FCC CERTIFICATION TEST REPORT

for

ShenZhen ChuangJieXing Electronics LTD.

Remote Controller

Model Number : 28078T,28076T,28083T

Prepared for	:	ShenZhen ChuangJieXing Electronics LTD.
Address	:	3/F, Bldg. A6, LaoDong 1ST Industrial Zone, XiXiang, BaoAn, ShenZhen, China

Prepared By	:	NS Electromagnetic Technology Co., Ltd.
Address	:	Chenwu Industrial Zone, Houjie Town, Dongguan City, Guangdong, China

Tel : 86-769-85935656
Fax: 86-769-85991080

Report Number	:	NSE-F0608141
Date of Test	:	Jul. 28,2006
Date of Report	:	Jul. 29,2006

TABLE OF CONTENTS

NS Electromagnetic Technology Co., Ltd.

Applicant: **Address:**	ShenZhen ChuangJieXing Electronics LTD. 3/F, Bldg. A6, LaoDong 1ST Industrial Zone, XiXiang, BaoAn, ShenZhen, China		
Manufacturer: **Address:**	ShenZhen ChuangJieXing Electronics LTD. 3/F, Bldg. A6, LaoDong 1ST Industrial Zone, XiXiang, BaoAn, ShenZhen, China		
E.U.T:	Remote Controller		
Model Number:	28078T;28083T;28076T		
Trade Name:	Westinghouse	**Serial No.:**	------
Date of Receipt:	Jul. 10, 2006	**Date of Test:**	Jul. 28, 2006
Test Specification:	FCC Part 15: February, 2006 ANSI C63.4:2003		
Test Result:	The equipment under test was found to be compliance with the requirements of the standards applied. **Issue Date: Jul. 10, 2006**		

Tested by:	Reviewed by:	Approved by:
Kelly / Engineer	Chris Du / Supervisor	Steven Lee / Manager

Other Aspects:

None.

Abbreviations: OK/P=passed fail/F=failed n.a/N=not applicable E.U.T=equipment under tested

1. GENERAL PRODUCT INFORMATION

1.1. Product Function

Refer to Technical Construction Form and User Manual.

1.2. Description of Device (EUT)

Description	:	Remote contrroller
Model No.	:	28078T;28083T;28076T
System Input Voltage	:	DC 12V

1.3. Difference between Model Numbers

Notes: *The products for model of 27078T and 27083T are different only for the enclosure;And the products for model of 28076T are different not only the enclosure but also button,it is added two buttons to 27078T and 27083T;But the schematics of all model are identical.*

1.4.Independent Operation Modes

The basic operation modes are:

1.4.1. TX 315MHz

2. TEST SITES

2.1. Test Facilities

EMC Lab **:** Certificated by TUV Rheinland, Germany.
Date of registration: July 28, 2003

Certificated by FCC, USA
Registration No.: 897109
Date of registration: October 10, 2003

Certificated by VCCI, Japan
Registration No.: R-1798 & C-1926
Date of registration: January 30, 2004

Certificated by CNAL, CHINA
Registration No.: L1744
Date of registration: November 25, 2004

Certificated by Intertek ETL SEMKO
Registration No.: TMP-013
Date of registration: June 11, 2005

Certificated by TUV/PS, Hong Kong
Date of registration: December 1, 2005

Certificated by Industry Canada
Registration No.: 5936
Date of registration: March 24, 2006

Name of Firm **:** NS Electromagnetic Technology Co., Ltd.

Site Location **:** Chenwu Industrial Zone, Houjie Town, Dongguan City, Guangdong, China

2.2. List of Test and Measurement Instruments

2.2.1. For conducted emission test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Test Receiver	Rohde & Schwarz	ESCS30	100199	Jun. 3,06	Jun. 3,07
L.I.S.N.#1	Rohde & Schwarz	ESH2-Z5	100071	Jun. 3,06	Jun. 3,07
L.I.S.N.#2(AUX)	Rohde & Schwarz	ESH3-Z5	100317	Jun. 3,06	Jun. 3,07

2.2.2. For radiated emission test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Test Receiver	Rohde & Schwarz	ESCS30	100340	Jun. 3,06	Jun. 3,07
Spectrum Analyzer	HP	8590L	3412A00251	Jun. 3,06	Jun. 3,07
Amplifier	Agilent	8447D	2944A10488	May 2,06	May 2,07
Bilog Antenna	EMCO	3142B	00022050	May 2,06	May 2,07
Double Ridged Broadband Horn Antenna	Rohde & Schwarz	BBHA9120D	E1S1002	May 15,06	May 15,07
Spectrum Analyzer	Agilent	E4403B	E1S1001	Jan.13,06	Jan.13,07
Amplifier	Agilent	8449B	E1A2002	Jan.27,06	Jan.27,07

2.2.3. For bandwidth test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer	HP	8563A	3417A01296	Mar.15,06	Mar.15,07
Bilog Antenna	EMCO	3142B	00022050	May 2,06	May 2,07

2.2.4. For transmission cessation from Time-of-Release test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer	HP	8563A	3417A01296	Mar.15,06	Mar.15,07
Bilog Antenna	EMCO	3142B	00022050	May 2,06	May 2,07

3. TEST SET-UP AND OPERATION MODES

3.1. Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the Operating Instructions.

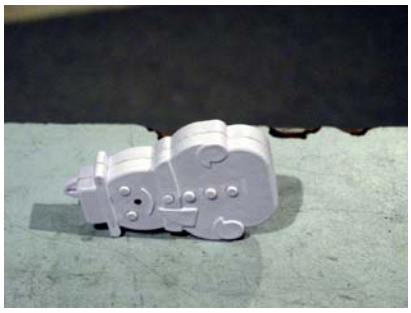
3.2. Block Diagram of Test Set-up

EUT is tested for stand orientation and lie orientation and side orientation of 3 axis as follow:

1) Model number: 28078T


Stand orientation


lie orientation


side orientation

2) Model number: 28083T

3）Model number: 28076T

(EUT: Remote Controller)

Note: 1) The EUT are tested at the lie orientation, side orientation and stand orientation.

3.3. Special Accessories and Auxiliary Equipment

None.

4. EMISSION TEST RESULTS

The three different model numble samples had been tested, and 28078T have the wrost emission. So only the data of the worse emission of 28078T are reported.

4.1. Conducted Emission Test

According to paragraph(f) of FCC Part 15 Section 15.207, measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation, and which do not operate from the AC power lines or contain provision for operation while connected to the AC power.

4.2. Radiated Emission Test

Test Standard:
FCC Part 15:2005, Subpart C (Section:15.205)
FCC Part 15:2005, Subpart C (Section:15.209)
FCC Part 15:2005, Subpart C (Section:15.231(b))

According to 15.231 the field strength of emissions from intentional radiators operated under these frequencies bands shall not exceed the following:

Fundamental Frequency(MHz)	Field Strength of Fundamental		Field Strength of Spurious	
	uV/meter	dBuV/meter	uV/meter	dBuV/meter
40.66 - 40.70	2250	67	225	47
70 -130	1250	62	125	42
130 - 174	1250 to 3750	62 to 71.5	125 to 375	42 to 51.5
174 - 260	3750	71.5	375	51.5
260 - 470	3750 to 12500	71.5 to 82	375 to 1250	51.5 to 62
Above 470	12500	82	1250	62

Note: (1) Where F is the frequency in MHz,the formulas for calculating the maximum permitted fundamental field strengths are as follows: for the band 130-174MHz,uV/m at 3 meters = 56.81818(F) – 6136.3636; for the band 260-470MHz,uV/m at 3 meters = 41.6667(F) – 7083.333.The maximum permitted unwanted emission level is 20dB below the maximum permitted fundamental level.

(2) The above field strength limits are specified at a distance of 3 meters. The tighter limits apply at the band edges. Emissions radiated outside of the specified bands,shall be according to the general radiated limits in 15.209 as following:

Frequencies (MHz)	Field strength uV/meter	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

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

Frequency Range of Radiated Measurement
(For unintentional radiators)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes(MHz)	Range(MHz)
Below 1.705	30
1.705-108	1000
108-500	2000
500-1000	5000
Above 1000	5^{th} harmonic of the highest frequency or 40GHz,whchever is lower

4.2.1 Test Produce

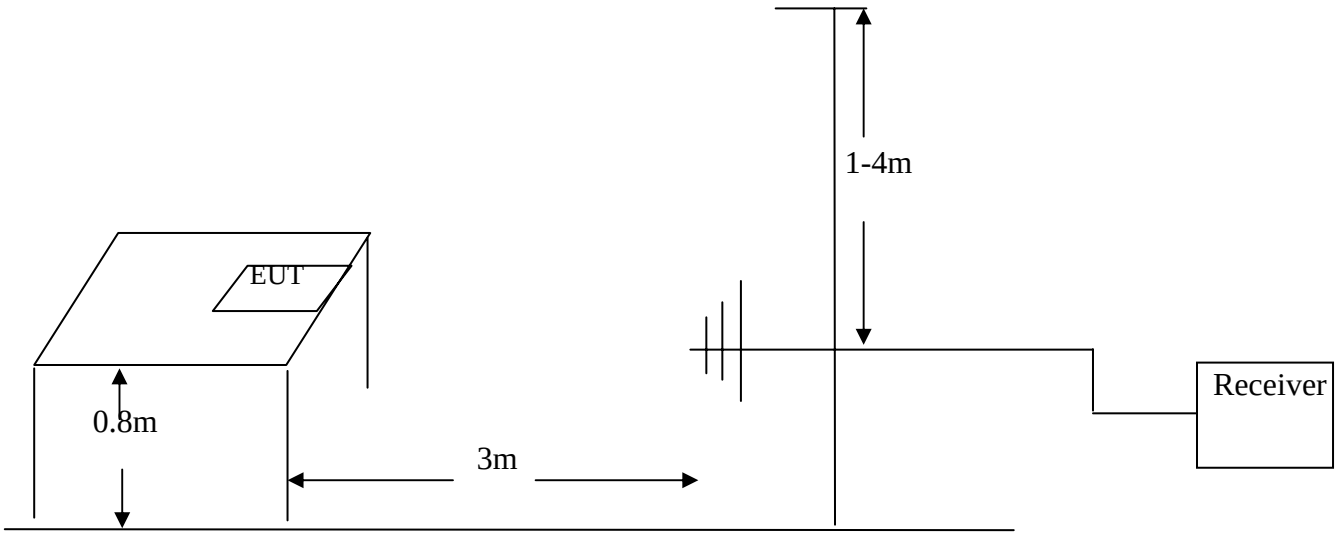
The EUT are tested at 3 axis of lie orientation, side orientation and stand orientation. And the lie orientation is the worst emission status. So only the worse emission data are included in this report.

The EUT was placed on a turn table which was 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on a antenna tower.At the frequency of 30 MHz～1000MHz ,the measuring antenna moved up and down to find out the maximum emission level. It moved from 1 to 4 m for horizontal and vertical polarizations. The broadband antenna was used as a receiving antenna. At the frequency of 1 GHz -5GHz ,the measuring antenna stands 1 m for horizontal and vertical polarizations. The horn antenna was used as a receiving antenna.

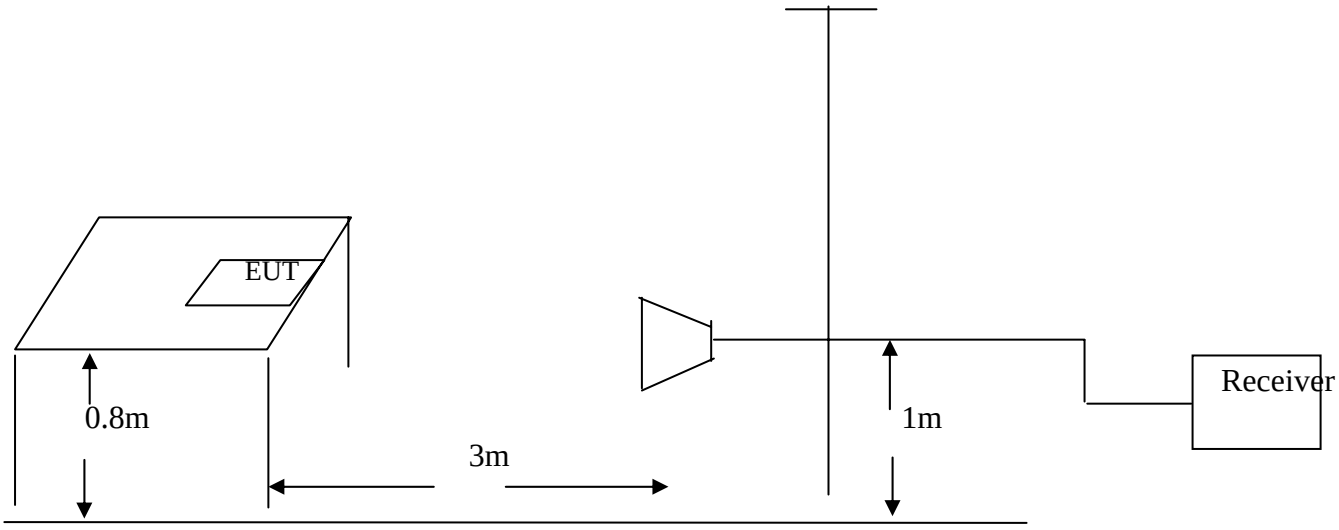
The bandwidth setting on the test receiver of RBW was 120 KHz and VBW was 400kHz(30 MHz～1000MHz).
The bandwidth setting on the test receiver of RBW was 1MHz and VBW was 3MHz (1 GHz～5GHz).

4.2.2 Test Setup Digram

4.2.1.1. Frequency range: 30MHz-1000MHz



4.2.1.2. Frequency range: 1 GHz -5GHz



4.2.3. Test Result

4.2.3.1. Frequncy range: 30 MHz -1000MHz

EUT**:**	Remote Controller	Temperature**:**	24.8℃
M/N**:**	28078T	Humidity**:**	56%
Test Mode:	TX 315MHz	Test Engineer**:**	Kelly

Item	Frequency MHz	Antenna Factor dB	Cable Loss dB	Meter Reading dBμV	Emission Level dBμV/m	Over Limits dB	Limits dBμV/m	Polarity	Detector
01	30.000	21.06	0.74	0.50	22.30	-17.70	40.00	H	QP
02	155.130	11.37	1.92	5.69	15.90	-27.60	43.50	H	QP
03	315.560	15.19	2.94	67.96	86.09	-9.53	95.62	H	PK
03	**315.560**	**15.19**	**2.94**	**56.08**	**74.21**	**-1.41**	**75.62**	**H**	**AV**
04	526.640	18.03	4.00	1.43	23.46	-22.54	46.00	H	QP
05	631.320	20.27	4.56	32.66	57.49	-18.13	75.62	H	PK
05	631.320	20.27	4.56	20.78	45.61	-10.01	55.62	H	AV
06	946.680	22.90	7.20	25.92	56.02	-19.60	75.62	H	PK
06	946.680	22.90	7.20	14.04	44.14	-11.48	55.62	H	AV
01	30.000	21.06	0.74	0.14	21.94	-18.06	40.00	V	QP
02	211.390	12.63	2.30	4.30	19.23	-24.30	43.50	V	QP
03	315.560	15.24	2.99	47.38	65.61	-30.01	95.62	V	PK
03	315.560	15.24	2.99	35.50	53.73	-21.89	75.62	V	AV
04	631.320	20.27	4.56	27.47	52.30	-23.32	75.62	V	PK
04	631.320	20.27	4.56	15.59	40.42	-15.20	55.62	V	AV
05	727.430	21.24	5.15	3.32	29.71	-16.29	46.00	V	QP
06	946.680	22.90	7.20	15.84	45.94	-29.68	75.62	V	PK
06	946.680	22.90	7.20	3.96	34.06	-21.56	55.62	V	AV

.

Remark: The worst emission was detected at **315.560MHz** with corrected signal level of **74.21dBμV/m** (Limit is **75.62dBμV/m**) when the antenna was at **Horizontal** polarization and at **1.25m** high and the turn table was at **45˚**.

Notes: 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading

2. 0 ° was the table front facing the antenna. Degree was calculated from 0 ° clockwise facing the antenna.

3.Over Limits = Emission Level – Limits

4. Test uncertainty: ±4.76dB at a level of confidence of 95%

5.The average value of fundamental frequecy is :

Average = Peak value +20log(Duty cycle)

20log(Duty cycle) = 20log(dwell time/100ms) =20log[1.04*16+（1.84-1.58）*34]/100ms = -11.88dB

Please see page 17 for plotted duty

Note: Eut had been tested at the 6 different combinations of push button settings, and -11.88dB is the worst duty cycle.

4.2.3.2. Frequncy range: 1 GHz -5GHz

EUT**:**	Remote Controller	Temperature**:**	24.8℃
M/N**:**	28078T	Humidity**:**	56%
Test Mode:	TX 315MHz	Test Engineer**:**	Kelly

Item	Frequency MHz	Meter Reading dBμV	Emission Level dBμV/m	Over Limits dB	Limits dBμV/m	Polarity	Detector
01	1262.48	36.30	53.60	-22.02	75.62	H	PK
01	1262.48	24.42	41.72	-13.90	55.62	H	AV
02	1367.05	24.51	52.14	-32.80	74.00	H	PK
02	1367.05	12.63	40.26	-13.74	54.00	H	AV
03	2155.32	18.78	50.08	-23.92	74.00	H	PK
03	**2155.32**	**6.90**	**39.20**	**-12.04**	**54.00**	**H**	**AV**
04	2968.44	15.29	47.14	-26.86	74.00	H	PK
04	2968.44	3.41	35.26	-14.98	54.00	H	AV
05	3110.06	12.96	45.06	-28.94	74.00	H	PK
05	3110.06	1.08	33.18	-17.06	54.00	H	AV
06	4567.95	8.99	43.14	-30.86	74.00	H	PK
06	4567.95	-3.22	31.26	-18.98	54.00	H	AV
01	1262.48	14.83	42.13	-33.49	75.62	V	PK
01	1262.48	2.95	30.32	-21.61	55.62	V	AV
02	1367.05	12.43	40.06	-33.94	74.00	V	PK
02	1367.05	0.55	28.18	-22.06	54.00	V	AV
03	2155.32	8.70	40.00	-34.00	74.00	V	PK
03	2155.32	-3.18	28.12	-22.12	54.00	V	AV
04	2968.44	7.75	39.60	-34.40	74.00	V	PK
04	2968.44	-4.13	27.72	-22.52	54.00	V	AV
05	3110.06	7.74	39.81	-34.19	74.00	V	PK
05	3110.06	-4.14	27.93	-22.31	54.00	V	AV
06	4567.95	3.26	37.74	-36.26	74.00	V	PK
06	4567.95	-8.62	25.86	-24.38	54.00	V	AV

Remark: The worst emission was detected at **2155.32MHz** with corrected signal level of **39.20dBμV/m** (Limit is **54 dBμV/m**) when the antenna was at **Horizontal** polarization and the turn table was at **45°**.

Notes: 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading
2. 0 ° was the table front facing the antenna. Degree was calculated from 0 ° clockwise facing the antenna.
3.Over Limits = Emission Level – Limits
4. Test uncertainty: ±4.76dB at a level of confidence of 95%
5.The average value of fundamental frequecy is :
Average = Peak value +20log(Duty cycle)
20log(Duty cycle) = 20log(dwell time/100ms) = 20log[1.04*16+（1.84-1.58）*34]/100ms = -11.88dB
Please see page 17 for plotted duty
Note: Eut had been tested at the 6 different combinations of push button settings, and -11.88dB is the worst duty cycle.

4.3. Bandwidth Test (20dB Occupied Bandwidth Measurement)

4.3.1 Limits of Band:

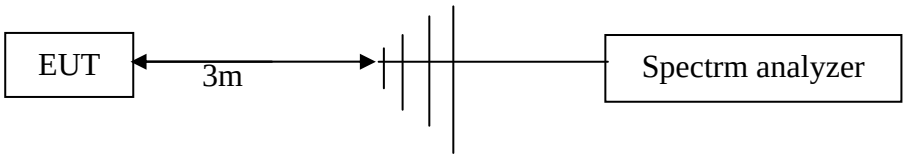
The bandwidth of the emission shall be no wider than 0.25% of the center frequency for device operating above 70MHz and below 900MHz.

4.3.2 Teat Procedure:

The EUT was placed on a turn table was 0.8meter above ground.

The signal was coupled to the speeturm analyzer through an antenna.

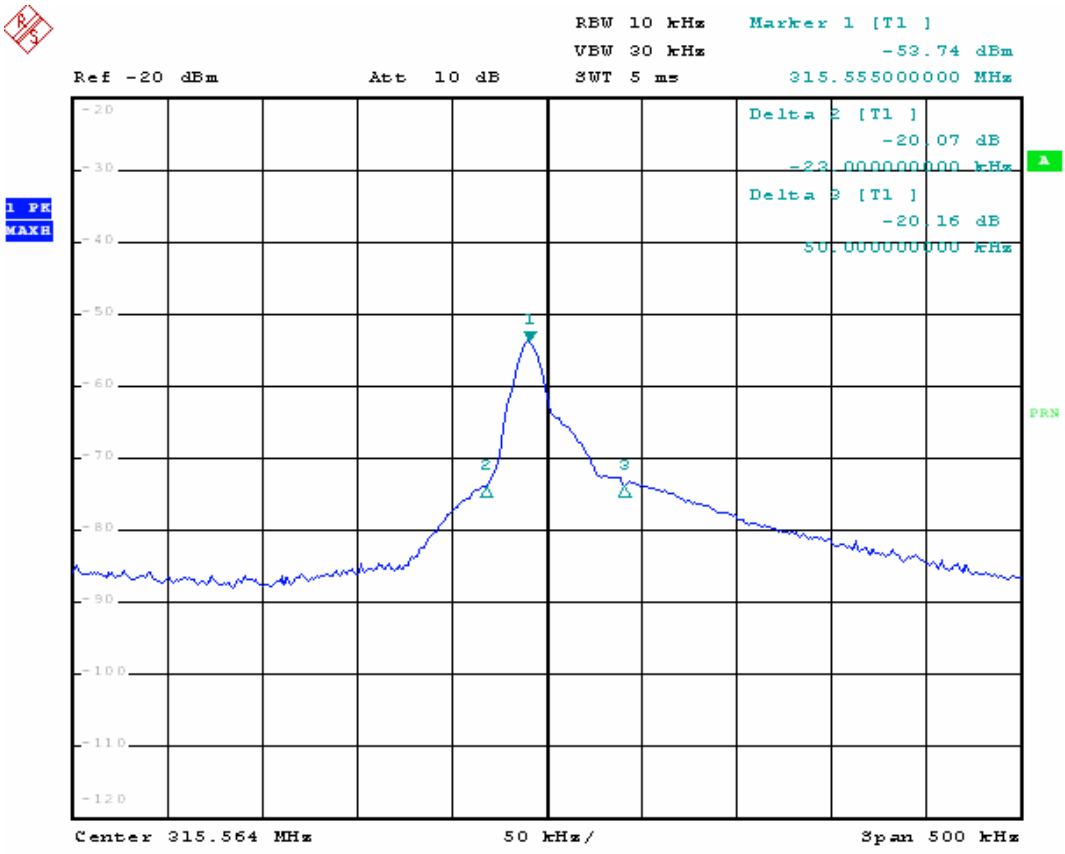
4.3.3 Test Set-up:



4.3.4 Test Result:

Frequency (MHz)	20dB bandwidth (KHz)	Maximum Limit (KHz)	Pass/Fail
315.555	73	788.875	Pass

4.3.5 The plot of test result is attached as below:



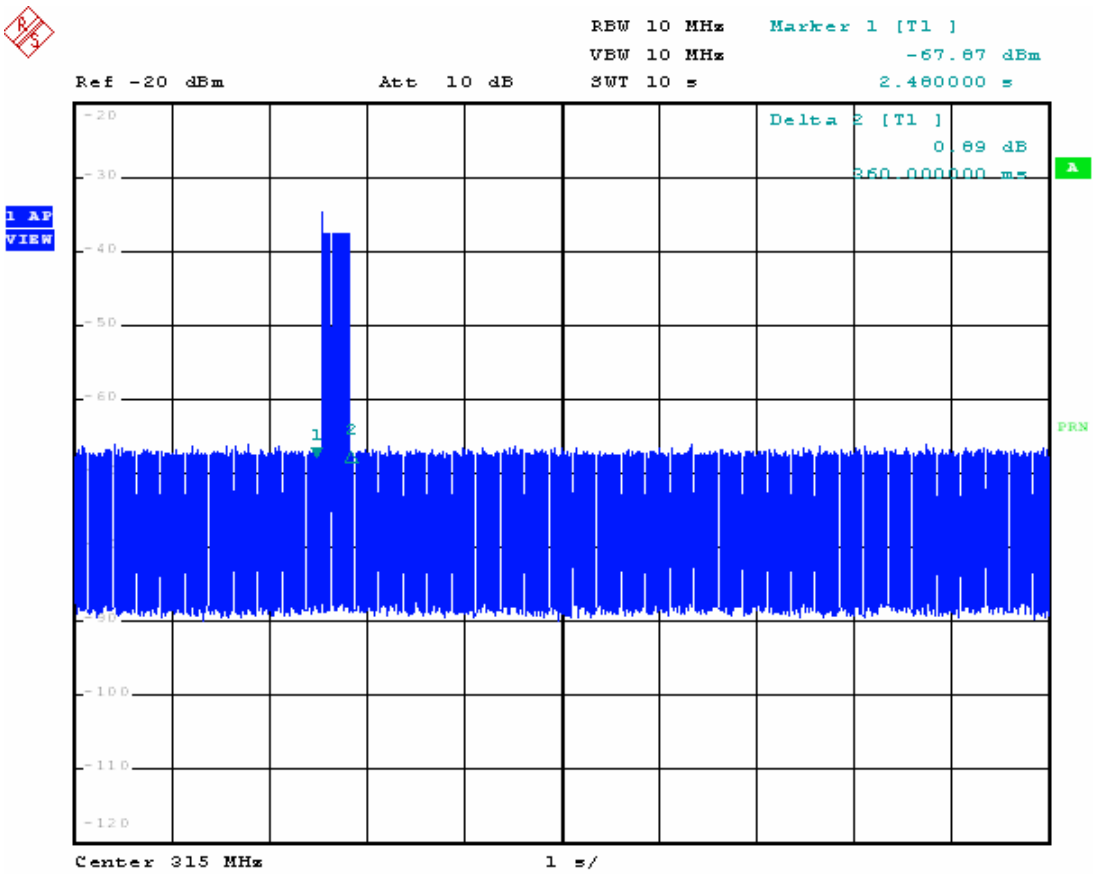
4.4. Transmission Cessation from Time-of-Release Test

4.4.1 Test Standard:

FCC Part 15: 2005, Subpart C (Section: 15.231(a)):

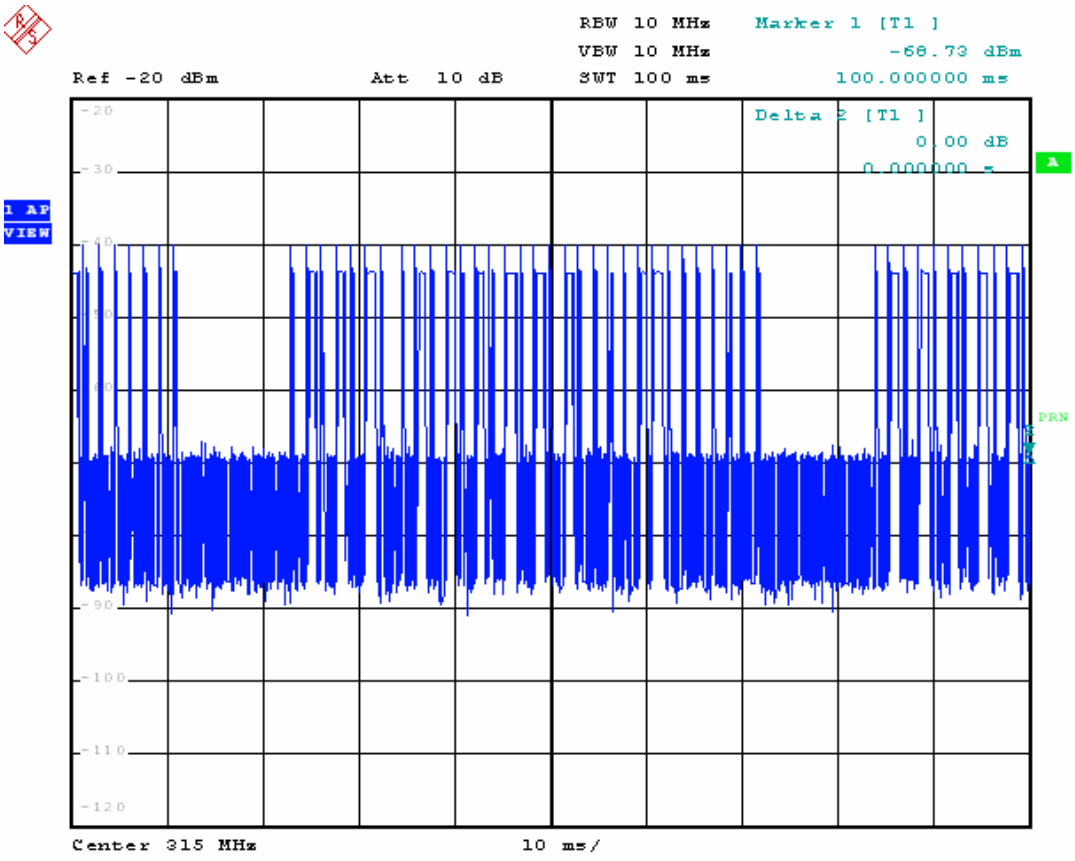
According A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being release.

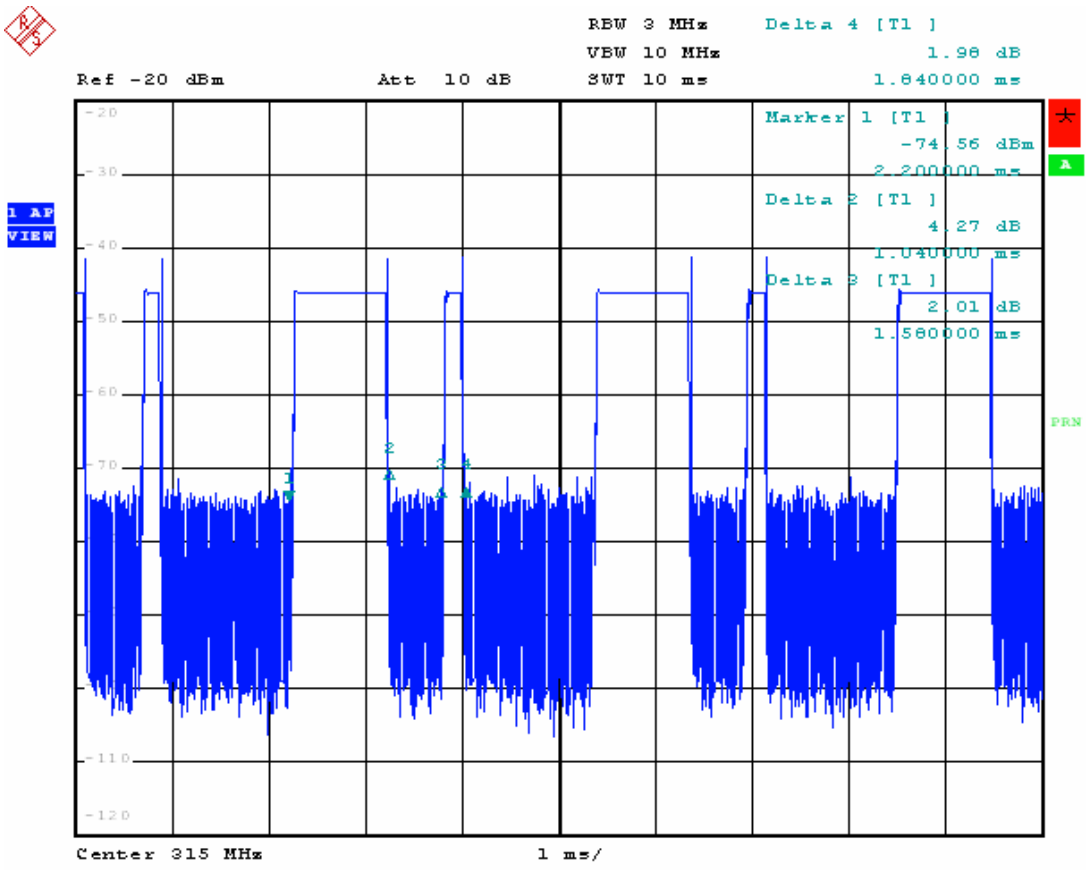
The plot of test result is attached as below:



4.4.2 Test Result:

Transmission Limited Time (s)	Actual Transmission Time (s)	Pass / Fail
≤5	0.36	Pass


RBW 10 MHz
VBW 10 MHz
SWT 100 ms
Marker 1 [T1]
-68.73 dBm
100.000000 ms
Ref -20 dBm
Att 10 dB
Delta 2 [T1]
0.00 dB
0.000000 s
1 AP
VIEW
A
PRN
-20
-30
-40
-90
-100
-110
-120
Center 315 MHz
10 ms/


RBW 3 MHz
VBW 10 MHz
SWT 10 ms
Delta 4 [T1]
1.98 dB
1.840000 ms
Ref -20 dBm
Att 10 dB
Marker 1 [T1]
-74.56 dBm
2.200000 ms
Delta 2 [T1]
4.27 dB
1.040000 ms
Delta 3 [T1]
2.01 dB
1.560000 ms
1 AP
VIEW
A
PRN
-20
-30
-40
-50
-60
-70
-110
-120
Center 315 MHz
1 ms/