

# **FCC REPORT**

For LTE

Report No. ....:: CHTEW22040168

Report Verification:

Project No.....: SHT2202018603EW

FCC ID.....:: 2A3E5-EYEON12WC

Applicant .....:: EyeTech Digital Systems , Inc.

Address....: 2141 E Broadway Rd, Ste 202, Tempe, AZ 85282, United States

of America

Product Name .....: EyeOn Air

Trade Mark ..... EyeOn

Model No ....: EyeOn-12WC

Listed Model(s) .....:

FCC CFR Title 47 Part 2 Standard .....:

FCC CFR Title 47 Part 90

Date of receipt of test sample..... Feb. 21, 2022

Date of testing..... Feb. 22, 2022- Apr. 22., 2022

Date of issue..... Apr. 24., 2022

Result.....: **Pass** 

Compiled by

File administrators Silvia Li (position+printedname+signature)...:

Supervised by

(position+printedname+signature)....: Project Engineer Aaron Fang Silvia Li Aaron.Fang

Approved by

(position+printedname+signature)....: Manager Hans Hu

Testing Laboratory Name .....: Shenzhen Huatongwei International Inspection Co., Ltd.

1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Address.....

Tianliao, Gongming, Shenzhen, China

Shenzhen Huatongwei International Inspection Co., Ltd. All rights reserved.

This publication may be reproduced in whole or in part for non-commercial purposes as long as the Shenzhen Huatongwei International Inspection Co., Ltd. is acknowledged as copyright owner and source of the material. Shenzhen Huatongwei International Inspection Co., Ltd. takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

The test report merely correspond to the test sample.

Page: 1 of 45

Report No.: CHTEW22040168 Page: 2 of 25 Date of issue: 2022-04-24

## **Contents**

<u>1.</u>	TEST STANDARDS AND REPORT VERSION	<u>ა</u>
1.1.	Applicable Standards	3
1.2.	Report version information	3
<u>2.</u>	TEST DESCRIPTION	4
<u>3.</u>	SUMMARY	5
		_
3.1.	Client Information	5
3.2.	Product Description	5
3.3.	Radio Specification Description	5
3.4.	Testing Laboratory Information	6
<u>4.</u>	TEST CONFIGURATION	7
<del></del>	TEST CONFIGURATION	
4.1.	Test frequency list	7
4.2.	Descriptions of Test mode	7
4.3.	Test sample information	7
4.4.	Support unit used in test configuration and system	7
4.5.	Testing environmental condition	8
4.6.	Statement of the measurement uncertainty	8
4.7.	Equipments Used during the Test	9
<u>5.</u>	TEST CONDITIONS AND RESULTS	10
5.1.	Conducted Output Power	10
5.1. 5.2.	Peak-to-Average Ratio	11
5.2. 5.3.	99% Occupied Bandwidth & 26 dB Bandwidth	12
5.4.	Band Edge	13
5. <del>5</del> .	Conducted Spurious Emissions	14
5.6.	Frequency stability VS Temperature measurement	15
5.7.	Frequency stability VS Voltage measurement	16
5.8.	Radiated Spurious Emission	17
<u>6.</u>	TEST SETUP PHOTOS OF THE EUT	25
<u>v.</u>	1201 OLIGI TITOTOG OF THE EUT	23
<u>7.</u>	EXTERNAL AND INTERNAL PHOTOS OF THE EUT	25
8.	APPENDIX REPORT	25

Report No.: CHTEW22040168 Page: 3 of 25 Date of issue: 2022-04-24

## 1. TEST STANDARDS AND REPORT VERSION

## 1.1. Applicable Standards

The tests were performed according to following standards:

FCC Rules Part 2: FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

FCC Rules Part 90: PRIVATE LAND MOBILE RADIO SERVICES.

ANSI C63.26: 2015: American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

KDB 971168 D01 Power Meas License Digital Systems v03: MEASUREMENT GUIDANCE FOR CERTIFICATION OF LICENSED DIGITAL TRANSMITTERS

### 1.2. Report version information

Revision No.	Date of issue	Description
N/A	2022-04-24	Original

Report No.: CHTEW22040168 Page: 4 of 25 Date of issue: 2022-04-24

# 2. Test Description

Section	Test Item	Section in CFR 47	Result #1	Test Engineer
5.1	Conducted Output Power	Part 2.1046 Part 90.635(b)	Pass	Tiancheng Huang
5.2	Peak-to-Average Ratio	-	Pass	Tiancheng Huang
5.3	99% Occupied Bandwidth & 26 dB Bandwidth	Part 2.1049	Pass	Tiancheng Huang
5.4	Band Edge	Part 2.1051 Part 90.691	Pass	Tiancheng Huang
5.5	Conducted Spurious Emissions	Part 2.1051 Part 90.691	Pass	Tiancheng Huang
5.6	Frequency stability vs temperature	Part 2.1055(a)(1)(b) Part 90.213	Pass	Tiancheng Huang
5.7	Frequency stability vs voltage	Part 2.1055(d)(1)(2) Part 90.213	Pass	Tiancheng Huang
5.8	Radiated Spurious Emissions	Part 2.1053 Part 90.691	Pass	Pan Xie

Note:

#1: The test result does not include measurement uncertainty value

Report No.: CHTEW22040168 Page: 5 of 25 Date of issue: 2022-04-24

## 3. **SUMMARY**

## 3.1. Client Information

Applicant:	EyeTech Digital Systems , Inc.	
Address:	2141 E Broadway Rd, Ste 202, Tempe, AZ 85282, United States of America	
Manufacturer:	Shenzhen Chuangwei Electronic Appliance Tech Co.,Ltd.	
	4F&6F, Overseas plant south, Skyworth Industrial Park, Shiyan Street,	
Address:	Bao'an District, Shenzhen, Guangdong, P.R. China	

## 3.2. Product Description

Main unit information:					
Product Name:	EyeOn Air				
Trade Mark:	EyeOn				
Model No.:	EyeOn-12WC				
Listed Model(s):					
Power supply:	DC 3.8V from Battery				
Hardware version:	TO116K_MB_V4.0				
Software version:	TO116K_Y12_V1.0.0_20220422				
Accessory unit information:					
Battery information:	DC3.8V,5050mAh				
Adapter information:	Model:SYS1649-6012-T3 Input: AC100-240V, 50/60Hz, 1.5A Output: 12Vdc, 5.0A				

## 3.3. Radio Specification Description

Operation Band:	⊠ FDD Band 26				
			Uplink		Downlink
Operation Frequency Range:	FDD Band 18		817.5 – 821.5 MHz		862.5 – 866.5 MHz
	FDD Band 26		814.7 – 823.3 MHz		859.7 – 868.3 MHz
Channel bandwidth:	1.4MHz, 3MHz, 5MH	Hz, 10	MHz, 10MHz	z,15MHz	
Power Class:	⊠ Class 3	☐ Cla	ass 4		
Uplink Modulation type:	⊠ QPSK	⊠ 16	QAM	☐ 64QAM	☐ 256QAM
Downlink Modulation type:	⊠ QPSK	⊠ 16	QAM	☐ 64QAM	☐ 256QAM
Antenna type	PIFA Antenna				
Antenna Gain <sup>#2</sup>	Band 18:-2.23dBi; B	and 2	26:-2.06dBi;	·	

Note:

 $<sup>\</sup>boxtimes$ : means that this feature is supported;  $\square$ : means that this feature is not supported

<sup>#2:</sup> The antenna gain is provided by the applicant, and the applicant should be responsible for its authenticity, HTW lab has not verified the authenticity of its information

Report No.: CHTEW22040168 Page: 6 of 25 Date of issue: 2022-04-24

# 3.4. Testing Laboratory Information

Laboratory Name	Shenzhen Huatongwei International Inspection Co., Ltd.			
Laboratory Location	1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China			
Connect information:	Tel: 86-755-26715499 E-mail: cs@szhtw.com.cn http://www.szhtw.com.cn			
Qualifications	Type Accreditation Number			
Qualifications	FCC 762235			

Report No.: CHTEW22040168 Page: 7 of 25 Date of issue: 2022-04-24

## 4. TEST CONFIGURATION

## 4.1. Test frequency list

	Test Frequency ID	Banwidth[MHz]	NUL	Frequency of Uplink [MHz]	NDL	Frequency of Downlink [MHz]
EDD D 140	Low Range	5	23875	817.5	5875	862.5
FDD Band 18	Mid Range	5	23895	819.5	5895	864.5
	High Range	5	23915	821.5	5915	866.5
		•		•		
	Took Fragues av ID	Demonstrately DAIL Inc.				
	Test Frequency ID	Banwidth[MHz]	N <sub>UL</sub>	Frequency of Uplink [MHz]	N <sub>DL</sub>	Frequency of Downlink [MHz]
	Low Range	Banwioth[MHz]	N <sub>UL</sub> 26997		N <sub>DL</sub> 8697	
	. ,	-		Uplink [MHz]		Downlink [MHz]
	. ,	1.4	26997	Uplink [MHz] 814.7	8697	Downlink [MHz] 859.7
TDD Band 26	. ,	1.4	26997 26705	Uplink [MHz] 814.7 815.5	8697 8705	Downlink [MHz] 859.7 860.5
TDD Band 26	. ,	1.4 3 5	26997 26705 26715	Uplink [MHz] 814.7 815.5 816.5	8697 8705 8715	Downlink [MHz] 859.7 860.5 861.5
TDD Band 26	. ,	1.4 3 5	26997 26705 26715	Uplink [MHz] 814.7 815.5 816.5	8697 8705 8715	Downlink [MHz] 859.7 860.5 861.5
TDD Band 26	Low Range	1.4 3 5 10	26997 26705 26715 - 26765	Uplink [MHz] 814.7 815.5 816.5 - 821.5	8697 8705 8715	Downlink [MHz] 859.7 860.5 861.5
TDD Band 26	Low Range  Mid Range	1.4 3 5 10 15 1.4/3/5/10	26997 26705 26715 - 26765 26740	Uplink [MHz] 814.7 815.5 816.5 - 821.5 819	8697 8705 8715 - 8740	Downlink [MHz] 859.7 860.5 861.5 -
TDD Band 26	Low Range  Mid Range	1.4 3 5 10 15 1.4/3/5/10 1.4	26997 26705 26715 - 26765 26740 26783	Uplink [MHz] 814.7 815.5 816.5 - 821.5 819 823.3	8697 8705 8715 - 8740 8783	Downlink [MHz]  859.7  860.5  861.5  -  864  868.3

## 4.2. Descriptions of Test mode

#### For RF test items

The EUT has been tested under typical operating condition. Testing was performed by configuring EUT to maximum output power status.

LTE Band	1.4MHz	3MHz	5MHz	10MHz	15MHz	20MHz
FDD Band 18			$\checkmark$			
FDD Band 26	√	√	√	√	√	

### 4.3. Test sample information

Test item	HTW sample no.		
Conducted test items	Please refer to the description in the appendix report		
Radiated test items	YPHT22020186003		

Note:

Conducted test items: Conducted Output Power, Peak-Average Ratio, 99% Occupied Bandwidth & 26 dB

Bandwidth, Band Edge, Conducted Spurious Emissions, Frequency stability, ERP

Radiated test items: Radiated Spurious Emission

### 4.4. Support unit used in test configuration and system

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

The following peripheral devices and interface cables were connected during the measurement:

Whether support unit is used?						
✓	No					
Item	Equipment	Trade Name	Model No.	Other		
1						

Report No.: CHTEW22040168 Page: 8 of 25 Date of issue: 2022-04-24

0		
2		

## 4.5. Testing environmental condition

Voltage	VN=Nominal Voltage	DC 3.80V		
	VL=Lower Voltage	DC 3.42V		
	VH=Higher Voltage	DC 4.18V		
Temperature	TN=Normal Temperature	25 °C		
	Extreme Temperature	From -30°C to + 50°C		
Humidity	30~60 %			
Air Pressure	950-1050 hPa			

## 4.6. Statement of the measurement uncertainty

Test Items	MeasurementUncertainty			
Radio frequency	<1GHz: 0.022ppm >1GHz: 0.64ppm			
Conducted output power	0.65 dB			
ERP	0.65 dB			
Conducted spurious emission	0.65 dB			
Radiated spurious emission	<1GHz: 2.85dB >1GHz: 3.66dB			
99% Occupied Bandwidth & 26 dB Bandwidth	<1GHz: 0.022ppm >1GHz: 0.64ppm			

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

Report No.: CHTEW22040168 Page: 9 of 25 Date of issue: 2022-04-24

## 4.7. Equipments Used during the Test

Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
•	Signal and spectrum Analyzer	R&S	HTWE0242	FSV40	100048	2021/09/13	2022/09/12
•	Signal & Spectrum Analyzer	R&S	HTWE0262	FSW26	103440	2021/09/13	2022/09/12
•	Spectrum Analyzer	Agilent	HTWE0286	N9020A	MY50510187	2021/09/13	2022/09/12
•	Radio communication tester	R&S	HTWE0287	CMW500	137688-Lv	2021/09/13	2022/09/12
•	Test software	Tonscend	N/A	JS1120	N/A	N/A	N/A

•	Radiated Spurious Emission								
Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)		
•	Semi-Anechoic Chamber	Albatross projects	HTWE0122	SAC-3m-01	N/A	2018/09/27	2022/09/26		
•	Spectrum Analyzer	R&S	HTWE0098	FSP40	100597	2021/09/13	2022/09/12		
•	Loop Antenna	R&S	HTWE0170	HFH2-Z2	100020	2021/04/06	2024/04/05		
•	Broadband Horn Antenna	SCHWARZBECK	HTWE0103	BBHA9170	BBHA9170472	2020/04/27	2023/04/26		
•	Ultra-Broadband Antenna	SCHWARZBECK	HTWE0123	VULB9163	538	2021/04/06	2024/04/05		
•	Horn Antenna	SCHWARZBECK	HTWE0126	9120D	1011	2020/04/01	2023/03/31		
•	Pre-amplifier	CD	HTWE0071	PAP-0102	12004	2021/11/05	2022/11/04		
•	Broadband Preamplifier	SCHWARZBECK	HTWE0201	BBV 9718	9718-248	2022/02/28	2023/02/27		
•	RF Connection Cable	HUBER+SUHNER	HTWE0120- 01	6m 18GHz S Serisa	N/A	2022/02/25	2023/02/24		
•	RF Connection Cable	HUBER+SUHNER	HTWE0120- 02	6m 3GHz RG Serisa	N/A	2022/02/25	2023/02/24		
•	RF Connection Cable	HUBER+SUHNER	HTWE0120- 03	6m 3GHz RG Serisa	N/A	2022/02/25	2023/02/24		
•	RF Connection Cable	HUBER+SUHNER	HTWE0120- 04	6m 3GHz RG Serisa	N/A	2022/02/25	2023/02/24		
•	RF Connection Cable	HUBER+SUHNER	HTWE0121- 01	6m 18GHz S Serisa	N/A	2018/09/27	2022/09/26		
•	EMI Test Software	Audix	N/A	E3	N/A	N/A	N/A		

•	Auxiliary Equipment							
Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)	
•	Climate chamber	ESPEC	HTWE0254	GPL-2	N/A	2021/09/14	2022/09/13	
•	DC Power Supply	Gwinstek	HTWE0274	SPS-2415	GER835793	N/A	N/A	

Report No.: CHTEW22040168 Page: 10 of 25 Date of issue: 2022-04-24

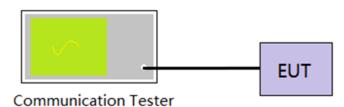
## 5. TEST CONDITIONS AND RESULTS

### 5.1. Conducted Output Power

#### **LIMIT**

N/A

### **TEST CONFIGURATION**



#### **TEST PROCEDURE**

- 1. The EUT output port was connected to communication tester.
- 2. Set EUT at maximum power through communication tester.
- 3. Select lowest, middle, and highest channels for each band and different modulation.
- 4. Measure the maximum burst average power.

#### **TEST MODE:**

Please refer to the clause 4.2

#### **TEST RESULTS**

Refer to appendix A on the section 8 appendix report

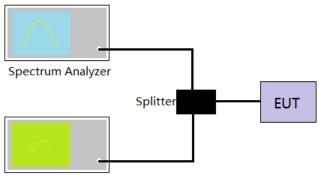
Report No.: CHTEW22040168 Page: 11 of 25 Date of issue: 2022-04-24

## 5.2. Peak-to-Average Ratio

#### LIMIT

13dB

#### **TEST CONFIGURATION**



Communication Tester

#### **TEST PROCEDURE**

- 1. The EUT was connected to the spectrum analyzer and communication tester via a power splitter
- 2. Set EUT in maximum power output.
- 3. Center Frequency = Carrier frequency, RBW > Emission bandwidth of signal
- 4. The signal analyzer was set to collect one million samples to generate the CCDF curve
- 5. The measurement interval was set depending on the type of signal analyzed.
  - i. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms.
  - ii. For bursttransmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that issynced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in whichthetransmitter is operating at maximum power
- 6. Record the maximum PAPR level associated with a probability of 0.1%.

## TEST MODE:

Please refer to the clause 4.2

#### **TEST RESULTS**

Refer to appendix B on the section 8 appendix report

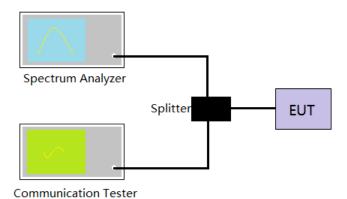
Report No.: CHTEW22040168 Page: 12 of 25 Date of issue: 2022-04-24

## 5.3. 99% Occupied Bandwidth & 26 dB Bandwidth

## LIMIT

N/A

### **TEST CONFIGURATION**



#### **TEST PROCEDURE**

- 1. The EUT was connected to the spectrum analyzer and communication tester via a power splitter
- 2. Set EUT in maximum power output.
- 3. Spectrum analyzer setting as follow:

Center Frequency= Carrier frequency, RBW=1% to 5% of the anticipated OBW, VBW= 3 \* RBW, Detector=Peak,

Trace maximum hold.

4. Record the value of 99% Occupied bandwidth and 26dB bandwidth.

#### **TEST MODE:**

Please refer to the clause 4.2

#### **TEST RESULTS**

Refer to appendix C on the section 8 appendix report

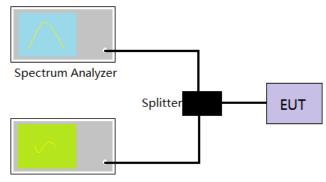
Report No.: CHTEW22040168 Page: 13 of 25 Date of issue: 2022-04-24

## 5.4. Band Edge

#### **LIMIT**

- (1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log<sub>10</sub>(f/6.1) decibels or 50 + 10 Log<sub>10</sub>(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.
- (2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 43 + 10Log<sub>10</sub>(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

### **TEST CONFIGURATION**



Communication Tester

#### **TEST PROCEDURE**

- 1. The EUT was connected to the spectrum analyzer and communication tester via a power splitter
- 2. Set EUT in maximum power output.
- 3. The band edges of low and high channels were measured.
- Spectrum analyzer setting as follow:
   RBW= no less than 1% of the OBW, VBW =3 \* RBW, Sweep time= Auto
- 5. Record the test plot.

#### **TEST MODE:**

Please refer to the clause 4.2

#### **TEST RESULTS**

Refer to appendix D on the section 8 appendix report

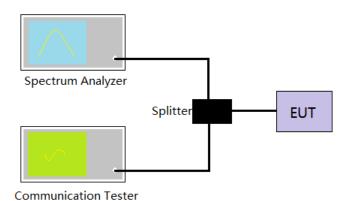
Report No.: CHTEW22040168 Page: 14 of 25 Date of issue: 2022-04-24

## 5.5. Conducted Spurious Emissions

#### **LIMIT**

- (3) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log<sub>10</sub>(f/6.1) decibels or 50 + 10 Log<sub>10</sub>(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.
- (4) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 43 + 10Log<sub>10</sub>(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

#### **TEST CONFIGURATION**



#### **TEST PROCEDURE**

- 1. The EUT was connected to the spectrum analyzer and communication tester via a power splitter
- 2. Set EUT in maximum power output.
- 3. Spectrum analyzer setting as follow:

Below 1GHz, RBW=100KHz, VBW = 300KHz, Detector=Peak, Sweep time= Auto Above 1GHz, RBW=1MHz, VBW=3MHz, Detector=Peak, Sweep time= Auto Scan frequency range up to 10<sup>th</sup> harmonic.

4. Record the test plot.

### **TEST MODE:**

Please refer to the clause 4.2

#### **TEST RESULTS**

Refer to appendix E on the section 8 appendix report

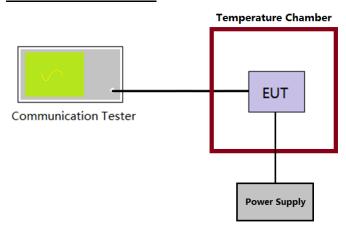
Report No.: CHTEW22040168 Page: 15 of 25 Date of issue: 2022-04-24

## 5.6. Frequency stability VS Temperature measurement

#### **LIMIT**

2.5ppm

#### **TEST CONFIGURATION**



#### **TEST PROCEDURE**

- 1. The equipment under test was connected to an external DC power supply and input rated voltage.
- 2. The EUT output port was connected to communication tester.
- 3. The EUT was placed inside the temperature chamber.
- 4. Turn EUT off and set the chamber temperature to –30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency.
- 5. Repeat step 4 measure with 10°C increased per stage until the highest temperature of +50°C reached.

#### **TEST MODE:**

Please refer to the clause 4.2

#### **TEST RESULTS**

Refer to appendix F on the section 8 appendix report

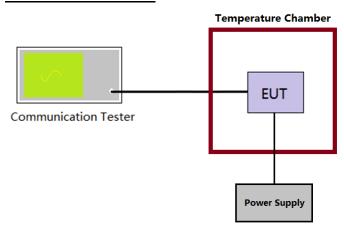
Report No.: CHTEW22040168 Page: 16 of 25 Date of issue: 2022-04-24

## 5.7. Frequency stability VS Voltage measurement

#### <u>LIMIT</u>

2.5ppm

#### **TEST CONFIGURATION**



#### **TEST PROCEDURE**

- 1. The equipment under test was connected to an external DC power supply and input rated voltage.
- 2. The EUT output port was connected to communication tester.
- 3. The EUT was placed inside the temperature chamber at 25°C
- 4. The power supply voltage to the EUT was varied ±15% of the nominal value measured at the input to the EUT
- 5. Record the maximum frequency change.

#### **TEST MODE:**

Please refer to the clause 4.2

#### **TEST RESULTS**

Refer to appendix F on the section 8 appendix report

Report No.: CHTEW22040168 Page: 17 of 25 Date of issue: 2022-04-24

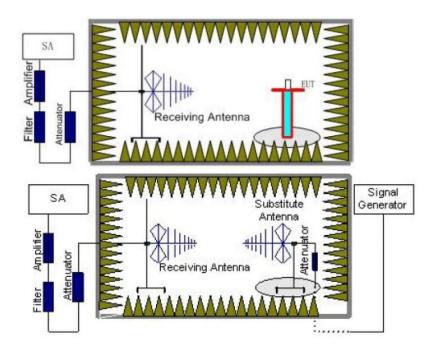
## 5.8. Radiated Spurious Emission

#### **LIMIT**

(5) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log<sub>10</sub>(f/6.1) decibels or 50 + 10 Log<sub>10</sub>(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(6) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 43 + 10Log<sub>10</sub>(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

#### **TEST CONFIGURATION**



#### **TEST PROCEDURE**

- Place the EUT in the center of the turntable.
  - a) For radiated emissions measurements performed at frequencies less than or equal to 1 GHz, the EUT shall be placed on a RF-transparent table at a nominal height of 80 cm above the reference ground plane
  - b) For radiated measurements performed at frequencies above 1 GHz, the EUT shall be placed on an RF transparent table at a nominal height of 1.5 m above the ground plane.
- Unless the EUT uses an integral antenna, the EUT shall be terminated with a non-radiating transmitter load. In cases where the EUT uses an adjustable antenna, the antenna shall be adjusted through typical positions and lengths to maximize emissions levels.
- 3. The EUT shall be tested while operating on the frequency per manufacturer specification. Set the transmitter to operate in continuous transmit mode.
- 4. Receiver or Spectrum set as follow:

Below 1GHz, RBW=100kHz, VBW=300kHz, Detector=Peak, Sweep time=Auto

Above 1GHz, RBW=1MHz, VBW=3MHz, Detector=Peck, Sweep time=Auto

- 5. Each emission under consideration shall be evaluated:
  - a) Raise and lower the measurement antenna from 1 m to 4 m, as necessary to enable detection of the maximum emission amplitude relative to measurement antenna height.
  - b) Rotate the EUT through 360° to determine the maximum emission level relative to the axial position.

Report No.: CHTEW22040168 Page: 18 of 25 Date of issue: 2022-04-24

c) Return the turntable to the azimuth where the highest emission amplitude level was observed.

- d) Vary the measurement antenna height again through 1 m to 4 m again to find the height associated with the maximum emission amplitude.
- e) Record the measured emission amplitude level and frequency
- 6. Repeat step 5 for each emission frequency with the measurement antenna oriented in both the horizontal and vertical polarizations to determine the orientation that gives the maximum emissions amplitude.
- Set-up the substitution measurement with the reference point of the substitution antenna located as near
  as possible to where the center of the EUT radiating element was located during the initial EUT
  measurement.
- 8. Maintain the previous measurement instrument settings and test set-up, with the exception that the EUT is removed and replaced by the substitution antenna.
- 9. Connect a signal generator to the substitution antenna; locate the signal generator so as to minimize any potential influences on the measurement results. Set the signal generator to the frequency where emissions are detected, and set an output power level such that the radiated signal can be detected by the measurement instrument, with sufficient dynamic range relative to the noise floor.
- 10. For each emission that was detected and measured in the initial test
  - a) Vary the measurement antenna height between 1 m to 4 m to maximize the received (measured) signal amplitude.
  - b) Adjust the signal generator output power level until the amplitude detected by the measurement instrument equals the amplitude level of the emission previously measured directly in step 5 and step 6.
  - Record the output power level of the signal generator when equivalence is achieved in step b).
- 11. Repeat step 8 through step 10 with the measurement antenna oriented in the opposite polarization.
- 12. Calculate the emission power in dBm referenced to a half-wave dipole using the following equation:

Pe = Ps(dBm) - cable loss (dB) + antenna gain (dBd)

where

Pe = equivalent emission power in dBm

Ps = source (signal generator) power in dBm

NOTE—dBd refers to the measured antenna gain in decibels relative to a half-wave dipole.

13. Correct the antenna gain of the substitution antenna if necessary to reference the emission power to a half-wave dipole. When using measurement antennas with the gain specified in dBi, the equivalent dipole-referenced gain can be determined from:

gain (dBd) = gain (dBi) -2.15 dB.

If necessary, the antenna gain can be calculated from calibrated antenna factor information

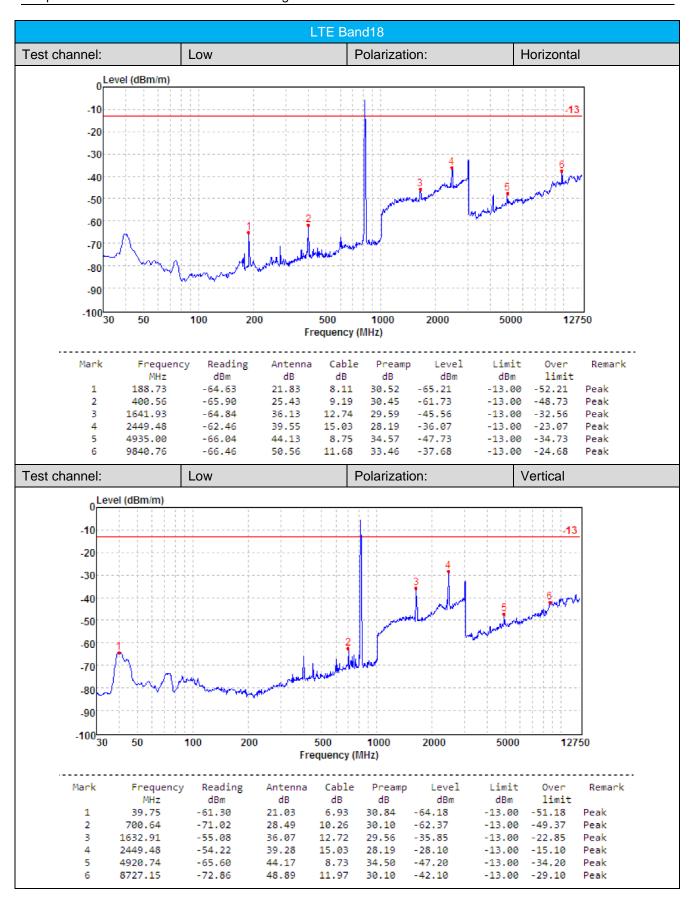
14. Provide the complete measurement results as a part of the test report.

#### **TEST MODE:**

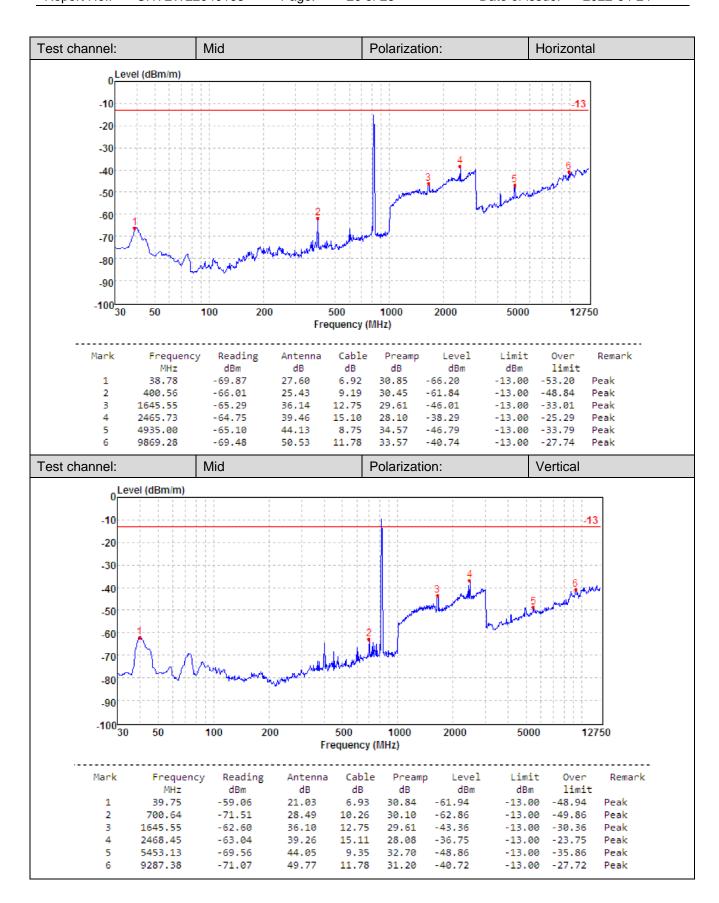
Please refer to the clause 4.2

#### **TEST RESULTS**

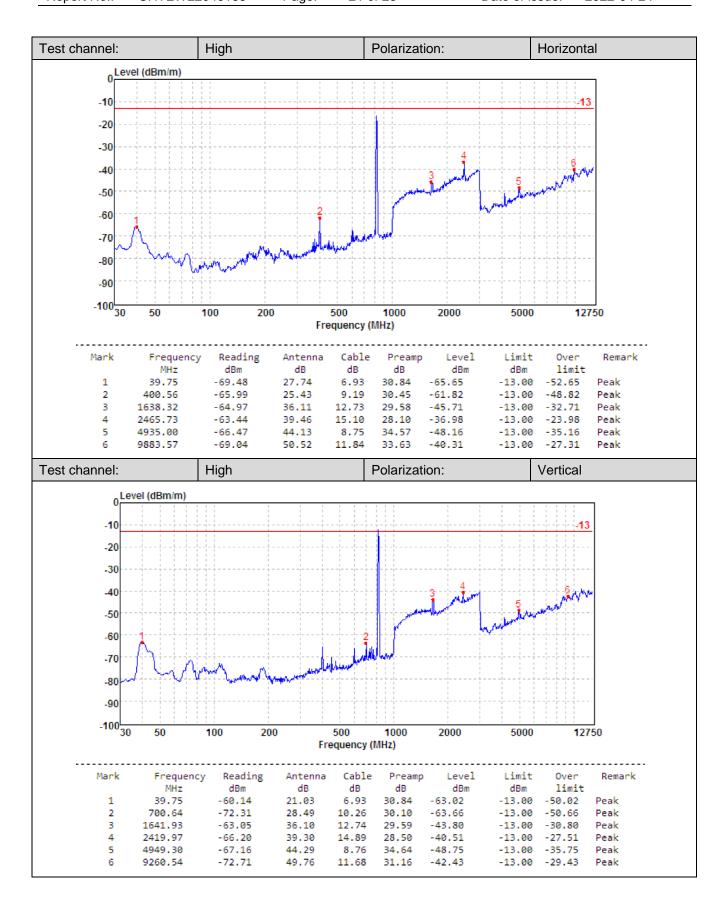
 Report No.: CHTEW22040168 Page: 19 of 25 Date of issue: 2022-04-24



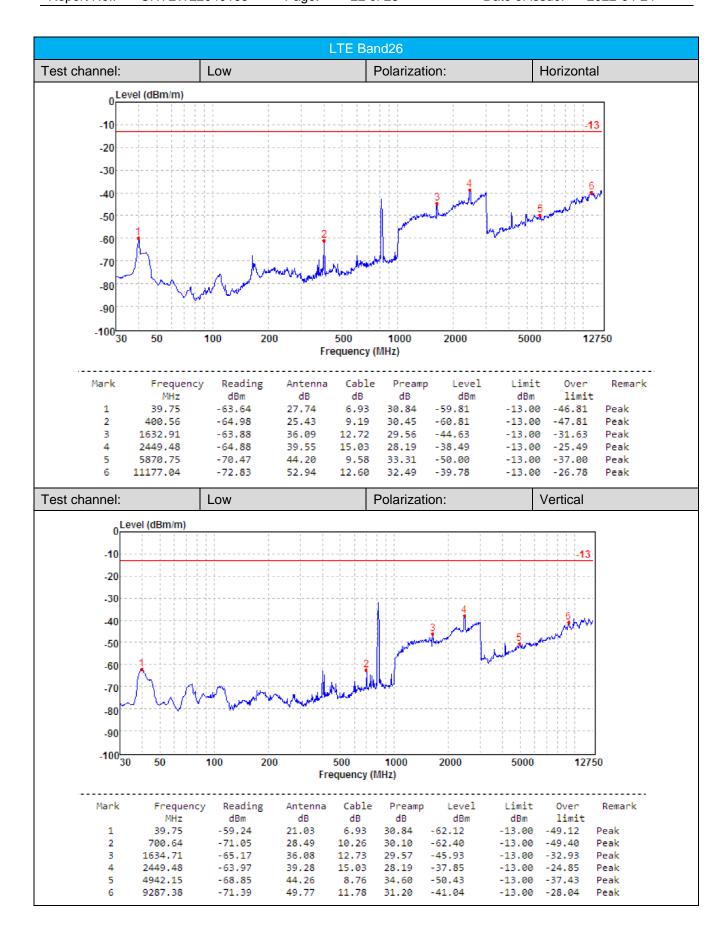
Report No.: CHTEW22040168 Page: 20 of 25 Date of issue: 2022-04-24



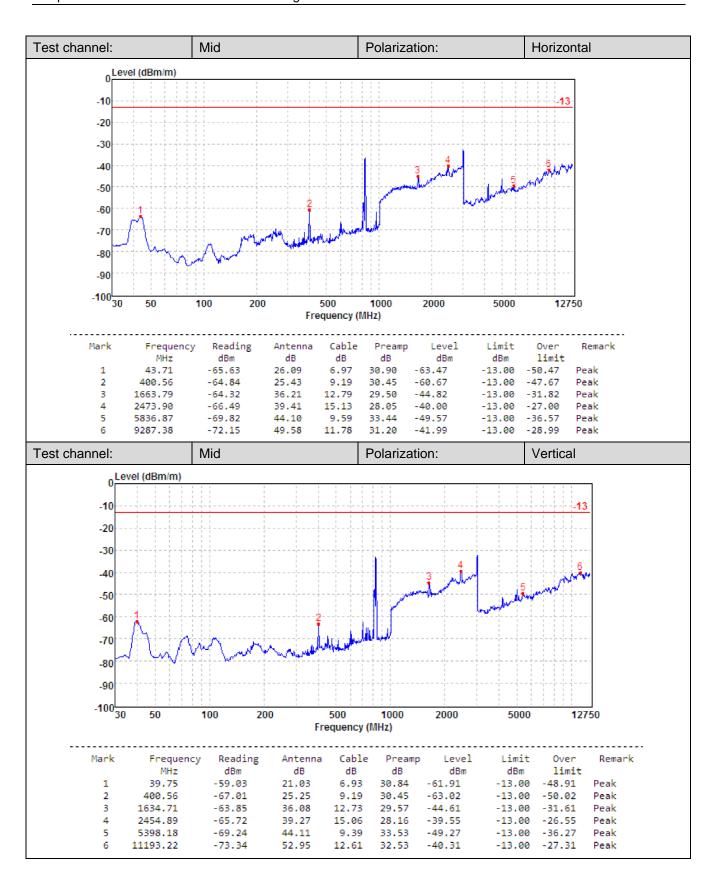
Report No.: CHTEW22040168 Page: 21 of 25 Date of issue: 2022-04-24



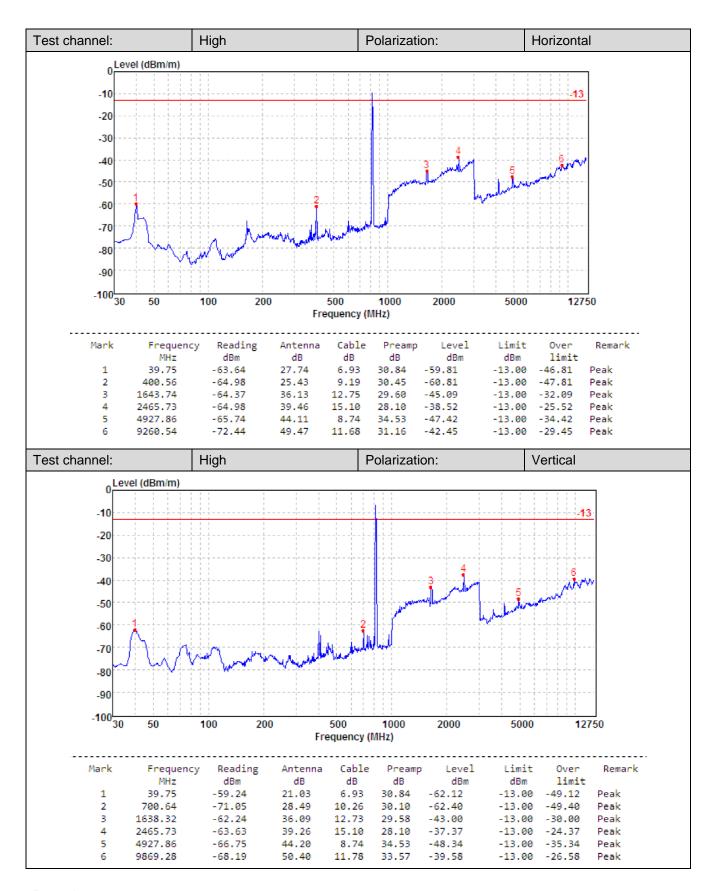
Report No.: CHTEW22040168 Page: 22 of 25 Date of issue: 2022-04-24



Report No.: CHTEW22040168 Page: 23 of 25 Date of issue: 2022-04-24



Report No.: CHTEW22040168 Page: 24 of 25 Date of issue: 2022-04-24



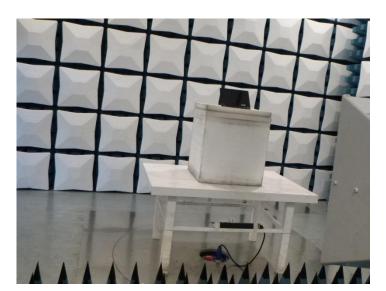
#### Remark:

- 1. Remark"---" means that the emission level is too low to be measured
- 2. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Report No.: CHTEW22040168 Page: 25 of 25 Date of issue: 2022-04-24

# 6. TEST SETUP PHOTOS OF THE EUT





# 7. EXTERNAL AND INTERNAL PHOTOS OF THE EUT

Refer to the test report No.: CHTEW22040160

# 8. APPENDIX REPORT