FCC EMI TEST REPORT

FCC ID	**:**	**2AN7U-5463**
Equipment	**:**	**Wireless Remote**
Model Name	**:**	**L5B83H**
Applicant	**:**	**X-Marks LLC** **X-Marks LLC, 4400 NE 77th Avenue, Suite 275, Vancouver, Washington, 98662**
Standard	**:**	**FCC 47 CFR FCC Part 15 Subpart B**

The testing was started from May 15, 2018 and completed on May 15, 2018. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI C63.4-2014 and has been in compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERTIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Jones Tsai

Approved by: Jones Tsai

SPORTON INTERTIONAL INC. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

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History of this test report

Report No.	Version	Description	Issued Date
FV7D2920-01	01	Initial issue of report	May 23, 2018
FV7D2920-01	02	Add the description in section 2.1.	Jul. 03, 2018

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)
-	15.107	AC Conducted Emission	Not Required
3.1	15.109	Radiated Emission	Pass
Note: Not required means after assessing, test items are not necessary to carry out.			

Reviewed by: Louis Wu

Report Producer: Polly Tsai

1. General Description

1.1. Product Feature of Equipment Under Test

Product Feature	
Equipment	Wireless Remote
Model Name	L5B83H
FCC ID	2AN7U-5463
EUT supports Radios application	Bluetooth LE

1.2. Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	Bluetooth: 2402 MHz ~ 2480 MHz
Rx Frequency	Bluetooth: 2402 MHz ~ 2480 MHz
Antenna Type	Bluetooth : Fixed Internal Antenna
Type of Modulation	Bluetooth LE : GFSK

1.3. Modification of EUT

No modifications are made to the EUT during all test items.

1.4. Test Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1093 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	**Sporton Site No.**
	03CH06-HY

1.5. Applicable Standards

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

- FCC 47 CFR FCC Part 15 Subpart B
- ANSI C63.4-2014

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.

2. Test Configuration of Equipment Under Test

2.1. Test Mode

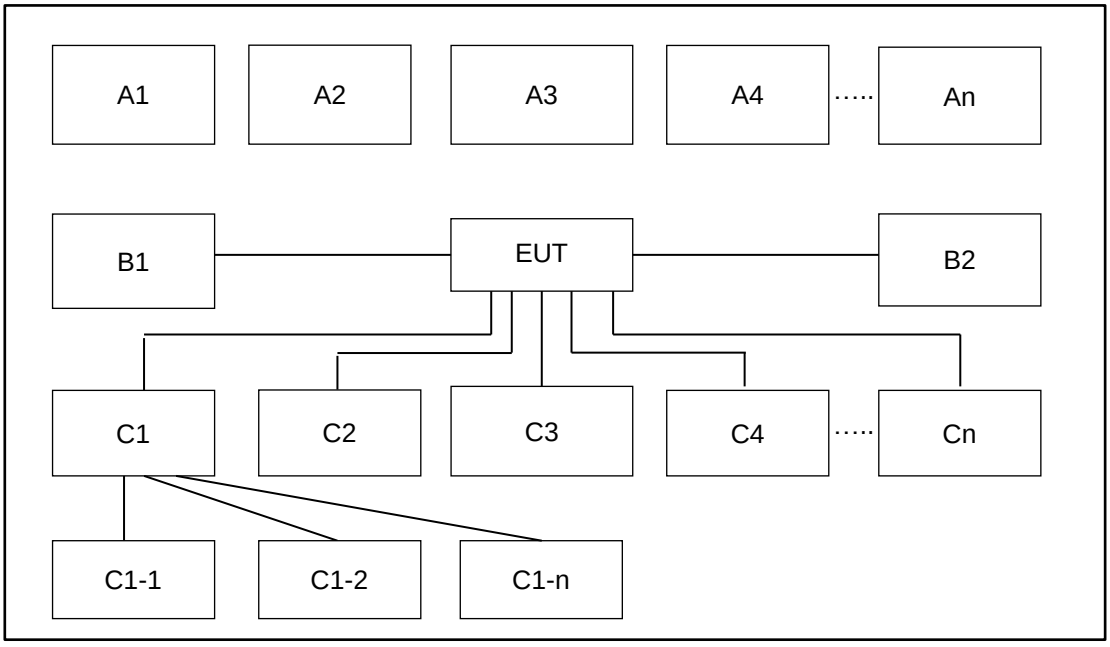
The EUT has been associated with peripherals pursuant to ANSI C63.4-2014 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

Frequency range investigated: radiation emission (30MHz to the 5th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Y plane) were recorded in this report.

Test Items	Function Type
Radiated Emissions	Mode 1 : Bluetooth Link + Battery

2.2. Connection Diagram of Test System



Test Setup									
No.	**Wireless Station**	**Connection Type**	**Test Mode**						
			1	**-**	**-**	**-**	**-**	**-**	**-**
A1	Needle	Bluetooth	X						

2.3. Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	HDMI Multi-Media Receiver	N/A	Needle	2ALBL-1731	N/A	N/A

2.4. EUT Operation Test Setup

The EUT linked with Needle by Bluetooth.

3. Test Result

3.1. Test of Radiated Emission Measurement

3.1.1. Limit of Radiated Emission

The emissions from an unintentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.1.2. Measuring Instruments

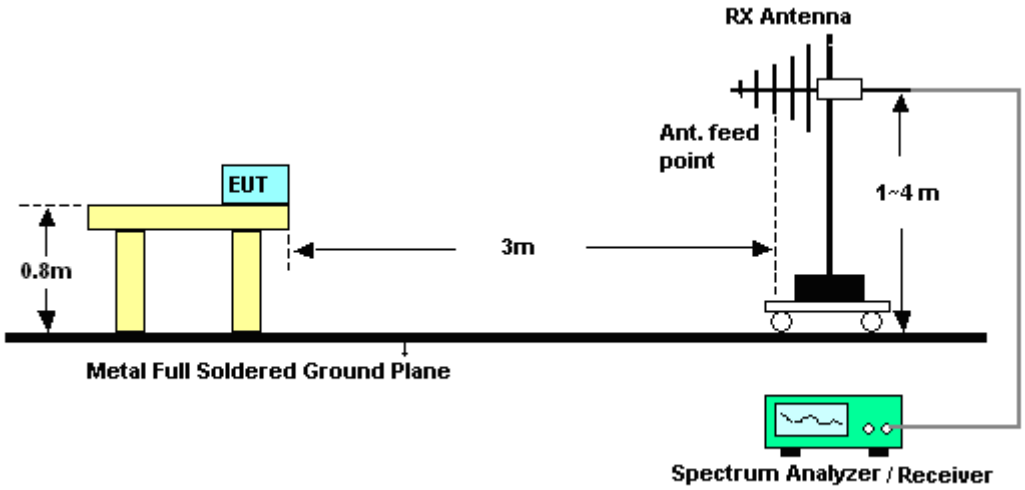
Refer a test equipment and calibration data table in this test report.

3.1.3. Test Procedures

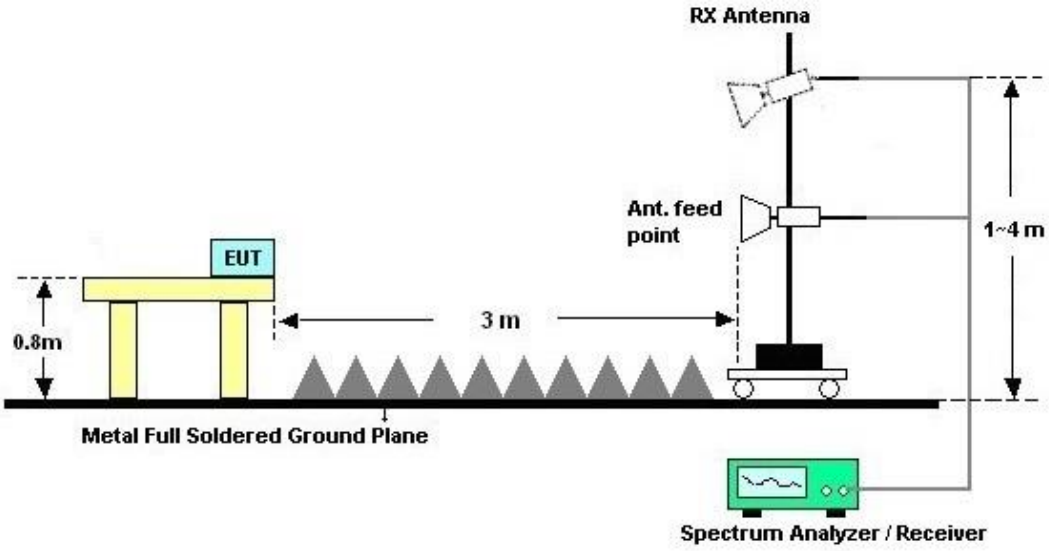
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a Bi-Log antenna and its height is adjusted between one to four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode (RBW=120kHz/VBW=300kHz for frequency below 1GHz; RBW=1MHz VBW=3MHz (Peak), RBW=1MHz/VBW=10Hz (Average) for frequency above 1GHz).
7. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, peak values of EUT will be reported. Otherwise, the emission will be repeated by using the quasi-peak method and reported.
8. Emission level (dBμV/m) = 20 log Emission level (μV/m)
9. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

3.1.4. Test Setup of Radiated Emission

For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.1.5. Test Result of Radiated Emission

Please refer to Appendix A.

4. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Bilog Antenna	Schaffner	CBL6111C&N-6-06	2725&AT-N0601	30MHz~1GHz	Oct. 14, 2017	May 15, 2018	Oct. 13, 2018	Radiation (03CH06-HY)
EMI Test Receiver	Rohde & Schwarz	ESU26	100472	20Hz~26.5GHz	Jan. 04, 2018	May 15, 2018	Jan. 03, 2019	Radiation (03CH06-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1156	1GHz~18GHz	Aug. 08, 2017	May 15, 2018	Aug. 07, 2018	Radiation (03CH06-HY)
Preamplifier	SONOMA	310N	186713	9kHz~1GHz	May 02, 2018	May 15, 2018	May 01, 2019	Radiation (03CH06-HY)
Preamplifier	MITEQ	AMF-7D-00101800-30-10P	1850117	1GHz ~ 18GHz	May 22, 2017	May 15, 2018	May 21, 2018	Radiation (03CH06-HY)
Antenna Mast	MF	MF-7802	MF780208212	1m~4m	N/A	May 15, 2018	N/A	Radiation (03CH06-HY)
Turn Table	INN-CO	DS2000	420/650/00	0-360 degree	N/A	May 15, 2018	N/A	Radiation (03CH06-HY)
Test Software	AUDIX	e3	6.2009-8-24(k5)	N/A	N/A	May 15, 2018	N/A	Radiation (03CH06-HY)
RF Cable	HUBER+SUHNER/UTIFLEX	SUCOFLEX 104 / UFA210A	MY24966/4 / LF-01	30MHz-1GHz	Nov. 24, 2017	May. 15, 2018	Nov. 23, 2018	Radiation (03CH06-HY)
RF Cable	Infinet/Sunhner	LL142/SF104	CA3601-3601-HLL	1GHz-26GHz	Nov. 24, 2017	May. 15, 2018	Nov. 23, 2018	Radiation (03CH06-HY)
Filter	Microwave	H1G013G1	SN477215	1.0G High Pass	Dec. 07, 2017	May. 15, 2018	Dec. 06, 2018	Radiation (03CH06-HY)
Filter	Wainwright	WLKS1200-8SS	SN3	1.2G Low Pass	Nov. 21, 2017	May. 15, 2018	Nov. 20, 2018	Radiation (03CH06-HY)

5. Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

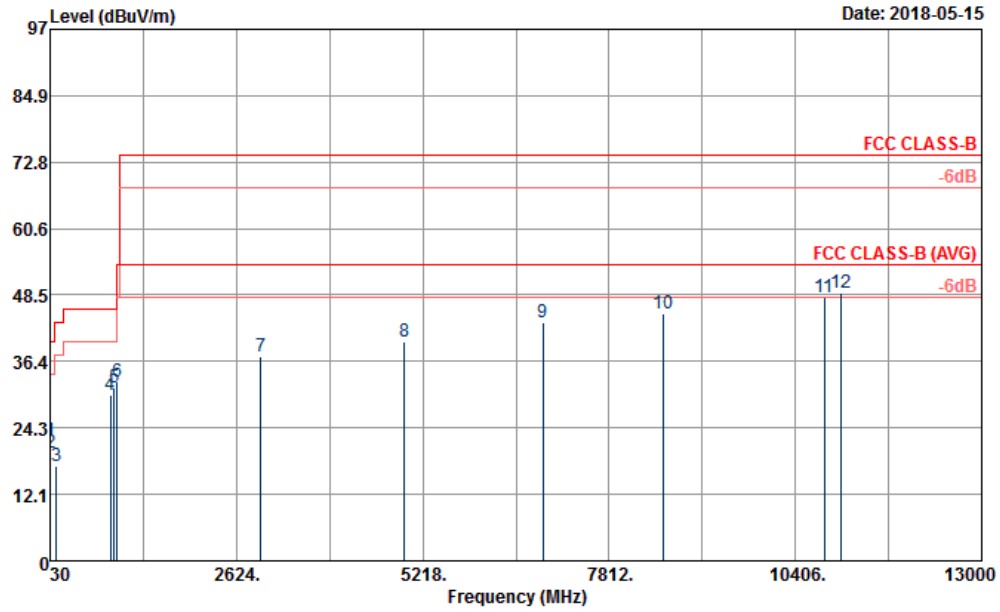
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.90**

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.70**

Appendix A. Radiated Emission Test Result

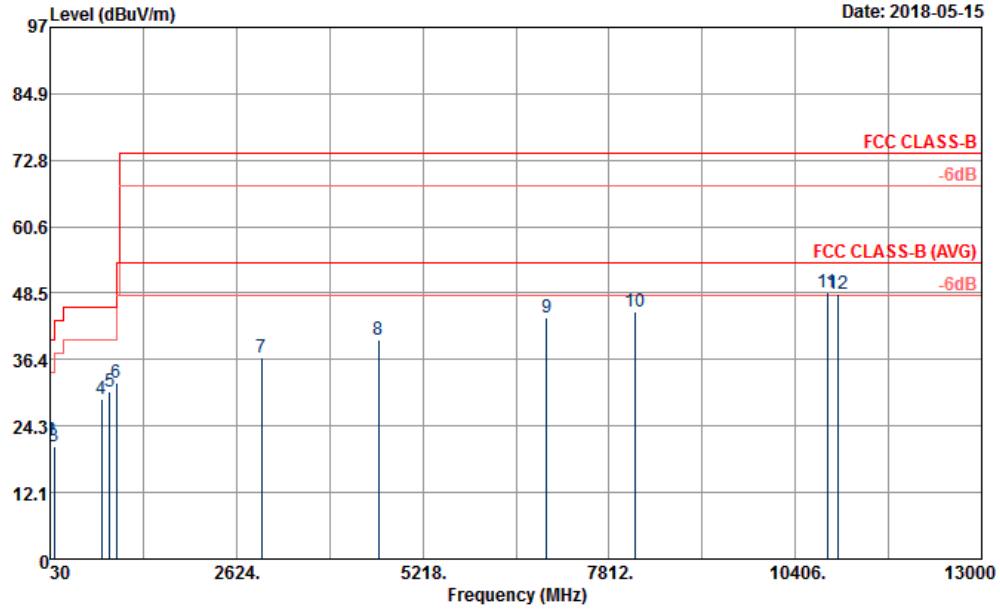
Test Mode	Mode 1	Temperature :	26~27°C
Test Engineer :	Eric Jeng	Relative Humidity :	48~50%
Test Distance :	3m	Polarization :	Horizontal



Site : 03CH06-HY
Condition : FCC CLASS-B 3m 9120D_1156_170915 HORIZONTAL
Project : 7D2920-01
Power : From Battery
Mode : Mode 1
: Y

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	30.27	22.00	-18.00	40.00	28.93	24.17	0.74	31.84	---	---	Peak
2	34.86	19.69	-20.31	40.00	28.91	21.84	0.78	31.84	---	---	Peak
3	115.05	17.35	-26.15	43.50	30.50	17.26	1.39	31.80	---	---	Peak
4	866.30	30.22	-15.78	46.00	29.21	29.06	3.65	31.70	---	---	Peak
5	921.60	31.53	-14.47	46.00	29.80	29.38	3.71	31.36	---	---	Peak
6	958.70	32.67	-13.33	46.00	28.87	31.02	3.81	31.03	100	21	Peak
7	2968.00	37.34	-36.66	74.00	61.91	28.64	8.07	61.28	---	---	Peak
8	4966.00	40.03	-33.97	74.00	57.04	31.39	10.72	59.12	---	---	Peak
9	6896.00	43.56	-30.44	74.00	54.68	35.23	12.89	59.24	---	---	Peak
10	8568.00	45.00	-29.00	74.00	51.53	36.64	14.72	57.89	---	---	Peak
11	10804.00	48.11	-25.89	74.00	49.16	39.90	16.53	57.48	---	---	Peak
12	11050.00	49.00	-25.00	74.00	48.98	40.05	16.91	56.94	100	0	Peak

Test Mode	Mode 1	Temperature :	26~27°C
Test Engineer :	Eric Jeng	Relative Humidity :	48~50%
Test Distance :	3m	Polarization :	Vertical



Site : 03CH06-HY
Condition : FCC CLASS-B 3m 9120D_1156_170915 VERTICAL
Project : 7D2920-01
Power : From Battery
Mode : Mode 1
: Y

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	30.00	21.74	-18.26	40.00	28.67	24.17	0.74	31.84	---	---	Peak
2	35.67	21.61	-18.39	40.00	31.35	21.31	0.79	31.84	---	---	Peak
3	81.84	20.52	-19.48	40.00	37.82	13.32	1.20	31.82	---	---	Peak
4	745.20	29.09	-16.91	46.00	30.01	27.77	3.36	32.05	---	---	Peak
5	863.50	30.47	-15.53	46.00	29.48	29.05	3.65	31.71	---	---	Peak
6	954.50	32.18	-13.82	46.00	28.63	30.81	3.81	31.07	100	82	Peak
7	2970.00	36.81	-37.19	74.00	61.38	28.64	8.07	61.28	---	---	Peak
8	4604.00	39.88	-34.12	74.00	59.18	30.70	10.13	60.13	---	---	Peak
9	6942.00	43.92	-30.08	74.00	54.91	35.36	12.88	59.23	---	---	Peak
10	8176.00	45.13	-28.87	74.00	52.57	36.59	14.09	58.12	---	---	Peak
11	10848.00	48.57	-25.43	74.00	49.41	39.94	16.60	57.38	100	65	Peak
12	11000.00	48.30	-25.70	74.00	48.34	40.13	16.83	57.00	---	---	Peak

THE END