FCC TEST REPORT

REPORT NO.: PRA-11DE0161VBTY-A1

MODEL NO.: RG03-1T

RECEIVED: Dec. 19, 2011

ISSUED: Feb. 02, 2012

APPLICANT: ProCom Electric Appliances (Shanghai) Co.,Ltd.

ADDRESS: #1118 Huicheng Road,Nanhui Industrial Park,Pudong New District 201300,Shanghai,China.

ISSUED BY: BUREAU VERITAS ADT (Shanghai) Corporation

ADDRESS: 2F, Building C, No.1618, Yishan rd., 201103, Shanghai, China

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1 CERTIFICATION

PRODUCT:	Wireless remote control
MODEL NO.:	RG03-1T
APPLICANT:	ProCom Electric Appliances (Shanghai) Co.,Ltd.
TESTED:	Dec. 20, 2011~Jan. 12, 2012
TEST ITEM:	ENGINEERING SAMPLE
STANDARDS:	FCC Part 15:2011, Subpart C (Section 15.209 and 15.231), ANSI C63.4-2003

We, BUREAU VERITAS ADT (Shanghai) Corporation, declare that the equipment above has been tested in our facility and found compliance with the requirement limits of applicable standards. The test record, data evaluation and Equipment Under Test (EUT) configurations represented herein are true and accurate under the standards herein specified.

PREPARED BY : Yuki Tao , **DATE:** Feb.02, 2012
Yuki Tao
Report Engineer

TECHNICAL ACCEPTANCE : Joy Zhu , **DATE:** Feb.02, 2012
Joy Zhu
Lab Manager

APPROVED BY : , **DATE:** Feb.02, 2012
Zhaoqian YU
Director of Operations

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart C			
Standard Paragraph	**Test Type**	**Result**	**Remarks**
15.207	Conducted Emission Test	N/A	Please refer to 4.1.2.
15.231(a)	De-activation Time	PASS	Meet the requirement of limit
15.209 15.231(b)	Radiated Emission Test	PASS	Minimum passing margin is -2.8 dB at 912.70 MHz
15.231(c)	20dB Occupied Bandwidth Measurement	PASS	Meet the requirement of limit

2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4:

Measurement		Value
Conducted emissions		2.55 dB
Conducted emissions at telecom port		2.60 dB
Radiated emissions	30 MHz ~ 1GHz	3.22 dB
	Above 1GHz	2.89 dB

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Wireless remote control
MODEL NO.	RG03-1T
POWER SUPPLY	4.5 Vdc by battery
MODULATION TYPE	FM
CARRIER FREQUENCY OF EACH CHANNEL	303.875 MHz
NUMBER OF CHANNEL	1
ANTENNA TYPE	Soldered on PCB
DATA CABLE SUPPLIED	N/A
I/O PORTS	N/A

NOTE: The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

Test Mode	Description
1	Make sure EUT work in the operation mode.

One channel is provided to this EUT:

Channel	Frequency
1	303.875 MHz

TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL:

EUT configure mode	Applicable to				Description
	PLC	De-a T	RE	20dB OBM	
A	-	√	√	√	Continuously transmitting

Where PLC: Power Line Conducted Emission De-a T: De-activation Time
RE: Radiated Emission 20dB OBM: 20dB Occupied Bandwidth Measurement

Radiated Emission Test:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, and X.Y.Z. axis.

☒ Following channel(s) was (were) selected for the final test as listed below.

Available Channel	Tested Channel	Modulation Type	Axis
1	1	FM	X

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a remote switching. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

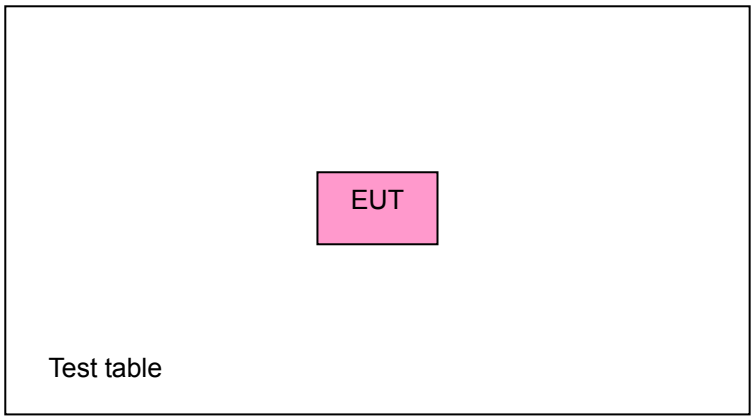
FCC Part 15, Subpart C. (15.231)

ANSI C63.4- 2003

All test items have been performed and recorded as per the above standards.

3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit.



Note: When doing the test, fresh batteries were used.

4 EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY (MHz)	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

NOTES: 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

4.1.2 TEST RESULTS

Because the EUT is powered by battery, so the report doesn't require for conduct emission test.

4.2 DEACTIVATION TIME

4.2.1 LIMITS OF DEACTIVATION TIME MEASUREMENT

TEST STANDARD:

FCC Part 15: 2011, Subpart C (Section: 15.231(a))

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

4.2.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
Spectrum Analyzer ROHDE & SCHWARZ	FSP	E1S1002	May. 16, 2012
BILOG Antenna SCHWARZBECK	VULB9168	E1A1001	Sept. 26, 2012

NOTE: The calibration interval of the above test instruments is 12 months.

4.2.3 TEST PROCEDURES

1 The EUT was placed on the turning table.

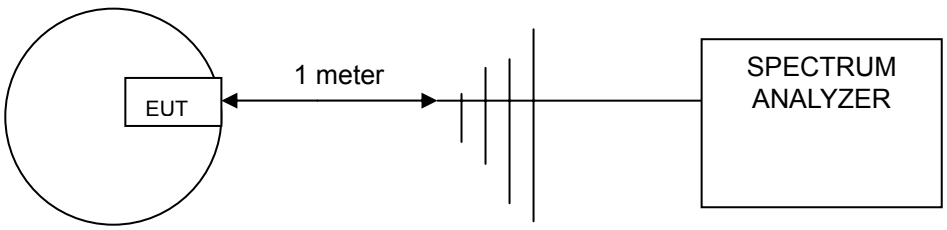
2 The signal was coupled to the spectrum analyzer through an antenna.

3 The transmission duration was measured and recorded.

4.2.4 DEVIATION FROM TEST STANDARD

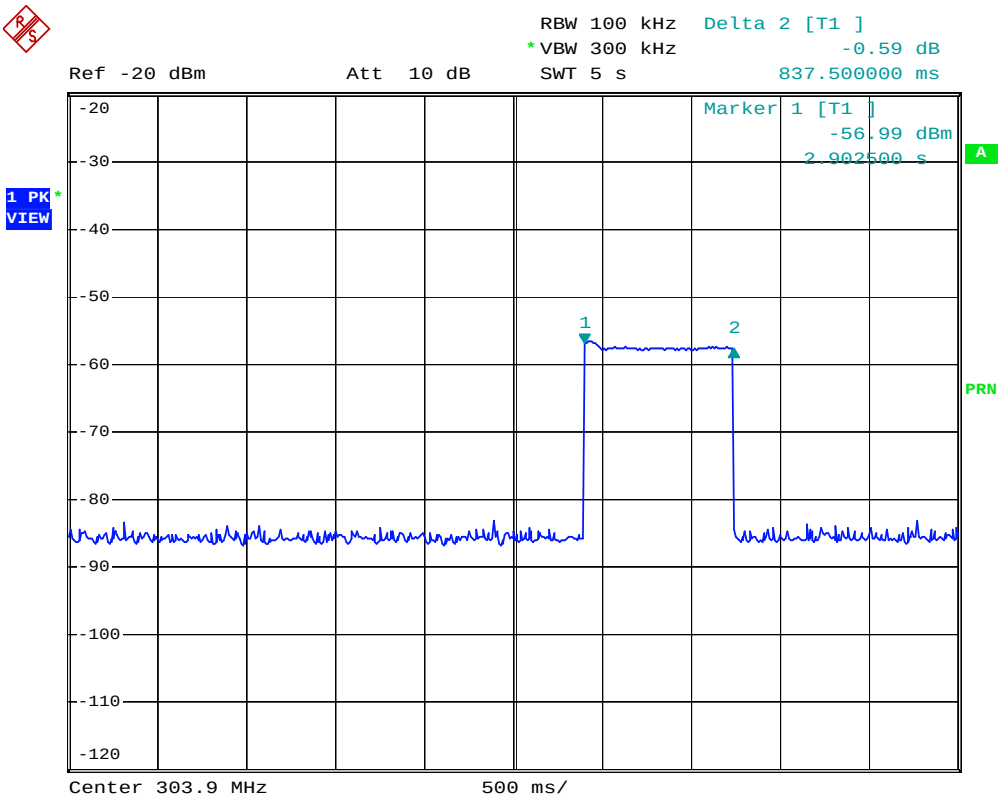
No deviation.

4.2.5 TEST SETUP



4.2.6 TEST RESULTS

Frequency (MHz)	Transmission duration (sec)	Maximum limit (sec)	Pass / Fail
303.875	0.8375	5	Pass



4.3 RADIATED EMISSION MEASUREMENT

4.3.1 LIMITS OF RADIATED EMISSION MEASUREMENT

TEST STANDARD:
FCC Part 15: 2011, Subpart C (Section: 15.205)
FCC Part 15: 2011, Subpart C (Section: 15.209)
FCC Part 15: 2011, 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	67.04	225	48.04
70 – 130	1250	61.94	125	41.94
130 – 174	1250 to 3750	61.94 to 71.48	125 to 375	41.94 to 51.48
174 – 260	3750	71.48	75	37.50
260 – 470	3750 to 12500	71.48 to 81.94	375 to 1250	51.48 to 61.94
Above 470	12500	81.94	1250	61.94

NOTE:
(1) Where F is the frequency in MHz, the formula for calculating the maximum permitted fundamental field strengths are as follows: for the band 130-174 MHz, uV/m at 3 meters = 56.81818(F)-6136.3636; for the band 260-470 MHz, uV/m at 3 meters = 41.6667(F)- 7083.3333. The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.
(2) The above field strength limits are specified at a distance of 3meters. 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 (microvolts/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 of modulation.

FREQUENCY RANGE OF RADIATED MEASUREMENT

(For intentional radiators)

If the intentional radiator operates below 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	E1R1001	Apr. 19, 2012
BILOG Antenna SCHWARZBECK	VULB9168	E1A1001	Sept. 26, 2012
Preamplifier Agilent	8447D	E1A2001	Jan. 27, 2012
Preamplifier Agilent	8449B	E1A2002	Jan. 27, 2012
Double Ridged Broadband Horn Antenna Schwarzbeck	BBHA 9120D	E1A1002	Feb. 15, 2012
*Spectrum Analyzer Agilent	E4403B	E1S1001	Jan. 13, 2012
*Spectrum Analyzer ROHDE & SCHWARZ	FSP	E1S1002	May. 16, 2012
RF signal cable Woken	RG-402	E1CBH01	May. 30, 2012
RF signal cable Woken	RG-402	E1CBH16	May. 30, 2012
RF signal cable Woken	RG-402	E1CBH20	May. 30, 2012
RF signal cable Woken	RG-412	E1CBL02	May. 30, 2012
RF signal cable Woken	RG-412	E1CBL03	May. 30, 2012
RF signal cable Woken	RG-412	E1CBL04	May. 30, 2012
Software ADT	ADT_Radiated_V7.5	N/A	N/A

NOTE: 1. The calibration interval of the above test instruments is 12 months.
2. "*" = These equipment are used for the final measurement.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The Spectrum Analyzer (model: FSP) and RF signal cable (SERIAL: E1CBH05&E1CBH07) are used only for the measurement of emission frequency above 1GHz if tested.

4.3.3 TEST PROCEDURE

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

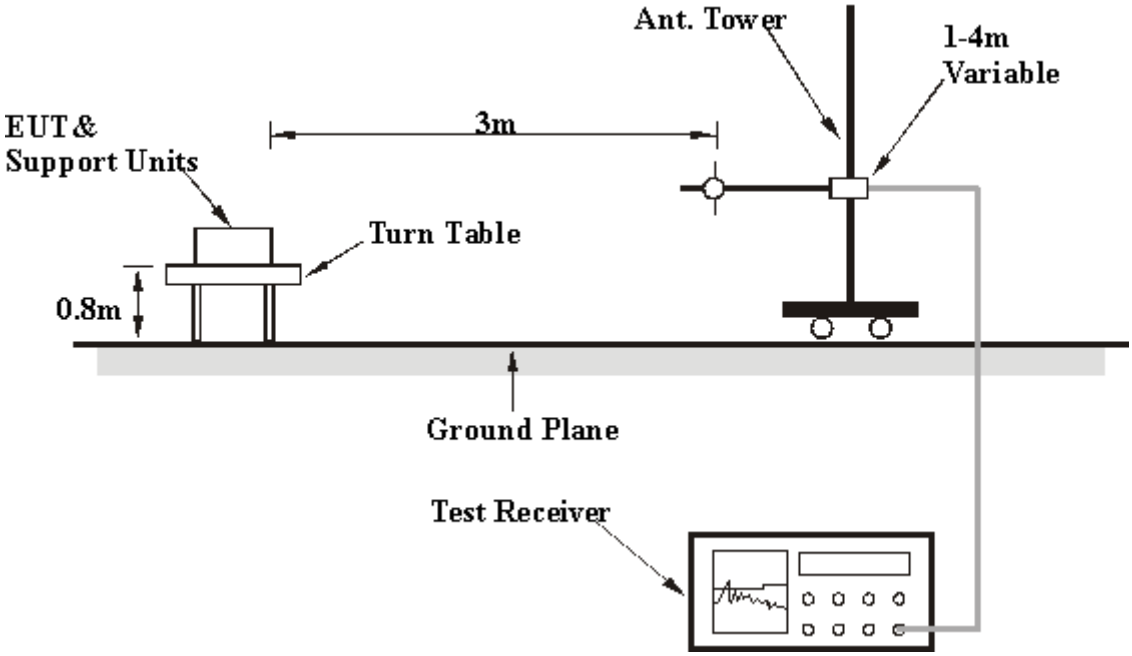
NOTE:

1. The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection (PK) at frequency above 1GHz.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation.

4.3.5 TEST SETUP



For the actual test configuration, please refer to the related Item – Photographs of the Test Configuration.

4.3.6 EUT OPERATING CONDITIONS

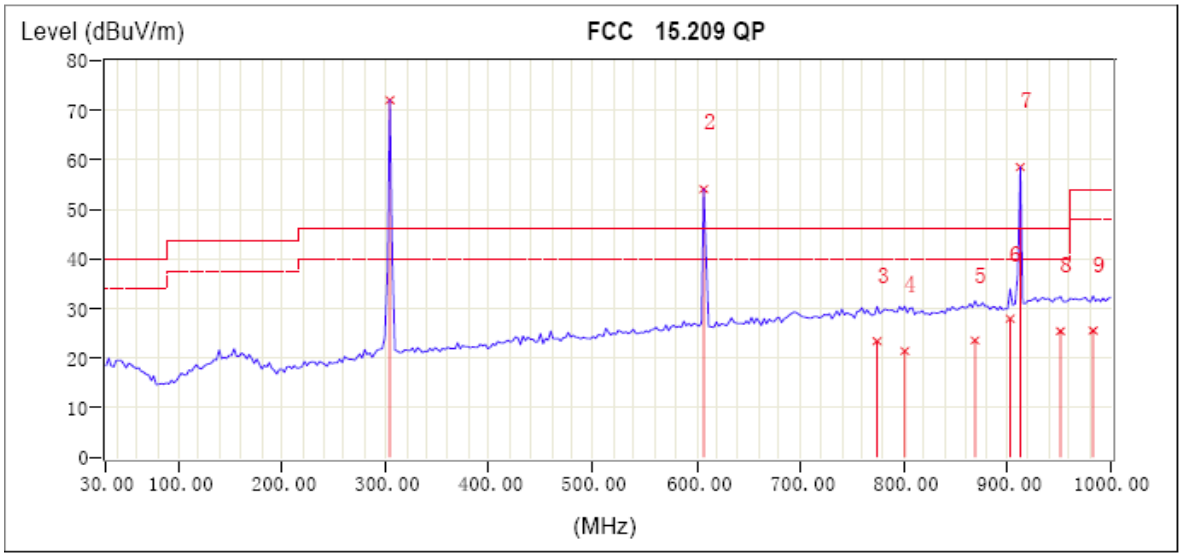
Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.

4.3.7 TEST RESULTS

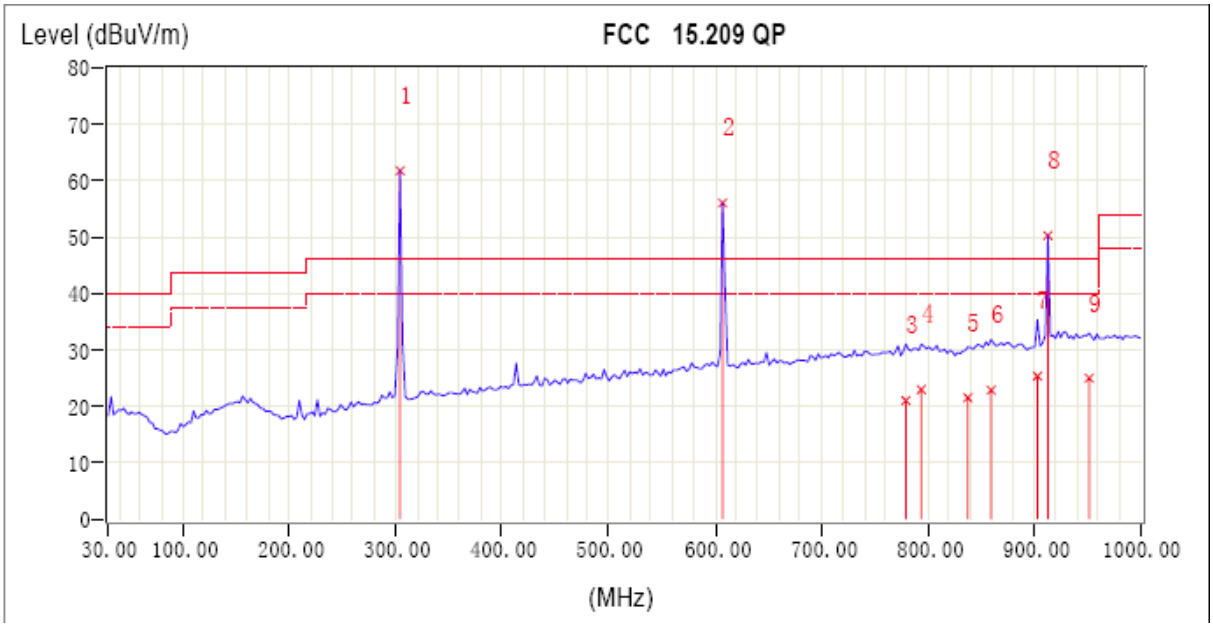
Below 1GHz Worst-Case Data

EUT	Wireless remote control	**MODEL NO.**	RG03-1T
CHANNEL	Channel 1	**FREQUENCY RANGE**	30 ~ 1000 MHz
MODULATION TYPE	FM	**INPUT POWER (SYSTEM)**	4.5 Vdc by battery
ENVIRONMENTAL CONDITIONS	20 deg. C, 65% RH, 1000 hPa	**DETECTOR FUNCTION**	Quasi-Peak / Peak/ Average
TESTED BY	Gray SONG		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Factor (dB/M)	Reading (dBuV/M)	Emission (dBuV/M)	Limit (dBuV/M)	Margin (dB)	Ant. Height (cm)	Table Angle (Deg.)
1	*304.02 PK	16.36	55.64	72	94.93	-22.93	--	--
1	*304.02 AV	16.36	49.29	65.65	74.93	-9.28	--	--
2	607.15 PK	23.00	31.05	54.05	74.93	-20.88	--	--
2	607.15 AV	23.00	24.7	47.7	54.93	-7.23	--	--
3	774.48 QP	25.29	-1.92	23.37	46.00	-22.63	100	35
4	801.15 QP	25.63	-4.23	21.40	46.00	-24.60	100	21
5	869.05 QP	26.16	-2.62	23.54	46.00	-22.46	100	141
6	903.00 QP	26.14	1.79	27.93	46.00	-18.07	100	147
7	912.7 PK	26.64	31.84	58.48	74.93	-16.45	--	--
7	912.7 AV	26.64	25.49	52.13	54.93	-2.8	--	--
8	951.50 QP	27.42	-2.02	25.39	46.00	-20.61	100	248
9	983.02 QP	27.34	-1.83	25.52	54.00	-28.48	100	289



ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Factor (dB/M)	Reading (dBuV/M)	Emission (dBuV/M)	Limit (dBuV/M)	Margin (dB)	Ant. Height (cm)	Table Angle (Deg.)
1	*304.02 PK	16.36	45.37	61.73	94.93	-33.2	--	--
1	*304.02 AV	16.36	39.02	55.38	74.93	-19.55	--	--
2	607.15 PK	23.00	33.02	56.02	74.93	-18.91	--	--
2	607.15 AV	23.00	26.67	49.67	54.93	-5.26	--	--
3	779.33 QP	25.35	-4.37	20.98	46.00	-25.02	100	127
4	793.87 QP	25.53	-2.58	22.95	46.00	-23.05	100	158
5	837.52 QP	25.87	-4.37	21.51	46.00	-24.49	100	126
6	859.35 QP	25.96	-3.13	22.83	46.00	-23.17	100	196
7	903.00 QP	26.14	-0.83	25.31	46.00	-20.69	100	174
8	912.7 PK	26.64	23.60	50.24	74.93	-24.69	--	--
8	912.7 AV	26.64	17.25	43.89	54.93	-11.04	--	--
9	951.50 QP	27.42	-2.48	24.94	46.00	-21.06	100	341



NOTE: 1. Emission level (dBuV/m) =Raw Value (dBuV) + Correction Factor (dB)
2. Correction Factor (dB) = Antenna Factor (dB) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "*" = Fundamental frequency
6. The average value of fundamental frequency and spurious emission is: Average = Peak value + 20log(Duty cycle)
Where the duty factor is calculated from following formula:
duty cycle=(1.16*30+0.58*23)/100=0.4814
20log(duty cycle)=-6.35
please see page 20 and 21for plotted duty.

Above 1GHz Worst-Case Data

EUT	Wireless remote control	**MODEL NO.**	RG03-1T
CHANNEL	Channel 1	**FREQUENCY RANGE**	Above 1 GHz
MODULATION TYPE	FM	**INPUT POWER (SYSTEM)**	4.5 Vdc by battery
ENVIRONMENTAL CONDITIONS	20 deg. C, 65% RH, 1000 hPa	**DETECTOR FUNCTION**	Peak/ Average
TESTED BY	Gray SONG		

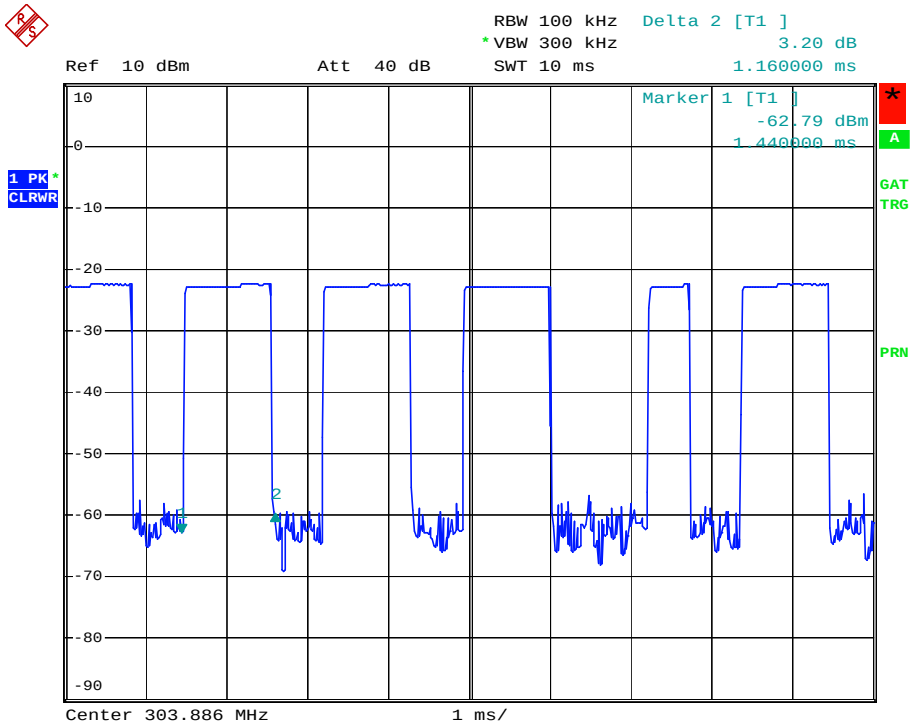
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Factor (dB/M)	Reading (dBuV/M)	Emission (dBuV/M)	Limit (dBuV/M)	Margin (dB)	Ant. Height (cm)	Table Angle (Deg.)
1	1215.50 PK	29.31	23.85	53.16	74	-20.84	--	--
1	1215.50 AV	29.31	17.5	46.81	54	-7.19	--	--
2	1519.37 PK	29.45	18.41	47.86	74	-26.14	--	--
2	1519.37 AV	29.45	12.06	41.51	54	-12.49	--	--
3	1823.25 PK	29.75	21.14	50.89	74	-23.11	--	--
3	1823.25 AV	29.75	14.79	44.54	54	-9.46	--	--
4	2127.12 PK	32.17	15.59	47.76	74	-26.24	--	--
4	2127.12 AV	32.17	9.24	41.41	54	-12.59	--	--
5	2431.00 PK	32.62	17.87	50.49	74	-23.51	--	--
5	2431.00 AV	32.62	11.52	44.14	54	-9.86	--	--
6	2734.87 PK	32.85	12.94	45.79	74	-28.21	--	--
6	2734.87 AV	32.85	6.59	39.44	54	-14.56	--	--
7	3038.75 PK	33.60	11.90	45.5	74	-28.5	--	--
7	3038.75 AV	33.60	5.55	39.15	54	-14.85	--	--
8	3342.62 PK	32.94	12.11	45.05	74	-28.95	--	--
8	3342.62 AV	32.94	5.76	38.7	54	-15.3	--	--
9	3646.50 PK	33.96	12.71	46.67	74	-27.33	--	--
9	3646.50 AV	33.96	6.36	40.32	54	-13.68	--	--
10	3950.37 PK	35.72	12.20	47.92	74	-26.08	--	--
10	3950.37 AV	35.72	5.85	41.57	54	-12.43	--	--
11	4254.25 PK	37.57	11.69	49.26	74	-2474	--	--
11	4254.25 AV	37.57	5.34	42.91	54	-11.09	--	--
12	4558.12 PK	37.73	11.91	49.64	74	-24.36	--	--
12	4558.12 AV	37.73	5.56	43.29	54	-10.71	--	--
13	4862 PK	37.79	12.01	49.8	74	-24.2	--	--
13	4862 AV	37.79	5.66	43.45	54	-10.55	--	--

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Factor (dB/M)	Reading (dBuV/M)	Emission (dBuV/M)	Limit (dBuV/M)	Margin (dB)	Ant. Height (cm)	Table Angle (Deg.)
1	1215.50 PK	29.33	18.75	48.08	74	-25.92	--	--
1	1215.50 AV	29.33	12.4	41.73	54	-12.27	--	--
2	1519.37 PK	29.45	22.23	51.68	74	-22.32	--	--
2	1519.37 AV	29.45	15.88	45.33	54	-8.67	--	--
3	1823.25 PK	29.75	22.04	51.79	74	-22.21	--	--
3	1823.25 AV	29.75	15.69	45.44	54	-8.56	--	--
4	2127.12 PK	32.17	22.56	54.73	74	-19.27	--	--
4	2127.12 AV	32.17	16.21	48.38	54	-5.62	--	--
5	2431.00 PK	32.67	11.38	44.05	74	-29.95	--	--
5	2431.00 AV	32.67	5.03	37.7	54	-16.3	--	--
6	2734.87 PK	32.79	13.24	46.03	74	-27.97	--	--
6	2734.87 AV	32.79	6.89	39.68	54	-14.32	--	--
7	3038.75 PK	33.66	13.63	47.29	74	-26.71	--	--
7	3038.75 AV	33.66	7.28	40.94	54	-13.06	--	--
8	3342.62 PK	32.91	11.52	44.43	74	-29.57	--	--
8	3342.62 AV	32.91	5.17	38.08	54	-15.92	--	--
9	3646.50 PK	33.96	14.25	48.21	74	-25.79	--	--
9	3646.50 AV	33.96	7.9	41.86	54	-12.14	--	--
10	3950.37 PK	35.95	12.40	48.35	74	-25.65	--	--
10	3950.37 AV	35.95	6.05	42	54	-12	--	--
11	4254.25 PK	37.64	12.48	50.12	74	-23.88	--	--
11	4254.25 AV	37.64	6.13	43.77	54	-10.23	--	--
12	4558.12 PK	37.66	12.36	50.02	74	-23.98	--	--
12	4558.12 AV	37.66	6.01	43.67	54	-10.33	--	--
13	4862 PK	37.97	11.30	49.27	74	-24.73	--	--
13	4862 AV	37.97	4.95	42.92	54	-11.08	--	--

REMARKS:

1. Emission level (dBuV/m) =Raw Value (dBuV) + Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. The average value of fundamental frequency and spurious emission is: Average = Peak value + 20log(Duty cycle)
   Where the duty factor is calculated from following formula:
   duty cycle=(1.16*30+0.58*23)/100=0.4814
   20log(duty cycle)=-6.35
   please see page 20 and 21 for plotted duty.

10ms-(a)



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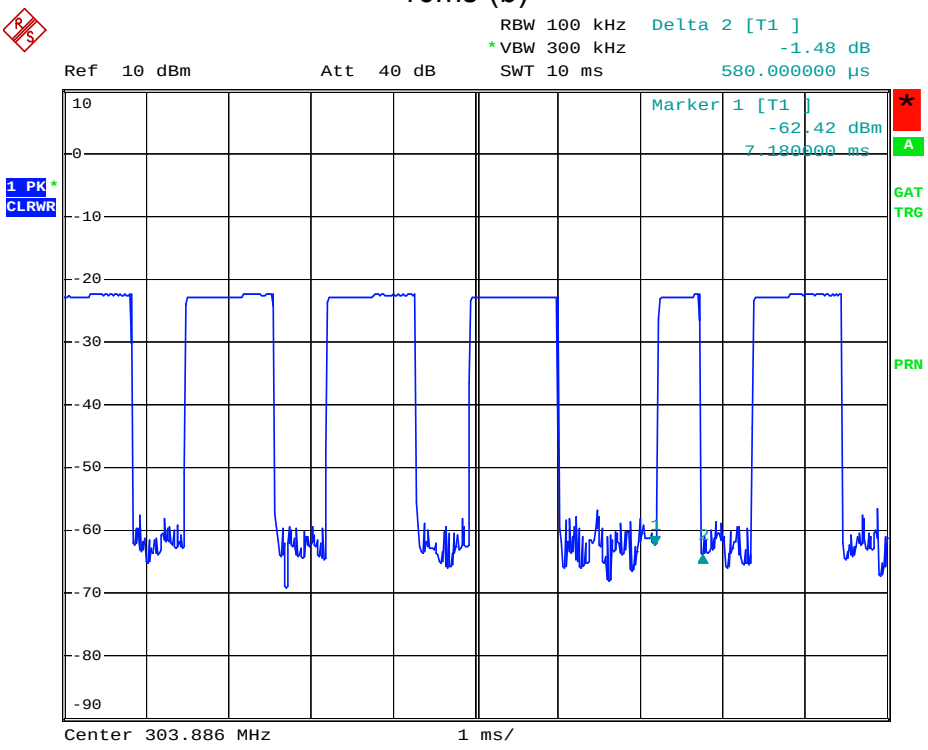
10ms-(b)



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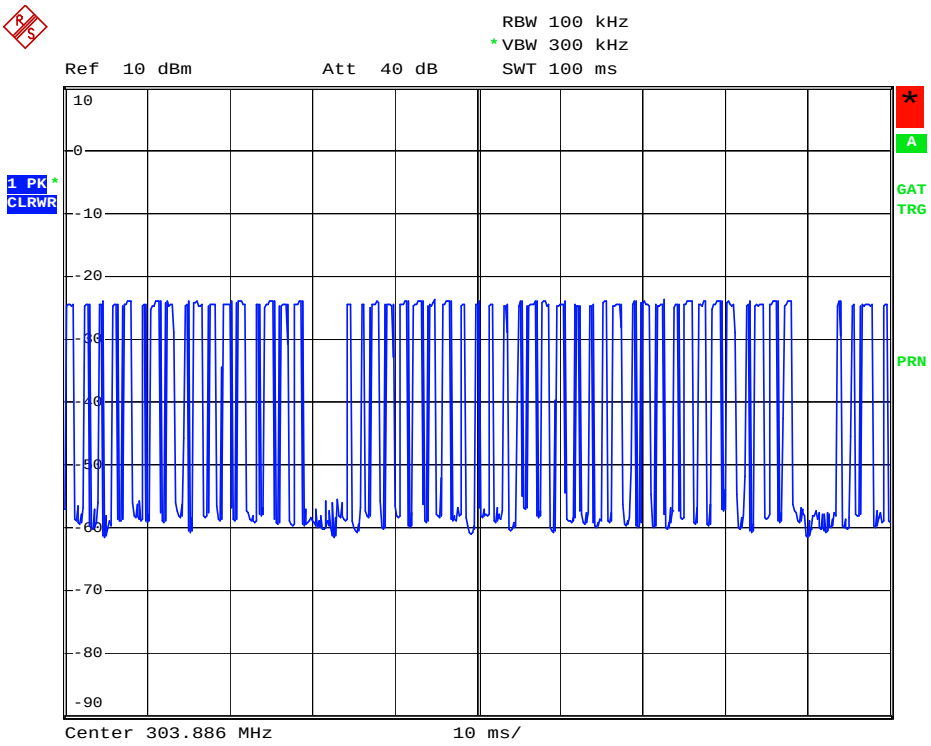
100ms



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4.4 20DB OCCUPIED BANDWIDTH MEASUREMENT

4.4.1 LIMITS OF BAND EDGES MEASUREMENT

TEST STANDARD:

FCC Part 15: 2011, Subpart C (Section: 15.231(C))

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

Fundamental Frequency (MHz)	Limit of 20 dB Bandwidth(kHz)
303.875	759.69

4.4.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SIGNAL ANALYZER Rohde & Schwarz	FSP	E1S1002	Mar. 16, 2012
BILOG Antenna SCHWARZBECK	VULB9168	E1A1001	Sept. 26, 2012

NOTE: The calibration interval of the above test instruments is 12 months.

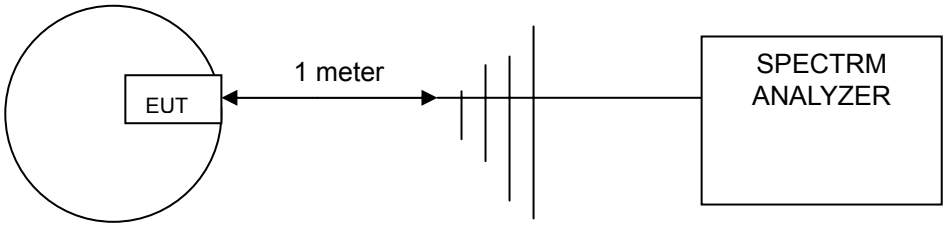
4.4.3 TEST PROCEDURES

1. The EUT was placed on the turning table.
2. The signal was coupled to the spectrum analyzer through an antenna.
3. Set the resolution bandwidth to 100 kHz and video bandwidth to 300 kHz then select Peak function to scan the channel frequency.
4. The 20dB bandwidth was measured and recorded.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation.

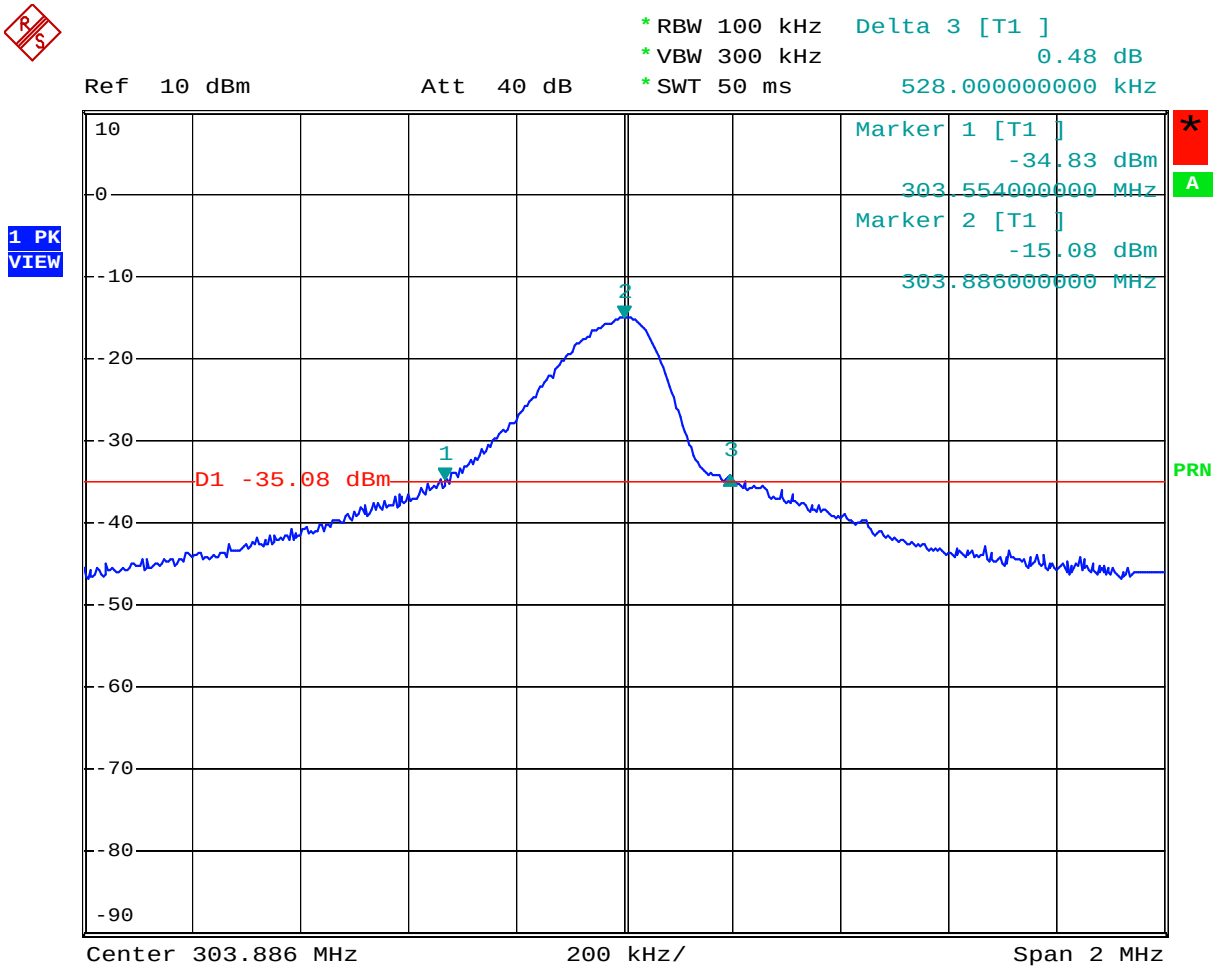
4.4.5 TEST SETUP



4.4.6 TEST RESULTS

Frequency (MHz)	20 dB bandwidth (kHz)	Maximum limit (kHz)	Pass / Fail
303.875	528	759.69	Pass

The plot of test result is attached as below.



5 APPENDIX - INFORMATION ON THE TESTING LABORATORY

We, BUREAU VERITAS ADT (Shanghai) Corporation, were founded in 2004 to provide our best service in EMC, Radio and Vehicle consultation. Our laboratories are accredited by the following accreditation bodies according to ISO/IEC 17025 (2005) .

USA	A2LA
	Certificate No.: 2343.01
China	CNAS
	Certificate No.: L2810

Copies of accreditation certificates could be inquired from our office. If you have any comments, please feel free to contact us at the following:

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