TEST REPORT

CERTIFICATE OF CONFORMITY

Standard:	**47 CFR FCC Part 15, Subpart C (Section 15.247)**
Report No.:	RFCYJN-WTW-P26030470
FCC ID:	2AAFM-RDA0059
Product:	Wireless Headset
Brand:	Corsair
Model No.:	RDA0059
Received Date:	2026/3/17
Test Date:	2026/3/24 ~ 2026/3/26
Issued Date:	2026/5/8
Applicant:	Corsair Memory, Inc.
Address:	115 North McCarthy Blvd, Milpitas, CA 95035, 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
Test Location:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
FCC Registration / Designation Number:	198487 / TW2021

Approved by: Jeremy Lin , **Date:** 2026/5/8

Jeremy Lin / Project Engineer

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Prepared by : Jessica Cheng / Senior Specialist

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Release Control Record

Issue No.	Description	Date Issued
RFCYJN-WTW-P26030470	Original release.	2026/5/8

1 Certificate

Product:	Wireless Headset
Brand:	Corsair
Test Model:	RDA0059
Sample Status:	Engineering sample
Applicant:	Corsair Memory, Inc.
Test Date:	2026/3/24 ~ 2026/3/26
Standard:	47 CFR FCC Part 15, Subpart C (Section 15.247)
Measurement procedure:	ANSI C63.10-2020 KDB 558074 D01 15.247 Meas Guidance v05r02

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 15.247)			
Standard / Clause	Test Item	Result	Remark
15.247 (a)(1)	RF Output Power	Pass	Meet the requirement of limit.
15.247(a)(1) (iii)	Number of Hopping Frequency Used	Pass	Meet the requirement of limit.
15.247(a)(1) (iii)	Dwell Time on Each Channel	Pass	Meet the requirement of limit.
15.247(a)(1)	Hopping Channel Separation	Pass	Meet the requirement of limit.
15.247(a)(1)	20 dB Bandwidth	-	Refer to Note 1
15.247(d)	Conducted Out of Band Emissions	Pass	Meet the requirement of limit.
15.207	AC Power Conducted Emissions	Pass	Minimum passing margin is -5.51 dB at 0.15391 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -10.2 dB at 142.52 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -12.3 dB at 2390.00 MHz
15.203	Antenna Requirement	Pass	No antenna connector is used.

Notes:

1. If the Frequency Hopping System operating in 2400-2483.5 MHz band and the output power less than 125 mW. The hopping channel carrier frequencies separated by a minimum of 25 kHz or two-thirds of the 20 dB bandwidth of hopping channel whichever is greater.
2. 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) (±)
RF Output Power	-	1.1 dB
Dwell Time on Each Channel	-	2.18 %
Hopping Channel Separation	-	390 Hz
20 dB Bandwidth	-	960 Hz
Conducted Out of Band Emissions	9 kHz ~ 40 GHz	2.7 dB
AC Power Conducted Emissions	9 kHz ~ 30 MHz	3.24 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	2.55 dB
	30 MHz ~ 1 GHz	5.77 dB
Unwanted 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

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 Headset
Brand	Corsair
Test Model	RDA0059
Status of EUT	Engineering sample
Power Supply Rating	5Vdc from host equipment & 3.7Vdc from battery
Modulation Type	GFSK, π/4-DQPSK
Modulation Technology	FHSS
Transfer Rate	Up to 2 Mbps
Operating Frequency	2.402 GHz ~ 2.48 GHz
Number of Channel	79
Output Power	7.551 mW (8.78 dBm)

Note:

1. The EUT uses following accessories.

Item	Specification
Type C - USB A cable	Shielded without core, 1.8m

2. There are Bluetooth and SRD technology used for the EUT.
3. Bluetooth and SRD technology can not transmit at same time.
4. 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

1. The antenna information is listed as below.

Gain (dBi)	Antenna Type	Connector Type
0.5	Chip	none

* Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

3.3 Channel List

79 channels are provided for BT-EDR:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (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		

3.4 Test Mode Applicability and Tested Channel Detail

Pre-Scan:	1. EUT can be used in the following ways: XYZ 3-axis. Pre-scan in these ways and find the worst case as a representative test condition. 2.For Unwanted Emission above 1 GHz has Battery/ EUT with USB cable(Adapter) mode of power supply. Pre-scan these modes and find the worst case as a representative test condition. 3.For Unwanted Emission below 1 GHz has Battery/ EUT with USB cable(Adapter)/ EUT with USB cable(Laptop) mode of power supply. Pre-scan these modes and find the worst case as a representative test condition.
Worst Case:	1. X/ Y/ Z Worst Condition: X Axis. 2. For Unwanted Emission above 1 GHz EUT with USB cable(Adapter) mode is the worst case of power supply. 3. For Unwanted Emission below 1 GHz EUT with USB cable(Adapter) mode is the worst case of power supply.

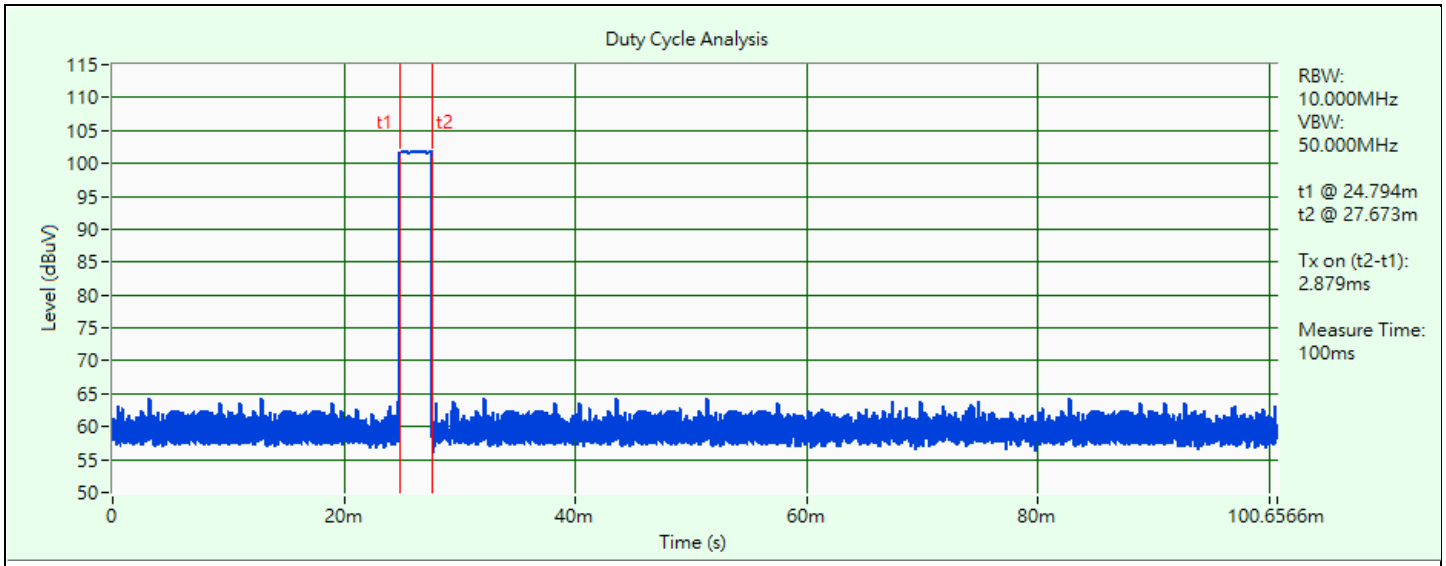
Following channel(s) was (were) selected for the final test as listed below:

Test Item	EUT Configure Mode	Tested Channel	Modulation	Data Rate Parameter
RF Output Power	A	0, 39, 78	GFSK	DH5
			π/4-DQPSK	2DH5
Number of Hopping Frequency Used	A	Hopping	GFSK	DH5
			π/4-DQPSK	2DH5
Dwell Time on Each Channel	A	Hopping	GFSK	DH1/DH3/DH5
			π/4-DQPSK	2DH1/2DH3/2DH5
Hopping Channel Separation / 20 dB Bandwidth	A	0, 39, 78	GFSK	DH5
			π/4-DQPSK	2DH5
Conducted Out of Band Emissions	A	Hopping 0, 78	GFSK	DH5
			π/4-DQPSK	2DH5
AC Power Conducted Emissions	A	78	GFSK	DH5
	B	-	-	-
Unwanted Emissions below 1 GHz	A	78	GFSK	DH5
Unwanted Emissions above 1 GHz	A	0, 39, 78	GFSK	DH5
			π/4-DQPSK	2DH5
EUT Configure Mode:	A	EUT with USB cable(Adapter)		
	B	EUT with USB cable(Laptop)		

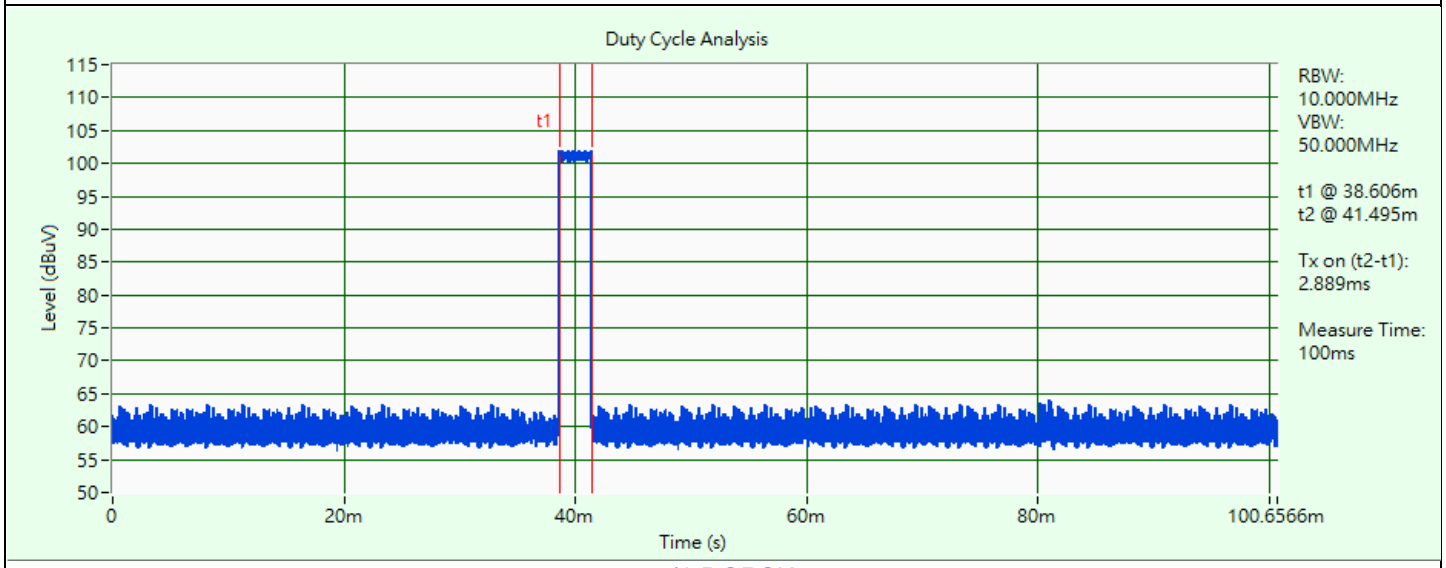
Note: Mode B involves the EUT connected to a laptop via a USB cable. As this is a wired mode without wireless functionality, parameters for modulation and data rate are not applicable; therefore, these fields are represented by "-" in the Test Mode interface.

3.5 Duty Cycle of Test Signal

GFSK: Duty cycle = 2.879 ms / 100 ms x 100% = 2.9%
π/4-DQPSK: Duty cycle = 2.889 ms / 100 ms x 100% = 2.9%



GFSK



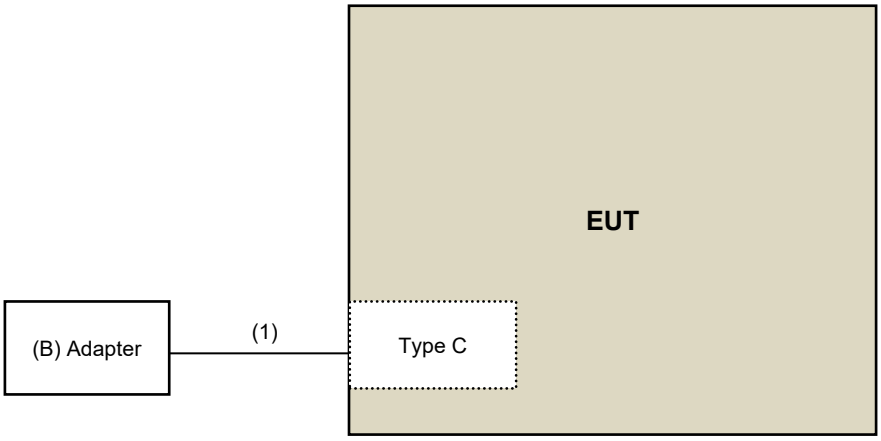
π/4-DQPSK

3.6 Test Program Used and Operation Descriptions

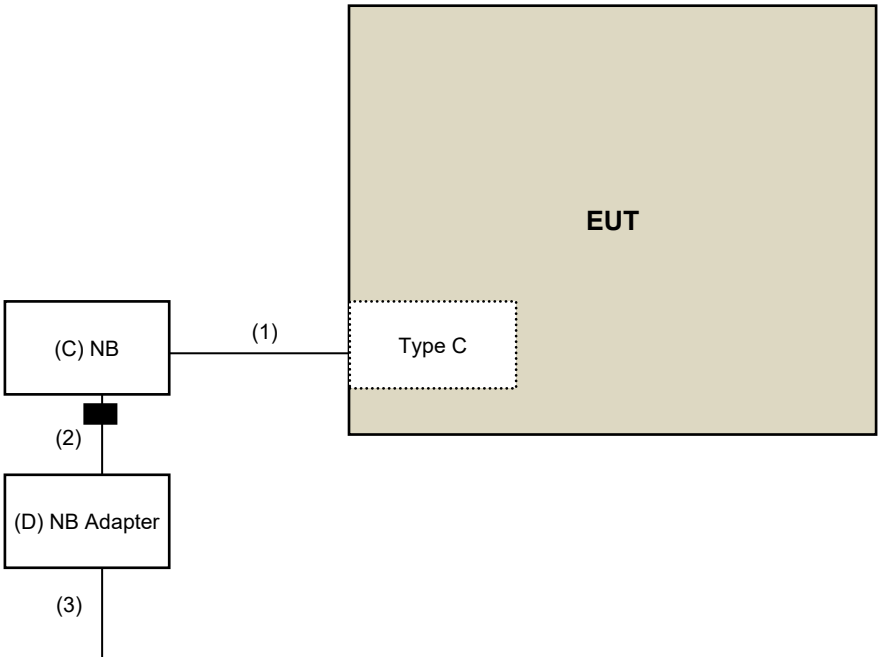
Controlling software (BT:ATS303X_FCC_V1.0_20230308,SRD:ATS303X_FCC_2_4_G_V3.0_20260320) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.7 Connection Diagram of EUT and Peripheral Devices

Mode A



Mode B



3.8 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	NB Adapter	Dell	LA65NS2-01	N/A	N/A	Provided by Lab
B	Adapter	Belkin	WCB007dq	N/A	N/A	Provided by Lab
C	NB	Dell	P90F	N/A	N/A	Provided by Lab

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	Type C - USB A cable	1	1.8	Y	0	Supplied by applicant
2	NB Adapter DC cable	1	1.9	N	1	Provided by Lab
3	NB Adapter AC cable	1	0.8	N	0	Provided by Lab

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 RF Output Power

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Fixed Attenuator Woken	00800A1K01A-20	00800A1K01A-20-02	2025/5/23	2026/5/22
Pulse Power Sensor Anritsu	MA2411B	1339443	2025/5/28	2026/5/27
RF Power Meter Anritsu	ML2495A	1529002	2025/6/3	2026/6/2
Wideband Power Sensor Keysight	N1923A	MY58020002	2026/1/26	2027/1/25

Notes:

1. The test was performed in LK - Oven (Linkou).
2. Tested Date: 2026/3/25

4.2 Number of Hopping Frequency Used

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	101544	2025/7/1	2026/6/30
Software	BVADT_RF_Test_Software V7.6.5.4	N/A	N/A	N/A

Notes:

1. The test was performed in LK - Oven (Linkou).
2. Tested Date: 2026/3/25

4.3 Dwell Time on Each Channel

Refer to section 4.2 to get the tested date and information of the instruments.

4.4 Hopping Channel Separation

Refer to section 4.2 to get the tested date and information of the instruments.

4.5 20 dB Bandwidth

Refer to section 4.2 to get the tested date and information of the instruments.

4.6 Conducted Out of Band Emissions

Refer to section 4.2 to get the tested date and information of the instruments.

4.7 AC Power Conducted Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
50 ohm terminal resistance LYNICS	0900510	E1-01-305	2026/2/12	2027/2/11
		E1-01-306	2025/4/16	2026/4/15
DC LISN R&S	ESH3-Z6	100219	2025/7/10	2026/7/9
		844950/018	2025/7/10	2026/7/9
Diode Pulse Limiter Schwarzbeck	VTSD 9561 F-N	01631	2025/5/2	2026/5/1
EMI Test Receiver R&S	EPL 1000	101064	2025/4/17	2026/4/16
		101065	2025/4/22	2026/4/21
	ESR3	102412	2025/12/23	2026/12/22
High Pass Filter EMCI	150HPF-ME	114005	2025/5/2	2026/5/1
		114006	2025/5/2	2026/5/1
	150HPF-MF	113009	2025/5/2	2026/5/1
High Voltage Probe Schwarzbeck	TK9420	00982	2025/12/3	2026/12/2
LISN R&S	ENV216	101195	2025/7/18	2026/7/17
		101196	2026/3/3	2027/3/2
		101197	2025/7/4	2026/7/3
LISN Schwarzbeck	NNLK 8121	8121-731	2025/6/10	2026/6/9
		8121-00759	2025/8/12	2026/8/11
		8121-808	2025/4/23	2026/4/22
	NNLK 8129	00624	2025/10/9	2026/10/8
		8129229	2025/10/14	2026/10/13
	NSLK 8128	8128-244	2025/11/11	2026/11/10
Passive Voltage Probe R&S	ESH2-Z3	100073	2025/5/26	2026/5/25
RF Coaxial Cable PEWC	5D-FB	Cable-CO5-01	2026/1/16	2027/1/15
Software BVADT	Cond_V7.4.1.0	N/A	N/A	N/A

Notes:

1. The test was performed in Linkou Conduction 5.
2. Tested Date: 2026/3/26

4.8 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Bi_Log Antenna Schwarzbeck	VULB 9168	137	2025/9/17	2026/9/16
Coupling / Decoupling Network Schwarzbeck	CDNE-M2	00097	2025/5/28	2026/5/27
	CDNE-M3	00091	2026/3/17	2027/3/16
MXE EMI Receiver Agilent	N9038A	MY51210114	2026/2/3	2027/2/2
Preamplifier Agilent	8447D	2944A11064	2026/2/13	2027/2/12
Radiating Loop Antenna TESEQ	RLA 6120-20	80002	2025/7/29	2026/7/28
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_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 LK - 966 Chamber 6 (CH 6) (Linkou).
2. Tested Date: 2026/3/26

4.9 Unwanted 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	2025/11/9	2026/11/8
Horn Antenna ETS-Lindgren	3117-PA	00215857	2025/11/9	2026/11/8
Horn Antenna Schwarzbeck	BBHA 9170	212	2025/10/28	2026/10/27
		BBHA9170190	2025/11/9	2026/11/8
MXE EMI Receiver Agilent	N9038A	MY51210114	2026/2/3	2027/2/2
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	2026/2/13	2027/2/12
	EMC184045B	980175	2025/8/23	2026/8/22
		980235	2026/2/13	2027/2/12
Preamplifier HP	8449B	3008A01201	2026/2/13	2027/2/12
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	2025/9/19	2026/9/18
		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 LK - 966 Chamber 6 (CH 6) (Linkou).
2. Tested Date: 2026/3/24 ~ 2026/3/25

5 Limits of Test Items

5.1 RF Output Power

The Maximum Output Power Measurement is 125 mW (21 dBm).

5.2 Number of Hopping Frequency Used

At least 15 channels frequencies, and should be equally spaced.

5.3 Dwell Time on Each Channel

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

5.4 Hopping Channel Separation

At least 25 kHz or two-third of 20 dB hopping channel bandwidth (whichever is greater).

5.5 20 dB Bandwidth

Maximum bandwidth is not specified.

5.6 Conducted Out of Band Emissions

Below 20 dB of the highest emission level of operating band (in 100 kHz Resolution Bandwidth).

5.7 AC Power Conducted Emissions

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Notes:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

5.8 Unwanted Emissions below 1 GHz

Radiated emissions up to 1 GHz 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

Notes:

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

5.9 Unwanted Emissions above 1 GHz

Radiated emissions above 1 GHz 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)
Above 960	500	3

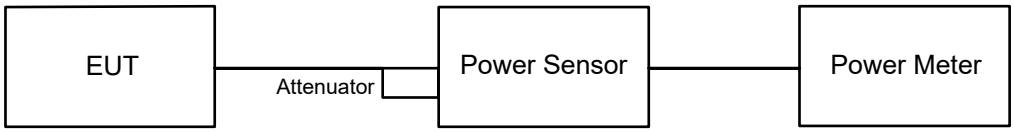
Notes:

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.

6 Test Arrangements

6.1 RF Output Power

6.1.1 Test Setup



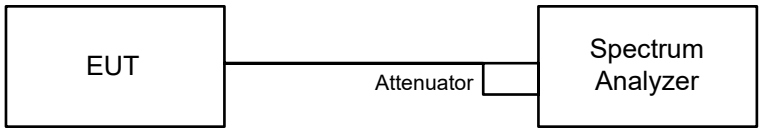
6.1.2 Test Procedure

Peak Power:
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.
The power meter video bandwidth is greater than or equal to the DTS bandwidth and use a fast responding diode detector.

Average Power:
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.

6.2 Number of Hopping Frequency Used

6.2.1 Test Setup



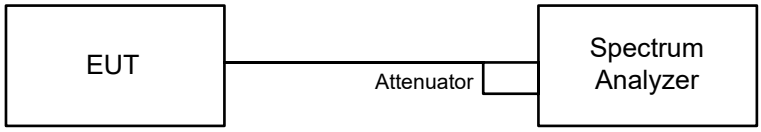
6.2.2 Test Procedure

a. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
b. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
c. Span: The frequency band of operation. Depending on the number of channels the device supports, it could be necessary to divide the frequency range of operation across multiple spans, to allow the individual channels to be clearly seen.
d. RBW: To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.
e. Video (or average) bandwidth (VBW) ≥ RBW.
f. Sweep: No faster than coupled (auto) time.
g. Detector function: Peak.
h. Trace: Max-hold.
i. Allow the trace to stabilize

Note: Where the device shares the same channel plan (carrier frequencies and number of channels) across multiple data rates or modulation schemes then the number of channels need only be measured for one of those modulation schemes or data rates.

6.3 Dwell Time on Each Channel

6.3.1 Test Setup



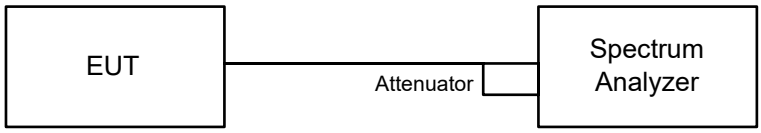
6.3.2 Test Procedure

a. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
b. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
c. Span: Zero span, centered on a hopping channel.
d. RBW shall be ≤ channel spacing and where possible RBW should be set >> 1 / T, where T is the expected transmission time per hop.
e. Sweep time: Set so that the start of the first transmission and end of the last transmission for the hop are clearly captured. Setting the sweep time to be slightly longer than the hopping period per channel (hopping period = 1/hopping rate) should achieve this.
f. Use a video trigger, where possible with a trigger delay, so that the start of the transmission is clearly observed. The trigger level might need adjustment to reduce the chance of triggering when the system hops on an adjacent channel.
g. Detector function: Peak.
h. Trace: Clear-write, single sweep.
i. Place markers at the start of the first transmission on the channel and at the end of the last transmission. The dwell time per hop is the time between these two markers.

Note: Where the device shares the same hopping algorithms (dwell time, channel selection) across multiple data rates or modulation schemes then the time of occupancy need only be measured for one of those modulation schemes or data rates. If the dwell time value varies with different modes of operation (data rate, modulation format, number of hopping channels, etc.), then repeat this test for each variation in dwell time.

6.4 Hopping Channel Separation

6.4.1 Test Setup



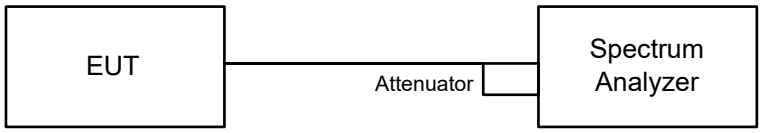
6.4.2 Test Procedure

a. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
b. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range.
c. Span: Wide enough to capture the peaks of two adjacent channels.
d. RBW: Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel.
e. Video (or average) bandwidth (VBW) ≥ RBW.
f. Sweep: No faster than coupled (auto) time.
g. Detector function: Peak.
h. Trace: Max-hold.
i. Allow the trace to stabilize.

Note: Where the device shares the same channel plan (carrier frequencies and number of channels) across multiple data rates or modulation schemes then the carrier separation need only be measured for one of those modulation schemes or data rates.

6.5 20 dB Bandwidth

6.5.1 Test Setup



6.5.2 Test Procedure

a. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

b. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the EMI receiver or spectrum analyzer shall be between two times and five times the OBW.

c. The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be at least three times RBW, unless otherwise specified by the applicable requirement.

d. Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level.

e. Steps a) through c) might require iteration to adjust within the specified tolerances.

f. The dynamic range of the instrument at the selected RBW shall be more than 10 dB below the target “−xx dB down” requirement; that is, if the requirement calls for measuring the −20 dB OBW, the instrument noise floor at the selected RBW shall be at least 30 dB below the reference value.

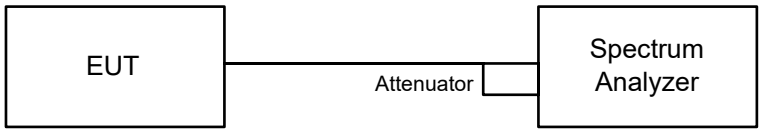
g. Set detection mode to peak and trace mode to max-hold.

h. Determine the reference value: Set the EUT to transmit an unmodulated carrier or modulated signal, as applicable. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value).

i. Determine the “−xx dB down amplitude” using [(reference value) - xx]. Alternatively, this calculation may be made by using the marker-delta function of the instrument.

6.6 Conducted Out of Band Emissions

6.6.1 Test Setup



6.6.2 Test Procedure

MEASUREMENT PROCEDURE REF

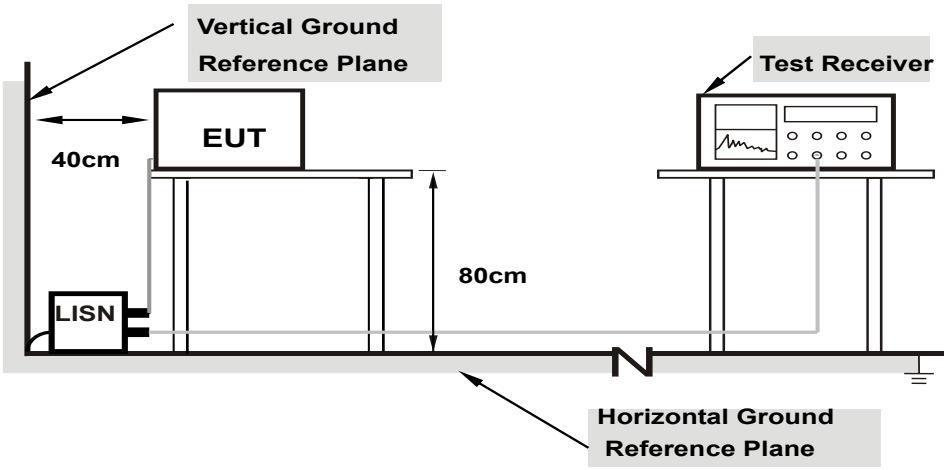
a. Set instrument center frequency to DTS channel center frequency.
b. Set the span to ≥ 1.5 times the DTS bandwidth.
c. Set the RBW = 100 kHz.
d. Set the VBW ≥ 300 kHz.
e. Detector = peak.
f. Sweep time = No faster than coupled (auto) time.
g. Trace mode = max hold.
h. Allow trace to fully stabilize.
i. Use the peak marker function to determine the maximum PSD level.

MEASUREMENT PROCEDURE OOBE

a. Set the center frequency and span to encompass frequency range to be measured. Note that the frequency range might need to be divided into multiple frequency ranges to retain frequency resolution.
b. Set RBW = 100 kHz.
c. Set VBW ≥ 300 kHz.
d. Detector = peak.
e. Sweep = No faster than coupled (auto) time.
f. Trace Mode = max hold.
g. Allow trace to fully stabilize.
h. Use the peak marker function to determine the maximum amplitude level.

6.7 AC Power Conducted Emissions

6.7.1 Test Setup



Note: 1.Support units were connected to second LISN.

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

6.7.2 Test Procedure

a. Exploratory ac power-line conducted emission measurements: The EUT shall be operated on the mid channel and in the mode with highest output power unless the fundamental operates in the AC power-line emission test range then the EUT shall be operated in the range of typical modes of operation.

b. The EUT was placed on a 0.8 meter to the top of table and placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50 uH of coupling impedance for the measuring instrument.

c. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

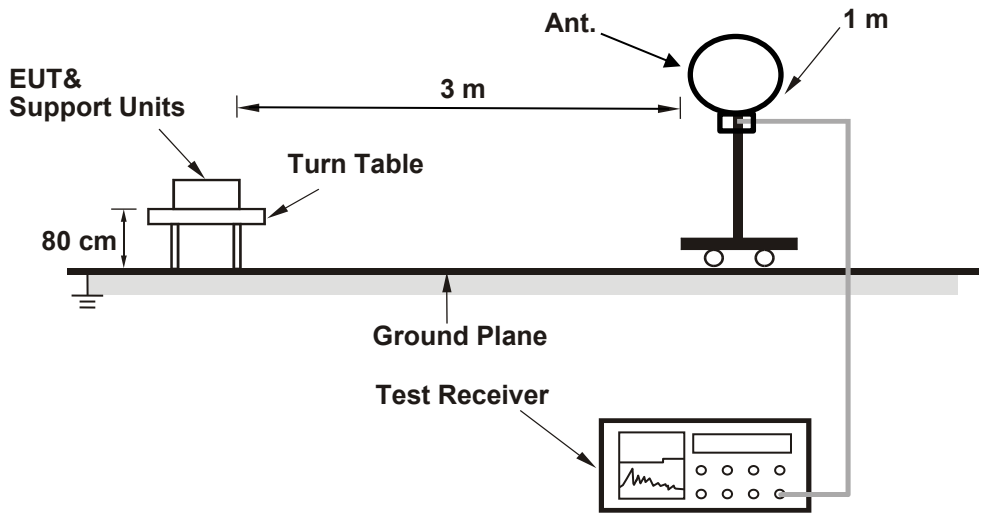
d. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

Note: The resolution bandwidth and video bandwidth of test receiver is 9 kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15 MHz-30 MHz.

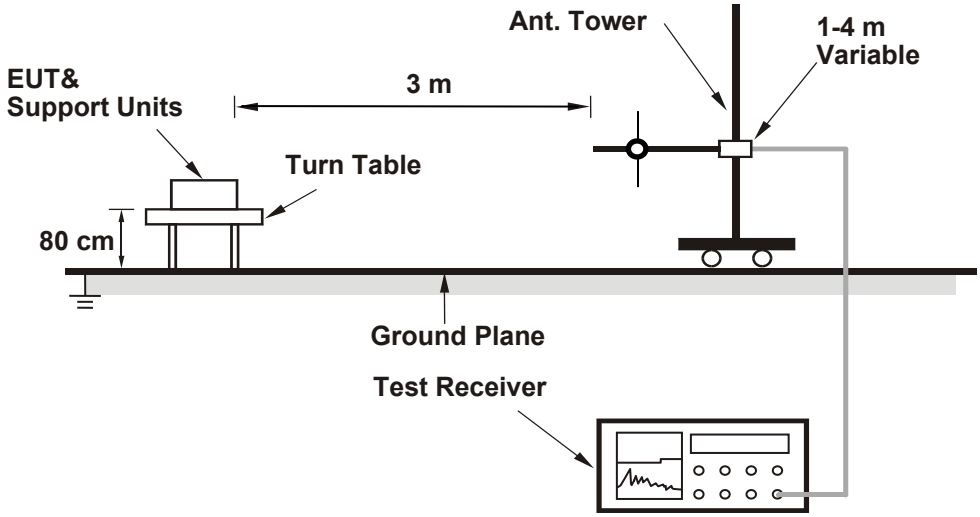
6.8 Unwanted Emissions below 1 GHz

6.8.1 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).

6.8.2 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 (however, peak detector measurements may be used to determine compliance with QP requirements), 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.

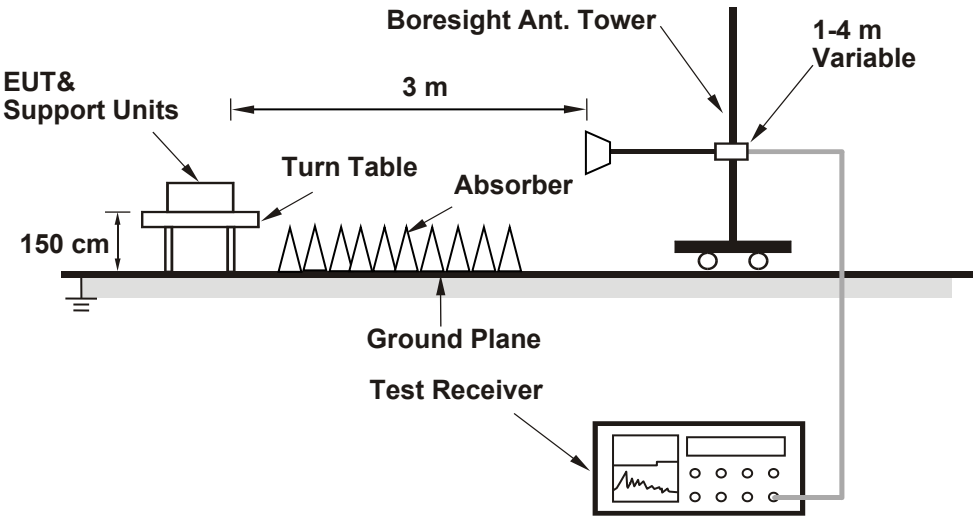
e. The test-receiver system was set to Quasi-peak(QP) detect function, Average(AV) detect function, Peak(PK) detect function and specified bandwidth with maximum hold mode when the test frequencies less than or equal to 1 GHz.

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 (however, peak detector measurements may be used to determine compliance with QP requirements).
2. All modes of operation were investigated and the worst-case emissions are reported.

6.9 Unwanted Emissions above 1 GHz

6.9.1 Test Setup



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

6.9.2 Test Procedure

a. 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.

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 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:

1. 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.
2. The maximum dwell time per 1 MHz is determined as follows:
   Maximum dwell time per 1 MHz = dwell time per 100 ms per channel × (channel separation correction + overlapping channel correction) where:
   i. Channel separation correction = [1 / channel separation (MHz)] for channel separation < 1 MHz, and = 1 for channel separation ≥ 1 MHz, as determined using the procedures ANSI C63.10 of 7.8.2. If the average measurements are performed on the Nth harmonic, the channel separation value is N times the separation at the fundamental frequency.
   ii. Overlapping channel correction = 0 when the 20 dB channel bandwidth < channel separation and = 1 for when the 20 dB channel bandwidth > channel separation.
3. The average value may be determined as follows:
   From the peak value of the emission: The measured peak value in dBuV/m is corrected by 20log(maximum dwell time in 100 ms / 100).
4. All modes of operation were investigated and the worst-case emissions are reported.

7 Test Results of Test Item

7.1 RF Output Power

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 76% RH	Tested By:	Dalen Dai

For Peak Power

GFSK

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
0	2402	7.261	8.61	21	Pass
39	2441	7.178	8.56	21	Pass
78	2480	7.551	8.78	21	Pass

Note: The antenna gain is 0.5 dBi <= 6 dBi, so the output power limit shall not be reduced.

π/4-DQPSK

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
0	2402	7.211	8.58	21	Pass
39	2441	7.129	8.53	21	Pass
78	2480	7.499	8.75	21	Pass

Note: The antenna gain is 0.5 dBi <= 6 dBi, so the output power limit shall not be reduced.

For Average Power

GFSK

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	6.934	8.41
39	2441	6.839	8.35
78	2480	7.063	8.49

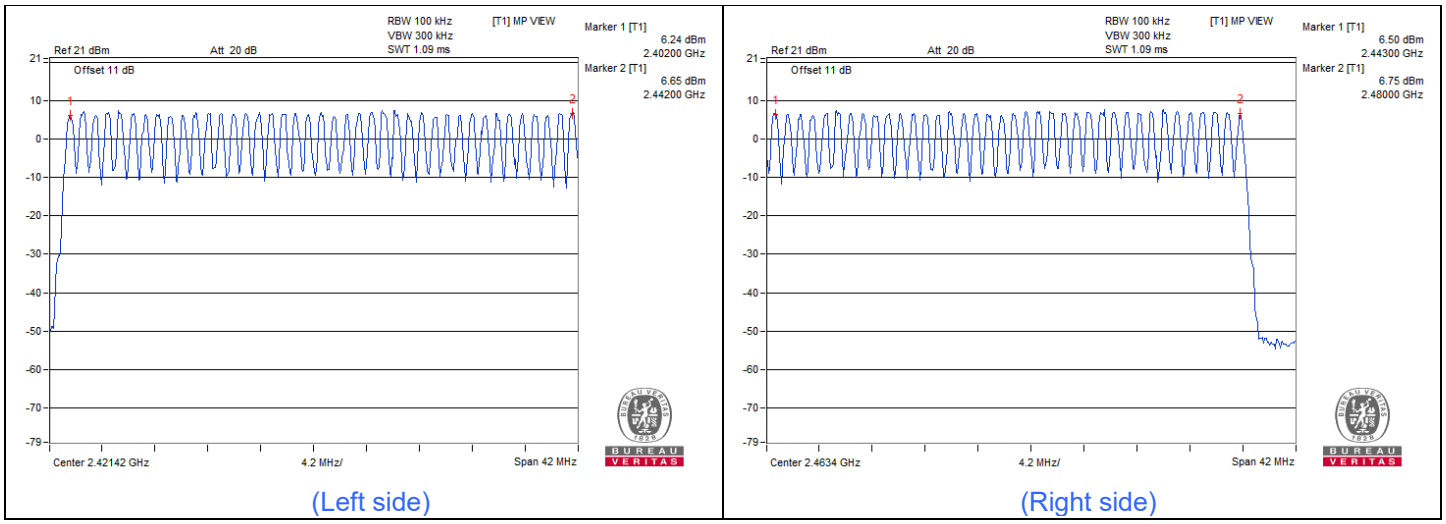
π/4-DQPSK

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	6.966	8.43
39	2441	6.714	8.27
78	2480	7.047	8.48

7.2 Number of Hopping Frequency Used

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 76% RH	Tested By:	Dalen Dai

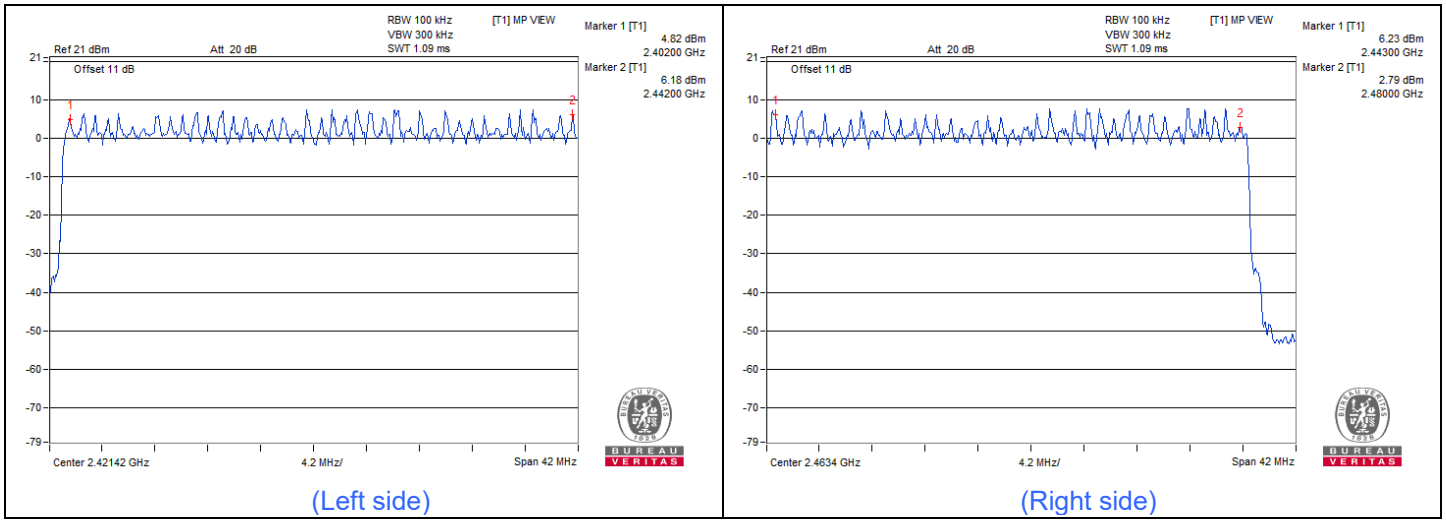
GFSK



(Left side) (Right side)

Note: There are 79 hopping frequencies in the hopping mode. On the plots, it shows that the hopping frequencies are equally spaced.

π/4-DQPSK



(Left side) (Right side)

Note: There are 79 hopping frequencies in the hopping mode. On the plots, it shows that the hopping frequencies are equally spaced.

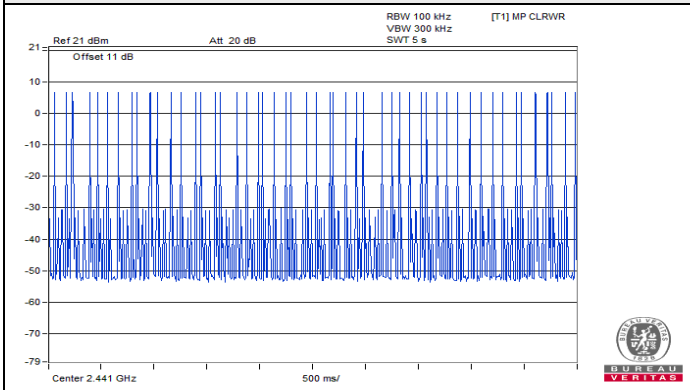
7.3 Dwell Time on Each Channel

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 76% RH	Tested By:	Dalen Dai

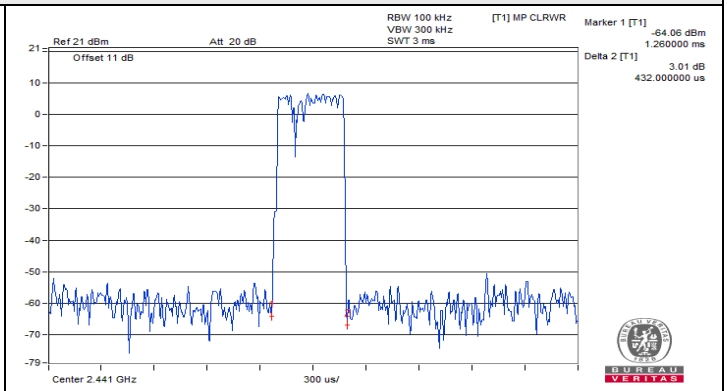
GFSK

Mode	Number of transmission in 31.6 sec	Length of transmission time (msec)	Dwell Time (msec)	Limit (msec)	Test Result
DH1	51 (times / 5 sec) * 6.32 = 323 times	0.432	139.54	400	Pass
DH3	25 (times / 5 sec) * 6.32 = 158 times	1.75	276.5	400	Pass
DH5	17 (times / 5 sec) * 6.32 = 108 times	3.008	324.86	400	Pass

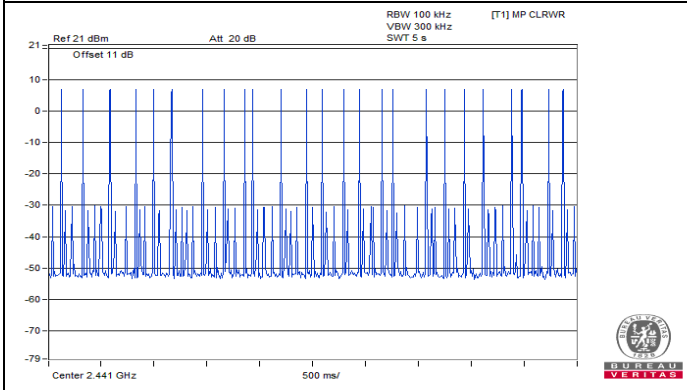
Spectrum plots of Dwell Time



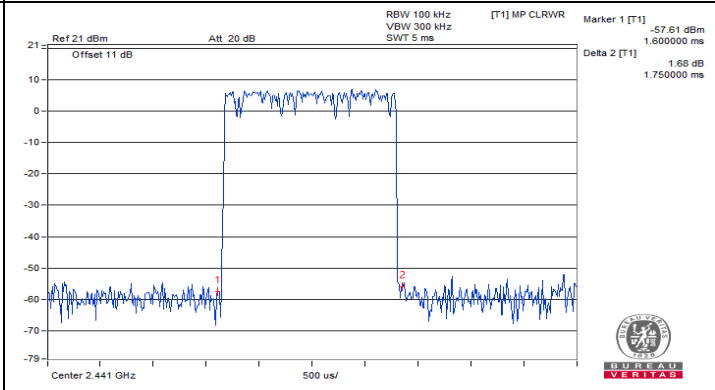
GFSK DH1



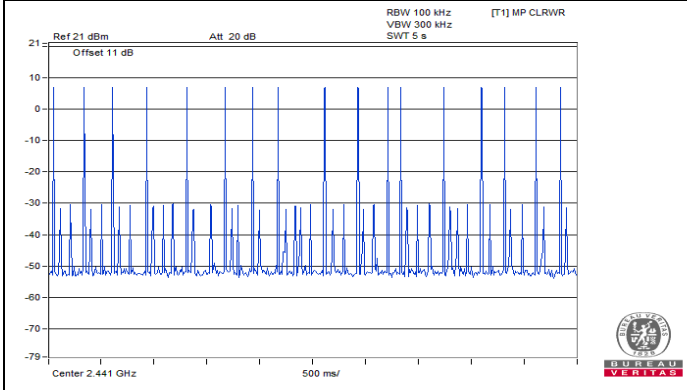
GFSK DH1



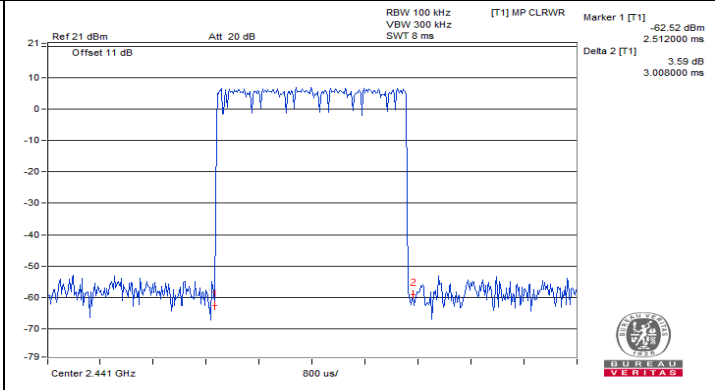
GFSK DH3



GFSK DH3



GFSK DH5

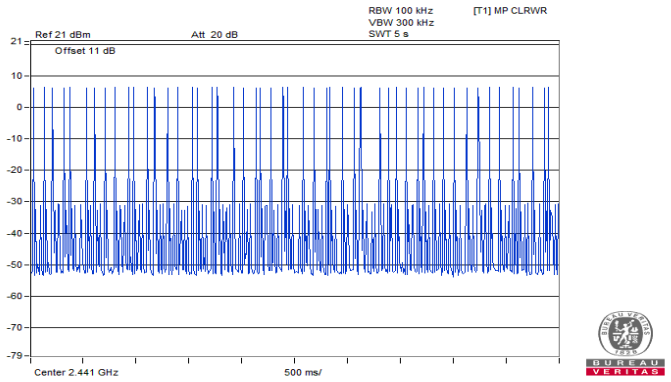


GFSK DH5

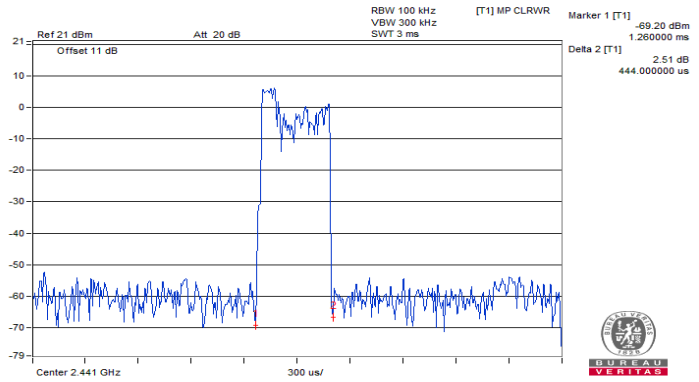
π/4-DQPSK

Mode	Number of transmission in 31.6 sec	Length of transmission time (msec)	Dwell Time (msec)	Limit (msec)	Test Result
2DH1	51 (times / 5 sec) * 6.32 = 323 times	0.444	143.41	400	Pass
2DH3	25 (times / 5 sec) * 6.32 = 158 times	1.73	273.34	400	Pass
2DH5	16 (times / 5 sec) * 6.32 = 102 times	2.96	301.92	400	Pass

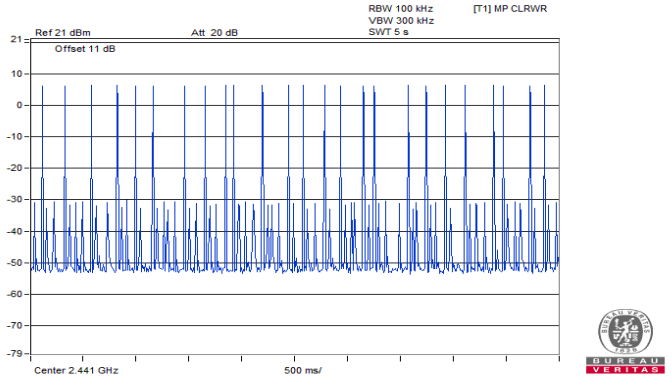
Spectrum plots of Dwell Time



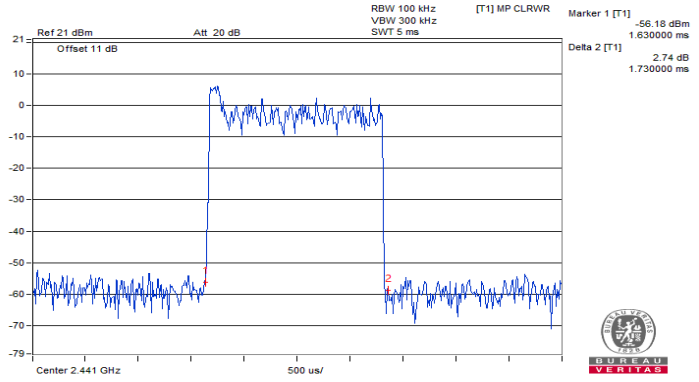
π/4-DQPSK 2DH1



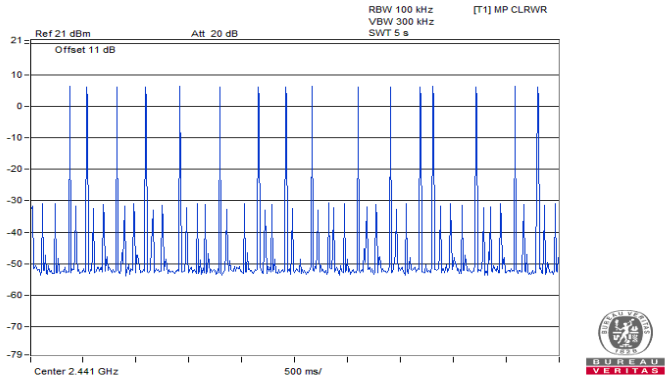
π/4-DQPSK 2DH1



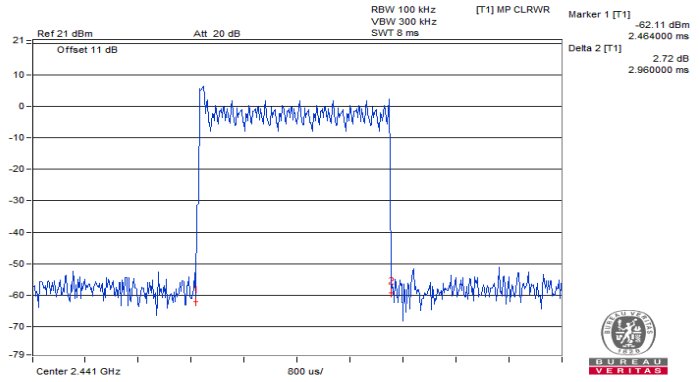
π/4-DQPSK 2DH3



π/4-DQPSK 2DH3



π/4-DQPSK 2DH5



π/4-DQPSK 2DH5

7.4 Hopping Channel Separation

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 76% RH	Tested By:	Dalen Dai

GFSK

Channel	Frequency (MHz)	Hopping Channel Separation (MHz)	Minimum Limit (MHz)	Test Result
0	2402	1.00	0.63	Pass
39	2441	1.00	0.63	Pass
78	2480	1.01	0.63	Pass

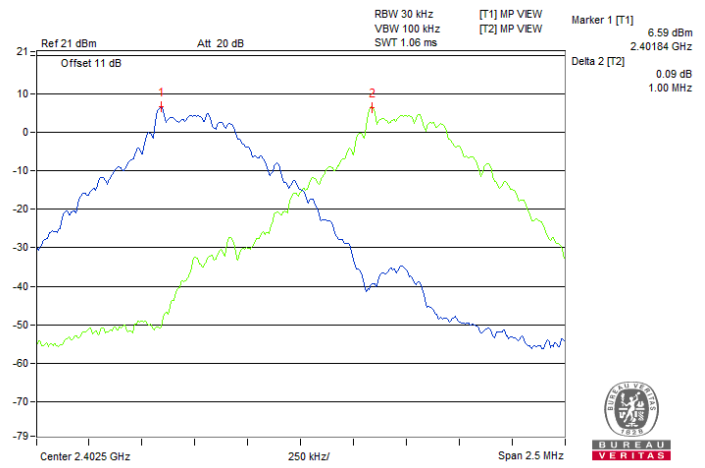
Note: The minimum limit is two-third 20dB bandwidth.

π/4-DQPSK

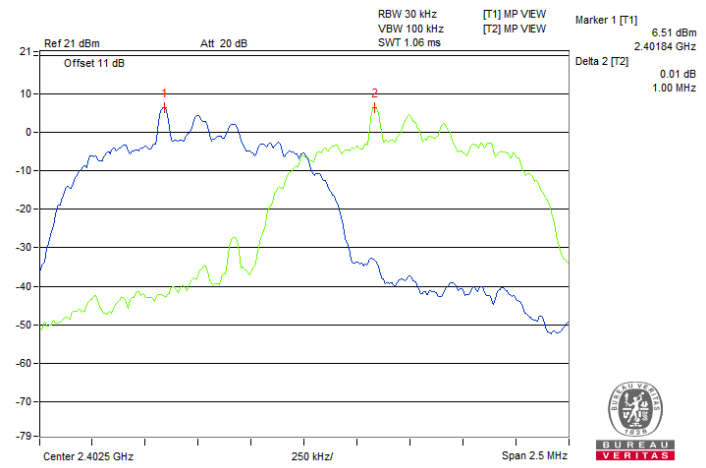
Channel	Frequency (MHz)	Hopping Channel Separation (MHz)	Minimum Limit (MHz)	Test Result
0	2402	1.00	0.8	Pass
39	2441	1.00	0.8	Pass
78	2480	1.01	0.81	Pass

Note: The minimum limit is two-third 20dB bandwidth.

Spectrum Plot of Minimum Value



GFSK: CH 0



π/4-DQPSK: CH 0

7.5 20 dB Bandwidth

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 76% RH	Tested By:	Dalen Dai

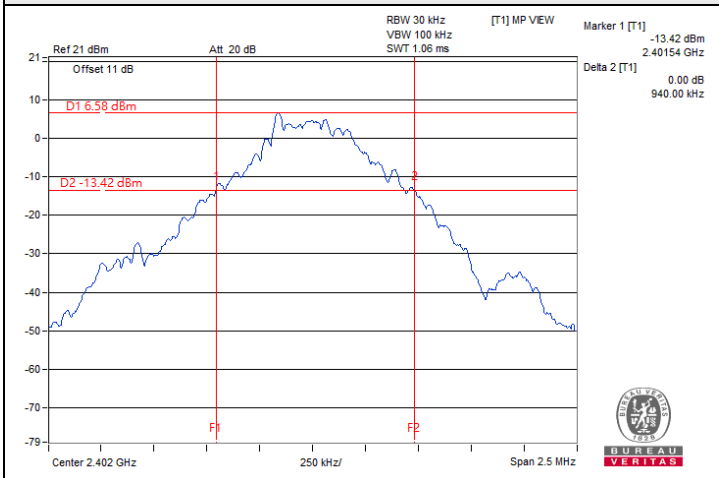
GFSK

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
0	2402	0.94
39	2441	0.94
78	2480	0.94

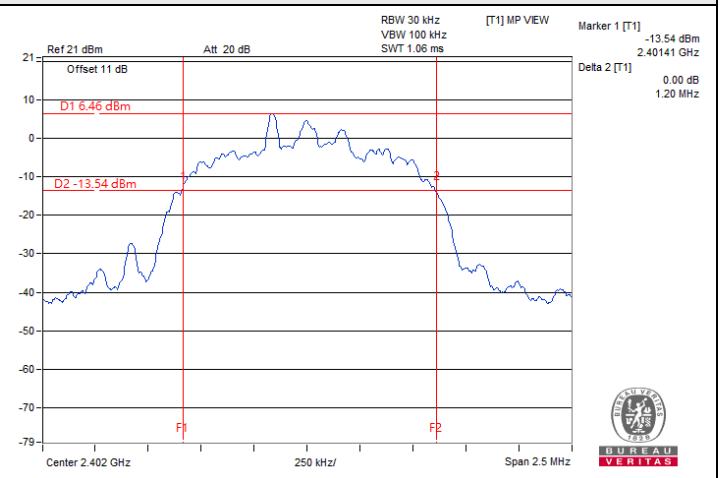
π/4-DQPSK

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
0	2402	1.2
39	2441	1.2
78	2480	1.21

Spectrum Plot of Minimum Value



GFSK: CH 0

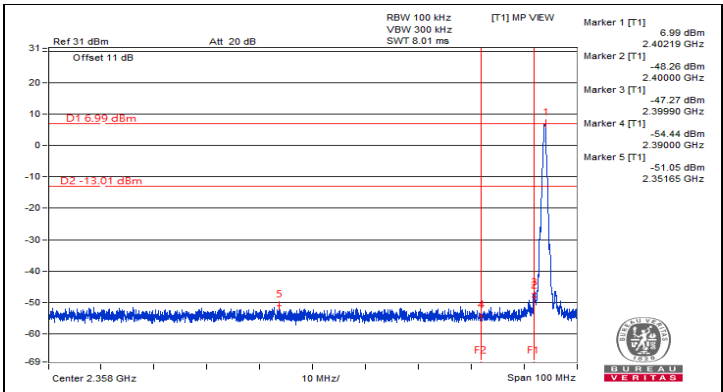


π/4-DQPSK: CH 0

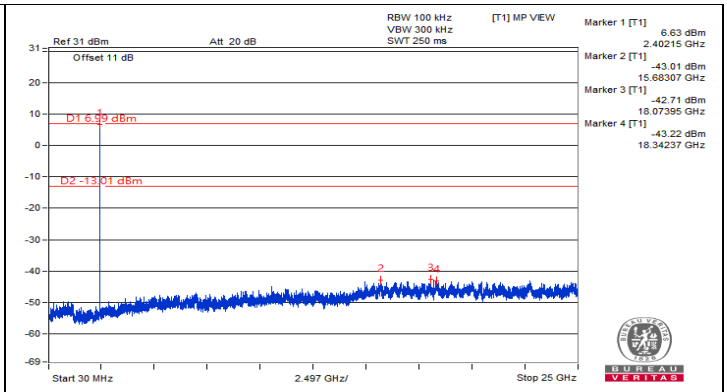
7.6 Conducted Out of Band Emissions

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 76% RH	Tested By:	Dalen Dai

GFSK



Hopping disabled (Low Channel)



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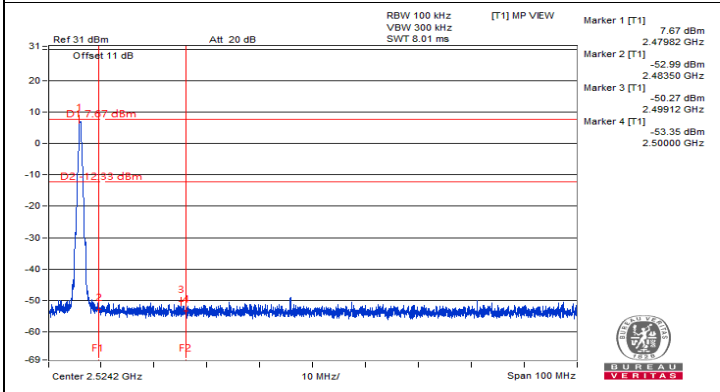

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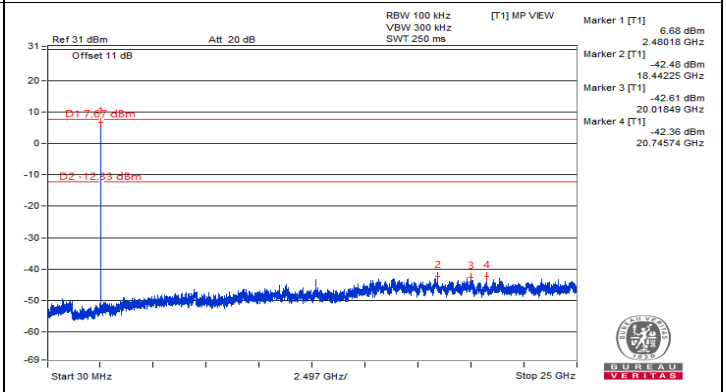

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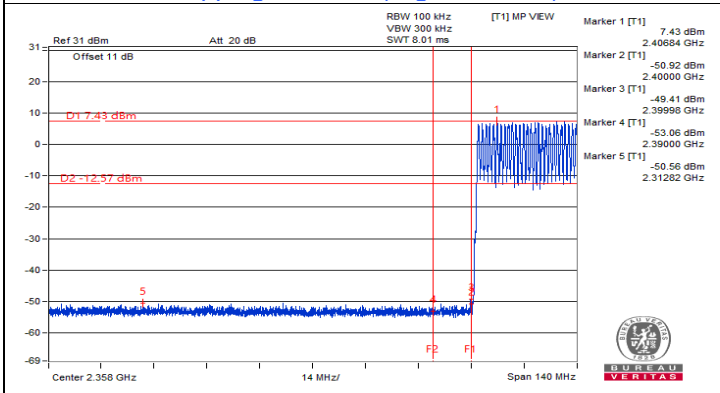

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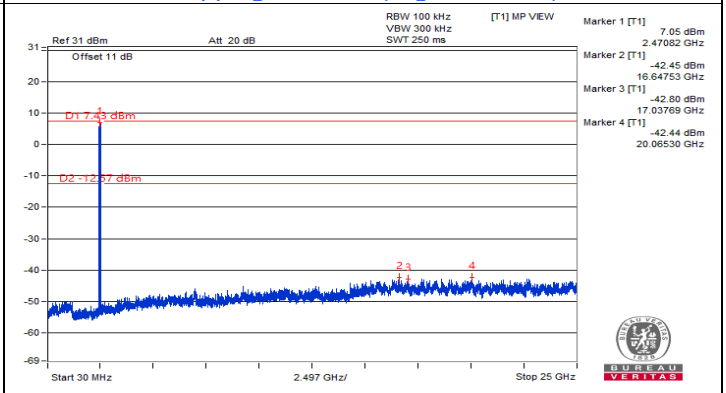

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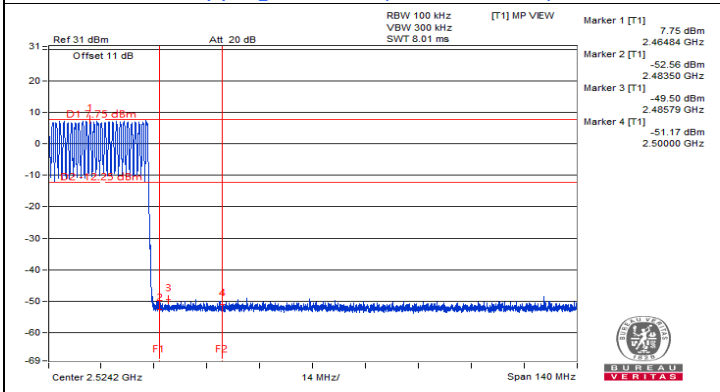

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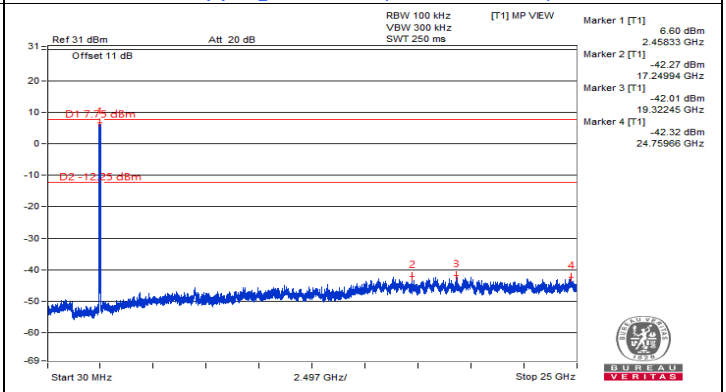
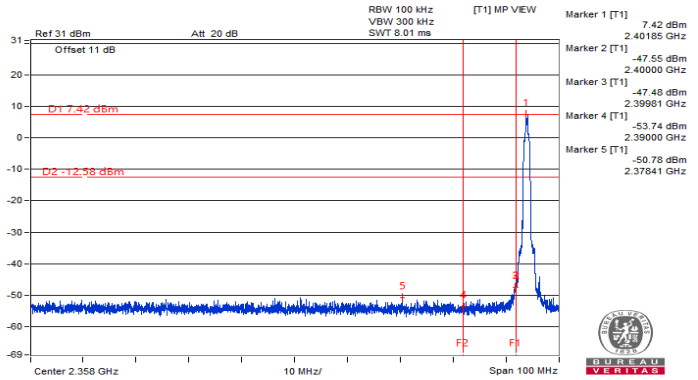


Hopping enabled (High Channel)

π/4-DQPSK



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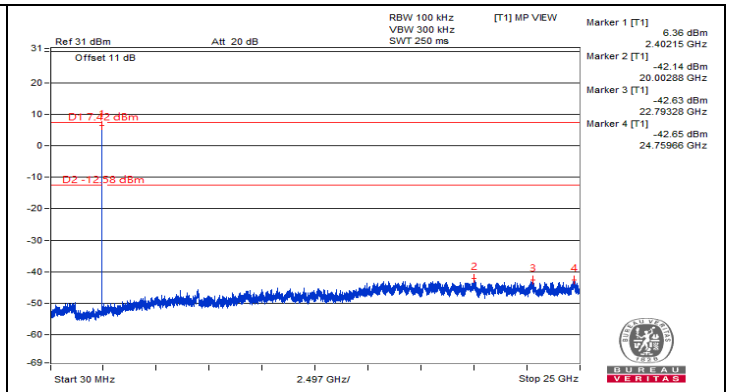

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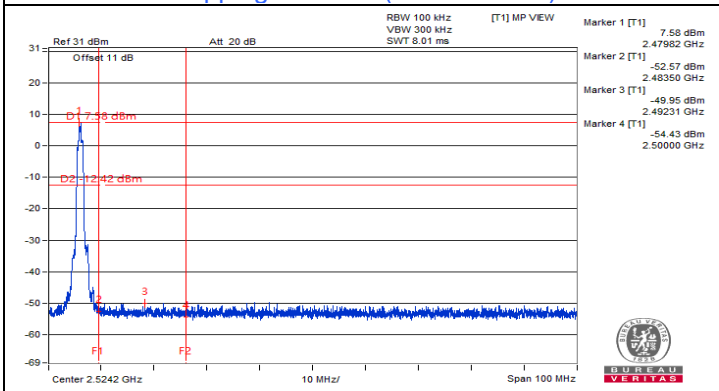

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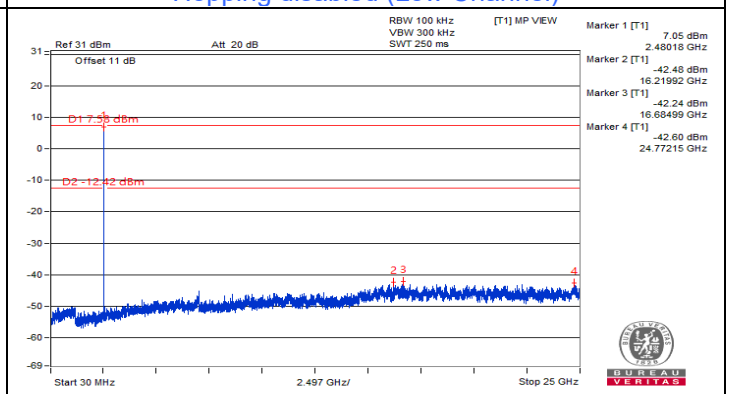

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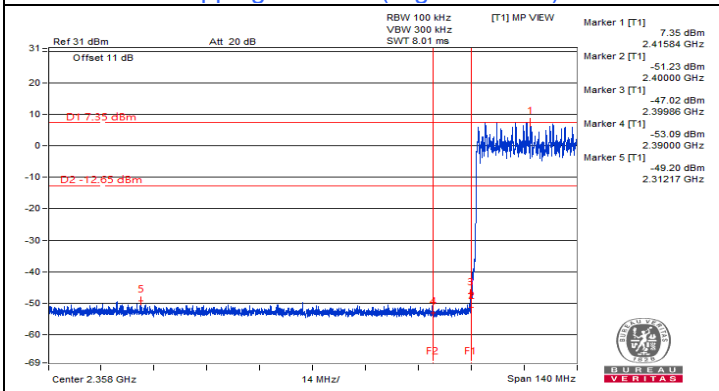

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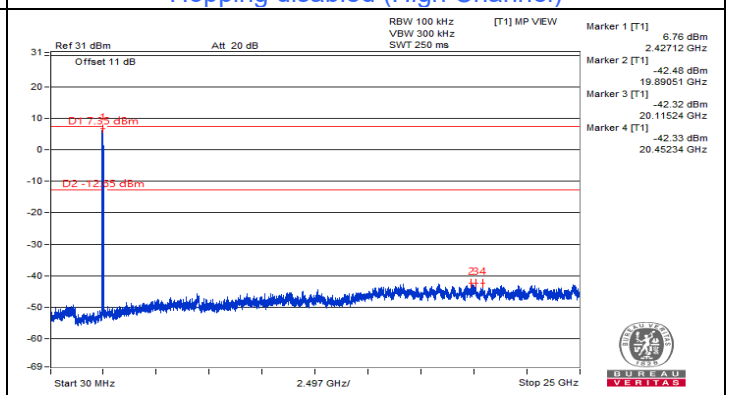

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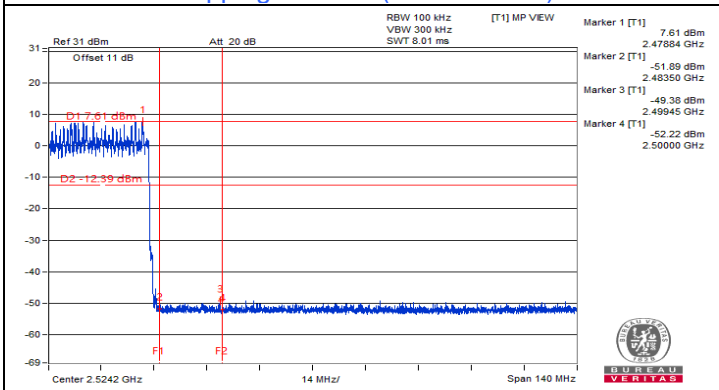

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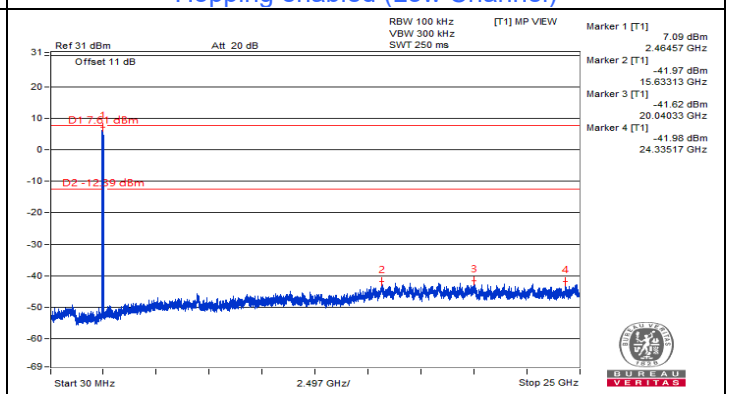


Hopping enabled (High Channel)

7.7 AC Power Conducted Emissions

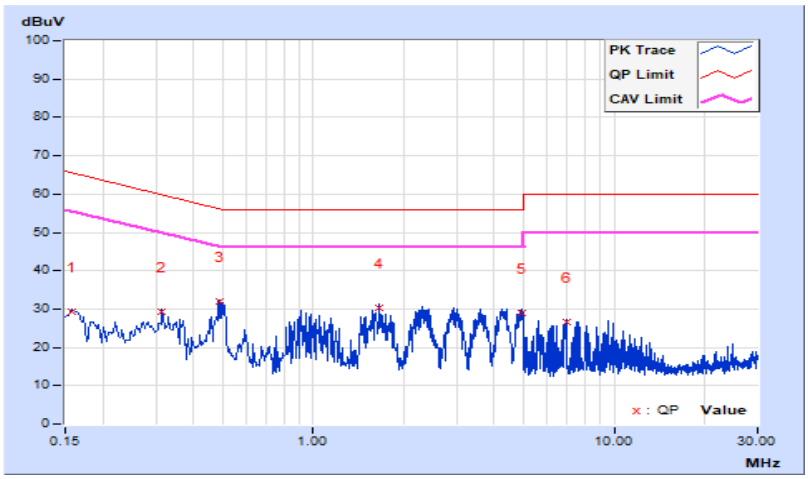
Mode A

RF Mode	GFSK	Channel	CH 78：2480 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75% RH
Tested By	Jed Wu		

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15760	10.33	18.80	8.03	29.13	18.36	65.59	55.59	-36.46	-37.23
2	0.31426	10.37	19.08	10.68	29.45	21.05	59.86	49.86	-30.41	-28.81
3	0.48635	10.42	21.60	6.95	32.02	17.37	56.23	46.23	-24.21	-28.86
4	1.66548	10.56	19.87	7.29	30.43	17.85	56.00	46.00	-25.57	-28.15
5	4.94681	10.76	18.31	5.95	29.07	16.71	56.00	46.00	-26.93	-29.29
6	6.94768	10.87	15.60	4.99	26.47	15.86	60.00	50.00	-33.53	-34.14

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

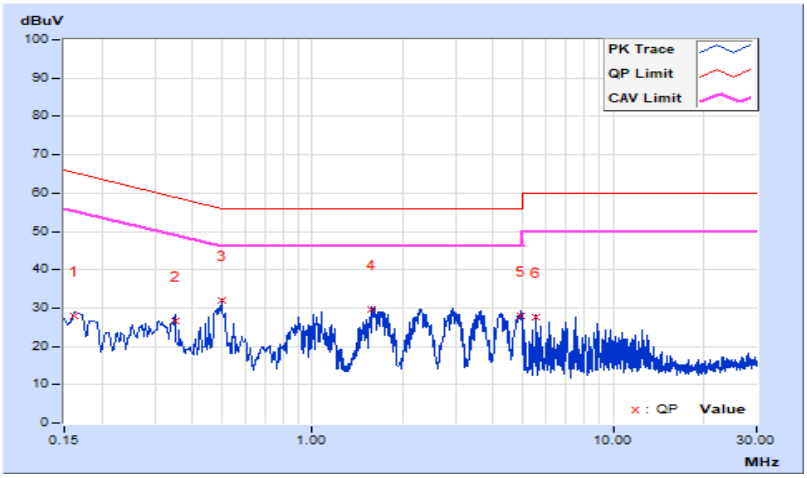


RF Mode	GFSK	Channel	CH 78：2480 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75% RH
Tested By	Jed Wu		

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16173	10.42	17.66	7.66	28.08	18.08	65.37	55.37	-37.29	-37.29
2	0.34927	10.42	16.34	8.48	26.76	18.90	58.98	48.98	-32.22	-30.08
3	0.50000	10.43	21.61	5.55	32.04	15.98	56.00	46.00	-23.96	-30.02
4	1.58335	10.51	19.04	7.89	29.55	18.40	56.00	46.00	-26.45	-27.60
5	4.92334	10.75	17.26	5.77	28.01	16.52	56.00	46.00	-27.99	-29.48
6	5.53190	10.78	16.93	5.97	27.71	16.75	60.00	50.00	-32.29	-33.25

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



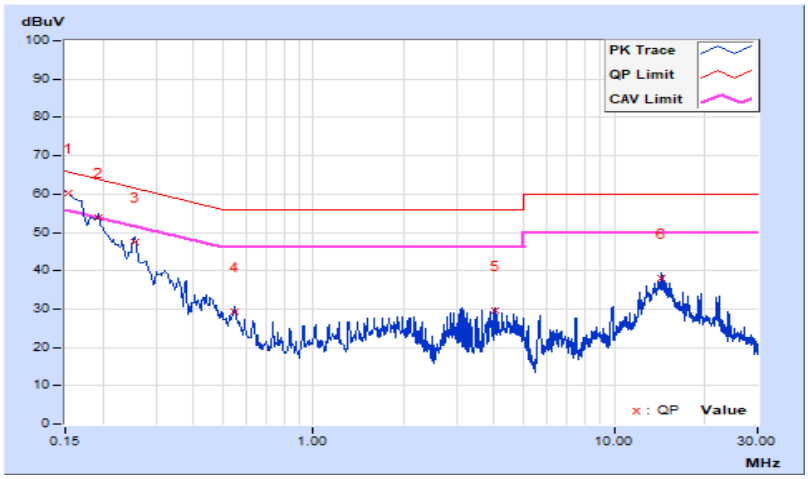
Mode B

Frequency Range	150 kHz ~ 30 MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	25 °C, 75% RH
Tested By	Jed Wu		

Phase Of Power : Line (L)										
No	**Frequency (MHz)**	**Correction Factor (dB)**	**Reading Value (dBuV)**		**Emission Level (dBuV)**		**Limit (dBuV)**		**Margin (dB)**	
			Q.P.	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**
1	**0.15391**	**10.33**	**49.95**	**30.20**	**60.28**	**40.53**	**65.79**	**55.79**	**-5.51**	**-15.26**
2	0.19302	10.32	43.70	21.58	54.02	31.90	63.91	53.91	-9.89	-22.01
3	0.25526	10.34	37.13	18.39	47.47	28.73	61.58	51.58	-14.11	-22.85
4	0.55084	10.43	19.02	9.56	29.45	19.99	56.00	46.00	-26.55	-26.01
5	4.03554	10.71	18.97	12.75	29.68	23.46	56.00	46.00	-26.32	-22.54
6	14.37076	11.14	26.98	20.75	38.12	31.89	60.00	50.00	-21.88	-18.11

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

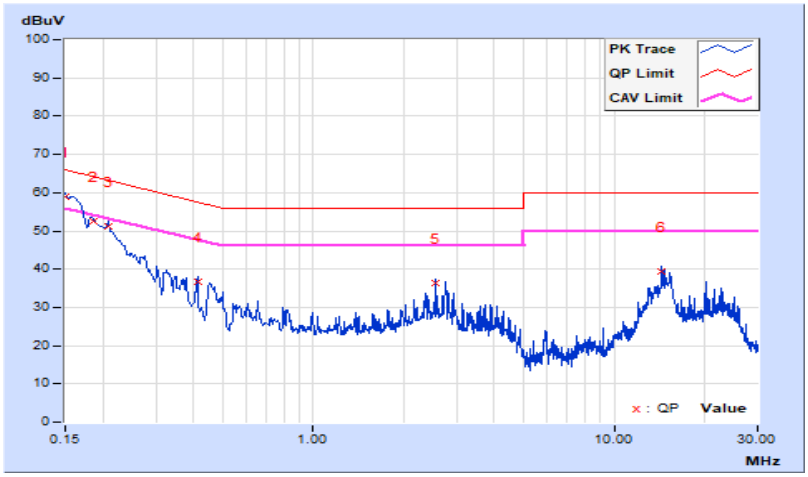


Frequency Range	150 kHz ~ 30 MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	25 °C, 75% RH
Tested By	Jed Wu		

Phase Of Power : Neutral (N)										
No	**Frequency (MHz)**	**Correction Factor (dB)**	**Reading Value (dBuV)**		**Emission Level (dBuV)**		**Limit (dBuV)**		**Margin (dB)**	
			Q.P.	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**
1	0.15000	10.42	48.52	25.19	58.94	35.61	66.00	56.00	-7.06	-20.39
2	0.18520	10.41	41.95	25.79	52.36	36.20	64.25	54.25	-11.89	-18.05
3	0.20866	10.41	40.84	22.14	51.25	32.55	63.26	53.26	-12.01	-20.71
4	0.41204	10.43	26.32	12.82	36.75	23.25	57.61	47.61	-20.86	-24.36
5	2.54154	10.60	25.86	17.40	36.46	28.00	56.00	46.00	-19.54	-18.00
6	14.42942	11.16	28.12	21.76	39.28	32.92	60.00	50.00	-20.72	-17.08

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



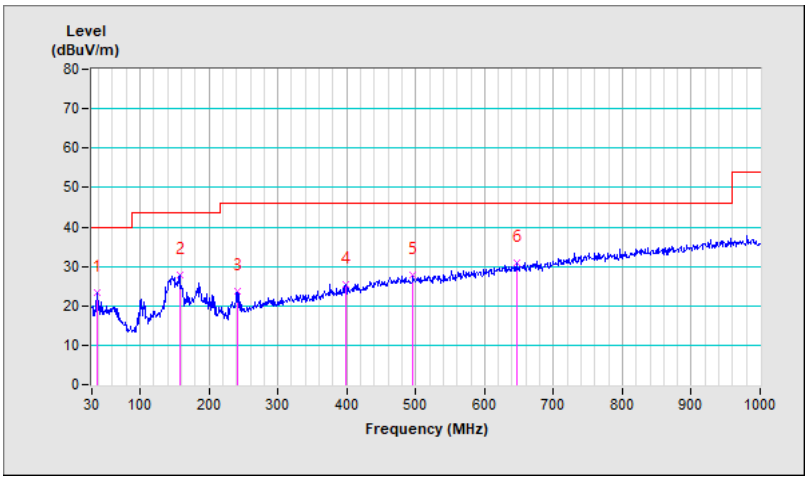
7.8 Unwanted Emissions below 1 GHz

RF Mode	GFSK	Channel	CH 78：2480 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	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	37.76	23.5 QP	40.0	-16.5	1.82 H	283	33.0	-9.5
2	157.07	27.9 QP	43.5	-15.6	1.47 H	281	35.7	-7.8
3	240.49	23.6 QP	46.0	-22.4	1.56 H	95	32.1	-8.5
4	398.60	25.5 QP	46.0	-20.5	1.69 H	173	29.2	-3.7
5	496.57	27.7 QP	46.0	-18.3	1.37 H	158	29.1	-1.4
6	645.95	31.0 QP	46.0	-15.0	1.18 H	291	28.7	2.3

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.

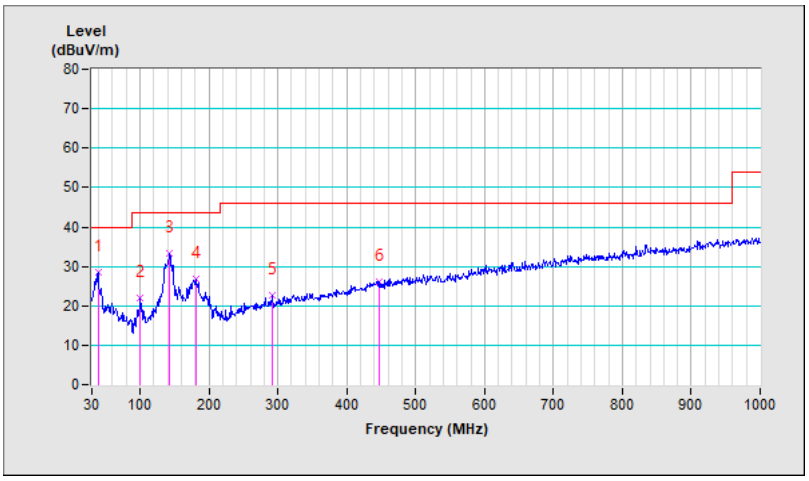


RF Mode	GFSK	Channel	CH 78：2480 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	25.2 °C, 74.3% RH
Tested By	Jed Wu		

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	38.73	28.5 QP	40.0	-11.5	1.64 V	227	38.1	-9.6
2	99.84	22.1 QP	43.5	-21.4	1.38 V	150	35.2	-13.1
3	**142.52**	**33.3 QP**	**43.5**	**-10.2**	**1.79 V**	**167**	**41.7**	**-8.4**
4	181.32	26.8 QP	43.5	-16.7	1.16 V	146	36.0	-9.2
5	290.93	22.8 QP	46.0	-23.2	1.02 V	29	28.8	-6.0
6	447.10	26.2 QP	46.0	-19.8	1.59 V	56	28.3	-2.1

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 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.



7.9 Unwanted Emissions above 1 GHz

RF Mode	GFSK	**Channel**	CH 0：2402 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	120 Vac, 60 Hz	**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	53.3 PK	74.0	-20.7	1.30 H	297	53.6	-0.3
2	2390.00	41.6 AV	54.0	-12.4	1.30 H	297	41.9	-0.3
3	*2402.00	102.6 PK			1.30 H	297	102.9	-0.3
4	*2402.00	71.8 AV			1.30 H	297	72.1	-0.3
5	4804.00	49.4 PK	74.0	-24.6	1.73 H	6	42.0	7.4
6	4804.00	18.6 AV	54.0	-35.4	1.73 H	6	11.2	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	2390.00	52.9 PK	74.0	-21.1	2.63 V	70	53.2	-0.3
2	2390.00	41.2 AV	54.0	-12.8	2.63 V	70	41.5	-0.3
3	*2402.00	96.4 PK			2.63 V	70	96.7	-0.3
4	*2402.00	65.6 AV			2.63 V	70	65.9	-0.3
5	4804.00	48.8 PK	74.0	-25.2	2.98 V	296	41.4	7.4
6	4804.00	18.0 AV	54.0	-36.0	2.98 V	296	10.6	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, the limit was restricted at the RF Output Power.
6. For fundamental and related emissions signals (e.g., harmonic frequencies), the average value of frequency is: Average = Peak value + 20 log(dwell time per 100 ms per channel * (channel separation correction + overlapping channel correction)) Where the duty cycle correction factor is calculated from following formula: 20 log(dwell time per 100 ms per channel × (channel separation correction + overlapping channel correction)) = 20 log(2.879ms * (1+0) / 100 ms) = -30.8dB

RF Mode	GFSK	Channel	CH 39：2441 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	120 Vac, 60 Hz	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	*2441.00	102.2 PK			1.45 H	311	102.2	0.0
2	*2441.00	71.4 AV			1.45 H	311	71.4	0.0
3	4882.00	49.0 PK	74.0	-25.0	1.88 H	20	41.2	7.8
4	4882.00	18.2 AV	54.0	-35.8	1.88 H	20	10.4	7.8
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	*2441.00	96.0 PK			2.78 V	84	96.0	0.0
2	*2441.00	65.2 AV			2.78 V	84	65.2	0.0
3	4882.00	48.4 PK	74.0	-25.6	3.11 V	310	40.6	7.8
4	4882.00	17.6 AV	54.0	-36.4	3.11 V	310	9.8	7.8

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.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. For fundamental and related emissions signals (e.g., harmonic frequencies), the average value of frequency is: Average = Peak value + 20 log(dwell time per 100 ms per channel * (channel separation correction + overlapping channel correction)) Where the duty cycle correction factor is calculated from following formula: 20 log(dwell time per 100 ms per channel × (channel separation correction + overlapping channel correction)) = 20 log(2.879ms * (1+0) / 100 ms) = -30.8dB

RF Mode	GFSK	Channel	CH 78：2480 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	120 Vac, 60 Hz	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	*2480.00	101.6 PK			1.45 H	294	101.4	0.2
2	*2480.00	70.8 AV			1.45 H	294	70.6	0.2
3	2483.50	54.2 PK	74.0	-19.8	1.45 H	294	54.0	0.2
4	2483.50	23.4 AV	54.0	-30.6	1.45 H	294	23.2	0.2
5	4960.00	48.4 PK	74.0	-25.6	1.88 H	3	40.6	7.8
6	4960.00	17.6 AV	54.0	-36.4	1.88 H	3	9.8	7.8
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	*2480.00	95.4 PK			2.77 V	67	95.2	0.2
2	*2480.00	64.6 AV			2.77 V	67	64.4	0.2
3	2483.50	53.8 PK	74.0	-20.2	2.77 V	67	53.6	0.2
4	2483.50	23.0 AV	54.0	-31.0	2.77 V	67	22.8	0.2
5	4960.00	47.8 PK	74.0	-26.2	3.10 V	293	40.0	7.8
6	4960.00	17.0 AV	54.0	-37.0	3.10 V	293	9.2	7.8

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.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. For fundamental and related emissions signals (e.g., harmonic frequencies), the average value of frequency is: Average = Peak value + 20 log(dwell time per 100 ms per channel * (channel separation correction + overlapping channel correction)) Where the duty cycle correction factor is calculated from following formula: 20 log(dwell time per 100 ms per channel × (channel separation correction + overlapping channel correction)) = 20 log(2.879ms * (1+0) / 100 ms) = -30.8dB

RF Mode	π/4-DQPSK	Channel	CH 0：2402 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	120 Vac, 60 Hz	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	53.4 PK	74.0	-20.6	1.30 H	297	53.7	-0.3
2	**2390.00**	**41.7 AV**	**54.0**	**-12.3**	**1.30 H**	**297**	**42.0**	**-0.3**
3	*2402.00	102.6 PK			1.30 H	297	102.9	-0.3
4	*2402.00	77.8 AV			1.30 H	297	78.1	-0.3
5	4804.00	49.5 PK	74.0	-24.5	1.74 H	7	42.1	7.4
6	4804.00	24.7 AV	54.0	-29.3	1.74 H	7	17.3	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	2390.00	53.0 PK	74.0	-21.0	2.62 V	69	53.3	-0.3
2	2390.00	41.3 AV	54.0	-12.7	2.62 V	69	41.6	-0.3
3	*2402.00	96.6 PK			2.62 V	69	96.9	-0.3
4	*2402.00	71.8 AV			2.62 V	69	72.1	-0.3
5	4804.00	49.0 PK	74.0	-25.0	2.98 V	295	41.6	7.4
6	4804.00	24.2 AV	54.0	-29.8	2.98 V	295	16.8	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, the limit was restricted at the RF Output Power.
6. For fundamental and related emissions signals (e.g., harmonic frequencies), the average value of frequency is: Average = Peak value + 20 log(dwell time per 100 ms per channel * (channel separation correction + overlapping channel correction)) Where the duty cycle correction factor is calculated from following formula: 20 log(dwell time per 100 ms per channel × (channel separation correction + overlapping channel correction)) = 20 log(2.889ms * (1+1) / 100 ms) = -24.8 dB

RF Mode	π/4-DQPSK	Channel	CH 39：2441 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	120 Vac, 60 Hz	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	*2441.00	102.2 PK			1.46 H	311	102.2	0.0
2	*2441.00	77.4 AV			1.46 H	311	77.4	0.0
3	4882.00	48.9 PK	74.0	-25.1	1.88 H	21	41.1	7.8
4	4882.00	24.1 AV	54.0	-29.9	1.88 H	21	16.3	7.8
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	*2441.00	95.6 PK			2.77 V	84	95.6	0.0
2	*2441.00	70.8 AV			2.77 V	84	70.8	0.0
3	4882.00	48.0 PK	74.0	-26.0	3.10 V	311	40.2	7.8
4	4882.00	23.2 AV	54.0	-30.8	3.10 V	311	15.4	7.8

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.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. For fundamental and related emissions signals (e.g., harmonic frequencies), the average value of frequency is: Average = Peak value + 20 log(dwell time per 100 ms per channel * (channel separation correction + overlapping channel correction)) Where the duty cycle correction factor is calculated from following formula: 20 log(dwell time per 100 ms per channel × (channel separation correction + overlapping channel correction)) = 20 log(2.889ms * (1+1) / 100 ms) = -24.8 dB

RF Mode	π/4-DQPSK	Channel	CH 78：2480 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	120 Vac, 60 Hz	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	*2480.00	101.3 PK			1.20 H	297	101.1	0.2
2	*2480.00	76.5 AV			1.20 H	297	76.3	0.2
3	2483.50	54.0 PK	74.0	-20.0	1.20 H	297	53.8	0.2
4	2483.50	29.2 AV	54.0	-24.8	1.20 H	297	29.0	0.2
5	4960.00	48.2 PK	74.0	-25.8	1.64 H	8	40.4	7.8
6	4960.00	23.4 AV	54.0	-30.6	1.64 H	8	15.6	7.8
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	*2480.00	95.3 PK			2.63 V	69	95.1	0.2
2	*2480.00	70.5 AV			2.63 V	69	70.3	0.2
3	2483.50	53.6 PK	74.0	-20.4	2.63 V	69	53.4	0.2
4	2483.50	28.8 AV	54.0	-25.2	2.63 V	69	28.6	0.2
5	4960.00	47.7 PK	74.0	-26.3	2.99 V	295	39.9	7.8
6	4960.00	22.9 AV	54.0	-31.1	2.99 V	295	15.1	7.8

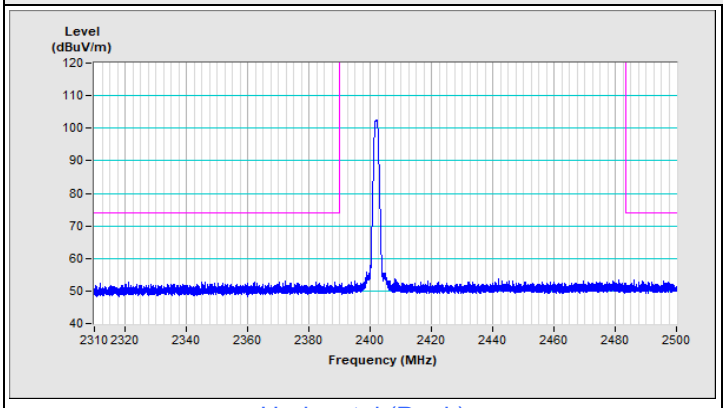
Remarks:

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.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. For fundamental and related emissions signals (e.g., harmonic frequencies), the average value of frequency is: Average = Peak value + 20 log(dwell time per 100 ms per channel * (channel separation correction + overlapping channel correction)) Where the duty cycle correction factor is calculated from following formula: 20 log(dwell time per 100 ms per channel × (channel separation correction + overlapping channel correction)) = 20 log(2.889ms * (1+1) / 100 ms) = -24.8 dB

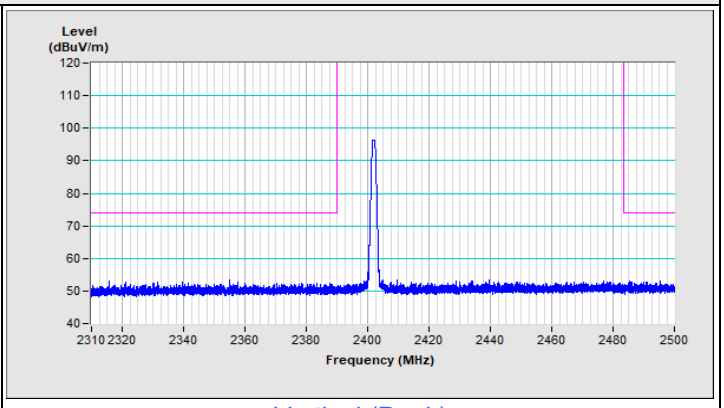
Plot of Band Edge

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

GFSK Channel 0

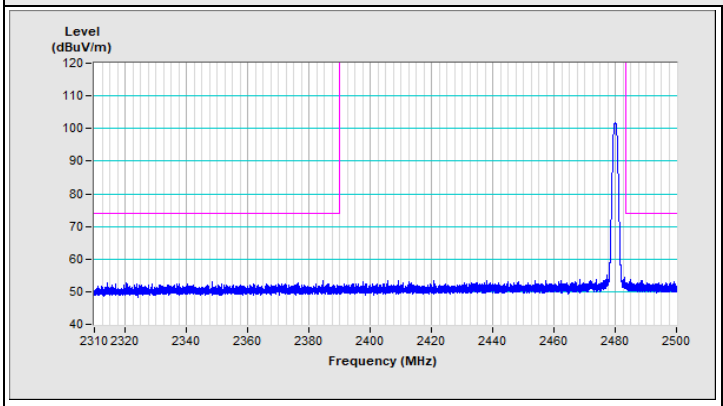


Horizontal (Peak)

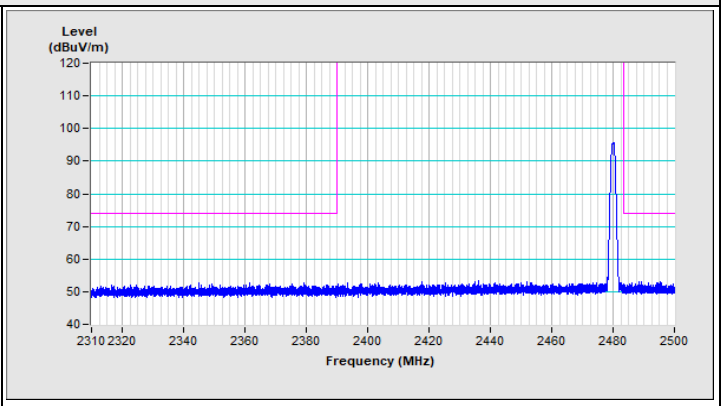


Vertical (Peak)

GFSK Channel 78



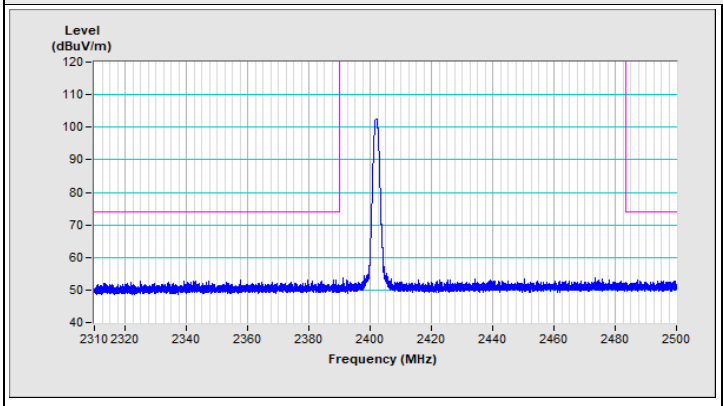
Horizontal (Peak)



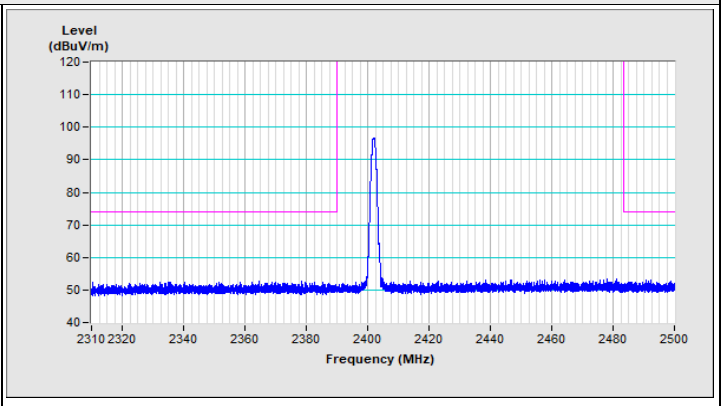
Vertical (Peak)

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

π/4-DQPSK Channel 0

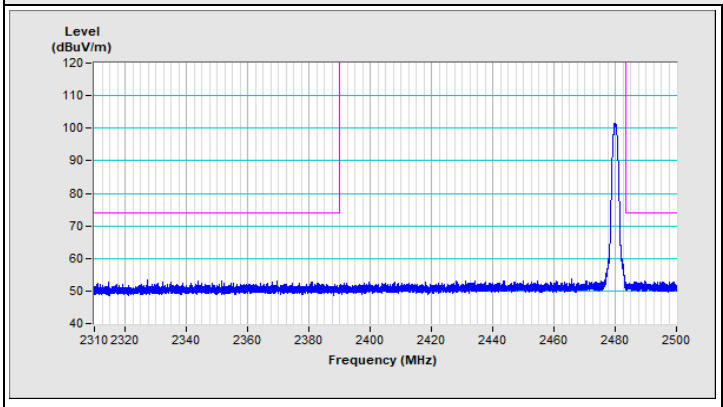


Horizontal (Peak)

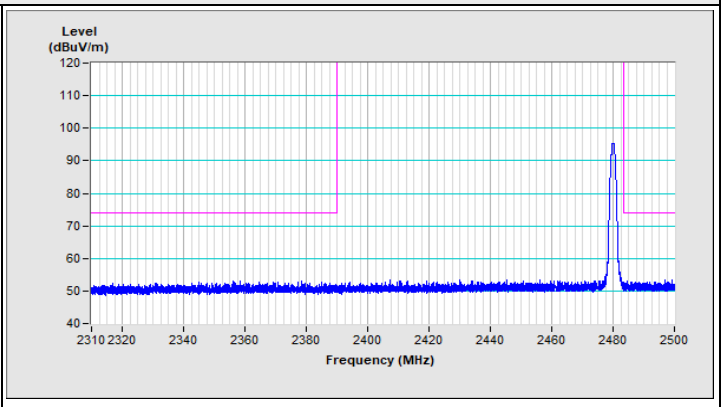


Vertical (Peak)

π/4-DQPSK Channel 78



Horizontal (Peak)

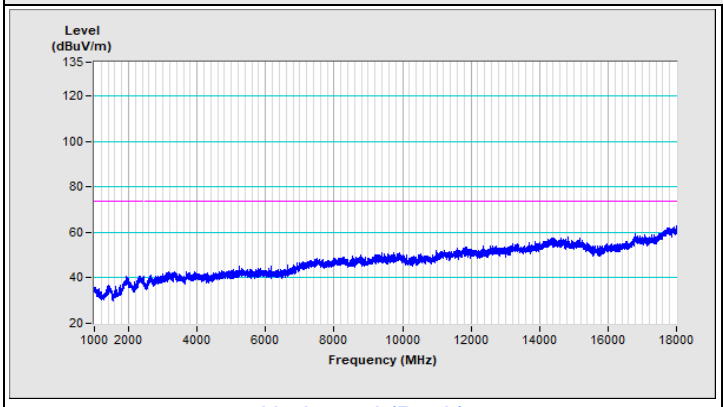


Vertical (Peak)

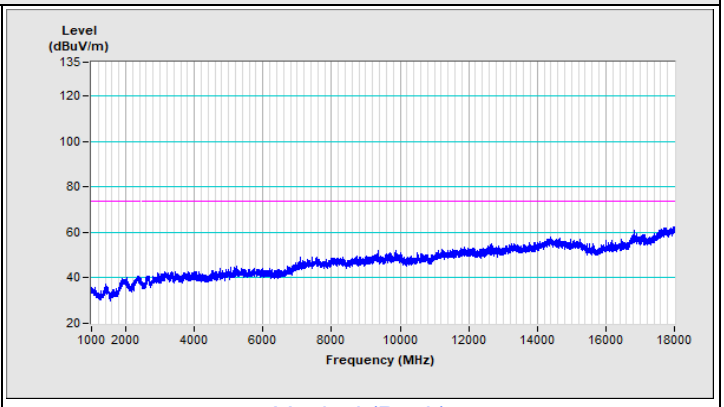
Plot of Other Emission

Frequency Range	1 GHz ~ 18 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak

π/4-DQPSK Channel 0



Horizontal (Peak)



Vertical (Peak)

Notes:

1. For radiated emission test data, complete spectral plots shall be presented in the report only for the worst-case scenarios of each mode within each operating frequency band.
2. The frequency range 18 GHz ~ 25 GHz: After investigation, no any emissions were found to exist, therefore they are not recorded in this report.

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.

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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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