





**TEST REPORT No: (5216)140-1033(Revision)**  
**Supersede Technical Report No.: (5216)140-1033**

**TEST REPORT**

To:	<b>SILVERLIT TOYS MANFACTORY LTD</b>	To:	-
Attn:	Ms. May Choi	Attn:	-
Address:	17 <sup>th</sup> Floor Word Trade Centre, 280 Gloucester Road, Causeway Bay, Hong Kong	Address:	-
Fax:	852-29162932	Fax:	-
E-mail:	<a href="mailto:may@silverlit.com">may@silverlit.com</a>	E-mail:	-
Folder No.:	--		
Factory name:	<b>SILVERLIT TOYS MANFACTORY LTD</b>		
Location:	17 <sup>th</sup> Floor Word Trade Centre, 280 Gloucester Road, Causeway Bay, Hong Kong		
Product:	2.4 G Xcelsior MODEL: 84747TX		
Please see exhibits – External Photo	Sample No:	(5216)140-1033	
	Date of Receipt:	July 05, 2016	
	Test date:	July 06, 2016 to August 01, 2016	
	Test Requested:	FCC Part 15 - 2015	
	Test Method:	ANSI C63.10 - 2013	
	FCC ID:	OYK-TX0002G4-1602	
<b>The results given in this report are related to the tested specimen of the described electrical apparatus.</b>			
<b>CONCLUSION: The submitted sample was found to <u>COMPLY</u> with requirement of FCC Part 15 Subpart C.</b>			
Authorized Signature:			
			
Reviewed by: Keith Yeung		Approved by: Law Man Kit	
Date: August 22, 2016		Date: August 22, 2016	

**BUREAU VERITAS HONG KONG LIMITED – Kowloon Bay Office**  
**1/F Pacific Trade Centre,**  
**2 Kai Hing Road, Kowloon Bay,**  
**Kowloon, HONG KONG**  
 Tel: +852 2331 0888  
 Fax: +852 2331 0889  
[www.cps.bureauveritas.com](http://www.cps.bureauveritas.com)

This report is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. Our report is limited to the test samples identified herein. The results set forth in this report are not necessarily indicative or representative of the statistical quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof. You shall have thirty days from receipt of this report to request additional testing of the samples or to notify us of any errors or omissions relating to our report, provided, however, such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.



**TEST REPORT No: (5216)140-1033(Revision)**  
**Supersede Technical Report No.: (5216)140-1033**

## **Table of Contents**

<b>RELEASE CONTROL RECORD .....</b>	<b>3</b>
<b>1 SUMMARY OF TEST RESULTS.....</b>	<b>4</b>
<b>2 MEASUREMENT UNCERTAINTY.....</b>	<b>4</b>
<b>3 GENERAL INFORMATION .....</b>	<b>5</b>
3.1 TEST LABORATORY .....	5
3.2 GENERAL DESCRIPTION OF EUT.....	5
3.3 DESCRIPTION OF TEST MODES.....	6
3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS .....	7
3.5 DESCRIPTION OF SUPPORT UNITS .....	7
<b>4. TEST TYPES AND RESULTS.....</b>	<b>8</b>
4.1 RADIATED EMISSION MEASUREMENT .....	8
4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT .....	8
4.1.2 TEST INSTRUMENTS.....	9
4.1.3 TEST PROCEDURES .....	10
4.1.4 DEVIATION FROM TEST STANDARD .....	12
4.1.5 TEST SETUP .....	12
4.1.6 EUT OPERATING CONDITIONS .....	12
4.1.7 TEST RESULTS .....	13
4.2 20dB BANDWIDTH MEASUREMENT .....	18
4.2.1 LIMITS OF 20dB BANDWIDTH MEASUREMENT.....	18
4.2.2 TEST INSTRUMENTS.....	18
4.2.3 TEST PROCEDURE.....	18
4.2.4 DEVIATION FROM TEST STANDARD .....	19
4.2.5 TEST SETUP.....	19
4.2.6 EUT OPERATING CONDITIONS .....	19
4.2.7 TEST RESULTS .....	19
<b>5. PHOTOGRAPHS OF THE TEST CONFIGURATION.....</b>	<b>22</b>
<b>6. APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB .....</b>	<b>23</b>



**TEST REPORT No: (5216)140-1033(Revision)**  
**Supersede Technical Report No.: (5216)140-1033**

## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
(5216)140-1033	Original release	August 12, 2016
(5216)140-1033(Revision)	Update product information	August 22, 2016



**TEST REPORT No: (5216)140-1033(Revision)**  
**Supersede Technical Report No.: (5216)140-1033**

## 1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.249)			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
§15.203	Antenna Requirement	PASS	No antenna connector is used
§15.207 (a)	Conducted Emission	N/A	Powered from Battery
§15.205	Restricted Band of Operation	PASS	Compliant
§15.209 §15.249(a)	Radiated Emission	PASS	Compliant
§15.215(c)	20dB Bandwidth Test	PASS	Compliant

## 2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Radiated emissions	9KHz ~ 30MHz	2.90dB
	30MHz ~ 1GMHz	3.83dB
	1GHz ~ 18GHz	4.93dB
	18GHz ~ 40GHz	4.80dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k = 2$ .



**TEST REPORT No: (5216)140-1033(Revision)**  
**Supersede Technical Report No.: (5216)140-1033**

### **3 GENERAL INFORMATION**

#### **3.1 TEST LABORATORY**

**BUREAU VERITAS SHENZHEN CO., LTD., DONGGUAN BRANCH**  
Chenwu Industrial Zone, Houjie Town, Dongguan, Guangdong, China

#### **3.2 GENERAL DESCRIPTION OF EUT**

<b>PRODUCT</b>	2.4 G Xcelsior
<b>MODEL NO.</b>	84747TX
<b>FCC ID</b>	OYK-TX0002G4-1602
<b>NOMINAL VOLTAGE</b>	DC 6V(1.5V*AA*4) from Battery
<b>MODULATION TECHNOLOGY</b>	GFSK
<b>OPERATING FREQUENCY</b>	2402-2413.5MHz
<b>ANTENNA TYPE</b>	Wire Antenna, with 2.5dBi gain
<b>I/O PORTS</b>	Refer to user's manual
<b>CABLE SUPPLIED</b>	N/A

**NOTE:**

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. For the test results, the EUT had been tested with all conditions, but only the worst case was shown in test report.
3. Please refer to the EUT photo document (Reference No.: 160621N067-1) for detailed product photo.



**TEST REPORT No: (5216)140-1033(Revision)**  
**Supersede Technical Report No.: (5216)140-1033**

**3.3 DESCRIPTION OF TEST MODES**

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE<1G	RE≥1G	PLC	BW	
A	√	√	-	√	DC 6V From New Battery

Where **RE<1G**: Radiated Emission below 1GHz      **RE≥1G**: Radiated Emission above 1GHz  
**PLC**: Power Line Conducted Emission      **BW**: 20db bandwidth

**NOTE:** No need to concern of Conducted Emission due to the EUT is powered by battery.

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

TESTED CHANNEL	TESTED FREQUENCY
Low	2402 MHz
Middle	2408 MHz
High	2413.5 MHz

Note: The more detailed channel, please refer to the product specifications

**TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE	26deg. C, 50%RH	DC 6V From New Battery	Breeze Jiang
BW	25deg. C, 55%RH	DC 6V From New Battery	Breeze Jiang
PLC		-	-



**TEST REPORT No: (5216)140-1033(Revision)**  
**Supersede Technical Report No.: (5216)140-1033**

### 3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

**FCC Part 15, Subpart C, Section 15.249(2015-10)**

**ANSI C63.10-2013**

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

### 3.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	N/A	N/A	N/A	N/A	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A



**TEST REPORT No: (5216)140-1033(Revision)  
Supersede Technical Report No.: (5216)140-1033**

**4. TEST TYPES AND RESULTS**

**4.1 RADIATED EMISSION MEASUREMENT**

**4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT**

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

<b>FREQUENCIES (MHz)</b>	<b>FIELD STRENGTH (microvolts/meter)</b>	<b>MEASUREMENT DISTANCE (meters)</b>
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

According to §15.249(a), the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

<b>Fundamental Frequency</b>	<b>Field strength of fundamental (milli-volts/meter)</b>	<b>Field strength of harmonics (micro-volts/meter)</b>
902-928 MHz	50	500
2400-2483.5 MHz	50	500
5725-5875 MHz	50	500
24.0-24.25 GHz	250	2500

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

**NOTE:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
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.





**TEST REPORT No: (5216)140-1033(Revision)**  
**Supersede Technical Report No.: (5216)140-1033**

**4.1.2 TEST INSTRUMENTS**

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR7	101494	Apr. 05,16	Apr. 04,17
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV7	102331	Nov. 09,15	Nov. 08,16
Bilog Antenna	Teseq	CBL 6111D	30643	Jul. 16, 16	Jul. 15, 17
Horn Antenna (1GHz -18GHz)	ETS -Lindgren	3117	00062558	May 18,16	May 17,17
GPS Generator+ Antenna	TOJOIN	GNSS-5000A	E1-010119	Aug. 08, 14	Aug. 07, 16
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	NSEMC003	Mar. 12,16	Mar. 11,18
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170242	Mar. 12,16	Mar. 11,17
Amplifier (9kHz-1GHz)	SONOMA	310D	186955	Mar. 04,16	Mar. 03, 17
Pre-Amplifier(1-18G)	HP	8449B	3008A00409	Apr. 25,16	Apr. 24,17
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Nov. 20,15	Nov. 19,16
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	Sep. 01,15	Aug. 31,16

**NOTE:**

1. The test was performed in 966 Chamber.
2. The calibration interval of the above test instruments are 12, 24 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 494399.



**TEST REPORT No: (5216)140-1033(Revision)**  
**Supersede Technical Report No.: (5216)140-1033**

**4.1.3 TEST PROCEDURES**

- a. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meters 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.
- f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

**NOTE:**

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.  
Average value = peak reading + 20log(duty cycle).  
The duty cycle correlation factor be equal to:  $20\log(10.96\%) = -19.2 \text{ dB}$ .
4. All modes of operation were investigated and the worst-case emissions are reported.
5. The testing of the EUT was performed on all 3 orthogonal axes; the worst-case test configuration was reported on the file test setup photo.



**TEST REPORT No: (5216)140-1033(Revision)  
Supersede Technical Report No.: (5216)140-1033**

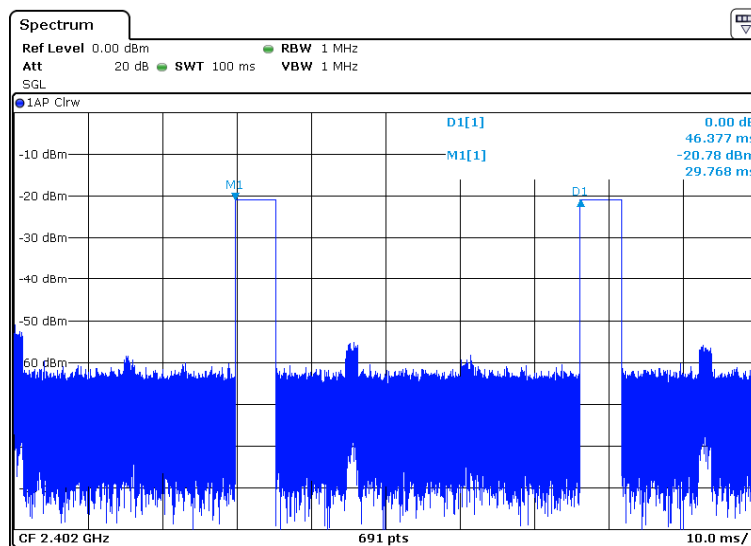
**Duty Cycle:**

Tp = 46.377ms

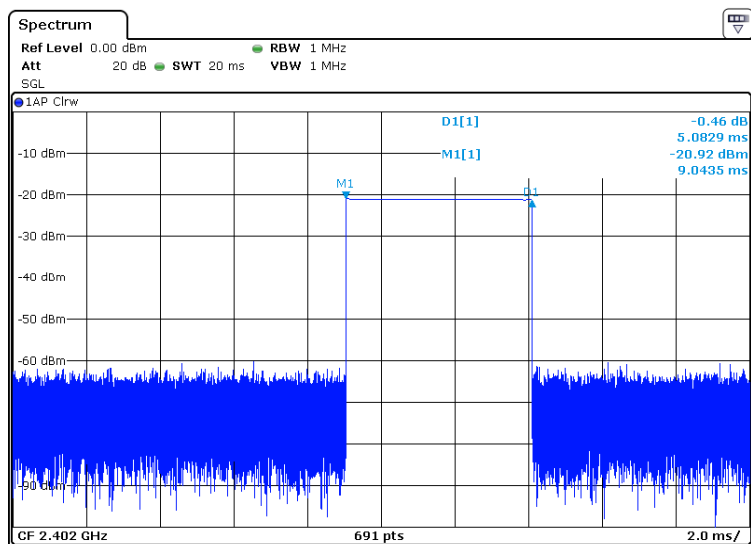
Ton = 5.0829 ms

Duty Cycle = Ton / Tp \* 100% = 5.0829 / 46.377 = 10.96%

**Tp=46.377ms**



**Ton=5.0829ms**



**BUREAU VERITAS HONG KONG LIMITED –  
Kowloon Bay Office  
1/F Pacific Trade Centre,  
2 Kai Hing Road, Kowloon Bay,  
Kowloon, HONG KONG  
Tel: +852 2331 0888  
Fax: +852 2331 0889  
www.cps.bureauveritas.com**

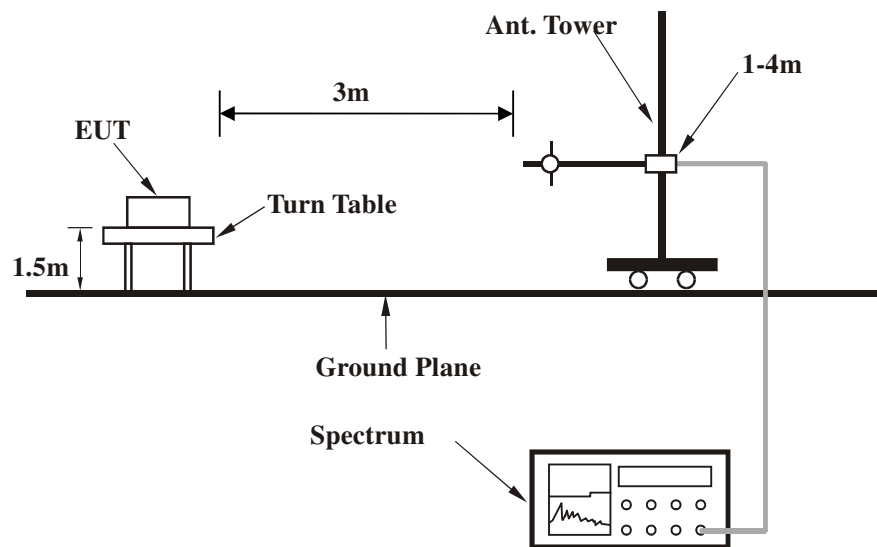
This report is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. Our report is limited to the test samples identified herein. The results set forth in this report are not necessarily indicative or representative of the statistical quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof. You shall have thirty days from receipt of this report to request additional testing of the samples or to notify us of any errors or omissions relating to our report, provided, however, such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.

**TEST REPORT No: (5216)140-1033(Revision)  
Supersede Technical Report No.: (5216)140-1033**

**4.1.4 DEVIATION FROM TEST STANDARD**

No deviation.

**4.1.5 TEST SETUP**



For the actual test configuration, please refer to the attached file (Test Setup Photo).

**4.1.6 EUT OPERATING CONDITIONS**

- a) Turned on the power of all equipment.
- b) EUT was operated according to the type used was description in manufacturer's specifications or the User's Manual.



**TEST REPORT No: (5216)140-1033(Revision)**  
**Supersede Technical Report No.: (5216)140-1033**

**4.1.7 TEST RESULTS**

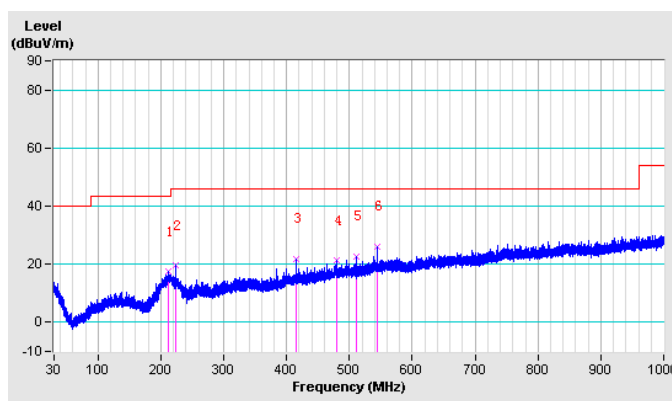
**BELOW 1GHz WORST-CASE DATA**

<b>CHANNEL</b>	TX Middle Channel	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	211.78	17.37	43.50	-26.13	100	0	36.70	-19.33
2	224.00	19.53	46.00	-26.47	100	0	38.06	-18.53
3	415.97	21.90	46.00	-24.10	100	0	31.70	-9.80
4	479.96	21.19	46.00	-24.81	100	0	29.48	-8.29
5	511.97	22.62	46.00	-23.38	100	0	30.11	-7.49
6	543.98	26.02	46.00	-19.98	100	0	31.57	-5.55

**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.





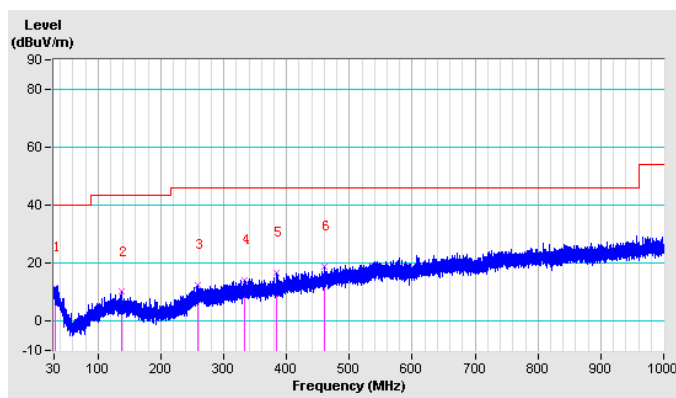
**TEST REPORT No: (5216)140-1033(Revision)**  
**Supersede Technical Report No.: (5216)140-1033**

<b>CHANNEL</b>	TX Middle Channel	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	31.03	11.78	40.00	-28.22	100	0	24.56	-12.78
2	136.85	10.15	43.50	-33.35	100	0	27.73	-17.58
3	259.37	12.35	46.00	-33.65	100	0	26.92	-14.57
4	332.88	14.33	46.00	-31.67	100	0	27.80	-13.47
5	383.99	16.58	46.00	-29.42	100	0	28.10	-11.52
6	459.98	18.99	46.00	-27.01	100	0	27.92	-8.93

**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.





**TEST REPORT No: (5216)140-1033(Revision)**  
**Supersede Technical Report No.: (5216)140-1033**

**ABOVE 1GHz WORST-CASE DATA:**

<b>CHANNEL</b>	TX Low Channel	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2400.00	68.3 PK	74.0	-5.7	1.12 H	214	65.75	2.55
2	2400.00	49.1 AV	54.0	-4.9	1.12 H	214	46.55	2.55
3	*2402.00	86.6 PK	114.0	-27.4	1.14 H	242	84.04	2.56
4	*2402.00	67.4 AV	94.0	-26.6	1.14 H	242	64.84	2.56
5	4804.00	49.6 PK	74.0	-24.4	1.02 H	214	41.87	7.74
6	4804.00	30.4 AV	54.0	-23.6	1.02 H	214	22.67	7.74
7	7206.00	53.7 PK	74.0	-20.3	1.03 H	62	40.33	13.37
8	7206.00	34.5 AV	54.0	-19.5	1.03 H	62	21.13	13.37

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2400.00	65.4 PK	74.0	-8.6	1.01 V	214	62.85	2.55
2	2400.00	46.2 AV	54.0	-7.8	1.01 V	214	43.65	2.55
3	*2402.00	74.3 PK	114.0	-39.7	1.02 V	242	71.74	2.56
4	*2402.00	53.1 AV	94.0	-40.9	1.02 V	242	50.54	2.56
5	4804.00	47.9 PK	74.0	-26.1	1.02 V	314	40.16	7.74
6	4804.00	28.6 AV	54.0	-25.4	1.02 V	314	20.86	7.74
7	7206.00	54.6 PK	74.0	-19.4	1.00 V	64	41.23	13.37
8	7206.00	35.3 AV	54.0	-18.7	1.00 V	64	21.93	13.37

**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. " \* " : Fundamental frequency.
6. The duty cycle correlation factor be equal to:  $20\log(10.96\%) = -19.2$  dB.  
Average value = peak reading +  $20\log(\text{duty cycle})$ .



**TEST REPORT No: (5216)140-1033(Revision)**  
**Supersede Technical Report No.: (5216)140-1033**

<b>CHANNEL</b>	TX Middle Channel	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2400.00	43.6 PK	74.0	-30.4	1.00 H	214	41.05	2.55
2	2400.00	24.4 AV	54.0	-29.6	1.00 H	214	21.85	2.55
3	*2408.00	83.7 PK	114.0	-30.3	1.12 H	85	81.12	2.58
4	*2408.00	64.5 AV	94.0	-29.5	1.12 H	85	61.92	2.58
5	4816.00	51.4 PK	74.0	-22.6	1.02 H	254	43.64	7.76
6	4816.00	32.2 AV	54.0	-21.8	1.02 H	254	24.44	7.76
7	7224.00	51.9 PK	74.0	-22.1	1.00 H	54	38.48	13.42
8	7224.00	32.7 AV	54.0	-21.3	1.00 H	54	19.28	13.42
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2400.00	37.9 PK	74.0	-36.1	1.02 V	25	35.31	2.55
2	2400.00	18.7 AV	54.0	-35.3	1.02 V	25	16.11	2.55
3	*2408.00	74.8 PK	114.0	-39.2	1.02 V	214	72.22	2.58
4	*2408.00	55.6 AV	94.0	-38.4	1.02 V	214	53.02	2.58
5	4816.00	49.9 PK	74.0	-24.1	1.03 V	225	42.14	7.76
6	4816.00	30.7 AV	54.0	-23.3	1.03 V	225	22.94	7.76
7	7224.00	54.9 PK	74.0	-19.1	1.01 V	241	41.44	13.42
8	7224.00	35.7 AV	54.0	-18.3	1.01 V	241	22.24	13.42

**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. " \* ": Fundamental frequency.
6. The duty cycle correlation factor be equal to:  $20\log(10.96\%) = -19.2$  dB.  
Average value = peak reading +  $20\log(\text{duty cycle})$ .





**TEST REPORT No: (5216)140-1033(Revision)**  
**Supersede Technical Report No.: (5216)140-1033**

<b>CHANNEL</b>	TX High Channel	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2400.00	37.4 PK	74.0	-36.6	1.50 H	111	34.85	2.55
2	2400.00	18.2 AV	54.0	-35.8	1.50 H	111	15.65	2.55
3	*2413.50	83.1 PK	114.0	-30.9	1.14 H	30	80.54	2.59
4	*2413.50	63.9 AV	94.0	-30.1	1.14 H	30	61.34	2.59
5	4827.00	45.7 PK	74.0	-28.3	1.10 H	14	37.89	7.78
6	4827.00	26.5 AV	54.0	-27.5	1.10 H	14	18.69	7.78
7	7240.50	52.7 PK	74.0	-21.3	1.12 H	114	39.27	13.45
8	7240.50	33.5 AV	54.0	-20.5	1.12 H	114	20.07	13.45

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2400.00	36.3 PK	74.0	-37.7	1.52 V	125	33.78	2.55
2	2400.00	17.1 AV	54.0	-36.9	1.52 V	125	14.58	2.55
3	*2413.50	74.3 PK	114.0	-39.7	1.52 V	125	71.68	2.59
4	*2413.50	55.1 AV	94.0	-38.9	1.52 V	125	52.48	2.59
5	4827.00	47.3 PK	74.0	-26.7	1.15 V	142	39.53	7.78
6	4827.00	28.1 AV	54.0	-25.9	1.15 V	142	20.33	7.78
7	7240.50	55.7 PK	74.0	-18.3	1.14 V	22	42.21	13.45
8	7240.50	36.5 AV	54.0	-17.5	1.14 V	22	23.01	13.45

**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. " \* ": Fundamental frequency.
6. The duty cycle correlation factor be equal to:  $20\log(10.96\%) = -19.2$  dB.  
Average value = peak reading +  $20\log(\text{duty cycle})$ .



**TEST REPORT No: (5216)140-1033(Revision)**  
**Supersede Technical Report No.: (5216)140-1033**

**4.2 20dB BANDWIDTH MEASUREMENT**

**4.2.1 LIMITS OF 20dB BANDWIDTH MEASUREMENT**

According to FCC 15.215(c), must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

**4.2.2 TEST INSTRUMENTS**

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Power Sensor	Keysight	U2021XA	MY55060016	Feb. 18,16	Feb. 17,17
Power Sensor	Keysight	U2021XA	MY55060018	Feb. 18,16	Feb. 17,17
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 12, 15	Oct.11, 16
Humid & Temp Programmable Tester	Haida	HD-2257	110807201	Sep.07,15	Sep. 06,16
Oscilloscope	Agilent	DSO9254A	MY51260160	Nov. 28,15	Nov. 27,16
Signal Analyzer	Rohde & Schwarz	FSV7	102331	Nov. 09,15	Nov. 08,16
Signal Generator	Agilent	N5183A	MY50140980	Nov. 09,15	Nov. 08,16
ESG Vector Signal Generator	Agilent	E4438C	MY49072505	Apr. 22, 16	Apr. 21, 17
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	Sep. 01,15	Aug. 31,16

**NOTE:**

1. The test was performed in RF Oven room.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

**4.2.3 TEST PROCEDURE**

- a. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- b. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
- c. Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.
- d. Repeat above procedures until all frequencies measured were complete.

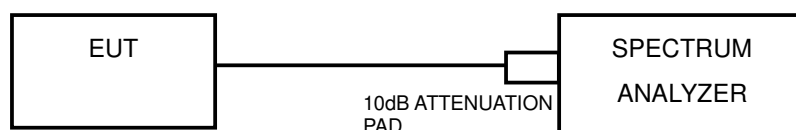


**TEST REPORT No: (5216)140-1033(Revision)  
Supersede Technical Report No.: (5216)140-1033**

**4.2.4 DEVIATION FROM TEST STANDARD**

No deviation.

**4.2.5 TEST SETUP**



**4.2.6 EUT OPERATING CONDITIONS**

- a) Turned on the power of all equipment.
- b) EUT was operated according to the type used was description in manufacturer’s specifications or the User's Manual.

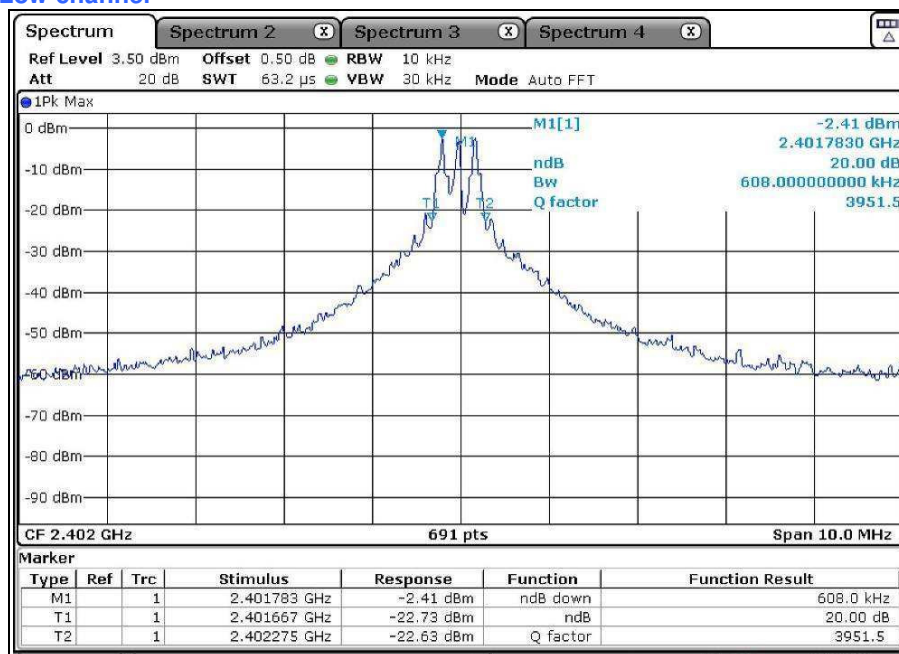
**4.2.7 TEST RESULTS**

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
Low	2402	0.608
Middle	2408	0.637
High	2413.5	0.637

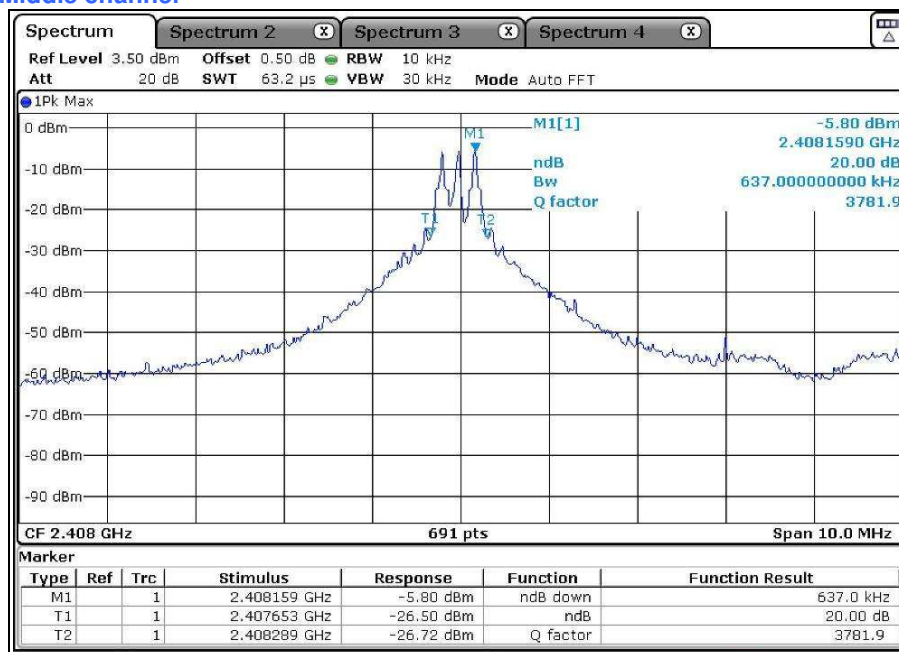


**TEST REPORT No: (5216)140-1033(Revision)  
Supersede Technical Report No.: (5216)140-1033**

**Test Data: Low channel**



**Test Data: Middle channel**



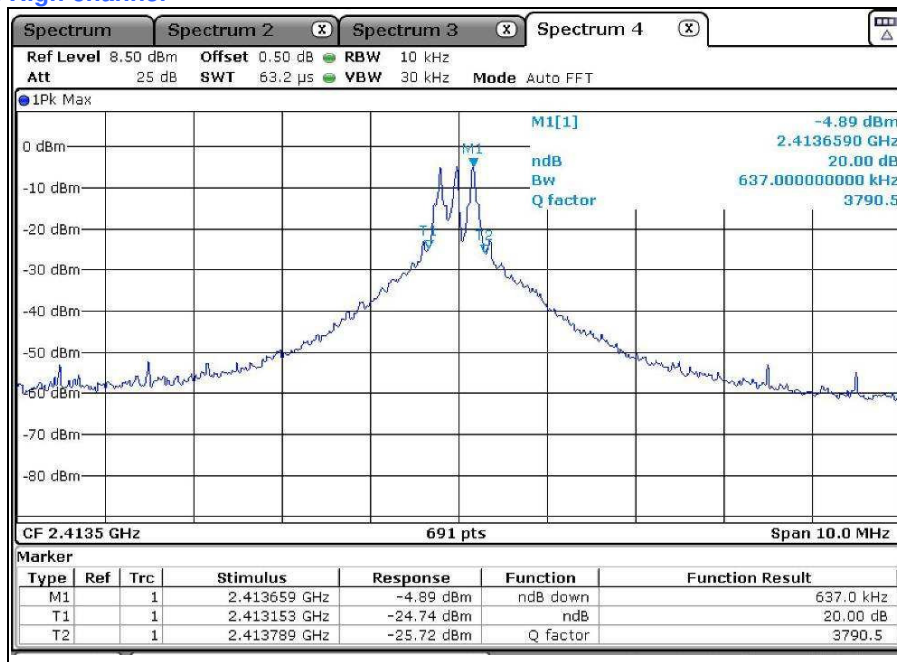
**BUREAU VERITAS HONG KONG LIMITED –  
Kowloon Bay Office**  
1/F Pacific Trade Centre,  
2 Kai Hing Road, Kowloon Bay,  
Kowloon, HONG KONG  
Tel: +852 2331 0888  
Fax: +852 2331 0889  
www.cps.bureauveritas.com

This report is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. Our report is limited to the test samples identified herein. The results set forth in this report are not necessarily indicative or representative of the statistical quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof. You shall have thirty days from receipt of this report to request additional testing of the samples or to notify us of any errors or omissions relating to our report, provided, however, such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.



**TEST REPORT No: (5216)140-1033(Revision)**  
**Supersede Technical Report No.: (5216)140-1033**

**Test Data: High channel**



**BUREAU VERITAS HONG KONG LIMITED –**  
**Kowloon Bay Office**  
 1/F Pacific Trade Centre,  
 2 Kai Hing Road, Kowloon Bay,  
 Kowloon, HONG KONG  
 Tel: +852 2331 0888  
 Fax: +852 2331 0889  
 www.cps.bureauveritas.com

This report is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. Our report is limited to the test samples identified herein. The results set forth in this report are not necessarily indicative or representative of the statistical quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof. You shall have thirty days from receipt of this report to request additional testing of the samples or to notify us of any errors or omissions relating to our report, provided, however, such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.



**TEST REPORT No: (5216)140-1033(Revision)**  
**Supersede Technical Report No.: (5216)140-1033**

## **5. PHOTOGRAPHS OF THE TEST CONFIGURATION**

Please refer to the attached file (Test Setup Photo).



**TEST REPORT No: (5216)140-1033(Revision)**  
**Supersede Technical Report No.: (5216)140-1033**

## **6. APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB**

No any modifications are made to the EUT by the lab during the test.

**---END---**