Report No: WD-EF-R-190581-A1

V

FCC SDoC Test Report

Issued date: Oct. 14, 2019 Project No.: 19Q082903

Product : Ultra Short Throw Outdoor Portable LED Projector

- Model: MGFU
- Applicant : Elite Screens Visual & Sound Co., Ltd.
 - Address: 3F., No. 88, Wugong Rd., Xinzhuang Dist., New Taipei City 242, Taiwan (R.O.C.)

Report No: WD-EF-R-190581-A1

According to

47 CFR FCC Part 1<mark>5, Subpar</mark>t B, Class B ICES-003: 2016 Issue 6, Class B ANSI C63.4: 2014

/ Ken Huang Authorized Signatory :



Wendell Industrial Co., Ltd Wendell Electrical Testing Lab. Add: 6F/6F-1, No.188, Baoqiao Rd., Xindian Dist., New Taipei City 23145, Taiwan R.O.C.

Table of Contents

1	Certif	fication	. 5
1.1	Su	nmary of Test Result	.6
2	Test (Configuration of Equipment Under Test	.7
2.1	Tes	st Facility	.7
2.2	Me	asurement Uncertainty	. 8
	.2.1	Conducted Emission test	
2.	.2.2	Radiated Emission test	. 8
3	Gene	ration Information	.9
3.1	Des	scription of EUT	.9
3.2	Des	scription of Test Modes1	10
3.3	EU	T Operating Condition1	10
3.4	Des	scription of Support Unit	11
3.5	Co	nfiguration of System Under Test	11
4	Fmiss	sion Test1	12
	1211190		
4.1		nducted Emission Measurement (Frequency Range 150 KHz-30MHz)	
4.1			12
4.1 4.	Co	nducted Emission Measurement (Frequency Range 150 KHz-30MHz)1	12 12
4.1 4. 4.	Co .1.1	nducted Emission Measurement (Frequency Range 150 KHz-30MHz)	12 12 13
4.1 4. 4. 4.	Co .1.1 .1.2	nducted Emission Measurement (Frequency Range 150 KHz-30MHz) 1 Limit of Conducted Emission Measurement 1 Test Instrument 1	12 12 13 14
4.1 4. 4. 4. 4. 4.	Co .1.1 .1.2 .1.3	nducted Emission Measurement (Frequency Range 150 KHz-30MHz) 1 Limit of Conducted Emission Measurement 1 Test Instrument 1 Test Procedure. 1	12 12 13 14 14
4.1 4. 4. 4. 4. 4. 4.	Co 1.1 1.2 1.3 1.4	nducted Emission Measurement (Frequency Range 150 KHz-30MHz) 1 Limit of Conducted Emission Measurement 1 Test Instrument 1 Test Procedure. 1 Deviation from Test Standard 1	12 12 13 14 14 15
4.1 4. 4. 4. 4. 4. 4.	Co 1.1 1.2 1.3 1.4 1.5	nducted Emission Measurement (Frequency Range 150 KHz-30MHz) 1 Limit of Conducted Emission Measurement 1 Test Instrument 1 Test Procedure 1 Deviation from Test Standard 1 Test Setup 1	12 13 14 14 15 16
4.1 4. 4. 4. 4. 4. 4.	Co 1.1 1.2 1.3 1.4 1.5 1.6 1.7	nducted Emission Measurement (Frequency Range 150 KHz-30MHz) 1 Limit of Conducted Emission Measurement 1 Test Instrument 1 Test Procedure 1 Deviation from Test Standard 1 Test Result 1	12 12 13 14 14 15 16 18
4.1 4. 4. 4. 4. 4. 4. 4.2	Co 1.1 1.2 1.3 1.4 1.5 1.6 1.7	nducted Emission Measurement (Frequency Range 150 KHz-30MHz) 1 Limit of Conducted Emission Measurement 1 Test Instrument 1 Test Procedure. 1 Deviation from Test Standard 1 Test Result 1 Photographs of Test Configuration 1	12 12 13 14 14 15 16 18 19
4.1 4. 4. 4. 4. 4. 4. 4.2 4.	Co. 1.1 1.2 1.3 1.4 1.5 1.6 1.7 Ra	nducted Emission Measurement (Frequency Range 150 KHz-30MHz) 1 Limit of Conducted Emission Measurement 1 Test Instrument 1 Test Procedure. 1 Deviation from Test Standard 1 Test Result 1 Photographs of Test Configuration 1 diated Emission Measurement 1	12 12 13 14 14 15 16 18 19 19
4.1 4. 4. 4. 4. 4. 4. 4. 4. 4. 4. 4. 4.	Co 1.1 1.2 1.3 1.4 1.5 1.6 1.7 Ra 2.1	nducted Emission Measurement (Frequency Range 150 KHz-30MHz) 1 Limit of Conducted Emission Measurement 1 Test Instrument 1 Test Procedure. 1 Deviation from Test Standard 1 Test Result 1 Photographs of Test Configuration 1 Limits of Radiated Emission Measurement 1	12 12 13 14 14 15 16 18 19 21
4.1 4. 4. 4. 4. 4. 4. 4. 4. 4. 4. 4. 4.	Co. 1.1 1.2 1.3 1.4 1.5 1.6 1.7 Ra 2.1 2.2	nducted Emission Measurement (Frequency Range 150 KHz-30MHz) 1 Limit of Conducted Emission Measurement 1 Test Instrument 1 Test Procedure. 1 Deviation from Test Standard 1 Test Result 1 Photographs of Test Configuration 1 Limits of Radiated Emission Measurement 1 Limits of Radiated Emission Measurement 1 Test Instrument 1	12 12 13 14 14 15 16 18 19 21 22
4.1 4. 4. 4. 4. 4. 4. 4. 4. 4. 4. 4. 4. 4.	Co. 1.1 1.2 1.3 1.4 1.5 1.6 1.7 Ra 2.1 2.2 2.3	nducted Emission Measurement (Frequency Range 150 KHz-30MHz) 1 Limit of Conducted Emission Measurement 1 Test Instrument 1 Test Procedure 1 Deviation from Test Standard 1 Test Setup 1 Test Result 1 Photographs of Test Configuration 1 Limits of Radiated Emission Measurement 1 Limits of Radiated Emission Measurement 1 Test Instrument 2 Test Instrument 2 Test Instrument 2 Test Procedure 2	12 12 13 14 14 15 16 18 19 21 22 22
4.1 4. 4. 4. 4. 4. 4. 4. 4. 4. 4. 4. 4. 4.	Co. 1.1 1.2 1.3 1.4 1.5 1.6 1.7 Rac 2.1 2.2 2.3 2.4	nducted Emission Measurement (Frequency Range 150 KHz-30MHz) 1 Limit of Conducted Emission Measurement 1 Test Instrument 1 Test Procedure. 1 Deviation from Test Standard 1 Test Result 1 Photographs of Test Configuration 1 diated Emission Measurement 1 Limits of Radiated Emission Measurement 1 Test Instrument 1 Deviation from Test Standard 1 Devisition from Test Configuration 1 Devisition from Test Configuration 1 Devisition from Test Standard 1 Devisition from Test Standard 1 Test Instrument 1 Devisition from Test Standard 1 Devisition from Test Standard 1 Devisition from Test Standard 1	12 13 14 14 15 16 18 19 21 22 22 23 24



History of this test report

Report No.	Issue date	Description
WD-EF-R-190581-A0	Oct. 05, 2019	Initial Issue
WD-EF-R-190581-A1		Changing brand name *Cancel report no.: WD-EF-R-190581-A0, Issued Date: Oct. 05, 2019

Declaration

This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us.



History of supplementary report

Report No.	Issue date	Description
WD-EF-R-190581-A1	Oct. 14, 2019	Original report

Declaration

This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us.

1 Certification

Product:	Ultra Short Throw Outdoor Portable LED Projector
Brand Name:	MosicGO TM
Model:	MGFU
Applicant:	Elite Screens Visual & Sound Co., Ltd.
Tested:	Sep. 09 ~ Sep. 11, 2019
Standard:	47 CFR FCC Part 15, Subpart B, Class B
	ICES-003: 2016 Issue 6, Class B
	ANSI C63.4: 2014

The above equipment (Model: MGFU) has been tested by **Wendell Electrical Testing Lab.**, and found compliance with the requirement of the above standards. The test record, data evaluation and Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Please note that the measurement uncertainty are provided for informational purpose only and are not used in determining the Pass/Fail results.



1.1 Summary of Test Result

The EUT has been tested according to the following specifications:

Emission				
Standard	Test Item	Limit	Result	Remark
47 CFR FCC Part 15, Subpart B	Conducted disturbance at mains terminals	Class B	Pass	Meets the requirements
ICES-003	Radiated disturbance	Class B	Pass	Meets the requirements

Note: Test record contained in the referenced test report relate only to the EUT sample and test item.



2 Test Configuration of Equipment Under Test

2.1 Test Facility

Conducted disturbance at mains terminals Test

W01: 5F-1, No.188, Baoqiao Rd., Xindian Dist., New Taipei City 23145, Taiwan (R.O.C.)

Radiated emission (9*6*6 Chamber) and Conducted disturbance at mains terminals Tests

W06: No.67-9, Shimen Rd., Tucheng Dist., New Taipei City 23654, Taiwan (R.O.C.)

ACCREDITATIONS

The laboratories are accredited and approved by the TAF according to ISO/IEC 17025.

V

2.2 Measurement Uncertainty

The measurement instrumentation uncertainly consideration contained in CISPR 16-4-2.

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

Please note that the measurement uncertainty are provided for informational purpose only and are not used in determining the Pass/Fail results.

2.2.1 Conducted Emission test

Test Site	Measurement Freq. Range	$\mathrm{dB}\left(U_{\mathrm{cispr}} ight)$	Note
W01	150 kHz ~ 30 MHz	2.43	N/A
W06	150 kHz ~ 30 MHz	2.52	N/A

2.2.2 Radiated Emission test

Test Site	Measurement Freq. Range	Ant	$dB(U_{cispr})$	Note
	30 MHz ~ 200 MHz	V	3.16	N/A
	30 MHz ~ 200 MHz	Н	2.46	N/A
	200 MHz ~ 1000 MHz	V	4.72	N/A
	200 MHz ~ 1000 MHz	Н	3.01	N/A
	1 GHz ~ 6 GHz	V	5.04	N/A
W06	1 GHz ~ 6 GHz	Н	4.92	N/A
	6 GHz ~ 18 GHz	V	5.22	N/A
	6 GHz ~ 18 GHz	Н	5.16	N/A
	18 GHz ~ 40 GHz	V	4.68	N/A
	18 GHz ~ 40 GHz	Н	4.92	N/A



3 Generation Information

3.1 Description of EUT

Product	Ultra Short Throw Outdoor Portable LED Projector
Brand	MosicGO TM
Model	MGFU
Applicant	Elite Screens Visual & Sound Co., Ltd.
Received date	Aug. 29, 2019
EUT Power Rating	19 Vdc (from adapter)
Model Differences	N/A
Operating System	N/A
Data Cable Supplied	N/A
Accessory Device	Adapter, remote control, HDMI cable and USB Type C cable
I/O Port	Please refer to the User's Manual

Note:

1. <u>The EUT uses the follow adapter:</u>

Adapter	
Brand	EDAC
Model	EA11013M-1900
Input Power	100-240Vac, 50-60Hz, 2.0A
Output Power	19Vdc, 6.31A
Power line	Input: 1.8m non-shielded cable without core. Output: 1m non-shielded cable with one core.

2. The EUT's highest operating frequency is more than 108MHz. Therefore the radiated emission is tested up to 6GHz.

V

3.2 Description of Test Modes

For conducted emission, the EUT has been pre-tested under the following test modes, and **test mode 2** was the worst case for final test.

Test Mode	Test Condition
1	Adapter + Battery, Projector on / HDMI 1 mode, BT ON
2	Adapter + Battery, Projector on / USB Type C display mode, BT ON

For radiated emission, the EUT has been pre-tested under the following test modes, and **test mode 2** was the worst case for final test.

Test Mode	Test Condition
1	Adapter + Battery, Projector on / HDMI 1 mode, BT ON
2	Adapter + Battery, Projector on / USB Type C display mode, BT ON
3	Only Battery, Projector on / HDMI 1 mode, BT ON

Test results are presented in the report as below.

Test Result	Test Condition				
	Conducted emission test				
-	Adapter + Battery, Projector on / USB Type C display mode, BT ON				
	Radiated emission 30MHz ~ 1GHz test				
-	Adapter + Battery, Projector on / USB Type C display mode, BT ON				
Radiated emission above 1GHz test					
-	Adapter + Battery, Projector on / USB Type C display mode, BT ON				

3.3 EUT Operating Condition

- a. Placed the EUT on the test table.
- b. The EUT sent voice signal to earphone.
- c. The ipod nano sent audio signal to EUT via wireless cable.
- d. The NB sent "H" message to EUT.
- e. The EUT enabled the Bluetooth function.
- f. The EUT connected to termination resistor as a dummy load.





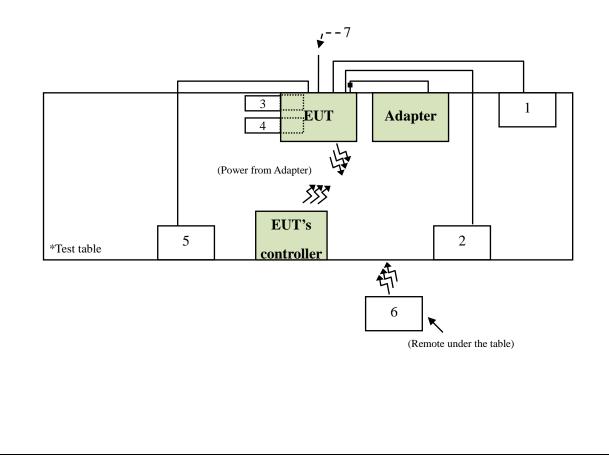
3.4 Description of Support Unit

The EUT has been conducted testing with other necessary accessories or support units	
	C1
- EITE L'O F HAS DEELLAOHUUCIEU IESUITZ WITT OHIEL HELESSALV AGGESSOHES OF SUDDOLLUHIE	. .

Item	Equipment	Brand	Model No.	Serial No.	FCC ID	Data Cable	Power Cord	Remark
1	Notebook	DELL	XPS 13	N/A	FCC DoC Approved	1m shielded Type C to C cable	AC: 1m non-shielded cable DC: 1m non-shielded cable with one core	-
2	Earphone & Microphone	E-books	E-EPA057	N/A	N/A	1.4m non-shielded cable	N/A	-
3	Load	N/A	N/A	N/A	N/A	N/A	N/A	Supplied by client
4	Load	N/A	N/A	N/A	N/A	N/A	N/A	Supplied by client
5	Load	N/A	N/A	N/A	N/A	0.8m shielded Type C to A cable	N/A	Supplied by client
6	iPod nano	apple	A1446	N/A	N/A	N/A	N/A	-
7	HDMI cable *2	AVIER	N/A	N/A	N/A	1.5m shielded cable	N/A	-

Note: 1. The core(s) is(are) originally attached to the cable(s).

3.5 Configuration of System Under Test





4 Emission Test

4.1 Conducted Emission Measurement (Frequency Range 150 KHz-30MHz)

4.1.1 Limit of Conducted Emission Measurement

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

Note: 1. The lower limit shall apply at the transition frequencies.

- 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
- 3. Detector function in the form: PK = Peak, QP = Quasi Peak, AV = Average
- 4. The test result calculated as following: Measurement Value = Reading Level + Correct Factor Correction Factor = Insertion loss of LISN + Cable loss + Transient Limiter (If use) Margin Level = Measurement Value –Limit Value



4.1.2 Test Instrument

	Test Site: W01-CE											
Item	Equipment	Manufacturer	Model	Meter No.	Calibration Date							
1	TWO-LINE V-NETWORK	R&S	ENV216	CT-1-025-1	Apr. 29, 2019							
2	Pulse limiter	R&S®	ESH3-Z2	CT-2-015	Apr. 25, 2019							
3	EMI Test Receiver	R&S	ESCI	CT-1-024	Apr. 24, 2019							
4	V-LISN	Schwarzbeck	NSLK8127	CT-1-104-1	Apr. 30, 2019							
5	Test Cable	Marvelous Microwave Inc	200200.400LL .500A	CT-10-048-1	Apr. 25, 2019							
6	50ohm Termination	N/A	N/A	CT-1-065-1	Apr. 25, 2019							
7	Measurement Software	EZ-EMC	Ver: FA-03A	CT-3-012	No calibration request							

Note: 1. The calibration interval of the above test instruments is 12 months.

	Test Site: W06-CE											
Item	Equipment	Manufacturer	anufacturer Model		Calibration Date							
1	TWO-LINE V-NETWORK	R&S	ENV216	CT-1-025-2	May 20, 2019							
2	Transient Limiter	Electro Metrics	EM-7600	CT-1-026	May 16, 2019							
3	EMI Test Receiver	R&S	ESR3	CT-1-103	May 16, 2019							
4	V-LISN	Schwarzbeck	NSLK8127RC	CT-1-104-1RC	May 20, 2019							
5	Test Cable	EMCI	EMCCFD300- BM-BM-5000	CT-1-107-2	May 16, 2019							
6	50ohm Termination	HUBER+SUHNE R	N/A	CT-1-109-1	May 13, 2019							
7	Measurement Software	EZ-EMC	Ver: FA-03A	CT-3-012	No calibration request							

Note: 1. The calibration interval of the above test instruments is 12 months.

4.1.3 Test Procedure

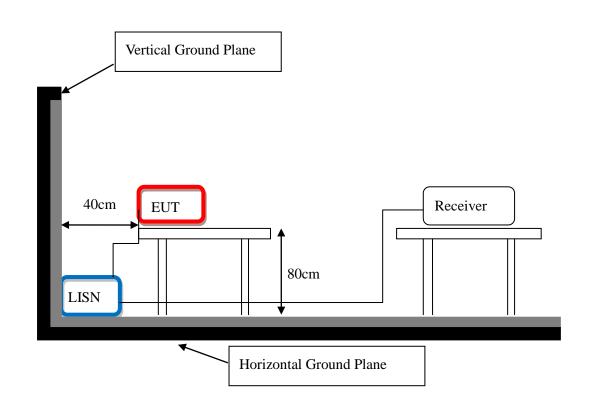
- a. The EUT was placed 0.8 meter height wooden table from the horizontal ground plane with EUT being connected to power source through a line impedance stabilization network (LISN). The LISN at least be 80 cm from nearest chassis of EUT.
- b. The line impedance stabilization network (LISN) provides 50 ohm/50uH of coupling impedance for the measuring instrument. All other support equipments powered from additional LISN(s).
- c. Interrelating cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle. All I/O cables were positioned to simulate typical usage.
- d. All I/O cables that are not connected to a peripheral shall be bundle in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- e. The EMI test receiver connected to LISN powering the EUT. The actual test configuration, please refer to EUT test photos.
- f. The receiver scanned from 150kHz to 30MHz for emissions in each of test modes. A scan was taken on both power lines, Line and Neutral, recording at least six highest emissions.
- g. The EUT and cable configuration of the above highest emission levels were recorded. The test data of the worst case was recorded.

4.1.4 Deviation from Test Standard

No deviation

Report No: WD-EF-R-190581-A1

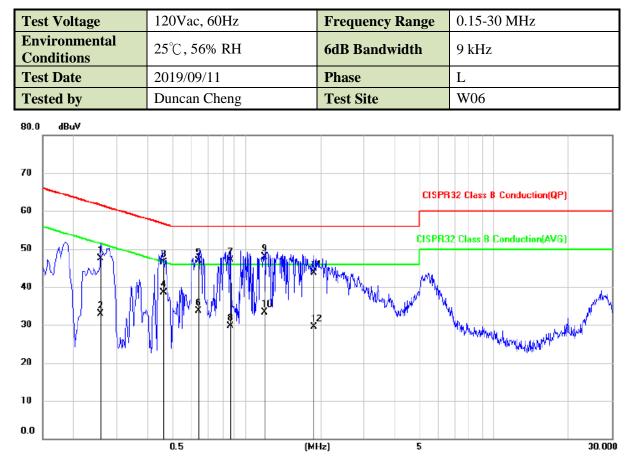
4.1.5 Test Setup



Note: Please refer to 4.1.7 for the actual test configuration.



4.1.6 Test Result



No.	Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measurement (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2569	37.71	9.81	47.52	61.53	-14.01	QP
2	0.2569	23.15	9.81	32.96	51.53	-18.57	AVG
3	0.4620	36.78	9.81	46.59	56.66	-10.07	QP
4	0.4620	28.70	9.81	38.51	46.66	-8.15	AVG
5	0.6438	37.03	9.82	46.85	56.00	-9.15	QP
6	0.6438	23.92	9.82	33.74	46.00	-12.26	AVG
7	0.8581	37.20	9.84	47.04	56.00	-8.96	QP
8	0.8581	19.84	9.84	29.68	46.00	-16.32	AVG
9	1.1921	37.98	9.85	47.83	56.00	-8.17	QP
10	1.1921	23.52	9.85	33.37	46.00	-12.63	AVG
11	1.8809	33.85	9.89	43.74	56.00	-12.26	QP
12	1.8809	19.65	9.89	29.54	46.00	-16.46	AVG

Remark: 1. QP = Quasi Peak, AVG = Average

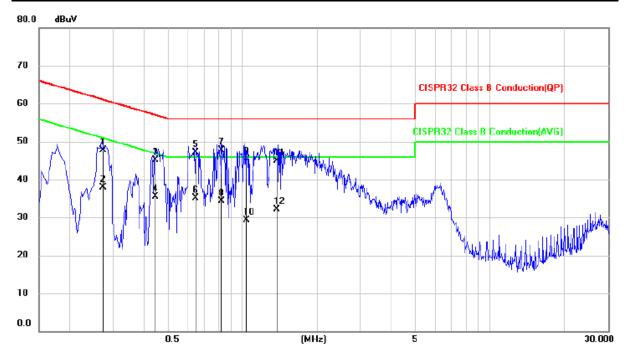
2. Correction Factor = Insertion loss of LISN + Cable loss + Transient Limiter (If use)

3. Measurement Value = Reading Level + Correct Factor

4. Margin Level = Measurement Value –Limit Value

Report No: WD-EF-R-190581-A1

Test Voltage	120Vac, 60Hz	Frequency Range	0.15-30 MHz
Environmental Conditions	25°C, 56% RH	6dB Bandwidth	9 kHz
Test Date	2019/09/11	Phase	Ν
Tested by	Duncan Cheng	Test Site	W06



No.	Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measurement (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2727	37.87	9.79	47.66	61.04	-13.38	QP
2	0.2727	28.04	9.79	37.83	51.04	-13.21	AVG
3	0.4432	35.29	9.79	45.08	57.00	-11.92	QP
4	0.4432	25.66	9.79	35.45	47.00	-11.55	AVG
5	0.6437	37.35	9.79	47.14	56.00	-8.86	QP
6	0.6437	25.41	9.79	35.20	46.00	-10.80	AVG
7	0.8264	37.85	9.81	47.66	56.00	-8.34	QP
8	0.8264	24.52	9.81	34.33	46.00	-11.67	AVG
9	1.0345	35.46	9.81	45.27	56.00	-10.73	QP
10	1.0345	19.47	9.81	29.28	46.00	-16.72	AVG
11	1.3736	35.13	9.83	44.96	56.00	-11.04	QP
12	1.3736	22.28	9.83	32.11	46.00	-13.89	AVG

Remark: 1. QP = Quasi Peak, AVG = Average 2. Correction Factor = Insertion loss of LISN + Cable loss + Transient Limiter (If use)

3. Measurement Value = Reading Level + Correct Factor 4. Margin Level = Measurement Value –Limit Value

Report No: WD-EF-R-190581-A1

V

4.1.7 Photographs of Test Configuration







4.2 Radiated Emission Measurement

4.2.1 Limits of Radiated Emission Measurement

Radiated Frequency range 30 MHz to 1000 MHz

	Radiated Emissions Limits at 10 meters												
Frequencies	FCC 15B/	ICES-003	CISPR 22										
(MHz)	Class A Class B (dBµV/m) (dBµV/m)		Class A (dBµV/m)	Class B (dBµV/m)									
30-88	39	29.5											
88-216	43.5	33.1	40	30									
216-230	16.4	25.6											
230-960	46.4	35.6	47	27									
960-1000	49.5	43.5	47	37									

	Radiated Emissions Limits at 3 meters											
Frequencies	FCC 15B/	ICES-003	CISPR 22									
(MHz)	Class A (dBµV/m)	Class B (dBµV/m)	Class A (dBµV/m)	Class B (dBµV/m)								
30-88	49.5	40		40.5								
88-216	54	43.5	50.5									
216-230	56.0	16										
230-960	56.9	46	57.5	17.5								
960-1000	60	54	57.5	47.5								

Note: 1. The lower limit shall apply at the transition frequency.

2. Detector function in the form: PK = Peak, QP = Quasi Peak, AV = Average

3. The test result calculated as following: Measurement Value = Reading Level + Correct Factor Correction Factor = Antenna factor + Cable loss (Antenna to preamplifier) - preamplifier Gain + Cable loss (preamplifier to receiver)

Margin Level = Measurement Value - Limit Value



	Radiated Emissions Limits at 10 meters											
	-	FCC 15B/	ICES-003	3	CISPR 22							
Frequencies (MHz)		lass A Class BµV/m) (dBµV			Class A	Class B						
	Peak	Average	Peak	Average	(dBµV/m)	(dBµV/m)						
1000-3000	60.5	69.5 49.5	63.5 43.5	12.5	Not defined	Not defined						
Above 3000	09.5			43.5	Not defined	Not defined						

Radiated Frequency range above 1 GHz

	Radiated Emissions Limits at 3meters											
	FCC 15B/ ICES-003				CISPR 22							
Frequencies (MHz)	Class A (dBµV/m)			Class B (dBµV/m)		Class A (dBµV/m)		Class B (dBµV/m)				
	Peak	Average	Peak	Average	Peak	Average	Peak	Average				
1000-3000	80	80 60	74	54	76	56	70	50				
Above 3000	80			54	80	60	74	54				

Note: 1. The lower limit shall apply at the transition frequency.

2. Detector function in the form: PK = Peak, QP = Quasi Peak, AV = Average

3. The test result calculated as following:

Measurement Value = Reading Level + Correct Factor

Correction Factor = Antenna factor + Cable loss (Antenna to preamplifier) - preamplifier Gain + Cable loss (preamplifier to receiver)

Margin Level = Measurement Value - Limit Value

Frequency Range (For unintentional radiators)

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705-108	1000
108-500	2000
500-1000	5000
Above 1000	5th harmonic of the highest frequency or 40GHz, whichever is lower



4.2.2 Test Instrument

	Test Site: W06-966										
Item	Equipment	Manufacturer	Model	Meter No.	Calibration Date						
1	Horn Antenna	Schwarzbeck	BBHA 9120D	CT-9-031	Oct. 09, 2018						
2	Horn Antenna	Schwarzbeck	BBHA 9170	CT-9-032	Oct. 11, 2018						
3	Bilog Antenna	Schwarzbeck	VULB 9168	СТ-9-027-2	Oct. 19, 2018						
4	EXA Signal Analyzer	Keysight	N9010A	CT-1-093	Apr. 19, 2019						
5	EMI Test Receiver Keysight		N9038A	CT-9-029	Dec. 05, 2018						
6	Preamplifier	EMEC	EMC330	СТ-9-024	Oct. 16, 2018						
7	Preamplifier	EMCI	EMC051845SE	CT-9-012	Oct. 11, 2018						
8	Preamplifier	EMCI	EMC184045SE	CT-9-013	Oct. 10, 2018						
9	Test Cable	EMEC	EM-CB400	CT-9-001-1	Oct. 18, 2018						
10	Test Cable	EMEC	EM-CB400	CT-9-001-2	Oct. 18, 2018						
11	Test Cable	EMEC	EM-CB400	CT-9-001-3	Oct. 18, 2018						
12	Test Cable	HUBER+SUHN ER	SF102	CT-9-002-1	Oct. 10, 2018						
13	Test Cable	EMEC	EMC102-KM-K M-600	CT-9-020	Oct. 10, 2018						
14	Test Cable	EMEC	EMC102-KM-K M-3000	CT-9-021-1	Oct. 10, 2018						
15	Measurement Software	EZ-EMC	Ver : FA-03A2 RE	CT-3-012	No calibration request						

Note: 1. The calibration interval of the above test instruments is 12 months.

4.2.3 Test Procedure

- a. The EUT was placed on the top of a turntable 0.8 meters above the ground at a 3 m 966 chamber or 10 m open area test site. The table was rotated 360 degrees to determine the position of the high radiation emissions.
- b. The height of the test antenna shall vary between 1 m to 4 m. Both vertical and horizontal polarizations of the antenna were set to make the measurement.
- c. The EUT was set up as per the test configuration to simulate typical usage per the user's manual. All I/O cables were positioned to simulate typical usage. The actual test configuration, please refer to EUT test photos.
- d. The initial step in collecting radiated emission data is a Spectrum Mode scanning the measurement frequency range.

Below 1GHz:

Reading in which marked as QP or Peak means measurements by using Spectrum Mode with detector RBW=120kHz.

If the Spectrum Mode measured peak value compliance with and lower than Quasi Peak Limit, the EUT shall be deemed to meet QP Limits.

Above 1GHz:

Reading in which marked as Peak & AVG means measurements by using Spectrum Mode with setting in RBW=1MHz.

If the Spectrum Mode measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak and AVG Limits.

e. Emission frequency and amplitude were recorded, recording at least six highest emissions. The EUT and cable configuration of the above highest emission levels were recorded. The test data of the worst case was recorded.

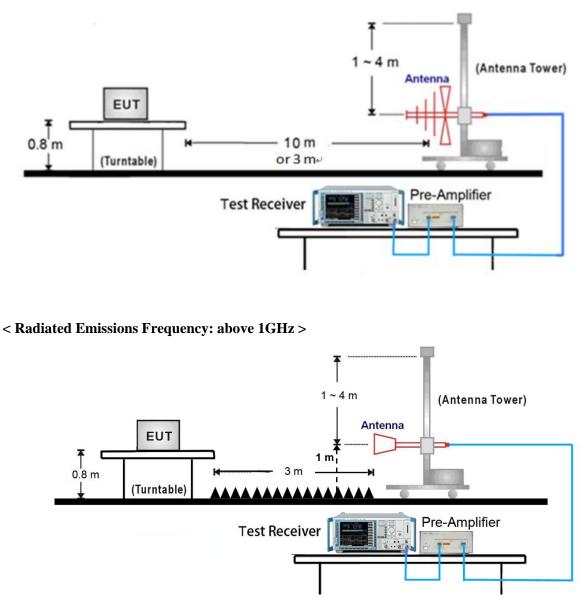
4.2.4 Deviation from Test Standard

No deviation

Report No: WD-EF-R-190581-A1

4.2.5 Test Setup

< Radiated Emissions Frequency: 30 MHz to 1000 MHz >



Note:

- (1) Please refer to the 4.2.7 for the actual test configuration.
- (2) The formula of measured value as: Test Result = Reading + Correction Factor
- (3) Detector function in the form: PK = Peak, QP = Quasi Peak, AV = Average
- (4) The test result calculated as following: Measurement Value = Reading Level + Correct Factor Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain (if use) Margin Level = Measurement Value - Limit Value



4.2.6 Test Result

Test Voltage	120Vac, 60Hz	Frequency Range	e 30 – 1000 MHz
Environmental Conditions	28°C, 63% RH	6dB Bandwidth	120 kHz
Test Date	2019/09/09	Test Distance	3m
Tested by	Karwin Kao	Polarization	Vertical
Test Site	W06		
80.0 dBuV/m			
		FCC 150 Class	B 3M Rad. up to 1GHz(QP)
		FLC 156 Class	
			Margin -6 dB 5 6
40 2			4 XX X
× 3			MANA AND AND AND AND AND AND AND AND AND
×.			1 4 All Manufarton Colombar
We this Month from	m. I. M. I. Williah M.	the material the work and a state of the	applicult W
with hat	Whather Worth Hard Prover		
822.)			
0.0			

No.	Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB/m)	Measurement (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Degree (degree)
1	30.0000	45.96	-10.65	35.31	40.00	-4.69	peak	100	139
2	34.8500	47.91	-10.36	37.55	40.00	-2.45	peak	100	356
3	120.2099	43.38	-12.32	31.06	43.50	-12.44	peak	100	70
4	806.9699	40.49	1.00	41.49	46.00	-4.51	peak	200	211
5	825.3999	42.91	1.29	44.20	46.00	-1.80	peak	200	221
6	840.9199	42.69	1.44	44.13	46.00	-1.87	peak	200	211

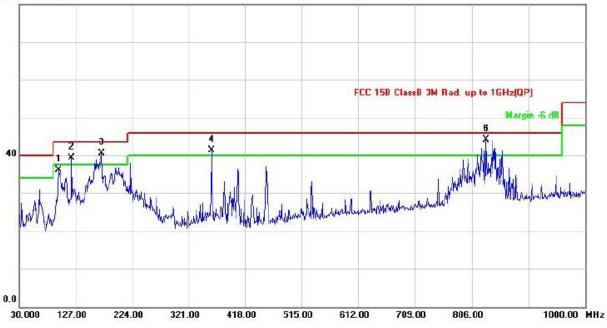
Remark: 1. QP = Quasi Peak

2. Correction Factor = Antenna factor + Cable loss (Antenna to preamplifier) - preamplifier Gain + Cable loss (preamplifier to receiver)

3. Measurement Value = Reading Level + Correct Factor 4. Margin Level = Measurement Value - Limit Value

Test Voltage 120Vac, 60Hz 30 - 1000 MHz**Frequency Range** Environmental 28°C, 63% RH 120 kHz **6dB Bandwidth** Conditions **Test Date** 2019/09/09 **Test Distance** 3m Karwin Kao Horizontal Tested by **Polarization** W06 **Test Site**





No.	Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB/m)	Measurement (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Degree (degree)
1	97.9000	51.24	-15.15	36.09	43.50	-7.41	peak	200	100
2	120.2100	51.61	-12.32	39.29	43.50	-4.21	peak	200	100
3	171.6200	50.80	-10.21	40.59	43.50	-2.91	peak	200	110
4	359.8000	49.03	-7.63	41.40	46.00	-4.60	peak	100	93
5	830.2500	42.79	1.31	44.10	46.00	-1.90	peak	100	132
6	830.2500	42.79	1.31	44.10	46.00	-1.90	peak	100	132

Remark: 1. QP = Quasi Peak

2. Correction Factor = Antenna factor + Cable loss (Antenna to preamplifier) - preamplifier Gain

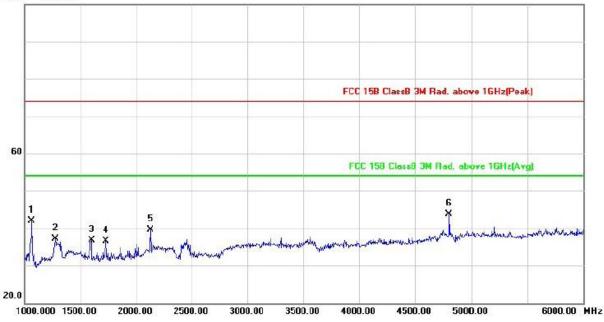
+ Cable loss (preamplifier to receiver)

3. Measurement Value = Reading Level + Correct Factor

4. Margin Level = Measurement Value - Limit Value

Test Voltage 120Vac, 60Hz 1-6GHz**Frequency Range** Environmental 28°C, 63% RH 1MHz **6dB Bandwidth Conditions Test Date** 2019/09/09 **Test Distance** 3m Karwin Kao Vertical Tested by **Polarization** W06 **Test Site**

100.0 dBuV/m



No.	Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB/m)	Measurement (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Degree (degree)
1	1065.000	63.70	-21.86	41.84	74.00	-32.16	peak	100	4
2	1275.000	56.18	-19.15	37.03	74.00	-36.97	peak	100	53
3	1600.000	56.45	-19.79	36.66	74.00	-37.34	peak	100	4
4	1730.000	55.94	-19.53	36.41	74.00	-37.59	peak	100	141
5	2130.000	56.00	-16.49	39.51	74.00	-34.49	peak	100	171
6	4805.000	53.56	-9.82	43.74	74.00	-30.26	peak	200	356

Remark: 1. peak = Peak, AVG = Average

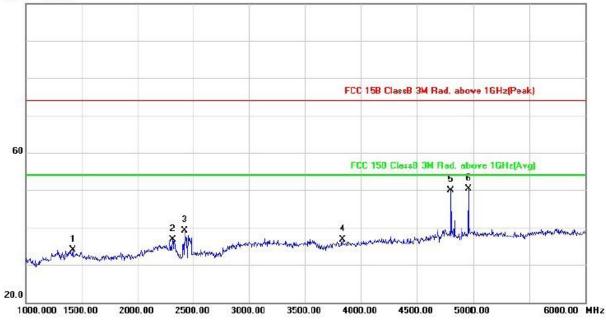
2. Correction Factor = Antenna factor + Cable loss (Antenna to preamplifier) - preamplifier Gain

+ Cable loss (preamplifier to receiver)

- 3. Measurement Value = Reading Level + Correct Factor
- 4. Margin Level = Measurement Value Limit Value

Test Voltage 120Vac, 60Hz 1-6GHz**Frequency Range** Environmental 28°C, 63% RH 1MHz **6dB Bandwidth** Conditions **Test Date** 2019/09/09 **Test Distance** 3m Karwin Kao Horizontal Tested by **Polarization** W06 **Test Site**

100.0 dBuV/m



No.	Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB/m)	Measurement (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Degree (degree)
1	1420.000	53.11	-19.14	33.97	74.00	-40.03	peak	100	133
2	2315.000	52.80	-16.05	36.75	74.00	-37.25	peak	100	346
3	2420.000	55.27	-16.21	39.06	74.00	-34.94	peak	100	84
4	3835.000	49.37	-12.60	36.77	74.00	-37.23	peak	100	259
5	4805.000	59.68	-9.82	49.86	74.00	-24.14	peak	114	360
6	4960.000	59.84	-9.54	50.30	74.00	-23.70	peak	180	360

Remark: 1. peak = Peak, AVG = Average

2. Correction Factor = Antenna factor + Cable loss (Antenna to preamplifier) - preamplifier Gain

+ Cable loss (preamplifier to receiver)

3. Measurement Value = Reading Level + Correct Factor 4. Margin Level = Measurement Value - Limit Value



4.2.7 Photographs of Test Configuration







< End Page >