

TEST REPORT

CERTIFICATE OF CONFORMITY

Standard: 47 CFR FCC Part 15, Subpart C (Section 15.247)
Report No.: RFBCKS-WTW-P26050074-1
FCC ID: NKR-DWSZW
Product: Door/Window Sensor
Brand: ADT
Model No.: DWSZW60R0-01
Received Date: 2026/5/15
Test Date: 2026/5/18 ~ 2026/5/20
Issued Date: 2026/7/13
Applicant: WNC Corporation
Address: 20 Park Avenue II, Hsinchu Science Park, Hsinchu 308, Taiwan
Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Hsin Chu Laboratory
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Test Location: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
FCC Registration / 723255 / TW2022
Designation Number:

Approved by: _____

Wen Yu / Assistant Manager

, Date: 2026/7/13

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Prepared by : Claire Kuan / Specialist

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Release Control Record

Issue No.	Description	Date Issued
RFBCKS-WTW-P26050074-1	Original release.	2026/7/13

1 Certificate

Product: Door/Window Sensor

Brand: ADT

Test Model: DWSZW60R0-01

Sample Status: Engineering sample

Applicant: WNC Corporation

Test Date: 2026/5/18 ~ 2026/5/20

Standard: 47 CFR FCC Part 15, Subpart C (Section 15.247)

Measurement ANSI C63.10-2020

procedure: 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(b)	RF Output Power	Pass	Meet the requirement of limit.
15.247(e)	Power Spectral Density	Pass	Meet the requirement of limit.
15.247(a)(2)	6 dB Bandwidth	Pass	Meet the requirement of limit.
15.247(d)	Conducted Out of Band Emissions	Pass	Meet the requirement of limit.
15.207	AC Power Conducted Emissions	N/A	Power supply is from battery.
15.205 / 15.209 / 15.247(d)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -9.6 dB at 928.56 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -0.5 dB at 8208.00 MHz and 8280.00 MHz
15.203	Antenna Requirement	Pass	No antenna connector is used.

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

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

Measurement	Specification	Expanded Uncertainty (k=2) (±)
RF Output Power	-	1.1 dB
Power Spectral Density	-	1.3 dB
6 dB Bandwidth	-	1050.00 Hz
Conducted Out of Band Emissions	9 kHz ~ 40 GHz	2.6 dB
AC Power Conducted Emissions	150 kHz ~ 30 MHz	1.9 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	3.1 dB
	30 MHz ~ 1 GHz	5.4 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	5.0 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	Door/Window Sensor
Brand	ADT
Test Model	DWSZW60R0-01
Status of EUT	Engineering sample
Power Supply Rating	3 Vdc from Battery
Modulation Type	OQPSK
Transfer Rate	100 kbps
Operating Frequency	912 MHz, 920 MHz
Number of Channel	2
Output Power	29.923 mW (14.76 dBm)

Note:

1. 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.

Antenna Net Gain(dBi)	Frequency range	Antenna Type	Connector Type
0.35	908-920 MHz	PIFA	none

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

3.3 Channel List

2 channels are provided to this EUT:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
3 (Primary)	912	3 (Secondary)	920

3.4 Test Mode Applicability and Tested Channel Detail

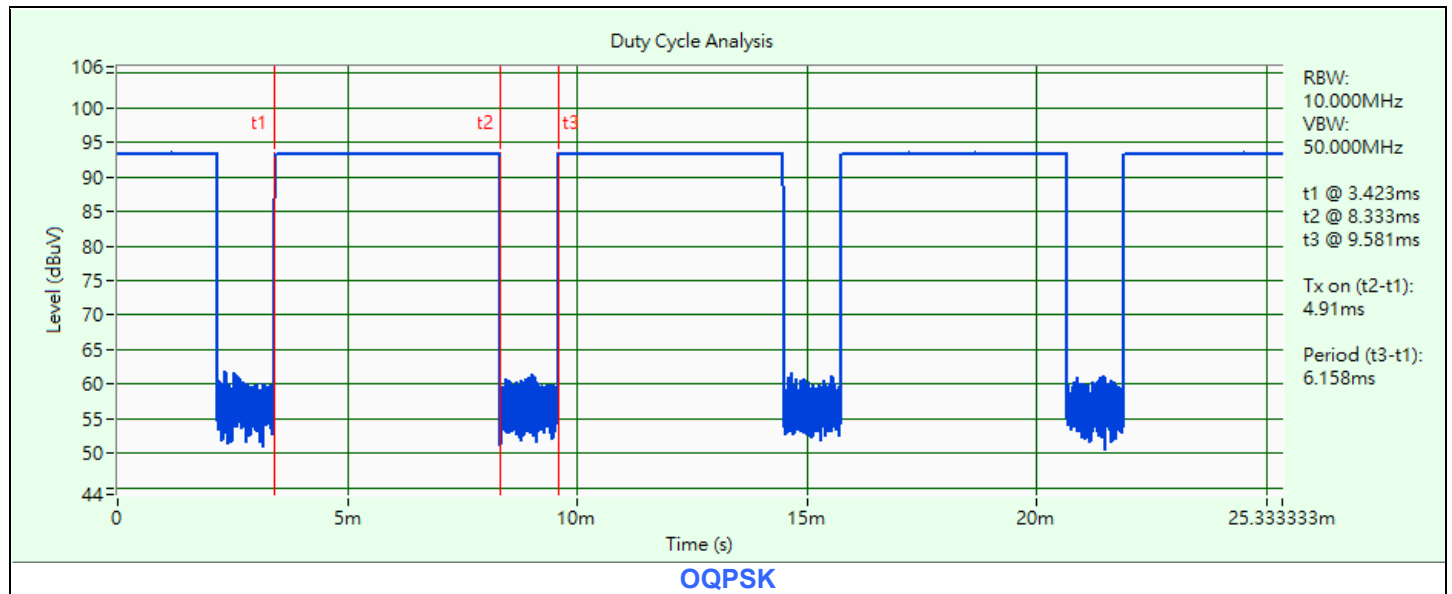
Pre-Scan:	1. EUT can be used in the following ways: X-Y-Z axis. Pre-scan these ways and find the worst case as a representative test condition.
Worst Case:	1. Antenna X-axis/ Y-axis/ Z-axis Worst Condition: Antenna Z-axis

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

Test Item	Test Channel	Operating Frequency (MHz)	Modulation Type	Data Rate Parameter
RF Output Power	3(Primary)	912	DSSS-OQPSK	100 kbps
	3(Secondary)	920	DSSS-OQPSK	100 kbps
Power Spectral Density	3(Primary)	912	DSSS-OQPSK	100 kbps
	3(Secondary)	920	DSSS-OQPSK	100 kbps
6 dB Bandwidth	3(Primary)	912	DSSS-OQPSK	100 kbps
	3(Secondary)	920	DSSS-OQPSK	100 kbps
Conducted Out of Band Emissions	3(Primary)	912	DSSS-OQPSK	100 kbps
	3(Secondary)	920	DSSS-OQPSK	100 kbps
Unwanted Emissions below 1 GHz	3(Primary)	912	DSSS-OQPSK	100 kbps
	3(Secondary)	920	DSSS-OQPSK	100 kbps
Unwanted Emissions above 1 GHz	3(Primary)	912	DSSS-OQPSK	100 kbps
	3(Secondary)	920	DSSS-OQPSK	100 kbps

3.5 Duty Cycle of Test Signal

OQPSK: Duty cycle = $4.91 \text{ ms} / 6.158 \text{ ms} \times 100\% = 79.7\%$, duty factor = $10 * \log (1/\text{Duty cycle}) = 0.98 \text{ dB}$

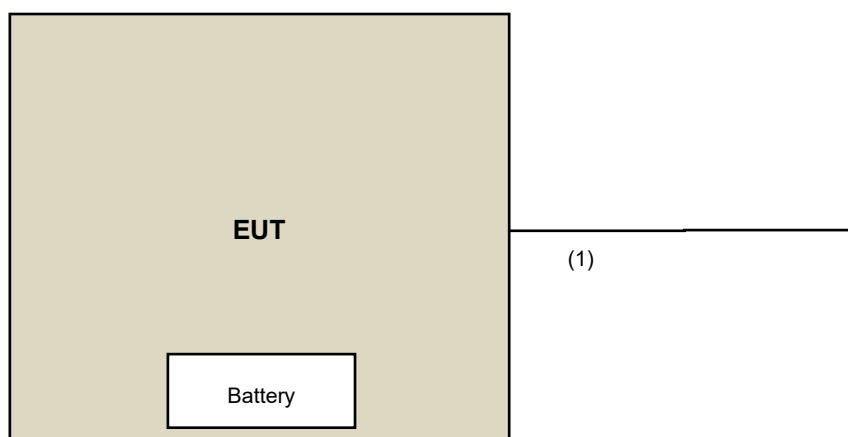


3.6 Test Program Used and Operation Descriptions

Controlling software (Tera Term Version5.3) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.7 Connection Diagram of EUT and Peripheral Devices

For Unwanted Emissions test:



3.8 Configuration of Peripheral Devices and Cable Connections

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	Consol Cable	1	0.05	NO	0	Supplied by applicant (for RF Setup)

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	1726434	2025/6/3	2026/6/2
RF Power Meter Anritsu	ML2495A	1529002	2025/6/3	2026/6/2

Notes:

1. The test was performed in HC - Oven room 2(Hsinchu).
2. Tested Date: 2026/5/20

4.2 Power Spectral Density

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Fixed Attenuator Woken	00800A1K01A-10	00800A1K01A-10-01	2025/5/23	2026/5/22
PXA Signal Analyzer Keysight	N9030B	MY57142938	2026/4/17	2027/4/16
Software	ADT_RF Test Software v8.5.6.4	N/A	N/A	N/A

Notes:

1. The test was performed in HC - Oven room 2(Hsinchu).
2. Tested Date: 2026/5/20

4.3 6 dB Bandwidth

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

4.4 Conducted Out of Band Emissions

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

4.5 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	N/A	N/A
Bi_Log Antenna Schwarzbeck	VULB 9168	9168-361	2025/9/16	2026/9/15
Fix tool for Boresight antenna tower BV	FBA-01	FBA_SIP01	N/A	N/A
Fixed Attenuator Woken	00800N1G01A-05	00800N1G01A-05-003	2026/1/31	2027/1/30
Loop Antenna TESEQ	HLA 6121	63620	2025/10/20	2026/10/19
MXE EMI Receiver Agilent	N9038A	MY50010156	2025/6/5	2026/6/4
Preamplifier EMCI	EMC330N	980852	2026/1/31	2027/1/30
RF Coaxial Cable PEWC	8D	001	2026/1/31	2027/1/30
		966-3-2	2026/1/31	2027/1/30
		966-3-3	2026/1/31	2027/1/30
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A

Notes:

1. The test was performed in HC - 966 Chamber No. 3(Hsinchu).
2. Tested Date: 2026/5/20

4.6 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	N/A	N/A
Fix tool for Boresight antenna tower BV	FBA-01	FBA_SIP01	N/A	N/A
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-406	2025/11/9	2026/11/8
MXE EMI Receiver Agilent	N9038A	MY50010156	2025/6/5	2026/6/4
Preamplifier EMCI	EMC12630SE	980384	2026/1/10	2027/1/9
RF Coaxial Cable EMCI	EMC104-SM-SM-1500	180504	2026/1/17	2027/1/16
	EMC104-SM-SM-2000	180601	2026/1/17	2027/1/16
	EMC104-SM-SM-6000	210201	2026/1/17	2027/1/16
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A

Notes:

1. The test was performed in HC - 966 Chamber No. 3(Hsinchu).
2. Tested Date: 2026/5/18 ~ 2026/5/20

5 Limits of Test Items

5.1 RF Output Power

For systems using digital modulation in the 902-928 MHz bands: 1 Watt (30 dBm)

5.2 Power Spectral Density

The Maximum of Power Spectral Density Measurement is 8 dBm in any 3 kHz.

5.3 6 dB Bandwidth

The minimum of 6 dB Bandwidth Measurement is 0.5 MHz.

5.4 Conducted Out of Band Emissions

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

5.5 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).

5.6 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

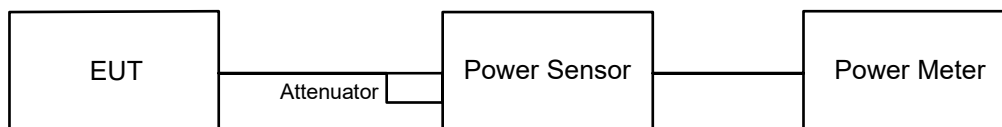
Notes:

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.

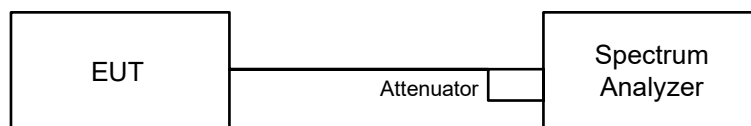
The power meter video bandwidth is greater than or equal to the DTS bandwidth and use a fast responding diode detector.

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 Power Spectral Density

6.2.1 Test Setup

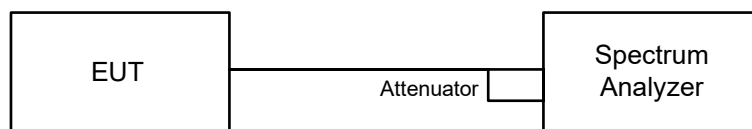


6.2.2 Test Procedure

- Set analyzer center frequency to DTS channel center frequency.
- Set the span > 1.5 times the DTS bandwidth.
- Set the RBW to: 3 kHz.
- Set the VBW $\geq 3 \times$ RBW.
- Detector = peak.
- Sweep time = No faster than coupled (auto) time.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level within the RBW.

6.3 6 dB Bandwidth

6.3.1 Test Setup

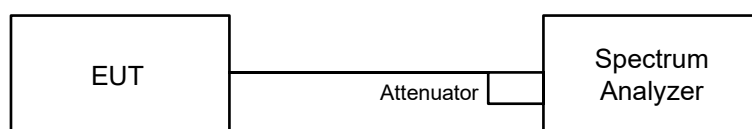


6.3.2 Test Procedure

- Set RBW = shall be in the range of 1% to 5% of the OBW but not less than 100 kHz.
- Set the VBW $\geq [3 \times \text{RBW}]$.
- Detector = peak.
- Trace mode = max-hold.
- Sweep = No faster than coupled (auto) time.
- Allow the trace to stabilize.
- Measure the maximum width of the emission by placing two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the “-6 dB down amplitude”. If a marker is below this “-6 dB down amplitude” value, then it shall be as close as possible to this value.

6.4 Conducted Out of Band Emissions

6.4.1 Test Setup



6.4.2 Test Procedure

MEASUREMENT PROCEDURE REF

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

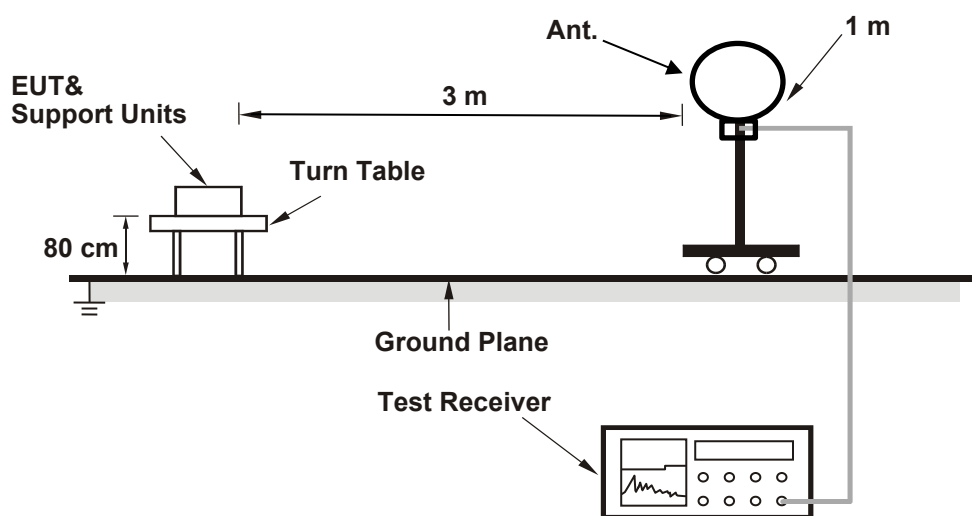
MEASUREMENT PROCEDURE OOB

- 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.
- Set RBW = 100 kHz.
- Set VBW ≥ 300 kHz.
- Detector = peak.
- Sweep = No faster than coupled (auto) time.
- Trace Mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level.

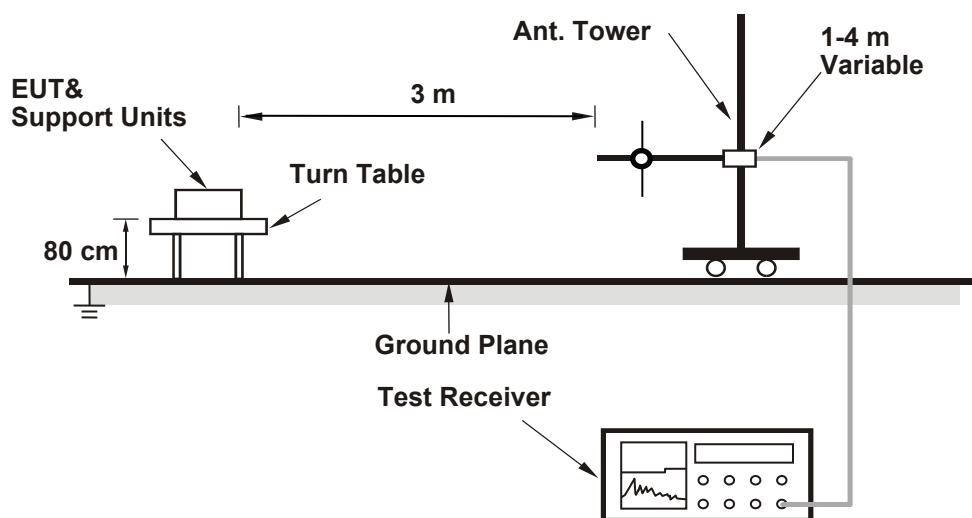
6.5 Unwanted Emissions below 1 GHz

6.5.1 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).

6.5.2 Test Procedure

For Radiated emission below 30 MHz

- 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.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- 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.
- 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:

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

For Radiated emission above 30 MHz

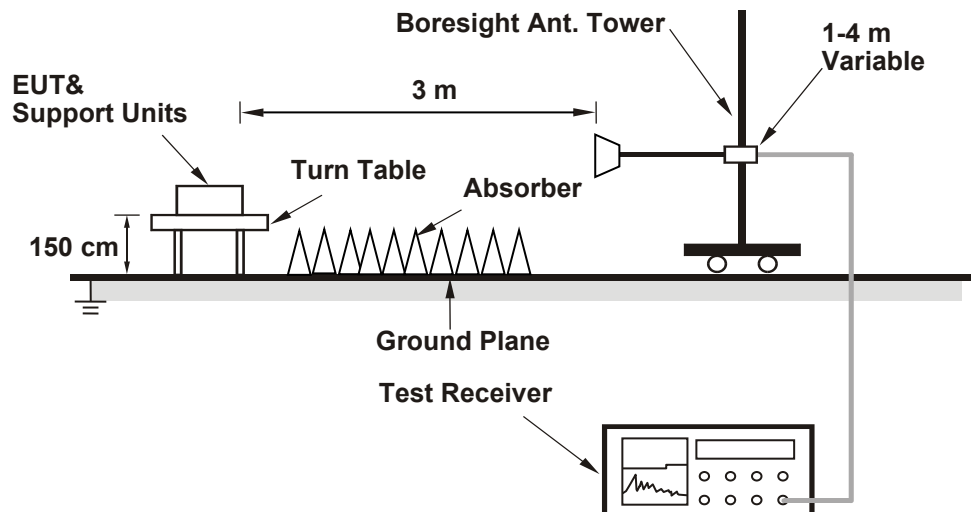
- The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to 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:

- 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).
- All modes of operation were investigated and the worst-case emissions are reported.

6.6 Unwanted Emissions above 1 GHz

6.6.1 Test Setup



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

6.6.2 Test Procedure

- The EUT was placed on the top of a rotating table 1.5 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver/spectrum analyzer was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Notes:

- The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) and Average detection (AV) at frequency above 1 GHz.
- For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10 Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1 GHz.
- 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:	3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Chris Lin
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For Peak Power

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
3(Primary)	912	29.923	14.76	30	Pass
3(Secondary)	920	29.785	14.74	30	Pass

Note: The antenna gain is 0.35 dBi $\leq$ 6 dBi, so the output power limit shall not be reduced.

For Average Power

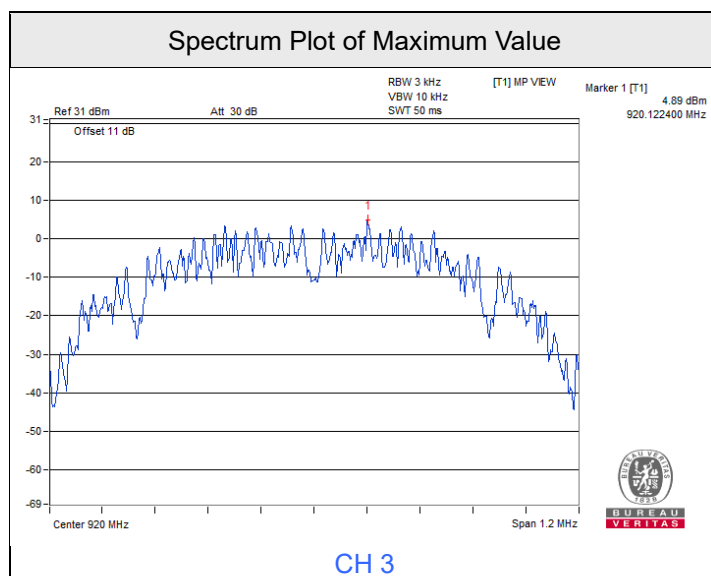
Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
3(Primary)	912	29.717	14.73
3(Secondary)	920	29.648	14.72

7.2 Power Spectral Density

Input Power:	3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Chris Lin
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Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
3(Primary)	912	4.82	8	Pass
3(Secondary)	920	4.89	8	Pass

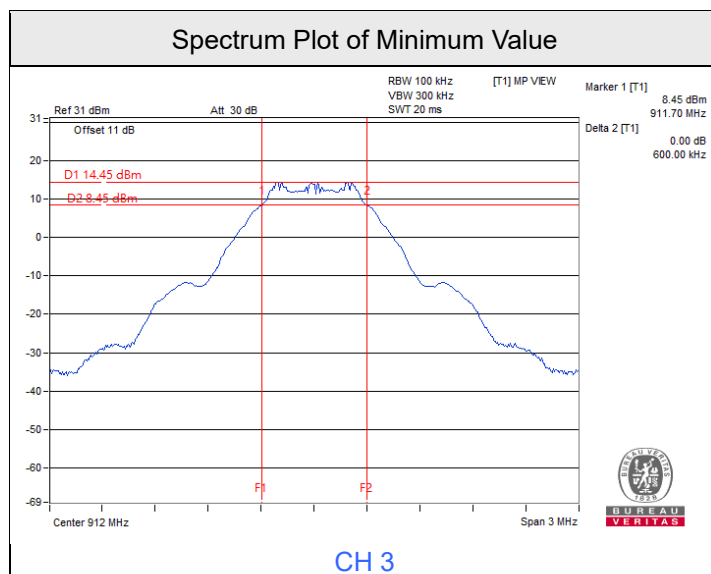
Note: The antenna gain is 0.35 dBi $\leq$ 6 dBi, so the power density limit shall not be reduced.



7.3 6 dB Bandwidth

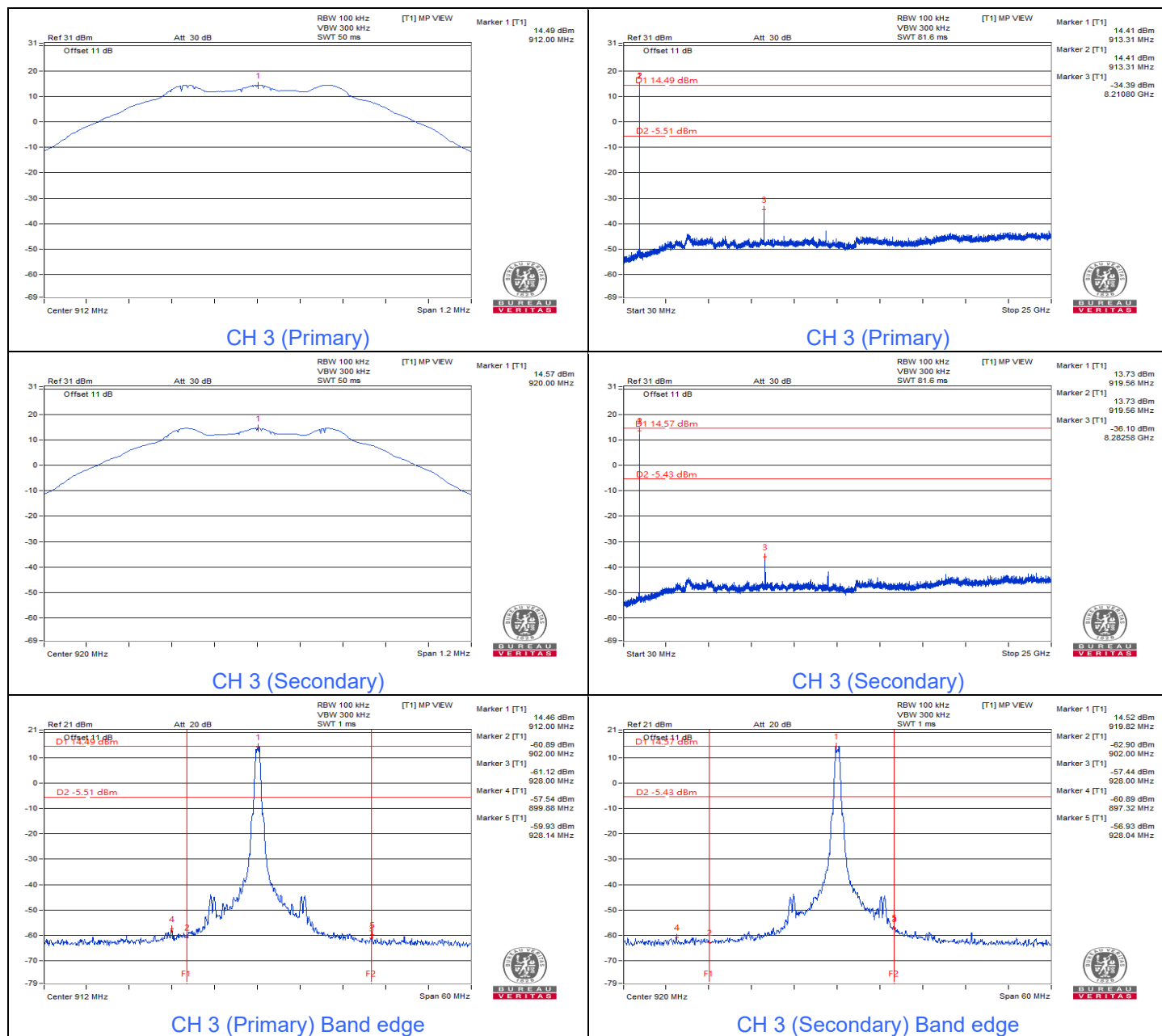
Input Power:	3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Chris Lin
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Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
3(Primary)	912	0.6	0.5	Pass
3(Secondary)	920	0.6	0.5	Pass



7.4 Conducted Out of Band Emissions

Input Power:	3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Chris Lin
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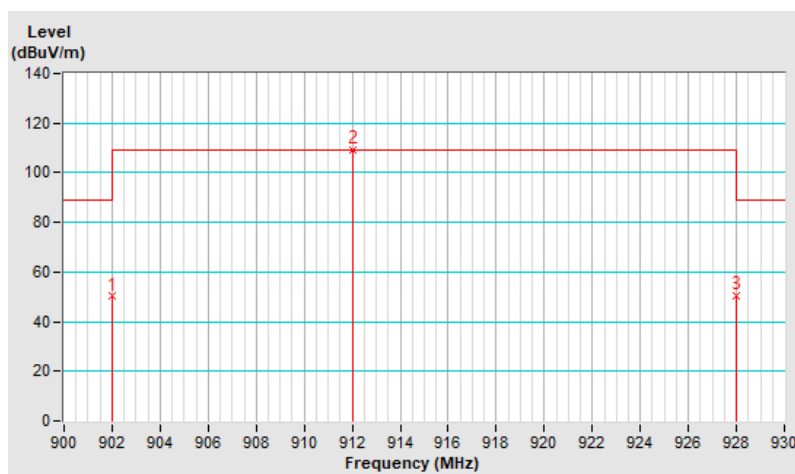
7.5 Unwanted Emissions below 1 GHz

RF Mode	Z-Wave	Channel	CH 3 (Primary) : 912 MHz
Frequency Range	9 kHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	24.9 °C, 71.1% RH
Tested By	Stars Liu		

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	902.00	50.2 QP	89.2	-39.0	1.62 H	350	19.2	31.0
2	*912.00	109.2 QP			1.62 H	350	78.0	31.2
3	928.00	50.5 QP	89.2	-38.7	1.62 H	350	19.0	31.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

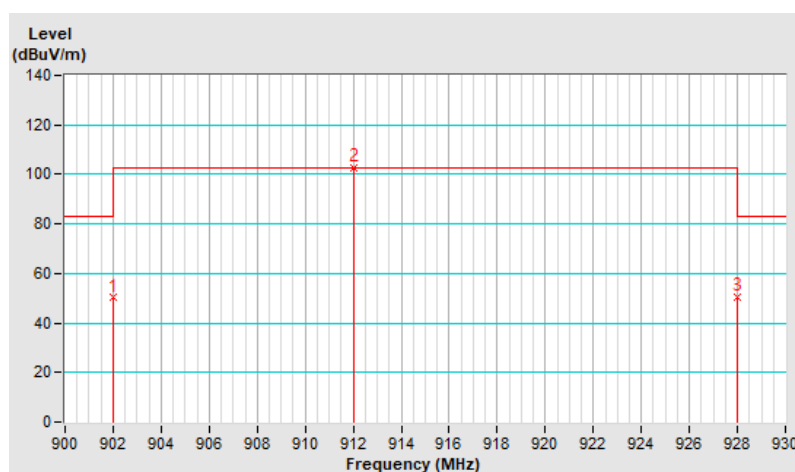


RF Mode	Z-Wave	Channel	CH 3 (Primary) : 912 MHz
Frequency Range	9 kHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	24.9 °C, 71.1% RH
Tested By	Stars Liu		

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	902.00	50.2 QP	82.8	-32.6	1.50 V	243	19.2	31.0
2	*912.00	102.8 QP			1.50 V	243	71.6	31.2
3	928.00	50.5 QP	82.8	-32.3	1.50 V	243	19.0	31.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. " * " : Fundamental frequency, the limit was restricted at the RF Output Power.

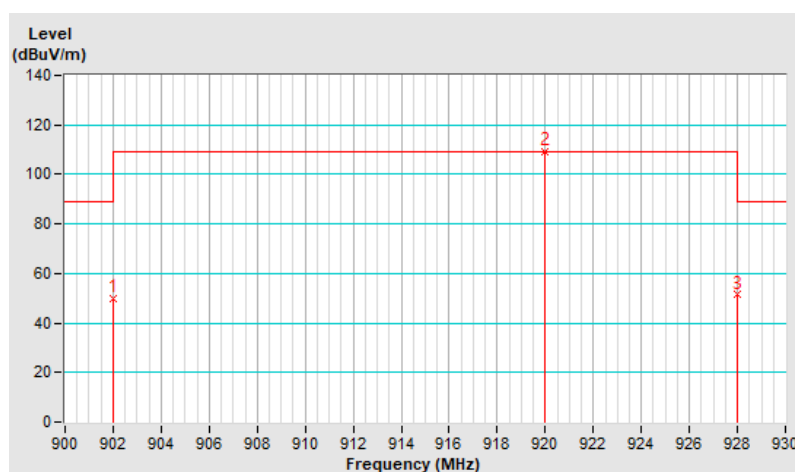


RF Mode	Z-Wave	Channel	CH 3 (Secondary) : 920 MHz
Frequency Range	9 kHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	24.9 °C, 71.1% RH
Tested By	Stars Liu		

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	902.00	50.1 QP	89.2	-39.1	1.55 H	241	19.1	31.0
2	*919.99	109.2 QP			1.61 H	360	77.8	31.4
3	928.00	51.6 QP	89.2	-37.6	1.61 H	360	20.1	31.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. " * " : Fundamental frequency, the limit was restricted at the RF Output Power.

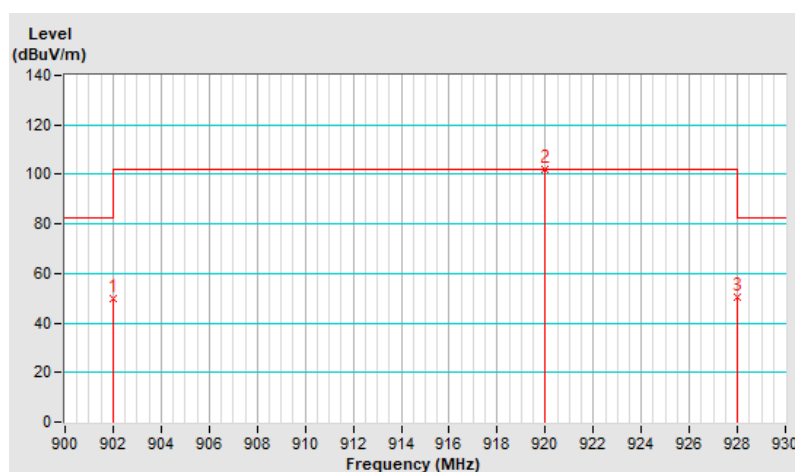


RF Mode	Z-Wave	Channel	CH 3 (Secondary) : 920 MHz
Frequency Range	9 kHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	24.9 °C, 71.1% RH
Tested By	Stars Liu		

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	902.00	50.1 QP	82.3	-32.2	1.55 V	241	19.1	31.0
2	*919.99	102.3 QP			1.55 V	241	70.9	31.4
3	928.00	50.5 QP	82.3	-31.8	1.55 V	360	19.0	31.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. " * " : Fundamental frequency, the limit was restricted at the RF Output Power.

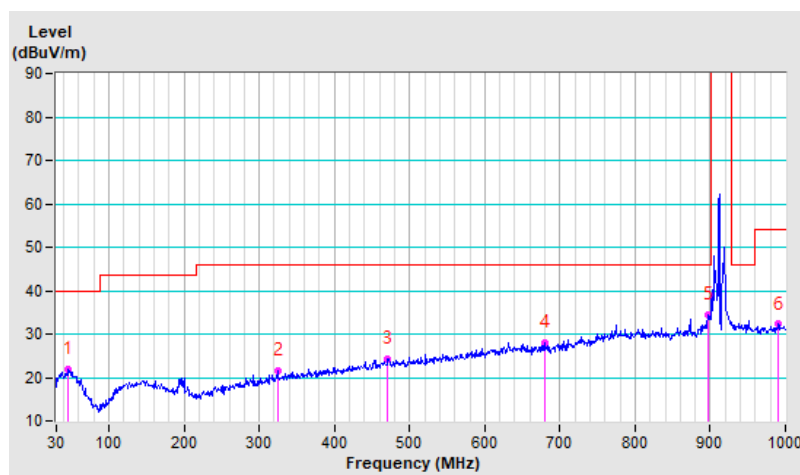


RF Mode	Z-Wave	Channel	CH 3 (Primary) : 912 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	PK: RB=120 kHz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	24.9 °C, 71.1% RH
Tested By	Stars Liu		

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	46.27	22.0 PK	40.0	-18.0	3.00 H	347	34.8	-12.8
2	323.91	21.7 PK	46.0	-24.3	1.00 H	346	32.6	-10.9
3	471.01	24.3 PK	46.0	-21.7	2.00 H	351	32.0	-7.7
4	679.27	28.0 PK	46.0	-18.0	3.00 H	0	31.8	-3.8
5	897.18	34.5 PK	46.0	-11.5	1.00 H	205	35.0	-0.5
6	990.83	32.2 PK	54.0	-21.8	1.00 H	354	31.4	0.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 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.

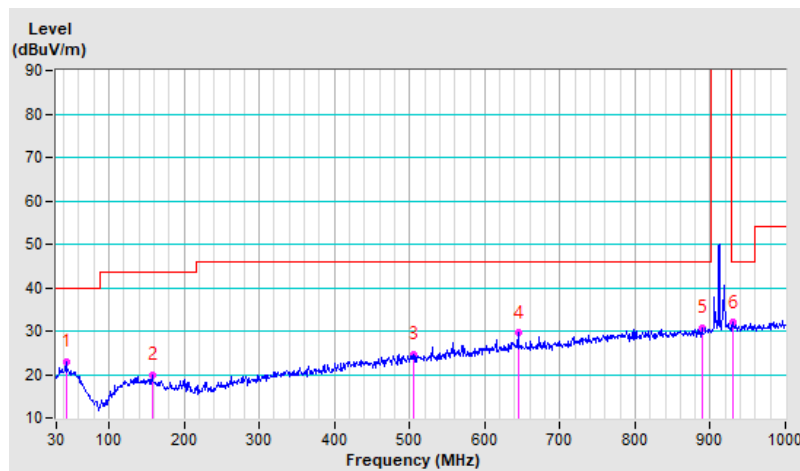


RF Mode	Z-Wave	Channel	CH 3 (Primary) : 912 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	PK: RB=120 kHz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	24.9 °C, 71.1% RH
Tested By	Stars Liu		

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	42.95	22.9 PK	40.0	-17.1	1.00 V	238	35.9	-13.0
2	157.60	19.8 PK	43.5	-23.7	2.00 V	0	32.4	-12.6
3	505.15	24.6 PK	46.0	-21.4	1.00 V	53	31.7	-7.1
4	644.35	29.5 PK	46.0	-16.5	2.00 V	180	33.5	-4.0
5	888.47	30.6 PK	46.0	-15.4	3.00 V	109	31.2	-0.6
6	929.48	31.9 PK	46.0	-14.1	3.00 V	251	31.5	0.4

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 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.

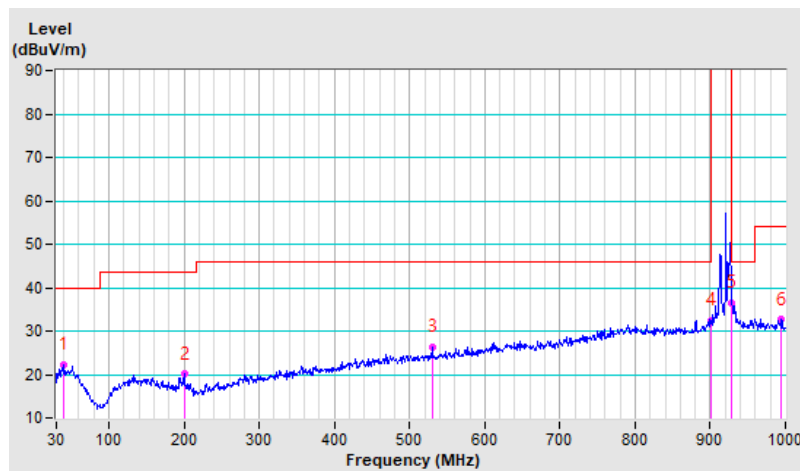


RF Mode	Z-Wave	Channel	CH 3 (Secondary) : 920 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	PK: RB=120 kHz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	24.9 °C, 71.1% RH
Tested By	Stars Liu		

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	39.55	22.2 PK	40.0	-17.8	3.00 H	360	35.5	-13.3
2	200.48	20.0 PK	43.5	-23.5	1.00 H	276	35.8	-15.8
3	530.01	26.4 PK	46.0	-19.6	2.00 H	101	33.0	-6.6
4	901.88	32.5 PK	46.0	-13.5	1.00 H	19	32.9	-0.4
5	928.56	36.4 PK	46.0	-9.6	1.00 H	349	36.0	0.4
6	993.57	32.6 PK	54.0	-21.4	2.00 H	0	31.8	0.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 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.

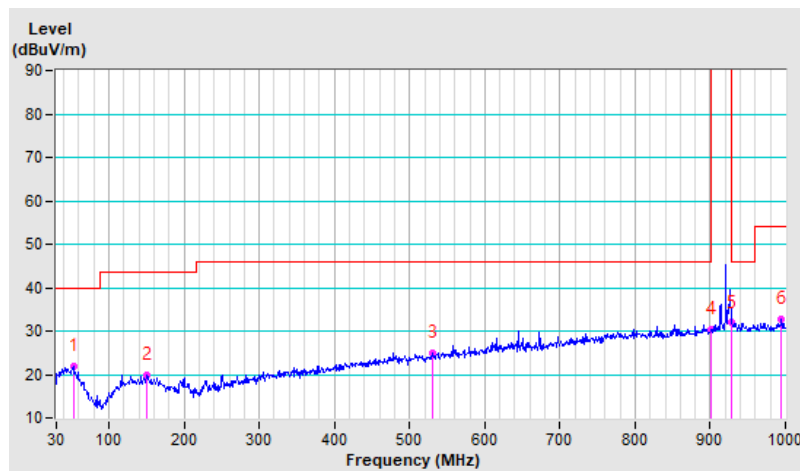


RF Mode	Z-Wave	Channel	CH 3 (Secondary) : 920 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	PK: RB=120 kHz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	24.9 °C, 71.1% RH
Tested By	Stars Liu		

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	52.33	21.8 PK	40.0	-18.2	3.00 V	257	34.8	-13.0
2	150.23	19.8 PK	43.5	-23.7	3.00 V	152	32.3	-12.5
3	529.82	25.0 PK	46.0	-21.0	2.00 V	352	31.7	-6.7
4	901.23	30.4 PK	46.0	-15.6	1.00 V	4	30.8	-0.4
5	928.73	31.9 PK	46.0	-14.1	1.00 V	158	31.5	0.4
6	994.76	32.8 PK	54.0	-21.2	3.00 V	55	32.1	0.7

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.



7.6 Unwanted Emissions above 1 GHz

RF Mode	Z-Wave	Channel	CH 3 (Primary) : 912 MHz
Frequency Range	1 GHz ~ 10 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=300 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	23 °C, 71% RH
Tested By	Stars Liu		

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	2736.00	41.6 PK	74.0	-32.4	2.21 H	128	42.8	-1.2
2	2736.00	32.5 AV	54.0	-21.5	2.21 H	128	33.7	-1.2
3	3648.00	36.8 PK	74.0	-37.2	1.54 H	223	37.0	-0.2
4	3648.00	24.9 AV	54.0	-29.1	1.54 H	223	25.1	-0.2
5	4560.00	42.8 PK	74.0	-31.2	1.31 H	124	41.3	1.5
6	4560.00	32.1 AV	54.0	-21.9	1.31 H	124	30.6	1.5
7	7296.00	45.6 PK	74.0	-28.4	2.54 H	311	38.2	7.4
8	7296.00	36.5 AV	54.0	-17.5	2.54 H	311	29.1	7.4
9	8208.00	63.5 PK	74.0	-10.5	1.79 H	254	54.8	8.7
10	8208.00	52.3 AV	54.0	-1.7	1.79 H	254	43.6	8.7
11	9120.00	48.6 PK	74.0	-25.4	1.28 H	115	38.7	9.9
12	9120.00	38.5 AV	54.0	-15.5	1.28 H	115	28.6	9.9
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	2736.00	42.1 PK	74.0	-31.9	1.81 V	354	43.3	-1.2
2	2736.00	33.2 AV	54.0	-20.8	1.81 V	354	34.4	-1.2
3	3648.00	37.6 PK	74.0	-36.4	1.50 V	312	37.8	-0.2
4	3648.00	25.3 AV	54.0	-28.7	1.50 V	312	25.5	-0.2
5	4560.00	43.5 PK	74.0	-30.5	2.71 V	326	42.0	1.5
6	4560.00	32.8 AV	54.0	-21.2	2.71 V	326	31.3	1.5
7	7296.00	47.6 PK	74.0	-26.4	1.00 V	0	40.2	7.4
8	7296.00	37.1 AV	54.0	-16.9	1.00 V	0	29.7	7.4
9	8208.00	65.4 PK	74.0	-8.6	1.25 V	108	56.7	8.7
10	8208.00	53.5 AV	54.0	-0.5	1.25 V	108	44.8	8.7
11	9120.00	50.2 PK	74.0	-23.8	1.00 V	0	40.3	9.9
12	9120.00	39.5 AV	54.0	-14.5	1.00 V	0	29.6	9.9

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.

RF Mode	Z-Wave	Channel	CH 3 (Secondary) : 920 MHz
Frequency Range	1 GHz ~ 10 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=300 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	23 °C, 71% RH
Tested By	Stars Liu		

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	2760.00	42.8 PK	74.0	-31.2	1.45 H	63	43.9	-1.1
2	2760.00	32.4 AV	54.0	-21.6	1.45 H	63	33.5	-1.1
3	3680.00	36.9 PK	74.0	-37.1	1.11 H	56	37.1	-0.2
4	3680.00	25.8 AV	54.0	-28.2	1.11 H	56	26.0	-0.2
5	4600.00	43.5 PK	74.0	-30.5	1.65 H	73	42.2	1.3
6	4600.00	33.2 AV	54.0	-20.8	1.65 H	73	31.9	1.3
7	7360.00	48.1 PK	74.0	-25.9	1.54 H	76	40.6	7.5
8	7360.00	38.5 AV	54.0	-15.5	1.54 H	76	31.0	7.5
9	8280.00	64.6 PK	74.0	-9.4	1.31 H	67	56.4	8.2
10	8280.00	52.7 AV	54.0	-1.3	1.31 H	67	44.5	8.2
11	9200.00	47.5 PK	74.0	-26.5	1.24 H	58	37.6	9.9
12	9200.00	38.0 AV	54.0	-16.0	1.24 H	58	28.1	9.9

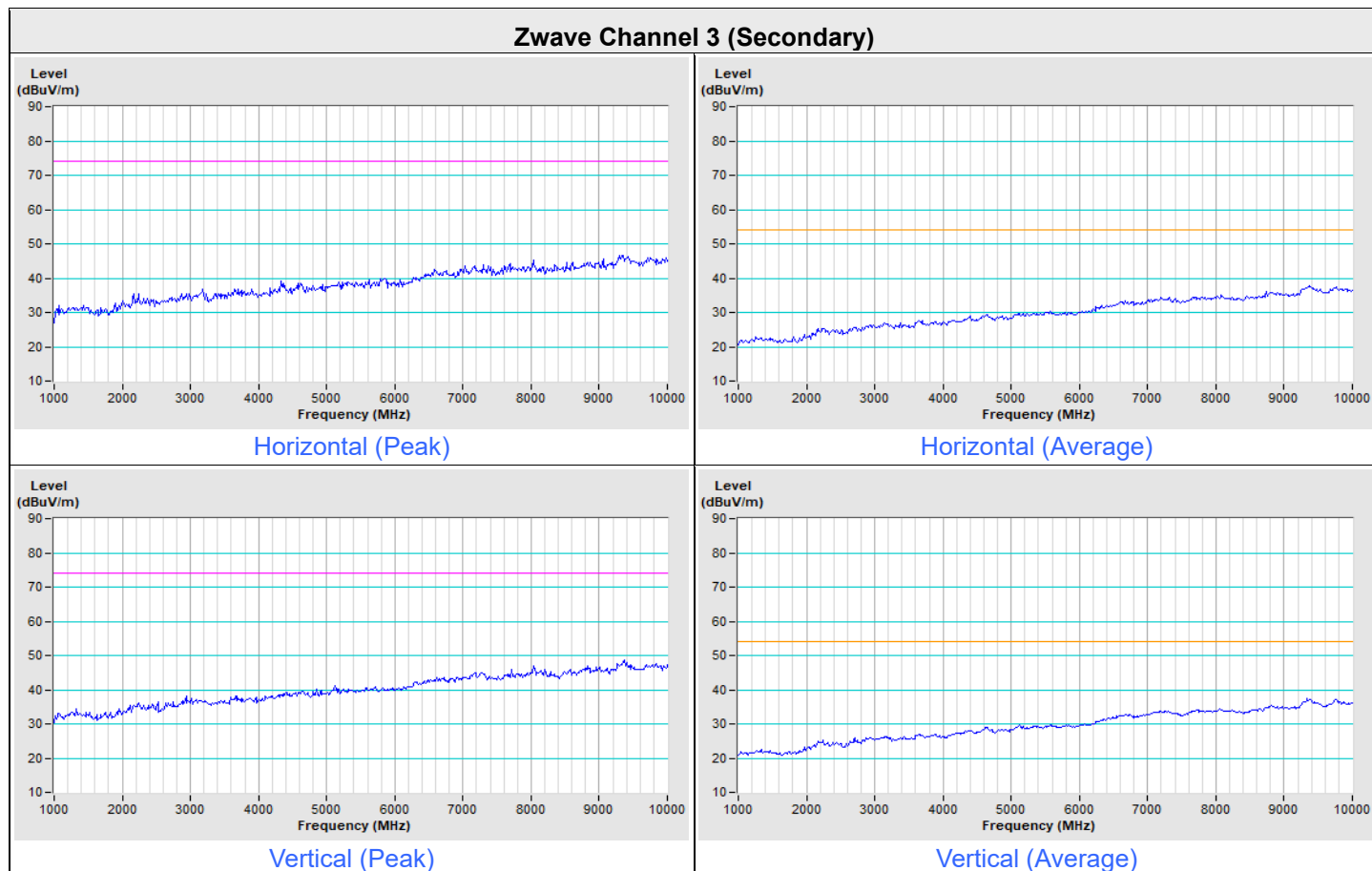
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2760.00	43.1 PK	74.0	-30.9	1.27 V	161	44.2	-1.1
2	2760.00	34.0 AV	54.0	-20.0	1.27 V	161	35.1	-1.1
3	3680.00	37.4 PK	74.0	-36.6	1.22 V	165	37.6	-0.2
4	3680.00	26.7 AV	54.0	-27.3	1.22 V	165	26.9	-0.2
5	4600.00	44.6 PK	74.0	-29.4	1.24 V	174	43.3	1.3
6	4600.00	33.5 AV	54.0	-20.5	1.24 V	174	32.2	1.3
7	7360.00	49.2 PK	74.0	-24.8	1.02 V	171	41.7	7.5
8	7360.00	39.7 AV	54.0	-14.3	1.02 V	171	32.2	7.5
9	8280.00	65.5 PK	74.0	-8.5	1.30 V	268	57.3	8.2
10	8280.00	53.5 AV	54.0	-0.5	1.30 V	268	45.3	8.2
11	9200.00	49.9 PK	74.0	-24.1	1.00 V	191	40.0	9.9
12	9200.00	39.1 AV	54.0	-14.9	1.00 V	191	29.2	9.9

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.

Plot of Other Emission

Frequency Range	1 GHz ~ 10 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
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Notes:

- 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.

8 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo)

9 Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

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

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Email: service.adt@bureauveritas.com

Web Site: <http://ee.bureauveritas.com.tw>

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

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