EMC TEST REPORT

FCC ID: 2BGTY-SH-01M

Report No.	:	SSP24050308-1E
Applicant	:	Shenzhen Qing Lv Electronic Technology Co., Ltd
Product Name	:	Digital and pointer radio
Model Name	:	SH-01M
Test Standard	:	FCC Part 15 Subpart B
Date of Issue	:	2024-06-07

Shenzhen CCUT Quality Technology Co., Ltd.
1F, Building 35, Changxing Technology Industrial Park, Yutang Street, Guangming District, Shenzhen, Guangdong, China; (Tel.:+86-755-23406590 website: www.ccuttest.com)

This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen CCUT Quality Technology Co., Ltd.

Test Report Basic Information

Applicant.....:	Shenzhen Qing Lv Electronic Technology Co., Ltd
Address of Applicant.....:	806, Building 2, Row 1, Jiangshi Road, Jiangwei Old Village, Jiangwei Community, Matian Street, Guangming District, Shenzhen, China
Manufacturer.....:	Shenzhen Qing Lv Electronic Technology Co., Ltd
Address of Manufacturer.....:	806, Building 2, Row 1, Jiangshi Road, Jiangwei Old Village, Jiangwei Community, Matian Street, Guangming District, Shenzhen, China
Product Name.....:	Digital and pointer radio
Brand Name.....:	-
Main Model.....:	SH-01M
Series Models.....:	See section 1.1 (Page 5)
Test Standard.....:	FCC Part 15 Subpart B ANSI C63.4-2014
Date of Test .....:	2024-06-04 to 2024-06-05
Test Result.....:	PASS
Tested By .....:	Walker Wu (Walker Wu)
Reviewed By.....:	Lieber Ouyang (Lieber Ouyang)
Authorized Signatory.....:	Lahm Peng (Lahm Peng)

Shenzhen CCUT Quality Technology Co., Ltd. APPROVED

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Revision History

Revision	Issue Date	Description	Revised By
V1.0	2024-06-07	Initial Release	Lahm Peng

1. General Information

1.1 Product Information

Product Name:	Digital and pointer radio
Trade Name:	-
Main Model:	SH-01M
Series Models:	SH-01, SH-02, SH-02M, QL-06, QL-08, QL-955, QL-618, QL-518, QL-09, QL-D01, QL-D02, Ql-D03, QL-01, QL-02, QL-01M, QL-02M, QL-M02, SH-05
Class of Equipment:	☐ Class A ☒ Class B
Highest Internal Frequency:	<108MHz
Rated Voltage:	DC 3.7V by battery, USB 5V charging
Note 1: The test data is gathered from a production sample, provided by the manufacturer. Note 2: The color of appearance and model name of series models listed are different from the main model, but the circuit and the electronic construction are the same, declared by the manufacturer.	

1.2 Test Setup Information

List of Test Modes		
Test Mode	Description	Remark
TM1	Working	FM Receive
TM2	Working	AM Receive
TM3	Charging	AC 120/60Hz

List and Details of Auxiliary Cable			
Description	Length (cm)	Shielded/Unshielded	With/Without Ferrite
USB Cable	50	Unshielded	Without Ferrite
-	-	-	-
-	-	-	-

List and Details of Auxiliary Equipment			
Description	Manufacturer	Model	Serial Number
Adapter	Huawei	HW-100225C00	HC78E2N6A23645
-	-	-	-
-	-	-	-

The equipment under test (EUT) was configured to measure its highest possible emission and immunity level. The test modes were adapted according to the operation manual for use.

1.3 Compliance Standards

Compliance Standards	
FCC Part 15 Subpart B	FEDERAL COMMUNICATIONS COMMISSION, RADIO FREQUENCY DEVICES, Unintentional Radiators
All measurements contained in this report were conducted with all above standards	
According to standards for test methodology	
FCC Part 15 Subpart B	FEDERAL COMMUNICATIONS COMMISSION, RADIO FREQUENCY DEVICES, Unintentional Radiators
ANSI C63.4-2014	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.
Maintenance of compliance is the responsibility of the manufacturer or applicant. Any modification of the product, which result is lowering the emission, should be checked to ensure compliance has been maintained.	

1.4 Test Facilities

Laboratory Name:	**Shenzhen CCUT Quality Technology Co., Ltd.** 1F, Building 35, Changxing Technology Industrial Park, Yutang Street, Guangming District, Shenzhen, Guangdong, China
CNAS Laboratory No.:	L18863
A2LA Certificate No.:	6893.01
FCC Registration No:	583813
ISED Registration No.:	CN0164
All measurement facilities used to collect the measurement data are located at 1F, Building 35, Changxing Technology Industrial Park, Yutang Street, Guangming District, Shenzhen, Guangdong, China.	

1.5 Measurement Uncertainty

Test Item	Conditions	Uncertainty
Conducted Disturbance	9kHz ~30MHz	±1.64 dB
Radiated Disturbance	30MHz ~ 1GHz	±3.32 dB
Radiated Disturbance	1GHz ~ 18GHz	±3.50 dB

1.6 List of Test and Measurement Instruments

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Conducted Emissions					
AMN	ROHDE&SCHWARZ	ENV216	101097	2023-10-21	2024-10-20
EMI Test Receiver	ROHDE&SCHWARZ	ESPI	100242	2023-07-31	2024-07-30
EMI Test Software	FARA	EZ-EMC	EMEC-3A1+	N/A	N/A
Radiated Emissions					
EMI Test Receiver	ROHDE&SCHWARZ	ESPI	100154	2023-07-31	2024-07-30
Spectrum Analyzer	KEYSIGHT	N9020A	MY48030972	2023-07-31	2024-07-30
Amplifier	SCHWARZBECK	BBV 9743B	00251	2023-07-31	2024-07-30
Amplifier	HUABO	YXL0518-2.5-45	--	2023-07-31	2024-07-30
Loop Antenna	DAZE	ZN30900C	21104	2023-08-07	2024-08-06
Broadband Antenna	SCHWARZBECK	VULB 9168	01320	2023-08-07	2024-08-06
Horn Antenna	SCHWARZBECK	BBHA 9120D	02553	2023-08-07	2024-08-06
EMI Test Software	FARA	EZ-EMC	FA-03A2 RE+	N/A	N/A

2. Summary of Test Results

FCC Rule	Description of Test Item	Result
FCC Part 15.107	Conducted Emissions	Passed
FCC Part 15.109	Radiated Emissions	Passed
Passed: The EUT complies with the essential requirements in the standard Failed: The EUT does not comply with the essential requirements in the standard N/A: Not applicable		

3. Conducted Emissions

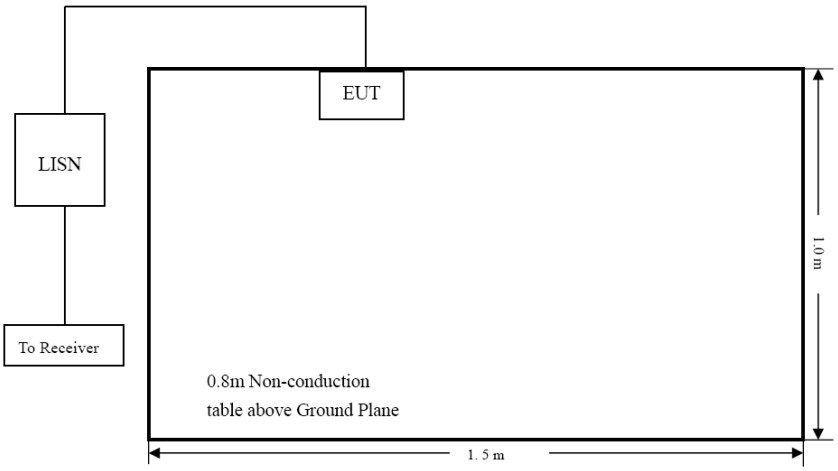
3.1 Standard and Limit

According to the rule FCC Part 15.107, Conducted limit, the limit for a class A and class B device as below:

Frequency of Emission (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15-0.5	79	66	66 to 56	56 to 46
0.5-5	73	60	56	46
5-30	73	60	60	50
Note 1: Decreases with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz Note 2: The lower limit applies at the band edges				

3.2 Test Procedure

Test is conducting under the description of ANSI C63.4-2014 American National Standard for Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

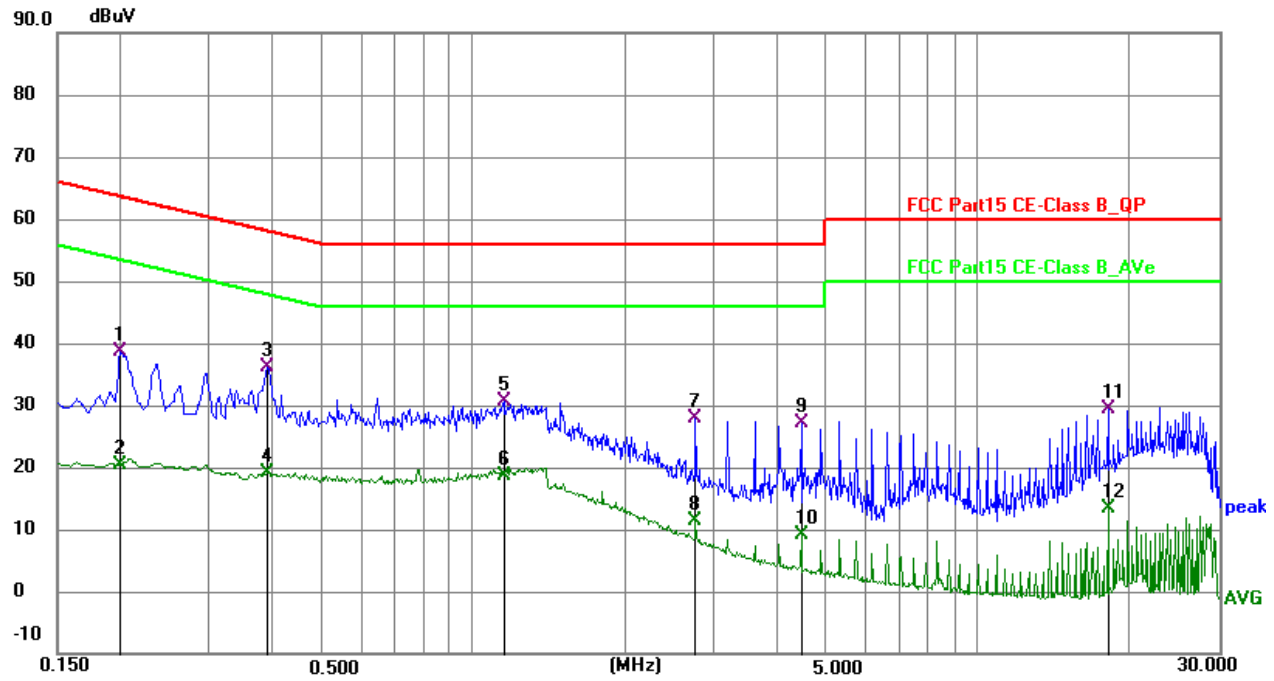


Test Setup Block Diagram

3.3 Test Data and Results

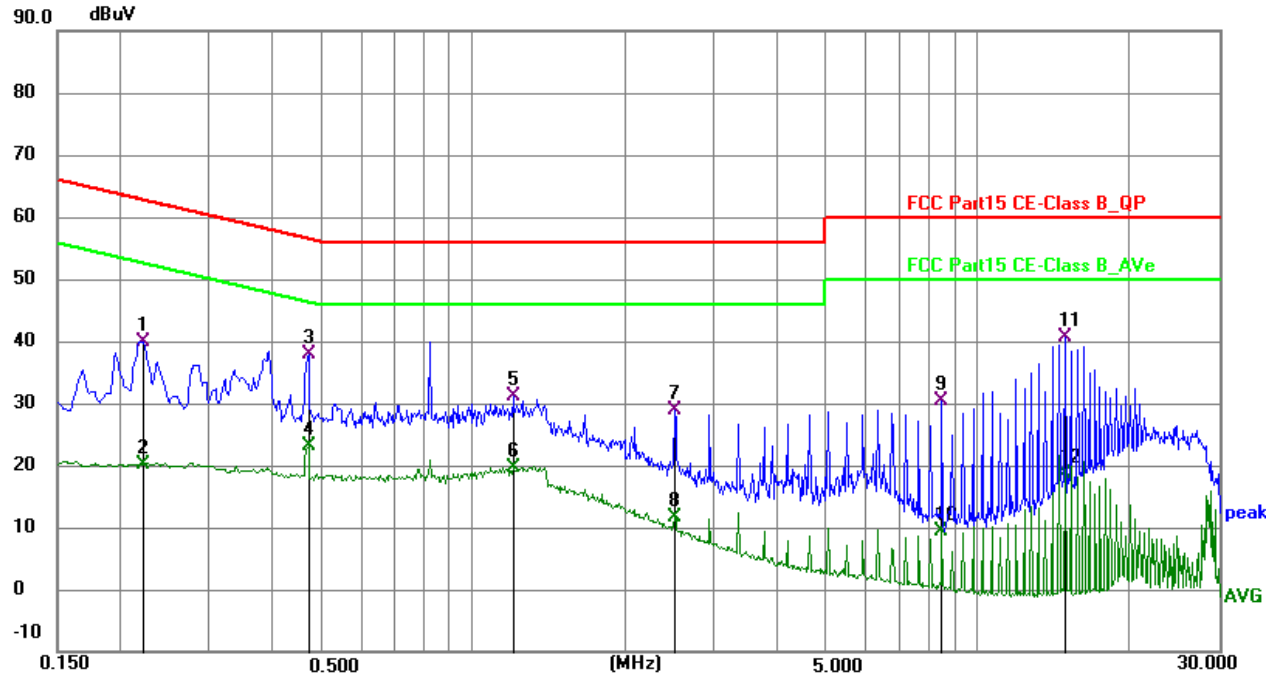
Based on all tested data, the EUT complied with the FCC Part 15.107 standard limit for a Class B device, and with the worst case as below:
Remark: Level = Reading + Factor, Margin = Level - Limit

Test Plots and Data of Conducted Emissions	
Tested Model:	SH-01M
Tested Mode:	TM3
Test Voltage:	AC 120V/60Hz
Test Power Line:	Neutral
Remark:	



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1995	29.05	9.58	38.63	63.63	-25.00	QP	P	
2	0.1995	10.91	9.58	20.49	53.63	-33.14	AVG	P	
3 *	0.3885	26.40	9.80	36.20	58.10	-21.90	QP	P	
4	0.3885	9.27	9.80	19.07	48.10	-29.03	AVG	P	
5	1.1490	20.61	9.92	30.53	56.00	-25.47	QP	P	
6	1.1490	8.68	9.92	18.60	46.00	-27.40	AVG	P	
7	2.7600	17.83	10.08	27.91	56.00	-28.09	QP	P	
8	2.7600	1.41	10.08	11.49	46.00	-34.51	AVG	P	
9	4.4610	16.84	10.19	27.03	56.00	-28.97	QP	P	
10	4.4610	-1.08	10.19	9.11	46.00	-36.89	AVG	P	
11	18.1140	19.24	10.24	29.48	60.00	-30.52	QP	P	
12	18.1140	3.16	10.24	13.40	50.00	-36.60	AVG	P	

Test Plots and Data of Conducted Emissions	
Tested Model:	SH-01M
Tested Mode:	TM3
Test Voltage:	AC 120V/60Hz
Test Power Line:	Live
Remark:	



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.2220	30.73	9.20	39.93	62.74	-22.81	QP	P	
2	0.2220	10.89	9.20	20.09	52.74	-32.65	AVG	P	
3 *	0.4695	28.03	9.94	37.97	56.52	-18.55	QP	P	
4	0.4695	13.17	9.94	23.11	46.52	-23.41	AVG	P	
5	1.1985	21.10	10.02	31.12	56.00	-24.88	QP	P	
6	1.1985	9.58	10.02	19.60	46.00	-26.40	AVG	P	
7	2.5125	18.79	10.08	28.87	56.00	-27.13	QP	P	
8	2.5125	1.64	10.08	11.72	46.00	-34.28	AVG	P	
9	8.4795	20.27	10.16	30.43	60.00	-29.57	QP	P	
10	8.4795	-0.72	10.16	9.44	50.00	-40.56	AVG	P	
11	14.8740	30.43	10.23	40.66	60.00	-19.34	QP	P	
12	14.8740	8.52	10.23	18.75	50.00	-31.25	AVG	P	

4. Radiated Disturbance

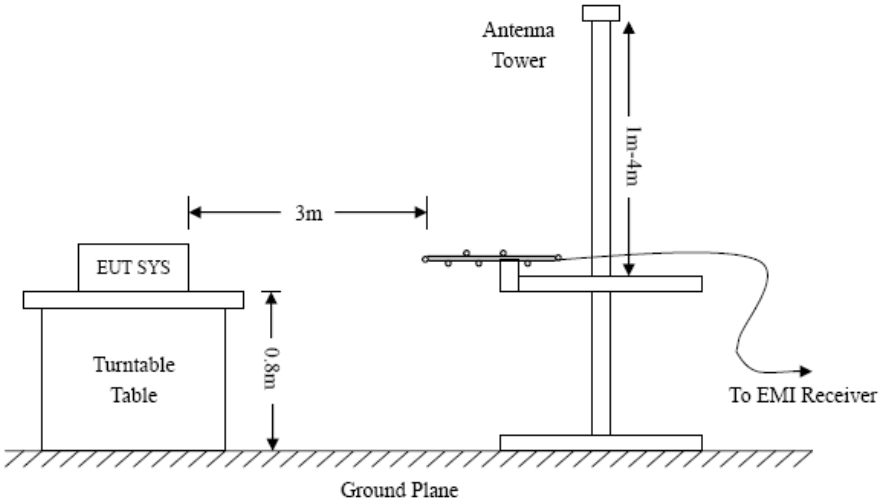
4.1 Standard and Limit

According to the rule FCC Part 15.109, Radiated emission limit for a class A and class B device as below:

Frequency of Emission (MHz)	Class A (3m)	Class B (3m)
	Quasi-peak (dBuV/m)	Quasi-peak (dBuV/m)
30-88	50	40
88-216	54.0	43.5
216-960	57.0	46
Above 960	60	54
Note: The more stringent limit applies at transition frequencies.		

4.2 Test Procedure

Test is conducting under the description of ANSI C63.4-2014 American National Standard for Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.



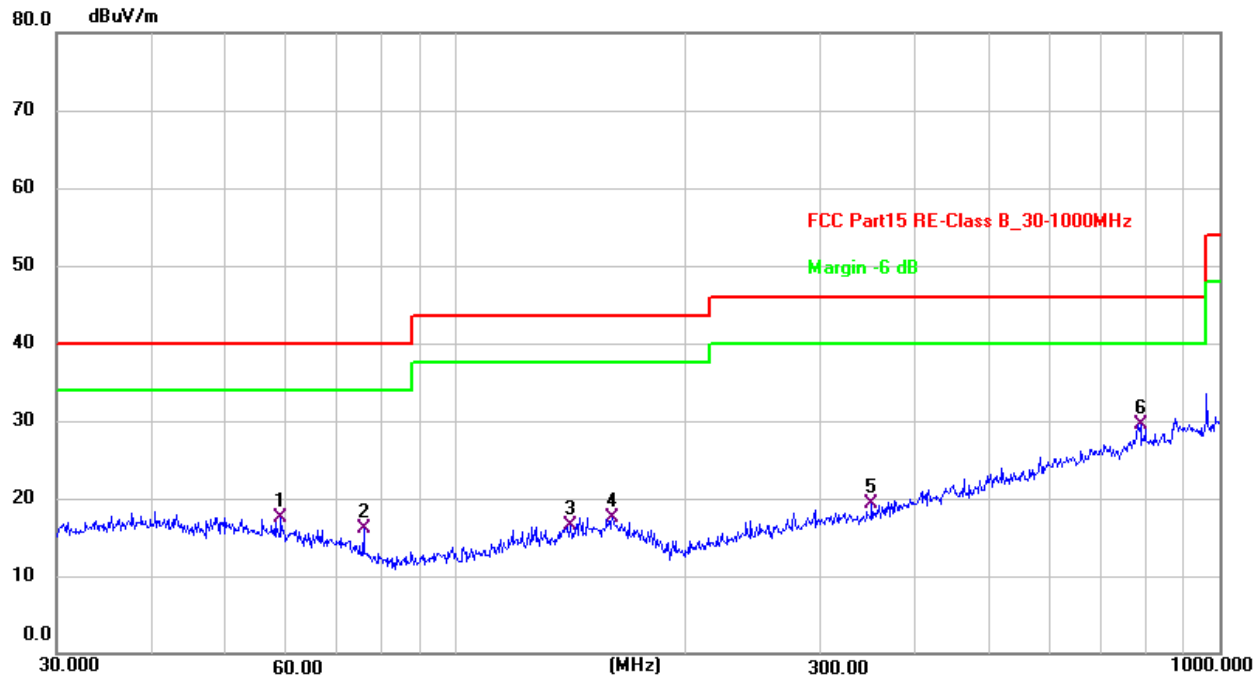
Test Setup Block Diagram

4.3 Test Data and Results

Based on all tested data, the EUT complied with the FCC Part 15.109 standard limit for a Class B device, and with the worst case as below:

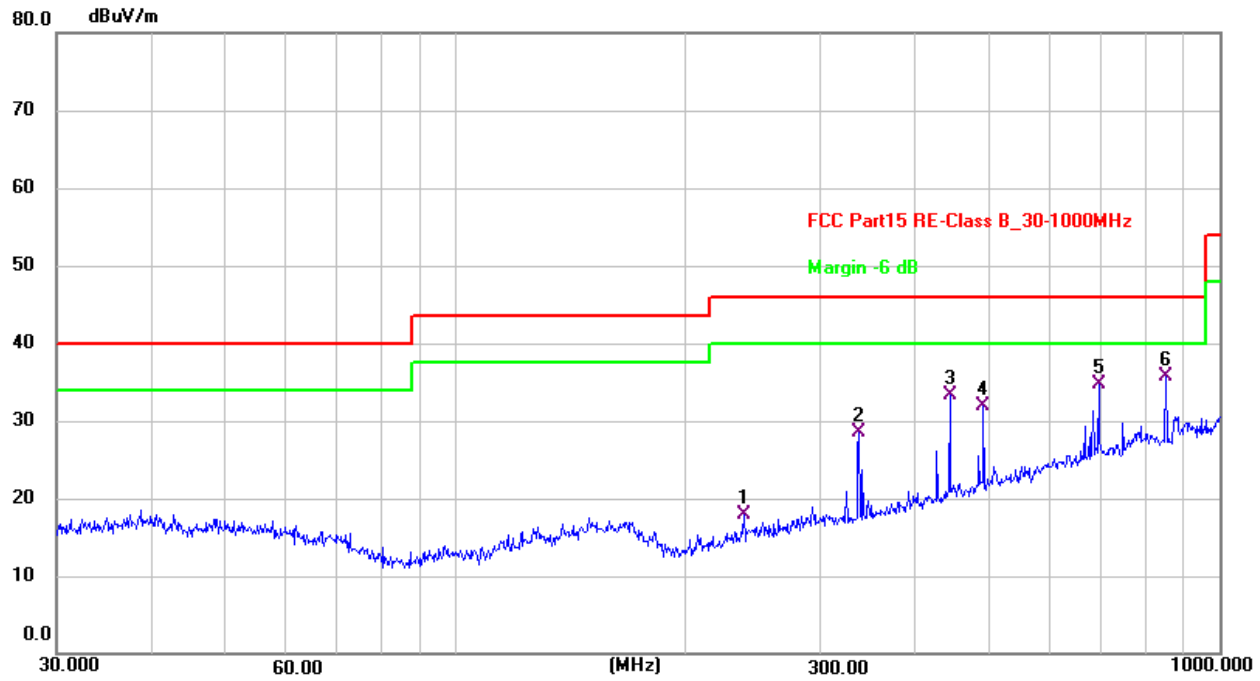
Remark: Level = Reading + Factor, Margin = Level - Limit

Test Plots and Data of Radiated Emissions	
Tested Model:	SH-01M
Tested Mode:	TM1
Test Voltage:	DC 3.7V
Test Antenna Polarization:	Horizontal
Remark:	



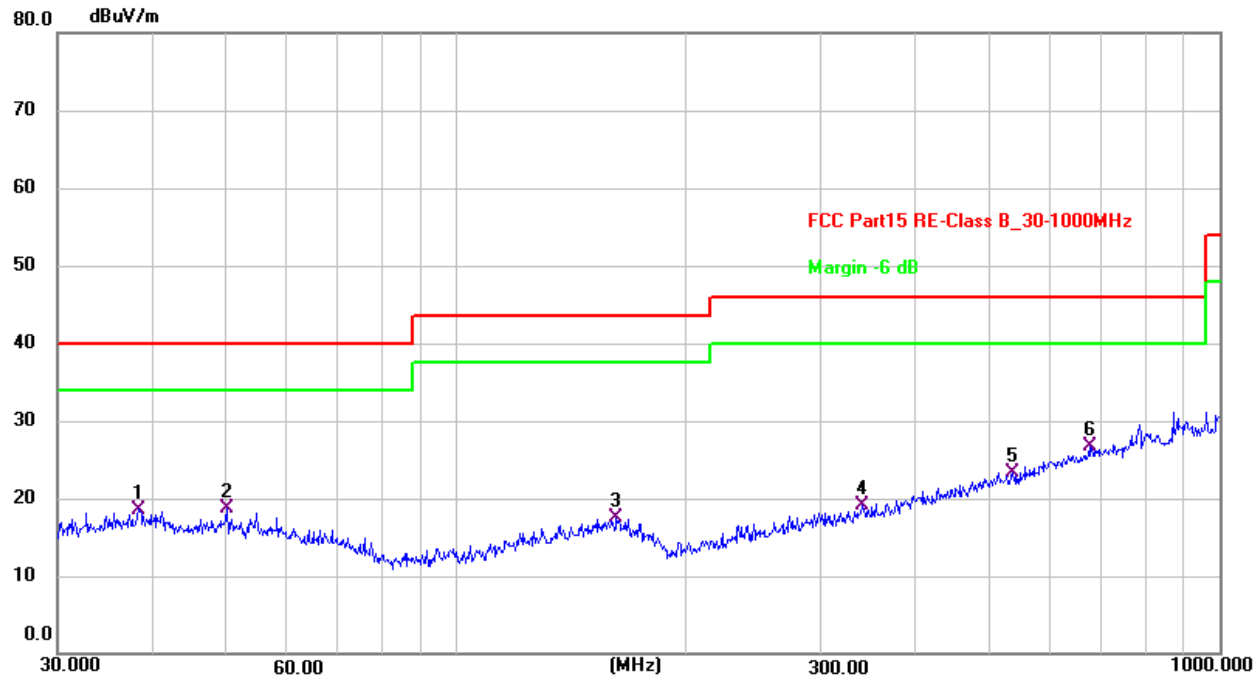
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	59.0251	27.20	-9.74	17.46	40.00	-22.54	QP	100	223	P	
2	75.7114	28.31	-12.29	16.02	40.00	-23.98	QP	200	11	P	
3	141.3298	25.63	-9.21	16.42	43.50	-27.08	QP	200	11	P	
4	160.3456	26.49	-8.99	17.50	43.50	-26.00	QP	100	348	P	
5	350.4768	26.79	-7.51	19.28	46.00	-26.72	QP	100	88	P	
6 *	787.8513	27.54	1.97	29.51	46.00	-16.49	QP	200	126	P	

Test Plots and Data of Radiated Emissions	
Tested Model:	SH-01M
Tested Mode:	TM1
Test Voltage:	DC 3.7V
Test Antenna Polarization:	Vertical
Remark:	



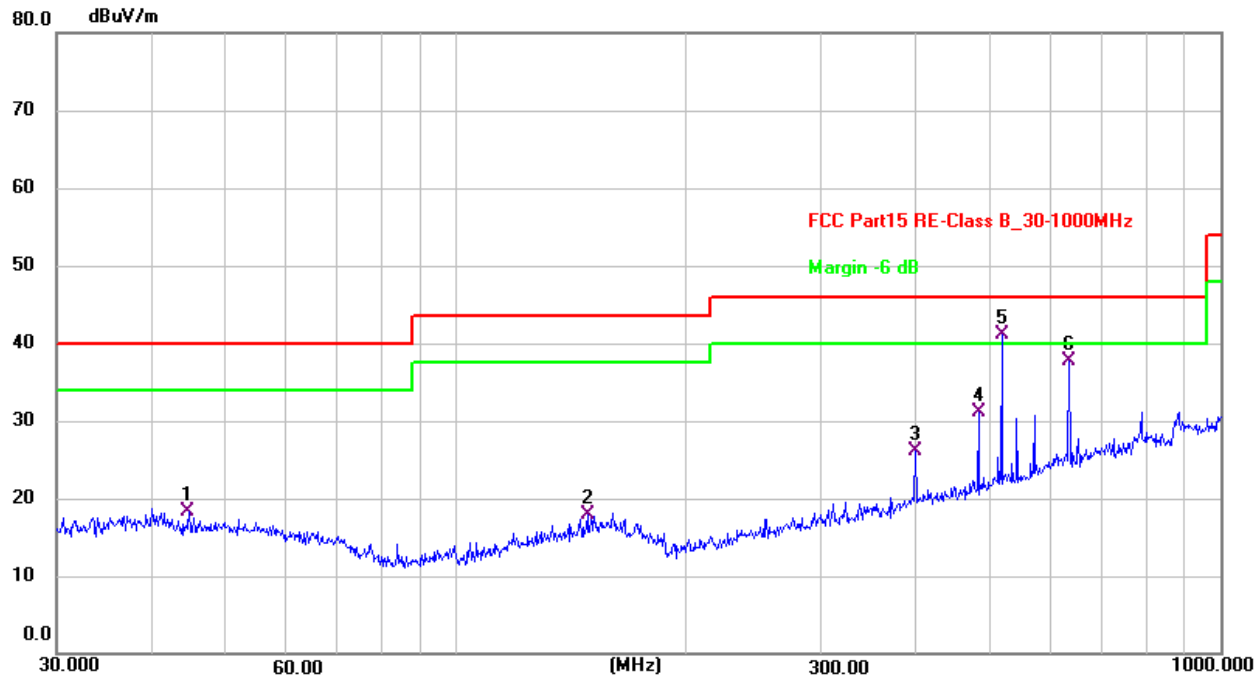
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	238.3102	27.97	-10.03	17.94	46.00	-28.06	QP	100	294	P	
2	337.2155	36.25	-7.82	28.43	46.00	-17.57	QP	100	250	P	
3	443.2943	38.52	-5.12	33.40	46.00	-12.60	QP	100	294	P	
4	490.7447	35.79	-3.86	31.93	46.00	-14.07	QP	100	294	P	
5	694.4174	34.24	0.49	34.73	46.00	-11.27	QP	100	283	P	
6 *	851.0353	33.83	1.85	35.68	46.00	-10.32	QP	100	294	P	

Test Plots and Data of Radiated Emissions	
Tested Model:	SH-01M
Tested Mode:	TM2
Test Voltage:	DC 3.7V
Test Antenna Polarization:	Horizontal
Remark:	



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	38.3462	26.81	-8.21	18.60	40.00	-21.40	QP	199	109	P	
2	50.0566	27.35	-8.70	18.65	40.00	-21.35	QP	100	270	P	
3	162.0414	26.61	-9.10	17.51	43.50	-25.99	QP	100	12	P	
4	340.7817	26.79	-7.73	19.06	46.00	-26.94	QP	199	234	P	
5	535.7073	26.34	-3.06	23.28	46.00	-22.72	QP	199	348	P	
6 *	675.2080	26.58	0.07	26.65	46.00	-19.35	QP	100	280	P	

Test Plots and Data of Radiated Emissions	
Tested Model:	SH-01M
Tested Mode:	TM2
Test Voltage:	DC 3.7V
Test Antenna Polarization:	Vertical
Remark:	



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	44.7433	27.54	-9.24	18.30	40.00	-21.70	QP	100	271	P	
2	148.4410	26.70	-8.75	17.95	43.50	-25.55	QP	100	178	P	
3	399.0302	31.90	-5.88	26.02	46.00	-19.98	QP	100	356	P	
4	482.2156	35.43	-4.23	31.20	46.00	-14.80	QP	199	226	P	
5 *	517.2480	44.44	-3.27	41.17	46.00	-4.83	QP	199	226	P	
6	633.9073	38.29	-0.68	37.61	46.00	-8.39	QP	199	247	P	

Other emissions are attenuated 20dB below the limits from 9kHz to 30MHz, so it does not recorded in report.