

FCC

EMC

TEST REPORT

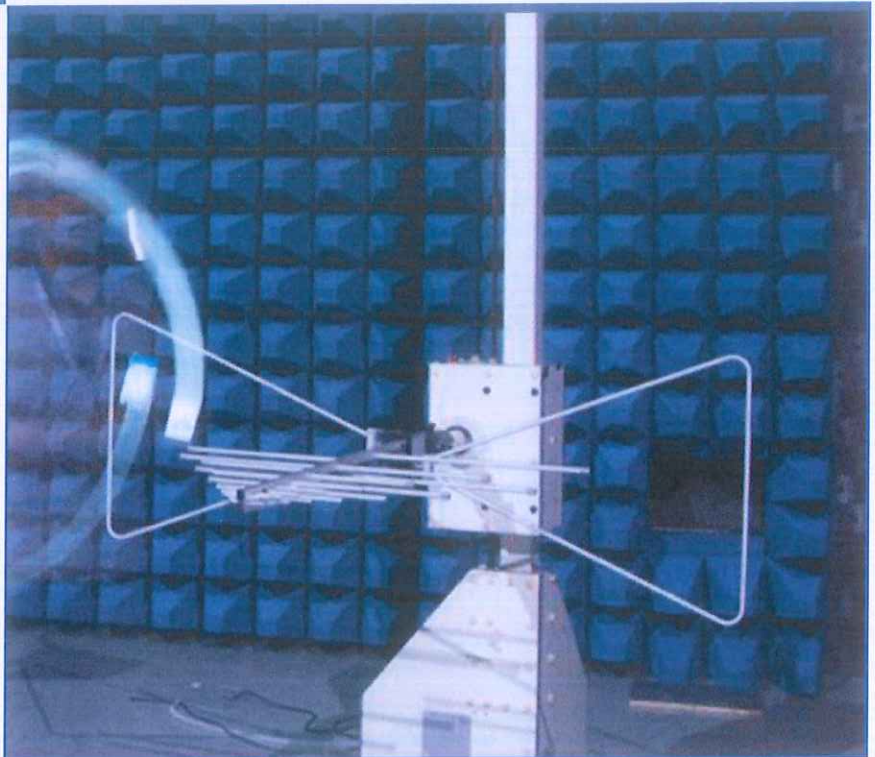
ISSUED BY
Shenzhen BALUN Technology Co., Ltd.



FOR
8Bitdo SF30 Pro Bluetooth GamePad

ISSUED TO
8BITDO TECHNOLOGY HK LIMITED

Rooms 1318-19, Hollywood Plaza, 610 Nathan Road, Mongkok,
Kowloon, Hong Kong



Tested by: Xia Long
Xia Long
(Engineer)
Date Nov. 08, 2017

Approved by: Wei Yanquan
Wei Yanquan
(Chief Engineer)
Date Nov. 08, 2017

Report No.: BL-SZ17A0114-401
EUT Name: 8Bitdo SF30 Pro Bluetooth GamePad
Model Name: 80DB
Brand Name: 8BITDO
Test Standard: 47 CFR Part 15 Subpart B
FCC ID: 2AH7N-SNFPRO80D

Test Conclusion: Pass
Test Date: Oct. 18, 2017 ~ Oct. 23, 2017
Date of Issue: Nov. 08, 2017

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Revision History

<u>Version</u>	<u>Issue Date</u>	<u>Revisions Content</u>
<u>Rev. 01</u>	<u>Nov. 08, 2017</u>	<u>Initial Issue</u>

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1 GENERAL INFORMATION

1.1 Identification of the Testing Laboratory

Company Name	Shenzhen BALUN Technology Co.,Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Phone Number	+86 755 6685 0100
Fax Number	+86 755 6182 4271

1.2 Identification of the Responsible Testing Location

Test Location	Shenzhen BALUN Technology Co.,Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Accreditation Certificate	<p>The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 11524A-1.</p> <p>The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1196.</p> <p>The laboratory is a testing organization accredited by American Association for Laboratory Accreditation(A2LA) according to ISO/IEC 17025.The accreditation certificate is 4344.01.</p> <p>The laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L6791.</p>
Description	All measurement facilities used to collect the measurement data are located at Block B, FL 1, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China 518055

1.3 Laboratory Condition

Ambient Temperature	20 to 25°C
Ambient Relative Humidity	45% - 55%
Ambient Pressure	100 kPa - 102 kPa

1.4 Announce

- (1) The test report refer to the BALUN report mode v6.5.
- (2) The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
- (3) The test report is invalid if there is any evidence and/or falsification.
- (4) The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.
- (5) This document may not be altered or revised in any way unless done so by BALUN and all revisions are duly noted in the revisions section.
- (6) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	8BITDO TECHNOLOGY HK LIMITED
Address	Rooms 1318-19, Hollywood Plaza, 610 Nathan Road, Mongkok, Kowloon, Hong Kong

2.2 Manufacturer Information

Manufacturer	Shenzhen Zhongxingda Electronic Co., Ltd.
Address	3-4/F, Bldg 10, Tongfuyu Industrial Zone, Lezhujiao Village, Xixiang, Baoan District, Shenzhen, China

2.3 Factory Information

Factory	N/A
Address	N/A

2.4 General Description for Equipment under Test (EUT)

EUT Name	8Bitdo SF30 Pro Bluetooth GamePad
Model Name Under Test	80DB
Series Model Name	80DA
Description of Model name differentiation	The Circuit, PCB Layout, Electrical Parts 80DA are identical to 80DB, only the appearance is different.
Hardware Version	1.0
Software Version	1.02
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A
Network and Wireless connectivity	Bluetooth 3.0 (BR+EDR)

2.5 Ancillary Equipment

Ancillary Equipment 1	Battery	
	Brand Name	N/A
	Model No.	451860 P
	Serial No.	N/A
	Capacitance	480 mAh
	Rated Voltage	3.7 V
	Limit Charge Voltage	N/A
Ancillary Equipment 2	USB Cable	
	Length (Approx.)	1.2 m

2.6 Technical Information

Note: Not applicable.

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	FCC 47 CFR Part 15 Subpart B (10-1-16 Edition)	Unintentional Radiators
2	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

3.2 Verdict

No.	Description	FCC Rule	Test Verdict	Result
1	Radiated Emission	15.109	Pass	Annex A .1
2	Conducted Emission, AC Ports	15.107	Pass	Annex A .2

3.3 Test Uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Measurement	Value
Conducted emissions (9 kHz-30 MHz)	3.23 dB
Radiated emissions (30 MHz-1 GHz)	4.30 dB
Radiated emissions (1 GHz-18 GHz)	4.81 dB
Radiated emissions (18 GHz-40 GHz)	5.71 dB

4 GENERAL TEST CONFIGURATIONS

4.1 Test Environments

Environment Parameter	Selected Values During Tests			
	Temperature	Voltage	Relative Humidity	Ambient Pressure
Normal Temperature, Normal Voltage (NTNV)	23°C~26°C	DC 3.7 V from Battery or DC 5 V from Laptop	50%-55%	100 to 102 kPa

4.2 Test Equipment List

Radiated Emission Test						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	KEYSIGHT	N9038A	MY53220118	2017.09.08	2018.09.07	<input checked="" type="checkbox"/>
Test Antenna-Bi-Log	SCHWARZBECK	VULB 9163	9163-624	2016.07.21	2018.07.20	<input checked="" type="checkbox"/>
Test Antenna-Horn	SCHWARZBECK	BBHA 9120D	9120D-1148	2016.07.21	2018.07.20	<input checked="" type="checkbox"/>
Anechoic Chamber	RAINFORD	9m*6m*6m	N/A	2017.02.21	2019.02.20	<input checked="" type="checkbox"/>

Conducted Emission Test						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2017.06.22	2018.06.21	<input checked="" type="checkbox"/>
LISN	SCHWARZBECK	NSLK 8127	8127-687	2017.06.22	2018.06.21	<input checked="" type="checkbox"/>
LISN	SCHWARZBECK	NNLK 8129	8129-462	2017.09.13	2018.09.12	<input type="checkbox"/>
AMN	SCHWARZBECK	NNBM8124	8124-509	2017.06.22	2018.06.21	<input type="checkbox"/>
AMN	SCHWARZBECK	NNBM8124	8124-510	2017.06.22	2018.06.21	<input type="checkbox"/>
ISN	TESEQ	ISN T800	34449	2017.06.22	2018.06.21	<input type="checkbox"/>
Shielded Enclosure	ChangNing	CN-130701	130703	N/A	N/A	<input checked="" type="checkbox"/>

4.3 Test Enclosure list

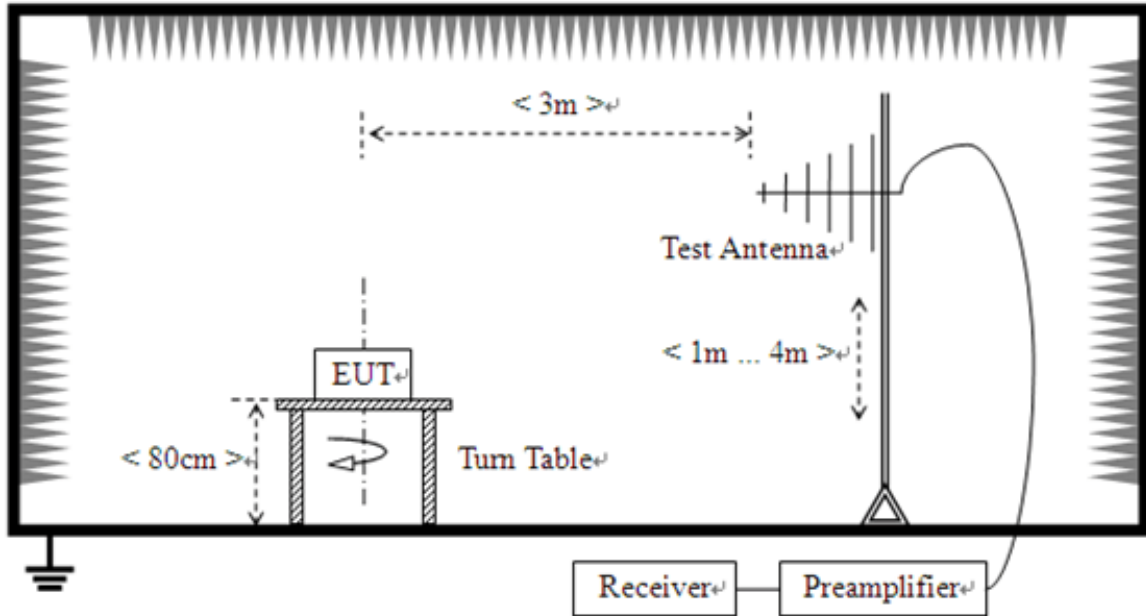
Description	Manufacturer	Model	Serial No.	Length	Description	Use
PC	Dell	015K3N	N/A	N/A	Special Handled	<input type="checkbox"/>
Laptop	Apple	A1465	N/A	N/A	N/A	<input checked="" type="checkbox"/>
Printer	HP	DESKJET 1000	N/A	N/A	N/A	<input type="checkbox"/>
Keyboard	Logitech	Y-BP62a	N/A	N/A	N/A	<input type="checkbox"/>
Mouse	Logitech	M100	N/A	N/A	N/A	<input type="checkbox"/>
USB disk	Kingston	N/A	N/A	N/A	N/A	<input type="checkbox"/>
TF Card	Kingston	N/A	N/A	N/A	N/A	<input type="checkbox"/>
VGA Cable	N/A	N/A	N/A	1.5 m	Shielded with core	<input type="checkbox"/>
HDMI Cable	N/A	N/A	N/A	1.5 m	Shielded with core	<input type="checkbox"/>
DVI Cable	N/A	N/A	N/A	1.5 m	Shielded with core	<input type="checkbox"/>
Coaxial video cable	N/A	N/A	N/A	2.0 m	Shielded with core	<input type="checkbox"/>
iPhone	Apple	A1586	N/A	N/A	N/A	<input type="checkbox"/>
Phone	MI	M4	N/A	N/A	N/A	<input checked="" type="checkbox"/>
Bluetooth Earphone	SAMSUNG	Gear Circle	N/A	N/A	N/A	<input type="checkbox"/>
GPS/GLONASS Vector signal generator	R&S	N5172B EXG	N/A	N/A	N/A	<input type="checkbox"/>
WIFI Router	TP-LINK	TL-WDR7500	N/A	N/A	N/A	<input type="checkbox"/>
Earphone	N/A	OPPO	N/A	1.1 m	N/A	<input type="checkbox"/>
Car Battery	Camel	55530	N/A	N/A	12 V/55 Ah	<input type="checkbox"/>
Artificial load	N/A	N/A	N/A	N/A	2.5 Ω/100 W	<input type="checkbox"/>
Artificial load	N/A	N/A	N/A	N/A	5 Ω/100 W	<input type="checkbox"/>
Electronic Load	ITECH	IT8511	N/A	N/A	N/A	<input type="checkbox"/>
USB Cable	N/A	N/A	N/A	1.5 m	Shielded with core	<input type="checkbox"/>
DC Power Supply	ITECH	IT6863A	60001401068 7210006	N/A	N/A	<input type="checkbox"/>
LCD Monitor	SAMSUNG	UA32C4000P	N/A	N/A	N/A	<input type="checkbox"/>
LCD Monitor	Dell	U241HB	N/A	N/A	N/A	<input type="checkbox"/>
RJ45 Cable	N/A	N/A	N/A	1.5 m	Shielded with core	<input type="checkbox"/>
Adapter	N/A	N/A	N/A	N/A	N/A	<input checked="" type="checkbox"/>

4.4 Test Configurations

Test Configurations (TC) No.	Description
TC01	<u>The Charging Test Mode</u> EUT + USB Cable + Battery + Laptop + Adapter + BT Link
TC02	<u>The USB Control Test Mode</u> EUT + Battery + Laptop + USB Cable + BT Link

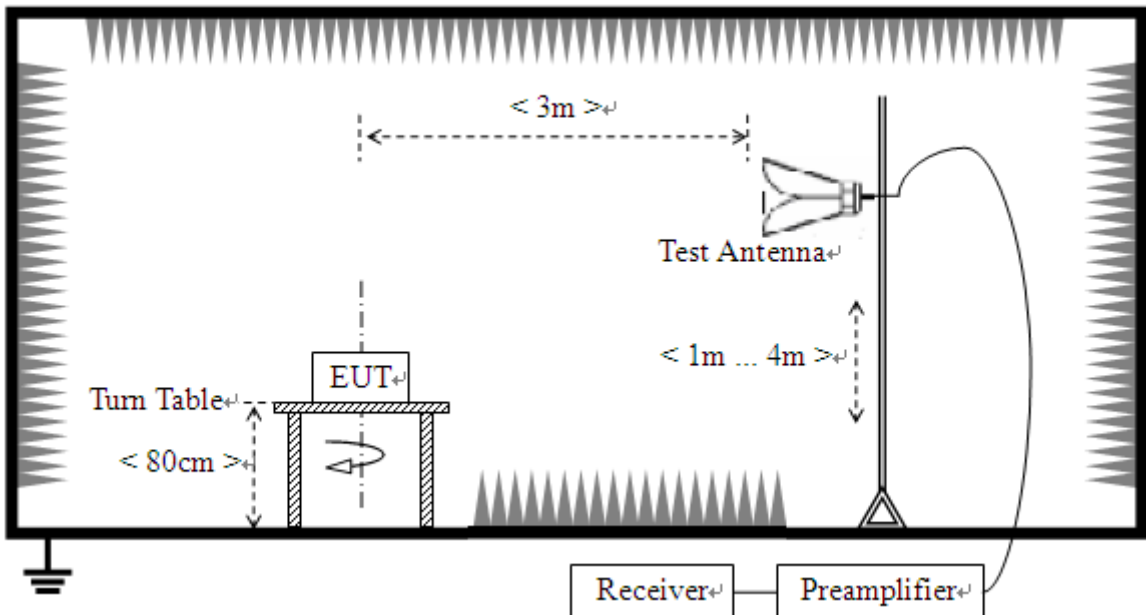
4.5 Test Setups

Test Setup 1



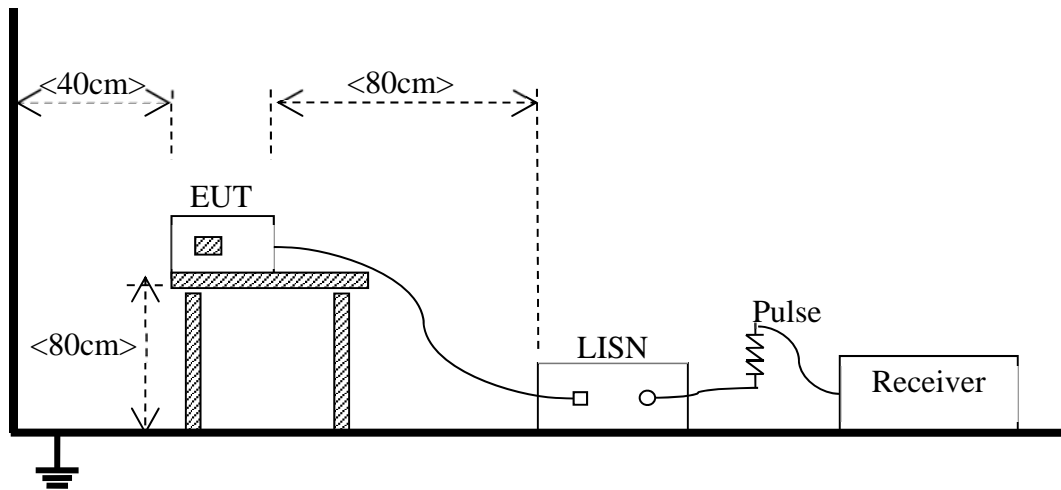
(For Radiated Emission Test (30 MHz-1 GHz))

Test Setup 2



(For Radiated Emission Test (above 1 GHz))

Test Setup 3



(For Conducted Emission, AC Ports Test)

4.6 Test Conditions

Test Case	Test Conditions	
Radiated Emission	Test Env.	NTNV
	Test Setup	Test Setup 1&2
	Test Configuration	TC01~TC02 ^{Note}
Conducted Emission, AC Ports	Test Env.	NTNV
	Test Setup	Test Setup 3
	Test Configuration	TC01~TC02 ^{Note}

Note: Based on client request, all normal using modes of the normal function were tested but only the worst test data of the worst mode is reported by this report. The USB Control Test Mode is the worst mode in this report.

5 TEST ITEMS

5.1 Emission Tests

5.1.1 Radiated Emission

5.1.1.1 Limit

Frequency range (MHz)	Class B (at 3 m)		Class B (at 10 m)	Class A (at 10 m)	
	Field Strength ($\mu\text{V/m}$)	Field Strength ($\text{dB}\mu\text{V/m}$)	Field Strength ($\text{dB}\mu\text{V/m}$)	Field Strength ($\mu\text{V/m}$)	Field Strength ($\text{dB}\mu\text{V/m}$)
30 - 88	100	40	30	90	39
88 - 216	150	43.5	33.5	150	43.5
216 - 960	200	46	36	210	46.4
Above 960	500	54	44	300	49.5

NOTE:

- 1) Field Strength ($\text{dB}\mu\text{V/m}$) = $20 \cdot \log$ [Field Strength ($\mu\text{V/m}$)].
- 2) In the emission tables above, the tighter limit applies at the band edges.

5.1.1.2 Test Setup

Refer to 4.5 section (test setup 1 to test setup 2) for radiated emission test, the photo of test setup please refer to ANNEX B.

5.1.1.3 Test Procedure

All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

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

5.1.1.4 Test Result

Please refer to ANNEX A.1.

5.1.2 Conducted Emission

5.1.2.1 Test Limit

Frequency range (MHz)	Class A	
	Quasi-peak (dB μ V)	Average (dB μ V)
0.15 - 0.50	79	66
0.50 - 30	73	60

Frequency range (MHz)	Class B	
	Quasi-peak (dB μ V)	Average (dB μ V)
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

NOTE:

- 1) The lower limit shall apply at the band edges.
- 2) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50 MHz.

5.1.2.2 Test Setup

Refer to 4.5 section test (test setup 3) for conducted emission, the photo of test setup please refer to ANNEX B.

5.1.2.3 Test Procedure

The EUT is connected to the power mains through a LISN which provides 50 Ω /50 μ H of coupling impedance for the measuring instrument. The test frequency range is from 150 kHz to 30 MHz. The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels that are more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed.

Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz) for which the device is capable of operation. A device rated for 50/60 Hz operation need not be tested at both frequencies provided the radiated and line conducted emissions are the same at both frequencies.

5.1.2.4 Test Result

Please refer to ANNEX A.2.

ANNEX A TEST RESULTS

A.1 Radiated Emission

Note 1: The symbol of "--" in the table which means not application.

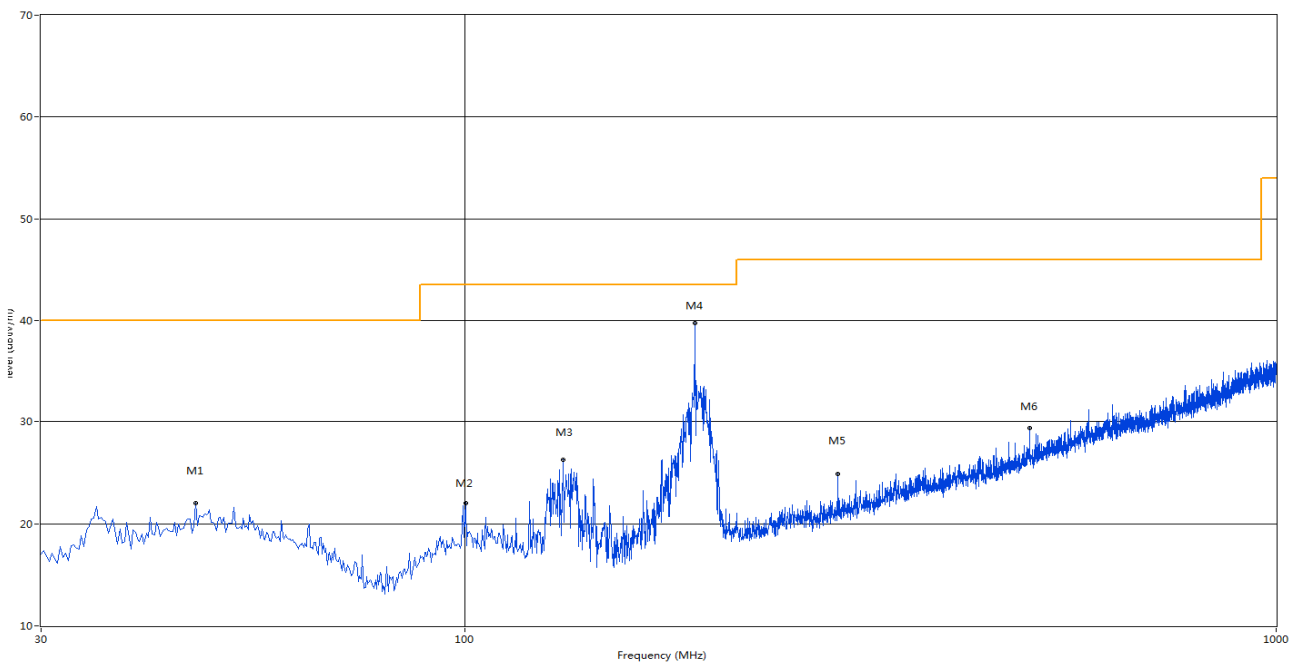
Note 2: For the test data above 1 GHz, according the ANSI C63.4-2014, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

Note 3: The marked spikes near 2400 MHz with circle should be ignored because they are Bluetooth carrier frequency.

Test Data and Plots

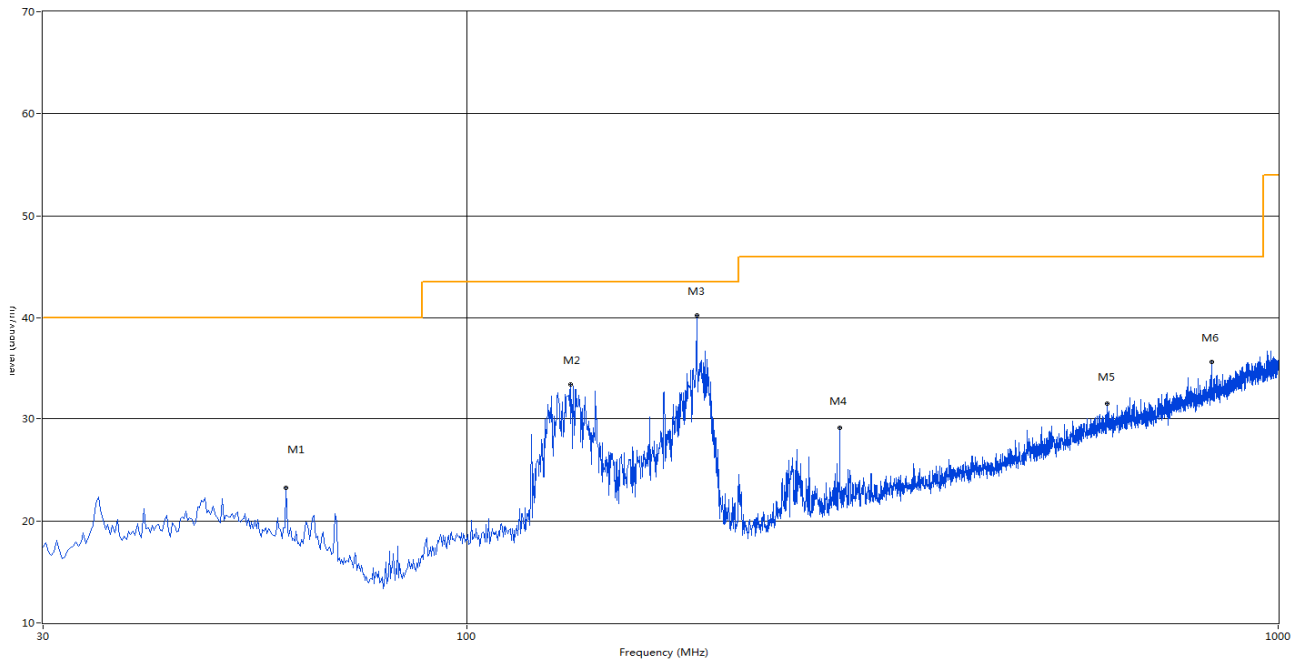
The USB Control Test Mode

A.1.1 Test Antenna Vertical, 30 MHz – 1 GHz



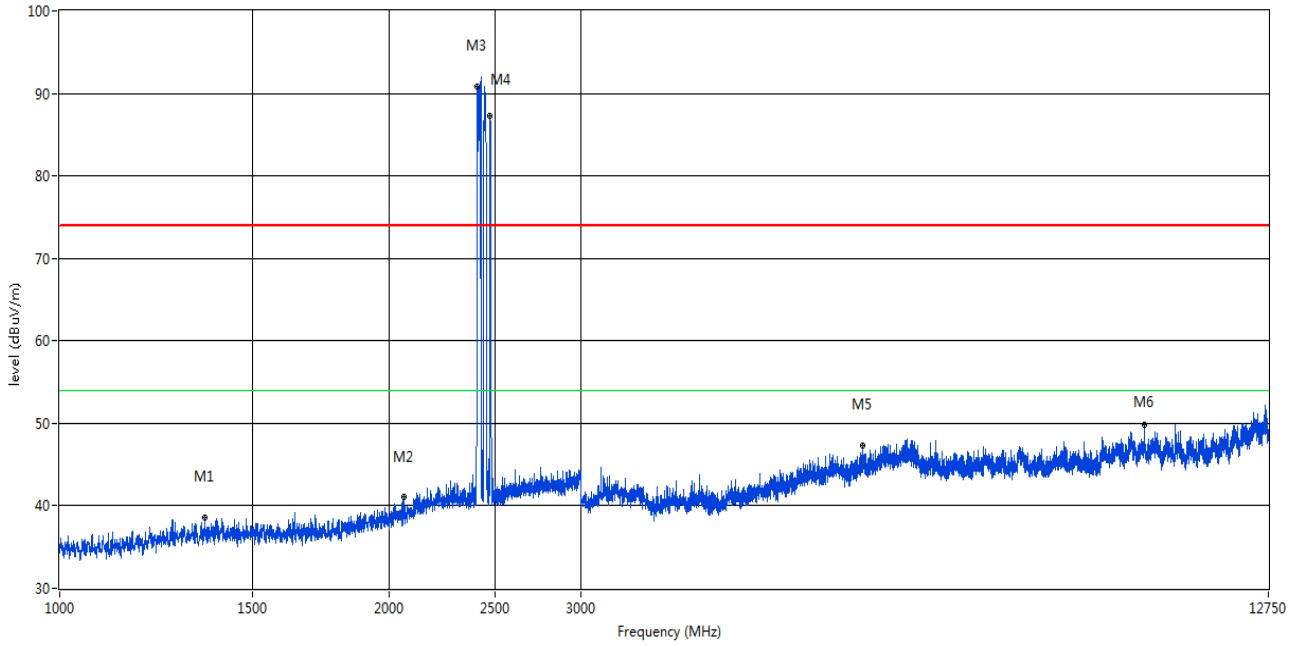
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	46.490	22.00	16.40	40.0	18.00	Peak	226.00	100	Vertical	Pass
2	100.082	27.04	14.86	43.5	16.46	Peak	353.00	200	Vertical	Pass
3	132.092	26.23	11.73	43.5	17.27	Peak	1.00	200	Vertical	Pass
4	191.990	39.5	14.31	43.5	4.00	Peak	149.00	100	Vertical	Pass
5	288.020	24.86	17.26	46.0	21.14	Peak	0.00	200	Vertical	Pass
6	496.813	29.38	22.30	46.0	16.62	Peak	4.00	200	Vertical	Pass

A.1.2 Test Antenna Horizontal, 30 MHz – 1 GHz



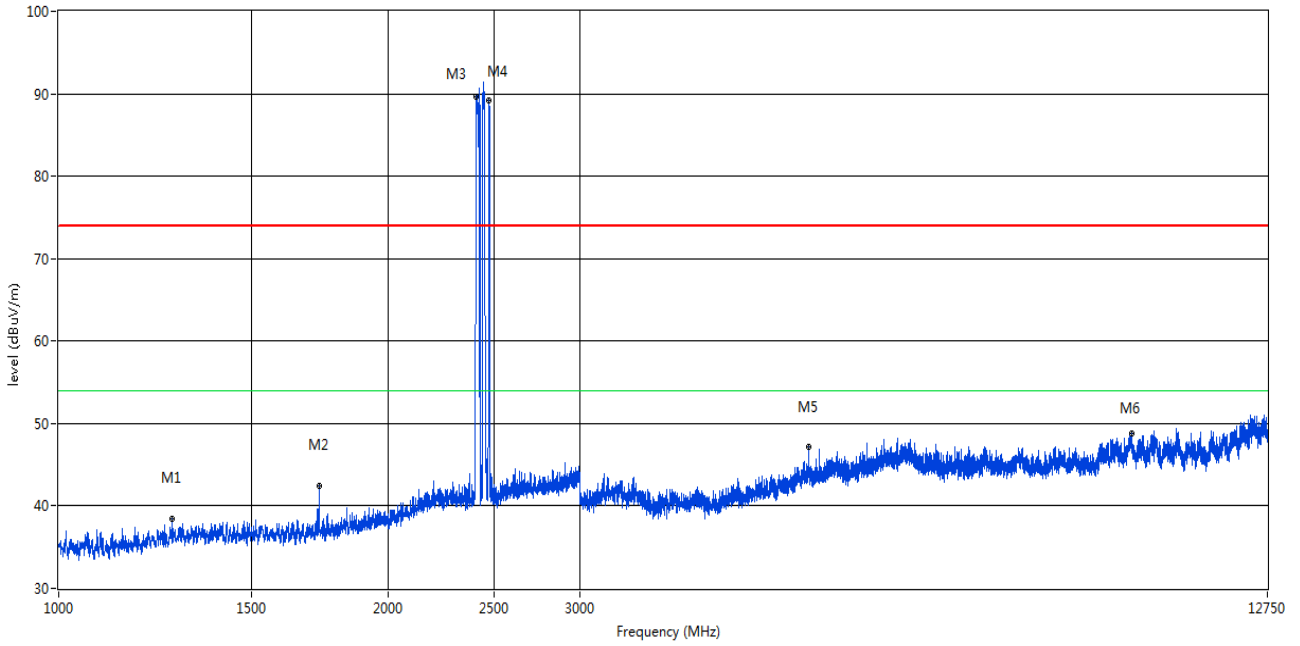
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	59.828	23.27	15.03	40.0	16.73	Peak	0.00	200	Horizontal	Pass
2	134.275	33.40	11.50	43.5	10.10	Peak	0.00	200	Horizontal	Pass
3	191.990	40.26	14.31	43.5	3.24	Peak	0.00	200	Horizontal	Pass
4	288.020	29.11	17.26	46.0	16.89	Peak	330.00	100	Horizontal	Pass
5	614.667	31.50	24.85	46.0	14.50	Peak	43.60	100	Horizontal	Pass
6	827.340	35.56	28.16	46.0	10.44	Peak	115.80	100	Horizontal	Pass

A.1.3 Test Antenna Vertical, 1 GHz – 12.75 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1357.000	38.56	2.97	74.0	35.44	Peak	237.70	100	Vertical	Pass
2	2064.500	41.16	5.72	74.0	32.84	Peak	77.70	100	Vertical	Pass
3	2411.000	90.85	7.52	74.0	-16.85	Peak	351.30	100	Vertical	N/A
4	2475.000	87.25	7.62	74.0	-13.25	Peak	358.30	100	Vertical	N/A
5	5430.000	47.34	13.35	74.0	26.66	Peak	261.30	100	Vertical	Pass
6	9814.625	49.77	17.22	74.0	24.23	Peak	128.10	100	Vertical	Pass

A.1.4 Test Antenna Horizontal, 1 GHz – 12.75 GHz



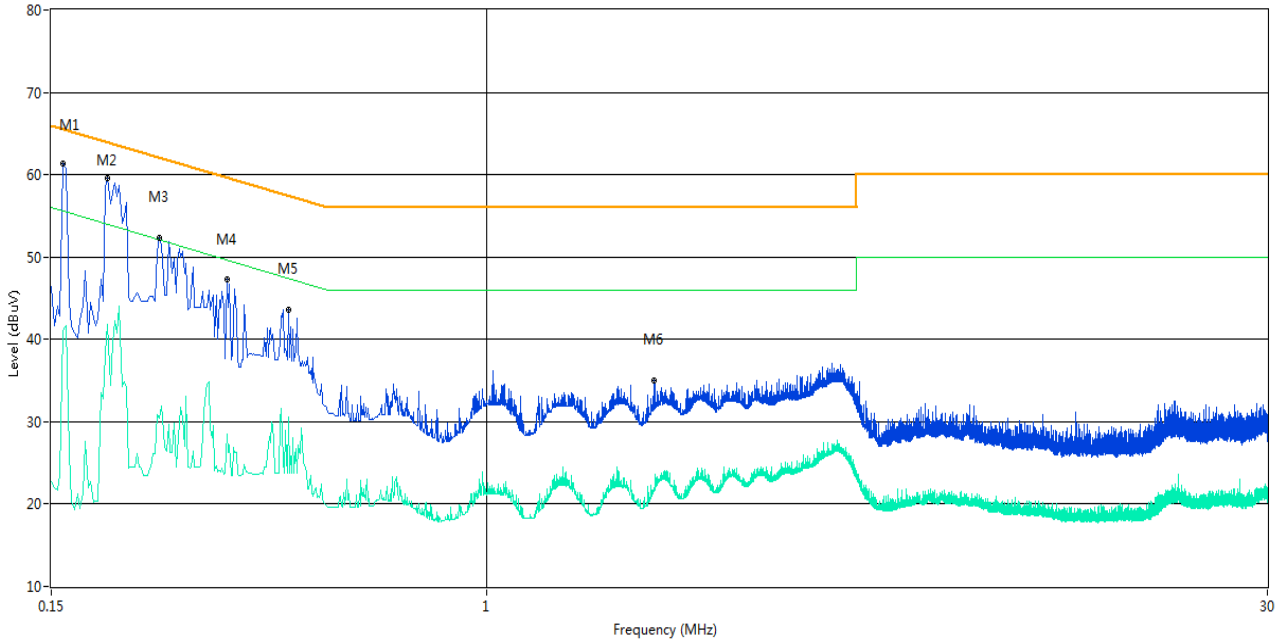
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1269.000	38.41	2.85	74.0	35.59	Peak	135.50	100	Horizontal	Pass
2	1731.000	42.41	3.97	74.0	31.59	Peak	117.40	100	Horizontal	Pass
3	2409.500	89.65	7.56	74.0	-15.65	Peak	286.30	100	Horizontal	N/A
4	2474.000	89.13	7.56	74.0	-15.13	Peak	322.20	100	Horizontal	N/A
5	4856.000	47.10	12.64	74.0	26.90	Peak	223.10	100	Horizontal	Pass
6	9584.625	48.80	17.39	74.0	25.20	Peak	22.10	100	Horizontal	Pass

A.2 Conducted Emission

Test Data and Plots

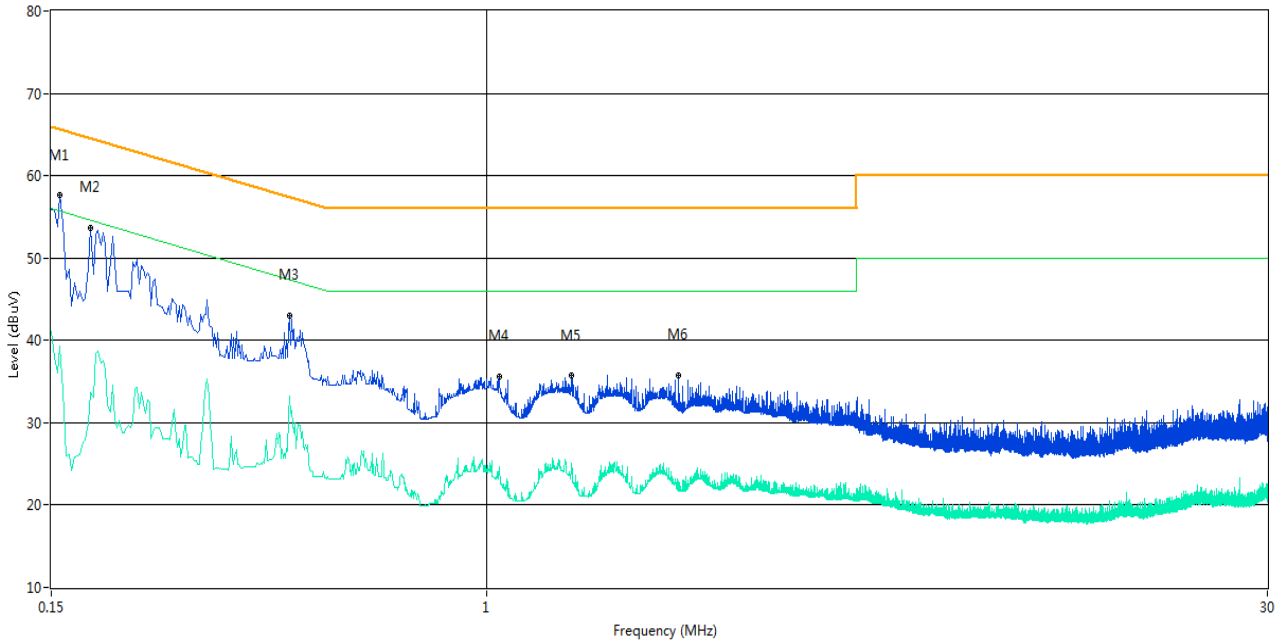
The USB Control Test Mode

A.2.1 L Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.158	61.3	10.04	65.6	4.30	Peak	L Line	Pass
1**	0.158	41.0	10.04	55.6	14.60	AV	L Line	Pass
2	0.192	59.5	10.04	63.9	4.40	Peak	L Line	Pass
2**	0.192	41.9	10.04	53.9	12.00	AV	L Line	Pass
3	0.240	52.4	10.04	62.1	9.70	Peak	L Line	Pass
3**	0.240	30.5	10.04	52.1	21.60	AV	L Line	Pass
4	0.322	47.2	10.04	59.7	12.50	Peak	L Line	Pass
4**	0.322	28.5	10.04	49.7	21.20	AV	L Line	Pass
5	0.422	43.6	10.04	57.4	13.80	Peak	L Line	Pass
5**	0.422	30.6	10.04	47.4	16.80	AV	L Line	Pass
6	2.076	35.0	10.09	56.0	21.00	Peak	L Line	Pass
6**	2.076	20.6	10.09	46.0	25.40	AV	L Line	Pass

A.2.2 N Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.156	57.6	10.04	65.7	8.10	Peak	N Line	Pass
1**	0.156	39.3	10.04	55.7	16.40	AV	N Line	Pass
2	0.178	53.7	10.04	64.6	10.90	Peak	N Line	Pass
2**	0.178	33.7	10.04	54.6	20.90	AV	N Line	Pass
3	0.424	43.0	10.04	57.4	14.40	Peak	N Line	Pass
3**	0.424	33.2	10.04	47.4	14.20	AV	N Line	Pass
4	1.056	35.7	10.06	56.0	20.30	Peak	N Line	Pass
4**	1.056	24.6	10.06	46.0	21.40	AV	N Line	Pass
5	1.448	35.7	10.07	56.0	20.30	Peak	N Line	Pass
5**	1.448	25.1	10.07	46.0	20.90	AV	N Line	Pass
6	2.310	35.7	10.10	56.0	20.30	Peak	N Line	Pass
6**	2.310	22.8	10.10	46.0	23.20	AV	N Line	Pass

ANNEX B TEST SETUP PHOTOS

Please refer the document "BL-SZ17A0114-AE.PDF".

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document "BL-SZ17A0114-AW.PDF".

ANNEX D EUT INTERNAL PHOTOS

Please refer the document "BL-SZ17A0114-AI.PDF".

--END OF REPORT--