

Variant FCC Test Report

Report No.: RFBHCP-WTW-P21030276

FCC ID: ACJ932AZ1801

Test Model: AZ1801

Series Model: CQ-RZ38A0AN, CQ-RZ38A1AN, CQ-RZ38A2AN, CQ-RZ19A0AN, CQ-RZ19A1AN, CQ-RZ39A0AN, CQ-RZ39A1AN, CQ-RZ39A2AN, CQ-RZ1AA0AN, CQ-RZ1AA1AN, CQ-RZ1AA2AN, CQ-RZ19A2AN, CQ-RZ38A0NT, CQ-RZ38A2NT, CQ-RZ19A0NT, CQ-RZ19A1NT, CQ-RZ19A2NT, CQ-RZ39A0NT, CQ-RZ39A1NT, CQ-RZ39A2NT, CQ-RZ1AA0NT, CQ-RZ1AA1NT, CQ-RZ1AA2NT, CQ-RZNB0NT
(Refer to item 3.1 for more detail)

Received Date: Mar. 09, 2021

Test Date: Mar. 26, 2021

Issued Date: Apr. 20, 2021

Applicant: Panasonic Corporation of North America

Address: Two Riverfront Plaza, 9th Floor Newark, NJ 07102-5490

Manufacture: Panasonic Automotive Systems Asia Pacific Co., Ltd.

Manufacture's address: 101 Moo 2 Teparak Rd., T. Bangsaothong, A. Bangsaothong, Samutprakarn 10570 Thailand

Factory: Panasonic Automotive Systems Asia Pacific Co., Ltd.

Factory's address: 101 Moo 2 Teparak Rd., T. Bangsaothong, A. Bangsaothong, Samutprakarn 10570 Thailand

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 (1): No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan

Test Location (2): B2F., No.215, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 231, Taiwan

FCC Registration / 788550 / TW0003

Designation Number: 427177 / TW0011



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification.

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Release Control Record

Issue No.	Description	Date Issued
RFBHCP-WTW-P21030276	Original Release	Apr. 20, 2021

1 Certificate of Conformity

Product: Car Audio

Brand: Panasonic

Test Model: AZ1801

Series Model: CQ-RZ38A0AN, CQ-RZ38A1AN, CQ-RZ38A2AN, CQ-RZ19A0AN, CQ-RZ19A1AN, CQ-RZ39A0AN, CQ-RZ39A1AN, CQ-RZ39A2AN, CQ-RZ1AA0AN, CQ-RZ1AA1AN, CQ-RZ1AA2AN, CQ-RZ19A2AN, CQ-RZ38A0NT, CQ-RZ38A2NT, CQ-RZ19A0NT, CQ-RZ19A1NT, CQ-RZ19A2NT, CQ-RZ39A0NT, CQ-RZ39A1NT, CQ-RZ39A2NT, CQ-RZ1AA0NT, CQ-RZ1AA1NT, CQ-RZ1AA2NT, CQ-RZNBA0NT
(Refer to item 3.1 for more detail)

Sample Status: Engineering Sample

Applicant: Panasonic Corporation of North America

Test Date: Mar. 26, 2021

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10:2013

This report is issued as a supplementary report to BV CPS report no.: RF181227C16A. This report shall be used by combining with its original report.

Prepared by : Gina Liu, **Date:** Apr. 20, 2021
Gina Liu / Specialist

Approved by : Dylan Chiou, **Date:** Apr. 20, 2021
Dylan Chiou / Senior Project Engineer

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	Pass	Refer to Note
15.247(a)(1)(iii)	Number of Hopping Frequency Used	Pass	Refer to Note
15.247(a)(1)(iii)	Dwell Time on Each Channel	Pass	Refer to Note
15.247(a)(1)	1. Hopping Channel Separation 2. Spectrum Bandwidth of a Frequency Hopping Sequence Spread Spectrum System	Pass	Refer to Note
15.247(a)(1)	Maximum Peak Output Power	Pass	Refer to Note
---	Occupied Bandwidth Measurement	Pass	Reference only
15.205 & 209	Radiated Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -2.98 dB at 42.96 MHz.
15.247(d)	Band Edge Measurement	Pass	Refer to Note
15.247(d)	Antenna Port Emission	Pass	Refer to Note
15.203	Antenna Requirement	Pass	No antenna connector is used.

Note:

- Only Radiated Emissions below 1GHz test had been performed for the addendum. Refer to original report for other test data.
- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150 kHz ~ 30 MHz	2.79 dB
Radiated Emissions up to 1 GHz	9 kHz ~ 30 MHz	3.04 dB
	30 MHz ~ 200 MHz	2.0153 dB
	200 MHz ~ 1000 MHz	2.0224 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	1.0121 dB
	18 GHz ~ 40 GHz	1.1508 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Car Audio
Brand	Panasonic
Test Model	AZ1801
Series Model	CQ-RZ38A0AN, CQ-RZ38A1AN, CQ-RZ38A2AN, CQ-RZ19A0AN, CQ-RZ19A1AN, CQ-RZ39A0AN, CQ-RZ39A1AN, CQ-RZ39A2AN, CQ-RZ1AA0AN, CQ-RZ1AA1AN, CQ-RZ1AA2AN, CQ-RZ19A2AN, CQ-RZ38A0NT, CQ-RZ38A2NT, CQ-RZ19A0NT, CQ-RZ19A1NT, CQ-RZ19A2NT, CQ-RZ39A0NT, CQ-RZ39A1NT, CQ-RZ39A2NT, CQ-RZ1AA0NT, CQ-RZ1AA1NT, CQ-RZ1AA2NT, CQ-RZNBA0NT
Model Difference	For marketing purpose
Status of EUT	Engineering Sample
Power Supply Rating	12Vdc (Power Supply)
Modulation Type	GFSK, $\pi/4$ -DQPSK, 8DPSK
Transfer Rate	1/2/3 Mbps
Operating Frequency	2402 ~ 2480 MHz
Number of Channel	79
Output Power	0.863 mW
Antenna Type	Pattern antenna with -1.8 dBi gain
Antenna Connector	N/A
Accessory Device	Refer to Note as below
Data Cable Supplied	Refer to Note as below

Note:

1. This report is issued as a supplementary report to BV CPS report no. RF181227C16A. The differences compared with the original report are LCD part & main PCB reduce size change and adding new model (CQ-RZNBA0NT). Therefore, only the test item of spurious emission below 1GHz had been an addendum test to this report. Other testing data refer to original report.
2. The following models are electrically identical, different model names are for marketing purpose. (New models are marked in boldface.)

Brand	Model	Description
	AZ1801	Main test
Panasonic	CQ-RZ38A0AN, CQ-RZ38A1AN, CQ-RZ38A2AN, CQ-RZ19A0AN, CQ-RZ19A1AN, CQ-RZ39A0AN, CQ-RZ39A1AN, CQ-RZ39A2AN, CQ-RZ1AA0AN, CQ-RZ1AA1AN, CQ-RZ1AA2AN, CQ-RZ19A2AN, CQ-RZ38A0NT, CQ-RZ38A2NT, CQ-RZ19A0NT, CQ-RZ19A1NT, CQ-RZ19A2NT, CQ-RZ39A0NT, CQ-RZ39A1NT, CQ-RZ39A2NT, CQ-RZ1AA0NT, CQ-RZ1AA1NT, CQ-RZ1AA2NT, CQ-RZNBA0NT	For marketing purpose

3. 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.
4. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or User's Manual.

3.2 Description of Test Modes

79 channels are provided to this EUT:

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

3.2.1 Test Mode Applicability and Tested Channel Detail

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

Where **RE<1G**: Radiated Emission below 1 GHz

Note:

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

Radiated Emission Test (Below 1 GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Packet Type
-	0 to 78	39	FHSS	8DPSK	3DH5

Test Condition:

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

3.3 Description of Support Units

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

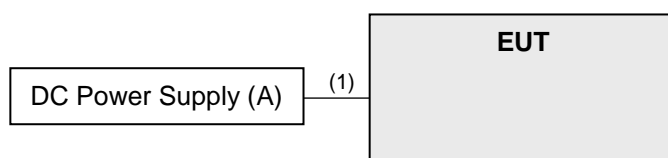
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	DC power supply	TECPEL	GPS-3030DD	GEO855738	NA	-

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC cable	1	2	N	0	-

3.3.1 Configuration of System under Test



3.4 General Description of Applied Standards and References

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

Test Standard:

FCC Part 15, Subpart C (15.247)

ANSI C63.10-2013

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

References Test Guidance:

KDB 558074 D01 15.247 Meas Guidance v05r02

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

Note:

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

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent Technologies	N9038A	MY52260177	Aug. 24, 2020	Aug. 23, 2021
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Apr. 16, 2020	Apr. 15, 2021
HORN Antenna ETS-Lindgren	3117	00143293	Nov. 22, 2020	Nov. 21, 2021
BILOG Antenna SCHWARZBECK	VULB 9168	9168-616	Nov. 09, 2020	Nov. 08, 2021
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Nov. 22, 2020	Nov. 21, 2021
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 14, 2020	Apr. 13, 2021
Bluetooth Tester	CBT	100980	Jul. 14, 2019	Jul. 13, 2021
Loop Antenna	EM-6879	269	Sep. 17, 2020	Sep. 16, 2021
Preamplifier Agilent	310N	187226	Jun. 17, 2020	Jun. 16, 2021
Preamplifier Agilent	83017A	MY39501357	Jun. 17, 2020	Jun. 16, 2021
RF signal cable ETS-LINDGREN	5D-FB	Cable-CH1-01(RFC -SMS-100-SMS-12 0+RFC-SMS-100-S MS-400)	Jun. 17, 2020	Jun. 16, 2021
RF signal cable ETS-LINDGREN	8D-FB	Cable-CH1-02(RFC -SMS-100-SMS-24)	Jun. 17, 2020	Jun. 17, 2021
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Software BV ADT	E3 8.130425b	NA	NA	NA
Antenna Tower MF	NA	NA	NA	NA
Turn Table MF	NA	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA

- Note: 1. The calibration interval of the above test instruments is 12 / 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HsinTien Chamber 1.

4.1.3 Test Procedures

For Radiated Emission below 30 MHz

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

Note:

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

For Radiated Emission above 30 MHz

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

Note:

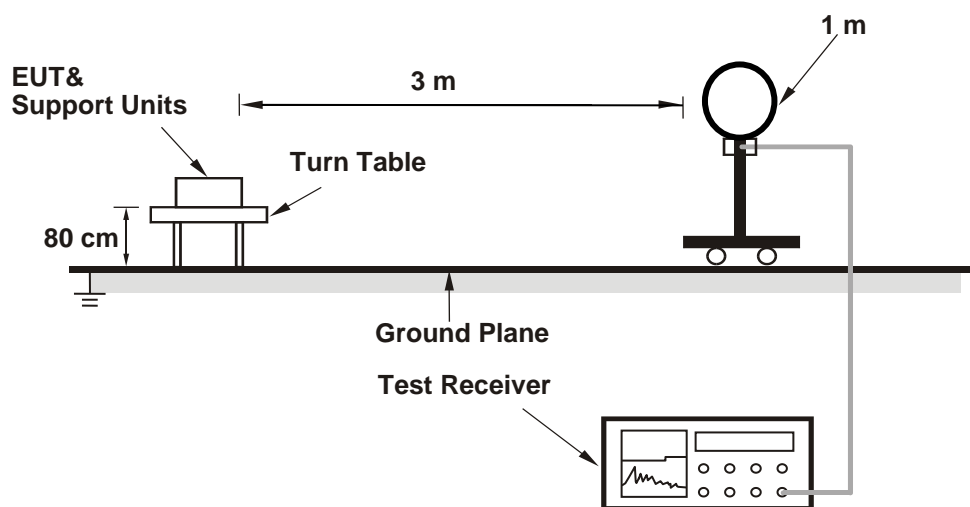
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

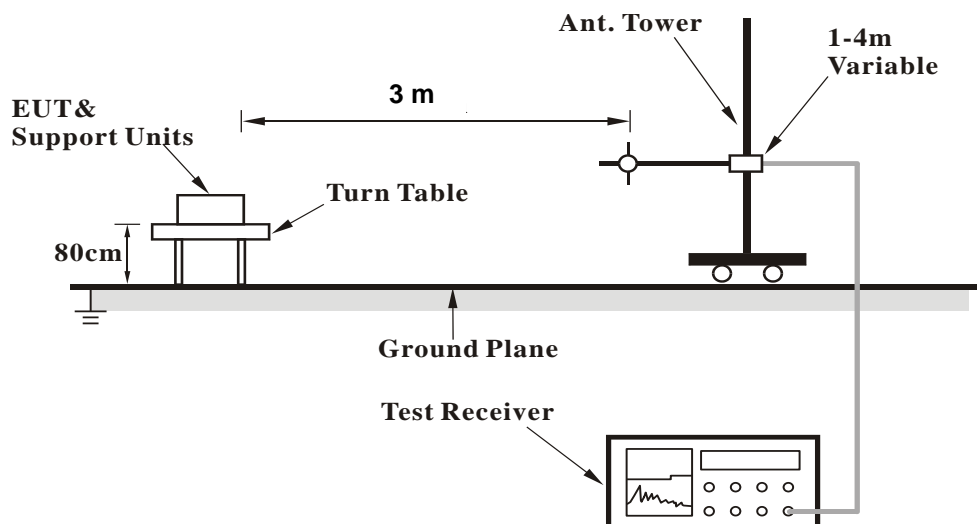
No deviation.

4.1.5 Test Set Up

<Radiated Emission below 30 MHz>



<Radiated Emission 30 MHz to 1 GHz>



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

4.1.6 EUT Operating Conditions

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

4.1.7 Test Results

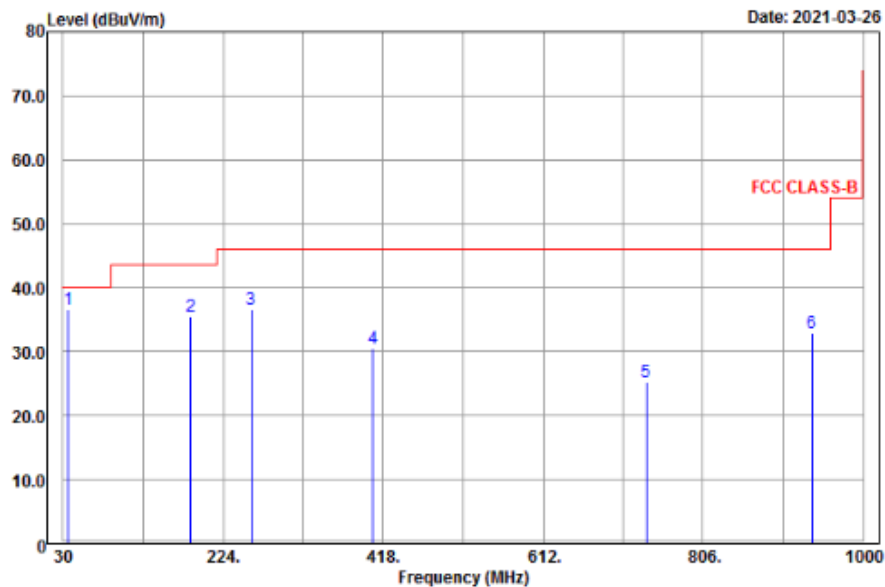
9 kHz ~ 30 MHz Data:

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

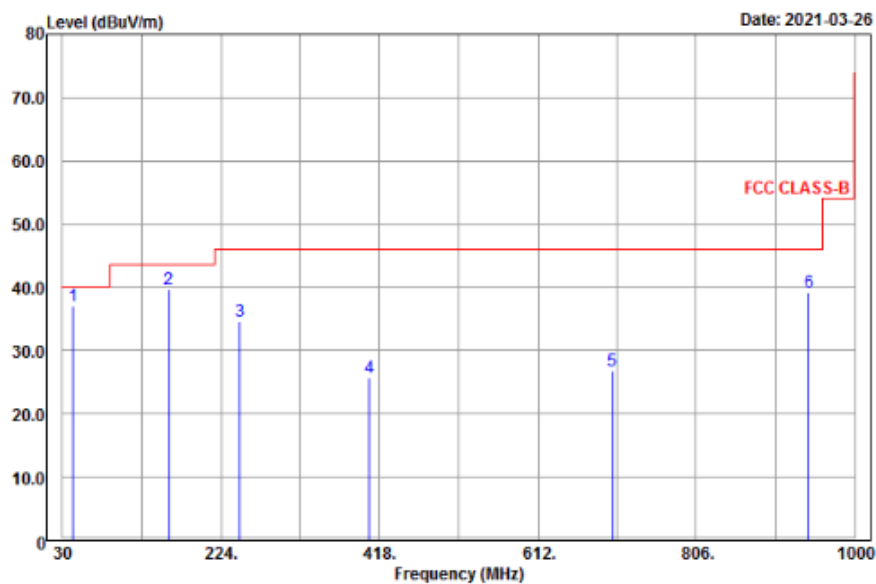
30 MHz ~ 1 GHz Worst-Case Data:

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

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
36.48	36.58	53.66	-17.08	40	-3.42	180	143	QP
184.44	35.62	54.86	-19.24	43.5	-7.88	164	172	QP
258.15	36.62	53.32	-16.7	46	-9.38	151	104	QP
405.7	30.62	44.46	-13.84	46	-15.38	106	145	QP
737.5	25.31	33.92	-8.61	46	-20.69	164	175	QP
937.7	32.95	38.41	-5.46	46	-13.05	196	352	QP
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
42.96	37.02	52.75	-15.73	40	-2.98	188	204	QP
160.14	39.65	60.24	-20.59	43.5	-3.85	241	27	QP
246.81	34.63	51.52	-16.89	46	-11.37	169	45	QP
405.7	25.73	39.57	-13.84	46	-20.27	236	184	QP
703.2	26.76	35.95	-9.19	46	-19.24	131	82	QP
944	39.15	44.57	-5.42	46	-6.85	104	178	QP

Remarks:

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

5 Pictures of Test Arrangements

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

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:

Lin Kou EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab

Tel: 886-3-3183232

Fax: 886-3-3270892

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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