



No.198 Kezhu Road, Science Town Economic& Technology Development District

Guangzhou, China 510663

FEDERAL COMMUNICATIONS COMMISSION

Registration number: 282399

Report No.: GLEMR070601640RFT

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FCC ID: VG3NOVELLR1498

TEST REPORT

Application No. : GLEMR070601640RF (SGS HK NO.: 2013356/EE)

Applicant : NOVEL ENTERPRISE LIMITED

FCC ID : VG3NOVELLR1498

Fundamental Frequency : 315MHz

Equipment under Test (EUT):

EUT Name : LUGGAGE RETRIEVER

Item No. : NOVELLR1498

Standards : FCC FCC PART 15, SUBPART C : 2007

Date of Receipt : 8 June 2007

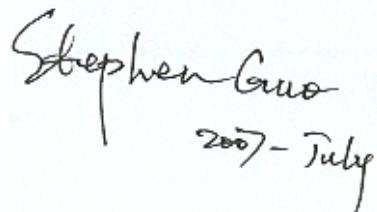
Date of Test : 12 to 27 June 2007

Date of Issue : 5 July 2007

Test Result :	PASS *
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* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:


Stephen Guo
2007 - July

Stephen Guo
Manager

This report refers to the General Conditions for Inspection and Testing Services, printed overleaf

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

All test results in this report can be traceable to National or International Standards.

2 Test Summary

Test	Test Requirement	Stanadard Paragraph	Result
Transmitter			
Radiated Emission	FCC PART 15C :2007	Section 15.231	PASS *
Occupied Bandwidth	FCC PART 15C :2007	Section 15.231	PASS
Dwell Time	FCC PART 15C :2007	Section 15.231	PASS

Remark:

* The EUT passed Radiated Emission test after the modification by the client.

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4 General Information

4.1 Client Information

Applicant: NOVEL ENTERPRISE LIMITED
Address of Applicant: FLAT C, 121F, WING CHAI INDUSTRIAL BUILDING, 27-29 NG FONG STREET, SAN PO KONG, KOWLOON, HONG KONG.

4.2 Details of E.U.T.

EUT Name: LUGGAGE RETRIEVER
Item No.: NOVELLR1498
Power Supply: 12V DC (1 x '27A' Size Battery) for transmitter.
4.5V DC (3 x 'AG10' Size Batteries) for receiver.

4.3 Description of Support Units

The EUT was tested as in a set: a 315MHz radio transmitter and a 315MHz receiver.

4.4 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

4.5 Other Information Requested by the Customer

None.

4.6 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.

- **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.

- **CNAS (Lab Code: L0167)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2006 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 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 authorized test laboratory for the DoC process.

5 Test Results

5.1 Test Instruments

RE in Chamber/OATS						
No:	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (dd-mm-yy)	Cal.Due date (dd-mm-yy)
EMC0525	Compact Semi-Anechoic Chamber	ChangZhou ZhongYu	N/A	N/A	06-03-2007	06-03-2008
EMC0522	EMI Test Receiver	Rohde & Schwarz	ESIB26	100249	05-12-2006	05-12-2007
N/A	EMI Test Software	Audix	E3	N/A	N/A	N/A
EMC0514	Coaxial cable	SGS	N/A	N/A	04-12-2006	04-12-2007
EMC0524	Bi-log Type Antenna	Schaffner -Chase	CBL6112B	2966	31-10-2006	31-10-2007
EMC0519	Bilog Type Antenna	Schaffner -Chase	CBL6143	5070	31-07-2006	31-07-2007
EMC0517	Horn Antenna	Rohde & Schwarz	HF906	100095	29-07-2006	29-07-2007
EMC0040	Spectrum Analyzer	Rohde & Schwarz	FSP30	100324	05-12-2006	05-12-2007
EMC0520	0.1-1300 MHz Pre-Amplifier	HP	8447D OPT 010	2944A0625 2	28-03-2007	28-03-2008
EMC0521	1-26.5 GHz Pre-Amplifier	Agilent	8449B	3008A0164 9	28-03-2007	28-03-2008
EMC0523	Active Loop Antenna	EMCO	6502	00042963	09-08-2006	09-08-2008
EMC0530	10m Semi- Anechoic Chamber	ETS	N/A	N/A	22-08-2006	22-08-2007

5.2 E.U.T. Operation

Operating Environment:

Temperature: 23.0 ~26.0°C

Humidity: 45~65 % RH

Atmospheric Pressure: 989~1012 mbar

EUT Operation:

Test the EUT in operation mode.

5.3 Test Procedure & Measurement Data

5.3.1 Radiated Emissions

Test Requirement: FCC Part15 15.231(a)
Test Method: ANSI C63.4
Test Date: 12 June 2007 (initial test) , 27 June 2007 (final test)
Measurement Distance: 3m (Semi-Anechoic Chamber)
Frequency range 30 MHz – 5.0GHz for transmitting mode.
Test instrumentation resolution bandwidth 120 kHz (30 MHz - 1000 MHz)
1 MHz (1000 MHz – 25GHz)
Receive antenna scan height 1 m - 4 m, polarization Vertical/Horizontal

Requirements:

Fundamental Frequency MHz	Field Strength of Fundamental (dB μ V/m @ 3m)	Field Strength of Harmonics and Spurious Emissions (dB μ V/m @ 3m)
40.66 to 40.70	67.04	47.04
70 to 130	61.94	41.94
130 to 174	61.94 to 71.48	41.94 to 51.48
174 to 260	71.48	51.48
260 to 470	71.48 to 81.94	51.48 to 61.94
470 and above	81.94	61.94

The fundamental frequency of the EUT is 315MHz

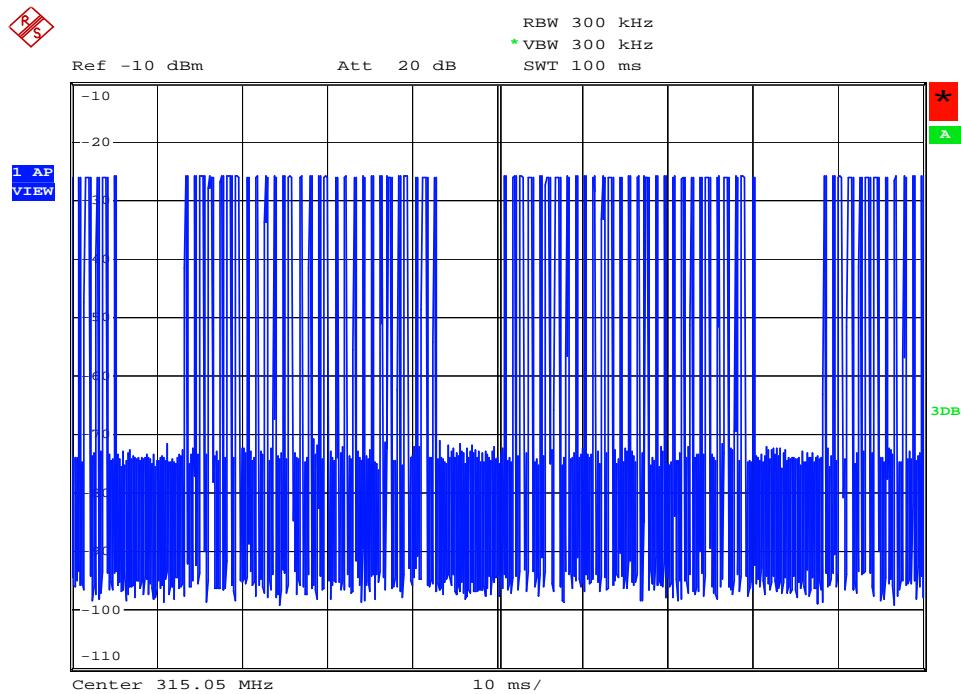
According to 15.231(b) and refer the section 5, the limit for average field strength dB μ V/m for the fundamental frequency = 75.6dB μ V/m.

No fundamental is allowed in the restricted bands .

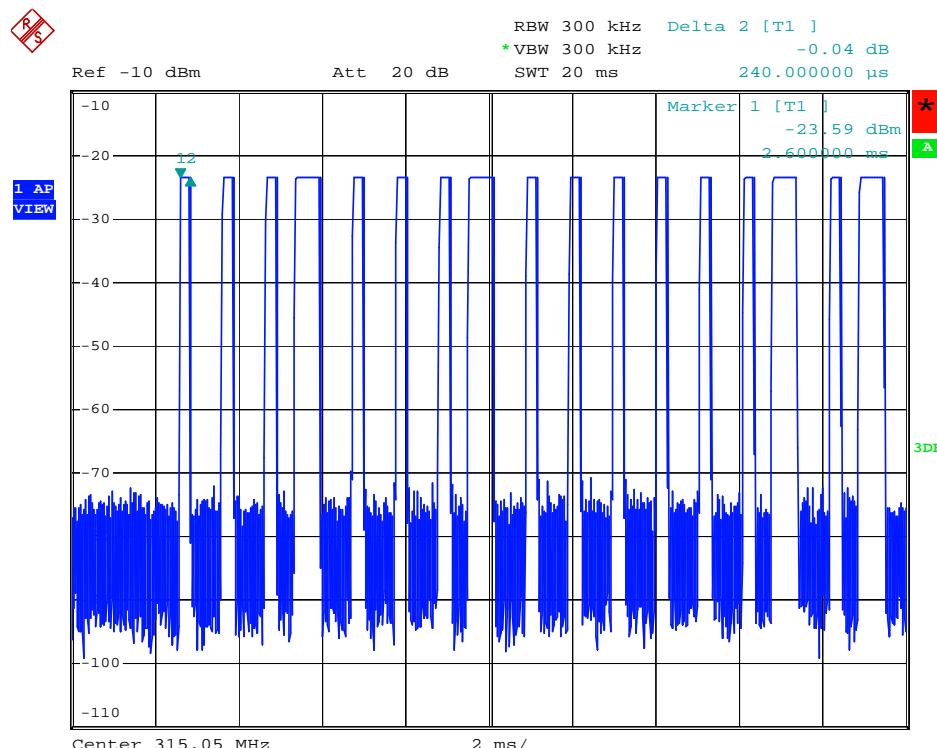
The limit for average field strength dB μ V/m for the harmonics frequencies = 55.6dB μ V/m. Spurious in the restricted bands must be less than 54dB μ V/m or 15.209.

The average correction factor is computed by analyzing the "worst case" on time in any 100 msec time period . Analysis of the remote transmitter worst case on time in any 100 msec time period is an on time of 100 msec, therefore the average value of fundamental frequency is: Average = Peak value + 20log (Duty cycle), where the duty factor is calculated from following formula:

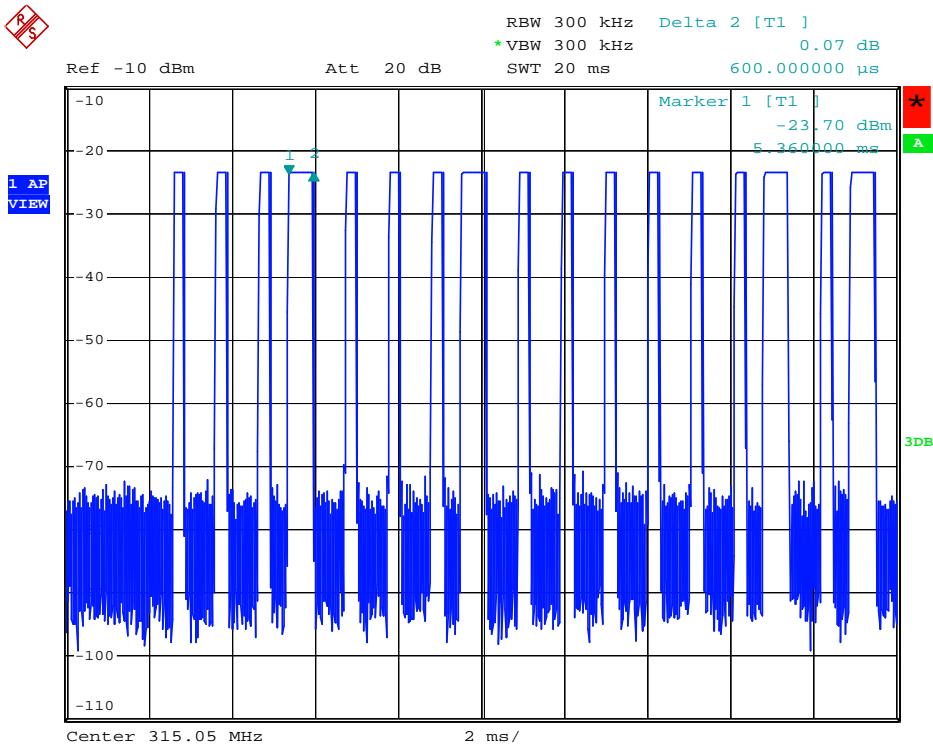
$$20\log (\text{Duty cycle}) = 20\log(T_{pulse}/100\text{ms}) = 20\log(27.84/100\text{ms}) = -11.1\text{dB}$$



$$T_{pulse} = T_1 \times 51 + T_2 \times 26 = 0.24 \times 51 + 0.6 \times 26 = 12.24 + 15.6 = 27.84 \text{ ms}$$



$$T_1 = 0.24 \text{ ms}$$



$$T_2 = 0.6 \text{ ms}$$

Test Procedure: The procedure used was ANSI Standard C63.4-2003. The receiver was scanned from 30MHz to 5.0GHz. When an emission was found, the table was rotated 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.

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

$$\text{Final Test Level} = \text{Receiver Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Peramplifier Factor}$$

An initial pre-scan was performed in the 3m chamber using the spectrum analyser in peak detection mode. Peak measurements were conducted based on the peak sweep graph. The EUT was measured by Bilog antenna with 2 orthogonal polarities.

The EUT rotated through three orthogonal axes to determine which attitude and equipment arrangement produces the highest emission relative to the limit was used in making final radiated emission measurements. Pre-test was performed at 3 orthogonal axes, compliance test in X axes as per photograph in section 6 of this report.

The following test results were performed on the EUT on 27 June 2007:

1. Fundamental emission

Test Frequency (MHz)	Peak (dB μ V/m)		Limits (dB μ V/m)	Margin (dB)	
	Vertical	Horizontal		Vertical	Horizontal
315.0	70.2	82.0	95.6	25.4	13.6

Test Frequency (MHz)	Average (dB μ V/m)		Limits (dB μ V/m)	Margin (dB)	
	Vertical	Horizontal		Vertical	Horizontal
315.0	59.1	70.9	75.6	16.5	4.7

2. Harmonics & Spurious Emissions

Test Frequency (MHz)	Peak (dB μ V/m)		Limits (dB μ V/m)	Margin (dB)	
	Vertical	Horizontal		Vertical	Horizontal
630.0	35.8	44.3	75.6	39.8	31.3
945.0	N/A	N/A	75.6	N/A	N/A
1260.0	N/A	N/A	75.6	N/A	N/A
1575.0	N/A	N/A	74.0	N/A	N/A
1890.0	N/A	N/A	75.6	N/A	N/A
2205.0	N/A	N/A	74.0	N/A	N/A
2520.0	N/A	N/A	75.6	N/A	N/A
2835.0	N/A	N/A	74.0	N/A	N/A
3150.0	N/A	N/A	75.6	N/A	N/A

Test Frequency (MHz)	Average (dB μ V/m)		Limits (dB μ V/m)	Margin (dB)	
	Vertical	Horizontal		Vertical	Horizontal
630.0	24.7	33.2	55.6	30.9	22.4
945.0	N/A	N/A	55.6	N/A	N/A
1260.0	N/A	N/A	55.6	N/A	N/A
1575.0	N/A	N/A	54.0	N/A	N/A
1890.0	N/A	N/A	55.6	N/A	N/A
2205.0	N/A	N/A	54.0	N/A	N/A
2520.0	N/A	N/A	55.6	N/A	N/A
2835.0	N/A	N/A	54.0	N/A	N/A
3150.0	N/A	N/A	55.6	N/A	N/A

Remark:

1. According to 15.35 (b) When average radiated emission measurements are specified in the regulations, including emission measurements below 1000 MHz, there is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules, e.g., see Section 15.255.
2. N/A, means the level is too weak to be detected or it is not applicable.
3. No other emissions level margin less than 20dB are been detected.



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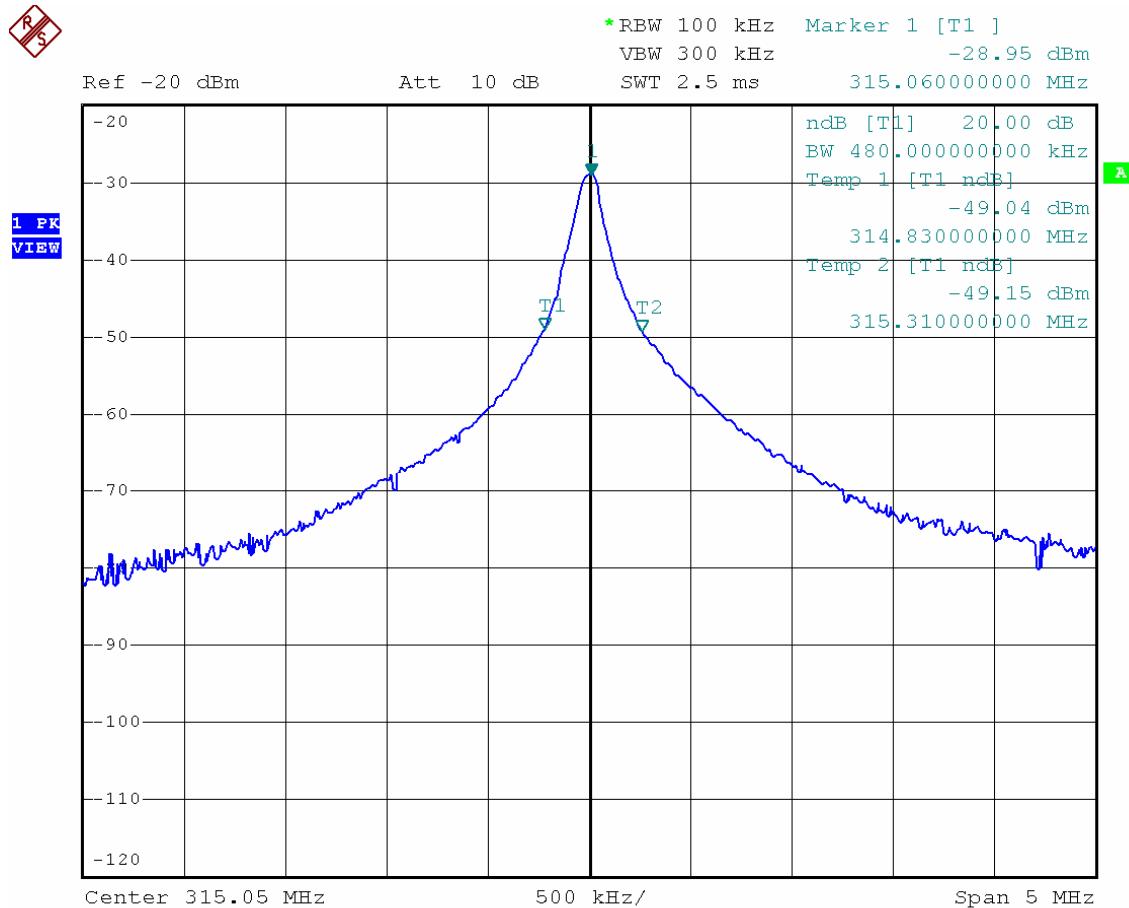
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TEST RESULTS: The unit does meet the FCC Part
15 C Section 15.231 requirements.

5.3.2 Occupied Bandwidth

Test Requirement: FCC Part15 15.231(c) (3)
Test Method: ANSI C63.4
Test Date: 13 June 2007
Requirements: 15.231 (c3) The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.
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 200KHz per division.

The graph as below, represents the emissions take for this device.



The fundamental frequency is 315MHz, so the 20dB bandwidth is $315 \pm 0.78\text{MHz}$, so the lower frequency

point limit is larger than 314.22MHz, and upper frequency point limit is less than 315.78MHz.

The results: The unit does meet the FCC requirements.

5.3.3 Dwell Time

Test Requirement: FCC Part15.231(a)(1)

Test Method: ANSI 63.4

Test Date: 13 June 2007

Requirements:

1. Regulation 15.231 (a) The provisions of this Section are restricted to periodic operation within the band 40.66 - 40.70 MHz and above 70 MHz. Except as shown in paragraph (e) of this Section, the intentional radiator is restricted to the transmission of a control signal such as those used with alarm systems, door openers, remote switches, etc. Continuous transmissions, voice, video and the radio control of toys are not permitted. Data is permitted to be sent with a control signal. The following conditions shall be met to comply with the provisions for this periodic operation:

Result:

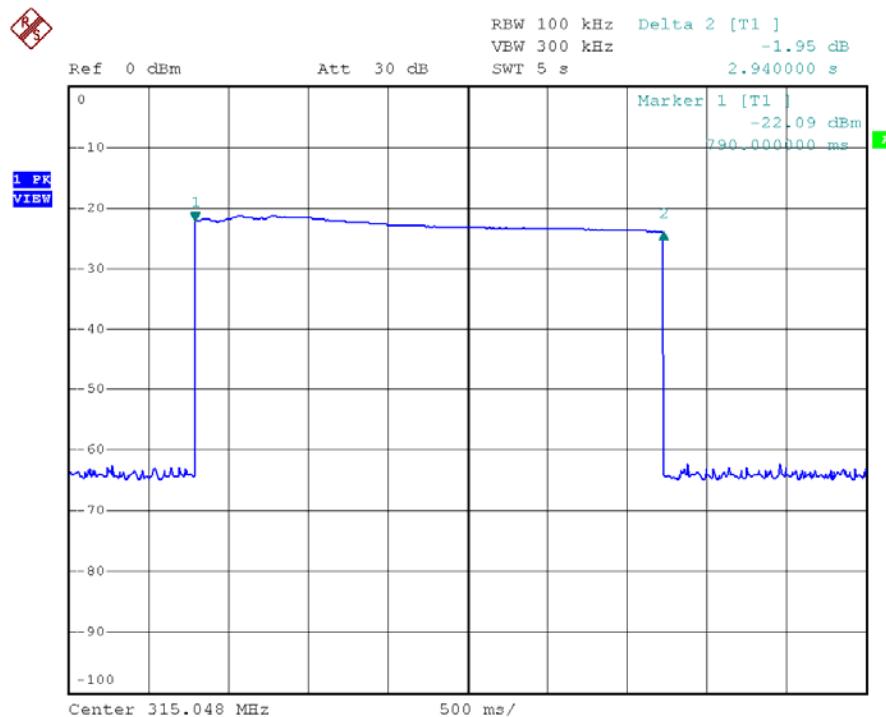
The EUT does meet the requirements of this section.

2. Regulation 15.231 (a)(1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitterwithin not more than 5 seconds of being released.

Result:

The unit does meet the FCC requirements.

See the graph as bellows:



3. Regulation 15.231 (a)(2) A transmitter activated automatically shall cease transmission within 5 seconds afteractivation.

Result:

This section is not applicable to the EUT.

4. Regulation 15.231 (a)(3) Periodic transmissions at regular predetermined intervals are not permitted. However, polling or supervision transmissions, including data, to determine system integrity of transmitters used in security or safety applications are allowed if the total duration of transmissions does not exceed more than two seconds per hour for each transmitter. There is no limit on the number of individual transmissions, provided the total transmission time does not exceed two seconds per hour.

Result:

This section is not applicable to the EUT.

5. Regulation 15.231 (a)(4) Intentional radiators which are employed for radio control purposes during emergencies involving fire, security, and safety of life, when activated to signal an alarm, may operate during the pendency of the alarm condition.

Result:

This section is not applicable to the EUT.

5. Regulation 15.231 (a)(5) Transmission of set-up information for security systems may exceed the transmission duration limits in paragraphs (a)(1) and (a)(2) of this section, provided such transmission are under the control of a professional installer and do not exceed ten seconds after a manually operated switch is released or a transmitter is activated automatically. Such set-up information may include data.

Result:

This section is not applicable to the EUT.