MEASUREMENT REPORT

FCC PART 27F & RSS-130

Applicant:	UnaliWear, Inc.
Address:	3410 Cherry Lane, Austin, TX 78703 USA
Product:	UnaliWear HL7800-M
Model No.:	HL7800-M
Brand Name:	UnaliWear
FCC Rule Part(s):	FCC CFR 47 Part 27F
IC Rule(s):	RSS-130 Issue 2, RSS-Gen Issue 5
Test Procedure(s):	ANSI C63.26-2015
Test Date:	March 03, 2020

Reviewed By: (Jame Yuan)

Approved By: (Robin Wu)

Revision History

Report No.	Version	Description	Issue Date	Note
1912RSU024-U2	Rev. 01	Initial Report	03-06-2020	Valid

Note: This module was used in portable host and changed the antenna, so we only evaluated the radiated spurious emissions item.

CONTENTS

General Information

Applicant:	UnaliWear, Inc.
Applicant Address:	3410 Cherry Lane, Austin, TX 78703 USA
Manufacturer:	UnaliWear, Inc.
Manufacturer Address:	3410 Cherry Lane, Austin, TX 78703 USA
Test Site:	MRT Technology (Suzhou) Co., Ltd
Test Site Address:	D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China

Test Facility / Accreditations

Measurements were performed at MRT Laboratory located in Tian'edang Rd., Suzhou, China.

- **MRT facility is a FCC registered (MRT Designation No. CN1166) test facility with the site description report on file and has met all the requirements specified in ANSI C63.4-2014.**
- **MRT facility is an IC registered (MRT Reg. No. 11384A-1) test laboratory with the site description on file at Industry Canada.**
- **MRT facility is a VCCI registered (R-20025, G-20034, C-20020, T-20020) test laboratory with the site description on file at VCCI Council.**
- **MRT Lab is accredited to ISO 17025 by the American Association for Laboratory Accreditation (A2LA) under the American Association for Laboratory Accreditation Program (A2LA Cert. No. 3628.01) in EMC, Telecommunications, Radio and SAR testing.**

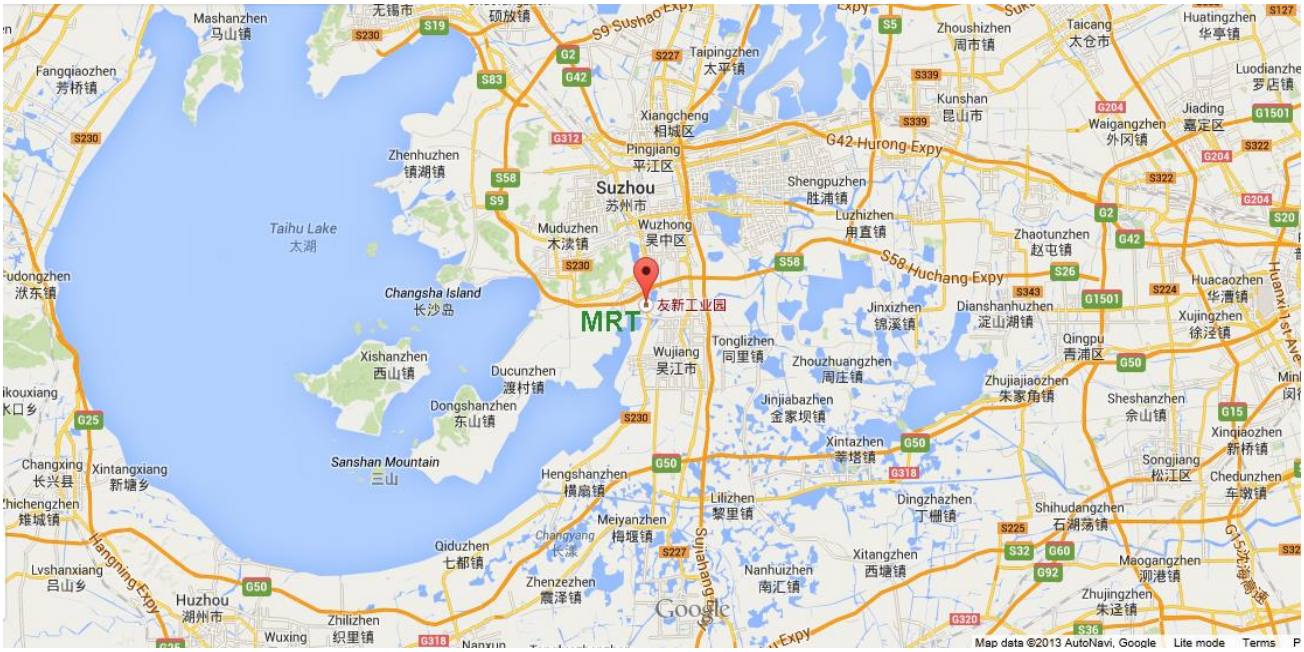
1. INTRODUCTION

1.1. Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Innovation, Science and Economic Development Canada and Certification and Engineering Bureau.

1.2. MRT Test Location

The map below shows the location of the MRT LABORATORY, its proximity to the Taihu Lake. These measurement tests were conducted at the MRT Technology (Suzhou) Co., Ltd. Facility located at D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China. The measurement facility compliant with the test site requirements specified in ANSI C63.4-2014.



2. PRODUCT INFORMATION

2.1. Feature of Equipment under Test

Product Name:	UnaliWear HL7800-M
Model No.:	HL7800-M
Brand Name:	UnaliWear
Frequency Range:	LTE Band 13 Cat. M1: 777 ~ 787 MHz
Type of Modulation:	QPSK, 16QAM
Channel Bandwidth:	5MHz, 10MHz
Antenna Type:	Copper Antenna
Antenna Gain:	-4.16dBi

2.2. Working Frequencies for this Report

Channel	Frequency
Low	779.5 MHz
Mid	782.0 MHz
High	784.5 MHz

2.3. Description of Host

Host Name.:	Kanega Watch
Model No.:	KANEGA002
Brand Name:	UnaliWear
Contain two modules	
Module 1#:	FCC ID: 2AM4C-HL7800M IC: 25867-HL7800M
Module 2#:	FCC ID: XF6-M4SB IC: 8407A-M4SB

Note: BLE & LTE CAT M1 can transmit simultaneously.

2.4. Test Mode

Test Mode	Mode 1: Traffic by LTE CAT-M1 Band 13 at Low channel, 1 RB, 5MHz Bandwidth, QPSK Modulation
	Mode 2: Traffic by LTE CAT-M1 Band 13 at Mid channel, 1 RB, 5MHz Bandwidth, QPSK Modulation
	Mode 3: Traffic by LTE CAT-M1 Band 13 at High channel, 1 RB, 5MHz Bandwidth, QPSK Modulation
	Mode 4: Traffic by LTE CAT-M1 Band 13 at Mid channel, 1 RB, 10MHz Bandwidth, QPSK Modulation
	Mode 5: Traffic by LTE CAT-M1 Band 13 at Low channel, Full RB, 5MHz Bandwidth, QPSK Modulation
	Mode 6: Traffic by LTE CAT-M1 Band 13 at Mid channel, Full RB, 5MHz Bandwidth, QPSK Modulation
	Mode 7: Traffic by LTE CAT-M1 Band 13 at High channel, Full RB, 5MHz Bandwidth, QPSK Modulation
	Mode 8: Traffic by LTE CAT-M1 Band 13 at Mid channel, Full RB, 10MHz Bandwidth, QPSK Modulation

2.5. EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and/or no modifications were made during testing.

3. DESCRIPTION OF TEST

3.1. Evaluation Procedure

The measurement procedures described in the American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services (ANSI C63.26-2015) and the guidance provided in ANSI C63.26-2015 was used in the measurement.

Deviation from measurement procedure…….....None

3.2. Radiated Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. For measurements above 1GHz absorbers are arranged on the floor between the turn table and the Antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1GHz, the absorbers are removed. A MF Model 210SS turntable is used for radiated measurement. It is a continuously rotatable, remote controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80cm high PVC support structure is placed on top of the turntable. For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive Antenna height using a broadband Antenna from 30MHz up to the upper frequency shown in 15.33(b)(1) depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn Antennas were used. For frequencies below 30MHz, a calibrated loop Antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband Antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up for frequencies below 1GHz was placed on top of the 0.8 meter high, 1 x 1.5 meter table; and test set-up for frequencies 1-40GHz was placed on top of the 1.5 meter high, 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, clock speed, mode of operation or video resolution, if applicable, turntable azimuth, and receive Antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn Antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive Antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive Antenna, whichever produced the worst-case emissions. According to 3dB Beam-Width of horn Antenna, the horn Antenna should be always directed to the EUT when rising height.

4. TEST EQUIPMENT CALIBRATION DATE

Radiated Emissions - AC1

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR7	MRTSUE06001	1 year	2020/08/01
PXA Signal Analyzer	Keysight	9030B	MRTSUE06395	1 year	2020/09/03
Loop Antenna	Schwarzbeck	FMZB 1519	MRTSUE06025	1 year	2020/11/13
Bilog Period Antenna	Schwarzbeck	VULB 9168	MRTSUE06172	1 year	2020/03/31
Broad Band Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06023	1 year	2020/10/13
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06597	1 year	2020/12/17
Microwave System Amplifier	Agilent	83017A	MRTSUE06076	1 year	2020/11/15
Preamplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2020/06/11
Thermohygrometer	Testo	608-H1	MRTSUE06403	1 year	2020/08/08
Anechoic Chamber	TDK	Chamber-AC1	MRTSUE06212	1 year	2020/04/30

Radiated Emission - AC2

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Spectrum Analyzer	Keysight	N9038A	MRTSUE06125	1 year	2020/08/01
Loop Antenna	Schwarzbeck	FMZB 1519	MRTSUE06025	1 year	2020/11/13
Bilog Period Antenna	Schwarzbeck	VULB 9162	MRTSUE06022	1 year	2020/10/13
Horn Antenna	Schwarzbeck	BBHA9120D	MRTSUE06171	1 year	2020/10/27
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06597	1 year	2020/12/17
Broadband Coaxial Preamplifier	Schwarzbeck	BBV 9718	MRTSUE06176	1 year	2020/11/15
Preamplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2020/06/11
Temperature/Humidity Meter	Minggao	ETH529	MRTSUE06170	1 year	2020/12/15
Anechoic Chamber	RIKEN	Chamber-AC2	MRTSUE06213	1 year	2020/04/30

Software	Version	Function
EMI Software	V3	EMI Test Software

5. MEASUREMENT UNCERTAINTY

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified 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.

Radiated Emission Measurement - AC1
Measurement Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): Horizontal: 30MHz~300MHz: 4.07dB 300MHz~1GHz: 3.63dB 1GHz~18GHz: 4.16dB Vertical: 30MHz~300MHz: 4.18dB 300MHz~1GHz: 3.60dB 1GHz~18GHz: 4.76dB
Radiated Emission Measurement - AC2
Measurement Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): Horizontal: 30MHz~300MHz: 3.75dB 300MHz~1GHz: 3.53dB 1GHz~18GHz: 4.28dB Vertical: 30MHz~300MHz: 3.86dB 300MHz~1GHz: 3.53dB 1GHz~18GHz: 4.33dB

6. TEST RESULT

6.1. Summary

FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1053 27.53(c)(f)	RSS-130 [4.7]	Radiated Spurious Emission	Refer to section 6.2.1	Radiated	Pass	Section 6.2

Notes:

1) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
2) All modes of operation and data rates were investigated. For radiated emission test, every axis (X, Y, Z) was also verified. The test results shown in the following sections represent the worst case emissions.

6.2. Radiated Spurious Emission Measurement

6.2.1.Test Limit

FCC Part 27.53(c)(2):

(2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB.

FCC Part 27.53(f):

For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

6.2.2.Test Procedure Used

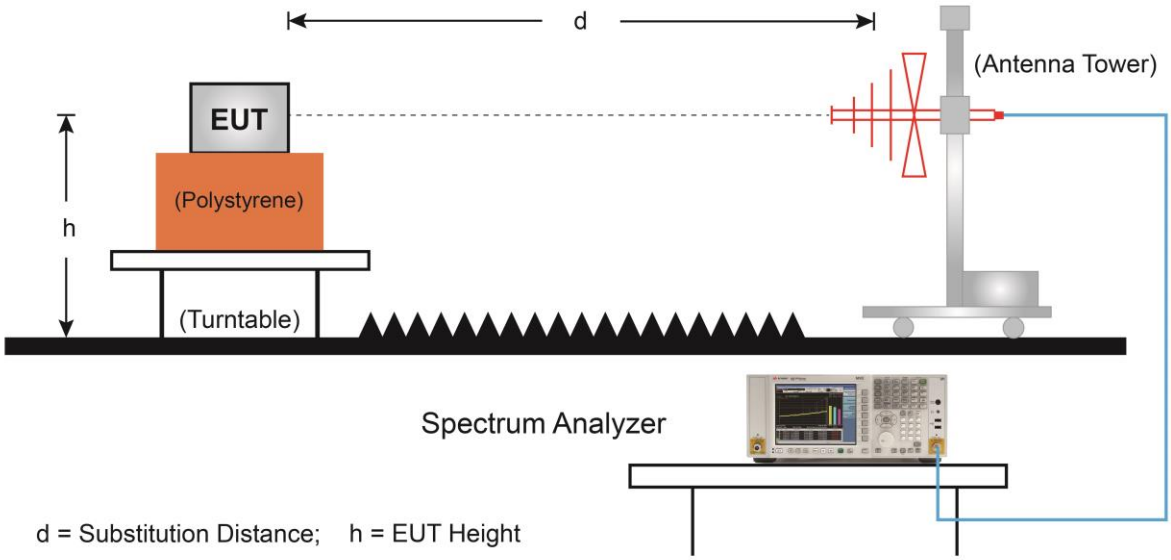
ANSI C63.26-2015 - Section 5.7

6.2.3.Test Setting

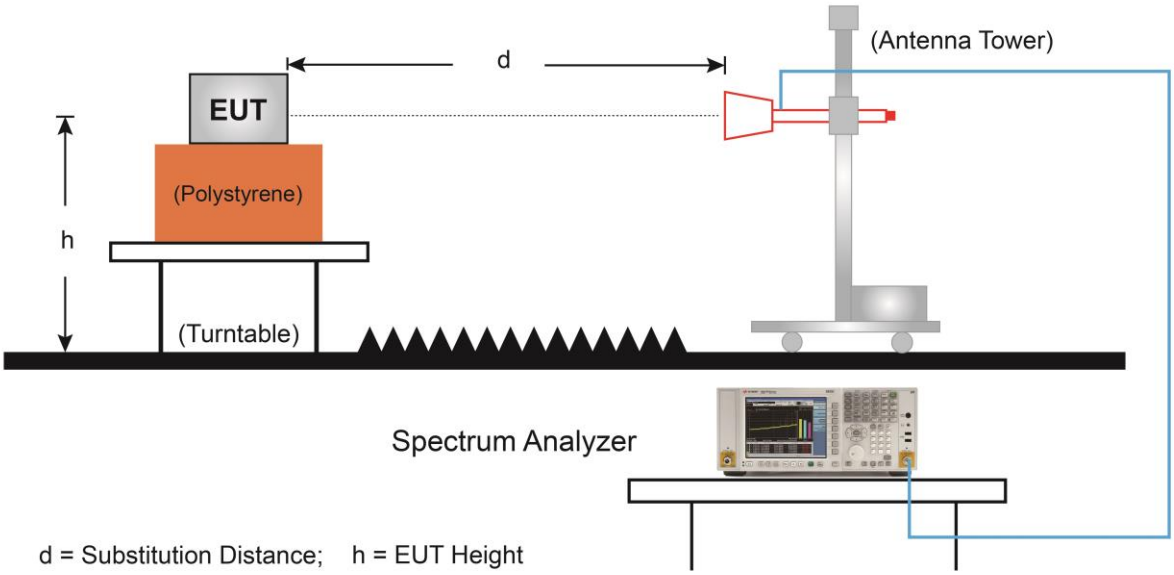
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 100kHz for below 1GHz or 1MHz for above 1GHz
3. VBW = 3 * RBW
4. Detector = power averaging (RMS)
5. Sweep time = Auto couple
6. Sweep point ≥ 2 * (Span / RBW)
7. Trace mode = Max hold
8. Trace was allowed to stabilize

6.2.4.Test Setup

Below 1GHz Test Setup:



Above 1GHz Test Setup:



6.2.5.Test Result

Product	UnaliWear HL7800-M	Temperature	25℃
Test Engineer	Dillon Diao	Relative Humidity	54%
Test Site	AC2	Test Date	2020/03/03
Test Mode	Mode 1: Traffic by LTE CAT-M1 Band 13 at Low channel, 1 RB, 5MHz Bandwidth, QPSK Modulation		
Remark	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-9GHz, there is not show in the report.		

Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
37.8	-99.7	28.0	-71.7	-13.0	-58.7	Peak	Horizontal
381.1	-104.2	27.9	-76.3	-13.0	-63.3	Peak	Horizontal
32.9	-91.2	24.3	-66.9	-13.0	-53.9	Peak	Vertical
353.0	-99.2	26.2	-73.0	-13.0	-60.0	Peak	Vertical
1560.0	-51.4	8.3	-43.1	-40.0	-3.1	Peak	Horizontal
2340.0	-64.0	12.1	-51.9	-13.0	-38.9	Peak	Horizontal
1560.0	-54.6	8.3	-46.3	-40.0	-6.3	Peak	Vertical
2340.0	-58.9	11.9	-47.0	-13.0	-34.0	Peak	Vertical
Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB) Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)							

Product	UnaliWear HL7800-M	Temperature	25℃
Test Engineer	Dillon Diao	Relative Humidity	54%
Test Site	AC2	Test Date	2020/03/03
Test Mode	Mode 2: Traffic by LTE CAT-M1 Band 13 at Mid channel, 1 RB, 5MHz Bandwidth, QPSK Modulation		
Remark	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-9GHz, there is not show in the report.		

Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
41.2	-102.9	27.5	-75.4	-13.0	-62.4	Peak	Horizontal
661.5	-103.1	32.5	-70.6	-13.0	-57.6	Peak	Horizontal
40.7	-86.9	20.4	-66.5	-13.0	-53.5	Peak	Vertical
653.2	-103.4	32.7	-70.7	-13.0	-57.7	Peak	Vertical
1564.0	-54.1	8.4	-45.7	-40.0	-5.7	Peak	Horizontal
2348.0	-62.4	12.1	-50.3	-13.0	-37.3	Peak	Horizontal
1564.0	-54.8	8.4	-46.4	-40.0	-6.4	Peak	Vertical
2344.0	-60.3	12.1	-48.2	-13.0	-35.2	Peak	Vertical
Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB) Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)							

Product	UnaliWear HL7800-M	Temperature	25℃
Test Engineer	Dillon Diao	Relative Humidity	54%
Test Site	AC2	Test Date	2020/03/03
Test Mode	Mode 3: Traffic by LTE CAT-M1 Band 13 at High channel, 1 RB, 5MHz Bandwidth, QPSK Modulation		
Remark	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-9GHz, there is not show in the report.		

Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
58.6	-104.7	21.8	-82.9	-13.0	-69.9	Peak	Horizontal
583.4	-103.9	32.3	-71.6	-13.0	-58.6	Peak	Horizontal
50.9	-92.8	21.1	-71.7	-13.0	-58.7	Peak	Vertical
443.7	-101.1	28.8	-72.3	-13.0	-59.3	Peak	Vertical
1568.0	-53.5	8.5	-45.0	-40.0	-5.0	Peak	Horizontal
2352.0	-60.9	12.0	-48.9	-13.0	-35.9	Peak	Horizontal
1568.0	-57.3	8.6	-48.7	-40.0	-8.7	Peak	Vertical
2352.0	-60.9	12.3	-48.6	-13.0	-35.6	Peak	Vertical
Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB) Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)							

Product	UnaliWear HL7800-M	Temperature	25℃
Test Engineer	Dillon Diao	Relative Humidity	54%
Test Site	AC2	Test Date	2020/03/03
Test Mode	Mode 4: Traffic by LTE CAT-M1 Band 13 at Mid channel, 1 RB, 10MHz Bandwidth, QPSK Modulation		
Remark	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-9GHz, there is not show in the report.		

Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
71.2	-105.6	21.8	-83.8	-13.0	-70.8	Peak	Horizontal
916.1	-104.3	36.8	-67.5	-13.0	-54.5	Peak	Horizontal
160.0	-102.1	26.7	-75.4	-13.0	-62.4	Peak	Vertical
236.1	-85.7	21.2	-64.5	-13.0	-51.5	Peak	Vertical
1564.0	-54.4	8.4	-46.0	-40.0	-6.0	Peak	Horizontal
2344.0	-62.7	12.2	-50.5	-13.0	-37.5	Peak	Horizontal
1564.0	-56.9	8.4	-48.5	-40.0	-8.5	Peak	Vertical
2344.0	-59.3	12.1	-47.2	-13.0	-34.2	Peak	Vertical
Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB) Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)							

Product	UnaliWear HL7800-M	Temperature	25℃
Test Engineer	Dillon Diao	Relative Humidity	54%
Test Site	AC2	Test Date	2020/03/03
Test Mode	Mode 5: Traffic by LTE CAT-M1 Band 13 at Low channel, Full RB, 5MHz Bandwidth, QPSK Modulation		
Remark	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-9GHz, there is not show in the report.		

Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
46.5	-104.1	25.9	-78.2	-13.0	-65.2	Peak	Horizontal
177.0	-98.3	25.3	-73.0	-13.0	-60.0	Peak	Horizontal
64.9	-97.7	23.4	-74.3	-13.0	-61.3	Peak	Vertical
224.0	-89.4	20.1	-69.3	-13.0	-56.3	Peak	Vertical
1560.0	-52.9	8.3	-44.6	-40.0	-4.6	Peak	Horizontal
2340.0	-62.2	12.1	-50.1	-13.0	-37.1	Peak	Horizontal
1560.0	-55.4	8.3	-47.1	-40.0	-7.1	Peak	Vertical
2340.0	-62.9	11.9	-51.0	-13.0	-38.0	Peak	Vertical
Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB) Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)							

Product	UnaliWear HL7800-M	Temperature	25℃
Test Engineer	Dillon Diao	Relative Humidity	54%
Test Site	AC2	Test Date	2020/03/03
Test Mode	Mode 6: Traffic by LTE CAT-M1 Band 13 at Mid channel, Full RB, 5MHz Bandwidth, QPSK Modulation		
Remark	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-9GHz, there is not show in the report.		

Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
103.7	-92.7	15.2	-77.5	-13.0	-64.5	Peak	Horizontal
238.6	-92.7	27.1	-65.6	-13.0	-52.6	Peak	Horizontal
89.2	-101.0	28.7	-72.3	-13.0	-59.3	Peak	Vertical
490.8	-100.2	29.6	-70.6	-13.0	-57.6	Peak	Vertical
1564.0	-53.5	8.4	-45.1	-40.0	-5.1	Peak	Horizontal
2348.0	-62.1	12.1	-50.0	-13.0	-37.0	Peak	Horizontal
1564.0	-56.0	8.4	-47.6	-40.0	-7.6	Peak	Vertical
2344.0	-60.9	12.1	-48.8	-13.0	-35.8	Peak	Vertical
Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB) Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)							

Product	UnaliWear HL7800-M	Temperature	25℃
Test Engineer	Dillon Diao	Relative Humidity	54%
Test Site	AC2	Test Date	2020/03/03
Test Mode	Mode 7: Traffic by LTE CAT-M1 Band 13 at High channel, Full RB, 5MHz Bandwidth, QPSK Modulation		
Remark	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-9GHz, there is not show in the report.		

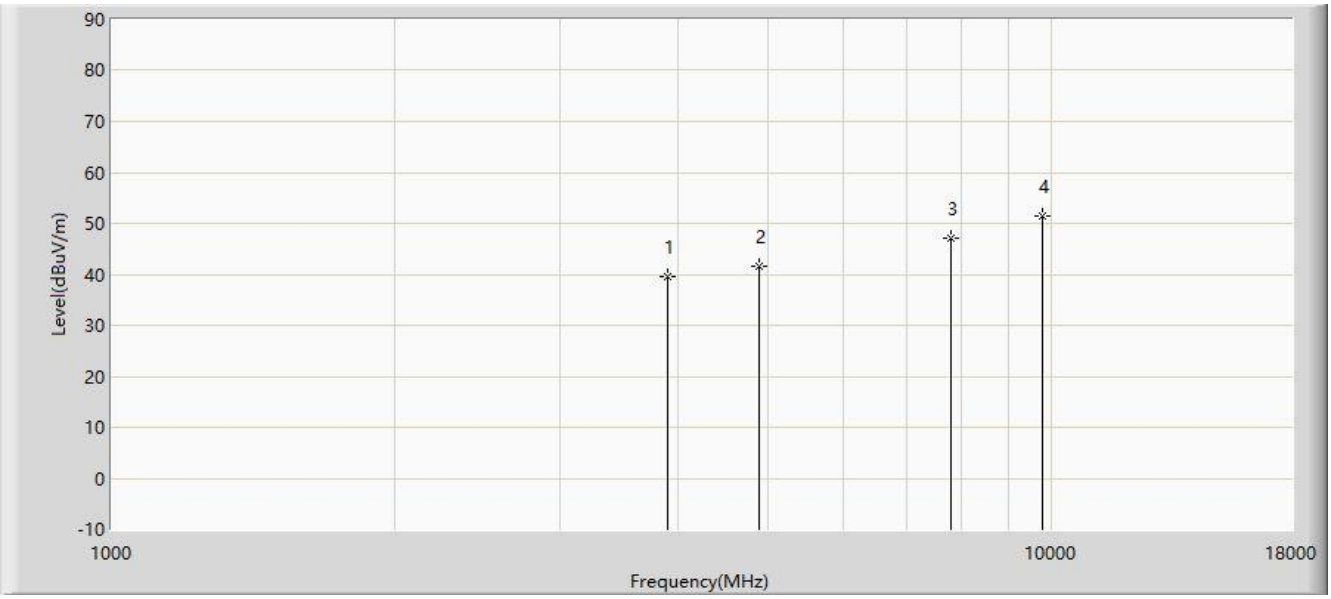
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
122.6	-100.6	19.0	-81.6	-13.0	-68.6	Peak	Horizontal
491.7	-101.7	29.8	-71.9	-13.0	-58.9	Peak	Horizontal
106.1	-100.6	26.8	-73.8	-13.0	-60.8	Peak	Vertical
877.3	-103.6	35.4	-68.2	-13.0	-55.2	Peak	Vertical
1568.0	-54.4	8.5	-45.9	-40.0	-5.9	Peak	Horizontal
2352.0	-61.0	12.0	-49.0	-13.0	-36.0	Peak	Horizontal
1568.0	-57.6	8.6	-49.0	-40.0	-9.0	Peak	Vertical
2352.0	-62.2	12.3	-49.9	-13.0	-36.9	Peak	Vertical
Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB) Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)							

Product	UnaliWear HL7800-M	Temperature	25℃
Test Engineer	Dillon Diao	Relative Humidity	54%
Test Site	AC2	Test Date	2020/03/03
Test Mode	Mode 8: Traffic by LTE CAT-M1 Band 13 at Mid channel, Full RB, 10MHz Bandwidth, QPSK Modulation		
Remark	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-9GHz, there is not show in the report.		

Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
260.9	-99.2	24.6	-74.6	-13.0	-61.6	Peak	Horizontal
723.6	-104.0	35.1	-68.9	-13.0	-55.9	Peak	Horizontal
176.5	-92.0	25.6	-66.4	-13.0	-53.4	Peak	Vertical
989.3	-104.5	37.0	-67.5	-13.0	-54.5	Peak	Vertical
1564.0	-52.9	8.4	-44.5	-40.0	-4.5	Peak	Horizontal
2344.0	-62.1	12.2	-49.9	-13.0	-36.9	Peak	Horizontal
1564.0	-55.5	8.4	-47.1	-40.0	-7.1	Peak	Vertical
2344.0	-60.9	12.1	-48.8	-13.0	-35.8	Peak	Vertical
Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB) Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)							

Test Result of Radiated Emissions for Co-located

Test Mode	BLE Transmit & LTE CAT M1 Transmit	Temperature & Relative Humidity	25℃ & 54%
Test Engineer	Bruce Wang	Polarity	Horizontal
Test Site	AC1	Test Date	2020/02/29
Remark	There is the ambient noise within frequency range 9kHz~1GHz and 18GHz~25GHz, the permissible value is not show in the report.		



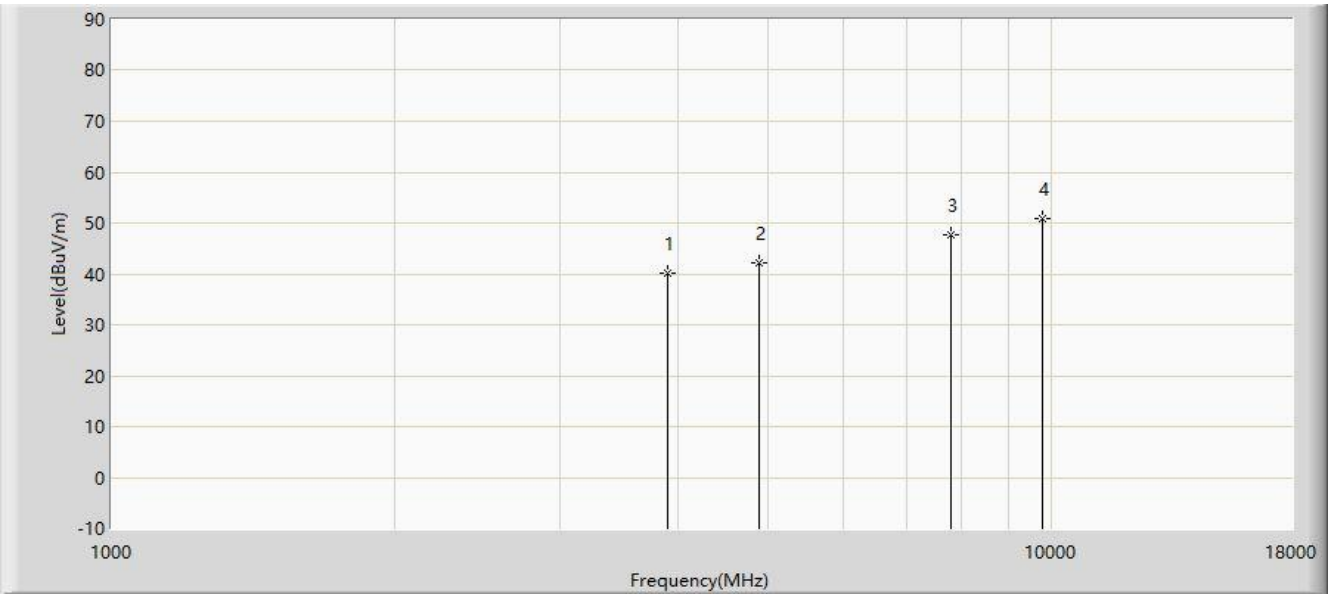
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		3910.000	39.473	34.960	-34.527	74.000	4.513	PK
2		4892.000	41.464	33.794	-32.536	74.000	7.670	PK
3		7820.000	47.040	33.258	-26.96	74.000	13.782	PK
4	*	9784.000	51.359	32.093	-22.641	74.000	19.266	PK

Note 1: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB).

Note 2: Worst-case Mode: BLE (1Mbps) Channel 2446MHz & LTE CAT M1 Band 13 Channel 782MHz.

Test Mode	BLE Transmit & LTE CAT M1 Transmit	Temperature & Relative Humidity	25℃ & 54%
Test Engineer	Bruce Wang	Polarity	Horizontal
Test Site	AC1	Test Date	2020/02/29
Remark:	There is the ambient noise within frequency range 9kHz~1GHz and 18GHz~25GHz, the permissible value is not show in the report.		



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		3910.000	40.056	35.543	-33.944	74.000	4.513	PK
2		4892.000	42.036	34.366	-31.964	74.000	7.670	PK
3		7820.000	47.795	34.013	-26.205	74.000	13.782	PK
4	*	9784.000	50.989	31.723	-23.011	74.000	19.266	PK

Note 1: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB).

Note 2: Worst-case Mode: BLE (1Mbps) Channel 2446MHz & LTE CAT M1 Band 13 Channel 782MHz.

7. CONCLUSION

The data collected relate only the item(s) tested and show that the unit is in compliance with radiated spurious emissions of FCC Part 27F and RSS-130 rules.

The End

Appendix A - Test Setup Photograph

Refer to “1912RSU024-UT-1” file.

Appendix B - EUT Photograph

Refer to “1912RSU024-UE-1” file.