

Test Report No.: FCC2022-0064-RF7

RF Test Report

EUT : SAGA

MODEL : OV1

BRAND NAME :

APPLICANT : OSOM Products Inc.

Classification Of Test : N/A

CVC Testing Technology Co., Ltd.



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Applicant		Name: OSOM Products Inc. Address: 21701 Stevens Creek Blvd #2270, Cupertino, CA 95015, USA					
Manufacturer			Name: OSOM Products Inc. Address: 21701 Stevens Creek Blvd #2270, Cupertino, CA 95015,				
Equipment Under	Toet	Product Name: SA Model/Type: OV1	GA				
Equipment Under	IESL	Brand Name: Serial NO.: N/A Sample NO.:15-1					
Date of Receipt.		2022.09.13	Date of	e of Testing 2022.09.13~2022.10.2			
Test Sp	ecificati	on Test Result					
47 CFR Part 2, 22(H), 24 ANSI/TIA-603-E, ANSI C RSS 132 issue 3, RSS 133 RSS 139 issue 3, RSS-Gen i		63.26-2015 PASS sissue 6 A1,					
Evaluation of Test Resu	llt	The equipment under test was found to comply with the requirements of the standards applied. Seal of CVC					
Tested by:		Reviewed by:		Approved by:		2022.10.2	
Xu Zhanfei		Linyonghai		Charliner			
Xu ZhenFei Name Signatu Other Aspects: NONE.	ıre	Liu YongH Name	lai Signature	Nan	Chen HuaWe	e n nature	
Abbreviations:OK, Pass= passed	l	Fail = failed N/A= not	applicable	EUT= equ	ipment, sample(s) u	nder tested	

This test report relates only to the EUT, and shall not be reproduced except in full, without written approval of CVC.



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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
FCC2022-0064-RF7	Original release	2022.10.24



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1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

FCC STANDARD SECTION	RSS STANDARD SECTION	TEST TYPE AND LIMIT	LIMIT	Report Section	RESULT
§2.1046	RSS-133(6.3) RSS-139(6.5) RSS-132(5.4)	Conducted power output		Annex A of GJW2022-9358-RF7-A1	Report Only
§22.913(a)(5)	RSS-132(5.4)	Effective Radiated Power (WCDMA B5)	ERP < 7 Watt		
§24.232(c)	RSS-133(6.3)	Equivalent Isotropic Radiated Power (WCDMA B2)	EIRP < 2Watt	Annex A of GJW2022-9358-RF7-A1	PASS
§27.50(d)(4)	RSS-139(6.4)	Equivalent Isotropic Radiated Power (WCDMA B4)	EIRP < 1Watt		
§2.1049	RSS-Gen (6.7)	Occupied Bandwidth		Annex C of GJW2022-9358-RF7-A1	Report Only
§24.232(d)	RSS-133(6.4) RSS-139(6.5) RSS-132(5.4)	Peak-to-Average Power Ratio	<13 dB	Annex B of GJW2022-9358-RF7-A1	PASS
§2.1055 §22.355	RSS-132(5.5)		< 2.5 ppm		
§2.1055 §24.235 §27.54	RSS-133(4.6) RSS-139(6.4)	Frequency Stability	Within authorized bands of operation/frequency block.	Annex F of GJW2022-9358-RF7-A1	PASS
§2.1051 §22.917 §24.238(a) §27.53(h)	RSS-133(6.5.1) RSS-139(6.9)	Band Edge Compliance	< 43+10log10(P[Watts])	Annex D of GJW2022-9358-RF7-A1	PASS
§2.1051 §22.917 §24.238(a) §27.53(h)	RSS-133(6.5.1) RSS-133(6.6) RSS-139(6.9) RSS-132(5.5) RSS-132(5.6)	Conducted Spurious Emission	< 43+10log10(P[Watts])	Annex E of GJW2022-9358-RF7-A1	PASS
§2.1051 §22.917 §24.238(a) §27.53(h)	RSS-133(6.5.1) RSS-133(6.6) RSS-139(6.9) RSS-132(5.5) RSS-132(5.6)	Radiates Spurious Emission	< 43+10log10(P[Watts])	See setion 3.1	PASS



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1.1 LIST OF TEST AND MEASUREMENT INSTRUMENTS

Test Equipment	Type/Mode	SERIAL NO.	Equipment No.	Manufacturer	Cal. Due
GSM/WCDMA/LTE/NB-IOT/NR Te	st System				1
Communication Shielded Room 1	4m*3m*3m	CRTDSWKSR44301	VGDS-0699	CRT	2024/04/24
Spectrum Analyzer	FSV40	101579	DZ-000239-3	R&S	2023/06/05
Comprehensive Test Instrument	MT8000A	6262208352	DZ-000310-1	Anritsu	2023/03/02
Comprehensive Test Instrument	MT8821C	6262226543	DZ-000310-2	Anritsu	2023/03/02
Analog Signal Generator	MG3692C	210507	DZ-000310-4	Anritsu	2023/03/02
Vector Signal Generator	MG3710E	6262251230	DZ-000310-3	Anritsu	2023/03/02
Communication Shielded Room 1	4m*3m*3m	CRTDSWKSR44301	VGDS-0699	CRT	2024/04/24
Spectrum Analyzer	FSV30	104337	DZ-000235	R&S	2022/11/03
Comprehensive Test Instrument	CMW500	137779	DZ-000220	R&S	2023/07/10
Comprehensive Test Instrument	CMW500	169888	DZ-000342	R&S	2022/12/01
LTE Comprehensive Test Instrument	E7515A	MY58010639	DZ-000173	KEYSIGHT	2023/04/07
Analog Signal Generator	SMA100B	103663	DZ-000239-2	R&S	2023/07/10
Vector Signal Generator	SMBV100B	101757	DZ-000239-1	R&S	2023/06/22
Programmable DC Power Supply	E3642A	MY59108106	DZ-000242-2	KEYSIGHT	2022/08/05
Radiation SpuriousTest System					/
3m Semi-Anechoic Chamber	FACT-4	ST08035	WKNA-0024	ETS	2024/12/12
Loop Antenna	FMZB1513	1513-170	EM-000384	SCHWARZBEC K	2023-03-04
Spectrum Analyzer	N9010B	MY57470323	DZ-000174	KEYSIGHT	2023/03/02
EMI Test Receiver	N9038A-508	MY532290079	EM-000397	Agilent	2023/03/02
Broadband Antenna	VULB 9163	9163-530	EM-000342	SCHWARZBEC K	2023/06/25
Waveguide Horn Antenna	HF906	360306/008	WKNA-0024-8	R&S	2023/03/04
Waveguide Horn Antenna	BBHA9170	00949	DZ-000209-2	SCHWARZBEC K	2023/07/31
Preamplifier	BBV 9721	9721-050	DZ-000209-1	SCHWARZBEC K	2023/06/05
5G Bandstop Filters	WRCJV12-4900- 5100-5900-6100- 50EE	1	DZ-000186	WI	2022/12/20
Comprehensive tester	CMW500	159000	DZ-000240-2	R&S	2022/12/20



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1.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	UNCERTAINTY
Maximum Peak Output Power	±0.9dB
Frequency Stability	±76.97Hz
Radiated emissions (30MHz~1GHz)	±5.0dB
Radiated emissions (1GHz ~18GHz)	±4.8dB
Radiated emissions (18GHz ~40GHz)	±5.1dB
Conducted emissions	±2.7dB
Occupied Channel Bandwidth	±43.58KHz
Band Edge Measurements	±2.7dB
Peak to average ratio	±0.76dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

1.3 TEST LOCATION

The tests and measurements refer to this report were performed by EMC testing Lab. of CVC Testing Technology Co., Ltd.

Address: No.3, TiantaiyiRoad, KaitaiAvenue, ScienceCity, Guangzhou, China

Post Code: 510663 Tel: 0755-23763060-8805 Fax: 0755-23763060 E-mail: sz-kf@cvc.org.cn

http://www.cvc.org.cn



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2 GENERAL INFORMATION

2.1 GENERAL PRODUCT INFORMATION

PRODUCT	SAGA					
BRAND	ũ					
TEST MODEL	OV1					
ADDITIONAL MODEL	N/A					
FCC ID	2AW49200731A					
IC ID	26394-200731A					
POWER SUPPLY	DC 3.89 from Battery or USB host unit					
MODULATION TYPE	WCDMA BPSK, QPSK					
OPERATING FREQUENCY	Band	TX(MHz)	RX(MHz)	Maximum Output Power to Antenna		
And	WCDMA B2	1850 ~ 1910	1930 ~ 1990	23.93 dBm		
MAXIMUM OUTPUT POWER	WCDMA B4	1710-1755	2110-2155	23.77 dBm		
	WCDMA B5	824 ~ 849	869 ~ 894	23.88 dBm		
	WCDMA B2: P	IFA Antenna, wi	th 0.3dBi gain			
ANTENNA TYPE (Note 4)	WCDMA B4: P	IFA Antenna, wi	th 0.5dBi gain			
	WCDMA B5: P	IFA Antenna, wi	th -3.5dBi gain			
I/O PORTS	Refer to user's	manual				
HARDWARE REVISION	MP					
SOFTWARE REVISION	SQ3A.220705.	.126				
CABLE SUPPLIED	USB line, 1.2M	leter, Shielded v	without ferrite			

Note:

- 1. For more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
- 2. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
- 3. Please refer to the EUT photo document (Reference No.: FCC2022-0064-E) for detailed product photo.
- 4. Since the above data and/or information is provided by the client relevant results or conclusions of this report are only made for these data and/or information, CVC is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.



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2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports.

EUT CONFIGURE MODE	DESCRIPTION
-	EUT + Adapter + with WCDMA link

Test CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RF power output	22deg. C, 65%RH	DC 3.89V from battery	Liu Shiwei
Effective Radiated Power	22deg. C, 65%RH	DC 3.89V from battery	Liu Shiwei
Equivalent Isotropic Radiated Power	22deg. C, 65%RH	DC 3.89V from battery	Liu Shiwei
Frequency Stability	22deg. C, 65%RH	DC 3.89V from battery	Liu Shiwei
Occupied Bandwidth	22deg. C, 65%RH	DC 3.89V from battery	Liu Shiwei
Band Edge Compliance	22deg. C, 65%RH	DC 3.89V from battery	Liu Shiwei
Conducted Spurious Emission	22deg. C, 65%RH	DC 3.89V from battery	Liu Shiwei
Radiates Spurious Emission	23deg. C, 63%RH	DC 3.89V from battery	Liu Shiwei
Peak-to-Average Power Ratio	22deg. C, 65%RH	DC 3.89V from battery	Liu Shiwei



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TEST MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
-		4132 to 4233	9262, 9400, 9538	WCDMA Band 2
	RF power output	1312 to 1513	1312,1413,1513	WCDMA Band 4
		9262 to 9538	4132, 4182, 4233	WCDMA Band 5
-	Equivalent Isotropic Radiated Power	4132 to 4233	9262, 9400, 9538	WCDMA Band 2
	Equivalent Isotropic Radiated Power	1312 to 1513	1312,1413,1513	WCDMA Band 4
	Effective Radiated Power	9262 to 9538	4132, 4182, 4233	WCDMA Band 5
-		4132 to 4233	9262, 9400, 9538	WCDMA Band 2
	Frequency Stability	1312 to 1513	1312,1413,1513	WCDMA Band 4
		9262 to 9538	4132, 4182, 4233	WCDMA Band 5
-		4132 to 4233	9262, 9400, 9538	WCDMA Band 2
	Occupied Bandwidth	1312 to 1513	1312,1413,1513	WCDMA Band 4
		9262 to 9538	4132, 4182, 4233	WCDMA Band 5
-		4132 to 4233	9262, 9538	WCDMA Band 2
	Band Edge Compliance	1312 to 1513	1312,1513	WCDMA Band 4
		9262 to 9538	4132, 4233	WCDMA Band 5
-		4132 to 4233	9262, 9400, 9538	WCDMA Band 2
	Conducted Spurious Emission	1312 to 1513	1312,1413,1513	WCDMA Band 4
		9262 to 9538	4132, 4182, 4233	WCDMA Band 5
-		4132 to 4233	9262, 9400, 9538	WCDMA Band 2
	Radiates Spurious Emission	1312 to 1513	1312,1413,1513	WCDMA Band 4
		9262 to 9538	4132, 4182, 4233	WCDMA Band 5
-		4132 to 4233	9262, 9400, 9538	WCDMA Band 2
	Peak-to-Average Power Ratio	1312 to 1513	1312,1413,1513	WCDMA Band 4
		9262 to 9538	4132, 4182, 4233	WCDMA Band 5



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2.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product, according to the specifications of the manufacturers. It must comply with the requirements of the following standards:

FCC 47 CFR PART 2

FCC 47 CFR PART 22

FCC 47 CFR PART 24

FCC 47 CFR PART 27

KDB 971168 D01 POWER MEAS LICENSE DIGITAL SYSTEMS V03R01

ANSI/TIA-603-E

ANSI C63.26-2015

RSS-132 ISSUE 3 (2013-01)

RSS-133 ISSUE 6 (2018-01)

RSS-139 ISSUE 3 (2015-07)

RSS-GEN ISSUE 5 (2018-04) + A1(2019-04) + A2(2021-02)

Note: All test items have been performed and recorded as per the above standards

2.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Support Equipment										
NO	Description	tion Brand		Model No. Serial N		rial Number		Supplied by		
-	-			-	-		_	-		-
				S	upport Cable					
NO	Description		uantity umber)	Length (cm)	Detachable (Yes/ No)		nielded es/ No)	Core (Numb	_	Supplied by
-	-		-	-	-		-	-		-



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3 TEST TYPES AND RESULTS

3.1 RADIATED EMISSION MEASUREMENT

3.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to –13dBm.

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

3.6.2 TEST PROCEDURES

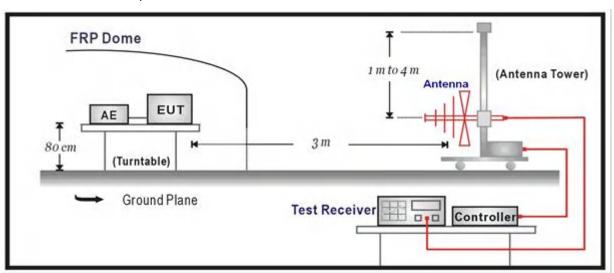
- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step a. Record the power level of S.G
- c. EIRP = Output power level of S.G TX cable loss + Antenna gain of substitution horn.
- d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.P.R power 2.15dBi.

NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

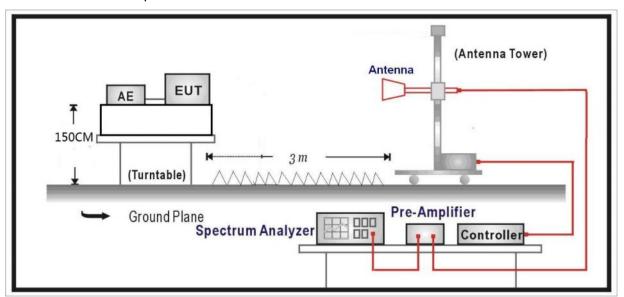
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3.6.3 TEST SETUP

Below 1GHz Test Setup:



Above 1GHz Test Setup:



Note: Above 1G is a directional antenna

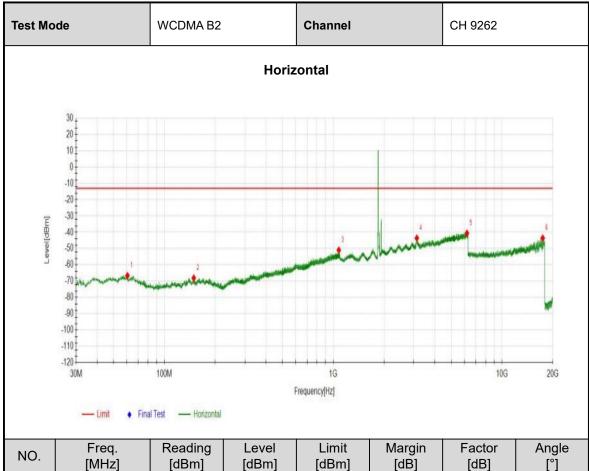
Depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

For the actual test configuration, please refer to the attached file (Test Setup Photo).



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3.6.4 TEST RESULTS

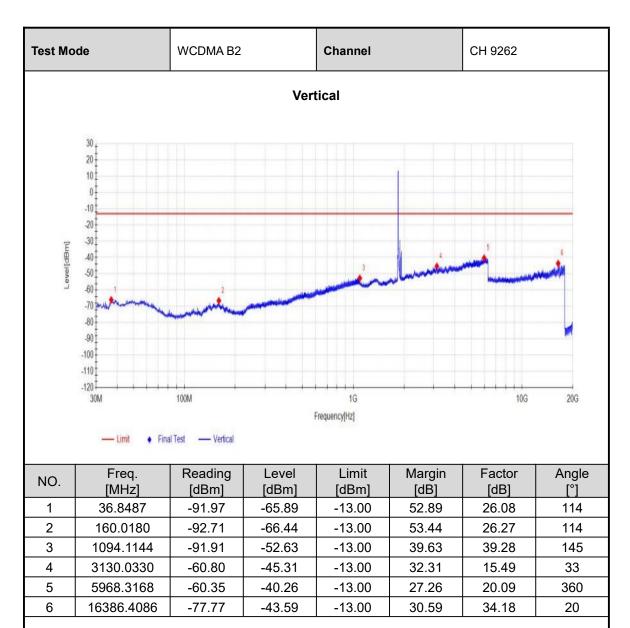


NO.	Freq.	Reading	Level	Limit	Margin	Factor	Angle
	[MHz]	[dBm]	[dBm]	[dBm]	[dB]	[dB]	[°]
1	60.3910	-93.60	-66.51	-13.00	53.51	27.09	154
2	149.2099	-93.07	-68.00	-13.00	55.00	25.07	360
3	1079.6680	-90.15	-50.92	-13.00	37.92	39.23	64
4	3128.7129	-60.27	-43.58	-13.00	30.58	16.69	266
5	6203.9604	-60.82	-40.53	-13.00	27.53	20.29	174
6	17441.8542	-78.38	-43.55	-13.00	30.55	34.83	34

- 2. Level (dBm) = Reading (dBm) + Factor (dB).
- 3. Margin(dB) = Limit[dBm] Level [dBm]



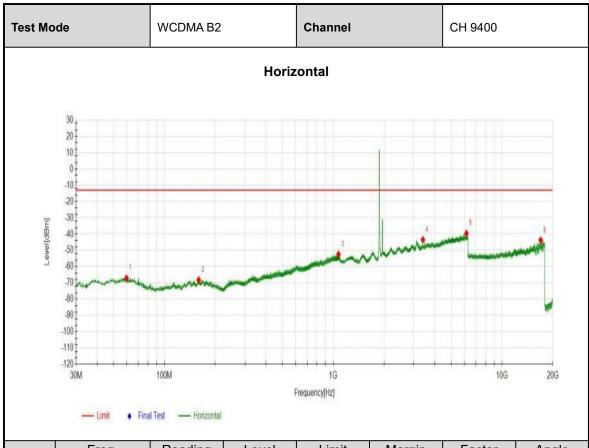
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- 2. Level (dBm) = Reading (dBm) + Factor (dB).
- 3. Margin(dB) = Limit[dBm] Level [dBm]



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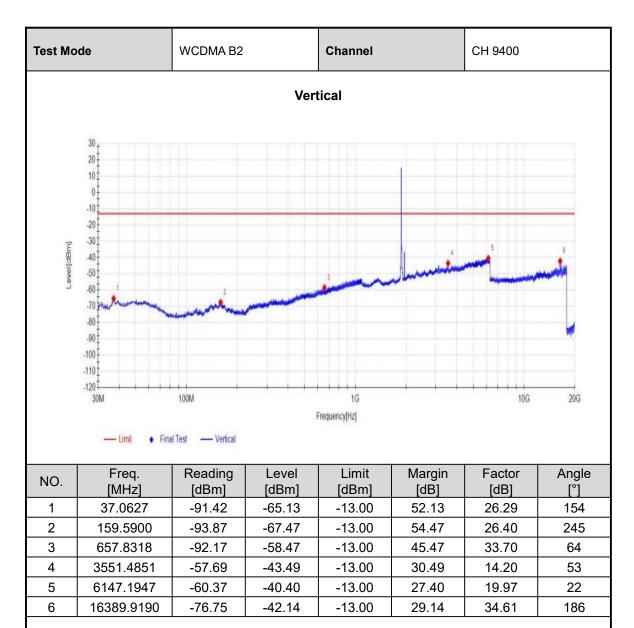


NO.	Freq.	Reading	Level	Limit	Margin	Factor	Angle	
	[MHz]	[dBm]	[dBm]	[dBm]	[dB]	[dB]	[°]	
1	59.6420	-94.32	-66.98	-13.00	53.98	27.34	266	
2	159.5900	-93.69	-68.09	-13.00	55.09	25.60	236	
3	1074.9595	-91.61	-52.44	-13.00	39.44	39.17	0	
4	3400.6601	-56.74	-43.43	-13.00	30.43	13.31	341	
5	6163.6964	-60.15	-39.52	-13.00	26.52	20.63	33	
6	16959.7660	-78.23	-43.69	-13.00	30.69	34.54	174	

- 2. Level (dBm) = Reading (dBm) + Factor (dB).
- 3. Margin(dB) = Limit[dBm] Level [dBm]



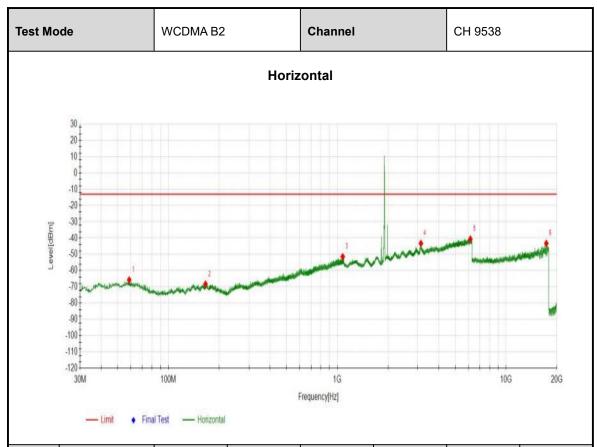
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- 2. Level (dBm) = Reading (dBm) + Factor (dB).
- 3. Margin(dB) = Limit[dBm] Level [dBm]



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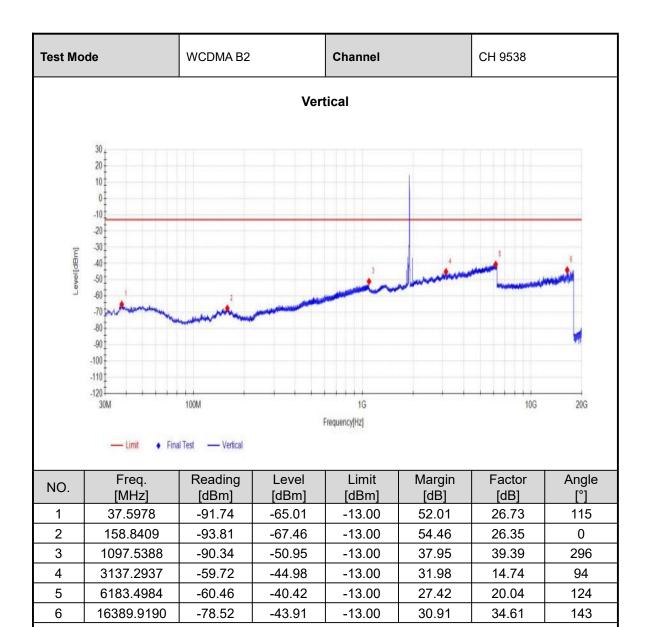


N	Ο.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Angle [°]
1	1	58.5719	-93.30	-65.65	-13.00	52.65	27.65	185
2	2	165.7966	-93.13	-68.23	-13.00	55.23	24.90	306
3	3	1078.0628	-90.60	-51.39	-13.00	38.39	39.21	306
4	4	3133.3333	-59.92	-43.25	-13.00	30.25	16.67	297
5	5	6152.1452	-60.96	-40.56	-13.00	27.56	20.40	82
6	ĵ	17351.7552	-78.22	-43.22	-13.00	30.22	35.00	33

- 2. Level (dBm) = Reading (dBm) + Factor (dB).
- 3. Margin(dB) = Limit[dBm] Level [dBm]



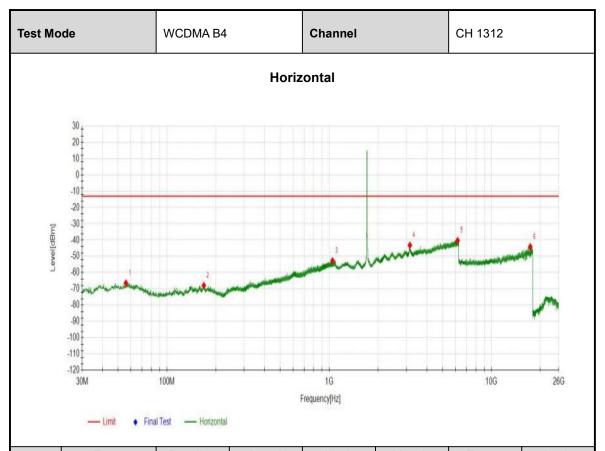
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- 2. Level (dBm) = Reading (dBm) + Factor (dB).
- 3. Margin(dB) = Limit[dBm] Level [dBm]



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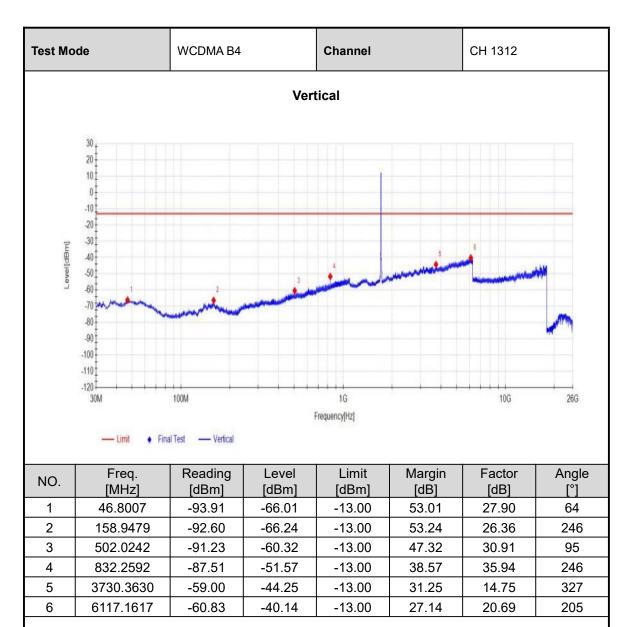


NO.	Freq.	Reading	Level	Limit	Margin	Factor	Angle		
	[MHz]	[dBm]	[dBm]	[dBm]	[dB]	[dB]	[°]		
1	55.7896	-93.80	-66.37	-13.00	53.37	27.43	54		
2	168.5789	-93.39	-67.85	-13.00	54.85	25.54	297		
3	1047.8858	-91.54	-52.73	-13.00	39.73	38.81	206		
4	3142.9043	-59.12	-43.14	-13.00	30.14	15.98	188		
5	6185.4785	-60.86	-40.26	-13.00	27.26	20.60	360		
6	17349.4149	-79.09	-44.14	-13.00	31.14	34.95	327		

- 2. Level (dBm) = Reading (dBm) + Factor (dB).
- 3. Margin(dB) = Limit[dBm] Level [dBm]



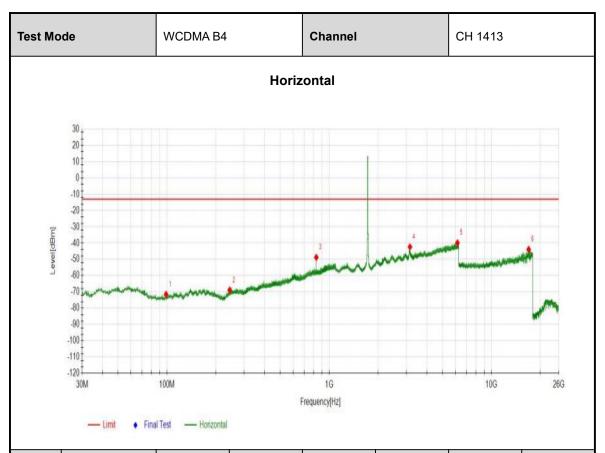
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- 2. Level (dBm) = Reading (dBm) + Factor (dB).
- 3. Margin(dB) = Limit[dBm] Level [dBm]



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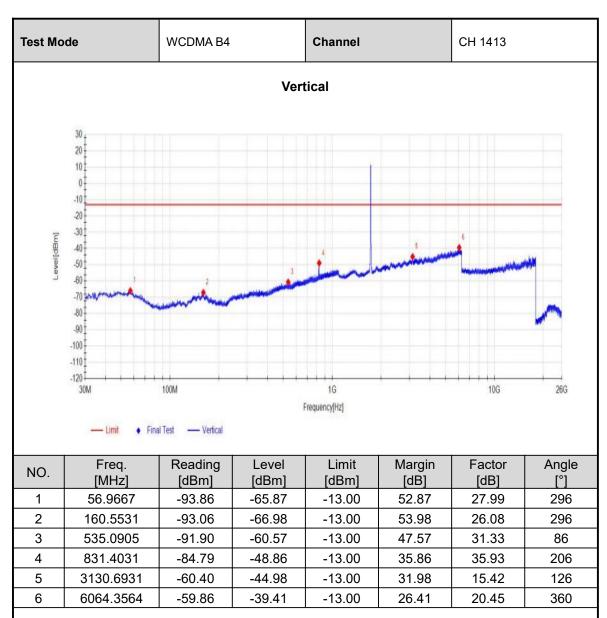


NO.	Freq.	Reading	Level	Limit	Margin	Factor	Angle		
	[MHz]	[dBm]	[dBm]	[dBm]	[dB]	[dB]	[°]		
1	98.7009	-93.31	-71.44	-13.00	58.44	21.87	360		
2	243.3793	-92.68	-68.85	-13.00	55.85	23.83	184		
3	832.3662	-84.80	-48.77	-13.00	35.77	36.03	154		
4	3145.8746	-58.09	-42.35	-13.00	29.35	15.74	21		
5	6169.3069	-60.44	-39.85	-13.00	26.85	20.59	357		
6	16959.7660	-78.41	-43.87	-13.00	30.87	34.54	278		
	_								

- 2. Level (dBm) = Reading (dBm) + Factor (dB).
- 3. Margin(dB) = Limit[dBm] Level [dBm]



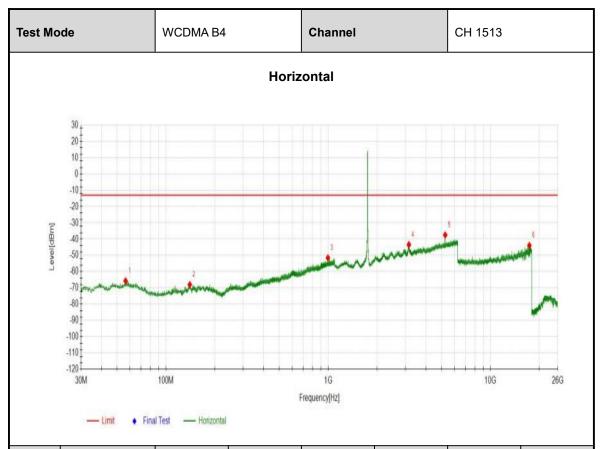
Test Report No.: FCC2022-0064-RF7 Page 23 of 39



- 2. Level (dBm) = Reading (dBm) + Factor (dB).
- 3. Margin(dB) = Limit[dBm] Level [dBm]



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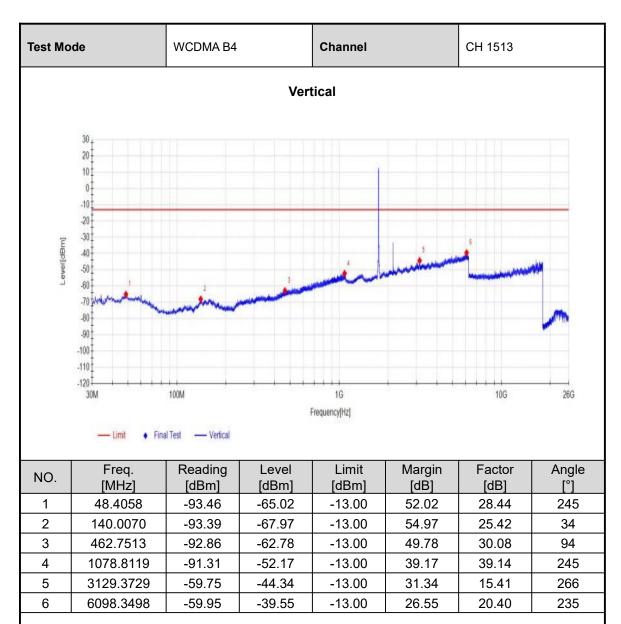


NO.	Freq.	Reading	Level	Limit	Margin	Factor	Angle		
	[MHz]	[dBm]	[dBm]	[dBm]	[dB]	[dB]	[°]		
1	56.3246	-93.23	-65.63	-13.00	52.63	27.60	357		
2	140.1140	-93.84	-67.95	-13.00	54.95	25.89	145		
3	995.3435	-90.25	-51.54	-13.00	38.54	38.71	23		
4	3141.9142	-59.50	-43.44	-13.00	30.44	16.06	278		
5	5261.0561	-55.84	-37.47	-13.00	24.47	18.37	64		
6	17375.1575	-77.93	-43.93	-13.00	30.93	34.00	81		

- 2. Level (dBm) = Reading (dBm) + Factor (dB).
- 3. Margin(dB) = Limit[dBm] Level [dBm]



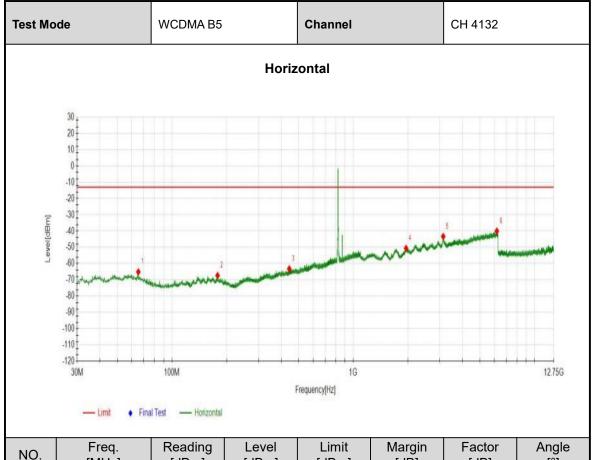
Test Report No.: FCC2022-0064-RF7 Page 25 of 39



- 2. Level (dBm) = Reading (dBm) + Factor (dB).
- 3. Margin(dB) = Limit[dBm] Level [dBm]



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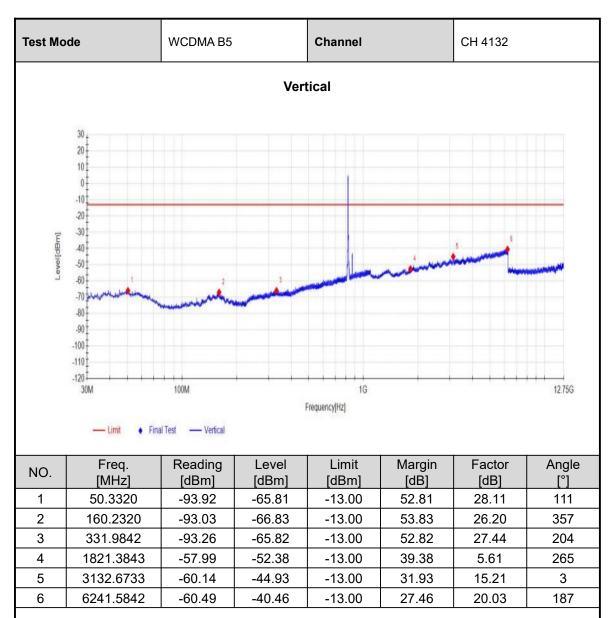


NO.	Freq.	Reading	Level	Limit	Margin	Factor	Angle		
	[MHz]	[dBm]	[dBm]	[dBm]	[dB]	[dB]	[°]		
1	65.2065	-92.08	-65.02	-13.00	52.02	27.06	33		
2	178.4238	-92.36	-67.26	-13.00	54.26	25.10	33		
3	443.4893	-92.48	-63.12	-13.00	50.12	29.36	64		
4	1954.0308	-58.44	-50.57	-13.00	37.57	7.87	246		
5	3132.6733	-60.00	-43.28	-13.00	30.28	16.72	51		
6	6189.1089	-60.58	-39.97	-13.00	26.97	20.61	234		

- 2. Level (dBm) = Reading (dBm) + Factor (dB).
- 3. Margin(dB) = Limit[dBm] Level [dBm]



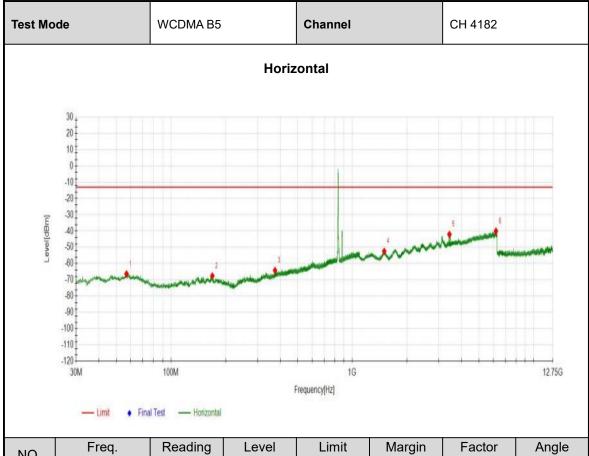
Test Report No.: FCC2022-0064-RF7 Page 27 of 39



- 2. Level (dBm) = Reading (dBm) + Factor (dB).
- 3. Margin(dB) = Limit[dBm] Level [dBm]



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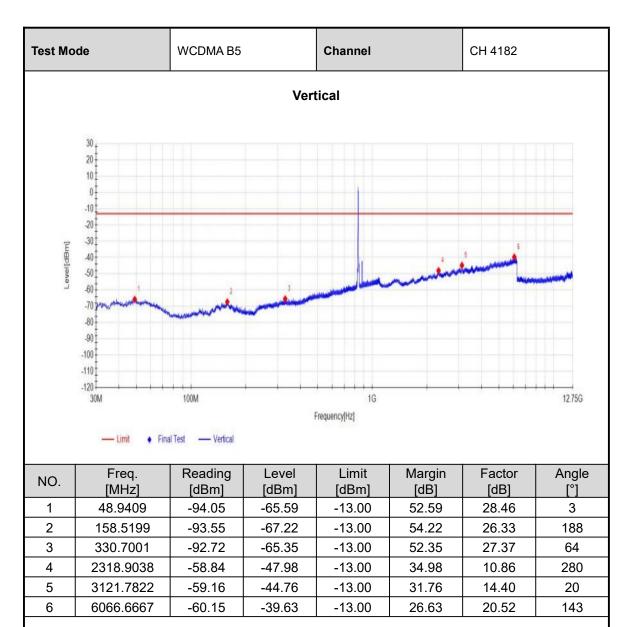


NO.	Freq.	Reading	Level	Limit	Margin	Factor	Angle		
	[MHz]	[dBm]	[dBm]	[dBm]	[dB]	[dB]	[°]		
1	56.8597	-93.99	-66.26	-13.00	53.26	27.73	143		
2	169.0069	-92.98	-67.46	-13.00	54.46	25.52	81		
3	374.7885	-91.87	-64.11	-13.00	51.11	27.76	266		
4	1499.4599	-58.37	-52.37	-13.00	39.37	6.00	50		
5	3432.0132	-55.14	-42.00	-13.00	29.00	13.14	278		
6	6195.3795	-60.36	-39.94	-13.00	26.94	20.42	308		

- 2. Level (dBm) = Reading (dBm) + Factor (dB).
- 3. Margin(dB) = Limit[dBm] Level [dBm]



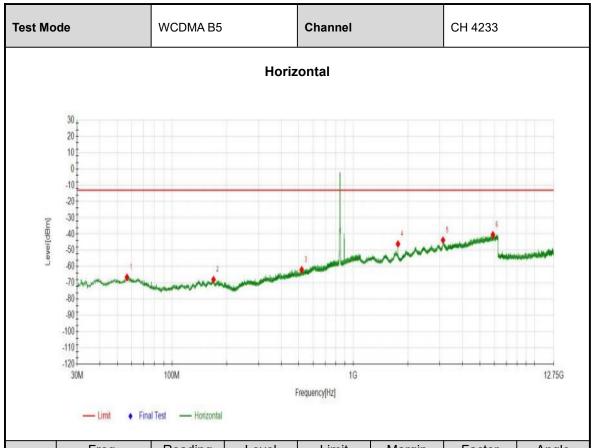
Test Report No.: FCC2022-0064-RF7 Page 29 of 39



- 2. Level (dBm) = Reading (dBm) + Factor (dB).
- 3. Margin(dB) = Limit[dBm] Level [dBm]



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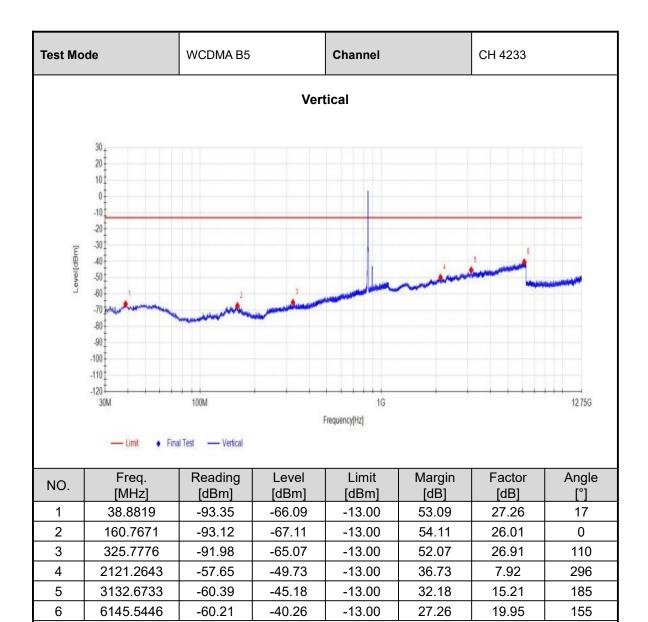


NO.	Freq.	Reading	Level	Limit	Margin	Factor	Angle	
	[MHz]	[dBm]	[dBm]	[dBm]	[dB]	[dB]	[°]	
1	56.4316	-94.05	-66.42	-13.00	53.42	27.63	156	
2	169.4349	-93.40	-67.89	-13.00	54.89	25.51	126	
3	519.2529	-92.65	-61.82	-13.00	48.82	30.83	33	
4	1763.9928	-52.21	-46.03	-13.00	33.03	6.18	33	
5	3124.0924	-59.63	-43.69	-13.00	30.69	15.94	266	
6	5888.1188	-60.32	-40.37	-13.00	27.37	19.95	236	

- 2. Level (dBm) = Reading (dBm) + Factor (dB).
- 3. Margin(dB) = Limit[dBm] Level [dBm]



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- 2. Level (dBm) = Reading (dBm) + Factor (dB).
- 3. Margin(dB) = Limit[dBm] Level [dBm]



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3.2 OUT POWER MEASUREMENT

3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

Mobile / Portable station are limited to 7 watts (38.45 dBm) E.R.P for WCDMA B5.

Mobile / Portable station are limited to 2 watts (33 dBm) E.I.R.P for WCDMA B2.

Mobile / Portable station are limited to 1 watt (30 dBm) E.I.R.P for WCDMA B4.

3.1.2 TEST PROCEDURES

Per KDB 971168 D01 Power Meas License Digital Systems v03r01 or subclause 5.2.5.5 of ANSI C63.26-2015, the relevant equation for determing the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:

EIRP = PT + GT - LC, ERP= EIRP - 2.15dBi, where

PT = transmitter output power dBm;

GT = gain of the transmitting antenna dBi;

LC = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

CONDUCTED POWER MEASUREMENT:

The EUT was set up for the maximum power with WCDMA link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

3.1.3 TEST SETUP

EIRP / ERP Measurement:

CONDUCTED POWER MEASUREMENT:





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4

3.3 FREQUENCY STABILITY

3.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

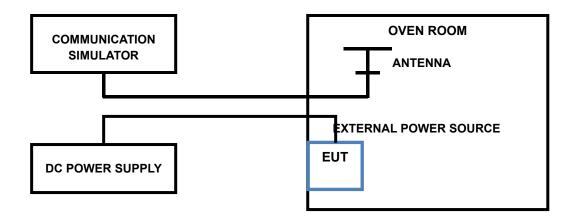
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

3.2.2 TEST PROCEDURE

- a. Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
- b. EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
- c. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ± 0.5 °C during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

NOTE: The frequency error was recorded frequency error from the communication simulator.

3.2.3 TEST SETUP





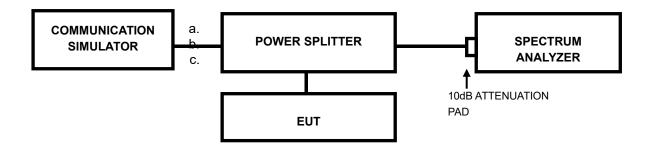
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3.4 OCCUPIED BANDWIDTH MEASUREMENT

3.3.1 TEST PROCEDURES

The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

3.3.2 TEST SETUP





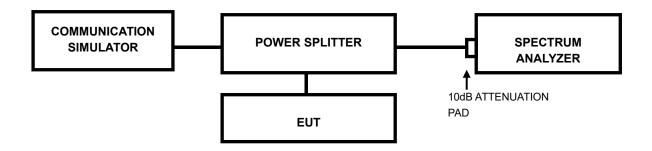
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3.5 BAND EDGE MEASUREMENT

3.4.1 LIMITS OF BAND EDGE MEASUREMENT

Power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

3.4.2 TEST SETUP



3.4.3 TEST PROCEDURES

- a. All measurements were done at low and high operational frequency range.
- b. The center frequency of spectrum is the band edge frequency and span is 2MHz. RBW of the spectrum is 5kHz and VBW of the spectrum is 20kHz (GSM).
- c. The center frequency of spectrum is the band edge frequency and span is 10MHz. RBW of the spectrum is 100kHz and VBW of the spectrum is 300kHz (WCDMA).
- d. Set the spectrum with RMS detector.
- e. Record the max trace plot into the test report.



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3.6 CONDUCTED SPURIOUS EMISSIONS

3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

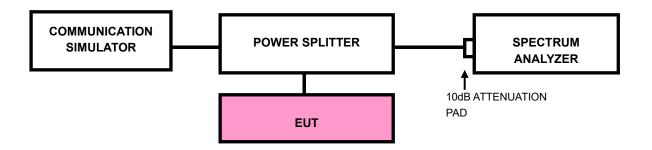
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to –13dBm.

3.5.2 TEST PROCEDURE

The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

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

3.5.3 TEST SETUP



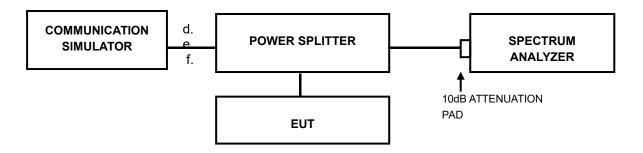
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3.7 PEAK TO AVERAGE RATIO

3.7.1 LIMITS OF PEAK TO AVERAGE RATIO MEASUREMENT

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB

3.7.2 TEST SETUP



3.7.3 TEST PROCEDURES

- 1. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;
- 2. Set the number of counts to a value that stabilizes the measured CCDF curve;
- 3. Record the maximum PAPR level associated with a probability of 0.1%.



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4 PHOTOGRAPHS OF TEST SETUP

Please refer to the attached file (Test Setup Photo).

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Important

- (1) The test report is valid with the official seal of the laboratory and the signatures of Test engineer, Author and Reviewer simultaneously.
- (2) The test report is invalid if altered.
- (3) Any photocopies or part photocopies in the test report are forbidden without the written permission from the laboratory.
- (4) Objections to the test report must be submitted to the laboratory within 15 days.
- (5) Generally, commission test is responsible for the tested samples only.

Address of the laboratory:

CVC Testing Technology Co., Ltd.

Address: No.3, Tiantaiyi Road, Kaitai Avenue, Science City, Guangzhou, China

Post Code: 510663 Tel: 020-32293888

FAX: 020-32293889 E-mail: office@cvc.org.cn