

FCC Test Report

Report No.: RFBHBQ-WTW-P20090301C

FCC ID: 2AH7L-UPSB

Test Model: PAS600L

Series Model: PAS600T, PAS600

Received Date: Apr. 26, 2021

Test Date: Apr. 26, 2021

Issued Date: May 10, 2021

Applicant: Schneider Electric Industries SAS

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Grenoble cedex 9

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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FCC Registration / 788550 / TW0003
Designation Number:



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Release Control Record

Issue No.	Description	Date Issued
RFBHBQ-WTW-P20090301C	Original release	May 10, 2021

1 Certificate of Conformity

Product: EcoStruxure Panel Server
Brand: Schneider Electric
Test Model: PAS600L
Series Model: PAS600T, PAS600
Sample Status: Identical Prototype
Applicant: Schneider Electric Industries SAS
Test Date: Apr. 26, 2021
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 RF characteristics under the conditions specified in this report.

Prepared by : Celine Chou , **Date:** May 10, 2021
Celine Chou / Senior Specialist

Approved by : Bruce Chen , **Date:** May 10, 2021
Bruce Chen / 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	NA	Refer to Note 1
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -7.90dB at 2483.50MHz.
15.247(d)	Antenna Port Emission	NA	Refer to Note 1
15.247(a)(2)	6dB bandwidth	NA	Refer to Note 1
15.247(b)	Conducted power	NA	Refer to Note 1
15.247(e)	Power Spectral Density	NA	Refer to Note 1
15.203	Antenna Requirement	Pass	No antenna connector is used.

Note:

1. The radiated emissions above 1GHz and band edge test items are performed for the addendum. Refer to original report for the other test data.
2. For 2.4G band compliance with rule 15.247(d) of the band-edge items, the test plots were recorded in Annex A. Test Procedures refer to report 4.1.3.
3. 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) (±)
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.04 dB
	30MHz ~ 200MHz	3.59 dB
	200MHz ~1000MHz	3.60 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	EcoStruxure Panel Server
Brand	Schneider Electric
Test Model	PAS600L
Series Model	PAS600T, PAS600
Sample Status	Identical Prototype
Power Supply Rating	24Vdc for PAS600L 110-240Vac, 50-60Hz and 240Vdc for PAS600T 110-277Vac, 50-60Hz and 277Vdc for PAS600
Modulation Type	O-QPSK
Modulation Technology	DSSS
Transfer Rate	250 kbps
Operating Frequency	2405 ~ 2475 MHz
Number of Channel	15
Output Power	4.285 mW
Antenna Type	Antenna 1: PCB antenna with 4.4 dBi gain Antenna 2: PCB antenna with 5.1 dBi gain
Antenna Connector	N/A
Accessory Device	External antenna for 2.4G (Brand: Schneider Electric; Model: PASA-ANT1)
Data Cable Supplied	N/A

Note:

1. This report is prepared for FCC class II permissive change. The difference compared with original report (BV CPS report no.: RFBHBQ-WTW-P21030022-2) is modified zigbee's antenna 2 component. Therefore, test items for radiated emissions above 1GHz and band edge had been re-tested in this report. Refer to original report for the other test data.
2. All models are listed as below. Model: PAS600L is the representative for final test.

Brand	Model	Difference
Schneider Electric	PAS600L	Power Supply Rating: 24Vdc
	PAS600T	(1) Power Supply Rating: 110-240Vac/dc with +/-10% tolerance (2) Without digital input
	PAS600	(1) Power Supply Rating: 110 -277Vac/dc with +/-10% tolerance (2) Without digital input

3. The EUT support 1TX diversity function in transmitter part.
4. 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.

3.2 Description of Test Modes

15 channels are provided to this EUT:

Channel	Frequency	Channel	Frequency
11	2405	19	2445
12	2410	20	2450
13	2415	21	2455
14	2420	22	2460
15	2425	23	2465
16	2430	24	2470
17	2435	25	2475
18	2440		

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable to	Description
	RE $\geq$ 1G	
-	√	EUT with Ant. 2 (Model: PAS600L)

Where RE $\geq$ 1G: Radiated Emission above 1GHz & Bandedge Measurement

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

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.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type
-	11 to 26	11, 17, 25	OFDM	O-QPSK

Test Condition:

Applicable to	Environmental Conditions	Input Power	Tested by
RE $\geq$ 1G	22 deg. C, 66% RH	24Vdc	Rex Wang

3.3 Description of Support Units

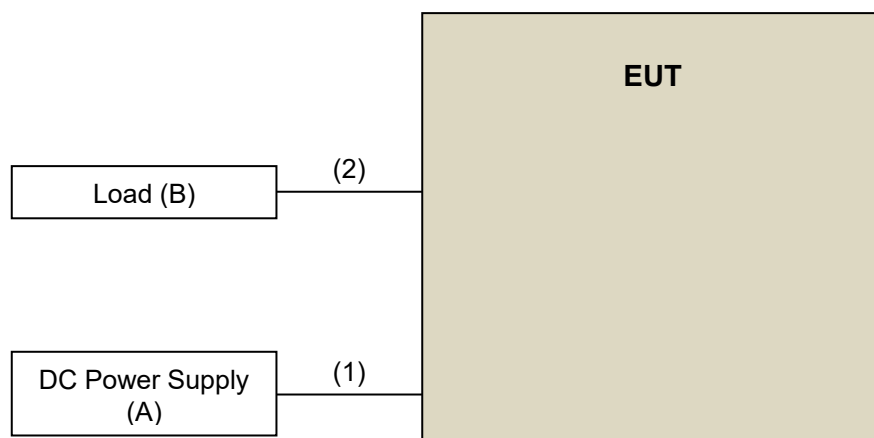
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	DC Power Supply	Topward	33010D	807748	N/A	-
B.	Load	N/A	N/A	N/A	N/A	-

Note: 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	1.5	N	0	Provided by client
2.	LAN Cable	2	1.5	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 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.	Cal. Date	Cal. Due
Test Receiver KEYSIGHT	N9038A	MY55420137	Apr. 09, 2021	Apr. 08, 2022
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Jun. 12, 2020	Jun. 11, 2021
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Nov. 06, 2020	Nov. 05, 2021
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1169	Nov. 22, 2020	Nov. 21, 2021
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Nov. 22, 2020	Nov. 21, 2021
Preamplifier Agilent (Above 1GHz)	8449B	3008A02367	Feb. 17, 2021	Feb. 16, 2022
RF signal cable HUBER+SUHNER&EMCI	SUCOFLEX 104 & EMC104-SM-SM800 0	CABLE-CH9-02 (248780+171006)	Jan. 16, 2021	Jan. 15, 2022
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-(250795/ 4)	Jan. 16, 2021	Jan. 15, 2022
RF signal cable Woken	8D-FB	Cable-CH9-01	Jun. 08, 2020	Jun. 07, 2021
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower & Turn BV ADT	AT100	AT93021705	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Turn Table Controller BV ADT	SC100	SC93021705	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA

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 HwaYa Chamber 9.

4.1.3 Test Procedures

- 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 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 detect 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.

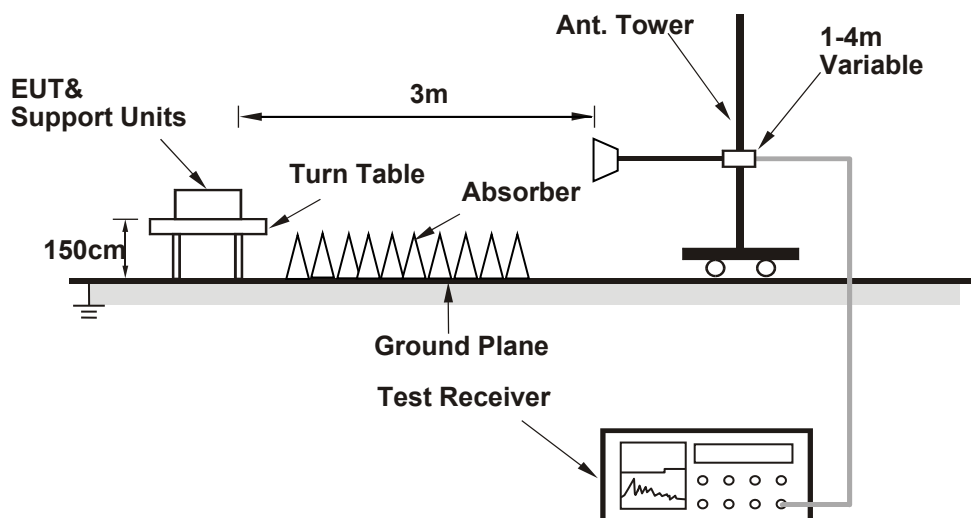
Note:

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. (RBW = 1MHz, VBW = 10Hz)
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 the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT Operating Conditions

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

4.1.7 Test Results

Above 1GHz Data:

RF Mode	TX Zigbee	Channel	CH 11 : 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	56.20 PK	74.00	-17.80	1.58 H	13	25.00	31.20
2	2390.00	43.20 AV	54.00	-10.80	1.58 H	13	12.00	31.20
3	*2405.00	109.50 PK			1.58 H	13	78.30	31.20
4	*2405.00	109.40 AV			1.58 H	13	78.20	31.20
5	4810.00	47.70 PK	74.00	-26.30	1.66 H	16	45.50	2.20
6	4810.00	43.90 AV	54.00	-10.10	1.66 H	16	41.70	2.20
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	57.10 PK	74.00	-16.90	1.00 V	348	25.90	31.20
2	2390.00	43.10 AV	54.00	-10.90	1.00 V	348	11.90	31.20
3	*2405.00	84.80 PK			1.00 V	348	53.60	31.20
4	*2405.00	84.50 AV			1.00 V	348	53.30	31.20
5	4810.00	45.10 PK	74.00	-28.90	1.00 V	89	42.90	2.20
6	4810.00	41.30 AV	54.00	-12.70	1.00 V	89	39.10	2.20

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 Zigbee	Channel	CH 17 : 2435 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	*2435.00	109.40 PK			1.50 H	10	78.30	31.10
2	*2435.00	109.30 AV			1.50 H	10	78.20	31.10
3	4870.00	46.70 PK	74.00	-27.30	1.70 H	352	44.60	2.10
4	4870.00	43.40 AV	54.00	-10.60	1.70 H	352	41.30	2.10
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	*2435.00	83.30 PK			1.01 V	347	52.20	31.10
2	*2435.00	83.00 AV			1.01 V	347	51.90	31.10
3	4870.00	43.50 PK	74.00	-30.50	1.02 V	88	41.40	2.10
4	4870.00	40.00 AV	54.00	-14.00	1.02 V	88	37.90	2.10

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.

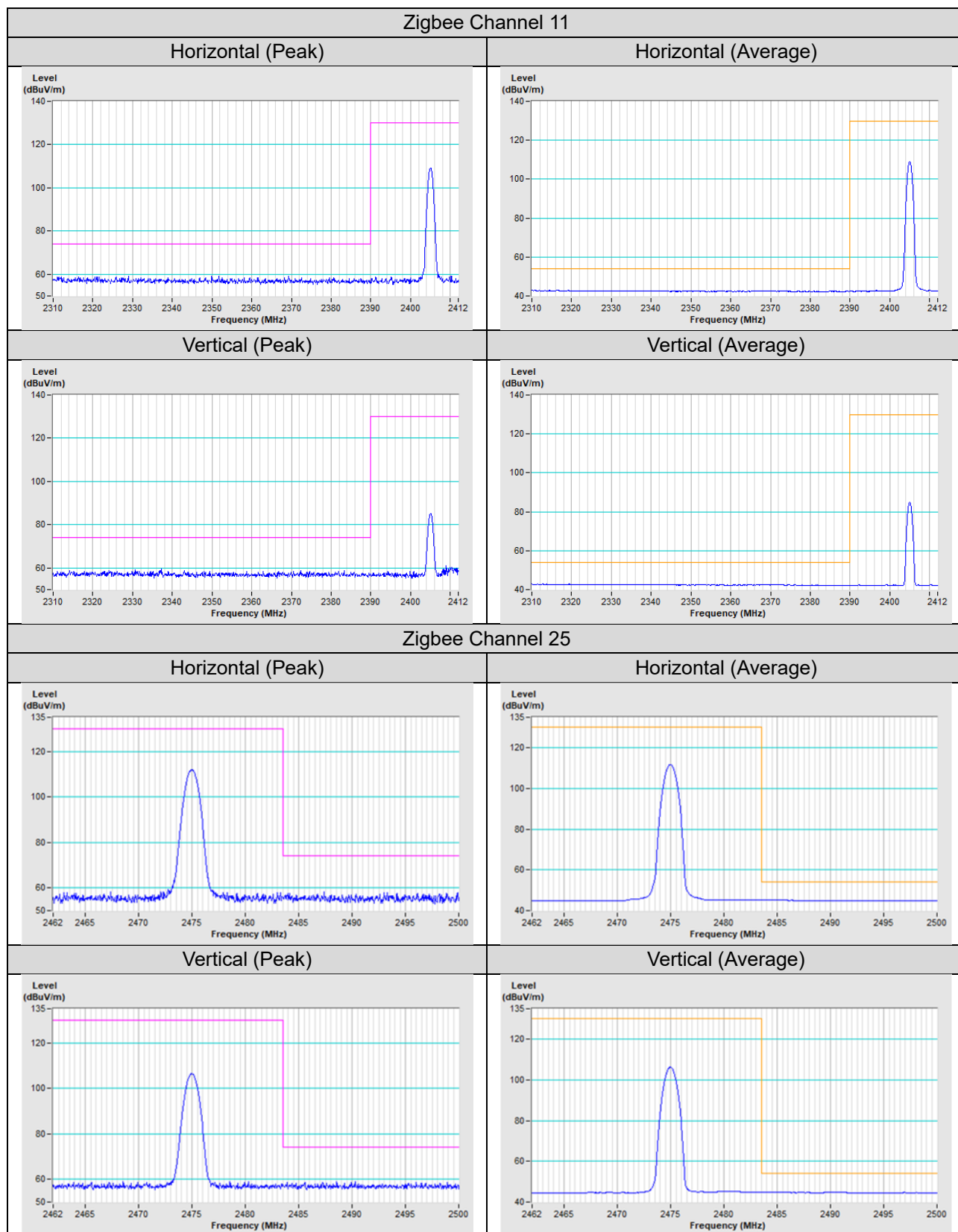
RF Mode	TX Zigbee	Channel	CH 25 : 2475 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

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	*2475.00	111.60 PK			1.62 H	34	80.50	31.10
2	*2475.00	111.40 AV			1.62 H	34	80.30	31.10
3	2483.50	57.10 PK	74.00	-16.90	1.62 H	34	26.00	31.10
4	2483.50	46.10 AV	54.00	-7.90	1.62 H	34	15.00	31.10
5	4950.00	47.10 PK	74.00	-26.90	1.59 H	19	44.90	2.20
6	4950.00	45.70 AV	54.00	-8.30	1.59 H	19	43.50	2.20
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	*2475.00	106.10 PK			1.57 V	320	75.00	31.10
2	*2475.00	106.00 AV			1.57 V	320	74.90	31.10
3	2483.50	55.90 PK	74.00	-18.10	1.57 V	320	24.80	31.10
4	2483.50	45.70 AV	54.00	-8.30	1.57 V	320	14.60	31.10
5	4950.00	44.30 PK	74.00	-29.70	1.34 V	320	42.10	2.20
6	4950.00	41.30 AV	54.00	-12.70	1.34 V	320	39.10	2.20

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.

Annex A - Band Edge Measurement



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 and approved according to ISO/IEC 17025.

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

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

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