



Test Report No.:
FCC2023-0024-RF2/R1

RF Test Report

EUT : **Soundbar speaker**
MODEL : **TAB7568/37**
ADDITIONAL MODEL : **See section 2.1**
BRAND NAME : **PHILIPS**
APPLICANT : **MMD Hong Kong Holding Limited**
Classification Of Test : **N/A**

CVC Testing Technology Co., Ltd.



CVC Testing Technology Co., Ltd.

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Client		Name : MMD Hong Kong Holding Limited	
		Address : Units 1208-11, 12th Floor, C-Bons International Center, 108 Wai Yip Street, Kwun Tong, Kowloon, Hong Kong	
Manufacturer		Name : MMD Hong Kong Holding Limited	
		Address : Units 1208-11, 12th Floor, C-Bons International Center, 108 Wai Yip Street, Kwun Tong, Kowloon, Hong Kong	
Equipment Under Test		Name : Soundbar speaker	
		Model/Type: TAB7568/37	
		Additional Model: See section 2.1	
		Brand : PHILIPS	
		Serial NO.: N/A	
		Sampe NO.:4-1	
Date of Receipt.	2023.02.10	Date of Testing	2023.02.10~2023.06.06
Test Specification		Test Result	
FCC Part 15, Subpart C, Section 15.249		PASS	
Evaluation of Test Result	The equipment under test was found to comply with the requirements of the standards applied.		
	Seal of CVC		
	Issue Date: 2023.06.06		
Tested by:	Reviewed by:	Approved by:	
Xu ZhenFei	Liu YongHai	Chen HuaWen	
Name Signature	Name Signature	Name Signature	
Other Aspects: NONE.			
Abbreviations:OK, Pass= passed Fail = failed N/A= not applicable EUT= equipment, sample(s) under tested			

This test report relates only to the EUT, and shall not be reproduced except in full, without written approval of CVC.



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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
FCC2023-0024-RF2	Original release	2023.05.08
FCC2023-0024-RF2/R1	Add test equipment information, retest bandwidth.	2023.06.06

This report replaces the report No.FCC2023-0024-RF2 after issuance.



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	Meet the requirement of limit.
§15.207 (a)	Conducted Emission	PASS	Meet the requirement of limit.
§15.205	Restricted Band of Operation	PASS	Meet the requirement of limit.
§15.209 §15.249(a)	Radiated Emission	PASS	Meet the requirement of limit.
§15.215(c)	20dB Bandwidth Test	PASS	Meet the requirement of limit.
-	99% Occupied Bandwidth	PASS	Reference only



1.1 LIST OF TEST AND MEASUREMENT INSTRUMENTS

Test Equipment	Type/Mode	SERIAL NO.	Equipment No.	Manufacturer	Cal. interval	Cal. Due
Conducted emission					/	/
EMI Test Receiver	ESW44	103123	EM-000698	R&S	1 year	2023-06-17
EMI Test Receiver	ESR3	102394	VG DY-0705	R&S	1 year	2023-03-03
EMI Test Receiver	ESR3	102394	VG DY-0705	R&S	1 year	2024-02-22
LISN	NSLK 8127	8127644	VG DY-0150	SCHWARZBECK	1 year	2023-09-03
LISN	NSLK 8128	8128-316	VG DY-0149	SCHWARZBECK	1 year	2023-09-03
DC LISN	PVDC8301-017	PVDC8301#17	VG DY-0692	SCHWARZBECK	1 year	2023-10-07
LISN	NSLK 8129	8129-268	EM-000388	SCHWARZBECK	1 year	2023-03-03
LISN	NSLK 8129	8129-268	EM-000388	SCHWARZBECK	1 year	2024-03-03
Plus Limiter (#1)	VTSD 9561 F-N	00515	VG DY-0808	SCHWARZBECK	1 year	2023-03-04
Plus Limiter (#1)	VTSD 9561 F-N	00515	VG DY-0808	SCHWARZBECK	1 year	2024-03-03
Impedance Stabilization Network	ISN T800	27095	WKNE-0195	TESEQ	1 year	2023-09-03
Impedance Stabilization Network	NTFM8158	8158-0092	VG DY-0356	SCHWARZBECK	1 year	2023-06-06
ImpedanceStabilizationNetwork	NTFM8131	#184	EM-000498	SCHWARZBECK	1 year	2023-06-06
Voltage Probe	TK9420	9420-499	VG DY-0128	SCHWARZBECK	1 year	2023-03-03
Voltage Probe	TK9420	9420-499	VG DY-0128	SCHWARZBECK	1 year	2024-02-22
Power Divider	4901.17.B	22643830	DB-0016	HUBER+SUHNE R	1 year	2023-08-31
Video Signal Generator	GV-798+	151064920001	VGDS-0215	PROMAX	1 year	2023-05-30
Video Signal Generator	GV-798+	151064920001	VGDS-0215	PROMAX	1 year	2024-05-23
AudioSignalGenerator	GAG-810	EK871591	EM-000309	GW	1 year	2023-12-06
Shielding Room(#1)	GP1A	001	WKNF-0001	LEINING	3 year	2024-08-07
WIFI & Bluetooth Test System 1						/
Communication Shielded Room 2	4m*3m*3m	CRTDSWKS R4 4301	VGDS-0700	CRT	3 year	2024/04/24
Spectrum Analyzer	N9030A	MY53310374	EM-000395	Agilent	1 year	2023/06/30
Comprehensive Test Instrument	CMW270	100304	DZ-000240-1	R&S	1 year	2023/12/06
Analog Signal Generator	SMB100A	181858	DZ-000238-2	R&S	1 year	2023/06/05
Analog Signal Generator	SMB100A	181858	DZ-000238-2	R&S	1 year	2024/05/29
Vector Signal Generator	SGT100A	111661	DZ-000238-1	R&S	1 year	2023/06/05
Vector Signal Generator	SGT100A	111661	DZ-000238-1	R&S	1 year	2024/05/29
RF Radio Frequency Switch	JS0806-2	19H9080187		Tonscend	1 year	2023/06/05
RF Radio Frequency Switch	JS0806-2	19H9080187		Tonscend	1 year	2024/05/29
Programmable DC Power Supply	E3644A	MY58036222	DZ-000178	KEYSIGHT	1 year	2023/04/21
Programmable DC Power Supply	E3644A	MY58036222	DZ-000178	KEYSIGHT	1 year	2024/04/12



Test Equipment	Type/Mode	SERIAL NO.	Equipment No.	Manufacturer	Cal. interval	Cal. Due
Radiation SpuriousTest System						/
3m Semi-Anechoic Chamber	FACT-4	ST08035	WKNA-0024	ETS	3 year	2024/12/12
Spectrum Analyzer	N9010B	MY57470323	DZ-000174	KEYSIGHT	1 year	2023/03/02
Spectrum Analyzer	N9010B	MY57470323	DZ-000174	KEYSIGHT	1 year	2024/02/22
EMI Test Receiver	N9038A-508	MY532290079	EM-000397	Agilent	1 year	2023/03/02
EMI Test Receiver	N9038A-508	MY532290079	EM-000397	Agilent	1 year	2024/02/22
Broadband Antenna	VULB 9163	9163-530	EM-000342	SCHWARZBECK	1 year	2023/06/25
Loop Antenna	HLA 6121	540046	EM-000546	TESEQ	1 year	2023/03/04
Loop Antenna	HLA 6121	540046	EM-000546	TESEQ	1 year	2024/02/24
Waveguide Horn Antenna	HF906	360306/008	EM-000093	R&S	1 year	2023/03/04
Waveguide Horn Antenna	HF906	360306/008	EM-000093	R&S	1 year	2024/02/24
Waveguide Horn Antenna	BBHA9170	00949	DZ-000209-2	SCHWARZBECK	1 year	2023/07/31
Preamplifier	BBV 9721	9721-050	DZ-000209-1	SCHWARZBECK	1 year	2023/06/05
Preamplifier	BBV 9721	9721-050	DZ-000209-1	SCHWARZBECK	1 year	2024/06/05
5G Bandstop Filters	WRCJV12-4900-5100-5900-6100-50EE	851770	DZ-000186	WI	1 year	2023/12/06
Comprehensive tester	CMW500	159000	DZ-000240-2	R&S	1 year	2023/12/06

1.2 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:

No.	ITEM	FREQUENCY	UNCERTAINTY
1	Conducted emissions	9kHz~30MHz	±2.66dB
2	Radiated emissions	9KHz ~ 30MHz	±0.769dB
		30MHz ~ 1GMHz	±0.877dB
		1GHz ~ 18GHz	±0.777dB
		18GHz ~ 40GHz	±1.315dB

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

1.3 TEST LOCATION

The tests and measurements refer to this report were performed by EMC testing Lab. of CVC Testing Technology Co., Ltd.

Address: No.3,TiantaiyiRoad,KaitaiAvenue,ScienceCity,Guangzhou,China
 Post Code: 510663 Tel: 020-32293888
 FAX: 020-32293889 E-mail: office@cvc.org.cn



2 GENERAL INFORMATION

2.1 GENERAL PRODUCT INFORMATION

Product(s)	Soundbar speaker
Test Model(s)	TAB7568/37
Additional Model	TAB7568, TAB7568/12, TAB7568/98, TAB7568/yy(yy=00-99 or Nil ,for country code)
FCC ID	2AR2STAB7568
Status of EUT	Engineering prototype
Power Supply Rating	Soundbar: AC 110~240V~, 50~60Hz, 43W Subwoofer: AC 110~240V~, 50~60Hz, 70W
Modulation technology	GFSK
Operating Frequency	5729~5851MHz
Antenna Type	MONO POLE Antenna (Soundbar)
Antenna Gain	1.55dBi
Maximum Field strength	104.13dBuV/m
RF Exposure Calculate	7.765mW
Antenna Connector	N/A
Accessory Device	Remote Control*1
Cable Supplied	AC Cable:1.5m*2, Battery AAA 1.5V*2, HDMI Cable 1.5m*1; RCA Cable 5.05m*2.

Note:

1. Please refer to the EUT photo document (Reference No.: FCC2023-0024-E) for detailed product photo.
2. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.
3. Soundbar 5.8G SRD is transmitting function, subwoofer is only receiving function.
4. Model difference: All models are identical except model name and country destination for marketing purpose.



2.2 OTHER INFORMATION

Channel List

CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)
1	5729	21	5769	41	5809	61	5847
2	5731	22	5771	42	5811	62	5849
3	5733	23	5773	43	5813	63	5851
4	5735	24	5775	44	5815		
5	5737	25	5777	45	5817		
6	5739	26	5779	46	5819		
7	5741	27	5781	47	5821		
8	5743	28	5783	48	5823		
9	5745	29	5785	49	5825		
10	5747	30	5787	50	5827		
11	5749	31	5789	51	5829		
12	5751	32	5791	52	5831		
13	5753	33	5793	53	5833		
14	5755	34	5795	54	5835		
15	5757	35	5797	55	5837		
16	5759	36	5799	56	5839		
17	5761	37	5801	57	5841		
18	5763	38	5803	58	5843		
19	5765	39	5805	59	5845		
20	5767	40	5807	60	5847		

- By means of test software which provided by manufacture, the power levels during the tests were set according to the following codes:

5.8GHz					
CHANNEL	POWER SETTING	CHANNEL	POWER SETTING	CHANNEL	POWER SETTING
1	default	31	default	63	default



2.3 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, xyz axis and antenna ports

EUT CONFIGURE MODE	APPLICABLE TEST ITEMS				DESCRIPTION
	RE<1G	RE≥1G	PLC	BW	
A	√	√	√	√	AC120V/60Hz

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

Radiated Emission Test (Above 1GHz):

EUT Configure Mode	Tested Channel	Modulation Technology	Data Rate (Mbps)
TX	1; 31; 61	FSK	1.0

Radiated Emission Test (Below 1GHz):

EUT Configure Mode	Tested Channel	Modulation Technology	Data Rate (Mbps)
TX	1	FSK	1.0

Power Line Conducted Emission Test:

EUT Configure Mode	Tested Channel	Modulation Technology	Data Rate (Mbps)
TX	1; 31; 61	FSK	1.0

Antenna Port Conducted Measurement:

EUT Configure Mode	Tested Channel	Modulation Technology	Data Rate (Mbps)
TX	1; 31; 61	FSK	1.0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE (SYSTEM)	TESTED BY
RE<1G	25.2deg. C, 55%RH	AC120V/60Hz	Li JiaLing
RE≥1G	25.2deg. C, 55%RH	AC120V/60Hz	Li JiaLing
PLC	25.6deg. C, 54%RH	AC120V/60Hz	Li JiaLing
BW	24.9deg. C, 58%RH	AC120V/60Hz	Li JiaLing



2.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product, according to the specifications of the manufacturers. It must comply with the requirements of the following standards:

FCC Part 15, Subpart C, Section 15.249
ANSI C63.10-2013

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

2.5 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.

Support Equipment							
NO	Description	Brand	Model No.	Serial Number	Supplied by		
1	DTV Signal Generator	XinQY	DSG-T1000B	/	Lab		
2	Notebook	DELL	Latitude 5300	/	Lab		
3	Mobile Phone	SAMSUNG	SCH-I699	801A2A38	Lab		
Support Cable							
NO	Description	Quantity (Number)	Length (m)	Detachable (Yes/ No)	Shielded (Yes/ No)	Cores (Number)	Supplied by
1	USB serial cable	N/A	1.2	Yes	No	N/A	N/A

3 TEST TYPES AND RESULTS

3.1 CONDUCTED EMISSION

3.1.1 Limits

TEST STANDARD: FCC Part 15, Subpart B (Section: 15.107) and ICES-003 (Class A: section 6.1)

Frequency (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

NOTE: 1. The lower limit shall apply at the transition frequencies.
 NOTE: 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.
 NOTE: 3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

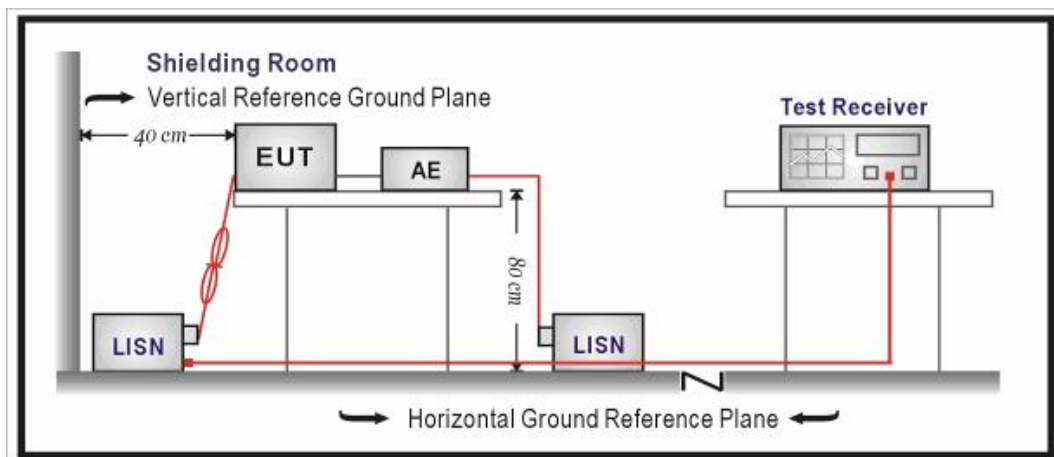
3.1.2 Test Procedures

The basic test procedure was in accordance with ANSI C63.4:2014 (section 7).

- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The test results of conducted emissions at mains ports are recorded of six worst margins for quasi-peak (mandatory) [and average (if necessary)] values against the limits at frequencies of interest unless the margin is 20 dB or greater.

Note: The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

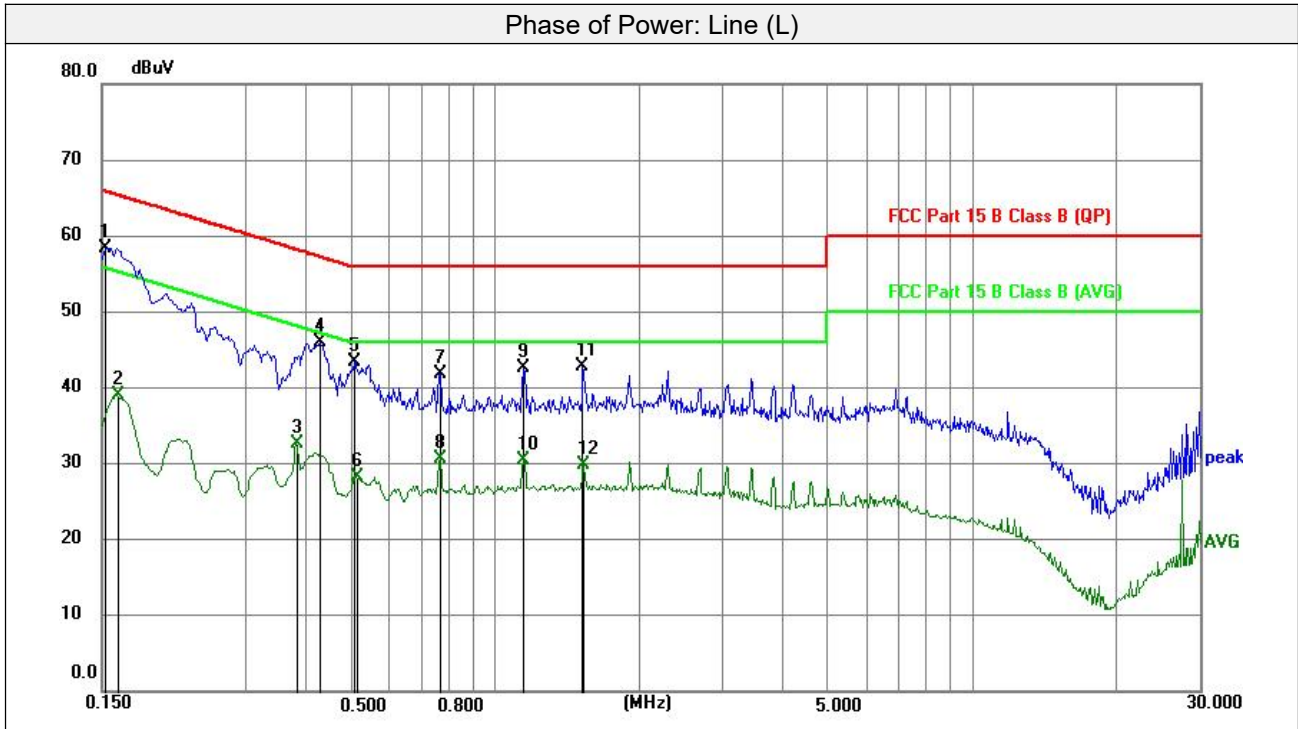
3.1.3 Test setup





3.1.4 Test Results

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
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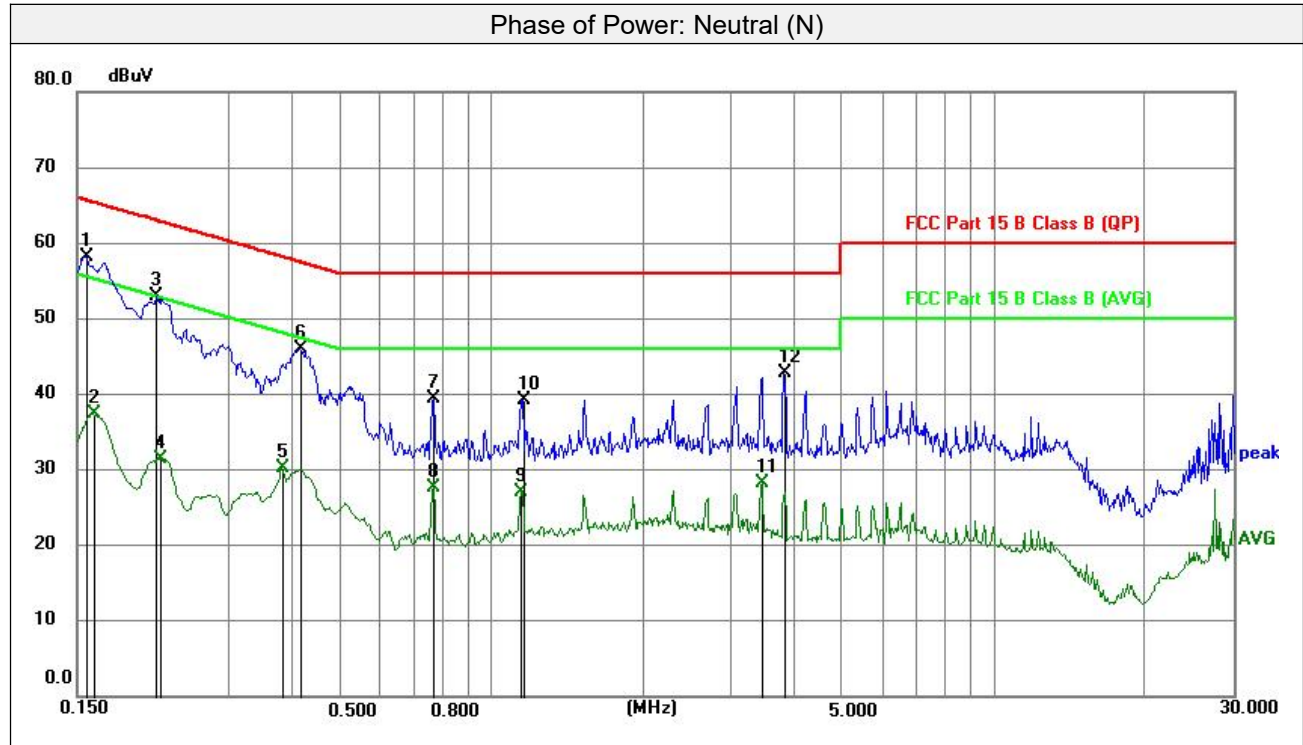
No	Frequency	Reading	Correction Factor	Emission Level	Limit	Margin	Remark
	(MHz)	(dBuV)	dB	(dBuV)	(dBuV)	(dB)	Detector
1	0.1522	48.24	10.18	58.42	65.88	-7.46	peak
2	0.1613	28.85	10.17	39.02	55.40	-16.38	AVG
3	0.3840	22.45	10.12	32.57	48.19	-15.62	AVG
4	0.4312	35.84	10.10	45.94	57.23	-11.29	peak
5	0.5100	33.25	10.10	43.35	56.00	-12.65	peak
6	0.5144	18.14	10.10	28.24	46.00	-17.76	AVG
7	0.7687	31.71	10.10	41.81	56.00	-14.19	peak
8	0.7687	20.47	10.10	30.57	46.00	-15.43	AVG
9	1.1512	32.54	10.05	42.59	56.00	-13.41	peak
10	1.1512	20.45	10.05	30.50	46.00	-15.50	AVG
11	1.5337	32.67	10.07	42.74	56.00	-13.26	peak
12	1.5382	19.84	10.07	29.91	46.00	-16.09	AVG

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
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No.	Frequency	Reading	Correction Factor	Emission Level	Limit	Margin	Remark
	(MHz)	(dBuV)	dB	(dBuV)	(dBuV)	(dB)	Detector
1	0.1556	47.90	10.18	58.08	65.70	-7.62	peak
2	0.1613	27.31	10.17	37.48	55.40	-17.92	AVG
3	0.2152	42.73	10.15	52.88	63.00	-10.12	peak
4	0.2175	21.32	10.15	31.47	52.91	-21.44	AVG
5	0.3840	20.09	10.10	30.19	48.19	-18.00	AVG
6	0.4155	35.93	10.09	46.02	57.54	-11.52	peak
7	0.7687	29.32	10.09	39.41	56.00	-16.59	peak
8	0.7687	17.61	10.09	27.70	46.00	-18.30	AVG
9	1.1512	16.93	10.06	26.99	46.00	-19.01	AVG
10	1.1534	29.21	10.06	39.27	56.00	-16.73	peak
11	3.4553	18.15	10.10	28.25	46.00	-17.75	AVG
12	3.8378	32.77	10.09	42.86	56.00	-13.14	peak

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

3.2 RADIATED EMISSION AND BANDEDGE MEASUREMENT



3.2.1 Limit

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

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

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

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

Fundamental Frequency	Field strength of fundamental (milli-volts/meter)	Field strength of harmonics (micro-volts/meter)
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.

3.2.2 Measurement procedure

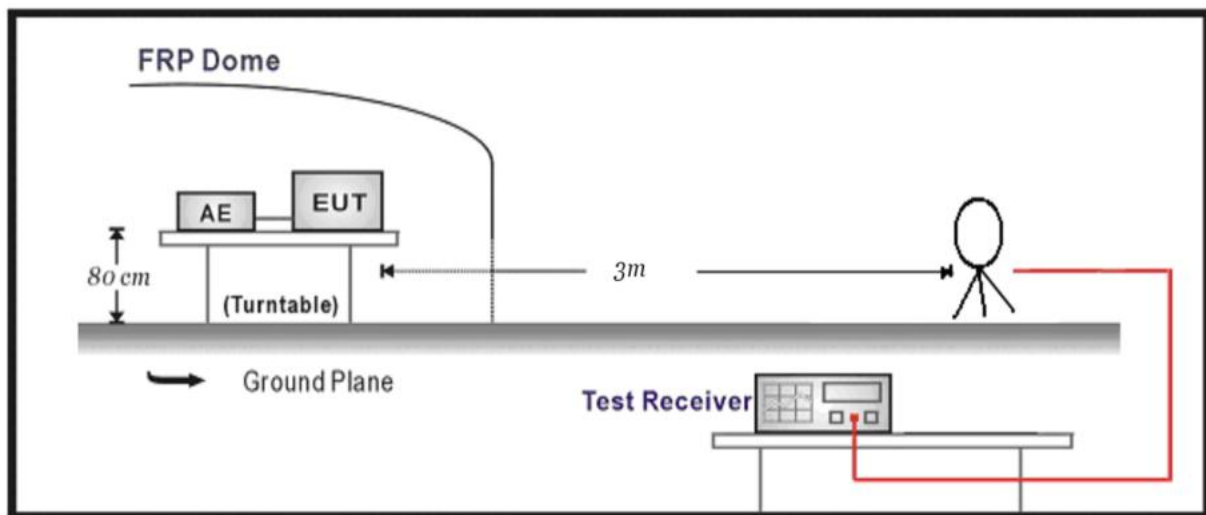
- a. The EUT was placed on the top of a rotating table 1.5 meters (above 1GHz) and 0.8 meters (below 1GHz) above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. For below 1GHz was used bilog antenna, and above 1GHz was used horn 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. For below 30MHz, a loop antenna with its vertical plane is placed 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1m above the ground.
- g. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be performed using fresh batteries. The turntable was rotated to maximize the emission level.

NOTE:

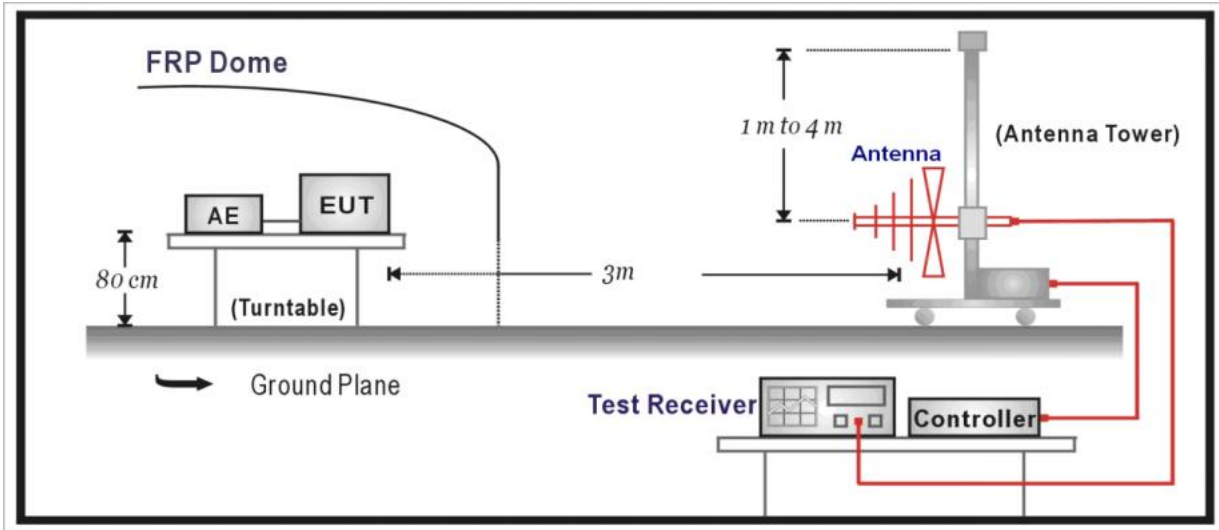
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10Hz (Duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.
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.

3.2.3 Test setup

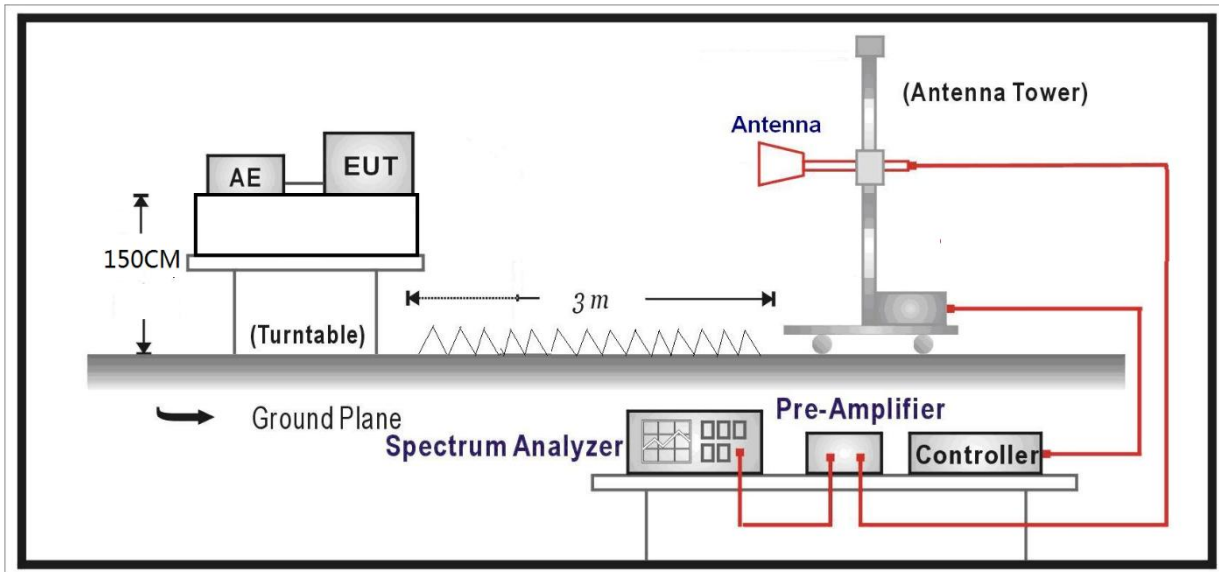
Below 30MHz Test Setup:



Below 1GHz Test Setup:



Above 1GHz Test Setup:





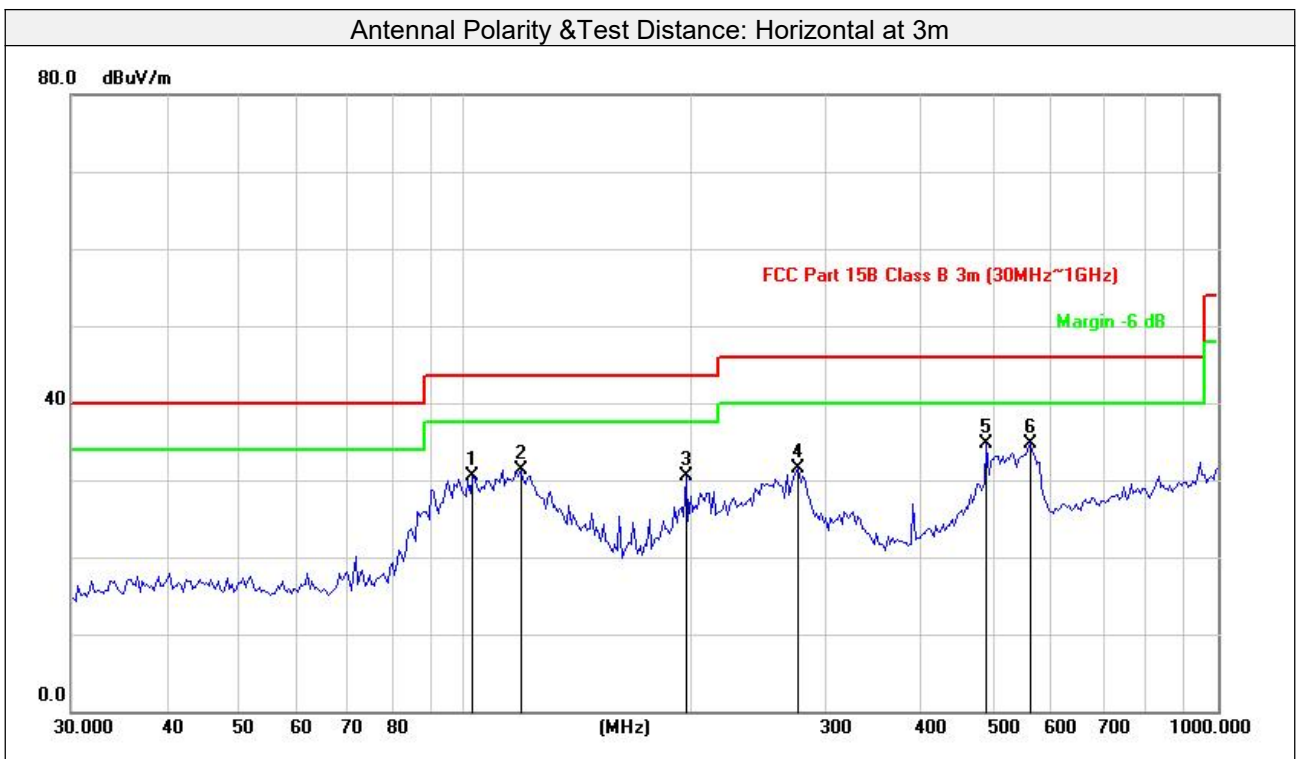
3.2.4 Test results

9kHz ~ 30MHz Data:

The amplitude of spurious emissions attenuated more than 20dB below the permissible value is not required to be report.

30MHz ~ 1GHz Worst-Case Data:

Test Mode	TX		
Test Channel	Channel 1	Frequency Range	30MHz ~ 1GHz
Detector Function	Peak (PK) & Quasi-peak (QP)	Tested By	Li JiaLing



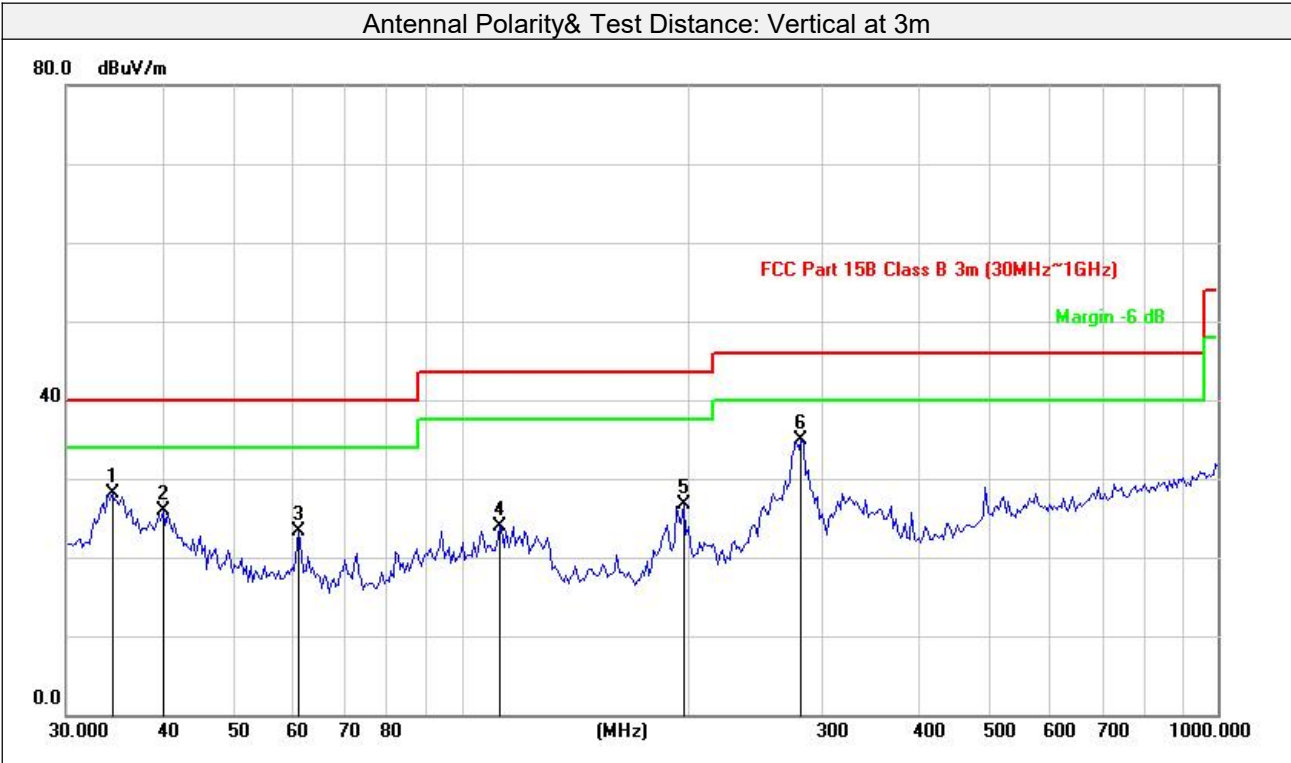
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	102.3597	48.21	-17.78	30.43	43.50	-13.07	peak	221	215
2	118.6014	47.59	-16.25	31.34	43.50	-12.16	peak	158	133
3	196.5098	47.53	-16.95	30.58	43.50	-12.92	peak	168	274
4	277.0935	45.19	-13.70	31.49	46.00	-14.51	peak	200	146
5	492.4685	41.50	-6.88	34.62	46.00	-11.38	peak	179	152
6	562.6624	40.30	-5.64	34.66	46.00	-11.34	peak	150	326

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



Test Mode	TX		
Test Channel	Channel 1	Frequency Range	30MHz ~ 1GHz
Detector Function	Peak (PK) & Quasi-peak (QP)	Tested By	Li JiaLing



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	34.5173	43.68	-15.63	28.05	40.00	-11.95	peak	110	284
2	40.2757	40.71	-14.87	25.84	40.00	-14.16	peak	100	216
3	60.9176	39.56	-16.25	23.31	40.00	-16.69	peak	125	326
4	112.1305	40.84	-16.85	23.99	43.50	-19.51	peak	139	196
5	196.5098	43.57	-16.95	26.62	43.50	-16.88	peak	124	117
6	281.0075	48.43	-13.55	34.88	46.00	-11.12	peak	115	215

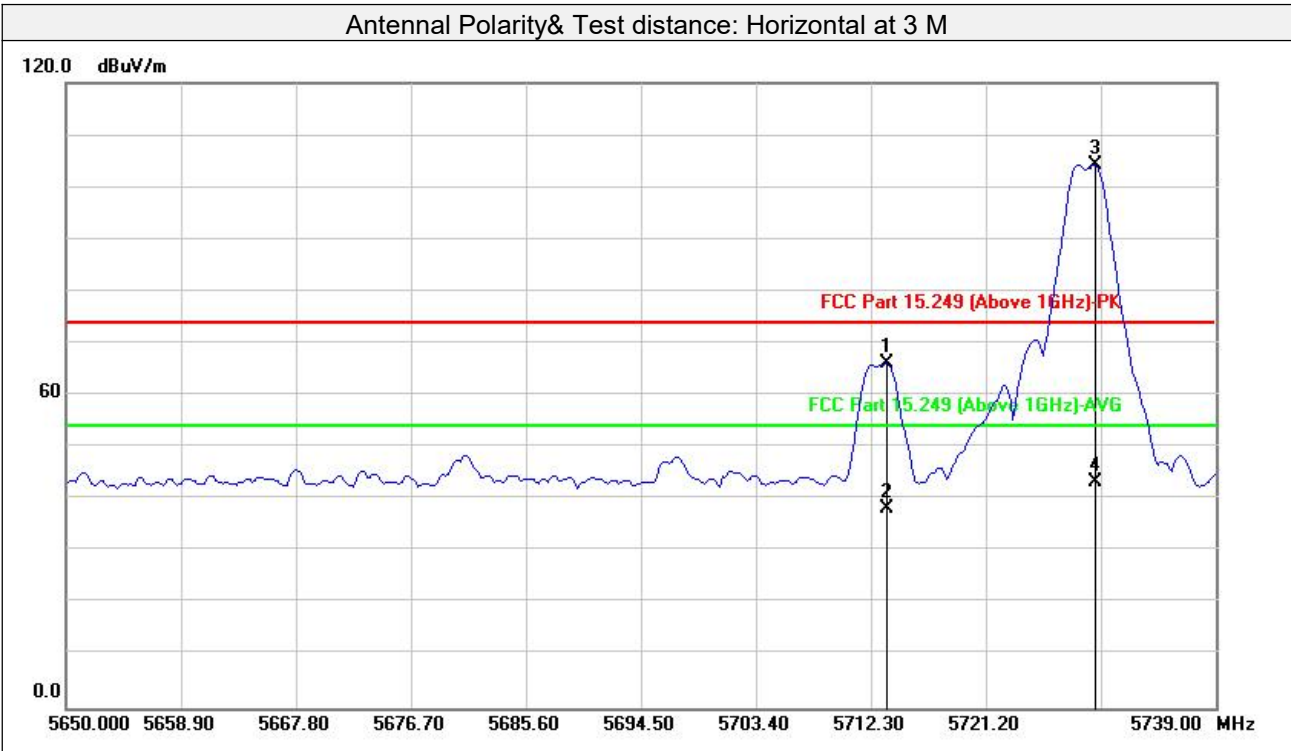
Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



Above 1GHz Data:

Test Mode	Lowest channel TX		
Test channel	Channel 1	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) & Quasi-peak (QP)	Tested By	Li JiaLing



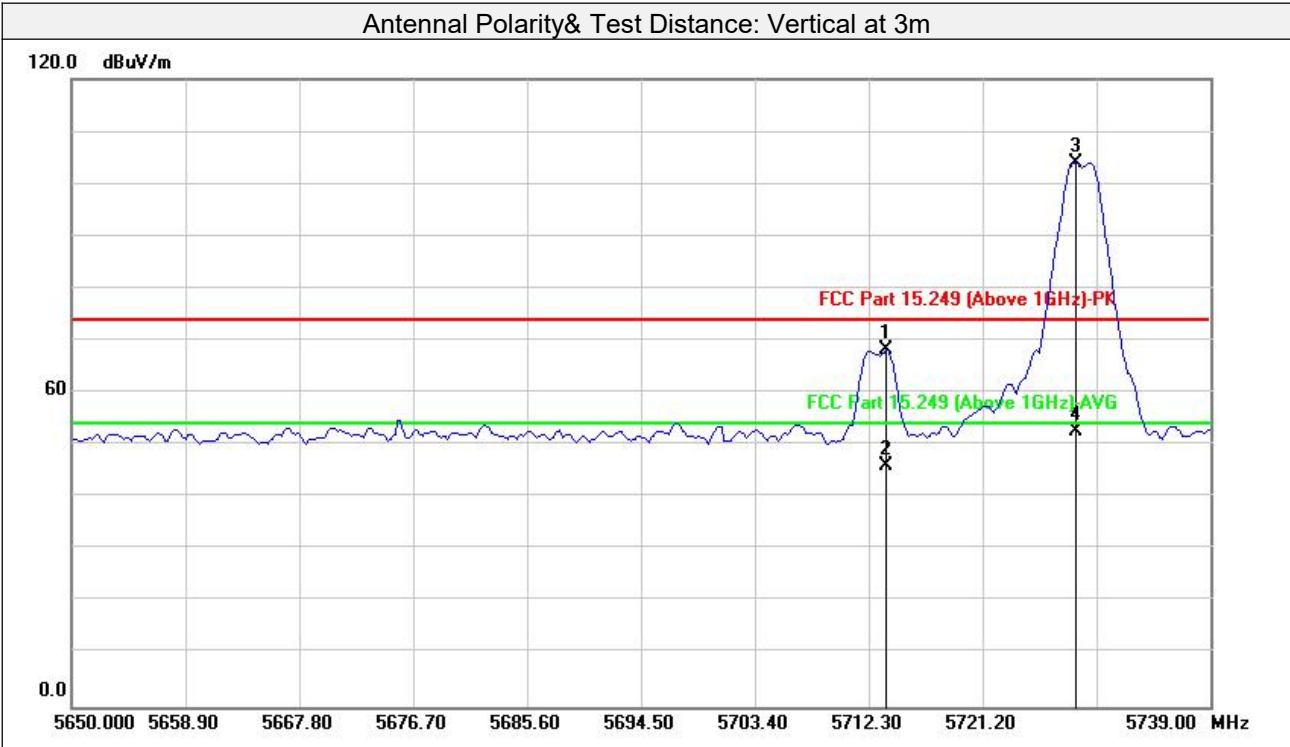
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5713.495	57.62	8.51	66.13	74.00	-7.87	peak	341	242
2	5713.495	29.73	8.51	38.24	54.00	-15.76	AVG	341	242
3	5729.725	95.59	8.54	104.13	114.00	-9.87	peak	341	242
4	5729.725	34.72	8.54	43.26	94.00	-50.74	AVG	341	242
5	11458.000	44.10	19.00	63.10	74.00	-10.90	peak	100	234
6	11458.000	26.36	19.00	45.36	54.00	-8.64	AVG	100	234
7	17187.000	38.46	27.87	66.33	74.00	-7.67	peak	100	154
8	17187.000	21.68	27.87	49.55	54.00	-4.45	AVG	100	154

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value
3. The other spurious emissions attenuated more than 20 dB below the permissible value is not required to be report



Test Mode	Low channel TX		
Test channel	Channel 1	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) & Average (AVG)	Tested By	Li JiaLing



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5713.673	59.77	8.51	68.28	74.00	-5.72	peak	101	176
2	5713.673	37.43	8.51	45.94	54.00	-8.06	AVG	101	176
3	5728.477	95.49	8.54	104.03	114.00	-9.97	peak	101	176
4	5728.477	44.24	8.54	52.78	94.00	-41.22	AVG	101	176
5	11458.000	43.03	19.00	62.03	74.00	-11.97	peak	100	227
6	11458.000	26.88	19.00	45.88	54.00	-8.12	AVG	100	227
7	17187.000	39.01	27.87	66.88	74.00	-7.12	peak	160	251
8	17187.000	22.36	27.87	50.23	54.00	-3.77	AVG	160	251

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value
3. The other spurious emissions attenuated more than 20 dB below the permissible value is not required to be report



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Test Mode	Mid channel TX		
Test channel	Channel 31	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) & Average (AVG)	Tested By	Li JiaLing

Antennal Polarity& Test Distance: Horizontal at 3m									
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5790.000	94.47	9.49	103.96	114.00	-10.04	peak	100	165
2	5790.000	32.84	9.49	42.33	94.00	-51.67	AVG	100	165
3	11580.000	43.13	19.09	62.22	74.00	-11.78	peak	100	200
4	11580.000	27.16	19.09	46.25	54.00	-7.75	AVG	100	200
5	17370.000	35.45	29.13	64.58	74.00	-9.42	peak	100	199
6	17370.000	20.42	29.13	49.55	54.00	-4.45	AVG	100	199

Antennal Polarity& Test Distance: Vertical at 3 M									
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5790.000	93.11	9.49	102.60	114.00	-11.4	peak	100	165
2	5790.000	40.06	9.49	49.55	94.00	-44.45	AVG	100	165
3	11580.000	43.06	19.09	62.15	74.00	-11.85	peak	100	200
4	11580.000	26.79	19.09	45.88	54.00	-8.12	AVG	100	200
5	17370.000	36.79	29.13	65.92	74.00	-8.08	peak	100	285
6	17370.000	20.92	29.13	50.05	54.00	-3.95	AVG	100	285

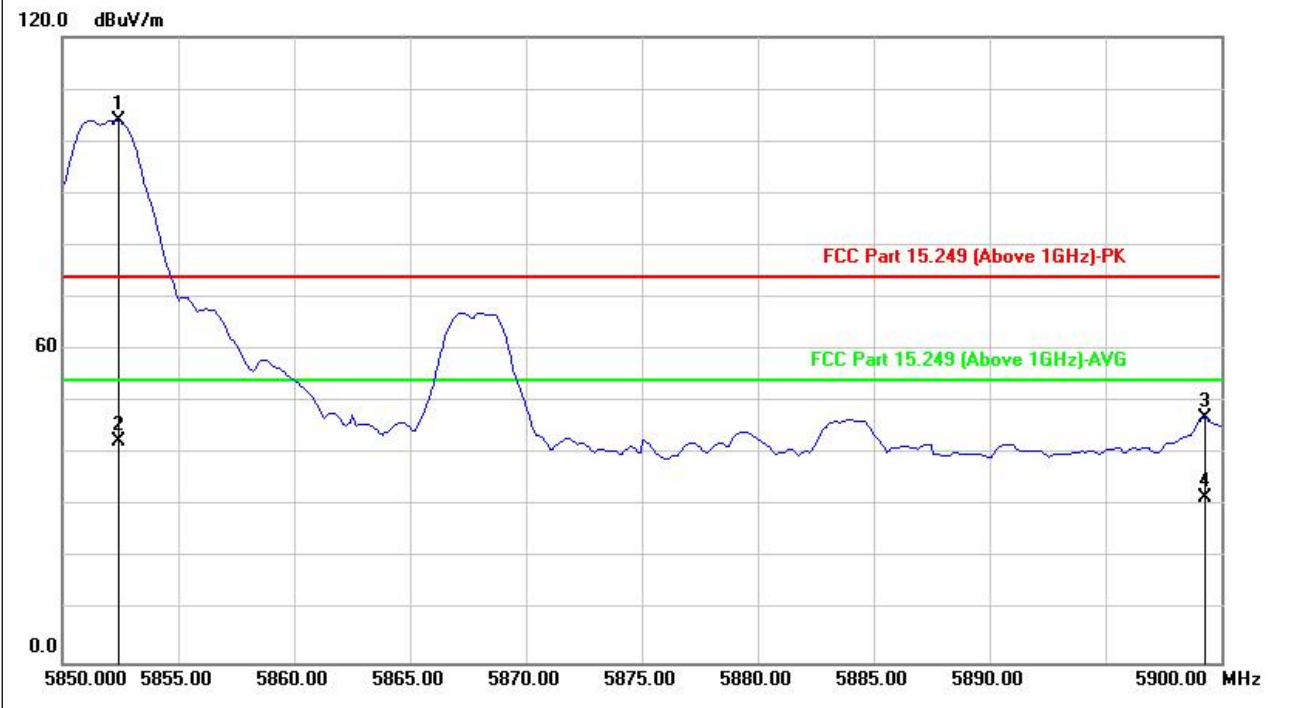
Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value
3. The other spurious emissions attenuated more than 20 dB below the permissible value is not required to be report



Test Mode	High channel TX		
Test channel	Channel 63	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) & Average (AVG)	Tested By	Li JiaLing

Antennal Polarity& Test distance: Horizontal at 3 M



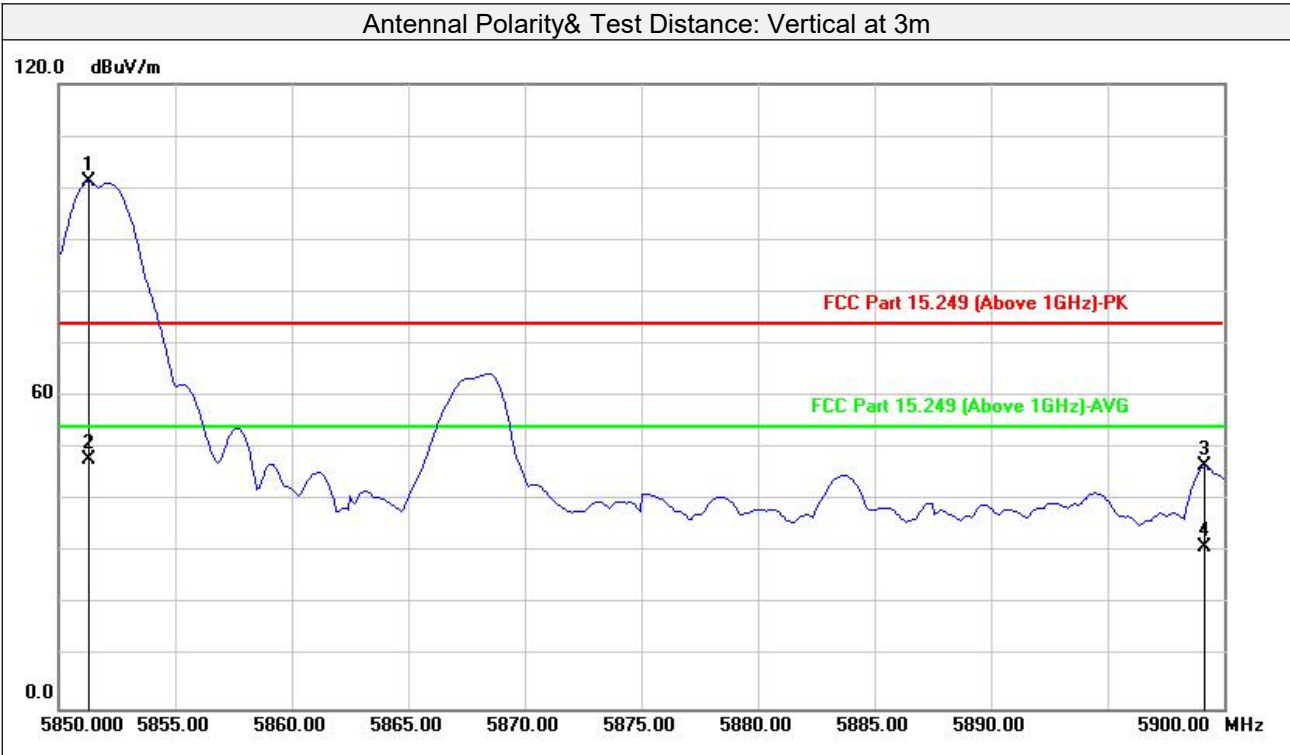
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5852.405	95.19	8.84	104.03	114.00	-9.97	peak	355	240
2	5852.405	33.56	8.84	42.40	94.00	-51.60	AVG	355	240
3	5899.299	38.00	8.94	46.94	74.00	-27.06	peak	355	240
4	5899.299	22.78	8.94	31.72	54.00	-22.28	AVG	355	240
5	11702.000	42.27	19.19	61.46	74.00	-12.54	peak	100	164
6	11702.000	27.36	19.19	46.55	54.00	-7.45	AVG	100	164
7	17553.000	30.17	30.38	60.55	74.00	-13.45	peak	100	233
8	17553.000	20.31	30.38	50.69	54.00	-3.31	AVG	100	233

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value
3. The other spurious emissions attenuated more than 20 dB below the permissible value is not required to be report



Test Mode	High channel TX		
Test channel	Channel 63	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Li JiaLing



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5851.303	92.37	8.84	101.21	114.00	-12.79	peak	100	165
2	5851.303	39.16	8.84	48.00	94.00	-46.00	AVG	100	165
3	5899.198	37.60	8.94	46.54	74.00	-27.46	peak	100	165
4	5899.198	22.14	8.94	31.08	54.00	-22.92	AVG	100	165
5	11702.000	43.82	19.19	63.01	74.00	-10.99	peak	100	232
6	11702.000	26.20	19.19	45.39	54.00	-8.61	AVG	100	232
7	17553.000	34.17	30.38	64.55	74.00	-9.45	peak	150	185
8	17553.000	19.77	30.38	50.15	54.00	-3.85	AVG	150	185

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value
3. The other spurious emissions attenuated more than 20 dB below the permissible value is not required to be report

3.3 20dB BANDWIDTH MEASUREMENT

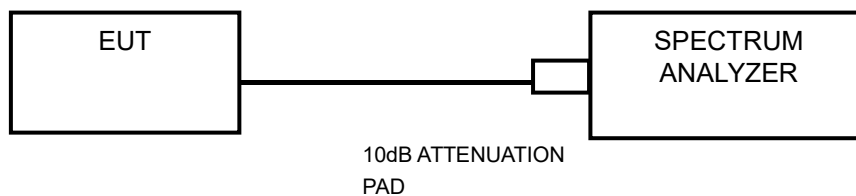
3.3.1 Limits

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.

3.3.2 Measurement 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.

3.3.3 Test setup





3.3.4 Test result

Test Mode	Channel	Frequency (MHz)	20dB Occupied Bandwidth (MHz)	Verdict
TX	1	5729	4.04	Pass
	31	5790	4.09	Pass
	63	5851	4.10	Pass

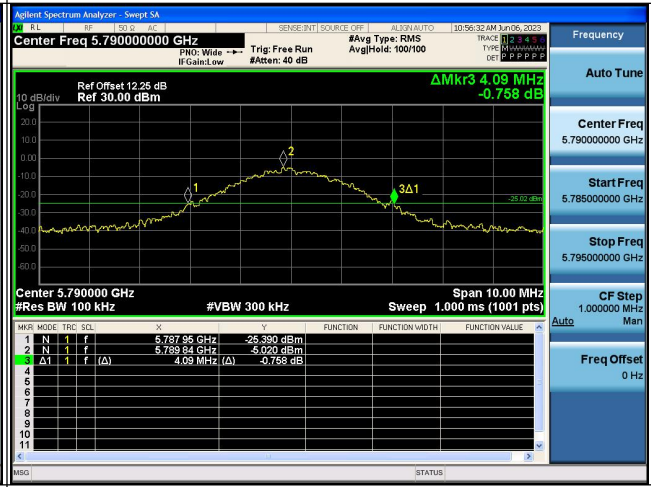


20dB Occupied Bandwidth (MHz)

Lowest Channel



Middle Channel



Highest Channel



/

/

3.4 99% OCCUPIED BANDWIDTH MEASUREMENT

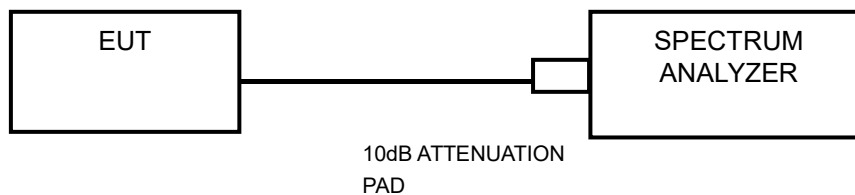
3.4.1 Limits

Only Report

3.4.2 Measurement 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. Repeat above procedures until all frequencies measured were complete.

3.4.3 Test setup





3.4.4 Test result

Test Mode	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Verdict
TX	1	5729	3.6380	Pass
	31	5790	3.7490	Pass
	63	5851	3.416	Pass



99% Occupied Bandwidth (MHz)





4 PHOTOGRAPHS OF TEST SETUP

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



5 PHOTOGRAPHS OF THE EUT

Please refer to the attached file (External Photos report and Internal Photos).



Important

- (1) The test report is valid without the official stamp of CVC;
- (2) Any part photocopies of the test report are forbidden without the written permission from CVC;
- (3) The test report is invalid without the signatures of Approval and Reviewer;
- (4) The test report is invalid if altered;
- (5) Objections to the test report must be submitted to CVC within 15 days.
- (6) Generally, commission test is responsible for the tested samples only.
- (7) As for the test result “-” or “N” means “not applicable”, “/” means “not test”, “P” means “pass” and “F” means “fail”

The test data and test results given in this test report should only be used for purposes of scientific research, teaching and internal quality control when the CMA symbol is not presented.

CVC Testing Technology Co., Ltd.

Address: No.3, Tiantaiyi Road, Kaitai Avenue, Science City, Guangzhou, China

Post Code: 510663

Tel: 020-32293888

FAX: 020-32293889

E-mail: office@cvc.org.cn