



Test Report No:
2450475R-RFUSV08S-A

TEST REPORT

FCC Rules&Regulations

Product Name	Keypad
Brand Name	SimpliSafe
Model No.	SSKP3
FCC ID	U9K-KP3010
Applicant's Name / Address	SimpliSafe, Inc 100 Summer Street, Suite 300, Boston Massachusetts 02110 United States
Manufacturer's Name / Address	SimpliSafe, Inc 100 Summer Street, Suite 300, Boston Massachusetts 02110 United States
Test Method Requested, Standard	FCC CFR Title 47 Part 15 Subpart C Section 15.231 ANSI C63.10-2013
Verdict Summary	IN COMPLIANCE
Documented By	 Vera Hsu
Approved By	 Rueyyan Lin
Date of Receipt	May 20, 2024
Date of Issue	Jul. 04, 2024
Report Version	V1.0

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Competences and Guarantees

DEKRA is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and maintenance program for its measurement equipment.

DEKRA guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated in the report and it is based on the knowledge and technical facilities available at DEKRA at the time of performance of the test.

DEKRA is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

IMPORTANT: No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA.

General Conditions

1. The test results relate only to the samples tested.
2. The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.
3. This report must not be used to claim product endorsement by TAF or any agency of the government.
4. The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.
5. Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Revision History

Version	Description	Issued Date
V1.0	Initial issue of report	Jul. 04, 2024

Summary of Test Result

Report Clause	Test Items	Result (PASS/FAIL)	Remark
-	AC Power Line Conducted Emission	N/A	Note
5	Field Strength of Fundamental Emissions	PASS	-
3	Emission Bandwidth	PASS	-
4	Transmit Time	PASS	-
6	Radiated Emission	PASS	-
Note: The EUT was powered by DC (battery). It's not necessary to apply to AC Power Line Conducted Emission test.			

Comments and Explanations
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Comments and Remarks

The product specification and testing instructions for the EUT declared in the report are provided by the manufacturer who will take all responsibilities for the accuracy.

1. General Information

1.1. EUT Description

Frequency	433.92 MHz
Channel Number	1 Channel
Type of Modulation	FSK

EUT Operational Condition	Repeated Transmit
Supply Voltage/Frequency	6V DC
RF HW Version	PCA-101100-00: A
FW Version	2.13.12.35
FW Hash	9f2d745a
Center Frequency	433.92 MHz
PA Power level	FW Default: Decimal 06 / Hex 0x06 CLI Modification: Decimal 05 / Hex 0x05
PA Mode	Hex 0x18
PA Bias Clock Duty	Hex 0xC0
Frequency Deviation	+/- 13kHz
Data Rate	Up to 4.8 kbps
Device's Maximum Packet Type	keypad_wifi_connect_req_t
Device's Maximum Packet Length (bytes) / (ms)	82 bytes / 136 ms
Action during testing:	CLI command: radio send-short 71 2000 860

Accessories Information				
No.	Equipment Name	Brand Name	Model No.	Rating
1	Battery*4	DURACELL	LR6	DC 1.5V

Antenna Information			
Ant.	Brand Name	Model No.	Type
1	Simplisafe	SSKP3	Monopole

1.2. EUT Information

EUT Power Type	From Battery
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1.3. Testing Applied Standards

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

- ♦ 47 CFR FCC Part 15
- ♦ ANSI C63.10-2013

The following reference test guidance is not within the scope of accreditation of TAF:

- ♦ KDB 414788 D01 v01r01

1.4. Testing Location Information

Testing Location Information		
Test Laboratory : DEKRA Testing and Certification Co., Ltd.		
1 (TAF: 3024)	ADD: No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C. TEL: +886-3-582-8001 FAX: +886-3-582-8958 Test site Designation No. TW3024 with FCC. Conformity Assessment Body Identifier (CABID) TW3024 with ISED.	
2 (TAF: 3024)	ADD: No.372, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C. TEL: +886-3-582-8001 FAX: +886-3-582-8958 Test site Designation No. TW3024 with FCC. Conformity Assessment Body Identifier (CABID) TW3024 with ISED.	
Test site number for address 1 includes HC-SR02. Test site number for address 2 includes HC-CB02, HC-CB03, HC-CB04, HC-SR10 and HC-SR12.		

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
RF Conducted Emission	HC-CB04	Ling Chen	21.8~24 / 48~59	2024/05/23~2024/05/27
Radiated Emission	HC-CB04	Ling Chen	21.8~24 / 48~59	2024/05/23~2024/05/27

1.5. Measurement Uncertainty

Uncertainties have been calculated according to the DEKRA internal document with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)).

Test item	Uncertainty
Field Strength of Fundamental Emissions	± 3.52 dB
Emission Bandwidth	± 282.55 Hz
Transmit Time	± 19.555 ms
Radiated Emission	± 3.52 dB below 1GHz ± 3.56 dB above 1GHz

1.6. List of Test Equipment

HC-CB04

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Cal. Date	Next Cal. Date
Signal and Spectrum Analyzer	R&S	FSVA40	101435	10 Hz-40 GHz	2024/05/17	2025/05/16
Signal Analyzer	R&S	FSVA40	101455	10 Hz-40 GHz	2023/10/03	2024/10/02
EXA Signal Analyzer	Keysight	N9010A	MY51440132	10 Hz-44 GHz	2023/12/11	2024/12/10
Trilog Broadband Antenna	Schwarzbeck	VULB 9168	1209	30 MHz-2 GHz	2023/06/13	2024/06/12
Pre-Amplifier	EMCI	EMC01820I	980364	30M-8 GHz,20 dB	2023/06/06	2024/06/05
Coaxial Cable(11m)	Suhner	SF102_SF104	HC-CB04	30M-18 GHz	2023/08/08	2024/08/07
EMI Test Receiver	R&S	ESR7	102260	10 Hz-7 GHz	2023/11/27	2024/11/26
Magnetic Loop Antenna	Teseq	HLA 6121	44287	0.01-30 MHz	2023/10/13	2024/10/12
Coaxial Cable(11m)	Suhner	SF102_SF104	HC-CB04	30M-18 GHz	2023/08/08	2024/08/07
DEKRA Testing System	DEKRA	Version 2.0	HC-CB04	N/A	N/A	N/A
Radiated Software	Audix	e3 V9	HC-CB02_1	N/A	N/A	N/A

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

2. Test Configuration of EUT

2.1. Test Condition

EUT Operational Condition	
Testing Voltage	DC 6V

Test Item	Test Condition
Field Strength of Fundamental Emissions	CLI command: radio send-short 71 2000 860
Emission Bandwidth	CLI command: radio send-short 71 2000 860
Transmit Time	CLI command: radio send-short 71 2000 860
Radiated Emission	CLI command: radio send-short 71 2000 860

2.2. The Worst Case Measurement Configuration

Tests Item	Emission Bandwidth Transmit Time
Test Condition	Radiated measurement

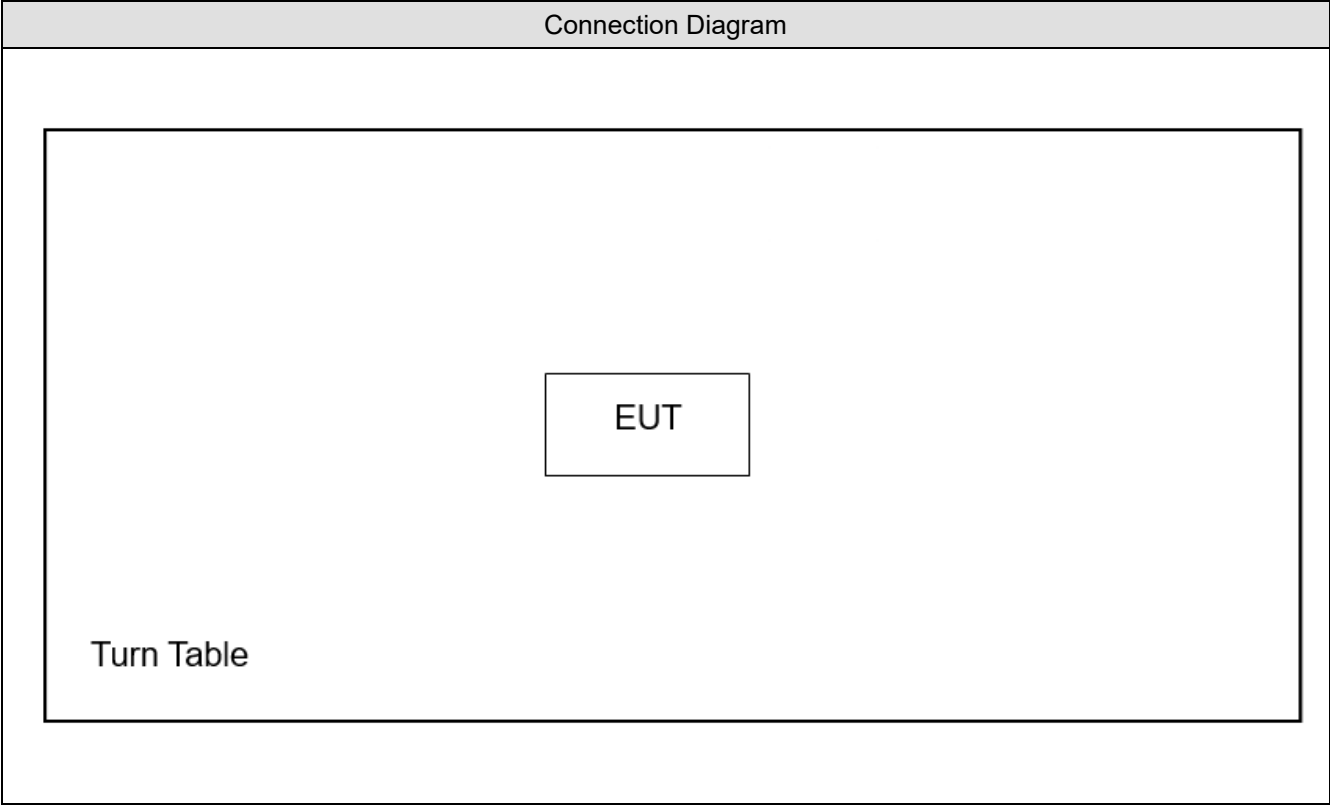
Tests Item	Field Strength of Fundamental Emissions Radiated Emission
Test Condition	Radiated measurement
Operating Mode < 1GHz	Transmit
Operating Mode > 1GHz	Transmit
The EUT was performed at X axis, Y axis and Z axis position for transmitter radiated spurious emission test. The worst case was found at X axis, so the measurement will follow this same test configuration.	

Note: Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.3. Tested System Details

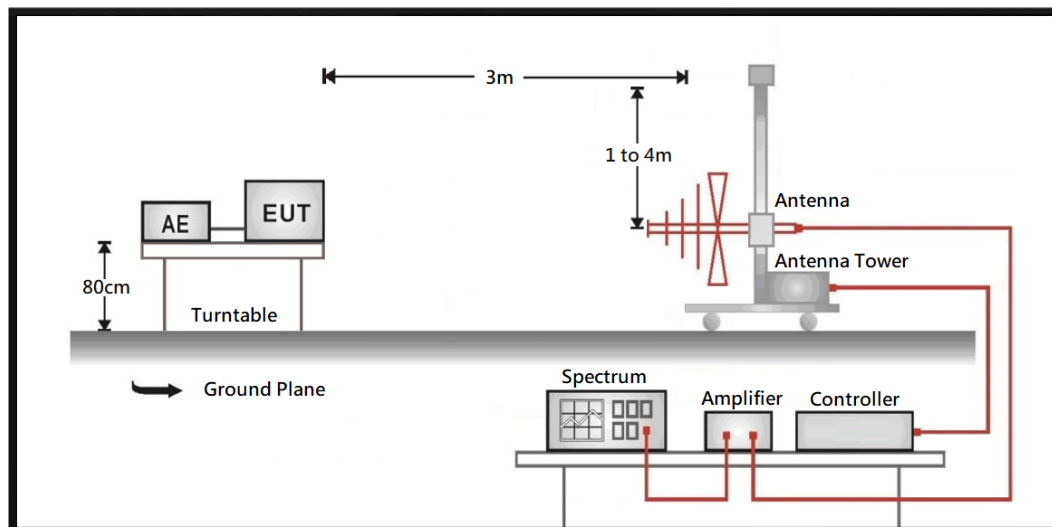
N/A

2.4. Configuration of tested System



3. Emission Bandwidth

3.1. Test Setup



3.2. Test Limit

For 20dB Bandwidth: The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz.

For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency.

Bandwidth is determined at the points 20 dB down from the modulated carrier.

For 99% Bandwidth: The occupied bandwidth of momentarily operated devices shall be less than or equal to 0.25% of the centre frequency for devices operating between 70 MHz and 900 MHz. For devices operating above 900 MHz, the occupied bandwidth shall be less than or equal to 0.5% of the centre frequency.

3.3. Test Procedures

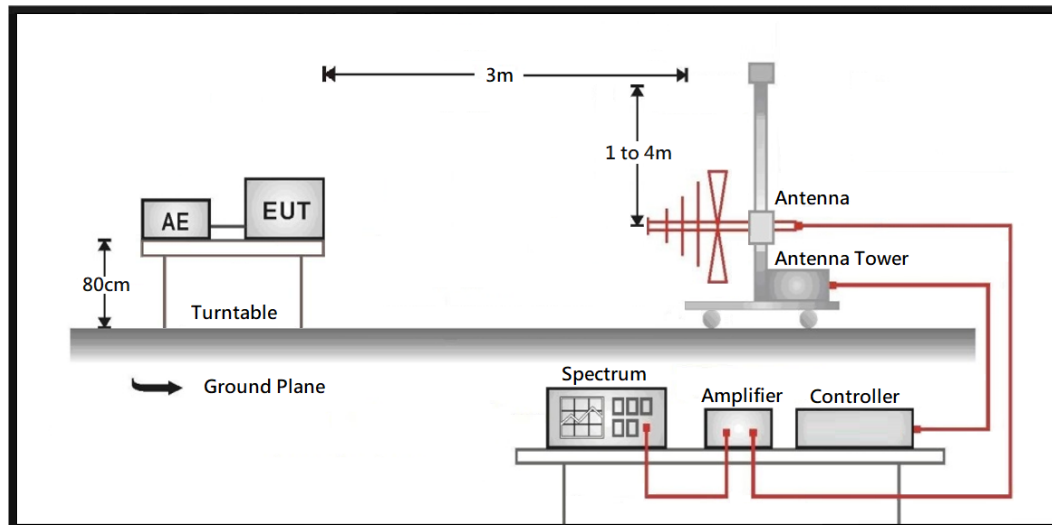
Refer as ANSI C63.10, clause 6.9.2 and 6.9.3 for 20 dB emission bandwidth and 99% occupied bandwidth measurement.

3.4. Test Result of Emission Bandwidth

Refer as Appendix A

4. Transmit Time

4.1. Test Setup



4.2. Test Limit

- ☒ Manually $\leq 5s$
- ☐ Automatically $\leq 5s$
- ☐ Periodic transmissions $\leq 2s$ in one hour
- ☐ Non-Periodic transmissions but security or safety applications

4.3. Test Procedures

Refer as ANSI C63.10, clause 7.4 for periodic operation measurement.

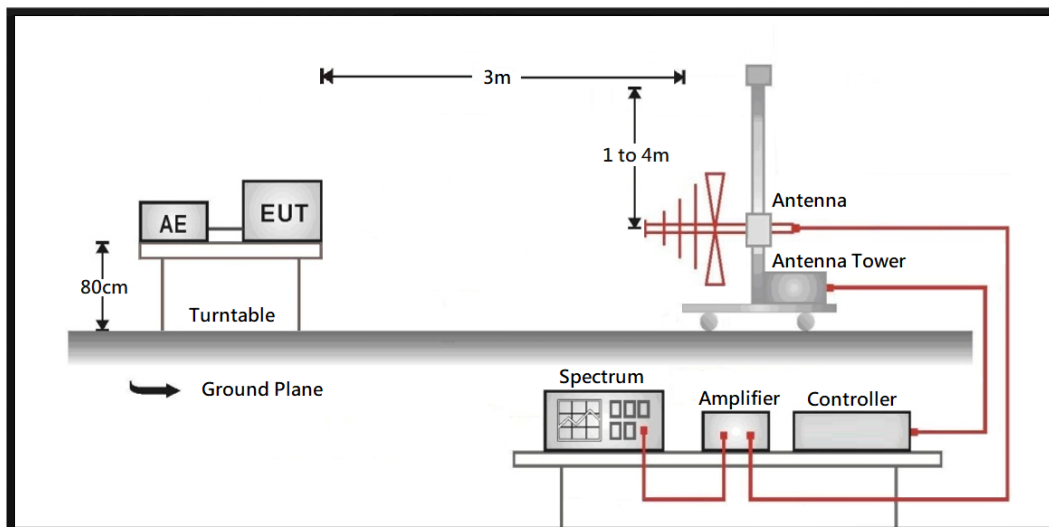
1. Trigger the spectrum analyzer sweep on the RF waveform of the unlicensed wireless device.
2. Set the spectrum analyzer sweep time greater than the specified time for periodic operation.
3. Manually activate and deactivate the unlicensed wireless device and confirm that it ceases transmission within the specified time of deactivation.
4. Document the test results.

4.4. Test Result of Transmit Time

Refer as Appendix B

5. Field Strength of Fundamental Emissions

5.1. Test Setup



5.2. Test Limit

Fundamental and Spurious Emissions Limit				
Frequency (MHz)	Field Strength of fundamental		Field Strength of spurious emissions	
	uV/m	dBuV/m	uV/m	dBuV/m
40.66 – 40.70	2250	67.04	225	47.04
70 – 130	1250	61.94	125	41.94
130 - 174	1250 - 3750	61.94 – 71.48	125 – 375	41.94 – 51.48
174 – 260	3750	71.48	375	51.48
260 – 470	3750 – 12500	71.48 – 81.94	375 – 1250	51.48 – 61.94
Above 470	12500	81.94	1250	61.94

Remarks:

1. Linear interpolations.
2. The above field strength limits are specified at a distance of 3 meters. The tighter limits apply at the band edges.
3. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.

5.3. Test Procedure

1. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

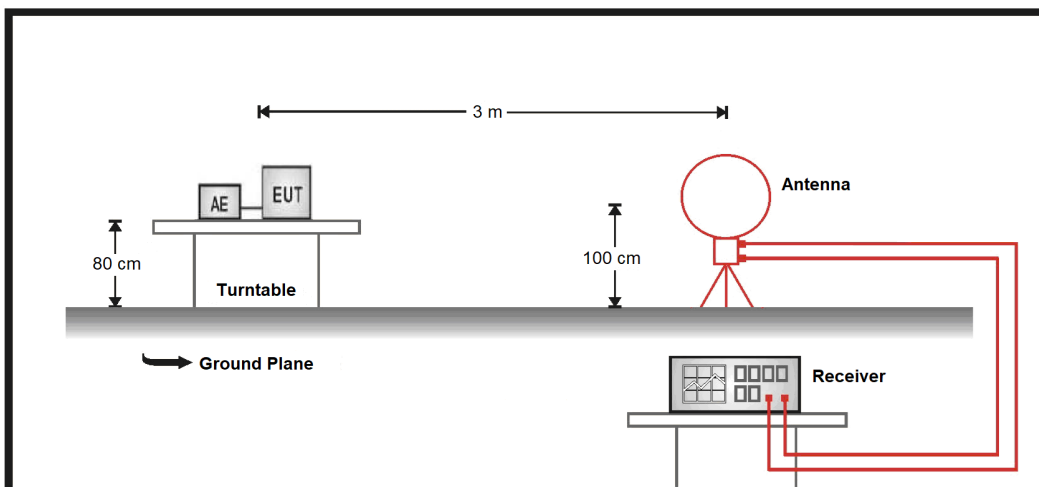
5.4. Test Result of Field Strength of Fundamental Emissions

Refer as Appendix C

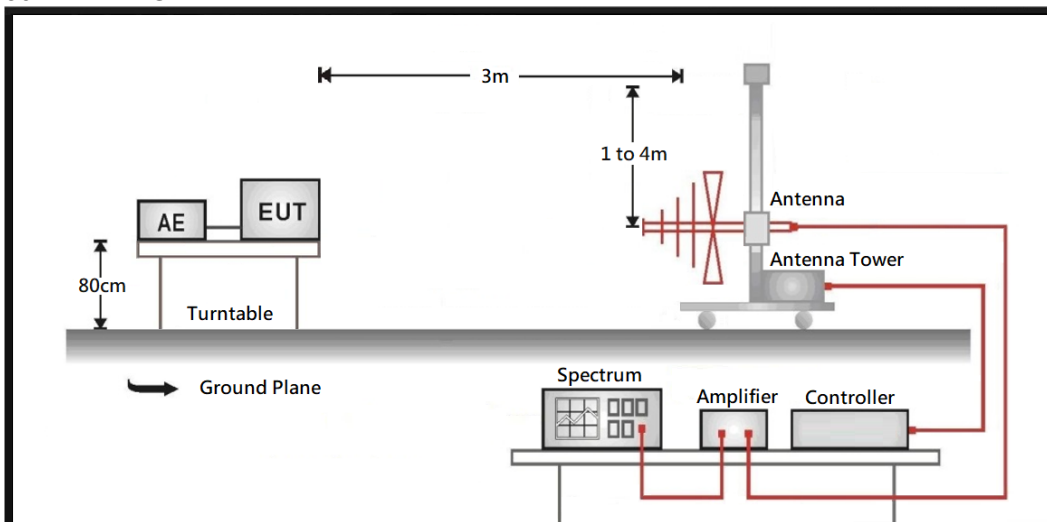
6. Radiated Emission

6.1. Test Setup

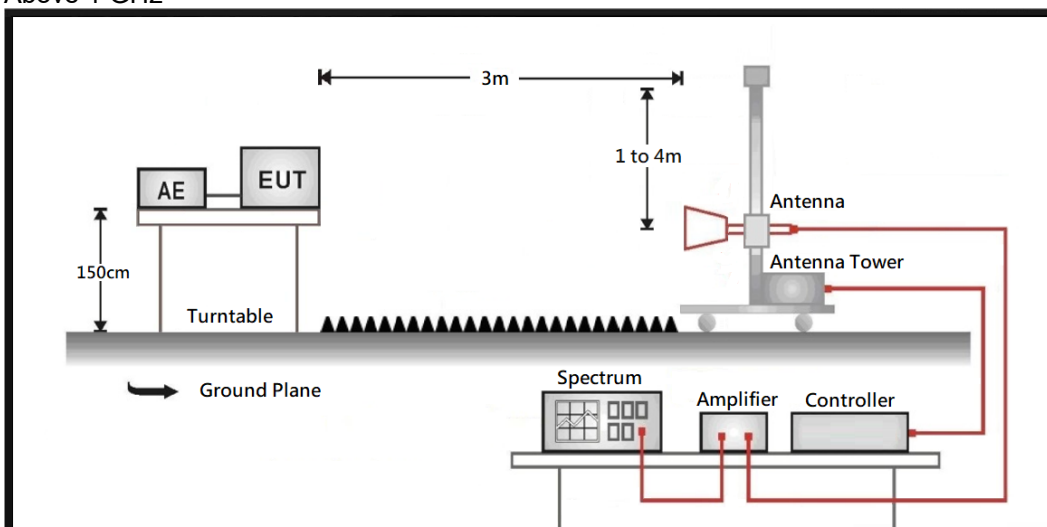
9 kHz ~ 30 MHz



30 MHz ~ 1 GHz



Above 1 GHz



6.2. Test Limit

Fundamental and Spurious Emissions Limit				
Frequency (MHz)	Field Strength of fundamental		Field Strength of spurious emissions	
	uV/m	dBuV/m	uV/m	dBuV/m
40.66 – 40.70	2250	67.04	225	47.04
70 – 130	1250	61.94	125	41.94
130 - 174	1250 - 3750	61.94 – 71.48	125 – 375	41.94 – 51.48
174 – 260	3750	71.48	375	51.48
260 – 470	3750 – 12500	71.48 – 81.94	375 – 1250	51.48 – 61.94
Above 470	12500	81.94	1250	61.94

Remarks:

1. RF Voltage (dBuV) = 20 log RF Voltage (uV).
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
3. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.

Frequency (MHz)	Field strength (uV/m)	Field strength (dBuV/m)	Measurement distance (m)
0.009 – 0.490	2400/F(kHz)	20 log (2400/F(kHz))	300
0.490 – 1.705	24000/F(kHz)	20 log (24000/F(kHz))	30
1.705 - 30	30	29.5	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
Above 960	500	54	3

Remarks:

1. E field strength (dBuV/m) = 20 log E field strength (uV/m).
2. In the Above Table, the tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

6.3. Test Procedure

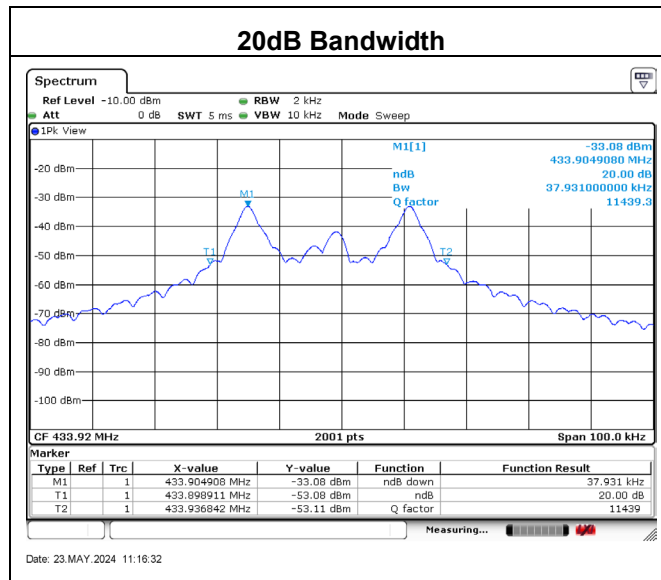
1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement. On any frequency or frequencies form 9kHz(inculde The the lowest oscillator frequency generated within the device up to the 10th harmonic) to 1000 MHz, the limit shown are based on measuring equipment employing a quasi-peak detector function and on any frequency or frequencies above 1000 MHz the radiated limit shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit. The bandwidth below 1 GHz setting on the field strength meter is 120 kHz and above 1 GHz is 1 MHz.

6.4. Test Result of Radiated Emission

Refer as Appendix D

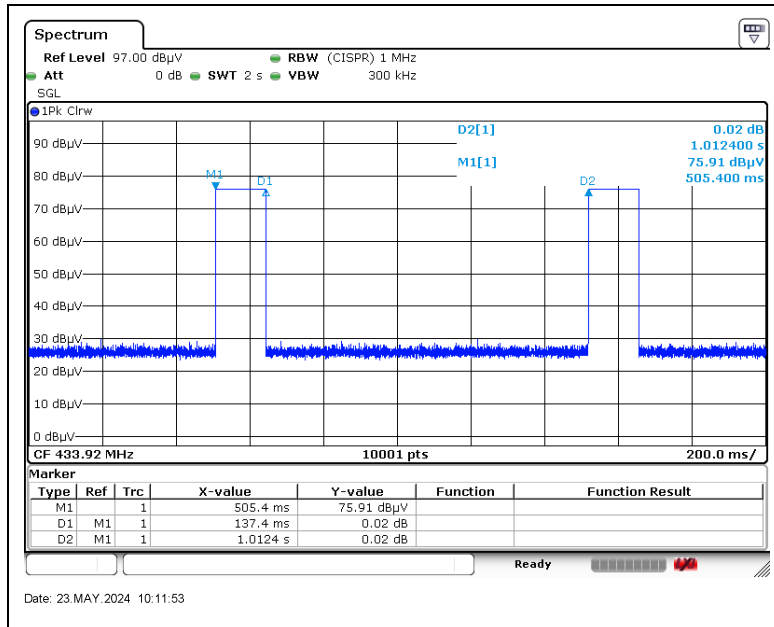
Appendix A. Test Result of Emission Bandwidth

Frequency (MHz)	20dB Bandwidth (MHz)	Limit (MHz)
433.92	0.0379	1.08



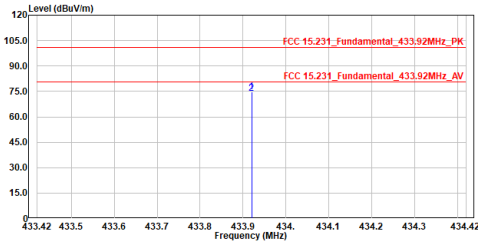
Appendix B. Test Result of Transmit Time

Frequency (MHz)	Measure Value (s)	Limit (s)
433.92	0.137	≤ 5



Appendix C. Test Result of Field Strength of Fundamental Emissions

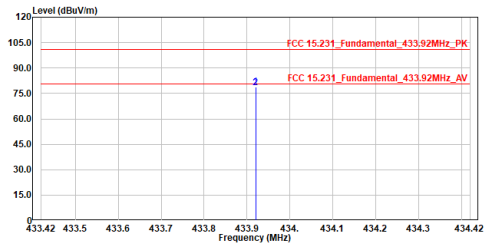
Site :HC-C804
Condition :3m Horizontal
Mode :Fundamental_433.92MHz
Test By :Ling Chen



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	433.920	74.62	100.82	-26.20	74.02	0.60	Peak
2	433.920	73.89	80.82	-6.93	73.29	0.60	QP

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.
5. The other emission levels were very low against the limit.

Site :HC-C804
Condition :3m Vertical
Mode :Fundamental_433.92MHz
Test By :Ling Chen



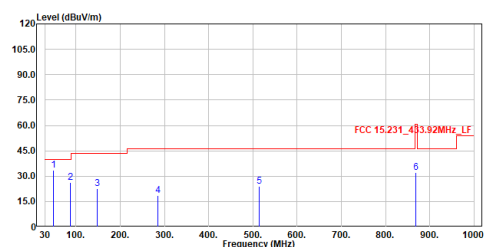
No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	433.920	78.60	100.82	-22.22	78.00	0.60	Peak
2	433.920	78.15	80.82	-2.67	77.55	0.60	QP

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.
5. The other emission levels were very low against the limit.

Appendix D. Test Result of Radiated Emission

30 MHz ~ 1 GHz

Site :HC-CB04
Condition :3m Horizontal
Mode :LF_TX_433.92MHz
Test By :Ling Chen

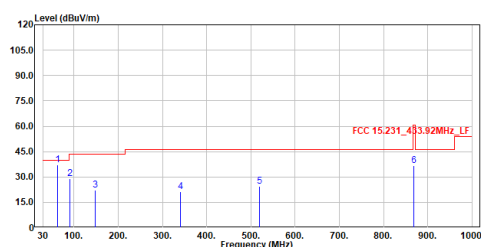


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	48.091	33.38	40.00	-6.62	35.86	-2.48	QP
2	87.570	26.11	40.00	-13.89	34.99	-8.88	QP
3	148.340	22.77	43.50	-20.73	26.27	-3.50	QP
4	284.189	18.38	46.00	-27.62	21.50	-3.12	QP
5	513.497	24.00	46.00	-22.00	21.74	2.26	QP
6	867.838	31.99	60.83	-28.84	24.15	7.84	QP

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.
5. The other emission levels were very low against the limit.

Site :HC-CB04
Condition :3m Vertical
Mode :LF_TX_433.92MHz
Test By :Ling Chen



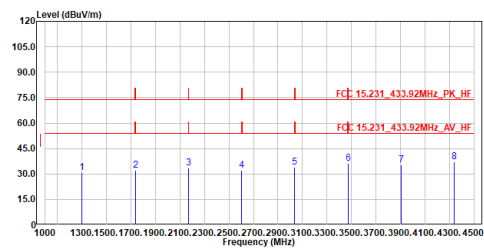
No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	62.156	37.27	40.00	-2.73	41.00	-3.73	QP
2	98.625	29.11	43.50	-14.39	38.17	-9.06	QP
3	148.340	22.28	43.50	-21.22	25.78	-3.50	QP
4	340.691	21.21	46.00	-24.79	23.15	-1.94	QP
5	519.268	24.59	46.00	-21.41	22.14	2.45	QP
6	867.838	36.84	60.83	-23.99	29.00	7.84	QP

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.
5. The other emission levels were very low against the limit.

Above 1 GHz

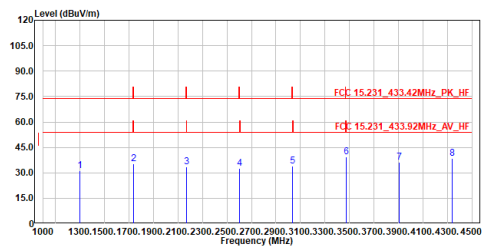
Site :HC-CB04
Condition :3m ,Horizontal
Mode :TX_433.92MHz
Test By :Ling Chen



No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	1301.760	30.94	74.00	-43.06	57.85	-26.91	Peak
2	1735.680	32.28	80.82	-48.54	57.98	-25.70	Peak
3	2169.600	33.58	80.82	-47.24	58.15	-24.57	Peak
4	2603.100	32.31	80.82	-48.51	55.96	-23.65	Peak
5	3037.440	34.01	80.82	-46.81	56.42	-22.41	Peak
6	3471.360	36.45	80.82	-44.37	58.02	-21.57	Peak
7	3905.280	35.47	74.00	-38.53	55.52	-20.05	Peak
8	4339.200	37.19	74.00	-36.81	56.17	-18.98	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

Site :HC-CB04
Condition :3m ,Vertical
Mode :TX_433.92MHz
Test By :Ling Chen



No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	1301.760	31.14	74.00	-42.86	58.05	-26.91	Peak
2	1735.680	35.13	74.00	-38.87	60.83	-25.70	Peak
3	2169.600	33.67	74.00	-40.33	58.24	-24.57	Peak
4	2603.100	32.56	74.00	-41.44	56.21	-23.65	Peak
5	3037.440	33.91	74.00	-40.09	56.32	-22.41	Peak
6	3471.360	39.42	74.00	-34.58	60.99	-21.57	Peak
7	3905.280	36.15	74.00	-37.85	56.20	-20.05	Peak
8	4339.200	38.37	74.00	-35.63	57.35	-18.98	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.