

# Test Report of FCC Part 15 C for FCC Certificate

On Behalf of

**PRO TV DEVELOPMENT INC**

**Product description:** FM Transmitter

**Brand Name:** N/A

**Model No.:** PS03

**FCC ID:** W66-PS03

**Prepared for:** **PRO TV DEVELOPMENT INC**

11-F-1, NO15, SEC.4, CHUNG HSIAO E. ROAD, TAIPEI,  
TAIWAN, R.O.C.

**Prepared by:** **Bontek Compliance Testing Laboratory Ltd.**

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**Test by:**

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# 1 - GENERAL INFORMATION

## 1.1 Product Description for Equipment Under Test (EUT)

Applicant: **PRO TV DEVELOPMENT INC**  
Address of Applicant: 11-F-1, NO15, SEC.4, CHUNG HSIAO E. ROAD, TAIPEI, TAIWAN, R.O.C.  
Manufacturer: **PRO TV DEVELOPMENT INC**  
Address of Manufacturer: 11-F-1, NO15, SEC.4, CHUNG HSIAO E. ROAD, TAIPEI, TAIWAN, R.O.C.

EUT Description: FM Transmitter  
Trade Name: N/A  
Model No.: PS03  
Rated Voltage DC 3V (2 x1.5VAA alkaline battery)  
Frequency Range 88.1~89.3MHz  
Number of Channels 4 channels  
Channel Separation 400kHz  
Product Class: Low Power Communication Device Transmitter  
Measurement Procedure: ANSI C63.4-2003

Remark: *\* The test data gathered are from the production sample provided by the manufacturer.*

## 1.2 Related Submittal(s) / Grant (s)

This submittal(s) is a test report based on the Electromagnetic Interference (EMI) tests performed on the EUT. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4 - 2003.

The following Declaration of Conformity report of EUT is prepared in accordance with FCC Rules and Regulations Part 15 Subpart C Section15.239

The objective of the manufacturer is to demonstrate compliance with the described above standards.

## 1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 - 2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz. Radiated testing was performed at an antenna to EUT distance 3 meters.

## **1.4 Test Facility**

All measurement required was performed at laboratory of Bontek Compliance Testing Laboratory Ltd at 1/F, Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, China.

The test facility is recognized, certified, or accredited by the following organizations:

### **FCC – Registration No.: 338263**

Bontek Compliance Testing Laboratory Ltd EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 338263, March 24, 2008.

### **IC Registration No.: 126111**

The 3m alternate test site of Bontek Compliance Testing Laboratory Ltd EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 126111 on March, 2008.

## **2. SYSTEM TEST CONFIGURATION**

The tests documented in this report were performed in accordance with ANSI C63.4-2003 and FCC CFR 47 Part 15 Subpart C Section 15.239.

### **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 that intends to maximize its emission characteristics in a continuous normal application.

### **2.2 EUT Exercise**

The calibrated antennas used to sample the radiated field strength are mounted on a non-conductive, motorized antenna mast 3 or 10 meters from the leading edge of the turntable.

### **2.3 General Test Procedures**

**Conducted Emissions** The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 7.1 of ANSI C63.4-2003. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak detector mode.

**Radiated Emissions** The EUT is placed on a turntable, which is 0.8 m above ground plane. The turntable 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 maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4-2003.

## 2.4 List of Measuring Equipments Used

Items	Equipment	Manufacturer	Model No.	Serial No.	Last Cal	Calibration Period
1	EMI Test Receiver	R&S	ESCI	100687	2009-2-22	1 Year
2	EMI Test Receiver	R&S	ESPI	100097	2009-2-22	1 Year
3	Amplifier	HP	8447D	1937A02492	2009-2-22	1 Year
4	Single Power Conductor Module	FCC	FCC-LISN-5-50-1-01-CISPR25	07101	2009-2-22	1 Year
5	Single Power Conductor Module	FCC	FCC-LISN-5-50-1-01-CISPR25	07102	2009-2-22	1 Year
6	Power Clamp	SCHWARZBECK	MDS-21	3812	2009-2-22	1 Year
7	Positioning Controller	C&C	CC-C-1F	MF7802113	2008-9-22	1 Year
8	Electrostatic Discharge Simulator	TESEQ	NSG437	125	2008-3-31	1 Year
9	Fast Transient Burst Generator	SCHAFFNER	MODULA6150	34572	2008-9-22	1 Year
10	Fast Transient Noise Simulator	Noiseken	FNS-105AX	31485	2008-9-22	1 Year
11	Color TV Pattern Genenerator	PHILIPS	PM5418	TM209947	N/A	N/A
12	Power Frequency Magnetic Field Generator	EVERFINE	EMS61000-8K	608002	2008-9-22	1 Year
13	Capacitive Coupling Clamp	TESEQ	CDN8014	25096	2009-2-22	1 Year
14	High Field Biconical Antenna	ELECTRO-METRICS	EM-6913	166	2008-9-04	1 Year
15	Log Periodic Antenna	ELECTRO-METRICS	EM-6950	811	2008-9-04	1 Year
16	Remote Active Vertical Antenna	ELECTRO-METRICS	EM-6892	304	2008-9-04	1 Year
17	TRILOG Broadband Test-Antenna	SCHWARZBECK	VULB9163	9163-324	2009-2-22	1 Year
18	Horn Antenna	SCHWARZBECK	BBHA9120A	B08000991-0001	2009-2-27	1 Year
19	Teo Line Single Phase Module	SCHWARZBECK	NSLK8128	D-69250	2008-3-31	1 Year
20	10dB attenuator	SCHWARZBECK	MTAIMP-136	R65.90.0001#06	2009-2-22	1 Year
21	Electric bridge	Zentech	100 LCR METER	803024	N/A	1 Year
22	RF Current Probe	FCC	F-33-4	80	2008-9-22	1 Year

### 3. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
15.207	Disturbance Voltage at The Mains Terminals	N/A, without AC power supply
15.239	Radiation Emission	Pass
15.239	Occupied Bandwidth	Pass

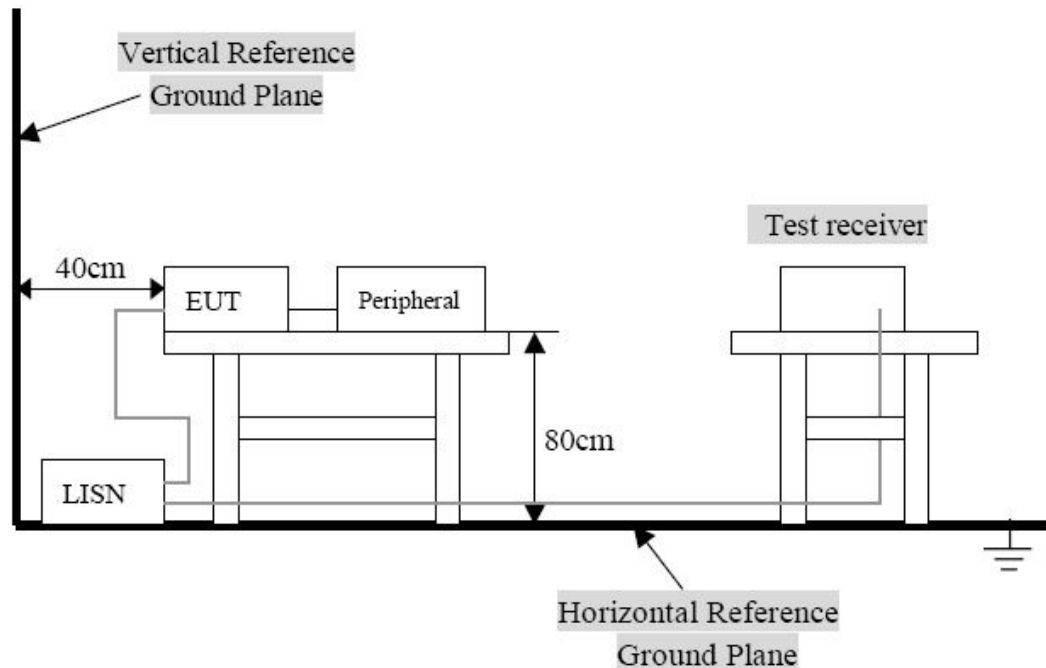
## 4. TEST OF CONDUCTED EMISSION

### 4.1 Applicable Standard

Section 15.207: For a Low-power Radio-frequency Device is designed to be connected to the AC power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed below limits table.

Frequency Range (MHz)	Limits ( dBuV)	
	Quasi-Peak	Average
0.150~0.500	66~56	56~46
0.500~5.000	56	46
5.000~30.00	60	50

### 4.2 Test Setup Diagram



- Remark: 1. The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC 15.207 limits.
2. The EUT is excluded from investigation of Disturbance Voltage at The Mains Terminals, for it is powered by DC 3V form 2 x1.5VAA alkaline battary. According to the Section 15.207(d), measurement to demonstrate compliance with the limits of Disturbance Voltage at The Mains Terminals are not required to the devices which only employed battary power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines.



## 5- RADIATED EMISSIONS

### 5.1 Limit of Radiated Emissions (FCC 47 CFR 15.209 Class B):

Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dB $\mu$ V/m)
30 ~ 88	3	40
88~216	3	43.5
216 ~ 960	3	46
960 ~ 1000	3	54

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

(2) The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

### 5.2 Test Equipment Used

Items	Equipment	Manufacturer	Model No.	Serial No.	Last Cal	Calibration Period
1	EMI Test Receiver	R&S	ESCI	100687	2009/2/22	1 Year
2	EMI Test Receiver	R&S	ESPI	100097	2009/2/22	1 Year
3	Amplifier	HP	8447D	1937A024 92	2009/2/22	1 Year
4	TRILOG Broadband Test-Antenna	SCHWARZBECK	VULB9163	9163-324	2009/2/22	1 Year

### 5.3 EUT Setup

#### Radiated Measurement Setup

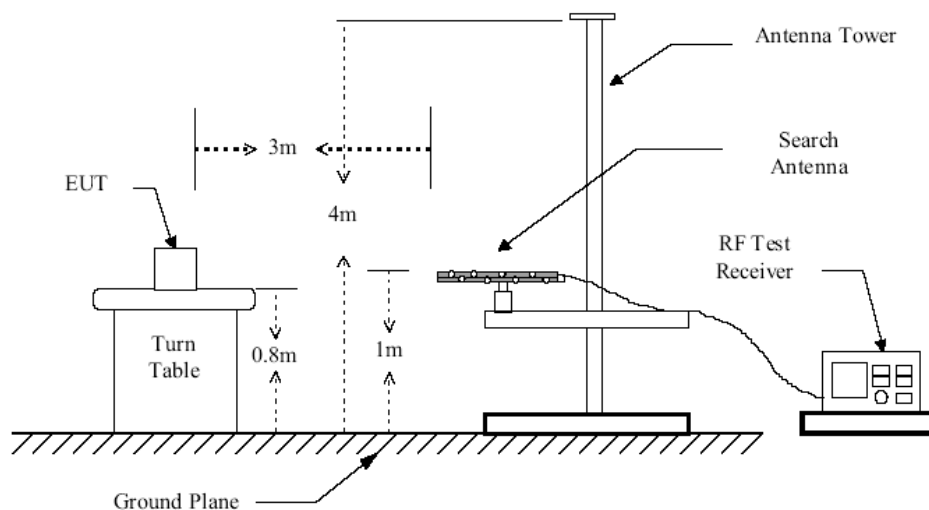


Figure 1 : Frequencies measured below 1 GHz configuration

## 5.4 Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

- 1). Configure the EUT according to ANSI C63.4:2003.
- 2). The EUT was placed on the top of the turntable 0.8 meter above ground.
- 3). The receiving antenna was placed 3 meters far away from the turntable.
- 4). The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 5). For Spurious Emissions test, The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emission field strength of both horizontal and vertical polarization. For each suspected emission, the antenna tower was scanned (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
- 6). For Field Strength of Fundamental Emissions test, Positioned the loop antenna with its plane vertical at the specified distance of 3 meters between its center and the EUT. The center of the loop antenna is set with 1m above the grounded plane. Then rotated about its vertical axis for finding out the maximum emission level of the EUT.  
Remark:  $\text{Transd.} = \text{Antenna Factor} + \text{Cable Loss} - \text{Pre-amplifier}$

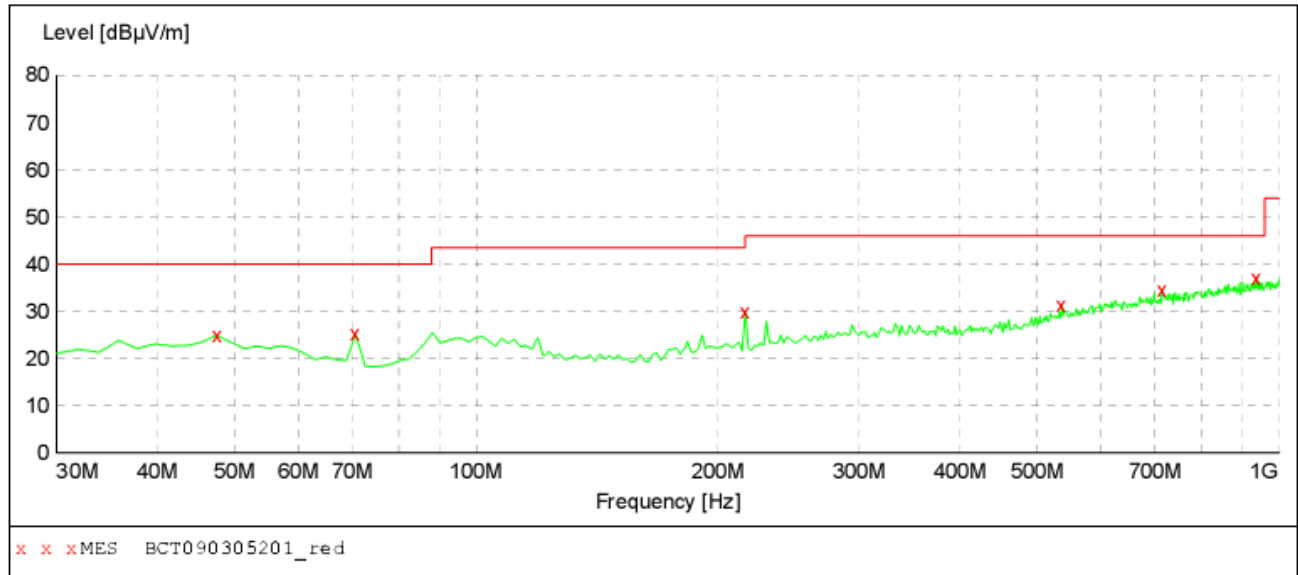
## 5.5 Test Result

Temperature ( °C ) : 22~23	EUT: FM transmitter
Humidity (%RH) : 50~54	M/N: PS03
Barometric Pressure ( mbar ) : 950~1000	Operation Condition: Typical MP3 Input to EUT

**Note: A typical MP3 song and the auxiliary device is adjusted to maximum volume.**  
**Test plots see following:**

## Harmonics & Spurious Emission (Low Channel: 88.1MHz)

EUT: FM Transmitter M/N: PS03  
Operating Condition: Typical MP3 Input to EUT  
Test Site: 3m CHAMBER  
Operator: Mandy  
Test Specification: DC 3V  
Comment: Polarization: Vertical  
Tem:25°C Hum:55%  
Start of Test: 03/05/09/ 08:41AM



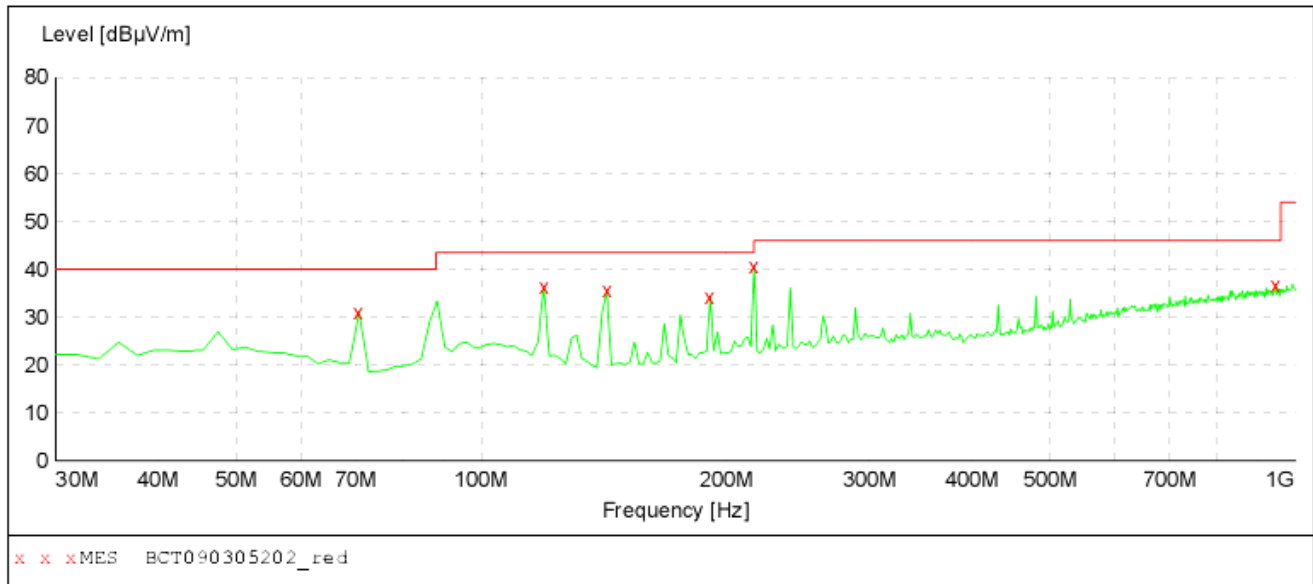
### MEASUREMENT RESULT: "BCT090305201\_red"

3/5/2009 08:41

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
47.460000	25.00	16.7	40.0	15.0	QP	100.0	0.00	VERTICAL
70.740000	25.20	13.3	40.0	14.8	QP	100.0	0.00	VERTICAL
216.240000	30.00	16.9	46.0	16.0	QP	100.0	0.00	VERTICAL
536.340000	31.50	23.7	46.0	14.5	QP	100.0	0.00	VERTICAL
714.820000	34.60	26.9	46.0	11.4	QP	100.0	0.00	VERTICAL
939.860000	36.90	29.6	46.0	9.1	QP	100.0	0.00	VERTICAL

## Harmonics & Spurious Emission (Low Channel: 88.1MHz)

EUT: FM Transmitter M/N: PS03  
Operating Condition: Typical MP3 Input to EUT  
Test Site: 3m CHAMBER  
Operator: Mandy  
Test Specification: DC 3V  
Comment: Polarization: Horizontal  
Tem:25°C Hum:55%  
Start of Test: 03/05/09/ 08:46AM



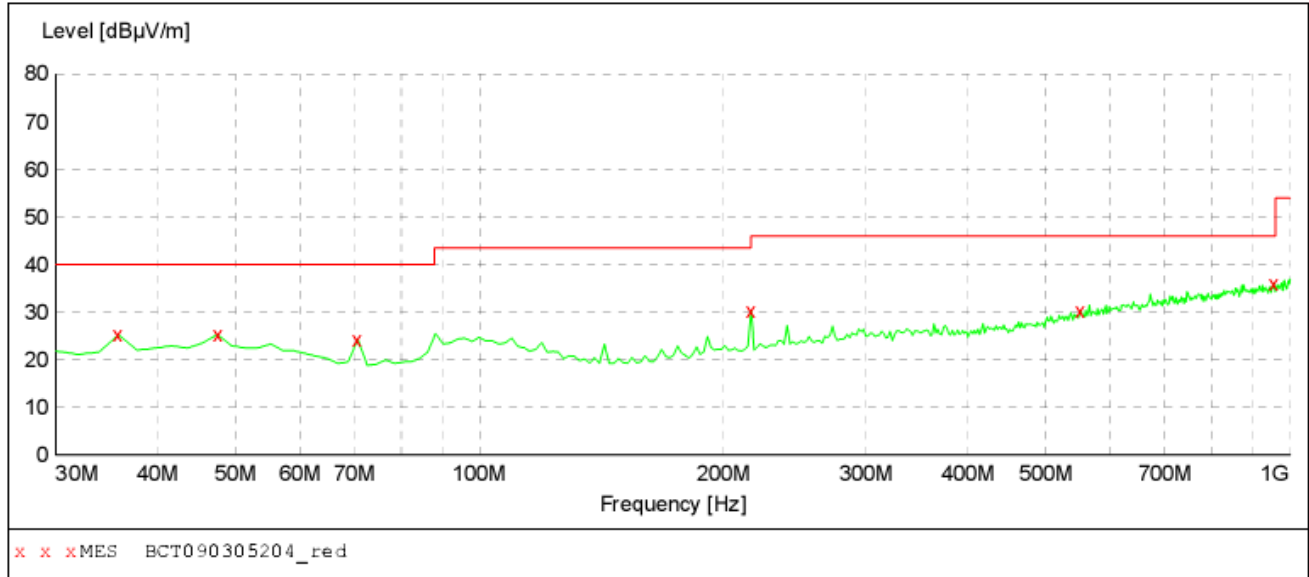
### MEASUREMENT RESULT: "BCT090305202\_red"

3/5/2009 08:46

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
70.740000	31.00	13.3	40.0	9.0	QP	300.0	0.00	HORIZONTAL
119.240000	36.20	16.1	43.5	7.3	QP	300.0	0.00	HORIZONTAL
142.520000	35.60	14.0	43.5	7.9	QP	300.0	0.00	HORIZONTAL
191.020000	34.20	16.8	43.5	9.3	QP	100.0	0.00	HORIZONTAL
216.240000	40.80	16.9	46.0	5.2	QP	100.0	0.00	HORIZONTAL
945.680000	36.60	29.6	46.0	9.4	QP	100.0	0.00	HORIZONTAL

## Harmonics & Spurious Emission (High Channel: 89.3MHz)

EUT: FM Transmitter M/N: PS03  
Operating Condition: Typical MP3 Input to EUT  
Test Site: 3m CHAMBER  
Operator: Mandy  
Test Specification: DC 3V  
Comment: Polarization: Vertical  
Tem:25°C Hum:55%  
Start of Test: 03/05/09/ 08:53AM



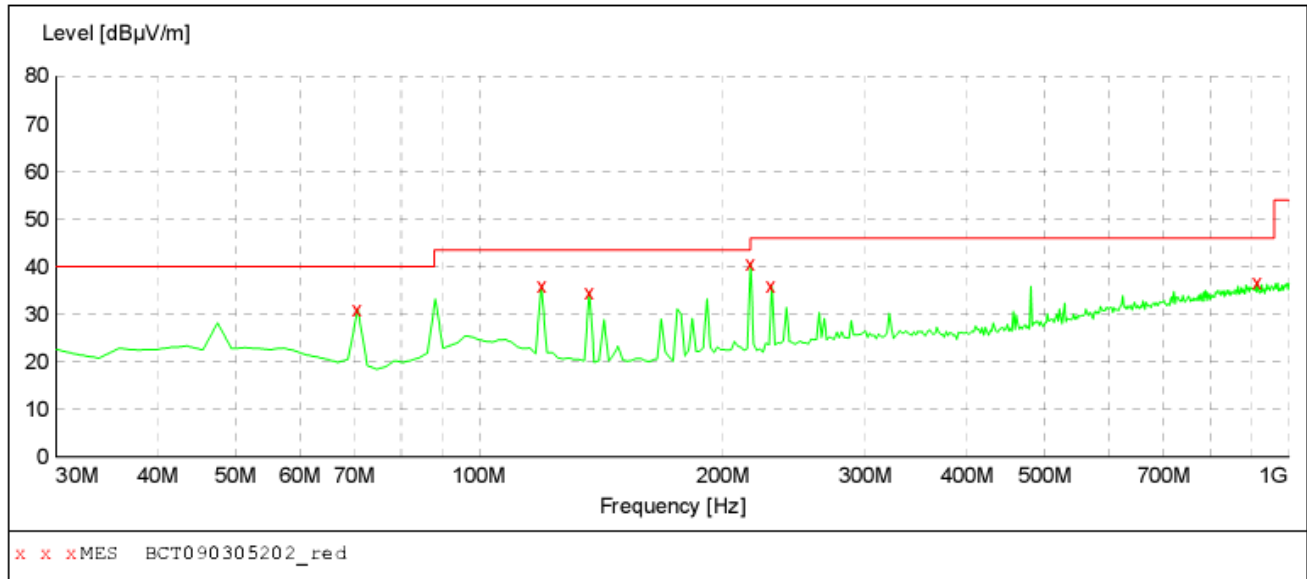
### MEASUREMENT RESULT: "BCT090305204\_red"

3/5/2009 08:53

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
35.820000	25.30	15.7	40.0	14.7	QP	100.0	0.00	VERTICAL
47.460000	25.30	16.7	40.0	14.7	QP	100.0	0.00	VERTICAL
70.740000	24.30	13.3	40.0	15.7	QP	100.0	0.00	VERTICAL
216.240000	30.40	16.9	46.0	15.6	QP	100.0	0.00	VERTICAL
551.860000	30.40	24.1	46.0	15.6	QP	100.0	0.00	VERTICAL
953.440000	36.10	29.7	46.0	9.9	QP	100.0	0.00	VERTICAL

## Harmonics & Spurious Emission (High Channel: 89.3MHz)

EUT: FM Transmitter M/N: PS03  
Operating Condition: Typical MP3 Input to EUT  
Test Site: 3m CHAMBER  
Operator: Mandy  
Test Specification: DC 3V  
Comment: Polarization: Horizontal  
Tem:25°C Hum:55%  
Start of Test: 03/05/09/ 08:51AM



### MEASUREMENT RESULT: "BCT090305202\_red"

3/5/2009 08:51

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
70.740000	31.10	13.3	40.0	8.9	QP	300.0	0.00	HORIZONTAL
119.240000	35.90	16.1	43.5	7.6	QP	300.0	0.00	HORIZONTAL
136.700000	34.70	14.1	43.5	8.8	QP	300.0	0.00	HORIZONTAL
216.240000	40.80	16.9	46.0	5.2	QP	100.0	0.00	HORIZONTAL
229.820000	36.00	17.6	46.0	10.0	QP	100.0	0.00	HORIZONTAL
914.640000	36.60	29.4	46.0	9.4	QP	100.0	0.00	HORIZONTAL

## Fundamental Emission Test Data

### Antenna polarization: Horizontal

Frequency (MHz)	Read Value dB $\mu$ V/m	Transd	Result dB $\mu$ V/m	Limit (dB $\mu$ V/m)	Margin (dB)	Detector Mode
Low Channel: 88.1MHz						
88.1	34.9	13.5	21.4	68.0	-46.6	PEAK
88.1	29.1	13.5	15.6	48.0	-32.4	AVERAGE
High Channel: 89.3MHz						
89.3	35.5	13.5	22.0	68.0	-46.0	PEAK
89.3	28.8	13.5	15.3	48.0	-32.7	AVERAGE

### Antenna polarization: Vertical

Frequency (MHz)	Read Value dB $\mu$ V/m	Transd	Result dB $\mu$ V/m	Limit (dB $\mu$ V/m)	Margin (dB)	Detector Mode
Low Channel: 88.1MHz						
88.1	21.1	13.5	7.6	68.0	-60.4	PEAK
88.1	16.0	13.5	2.5	48.0	-45.5	AVERAGE
High Channel: 89.3MHz						
89.3	21.3	13.5	7.8	68.0	-60.2	PEAK
89.3	16.4	13.5	2.9	48.0	-45.1	AVERAGE

## 6- OCCUPIED BANDWIDTH

### 6.1 Requirement of Occupied Bandwidth

Emission from the intentional radiator shall be confined within a band 200kHz wide centered on the operation frequency. The 200kHz band shall lie wholly within the frequency range of 88.1~89.3MHz.

### 6.2 Test Procedure

- 1). The EUT was placed on the top of the turntable 0.8 meter above ground.
- 2). The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 3). Power on the EUT and all the supporting units.
- 4). The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 5). For each suspected emission, the antenna tower was scanned (from 1 m to 4 m) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading of both horizontal and vertical polarization.
- 6). Set EMI test receiver with Max hold. Mark peak, -20dB.

### 6.3 Test Equipment Used

Items	Equipment	Manufacturer	Model No.	Serial No.	Last Cal	Calibration Period
1	EMI Test Receiver	R&S	ESCI	100687	2009/2/22	1 Year
2	EMI Test Receiver	R&S	ESPI7	100097	2009/2/22	1 Year
3	Amplifier	HP	8447D	1937A024 92	2009/2/22	1 Year
4	TRILOG Broadband Test- Antenna	SCHWARZBECK	VULB9163	9163-324	2009/2/22	1 Year

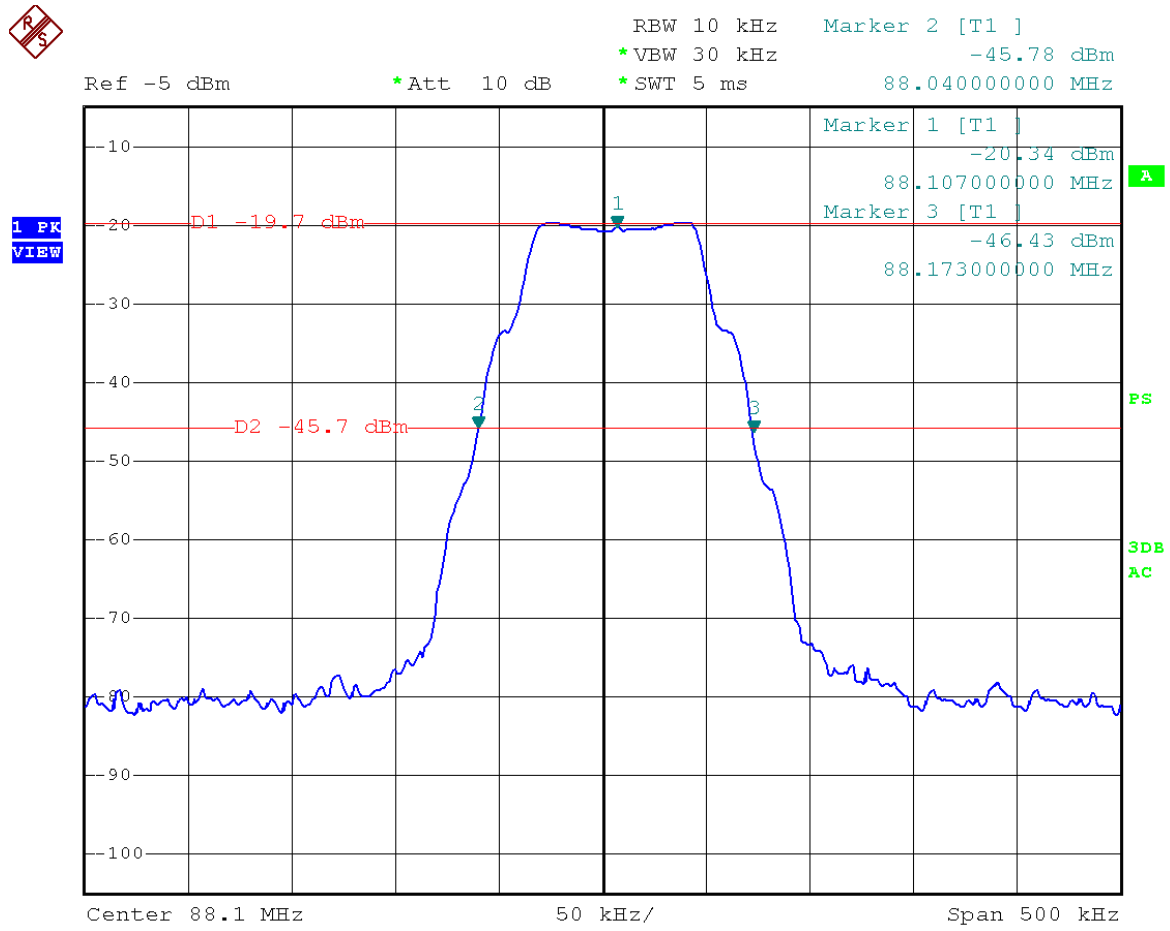
### 6.4 Emissions within Band Edges Test Result

Temperature ( °C ) : 22~23	EUT: FM transmitter
Humidity (%RH ) : 50~54	M/N: PS03
Barometric Pressure ( mbar ) : 950~1000	Operation Condition: Typical MP3 Input to EUT

**Note: A typical MP3 song and the auxiliary device is adjusted to maximum volume.  
Test plots see following:**

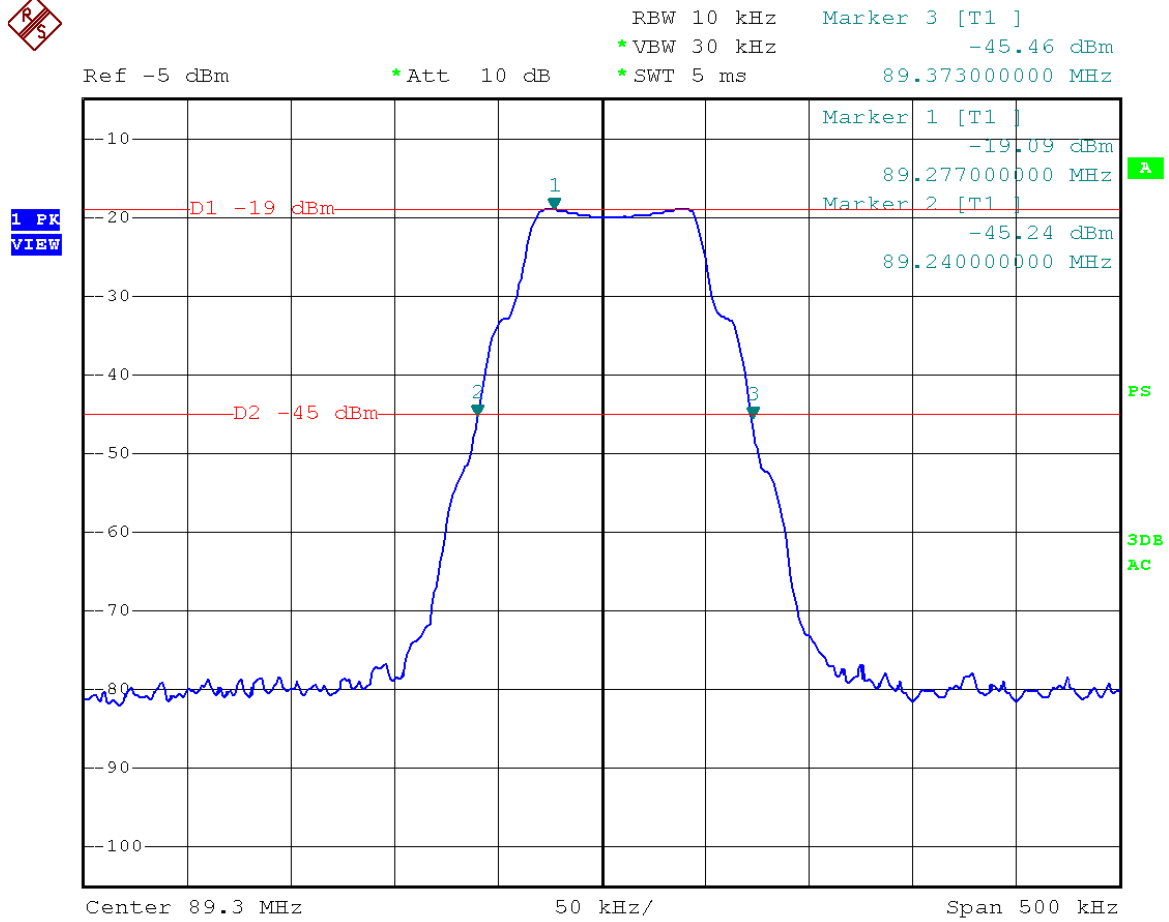


# Low Channel: 88.1MHz



Date: 20.MAR.2009 10:17:15

## High Channel: 89.3MHz



Date: 20.MAR.2009 10:18:48