

FCC Test Report

Report No.: RFBDKG-WTW-P21123094

FCC ID: JNZMR0084

Test Model: MR0084

Received Date: 2021/12/26

Test Date: 2022/1/4 ~ 2022/1/17

Issued Date: 2022/1/25

Applicant: LOGITECH FAR EAST LTD.

Address: 7700 Gateway Boulevard Newark California United States

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

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Test Location: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,
Taiwan

**FCC Registration /
Designation Number:** 723255 / TW2022



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Release Control Record

Issue No.	Description	Date Issued
RFBDKG-WTW-P21123094	Original release.	2022/1/25

1 Certificate of Conformity

Product: Wireless Mouse

Brand: logitech

Test Model: MR0084

Sample Status: Engineering sample

Applicant: LOGITECH FAR EAST LTD.

Test Date: 2022/1/4 ~ 2022/1/17

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 EMC characteristics under the conditions specified in this report.

Prepared by : Vivian Huang , **Date:** 2022/1/25
Vivian Huang / Specialist

Approved by : Clark Lin , **Date:** 2022/1/25
Clark Lin / Technical Manager

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	NA	Without AC power port of the EUT.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -4.0dB at 7422.00MHz.
15.247(d)	Antenna Port Emission	N/A	Refer to Note 1 below
15.247(a)(2)	6dB bandwidth	N/A	Refer to Note 1 below
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	N/A	Refer to Note 1 below
15.203	Antenna Requirement	PASS	No antenna connector is used.

Note:

1. Conducted power, Radiated Emissions and Band Edge Measurement were performed for this addendum. The others testing data refer to original test report.
2. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
3. This report is prepared for supplementary report.

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) (±)
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	1.9 dB
	30MHz ~ 1GHz	2.5 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	3.1 dB
	6GHz ~ 18GHz	5.1 dB
	18GHz ~ 40GHz	5.1 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Wireless Mouse
Brand	logitech
Test Model	MR0084
Status of EUT	Engineering sample
Power Supply Rating	1.5Vdc from battery
Modulation Type	GFSK
Transfer Rate	2Mbps
Operating Frequency	2405 ~ 2474MHz
Number of Channel	10
Output Power	0.7311 mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	NA

Note:

- This is a supplementary report of Report No.: RF191225E03. The differences between them are as below information:
 - ◆ Change to the silent switch.
 - ◆ Antenna gain changed from 4.8dBi to 3dBi.
- According to above conditions, only Conducted power, Radiated Emissions and Band Edge Measurement need to be performed. And all data are verified to meet the requirements.
- The EUT may have a lot of colors for marketing requirement.
- The antenna provided to the EUT, please refer to the following table:

Original			
Antenna Gain (dBi)	Frequency range(GHz)	Antenna Type	Connector Type
4.8	2.4~2.4835	Printed Antenna	None
Newly			
Antenna Gain (dBi)	Frequency range(GHz)	Antenna Type	Connector Type
3	2.4~2.4835	Printed Antenna	None

- The RF inductors are listed as below.

Brand	Difference
Muruta	With different brand.
Sunlord	

In the original report, from the above brands, the worst radiated test was found in **Muruta**. Therefore only the test data of the modes were recorded in this report.

- 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.
- 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

10 channels are provided to this EUT:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2405	6	2450
2	2408	7	2455
3	2419	8	2461
4	2428	9	2469
5	2444	10	2474

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO			DESCRIPTION
	RE \geq 1G	RE<1G	APCM	
-	√	√	√	-

Where **RE \geq 1G**: Radiated Emission above 1GHz & Bandedge Measurement
RE<1G: Radiated Emission below 1GHz
APCM: Antenna Port Conducted Measurement

Radiated Emission Test (Above 1GHz):

- ☒ 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.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TYPE
1 to 10	1, 5, 10	GFSK

Radiated Emission Test (Below 1GHz):

- ☒ 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.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TYPE
1 to 10	1	GFSK

Antenna Port Conducted Measurement:

- ☒ 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.

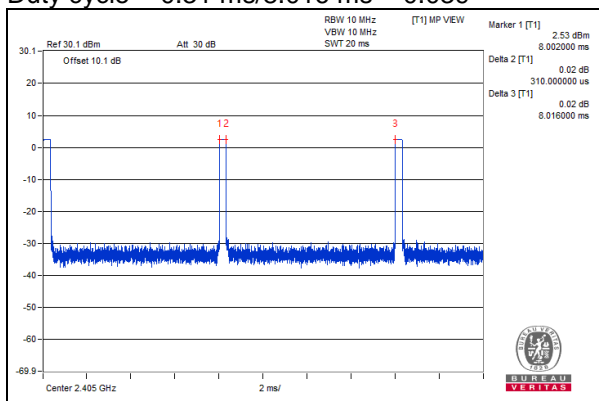
AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TYPE
1 to 10	1, 5, 10	GFSK

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE \geq 1G	25deg. C, 65%RH	1.5Vdc	Ryan Du
RE<1G	24deg. C, 67%RH	1.5Vdc	Nelson Teng
APCM	25deg. C, 60%RH	1.5Vdc	Leon Dai

3.3 Duty Cycle of Test Signal

Duty cycle = $0.31 \text{ ms} / 8.016 \text{ ms} = 0.039$

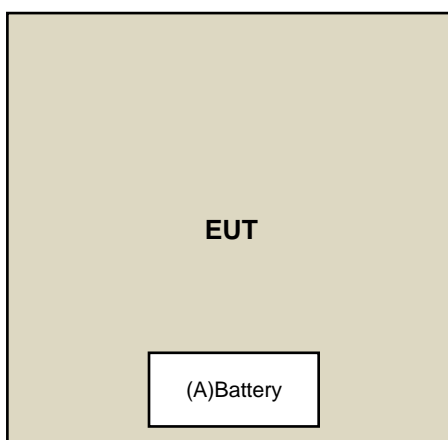


3.4 Description of Support Units

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
A.	Battery	Duracell	AA	NA	NA	Provided by Lab

3.4.1 Configuration of System under Test



3.5 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.

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 20dB 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 1000MHz, 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 20dB under any condition of modulation.

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESR3	102528	2021/3/2	2022/3/1
Spectrum Analyzer KEYSIGHT	N9030B	MY57141948	2021/5/21	2022/5/20
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	NA	NA
Pre_Amplifier EMCI	EMC001340	980142	2021/5/24	2022/5/23
LOOP ANTENNA Electro-Metrics	EM-6879	264	2021/3/5	2022/3/4
RF Coaxial Cable JYEBO	5D-FB	LOOPCAB-001	2021/1/7	2022/1/6
RF Coaxial Cable JYEBO	5D-FB	LOOPCAB-002	2021/1/7	2022/1/6
Pre_Amplifier EMCI	EMC330N	980538	2021/4/26	2022/4/25
Bilog Antenna Schwarzbeck	VULB 9168	9168-0842	2021/10/26	2022/10/25
RF Coaxial Cable COMMATE/PEWC	8D	966-5-1	2021/4/26	2022/4/25
RF Coaxial Cable COMMATE/PEWC	8D	966-5-2	2021/4/26	2022/4/25
RF Coaxial Cable COMMATE/PEWC	8D	966-5-3	2021/4/26	2022/4/25
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-ATT5-02	2021/1/11	2022/1/10
Broad-Band Horn Antenna Schwarzbeck	BBHA 9120D	9120D-1819	2021/11/14	2022/11/13
Pre_Amplifier EMCI	EMC12630SE	980509	2021/4/26	2022/4/25
RF Coaxial Cable EMCI	EMC104-SM-SM-1500	180503	2021/4/26	2022/4/25
RF Coaxial Cable EMCI	EMC104-SM-SM-2000	180501	2021/4/26	2022/4/25
RF Coaxial Cable EMCI	EMC104-SM-SM-6000	180506	2021/4/26	2022/4/25
Pre_Amplifier EMCI	EMC184045SE	980387	2021/1/11	2022/1/10
SHF-EHF Horn Schwarzbeck	BBHA 9170	BBHA9170519	2021/11/14	2022/11/13
RF Cable-Frequency range: 1-40GHz EMCI	EMC102-KM-KM-1200	160924	2021/1/11	2022/1/10
RF cable (40GHz) EMCI	EMC-KM-KM-4000	200214	2021/3/10	2022/3/9

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in 966 Chamber No. 5.
3. Tested Date: 2022/1/4

For other test items:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSV40	101516	2021/3/8	2022/3/7
Power meter Anritsu	ML2495A	1529002	2021/6/21	2022/6/20
Power sensor Anritsu	MA2411B	1339443	2021/5/31	2022/5/30
10dB Attenuator Woken	MDCS18N-10	MDCS18N-10-01	2021/4/13	2022/4/12
Software	ADT_RF Test Software V6.6.5.4	NA	NA	NA

- NOTE:**
1. The test was performed in Oven room 2.
 2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 3. Tested Date: 2022/1/17

4.1.3 Test Procedures

For Radiated emission below 30MHz

- 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 9kHz at frequency below 30MHz.

For Radiated emission above 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) 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 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.

Note:

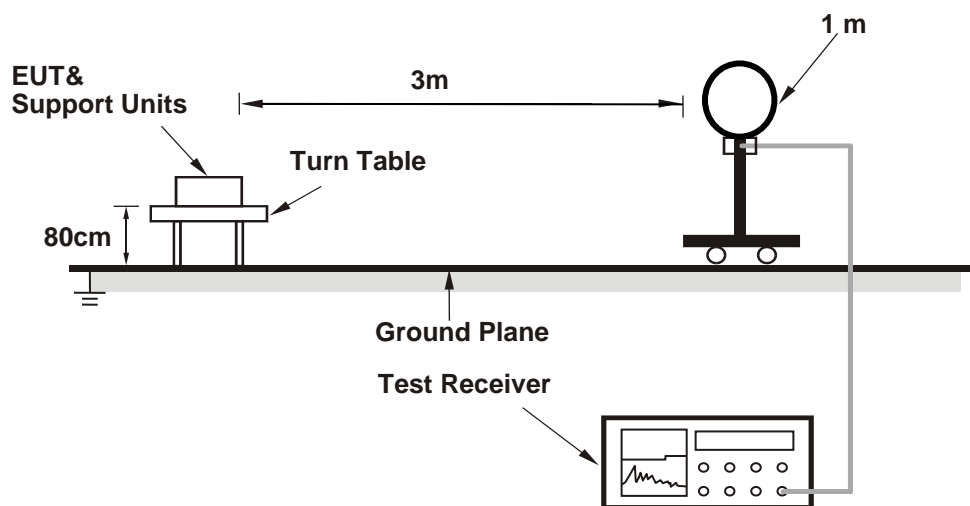
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.1.4 Deviation from Test Standard

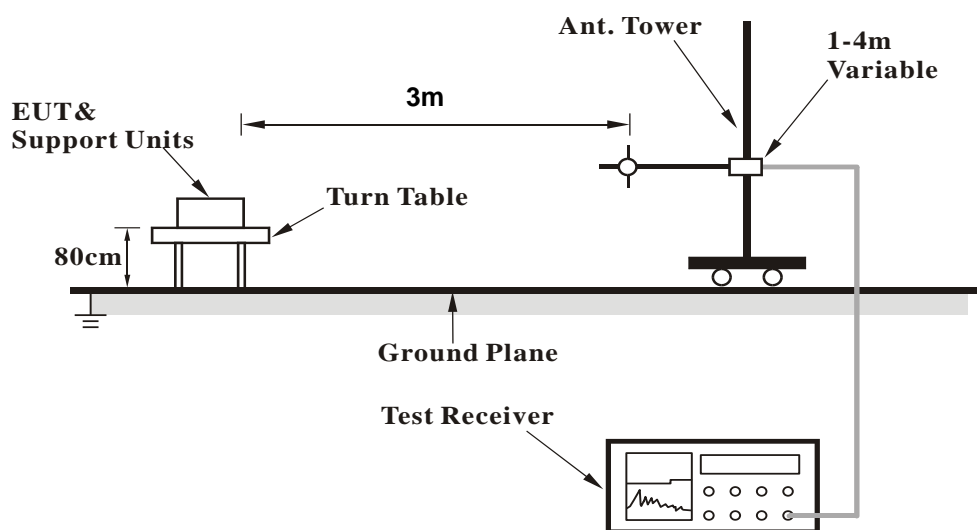
No deviation.

4.1.5 Test Setup

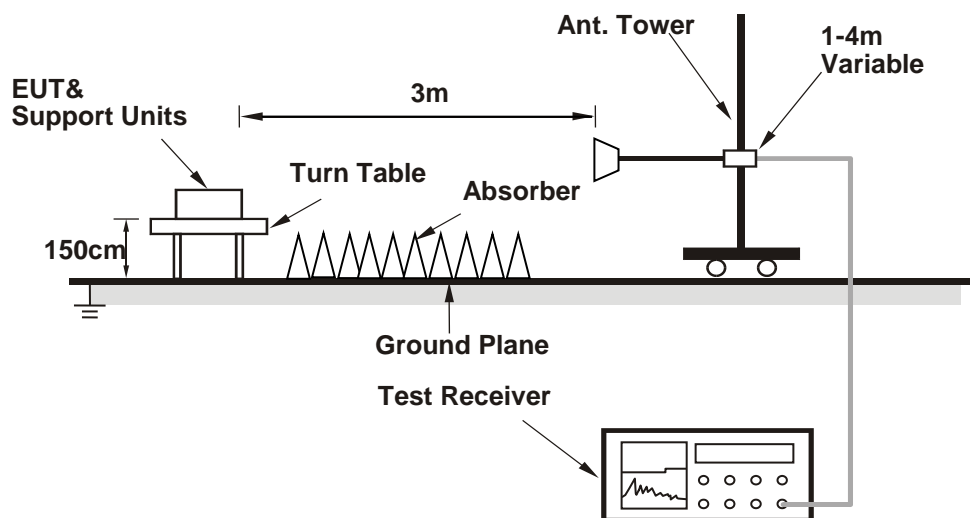
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Conditions

- Placed the EUT on the testing table.
- The RF sample click button has been activated to set the EUT under transmission/receiving condition continuously.

4.1.7 Test Results

Above 1GHz Data:

RF Mode	TX_GFSK	Channel	CH 1 : 2405 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

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	57.2 PK	74.0	-16.8	1.11 H	106	59.9	-2.7
2	2390.00	44.0 AV	54.0	-10.0	1.11 H	106	46.7	-2.7
3	*2405.00	95.5 PK			1.11 H	106	98.2	-2.7
4	*2405.00	92.8 AV			1.11 H	106	95.5	-2.7
5	4810.00	53.9 PK	74.0	-20.1	1.09 H	143	52.4	1.5
6	4810.00	48.0 AV	54.0	-6.0	1.09 H	143	46.5	1.5
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	57.0 PK	74.0	-17.0	3.63 V	108	59.7	-2.7
2	2390.00	43.4 AV	54.0	-10.6	3.63 V	108	46.1	-2.7
3	*2405.00	89.0 PK			3.63 V	108	91.7	-2.7
4	*2405.00	86.1 AV			3.63 V	108	88.8	-2.7
5	4810.00	52.6 PK	74.0	-21.4	1.51 V	11	51.1	1.5
6	4810.00	45.5 AV	54.0	-8.5	1.51 V	11	44.0	1.5

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.
5. " * ": Fundamental frequency.

RF Mode	TX_GFSK	Channel	CH 5 : 2444 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

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	*2444.00	96.7 PK			1.18 H	89	99.5	-2.8
2	*2444.00	93.5 AV			1.18 H	89	96.3	-2.8
3	4888.00	54.0 PK	74.0	-20.0	1.03 H	129	52.5	1.5
4	4888.00	47.9 AV	54.0	-6.1	1.03 H	129	46.4	1.5
5	7332.00	56.6 PK	74.0	-17.4	1.04 H	282	49.4	7.2
6	7332.00	49.7 AV	54.0	-4.3	1.04 H	282	42.5	7.2
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	*2444.00	91.9 PK			3.63 V	142	94.7	-2.8
2	*2444.00	88.7 AV			3.63 V	142	91.5	-2.8
3	4888.00	52.5 PK	74.0	-21.5	1.58 V	12	51.0	1.5
4	4888.00	45.5 AV	54.0	-8.5	1.58 V	12	44.0	1.5
5	7332.00	53.2 PK	74.0	-20.8	1.02 V	270	46.0	7.2
6	7332.00	45.1 AV	54.0	-8.9	1.02 V	270	37.9	7.2

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.
5. " * ": Fundamental frequency.

RF Mode	TX_GFSK	Channel	CH 10 : 2474 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

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	*2474.00	96.7 PK			1.19 H	101	99.6	-2.9
2	*2474.00	93.7 AV			1.19 H	101	96.6	-2.9
3	2483.50	57.0 PK	74.0	-17.0	1.19 H	101	59.9	-2.9
4	2483.50	44.4 AV	54.0	-9.6	1.19 H	101	47.3	-2.9
5	4948.00	54.2 PK	74.0	-19.8	1.02 H	126	52.5	1.7
6	4948.00	48.3 AV	54.0	-5.7	1.02 H	126	46.6	1.7
7	7422.00	56.9 PK	74.0	-17.1	1.00 H	288	49.5	7.4
8	7422.00	50.0 AV	54.0	-4.0	1.00 H	288	42.6	7.4
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	*2474.00	91.5 PK			3.95 V	129	94.4	-2.9
2	*2474.00	88.6 AV			3.95 V	129	91.5	-2.9
3	2483.50	56.7 PK	74.0	-17.3	3.95 V	129	59.6	-2.9
4	2483.50	43.4 AV	54.0	-10.6	3.95 V	129	46.3	-2.9
5	4948.00	53.0 PK	74.0	-21.0	1.53 V	4	51.3	1.7
6	4948.00	45.8 AV	54.0	-8.2	1.53 V	4	44.1	1.7
7	7422.00	53.3 PK	74.0	-20.7	1.00 V	272	45.9	7.4
8	7422.00	45.2 AV	54.0	-8.8	1.00 V	272	37.8	7.4

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.

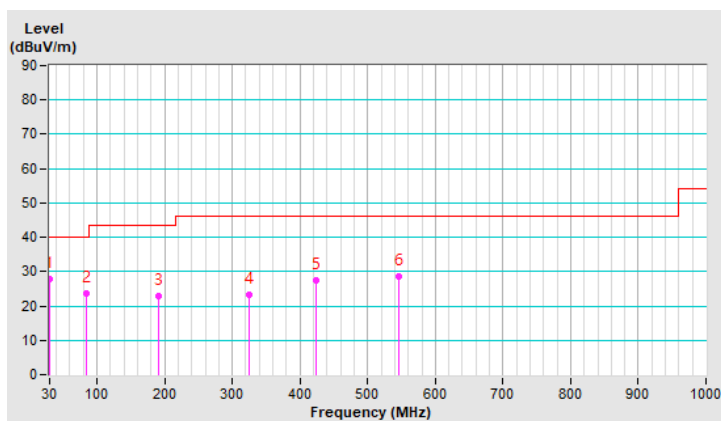
Below 1GHz Data:

RF Mode	TX _GFSK	Channel	CH 1 : 2405 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	30.67	27.7 QP	40.0	-12.3	1.00 H	95	41.8	-14.1
2	83.57	23.6 QP	40.0	-16.4	2.00 H	241	41.9	-18.3
3	191.28	22.7 QP	43.5	-20.8	2.50 H	173	38.4	-15.7
4	324.45	23.1 QP	46.0	-22.9	2.00 H	164	34.7	-11.6
5	423.35	27.6 QP	46.0	-18.4	1.00 H	145	36.6	-9.0
6	546.48	28.5 QP	46.0	-17.5	1.50 H	0	35.3	-6.8

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 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

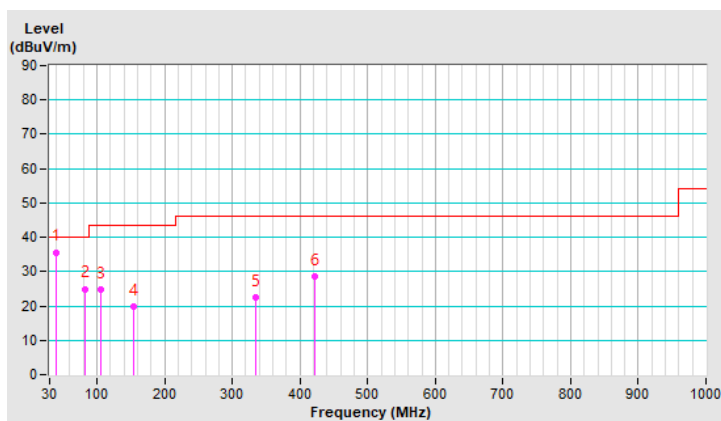


RF Mode	TX_GFSK	Channel	CH 1 : 2405 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	40.35	35.7 QP	40.0	-4.3	1.50 V	79	48.8	-13.1
2	82.56	25.0 QP	40.0	-15.0	1.50 V	300	43.1	-18.1
3	105.93	24.9 QP	43.5	-18.6	2.00 V	360	41.3	-16.4
4	153.95	19.9 QP	43.5	-23.6	1.00 V	122	32.5	-12.6
5	335.26	22.3 QP	46.0	-23.7	2.50 V	142	33.5	-11.2
6	422.36	28.5 QP	46.0	-17.5	1.00 V	289	37.6	-9.1

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 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

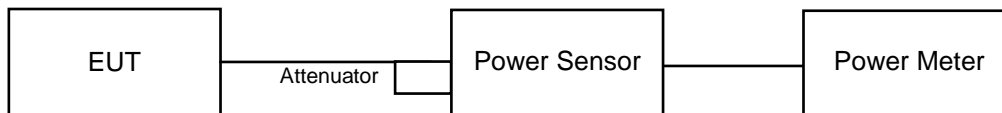


4.2 Conducted Output Power Measurement

4.2.1 Limits of Conducted Output Power Measurement

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

4.2.2 Test Setup



4.2.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.2.4 Test Procedures

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

Average power sensor was used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

4.2.5 Deviation from Test Standard

No deviation.

4.2.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.2.7 Test Results

FOR PEAK POWER

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2405	0.7311	-1.36	30	Pass
5	2444	0.7161	-1.45	30	Pass
10	2474	0.7211	-1.42	30	Pass

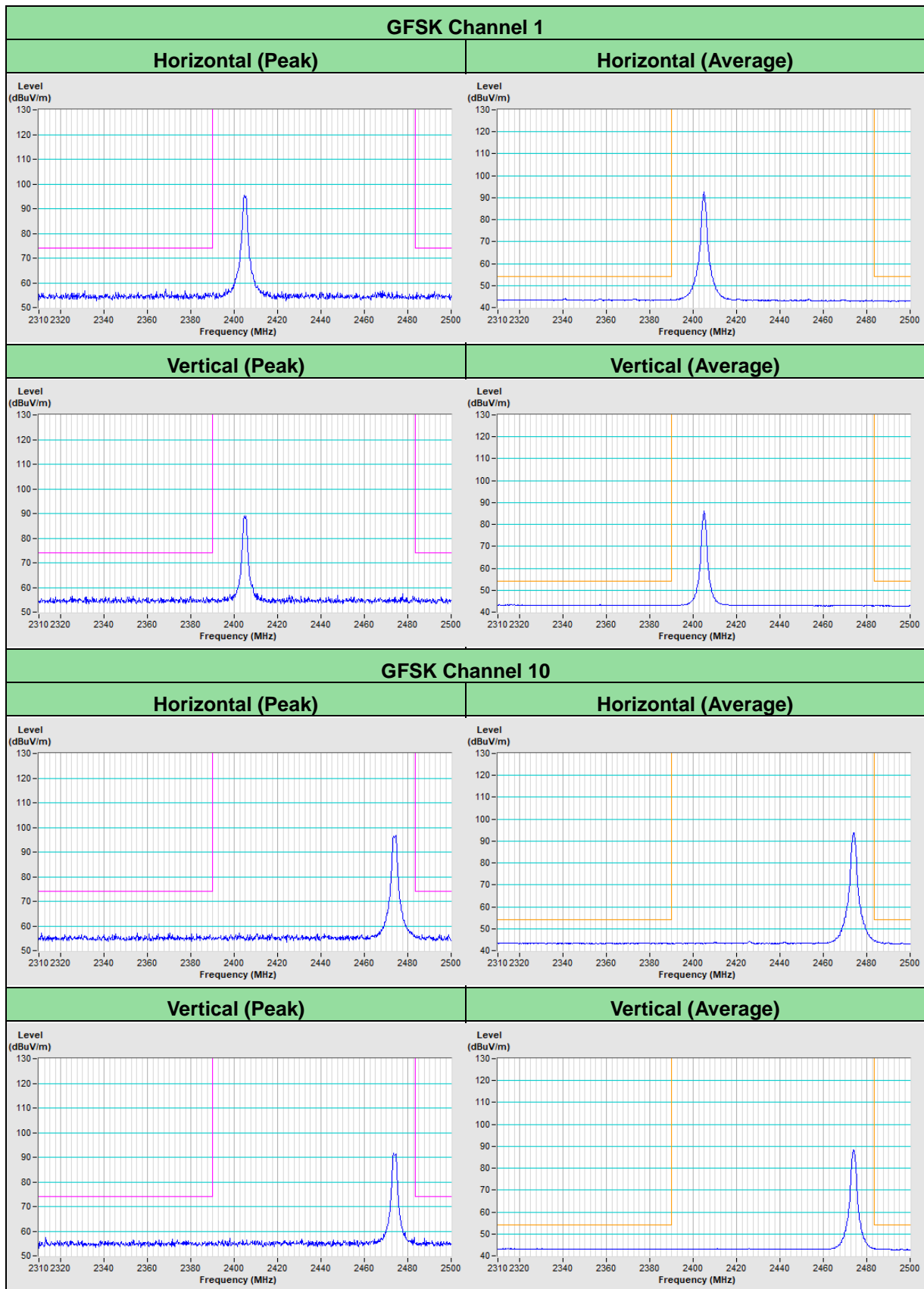
FOR AVERAGE POWER

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2405	0.6839	-1.65
5	2444	0.6761	-1.70
10	2474	0.6808	-1.67

5 Pictures of Test Arrangements

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

Annex A - Band-Edge Measurement



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.

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

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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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