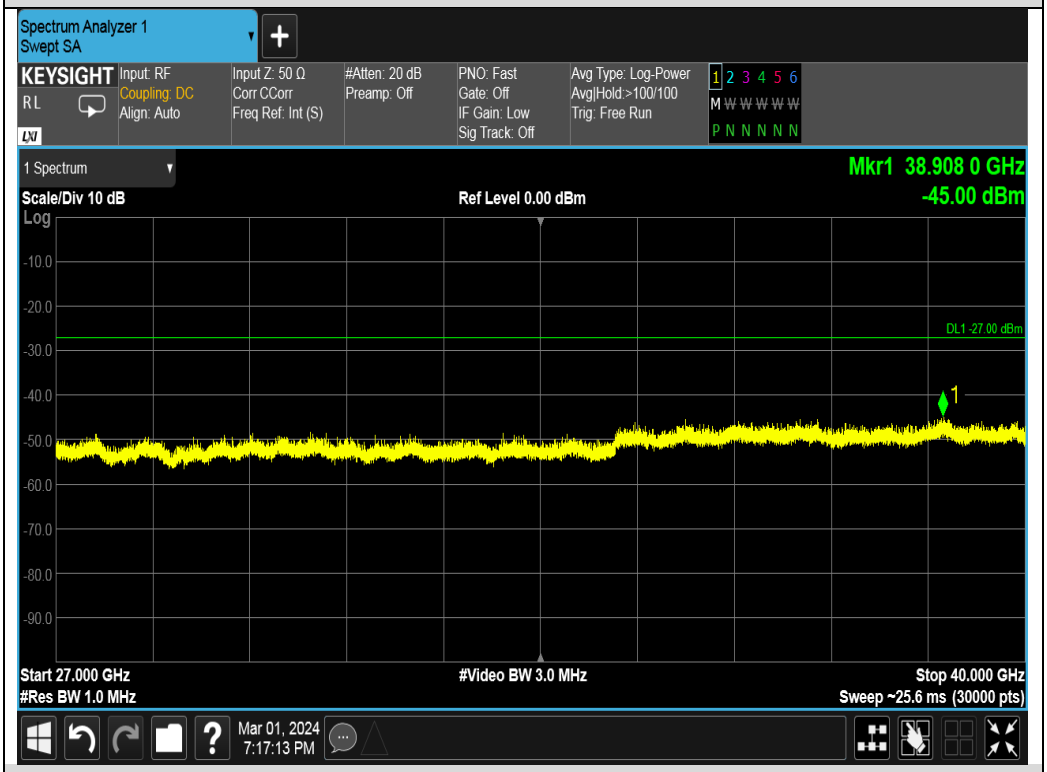
Test_Graph_802.11n40_ANT1_5795_MCS0_Frequency Band4



Test_Graph_802.11n40_ANT1_5795_MCS0_Frequency Band5

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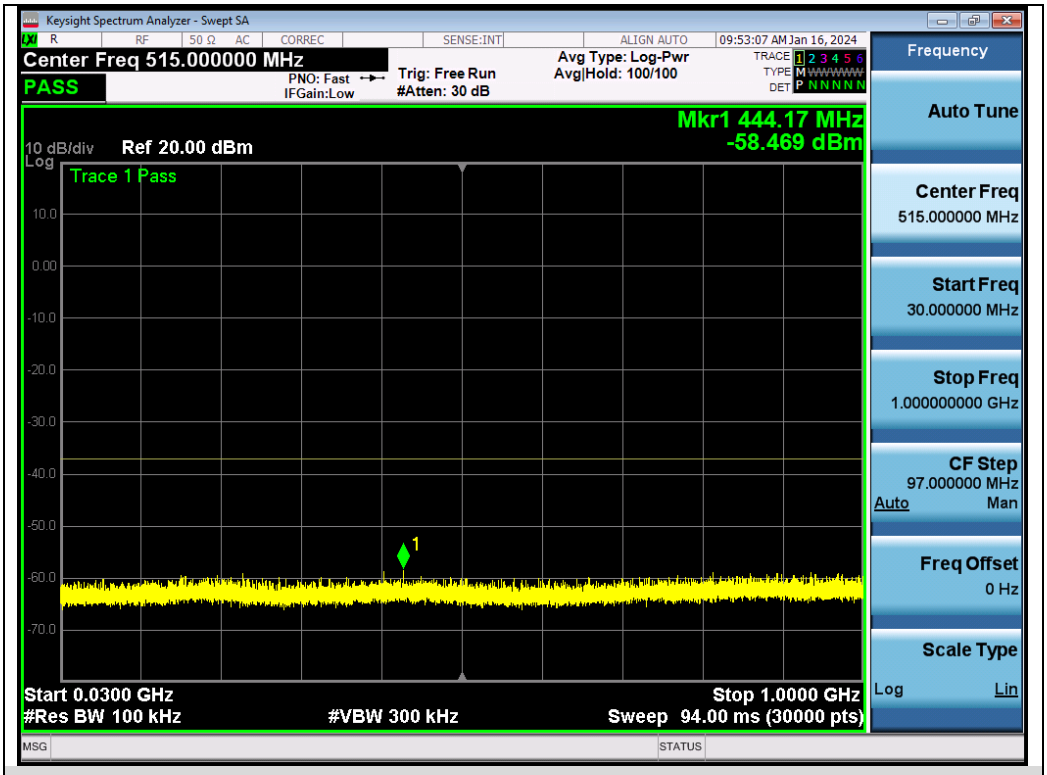
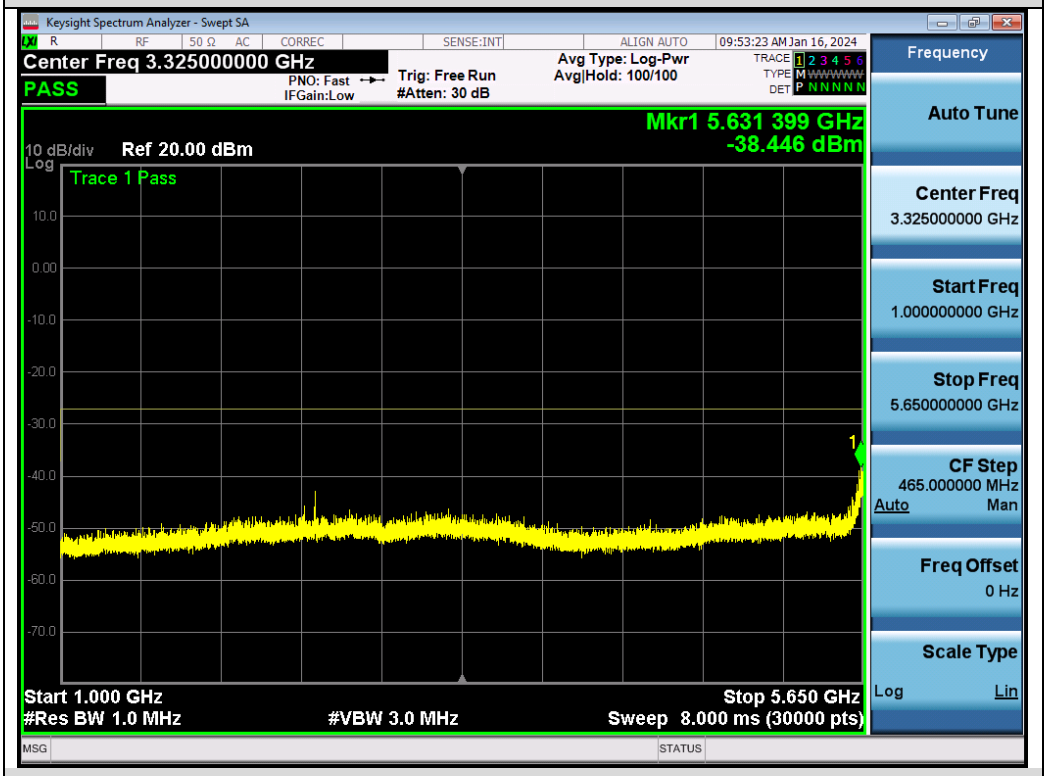


Test_Graph_802.11ac80_ANT1_5775_MCS9_Frequency Band1



Test_Graph_802.11ac80_ANT1_5775_MCS9_Frequency Band2

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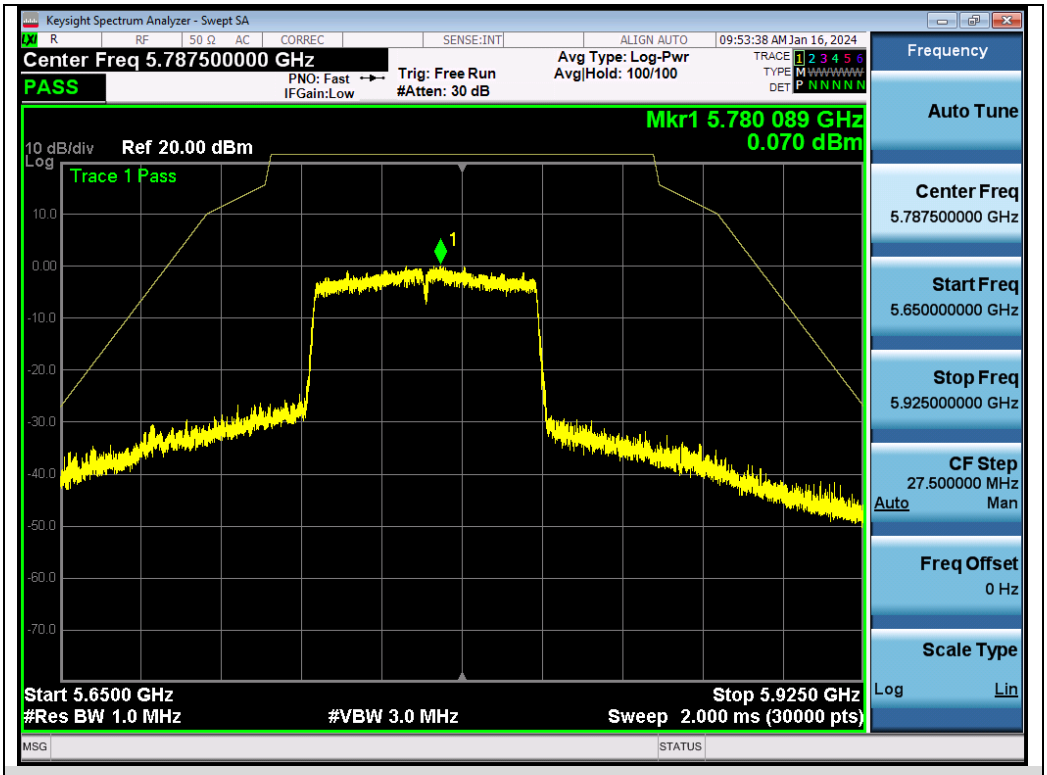
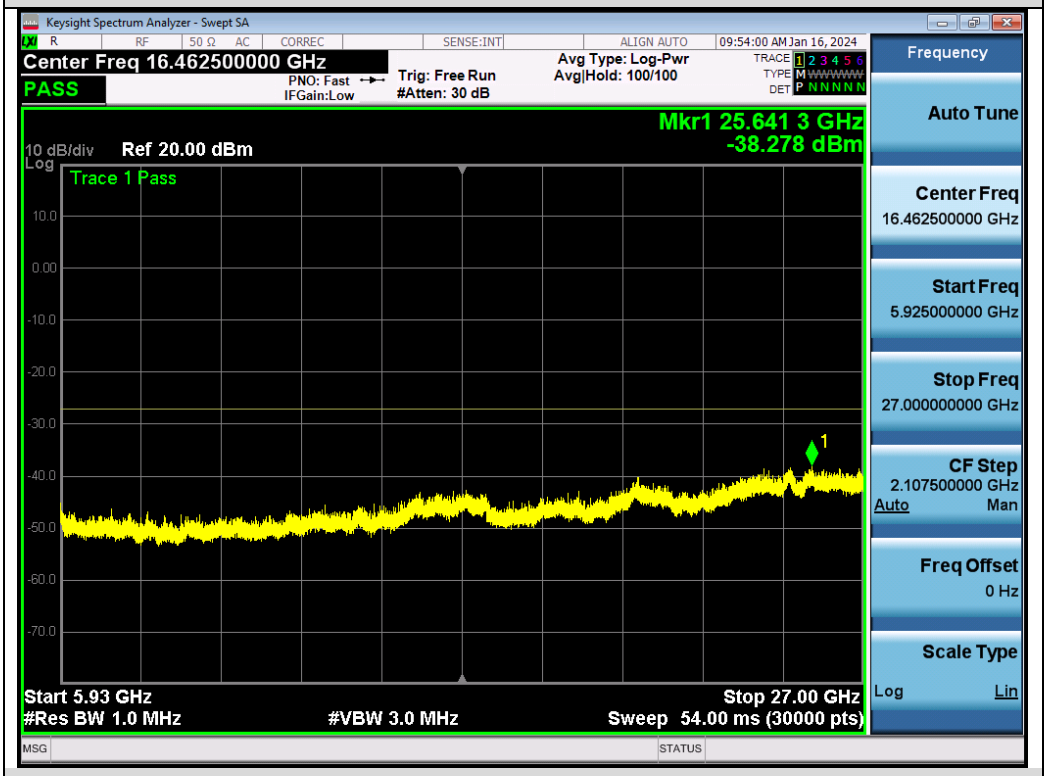


Test_Graph_802.11ac80_ANT1_5775_MCS9_Frequency Band3



Test_Graph_802.11ac80_ANT1_5775_MCS9_Frequency Band4

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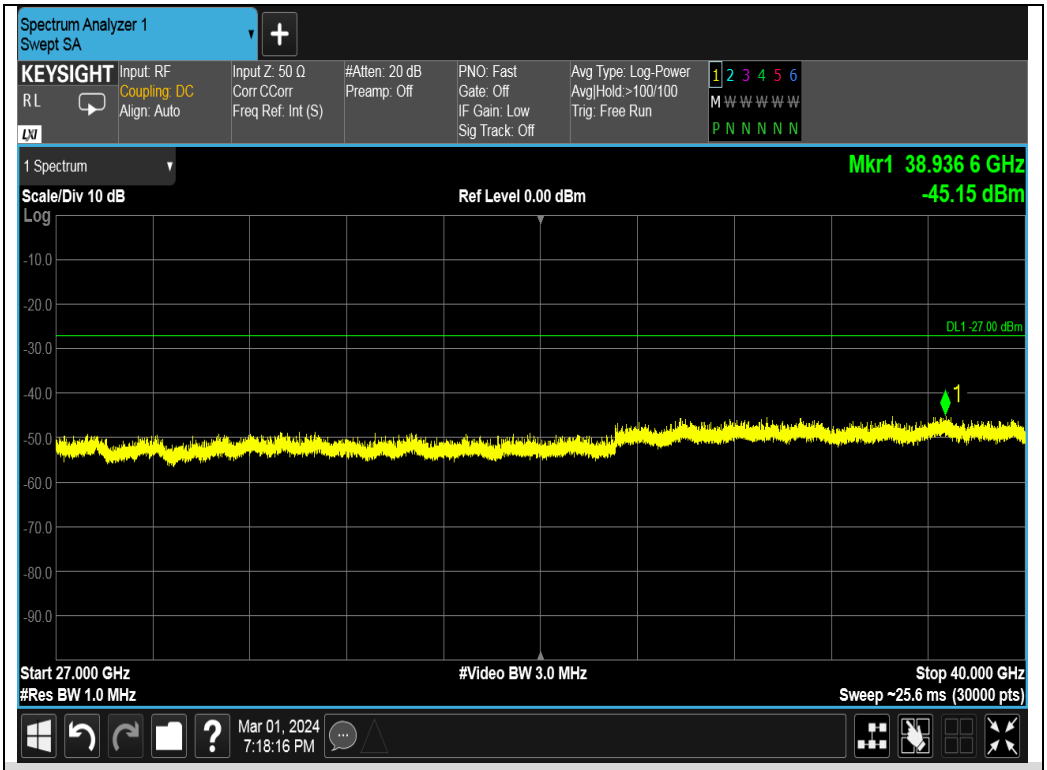

Test_Graph_802.11ac80_ANT1_5775_MCS9_Frequency Band5

Note: The test data already includes the cable loss and antenna gain, and the margin of each chain is greater than 3.01dB

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11. Radiated Spurious Emission

11.1 Measurement Limit

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table:

Frequency (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

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. 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.

Restricted bands	Applicable to	Limit	
	789033 D02 General UNII Test Procedures New Rules v02r01	Field strength at 3m (dBuV/m)	
		PK: 74	AV: 54
Out of the restricted bands	Applicable to	EIRP Limit (dBm/MHz)	Equivalent field Strength at 3m (dBuV/m)
	FCC 15.407(b)(1)	PK: -27	PK: 68.2
	15.407(b)(2)		
	15.407(b)(3)		
	15.407(b)(4)	See Note 2	

Note 1: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000 \sqrt{30 P}}{3} \quad \mu V/m, \text{ where P is the eirp (Watts).}$$

Note 2: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

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11.2 Measurement 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 emission, 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. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz RBW and 3MHz VBW for peak reading. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.

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The following table is the setting of spectrum analyzer and receiver.

Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP

The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04.Section G) Unwanted emissions measurement.

◆ **Procedure for Unwanted Emissions Measurements Below 1000MHz:**

- RBW = 120 kHz
- VBW = 300 kHz
- Detector = Peak
- Trace mode = max hold

◆ **Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz:**

- RBW = 1 MHz
- VBW ≥ 3 MHz
- Detector = Peak
- Sweep time = auto
- Trace mode = max hold

◆ **Procedures for Average Unwanted Emissions Measurements Above 1000MHz:**

- RBW = 1 MHz
- VBW = 10 Hz, when duty cycle is no less than 98 percent.
- VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

◆ **Procedures for Average Unwanted Emissions Measurements Above 1000MHz:**

- RBW = 1 MHz
- VBW = 3 MHz • Detector = power averaging (rms), set span/(# of points in sweep) ≥ RBW/2.
- Averaging type = power averaging (RMS)
- The correction factor shall be offset is 10 log (1/x), where x is the duty cycle.

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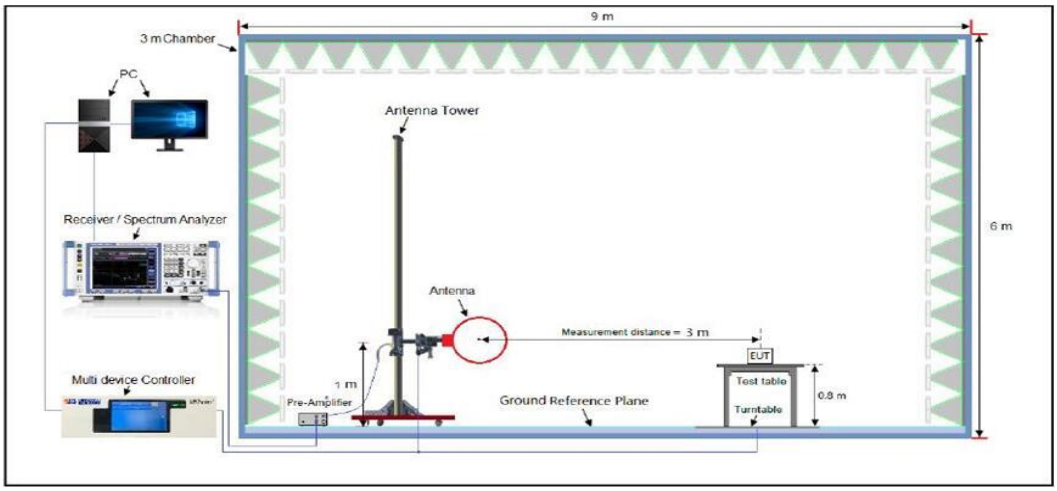
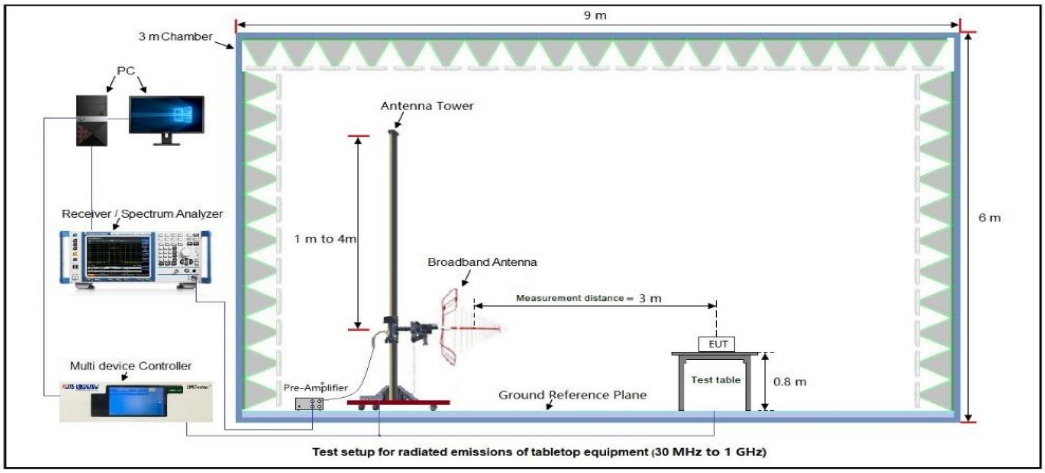
11.3 Measurement Setup (Block Diagram of Configuration)

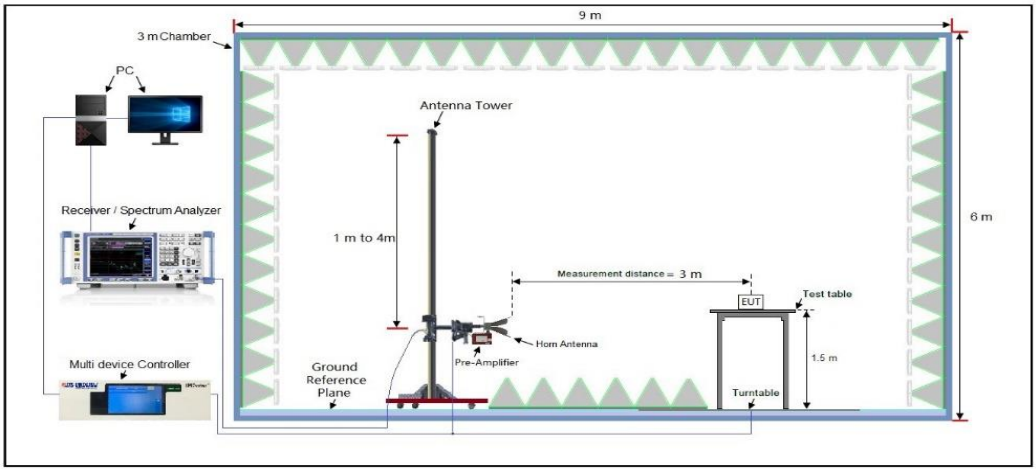
Radiated Emission Test Setup 9kHz-30MHz



Radiated Emission Test Setup 30MHz-1000MHz



Radiated Emission Test Setup Above 1000MHz



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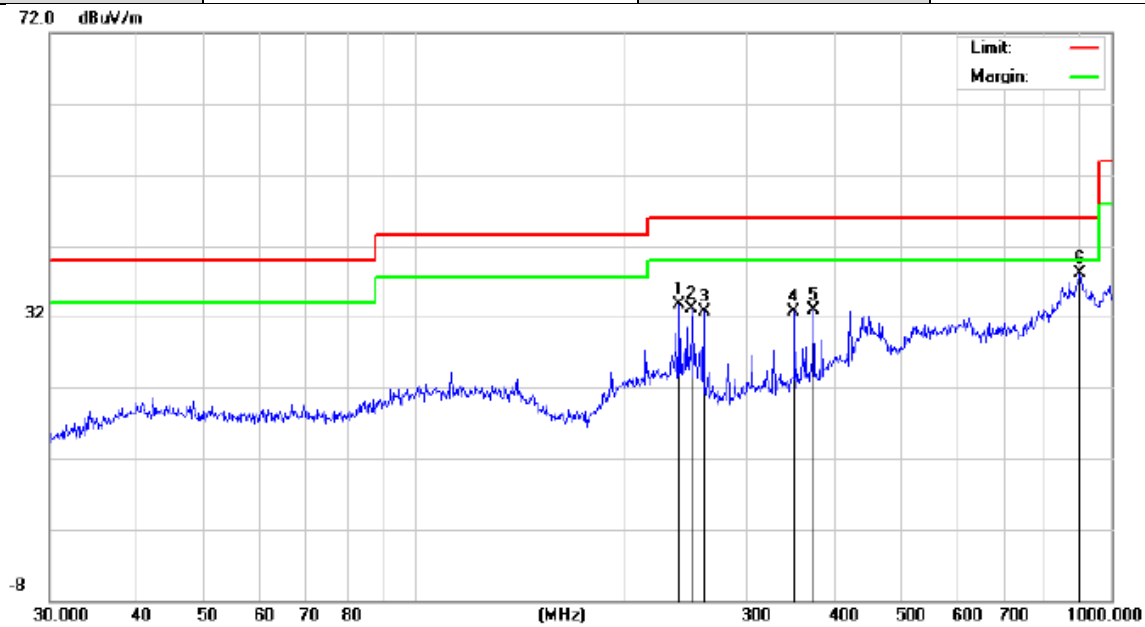
11.4 Measurement Result

Radiated Emission Below 30MHz

The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported.

Radiated Emission Test Results at 30MHz-1GHz

EUT Name	Smart Karaoke Machine	**Model Name**	BREAK X2
Temperature	22.9℃	**Relative Humidity**	57.4%
Pressure	960hPa	**Test Voltage**	DC 14.8V by battery
Test Mode	802.11a_5180MHz	**Antenna**	Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		239.9874	18.29	15.40	33.69	46.00	-12.31	peak
2		250.3012	18.10	15.09	33.19	46.00	-12.81	peak
3		260.1444	17.87	14.80	32.67	46.00	-13.33	peak
4		350.4768	15.26	17.36	32.62	46.00	-13.38	peak
5		373.3112	14.86	18.00	32.86	46.00	-13.14	peak
6	*	900.1474	6.29	31.78	38.07	46.00	-7.93	peak

Result: Pass

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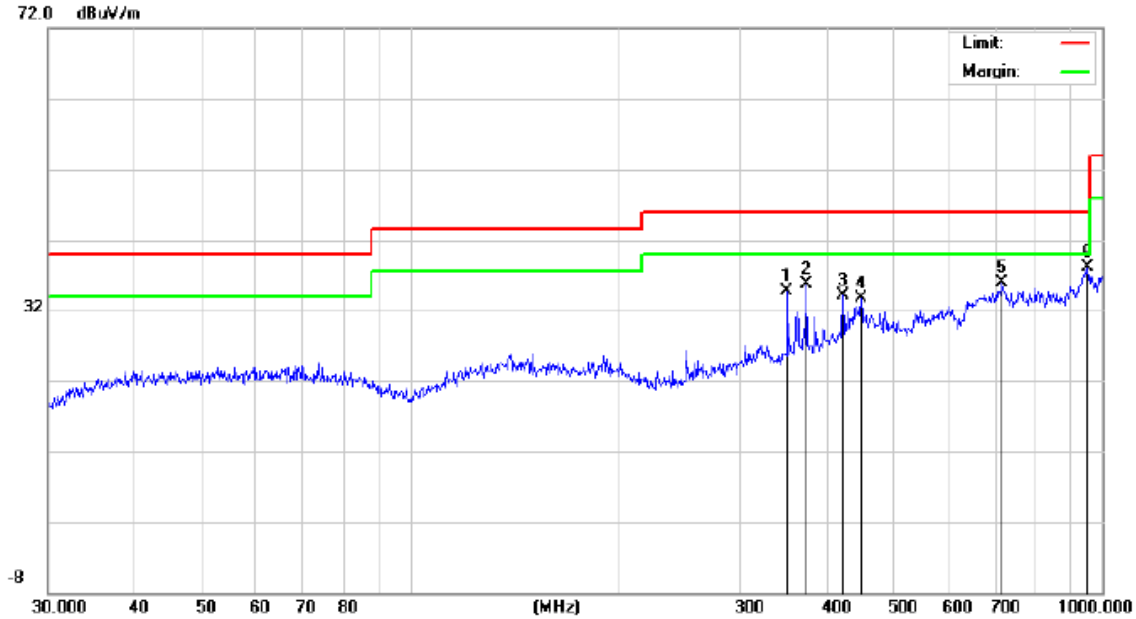
EUT Name	Smart Karaoke Machine	Model Name	BREAK X2
Temperature	22.9℃	Relative Humidity	57.4%
Pressure	960hPa	Test Voltage	DC 14.8V by battery
Test Mode	802.11a_5180MHz	Antenna	Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		350.4768	14.24	20.44	34.68	46.00	-11.32	peak
2		373.3112	14.46	21.33	35.79	46.00	-10.21	peak
3		422.0577	10.97	23.23	34.20	46.00	-11.80	peak
4		447.9822	7.88	25.74	33.62	46.00	-12.38	peak
5		716.6820	7.13	28.68	35.81	46.00	-10.19	peak
6	*	952.0937	7.61	30.52	38.13	46.00	-7.87	peak

Result: Pass

Note:

1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.
2. All test modes had been pre-tested,Refer to Chapter 5 of the report for details.

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Radiated Emissions Test Results Above 1GHz

EUT Name	Smart Karaoke Machine	**Model Name**	BREAK X2
Temperature	22.9℃	**Relative Humidity**	57.4%
Pressure	960hPa	**Test Voltage**	DC 14.8V by battery
Test Mode	802.11a_5180MHz	**Antenna**	Horizontal/Vertical

Radiated Emission Above 1GHz–Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
10360.042	47.52	9.14	56.66	68.20	-11.54	peak
15540.063	42.16	10.22	52.38	74.00	-21.62	peak
15540.063	31.69	10.22	41.91	54.00	-12.09	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Radiated Emission Above 1GHz–Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
10360.042	47.69	9.14	56.83	68.20	-11.37	peak
15540.063	41.36	10.22	51.58	74.00	-22.42	peak
15540.063	32.45	10.22	42.67	54.00	-11.33	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Result: Pass

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Radiated Emissions Test Results Above 1GHz

EUT Name	Smart Karaoke Machine	**Model Name**	BREAK X2
Temperature	22.9℃	**Relative Humidity**	57.4%
Pressure	960hPa	**Test Voltage**	DC 14.8V by battery
Test Mode	802.11a_5200MHz	**Antenna**	Horizontal/Vertical

Radiated Emission Above 1GHz–Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
10400.042	48.61	9.14	57.75	68.20	-10.45	peak
15600.063	43.16	10.22	53.38	74.00	-20.62	peak
15600.063	32.59	10.22	42.81	54.00	-11.19	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Radiated Emission Above 1GHz–Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
10400.042	48.61	9.14	57.75	68.20	-10.45	peak
15600.063	43.55	10.22	53.77	74.00	-20.23	peak
15600.063	32.49	10.22	42.71	54.00	-11.29	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Result: Pass

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Radiated Emissions Test Results Above 1GHz

EUT Name	Smart Karaoke Machine	**Model Name**	BREAK X2
Temperature	22.9℃	**Relative Humidity**	57.4%
Pressure	960hPa	**Test Voltage**	DC 14.8V by battery
Test Mode	802.11a_5240MHz	**Antenna**	Horizontal/Vertical

Radiated Emission Above 1GHz–Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
10480.042	47.65	9.27	56.92	68.20	-11.28	peak
15720.063	42.15	10.38	52.53	74.00	-21.47	peak
15720.063	31.24	10.38	41.62	54.00	-12.38	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Radiated Emission Above 1GHz–Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
10480.042	47.59	9.27	56.86	68.20	-11.34	peak
15720.063	42.15	10.38	52.53	74.00	-21.47	peak
15720.063	31.26	10.38	41.64	54.00	-12.36	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Result: Pass

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Radiated Emissions Test Results Above 1GHz

EUT Name	Smart Karaoke Machine	**Model Name**	BREAK X2
Temperature	22.9℃	**Relative Humidity**	57.4%
Pressure	960hPa	**Test Voltage**	DC 14.8V by battery
Test Mode	802.11a_5260MHz	**Antenna**	Horizontal/Vertical

Radiated Emission Above 1GHz–Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
10520.022	47.63	9.14	56.77	68.20	-11.43	peak
15780.054	42.34	10.22	52.56	74.00	-21.44	peak
15780.054	31.59	10.22	41.81	54.00	-12.19	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Radiated Emission Above 1GHz–Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
10520.022	47.62	9.14	56.76	68.20	-11.44	peak
15780.054	42.36	10.22	52.58	74.00	-21.42	peak
15780.054	31.26	10.22	41.48	54.00	-12.52	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Result: Pass

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Radiated Emissions Test Results Above 1GHz

EUT Name	Smart Karaoke Machine	**Model Name**	BREAK X2
Temperature	22.9℃	**Relative Humidity**	57.4%
Pressure	960hPa	**Test Voltage**	DC 14.8V by battery
Test Mode	802.11a_5300MHz	**Antenna**	Horizontal/Vertical

Radiated Emission Above 1GHz–Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
10600.022	49.62	9.14	58.76	74.00	-15.24	peak
10600.022	37.45	9.14	46.59	54.00	-7.41	AVG
15900.045	43.25	10.22	53.47	74.00	-20.53	peak
15900.045	31.38	10.22	41.60	54.00	-12.40	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Radiated Emission Above 1GHz–Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
10600.022	47.64	9.14	56.78	74.00	-17.22	peak
10600.022	36.28	9.14	45.42	54.00	-8.58	AVG
15900.045	42.15	10.22	52.37	74.00	-21.63	peak
15900.045	31.59	10.22	41.81	54.00	-12.19	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Result: Pass

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Radiated Emissions Test Results Above 1GHz

EUT Name	Smart Karaoke Machine	**Model Name**	BREAK X2
Temperature	22.9℃	**Relative Humidity**	57.4%
Pressure	960hPa	**Test Voltage**	DC 14.8V by battery
Test Mode	802.11a_5320MHz	**Antenna**	Horizontal/Vertical

Radiated Emission Above 1GHz–Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
10640.015	48.64	9.14	57.78	74.00	-16.22	peak
10640.015	37.54	9.14	46.68	54.00	-7.32	AVG
15900.045	45.19	10.22	55.41	74.00	-18.59	peak
15900.045	34.52	10.22	44.74	54.00	-9.26	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Radiated Emission Above 1GHz–Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
10640.015	47.61	9.14	56.75	74.00	-17.25	peak
10640.015	38.42	9.14	47.56	54.00	-6.44	AVG
15900.045	42.32	10.22	52.54	74.00	-21.46	peak
15900.045	31.26	10.22	41.48	54.00	-12.52	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Result: Pass

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Radiated Emissions Test Results Above 1GHz

EUT Name	Smart Karaoke Machine	**Model Name**	BREAK X2
Temperature	22.9℃	**Relative Humidity**	57.4%
Pressure	960hPa	**Test Voltage**	DC 14.8V by battery
Test Mode	802.11a_5500MHz	**Antenna**	Horizontal/Vertical

Radiated Emission Above 1GHz–Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
11000.056	47.52	9.14	56.66	74.00	-17.34	peak
11000.056	36.49	9.14	45.63	54.00	-8.37	AVG
16500.023	41.24	10.22	51.46	68.20	-16.74	peak
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Radiated Emission Above 1GHz–Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
11000.056	47.62	9.14	56.76	74.00	-17.24	peak
11000.056	35.94	9.14	45.08	54.00	-8.92	AVG
16500.023	44.26	10.22	54.48	68.20	-13.72	peak
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Result: Pass

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Radiated Emissions Test Results Above 1GHz

EUT Name	Smart Karaoke Machine	**Model Name**	BREAK X2
Temperature	22.9℃	**Relative Humidity**	57.4%
Pressure	960hPa	**Test Voltage**	DC 14.8V by battery
Test Mode	802.11a_5600MHz	**Antenna**	Horizontal/Vertical

Radiated Emission Above 1GHz–Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
11200.022	47.62	9.14	56.76	74.00	-17.24	peak
11200.022	36.94	9.14	46.08	54.00	-7.92	AVG
16800.025	42.15	10.22	52.37	68.20	-15.83	peak
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Radiated Emission Above 1GHz–Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
11200.022	47.65	9.14	56.79	74.00	-17.21	peak
11200.022	34.25	9.14	43.39	54.00	-10.61	AVG
16800.025	42.16	10.22	52.38	68.20	-15.82	peak
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Result: Pass

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

Radiated Emissions Test Results Above 1GHz

EUT Name	Smart Karaoke Machine	**Model Name**	BREAK X2
Temperature	22.9℃	**Relative Humidity**	57.4%
Pressure	960hPa	**Test Voltage**	DC 14.8V by battery
Test Mode	802.1a_5700MHz	**Antenna**	Horizontal/Vertical

Radiated Emission Above 1GHz–Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
11400.025	47.62	9.14	56.76	74.00	-17.24	peak
11400.025	38.42	9.14	47.56	54.00	-6.44	AVG
17100.056	43.46	10.22	53.68	68.20	-14.52	peak
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Radiated Emission Above 1GHz–Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
11400.025	47.65	9.14	56.79	74.00	-17.21	peak
11400.025	36.99	9.14	46.13	54.00	-7.87	AVG
17100.056	42.15	10.22	52.37	68.20	-15.83	peak
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Result: Pass

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Radiated Emissions Test Results Above 1GHz

EUT Name	Smart Karaoke Machine	**Model Name**	BREAK X2
Temperature	22.9℃	**Relative Humidity**	57.4%
Pressure	960hPa	**Test Voltage**	DC 14.8V by battery
Test Mode	802.11a_5745MHz	**Antenna**	Horizontal/Vertical

Radiated Emission Above 1GHz–Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
11490.042	48.65	9.42	58.07	74.00	-15.93	peak
11490.042	37.42	9.42	46.84	54.00	-7.16	AVG
17235.063	42.15	10.51	52.66	68.20	-15.54	peak
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Radiated Emission Above 1GHz–Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
11490.042	44.59	9.42	54.01	74.00	-19.99	peak
11490.042	37.54	9.42	46.96	54.00	-7.04	AVG
17235.063	42.16	10.51	52.67	68.20	-15.53	peak
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Result: Pass

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Radiated Emissions Test Results Above 1GHz

EUT Name	Smart Karaoke Machine	**Model Name**	BREAK X2
Temperature	22.9℃	**Relative Humidity**	57.4%
Pressure	960hPa	**Test Voltage**	DC 14.8V by battery
Test Mode	802.11a_5785MHz	**Antenna**	Horizontal/Vertical

Radiated Emission Above 1GHz–Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
11570.042	48.64	9.42	58.06	74.00	-15.94	peak
11570.042	37.54	9.42	46.96	54.00	-7.04	AVG
17355.063	42.16	10.51	52.67	68.20	-15.53	peak
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Radiated Emission Above 1GHz–Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
11570.042	47.65	9.42	57.07	74.00	-16.93	peak
11570.042	38.91	9.42	48.33	54.00	-5.67	AVG
17355.063	43.55	10.51	54.06	68.20	-14.14	peak
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Result: Pass

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Radiated Emissions Test Results Above 1GHz

EUT Name	Smart Karaoke Machine	**Model Name**	BREAK X2
Temperature	22.9℃	**Relative Humidity**	57.4%
Pressure	960hPa	**Test Voltage**	DC 14.8V by battery
Test Mode	802.11a_5825MHz	**Antenna**	Horizontal/Vertical

Radiated Emission Above 1GHz–Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
11650.042	47.85	9.62	57.47	74.00	-16.53	peak
11650.042	38.12	9.62	47.74	54.00	-6.26	AVG
17475.063	42.19	10.75	52.94	68.20	-15.26	peak
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Radiated Emission Above 1GHz–Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
11650.042	46.28	9.62	55.90	74.00	-18.10	peak
11650.042	37.54	9.62	47.16	54.00	-6.84	AVG
17475.063	42.16	10.75	52.91	68.20	-15.29	peak
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Result: Pass

Note:

1. The amplitude of other spurious emissions from 1GHz to 25 GHz which are attenuated more than 20 dB below the permissible value need not be reported.
2. Factor = Antenna Factor + Cable loss - Amplifier gain, Margin=Measure Result-Limit.
3. The “Factor” value can be calculated automatically by software of measurement system.
4. All test modes had been pre-tested. Refer to Chapter 5 of the report for details.

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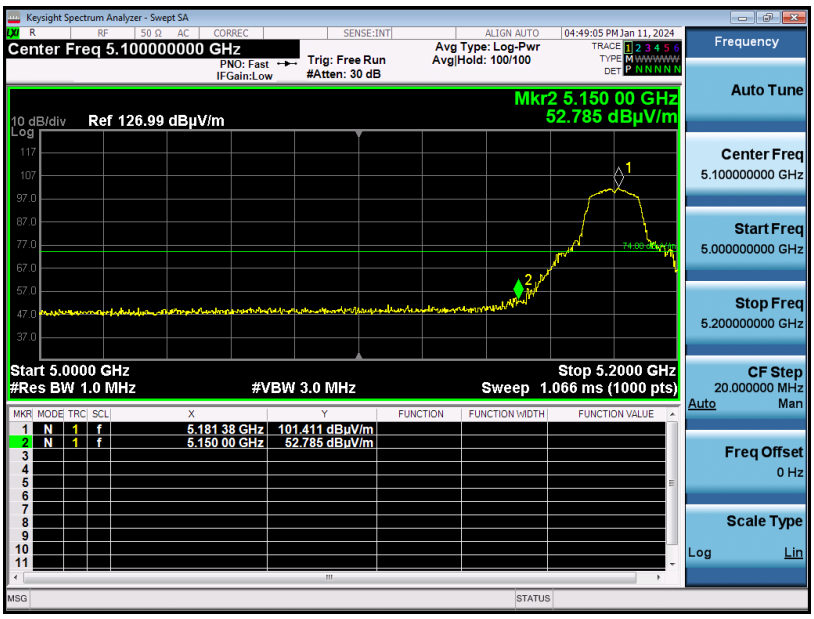
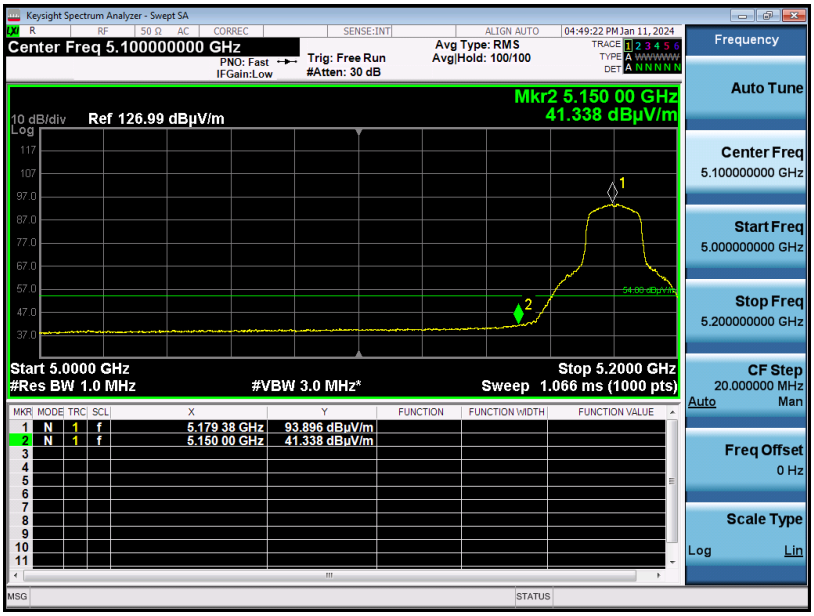
Test Result for Band edge Emission at Restricted bands

EUT Name	Smart Karaoke Machine	**Model Name**	BREAK X2
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	DC 14.8V by battery
Test Mode	802.11a_5180MHz	**Antenna**	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement



Result: Pass

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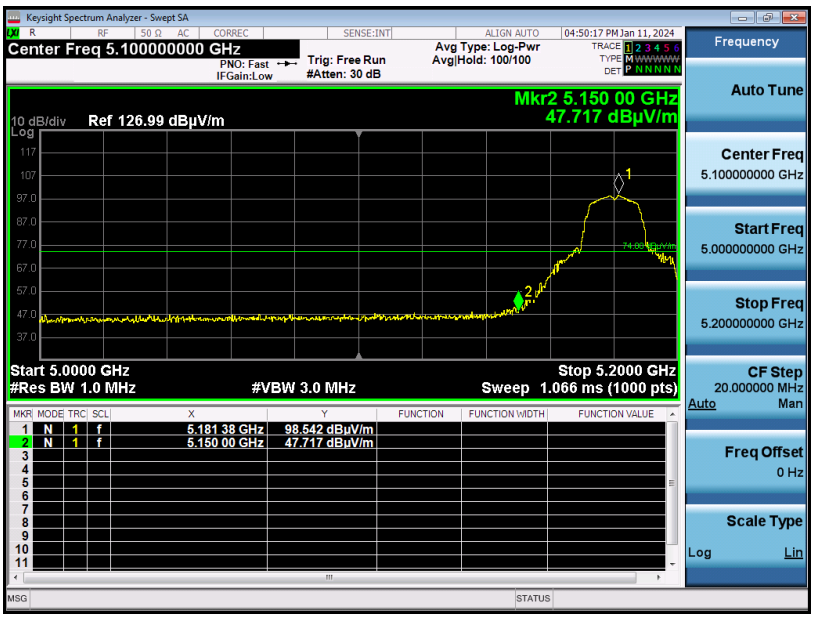
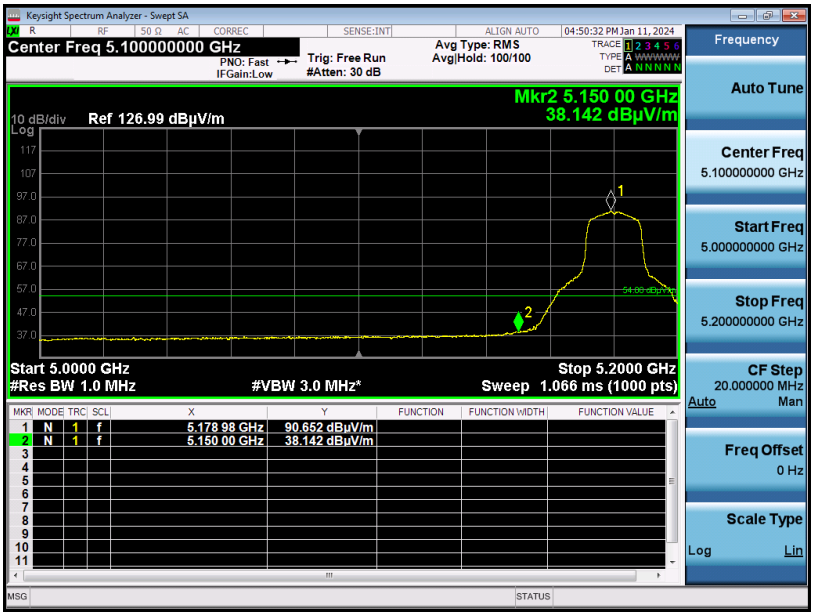
Test Result for Band edge Emission at Restricted bands

EUT Name	Smart Karaoke Machine	**Model Name**	BREAK X2
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	DC 14.8V by battery
Test Mode	802.11a_5180MHz	**Antenna**	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement



Result: Pass

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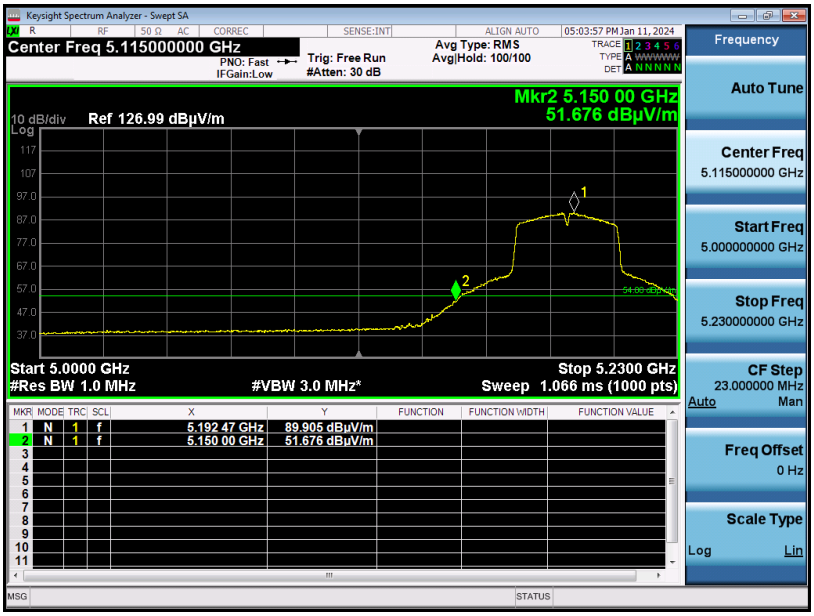
Test Result for Band edge Emission at Restricted bands

EUT Name	Smart Karaoke Machine	**Model Name**	BREAK X2
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	DC 14.8V by battery
Test Mode	802.11n40_5190MHz	**Antenna**	Horizontal

Test Graph for Peak Measurement

Test Graph for Average Measurement



Result: Pass

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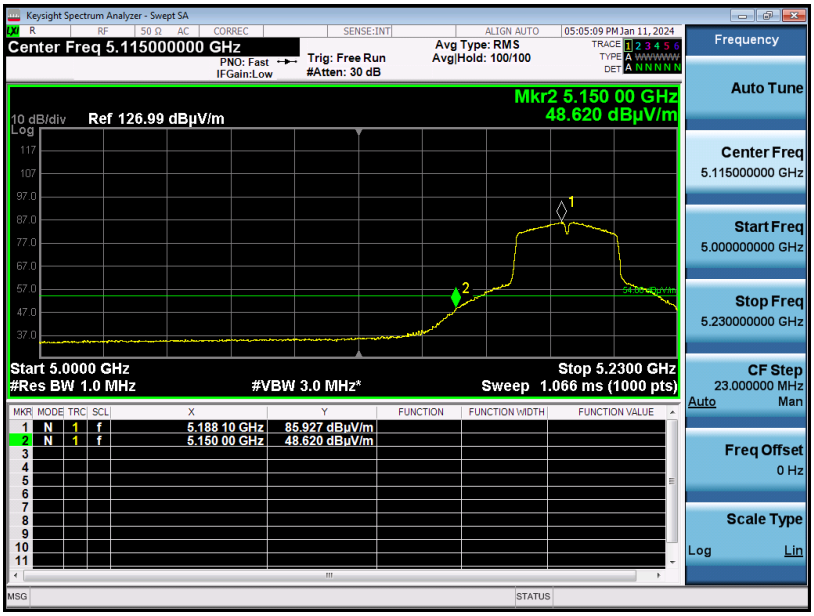
Test Result for Band edge Emission at Restricted bands

EUT Name	Smart Karaoke Machine	Model Name	BREAK X2
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	DC 14.8V by battery
Test Mode	802.11n40_5190MHz	Antenna	Vertical

Test Graph for Peak Measurement

Test Graph for Average Measurement



Result: Pass

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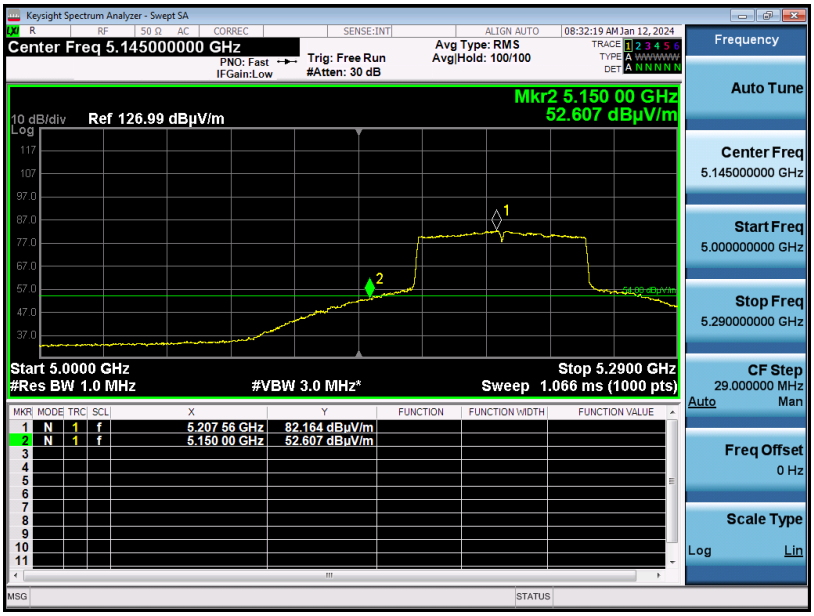
Test Result for Band edge Emission at Restricted bands

EUT Name	Smart Karaoke Machine	**Model Name**	BREAK X2
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	DC 14.8V by battery
Test Mode	802.11ac80_5210MHz	**Antenna**	Horizontal

Test Graph for Peak Measurement

Test Graph for Average Measurement



Result: Pass

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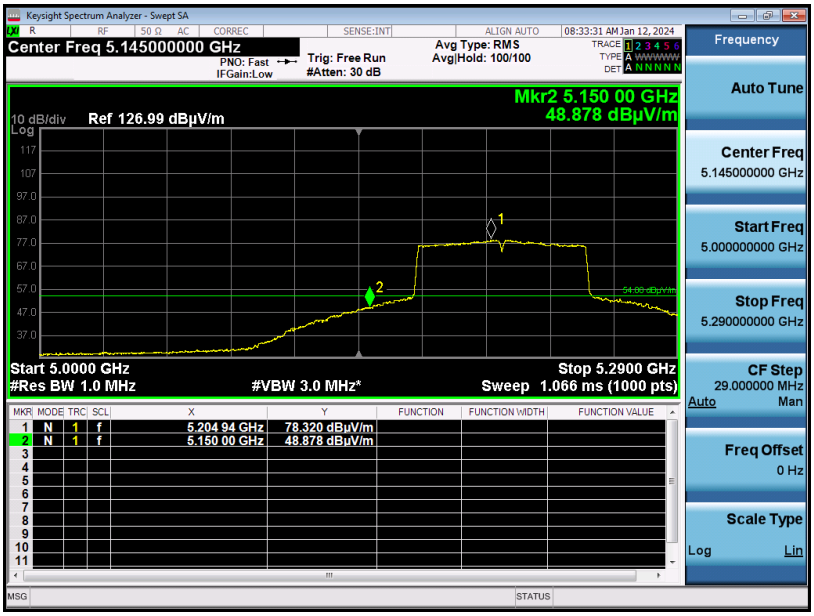
Test Result for Band edge Emission at Restricted bands

EUT Name	Smart Karaoke Machine	**Model Name**	BREAK X2
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	DC 14.8V by battery
Test Mode	802.11ac80_5210MHz	**Antenna**	Vertical

Test Graph for Peak Measurement

Test Graph for Average Measurement



Result: Pass

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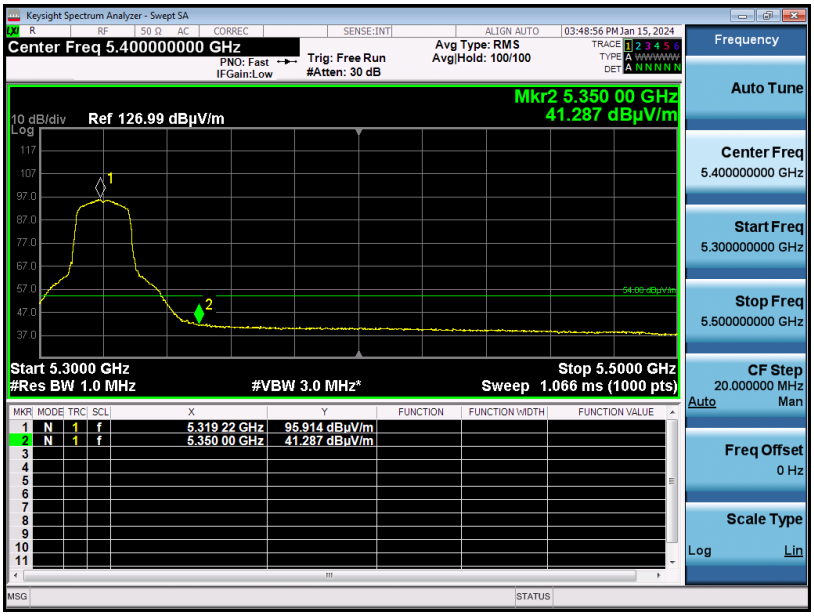
Test Result for Band edge Emission at Restricted bands

EUT Name	Smart Karaoke Machine	**Model Name**	BREAK X2
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	DC 14.8V by battery
Test Mode	802.11a_5320MHz	**Antenna**	Horizontal

Test Graph for Peak Measurement

Test Graph for Average Measurement



Result: Pass

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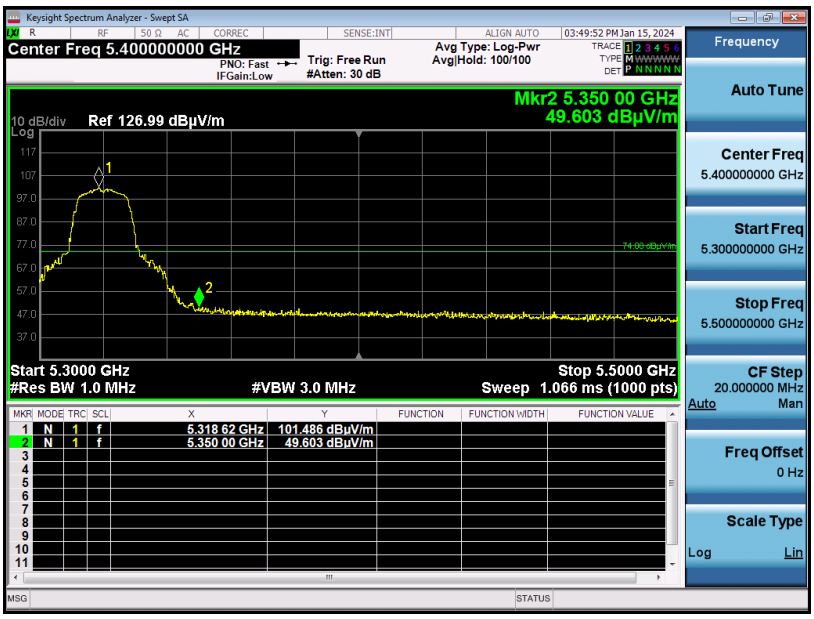
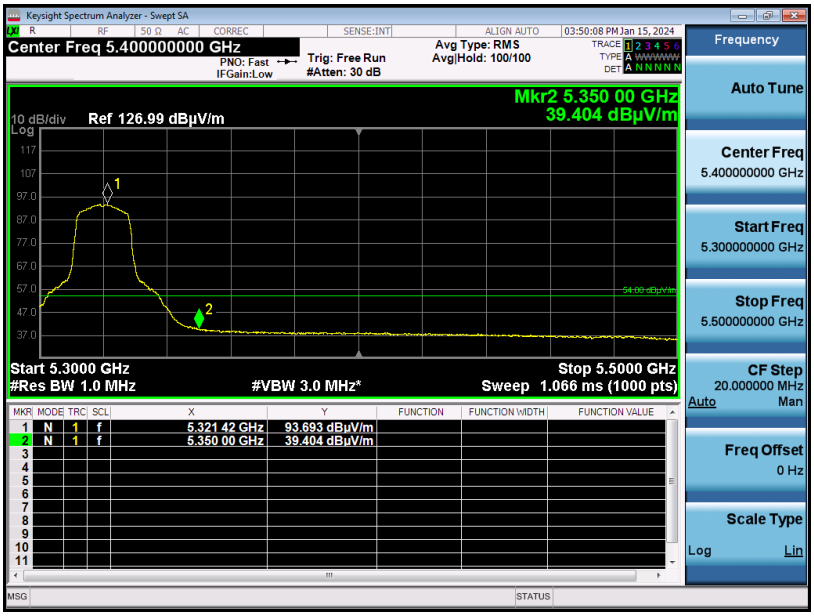
Test Result for Band edge Emission at Restricted bands

EUT Name	Smart Karaoke Machine	**Model Name**	BREAK X2
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	DC 14.8V by battery
Test Mode	802.11a_5320MHz	**Antenna**	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement



Result: Pass

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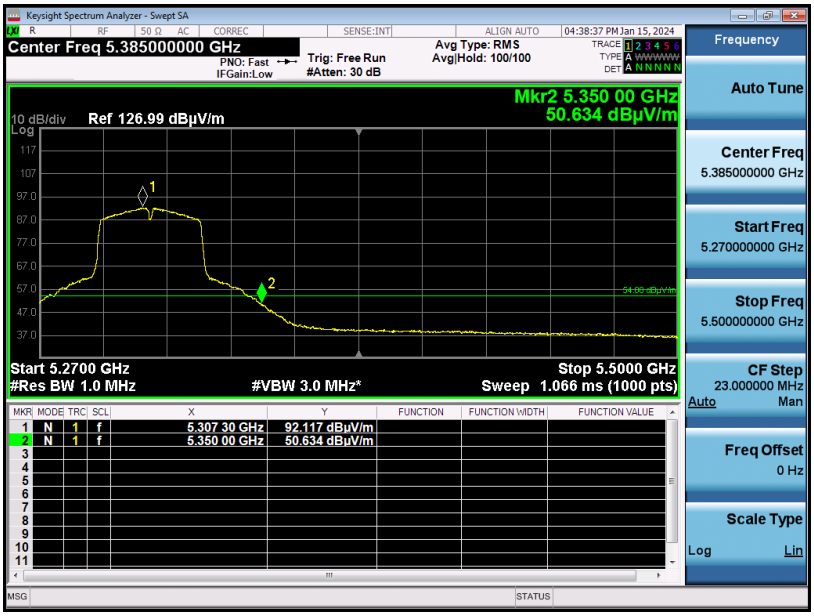
Test Result for Band edge Emission at Restricted bands

EUT Name	Smart Karaoke Machine	**Model Name**	BREAK X2
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	DC 14.8V by battery
Test Mode	802.11n40_5310MHz	**Antenna**	Horizontal

Test Graph for Peak Measurement

Test Graph for Average Measurement



Result: Pass

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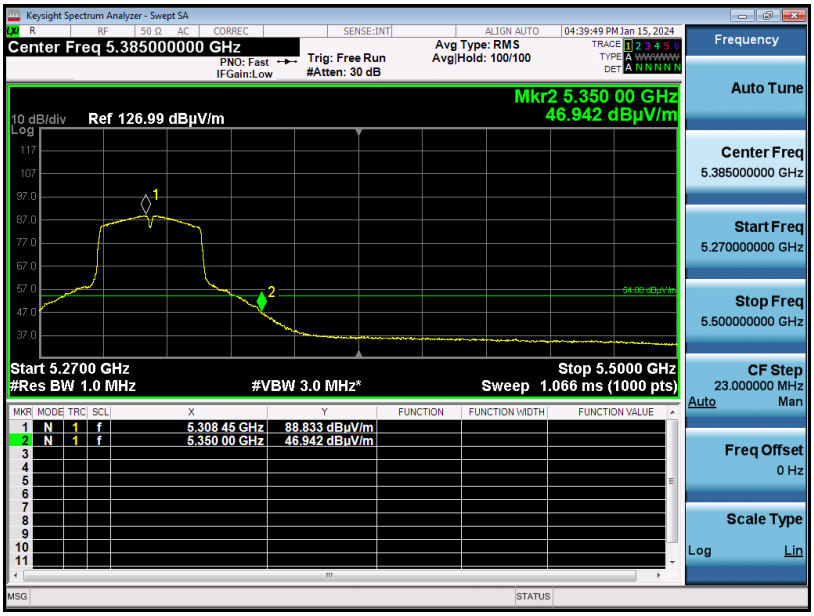
Test Result for Band edge Emission at Restricted bands

EUT Name	Smart Karaoke Machine	**Model Name**	BREAK X2
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	DC 14.8V by battery
Test Mode	802.11n40_5310MHz	**Antenna**	Vertical

Test Graph for Peak Measurement

Test Graph for Average Measurement



Result: Pass

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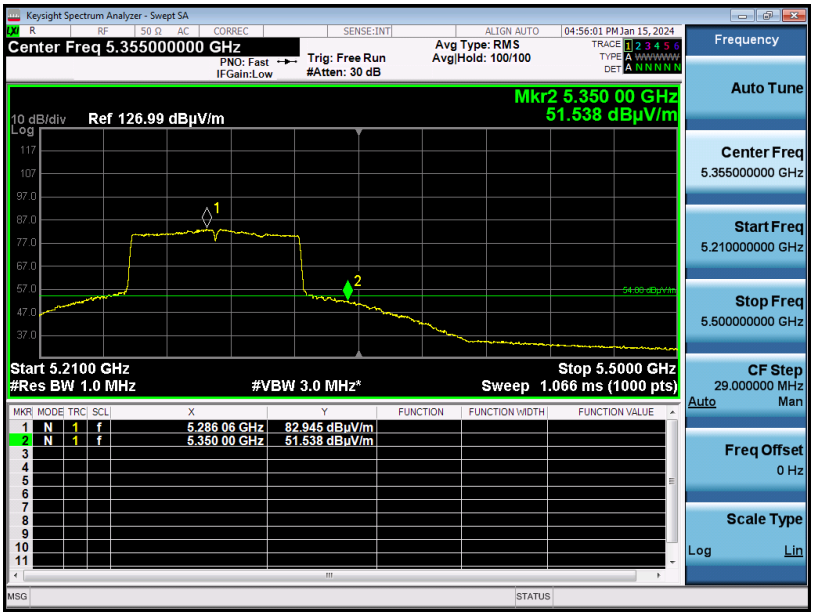
Test Result for Band edge Emission at Restricted bands

EUT Name	Smart Karaoke Machine	**Model Name**	BREAK X2
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	DC 14.8V by battery
Test Mode	802.11ac80_5290MHz	**Antenna**	Horizontal

Test Graph for Peak Measurement

Test Graph for Average Measurement



Result: Pass

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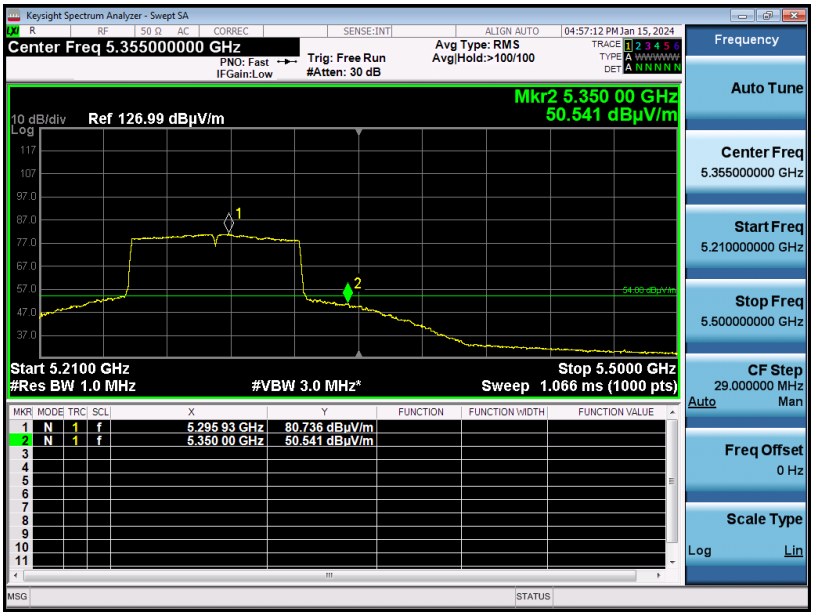
Test Result for Band edge Emission at Restricted bands

EUT Name	Smart Karaoke Machine	Model Name	BREAK X2
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	DC 14.8V by battery
Test Mode	802.11ac80_5290MHz	Antenna	Vertical

Test Graph for Peak Measurement

Test Graph for Average Measurement



Result: Pass

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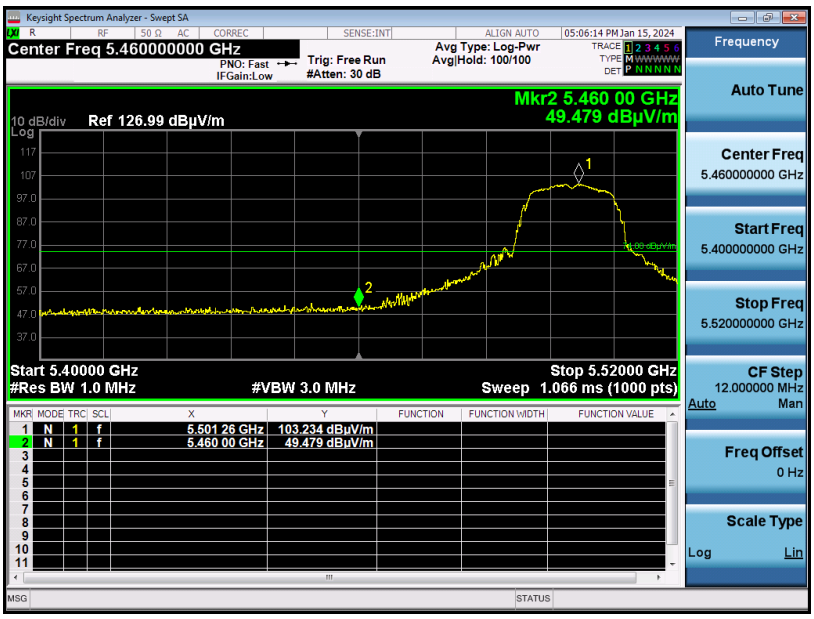
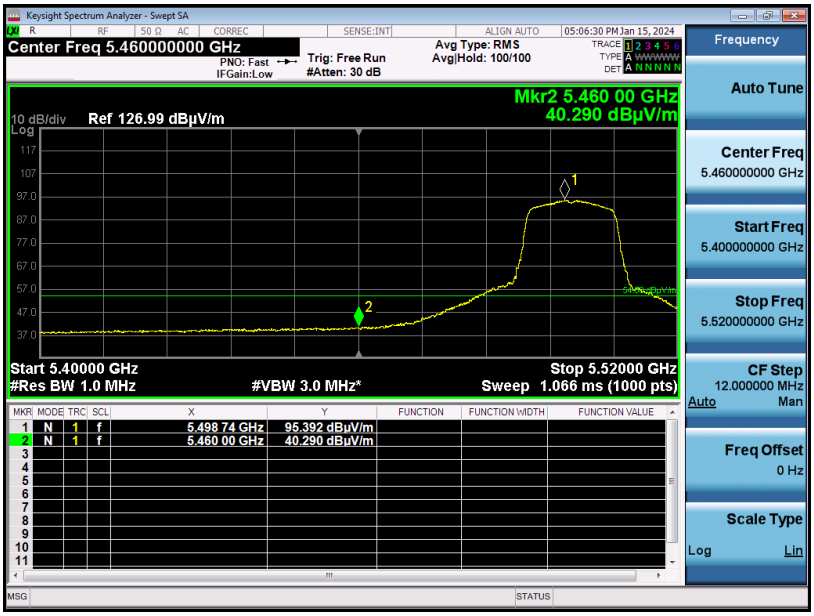
Test Result for Band edge Emission at Restricted bands

EUT Name	Smart Karaoke Machine	**Model Name**	BREAK X2
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	DC 14.8V by battery
Test Mode	802.11a_5500MHz	**Antenna**	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement



Result: Pass

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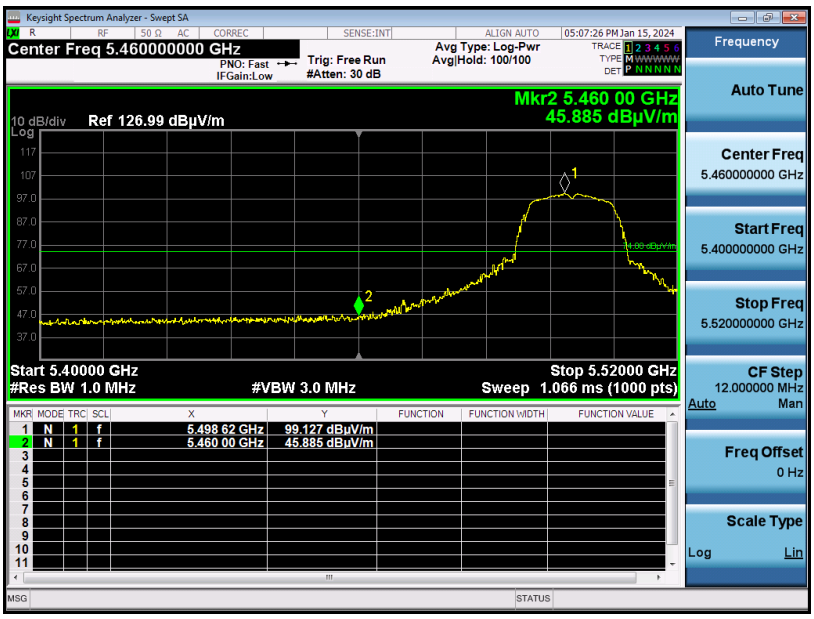
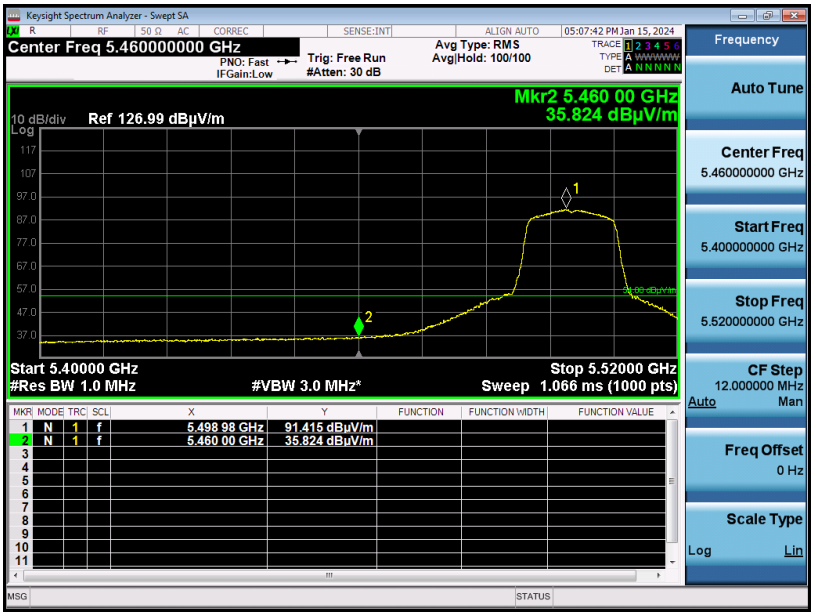
Test Result for Band edge Emission at Restricted bands

EUT Name	Smart Karaoke Machine	**Model Name**	BREAK X2
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	DC 14.8V by battery
Test Mode	802.11a_5500MHz	**Antenna**	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement



Result: Pass

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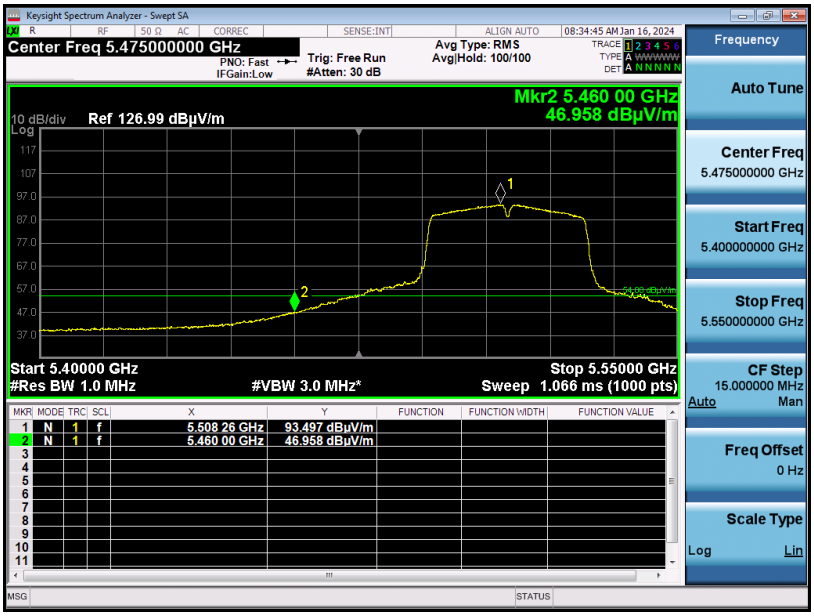
Test Result for Band edge Emission at Restricted bands

EUT Name	Smart Karaoke Machine	**Model Name**	BREAK X2
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	DC 14.8V by battery
Test Mode	802.11n40_5510MHz	**Antenna**	Horizontal

Test Graph for Peak Measurement

Test Graph for Average Measurement



Result: Pass

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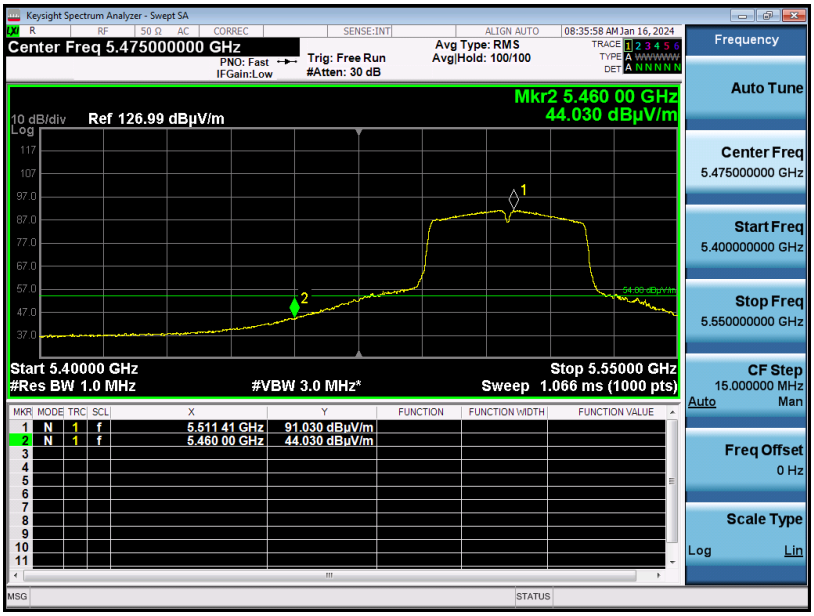
Test Result for Band edge Emission at Restricted bands

EUT Name	Smart Karaoke Machine	**Model Name**	BREAK X2
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	DC 14.8V by battery
Test Mode	802.11n40_5510MHz	**Antenna**	Vertical

Test Graph for Peak Measurement

Test Graph for Average Measurement



Result: Pass

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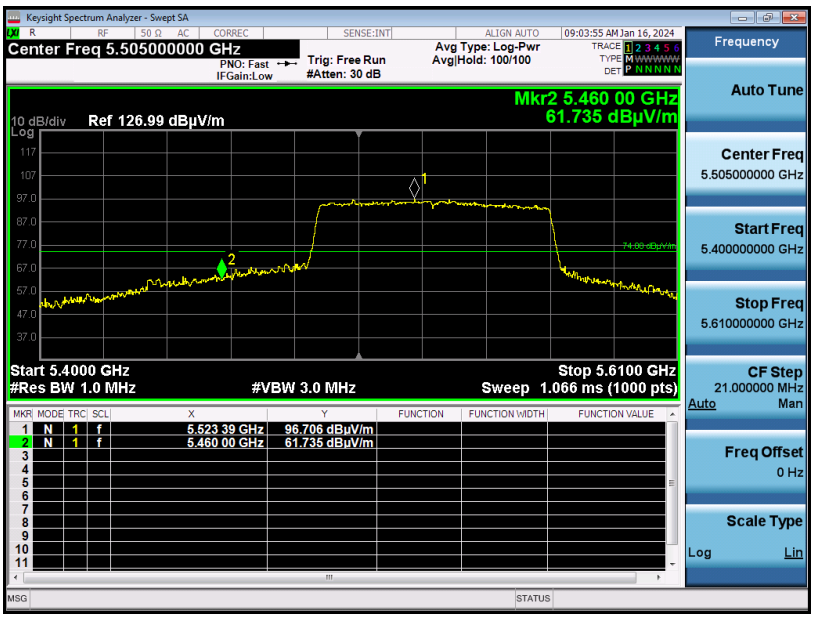
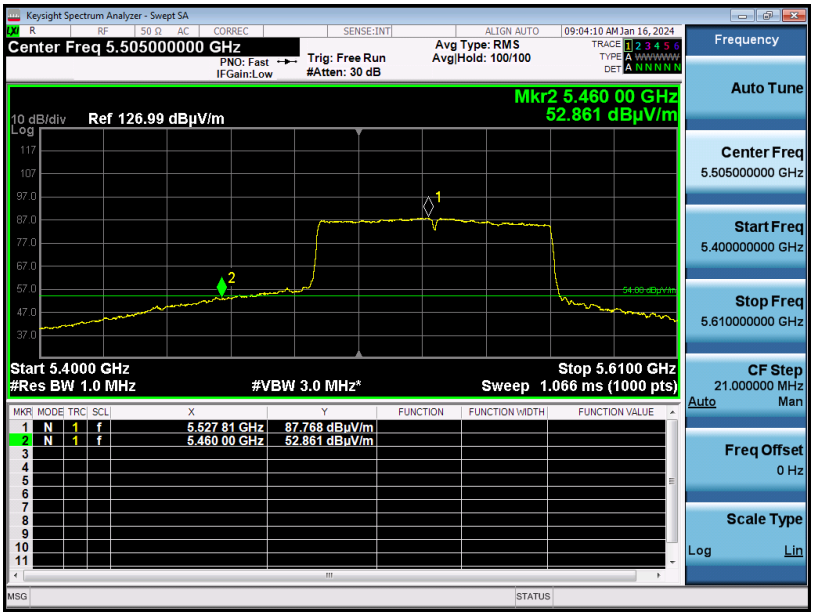
Test Result for Band edge Emission at Restricted bands

EUT Name	Smart Karaoke Machine	**Model Name**	BREAK X2
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	DC 14.8V by battery
Test Mode	802.11ac80_5530MHz	**Antenna**	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement



Result: Pass

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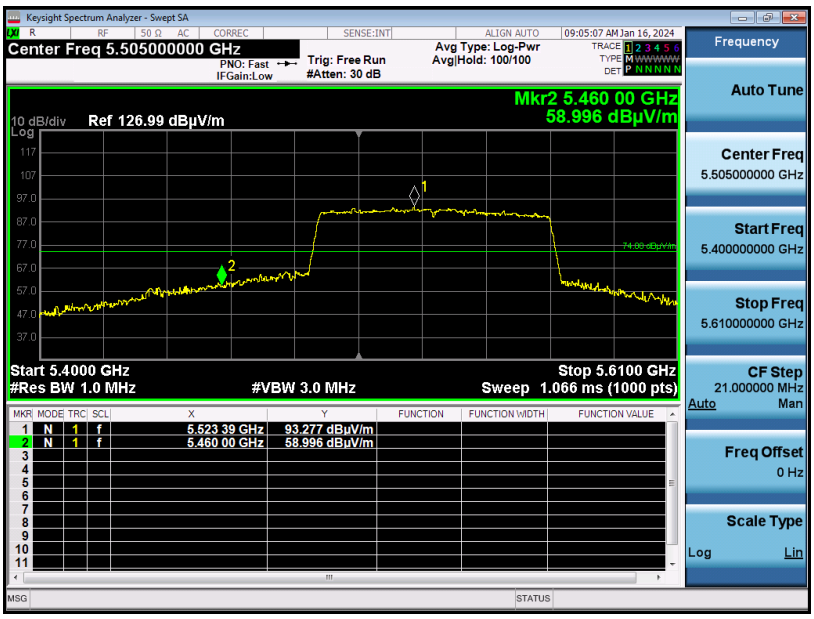
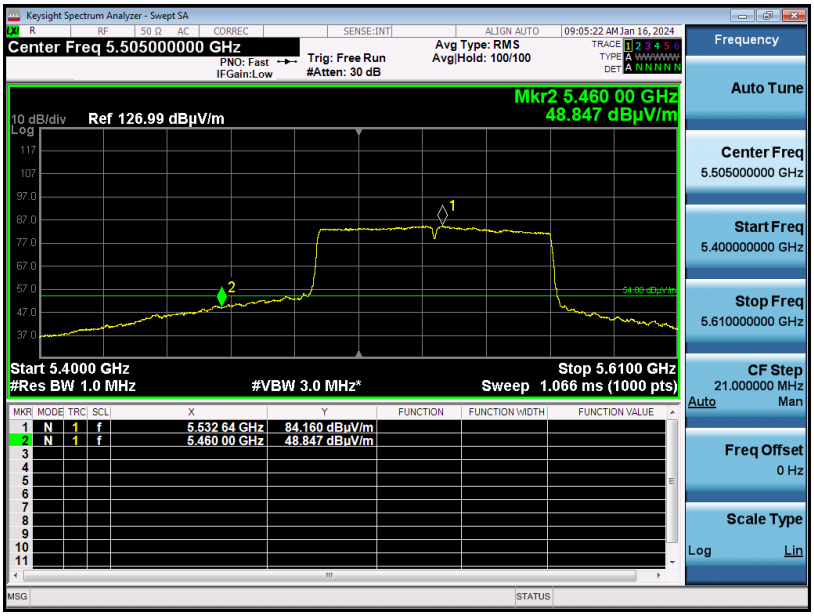
Test Result for Band edge Emission at Restricted bands

EUT Name	Smart Karaoke Machine	**Model Name**	BREAK X2
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	DC 14.8V by battery
Test Mode	802.11ac80_5530MHz	**Antenna**	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement



Result: Pass

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Note:

1. The factor had been edited in the “Input Correction” of the Spectrum Analyzer.
2. All test modes had been pre-tested, Refer to Chapter 5 of the report for details.
3. The test data already includes the cable loss and antenna gain, and the margin of each chain is greater than 3.01dB

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12. AC Power Line Conducted Emission Test

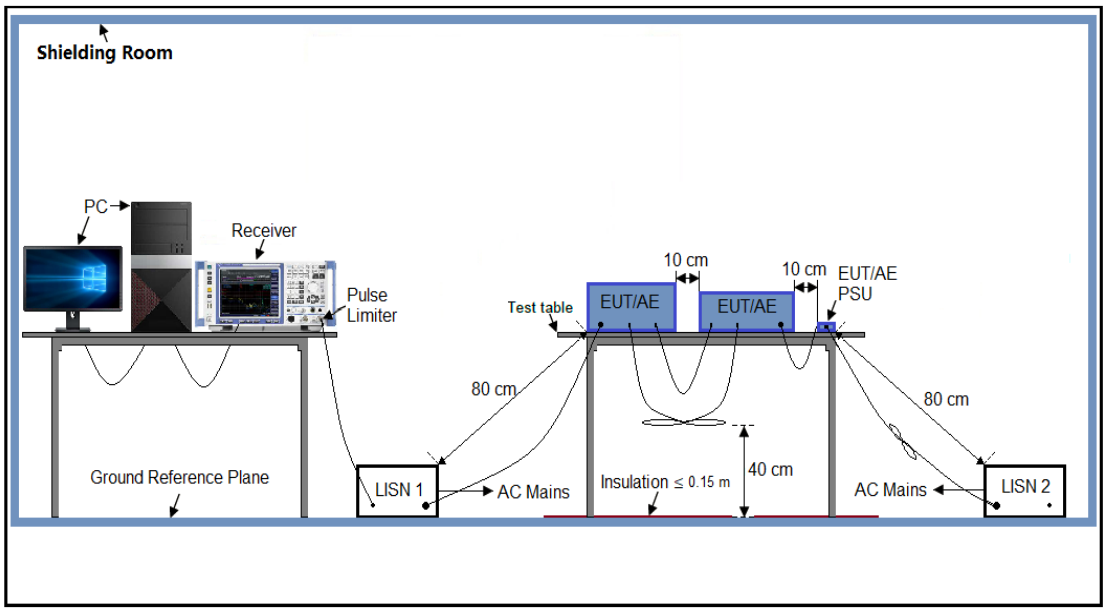
12.1 Measurement limit

Frequency	Maximum RF Line Voltage	
	Q.P (dBμV)	Average (dBμV)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Note:

1. The lower limit shall apply at the transition frequency.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50MHz.

12.2 Block Diagram of Line Conducted Emission Test



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12.3 Preliminary Procedure of Line Conducted Emission Test

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2. Support equipment, if needed, was placed as per ANSI C63.10.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4. All support equipment received AC120V/60Hz power from a LISN, if any.
5. The EUT received charging voltage by adapter which received 120V/60Hzpower by a LISN.
6. The test program was started. Emissions were measured on each current carrying line of the EUT using spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 Ohm load; the second scan had Line 1 connected to a 50 Ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.
9. The test mode(s) were scanned during the preliminary test.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

12.4 Final Procedure of Line Conducted Emission Test

1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less –2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
3. The test data of the worst case was reported on the Summary Data page.
4. The worst mode is 802.11n20 5180MHz, antenna 1 and antenna 2 work together.

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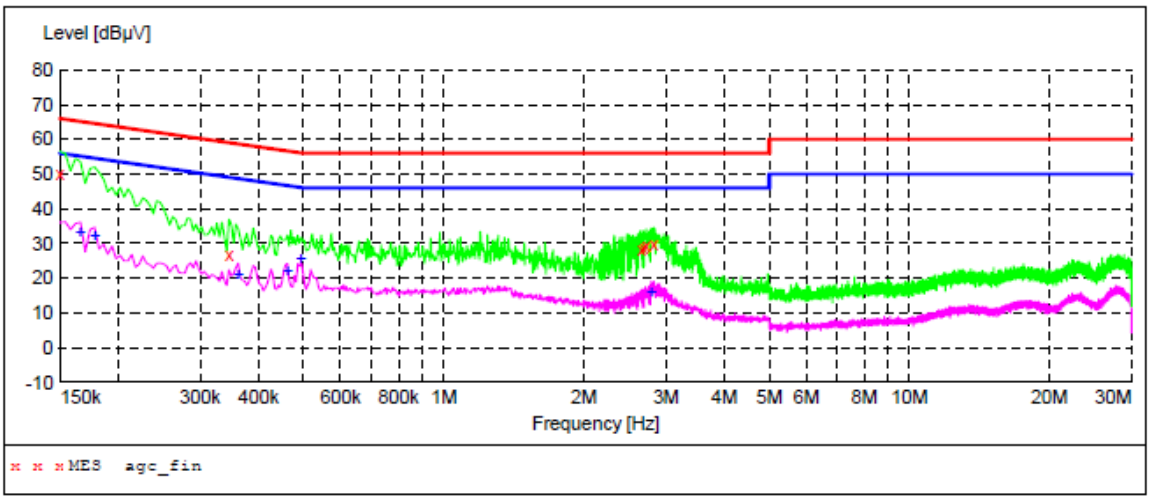
12.5 Test Result of Line Conducted Emission Test

AC Power Line Conducted Emission Test-With Adapter 1			
Test Mode	802.11n(20MHz)5180MHz	LISN Line	Hot Side



MEASUREMENT RESULT: "agc_fin"

2023/12/29 15:26

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.150000	50.00	6.1	66	16.0	QP	L1
0.346000	26.90	6.1	59	32.2	QP	L1
2.654000	28.50	6.3	56	27.5	QP	L1
2.690000	28.80	6.3	56	27.2	QP	L1
2.722000	29.20	6.3	56	26.8	QP	L1
2.826000	29.80	6.3	56	26.2	QP	L1

MEASUREMENT RESULT: "agc_fin2"

2023/12/29 15:26

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.166000	33.20	6.1	55	22.0	AV	L1
0.178000	32.30	6.1	55	22.3	AV	L1
0.362000	21.40	6.1	49	27.3	AV	L1
0.462000	22.10	6.1	47	24.6	AV	L1
0.494000	25.60	6.1	46	20.5	AV	L1
2.790000	16.10	6.3	46	29.9	AV	L1

Result: Pass

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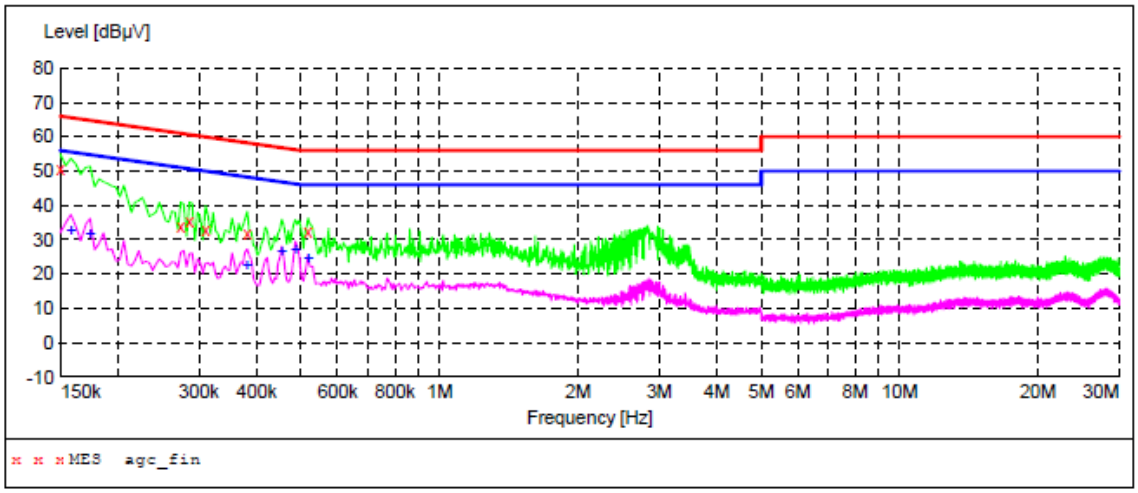
AC Power Line Conducted Emission Test-With Adapter 1			
Test Mode	802.11n(40MHz)5180MHz	LISN Line	Neutral Side



MEASUREMENT RESULT: "agc_fin"

2023/12/29 15:29

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.150000	50.50	6.1	66	15.5	QP	N
0.274000	34.00	6.1	61	27.0	QP	N
0.286000	35.50	6.1	61	25.1	QP	N
0.310000	33.00	6.1	60	27.0	QP	N
0.382000	31.60	6.1	58	26.6	QP	N
0.518000	32.20	6.2	56	23.8	QP	N

MEASUREMENT RESULT: "agc_fin2"

2023/12/29 15:29

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.158000	32.80	6.1	56	22.8	AV	N
0.174000	31.60	6.1	55	23.2	AV	N
0.382000	22.60	6.1	48	25.6	AV	N
0.454000	26.70	6.1	47	20.1	AV	N
0.486000	27.30	6.1	46	18.9	AV	N
0.518000	24.60	6.2	46	21.4	AV	N

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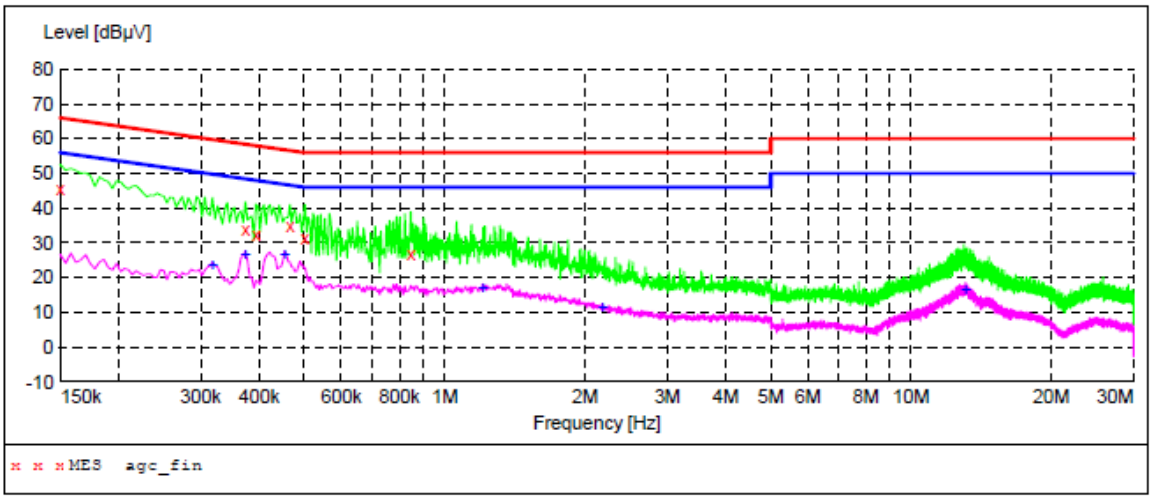
AC Power Line Conducted Emission Test-With Adapter 2			
Test Mode	802.11n(20MHz)5180MHz	LISN Line	Hot Side



MEASUREMENT RESULT: "agc_fin"

2023/12/29 14:41

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.150000	45.60	6.1	66	20.4	QP	L1
0.374000	34.00	6.1	58	24.4	QP	L1
0.394000	32.10	6.1	58	25.9	QP	L1
0.466000	35.00	6.1	57	21.6	QP	L1
0.502000	31.30	6.2	56	24.7	QP	L1
0.846000	26.90	6.2	56	29.1	QP	L1

MEASUREMENT RESULT: "agc_fin2"

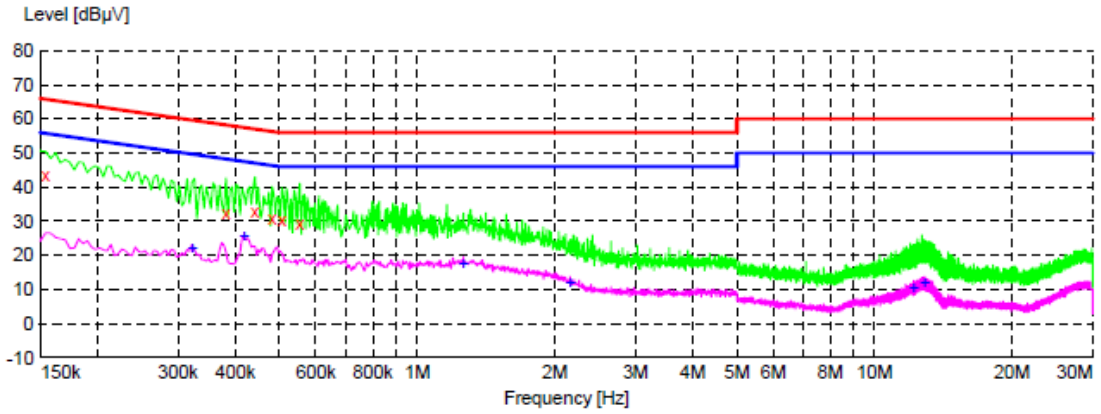
2023/12/29 14:41

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.318000	23.60	6.1	50	26.2	AV	L1
0.374000	27.00	6.1	48	21.4	AV	L1
0.454000	26.70	6.1	47	20.1	AV	L1
1.206000	17.00	6.2	46	29.0	AV	L1
2.178000	11.70	6.3	46	34.3	AV	L1
13.082000	16.70	6.8	50	33.3	AV	L1

Result: Pass

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

AC Power Line Conducted Emission Test-With Adapter 2			
Test Mode	802.11n(40MHz)5180MHz	LISN Line	Neutral Side



MES agc_fin

MEASUREMENT RESULT: "agc_fin"

2023/12/29 14:38

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.154000	43.20	6.1	66	22.6	QP	N
0.382000	32.40	6.1	58	25.8	QP	N
0.442000	32.80	6.1	57	24.2	QP	N
0.482000	31.00	6.1	56	25.3	QP	N
0.506000	30.10	6.2	56	25.9	QP	N
0.554000	29.10	6.2	56	26.9	QP	N

MEASUREMENT RESULT: "agc_fin2"

2023/12/29 14:38

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.322000	22.10	6.1	50	27.6	AV	N
0.418000	25.60	6.1	48	21.9	AV	N
1.262000	17.80	6.2	46	28.2	AV	N
2.158000	12.30	6.2	46	33.7	AV	N
12.174000	10.60	6.8	50	39.4	AV	N
12.874000	11.90	6.8	50	38.1	AV	N

Result: Pass

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

Appendix I: Photographs of Test Setup

Refer to the Report No.: AGC10514231205AP02

Appendix II: Photographs of EUT

Refer to the Report No.: AGC10514231205AP03

----End of Report----

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

Conditions of Issuance of Test Reports

1. All samples and goods are accepted by the Attestation of Global Compliance (Shenzhen) Co., Ltd (the "Company") solely for testing and reporting in accordance with the following terms and conditions. The company provides its services on the basis that such terms and conditions constitute express agreement between the company and any person, firm or company requesting its services (the "Clients").

2. Any report issued by Company as a result of this application for testing services (the "Report") shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to its customer, supplier or other persons directly concerned. The Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.

3.The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.

4. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.

5. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.

6. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.

7.Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.

8. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.

9. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.