ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
INTENTIONAL RADIATOR CERTIFICATION

Product Name	:	MaxiVideo
Model Number	:	MV301/ VS8198
Trade Name	:	Autel/ SEALEY
FCC ID	:	XPRMAXIVIDEOMV301
Report Number	:	EESZD06070005-3
Date	:	Jun. 17, 2011

Standards	Results
☒ 47 CFR FCC Part 15 Subpart C 15.249: 2010	PASS

Prepared for

Autel Intelligent Technology Co., Ltd.
Room 2205-2206, Overseas Chinese Scholars Venture Bldg, Hi-Tech Industrial Park, Nanshan District, Shenzhen, China

Prepared by

CENTRE TESTING INTERNATIONAL (SHENZHEN) CORPORATION
Building C, Hongwei Industrial Zone, Baoan 70 District, Shenzhen, Guangdong, China
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Check No.: 11511841

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(Note: N/A means not applicable)

1. GENERAL INFORMATION

Applicant:	Autel Intelligent Technology Co., Ltd. Room 2205-2206, Overseas Chinese Scholars Venture Bldg, Hi-Tech Industrial Park, Nanshan District, Shenzhen, China
Manufacturer:	Autel Intelligent Technology Co., Ltd. F/6, Bldg. A, Zhonghaixin Science & Technology Park, Shanglilang Village, Buji, Longgang District, Shenzhen, China
Sample Description:	MaxiVideo
Technical Date:	DC 6V
Model Name:	MV301/ VS8198
Trade Name:	Autel/ SEALEY
FCC ID:	XPRMAXIVIDEOMV301
Model Discrepancy:	The two models are same product, just different model names.
Report Number:	EESZD06070005-3
Date of Test:	Jun. 10, 2011 to Jun. 17, 2011

The above equipment was tested by CENTRE TESTING INTERNATIONAL (SHENZHEN) CORPORATION for compliance with the requirements set forth in FCC Rules and the measurement procedure according to ANSI C63.4-2009.
The test results of this report relate only to the tested sample identified in this report.

Prepared by : Christy Chen

Reviewed by : Louisa Lu

Approved by ; Jimmy Li
Manager

Date : Jun. 17, 2011

2. TEST SUMMARY

The complete list of measurements is given below:

Clause	Test Item	Rule	Result
7	20dB Bandwidth	FCC 15.215(c)	**PASS**
8	Radiated Emission	FCC 15.209 FCC 15.249(a) (d)	**PASS**
9	Out of Band Emission	FCC 15.249 (d)	**PASS**
--	Antenna Requirements *	FCC 15.203	**PASS**

*: According to Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The EUT has a built in antenna which is a short wire solder on the PCB, this is permanently attached antenna and meets the requirements of this section.

3. MEASUREMENT UNCERTAINTY

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

Measurement items	Uncertainty
Radiated Emissions / Band edge Emission	4.6 dB
Conducted disturbance	2.6 dB

4. TEST EQUIPMENT LIST

Equipment	Manufacturer	Model Number	Serial Number	Due Date
3M Chamber & Accessory Equipment	ETS-LINDGREN	FACT-3	3510	07/09/2012
Spectrum Analyzer	Agilent	E4440A	MY46185649	03/29/2012
Biconilog Antenna	ETS-LINGREN	3142C	00044562	07/31/2011
Multi device Controller	ETS-LINGREN	2090	00057230	N/A
Horn Antenna	ETS-LINGREN	3117	00057407	06/07/2012
Microwave Preamplifier	Agilent	8449B	3008A02425	N/A
Loop Antenna	ETS-LINDGREN	6502	00071730	08/24/2011

5. SUPPORT EQUIPMENT LIST

No.	Device Type	Brand	Model	Series No.	Data Cable	Power Cord
1.	----	----	----	----	----	----

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.

2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

6. PRODUCT INFORMATION

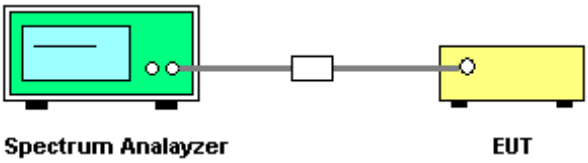
Items	Description
Rating	DC 6V
Intentional Transceiver	Intentional Transmitter
Modulation	FM
Frequency Range	2468 MHz
Channel Number	1
Connector	fixed on board
Gain	1.6dBi

7. 20DB BANDWIDTH MEASUREMENT

7.1 LIMITS

None

7.2 BLOCK DIAGRAM OF TEST SETUP



7.3 TEST PROCEDURE

1. The transmitter output (antenna port) was connected to the spectrum analyzer.

2. Set spectrum analyzer's RBW and VBW to applicable value with Peak in Max Hold.

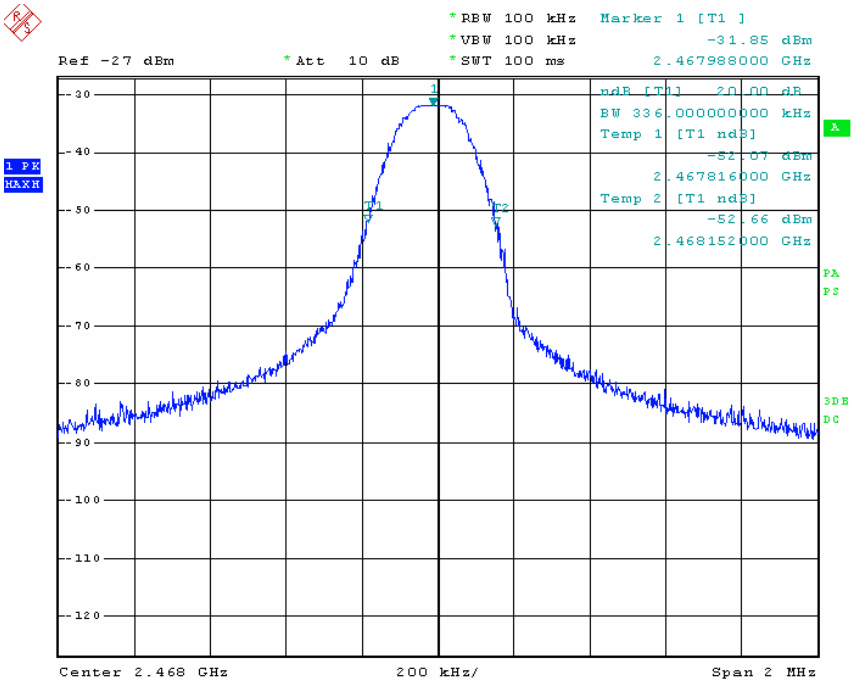
3. A PEAK output reading was taken, a DISPLAY line was drawn 20 dB lower than PEAK level.

4. The 20dB bandwidth was determined from where the channel output spectrum intersected the display line.

7.4 TEST RESULT

Worst case-- Modulation Type: FM

20 dB BW = 336kHz



9. RADIATED EMISSIONS MEASUREMENT

9.1 LIMITS

(1) The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency	Field strength of fundamental (millivolts/ meter)	Field strength of harmonics (microvolts/ meter)
902–928 MHz	50	500
2400–2483.5 MHz	50	500
5725–5875 MHz	50	500
24.0–24.25 GHz	250	2500

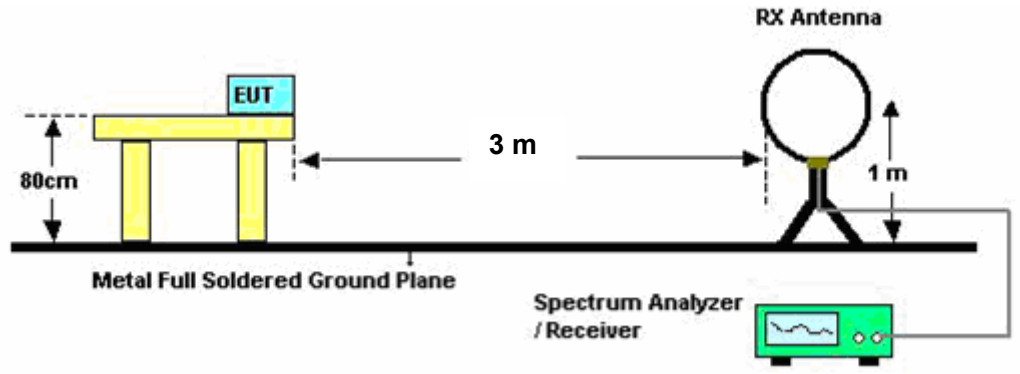
(2) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209 as the following , whichever is the lesser attenuation.

Frequency (MHz)	Field strength (mV/m)	Distance (m)
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

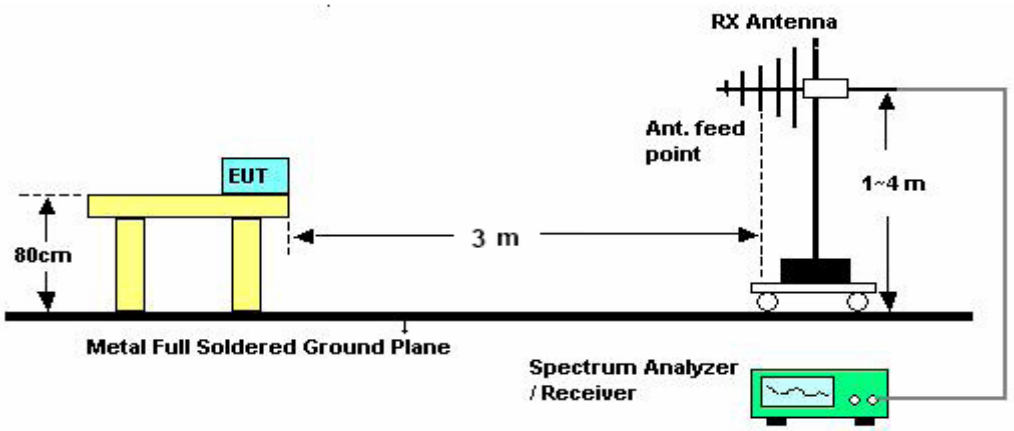
Note: the tighter limit applies at the band edges.

9.2 BLOCK DIAGRAM OF TEST SETUP

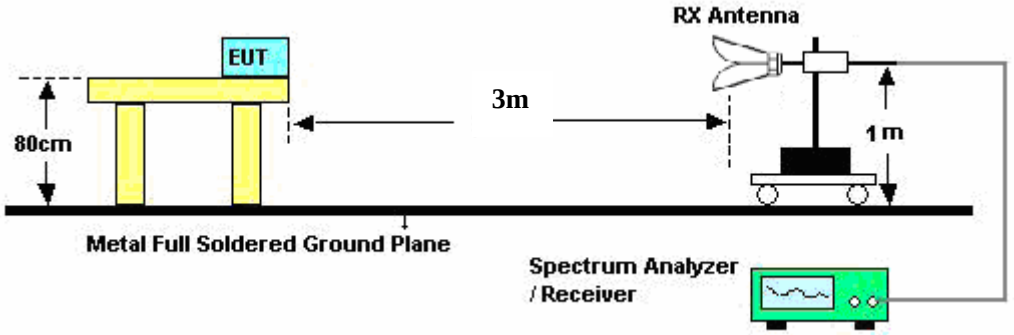
For radiated emissions from 9kHz to 30MHz



For radiated emissions from 30 - 1000MHz



For radiated emissions from 1GHz to 25GHz



9.3 TEST PROCEDURE

Below 30MHz

a. The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 1 meter away from the antenna (loop antenna). The maximum values of the field strength are recorded by adjusting the polarizations of the test antenna and rotating the turntable.

b. For each suspected emission, the EUT was arranged to its worst case and then turn table was turned from 0 degrees to 360 degrees to find the maximum reading.

c. The test frequency analyzer system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

30MHz ~ 1GHz:

a. The EUT was placed on the non-conductive turntable 0.8 m above the ground at a chamber.

b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.

c. For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where EUT radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.

Above 1GHz:

a. The EUT was placed on the non-conductive turntable 0.8 m above the ground at a chamber.

b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 1MHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.

c. For each frequency whose maximum record was higher or close to limit, measure its AV value: rotate the turntable from 0 to 360 degrees to find the degree where EUT radiated the maximum emission, then set the test frequency analyzer/receiver to AV value and specified bandwidth with Maximum Hold Mode, and record the maximum value.

9.4 TEST RESULT

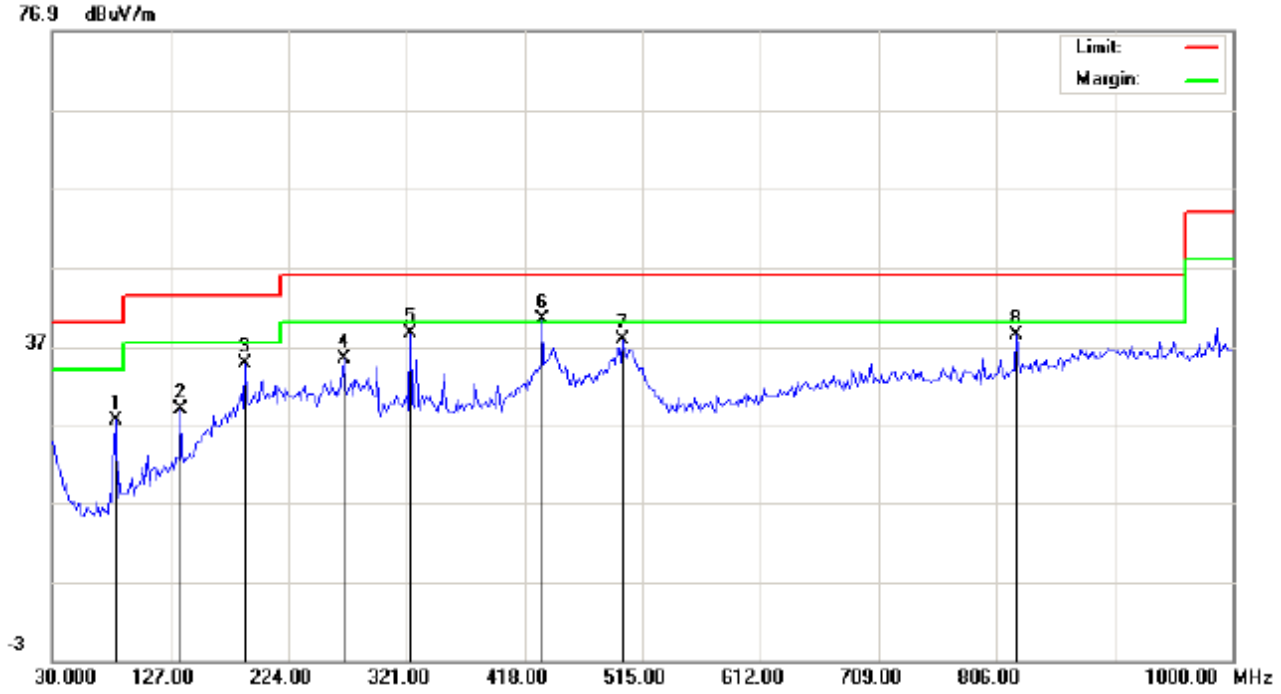
Note: Limit dBμV/m @3m = Limit dBμV/m @300m+ 80
Limit dBμV/m @3m = Limit dBμV/m @30m + 40

A. Below 30MHz:

The test data below 30MHz are very low, so they are not recorded.

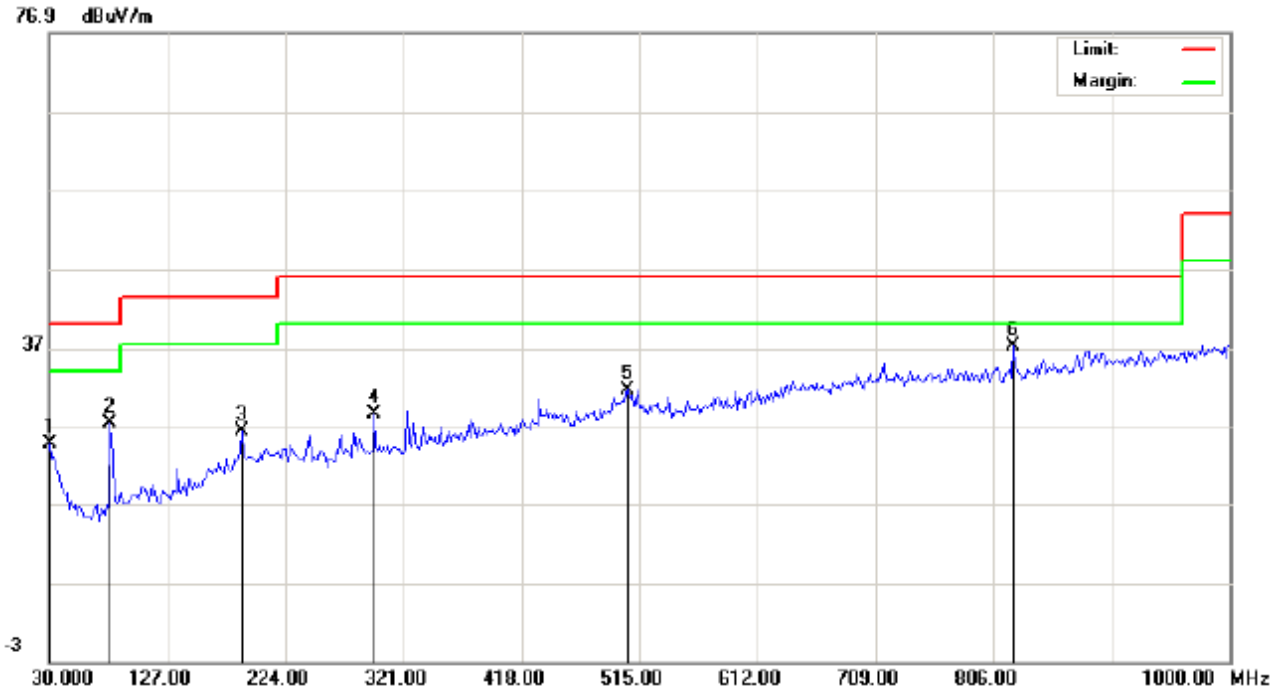
B. 30MHz ～ 1GHz:

H:



No.	Freq.	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV/m)			Limit (dBuV/m)		Margin (dB)			
	MHz	Peak	QP	AVG	dB	peak	QP	AVG	QP	AVG	QP	AVG	P/F	Comment
1	81.7333	18.48			9.12	27.60			40.00		-12.40		P	
2	135.0833	19.67			9.38	29.05			43.50		-14.45		P	
3	188.4333	22.96			11.88	34.84			43.50		-8.66		P	
4	269.2667	20.85			14.60	35.45			46.00		-10.55		P	
5	324.2333	22.10			16.45	38.55			46.00		-7.45		P	
6	432.5500	21.58			18.89	40.47			46.00		-5.53		P	
7	498.8333	17.90			19.92	37.82			46.00		-8.18		P	
8	822.1667	12.98			25.44	38.42			46.00		-7.58		P	

V:



No.	Freq.	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV/m)			Limit (dBuV/m)		Margin (dB)			
	MHz	Peak	QP	AVG	dB	peak	QP	AVG	QP	AVG	QP	AVG	P/F	Comment
1	30.0000	7.19			17.63	24.82			40.00		-15.18		P	
2	80.1167	18.37			8.95	27.32			40.00		-12.68		P	
3	188.4333	14.58			11.88	26.46			43.50		-17.04		P	
4	296.7500	12.89			15.70	28.59			46.00		-17.41		P	
5	505.3000	11.64			20.06	31.70			46.00		-14.30		P	
6	822.1667	11.78			25.44	37.22			46.00		-8.78		P	

C. Above 1GHz:

Test Results-(Measurement Distance: 3m)								
Frequency (MHz)	Measurement value			Limit			Antenna	Result
	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	(H/V)	(P/F)
1806.667	43.21	---	---	74	---	54	H	P
1971.667	44.78	---	---	74	---	54	H	P
2136.667	47.60	---	---	74	---	54	H	P
***2468.000**	91.66	---	---	114	---	94	H	P
4936.000	62.95	---	52.36	74	---	54	H	P
7404.000	60.28	---	50.21	74	---	54	H	P
9873.333	49.14	---	---	74	---	54	H	P
11541.66	50.01	---	---	74	---	54	H	P
15590.00	51.02	---	---	74	---	54	H	P
1146.667	37.63	---	---	74	---	54	V	P
1311.667	35.64	---	---	74	---	54	V	P
1641.667	40.16	---	---	74	---	54	V	P
***2468.000**	91.81	---	---	114	---	94	V	P
4936.000	60.57	---	50.44	74	---	54	V	P
7404.000	54.84	---	47.37	74	---	54	V	P
8260.000	46.92	---	---	74	---	54	V	P
11486.66	50.11	---	---	74	---	54	V	P
12340.00	51.02	---	---	74	---	54	V	P
13960.00	51.63	---	---	74	---	54	V	P

*: fundamental frequency

Remark:

According to the emissions below 18GHz, the data curve is lower than the limit, and the data between 18GHz to 25GHz will be lower than the limit, so they are not recorded in the report.

10. BAND EDGE EMISSION MEASUREMENT

10.1 LIMITS

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 § 15.209, whichever is the lesser attenuation.

10.2 BLOCK DIAGRAM OF TEST SETUP

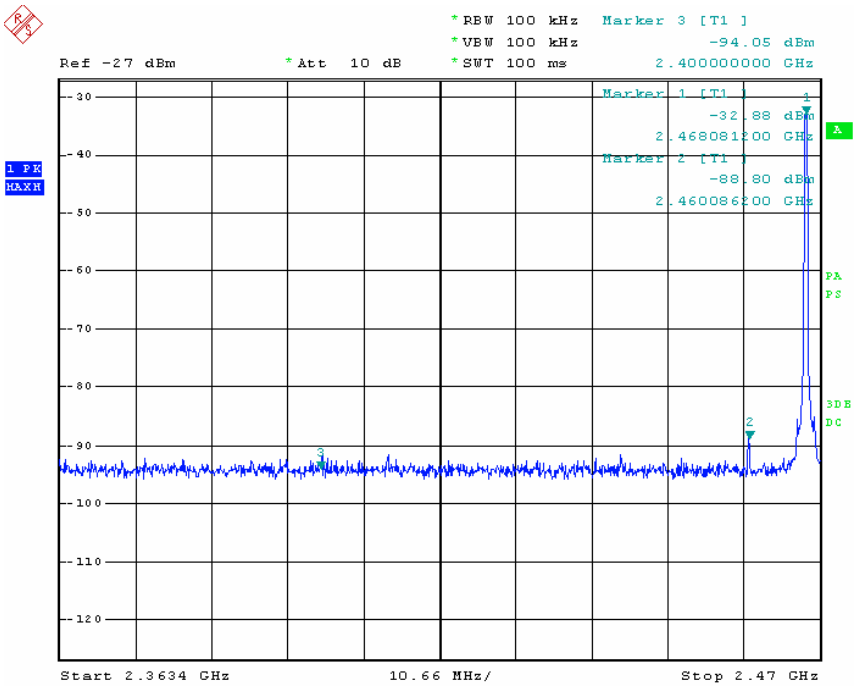
10.3 TEST PROCEDURE

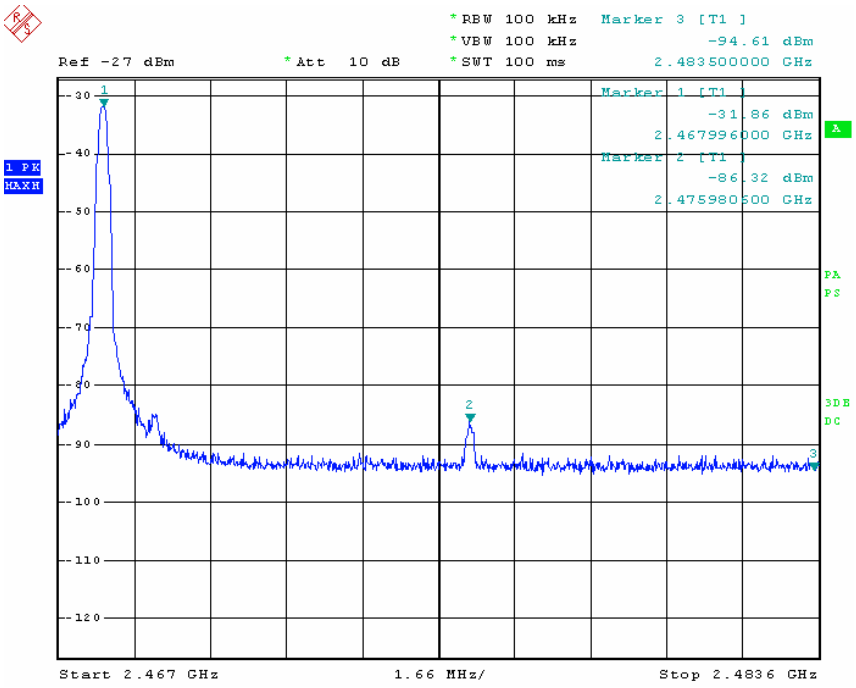
1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. Set spectrum analyzer's RBW and VBW to applicable value with Peak in Max Hold.
3. Record the emission drops at the band-edge relative to the highest fundamental emission level.
4. Use the marker-delta method to determine band-edge compliance as required.

10.4 TEST RESULT

Worst case-- Modulation Type: FM

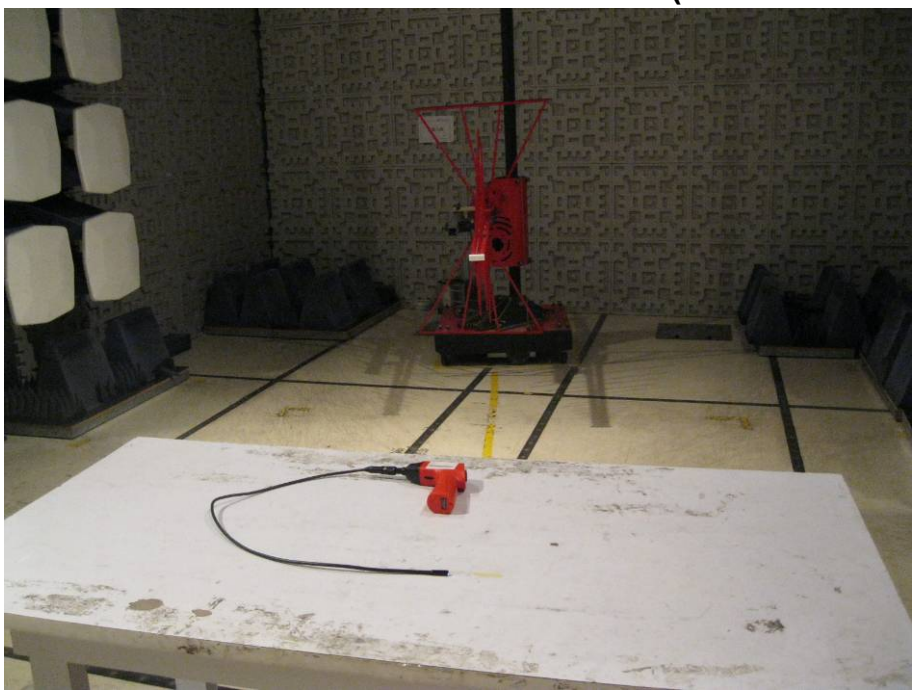
Channel Frequency (GHz)	Fundamental Emission (dBμV/m)	Delta (dB)	Final Emission (dBμV/m)	Limit (dBμV/m)		Result (Pass / Fail)
	PK		PK	PK	AV	
2.468	91.81	---	---	---	---	---
2.400	---	61.17	30.64	74	54	Pass
2.460	---	55.92	35.89	74	54	Pass
2.476	---	54.46	37.35	74	54	Pass
2.4835	---	62.75	29.06	74	54	Pass


RBW 100 kHz
VBW 100 kHz
SWT 100 ms
Marker 3 [T1]
-94.05 dBm
2.400000000 GHz
Ref -27 dBm
Att 10 dB
Marker 1 [T1]
-32.88 dBm
2.468081200 GHz
Marker 2 [T1]
-88.80 dBm
2.460086200 GHz
1 PK
MAXH
A
PA
PS
3DB
DC
Start 2.3634 GHz
10.66 MHz/
Stop 2.47 GHz

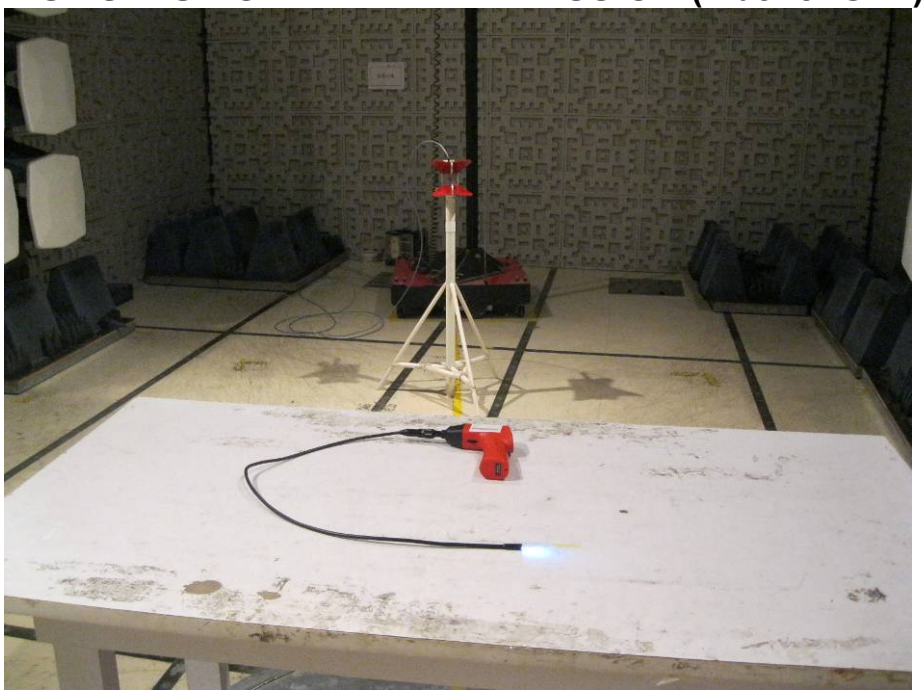

RBW 100 kHz
VBW 100 kHz
SWT 100 ms
Marker 3 [T1]
-94.61 dBm
2.483500000 GHz
Ref -27 dBm
Att 10 dB
Marker 1 [T1]
-31.86 dBm
2.467996000 GHz
Marker 2 [T1]
-86.32 dBm
2.475980500 GHz
1 PK
MAXH
A
PA
PS
3DB
DC
Start 2.467 GHz
1.66 MHz/
Stop 2.4836 GHz

APPENDIX 1 PHOTOGRAPHS OF TEST SETUP

TEST SETUP OF RADIATED EMISSION (30MHz～1GHz)



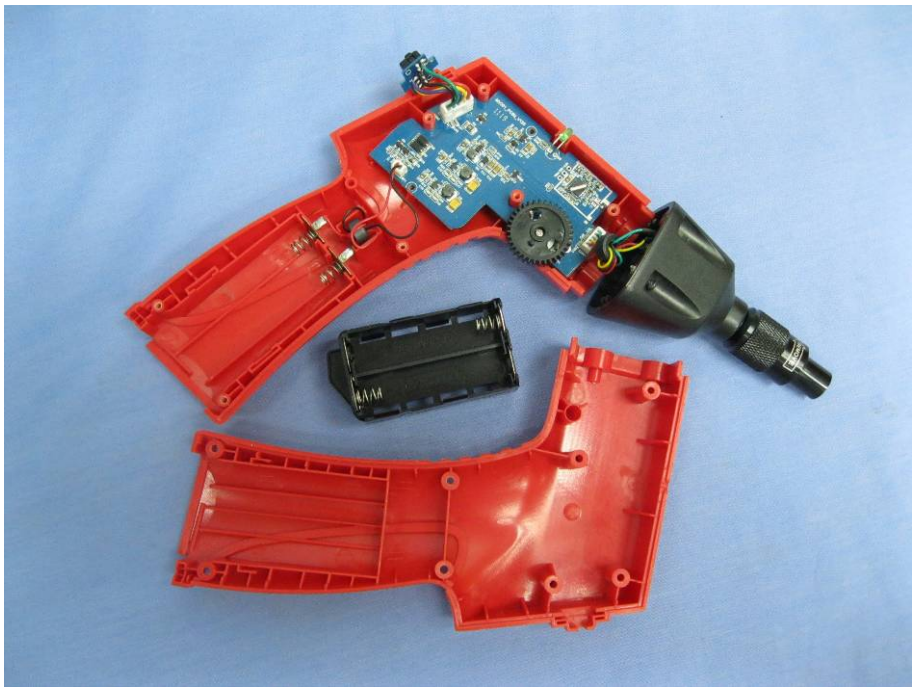
TEST SETUP OF RADIATED EMISSION (Above1GHz)



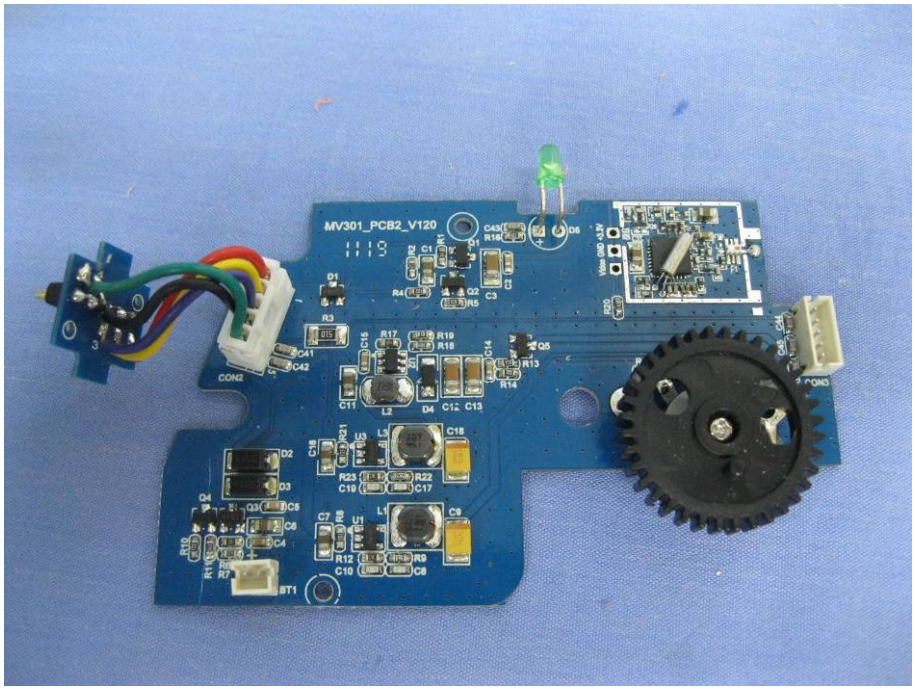
APPENDIX 2 PHOTOGRAPHS OF EUT

View of external EUT-1

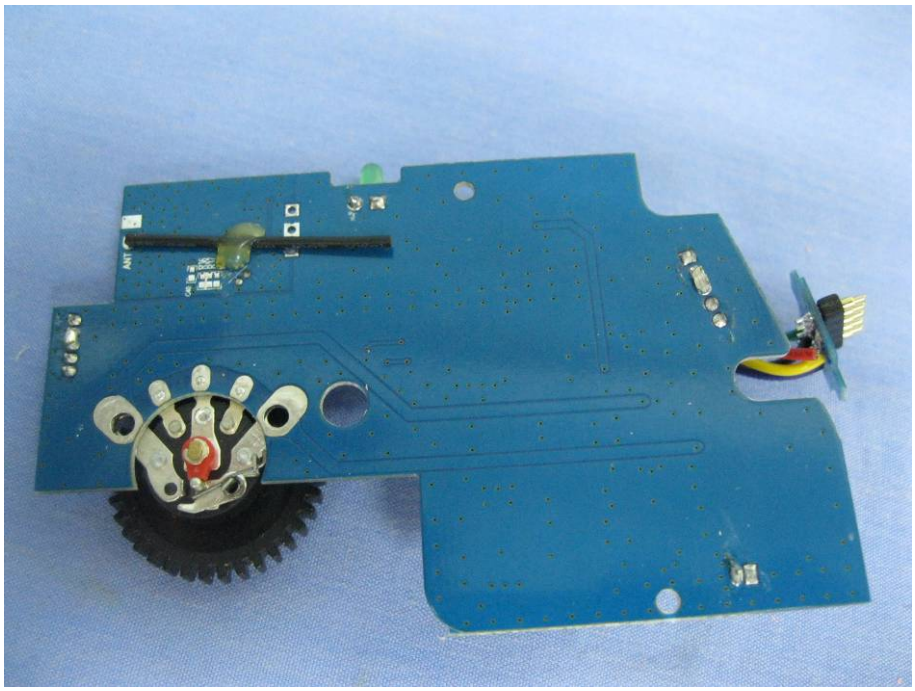
View of external EUT-2



View of internal EUT-1



View of internal EUT-2



View of internal EUT-3

------- End of report -------