

TEST REPORT

KCTL KCTL Inc.

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Report No.:
KR16-SER0025

Page (1) of (41)



1. Client

- Name : QUOSS Co., LTD.
- Address : 501-ho 5F 53, 250Beon-gil, Geonji-ro,
Seo-gu, Incheon, Korea
- Date of Receipt : 2016-08-17

2. Use of Report : -

3. Name of Product and Model : BIDET / Q-6100

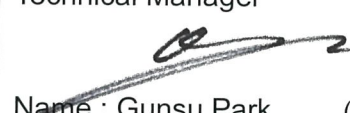
4. Manufacturer and Country of Origin : QUOSS Co., LTD. / Korea

5. Date of Test : 2016-09-12 to 2016-09-13

6. Test method used : AS/NZS CISPR 14-1:2010

7. Test Results : Refer to the test result in the test report

This laboratory is not accredited for the test results marked. *

Affirmation	Tested by	Technical Manager
	 Name : Dootae Lee (Signature)	 Name : Gunsu Park (Signature)

The above testing certificate is the accredited test results by Korea Laboratory Accreditation Scheme, which signed the ILAC-MRA.

2016-09-20

Accredited by KOLAS, Republic of KOREA

KCTL Inc.

As a test result of the sample which was submitted from the client, this report does not guarantee the whole product quality. This test report should not be used and copied without a written agreement by KCTL Inc.

REPORT REVISION HISTORY

Date	Revision	Page No
2016-09-20	Originally issued	-

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1. Applicant information

Applicant: QUOSS Co., LTD.
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Contact name: Jonggap Lee

Manufacturer: QUOSS Co., LTD.
Address: 501-ho 5F 53, 250Beon-gil, Geonji-ro, Seo-gu, Incheon, Korea
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Fax: +82-32-715-7188
E-mail: iquoss@hotmail.com
Contact name: Jonggap Lee

2. Laboratory information

Address

KCTL Inc. (Suwon Lab.)

65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea

Telephone Number: 82 70 5008 1021

Facsimile Number: 82 505 299 8311

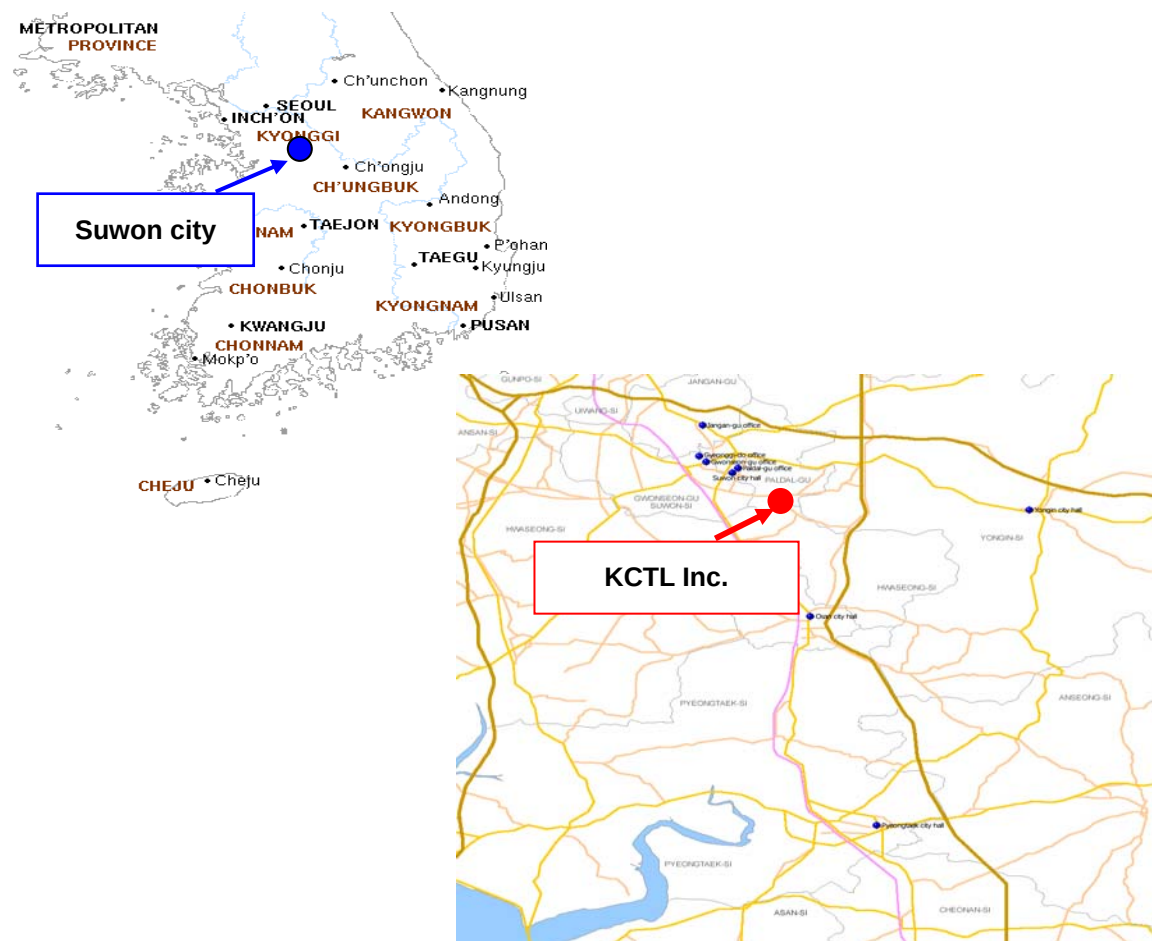
FCC Site Designation No: KR0040, FCC Site Registration No: 687132

VCCI Registration No. : R-3327, G-198, C-3706, T-1849

Industry Canada Registration No. : 8035A

KOLAS NO.: KT231

SITE MAP



3. Test system configuration

3.1 Operation environment

	Temperature	Humidity	Pressure
Shielded room(CE)	23.4 °C	42.4 % R.H.	-

Test site

These testing items were performed following locations;

Test item	Test site
Conducted Emission	Shielded Room
Disturbance power	Shielded Room
Discontinuous interference	Shielded Room
Radiated Emission	10 m Chamber

3.2 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC.

The factors contributing to uncertainties are test receiver, cable loss, antenna factor calibration, Antenna directivity, antenna factor variation with height, antenna phase center variation, antenna frequency interpolation, measurement distance variation, site imperfection, mismatch, and system repeatability. Based on CISPR 16-4-2, the measurement uncertainty level with a 95% confidence level was applied.

Conducted Emission measurement (Confidence level about 95 %, $k = 2$)		
Shielded Room (CE#1)	9 kHz ~ 150 kHz:	3.80 dB
	150 kHz ~ 30 MHz:	3.42 dB
Shielded Room (CE#2)	9 kHz ~ 150 kHz:	3.82 dB
	150 kHz ~ 30 MHz:	3.40 dB
Radiated Emission measurement (Confidence level about 95 %, $k = 2$)		
10 m Chamber (4F)	30 MHz ~ 300 MHz	3 m: 5.48 dB
		10 m: 5.48 dB
	300 MHz ~ 1 000 MHz	3 m: 5.60 dB
		10 m: 5.48 dB
	1 GHz ~ 6 GHz	3 m: 6.00 dB
10 m Chamber (2F)	30 MHz ~ 300 MHz	3 m: 5.04 dB
		10 m: 5.04 dB
	300 MHz ~ 1 000 MHz	3 m: 5.16 dB
		10 m: 5.04 dB
	1 GHz ~ 6 GHz	3 m: 6.10 dB
Radio Frequency Electromagnetic Fields (Confidence level about 95 %, $k = 2$)		
1.85 dB		
Disturbance Power Electromagnetic Fields (Confidence level about 95 %, $k = 2$)		
3.20 dB		

3.3 Measurement Program

These test items were performed by software programs;

Test item	Measurement Program	Used
Conducted Emission	EP5CE_V 5.4.0(TOYO)	☒
Radiated Emission	EP5RE_V 4.6.0(TOYO)	☐
Discontinuous interference	EMC32_V 9.01.0(ROHDE & SCHWARZ)	☒

4. Description of EUT

4.1 General information

Power supply		AC240V/50Hz
Power consumption		Max. 1650W(main unit : 1600W, heated seat : 45W, Other : 5W)
Power cord length		170cm or longer
Water pressure		0.5 – 7.5 kgf/cm ²
Water supply		connected directly to tap water
Water supply control		by solenoid valve
Clean-sing	Heating	Instantaneous heating
	WASH	Bubble cleansing(water 730ml + air500ml/min)
	BIDET	Bubble cleansing(water 730ml + air500ml/min)
	Water pressure	Adjustable by 8 levels
	Temperature	Adjustable by 4 levels(room, 34, 37, 40℃)
	Nozzle position	Adjusted by MICOM
	Power consumption	0 – max. 1,600W
Heated seat	Safety device	Flow meter, Thermister x 2, Bimetal(48℃), Thermal fuse(66℃)
	Temperature	Adjustable by 4 levels(room, 34℃, 38℃, 42℃)
	Power consumption of heater	45W
	Anti-slam seat	Damper(slow down), shock absorber by oil pressure
Drying	Safety device	Thermistor, thermal fuse(77℃)
	Temperature	Adjustable by 8 levels(room, 36, 40, 44, 48, 52, 56, 60℃)
	Power consumption of heater	270W
	Safety device	Thermal fuse(153℃)
	Fan	Low noise,DC12V
Deodorizer	Filter	Active carbon(lasts for 7 years)
	Method	Suction (low noise, Dc12V)
Other Functions	Occupied seat sensor	Touch sensor
	Water purifying filter	Sediment filter(recommended to replace in every 6 month)
	Aroma	Aromatic
	LIGHT	LED
	Material	ABS
Accessory part	Installation	fixing plate 1, fixing bolt 2, nut 2, bracket 2, rubber packing 2
	Water supply	T- valve 1+packing 1, connection(tubing) hose 1, flexible hose 1 + packing 2, nipple(2 caps) 1, nipple(1 cap) 1, water filter 1

4.2 Product description

Type of product	BIDET																	
Model name (Basic)	Q-6100																	
Model name (Variant)	Q-6000, Q3, QB4000, JS6100, PK-2000, YB-610, Q-6900, JS6000, YB-6000																	
Difference	Brand model names																	
Serial no	-																	
Testing voltage	240 V, 50 Hz																	
Input rating	240 V, 50 Hz																	
Internal clock frequency	8 MHz																	
Note	<table><tr><td>Test #1</td><td rowspan="2">DRY</td><td>Hot</td><td>8 Step</td></tr><tr><td>Test #2</td><td>Cool</td><td>1 Step</td></tr><tr><td>Test #3</td><td rowspan="2">BITET</td><td>High</td><td>7.5 Step</td></tr><tr><td>Test #4</td><td>Low</td><td>0.5 Step</td></tr></table>				Test #1	DRY	Hot	8 Step	Test #2	Cool	1 Step	Test #3	BITET	High	7.5 Step	Test #4	Low	0.5 Step
	Test #1	DRY	Hot	8 Step														
	Test #2		Cool	1 Step														
	Test #3	BITET	High	7.5 Step														
	Test #4		Low	0.5 Step														
	Input voltage (240 V, 50 Hz) Changed to 0.9 or 1.1 times During testing. (It mentioned the worst case value)																	
	Conducted Emission																	
	Voltage determination(160 kHz found Noise generated by the highest voltage.)																	
	- Test #1																	
	<table><tr><td>Test Voltage</td><td>216 V</td><td>240 V</td><td>264 V</td></tr><tr><td>160 kHz (QP)</td><td>46.9 dB</td><td>47.0 dB</td><td><u>47.3 dB</u></td></tr></table>				Test Voltage	216 V	240 V	264 V	160 kHz (QP)	46.9 dB	47.0 dB	<u>47.3 dB</u>						
	Test Voltage	216 V	240 V	264 V														
	160 kHz (QP)	46.9 dB	47.0 dB	<u>47.3 dB</u>														
	- Test #2																	
	<table><tr><td>Test Voltage</td><td>216 V</td><td>240 V</td><td>264 V</td></tr><tr><td>160 kHz (QP)</td><td><u>4.6 dB</u></td><td>3.7 dB</td><td>2.6 dB</td></tr></table>				Test Voltage	216 V	240 V	264 V	160 kHz (QP)	<u>4.6 dB</u>	3.7 dB	2.6 dB						
Test Voltage	216 V	240 V	264 V															
160 kHz (QP)	<u>4.6 dB</u>	3.7 dB	2.6 dB															
- Test #3																		
<table><tr><td>Test Voltage</td><td>216 V</td><td>240 V</td><td>264 V</td></tr><tr><td>160 kHz (QP)</td><td>26.3 dB</td><td>26.9 dB</td><td><u>27.2 dB</u></td></tr></table>				Test Voltage	216 V	240 V	264 V	160 kHz (QP)	26.3 dB	26.9 dB	<u>27.2 dB</u>							
Test Voltage	216 V	240 V	264 V															
160 kHz (QP)	26.3 dB	26.9 dB	<u>27.2 dB</u>															
- Test #4																		
<table><tr><td>Test Voltage</td><td>216 V</td><td>240 V</td><td>264 V</td></tr><tr><td>160 kHz (QP)</td><td>26.3 dB</td><td>26.5 dB</td><td>26.9 dB</td></tr></table>				Test Voltage	216 V	240 V	264 V	160 kHz (QP)	26.3 dB	26.5 dB	26.9 dB							
Test Voltage	216 V	240 V	264 V															
160 kHz (QP)	26.3 dB	26.5 dB	26.9 dB															

Disturbance power

Voltage determination(50 MHz found Noise generated by the highest voltage.)

- Test #1

Test Voltage	216 V	240 V	264 V
50 MHz (QP)	8.8 dB	8.9 dB	<u>9.1 dB</u>

- Test #2

Test Voltage	216 V	240 V	264 V
50 MHz (QP)	10.0 dB	<u>10.3 dB</u>	10.0 dB

- Test #3

Test Voltage	216 V	240 V	264 V
50 MHz (QP)	<u>15.5 dB</u>	14.4 dB	14.8 dB

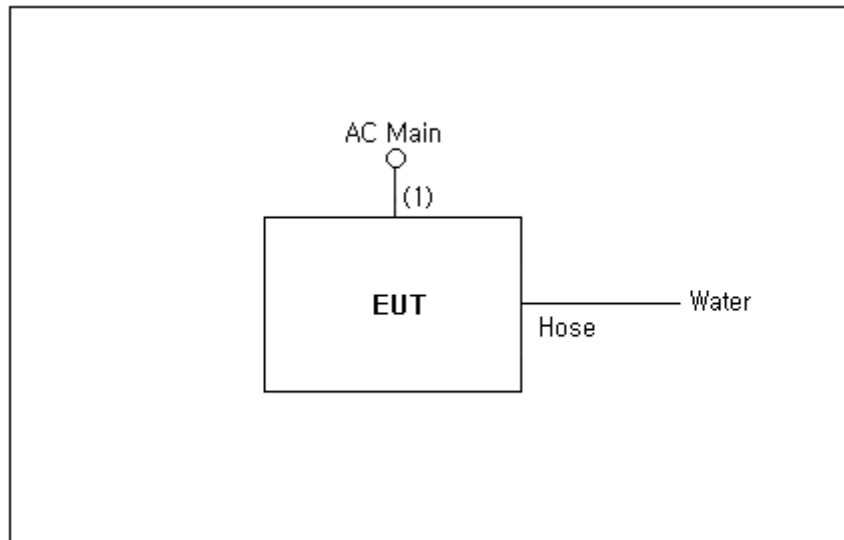
- Test #4

Test Voltage	216 V	240 V	264 V
50 MHz (QP)	<u>9.2 dB</u>	8.5 dB	8.6 dB

4.3 Auxiliary equipments

Type	Model / Part #	Serial number	Manufacturer
-	-	-	-

4.4 Test configuration



Note	Start		End		Cable	
	Name	I/O port	Name	I/O port	Length (m)	Spec.
1	EUT	Power	AC Main	Power	2.0	Unshield

4.5 Operating conditions

The EUT was configured as normal intended use.

Test mode	Normal operating
Test #1	Check the temperature of the wind. (DRY_Hot: 8 Step)
Test #2	Check the temperature of the wind. (DRY_Cool: 1 Step)
Test #3	Check the pressure of the water. (BIDET_High: 7.5 Step)
Test #4	Check the pressure of the water. (BIDET_Low: 0.5 Step)

5. Summary of test results

5.1 Summary of EMI emission test results

Applied	Test items	Test method	Result
☒	Conducted Emission	AS/NZS CISPR 14-1:2010	Pass
☒	Disturbance power	AS/NZS CISPR 14-1:2010	Pass
☒	Discontinuous interference	AS/NZS CISPR 14-1:2010	Pass
☐	Radiated Emission	AS/NZS CISPR 14-1:2010	N/A

6. Test results

6.1 Conducted Emission

Test specification	AS/NZS CISPR 14-1:2010		
Testing voltage	216 V, 50 Hz (Test #2) / 264 V, 50 Hz (Test #1, Test #3, Test #4)		
Test facility	Shielded room (CE#2)		
Date	2016-09-12		
Temperature (°C)	23.4 °C	Humidity (% R.H.)	42.4 % R.H.
Remarks	Pass		

6.1.1 Limits of conducted emission measurement

☒ Household appliances and equipment causing similar disturbances and regulating controls incorporating demiconductor devices						
Frequency [MHz]	At mains terminals		At load terminals and additional terminals			
	(dB(μV)) Quasi-peak	(dB(μV)) Average ¹⁾	(dB(μV)) Quasi-peak	(dB(μV)) Average ¹⁾		
0.15 to 0.50	Decreasing linearly with the logarithm of the frequency from:		80	70		
	66 to 56	59 to 46				
0.50 to 5	56	46	74	64		
5 to 30	60	50	74	64		
☐ Main terminals of tools						
Frequency [MHz]	Rated motor power not exceeding 700 W		Rated motor power above 700 W and not exceeding 1 000 W		Rated motor power above 1 000 W	
	(dB(μV)) Quasi-peak	(dB(μV)) Average ¹⁾	(dB(μV)) Quasi-peak	(dB(μV)) Average ¹⁾	(dB(μV)) Quasi- peak	(dB(μV)) Average ¹⁾
0.15 to 0.35	Decreasing linearly with the logarithm of the frequency from:					
	66 to 59	59 to 49	70 to 63	63 to 53	76 to 69	69 to 59
0.35 to 5	59	49	63	53	69	59
5 to 30	64	54	68	58	74	64
¹⁾ If the limit for the measurement with the average detector is met when using a receiver with a quasi-peak detector, the equipment under test shall be deemed to meet both limits and the measurement using the receiver with an average detector need not be carried out.						
Note: The limits for the measurement with the average detector are tentative and may be modified after a period of experience.						

6.1.2 Measurement procedure

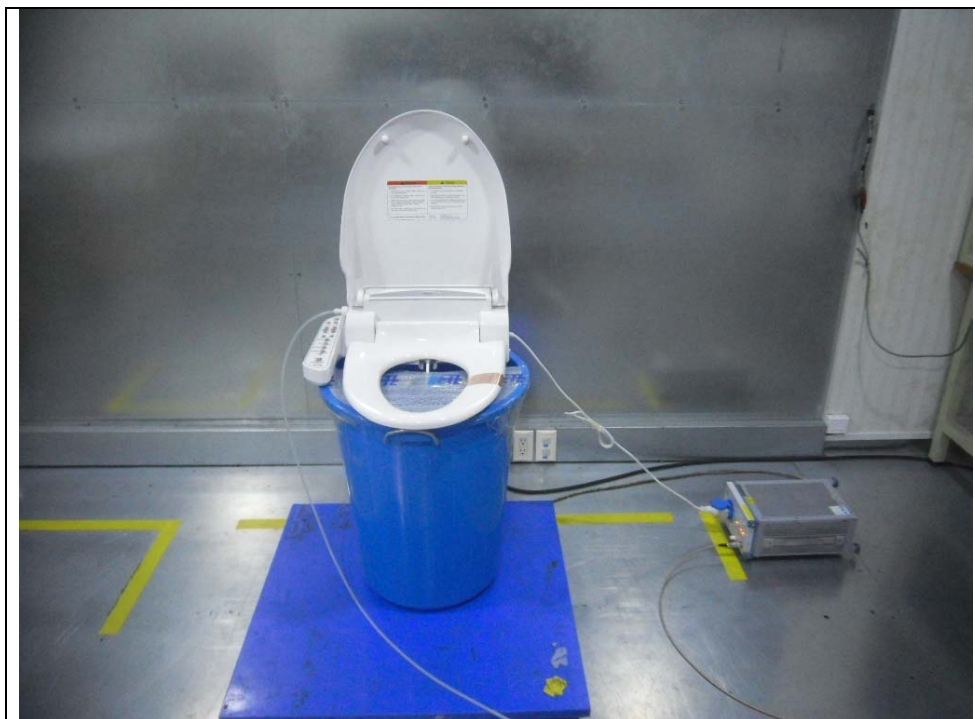
The measurements were performed in a shielded room. EUT was setup as shown in photograph and placed on a non-metallic table height of 0.8 m above the reference ground plane. The rear of table was located 0.4 m to the vertical conducted plane. EUT was power through the LISN, which was bonded to the ground plane. The LISN power was filtered. Each EUT power lead, except ground (safety) lead was individually connected through a LISN to input power source. EUT signal cables that hung closer than 0.4 m to the Horizontal metal ground 0.3 m ~ 0.4 m long. The power cord was bundles in the center. All peripheral equipment was powered from a sub LISN. The LISN and ISN were positioned 0.8 m from the EUT. Peak and Average detection were used in preliminary testing and Quasi-peak and Average detections were used at final measurement.

6.1.3 Used equipments

Equipment	Model	Serial No.	Makers	Next Cal. Date	Used
EMI TEST RECEIVER	ESCI	100710	R&S	2017.08.25	☒
TWO-LINE V-NETWORK	ENV216	101352	R&S	2017.08.26	☒
TWO-LINE V-NETWORK	NNLK8121	8121-472	SCHWARZBECK	2017.09.08	☐

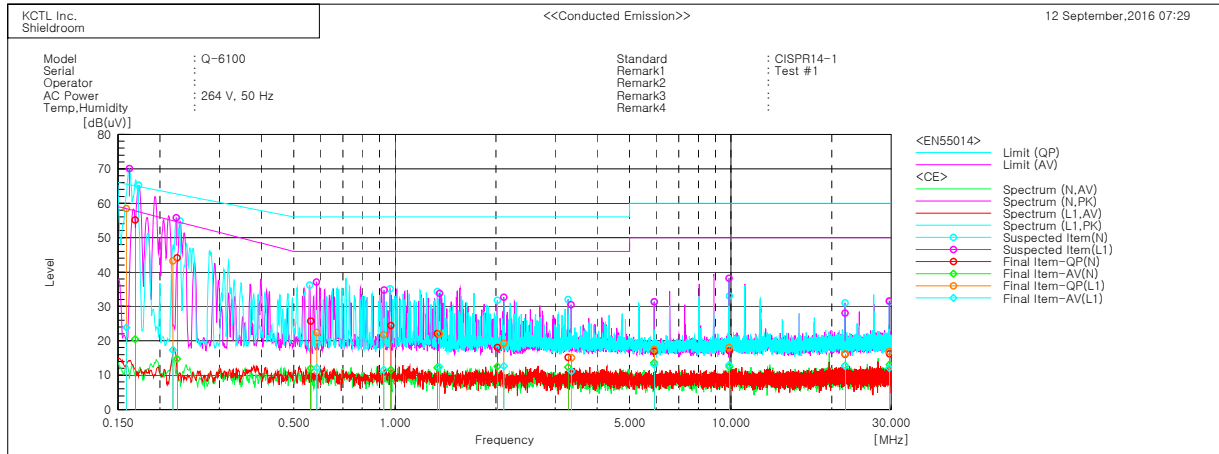
6.1.4 Photographs of test setup

AC Main



6.1.5 Conducted emission measurement result

AC Main

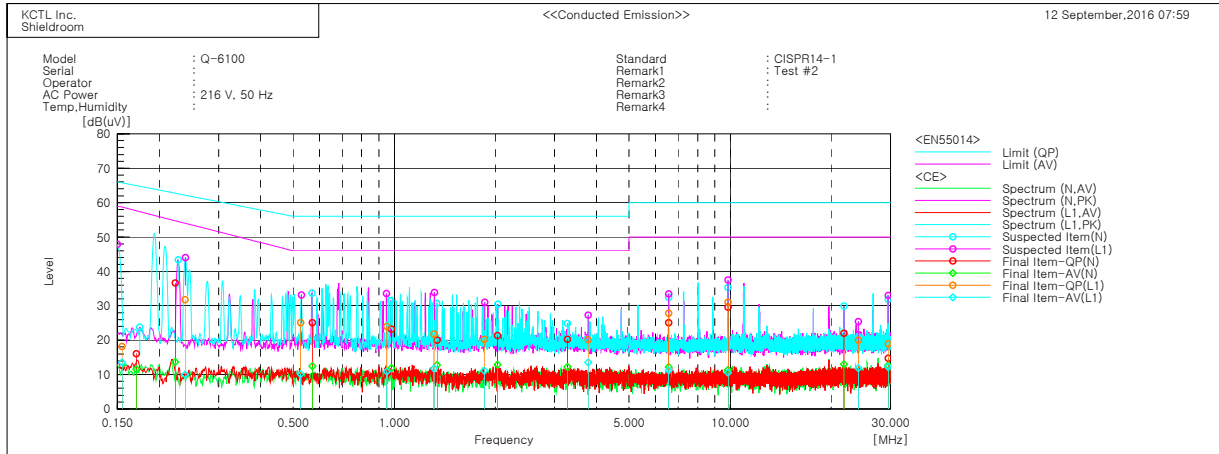


Final Result

--- N Phase ---									
No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading CAV [dB(μV)]	c. f [dB]	Result QP [dB(μV)]	Result CAV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]
1	0.16856	45.0	10.4	10.1	55.1	20.5	65.0	57.7	9.9
2	0.22458	34.4	5.0	9.7	44.1	14.7	62.6	54.6	18.5
3	0.56134	15.9	2.1	9.9	25.8	12.0	56.0	46.0	30.2
4	0.97187	14.6	1.7	9.8	24.4	11.5	56.0	46.0	31.6
5	1.33848	12.3	2.4	9.8	22.1	12.2	56.0	46.0	33.9
6	2.02069	8.3	2.7	9.8	18.1	12.5	56.0	46.0	37.9
7	3.27481	5.4	2.5	9.8	15.2	12.3	56.0	46.0	40.8
8	5.91295	7.2	3.9	9.8	17.0	13.7	60.0	50.0	43.0
9	9.89285	7.2	2.5	9.9	17.1	12.4	60.0	50.0	42.9
10	21.8773	6.0	2.7	10.1	16.1	12.8	60.0	50.0	43.9
11	29.67637	5.9	2.8	10.3	16.2	13.1	60.0	50.0	43.8

--- L1 Phase ---									
No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading CAV [dB(μV)]	c. f [dB]	Result QP [dB(μV)]	Result CAV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]
1	0.15897	48.4	13.9	10.0	58.4	23.9	65.5	58.4	7.1
2	0.2185	33.4	7.4	9.8	43.2	17.2	62.9	54.9	19.7
3	0.58553	12.5	2.2	9.9	22.4	12.1	56.0	46.0	33.6
4	0.92735	12.0	1.7	9.8	21.8	11.5	56.0	46.0	34.2
5	1.35622	12.2	2.6	9.8	22.0	12.4	56.0	46.0	34.0
6	2.10868	9.5	2.9	9.8	19.3	12.7	56.0	46.0	36.7
7	3.35184	5.3	1.3	9.8	15.1	11.1	56.0	46.0	40.9
8	5.91272	7.7	3.3	9.8	17.5	13.1	60.0	50.0	42.5
9	9.87082	8.1	3.1	9.9	18.0	13.0	60.0	50.0	42.0
10	21.85089	6.2	2.6	10.0	16.2	12.6	60.0	50.0	43.8
11	29.62187	6.9	2.0	10.1	17.0	12.1	60.0	50.0	43.0

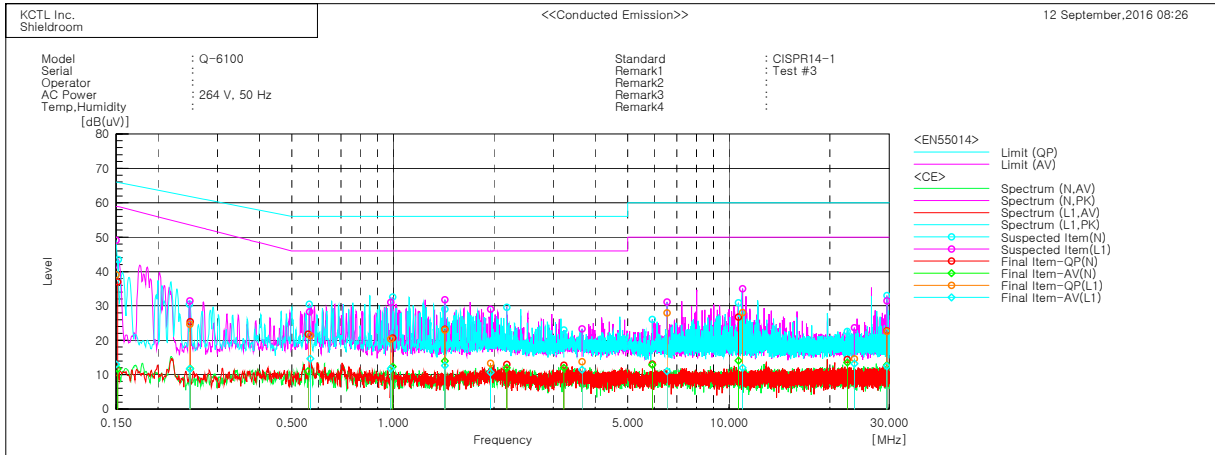
AC Main



--- N Phase ---									
No.	Frequency	Reading QP	Reading CAV	c. f	Result QP	Result CAV	Limit QP	Limit AV	Margin
	[MHz]	[dB(uV)]	[dB(uV)]	[dB]	[dB(uV)]	[dB(uV)]	[dB(uV)]	[dB(uV)]	QP CAV
1	0.17093	5.9	1.5	10.1	16.0	11.6	64.9	57.6	48.9 46.0
2	0.22285	26.9	3.9	9.7	36.6	13.6	62.7	54.7	26.1 41.1
3	0.57127	15.2	2.5	9.9	25.1	12.4	56.0	46.0	30.9 33.6
4	0.97984	13.4	2.1	9.8	23.2	11.9	56.0	46.0	32.8 34.1
5	1.34056	10.2	3.0	9.8	20.0	12.8	56.0	46.0	36.0 33.2
6	2.03062	11.6	3.1	9.8	21.4	12.9	56.0	46.0	34.6 33.1
7	3.27467	10.4	2.4	9.8	20.2	12.2	56.0	46.0	35.8 33.8
8	6.56311	15.3	2.4	9.8	25.1	12.2	60.0	50.0	34.9 37.8
9	9.85972	19.7	1.4	9.9	29.6	11.3	60.0	50.0	30.4 38.7
10	21.80708	11.9	2.9	10.1	22.0	13.0	60.0	50.0	38.0 37.0
11	29.57344	4.5	2.4	10.2	14.7	12.6	60.0	50.0	45.3 37.4

--- L1 Phase ---									
No.	Frequency	Reading QP	Reading CAV	c. f	Result QP	Result CAV	Limit QP	Limit AV	Margin
	[MHz]	[dB(uV)]	[dB(uV)]	[dB]	[dB(uV)]	[dB(uV)]	[dB(uV)]	[dB(uV)]	QP CAV
1	0.15472	8.2	3.6	9.9	18.1	13.5	65.7	58.7	47.6 45.2
2	0.23856	22.1	0.3	9.7	31.8	10.0	62.1	54.0	30.3 44.0
3	0.52628	15.2	0.2	9.9	25.1	10.1	56.0	46.0	30.9 35.9
4	0.94959	14.2	1.1	9.8	24.0	10.9	56.0	46.0	32.0 35.1
5	1.31464	12.0	2.0	9.8	21.8	11.8	56.0	46.0	34.2 34.2
6	1.85597	10.4	1.3	9.8	20.2	11.1	56.0	46.0	35.8 34.9
7	3.78339	10.3	3.7	9.8	20.1	13.5	56.0	46.0	35.9 32.5
8	6.56363	18.0	1.4	9.8	27.8	11.2	60.0	50.0	32.2 38.8
9	9.86016	21.1	0.7	9.9	31.0	10.6	60.0	50.0	29.0 39.4
10	24.0825	10.0	1.9	10.0	20.0	11.9	60.0	50.0	40.0 38.1
11	29.56815	8.8	2.1	10.1	18.9	12.2	60.0	50.0	41.1 37.8

AC Main

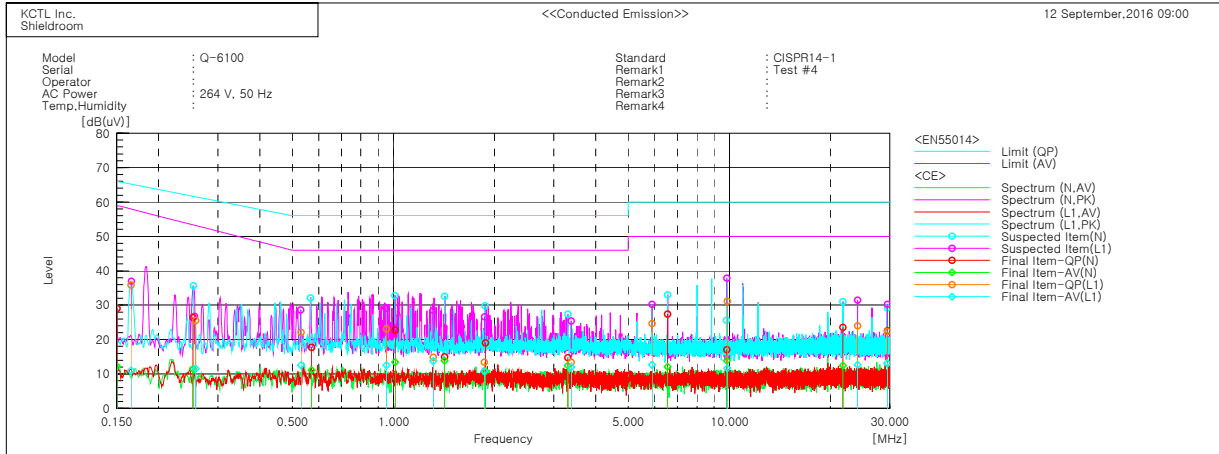


Final Result

--- N Phase ---									
No.	Frequency	Reading QP	Reading CAV	c.f	Result QP	Result CAV	Limit QP	Limit AV	Margin
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	QP CAV
1	0.15161	27.2	1.8	9.8	37.0	11.6	65.9	58.9	28.9 47.3
2	0.24923	15.7	2.1	9.7	25.4	11.8	61.8	53.5	36.4 41.7
3	0.55925	11.9	1.1	9.9	21.8	11.0	56.0	46.0	34.2 35.0
4	0.99965	10.9	2.5	9.8	20.7	12.3	56.0	46.0	35.3 33.7
5	1.42566	13.4	4.2	9.8	23.2	14.0	56.0	46.0	32.8 32.0
6	2.17991	3.2	2.2	9.8	13.0	12.0	56.0	46.0	43.0 34.0
7	3.2256	3.0	2.2	9.8	12.8	12.0	56.0	46.0	43.2 34.0
8	5.91542	3.3	3.1	9.8	13.1	12.9	60.0	50.0	46.9 37.1
9	10.862	16.8	4.2	9.9	26.7	14.1	60.0	50.0	33.3 35.9
10	22.50778	4.3	3.4	10.1	14.4	13.5	60.0	50.0	45.6 36.5
11	29.52213	12.6	2.6	10.2	22.8	12.8	60.0	50.0	37.2 37.2

--- L1 Phase ---									
No.	Frequency	Reading QP	Reading CAV	c.f	Result QP	Result CAV	Limit QP	Limit AV	Margin
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	QP CAV
1	0.15008	29.3	3.1	9.8	39.1	12.9	66.0	59.0	26.9 46.1
2	0.24856	14.9	2.0	9.7	24.6	11.7	61.8	53.5	37.2 41.8
3	0.5674	11.4	4.7	9.9	21.3	14.6	56.0	46.0	34.7 31.4
4	0.98633	10.6	2.0	9.8	20.4	11.8	56.0	46.0	35.6 34.2
5	1.42792	13.2	2.8	9.8	23.0	12.6	56.0	46.0	33.0 33.4
6	1.95285	3.5	0.9	9.8	13.3	10.7	56.0	46.0	42.7 35.3
7	3.65572	4.0	1.6	9.8	13.8	11.4	56.0	46.0	42.2 34.6
8	6.54662	18.1	1.2	9.8	27.9	11.0	60.0	50.0	32.1 39.0
9	10.97212	18.2	2.1	9.9	28.1	12.0	60.0	50.0	31.9 38.0
10	23.66073	4.6	3.2	10.0	14.6	13.2	60.0	50.0	45.4 36.8
11	29.51633	12.5	2.3	10.1	22.6	12.4	60.0	50.0	37.4 37.6

AC Main



Final Result

--- N Phase ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading CAV [dB(μV)]	c.f [dB]	Result QP [dB(μV)]	Result CAV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin CAV [dB]
1	0.15046	19.3	2.4	9.8	29.1	12.2	66.0	59.0	36.9	46.8
2	0.25296	16.7	1.7	9.7	26.4	11.4	61.7	53.4	35.3	42.0
3	0.57001	7.8	1.2	9.9	17.7	11.1	56.0	46.0	38.3	34.9
4	1.01068	13.0	3.6	9.8	22.8	13.4	56.0	46.0	33.2	32.6
5	1.41887	5.2	4.1	9.8	15.0	13.9	56.0	46.0	41.0	32.1
6	1.87655	9.2	1.0	9.8	19.0	10.8	56.0	46.0	37.0	35.2
7	3.3039	5.0	2.6	9.8	14.8	12.4	56.0	46.0	41.2	33.6
8	6.54737	17.6	2.3	9.8	27.4	12.1	60.0	50.0	32.6	37.9
9	9.81441	7.2	4.0	9.9	17.1	13.9	60.0	50.0	42.9	36.1
10	21.78267	13.4	2.3	10.1	23.5	12.4	60.0	50.0	36.5	37.6
11	29.5263	12.4	2.9	10.2	22.6	13.1	60.0	50.0	37.4	36.9

--- L1 Phase ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading CAV [dB(μV)]	c.f [dB]	Result QP [dB(μV)]	Result CAV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin CAV [dB]
1	0.16563	25.8	0.9	10.1	35.9	11.0	65.2	57.9	29.3	46.9
2	0.25804	15.8	1.9	9.7	25.5	11.6	61.5	53.1	36.0	41.5
3	0.53067	12.2	2.6	9.9	22.1	12.5	56.0	46.0	33.9	33.5
4	0.95197	13.3	2.7	9.8	23.1	12.5	56.0	46.0	32.9	33.5
5	1.31553	5.1	4.0	9.8	14.9	13.8	56.0	46.0	41.1	32.2
6	1.86334	3.6	1.0	9.8	13.4	10.8	56.0	46.0	42.6	35.2
7	3.38166	3.6	2.2	9.8	13.4	12.0	56.0	46.0	42.6	34.0
8	5.88302	14.9	2.8	9.8	24.7	12.6	60.0	50.0	35.3	37.4
9	9.8399	21.2	1.8	9.9	31.1	11.7	60.0	50.0	28.9	38.3
10	24.04731	14.0	2.6	10.0	24.0	12.6	60.0	50.0	36.0	37.4
11	29.51856	12.2	3.0	10.1	22.3	13.1	60.0	50.0	37.7	36.9

6.2 Disturbance power

Test specification	AS/NZS CISPR 14-1:2010		
Testing voltage	216 V, 50 Hz (Test #3, Test #4) / 240V, 50 Hz (Test #2) / 264 V, 50 Hz (Test #1)		
Test facility	Shielded room(4F)		
Date	2016-09-13		
Temperature (°C)	26.0 °C	Humidity (% R.H.)	51.4 % R.H.
Remarks	Pass (#1-AC Power)		

6.2.1 Measurement procedure

The appliance to be tested is placed on a non-metallic table at least 0.8 m from other metallic objects and the lead to be measured on is stretched in a straight line for a distance sufficient to accommodate the absorbing clamp, and to permit the necessary measuring adjustment of position for tuning.

The clamp is placed around the lead so as to measure a quantity proportional to the disturbance power on the lead. The absorbing clamp is positioned for maximum indication at each test frequency; the clamp shall be moved along the lead until the maximum value is found between a position adjacent to the appliance and a distance of about a half-wavelength from it. EUT during the test are noted in the following test records.

6.2.2 Disturbance power limits for the frequency range 30 MHz to 300 MHz

Disturbance power limits for the frequency range 30 MHz to 300 MHz								
Frequency [MHz]	Household and similar appliances		Tools					
			Rated motor power not exceeding 700 W		Rated motor power above 700 W and not exceeding 1 000 W		Rated motor power above 1 000 W	
	Quasi-peak [dB(pW)]	Average ⁽¹⁾ [dB(pW)]	Quasi-peak [dB(pW)]	Average ⁽¹⁾ [dB(pW)]	Quasi-peak [dB(pW)]	Average ⁽¹⁾ [dB(pW)]	Quasi-peak [dB(pW)]	Average ⁽¹⁾ [dB(pW)]
30 to 300	Increasing linearly with the frequency from:							
	45 to 55	35 to 45	45 to 55	35 to 45	49 to 59	39 to 49	55 to 65	45 to 55
⁽¹⁾ If the limit for the measurement with the average detector is met when using a receiver with a quasi-peak detector, the equipment under test shall be deemed to meet both limits and the measurement using the receiver with an average detector need not be carried out.								
Margin when performing disturbance power measurement in the frequency range 30 MHz to 300 MHz								
Frequency [MHz]	Household and similar appliances		Tools					
			Rated motor power not exceeding 700 W		Rated motor power above 700 W and not exceeding 1 000 W		Rated motor power above 1 000 W	
	Quasi-peak [dB(pW)]	Average [dB(pW)]	Quasi-peak [dB(pW)]	Average [dB(pW)]	Quasi-peak [dB(pW)]	Average [dB(pW)]	Quasi-peak [dB(pW)]	Average [dB(pW)]
200 to 300	Increasing linearly with the frequency from:							
	0 to 10 dB	-	0 to 10 dB	-	0 to 10 dB	-	0 to 10 dB	-
Note: The measured result at a particular frequency shall be less than the relevant limit minus the corresponding margin (at that frequency).								

Margin(dB) = Limit(dB(pW)) - QuasiPeak(dB(pW))

Margin(dB) = Limit(dB(pW)) - C-Average(dB(pW))

6.2.3 Used equipments

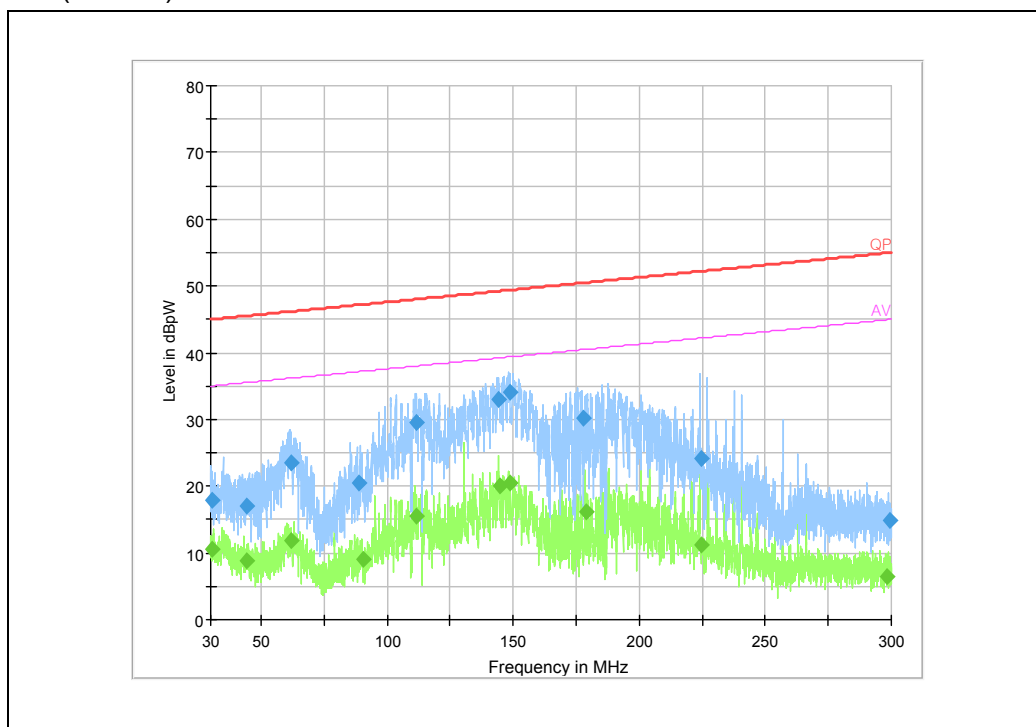
Equipment	Model	Serial No.	Makers	Next Cal. Date	Used
Test Receiver	ESCI	101408	R&S	2017.08.25	☒
ABSORBING CLAMP	MDS-21	100537	R&S	2017.08.25	☒
Slide Bar	-	-	SIWON	-	☒

6.2.4 Photographs of test setup



6.2.5 Disturbance power measurement result

#1-AC Power (Test #1)



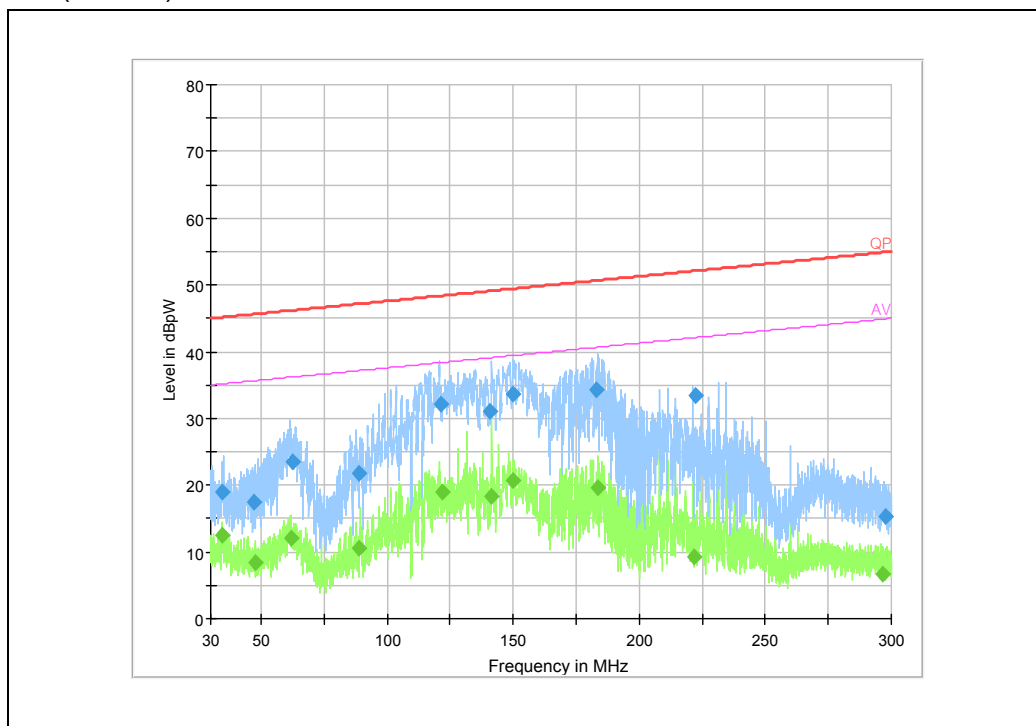
Quasi-peak

Frequency (MHz)	Corr. (dB)	QuasiPeak (dBpW)	Limit (dBpW)	Margin (dB)
30.38	11.5	17.84	45.01	27.17
44.42	9.0	17.14	45.53	28.39
62.20	8.4	23.52	46.19	22.67
88.91	8.4	20.51	47.18	26.67
111.80	8.8	29.60	48.03	18.43
143.90	9.2	33.01	49.22	16.21
148.76	9.2	33.97	49.40	15.43
177.69	8.5	30.20	50.47	20.27
224.78	9.2	24.14	52.21	28.07
299.44	9.3	14.79	54.98	40.19

C-Average

Frequency (MHz)	Corr. (dB)	CAverage (dBpW)	Limit (dBpW)	Margin (dB)
30.72	11.5	10.63	35.03	24.40
44.42	9.0	8.76	35.53	26.77
62.16	8.4	11.76	36.19	24.43
90.63	8.4	9.16	37.25	28.09
111.55	8.8	15.50	38.02	22.52
144.52	9.2	19.96	39.24	19.28
148.78	9.2	20.44	39.40	18.96
178.95	8.4	16.25	40.52	24.27
224.76	9.2	11.18	42.21	31.03
298.57	9.3	6.51	44.95	38.44

#1-AC Power (Test #2)

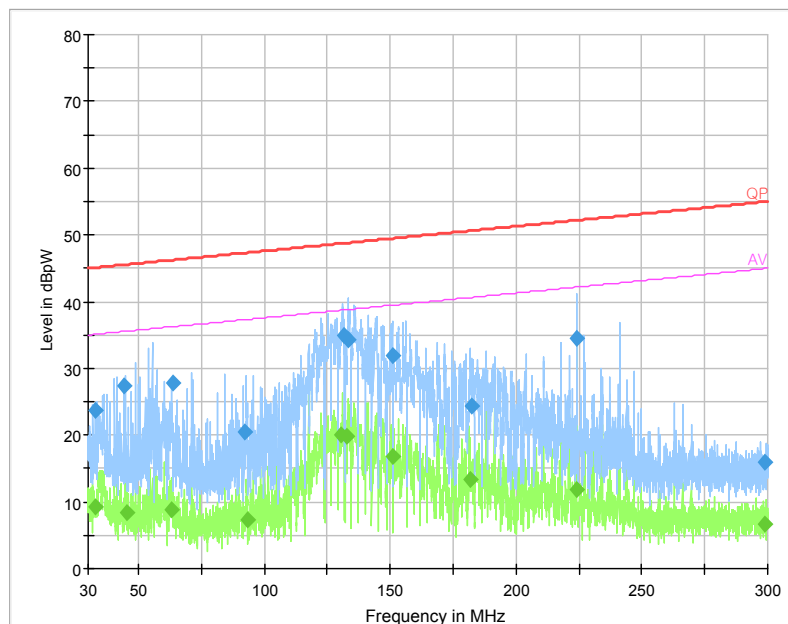
**Quasi-peak**

Frequency (MHz)	Corr. (dB)	QuasiPeak (dBpW)	Limit (dBpW)	Margin (dB)
34.45	10.8	18.89	45.16	26.27
47.40	8.5	17.49	45.64	28.15
62.51	8.4	23.44	46.20	22.76
88.92	8.4	21.78	47.18	25.40
121.26	9.0	32.14	48.38	16.24
140.68	9.2	31.06	49.10	18.04
149.61	9.2	33.58	49.43	15.85
182.80	8.5	34.26	50.66	16.40
222.11	9.2	33.40	52.12	18.72
297.52	9.3	15.32	54.91	39.59

C-Average

Frequency (MHz)	Corr. (dB)	CAverage (dBpW)	Limit (dBpW)	Margin (dB)
34.45	10.8	12.61	35.16	22.55
47.93	8.4	8.40	35.66	27.26
62.00	8.4	12.12	36.19	24.07
89.04	8.4	10.63	37.19	26.56
121.80	9.0	18.90	38.40	19.50
141.58	9.2	18.43	39.13	20.70
149.99	9.2	20.80	39.44	18.64
183.29	8.5	19.70	40.68	20.98
221.98	9.2	9.17	42.11	32.94
296.66	9.3	6.59	44.88	38.29

#1-AC Power (Test #3)

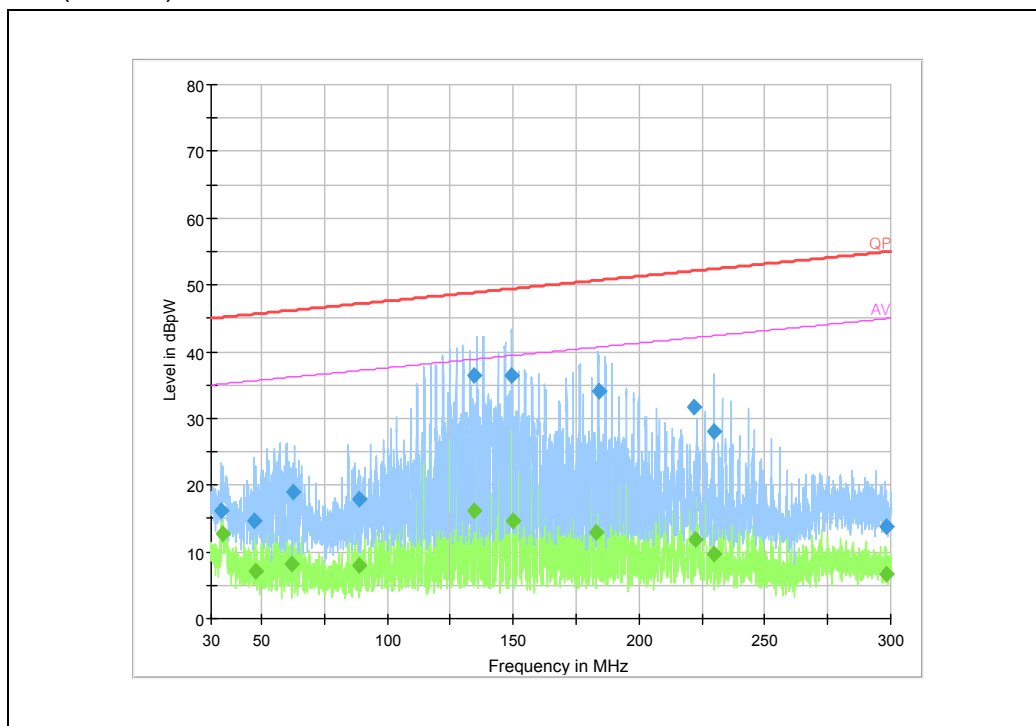
**Quasi-peak**

Frequency (MHz)	Corr. (dB)	QuasiPeak (dBpW)	Limit (dBpW)	Margin (dB)
32.96	11.1	23.68	45.11	21.43
44.37	9.0	27.49	45.53	18.04
63.71	8.4	27.92	46.25	18.33
92.18	8.5	20.56	47.30	26.74
131.47	9.1	34.91	48.76	13.85
133.03	9.1	34.23	48.82	14.59
150.90	9.2	31.92	49.48	17.56
182.64	8.5	24.31	50.65	26.34
224.12	9.2	34.47	52.19	17.72
298.76	9.3	15.97	54.95	38.98

C-Average

Frequency (MHz)	Corr. (dB)	CAverage (dBpW)	Limit (dBpW)	Margin (dB)
32.90	11.1	9.28	35.11	25.83
45.53	8.8	8.35	35.58	27.23
62.91	8.4	8.90	36.22	27.32
93.43	8.5	7.37	37.35	29.98
130.62	9.1	20.09	38.73	18.64
132.90	9.1	19.80	38.81	19.01
150.89	9.2	16.92	39.48	22.56
181.76	8.4	13.28	40.62	27.34
224.32	9.2	11.90	42.20	30.30
298.70	9.3	6.79	44.95	38.16

#1-AC Power (Test #4)

**Quasi-peak**

Frequency (MHz)	Corr. (dB)	QuasiPeak (dBpW)	Limit (dBpW)	Margin (dB)
33.83	10.9	16.18	45.14	28.96
47.04	8.5	14.71	45.63	30.92
62.54	8.4	18.99	46.20	27.22
88.89	8.4	18.00	47.18	29.18
134.69	9.1	36.44	48.88	12.44
149.36	9.2	36.37	49.42	13.05
184.38	8.5	34.12	50.72	16.60
222.06	9.2	31.75	52.11	20.36
229.89	9.2	28.00	52.40	24.40
298.17	9.3	13.75	54.93	41.18

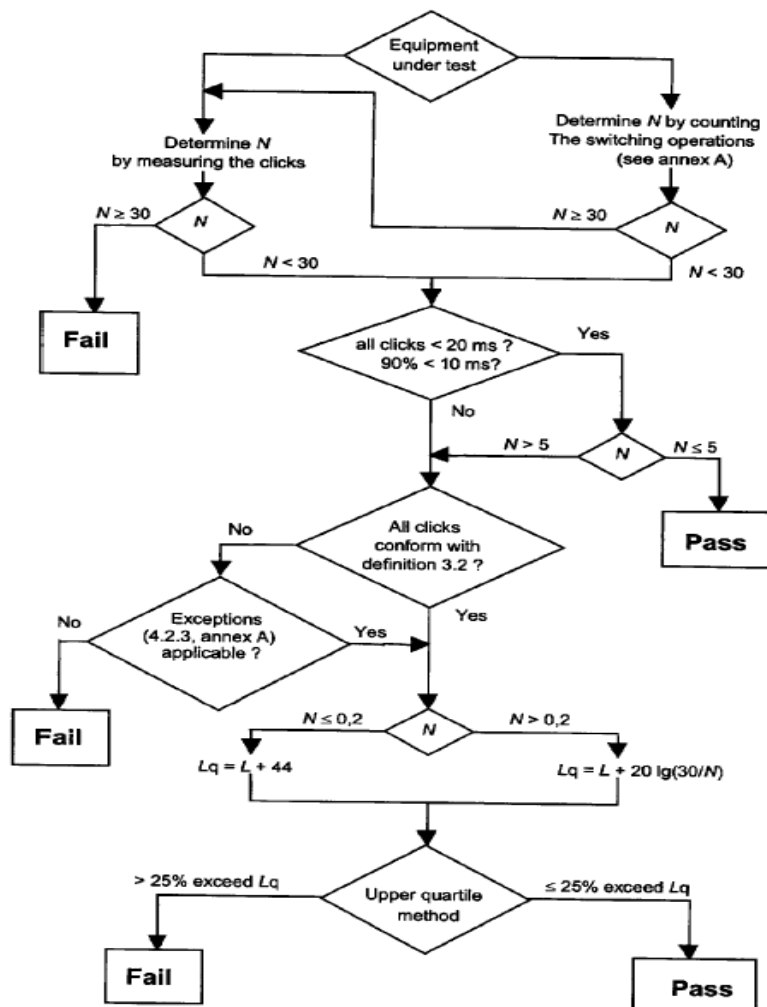
C-Average

Frequency (MHz)	Corr. (dB)	CAverage (dBpW)	Limit (dBpW)	Margin (dB)
34.61	10.8	12.65	35.17	22.52
47.88	8.4	7.20	35.66	28.46
61.96	8.4	8.27	36.18	27.91
89.04	8.4	7.93	37.19	29.26
134.60	9.1	16.20	38.87	22.67
149.71	9.2	14.76	39.43	24.67
183.13	8.5	12.99	40.67	27.68
222.55	9.2	11.77	42.13	30.36
230.04	9.2	9.69	42.41	32.72
298.23	9.3	6.77	44.93	38.16

6.3 Discontinuous interference

Test specification	AS/NZS CISPR 14-1:2010		
Testing voltage	216 V, 50 Hz (Test #2) / 264 V, 50 Hz (Test #1, Test #3, Test #4)		
Test facility	Shielded room		
Date	2016-09-13		
Temperature (°C)	22.3 °C	Humidity (% R.H.)	41.6 % R.H.
Remarks	Pass		

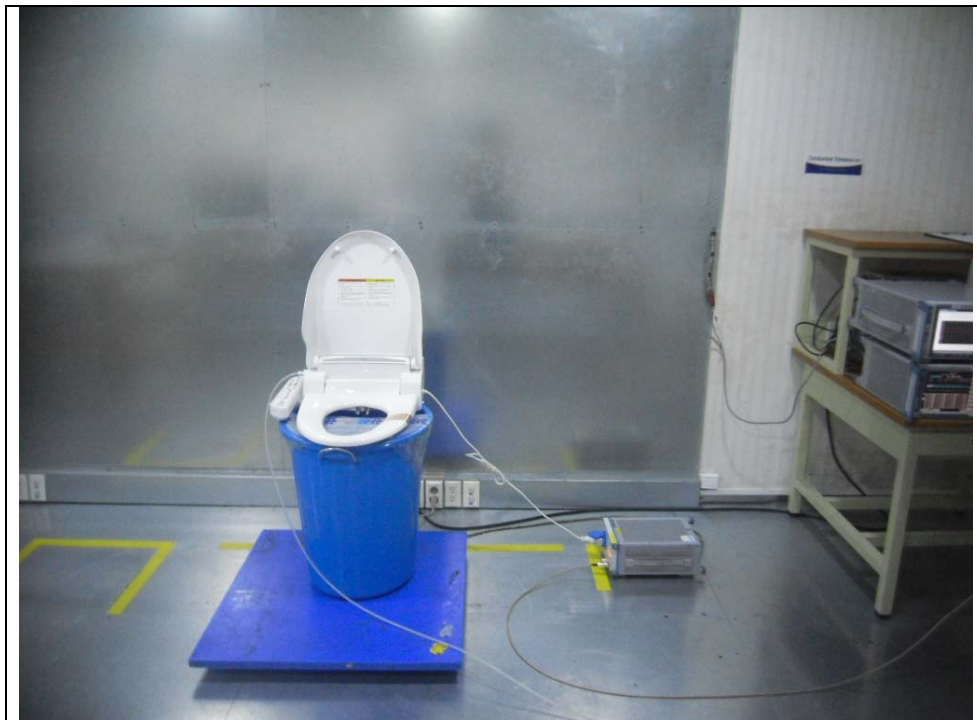
6.3.1 Measurement procedure



6.3.2 Used equipments

Equipment	Model no.	Serial no.	Makers	Next Cal. Date	Used
Test Receiver	ESR	101078	R&S	2017.02.26	☒
TWO-LINE V-NETWORK	ENV216	101352	R&S	2017.08.26	☒

6.3.3 Photographs of test setup



6.3.4 Measurement result

Measure from the top of the Live and Neutral line noise mode. (Neutral line Measure)

Test #1

Frequency	150 kHz	500 kHz	1.4 MHz	30 MHz
Clicks (< 10 ms)	0	0	0	0
Clicks (10ms - 20ms)	0	0	0	0
Clicks (> 20 ms)	0	0	0	0
Click Rate [1/min]	0.0	0.0	0.0	0.0
Continous Disturbances	0	0	0	0
L [dBuV]	66	56	56	60
Lq [dBuV]	110	100	100	104
Clicks > Lq	0	0	0	0
Clicks > Lq [%]	0	0	0	0
Fridge Rules	0	0	0	0
600 ms Rule used	NO	NO	NO	NO
Overall Correction	9.64	9.81	9.69	9.94
Result	PASSED	PASSED	PASSED	PASSED

Test #2

Frequency	150 kHz	500 kHz	1.4 MHz	30 MHz
Clicks (< 10 ms)	0	0	0	0
Clicks (10ms - 20ms)	0	0	0	0
Clicks (> 20 ms)	0	0	0	0
Click Rate [1/min]	0.0	0.0	0.0	0.0
Continous Disturbances	0	0	0	0
L [dBuV]	66	56	56	60
Lq [dBuV]	110	100	100	104
Clicks > Lq	0	0	0	0
Clicks > Lq [%]	0	0	0	0
Fridge Rules	0	0	0	0
600 ms Rule used	NO	NO	NO	NO
Overall Correction	9.64	9.81	9.69	9.94
Result	PASSED	PASSED	PASSED	PASSED

Test #3

Frequency	150 kHz	500 kHz	1.4 MHz	30 MHz
Clicks (< 10 ms)	0	0	0	0
Clicks (10ms - 20ms)	0	0	0	0
Clicks (> 20 ms)	0	0	0	0
Click Rate [1/min]	0.0	0.0	0.0	0.0
Continous Disturbances	0	0	0	0
L [dBuV]	66	56	56	60
Lq [dBuV]	110	100	100	104
Clicks > Lq	0	0	0	0
Clicks > Lq [%]	0	0	0	0
Fridge Rules	0	0	0	0
600 ms Rule used	NO	NO	NO	NO
Overall Correction	9.64	9.81	9.69	9.94
Result	PASSED	PASSED	PASSED	PASSED

Test #4

Frequency	150 kHz	500 kHz	1.4 MHz	30 MHz
Clicks (< 10 ms)	0	0	0	0
Clicks (10ms - 20ms)	0	0	0	0
Clicks (> 20 ms)	0	0	0	0
Click Rate [1/min]	0.0	0.0	0.0	0.0
Continous Disturbances	0	0	0	0
L [dBuV]	66	56	56	60
Lq [dBuV]	110	100	100	104
Clicks > Lq	0	0	0	0
Clicks > Lq [%]	0	0	0	0
Fridge Rules	0	0	0	0
600 ms Rule used	NO	NO	NO	NO
Overall Correction	9.64	9.81	9.69	9.94
Result	PASSED	PASSED	PASSED	PASSED

7. EUT photographs

Front View

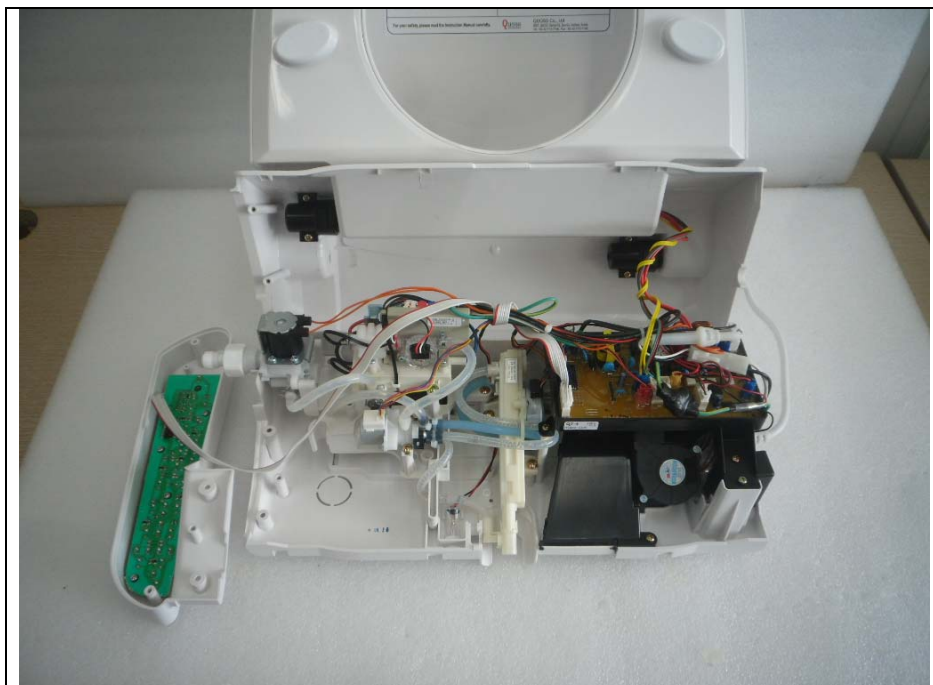


Rear View

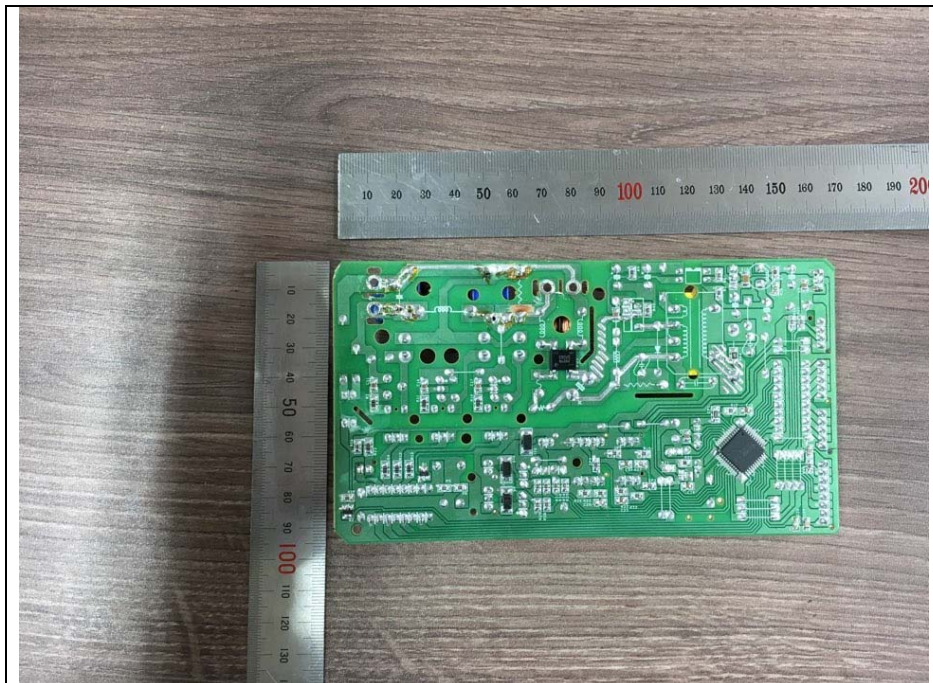
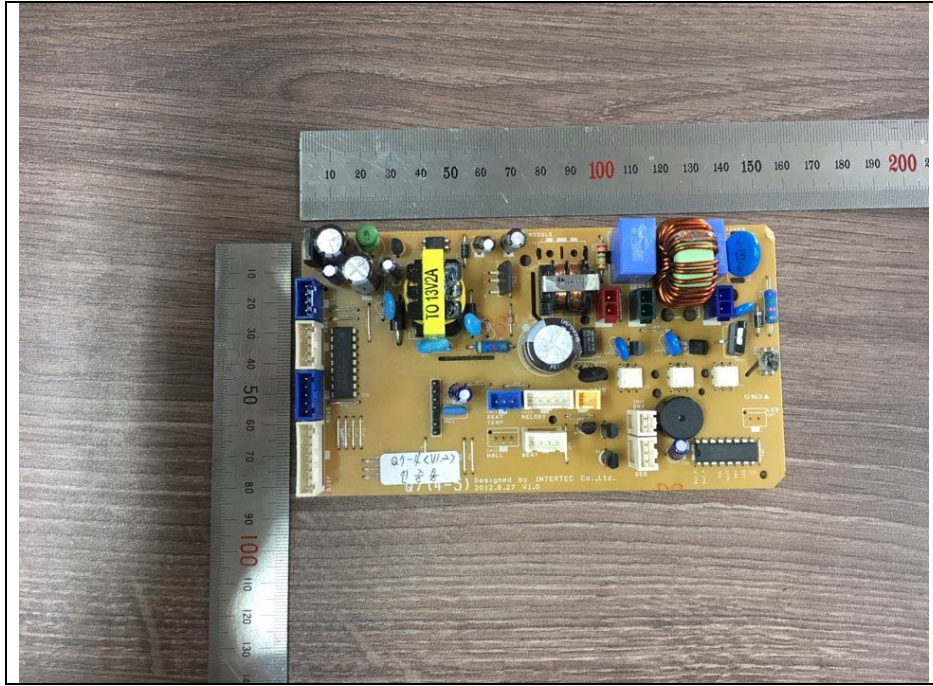


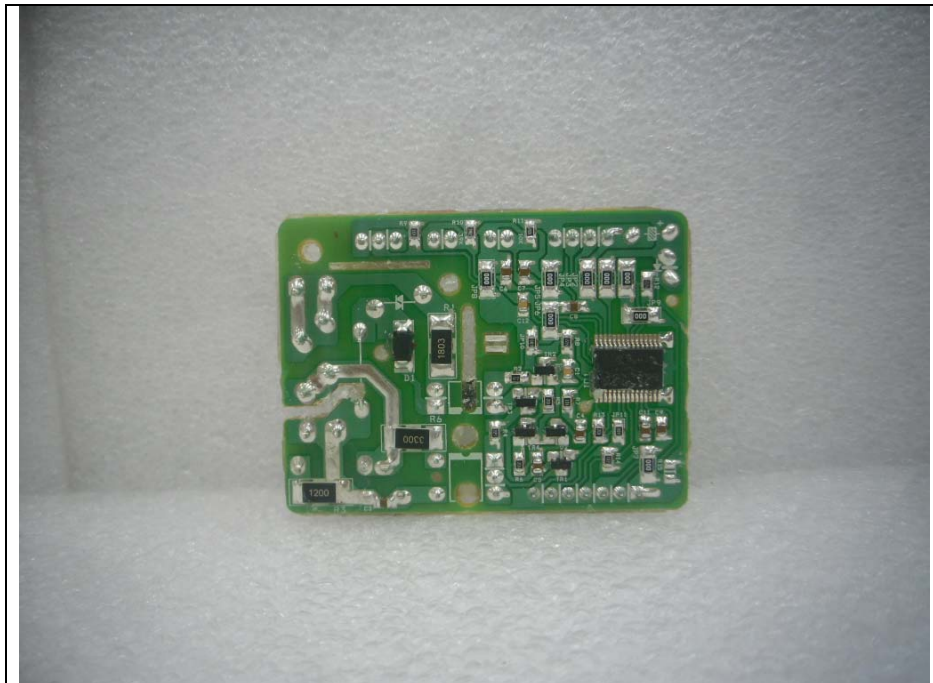
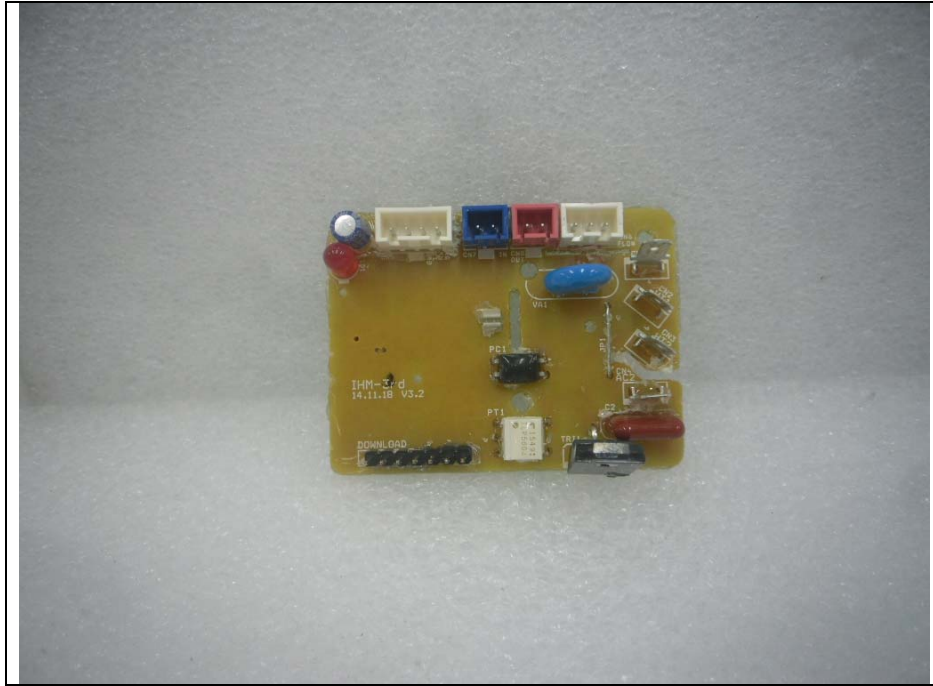
Left ViewRight View

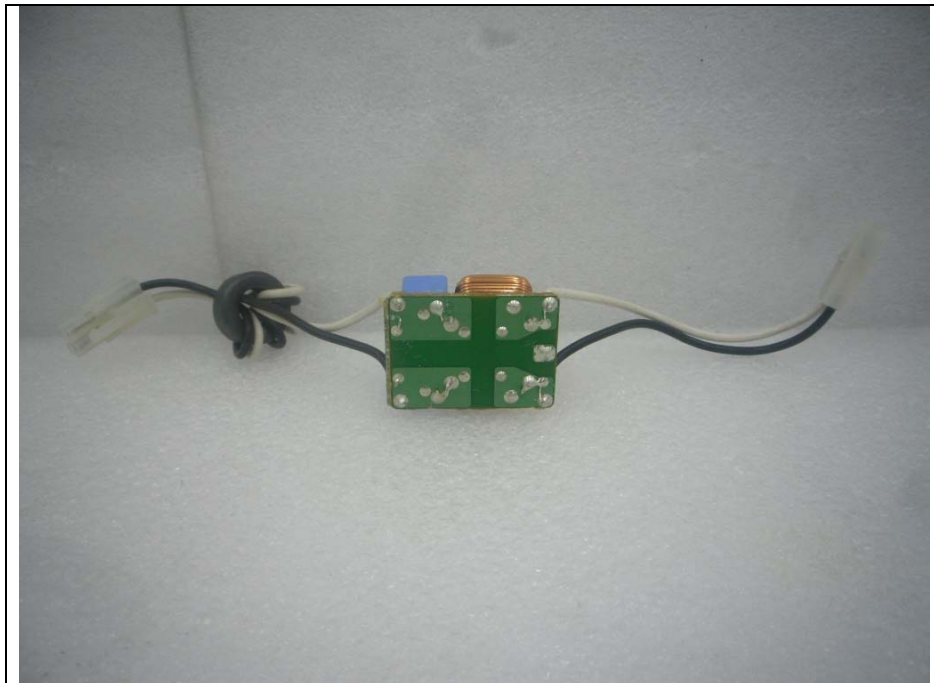
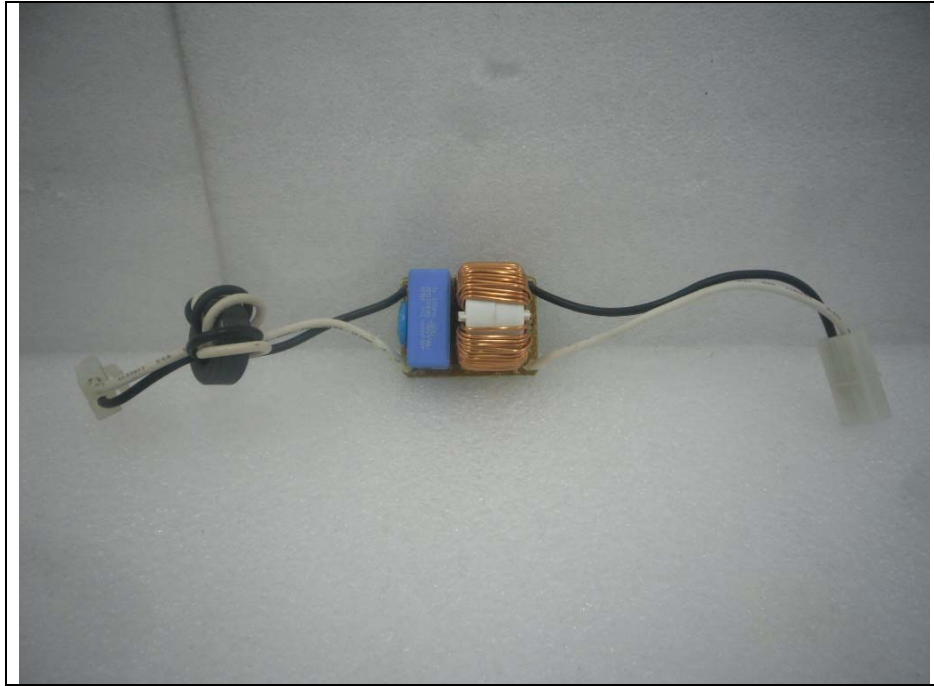
Top ViewBottom View

Inside

Main Board



SUB Board

Filter Board



Display Board

