

FCC - TEST REPORTReport Number : **60.790.17.051.01R01** Date of Issue : January 16, 2018Model : VELIGEAR/PS-01Product Type : BLE SMART WATCHApplicant : DAYTON INDUSTRIAL CO, LTDAddress : 11A, 2-12 KWAI FAT RODA, KWAI CHUNG, NEW TERRITORIES,
HONGKONGProduction Facility : Kendy Electronics(Dongguan) Co, LtdAddress : Xingsi Huangtang Village, Hengli Town, Dongguang City, Guangdong
Province, P.R. ChinaTest Result : ☒Positive ☐NegativeTotal pages
including
Appendices : 58

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2. Details about the Test Laboratory

Company name: TUV SUD Cert & Testing (China) Co., Ltd.
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Checkpoint Road 2, Nanshan District
Shenzhen 518052
P.R. China

Telephone: 86 755 8828 6998
Fax: 86 755 828 5299

FCC Registration No.: 514049

3. Description of Equipment Under Test

Description of the Equipment Under Test

Product: BLE SMART WATCH

Model no.: VELIGEAR/PS-01

FCC ID: O4GDAVGear

Rating: 1) 3.7VDC (1 x 3.7VDC Rechargeable battery)
2) 5.0VDC (USB charging port)

Frequency: 2402MHz-2480MHz

Antenna gain: 0 dBi

Number of operated channel: 40

Modulation: GFSK



4. Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C 10-1-2016 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators

All the test methods for BLE were according to 558074 D01 DTS Meas Guidance v04 DTS Measurement Guidance and ANSI C63.10 (2013).

5. Summary of Test Results

5.1. FCC Part 15 Subpart C - BLE

Emission Tests				
FCC Part 15 Subpart C				
Test Condition	Pages	Test Result		
		Pass	Fail	N/A
FCC Title 47 Part 15.205, 15.209 & 15.247(d) Spurious Radiated Emission	10-16	☒	☐	☐
FCC Title 47 Part 15.207 Conduct Emission	17-19	☒	☐	☐
FCC Title 47 Part 15.247(a)(2) 6dB & 99% Bandwidth	20-23	☒	☐	☐
FCC Title 47 Part 15.247(b) Peak Output Power	24-27	☒	☐	☐
FCC Title 47 Part 2.1051 & 15.247(d) Spurious Emissions at Antenna Terminals	28-31	☒	☐	☐
FCC Title 47 Part 15.247(d) 100kHz Bandwidth of band edges	32-36	☒	☐	☐
FCC Title 47 Part 15.247(e) Power Spectral Density	37-40	☒	☐	☐
FCC Title 47 Part 15.203 & 15.247(b) Antenna Requirement	41	☒	☐	☐

6. General Remarks

Remarks

Client informs that the PS-01 has the same technical construction including circuit diagram, PCB Layout, components and component layout, all electrical construction and mechanical construction, with BLE SMART WATCH, VELIGEAR. The difference lies only on different color of the different models. (Client's conformation letter shown at appendix C)

EMC Tests were performed on model: VELIGEAR.

This submittal(s) (test report) is intended for
FCC ID: O4GDAVGGEAR complies with:
Section 15.207, 15.209, 15.247 of the FCC Part 15, Subpart C rules for the DTS grant

The TX and RX range is 2402MHz-2480MHz for the BLE.

SUMMARY:

- All tests according to the regulations cited on page 5 were

☒ - Performed

☐ - **Not** Performed

- The Equipment Under Test

☒ - **Fulfills** the general approval requirements.

☐ - **Does not** fulfill the general approval requirements.

Sample Received Date: October 6, 2017

Testing Start Date: October 11, 2017

Testing End Date: January 16, 2018

- TUV SUD CERT & TESTING (CHINA) CO., LTD.-

Reviewed by:



CHAN Kwong Ngai
EMC Test Engineer

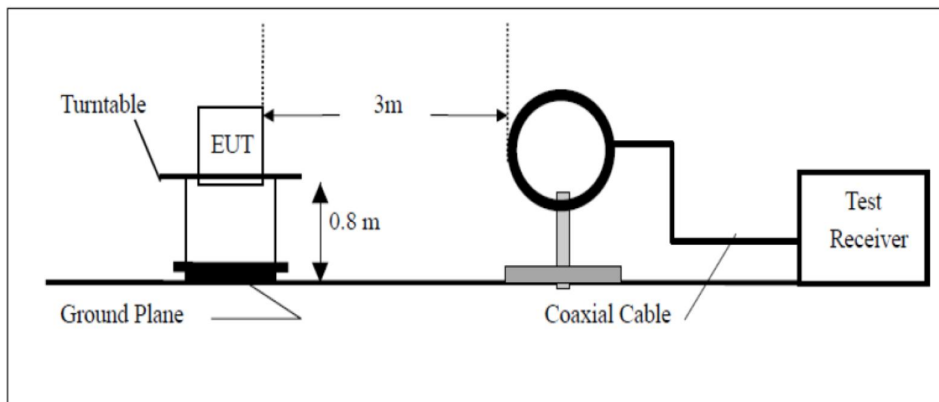
Prepared by:



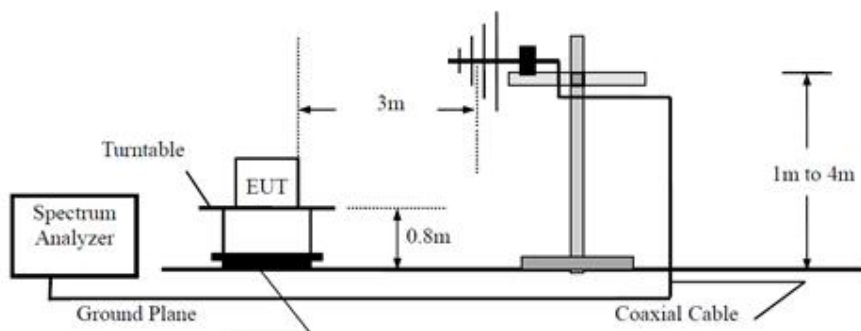
Alex CHAN
EMC Project Engineer

7. Test Setups

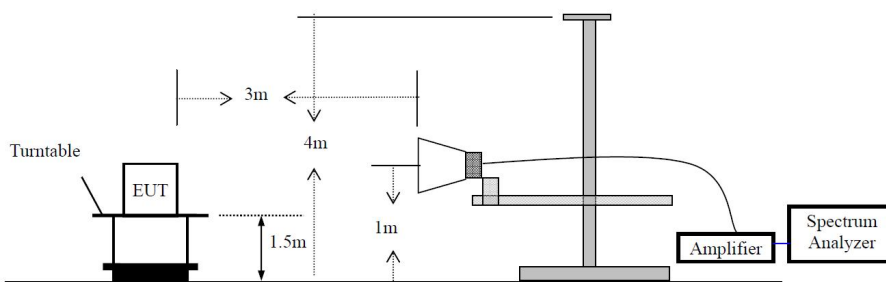
7.1. Radiated test setups 9kHz-30MHz



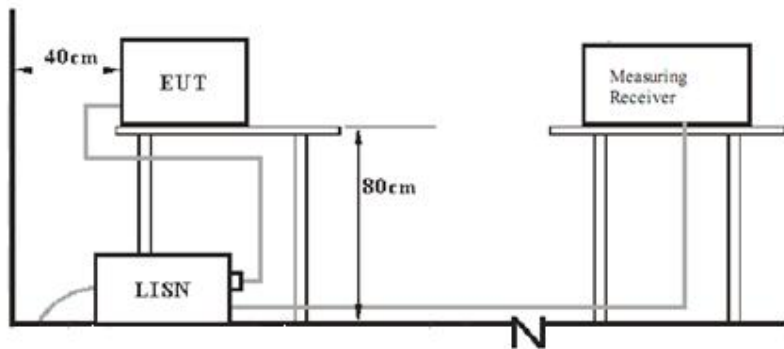
7.2. Radiated test setups Below 1GHz



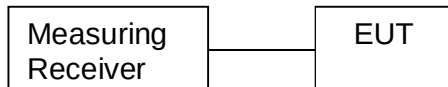
7.3. Radiated test setups Above 1GHz



7.4. AC Power Line Conducted Emission test setups



7.5. Conducted RF test setups



8. Systems test configuration

Auxiliary Equipment Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.	S/N
Notebook	Lenovo	X240	/
Adapter	Apple	A1537	/

Test software: nRFgo test tool, which used to control the EUT in continues transmitting mode

The system was configured to channel 0, 19, and 39 for the test BLE mode

Non-hopping mode: The system was configured to operate at a signal channel transmitting. The test software allows the configuration and operation at the worst-case duty and the highest transmit power

9. Emission Test Results

9.1. Spurious Radiated Emission BLE

Test Method

1: The EUT was placed on a turn table which is 1.5m above ground plane for above 1GHz and 0.8m above ground for below 1GHz at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

2: The EUT was set 3 meters away from the interference – receiving antenna, which was mounted on the top of a variable – height antenna tower.

3: The height of antenna 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.

4: 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.

5: Use the following spectrum analyzer settings According to C63.10:

For Above 1GHz

Span = wide enough to capture the peak level of the in-band emission and all spurious
RBW = 1MHz, VBW ≥ RBW for peak measurement and VBW = 10Hz for average measurement, Sweep = auto, Detector function = peak, Trace = max hold.

For Below 1GHz

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious
RBW = 100 KHz, VBW ≥ RBW for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.

Note:

1: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 KHz for Quasi-peak detection (QP) at frequency below 1GHz.

2: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for peak detection (PK) at frequency above 1GHz.

3: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average ((duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor (20log(1/duty cycle)).

4: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (duty cycle > 98%) for Average detection (AV) at frequency above 1GHz

Spurious Radiated Emission BLE

EUT: VELIGARE
 Op Condition: Operated, TX Mode (2402MHz)
 Test Specification: FCC15.205, 15.209 & 15.247(d) Antenna: Horizontal
 Comment: 3.7VDC
 Remark: 9kHz to 25GHz

Test Result	
☒	Passed
☐	Not Passed

Frequency MHz	Result dB μ V/m	Limit dB μ V/m	Margin dB	Detector
82.434	16.54	40	-23.46	Quasi Peak
180.942	19.68	43.5	-23.82	Quasi Peak
311.731	21.85	46	-24.15	Quasi Peak
876.271	31.83	46	-14.17	Quasi Peak
1234.687	27.16	54	-26.84	Peak
2274.562	36.58	54	-17.42	Peak
4804.000	40.53	74	-33.47	Peak
4804.000	34.77	54	-19.23	Average
7206.094	38.66	74	-13.83	Peak
7206.094	36.71	54	-17.29	Average

Spurious Radiated Emission BLE

EUT: VELIGARE
 Op Condition: Operated, TX Mode (2402MHz)
 Test Specification: FCC15.205, 15.209 & 15.247(d) Antenna: Vertical
 Comment: 3.7VDC
 Remark: 9kHz to 25GHz

Test Result	
☒	Passed
☐	Not Passed

Frequency MHz	Result dBμV/m	Limit dBμV/m	Margin dB	Detector
43.795	19.39	40	-20.61	Quasi Peak
83.188	22.54	40	-17.46	Quasi Peak
437.130	20.49	46	-25.51	Quasi Peak
874.493	31.26	46	-14.74	Quasi Peak
1254.563	28.33	54	-25.67	Peak
1769.500	28.22	54	-25.78	Peak
2314.563	37.06	54	-16.94	Peak
4804.000	41.55	74	-32.45	Peak
4804.000	37.98	54	-16.02	Average
7206.000	45.19	74	-13.83	Peak
7206.000	38.65	54	-15.35	Average

Spurious Radiated Emission BLE

EUT: VELIGARE
 Op Condition: Operated, TX Mode (2440MHz)
 Test Specification: FCC15.205, 15.209 & 15.247(d) Antenna: Horizontal
 Comment: 3.7VDC
 Remark: 9kHz to 25GHz

Test Result	
☒	Passed
☐	Not Passed

Frequency MHz	Result dB μ V/m	Limit dB μ V/m	Margin dB	Detector
38.468	19.66	40	-20.34	Quasi Peak
180.951	20.54	43.5	-22.96	Quasi Peak
287.898	20.12	46	-25.88	Quasi Peak
310.768	21.87	46	-24.13	Quasi Peak
1254.562	28.33	74	-45.67	Peak
1254.562	24.71	54	-29.29	Average
4880.000	40.88	74	-33.12	Peak
4880.000	37.42	54	-16.58	Average
7320.000	41.09	74	-13.83	Peak
7320.000	38.45	54	-15.55	Average

Spurious Radiated Emission BLE

EUT: VELIGARE
 Op Condition: Operated, TX Mode (2440MHz)
 Test Specification: FCC15.205, 15.209 & 15.247(d) Antenna: Vertical
 Comment: 3.7VDC
 Remark: 9kHz to 25GHz

Test Result	
☒	Passed
☐	Not Passed

Frequency MHz	Result dB μ V/m	Limit dB μ V/m	Margin dB	Detector
44.627	21.44	40	-18.56	Quasi Peak
108.605	15.15	43.5	-28.35	Quasi Peak
271.636	19.84	46	-26.16	Quasi Peak
425.051	22.37	46	-23.63	Quasi Peak
1262.375	30.36	74	-43.64	Peak
1262.375	23.86	54	-30.14	Average
4880.000	40.97	74	-33.03	Peak
4880.000	35.56	54	-18.44	Average
7320.000	44.06	74	-29.94	Peak
7320.000	39.15	54	-14.85	Average
12739.000	43.88	74	-30.12	Peak
12739.000	34.65	54	-19.35	Average

Spurious Radiated Emission BLE

EUT: VELIGARE
 Op Condition: Operated, TX Mode (2480MHz)
 Test Specification: FCC15.205, 15.209 & 15.247(d) Antenna: Horizontal
 Comment: 3.7VDC
 Remark: 9kHz to 25GHz

Test Result	
☒	Passed
☐	Not Passed

MHz	dBμV/m	dBμV/m	dB	
45.350	21.65	40	-18.35	Quasi Peak
198.986	17.67	43.5	-25.83	Quasi Peak
255.134	21.78	46	-24.22	Quasi Peak
454.576	20.87	46	-25.13	Quasi Peak
1254.563	28.33	74	-45.67	Peak
1254.563	22.56	54	-31.44	Average
4960.000	40.88	74	-33.12	Peak
4960.000	35.76	54	-18.24	Average
7440.000	43.24	74	-30.76	Peak
7440.000	37.17	54	-16.83	Average
8772.654	42.03	74	-31.97	Peak
8772.654	34.17	54	-19.83	Average

Spurious Radiated Emission BLE

EUT: VELIGARE
 Op Condition: Operated, TX Mode (2480MHz)
 Test Specification: FCC15.205, 15.209 & 15.247(d) Antenna: Vertical
 Comment: 3.7VDC
 Remark: 9kHz to 25GHz

Test Result	
☒	Passed
☐	Not Passed

Frequency MHz	Result dB μ V/m	Limit dB μ V/m	Margin dB	Detector
44.345	19.56	40	-20.44	Quasi Peak
112.675	17.35	43.5	-26.15	Quasi Peak
287.330	22.43	46	-23.57	Quasi Peak
543.250	21.05	46	-24.95	Quasi Peak
1259.750	30.02	74	-43.98	Peak
1259.750	24.18	54	-29.82	Average
4960.000	41.84	74	-32.16	Peak
4960.000	36.17	54	-17.83	Average
7440.000	45.65	74	-28.35	Peak
7440.000	41.17	54	-12.83	Average
13562.000	44.89	74	-29.11	Peak
13562.000	32.54	54	-21.46	Average

9.2. Conducted Emission

Test Method

1. The EUT was placed on a table, which is 0.8m above ground plane
2. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.).
3. Maximum procedure was performed to ensure EUT compliance
4. A EMI test receiver is used to test the emissions from both sides of AC line

Limit

According to §15.107, conducted emissions limit as below:

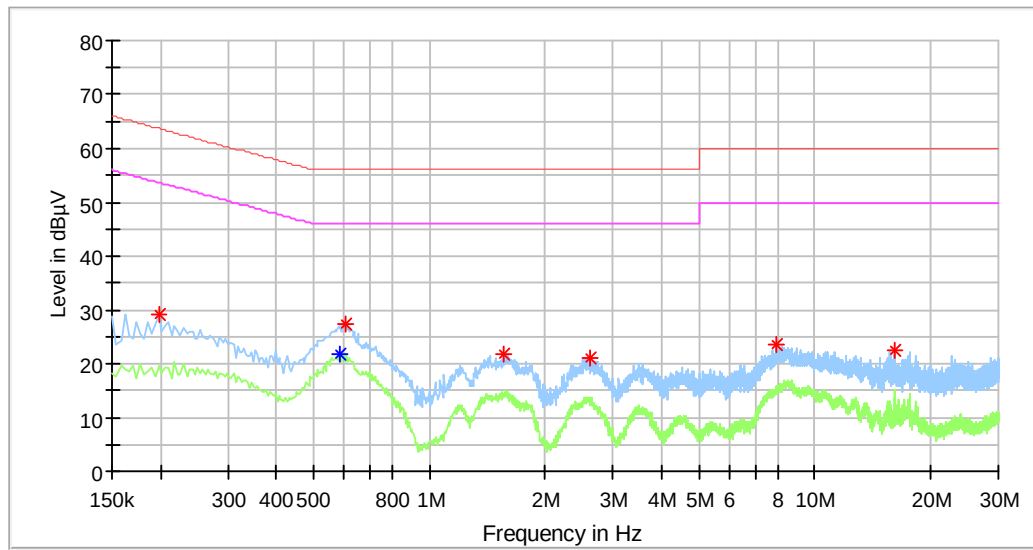
Frequency MHz	QP Limit dB μ V	AV Limit dB μ V
0.150-0.500	66-56*	56-46*
0.500-5	56	46
5-30	60	50

*Decreasing linearly with logarithm of the frequency

Conducted Emission BLE

EUT: VELIGEAR.
 Op Condition: Operated, Tx Mode
 Test Specification: FCC 15.207 Conduct Emission, L Line
 Comment: 120VAC, 60Hz (For external adaptor)

Test Result
☒ Passed
☐ Not Passed

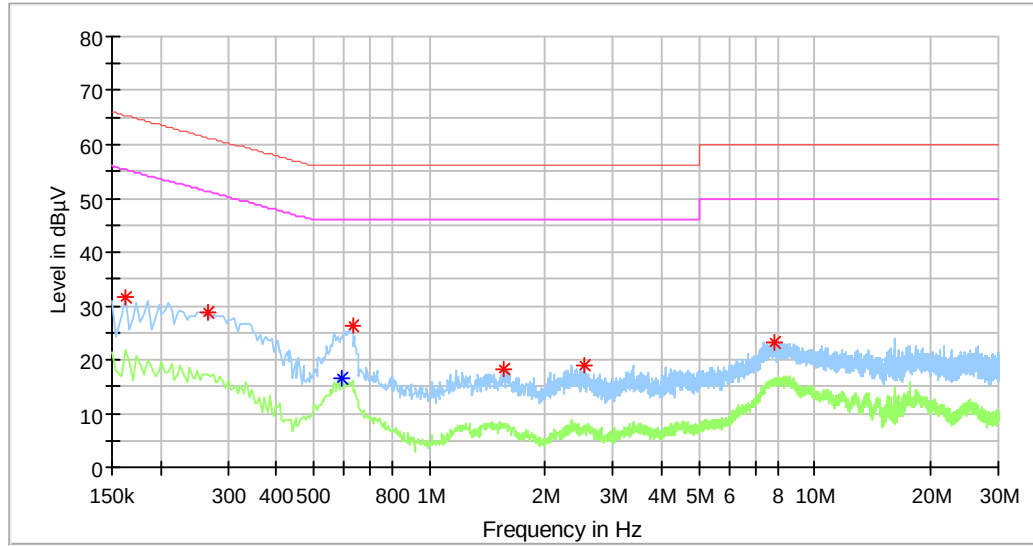


Frequency (MHz)	MaxPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)
0.198000	29.03	---	63.69	34.67
0.582000	---	21.64	46.00	24.36
0.606000	27.22	---	56.00	28.78
1.554000	21.75	---	56.00	34.25
2.598000	21.15	---	56.00	34.85
7.970000	23.64	---	60.00	36.36
16.170000	22.31	---	60.00	37.69

Conducted Emission BLE

EUT: VELIGEAR.
 Op Condition: Operated, Tx mode
 Test Specification: FCC 15.207 Conduct Emission, N Line
 Comment: 120VAC, 60Hz (For external adaptor)

Test Result
☒ Passed
☐ Not Passed



Frequency (MHz)	MaxPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)
0.162000	31.65	---	65.36	33.71
0.266000	28.61	---	61.24	32.63
0.590000	---	16.66	46.00	29.34
0.630000	26.41	---	56.00	29.59
1.554000	18.18	---	56.00	37.82
2.538000	18.85	---	56.00	37.15
7.910000	23.19	---	60.00	36.81

9.3. 6dB & 99% Bandwidth BLE

Test Method

1. Use the following spectrum analyzer settings:
RBW=100K, VBW $\geq$ 3RBW, Sweep = auto, Detector function = peak, Trace = max hold
2. Use the automatic bandwidth measurement capability of an instrument, may be employed using the X dB bandwidth mode with X set to 6 dB, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be $\geq$ 6 dB.
3. Allow the trace to stabilize, record the X dB Bandwidth value.

Limit

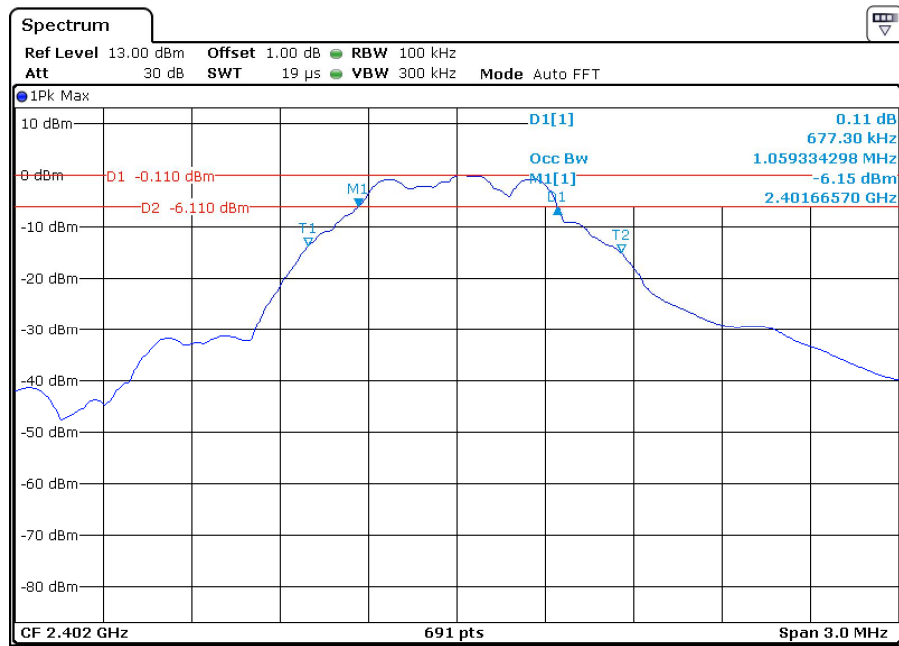
Limit [kHz]

≥ 500

6dB & 99% Bandwidth BLE

EUT: VELIGARE
 Op Condition: Operated, TX Mode (2402MHz)
 Test Specification: FCC15.247(a)(2), 6dB Bandwidth & 99% Bandwidth
 Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



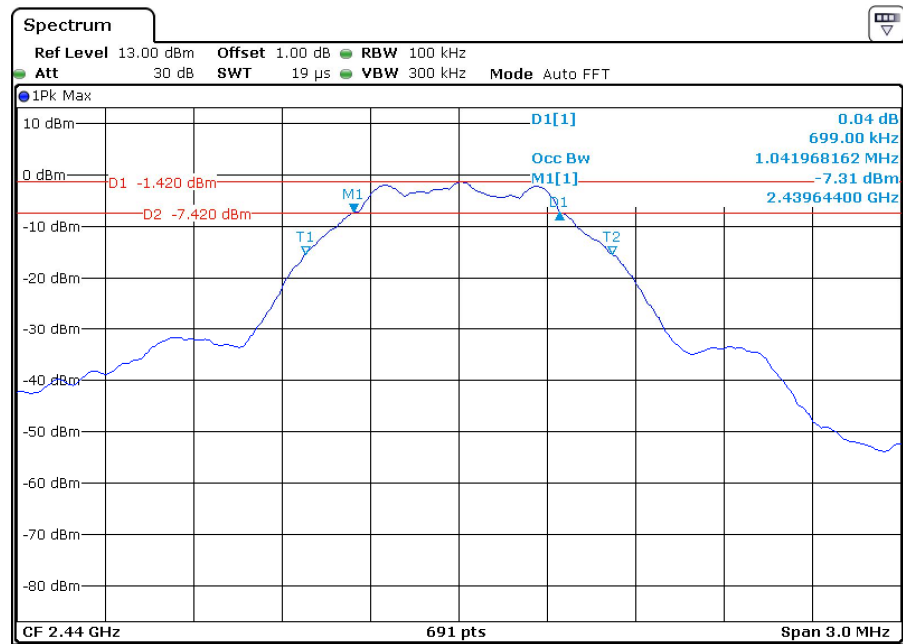
6dB bandwidth	Limit
677.300 kHz	>500 kHz

99% bandwidth
1015.334 kHz

6dB & 99% Bandwidth BLE

EUT: VELIGARE
 Op Condition: Operated, TX Mode (2440MHz)
 Test Specification: FCC15.247(a)(2), 6dB Bandwidth & 99% Bandwidth
 Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



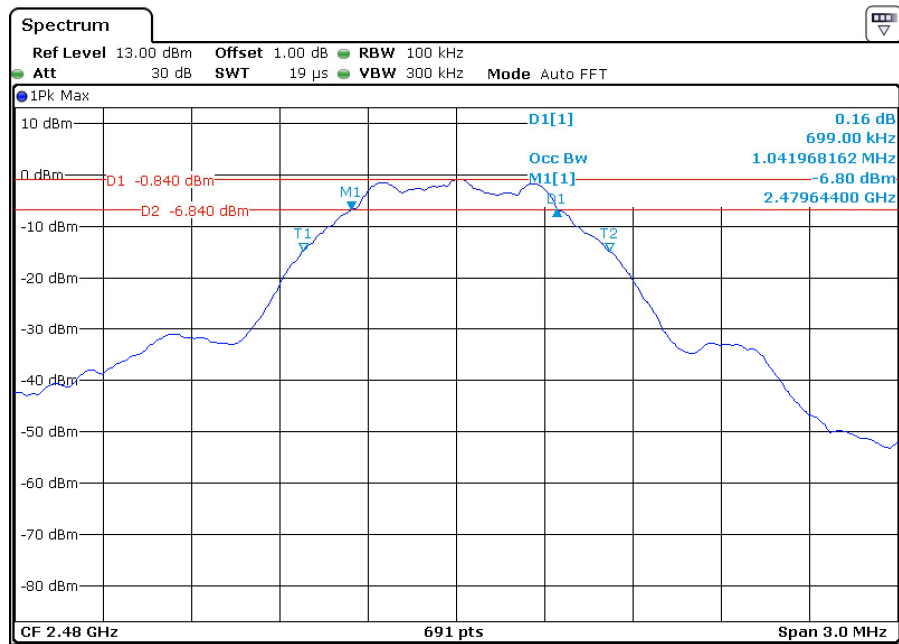
6dB bandwidth	Limit
699.000 kHz	>500 kHz

99% bandwidth
1041.968 kHz

6dB & 99% Bandwidth BLE

EUT: VELIGARE
 Op Condition: Operated, TX Mode (2480MHz)
 Test Specification: FCC15.247(a)(2), 6dB Bandwidth & 99% Bandwidth
 Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



6dB bandwidth	Limit
699.000 kHz	>500 kHz

99% bandwidth
1041.968 kHz

9.4. Conducted Peak Output Power BLE

Test Method

1. Use the following spectrum analyzer settings:
Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel
RBW > the 20 dB bandwidth of the emission being measured, VBW ≥ RBW,
Sweep = auto, Detector function = peak, Trace = max hold
2. Add a correction factor to the display.
3. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power

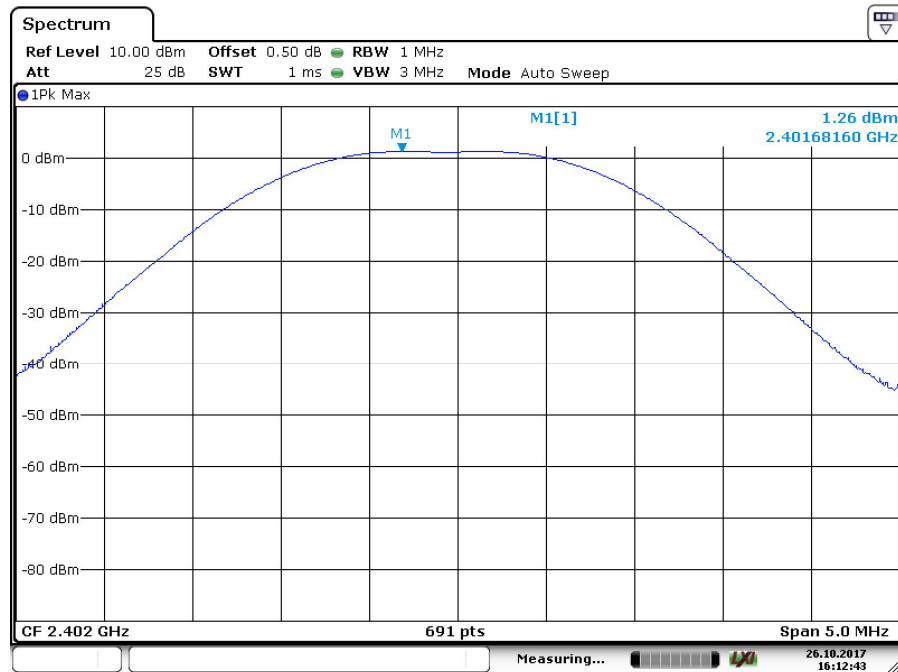
Limits

Frequency Range MHz	Limit W	Limit dBm
2400-2483.5	≤1	≤30

Conducted Peak Output Power BLE

EUT: VELIGARE
 Op Condition: Operated, TX Mode (2402MHz)
 Test Specification: FCC15.247(b)
 Comment: 3.7VDC, Antenna gain: 0 dBi,
 Cable Loss: 0.5dB

Test Result
☒ Passed
☐ Not Passed



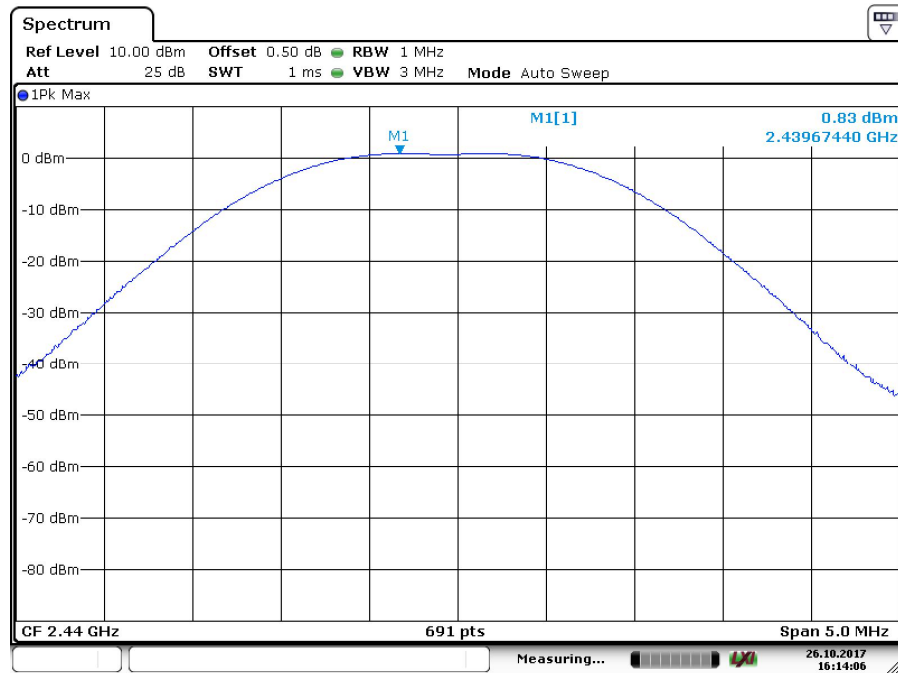
Date: 26.OCT.2017 16:12:43

Conducted Output Power	Limit
1.26dBm	30dBm

Conducted Peak Output Power BLE

EUT: VELIGARE
 Op Condition: Operated, TX Mode (2440MHz)
 Test Specification: FCC15.247(b)
 Comment: 3.7VDC, Antenna gain: 0 dBi,
 Cable Loss: 0.5dB

Test Result	
☒	Passed
☐	Not Passed



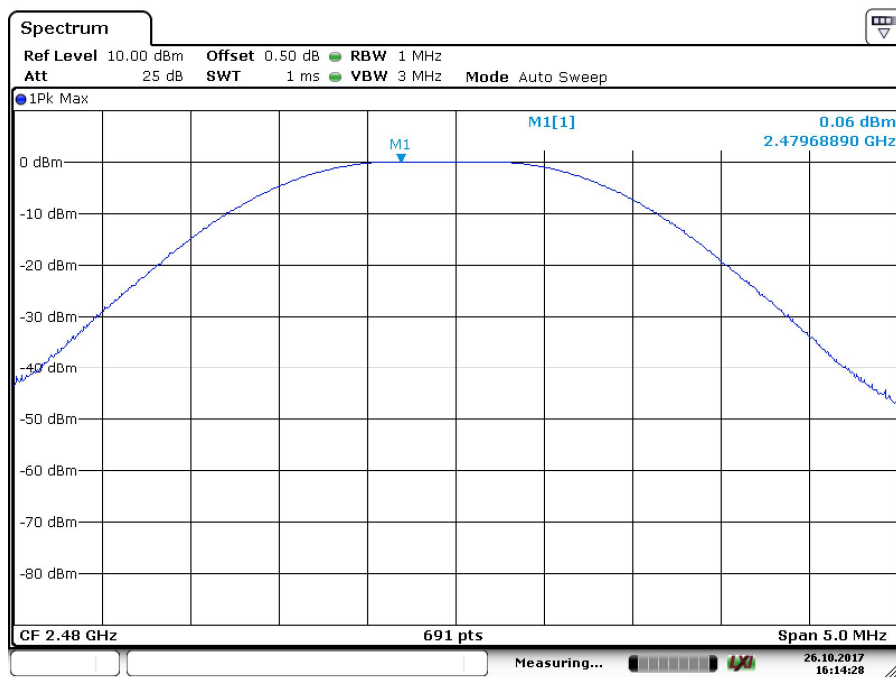
Date: 26.OCT.2017 16:14:06

Conducted Output Power	Limit
0.83dBm	30dBm

Conducted Peak Output Power BLE

EUT: VELIGARE
 Op Condition: Operated, TX Mode (2480MHz)
 Test Specification: FCC15.247(b)
 Comment: 3.7VDC, Antenna gain: 0 dBi,
 Cable Loss: 0.5dB

Test Result	
☒	Passed
☐	Not Passed



Date: 26.OCT.2017 16:14:28

Conducted Output Power	Limit
0.06dBm	30dBm

9.5. Spurious Emissions at Antenna Terminals BLE

Test Method

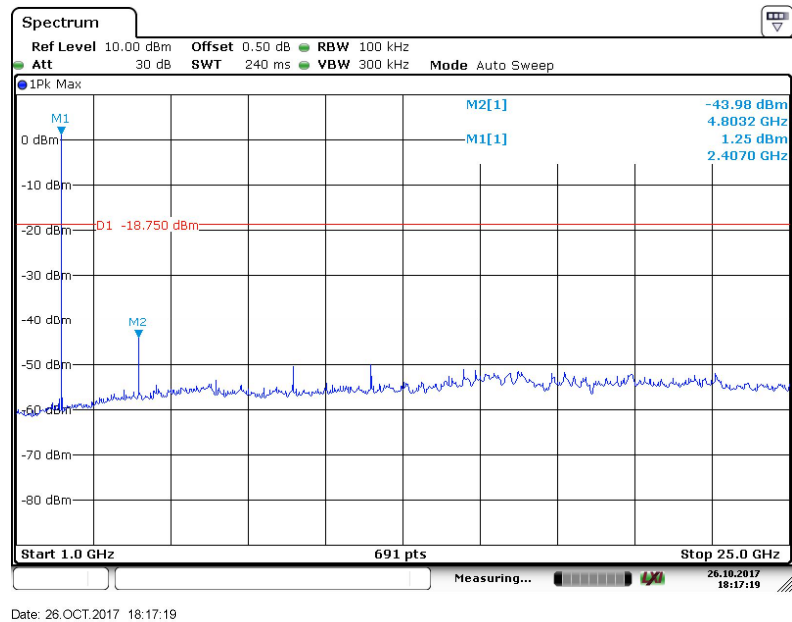
1. Use the following spectrum analyzer settings:
Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.
RBW = 100 kHz, VBW ≥ RBW, Sweep = auto, Detector function = peak, Trace = max hold
2. Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded.
3. The level displayed must comply with the limit specified in this Section. Submit these plots.
4. Repeat above procedures until all frequencies measured were complete.

Limit

Frequency Range MHz	Limit (dBc)
30-25000	-20

EUT:	VELIGARE
Op Condition:	Operated, TX Mode (2402MHz)
Test Specification:	FCC2.1051 & 15.247(d)
Comment:	3.7VDC

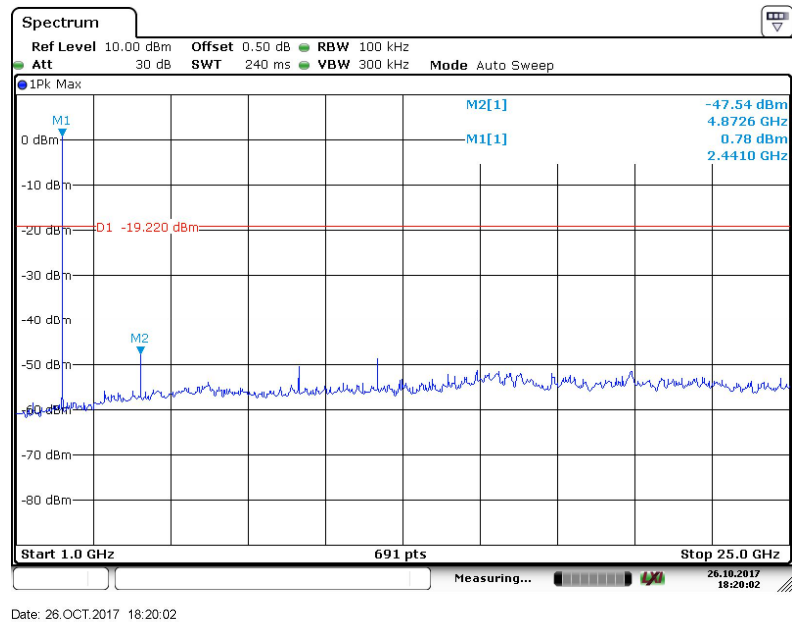
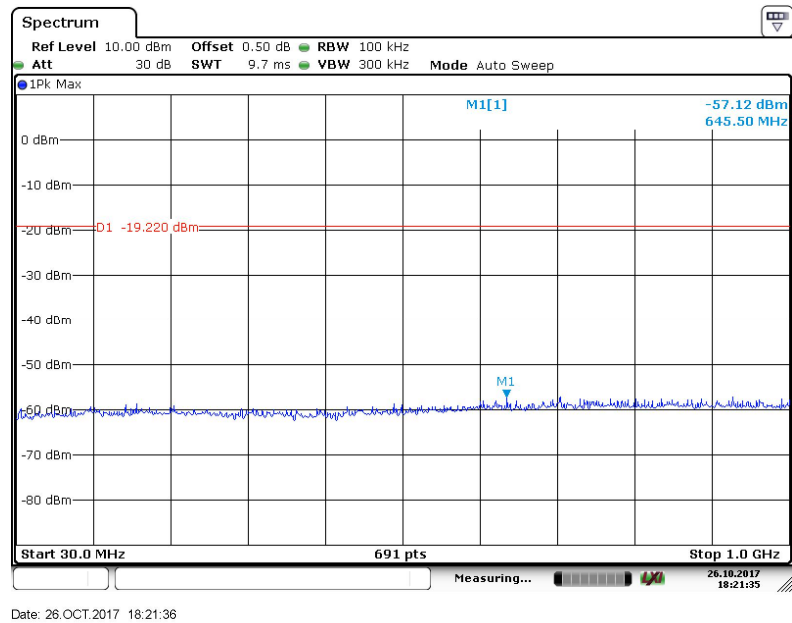
Test Result
☒ Passed
☐ Not Passed



Spurious Emissions at Antenna Terminals BLE

EUT: VELIGARE
Op Condition: Operated, TX Mode (2440MHz)
Test Specification: FCC2.1051 & 15.247(d)
Comment: 3.7VDC

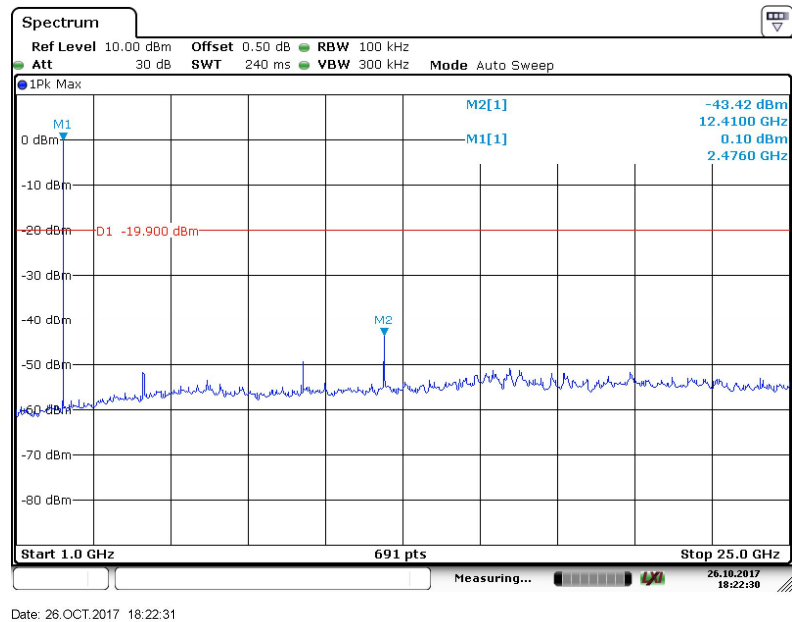
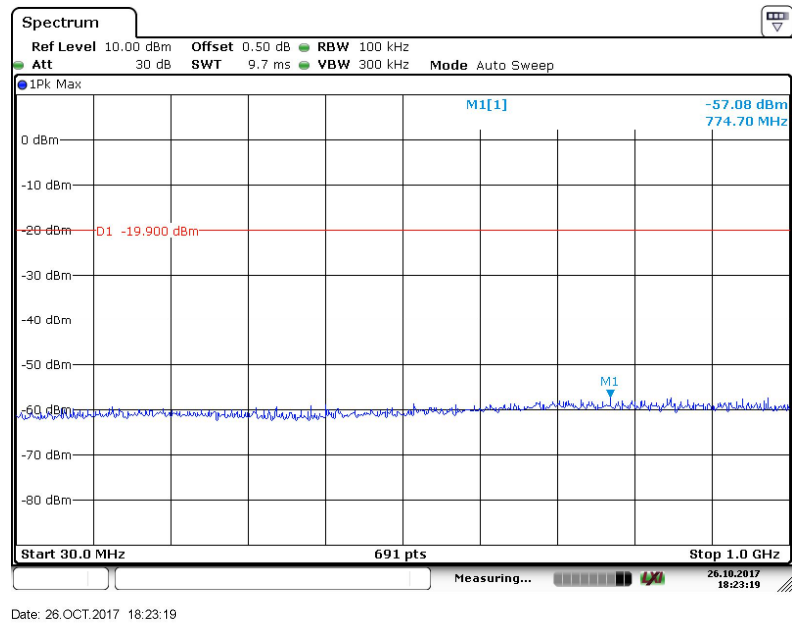
Test Result
☒ Passed
☐ Not Passed



Spurious Emissions at Antenna Terminals BLE

EUT: VELIGARE
Op Condition: Operated, TX Mode (2480MHz)
Test Specification: FCC2.1051 & 15.247(d)
Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



9.6. 100kHz Bandwidth of band edges BLE

Test Method

- 1 Use the following spectrum analyzer settings:
Span = wide enough to capture the peak level of the in-band emission and all spurious
RBW = 100 kHz, VBW $\geq$ RBW, Sweep = auto, Detector function = peak, Trace = max hold
- 2 Allow the trace to stabilize, use the peak and delta measurement to record the result.
- 3 The level displayed must comply with the limit specified in this Section. .
- 4 Repeat the test at the hopping off and hopping on mode, submit all the plots.

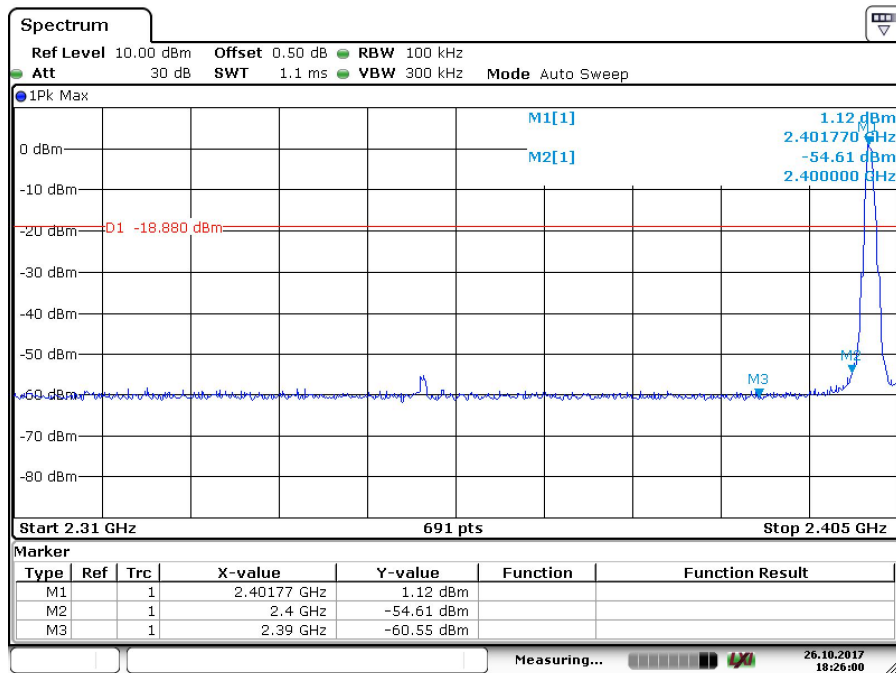
Limit:

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits.

100kHz Bandwidth of band edges BLE

EUT: VELIGARE
 Op Condition: Operated, TX Mode (2402MHz)
 Test Specification: FCC15.247(d), Conducted
 Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



Date: 26.OCT.2017 18:26:00

Band edges	Limit
55.73 dB	> 20dB

100kHz Bandwidth of band edges BLE

EUT: VELIGARE
Op Condition: Operated, TX Mode (2402MHz)
Test Specification: FCC15.247(d), Radiated
Comment: 3.7VDC

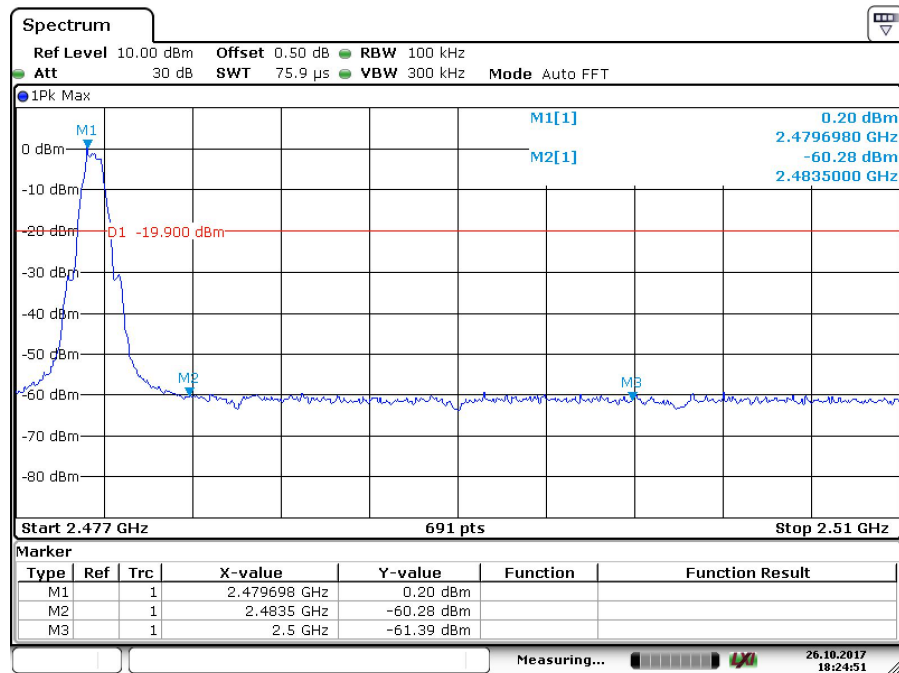
Test Result	
☒	Passed
☐	Not Passed

Frequency MHz	Result dBμV/m	Limit dBμV/m	Margin dB	Detector
2390.000	40.14	74	-33.86	Peak
2390.000	34.45	54	-19.55	Average

100kHz Bandwidth of band edges BLE

EUT: VELIGARE
 Op Condition: Operated, TX Mode (2480MHz)
 Test Specification: FCC15.247(d), Conducted
 Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



Date: 26.OCT.2017 18:24:51

Band edges	Limit
60.48 dB	> 20dB

100kHz Bandwidth of band edges BLE

EUT: VELIGARE
Op Condition: Operated, TX Mode (2480MHz)
Test Specification: FCC15.247(d), Radiated
Comment: 3.7VDC

Test Result	
☒	Passed
☐	Not Passed

Frequency MHz	Result dBμV/m	Limit dBμV/m	Margin dB	Detector
2483.500	43.43	74	-30.57	Peak
2483.500	36.71	54	-17.29	Average

9.7. Power Special Density BLE

Test Method

This procedure shall be used if maximum peak conducted output power was used to demonstrate compliance:

1. Set analyzer center frequency to DTS channel center frequency. RBW=3kHz, VBW $\geq$ 3RBW, Span=1.5 times DTS bandwidth, Detector=Peak, Sweep=auto, Trace= max hold.
2. Allow trace to fully stabilize, use the peak marker function to determine the maximum amplitude level within the RBW.
3. Repeat above procedures until other frequencies measured were completed.

Limit

Limit [dBm]

≤ 8

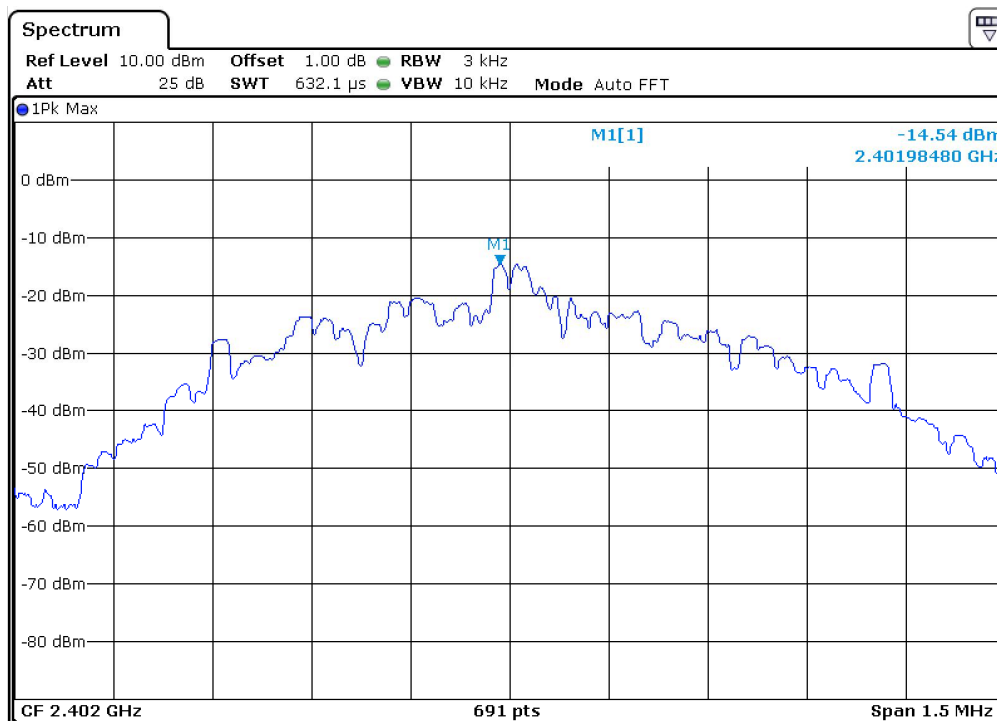
Test result

Frequency MHz	Power spectral density dBm	Result
Top channel 2402MHz	-14.54	Pass
Middle channel 2440MHz	-13.28	Pass
Bottom channel 2480MHz	-12.60	Pass

Power Spectral Density BLE

EUT: VELIGARE
Op Condition: Operated, TX Mode (2402MHz)
Test Specification: FCC15.247(e)
Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



PSD	Limit
-14.54 dBm	< 8 dBm



Power Spectral Density BLE

EUT: VELIGARE
Op Condition: Operated, TX Mode (2440MHz)
Test Specification: FCC15.247(e)
Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



PSD	Limit
-13.28 dBm	< 8 dBm

Power Special Density

EUT: VELIGARE
 Op Condition: Operated, TX Mode (2480MHz)
 Test Specification: FCC15.247(e)
 Comment: 3.7VDC

Test Result	
☒	Passed
☐	Not Passed



PSD	Limit
-12.60 dBm	< 8 dBm



9.8. Antenna Requirement

EUT: VELIGARE
Op Condition: Operated, TX Mode
Test Specification: FCC15.203 & 15.247(b)
Comment: 3.7VDC

Test Result	
☒	Passed
☐	Not Passed

Limit

For intentional device, according to FCC Title 47 Part 15.203, 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. And according to FCC Title 47 Part 15.247(b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

The antenna used in this product is PCB antenna, and the maximum gain of this antenna is 0.0 dBi.

10. Appendix A - Photographs of EUT



Appendix A



Appendix A



Appendix A



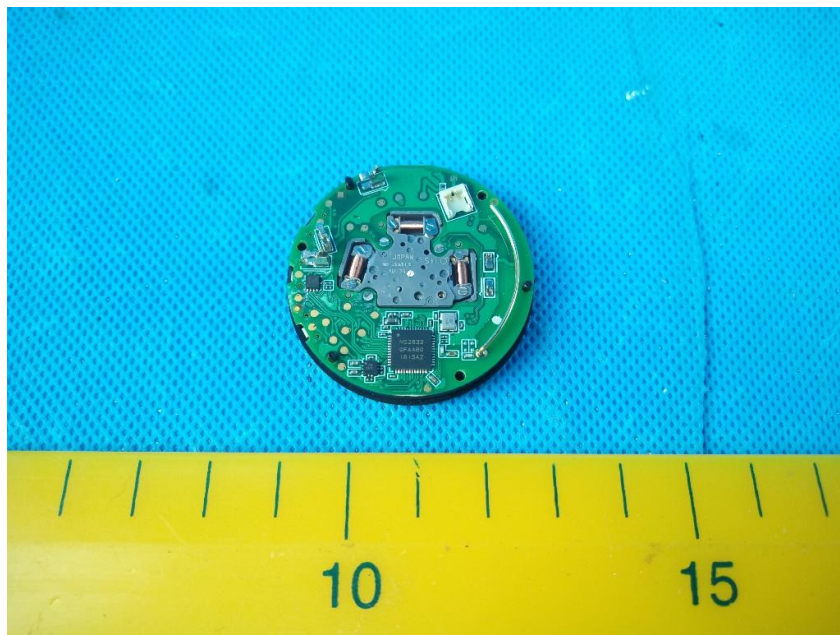
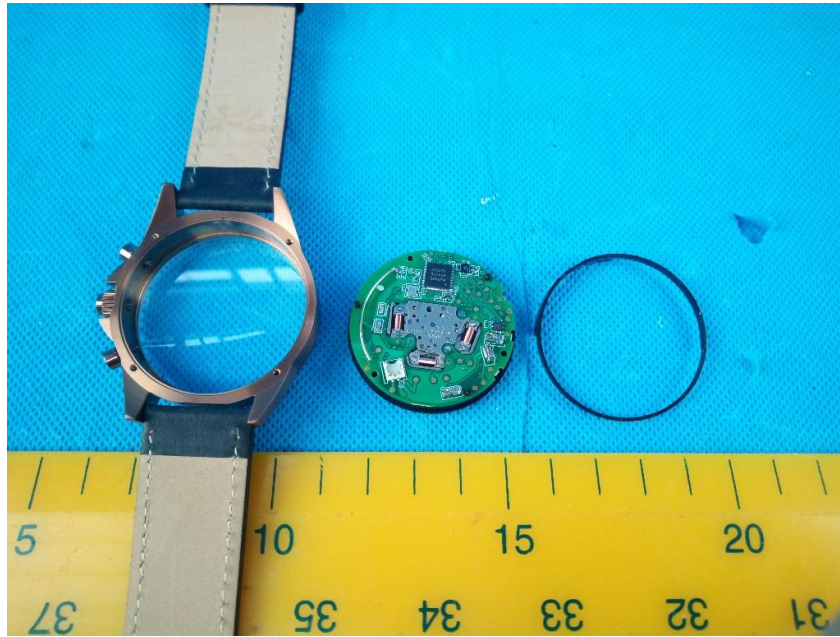
Appendix A



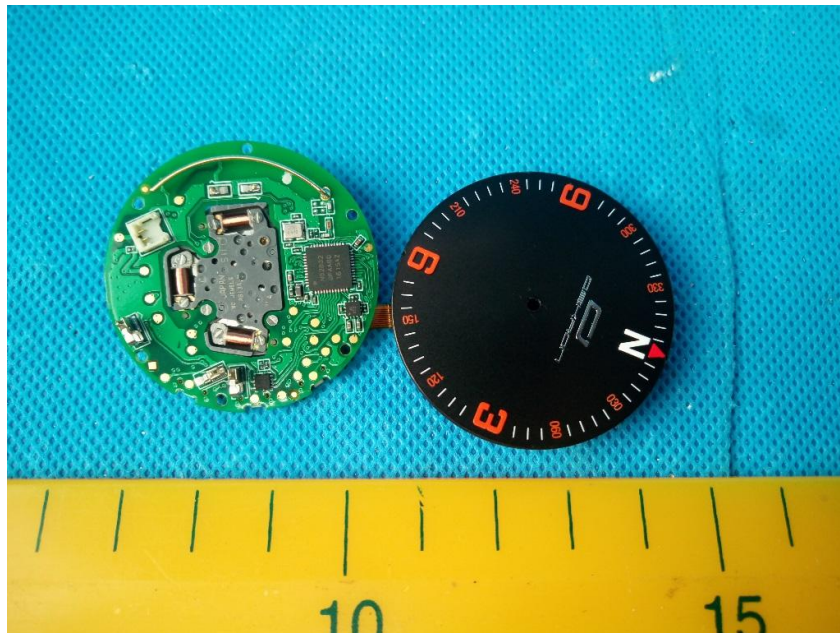
Appendix A



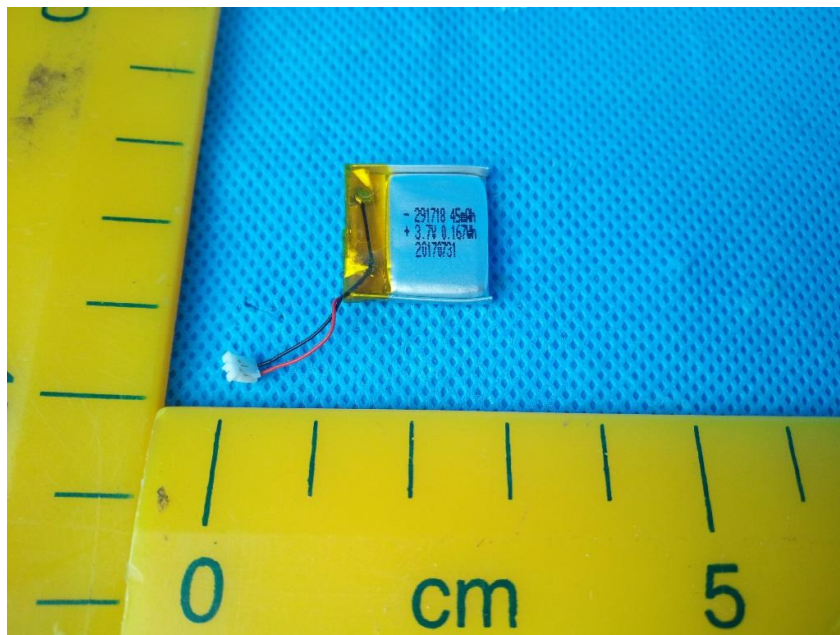
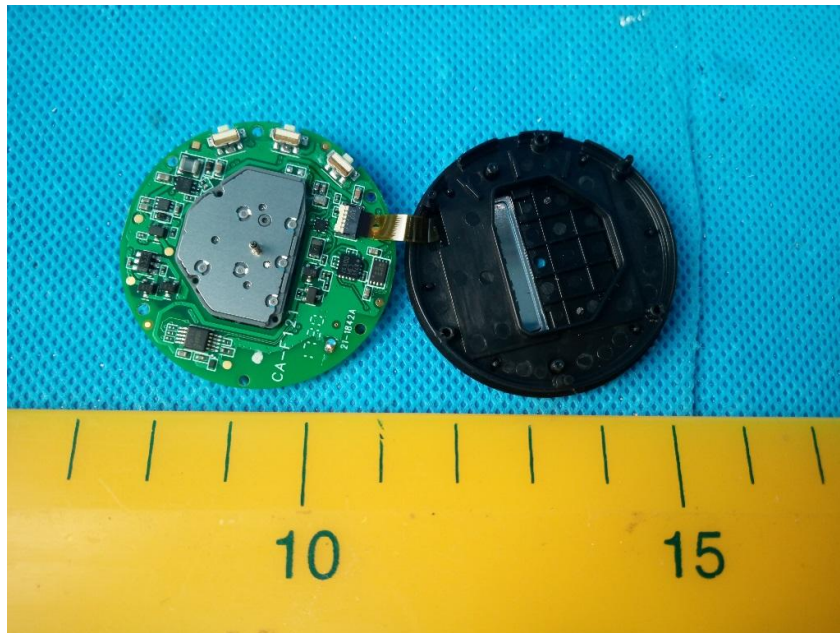
Appendix A



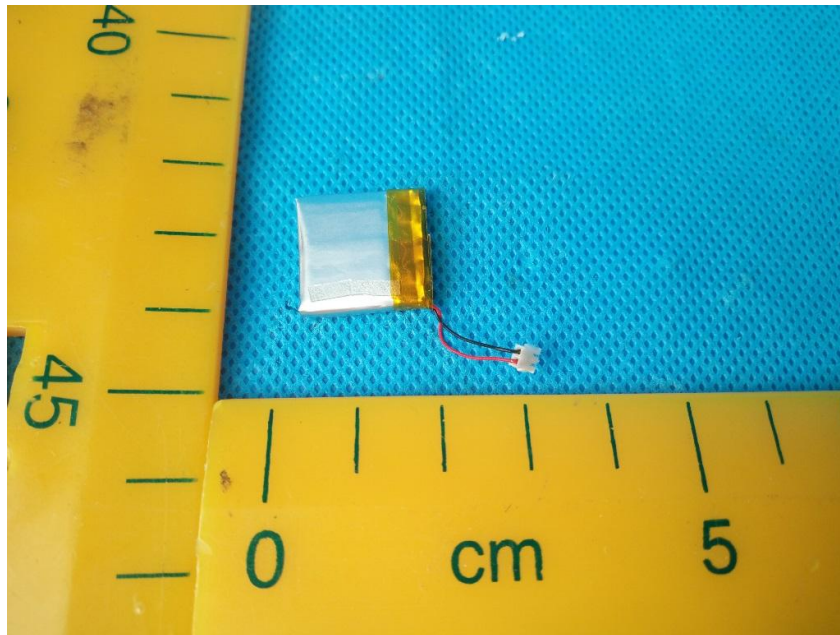
Appendix A



Appendix A



Appendix A

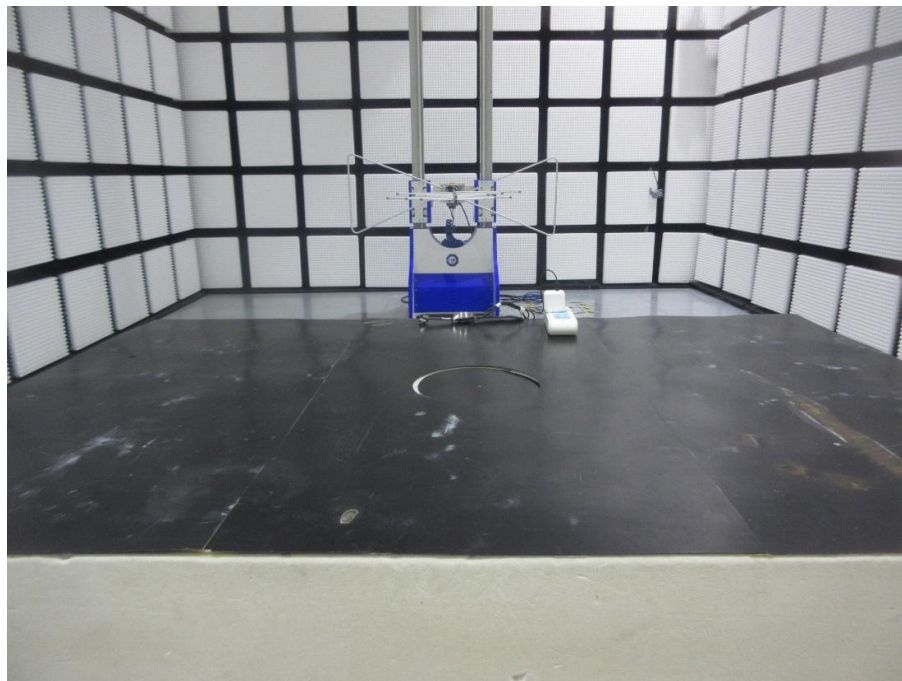
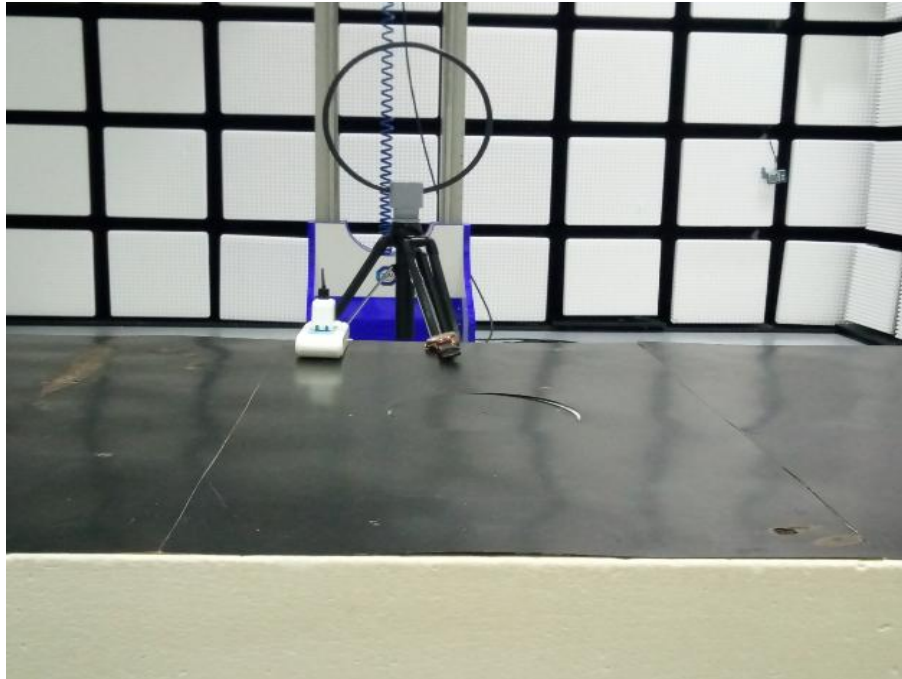


.5

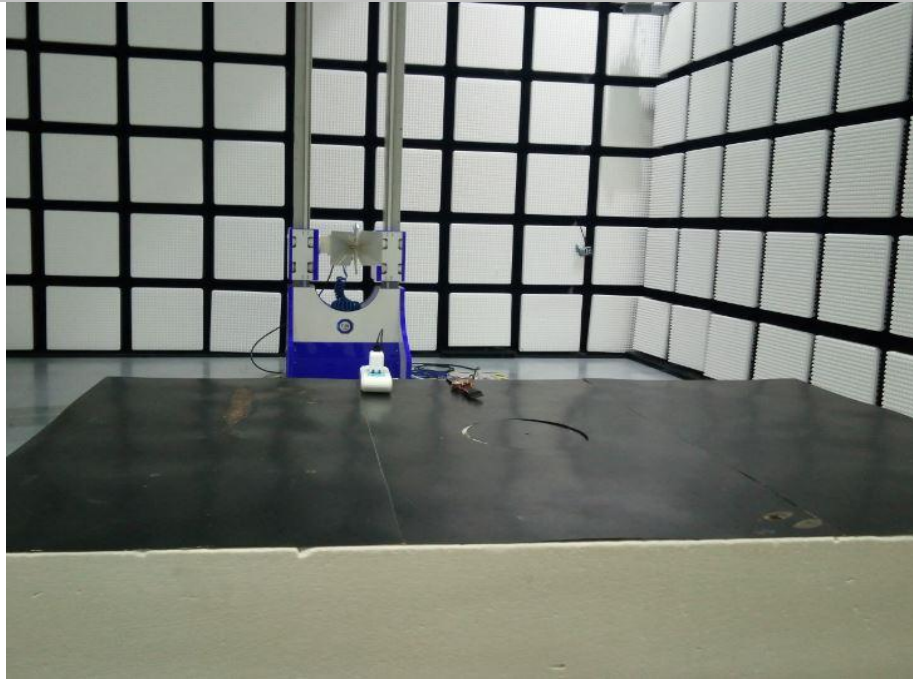


11. Appendix B - Setup Photographs of EUT

Spurious Radiated Emission



Appendix B



Conducted Emission



Appendix B

20dB & 99% Bandwidth, Peak Output Power,
Spurious Emissions at Antenna Terminals,
100kHz Bandwidth of band edges, Min. No. of Hopping Frequencies,
Min. Hopping Channel Carrier Frequency Separation, Average Time of Occupancy



12. Appendix C - General Product Information

Radiofrequency radiation exposure evaluation

According to KDB 447498 D01v06 section 4.3.1, For frequencies between 100 MHz to 6GHz and test separation distances ≤ 50 mm, the Numeric threshold is determined as:

Step a)

$$\left[\frac{\text{max. power of channel, including tune-up tolerance, mW}}{(\text{min. test separation distance, mm})} \cdot [\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR} \right]$$

>> The fundamental frequency of the EUT is 2402-2480MHz,
the test separation distance is ≤ 50 mm.
(Manufacturer specified the separation distance is: 5mm)

Step b)

>> Numeric threshold (2402MHz), $\text{mW} / 5\text{mm} \cdot \sqrt{2.402\text{GHz}} \leq 3.0$
Numeric threshold (2402MHz) $\leq 38.713\text{mW}$

>> Numeric threshold (2440MHz), $\text{mW} / 5\text{mm} \cdot \sqrt{2.440\text{GHz}} \leq 3.0$
Numeric threshold (2440MHz) $\leq 38.411\text{mW}$

>> Numeric threshold (2480MHz), $\text{mW} / 5\text{mm} \cdot \sqrt{2.480\text{GHz}} \leq 3.0$
Numeric threshold (2480MHz) $\leq 38.100\text{mW}$

>> The power of EUT measured (2402MHz) is: 1.26dBm = 1.337mW
The power of EUT measured (2440MHz) is: 0.83dBm = 1.211mW
The power of EUT measured (2480MHz) is: 0.06dBm = 1.014mW

Which is smaller than the Numeric threshold.

Therefore, the device is exempt from stand-alone SAR test requirements.

Appendix C



11A, Tai Tak Industrial Building, 2-12 Kwai Fat Road, Kwai Chung, N.T. Hongkong
Tel: 24224404

To: TÜV SÜD HKG Ltd.

Attention: **Mr. Edmond Fung**

From: **L.F. Wong**

Tel. No: 2422 4404

Date: November 24, 2017

Total Page (Cover Included): 1

Declaration Letter

Subject: Declaration Letter for Model Number

We:

Officially notify TÜV SÜD HKG Ltd. that the **PS-01** have the same technical construction including circuit diagram, PCB Layout, components and component layout, all electrical construction and mechanical construction, with **BLE SMART WATCH, VELIGEAR**.
The difference lies only on different color of the different models.

<<Additional Model >>: PS-01

<<Main Test Model >>: VELIGEAR

<<Product>>: BLE SMART WATCH

Applicant:

24 Nov 2017
(Date)


(Applicant's authorized signature and company Chop)

13. Test Equipment Site List

Radiated emission Test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 26	101269	2018-7-14
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9163	707	2018-7-14
Loop Antenne	Rohde & Schwarz	HFG2-Z2	335471152	2018-7-14
Horn Antenna	Rohde & Schwarz	HF907	102294	2018-7-14
Pre-amplifier	Rohde & Schwarz	SCU 18	102230	2018-7-14
Signal Generator	Rohde & Schwarz	SMY01	839369/005	2018-7-7
Attenuator	Agilent	8491A	MY39264334	2018-7-7
3m Semi-anechoic chamber	TDK	9X6X6	----	2020-7-7
Test software	Rohde & Schwarz	EMC32	Version 9.15.00	N/A

Conducted Emission Test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 3	101782	2018-7-14
LISN	Rohde & Schwarz	ENV4200	100249	2018-7-14
LISN	Rohde & Schwarz	ENV432	101318	2018-7-14
LISN	Rohde & Schwarz	ENV216	100326	2018-7-14
ISN	Rohde & Schwarz	ENY81	100177	2018-7-14
ISN	Rohde & Schwarz	ENY81-CA6	101664	2018-7-14
High Voltage Probe	Rohde & Schwarz	TK9420(VT9420)	9420-584	2018-7-14
RF Current Probe	Rohde & Schwarz	EZ-17	100816	2018-7-14
Attenuator	Shanghai Huaxiang	TS2-26-3	080928189	2018-7-7
Test software	Rohde & Schwarz	EMC32	Version9.15.00	N/A

20dB & 99% Bandwidth, Peak Output Power, Spurious Emissions at Antenna Terminals, 100kHz Bandwidth of band edges, Power Spectral Density

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
Signal Generator	Rohde & Schwarz	SMB100A	108272	2018-7-7
Signal Analyzer	Rohde & Schwarz	FSV40	101030	2018-7-7
Vector Signal Generator	Rohde & Schwarz	SMU 200A	105324	2018-7-7
RF Switch Module	Rohde & Schwarz	OSP120/OSP-B157	101226/100851	2018-7-7

14. Measurement System Uncertainty

Measurement System Uncertainty Emissions

System Measurement Uncertainty	
Items	Extended Uncertainty
Uncertainty for Radiated Emission in 3m chamber 9kHz-30MHz	4.54dB
Uncertainty for Radiated Emission in 3m chamber 30MHz-1000MHz	Horizontal: 4.83dB; Vertical: 4.91dB;
Uncertainty for Radiated Emission in 3m chamber 1000MHz-25000MHz	Horizontal: 4.89dB; Vertical: 4.88dB;
Uncertainty for Conducted RF test	2.04dB