



## Test Report

No.: AJT191119016E

Applicant name : CHAMPION GAMES LLC  
Applicant address : 1303 53th STREET, SUITE 249, BROOKLYN NY 11219  
Manufacturer name : CHAMPION GAMES LLC  
Manufacturer address : 1303 53th STREET, SUITE 249, BROOKLYN NY 11219  
  
Sample Description : LASER TAG SET, WITH A CHARGING STATION  
Model No. : SH-001  
Client Specified Age Grade : 8+  
Tested Age Grade : --  
Sample received date : 19 NOV. 2019  
Testing completed date : 26 NOV. 2019

Tests conducted: For compliance with application, refer to attached page(s) for details.

Assess standard used:	Conclusion
FCC Part 15, Subpart C, Section 15.249	PASS

Note: "--" is represent for blank.

Tested by:

*Glory*

Reviewed by:

*Fly Liang*

Approved by:

*Guangdong*

Position: Technical Supervisor

Date: 2019-11-27



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Page 1 of 30





# Test Report

No.: AJT191119016E

## TABLE OF CONTENTS

1 Test Standards .....	3
2 Summary .....	3
2.1 General remarks .....	3
2.2 Final assessment .....	3
3 Equipment Under Test .....	3
3.1 Short description of the Equipment Under Test (EUT) .....	3
3.2 EUT configuration .....	4
3.3 Description of test modes .....	4
4 Test Environment .....	5
4.1 Address of the test laboratory .....	5
4.2 Test facility .....	5
4.3 Environmental conditions .....	5
4.4 Statement of the measurement uncertainty .....	6
4.5 Test types and results .....	6
5 Test Conditions and Results .....	6
5.1 Radiated emission .....	6
5.4 Antenna requirements .....	29
6 Test Equipment .....	30

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## 1 Test Standards

The tests were performed according to following standards:
FCC Part 15, Subpart C, Section 15.249: Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz, and 24.0-24.25 GHz
ANSI C63,10-2013: American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

## 2 Summary

### 2.1 General remarks

Date of receipt of test sample	19 Nov. 2019
Testing commenced on	19 Nov. 2019 ---- 26 Nov. 2019
Testing concluded on	26 Nov. 2019

### 2.2 Final assessment

Test content:	Assessment
The RF requirements pertaining to the technical standards and tested operation modes are	Fulfilled
The equipment under test	Fulfilled the RF requirements

## 3 Equipment Under Test

### 3.1 Short description of the Equipment Under Test (EUT)

EUT Name:	Squad Hero Battle Action Laser Tag game
FCC ID:	2AU87-SH001-B
Model No.:	SH-001
Number of tested samples:	1
Serial number:	--
Power supply voltage	TX: DC 3.7V
Operating Mode	TX Mode; Charging Mode
Operation frequency	2416-2467MHz
Number of Channel	1
Modulation	GFSK
Antenna Type	Monopole Antenna
Antenna Gain	0dBi

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## 3.2 EUT configuration

(The CDF filled by the applicant can be viewed at the test laboratory.)

The following peripheral devices and interface cables were connected during the measurement:

Not Applicable



## 3.3 Description of test modes

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and packet type. The worst case was found when the EUT was positioned on Y axis for radiated emission. The EUT was tested under the following mode.

EUT configure mode	Applicable to				Description
	RE < 1G	RE ≥ 1G	PLC	BW	DC 3.7V from battery
A	√	√	√	√	

Where RE<1G: Radiated Emission below 1GHz

RE ≥ 1G: Radiated Emission above 1GHz

PLC: Power Line Conducted Emission

BW: 20dB bandwidth

Following channel(s) was (were) selected for the test as listed below.

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2416	19	2434	37	2452
2	2417	20	2435	38	2453
3	2418	21	2436	39	2454
4	2419	22	2437	40	2455
5	2420	23	2438	41	2456
6	2421	24	2439	42	2457
7	2422	25	2440	43	2458
8	2423	26	2441	44	2459
9	2424	27	2442	45	2460
10	2425	28	2443	46	2461
11	2426	29	2444	47	2462
12	2427	30	2445	48	2463
13	2428	31	2446	49	2464
14	2429	32	2447	50	2465
15	2430	33	2448	51	2466
16	2431	34	2449	52	2467
17	2432	35	2450		
18	2433	36	2451		

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Channel list

Channel	Frequency (MHz)
The lowest channel	2416
The middle channel	2441
The highest channel	2467

Note: The more detailed channel, please refer to the product specifications

## 4 Test Environment

### 4.1 Address of the test laboratory

Test site:	1/F YIFENG BUILDING, CHENGHUA INDUSTRIAL ZONE, CH
Tel:	86-754-85860999
Fax:	86-754-86984098

### 4.2 Test facility

The test facility is recognized, certified, or accredited by the following organizations:	
CNAS Accreditation NO.:	L4735
A2LA Accreditation NO.:	5443.01
Designation Number:	CN1263
Test Firm Registration Number:	127385
Industry Canada site registration number:	25345
FCC Registration NO.:	0028094555

### 4.3 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:	
Temperature	15~30°C
Humidity	20~75%

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## 4.4 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. Furthermore, component and process variability of devices are similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Measurement Uncertainty (Standard: ETSI TR 100 028)	
Conducted emissions	$\pm 2.14\text{dB}$
Radiated Emission below 1GHz	$\pm 4.88\text{dB}$
Radiated Emission above 1GHz	$\pm 4.65\text{dB}$

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .

## 4.5 Test types and results

Standard: FCC PART 15, SUBPART C (SECTION 15.249)		
Standard section	Test Type	Result
§15.209 & §15.249(a)	Radiated Emission	PASS
§15.215(c)	20dB Bandwidth	PASS
§15.207(a)	Conducted Emission	PASS
§15.203	Antenna Requirement	PASS
§15.205	Restricted Band Around Fundamental Frequency	PASS

## 5 Test Conditions and Results

### 5.1 Radiated emission

For test instruments and accessories used see section 6

#### 5.1.1 Test procedures

- (1) The EUT was placed on the top of a rotating table 1.5 meters (above 1GHz) and 0.8 meters (below 1GHz) above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- (2) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- (3) The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- (4) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

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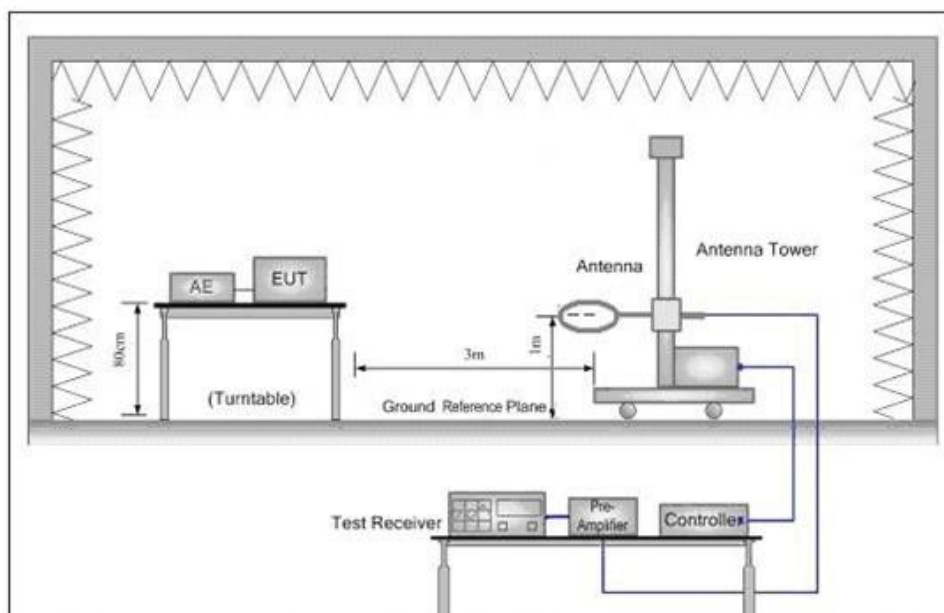
No.: AJT191119016E

- (5) The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- (6) For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1m above the ground.
- (7) If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

### Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. All modes of operation were investigated and the worst-case emissions are reported
4. The testing of the EUT was performed on all 3 orthogonal axes; the worst-case test configuration was reported on the file test setup photo.

### 5.1.2 Test setup



Below 30MHz

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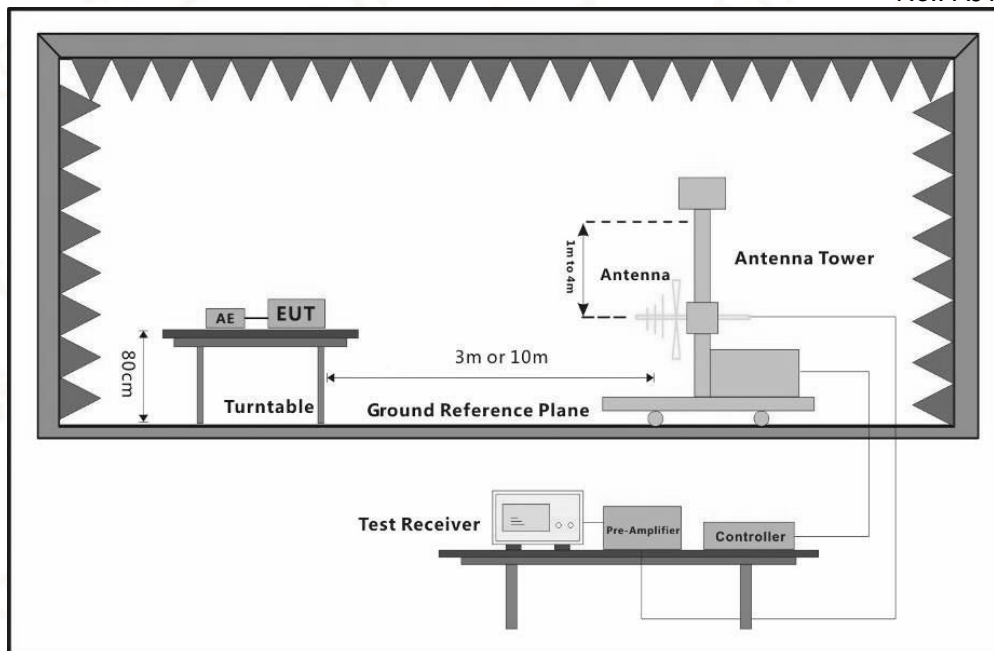
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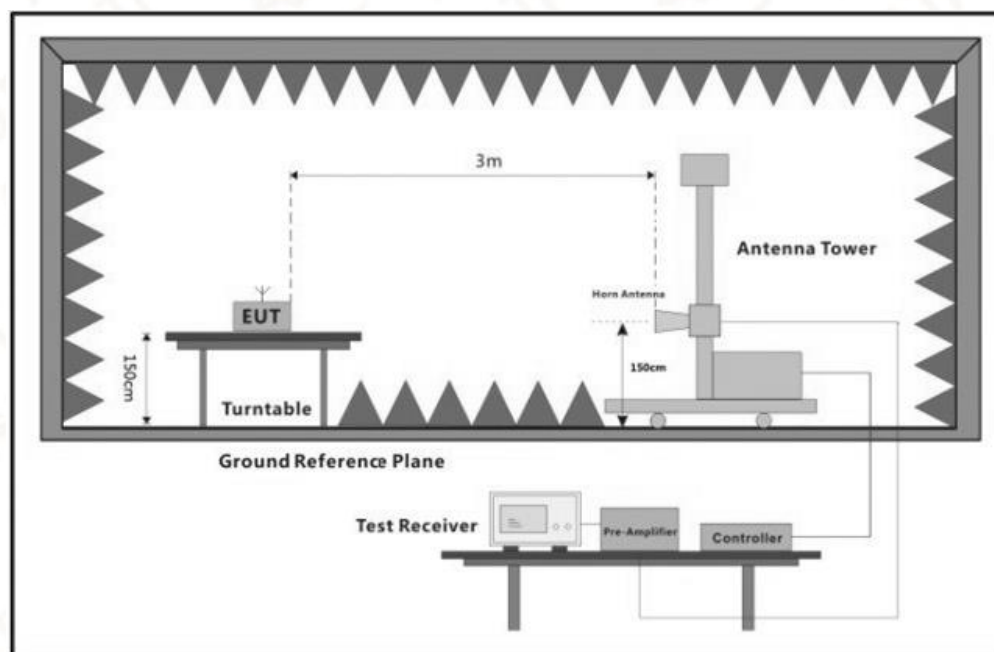


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30MHz-1000MHz



Above 1GHz

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Page 8 of 30







## Test Report

No.: AJT191119016E

### 5.1.3 Test limits

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
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

According to §15.249(a), the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency	Filed strength of fundamental(milli-volts/meter)	Field strength of harmonics (micro- volts/meter)
902 ~ 928 MHz	50	500
2400 ~ 2483.5 MHz	50	500
5725 ~5875 MHz	50	500
24.0 ~24.25 GHz	250	2500

The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply.

Note:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.
4. Emission from 9kHz to 30MHz is more than 20dB below the limit.

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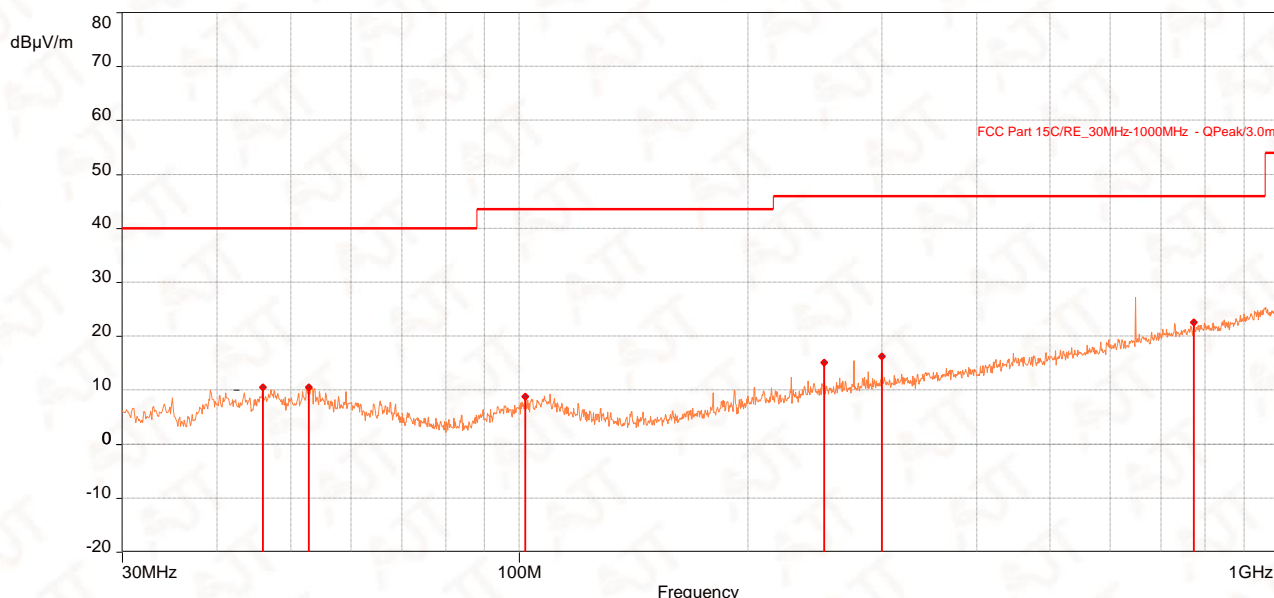
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## 5.1.4 Test results

### 5.1.4.1 Radiated emissions test (below 1GHz)

Test point	Operation mode	Result
Horizontal	TX mode (The worst channel: 2441MHz)	PASS

EUT	Squad Hero Battle Action Laser Tag game
Operating Condition	DC 3.7V
Test Condition	Ambient Temperature: 24°C Humidity: 56%RH



Frequency (MHz)	Peak (dBuV/m)	QP (dBuV/m)	QP Lim. (dBuV/m)	Margin (dB)	Angle (°)	Height (m)	Polarization	Correction (dB)
46.005	10.50	--	40.00	29.50	214.00	1.00	Horizontal	-12.49
52.795	10.50	--	40.00	29.50	312.00	1.00	Horizontal	-12.40
101.877	8.79	--	43.50	34.71	71.00	1.00	Horizontal	-14.39
251.936	15.12	--	46.00	30.88	349.00	1.00	Horizontal	-12.08
299.951	16.25	--	46.00	29.75	115.00	1.00	Horizontal	-10.78
772.535	22.52	--	46.00	23.48	211.00	1.00	Horizontal	-0.72

#### Note:

- 1.QP and Avg. are abbreviations of Quasi-Peak and Average
- 2.Emission Level = Read Level + Correction Factor
- 3.Correction Factor = Antenna Factor + Cable Loss - Preamplifier Gain
- 4.Margin = Limit Value - Emission Level
- 5.The emission levels of other frequencies were more than 20dB margin against the limit

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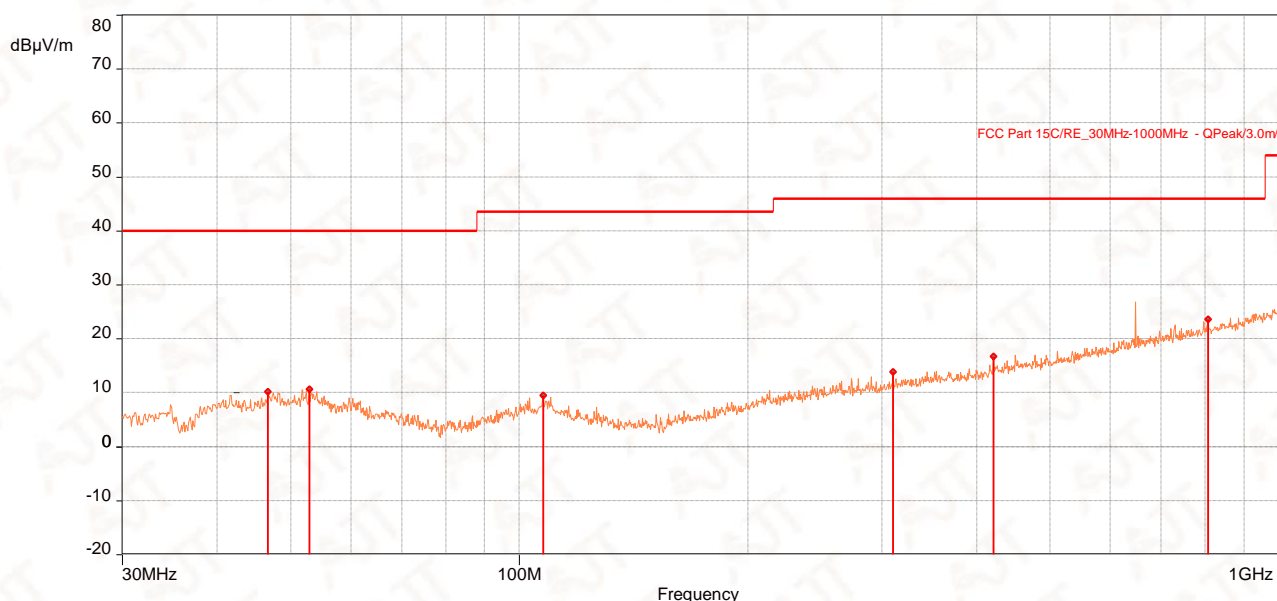


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Test point	Operation mode	Result
Vertical	TX mode (The worst channel: 2441MHz)	PASS

EUT	Squad Hero Battle Action Laser Tag game
Operating Condition	DC 3.7V
Test Condition	Ambient Temperature: 24°C Humidity: 64%RH



Frequency (MHz)	Peak (dBuV/m)	QP (dBuV/m)	QP Lim. (dBuV/m)	Margin (dB)	Angle (°)	Height (m)	Polarization	Correction (dB)
46.684	10.21	--	40.00	29.79	145.00	1.00	Vertical	-12.42
52.892	10.67	--	40.00	29.33	236.00	1.00	Vertical	-12.45
107.503	9.48	--	43.50	34.02	292.00	1.00	Vertical	-14.31
310.524	13.78	--	46.00	32.22	140.00	1.00	Vertical	-10.66
421.298	16.66	--	46.00	29.34	224.00	1.00	Vertical	-8.10
807.358	23.57	--	46.00	22.43	313.00	1.00	Vertical	-0.06

## Note:

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- 2.Emission Level = Read Level + Factor
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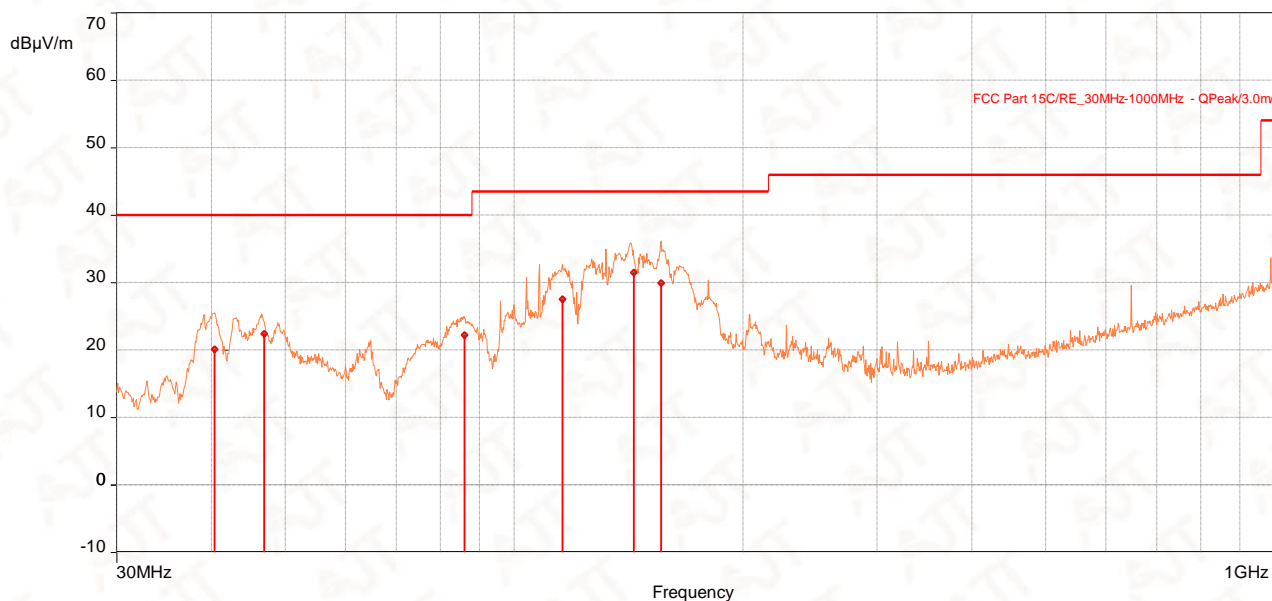


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Test point	Operation mode	Result
Horizontal	Charging mode	PASS

EUT	Squad Hero Battle Action Laser Tag game
Operating Condition	DC 3.7V
Test Condition	Ambient Temperature: 21°C Humidity: 54%RH



Frequency (MHz)	Peak (dBuV/m)	QP (dBuV/m)	QP Lim. (dBuV/m)	Margin (dB)	Angle (°)	Height (m)	Polarization	Correction (dB)
40.427	23.45	20.07	40.00	19.93	205.00	1.68	Horizontal	-13.42
46.923	25.45	22.37	40.00	17.63	207.00	1.59	Horizontal	-12.39
86.04	25.40	22.18	40.00	17.82	90.00	1.85	Horizontal	-17.35
115.82	31.79	27.55	43.50	15.95	316.00	1.94	Horizontal	-15.37
143.598	35.03	31.49	43.50	12.01	350.00	1.68	Horizontal	-17.77
156.003	34.44	29.87	43.50	13.63	273.00	2.00	Horizontal	-17.34

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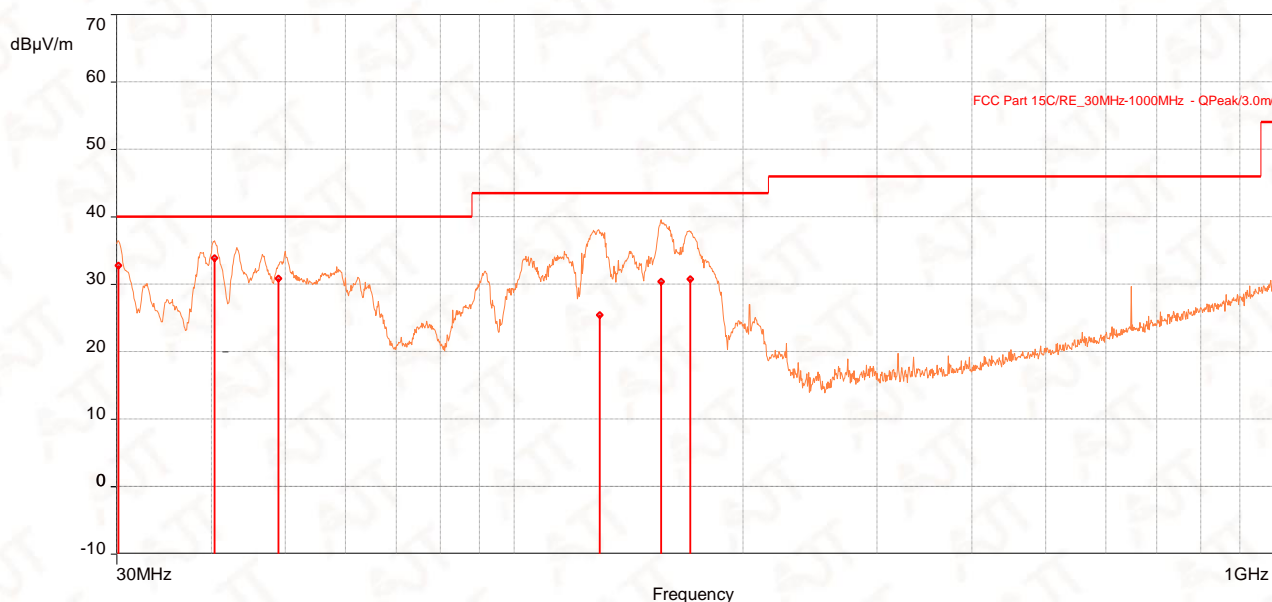


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Test point	Operation mode	Result
Vertical	Charging mode	PASS

EUT	Squad Hero Battle Action Laser Tag game
Operating Condition	DC 3.7V
Test Condition	Ambient Temperature: 21°C Humidity: 54%RH



Frequency (MHz)	Peak (dBuV/m)	QP (dBuV/m)	QP Lim. (dBuV/m)	Margin (dB)	Angle (°)	Height (m)	Polarization	Correction (dB)
30.168	35.04	32.80	40.00	7.20	302.00	1.00	Vertical	-14.93
40.331	35.81	33.90	40.00	6.10	0.00	1.00	Vertical	-13.53
48.998	33.06	30.81	40.00	9.19	188.00	1.00	Vertical	-12.10
129.542	32.81	25.42	43.50	18.08	50.00	1.00	Vertical	-17.12
156.003	34.95	30.33	43.50	13.17	212.00	1.05	Vertical	-17.76
170.573	32.57	30.76	43.50	12.74	75.00	1.00	Vertical	-16.67

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- 4.Margin value = Limit Value - Emission Level
- 5.The emission levels of other frequencies were more than 20dB margin against the limit

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# Test Report

No.: AJT191119016E

## 5.1.4.2 Radiated emissions test (above 1GHz)

EUT	Squad Hero Battle Action Laser Tag game		
Channel	The lowest channel (2416MHz)	Detector function	Peak (PK) Average (AV)
Frequency range	above 1GHz	Result	PASS

Antenna Polarity & Test Distance: Horizontal At 3m								
Frequency (MHz)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Height (m)	Angle (°)	Polarization	Correction (dB)	Detector
2390.04	28.69	54.00	25.31	1.50	133.00	Horizontal	-3.50	Average
2400	29.19	54.00	24.81	1.50	63.00	Horizontal	-3.27	Average
*2416.08	49.70	94.00	44.30	1.50	135.00	Horizontal	-30.0	Average
4832.85	15.07	54.00	39.93	1.50	128.00	Horizontal	-30.0	Average
2390.04	39.15	74.00	34.85	1.50	224.00	Horizontal	-3.50	Peak
2400	39.18	74.00	34.82	1.50	229.00	Horizontal	-3.27	Peak
*2416.08	79.70	114.00	34.30	1.50	135.00	Horizontal	-3.31	Peak
4832.85	45.07	74.00	28.93	1.50	128.00	Horizontal	1.81	Peak
Antenna Polarity & Test Distance: Vertical At 3m								
Frequency (MHz)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Height (m)	Angle (°)	Polarization	Correction (dB)	Detector
2390.04	28.87	54.00	25.13	1.50	159.00	Vertical	-3.30	Average
2400	29.49	54.00	24.51	1.50	189.00	Vertical	-3.07	Average
*2416.08	51.53	94.00	42.47	1.50	272.00	Vertical	-30.0	Average
4832.85	17.14	54.00	36.86	1.50	24.00	Vertical	-30.0	Average
2390.04	40.24	74.00	33.76	1.50	199.00	Vertical	-3.30	Peak
2400	40.21	74.00	33.79	1.50	301.00	Vertical	-3.07	Peak
*2416.08	81.53	114.00	32.47	1.50	272.00	Vertical	-3.11	Peak
4832.85	47.14	74.00	26.86	1.50	24.00	Vertical	1.64	Peak
Remarks: 1. Emission level (dB $\mu$ V/m) = Raw Value (dB $\mu$ V) + Correction Factor (dB/m) 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) 3. The emission levels of other frequencies were more than 20dB margin against the limit. 4. Margin value = Limit value - Emission level. 5. " * ": Fundamental frequency.								

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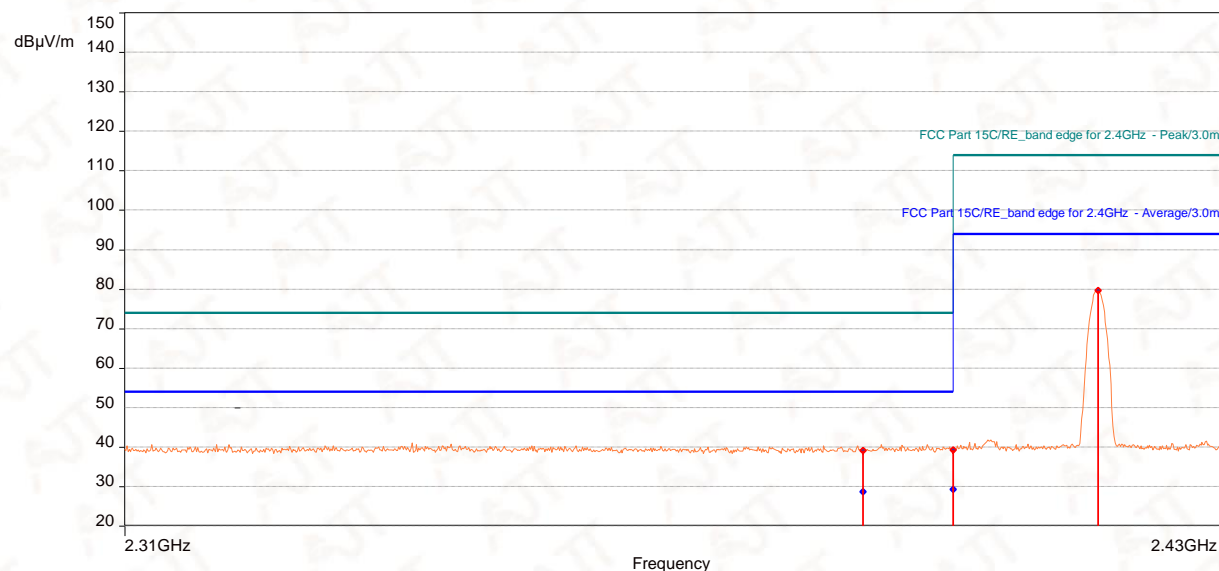


# Test Report

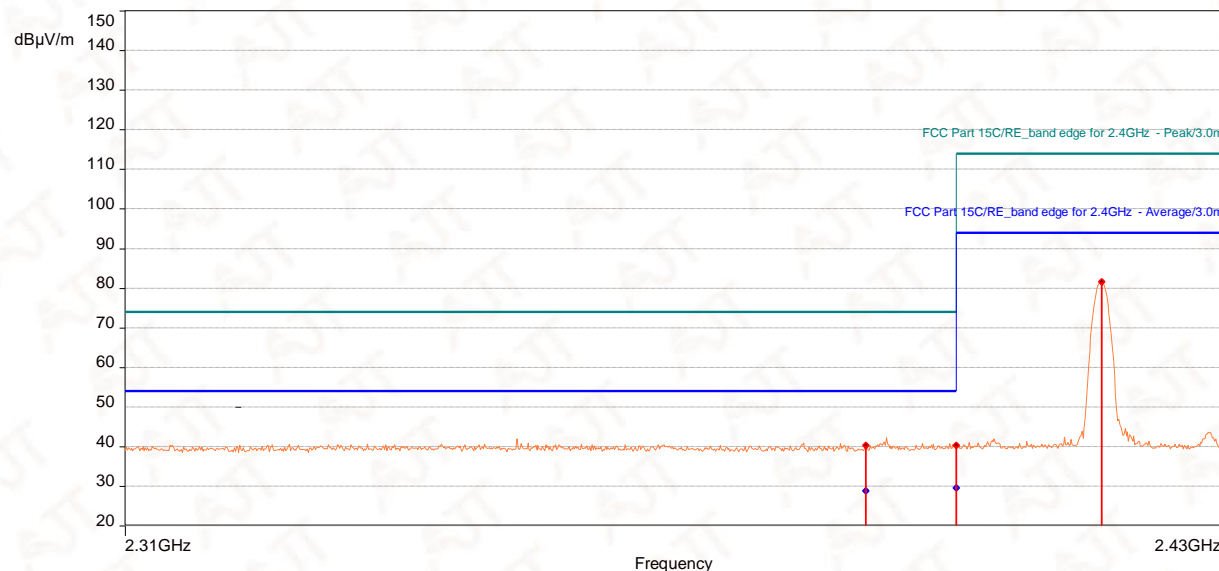
No.: AJT191119016E

## Band Edge Plot

### 2416MHz Horizontal



### 2416MHz Vertical



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# Test Report

No.: AJT191119016E

EUT	Squad Hero Battle Action Laser Tag game		
Channel	The middle channel (2441MHz)	Detector function	Peak (PK) Average (AV)
Frequency range	above 1GHz	Result	PASS

Antenna Polarity & Test Distance: Horizontal At 3m								
Frequency (MHz)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Height (m)	Angle (°)	Polarization	Correction (dB)	Detector
*2440.915	48.16	94.00	45.84	1.50	138.00	Horizontal	-30.0	Average
4882.2	12.71	54.00	41.29	1.50	131.00	Horizontal	-30.0	Average
*2440.915	78.16	114.00	35.84	1.50	138.00	Horizontal	-3.20	Peak
4882.2	42.71	74.00	31.29	1.50	131.00	Horizontal	1.50	Peak
Antenna Polarity & Test Distance: Vertical At 3m								
Frequency (MHz)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Height (m)	Angle (°)	Polarization	Correction (dB)	Detector
*2440.915	51.49	94.00	42.51	1.50	239.00	Vertical	-30.0	Average
4883.375	14.48	54.00	39.52	1.50	37.00	Vertical	-30.0	Average
*2440.915	81.49	114.00	32.51	1.50	239.00	Vertical	-3.00	Peak
4883.375	44.48	74.00	29.52	1.50	37.00	Vertical	1.32	Peak
Remarks: 1. Emission level (dB $\mu$ V/m) = Raw Value (dB $\mu$ V) + Correction Factor (dB/m) 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) 3. The emission levels of other frequencies were more than 20dB margin against the limit. 4. Margin value = Limit value - Emission level. 5. " * ": Fundamental frequency.								

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# Test Report

No.: AJT191119016E

EUT	Squad Hero Battle Action Laser Tag game		
Channel	The highest channel (2467MHz)	Detector function	Peak (PK) Average (AV)
Frequency range	above 1GHz	Result	PASS

Antenna Polarity & Test Distance: Horizontal At 3m								
Frequency (MHz)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Height (m)	Angle (°)	Polarization	Correction (dB)	Detector
*2467.05	48.22	94.00	45.78	1.50	107.00	Horizontal	-30.0	Average
2483.5	29.69	54.00	24.31	1.50	225.00	Horizontal	-3.10	Average
4933.9	13.70	54.00	40.30	1.50	128.00	Horizontal	-30.0	Average
*2467.05	78.22	114.00	35.78	1.50	107.00	Horizontal	-3.20	Peak
2483.5	39.08	74.00	34.92	1.50	196.00	Horizontal	-3.10	Peak
4933.9	43.70	74.00	30.30	1.50	128.00	Horizontal	1.64	Peak
Antenna Polarity & Test Distance: Vertical At 3m								
Frequency (MHz)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Height (m)	Angle (°)	Polarization	Correction (dB)	Detector
*2467.05	51.04	94.00	42.96	1.50	217.00	Vertical	-30.0	Average
2483.5	30.09	54.00	23.91	1.50	14.00	Vertical	-2.90	Average
4933.9	16.70	54.00	37.30	1.50	23.00	Vertical	-30.0	Average
*2467.05	81.04	114.00	32.96	1.50	217.00	Vertical	-3.00	Peak
2483.5	39.40	74.00	34.60	1.50	120.00	Vertical	-2.90	Peak
4933.9	46.70	74.00	27.30	1.50	23.00	Vertical	1.45	Peak
<b>Remarks:</b> 1. Emission level (dB $\mu$ V/m) = Raw Value (dB $\mu$ V) + Correction Factor (dB/m) 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) 3. The emission levels of other frequencies were more than 20dB margin against the limit. 4. Margin value = Limit value - Emission level. 5. " * ": Fundamental frequency.								

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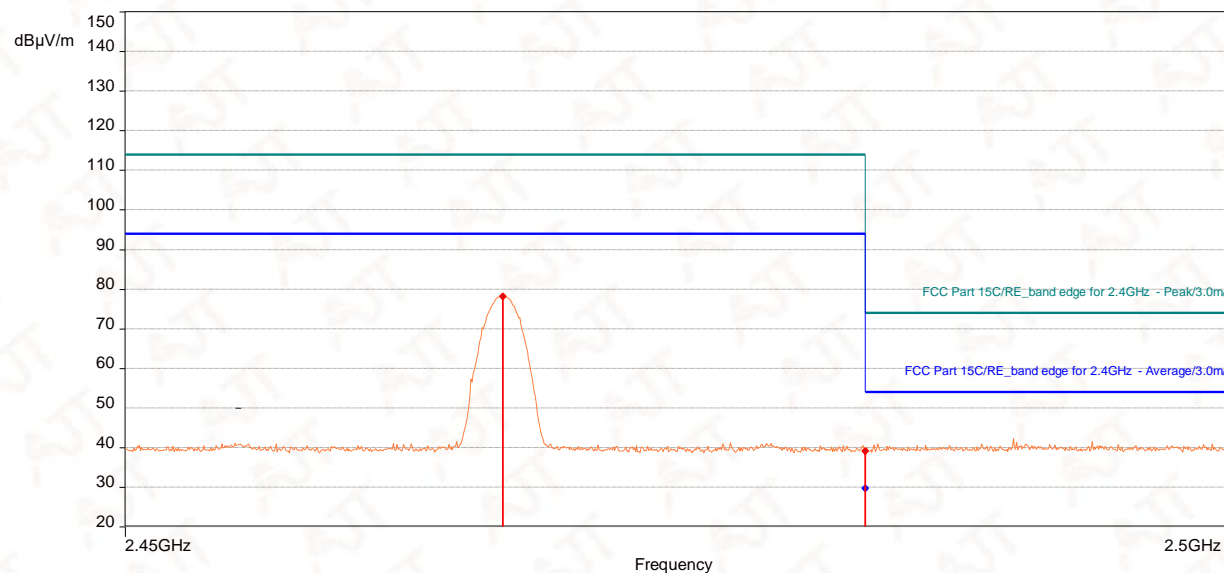


# Test Report

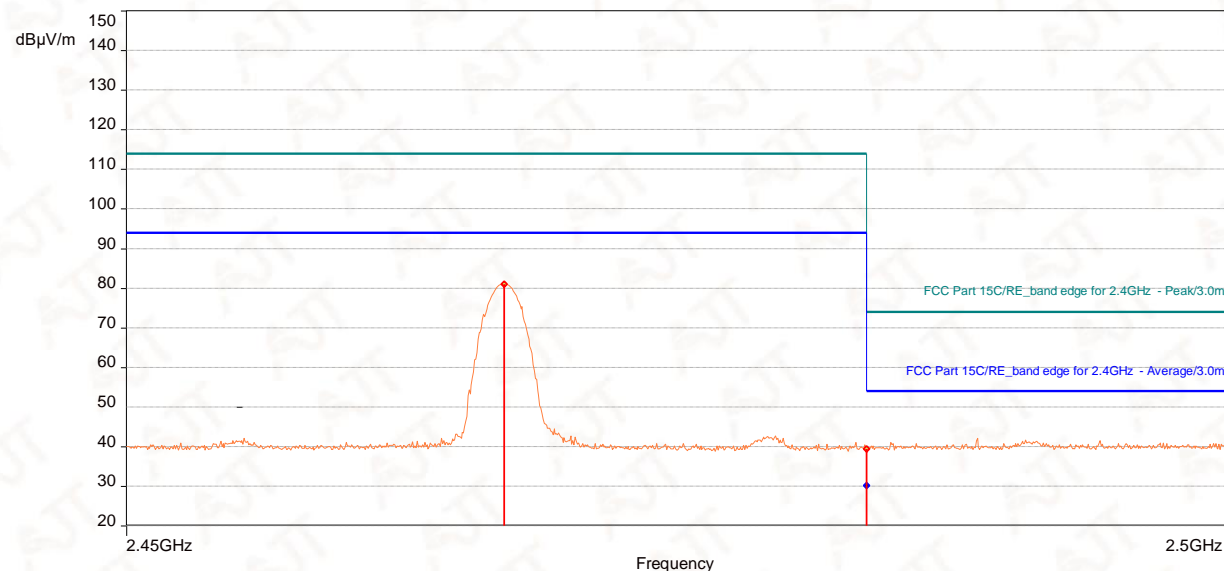
No.: AJT191119016E

## Band Edge Plot

### 2467MHz Horizontal



### 2467MHz Vertical



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## Test Report

No.: AJT191119016E

### 5.1.4.3 Calculation of Average Factor

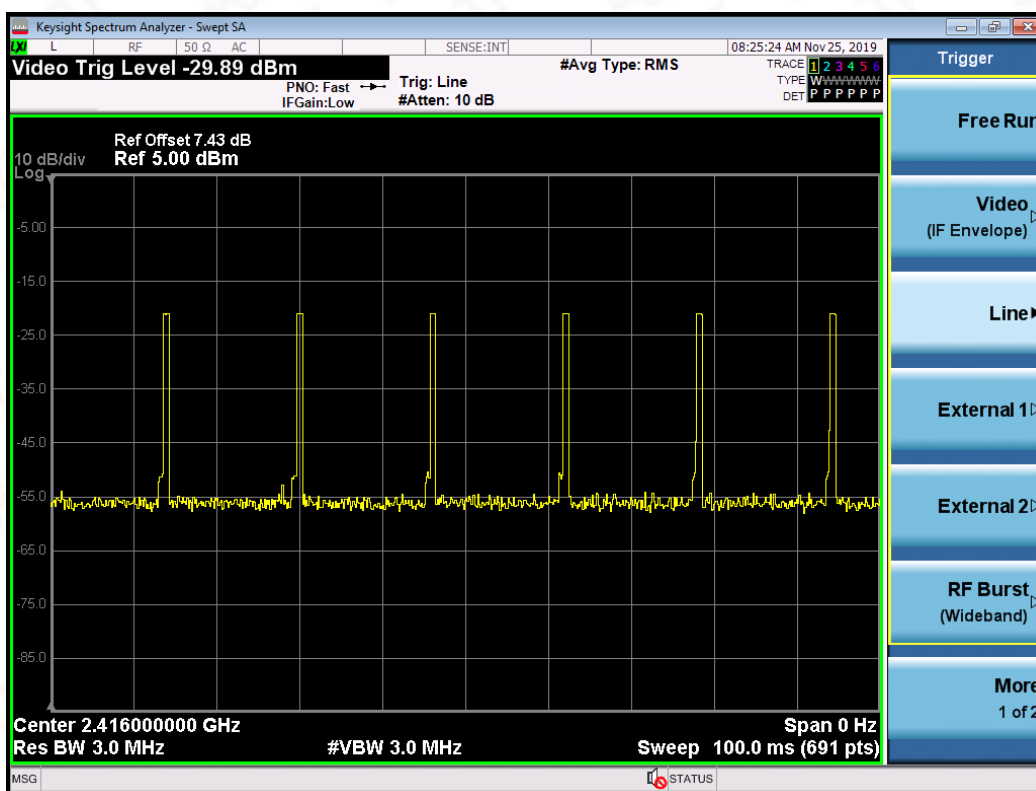
The duration of one cycle = 16.09ms

Effective period of the cycle = 507.3μs

Duty Cycle = 507.3μs / 16.09ms = 0.0315

Averaging factor in dB = 20 log (duty cycle) = 20 log (0.0315) = -30.0

The duration of one cycle



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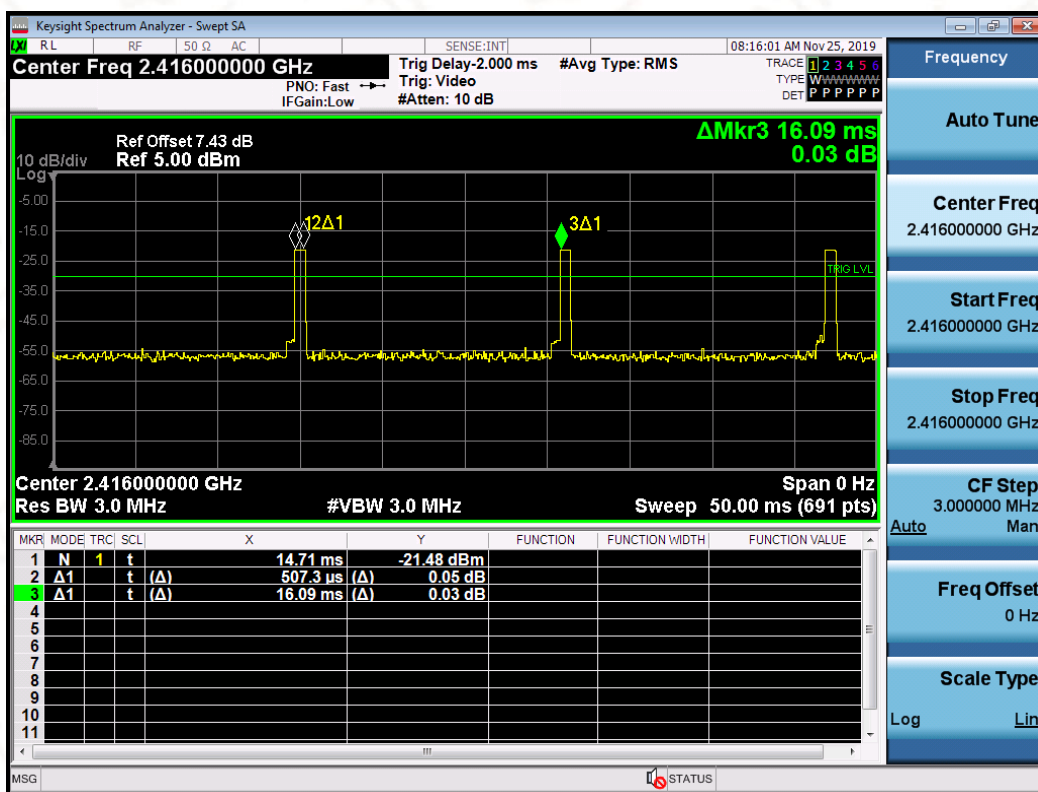




# Test Report

No.: AJT191119016E

Effective period of the cycle



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# Test Report

No.: AJT191119016E

## 5.2 20dB bandwidth

For test instruments and accessories used see section 6

### 5.2.1 Test procedures

- (1) Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- (2) Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
- (3) Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.
- (4) Repeat above procedures until all frequencies measured were complete.

### 5.2.2 Test setup



### 5.2.3 Test limits

According to FCC 15.215(c), must be designed to ensure that the 20dB 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.

### 5.2.4 Test results

Channel	frequency (MHz)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	20dB Bandwidth (MHz)
The lowest channel	2416	2415.492	2416.676	1.184
The middle channel	2441	2440.488	2441.792	1.304
The highest channel	2467	2466.492	2467.812	1.320

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# Test Report

No.: AJT191119016E



2416MHz



2441MHz

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# Test Report

No.: AJT191119016E



2467MHz

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### 5.3 Conducted emission

### 5.3.1 Test procedures

### 5.3.2 Test setup



Notes: 1. \* Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

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Page 24 of 30



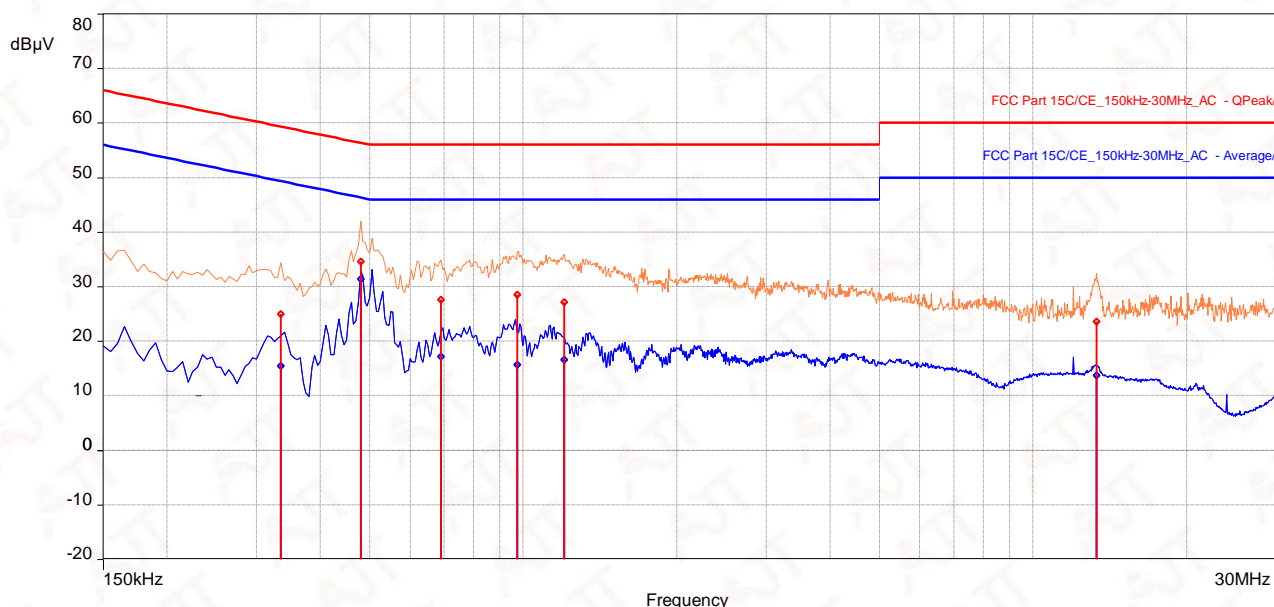


# Test Report

No.: AJT191119016E

## 5.3.4 Test results

Test Date	2019.11.25	Result	Pass
Power Supply	AC 100V/60Hz	Test Mode	Charging mode
Condition	Temp:24℃, Humi:64%, Press:101kPa	LISN	NSLK 8127 RC
Test Site	Control Room		



Frequency (MHz)	Peak (dBμV)	QP (dBμV)	QP Limit (dBμV)	QP Margin (dB)	Avg (dBμV)	Avg Limit (dBμV)	Avg Margin (dB)	Line Pos.	Correction (dB)
0.335	32.93	25.00	59.33	34.32	15.47	49.33	33.86	N	10.27
0.48	38.41	34.57	56.34	21.77	31.43	46.34	14.90	N	10.26
0.69	32.21	27.59	56.00	28.41	17.12	46.00	28.88	N	10.28
0.975	36.49	28.51	56.00	27.49	15.71	46.00	30.29	N	10.34
1.205	30.20	27.16	56.00	28.84	16.58	46.00	29.42	N	10.35
13.34	31.62	23.56	60.00	36.44	13.76	50.00	36.24	N	10.76

- 1.QP and Avg. are abbreviations of Quasi-Peak and Average
- 2.Emission Level = Read Level + Factor
- 3.Correction Factor = LISN Factor + Cable Loss+ Pulse limiter Factor
- 4.Margin value = Limit Value - Emission Level

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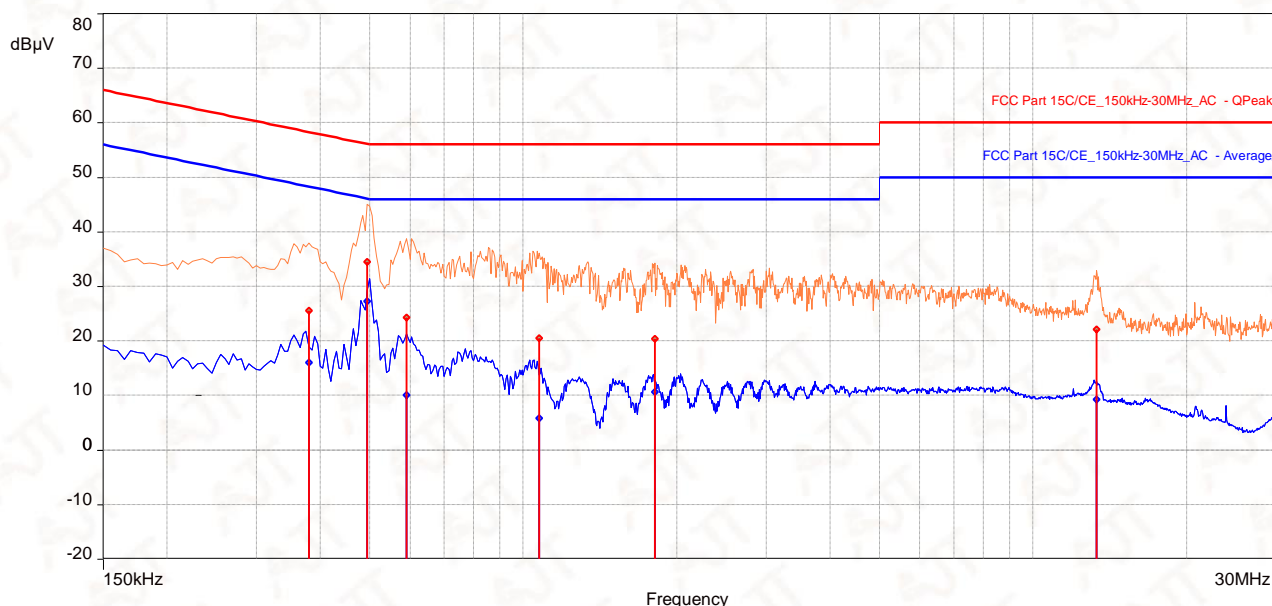




# Test Report

No.: AJT191119016E

Test Date	2019.11.25	Result	Pass
Power Supply	AC 100V/60Hz	Test Mode	Charging mode
Condition	Temp:24℃, Humi:64%, Press:101kPa	LISN	NSLK 8127 RC
Test Site	Control Room		



Frequency (MHz)	Peak (dBμV)	QP (dBμV)	QP Limit (dBuV)	QP Margin (dB)	Avg (dBuV)	Avg Limit (dBuV)	Avg Margin (dB)	Line Pos.	Correction (dB)
0.38	34.73	25.50	58.28	32.78	15.98	48.28	32.30	L	10.27
0.495	45.14	34.50	56.08	21.59	27.31	46.08	18.77	L	10.26
0.59	29.70	24.25	56.00	31.75	10.07	46.00	35.93	L	10.25
1.075	31.86	20.46	56.00	35.54	5.85	46.00	40.15	L	10.34
1.815	31.26	20.38	56.00	35.62	10.58	46.00	35.42	L	10.37
13.33	31.93	22.13	60.00	37.87	9.26	50.00	40.74	L	10.74

1.QP and Avg. are abbreviations of Quasi-Peak and Average  
 2.Emission Level = Read Level + Factor  
 3.Correction Factor = LISN Factor + Cable Loss+ Pulse limiter Factor  
 4.Margin value = Limit Value - Emission Level

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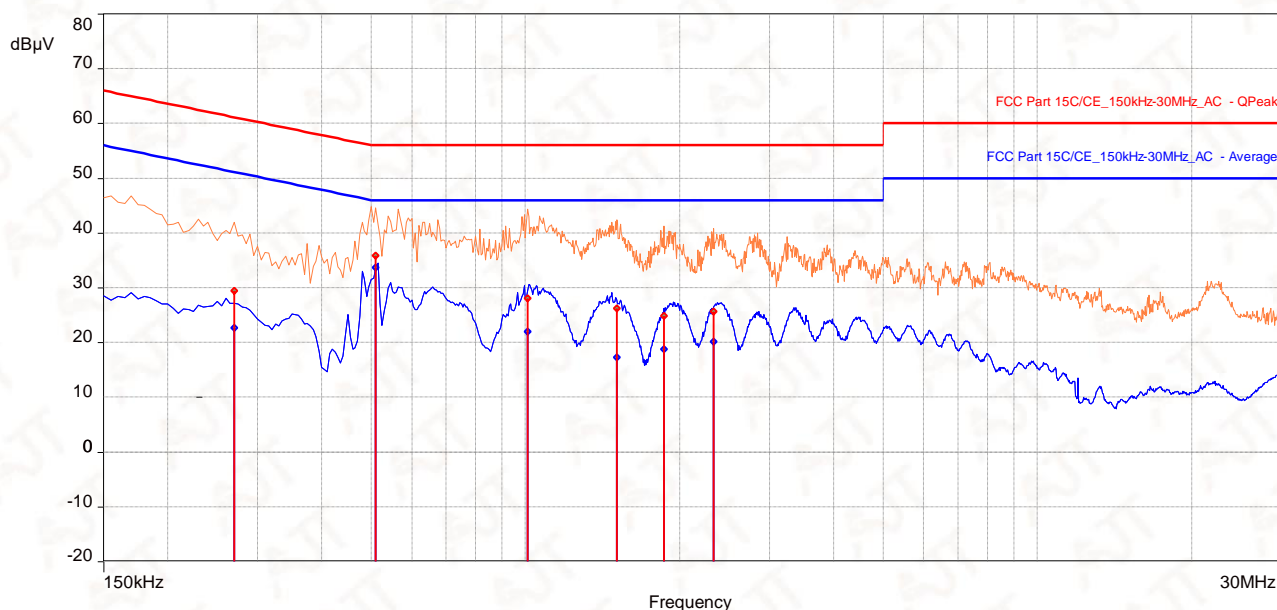




# Test Report

No.: AJT191119016E

Test Date	2019.11.25	Result	Pass
Power Supply	AC 240V/50Hz	Test Mode	Charging mode
Condition	Temp:24℃, Humi:64%, Press:101kPa	LISN	NSLK 8127 RC
Test Site	Control Room		



Frequency (MHz)	Peak (dBμV)	QP (dBμV)	QP Limit (dBμV)	QP Margin (dB)	Avg (dBμV)	Avg Limit (dBμV)	Avg Margin (dB)	Line Pos.	Correction (dB)
0.27	34.60	29.42	61.12	31.69	22.68	51.12	28.44	N	10.27
0.51	39.76	35.87	56.00	20.13	33.63	46.00	12.37	N	10.26
1.01	33.53	28.11	56.00	27.89	21.99	46.00	24.01	N	10.35
1.51	31.26	26.20	56.00	29.80	17.24	46.00	28.76	N	10.36
1.865	30.99	24.90	56.00	31.10	18.75	46.00	27.25	N	10.38
2.33	31.26	25.68	56.00	30.32	20.18	46.00	25.82	N	10.42

1.QP and Avg. are abbreviations of Quasi-Peak and Average  
2.Emission Level = Read Level + Factor  
3.Correction Factor = LISN Factor + Cable Loss+ Pulse limiter Factor  
4.Margin value = Limit Value - Emission Level

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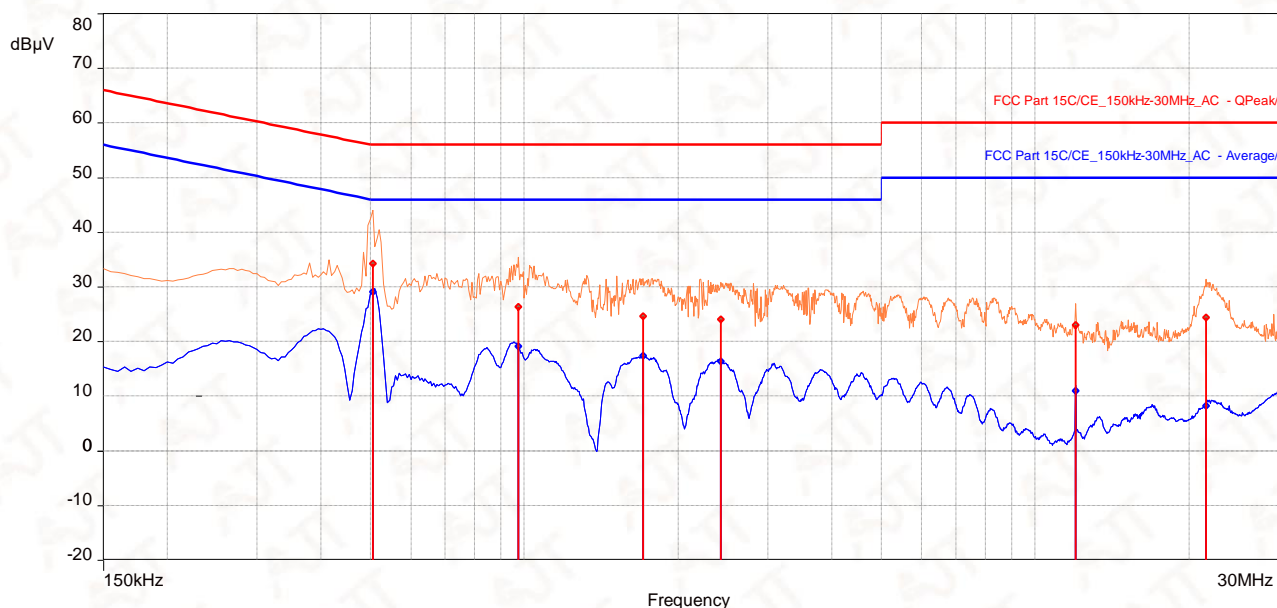




# Test Report

No.: AJT191119016E

Test Date	2019.11.25	Result	Pass
Power Supply	AC 240V/50Hz	Test Mode	Charging mode
Condition	Temp:24℃, Humi:64%, Press:101kPa	LISN	NSLK 8127 RC
Test Site	Control Room		



Frequency (MHz)	Peak (dBμV)	QP (dBμV)	QP Limit (dBuV)	QP Margin (dB)	Avg (dBuV)	Avg Limit (dBuV)	Avg Margin (dB)	Line Pos.	Correction (dB)
0.505	44.17	34.30	56.00	21.70	29.08	46.00	16.92	L	10.26
0.975	35.83	26.30	56.00	29.70	19.07	46.00	26.93	L	10.33
1.71	31.69	24.59	56.00	31.41	17.35	46.00	28.65	L	10.37
2.425	31.00	24.04	56.00	31.96	16.34	46.00	29.66	L	10.43
12	29.71	23.06	60.00	36.94	10.92	50.00	39.08	L	10.66
21.6	31.55	24.42	60.00	35.58	8.17	50.00	41.83	L	11.11

1.QP and Avg. are abbreviations of Quasi-Peak and Average  
2.Emission Level = Read Level + Factor  
3.Correction Factor = LISN Factor + Cable Loss+ Pulse limiter Factor  
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## Test Report

No.: AJT191119016E

### 5.4 Antenna requirements

Test Standard:  
FCC Part 15, Subpart C 15.203

Standard Requirement:

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, 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.

EUT Antenna:

The best case gain of the antenna is 0dBi. Antenna location: Refer to Appendix (Internal photos).

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## Test Report

No.: AJT191119016E

### 6 Test Equipment

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	Spectrum Analyzer	Keysight	N9010A	MY51120099	2019/07/17	2020/07/17
2	JS0806-2 RF Control Unit	Tonscend	JS0806-2	188060124	2018/12/12	2019/12/12
3	Broadband Preamplifier	SCHWARZBECK	BBV 9743B	00067	2019/04/15	2020/04/15
4	Broadband Preamplifier	SCHWARZBECK	BBV 9718B	00062	2019/04/15	2020/04/15
5	EMI Test Receiver	ROHDE & SCHWARZ	ESR3	102452	2019/07/15	2020/07/15
6	Trilog Broadband Antenna	SCHWARZBECK	VULB 9163	9163-1127	2019/06/04	2020/06/04
7	Horn Antenna	SCHWARZBECK	BBHA 9120D	01829	2019/06/04	2020/06/04
8	DC power supply	ZHAOXIN	RXN-3010D	2009006313	2018/12/24	2019/12/23
9	Vector Signal Generator	Keysight	N5172B-506	MY53052255	2019/06/03	2020/06/03
10	EXG Analog Signal Generator	Keysight	N5171B-506	MY53051692	2019/05/31	2020/05/31
11	Constant temperature humidity chamber	REALE	RHP-225L	R2017032031 1	2019/07/05	2020/07/05
12	Temperature And Humidity Indicator	JianDaRenKe	Cos-03	0612058	2019/07/31	2020/07/31
13	BAT-EMC Testing (Test Software)	NEXIO	BAT-EMC	Version: 3.16.0.74	N/A	N/A
14	JS1120-3 Test System (Test Software)	Tonscend	JS1120-3	Version: 2.5.77.0418	N/A	N/A
15	Double Ridge Guide Horn Antennas	A.H.Systems	SAS-574	588	2019/06/06	2020/06/06
16	Active loop antenna	BeiJing DaZe technology co. LTD	ZN30900C	15015	2019.03.10	2020.03.10

### END OF TEST REPORT

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