

Variant FCC RF Test Report

APPLICANT : Lenovo Mobile Communication Technology Ltd.

EQUIPMENT: Mobile Cellular Phone

BRAND NAME : Lenovo

MODEL NAME : Lenovo K53b36, Lenovo K53b37

FCC ID : YCNK53B3

STANDARD : FCC Part 15 Subpart C §15.247

CLASSIFICATION : (DTS) Digital Transmission System

This is a variant report which is only valid together with the original test report. The product was received on Sep. 14, 2016 and testing was completed on Oct. 14, 2016. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (KUNSHAN) INC., the test report shall not be reproduced except in full.

Prepared by: James Huang / Manager

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ilac-MF



Report No.: FR691407C

Approved by: Jones Tsai / Manager

SPORTON INTERNATIONAL (KUNSHAN) INC. No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P. R. China

SPORTON INTERNATIONAL (KUNSHAN) INC.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR691407C	Rev. 01	This is a variant report for Lenovo K53b36, Lenovo K53b37. The product equality declaration could be referred to Appendix D. Based on the similarity between two models, only the conducted power and worst cases of Radiated Spurious Emission from original test report (Sporton Report Number FR662005C) were verified for the differences.	Oct. 31, 2016

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SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(b)	Power Output Measurement	≤ 30dBm	Pass	-
3.2	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 5.87 dB at 2389.95 MHz

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1 General Description

1.1 Applicant

Lenovo Mobile Communication Technology Ltd.

No. 999, Qishan North 2nd Road, Information & Optoelectronics Park, Torch Hi-tech Industry Development Zone, Xiamen, P. R. China

1.2 Manufacturer

Motorola Mobility LLC

222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

1.3 Product Feature of Equipment Under Test

Product Feature				
Equipment	Mobile Cellular Phone			
Brand Name	Lenovo			
Model Name	Lenovo K53b36, Lenovo K53b37			
FCC ID	YCNK53B3			
	GSM/GPRS/EGPRS/WCDMA/HSPA/DC-HSDPA/			
	HSPA+(16QAM uplink is not supported)/LTE/			
EUT supports Radios application	WLAN2.4GHz 802.11b/g/n HT20/			
	Bluetooth v3.0+EDR/Bluetooth v4.0 LE/			
	Bluetooth v4.2 LE			
IMEL Code	Radiation:			
IMEI Code	Sample 1: 861901030036633/861901030036641			
HW Version	82939_1_13			
SW Version	K53_S016_160729_ROW			
EUT Stage	Identical Prototype			

Remark:

- 1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
- 2. There are two different types of EUT. They are single SIM card mobile (Model Name: Lenovo K53b37) and dual SIM card mobile (Model Name: Lenovo K53b36). The others are the same including circuit design, PCB board, structure and all components.

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1.4 Product Specification of Equipment Under Test

Standards-related Product Specification			
Tx/Rx Channel Frequency Range	2412 MHz ~ 2462 MHz		
Maximum (Peak) Output Power to	802.11b : 15.45 dBm (0.0351 W)		
antenna	802.11g : 21.34 dBm (0.1361 W)		
antenna	802.11n HT20 : 20.62 dBm (0.1153 W)		
Antenna Type / Gain	LDS Antenna with gain -4.93 dBi		
Type of Madulation	802.11b: DSSS (DBPSK / DQPSK / CCK)		
Type of Modulation	802.11g/n: OFDM (BPSK / QPSK / 16QAM / 64QAM)		

1.5 Specification of Accessory

Specification of Accessory							
AC Adapter 1	Brand Name	Lenovo (Acbel)	Model Name	C-P35			
Ao Adapter 1	Power Rating	I/P: 100-240Vac, 300	mA, O/P: 5.2V	dc, 2000mA			
AC Adapter 2	Brand Name	Lenovo (Huntkey)	Model Name	C-P35			
No Adaptor 2	Power Rating	I/P: 100-240Vac, 500	mA, O/P: 5.2V	dc, 2000mA			
Battery	Brand Name	Lenovo (SCUD)	Model Name	BL270			
-autory	Power Rating	3.85Vdc, 4000mAh					
Earphone	Brand Name	Lenovo (Cosonic)	Model Name	LS-118M			
Larphone	Signal Line Type	1.1 meter, non-shielded cable, without ferrite core					
USB Cable 1	Brand Name	Lenovo(Starw)	Model Name	XJ-007070			
USB Cable 1	Signal Line Type	1.0 meter, non-shield	ed cable, withou	out ferrite core			
USB Cable 2	Brand Name	Lenovo(Saibao)	Model Name	SWT-A053A			
USB Cable 2	Signal Line Type	1.0 meter, non-shielded cable, without ferrite core					
LCD Panel	Brand Name	O-FILM	Model Name	MTF-055-2594-03TMA			
Camera_ Front	Brand Name	Q-Tech	Model Name	FX219BQS			
Camera _ Rear	Brand Name	Sunny	Model Name	A16S05J-200			
CTP Module	Brand Name	O-FILM		Black: MCF-055-2594 White: MCF-055-2594 Golden: MCF-055-2594			

1.6 Modification of EUT

No modifications are made to the EUT during all test items.

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1.7 Testing Location

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.				
	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P. R. China				
Test Site Location	TEL: +86-0512-5790-0158				
	FAX: +86-0512-5790-09	58			
Took Cita No	Sporton Site No.		FCC Registration No.		
Test Site No.	TH01-KS	03CH03-KS	306251		

Note: The test site complies with ANSI C63.4 2014 requirement.

1.8 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r05
- ANSI C63.10-2013

Remark:

- All test items were verified and recorded according to the standards and without any deviation during the test.
- 2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

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2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: radiated emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases were recorded in this report.

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
	1	2412	7	2442
	2	2417	8	2447
2400 2492 F MH=	3	2422	9	2452
2400-2483.5 MHz	4	2427	10	2457
	5	2432	11	2462
	6	2437	-	-

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2.2 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and data rate associated with the highest power were chosen for full test shown in the following tables.

802.11b mode Peak Power (dBm)						
Channal	Erogueney		Data Ra	te (MHz)		
Channel	Frequency	1M bps	2M bps	5.5M bps	11M bps	
CH 01	2412 MHz	<mark>15.45</mark>	15.42	15.40	15.43	
CH 06	2437 MHz	14.87	14.85	14.75	14.82	
CH 11	2462 MHz	14.63	14.62	14.54	14.61	

802.11g mode Peak Power (dBm)									
Channal					Data Ra	te (MHz)			
Channel	Frequency	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
CH 01	2412 MHz	<mark>21.34</mark>	21.28	21.30	21.33	21.29	21.25	21.14	21.16
CH 06	2437 MHz	20.43	20.31	20.37	20.39	20.42	20.30	20.29	20.23
CH 11	2462 MHz	19.82	19.75	19.76	19.74	19.69	19.72	19.55	19.68

	802.11n HT20 mode Peak Power (dBm)								
Channal					Data Ra	te (MHz)			
Channel	Frequency	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 01	2412 MHz	<mark>20.62</mark>	20.53	20.60	20.58	20.51	20.57	20.59	20.61
CH 06	2437 MHz	19.65	19.60	19.55	19.62	19.63	19.59	19.48	19.58
CH 11	2462 MHz	19.15	19.10	19.04	19.08	19.00	19.03	18.94	19.09

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2.3 Test Mode

Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates from the power table described in section 2.2.

Modulation	Data Rate
802.11b	1 Mbps
802.11g	6 Mbps
802.11n HT20	MCS0

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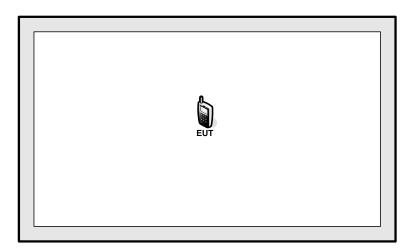
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2.4 Connection Diagram of Test System

<WLAN Tx Mode>



2.5 EUT Operation Test Setup

For WLAN function, the engineering test program was provided and enabled to make EUT continuous transmit/receive.

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3 Test Result

3.1 Output Power Measurement

3.1.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting antenna of directional gain greater than 6dBi are used the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

- The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas.
 Guidance v03r05 section 9.1.2 PKPM1 Peak power meter method.
- 2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 3. Set to the maximum power setting and enable the EUT transmit continuously.
- 4. Measure the conducted output power and record the results in the test report.

3.1.4 Test Setup



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3.2 Radiated Band Edges and Spurious Emission Measurement

3.2.1 Limit of Radiated band edge and Spurious Emission Measurement

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

Frequency	Field Strength	Measurement Distance		
(MHz)	(microvolts/meter)	(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		

3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

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3.2.3 Test Procedures

- 1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r05.
- 2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
- 3. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
- 4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
- 5. Corrected Reading: Antenna Factor + Cable Loss + Read Level Preamp Factor = Level
- 6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
- 7. Use the following spectrum analyzer settings:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW=100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW= 3MHz for $f \ge 1$ GHz for peak measurement. For average measurement:
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

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3.2.4 Test Setup

For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz

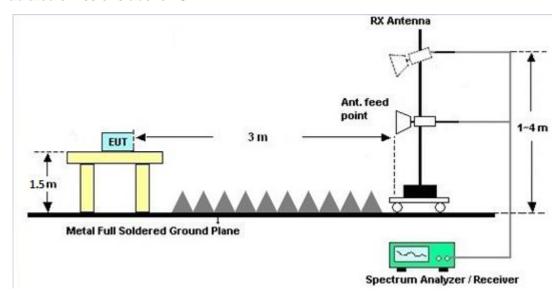


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For radiated emissions above 1GHz



3.2.5 Test Results of Radiated Spurious Emissions (9kHz ~ 30MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

3.2.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix A.

3.2.7 Duty Cycle

Please refer to Appendix B.

3.2.8 Test Result of Radiated Spurious Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix A.

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4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Aug. 09, 2016	Oct. 14, 2016	Aug. 08, 2017	Conducted (TH01-KS)
Pulse Power Senor	Anritsu	MA2411B	0917070	300MHz~40GH z	Jan. 20, 2016	Oct. 14, 2016	Jan. 19, 2017	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 20, 2016	Oct. 14, 2016	Jan. 19, 2017	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Oct. 24, 2015	Sep. 24, 2016	Oct. 23, 2016	Radiation (03CH03-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY551502 44	10Hz~44GHz	Apr. 22, 2016	Sep. 24, 2016	Apr. 21, 2017	Radiation (03CH03-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Nov. 07, 2015	Sep. 24, 2016	Nov. 06, 2016	Radiation (03CH03-KS)
Bilog Antenna	TeseQ	CBL6112D	35406	25MHz-2GHz	Apr. 16, 2016	Sep. 24, 2016	Apr. 15, 2017	Radiation (03CH03-KS)
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-135 6	1GHz~18GHz	Apr. 16, 2016	Sep. 24, 2016	Apr. 15, 2017	Radiation (03CH03-KS)
SHF-EHF Horn	com-power	AH-840	101070	18GHz~40GHz	Oct. 10, 2015	Sep. 24, 2016	Oct. 09, 2016	Radiation (03CH03-KS)
Amplifier	SONOMA	310N	187289	9kHz~1GHz	Aug. 09, 2016	Sep. 24, 2016	Aug. 08, 2017	Radiation (03CH03-KS)
Amplifier	MITEQ	TTA1840-35- HG	1887435	18GHz~40GHz	Jan. 20, 2016	Sep. 24, 2016	Jan. 19, 2017	Radiation (03CH03-KS)
Amplifier	Agilent	8449B	3008A023 70	1GHz~26.5GHz	Oct. 24, 2015	Sep. 24, 2016	Oct. 23, 2016	Radiation (03CH03-KS)
AC Power Source	Chroma	61601	F1040900 04	N/A	NCR	Sep. 24, 2016	NCR	Radiation (03CH03-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Sep. 24, 2016	NCR	Radiation (03CH03-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Sep. 24, 2016	NCR	Radiation (03CH03-KS)

NCR: No Calibration Required

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5 Uncertainty of Evaluation

<u>Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)</u>

Measuring Uncertainty for a Level of Confidence	4.5dB
of 95% (U = 2Uc(y))	

<u>Uncertainty of Radiated Emission Measurement (1GHz ~ 18GHz)</u>

Measuring Uncertainty for a Level of Confidence	4.5dB
of 95% (U = 2Uc(y))	

Uncertainty of Radiated Emission Measurement (18GHz ~ 40GHz)

Measuring Uncertainty for a Level of Confidence	4.6dB
of 95% (U = 2Uc(y))	4.0UD

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Appendix A. Radiated Spurious Emission

2.4GHz 2400~2483.5MHz

WIFI 802.11g (Band Edge @ 3m)

Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
			Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
	(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
	2389.95	61.08	-12.92	74	65.63	27	5.47	37.02	203	147	Р	Н
!	2389.82	47.97	-6.03	54	52.52	27	5.47	37.02	203	147	Α	Н
*	2418	105.05	-	-	109.45	27.13	5.47	37	203	147	Р	Н
*	2418	96.62	-	-	101.02	27.13	5.47	37	203	147	Α	Н
	2389.95	61.09	-12.91	74	65.64	27	5.47	37.02	100	62	Р	V
!	2389.95	48.13	-5.87	54	52.68	27	5.47	37.02	100	62	Α	٧
*	2420	103.69	-	-	107.94	27.26	5.48	36.99	100	62	Р	٧
*	2418	95.98	-	-	100.38	27.13	5.47	37	100	62	Α	٧
	*	2389.95 ! 2389.82 * 2418 * 2418 2389.95 ! 2389.95 ! 2389.95 * 2420	2389.95 61.08 ! 2389.82 47.97 * 2418 105.05 * 2418 96.62 2389.95 61.09 ! 2389.95 48.13 * 2420 103.69	(MHz) (dBμV/m) (dB) 2389.95 61.08 -12.92 ! 2389.82 47.97 -6.03 * 2418 105.05 - * 2418 96.62 - 2389.95 61.09 -12.91 ! 2389.95 48.13 -5.87 * 2420 103.69 -	(MHz) (dBμV/m) (dB) (dBμV/m) 2389.95 61.08 -12.92 74 ! 2389.82 47.97 -6.03 54 * 2418 105.05 - - * 2418 96.62 - - 2389.95 61.09 -12.91 74 ! 2389.95 48.13 -5.87 54 * 2420 103.69 - -	(MHz) (dBμV/m) (dB) (dBμV/m) (dBμV/m) (dBμV/m) 2389.95 61.08 -12.92 74 65.63 ! 2389.82 47.97 -6.03 54 52.52 * 2418 105.05 - - 109.45 * 2418 96.62 - - 101.02 2389.95 61.09 -12.91 74 65.64 ! 2389.95 48.13 -5.87 54 52.68 * 2420 103.69 - - 107.94	(MHz) (dBμV/m) (dB) (dBμV/m) (dBμV/m) (dBμV) (dBμV) 2389.95 61.08 -12.92 74 65.63 27 ! 2389.82 47.97 -6.03 54 52.52 27 * 2418 105.05 - - 109.45 27.13 * 2418 96.62 - - 101.02 27.13 2389.95 61.09 -12.91 74 65.64 27 ! 2389.95 48.13 -5.87 54 52.68 27 * 2420 103.69 - - 107.94 27.26	(MHz) (dBμV/m) (dB) (dBμV/m) (dBμV) (dB/m) (dB) 2389.95 61.08 -12.92 74 65.63 27 5.47 ! 2389.82 47.97 -6.03 54 52.52 27 5.47 * 2418 105.05 - - 109.45 27.13 5.47 * 2418 96.62 - - 101.02 27.13 5.47 2389.95 61.09 -12.91 74 65.64 27 5.47 ! 2389.95 48.13 -5.87 54 52.68 27 5.47 * 2420 103.69 - - 107.94 27.26 5.48	(MHz) (dBμV/m) (dB) (dBμV/m) (dBμV) (dB/m) (dB) (dB) 2389.95 61.08 -12.92 74 65.63 27 5.47 37.02 ! 2389.82 47.97 -6.03 54 52.52 27 5.47 37.02 * 2418 105.05 - - 109.45 27.13 5.47 37 * 2418 96.62 - - 101.02 27.13 5.47 37 2389.95 61.09 -12.91 74 65.64 27 5.47 37.02 ! 2389.95 48.13 -5.87 54 52.68 27 5.47 37.02 * 2420 103.69 - - 107.94 27.26 5.48 36.99	(MHz) (dBμV/m) (dB) (dBμV/m) (dBμV) (dB/m) (dB) (dB) (cm) 2389.95 61.08 -12.92 74 65.63 27 5.47 37.02 203 ! 2389.82 47.97 -6.03 54 52.52 27 5.47 37.02 203 * 2418 105.05 - - 109.45 27.13 5.47 37 203 * 2418 96.62 - - 101.02 27.13 5.47 37 203 2389.95 61.09 -12.91 74 65.64 27 5.47 37.02 100 ! 2389.95 48.13 -5.87 54 52.68 27 5.47 37.02 100 * 2420 103.69 - - 107.94 27.26 5.48 36.99 100	(MHz) (dBμV/m) (dBμV/m) (dBμV) (dB/m) (dB) (dB) (cm) (deg) 2389.95 61.08 -12.92 74 65.63 27 5.47 37.02 203 147 ! 2389.82 47.97 -6.03 54 52.52 27 5.47 37.02 203 147 * 2418 105.05 - - 109.45 27.13 5.47 37 203 147 * 2418 96.62 - - 101.02 27.13 5.47 37 203 147 2389.95 61.09 -12.91 74 65.64 27 5.47 37.02 100 62 ! 2389.95 48.13 -5.87 54 52.68 27 5.47 37.02 100 62 * 2420 103.69 - - 107.94 27.26 5.48 36.99 100 62	(MHz) (dBμV/m) (dB) (dBμV/m) (dBμV/m) (dBμV) (dB/m) (dB) (dB) (cm) (deg) (P/A) 2389.95 61.08 -12.92 74 65.63 27 5.47 37.02 203 147 P ! 2389.82 47.97 -6.03 54 52.52 27 5.47 37.02 203 147 A * 2418 105.05 - - 109.45 27.13 5.47 37 203 147 P * 2418 96.62 - - 101.02 27.13 5.47 37 203 147 A * 2389.95 61.09 -12.91 74 65.64 27 5.47 37.02 100 62 P ! 2389.95 48.13 -5.87 54 52.68 27 5.47 37.02 100 62 A * 2420 103.69 -

Remark

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^{1.} No other spurious found.

^{2.} All results are PASS against Peak and Average limit line.

2.4GHz 2400~2483.5MHz

WIFI 802.11g (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11g		4824	41.75	-32.25	74	39.2	31.51	7.72	36.68	100	360	Р	Н
CH 01 2412MHz		4824	41.95	-32.05	74	39.4	31.51	7.72	36.68	100	360	Р	٧

Remark

1. No other spurious found.

2. All results are PASS against Peak and Average limit line.

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2.4GHz 2400~2483.5MHz

Emission below 1GHz

2.4GHz WIFI 802.11g (LF)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		31.94	18.88	-21.12	40	32.43	18.32	0.68	32.55	105	197	Р	Н
		45.52	16.69	-23.31	40	36.24	12.22	0.83	32.6	-	-	Р	Н
		111.48	18.02	-25.48	43.5	35.8	13.26	1.28	32.32	-	-	Р	Н
		216.24	16.75	-29.25	46	35.84	11.52	1.73	32.34	-	-	Р	Н
		463.59	19.06	-26.94	46	30.91	17.64	2.68	32.17	-	-	Р	Н
2.4GHz		764.29	23.64	-22.36	46	30.86	21.06	3.5	31.78	-	-	Р	Н
802.11g LF		32.91	28.78	-11.22	40	42.43	18.18	0.69	32.52	199	47	Р	V
LF		45.52	25.81	-14.19	40	45.36	12.22	0.83	32.6	-	-	Р	V
		110.51	19.56	-23.94	43.5	37.35	13.25	1.27	32.31	-	-	Р	V
		168.71	20.39	-23.11	43.5	38.62	12.65	1.57	32.45	-	-	Р	V
		288.02	19.19	-26.81	46	34.85	14.5	2.04	32.2	-	-	Р	V
		323.91	21.26	-24.74	46	35.96	15.33	2.21	32.24	-	-	Р	V
						,	,		•		•		

Remark

1. No other spurious found.

2. All results are PASS against limit line.

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Note symbol

*	Fundamental Frequency which can be ignored. However, the level of any
	unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is over limit line.
P/A	Peak or Average
H/V	Horizontal or Vertical

SPORTON INTERNATIONAL (KUNSHAN) INC.

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A calculation example for radiated spurious emission is shown as below:

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WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dB _µ V)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	Р	Н
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	Α	Н

1. Level($dB\mu V/m$) =

Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBµV) - Preamp Factor(dB)

2. Over Limit(dB) = Level(dB μ V/m) – Limit Line(dB μ V/m)

For Peak Limit @ 2390MHz:

- 1. Level(dBµV/m)
- = Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBµV) Preamp Factor(dB)
- $= 32.22(dB/m) + 4.58(dB) + 54.51(dB\mu V) 35.86 (dB)$
- $= 55.45 (dB\mu V/m)$
- 2. Over Limit(dB)
- = Level(dBµV/m) Limit Line(dBµV/m)
- $= 55.45(dB\mu V/m) 74(dB\mu V/m)$
- = -18.55(dB)

For Average Limit @ 2390MHz:

- 1. Level(dBµV/m)
- = Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBµV) Preamp Factor(dB)
- $= 32.22(dB/m) + 4.58(dB) + 42.6(dB\mu V) 35.86 (dB)$
- $= 43.54 (dB\mu V/m)$
- 2. Over Limit(dB)
- = Level($dB\mu V/m$) Limit Line($dB\mu V/m$)
- $= 43.54(dB\mu V/m) 54(dB\mu V/m)$
- = -10.46(dB)

Both peak and average measured complies with the limit line, so test result is "PASS".

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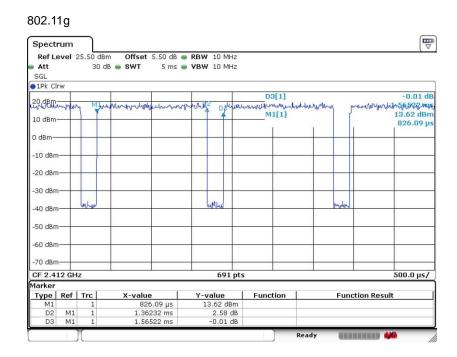
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Appendix B. Duty Cycle Plots

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting	
802.11g	87.04	1.36	0.73	1kHz	



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Appendix D. Product Equality Declaration

SPORTON INTERNATIONAL (KUNSHAN) INC.

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Report No.: FR691407C

Lenovo Mobile Communication Technology Ltd.

No.999, Qishan North 2nd Road, Information & Optoelectronics Park, Torch Hi-tech Industry Development Zone, Xiamen, P.R.China

Tel: 86-10-58866181; Fax: 86-10-56720293

Date: October 26, 2016

Product Equality Declaration

We, Lenovo Mobile Communication Technology Ltd., declare on our sole responsibility for the product of Lenovo K53b36 (Dual Sim) & Lenovo K53b37(Single Sim) as below:

The differences between Lenovo K53b36 (Dual Sim) & Lenovo K53b37(Single Sim) and previous as below:

Object		1 st Source spec (G5. 5)	2 nd Source spec (G6. 0)		
	The BLU code is not consistent	Item number code for TL055VDXP64-00	Item number code for TL055VDMP02-00		
	BLU protective film color	wathet	carmine		
LCD	FPC shape difference	Bonding pad in FPC LCM appearance shape distance is 1 . 72 , welding positioning hole is circular	Bonding pad in FPC LCM appearance shape distance is 2 . 52 , the welding location hole for semicircle		
LCD	FPC jet printing on Mark is not consistent	sprinkle TL055VDXP64-00-FPC1	sprinkle TL055VDMP02-00-FPC1		
	Glass border is not the same	1.0border	0.8border		
	IC difference	Нх8399с	NT35596		

And also the variant test $(2^{nd} \ Source)$ reduces WCDMA Band $\ II$ power level comparing with the original test $(2^{nd} \ Source)$.

Except listings above, the others are all the same.

Should you have any questions or comments regarding this matter, please have my best attention.

Sincerely yours,

Weiting Sun

Contact Person: Sun weiting

COMPANY: Lenovo Mobile Communication Technology Ltd.

Tel: 86-10-58866181 Fax: 86-10-57874529

E-Mail: sunwt1@lenovo.com