

Shenzhen Zhongjian Nanfang Testing Co., Ltd.

Report No: CCIS14030017002

FCC REPORT

Applicant: HUNG WAI PRODUCTS LIMITED

Address of Applicant: Unit 11, 12/F., New Commerce Centre, 19 On Sum Street,

Shatin, Hong Kong

Equipment Under Test (EUT)

Product Name: Product Selector Slave Device

Model No.: DTEX-PS-S(401-PSRM)

FCC ID: 2AB6Z-DTEX-PS-S

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.249

Date of sample receipt: 26 Mar., 2014

Date of Test: 27 Mar., to 11 Apr.,2014

Date of report issued: 14 Apr., 2014

Test Result: PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Bruce Zhang Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Version 2

| Version No. | Date | Description |
|-------------|---------------|-------------|
| 00 | 14 Apr., 2014 | Original |
| | | |
| | | |
| | | |
| | | |

Sera Ximy Project Engineer Prepared By: Date: 14 Apr., 2014

Check By: Date: 14 Apr., 2014

Reviewer



3 Contents

| | | Page |
|---|--|------|
| 1 | COVER PAGE | 1 |
| 2 | VERSION | 2 |
| 3 | CONTENTS | 3 |
| 4 | TEST SUMMARY | |
| 5 | GENERAL INFORMATION | |
| | 5.1 CLIENT INFORMATION | |
| | 5.2 GENERAL DESCRIPTION OF E.U.T. | |
| | 5.3 TEST MODE | |
| | 5.4 DESCRIPTION OF SUPPORT UNITS | |
| | 5.5 LABORATORY FACILITY | |
| | 5.6 LABORATORY LOCATION | |
| 6 | TEST RESULTS AND MEASUREMENT DATA | |
| | 6.1 ANTENNA REQUIREMENT: | 8 |
| | 6.2 CONDUCTED EMISSIONS | 9 |
| | 6.3 RADIATED EMISSION | |
| | 6.3.1 Field Strength Of The Fundamental Signal | |
| | 6.3.2 Spurious Emissions | |
| | 6.3.3 Band edge (Radiated Emission) | |
| | | |
| 7 | TEST SETUP PHOTO | 19 |
| 8 | EUT CONSTRUCTIONAL DETAILS | 21 |



4 Test Summary

| Test Item | Section in CFR 47 | Result | |
|--|-----------------------|--------|--|
| Antenna requirement | 15.203 | Pass | |
| Conducted Emission | 15.207 | Pass | |
| Field strength of the fundamental signal | 15.249 (a) | Pass | |
| Spurious emissions | 15.249 (a) (d)/15.209 | Pass | |
| Band edge | 15.249 (d)/15.205 | Pass | |
| 20dB Occupied Bandwidth | 15.215 (c) | Pass | |

Pass: The EUT comply with the essential requirements in the standard.



5 General Information

5.1 Client Information

| Applicant: | HUNG WAI PRODUCTS LIMITED |
|--------------------------------------|--|
| Address of Applicant: | Unit 11, 12/F., New Commerce Centre, 19 On Sum Street, Shatin, Hong Kong |
| Manufacturer/Factory: | HUNG WAI ELECTRONICS (HUIZHOU) LTD. |
| Address of Manufacturer/ Factory: | 3rd floor, NO. 3, Minfeng Road, Huinan High and New Tchnology Industry Park, Huiao Avenue, Huizhou City, Guangdong |

5.2 General Description of E.U.T.

| Product Selector Slave Device |
|-------------------------------|
| DTEX-PS-S(401-PSRM) |
| 2440MHz |
| 1 |
| GFSK |
| Integrated PCB antenna |
| 0 dBi |
| DC3.3V |
| |



5.3 Test mode

| Transmitting mode: Keep the EUT in transmitting mode with modulation. | | | | | | | |
|---|--|-------|-------|-------|--|--|--|
| | CCIS has verified the construction and function in typical operation, The EUT was placed on three different polar directions; i.e. X axis, Y axis, Z axis. which was shown in this test report and defined as follows: | | | | | | |
| Axis X Y Z | | | | | | | |
| | Field Strength(dBuV/m) | 81.35 | 81.62 | 81.33 | | | |
| ı | | | | | | | |

Final Test Mode:

According to ANSI C63.4 standards, the test results are both the "worst case" and "worst setup": Y axis (see the test setup photo)

5.4 Description of Support Units

| Manufacturer | Manufacturer Description | | Serial Number | FCC | |
|--------------|--------------------------|----------|---------------|-----|--|
| XANTREX | DC Power Supply | HPD30-10 | 82189 | VoC | |

5.5 Laboratory Facility

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

● FCC - Registration No.: 817957

Shenzhen Zhongjian Nanfang Testing Co., Ltd. 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 out files. Registration 817957, February 27, 2012.

● IC - Registration No.: 10106A-1

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

CNAS - Registration No.: CNAS L6048

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

5.6 Laboratory Location

Shenzhen Zhongjian Nanfang Testing Co., Ltd.

Address: No.B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,

Bao'an District, Shenzhen, Guangdong, China

Tel: +86-755-23118282 Fax: +86-755-23116366

Shenzhen Zhongjian Nanfang Testing Co., Ltd. No.B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road, Bao'an District, Shenzhen, Guangdong, China Telephone: +86 (0) 755 23118282 Fax: +86 (0) 755 23116366

Page 6 of 21



5.7 Test Instruments list

| Radiated Emission: | | | | | | | | |
|--------------------|----------------------------------|-----------------------------------|-----------------------------|------------------|------------------------|----------------------------|--|--|
| Item | Test Equipment | Manufacturer | Model No. | Inventory No. | Cal.Date (mm-dd-yy) | Cal.Due date (mm-dd-yy) | | |
| 1 | 3m SAC | SAEMC | 9(L)*6(W)* 6(H) | CCIS0001 | Aug. 09 2013 | Aug. 09 2014 | | |
| 2 | EMI Test Receiver | Rohde & Schwarz | ESCI | CCIS0002 | June 16 2013 | June 16 2014 | | |
| 3 | BiConiLog Antenna | SCHWARZBECK MESS-ELEKTRONIK | VULB9163 | CCIS0005 | June 09 2013 | June 09 2014 | | |
| 4 | Double -ridged waveguide horn | SCHWARZBECK MESS-ELEKTRONIK | BBHA9120D | CCIS0006 | June 09 2013 | June 09 2014 | | |
| 5 | EMI Test Software | AUDIX | E3 | N/A | N/A | N/A | | |
| 6 | Coaxial Cable | CCIS | N/A | CCIS0016 | Feb. 01 2014 | Feb. 01 2015 | | |
| 7 | Coaxial Cable | CCIS | N/A | CCIS0017 | Feb. 01 2014 | Feb. 01 2015 | | |
| 8 | Coaxial cable | CCIS | N/A | CCIS0018 | Feb. 01 2014 | Feb. 01 2015 | | |
| 9 | Coaxial Cable | CCIS | N/A | CCIS0019 | Feb. 01 2014 | Feb. 01 2015 | | |
| 10 | Coaxial Cable | CCIS | N/A | CCIS0087 | Feb. 01 2014 | Feb. 01 2015 | | |
| 11 | Pre-amplifier | HP | 8447D | CCIS0003 | Aug. 03 2013 | Aug. 03 2014 | | |
| 12 | Pre-amplifier | Compliance Direction Systems Inc. | PAP-1G18 | CCIS0011 | Aug. 05 2013 | Aug. 05 2014 | | |
| 13 | Spectrum analyzer | Rohde & Schwarz | FSP | CCIS0023 | June 22 2013 | June 22 2014 | | |
| 14 | EMI Test Receiver | Rohde & Schwarz | ECSI | CCIS0002 | June16 2013 | June 16 2014 | | |
| 15 | Printer | HP | HP LaserJet P1007 | N/A | N/A | N/A | | |
| 16 | Coaxial Cable | CCIS | N/A | CCIS0095 | Feb. 01 2014 | Feb. 01 2015 | | |
| 17 | Pre-amplifier | | AFS33-18002 650-30-8P-44 | GTS218 | Feb. 01 2014 | Feb. 31 2015 | | |
| 18 | Horn Antenna | ETS-LINDGREN | 3160 | GTS217 | Feb. 30 2014 | Feb. 29 2015 | | |

| Cond | Conducted Emission: | | | | | | | | | | |
|------|---------------------|--------------------|-----------------------|-----------|--------------|--------------|--|--|--|--|--|
| Item | Test Equipment | Manufacturer | Model No. | Inventory | Cal.Date | Cal.Due date | | | | | |
| item | rest Equipment | Mariaractarci | Model No. | No. | (mm-dd-yy) | (mm-dd-yy) | | | | | |
| 1 | Shielding Room | ZhongShuo Electron | 11.0(L)x4.0(W)x3.0(H) | CCIS0061 | June 09 2013 | June 08 2014 | | | | | |
| 2 | EMI Test Receiver | Rohde & Schwarz | ESCI | CCIS0002 | May 25 2013 | May. 24 2014 | | | | | |
| 3 | LISN | CHASE | MN2050D | CCIS0074 | Apr. 01 2013 | Mar. 31 2014 | | | | | |
| 4 | Coaxial Cable | CCIS | N/A | CCIS0086 | Apr. 01 2013 | Mar. 31 2014 | | | | | |



6 Test results and Measurement Data

6.1 Antenna requirement:

Standard requirement: FCC Par

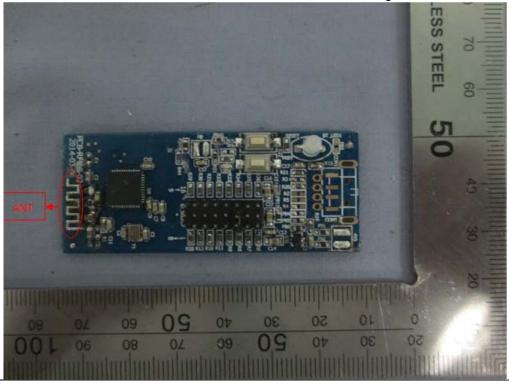
FCC Part15 C Section 15.203

15.203 requirement:

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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

E.U.T Antenna:

The antenna is PCB antenna which cannot detachable . The best case gain of the antenna is 0dBi.





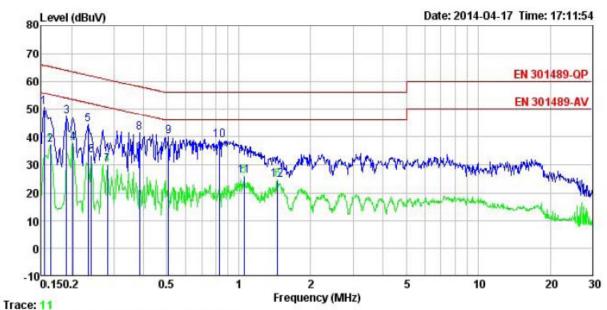
6.2 Conducted Emissions

| Test Requirement: | FCC Part15 C Section 15.249 an | d 15.209 | | | | | |
|-----------------------|---|-----------|----------------------|--|--|--|--|
| Test Method: | ANSI C63.4:2003 | | | | | | |
| Test Frequency Range: | 150 kHz to 30 MHz | | | | | | |
| Class / Severity: | Class B | | | | | | |
| Receiver setup: | RBW=9 kHz, VBW=30 kHz, Sweep time=auto | | | | | | |
| Limit: | Erequency range (MHz) Limit (dBuV) | | | | | | |
| | Prequency range (MHz) Quasi-peak Average | | | | | | |
| | 0.15-0.5 | 66 to 56* | 56 to 46* | | | | |
| | 0.5-5 56 46 | | | | | | |
| | 5-30 60 50 * Decreases with the logarithm of the frequency. | | | | | | |
| | | | | | | | |
| Test setup: | Reference Plane LISN 40cm 80cm Filter AC power Equipment Test table/Insulation plane Remark E U T. Equipment Under Test LISN Line Impedence Stabilization Network Test table height=0.8m | | | | | | |
| | | | | | | | |
| Test procedure: | The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement. | | | | | | |
| Measurement Record: | | | Uncertainty: 3.28 dB | | | | |
| Test Instruments: | Refer to section 5.7 for details | | · | | | | |
| Test mode: | Transmitting mode | | | | | | |
| Test results: | Pass | | | | | | |

Measurement Data



Line:



Site : CCIS Conducted test Site Condition : EN 301489-QP LISN LINE

: 170RF : DTEX-PS-S : TX mode Tob. no Model Test Mode

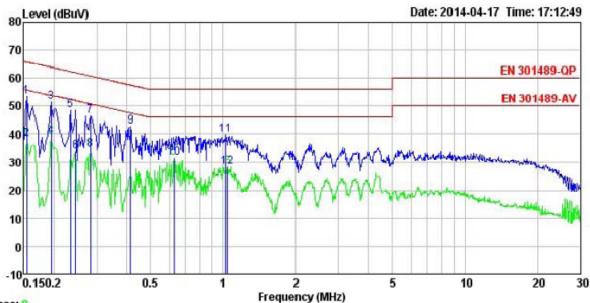
Environment : Temp: 23 °C Huni: 56% Atmos: 101KPa

Test Engineer: Aaron Remark :

| Kemark | : | | | | | | | |
|---|-------|-------|--------|-------|-------|-------|--------|---------|
| | - | Read | LISN | Cable | | Limit | Over | |
| | Freq | rever | Factor | Loss | Level | Line | Limit | Remark |
| 0000 | MHz | dBu∀ | d₿ | dB | dBuV | dBuV | d₿ | |
| 1 | 0.154 | 39.78 | 0.27 | 10.78 | 50.83 | 65.78 | -14.95 | QP |
| 2 | 0.162 | 25.97 | 0.27 | 10.77 | 37.01 | 55.34 | -18.33 | Average |
| 3 | 0.190 | 36.52 | 0.28 | 10.76 | 47.56 | | -16.46 | |
| 4 | 0.202 | 26.89 | 0.28 | 10.76 | 37.93 | 53.54 | -15.61 | Average |
| 5 | 0.234 | 33.57 | 0.27 | 10.75 | 44.59 | 62.30 | -17.71 | QP |
| 6 | 0.242 | 22.16 | 0.27 | 10.75 | 33.18 | 52.04 | -18.86 | Average |
| 7 | 0.282 | 18.94 | 0.26 | 10.74 | 29.94 | 50.76 | -20.82 | Average |
| 8 | 0.385 | 30.48 | 0.28 | 10.72 | 41.48 | 58.17 | -16.69 | QP |
| 9 | 0.510 | 29.17 | 0.28 | 10.76 | 40.21 | 56.00 | -15.79 | QP |
| 1 2 3 4 5 6 7 8 9 | 0.830 | 27.86 | 0.23 | 10.82 | 38.91 | 56.00 | -17.09 | QP |
| 11 | 1.049 | 14.81 | 0.25 | 10.88 | 25.94 | | | Average |
| 12 | 1.449 | 13.40 | 0.26 | 10.92 | 24.58 | | | Average |



Neutral:



Trace: 9

Site : CCIS Conducted test Site Condition : EN 301489-QP LISN NEUTRAL

Job. no : 170RF
Model : DTEX-PS-S
Test Mode : TX mode

Environment : Temp: 23 °C Huni:56% Atmos:101KPa

Test Engineer: Aaron

Remark

| CHAIR | Freq | Read Level | LISN Factor | Cable Loss | Level | Limit Line | Over Limit | Remark |
|----------------------------|----------------|----------------|----------------|----------------|----------------|---------------|------------------|---------------|
| 1000 | MHz | dBu∜ | ₫B | ₫B | dBu₹ | dBu∜ | dB | |
| 1 | 0.154 0.154 | 42.49 | 0.25 0.25 | 10.78 10.78 | 53.52 38.01 | | -12.26 | QP Average |
| 2 3 4 5 6 7 | 0.194 | 40.39 | 0.25 | 10.76 | 51.40 | 63.84 | -12.44 | QP |
| 5 | 0.194 0.234 | 28.11 37.61 | 0.25 0.25 | 10.76 10.75 | 39.12 48.61 | 62.30 | -13.69 | |
| 6 7 | 0.246 0.282 | 22.87 35.41 | 0. 26 0. 26 | 10.75 10.74 | 33.88 46.41 | | -18.03 -14.35 | Average QP |
| 8 9 10 | 0.282 | 23.60 | 0.26 | 10.74 | 34.60 42.96 | | -16.16 -14.59 | Average QP |
| 10 11 | 0.627 | 20.58 28.66 | 0. 22 | 10.77 10.87 | 31.57 | 46.00 | | Average |
| 12 | 1.043 | 17.21 | 0. 22 | 10.88 | 28.31 | | | Average |

Motos

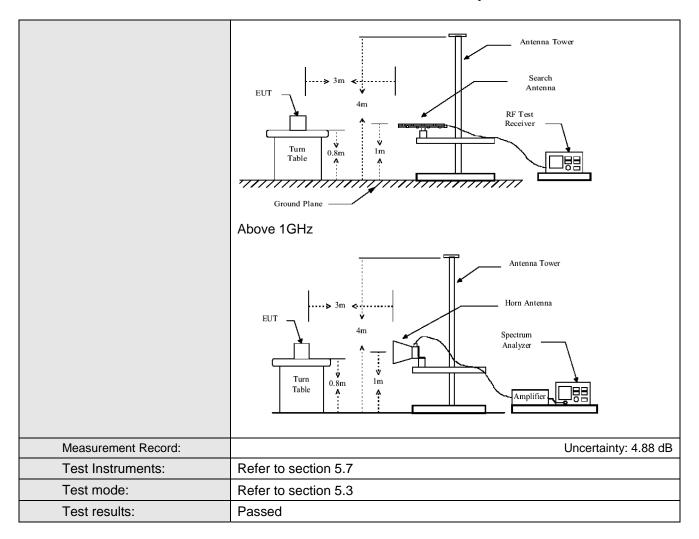
- 1. An initial pre-scan was performed on the line and neutral lines with peak detector.
- 2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 3. Final Level =Receiver Read level + LISN Factor + Cable Loss



6.3 Radiated Emission

| 0.5 Itau | ialeu Ellission | | | | | | | | | | | |
|----------|-------------------|---|---------------|--------------|--------------|--------------------------|--|--|--|--|--|--|
| Test | : Requirement: | FCC Part15 C S | Section 15.24 | 9 and 15.209 | | | | | | | | |
| Test | Method: | ANSI C63.4:200 | 03 | | | | | | | | | |
| Test | Frequency Range: | 30MHz to 2500 | OMHz | | | | | | | | | |
| Test | site: | Measurement D | istance: 3m | | | | | | | | | |
| Rec | eiver setup: | | | | Τ | | | | | | | |
| | | Frequency | Detector | RBW | VBW | Remark | | | | | | |
| | | 30MHz-1GHz | Quasi-peak | 120kHz | 300kHz | Quasi-peak Value | | | | | | |
| | | Above 1GHz | Peak Peak | 1MHz 1MHz | 3MHz 10Hz | Peak Value Average Value | | | | | | |
| Limi | t· | | 1 Can | TIVITIZ | 10112 | Average value | | | | | | |
| | d strength of the | Freque | ency | Limit (dBuV/ | /m @3m) | Remark | | | | | | |
| | amental signal) | | - | 94.0 | | Average Value | | | | | | |
| | 0 / | 2400MHz-24 | 183.5IVITZ | 114.0 | 00 | Peak Value | | | | | | |
| Limi | t: | | | | | | | | | | | |
| (Spu | ırious Emissions) | Freque | | Limit (dBuV/ | | Remark | | | | | | |
| | | 30MHz-8 | | 40.0 | | Quasi-peak Value | | | | | | |
| | | 88MHz-216MHz 43.50 Quasi-peak \ | | | | | | | | | | |
| | | 216MHz-960MHz 46.00 Quasi-peak V | | | | | | | | | | |
| | | 960MHz-1GHz 54.00 Quasi-peak Val | | | | | | | | | | |
| | | Above 1 | GHz | 74.0 | | Peak Value | | | | | | |
| Test | Procedure: | Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values | | | | | | | | | | |
| Test | : setup: | sheet. | erage method | as specified | and then re | ported in a data | | | | | | |
| | 1 | Delow IGHZ | | | | Below 1GHz | | | | | | |





Measurement Data

Page 13 of 21



6.3.1 Field Strength Of The Fundamental Signal

Peak value:

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|--------------------|-------------------------|-----------------------------|--------------------|--------------------------|-------------------|------------------------|--------------------|--------------|
| 2440.00 | 82.28 | 27.46 | 5.69 | 34.90 | 80.53 | 114.00 | -33.47 | Horizontal |
| 2440.00 | 83.37 | 27.46 | 5.69 | 34.90 | 81.62 | 114.00 | -32.28 | Vertical |

Average value:

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|--------------------|-------------------------|-----------------------------|--------------------|--------------------------|-------------------|------------------------|--------------------|--------------|
| 2440.00 | 71.69 | 27.46 | 5.69 | 34.90 | 69.94 | 94.00 | -24.06 | Horizontal |
| 2440.00 | 71.57 | 27.46 | 5.69 | 34.90 | 69.82 | 94.00 | -24.18 | Vertical |



6.3.2 Spurious Emissions

30MHz~1GHz

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|--------------------|-------------------------|-----------------------------|-----------------------|--------------------------|-------------------|------------------------|-----------------------|--------------|
| 35.01 | 35.93 | 12.30 | 1.04 | 26.79 | 22.48 | 40.00 | -17.52 | Vertical |
| 45.86 | 35.64 | 13.49 | 1.29 | 27.88 | 22.54 | 40.00 | -17.46 | Vertical |
| 98.83 | 33.89 | 13.10 | 1.97 | 30.09 | 18.87 | 43.50 | -24.63 | Vertical |
| 123.27 | 39.45 | 10.00 | 2.20 | 29.64 | 22.01 | 43.50 | -21.49 | Vertical |
| 417.64 | 38.26 | 15.43 | 3.12 | 30.13 | 26.68 | 46.00 | -19.32 | Vertical |
| 32.63 | 35.04 | 12.31 | 0.91 | 26.55 | 21.71 | 40.00 | -18.29 | Horizontal |
| 40.14 | 32.86 | 13.58 | 1.22 | 27.27 | 20.39 | 40.00 | -19.61 | Horizontal |
| 44.90 | 32.29 | 13.55 | 1.28 | 27.79 | 19.33 | 40.00 | -20.67 | Horizontal |
| 59.03 | 34.02 | 12.77 | 1.38 | 29.13 | 19.04 | 40.00 | -20.96 | Horizontal |
| 165.49 | 38.03 | 8.82 | 2.62 | 29.33 | 20.14 | 43.50 | -23.36 | Horizontal |

Above 1GHz

Peak value:

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|--------------------|-------------------------|-----------------------------|-----------------------|--------------------------|-------------------|------------------------|-----------------------|--------------|
| 4880 | 53.28 | 31.58 | 8.98 | 40.15 | 53.69 | 74 | -20.31 | Vertical |
| 4880 | 50.53 | 31.58 | 8.98 | 40.15 | 50.94 | 74 | -23.06 | Horizontal |

Average value:

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|--------------------|-------------------------|-----------------------------|-----------------------|--------------------------|-------------------|------------------------|-----------------------|--------------|
| 4880.00 | 42.69 | 31.58 | 8.98 | 40.15 | 43.10 | 54.00 | -10.90 | Vertical |
| 4880.00 | 38.49 | 31.58 | 8.98 | 40.15 | 38.90 | 54.00 | -15.10 | Horizontal |

Remark:

- 1. Final Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



6.3.3 Band edge (Radiated Emission)

Peak value:

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|--------------------|-------------------------|-----------------------------|-----------------------|--------------------------|-------------------|------------------------|-----------------------|--------------|
| 2390.00 | 42.67 | 27.58 | 5.67 | 31.35 | 44.57 | 74.00 | -29.43 | Vertical |
| 2390.00 | 43.45 | 27.58 | 5.67 | 31.35 | 45.35 | 74.00 | -28.65 | Horizontal |
| 2400.00 | 46.85 | 27.58 | 5.67 | 31.35 | 48.75 | 74.00 | -25.25 | Vertical |
| 2400.00 | 44.48 | 27.58 | 5.67 | 31.35 | 46.38 | 74.00 | -27.62 | Horizontal |

Average value:

| Average valu | ℧. | | | | | | | |
|--------------------|-------------------------|-----------------------------|-----------------------|--------------------------|-------------------|------------------------|-----------------------|--------------|
| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 2390.00 | 38.69 | 27.58 | 5.67 | 31.35 | 40.69 | 54.00 | -13.31 | Vertical |
| 2390.00 | 36.78 | 27.58 | 5.67 | 31.35 | 38.68 | 54.00 | -15.32 | Horizontal |
| 2400.00 | 38.76 | 27.58 | 5.67 | 31.35 | 40.66 | 54.00 | -13.34 | Vertical |
| 2400.00 | 33.26 | 27.58 | 5.67 | 31.35 | 35.16 | 54.00 | -18.84 | Horizontal |

Peak value:

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|--------------------|-------------------------|-----------------------------|-----------------------|--------------------------|-------------------|------------------------|-----------------------|--------------|
| 2483.50 | 50.00 | 27.52 | 5.70 | 37.26 | 45.96 | 74.00 | -28.04 | Vertical |
| 2483.50 | 49.54 | 27.52 | 5.70 | 37.26 | 42.50 | 74.00 | -31.50 | Horizontal |
| 2500.00 | 46.12 | 27.55 | 5.71 | 38.44 | 40.94 | 74.00 | -33.06 | Vertical |
| 2500.00 | 45.98 | 27.55 | 5.71 | 38.44 | 40.80 | 74.00 | -33.20 | Horizontal |

Average value:

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|--------------------|-------------------------|-----------------------------|-----------------------|--------------------------|-------------------|------------------------|-----------------------|--------------|
| 2483.50 | 38.46 | 27.52 | 5.70 | 37.26 | 32.42 | 54.00 | -19.58 | Vertical |
| 2483.50 | 39.27 | 27.52 | 5.70 | 37.26 | 35.23 | 54.00 | -18.77 | Horizontal |
| 2500.00 | 36.79 | 27.55 | 5.71 | 38.44 | 31.61 | 54.00 | -22.39 | Vertical |
| 2500.00 | 35.13 | 27.55 | 5.71 | 38.44 | 29.95 | 54.00 | -24.05 | Horizontal |

Remark:

- 1. Final Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



6.4 20dB Bandwidth

| Test Requirement: | FCC Part15 C Section 15.249/15.215 | | | | | |
|-------------------|---|--|--|--|--|--|
| Test Method: | ANSI C63.4:2003 | | | | | |
| Receiver setup: | RBW ≥1% of the 20 dB bandwidth, VBW ≥ VBW, detector: Peak | | | | | |
| Limit: | Operation Frequency range 2400MHz-2483.5MHz | | | | | |
| Test Procedure: | According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT. Set the EUT to proper test channel. Max hold the radiated emissions, mark the peak power frequency point and the -20dB upper and lower frequency points. Read 20dB bandwidth. | | | | | |
| Test setup: | Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane | | | | | |
| Test Instruments: | Refer to section 5.7 for details | | | | | |
| Test mode: | Refer to section 5.3 for details | | | | | |
| Test results: | Passed | | | | | |

Measurement Data

| Test channel | 20dB bandwidth (MHz) | Results |
|--------------|----------------------|---------|
| 2440MHz | 0.52 | Pass |

Test plot as follows:



