



Report No.: FCC 1909069-03 File Reference No.: 2019-10-22

Applicant: GLORY STAR TECHNICS (SHENZHEN) CO., LTD.

Product: 7' Advertising Displayer

Model No.: N/A

Trademark: VOD073

Test Standards: FCC Part 15.247

Test Result:

It is herewith confirmed and found to comply with the

requirements set up by ANSI C63.10, FCC Part 15.247 for

the evaluation of electromagnetic compatibility

Approved By

Jack Chung

Jack Chung

Manager

Dated: October 22, 2019

Results appearing herein relate only to the sample tested The technical reports is issued errors and omissions exempt and is subject to withdrawal at

# SHENZHEN TIMEWAY TESTING LABORATORIES

Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China

Tel (755) 83448688, Fax (755) 83442996, E-Mail:info@timeway-lab.com

Report No.: FCC1909069-03 Page 2 of 44

Date: 2019-10-22



# **Special Statement:**

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meet with ISO/IEC-17025 requirements, which is approved by CNAL. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

# **CNAS-LAB Code: L2292**

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of testing Laboratories.

# FCC-Registration No.: 744189

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 744189.

# Industry Canada (IC) —Registration No.:5205A

The EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 5205A.

# **A2LA (Certification Number:5013.01)**

The EMC Laboratory has been accredited by the American Association for Laboratory Accreditation (A2LA). Certification Number:5013.01

Page 3 of 44

Report No.: FCC1909069-03

Date: 2019-10-22



# **Test Report Conclusion**

# Content

1.0	General Details	4
1.1	Test Lab Details.	4
1.2	Applicant Details	4
1.3	Description of EUT	4
1.4	Submitted Sample	4
1.5	Test Duration.	5
1.6	Test Uncertainty.	5
1.7	Test By	5
2.0	List of Measurement Equipment	6
3.0	Technical Details	7
3.1	Summary of Test Results	7
3.2	Test Standards	7
4.0	EUT Modification.	7
5.0	Power Line Conducted Emission Test.	8
5.1	Schematics of the Test.	8
5.2	Test Method and Test Procedure.	8
5.3	Configuration of the EUT	8
5.4	EUT Operating Condition.	9
5.5	Conducted Emission Limit.	9
5.6	Test Result.	9
6.0	Radiated Emission test	12
5.1	Test Method and Test Procedure.	12
6.2	Configuration of the EUT	12
6.3	EUT Operation Condition.	12
5.4	Radiated Emission Limit.	13
7.0	6dB Bandwidth Measurement Bandwidth	22
8.0	Maximum Peak Output Power	27
9.0	Power Spectral Density Measurement	29
10.0	Out of Band Measurement	34
11.0	Antenna Requirement.	41
12.0	FCC ID Label.	42
13.0	Photo of Test Setup and EUT View.	43



#### 1.0 General Details

#### 1.1 Test Lab Details

Name: SHENZHEN TIMEWAY TESTING LABORATORIES.

Address: Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le

Village, Nanshan District, Shenzhen, China

Telephone: (755) 83448688 Fax: (755) 83442996

# 1.2 Applicant Details

Applicant: GLORY STAR TECHNICS (SHENZHEN) CO., LTD.

Address: 4/Floor,west block,Longzhu Road,Xin WuCun Industry Building,NanShan District,ShenZhen

Telephone: (755)-26001808-305 Fax: (755)-26002933

#### 1.3 Description of EUT

Product: 7' Advertising Displayer

Manufacturer: GLORY STAR TECHNICS (SHENZHEN) CO., LTD.

Address: 4/Floor, west block, Longzhu Road, Xin WuCun Industry Building, NanShan

District, Shen Zhen

Brand Name: N/A
Additional Brand Name: N/A
Model Number: VOD073

Additional Model Number: N/A

Type of Modulation GFSK (Bluetooth BLE)

Frequency range 2402-2480MHz Frequency Selection By software

Channel Number 40

Rating: Input : DC 12V, 0.65(max), 8W(max)

1.4 Submitted Sample: 2 Samples

#### 1.5 Test Duration

2019-09-10 to 2019-10-22

#### 1.6 Test Uncertainty

Conducted Emissions Uncertainty = 3.6dB

Radiated Emissions below 1GHz Uncertainty =4.7dB Radiated Emissions above 1GHz Uncertainty =6.0dB

Conducted Power Uncertainty = 6.0dB

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.

Report No.: FCC1909069-03 Page 5 of 44

Date: 2019-10-22



Occupied Channel Bandwidth Uncertainty = 5%

1.7 Test Engineer

The sample tested by

Print Name: Terry Tang

Page 6 of 44 Report No.: FCC1909069-03

Date: 2019-10-22



2.0 Test Equipment					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	SPI Test Receiver R&S		100379	2019-06-21	2020-06-20
TWO Line-V-NETW	R&S	EZH3-Z5	100294	2019-06-21	2020-06-20
TWO Line-V-NETW	R&S	EZH3-Z5	100253	2019-06-21	2020-06-20
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2019-06-21	2020-06-20
Loop Antenna	EMCO	6507	00078608	2019-06-20	2020-06-20
Spectrum	R&S	FSIQ26	100292	2019-06-21	2020-06-20
Horn Antenna	A-INFO	LB-180400-KF	J211060660	2019-06-21	2020-06-20
Horn Antenna	R&S	BBHA 9120D	9120D-631	2018-07-09	2021-07-08
Power meter	Anritsu	ML2487A	6K00003613	2019-08-22	2020-08-21
Power sensor	Power sensor Anritsu		32263	2019-08-22	2020-08-21
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2018-07-04	2021-07-03
9*6*6 Anechoic			N/A	2018-02-07	2021-02-06
EMI Test Receiver	RS	ESVB	826156/011	2019-06-21	2020-06-20
EMI Test Receiver	RS	ESH3	860904/006	2019-06-21	2020-06-20
Spectrum	HP/Agilent	ESA-L1500A	US37451154	2019-06-21	2020-06-20
Spectrum	HP/Agilent	E4407B	MY50441392	2019-06-21	2020-06-20
Spectrum	RS	FSP	1164.4391.38	2019-01-20	2020-01-19
RF Cable	Zhengdi	ZT26-NJ-NJ-8 M/FA		2019-06-21	2020-06-20
RF Cable	Zhengdi	7m		2019-06-21	2020-06-20
RF Switch	EM	EMSW18	060391	2019-06-21	2020-06-20
Pre-Amplifier	Schwarebeck	BBV9743	#218	2019-06-21	2020-06-20
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2019-06-21	2020-06-20
LISN	SCHAFFNER	NNB42	00012	2019-01-08	2020-01-07

Report No.: FCC1909069-03

Date: 2019-10-22



#### 3.0 Technical Details

# 3.1 Summary of test results

Standard	Test Type	Result	Notes
ECC Part 15, Paragraph 15.107 & 15.207	<b>Conducted Emission Test</b>	PASS	Complies
FCC Part 15 Subpart C Paragraph 15.247(a)(2) Limit	Spectrum bandwidth of a Orthogonal Frequency Division Multiplex System Limit: 6dB bandwidth>500kHz	PASS	Complies
FCC Part 15, Paragraph 15.247(b)	Maximum peak output power Limit: max. 30dBm	PASS	Complies
FCC Part 15, Paragraph 15.109,15.205 & 15.209	Transmitter Radiated Emission Limit: Table 15.209	PASS	Complies
FCC Part 15, Paragraph 15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Complies
FCC Part 15, Paragraph 15.247(d)	Out of Band Emission and Restricted Band Radiation Limit: 20dB less than peak value of fundamental frequency Restricted band limit: Table 15.209	PASS	Complies

#### 3.2 Test Standards

FCC Part 15 Subpart & Subpart C, Paragraph 15.247

# 4.0 EUT Modification

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES.

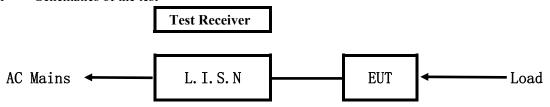
Report No.: FCC1909069-03

Date: 2019-10-22



#### **5.Power Line Conducted Emission Test**

#### 5.1 Schematics of the test

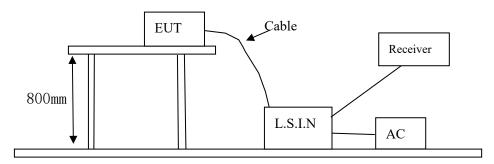


**EUT: Equipment Under Test** 

#### 5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.10-2013. The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 500hm/50uH as specified by section 5.1 of ANSI C63.10 –2013.

Test Voltage: 120V~, 60Hz Block diagram of Test setup



# 5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.10-2013. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

#### A. EUT

Devi		Manufacturer	Model	FCC ID
ce				
7' Adv	vertising Displayer	GLORY STAR TECHNICS (SHENZHEN) CO., LTD.	VOD073	2AACS-VOD073

Report No.: FCC1909069-03 Page 9 of 44

Date: 2019-10-22



#### B. Internal Device

Device	Manufacturer	Model	Rating

# C. Peripherals

Device	Manufacturer	Model	Rating		
Power Supply	SOY	SUN-1200500	Input: 100-240V~, 50/60Hz, 1.7A;		
			Output: DC12V, 5A		

#### 5.4 EUT Operating Condition

Operating condition is according to ANSI C63.10-2013.

- A Setup the EUT and simulators as shown on follow
- B Enable AF signal and confirm EUT active to normal condition

#### 5.5 Power line conducted Emission Limit according to Paragraph 15.207 and 15.107

Frequency	Class A Lim	its (dB µ V)	Class B Limits (dB µ V)		
(MHz)	Quasi-peak Level	Average Level	Quasi-peak Level	Average Level	
$0.15 \sim 0.50$	79.0	66.0	66.0~56.0*	56.0~46.0*	
$0.50 \sim 5.00$	73.0	60.0	56.0	46.0	
$5.00 \sim 30.00$	73.0	60.0	60.0	50.0	

Notes:

- 1. \*Decreasing linearly with logarithm of frequency.
- 2. The tighter limit shall apply at the transition frequencies

#### 5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.



# A: Conducted Emission on Live Terminal (150kHz to 30MHz)

**EUT Operating Environment** 

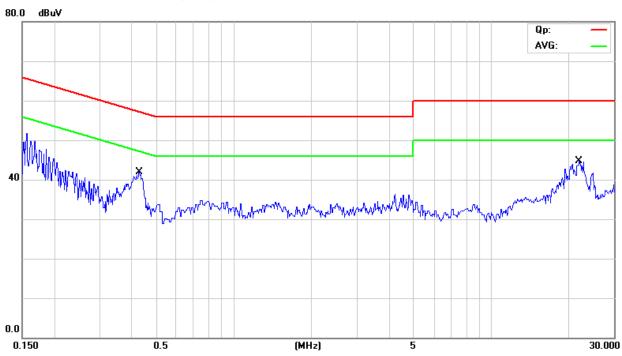
Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 KPa

**EUT set Condition: Keep Bluetooth Transmitting** 

**Equipment Level: Class B** 

**Results: PASS** 

Please refer to following diagram for individual



No. N	Лk.	Freq.	Reading Level	Correct Factor	Measure- ment Limit		Over		
		MHz	dBu∨	dB	dBu∀	dBu∨	dB	Detector	Comment
1 *	,	0.4271	29.41	9.76	39.17	57.31	-18.14	QP	
2		0.4271	17.11	9.76	26.87	47.31	-20.44	AVG	
3		21.9095	27.50	10.80	38.30	60.00	-21.70	QP	
4	:	21.9095	17.40	10.80	28.20	50.00	-21.80	AVG	



# B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

**EUT Operating Environment** 

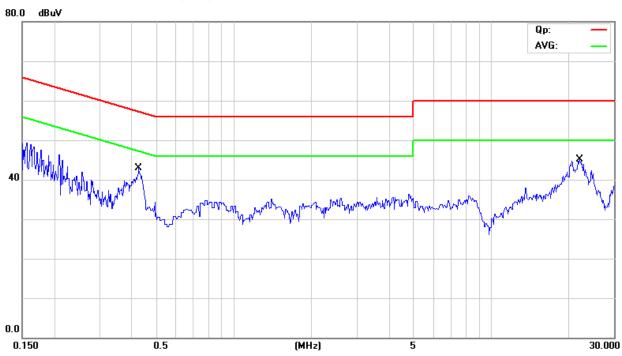
Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 KPa

**EUT set Condition: Keep Bluetooth Transmitting** 

**Equipment Level: Class B** 

**Results: Pass** 

Please refer to following diagram for individual



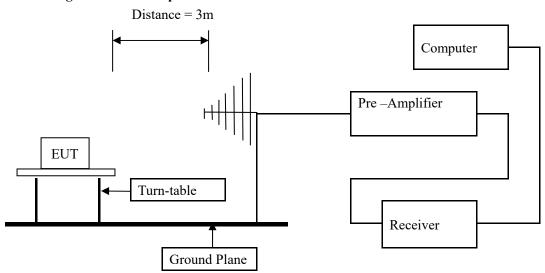
No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit Ove			
	MHz	dBu∀	dB	dBu∀	dBu∨	dB	Detector	Comment
1 *	0.4284	29.40	9.77	39.17	57.28	-18.11	QP	
2	0.4284	16.70	9.77	26.47	47.28	-20.81	AVG	
3	22.0674	27.90	10.81	38.71	60.00	-21.29	QP	
4	22.0674	18.40	10.81	29.21	50.00	-20.79	AVG	



#### **6** Radiated Emission Test

- 6.1 Test Method and test Procedure:
- (1) The EUT was tested according to ANSI C63.10-2013. The radiated test was performed at Timeway EMC Laboratory. This site is on file with the FCC laboratory division, Registration No.744189
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.10-2013.
- (3) The frequency spectrum from 30 MHz to 25 GHz was investigated. All readings from 30 MHz to 1 GHz are Quasi-peak values with a resolution bandwidth of 120 kHz. For measurement above 1GHz, peak values with RBW=1MHz VBW=3MHz and PK detector. AV value with RBW=1MHz, VBW=3MHz and RMS detector. Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "**OP**" in the data table.
- (6) The antenna polarization: Vertical polarization and Horizontal polarization.

#### **Block diagram of Test setup**



- 6.2 Configuration of The EUT

  Same as section 5.3 of this report
- 6.3 EUT Operating Condition
  Same as section 5.4 of this report.

The report refers only to the sample tested and does not apply to the bulk.

Report No.: FCC1909069-03 Page 13 of 44

Date: 2019-10-22



#### 6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

# Frequencies in restricted band are complied to limit on Paragraph 15.209 and 15.109

		9 1
Frequency Range (MHz)	Distance (m)	Field strength (dB $\mu$ V/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

Note:

- 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
- 2. In the Above Table, the higher limit applies at the band edges.
- 3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT

Page 14 of 44

Report No.: FCC1909069-03

Date: 2019-10-22



# Test result General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Horizontal (30MHz----1000MHz)

**EUT set Condition:** Keep Bluetooth Transmitting

**Results:** Pass

#### Test Figure:

No.	Frequency	Results	Factor	Limit	Over	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	Limit (dB)			(cm)		
1	81.397	30.48	-17.23	40.0	-9.52	Peak	360.00	100	Н	Pass
2	189.768	37.91	-14.33	43.5	-5.59	Peak	336.00	100	Н	Pass
3	244.074	42.08	-12.24	46.0	-3.92	Peak	352.00	100	Н	Pass
4	271.227	38.54	-11.72	46.0	-7.46	Peak	315.00	100	Н	Pass
5	332.807	35.07	-10.08	46.0	-10.93	Peak	319.00	100	Н	Pass
6	840.717	42.75	-2.60	46.0	-3.25	Peak	357.00	100	Н	Pass
7	867.871	42.35	-2.31	46.0	-3.65	Peak	260.00	100	Н	Pass
8	894.781	41.79	-1.84	46.0	-4.21	Peak	360.00	100	Н	Pass

Page 15 of 44

Report No.: FCC1909069-03

Date: 2019-10-22



# Test result General Radiated Emission Data and Harmonics Radiated Emission Data

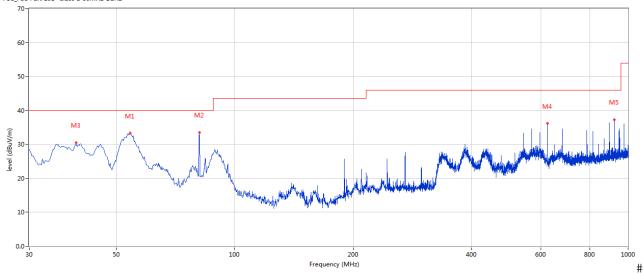
# Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: Keep Transmitting

**Results:** Pass

# Test Figure:

FCC\_FCC Part 15B Class B 30MHz-1GHz



No.	Frequency	Results	Factor	Limit	Over	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	Limit (dB)			(cm)		
1	54.244	33.30	-11.60	40.0	-6.70	Peak	347.00	100	V	Pass
2	81.397	34.48	-17.23	40.0	-5.52	Peak	94.00	100	V	Pass
3	39.455	30.56	-12.52	40.0	-9.44	Peak	80.00	100	V	Pass
4	623.734	36.18	-4.87	46.0	-9.82	Peak	186.00	100	V	Pass
5	921.935	37.31	-1.73	46.0	-8.69	Peak	220.00	100	V	Pass

Page 16 of 44 Report No.: FCC1909069-03

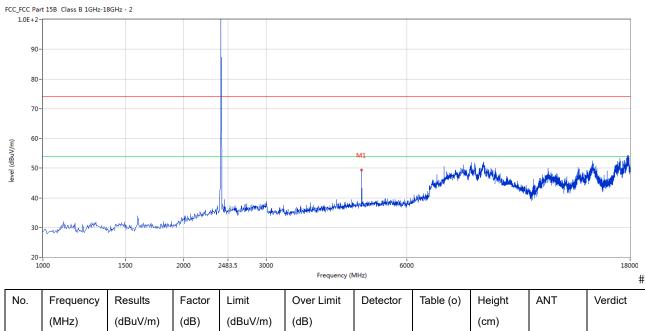
Date: 2019-10-22



# **Test Figures above 1GHz:**

Please refer to the following test plots for details:

#### **Low Channel: Vertical**



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	4802.799	49.28	3.12	54.0	-4.72	Peak	206.00	100	V	Pass

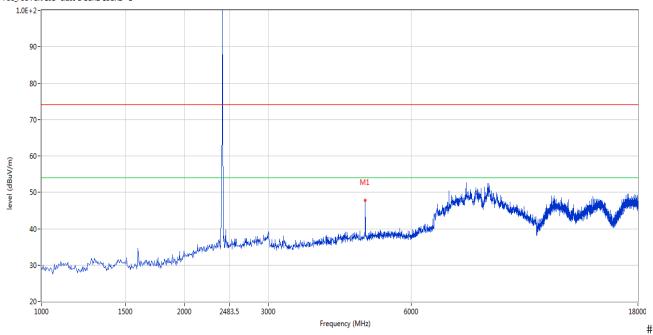
Page 17 of 44 Report No.: FCC1909069-03

Date: 2019-10-22



# **Low Channel: Horizontal**

FCC\_FCC Part 15B Class B 1GHz-18GHz - 2



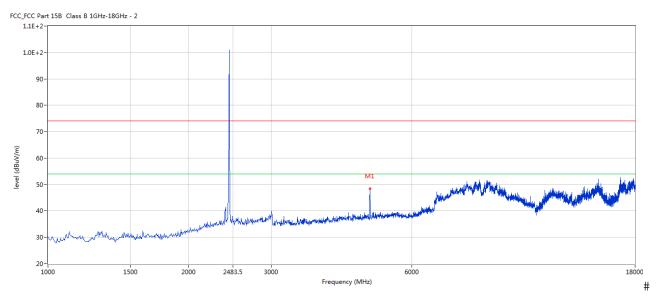
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	4802.799	48.76	3.12	54.0	-5.24	Peak	205.00	100	Н	Pass

Page 18 of 44 Report No.: FCC1909069-03

Date: 2019-10-22



#### Middle Channel: Vertical



No.	Frequency	Results	Factor	Limit	Over	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	Limit (dB)			(cm)		
1	4879.280	49.31	3.20	54.0	-4.69	Peak	213.00	100	V	Pass

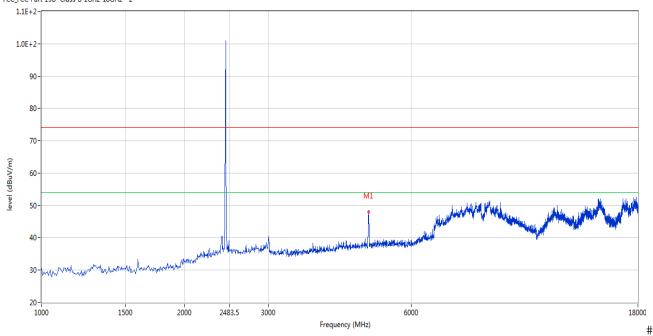
Page 19 of 44 Report No.: FCC1909069-03

Date: 2019-10-22



# **Middle Channel: Horizontal**

FCC\_FCC Part 15B Class B 1GHz-18GHz - 2



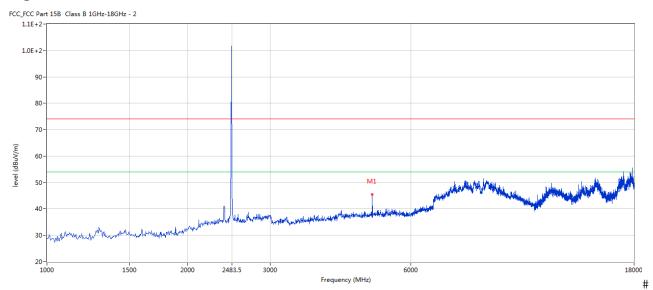
No.	Frequency	Results	Factor (dB)	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	4879.280	48.05	3.20	54.0	-5.95	Peak	209.00	100	Н	Pass

Page 20 of 44 Report No.: FCC1909069-03

Date: 2019-10-22



# **High Channel: Vertical**



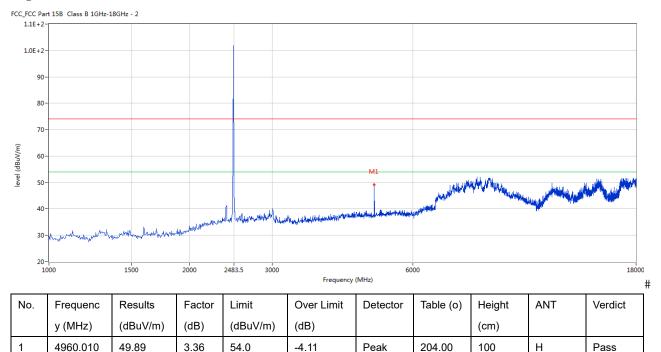
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	4960.010	46.45	3.36	54.0	-7.55	Peak	202.00	100	V	Pass

Report No.: FCC1909069-03 Page 21 of 44

Date: 2019-10-22



# **High Channel: Horizontal**



#

# Note: 1. Level = Reading + AF + Cable - Preamp

- 2. For the radiated emissions above 18G, it is the floor noise.
- 3. The measured PK value less than the AV limit, no necessary to take down the AV measurement result.

Page 22 of 44

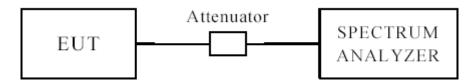
Report No.: FCC1909069-03

Date: 2019-10-22



# 7.0 6dB Bandwidth Measurement

# 7.1 Test Setup



# 7.2 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is >500 kHz

## 7.3 Test Procedure

- 1. Set resolution bandwidth (RBW) = 100 kHz
- 2. Set the video bandwidth (VBW)  $\geq$  3 x RBW.
- 3. Detector = Peak.
- 4. Trace mode =  $\max$  hold.
- 5. Sweep = auto couple.
- 6. Allow the trace to stabilize.
- 7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

#### 7.4 Test Result

Page 23 of 44 Report No.: FCC1909069-03

Date: 2019-10-22



#### 6dB BW

ab b · ·							
EUT		7' Advertising	Displayer	Model			VOD073
Mode		Keep Trans	smitting	Input Voltag	e		120V~
Temperati	ure	24 deg. C,		Humidity		56% RH	
Channel		el Frequency MHz)		andwidth M		inimum Limit (MHz)	Pass/ Fail
Low	Low 2402		688			0.5	Pass
Middle		2440	6	78		0.5	Pass
High		2480	6	88		0.5	Pass

Page 24 of 44

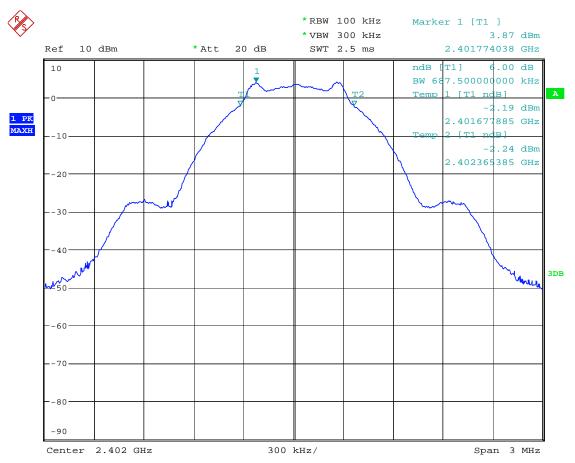
Report No.: FCC1909069-03

Date: 2019-10-22



# Test Figure:

# 1. Condition: Low Channel



Date: 20.OCT.2019 11:20:36

Page 25 of 44

Report No.: FCC1909069-03

Date: 2019-10-22



#### 2. Condition: Middle Channel



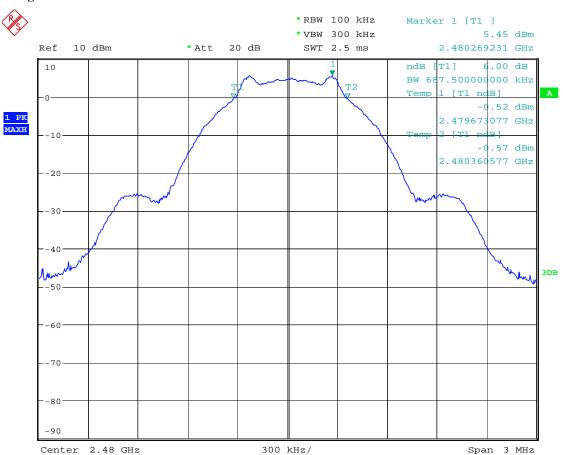
Date: 20.OCT.2019 11:21:35

Report No.: FCC1909069-03 Page 26 of 44

Date: 2019-10-22



# 3. High Channel



Date: 20.OCT.2019 11:22:09

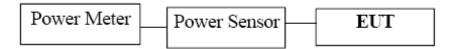
Report No.: FCC1909069-03 Page 27 of 44

Date: 2019-10-22



# 8. Maximum Output Power

# 8.1 Test Setup



#### 8.2 Limits of Maximum Output Power

The Maximum Output Power Measurement is 30dBm.

#### **8.3 Test Procedure**

The RF power output was measured with a Power meter connected to the RF Antenna connector (conducted measurement) while EUT was operating in transmit mode at the appropriate centre frequency.

Note: the Peak power were measured.

Report No.: FCC1909069-03 Page 28 of 44

Date: 2019-10-22



#### **8.4Test Results**

EUT		7' Advertising I	Displayer	Model		VOD07	3
Mode		Keep Transm	nitting	Input Voltage		120V~	
Temperatu	re	24 deg. (	Ξ,	Humidity		56% RF	ł
Channel	Channel Frequency		Max	Max. Power Output (dBm)			Pass/ Fail
Chamer		(MHz)	Peak			Limit (dBm)	
Low	Low 2402		4.79			30	Pass
Middle	Middle 2440		5.69		30	Pass	
High	High 2480			5.69		30	Pass

Note: 1. the result basic equation calculation as follow:

Max. Power Output = Power Reading + Cable loss + Attenuator

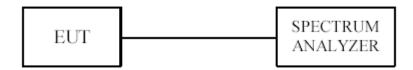
Report No.: FCC1909069-03 Page 29 of 44

Date: 2019-10-22



# 9. Power Spectral Density Measurement

# 9.1 Test Setup



#### 9.2 Limits of Power Spectral Density Measurement

The Maximum Power Spectral Density Measurement is 8dBm.

#### 9.3 Test Procedure

- 1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
- 2. Set the RBW = 10 kHz.
- 3. Set the VBW  $\geq$  30 kHz.
- 4. Set the span to 1.5 times the DTS channel bandwidth.
- 5. Detector = peak.
- 6. Sweep time = auto couple.
- 7. Trace mode = max hold.
- 8. Allow trace to fully stabilize.
- 9. Use the peak marker function to determine the maximum amplitude level.
- 10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.
- 11. The resulting peak PSD level must be  $\leq 8$  dBm.

Report No.: FCC1909069-03 Page 30 of 44

Date: 2019-10-22



#### 9.4Test Result

EUT		7' Ad	vertising Dis	player	Model	V	OD073
Mode		Ke	ep Transmitt	ing	Input Voltage	1	20V~
Temperat	ure		24 deg. C,		Humidity	56	5% RH
Channel	Channel Peak Power Reading (dBm)		Cable Loss (dB)	Final Power Spectral Density (dBm)		Maximum Limit (dBm)	Pass/ Fail
	, ,						
Low	Low -2.71		0.2	-	-2.51	8	Pass
Middle	-	1.79	0.2	-	-1.59	8	Pass
High	-2	2.87	0.2	-	-2.67	8	Pass

Note: The result basic equation calculation as follow:

Peak Power Output = Peak Power Reading + Cable loss

Page 31 of 44

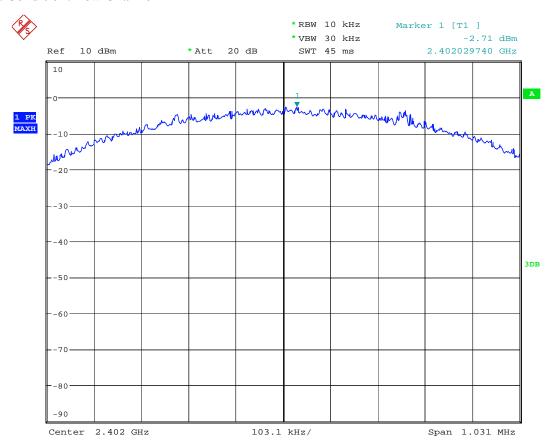
Report No.: FCC1909069-03

Date: 2019-10-22



# Test Figure:

# 1. Condition: Low Channel



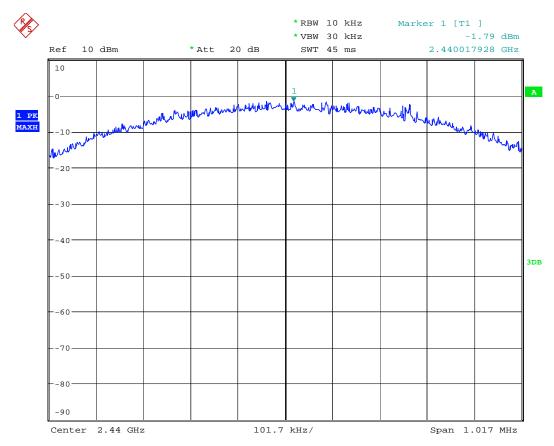
Date: 20.OCT.2019 11:26:06

Report No.: FCC1909069-03 Page 32 of 44

Date: 2019-10-22



#### 2. Condition: Middle Channel



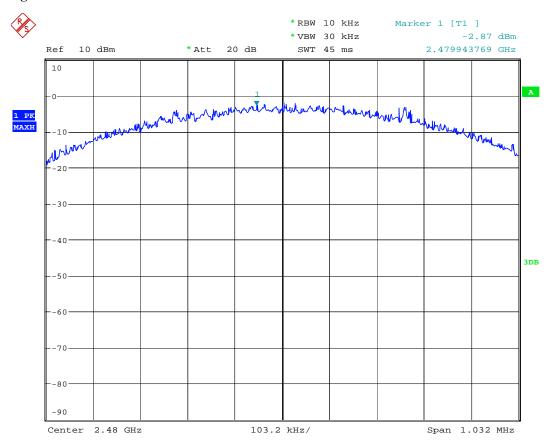
Date: 20.0CT.2019 11:27:32

Report No.: FCC1909069-03 Page 33 of 44

Date: 2019-10-22



# 3. High Channel



Date: 20.0CT.2019 11:28:29

Page 34 of 44

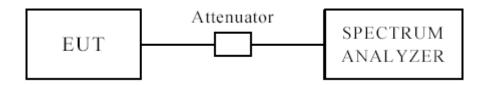
Report No.: FCC1909069-03

Date: 2019-10-22



# **10 Out of Band Measurement**

# 10.1 Test Setup for band edge



The restricted band requirement based on radiated emission test; please see the clause 6 for the test setup

#### 10.2 Limits of Out of Band Emissions Measurement

- 1. Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).
- 2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

#### **10.3 Test Procedure**

For signals in the restricted bands above and below the 2.4-2.483GHz allocated band a measurement was made of Radiated emission test. (Peak values with RBW=1MHz, VBW=3MHz and PK detector. AV value with RBW=1MHz, VBW=3MHz and RMS detector)

For bandage test, the spectrum set as follows: RBW=100 kHz, VBW=300 kHz. A conducted measurement used

#### 10.4 Test Result

Please see next pages

Note: 1. For band-edge measurement, the frequency from 30MHz-25GHz was tested. And It met the FCC rule.

Page 35 of 44

Report No.: FCC1909069-03

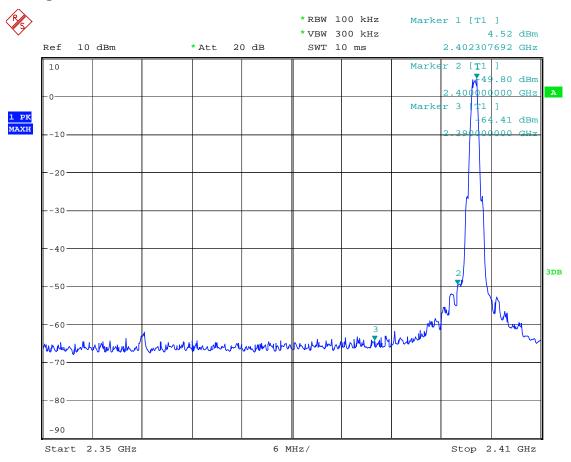
Date: 2019-10-22



#### 10.4 Band-edge Measurement

EUT	7' Advertising Displayer	Model	VOD073
Mode	Keep Transmitting	Input Voltage	120V~
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

# **Test Figure:**



Date: 20.OCT.2019 11:29:53

Note: The Max. FS in Restrict Band are measured in conventional method.

Page 36 of 44

Report No.: FCC1909069-03

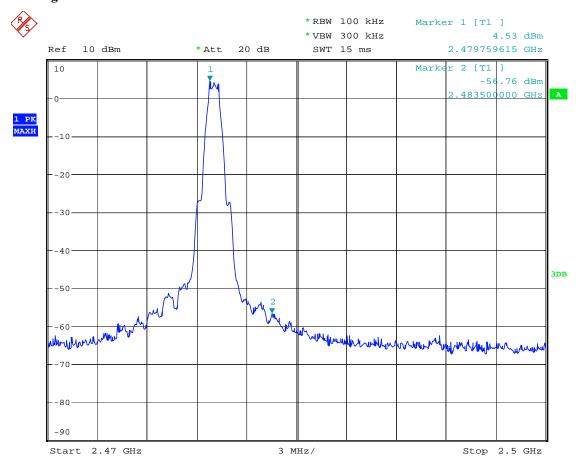
Date: 2019-10-22



#### 10.4 Band-edge Measurement

EUT	7' Advertising Displayer	Model	VOD073
Mode	Keeping Transmitting	Input Voltage	120V~
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

# **Test Figure:**



Date: 20.OCT.2019 11:29:00

Note: The Max. FS in Restrict Band are measured in conventional method.

Page 37 of 44 Report No.: FCC1909069-03

Date: 2019-10-22



#### 10.4 Restrict Band Measurement

	]	EUT	7' Adv	ertising	Displayer	Mod	lel		VO	D073			
	N	Mode	Kee	ep Transı	mitting	Input V	oltage		12	20V~			
-	Tem	perature		24 deg.	C,	Humi	dity		569	% RH			
	Test	t Result:		Pass									
		t 15B Class B 1GHz-1	8GHz - 2				l						
1.	1E+2-												
1.	.0E+2-												
	90-									-/-			
	80-												
	00									/			
	70-									,			
level (dBuV/m)	60-												
evel (d	50-												
	40-							M1	in the state of th		WHAM.		
	40	in the plant of the property of the plant of											
	30-												
	20 - 23	50									2410		
						Frequency (N	1Hz)				#		
No	<b>)</b> .	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict		
		(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)				
1		2390	41.91	-3.53	54.0	-12.09	Peak	218.00	100	Н	Pass		

Page 38 of 44 Report No.: FCC1909069-03

Date: 2019-10-22



#### 10.4 Restrict Band Measurement

	]	EUT	7' Ac	lvertising	g Displayer		Model			VOD073			
	N	Mode	K	eep Tran	smitting	Inp	out Voltage	;		120V~			
	Гет	perature		24 deg	g. C,	I	Humidity		56% RH				
,	Test	Result:		Pas	SS								
		15B Class B 1GHz-1	8GHz - 2			•		•					
1.	1E+2-												
1.0	0E+2-												
	90-									-/-			
	80-									/ \			
	80-												
	70-									\			
(III/And	60-												
level (dbuv/m)	50-												
Ē	50							M1	day bear with the		No. of the last		
	40-	0 - White the state of the stat											
	30-	The second secon	mind water property and the second	A) The growth types to any Mark to be g	A street out of believes a little description	of aniet Ly Street and any of all and any and any	Amen't before						
	20-												
	23	50				Frequency (N	/IHz)				2410		
			<b>.</b>	I = .	,	· ·	1	T	T	A N.I.T.	# 		
Nc	Э.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict		
		(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)				
1		2390	41.37	-3.53	54.0	-12.63	Peak	208.00	100	V	Pass		

Report No.: FCC1909069-03 Page 39 of 44

Date: 2019-10-22



#### 10.4 Restrict Band Measurement

EUT  Mode  Temperature		7' Advertising Displayer  Keep Transmitting			M	Model Input Voltage Humidity		VOD073 120V~ 56% RH				
					Input							
			24 deg. C,									
Tes	st Result:		Pass									
CC_FCC Par 1.1E+2-	rt 15B Class B 1GHz-1	8GHz - 2										
1.0E+2-												
90-												
80-			-/-	$\overline{}$	1							
70-												
(E) 60-		/										
eve  (dBn//m) 					1							
<u>\$</u> 50-	La la constitution de la constit											
40-	The phosphast and the land we will be the second of the se					The second of the second secon						
30-						Accessed that does	and a second and half a select					
20-	-				2483.5 Frequency (N	MHz)				2500		
20- 24	<del>- </del> 470				rrequericy (ii							
20- 24 No.		Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict		
	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	1	Detector	Table (o)	Height (cm)	ANT	Verdict		

Page 40 of 44

Report No.: FCC1909069-03

Date: 2019-10-22



#### **10.4** Restrict Band Measurement

EUT		7' Advertising Displayer			Model		VOD073				
Mode Temperature Test Result:		Keep Transmitting 24 deg. C, Pass			Input Volt	age	120V~ 56% RH				
					Humidity	у					
	CC Part 15B Class B 1GHz-18	GHz - 2				•					
1.	1E+2-										
1.	0E+2-										
	90-										
	80-										
<u>ر</u>	70-										
level (dBuV/m)	60-	\ \ \									
level (	50-	. 45 10 10 10 10 10 10 10 10 10 10 10 10 10			hand.						
	40-	Nagelingunder dieder het welten der				The contraction of the second					
							and the second		hilliphika interpretation proper		
	30-										
	20- 2470	2483.5					2500				
					Frequency (MI	łz)				#	
No	o. Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict	
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)			
1	2483.5	49.47	-3.57	54.0	-4.53	Peak	201.00	100	V	Pass	

Note: The measured PK value less than the AV limit, no necessary to take down the AV measurement result.

Report No.: FCC1909069-03

Date: 2019-10-22



Page 41 of 44

# 11.0 Antenna Requirement

## 11.1 Standard Applicable

For intentional device, according to FCC 47 CFR 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.

And according to FCC 47 CFR Section 15.247 (b), if transmitter antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the mount in dB that the directional gain of the antenna exceeds 6 dBi.

#### 11.2 Antenna Connected construction

Integral antenna used. The gain of the antennas is 2.0dBi.

Report No.: FCC1909069-03 Page 42 of 44

Date: 2019-10-22

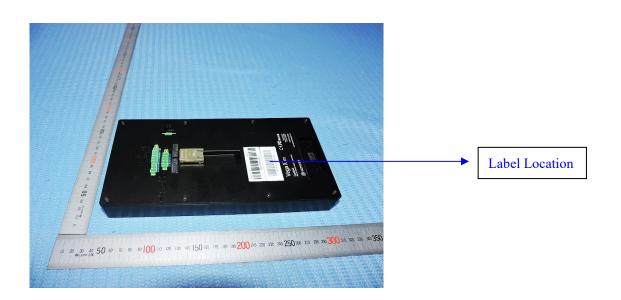


#### 12.0 FCC ID Label

# FCC ID: 2AACS-VOD073

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

#### **Mark Location:**



Page 43 of 44

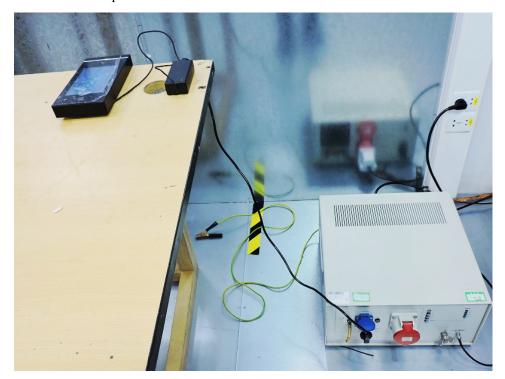
Report No.: FCC1909069-03

Date: 2019-10-22



#### 13.0 **Photo of testing**

Conducted Emission Test Setup:

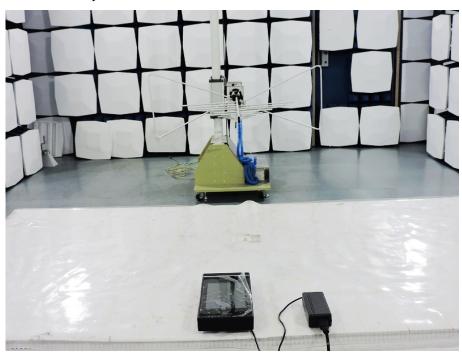


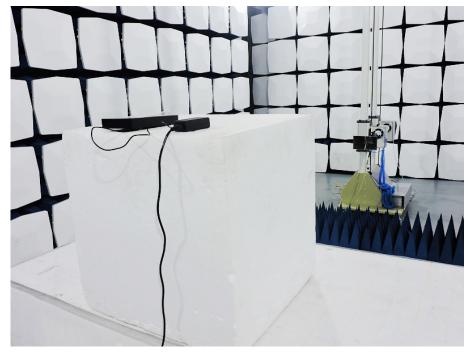
Report No.: FCC1909069-03

Date: 2019-10-22



# Radiated Emission Test Setup:





Photographs - EUT

Please refer test report EMC1909069-01

# **End of the report**

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to

adopt any other remedies which may be appropriate.