Test Report

FCC ID: 2ADDG-WIRELESSCHIME

Date of issue: Dec. 14, 2020

Report No.:	MTi20112012-7E1
Sample Description:	Chime
Model(s):	Chime, Chime 2, Chime 3, Chime 4, Chime 5, Chime 6, Chime 7, Chime 8, Chime 9, Chime Pro, Chime Plus
Applicant:	EKEN GROUP LIMITED
Address:	Room 2511-2512, Meilan Business Center Qianjin Two Road, XiXiang, Baoan District Shenzhen, Guangdong, China
Date of Test:	Dec. 01, 2020 to Dec. 14, 2020

Shenzhen Microtest Co., Ltd.
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Address: 101, No. 7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao' an District, Shenzhen, Guangdong, China.

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TEST REPORT

Applicant's name:	EKEN GROUP LIMITED
Address:	Room 2511-2512, Meilan Business Center Qianjin Two Road, XiXiang, Baoan District Shenzhen, Guangdong, China
Manufacture's Name:	Shenzhen Puge Electronics Co., Ltd.
Address:	2F Building E, No. 1 LingXia Road, FengHuang Community, FuYong Street, BaoAn District, Shenzhen.
Product name:	Chime
Trademark:	N/A
Model name:	Chime, Chime 2, Chime 3, Chime 4, Chime 5, Chime 6, Chime 7, Chime 8, Chime 9, Chime Pro, Chime Plus
Standards:	FCC Part 15 Subpart B
Test methods	ANSI C63.4-2014

This device described above has been tested by Shenzhen Microtest Co., Ltd. and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

Tested by: Demi Mu — Dec. 14, 2020

Reviewed by: Leo Su — Dec. 14, 2020

Approved by: Tom Xue — Dec. 14, 2020

1 General description

1.1 Description of EUT

Product name:	Chime
Model name:	Chime
Series Model:	Chime 2, Chime 3, Chime 4, Chime 5, Chime 6, Chime 7, Chime 8, Chime 9, Chime Pro, Chime Plus
Different of series model:	All the models are of the same circuit, except the color and model No..
Power supply:	AC 120V/60Hz
Adapter information:	N/A

1.2 Test mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Test mode	Description
Mode 1	Normal working
Note: The test modes were carried out for all operation modes. The final test mode of the EUT was the worst test mode for EMI, and its test data is showed.	

1.3 EUT test setup

See photographs of the test setup in the report for the actual setup and connections between EUT and support equipment.

1.4 Ancillary equipment

Equipment	Model	S/N	Manufacturer
/	/	/	/

2 Summary of Test Result

Item	Description of Test	Result
FCC Part 15 Subpart B		
1	Conducted emission	Pass
2	Radiated emission	Pass

N/A: Mean not applicable.

3 Test Facilities and Accreditations

3.1 Test laboratory

Test Site	Shenzhen Microtest Co., Ltd.
Test Site Location	101, No. 7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao' an District, Shenzhen, Guangdong, China.
Telephone:	(86-755)88850135
Fax:	(86-755)88850136
CNAS Registration No.:	CNAS L5868
FCC Registration No.:	448573

3.2 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15ºC~35ºC
Humidity	20%~75%
Atmospheric pressure	98kPa~101kPa

3.3 Measurement uncertainty

Measurement Uncertainty for a Level of Confidence of 95 %, U=2xUc(y)

Conducted emission(150kHz~30MHz)	± 2.5 dB
Radiated emission(30MHz~1GHz)	± 4.2 dB
Radiated emission (above 1GHz)	± 4.3 dB
Temperature	±1 degree
Humidity	± 5 %

3.4 Test software

Software name	Manufacturer	Model	Version
EMI Measurement Software	Farad	EZ-EMC	V1.1.4.2

4 List of test equipment

Radiation emission							
Item	Equipment name	Equipment No.	Manufacturer	Model	Serial No.	Calibration date	Due date
1	EMI Test Receiver	MTI-E043	Rohde&schwarz	ESPI7	101166	2020/06/04	2021/06/03
2	Broadband antenna	MTI-E044	schwarabeck	VULB9163	9163-1338	2020/06/05	2021/06/04
3	Horn antenna	MTI-E045	schwarabeck	BBHA9120D	9120D-2278	2020/06/05	2021/06/04
4	amplifier	MTI-E047	Hewlett-Packard	8447D	3113A06150	2020/06/04	2021/06/03
5	1GHz-26.5GHz Amplifier	MTI-E048	Agilent	8449B	3008A02400	2020/07/03	2021/07/02
Conduction emission							
Item	Equipment name	Equipment No.	Manufacturer	Model	Serial No.	Calibration date	Due date
1	Artificial power network	MTI-E023	Schwarzbeck	NSLK8127	NSLK8127#841	2020/06/04	2021/06/03
2	EMI Test Receiver	MTI-E021	Rohde&schwarz	ESCS30	100210	2020/06/04	2021/06/03
3	Artificial power network	MTI-E025	Schwarzbeck	NSLK8127	8127183	2020/06/03	2021/06/02

Note: the calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

5 EMC emission test

5.1 Conducted emission

5.1.1 Limits

Frequency (MHz)	Class A (dBμV)		Class B (dBμV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79	66	66 - 56 *	56 - 46 *
0.5 -5	73	60	56	46
5 -30	73	60	60	50

Note 1: the tighter limit applies at the band edges.
Note 2: the limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

5.1.2 Test Procedures

The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

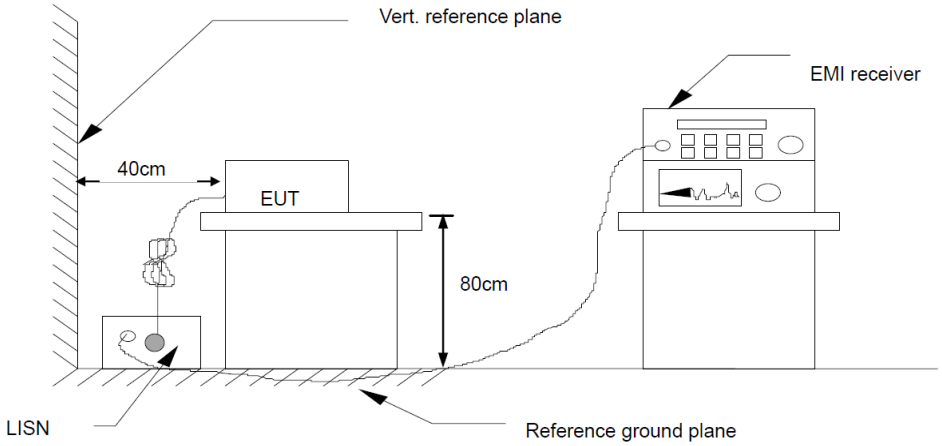
Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

LISN is at least 80 cm from nearest part of EUT chassis.

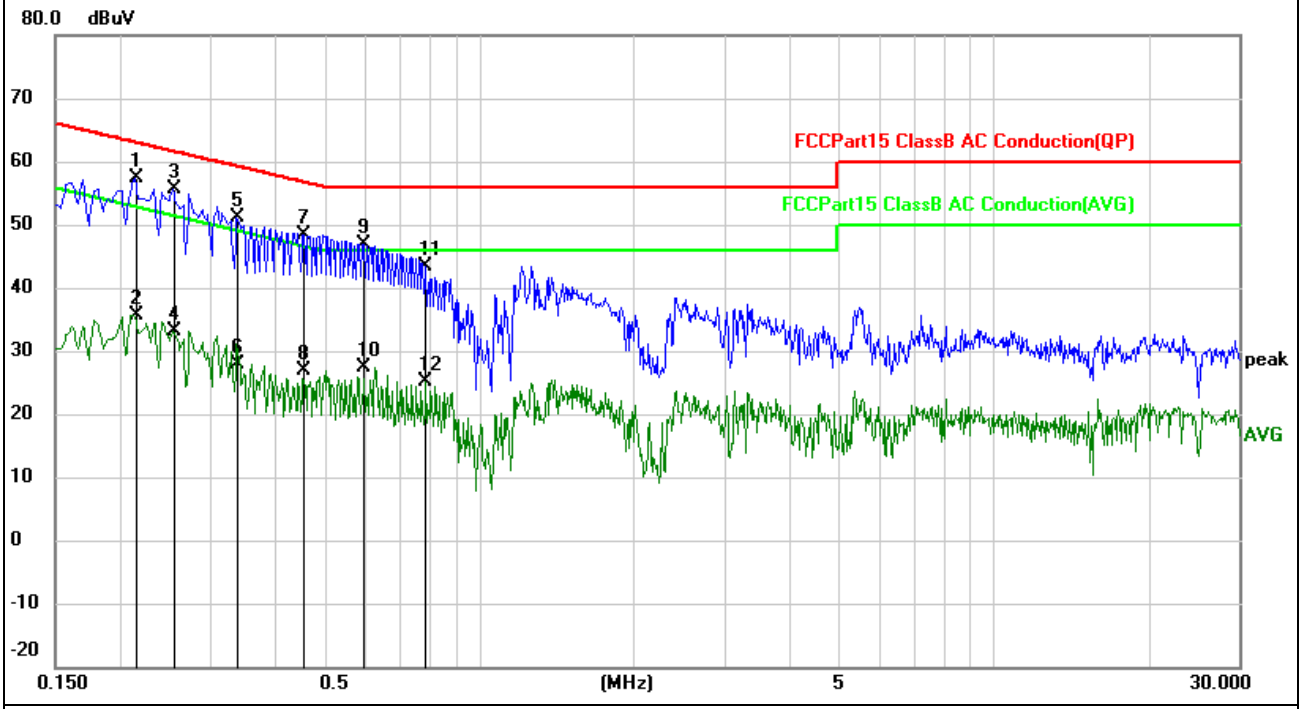
For the actual test configuration, please refer to the related Item – photographs of the test setup.

5.1.3 Test Setup



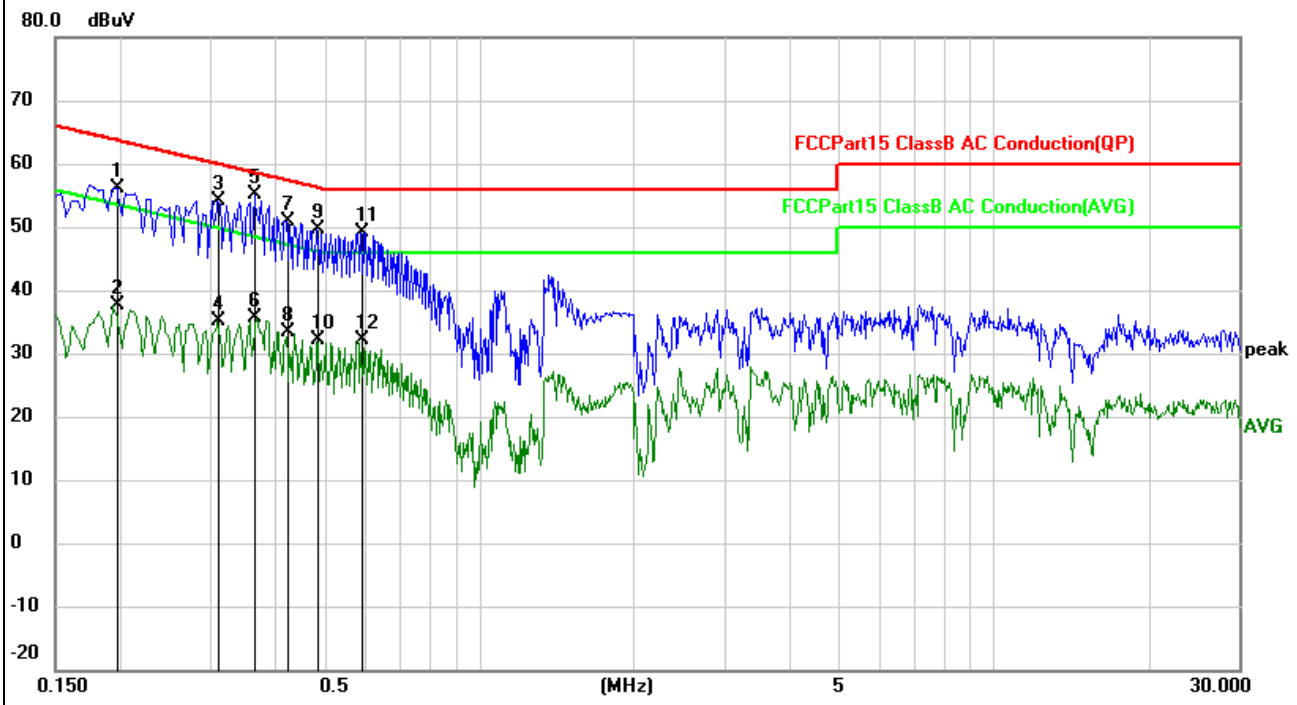
5.1.4 Test Result

EUT:	Chime	Model Name:	Chime
Pressure:	101kPa	Phase:	L
Test voltage:	AC 120V/60Hz	Test mode:	Mode 1



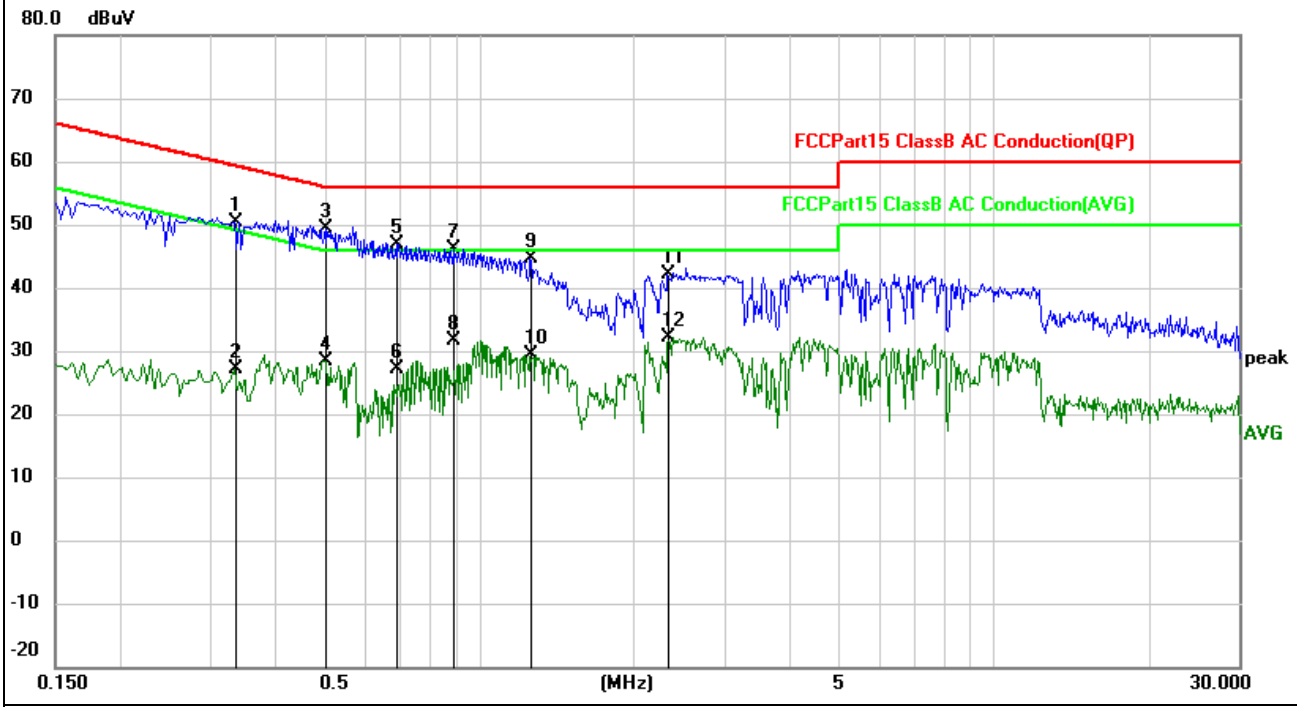
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	*	0.2140	47.76	9.74	57.50	63.05	-5.55	QP
2		0.2140	25.84	9.74	35.58	53.05	-17.47	AVG
3		0.2540	45.82	9.74	55.56	61.63	-6.07	QP
4		0.2540	23.36	9.74	33.10	51.63	-18.53	AVG
5		0.3379	41.39	9.81	51.20	59.25	-8.05	QP
6		0.3379	18.16	9.81	27.97	49.25	-21.28	AVG
7		0.4540	38.53	9.90	48.43	56.80	-8.37	QP
8		0.4540	16.96	9.90	26.86	46.80	-19.94	AVG
9		0.5940	36.99	9.94	46.93	56.00	-9.07	QP
10		0.5940	17.34	9.94	27.28	46.00	-18.72	AVG
11		0.7860	33.49	9.96	43.45	56.00	-12.55	QP
12		0.7860	15.16	9.96	25.12	46.00	-20.88	AVG

EUT:	Chime	Model Name:	Chime
Pressure:	101kPa	Phase:	N
Test voltage:	AC 120V/60Hz	Test mode:	Mode 1



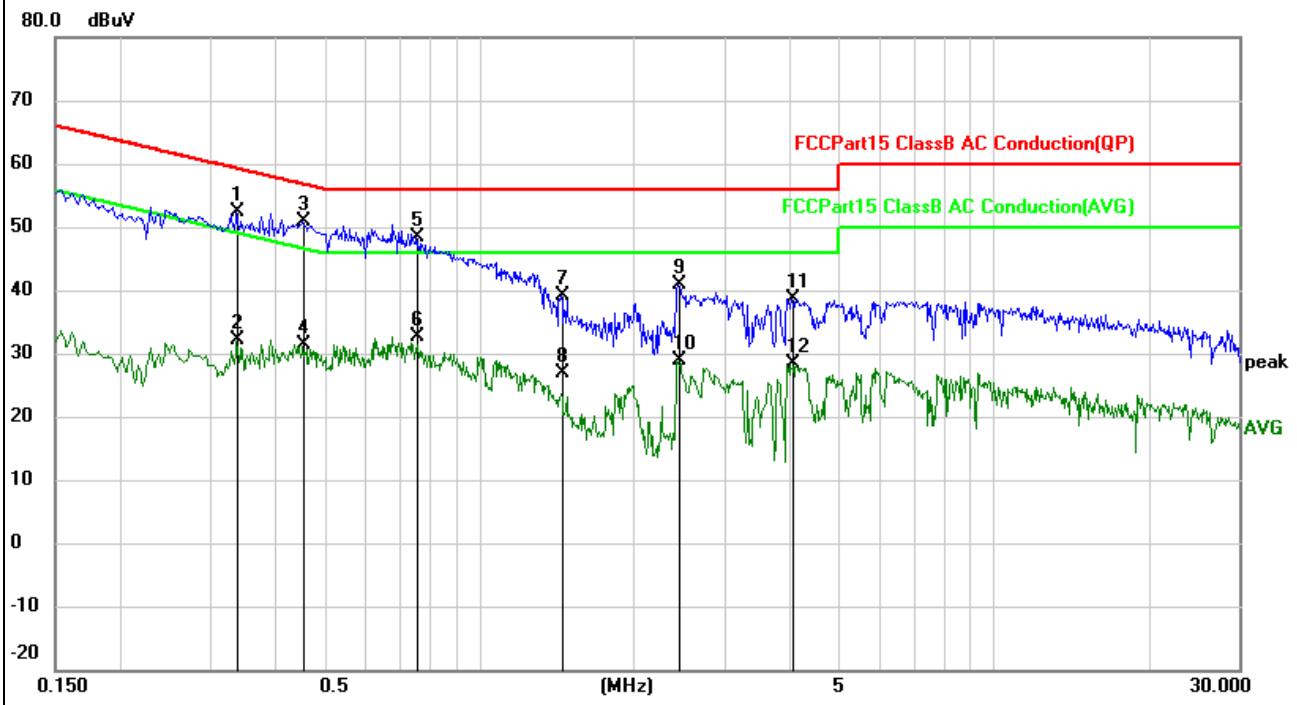
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.1980	46.43	9.74	56.17	63.69	-7.52	QP
2		0.1980	27.79	9.74	37.53	53.69	-16.16	AVG
3		0.3100	44.39	9.79	54.18	59.97	-5.79	QP
4		0.3100	25.41	9.79	35.20	49.97	-14.77	AVG
5	*	0.3660	45.39	9.83	55.22	58.59	-3.37	QP
6		0.3660	25.84	9.83	35.67	48.59	-12.92	AVG
7		0.4220	41.02	9.87	50.89	57.41	-6.52	QP
8		0.4220	23.53	9.87	33.40	47.41	-14.01	AVG
9		0.4860	39.81	9.92	49.73	56.24	-6.51	QP
10		0.4860	22.14	9.92	32.06	46.24	-14.18	AVG
11		0.5899	39.20	9.94	49.14	56.00	-6.86	QP
12		0.5899	22.21	9.94	32.15	46.00	-13.85	AVG

EUT:	Chime	Model Name:	Chime
Pressure:	101kPa	Phase:	L
Test voltage:	AC 240V/60Hz	Test mode:	Mode 1



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.3339	40.65	9.80	50.45	59.35	-8.90	QP
2		0.3339	17.22	9.80	27.02	49.35	-22.33	AVG
3	*	0.5020	39.52	9.93	49.45	56.00	-6.55	QP
4		0.5020	18.34	9.93	28.27	46.00	-17.73	AVG
5		0.6900	36.96	9.95	46.91	56.00	-9.09	QP
6		0.6900	17.09	9.95	27.04	46.00	-18.96	AVG
7		0.8900	36.20	9.98	46.18	56.00	-9.82	QP
8		0.8900	21.70	9.98	31.68	46.00	-14.32	AVG
9		1.2620	34.62	10.01	44.63	56.00	-11.37	QP
10		1.2620	19.40	10.01	29.41	46.00	-16.59	AVG
11		2.3260	32.04	10.05	42.09	56.00	-13.91	QP
12		2.3260	22.11	10.05	32.16	46.00	-13.84	AVG

EUT:	Chime	Model Name:	Chime
Pressure:	101kPa	Phase:	N
Test voltage:	AC 240V/60Hz	Test mode:	Mode 1



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.3379	42.60	9.81	52.41	59.25	-6.84	QP
2		0.3379	22.33	9.81	32.14	49.25	-17.11	AVG
3	*	0.4540	41.08	9.90	50.98	56.80	-5.82	QP
4		0.4540	21.57	9.90	31.47	46.80	-15.33	AVG
5		0.7580	38.52	9.96	48.48	56.00	-7.52	QP
6		0.7580	22.55	9.96	32.51	46.00	-13.49	AVG
7		1.4420	29.21	10.01	39.22	56.00	-16.78	QP
8		1.4420	16.85	10.01	26.86	46.00	-19.14	AVG
9		2.4380	30.79	10.06	40.85	56.00	-15.15	QP
10		2.4380	18.71	10.06	28.77	46.00	-17.23	AVG
11		4.0539	28.47	10.14	38.61	56.00	-17.39	QP
12		4.0539	18.14	10.14	28.28	46.00	-17.72	AVG

5.2 Radiated emission

5.2.1 Limits

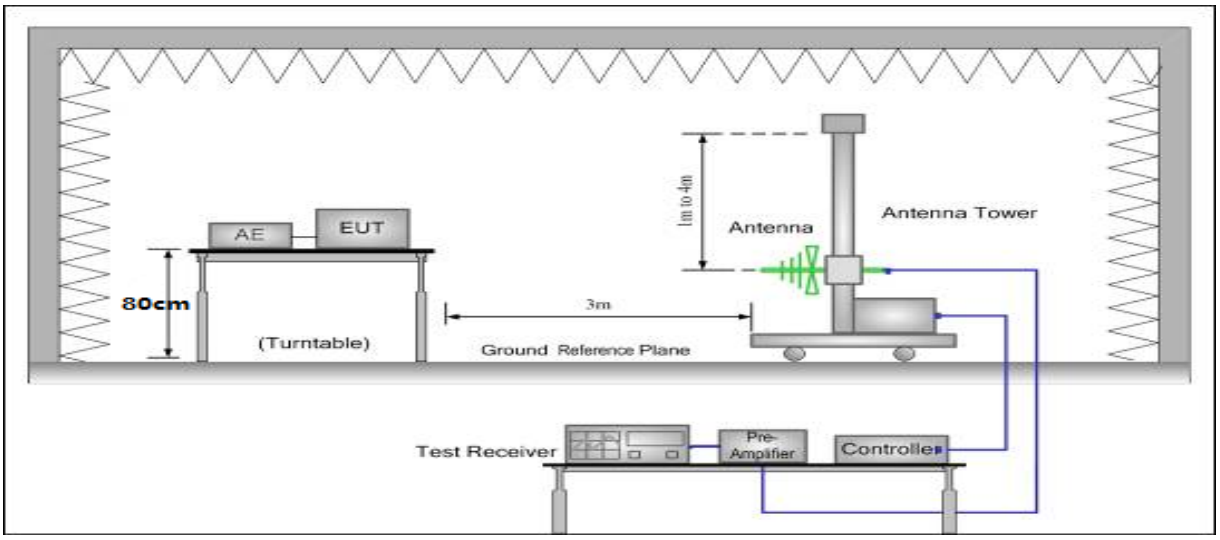
Limits of radiated emission measurement

Frequency (MHz)	Class B device (at 3m) dBμV/m	Class A device (at 3m) dBμV/m	Detector
30-88	40	49	QP
88-216	43.5	53.5	QP
216-960	46	56.4	QP
960-1000	54	59.5	QP
Above 1000	54	59.5	AV
Above 1000	74	79.5	PK

5.2.2 Test Procedures

The radiated emission tests were performed in the 3 meters.
The EUT was placed on the top of a rotating table 0.8 meters above the ground. The table was rotated 360 degrees to determine the position of the highest radiation.
The height of the test antenna shall vary between 1m to 4m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
If the peak mode measured value compliance with and lower than quasi peak mode limit, the EUT shall be deemed to meet QP limits and then no additional QP mode measurement performed.
If the peak mode measured value compliance with and lower than average mode limit, the EUT shall be deemed to meet average limits and then no additional average mode measurement performed.
For the actual test configuration, please refer to the related item – EUT test photos.

5.2.3 Test Setup



5.2.4 Test Result

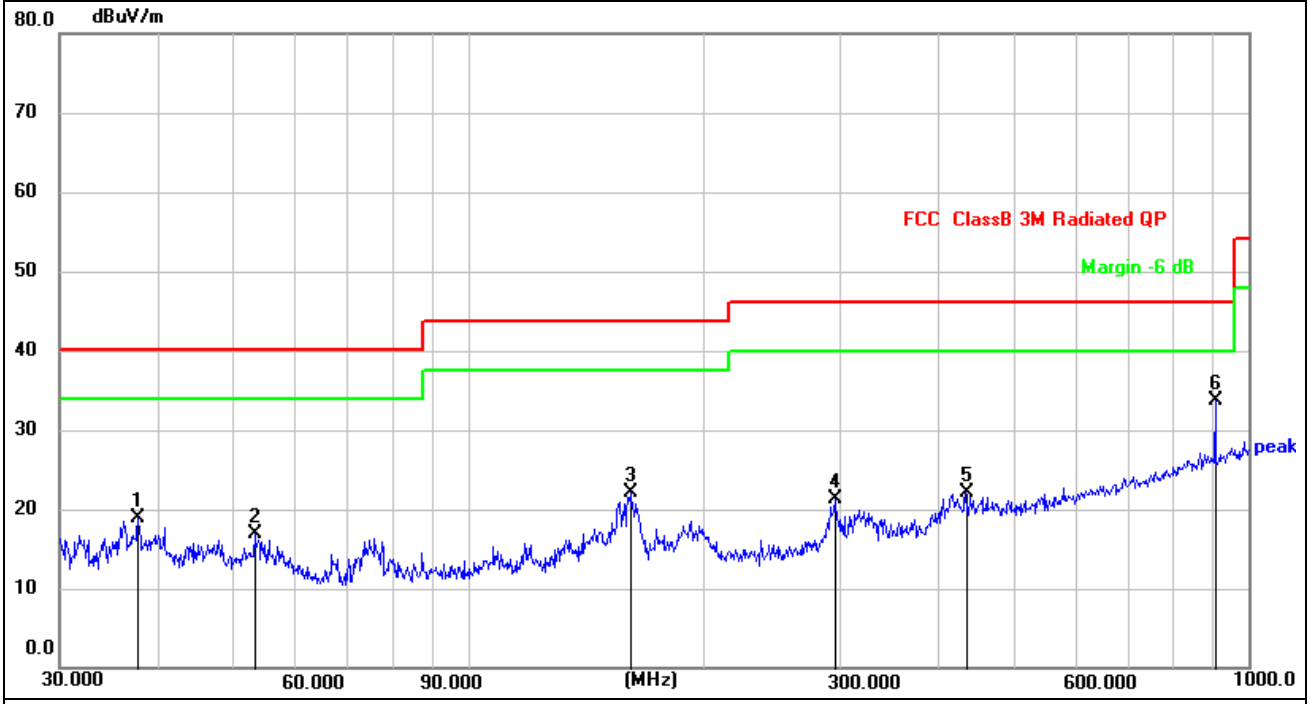
Note: the highest working frequency of EUT is below 108MHz.

Formula:

Measurement Level (dBuV/m) = Reading Level (dBuV/m) + Correct Factor (dBuV/m)

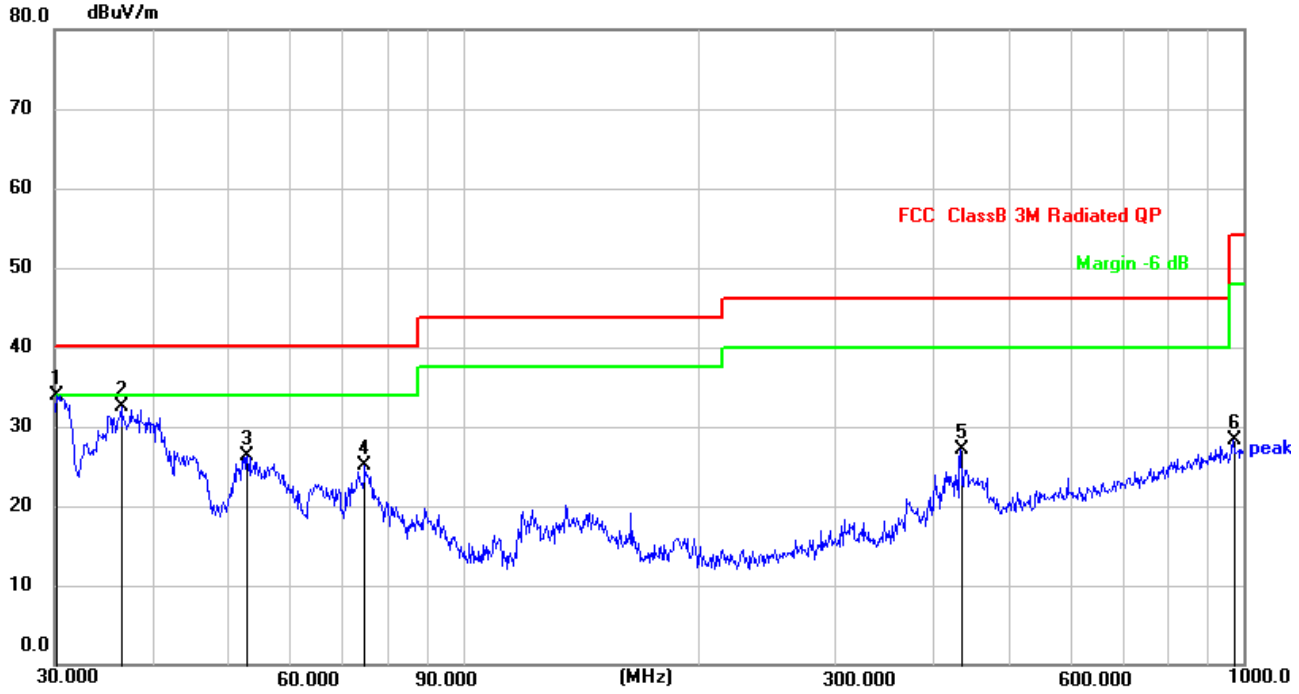
Margin Level (dBuV/m) = Measurement Level (dBuV/m) – Limit Level (dBuV/m)

EUT:	Chime	Model Name:	Chime
Pressure:	101kPa	Polarization:	Horizontal
Test voltage:	AC 120V/60Hz	Test mode:	Mode 1



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	37.8121	33.50	-14.59	18.91	40.00	-21.09	QP
2	53.3179	30.71	-13.89	16.82	40.00	-23.18	QP
3	161.4742	38.69	-16.51	22.18	43.50	-21.32	QP
4	295.1469	32.00	-10.61	21.39	46.00	-24.61	QP
5	434.0651	30.50	-8.32	22.18	46.00	-23.82	QP
6 *	906.4824	33.27	0.37	33.64	46.00	-12.36	QP

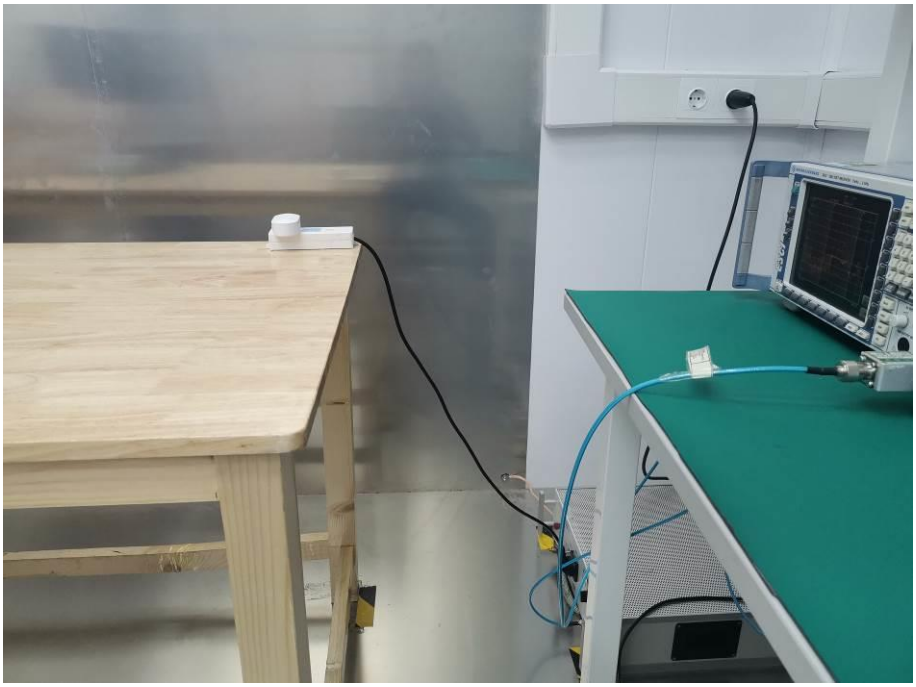
EUT:	Chime	Model Name:	Chime
Pressure:	101kPa	Polarization:	Vertical
Test voltage:	AC 120V/60Hz	Test mode:	Mode 1



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	30.2111	50.25	-16.32	33.93	40.00	-6.07	QP
2	36.5092	47.34	-14.89	32.45	40.00	-7.55	QP
3	52.9453	40.21	-13.84	26.37	40.00	-13.63	QP
4	74.9191	42.95	-17.89	25.06	40.00	-14.94	QP
5	434.0651	35.39	-8.32	27.07	46.00	-18.93	QP
6	968.9338	27.03	1.33	28.36	54.00	-25.64	QP

Photographs of the Test Setup

Radiated emission below 1GHz

Conducted emission


Photographs of the EUT

See the APPENDIX 1: EUT PHOTO in the report No.: MTi20112012-7E1-1

----End of Report----