

Variant FCC Test Report

Report No.: RF181221C17-1

FCC ID: UK7-DW9

Test Model: DW9B1

Received Date: Dec. 21, 2018

Test Date: Jan. 04, 2019

Issued Date: Jan. 09, 2019

Applicant: Fossil Group, Inc.

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(R.O.C)

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Taiwan, R.O.C

FCC Registration /
Designation Number: 427177 / TW0011



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Table of Contents

Release Control Record	3
1 Certificate of Conformity	4
2 Summary of Test Results.....	5
2.1 Measurement Uncertainty.....	5
2.2 Modification Record	5
3 General Information	6
3.1 General Description of EUT	6
3.2 Description of Test Modes.....	7
3.2.1 Test Mode Applicability and Tested Channel Detail.....	8
3.3 Description of Support Units	9
3.3.1 Configuration of System under Test	9
3.4 General Description of Applied Standards.....	9
4 Test Types and Results	10
4.1 Radiated Emission and Bandedge Measurement	10
4.1.1 Limits of Radiated Emission and Bandedge Measurement	10
4.1.2 Test Instruments	11
4.1.3 Test Procedures.....	12
4.1.4 Deviation from Test Standard	13
4.1.5 Test Set Up	13
4.1.6 EUT Operating Conditions.....	14
4.1.7 Test Results	15
5 Pictures of Test Arrangements.....	29
Annex A- Band-edge measurement	30
Appendix – Information on the Testing Laboratories	32

Release Control Record

Issue No.	Description	Date Issued
RF181221C17-1	Original Release	Jan. 09, 2019

1 Certificate of Conformity

Product: Smart Watch

Test Model: DW9B1

Sample Status: Identical Prototype

Applicant: Fossil Group, Inc.

Test Date: Jan. 04, 2019

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

ANSI C63.10:2013

This report is issued as a supplementary report to BV CPS report no.: RF180621C33. This report shall be used by combining with its original report.

Prepared by : Gina Liu, **Date:** Jan. 09, 2019

Gina Liu / Specialist

Approved by : Dylan Chiou, **Date:** Jan. 09, 2019

Dylan Chiou / Project 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
15.247(a)(1) (iii)	Number of Hopping Frequency Used	N/A	Refer to Note
15.247(a)(1) (iii)	Dwell Time on Each Channel	N/A	Refer to Note
15.247(a)(1)	1. Hopping Channel Separation 2. Spectrum Bandwidth of a Frequency Hopping Sequence Spread Spectrum System	N/A	Refer to Note
15.247(b)	Maximum Peak Output Power	N/A	Refer to Note
---	Occupied Bandwidth Measurement	N/A	Refer to Note
15.205 & 209	Radiated Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -9.61 dB at 46.74 MHz.
15.247(d)	Band Edge Measurement	N/A	Refer to Note
15.247(d)	Antenna Port Emission	N/A	Refer to Note
15.203	Antenna Requirement	N/A	Refer to Note

Note: Only Radiated Emissions was performed for this report. Refer to original report for other test data.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT:

The listed uncertainties are the worst case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

Measurement	Frequency	Expended Uncertainty (k=2) (±)
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
	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	DW9B1
Status of EUT	Identical Prototype
Power Supply Rating	5 Vdc (adapter or host equipment) 3.85 Vdc (battery)
Modulation Type	GFSK, $\pi/4$ -DQPSK, 8DPSK
Transfer Rate	1/2/3 Mbps
Operating Frequency	2402 ~ 2480 MHz
Number of Channel	79
Antenna Type	Loop antenna
Antenna Connector	N/A
Accessory Device	Refer to Note as below
Data Cable Supplied	Refer to Note as below

Note:

1. This report is issued as a supplementary report to BV CPS report no. RF180621C33. The difference compared with original report is adding model (DW9B1) and new antenna. Therefore, only Radiated Emissions was verified and recorded in this report.

2. The model is listed as below.

Model	WLAN / BT Antenna Gain	GPS Antenna Gain
DW9B1	-5.88 dBi	-4.02 dBi

3. The EUT accessories list refers to user manual.

4. Confirmed output power has been verified as original filing before starting the C2PC testing.

5. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 Description of Test Modes

79 channels are provided to this EUT:

Channel	Freq. (MHz)						
0	2402	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
3	2405	23	2425	43	2445	63	2465
4	2406	24	2426	44	2446	64	2466
5	2407	25	2427	45	2447	65	2467
6	2408	26	2428	46	2448	66	2468
7	2409	27	2429	47	2449	67	2469
8	2410	28	2430	48	2450	68	2470
9	2411	29	2431	49	2451	69	2471
10	2412	30	2432	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	78	2480
19	2421	39	2441	59	2461		

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable To				Description
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	-	-	-

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:

1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Y-plane**.
2. “-” 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 Technology	Modulation Type	Packet Type
-	0 to 78	0, 39, 78	FHSS	GFSK	DH5
-	0 to 78	0, 39, 78	FHSS	8DPSK	3DH5

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 Technology	Modulation Type	Packet Type
-	0 to 78	78	FHSS	8DPSK	3DH5

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested by
RE≥1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Karl Lee, Charles Hsiao
RE<1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Harry Hsueh

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.

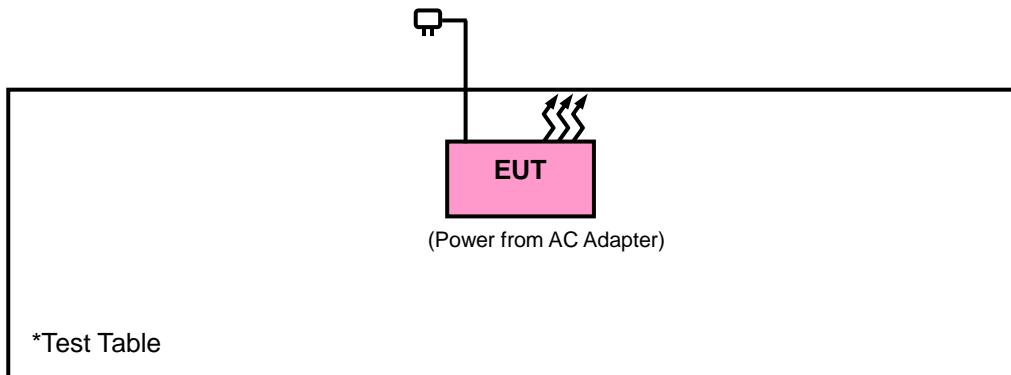
No.	Product	Brand	Model No.	Serial No.	FCC ID
1.	Adapter	HTC	TC U250	N/A	N/A

No.	Signal Cable Description Of The Above Support Units
1.	N/A

Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item 1 acted as communication partner to transfer data.

3.3.1 Configuration of System under Test



3.4 General Description of Applied Standards

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

FCC Part 15, Subpart C (15.247)

KDB 558074 D01 15.247 Meas Guidance v05r01

ANSI C63.10-2013

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

Note: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

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 (dB_uV/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.

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent Technologies	N9038A	MY51210203	Mar. 16, 2018	Mar. 15, 2019
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Jan. 11, 2018	Jan. 10, 2019
BILOG Antenna SCHWARZBECK	VULB9168	9168-616	Nov. 27, 2018	Nov. 26, 2019
HORN Antenna ETS-Lindgren	3117	00143293	Nov. 25, 2018	Nov. 24, 2019
HORN Antenna Schwarzbeck	BBHA 9170	9170-480	Nov. 25, 2018	Nov. 24, 2019
Bluetooth Tester	CBT	100980	Jun. 28, 2017	Jun. 27, 2019
Loop Antenna	EM-6879	269	Sep. 07, 2018	Sep. 06, 2019
Preamplifier Agilent	310N	187226	Jun. 19, 2018	Jun. 18, 2019
Preamplifier Agilent	83017A	MY39501357	Jun. 19, 2018	Jun. 18, 2019
RF signal cable ETS-LINDGREN	5D-FB	Cable-CH1-01(RFC -SMS-100-SMS-12 0+RFC-SMS-100-S MS-400)	Jun. 19, 2018	Jun. 18, 2019
RF signal cable ETS-LINDGREN	8D-FB	Cable-CH1-02(RFC -SMS-100-SMS-24)	Jun. 19, 2018	Jun. 18, 2019
Software	E3 8.130425b	NA	NA	NA
Antenna Tower MF	NA	NA	NA	NA
Turn Table MF	NA	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.
 2. The test was performed in HsinTien Chamber 1.
 3. The horn antenna and preamplifier (model: 83017A) are used only for the measurement of emission frequency above 1 GHz if tested.
 4. The IC Site Registration No. is IC7450I-1.

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. Both 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.
2. There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

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:

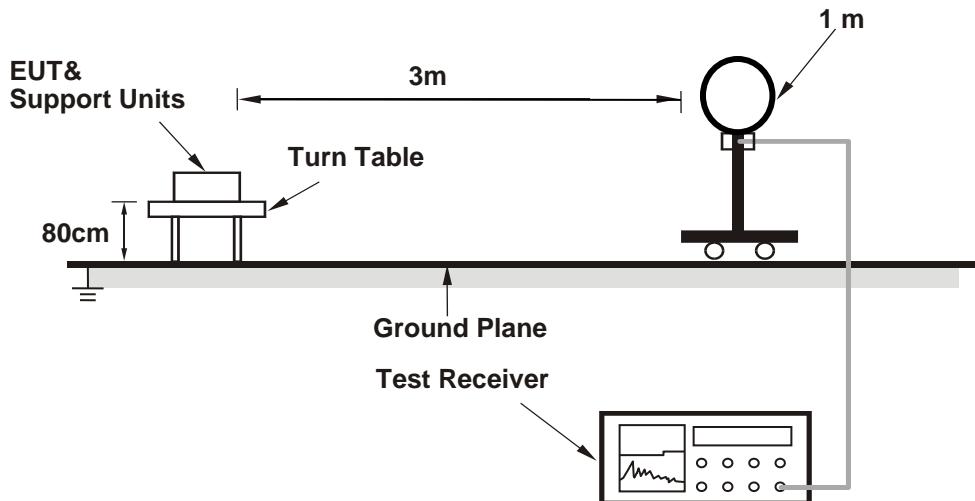
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK)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

4.1.4 Deviation from Test Standard

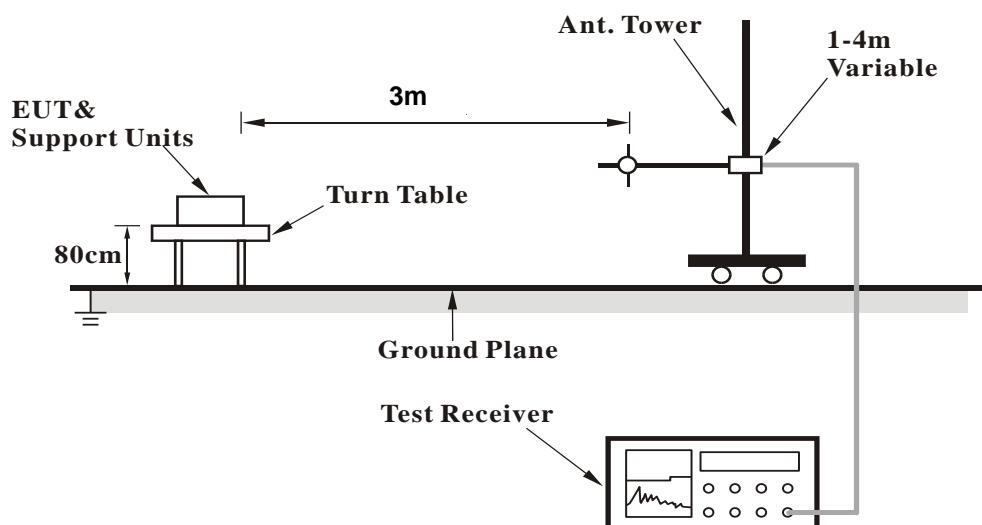
No deviation.

4.1.5 Test Set Up

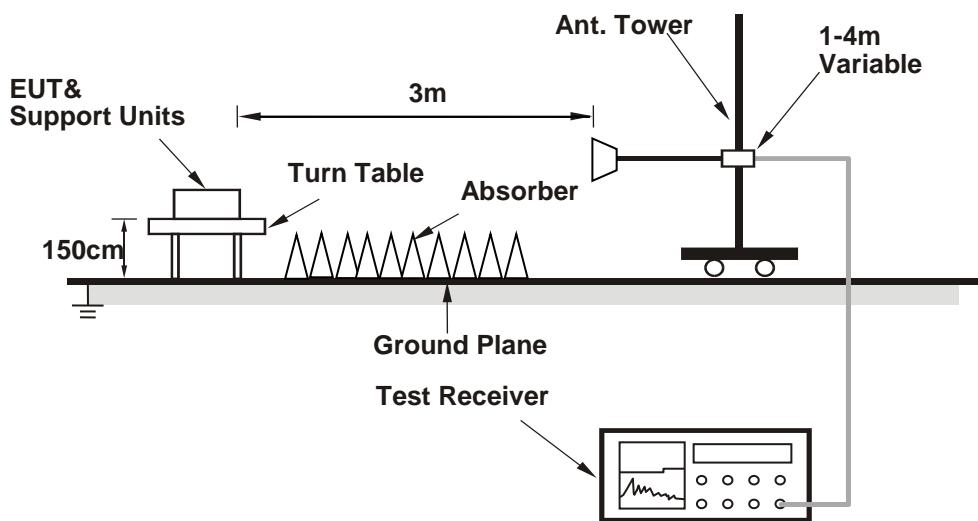
<Radiated emission below 30 MHz>



<Frequency Range below 1 GHz>



<Frequency Range above 1 GHz>



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

4.1.6 EUT Operating Conditions

Set the EUT under transmission condition continuously at specific channel frequency.

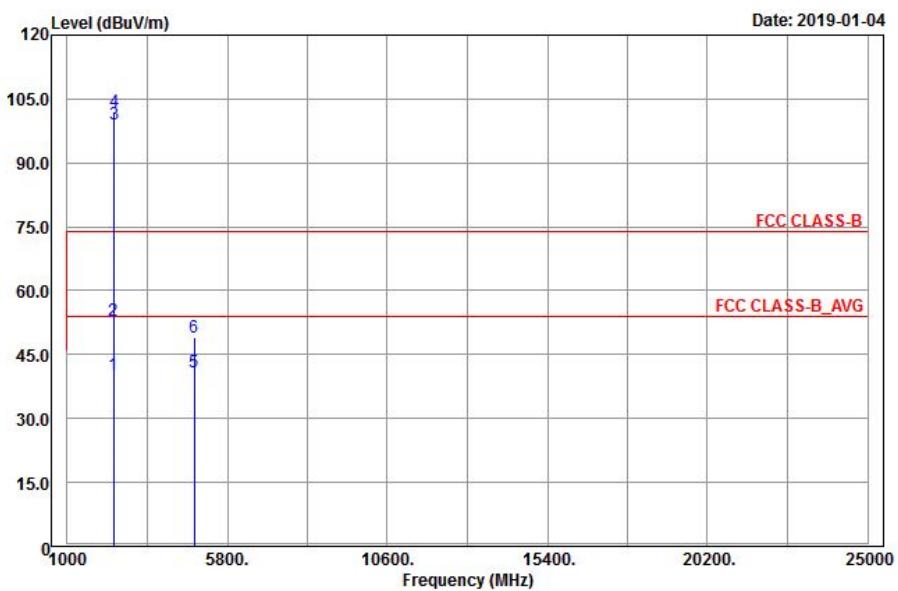
4.1.7 Test Results

ABOVE 1GHz DATA

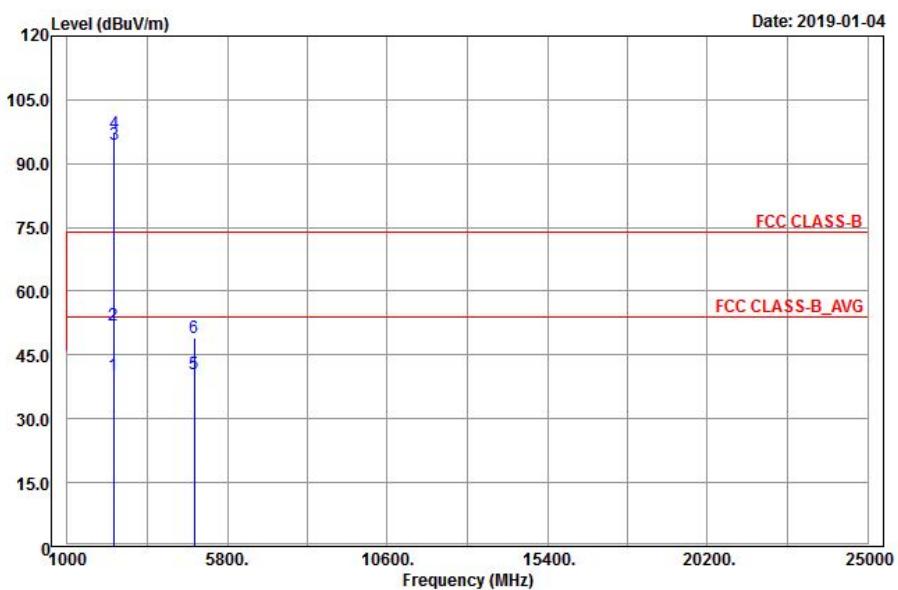
BT_GFSK

EUT Test Condition		Measurement Detail	
Channel	Channel 0	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	Karl Lee

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2388.12	40.38	33.94	54	-13.62	31.8	5.4	30.76	266	360	Average
2388.12	53.11	46.67	74	-20.89	31.8	5.4	30.76	266	360	Peak
2402	99.15	92.68			31.8	5.4	30.73	266	360	Average
2402	101.91	95.44			31.8	5.4	30.73	266	360	Peak
4804	40.78	28.36	54	-13.22	33.96	8.25	29.79	124	206	Average
4804	49.05	36.63	74	-24.95	33.96	8.25	29.79	124	206	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2388.21	40.34	33.9	54	-13.66	31.8	5.4	30.76	208	6	Average
2388.21	51.98	45.54	74	-22.02	31.8	5.4	30.76	208	6	Peak
2402	94.51	88.04			31.8	5.4	30.73	208	6	Average
2402	97.23	90.76			31.8	5.4	30.73	208	6	Peak
4804	40.68	28.26	54	-13.32	33.96	8.25	29.79	188	188	Average
4804	49.17	36.75	74	-24.83	33.96	8.25	29.79	188	188	Peak

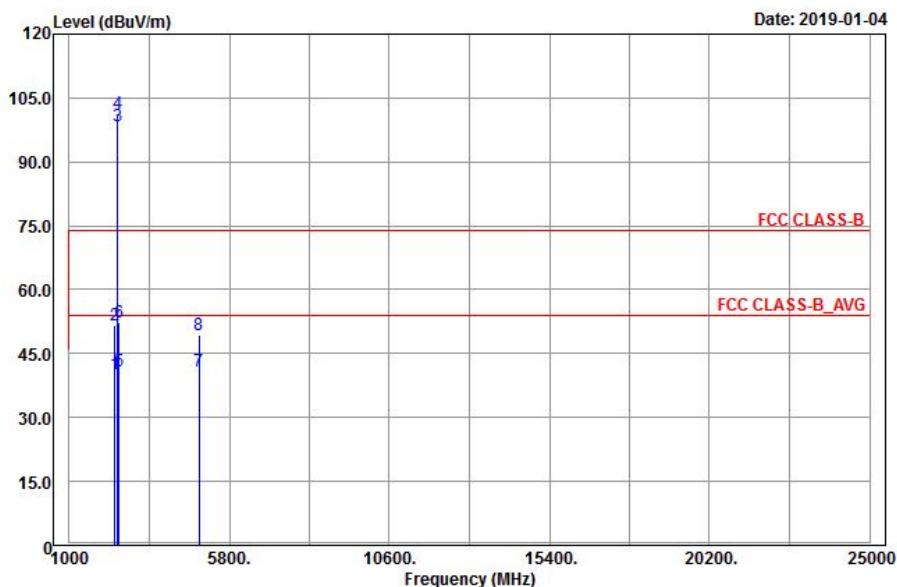
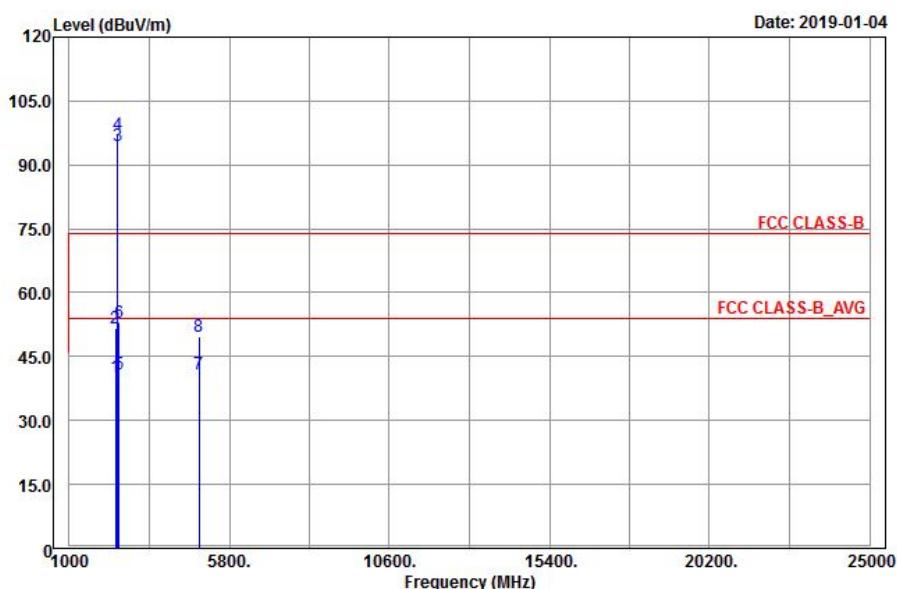
Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor

Margin value = Emission level – Limit value

2. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		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	Karl Lee

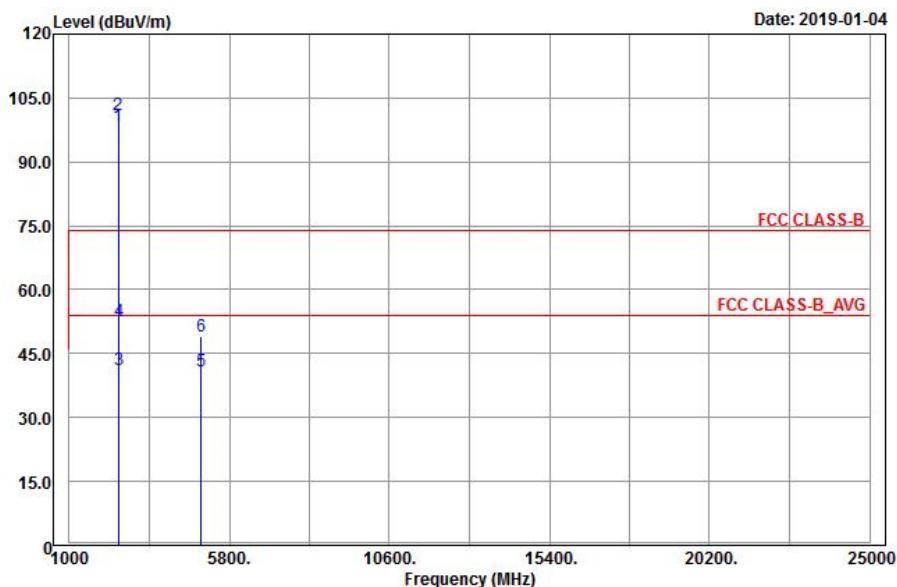
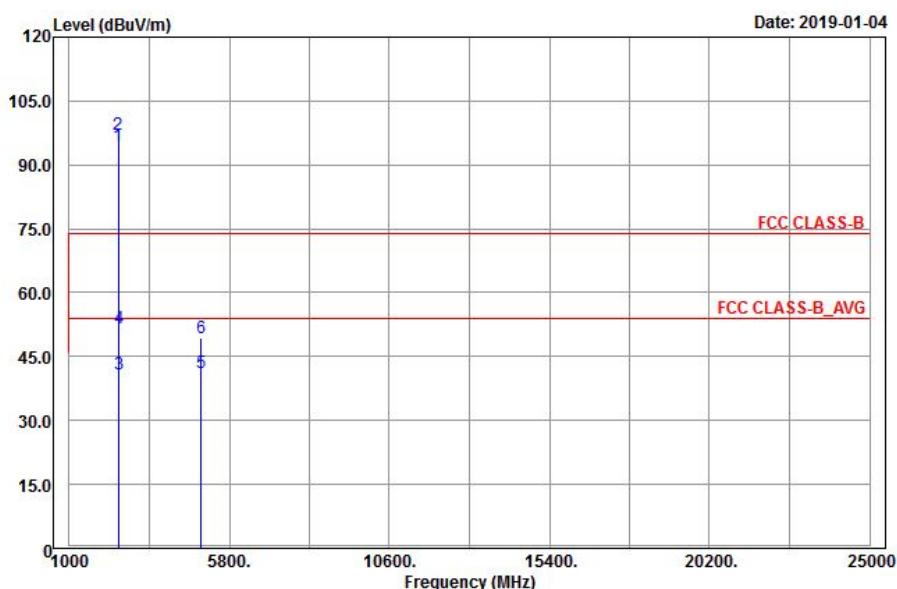
Horizontal

Vertical


Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2369.04	40.3	33.91	54	-13.7	31.78	5.37	30.76	266	360	Average
2369.04	51.76	45.37	74	-22.24	31.78	5.37	30.76	266	360	Peak
2441	98.55	91.89			31.85	5.46	30.65	266	360	Average
2441	101.28	94.62			31.85	5.46	30.65	266	360	Peak
2486.72	40.96	34.17	54	-13.04	31.88	5.53	30.62	266	360	Average
2486.72	52.17	45.38	74	-21.83	31.88	5.53	30.62	266	360	Peak
4882	41.02	28.53	54	-12.98	33.98	8.27	29.76	105	285	Average
4882	49.27	36.78	74	-24.73	33.98	8.27	29.76	105	285	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2386.14	40.25	33.81	54	-13.75	31.8	5.4	30.76	208	6	Average
2386.14	51.75	45.31	74	-22.25	31.8	5.4	30.76	208	6	Peak
2441	94.34	87.68			31.85	5.46	30.65	208	6	Average
2441	97.18	90.52			31.85	5.46	30.65	208	6	Peak
2484.48	40.86	34.07	54	-13.14	31.88	5.53	30.62	208	6	Average
2484.48	52.89	46.1	74	-21.11	31.88	5.53	30.62	208	6	Peak
4882	40.73	28.24	54	-13.27	33.98	8.27	29.76	185	333	Average
4882	49.69	37.2	74	-24.31	33.98	8.27	29.76	185	333	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 2441 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 78	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	Karl Lee

Horizontal

Vertical


Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	98.43	91.67			31.88	5.5	30.62	266	360	Average
2480	101.15	94.39			31.88	5.5	30.62	266	360	Peak
2483.52	41.2	34.44	54	-12.8	31.88	5.5	30.62	266	360	Average
2483.52	52.5	45.74	74	-21.5	31.88	5.5	30.62	266	360	Peak
4960	40.97	28.41	54	-13.03	33.99	8.29	29.72	131	85	Average
4960	48.92	36.36	74	-25.08	33.99	8.29	29.72	131	85	Peak

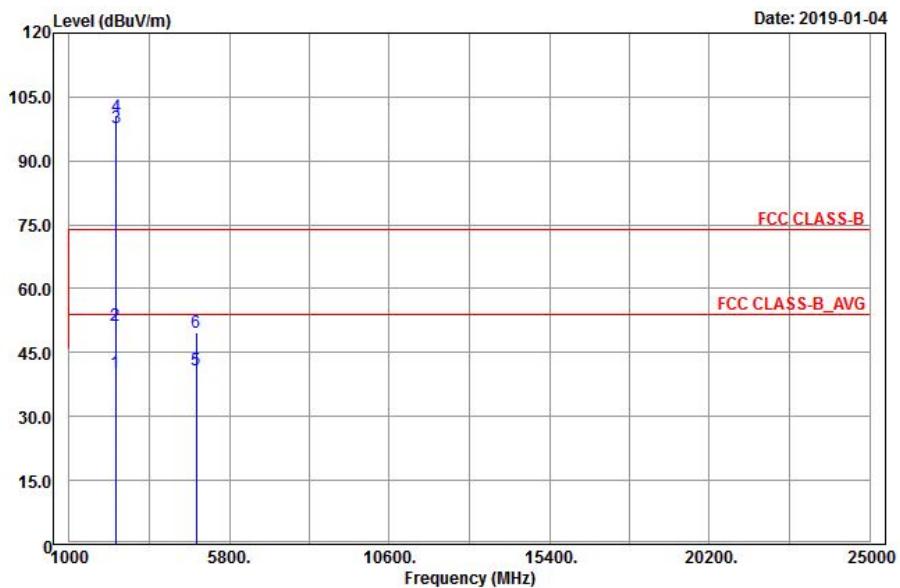
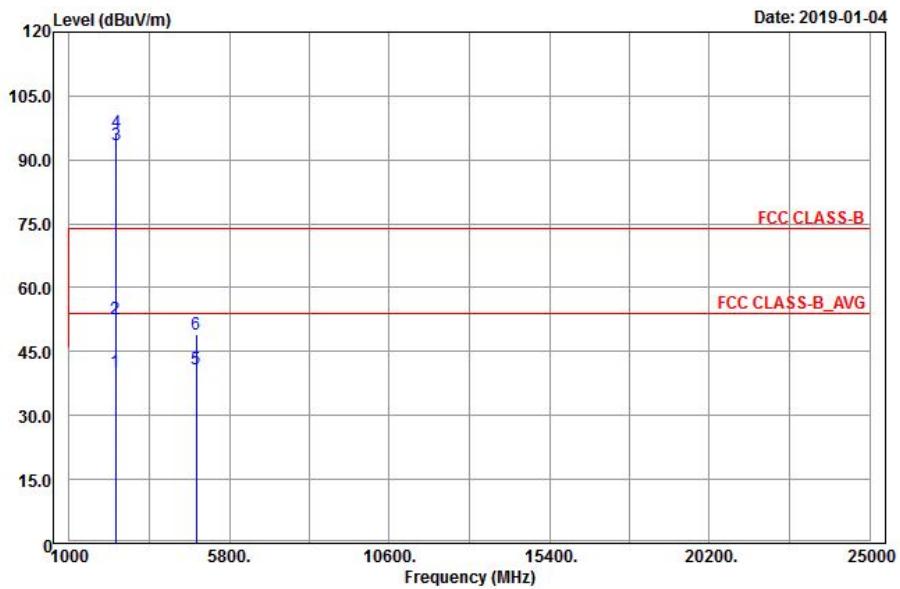
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	94.35	87.59			31.88	5.5	30.62	208	6	Average
2480	97.05	90.29			31.88	5.5	30.62	208	6	Peak
2493.08	40.89	34.04	54	-13.11	31.9	5.53	30.58	208	6	Average
2493.08	51.7	44.85	74	-22.3	31.9	5.53	30.58	208	6	Peak
4960	41.09	28.53	54	-12.91	33.99	8.29	29.72	131	226	Average
4960	49.45	36.89	74	-24.55	33.99	8.29	29.72	131	226	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp 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.

8DPSK

EUT Test Condition		Measurement Detail	
Channel	Channel 0	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	Charles Hsiao

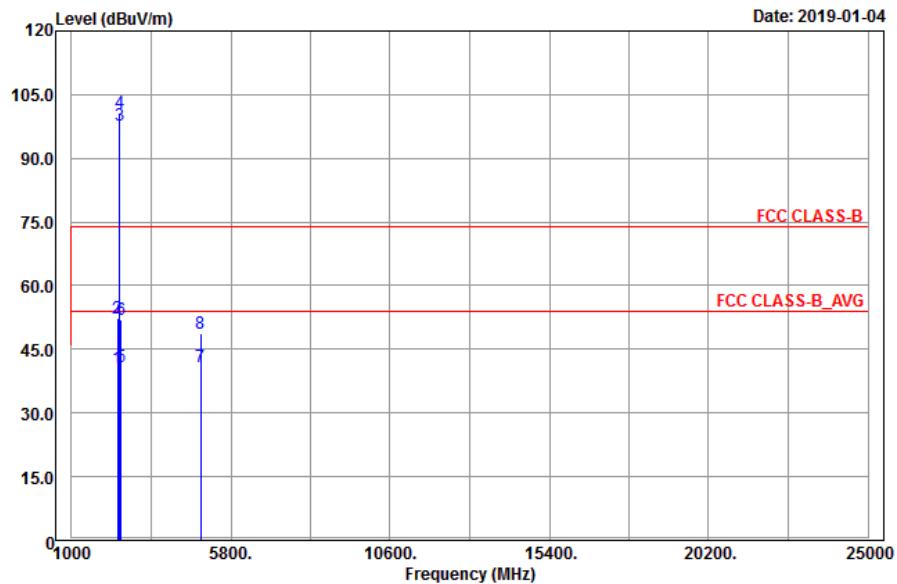
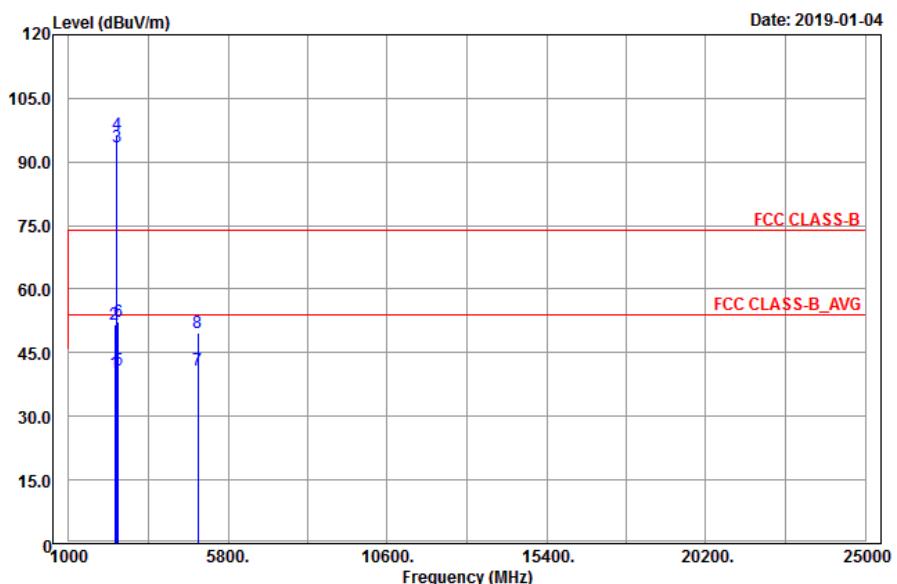
Horizontal

Vertical


Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2388.66	40.33	33.89	54	-13.67	31.8	5.4	30.76	266	0	Average
2388.66	51.49	45.05	74	-22.51	31.8	5.4	30.76	266	0	Peak
2402	97.88	91.41			31.8	5.4	30.73	266	0	Average
2402	100.51	94.04			31.8	5.4	30.73	266	0	Peak
4804	40.72	28.3	54	-13.28	33.96	8.25	29.79	112	29	Average
4804	49.61	37.19	74	-24.39	33.96	8.25	29.79	112	29	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2387.58	40.31	33.87	54	-13.69	31.8	5.4	30.76	208	6	Average
2387.58	52.63	46.19	74	-21.37	31.8	5.4	30.76	208	6	Peak
2402	93.54	87.07			31.8	5.4	30.73	208	6	Average
2402	96.42	89.95			31.8	5.4	30.73	208	6	Peak
4804	41.02	28.6	54	-12.98	33.96	8.25	29.79	101	206	Average
4804	48.95	36.53	74	-25.05	33.96	8.25	29.79	101	206	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 2402 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		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	Charles Hsiao

Horizontal

Vertical


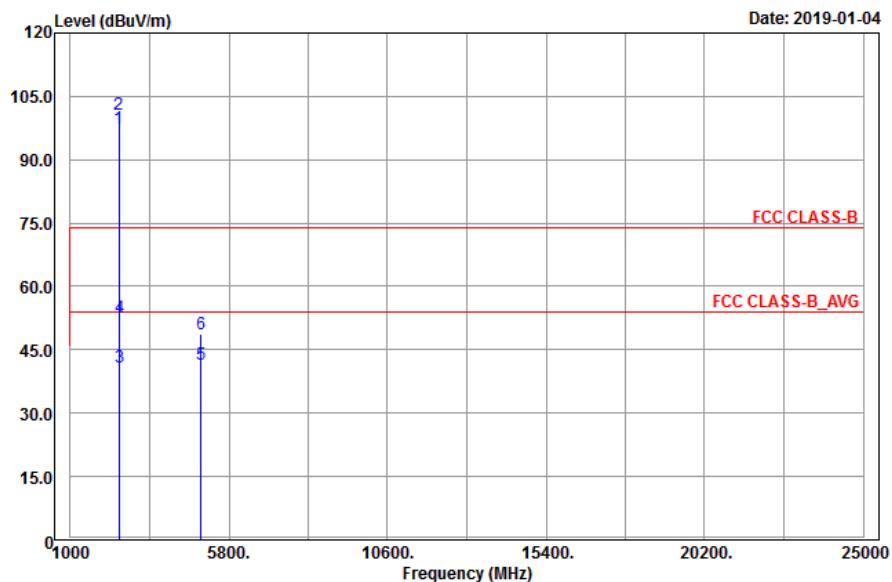
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2383.53	40.44	34.02	54	-13.56	31.78	5.4	30.76	266	0	Average
2383.53	52.24	45.82	74	-21.76	31.78	5.4	30.76	266	0	Peak
2441	97.8	91.14			31.85	5.46	30.65	266	0	Average
2441	100.71	94.05			31.85	5.46	30.65	266	0	Peak
2489.72	40.86	34.05	54	-13.14	31.9	5.53	30.62	266	0	Average
2489.72	52.07	45.26	74	-21.93	31.9	5.53	30.62	266	0	Peak
4882	40.93	28.44	54	-13.07	33.98	8.27	29.76	117	258	Average
4882	48.84	36.35	74	-25.16	33.98	8.27	29.76	117	258	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2386.86	40.37	33.93	54	-13.63	31.8	5.4	30.76	208	6	Average
2386.86	51.67	45.23	74	-22.33	31.8	5.4	30.76	208	6	Peak
2441	93.54	86.88			31.85	5.46	30.65	208	6	Average
2441	96.39	89.73			31.85	5.46	30.65	208	6	Peak
2498.68	40.86	34.01	54	-13.14	31.9	5.53	30.58	208	6	Average
2498.68	52.21	45.36	74	-21.79	31.9	5.53	30.58	208	6	Peak
4882	40.96	28.47	54	-13.04	33.98	8.27	29.76	132	22	Average
4882	49.85	37.36	74	-24.15	33.98	8.27	29.76	132	22	Peak

Remarks:

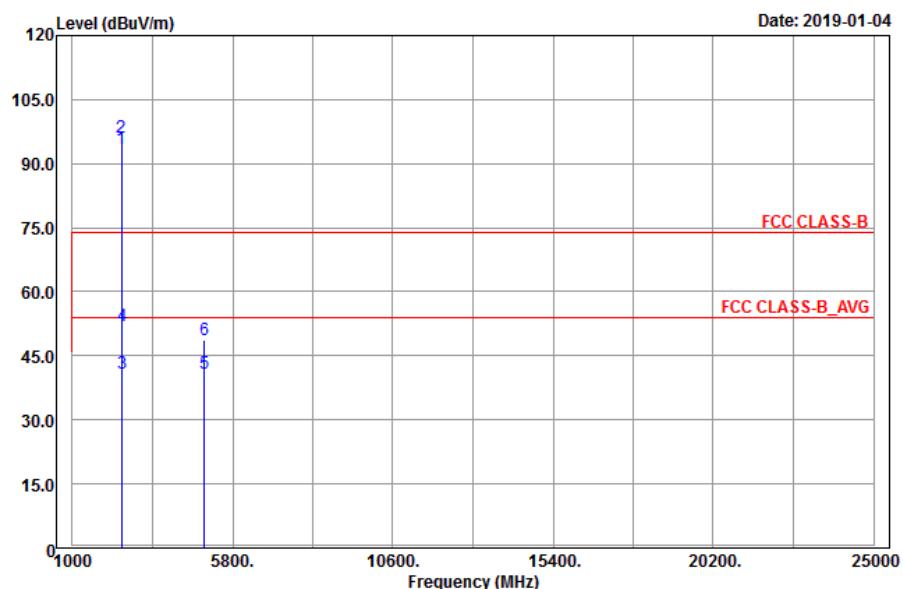
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 2441 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 78	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	Charles Hsiao

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	97.52	90.76			31.88	5.5	30.62	266	0	Average
2480	100.65	93.89			31.88	5.5	30.62	266	0	Peak
2484.44	41.02	34.23	54	-12.98	31.88	5.53	30.62	266	0	Average
2484.44	52.51	45.72	74	-21.49	31.88	5.53	30.62	266	0	Peak
4960	41.47	28.91	54	-12.53	33.99	8.29	29.72	105	215	Average
4960	48.78	36.22	74	-25.22	33.99	8.29	29.72	105	215	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	93.46	86.7			31.88	5.5	30.62	208	6	Average
2480	96.21	89.45			31.88	5.5	30.62	208	6	Peak
2494.72	40.91	34.06	54	-13.09	31.9	5.53	30.58	208	6	Average
2494.72	52	45.15	74	-22	31.9	5.53	30.58	208	6	Peak
4960	41.02	28.46	54	-12.98	33.99	8.29	29.72	134	11	Average
4960	48.73	36.17	74	-25.27	33.99	8.29	29.72	134	11	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp 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.

9 kHz ~ 30 MHz Data:

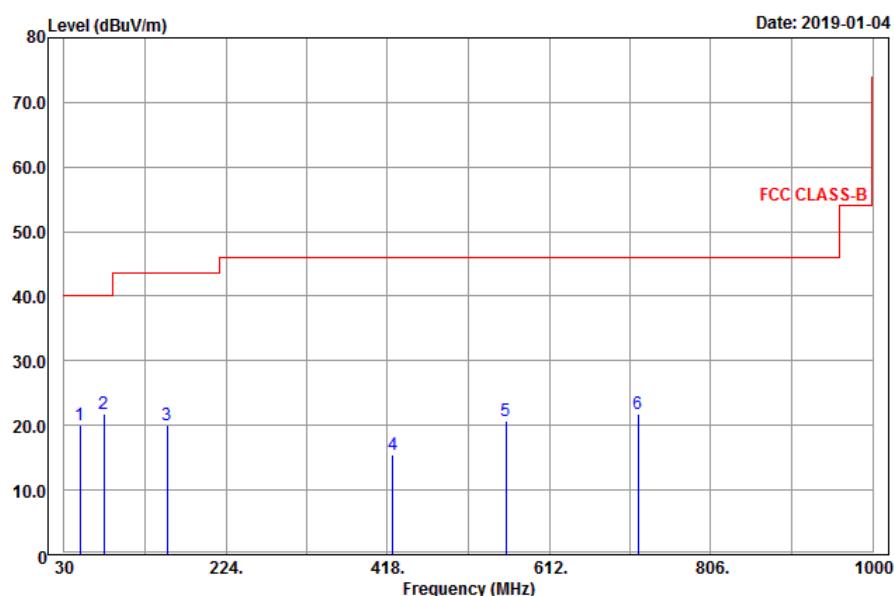
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz

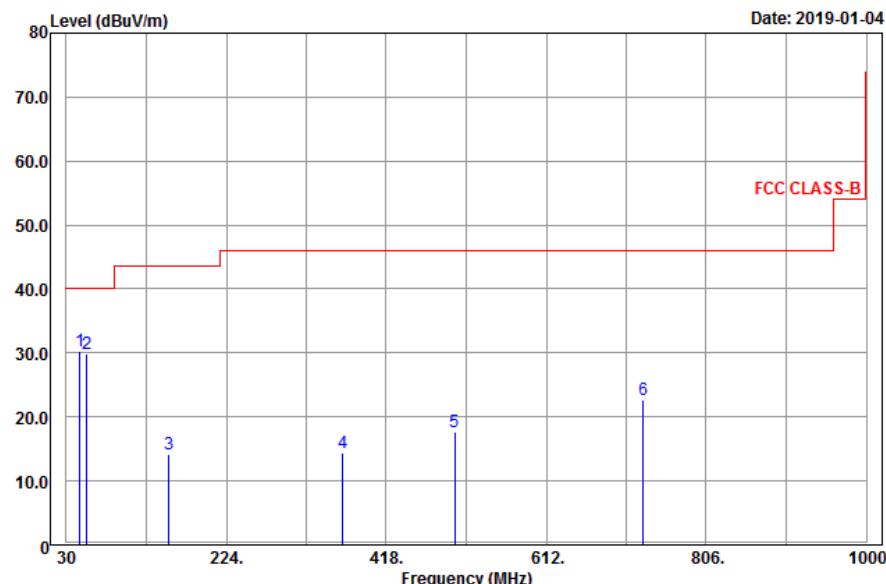
Worst-Case Data: 8DPSK

EUT Test Condition		Measurement Detail	
Channel	Channel 78	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	Harry Hsueh

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
48.63	20.01	36.77	40	-19.99	14.56	0.9	32.22	166	157	Peak
77.25	21.86	44.64	40	-18.14	8.33	1.11	32.22	166	199	Peak
153.93	20.1	42.32	43.5	-23.4	8.53	1.52	32.27	102	132	Peak
424.6	15.57	30.06	46	-30.43	15.28	2.41	32.18	172	187	Peak
560.4	20.81	32.95	46	-25.19	17.3	2.76	32.2	186	195	Peak
718.6	21.85	31.3	46	-24.15	19.5	3.16	32.11	188	177	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
46.74	30.39	47.25	40	-9.61	14.46	0.9	32.22	142	153	Peak
55.11	29.87	47.06	40	-10.13	14.14	0.9	32.23	158	165	Peak
154.2	14.17	36.39	43.5	-29.33	8.53	1.52	32.27	155	173	Peak
365.1	14.33	29.77	46	-31.67	14.41	2.26	32.11	122	156	Peak
500.9	17.68	30.79	46	-28.32	16.36	2.63	32.1	127	148	Peak
729.8	22.75	32.1	46	-23.25	19.61	3.16	32.12	138	197	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor

Margin value = Emission level – Limit value

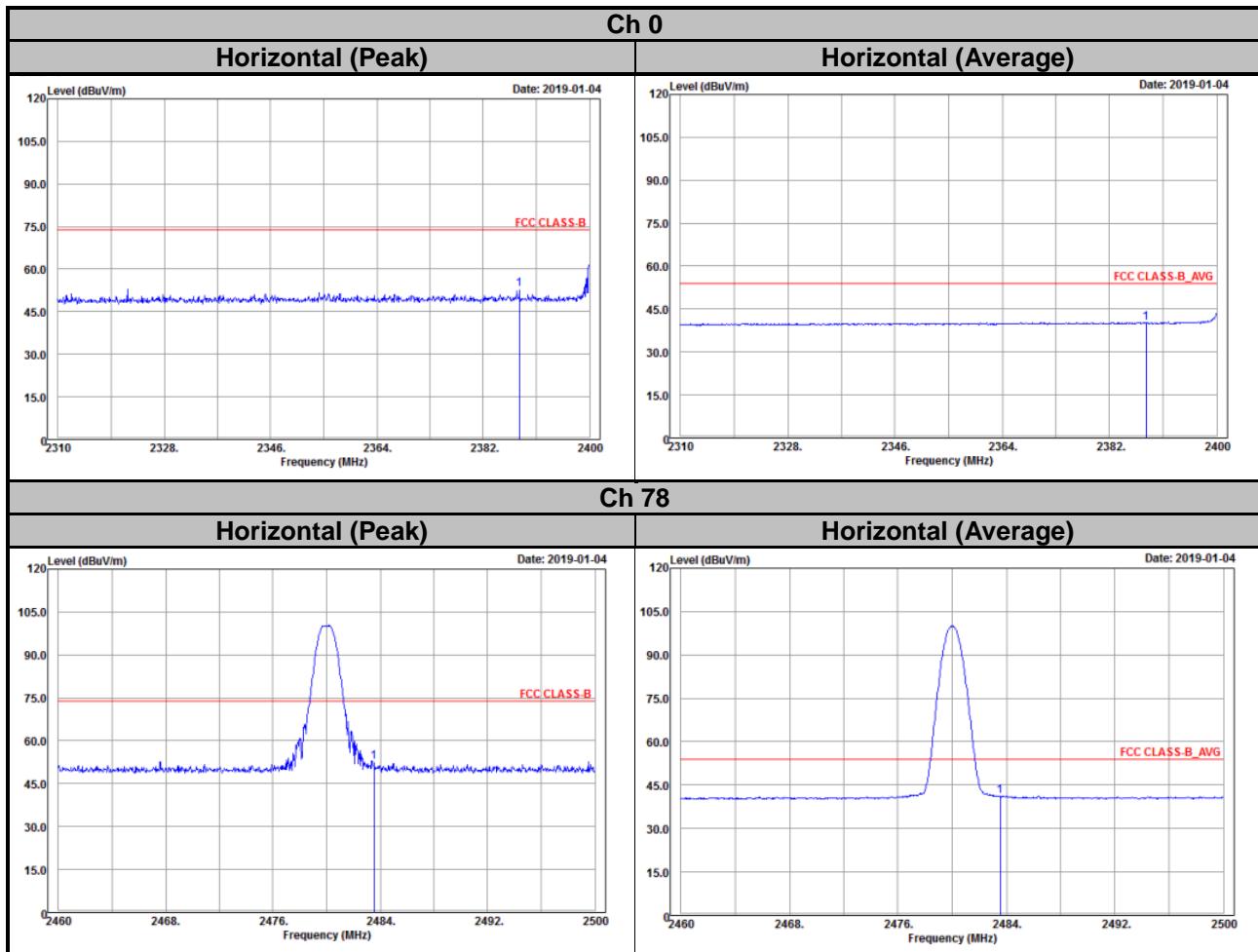
2. The emission levels of other frequencies were very low against the limit.

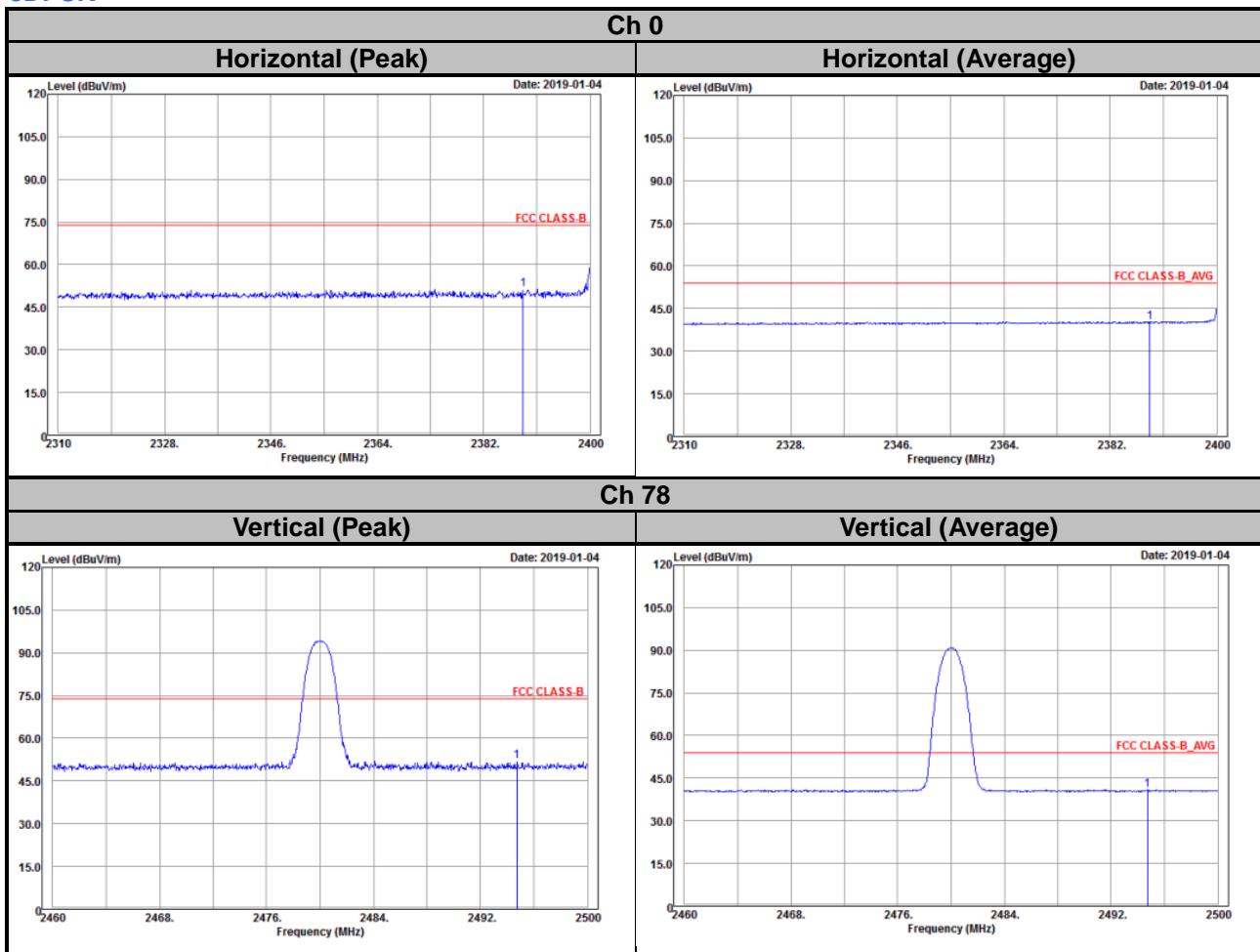
5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Annex A- Band-edge measurement

GFSK



8DPSK


Appendix – Information on 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.

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

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Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

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Hwa Ya EMC/RF/Safety

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Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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

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