

Appendix A.1: Spurious Emissions of Bluetooth operation Low Channel

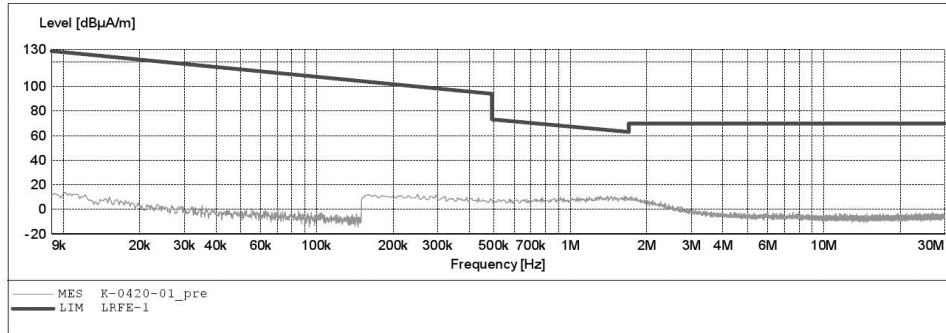
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3m Radiated

EUT: ThinkPad Stack Bluetooth Speaker M/N:S123
Manufacturer: Lenovo
Operating Condition: TX 2402MHz
Test Site: 2# Chamber
Operator: LAN
Test Specification: AC 120V/60Hz
Comment: X
Start of Test: 2015-4-20 /

SCAN TABLE: "LFRE 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	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



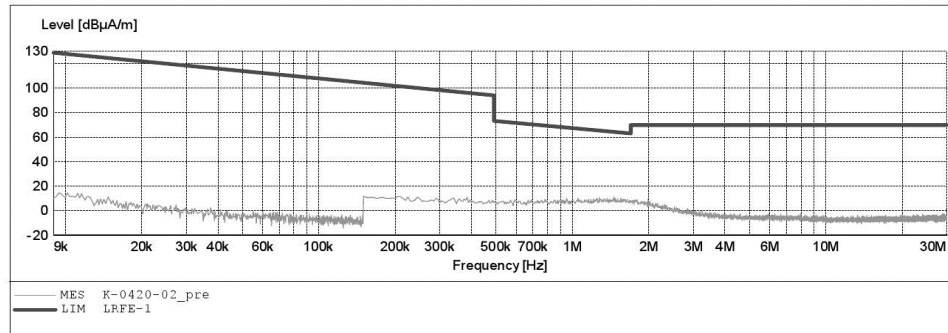
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3m Radiated

EUT: ThinkPad Stack Bluetooth Speaker M/N:S123
 Manufacturer: Lenovo
 Operating Condition: TX 2402MHz
 Test Site: 2# Chamber
 Operator: LAN
 Test Specification: AC 120V/60Hz
 Comment: Y
 Start of Test: 2015-4-20 /

SCAN TABLE: "LFRE Fin"

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



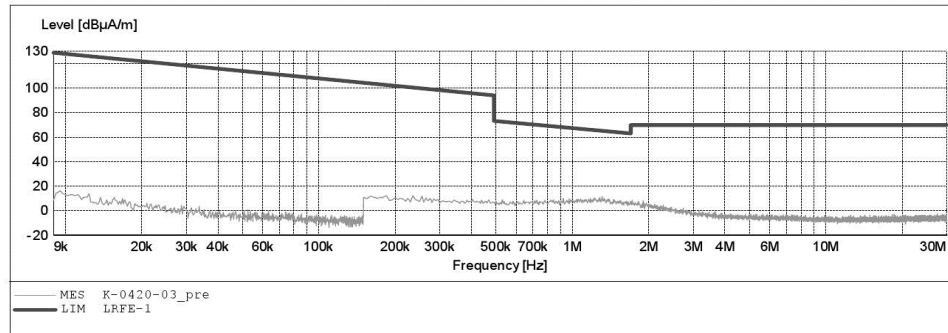
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FCC Class B 3m Radiated

EUT: ThinkPad Stack Bluetooth Speaker M/N:S123
 Manufacturer: Lenovo
 Operating Condition: TX 2402MHz
 Test Site: 2# Chamber
 Operator: LAN
 Test Specification: AC 120V/60Hz
 Comment: Z
 Start of Test: 2015-4-20 /

SCAN TABLE: "LFRE Fin"

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



Produkte
 Products



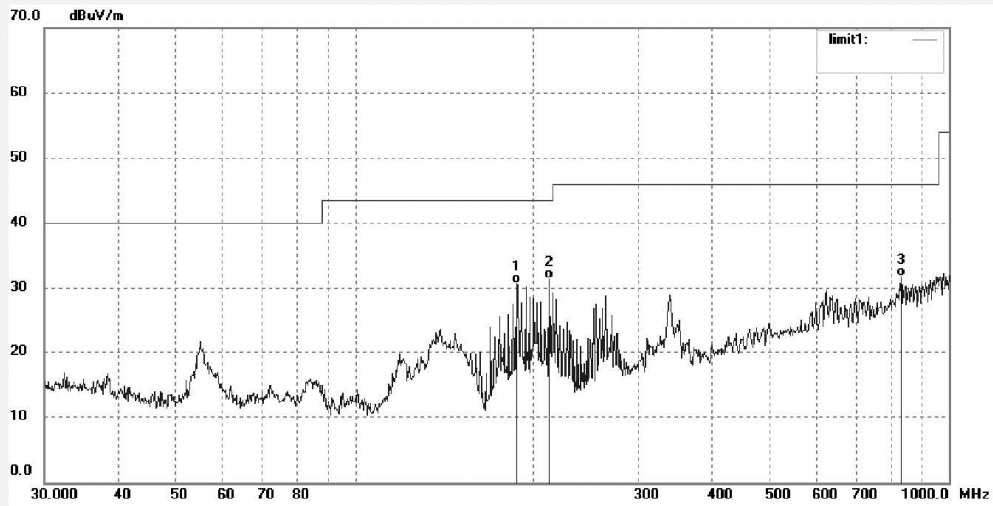
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F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
 Tel:+86-0755-26503290
 Fax:+86-0755-26503396

Job No.: lenovo #426	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/17/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: TX 2402MHz	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note: Bluetooth 3.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	187.0956	43.33	-12.69	30.64	43.50	-12.86	QP			
2	212.2693	43.46	-12.04	31.42	43.50	-12.08	QP			
3	830.4002	31.18	0.54	31.72	46.00	-14.28	QP			

Produkte
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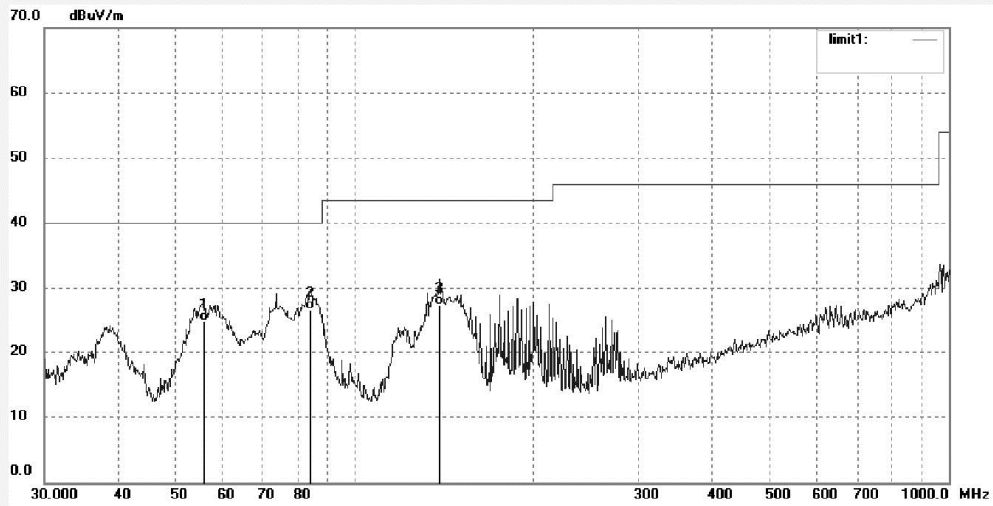
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F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
 Tel:+86-0755-26503290
 Fax:+86-0755-26503396

Job No.: lenovo #427	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/17/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: TX 2402MHz	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note: Bluetooth 3.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	55.8046	38.04	-13.13	24.91	40.00	-15.09	QP			
2	84.1098	42.34	-15.59	26.75	40.00	-13.25	QP			
3	138.3873	42.31	-14.87	27.44	43.50	-16.06	QP			

Produkte
 Products



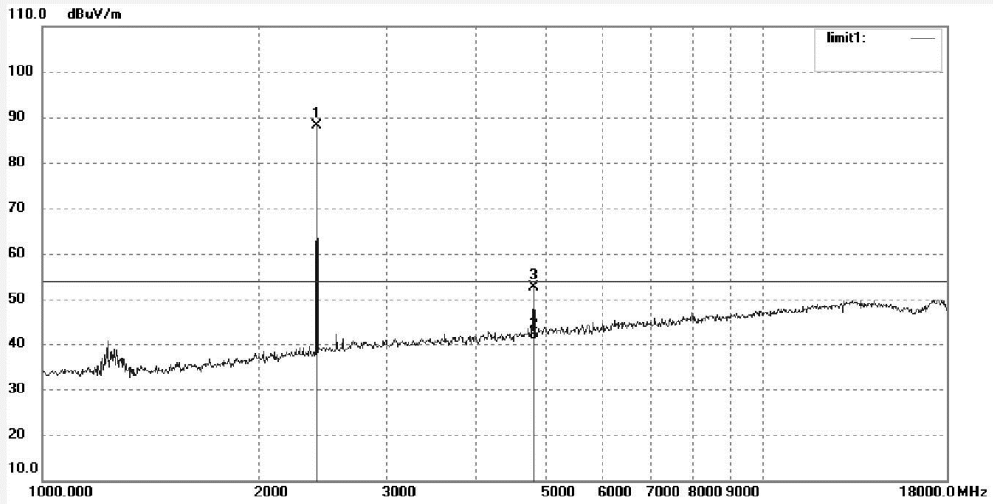
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 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
 Tel:+86-0755-26503290
 Fax:+86-0755-26503396

Job No.: lenovo #438	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/18/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: TX 2402MHz	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note: Bluetooth 3.0



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	95.62	-7.45	88.17	/	/	peak			
2	4804.010	41.29	-0.30	40.99	54.00	-13.01	AVG			
3	4804.010	52.98	-0.30	52.68	74.00	-21.32	peak			

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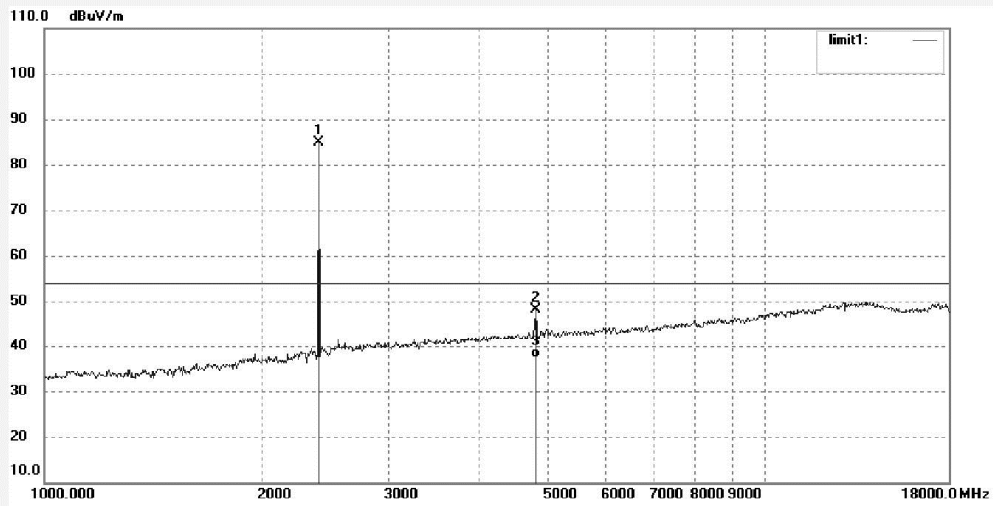
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 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
 Tel:+86-0755-26503290
 Fax:+86-0755-26503396

Job No.: lenovo #439	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/18/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: TX 2402MHz	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note: Bluetooth 3.0



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	92.33	-7.45	84.88	/	/	peak			
2	4804.024	48.45	-0.30	48.15	74.00	-25.85	peak			
3	4804.024	37.57	-0.30	37.27	54.00	-16.73	AVG			

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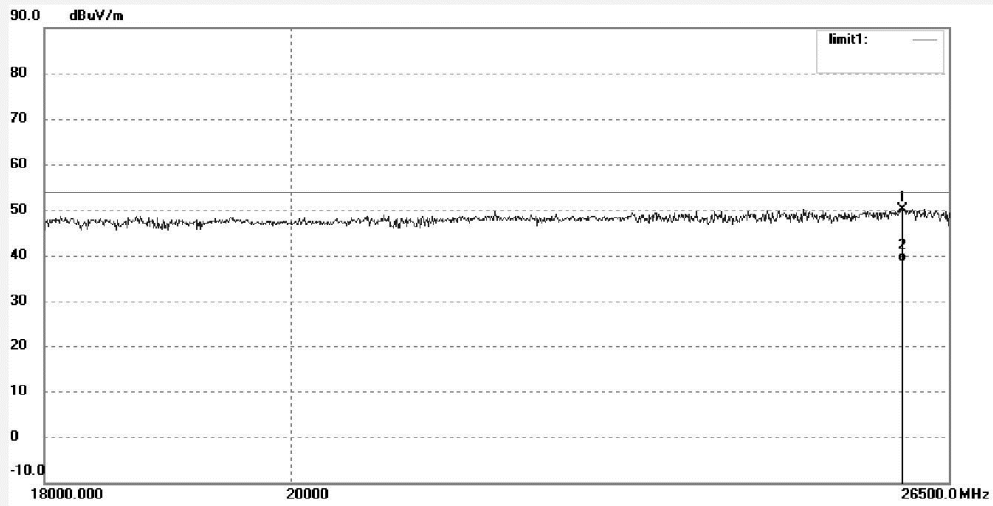
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 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
 Tel:+86-0755-26503290
 Fax:+86-0755-26503396

Job No.: lenovo #506	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/18/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: TX 2402MHz	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note: Bluetooth 3.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	25982.398	33.00	17.24	50.24	74.00	-23.76	peak			
2	25982.398	21.42	17.24	38.66	54.00	-15.34	AVG			

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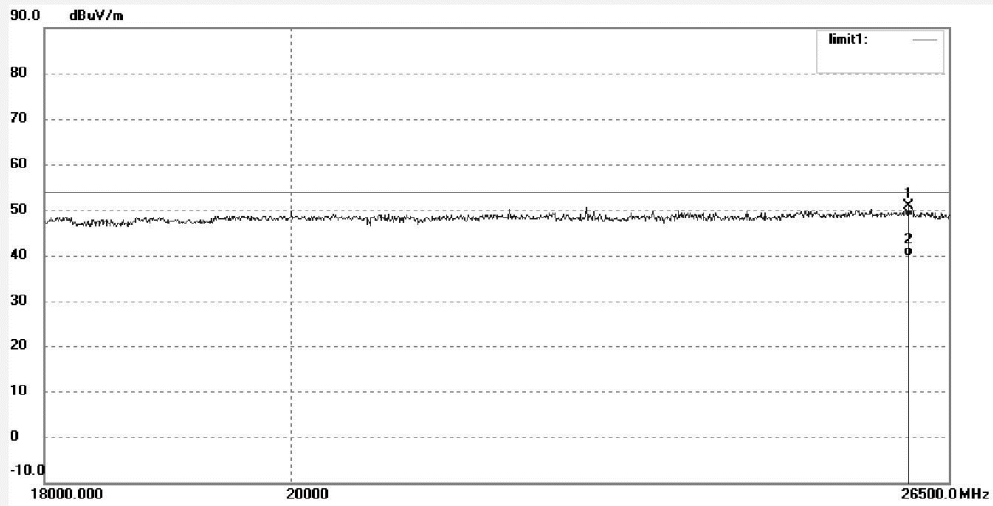
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 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
 Tel:+86-0755-26503290
 Fax:+86-0755-26503396

Job No.: lenovo #507	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/18/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: TX 2402MHz	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note: Bluetooth 3.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	26042.764	33.62	17.20	50.82	74.00	-23.18	peak			
2	26042.764	22.64	17.20	39.84	54.00	-14.16	AVG			

Middle Channel

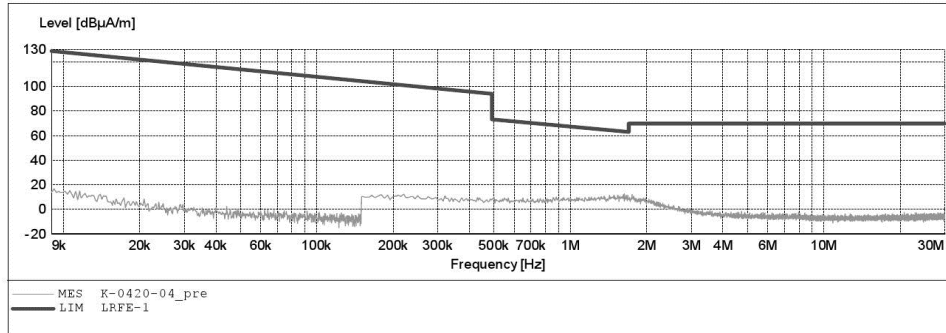
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3m Radiated

EUT: ThinkPad Stack Bluetooth Speaker M/N:S123
Manufacturer: Lenovo
Operating Condition: TX 2441MHz
Test Site: 2# Chamber
Operator: LAN
Test Specification: AC 120V/60Hz
Comment: X
Start of Test: 2015-4-21 /

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



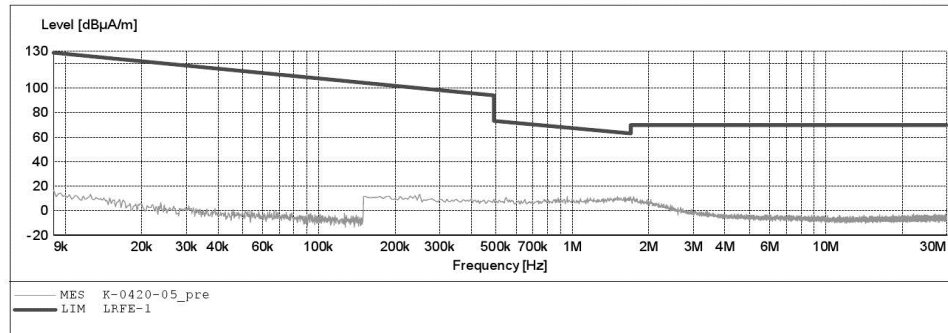
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3m Radiated

EUT: ThinkPad Stack Bluetooth Speaker M/N:S123
 Manufacturer: Lenovo
 Operating Condition: TX 2441MHz
 Test Site: 2# Chamber
 Operator: LAN
 Test Specification: AC 120V/60Hz
 Comment: Y
 Start of Test: 2015-4-21 /

SCAN TABLE: "LFRE Fin"

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



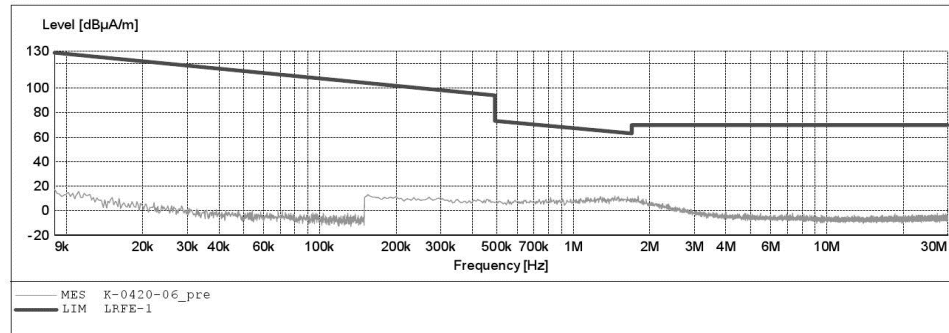
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3m Radiated

EUT: ThinkPad Stack Bluetooth Speaker M/N:S123
Manufacturer: Lenovo
Operating Condition: TX 2441MHz
Test Site: 2# Chamber
Operator: LAN
Test Specification: AC 120V/60Hz
Comment: Z
Start of Test: 2015-4-21 /

SCAN TABLE: "LFRE Fin"

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



Produkte
 Products



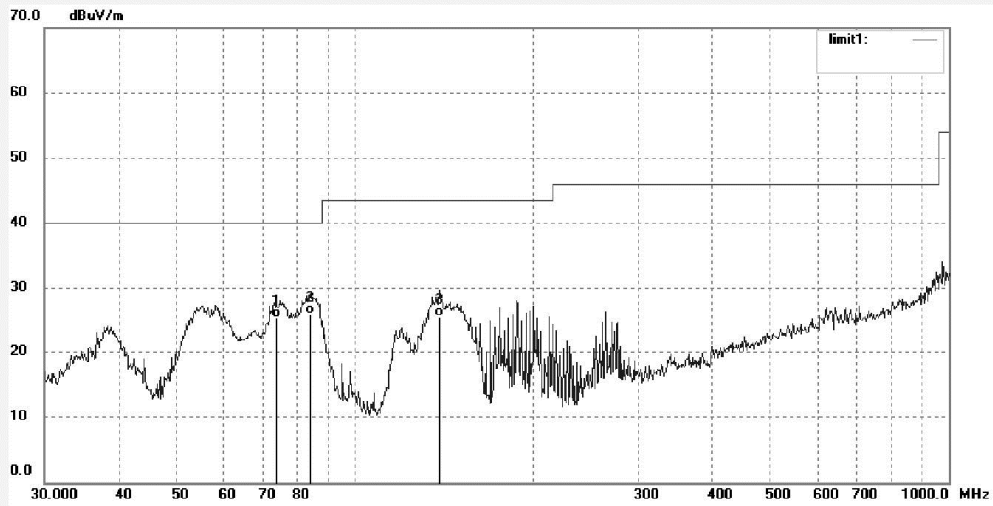
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 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
 Tel:+86-0755-26503290
 Fax:+86-0755-26503396

Job No.: lenovo #428	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/17/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: TX 2441MHz	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note: Bluetooth 3.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	73.6170	42.07	-16.58	25.49	40.00	-14.51	QP			
2	84.1099	41.65	-15.59	26.06	40.00	-13.94	QP			
3	138.3873	40.50	-14.87	25.63	43.50	-17.87	QP			

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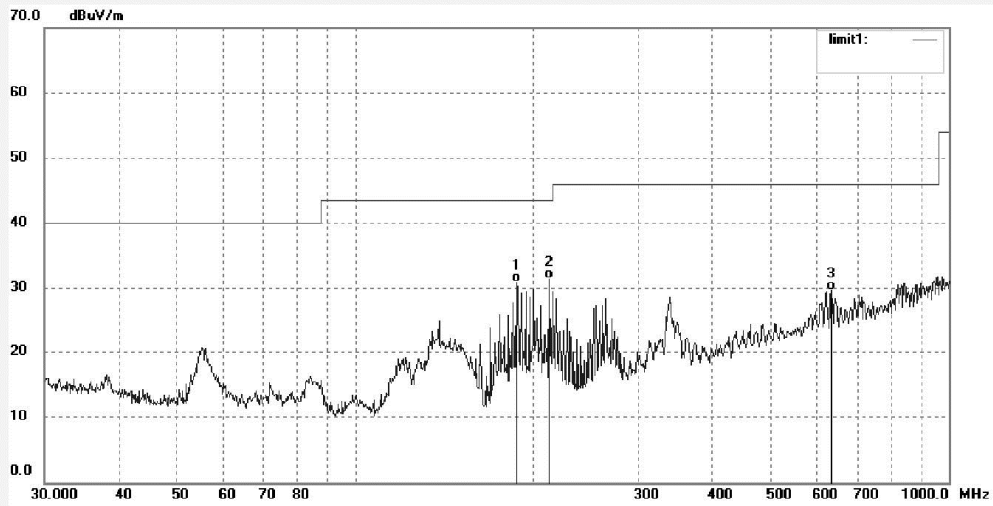
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 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
 Tel:+86-0755-26503290
 Fax:+86-0755-26503396

Job No.: lenovo #429	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/17/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: TX 2441MHz	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note: Bluetooth 3.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	187.0956	43.54	-12.69	30.85	43.50	-12.65	QP			
2	212.2694	43.41	-12.04	31.37	43.50	-12.13	QP			
3	633.9072	32.26	-2.56	29.70	46.00	-16.30	QP			

Produkte
 Products



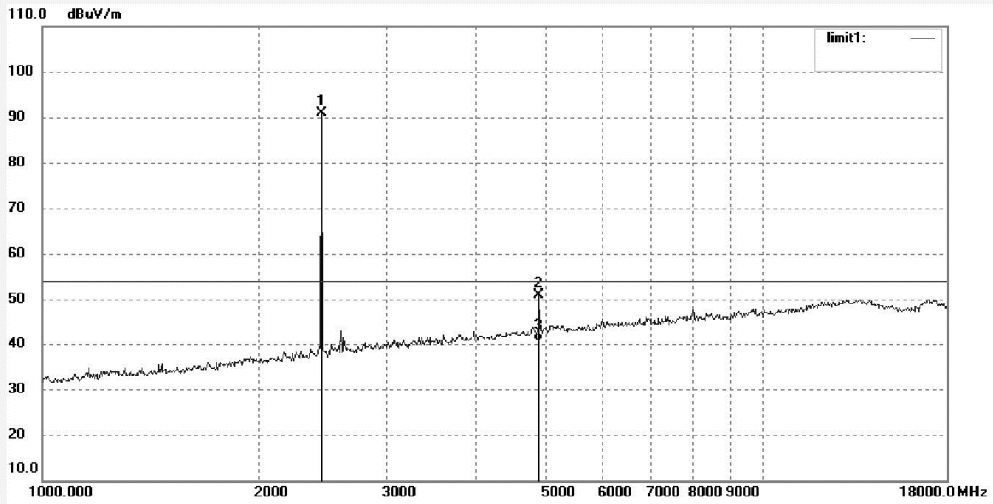
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Site: 2# Chamber
 Tel:+86-0755-26503290
 Fax:+86-0755-26503396

Job No.: lenovo #442	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/18/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: TX 2441MHz	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note: Bluetooth 3.0



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	98.11	-7.35	90.76	/	/	peak			
2	4882.015	50.81	0.14	50.95	74.00	-23.05	peak			
3	4882.015	40.37	0.14	40.51	54.00	-13.49	AVG			

Produkte
 Products



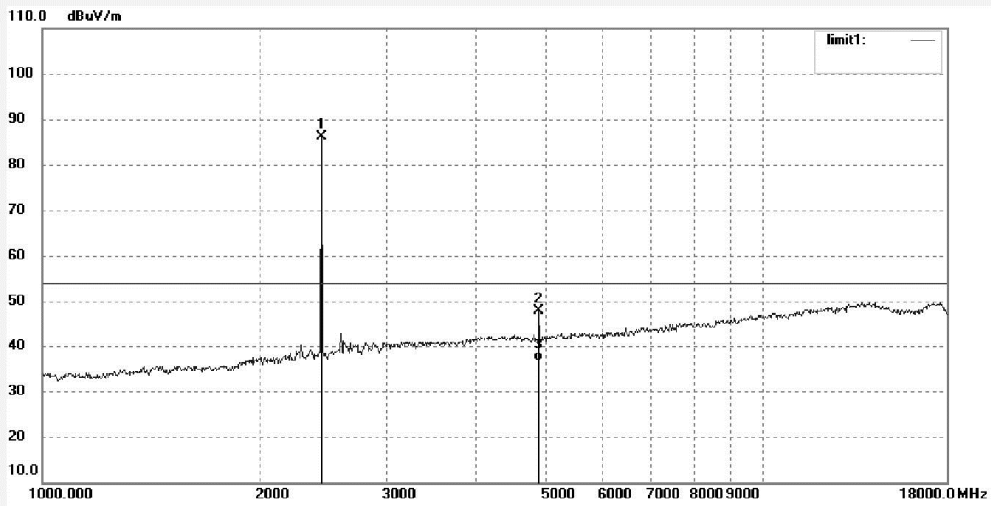
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 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
 Tel:+86-0755-26503290
 Fax:+86-0755-26503396

Job No.: lenovo #443	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/18/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: TX 2441MHz	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note: Bluetooth 3.0



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	93.41	-7.35	86.06	/	/	peak			
2	4882.011	47.72	0.14	47.86	74.00	-26.14	peak			
3	4882.011	36.45	0.14	36.59	54.00	-17.41	AVG			

Produkte
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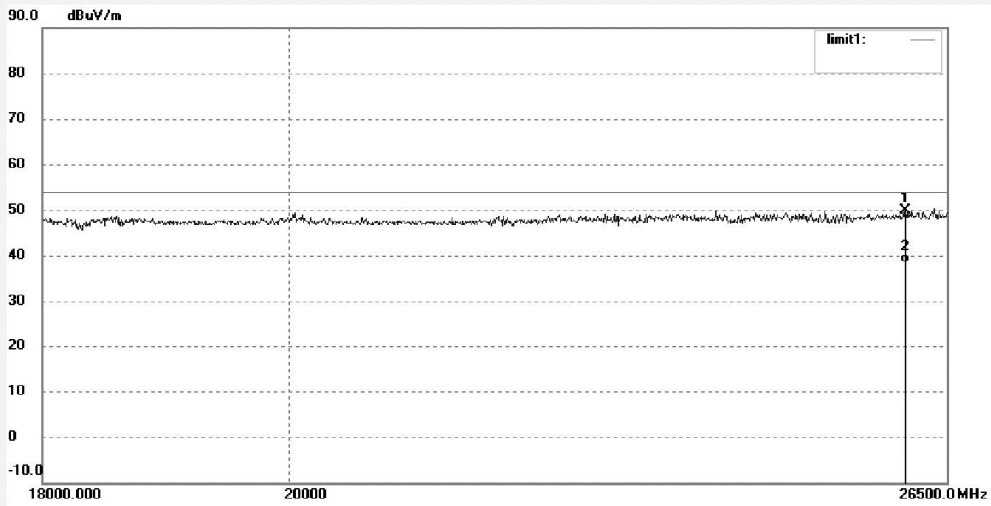
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F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
 Tel:+86-0755-26503290
 Fax:+86-0755-26503396

Job No.: lenovo #508	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/18/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: TX 2441MHz	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note: Bluetooth 3.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	26032.693	32.75	17.21	49.96	74.00	-24.04	peak			
2	26032.693	21.08	17.21	38.29	54.00	-15.71	AVG			

Produkte
 Products



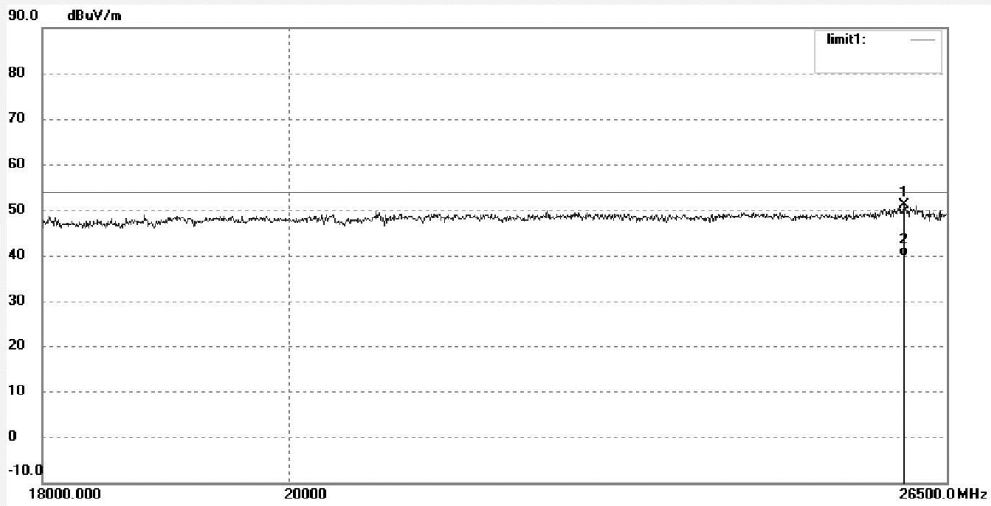
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F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
 Tel:+86-0755-26503290
 Fax:+86-0755-26503396

Job No.: lenovo #509	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/18/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: TX 2441MHz	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note: Bluetooth 3.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	26012.563	33.90	17.22	51.12	74.00	-22.88	peak			
2	26012.563	22.57	17.22	39.79	54.00	-14.21	AVG			

High Channel

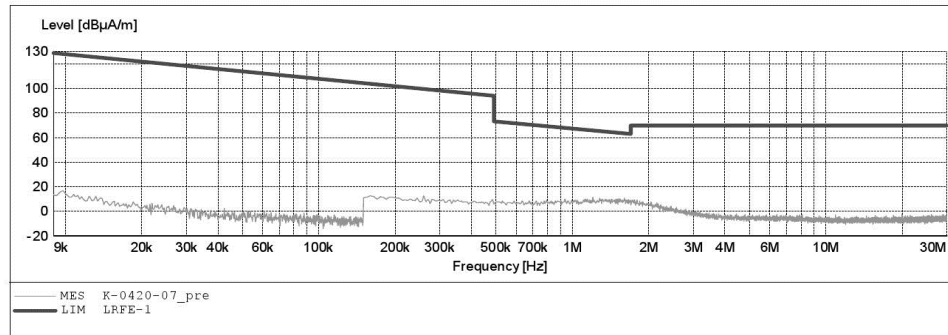
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3m Radiated

EUT: ThinkPad Stack Bluetooth Speaker M/N:S123
Manufacturer: Lenovo
Operating Condition: TX 2480MHz
Test Site: 2# Chamber
Operator: LAN
Test Specification: AC 120V/60Hz
Comment: X
Start of Test: 2015-4-21 /

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



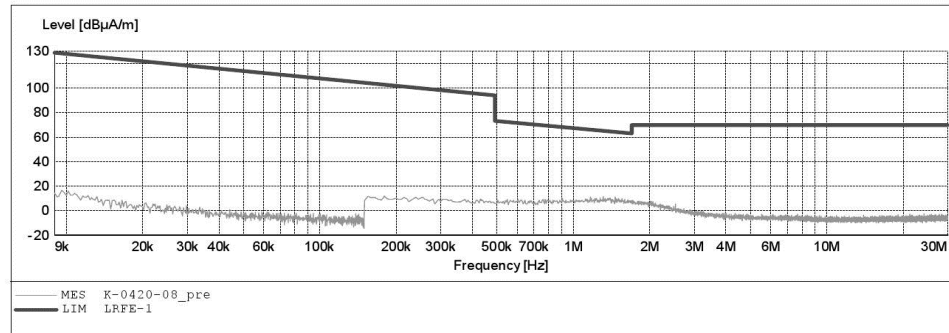
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3m Radiated

EUT: ThinkPad Stack Bluetooth Speaker M/N:S123
Manufacturer: Lenovo
Operating Condition: TX 2480MHz
Test Site: 2# Chamber
Operator: LAN
Test Specification: AC 120V/60Hz
Comment: Y
Start of Test: 2015-4-21 /

SCAN TABLE: "LFRE Fin"

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



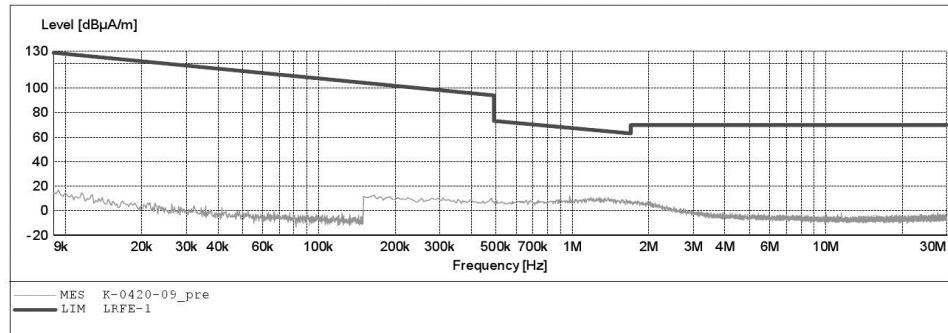
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3m Radiated

EUT: ThinkPad Stack Bluetooth Speaker M/N:S123
Manufacturer: Lenovo
Operating Condition: TX 2480MHz
Test Site: 2# Chamber
Operator: LAN
Test Specification: AC 120V/60Hz
Comment: Z
Start of Test: 2015-4-21 /

SCAN TABLE: "LFRE Fin"

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



Produkte
 Products



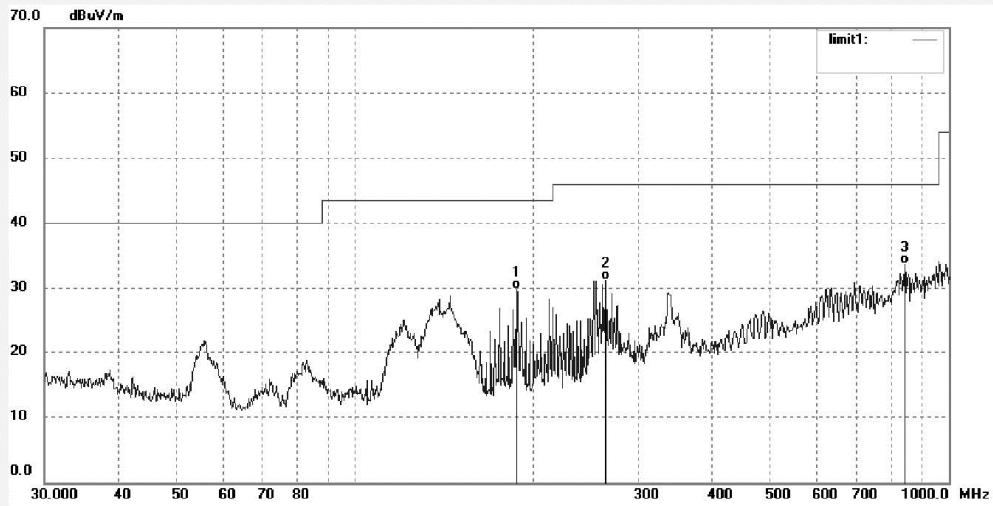
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 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
 Tel:+86-0755-26503290
 Fax:+86-0755-26503396

Job No.: lenovo #430	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/18/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: TX 2480MHz	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note: Bluetooth 3.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	187.0956	42.53	-12.69	29.84	43.50	-13.66	QP			
2	264.7456	41.72	-10.44	31.28	46.00	-14.72	QP			
3	842.1295	32.99	0.66	33.65	46.00	-12.35	QP			

Produkte
 Products



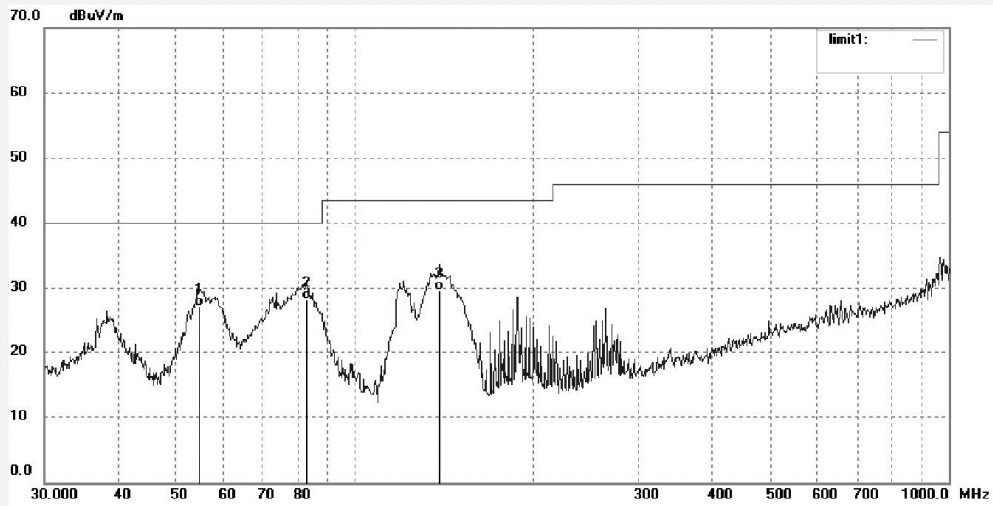
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 Fax:+86-0755-26503396

Job No.: lenovo #431	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/18/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: TX 2480MHz	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note: Bluetooth 3.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	54.6428	40.15	-12.95	27.20	40.00	-12.80	QP			
2	82.9385	44.02	-15.84	28.18	40.00	-11.82	QP			
3	138.3873	44.52	-14.87	29.65	43.50	-13.85	QP			

Produkte
 Products



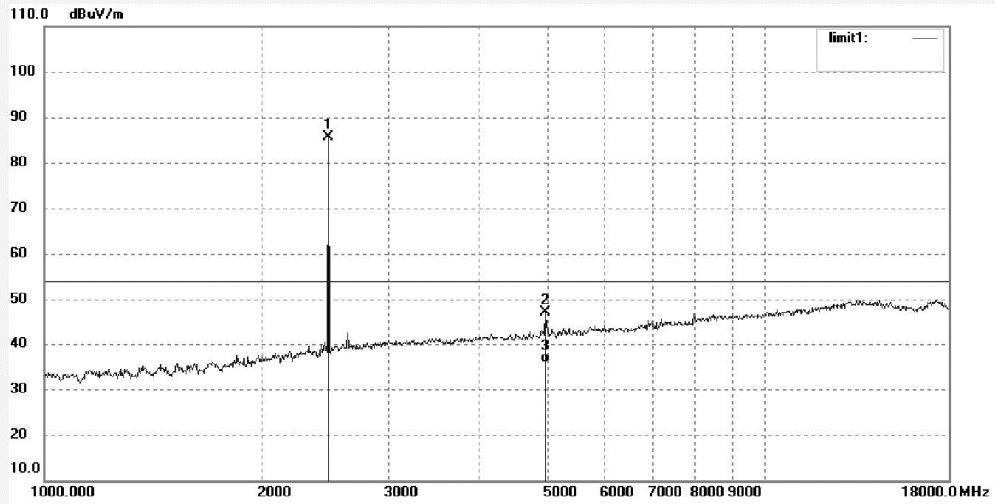
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Job No.: lenovo #444	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/18/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: TX 2480MHz	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note: Bluetooth 3.0



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	93.10	-7.37	85.73	/	/	peak			
2	4960.007	46.60	0.52	47.12	74.00	-26.88	peak			
3	4960.007	35.41	0.52	35.93	54.00	-18.07	AVG			

Produkte
 Products



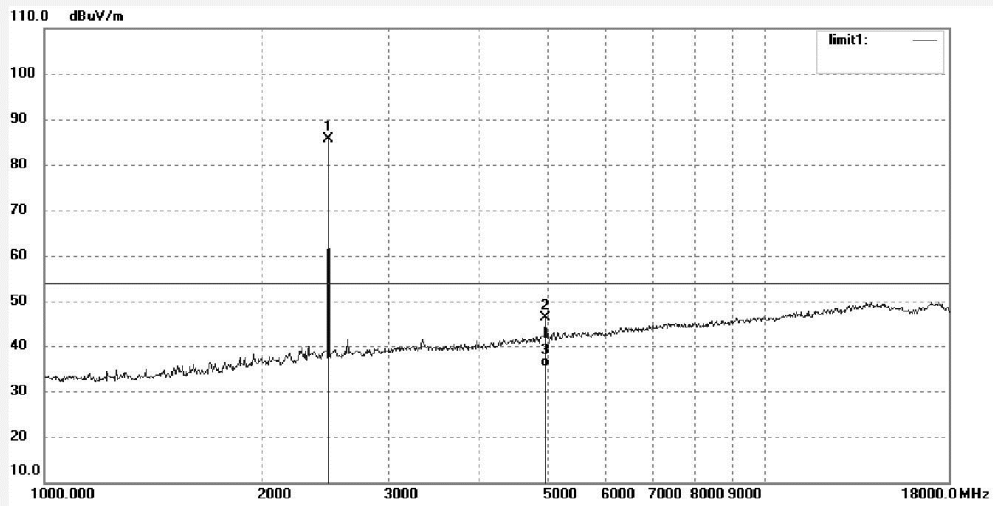
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Job No.: lenovo #445	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/18/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: TX 2480MHz	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note: Bluetooth 3.0



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	93.06	-7.37	85.69	/	/	peak			
2	4960.013	45.95	0.52	46.47	74.00	-27.53	peak			
3	4960.013	34.82	0.52	35.34	54.00	-18.66	AVG			

Produkte
 Products



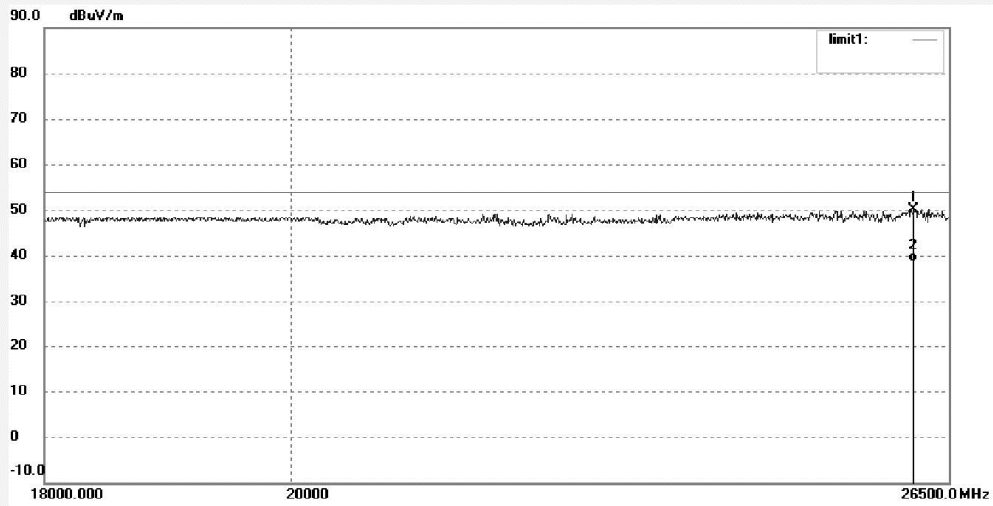
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Job No.: lenovo #510	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/18/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: TX 2480MHz	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note: Bluetooth 3.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	26103.270	32.94	17.16	50.10	74.00	-23.90	peak			
2	26103.270	21.55	17.16	38.71	54.00	-15.29	AVG			

Produkte
 Products



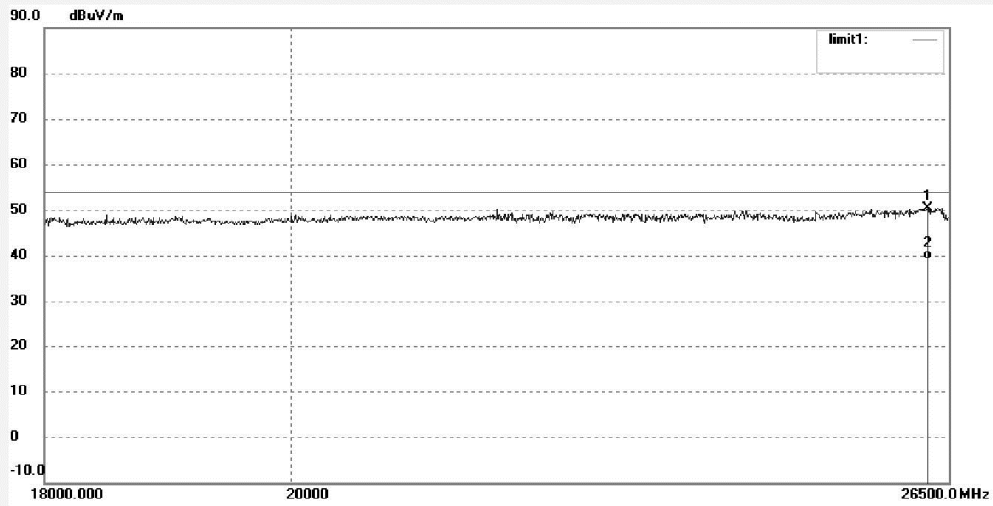
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Job No.: lenovo #511	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/18/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: TX 2480MHz	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note: Bluetooth 3.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	26255.151	33.34	17.06	50.40	74.00	-23.60	peak			
2	26255.151	22.05	17.06	39.11	54.00	-14.89	AVG			

Produkte
 Products

Appendix A.2: Radiated Emissions in Restricted Bands
 Low Channel



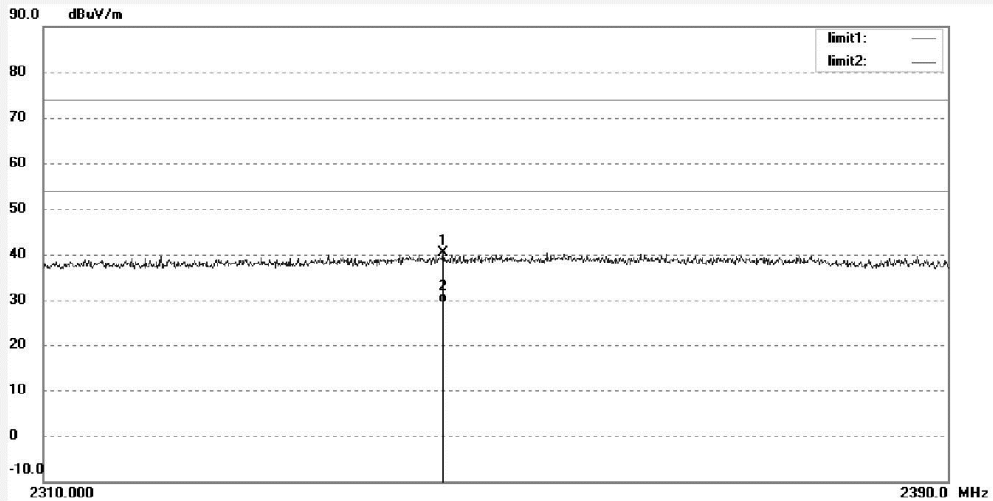
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Job No.: lenovo #440	Polarization: Vertical
Standard: FCC (Band Edge)	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/18/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: TX 2402MHz	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note: Bluetooth 3.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2345.040	48.17	-7.79	40.38	74.00	-33.62	peak			
2	2345.040	37.05	-7.79	29.26	54.00	-24.74	AVG			

Produkte
 Products



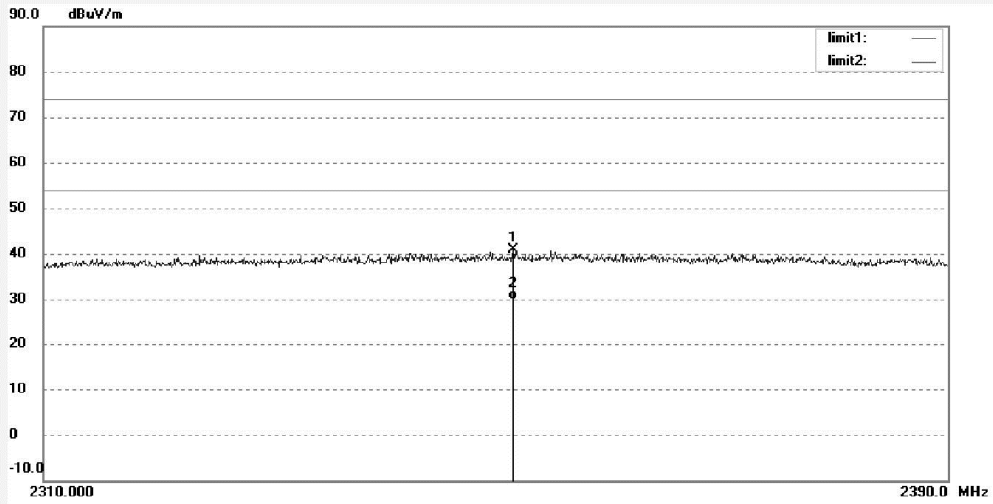
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Job No.: lenovo #441	Polarization: Horizontal
Standard: FCC (Band Edge)	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/18/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: TX 2402MHz	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note: Bluetooth 3.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2351.200	48.70	-7.79	40.91	74.00	-33.09	peak			
2	2351.200	37.69	-7.79	29.90	54.00	-24.10	AVG			

Produkte
 Products

High Channel



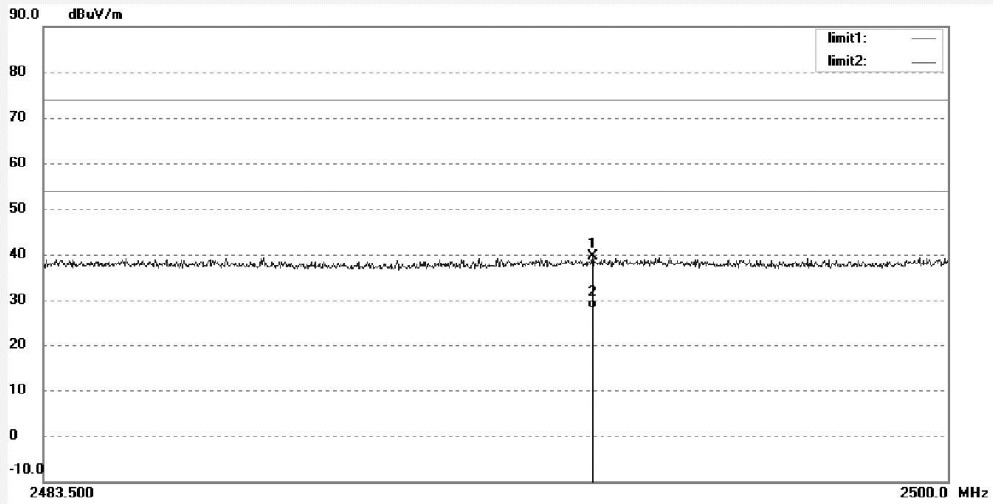
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 Fax:+86-0755-26503396

Job No.: lenovo #446	Polarization: Horizontal
Standard: FCC (Band Edge)	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/18/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: TX 2480MHz	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note: Bluetooth 3.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2493.515	46.90	-7.39	39.51	74.00	-34.49	peak			
2	2493.515	35.52	-7.39	28.13	54.00	-25.87	AVG			

Produkte
 Products



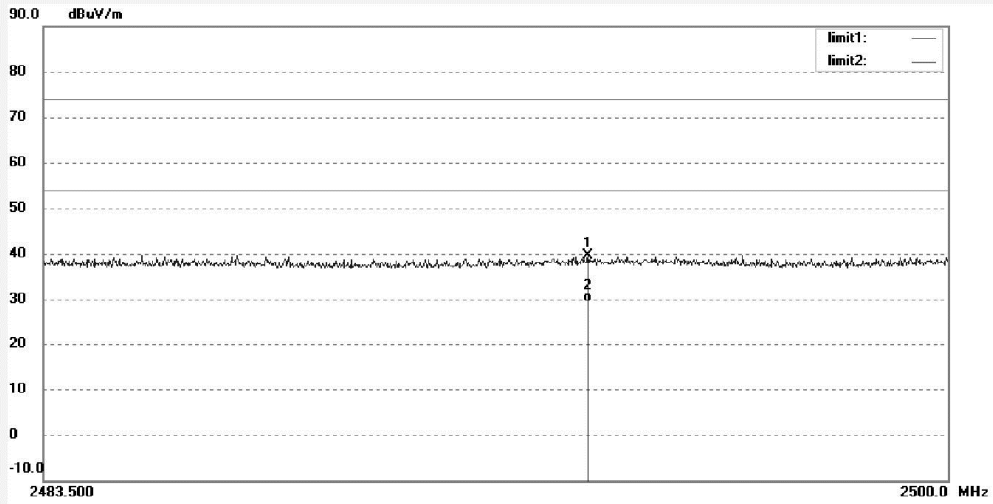
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Job No.: lenovo #447	Polarization: Vertical
Standard: FCC (Band Edge)	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/18/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: TX 2480MHz	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note: Bluetooth 3.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2493.433	47.00	-7.39	39.61	74.00	-34.39	peak			
2	2493.433	36.75	-7.39	29.36	54.00	-24.64	AVG			

Produkte
 Products

Appendix A.3: Radiated Emissions
 Aux in playing with battery



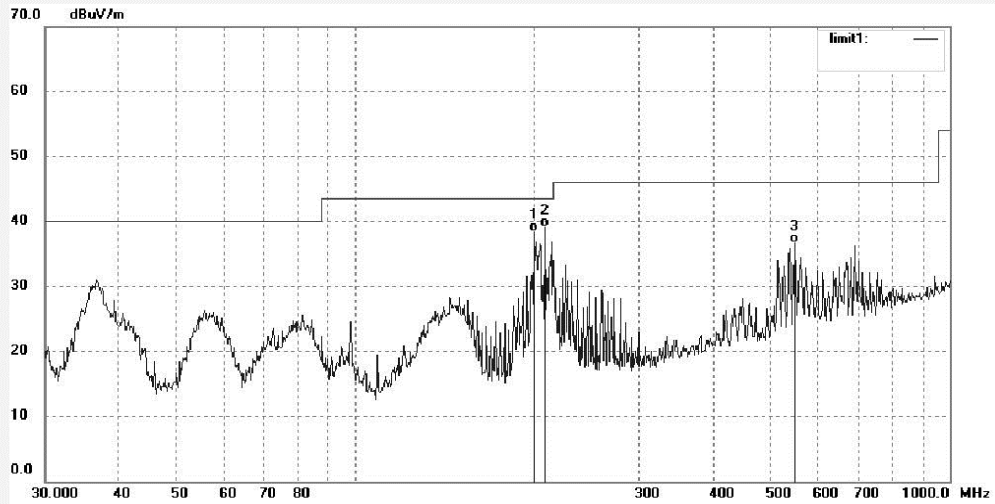
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 Tel:+86-0755-26503290
 Fax:+86-0755-26503396

Job No.: lenovo 1#03	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 15/04/20/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: Aux in	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	200.0432	50.78	-12.44	38.34	43.50	-5.16	QP			
2	208.6579	51.25	-12.21	39.04	43.50	-4.46	QP			
3	548.3600	40.40	-3.67	36.73	46.00	-9.27	QP			

Produkte
 Products



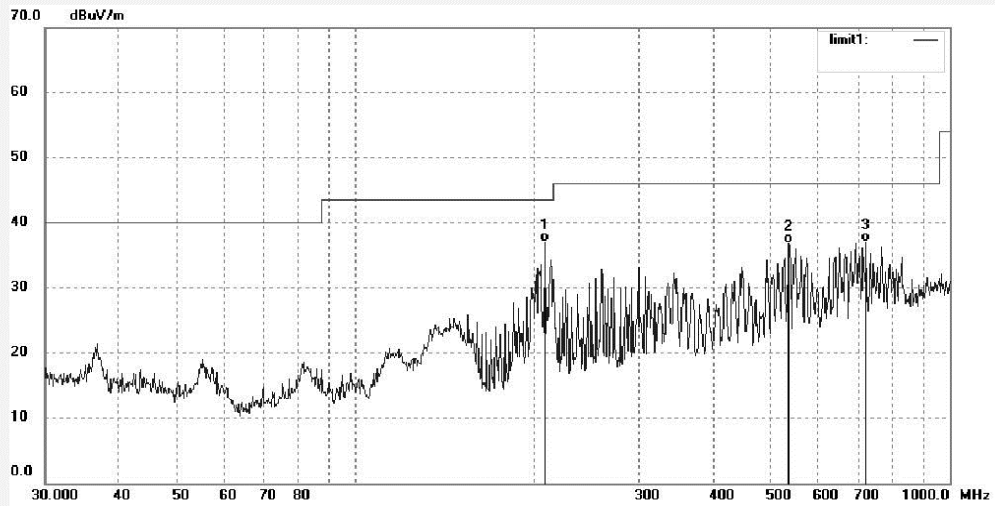
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 Fax:+86-0755-26503396

Job No.: lenovo 1#04	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 15/04/20/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: Aux in	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	208.6579	49.28	-12.21	37.07	43.50	-6.43	QP			
2	536.9208	40.73	-3.91	36.82	46.00	-9.18	QP			
3	723.7930	38.45	-1.43	37.02	46.00	-8.98	QP			

Produkte
 Products



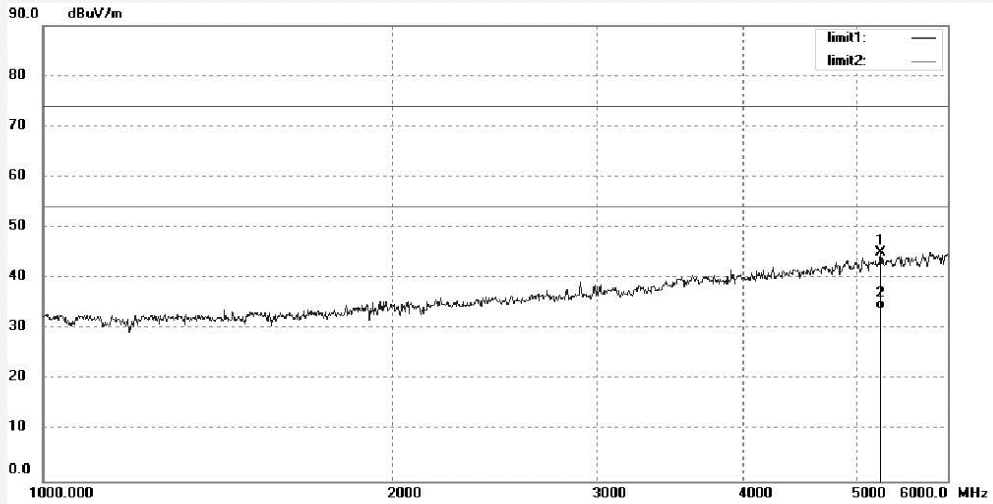
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Job No.: lenovo 1#05	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 15/04/20/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: Aux in	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	5254.944	44.24	0.87	45.11	74.00	-28.89	peak			
2	5254.944	33.01	0.87	33.88	54.00	-20.12	AVG			

Produkte
 Products



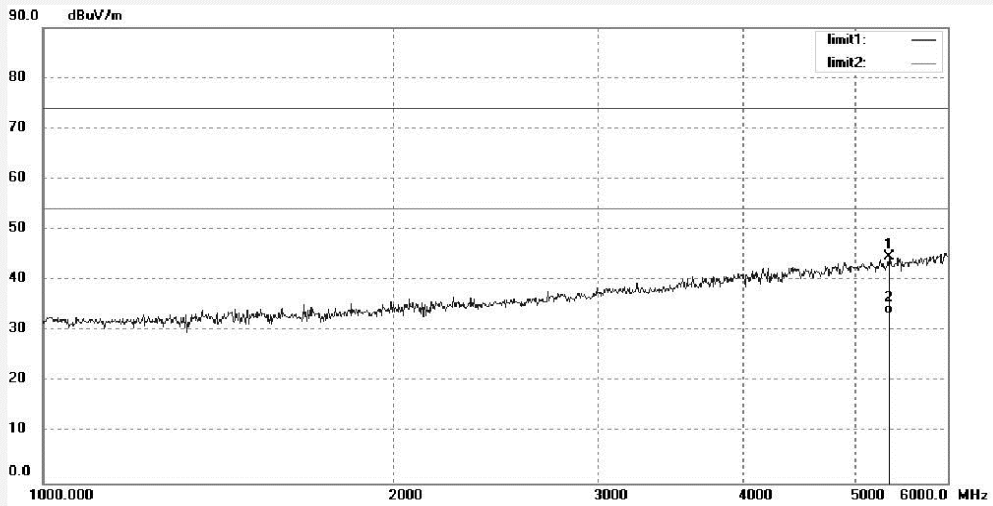
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Job No.: lenovo 1#06	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 15/04/20/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: Aux in	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	5340.371	43.75	0.88	44.63	74.00	-29.37	peak			
2	5340.371	32.56	0.88	33.44	54.00	-20.56	AVG			

Produkte
 Products

Aux in playing with AC/DC adapter

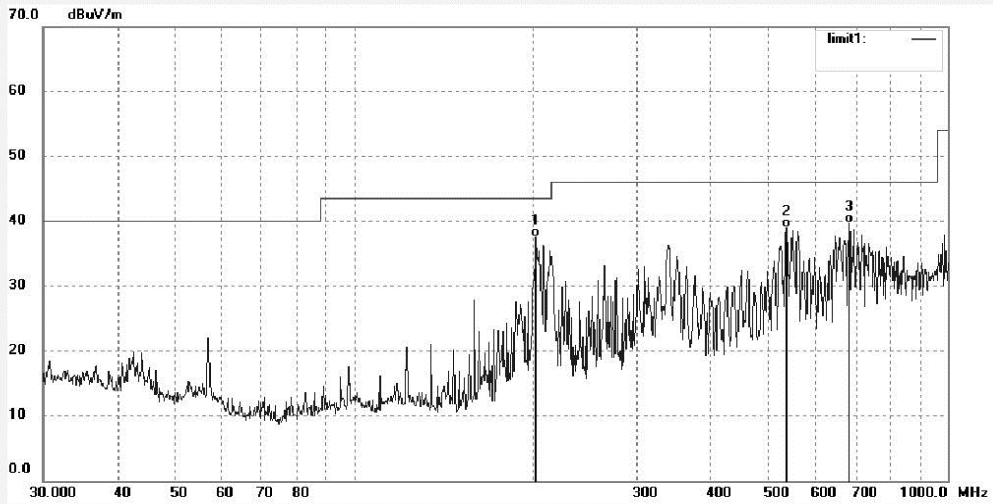


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Job No.: lenovo 1#01	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/20/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: Aux in	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	202.8103	49.84	-12.35	37.49	43.50	-6.01	QP			
2	535.7073	42.90	-3.92	38.98	46.00	-7.02	QP			
3	682.3484	41.57	-2.00	39.57	46.00	-6.43	QP			

Produkte
 Products



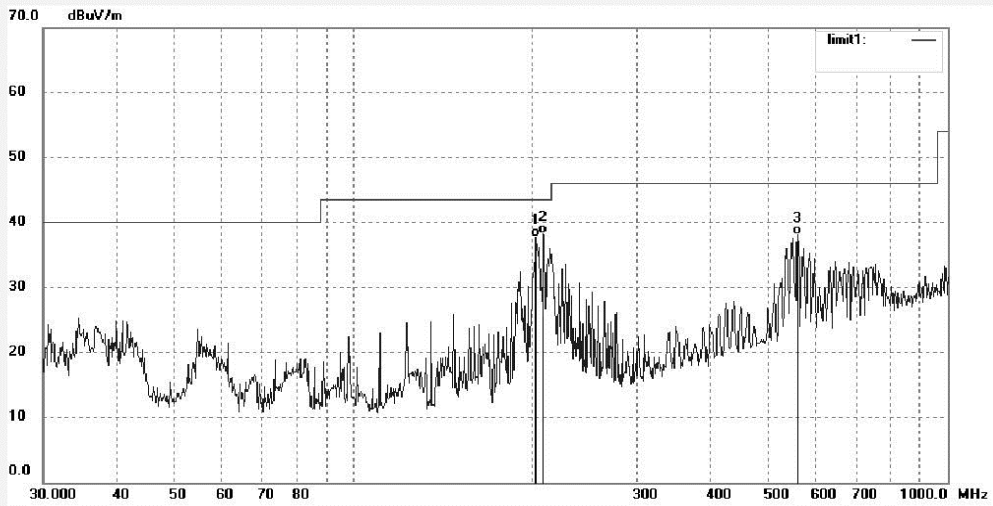
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Job No.: lenovo 1#02	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/20/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: Aux in	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	202.8103	50.10	-12.35	37.75	43.50	-5.75	QP			
2	208.5801	50.45	-12.21	38.24	43.50	-5.26	QP			
3	558.7301	41.46	-3.47	37.99	46.00	-8.01	QP			

Produkte
 Products



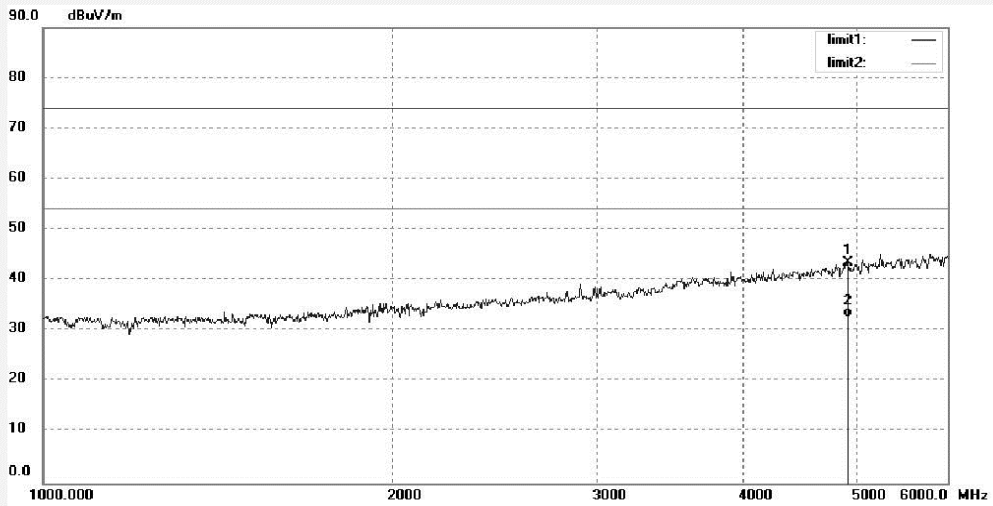
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Job No.: lenovo 1#07	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/20/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: Aux in	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4926.683	43.22	0.37	43.59	74.00	-30.41	peak			
2	4926.683	32.45	0.37	32.82	54.00	-21.18	AVG			

Produkte
 Products



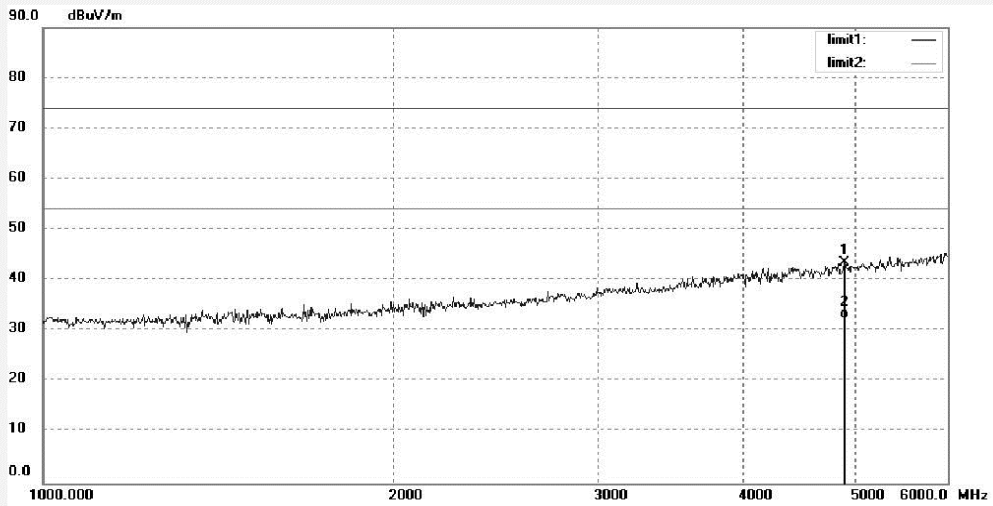
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Job No.: lenovo 1#08	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/20/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Bluetooth Speaker	Engineer Signature:
Mode: Aux in	Distance: 3m
Model: S123	
Manufacturer: Lenovo	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4891.499	43.40	0.20	43.60	74.00	-30.40	peak			
2	4891.499	32.37	0.20	32.57	54.00	-21.43	AVG			

Appendix A.4: Conducted Emissions
 Bluetooth playing with charging

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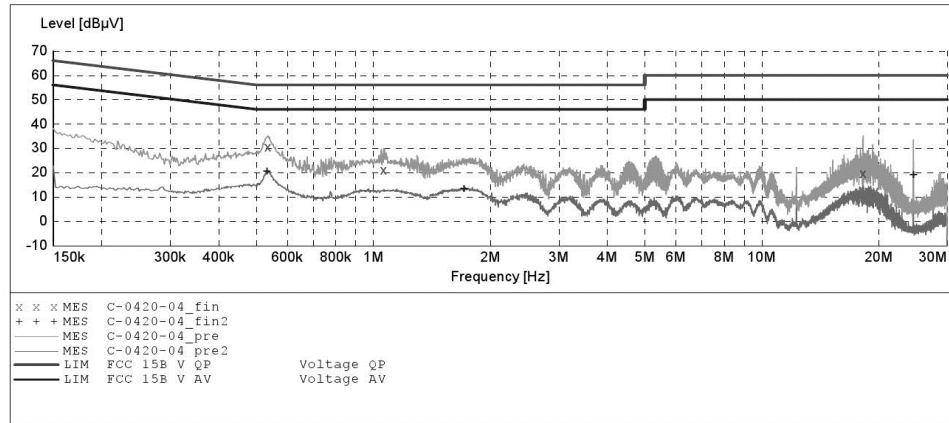
CONDUCTED EMISSION STANDARD FCC PART 15 B

EUT: TinkPad Stack Bluetooth Speaker M/N:S123
 Manufacturer: Lenovo
 Operating Condition: On with Bluetooth
 Test Site: 1#Shielding Room
 Operator: LAN
 Test Specification: N 120V/60Hz
 Comment: Mains Port
 Start of Test: 2015-4-20 /

SCAN TABLE: "V 150K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	30.0 MHz	4.5 kHz	QuasiPeak	1.0 s	9 kHz	NSLK8126 2008
Average						



MEASUREMENT RESULT: "C-0420-04_fin"

2015-4-20

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.536000	30.50	11.5	56	25.5	QP	N	GND
1.064000	21.00	11.6	56	35.0	QP	N	GND
18.263000	19.60	11.9	60	40.4	QP	N	GND

MEASUREMENT RESULT: "C-0420-04_fin2"

2015-4-20

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.532000	20.50	11.5	46	25.5	AV	N	GND
1.710000	13.20	11.6	46	32.8	AV	N	GND
24.576500	19.10	12.0	50	30.9	AV	N	GND

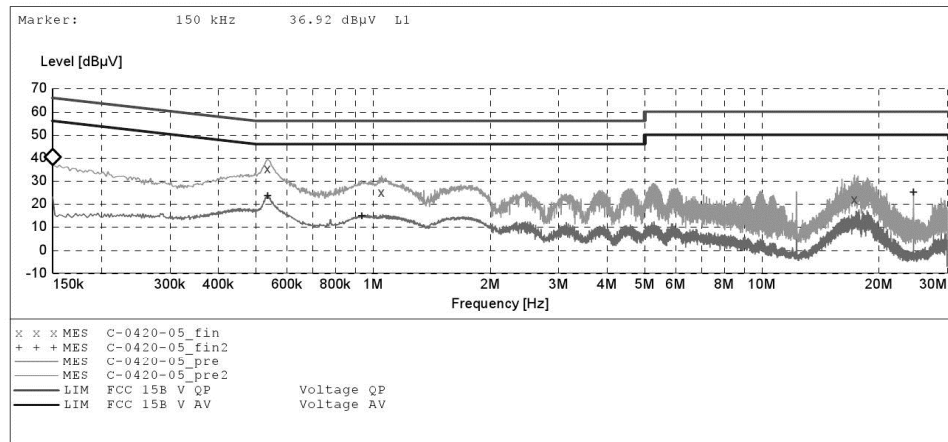
ACCURATE TECHNOLOGY CO., LTD

CONDUCTED EMISSION STANDARD FCC PART 15 B

EUT: TinkPad Stack Bluetooth Speaker M/N:S123
 Manufacturer: Lenovo
 Operating Condition: On with Bluetooth
 Test Site: 1#Shielding Room
 Operator: LAN
 Test Specification: L 120V/60Hz
 Comment: Mains Port
 Start of Test: 2015-4-20 /

SCAN TABLE: "V 150K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 150.0 kHz 30.0 MHz 4.5 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008
 Average



MEASUREMENT RESULT: "C-0420-05_fin"

2015-4-20	Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
	0.536000	35.20	11.5	56	20.8	QP	L1	GND
	1.052000	24.90	11.6	56	31.1	QP	L1	GND
	17.336000	21.90	11.9	60	38.1	QP	L1	GND

MEASUREMENT RESULT: "C-0420-05_fin2"

2015-4-20	Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
	0.536000	23.40	11.5	46	22.6	AV	L1	GND
	0.936000	14.70	11.6	46	31.3	AV	L1	GND
	24.576500	25.10	12.0	50	24.9	AV	L1	GND

Aux in playing with charging

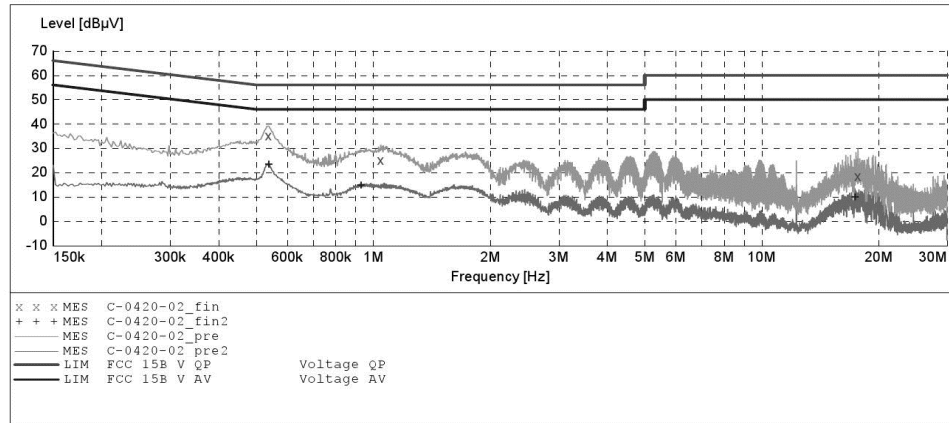
ACCURATE TECHNOLOGY CO., LTD

CONDUCTED EMISSION STANDARD FCC PART 15 B

EUT: TinkPad Stack Bluetooth Speaker M/N:S123
 Manufacturer: Lenovo
 Operating Condition: Aux in
 Test Site: 1#Shielding Room
 Operator: LAN
 Test Specification: L 120V/60Hz
 Comment: Mains Port
 Start of Test: 2015-4-20 /

SCAN TABLE: "V 150K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 150.0 kHz 30.0 MHz 4.5 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008
 Average



MEASUREMENT RESULT: "C-0420-02_fin"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.538000	35.00	11.5	56	21.0	QP	L1	GND
1.046000	25.10	11.6	56	30.9	QP	L1	GND
17.696000	18.50	11.9	60	41.5	QP	L1	GND

MEASUREMENT RESULT: "C-0420-02_fin2"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.538000	23.30	11.5	46	22.7	AV	L1	GND
0.930000	14.80	11.6	46	31.2	AV	L1	GND
17.381000	9.80	11.9	50	40.2	AV	L1	GND

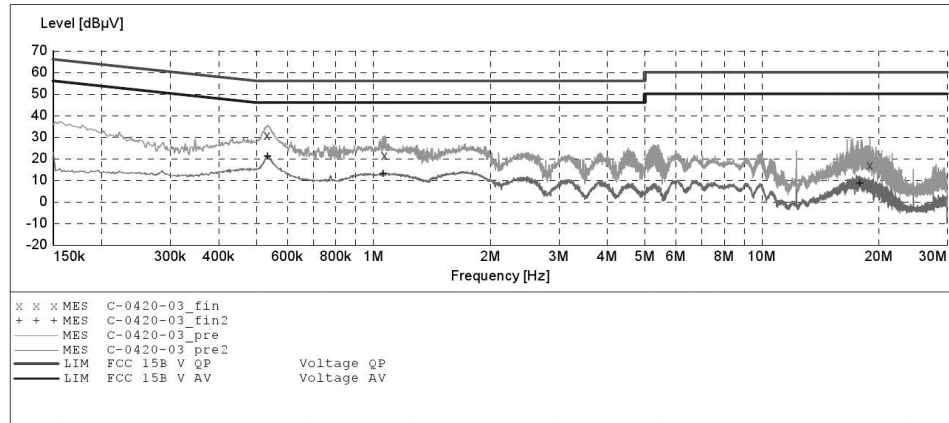
ACCURATE TECHNOLOGY CO., LTD

CONDUCTED EMISSION STANDARD FCC PART 15 B

EUT: TinkPad Stack Bluetooth Speaker M/N:S123
 Manufacturer: Lenovo
 Operating Condition: Aux in
 Test Site: 1#Shielding Room
 Operator: LAN
 Test Specification: N 120V/60Hz
 Comment: Mains Port
 Start of Test: 2015-4-20 /

SCAN TABLE: "V 150K-30MHz fin"

Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	30.0 MHz	4.5 kHz	QuasiPeak	1.0 s	9 kHz	NSLK8126 2008
Average						



MEASUREMENT RESULT: "C-0420-03_fin"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.534000	30.70	11.5	56	25.3	QP	N	GND
1.070000	21.40	11.6	56	34.6	QP	N	GND
19.014500	16.70	11.9	60	43.3	QP	N	GND

MEASUREMENT RESULT: "C-0420-03_fin2"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.534000	20.90	11.5	46	25.1	AV	N	GND
1.060000	12.90	11.6	46	33.1	AV	N	GND
17.880500	8.60	11.9	50	41.4	AV	N	GND

Appendix B

Test Results of RF Exposure

APPENDIX B.1: RF EXPOSURE COMPLIANCE 2

Appendix B.1: RF Exposure Compliance

Radio Frequency Exposure Compliance

RESULT:

Passed

Test standard : FCC 1.1310
RSS-102 Issue 5

This device is mobile device, and the applicant declares that the minimum separation distance is greater than 20cm. Therefore MPE measurement or computational modeling should be used to determine compliance.

MPE Calculation
According to the formula

$$Pd = \frac{P_{out} * G}{4R^2\pi}$$

Where

Pd = power density in mW/cm² or W/m²

Pout = output power to antenna in mW or W

G = Antenna gain in numeric

π = 3.14159

R = Distance between observation point and the center of radiator in cm or m

In here

Pout = 3.58dBm = 2.28mW

G = -0.13dBi = 0.97 (numeric)

R = 20cm

For Bluetooth operation:

$$Pd = \frac{P_{out} * G}{4R^2\pi} = \frac{2.28 * 0.97}{4 * 20^2 * 3.14159} = 0.00044mW / cm^2 < 1mW/cm^2 \text{ for FCC limit}$$

$$Pd = \frac{P_{out} * G}{4R^2\pi} = \frac{0.00228 * 0.97}{4 * 0.2^2 * 3.14159} = 0.0044W / m^2 < 5.4W/m^2 \text{ for IC limit}$$

The summed maximum permissible exposure (MPE) level is 0.00044mW/cm² and 0.0044W/m². It is less than MPE limit 1mW/cm² for FCC and 5.4W/m² for IC, therefore the device compliance with MPE limit.