

FCC Test Report

FCC ID : L2BWB60

Equipment : CHI WB-60 Model No. : CHI WB-60

Brand Name : SHO-U

Applicant : Solid Year Co., Ltd.

Address : 8F.-1, No.36, Hengyang Rd., Zhongzheng Dist.,

Taipei City

Manufacturer : DONGGUAN SOLIDTEK ELECTRONICS CO.,

LTD.

Address : Youyi Road Tianxin Industrial Area, Qiaotou,

Dongguan, Guangdong, P.R. CHINA

Standard : 47 CFR FCC Part 15.209

Received Date : May 29, 2015

Tested Date : Jul. 21 ~ Jul. 24, 2015

We, International Certification Corp., would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.

Approved & Reviewed by:

Gary Chang / Manager





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Release Record

Report No.	Version	Description	Issued Date
FR552902	Rev. 01	Initial issue	Oct. 13, 2015

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Summary of Test Results

FCC Rules Test Items		Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.407MHz 43.25 (Margin -14.45dB) - QP	Pass
15.209	Radiated Emissions	[dBuV/m at 3m]: 46.47MHz 38.91 (Margin -1.09dB) - QP	Pass

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1 General Description

1.1 Information

1.1.1 Specification of the Equipment under Test (EUT)

RF General Information			
Frequency Range (MHz) Modulation			
0.110 – 0.205	ASK		

1.1.2 Antenna Details

Ant. No.	Туре	Gain (dBi)	Connector	Remark
1	Coil antenna			

1.1.3 EUT Operational Condition

Type of power supply	Input DC5V/2A from host / adapter 3.7Vdc from internal rechargeable battery Output DC 5V/2A (DC 5V/1A for USB; DC 5V/1A for Wireless charging)
----------------------	--

Note: When the device is connected to host or adapter, USB output power function will be disabled.

1.1.4 Accessories

	Accessories				
No.	Equipment	Description			
1	Li-Polymer Rechargeable Battery	Brand Name: N/A Model Name: AE5065110P Rating: 3.7Vdc, 4350mAh			
2	Micro USB cable	0.2m shielded w/o core			

1.2 Local Support Equipment List

	Support Equipment List						
No.	Equipment	Brand	Model	S/N	FCC ID	Signal cable / Length (m)	
1	Cellphone	SAMSUNG	GT-N7100		A3LGTN7100		
2	Wireless Tag	pqi	PB-114				
3	USB cable					1m shielded with one core.	
4	AC Adapter	Apple	A1357				

Note:

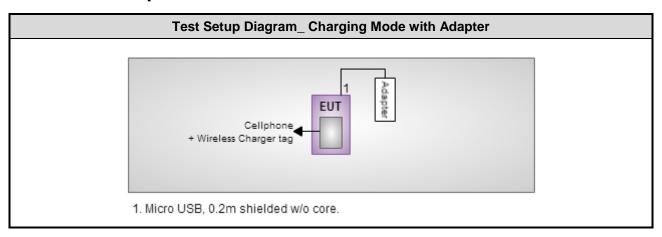
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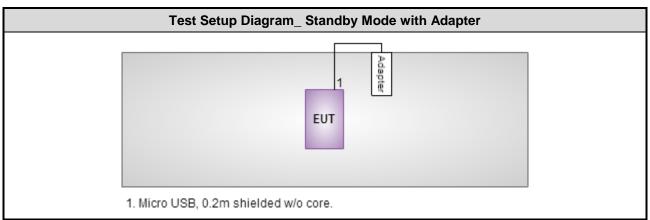
¹⁾ No. 3 was provided by applicant.

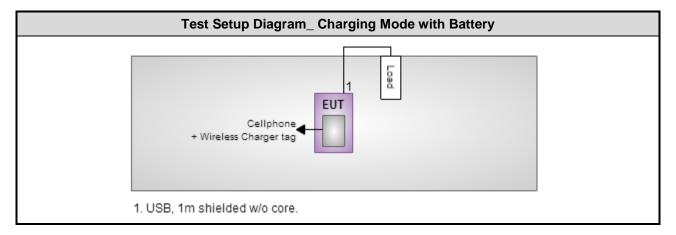
²⁾ Wireless tag is installed to cellphone to enable wireless charging function of cellphone.



1.3 Test Setup Chart







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1.4 The Equipment List

Test Item	Conducted Emission	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)					
Instrument	Manufacturer	Manufacturer Model No. Serial No. Calibration Date Calibration Until				
EMC Receiver	R&S	ESCS 30	100169	Oct. 17, 2014	Oct. 16, 2015	
LISN	SCHWARZBECK	Schwarzbeck 8127	8127-667	Nov. 17, 2014	Nov. 16, 2015	
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Dec. 31, 2014	Dec. 30, 2015	
Measurement Software	AUDIX	e3	6.120210k	NA	NA	
Note: Calibration Interval of instruments listed above is one year.						

Test Item	Radiated Emission					
Test Site	966 chamber 2 / (03CH02-WS)					
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until	
Spectrum Analyzer	R&S	FSV40	101499	Dec. 31, 2014	Dec. 30, 2015	
Receiver	R&S	ESR3	101657	Jan. 15, 2015	Jan. 14, 2016	
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-524	Oct. 16, 2014	Oct. 15, 2015	
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1095	Oct. 14, 2014	Oct. 13, 2015	
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 10, 2014	Nov. 09, 2015	
Loop Antenna	R&S	HFH2-Z2	11900	Nov. 10, 2014	Nov. 09, 2015	
Preamplifier	Burgeon	BPA-530	100218	Nov. 10, 2014	Nov. 09, 2015	
Preamplifier	Agilent	83017A	MY39501309	Sep. 29, 2014	Sep. 28, 2015	
Preamplifier	EMC	EMC184045B	980192	Aug. 26, 2014	Aug. 25, 2015	
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16140/4	Dec. 16, 2014	Dec. 15, 2015	
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16018/4	Dec. 16, 2014	Dec. 15, 2015	
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16015/4	Dec. 16, 2014	Dec. 15, 2015	
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-003	Dec. 16, 2014	Dec. 15, 2015	
LF cable 10M	Woken	CFD400NL-LW	CFD400NL-004	Dec. 16, 2014	Dec. 15, 2015	
Measurement Software	AUDIX	e3	6.120210g	NA	NA	
Note: Calibration Inter	rval of instruments listed	d above is one year.				

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1.5 Test Standards

According to the specification of EUT, the EUT must comply with following standards and KDB documents.

47 CFR FCC Part 15.209

ANSI C63.10-2013

1.6 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

Measurement Uncertainty				
Parameters	Uncertainty			
AC conducted emission	±2.92 dB			
Radiated emission ≤ 1GHz	±3.62 dB			
Radiated emission > 1GHz	±5.60 dB			

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2 Test Configuration

2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	21°C / 61%	Kevin Ma
Radiated Emissions	03CH02-WS	21-23°C / 61-62%	Warren Lee Anderson Hong

FCC site registration No.: 657002IC site registration No.: 10807A-2

2.2 The Worst Test Modes and Channel Details

Test item	Mode	Test Configuration
AC Conducted Emissions	ASK	1, 2
Radiated Emissions	ASK	1, 2, 3

NOTE: The EUT had been tested by following test configurations.

Configuration 1 : AC Adapter Mode
 Configuration 2 : Standby Mode

3) Configuration 3: Battery

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3 Transmitter Test Results

3.1 Conducted Emissions

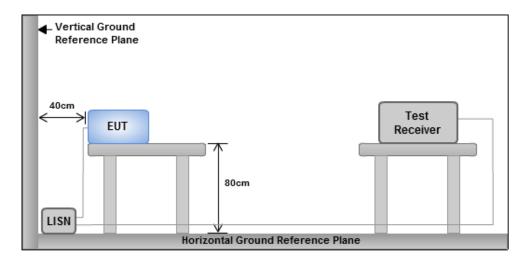
3.1.1 Limit of Conducted Emissions

Conducted Emissions Limit									
Frequency Emission (MHz) Quasi-Peak Average									
0.15-0.5	66 - 56 *	56 - 46 *							
0.5-5	56	46							
5-30 60 50									
Note 1: * Decreases with the logarithm of the frequency.									

3.1.2 Test Procedures

- 1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
- 2. The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50 Ω LISN port.
- 3. AC conducted emission measurements is made over frequency range from 150 kHz to 30 MHz.
- 4. This measurement was performed with AC 120V / 60Hz.

3.1.3 Test Setup



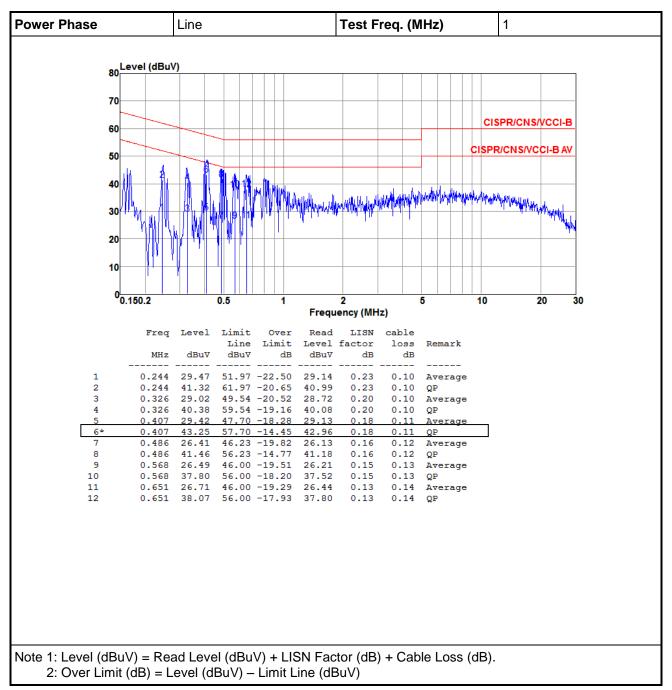
Note: 1. Support units were connected to second LISN.

Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

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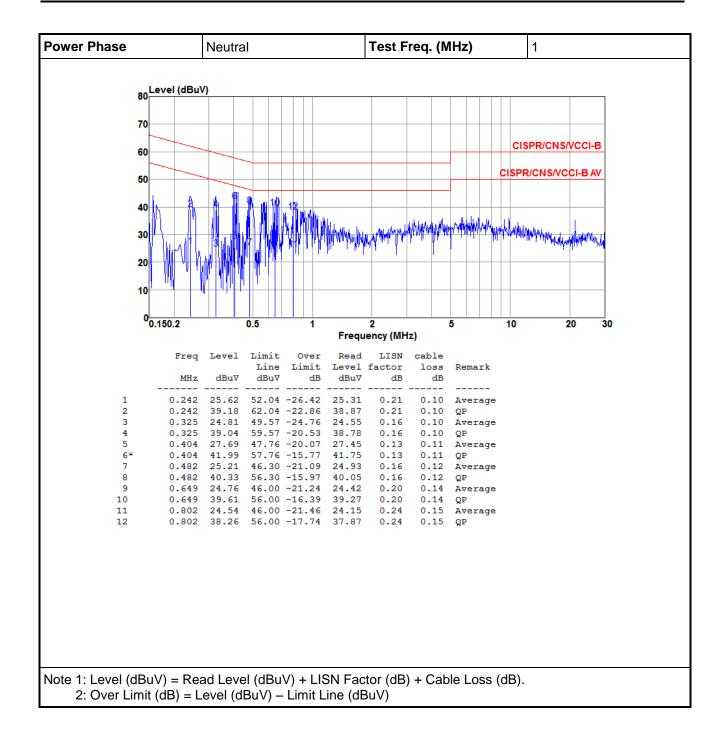


3.1.4 Test Result of Conducted Emissions



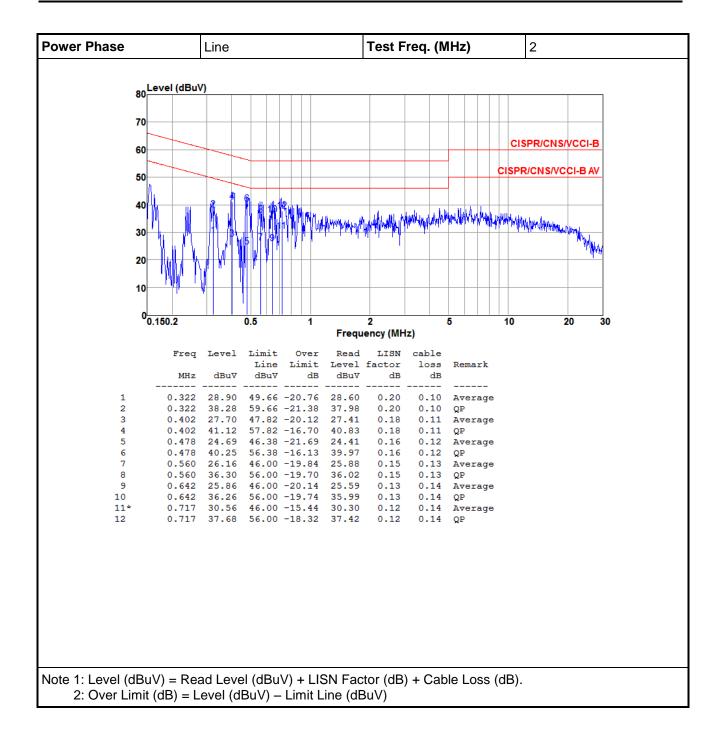
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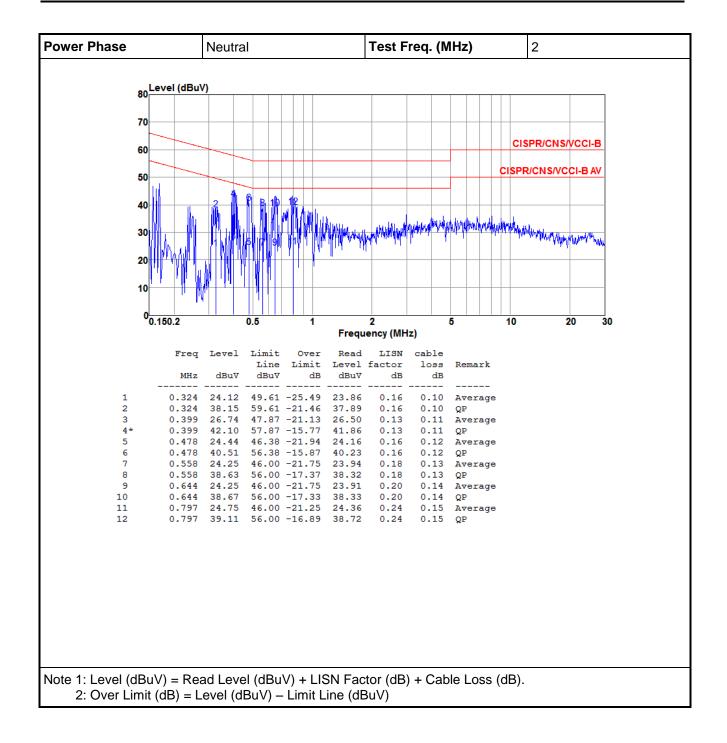
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3.2 Radiated Emissions

3.2.1 Limit of Radiated Emissions

Restricted Band Emissions Limit								
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)					
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300					
0.490~1.705	24000/F(kHz)	33.8 - 23	30					
1.705~30.0	30	29.54	30					
30~88	100	40	3					
88~216	150	43.5	3					
216~960	216~960 200		3					
Above 960	500	54	3					

Note 1:

Qusai-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit

Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

3.2.2 Test Procedures

- Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at a height of 0.8 m test table above the ground plane.
- 2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
- 3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

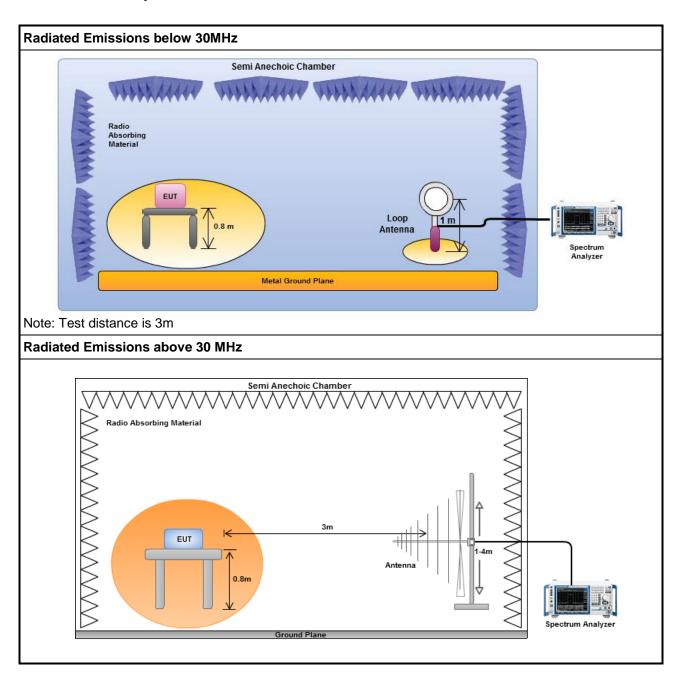
Note:

- 1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission above 30 MHz.
- 2. 9 kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission within 490kHz ~ 30 MHz
- 3. 9 kHz measurement bandwidth of test receiver and Peak/Average detector is for radiated emission below 490 kHz

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3.2.3 Test Setup



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3.2.4 Transmitter Radiated Unwanted Emissions (9kHz ~ 490kHz)

Polarization	1	Loop Open					
Mode		1					
	Frequency (MHz)	Level dBuV/m	Limit (dBuV/m)	Margin (dB)	Reading (dBuV/m)	Factor	Remark
1	0.16	84.88	103.52	-18.64	65.32	19.56	Average
2	0.16	85.18	123.52	-38.34	65.62	19.56	Peak
3	0.31	46.18	97.78	-51.60	26.68	19.5	Average
4	0.31	46.65	117.78	-71.13	27.15	19.5	Peak
5	0.47	60.31	94.16	-33.85	40.81	19.5	Average
6	0.47	60.73	114.16	-53.43	41.23	19.5	Peak

Polarizatio	n	Loop Close							
Mode		1	1						
	Frequency (MHz)	Level dBuV/m	Limit (dBuV/m)	Margin (dB)	Reading (dBuV/m)	Factor	Remark		
1	0.16	79.48	103.52	-24.04	59.92	19.56	Average		
2	0.16	79.69	123.52	-43.83	60.13	19.56	Peak		
3	0.31	43.78	97.78	-54.00	24.28	19.5	Average		
4	0.31	44.28	117.78	-73.50	24.78	19.5	Peak		
5	0.47	55.15	94.16	-39.01	35.65	19.5	Average		
6	0.47	55.43	114.16	-58.73	35.93	19.5	Peak		

Polarization	n	Loop Open						
Mode		2	2					
	Frequency (MHz)	Level dBuV/m	Limit (dBuV/m)	Margin (dB)	Reading (dBuV/m)	Factor	Remark	
1	0.18	67.85	102.5	-34.65	48.3	19.55	Average	
2	0.18	70.65	122.5	-51.85	51.1	19.55	Peak	
3	0.24	42.21	100	-57.79	22.69	19.52	Average	
4	0.24	42.88	120	-77.12	23.36	19.52	Peak	
5	0.36	37.47	96.48	-59.01	17.97	19.5	Average	
6	0.36	38.07	116.48	-78.41	18.57	19.5	Peak	

Polarization	1	Loop Close						
Mode		2	2					
	Frequency (MHz)	Level dBuV/m	Limit (dBuV/m)	Margin (dB)	Reading (dBuV/m)	Factor	Remark	
1	0.18	55.15	102.5	-47.35	35.6	19.55	Average	
2	0.18	57.85	122.5	-64.65	38.3	19.55	Peak	
3	0.24	42.23	100	-57.77	22.71	19.52	Average	
4	0.24	42.98	120	-77.02	23.46	19.52	Peak	
5	0.36	37.92	96.48	-58.56	18.42	19.5	Average	
6	0.36	38.77	116.48	-77.71	19.27	19.5	Peak	

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor and cable loss

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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Polarization	1	Loop Open					
Mode		3					
	Frequency (MHz)	Level dBuV/m	Limit (dBuV/m)	Margin (dB)	Reading (dBuV/m)	Factor	Remark
1	0.16	85.9	103.52	-17.62	66.34	19.56	Average
2	0.16	86.31	123.52	-37.21	66.75	19.56	Peak
3	0.31	44.94	97.78	-52.84	25.44	19.5	Average
4	0.31	45.58	117.78	-72.20	26.08	19.5	Peak
5	0.47	60.56	94.16	-33.60	41.06	19.5	Average
6	0.47	60.84	114.16	-53.32	41.34	19.5	Peak

Polarization Loop Close								
Mode		3	3					
	Frequency	Level	Limit	Margin	Reading	Factor	Remark	
	(MHz)	dBuV/m	(dBuV/m)	(dB)	(dBuV/m)			
1	0.16	79.96	103.52	-23.56	60.4	19.56	Average	
2	0.16	80.28	123.52	-43.24	60.72	19.56	Peak	
3	0.31	43.74	97.78	-54.04	24.24	19.5	Average	
4	0.31	44.4	117.78	-73.38	24.9	19.5	Peak	
5	0.47	55.22	94.16	-38.94	35.72	19.5	Average	
6	0.47	55.53	114.16	-58.63	36.03	19.5	Peak	

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

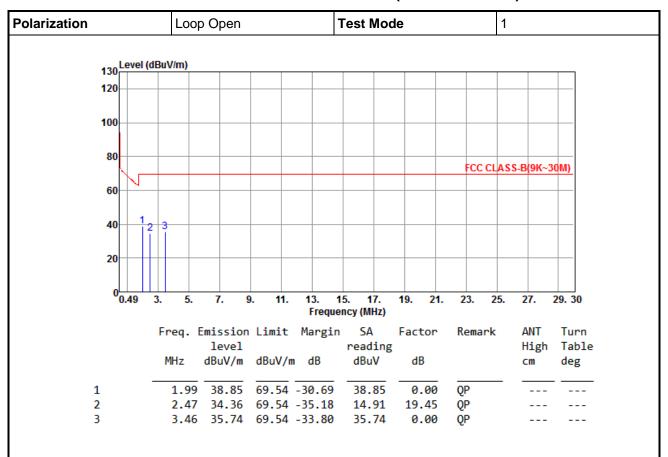
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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^{*}Factor includes antenna factor and cable loss



3.2.5 Transmitter Radiated Unwanted Emissions (490kHz~30MHz)



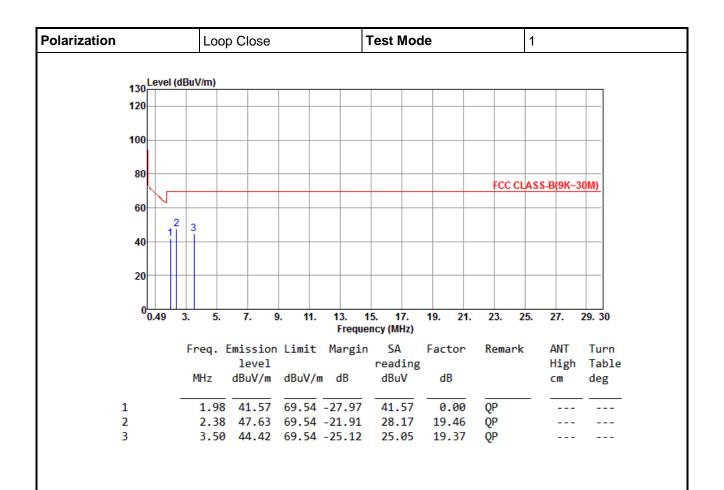
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor and cable loss

Note 2: Margin (dB) = Emission level (dBuV/m) - Limit (dBuV/m).

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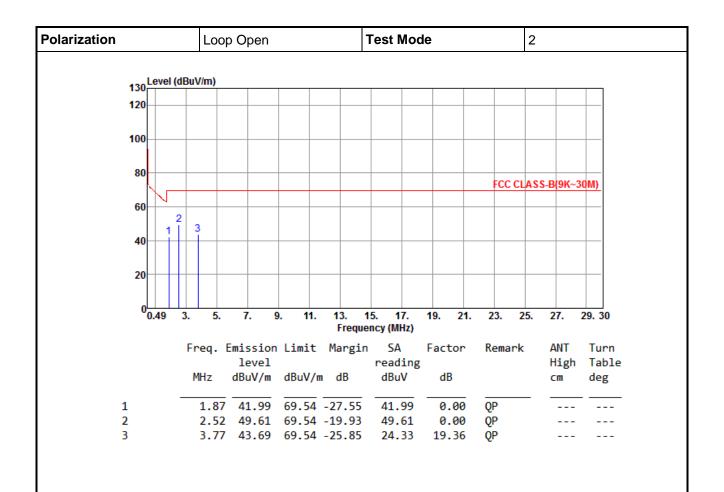


*Factor includes antenna factor and cable loss

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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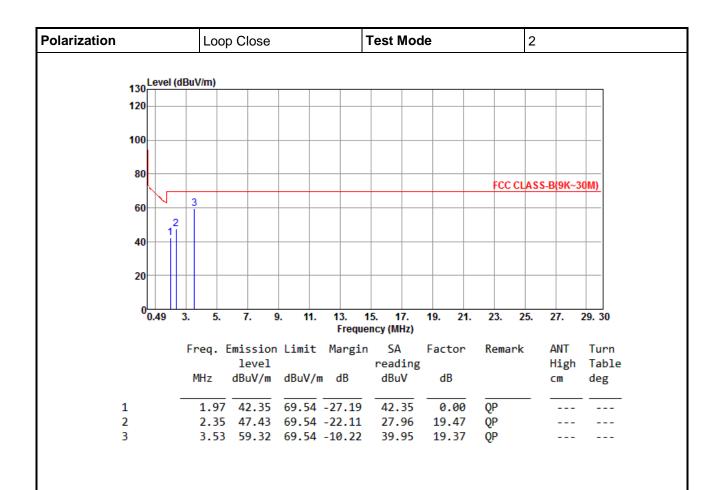


*Factor includes antenna factor and cable loss

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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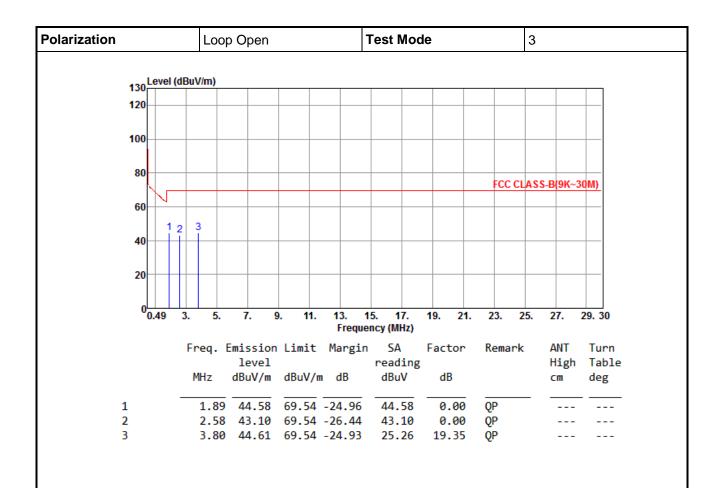


*Factor includes antenna factor and cable loss

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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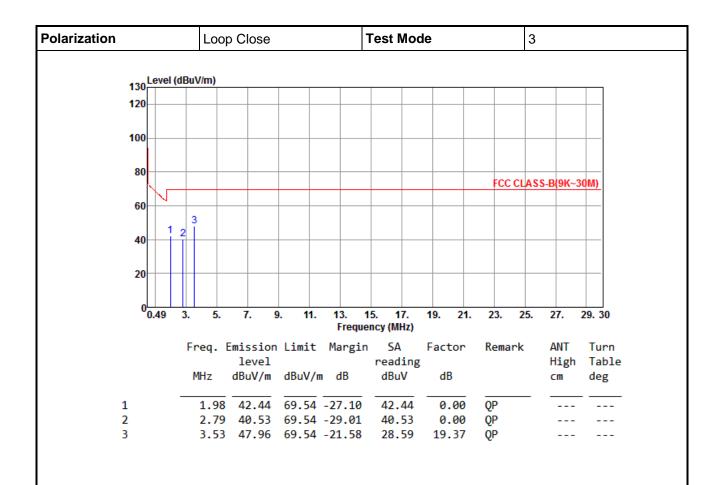


*Factor includes antenna factor and cable loss

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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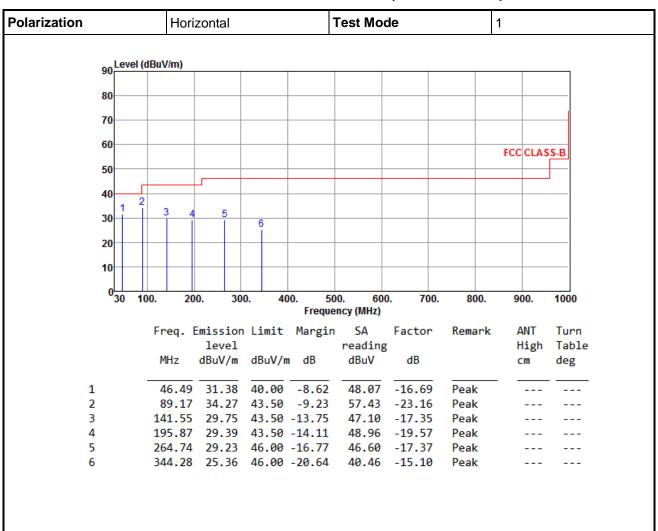
*Factor includes antenna factor and cable loss

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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3.2.6 Transmitter Radiated Unwanted Emissions (Above 30MHz)



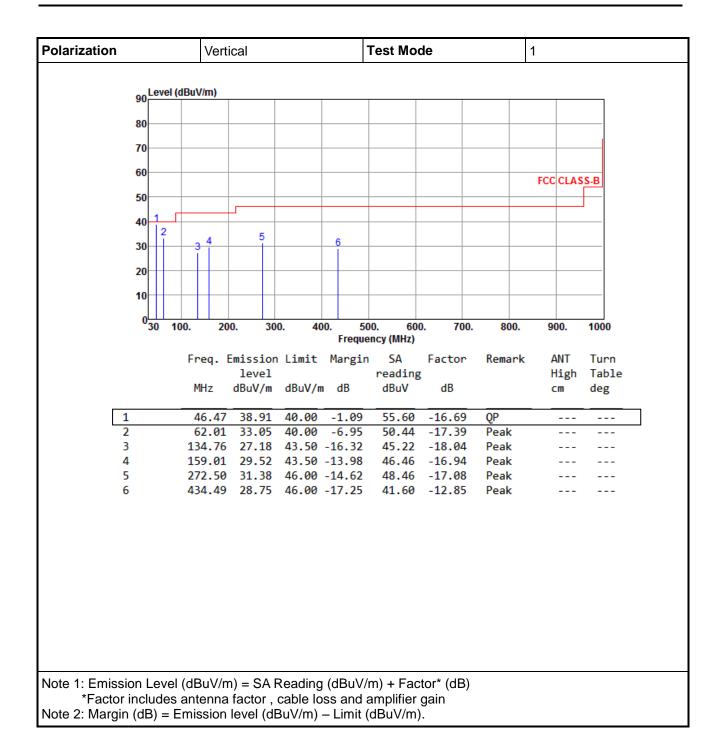
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) - Limit (dBuV/m).

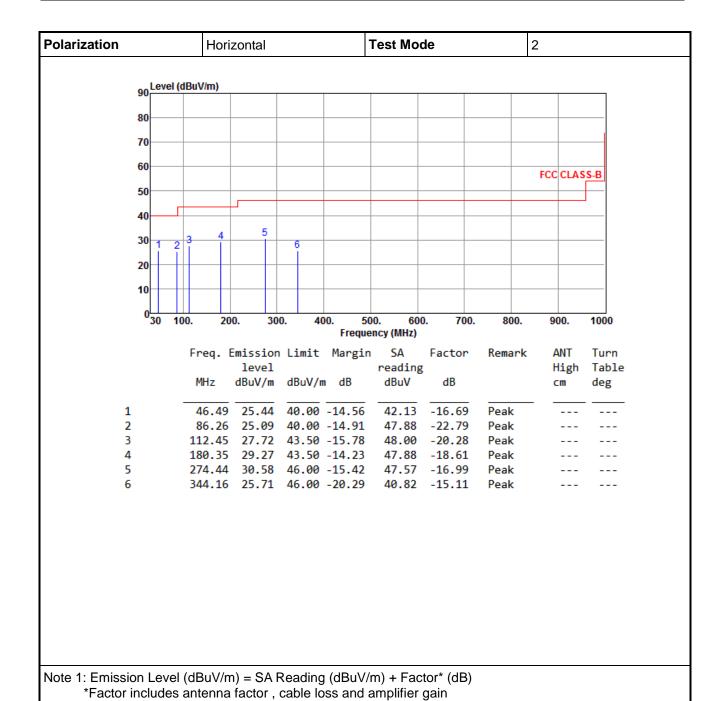
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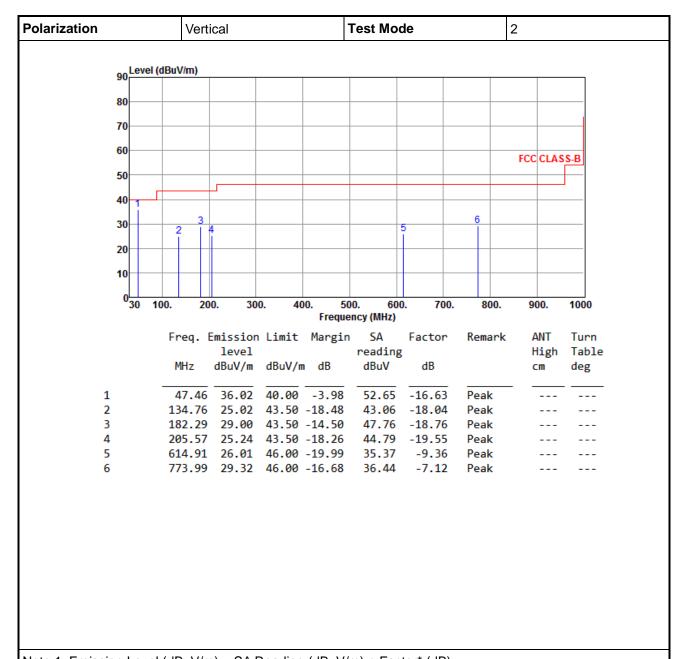




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Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).



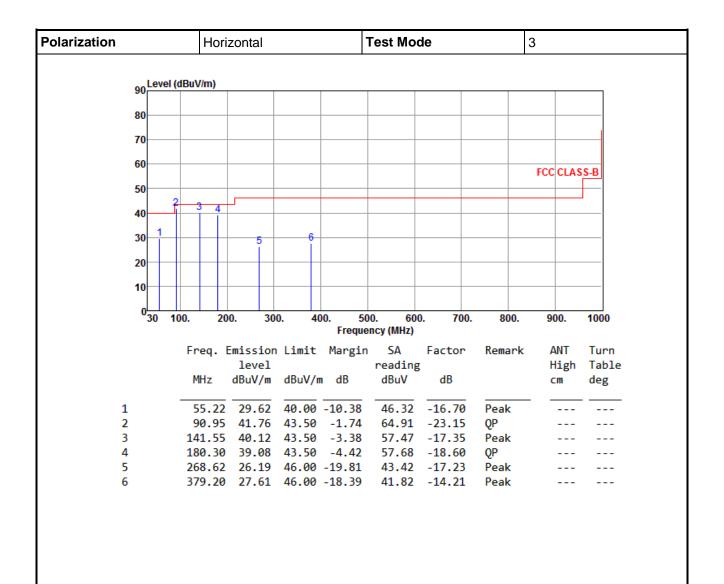


Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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^{*}Factor includes antenna factor, cable loss and amplifier gain



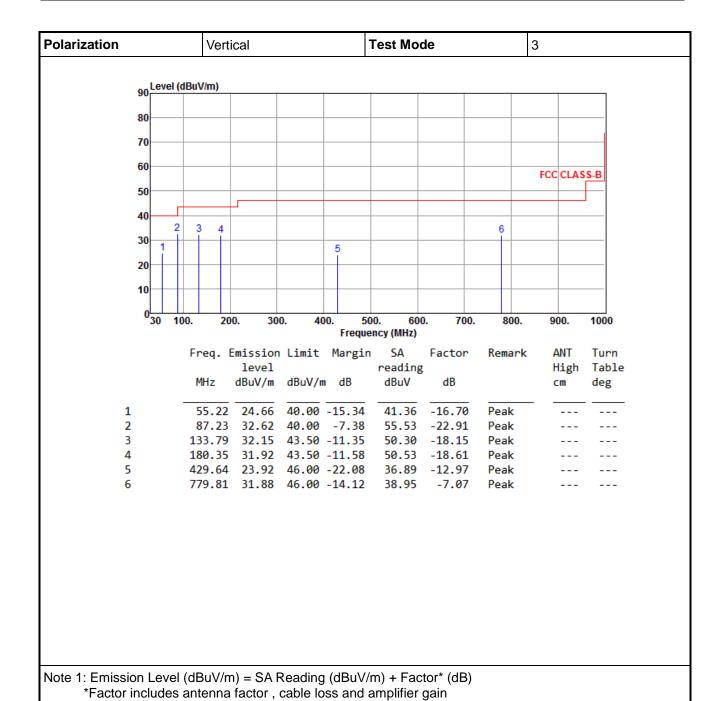


Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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^{*}Factor includes antenna factor, cable loss and amplifier gain





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Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).



4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corp, it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan Hsiang. Location map can be found on our website http://www.icertifi.com.tw.

Linkou

Tel: 886-2-2601-1640

No. 30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei City, Taiwan,

R.O.C.

Kwei Shan

Tel: 886-3-271-8666 No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan

Hsien 333, Taiwan, R.O.C.

Kwei Shan Site II

Tel: 886-3-271-8640

No. 14-1, Lane 19, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C.

If you have any suggestion, please feel free to contact us as below information

Tel: 886-3-271-8666 Fax: 886-3-318-0155

Email: ICC_Service@icertifi.com.tw

==END==

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