

EMC

TEST REPORT

Report No.: EME-061133

Model No.: EF-6210C, EF-6210

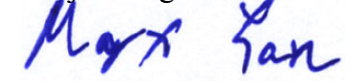
Issued Date: Oct. 2, 2006

Applicant: Procare International Co.
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Test By: Intertek Testing Services Taiwan Ltd.
No. 11, Lane 275, Ko-Nan 1 Street, Chia-Tung Li,
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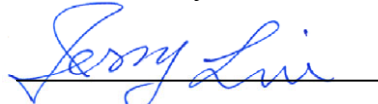
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Project Engineer



Marx Yan

Reviewed By



Jerry Liu

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Summary of Tests**FM Transmitter -Model: EF-6210C
FCC ID: POSEM-6210**

Test	Reference	Results
Bandwidth of fundamental frequency	15.239(a)	Pass
Field strength of fundamental frequency	15.239(b)	Pass
Radiated emission	15.239(c), 15.209	Pass

1. General information

1.1 Identification of the EUT

Applicant: Procure International Co.
Product: FM Transmitter
Model No.: EF-6210C
FCC ID.: POSEF-6210
Frequency Range: 88.1MHz to 107.9MHz
Channel Number: 199 channels
Frequency of Each Channel: 88.1 + 0.1k MHz, k=0-198
Type of Modulation: FM
Power Supply: DC 12V from Car charger, DC 3V from battery
Power Cord: N/A
Sample Received: Sep. 15, 2006
Test Date(s): Sep. 26, 2006 ~ Sep. 27, 2006

A DoC report has been generated for the client.

1.2 Additional information about the EUT

The EUT is a USB FM Transmitter, and was defined as information technology equipment.

The model EF-6210 is identical to model EF-6210C (EUT), the different as following:

Model No.	Difference
EF-6210C	Be powered by battery or car charger
EF-6210	Can only be powered by battery

:

For more detail features, please refer to User's manual as file name "Installation guide.pdf"

1.3 Antenna description

The EUT uses a permanently connected antenna.

Antenna Gain: 0dBm

Antenna Type: PCB Printed

Connector Type: N/A

1.4 Peripherals equipment

Peripherals	Manufacturer	Product No.	Serial No.	FCC ID
iPOD	Apple	N/A	N/A	FCC DoC Approved

2. Test specifications

2.1 Test standard

The EUT was performed according to the procedures in FCC Part 15 Subpart C Section §15.239 、 §15.207 and ANSI C63.4/2003.

The test of radiated measurements according to FCC Part15 Section 15.33(a) had been conducted and the field strength of this frequency band were all meet limit requirement, thus we evaluate the EUT pass the specified test.

2.2 Operation mode

The EUT was supplied with DC 12V from Car charger. In radiated emission test, the EUT was tested in the status of continuously transmitting.

The EUT was tested and worked properly in an automobile.

The configuration of EUT was set up by the Client.

2.3 Test equipment

Equipment	Brand	Frequency range	Model No.	Intertek ID No.	Next Cal. Date
EMI Test Receiver	Rohde & Schwarz	9kHz~2.75GHz	ESCS 30	EC303	04/13/2007
EMI Test Receiver	Rohde & Schwarz	20Hz~26.5GHz	ESMI	EC317	07/14/2007
Spectrum Analyzer	Rohde & Schwarz	9kHz~30GHz	FSP 30	EC353	07/13/2007
Bilog Antenna	SCHWARZBECK	25MHz~1.7GHz	VULB 9160	EC368	05/20/2007
Controller	HDGmbH	N/A	HD 100	EP317-1	N/A
Antenna Tower	HDGmbH	N/A	MA 240	EP317-2	N/A
Turn Table	HDGmbH	N/A	DS 420S	EP317-3	N/A
LISN	Rohde & Schwarz	9KHz~30MHz	ESH3-Z5	EC344	01/14/2007
Function Generator	HP	N/A	33120A	EC334	08/27/2007

Note: The above equipments are within the valid calibration period.

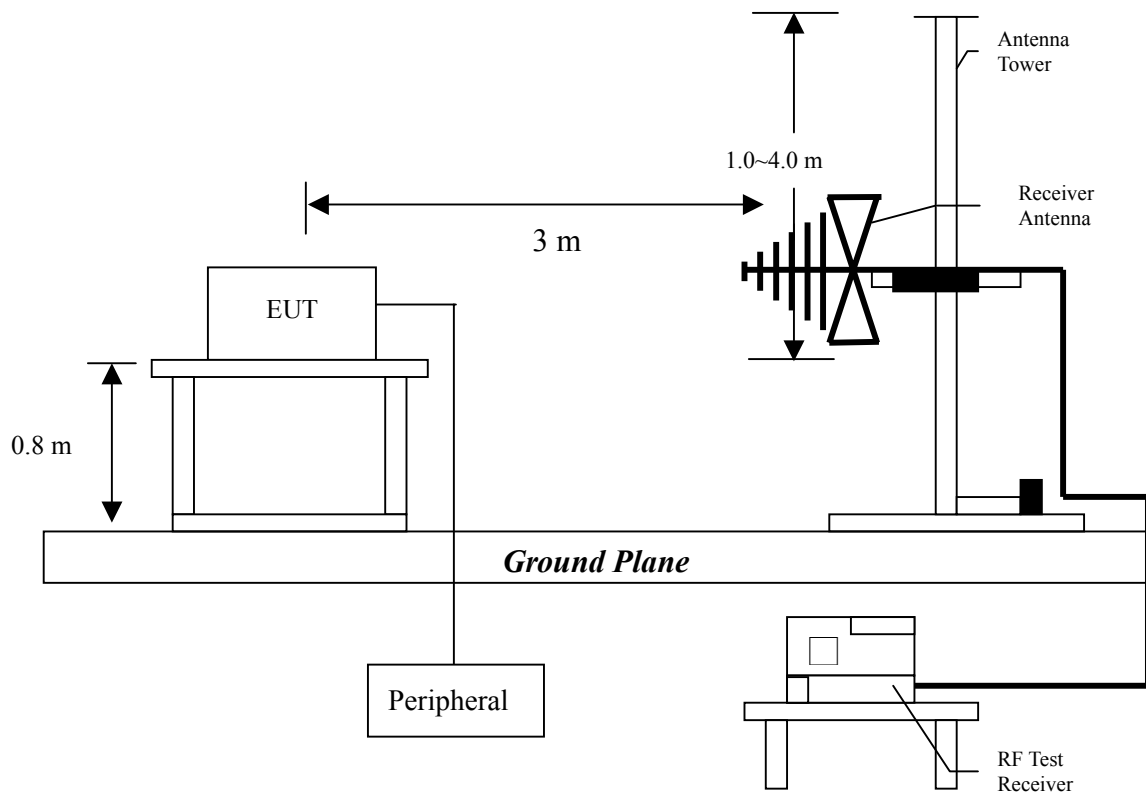
3. Radiated emission test FCC 15.239 (b)/(c)

3.1 Operating environment

Temperature:	25	°C
Relative Humidity:	51	%
Atmospheric Pressure:	1023	hPa

3.2 Test setup & procedure

The Diagram below shows the test setup, which is utilized to make these measurements.



Radiated emissions were investigated cover the frequency range from 30MHz to 1000MHz using a receiver RBW of 120kHz record QP reading, and the frequency over 1GHz using a spectrum analyzer RBW of 1MHz and 10Hz VBW record Average reading. (15.209 paragraph), the Peak reading (1MHz RBW/VBW) recorded also on the report. The EUT for testing is arranged on a wooden turntable. If some peripherals apply to the EUT, the peripherals will be connected to EUT and the whole system. During the test, all cables were arranged to produce worst-case emissions. The signal is maximized through rotation. The height of antenna and polarization is changing constantly for exploring for maximum signal level. The height of antenna can be up to 4 meters and down to 1 meter.

The measurement for radiated emission will be done at the distance of three meters unless the signal level is too low to measure at that distance. In the case of the reading under noise floor, a pre-amplifier is used and/or the test is conducted at a closer distance. And then all readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance.

The EUT configuration please refer to the “Spurious set-up photo.pdf”.

3.3 Emission limit

3.3.1 Fundamental and harmonics emission limits

Frequency (MHz)	Field Strength of Fundamental	
	(uV/m@3m)	(dBuV/m@3m)
88-108	250	48

The emission limit above is based on measurement instrumentation employing an average detector. The provisions in Section 15.35 for limiting peak emissions apply.

3.3.2 General radiated emission limits

Frequency MHz	15.209 Limits (dB μ V/m@3m)
30-88	40
88-216	43.5
216-960	46
Above 960	54

Remark:

1. In the above table, the tighter limit applies at the band edges.
2. Distance refers to the distance in meters between the measuring antenna and the closed point of any part of the device or system

Uncertainty was calculated in accordance with NAMAS NIS 81.

Expanded uncertainty (k=2) of radiated emission measurement is ± 4.68 dB.

The EUT cannot tune outside the 88.1 - 107.9 MHz band

3.4 Radiated emission test data

3.4.1 Fundamental Radiated Emission Data

EUT : EF-6210C
Test Condition : Tx at 88.1MHz

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
88.1000	PK	V	8.50	29.67	38.16	43.50	-5.34
159.9800	QP	V	15.83	20.32	36.15	43.50	-7.35
439.3400	QP	V	17.64	18.40	36.04	46.00	-9.96
599.3900	QP	V	20.71	15.60	36.31	46.00	-9.69
679.9000	QP	V	22.33	14.60	36.93	46.00	-9.08
959.2600	QP	V	25.34	9.97	35.31	46.00	-10.70
88.1000	PK	H	9.45	24.88	34.32	43.50	-9.18
263.7700	QP	H	12.88	17.87	30.75	46.00	-15.25
352.0400	QP	H	15.48	15.60	31.08	46.00	-14.93
439.3400	QP	H	18.12	16.12	34.24	46.00	-11.76
480.0000	QP	H	18.64	14.32	32.96	46.00	-13.04
679.9000	QP	H	22.48	10.97	33.45	46.00	-12.55

Remark:

1. Corrected Level = Reading + Correction Factor
2. Correction Factor = Antenna Factor + Cable Loss

EUT : EF-6210C

Test Condition : Tx at 98 MHz

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
98.0000	PK	V	7.38	29.85	37.22	43.50	-6.28
159.9800	QP	V	15.83	21.33	37.16	43.50	-6.34
439.3400	QP	V	17.64	19.10	36.74	46.00	-9.26
599.3900	QP	V	20.71	15.14	35.85	46.00	-10.15
679.9000	QP	V	22.33	13.40	35.73	46.00	-10.28
959.2600	QP	V	25.34	9.44	34.78	46.00	-11.23
98.0000	PK	H	7.93	28.48	36.40	43.50	-7.10
263.7700	QP	H	12.88	19.10	31.98	46.00	-14.02
352.0400	QP	H	15.48	16.12	31.60	46.00	-14.41
439.3400	QP	H	18.12	17.50	35.62	46.00	-10.38
480.0000	QP	H	18.64	16.10	34.74	46.00	-11.26
679.9000	QP	H	22.48	12.10	34.58	46.00	-11.42

Remark:

1. Corrected Level = Reading + Correction Factor

2. Correction Factor = Antenna Factor + Cable Loss

EUT : EF-6210C

Test Condition : Tx at 107.9 MHz

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
107.9000	PK	V	7.64	30.74	38.38	43.50	-5.12
159.9800	QP	V	15.83	21.33	37.16	43.50	-6.34
439.3400	QP	V	17.64	19.10	36.74	46.00	-9.26
599.3900	QP	V	20.71	16.87	37.58	46.00	-8.42
679.9000	QP	V	22.33	15.12	37.45	46.00	-8.56
959.2600	QP	V	25.34	9.44	34.78	46.00	-11.23
107.9000	PK	H	9.03	26.69	35.71	43.50	-7.79
263.7700	QP	H	12.88	18.11	30.99	46.00	-15.01
352.0400	QP	H	15.48	15.98	31.46	46.00	-14.55
439.3400	QP	H	18.12	16.21	34.33	46.00	-11.67
480.0000	QP	H	18.64	14.77	33.41	46.00	-12.59
679.9000	QP	H	22.48	11.12	33.60	46.00	-12.40

Remark:

1. Corrected Level = Reading + Correction Factor

2. Correction Factor = Antenna Factor + Cable Loss

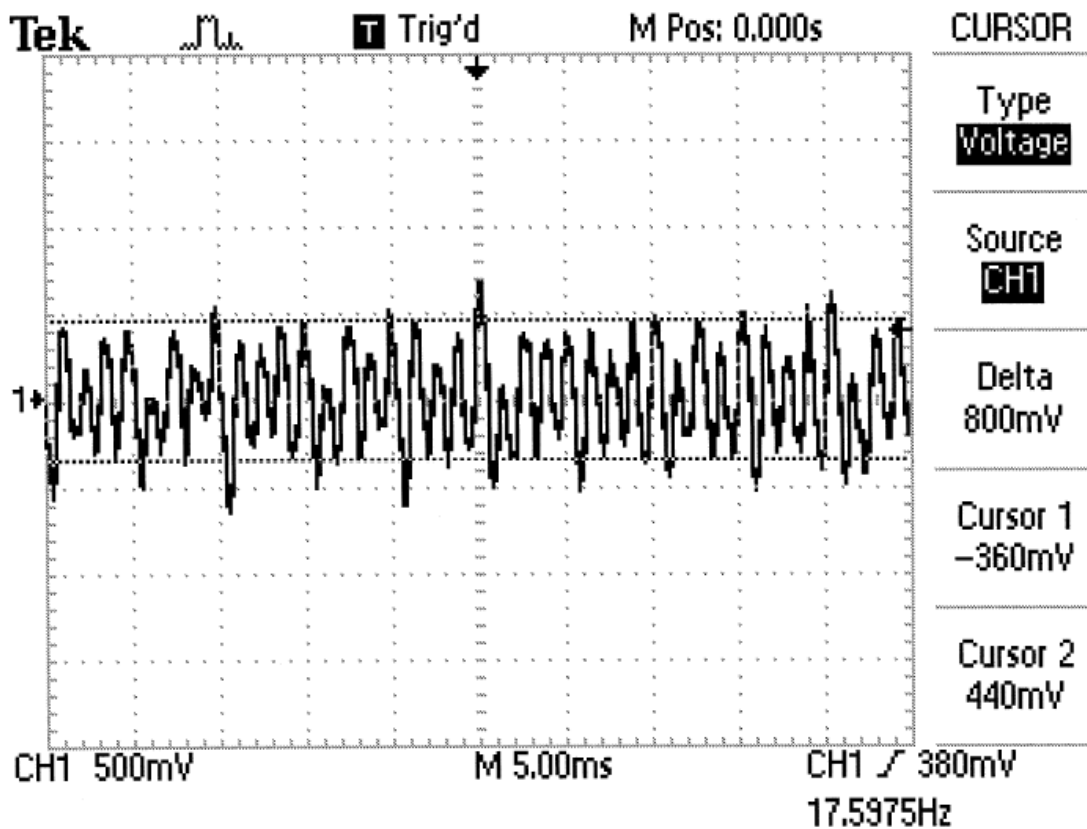
4. Bandwidth of fundamental frequency FCC 15.239(a)

Emissions from the intentional radiator shall be confined within a band 200 kHz wide centered on the operation frequency. The 200 kHz band shall lie wholly within the frequency range of 88 – 108 MHz.

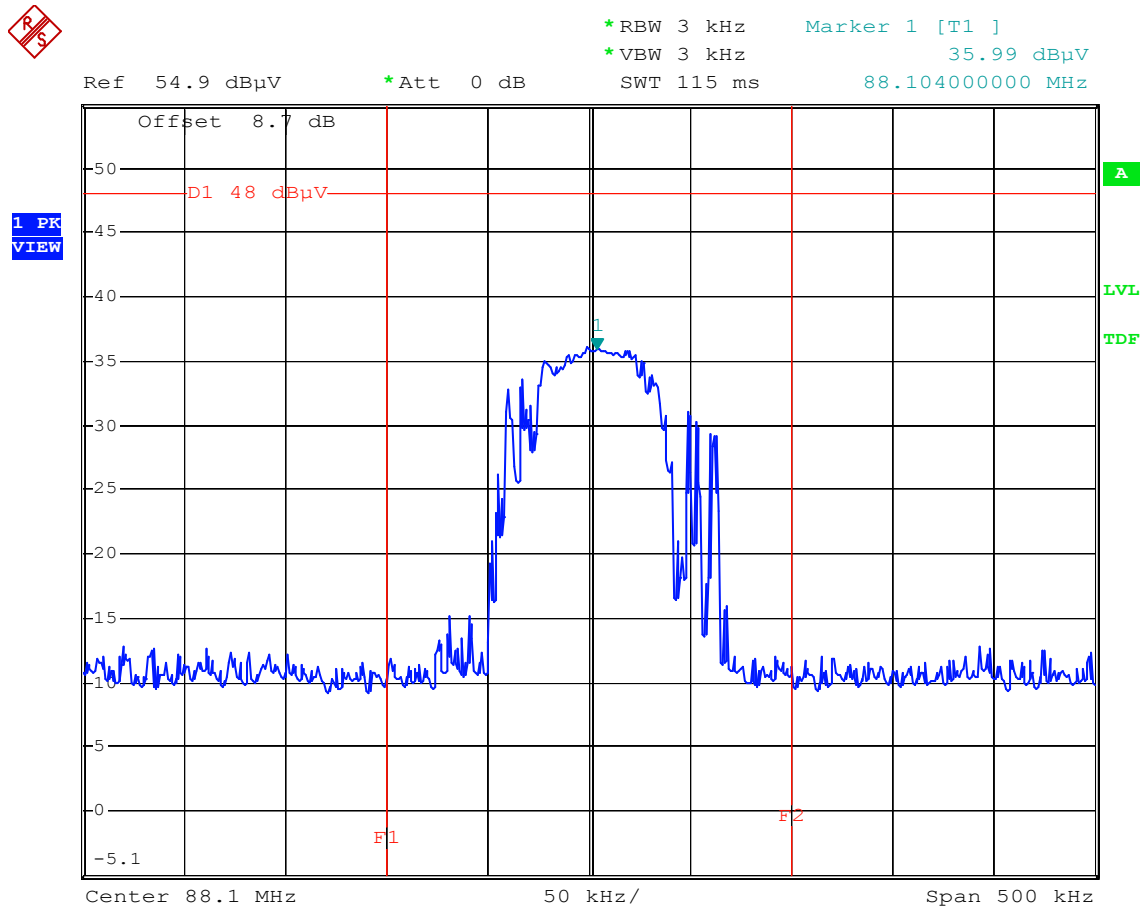
EUT was adjusted to work at the selected channels: 88.1 MHz, 98 MHz, and 107.9 MHz. The EUT will not allow operation below 88.1 MHz and will not allow operation above 107.9 MHz.

Audio input was generated from an iPod to the device and tested under normal operating conditions. The maximum audio input from this iPod was 800mVp-p. The FM transmitter output is shown in the plots below and meets the requirements of FCC Part 15.239(a).

Please see the plot below.



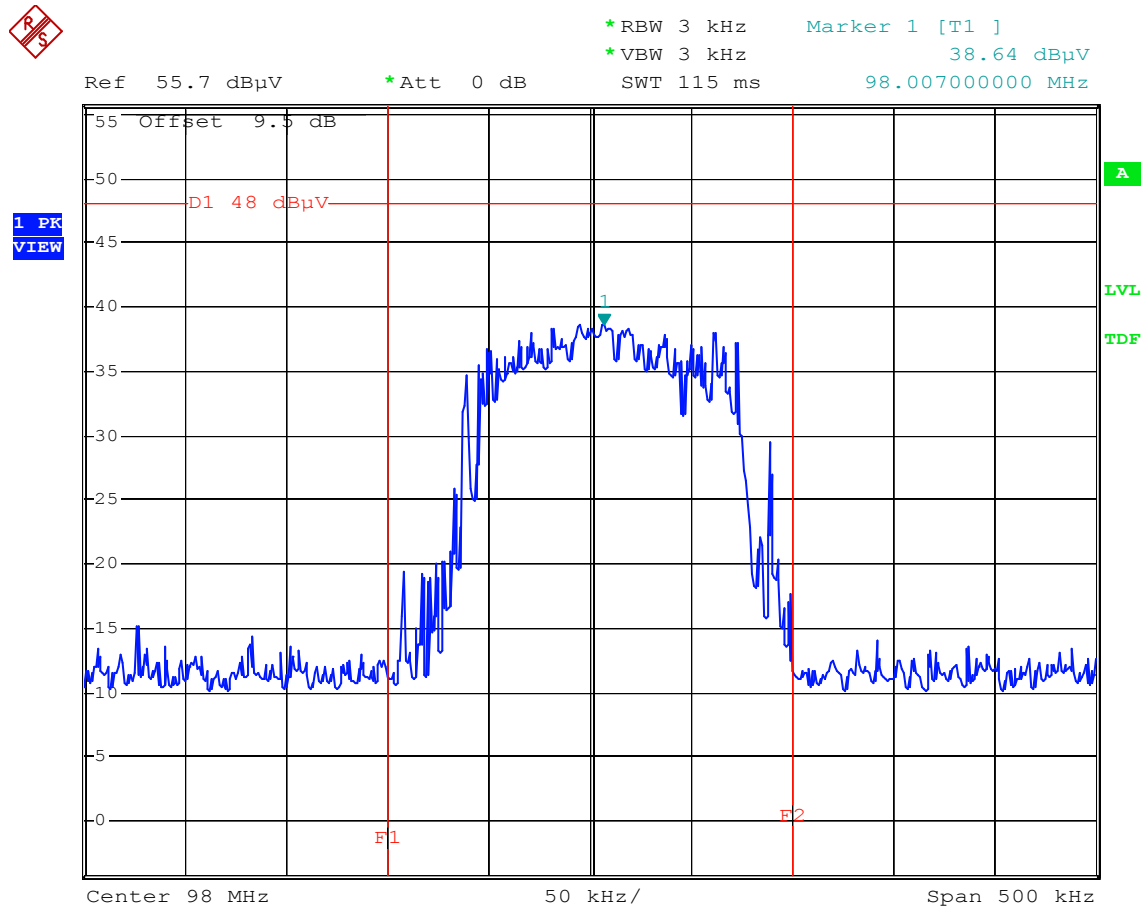
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Comment: 88.1MHz

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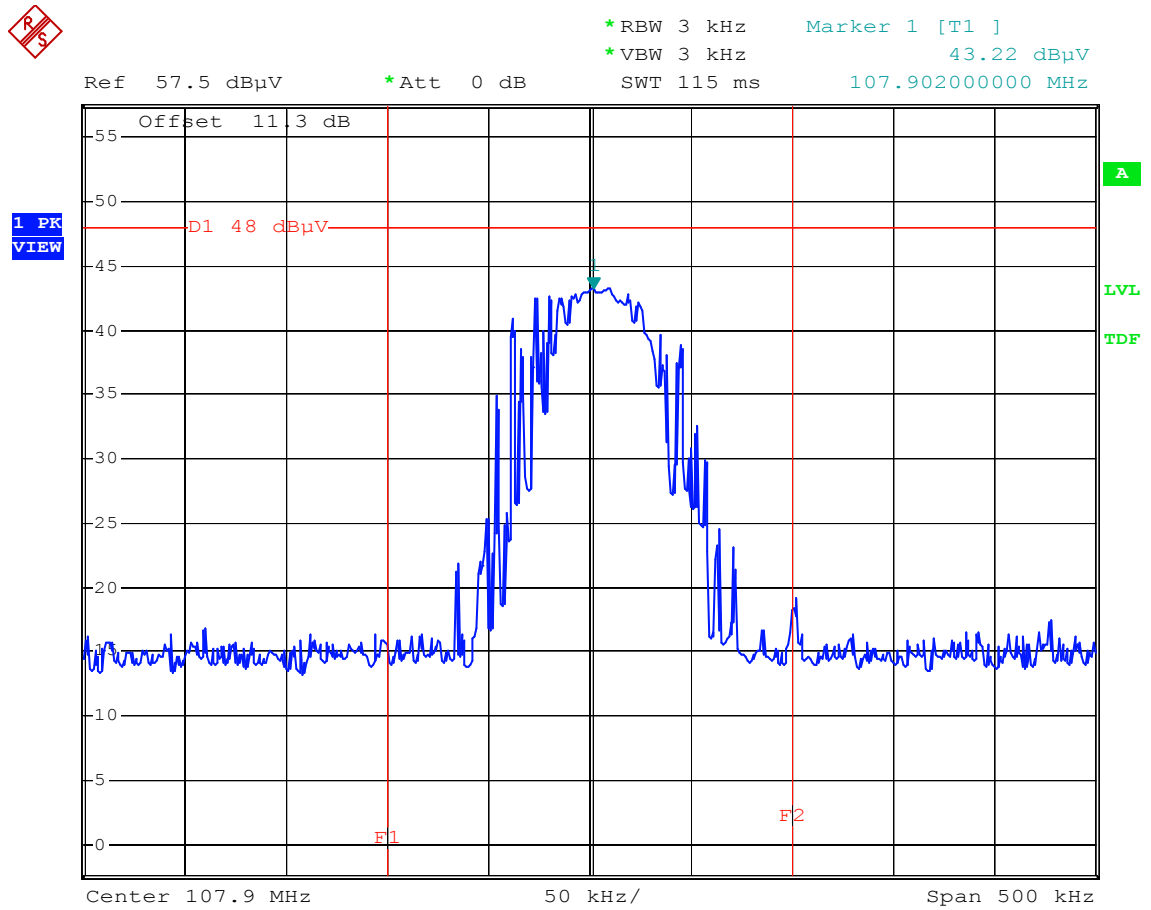
Test Mode: 98 MHz



Comment: 98MHz

Date: 20.NOV.2006 16:02:01

Test Mode: 107.9 MHz



Comment: 107.9MHz

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