

# FCC REPORT

Report Reference No.....	CHTEW21110070	Report Verification:	 ReportNo:CHTEW21110070
Project No.....	SHT2109065003EW		
FCC ID .....	2A3QD-WB-BHA12A001		
Applicant's name.....	Telecom Square, Inc.		
Address.....	3F Homat Horizon Building, 6-2 Gobancho, Chiyoda-ku, Tokyo 102-0076		
Test item description .....	12 Slots Sharing Power Bank		
Trade Mark .....	-		
Model/Type reference.....	ZBJ-886		
Listed Model(s) .....	-		
Standard .....	<b>FCC CFR Title 47 Part 2</b> <b>FCC CFR Title 47 Part 90</b>		
Date of receipt of test sample.....	Sep. 28, 2021		
Date of testing.....	Sep. 29, 2021- Nov. 08, 2021		
Date of issue.....	Nov. 09, 2021		
Result.....	<b>Pass</b>		

Compiled by ( position+printedname+signature)....:	File administrators Silvia Li	
Supervised by (position+printedname+signature)....:	Project Engineer Aaron Fang	
Approved by (position+printedname+signature)....:	Manager Hans Hu	

Testing Laboratory Name .....	<b>Shenzhen Huatongwei International Inspection Co., Ltd.</b>
Address.....	1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

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*The test report merely correspond to the test sample.*

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## 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	2021-11-09	Original

## 2. Test Description

Test Item	Section in CFR 47	Result	Test Engineer
Conducted Output Power	Part 2.1046 Part 90.635(b)	Pass*	N/A
Peak-to-Average Ratio	-	Pass*	N/A
99% Occupied Bandwidth & 26 dB Bandwidth	Part 2.1049	Pass*	N/A
Band Edge	Part 2.1051 Part 90.691	Pass*	N/A
Conducted Spurious Emissions	Part 2.1051 Part 90.691	Pass*	N/A
Frequency stability VS Temperature	Part 2.1055(a)(1)(b) Part 90.213	Pass*	N/A
Frequency stability VS Voltage	Part 2.1055(d)(1)(2) Part 90.213	Pass*	N/A
ERP	Part 22.913(a) Part 90.635(b)	Pass	Pan Xie
Radiated Spurious Emissions	Part 2.1053 Part 90.691	Pass	Pan Xie

Note:

1. The measurement uncertainty is not included in the test result.
2. \* reference to module report , which FCC ID is XMR201903EG25G

### 3. SUMMARY

#### 3.1. Client Information

Applicant:	Telecom Square, Inc.
Address:	3F Homat Horizon Building, 6-2 Gobancho, Chiyoda-ku, Tokyo 102-0076
Manufacturer:	Skyroam Technology Co., Ltd.
Address:	No.902, 9th Floor, Weisheng Technology Building, No.9966 Shennan Avenue, Shenzhen, Guangdong, China

#### 3.2. Product Description

Name of EUT:	12 Slots Sharing Power Bank
Trade Mark:	-
Model No.:	ZBJ-886
Listed Model(s):	-
Power supply:	DC 12V
Adapter information:	Model:J652-1205000D Input: AC100-240V, 50/60Hz, 1.7A Output: 12.0Vdc, 5.0A 60.0W
Hardware version:	bat-5310-B8
Software version:	Bat-5310-bin-20210812.hex
<b>4G</b>	
Operation Band:	<input checked="" type="checkbox"/> FDD Band 26
Transmit frequency:	814.7 MHz – 823.3 MHz
Receive frequency:	859.7 MHz – 868.3 MHz
Channel bandwidth:	1.4MHz, 3MHz, 5MHz, 10MHz
Power Class:	Class 3
Modulation type:	QPSK, 16QAM
Antenna type	Vertically polarized antenna
Antenna Gain	1.5dBi

#### 3.3. Operation state

##### ➤ Test frequency list

TDD Band 26	Test Frequency ID	Bandwidth[MHz]	N <sub>UL</sub>	Frequency of Uplink [MHz]	N <sub>DL</sub>	Frequency of Downlink [MHz]
Low Range	1.4	26997	814.7	8697	859.7	
	3	26705	815.5	8705	860.5	
	5	26715	816.5	8715	861.5	
	10	-	-	-	-	
Mid Range	1.4/3/5/10	26740	819	8740	864	
	1.4	26783	823.3	8783	868.3	
	3	26775	822.5	8775	867.5	
	5	26765	821.5	8765	866.5	
	10	-	-	-	-	
High Range	1.4/3/5/10	26783	823.3	8783	868.3	
	3	26775	822.5	8775	867.5	
	5	26765	821.5	8765	866.5	
	10	-	-	-	-	

### 3.4. EUT operation 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.										

Test Items	Band	Bandwidth (MHz)				Modulation		RB #		
		1.4	3	5	10	QPSK	16QAM	1	Half	Full
Conducted Output Power	26	○	○	○	○	○	○	○	○	○
Peak-to-Average Ratio	26	○	○	○	○	○	○	○	-	○
99% Occupied Bandwidth & 26 dB Bandwidth	26	○	○	○	○	○	○	-	-	○
Band Edge	26	○	○	○	○	○	○	○	-	○
Conducted Spurious Emission	26	○	○	○	○	○	○	○	-	-
Frequency Stability	26	○	○	○	○	○	○	-	-	○
ERP and EIRP	26	○	○	○	○	○	○	○	-	-
Radiated Spurious Emission	26	○	○	○	○	○	○	○	-	-
<b>Remark</b>		1. The mark “○” means that this configuration is chosen for testing 2. The mark “-” means that this bandwidth is not test. 3. The device is investigated from 30MHz to 10 times off fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.								

### 3.5. EUT configuration

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

- - supplied by the manufacturer
- - supplied by the lab

○	/	Manufacturer:	/
		Model No.:	/
○	/	Manufacturer:	/
		Model No.:	/

### 3.6. Modifications

No modifications were implemented to meet testing criteria.

## 4. TEST ENVIRONMENT

### 4.1. 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: <a href="mailto:cs@szhtw.com.cn">cs@szhtw.com.cn</a> <a href="http://www.szhtw.com.cn">http://www.szhtw.com.cn</a>	
Qualifications	Type	Accreditation Number
	FCC	762235

### 4.2. Equipments Used during the Test

● 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	2021/9/13	2022/9/12
●	Loop Antenna	R&S	HTWE0170	HFH2-Z2	100020	2021/04/06	2022/04/05
●	Broadband Horn Antenna	SCHWARZBECK	HTWE0103	BBHA9170	BBHA9170472	2020/4/27	2023/4/27
●	Ultra-Broadband Antenna	SCHWARZBECK	HTWE0123	VULB9163	538	2021/04/06	2022/04/05
●	Horn Antenna	SCHWARZBECK	HTWE0126	9120D	1011	2020/04/01	2023/03/31
●	Pre-amplifier	CD	HTWE0071	PAP-0102	12004	2020/11/13	2021/11/12
●	Broadband Preamplifier	SCHWARZBECK	HTWE0201	BBV 9718	9718-248	2021/03/05	2022/03/04
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-01	6m 18GHz S Serisa	N/A	2021/02/26	2022/02/25
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-02	6m 3GHz RG Serisa	N/A	2021/02/26	2022/02/25
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-03	6m 3GHz RG Serisa	N/A	2021/02/26	2022/02/25
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-04	6m 3GHz RG Serisa	N/A	2021/02/26	2022/02/25
●	RF Connection Cable	HUBER+SUHNER	HTWE0121-01	6m 18GHz S Serisa	N/A	2021/02/26	2022/02/25
●	EMI Test Software	Audix	N/A	E3	N/A	N/A	N/A

### 4.3. Environmental conditions

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

Voltage	VN=Nominal Voltage	DC 12.0V
	VL=Lower Voltage	DC 10.8V
	VH=Higher Voltage	DC 13.2V
Temperature	TN=Normal Temperature	25 °C
	Extreme Temperature	From -30° to + 50° centigrade
Humidity	30~60 %	
Air Pressure	950-1050 hPa	

### 4.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2" and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Huatongwei laboratory is reported:

Test Items	Measurement Uncertainty	Notes
Transmitter power conducted	0.51 dB	(1)
Transmitter power Radiated	2.66dB for <1GHz 3.44dB for >1GHz	(1)
Conducted spurious emissions 9kHz~40GHz	0.51 dB	(1)
Radiated spurious emissions	2.66dB for <1GHz 3.44dB for >1GHz	(1)
Occupied Bandwidth	15Hz for <1GHz 70Hz for >1GHz	(1)
Frequency error	15Hz for <1GHz 70Hz for >1GHz	(1)

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

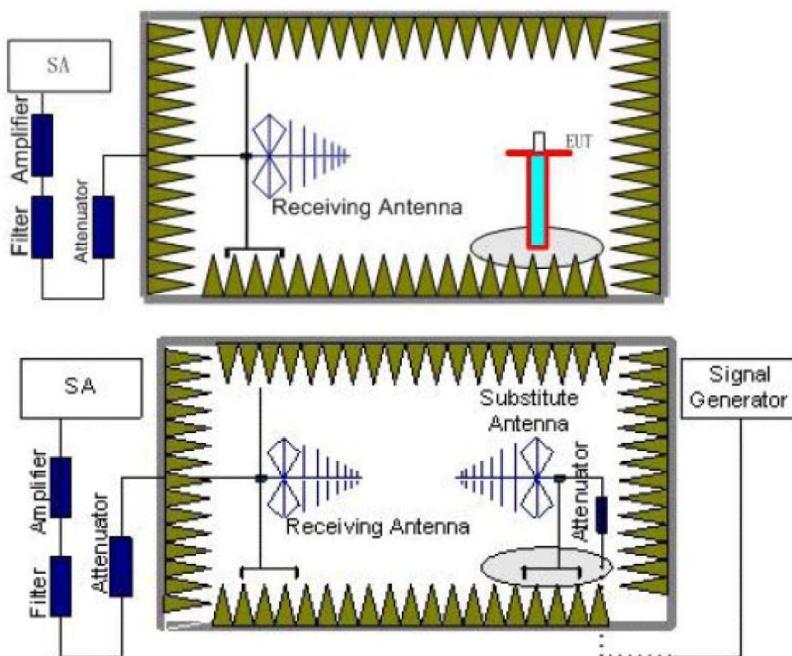
## 5. TEST CONDITIONS AND RESULTS

### 5.1. ERP

#### LIMIT

LTE Band 26: 100W(50.00dBm) ERP

#### TEST CONFIGURATION



#### TEST PROCEDURE

1. 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.
2. 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=Peak, 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.
  - 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.
7. 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.
  - c) 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:
$$Pe = Ps(dBm) - \text{cable loss (dB)} + \text{antenna gain (dBd)}$$
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:
$$\text{gain (dBd)} = \text{gain (dBi)} - 2.15 \text{ dB}.$$
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 3.3

**TEST RESULTS**

Passed       Not Applicable

LTE Band 26-1.4MHz					
Modulation	Channel	ERP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	20.91	18.35	<50.00	PASS
	Mid	21.32	18.94		
	High	20.65	18.59		
16QAM	Low	20.85	18.32	<50.00	PASS
	Mid	21.28	19.00		
	High	20.60	18.54		

LTE Band 26-3MHz					
Modulation	Channel	ERP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	20.91	18.37	<50.00	PASS
	Mid	21.37	18.91		
	High	20.70	18.63		
16QAM	Low	20.81	18.28	<50.00	PASS
	Mid	21.21	18.93		
	High	20.54	18.53		

LTE Band 26-5MHz					
Modulation	Channel	ERP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	20.87	18.32	<50.00	PASS
	Mid	21.28	18.96		
	High	20.65	18.70		
16QAM	Low	20.90	18.44	<50.00	PASS
	Mid	21.25	18.90		
	High	20.53	18.57		

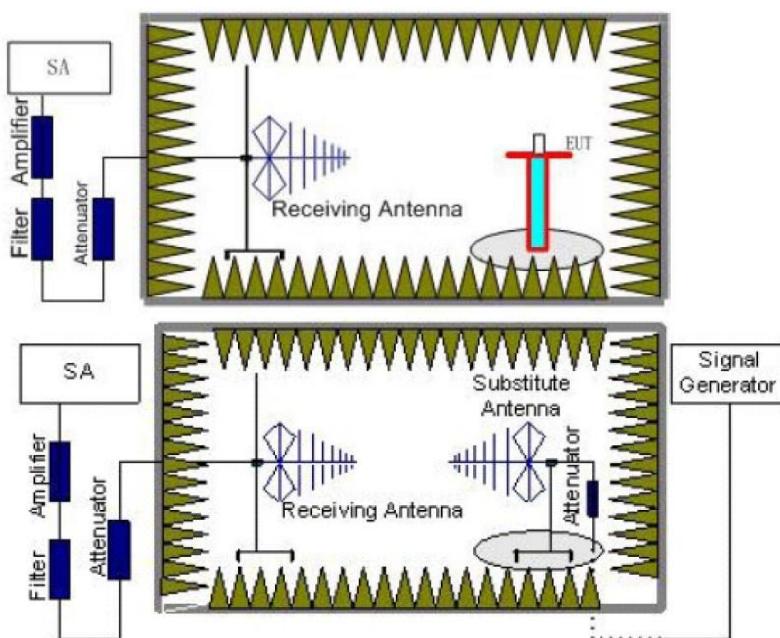
LTE Band 26-10MHz					
Modulation	Channel	ERP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Mid	21.35	18.97	<50.00	PASS
16QAM	Mid	21.36	19.02		PASS

## 5.2. Radiated Spurious Emission

### 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  $116 \text{ Log}_{10}(f/6.1)$  decibels or  $50 + 10 \text{ Log}_{10}(P)$  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  $43 + 10 \text{ Log}_{10}(P)$  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. 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.
2. 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=Peak, 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.
- 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.

7. 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.
- c) 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:

$$Pe = Ps(dBm) - \text{cable loss (dB)} + \text{antenna gain (dBd)}$$

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:

$$\text{gain (dBd)} = \text{gain (dBi)} - 2.15 \text{ dB.}$$

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.

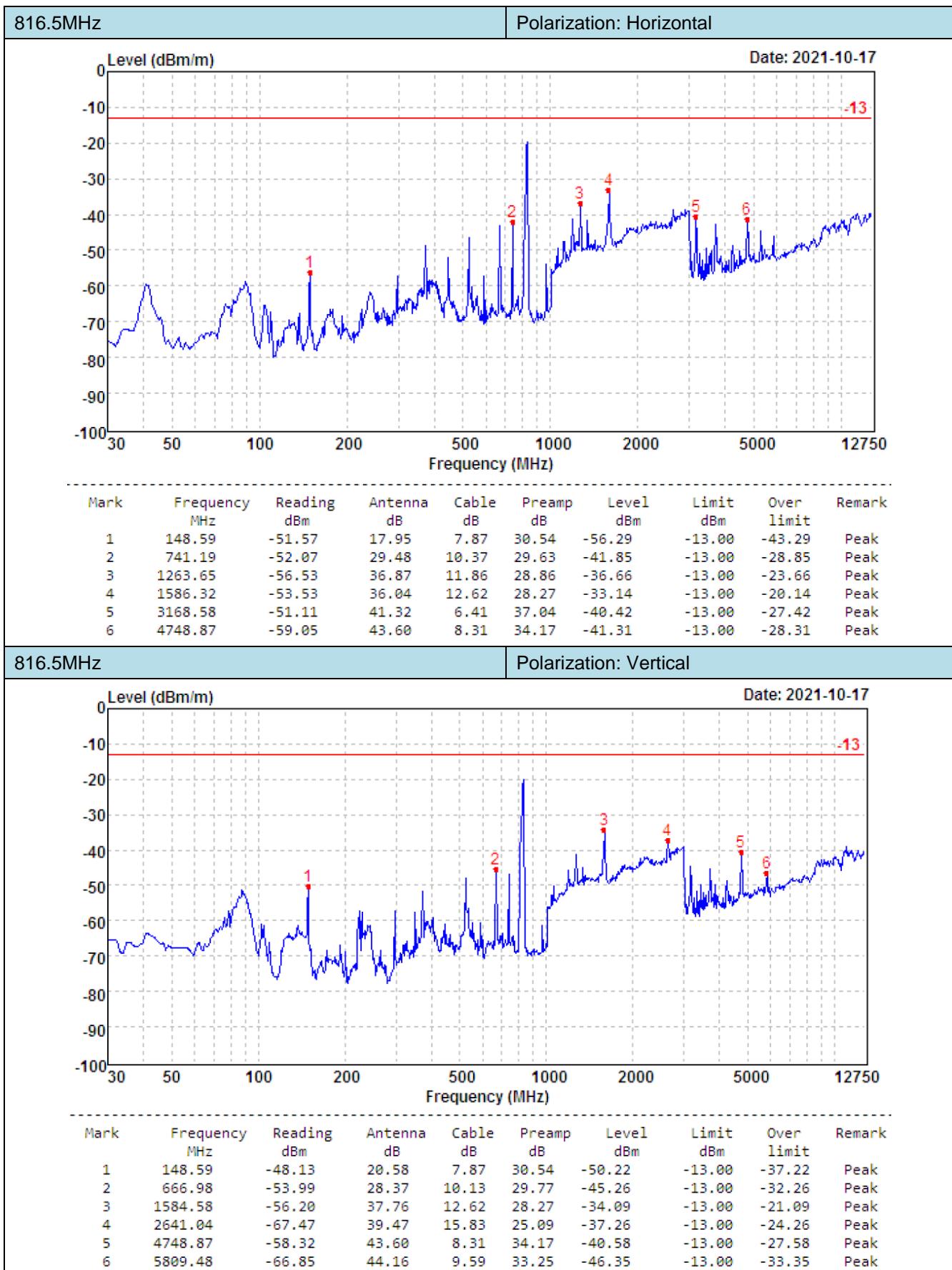
**TEST MODE:**

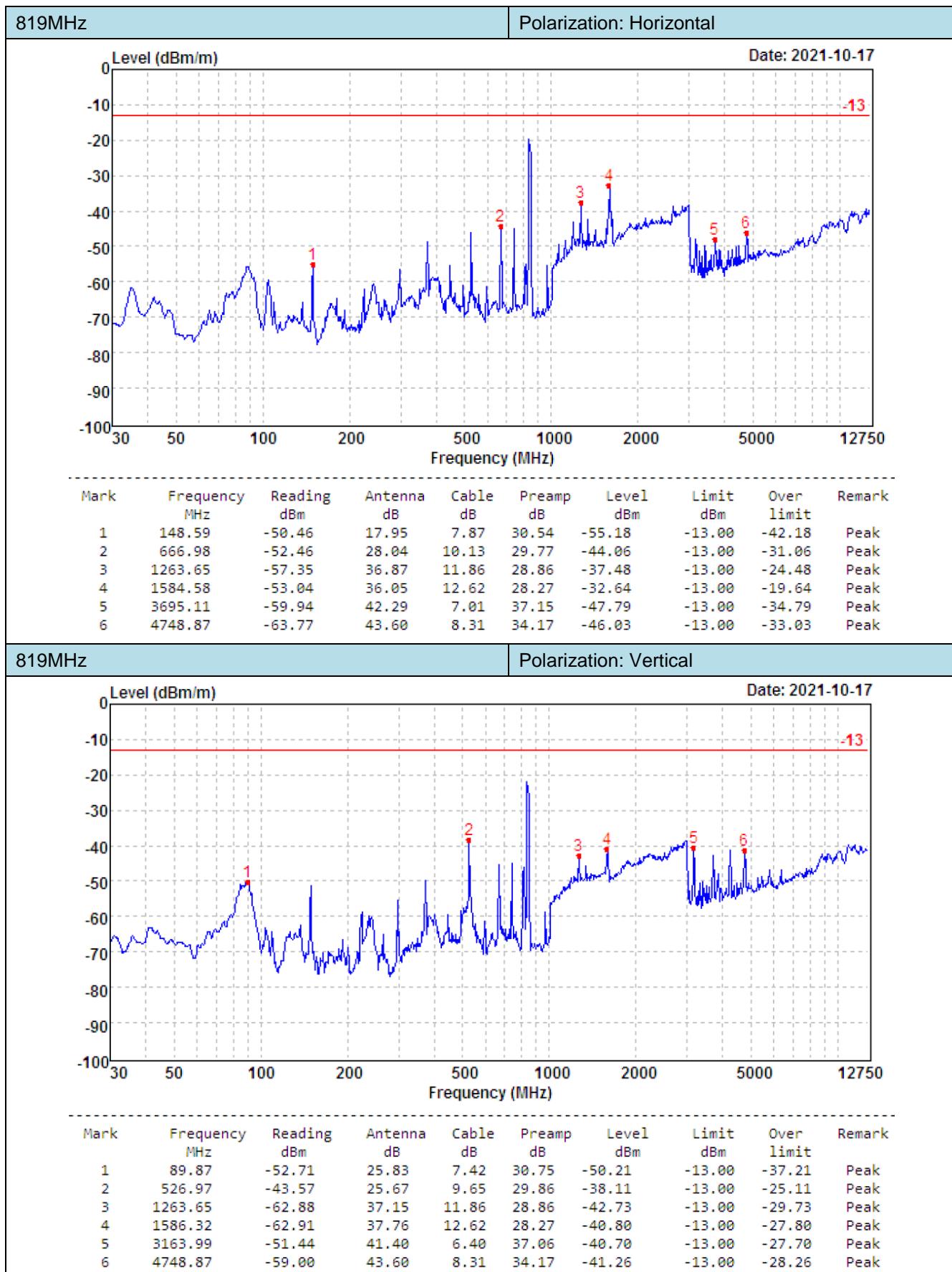
Please refer to the clause 3.3

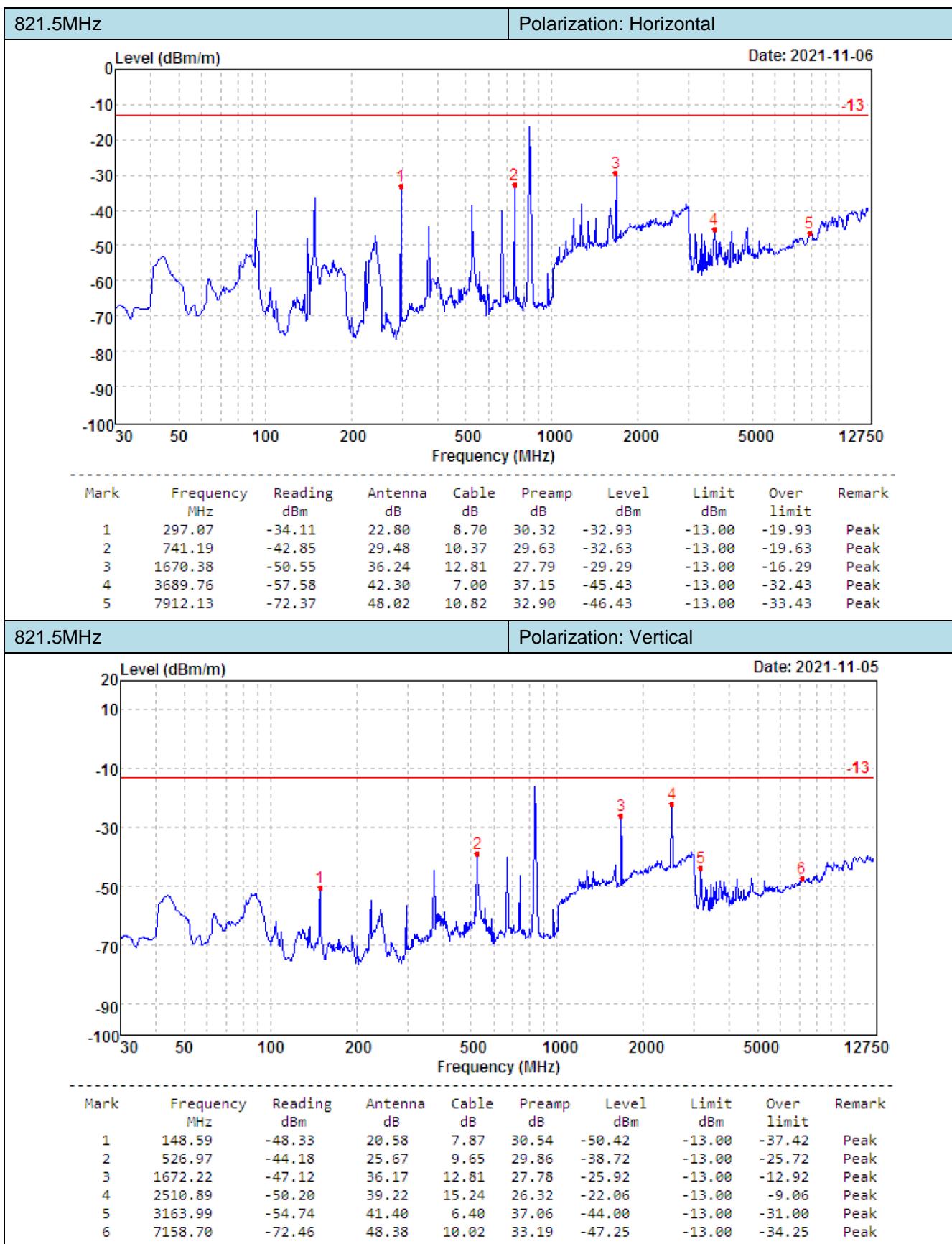
**TEST RESULTS**

Passed       Not Applicable

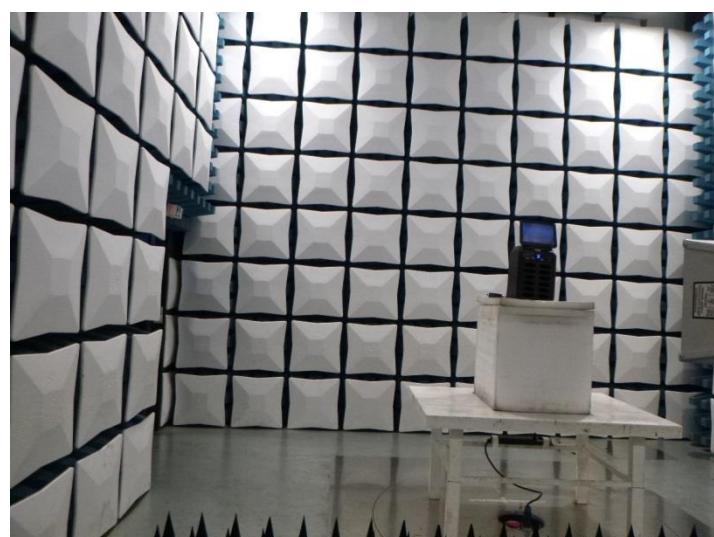
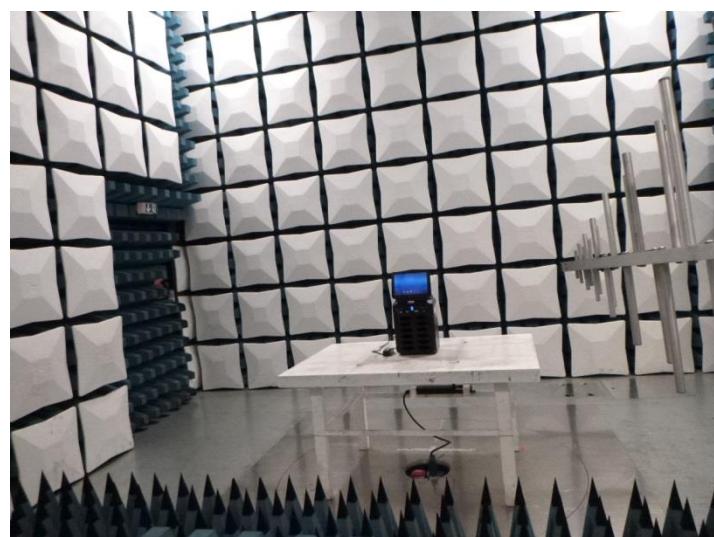
Note: only show the worse case for QPSK modulation.







## 6. TEST SETUP PHOTOS OF THE EUT



## 7. EXTERNAL AND INTERNAL PHOTOS OF THE EUT

Refere to the test report No.: CHTEW21110067

-----End of Report-----