

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: Julie Zhu

Julie Zhu

Date Mar. 17, 2022

Approved by: Liao Jianming

Liao Jianming

(Technical Director)

Date Mar. 17, 2022

Report No.: BL-SZ21C1149-601

EUT Name: Hand Hygiene Sensor

Model Name: IT-373 (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)

HVIN: IT373B, IT-373 H

FCC ID: ST2-IT373B

ISED Number 6012A-IT373B

Test Conclusion: Pass

Test Date: Jan. 05, 2022 ~ Mar. 08, 2022

Date of Issue: Mar. 17, 2022

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Revision History		
Version	Issue Date	Revisions Content
<u>Rev. 01</u>	<u>Feb. 28, 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, A.3 and A.4</u>
<u>Rev. 03</u>	<u>Mar. 17, 2022</u>	<u>Add HVIN</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-373
Series Model Name	IT-373 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

Network and Wireless connectivity	RFID, 125KHz(Only TX)
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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			
Antenna 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

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:

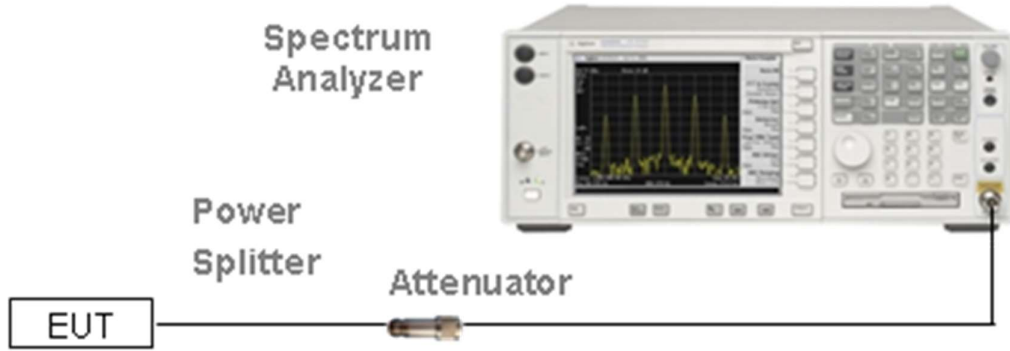
Relative Humidity	45% to 55%	
Atmospheric Pressure	100 kPa to 102 kPa	
Temperature	NT (Normal Temperature)	+22°C to +25°C
Working Voltage of the EUT	NV (Normal Voltage)	3.3 V

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	--	--

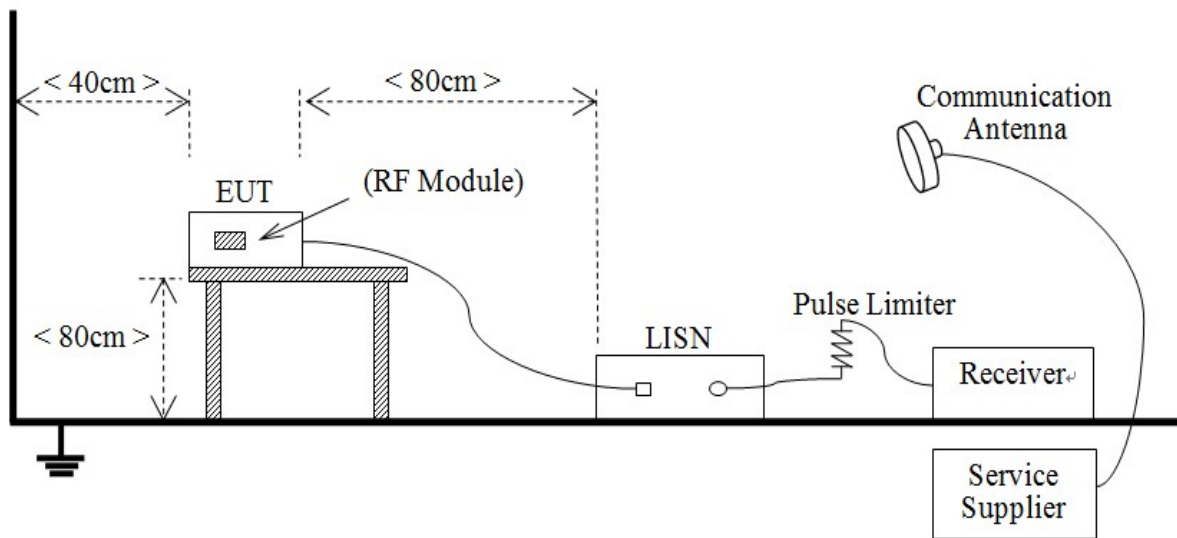
4.3 Description of Test Setup

4.3.1 For Antenna Port Test



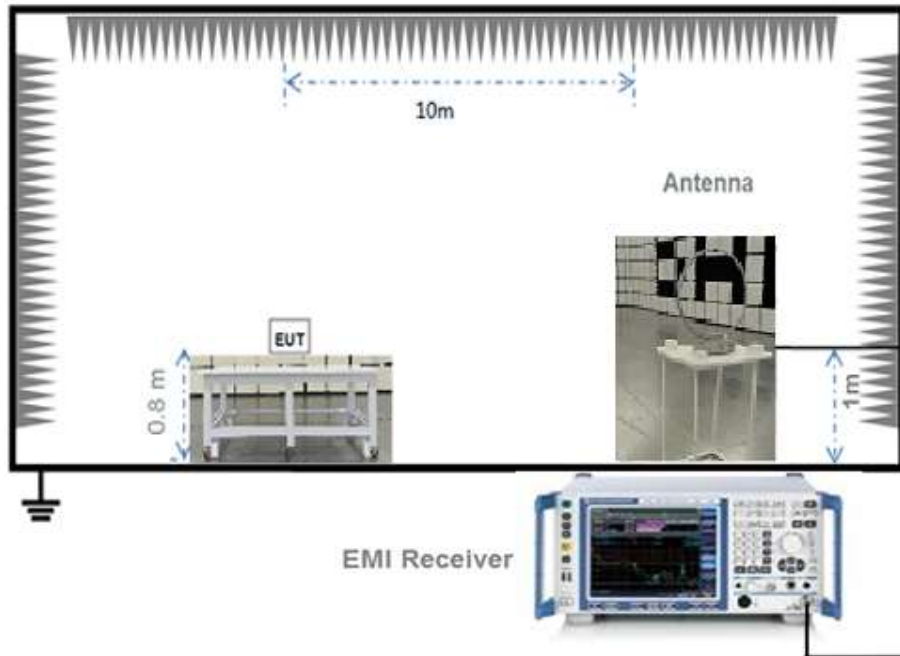
(Diagram 1)

4.3.2 For AC Power Supply Port Test



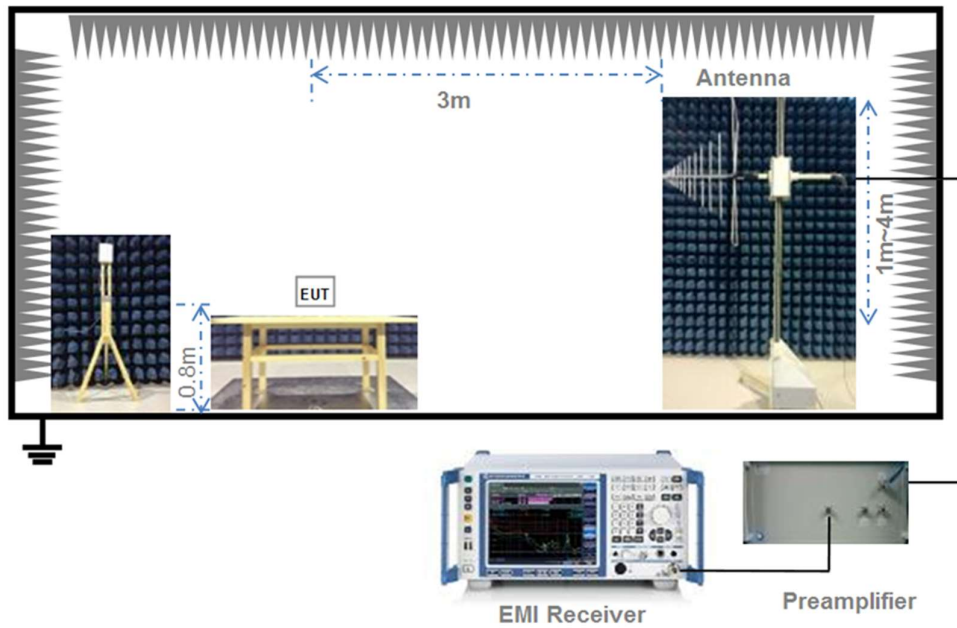
(Diagram 2)

4.3.3 For Radiated Test (Below 30 MHz)



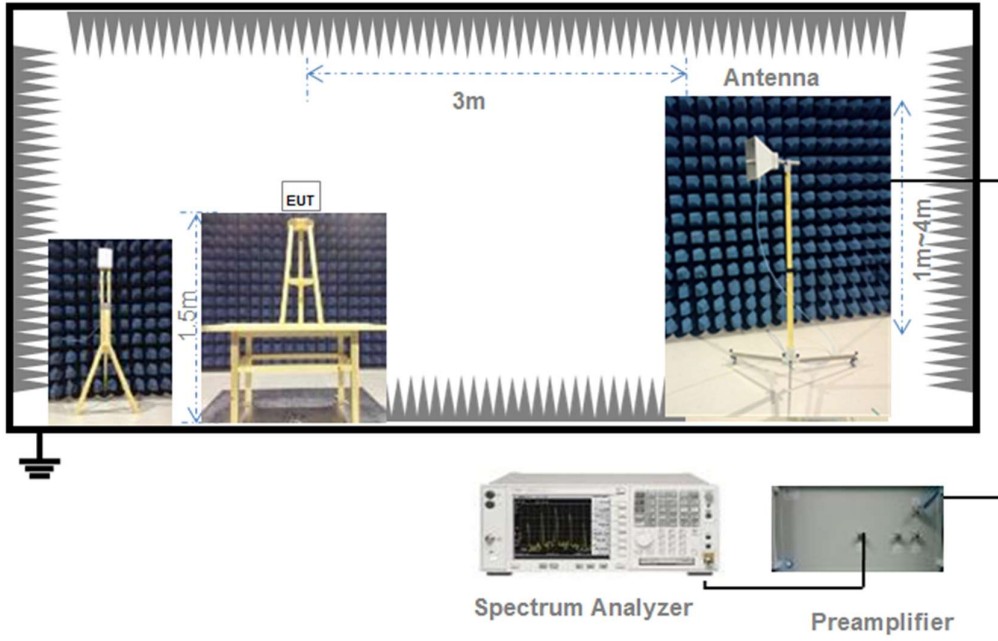
(Diagram 3)

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 (µV/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 (µV/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:

1. 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.
2. 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	96.600	90.061
Middle	915	97.500	89.672
High	926	101.700	90.397

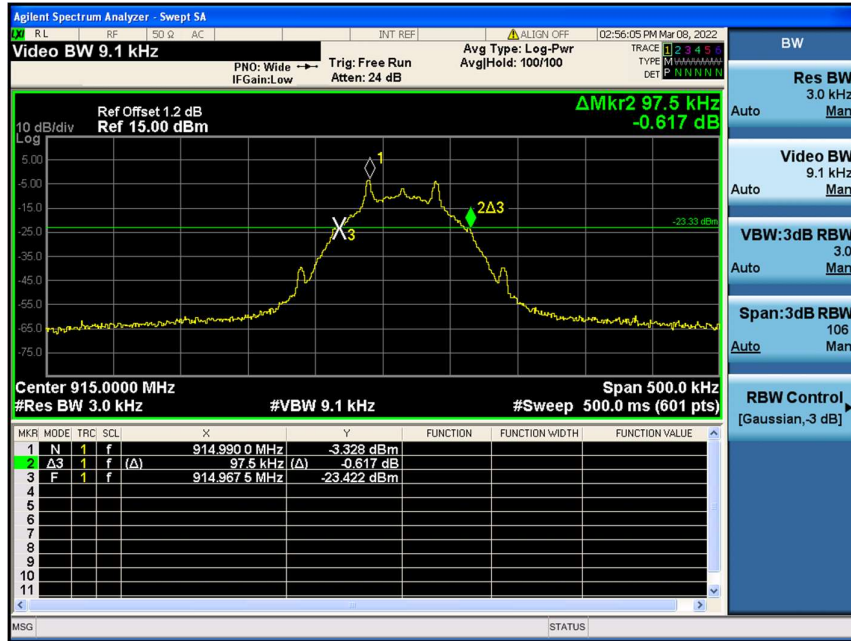
Test plots

20 dB Bandwidth

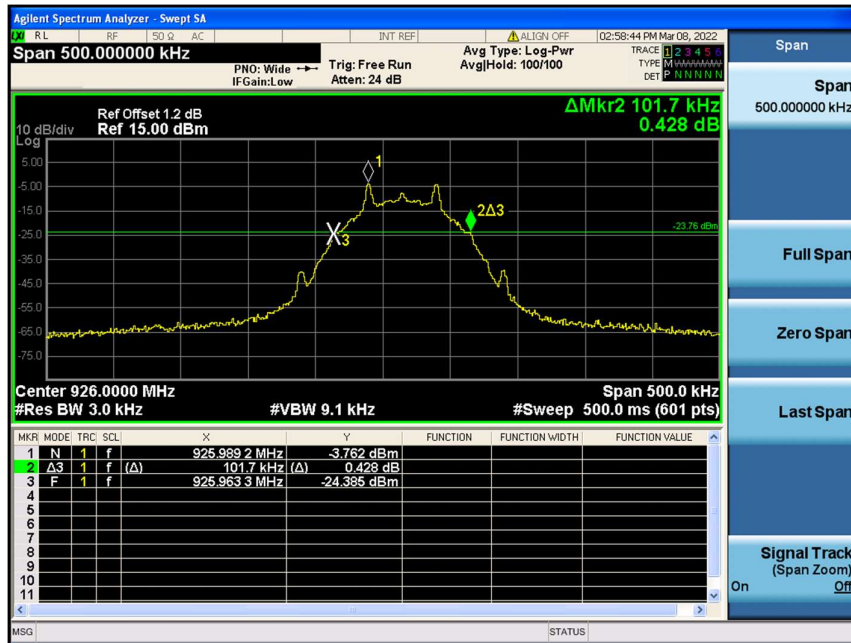
Low Channel



Middle Channel

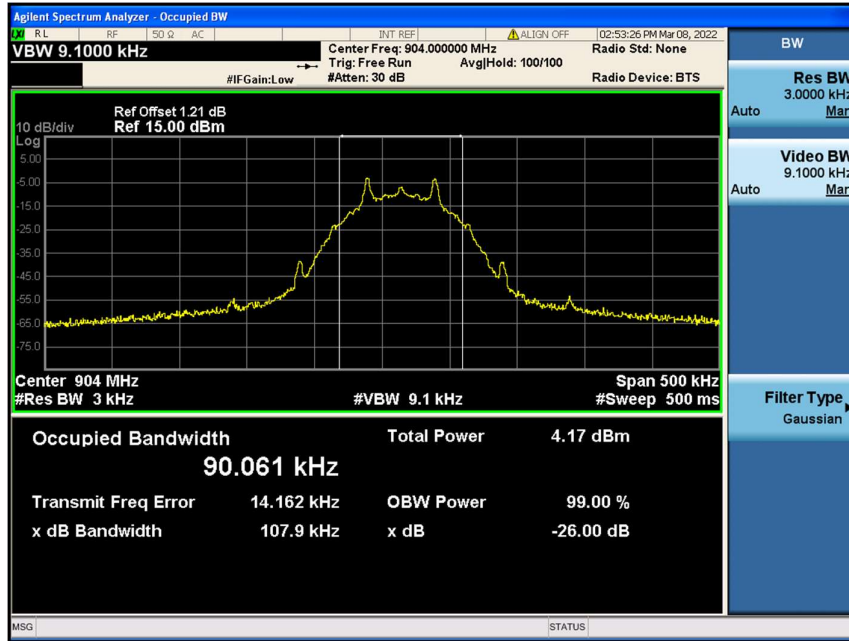


High Channel

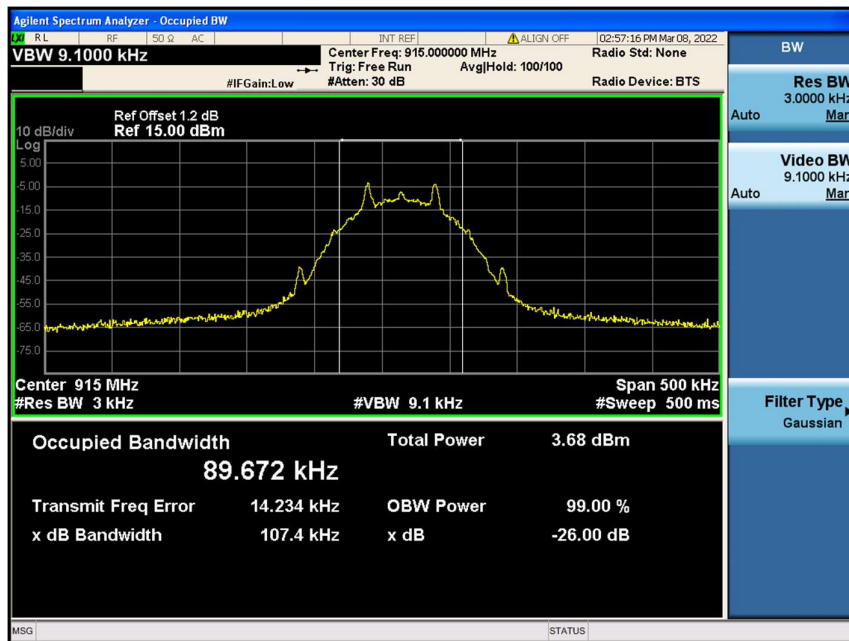


99% Bandwidth

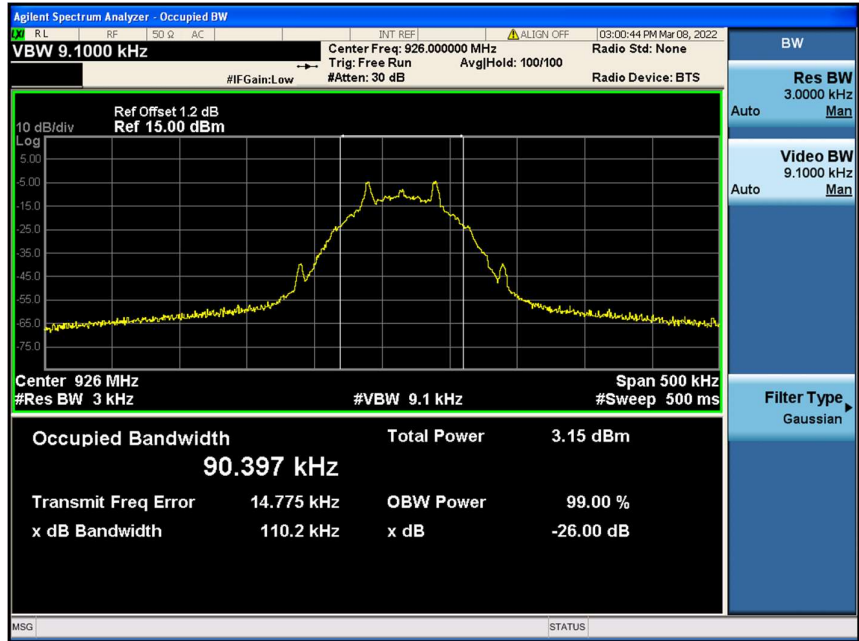
Low Channel



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	86.63	-7.76	94	-7.37	QP	Horizontal	Pass
	85.26	-7.76	94	-8.74	QP	Vertical	Pass
915	87.05	-7.70	94	-6.95	QP	Horizontal	Pass
	85.74	-7.70	94	-8.26	QP	Vertical	Pass
926	86.45	-7.80	94	-7.55	QP	Horizontal	Pass
	87.30	-7.80	94	-6.70	QP	Vertical	Pass

A.4 Radiated Emission and Bandedge Measurement

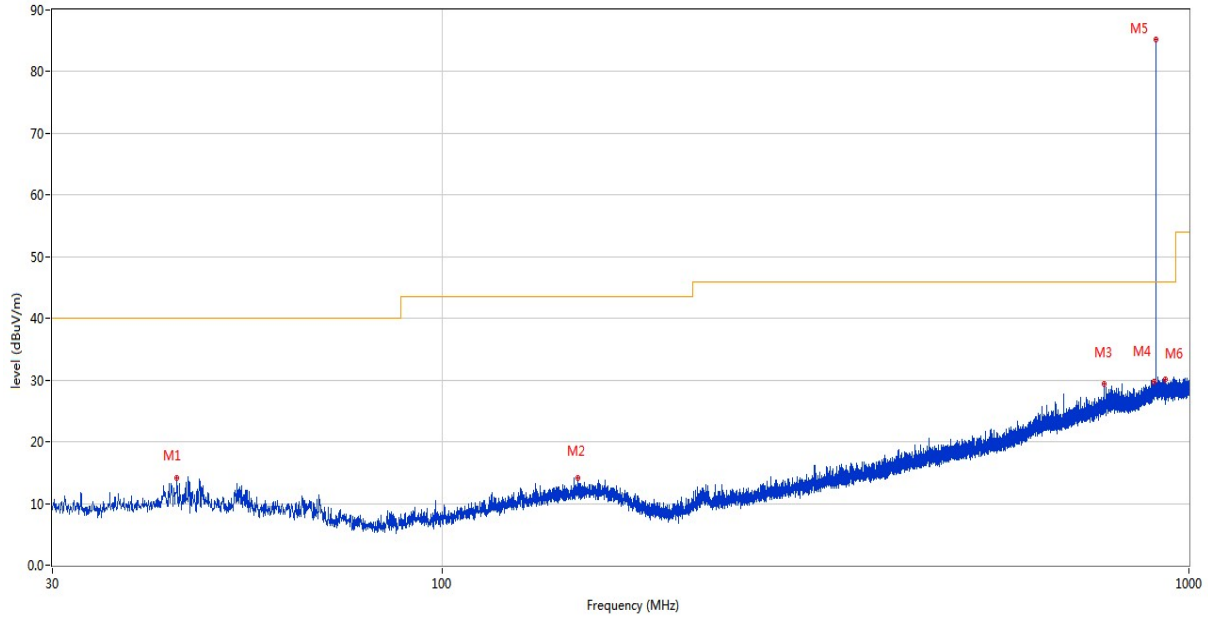
The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

Test Data and Plots (30 MHz ~ 1 GHz)

Note: The bold frequency is the fundamental.

Low Channel 30 MHz to 1 GHz, ANT V

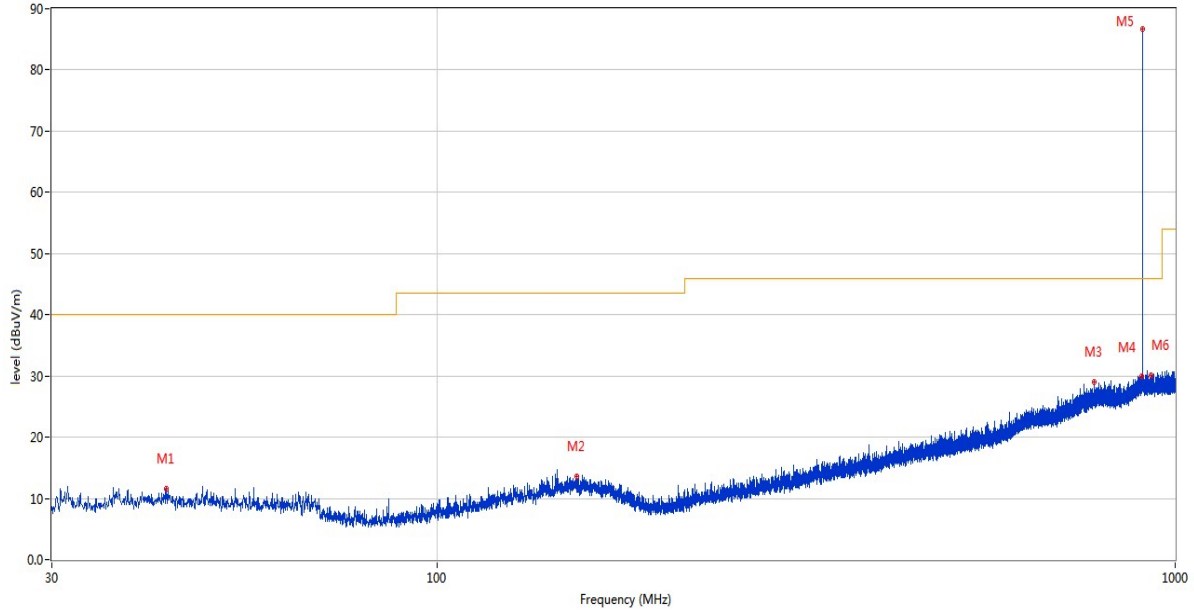
RE Test case_FCC Part 15C_FCC 15.249(2.4G)_30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	44.065	14.23	-26.03	40.0	-25.77	Peak	171.00	100	Vertical	Pass
2	151.735	14.06	-24.22	43.5	-29.44	Peak	335.00	100	Vertical	Pass
3	770.498	29.38	-10.19	46.0	-16.62	Peak	54.00	200	Vertical	Pass
4	902.000	29.74	-7.78	46.0	-16.26	Peak	66.00	200	Vertical	Pass
5	904.018	85.26	-7.76	94.0	-8.74	QP	0.00	200	Vertical	Pass
6	928.000	30.18	-7.73	46.0	-15.82	Peak	217.00	200	Vertical	Pass

Low Channel 30 MHz to 1 GHz, ANT H

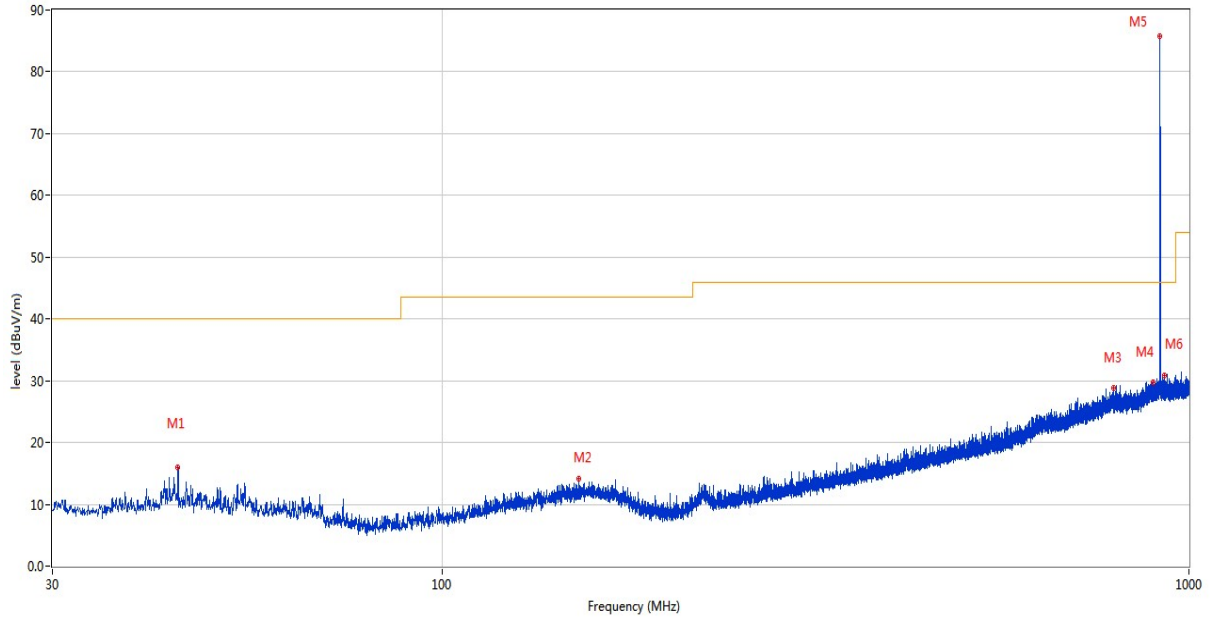
RE Test case_FCC Part 15C_FCC 15.249(2.4G)_30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	42.852	11.15	-25.95	40.0	-28.85	Peak	330.00	100	Horizontal	Pass
2	154.645	13.56	-24.18	43.5	-29.94	Peak	278.00	100	Horizontal	Pass
3	776.415	28.94	-9.94	46.0	-17.06	Peak	103.00	200	Horizontal	Pass
4	902.000	30.02	-7.77	46.0	-15.98	Peak	0.00	200	Horizontal	Pass
5	904.018	86.63	-7.76	94.0	-7.37	QP	33.00	100	Horizontal	Pass
6	928.000	30.17	-7.74	46.0	-15.83	Peak	67.00	200	Horizontal	Pass

Middle Channel 30 MHz to 1 GHz, ANT V

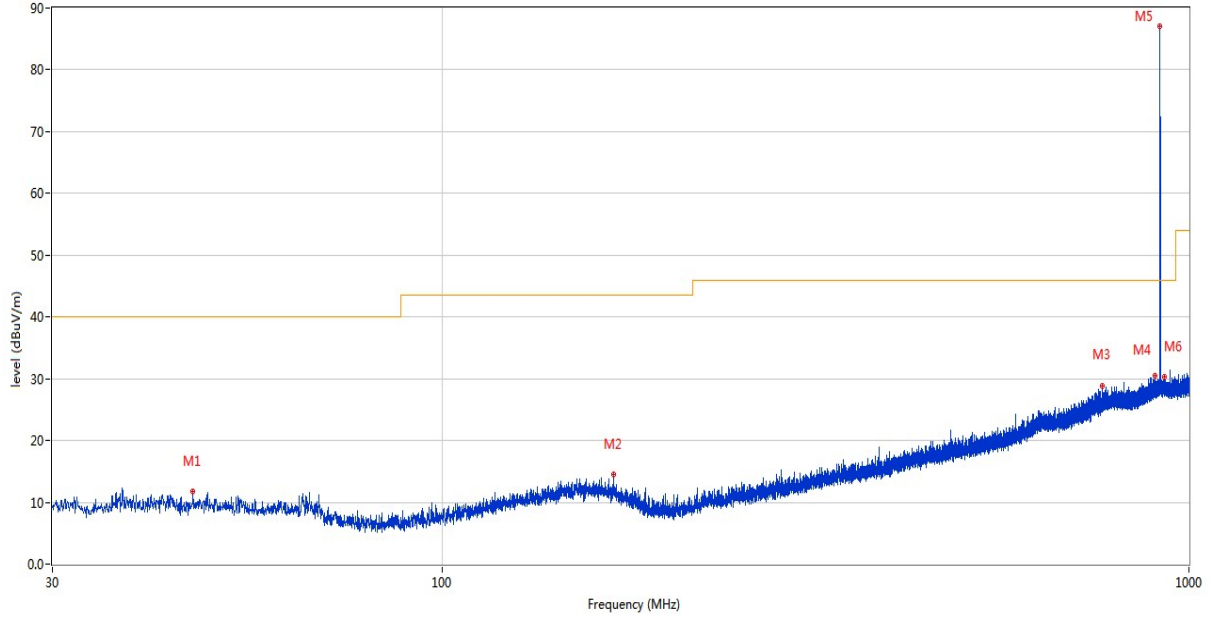
RE Test case_FCC Part 15C_FCC 15.249_30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	44.211	15.93	-26.04	40.0	-24.07	Peak	28.00	100	Vertical	Pass
2	152.074	14.23	-24.21	43.5	-29.27	Peak	232.00	200	Vertical	Pass
3	793.293	28.89	-9.91	46.0	-17.11	Peak	103.00	100	Vertical	Pass
4	902.000	29.80	-7.88	46.0	-16.20	Peak	73.00	200	Vertical	Pass
5	915.028	85.74	-7.70	94.0	-8.26	QP	0.00	200	Vertical	Pass
6	928.000	30.77	-7.74	46.0	-15.23	Peak	231.00	100	Vertical	Pass

Middle Channel 30 MHz to 1 GHz, ANT H

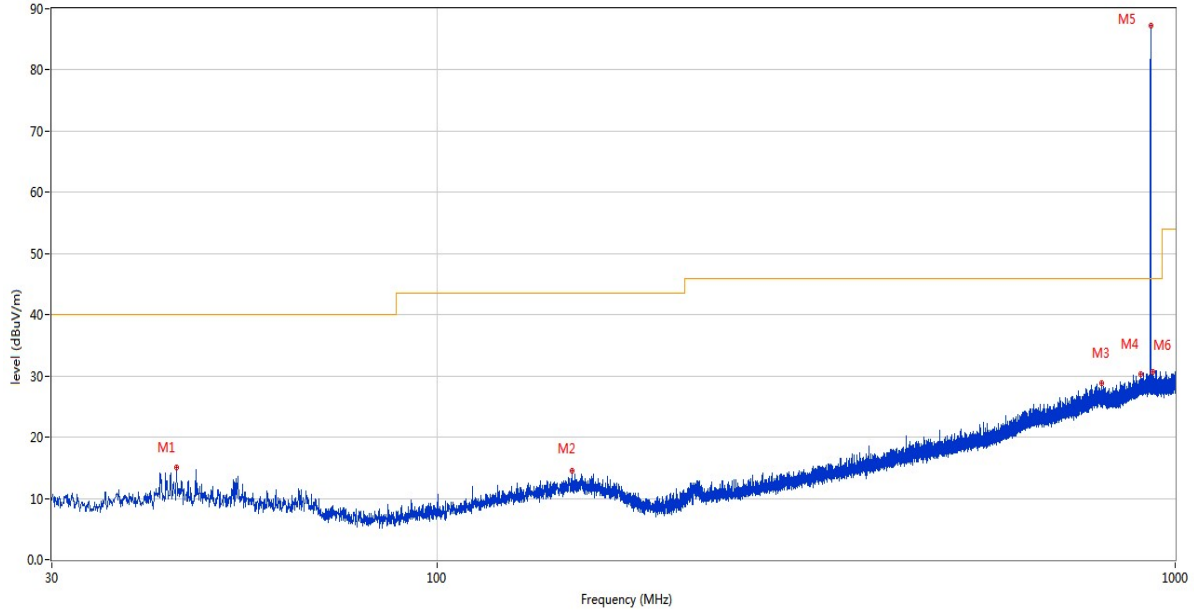
RE Test case_FCC Part 15C_FCC 15.249_30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	46.296	11.68	-26.05	40.0	-28.32	Peak	78.00	100	Horizontal	Pass
2	169.534	14.54	-24.92	43.5	-28.96	Peak	0.00	200	Horizontal	Pass
3	764.630	28.92	-10.53	46.0	-17.08	Peak	54.00	100	Horizontal	Pass
4	902.000	30.48	-7.75	46.0	-15.52	Peak	0.00	200	Horizontal	Pass
5	915.028	87.05	-7.70	94.0	-6.95	QP	30.00	100	Horizontal	Pass
6	928.000	30.27	-7.86	46.0	-15.73	Peak	299.00	100	Horizontal	Pass

High Channel 30 MHz to 1 GHz, ANT V

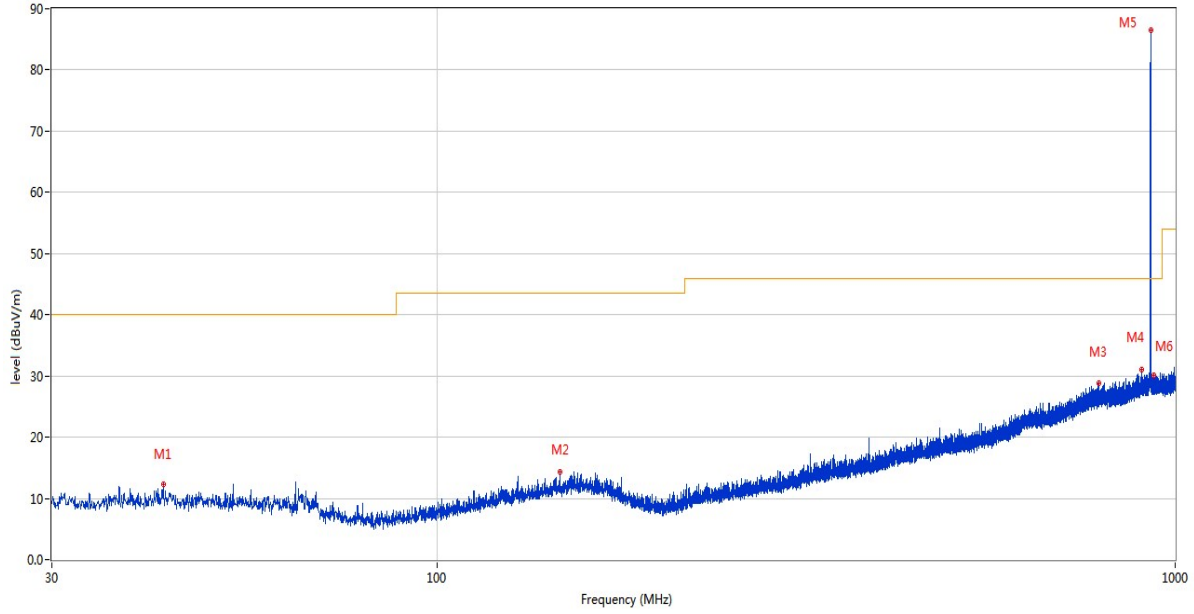
RE Test case_FCC Part 15C_FCC 15.249_30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	44.259	14.99	-26.04	40.0	-25.01	Peak	289.00	100	Vertical	Pass
2	152.317	14.44	-24.21	43.5	-29.06	Peak	263.00	200	Vertical	Pass
3	795.718	28.81	-10.05	46.0	-17.19	Peak	193.00	200	Vertical	Pass
4	902.000	30.36	-7.77	46.0	-15.64	Peak	100.00	200	Vertical	Pass
5	925.989	87.30	-7.80	94.0	-6.70	QP	0.00	200	Vertical	Pass
6	928.000	30.68	-7.87	46.0	-15.32	Peak	0.00	200	Vertical	Pass

High Channel 30 MHz to 1 GHz, ANT H

RE Test case_FCC Part 15C_FCC 15.249_30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	42.513	12.33	-25.93	40.0	-27.67	Peak	358.00	100	Horizontal	Pass
2	146.400	14.24	-24.62	43.5	-29.26	Peak	0.00	200	Horizontal	Pass
3	788.006	28.92	-9.68	46.0	-17.08	Peak	360.00	200	Horizontal	Pass
4	902.000	31.09	-7.77	46.0	-14.91	Peak	0.00	200	Horizontal	Pass
5	925.989	86.45	-7.80	94.0	-7.55	QP	12.00	100	Horizontal	Pass
6	928.000	30.20	-7.91	46.0	-15.80	Peak	94.00	100	Horizontal	Pass

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

Note 1: The marked is the harmonic signal.

Note 2: Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Note 3: 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.

Note 4: 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.

Note 5: 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)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1808.100	41.54	-16.80	74.0	-32.46	Peak	0.00	150	Vertical	Pass
1**	1808.100	38.31	-16.80	54.0	-15.69	AV	0.00	150	Vertical	Pass
2	3679.600	47.46	-6.30	74.0	-26.54	Peak	194.00	150	Vertical	Pass
2**	3679.600	38.62	-6.30	54.0	-15.38	AV	194.00	150	Vertical	Pass
3	5387.600	52.28	-2.58	74.0	-21.72	Peak	21.00	150	Vertical	Pass
3**	5387.600	43.10	-2.58	54.0	-10.90	AV	21.00	150	Vertical	Pass
4	6276.200	53.53	-0.24	74.0	-20.47	Peak	352.00	150	Vertical	Pass
4**	6276.200	43.94	-0.24	54.0	-10.06	AV	352.00	150	Vertical	Pass
5	7641.550	50.16	-3.49	74.0	-23.84	Peak	11.00	150	Vertical	Pass
5**	7641.550	39.49	-3.49	54.0	-14.51	AV	11.00	150	Vertical	Pass
6	8504.350	51.20	-1.37	74.0	-22.80	Peak	0.00	150	Vertical	Pass
6**	8504.350	41.36	-1.37	54.0	-12.64	AV	0.00	150	Vertical	Pass

LOW CHANNEL 1 GHz to 10 GHz, ANT H

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1808.100	40.04	-16.80	74.0	-33.96	Peak	316.00	150	Horizontal	Pass
1**	1808.100	34.27	-16.80	54.0	-19.73	AV	316.00	150	Horizontal	Pass
2	2711.600	43.86	-11.19	74.0	-30.14	Peak	233.00	150	Horizontal	Pass
2**	2711.600	35.74	-11.19	54.0	-18.26	AV	233.00	150	Horizontal	Pass
3	3616.400	49.90	-7.11	74.0	-24.10	Peak	313.00	150	Horizontal	Pass
3**	3616.400	48.41	-7.11	54.0	-5.59	AV	313.00	150	Horizontal	Pass
4	6675.600	54.41	-0.63	74.0	-19.59	Peak	249.00	150	Horizontal	Pass
4**	6675.600	45.43	-0.63	54.0	-8.57	AV	249.00	150	Horizontal	Pass
5	8040.700	51.48	-2.81	74.0	-22.52	Peak	269.00	150	Horizontal	Pass
5**	8040.700	41.16	-2.81	54.0	-12.84	AV	269.00	150	Horizontal	Pass
6	8606.650	50.67	-2.16	74.0	-23.33	Peak	49.00	150	Horizontal	Pass
6**	8606.650	41.49	-2.16	54.0	-12.51	AV	49.00	150	Horizontal	Pass

MIDDLE CHANNEL 1 GHz to 10 GHz, ANT V

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1830.100	42.57	-16.69	74.0	-31.43	Peak	29.00	150	Vertical	Pass
1**	1830.100	37.75	-16.69	54.0	-16.25	AV	29.00	150	Vertical	Pass
2	3015.000	45.25	-8.40	74.0	-28.75	Peak	48.00	150	Vertical	Pass
2**	3015.000	36.01	-8.40	54.0	-17.99	AV	48.00	150	Vertical	Pass
3	5761.800	52.56	-1.88	74.0	-21.44	Peak	100.00	150	Vertical	Pass
3**	5761.800	42.65	-1.88	54.0	-11.35	AV	100.00	150	Vertical	Pass
4	6680.800	53.93	-0.52	74.0	-20.07	Peak	23.00	150	Vertical	Pass
4**	6680.800	45.05	-0.52	54.0	-8.95	AV	23.00	150	Vertical	Pass
5	7908.850	49.56	-2.39	74.0	-24.44	Peak	346.00	150	Vertical	Pass
5**	7908.850	39.81	-2.39	54.0	-14.19	AV	346.00	150	Vertical	Pass
6	8918.651	51.12	-0.37	74.0	-22.88	Peak	203.00	150	Vertical	Pass
6**	8918.651	41.10	-0.37	54.0	-12.90	AV	203.00	150	Vertical	Pass

MIDDLE CHANNEL 1 GHz to 10 GHz, ANT H

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1829.800	39.80	-16.70	74.0	-34.20	Peak	314.00	150	Horizontal	Pass
1**	1829.800	34.11	-16.70	54.0	-19.89	AV	314.00	150	Horizontal	Pass
2	2745.100	45.01	-10.88	74.0	-28.99	Peak	60.00	150	Horizontal	Pass
2**	2745.100	38.23	-10.88	54.0	-15.77	AV	60.00	150	Horizontal	Pass
3	3660.200	51.08	-6.83	74.0	-22.92	Peak	349.00	150	Horizontal	Pass
3**	3660.200	48.49	-6.83	54.0	-5.51	AV	349.00	150	Horizontal	Pass
4	6275.000	54.31	-0.26	74.0	-19.69	Peak	360.00	150	Horizontal	Pass
4**	6275.000	44.64	-0.26	54.0	-9.36	AV	360.00	150	Horizontal	Pass
5	7952.650	50.14	-2.13	74.0	-23.86	Peak	204.00	150	Horizontal	Pass
5**	7952.650	41.84	-2.13	54.0	-12.16	AV	204.00	150	Horizontal	Pass
6	8500.900	51.56	-1.28	74.0	-22.44	Peak	99.00	150	Horizontal	Pass
6**	8500.900	41.18	-1.28	54.0	-12.82	AV	99.00	150	Horizontal	Pass

HIGH CHANNEL 1 GHz to 10 GHz, ANT V

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1851.700	41.50	-16.60	74.0	-32.50	Peak	0.00	150	Vertical	Pass
1**	1851.700	35.59	-16.60	54.0	-18.41	AV	0.00	150	Vertical	Pass
2	3685.200	46.90	-6.14	74.0	-27.10	Peak	49.00	150	Vertical	Pass
2**	3685.200	38.57	-6.14	54.0	-15.43	AV	49.00	150	Vertical	Pass
3	5696.200	52.20	-2.08	74.0	-21.80	Peak	49.00	150	Vertical	Pass
3**	5696.200	42.05	-2.08	54.0	-11.95	AV	49.00	150	Vertical	Pass
4	6685.200	54.45	-0.19	74.0	-19.55	Peak	166.00	150	Vertical	Pass
4**	6685.200	44.59	-0.19	54.0	-9.41	AV	166.00	150	Vertical	Pass
5	7962.400	50.86	-2.81	74.0	-23.14	Peak	323.00	150	Vertical	Pass
5**	7962.400	40.50	-2.81	54.0	-13.50	AV	323.00	150	Vertical	Pass
6	8588.500	50.97	-2.11	74.0	-23.03	Peak	194.00	150	Vertical	Pass
6**	8588.500	42.09	-2.11	54.0	-11.91	AV	194.00	150	Vertical	Pass

HIGH CHANNEL 1 GHz to 10 GHz, ANT H

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1851.800	40.68	-16.60	74.0	-33.32	Peak	297.00	150	Horizontal	Pass
1**	1851.800	34.11	-16.60	54.0	-19.89	AV	297.00	150	Horizontal	Pass
2	2778.000	44.21	-10.42	74.0	-29.79	Peak	360.00	150	Horizontal	Pass
2**	2778.000	38.01	-10.42	54.0	-15.99	AV	360.00	150	Horizontal	Pass
3	3704.200	52.16	-6.00	74.0	-21.84	Peak	338.00	150	Horizontal	Pass
3**	3704.200	49.10	-6.00	54.0	-4.90	AV	338.00	150	Horizontal	Pass
4	6096.600	53.09	-1.82	74.0	-20.91	Peak	338.00	150	Horizontal	Pass
4**	6096.600	43.50	-1.82	54.0	-10.50	AV	338.00	150	Horizontal	Pass
5	7910.500	50.11	-2.36	74.0	-23.89	Peak	26.00	150	Horizontal	Pass
5**	7910.500	41.23	-2.36	54.0	-12.77	AV	26.00	150	Horizontal	Pass
6	8636.650	51.20	-1.84	74.0	-22.80	Peak	80.00	150	Horizontal	Pass
6**	8636.650	42.42	-1.84	54.0	-11.58	AV	80.00	150	Horizontal	Pass

ANNEX B TEST SETUP PHOTOS

Please refer the document "BL-SZ21C1149-AR.PDF".

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document "BL-SZ21C1149-AW.PDF".

ANNEX D EUT INTERNAL PHOTOS

Please refer the document "BL-SZ21C1149-AI.PDF".

--END OF REPORT--