



■ Report No.: DDT-R21090105-1E01

■ Issued Date: Sep. 16, 2021

# FCC CERTIFICATION TEST REPORT

## FOR

<b>Applicant</b>	:	Nissin Industries Ltd.
<b>Address</b>	:	Flat B, 13/F., North Point Ind. Bldg., 499 King's Rd., North Point, HK
<b>Equipment Under Test</b>	:	Shoe mount flash
<b>Model No.</b>	:	MG60
<b>Trade Mark</b>	:	N/A
<b>FCC ID</b>	:	2AD52MG60
<b>Manufacturer</b>	:	Nissin Industries Ltd.
<b>Address</b>	:	Flat B, 13/F., North Point Ind. Bldg., 499 King's Rd., North Point, HK

**Issued By: Dongguan Dongdian Testing Service Co., Ltd.**

**Add.: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park,  
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# REPORT

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## Test Report Declare

<b>Applicant</b>	:	Nissin Industries Ltd.
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<b>Manufacturer</b>	:	Nissin Industries Ltd.
<b>Address</b>	:	Flat B, 13/F., North Point Ind. Bldg., 499 King's Rd., North Point, HK

**Test Standard Used:**

FCC Rules and Regulations Part 15 Subpart B

**Test Procedure Used:**

ANSI C63.4-2014, ANSI C63.4a-2017

**We Declare:**

The equipment described above is tested by Dongguan Dongdian Testing Service Co., Ltd. and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Dongguan Dongdian Testing Service Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

**After test and evaluation, our opinion is that the equipment provided for test compliance with the requirement of the above FCC standard.**

<b>Report No.:</b>	DDT-R21090105-1E01		
<b>Date of Receipt:</b>	Sep. 08, 2021	<b>Date of Test:</b>	Sep. 08, 2021 ~ Sep. 15, 2021

**Prepared By:**



David Gao/Engineer

**Approved By:**



Damon Hu/EMC Manager

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Dongguan Dongdian Testing Service Co., Ltd.

## Revision History

Rev.	Revisions	Issue Date	Revised By
---	Initial issue	Sep. 16, 2021	

## 1. Summary of Test Results

Description of Test Item	Standard	Result
Conducted Disturbance at AC Mains Terminals	FCC Rules and Regulations Part 15 Subpart B, ANSI C63.4-2014, ANSI C63.4a-2017	N/A
Radiated Disturbance Test	FCC Rules and Regulations Part 15 Subpart B, ANSI C63.4-2014, ANSI C63.4a-2017	PASS

Note: N/A is an abbreviation for Not Applicable, and means this item is not applicable for this device.

## 2. General Test Information

### 2.1. Description of EUT

EUT* Name	:	Shoe mount flash
Model Number	:	MG60
EUT Function Description	:	Please reference user manual of this device
Power Supply	:	6-14.8V--- (4 x 14500 Li-ion or size AA rechargeable batteries)
EUT Class	:	Class B
Maximum Work Frequency	:	2476 MHz
Serial Number	:	N/A

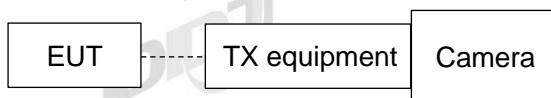
Note: EUT is the abbreviation of equipment under test.

### 2.2. Accessories of EUT

Description of Accessories	Manufacturer	Model Number	Description	Remark
N/A	N/A	N/A	N/A	N/A

### 2.3. Block diagram EUT configuration for test

For mode 1: Working mode



Test mode description: The camera is connected to the EUT control flash.

Note: According exploration test, adjust the volume of EUT radiated the maximum emissions.

### 2.4. Decision of final test mode

According pre-test, the worst test modes were reported as below.

Radiated Emission	Mode 1: Working mode
-------------------	----------------------

### 2.5. Deviations of Test Standard

No Deviation.

### 2.6. Test environment conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature range:	21-25°C
Humidity range:	40-75%
Pressure range:	86-106kPa

## 2.7. Test laboratory

Dongguan Dongdian Testing Service Co., Ltd.

Add.: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, China, 523808

Tel.: +86-0769-38826678, <http://www.dgddt.com>, Email: [ddt@dgddt.com](mailto:ddt@dgddt.com)

CNAS Accreditation No. L6451; A2LA Accreditation Number: 3870.01

FCC Designation Number: CN1182, Test Firm Registration Number: 540522

Innovation, Science and Economic Development Canada Site Registration Number: 10288A

Conformity Assessment Body identifier: CN0048

VCCI facility registration number: C-20087, T-20088, R-20123, G-20118

## 2.8. Measurement uncertainty

Test Item	Uncertainty
Conducted disturbance at mains terminals	3.32dB (150KHz-30MHz)
Uncertainty for telecommunication port conduction emission test	AAN with aLCL = 55 ... 40 dB c: 3.64dB AAN with aLCL = 65 ... 50 dB c: 4.08dB AAN with aLCL = 75 ... 60 dB c: 4.56dB
Uncertainty for Radiation Emission test (30MHz-1GHz)	4.70 dB (Antenna Polarize: V) 4.84 dB (Antenna Polarize: H)
Uncertainty for Radiation disturbance test (1GHz to 40GHz)	4.10dB(1-6GHz) 4.40dB (6GHz-18Gz) 4.60dB (18GHz-40Gz)
Temperature	0.4°C
Humidity	2%

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

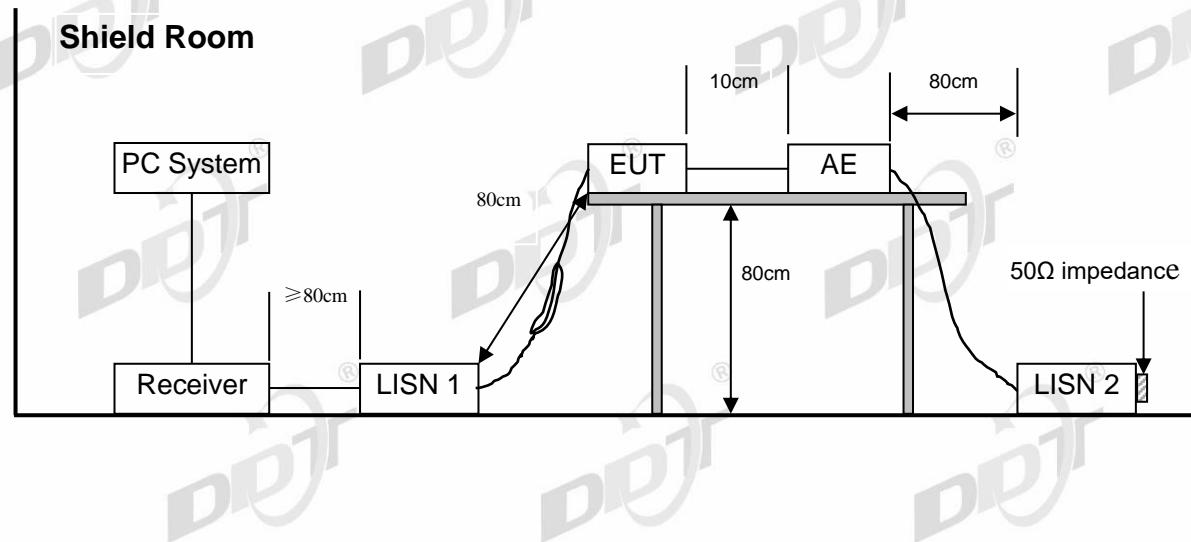
### 3. Conducted Emission Test Report

#### 3.1. Test equipment

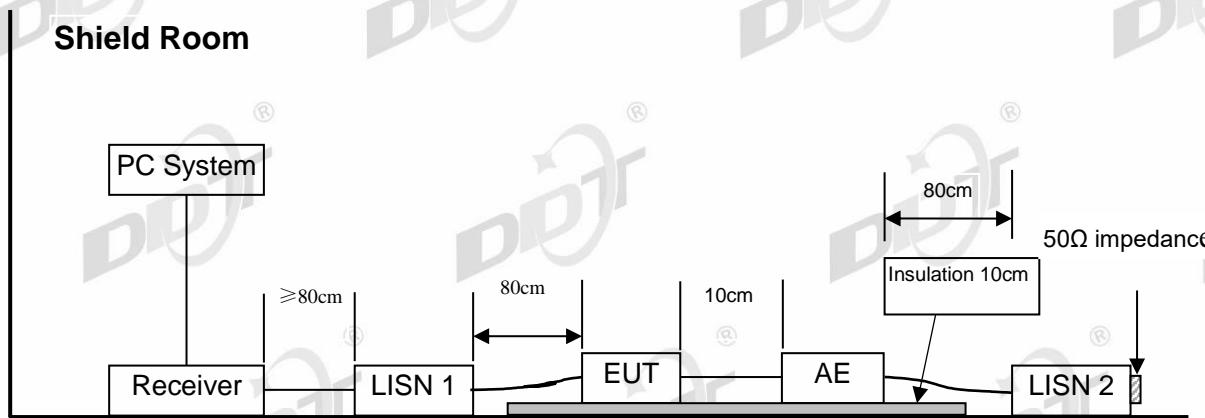
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
<b><input type="checkbox"/> 1# Conducted emission</b>					
Test Receiver	R&S	ESCI	100551	Sep. 24, 2020	1 Year
LISN 1	R&S	ENV216	101109	Sep. 28, 2020	1 Year
LISN 2	R&S	ESH2-Z5	100309	Sep. 28, 2020	1 Year
Pulse Limiter	R&S	ESH3-Z2	101242	Sep. 24, 2020	1 Year
CE Cable 1	HUBSER	N/A	W10.01	Sep. 24, 2020	1 Year
LISN 3	SCHWARZBECK	NSLK 8163	00017	Oct. 15, 2020	1 Year
Test software	Audix	E3	V 6.11111b	N/A	N/A
<b><input type="checkbox"/> 2# Conducted emission</b>					
Test Receiver	R&S	ESCI	101028	Oct. 15, 2020	1 Year
LISN 1	R&S	ENV216	101170	Sep. 28, 2020	1 Year
Pulse Limiter	R&S	KH43101	4310118015 68-12#	Jun. 01, 2021	1 Year
CE Cable 2	HUBSER	N/A	W11.02	Sep. 24, 2020	1 Year
Test software	Audix	E3	V 6.11111b	N/A	N/A

#### 3.2. Block diagram of test setup

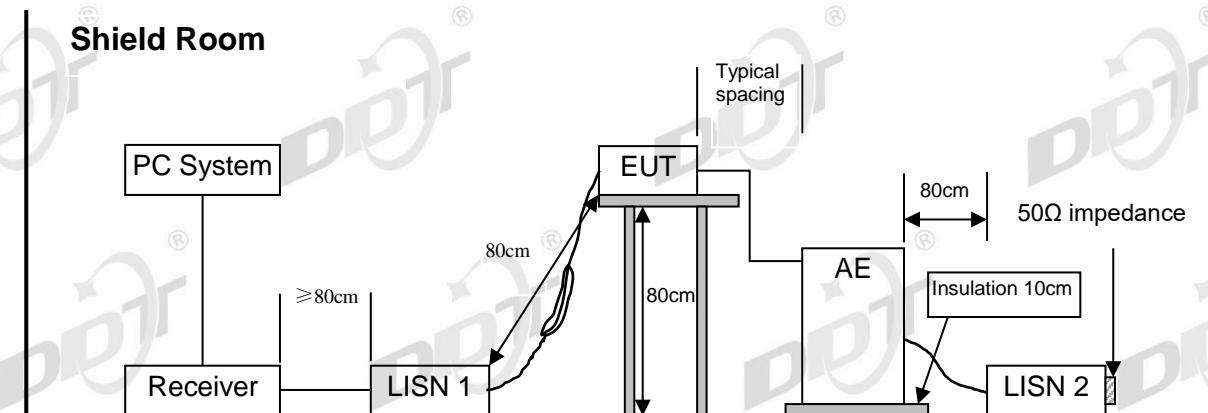
For table-top equipment



For floor standing equipment



For combinations equipment



### 3.3. Limits

Class A

Frequency	Quasi-Peak Level dB(µV)	Average Level dB(µV)
150kHz ~ 500kHz	79	66
500kHz ~ 30MHz	73	60

Class B

Frequency	Quasi-Peak Level dB(µV)	Average Level dB(µV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Notes: 1. \* Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

### 3.4. Assistant equipment used for test

Assistant Equipment	Manufacturer	Model Number	Description	Other
N/A	N/A	N/A	N/A	N/A

### 3.5. Test procedure

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80cm above the ground plane.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.

All support equipment power received from a second LISN.

Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in clause 2.3 were scanned during the preliminary test.

After the preliminary scan, we found the test mode producing the highest emission level.

The EUT configuration and worse cable configuration of the above highest emission levels were recorded for reference of the final test.

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Neutral and Line, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.

The bandwidth of test receiver is set at 9 kHz.

### 3.6. Test result

Not applicable, Since the EUT is battery-powered.

## 4. Radiated Emissions Test

### 4.1. Test equipment

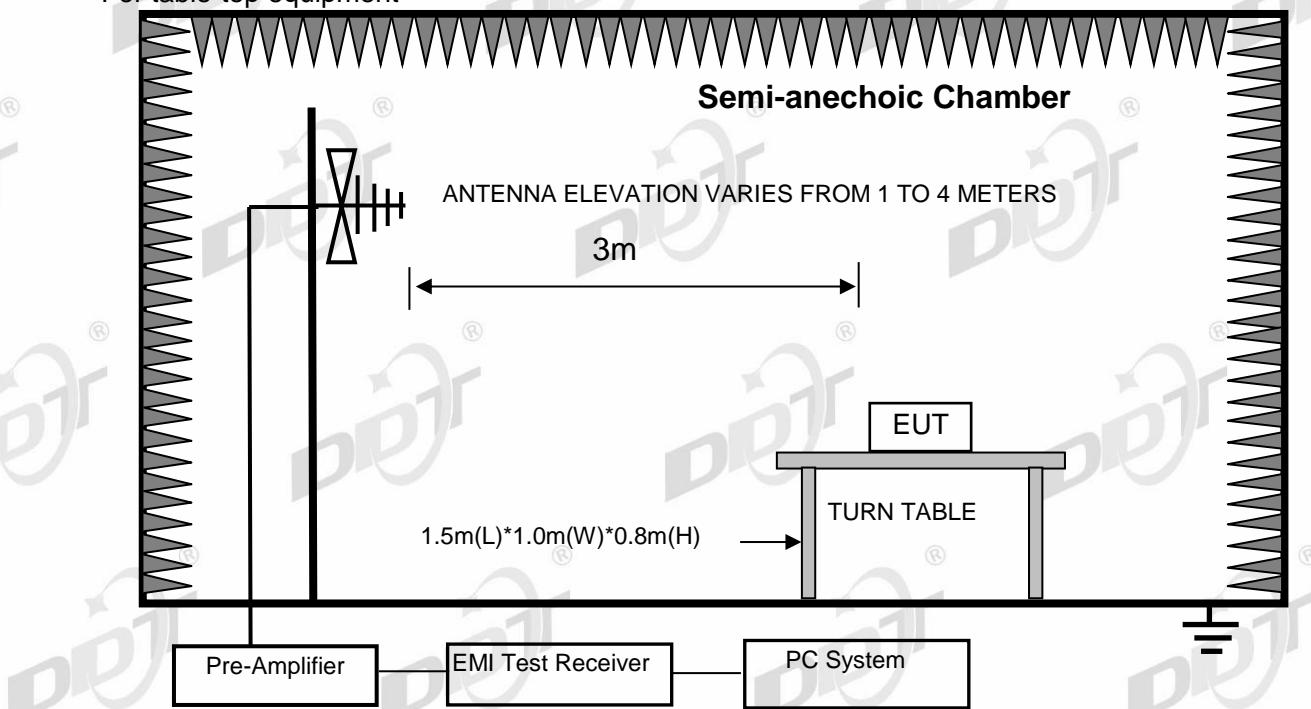
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
<b>☒ 1# Radiation chamber</b>					
EMI Test Receiver	R&S	ESU8	100316	Sep. 02, 2021	1 Year
Spectrum analyzer	Agilent	E4447A	MY50180031	Jun. 01, 2021	1 Year
Trilog Broadband Antenna	Schwarzbeck	VULB9163	9163-462	Nov. 13, 2020	1 Year
Active Loop antenna	Schwarzbeck	FMZB-1519	1519-038	Nov. 18, 2020	1 Year
Double Ridged Horn Antenna	R&S	HF907	100276	Nov. 13, 2020	1 Year
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	790	May 08, 2021	1 Year
Pre-amplifier	A.H.	PAM-0118	360	Sep. 28, 2020	1 Year
Pre-amplifier	TRLA-MW	TRLA-0040G35	101303	Sep. 28, 2020	1 Year
RF Cable	HUBSER	CP-X2+ CP-X1	W11.03+ W12.02	Sep. 24, 2020	1 Year
RF Cable	N/A	5m+6m+1m	06270619	Sep. 02, 2021	1 Year
MI Cable	HUBSER	C10-01-01-1M	1091629	Sep. 30, 2020	1 Year
Test software	Audix	E3	V 6.11111b	N/A	N/A

Notes. N/A means Not applicable.

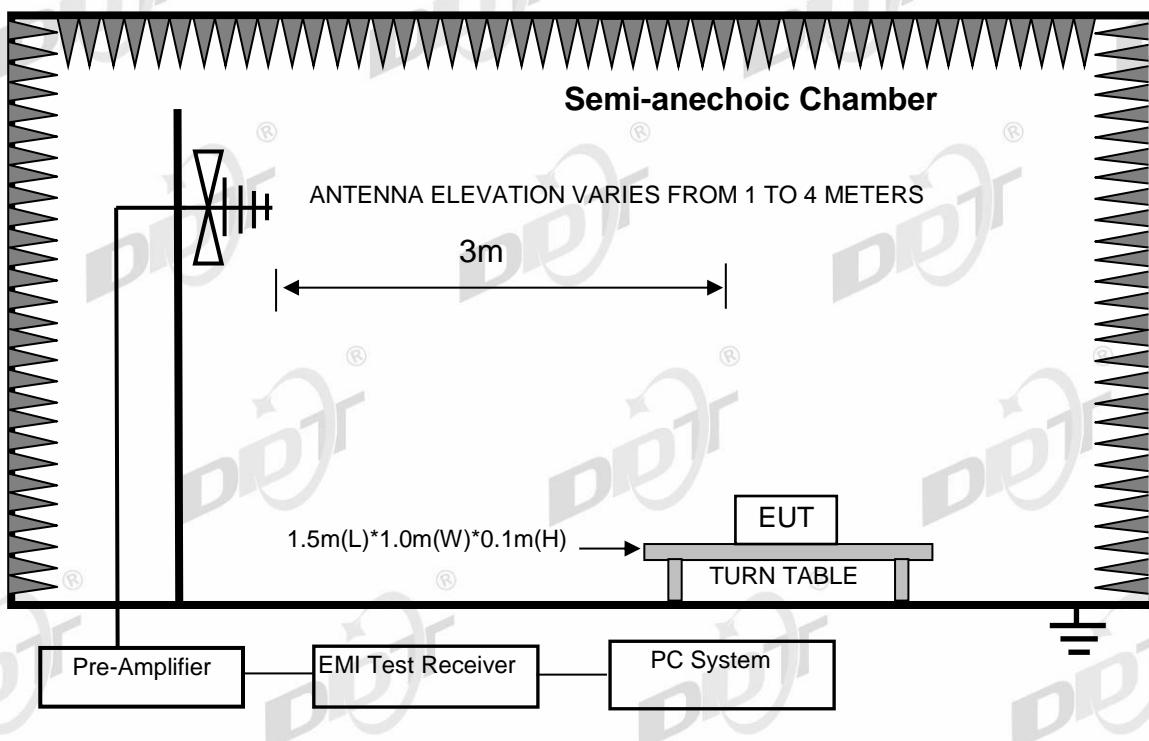
### 4.2. Block diagram of test setup

Below 1 GHz

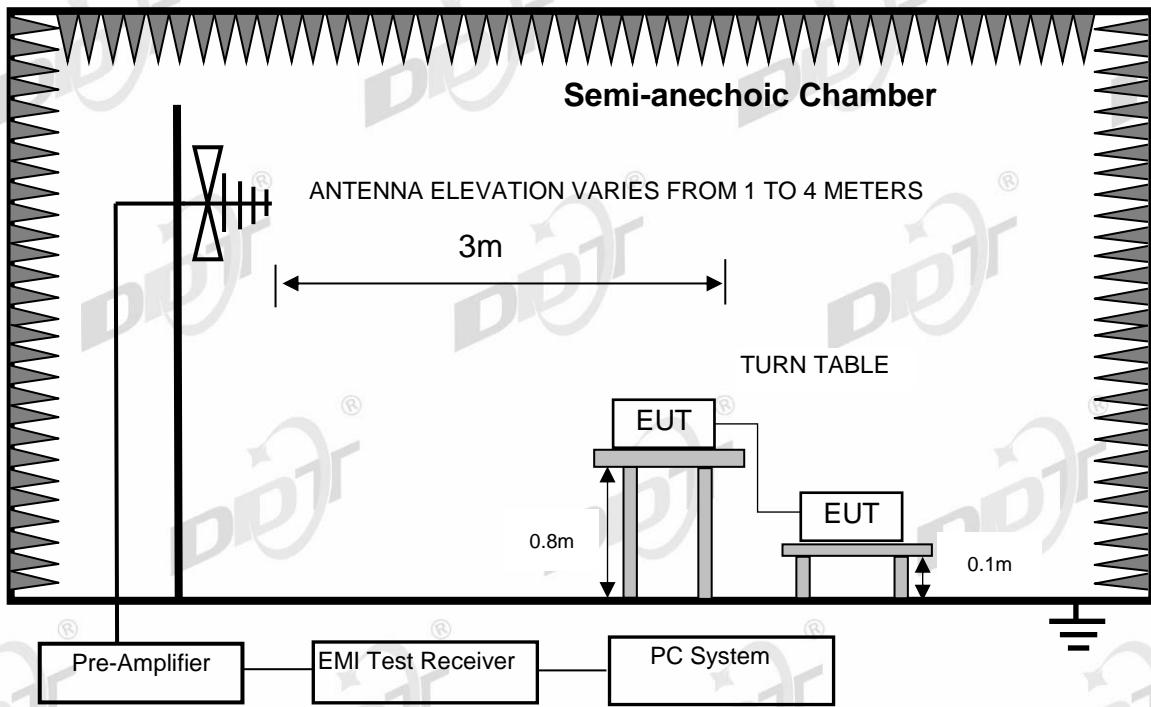
For table-top equipment



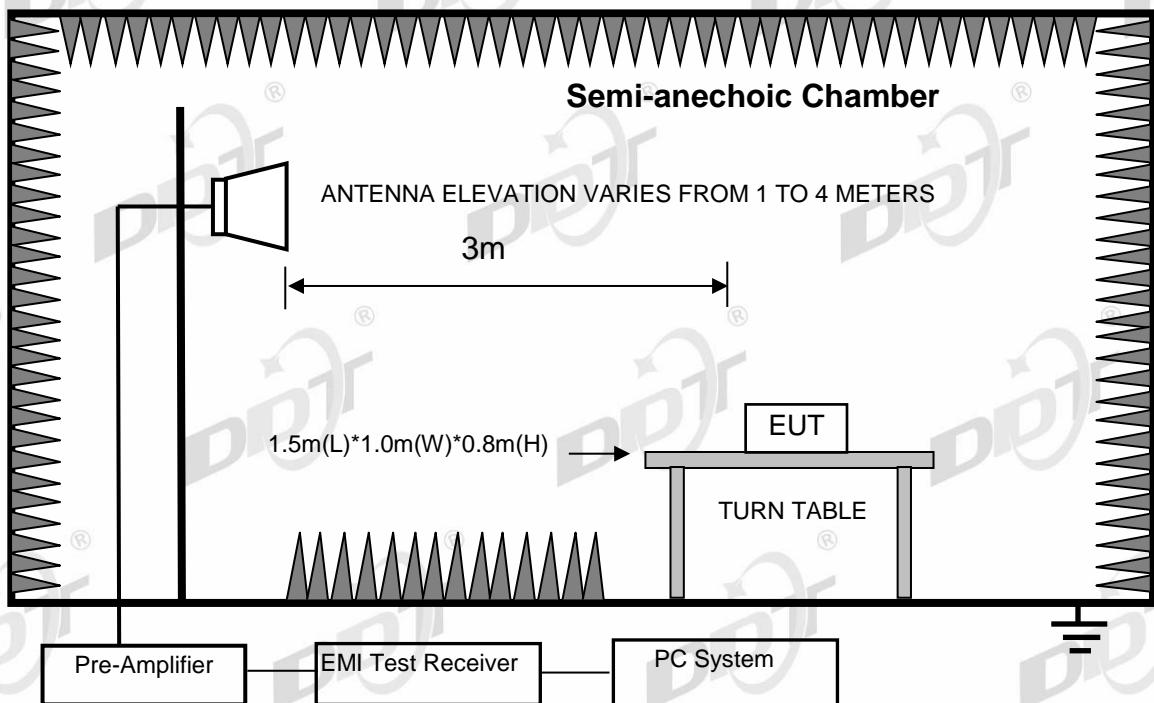
For floor standing equipment



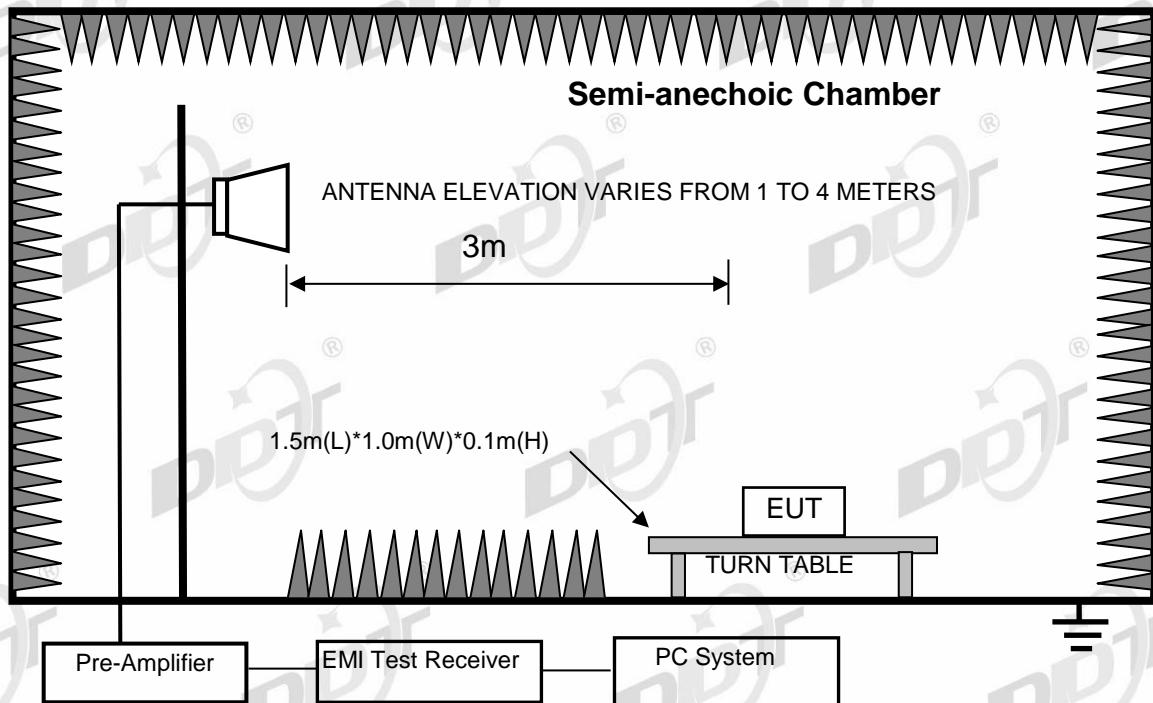
For combinations equipment



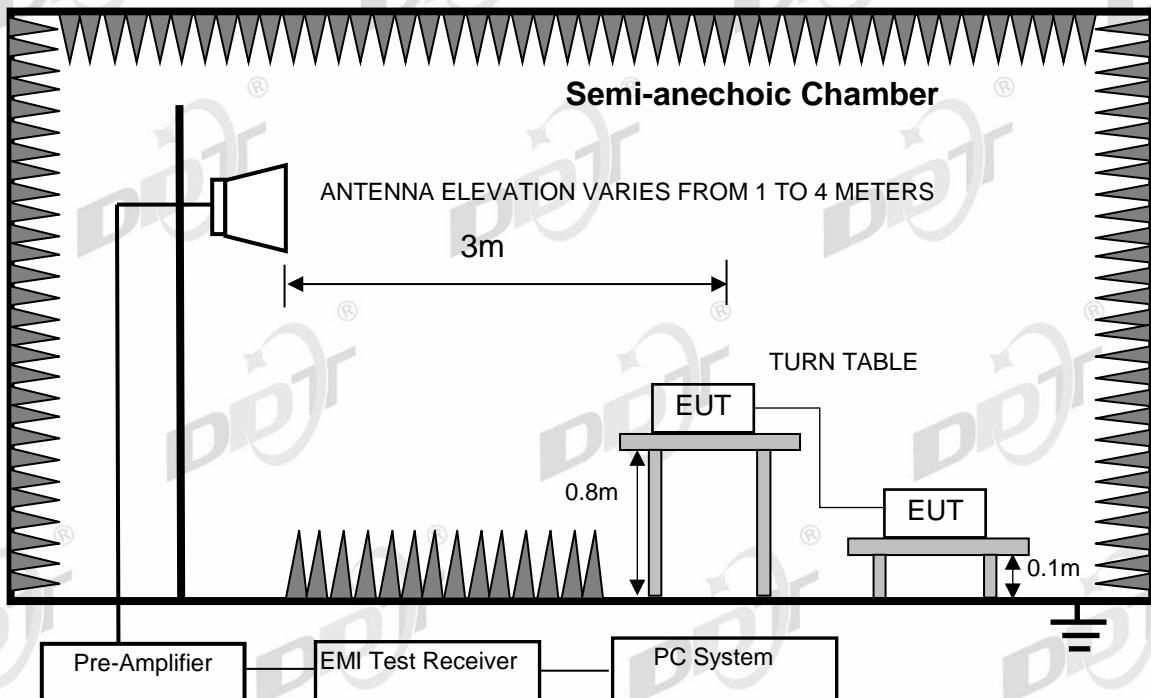
Above 1 GHz  
For table-top equipment



For floor standing equipment



For combinations equipment



#### 4.3. Limits

Class A

Frequency (MHz)	Distance (Meters)	Field Strengths Limits dB( $\mu$ V/m)
30--88	3	49.5
88--216	3	54
216--960	3	57
960-1000	3	60
Above 1000	3	80(Peak), 60(Average)

Class B

Frequency (MHz)	Distance (Meters)	Field Strengths Limits dB( $\mu$ V/m)
30--88	3	40.0
88--216	3	43.5
216--960	3	46.0
960-1000	3	54.0
Above 1000	3	74(Peak), 54(Average)

Note: (1) The smaller limit shall apply at the cross point between two frequency bands.

#### 4.4. Assistant equipment used for test

Assistant Equipment	Manufacturer	Model Number	Description	Other
TX equipment	Nissin	Air 10s	N/A	Input: 3V---
Camera	Nikon	D3400	N/A	Input: 7.2/9V---2.5A

#### 4.5. Test procedure

##### Procedure of Preliminary Test

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80cm above the ground plane.

Configuration EUT to simulate typical usage as described in clause 2.3 and test equipment as described in clause 4.2 of this report.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.

Mains cables, telephone lines or other connections to auxiliary equipment located outside the test are shall drape to the floor, be fitted with ferrite clamps or ferrite tubes placed on the floor at the point where the cable reaches the floor and then routed to the place where they leave the turntable. No extension cords shall be used to mains receptacle.

The antenna was placed at 3 meter away from the EUT as stated in ANSI C63.4. The antenna connected to the Spectrum Analyzer via a cable and at times a pre-amplifier would be used.

The Analyzer / Receiver quickly scanned from 30MHz to 40GHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

The test mode(s) described in clause 2.3 were scanned during the preliminary test:

After the preliminary scan, we found the test mode producing the highest emission level. The EUT and cable configuration, antenna position, polarization and turntable position of the above highest emission level were recorded for the final test.

##### Procedure of Final Test

EUT and support equipment were set up on the turntable as per the configuration with highest emission level in the preliminary test.

The Analyzer / Receiver scanned from 30MHz to 40GHz. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

Recorded at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and only Q.P. reading is presented.

For emissions from 30MHz to 1GHz, Quasi-Peak values were measured with EMI Receiver and the bandwidth of Receiver is 120 kHz.

For emissions above 1GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1MHz VBW is set at 3MHz.

The test data of the worst-case condition(s) was recorded.

#### 4.6. Test result

**PASS. (See below detailed test result)**

Note: All emissions not reported below are too low against the prescribed limits.

# TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

D:\2021 RE 1# Report data\Q21090105-1E\RE.EM6

Test Date : 2021-09-09

Tested By : Youbin He

EUT : Shoe mount flash

Model Number : MG60

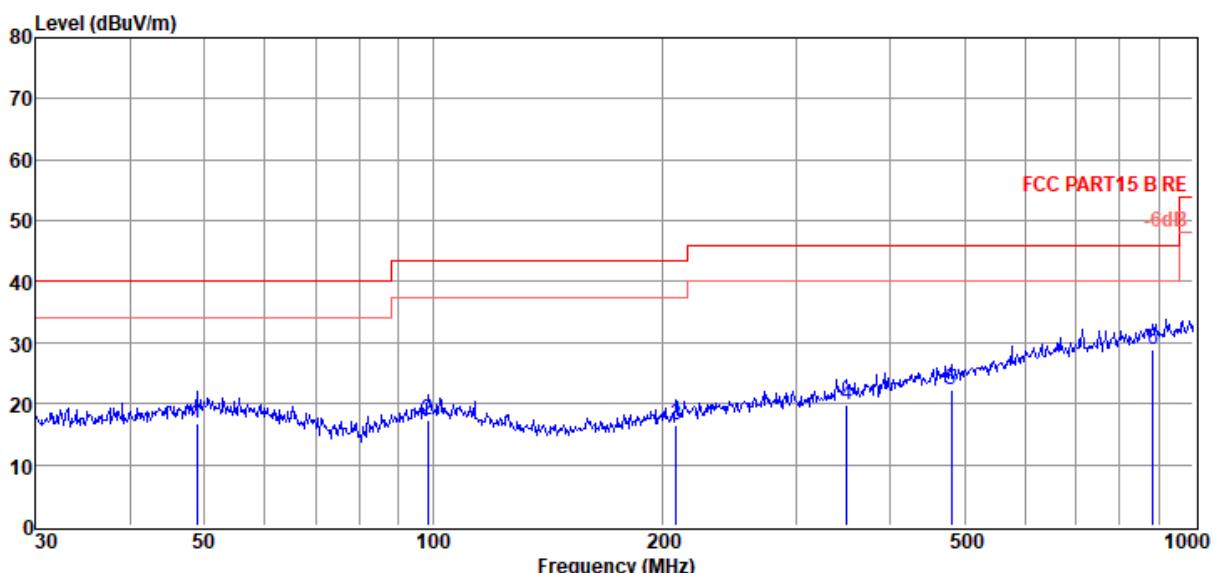
Power Supply : Battery

Test Mode : Working mode

Condition : Temp:24.3°C,Humi:53.7%,Press:101.4kPa Antenna/Distance : 2020 VULB 9163 1#/3m/HORIZONTAL

Memo :

Data: 3



Item (Mark)	Freq. (MHz)	Read Level (dB $\mu$ V)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dB $\mu$ V/m)	Limit Line (dB $\mu$ V/m)	Over Limit (dB)	Detector	Polarization
1	48.84	-0.23	13.54	3.56	16.87	40.00	-23.13	QP	HORIZONTAL
2	98.49	0.62	12.87	3.87	17.36	43.50	-26.14	QP	HORIZONTAL
3	208.58	0.71	11.42	4.37	16.50	43.50	-27.00	QP	HORIZONTAL
4	350.48	0.42	14.65	4.86	19.93	46.00	-26.07	QP	HORIZONTAL
5	480.53	0.09	17.03	5.24	22.36	46.00	-23.64	QP	HORIZONTAL
6	884.50	0.96	21.82	6.21	28.99	46.00	-17.01	QP	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

# TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

D:\2021 RE 1# Report data\Q21090105-1E\RE.EM6

Test Date : 2021-09-09

Tested By : Youbin He

EUT : Shoe mount flash

Model Number : MG60

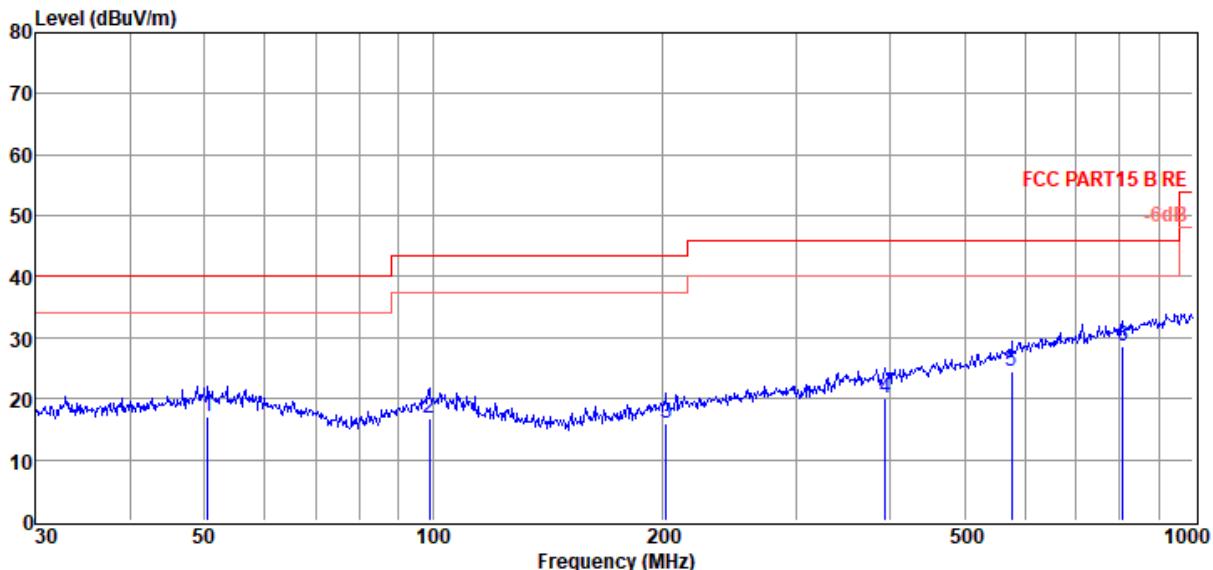
Power Supply : Battery

Test Mode : Working mode

Condition : Temp:24.3°C,Humi:53.7%,Press:101.4kPa Antenna/Distance : 2020 VULB 9163 1#/3m/VERTICAL

Memo :

Data: 4



Item (Mark)	Freq. (MHz)	Read Level (dB $\mu$ V)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dB $\mu$ V/m)	Limit Line (dB $\mu$ V/m)	Over Limit (dB)	Detector	Polarization
1	50.59	-0.14	13.62	3.57	17.05	40.00	-22.95	QP	VERTICAL
2	98.83	-0.16	12.92	3.87	16.63	43.50	-26.87	QP	VERTICAL
3	202.81	0.35	11.27	4.34	15.96	43.50	-27.54	QP	VERTICAL
4	393.47	-0.64	15.66	4.99	20.01	46.00	-25.99	QP	VERTICAL
5	576.64	0.40	18.47	5.50	24.37	46.00	-21.63	QP	VERTICAL
6	807.43	1.70	20.89	6.03	28.62	46.00	-17.38	QP	VERTICAL

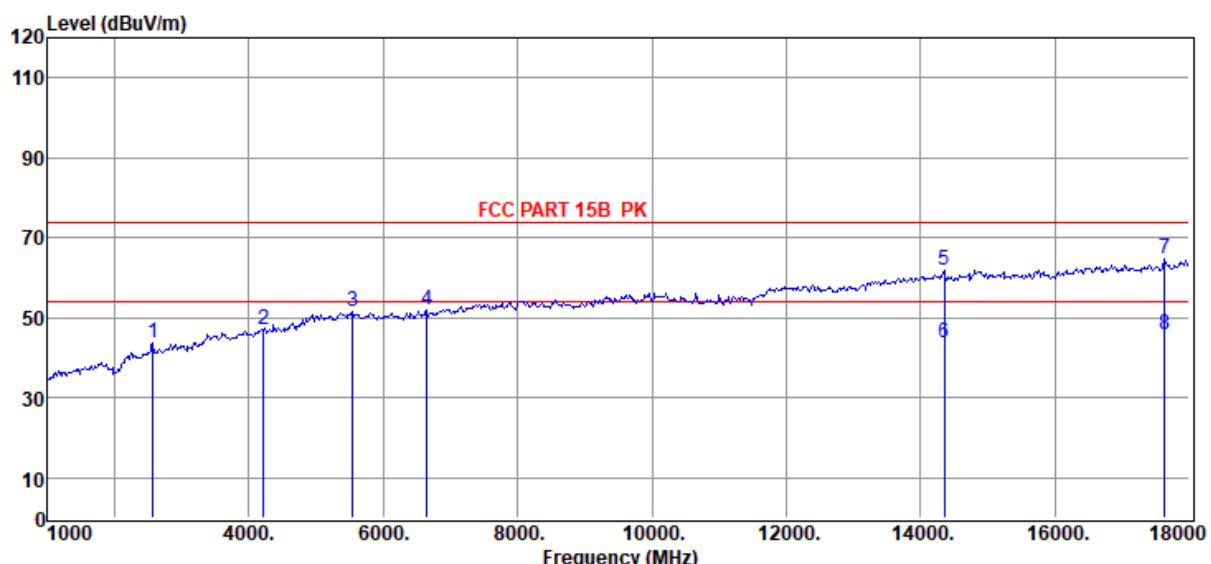
Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

# TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber 1# **Tested By** : Youbin He  
**Test Date** : 2021-09-10 **Model Number** : MG60  
**EUT** : Shoe mount flash **Test Mode** : Working mode  
**Power Supply** : Battery  
**Condition** : Temp:23.8°C,Humi:50.4%,Press:101.4kPa **Antenna/Distance** : 2020 HF907/3m/HORIZONTAL  
**Memo** :  
Data: 3



Item (Mark)	Freq. (MHz)	Read Level (dB $\mu$ V)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dB $\mu$ V/m)	Limit Line (dB $\mu$ V/m)	Over Limit (dB)	Detector	Polarization
1	2564.00	53.75	29.39	43.31	3.99	43.82	74.00	-30.18	Peak	HORIZONTAL
2	4213.00	52.67	33.11	43.81	5.19	47.16	74.00	-26.84	Peak	HORIZONTAL
3	5539.00	53.98	34.72	43.37	6.23	51.56	74.00	-22.44	Peak	HORIZONTAL
4	6644.00	52.82	35.62	43.17	6.64	51.91	74.00	-22.09	Peak	HORIZONTAL
5	14345.00	52.95	39.98	42.22	11.01	61.72	74.00	-12.28	Peak	HORIZONTAL
6	14345.00	34.95	39.98	42.22	11.01	43.72	54.00	-10.28	Average	HORIZONTAL
7	17626.00	52.92	43.58	42.39	10.57	64.68	74.00	-9.32	Peak	HORIZONTAL
8	17626.00	33.92	43.58	42.39	10.57	45.68	54.00	-8.32	Average	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.  
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

# TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

D:\2021 RE 1# Report data\Q21090105-1E\20210910 RE-H.EM6

Test Date : 2021-09-10

Tested By : Youbin He

EUT : Shoe mount flash

Model Number : MG60

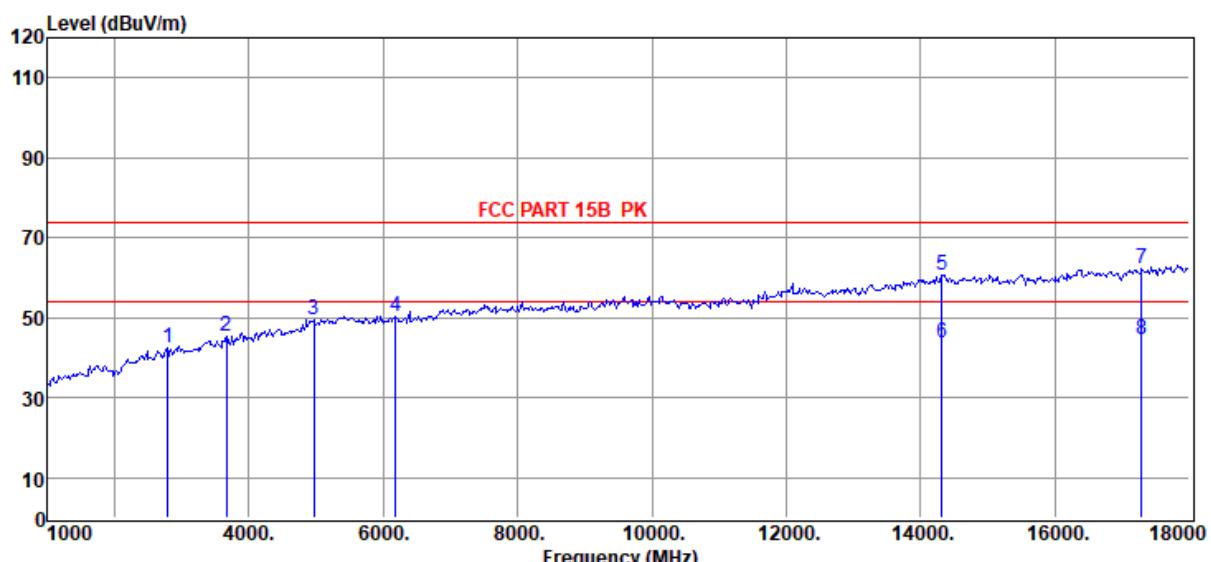
Power Supply : Battery

Test Mode : Working mode

Condition : Temp:23.8°C,Humi:50.4%,Press:101.4kPa Antenna/Distance : 2020 HF907/3m/VERTICAL

Memo :

Data: 4



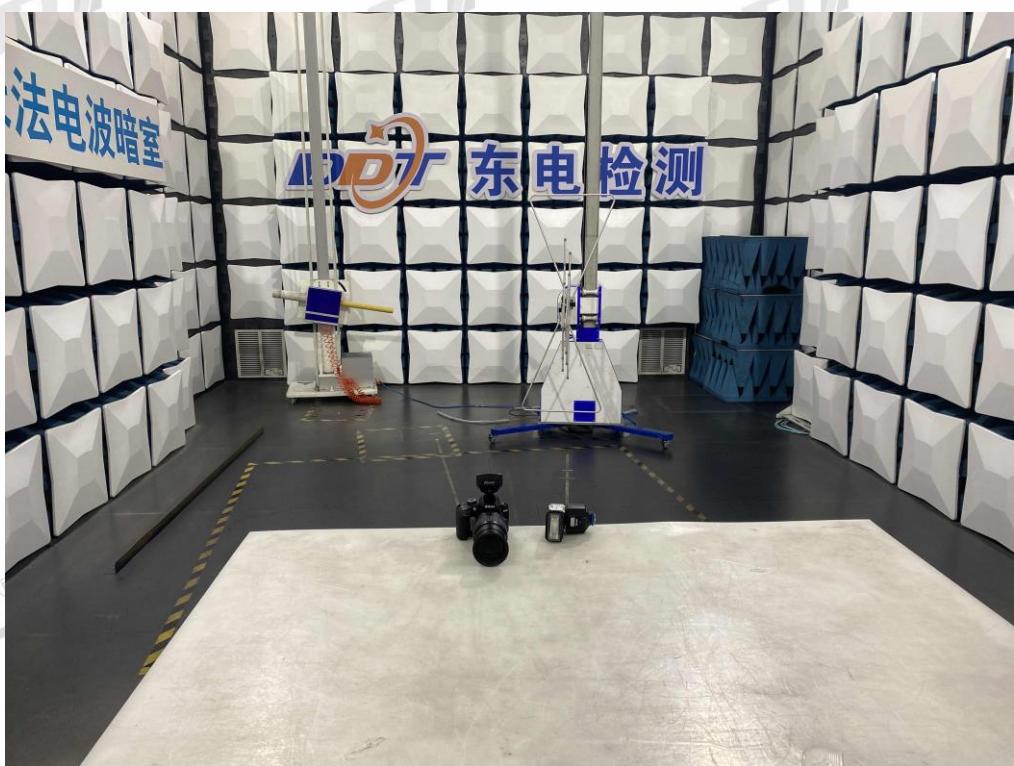
Item (Mark)	Freq. (MHz)	Read Level (dB $\mu$ V)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dB $\mu$ V/m)	Limit Line (dB $\mu$ V/m)	Over Limit (dB)	Detector	Polarization
1	2785.00	51.75	30.03	43.52	4.14	42.40	74.00	-31.60	Peak	VERTICAL
2	3669.00	52.46	32.15	43.91	4.82	45.52	74.00	-28.48	Peak	VERTICAL
3	4961.00	52.86	34.43	43.23	5.63	49.69	74.00	-24.31	Peak	VERTICAL
4	6185.00	51.94	35.19	43.40	6.67	50.40	74.00	-23.60	Peak	VERTICAL
5	14311.00	51.91	39.95	42.25	11.03	60.64	74.00	-13.36	Peak	VERTICAL
6	14311.00	34.91	39.95	42.25	11.03	43.64	54.00	-10.36	Average	VERTICAL
7	17286.00	51.17	43.00	42.29	10.48	62.36	74.00	-11.64	Peak	VERTICAL
8	17286.00	33.17	43.00	42.29	10.48	44.36	54.00	-9.64	Average	VERTICAL

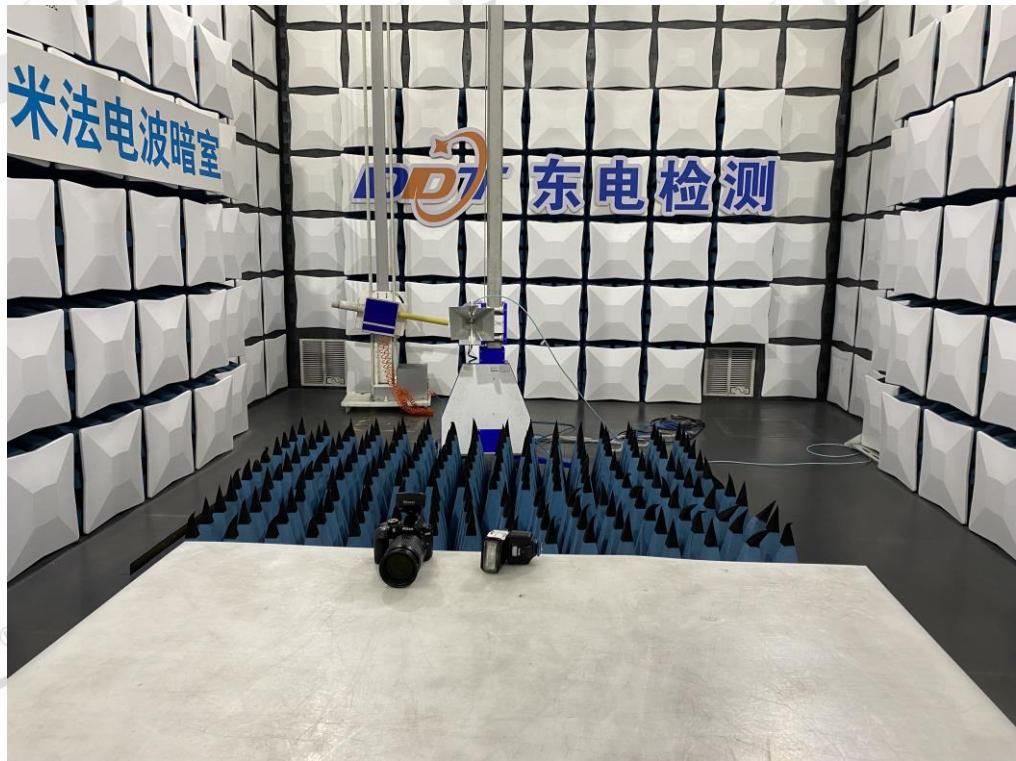
Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

#### 4.7. Test photo





## 5. Photos of the EUT









