

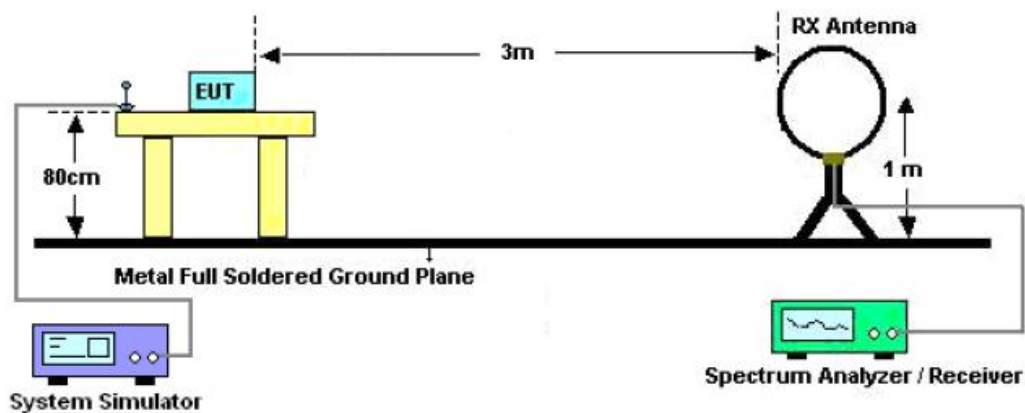
11. RADIATED EMISSION

11.1. MEASUREMENT PROCEDURE

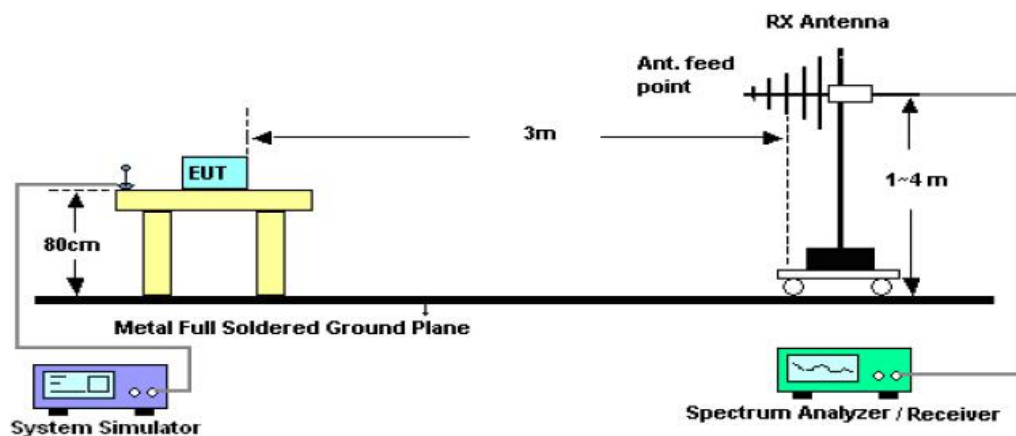
1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated 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 emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. 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.

11.2. TEST SETUP

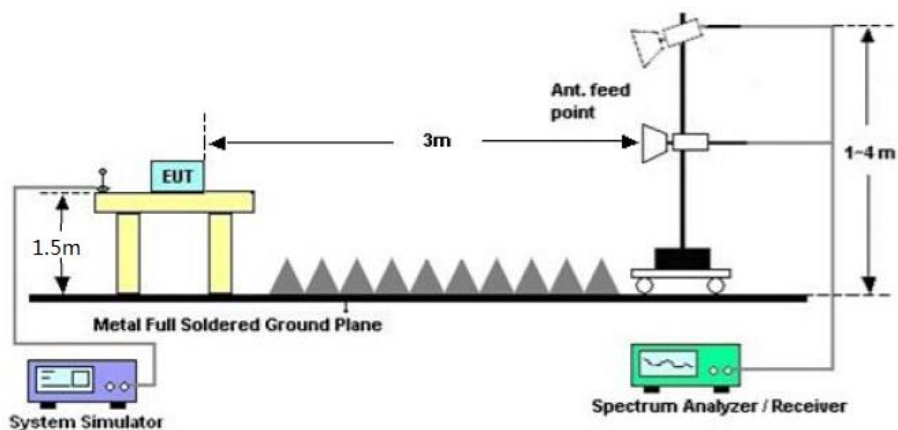
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



11.3. LIMITS AND MEASUREMENT RESULT

15.209(a) Limit in the below table has to be followed

Frequencies (MHz)	Field Strength (micorvolts/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).All modes were tested For restricted band radiated emission, the test records reported below are the worst result compared to other modes.
- (2). The amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported. (9KHz~30MHz)

11.4. TEST RESULT

RADIATED EMISSION BELOW 30MHZ

No emission found between lowest internal used/generated frequencies to 30MHz.

RADIATED EMISSION BELOW 1GHZ

EUT	Mia Baby sound machine	Model Name	KT-W01A
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2412MHZ	Antenna	Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height	Table Degree		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	31.2482	52.24	-20.54	31.70	40.00	-8.30	QP			
2		36.0481	54.27	-23.55	30.72	40.00	-9.28	QP			
3		133.8533	54.61	-25.24	29.37	43.50	-14.13	QP			
4		175.4207	43.88	-27.13	16.75	43.50	-26.75	QP			
5		195.6504	45.30	-27.19	18.11	43.50	-25.39	QP			
6		290.1444	40.96	-23.72	17.24	46.00	-28.76	QP			

RESULT: PASS

EUT	Mia Baby sound machine	Model Name	KT-W01A
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2412MHZ	Antenna	Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree	Comment
1	*	30.5574	53.44	-20.66	32.78	40.00	-7.22	QP			
2		44.1783	57.00	-26.34	30.66	40.00	-9.34	QP			
3		65.3146	55.56	-32.02	23.54	40.00	-16.46	QP			
4		139.9735	51.38	-24.59	26.79	43.50	-16.71	QP			
5		175.6516	51.95	-26.09	25.86	43.50	-17.64	QP			
6		221.9751	51.51	-26.02	25.49	46.00	-20.51	QP			

RESULT: PASS

Note: 1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.

2. The "Factor" value can be calculated automatically by software of measurement system.

3. All test modes had been pre-tested. The 802.11b at low channel is the worst case and recorded in the report.

RADIATED EMISSION ABOVE 1GHZ

EUT	Mia Baby sound machine	Model Name	KT-W01A
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ	Antenna	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4824.031	43.05	3.72	46.77	74	-27.23	peak
4824.065	36.57	3.72	40.29	54	-13.71	AVG
7236.095	41.22	8.15	49.37	74	-24.63	peak
7236.034	37.32	8.15	45.47	54	-8.53	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

EUT	Mia Baby sound machine	Model Name	KT-W01A
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ	Antenna	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4824.030	44.12	3.72	47.84	74	-26.16	peak
4824.079	38.06	3.72	41.78	54	-12.22	AVG
7236.078	41.91	8.15	50.06	74	-23.94	peak
7236.096	36.66	8.15	44.81	54	-9.19	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

EUT	Mia Baby sound machine	Model Name	KT-W01A
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2437MHZ	Antenna	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4874.029	46.21	3.75	49.96	74	-24.04	peak
4874.038	41.26	3.75	45.01	54	-8.99	AVG
7311.096	40.21	8.16	48.37	74	-25.63	peak
7311.044	36.11	8.16	44.27	54	-9.73	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

EUT	Mia Baby sound machine	Model Name	KT-W01A
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2437MHZ	Antenna	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4874.083	45.87	3.75	49.62	74	-24.38	peak
4874.110	41.12	3.75	44.87	54	-9.13	AVG
7311.115	40.28	8.16	48.44	74	-25.56	peak
7311.101	35.16	8.16	43.32	54	-10.68	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

EUT	Mia Baby sound machine	Model Name	KT-W01A
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2462MHZ	Antenna	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4924.092	42.33	3.81	46.14	74	-27.86	peak
4924.078	39.88	3.81	43.69	54	-10.31	AVG
7386.096	41.02	8.19	49.21	74	-24.79	peak
7386.114	34.58	8.19	42.77	54	-11.23	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

EUT	Mia Baby sound machine	Model Name	KT-W01A
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2462MHZ	Antenna	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4924.065	43.07	3.81	46.88	74	-27.12	peak
4924.040	38.51	3.81	42.32	54	-11.68	AVG
7386.032	37.42	8.19	45.61	74	-28.39	peak
7386.103	35.56	8.19	43.75	54	-10.25	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

RESULT: PASS

Note:

Other emissions from 1G to 25 GHz are considered as ambient noise. No recording in the test report.

Factor = Antenna Factor + Cable loss - Amplifier gain, Over=Measure-Limit.

The "Factor" value can be calculated automatically by software of measurement system.

All test modes had been pre-tested. The 802.11b mode is the worst case and recorded in the report.

12. BAND EDGE EMISSION

12.1. MEASUREMENT PROCEDURE

Radiated restricted band edge measurements

The radiated restricted band edge measurements are measured with an EMI test receiver connected to the receive antenna while the EUT is transmitting

12.2. TEST SET-UP

same as 11.2

Note:

1. Factor=Antenna Factor + Cable loss - Amplifier gain. Field Strength=Factor + Reading level
2. The factor had been edited in the "Input Correction" of the Spectrum Analyzer. So the Amplitude of test plots is equal to Reading level plus the Factor in dB. Use the A dB(μ V) to represent the Amplitude. Use the F dB(μ V/m) to represent the Field Strength. So A=F.

12.3. TEST RESULT

EUT	Mia Baby sound machine	Model Name	KT-W01A
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2412MHZ	Antenna	Horizontal

PK



AV



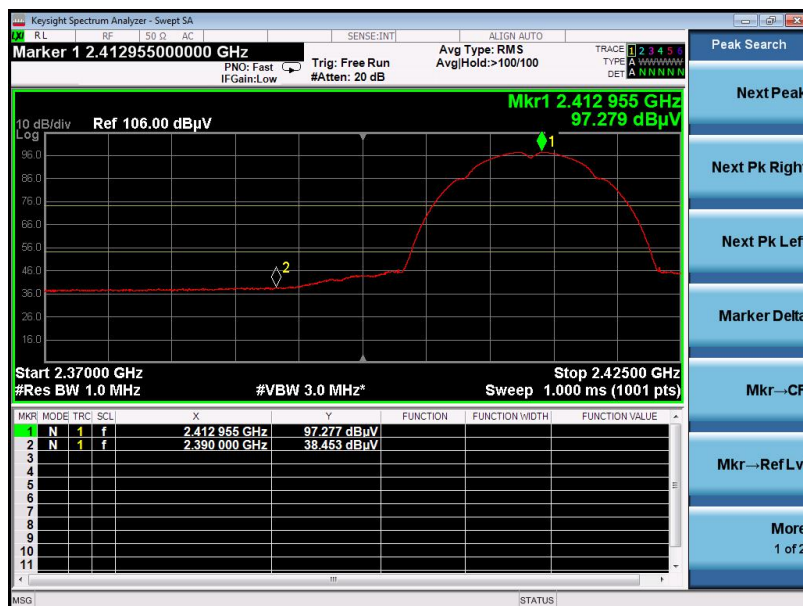
RESULT: PASS

EUT	Mia Baby sound machine	Model Name	KT-W01A
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2412MHZ	Antenna	Vertical

PK



AV



RESULT: PASS

EUT	Mia Baby sound machine	Model Name	KT-W01A
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2462MHZ	Antenna	Horizontal

PK



AV



RESULT: PASS

EUT	Mia Baby sound machine	Model Name	KT-W01A
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2462MHZ	Antenna	Vertical

PK



AV



RESULT: PASS

EUT	Mia Baby sound machine	Model Name	KT-W01A
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with data rate 6 2412MHZ	Antenna	Horizontal

PK



AV



RESULT: PASS

EUT	Mia Baby sound machine	Model Name	KT-W01A
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with data rate 6 2412MHZ	Antenna	Vertical

PK



AV



RESULT: PASS

EUT	Mia Baby sound machine	Model Name	KT-W01A
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with data rate 6 2462MHZ	Antenna	Horizontal

PK



AV



RESULT: PASS

EUT	Mia Baby sound machine	Model Name	KT-W01A
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with data rate 6 2462MHZ	Antenna	Vertical

PK



AV



RESULT: PASS

EUT	Mia Baby sound machine	Model Name	KT-W01A
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 20 with data rate 6.5 2412MHZ	Antenna	Horizontal

PK



AV



RESULT: PASS

EUT	Mia Baby sound machine	Model Name	KT-W01A
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 20 with data rate 6.5 2412MHZ	Antenna	Vertical

PK



AV



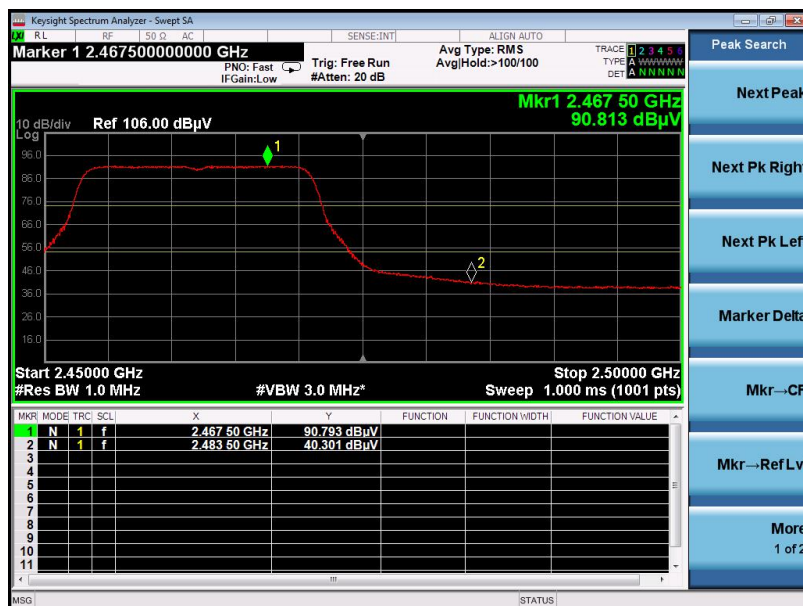
RESULT: PASS

EUT	Mia Baby sound machine	Model Name	KT-W01A
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 20 with data rate 6.5 2462MHZ	Antenna	Horizontal

PK



AV



RESULT: PASS

EUT	Mia Baby sound machine	Model Name	KT-W01A
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 20 with data rate 6.5 2462MHZ	Antenna	Vertical

PK



AV



RESULT: PASS

EUT	Mia Baby sound machine	Model Name	KT-W01A
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 40 with data rate 13.5 2422MHZ	Antenna	Horizontal

PK



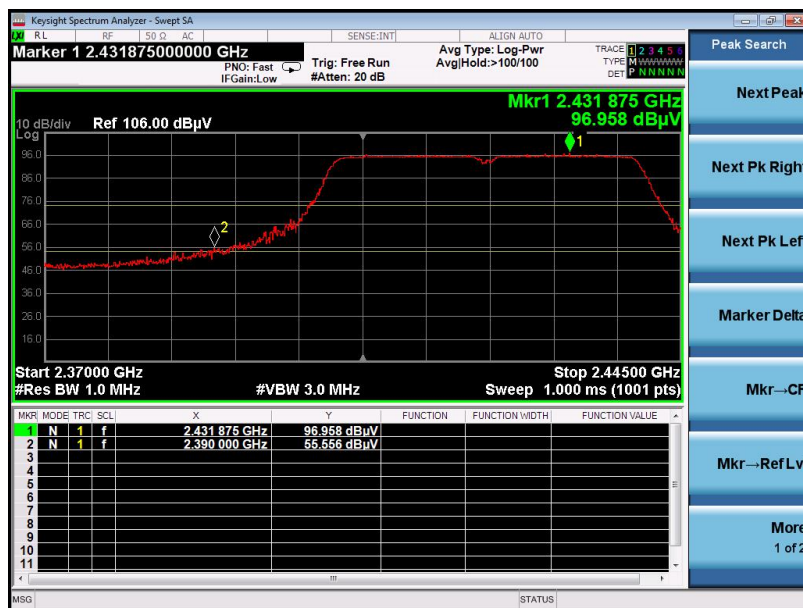
AV



RESULT: PASS

EUT	Mia Baby sound machine	Model Name	KT-W01A
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 40 with data rate 13.5 2422MHZ	Antenna	Vertical

PK



AV



RESULT: PASS

EUT	Mia Baby sound machine	Model Name	KT-W01A
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 40with data rate 13.5 2452MHZ	Antenna	Horizontal

PK



AV



RESULT: PASS

EUT	Mia Baby sound machine	Model Name	KT-W01A
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 40 with data rate 13.5 2452MHZ	Antenna	Vertical

PK



AV



RESULT: PASS

13. FCC LINE CONDUCTED EMISSION TEST

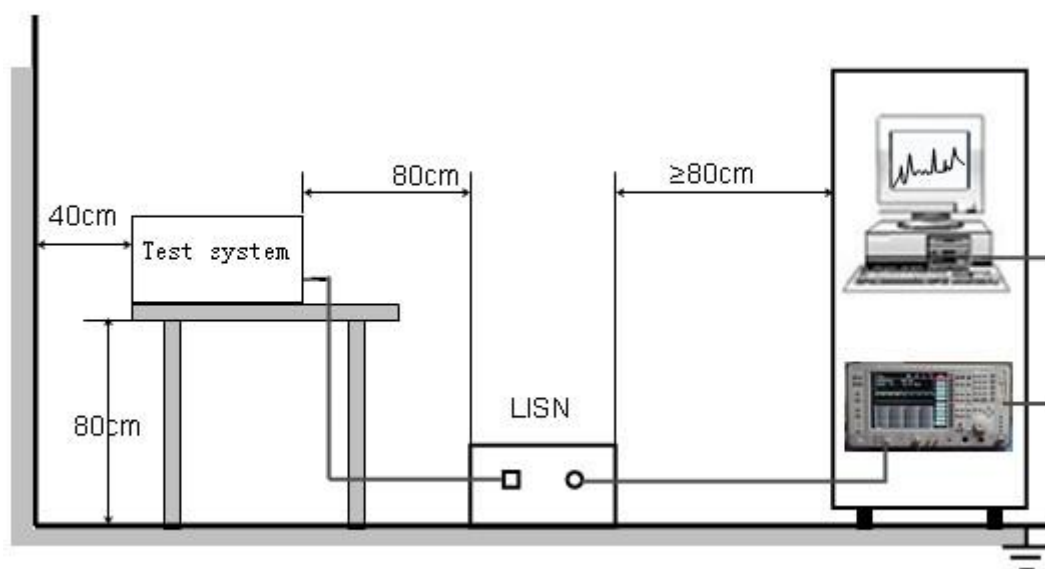
13.1. LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage	
	Q.P.(dBuV)	Average(dBuV)
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.

13.2. BLOCK DIAGRAM OF TEST SETUP

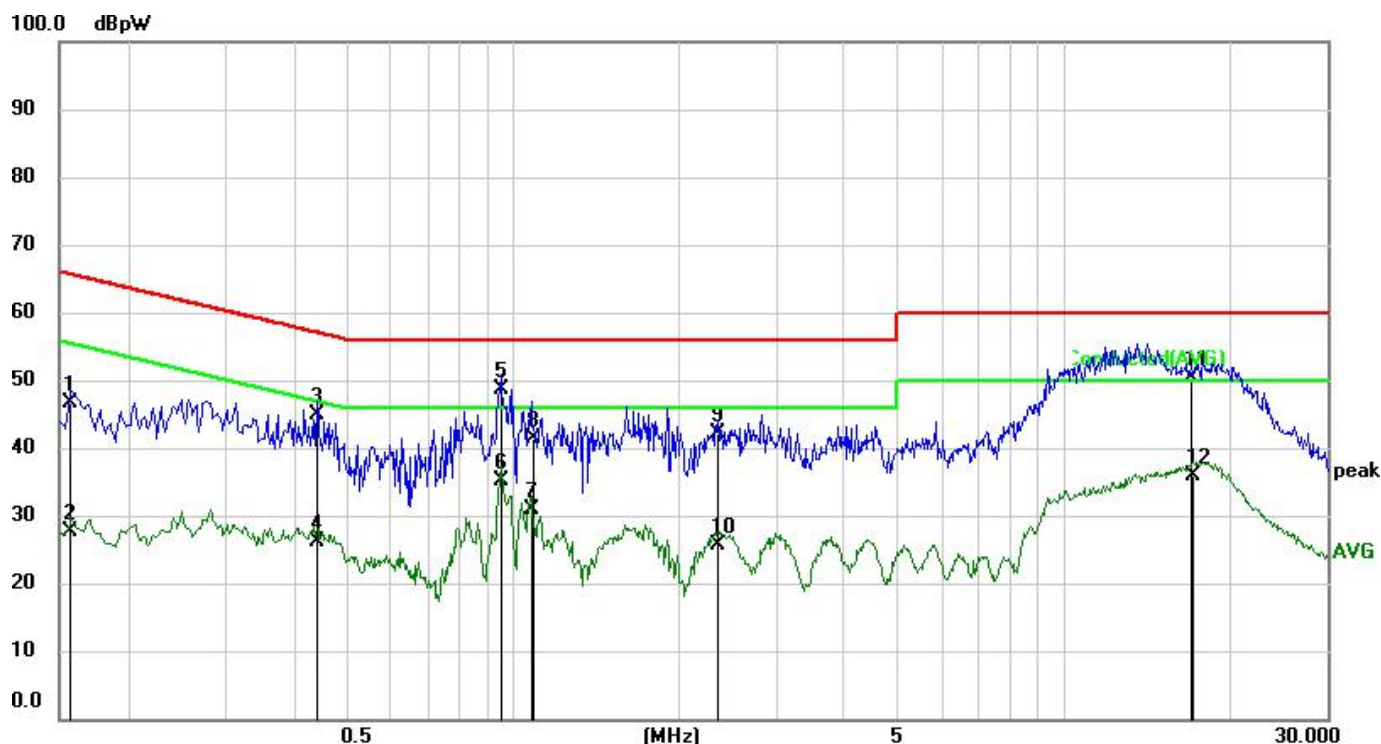


13.3. PROCEDURE OF LINE CONDUCTED EMISSION TEST

- (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 C63.4 (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 C63.4.
- (3) All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- (4) The EUT received DC 5V power from pc which received AC120V/60Hz power from a LISN.
- (5) The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a 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.
- (6) Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
- (7) During the above scans, the emissions were maximized by cable manipulation.
- (8) A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions.
- (9) 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.

13.4. TEST RESULT OF LINE CONDUCTED EMISSION TEST

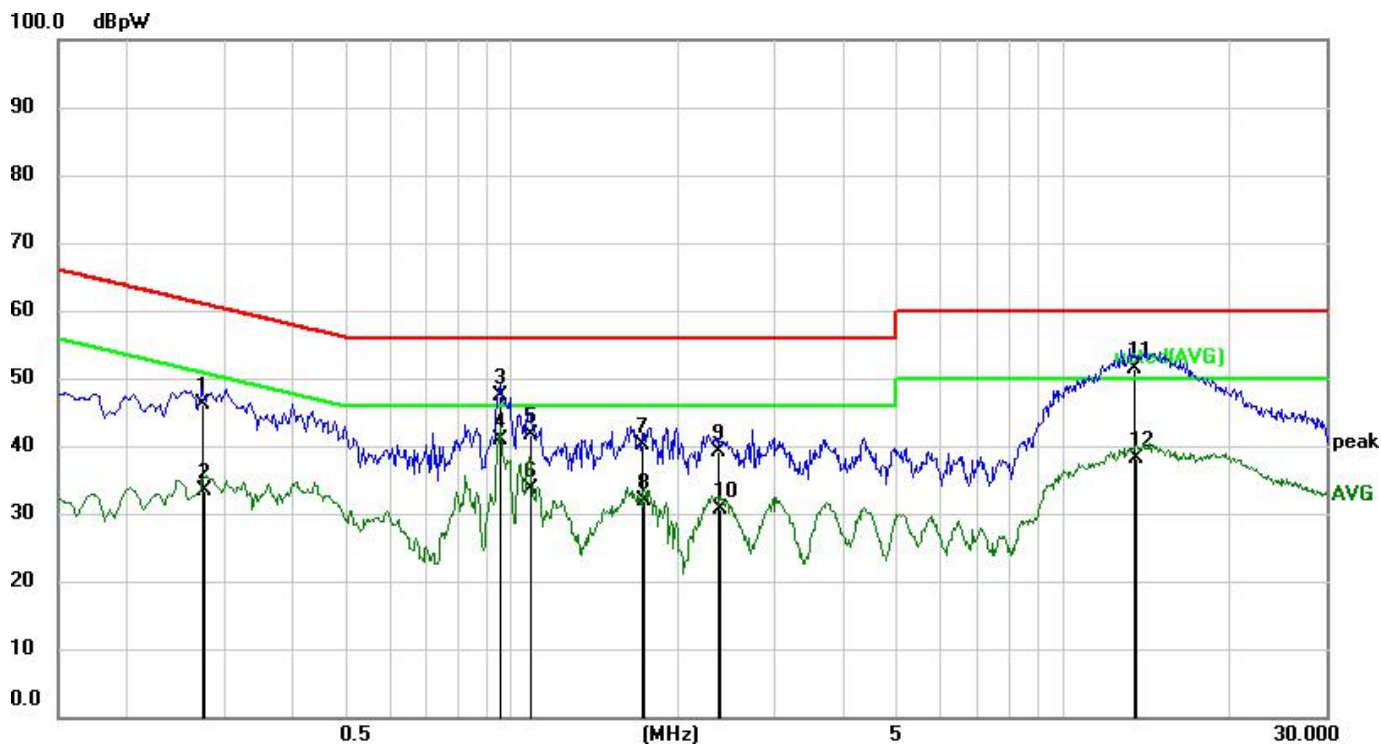
LINE CONDUCTED EMISSION TEST-L1



No. Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1580	36.71	9.94	46.65	65.57	-18.92	QP	
2	0.1580	17.58	9.94	27.52	55.57	-28.05	AVG	
3	0.4420	34.91	9.92	44.83	57.02	-12.19	QP	
4	0.4420	16.31	9.92	26.23	47.02	-20.79	AVG	
5 *	0.9500	38.78	9.97	48.75	56.00	-7.25	QP	
6	0.9540	25.09	9.97	35.06	46.00	-10.94	AVG	
7	1.0780	20.96	9.97	30.93	46.00	-15.07	AVG	
8	1.0900	31.29	9.97	41.26	56.00	-14.74	QP	
9	2.3500	32.00	10.05	42.05	56.00	-13.95	QP	
10	2.3500	15.60	10.05	25.65	46.00	-20.35	AVG	
11	17.0620	38.02	12.46	50.48	60.00	-9.52	QP	
12	17.1500	23.44	12.48	35.92	50.00	-14.08	AVG	

RESULT: PASS

LINE CONDUCTED EMISSION TEST-N



No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	0.2744	36.14	9.91	46.05	60.98	-14.93	QP	
2	0.2759	23.40	9.92	33.32	50.94	-17.62	AVG	
3	0.9540	37.32	9.97	47.29	56.00	-8.71	QP	
4 *	0.9540	30.83	9.97	40.80	46.00	-5.20	AVG	
5	1.0859	31.66	9.97	41.63	56.00	-14.37	QP	
6	1.0859	23.56	9.97	33.53	46.00	-12.47	AVG	
7	1.7340	30.04	10.01	40.05	56.00	-15.95	QP	
8	1.7420	21.78	10.01	31.79	46.00	-14.21	AVG	
9	2.3740	29.10	10.05	39.15	56.00	-16.85	QP	
10	2.3900	20.66	10.06	30.72	46.00	-15.28	AVG	
11	13.5420	39.65	11.66	51.31	60.00	-8.69	QP	
12	13.5700	26.43	11.67	38.10	50.00	-11.90	AVG	

RESULT: PASS

14.DUTY CYCLE

14.1.Applicable Standard

According to KDB 558074)6)b), issued 06/09/2015

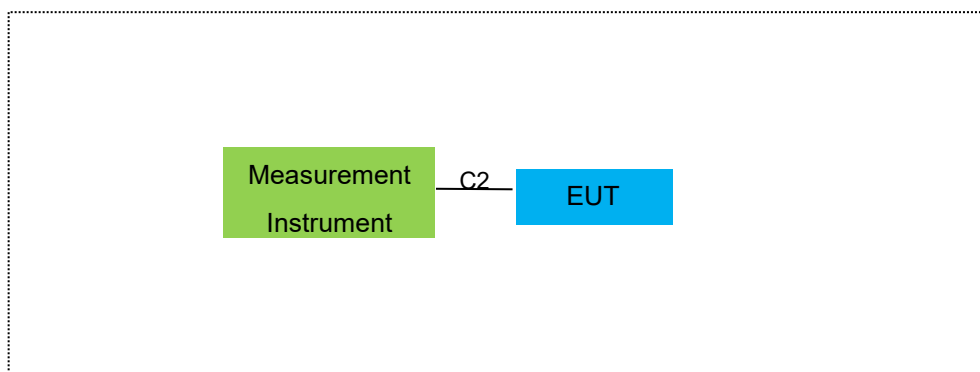
14.2.Conformance Limit

No limit requirement.

14.3.Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

14.4.Test Setup



14.5.Test Procedure

The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal. Set the center frequency of the instrument to the center frequency of the transmission. Set $RBW \geq OBW$ if possible; otherwise, set RBW to the largest available value. Set $VBW \geq RBW$. Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are $> 50/T$ and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if $T \leq 16.7$ microseconds.)

The transmitter output is connected to the Spectrum Analyzer. We tested according to the zero-span measurement method, 6.0)b) in KDB 558074(issued 06/09/2015)

The largest available value of RBW is 8 MHz and VBW is 50 MHz. The zero-span method of measuring duty cycle shall not be used if $T \leq 6.25$ microseconds. ($50/6.25 = 8$)

The zero-span method was used because all measured T data are > 6.25 microseconds and both RBW and VBW are $> 50/T$.

The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.

The path loss was compensated to the results for each measurement.

Set to the maximum power setting and enable the EUT transmit continuously.

The EUT was operating in controlled its channel.

Use the following spectrum analyzer settings:

Span = Zero Span

RBW = 8MHz(the largest available value)

VBW = 8MHz ($\geq$ RBW)

Number of points in Sweep >100

Detector function = peak

Trace = Clear write

Measure T_{total} and T_{on}

Calculate Duty Cycle = T_{on} / T_{total}

14.6.Test Results

All Mode Duty Cycle $\geq 98\%$

15.ANTENNA APPLICATION

15.1Antenna Requirement

15.203 requirement: For intentional device, according to 15.203: 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.

15.2Result

The EUT antenna is permanent attached PCB antenna (Gain:2.0 dBi). It comply with the standard requirement.

PCB antenna



-----END OF REPORT-----