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FEDERAL COMMUNICATIONS COMMISSION
Registration number: 282399

TEST REPORT

Application No. :	SZEMO070902393RF(SGS SZ NO.: SZTYR070902362/EL)
Applicant:	SUNWAY ELECTRONICS COMPANY
FCC ID:	VN2XW20078
Fundamental Carrier	**Frequency** : 2.4GHz to 2.4835GHz
Equipment Under Test (EUT):	
Name:	Wireless back up camera
Standards:	FCC PART 15: 2007 Section 15.249
Date of Receipt:	06 September 2007
Date of Test:	11 to 25 September 2007
Date of Issue:	27 September 2007
Test Result :	**PASS ***

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Robinson Lo
Manager

2 Test Summary

Test	Test Requirement	Stanadard Paragraph	Result
Flied Strength of Fundamental	FCC PART 15 : 2007	Section 15.249 (a)	PASS
Flied Strength of Harmornics or other Frequency	FCC PART 15 : 2007	Section 15.249 (a) Section 15.209	PASS
Occupied Bandwidth	FCC PART 15 : 2007	Section 15.249	PASS
Band Edges Measurement	FCC PART 15 : 2007	Section 15.249 (d)	PASS

Remark:

The EUT passed the Tx test after modification:

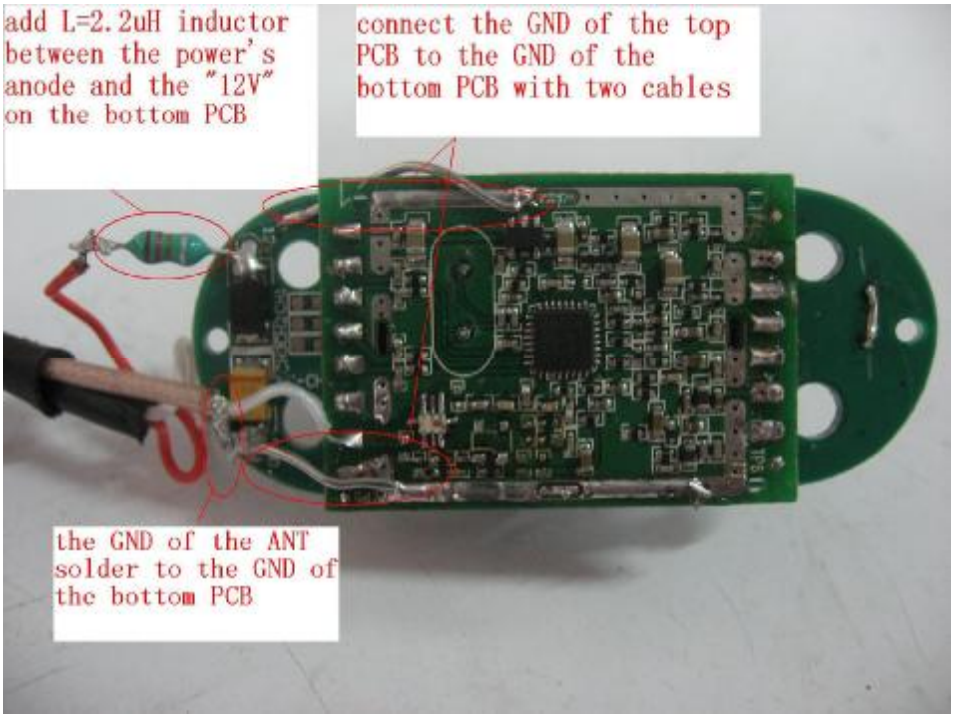
For TX,

1>.Add L=2.2uH inductor between the power's anode and the "12V" on the bottom PCB

2>Connect the GND of the top PCB to the GND of the bottom PCB with two cables

3>GND of the ANT solder to "GND" of the bottom PCB.

please see the detail information as follow photo:



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4 General Information

4.1 Client Information

Applicant Name:	SUNWAY ELECTRONICS COMPANY
Applicant Address:	Shiting jiankou Township, Putian City, Fujian Province, China

4.2 General Description of E.U.T.

Product Name:	Wireless back up camera
Power Supply:	12V DC
Power Cord:	N/A-

4.3 Description of Support Units

The EUT was tested as an independent unit: Wireless back up camera.

4.4 Standards Applicable for Testing

The customer requested FCC tests for Wireless back up camera.

The standard used was FCC PART 15, SUBPART C (2007) section 15.249.

4.5 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory, No.198 Kezhu Road, Science Town Economic& Technology Development District Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.

4.6 Other Information Requested by the Customer

None.

4.7 Test Facility

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

- **NVLAP – Lab Code: 200611-0**
  SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is recognized under the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0. Effective through December 31, 2006.
- **ACA**
  SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our NVLAP accreditation.
- **VCCI**
  The 3m Semi-anechoic chamber and Shielded Room (11.5m x 4m x 4m) of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-1599 and C-1706 respectively.
  Date of Registration:June 01, 2005. Valid until February 22, 2008
- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**
  Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.
- **CNAL – LAB Code: L0141**
  SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAL/AC01: 2002 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:1999 General Requirements) for the Competence of Testing Laboratories.
- **FCC – Registration No.: 282399**
  SGS-CSTC Standards Technical Services Co., 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 282399, May 31, 2002. With the above and NVLAP's accreditation, SGS-CSTC is an authorised test laboratory for the DoC process.
- **Industry Canada (IC)**
  The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 5169.

5 Test Results

5.1 Test Instruments

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (dd-mm-yy)	Cal.Due date (dd-mm-yy)
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEL0017	16-06-2007	15-06-2008
2	EMI Test Receiver	Rohde & Schwarz	ESIB26	100249	14-12-2006	13-12-2007
3	EMI Test software	AUDIX	E3	SEL0050	N/A	N/A
4	Coaxial cable	SGS	N/A	SEL0028	01-06-2007	31-05-2008
5	Coaxial cable	SGS	N/A	SEL0027	01-06-2007	31-05-2008
6	BiConiLog Antenna	ETS-LINDGREN	3142C	00042673	03-03-2007	02-03-2008
7	EMI Test Receiver	Rohde & Schwarz	ESCI	100119	27-06-2007	26-06-2008
8	Loop Antenna	Emco	6502	00042963	30-05-2006	29-05-2008

5.2 E.U.T. Operation

Input voltage: 12V DC
Operating Environment:
Temperature: 24.0 °C
Humidity: 52 % RH
Atmospheric Pressure: 1012 mbar
EUT Operation: Test in transmitting mode:

1. Operation frequency: 2.47GHz.

5.3 Test Procedure & Measurement Data

5.3.1 Radiated Emissions

5.3.1.1 Test in transmitting mode

Test Requirement:	FCC Part15 C
Test Method:	Based on FCC Part15 C Section 15.249
Test Date:	13 September 2007
Measurement Distance:	3m (Semi-Anechoic Chamber)
Frequency range	30 MHz – 10GHz for transmitting mode. Test instrumentation resolution bandwidth 120 kHz (30 MHz - 1000 MHz), 1 MHz (1000 M – 25GHz)
Operation:	Receive antenna scan height 1 - 4 m, polarization Vertical/ Horizontal

Requirements:

Fundamental Frequency (MHz)	Field Strength of Fundamental (dBuV/m @ 3m)	Field Strength of Harmonics and Spurious Emissions (dBuV/m @ 3m)
902 to 928	94.0	54.0
2400 to 2483.5	94.0	54.0
5725 to 5875	94.0	54.0
24000 to 24250	108.0	68.0

The fundamental frequency of the EUT is 2.47GHz

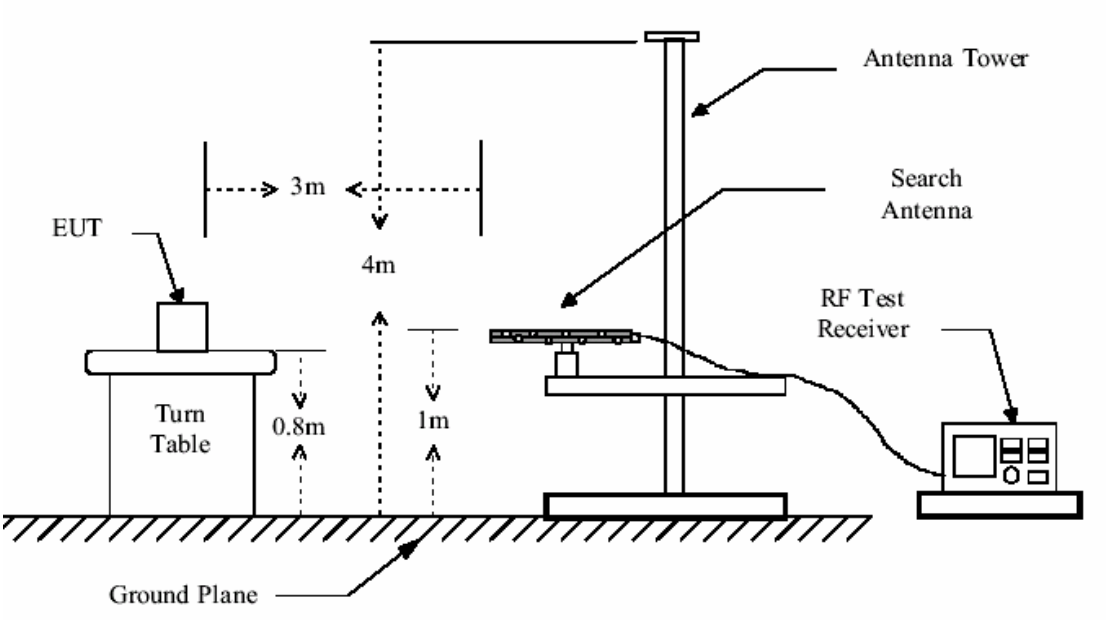
The limit for average field strength dBuv/m for the fundamental frequency = 94.0 dBμV/m.

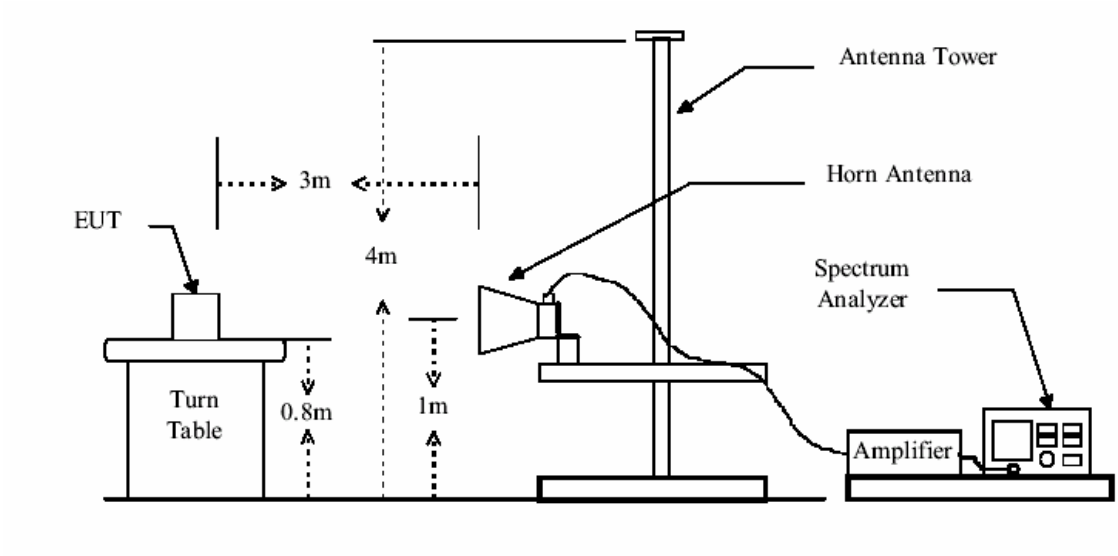
No fundamental is allowed in the restricted bands.

The limit for average field strength dBμV/m for the harmonics and spurious frequencies = 54.0 dBμV/m. Spurious in the restricted bands must be less than 54.0 dBuv/m or 15.209.

Test Procedure: The procedure uesd was ANSI Standard C63.4-2003. The receive was scanned from 30MHz to 25GHz.When an emission was found,the table was roated to produce the maximum signal strength. An initial pre-scan was performed for in peak detection mode using the receiver. The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes. For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. The worst case emissions were reported.

Test Configuration:





The field strength is calculated by adding the Antenna Factor, Cable Factor & Peramplifier . The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Peramlifer Factor

The following test results were performed on the EUT:

. Fundamental emission

Remark: Duty cycle of the EUT is 100%. Then Average equalt to Peak.

Peak Measurement

Test Frequency (GHz)	Measuring Level (dBuV/m)		Limits (dBuV/m)	Margin (dB)	
	Vertical	Horizontal		Vertical	Horizontal
2.47	90.7	88.2	114.0	23.3	25.8
Average Measurement					
2.47	90.7	88.2	94.0	3.3	5.8

(2). Harmonics & Spurious Emissions

The following test results were performed on the comple system at 30MHz-1000MHz.

Test Frequency (GHz)		Measuring Level (dBuV/m)		Limits (dBuV/m)	Margin (dB)	
		Vertical	Horizontal		Vertical	Horizontal
2)	133.79	18.39	30.92	43.5	25.11	12.58
3)	148.34	14.95	23.93	43.5	28.55	19.57
4)	238.10	13.93	40.58	46	32.07	5.42
5)	350.10	20.05	35.85	46	25.95	10.15
6)	458.74	24.58	29.46	46	21.42	16.54
7)	836.07	37.22	35.14	46	8.78	10.86
The following test results were performed at above 1 GHz						
2)	4.96440	45.15	47.33	54.0	8.85	6.67
3)	7.44660	44.08	46.44	54.0	9.92	7.56
4)	9.92880	43.69	42.99	54.0	10.31	11.01
5)	12.41100	46.30	46.15	54.0	7.70	7.85
6)	14.89320	47.88	47.00	54.0	6.12	7.00
7)	17.37540	48.80	46.16	54.0	5.20	7.84

Remark:

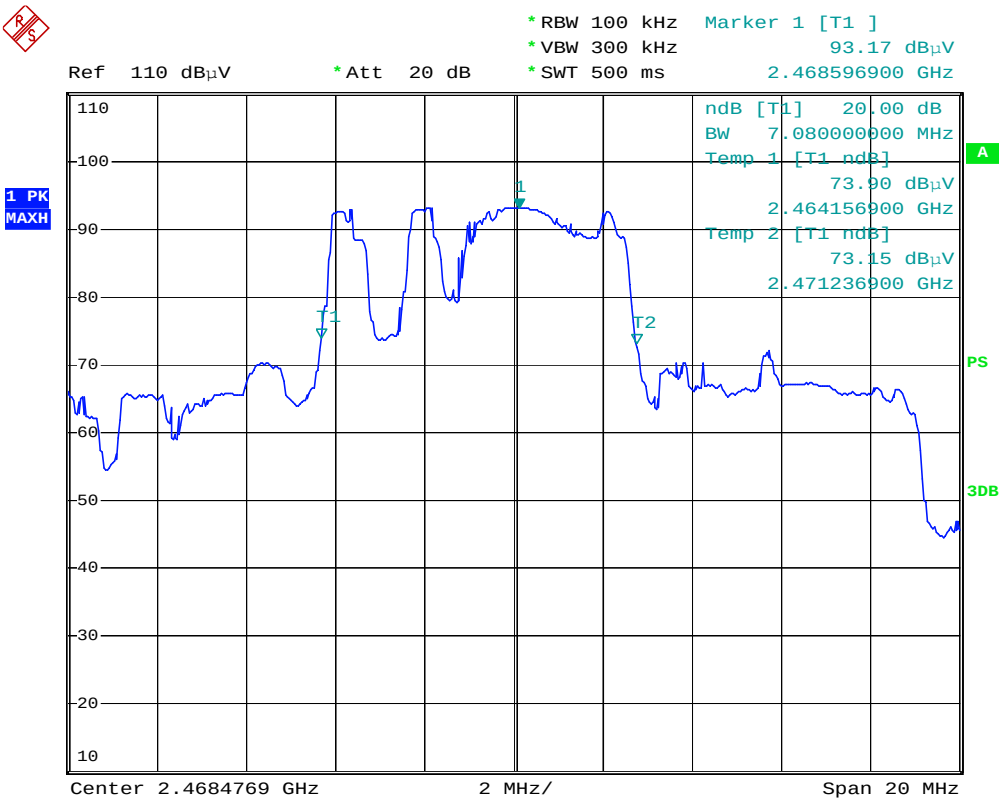
1). According to 15.249 (e) As shown in Section 15.35(b), for frequencies above 1000 MHz, the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

TEST RESULTS: The unit does meet the FCC requirements.

5.3.2 Occupied Bandwidth & Band Edge

Test Requirement:	FCC Part 15 C
Test Method:	Based on FCC Part15 C Section 15.249:
	Operation within the band 2.4000 – 2.4835GHz
Test Date:	11 September 2007
Requirements:	15.249 (d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.
Method of measurement:	A small sample of the transmitter output was fed into the Spectrum Analyzer and the attached plot was taken. The vertical is set to 10dB per division. The horizontal scale is set to 2MHz per division.

The occupied bandwidth as below:



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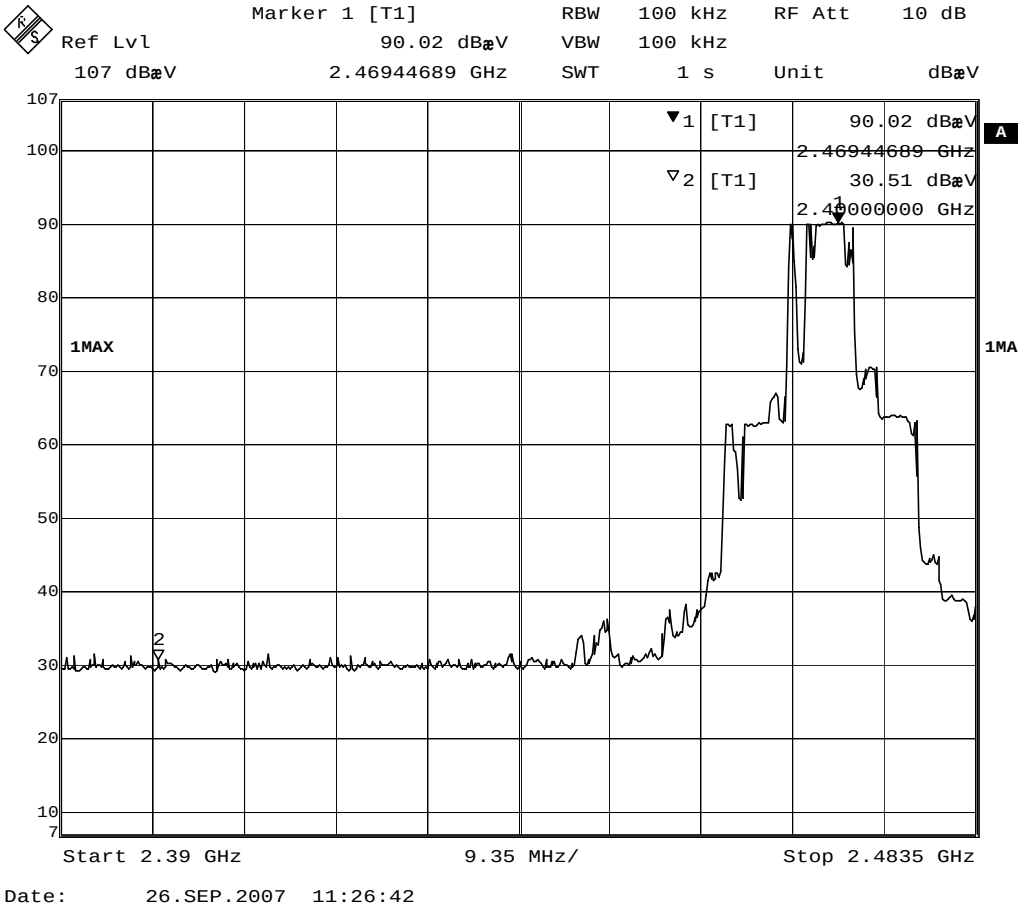
Date: 26.SEP.2007 12:34:59

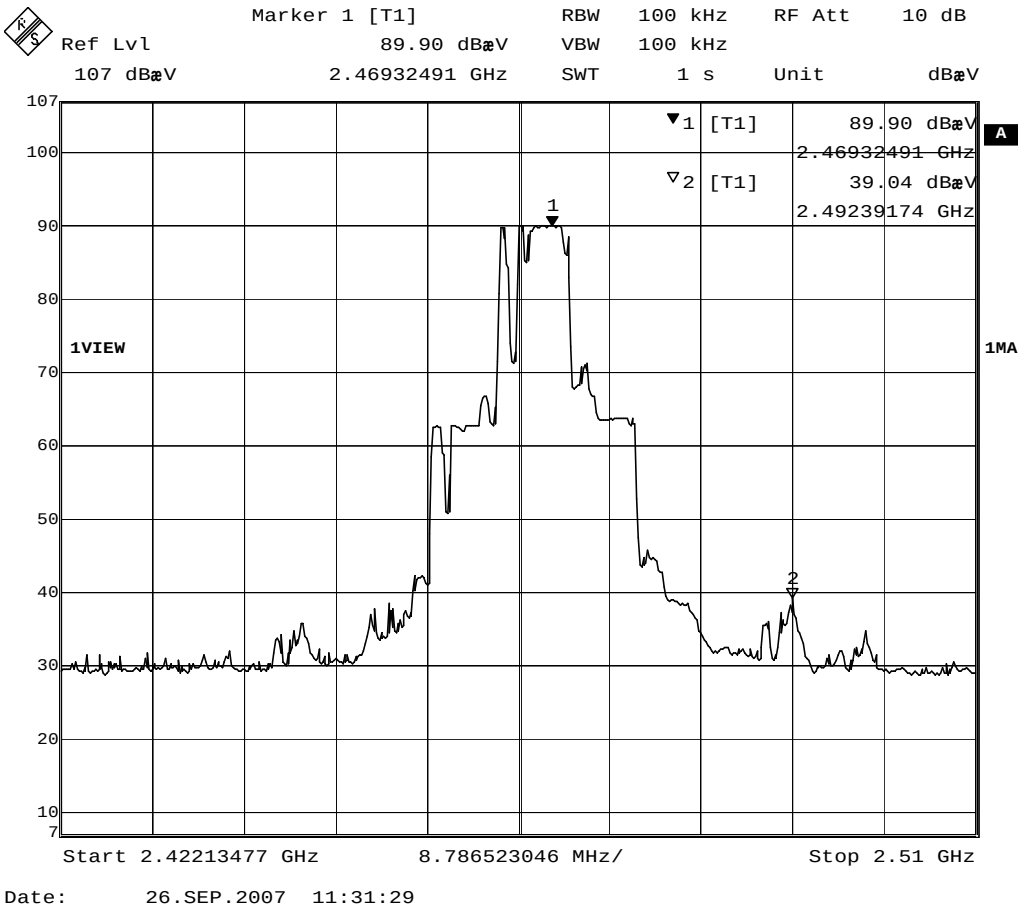
(2). 2.4GHz Band Edge:



For the field strength of Lower Edges:2.4000GHz is 31.2dBuV/m.

The results: The unit does meet the FCC requirements.

(2). 2.4835GHz Band Edge:



For the field strength of Upper Edges:2.4835GHz is less than 40.7dBuV/m.

The results: The unit does meet the FCC requirements.