

FCC Test Report

APPLICANT	: Yulong Computer Telecommunication	
	Scientific (Shenzhen) Co., Ltd.	
EQUIPMENT	: mobile phone	
BRAND NAME	: Coolpad	
MODEL NAME	: Coolpad 3700A	
FCC ID	: R38YL3700A	
STANDARD	: FCC 47 CFR FCC Part 15 Subpart B	
CLASSIFICATION	: Certification	

The product was received on Jul. 29, 2014 and testing was completed on Aug. 30, 2014. We, SPORTON INTERNATIONAL (SHENZHEN) INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI C63.4-2003 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 (SHENZHEN) INC., the test report shall not be reproduced except in full.

Louis Wu

Reviewed by: Louis Wu / Manager

moelsar

Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL (SHENZHEN) INC.

No. 3 Building, the third floor of south, Shahe River west, Fengzeyuan warehouse, Nanshan District, Shenzhen, Guangdong, P.R.C.



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FC472901	Rev. 01	Initial issue of report	Sep. 18, 2014



Report Section	FCC Rule	Description	Limit	Result	Remark
				PASS	Under limit
3.1	15.107	AC Conducted Emission	< 15.107 limits		3.84 dB at
					0.500 MHz
					Under limit
3.2	15.109	Radiated Emission	< 15.109 limits	PASS	4.47 dB at
					31.890 MHz

SUMMARY OF TEST RESULT



1. General Description

1.1. Applicant

Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd.

Coolpad Information Harbor, 2nd Mengxi Road, Northern Part of Science&Technology Park, Nanshan district, Shenzhen, P.R.China

1.2. Manufacturer

Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd.

Coolpad Information Harbor, 2nd Mengxi Road, Northern Part of Science&Technology Park, Nanshan district, Shenzhen, P.R.China

1.3. Product Feature of Equipment Under Test

	Product Feature
Equipment	mobile phone
Brand Name	Coolpad
Model Name	Coolpad 3700A
FCC ID	R38YL3700A
	CDMA/EV-DO/LTE
EUT supports Radios application	WLAN 2.4GHz 802.11b/g/n HT20
	Bluetooth v2.1 + EDR/Bluetooth v4.0 LE
HW Version	P2
SW Version	3700A.OM005
EUT Stage	Pre-Production

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.



1.4.	Product	Specification	subjective	to this st	tandard
		opeenieanen	04.01000.00		

Product Specification subjective to this standard				
Tx Frequency	CDMA2000 BC0 : 824.70 MHz ~ 848.31 MHz CDMA2000 BC1 : 1851.25 MHz ~ 1908.75 MHz LTE Band 13 : 779.5 MHz ~ 784.5 MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz Bluetooth: 2402 MHz ~ 2480 MHz			
Rx Frequency	CDMA2000 BC0 : 869.70 MHz ~ 893.31 MHz CDMA2000 BC1 : 1931.25 MHz ~ 1988.75 MHz LTE Band 13 : 748.5 MHz ~ 753.5 MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz Bluetooth: 2402 MHz ~ 2480 MHz GPS : 1.57542 GHz			
Antenna Type	WWAN : PIFA Antenna LTE : PIFA Antenna WLAN : PIFA Antenna Bluetooth : PIFA Antenna GPS : PIFA Antenna			
Type of Modulation	LTE: QPSK / 16QAM CDMA2000 : QPSK CDMA2000 1xEV-DO : QPSK/8PSK 802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) Bluetooth v4.0 LE : GFSK Bluetooth (1Mbps) : GFSK Bluetooth (2Mbps) : π /4-DQPSK Bluetooth (3Mbps) : 8-DPSK GPS : BPSK			

1.5. Modification of EUT

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



1.6. Test Location

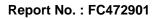
Test Site	SPORTON INTERNATIONAL (SHENZHEN) INC.			
Test Site Location	No. 3 Building, the third floor of south, Shahe River west, Fengzeyuan warehouse, Nanshan District, Shenzhen, Guangdong, P.R.C.			
	TEL: +86-755- 3320-2398			
Tost Site No	Sportor	n Site No.	FCC Registration No.	
Test Site No.	CO01-SZ	03CH01-SZ	831040	

1.7. Applicable Standards

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

- FCC 47 CFR FCC Part 15 Subpart B
- ANSI C63.4-2003

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.





2. Test Configuration of Equipment Under Test

2.1. Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction (150 kHz to 30 MHz), radiation (30MHz to the 5th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

		Test Condition			
ltem	EUT Configuration		EMI RE<1G	EMI RE≥1G	
1.	Charging Mode (EUT with adapter)	\boxtimes	\boxtimes	\boxtimes	
2.	Data application transferred mode (EUT connected with notebook)		\boxtimes		

The following tables are showing the test modes as the worst cases and recorded in this report.

Abbreviations:

- EMI AC: AC conducted emissions
- EMI RE ≥ 1G: EUT radiated emissions ≥ 1GHz
- EMI RE < 1G: EUT radiated emissions < 1GHz



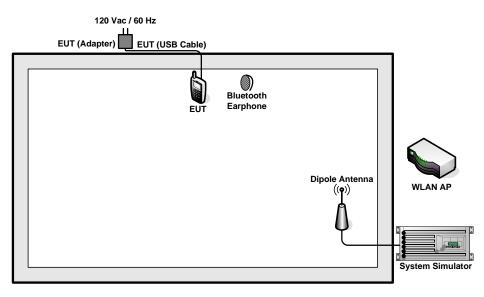
Test Items	EUT Configure Mode	Function Type		
		Mode 1: CDMA850 Idle + Bluetooth Idle + WLAN Idle + USB Cable (Charging from Adapter) + Camera <fig.1></fig.1>		
AC Conducted Emission	1/2	Mode 2: CDMA1900 Idle + Bluetooth Idle + WLAN Idle + USB Cable (Charging from Adapter) + MPEG4 <fig.1></fig.1>		
		Mode 3: LTE Band 13 Idle + Bluetooth Idle + WLAN Idle + USB Cable (Data Link with Notebook) + GPS Rx <fig.2></fig.2>		
	1/2	Mode 1: CDMA850 Idle + Bluetooth Idle + WLAN Idle + USB Cable (Charging from Adapter) + Camera <fig.1></fig.1>		
Radiated Emissions < 1GHz		Mode 2: CDMA1900 Idle + Bluetooth Idle + WLAN Idle + USB Cable (Charging from Adapter) + MPEG4 <fig.1></fig.1>		
		Mode 3: LTE Band 13 Idle + Bluetooth Idle + WLAN Idle + USB Cable (Data Link with Notebook) + GPS Rx <fig.2></fig.2>		
Radiated	5Hz 1/2	Mode 1: CDMA1900 Idle + Bluetooth Idle + WLAN Idle + USB Cable (Charging from Adapter) + MPEG4 <fig.1></fig.1>		
$Emissions \geq 1GHz$		Mode 2: LTE Band 13 Idle + Bluetooth Idle + WLAN Idle + USB Cable (Data Link with Notebook) + GPS Rx <fig.2></fig.2>		
Remark:				
1. The worst	1. The worst case of AC is mode 2, and the USB Link mode of AC is mode 3, the test data of			
these mod	these modes are reported.			
2. The worst	2. The worst case of RE < 1G is mode 2, and the USB Link mode of RE is mode 3, the test data			

of these modes are reported.

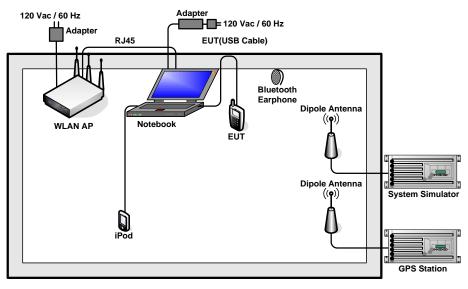
3. Link with Notebook means data application transferred mode between EUT and Notebook.



2.2. Connection Diagram of Test System







<Fig2>



2.3. Support Unit used in test configuration and system

ltem	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
3.	System Simulator(LTE)	Anitsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
4.	GPS Station	ADIVIC	MP9000	N/A	N/A	Unshielded, 1.8 m
5.	GPS Station	T&E	GS-50	N/A	N/A	Unshielded, 1.8 m
						AC I/P:
	Notebook		G480	FCC DoC	N/A	Unshielded, 0.9 m
6.		Lenovo				DC O/P:
						Shielded, 1.8 m
						AC I/P:
						Unshielded, 1.8 m
7.	Notebook	Lenovo	E540	FCC DoC	N/A	DC O/P:
						Shielded, 1.8 m
8.	Bluetooth Earphone	Nokia	BH-108	PYAHS-107W	N/A	N/A
9.	SD Card	SanDisk	4G class 4	FCC DoC	N/A	N/A
10.	iPod	Apple	MC525 ZP/A	FCC DoC	Shielded, 1.0 m	N/A
11.	IPod nano 8GB	Apple	MC690ZP/A	FCC DoC	Shielded, 1.2 m	N/A



2.4. EUT Operation Test Setup

The EUT was in CDMA idle mode during the testing. The EUT was synchronized to the BCCH, and was in continuous receiving mode by setting system simulator's paging reorganization.

At the same time, the EUT was attached to the Bluetooth earphone or WLAN AP, and the following programs installed in the EUT were programmed during the test.

- 1. Data application is transferred between notebook and EUT via USB cable.
- 2. Turn on GPS function to make the EUT receive continuous signals from GPS station.
- 3. Execute "Video player" to play MPEG4 files.
- 4. Turn on camera to capture images.



3. Test Result

3.1. Test of AC Conducted Emission Measurement

3.1.1 Limits of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission	Conducted limit (dBuV)		
(MHz)	Quasi-peak	Average	
0.15-0.5	66 to 56*	56 to 46*	
0.5-5	56	46	
5-30	60	50	

*Decreases with the logarithm of the frequency.

3.1.2 Measuring Instruments

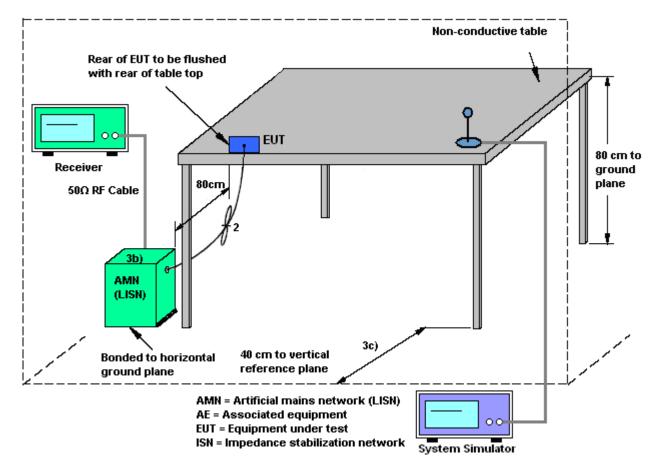
The measuring equipment is listed in the section 4 of this test report.

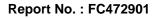
3.1.3 Test Procedure

- 1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- 2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- 3. All the support units are connecting to the other LISN.
- 4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- 5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
- 6. Both sides of AC line were checked for maximum conducted interference.
- 7. The frequency range from 150 kHz to 30 MHz was searched.
- Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.



3.1.4 Test Setup



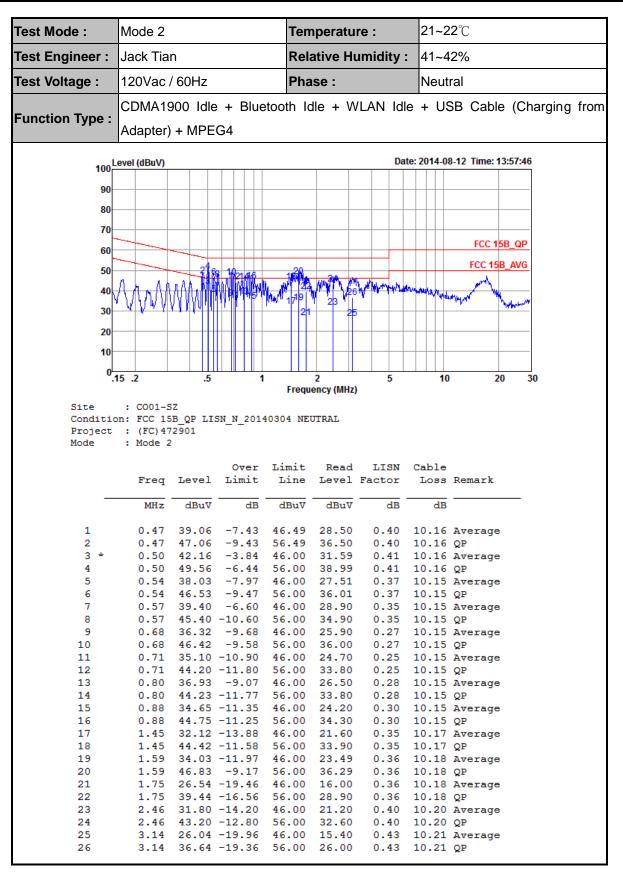




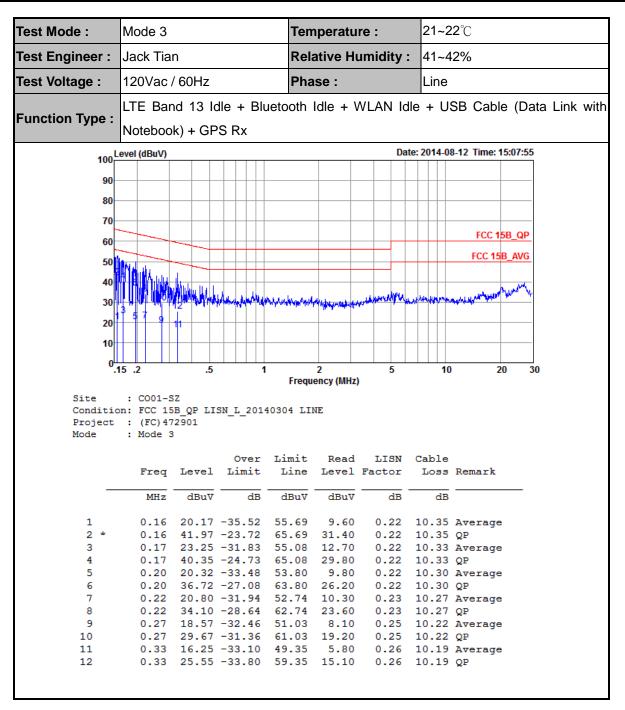
3.1.5 Test Result of AC Conducted Emission

Test Mode :	Mode 2				Temperature :			21~22 ℃		
Test Engineer :	Jack Tian				Relative Humidity :			41~42%		
Test Voltage :	120Vac / 60Hz			Pha	Phase :			Line		
	CDMA19	00 Idle	+ Blue	etooth Io	th Idle + WLAN Idle			+ USB Cable (Charging from		
Function Type :	Adapter)	Adapter) + MPEG4								
100 <mark>L/</mark>	evel (dBuV)	evel (dBuV) Date: 2014-08-12 Time: 14:04:08								
90-										
80-										
70-										
60								FCC 15B_	QP	
-								FCC 15B_A	VG	
50	<u>A</u>		¥ 10							
40	91. A A A A	心心的	N/YYYYW	had a starting	Mr. M	homemory		and all all hallen	her.	
30	VVYP	1 M M Martin		11	<u>м., А</u>	the all second and		ANALIN RAMAN	<u> </u>	
20										
10										
0	5.2	.5	1		2	5	10) 20	30	
	Frequency (MHz)									
Site	: CO01-S									
	Condition: FCC 15B_QP LISN_L_20140304 LINE Project : (FC)472901									
Mode	: Mode 2									
			Over	Limit	Read		Cable			
	Freq	Level	Limit	Line	Level	Factor	Loss	Remark		
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		_	
1	0.17		-22.33		22.20			Average		
2	0.17		-23.23		31.30		10.33			
3 4	0.30		-20.48	50.24 60.24	19.30 28.00		10.20	Average		
± 5 *	0.50		-21.78	46.00	25.00			QF Average		
6	0.50		-12.75	56.00	32.79		10.16	-		
7	0.57		-12.99	46.00	22.61			x- Average		
8	0.57		-14.69			0.25		-		
9	0.80		-15.74		19.90			Average		
10	0.80		-16.94				10.15	QP		
11	1.46		-21.19					Average		
12	1.46	35.81	-20.19	56.00	25.40	0.24	10.17	QP		

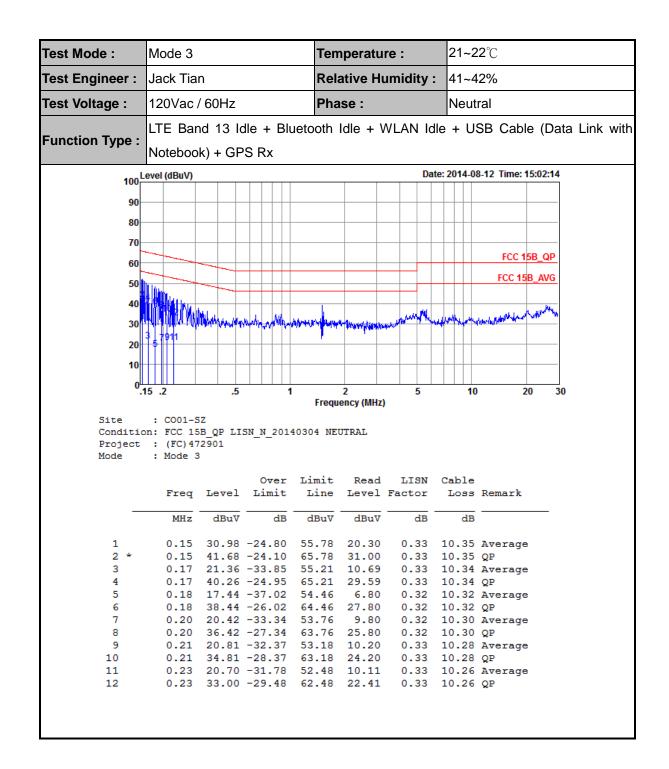


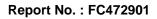














3.2. Test of Radiated Emission Measurement

3.2.1. Limit of Radiated Emission

The emissions from an unintentional radiator shall not exceed the field strength levels specified in the following table:

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

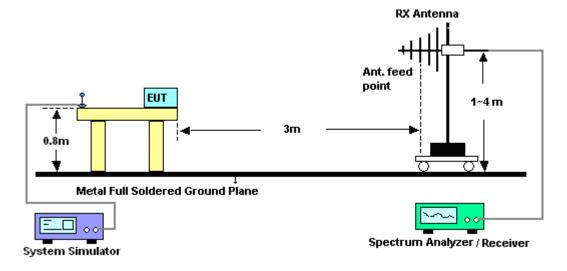
3.2.3. Test Procedures

- 1. The EUT was placed on a turntable with 0.8 meter above ground.
- 2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
- 3. The table was rotated 360 degrees to determine the position of the highest radiation.
- 4. The antenna is a Bi-Log antenna and its height is adjusted between one to four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
- 5. For each suspected emission, 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.
- 6. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
- 7. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, peak values of EUT will be reported. Otherwise, the emission will be repeated by using the quasi-peak method and reported.
- 8. Emission level (dB μ V/m) = 20 log Emission level (μ V/m)
- 9. Corrected Reading: Antenna Factor + Cable Loss + Read Level Preamp Factor = Level

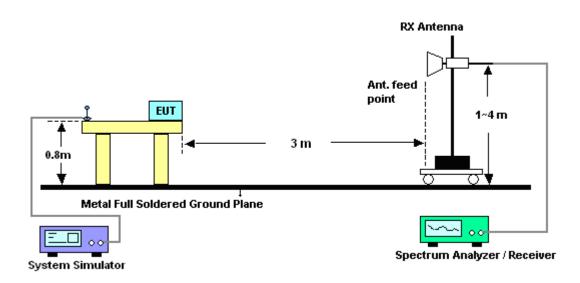


3.2.4. Test Setup of Radiated Emission

For radiated emissions from 30MHz to 1GHz



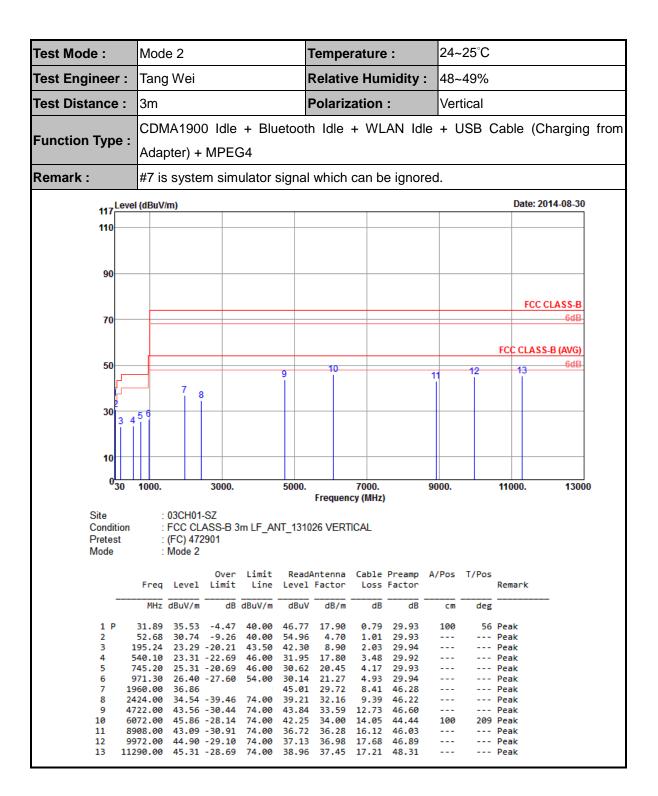
For radiated emissions above 1GHz

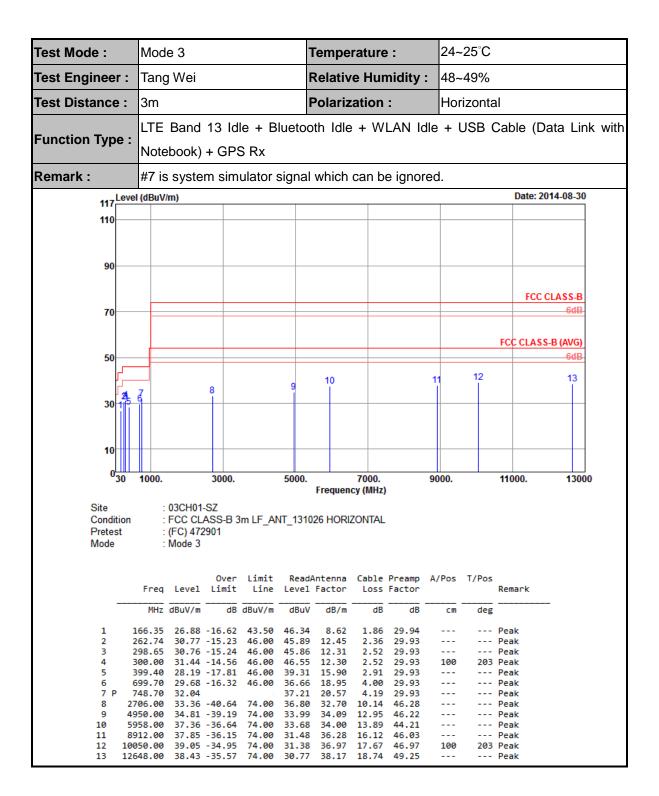


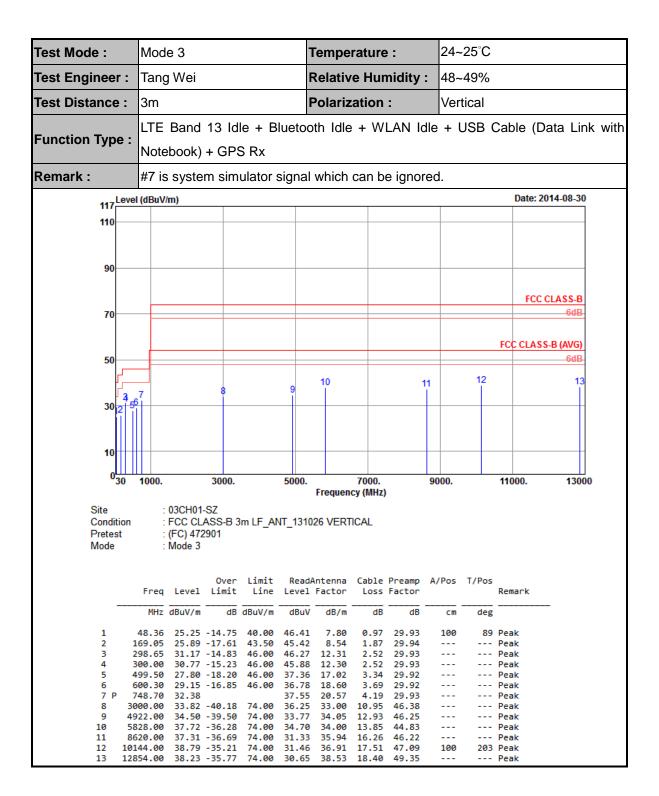


3.2.5. Test Result of Radiated Emission

Test Mode :	Mode 2			1	ſempe	rature	e :	24~	25°C			
Test Engineer :					Relative Humidity :			48~	48~49%			
Test Distance :	Ŭ				Polarization :				Horizontal			
	CDMA190	مالها ٥	т ВШ								Charging	from
Function Type :				elooli	i iule	- VVL		e + C	JSB (Jable (Charging	, nom
	Adapter) +											
Remark :	#7 is syste	m simu	ulator s	signal	which	can b	e ignor	ed.				
117	(dBuV/m)									Date	: 2014-08-30	
110												
90												
50												
								_		FC	C CLASS-B	
70								_			-6dB	
										FCC CLA	SS-B (AVG)	
50	7				10				40		6dB	
		8	9		Ĭ			11	12		13	
ſ												
30 3	56											
10												
0 ₃₀	1000	3000.		5000.		7000		9000.		44000	1200	0
30	1000.	3000.		5000.	Frequen	7000. cy (MHz)	9000.		11000.	1300	U
Site	: 03CH01											
Condition Pretest	: FCC CL : (FC) 472		n LF_AN	1_1310	26 HORI	ZONTAL	-					
Mode	: Mode 2											
	Freq Level	Over	Limit		Antenna Factor		Preamp Factor	A/Pos	T/Pos	Remark		
	MHz dBuV/m		dBuV/m	dBuV	dB/m	dB		Cm	deg			
1 P	35.94 28.13							100	_	Peak		
2	95.88 20.24	-23.26	43.50	38.33	10.44	1.41	29.94			Peak		
	98.21 26.95 87.60 22.63						29.94 29.92			Peak Peak		
5 7	47.30 25.99	-20.01	46.00	31.23	20.51	4.18	29.93			Peak		
	63.60 27.19	-26.81	54.00				29.94 46.28			Peak		
	60.00 46.38 56.00 41.63	-32.37	74.00		29.72 32.57		46.28			Peak Peak		
9 45	00.00 43.90	-30.10	74.00	45.29	33.10	12.50	46.99			Peak		
	34.00 45.95 60.00 42.15							100		Peak Peak		
12 98	66.00 45.02	-28.98	74.00	37.55	36.83	17.39	46.75			Peak		
13 127	04.00 42.32	-31.68	74.00	34.68	38.26	18.65	49.27			Peak		









4. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
ESCIO TEST Receiver	R&S	ESCI	100724	9kHz~3GHz	Feb. 21, 2014	Aug. 12, 2014	Feb. 20, 2015	Conduction (CO01-SZ)
AC LISN	EMCO	3816/2SH	00103912	9kHz~30MHz	Mar. 04, 2014	Aug. 12, 2014	Mar. 03, 2015	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	EMCO	3816/2SH	00103892	9kHz~30MHz	Mar. 04, 2014	Aug. 12, 2014	Mar. 03, 2015	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000891	100Vac~250Vac	Dec. 17, 2013	Aug. 12, 2014	Dec. 16, 2014	Conduction (CO01-SZ)
ESCIO TEST Receiver	R&S	ESCI	100724	9kHz~3GHz	Feb. 21, 2014	Aug. 30, 2014	Feb. 20, 2015	Radiation (03CH01-SZ)
Spectrum Analyzer	Agilent Technologies	N9038A	MY52260185	20Hz~26.5GHz	May 26, 2014	Aug. 30, 2014	May 25, 2015	Radiation (03CH01-SZ)
Bilog Antenna	TESEQ	CBL 6112D	23188	30MHz~2GHz	Oct. 26, 2013	Aug. 30, 2014	Oct. 25, 2014	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS Lindgren	3117	00119436	1GHz~18GHz	Oct. 26, 2013	Aug. 30, 2014	Oct. 25, 2014	Radiation (03CH01-SZ)
Amplifier	ADVANTEST	BB525C	E9007003	9kHz~3000MHz	Feb. 21, 2014	Aug. 30, 2014	Feb. 20, 2015	Radiation (03CH01-SZ)
Amplifier	Yiai	AV3860B	04030	2GHz~26.5GHz	May 08, 2014	Aug. 30, 2014	May 07, 2015	Radiation (03CH01-SZ)
AC Source(AVR)	Chroma	61601	616010001985	100Vac~250Vac	Mar. 25, 2014	Aug. 30, 2014	Mar. 24, 2015	Radiation (03CH01-SZ)
Turn Table	EM Electronics	EM 1000	N/A	0~360 degree	NCR	Aug. 30, 2014	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM Electronics	EM 1000	N/A	1 m~4 m	NCR	Aug. 30, 2014	NCR	Radiation (03CH01-SZ)



5. Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

Measuring Uncertainty for a Level of	2.2
Confidence of 95% (U = 2Uc(y))	2.3

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

Measuring Uncertainty for a Level of	3.0
Confidence of 95% (U = 2Uc(y))	5.5