



EMC TEST REPORT

Applicant Honeywell International Inc.
FCC ID HS9-TH6220WF01DB
Product Honeywell Home Wi-Fi Thermostat
Model RCHT8610WF2006DB
Report No. RXA1707-0207RF03R1
Issue Date October 25, 2017

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC Code CFR47 Part15B (2017)/ ANSI C63.4 (2014)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Wei Liu

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Summary of measurement results

Number	Test Case	Clause in FCC Rules	Conclusion
1	Radiated Emission	15.109, ANSI C63.4-2014	PASS
2	Conducted Emission	15.107, ANSI C63.4-2014	PASS
Date of Testing: July 11, 2017~ August 9, 2017			

1 Test Laboratory

1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **TA technology (shanghai) co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein .Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above. This report must not be used by the client to claim product certification, approval, or endorsement any government agencies.

1.2 Test facility

CNAS (accreditation number: L2264)

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS).

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

IC (recognition number is 8510A)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Canada to perform electromagnetic emission measurement.

VCCI (recognition number is C-4595, T-2154, R-4113, G-10766)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Japan to perform electromagnetic emission measurement.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.



1.3 Testing Location

Company: TA Technology (Shanghai) Co., Ltd.
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City: Shanghai
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E-mail: xukai@ta-shanghai.com

2 General Description of Equipment under Test

2.1 Client Information

Applicant	Honeywell International Inc.
Applicant address	2 Corporate Center Drive, Melville, NY, USA
Manufacturer	Jabil Circuit de Mexico
Manufacturer address	Valdepeñas 1993, Zapopan, Mexico

2.2 General information

EUT Description	
Device Type:	Fixed Device
Product Name:	Honeywell Home Wi-Fi Thermostat
Model Number:	RCHT8610WF2006DB
HW Version:	200-01841B
SW Version:	2.6.5
Antenna Type:	Internal Antenna
Telephone	Manufacturer :TCL Model:HCD868(79)TSD
Test Mode:	IDLE Mode
Accessory Equipment	
Adapter	Model:YY-24AC3A24V
Remark: The information of the EUT is declared by the manufacturer. 2The EUT don't have standard Adapter. The adapter used for testing in this report is the after-market accessory.	



2.3 Applied Standards

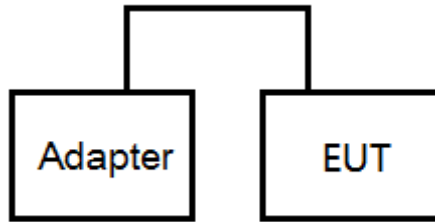
According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test standards

FCC Code CFR47 Part15B (2017)

ANSI C63.4 (2014)

2.4 Test Configuration



3 Test Case Results

3.1 Radiated Emission

Ambient condition

Temperature	Relative humidity	Pressure
24°C~26°C	45%~50%	102.5kPa

Methods of Measurement

The EUT is placed on a non-metallic table 0.8m above the horizontal metal reference ground plane. The distance between EUT and receive antenna should be 3 meters. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.4-2014. Sweep the whole frequency band through the range from 30MHz to the 5th harmonic of the carrier. During the test, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turn table shall be rotated from 0 to 360 degrees for detecting the maximum of radiated signal level.

The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing. During the test, the EUT is worked at maximum output power.

Set the spectrum analyzer in the following:

Below 1GHz:

RBW=100 kHz / VBW=300 kHz / Sweep=AUTO

Above 1GHz:

(a) PEAK: RBW=1MHz / VBW=3MHz/ Sweep=AUTO

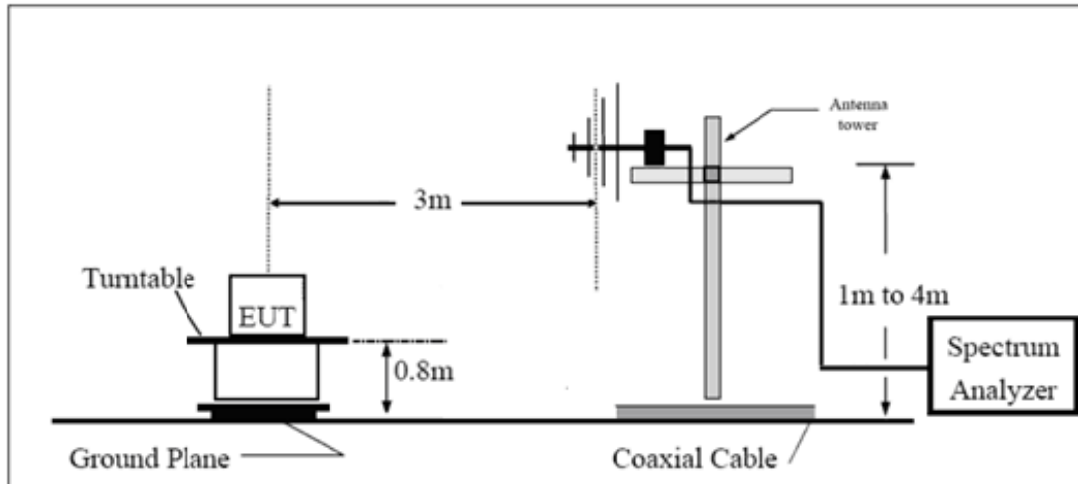
(b) AVERAGE: RBW=1MHz / VBW=3MHz / Sweep=AUTO

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the worst case was recorded.

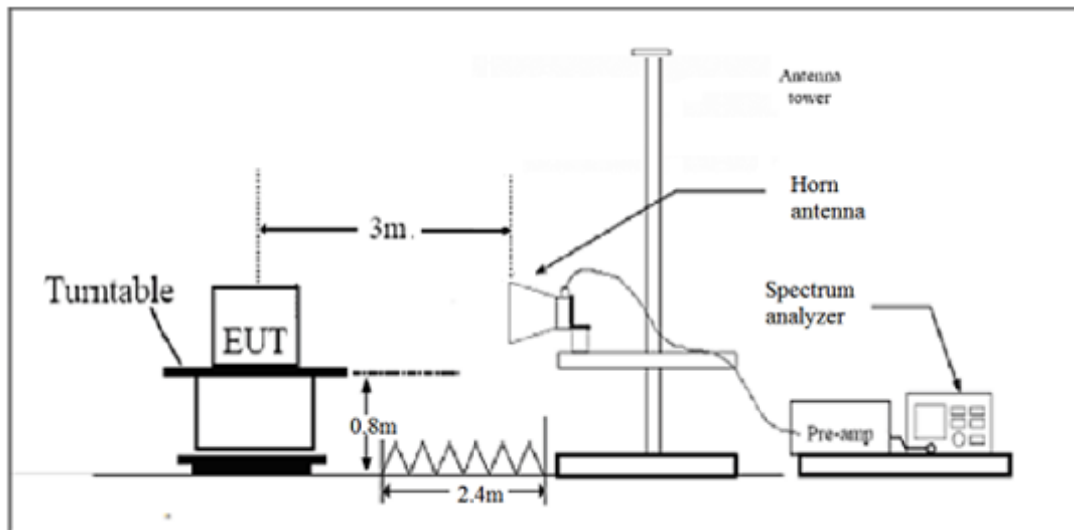
During the test, EUT connected the adapter, EUT power on.

Test Setup

Below 1GHz



Above 1GHz



Note: Area side:2.4mX3.6m

Antenna Tower meets ANSI C63.4 requirements for measurements above 1 GHz by keeping the antenna aimed at the EUT during the antenna's ascent/ descent along the antenna mast.

Limits

Frequency (MHz)	Field Strength (dB μ V/m)	Detector
30 -88	40.0	Quasi-peak
88-216	43.5	Quasi-peak
216 – 960	46.0	Quasi-peak
960-1000	54.0	Quasi-peak
1000-5 th harmonic of the highest frequency or 40GHz, which is lower	54 74	Average Peak

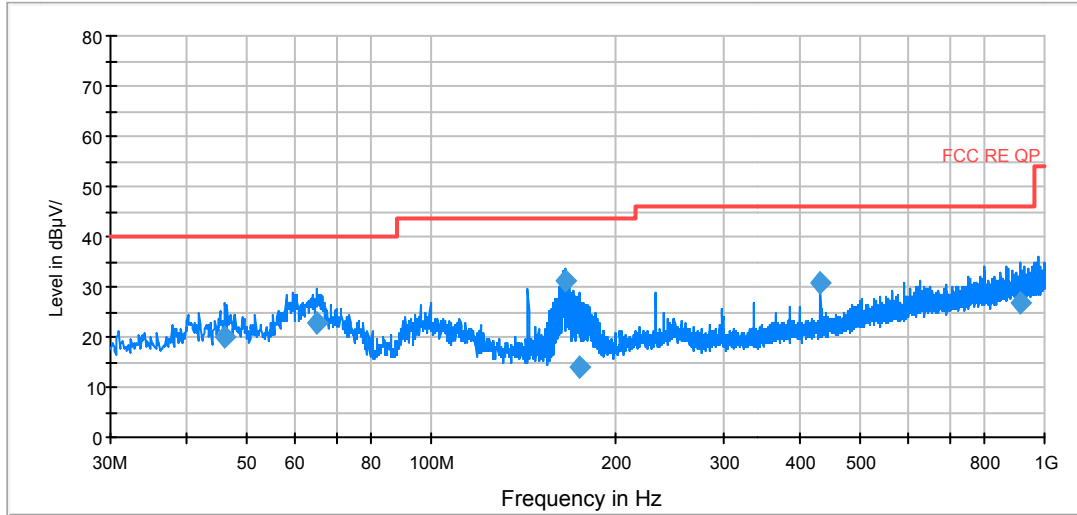
Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$. $U = 3.92$ dB.

Test Results

The following graphs display the maximum values of horizontal and vertical by software.
 For above 1GHz, Blue trace uses the peak detection, Green trace uses the average detection.

FCC RE 0.03-1GHz QP Class B

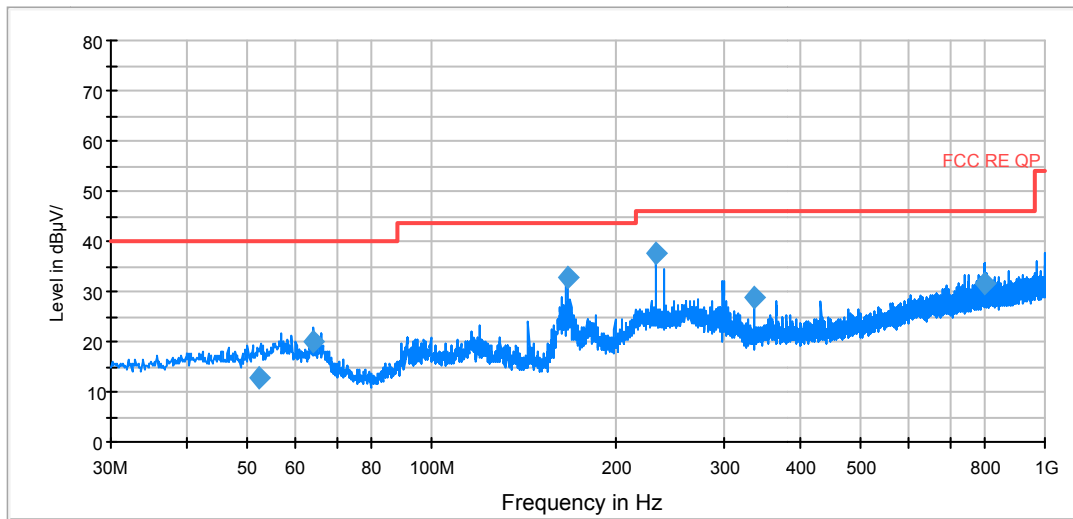


Radiated Emission from 30MHz to 1GHz vertical

Frequency (MHz)	Quasi-Peak (dBuV/m)	Reading value (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
45.926250	20.2	7.0	100.0	V	86.0	13.2	19.8	40.0
65.241250	22.9	12.5	100.0	V	116.0	10.4	17.1	40.0
166.001250	31.3	21.3	100.0	V	216.0	10.0	12.2	43.5
173.888750	14.1	3.4	100.0	V	231.0	10.7	29.4	43.5
431.985000	31.0	12.0	114.0	V	344.0	19.0	15.0	46.0
915.088750	26.9	-0.1	114.0	V	113.0	27.0	19.1	46.0

- Remark:**
1. Quasi-Peak = Reading value + Correction factor
 2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)
 3. Margin = Limit – Quasi-Peak

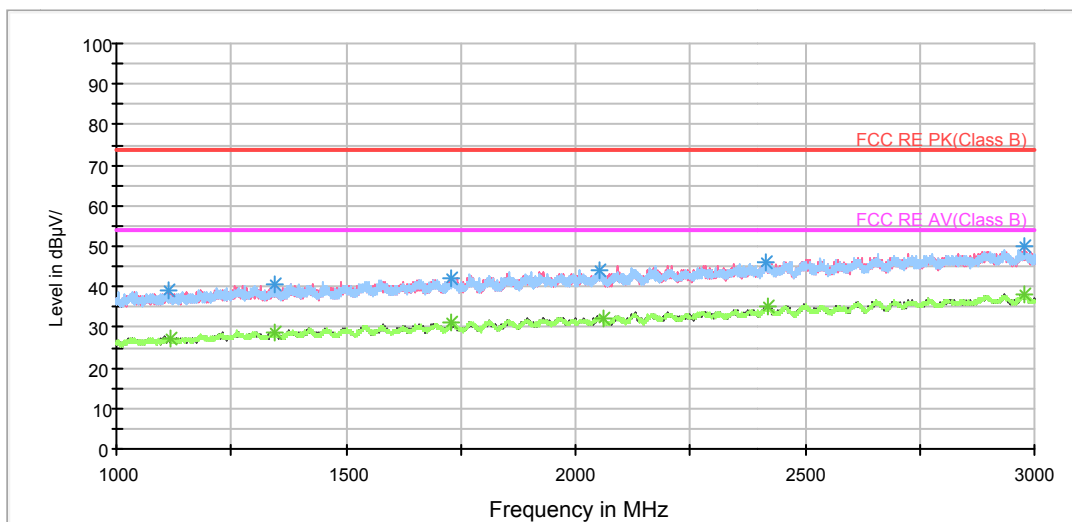
FCC RE 0.03-1GHz QP Class B



Radiated Emission from 30MHz to 1GHz _ horizontal

Frequency (MHz)	Quasi-Peak (dBuV/m)	Reading value (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
52.432500	12.9	0	125.0	H	3.0	12.9	27.1	40.0
64.313750	19.8	8.8	125.0	H	149.0	11.0	20.2	40.0
166.245000	32.8	22.7	125.0	H	107.0	10.1	10.7	43.5
232.371250	37.6	24.2	125.0	H	51.0	13.4	8.4	43.5
335.993750	28.9	12.2	100.0	H	86.0	16.7	17.1	46.0
796.623750	31.4	6.5	113.0	H	34.0	24.9	14.6	46.0

RE 1G-3GHz PK+AV

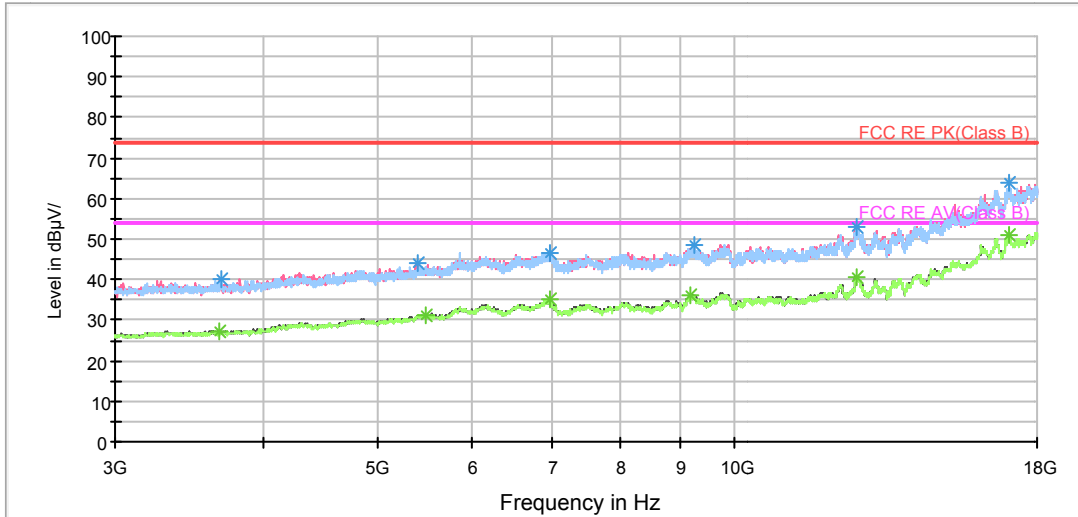


Radiated Emission from 1GHz to 3GHz

Frequency (MHz)	Peak (dBuV/m)	Reading value (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1112.250000	39.1	47.7	202.0	V	114.0	-8.6	34.9	74
1344.500000	40.8	48.3	202.0	V	45.0	-7.5	33.2	74
1729.500000	42.1	47.1	202.0	H	305.0	-5.0	31.9	74
2050.500000	44.2	47.4	202.0	H	253.0	-3.2	29.8	74
2417.000000	46.3	46.9	102.0	V	300.0	-0.6	27.7	74
2978.750000	49.9	47.7	202.0	V	62.0	2.2	24.1	74

Frequency (MHz)	Average (dBuV/m)	Reading value (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1117.750000	37.2	45.8	202.0	V	96.0	-8.6	16.8	54
1344.000000	39.0	46.5	202.0	H	296.0	-7.5	15.0	54
1731.250000	40.3	45.2	102.0	H	198.0	-4.9	13.7	54
2059.250000	42.4	45.5	102.0	H	101.0	-3.1	11.6	54
2419.250000	45.0	45.6	202.0	H	235.0	-0.6	9.0	54
2979.250000	48.1	45.9	202.0	H	0.0	2.2	5.9	54

RE 3-18GHz PK+AV

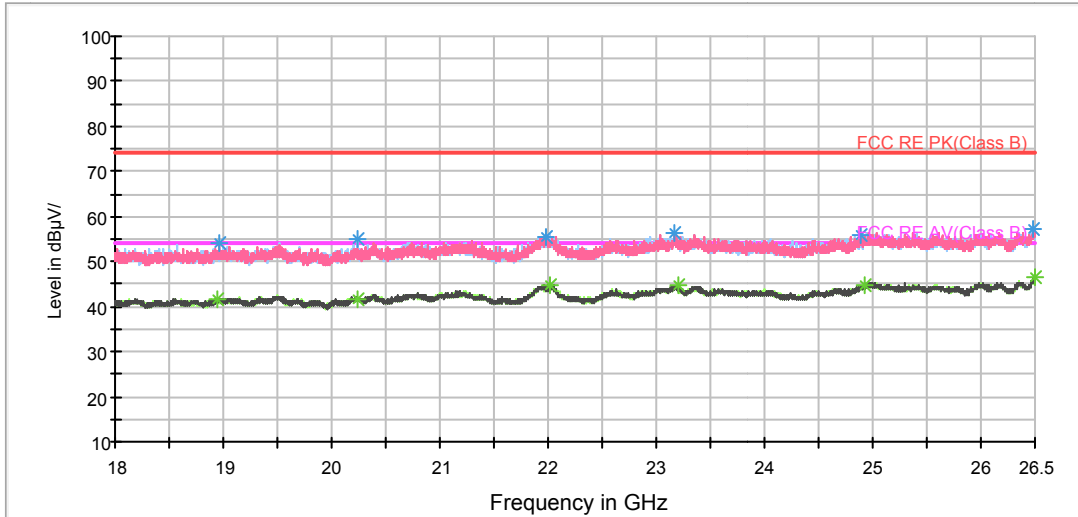


Radiated Emission from 3GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Reading value (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3690.000000	40.0	41.7	102.0	H	0.0	-1.7	34.0	74
5394.375000	44.0	41.6	102.0	V	299.0	2.4	30.0	74
6993.750000	46.8	40.3	202.0	V	86.0	6.5	27.2	74
9241.875000	48.6	38.7	202.0	V	0.0	9.9	25.4	74
12684.375000	53.0	38.8	102.0	V	253.0	14.2	21.0	74
17040.000000	64.0	39.4	102.0	H	131.0	24.6	10.0	74

Frequency (MHz)	Average (dBuV/m)	Reading value (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3678.750000	27.0	28.8	102.0	V	0.0	-1.8	27.0	54
5484.375000	31.3	28.2	102.0	V	322.0	3.1	22.7	54
6995.625000	35.0	28.5	102.0	V	116.0	6.5	19.0	54
9159.375000	35.9	25.5	102.0	V	276.0	10.4	18.1	54
12680.625000	40.5	26.2	202.0	V	63.0	14.3	13.5	54
17043.750000	51.2	26.6	202.0	V	131.0	24.6	2.8	54

BELL_RE 18-26.5GHz PK+AV



Radiated Emission from 18GHz to 26.5GHz

Frequency (MHz)	Peak (dBuV/m)	Reading value (dBuV/m)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18966.875000	53.9	54.0	V	47.0	-0.1	20.1	74
20246.125000	55.0	56.2	H	347.0	-1.2	19.0	74
21984.375000	55.6	56.9	H	230.0	-1.3	18.4	74
23171.187500	56.5	56.6	V	335.0	-0.1	17.5	74
24883.937500	55.9	55.4	V	0.0	0.5	18.1	74
26472.375000	57.4	56.3	H	195.0	1.1	16.6	74

Frequency (MHz)	Average (dBuV/m)	Reading value (dBuV/m)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18947.750000	41.5	41.5	V	31.0	0.0	12.5	54
20238.687500	41.7	42.9	V	80.0	-1.2	12.3	54
22009.875000	44.6	45.9	V	215.0	-1.3	9.4	54
23198.812500	44.6	44.7	V	356.0	-0.1	9.4	54
24920.062500	44.7	44.0	H	272.0	0.7	9.3	54
26497.875000	46.7	45.6	V	0.0	1.1	7.3	54

3.2 Conducted Emission

Ambient condition

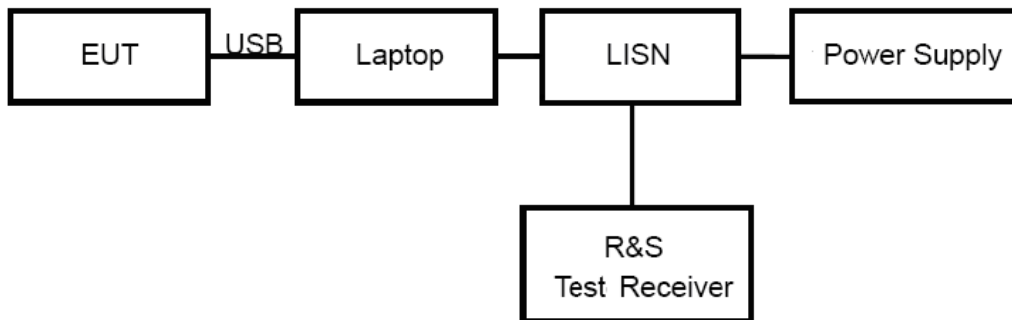
Temperature	Relative humidity	Pressure
24°C ~26°C	50%~55%	102.5kPa

Methods of Measurement

The EUT is placed on a non-metallic table of 80cm height above the horizontal metal reference ground plane. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.4-2014. Connect the AC power line of the EUT to the L.I.S.N. Use EMI receiver to detect the average and Quasi-peak value. RBW is set to 9 kHz, VBW is set to 30kHz. The measurement result should include both L line and N line.

During the test, EUT connected the adapter, EUT power on

Test Setup



Note: Power Supply is AC Power source and it is used to change the voltage 120V/60Hz.

Limits

Frequency (MHz)	Conducted Limits(dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46 *
0.5 - 5	56	46
5 - 30	60	50

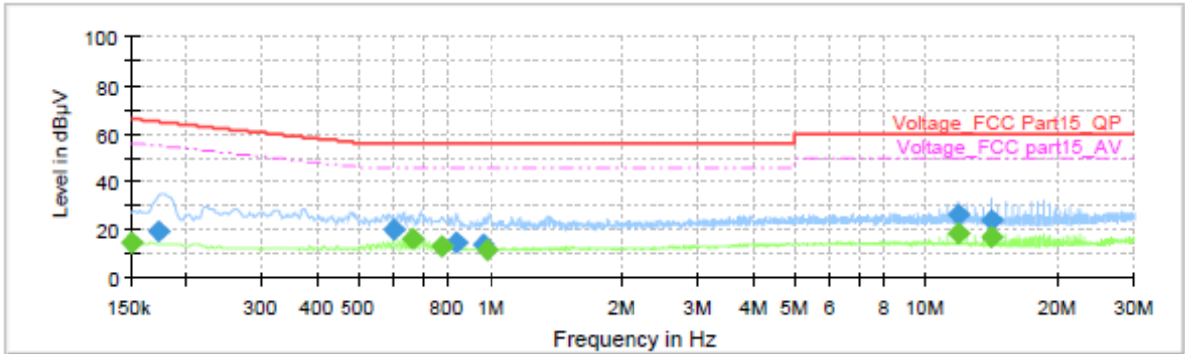
*: Decreases with the logarithm of the frequency.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$. $U = 2.69$ dB.

Test Results

Following plots, Blue trace uses the peak detection; Green trace uses the average detection.

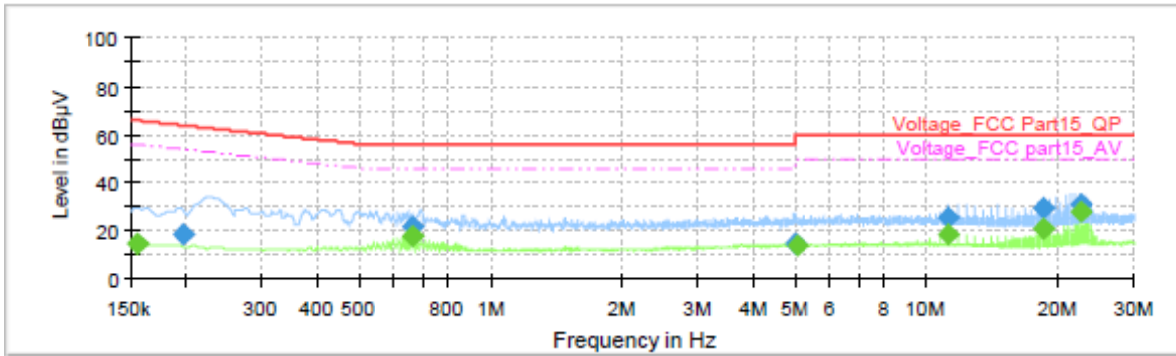


Final Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.150000	---	15.08	56.00	40.92	1000.0	9.000	L1	ON	19.1
0.172500	19.57	---	64.84	45.27	1000.0	9.000	L1	ON	19.2
0.597750	19.90	---	56.00	36.10	1000.0	9.000	L1	ON	19.3
0.660750	---	16.41	46.00	29.59	1000.0	9.000	L1	ON	19.3
0.768750	---	13.14	46.00	32.86	1000.0	9.000	L1	ON	19.2
0.836250	14.34	---	56.00	41.66	1000.0	9.000	L1	ON	19.2
0.957750	13.87	---	56.00	42.13	1000.0	9.000	L1	ON	19.2
0.982500	---	11.99	46.00	34.01	1000.0	9.000	L1	ON	19.2
11.823000	---	18.43	50.00	31.57	1000.0	9.000	L1	ON	19.4
11.825250	26.57	---	60.00	33.43	1000.0	9.000	L1	ON	19.4
14.073000	---	17.12	50.00	32.88	1000.0	9.000	L1	ON	19.5
14.073000	24.08	---	60.00	35.92	1000.0	9.000	L1	ON	19.5

L line

Conducted Emission from 150 KHz to 30 MHz



Final Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.154500	---	14.81	55.75	40.94	1000.0	9.000	N	ON	19.1
0.197250	18.35	---	63.73	45.37	1000.0	9.000	N	ON	19.2
0.660750	---	17.59	46.00	28.41	1000.0	9.000	N	ON	19.3
0.660750	21.89	---	56.00	34.11	1000.0	9.000	N	ON	19.3
5.005500	14.89	---	60.00	45.11	1000.0	9.000	N	ON	19.1
5.066250	---	13.98	50.00	36.02	1000.0	9.000	N	ON	19.1
11.262750	25.48	---	60.00	34.52	1000.0	9.000	N	ON	19.4
11.262750	---	18.62	50.00	31.38	1000.0	9.000	N	ON	19.4
18.582000	29.50	---	60.00	30.50	1000.0	9.000	N	ON	19.4
18.582000	---	20.59	50.00	29.41	1000.0	9.000	N	ON	19.4
22.524000	30.70	---	60.00	29.30	1000.0	9.000	N	ON	19.5
22.654500	---	28.23	50.00	21.77	1000.0	9.000	N	ON	19.5

N line
 Conducted Emission from 150 KHz to 30 MHz

4 Main Test Instrument

Name	Manufacturer	Type	Serial Number	Last Cal.	Cal. Due Date
Signal Analyzer	R&S	FSV30	100815	2016-12-16	2017-12-15
EMI Test Receiver	R&S	ESCI	100948	2017-05-20	2018-05-19
Loop Antenna	SCHWARZBECK	FMZB1519	1519-047	2017-02-18	2019-02-17
Trilog Antenna	SCHWARZBECK	VULB 9163	9163-201	2014-12-06	2017-12-05
Horn Antenna	R&S	HF907	100126	2014-12-06	2017-12-05
Horn Antenna	ETS-Lindgren	3160-09	00102643	2015-01-30	2018-01-29
EMI Test Receiver	R&S	ESCS30	100138	2016-12-16	2017-12-15
LISN	R&S	ENV216	101171	2016-12-16	2019-12-15
Bore Sight Antenna mast	ETS	2171B	00058752	NA	NA

ANNEX A: The EUT Appearance and Test Configuration

A.1 EUT Appearance



Front Side

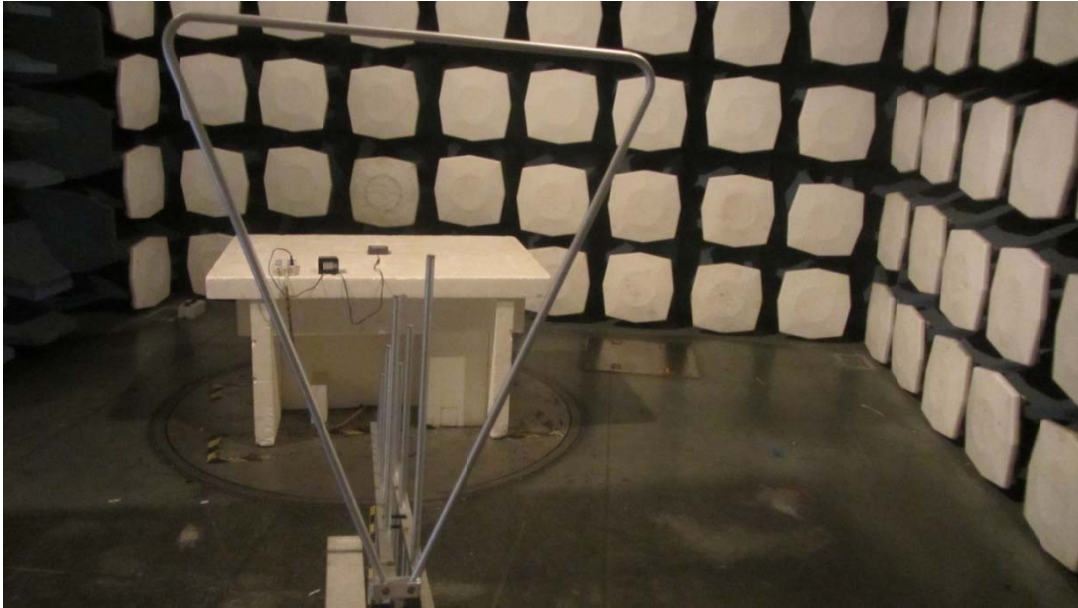


Back Side



b: Adapter
Picture 1 EUT

A.2 Test Setup



a: Below 1GHz



b: Above 1GHz

Picture 2 Radiated Emission Test Setup



Picture 3 Conducted Emission Test Setup