TEST REPORT

Report No.:	KS2211S4711E02
FCC ID.:	2AHYV-JKEYB
Applicant.:	PEAG, LLC dba JLab Audio
Address.:	5927 Landau Ct. Carlsbad, CA 92008,USA
Manufacturer.:	GuangDong Simpreal Intelligent Technology Co., Ltd
Address.:	Room 2408, JiaHong ZhenXing DaSha, DongGuan Avenue #13, DongCheng District, DongGuan City, GuangDong Province, P.R. China
Product Name.:	keyboard
Trademark.:	JLAB
Model/Type reference.:	JBuds Keyboards
Standard.:	47 CFR Part 15.249
Date of Receipt.:	November 7, 2022
Date of Test Date.:	November 7, 2022 to November 11, 2022
Date of issue.:	November 11, 2022
Test result.....:	**Pass**

Prepared by:		
(Printed name + Signature)	Pai Zheng	Pai Zheng
Approved by:		
(Printed name + Signature)	Sky Dong	Sky dong

Testing Laboratory Name...:	**KSIGN(Guangdong) Testing Co., Ltd.**
Address.:	West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

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1. TEST SUMMARY

1.1. Test Standards

The tests were performed according to following standards:

47 CFR Part 15.249: Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHZ, and 24.0-24.25 GHz

1.2. Report Version

Revised No.	Date of issue	Description
01	November 11, 2022	Original

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1.3. Test Description

Test Item	Standard	Requirement	Result
Antenna requirement	47 CFR Part 15.249	Part 15.203	Pass
Conducted Emission at AC power line	47 CFR Part 15.249	47 CFR 15.207(a)	Pass
Occupied Bandwidth	47 CFR Part 15.249	47 CFR 15.215(c)	Pass
Field strength of fundamental	47 CFR Part 15.249	47 CFR 15.249(a)	Pass
Emissions around the fundamental which falls within the restriction frequency bands	47 CFR Part 15.249	47 CFR 15.249(d)	Pass
Emissions in restricted frequency bands (below 1GHz)	47 CFR Part 15.249	47 CFR 15.249(a) 47 CFR 15.249(d) 47 CFR 15.249(e)	Pass
Emissions in restricted frequency bands (above 1GHz)	47 CFR Part 15.249	47 CFR 15.249(a) 47 CFR 15.249(d) 47 CFR 15.249(e)	Pass

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1.4. Test Facility

KSIGN(Guangdong) Testing Co., Ltd.
West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu,Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

The test facility is recognized, certified, or accredited by the following organizations:
CNAS-Lab Code: L13261
KSIGN(Guangdong) Testing Co., Ltd. has been assessed and proved to be in Compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2017 General Requirements) for the Competence of Testing and Calibration Laboratories.
A2LA-Lab Cert. No.: 5457.01
KSIGN(Guangdong) Testing Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025:2017 General Requirementsfor the Competence of Testing and Calibration Laboratories and any additional program requirements in the
identified field of testing
ISED#: 25693 CAB identifier.: CN0096
KSIGN(Guangdong) Testing Co., Ltd. has been listed by Innovation, Science and Economic Development Canada to perform electromagnetic emission measurement.
FCC-Registration No.: 294912 Designation Number: CN1328
KSIGN(Guangdong) Testing Co., Ltd. EMC Laboratory has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

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1.5. Measurement Uncertainty

Test Items	Measurement Uncertainty
Conducted Emission (150k-30MHz)	± 3.34dB
RSE (30-1000MHz)	± 5.7dB
RSE (1-18GHz)	± 4.68dB
RSE (18-40GHz)	± 5.18dB

The reported uncertainty of measurement y ± U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

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2. GENERAL INFORMATION

2.1. General Description Of EUT

Product Name:	keyboard
Trademark:	JLAB
Model / Type reference:	JBuds Keyboards
Power Supply:	DC 3.7V from battery
Operation Frequency:	Channel / Frequency (MHz) / Channel / Frequency (MHz) 1 / 2402 / 9 / 2414 2 / 2429 / 10 / 2434 3 / 2446 / 11 / 2459 4 / 2461 / 12 / 2473 5 / 2407 / 13 / 2419 6 / 2424 / 14 / 2439 7 / 2449 / 15 / 2454 8 / 2466 / 16 / 2479
Number of Channels:	16
Modulation Type:	GFSK
Antenna Type:	PCB
Antenna Gain:	-0.71dBi

2.2. Accessory Equipment Information

The EUT was tested as an independent device.

2.3. Description of Test Modes

No.	Title	Description of Mode
Test Mode1	TM1	Keep EUT is transmitting in 2.4GSRD mode

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2.4. Measurement Instruments List

Conducted Emission at AC power line				
Test Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
LISN	R&S	ENV432	1326.6105.02	2023-03-04
EMI Test Receiver	R&S	ESR	102524	2023-03-04
Manual RF Switch	JS TOYO	/	MSW-01/002	2023-03-04
ISN CAT6	Schwarzbeck	CAT5 8158	227	2023-03-04
Color Signal Generator	Philips	PM5418	672926	2023-03-04
Power Absorbing Clamp	R&S	MDS-21	100925	2023-03-26

Occupied Bandwidth				
Test Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
Wideband Radio Communication Tester	R&S	CMU200	115297	2023-03-04
Audio Analyzer	R&S	UPL16	100001	2023-03-04
Shielding box	Gxiong	GX-5915A	2201113	2023-04-23
High Pass Filter	COM-MW Technology Co., Ltd	ZHPF-M1.2-9G-187	09203403	2023-03-04
Band Stop Filter	COM-MW Technology Co., Ltd	ZBSF6-C820-920-188	09203401	2023-03-04
Splitter	COM-MW Technology Co., Ltd	ZPD-M1-8-2103	09203407	2023-03-04
Coaxial Cable	BEBES	A40-2.92M2.92F-4.5M	1907021	2023-03-04
Hygrothermograph	Anymetre	JB913	/	2023-03-07
Climate Chamber	Angul	AGNH80L	1903042120	2023-03-04
Spectrum Analyzer	HP	8593E	3831U02087	2023-03-04
Dual Output DC Power Supply	Agilent	E3646A	MY40009992	2023-03-04
RF Control Unit	Tonscend	JS0806-2	/	2023-03-04
Analog Signal Generator	HP	83752A	3344A00337	2023-03-04
Vector Signal Generator	Agilent	N5182A	MY50142520	2023-03-04
Wideband Radio Communication Tester	R&S	CMW500	157282	2023-03-04
Spectrum Analyzer	R&S	FSV40-N	101798	2023-03-04

Field strength of fundamental				
Test Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
Ultra-Broadband logarithmic period Antenna	Schwarzbeck	VULB 9163	1230	2023-04-12
Pre-Amplifier	Schwarzbeck	BBV 9745	9745#129	2023-03-04
Color Signal Generator	Philips	PM5418	672926	2023-03-04

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Broadcast Television Signal Generator	R&S	SFE100	141038	2023-03-04
Analog Signal Generator	Agilent	8648A	3847M00445	2023-03-04
EMI Test Receiver	R&S	ESR	102525	2023-03-04
Horn Antenna	Schwarzbeck	BBHA 9120 D	2023	2023-03-29
Pre-Amplifier	EMCI	EMC051835SE	980662	2023-03-04
Spectrum Analyzer	Keysight	N9020A	MY46471971	2023-03-04
Loop Antenna	Beijin ZHINAN	ZN30900C	18050	2023-03-05

Emissions around the fundamental which falls within the restriction frequency bands				
Test Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
Ultra-Broadband logarithmic period Antenna	Schwarzbeck	VULB 9163	1230	2023-04-12
Pre-Amplifier	Schwarzbeck	BBV 9745	9745#129	2023-03-04
Color Signal Generator	Philips	PM5418	672926	2023-03-04
Broadcast Television Signal Generator	R&S	SFE100	141038	2023-03-04
Analog Signal Generator	Agilent	8648A	3847M00445	2023-03-04
EMI Test Receiver	R&S	ESR	102525	2023-03-04
Horn Antenna	Schwarzbeck	BBHA 9120 D	2023	2023-03-29
Pre-Amplifier	EMCI	EMC051835SE	980662	2023-03-04
Spectrum Analyzer	Keysight	N9020A	MY46471971	2023-03-04
Loop Antenna	Beijin ZHINAN	ZN30900C	18050	2023-03-05

Emissions in restricted frequency bands (below 1GHz)				
Test Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
Ultra-Broadband logarithmic period Antenna	Schwarzbeck	VULB 9163	1230	2023-04-12
Pre-Amplifier	Schwarzbeck	BBV 9745	9745#129	2023-03-04
Color Signal Generator	Philips	PM5418	672926	2023-03-04
Broadcast Television Signal Generator	R&S	SFE100	141038	2023-03-04
Analog Signal Generator	Agilent	8648A	3847M00445	2023-03-04
EMI Test Receiver	R&S	ESR	102525	2023-03-04
Horn Antenna	Schwarzbeck	BBHA 9120 D	2023	2023-03-29
Pre-Amplifier	EMCI	EMC051835SE	980662	2023-03-04
Spectrum Analyzer	Keysight	N9020A	MY46471971	2023-03-04
Loop Antenna	Beijin ZHINAN	ZN30900C	18050	2023-03-05

Emissions in restricted frequency bands (above 1GHz)				
Test Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
Ultra-Broadband logarithmic period	Schwarzbeck	VULB 9163	1230	2023-04-12

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Antenna				
Pre-Amplifier	Schwarzbeck	BBV 9745	9745#129	2023-03-04
Color Signal Generator	Philips	PM5418	672926	2023-03-04
Broadcast Television Signal Generator	R&S	SFE100	141038	2023-03-04
Analog Signal Generator	Agilent	8648A	3847M00445	2023-03-04
EMI Test Receiver	R&S	ESR	102525	2023-03-04
Horn Antenna	Schwarzbeck	BBHA 9120 D	2023	2023-03-29
Pre-Amplifier	EMCI	EMC051835SE	980662	2023-03-04
Spectrum Analyzer	Keysight	N9020A	MY46471971	2023-03-04
Loop Antenna	Beijin ZHINAN	ZN30900C	18050	2023-03-05

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3. Evaluation Results (Evaluation)

3.1. Antenna requirement

Test 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 shall be considered sufficient to comply with the provisions of this section.

3.1.1. Conclusion:

The directional gain of the antenna less than 6dBi. It comply with the standard requirement. In case of replacement of broken antenna the same antenna type must be used.
Antenna structure please refer to the EUT internal photographs antenna photo.

4. Radio Spectrum Matter Test Results (RF)

4.1. Conducted Emission at AC power line

Test Requirement:	Except as shown in paragraphs (b)and (c)of this section, 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 or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN).
Test Limit:	Frequency of emission (MHz) / Conducted limit (dBμV): Quasi-peak / Average 0.15-0.5: 66 to 56* / 56 to 46* 0.5-5: 56 / 46 5-30: 60 / 50 *Decreases with the logarithm of the frequency.
Test Method:	Refer to ANSI C63.10-2013 section 6.2, standard test method for ac power-line conducted emissions from unlicensed wireless devices

4.1.1. E.U.T. Operation:

Operating Environment:	
Temperature:	25.2 °C
Humidity:	54.1 %
Atmospheric Pressure:	102 kPa
Final test mode:	Test Mode1

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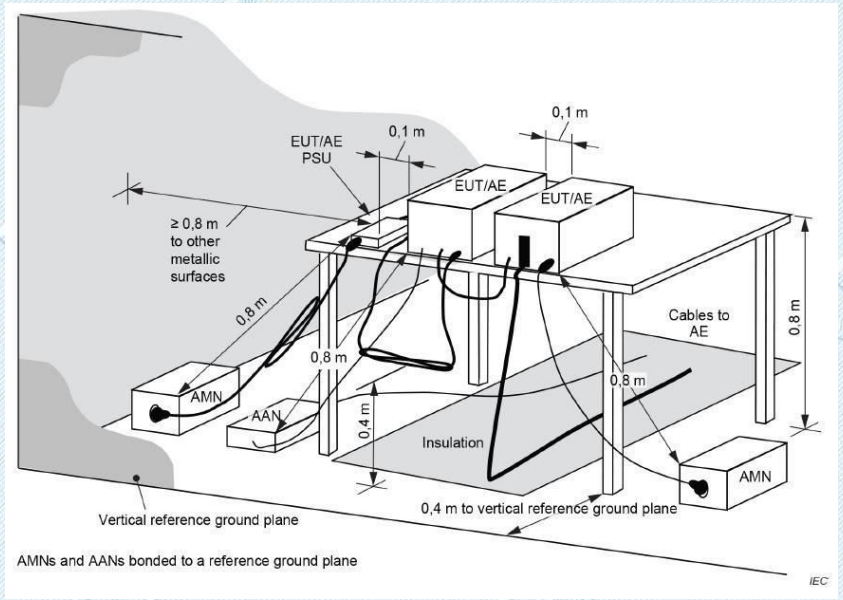
4.1.2. Test Setup Diagram:



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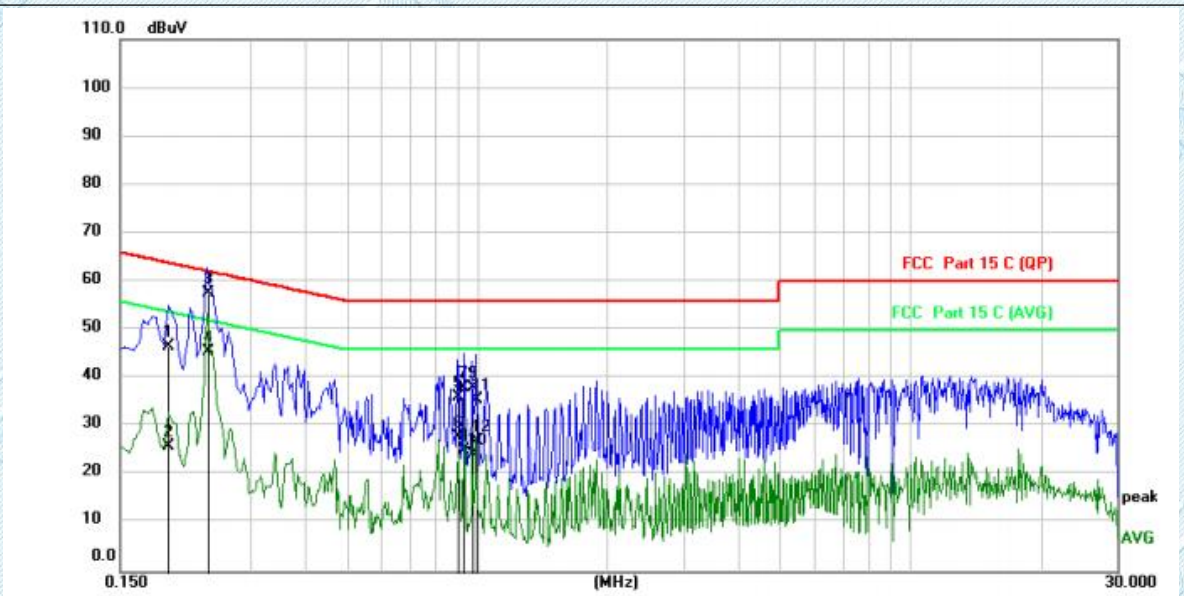
4.1.3. Test Data:

Test Mode1 / Line: Line / Band: 2.4G / BW: 2



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1940	35.76	10.75	46.51	63.86	-17.35	QP	
2		0.1940	15.26	10.75	26.01	53.86	-27.85	AVG	
3	*	0.2380	46.87	10.74	57.61	62.17	-4.56	QP	
4		0.2380	34.79	10.74	45.53	52.17	-6.64	AVG	
5		0.9020	25.73	10.48	36.21	56.00	-19.79	QP	
6		0.9020	17.43	10.48	27.91	46.00	-18.09	AVG	
7		0.9300	27.52	10.49	38.01	56.00	-17.99	QP	
8		0.9300	14.81	10.49	25.30	46.00	-20.70	AVG	
9		0.9740	27.54	10.50	38.04	56.00	-17.96	QP	
10		0.9740	13.89	10.50	24.39	46.00	-21.61	AVG	
11		0.9980	25.03	10.51	35.54	56.00	-20.46	QP	
12		0.9980	16.60	10.51	27.11	46.00	-18.89	AVG	

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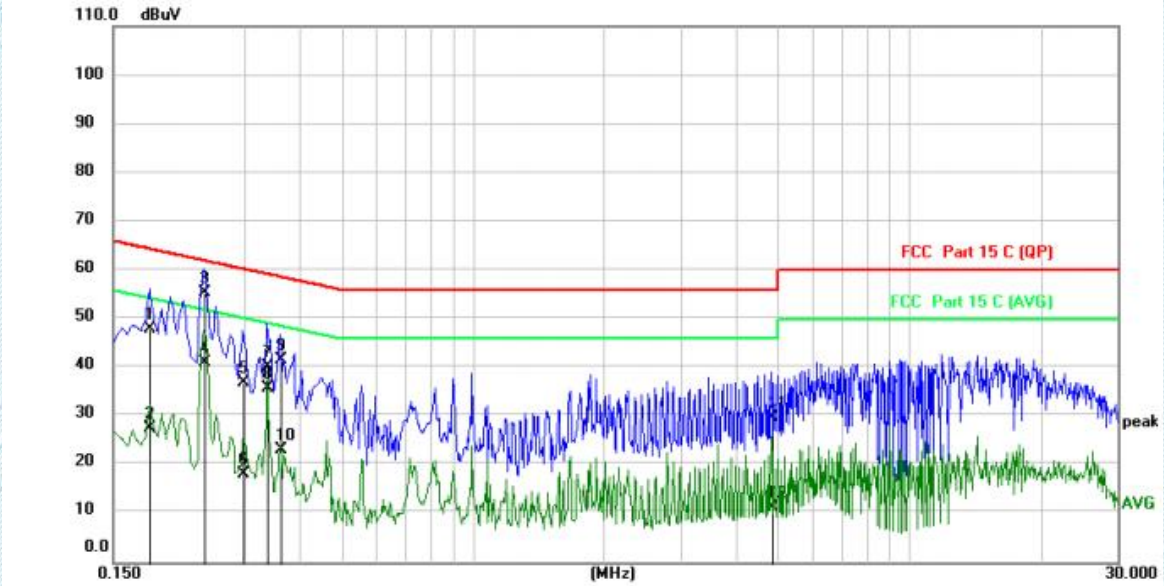
Test Mode1 / Line: Neutral / Band: 2.4G / BW: 2



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1819	37.29	10.74	48.03	64.40	-16.37	QP	
2		0.1819	16.79	10.74	27.53	54.40	-26.87	AVG	
3	*	0.2420	44.67	10.72	55.39	62.03	-6.64	QP	
4		0.2420	30.53	10.72	41.25	52.03	-10.78	AVG	
5		0.2980	26.40	10.51	36.91	60.30	-23.39	QP	
6		0.2980	7.87	10.51	18.38	50.30	-31.92	AVG	
7		0.3379	29.68	10.53	40.21	59.25	-19.04	QP	
8		0.3379	25.37	10.53	35.90	49.25	-13.35	AVG	
9		0.3620	31.06	10.53	41.59	58.68	-17.09	QP	
10		0.3620	12.81	10.53	23.34	48.68	-25.34	AVG	
11		4.8460	19.10	10.62	29.72	56.00	-26.28	QP	
12		4.8460	0.79	10.62	11.41	46.00	-34.59	AVG	

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4.2. 20 dB Occupied Bandwidth

Test Requirement:	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.
Test Limit:	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.
Test Method:	Occupied bandwidth—relative measurement procedure
Procedure:	a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the EMI receiver or spectrum analyzer shall be between two times and five times the OBW. b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be approximately three times RBW, unless otherwise specified by the applicable requirement. c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2. d) Steps a) through c) might require iteration to adjust within the specified tolerances. e) The dynamic range of the instrument at the selected RBW shall be more than 10 dB below the target “−xx dB down” requirement; that is, if the requirement calls for measuring the −20 dB OBW, the instrument noise floor at the selected RBW shall be at least 30 dB below the reference value. f) Set detection mode to peak and trace mode to max hold. g) Determine the reference value: Set the EUT to transmit an unmodulated carrier or modulated signal, as applicable. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value). h) Determine the “−xx dB down amplitude” using [(reference value) − xx]. Alternatively, this calculation may be made by using the marker-delta function of the instrument. i) If the reference value is determined by an unmodulated carrier, then turn the EUT modulation ON, and either clear the existing trace or start a new trace on the spectrum analyzer and allow the new trace to stabilize. Otherwise, the trace from step g) shall be used for step j). j) Place two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the “-xx dB down amplitude” determined in step h). If a marker is below this “−xx dB down amplitude” value, then it shall be as close as possible to this value. The occupied bandwidth is the frequency difference between the two markers. Alternatively, set a marker at the lowest frequency of the envelope of the spectral display, such that the marker is at or slightly below the “-xx dB down amplitude” determined in step h). Reset the marker-delta function and move the marker to the other side of the emission until the delta marker amplitude is at the same level as the reference marker amplitude. The marker-delta frequency reading at this point is the specified emission bandwidth. k) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

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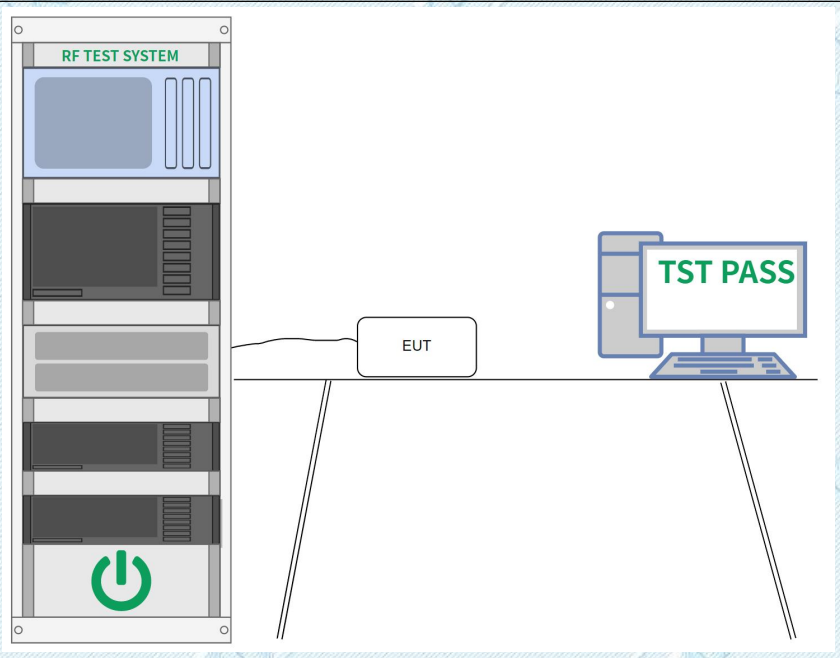
4.2.1. E.U.T. Operation:

Operating Environment:	
Temperature:	25 °C
Humidity:	45.6 %
Atmospheric Pressure:	102 kPa
Final test mode:	Test Mode1

4.2.2. Test Setup Diagram:



4.2.3. Test Data:

TestMode	Antenna	Freq(MHz)	20dB OCB [MHz]	Verdict
2.4GSRD	Ant1	2402	1.6440	Pass
		2446	1.6556	Pass
		2479	1.6498	Pass

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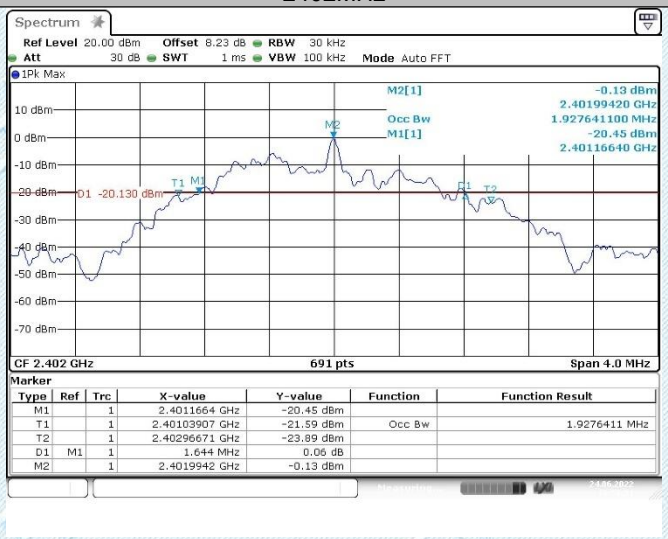
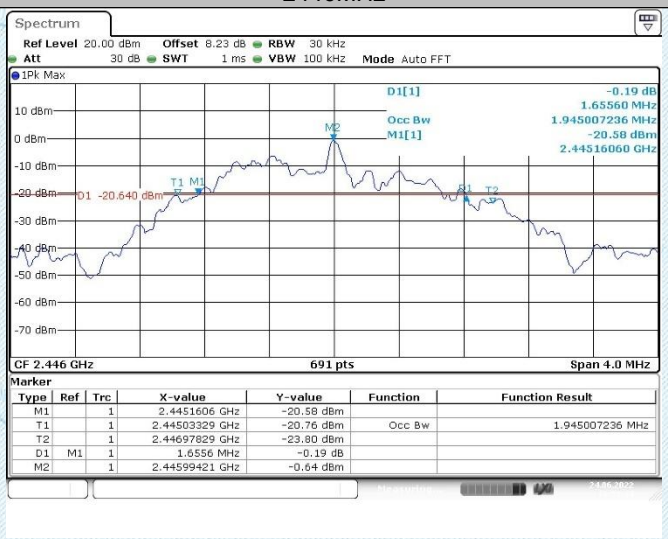
4.2.4. Test Graphs

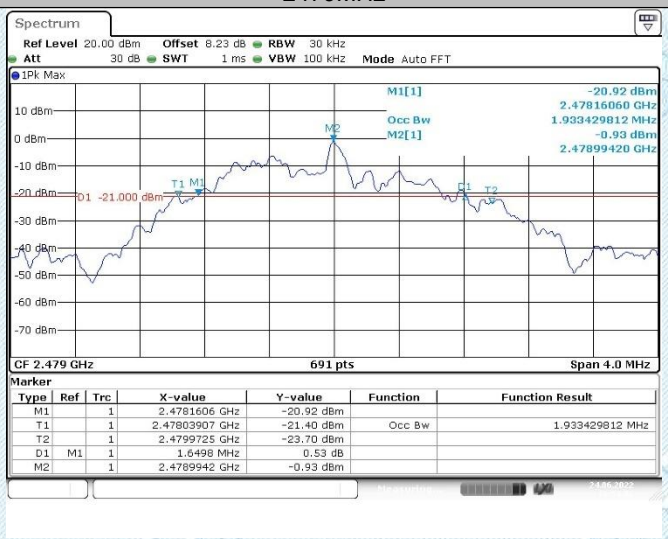
2402MHz



2446MHz



2479MHz



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4.3. Field strength of fundamental

<table>
<tr><td>Test Requirement:</td><td>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:
<table>
<tr><th>Fundamental frequency</th><th>Field strength of fundamental (millivolts/meter)</th><th>Field strength of harmonics (microvolts/meter)</th></tr>
<tr><td>902-928 MHz</td><td>50</td><td>500</td></tr>
<tr><td>2400-2483.5 MHz</td><td>50</td><td>500</td></tr>
<tr><td>5725-5875 MHz</td><td>50</td><td>500</td></tr>
<tr><td>24.0-24.25 GHz</td><td>250</td><td>2500</td></tr>
</table></td></tr>
<tr><td>Test Limit:</td><td>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:
<table>
<tr><th>Fundamental frequency</th><th>Field strength of fundamental (millivolts/meter)</th><th>Field strength of harmonics (microvolts/meter)</th></tr>
<tr><td>902-928 MHz</td><td>50</td><td>500</td></tr>
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<tr><td>5725-5875 MHz</td><td>50</td><td>500</td></tr>
<tr><td>24.0-24.25 GHz</td><td>250</td><td>2500</td></tr>
</table></td></tr>
</table>

4.3.1. E.U.T. Operation:

Operating Environment:	
Temperature:	23.4 °C
Humidity:	53.2 %
Atmospheric Pressure:	101 kPa
Final test mode:	Test Mode1

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4.3.2. Test Data:

Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dBuV/m)	Polarization	Test value
2402	90.49	-10.88	79.61	114	-34.39	Horizontal	Peak
2446	91.12	-10.88	80.24	114	-33.76	Horizontal	Peak
2479	92.73	-10.88	81.85	114	-32.15	Horizontal	Peak
2402	74.50	-10.88	63.62	94	-30.38	Horizontal	AVG
2446	76.76	-10.88	65.88	94	-28.12	Horizontal	AVG
2479	77.49	-10.88	66.61	94	-27.39	Horizontal	AVG

Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dBuV/m)	Polarization	Test value
2402	93.46	-10.88	82.58	114	-31.42	Vertical	Peak
2446	93.02	-10.88	82.14	114	-31.86	Vertical	Peak
2479	95.93	-10.88	85.05	114	-28.95	Vertical	Peak
2402	75.47	-10.88	64.59	94	-29.41	Vertical	AVG
2446	73.54	-10.88	62.66	94	-31.34	Vertical	AVG
2479	71.79	-10.88	60.91	94	-33.09	Vertical	AVG

Note:
Correct Factor=Antenna Factor + Cable Loss -Preamplifier Factor.

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4.4. Emissions around the fundamental which falls within the restriction frequency bands

<table>
<tr><td>Test Requirement:</td><td>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.</td></tr>
<tr><td>Test Limit:</td><td>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.
<table>
<tr><td>Frequency (MHz)</td><td>Field strength (microvolts/meter)</td><td>Measurement distance (meters)</td></tr>
<tr><td>0.009-0.490</td><td>2400/F(kHz)</td><td>300</td></tr>
<tr><td>0.490-1.705</td><td>24000/F(kHz)</td><td>30</td></tr>
<tr><td>1.705-30.0</td><td>30</td><td>30</td></tr>
<tr><td>30-88</td><td>100 **</td><td>3</td></tr>
<tr><td>88-216</td><td>150 **</td><td>3</td></tr>
<tr><td>216-960</td><td>200 **</td><td>3</td></tr>
<tr><td>Above 960</td><td>500</td><td>3</td></tr>
</table>
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g.,
§§ 15.231 and 15.241.</td></tr>
<tr><td>Test Method:</td><td>Radiated emissions tests</td></tr>
<tr><td>Procedure:</td><td>ANSI C63.10-2013 section 6.6.4</td></tr>
</table>

4.4.1. E.U.T. Operation:

Operating Environment:	
Temperature:	23.4 °C
Humidity:	53.2 %
Atmospheric Pressure:	101 kPa
Final test mode:	Test Mode1

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4.4.2. Test Data:

Frequency(MHz):		2402		Polarity:		HORIZONTAL
Frequency (MHz)	Reading Level (dBuV/m)	Correc Factor (dB/m)	Measurement (dBuV/m)	Limit (dBuV/m)	Over (dB)	Detector
2390.00	57.46	-10.92	46.54	74	27.46	PK
2390.00	42.06	-10.92	31.14	54	22.86	AV

Frequency(MHz):		2402		Polarity:		HORIZONTAL
Frequency (MHz)	Reading Level (dBuV/m)	Correc Factor (dB/m)	Measurement (dBuV/m)	Limit (dBuV/m)	Over (dB)	Detector
2390.00	51.92	-10.92	41.00	74	33.00	PK
2390.00	41.29	-10.92	30.37	54	23.63	AV

Frequency(MHz):		2479		Polarity:		HORIZONTAL
Frequency (MHz)	Reading Level (dBuV/m)	Correc Factor (dB/m)	Measurement (dBuV/m)	Limit (dBuV/m)	Over (dB)	Detector
2483.50	61.21	-10.88	50.33	74	23.67	PK
2483.50	41.15	-10.88	30.27	54	23.73	AV

Frequency(MHz):		2479		Polarity:		HORIZONTAL
Frequency (MHz)	Reading Level (dBuV/m)	Correc Factor (dB/m)	Measurement (dBuV/m)	Limit (dBuV/m)	Over (dB)	Detector
2483.50	60.18	-10.88	49.30	74	24.70	PK
2483.50	40.51	-10.88	29.63	54	24.37	AV

Note:

1.Level (dBμV/m)= Reading (dBμV)+ Factor (dB/m)

2.Factor(dB/m)=Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB)

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4.5. Emissions in restricted frequency bands (below 1GHz)

<table>
<tr><td>Test Requirement:</td><td>47 CFR 15.249(a)
47 CFR 15.249(d)
47 CFR 15.249(e)</td></tr>
<tr><td>Test Limit:</td><td>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:

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

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.
<table>
<tr><th>Frequency (MHz)</th><th>Field strength (microvolts/meter)</th><th>Measurement distance (meters)</th></tr>
<tr><td>0.009-0.490</td><td>2400/F(kHz)</td><td>300</td></tr>
<tr><td>0.490-1.705</td><td>24000/F(kHz)</td><td>30</td></tr>
<tr><td>1.705-30.0</td><td>30</td><td>30</td></tr>
<tr><td>30-88</td><td>100 **</td><td>3</td></tr>
<tr><td>88-216</td><td>150 **</td><td>3</td></tr>
<tr><td>216-960</td><td>200 **</td><td>3</td></tr>
<tr><td>Above 960</td><td>500</td><td>3</td></tr>
</table>
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g.,
§§ 15.231 and 15.241.

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.</td></tr>
<tr><td>Test Method:</td><td>Radiated emissions tests</td></tr>
<tr><td>Procedure:</td><td>ANSI C63.10-2013 section 6.6.4</td></tr>
</table>

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4.5.1. E.U.T. Operation:

Operating Environment:	
Temperature:	23.4 °C
Humidity:	53.2 %
Atmospheric Pressure:	101 kPa
Final test mode:	Test Mode1

Note:

Both modes of were tested at Low, Middle, and High channel and recorded worst mode at Low channel.

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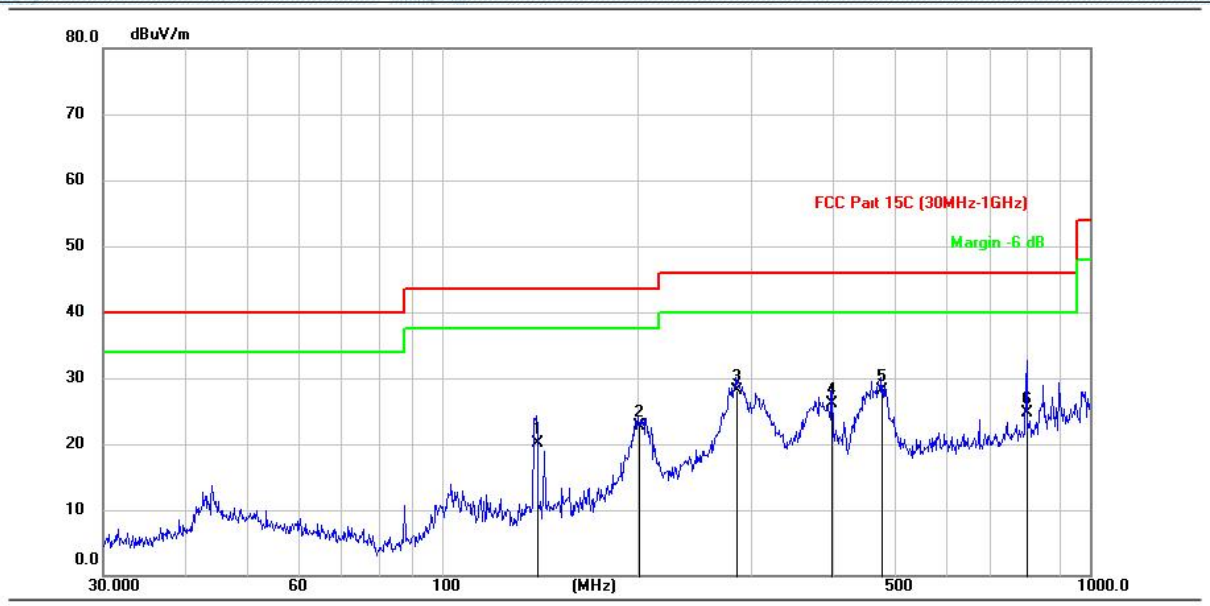
4.5.2. Test Data:

Test Mode1 / Polarization: Horizontal / Band: 2.4G / BW: 2 / CH: L



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Detector
1		140.1945	41.47	-21.27	20.20	43.50	-23.30	QP
2		200.8288	40.64	-17.98	22.66	43.50	-20.84	QP
3		284.4775	43.15	-15.04	28.11	46.00	-17.89	QP
4		398.1915	37.14	-10.97	26.17	46.00	-19.83	QP
5	*	477.8391	38.22	-10.10	28.12	46.00	-17.88	QP
6		799.2600	30.91	-6.24	24.67	46.00	-21.33	QP

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Test Mode1 / Polarization: Vertical / Band: 2.4G / BW: 2 / CH: L

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Detector
1		63.9603	30.83	-18.42	12.41	40.00	-27.59	QP
2		140.0471	36.93	-21.27	15.66	43.50	-27.84	QP
3		300.0514	31.95	-14.66	17.29	46.00	-28.71	QP
4		398.3312	33.04	-10.96	22.08	46.00	-23.92	QP
5	*	498.2003	33.43	-9.94	23.49	46.00	-22.51	QP
6		783.4434	28.77	-6.34	22.43	46.00	-23.57	QP

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4.6. Emissions in restricted frequency bands (above 1GHz)

<table>
<tr><td>Test Requirement:</td><td>47 CFR 15.249(a)
47 CFR 15.249(d)
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<tr><td>Test Limit:</td><td>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:

<table>
<tr><th>Fundamental frequency</th><th>Field strength of fundamental (millivolts/meter)</th><th>Field strength of harmonics (microvolts/meter)</th></tr>
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<tr><td>24.0-24.25 GHz</td><td>250</td><td>2500</td></tr>
</table>

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
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<tr><th>Frequency (MHz)</th><th>Field strength (microvolts/meter)</th><th>Measurement distance (meters)</th></tr>
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<tr><td>1.705-30.0</td><td>30</td><td>30</td></tr>
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** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g.,
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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.</td></tr>
<tr><td>Test Method:</td><td>Radiated emissions tests</td></tr>
<tr><td>Procedure:</td><td>ANSI C63.10-2013 section 6.6.4</td></tr>
</table>

4.6.1. E.U.T. Operation:

Operating Environment:	
Temperature:	23.4 °C
Humidity:	53.2 %

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Atmospheric Pressure:	101 kPa
Final test mode:	Test Mode1

4.6.2. Test Data:

Frequency(MHz):		2402		Polarity:		HORIZONTAL
Frequency (MHz)	Reading Level (dBuV/m)	Correc Factor (dB/m)	Measurement (dBuV/m)	Limit (dBuV/m)	Over (dB)	Detector
4804.00	60.54	-5.92	54.62	74	19.38	PK
4804.00	44.15	-5.92	38.23	54	15.77	AV
7206.00	52.94	-1.81	51.13	74	22.87	PK
7206.00	42.68	-1.81	40.87	54	13.13	AV

Frequency(MHz):		2402		Polarity:		VERTICAL
Frequency (MHz)	Reading Level (dBuV/m)	Correc Factor (dB/m)	Measurement (dBuV/m)	Limit (dBuV/m)	Over (dB)	Detector
4804.00	53.92	-5.92	48.00	74	26.00	PK
4804.00	44.16	-5.92	38.24	54	15.76	AV
7206.00	52.67	-1.81	50.86	74	23.14	PK
7206.00	40.21	-1.81	38.40	54	15.60	AV

Frequency(MHz):		2446		Polarity:		HORIZONTAL
Frequency (MHz)	Reading Level (dBuV/m)	Correc Factor (dB/m)	Measurement (dBuV/m)	Limit (dBuV/m)	Over (dB)	Detector
4892.00	54.05	-5.71	48.34	74	25.66	PK
4892.00	43.99	-5.71	38.28	54	15.72	AV
7338.00	52.40	-0.36	52.04	74	21.96	PK
7338.00	38.87	-0.36	38.51	54	15.49	AV

Frequency(MHz):		2446		Polarity:		VERTICAL
Frequency (MHz)	Reading Level (dBuV/m)	Correc Factor (dB/m)	Measurement (dBuV/m)	Limit (dBuV/m)	Over (dB)	Detector
4892.00	54.32	-5.71	48.61	74	25.39	PK
4892.00	44.59	-5.71	38.88	54	15.12	AV
7338.00	53.06	-0.36	52.70	74	21.30	PK
7338.00	39.14	-0.36	38.78	54	15.22	AV

Frequency(MHz):		2479		Polarity:		HORIZONTAL
Frequency (MHz)	Reading Level (dBuV/m)	Correc Factor (dB/m)	Measurement (dBuV/m)	Limit (dBuV/m)	Over (dB)	Detector
4958.00	52.12	-5.51	46.61	74	27.39	PK
4958.00	43.33	-5.51	37.82	54	16.18	AV
7437.00	51.64	0.99	52.63	74	21.37	PK
7437.00	38.27	0.99	39.26	54	14.74	AV

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Frequency(MHz):		2479		Polarity:		VERTICAL
Frequency (MHz)	Reading Level (dBuV/m)	Correc Factor (dB/m)	Measurement (dBuV/m)	Limit (dBuV/m)	Over (dB)	Detector
4958.00	53.08	-5.51	47.57	74	26.43	PK
4958.00	43.13	-5.51	37.62	54	16.38	AV
7437.00	51.86	0.99	52.85	74	21.15	PK
7437.00	39.39	0.99	40.38	54	13.62	AV

Note:
18GHz-26.5GHz is the background of the site, there is no radiated spurious.

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5. EUT TEST PHOTOS

Conducted Emission at AC power line

Emissions in restricted frequency bands (below 1GHz)

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6. PHOTOGRAPHS OF EUT CONSTRUCTIONAL

Refer to Appendix - Photographs of EUT Constructional Details for KS2211S4711E.

--THE END--

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