

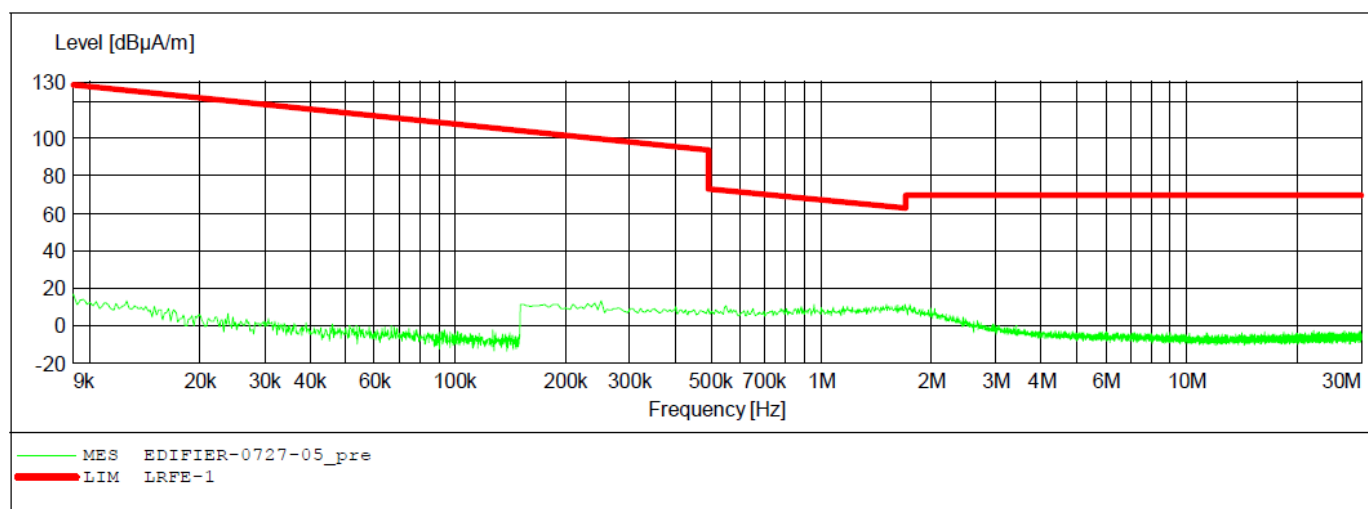
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3m Radiated

EUT: Multimedia Speaker M/N:M2290BT
 Manufacturer: EDIFIER
 Operating Condition: TX 2441MHz
 Test Site: 2# Chamber
 Operator: WADE
 Test Specification: AC 120V/60Hz
 Comment: Y
 Start of Test: 2017-7-27 /

SCAN TABLE: "LFRE Fin"

Short Description:			_SUB_STD_VTERM2 1.70			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



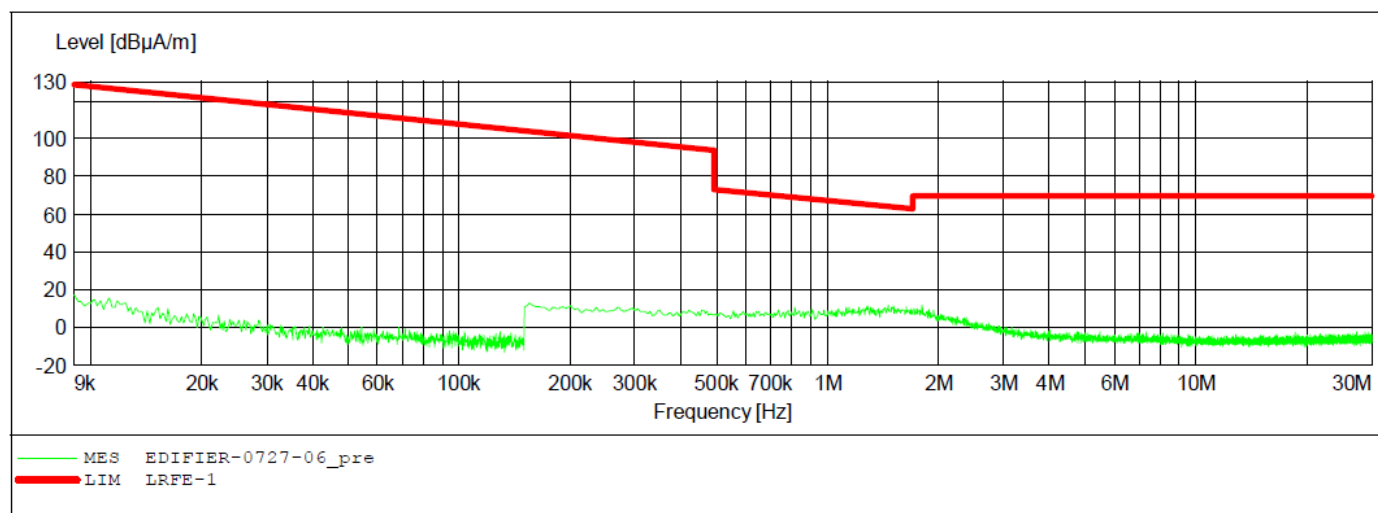
ACCURATE TECHNOLOGY CO.,LTD

FCC Class B 3m Radiated

EUT: Multimedia Speaker M/N:M2290BT
 Manufacturer: EDIFIER
 Operating Condition: TX 2441MHz
 Test Site: 2# Chamber
 Operator: WADE
 Test Specification: AC 120V/60Hz
 Comment: Z
 Start of Test: 2017-7-27 /

SCAN TABLE: "LFRE Fin"

Short Description:			_SUB_STD_VTERM2 1.70			
Start	Stop	Step	Detector	Meas.	IF	Transducer
Frequency	Frequency	Width		Time	Bandw.	
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



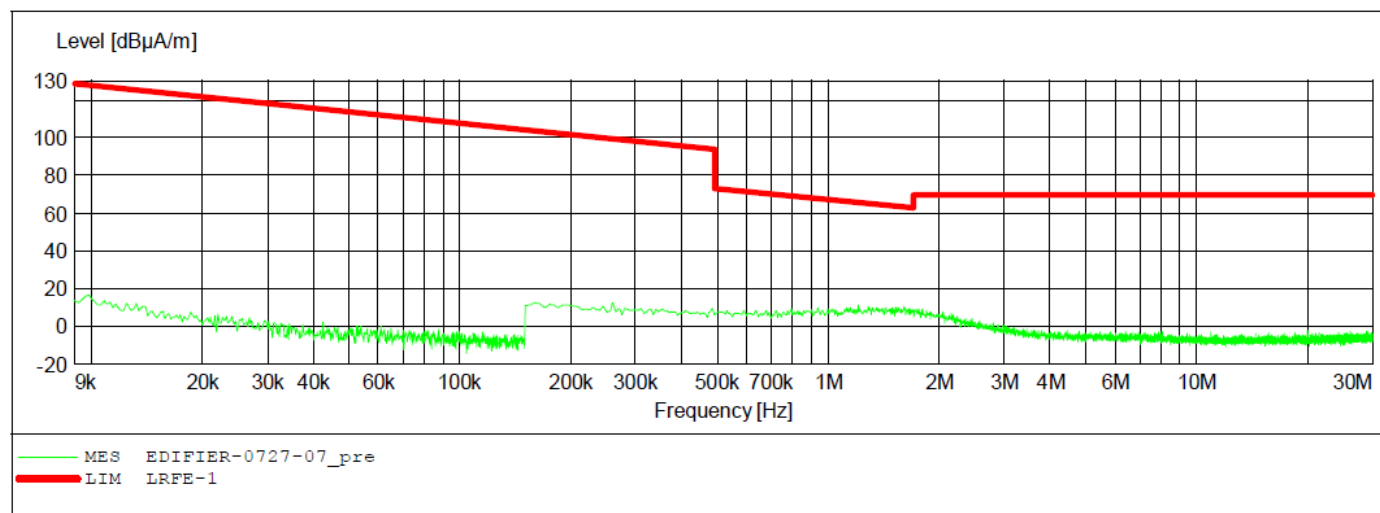
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3m Radiated

EUT: Multimedia Speaker M/N:M2290BT
 Manufacturer: EDIFIER
 Operating Condition: TX 2480MHz
 Test Site: 2# Chamber
 Operator: WADE
 Test Specification: AC 120V/60Hz
 Comment: X
 Start of Test: 2017-7-27 /

SCAN TABLE: "LFRE Fin"

Short Description: _SUB_STD_VTERM2 1.70						
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



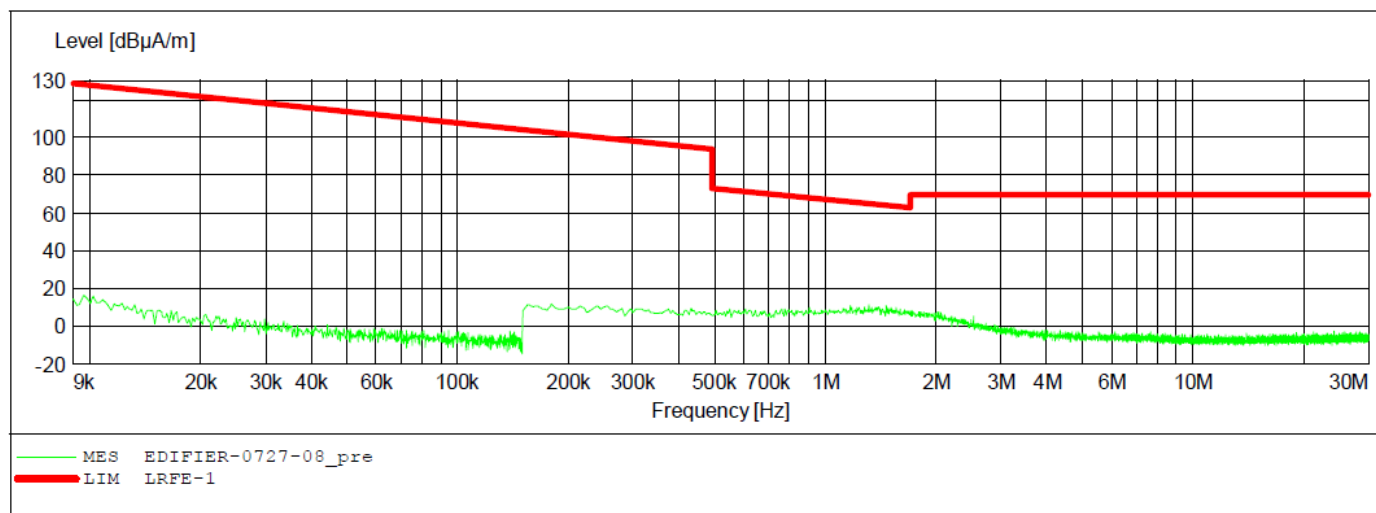
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3m Radiated

EUT: Multimedia Speaker M/N:M2290BT
 Manufacturer: EDIFIER
 Operating Condition: TX 2480MHz
 Test Site: 2# Chamber
 Operator: WADE
 Test Specification: AC 120V/60Hz
 Comment: Y
 Start of Test: 2017-7-27 /

SCAN TABLE: "LFRE Fin"

Short Description:			_SUB_STD_VTERM2 1.70			
Start	Stop	Step	Detector	Meas.	IF	Transducer
Frequency	Frequency	Width		Time	Bandw.	
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



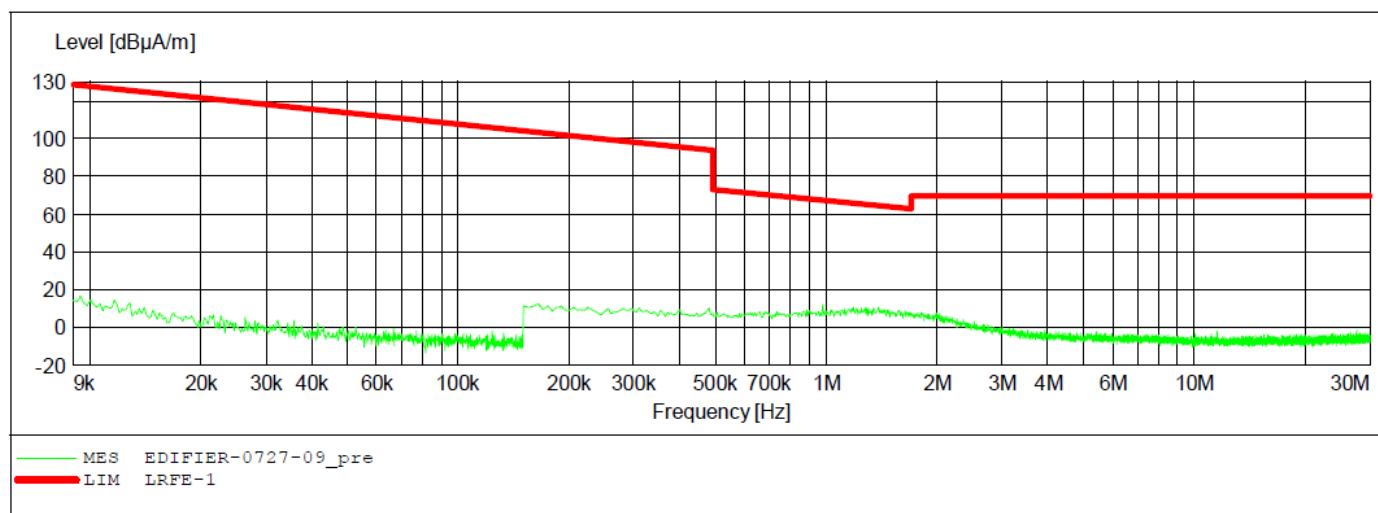
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3m Radiated

EUT: Multimedia Speaker M/N:M2290BT
 Manufacturer: EDIFIER
 Operating Condition: TX 2480MHz
 Test Site: 2# Chamber
 Operator: WADE
 Test Specification: AC 120V/60Hz
 Comment: Z
 Start of Test: 2017-7-27 /

SCAN TABLE: "LFRE Fin"

Short Description: _SUB_STD_VTERM2 1.70						
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



30MHz-1000MHz test data



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Job No.: LGW2017 #4822

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Multimedia Speaker

Mode: TX 2402MHz

Model: M2290BT

Manufacturer: EDIFIER

Polarization: Horizontal

Power Source: AC 120V/60Hz

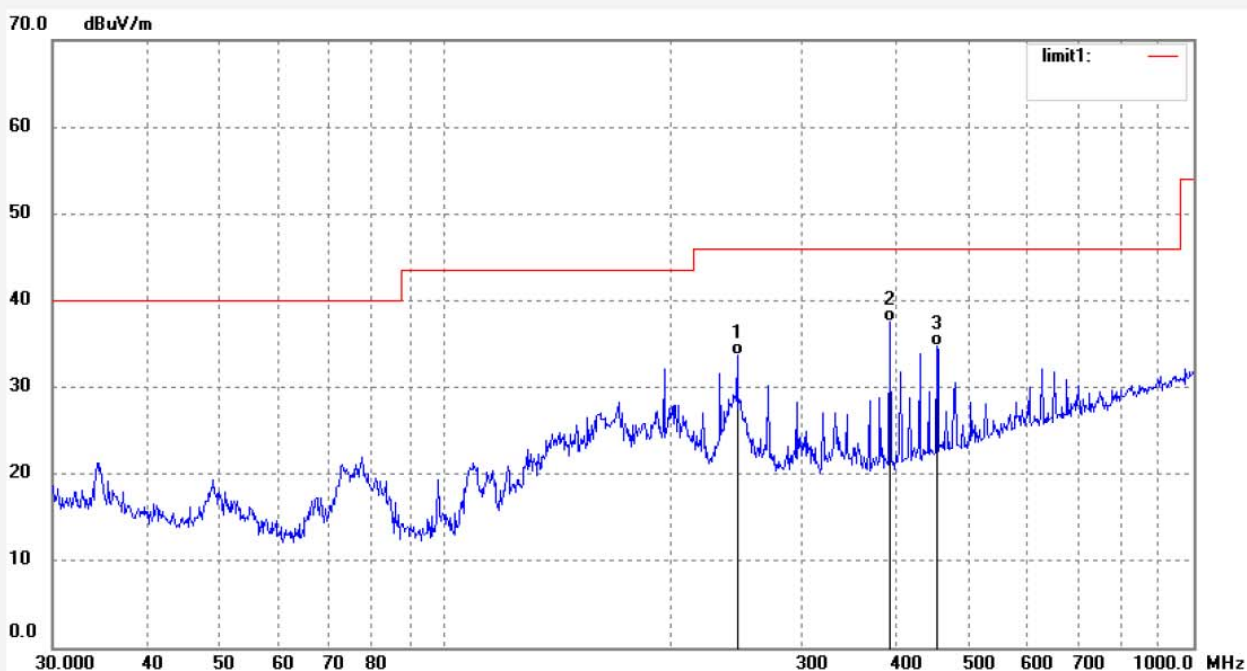
Date: 17/10/25/

Time:

Engineer Signature: WADE

Distance: 3m

Note: Bluetooth



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	245.9508	44.35	-10.58	33.77	46.00	-12.23	QP			
2	393.4723	44.29	-6.71	37.58	46.00	-8.42	QP			
3	454.3100	40.06	-5.28	34.78	46.00	-11.22	QP			

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Site: 2# Chamber

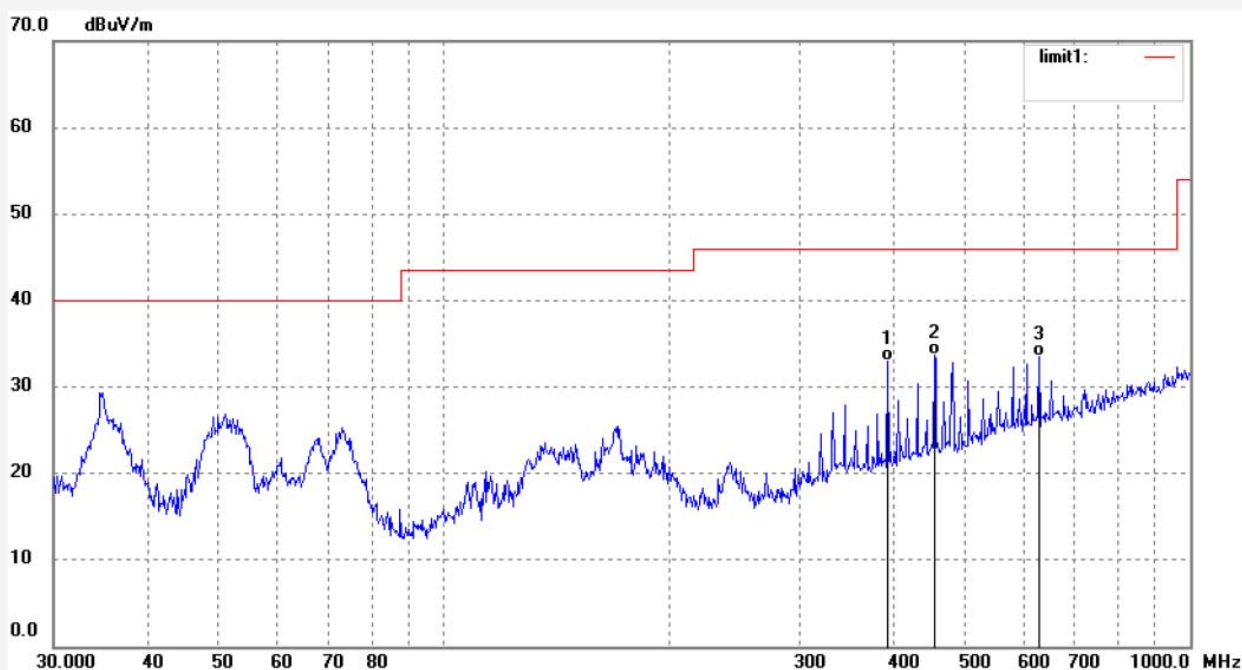
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: LGW2017 #4823
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Multimedia Speaker
Mode: TX 2402MHz
Model: M2290BT
Manufacturer: EDIFIER

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 17/10/25/
Time:
Engineer Signature: WADE
Distance: 3m

Note: Bluetooth



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	393.4723	39.68	-6.71	32.97	46.00	-13.03	QP			
2	454.3100	38.95	-5.28	33.67	46.00	-12.33	QP			
3	627.2738	35.55	-1.99	33.56	46.00	-12.44	QP			

Job No.: LGW2017 #4825

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Multimedia Speaker

Mode: TX 2441MHz

Model: M2290BT

Manufacturer: EDIFIER

Polarization: Horizontal

Power Source: AC 120V/60Hz

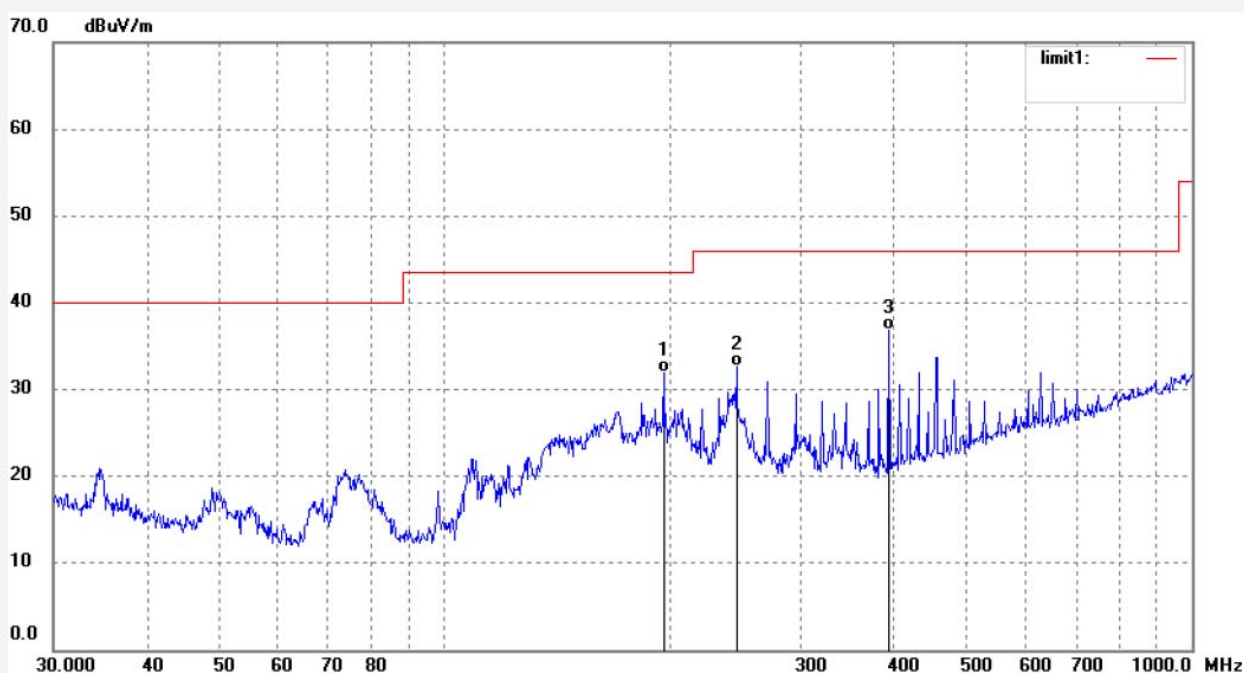
Date: 17/10/25/

Time:

Engineer Signature: WADE

Distance: 3m

Note: Bluetooth



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	196.5098	44.16	-12.30	31.86	43.50	-11.64	QP			
2	245.9508	43.23	-10.58	32.65	46.00	-13.35	QP			
3	393.4723	43.60	-6.71	36.89	46.00	-9.11	QP			

Job No.: LGW2017 #4824

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Multimedia Speaker

Mode: TX 2441MHz

Model: M2290BT

Manufacturer: EDIFIER

Polarization: Vertical

Power Source: AC 120V/60Hz

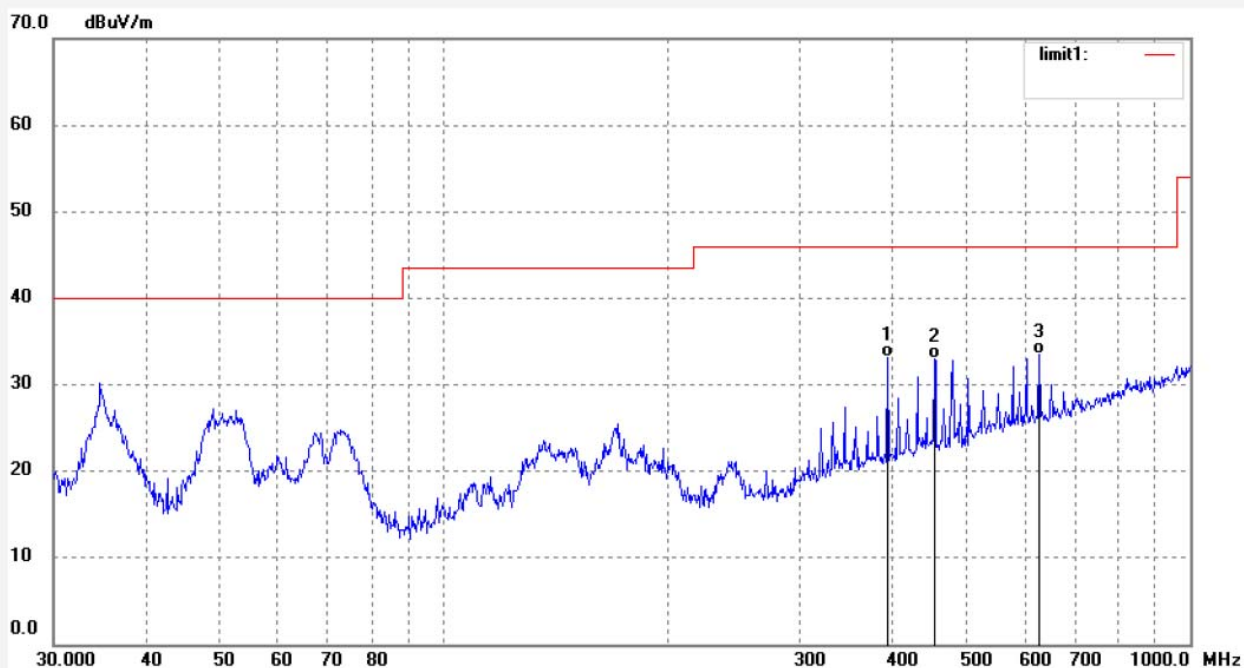
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Engineer Signature: WADE

Distance: 3m

Note: Bluetooth

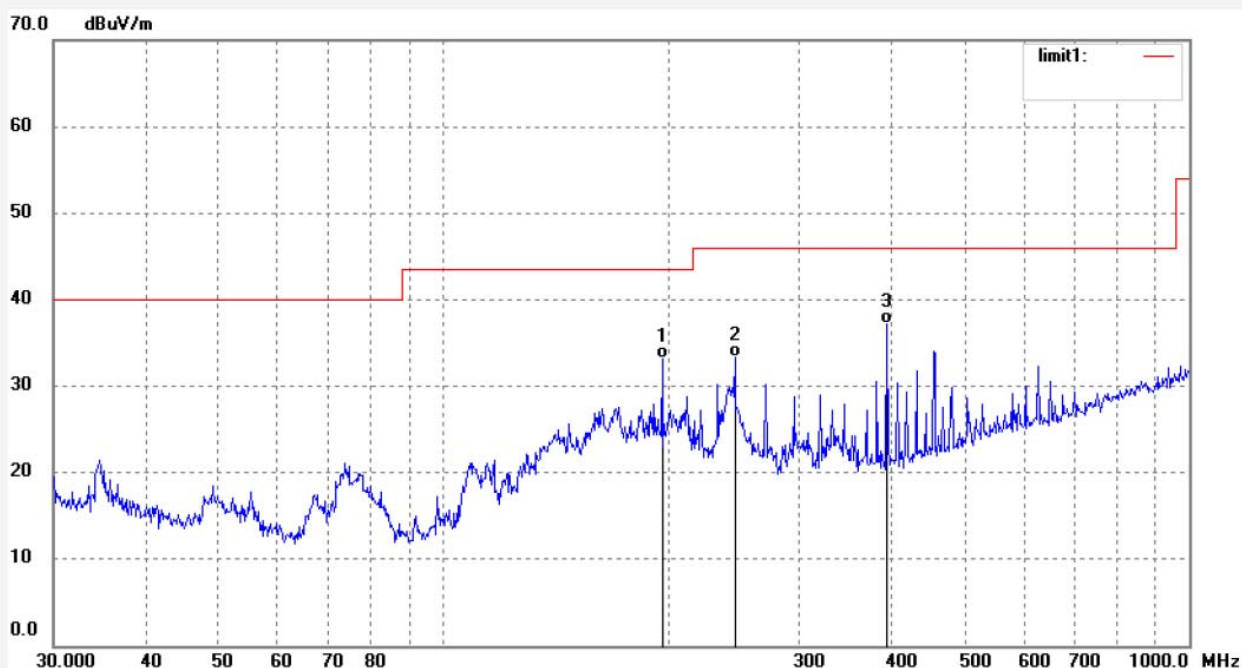


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	393.4723	39.92	-6.71	33.21	46.00	-12.79	QP			
2	454.3100	38.28	-5.28	33.00	46.00	-13.00	QP			
3	627.2738	35.47	-1.99	33.48	46.00	-12.52	QP			

Job No.: LGW2017 #4826
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Multimedia Speaker
Mode: TX 2480MHz
Model: M2290BT
Manufacturer: EDIFIER

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 17/10/25/
Time:
Engineer Signature: WADE
Distance: 3m

Note: Bluetooth

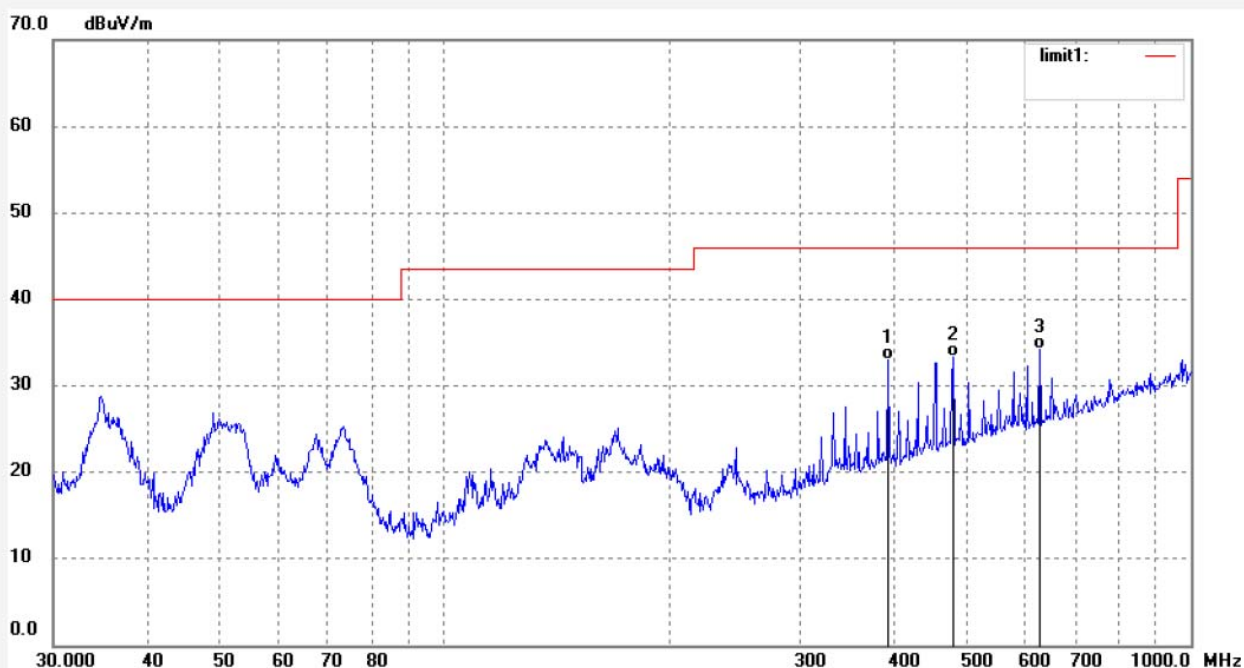


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	196.5098	45.43	-12.30	33.13	43.50	-10.37	QP			
2	245.9508	43.92	-10.58	33.34	46.00	-12.66	QP			
3	393.4723	43.98	-6.71	37.27	46.00	-8.73	QP			

Job No.: LGW2017 #4827
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Multimedia Speaker
Mode: TX 2480MHz
Model: M2290BT
Manufacturer: EDIFIER

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 17/10/25/
Time:
Engineer Signature: WADE
Distance: 3m

Note: Bluetooth



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	393.4723	39.66	-6.71	32.95	46.00	-13.05	QP			
2	480.5276	38.23	-4.88	33.35	46.00	-12.65	QP			
3	627.2738	36.17	-1.99	34.18	46.00	-11.82	QP			

1GHz-18GHz test data



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Job No.: LGW2017 #4790

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Multimedia Speaker

Mode: TX 2402MHz

Model: M2290BT

Manufacturer: EDIFIER

Polarization: Horizontal

Power Source: AC 120V/60Hz

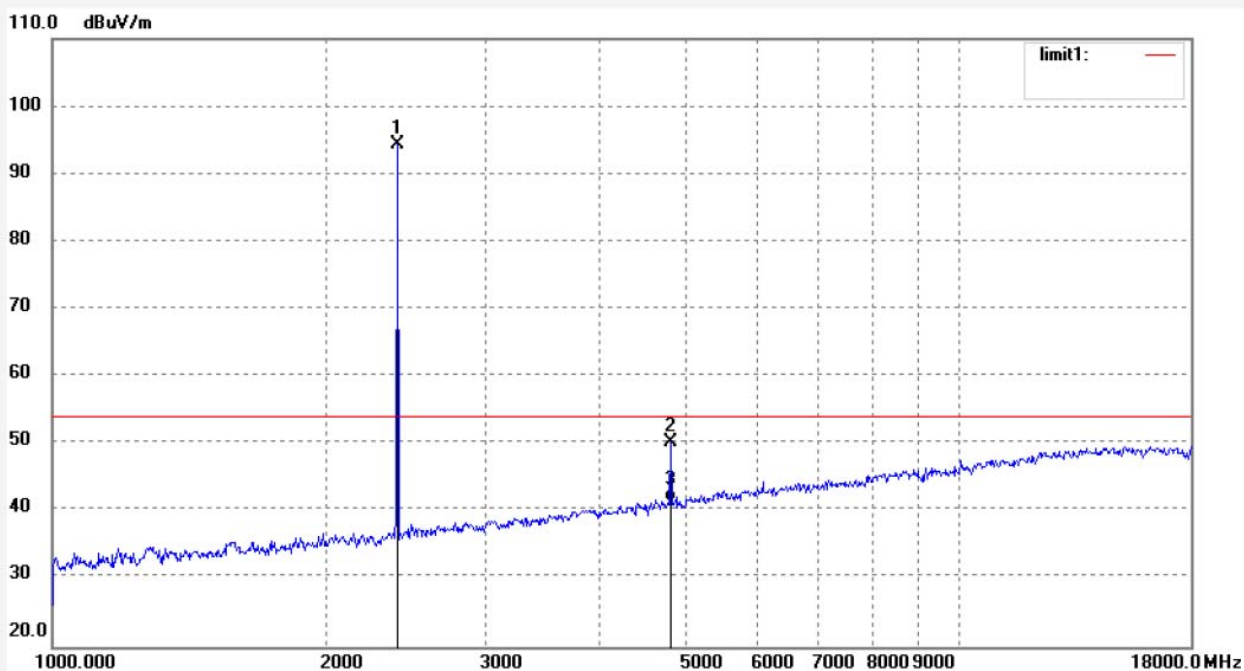
Date: 17/10/25/

Time:

Engineer Signature: WADE

Distance: 3m

Note: Bluetooth



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.000	93.47	0.89	94.36	/	/	peak			
2	4804.025	42.96	7.40	50.36	74.00	-23.64	peak			
3	4804.025	34.04	7.40	41.44	54.00	-12.56	AVG			

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Job No.: LGW2017 #4791

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Multimedia Speaker

Mode: TX 2402MHz

Model: M2290BT

Manufacturer: EDIFIER

Polarization: Vertical

Power Source: AC 120V/60Hz

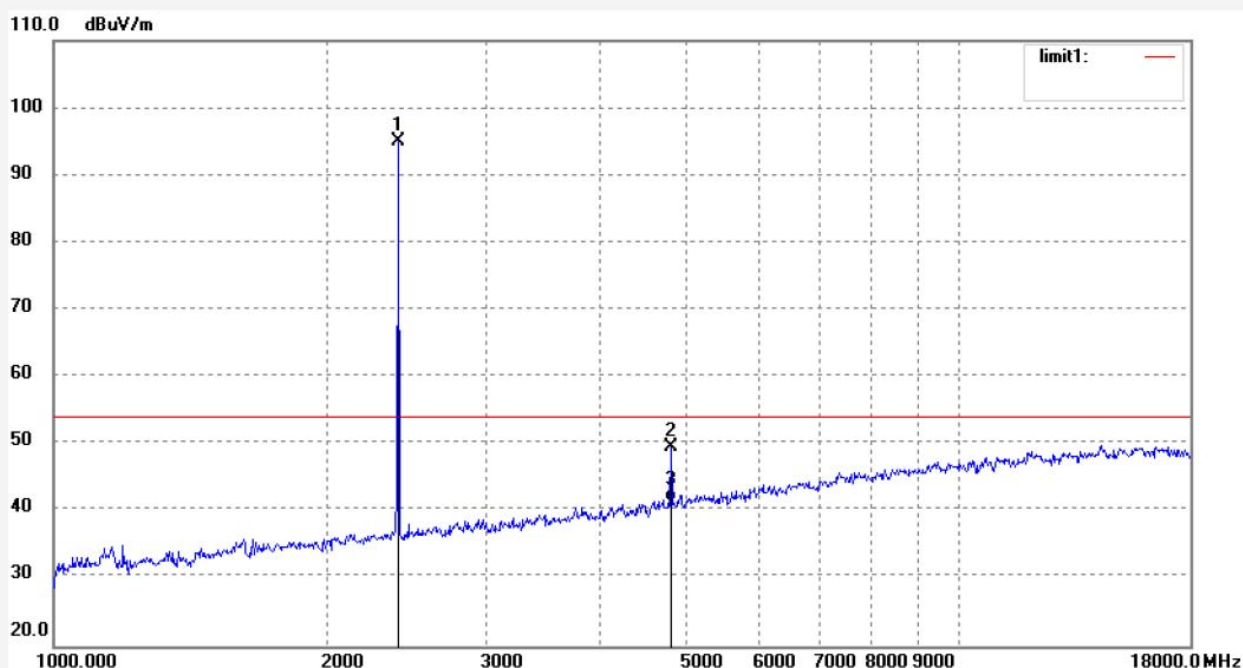
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Time:

Engineer Signature: WADE

Distance: 3m

Note: Bluetooth

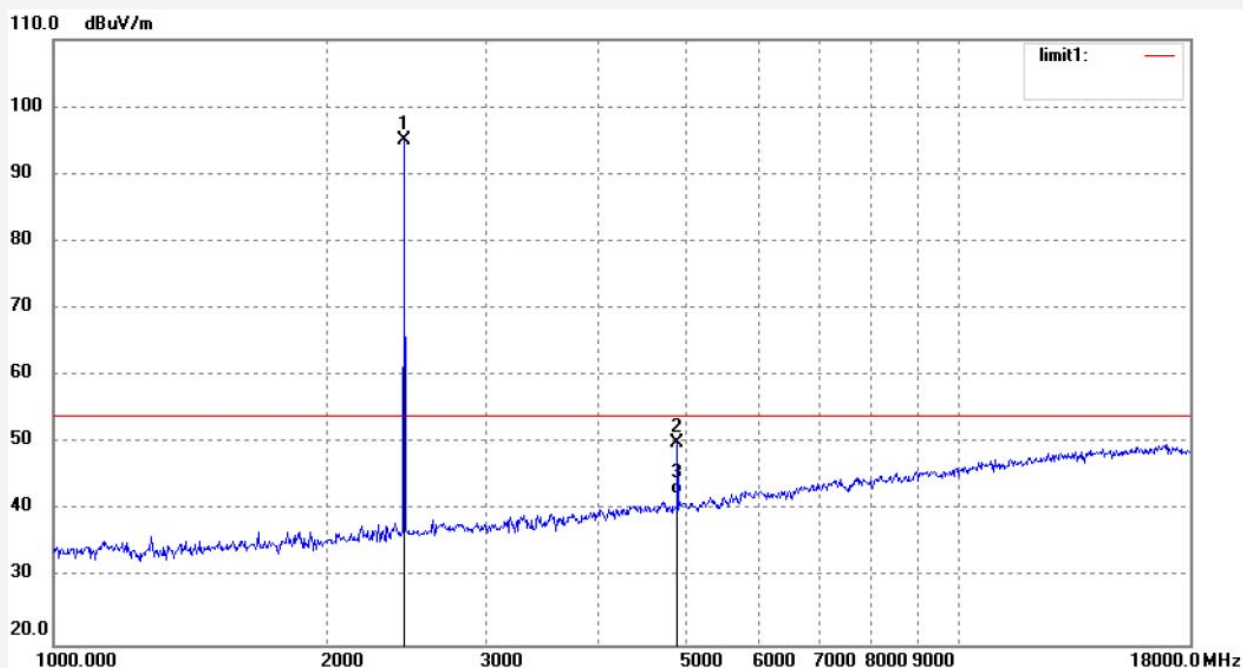


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.000	92.11	2.89	95.00	/	/	peak			
2	4804.024	40.15	9.40	49.55	74.00	-24.45	peak			
3	4804.024	32.17	9.40	41.57	54.00	-12.43	AVG			

Job No.: LGW2017 #4794
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Multimedia Speaker
Mode: TX 2441MHz
Model: M2290BT
Manufacturer: EDIFIER

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 17/10/25/
Time:
Engineer Signature: WADE
Distance: 3m

Note: Bluetooth

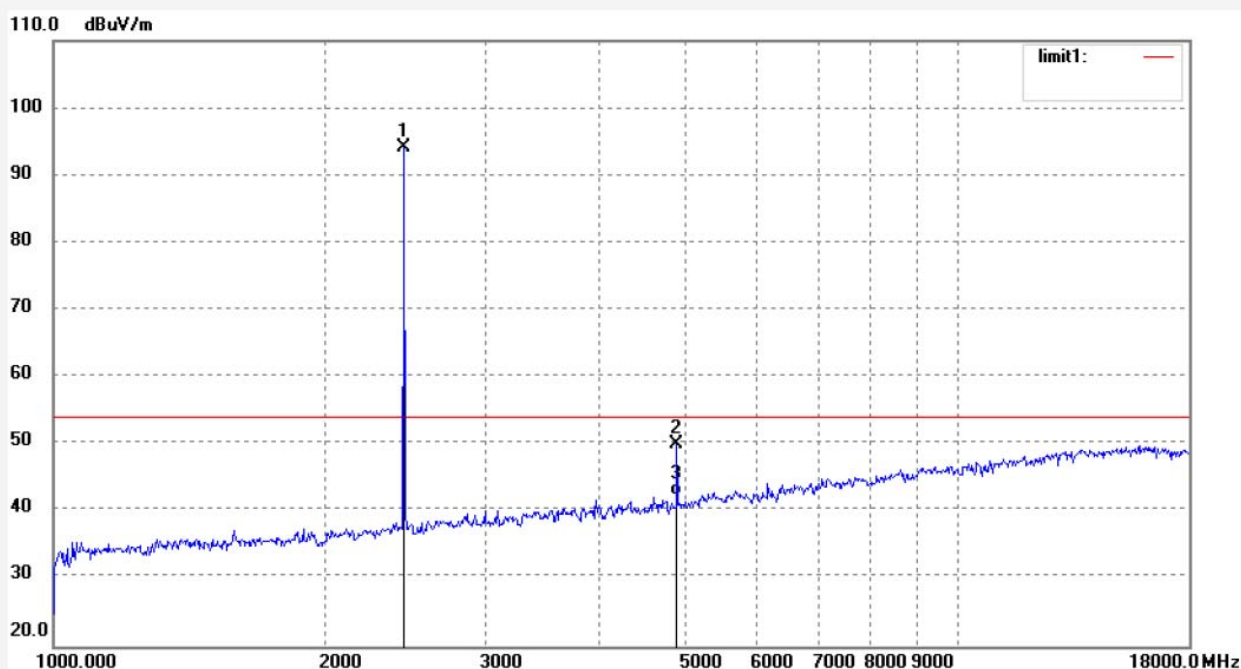


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2441.000	93.99	1.06	95.05	/	/	peak			
2	4882.025	41.97	8.11	50.08	74.00	-23.92	peak			
3	4882.025	34.24	8.11	42.35	54.00	-11.65	AVG			

Job No.: LGW2017 #4795
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Multimedia Speaker
Mode: TX 2441MHz
Model: M2290BT
Manufacturer: EDIFIER

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 17/10/25/
Time:
Engineer Signature: WADE
Distance: 3m

Note: Bluetooth

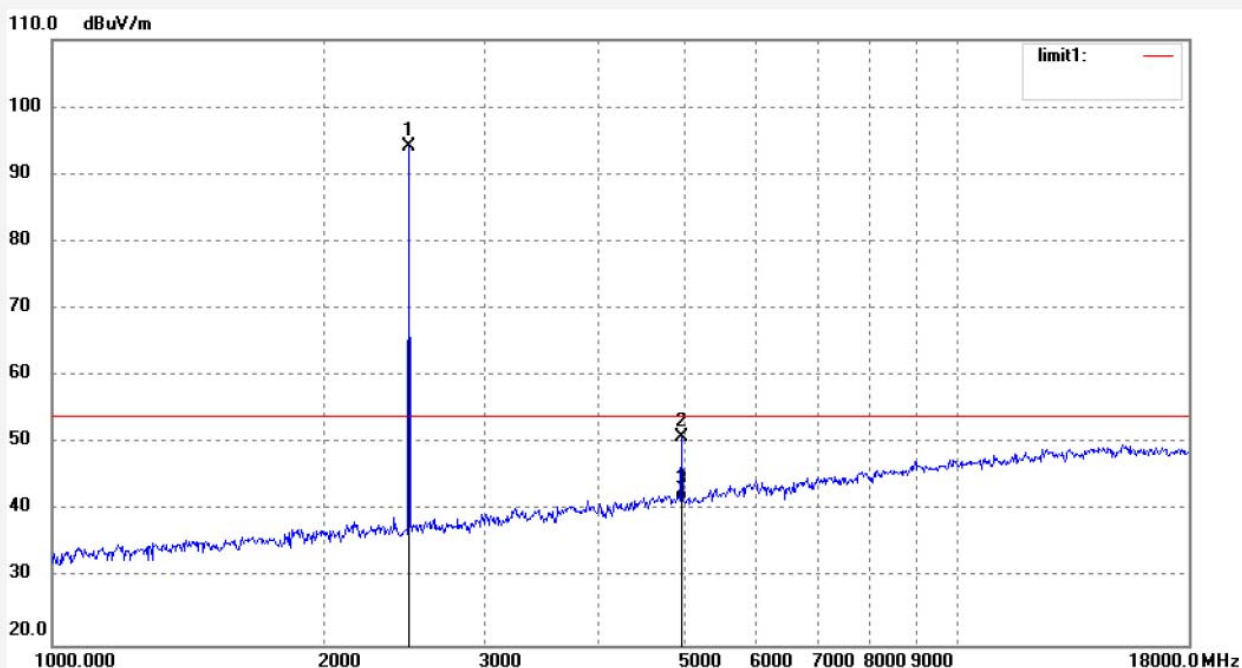


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2441.000	90.99	3.06	94.05	/	/	peak			
2	4882.026	39.97	10.11	50.08	74.00	-23.92	peak			
3	4882.026	32.24	10.11	42.35	54.00	-11.65	AVG			

Job No.: LGW2017 #4797
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Multimedia Speaker
Mode: TX 2480MHz
Model: M2290BT
Manufacturer: EDIFIER

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 17/10/25/
Time:
Engineer Signature: WADE
Distance: 3m

Note: Bluetooth

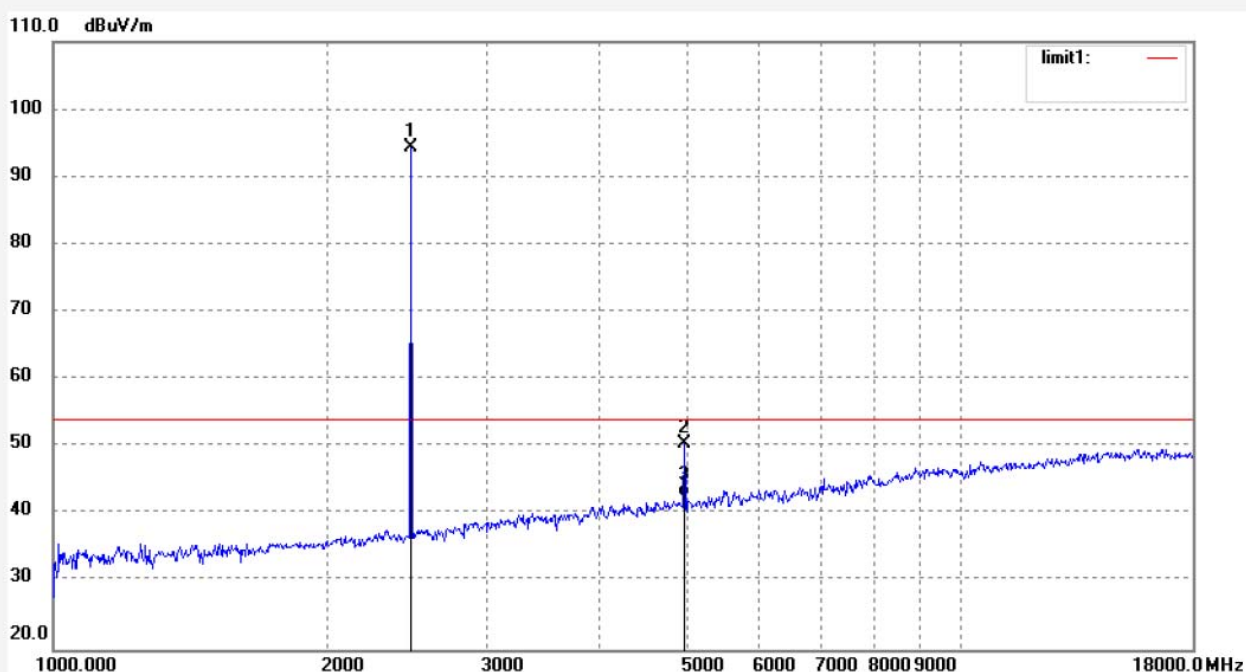


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.000	93.02	1.10	94.12	/	/	peak			
2	4960.027	42.25	8.60	50.85	74.00	-23.15	peak			
3	4960.027	32.97	8.60	41.57	54.00	-12.43	AVG			

Job No.: LGW2017 #4796
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Multimedia Speaker
Mode: TX 2480MHz
Model: M2290BT
Manufacturer: EDIFIER

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 17/10/25/
Time:
Engineer Signature: WADE
Distance: 3m

Note: Bluetooth



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.000	91.35	3.10	94.45	/	/	peak			
2	4960.028	39.78	10.60	50.38	74.00	-23.62	peak			
3	4960.028	31.96	10.60	42.56	54.00	-11.44	AVG			

18GHz-26.5GHz test data



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Job No.: LGW2017 #4801

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Multimedia Speaker

Mode: TX 2402MHz

Model: M2290BT

Manufacturer: EDIFIER

Polarization: Horizontal

Power Source: AC 120V/60Hz

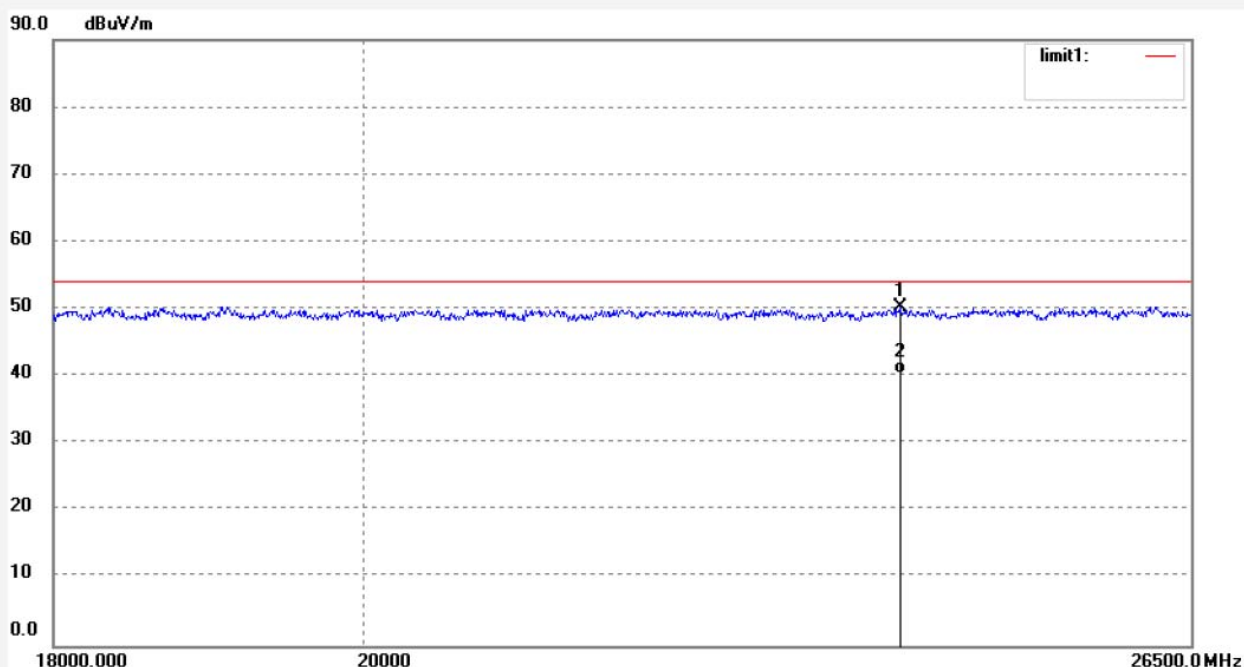
Date: 17/10/25/

Time:

Engineer Signature: WADE

Distance: 3m

Note: Bluetooth



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	24001.849	-10.24	60.42	50.18	74.00	-23.82	peak			
2	24001.849	-20.09	60.42	40.33	54.00	-13.67	AVG			

Job No.: LGW2017 #4800

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Multimedia Speaker

Mode: TX 2402MHz

Model: M2290BT

Manufacturer: EDIFIER

Polarization: Vertical

Power Source: AC 120V/60Hz

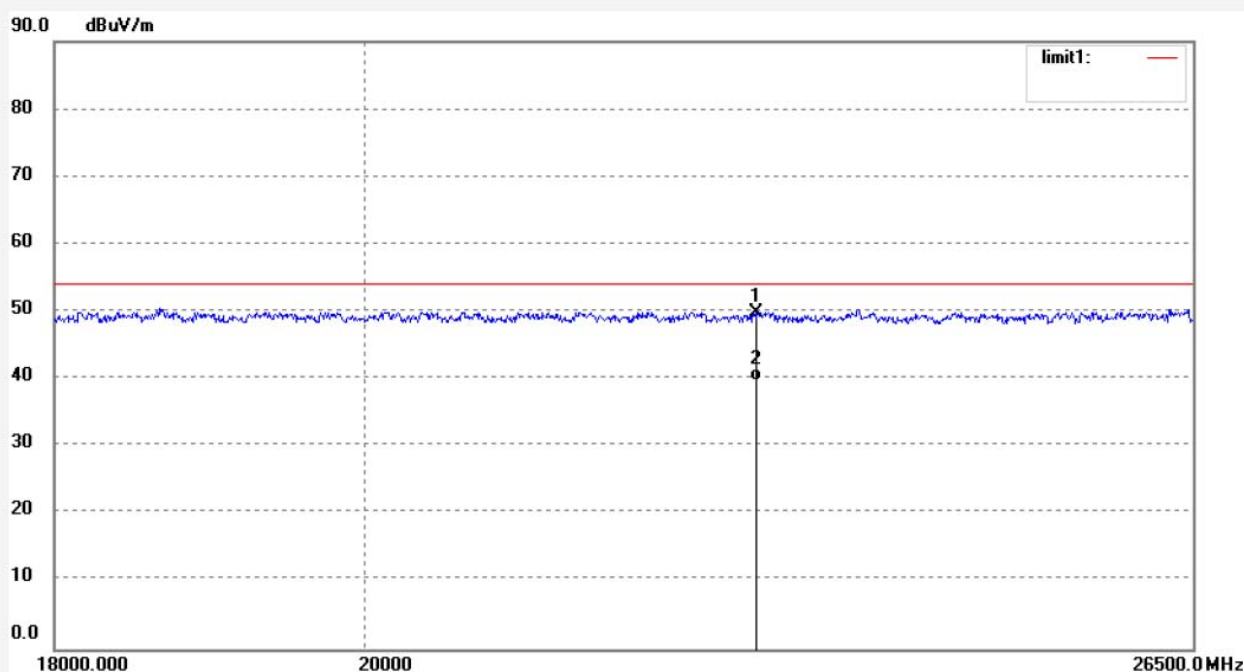
Date: 17/10/25/

Time:

Engineer Signature: WADE

Distance: 3m

Note: Bluetooth

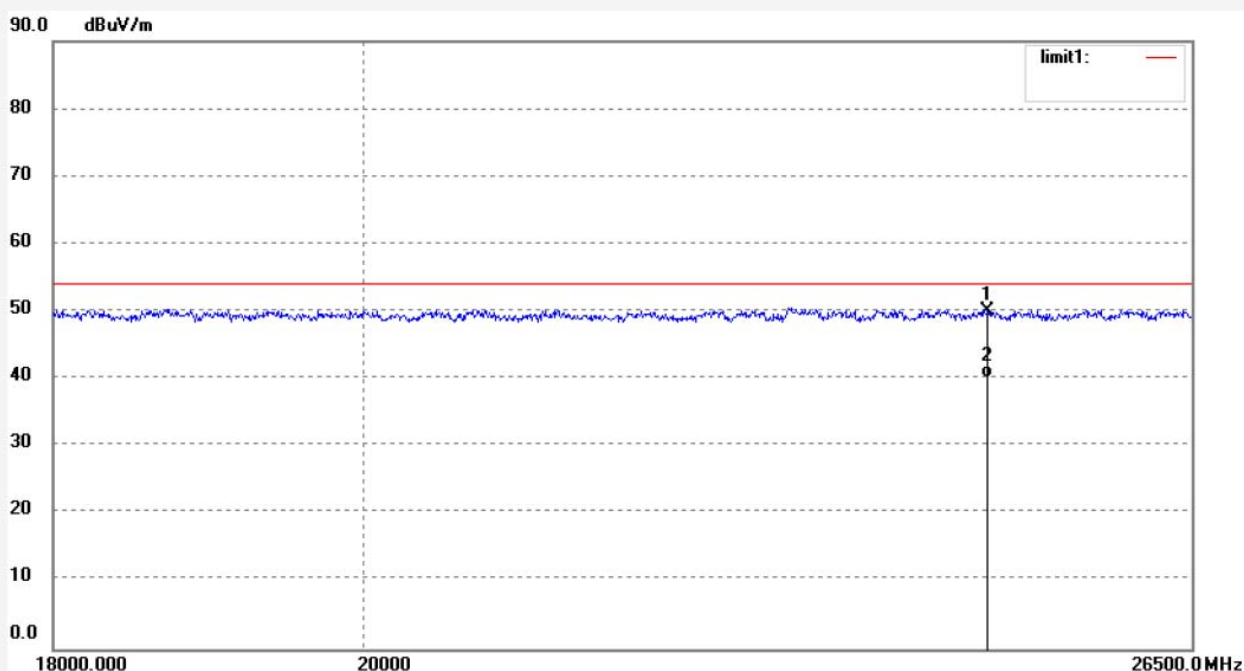


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	22851.361	10.12	39.69	49.81	74.00	-24.19	peak			
2	22851.361	-0.05	39.69	39.64	54.00	-14.36	AVG			

Job No.: LGW2017 #4802
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Multimedia Speaker
Mode: TX 2441MHz
Model: M2290BT
Manufacturer: EDIFIER

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 17/10/25/
Time:
Engineer Signature: WADE
Distance: 3m

Note: Bluetooth

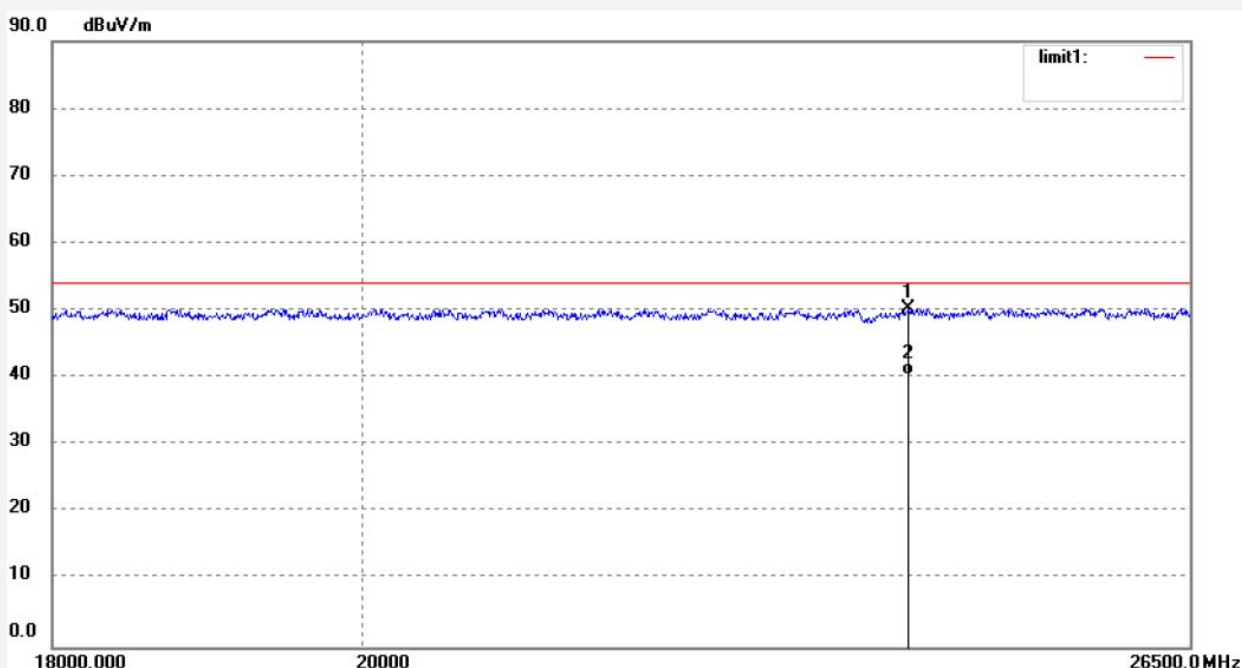


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	24727.411	-9.68	59.77	50.09	74.00	-23.91	peak			
2	24727.411	-19.56	59.77	40.21	54.00	-13.79	AVG			

Job No.: LGW2017 #4803
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Multimedia Speaker
Mode: TX 2441MHz
Model: M2290BT
Manufacturer: EDIFIER

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 17/10/25/
Time:
Engineer Signature: WADE
Distance: 3m

Note: Bluetooth

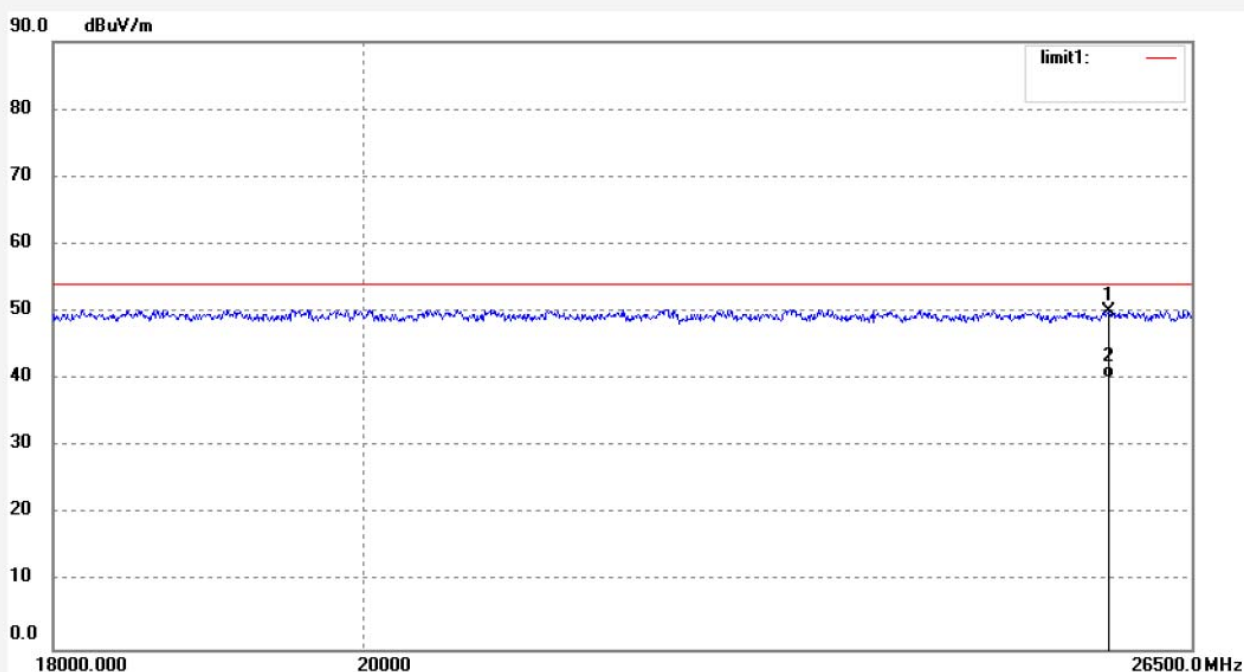


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	24085.544	10.41	39.81	50.22	74.00	-23.78	peak			
2	24085.544	0.59	39.81	40.40	54.00	-13.60	AVG			

Job No.: LGW2017 #4805
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Multimedia Speaker
Mode: TX 2480MHz
Model: M2290BT
Manufacturer: EDIFIER

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 17/10/25/
Time:
Engineer Signature: WADE
Distance: 3m

Note: Bluetooth



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	25762.251	9.87	40.13	50.00	74.00	-24.00	peak			
2	25762.251	-0.01	40.13	40.12	54.00	-13.88	AVG			

Job No.: LGW2017 #4804

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Multimedia Speaker

Mode: TX 2480MHz

Model: M2290BT

Manufacturer: EDIFIER

Polarization: Vertical

Power Source: AC 120V/60Hz

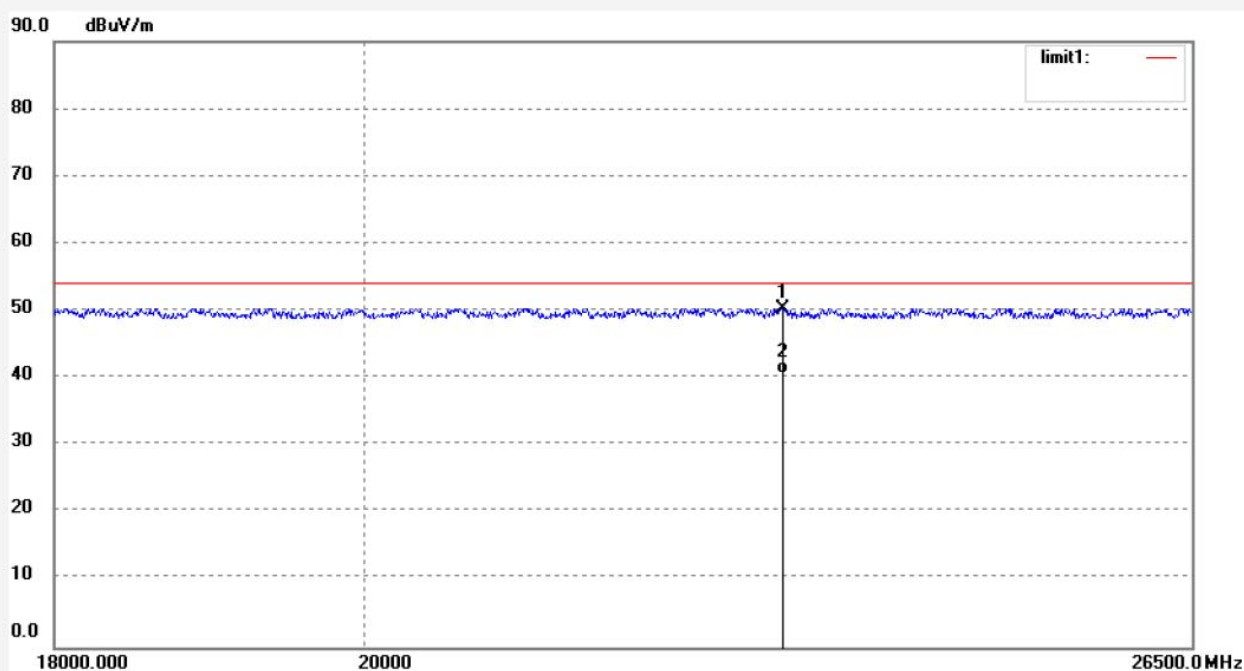
Date: 17/10/25/

Time:

Engineer Signature: WADE

Distance: 3m

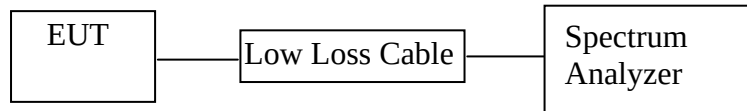
Note: Bluetooth



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	23064.467	10.51	39.81	50.32	74.00	-23.68	peak			
2	23064.467	0.76	39.81	40.57	54.00	-13.43	AVG			

11.BAND EDGE COMPLIANCE TEST

11.1.Block Diagram of Test Setup



(EUT: Multimedia Speaker)

11.2.The Requirement For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

11.3.EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

11.4.Operating Condition of EUT

11.4.1.Setup the EUT and simulator as shown as Section 11.1.

11.4.2.Turn on the power of all equipment.

11.4.3.Let the EUT work in TX (Hopping off, Hopping on) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2480MHz TX frequency to transmit.

11.5. Test Procedure

11.5.1. The transmitter output was connected to the spectrum analyzer via a low loss cable.

11.5.2. Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz with convenient frequency span including 100 kHz bandwidth from band edge.

11.5.3. The band edges was measured and recorded.

11.6. Test Result

Non-hopping mode

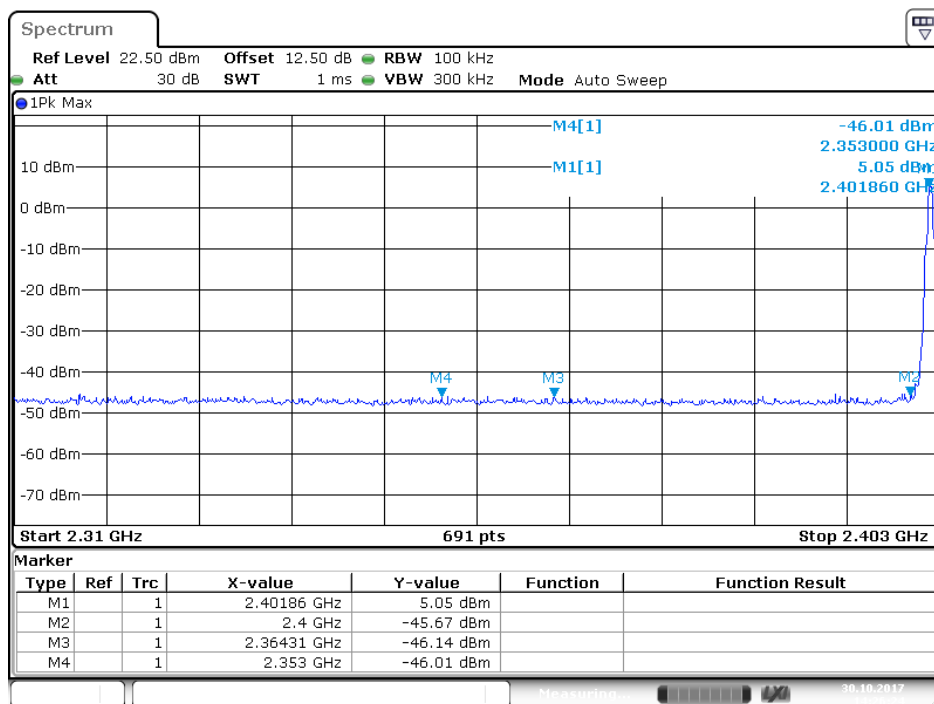
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
BDR mode		
2400.00	50.72	> 20dBc
2483.50	52.63	> 20dBc
EDR mode		
2336.58	46.85	> 20dBc
2496.10	48.63	> 20dBc

Hopping mode

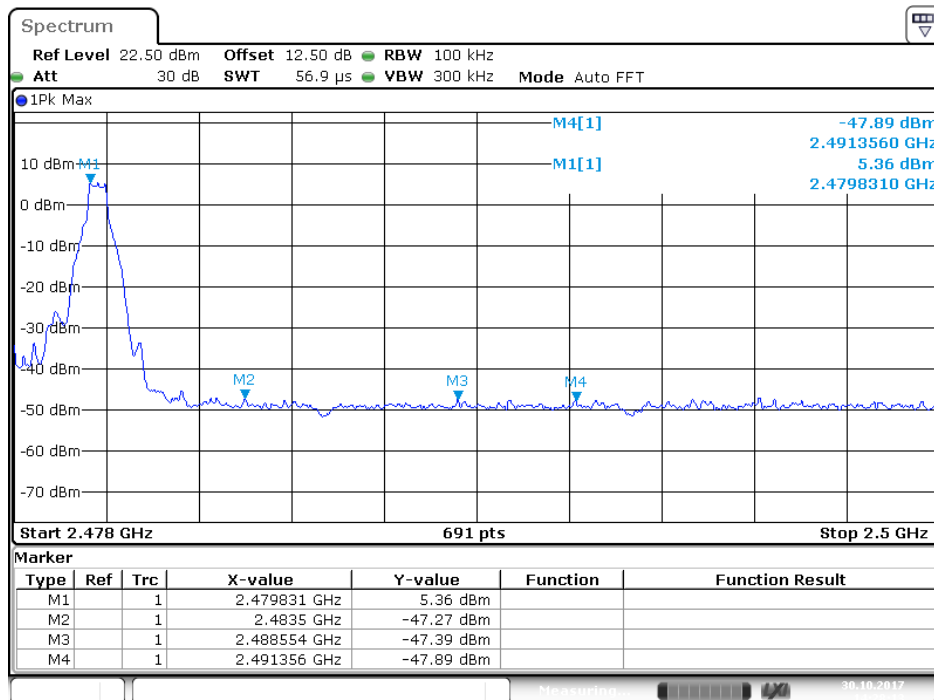
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
BDR mode		
2343.61	50.76	> 20dBc
2487.60	51.62	> 20dBc
EDR mode		
2364.10	46.41	> 20dBc
2486.87	48.10	> 20dBc

Non-hopping mode

BDR mode

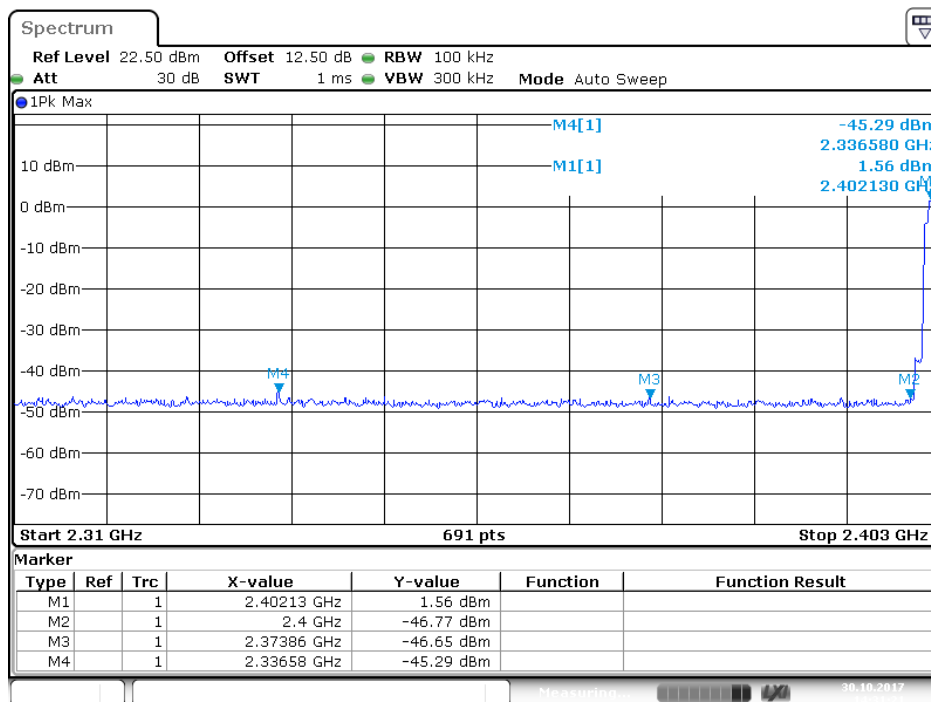


Date: 30.OCT.2017 14:26:25

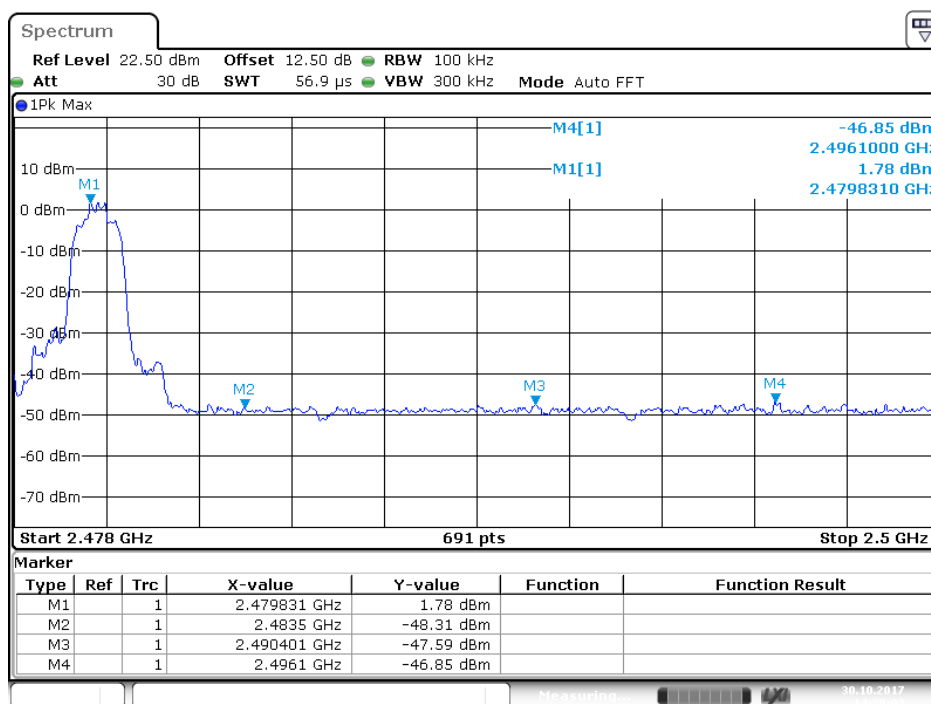


Date: 30.OCT.2017 14:28:13

EDR mode



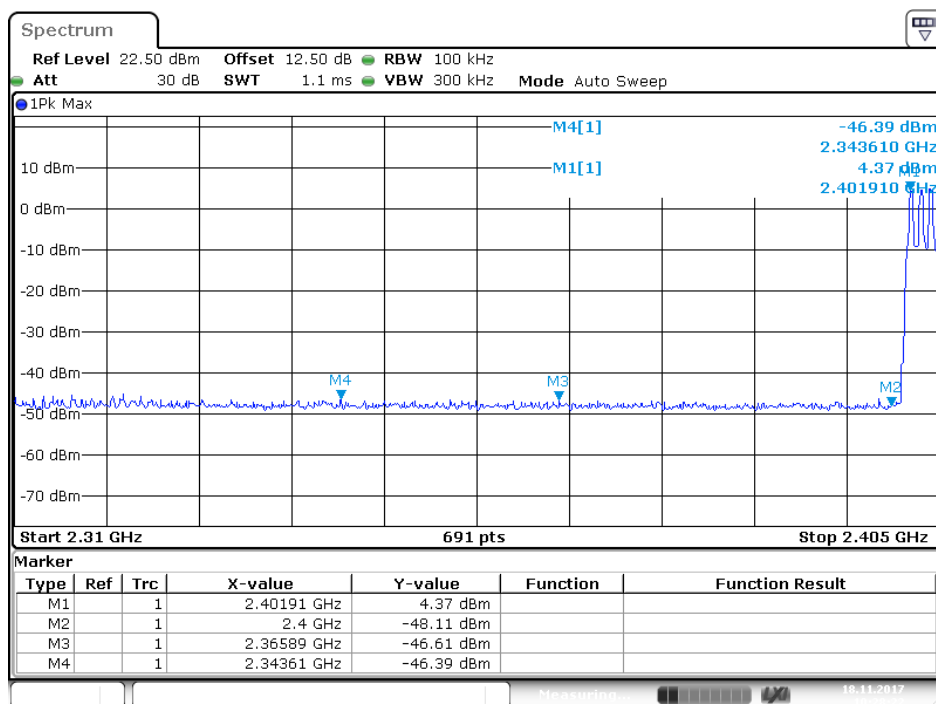
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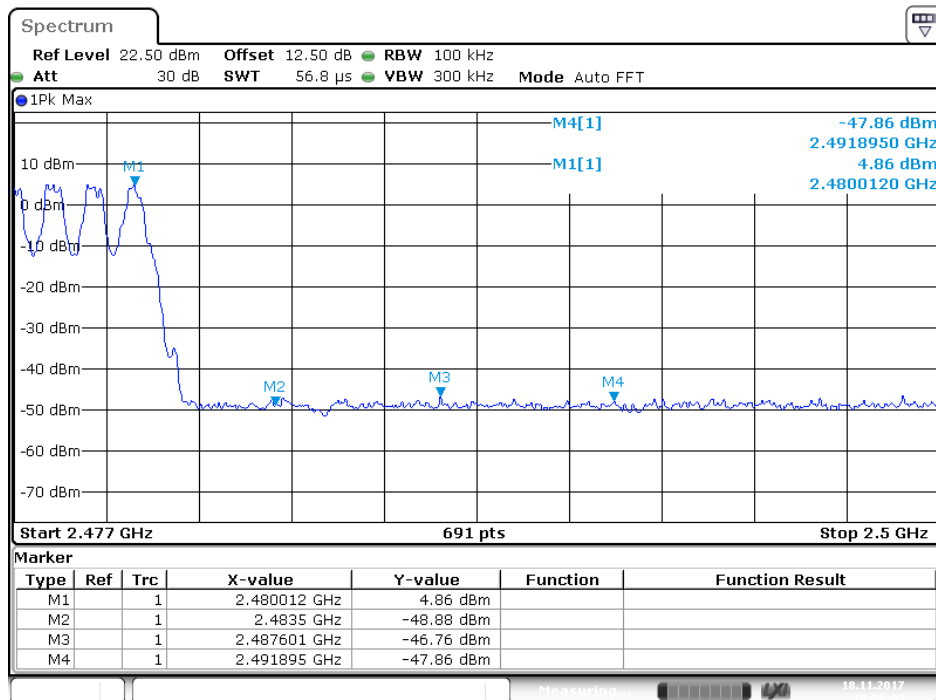
Date: 30.OCT.2017 14:30:03

hopping mode

BDR mode

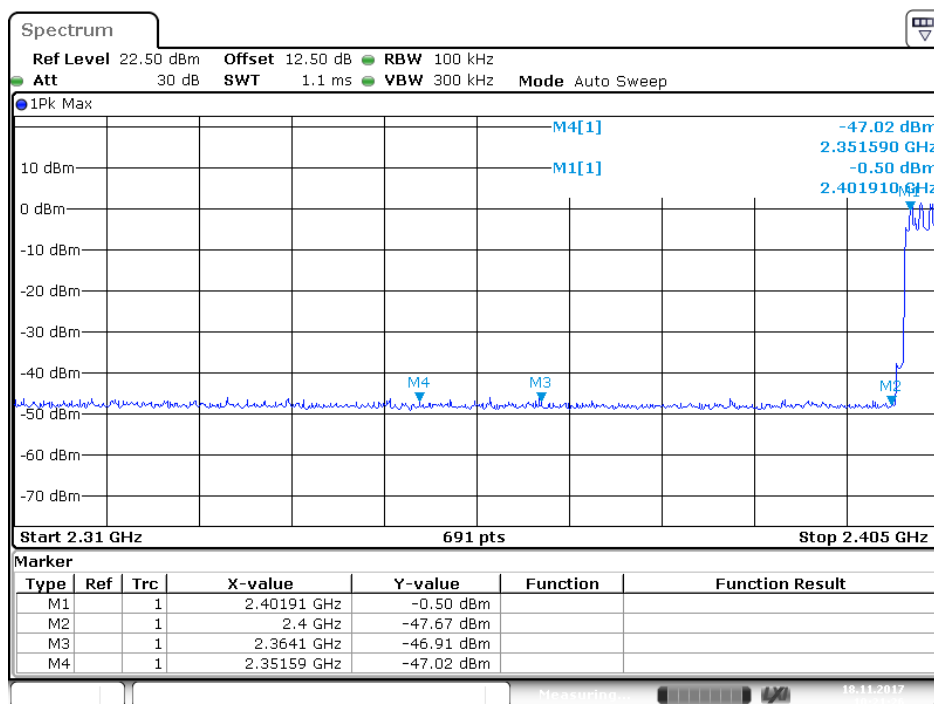


Date: 18.NOV.2017 10:28:22

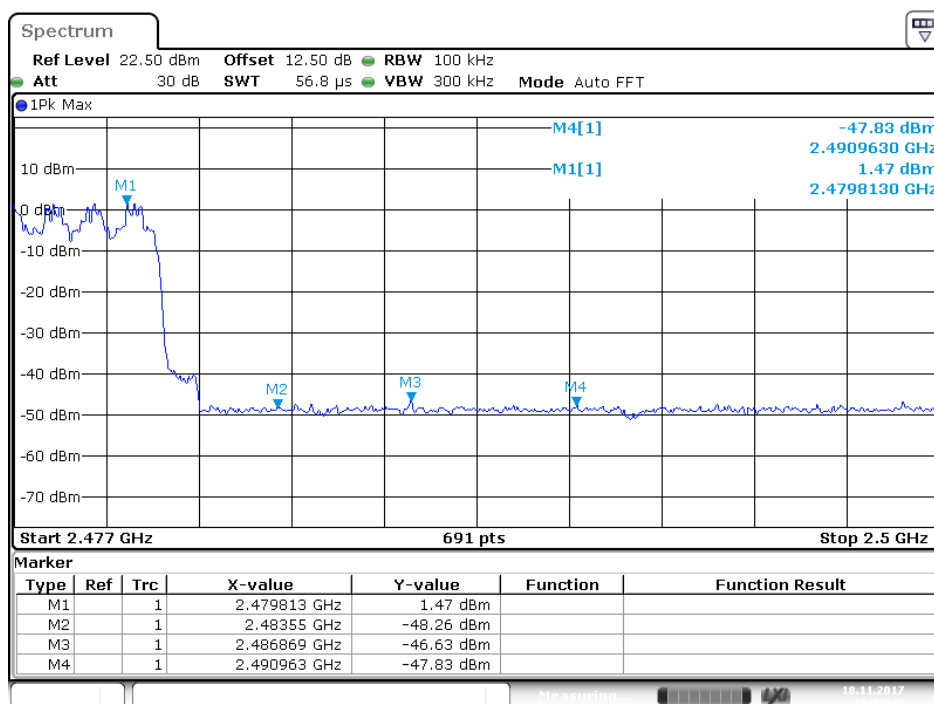


Date: 18.NOV.2017 10:26:03

EDR mode



Date: 18.NOV.2017 10:21:25



Date: 18.NOV.2017 10:23:48

Radiated Band Edge Result

Note:

1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

3. Display the measurement of peak values.

Test Procedure:

The EUT and its simulators are placed on a turntable, which is 1.5 meter high above ground(Above 1GHz). The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bi-log antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the EUT location must be manipulated according to ANSI C63.10:2013 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

Let the EUT work in TX (Hopping off, Hopping on) modes measure it.

We select 2402MHz, 2480MHz TX frequency to transmit(Hopping off mode).

We select 2402-2480MHz TX frequency to transmit(Hopping on mode).

During the radiated emission test, the spectrum analyzer was set with the following configurations:

- 1.The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz.
- 2.The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
- 3.All modes of operation were investigated and the worst-case emissions are reported.

Non-hopping mode



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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber

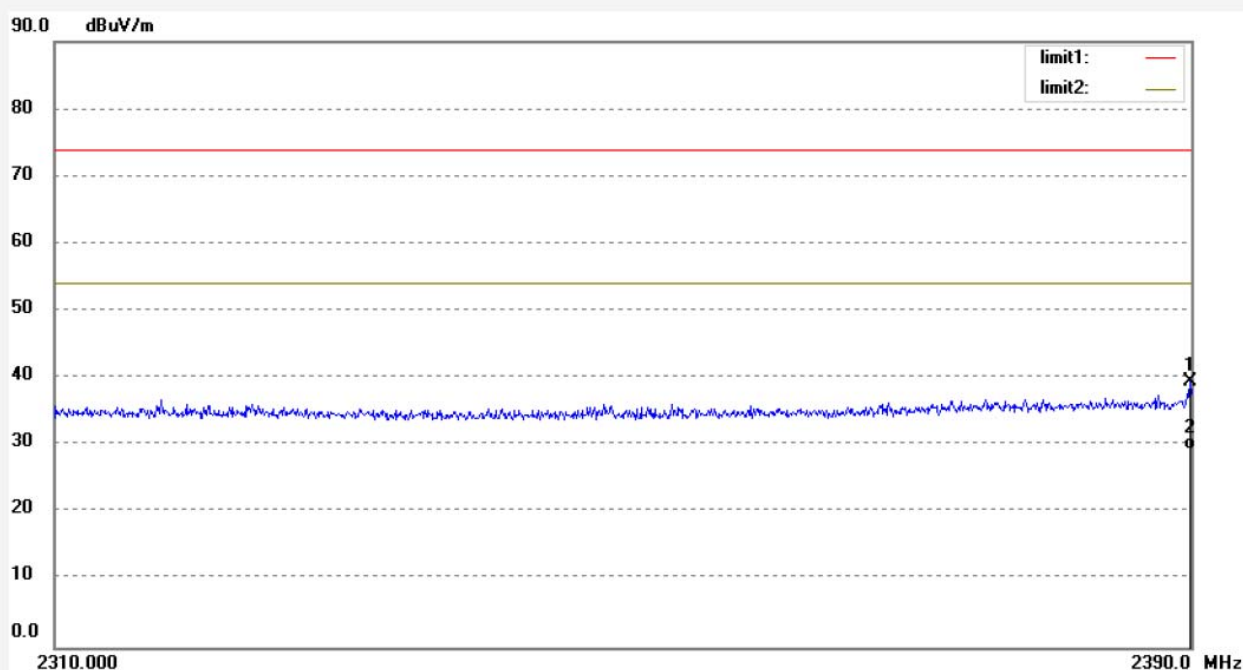
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: LGW2017 #4793
Standard: FCC (Band Edge)
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Multimedia Speaker
Mode: TX 2402MHz
Model: M2290BT
Manufacturer: EDIFIER

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 17/10/25/
Time:
Engineer Signature: WADE
Distance: 3m

Note: Bluetooth



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2389.920	38.71	0.79	39.50	74.00	-34.50	peak			
2	2389.920	28.62	0.79	29.41	54.00	-24.59	AVG			

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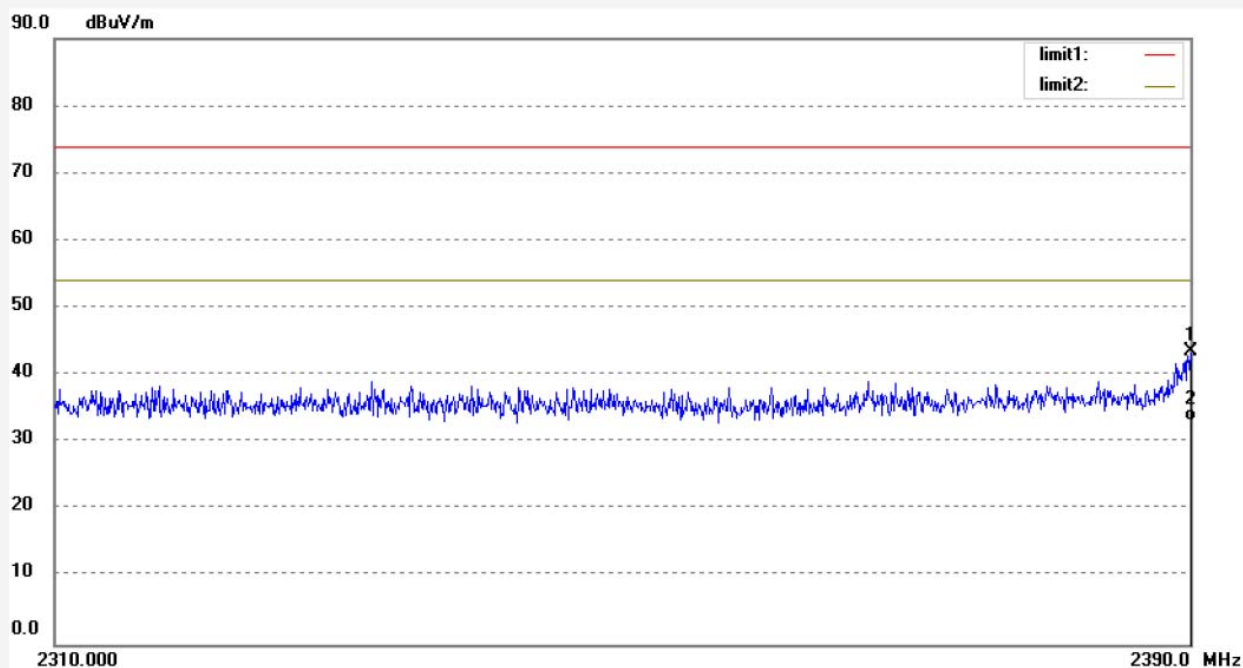
E-mail: webmaster@atc-lab.com

Http://www.atc-lab.com

Job No.: LGW2017 #4792
Standard: FCC (Band Edge)
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Multimedia Speaker
Mode: TX 2402MHz
Model: M2290BT
Manufacturer: EDIFIER

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 17/10/25/
Time:
Engineer Signature: WADE
Distance: 3m

Note: Bluetooth

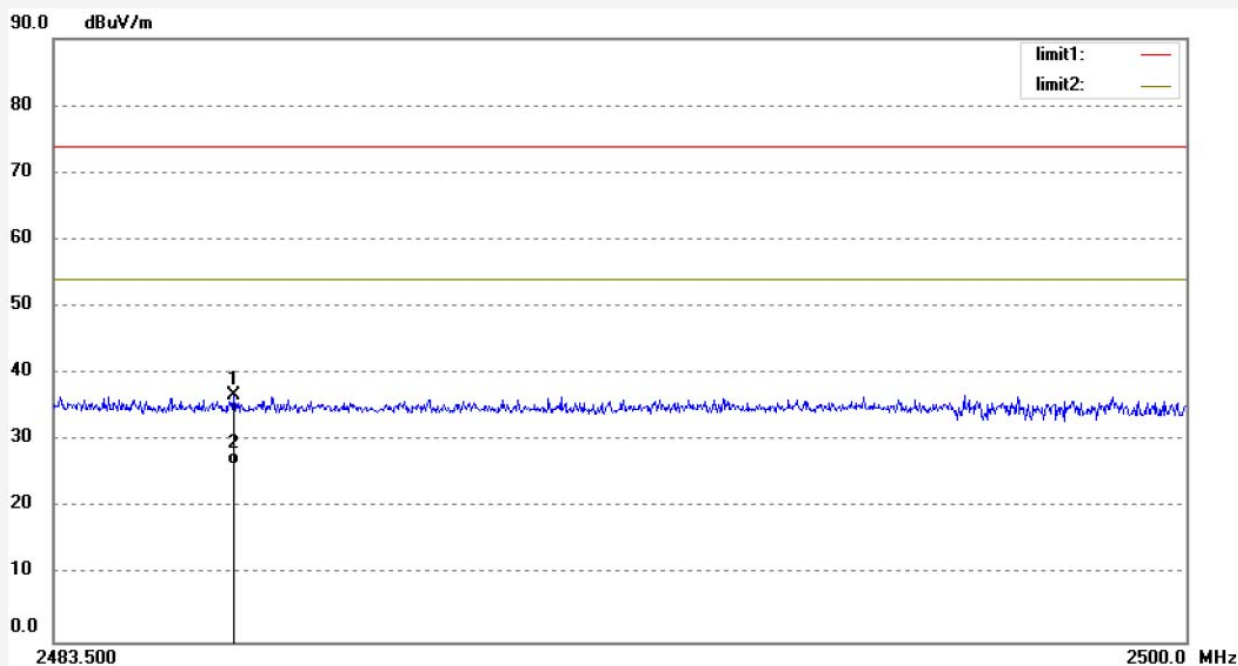


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	40.81	2.79	43.60	74.00	-30.40	peak			
2	2390.000	30.46	2.79	33.25	54.00	-20.75	AVG			

Job No.: LGW2017 #4798
Standard: FCC (Band Edge)
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Multimedia Speaker
Mode: TX 2480MHz
Model: M2290BT
Manufacturer: EDIFIER

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 17/10/25/
Time:
Engineer Signature: WADE
Distance: 3m

Note: Bluetooth

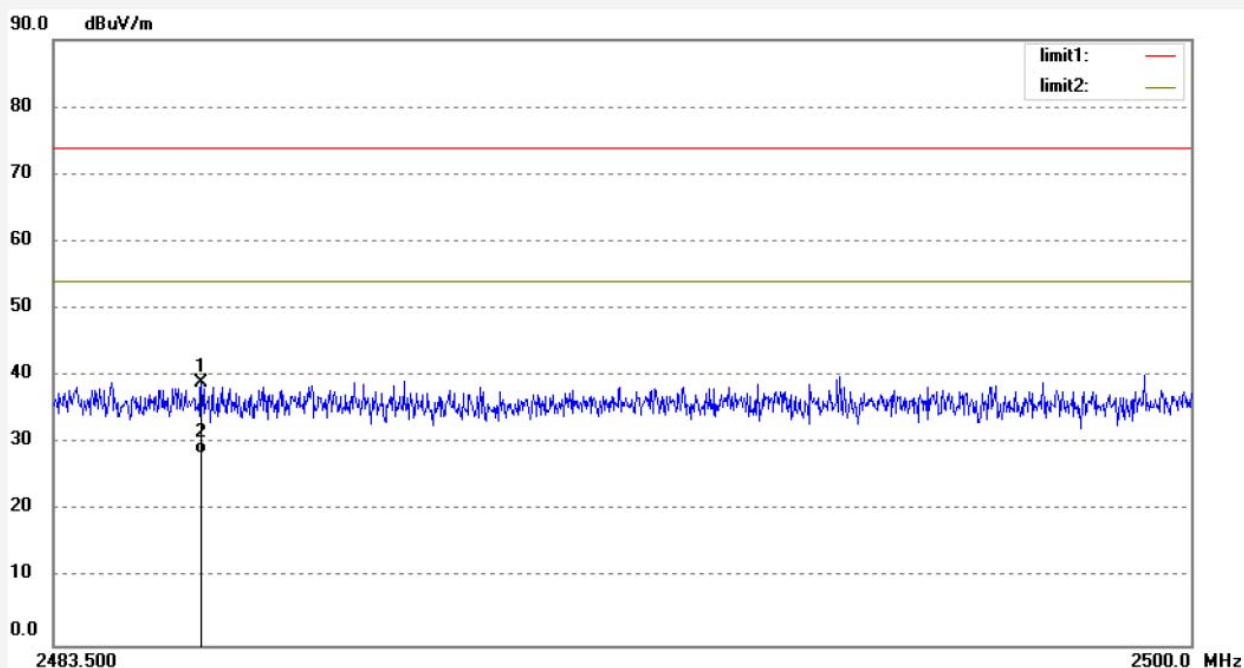


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2486.124	35.64	1.10	36.74	74.00	-37.26	peak			
2	2486.124	25.44	1.10	26.54	54.00	-27.46	AVG			

Job No.: LGW2017 #4799
Standard: FCC (Band Edge)
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Multimedia Speaker
Mode: TX 2480MHz
Model: M2290BT
Manufacturer: EDIFIER

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 17/10/25/
Time:
Engineer Signature: WADE
Distance: 3m

Note: Bluetooth

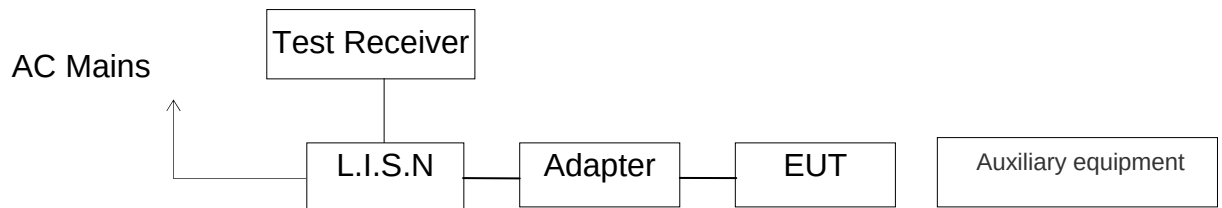


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2485.645	35.83	3.10	38.93	74.00	-35.07	peak			
2	2485.645	25.46	3.10	28.56	54.00	-25.44	AVG			

12.AC POWER LINE CONDUCTED EMISSION FOR FCC PART

15 SECTION 15.207(A)

12.1.Block Diagram of Test Setup



(EUT: Multimedia Speaker)

12.2.Power Line Conducted Emission Measurement Limits

Frequency (MHz)	Limit dB(μ V)	
	Quasi-peak Level	Average Level
0.15 - 0.50	66.0 – 56.0 *	56.0 – 46.0 *
0.50 - 5.00	56.0	46.0
5.00 - 30.00	60.0	50.0

NOTE1: The lower limit shall apply at the transition frequencies.
NOTE2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

12.3.Configuration of EUT on Measurement

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.

12.4.Operating Condition of EUT

12.4.1.Setup the EUT and simulator as shown as Section 12.1.

12.4.2.Turn on the power of all equipment.

12.4.3.Let the EUT work in test mode and measure it.

12.5.Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.4: 2014 on Conducted Emission Measurement.

The bandwidth of test receiver (R & S ESCS30) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

12.6.Power Line Conducted Emission Measurement Results

PASS.

The frequency range from 150kHz to 30MHz is checked.

Test mode : BT Playing(AC 120V/60Hz)

MEASUREMENT RESULT: "TUV-1030-7_fin"

10/30/2017

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.165000	50.40	10.5	65	14.8	QP	L1	GND
0.495000	46.20	10.7	56	9.9	QP	L1	GND
0.890000	28.00	10.8	56	28.0	QP	L1	GND
17.170000	23.80	11.4	60	36.2	QP	L1	GND

MEASUREMENT RESULT: "TUV-1030-7_fin2"

10/30/2017

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.160000	32.40	10.5	56	23.1	AV	L1	GND
0.495000	39.60	10.7	46	6.5	AV	L1	GND
4.730000	21.40	11.1	46	24.6	AV	L1	GND
6.030000	21.40	11.2	50	28.6	AV	L1	GND

MEASUREMENT RESULT: "TUV-1030-8_fin"

10/30/2017

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.175000	45.70	10.5	65	19.0	QP	N	GND
0.495000	44.70	10.7	56	11.4	QP	N	GND
3.990000	30.70	11.1	56	25.3	QP	N	GND
7.670000	29.30	11.2	60	30.7	QP	N	GND

MEASUREMENT RESULT: "TUV-1030-8_fin2"

10/30/2017

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.175000	28.70	10.5	55	26.0	AV	N	GND
0.495000	38.10	10.7	46	8.0	AV	N	GND
3.240000	23.60	11.1	46	22.4	AV	N	GND
7.440000	23.30	11.2	50	26.7	AV	N	GND

Emissions attenuated more than 20 dB below the permissible value are not reported.

The spectral diagrams are attached as below.

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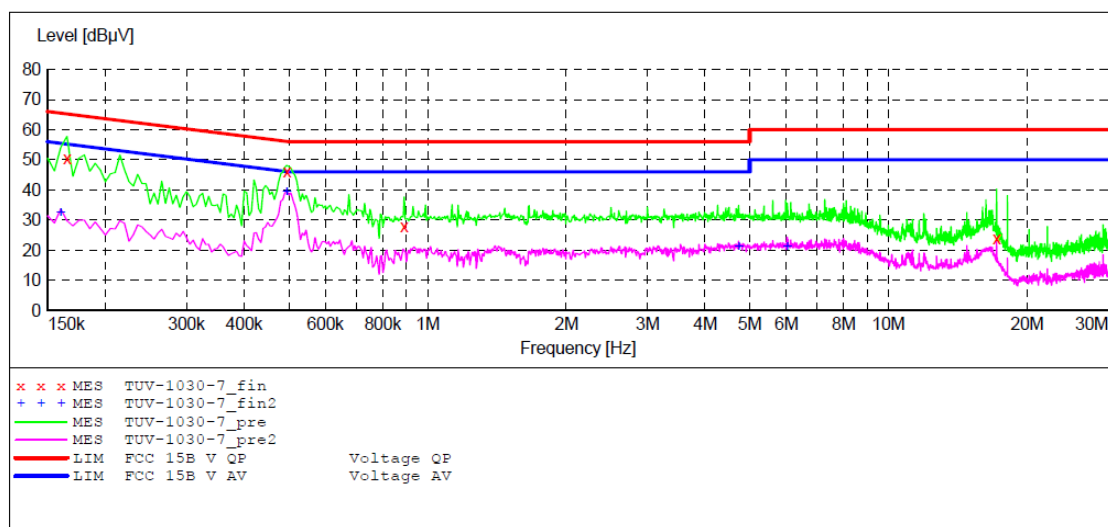
CONDUCTED EMISSION STANDARD FCC PART 15 B

EUT: Multimedia Speaker M/N:M2290BT
 Manufacturer: EDIFIER
 Operating Condition: Bluetooth Playing
 Test Site: 1#Shielding Room
 Operator: WADE
 Test Specification: L 120V/60Hz
 Comment: Mains Port
 Start of Test: 10/30/2017 /

SCAN TABLE: "V 9K-30MHz fin"

Short Description: SUB STD VTERM2 1.70

Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	NSLK8126 2008
			Average			
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	NSLK8126 2008
			Average			



MEASUREMENT RESULT: "TUV-1030-7_fin"

10/30/2017

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.165000	50.40	10.5	65	14.8	QP	L1	GND
0.495000	46.20	10.7	56	9.9	QP	L1	GND
0.890000	28.00	10.8	56	28.0	QP	L1	GND
17.170000	23.80	11.4	60	36.2	QP	L1	GND

MEASUREMENT RESULT: "TUV-1030-7_fin2"

10/30/2017

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.160000	32.40	10.5	56	23.1	AV	L1	GND
0.495000	39.60	10.7	46	6.5	AV	L1	GND
4.730000	21.40	11.1	46	24.6	AV	L1	GND
6.030000	21.40	11.2	50	28.6	AV	L1	GND

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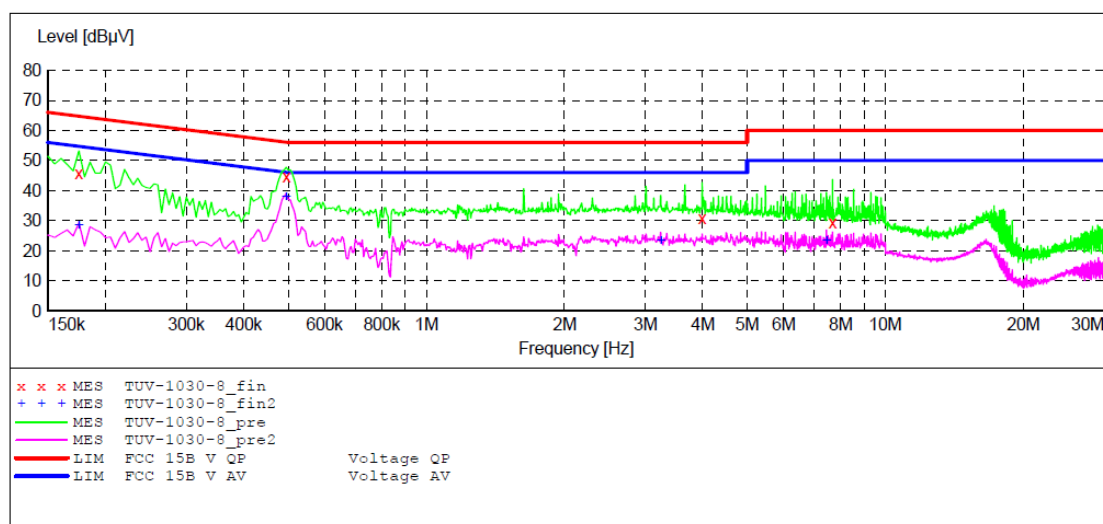
CONDUCTED EMISSION STANDARD FCC PART 15 B

EUT: Multimedia Speaker M/N:M2290BT
 Manufacturer: EDIFIER
 Operating Condition: Bluetooth Playing
 Test Site: 1#Shielding Room
 Operator: WADE
 Test Specification: N 120V/60Hz
 Comment: Mains Port
 Start of Test: 10/30/2017 /

SCAN TABLE: "V 9K-30MHz fin"

Short Description: SUB STD VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	NSLK8126 2008
150.0 kHz	30.0 MHz	5.0 kHz	Average			
			QuasiPeak	1.0 s	9 kHz	NSLK8126 2008
			Average			



MEASUREMENT RESULT: "TUV-1030-8_fin"

10/30/2017

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.175000	45.70	10.5	65	19.0	QP	N	GND
0.495000	44.70	10.7	56	11.4	QP	N	GND
3.990000	30.70	11.1	56	25.3	QP	N	GND
7.670000	29.30	11.2	60	30.7	QP	N	GND

MEASUREMENT RESULT: "TUV-1030-8_fin2"

10/30/2017

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.175000	28.70	10.5	55	26.0	AV	N	GND
0.495000	38.10	10.7	46	8.0	AV	N	GND
3.240000	23.60	11.1	46	22.4	AV	N	GND
7.440000	23.30	11.2	50	26.7	AV	N	GND

13.99% OCCUPIED BANDWIDTH

13.1.The Requirement for RSS-Gen Clause 6.6

The emission bandwidth (x dB) is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated x dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth. When the occupied bandwidth limit is not stated in the applicable RSS or reference measurement method, the transmitted signal bandwidth shall be reported as the 99% emission bandwidth

13.2.EUT Configuration on Measurement

The following equipment is installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

13.3.Operating Condition of EUT

13.3.1.Setup the EUT and simulator as shown as Section 5.1.

13.3.2.Turn on the power of all equipment.

13.3.3.Let the EUT work in TX modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, 2480MHz TX frequency to transmit.

13.4.Test Procedure

13.4.1.The transmitter shall be operated at its maximum carrier power measured under normal test conditions. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The transmitter output was connected to the spectrum analyzer through a low loss cable.

13.4.2.The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3x RBW. Set RBW of spectrum analyzer to 30kHz and VBW to 100kHz.

13.4.3.Set SPA “Meas” function, Select “Occupied Bandwidth” function, Select “99% Power Bandwidth”. The frequency of the upper and lower markers indicating the edges of the transmitters “99% Power” emission bandwidth shall be recorded to automate by SPA.

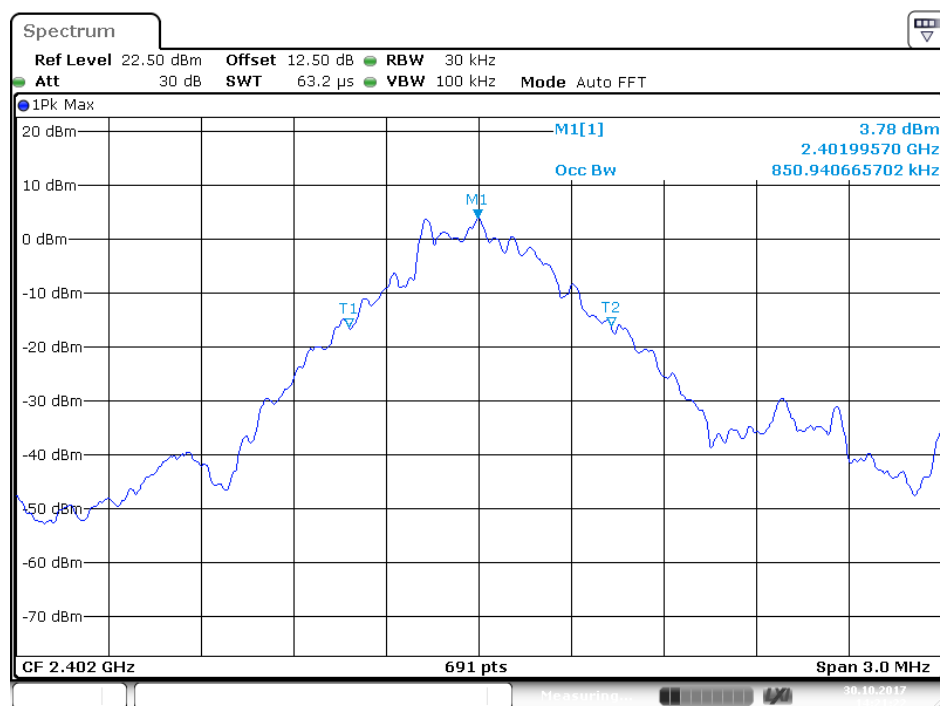
13.5.Measurement Result

Channel	Frequency (MHz)	BDR mode 99% Bandwidth (MHz)	EDR mode 99% Bandwidth (MHz)	Result
Low	2402	0.851	1.151	Pass
Middle	2441	0.842	1.142	Pass
High	2480	0.842	1.142	Pass

The spectrum analyzer plots are attached as below.

BDR mode

Low channel



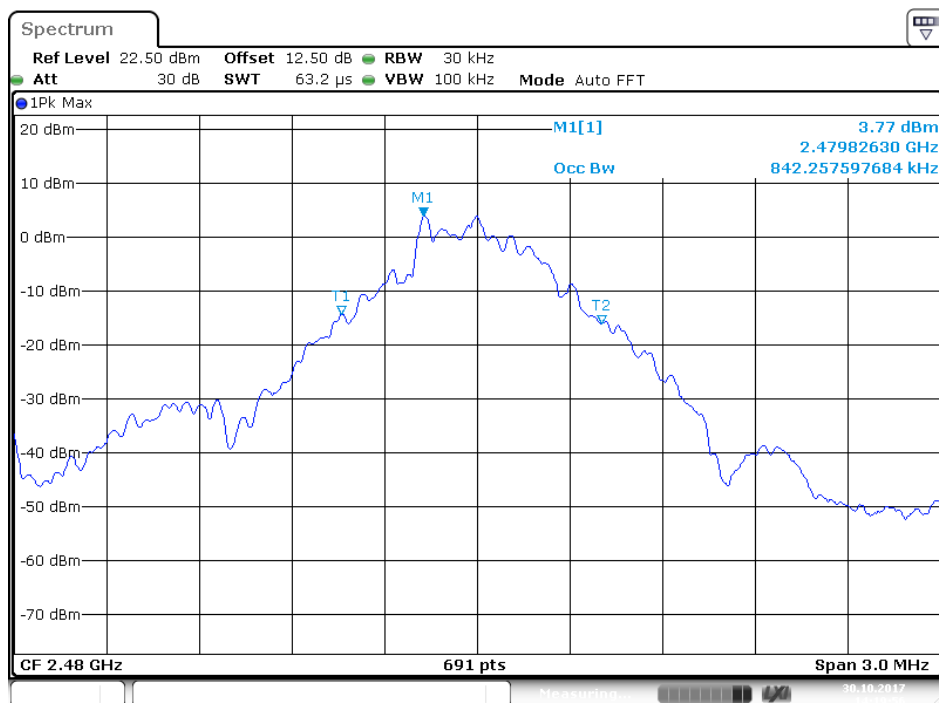
Date: 30.OCT.2017 14:21:23

Middle channel



Date: 30.OCT.2017 14:20:42

High channel



Date: 30.OCT.2017 14:19:56

shenzhen Accurate Technology Co., Ltd.

Address: 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

Tel: +86-755-26503290

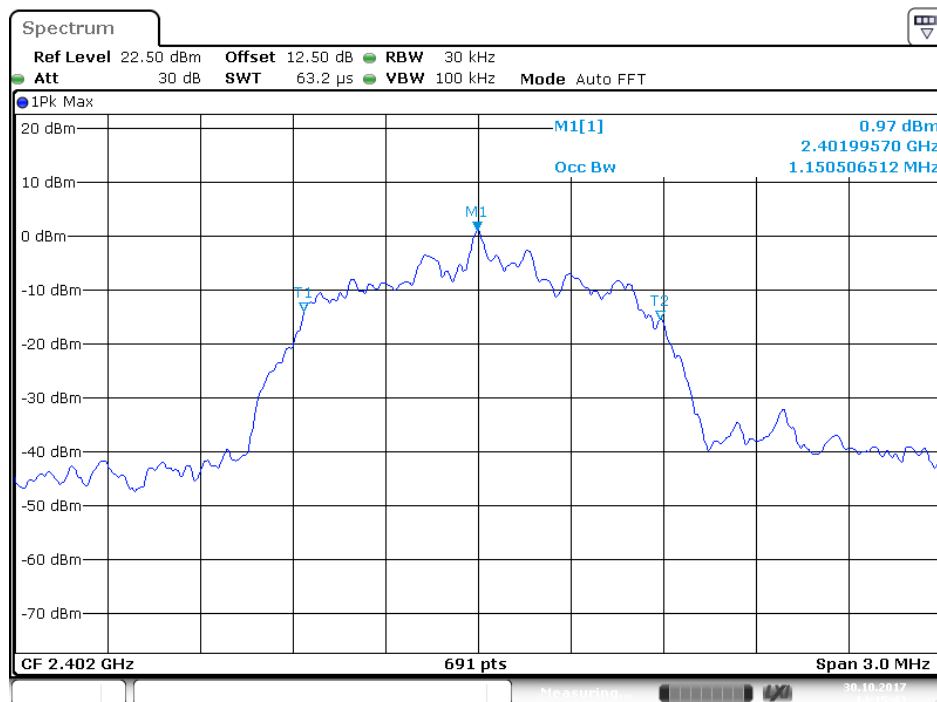
Fax: +86-755-26503396

E-mail: webmaster@atc-lab.com

Http://www.atc-lab.com

EDR mode

Low channel



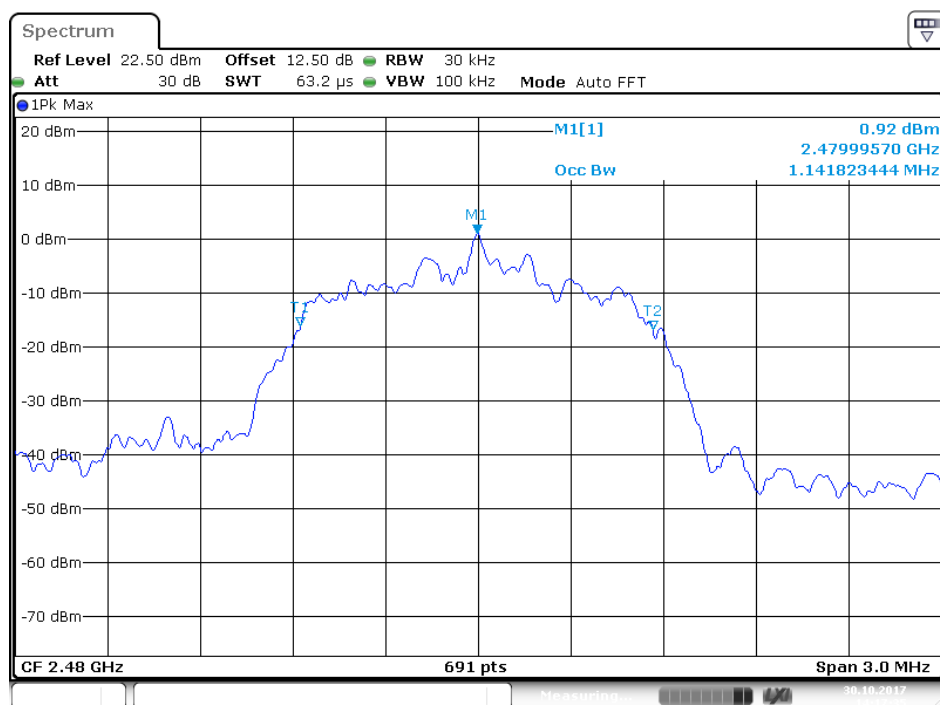
Date: 30.OCT.2017 14:15:43

Middle channel



Date: 30.OCT.2017 14:16:49

High channel



Date: 30.OCT.2017 14:17:35

14.CONDUCTED SPURIOUS EMISSION COMPLIANCE TEST

14.1.Block Diagram of Test Setup



(EUT: Multimedia Speaker)

14.2.The Requirement For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

14.3.EUT Configuration on Measurement

The equipment is installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

14.4.Operating Condition of EUT

14.4.1.Setup the EUT and simulator as shown as Section 14.1.

14.4.2.Turn on the power of all equipment.

14.4.3.Let the EUT work in TX modes measure it. The transmit frequency are 2402-2480 MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

14.5. Test Procedure

14.5.1. The transmitter output was connected to the spectrum analyzer via a low loss cable.

14.5.2. Set RBW of spectrum analyzer to 100kHz and VBW to 300kHz

14.5.3. The Conducted Spurious Emission was measured and recorded.

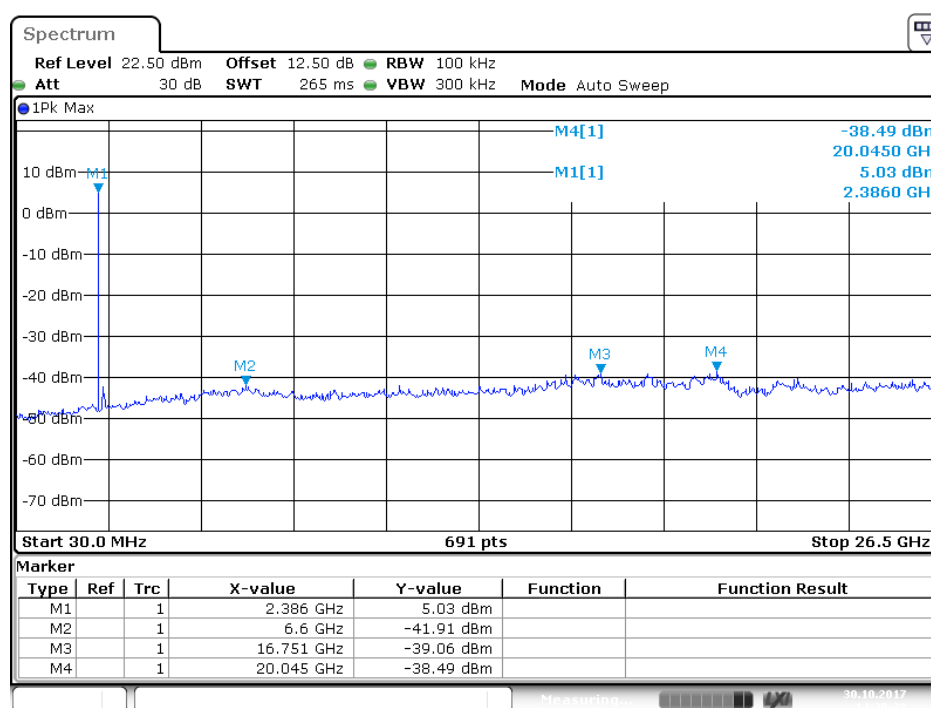
14.6. Test Result

Pass.

The spectrum analyzer plots are attached as below.

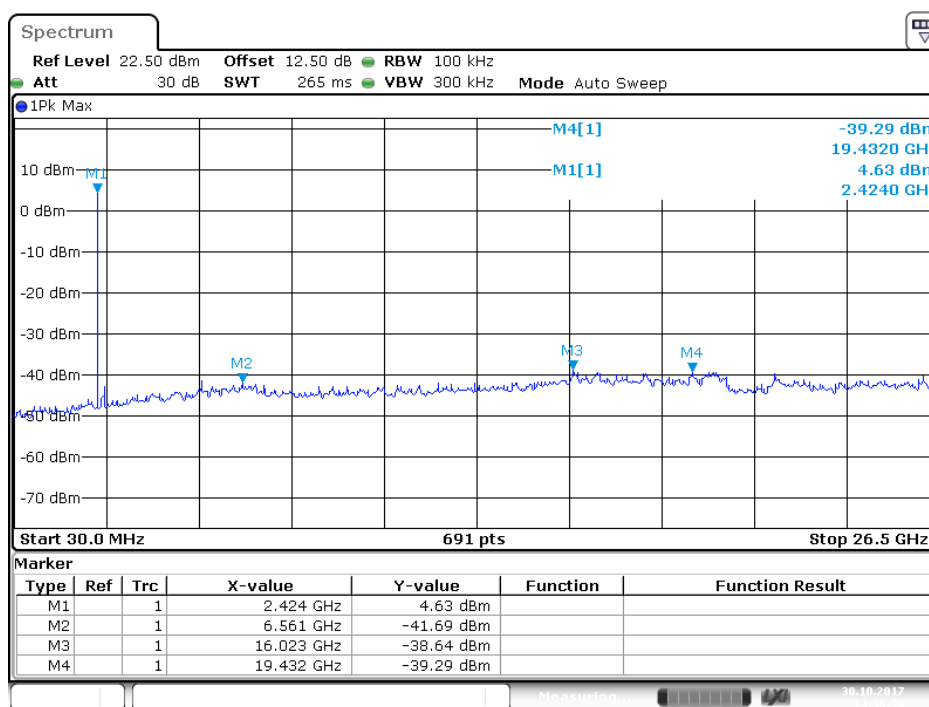
BDR mode

Low Channel 2402MHz



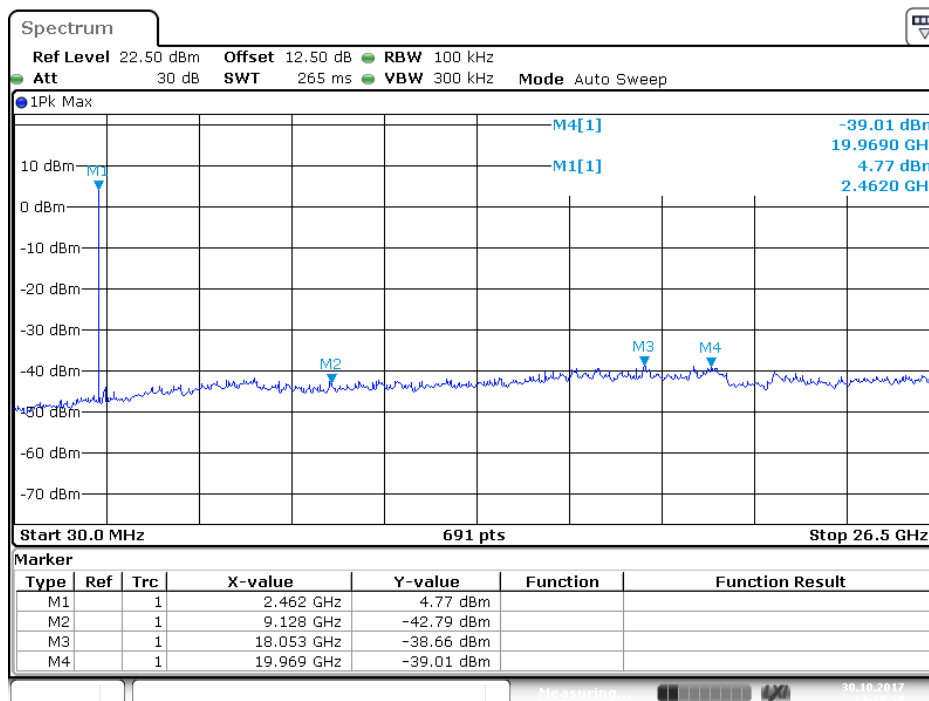
Date: 30.OCT.2017 14:39:38

Middle Channel 2441MHz



Date: 30.OCT.2017 14:38:31

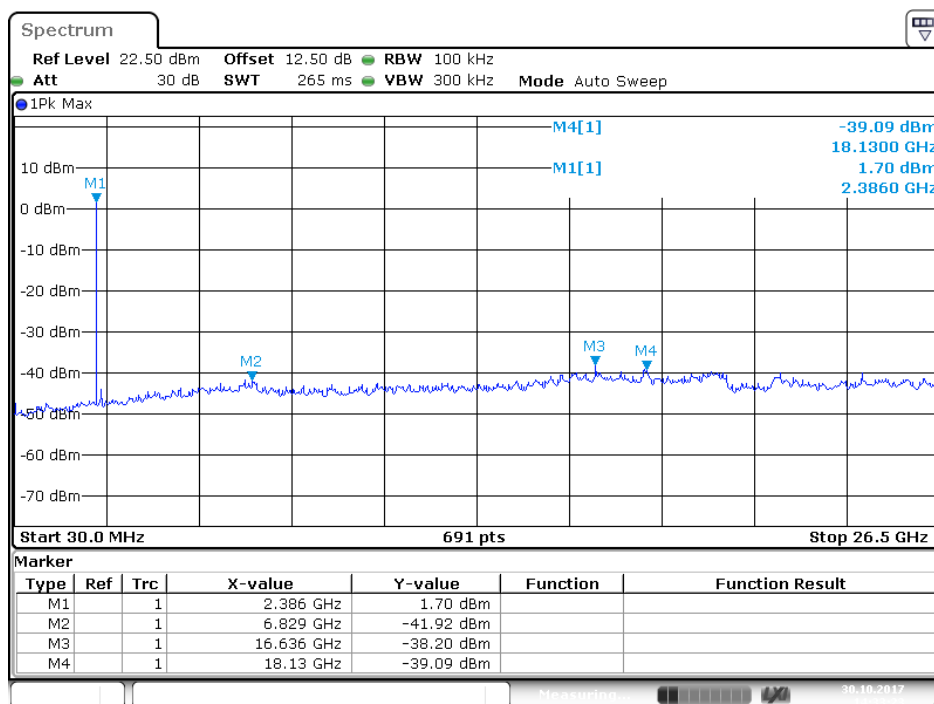
High Channel 2480MHz



Date: 30.OCT.2017 14:37:27

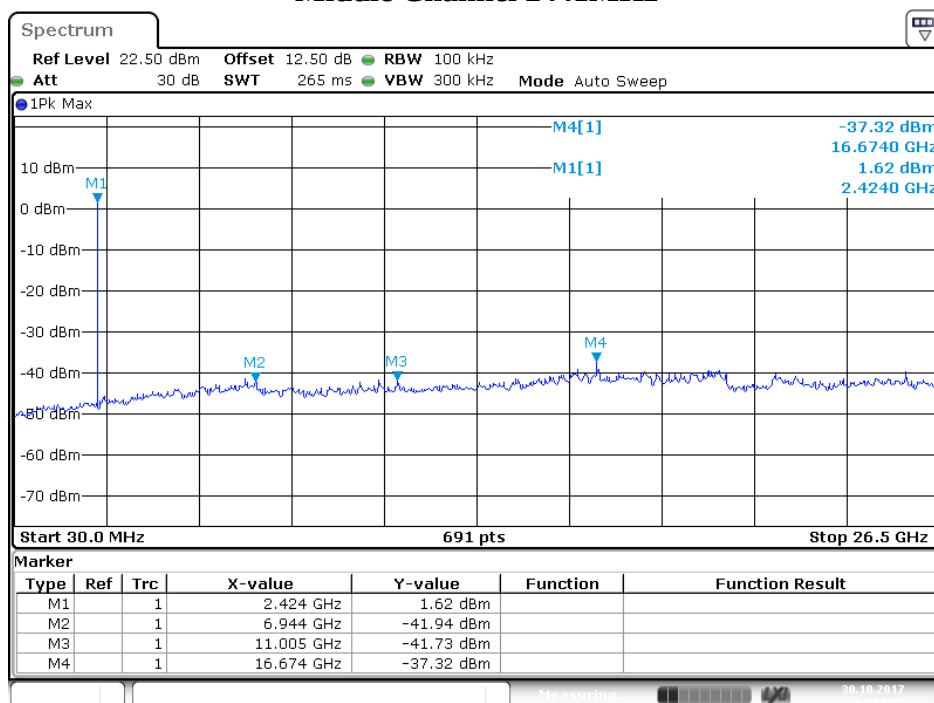
EDR mode

Low Channel 2402MHz



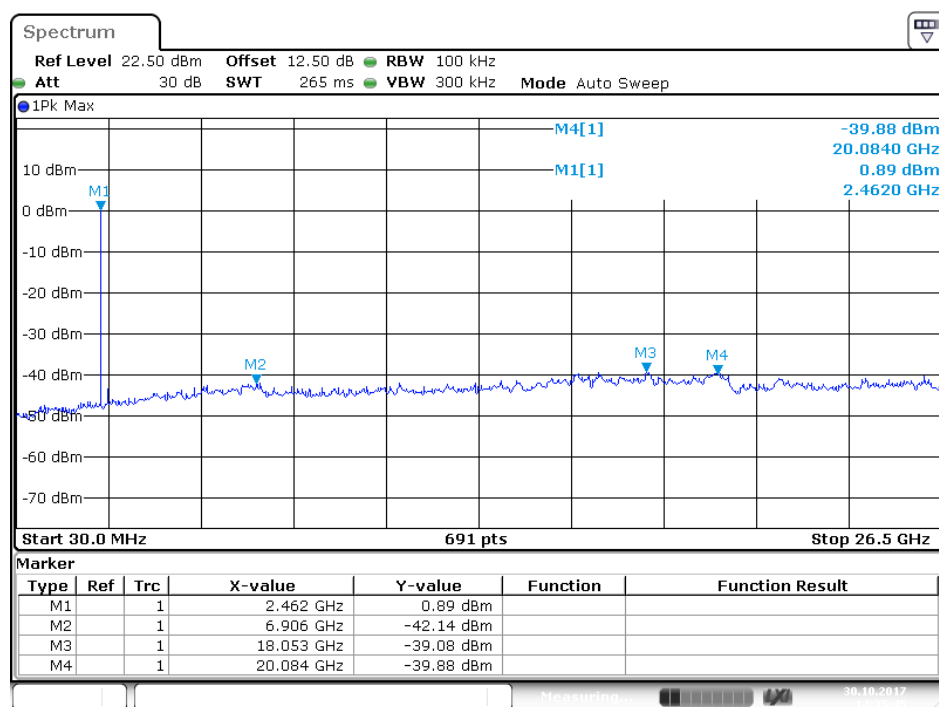
Date: 30.OCT.2017 14:33:23

Middle Channel 2441MHz



Date: 30.OCT.2017 14:34:27

High Channel 2480MHz



Date: 30.OCT.2017 14:35:45

15.ANTENNA REQUIREMENT

15.1.The Requirement

According to Section 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.

15.2.Antenna Construction

Device is equipped with permanent attached antenna, which isn't displaced by other antenna. The Max Antenna gain of EUT is 2.5dBi. Therefore, the equipment complies with the antenna requirement of Section 15.203.