

Test Report

FCC ID: XX2-UBIO-TABLET5

Date of issue: June 20, 2019

Report Number:	MTi190611E070
Sample Description:	UBio Tablet5
Model(s):	UBio Tablet5
Applicant:	UNION COMMUNITY
Address:	12F, Munjeong Daemyeong Valeon bldg, 127 Beobwon-ro Songpa-gu, South Korea
Date of Test:	May 05, 2019 to June 20, 2019

Shenzhen Microtest Co., Ltd.
<http://www.mtitest.com>

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Test Result Certification

Applicant's name: UNION COMMUNITY

Address: 12F, Munjeong Daemyeong Valeon bldg, 127 Beobwon-ro
Songpa-gu, Seoul, South Korea

Manufacture's Name: SHENZHEN HEROFUN BIO-TECH., LTD

Address: 7001B, 7th Floor, LaoBing Building, East Block 2, No. 3012
XingYe Road, BaoAn District, Shenzhen, China

Product name: UBio Tablet5

Trademark: UNION COMMUNITY

Model name: UBio Tablet5

Standards: FCC Part 22 Subpart H
FCC Part 24 Subpart E
FCC Part 2
ANSI/TIA-603-E-2016

Test Procedure: ANSI C63.26:2015
KDB 971168 D01 Power Meas License Digital Systems
v03r01

This device described above has been tested by Shenzhen Microtest Co., Ltd. and the test results show that the equipment under test (EUT) compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

Tested by:



Jone Lee

June 20, 2019

Reviewed by:



Blue Zheng

June 20, 2019

Approved by:



Smith Chen

June 20, 2019

1 General description

1.1 Feature of equipment under test (EUT)

Product name:	UBio Tablet5
Trade name	UNION COMMUNITY
Model name:	UBio Tablet5
Difference in series models:	N/A
Frequency range:	GSM850: TX824.2MHz~848.8MHz /RX869.2MHz~893.8MHz; PCS1900: TX1850.2MHz~1909.8MHz /RX1930.2MHz~1989.8MHz; WCDMA Band II: TX1852.4MHz~1907.6MHz RX1932.4MHz~1987.6MHz; WCDMA Band V: TX826.4MHz~846.6MHz RX871.4MHz~891.6MHz;
Modulation type:	GMSK for GSM/GPRS; 8PSK for EGPRS; QPSK for WCDMA bands;
Power class:	Multi-Class12 Only 4 timeslots are used for GPRS
SIM card:	The UBio Tablet5 has Two SIM Card socket
Antenna Type	FPC Antenna
Antenna gain:	GSM 850 Gain: 0.85dBi GSM 1900 Gain: 0.96dBi WCDMA Band II: 1.0dBi WCDMA Band V: 0.83dBi
Hardware version	HYF_BH502G_V4.0_20190415
Software version	SW01_H_BH502G_20190420
Power supply:	DC 3.7V from Battery or DC 5V from adapter
Battery:	DC 3.7V 6000mAh
Adapter information:	N/A

1.2 Test frequency channel

Frequency Band	Frequency	Channel	Frequency(MHz)
GSM 850	Low	128	824.2
	Middle	190	836.6
	High	251	848.8
GSM 1900	Low	512	1850.2
	Middle	661	1880
	High	810	1909.8
WCDMA Band II	Low	9262	1852.4
	Middle	9400	1880
	High	9538	1907.6
WCDMA Band V	Low	4132	826.4
	Middle	4183	836.6
	High	4233	846.6

1.3 EUT operation mode

During testing, RF test program provided by the manufacture to control the Tx operation followed the test requirement. The EUT is configured to transmit continuously (duty cycle > 98 %) at the maximum power control level.

1.4 Test conditions

During the measurement the environmental conditions were within the listed ranges:

- Temperature: 15°C~35°C
- Humidity: 20%~75%
- Atmospheric pressure: 98kPa~101kPa

1.5 Testing site

Test Site	Shenzhen Microtest Co., Ltd.
Test Site Location	No.102A & 302A, East Block, Hengfang Industrial Park, Xingye Road, Xixiang, Bao'an District, Shenzhen, Guangdong, China
FCC Registration No.:	448573

1.6 Ancillary equipment list

Equipment	Model	S/N	Manufacturer	Certificate type
Adapter	/	/	/	/

1.7 Measurement uncertainty

Measurement Uncertainty for a Level of Confidence of 95 %, $U=2 \times U_c(y)$

RF frequency	1×10^{-7}
RF power, conducted	± 1 dB
Conducted emission(150kHz~30MHz)	± 2.5 dB
Radiated emission(30MHz~1GHz)	± 4.2 dB
Radiated emission (above 1GHz)	± 4.3 dB
Temperature	± 1 degree
Humidity	± 5 %

2 Summary of Test Result

Item	FCC Part No.	Description of Test	Result
1	2.1046, 22.913(a); 24.232(c)	Maximum output power	Pass
2	2.1046, 22.913(d); 24.232(d)	Peak to average power ratio(PAPR)	Pass
3	2.1046, 22.913(a); 24.232(c)	Transmitter Radiated Power (EIRP/ERP)	Pass
4	2.1049; 22.917(b); 24.238(b)	Occupied Bandwidth	Pass
5	2.1051; 22.917(a); 24.238(a)	Conducted spurious emissions	Pass
6	2.1051; 22.917(b); 24.238(b)	Spurious emissions at band edge	Pass
7	2.1053; 22.917(a); 24.238(a)	Radiated spurious emissions	Pass
8	2.1055; 22.355; 24.235	Frequency Stability	Pass

3 Test facilities and accreditations

3.1 Test laboratory

Test Laboratory	Shenzhen Microtest Co., Ltd
Location	No.102A & 302A, East Block, Hengfang Industrial Park, Xingye Road, Xixiang, Bao'an District, Shenzhen, Guangdong, China
FCC Registration No.:	FCC Registration No.: 448573

3.2 Environmental conditions

Temperature:	15°C~35°C
Humidity	20%~75%
Atmospheric pressure	98kPa~101kPa

3.3 Measurement uncertainty

Measurement Uncertainty for a Level of Confidence of 95 %, $U=2 \times U_c(y)$

RF frequency	1×10^{-7}
RF power, conducted	± 1 dB
Conducted emission(150kHz~30MHz)	± 2.5 dB
Radiated emission(30MHz~1GHz)	± 4.2 dB
Radiated emission (above 1GHz)	± 4.3 dB
Temperature	± 1 degree
Humidity	± 5 %

3.4 Test software

Software Name	Manufacturer	Model	Version
RF Test System	Farad	LZ-RF	Lz_Rf 3A3

4 List of test equipment

Equipment No.	Equipment Name	Manufacturer	Model	Serial No.	Calibration date	Due date
MTI-E001	Spectrum Analyzer	Agilent	E4407B	MY41441082	2018/09/18	2019/09/17
MTI-E004	EMI Test Receiver	Rohde&schwarz	ESPI	1000314	2018/09/18	2019/09/17
MTI-E006	Broadband antenna	schwarabeck	VULB9163	872	2018/09/18	2019/09/17
MTI-E007	Horn antenna	schwarabeck	BBHA9120D	1201	2018/09/18	2019/09/17
MTI-E014	amplifier	America	8447D	3113A06150	2018/09/18	2019/09/17
MTI-E015	Conduction Immunity Signal Generator	Schloder	CDG6000	126A1343/2015	2018/09/18	2019/09/17
MTI-E016	Coupled decoupling network	Schloder	CDA M2/M3	A2210332/2015	2018/09/18	2019/09/17
MTI-E032	Comprehensive test instrument	Rohde&schwarz	CMW500	124192	2018/09/18	2019/09/17
MTI-E034	amplifier	Agilent	8449B	3008A02400	2018/09/18	2019/09/17
MTI-E040	Spectrum analyzer	Agilent	N9020A	MY49100060	2018/09/18	2019/09/17
MTI-E041	Signal generator	Agilent	N5182A	MY49060455	2018/09/18	2019/09/17
MTI-E042	Analog signal generator	Agilent	E4421B	GB40051240	2018/09/18	2019/09/17
MTI-E043	Power probe	Dare Instruments	RPR3006W	16I00054SN O16	2018/09/18	2019/09/17
MTI-E047	10dB attenuator	Mini-Circuits	UNAT-10+	15542	2018/09/18	2019/09/17
MTI-E049	spectrum analyzer	Rohde&schwarz	FSP-38	100019	2018/09/18	2019/09/17
MTI-E050	PSG Signal generator	Agilent	E8257D	MY46520873	2018/09/18	2019/09/17
MTI-E061	Active Loop Antenna 9kHz - 30MHz	Schwarzbeek	FMZB 1519 B	00044	2018/09/18	2019/09/17
MTI-E052	18-40GHz amplifier	Chengdu step Micro Technology	ZLNA-18-40G-21	1608001	2018/09/18	2019/09/17
MTI-E053	15-40G Antenna	Schwarzbeek	BBHA9170	BBHA9170582	2018/09/18	2019/09/17
MTI-B046	DC power supply	QJE	QJ3020E	015170	2018/09/18	2019/09/17

Note: the calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

5 Test Result

5.1 Maximum output power and EIRP & ERP

5.1.1 Limit

For FCC 22.913: The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

For FCC 24.234: Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13dB.

5.1.2 Test method

For Conducted output power:

1. Use a universal radio communication tester, the output power of EUT was measured at the antenna terminal. The path loss was calibrated and entered as an offset into the test equipment.
2. The EUT was configured to transmit on maximum power by the radio communication tester.
3. Measured the peak and average powers.

For EIRP & ERP:

1. In many cases, the RF output power limits for licensed digital transmission devices is specified in terms of effective radiated power (ERP) or equivalent isotropic radiated power (EIRP). Typically, ERP is specified when the operating frequency is less than or equal to 1 GHz and EIRP is specified when the operating frequency is greater than 1 GHz. Both are determined by adding the transmit antenna gain to the conducted RF output power with the primary difference between the two being that when determining the ERP, the transmit antenna gain is referenced to a dipole antenna (i.e., dBd) whereas when determining the EIRP, the transmit antenna gain is referenced to an isotropic antenna (dBi).

2. The relevant equation for determining the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:

$$\text{ERP/EIRP} = P_{\text{Meas}} + \text{GT} - \text{LC}$$

where:

ERP/EIRP = effective or equivalent radiated power, respectively (expressed in the same units as P_{Meas} , typically dBW or dBm);

P_{Meas} = measured transmitter output power or PSD, in dBm or dBW;

GT = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

dBd (ERP)=dBi (EIRP) -2.15 dB

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

For devices utilizing multiple antennas, KDB 662911 provides guidance for determining the effective array transmit antenna gain term to be used in the above equation.

5.1.3 Test Result

For Conducted output power:

Band	Channel	PCL	Power(dBm)	Limit(dBm)	Verdict
GSM850	128	5	31.06	38.5	PASS
GSM850	190	5	29.61	38.5	PASS
GSM850	251	5	30.42	38.5	PASS
GSM1900	512	0	28.92	33	PASS
GSM1900	661	0	29.24	33	PASS
GSM1900	810	0	29.24	33	PASS

Band	Channel	PCL	Slot	Power(dBm)	Limit(dBm)	Verdict
GPRS850	128	5	1	31.14	38.5	PASS
GPRS850	128	5	2	30.73	38.5	PASS
GPRS850	128	5	3	29.21	38.5	PASS
GPRS850	128	5	4	27.51	38.5	PASS
GPRS850	190	5	1	31.55	38.5	PASS
GPRS850	190	5	2	30.93	38.5	PASS
GPRS850	190	5	3	29.39	38.5	PASS
GPRS850	190	5	4	27.70	38.5	PASS
GPRS850	251	5	1	31.68	38.5	PASS
GPRS850	251	5	2	31.06	38.5	PASS
GPRS850	251	5	3	29.52	38.5	PASS
GPRS850	251	5	4	27.83	38.5	PASS
GPRS1900	512	0	1	28.98	33	PASS
GPRS1900	512	0	2	28.32	33	PASS
GPRS1900	512	0	3	27.14	33	PASS
GPRS1900	512	0	4	25.49	33	PASS
GPRS1900	661	0	1	29.25	33	PASS
GPRS1900	661	0	2	28.69	33	PASS
GPRS1900	661	0	3	27.24	33	PASS
GPRS1900	661	0	4	25.76	33	PASS
GPRS1900	810	0	1	29.21	33	PASS
GPRS1900	810	0	2	28.82	33	PASS
GPRS1900	810	0	3	27.20	33	PASS
GPRS1900	810	0	4	25.72	33	PASS

Band	Channel	PCL	Slot	Power(dBm)	Limit(dBm)	Verdict
EGPRS850	128	8	1	32.92	38.5	PASS
EGPRS850	128	8	2	32.80	38.5	PASS
EGPRS850	128	8	3	31.98	38.5	PASS
EGPRS850	128	8	4	30.40	38.5	PASS
EGPRS850	190	8	1	32.89	38.5	PASS
EGPRS850	190	8	2	33.10	38.5	PASS
EGPRS850	190	8	3	31.92	38.5	PASS
EGPRS850	190	8	4	30.57	38.5	PASS
EGPRS850	251	8	1	32.23	38.5	PASS
EGPRS850	251	8	2	33.07	38.5	PASS
EGPRS850	251	8	3	31.76	38.5	PASS
EGPRS850	251	8	4	30.31	38.5	PASS
EGPRS1900	512	2	1	30.81	33	PASS
EGPRS1900	512	2	2	30.48	33	PASS
EGPRS1900	512	2	3	29.23	33	PASS
EGPRS1900	512	2	4	27.48	33	PASS
EGPRS1900	661	2	1	30.54	33	PASS
EGPRS1900	661	2	2	30.42	33	PASS
EGPRS1900	661	2	3	28.91	33	PASS
EGPRS1900	661	2	4	27.18	33	PASS
EGPRS1900	810	2	1	29.72	33	PASS
EGPRS1900	810	2	2	29.72	33	PASS
EGPRS1900	810	2	3	28.01	33	PASS
EGPRS1900	810	2	4	26.17	33	PASS

Band	Channel	Power(dBm)	Limit(dBm)	Verdict
Band II	9262	21.49	33	PASS
Band II	9400	21.73	33	PASS
Band II	9538	21.89	33	PASS
Band V	4132	21.83	38.5	PASS
Band V	4182	22.02	38.5	PASS
Band V	4233	21.77	38.5	PASS

Band	Channel	SubTest	Power(dBm)	Limit(dBm)	Verdict
Band II	9262	HSDPA_Sub0	19.89	33	PASS
Band II	9262	HSDPA_Sub1	19.46	33	PASS
Band II	9262	HSDPA_Sub2	19.47	33	PASS
Band II	9262	HSDPA_Sub3	19.46	33	PASS
Band II	9400	HSDPA_Sub0	20.18	33	PASS
Band II	9400	HSDPA_Sub1	19.72	33	PASS
Band II	9400	HSDPA_Sub2	19.73	33	PASS
Band II	9400	HSDPA_Sub3	19.71	33	PASS
Band II	9538	HSDPA_Sub0	20.15	33	PASS
Band II	9538	HSDPA_Sub1	19.68	33	PASS
Band II	9538	HSDPA_Sub2	19.71	33	PASS
Band II	9538	HSDPA_Sub3	19.67	33	PASS
Band V	4132	HSDPA_Sub0	21.22	38.5	PASS
Band V	4132	HSDPA_Sub1	20.74	38.5	PASS
Band V	4132	HSDPA_Sub2	20.73	38.5	PASS
Band V	4132	HSDPA_Sub3	20.69	38.5	PASS
Band V	4182	HSDPA_Sub0	21.35	38.5	PASS
Band V	4182	HSDPA_Sub1	20.51	38.5	PASS
Band V	4182	HSDPA_Sub2	20.50	38.5	PASS
Band V	4182	HSDPA_Sub3	20.49	38.5	PASS
Band V	4233	HSDPA_Sub0	20.73	38.5	PASS
Band V	4233	HSDPA_Sub1	20.20	38.5	PASS
Band V	4233	HSDPA_Sub2	20.27	38.5	PASS
Band V	4233	HSDPA_Sub3	20.23	38.5	PASS

Band	Channel	SubTest	Power(dBm)	Limit(dBm)	Verdict
Band II	9262	HSUPA_Sub1	18.46	33	PASS
Band II	9262	HSUPA_Sub2	19.01	33	PASS
Band II	9262	HSUPA_Sub3	19.49	33	PASS
Band II	9262	HSUPA_Sub4	18.48	33	PASS
Band II	9262	HSUPA_Sub5	20.42	33	PASS
Band II	9400	HSUPA_Sub1	18.76	33	PASS

Band II	9400	HSUPA_Sub2	19.26	33	PASS
Band II	9400	HSUPA_Sub3	19.76	33	PASS
Band II	9400	HSUPA_Sub4	18.77	33	PASS
Band II	9400	HSUPA_Sub5	20.72	33	PASS
Band II	9538	HSUPA_Sub1	18.82	33	PASS
Band II	9538	HSUPA_Sub2	19.26	33	PASS
Band II	9538	HSUPA_Sub3	20.00	33	PASS
Band II	9538	HSUPA_Sub4	18.76	33	PASS
Band II	9538	HSUPA_Sub5	20.78	33	PASS
Band V	4132	HSUPA_Sub1	19.21	38.5	PASS
Band V	4132	HSUPA_Sub2	19.75	38.5	PASS
Band V	4132	HSUPA_Sub3	20.21	38.5	PASS
Band V	4132	HSUPA_Sub4	19.18	38.5	PASS
Band V	4132	HSUPA_Sub5	21.14	38.5	PASS
Band V	4182	HSUPA_Sub1	19.39	38.5	PASS
Band V	4182	HSUPA_Sub2	19.86	38.5	PASS
Band V	4182	HSUPA_Sub3	20.41	38.5	PASS
Band V	4182	HSUPA_Sub4	19.38	38.5	PASS
Band V	4182	HSUPA_Sub5	21.34	38.5	PASS
Band V	4233	HSUPA_Sub1	19.08	38.5	PASS
Band V	4233	HSUPA_Sub2	19.60	38.5	PASS
Band V	4233	HSUPA_Sub3	20.08	38.5	PASS
Band V	4233	HSUPA_Sub4	19.13	38.5	PASS
Band V	4233	HSUPA_Sub5	21.04	38.5	PASS

For EIRP & ERP:

For GSM 850

Frequency	Polarization	SG	Cable Loss	Antenna Gain	Correction	ERP	ERP
(MHz)		Level					
		(dBm)	(dB)	(dB)	(dB)	(dBm)	(W)
824.2	H	33.32	0.39	1	2.15	31.78	1.5066
836.6	H	33.05	0.35	1.1	2.15	31.65	1.4622
848.8	H	33.62	0.32	1.2	2.15	32.35	1.7179
824.2	V	32.66	0.39	1	2.15	31.12	1.2942
836.6	V	33.54	0.35	1.1	2.15	32.14	1.6368
848.8	V	33.18	0.32	1.2	2.15	31.91	1.5524

For GPRS 850

Frequency	Polarization	SG	Cable Loss	Antenna Gain	Correction	ERP	ERP
(MHz)		Level					
		(dBm)	(dB)	(dB)	(dB)	(dBm)	(W)
824.2	H	31.52	0.39	1	2.15	29.98	0.9954
836.6	H	31.83	0.35	1.1	2.15	30.43	1.1041
848.8	H	31.47	0.32	1.2	2.15	30.20	1.0471
824.2	V	31.53	0.39	1	2.15	29.99	0.9977
836.6	V	32.08	0.35	1.1	2.15	30.68	1.1695
848.8	V	32.18	0.32	1.2	2.15	30.91	1.2331

For EGPRS 850

Frequency	Polarization	SG	Cable Loss	Antenna Gain	Correction	ERP	ERP
(MHz)		Level					
		(dBm)	(dB)	(dB)	(dB)	(dBm)	(W)
824.2	H	29.95	0.39	1	2.15	28.41	0.6934
836.6	H	29.99	0.35	1.1	2.15	28.59	0.7228
848.8	H	29.93	0.32	1.2	2.15	28.66	0.7345
824.2	V	29.91	0.39	1	2.15	28.37	0.6871
836.6	V	29.91	0.35	1.1	2.15	28.51	0.7096
848.8	V	30.02	0.32	1.2	2.15	28.75	0.7499

For GSM 1900

Frequency	Polarization	SG	Cable Loss	Antenna Gain	EIRP	EIRP
(MHz)		Level				
		(dBm)	(dB)	(dB)	(dBm)	(W)
1850.2	H	30.87	0.47	1.58	31.98	1.5776
1880	H	30.37	0.47	1.72	31.62	1.4521
1909.8	H	29.98	0.46	1.85	31.37	1.3709
1850.2	V	30.35	0.47	1.58	31.46	1.3996
1880	V	30.72	0.47	1.72	31.97	1.5740
1909.8	V	30.07	0.46	1.85	31.46	1.3996

For GPRS 1900

Frequency	Polarization	SG Level	Cable Loss	Antenna Gain	EIRP	EIRP
(MHz)		(dBm)	(dB)	(dB)	(dBm)	(W)
1850.2	H	29.45	0.47	1.58	30.56	1.1376
1880	H	29.60	0.47	1.72	30.85	1.2162
1909.8	H	29.35	0.46	1.85	30.74	1.1858
1850.2	V	30.03	0.47	1.58	31.14	1.3002
1880	V	29.75	0.47	1.72	31.00	1.2589
1909.8	V	29.23	0.46	1.85	30.62	1.1535

For EGPRS 1900

Frequency	Polarization	SG Level	Cable Loss	Antenna Gain	EIRP	EIRP
(MHz)		(dBm)	(dB)	(dB)	(dBm)	(W)
1850.2	H	28.61	0.47	1.58	29.72	0.9376
1880	H	28.92	0.47	1.72	30.17	1.0399
1909.8	H	28.56	0.46	1.85	29.95	0.9886
1850.2	V	28.74	0.47	1.58	29.85	0.9661
1880	V	28.95	0.47	1.72	28.48	0.7047
1909.8	V	28.64	0.46	1.85	28.18	0.6577

For WCDMA BAND II

Frequency	Polarization	SG Level	Cable Loss	Antenna Gain	EIRP	EIRP
(MHz)		(dBm)	(dB)	(dB)	(dBm)	(W)
1852.4	H	22.64	0.47	1.59	23.76	0.2377
1880	H	22.61	0.47	1.72	23.86	0.2432
1907.6	H	22.37	0.46	1.84	23.75	0.2371
1852.4	V	22.30	0.47	1.59	23.42	0.2198
1880	V	22.38	0.47	1.72	23.63	0.2307
1907.6	V	21.97	0.46	1.84	23.35	0.2163

For WCDMA BAND V

Radiated Power (ERP) for UMTS band V							
Frequency	Polarization	SG Level	Cable Loss	Antenna Gain	Correction	(ERP)	ERP
(MHz)		(dBm)	(dB)	(dB)	(dBi)	(dBm)	(W)
826.4	H	23.07	0.39	1	2.15	21.53	0.1422
836.6	H	22.95	0.35	1.1	2.15	21.55	0.1429
846.6	H	22.80	0.32	1.2	2.15	21.53	0.1422
826.4	V	22.57	0.39	1	2.15	21.03	0.1268
836.6	V	22.28	0.35	1.1	2.15	20.88	0.1225
846.6	V	22.25	0.32	1.2	2.15	20.98	0.1253

Note: ERP = SG Level- Cable Loss + Antenna Gain – Correction

EIRP= SG Level- Cable Loss + Antenna Gain

5.2 Peak to average power ratio (PAPR)

5.2.1 Limit

The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB. The PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities to determine that PAPR will not exceed 13 dB for more than 0.1 percent of the time or other Commission approved procedure. The measurement must be performed using a signal corresponding to the highest PAPR expected during periods of continuous transmission.

5.2.2 Test method

The EUT was connected to Spectrum Analyzer and Base Station via power divider.

The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.

Set the number of counts to a value that stabilizes the measured CCDF curve.

Set the measurement interval to 1 ms.

Record the maximum PAPR level associated with a probability of 0.1%.

- a) Refer to instrument's analyzer instruction manual for details on how to use the power statistics/CCDF function;
- b) Set resolution/measurement bandwidth $\geq$ signal's occupied bandwidth;
- c) Set the number of counts to a value that stabilizes the measured CCDF curve;
- d) Set the measurement interval as follows:
 - 1) for continuous transmissions, set to 1 ms,
 - 2) for burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.
- e) Record the maximum PAPR level associated with a probability of 0.1%.

5.2.3 Test Result

Cellular Band						
Modes	GSM850			GSM1900		
Channel	128 (Low)	190 (Mid)	251 (High)	512 (Low)	661 (Mid)	810 (High)
Frequency(MHz)	824.2	836.6	848.8	1850.2	1880	1909.8
Peak-to-Average Ratio (dB)	3.85	3.90	3.89	2.66	2.66	2.66

Cellular Band						
Modes	GPRS850			GPRS1900		
Channel	128 (Low)	190 (Mid)	251 (High)	512 (Low)	661 (Mid)	810 (High)
Frequency(MHz)	824.2	836.6	848.8	1850.2	1880	1909.8
Peak-to-Average Ratio (dB)	2.66	2.66	2.66	2.67	2.66	2.67

Cellular Band						
Modes	EGPRS850			EGPRS1900		
Channel	128 (Low)	190 (Mid)	251 (High)	512 (Low)	661 (Mid)	810 (High)
Frequency(MHz)	824.2	836.6	848.8	1850.2	1880	1909.8
Peak-to-Average Ratio (dB)	9.02	9.05	8.54	9.32	9.76	9.76

Cellular Band						
Modes	WCDMA BAND II			WCDMA BAND V		
Channel	9262 (Low)	9400 (Mid)	9538 (High)	4132 (Low)	4183 (Mid)	4233 (High)
Frequency(MHz)	1852.4	1880	1907.6	826.4	836.6	846.6
Peak-to-Average Ratio (dB)	2.79	2.86	2.75	2.82	2.86	2.87

Test plot

(GSM850)

(GSM1900)

Peak-to-Average Ratio on channel 128

Peak-to-Average Ratio on channel 512



Peak-to-Average Ratio on channel 190

Peak-to-Average Ratio on channel 661



Peak-to-Average Ratio on channel 251

Peak-to-Average Ratio on channel 810



Test plot

(GSM850)

(GSM1900)

Peak-to-Average Ratio on channel 128

Peak-to-Average Ratio on channel 512



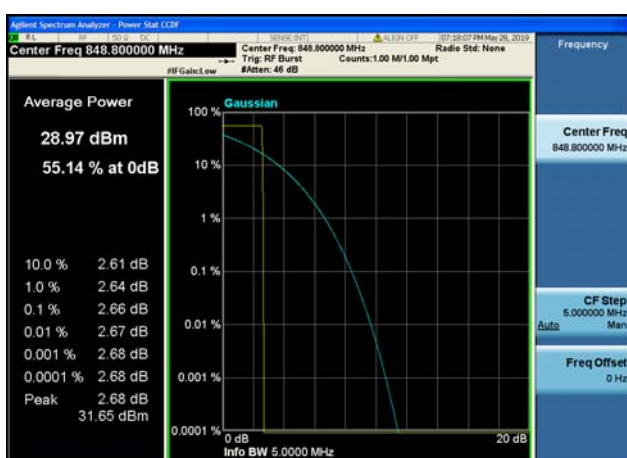
Peak-to-Average Ratio on channel 190

Peak-to-Average Ratio on channel 661



Peak-to-Average Ratio on channel 251

Peak-to-Average Ratio on channel 810



Test plot

(EGPSM850)

(EGPSM1900)

Peak-to-Average Ratio on channel 128

Peak-to-Average Ratio on channel 512



Peak-to-Average Ratio on channel 190

Peak-to-Average Ratio on channel 661



Peak-to-Average Ratio on channel 251

Peak-to-Average Ratio on channel 810



Test plot	
(WCDMA BAND II)	(WCDMA BAND V)
Peak-to-Average Ratio on channel 9262	Peak-to-Average Ratio on channel 4132
Peak-to-Average Ratio on channel 9400	Peak-to-Average Ratio on channel 4183
Peak-to-Average Ratio on channel 9538	Peak-to-Average Ratio on channel 4233

Note: all modes of EUT have been tested; only the data of worst case mode is reported.

5.3 Occupied bandwidth

5.3.1 Test method

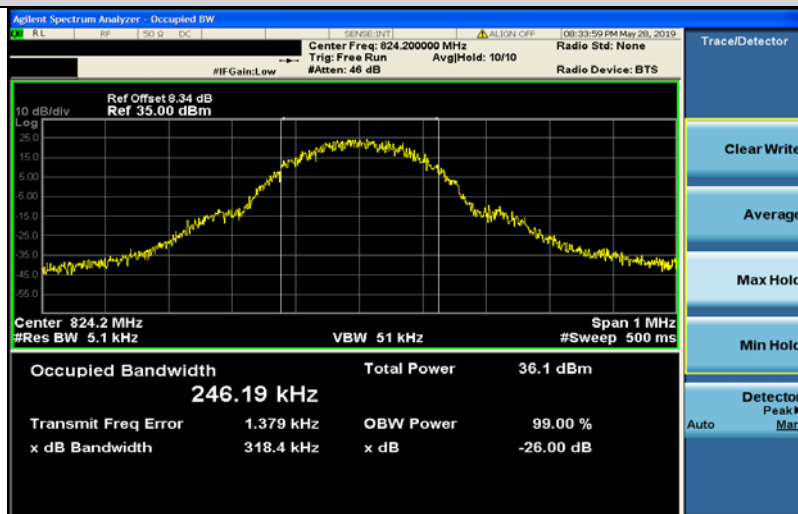
1. The EUT was directly connected to the spectrum analyzer and Base station via power splitter as show in the block diagram above.
2. The resolution bandwidth of the Spectrum Analyzer is set to at least 1% of the occupied bandwidth.
3. The low, middle and the high channels are selected to perform tests respectively.
4. Set the frequency range of the Spectrum Analyzer suitably to capture the waveform; search peak; make a line whose value is 26dB lower than the peak; mark two points which the line intersected the waveform at; finally record the delta of the two points as the occupied bandwidth and the plot.
5. Set the Spectrum Analyzer Occupied bandwidth function to measure the 99% occupied bandwidth.

5.3.2 Test result

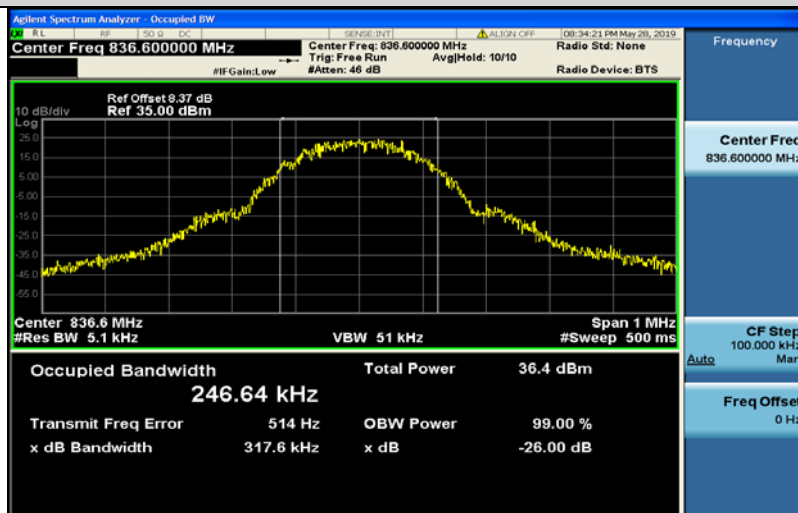
Band	Channel	Occupied Bandwidth (kHz)	26dB Bandwidth (kHz)	Limit(kHz)	Verdict
GSM850	128	246.19	318.4	---	PASS
GSM850	190	246.64	317.6	---	PASS
GSM850	251	246.17	317.0	---	PASS
GPRS850	128	247.59	310.1	---	PASS
GPRS850	190	248.25	314.4	---	PASS
GPRS850	251	244.12	312.9	---	PASS
EGPRS850	128	297.52	414.2	---	PASS
EGPRS850	190	265.79	340.6	---	PASS
EGPRS850	251	300.20	402.9	---	PASS
GSM1900	512	244.36	313.7	---	PASS
GSM1900	661	248.95	315.6	---	PASS
GSM1900	810	247.93	313.9	---	PASS
GPRS1900	512	248.41	315.5	---	PASS
GPRS1900	661	249.89	319.2	---	PASS
GPRS1900	810	246.59	313.2	---	PASS
EGPRS1900	512	273.82	352.1	---	PASS
EGPRS1900	661	268.32	354.0	---	PASS
EGPRS1900	810	263.35	332.8	---	PASS

Band	Channel	Occupied Bandwidth (kHz)	26dB Bandwidth (kHz)	Limit(kHz)	Verdict
Band II	9262	4200.2	4859	---	PASS
Band II	9400	4200.9	4877	---	PASS
Band II	9538	4212.4	4855	---	PASS
Band V	4132	4195.3	4853	---	PASS
Band V	4182	4214.1	4858	---	PASS
Band V	4233	4208.3	4851	---	PASS

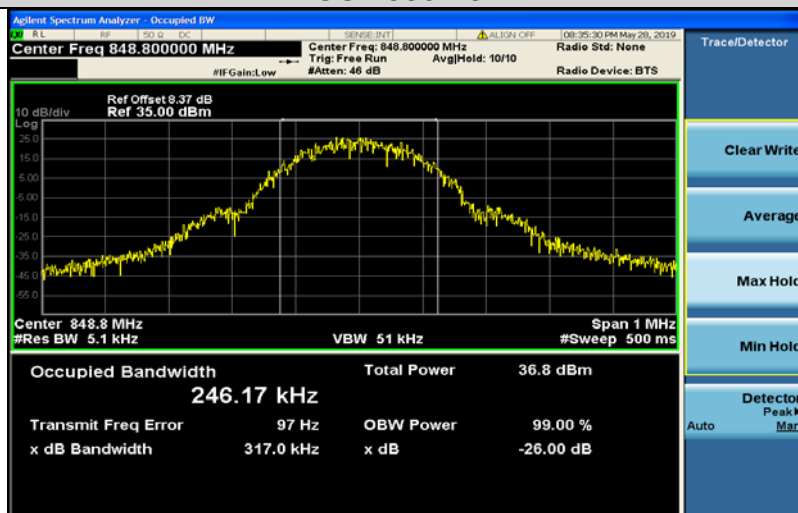
GSM850-128



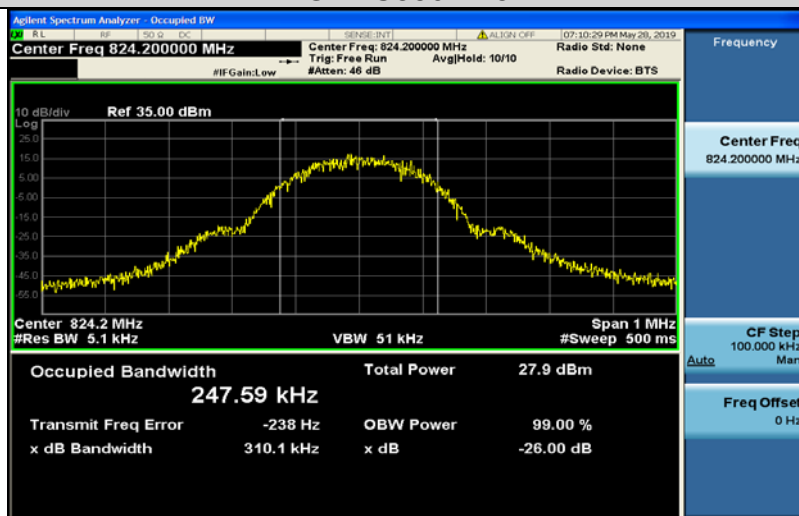
GSM850-190



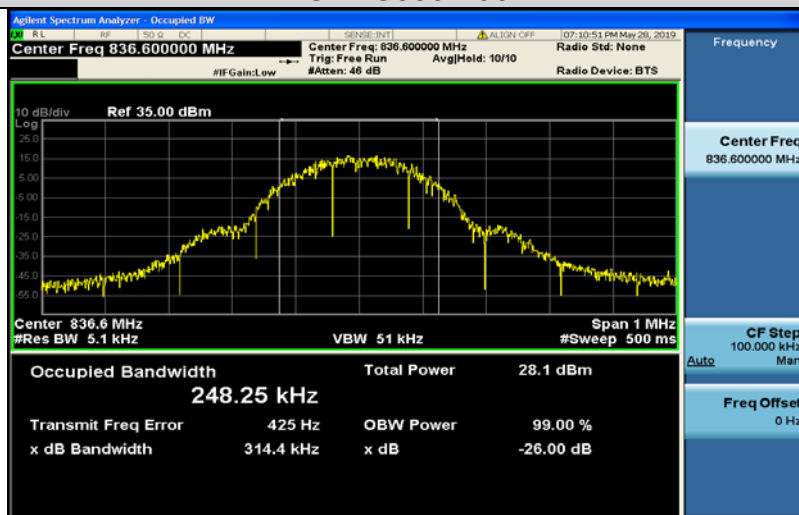
GSM850-251



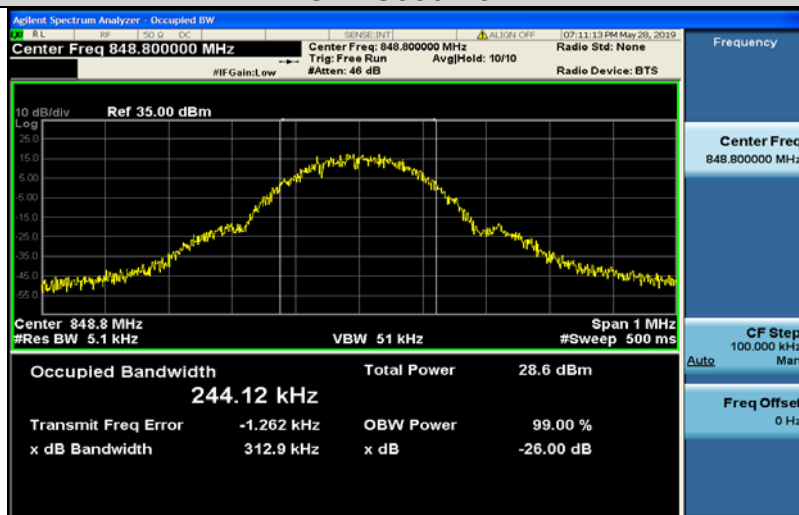
GPRS850-128



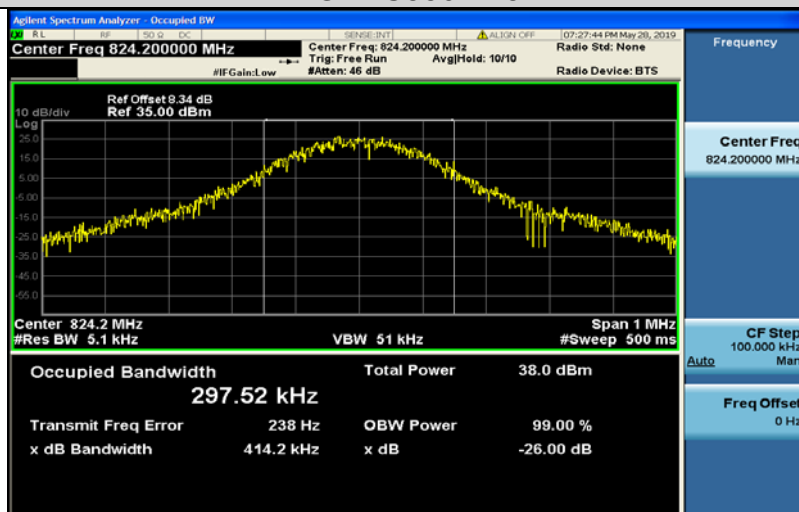
GPRS850-190



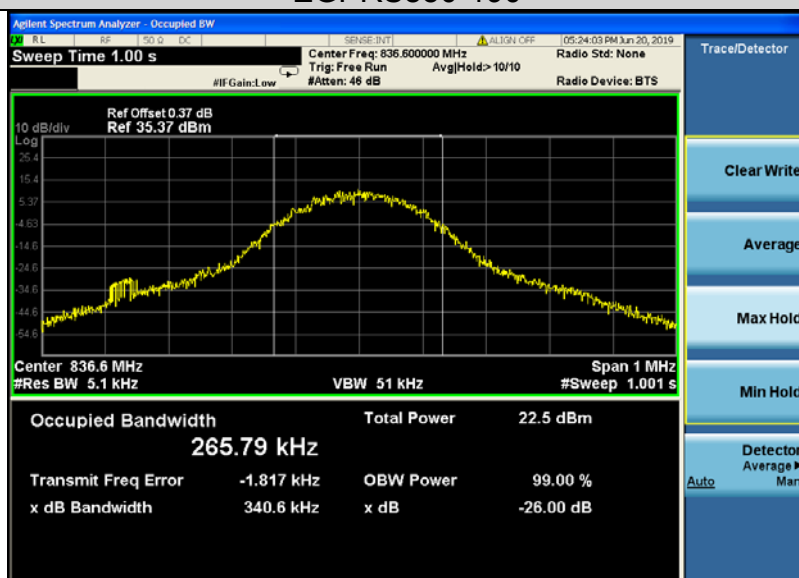
GPRS850-251



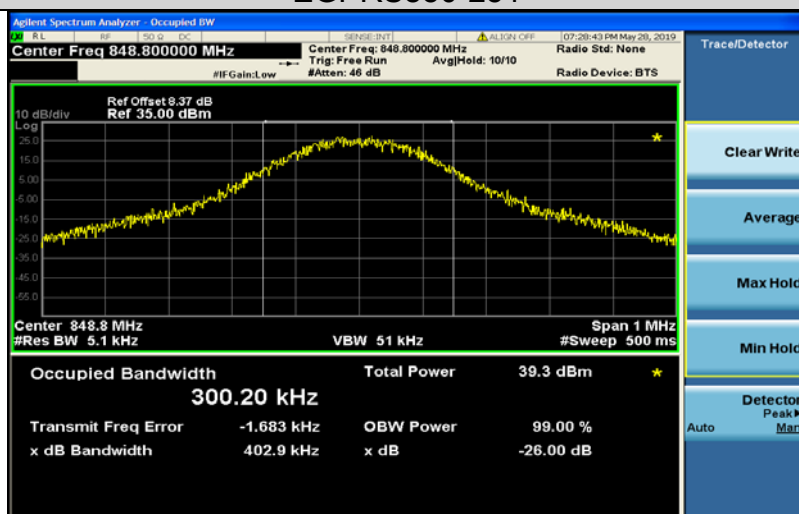
EGPRS850-128



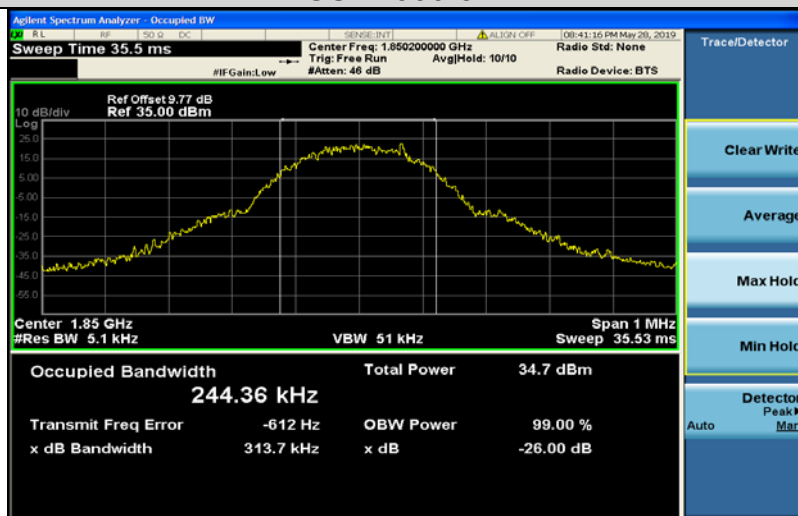
EGPRS850-190



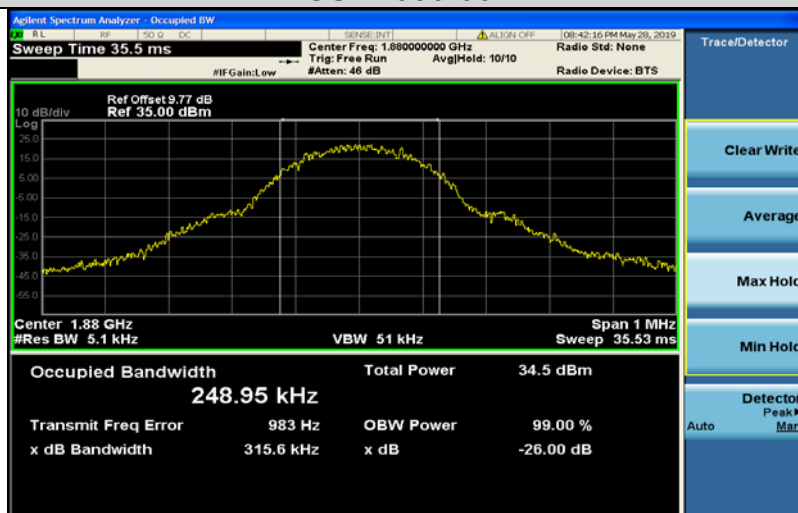
EGPRS850-251



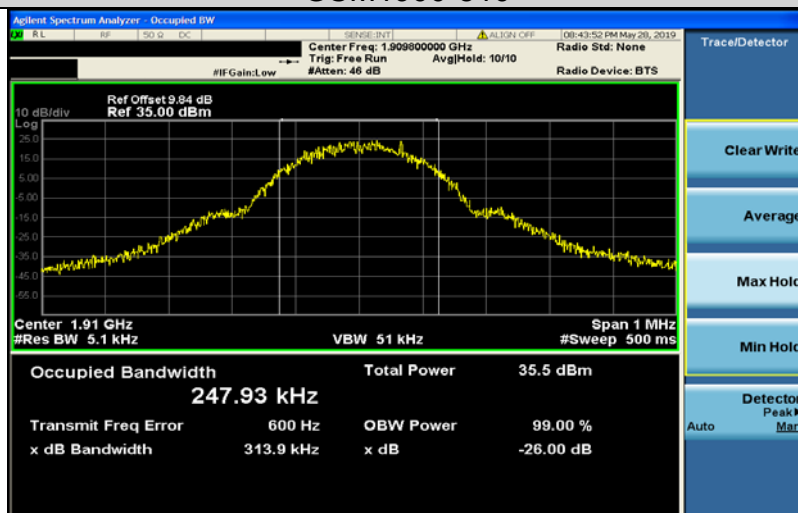
GSM1900-512



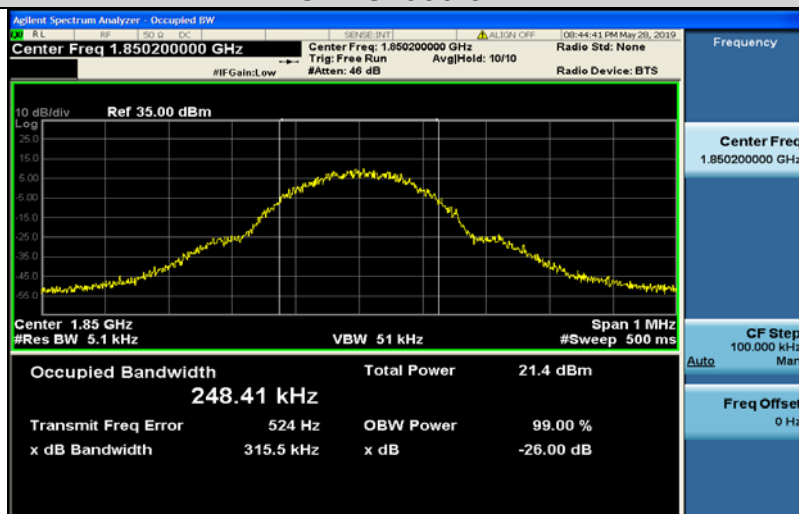
GSM1900-661



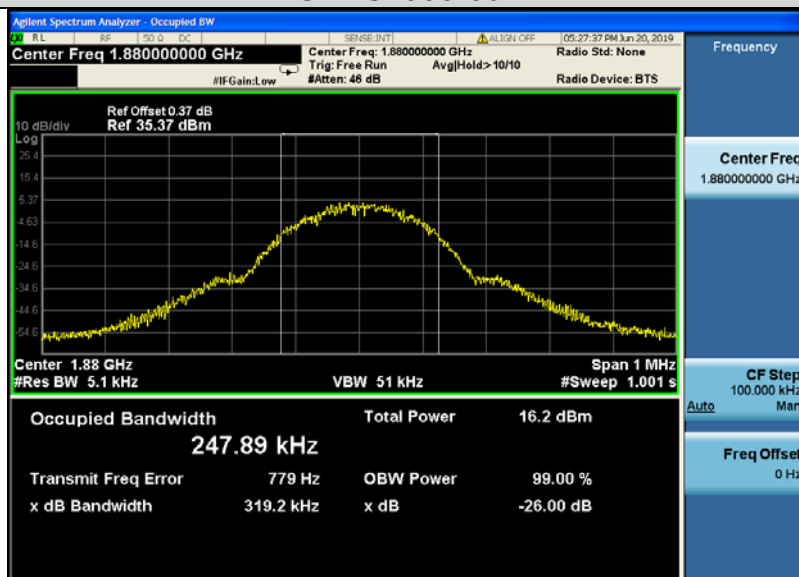
GSM1900-810



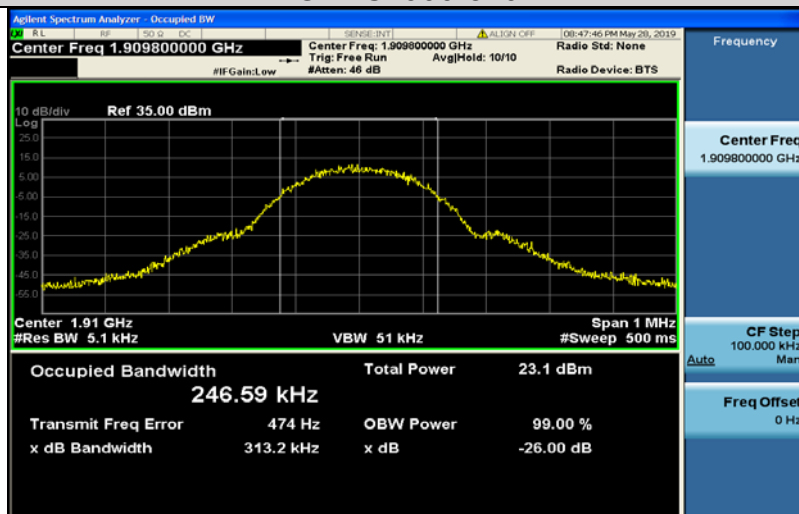
GPRS1900-512



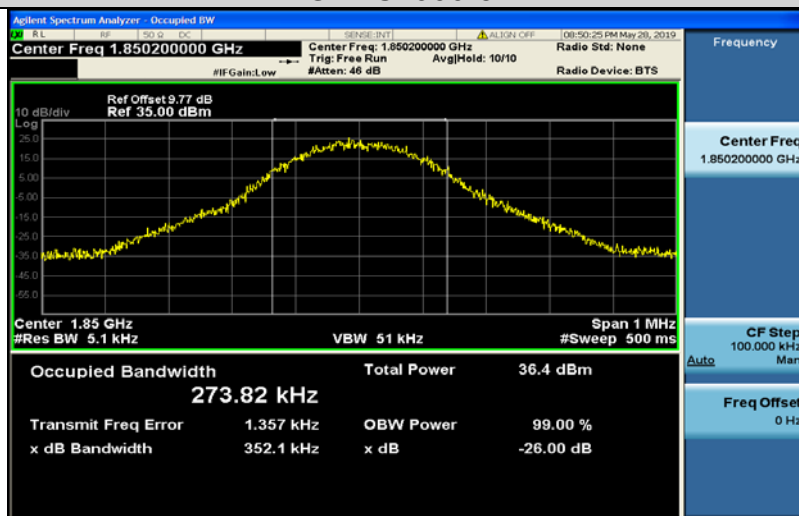
GPRS1900-661



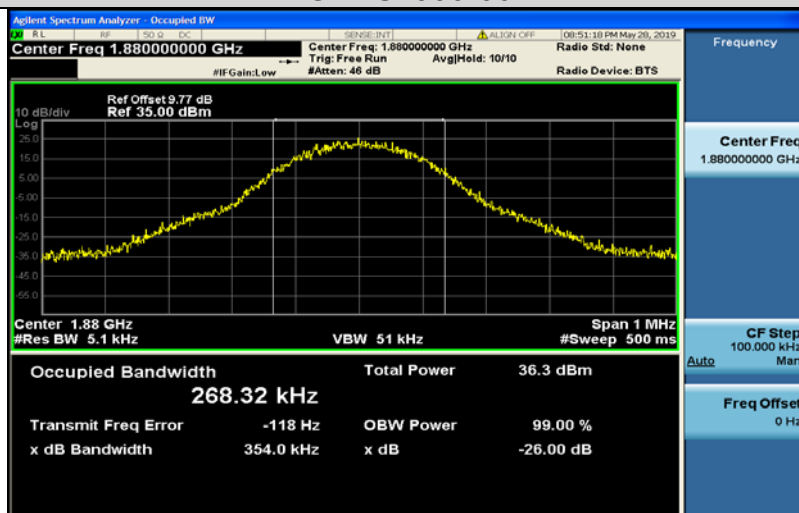
GPRS1900-810



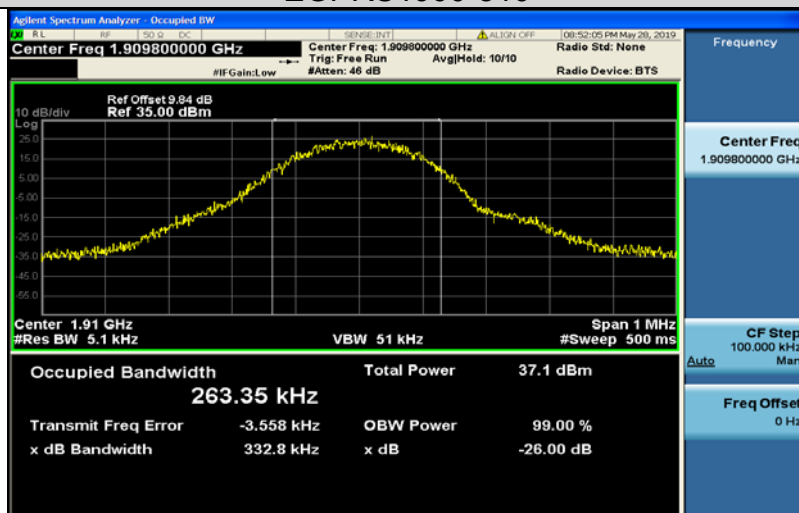
EGPRS1900-512



EGPRS1900-661

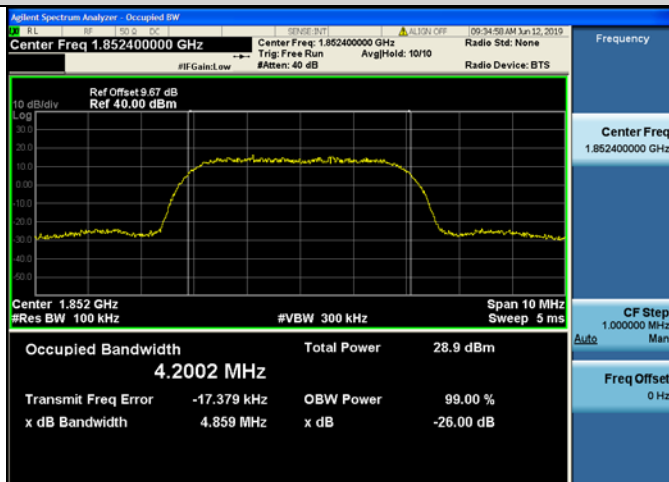


EGPRS1900-810

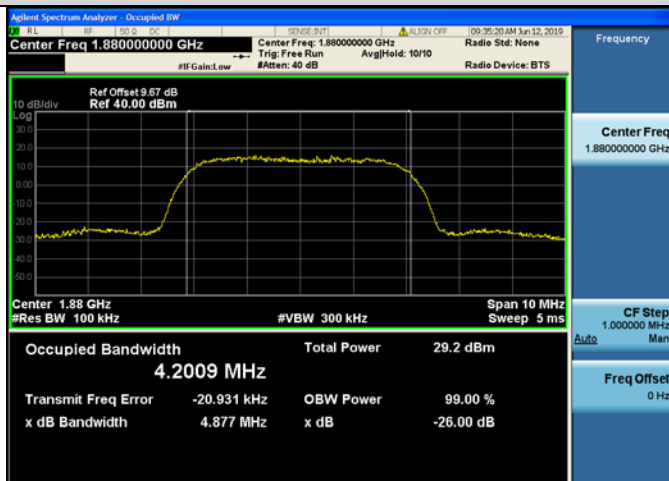


Band Band II

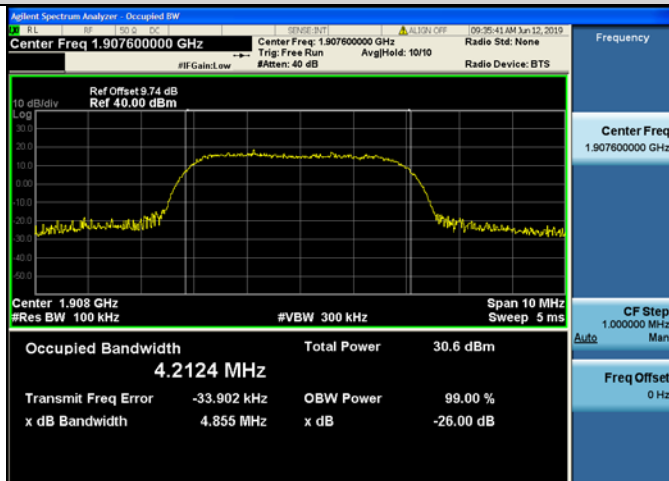
Band II-9262



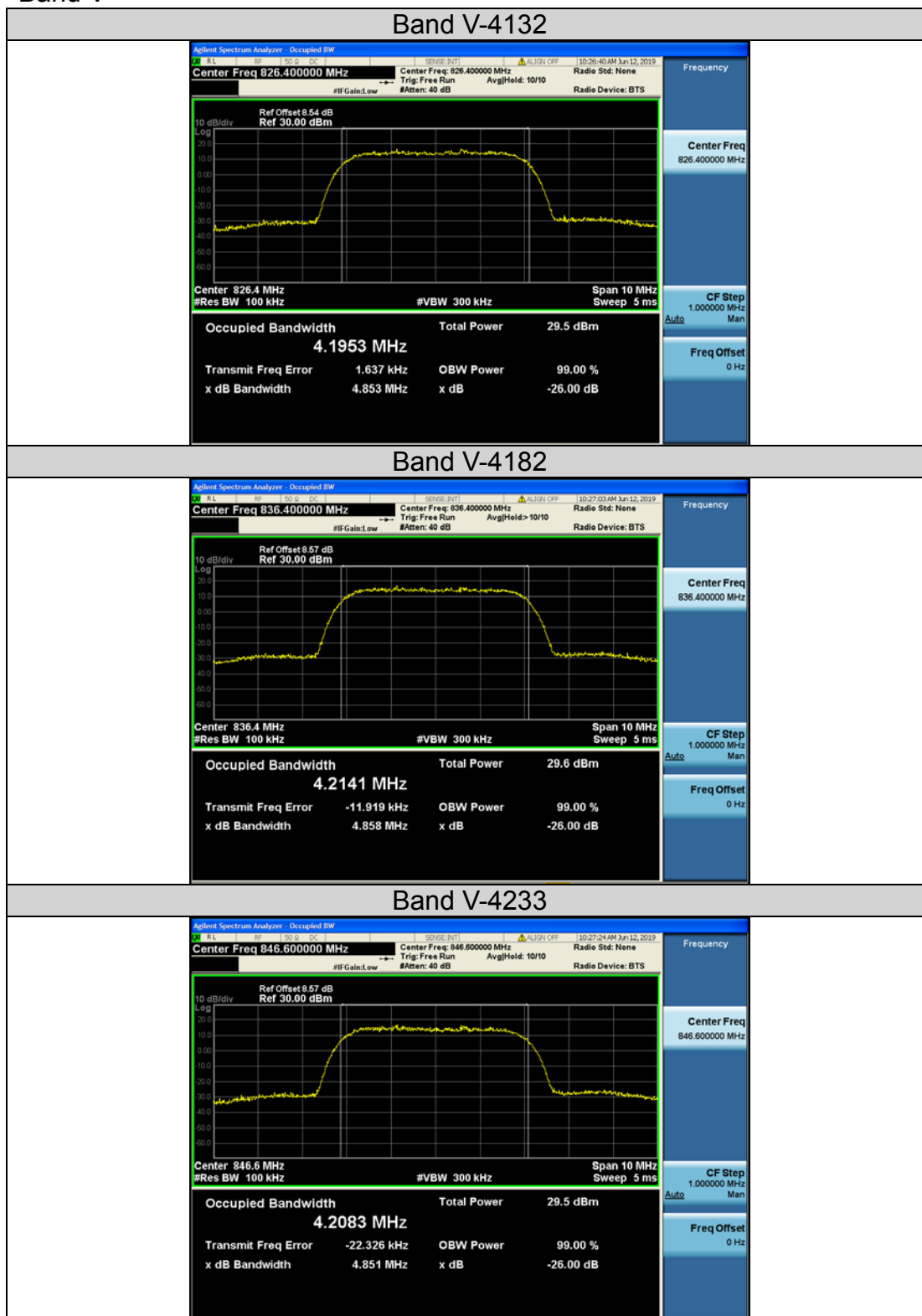
Band II-9400



Band II-9538



Band V



Note: all modes of EUT have been tested; only the data of worst case mode is reported.

5.4 Conducted spurious emissions

5.4.1 Limits

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

5.4.2 Test method

1, The EUT was directly connected to the spectrum analyzer and Base station via power splitter as show in the block diagram above.

2, Spectrum Setting:

Frequency bellow 1 GHz: RBW=100 kHz, VBW=300 kHz.

Frequency above 1 GHz: RBW=1 MHz, VBW=3 MHz.

3, The low, middle and high channels of each band and mode's spurious emissions for 30 MHz to 10th Harmonic were measured by Spectrum analyzer.

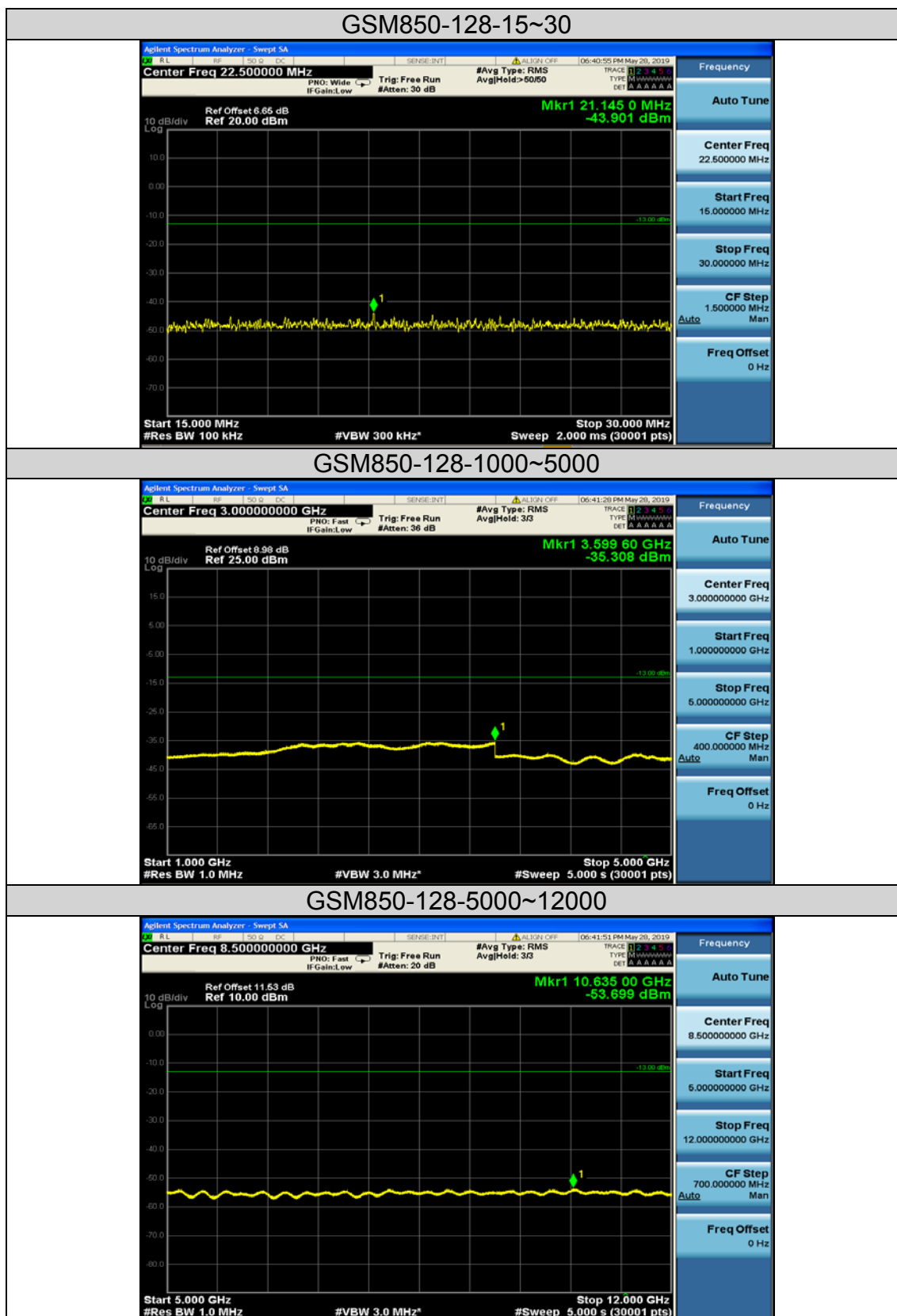
5.4.3 Test result

Band	Channel	Frequency Range(Mhz)	Value(dBm)	Limit(dBm)	Verdict
GSM850	128	15~30	-43.90	-13	PASS
GSM850	128	1000~5000	-35.31	-13	PASS
GSM850	128	5000~12000	-53.70	-13	PASS
GSM850	128	12000~18000	-50.96	-13	PASS
GSM850	190	15~30	-44.74	-13	PASS
GSM850	190	1000~5000	-35.43	-13	PASS
GSM850	190	5000~12000	-53.51	-13	PASS
GSM850	190	12000~18000	-50.93	-13	PASS
GSM850	251	15~30	-45.10	-13	PASS
GSM850	251	1000~5000	-35.47	-13	PASS
GSM850	251	5000~12000	-53.51	-13	PASS
GSM850	251	12000~18000	-51.01	-13	PASS
GPRS850	128	15~30	-44.00	-13	PASS
GPRS850	128	1000~5000	-35.31	-13	PASS
GPRS850	128	5000~12000	-53.60	-13	PASS
GPRS850	128	12000~18000	-50.92	-13	PASS
GPRS850	190	15~30	-45.34	-13	PASS
GPRS850	190	1000~5000	-35.35	-13	PASS
GPRS850	190	5000~12000	-53.52	-13	PASS
GPRS850	190	12000~18000	-51.06	-13	PASS
GPRS850	251	15~30	-44.70	-13	PASS
GPRS850	251	1000~5000	-35.35	-13	PASS
GPRS850	251	5000~12000	-53.72	-13	PASS
GPRS850	251	12000~18000	-50.94	-13	PASS
EGPRS850	128	15~30	-45.10	-13	PASS
EGPRS850	128	1000~5000	-35.31	-13	PASS
EGPRS850	128	5000~12000	-53.56	-13	PASS
EGPRS850	128	12000~18000	-51.04	-13	PASS
EGPRS850	190	15~30	-44.89	-13	PASS
EGPRS850	190	1000~5000	-35.36	-13	PASS

EGPRS850	190	5000~12000	-53.61	-13	PASS
EGPRS850	190	12000~18000	-51.03	-13	PASS
EGPRS850	251	15~30	-44.90	-13	PASS
EGPRS850	251	1000~5000	-35.36	-13	PASS
EGPRS850	251	5000~12000	-53.57	-13	PASS
EGPRS850	251	12000~18000	-51.02	-13	PASS
GSM1900	512	30~1000	-29.25	-13	PASS
GSM1900	512	1000~5000	-35.39	-13	PASS
GSM1900	512	5000~12000	-53.15	-13	PASS
GSM1900	512	12000~26500	-46.41	-13	PASS
GSM1900	661	30~1000	-30.62	-13	PASS
GSM1900	661	1000~5000	-35.37	-13	PASS
GSM1900	661	5000~12000	-53.55	-13	PASS
GSM1900	661	12000~26500	-46.44	-13	PASS
GSM1900	810	30~1000	-30.37	-13	PASS
GSM1900	810	1000~5000	-35.29	-13	PASS
GSM1900	810	5000~12000	-53.57	-13	PASS
GSM1900	810	12000~26500	-46.38	-13	PASS
EGPRS1900	512	30~1000	-27.64	-13	PASS
EGPRS1900	512	1000~5000	-35.42	-13	PASS
EGPRS1900	512	5000~12000	-53.57	-13	PASS
EGPRS1900	512	12000~26500	-46.40	-13	PASS
EGPRS1900	661	30~1000	-29.13	-13	PASS
EGPRS1900	661	1000~5000	-35.37	-13	PASS
EGPRS1900	661	5000~12000	-53.58	-13	PASS
EGPRS1900	661	12000~26500	-46.39	-13	PASS
EGPRS1900	810	30~1000	-28.60	-13	PASS
EGPRS1900	810	1000~5000	-35.48	-13	PASS
EGPRS1900	810	5000~12000	-53.52	-13	PASS
EGPRS1900	810	12000~26500	-46.36	-13	PASS

Band	Channel	Frequency Range (Mhz)	Value(dBm)	Limit(dBm)	Verdict
Band II	9262	30~1000	-29.87	-13	PASS
Band II	9262	1000~5000	-35.52	-13	PASS
Band II	9262	5000~12000	-54.04	-13	PASS
Band II	9262	12000~20000	-49.81	-13	PASS
Band II	9400	30~1000	-29.40	-13	PASS
Band II	9400	1000~5000	-35.50	-13	PASS
Band II	9400	5000~12000	-54.20	-13	PASS
Band II	9400	12000~20000	-49.87	-13	PASS
Band II	9538	30~1000	-30.66	-13	PASS
Band II	9538	1000~5000	-35.29	-13	PASS
Band II	9538	5000~12000	-54.17	-13	PASS
Band II	9538	12000~20000	-49.94	-13	PASS
Band V	4132	30~1000	-40.64	-13	PASS
Band V	4132	1000~5000	-35.35	-13	PASS
Band V	4132	5000~12000	-54.16	-13	PASS
Band V	4132	12000~18000	-51.73	-13	PASS
Band V	4182	30~1000	-40.88	-13	PASS
Band V	4182	1000~5000	-35.45	-13	PASS
Band V	4182	5000~12000	-54.20	-13	PASS
Band V	4182	12000~18000	-51.52	-13	PASS
Band V	4233	30~1000	-40.54	-13	PASS
Band V	4233	1000~5000	-35.49	-13	PASS
Band V	4233	5000~12000	-54.00	-13	PASS
Band V	4233	12000~18000	-51.60	-13	PASS

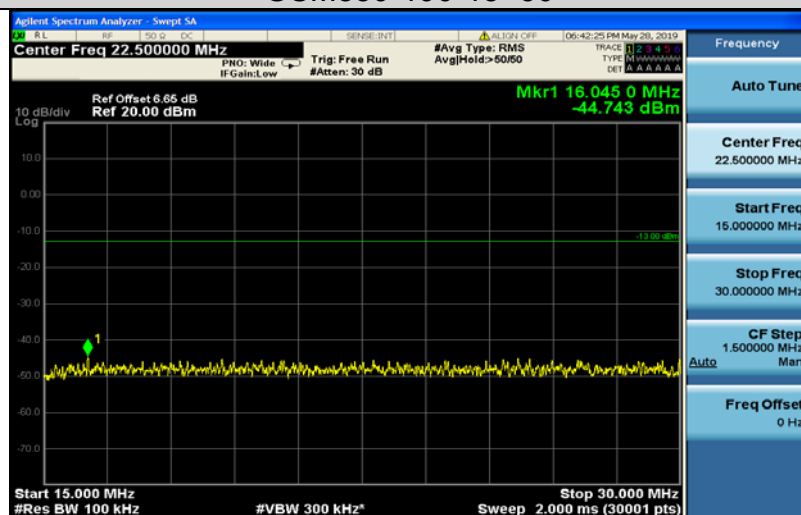
GSM850



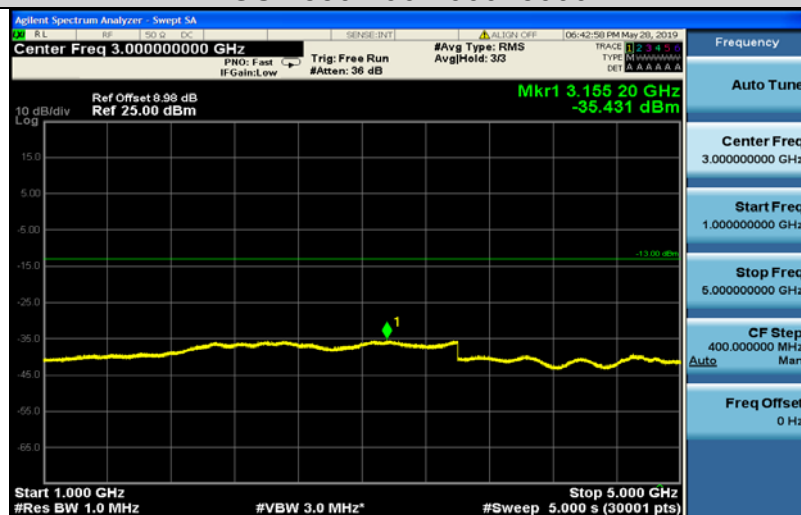
GSM850-128-12000~18000



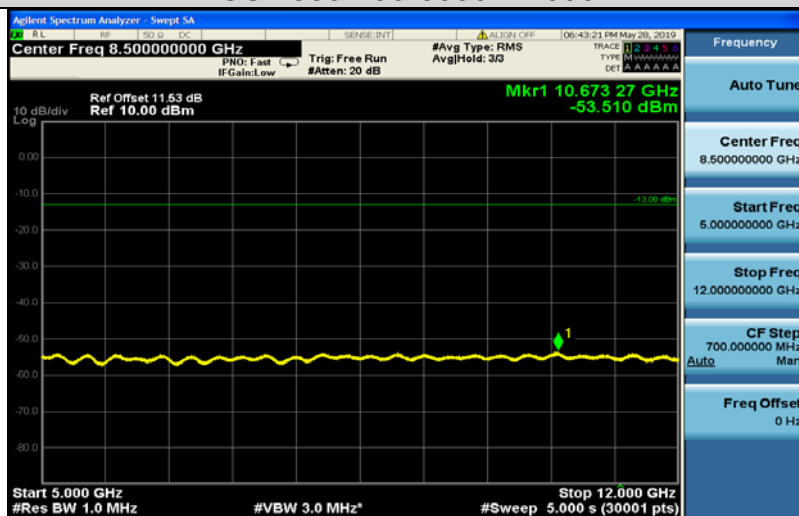
GSM850-190-15~30



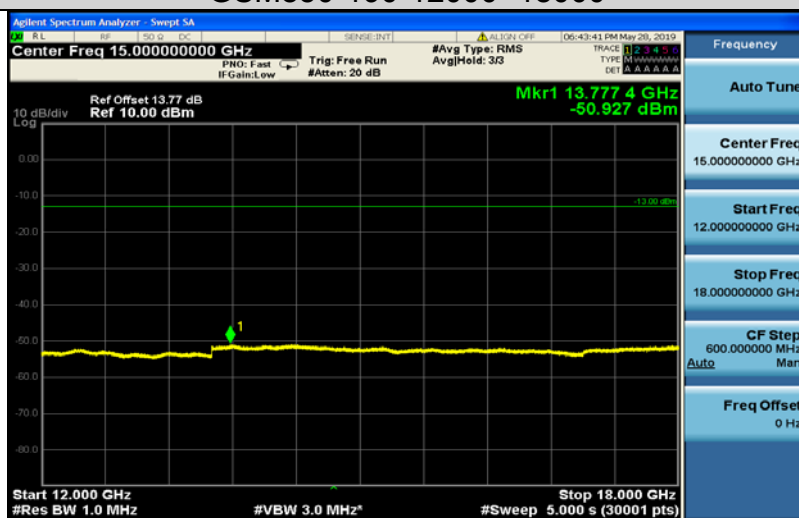
GSM850-190-1000~5000



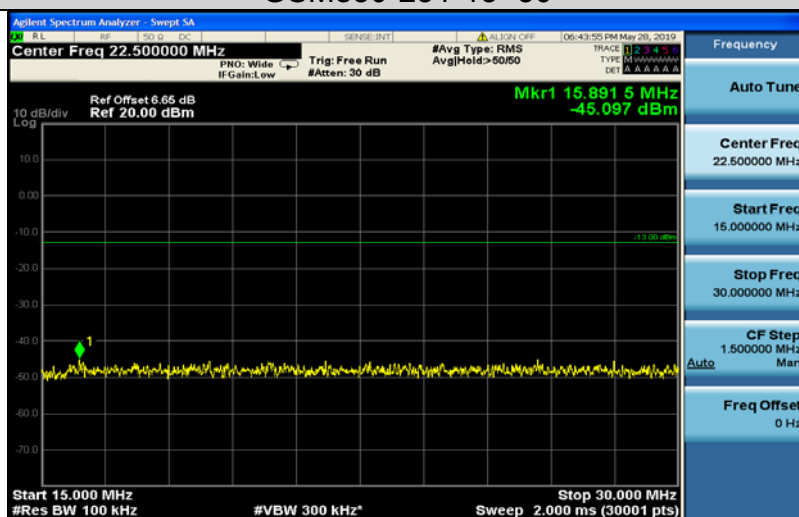
GSM850-190-5000~12000



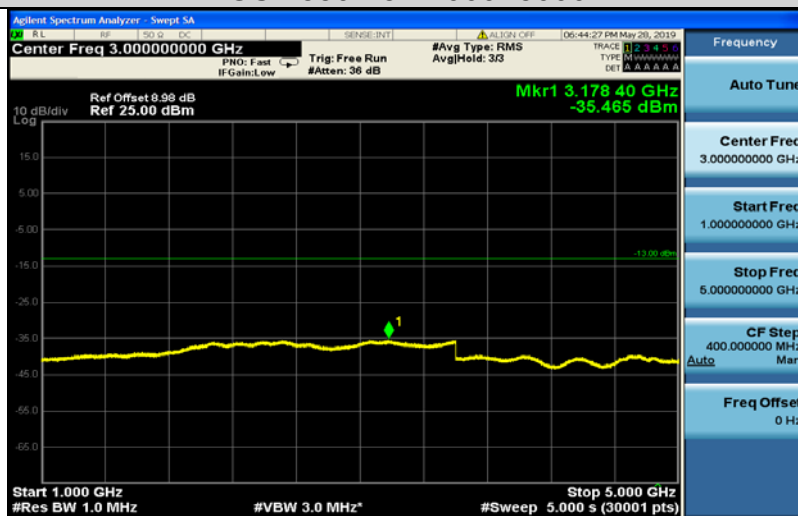
GSM850-190-12000~18000



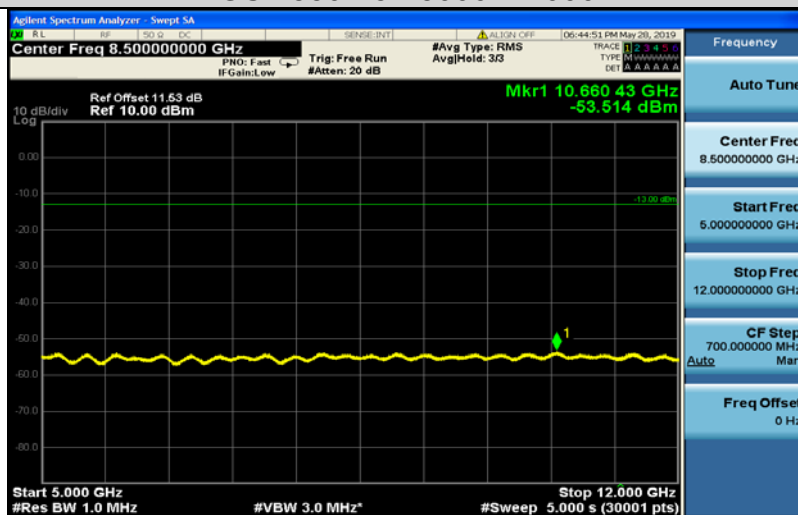
GSM850-251-15~30



GSM850-251-1000~5000



GSM850-251-5000~12000

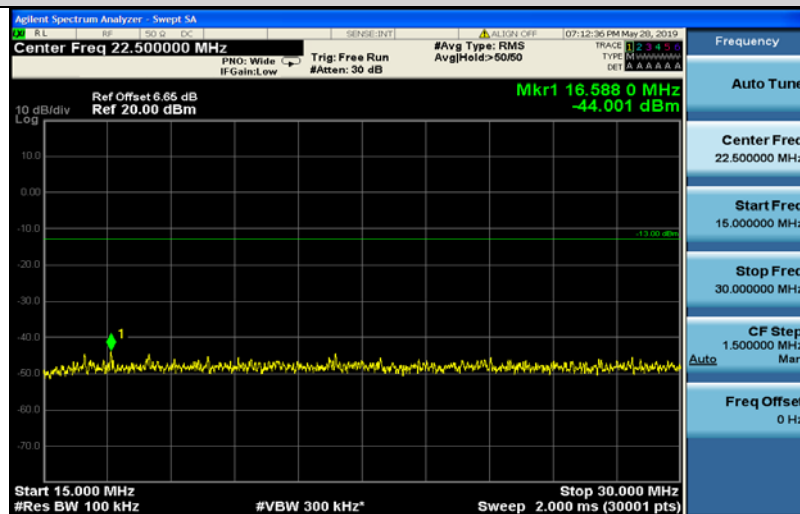


GSM850-251-12000~18000

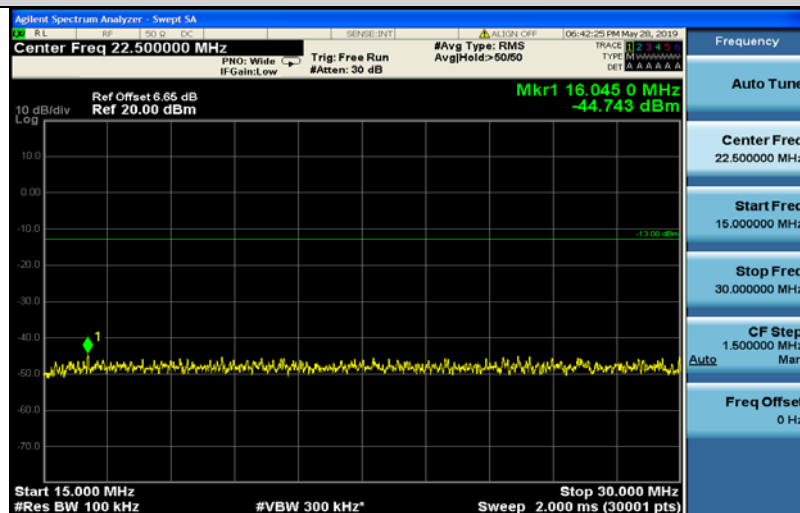


GPRS850

GPRS850-128-15~30



GPRS850-128-1000~5000



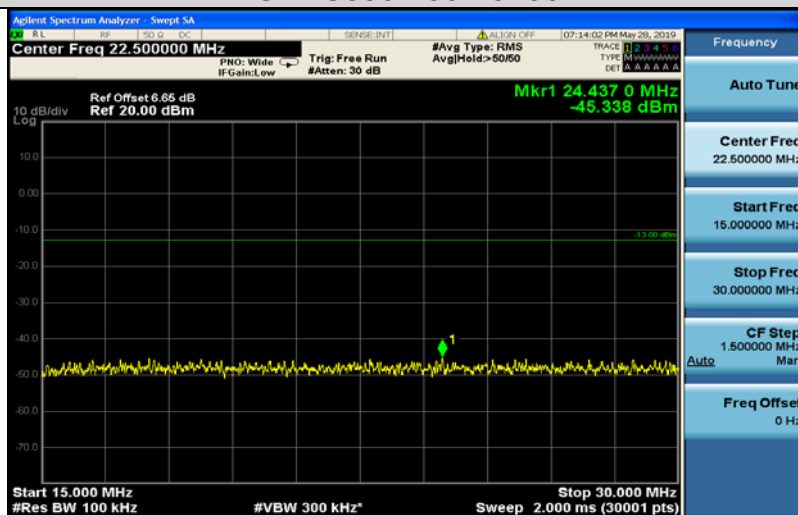
GPRS850-128-5000~12000



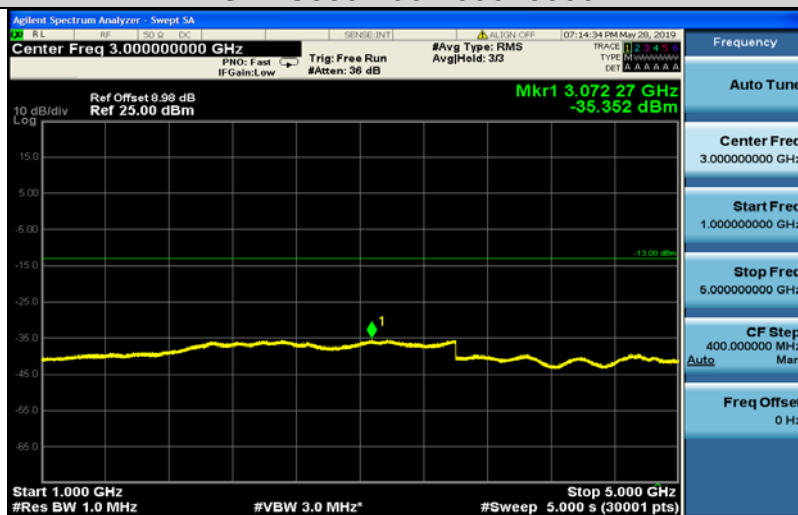
GPRS850-128-12000~18000



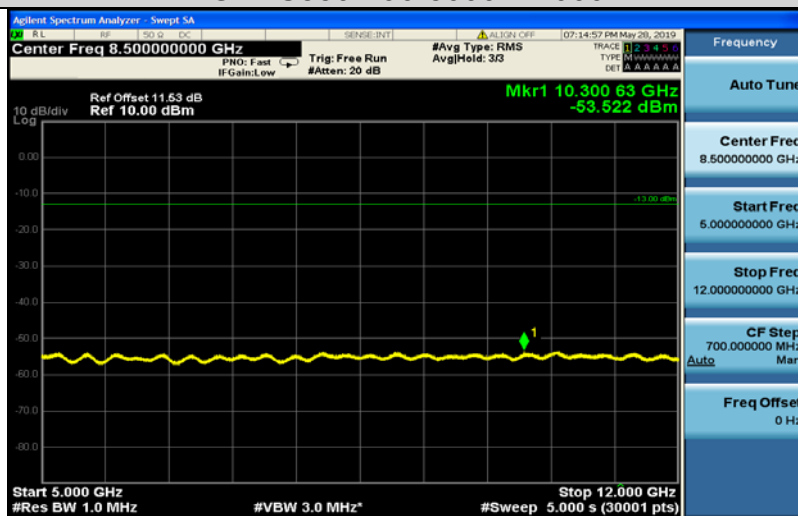
GPRS850-190-15~30



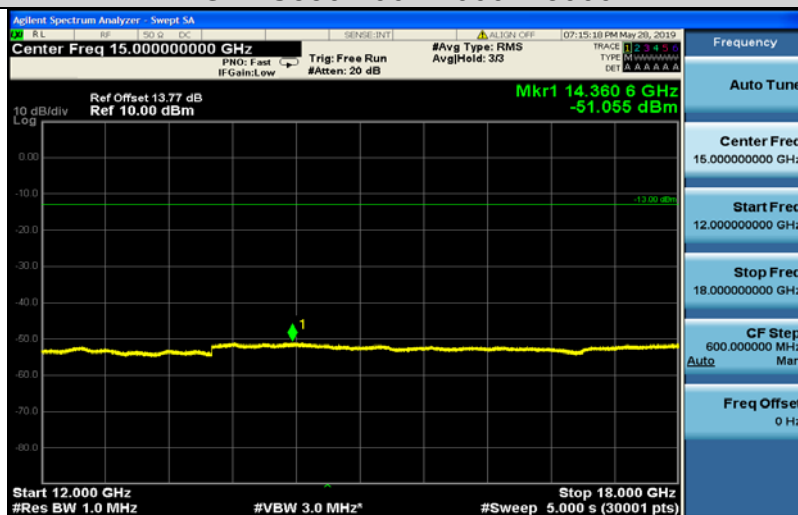
GPRS850-190-1000~5000



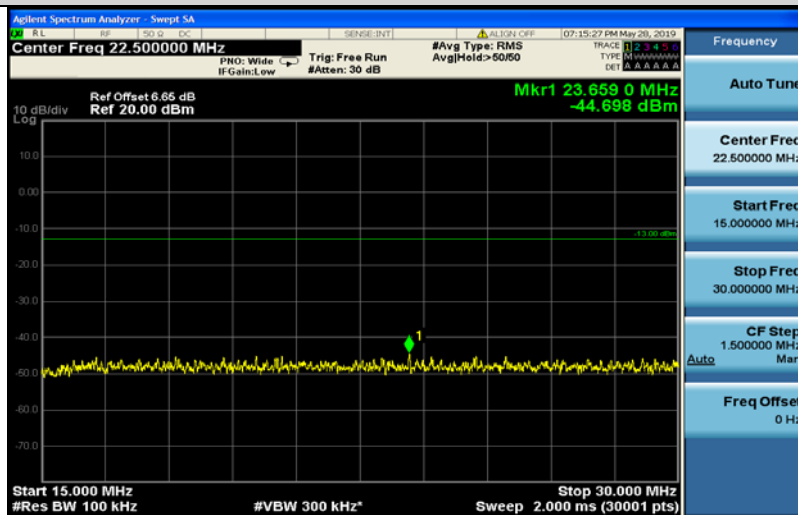
GPRS850-190-5000~12000



GPRS850-190-12000~18000



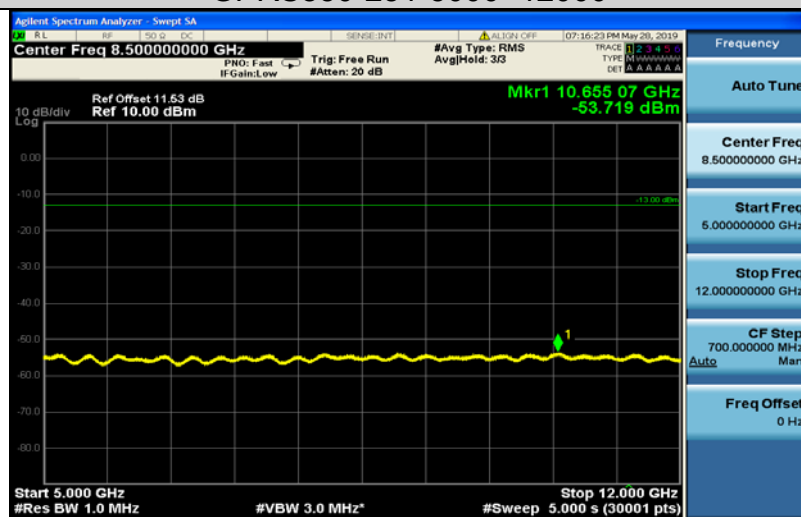
GPRS850-251-15~30



GPRS850-251-1000~5000



GPRS850-251-5000~12000

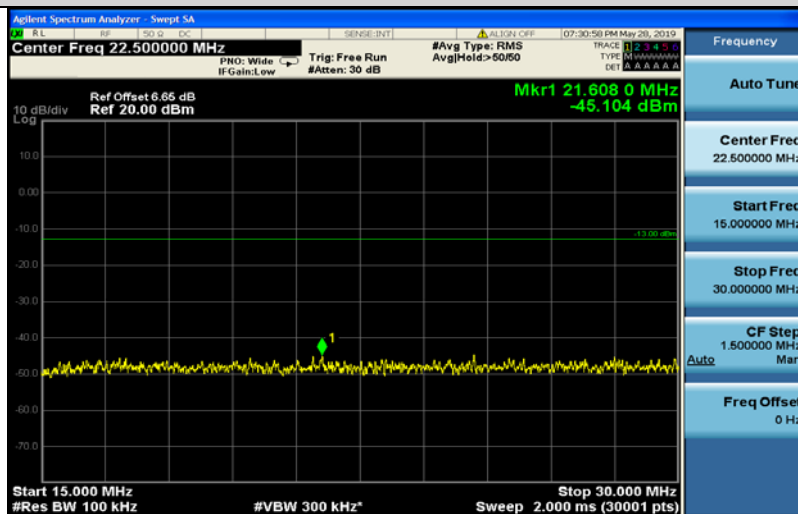


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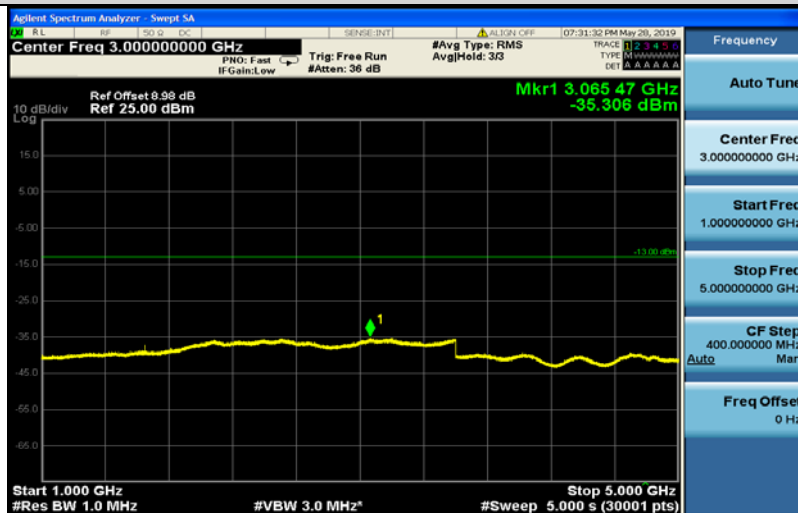


EGPRS850

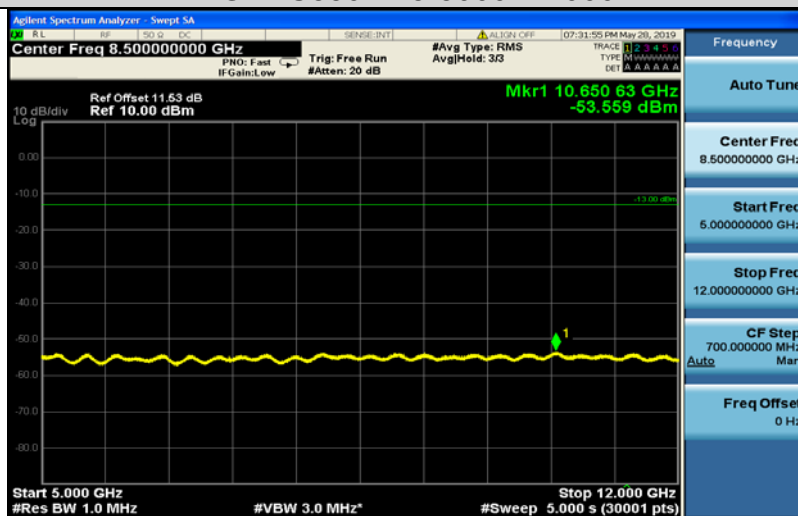
EGPRS850-128-15~30

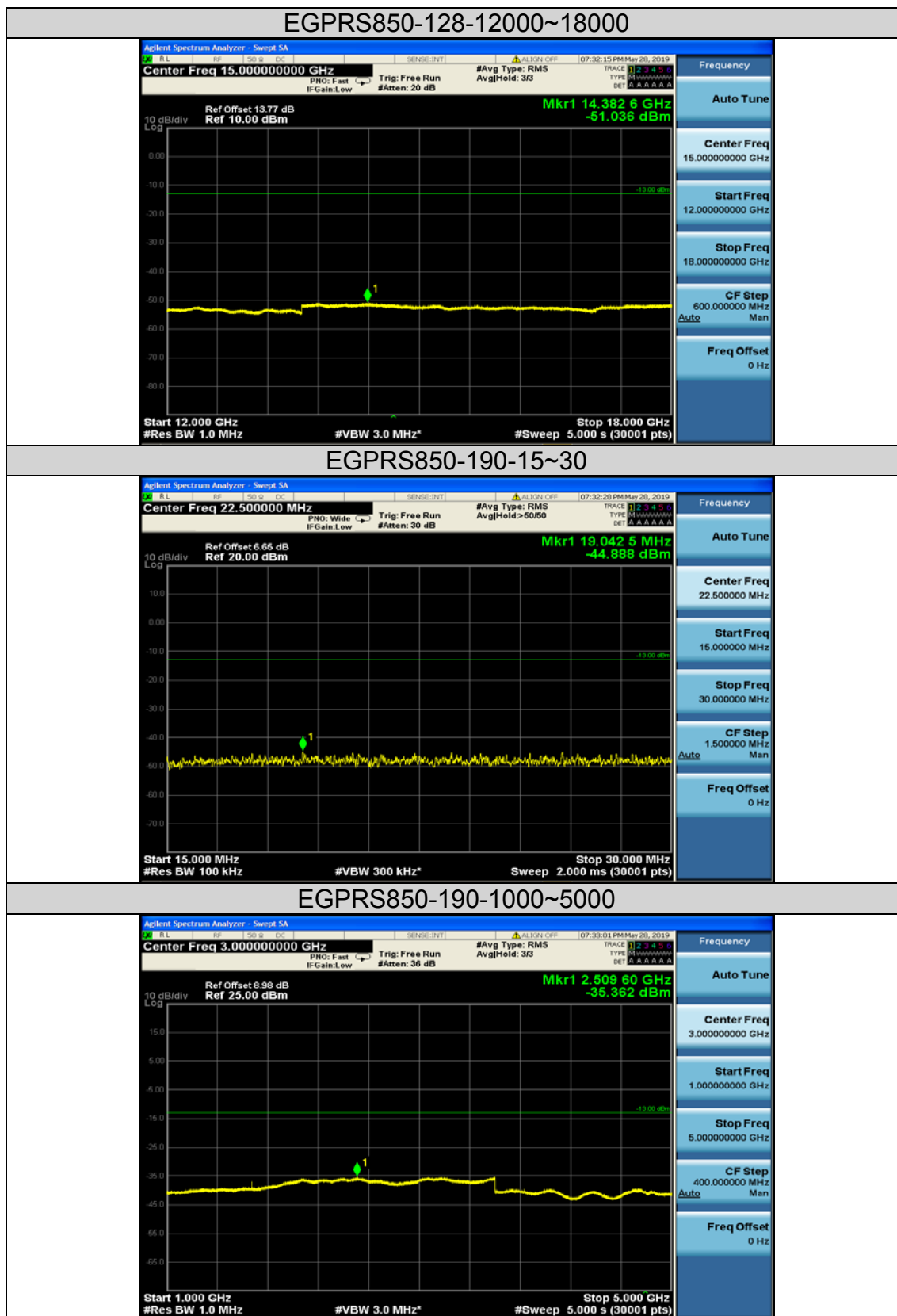


EGPRS850-128-1000~5000

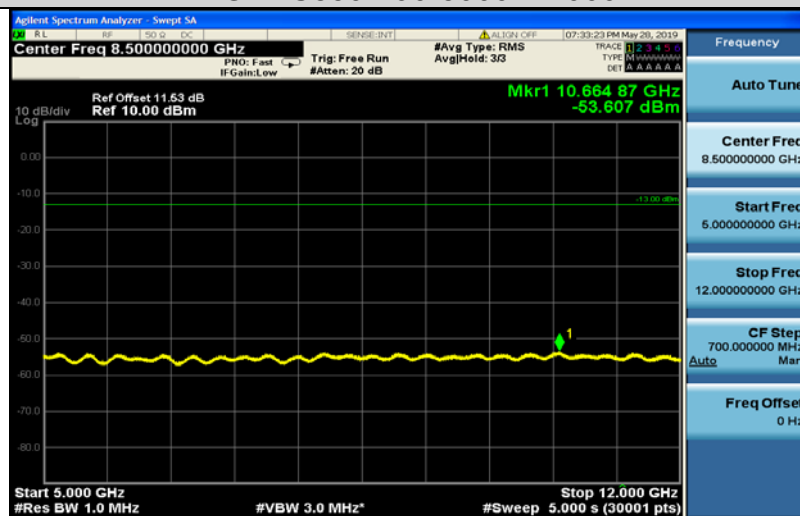


EGPRS850-128-5000~12000





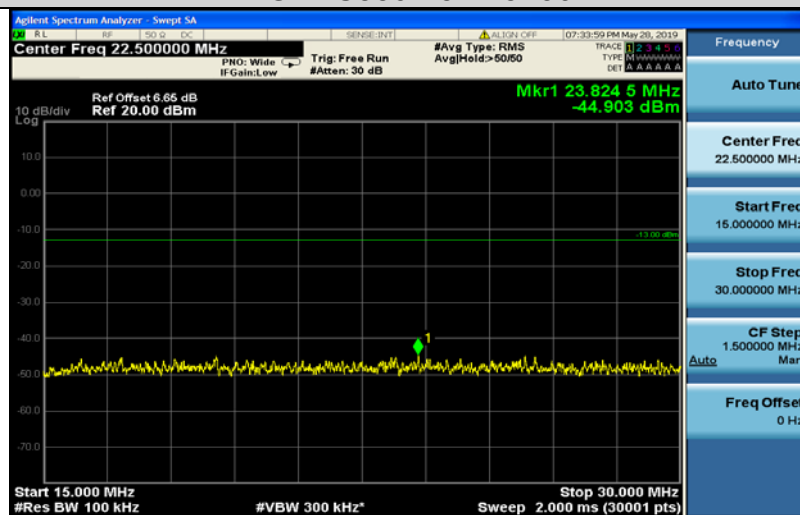
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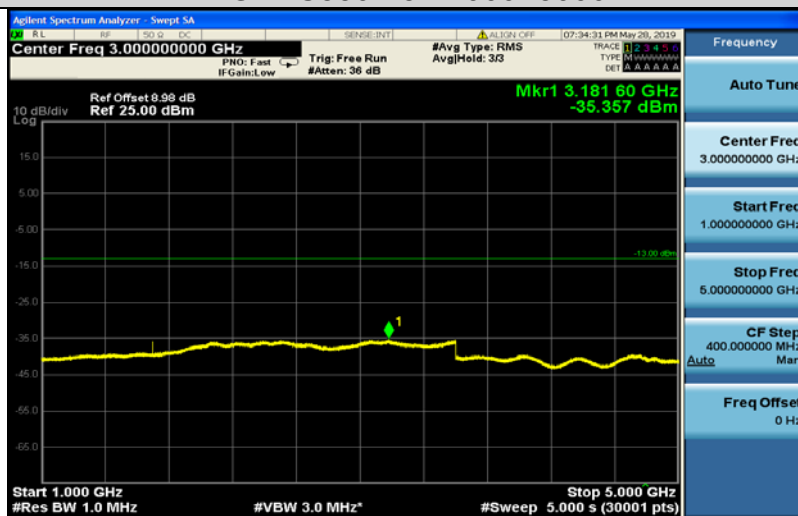
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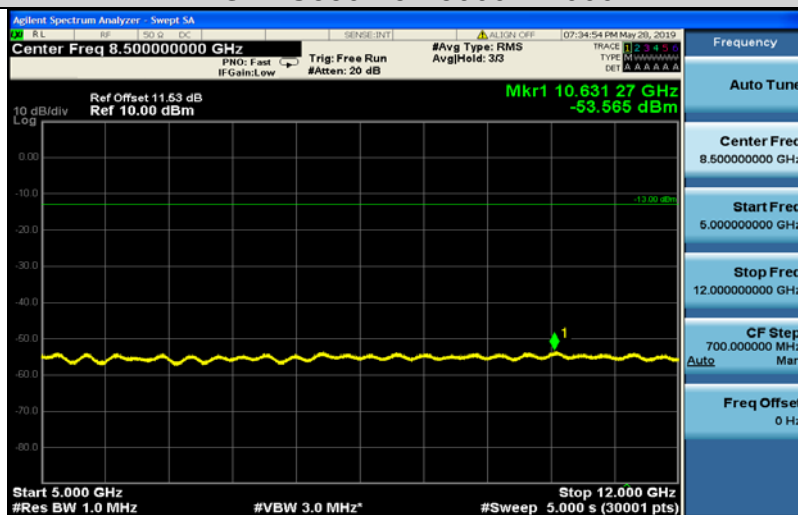
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EGPRS850-251-1000~5000



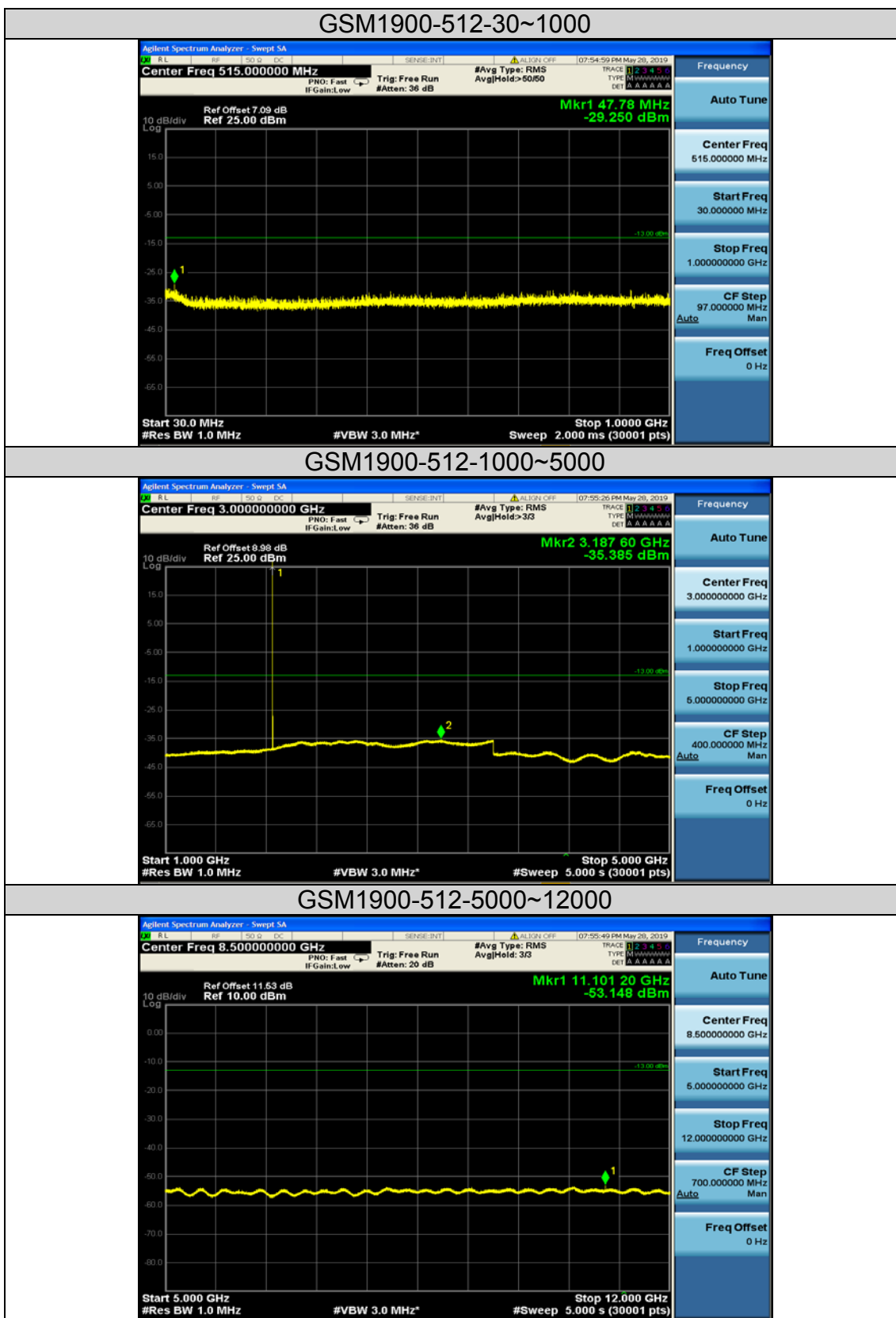
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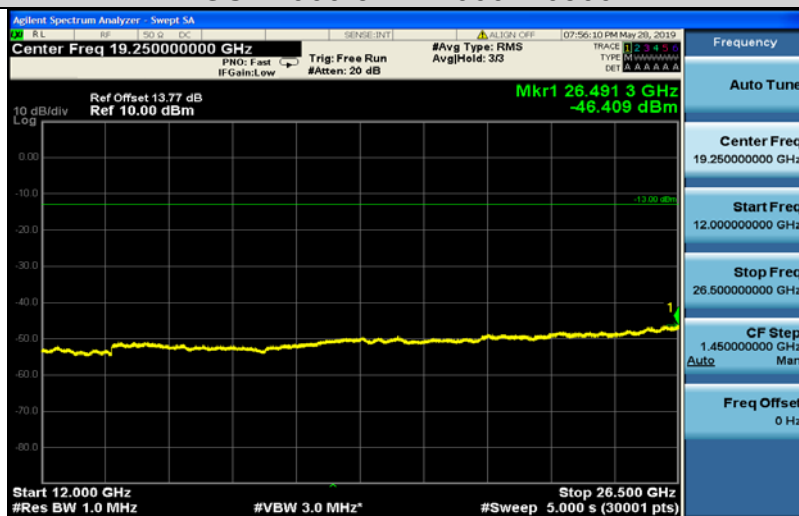
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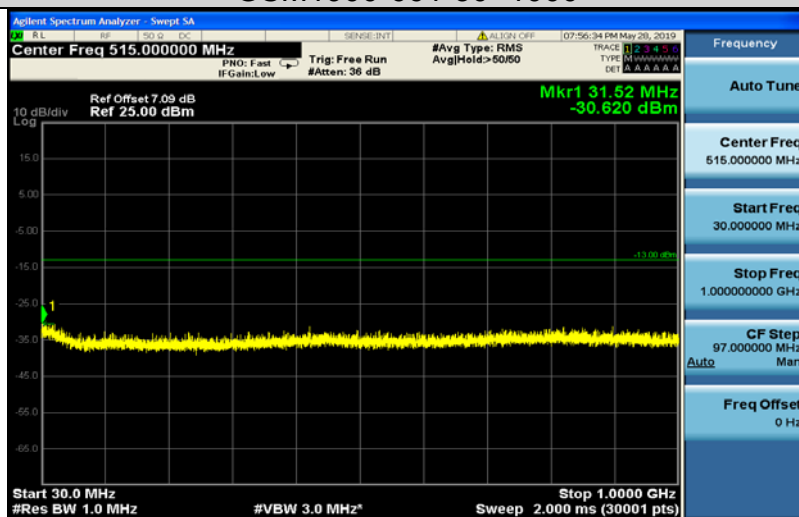
GSM1900



GSM1900-512-12000~26500



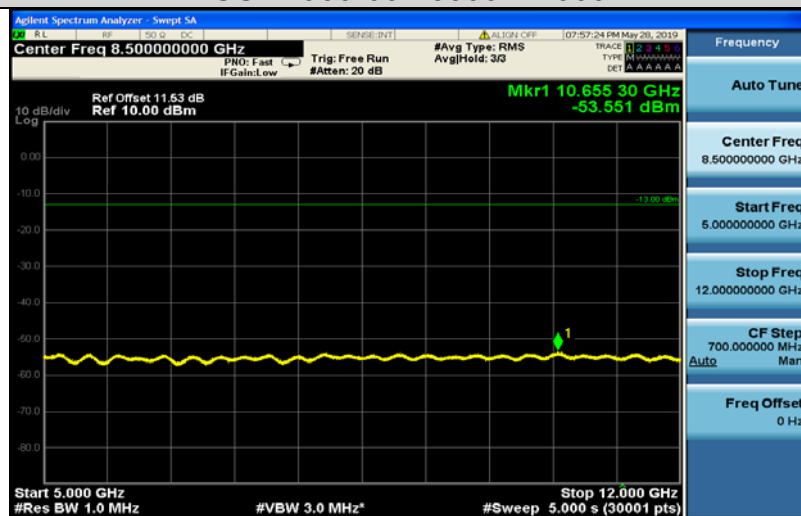
GSM1900-661-30~1000



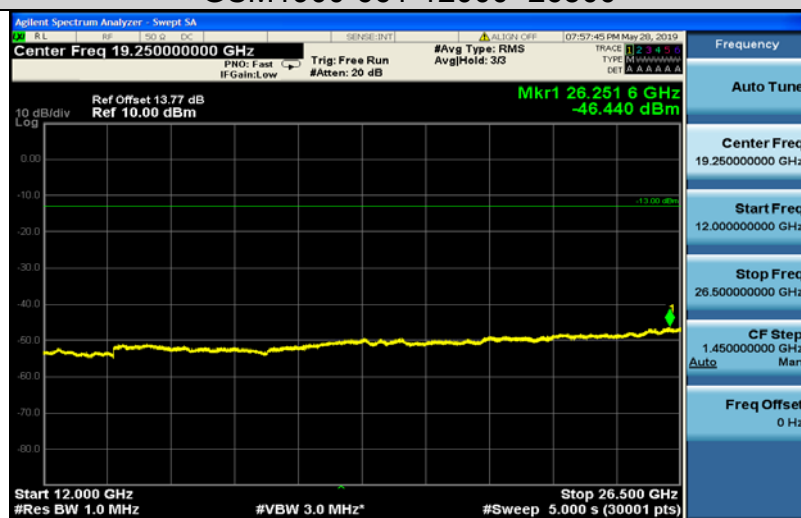
GSM1900-661-1000~5000



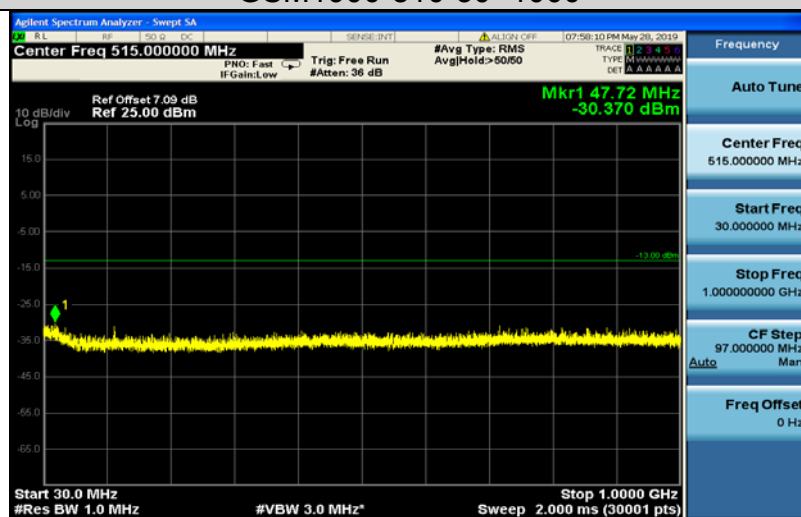
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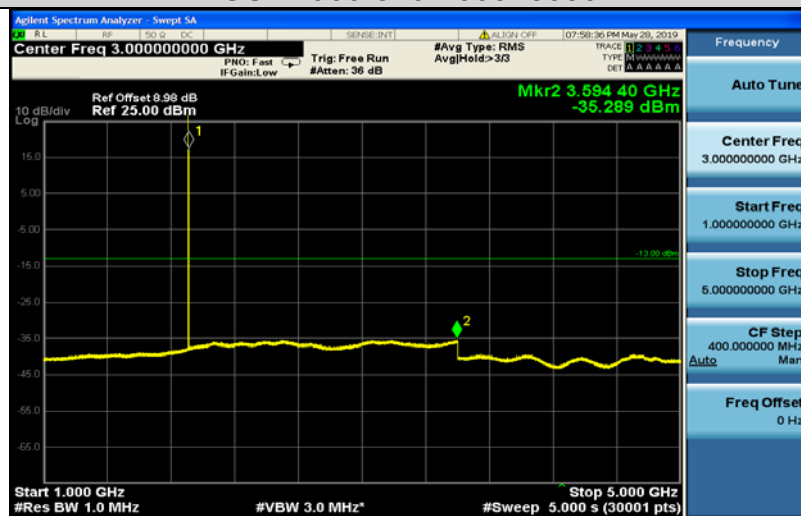
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GSM1900-810-30~1000



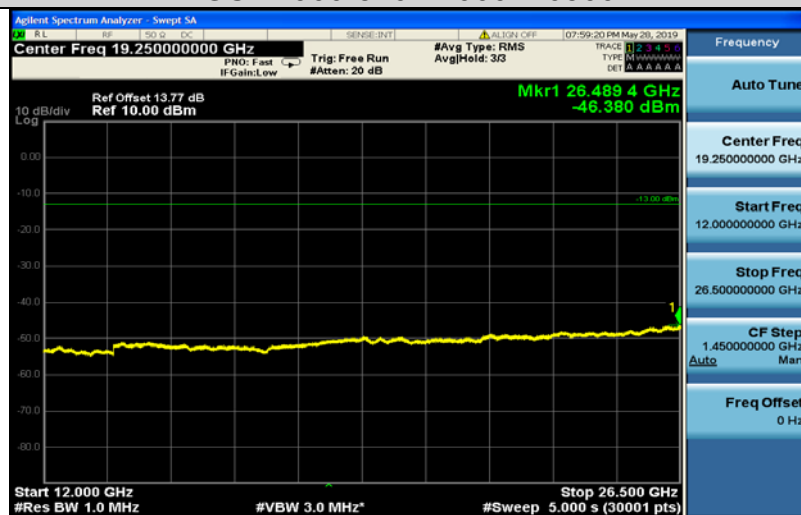
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GSM1900-810-5000~12000

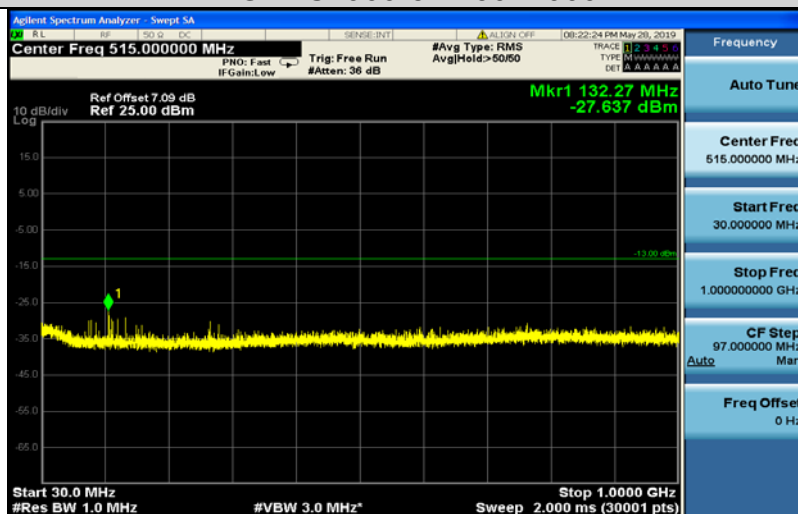


GSM1900-810-12000~26500

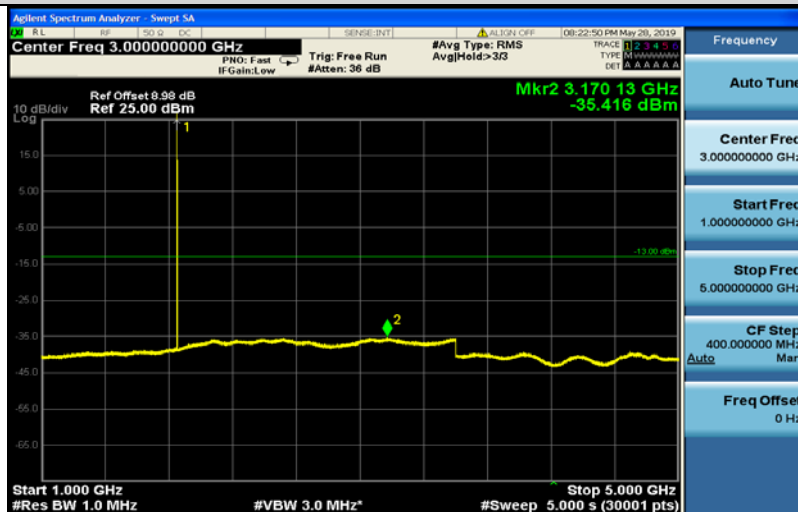


EGPRS1900

EGPRS1900-512-30~1000



EGPRS1900-512-1000~5000



EGPRS1900-512-5000~12000

