

Test Report

Verified code: 955145

Report No.: E202304116396-6

Customer: Flaircomm Microelectronics, Inc.

Address: 7F,Guomai Building, Guomai Science and Technology Park, 116 JiangBin
East Avenue, Mawei District, Fuzhou, Fujian, China

Sample Name: Remote Monitor System

Sample Model: FLC-WNP019

Receive Sample
Date: Apr.14,2023

Test Date: Apr.17,2023 ~ Apr.28,2023

Reference
Document: CFR Title 47 Part 22 Subpart H
CFR Title 47 Part 24 Subpart E

Test Result: Pass

Prepared by: *Wen Wen* Reviewed by: *Zhao Zetian*

Approved by: *Xiao Liang*

GRG METROLOGY & TEST GROUP CO., LTD.

Issued Date: 2023-05-26

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REPORT ISSUED HISTORY

Report Version	Report No.	Description	Compile Date
1.0	E202304116396-6	Original Issue	2023-05-25

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1. TEST RESULT SUMMARY

1.1 TEST STANDARDS

No.	Identity	Document Title
1	FCC CFR Title 47 Part 2 Section 2.1047, 2.1049	Frequency Allocations And Radio Treaty Mattres; General Rules And Regulations
2	FCC CFR Title 47 Part 22 Subpart H	Cellular Radiotelephone Service
3	FCC CFR Title 47 Part 24 Subpart E	Broadband PCS

1.2 TEST RESULT

GSM850			
Item	FCC Rule No.	Requirements	Result
Effective (Isotropic) Radiated Power Output Data	§2.1046, §22.913(a)(5)	EIRP $\leq$ 11.5 W	PASS
Peak-Average Ratio	§22.913(d)	Limit $\leq$ 13 dB	PASS
Modulation Characteristics	§2.1047	Digital modulation	PASS
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	PASS
Band Edges Compliance	§2.1051, §22.917(b)(1)	Refer to section 9.1	PASS
Spurious Emission at Antenna Terminals	§2.1051, §22.917(a)	$\leq$ -13 dBm/1MHz	PASS
Field Strength of Spurious Radiation	§2.1053, §22.917(a)	$\leq$ -13 dBm/1MHz.	PASS
Frequency Stability	§2.1055, §22.355	$\leq$ $\pm$ 2.5ppm.	PASS

Remark: For the verdict, the "N/A" denotes "not applicable", the "N/T" denotes "not tested".

PCS1900			
Item	FCC Rule No.	Requirements	Result
Effective (Isotropic) Radiated Power Output Data	§2.1046, §24.232(c)	EIRP $\leq$ 2 W	PASS
Peak-Average Ratio	§24.232(d)	Limit $\leq$ 13 dB	PASS
Modulation Characteristics	§2.1047	Digital modulation	PASS
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	PASS
Band Edges Compliance	§2.1051, §24.238(a)(b)	Refer to section 9.1	PASS
Spurious Emission at Antenna Terminals	§2.1051, §24.238(a)(b)	$\leq$ -13 dBm/1MHz	PASS
Field Strength of Spurious Radiation	§2.1053, §24.238(a)	$\leq$ -13 dBm/1MHz.	PASS
Frequency Stability	§2.1055, §24.235	No limit	PASS

Remark: For the verdict, the “N/A” denotes “not applicable”, the “N/T” denotes “not tested”.

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2. GENERAL DESCRIPTION OF EUT

2.1 APPLICANT

Name:	Flaircomm Microelectronics, Inc.
Address:	7F,Guomai Building, Guomai Science and Technology Park, 116 JiangBin East Avenue, Mawei District, Fuzhou, Fujian, China

2.2 MANUFACTURER

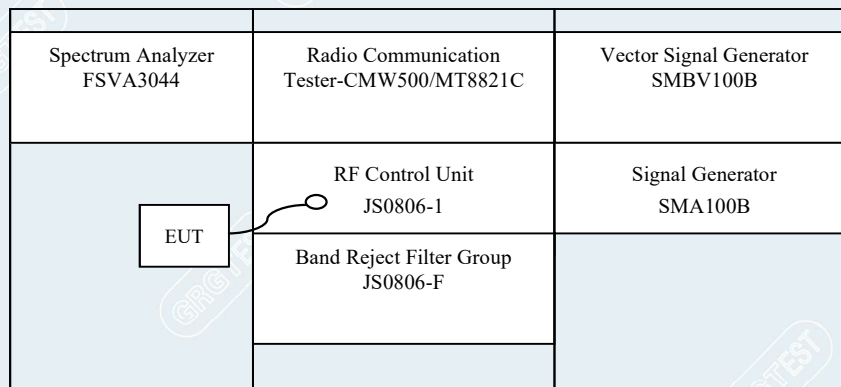
Name:	Flaircomm Microelectronics, Inc.
Address:	7F,Guomai Building, Guomai Science and Technology Park, 116 JiangBin East Avenue, Mawei District, Fuzhou, Fujian, China

2.3 BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

Equipment:	Remote Monitor System
Product Model:	FLC-WNP019
Adding Model	FLC-WNP019-RMS20
Model difference:	They have the same technical construction including circuit diagram, PCB LAYOUT, hardware version and software version identical, except the model name different.
Trade Name:	/
Power supply:	DC 3.6V by battery
FCC ID:	2BBDN-WNP019
Hardware Version:	RS20 1 1 03 00
Software Version:	RMS01.01#007.006
Antenna Type:	Internal antenna
Antenna Gain:	GSM850: -0.2dBi PCS1900: 3.5dBi
Power Class:	GSM850: 4 PCS1900: 1
Frequency range:	GSM850: Tx 824MHz ~ 849MHz, Rx 869MHz ~ 894 MHz PCS1900: Tx 1850MHz ~1910MHz, Rx 1930MHz ~ 1990 MHz
Bandwidth:	GSM850: 0.2MHz PCS1900: 0.2MHz
ERP/EIRP:	GSM850: 29.06dBm PCS1900: 32.53dBm
Modulation:	GSM850: GMSK,8PSK PCS1900: GMSK,8PSK
Sample No.:	E202304116396-0002, E202304116396-0004
IMEI:	E202304116396-0002:86546405240018 E202304116396-0004:86546405240087
Temperature Range:	-20℃~70℃
Sample Submitting Way:	☒ Provided by customer ☐ Sampling
Note:	The EUT antenna gain is provided by the applicant.

2.4 CONFIGURATION OF SYSTEM UNDER TEST

Conduct System Setup



2.5 DESIGNATION OF EMISSION

Test Mode	Emission Designator
GSM850(GSM)	252KGXW
GSM850(GPRS)	246KGXW
GSM850(EDGE)	244KG7W
PCS1900(GSM)	992KGXW
PCS1900(GPRS)	249KGXW
PCS1900(EDGE)	250KG7W

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3. LABORATORY AND ACCREDITATIONS AND MEASUREMENT UNCERTAINTY

3.1 LABORATORY

The tests & measurements refer to this report were performed by Shenzhen EMC Laboratory of GRG Metrology & Test group Co., Ltd.

Add.: No.1301 Guanguang Road Xinlan Community, Guanlan Street, Longhua District
Shenzhen, 518110, People's Republic of China.
P.C.: 518110
Tel : 0755-61180008
Fax: 0755-61180008

3.2 ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

USA	A2LA(Certificate #2861.01)
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The measuring facility of laboratories has been authorized or registered by the following approval agencies.

Canada	ISED (Company Number: 24897, CAB identifier:CN0069)
USA	FCC (Registration Number: 759402, Designation Number:CN1198)

Copies of granted accreditation certificates are available for downloading from our web site,
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3.3 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		Frequency	Uncertainty
Radiated Emission	Horizontal	30MHz~1000MHz	3.70dB
		1GHz~18GHz	4.50dB
		18GHz~40GHz	4.30dB
	Vertical	30MHz~1000MHz	3.70dB
		1GHz~18GHz	4.50dB
		18GHz~40GHz	4.30dB
	Coaxial	9kHz~30MHz	4.50dB
	Coplanar	9kHz~30MHz	4.50dB

Measurement	Uncertainty
RF frequency	6.0×10^{-6}
RF power conducted	0.8dB
Occupied channel bandwidth	0.4dB
Unwanted emission, conducted	0.7dB
Humidity	6%
Temperature	2°C

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

4. LIST OF USED TEST EQUIPMENT AT GRGT

Conducted System :

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Keysight	N9010B	MY60680122	2024-03-19
Wideband radio Communication Tester	R&S	CMW500	144611-nc	2024-04-16
Temperature& humidity chamber	HOSON	HS01060SDF	201013401	2024-02-02
RF switch box	Tonscend	JS0806-1	20D8060250	/
Test SW	Tonscend	JS1120	/	/
Dc Source	LW	PS-305DM	180704488	2024-02-16

RSE system:

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Keysight	N9010B	MY60680122	2024-03-19
Loop Antenna	TESEQ	HLA6121	52599	2024-02-03
Bi-log Antenna	Schwarzbeck	VULB9163	01279	2024-03-05
Horn Antenna	Schwarzbeck	BBHA9120D (1201)	02143	2023-10-15
Horn Antenna	Schwarzbeck	BBHA9170	BBHA 9170-497	2023-10-14
Amplifier	tonscend	TAP9E6343	AP20E806065	2024-04-16
Amplifier	tonscend	TAP01018048	AP20E8060075	2024-04-11
Amplifier	tonscend	TAP184050	AP20E806070	2024-04-11
Wideband radio Communication Tester	R&S	CMW500	144611-nc	2024-04-16
Test S/W	tonscend	JS36-RSE/2.5.1.5		

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5. EFFECTIVE (ISOTROPIC) RADIATED POWER OUTPUT DATA

5.1 LIMIT

According to FCC section 22.913 (a)(5) the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to FCC section 24.232 (c) the mobile and portable stations are limited to 2 watts EIRP.

5.2 TEST PROCEDURES

Measurement Procedure: FCC KDB 971168 D01 V03r01

1. Connect the test system to the UE antenna connector.
2. A call is set up according to the Generic call setup procedure.
3. Set and send continuously up power control commands to the UE, until the UE output power shall be maximum level.
4. Read the conducted power in the base station.

Remark:

- a: For getting the EIRP (Efficient Isotropic Radiated Power) in substitution method, the following formula should be taken to calculate it,

$$\text{EIRP [dBm]} = \text{Conducted output power [dBm]} + \text{Gain [dBi]}$$

$$\text{ERP [dBm]} = \text{Conducted output power [dBm]} + \text{Gain [dBi]} - 2.15\text{dB}$$

$$P [\text{dBm}] = 10 \lg(p/1\text{mw})$$

5.3 TEST SETUP



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5.4 TEST RESULTS

Effective Radiated Power

EUT Name	Remote Monitor System	Model	FLC-WNP019
Sample No.	E202304116396-0002	Test Mode	GSM
Power supply	DC 3.6V	Environmental Conditions	Temp:23.1℃;Humi:47%RH
Test Date	2023-04-17 to 2023-04-28	Test Site	shielded room-4
Tested By	Zhu Rongting	Reviewed by	Zhao Zetian

Band	Channel	Power(dBm)	ERP/EIRP(dBm)	Limit(dBm)	Verdict
GSM850	128	31.05	28.70	38.45	PASS
GSM850	190	31.21	28.86	38.45	PASS
GSM850	251	31.38	29.03	38.45	PASS
PCS1900	512	29.03	32.53	33.00	PASS
PCS1900	661	28.96	32.46	33.00	PASS
PCS1900	810	28.80	32.30	33.00	PASS

Band	Channel	Slot	Power(dBm)	ERP/EIRP(dBm)	Limit(dBm)	Verdict
GPRS850	128	1	31.08	28.73	38.45	PASS
GPRS850	128	2	31.08	28.73	38.45	PASS
GPRS850	128	3	30.64	28.29	38.45	PASS
GPRS850	128	4	28.82	26.47	38.45	PASS
GPRS850	190	1	31.29	28.94	38.45	PASS
GPRS850	190	2	31.28	28.93	38.45	PASS
GPRS850	190	3	30.83	28.48	38.45	PASS
GPRS850	190	4	29.05	26.70	38.45	PASS
GPRS850	251	1	31.41	29.06	38.45	PASS
GPRS850	251	2	31.41	29.06	38.45	PASS
GPRS850	251	3	30.99	28.64	38.45	PASS
GPRS850	251	4	29.20	26.85	38.45	PASS
GPRS1900	512	1	28.95	32.25	33.00	PASS
GPRS1900	512	2	28.98	32.28	33.00	PASS
GPRS1900	512	3	27.60	31.10	33.00	PASS
GPRS1900	512	4	25.71	29.21	33.00	PASS
GPRS1900	661	1	28.90	32.40	33.00	PASS
GPRS1900	661	2	28.92	32.42	33.00	PASS
GPRS1900	661	3	27.52	31.02	33.00	PASS
GPRS1900	661	4	25.63	29.13	33.00	PASS
GPRS1900	810	1	28.73	32.23	33.00	PASS
GPRS1900	810	2	28.76	32.26	33.00	PASS
GPRS1900	810	3	27.36	30.86	33.00	PASS
GPRS1900	810	4	25.40	28.90	33.00	PASS

Band	Channel	Slot	Power(dBm)	ERP/EIRP (dBm)	Limit(dBm)	Verdict
EGPRS850	128	1	25.82	23.47	38.45	PASS
EGPRS850	128	2	24.53	22.18	38.45	PASS
EGPRS850	128	3	22.56	20.21	38.45	PASS
EGPRS850	128	4	20.48	18.13	38.45	PASS
EGPRS850	190	1	25.86	23.51	38.45	PASS
EGPRS850	190	2	24.50	22.15	38.45	PASS
EGPRS850	190	3	22.07	19.72	38.45	PASS
EGPRS850	190	4	19.93	17.58	38.45	PASS
EGPRS850	251	1	25.99	23.64	38.45	PASS
EGPRS850	251	2	24.66	22.31	38.45	PASS
EGPRS850	251	3	22.65	20.30	38.45	PASS

EGPRS850	251	4	20.53	18.18	38.45	PASS
EGPRS1900	512	1	25.94	29.44	33.00	PASS
EGPRS1900	512	2	24.46	27.96	33.00	PASS
EGPRS1900	512	3	22.43	25.93	33.00	PASS
EGPRS1900	512	4	20.25	23.75	33.00	PASS
EGPRS1900	661	1	25.54	29.04	33.00	PASS
EGPRS1900	661	2	24.09	27.59	33.00	PASS
EGPRS1900	661	3	22.00	25.50	33.00	PASS
EGPRS1900	661	4	19.79	23.29	33.00	PASS
EGPRS1900	810	1	25.84	29.34	33.00	PASS
EGPRS1900	810	2	24.47	27.97	33.00	PASS
EGPRS1900	810	3	22.41	25.91	33.00	PASS
EGPRS1900	810	4	20.37	23.87	33.00	PASS

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6. PEAK-TO-AVERAGE RATIO

6.1 LIMIT

According to FCC section 22.913(d), 24.232(d), the peak to average ratio (PAR) of the transmission may not exceed 13dB.

6.2 TEST PROCEDURES

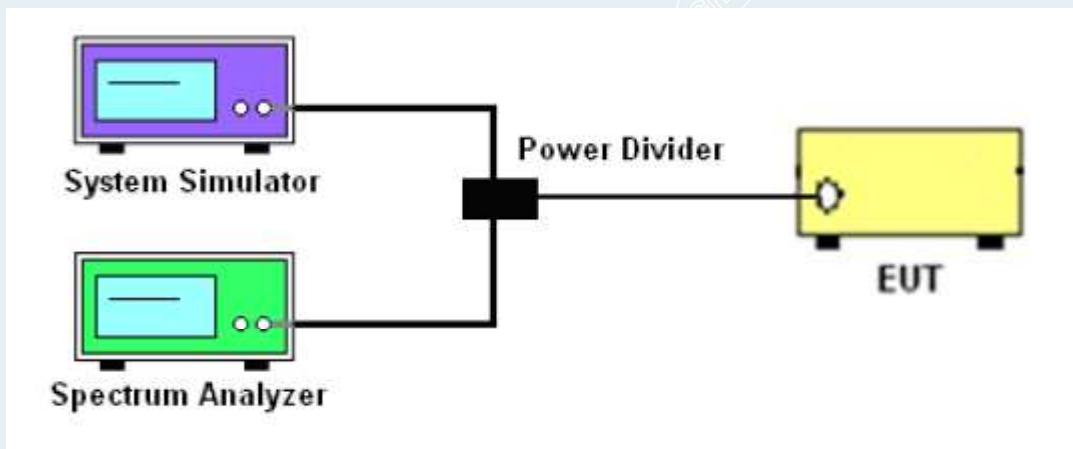
Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 5.7.1

A peak to average ratio measurement is performed at the conducted port of the EUT. For WWAN signals, the spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

Test Settings

1. The signal analyzer's CCDF measurement profile is enabled
2. Frequency = carrier center frequency
3. Measurement BW > Emission bandwidth of signal
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

6.3 TEST SETUP



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6.4 TEST RESULTS

EUT Name	Remote Monitor System	Model	FLC-WNP019
Sample No.	E202304116396-0002	Test Mode	GSM
Power supply	DC 3.6V	Environmental Conditions	Temp:22.5℃;Humi:45%RH
Test Date	2023-04-17 to 2023-04-28	Test Site	shielded room-4
Tested By	Zhu Rongting	Reviewed by	Zhao Zetian

Band	Channel	Result(dB)	Limit(dB)	Verdict
GSM850	128	2.59	13	PASS
GSM850	190	2.6	13	PASS
GSM850	251	2.61	13	PASS
GPRS850	128	2.6	13	PASS
GPRS850	190	6.03	13	PASS
GPRS850	251	2.62	13	PASS
EGPRS850	128	5.7	13	PASS
EGPRS850	190	5.69	13	PASS
EGPRS850	251	5.62	13	PASS
PCS1900	512	2.61	13	PASS
PCS1900	661	2.61	13	PASS
PCS1900	810	2.61	13	PASS
GPRS1900	512	2.61	13	PASS
GPRS1900	661	2.61	13	PASS
GPRS1900	810	6.03	13	PASS
EGPRS1900	512	5.32	13	PASS
EGPRS1900	661	8.05	13	PASS
EGPRS1900	810	5.37	13	PASS

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GSM850-128



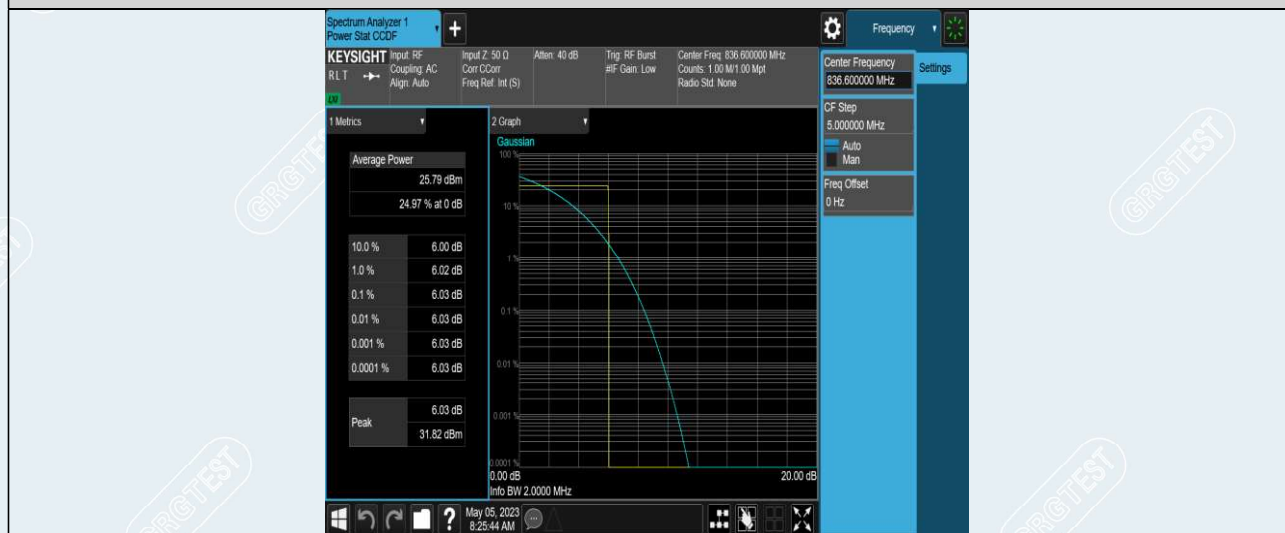
GSM850-190



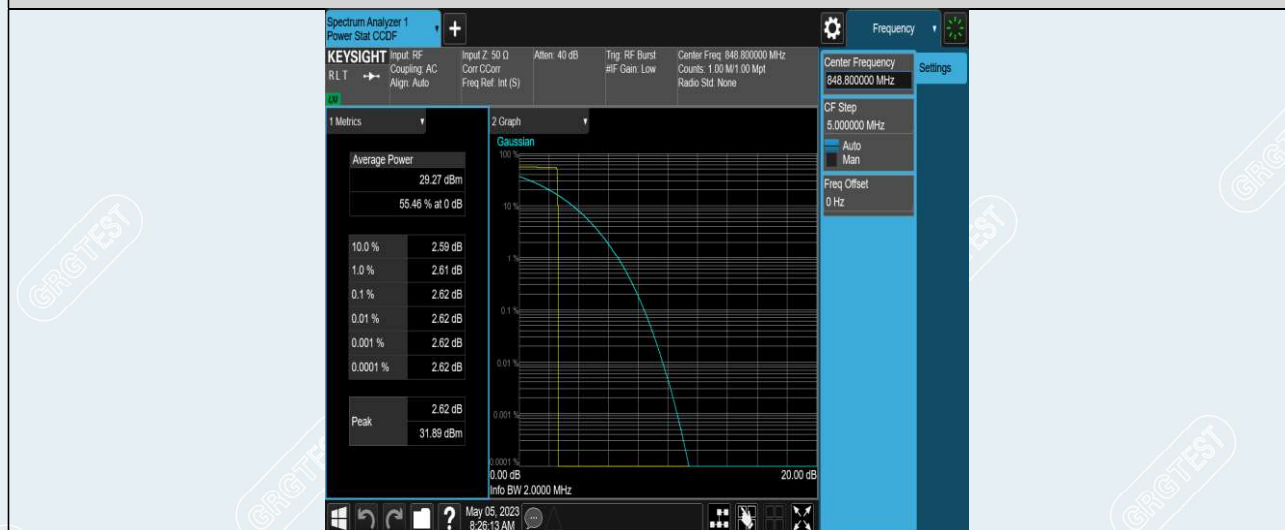
GSM850-251



GPRS850-128



GPRS850-190



GPRS850-251



EGPRS850-128



EGPRS850-190



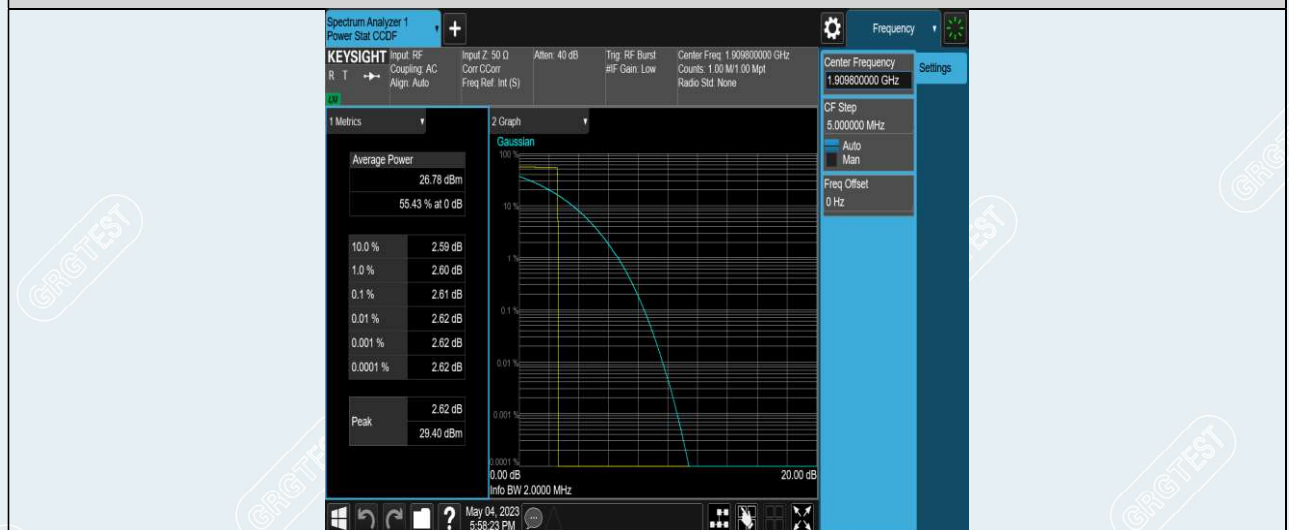
EGPRS850-251



PCS1900-512



PCS1900-661



PCS1900-810



GPRS1900-512



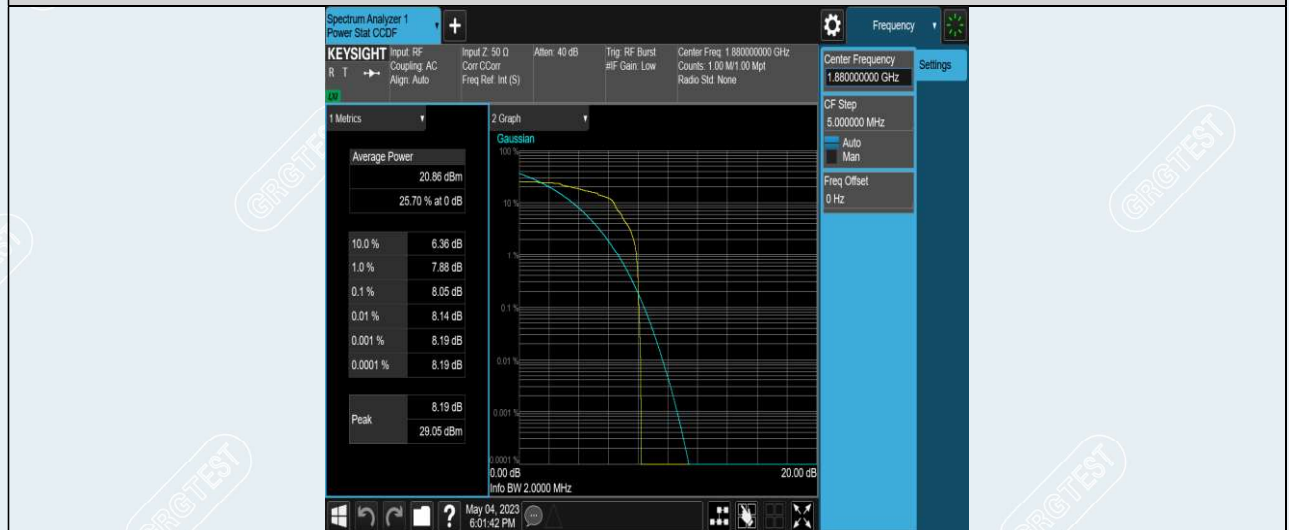
GPRS1900-661



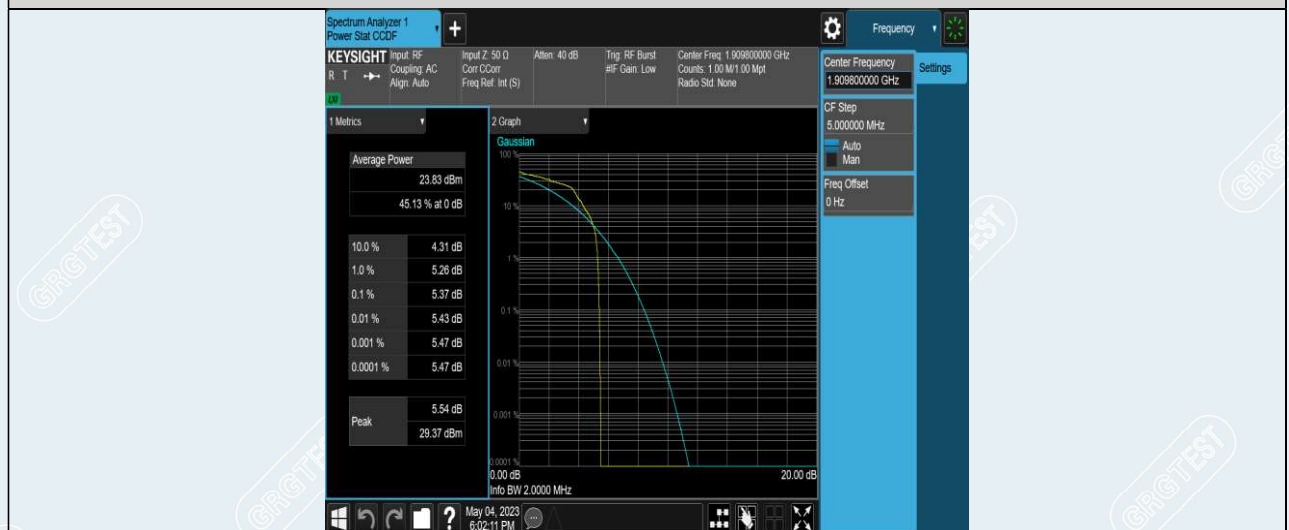
GPRS1900-810



EGPRS1900-512



EGPRS1900-661



EGPRS1900-810

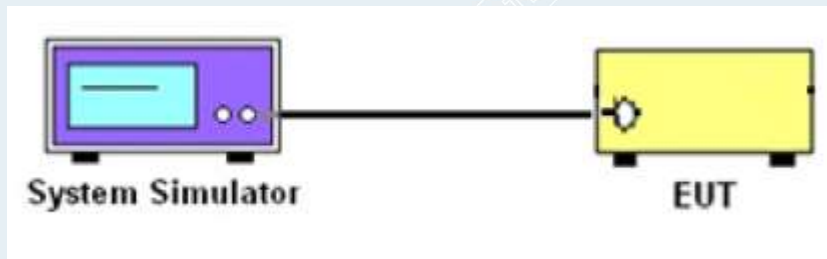
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7. MODULATION CHARACTERISTICS

7.1 TEST PROCEDURES

The devices may employ any type of modulation techniques. The type of modulation used must be reported.

7.2 TEST SETUP



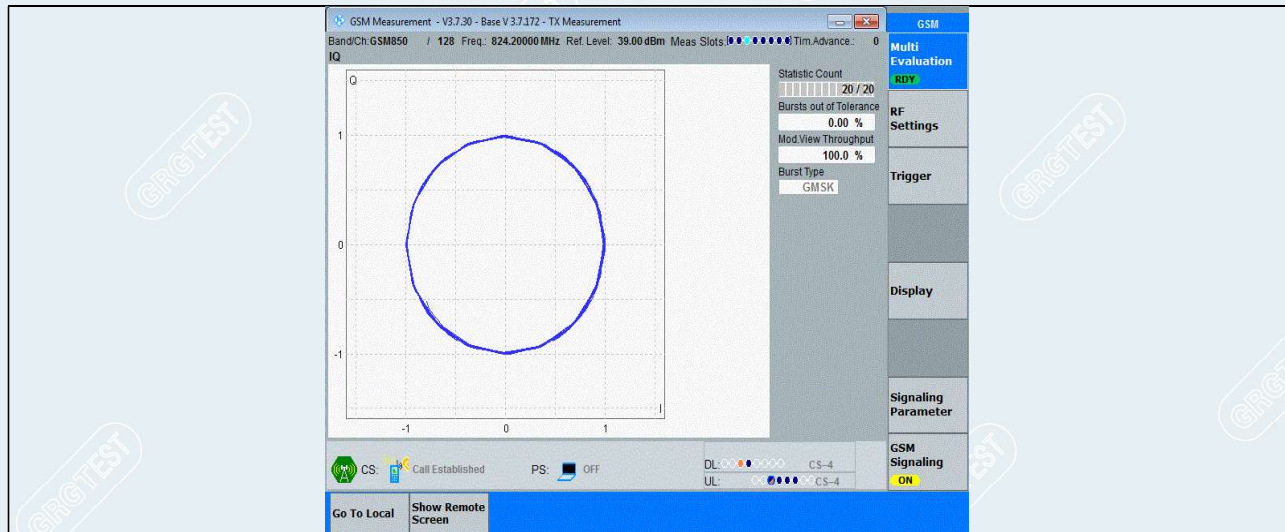
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7.3 TEST RESULTS

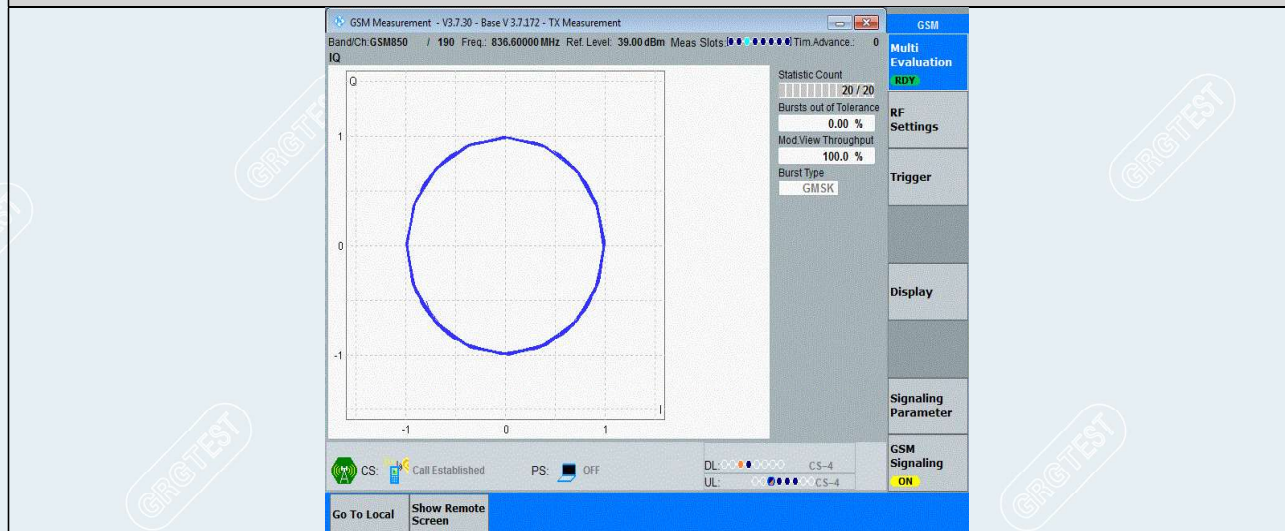
EUT Name	Remote Monitor System	Model	FLC-WNP019
Sample No.	E202304116396-0002	Test Mode	GSM
Power supply	DC 3.6V	Environmental Conditions	Temp:23.1℃;Humi:47%RH
Test Date	2023-04-17 to 2023-04-28	Test Site	shielded room-4
Tested By	Zhu Rongting	Reviewed by	Zhao Zetian

Band	Channel	Result	Verdict
GSM850	128	Digital modulation	PASS
GSM850	190	Digital modulation	PASS
GSM850	251	Digital modulation	PASS
GPRS850	128	Digital modulation	PASS
GPRS850	190	Digital modulation	PASS
GPRS850	251	Digital modulation	PASS
EGPRS850	128	Digital modulation	PASS
EGPRS850	190	Digital modulation	PASS
EGPRS850	251	Digital modulation	PASS
PCS1900	512	Digital modulation	PASS
PCS1900	661	Digital modulation	PASS
PCS1900	810	Digital modulation	PASS
GPRS1900	512	Digital modulation	PASS
GPRS1900	661	Digital modulation	PASS
GPRS1900	810	Digital modulation	PASS
EGPRS1900	512	Digital modulation	PASS
EGPRS1900	661	Digital modulation	PASS
EGPRS1900	810	Digital modulation	PASS

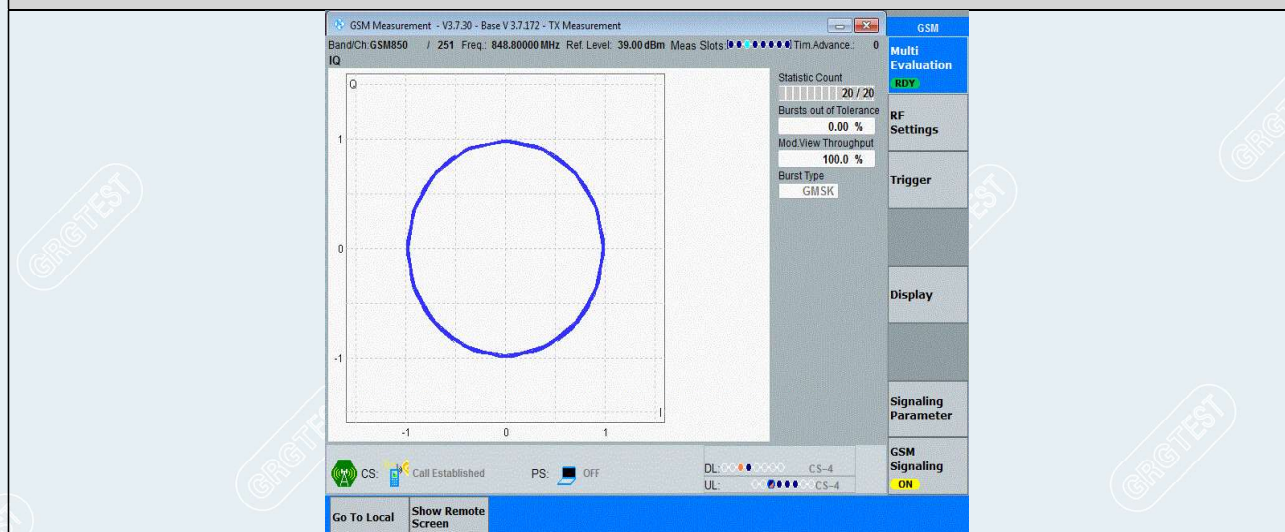
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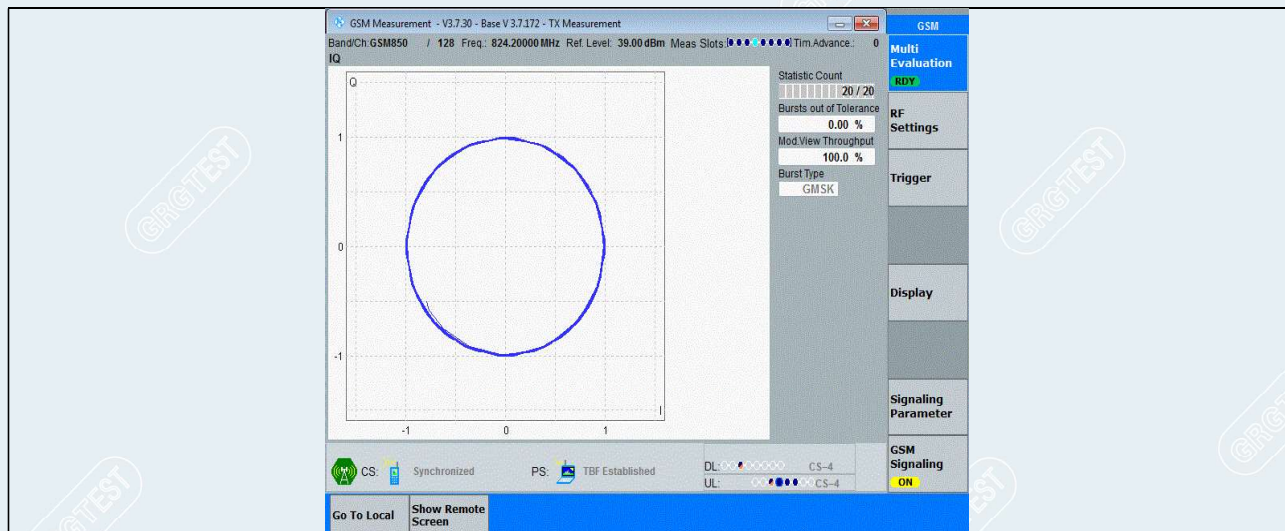
GSM850-128



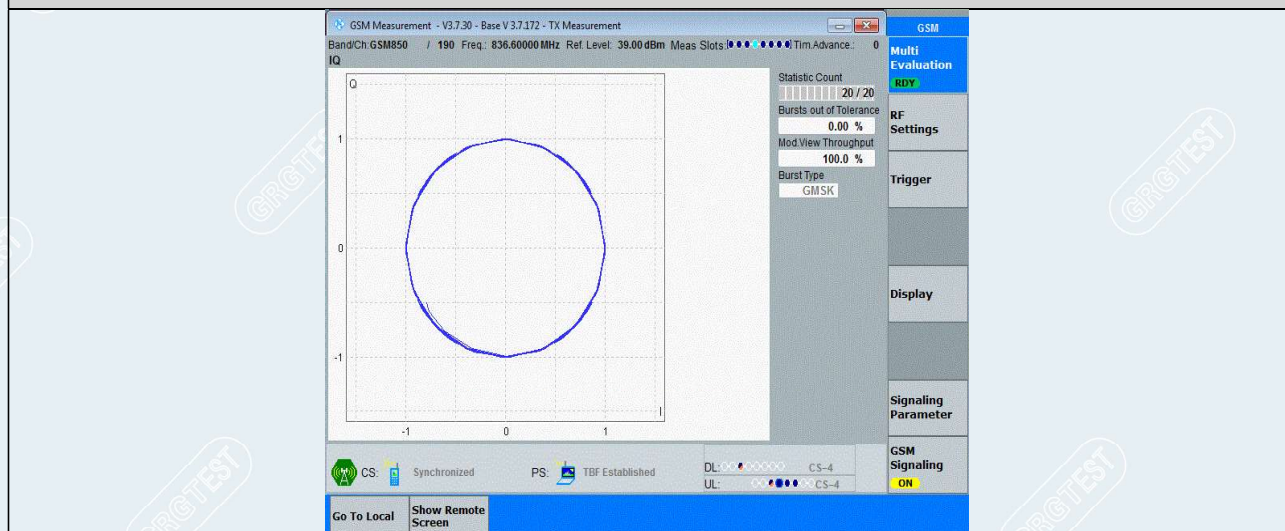
GSM850-190



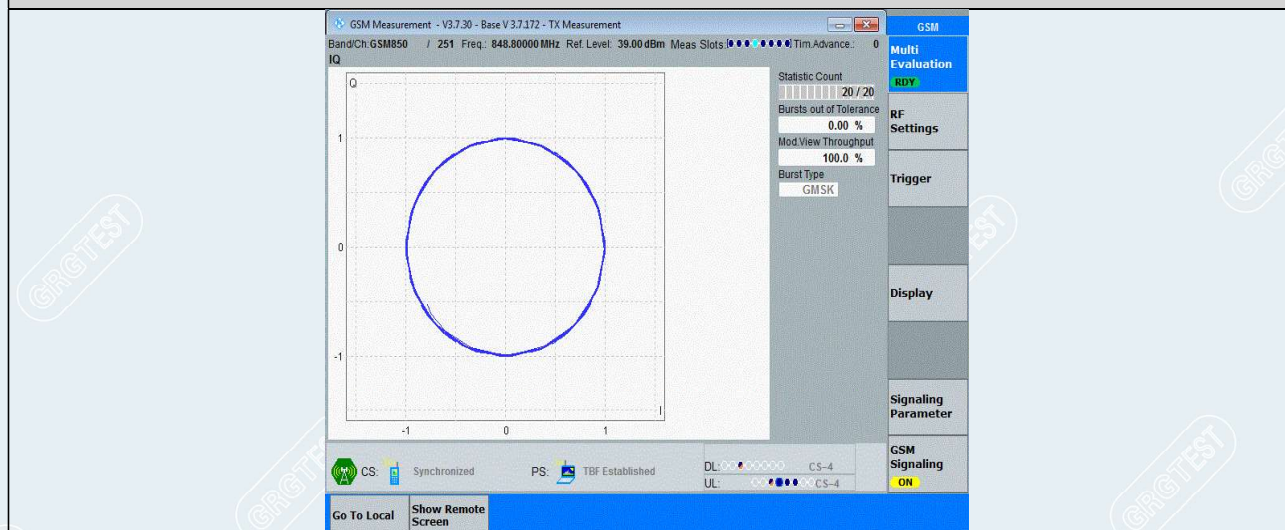
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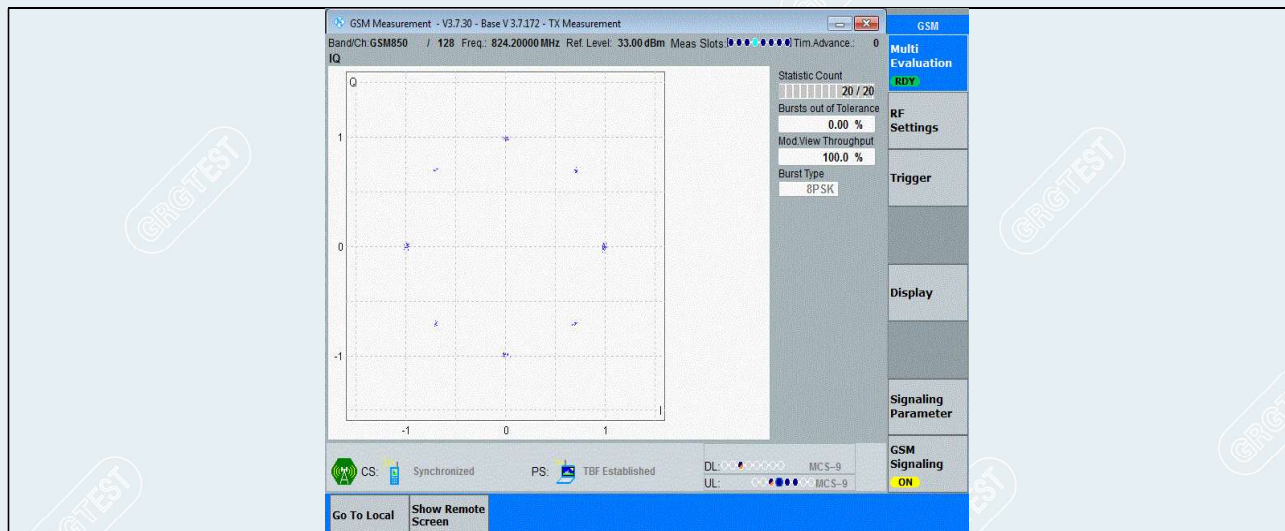
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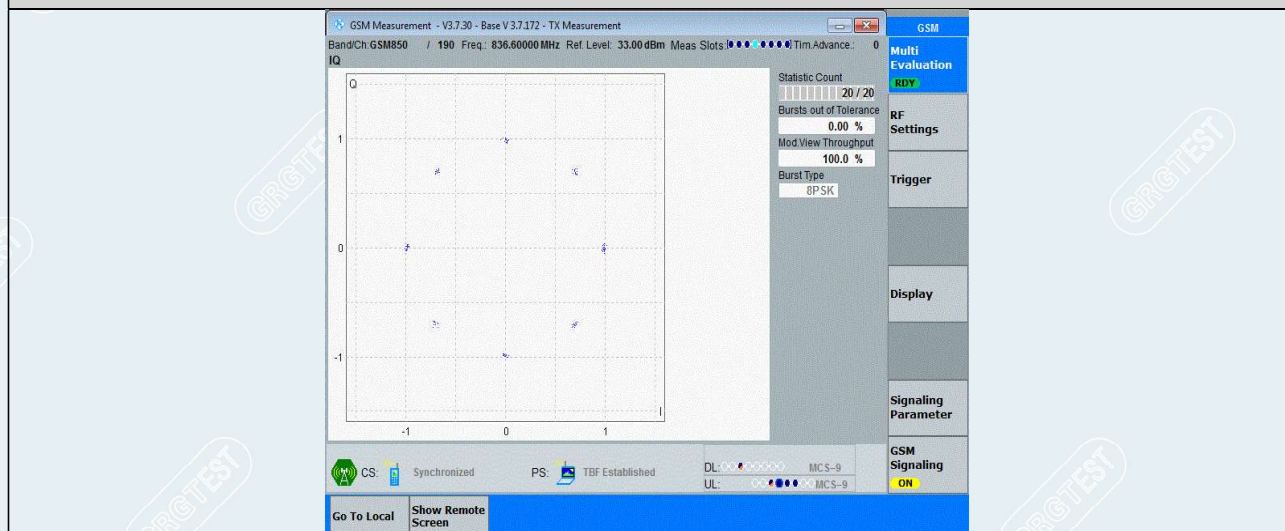
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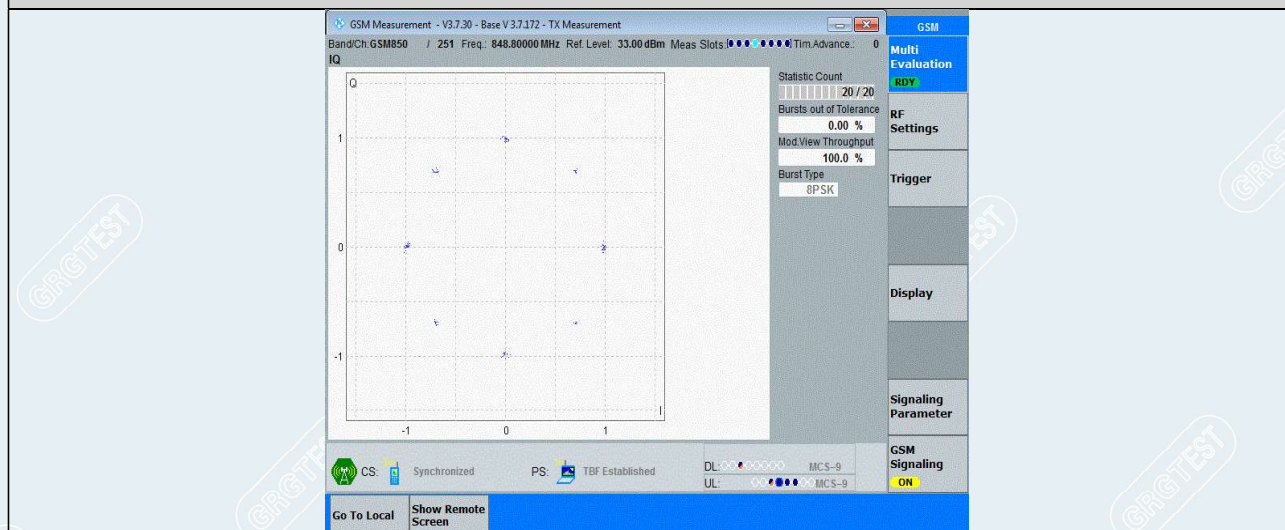
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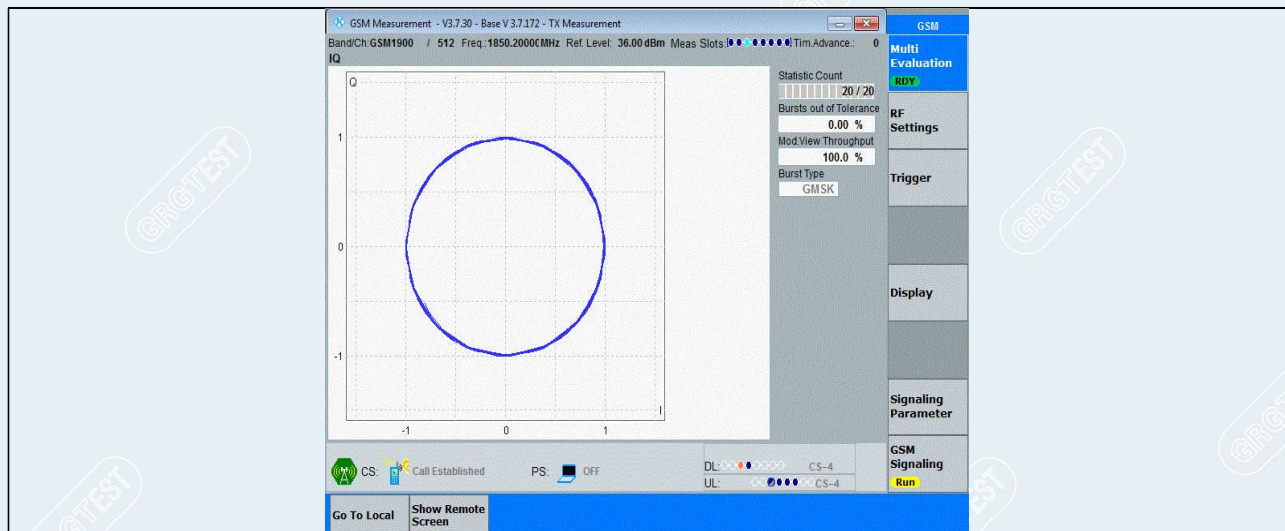
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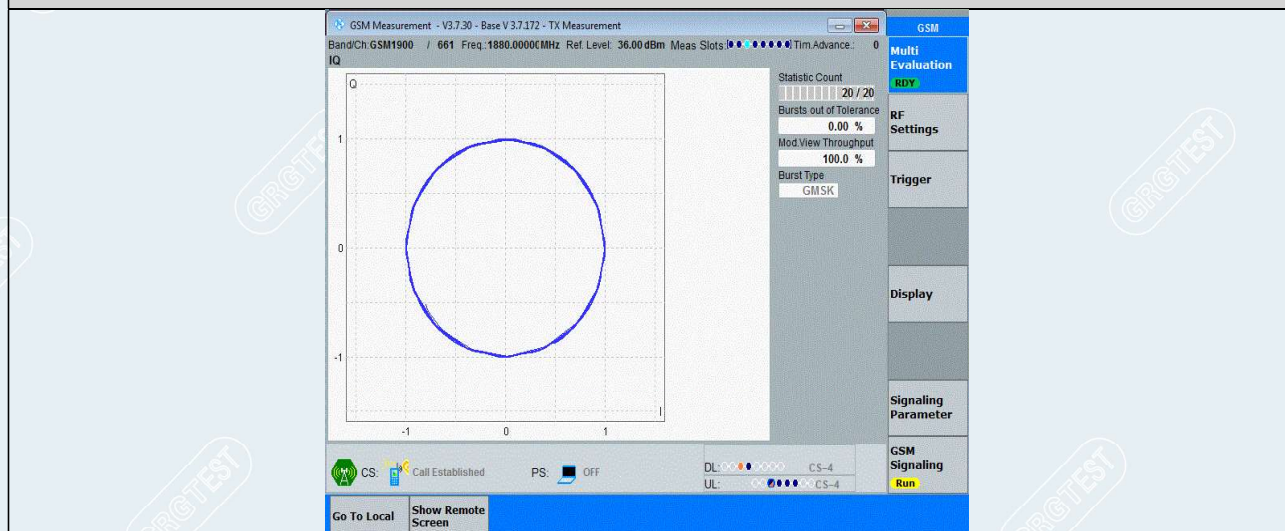
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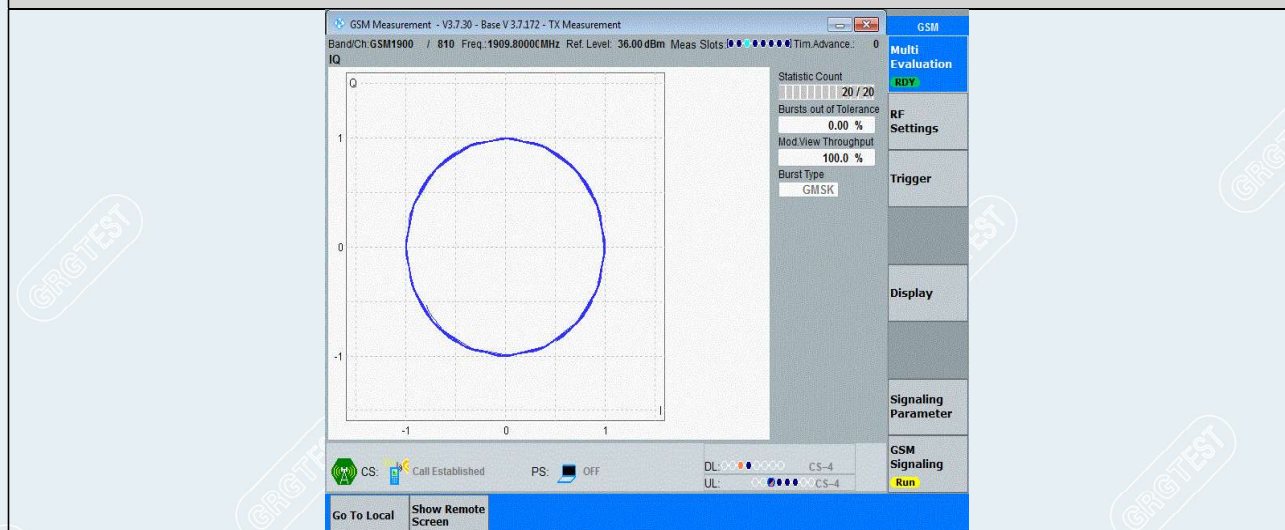
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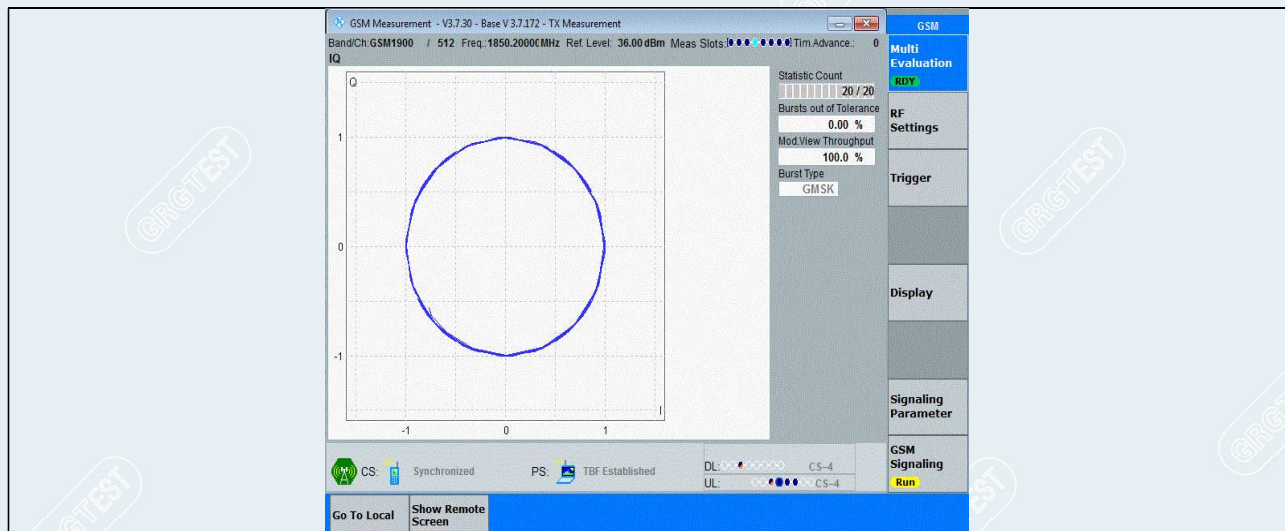
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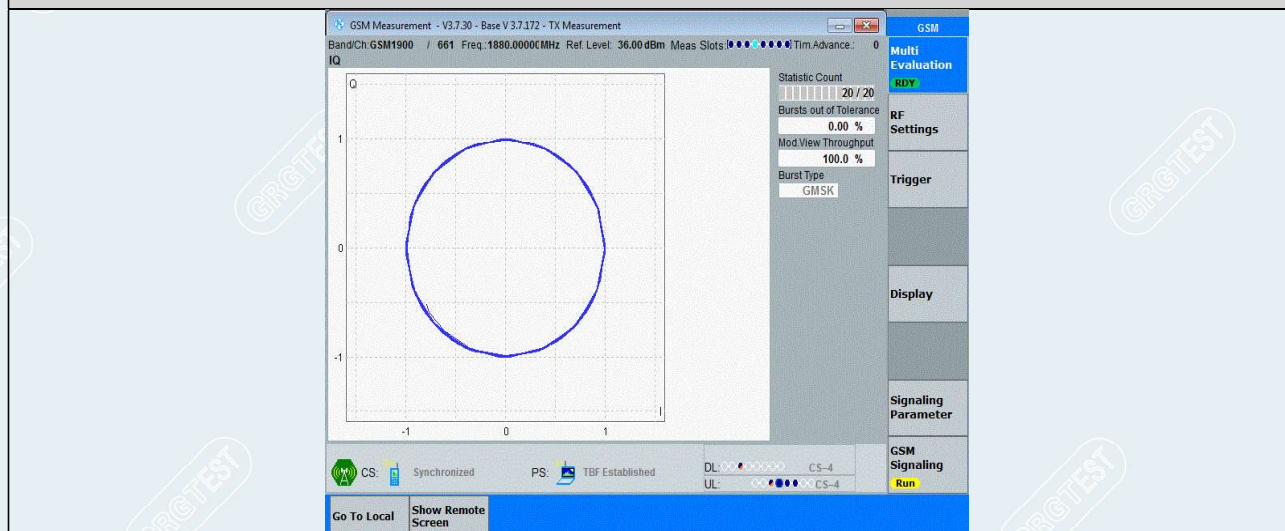
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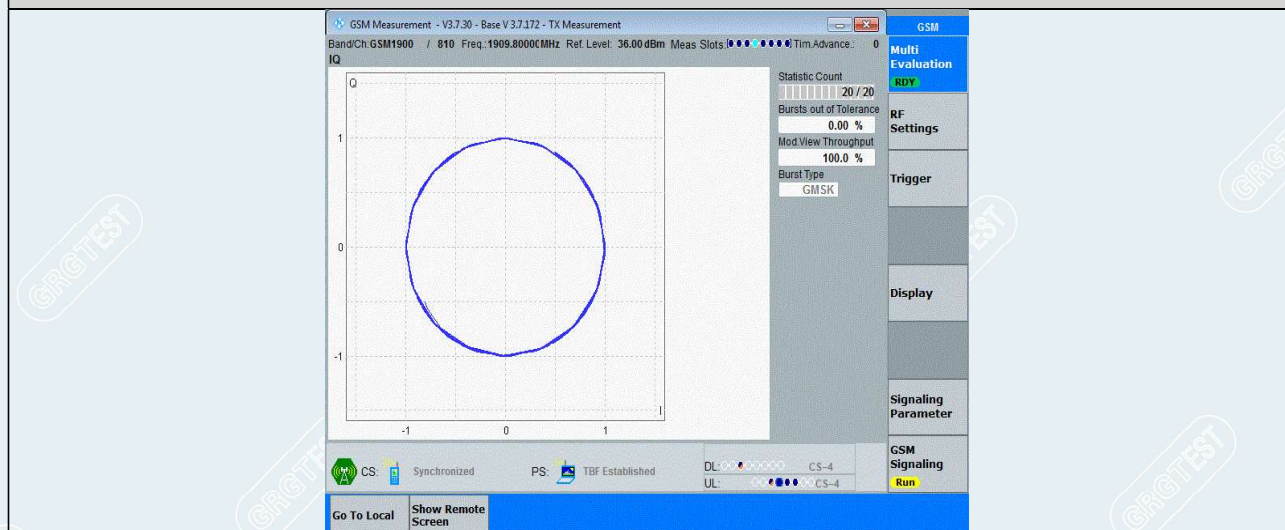
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GPRS1900-512



GPRS1900-661



GPRS1900-810