



# FCC RF Test Report

**APPLICANT** : Lenovo(Shanghai) Electronics Technology Co., Ltd.  
**EQUIPMENT** : Portable Tablet Computer  
**BRAND NAME** : Lenovo  
**MODEL NAME** : Lenovo YB1-X90L  
**FCC ID** : O57YB1X90L1  
**STANDARD** : 47 CFR Part 2, 22(H), 24(E), 27(L), 27(M), 27(H)  
**CLASSIFICATION** : PCS Licensed Transmitter (PCB)

This is a data re-used report which is only valid together with the original test report. The product was received on Jan. 06, 2017 and completely tested on Mar. 22, 2017. We, Sporton International (KunShan) INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA / EIA-603-D-2010 and the testing has shown the tested sample to be 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

Approved by: Jones Tsai / Manager



**Sporton International (KunShan) INC.**  
**No.3-2, Pingxiang Road, Kunshan Development Zone, Jiangsu, China**



TABLE OF CONTENTS

1 GENERAL DESCRIPTION .....5
1.1 Applicant .....5
1.2 Manufacturer .....5
1.3 Product Feature of Equipment Under Test.....5
1.4 Product Specification of Equipment Under Test.....6
1.5 Component List.....6
1.6 Modification of EUT .....6
1.7 Maximum ERP Power.....7
1.8 Testing Location .....8
1.9 Applicable Standards.....8
1.10 Re-use of Measured Data .....9
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST ..... 10
2.1 Test Mode ..... 10
2.2 Connection Diagram of Test System ..... 11
2.3 Support Unit used in test configuration and system ..... 11
2.4 Frequency List of Low/Middle/High Channels ..... 12
3 RADIATED TEST ITEMS ..... 13
3.1 Measuring Instruments ..... 13
3.2 Test Setup ..... 13
3.3 Test Result of Radiated Test ..... 13
3.4 Effective Radiated Power ..... 14
3.5 Radiated Spurious Emission ..... 16
4 LIST OF MEASURING EQUIPMENT ..... 17
5 UNCERTAINTY OF EVALUATION ..... 18
APPENDIX A. TEST RESULTS OF RADIATED TEST
APPENDIX B. TEST SETUP PHOTOGRAPHS
APPENDIX C. REFERENCE REPORT





### SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§27.50(c)(10)	Effective Radiated Power (Band 12) (Band 17)	ERP < 3 Watt	PASS	-
3.5	§27.53(g)	Radiated Spurious Emission (Band 12) (Band 17)	< 43+10log <sub>10</sub> (P[Watts])	PASS	Under limit 27.45 dB at 2116.000 MHz



# 1 General Description

## 1.1 Applicant

Lenovo(Shanghai) Electronics Technology Co., Ltd.

NO.68 BUILDING, 199 FENJU RD., China (Shanghai) Pilot Free Trade Zone, 200131, CHINA

## 1.2 Manufacturer

Lenovo PC HK Limited

23/F, Lincoln House, Taikoo Place 979 King's Road, Quarry Bay, Hong Kong

## 1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Portable Tablet Computer
Brand Name	Lenovo
Model Name	Lenovo YB1-X90L
FCC ID	O57YB1X90L1
EUT supports Radios application	GPRS/EGPRS/WCDMA/HSPA/DC-HSDPA/ HSPA+(16QAM uplink is not supported)/LTE/ WLAN2.4GHz 802.11b/g/n HT20/ WLAN5GHz 802.11a/n HT20/HT40/ WLAN5GHz 802.11ac VHT20/VHT40/VHT80/ Bluetooth v3.0+EDR/Bluetooth v4.0 LE
IMEI Code	Radiation: 868672020083264 ERP: 868672020083553
HW Version	Lenovo YB1-X90L
SW Version	YB1-X90L_170110
EUT Stage	Identical Prototype



### 1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
<b>Tx Frequency</b>	LTE Band 2 : 1850.7 MHz ~ 1909.3 MHz LTE Band 4 : 1710.7 MHz ~ 1754.3 MHz LTE Band 5 : 824.7 MHz ~ 848.3 MHz LTE Band 7 : 2502.5 MHz ~ 2567.5 MHz LTE Band 12 : 699.7 MHz ~ 715.3 MHz LTE Band 17 : 706.5 MHz ~ 713.5 MHz LTE Band 25 : 1850.7MHz ~ 1914.3 MHz LTE Band 38 : 2572.5MHz ~ 2617.5MHz
<b>Rx Frequency</b>	LTE Band 2 : 1930.7 MHz ~ 1989.3 MHz LTE Band 4 : 2110.7 MHz ~ 2154.3 MHz LTE Band 5 : 869.7 MHz ~ 893.3 MHz LTE Band 7 : 2622.5MHz ~ 2687.5 MHz LTE Band 12 : 729.7 MHz ~ 745.3 MHz LTE Band 17 : 736.5 MHz ~ 743.5 MHz LTE Band 25 : 1930.7MHz ~ 1994.3 MHz LTE Band 38 : 2572.5MHz ~ 2617.5MHz
<b>Bandwidth</b>	LTE Band 2 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 4 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 5 : 1.4MHz / 3MHz / 5MHz / 10MHz LTE Band 7 : 5MHz / 10MHz / 15MHz / 20MHz LTE Band 12 : 1.4MHz / 3MHz / 5MHz / 10MHz LTE Band 17 : 5MHz / 10MHz LTE Band 25 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 38 : 5MHz / 10MHz / 15MHz / 20MHz
<b>Antenna Type</b>	PIFA Antenna
<b>Type of Modulation</b>	QPSK / 16QAM

### 1.5 Component List

Object	Sample 1	Sample 2
<b>Flash</b>	Toshiba : THGBMFG9C4LBAIR	Toshiba : THGBMFG9C4LBAIR
<b>LCD</b>	AUO : B101UAN07.1;10.1;IPS1200x1920MIPI;2.5	AUO : B101UAN07.1;10.1;IPS1200x1920MIPI;2.5
<b>TP</b>	GIS : TP_GFF_GIS/TC101GFL11 V.A	GIS : TP_GFF_GIS/TC101GFL11 V.A
<b>Front Camera</b>	Primax : CCM L202V 2M OV2740 COB 24PIN BtoB	Ofilm : CCM L2740F00 2M OV2740 COB 24PIN BtoB
<b>USB Cable</b>	Saibao	Saibao

### 1.6 Modification of EUT

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



### 1.7 Maximum ERP Power

LTE Band 12	QPSK	16QAM
BW(MHz)	Maximum ERP(W)	Maximum ERP(W)
1.4	0.0851	0.0787
3	0.0841	0.0728
5	0.0807	0.0741
10	0.0817	0.0759
LTE Band 17	QPSK	16QAM
BW(MHz)	Maximum ERP(W)	Maximum ERP(W)
5	0.0813	0.0746
10	0.0830	0.0774



### 1.8 Testing Location

<b>Test Site</b>	Sporton International (KunShan) INC.	
<b>Test Site Location</b>	No.3-2, Pingxiang Road, Kunshan Development Zone, Jiangsu, China TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958	
<b>Test Site No.</b>	<b>Sporton Site No.</b>	<b>FCC Registration No.</b>
	03CH03-KS	306251

### 1.9 Applicable Standards

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

- ♦ 47 CFR Part 2, 22(H), 24(E), 27(L), 27(M), 27(H)
- ♦ ANSI / TIA / EIA-603-D-2010
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v02r02

**Remark:**

1. 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.



## 1.10 Re-use of Measured Data

### 1.9.1 Introduction Section

This application re-uses data collected on a similar device. The subject device of this application (Model: Lenovo YB1-X90L, FCC ID: O57YB1X90L1) is electrically identical to the reference device (Model: Lenovo YB1-X90L, FCC ID: O57YB1X90L) for the portions of the circuitry corresponding to the data being re-used, as treated by KDB Publication 178919 D01.

### 1.9.2 Difference Section

For details concerning the similarity with respect to component placement, mechanical/electrical design etc., please refer to the Operational Description.

The re-used RF data includes the following bands provided in Appendix C (Sporton RF Report No. FG662015B for the reference device Model: Lenovo YB1-X90L, FCC ID: O57YB1X90L):

### 1.9.3 Spot Check Verification Data Section

In order to confirm hardware similarity of the subject device with the reference device, spot check measurements were performed on the subject device for radiated spurious emission, Conducted Band-edge and Conducted spurious emission, the test result were consistent with FCC ID: O57YB1X90L and re-test ERP and radiated spurious emission of LTE Band 12/17.

Assertions concerning the similarity of these devices are based on representations by the applicant. The applicant accepts full responsibility for the validity of the similarity claim, and for the determination that verification test data are sufficient to support it.

### 1.9.4 Reference detail Section:

Equipment Class	Reference FCC ID	Folder Test/RF Exposure	Report Title/Section
PCB (LTE)	O57YB1X90L	Part22H.24E.27L.27M.27H (FG662015B)	All sections applicable except for ERP and radiated spurious emission of LTE Band 12/17



## 2 Test Configuration of Equipment Under Test

### 2.1 Test Mode

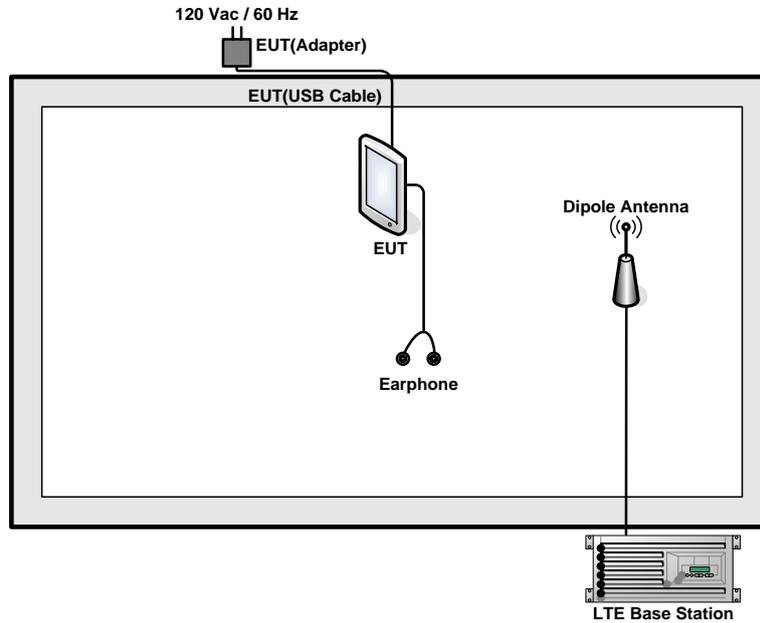
Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v02r02 with maximum output power.

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes to find the maximum emission.

Test Items	Band	Bandwidth (MHz)						Modulation		RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
E.R.P.	12	Y	Y	Y	Y	-	-	Y	Y	Y	Y		Y	Y	Y
	17	-	-	Y	Y	-	-	Y	Y	Y			Y	Y	Y
Radiated Spurious Emission	12	Y	Y	Y	Y	-	-	Y		Y				Y	
	17	-	-	Y	Y	-	-	Y		Y				Y	
Note	<ol style="list-style-type: none"> <li>The mark "Y" means that this configuration is chosen for testing</li> <li>The mark "-" means that this bandwidth is not supported.</li> <li>The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.</li> </ol>														

## 2.2 Connection Diagram of Test System

For LTE Band 12 / 17



## 2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	LTE Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	Earphone	Lenovo	SH100	N/A	Unshielded, 1.2m	N/A



## 2.4 Frequency List of Low/Middle/High Channels

LTE Band 12 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
10	Channel	23060	23095	23130
	Frequency	704	707.5	711
5	Channel	23035	23095	23155
	Frequency	701.5	707.5	713.5
3	Channel	23025	23095	23165
	Frequency	700.5	707.5	714.5
1.4	Channel	23017	23095	23173
	Frequency	699.7	707.5	715.3

LTE Band 17 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
10	Channel	23780	23790	23800
	Frequency	709	710	711
5	Channel	23755	23790	23825
	Frequency	706.5	710	713.5

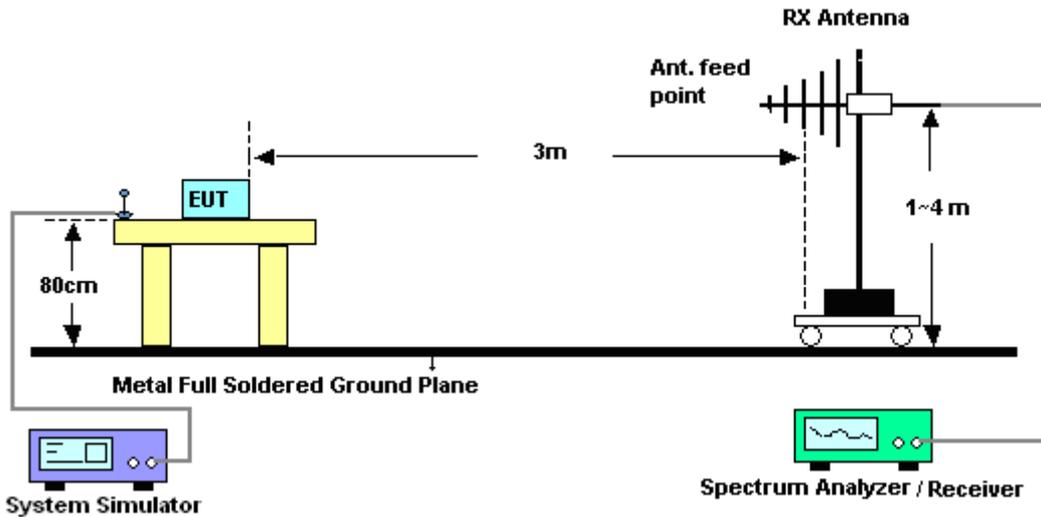
### 3 Radiated Test Items

#### 3.1 Measuring Instruments

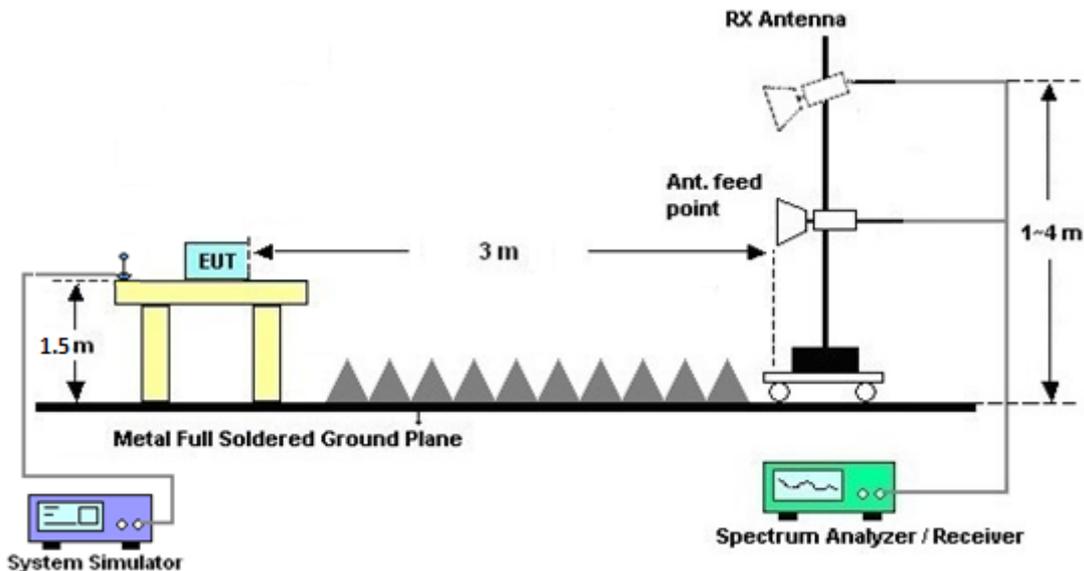
See list of measuring instruments of this test report.

#### 3.2 Test Setup

##### 3.2.1 For radiated test from 30MHz to 1GHz



##### 3.2.2 For radiated test above 1GHz



### 3.3 Test Result of Radiated Test

Please refer to Appendix A.



## 3.4 Effective Radiated Power

### 3.4.1 Description of the ERP Measurement

Effective radiated power output measurements by substitution method according to ANSI / TIA / EIA-603-D-2010, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas. License Digital Systems v02r02. Mobile and portable (hand-held) stations operating are limited to average ERP of 3 watts with LTE band 12 / 17.

### 3.4.2 Test Procedures

1. The EUT was placed on a non-conductive rotating platform (0.8 meters for frequency below 1GHz and 1.5 meter for frequency above 1GHz) in a semi-anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer with RMS detector per section 5. of KDB 971168 D01.
2. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power. The maximum emission was recorded from analyzer power level (LVL) from the 360 degrees rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations.
3. Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to TIA/EIA-603-D. The EUT was replaced by the substitution antenna at same location, and then a known power from S.G. was applied into the dipole antenna through a Tx cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna. The correction factor (in dB) = S.G. - Tx Cable loss + Substitution antenna gain - Analyzer reading. Then the EUT's EIRP was calculated with the correction factor,  $EIRP = LVL + \text{Correction factor}$  and  $ERP = EIRP - 2.15$ . Take the record of the output power at substitution antenna.



	LTE Average					
LTE BW	1.4M	3M	5M	10M	15M	20M
Span	3MHz	6MHz	10MHz	20MHz	30MHz	40MHz
RBW	30kHz	100kHz	100kHz	300kHz	300kHz	300kHz
VBW	100kHz	300kHz	300kHz	1MHz	1MHz	1MHz
Detector	RMS	RMS	RMS	RMS	RMS	RMS
Trace	Average	Average	Average	Average	Average	Average
Average Type	Power	Power	Power	Power	Power	Power
Sweep Count	100	100	100	100	100	100



### 3.5 Radiated Spurious Emission

#### 3.5.1 Description of Radiated Spurious Emission

The radiated spurious emission was measured by substitution method according to ANSI / TIA / EIA-603-D-2010. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least  $43 + 10 \log (P)$  dB.

For LTE Band 12,17

For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to  $-70$  dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and  $-80$  dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

#### 3.5.2 Test Procedures

1. The testing follows FCC KDB 971168 v02r02 Section 5.8 and ANSI / TIA-603-D-2010 Section 2.2.12.
2. The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
5. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
7. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
9. Taking the record of output power at antenna port.
10. Repeat step 7 to step 8 for another polarization.
11. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

The limit line is derived from  $43 + 10\log(P)$ dB below the transmitter power P(Watts)  
= P(W)- [43 + 10log(P)] (dB)  
= [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)  
= -13dBm.

12. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
13. ERP (dBm) = EIRP - 2.15



## 4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz~44GHz	Apr. 22, 2016	Mar. 22, 2017	Apr. 21, 2017	Radiation (03CH03-KS)
Bilog Antenna	TeseQ	CBL6112D	35406	25MHz~2GHz	Apr. 16, 2016	Mar. 22, 2017	Apr. 15, 2017	Radiation (03CH03-KS)
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1356	1GHz~18GHz	Apr. 16, 2016	Mar. 22, 2017	Apr. 15, 2017	Radiation (03CH03-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz~40GHz	Feb. 15, 2017	Mar. 22, 2017	Feb. 14, 2018	Radiation (03CH03-KS)
Amplifier	SONOMA	310N	187289	9kHz~1GHz	Aug. 09, 2016	Mar. 22, 2017	Aug. 08, 2017	Radiation (03CH03-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Oct. 13, 2016	Mar. 22, 2017	Oct. 12, 2017	Radiation (03CH03-KS)
Amplifier	MITEQ	TTA1840-35-HG	1887435	18GHz~40GHz	Oct. 13, 2016	Mar. 22, 2017	Oct. 12, 2017	Radiation (03CH03-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Mar. 22, 2017	NCR	Radiation (03CH03-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Mar. 22, 2017	NCR	Radiation (03CH03-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Mar. 22, 2017	NCR	Radiation (03CH03-KS)

NCR: No Calibration Required



## 5 Uncertainty of Evaluation

### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	2.8dB
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### Uncertainty of Radiated Emission Measurement (1GHz ~ 40GHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	3.3dB
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## Appendix A. Test Results of Radiated Test

### ERP

LTE Band 12 / 1.4MHz (Average)							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	ERP(dBm)	ERP(W)	ERP(dBm)	ERP(W)
Lowest	QPSK	3	1	18.96	0.0787	19.30	0.0851
Middle		3	3	18.68	0.0738	19.23	0.0838
Highest		3	3	18.44	0.0698	19.29	0.0849
Lowest	16QAM	1	3	17.80	0.0603	18.05	0.0638
Middle		1	3	18.16	0.0655	18.96	0.0787
Highest		1	0	17.97	0.0627	18.95	0.0785
Limit	ERP < 3W			Result		PASS	

LTE Band 12 / 3MHz (Average)							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	ERP(dBm)	ERP(W)	ERP(dBm)	ERP(W)
Lowest	QPSK	1	8	18.72	0.0745	18.96	0.0787
Middle		1	14	18.61	0.0726	19.03	0.0800
Highest		1	14	18.48	0.0705	19.25	0.0841
Lowest	16QAM	1	8	18.38	0.0689	18.45	0.0700
Middle		1	14	18.07	0.0641	18.51	0.0710
Highest		1	8	18.02	0.0634	18.62	0.0728
Limit	ERP < 3W			Result		PASS	



LTE Band 12 / 5MHz (Average)							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	ERP(dBm)	ERP(W)	ERP(dBm)	ERP(W)
Lowest	QPSK	1	12	18.60	0.0724	18.99	0.0793
Middle		1	12	18.48	0.0705	18.96	0.0787
Highest		1	12	18.81	0.0760	19.07	0.0807
Lowest	16QAM	1	12	18.39	0.0690	18.50	0.0708
Middle		1	12	18.12	0.0649	18.70	0.0741
Highest		1	12	17.89	0.0615	18.51	0.0710
Limit	ERP < 3W			Result		PASS	

LTE Band 12 / 10MHz (Average)							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	ERP(dBm)	ERP(W)	ERP(dBm)	ERP(W)
Lowest	QPSK	1	25	18.24	0.0667	19.12	0.0817
Middle		1	25	18.47	0.0703	19.03	0.0800
Highest		1	25	18.51	0.0710	19.08	0.0809
Lowest	16QAM	1	0	18.12	0.0649	18.44	0.0698
Middle		1	49	18.17	0.0656	18.47	0.0703
Highest		1	25	18.04	0.0637	18.80	0.0759
Limit	ERP < 3W			Result		PASS	



LTE Band 17 / 5MHz (Average)							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	ERP(dBm)	ERP(W)	ERP(dBm)	ERP(W)
Lowest	QPSK	1	12	18.31	0.0678	18.95	0.0785
Middle		1	12	18.45	0.0700	19.00	0.0794
Highest		1	12	18.65	0.0733	19.10	0.0813
Lowest	16QAM	1	12	18.06	0.0640	18.73	0.0746
Middle		1	12	18.14	0.0652	18.29	0.0675
Highest		1	12	17.94	0.0622	18.36	0.0685
Limit	ERP < 3W			Result		PASS	

LTE Band 17 / 10MHz (Average)							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	ERP(dBm)	ERP(W)	ERP(dBm)	ERP(W)
Lowest	QPSK	1	25	18.64	0.0731	18.97	0.0789
Middle		1	25	18.62	0.0728	19.19	0.0830
Highest		1	25	18.56	0.0718	19.10	0.0813
Lowest	16QAM	1	25	18.24	0.0667	18.89	0.0774
Middle		1	25	17.98	0.0628	18.62	0.0728
Highest		1	25	18.02	0.0634	18.71	0.0743
Limit	ERP < 3W			Result		PASS	



### Radiated Spurious Emission

LTE Band 12 / 1.4MHz / QPSK / RB Size 1 Offset 0									
Channel	Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading (dBm)	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1414	-66.32	-13	-53.32	-62.16	-67.22	1.14	4.19	H
	2120	-42.93	-13	-29.93	-48.78	-44.39	1.4	5.01	H
	2828	-66.43	-13	-53.43	-67.07	-68.96	1.63	6.31	H
	1414	-67.74	-13	-54.74	-62.61	-68.64	1.14	4.19	V
	2120	-51.48	-13	-38.48	-53.61	-52.94	1.4	5.01	V
	2828	-64.63	-13	-51.63	-66.75	-67.16	1.63	6.31	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

LTE Band 12 / 3MHz / QPSK / RB Size 1 Offset 0									
Channel	Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading (dBm)	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1412	-66.86	-13	-53.86	-62.70	-67.76	1.14	4.19	H
	2118	-41.63	-13	-28.63	-47.78	-43.09	1.4	5.01	H
	2824	-67.43	-13	-54.43	-68.07	-69.96	1.63	6.31	H
	1412	-67.68	-13	-54.68	-62.55	-68.58	1.14	4.19	V
	2118	-48.76	-13	-35.76	-51.85	-50.22	1.4	5.01	V
	2824	-65.04	-13	-52.04	-67.16	-67.57	1.63	6.31	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



LTE Band 12 / 5MHz / QPSK / RB Size 1 Offset 0									
Channel	Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading (dBm)	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1410	-65.25	-13	-52.25	-61.09	-66.15	1.14	4.19	H
	2116	-44.07	-13	-31.07	-49.87	-45.53	1.4	5.01	H
	2822	-67.41	-13	-54.41	-68.05	-69.94	1.63	6.31	H
	1410	-66.57	-13	-53.57	-61.44	-67.47	1.14	4.19	V
	2116	-48.54	-13	-35.54	-51.7	-50.00	1.4	5.01	V
	2822	-64.64	-13	-51.64	-66.76	-67.17	1.63	6.31	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

LTE Band 12 / 10MHz / QPSK / RB Size 1 Offset 0									
Channel	Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading (dBm)	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1406	-64.98	-13	-51.98	-60.82	-65.88	1.14	4.19	H
	2108	-45.44	-13	-32.44	-50.86	-46.90	1.4	5.01	H
	2812	-66.88	-13	-53.88	-67.52	-69.41	1.63	6.31	H
	1406	-65.98	-13	-52.98	-60.85	-66.88	1.14	4.19	V
	2108	-50.41	-13	-37.41	-52.91	-51.87	1.4	5.01	V
	2812	-64.97	-13	-51.97	-67.09	-67.50	1.63	6.31	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



LTE Band 17 / 5MHz / QPSK / RB Size 1 Offset 0									
Channel	Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading (dBm)	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1416	-69.38	-13	-56.38	-65.22	-70.28	1.14	4.19	H
	2124	-52.84	-13	-39.84	-55.75	-54.30	1.4	5.01	H
	2832	-66.93	-13	-53.93	-67.57	-69.46	1.63	6.31	H
	1416	-69.13	-13	-56.13	-64	-70.03	1.14	4.19	V
	2122	-55.60	-13	-42.60	-55.96	-57.06	1.4	5.01	V
	2832	-65.31	-13	-52.31	-67.43	-67.84	1.63	6.31	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

LTE Band 17 / 10MHz / QPSK / RB Size 1 Offset 0									
Channel	Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading (dBm)	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1410	-63.38	-13	-50.38	-59.22	-64.28	1.14	4.19	H
	2116	-40.45	-13	-27.45	-46.78	-41.91	1.4	5.01	H
	2822	-66.37	-13	-53.37	-67.01	-68.90	1.63	6.31	H
	1410	-66.69	-13	-53.69	-61.56	-67.59	1.14	4.19	V
	2116	-45.68	-13	-32.68	-49.53	-47.14	1.4	5.01	V
	2822	-64.03	-13	-51.03	-66.15	-66.56	1.63	6.31	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



## **Appendix C. Reference Report**

Please refer to Sporton report number FG662015B which is issued separately.