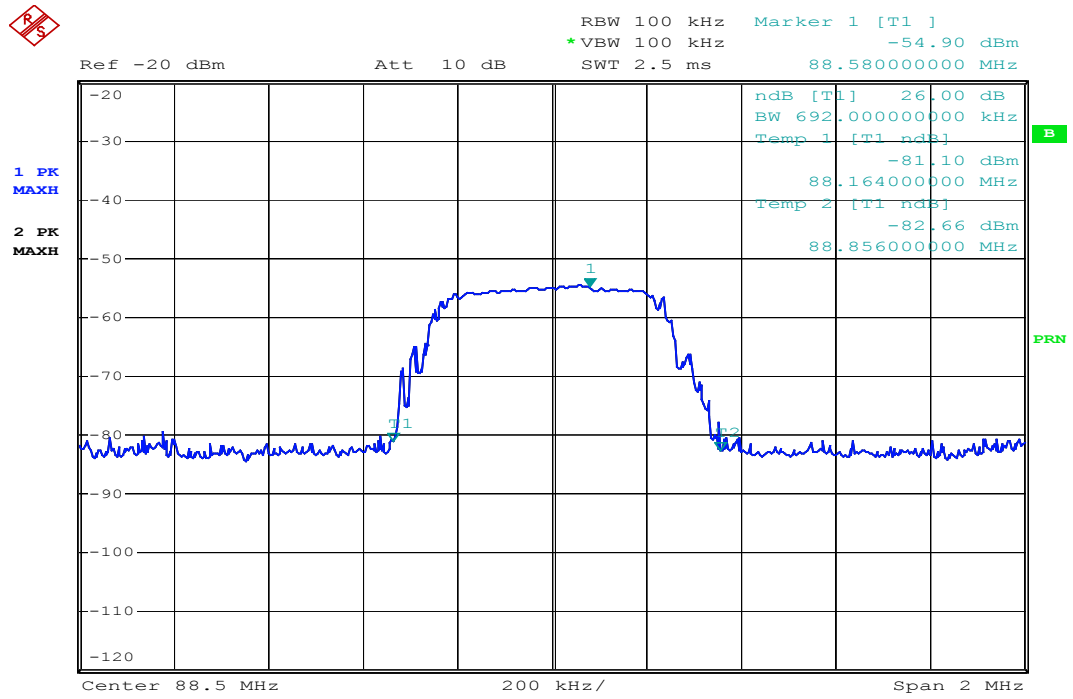
7.4 Measurement Results:

Max. 26dB bandwidth = 804KHz

Refer to attached data chart.

26dB Band Width Test Data

LOW



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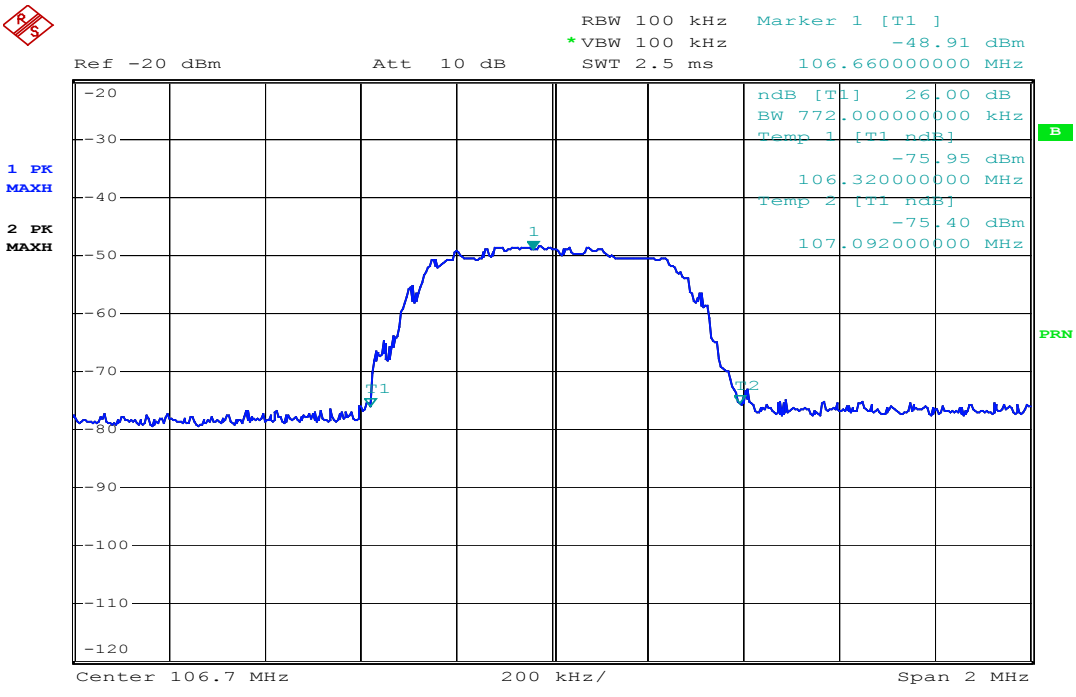
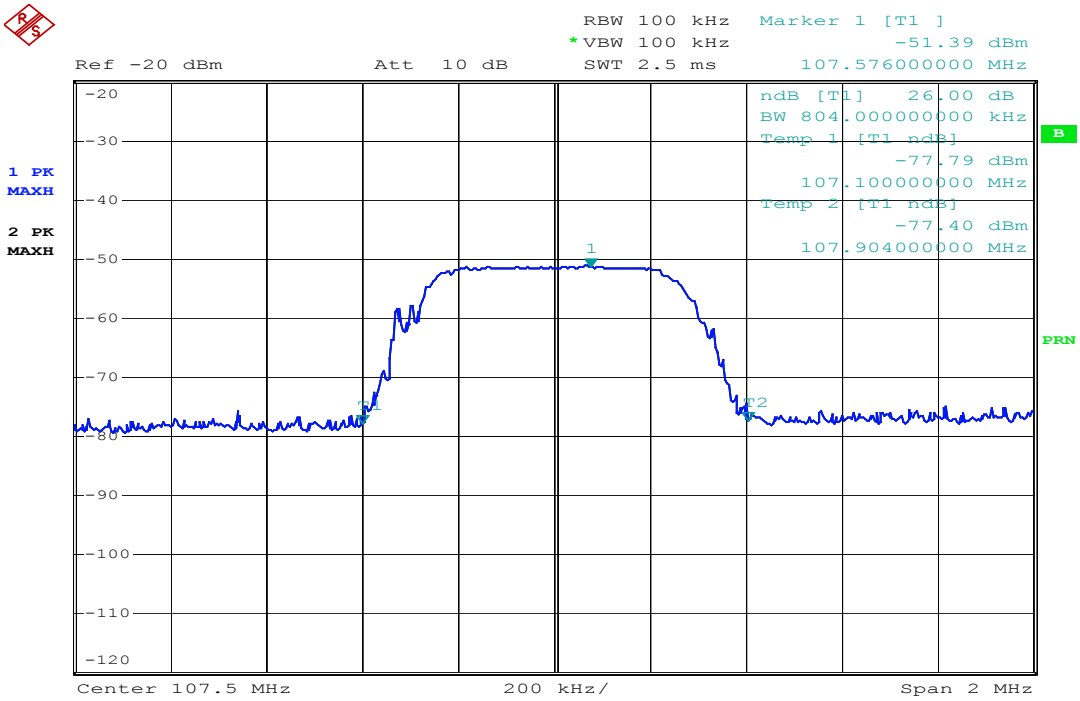


HIGH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*VBW 100 kHz
SWT 2.5 ms
Marker 1 [T1]
-51.39 dBm
107.576000000 MHz
Ref -20 dBm
Att 10 dB
ndB [T1] 26.00 dB
BW 804.000000000 kHz
Temp 1 [T1 ndB]
-77.79 dBm
107.100000000 MHz
Temp 2 [T1 ndB]
-77.40 dBm
107.904000000 MHz
1 PK
MAXH
2 PK
MAXH
B
PRN
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
-120
T1
T2
Center 107.5 MHz
200 kHz/
Span 2 MHz
Date: 25.MAR.2003 09:03:59