

RF TEST REPORT

ISSUED BY
Shenzhen BALUN Technology Co., Ltd.



FOR
Hand Hygiene Sensor

ISSUED TO
CENTRAK, INC.

826 Newtown Yardley Road, Newtown, Pennsylvania 18940,
United States



Tested by: Yu Ying Yuan
Yu Yingyuan
Date Mar. 10, 2022

Approved by: Liao Jianming
Liao Jianming
(Technical Director)
Date Mar. 10, 2022

Report No.: BL-SZ21B1060-601
EUT Name: Hand Hygiene Sensor
Model Name: IT-376 (refer section 2.4)
Brand Name: Centrak
Test Standard: 47 CFR Part 15 Subpart C
RSS-210 Issue 10
RSS-Gen Issue 5
(refer section 3.1)
FCC ID: ST2-IT376B
IC Number: 6012A-IT376B
Test Conclusion: Pass
Test Date: Dec. 07, 2021 ~ Mar. 08, 2022
Date of Issue: Mar. 10, 2022

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Revision History

<u>Version</u>	<u>Issue Date</u>	<u>Revisions</u>
<u>Rev. 01</u>	<u>Mar. 01, 2022</u>	<u>Initial Issue</u>
<u>Rev. 02</u>	<u>Mar. 10, 2022</u>	<u>Modified the name and address of the applicant;</u> <u>Update the technical information in section 2.5 and data in sections A.1 and A.3</u>

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1 ADMINISTRATIVE DATA (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

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	The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 11524A-1. The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1196.
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°C to 25°C
Ambient Relative Humidity	45% to 55%
Ambient Pressure	100 kPa to 102 kPa

1.4 Announce

- (1) The test report reference to the report template version v2.5.
- (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.
- (7) The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	CENTRAK, INC.
Address	826 Newtown Yardley Road, Newtown, Pennsylvania 18940, United States

2.2 Manufacturer Information

Manufacturer	CENTRAK, INC.
Address	826 Newtown Yardley Road, Newtown, Pennsylvania 18940, United States

2.3 Factory Information

Factory	Concord Electronic (Huizhou) Ltd.
Address	21, Ping An Rd, Shuikou Street, Hui Cheng District, Huizhou City, Guangdong Province, China

2.4 General Description for Equipment under Test (EUT)

EUT Name	Hand Hygiene Sensor
Model Name Under Test	IT-376
Series Model Name	IT-376 H
Description of Model name differentiation	All models are same with electrical parameters and internal circuit structure, but only differ in model name.
Hardware Version	V[A]
Software Version	V3.0
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.5 Technical Information

The requirement for the following technical information of the EUT was tested in this report:

Modulation Type	ASK			
Product Type	<input checked="" type="checkbox"/> Mobile <input type="checkbox"/> Portable <input type="checkbox"/> Fix Location			
Frequency Range	902 MHz to 928 MHz			
Tested Channel	Low (904 MHz), Middle (915 MHz), High (926 MHz)			
Antenna Type	Flex Antenna			
Antenn a Gain	<table border="1"> <tr> <td>Main Antenna</td> <td rowspan="2">0 dBi (In test items related to antenna gain, the final results reflect this figure. This value is provided by the applicant.)</td> </tr> <tr> <td>Aux. Antenna</td> </tr> </table>	Main Antenna	0 dBi (In test items related to antenna gain, the final results reflect this figure. This value is provided by the applicant.)	Aux. Antenna
Main Antenna	0 dBi (In test items related to antenna gain, the final results reflect this figure. This value is provided by the applicant.)			
Aux. Antenna				

2.6 Additional Instructions

EUT Software Settings:

Client have set the channel and frequency, open the switch on electricity can transmit signal

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 15, Subpart C	Miscellaneous Wireless Communications Services
2	RSS-Gen Issue 5	General Requirements for Compliance of Radio Apparatus
3	RSS-210 Issue 10	Licence-Exempt Radio Apparatus: Category I Equipment
4	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

3.2 Verdict

No.	Description	FCC Part No.	ISED Part No.	Test Result	Verdict	Remark
1	Antenna Requirement	15.203	RSS-Gen 6.8	--	Pass	Note ¹
2	20 dB and 99% Bandwidth	15.215(c)	RSS-Gen 6.7	ANNEX A.1	Pass	--
3	AC Conducted Emission	15.207	RSS-Gen 8.8	ANNEX A.2	N/A	--
4	Field Strength of Fundamental Emissions	15.249(a)	RSS-Gen 8.9	ANNEX A.3	Pass	
5	Radiated Emission Test Band Edge Measurement	15.249(a) 15.249(d) 15.209	RSS-210 B.10 RSS-Gen 8.9 RSS-Gen 8.10	ANNEX A.4	Pass	Note ²

Note¹: The EUT has a permanently and irreplaceable attached antenna, which complies with the requirement FCC 15.203.

Note²: the limit is 50dB less than the peak value of fundamental frequency or meet radiated emission limit in section 15.209

4 GENERAL TEST CONFIGURATIONS

4.1 Test Environments

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

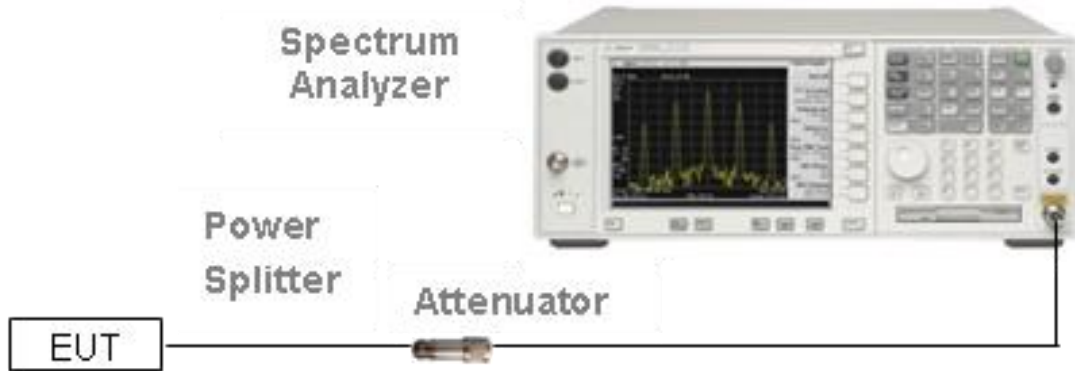
Relative Humidity	45% to 55%	
Atmospheric Pressure	100 kPa to 102 kPa	
Temperature	NT (Normal Temperature)	+22°C to +25°C
Working Voltage of the EUT	NV (Normal Voltage)	3.3 V

4.2 Test Equipment List

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	ROHDE&SCHWARZ	FSV-40	101544	2021.04.01	2022.03.31
Spectrum Analyzer	KEYSIGHT	N9020A	MY50330200	2021.06.01	2022.05.31
Bluetooth Signaling Unit	ROHDE&SCHWARZ	CMW500	142028	2021.06.01	2022.05.31
EMI Receiver	KEYSIGHT	N9038A	MY53220118	2021.06.01	2022.05.31
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2021.06.01	2022.05.31
LISN	SCHWARZBECK	NSLK 8127	8127-687	2021.06.01	2022.05.31
Test Antenna-Loop(9 kHz-30 MHz)	SCHWARZBECK	FMZB 1519	1519-037	2021.04.16	2024.04.15
Test Antenna-Bi-Log(30 MHz-3 GHz)	SCHWARZBECK	VULB 9163	9163-624	2021.08.20	2024.08.19
Test Antenna-Horn(1-18 GHz)	SCHWARZBECK	BBHA 9120D	9120D-1917	2019.07.02	2022.07.01
Test Antenna-Horn (18-40 GHz)	A-INFO	LB-180400KF	J211060273	2021.07.02	2023.07.01
Anechoic Chamber	RAINFORD	9m*6m*6m	N/A	2017.02.21	2022.02.20
Anechoic Chamber	RAINFORD	9m*6m*6m	N/A	2022.02.19	2024.09.03
Anechoic Chamber	EMC Electronic Co., Ltd	20.10*11.60*7.35m	N/A	2019.08.08	2022.08.07
Shielded Enclosure	ChangNing	CN-130701	130703	--	--

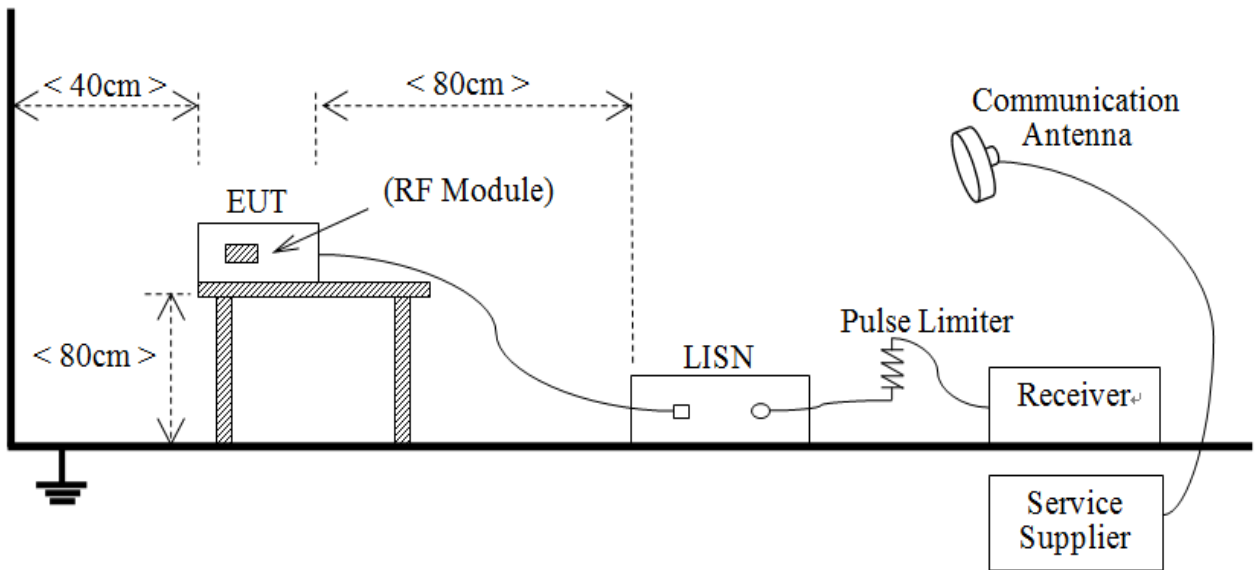
4.3 Description of Test Setup

4.3.1 For Antenna Port Test



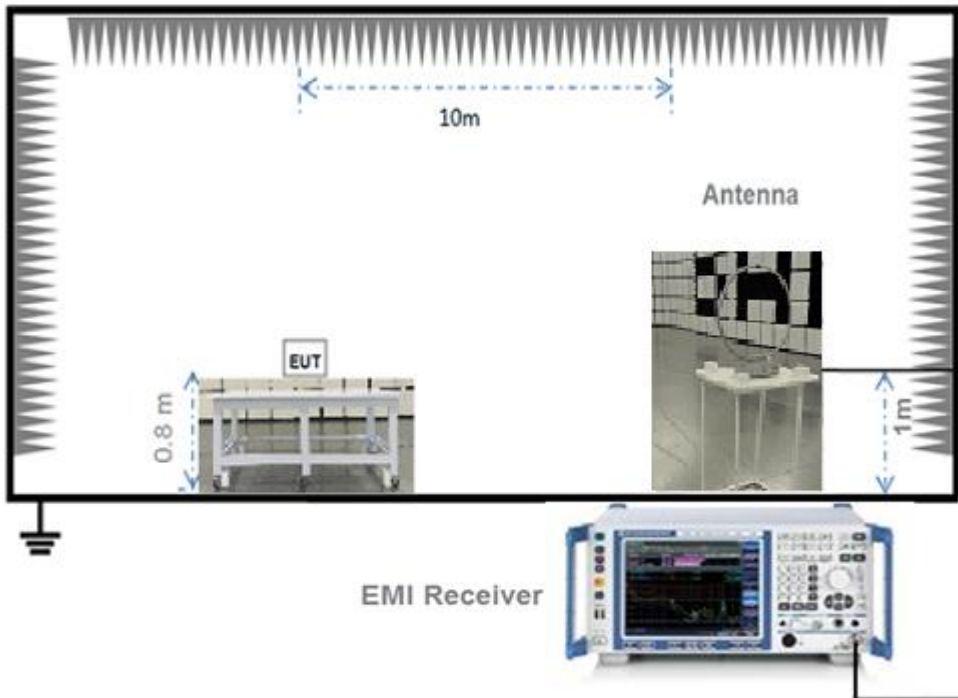
(Diagram 1)

4.3.2 For AC Power Supply Port Test



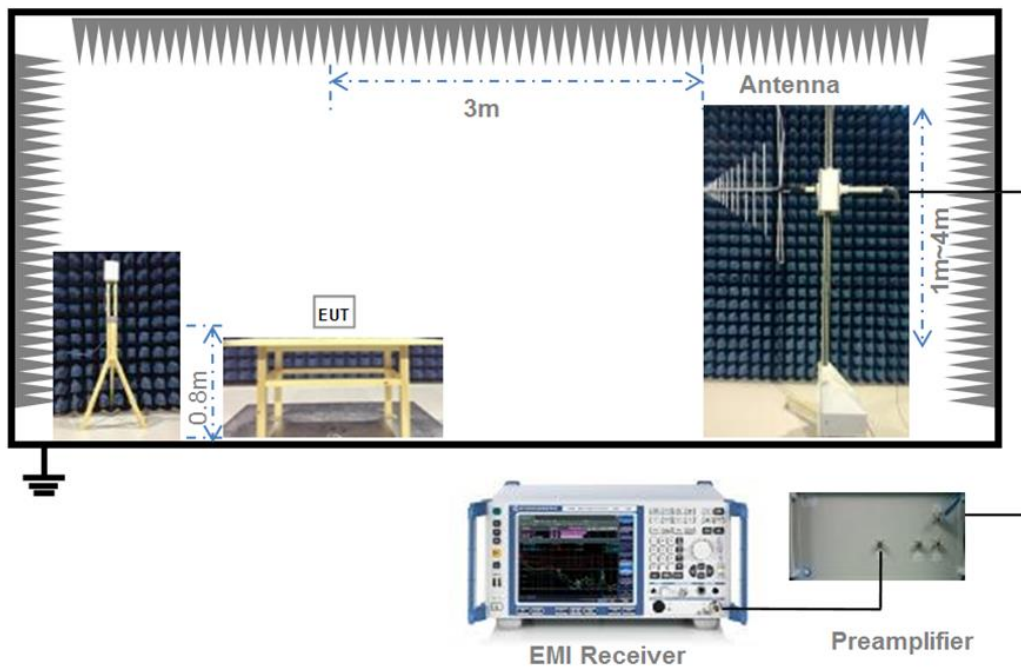
(Diagram 2)

4.3.3 For Radiated Test (Below 30 MHz)



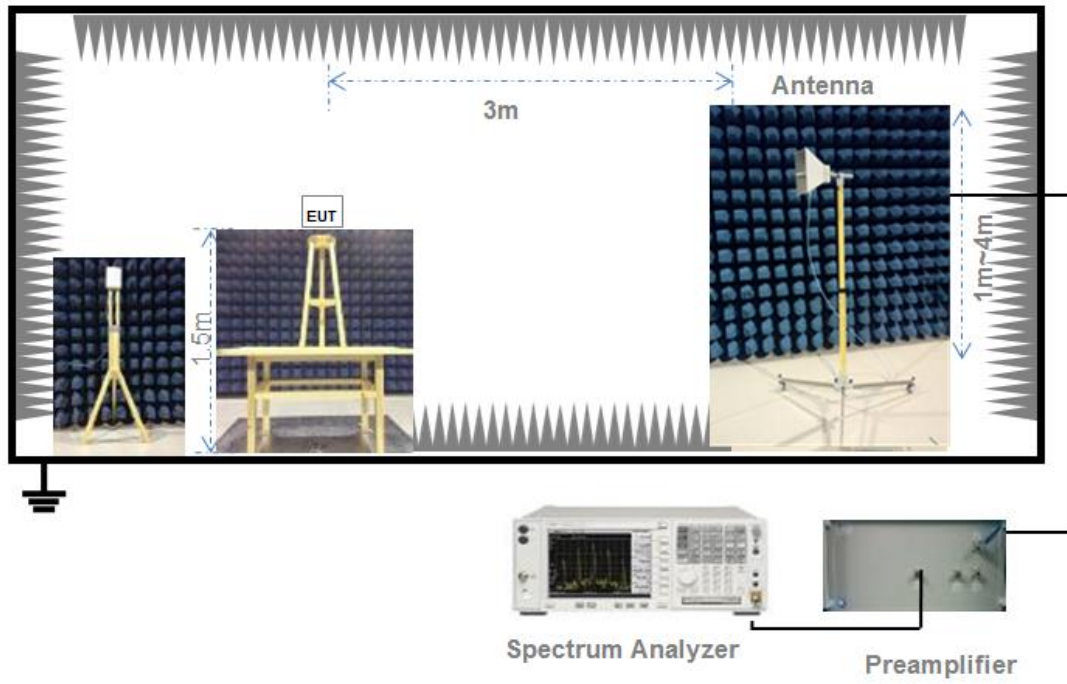
(Diagram 3)

4.3.4 For Radiated Test (30 MHz-1 GHz)



(Diagram 4)

4.3.5 For Radiated Test (Above 1 GHz)



(Diagram 5)

5 TEST ITEMS

5.1 Antenna Requirements

5.1.1 Relevant Standards

FCC §15.203; RSS-Gen, 6.8

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of § 15.211, § 15.213, § 15.217, § 15.219, or § 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

If directional gain of transmitting antennas is greater than 6 dBi, the power shall be reduced by the same level in dB comparing to gain minus 6 dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

5.1.2 Antenna Anti-Replacement Construction

The Antenna Anti-Replacement as following method:

Protected Method	Description
The antenna is embedded in the product.	An embedded-in antenna design is used.

Reference Documents	Item
Photo	Please refer to the EUT Photo documents.

5.1.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

5.2 20 dB and 99% Bandwidth

5.2.1 Limit

FCC §15.215(c); RSS-Gen, 6.7

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in § 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

5.2.2 Test Setups

See section 4.3.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.2.3 Test Procedure

Use the following spectrum analyzer settings:

Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel

RBW \geq 1% of the 20 dB bandwidth

VBW \geq RBW

Sweep = auto

Detector function = peak

Trace = max hold

5.2.4 Test Result

Please refer to ANNEX A.1.

5.3 AC Conducted Emission

5.3.1 Limit

FCC §15.207; RSS-Gen, 8.8

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 Ω line impedance stabilization network (LISN).

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

5.3.2 Test Setups

See section 4.3.2 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.3.3 Test Procedure

The maximum conducted interference is searched using Peak (PK), if the emission levels 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.

5.3.4 Test Result

Please refer to ANNEX A.2.

5.4 field strength of Fundamental emissions

5.4.1 Limit

FCC&15.249(a); RSS-Gen, 8.9

Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902-928 MHz	50	500
2400-2483.5 MHz	50	500
5725-5875 MHz	50	500
24.0-24.25 GHz	250	2500

As shown in § 15.35(b), for frequencies above 1000 MHz, the field strength limits in paragraphs (a) and (b) of this section are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For point-to-point operation under paragraph (b) of this section, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.

5.4.2 Test Setups

See section 4.3.3-4.3.5 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.4.3 Test Procedure

The measurement frequency range is from 9 kHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. Mid channels on all channel bandwidth verified. Only the worst RB size/offset presented. The power of the EUT transmitting frequency should be ignored.

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.

Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz

VBW \geq RBW

Sweep = auto

Detector function = peak

Trace = max hold

5.4.4 Test Result

Please refer to ANNEX A.3.

5.5 Radiated Spurious Emission and Bandedge Measurement

5.5.1 Limit

FCC §15.249(a); FCC §15.249(d); FCC §15.209; RSS-210, B.10; RSS-Gen, 8.9; RSS-Gen, 8.10

Except as provided in paragraph (a) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Frequency (MHz)	Field Strength of Fundamental (mV/m)	Field Strength of Harmonics ($\mu\text{V/m}$)
902-928	50	500
2400-2483.5	50	500
5725-5875	50	500
24000-24250	250	2500

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

Note:

- For Above 1000 MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.
- For above 1000 MHz, limit field strength of harmonics: 54dBuV/m@3m (AV) and 74dBuV/m@3m (PK).

5.5.2 Test Setups

See section 4.3.3-4.3.5 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.5.3 Test Procedure

The measurement frequency range is from 9 kHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. Mid channels on all channel bandwidth verified. Only the worst RB size/offset presented. The power of the EUT transmitting frequency should be ignored.

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.

Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz

VBW \geq RBW

Sweep = auto

Detector function = peak

Trace = max hold

5.5.4 Test Result

Please refer to ANNEX A.4.

ANNEX A TEST RESULT

Note: All antenna were tested, but only the worst case has been reported in this report.

A.1 20dB bandwidth and 99% bandwidth

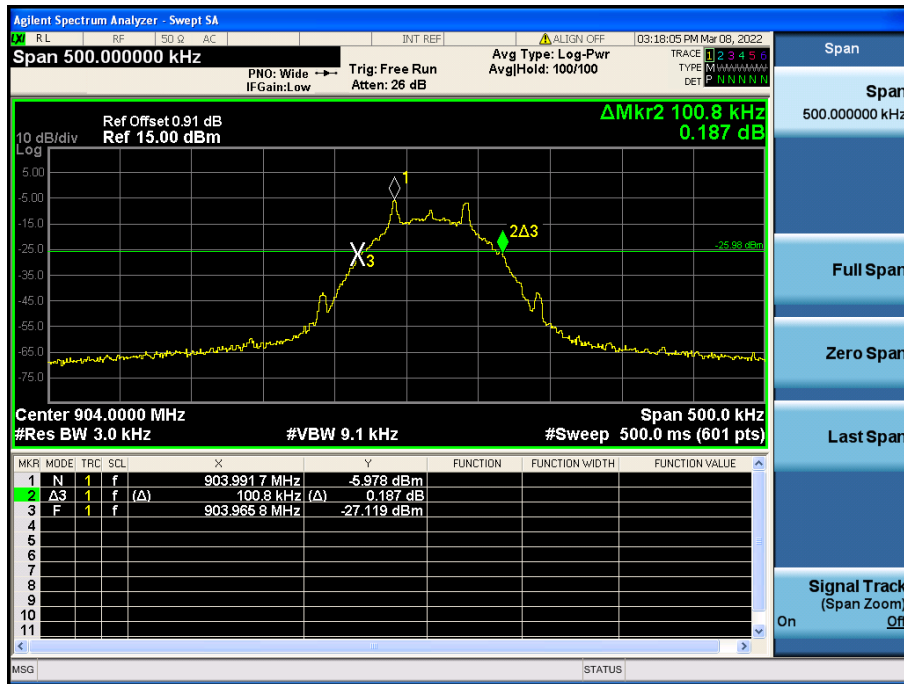
Test Data

Channel	Frequency (MHz)	20 dB Bandwidth (kHz)	99% Bandwidth (kHz)
Low	904	100.800	90.166
Middle	915	92.500	90.562
High	926	97.500	90.007

Test plots

20dB bandwidth

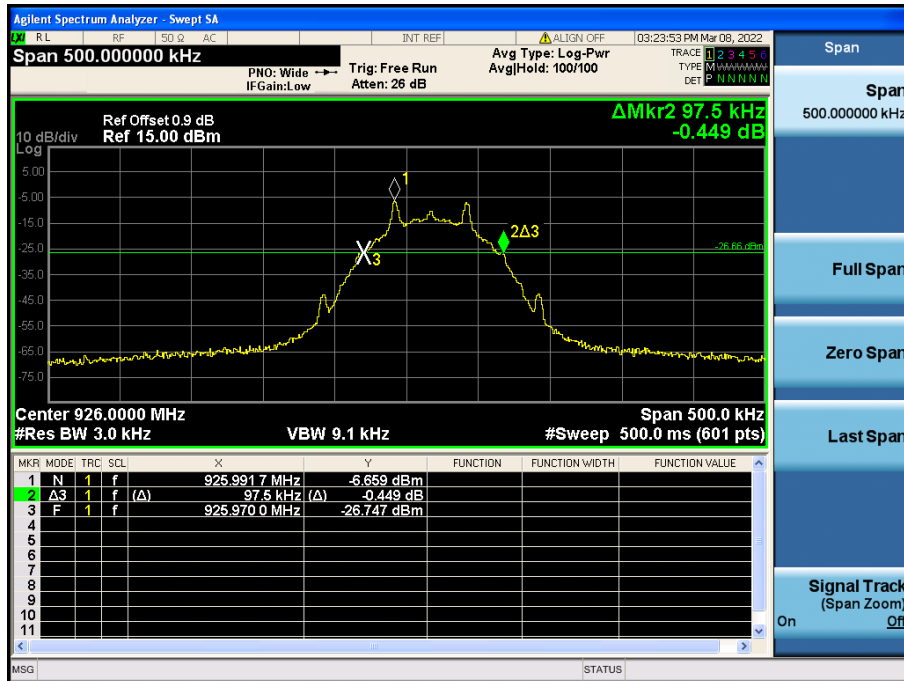
Low Channel



Middle Channel

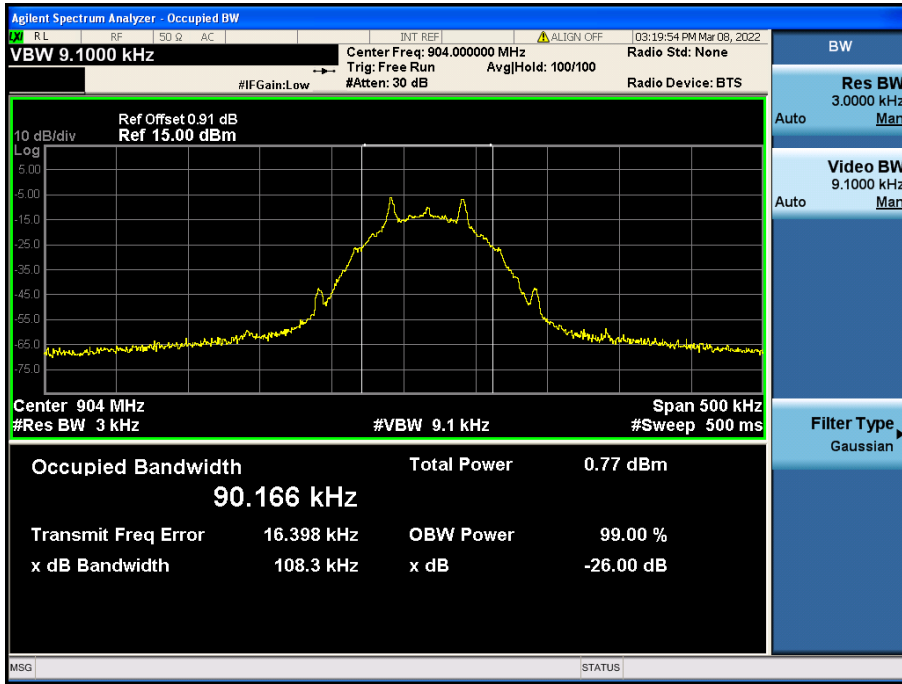


High Channel

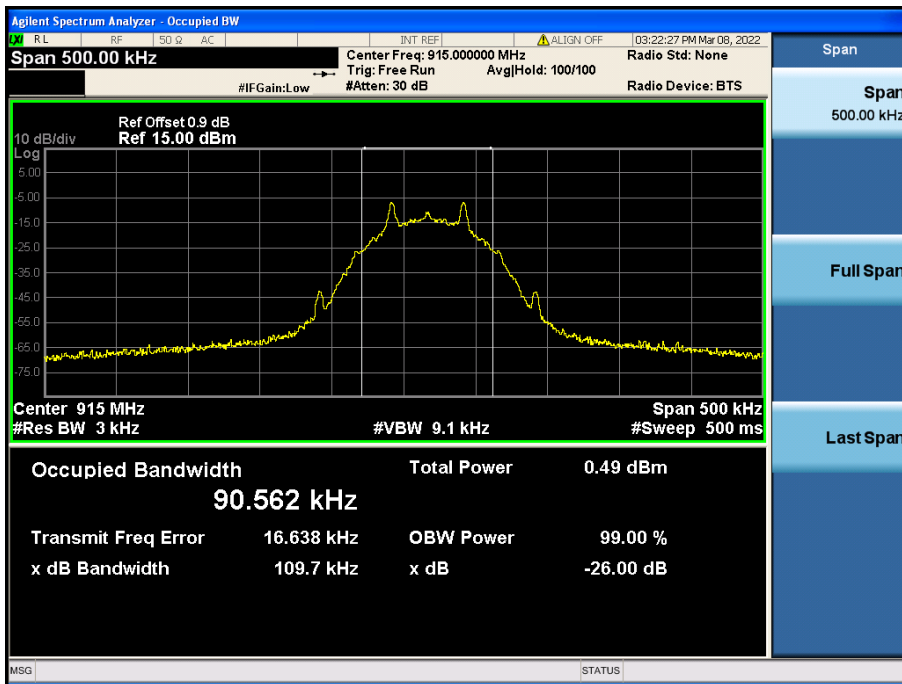


99% bandwidth

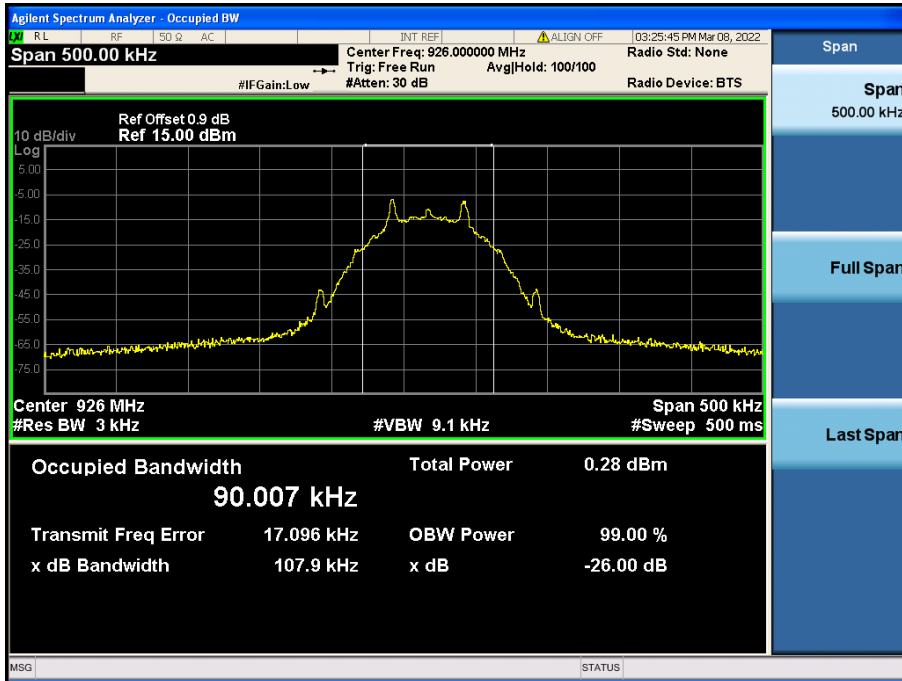
Low Channel



Middle Channel



High Channel



A.2 AC Conducted Emission

Note: The EUT only powered by battery, so the Conducted Emission test is not applicable.

A.3 Field Strength of Fundamental Emissions

The Field Strength of Fundamental Emissions (Operating Frequency) is:
 $50000 \text{ uV/m} = 20 \cdot \log(50000) \text{ dBuV/m} = 94 \text{ dBuV/m}$

Test Data

Operating Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Antenna	Verdict
904	76.54	-7.76	94	-17.46	QP	Horizontal	Pass
	86.27	-7.76	94	-7.73	QP	Vertical	Pass
915	75.78	-7.70	94	-18.22	QP	Horizontal	Pass
	84.22	-7.70	94	-9.78	QP	Vertical	Pass
926	74.89	-7.80	94	-19.11	QP	Horizontal	Pass
	83.74	-7.80	94	-10.26	QP	Vertical	Pass

A.4 Radiated Emission and Bandedge Measurement

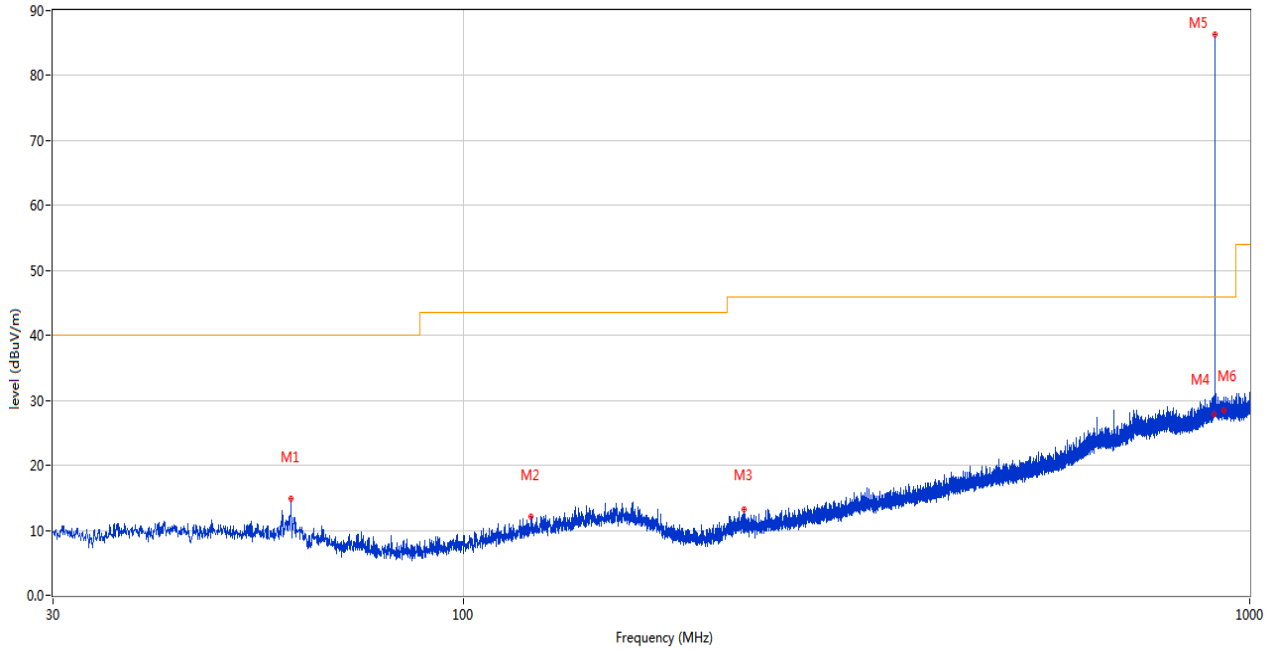
The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

Test Data and Plots (30 MHz ~ 1 GHz)

Note : The bold frequency is the fundamental.

Low Channel 30 MHz to 1 GHz, ANT V

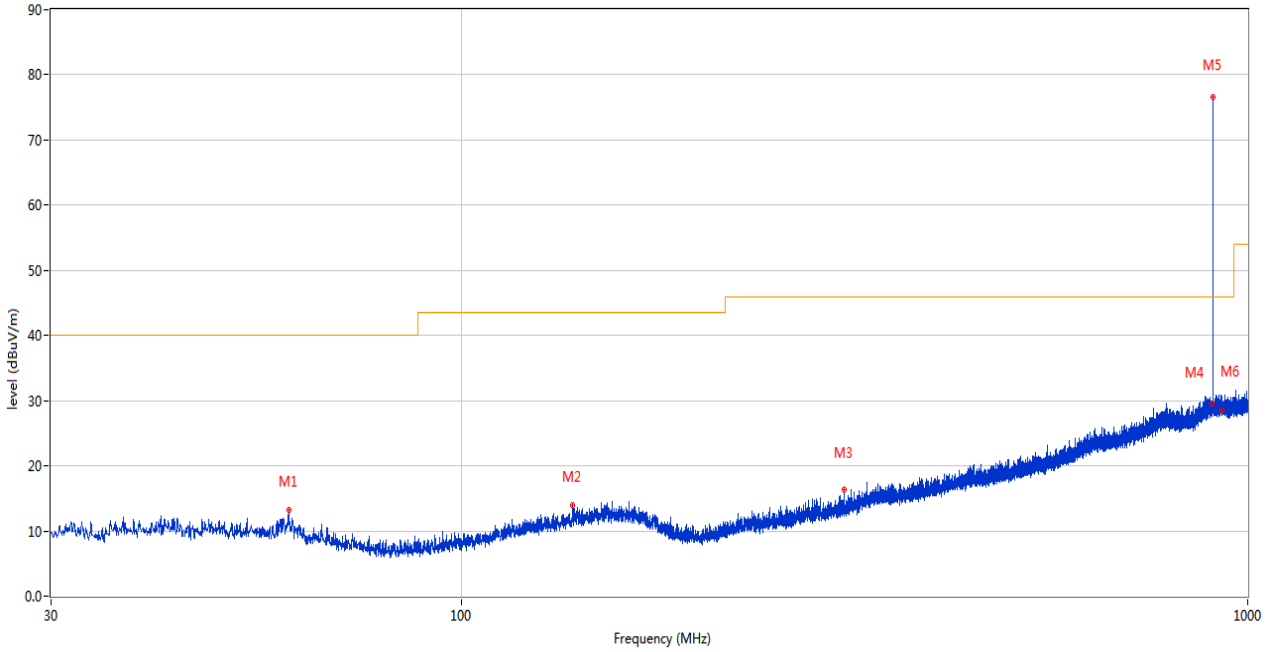
RE Test case_FCC Part 15B_FCC Part 15B Class B 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	60.264	14.89	-26.78	40.0	-25.11	Peak	0.00	201	Vertical	Pass
2	121.714	12.18	-26.28	43.5	-31.32	Peak	71.00	100	Vertical	Pass
3	227.346	13.16	-26.45	46.0	-32.84	Peak	0.00	201	Vertical	Pass
4	902.000	27.84	-7.75	46.0	-18.16	Peak	32.38	100	Vertical	Pass
5	904.018	86.27	-7.76	94.0	-7.73	QP	102.00	201	Vertical	Pass
6	928.000	28.55	-7.74	46.0	-17.45	Peak	112.86	154	Vertical	Pass

Low Channel 30 MHz to 1 GHz, ANT H

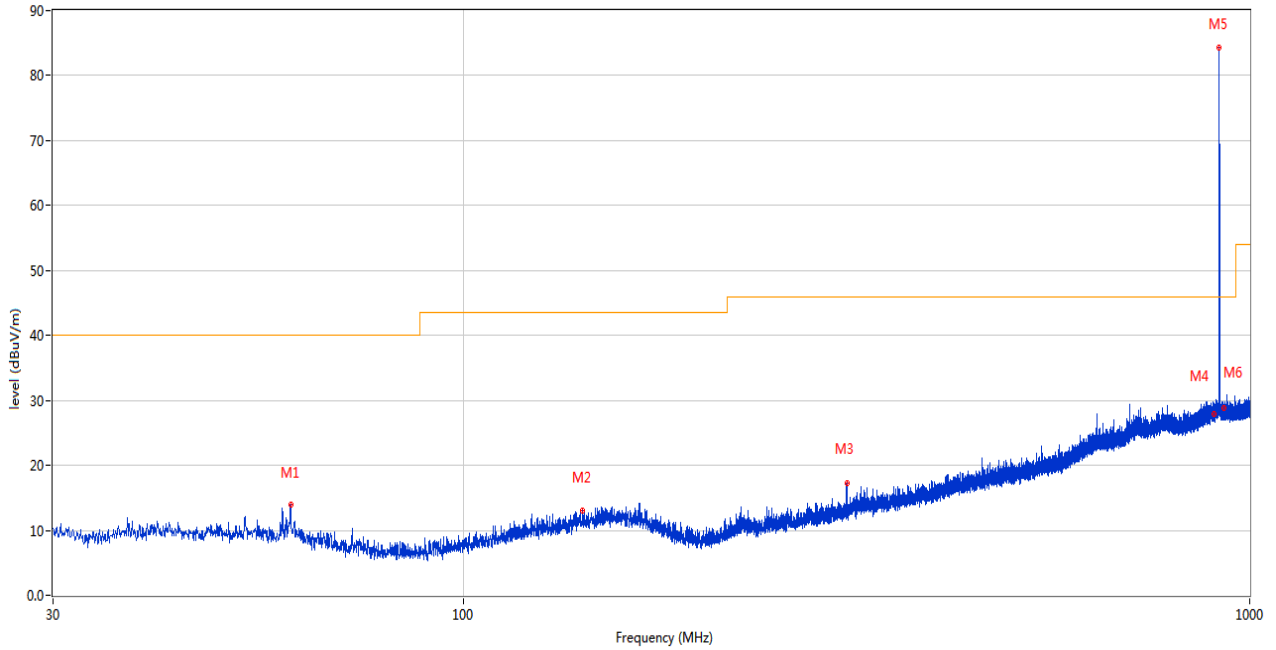
RE Test case_FCC Part 15B_FCC Part 15B Class B 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	60.215	13.22	-26.77	40.0	-26.78	Peak	202.00	201	Horizontal	Pass
2	138.204	13.90	-25.16	43.5	-29.60	Peak	154.00	201	Horizontal	Pass
3	306.741	16.33	-23.58	46.0	-29.67	Peak	291.00	201	Horizontal	Pass
4	902.000	29.53	-7.75	46.0	-16.47	Peak	0.00	201	Horizontal	Pass
5	904.067	76.54	-7.76	94.0	-17.46	QP	18.00	100	Horizontal	Pass
6	928.000	28.55	-7.74	46.0	-17.45	Peak	247.53	154	Horizontal	Pass

Middle Channel 30 MHz to 1 GHz, ANT V

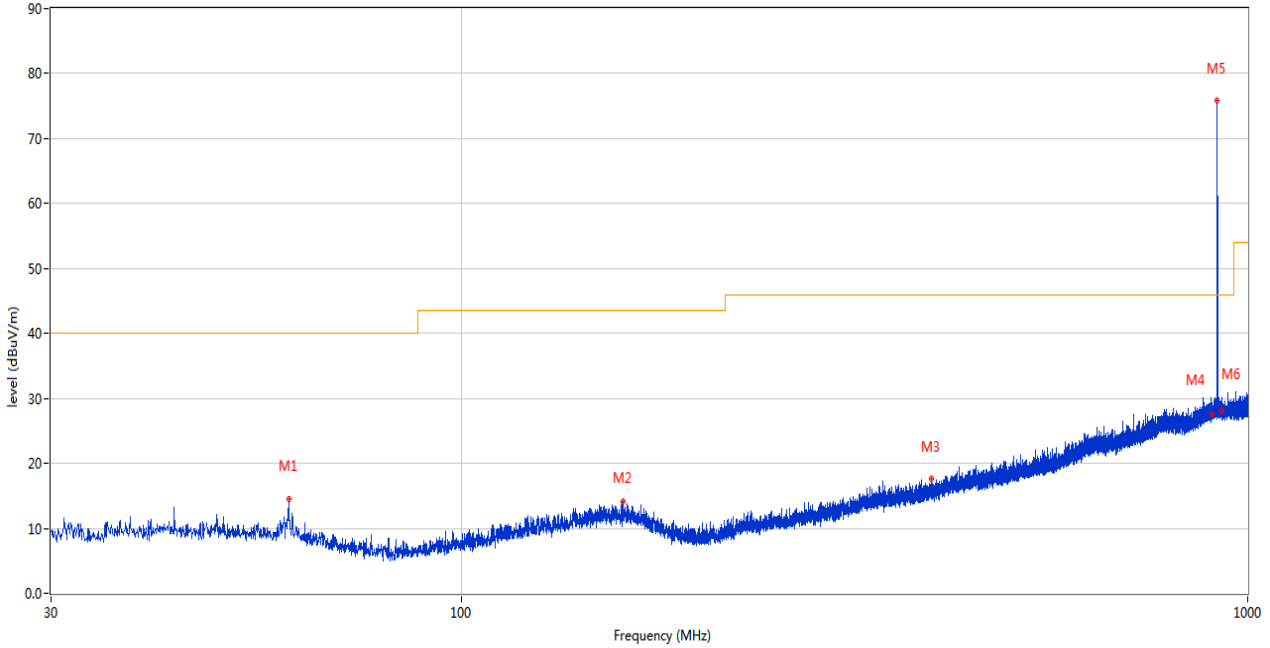
RE Test case_FCC Part 15B_FCC Part 15B Class B 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	60.215	13.88	-26.77	40.0	-26.12	Peak	277.00	201	Vertical	Pass
2	141.550	13.02	-24.86	43.5	-30.48	Peak	0.00	201	Vertical	Pass
3	307.032	17.29	-23.58	46.0	-28.71	Peak	105.00	201	Vertical	Pass
4	902.000	27.99	-7.75	46.0	-18.01	Peak	133.37	201	Vertical	Pass
5	915.028	84.22	-7.70	94.0	-9.78	QP	113.00	201	Vertical	Pass
6	928.000	28.82	-7.74	46.0	-17.18	Peak	105.00	201	Vertical	Pass

Middle Channel 30 MHz to 1 GHz, ANT H

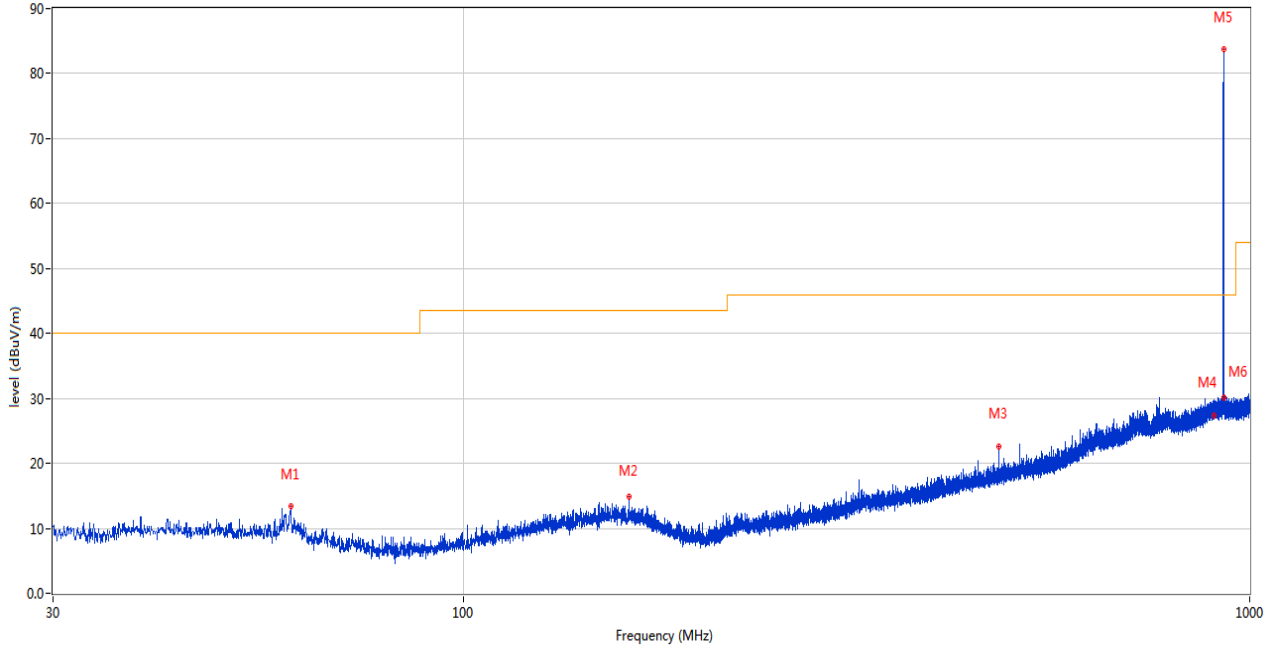
RE Test case_FCC Part 15B_FCC Part 15B Class B 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	60.215	14.58	-26.77	40.0	-25.42	Peak	333.00	100	Horizontal	Pass
2	160.174	14.09	-24.19	43.5	-29.41	Peak	0.00	201	Horizontal	Pass
3	396.030	17.65	-21.23	46.0	-28.35	Peak	128.00	100	Horizontal	Pass
4	902.000	27.53	-7.75	46.0	-18.47	Peak	49.88	100	Horizontal	Pass
5	915.076	75.78	-7.70	94.0	-18.22	QP	222.00	201	Horizontal	Pass
6	928.000	28.09	-7.74	46.0	-17.91	Peak	264.59	100	Horizontal	Pass

High Channel 30 MHz to 1 GHz, ANT V

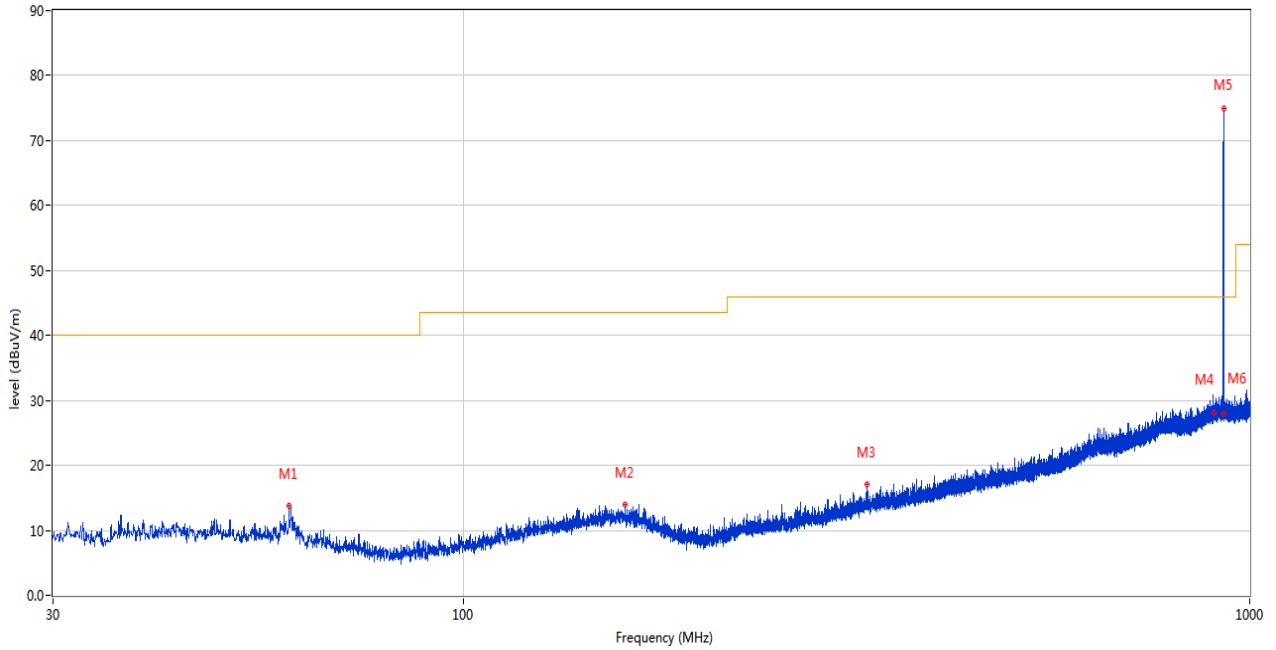
RE Test case_FCC Part 15B_FCC Part 15B Class B 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	60.215	13.33	-26.77	40.0	-26.67	Peak	0.00	201	Vertical	Pass
2	162.357	14.89	-24.40	43.5	-28.61	Peak	0.00	201	Vertical	Pass
3	480.031	22.54	-18.77	46.0	-23.46	Peak	178.00	100	Vertical	Pass
4	902.000	27.33	-7.75	46.0	-18.67	Peak	101.00	100	Vertical	Pass
5	926.038	83.74	-7.80	94.0	-10.26	QP	40.00	100	Vertical	Pass
6	928.000	30.06	-7.74	46.0	-15.94	Peak	174.00	201	Vertical	Pass

High Channel 30 MHz to 1 GHz, ANT H

RE Test case_FCC Part 15B_FCC Part 15B Class B 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	59.925	13.76	-26.73	40.0	-26.24	Peak	121.00	100	Horizontal	Pass
2	160.222	13.99	-24.19	43.5	-29.51	Peak	85.00	201	Horizontal	Pass
3	326.286	17.03	-22.84	46.0	-28.97	Peak	0.00	100	Horizontal	Pass
4	902.000	28.16	-7.75	46.0	-17.84	Peak	35.00	100	Horizontal	Pass
5	925.989	74.89	-7.80	94.0	-19.11	QP	187.00	201	Horizontal	Pass
6	928.000	27.98	-7.74	46.0	-18.02	Peak	10.08	201	Horizontal	Pass

Test Data and Plots (1 GHz ~ 10th Harmonic)

Note¹: The marked is the harmonic signal.

Note²: Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Note³: Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

Note⁴: Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20 dB from the applicable limit) and considered that's already beyond the background noise floor.

Note⁵: Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.

LOW CHANNEL 1 GHz to 10 GHz, ANT V

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1346.300	40.61	-17.49	74.0	-33.39	Peak	186.00	150	Vertical	Pass
1**	1346.300	30.35	-17.49	54.0	-23.65	AV	186.00	150	Vertical	Pass
2	2670.200	48.46	-11.18	74.0	-25.54	Peak	170.00	150	Vertical	Pass
2**	2670.200	38.34	-11.18	54.0	-15.66	AV	170.00	150	Vertical	Pass
3	4473.200	51.31	-3.65	74.0	-22.69	Peak	360.00	150	Vertical	Pass ^{Note 1}
3**	4473.200	41.20	-3.65	54.0	-12.80	AV	360.00	150	Vertical	Pass ^{Note 1}
4	5771.000	55.60	-1.96	74.0	-18.40	Peak	276.00	150	Vertical	Pass
4**	5771.000	47.97	-1.96	54.0	-6.03	AV	276.00	150	Vertical	Pass
5	7951.050	50.13	-2.12	74.0	-23.87	Peak	326.00	150	Vertical	Pass
5**	7951.050	41.33	-2.12	54.0	-12.67	AV	326.00	150	Vertical	Pass
6	11760.137	53.02	1.23	74.0	-20.98	Peak	326.00	150	Vertical	Pass
6**	11760.137	43.85	1.23	54.0	-10.15	AV	326.00	150	Vertical	Pass

LOW CHANNEL 1 GHz to 10 GHz, ANT H

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1266.900	39.39	-17.69	74.0	-34.61	Peak	79.00	150	Horizontal	Pass
1**	1266.900	30.15	-17.69	54.0	-23.85	AV	79.00	150	Horizontal	Pass
2	2655.300	46.98	-11.32	74.0	-27.02	Peak	278.00	150	Horizontal	Pass
2**	2655.300	38.06	-11.32	54.0	-15.94	AV	278.00	150	Horizontal	Pass
3	3616.200	48.72	-7.11	74.0	-25.28	Peak	142.00	150	Horizontal	Pass ^{Note 1}
3**	3616.200	43.46	-7.11	54.0	-10.54	AV	142.00	150	Horizontal	Pass ^{Note 1}
4	6268.200	54.90	-0.43	74.0	-19.10	Peak	129.00	150	Horizontal	Pass
4**	6268.200	45.50	-0.43	54.0	-8.50	AV	129.00	150	Horizontal	Pass
5	8616.612	50.85	-2.09	74.0	-23.15	Peak	50.00	150	Horizontal	Pass
5**	8616.612	41.57	-2.09	54.0	-12.43	AV	50.00	150	Horizontal	Pass
6	11035.350	52.71	-0.57	74.0	-21.29	Peak	32.00	150	Horizontal	Pass
6**	11035.350	43.23	-0.57	54.0	-10.77	AV	32.00	150	Horizontal	Pass

MIDDLE CHANNEL 1 GHz to 10 GHz, ANT V

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1300.800	40.22	-17.23	74.0	-33.78	Peak	54.00	150	Vertical	Pass
1**	1300.800	30.77	-17.23	54.0	-23.23	AV	54.00	150	Vertical	Pass
2	2176.700	45.62	-13.27	74.0	-28.38	Peak	119.00	150	Vertical	Pass
2**	2176.700	35.71	-13.27	54.0	-18.29	AV	119.00	150	Vertical	Pass
3	3953.600	48.73	-4.67	74.0	-25.27	Peak	0.00	150	Vertical	Pass ^{Note 1}
3**	3953.600	40.10	-4.67	54.0	-13.90	AV	0.00	150	Vertical	Pass ^{Note 1}
4	6689.200	55.25	-0.26	74.0	-18.75	Peak	62.00	150	Vertical	Pass
4**	6689.200	45.86	-0.26	54.0	-8.14	AV	62.00	150	Vertical	Pass
5	8590.451	50.69	-2.13	74.0	-23.31	Peak	115.00	150	Vertical	Pass
5**	8590.451	42.00	-2.13	54.0	-12.00	AV	115.00	150	Vertical	Pass
6	11392.137	52.46	-0.20	74.0	-21.54	Peak	115.00	150	Vertical	Pass
6**	11392.137	43.64	-0.20	54.0	-10.36	AV	115.00	150	Vertical	Pass

MIDDLE CHANNEL 1 GHz to 10 GHz, ANT H

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1294.900	39.86	-17.38	74.0	-34.14	Peak	297.00	150	Horizontal	Pass
1**	1294.900	30.59	-17.38	54.0	-23.41	AV	297.00	150	Horizontal	Pass
2	2374.100	45.67	-12.19	74.0	-28.33	Peak	101.00	150	Horizontal	Pass
2**	2374.100	36.01	-12.19	54.0	-17.99	AV	101.00	150	Horizontal	Pass
3	3704.600	49.12	-6.01	74.0	-24.88	Peak	142.00	150	Horizontal	Pass ^{Note 1}
3**	3704.600	39.20	-6.01	54.0	-14.80	AV	142.00	150	Horizontal	Pass ^{Note 1}
4	6274.000	54.93	-0.22	74.0	-19.07	Peak	247.00	150	Horizontal	Pass
4**	6274.000	45.78	-0.22	54.0	-8.22	AV	247.00	150	Horizontal	Pass
5	8571.763	51.29	-2.07	74.0	-22.71	Peak	268.00	150	Horizontal	Pass
5**	8571.763	41.80	-2.07	54.0	-12.20	AV	268.00	150	Horizontal	Pass
6	11753.813	53.16	1.02	74.0	-20.84	Peak	289.00	150	Horizontal	Pass
6**	11753.813	43.45	1.02	54.0	-10.55	AV	289.00	150	Horizontal	Pass

HIGH CHANNEL 1 GHz to 10 GHz, ANT V

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1345.200	40.64	-17.25	74.0	-33.36	Peak	360.00	150	Vertical	Pass
1**	1345.200	30.65	-17.25	54.0	-23.35	AV	360.00	150	Vertical	Pass
2	1991.100	42.58	-15.51	74.0	-31.42	Peak	62.00	150	Vertical	Pass
2**	1991.100	33.22	-15.51	54.0	-20.78	AV	62.00	150	Vertical	Pass
3	3682.600	48.76	-6.32	74.0	-25.24	Peak	139.00	150	Vertical	Pass ^{Note 1}
3**	3682.600	38.24	-6.32	54.0	-15.76	AV	139.00	150	Vertical	Pass ^{Note 1}
4	6997.600	55.87	0.22	74.0	-18.13	Peak	177.00	150	Vertical	Pass
4**	6997.600	46.69	0.22	54.0	-7.31	AV	177.00	150	Vertical	Pass
5	9451.225	51.03	-0.81	74.0	-22.97	Peak	212.00	150	Vertical	Pass
5**	9451.225	41.59	-0.81	54.0	-12.41	AV	212.00	150	Vertical	Pass
6	11434.974	52.64	-0.08	74.0	-21.36	Peak	360.00	150	Vertical	Pass
6**	11434.974	42.95	-0.08	54.0	-11.05	AV	360.00	150	Vertical	Pass

HIGH CHANNEL 1 GHz to 10 GHz, ANT H

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1268.000	39.72	-17.48	74.0	-34.28	Peak	360.00	150	Horizontal	Pass
1**	1268.000	30.50	-17.48	54.0	-23.50	AV	360.00	150	Horizontal	Pass
2	2331.200	44.80	-12.73	74.0	-29.20	Peak	12.00	150	Horizontal	Pass
2**	2331.200	36.24	-12.73	54.0	-17.76	AV	12.00	150	Horizontal	Pass
3	3704.000	49.51	-5.99	74.0	-24.49	Peak	159.00	150	Horizontal	Pass ^{Note 1}
3**	3704.000	42.96	-5.99	54.0	-11.04	AV	159.00	150	Horizontal	Pass ^{Note 1}
4	6401.000	53.94	-1.10	74.0	-20.06	Peak	134.00	150	Horizontal	Pass
4**	6401.000	45.39	-1.10	54.0	-8.61	AV	134.00	150	Horizontal	Pass
5	8529.500	50.93	-1.80	74.0	-23.07	Peak	185.00	150	Horizontal	Pass
5**	8529.500	41.51	-1.80	54.0	-12.49	AV	185.00	150	Horizontal	Pass
6	11568.088	52.94	-0.40	74.0	-21.06	Peak	360.00	150	Horizontal	Pass
6**	11568.088	42.70	-0.40	54.0	-11.30	AV	360.00	150	Horizontal	Pass

ANNEX B TEST SETUP PHOTOS

Please refer the document "BL-SZ21B1060-AR.PDF".

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document "BL-SZ21B1060-AW.PDF".

ANNEX D EUT INTERNAL PHOTOS

Please refer the document "BL-SZ21B1060-AI.PDF".

--END OF REPORT--