

# **Variant FCC Test Report**

Report No.: RFBHJP-WTW-P21010398B-1 R1

FCC ID: UK7-DW13

Test Model: DW13F1, DW13F2, DW13M1, DW13S1 (refer to section 3.1 for more

details)

Received Date: Aug. 05, 2021

Test Date: Aug. 14, 2021 ~ Aug. 17, 2021

**Issued Date:** Dec. 30, 2021

**Applicant:** Fossil Group, Inc.

Address: 901 S. Central Expressway, Richardson, Tx 75080, USA

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

Lin Kou Laboratories

Lab Address: No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan

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33383, Taiwan

FCC Registration /

788550 / TW0003

**Designation Number:** 





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Report No.: RFBHJP-WTW-P21010398B-1 R1

Reference No.: BHJP-WTW-P21080191
Cancels and replaces the report no.: RFBHJP-WTW-P21010398B-1 dated on Sep. 09, 2021

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# **Release Control Record**

Issue No.	Description	Date Issued
RFBHJP-WTW-P21010398B-1	Original Release	Sep. 09, 2021
RFBHJP-WTW-P21010398B-1 R1	Remove Test Model	Dec. 30, 2021

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## 1 Certificate of Conformity

**Product:** Smart Watch

Test Model: DW13F1, DW13F2, DW13M1, DW13S1 (refer to section 3.1 for more details)

Sample Status: Identical Prototype

Applicant: Fossil Group, Inc.

Test Date: Aug. 14, 2021 ~ Aug. 17, 2021

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.247)

ANSI C63.10:2013

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

Prepared by :	Lena Wang	, Date:	Dec. 30, 2021	
_	Lena Wang / Specialist			

Dylan Chiou / Senior Engineer



#### 2 Summary of Test Results

	47 CFR FCC Part 15, Subpart C (Section 15.247)						
FCC Clause	Test Item	Result	Remarks				
15.207	AC Power Conducted Emission	N/A	Refer to note				
15.205 & 209	15.205 & 209 Radiated Emissions		Meet the requirement of limit.  Minimum passing margin is -10.12 dB at 43.58 MHz.				
15.247(d)	Band Edge Measurement		Refer to note				
15.247(d)	15.247(d) Antenna Port Emission		Refer to note				
15.247(a)(2)	15.247(a)(2) 6 dB Bandwidth		Refer to note				
	Occupied Bandwidth Measurement	N/A	Refer to note				
15.247(b) Conducted Power		N/A	Refer to note				
15.247(e) Power Spectral Density		N/A	Refer to note				
15.203	Antenna Requirement	N/A	Refer to note				

#### Note:

- 1. Only Radiated Emissions test was performed for this addendum. Refer to original report for other test data.
- 2. For 2.4G band compliance with rule 15.247(d) of the band-edge items, the test plots were recorded in Annex A. Test Procedures refer to report 4.1.3.
- 3. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

#### 2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150 kHz ~ 30 MHz	2.79 dB
	9 kHz ~ 30 MHz	3.04 dB
Radiated Emissions up to 1 GHz	30 MHz ~ 200 MHz	2.93 dB
	200 MHz ~ 1000 MHz	2.95 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	2.26 dB
Radiated Effissions above 1 GHZ	18 GHz ~ 40 GHz	1.94 dB

## 2.2 Modification Record

There were no modifications required for compliance.



#### 3 General Information

## 3.1 General Description of EUT

Product	Smart Watch
Test Model	DW13F1, DW13F2, DW13M1, DW13S1
Status of EUT	Identical Prototype
Power Supply Rating	5.0 Vdc (adapter or host equipment) 3.88 Vdc (Li-ion battery)
Modulation Type	GFSK
Transfer Rate	LE 4.0: 1 Mbps LE 5.0: 2 Mbps
Operating Frequency	2402 ~ 2480 MHz
Number of Channel	40
Antenna Type	Refer to Note as below
Antenna Connector	N/A
Accessory Device	Refer to Note as below
Data Cable Supplied	Refer to Note as below

#### Note:

This report is issued as a supplementary report to BV CPS report no.: RFBHJP-WTW-P21010398-1. The
differences compared with original report is adding model (DW13S1). Therefore, only Radiated
Emissions test is verified on the worst case of original report and recorded in this report.

2. All models are listed as below. Only model: DW13S1 as a representative for final test.

Model	Antenna Type	Antenna Gain (dBi) 2.4G / BT	Difference
DW13F1	PIFA	-5.25	
DW13F2	PIFA		All models are electrically identical, different antenna gain due to enclosure, and different model
DW13M1	PIFA		names are for marketing purpose.
DW13S1	PIFA	-6.42	Trained are for marrieding purpose.

3. The EUT contains following accessory devices.

Product	Brand	Model	Description
Charging Dock	Simula	CB407D-6040-202	Voltage Rating: 5V
Battery	Lishen	DAGP382427SA	3.88 Vdc, 300 mAh

- 4. The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.
- 5. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.



#### 3.2 **Description of Test Modes**

40 channels are provided to this EUT:

Channel	Freq. (MHz)						
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480



## 3.2.1 Test Mode Applicability and Tested Channel Detail

#### <LE 4.0>

EUT Configure	Applicab	le To	Description
Mode	RE≥1G	RE<1G	
-	$\sqrt{}$	-	-

Where RE≥1G: Radiated Emission above 1 GHz RE<1G: Radiated Emission below 1 GHz

Note: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-plane**.

Note: "-"means no effect.

## Radiated Emission Test (Above 1 GHz):

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type	Data Rate (Mbps)
-	0 to 39	39	GFSK	1

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#### <LE 5.0>

EUT Configure	Applicable To		Description
Mode	RE≥1G	RE<1G	
-	$\sqrt{}$	$\sqrt{}$	-

Where **RE≥1G:** Radiated Emission above 1 GHz

RE<1G: Radiated Emission below 1 GHz

PLC: Power Line Conducted Emission

**APCM:** Antenna Port Conducted Measurement

Note: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on Z-plane.

Note: "-"means no effect.

# Radiated Emission Test (Above 1 GHz):

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type	Data Rate (Mbps)
-	0 to 39	39	GFSK	2

## Radiated Emission Test (Below 1 GHz):

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type	Data Rate (Mbps)	
-	0 to 39	39	GFSK	2	

#### **Test Condition:**

Applicable To	Environmental Conditions	Input Power	Tested by
RE≥1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Tim Chen
RE<1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Cookie Ku

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## 3.3 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

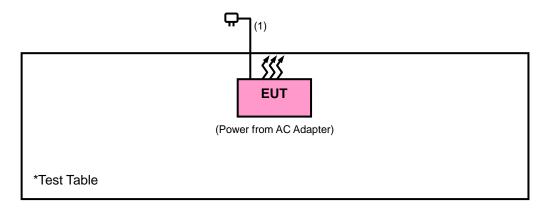
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
Α	Adapter	ASUS	AD827M	NA	NA	-

#### Note:

<sup>1.</sup> All power cords of the above support units are non-shielded (1.8m).

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	Charging Cable	1	0.85	N	0	Provided by client

#### 3.3.1 Configuration of System under Test



#### 3.4 General Description of Applied Standards and References

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards and references:

#### **Test Standard:**

## **FCC Part 15, Subpart C (15.247)**

ANSI C63.10-2013

All test items have been performed and recorded as per the above standards.

#### **References Test Guidance:**

# KDB 558074 D01 15.247 Meas Guidance v05r02

All test items have been performed as a reference to the above KDB test guidance.

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#### 4 Test Types and Results

# 4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20 dB below the highest level of the desired power:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F (kHz)	300
0.490 ~ 1.705	24000/F (kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

#### Note:

- 1. The lower limit shall apply at the transition frequencies.
- 2. Emission level  $(dBuV/m) = 20 \log Emission level (uV/m)$ .
- 3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

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## 4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Spectrum Analyzer Agilent	N9010A	MY52220314	Dec. 07, 2020	Dec. 06, 2021
Spectrum Analyzer ROHDE & SCHWARZ	FSV40	100980	Apr. 14, 2021	Apr. 13, 2022
Signal Analyzer Keysight	N9010A	MY56070348	Sep. 16, 2020	Sep. 15, 2021
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Apr. 12, 2021	Apr. 11, 2022
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-969	Nov. 22, 2020	Nov. 21, 2021
BILOG Antenna SCHWARZBECK	VULB 9168	9168-472	Nov. 06, 2020	Nov. 05, 2021
Fixed Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	Apr. 13, 2021	Apr. 12, 2022
Loop Antenna	EM-6879	269	Sep. 17, 2020	Sep. 16, 2021
Preamplifier EMCI	EMC001340	980201	Oct. 21, 2020	Oct. 20, 2021
Preamplifier EMCI	EMC 012645	980115	Oct. 07, 2020	Oct. 06, 2021
Preamplifier EMCI	EMC 330H	980112	Oct. 07, 2020	Oct. 06, 2021
Power Meter Anritsu	ML2495A	1012010	Sep. 01, 2020	Aug. 31, 2021
Power Sensor Anritsu	MA2411B	1315050	Sep. 01, 2020	Aug. 31, 2021
RF Coaxial Cable EMCI	EMC104-SM-SM- 8000	171005	Oct. 07, 2020	Oct. 06, 2021
RF Coaxial Cable HUBER+SUHNNER	SUCOFLEX 104	EMC104-SM-SM- 1000(140807)	Oct. 07, 2020	Oct. 06, 2021
RF Coaxial Cable WOKEN	8D-FB	Cable-Ch10-01	Oct. 07, 2020	Oct. 06, 2021
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower &Turn Table Controller MF	MF-7802	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 / 24 months and the calibrations are traceable to NML/ROC and NIST/USA.

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2. The test was performed in HwaYa Chamber 10.



#### 4.1.3 **Test Procedures**

#### For Radiated Emission below 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

#### Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz at frequency below 30 MHz.

#### For Radiated Emission above 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30 MHz ~ 1 GHz) / 1.5 meters (for above 1 GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. 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.
- d. 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.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

#### Note:

- 1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasipeak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
- 2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
- 3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98 %) or 10 Hz (Duty cycle ≥ 98 %) for Average detection (AV) at frequency above 1 GHz. (LE4.0: RBW = 1 MHz, VBW = 3 kHz; LE5.0: RBW = 1 MHz, VBW = 5.6 kHz)
- 4. All modes of operation were investigated and the worst-case emissions are reported.

#### **Deviation from Test Standard** 4.1.4

No deviation.

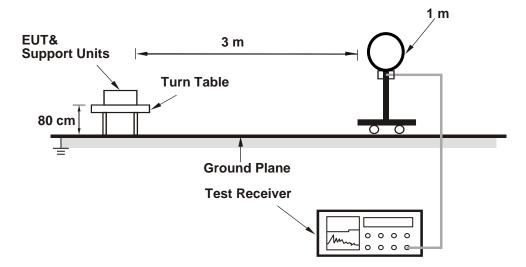
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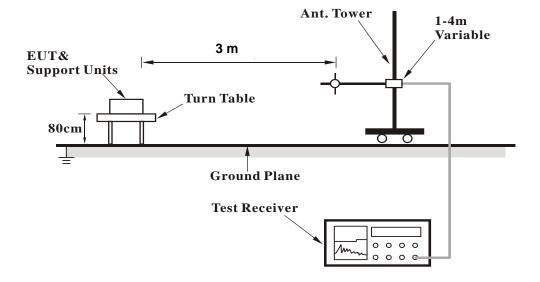


#### 4.1.5 Test Set Up

## <Radiated Emission below 30 MHz>

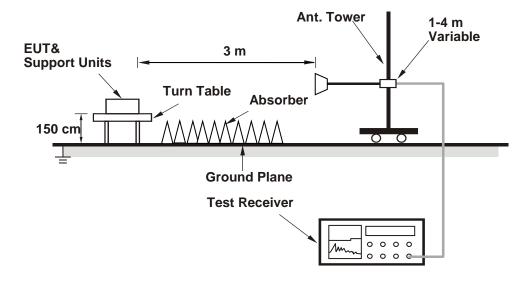


# <Radiated Emission 30 MHz to 1 GHz>





#### <Radiated Emission above 1 GHz>



For the actual test configuration, please refer to the attached file (Test Setup Photo).

# **EUT Operating Conditions**

- a. Placed the EUT on the testing table.
- Set the EUT under transmission condition continuously at specific channel frequency.



## 4.1.7 Test Results

#### **Above 1 GHz Data:**

<LE 4.0>

<b>EUT Test Condition</b>		Measurement Detail		
Channel	Channel 39	Frequency Range	1 GHz ~ 25 GHz	
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)	
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Tim Chen	

	Antenna Polarity & Test Distance: Horizontal at 3 m							
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	94.38	101.24	-6.86			100	214	Average
2480	95.51	102.37	-6.86			100	214	Peak
2483.5	34.67	41.53	-6.86	54	-19.33	100	214	Average
2483.5	44.88	51.74	-6.86	74	-29.12	100	214	Peak
4960	31.99	47.69	-15.7	54	-22.01	108	115	Average
4960	39.93	55.63	-15.7	74	-34.07	108	115	Peak
		Antenn	a Polarity &	Test Dista	nce: Vertica	l at 3 m		
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	89.31	96.17	-6.86			100	278	Average
2480	90.06	96.92	-6.86			100	278	Peak
2483.5	34.89	41.75	-6.86	54	-19.11	100	278	Average
2483.5	44.97	51.83	-6.86	74	-29.03	100	278	Peak
4960	31.56	47.26	-15.7	54	-22.44	204	192	Average
4960	38.85	54.55	-15.7	74	-35.15	204	192	Peak

#### Remarks:

- Emission Level = Read Level + Factor
   Margin value = Emission level Limit value
- 2. 2480 MHz: Fundamental frequency.
- 3. The emission levels of other frequencies were very low against the limit.

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## <LE 5.0>

<b>EUT Test Condition</b>		Measurement Detail		
Channel	Channel 39	Frequency Range	1 GHz ~ 25 GHz	
Input Power	120 Vac, 60 Hz	<b>Detector Function</b>	Peak (PK) Average (AV)	
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Tim Chen	

	Antenna Polarity & Test Distance: Horizontal at 3 m							
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	92.86	99.72	-6.86			188	342	Average
2480	95.06	101.92	-6.86			188	342	Peak
2483.5	35.59	42.45	-6.86	54	-18.41	188	342	Average
2483.5	47.07	53.93	-6.86	74	-26.93	188	342	Peak
4960	35.03	50.73	-15.7	54	-18.97	123	105	Average
4960	42.79	58.49	-15.7	74	-31.21	123	105	Peak
		Antenn	a Polarity &	Test Dista	nce: Vertica	l at 3 m		
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	87.08	93.94	-6.86			202	254	Average
2480	88.23	95.09	-6.86			202	254	Peak
2483.5	35.49	42.35	-6.86	54	-18.51	202	254	Average
2483.5	47.6	54.46	-6.86	74	-26.4	202	254	Peak
4960	34.02	49.72	-15.7	54	-19.98	107	165	Average
4960	41.81	57.51	-15.7	74	-32.19	107	165	Peak

#### Remarks:

- 1. Emission Level = Read Level + Factor Margin value = Emission level - Limit value
- 2. 2480 MHz: Fundamental frequency.
- 3. The emission levels of other frequencies were very low against the limit.

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## 9 kHz ~ 30 MHz Data:

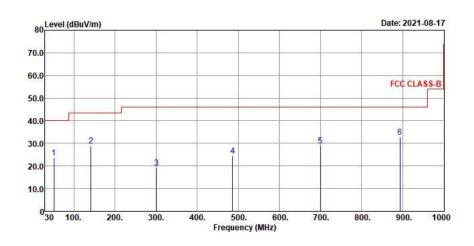
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

#### 30 MHz ~ 1 GHz Worst-Case Data:

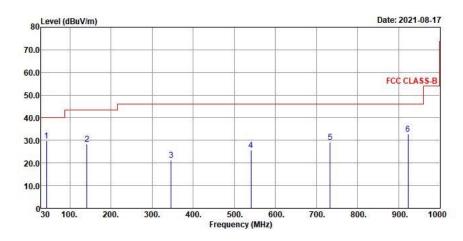
#### <LE 5.0>

<b>EUT Test Condition</b>		Measurement Detail		
Channel	Channel 39	Frequency Range	30 MHz ~ 1 GHz	
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Quasi-peak (QP)	
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Cookie Ku	

## Horizontal



#### **Vertical**





Antenna Polarity & Test Distance: Horizontal at 3 m									
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark	
51.34	23.48	36.03	-12.55	40	-16.52	119	281	QP	
141.55	28.85	41.45	-12.6	43.5	-14.65	256	307	QP	
300.63	19.32	30.68	-11.36	46	-26.68	210	132	QP	
485.9	24.53	30.54	-6.01	46	-21.47	154	79	QP	
700.27	28.85	30.04	-1.19	46	-17.15	126	183	QP	
893.3	32.69	30.6	2.09	46	-13.31	235	41	QP	
		Antenn	a Polarity &	Test Dista	nce: Vertica	l at 3 m			
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark	
43.58	29.88	42.46	-12.58	40	-10.12	153	227	QP	
141.55	28.39	40.99	-12.6	43.5	-15.11	142	306	QP	
346.22	21.13	31.29	-10.16	46	-24.87	239	158	QP	
540.22	25.72	30.25	-4.53	46	-20.28	174	66	QP	
733.25	29.24	29.52	-0.28	46	-16.76	231	101	QP	
922.4	32.83	29.97	2.86	46	-13.17	150	93	QP	

# Remarks:

- 1. Emission Level = Read Level + Factor Margin value = Emission level - Limit value
- 2. The emission levels of other frequencies were very low against the limit.

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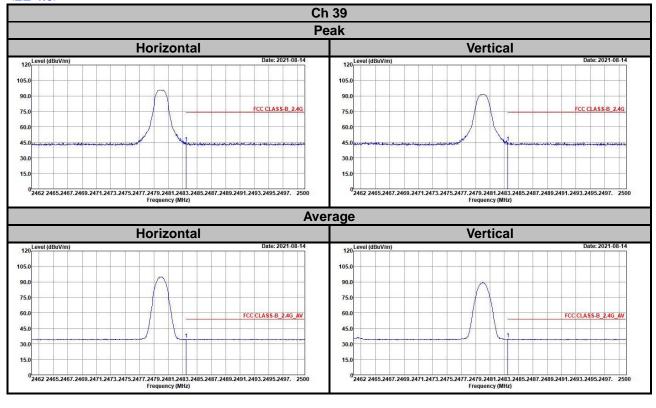
Cancels and replaces the report no.: RFBHJP-WTW-P21010398B-1 dated on Sep. 09, 2021

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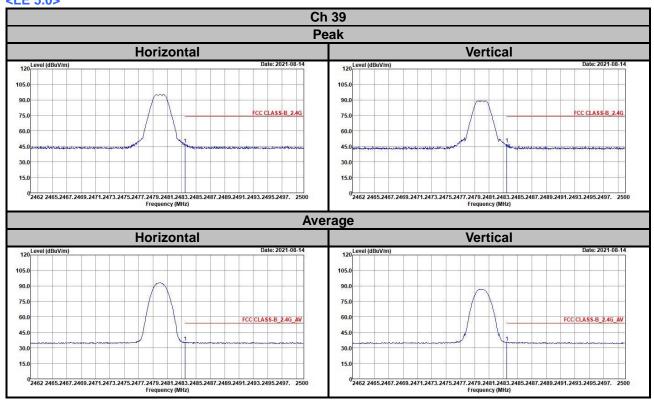
# **Annex A- Band Edge Measurement**

#### <LE 4.0>











5 Pictures of Test Arrangements							
Please refer to the attached file (Test Setup Photo).							
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## Appendix - Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

Hsin Chu EMC/RF/Telecom Lab

If you have any comments, please feel free to contact us at the following:

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The address and road map of all our labs can be found in our web site also.

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