

TEST REPORT

CERTIFICATE OF CONFORMITY

Standard: 47 CFR FCC Part 15, Subpart C (Section 15.249)
Report No.: RFBEBU-WTW-P25080312
FCC ID: E8HMG-2516
Product: Wireless mouse
Brand: DELL
Model No.: MS326c
Received Date: 2025/8/14
Test Date: 2025/8/25 ~ 2025/8/27
Issued Date: 2025/9/8

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FCC Registration / 198487 / TW2021

Designation Number:

Approved by: Jeremy Lin, **Date:** 2025/9/8
Jeremy Lin / Project Engineer

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Prepared by : Annie Chang / Senior Specialist

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Release Control Record

Issue No.	Description	Date Issued
RFBEBU-WTW-P25080312	Original release.	2025/9/8

1 Certificate

Product: Wireless mouse

Brand: DELL

Test Model: MS326c

Sample Status: Engineering sample

Applicant: Chicony Electronics Co., Ltd.

Test Date: 2025/8/25 ~ 2025/8/27

Standard: 47 CFR FCC Part 15, Subpart C (Section 15.249)

Measurement procedure: ANSI C63.10-2020

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.

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.249)			
Standard / Clause	Test Item	Result	Remark
15.207	AC Power Conducted Emissions	N/A	Power supply is from battery.
15.209 / 15.249(d)	Radiated Emissions below 1 GHz	Pass	Minimum passing margin is -8.3 dB at 38.60 MHz
15.209 / 15.249(a) / 15.249(d) / 15.249(e)	Radiated Emissions above 1 GHz	Pass	Minimum passing margin is -7.5 dB at 2400.00 MHz
15.215 (c)	20 dB Bandwidth	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	No antenna connector is used.

Note: 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	Specification	Expanded Uncertainty (k=2) (±)
Radiated Emissions below 1 GHz	9 kHz ~ 30 MHz	2.55 dB
	30 MHz ~ 1 GHz	5.77 dB
Radiated Emissions above 1 GHz	1 GHz ~ 6 GHz	4.71 dB
	6 GHz ~ 18 GHz	5.3 dB
	18 GHz ~ 40 GHz	4.98 dB
20 dB Bandwidth	-	960 Hz

The other instruments specified are routine verified to remain within the calibrated levels, no measurement uncertainty is required to be calculated.

2.2 Supplementary Information

There is not any deviation from the test standards for the test method, and no modifications required for compliance.

3 General Information

3.1 General Description

Product	Wireless mouse
Brand	DELL
Test Model	MS326c
Status of EUT	Engineering sample
Power Supply Rating	1.5Vdc from battery
Modulation Type	GFSK
Transfer Rate	2 Mbps
Operating Frequency	2.402 GHz ~ 2.479 GHz
Number of Channel	78
Field Strength Of Fundamental	71.3 dBuV/m (Average) at 3 meters

Note: 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 Antenna Description of EUT

The antenna information is listed as below.

Gain(dBi)	Antenna Type	Connector Type
0.12	PCBA	none

*Due to radiated measurements are made and the antenna gain is already accounted for this device, so provide an antenna datasheet and/or antenna measurement report is not required. The antenna dimensions and pictures (include antenna wire length if have) are stated in EUT photo exhibit.

3.3 Channel List

78 channels are provided to this EUT:

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

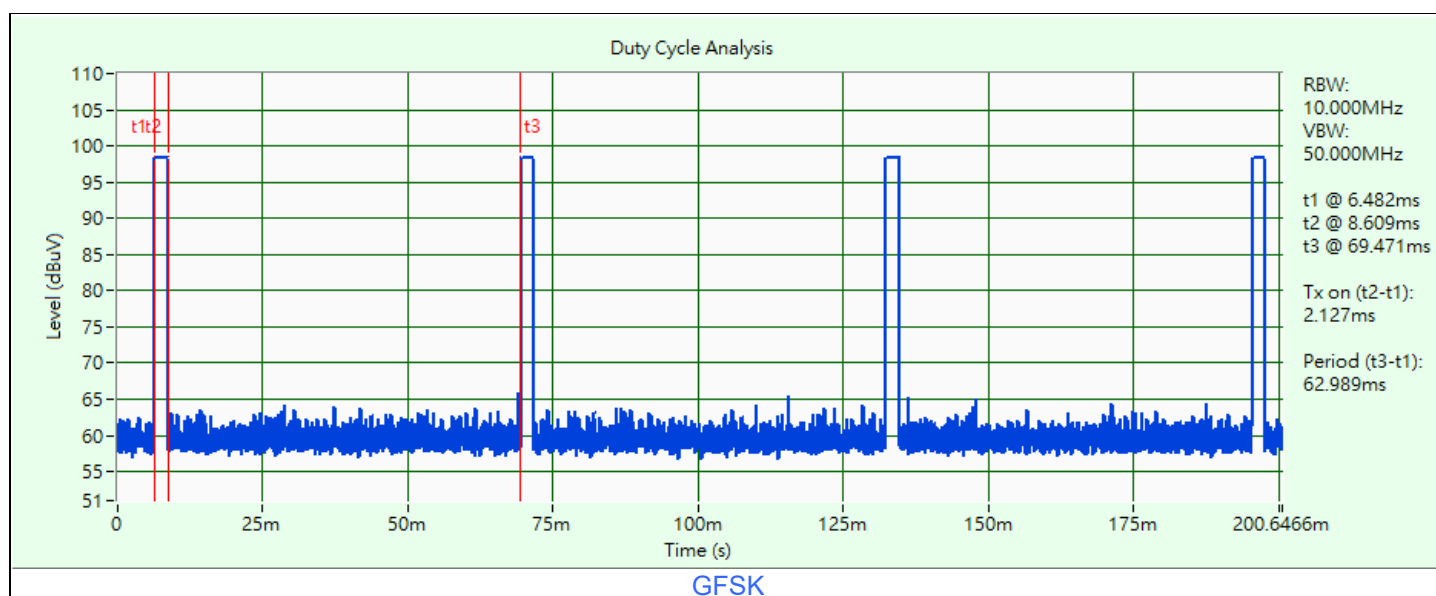
3.4 Test Mode Applicability and Tested Channel Detail

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

Test Item	Tested Channel	Modulation	Data Rate Parameter
Radiated Emissions below 1 GHz	78	GFSK	2Mb/s
Radiated Emissions above 1 GHz	1, 39, 78	GFSK	2Mb/s
20 dB Bandwidth	1, 39, 78	GFSK	2Mb/s

3.5 Duty Cycle of Test Signal

GFSK: Duty cycle = 2.127 ms / 62.989 ms x 100% = 3.4%



3.6 Test Program Used and Operation Descriptions

Controlling software (RadioTestTool_0.6.1.4-2) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.7 Connection Diagram of EUT and Peripheral Devices



4 Test Instruments

The calibration interval of the all test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.1 Radiated Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Bi_Log Antenna Schwarzbeck	VULB 9168	137	2024/10/9	2025/10/8
Coupling / Decoupling Network Schwarzbeck	CDNE-M2	00097	2025/5/28	2026/5/27
	CDNE-M3	00091	2025/3/20	2026/3/19
Loop Antenna TESEQ	HLA 6121	64095	2024/10/17	2025/10/16
MXE EMI Receiver Agilent	N9038A	MY50010158	2024/10/11	2025/10/10
Preamplifier Agilent	8447D	2944A11064	2025/2/14	2026/2/13
RF Coaxial Cable Pacific	8D-FB	Cable-CH6-02	2025/6/24	2026/6/23
Signal Analyzer R&S	FSV40	101544	2025/7/1	2026/6/30
Software BVADT	Radiated_V8.7.08	N/A	N/A	N/A
Tower ADT	AT100	0306	N/A	N/A
Turn Table ADT	TT100	0306	N/A	N/A

Notes:

1. The test was performed in Linkou 966 Chamber 6 (CH 6).
2. Tested Date: 2025/8/27

4.2 Radiated Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Boresight antenna tower fixture BV	BAF-02	6	N/A	N/A
High Pass Filter Wainwright	WHK 3.1/18G-10SS	SN 8	2025/5/22	2026/5/21
Horn Antenna EMCO	3115	00028257	2024/11/10	2025/11/9
Horn Antenna ETS-Lindgren	3117-PA	00215857	2024/11/10	2025/11/9
Horn Antenna Schwarzbeck	BBHA 9170	212	2024/10/18	2025/10/17
		BBHA9170190	2024/11/10	2025/11/9
MXE EMI Receiver Agilent	N9038A	MY50010158	2024/10/11	2025/10/10
Notch Filter Micro-Tronics	BRC50703-01	010	2025/5/22	2026/5/21
	BRM17690	005	2025/5/22	2026/5/21
Preamplifier EMCI	EMC0126545	980076	2025/2/14	2026/2/13
		980175	2025/8/23	2026/8/22
		980235	2025/2/14	2026/2/13
Preamplifier HP	8449B	3008A01201	2025/2/14	2026/2/13
RF Coaxial Cable EMCI	EMC104	190801	2025/7/4	2026/7/3
		190804	2025/7/4	2026/7/3
RF Coaxial Cable EMEC	EM102-KMKM-100	02	2025/7/4	2026/7/3
RF Coaxial Cable HUBER+SUHNER	SF-104	Cable-CH6-01	2025/7/4	2026/7/3
Signal Analyzer R&S	FSV40	101042	2024/9/12	2025/9/11
		101544	2025/7/1	2026/6/30
Software BVADT	Radiated_V7.7.1.1.1	N/A	N/A	N/A
Tower ADT	AT100	0306	N/A	N/A
Turn Table ADT	TT100	0306	N/A	N/A

Notes:

1. The test was performed in Linkou 966 Chamber 6 (CH 6).
2. Tested Date: 2025/8/25

4.3 20 dB Bandwidth

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Fixed Attenuator Woken	00800A1K01A-20	00800A1K01A-20-02	2025/5/23	2026/5/22
PXA Signal Analyzer Keysight	N9030A	MY54490260	2025/7/24	2026/7/23
Signal Analyzer R&S	FSV40	101042	2024/9/12	2025/9/11
Software	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A

Notes:

1. The test was performed in LK - Oven
2. Tested Date: 2025/8/26

5 Limits of Test Items

5.1 Radiated Emissions below 1 GHz

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

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

Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).

5.2 Radiated Emissions above 1 GHz

The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following.

Fundamental Frequency	Field Strength of Fundamental (millivolts/meter)	Field Strength of Harmonics (microvolts/meter)
2400 ~ 2483.5 MHz	50	500

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits as below table, whichever is the lesser attenuation.

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
Above 960	500	3

Notes:

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.

5.3 20 dB Bandwidth

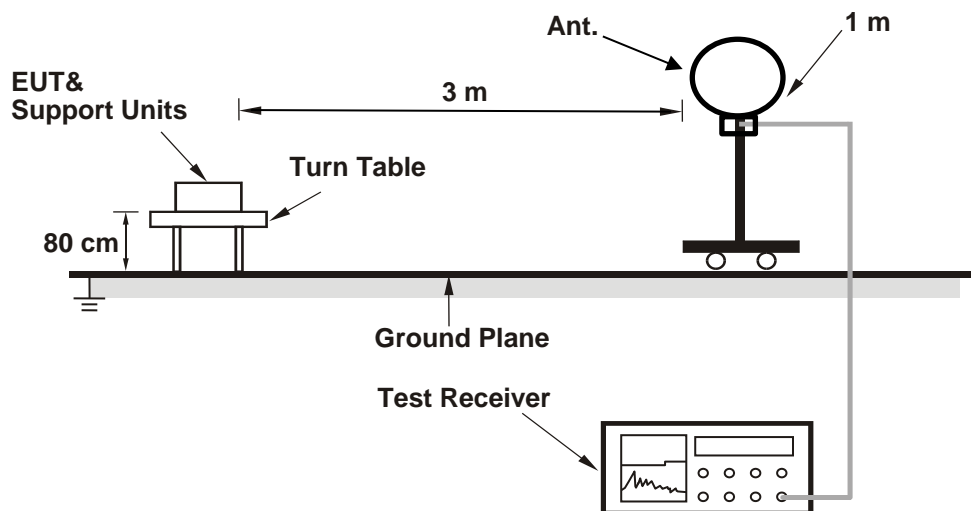
The 20dB bandwidth shall be specified in operating frequency band.

6 Test Arrangements

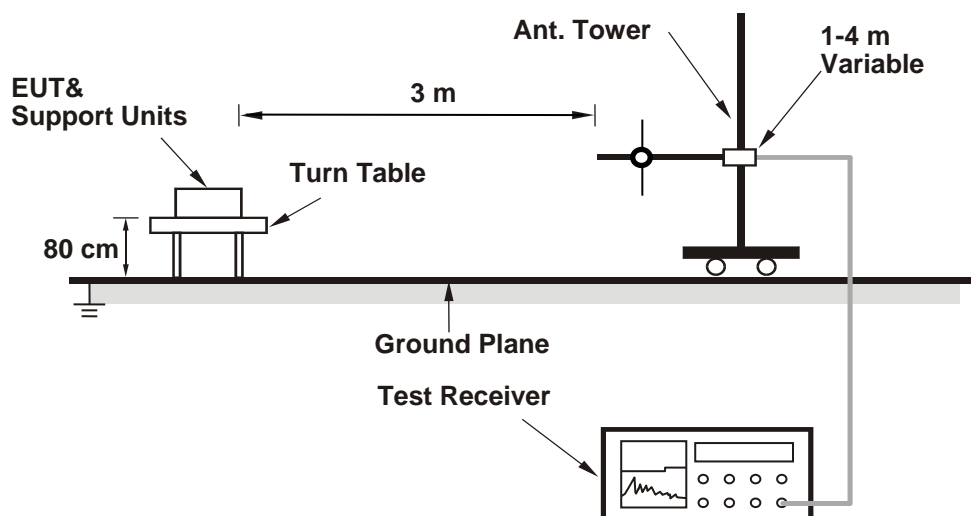
6.1 Radiated Emissions below 1 GHz

6.1.1 Test Setup

For Radiated emission below 30 MHz



For Radiated emission above 30 MHz



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

6.1.2 Test Procedure

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 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. 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, except for the frequency band (9 kHz to 90 kHz and 110 kHz to 490 kHz) set to average detect function and peak detect function.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 200 Hz at frequency below 150 kHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz or 10 kHz at frequency (150 kHz to 30 MHz).
3. All modes of operation were investigated and the worst-case emissions are reported.

For Radiated emission above 30 MHz

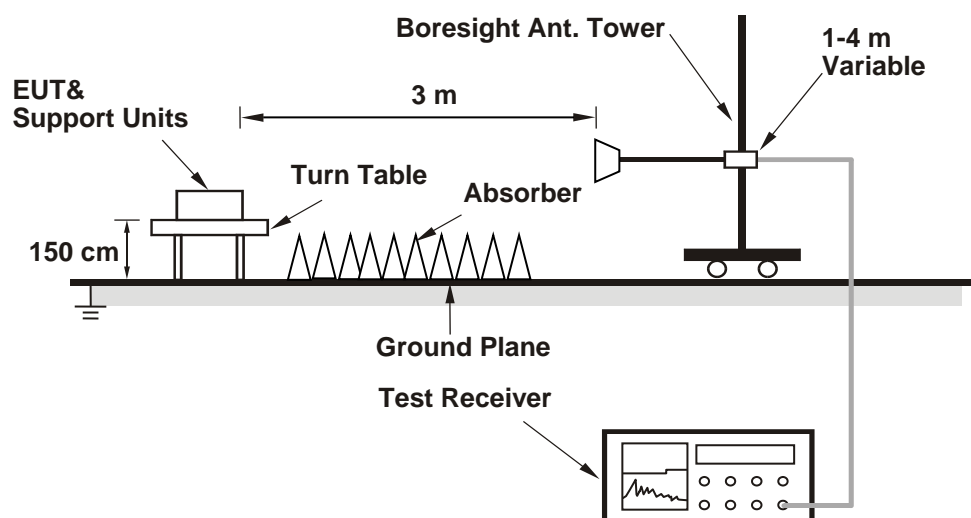
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the 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(QP) detect function, Average(AV) detect function, Peak(PK) detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

6.2 Radiated Emissions above 1 GHz

6.2.1 Test Setup



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

6.2.2 Test Procedure

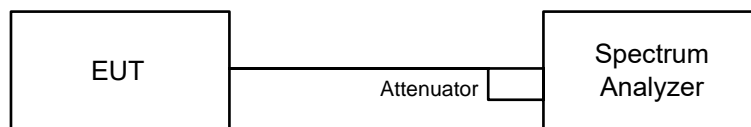
- The EUT was placed on the top of a rotating table 1.5 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The 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.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to peak and average detects 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.

Notes:

- The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) and Average detection (AV) at frequency above 1 GHz.
- According to ANSI C63.10 section 6.6.4 and 4.1.4.2.2. For fundamental and harmonic signal measurement, according to ANSI C63.10 section 7.5, the average value = peak value + duty cycle correction factor. For duty cycle correction factor values, see the Test Signal Duty Cycle section in this report.
- All modes of operation were investigated and the worst-case emissions are reported.

6.3 20 dB Bandwidth

6.3.1 Test Setup



6.3.2 Test Procedure

- a. Set resolution bandwidth (RBW) = 1% to 5% of the OBW.
- b. Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- c. Trace mode = max hold.
- d. Sweep = auto couple.
- e. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

7 Test Results of Test Item

7.1 Radiated Emissions below 1 GHz

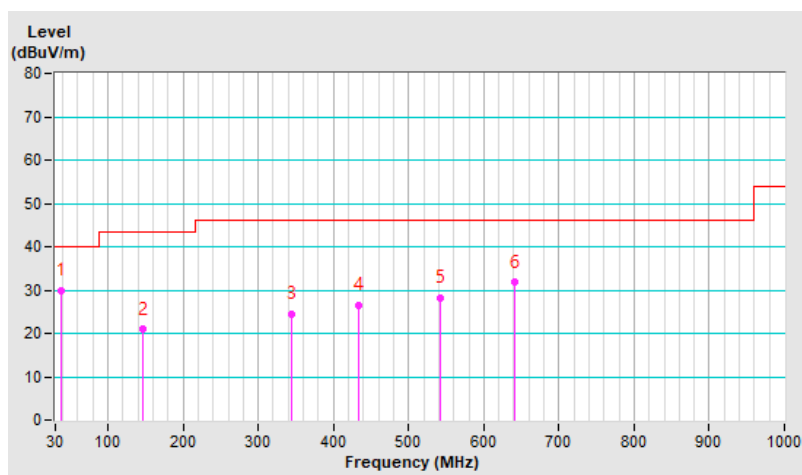
RF Mode	GFSK	Channel	CH 78 : 2479 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power	1.5 Vdc	Environmental Conditions	25 °C, 75% RH
Tested By	Jed Wu		

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	37.70	30.0 QP	40.0	-10.0	1.93 H	149	39.8	-9.8
2	146.50	20.9 QP	43.5	-22.6	1.87 H	268	29.0	-8.1
3	343.40	24.5 QP	46.0	-21.5	1.54 H	11	29.2	-4.7
4	433.50	26.5 QP	46.0	-19.5	1.63 H	122	29.1	-2.6
5	542.40	28.3 QP	46.0	-17.7	1.29 H	68	29.0	-0.7
6	640.20	31.7 QP	46.0	-14.3	1.11 H	241	29.5	2.2

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

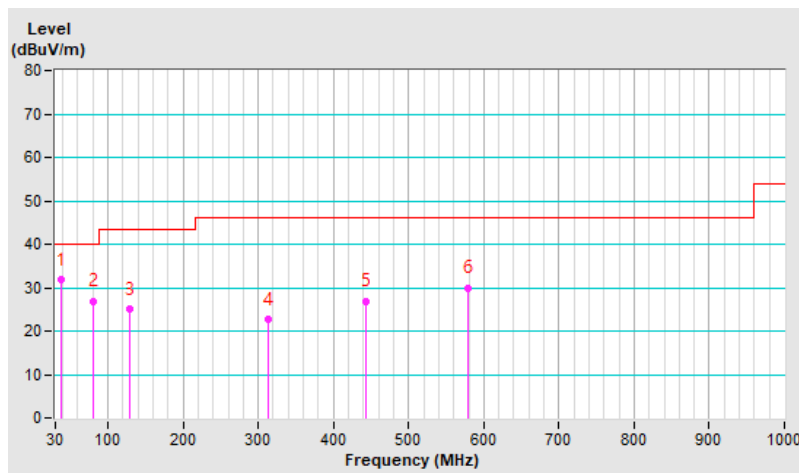


RF Mode	GFSK	Channel	CH 78 : 2479 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power	1.5 Vdc	Environmental Conditions	25 °C, 75% RH
Tested By	Jed Wu		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	38.60	31.7 QP	40.0	-8.3	1.69 V	18	41.5	-9.8
2	80.00	26.8 QP	40.0	-13.2	1.48 V	86	39.7	-12.9
3	128.90	25.0 QP	43.5	-18.5	1.73 V	174	34.6	-9.6
4	313.70	22.6 QP	46.0	-23.4	1.20 V	113	27.8	-5.2
5	442.30	26.9 QP	46.0	-19.1	1.58 V	157	29.3	-2.4
6	578.60	30.0 QP	46.0	-16.0	1.08 V	360	29.5	0.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.



7.2 Radiated Emissions above 1 GHz

RF Mode	GFSK	Channel	CH 1 : 2402 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
Input Power	1.5 Vdc	Environmental Conditions	25.2 °C, 74.3% RH
Tested By	Jed Wu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	52.7 PK	74.0	-21.3	3.22 H	144	53.4	-0.7
2	2390.00	40.8 AV	54.0	-13.2	3.22 H	144	41.5	-0.7
3	2400.00	66.5 PK	74.0	-7.5	3.22 H	144	67.1	-0.6
4	2400.00	37.1 AV	54.0	-16.9	3.22 H	144	37.7	-0.6
5	*2402.00	97.7 PK	114.0	-16.3	3.22 H	144	98.3	-0.6
6	*2402.00	68.3 AV	94.0	-25.7	3.22 H	144	68.9	-0.6
7	4804.00	52.5 PK	74.0	-21.5	1.45 H	183	45.4	7.1
8	4804.00	23.1 AV	54.0	-30.9	1.45 H	183	16.0	7.1
9	7206.00	55.3 PK	74.0	-18.7	1.15 H	194	42.2	13.1
10	7206.00	25.9 AV	54.0	-28.1	1.15 H	194	12.8	13.1
11	9608.00	62.8 PK	74.0	-11.2	1.15 H	189	46.7	16.1
12	9608.00	33.4 AV	54.0	-20.6	1.15 H	189	17.3	16.1
13	12010.00	61.5 PK	74.0	-12.5	1.30 H	358	41.4	20.1
14	12010.00	32.1 AV	54.0	-21.9	1.30 H	358	12.0	20.1

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	52.4 PK	74.0	-21.6	4.00 V	199	53.1	-0.7
2	2390.00	40.5 AV	54.0	-13.5	4.00 V	199	41.2	-0.7
3	2400.00	64.1 PK	74.0	-9.9	4.00 V	199	64.7	-0.6
4	2400.00	34.7 AV	54.0	-19.3	4.00 V	199	35.3	-0.6
5	*2402.00	96.1 PK	114.0	-17.9	4.00 V	199	96.7	-0.6
6	*2402.00	66.7 AV	94.0	-27.3	4.00 V	199	67.3	-0.6
7	4804.00	54.9 PK	74.0	-19.1	2.82 V	85	47.8	7.1
8	4804.00	25.5 AV	54.0	-28.5	2.82 V	85	18.4	7.1
9	7206.00	58.9 PK	74.0	-15.1	1.00 V	355	45.8	13.1
10	7206.00	29.5 AV	54.0	-24.5	1.00 V	355	16.4	13.1
11	9608.00	61.3 PK	74.0	-12.7	1.49 V	106	45.2	16.1
12	9608.00	31.9 AV	54.0	-22.1	1.49 V	106	15.8	16.1
13	12010.00	61.2 PK	74.0	-12.8	1.23 V	219	41.1	20.1
14	12010.00	31.8 AV	54.0	-22.2	1.23 V	219	11.7	20.1

Remarks:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
- Margin value = Emission Level – Limit value
- The other emission levels were very low against the limit.
- " * " : Fundamental frequency.
- The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
 $20 \log(\text{Duty cycle}) = 20 \log(2.127 \text{ ms} / 62.989 \text{ ms}) = -29.4 \text{ dB}$



RF Mode	GFSK	Channel	CH 39 : 2440 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
Input Power	1.5 Vdc	Environmental Conditions	25.2 °C, 74.3% RH
Tested By	Jed Wu		

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2440.00	99.8 PK	114.0	-14.2	2.77 H	151	100.3	-0.5
2	*2440.00	70.4 AV	94.0	-23.6	2.77 H	151	70.9	-0.5
3	4880.00	54.9 PK	74.0	-19.1	1.00 H	190	47.4	7.5
4	4880.00	25.5 AV	54.0	-28.5	1.00 H	190	18.0	7.5
5	7320.00	52.8 PK	74.0	-21.2	1.10 H	295	39.1	13.7
6	7320.00	23.4 AV	54.0	-30.6	1.10 H	295	9.7	13.7
7	9760.00	62.8 PK	74.0	-11.2	1.08 H	307	46.9	15.9
8	9760.00	33.4 AV	54.0	-20.6	1.08 H	307	17.5	15.9
9	12200.00	60.5 PK	74.0	-13.5	1.23 H	240	40.7	19.8
10	12200.00	31.1 AV	54.0	-22.9	1.23 H	240	11.3	19.8

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2440.00	98.2 PK	114.0	-15.8	3.55 V	206	98.7	-0.5
2	*2440.00	68.8 AV	94.0	-25.2	3.55 V	206	69.3	-0.5
3	4880.00	57.3 PK	74.0	-16.7	2.37 V	92	49.8	7.5
4	4880.00	27.9 AV	54.0	-26.1	2.37 V	92	20.4	7.5
5	7320.00	56.3 PK	74.0	-17.7	1.07 V	237	42.6	13.7
6	7320.00	26.9 AV	54.0	-27.1	1.07 V	237	13.2	13.7
7	9760.00	61.3 PK	74.0	-12.7	1.42 V	224	45.4	15.9
8	9760.00	31.9 AV	54.0	-22.1	1.42 V	224	16.0	15.9
9	12200.00	60.5 PK	74.0	-13.5	1.30 V	101	40.7	19.8
10	12200.00	31.1 AV	54.0	-22.9	1.30 V	101	11.3	19.8

Remarks:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
- Margin value = Emission Level – Limit value
- The other emission levels were very low against the limit.
- " * " : Fundamental frequency.
- The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
 $20 \log(\text{Duty cycle}) = 20 \log(2.127 \text{ ms} / 62.989 \text{ ms}) = -29.4 \text{ dB}$



RF Mode	GFSK	Channel	CH 78 : 2479 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
Input Power	1.5 Vdc	Environmental Conditions	25.2 °C, 74.3% RH
Tested By	Jed Wu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2479.00	100.7 PK	114.0	-13.3	3.32 H	140	100.8	-0.1
2	*2479.00	71.3 AV	94.0	-22.7	3.32 H	140	71.4	-0.1
3	2483.50	57.6 PK	74.0	-16.4	3.32 H	140	57.7	-0.1
4	2483.50	28.2 AV	54.0	-25.8	3.32 H	140	28.3	-0.1
5	4958.00	55.4 PK	74.0	-18.6	1.55 H	179	47.9	7.5
6	4958.00	26.0 AV	54.0	-28.0	1.55 H	179	18.5	7.5
7	7437.00	50.8 PK	74.0	-23.2	1.23 H	278	37.1	13.7
8	7437.00	21.4 AV	54.0	-32.6	1.23 H	278	7.7	13.7
9	9916.00	61.1 PK	74.0	-12.9	1.21 H	324	45.3	15.8
10	9916.00	31.7 AV	54.0	-22.3	1.21 H	324	15.9	15.8
11	12395.00	60.6 PK	74.0	-13.4	1.36 H	257	41.2	19.4
12	12395.00	31.2 AV	54.0	-22.8	1.36 H	257	11.8	19.4

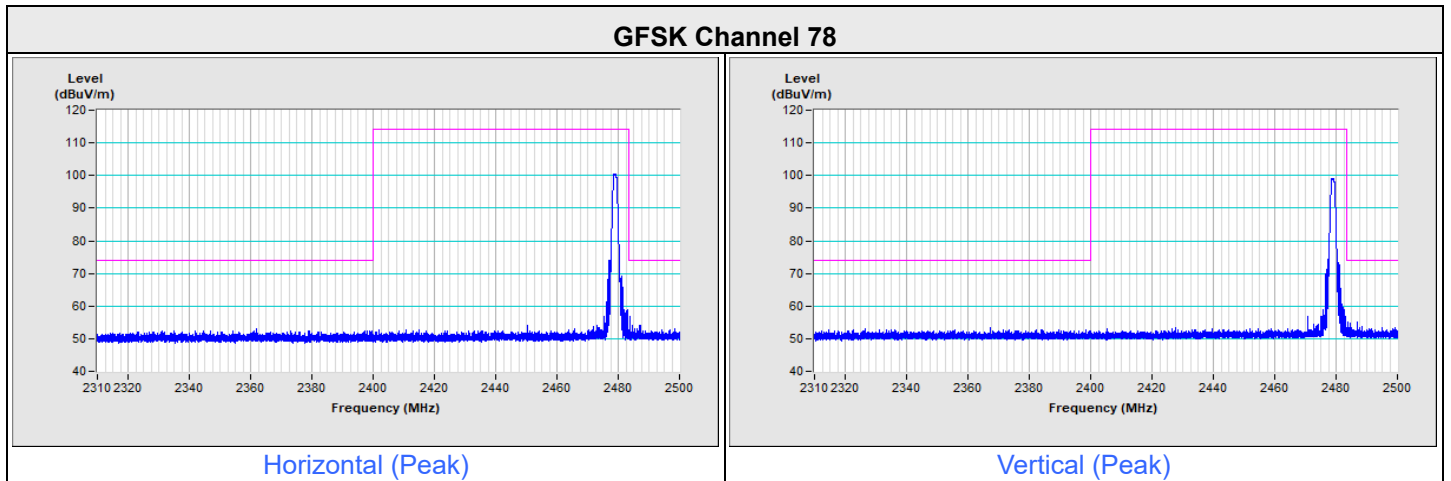
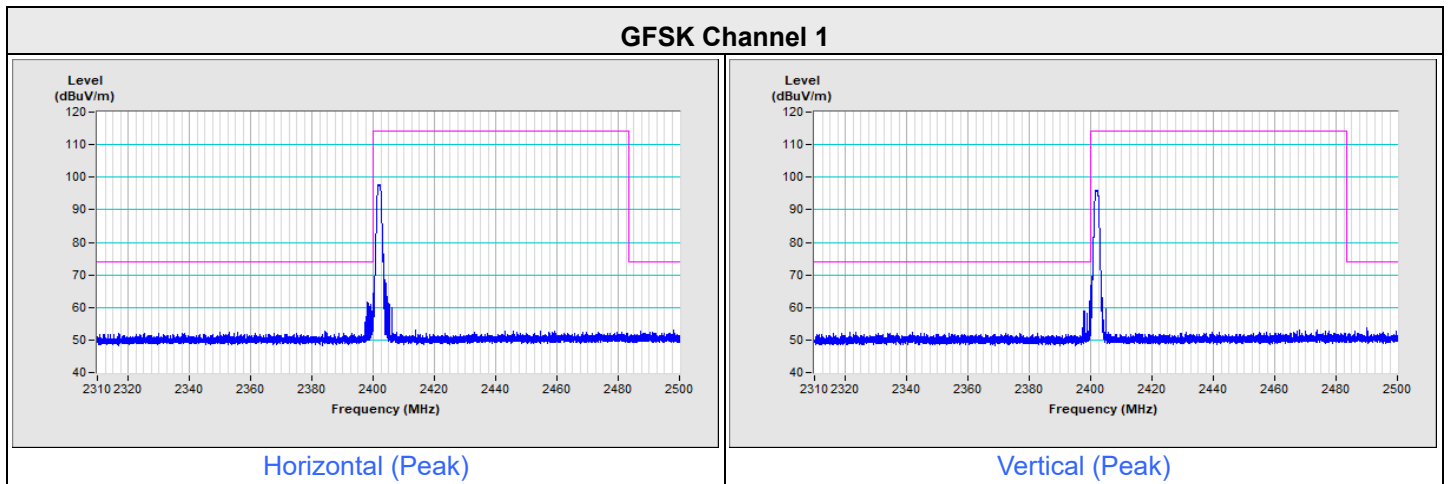
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2479.00	99.2 PK	114.0	-14.8	3.00 V	195	99.3	-0.1
2	*2479.00	69.8 AV	94.0	-24.2	3.00 V	195	69.9	-0.1
3	2483.50	55.5 PK	74.0	-18.5	3.00 V	195	55.6	-0.1
4	2483.50	26.1 AV	54.0	-27.9	3.00 V	195	26.2	-0.1
5	4958.00	57.8 PK	74.0	-16.2	1.82 V	103	50.3	7.5
6	4958.00	28.4 AV	54.0	-25.6	1.82 V	103	20.9	7.5
7	7437.00	59.5 PK	74.0	-14.5	1.20 V	254	45.8	13.7
8	7437.00	30.1 AV	54.0	-23.9	1.20 V	254	16.4	13.7
9	9916.00	59.6 PK	74.0	-14.4	1.55 V	241	43.8	15.8
10	9916.00	30.2 AV	54.0	-23.8	1.55 V	241	14.4	15.8
11	12395.00	60.4 PK	74.0	-13.6	1.43 V	118	41.0	19.4
12	12395.00	31.0 AV	54.0	-23.0	1.43 V	118	11.6	19.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
 $20 \log(\text{Duty cycle}) = 20 \log(2.127 \text{ ms} / 62.989 \text{ ms}) = -29.4 \text{ dB}$

Plot of Band Edge

Frequency Range	2.31 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak
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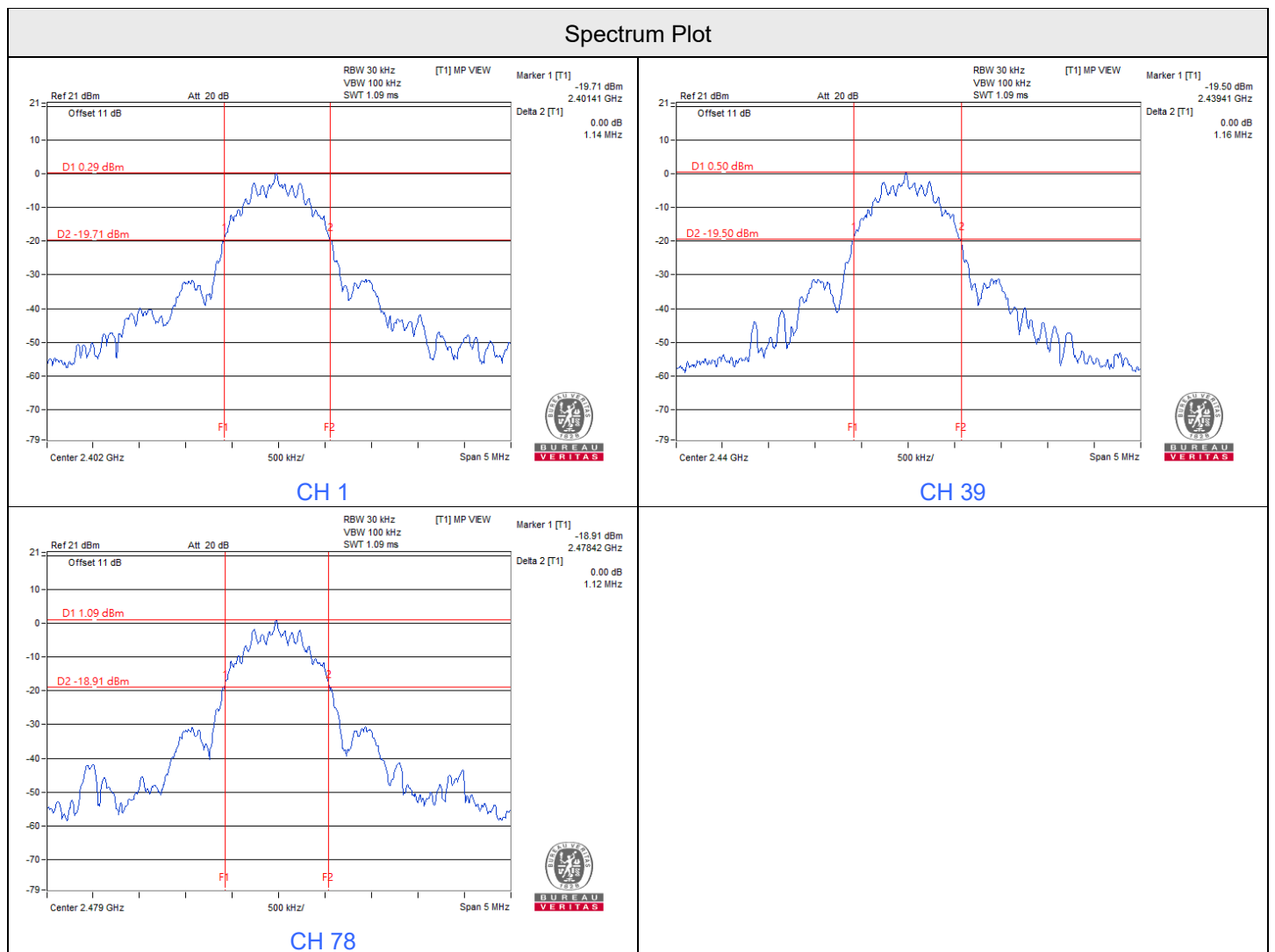
7.3 20 dB Bandwidth

Input Power:	1.5 Vdc	Environmental Conditions:	25°C, 76% RH	Tested By:	Dalen Dai
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Channel	Channel Frequency (MHz)	20 dB Bandwidth (MHz)	Measured Frequencies		Operating Frequency Band (MHz)	Test Result
			FL (MHz)	FH (MHz)		
1	2402	1.14	2401.41	2402.55	2400 ~ 2483.5	Pass
39	2440	1.16	2439.41	2440.57		Pass
78	2479	1.12	2478.42	2479.54		Pass

Notes:

1. FL is the lowest frequency of the 20 dB bandwidth of power envelope.
2. FH is the highest frequency of the 20 dB bandwidth of power envelope.



8 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo)

9 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.

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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