

SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch Page: 1 of 49 EMC-ARF-05 Rev 1.1 FCC ID: OJFDHRU-G2-35

Appendix -

Test Data and Result for report GZCR240300025402



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EMC-ARF-05 Rev 1.1

Page: 2 of 49

Remark: Manufacture declared the product support 2X2 MIMO with identical PCB layout/component use/Tune up that make sure each antenna port with identical RF output, so the test only performed at one of the antenna port in this report.

1 Out-of-band rejection



935210 D05 Signal Booster Measurements v01r04 Out-of-band rejection verification test requirement.



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EMC-ARF-05 Rev 1.1

Page: 3 of 49

2 Input versus Output comparison

Occupied Bandwidth							
Test Path	Test Signal	Test Channel	Signal Level	Verdict			
	4.1MHz AWGN 100MHz AWGN	МСН	Pre-AGC	PASS			
		MCT	3dB above AGC	PASS			
		MCH	Pre-AGC	PASS			
DL			3dB above AGC	PASS			
DL		MOLL	Pre-AGC	PASS			
	GSM	WOT	3dB above AGC	PASS			
	100MHz AWGN GSM	мсн	3dB above AGC Pre-AGC 3dB above AGC	PASS PASS PASS			

Remark:

Compare the spectral plot of the input signal to the output signal affirm that they are similar (in passband and roll off characteristic features and relative spectral locations). The test result complies with the requirement.



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EMC-ARF-05 Rev 1.1

Page: 4 of 49





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EMC-ARF-05 Rev 1.1

Page: 5 of 49





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Page: 6 of 49





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Page: 7 of 49





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EMC-ARF-05 Rev 1.1

Page: 8 of 49





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EMC-ARF-05 Rev 1.1

Page: 9 of 49





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EMC-ARF-05 Rev 1.1

Page: 10 of 49

3 Output power and amplifier/booster gain

	Mean output power and gain												
Test Path	Test Freq. f0 (MHz)	Test Signal	Signal Level	Input power (dBm)	Output Power (dBm)	SISO EIRP (W)	Total EIRP (W)	Gain (dB)	Verdict				
		4.1MHz AWGN	Pre-AGC	23.00	45.21	104.96	419.76	22.21	PASS				
			3dB above AGC	26.00	45.29	106.91	427.57	/	PASS				
		100MHz AWGN	Pre-AGC	23.00	45.59	114.56	458.15	22.59	PASS				
DL	3451.0		3dB above AGC	26.00	45.67	116.69	466.66	/	PASS				
		GSM	Pre-AGC	23.00	45.17	104.00	415.92	22.17	PASS				
			3dB above AGC	26.00	45.32	107.65	430.53	/	PASS				

Remark:

1. f0 is from Out-of-band Rejection test in the report.

2. EIRP= output power (dBm)+ antenna gain (dBi), the antenna gain is 5dBi declared by the manufacturer, the directional gain = G_{ANT} + 10 log (N_{ANT}) dBi = 8dBi.

	Mean output power										
Test Path	Test Freq. f0 (MHz)	Test Signal	Signal Level	Output Power (dBm/MHz)	SISO EIRP (W/MHz)	Total EIRP (W/MHz)	Verdict				
		4.1MHz AWGN	Pre-AGC	39.74	29.79	119.13	PASS				
			3dB above AGC	39.69	29.45	117.77	PASS				
		100MHz AWGN	Pre-AGC	27.54	1.80	7.18	PASS				
DL	3451.0		3dB above AGC	27.71	1.87	7.47	PASS				
		GSM	Pre-AGC	45.17	104.00	415.93	PASS				
			3dB above AGC	45.32	107.65	430.53	PASS				

Remark:

1. f0 is from Out-of-band Rejection test in the report.

2. EIRP= output power (dBm)+ antenna gain (dBi), the antenna gain is 5dBi declared by the manufacturer, the directional gain = GANT + 10 log (NANT) dBi = 8dBi.

3. The output power is limited to an EIRP of 1640W/MHz.



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EMC-ARF-05 Rev 1.1

Page: 11 of 49

	Peak-to-average ratio (PAR)									
Test Path	Test Freq. f0 (MHz)	Test Signal	Signal Level	PAR (dB)	Limit (dB)	Verdict				
	4	4.1MHz AWGN 51.0 100MHz AWGN	Pre-AGC	9.93		PASS				
			3dB above AGC	9.97	≤13	PASS				
DL	3451.0		Pre-AGC	8.80		PASS				
			3dB above AGC	8.79		PASS				
Rema	Remark:									
GSM	GSM signals are not similar to a noise-like signal, the PAR of a GSM signal is very low and not displayed in this									
report										



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Page: 12 of 49





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Page: 13 of 49





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EMC-ARF-05 Rev 1.1

Page: 14 of 49

Out-of-band/out-of-block(including intermodulation) emissions										
Test	Test	Test	Stimulus	Signal Level	Worst co test leve	onducted el (dBm)	Limit	Verdict		
i aui	Channel	Olghai	Condition		/200kHz	/1MHz				
					-25.38	-18.39		PASS		
			One signal	FIE-AGC	/	-17.34		PASS		
			input	2dB above ACC	-25.36	-18.37		PASS		
				SUB above AGC	/	-17.21		PASS		
	LCH	4.1MHz AWGN		Pre-AGC	-28.11	-21.12	≤-16	PASS		
			Two signals input		/	-17.91		PASS		
				3dB above AGC	-27.77	-20.78		PASS		
					/	-17.90		PASS		
DL			One signal	Pre-AGC	-27.03	-20.04		PASS		
					/	-17.01		PASS		
			input		-27.20	-20.21		PASS		
				3dB above AGC	/	-17.13		PASS		
	нсн				-29.88	-22.89		PASS		
			Two signals	Pre-AGC	/	18.26		PASS		
			input	3dB above AGC	-28.39	-21.40		PASS		
					/	18.26		PASS		

4 Out-of-band/out-of-block(including intermodulation) emissions

Remark:

1. The level in 1MHz RBW= the level in 200kHz RBW+ 10lg(1000/200).

2. For 2×2 MIMO, one of ANT ports was measured and the limit shall be reduced by 10lg(2) = 3dB, so the limit was calculated to show -16dBm/MHz in order to determine the test result conveniently.



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EMC-ARF-05 Rev 1.1

Page: 15 of 49

Out-of-band/out-of-block(including intermodulation) emissions									
Test Path	Test Channel	Test Signal	Stimulus Condition	Signal Level	Worst conducted test level (dBm/MHz)	Limit (dBm/MHz)	Verdict		
			One signal	Pre-AGC	-17.51		PASS		
		100MHz AWGN	input	3dB above AGC	-17.26		PASS		
	LCH		Two signals input	Pre-AGC	-17.89		PASS		
51				3dB above AGC	-18.06	≤-16	PASS		
DL			One signal input	Pre-AGC	-16.25		PASS		
				3dB above AGC	-16.56		PASS		
	псп		Two signals input	Pre-AGC	-18.43		PASS		
				3dB above AGC	-18.45		PASS		
Remark:	•			•	•				

For 2×2 MIMO, one of ANT ports was measured and the limit shall be reduced by 10lg(2) = 3dB, so the limit was calculated to show -16dBm/MHz in order to determine the test result conveniently.

Out-of-band/out-of-block(including intermodulation) emissions								
Test Test		Test	Stimulus	Signal Level	Worst conducted test level (dBm)		Limit	Verdict
raur	Channel	Olghai	Condition		/10kHz	/1MHz		
			One signal	Pre-AGC	-37.75	-17.75		PASS
	LCH	- GSM	input	3dB above AGC	-37.85	-17.85	≤-16	PASS
			Two signals input	Pre-AGC	-37.17	-17.17		PASS
D				3dB above AGC	-37.34	-17.34		PASS
DL			One signal input	Pre-AGC	-39.32	-19.32		PASS
	ЦСЦ			3dB above AGC	-39.48	-19.48		PASS
	псп		Two signals input	Pre-AGC	-39.64	-19.64		PASS
				3dB above AGC	-39.69	-19.69		PASS

Remark:

1. The level in 1MHz RBW= the level in 10kHz RBW+ 10lg(1000/10).

2. For 2×2 MIMO, one of ANT ports was measured and the limit shall be reduced by 10lg(2) = 3dB, so the limit was calculated to show -16dBm/MHz in order to determine the test result conveniently.



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EMC-ARF-05 Rev 1.1

Page: 16 of 49

Out-of-band/out-of-block(including intermodulation) emissions								
Test Test		Test	Stimulus	Stimulus Signal Level		Worst conducted test level (dBm)		Verdict
raur	Channel	Signal	Condition		/100kHz	/1MHz		
			One signal	Pre-AGC	-33.11	-23.11		PASS
	LCH		input	3dB above AGC	-33.09	-23.09	≤-16	PASS
			Two signals input SM One signal input	Pre-AGC	-31.50	-21.50		PASS
		0014		3dB above AGC	-31.33	-21.33		PASS
DL		I GSM		Pre-AGC	-33.91	-23.91		PASS
	ЦСЦ			3dB above AGC	-33.94	-23.94		PASS
	псп		Two signals input	Pre-AGC	-29.72	-19.72		PASS
				3dB above AGC	-29.74	-19.74		PASS
Domork:								

1. The level in 1MHz RBW= the level in 100kHz RBW+ 10lg(1000/100).

2. For 2×2 MIMO, one of ANT ports was measured and the limit shall be reduced by 10lg(2) =3dB, so the limit was calculated to show -16dBm/MHz in order to determine the test result conveniently.



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EMC-ARF-05 Rev 1.1

Page: 17 of 49





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EMC-ARF-05 Rev 1.1

Page: 18 of 49





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EMC-ARF-05 Rev 1.1

Page: 19 of 49





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EMC-ARF-05 Rev 1.1

Page: 20 of 49





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EMC-ARF-05 Rev 1.1

Page: 21 of 49





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EMC-ARF-05 Rev 1.1

Page: 22 of 49





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EMC-ARF-05 Rev 1.1

Page: 23 of 49





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EMC-ARF-05 Rev 1.1

Page: 24 of 49





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EMC-ARF-05 Rev 1.1

Page: 25 of 49





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EMC-ARF-05 Rev 1.1

Page: 26 of 49





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EMC-ARF-05 Rev 1.1

Page: 27 of 49





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EMC-ARF-05 Rev 1.1

Page: 28 of 49





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EMC-ARF-05 Rev 1.1

Page: 29 of 49





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