FCC TEST REPORT

Client Name	:	Qianhai R-Guardian (Shenzhen) Technology Co., Ltd.
Address	:	Rm210, Liweibo Bldg., HKCU Shenzhen Research Institute, No. 2, Yuexing District, Nanshan, Shenzhen, China
Product Name	:	Smart Luggage
Date	:	Mar. 13, 2020

Shenzhen Anbotek Compliance Laboratory Limited

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TEST REPORT

Applicant	:	Qianhai R-Guardian (Shenzhen) Technology Co., Ltd.
Manufacturer	:	Qianhai R-Guardian (Shenzhen) Technology Co., Ltd.
Product Name	:	Smart Luggage
Model No.	:	SL-03
Trade Mark	:	N.A.
Rating(s)	:	Input: DC 5V, 2A/DC 9V, 2A(Micro)/DC 5V, 3A/DC 9V, 2A(Type-c)（with DC 3.7V, 8000mAh Battery and DC 3.6V, 600mAh Ni-MH Battery inside); Output: DC 5V, 3A/DC 9V, 2A/DC 12V, 1.5A(USB)/DC 5V, 3A/DC 9V, 2A/DC 12V, 1.5A(Type-c)
Test Standard(s)	**:**	**FCC PART 2, FCC Part 22(H) :2018, FCC Part 24(E)**
Test Method(s)	**:**	**ANSI C63.26-2015, KDB971168 D01 v03**

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 22/FCC Part 24 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Receipt Dec. 25, 2019

Date of Test : : Dec. 25, 2019~ Feb. 28, 2020

Prepared by : : Dolly Mo

(Engineer / Dolly Mo)

Reviewer : : Bibo Zhang

(Supervisor / Bibo Zhang)

Approved & Authorized Signer : : Tom Chen

(Manager / Tom Chen)

1. General Information

1.1. Client Information

Applicant	:	Qianhai R-Guardian (Shenzhen) Technology Co., Ltd.
Address	:	Rm210, Liweibo Bldg., HKCU Shenzhen Research Institute, No. 2, Yuexing District, Nanshan, Shenzhen, China
Manufacturer	:	Qianhai R-Guardian (Shenzhen) Technology Co., Ltd.
Address	:	Rm210, Liweibo Bldg., HKCU Shenzhen Research Institute, No. 2, Yuexing District, Nanshan, Shenzhen, China
Factory	:	Qianhai R-Guardian (Shenzhen) Technology Co., Ltd.
Address	:	Rm210, Liweibo Bldg., HKCU Shenzhen Research Institute, No. 2, Yuexing District, Nanshan, Shenzhen, China

1.2. Description of Device (EUT)

Product Name	:	Smart Luggage	
Model No.	:	SL-03	
Trade Mark	:	N.A.	
Test Sample NO.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)	
Test Power Supply		AC 120V, 60Hz for adapter/ DC 3.7V from Battery inside	
Product Description	:	Operation Frequency:	GPRS/EGPRS 850 TX:824.2~848.8 MHz GPRS/EGPRS 1900 TX:1850.2~1909.8 MHz UMTS-FDD Band 5 TX: 826.4 ~ 846.6 MHz UMTS-FDD Band 2 TX:1852.4~1907.6 MHz
		GPRS Class	8/10/12
		Modulation Type:	GPRS/EGPRS: GMSK, 8PSK WCDMA: BPSK, 16QAM;
		Antenna Type:	GPRS/EGPRS: PIFA Antenna WCDMA: PIFA Antenna
		Antenna Gain(Peak):	GSM 850: 0.2 dBi PCS 1900: 2.5 dBi UMTS-FDD Band 2: 2.1 dBi UMTS-FDD Band 5: 0.2 dBi

Remark: 1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual. 2) This report is for GSM&WCDMA.

1.3. Auxiliary Equipment Used During Test

N/A	:	

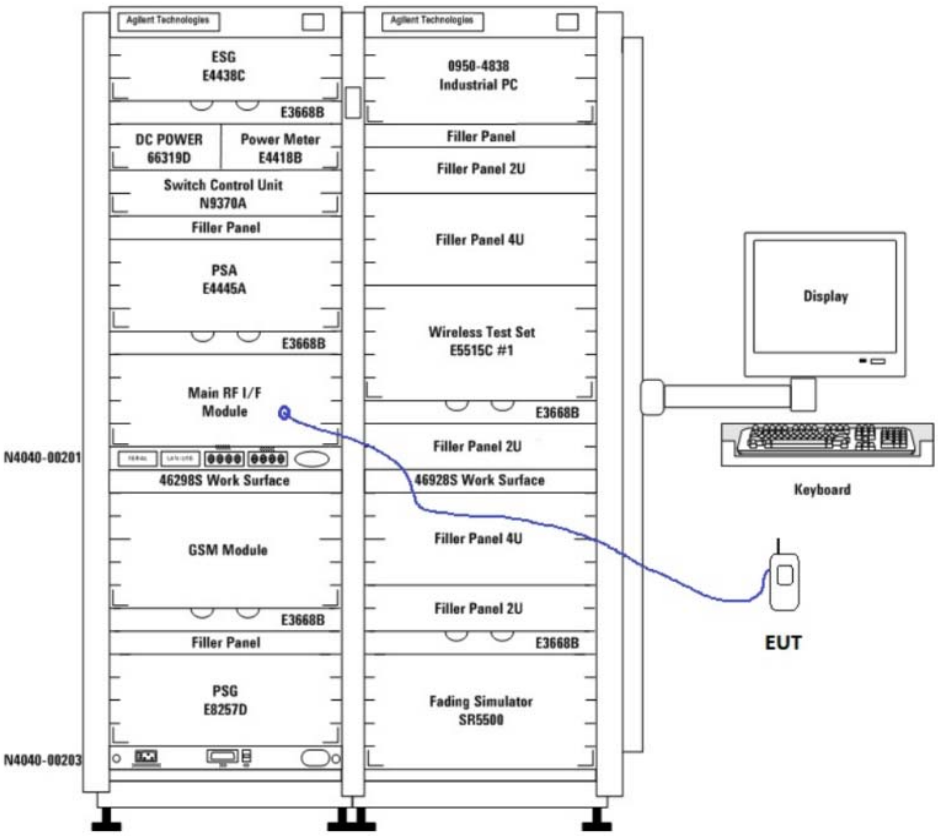
1.4. Description of Test Modes

The following is the description of how the EUT is exercised during testing.

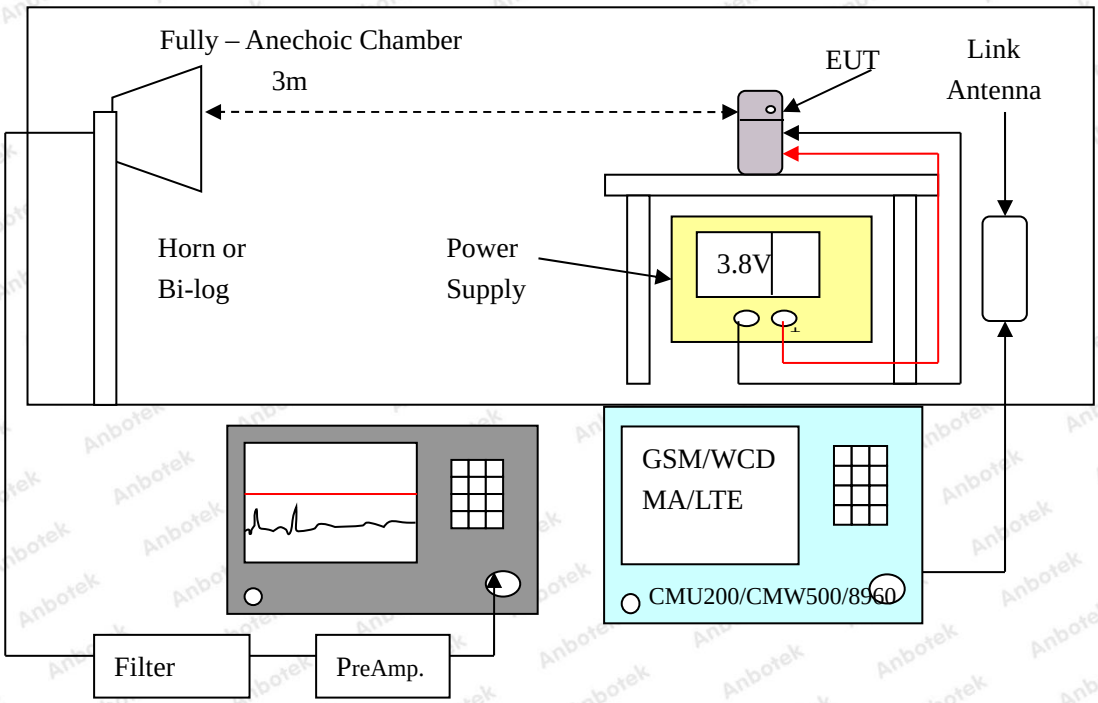
Test	Description Of Operation
Emissions Testing	The EUT was communicating with base station.
Others Testing	The EUT was communicating with base station.

1.5. Description Of Test Setup

1.5.1 Conducted Test Setup



1.5.2 Radiated Test Setup



1.6. Test Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Nov. 04, 2019	1 Year
2.	Preamplifier	SKET Electronic	BK1G18G30D	KD17503	Nov. 04, 2019	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI3	101604	Nov. 04, 2019	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Nov. 01, 2019	1 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Nov. 01, 2019	1 Year
6.	Bilog Broadband Antenna	SCHWARZBECK	VULB 9163	01109	Nov. 01, 2019	1 Year
7.	Pre-amplifier	SONOMA	310N	186860	Nov. 04, 2019	1 Year
8.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
9.	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	Nov. 04, 2019	1 Year
10.	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Nov. 04, 2019	1 Year
11.	DC Power Supply	LW	TPR-6420D	374470	Nov. 04, 2019	1 Year
12.	Constant Temperature Humidity Chamber	ZHONGJIAN	ZJ-KHWS80B	N/A	Nov. 04, 2019	1 Year
13.	Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	117888	Nov. 04, 2019	1 Year
14.	Wideband Radio Communication Tester	Rohde & Schwarz	CMW 500	104209	Nov. 04, 2019	1 Year
15.	High-Pass Filter	CDKMV	ZHPF-BM1100-4000-0730	B2015094550	Nov. 04, 2019	1 Year
16.	High-Pass Filter	CDKMV	ZHPF-M3.5-18G-3834	1307006523	Nov. 04, 2019	1 Year
17.	4 Ch. Simultaneous Sampling 14 Bits 2 MS/s	Agilent	U2531A	TW54063507	Nov. 04, 2019	1 Year
18.	4 Ch. Simultaneous Sampling 14 Bits 2 MS/s	Agilent	U2531A	TW54063513	Nov. 04, 2019	1 Year
19.	Horn Antenna	A-INFO	LB-180400-KF	J211060628	Nov. 01, 2019	1 Year

1.7. Measurement Uncertainty

Maximum measurement uncertainty

Parameter	Uncertainty
RF output power, conducted	±1,5 dB
Power Spectral Density, conducted	±3 dB
Unwanted Emissions, conducted	±3 dB
All emissions, radiated	±6 dB
Temperature	±1 ℃
Humidity	±5 %
DC and low frequency voltages	±3 %
Time	±5 %
Confidence interval：95%. Confidence factor:k=2	

1.8. Description of Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC-Registration No.: 184111

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registed and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No. 184111, September 27, 2019.

ISED-Registration No.: 8058A-1

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A, March 07, 2019.

Test Location

Shenzhen Anbotek Compliance Laboratory Limited.
1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.518102

2. Summary of Test

2.1. Summary of test result

FCC Rules	Description of Test	Result
§2.1046; § 22.913(a); § 24.232(c);	RF Output Power	Compliance
§ 24.232 (d);	Peak-Average Ratio	Compliance
§ 2.1047	Modulation Characteristics	N/A
§ 2.1049; § 22.905; § 22.917; § 24.238;	99% & -26 dB Occupied Bandwidth	Compliance
§ 2.1051; § 22.917(a); § 24.238(a);	Spurious Emissions at Antenna Terminal	Compliance
§ 2.1053; § 22.917(a); § 24.238(a);	Field Strength of Spurious Radiation	Compliance
§ 22.917(a); § 24.238(a);	Out of band emission, Band Edge	Compliance
§ 2.1055; § 22.355; § 24.235;	Frequency stability vs. temperature Frequency stability vs. voltage	Compliance

Note: Testing was performed by configuring EUT to maximum output power status, the declared output power class for different

2.2. Test mode

During all testing, EUT is in link mode with base station emulator at maximum power level in each test mode and channel as below:

Temperature range	21-25℃
Humidity range	40-75%
Pressure range	86-106kPa

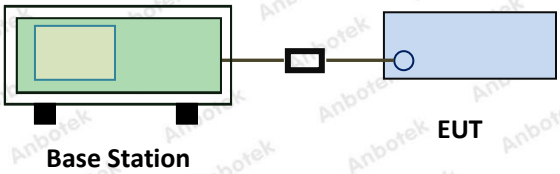
Mode	Channel	Frequency(MHz)
GSM 850	128	824.2
	190	836.6
	251	848.8
PCS 1900	512	1850.2
	661	1880.0
	810	1909.8
UMTS BAND V	4132	826.4
	4182	836.4
	4233	846.6
UMTS BAND II	9262	1852.4
	9400	1880.0
	9538	1907.6

3. RF Output Power Test

3.1. Test Standard and Limit

Spec	Item	Requirement
§22.913 (a)	a)	ERP:38.5dBm
§24.232 (c)	b)	EIRP:33dBm

3.2. Test Setup



3.3. Test Procedure

For Conducted Power:

The transmitter output port was connected to base station.

Set EUT at maximum power through base station.

Select lowest, middle, and highest channels for each band and different test mode.

For ERP/EIRP:

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB = 10 log (TX power in Watts/0.001) – the absolute level

Spurious attenuation limit in dB = 43 + 10 Log10 (power out in Watts.

3.4. Test Data

Please to see the following pages

Conducted Power:

GPRS Mode:

Band	Channel	PCL	Slot	Power(dBm)	Limit(dBm)	Verdict
GPRS850	128	5	1	30.31	38.5	PASS
GPRS850	128	5	2	27.76	38.5	PASS
GPRS850	128	5	3	26.47	38.5	PASS
GPRS850	128	5	4	25.00	38.5	PASS
GPRS850	190	5	1	30.15	38.5	PASS
GPRS850	190	5	2	27.70	38.5	PASS
GPRS850	190	5	3	26.43	38.5	PASS
GPRS850	190	5	4	24.92	38.5	PASS
GPRS850	251	5	1	**30.32**	38.5	PASS
GPRS850	251	5	2	27.86	38.5	PASS
GPRS850	251	5	3	26.26	38.5	PASS
GPRS850	251	5	4	24.75	38.5	PASS
GPRS1900	512	0	1	**29.76**	33	PASS
GPRS1900	512	0	2	29.60	33	PASS
GPRS1900	512	0	3	27.17	33	PASS
GPRS1900	512	0	4	25.95	33	PASS
GPRS1900	661	0	1	29.25	33	PASS
GPRS1900	661	0	2	29.14	33	PASS
GPRS1900	661	0	3	27.17	33	PASS
GPRS1900	661	0	4	25.86	33	PASS
GPRS1900	810	0	1	29.24	33	PASS
GPRS1900	810	0	2	29.10	33	PASS
GPRS1900	810	0	3	27.07	33	PASS
GPRS1900	810	0	4	25.67	33	PASS

EGPRS Mode:

Band	Channel	PCL	Slot	Power(dBm)	Limit(dBm)	Verdict
EGPRS850	128	8	1	26.90	38.5	PASS
EGPRS850	128	8	2	26.68	38.5	PASS
EGPRS850	128	8	3	26.35	38.5	PASS
EGPRS850	128	8	4	26.05	38.5	PASS
EGPRS850	190	8	1	26.72	38.5	PASS
EGPRS850	190	8	2	26.53	38.5	PASS

EGPRS850	190	8	3	26.27	38.5	PASS
EGPRS850	190	8	4	26.00	38.5	PASS
EGPRS850	251	8	1	26.67	38.5	PASS
EGPRS850	251	8	2	26.44	38.5	PASS
EGPRS850	251	8	3	26.19	38.5	PASS
EGPRS850	251	8	4	25.98	38.5	PASS
EGPRS1900	512	2	1	30.15	33	PASS
EGPRS1900	512	2	2	29.99	33	PASS
EGPRS1900	512	2	3	29.92	33	PASS
EGPRS1900	512	2	4	29.66	33	PASS
EGPRS1900	661	2	1	29.96	33	PASS
EGPRS1900	661	2	2	29.81	33	PASS
EGPRS1900	661	2	3	29.65	33	PASS
EGPRS1900	661	2	4	29.51	33	PASS
EGPRS1900	810	2	1	26.90	33	PASS
EGPRS1900	810	2	2	26.68	33	PASS
EGPRS1900	810	2	3	26.35	33	PASS
EGPRS1900	810	2	4	26.05	33	PASS

WCDMA Mode:

Band	Channel	Power(dBm)	Limit(dBm)	Verdict
Band II	9262	22.63	33	PASS
Band II	9400	**23.69**	33	PASS
Band II	9538	23.04	33	PASS
Band V	4132	20.60	38.5	PASS
Band V	4182	**21.27**	38.5	PASS
Band V	4233	20.74	38.5	PASS

Band	Channel	SubTest	Power(dBm)	Limit(dBm)	Verdict
Band II	9262	HSDPA_Sub1	21.78	33	PASS
Band II	9262	HSDPA_Sub2	21.16	33	PASS
Band II	9262	HSDPA_Sub3	22.24	33	PASS
Band II	9262	HSDPA_Sub4	22.52	33	PASS
Band II	9400	HSDPA_Sub1	21.87	33	PASS
Band II	9400	HSDPA_Sub2	21.71	33	PASS
Band II	9400	HSDPA_Sub3	20.53	33	PASS
Band II	9400	HSDPA_Sub4	21.29	33	PASS
Band II	9538	HSDPA_Sub1	22.11	33	PASS

Band II	9538	HSDPA_Sub2	22.49	33	PASS
Band II	9538	HSDPA_Sub3	20.65	33	PASS
Band II	9538	HSDPA_Sub4	21.45	33	PASS
Band V	4132	HSDPA_Sub1	20.64	38.5	PASS
Band V	4132	HSDPA_Sub2	21.26	38.5	PASS
Band V	4132	HSDPA_Sub3	20.34	38.5	PASS
Band V	4132	HSDPA_Sub4	21.62	38.5	PASS
Band V	4182	HSDPA_Sub1	20.83	38.5	PASS
Band V	4182	HSDPA_Sub2	22.29	38.5	PASS
Band V	4182	HSDPA_Sub3	21.12	38.5	PASS
Band V	4182	HSDPA_Sub4	21.70	38.5	PASS
Band V	4233	HSDPA_Sub1	22.25	38.5	PASS
Band V	4233	HSDPA_Sub2	21.22	38.5	PASS
Band V	4233	HSDPA_Sub3	22.91	38.5	PASS
Band V	4233	HSDPA_Sub4	20.66	38.5	PASS

Band	Channel	SubTest	Power(dBm)	Limit(dBm)	Verdict
Band II	9262	HSUPA_Sub1	20.73	33	PASS
Band II	9262	HSUPA_Sub2	20.95	33	PASS
Band II	9262	HSUPA_Sub3	22.10	33	PASS
Band II	9262	HSUPA_Sub4	21.32	33	PASS
Band II	9262	HSUPA_Sub5	21.35	33	PASS
Band II	9400	HSUPA_Sub1	21.45	33	PASS
Band II	9400	HSUPA_Sub2	21.38	33	PASS
Band II	9400	HSUPA_Sub3	21.03	33	PASS
Band II	9400	HSUPA_Sub4	21.77	33	PASS
Band II	9400	HSUPA_Sub5	20.70	33	PASS
Band II	9538	HSUPA_Sub1	20.25	33	PASS
Band II	9538	HSUPA_Sub2	20.63	33	PASS
Band II	9538	HSUPA_Sub3	21.59	33	PASS
Band II	9538	HSUPA_Sub4	21.17	33	PASS
Band II	9538	HSUPA_Sub5	21.35	33	PASS
Band V	4132	HSUPA_Sub1	20.48	38.5	PASS
Band V	4132	HSUPA_Sub2	21.09	38.5	PASS
Band V	4132	HSUPA_Sub3	19.91	38.5	PASS
Band V	4132	HSUPA_Sub4	21.45	38.5	PASS
Band V	4132	HSUPA_Sub5	20.76	38.5	PASS

Band V	4182	HSUPA_Sub1	20.93	38.5	PASS
Band V	4182	HSUPA_Sub2	21.55	38.5	PASS
Band V	4182	HSUPA_Sub3	20.91	38.5	PASS
Band V	4182	HSUPA_Sub4	21.02	38.5	PASS
Band V	4182	HSUPA_Sub5	20.07	38.5	PASS
Band V	4233	HSUPA_Sub1	21.97	38.5	PASS
Band V	4233	HSUPA_Sub2	20.59	38.5	PASS
Band V	4233	HSUPA_Sub3	21.10	38.5	PASS
Band V	4233	HSUPA_Sub4	21.33	38.5	PASS
Band V	4233	HSUPA_Sub5	21.71	38.5	PASS

Radiated Output power:

ERP & EIRP
ERP for Cellular Band (Part 22H)
GPRS Mode

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
824.2	24.26	V	6.8	0.53	30.53	38.45
824.2	23.57	H	6.8	0.53	29.84	38.45
836.6	23.08	V	6.8	0.53	29.35	38.45
836.6	24.10	H	6.8	0.53	30.37	38.45
848.8	22.99	V	6.9	0.53	29.36	38.45
848.8	21.48	H	6.9	0.53	27.85	38.45

EGPRS Mode

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
824.2	23.44	V	6.8	0.53	29.71	38.45
824.2	24.10	H	6.8	0.53	30.37	38.45
836.6	22.88	V	6.8	0.53	29.15	38.45
836.6	22.61	H	6.8	0.53	28.88	38.45
848.8	22.55	V	6.9	0.53	28.92	38.45
848.8	22.62	H	6.9	0.53	28.99	38.45

ERP for UMTS-FDD Band Ⅴ (Part 22H)

WCDMA Mode

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
826.4	13.58	V	6.8	0.53	19.85	38.45
826.4	15.80	H	6.8	0.53	22.07	38.45
836.4	15.02	V	6.8	0.53	21.29	38.45
836.4	13.38	H	6.8	0.53	19.65	38.45
846.6	13.67	V	6.9	0.53	20.04	38.45
846.6	14.26	H	6.9	0.53	20.63	38.45

HSDPA Mode

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
826.4	14.43	V	6.8	0.53	20.70	38.45
826.4	13.18	H	6.8	0.53	19.45	38.45
836.4	15.05	V	6.8	0.53	21.32	38.45
836.4	14.53	H	6.8	0.53	20.80	38.45
846.6	14.17	V	6.9	0.53	20.54	38.45
846.6	13.76	H	6.9	0.53	20.13	38.45

HSUPA Mode

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
826.4	14.03	V	6.8	0.53	20.30	38.45
826.4	14.28	H	6.8	0.53	20.55	38.45
836.4	14.90	V	6.8	0.53	21.17	38.45
836.4	13.50	H	6.8	0.53	19.77	38.45
846.6	14.50	V	6.9	0.53	20.87	38.45
846.6	14.50	H	6.9	0.53	20.87	38.45

EIRP for PCS Band (Part 24E)

GPRS Mode

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
1850.2	21.92	V	7.88	0.85	28.95	33
1850.2	22.38	H	7.88	0.85	29.41	33
1880	21.23	V	7.88	0.85	28.26	33
1880	22.56	H	7.88	0.85	29.59	33
1909.8	20.25	V	7.86	0.85	27.26	33
1909.8	21.87	H	7.86	0.85	28.88	33

EGPRS Mode

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
1850.2	19.90	V	7.88	0.85	26.93	33
1850.2	20.68	H	7.88	0.85	27.71	33
1880	19.72	V	7.88	0.85	26.75	33
1880	20.91	H	7.88	0.85	27.94	33
1909.8	21.04	V	7.86	0.85	28.05	33
1909.8	19.73	H	7.86	0.85	26.74	33

EIRP for UMTS-FDD Band Ⅱ (Part 24E)
WCDMA Mode

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
1852.4	14.60	V	7.88	0.85	21.63	33
1852.4	12.72	H	7.88	0.85	19.75	33
1880	15.07	V	7.88	0.85	22.10	33
1880	14.16	H	7.88	0.85	21.19	33
1907.6	14.45	V	7.86	0.85	21.46	33
1907.6	15.01	H	7.86	0.85	22.02	33

HSDPA Mode

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
1852.4	12.44	V	7.88	0.85	19.47	33
1852.4	13.05	H	7.88	0.85	20.08	33
1880	12.46	V	7.88	0.85	19.49	33
1880	12.94	H	7.88	0.85	19.97	33
1907.6	13.67	V	7.86	0.85	20.68	33
1907.6	13.03	H	7.86	0.85	20.04	33

HSUPA Mode

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
1852.4	13.40	V	7.88	0.85	20.43	33
1852.4	12.57	H	7.88	0.85	19.60	33
1880	12.95	V	7.88	0.85	19.98	33
1880	12.12	H	7.88	0.85	19.15	33
1907.6	12.33	V	7.86	0.85	19.34	33
1907.6	13.49	H	7.86	0.85	20.50	33

Note：

Absolute level=Substituted Level-Cable loss+Antenna Gain

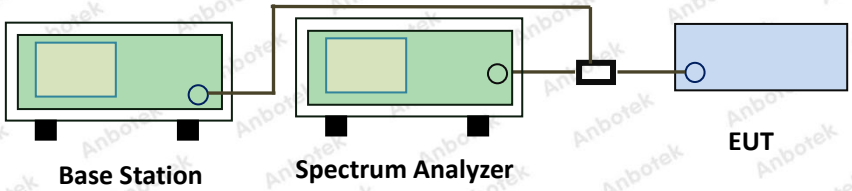
Margin=Limit -Absolute Level

4. Peak-Average Ratio

4.1. Test Standard and Limit

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.

4.2. Test Setup



4.3. Test Procedure

According with KDB 971168

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

4.4. Test Data

GSM Mode:

Band	Channel	Peak-to-Average Ratio(dB)	Limit(dBm)	Verdict
GPRS850	128	0.13	13	PASS
GPRS850	190	0.16	13	PASS
GPRS850	251	0.16	13	PASS
EGPRS850	128	3.17	13	PASS
EGPRS850	190	3.19	13	PASS
EGPRS850	251	3.14	13	PASS
GPRS1900	512	0.21	13	PASS
GPRS1900	661	0.21	13	PASS
GPRS1900	810	0.20	13	PASS
EGPRS1900	512	3.23	13	PASS
EGPRS1900	661	3.11	13	PASS
EGPRS1900	810	3.20	13	PASS

WCDMA Mode:

Band	Channel	Peak-to-Average Ratio(dB)	Limit(dBm)	Verdict
Band II	9262	3.05	13	PASS
Band II	9400	2.97	13	PASS
Band II	9538	2.66	13	PASS
Band V	4132	2.93	13	PASS
Band V	4182	3.00	13	PASS
Band V	4233	2.93	13	PASS

5. Modulation Characteristic

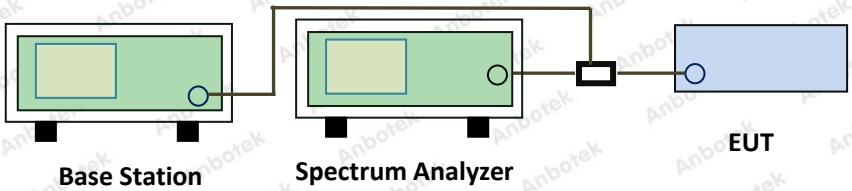
According to FCC § 2.1047(d), Part 22H, 24E there is no specific requirement for digital modulation, thereforemodulation characteristic is not presented.

6. Occupied Bandwidth

6.1. Test Standard and Limit

Spec	Item	Requirement
§2.1049, §22.917, §22.905 §24.238	a)	99% Occupied Bandwidth(kHz)
	b)	26 dB Bandwidth(kHz)

6.2. Test Setup



6.3. Test Procedure

1. The EUT's output RF connector was connected with a short cable to the spectrum analyzer
2. RBWwas set to about 1% of emission BW, VBW≥ 3 times RBW.
3. -26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth isthe delta frequency between the two points where the display line intersects the signal trace.

6.4. Test Data

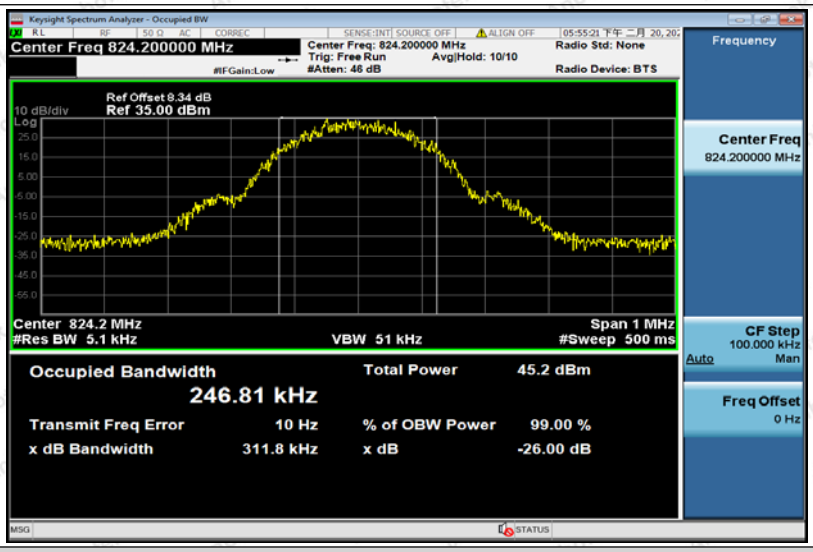
GSM Mode：

Band	Channel	Occupied Bandwidth (kHz)	26dB Bandwidth (kHz)	Verdict
GPRS850	128	246.8	312	PASS
GPRS850	190	244.4	312	PASS
GPRS850	251	246.0	313	PASS
EGPRS850	128	246.3	305	PASS
EGPRS850	190	245.5	305	PASS
EGPRS850	251	244.2	308	PASS
GPRS1900	512	244.7	315	PASS
GPRS1900	661	243.1	314	PASS
GPRS1900	810	242.4	315	PASS
EGPRS1900	512	243.1	307	PASS
EGPRS1900	661	244.3	298	PASS
EGPRS1900	810	242.5	305	PASS

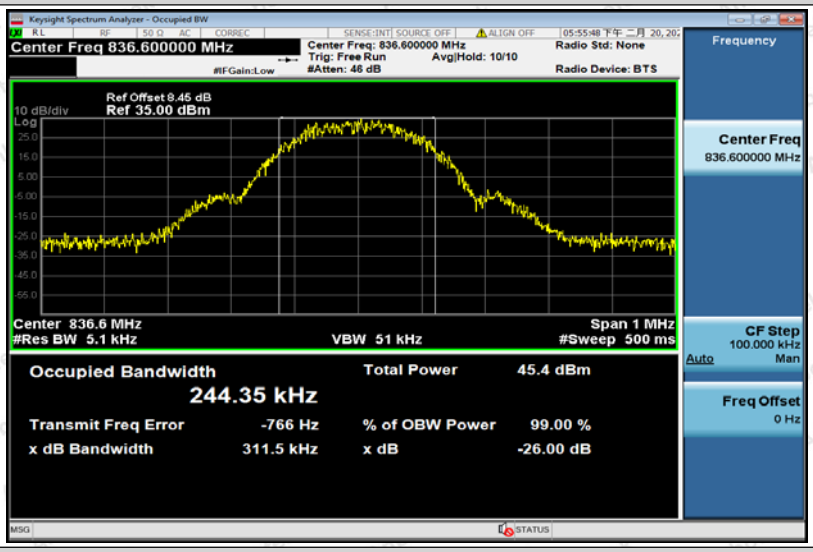
WCDMA Mode：

Band	Channel	Occupied Bandwidth (kHz)	26dB Bandwidth (kHz)	Verdict
Band II	9262	4137.8	4726	PASS
Band II	9400	4130.5	4725	PASS
Band II	9538	4150.1	4750	PASS
Band V	4132	4157.3	4739	PASS
Band V	4182	4149.3	4746	PASS
Band V	4233	4163.7	4744	PASS

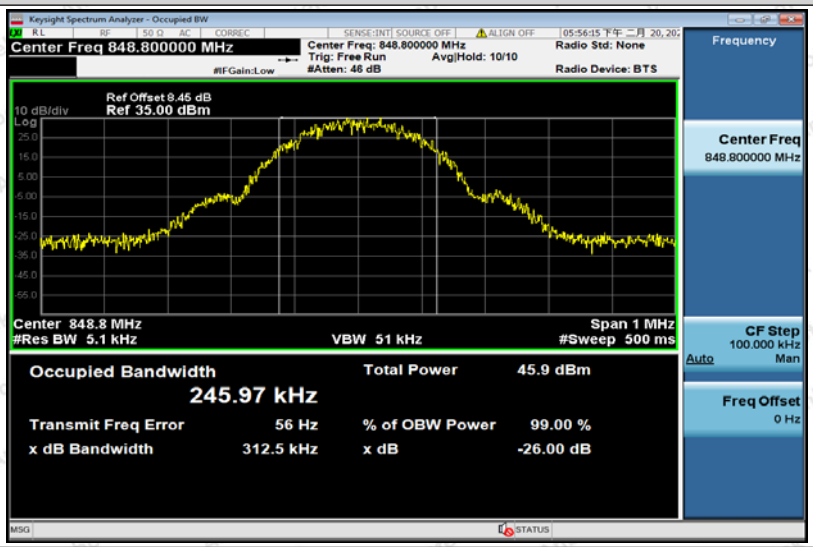
Test Graphs



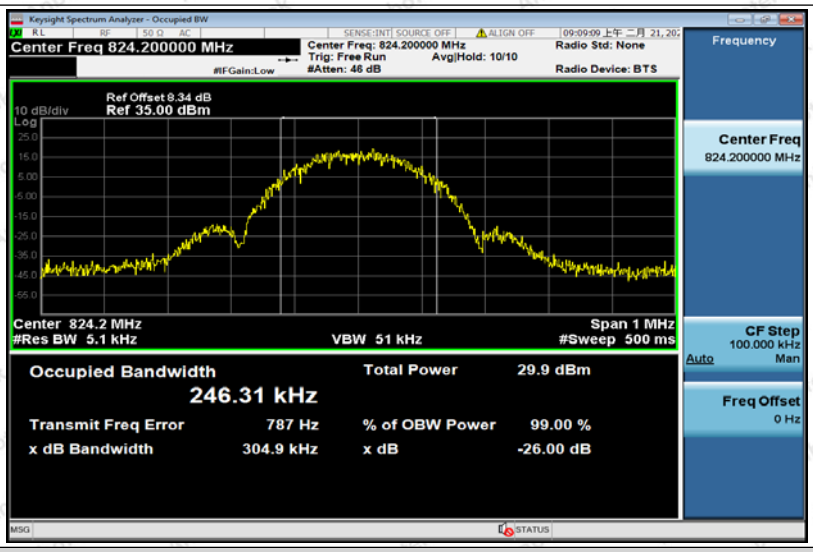
GPRS850-128



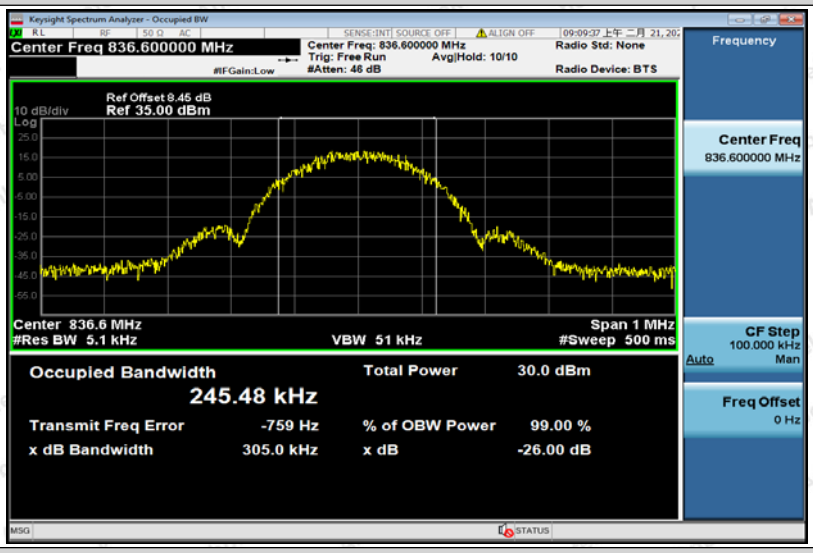
GPRS850-190



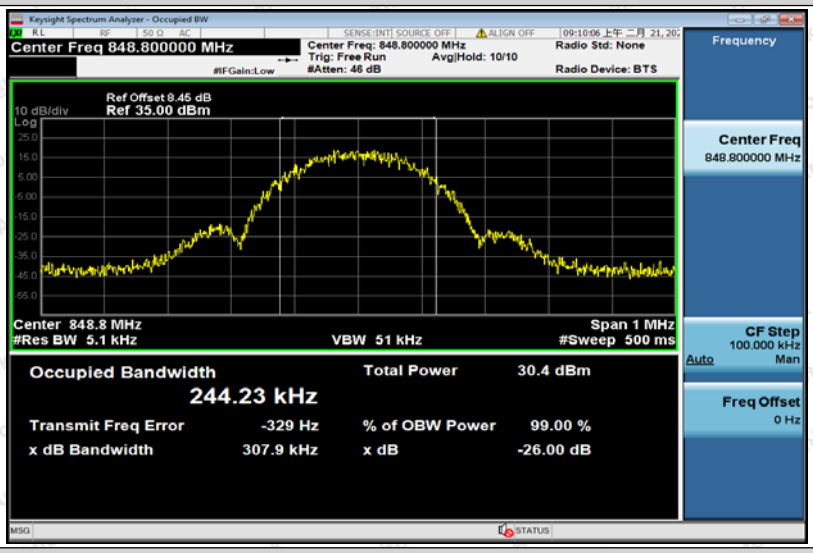
GPRS850-251



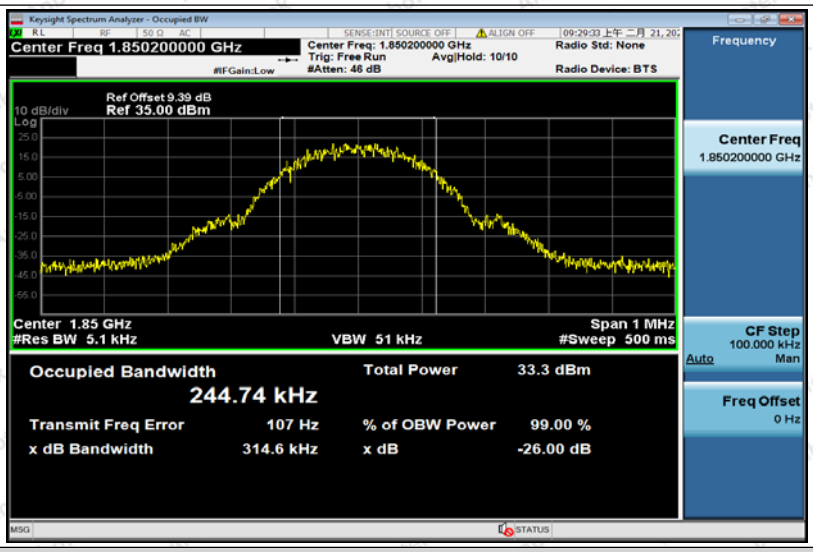
EGPRS850-128



EGPRS850-190

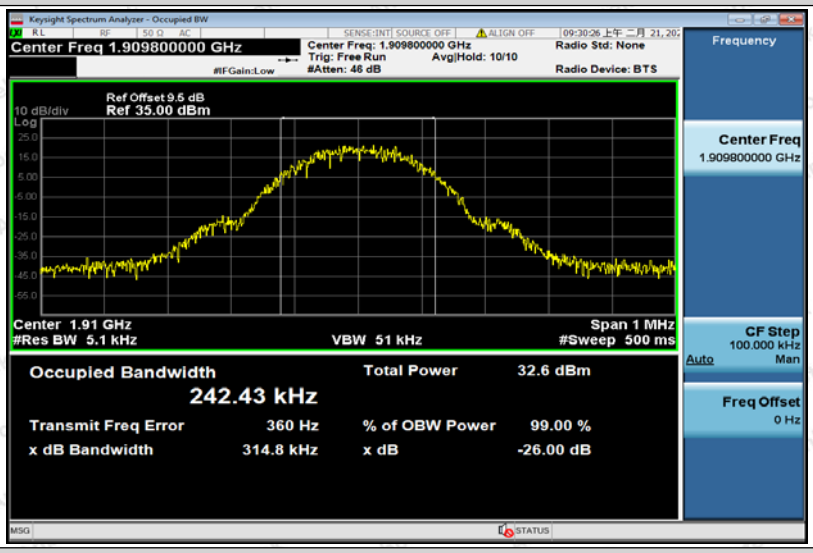


EGPRS850-251

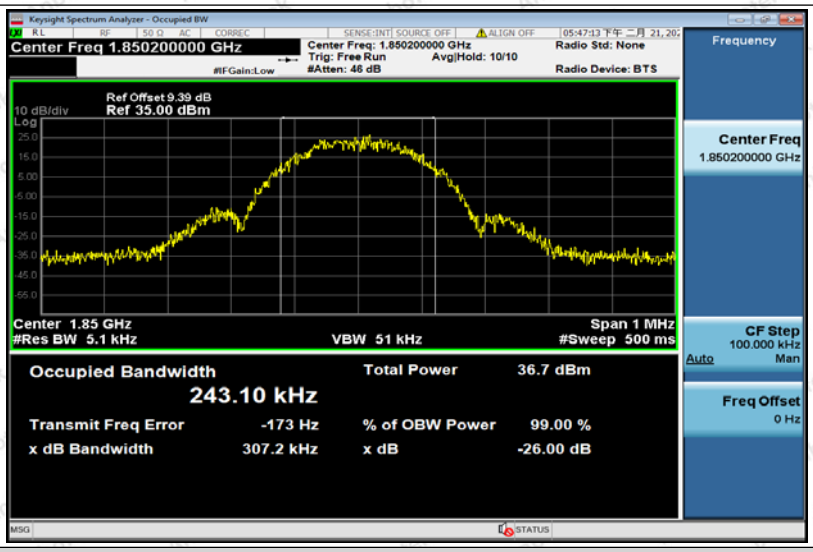


GPRS1900-512

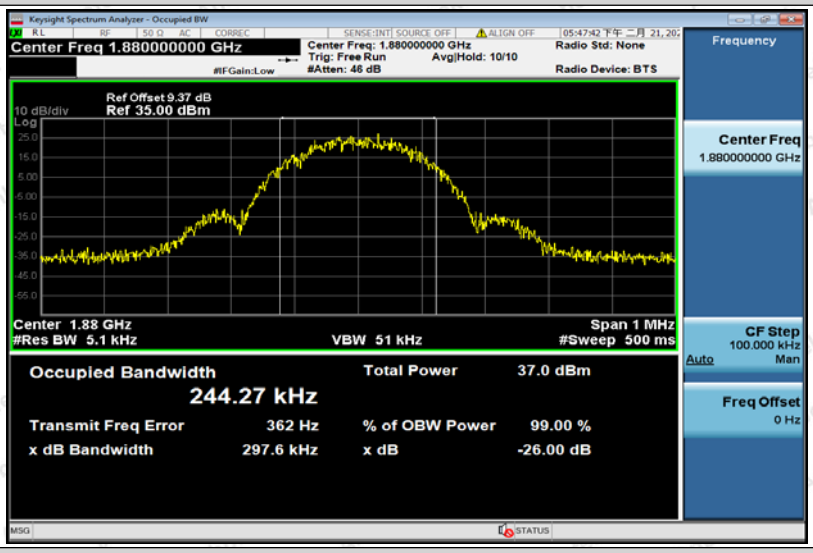
GPRS1900-661



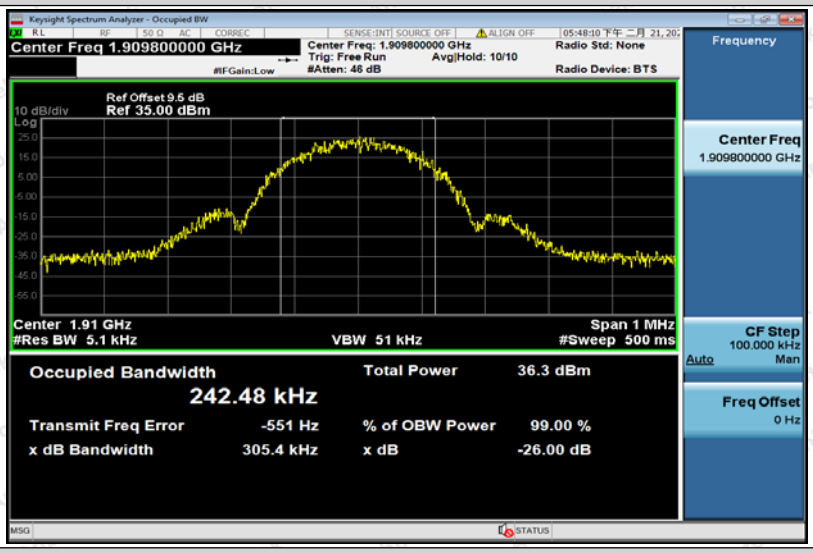
GPRS1900-810



EGPRS1900-512



EGPRS1900-661

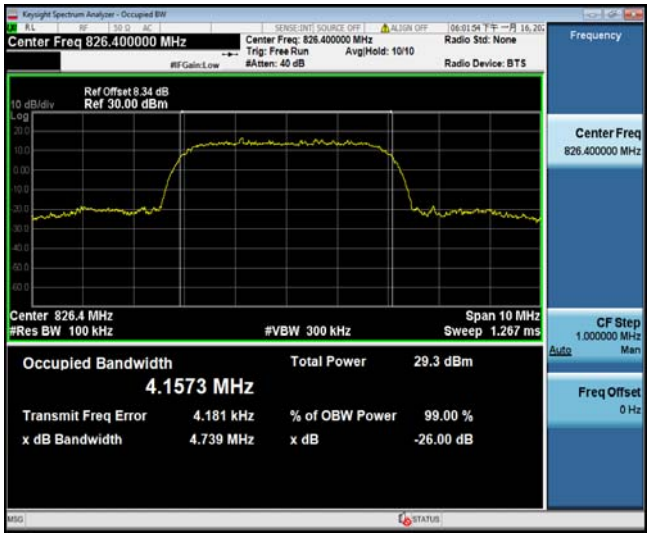


EGPRS1900-810

Band II_9262

Band II_9400

Band II_9538



Band V_4132

Band V_4182

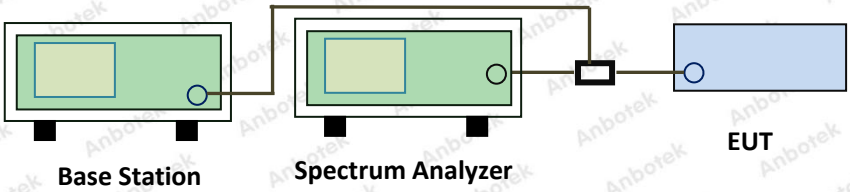
Band V_4233

7. Spurious Emissions at Antenna Terminals

7.1. Test Standard and Limit

The mean power of emissions must be attenuated below the mean power of the unmodulated carrier (P) on any frequency outside the frequency band by at least (43 + 10 log P) dB, in this case, -13dBm.

7.2. Test Setup



7.3. Test Procedure

1. The RF output of the transceiver was connected to a spectrum analyzer through appropriateattenuation.
2. The resolution bandwidth of the spectrum analyzer was set at 1MHz, sufficientscans were taken to show the out of band Emissions if any up to 10th harmonic.
3. For the out of band: Set the RBW= 1MHz, VBW = 3MHz, Start=30MHz, Stop= 10th harmonic.

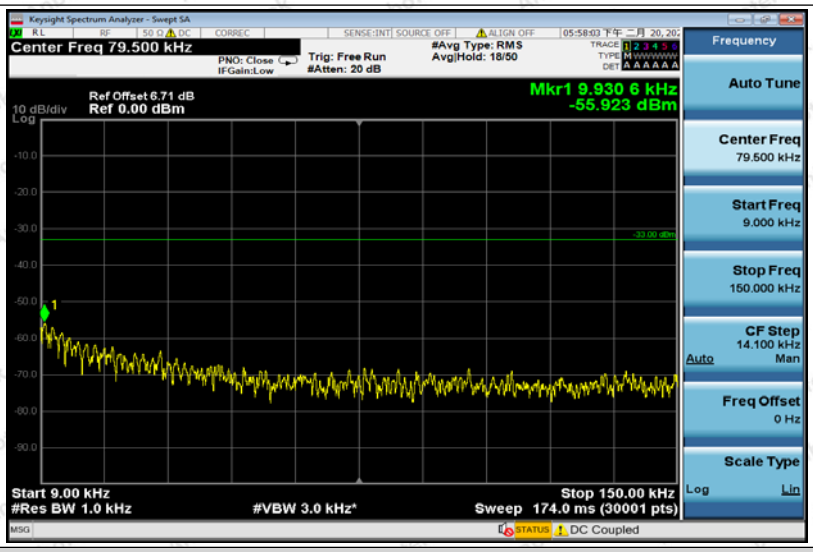
7.4. Test Data

Band	Channel	Frequency Range(Mhz)	Value(dBm)	Limit(dBm)	Verdict
GPRS850	128	0.009~0.15	-56.10	-33	PASS
GPRS850	128	0.15~30	-47.08	-13	PASS
GPRS850	128	30~1000	-28.65	-13	PASS
GPRS850	128	1000~5000	-30.26	-13	PASS
GPRS850	128	5000~12000	-38.51	-13	PASS
GPRS850	128	12000~18000	-40.71	-13	PASS
GPRS850	190	0.009~0.15	-56.62	-33	PASS
GPRS850	190	0.15~30	-46.74	-13	PASS
GPRS850	190	30~1000	-28.95	-13	PASS
GPRS850	190	1000~5000	-28.44	-13	PASS
GPRS850	190	5000~12000	-35.98	-13	PASS
GPRS850	190	12000~18000	-40.61	-13	PASS
GPRS850	251	0.009~0.15	-56.14	-33	PASS
GPRS850	251	0.15~30	-46.47	-13	PASS
GPRS850	251	30~1000	-29.27	-13	PASS
GPRS850	251	1000~5000	-27.17	-13	PASS
GPRS850	251	5000~12000	-35.62	-13	PASS
GPRS850	251	12000~18000	-40.70	-13	PASS
EGPRS850	128	0.009~0.15	-64.86	-33	PASS
EGPRS850	128	0.15~30	-53.57	-13	PASS
EGPRS850	128	30~1000	-38.09	-13	PASS
EGPRS850	128	1000~5000	-42.55	-13	PASS
EGPRS850	128	5000~12000	-56.87	-13	PASS
EGPRS850	128	12000~18000	-52.83	-13	PASS
EGPRS850	190	0.009~0.15	-65.13	-33	PASS
EGPRS850	190	0.15~30	-53.82	-13	PASS
EGPRS850	190	30~1000	-38.34	-13	PASS
EGPRS850	190	1000~5000	-42.52	-13	PASS
EGPRS850	190	5000~12000	-57.41	-13	PASS
EGPRS850	190	12000~18000	-52.85	-13	PASS
EGPRS850	251	0.009~0.15	-66.22	-33	PASS
EGPRS850	251	0.15~30	-54.05	-13	PASS
EGPRS850	251	30~1000	-38.39	-13	PASS
EGPRS850	251	1000~5000	-42.46	-13	PASS
EGPRS850	251	5000~12000	-57.38	-13	PASS
EGPRS850	251	12000~18000	-52.43	-13	PASS
GPRS1900	512	0.009~0.15	-69.00	-43	PASS
GPRS1900	512	0.15~30	-49.84	-23	PASS
GPRS1900	512	30~1000	-32.39	-13	PASS

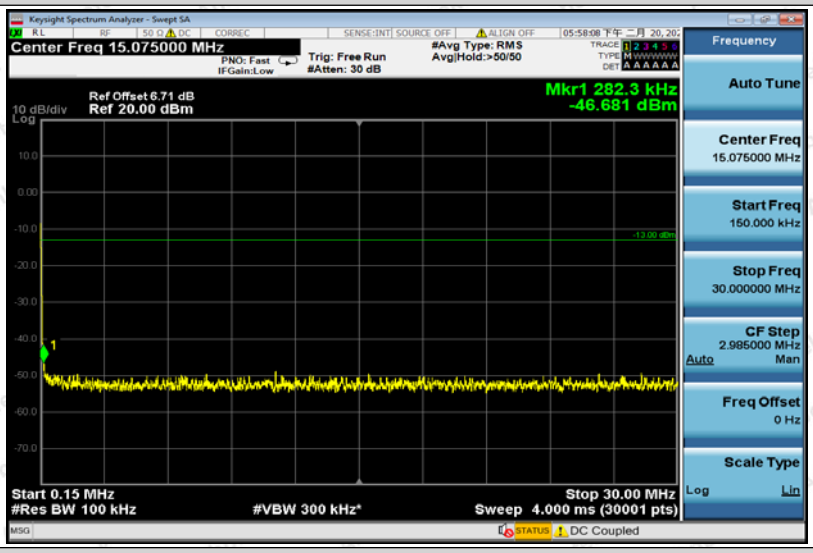
GPRS1900	512	1000~5000	-34.91	-13	PASS
GPRS1900	512	5000~12000	-45.92	-13	PASS
GPRS1900	512	12000~26500	-37.81	-13	PASS
GPRS1900	661	0.009~0.15	-67.40	-43	PASS
GPRS1900	661	0.15~30	-49.51	-23	PASS
GPRS1900	661	30~1000	-32.11	-13	PASS
GPRS1900	661	1000~5000	-34.91	-13	PASS
GPRS1900	661	5000~12000	-46.48	-13	PASS
GPRS1900	661	12000~26500	-37.47	-13	PASS
GPRS1900	810	0.009~0.15	-67.56	-43	PASS
GPRS1900	810	0.15~30	-49.40	-23	PASS
GPRS1900	810	30~1000	-32.67	-13	PASS
GPRS1900	810	1000~5000	-35.10	-13	PASS
GPRS1900	810	5000~12000	-39.22	-13	PASS
GPRS1900	810	12000~26500	-37.78	-13	PASS
EGPRS1900	512	0.009~0.15	-66.52	-43	PASS
EGPRS1900	512	0.15~30	-48.72	-23	PASS
EGPRS1900	512	30~1000	-33.02	-13	PASS
EGPRS1900	512	1000~5000	-35.07	-13	PASS
EGPRS1900	512	5000~12000	-47.76	-13	PASS
EGPRS1900	512	12000~26500	-37.52	-13	PASS
EGPRS1900	661	0.009~0.15	-65.04	-43	PASS
EGPRS1900	661	0.15~30	-49.38	-23	PASS
EGPRS1900	661	30~1000	-32.68	-13	PASS
EGPRS1900	661	1000~5000	-34.74	-13	PASS
EGPRS1900	661	5000~12000	-48.48	-13	PASS
EGPRS1900	661	12000~26500	-37.61	-13	PASS
EGPRS1900	810	0.009~0.15	-66.06	-43	PASS
EGPRS1900	810	0.15~30	-49.57	-23	PASS
EGPRS1900	810	30~1000	-32.41	-13	PASS
EGPRS1900	810	1000~5000	-35.08	-13	PASS
EGPRS1900	810	5000~12000	-48.57	-13	PASS
EGPRS1900	810	12000~26500	-37.61	-13	PASS

Band	Channel	Frequency Rang(Mhz)	Value(dBm)	Limit(dBm)	Verdict
Band II	9262	0.009~0.15	-75.88	-75.88	PASS
Band II	9262	0.15~30	-53.32	-53.32	PASS
Band II	9262	30~1000	-37.20	-37.2	PASS
Band II	9262	1000~3000	-42.96	-42.96	PASS
Band II	9262	3000~10000	-54.06	-54.06	PASS
Band II	9262	10000~20000	-51.79	-51.79	PASS

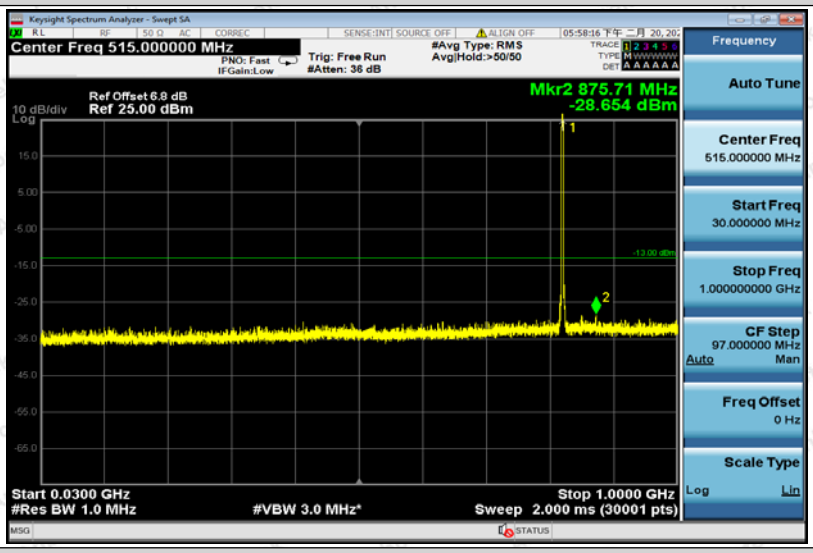
Band II	9400	0.009~0.15	-74.93	-74.93	PASS
Band II	9400	0.15~30	-52.40	-52.4	PASS
Band II	9400	30~1000	-38.19	-38.19	PASS
Band II	9400	1000~3000	-42.94	-42.94	PASS
Band II	9400	3000~10000	-56.29	-56.29	PASS
Band II	9400	10000~20000	-51.94	-51.94	PASS
Band II	9538	0.009~0.15	-75.28	-75.28	PASS
Band II	9538	0.15~30	-52.57	-52.57	PASS
Band II	9538	30~1000	-37.86	-37.86	PASS
Band II	9538	1000~3000	-43.01	-43.01	PASS
Band II	9538	3000~10000	-57.67	-57.67	PASS
Band II	9538	10000~20000	-52.02	-52.02	PASS
Band V	4132	0.009~0.15	-75.71	-75.71	PASS
Band V	4132	0.15~30	-53.92	-53.92	PASS
Band V	4132	30~1000	-37.94	-37.94	PASS
Band V	4132	1000~3000	-42.45	-42.45	PASS
Band V	4132	3000~10000	-58.29	-58.29	PASS
Band V	4132	10000~18000	-52.35	-52.35	PASS
Band V	4182	0.009~0.15	-75.24	-75.24	PASS
Band V	4182	0.15~30	-52.68	-52.68	PASS
Band V	4182	30~1000	-36.61	-36.61	PASS
Band V	4182	1000~3000	-42.34	-42.34	PASS
Band V	4182	3000~10000	-58.16	-58.16	PASS
Band V	4182	10000~18000	-52.28	-52.28	PASS
Band V	4233	0.009~0.15	-75.22	-75.22	PASS
Band V	4233	0.15~30	-54.19	-54.19	PASS
Band V	4233	30~1000	-37.44	-37.44	PASS
Band V	4233	1000~3000	-42.51	-42.51	PASS
Band V	4233	3000~10000	-58.22	-58.22	PASS
Band V	4233	10000~18000	-52.37	-52.37	PASS



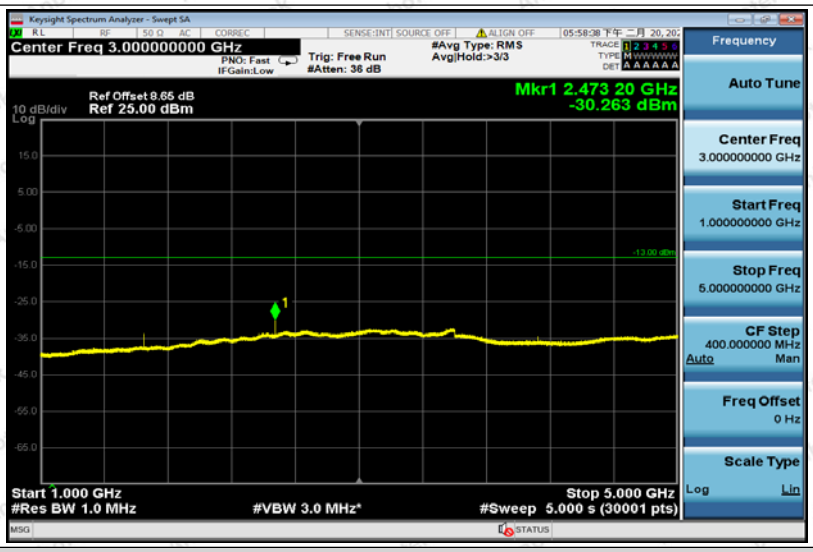
GPRS850-128-0.009~0.15



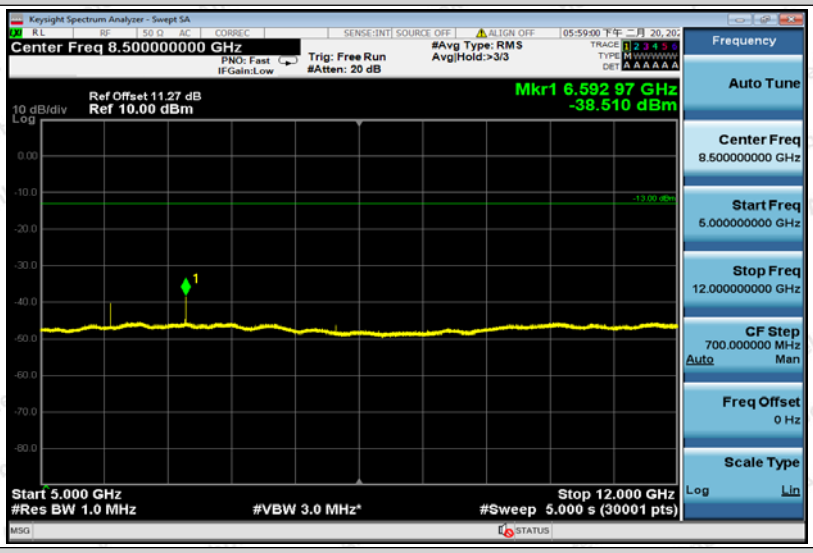
GPRS850-128-0.15~30



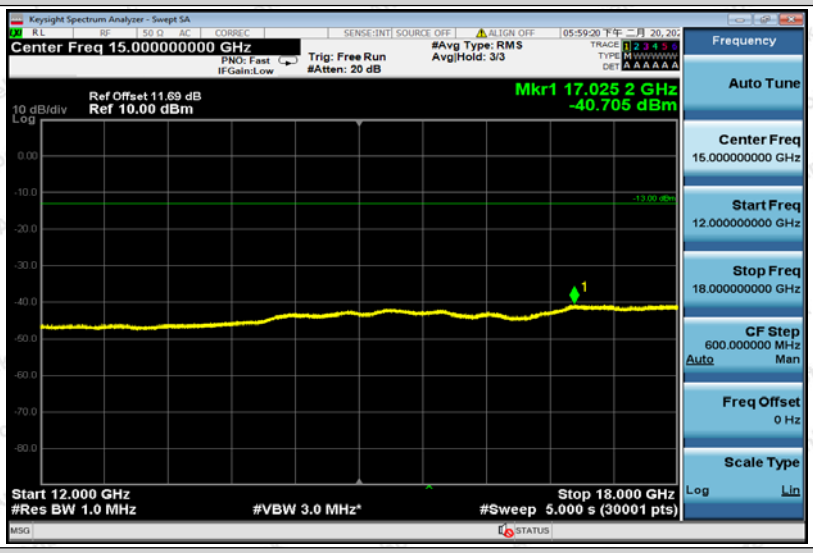
GPRS850-128-30~1000



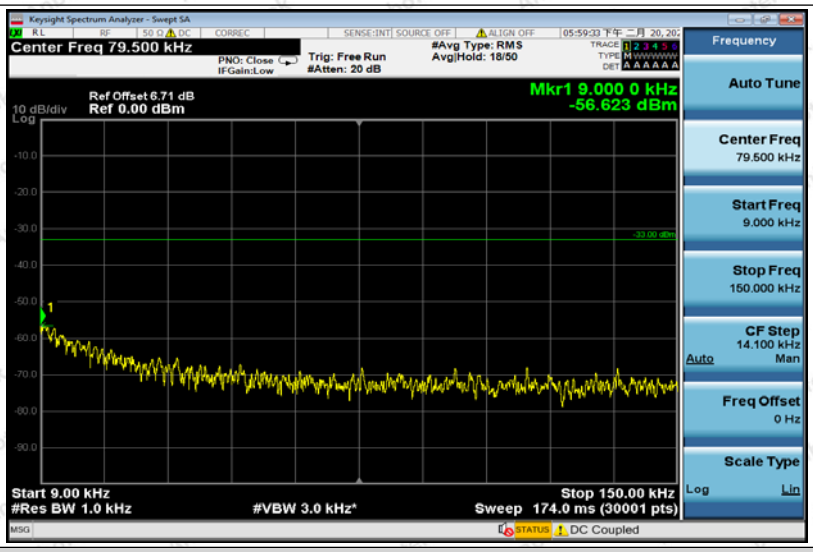
GPRS850-128-1000~5000



GPRS850-128-5000~12000



GPRS850-128-12000~18000



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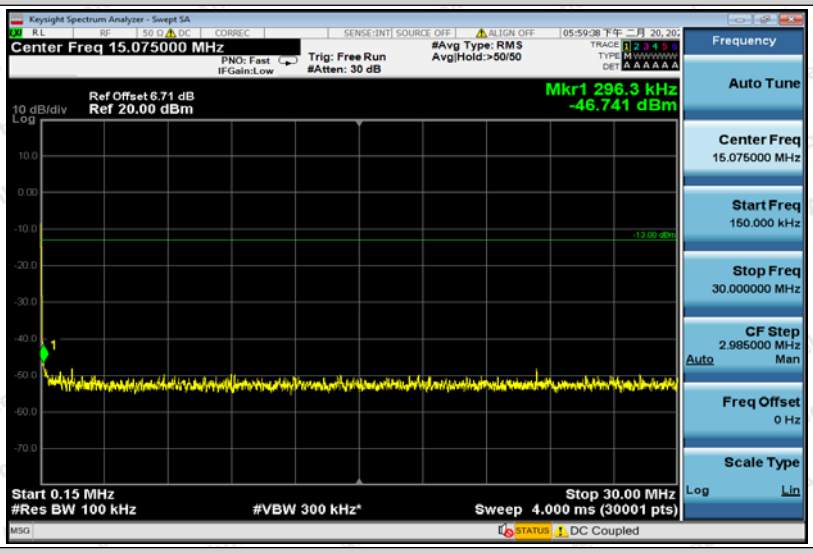

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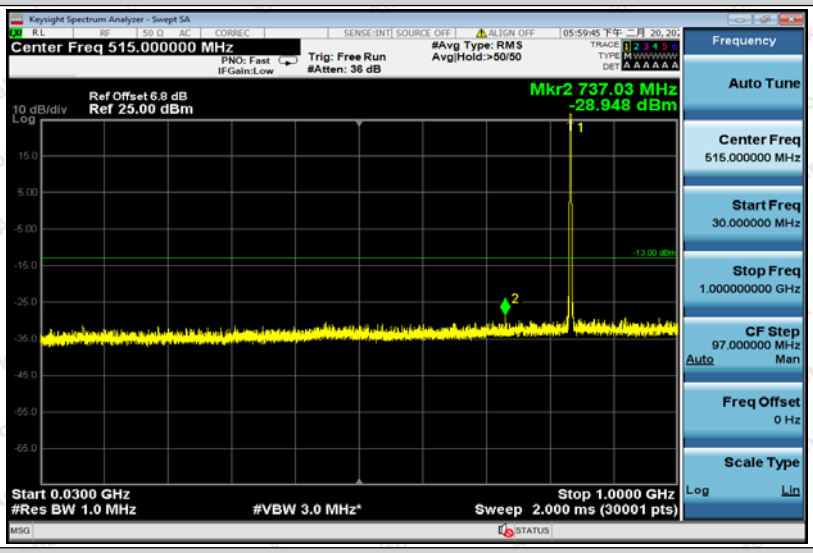

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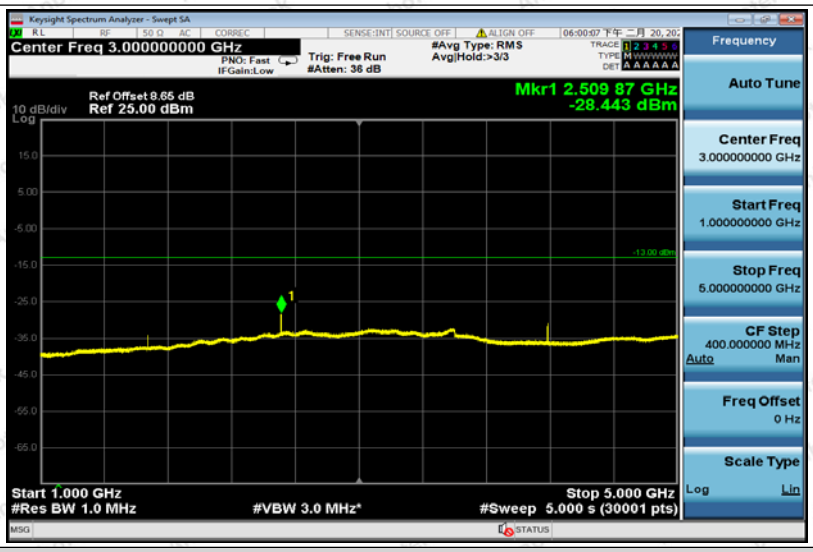

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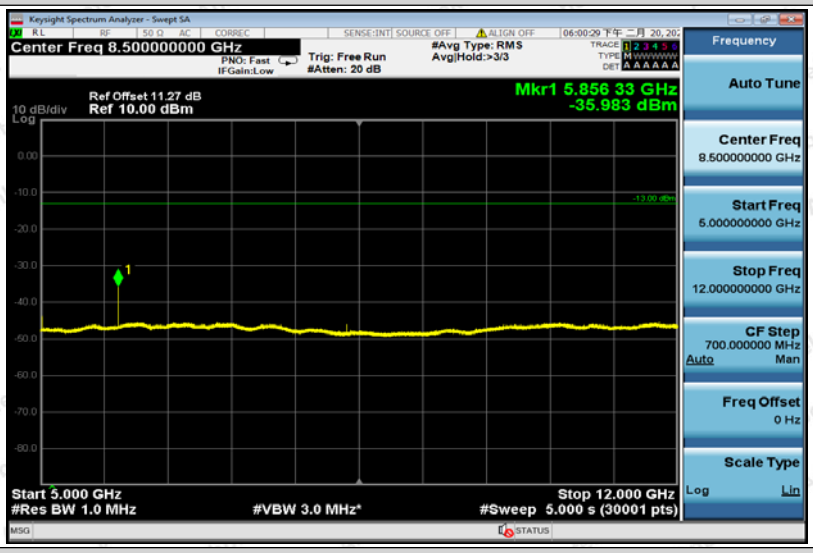

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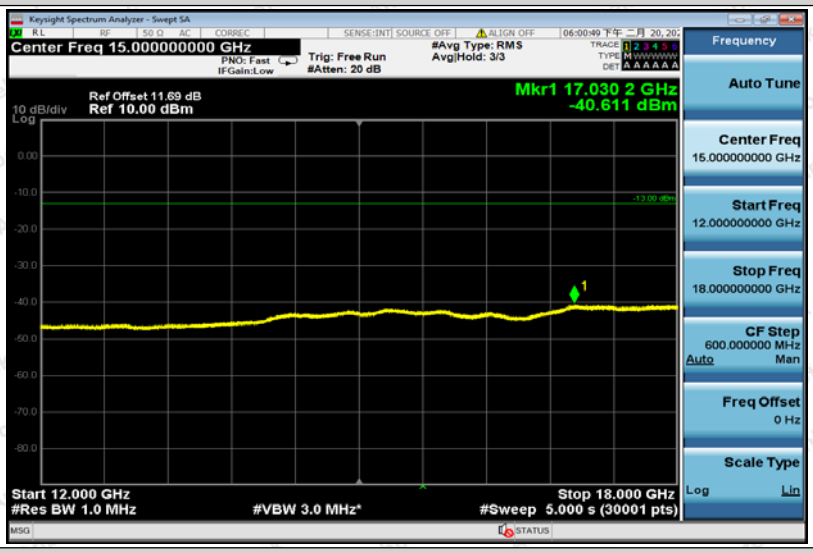

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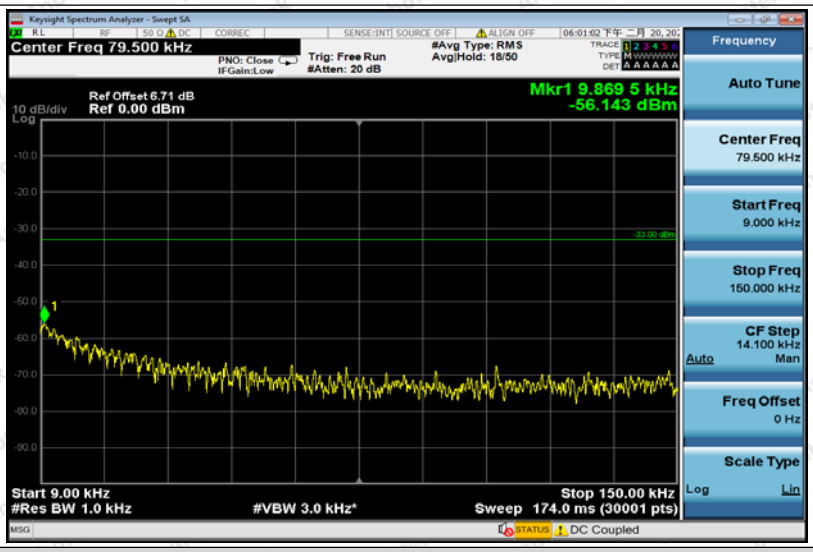

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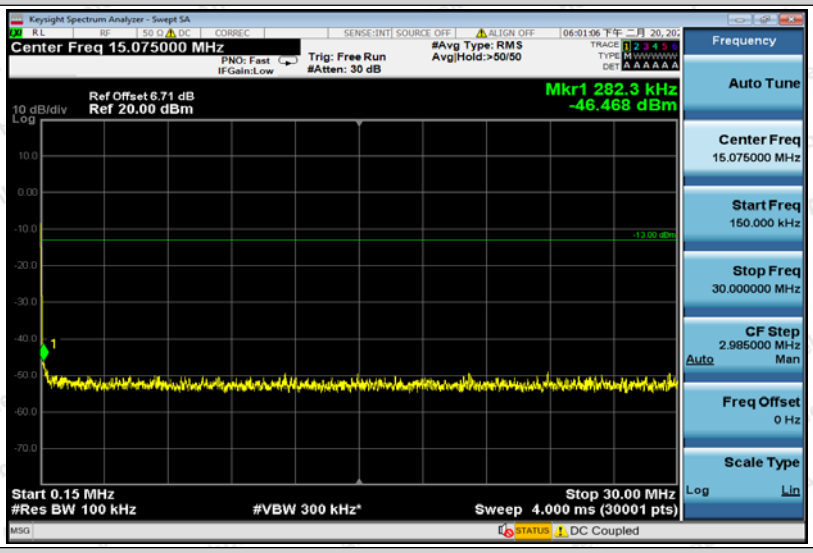

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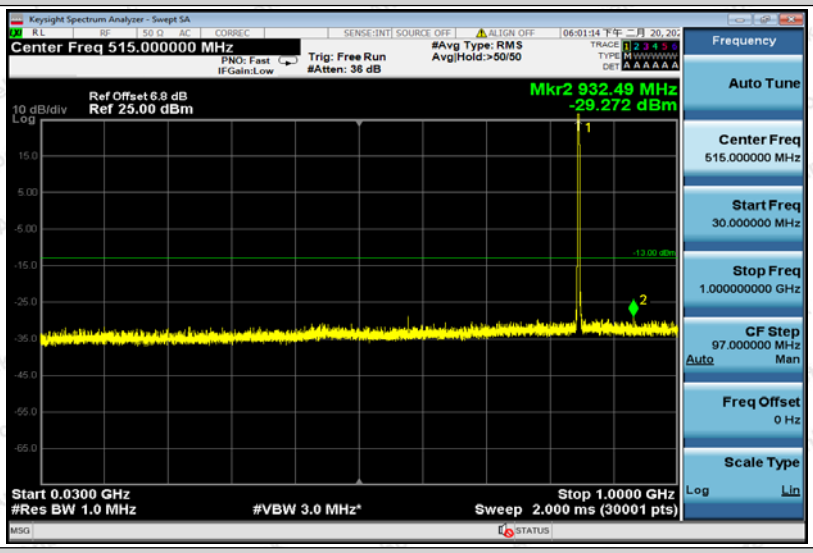

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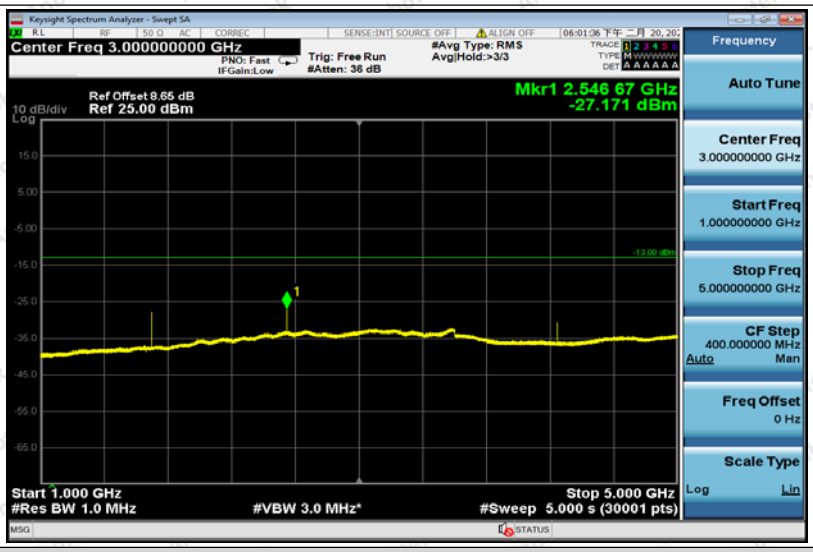

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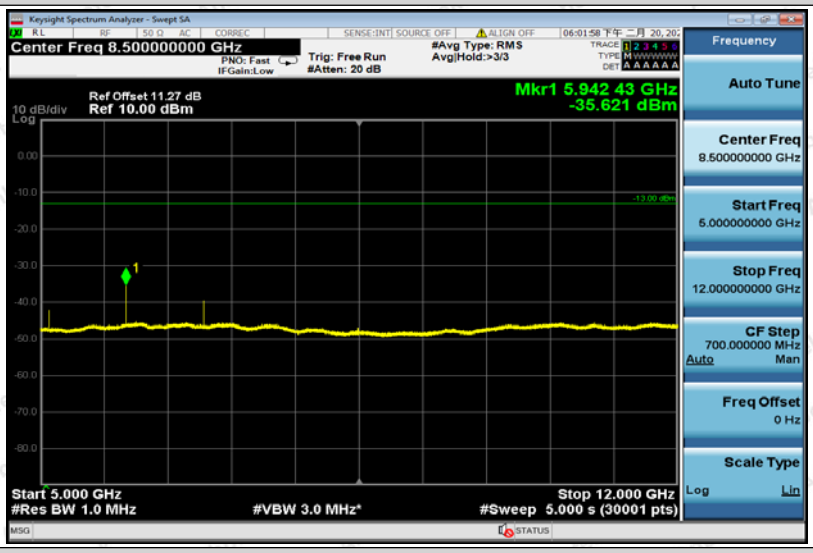

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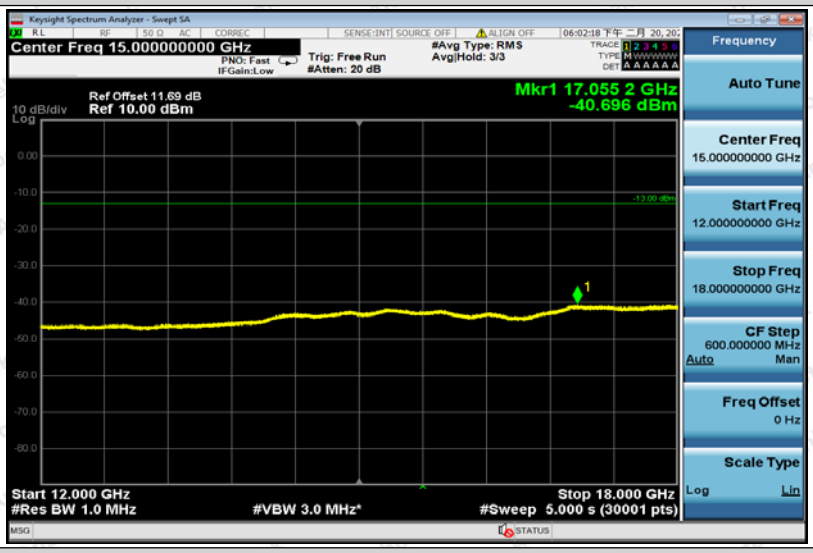

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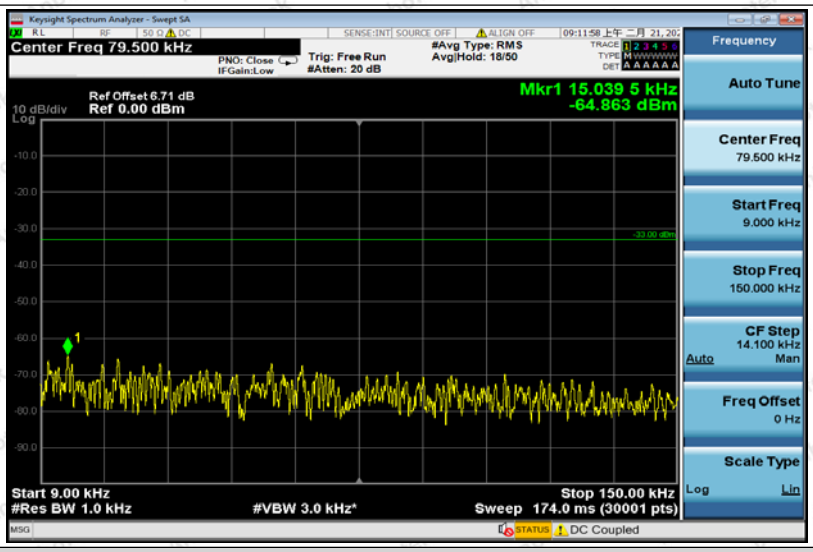

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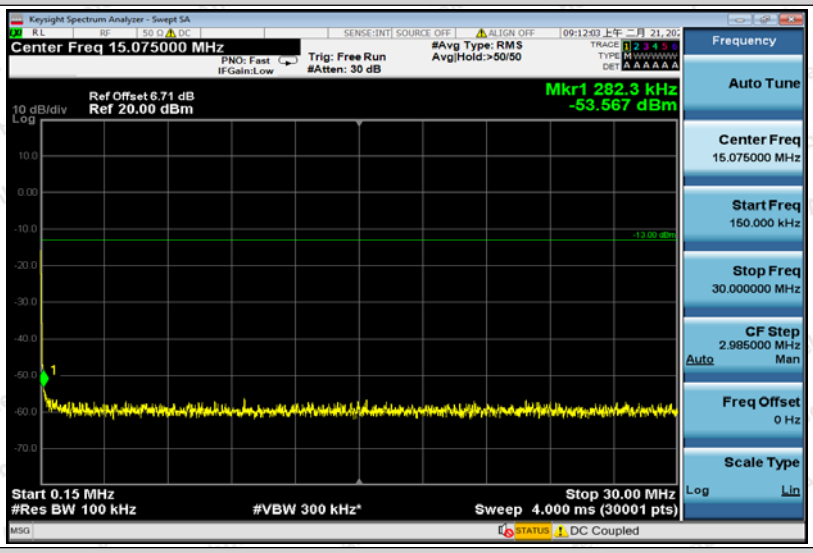

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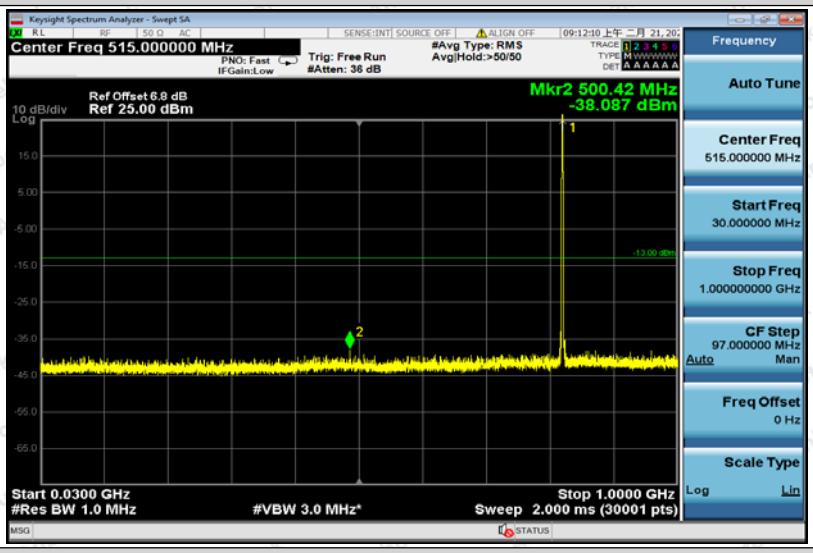

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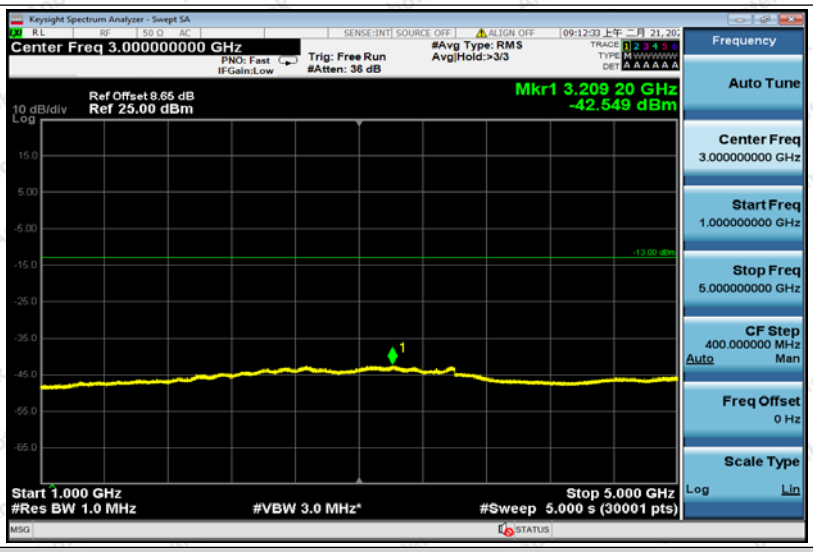

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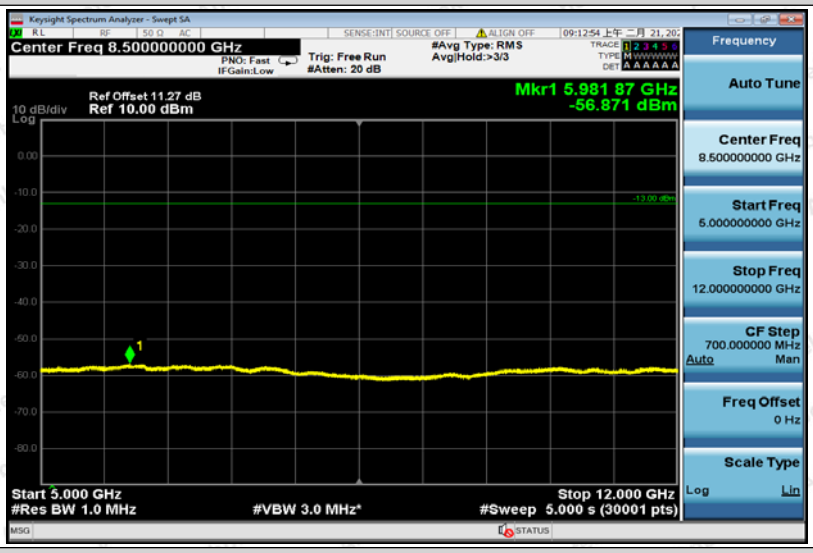

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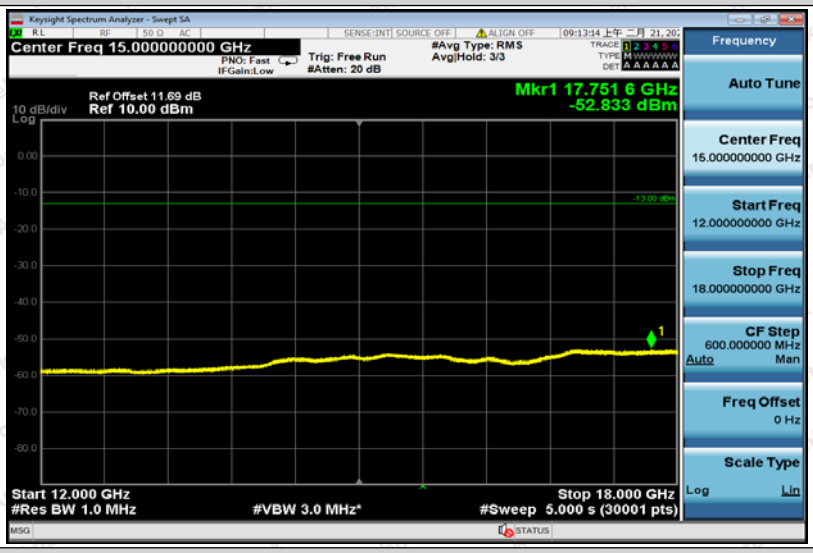

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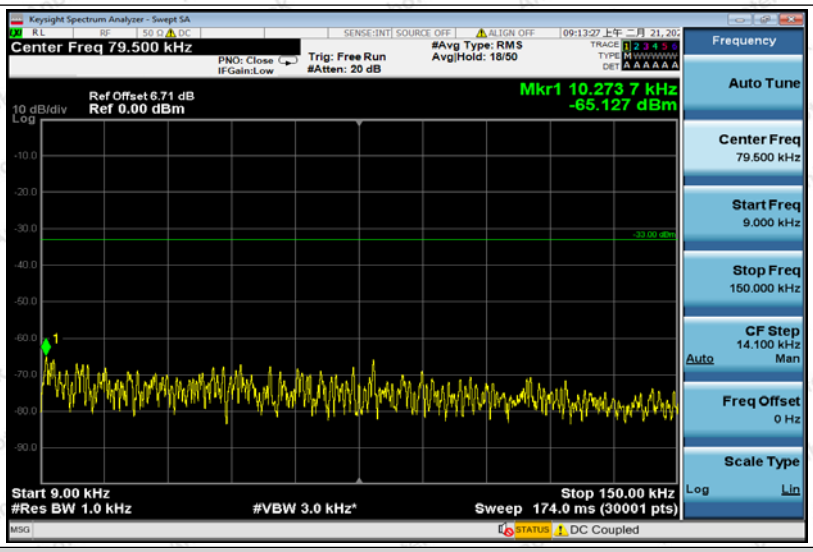

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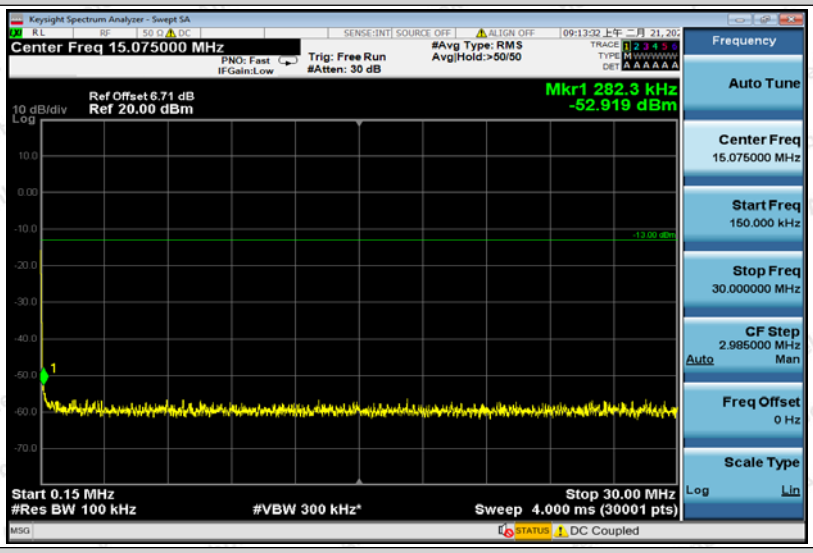

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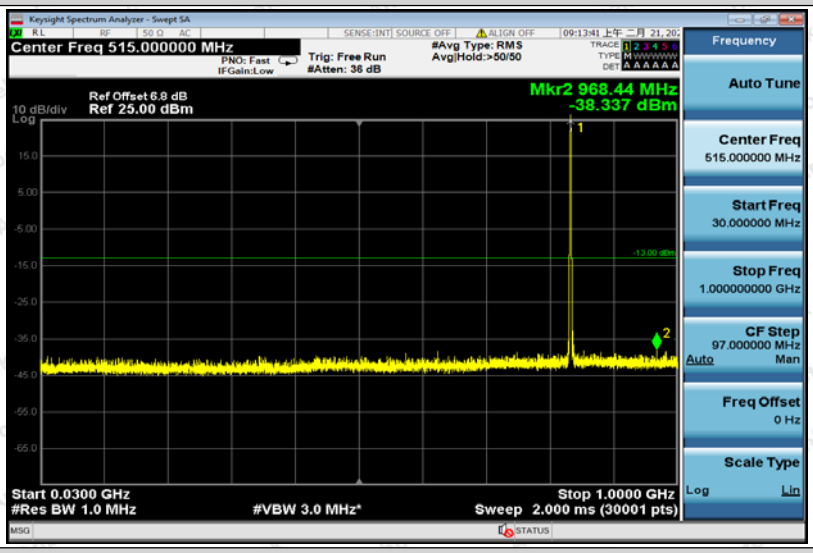

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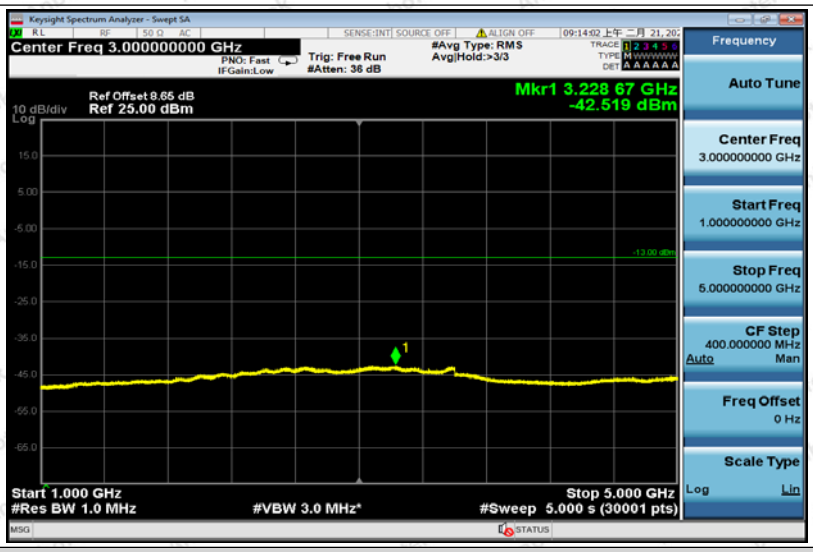

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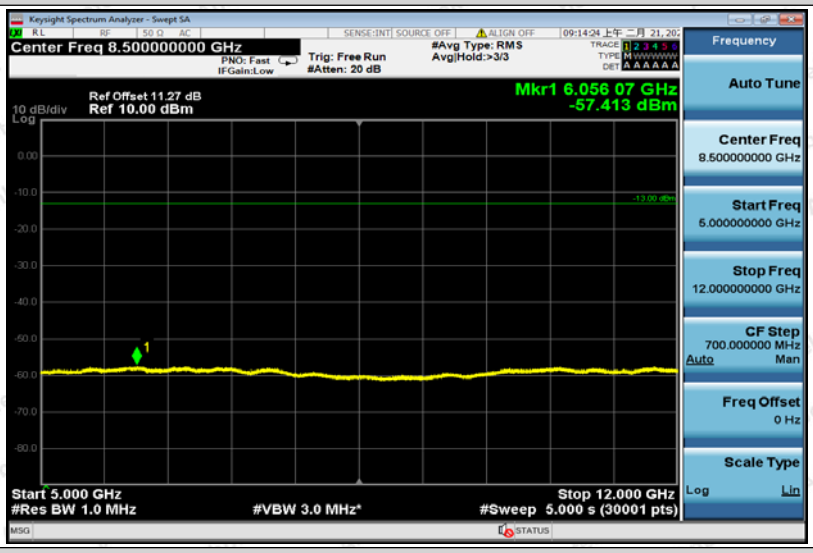

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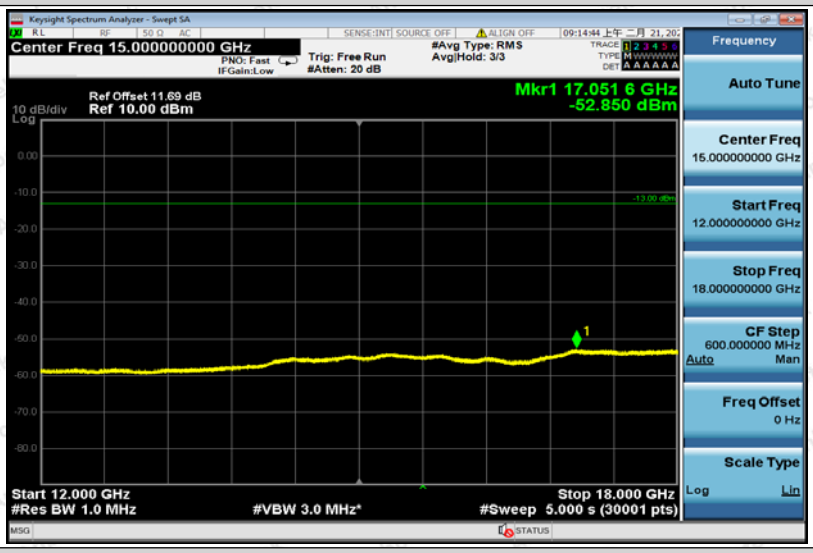

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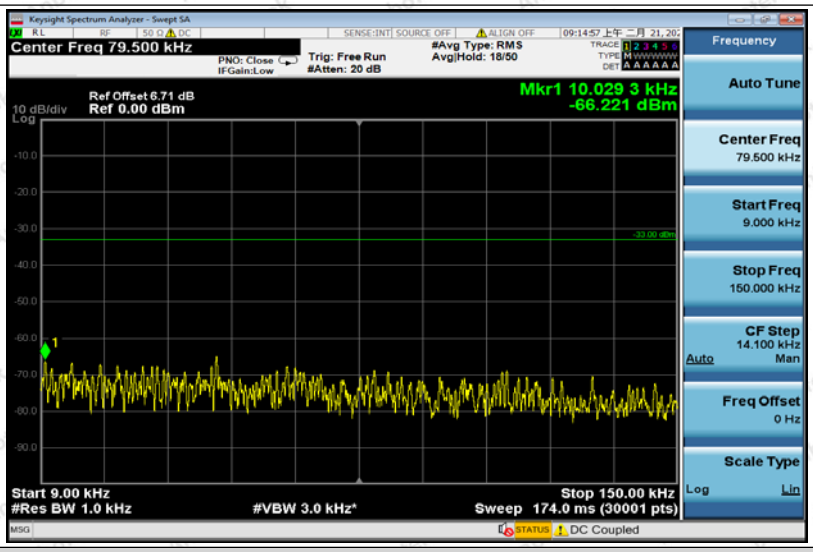

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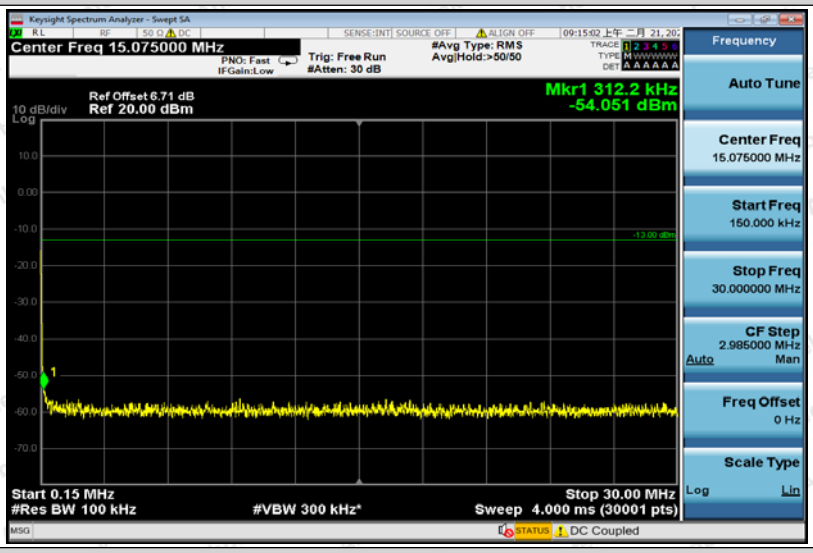

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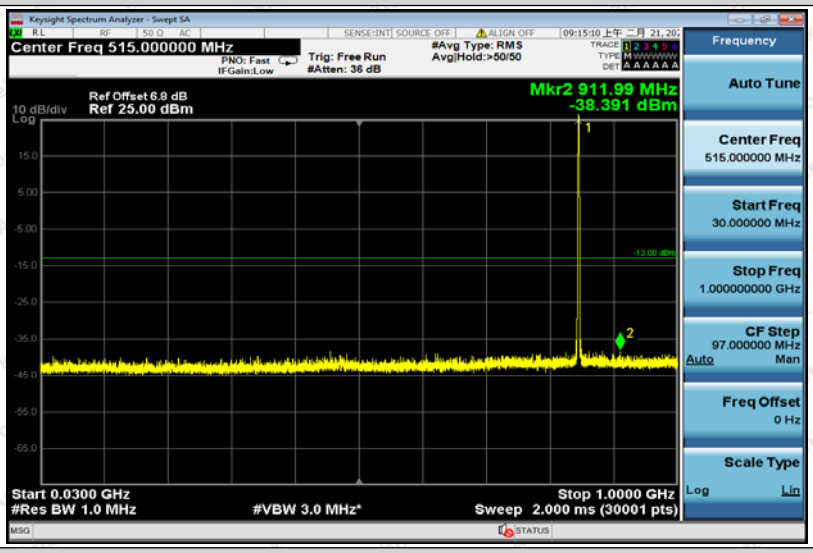

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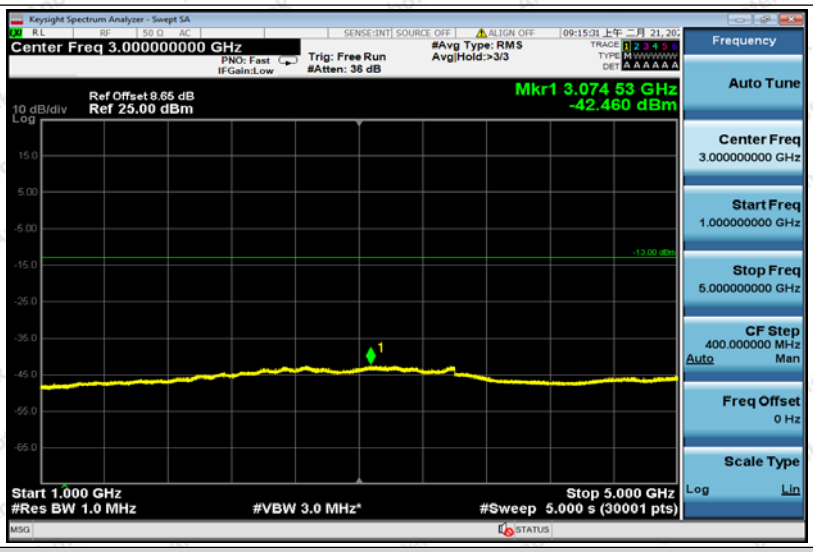

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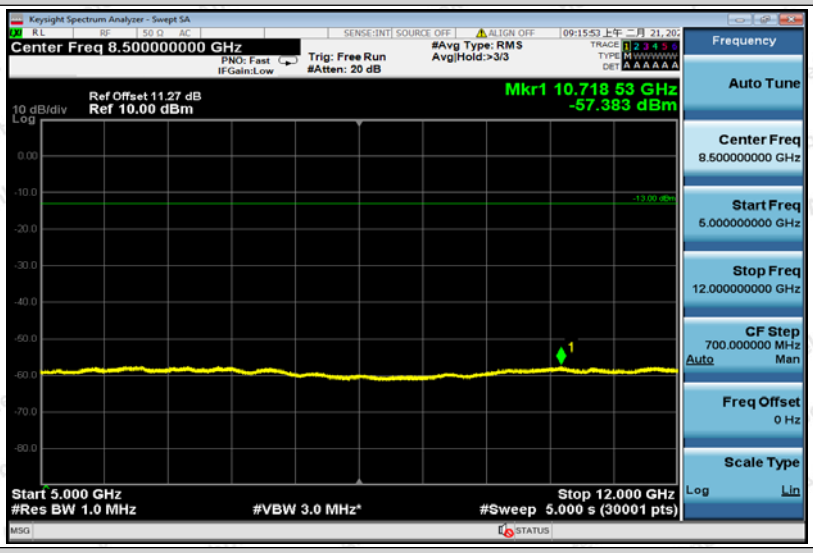

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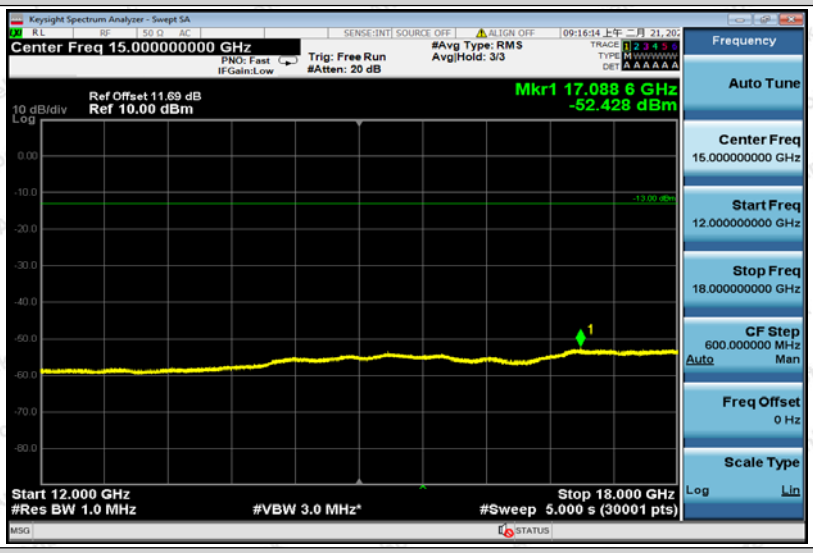

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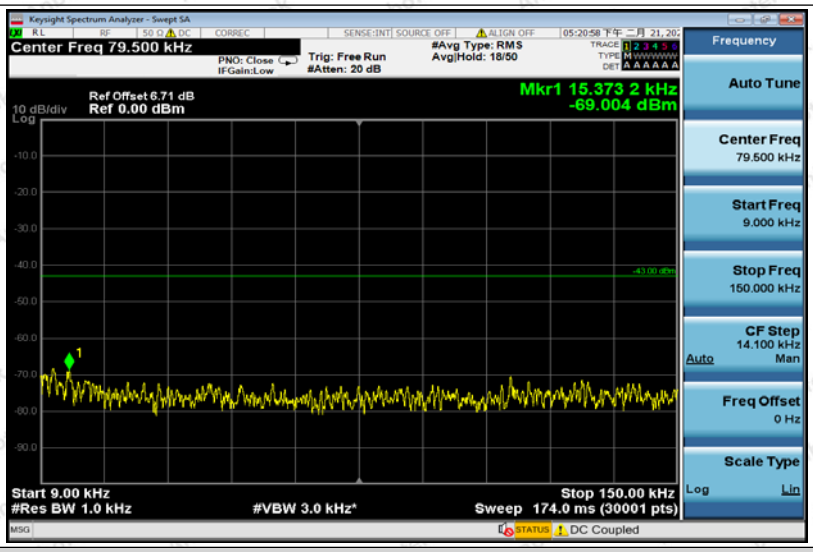

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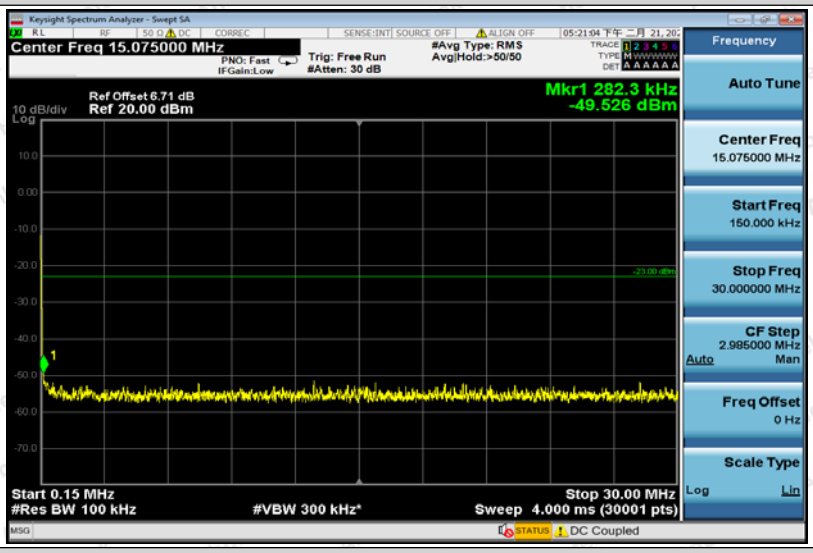

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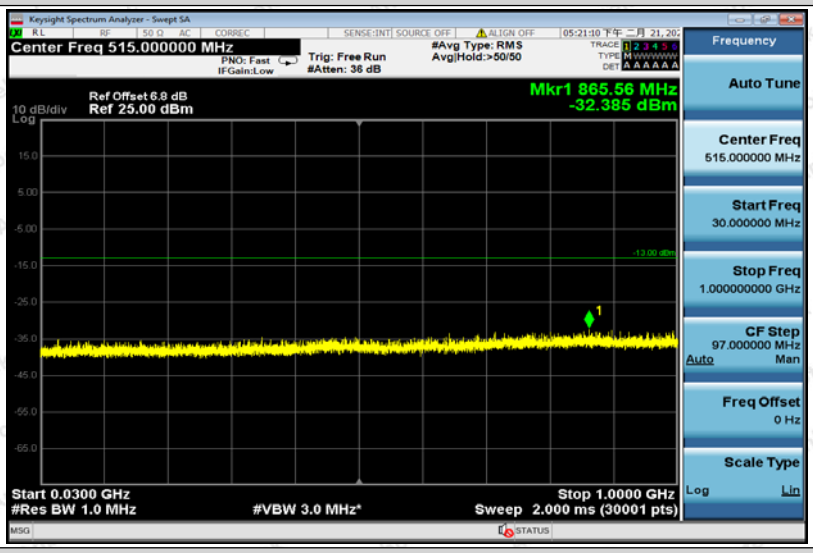

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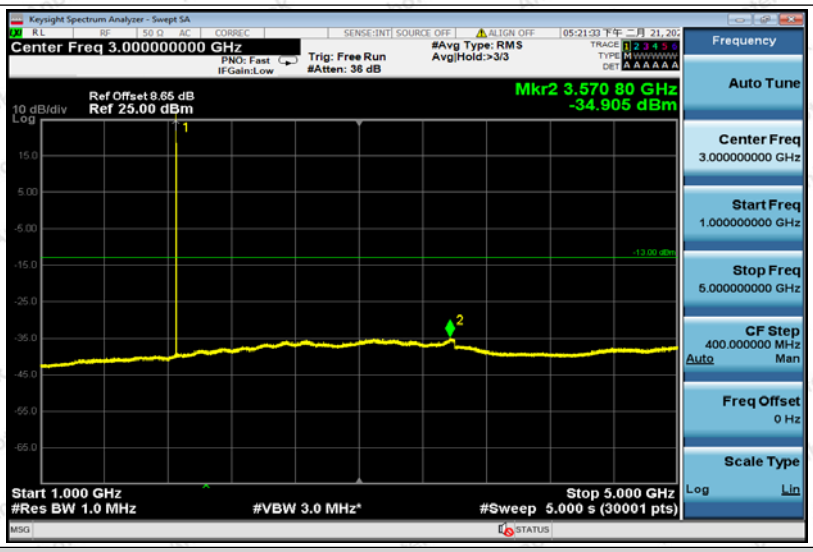

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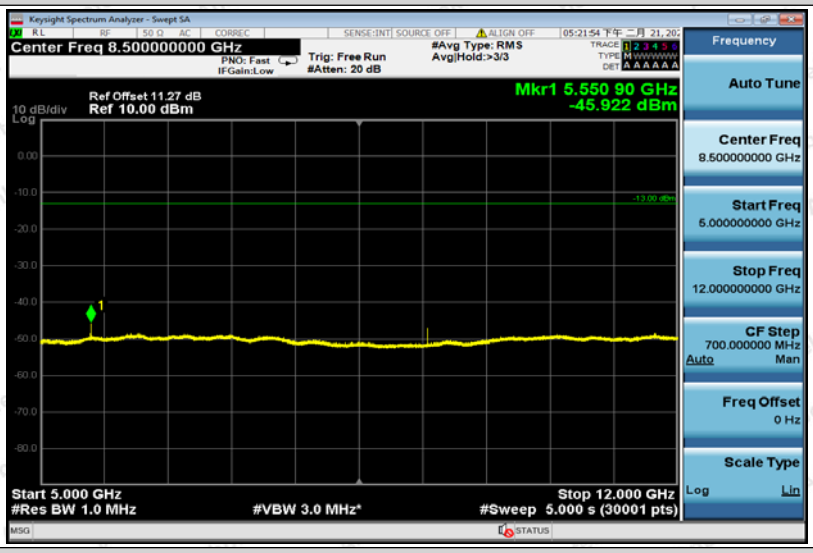

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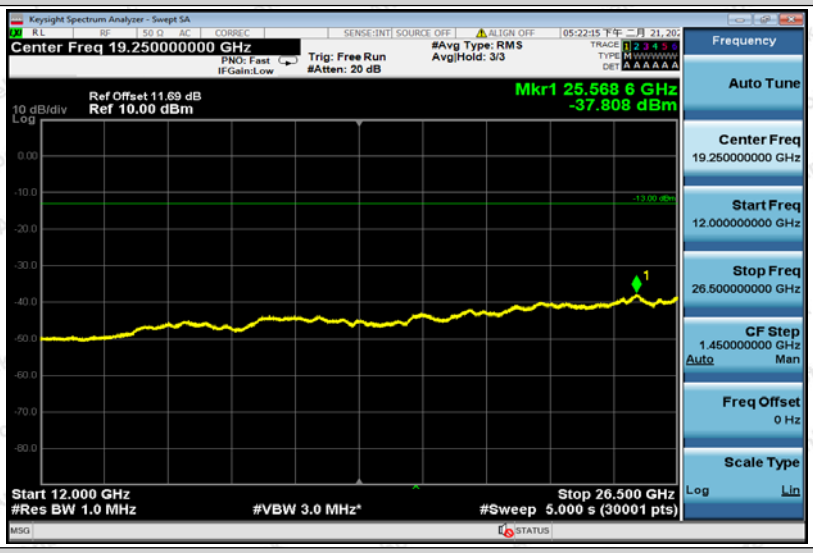

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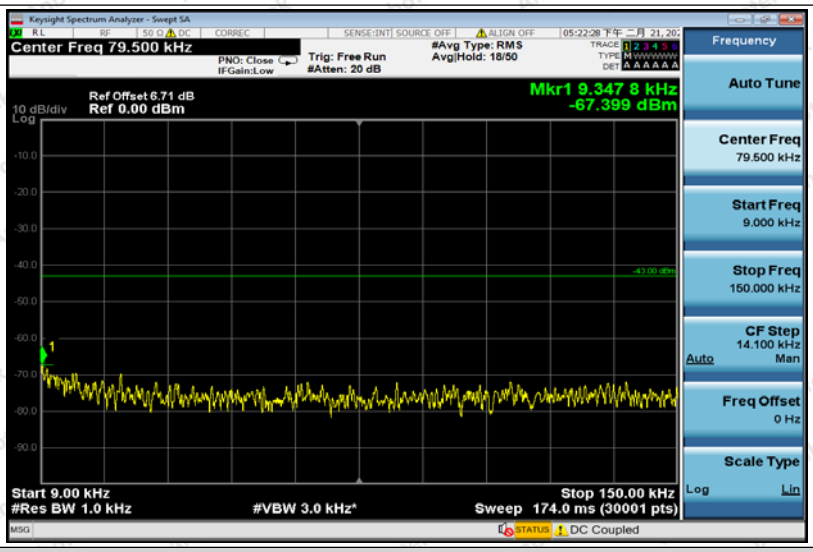
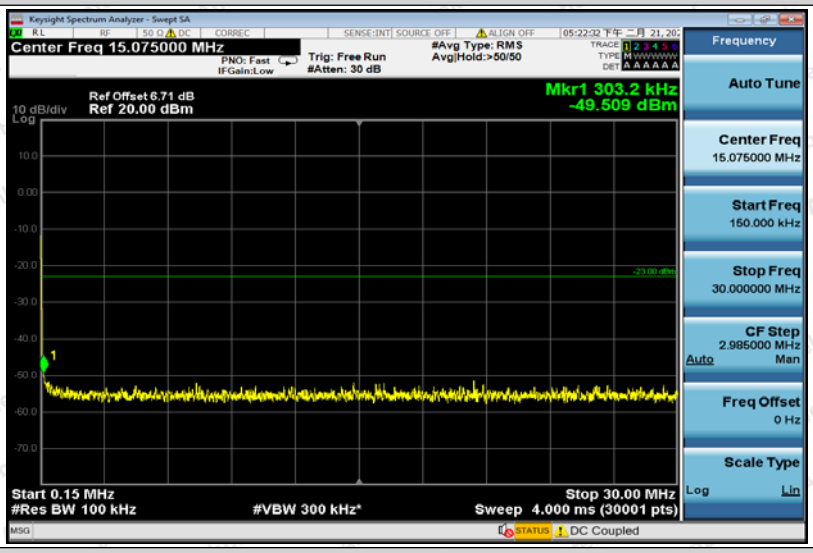


GPRS1900-661-0.009~0.15



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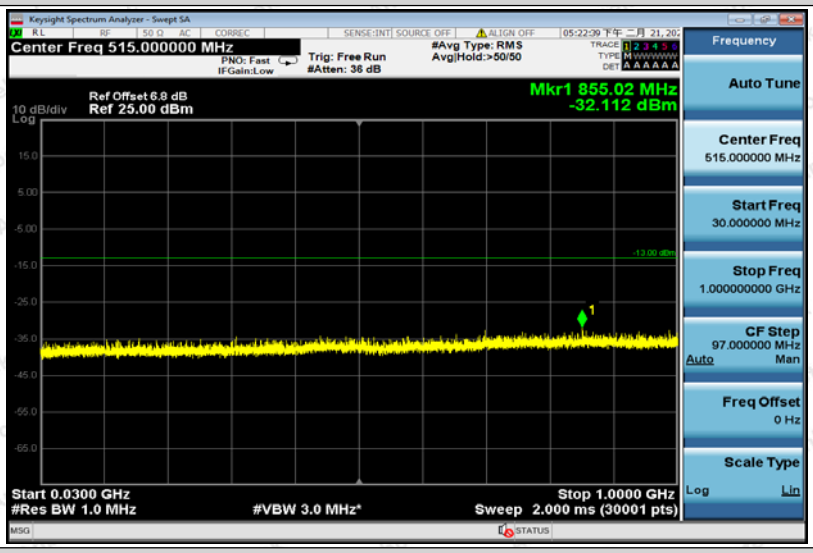

GPRS1900-661-30~1000