SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China
Telephone: +86 (0) 21 6191 5666
Fax: +86 (0) 21 6191 5678
ee.shanghai@sgs.com

TEST REPORT

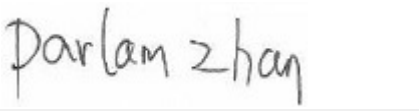
Application No.:	SHEM1803002204CR
FCC ID:	2AHEA-WF12096
Applicant:	Shanghai Mobvoi Information Technology Company Limited
Address of Applicant:	Building 2-106, 1690 Cailun Road, China (Shanghai) free trade area, China
Manufacturer:	Shanghai Mobvoi Information Technology Company Limited
Address of Manufacturer:	Building 2-106, 1690 Cailun Road, China (Shanghai) free trade area, China
Factory:	Compal Display Electronics (Kunshan) Co., Ltd.
Address of Factory:	No.1881 Liji Road Shipai Bacheng Town, Kunshan, Jiangsu, P.R.China
Equipment Under Test (EUT):	
EUT Name:	TicWatch Pro Smartwatch
Model No.:	WF12096
Trade mark:	TicWatch
Standard(s) :	47 CFR Part 15, Subpart B
Date of Receipt:	2018-03-26
Date of Test:	2018-04-02 to 2018-04-17
Date of Issue:	2018-05-20
Test Result:	**Pass***

* In the configuration tested, the EUT complied with the standards specified above.

Parlam Zhan
E&E Section Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

Revision Record			
Version	**Description**	**Date**	**Remark**
00	Original	2018-05-20	/

Authorized for issue by:				
				
		Vincent Zhu / Project Engineer		
				
		Parlam Zhan / Reviewer		

2 Test Summary

Emission Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Conducted Emissions at Mains Terminals (150kHz-30MHz)	47 CFR Part 15, Subpart B	ANSI C63.4	Class B	Pass
Radiated Emissions (30MHz-1GHz)	47 CFR Part 15, Subpart B	ANSI C63.4	Class B	Pass
Radiated Emissions (above 1GHz)	47 CFR Part 15, Subpart B	ANSI C63.4	Class B	Pass

InternalSource	UpperFrequency
Below 1.705MHz	30MHz
1.705MHz to 108MHz	1GHz
108MHz to 500MHz	2GHz
500MHz to 1GHz	5GHz
Above 1GHz	5th harmonic of the highest frequency or 40GHz, whichever is lower

3 Contents

4 General Information

4.1 Details of E.U.T.

Power supply: Battery:3.8V 415mAh
Charging Dock:
name:TicWatch Dock
Model:WF20028
INPUT:DC 5V 1A
OUTPUT:DC 5V 0.8A

Cable: DC Cable 80mm for TicWatch Dock

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
iPad mini	Apple	A1490	/
Laptop	LENOVO	R400	/
Router	CISCO	RV110W	

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conducted Emission at mains port using AMN	3.2dB (9kHz to 150kHz)
		3.0dB (150kHz to 30MHz)
2	Conducted Emission at mains port using VP	1.9 dB(9kHz to 30MHz)
3	Conducted Emission at telecommunication port using AAN	2.4 dB(150kHz to 30MHz)
4	Radiated Power	3.5dB
5	Radiated emission	4.4dB (30MHz-1GHz)
		4.6dB (1GHz-6GHz)

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. E&E Lab

588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China

Tel: +86 21 6191 5666 Fax: +86 21 6191 5678

No tests were sub-contracted.

4.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• CNAS (No. CNAS L0599)

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

• NVLAP (Certificate No. 201034-0)

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. is accredited by the National Voluntary Laboratory Accreditation Program(NVLAP). Certificate No. 201034-0.

• FCC –Designation Number: CN5033

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been recognized as an accredited testing laboratory.

Designation Number: CN5033. Test Firm Registration Number: 479755.

• Industry Canada (IC) – IC Assigned Code: 8617A

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A-1.

• VCCI (Member No.: 3061)

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-3868,C-4336,T-12221,G-10830 respectively.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

5 Equipment List

Conducted Emissions at Mains Terminals (150kHz-30MHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
EMI test receiver	Rohde & Schwarz	ESR7	SHEM162-1	2017-12-20	2018-12-19
Line impedance stabilization network	SCHWARZBECK	NSLK8127	SHEM061-1	2017-12-20	2018-12-19
Line impedance stabilization network	EMCO	3816/2	SHEM019-1	2017-12-20	2018-12-19
Pulse limiter	Rohde & Schwarz	ESH3-Z2	SHEM029-1	2017-12-20	2018-12-19
Shielding Room	ZHONGYU	8*4*3M	SHEM079-2	2017-12-20	2020-12-19
CE test Cable	/	/	CE01	2017-12-26	2018-12-25

Radiated Emissions (30MHz-1GHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
EMI test receiver	Rohde & Schwarz	ESU40	SHEM051-1	2017-09-26	2018-09-25
CONTROLLER	INNCO	CO200	SHEM047-1	N/A	N/A
ANTENNA MAST	INNCO	MA400-EP	SHEM047-2	N/A	N/A
TURN DEVICE	INNCO	DE 3600-RH	SHEM047-3	N/A	N/A
Broadband UHF-VHF ANTENNA	SCHWARZBECK	VULB9168	SHEM048-1	2017-02-28	2020-02-27
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2017-07-22	2020-07-21
Low Amplifier	CLAVIIO	BDLNA-0001-412010	SHEM164-1	2017-08-22	2018-08-21

Radiated Emissions (above 1GHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
EMI test receiver	Rohde & Schwarz	ESU40	SHEM051-1	2017-09-26	2018-09-25
CONTROLLER	INNCO	CO200	SHEM047-1	N/A	N/A
ANTENNA MAST	INNCO	MA400-EP	SHEM047-2	N/A	N/A
TURN DEVICE	INNCO	DE 3600-RH	SHEM047-3	N/A	N/A
Double ridged broadband horn ANTENNA	SCHWARZBECK	BBHA9120D	SHEM050-1	2017-01-14	2020-01-13
High-amplifier	SCHWARZBECK	SCU-F0118-G40-BZ4-CS	SHEM050-2	2017-12-20	2018-12-19
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2017-07-22	2020-07-21

General used equipment					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Digital pressure meter	YONGZHI	DYM3-01	SHEM082-1	2018-01-25	2019-01-24
Temperature&humidity recorder	ShangHai weather meter work	ZJ 1-2B	SHEM042-1~6	2017-09-13	2018-09-12
Digital Multimeter	FLUKE	17B	SHEM043-3	2017-09-11	2018-09-10
Autoformer regulator	Guangzhou bao de	TDGC2-5KVA	SHEM150-1	N/A	N/A
Multi-purpose tong tester	FLUKE	316	SHEM001-1	2017-12-20	2018-12-19

6 Emission Test Results

6.1 Conducted Emissions at Mains Terminals (150kHz-30MHz)

Test Requirement:	47 CFR Part 15, Subpart B
Test Method:	ANSI C63.4
Frequency Range:	150kHz to 30MHz
Limit:	
0.15M-0.5MHz	66dB(μV)-56dB(μV) quasi-peak, 56dB(μV)-46dB(μV) average
0.5M-5MHz	56dB(μV) quasi-peak, 46dB(μV) average
5M-30MHz	60dB(μV) quasi-peak, 50dB(μV) average
Detector:	Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

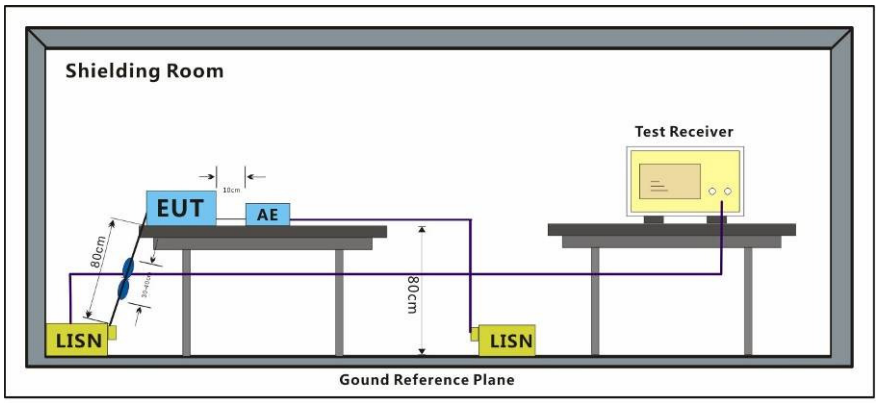
6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1010 mbar

Test mode a:Charging mode_Keep EUT charging via connecting the USB port of PC.

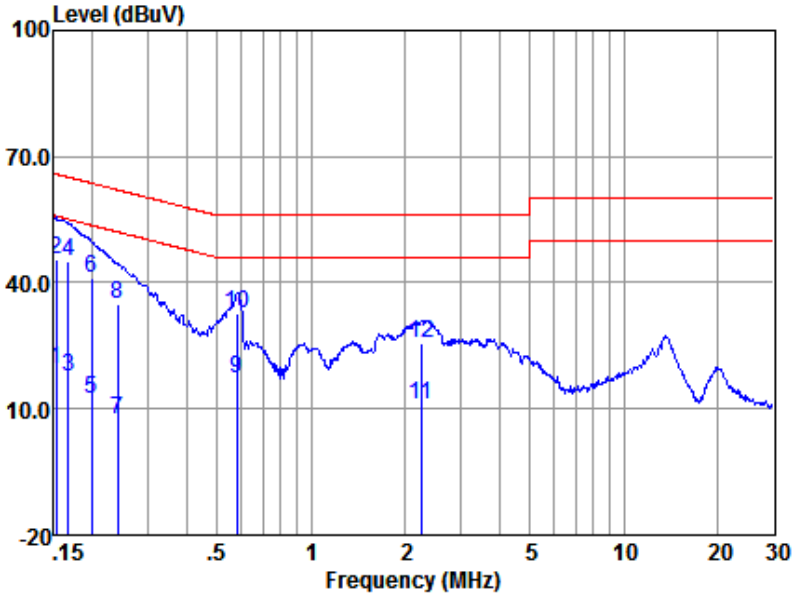
6.1.2 Test Setup Diagram



6.1.3 Measurement Data

An initial pre-scan was performed with peak detector.Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.

Mode:a; Line:Live Line

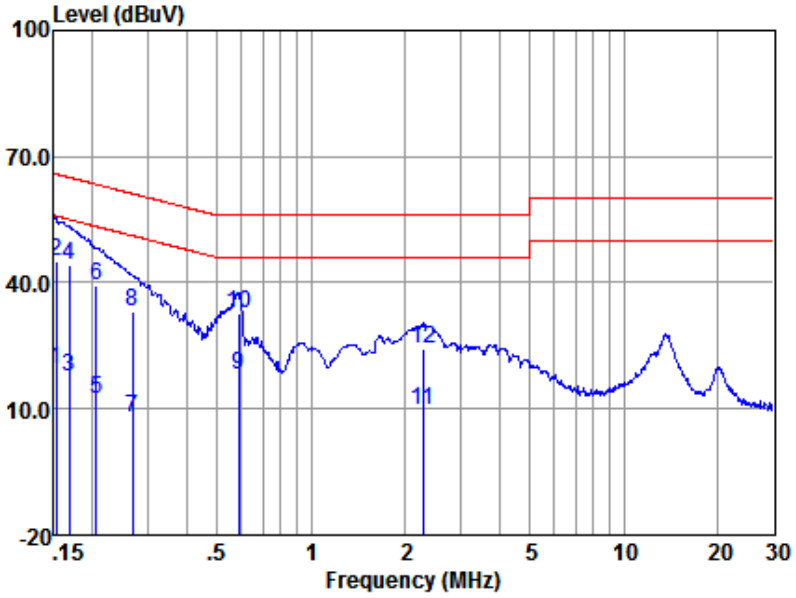


LISN : LINE
EUT/Project No : 2204CR
Test Mode : a

	Freq (MHz)	Read level (dBuV)	LISN Factor (dB)	Cable Loss (dB)	Emission Level (dBuV)	Limit (dBuV)	Over Limit (dB)	Remark
1	0.15	9.55	0.11	9.81	19.47	55.87	-36.40	Average
2	0.15	35.44	0.11	9.81	45.36	65.87	-20.51	QP
3	0.17	7.90	0.11	9.81	17.82	55.08	-37.26	Average
4	0.17	35.16	0.11	9.81	45.08	65.08	-20.00	QP
5	0.20	2.24	0.11	9.81	12.16	53.67	-41.51	Average
6	0.20	31.17	0.11	9.81	41.09	63.67	-22.58	QP
7	0.24	-2.43	0.11	9.81	7.49	52.08	-44.59	Average
8	0.24	24.78	0.11	9.81	34.70	62.08	-27.38	QP
9	0.58	7.30	0.11	9.82	17.23	46.00	-28.77	Average
10	0.58	22.78	0.11	9.82	32.71	56.00	-23.29	QP
11	2.25	0.84	0.12	9.85	10.81	46.00	-35.19	Average
12	2.25	15.84	0.12	9.85	25.81	56.00	-30.19	QP

Notes: Emission Level = Read Level +LISN Factor + Cable loss

Mode:a; Line:Neutral Line



LISN : NEUTRAL
EUT/Project No : 2204CR
Test Mode : a

	Freq (MHz)	Read level (dBuV)	LISN Factor (dB)	Cable Loss (dB)	Emission Level (dBuV)	Limit (dBuV)	Over Limit (dB)	Remark
1	0.15	9.55	0.12	9.81	19.48	55.87	-36.39	Average
2	0.15	35.23	0.12	9.81	45.16	65.87	-20.71	QP
3	0.17	7.68	0.12	9.81	17.61	55.03	-37.42	Average
4	0.17	34.42	0.12	9.81	44.35	65.03	-20.68	QP
5	0.21	2.19	0.12	9.81	12.12	53.40	-41.28	Average
6	0.21	29.53	0.12	9.81	39.46	63.40	-23.94	QP
7	0.27	-2.13	0.11	9.81	7.79	51.16	-43.37	Average
8	0.27	23.34	0.11	9.81	33.26	61.16	-27.90	QP
9	0.59	7.96	0.11	9.82	17.89	46.00	-28.11	Average
10	0.59	22.95	0.11	9.82	32.88	56.00	-23.12	QP
11	2.27	-0.13	0.12	9.85	9.84	46.00	-36.16	Average
12	2.27	14.16	0.12	9.85	24.13	56.00	-31.87	QP

Notes: Emission Level = Read Level +LISN Factor + Cable loss

6.2 Radiated Emissions (30MHz-1GHz)

Test Requirement:	47 CFR Part 15, Subpart B
Test Method:	ANSI C63.4
Frequency Range:	30MHz to 1GHz
Measurement Distance:	3m
Limit:	
30MHz -88MHz	40.0(dBμV/m) quasi-peak
88MHz-216MHz	43.5(dBμV/m) quasi-peak
216MHz-960MHz	46.0(dBμV/m) quasi-peak
960MHz-1000MHz	54.0(dBμV/m) quasi-peak
Detector:	Peak for pre-scan (120kHz resolution bandwidth) 30M to1000MHz

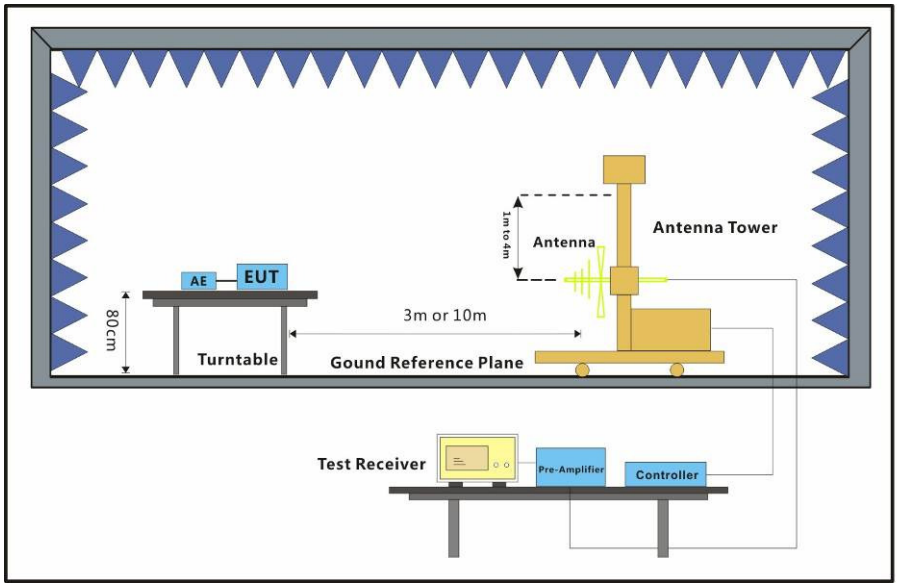
6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1002 mbar

Pretest these mode to find the worst case:	a:Charging mode_Keep EUT charging via connecting the USB port of PC. b:Working mode_The EUT power switch on, establish communication between EUT and router via WiFi function and connected to iPad via BT function, and than sliding touch screen.
The worst case for final test:	a:Charging mode_Keep EUT charging via connecting the USB port of PC.

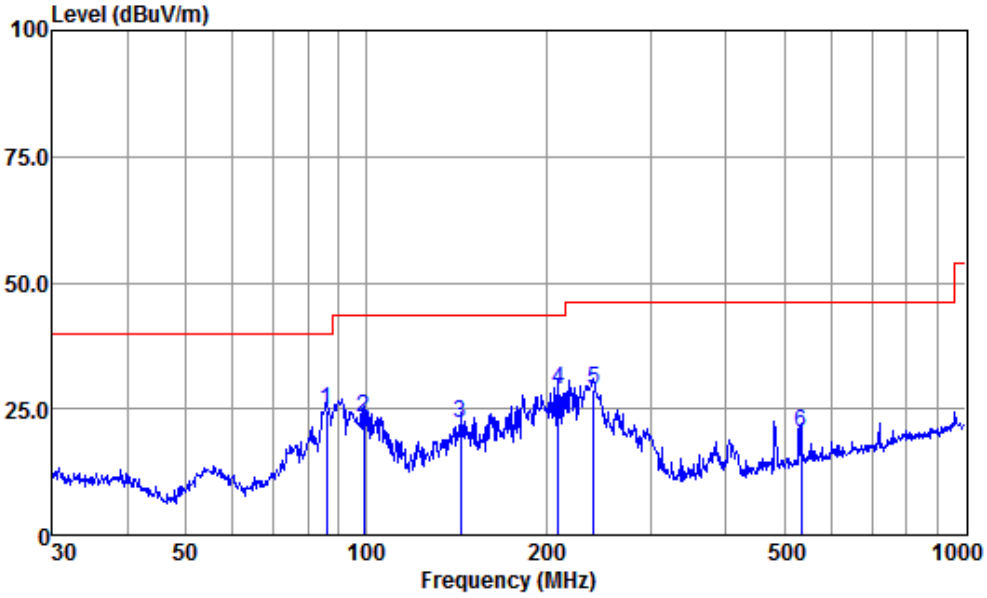
6.2.2 Test Setup Diagram



6.2.3 Measurement Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.

Mode:a; Polarization:Horizontal

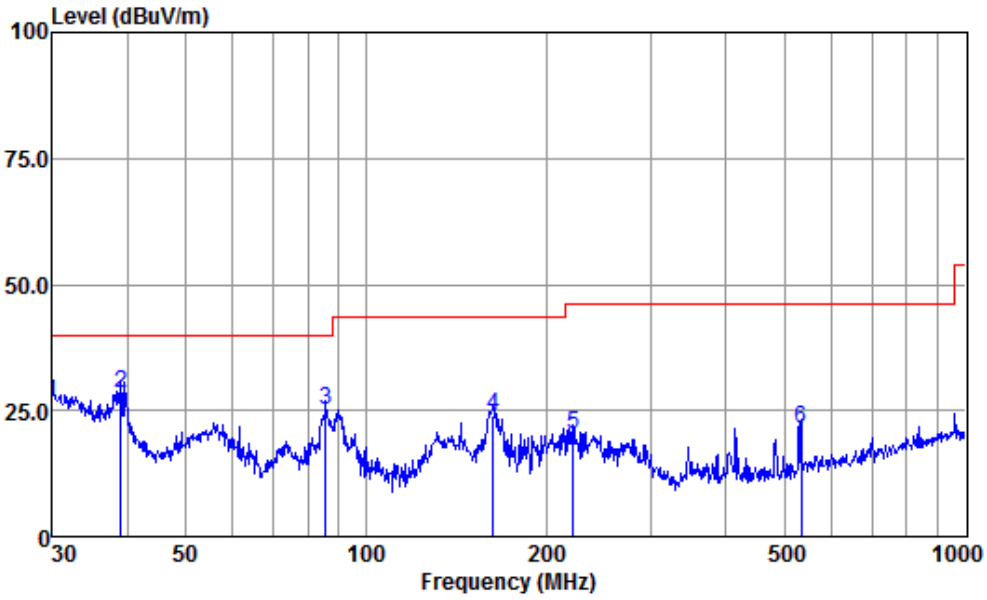


Antenna Polarity :HORIZONTAL
EUT/Project :2204CR
Test mode :a

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	86.20	59.04	8.06	0.40	42.68	24.82	40.00	-15.18	QP
2	99.18	56.23	9.41	0.45	42.69	23.40	43.50	-20.10	QP
3	143.83	52.65	11.54	0.61	42.62	22.18	43.50	-21.32	QP
4	210.05	60.69	9.86	0.71	42.51	28.75	43.50	-14.75	QP
5	239.99	59.46	11.10	0.75	42.47	28.84	46.00	-17.16	QP
6	533.83	43.12	18.00	1.25	42.16	20.21	46.00	-25.79	QP

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Mode:a; Polarization:Vertical



Antenna Polarity :VERTICAL
EUT/Project :2204CR
Test mode :a

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	30.00	53.58	15.30	0.18	42.60	26.46	40.00	-13.54	QP
2	39.02	54.74	16.21	0.22	42.62	28.55	40.00	-11.45	QP
3	85.60	59.21	8.06	0.40	42.68	24.99	40.00	-15.01	QP
4	163.18	53.35	12.60	0.64	42.59	24.00	43.50	-19.50	QP
5	222.17	51.57	10.38	0.73	42.49	20.19	46.00	-25.81	QP
6	533.83	44.32	18.00	1.25	42.16	21.41	46.00	-24.59	QP

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

6.3 Radiated Emissions (above 1GHz)

Test Requirement: 47 CFR Part 15, Subpart B
Test Method: ANSI C63.4
Frequency Range: Above 1GHz
Measurement Distance: 3m
Limit:
Above 1GHz 74(dBμV/m) peak, 54(dBμV/m) average
Detector: Peak for pre-scan (1000kHz resolution bandwidth) 1000M to18000MHz

6.3.1 E.U.T. Operation

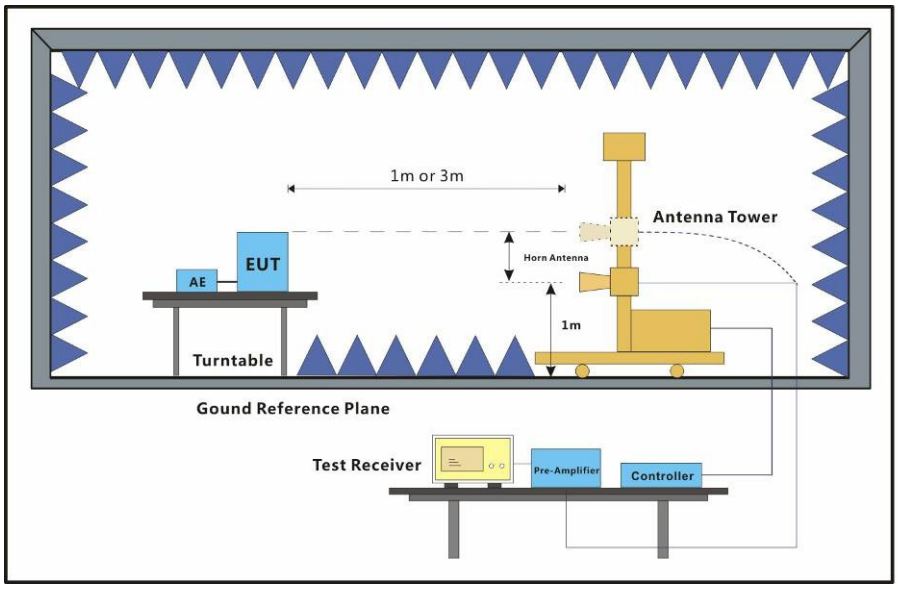
Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1002 mbar

Pretest these mode to find the worst case: a:Charging mode_Keep EUT charging via connecting the USB port of PC.
b:Working mode_The EUT power switch on, establish communication between EUT and router via WiFi function and connected to iPad via BT function, and than sliding touch screen.

The worst case for final test: a:Charging mode_Keep EUT charging via connecting the USB port of PC.

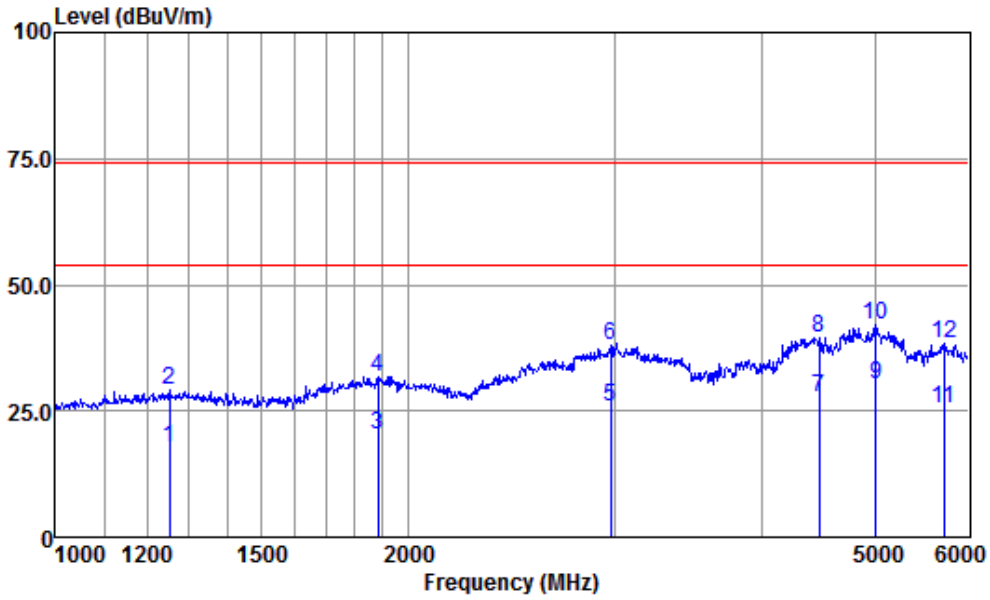
6.3.2 Test Setup Diagram



6.3.3 Measurement Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.

Mode:a; Polarization:Horizontal

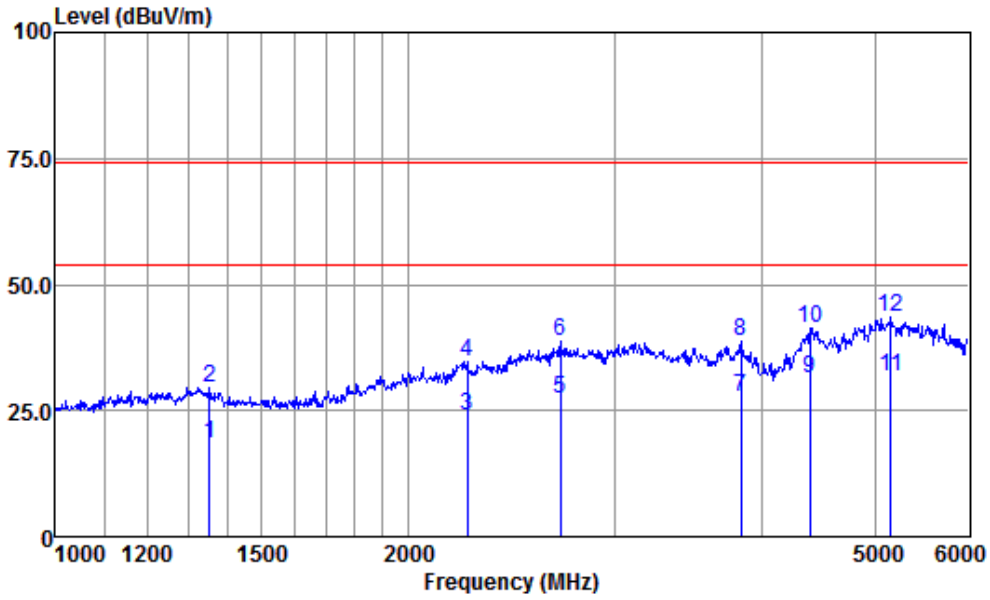


Antenna Polarity :HORIZONTAL
EUT/Project :2204CR
Test mode :a

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	1251.03	31.54	24.70	3.45	41.84	17.85	54.00	-36.15	Average
2	1251.03	42.70	24.70	3.45	41.84	29.01	74.00	-44.99	Peak
3	1885.67	32.29	25.83	4.33	42.16	20.29	54.00	-33.71	Average
4	1885.67	43.74	25.83	4.33	42.16	31.74	74.00	-42.26	Peak
5	2977.79	33.37	28.47	5.79	41.72	25.91	54.00	-28.09	Average
6	2977.79	45.31	28.47	5.79	41.72	37.85	74.00	-36.15	Peak
7	4480.36	30.98	30.58	7.70	41.67	27.59	54.00	-26.41	Average
8	4480.36	42.72	30.58	7.70	41.67	39.33	74.00	-34.67	Peak
9	5006.77	32.09	31.60	8.19	41.61	30.27	54.00	-23.73	Average
10	5006.77	43.84	31.60	8.19	41.61	42.02	74.00	-31.98	Peak
11	5726.90	26.94	32.23	8.36	41.93	25.60	54.00	-28.40	Average
12	5726.90	39.63	32.23	8.36	41.93	38.29	74.00	-35.71	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Mode:a; Polarization:Vertical



Antenna Polarity :VERTICAL
EUT/Project :2204CR
Test mode :a

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	1353.65	31.66	24.93	3.66	41.88	18.37	54.00	-35.63	Average
2	1353.65	42.94	24.93	3.66	41.88	29.65	74.00	-44.35	Peak
3	2247.63	34.28	26.73	4.99	42.19	23.81	54.00	-30.19	Average
4	2247.63	45.12	26.73	4.99	42.19	34.65	74.00	-39.35	Peak
5	2698.33	35.96	27.85	5.57	41.98	27.40	54.00	-26.60	Average
6	2698.33	47.22	27.85	5.57	41.98	38.66	74.00	-35.34	Peak
7	3847.42	33.35	29.43	6.80	41.93	27.65	54.00	-26.35	Average
8	3847.42	44.57	29.43	6.80	41.93	38.87	74.00	-35.13	Peak
9	4400.79	34.99	30.44	7.64	41.71	31.36	54.00	-22.64	Average
10	4400.79	45.12	30.44	7.64	41.71	41.49	74.00	-32.51	Peak
11	5161.63	33.67	31.70	8.22	41.74	31.85	54.00	-22.15	Average
12	5161.63	45.31	31.70	8.22	41.74	43.49	74.00	-30.51	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

7 Photographs

Refer to the < Test Setup photos FCC >

8 EUT Constructional Details

Refer to the < External Photos > & < Internal Photos >.

- End of the Report -