TEST REPORT

Report No.:	BCTC2308365526-3E
Applicant:	HONGKONG UMEDIA LIMITED
Product Name:	S4 smart watch
Model/Type Reference:	S4
Tested Date:	2023-08-28 to 2023-11-18
Issued Date:	2023-11-18

Shenzhen BCTC Testing Co., Ltd.

FCC ID: 2BC4N-S4

Product Name:	S4 smart watch
Trademark:	UNICO
Model/Type Reference:	S4
Prepared For:	HONGKONG UMEDIA LIMITED
Address:	RM 223B 2/F 1W PHASE ONE HONG KONG SCIENCE PARK PAK SHEK KOK TAI PO TOWN LOT NO.171 NT, HONGKONG
Manufacturer:	HONGKONG UMEDIA LIMITED
Address:	RM 223B 2/F 1W PHASE ONE HONG KONG SCIENCE PARK PAK SHEK KOK TAI PO TOWN LOT NO.171 NT, HONGKONG
Prepared By:	Shenzhen BCTC Testing Co., Ltd.
Address:	1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Sample Received Date:	2023-08-28
Sample Tested Date:	2023-08-28 to 2023-11-18
Issue Date:	2023-11-18
Report No.:	BCTC2308365526-3E
Test Standards:	FCC CFR Title 47 Part 2 FCC CFR Title 47 Part22 Subpart H FCC CFR Title 47 Part24 Subpart E ANSI/ TIA/ EIA-603-D-2010 FCC KDB 971168 D01 Power Meas License Digital Systems v03r01
Test Results:	PASS
Remark:	This is GSM & WCDMAradio test report.

Tested by:

Lei Chen

Lei Chen/Project Handler

Approved by:

Zero Zhou/Reviewer

The test report is effective only with both signature and specialized stamp.This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen BCTC Testing Co., Ltd, this report can't be reproduced except in full.The tested sample(s) and the sample information are provided by the client.

Table Of Content

(Note: N/A Means Not Applicable)

1. Version

Report No.	Issue Date	Description	Approved
BCTC2308365526-3E	2023-11-18	Original	Valid

2. Test Summary

The Product has been tested according to the following specifications:

No.	Test Parameter	Clause No.	Results
1	RF Exposure	§1.130, §2.1093	PASS
2	RF Output Power	§22.913, §24.232,	PASS
3	Peak-to-average Ratio(PAR) of Transmitter	§24.232, §22.913,	PASS
4	Emission Bandwidth	§22.917, §24.238,	PASS
5	Spurious Emissions at Antenna Terminal	§22.917, §24.238,	PASS
6	Spurious Radiation Emissions	§22.917, §24.238,	PASS
7	Out of Band Emissions	§22.917, §24.238,	PASS
8	Frequency Stability	§22.355, §24.235	PASS

3. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

No.	Item	Uncertainty
1	3m chamber Radiated spurious emission(30MHz-1GHz)	U=4.3dB
2	3m chamber Radiated spurious emission(9KHz-30MHz)	U=3.7dB
3	3m chamber Radiated spurious emission(1GHz-18GHz)	U=4.5dB
4	3m chamber Radiated spurious emission(18GHz-40GHz)	U=3.34dB
5	Conducted Emission (150kHz-30MHz)	U=3.20dB
6	Conducted Adjacent channel power	U=1.38dB
7	Conducted output power uncertainty Above 1G	U=1.576dB
8	Conducted output power uncertainty below 1G	U=1.28dB
9	humidity uncertainty	U=5.3%
10	Temperature uncertainty	U=0.59℃

4. Product Information And Test Setup

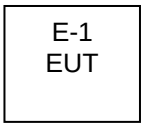
4.1 Product Information

Model/Type Reference:	S4
Model Differences:	N/A
Hardware Version:	N/A
Software Version:	N/A
Operation Frequency:	GSM/GPRS/EGPRS 850: TX: 824~849MHz; RX: 869~894MHz; GSM/GPRS/EGPRS 1900: TX:1850~1910MHz; RX:1930~1990MHz; WCDMA Band II: TX: 1852.40~1907.60MHz; Rx: 1932.60~1987.40MHz; WCDMA Band V: TX: 826.40~846.60MHz; RX: 871.40~ 891.60MHz.
Max RF Output Power:	GSM/GPRS 850: 32.45 dBm GSM/GPRS 1900: 29.75 dBm EGPRS 850: 28.89 dBm EGPRS 1900: 26.64 dBm WCDMA Band II: 22.48 dBm WCDMA Band V: 22.57 dBm
Type of Modulation:	GSM with GMSK Modulation WCDMA Mode with BPSK Modulation HSDPA Mode with QPSK, 16QAM Modulation HSUPA Mode with QPSK, 16QAM Modulation
Type of Emission:	GSM 850: 246KGXW GSM 1900: 246KGXW GPRS 850: 250KGXW GPRS 1900: 248KGXW EGPRS 850: 251KG7W EGPRS 1900: 260KG7W WCDMA Band II: 4M21F9W WCDMA Band V: 4M22F9W
Antenna installation:	Internal antenna
Antenna Gain:	GSM850: 3.27 dBi GSM1900: 1.44 dBi WCDMA Band II: 1.44 dBi WCDMA Band V: 3.27 dBi
Connecting I/O Port(s)	Please refer to the User's Manual
Ratings:	DC 3.8V from battery, DC 5V from USB

4.2 Test Setup Configuration

See test photographs attached in *EUT TEST SETUP PHOTOGRAPHS* for the actual connections between Product and support equipment.

Radiated Spurious Emission:



4.3 Support Equipment

No.	Device Type	Brand	Model	Series No.	Note
E-1	S4 smart watch	UNICO	S4	N/A	EUT

Notes:
1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.5 Test Mode

Testing Configure			
Support Band	**Support Standard**	**Channel Frequency**	**Channel Number**
GSM 850	GSM/GPRS/EGPRS	824.2 MHz	128
		836.6 MHz	190
		848.8 MHz	251
PCS 1900	GSM/GPRS/EGPRS	1850.2 MHz	512
		1880.0 MHz	661
		1909.8 MHz	810
WCDMA Band II	WCDMA/HSDPA/ HSUPA	1852.4 MHz	9262
		1880.0 MHz	9400
		1907.6 MHz	9538
WCDMA Band V	WCDMA/HSDPA/ HSUPA	826.4 MHz	4132
		836.4 MHz	4182
		846.6 MHz	4233
Note 1: the transmitter has been tested on the communications mode of WCDMA, HSDPA, HSUPA compliance test and record the worst case.			

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/ Without Core
/	/	/	/
/	/	/	/

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
/	/	/	/

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/ Without Core
/	/	/	/

5. Test Facility And Test Instrument Used

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Testing Co., Ltd. Address:1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.
FCC Test Firm Registration Number: 712850
FCC Designation Number: CN1212
ISED Registered No.: 23583
ISED CAB identifier: CN0017

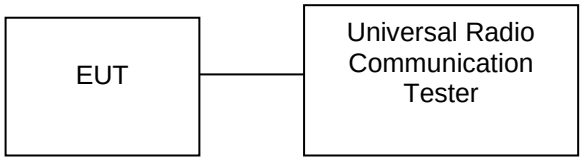
5.2 Test Instrument Used

Radiated Emissions Test (966 Chamber01)					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
966 chamber	ChengYu	966 Room	966	May 15, 2023	May 14, 2026
Receiver	R&S	ESR3	102075	May 15, 2023	May 14, 2024
Receiver	R&S	ESRP	101154	May 15, 2023	May 14, 2024
Amplifier	Schwarzbeck	BBV9744	9744-0037	May 15, 2023	May 14, 2024
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	942	May 29, 2023	May 28, 2024
Loop Antenna(9KHz -30MHz)	Schwarzbeck	FMZB1519B	00014	May 31, 2023	May 30, 2024
Amplifier	SKET	LAPA_01G18 G-45dB	\	May 15, 2023	May 14, 2024
Horn Antenna	Schwarzbeck	BBHA9120D	1541	May 31, 2023	May 30, 2024
Amplifier(18G Hz-40GHz)	MITEQ	TTA1840-35-HG	2034381	May 15, 2023	May 14, 2024
Horn Antenna(18G Hz-40GHz)	Schwarzbeck	BBHA9170	00822	May 31, 2023	May 30, 2024
Spectrum Analyzer9kHz-40GHz	R&S	FSP40	100363	May 15, 2023	May 14, 2024
Communication test set	R&S	CMW500	126173	Nov. 08, 2022	Nov. 07, 2023
Software	Frad	EZ-EMC	FA-03A2 RE	\	\

6. RF Output Power

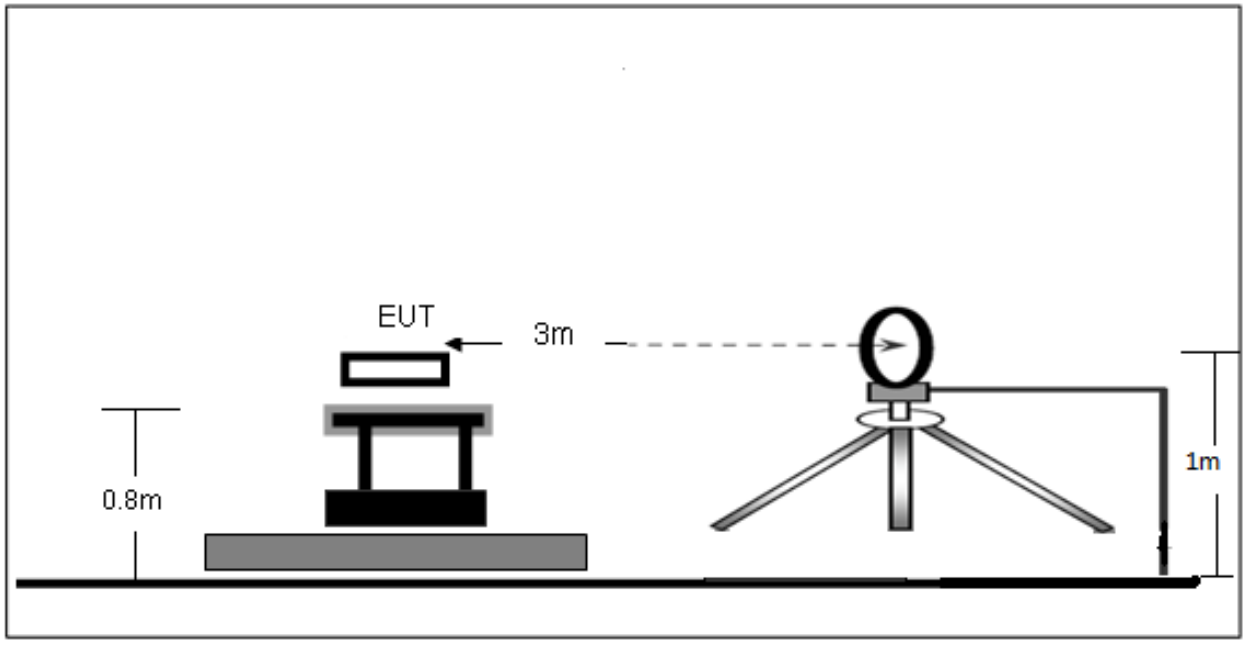
6.1 Block Diagram Of Test Setup

Conducted output power test method:

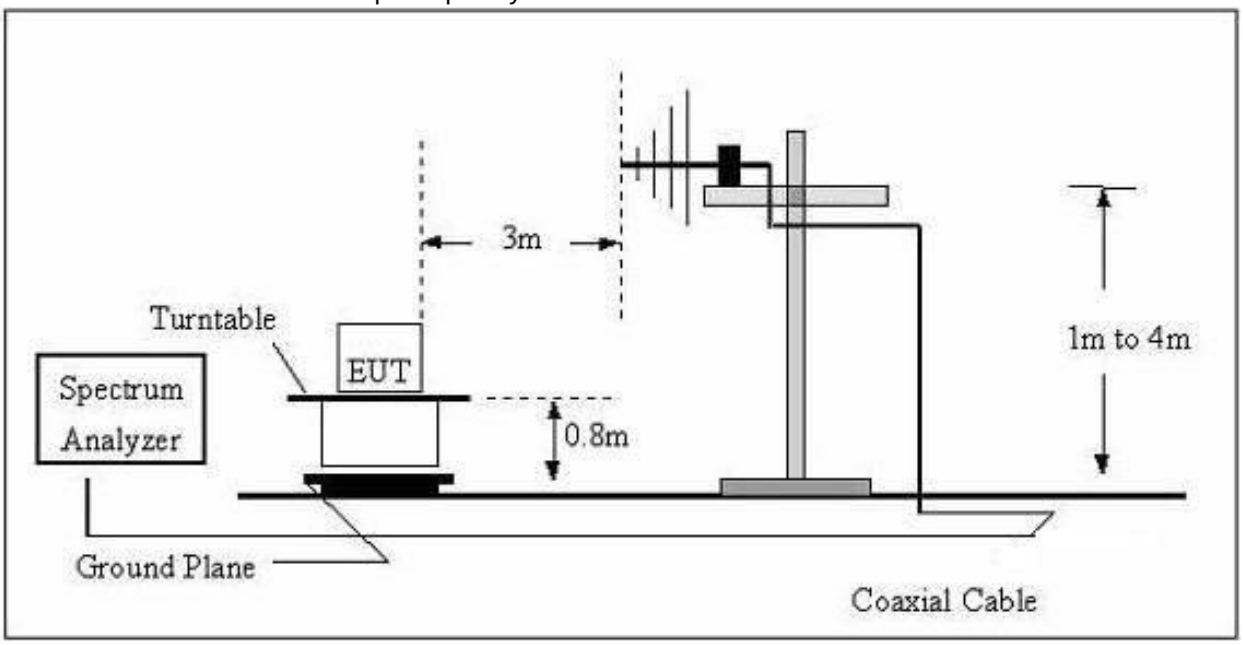


Radiated power test method:

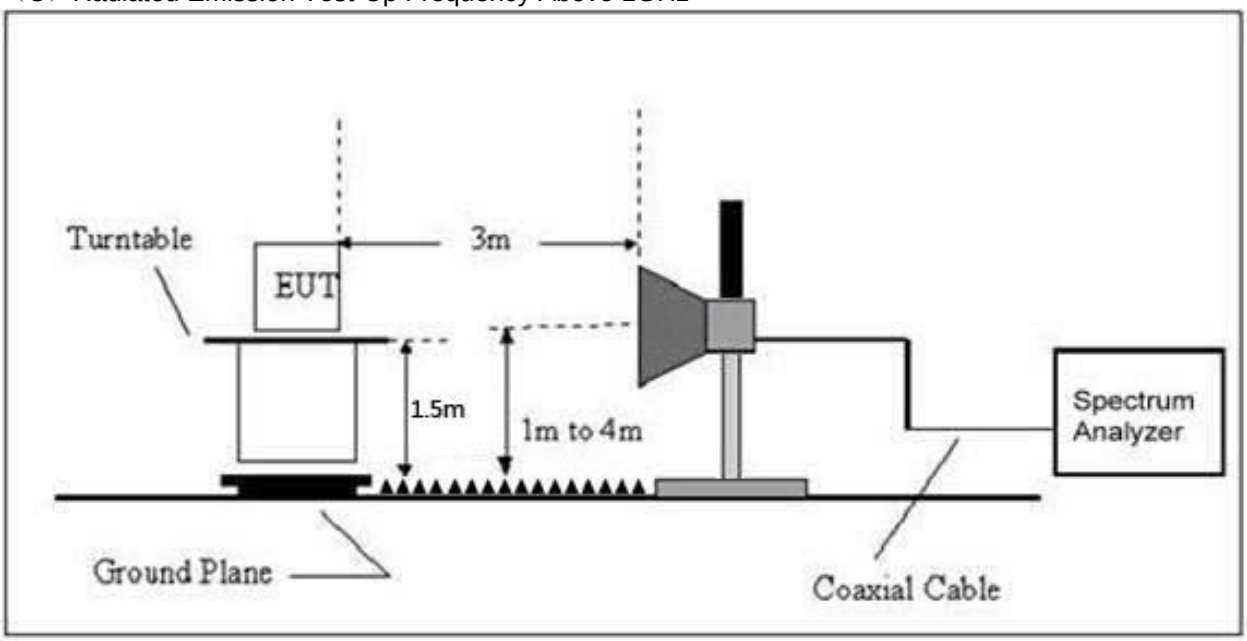
（A）Radiated Emission Test-Up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



（C）Radiated Emission Test-Up Frequency Above 1GHz



6.2 Limit

According to §22.913(a)(2),The ERP of mobileand portable stations transmitters and auxiliary test transmitters must not exceed 7 Watts.

According to §24.232 (c), 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.

6.3 Test procedure

Radiated power test method:

1.The setup of EUT is according with per ANSI/TIA Standard 603D and ANSI C63.4-2014 measurement procedure.
2. 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.
3. The frequency range up to tenth harmonic of the fundamental frequency was investigated.
4. 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.

6.4 Test Result

ERP For GSM Mode GSM850

Frequency (MHz)	Polar (H/V)	Height (Meter)	Table (Degree)	Reading Level (dBm)	Correct Factor (dB)	Measure-ment (dBm)	FCC Part 22H Limits (dBm)	Result
Low Channel								
824.2	H	1.5	0	49.78	-26.29	28.38	38.45	PASS
824.2	V	1.5	0	50.51	-26.29	27.87	38.45	PASS
Middle Channel								
836.6	H	1.5	0	50.35	-26.35	28.14	38.45	PASS
836.6	V	1.5	0	50.12	-26.35	27.75	38.45	PASS
High Channel								
848.8	H	1.5	0	49.56	-26.42	28.32	38.45	PASS
848.8	V	1.5	0	50.38	-26.42	27.41	38.45	PASS

EIRP For GSM Mode PCS1900

Frequency (MHz)	Polar (H/V)	Height (Meter)	Table (Degree)	Reading Level (dBm)	Correct Factor (dB)	Measure-ment (dBm)	FCC Part 24E Limits (dBm)	Result
Low Channel								
1850.2	H	1.5	0	48.93	-26.93	25.81	33.00	PASS
1850.2	V	1.5	0	47.92	-26.93	25.42	33.00	PASS
Middle Channel								
1880	H	1.5	0	48.21	-26.86	26.67	33.00	PASS
1880	V	1.5	0	48.24	-26.86	25.15	33.00	PASS
High Channel								
1909.8	H	1.5	0	49.48	-26.80	26.34	33.00	PASS
1909.8	V	1.5	0	48.49	-26.80	24.98	33.00	PASS

ERP For GPRS Mode GSM850

Frequency (MHz)	Polar (H/V)	Height (Meter)	Table (Degree)	Reading Level (dBm)	Correct Factor (dB)	Measure-ment (dBm)	FCC Part 22H Limits (dBm)	Result
Low Channel								
824.2	H	1.5	0	54.94	-26.29	28.65	38.45	PASS
824.2	V	1.5	0	53.67	-26.29	27.38	38.45	PASS
Middle Channel								
836.6	H	1.5	0	54.78	-26.35	28.43	38.45	PASS
836.6	V	1.5	0	53.61	-26.35	27.26	38.45	PASS
High Channel								
848.8	H	1.5	0	54.77	-26.42	28.35	38.45	PASS
848.8	V	1.5	0	53.56	-26.42	27.14	38.45	PASS

EIRP For GPRS Mode PCS1900

Frequency (MHz)	Polar (H/V)	Height (Meter)	Table (Degree)	Reading Level (dBm)	Correct Factor (dB)	Measure-ment (dBm)	FCC Part 24E Limits (dBm)	Result
Low Channel								
1850.2	H	1.5	0	52.40	-26.93	25.47	33.00	PASS
1850.2	V	1.5	0	51.08	-26.93	24.15	33.00	PASS
Middle Channel								
1880	H	1.5	0	53.20	-26.86	26.34	33.00	PASS
1880	V	1.5	0	51.89	-26.86	25.03	33.00	PASS
High Channel								
1909.8	H	1.5	0	52.82	-26.80	26.02	33.00	PASS
1909.8	V	1.5	0	51.67	-26.80	24.87	33.00	PASS

ERP For EGPRS Mode GSM850

Frequency (MHz)	Polar (H/V)	Height (Meter)	Table (Degree)	Reading Level (dBm)	Correct Factor (dB)	Measure-ment (dBm)	FCC Part 22H Limits (dBm)	Result
Low Channel								
824.2	H	1.5	0	50.92	-26.29	24.63	38.45	PASS
824.2	V	1.5	0	50.76	-26.29	24.47	38.45	PASS
Middle Channel								
836.6	H	1.5	0	50.77	-26.35	24.42	38.45	PASS
836.6	V	1.5	0	50.53	-26.35	24.18	38.45	PASS
High Channel								
848.8	H	1.5	0	50.62	-26.42	24.20	38.45	PASS
848.8	V	1.5	0	50.40	-26.42	23.98	38.45	PASS

EIRP For EGPRS Mode PCS1900

Frequency (MHz)	Polar (H/V)	Height (Meter)	Table (Degree)	Reading Level (dBm)	Correct Factor (dB)	Measure-ment (dBm)	FCC Part 24E Limits (dBm)	Result
Low Channel								
1850.2	H	1.5	0	49.34	-26.93	22.41	33.00	PASS
1850.2	V	1.5	0	48.78	-26.93	21.85	33.00	PASS
Middle Channel								
1880	H	1.5	0	49.58	-26.86	22.72	33.00	PASS
1880	V	1.5	0	48.44	-26.86	21.58	33.00	PASS
High Channel								
1909.8	H	1.5	0	49.61	-26.80	22.81	33.00	PASS
1909.8	V	1.5	0	48.33	-26.80	21.53	33.00	PASS

EIRP For WCDMA Mode Band II

Frequency (MHz)	Polar (H/V)	Height (Meter)	Table (Degree)	Reading Level (dBm)	Correct Factor (dB)	Measure-ment (dBm)	FCC Part 24E Limits (dBm)	Result
Low Channel								
1852.4	H	1.5	0	45.65	-26.92	18.73	33.00	PASS
1852.4	V	1.5	0	44.96	-26.92	18.04	33.00	PASS
Middle Channel								
1880	H	1.5	0	45.49	-26.86	18.63	33.00	PASS
1880	V	1.5	0	44.97	-26.86	18.11	33.00	PASS
High Channel								
1907.6	H	1.5	0	44.74	-26.80	17.94	33.00	PASS
1907.6	V	1.5	0	44.19	-26.80	17.39	33.00	PASS

EIRP For HSDPA Mode Band II

Frequency (MHz)	Polar (H/V)	Height (Meter)	Table (Degree)	Reading Level (dBm)	Correct Factor (dB)	Measure-ment (dBm)	FCC Part 24E Limits (dBm)	Result
Low Channel								
1852.4	H	1.5	0	46.02	-26.92	19.10	33.00	PASS
1852.4	V	1.5	0	45.09	-26.92	18.17	33.00	PASS
Middle Channel								
1880	H	1.5	0	46.31	-26.86	19.45	33.00	PASS
1880	V	1.5	0	45.08	-26.86	18.22	33.00	PASS
High Channel								
1907.6	H	1.5	0	46.71	-26.80	19.91	33.00	PASS
1907.6	V	1.5	0	45.30	-26.80	18.50	33.00	PASS

EIRP For HSUPA Mode Band II

Frequency (MHz)	Polar (H/V)	Height (Meter)	Table (Degree)	Reading Level (dBm)	Correct Factor (dB)	Measure-ment (dBm)	FCC Part 24E Limits (dBm)	Result
Low Channel								
1852.4	H	1.5	0	44.95	-26.92	18.03	33.00	PASS
1852.4	V	1.5	0	45.06	-26.92	18.14	33.00	PASS
Middle Channel								
1880	H	1.5	0	45.70	-26.86	18.84	33.00	PASS
1880	V	1.5	0	44.06	-26.86	17.20	33.00	PASS
High Channel								
1907.6	H	1.5	0	46.53	-26.80	19.73	33.00	PASS
1907.6	V	1.5	0	45.12	-26.80	18.32	33.00	PASS

ERP For WCDMA Mode Band V

Frequency (MHz)	Polar (H/V)	Height (Meter)	Table (Degree)	Reading Level (dBm)	Correct Factor (dB)	Measure-ment (dBm)	FCC Part 22H Limits (dBm)	Result
Low Channel								
826.4	H	1.5	0	47.69	-26.29	21.40	38.45	PASS
826.4	V	1.5	0	46.75	-26.29	20.46	38.45	PASS
Middle Channel								
836.4	H	1.5	0	47.14	-26.35	20.79	38.45	PASS
836.4	V	1.5	0	46.31	-26.35	19.96	38.45	PASS
High Channel								
846.6	H	1.5	0	46.71	-26.42	20.29	38.45	PASS
846.6	V	1.5	0	46.99	-26.42	20.57	38.45	PASS

ERP For HSDPA Mode Band V

Frequency (MHz)	Polar (H/V)	Height (Meter)	Table (Degree)	Reading Level (dBm)	Correct Factor (dB)	Measure-ment (dBm)	FCC Part 22H Limits (dBm)	Result
Low Channel								
826.4	H	1.5	0	47.40	-26.29	21.11	38.45	PASS
826.4	V	1.5	0	46.86	-26.29	20.57	38.45	PASS
Middle Channel								
836.4	H	1.5	0	47.12	-26.35	20.77	38.45	PASS
836.4	V	1.5	0	47.34	-26.35	20.99	38.45	PASS
High Channel								
846.6	H	1.5	0	47.13	-26.42	20.71	38.45	PASS
846.6	V	1.5	0	46.69	-26.42	20.27	38.45	PASS

ERP For HSUPA Mode Band V

Frequency (MHz)	Polar (H/V)	Height (Meter)	Table (Degree)	Reading Level (dBm)	Correct Factor (dB)	Measure-ment (dBm)	FCC Part 22H Limits (dBm)	Result
Low Channel								
826.4	H	1.5	0	48.11	-26.29	21.82	38.45	PASS
826.4	V	1.5	0	47.24	-26.29	20.95	38.45	PASS
Middle Channel								
836.4	H	1.5	0	46.26	-26.35	19.91	38.45	PASS
836.4	V	1.5	0	46.74	-26.35	20.39	38.45	PASS
High Channel								
846.6	H	1.5	0	46.96	-26.42	20.54	38.45	PASS
846.6	V	1.5	0	46.98	-26.42	20.56	38.45	PASS

Correction Factor= S.G. Power - Cable loss + Antenna Gain- SPA. Reading

Max. Conducted Output Power

For Cellular Band (GSM850)

Band	GSM850			Limit (dBm)
Channel	**128**	**190**	**251**	
Frequency(MHz)	**824.2**	**836.6**	**848.8**	
GSM	32.40	32.35	32.45	38.45
GPRS Slot -1	32.35	32.29	32.37	38.45
GPRS Slot -2	31.75	31.67	31.75	38.45
GPRS Slot -3	30.12	30.05	30.15	38.45
GPRS Slot -4	28.95	28.91	28.97	38.45
EGPRS Slot -1	28.64	28.10	28.89	38.45
EGPRS Slot -2	27.13	27.19	27.70	38.45
EGPRS Slot -3	25.42	25.31	25.69	38.45
EGPRS Slot -4	24.39	24.22	24.10	38.45

For PCS Band (GSM1900)

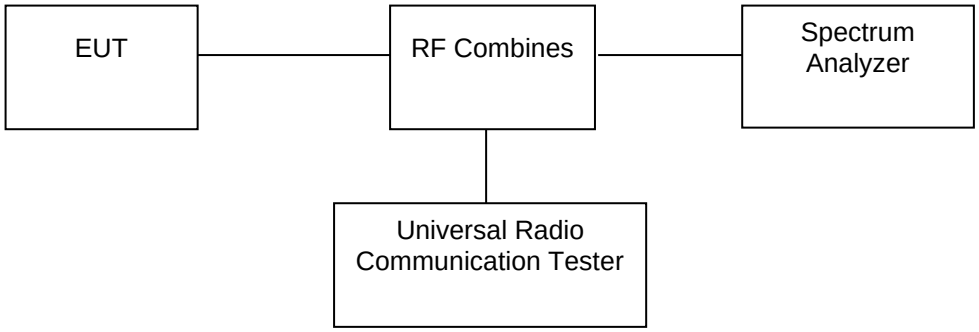
Band	GSM1900			Limit (dBm)
Channel	**512**	**661**	**810**	
Frequency(MHz)	**1850.2**	**1880**	**1909.8**	
GSM	29.66	29.75	29.72	33.0
GPRS Slot -1	29.59	29.70	29.63	33.0
GPRS Slot -2	28.52	28.04	28.71	33.0
GPRS Slot -3	27.01	27.29	27.24	33.0
GPRS Slot -4	25.89	26.17	26.15	33.0
EGPRS Slot -1	26.58	26.64	26.31	33.0
EGPRS Slot -2	24.28	24.47	24.20	33.0
EGPRS Slot -3	22.59	22.99	22.28	33.0
EGPRS Slot -4	21.41	21.52	21.15	33.0

Band	WCDMA Band II		
Channel	**9262**	**9400**	**9538**
Frequency(MHz)	**1852.4**	**1880.0**	**1907.6**
WCDMA RMC 12.2K	22.22	22.39	22.23
HSDPA Subtest-1	22.34	22.44	22.25
HSDPA Subtest-2	22.33	22.43	22.24
HSDPA Subtest-3	22.33	22.43	22.23
HSDPA Subtest-4	22.33	22.42	22.22
HSUPA Subtest-1	22.25	22.41	22.29
HSUPA Subtest-2	22.34	22.40	22.28
HSUPA Subtest-3	22.34	22.39	22.12
HSUPA Subtest-4	22.33	22.48	21.85
HSUPA Subtest-5	22.34	22.48	21.66

Band	WCDMA Band V		
Channel	**4132**	**4182**	**4233**
Frequency(MHz)	**826.4**	**836.4**	**846.6**
WCDMA RMC 12.2K	22.45	22.57	22.48
HSDPA Subtest-1	22.57	22.54	22.48
HSDPA Subtest-2	22.56	22.54	22.47
HSDPA Subtest-3	22.56	22.53	22.46
HSDPA Subtest-4	22.55	22.56	22.46
HSUPA Subtest-1	22.49	22.51	22.47
HSUPA Subtest-2	22.48	22.50	22.46
HSUPA Subtest-3	22.48	22.49	22.46
HSUPA Subtest-4	22.47	22.49	22.45
HSUPA Subtest-5	22.47	22.48	22.45

7. Peak-to-average Ratio(PAR) of Transmitter

7.1 Block Diagram Of Test Setup



7.2 Limit

According to §22.913(d), Power measurement. Measurement of the ERP of Cellular base transmitters and repeaters must be made using an average power measurement technique. The peak-to-average ratio (PAR) of the transmission must not exceed 13 dB. Power measurements for base transmitters and repeaters must be made in accordance with either of the following:
(1) A Commission-approved average power technique (see FCC Laboratory's Knowledge Database); or
(2) For purposes of this section, peak transmit power must be measured over an interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, etc., so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel.

According to §24.232(d), Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51. 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.

7.3 Test procedure

The RF output terminal of the transmitter was connected to the input of the spectrum analyzer via a suitable attenuation. The RBW of the spectrum analyzer was set to 30kHz and the peak-to-average ratio (PAR) of the transmission was recorded.Record the maximum PAPR level associated with a probability of 0.1%.

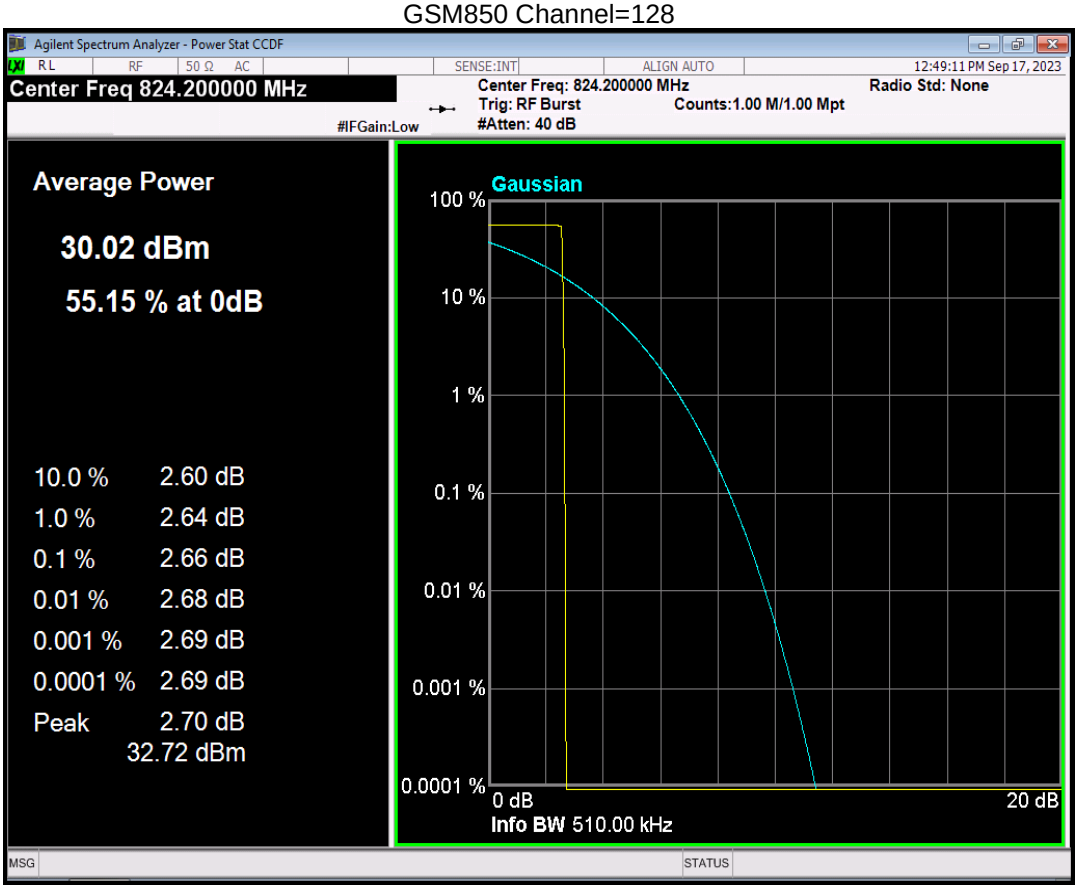
7.4 Test Result

Band	Channel	Frequency (MHz)	Result (dB)	high Limit (dB)	Verdict
GSM850	128	824.2	2.66	13.00	PASS
GSM850	190	836.6	2.66	13.00	PASS
GSM850	251	848.8	2.64	13.00	PASS
GSM1900	512	1850.2	2.64	13.00	PASS
GSM1900	661	1880	2.65	13.00	PASS
GSM1900	810	1909.8	2.64	13.00	PASS

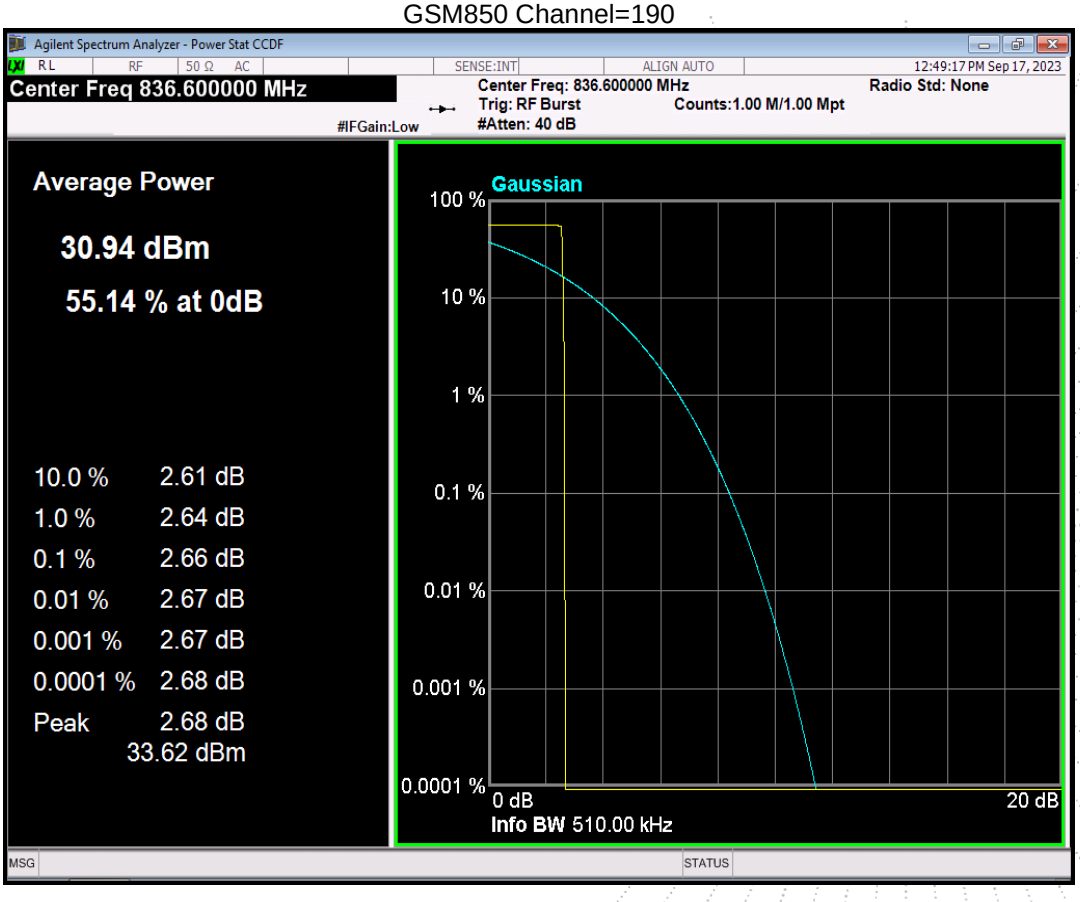
Band	Channel	Frequency (MHz)	Result (dB)	high Limit (dB)	Verdict
GPRS850	128	824.2	2.94	13.00	PASS
GPRS850	190	836.6	2.66	13.00	PASS
GPRS850	251	848.8	2.66	13.00	PASS
GPRS1900	512	1850.2	2.68	13.00	PASS
GPRS1900	661	1880	2.69	13.00	PASS
GPRS1900	810	1909.8	2.69	13.00	PASS

Band	Channel	Frequency (MHz)	Result (dB)	high Limit (dB)	Verdict
EGPRS850	128	824.2	2.92	13.00	PASS
EGPRS850	190	836.6	2.83	13.00	PASS
EGPRS850	251	848.8	2.85	13.00	PASS
EGPRS1900	512	1850.2	5.33	13.00	PASS
EGPRS1900	661	1880	5.32	13.00	PASS
EGPRS1900	810	1909.8	5.30	13.00	PASS

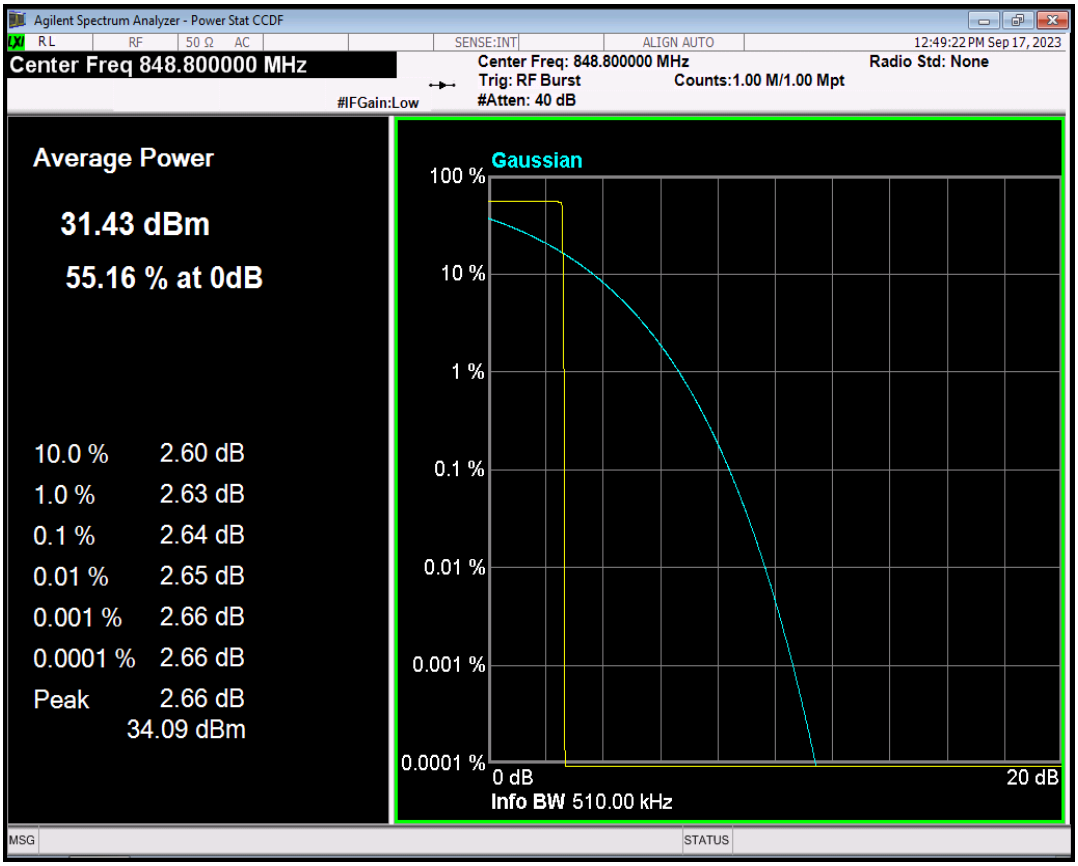
GSM850 Channel=128



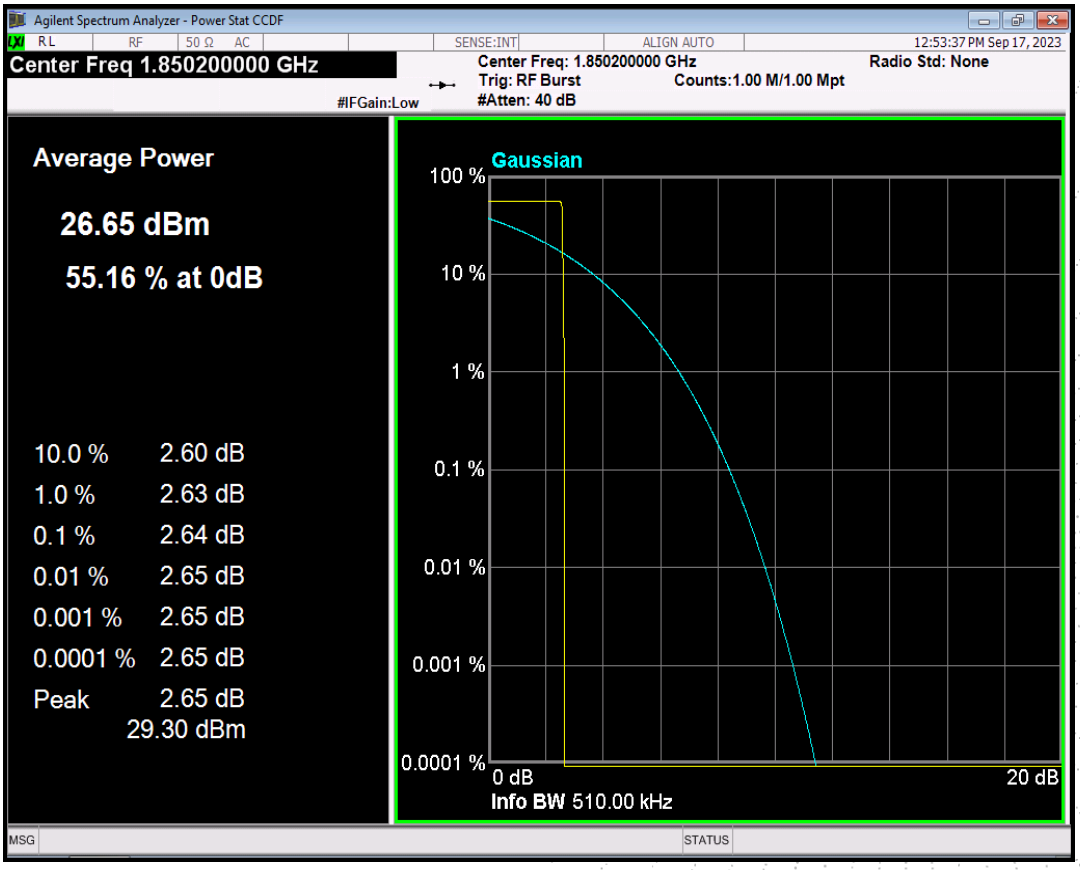
GSM850 Channel=190



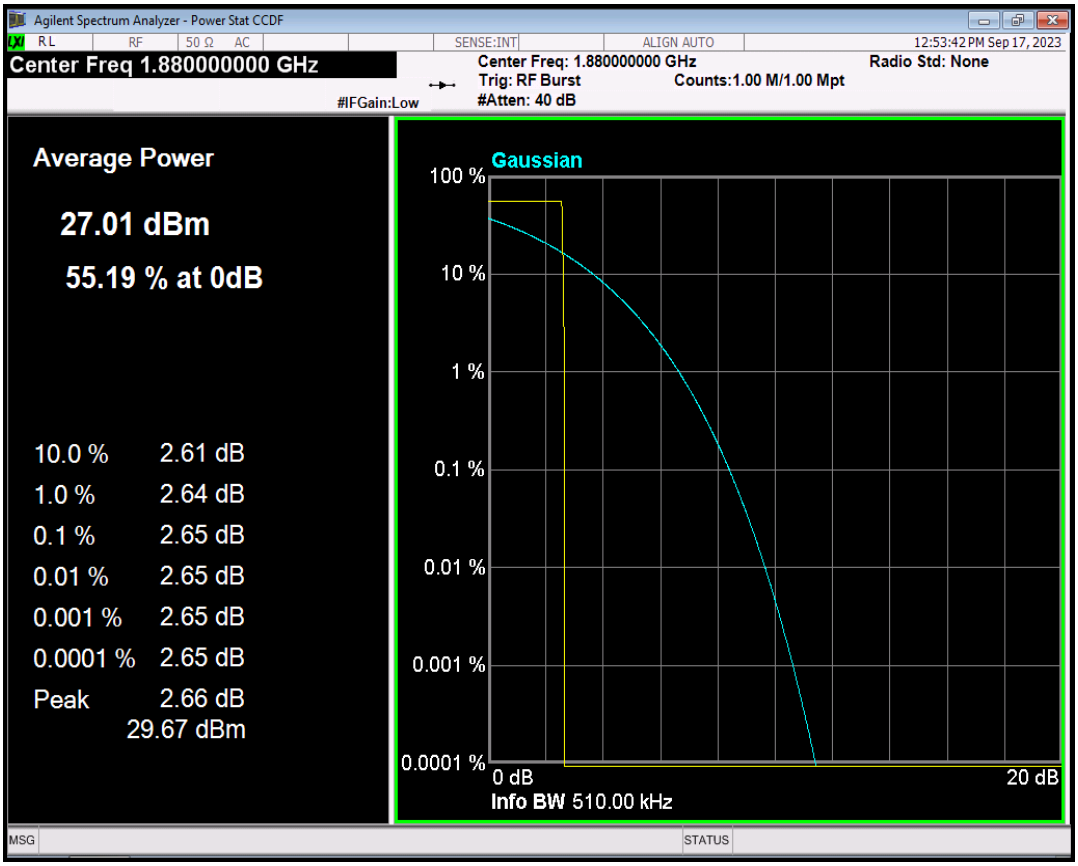
GSM850 Channel=251



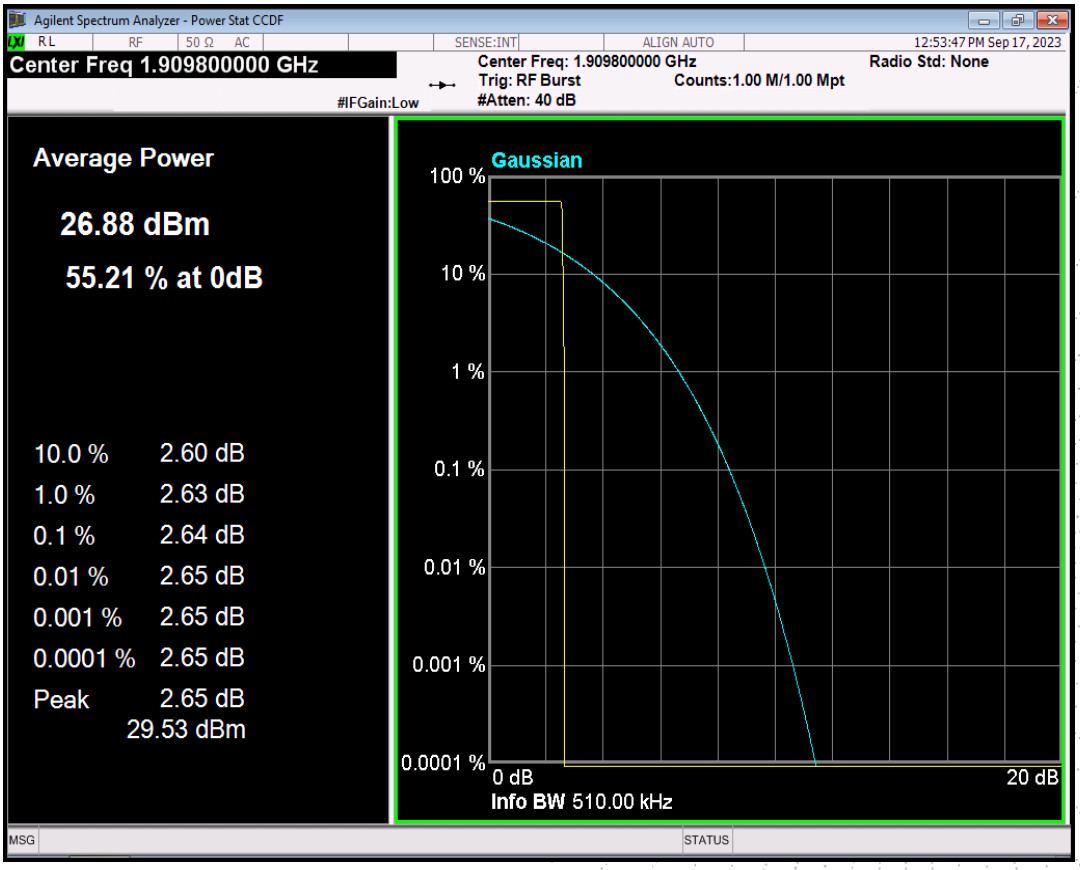
GSM1900 Channel=512



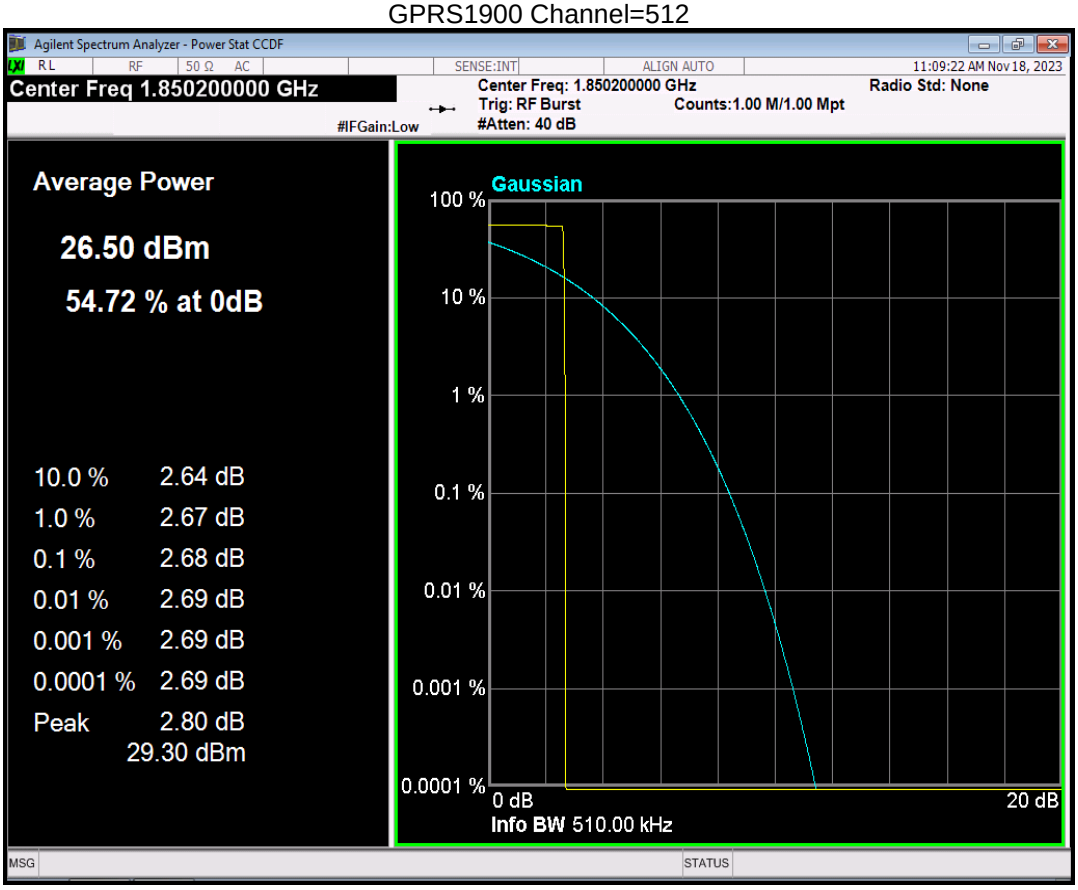
GSM1900 Channel=661



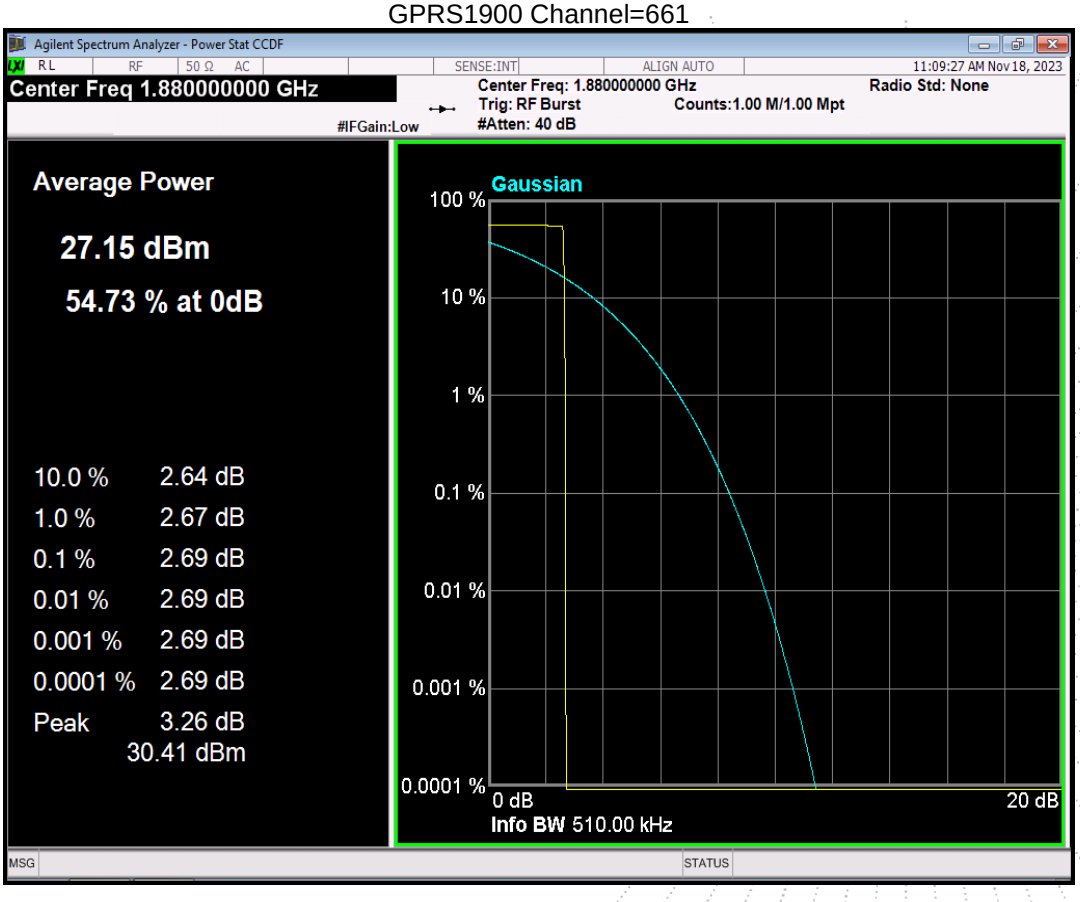
GSM1900 Channel=810



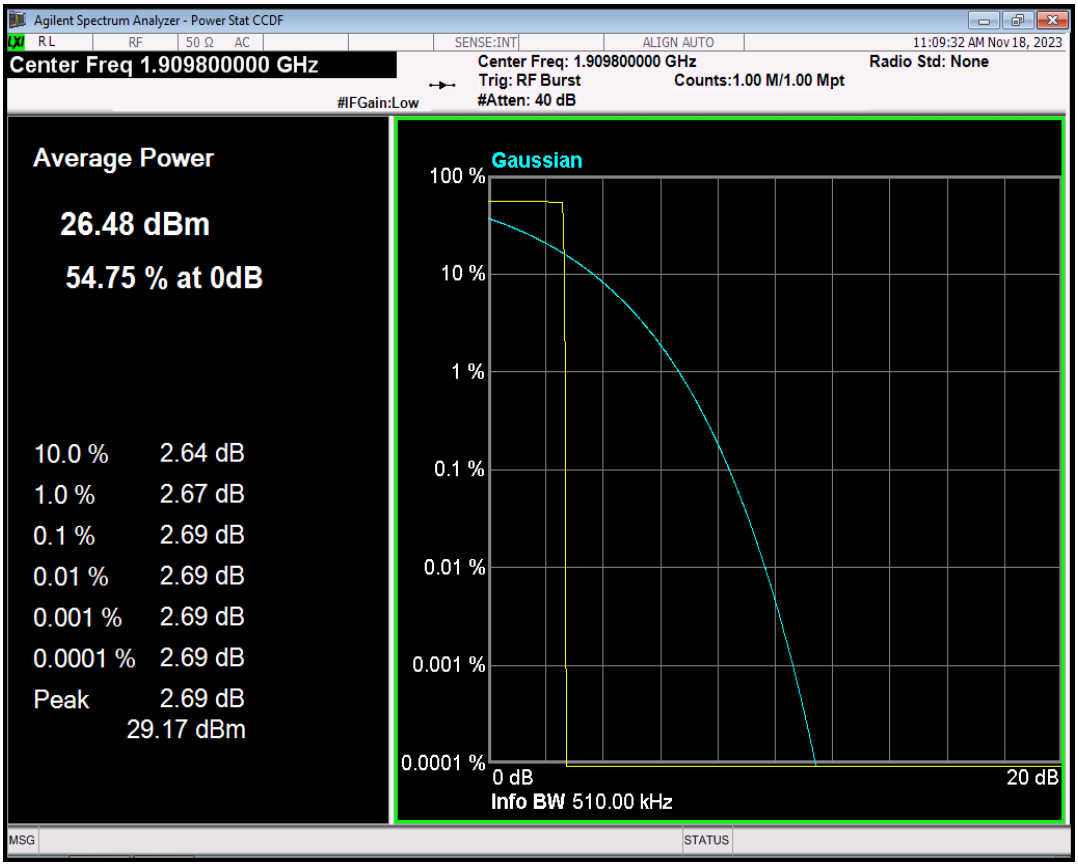
GPRS1900 Channel=512



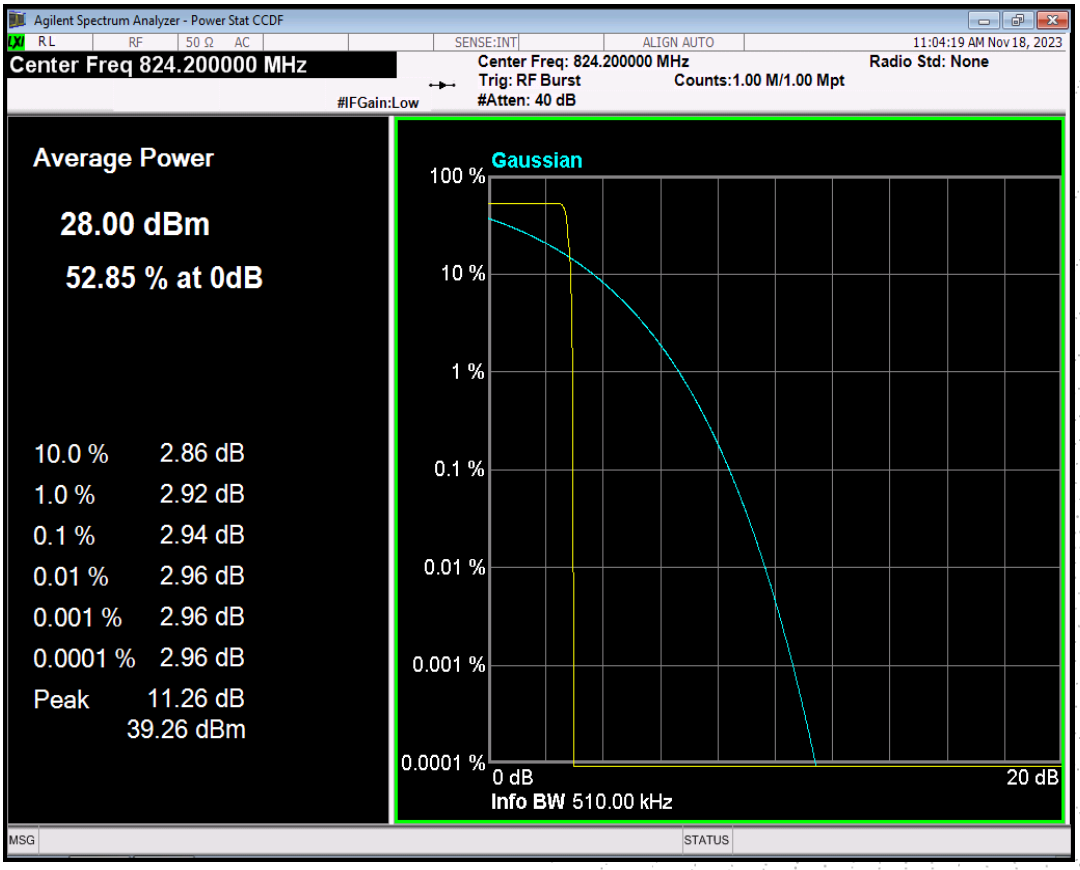
GPRS1900 Channel=661



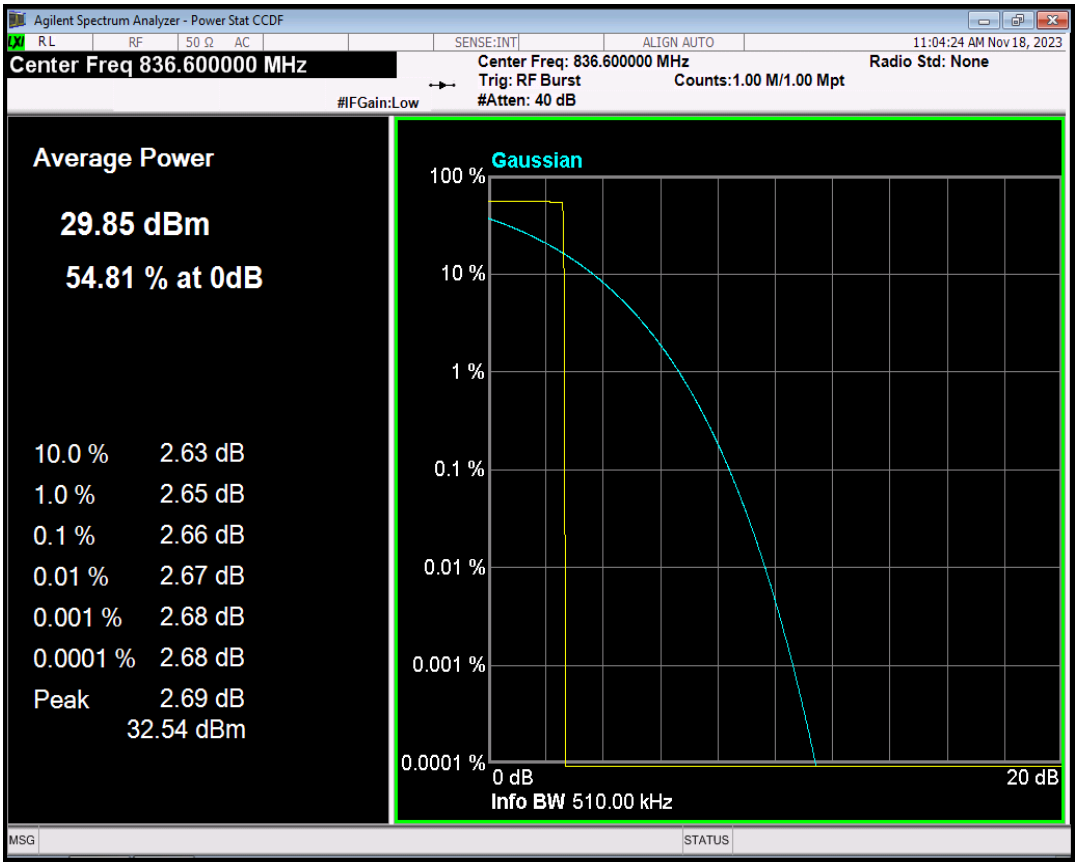
GPRS1900 Channel=810



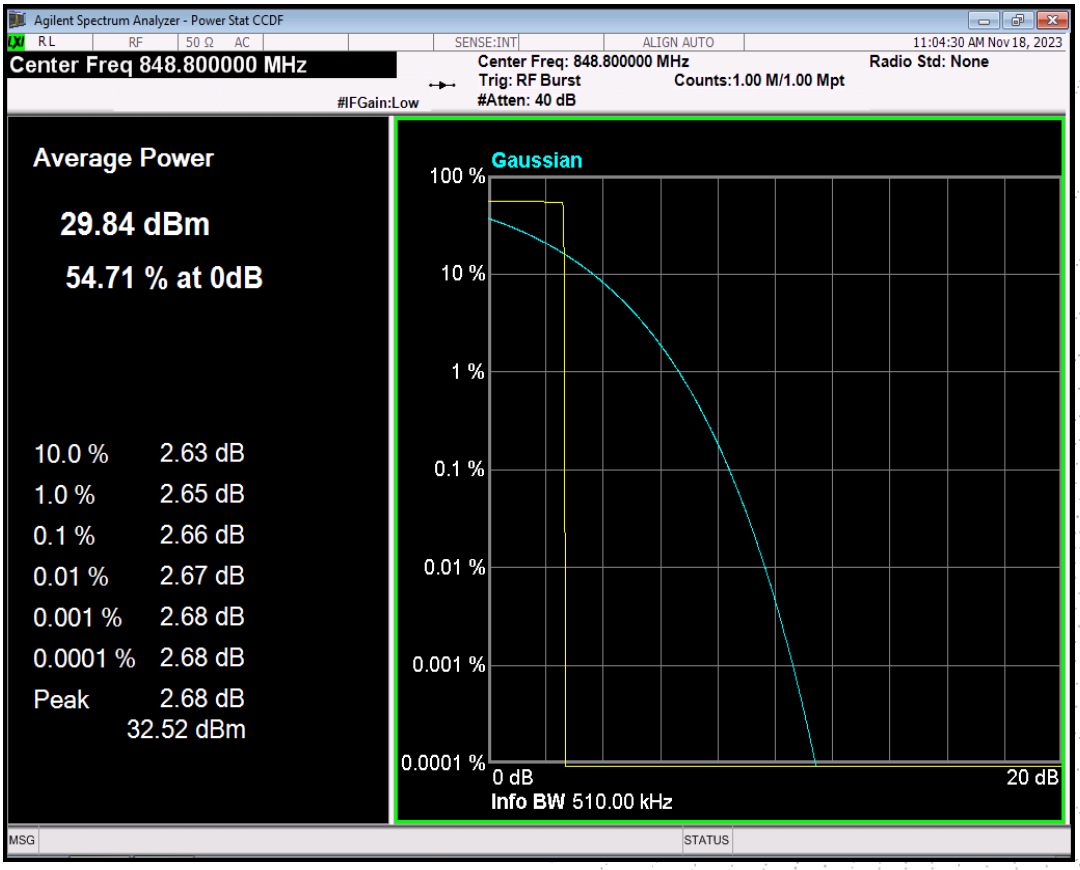
GPRS850 Channel=128



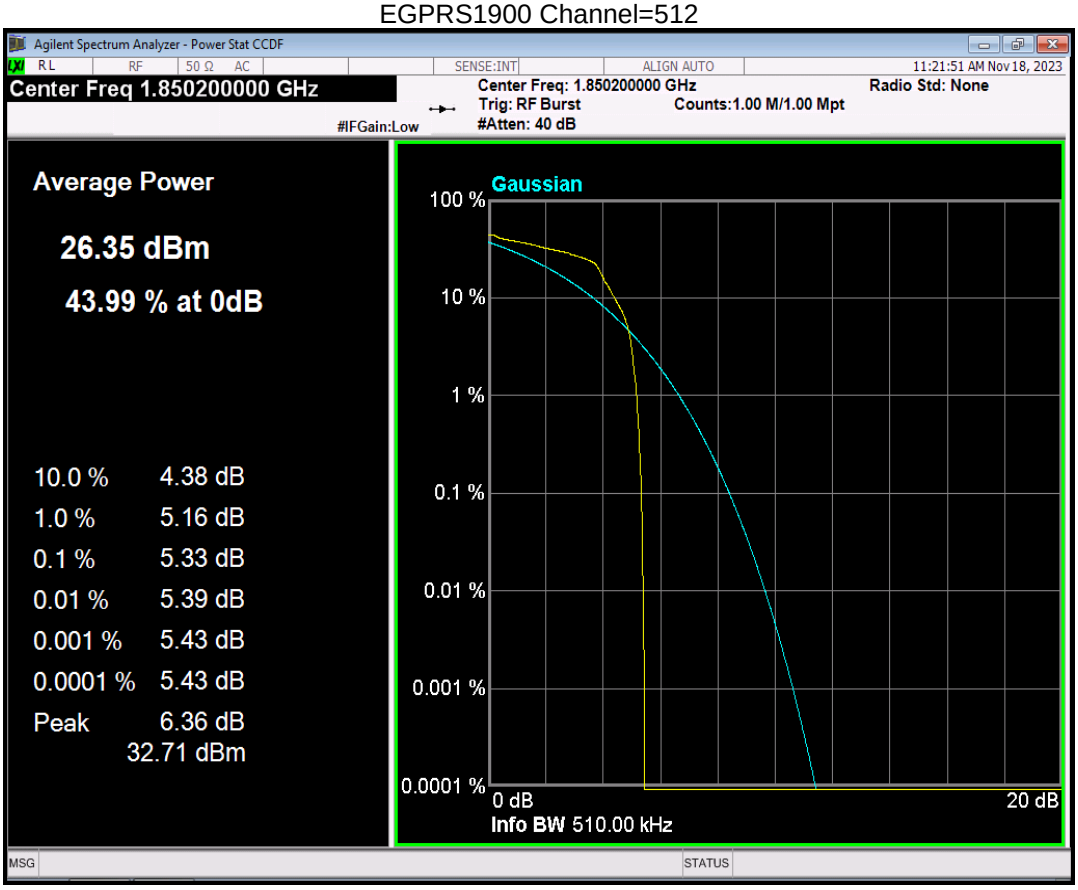
GPRS850 Channel=190



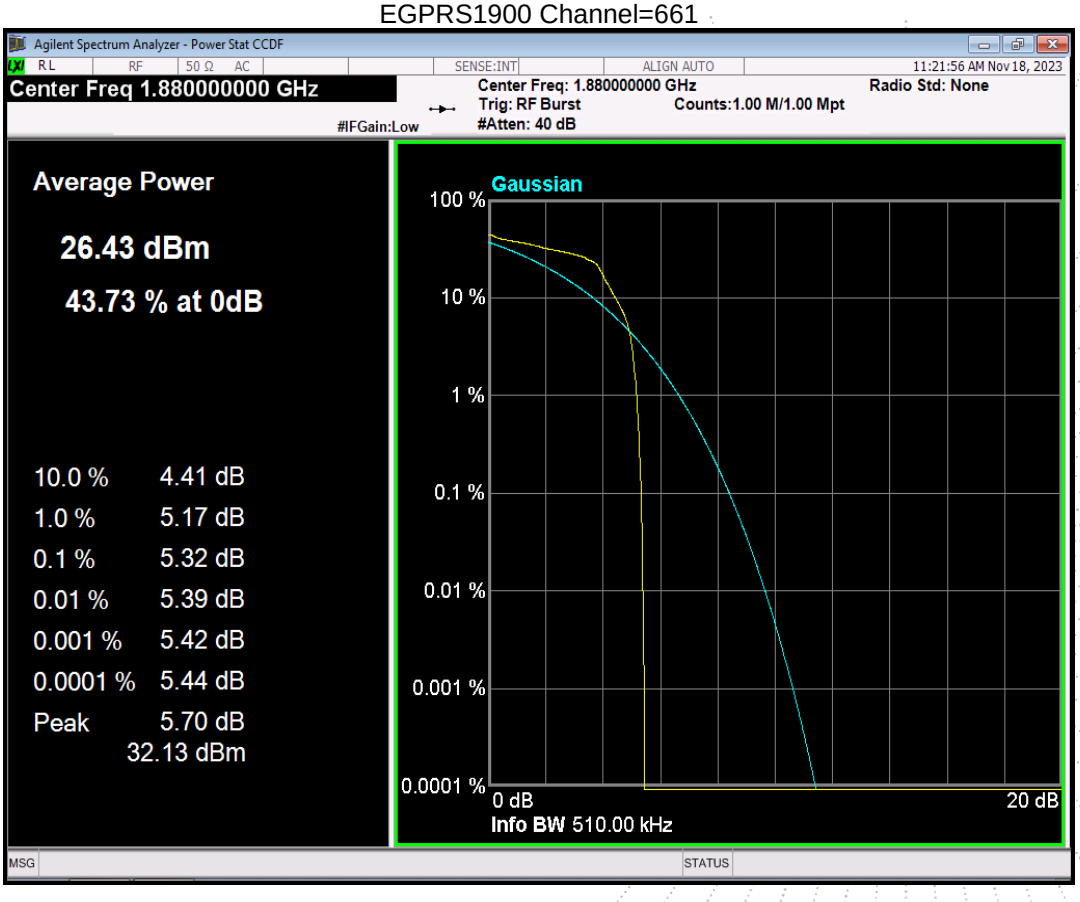
GPRS850 Channel=251



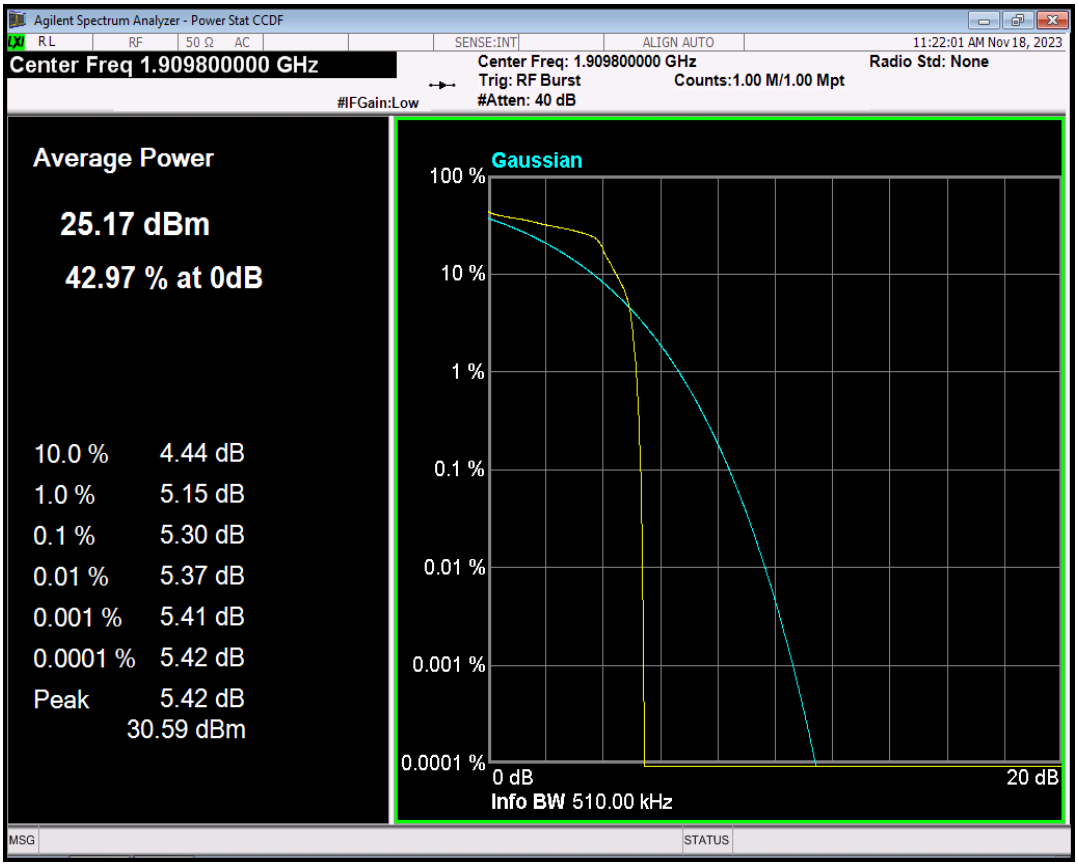
EGPRS1900 Channel=512



EGPRS1900 Channel=661

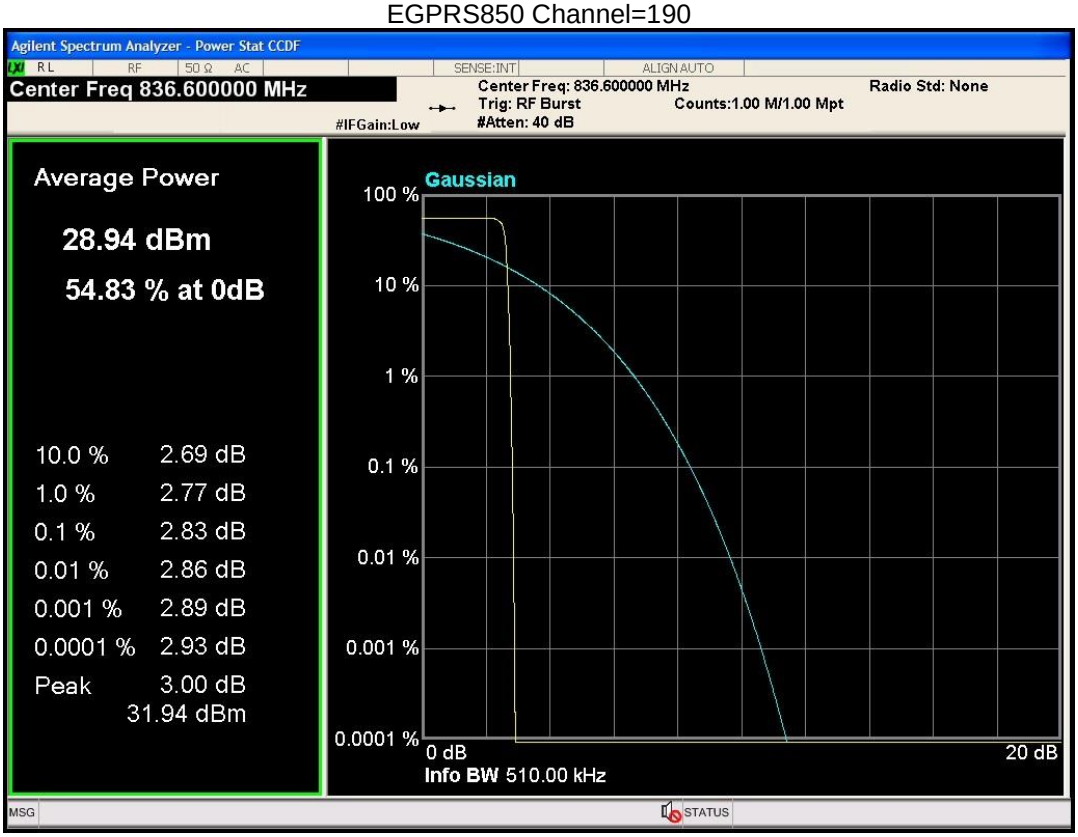


EGPRS1900 Channel=810

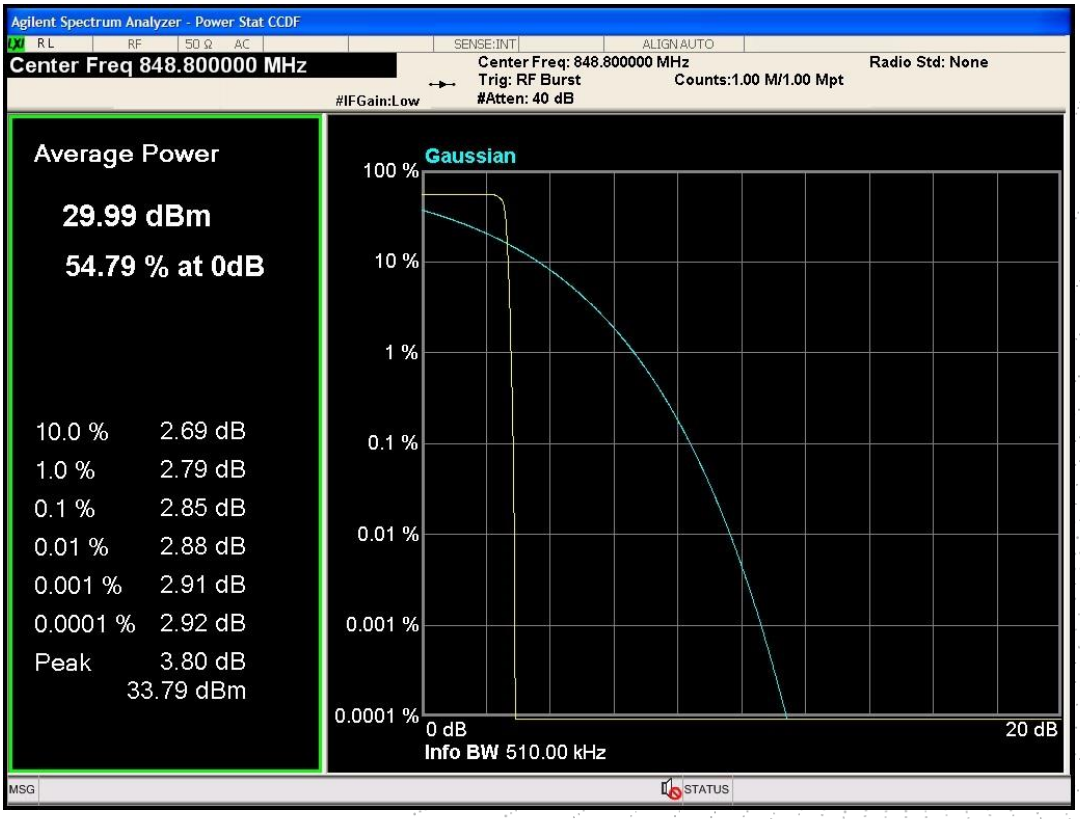


EGPRS850 Channel=128

EGPRS850 Channel=190



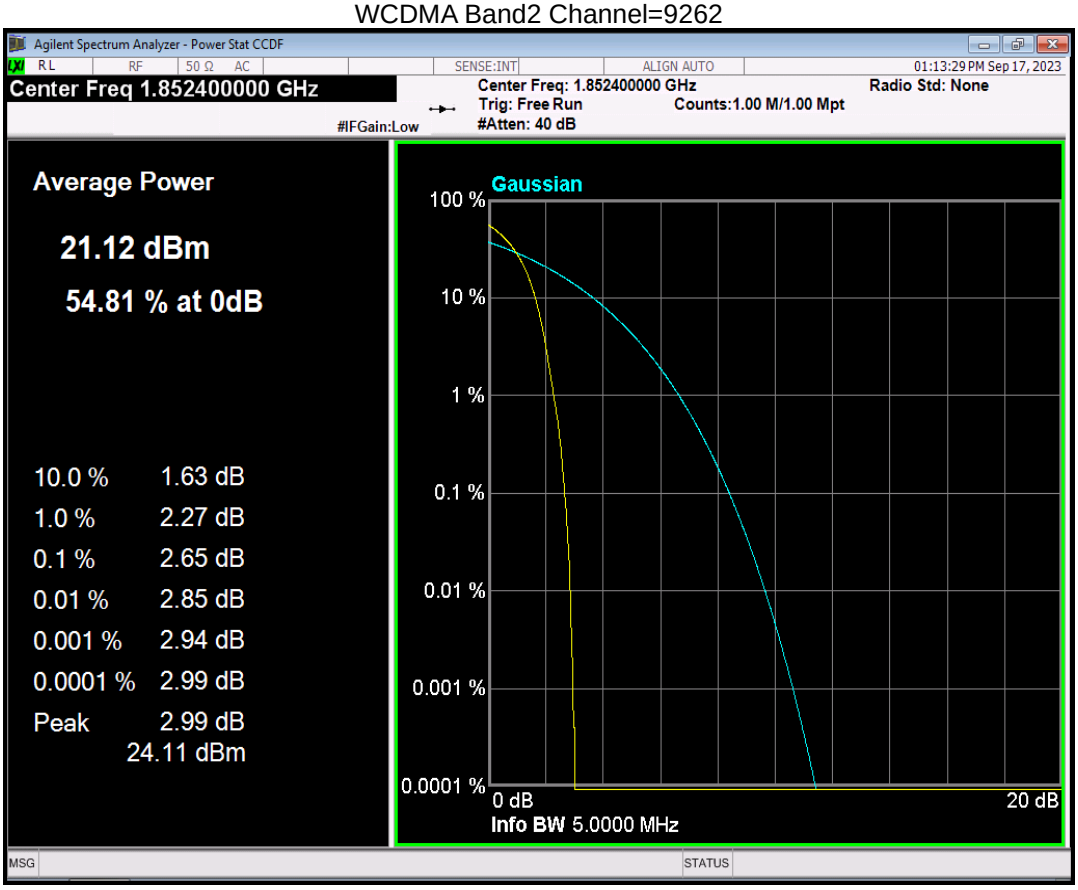
EGPRS850 Channel=251



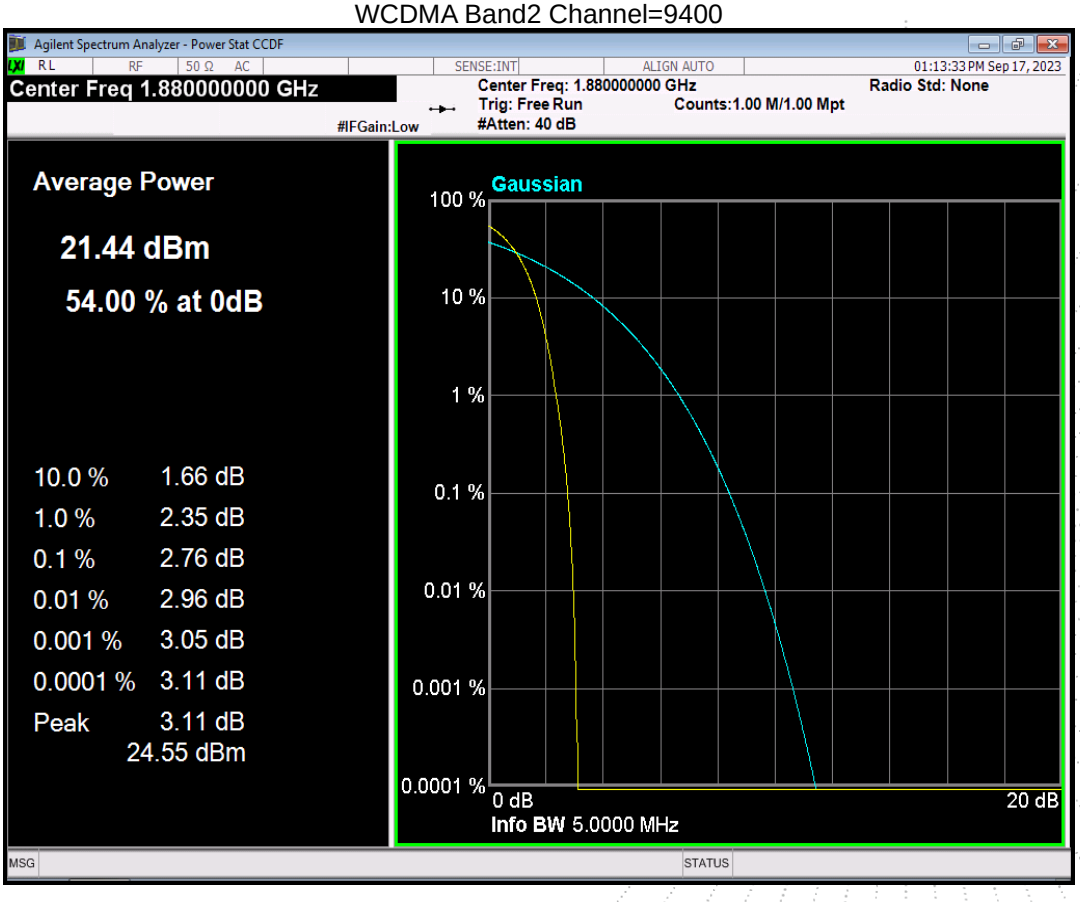
Band	Channel	Frequency (MHz)	Result (dB)	high Limit (dB)	Verdict
WCDMA Band2	9262	1852.4	2.65	13	PASS
WCDMA Band2	9400	1880	2.76	13	PASS
WCDMA Band2	9538	1907.6	2.63	13	PASS
WCDMA Band5	4132	826.4	2.83	13	PASS
WCDMA Band5	4182	836.4	2.82	13	PASS
WCDMA Band5	4233	846.6	2.65	13	PASS

Note:In WCDMA, RMC, HSDPA and HSUPA all three tests only reflect the worst mode RMC.

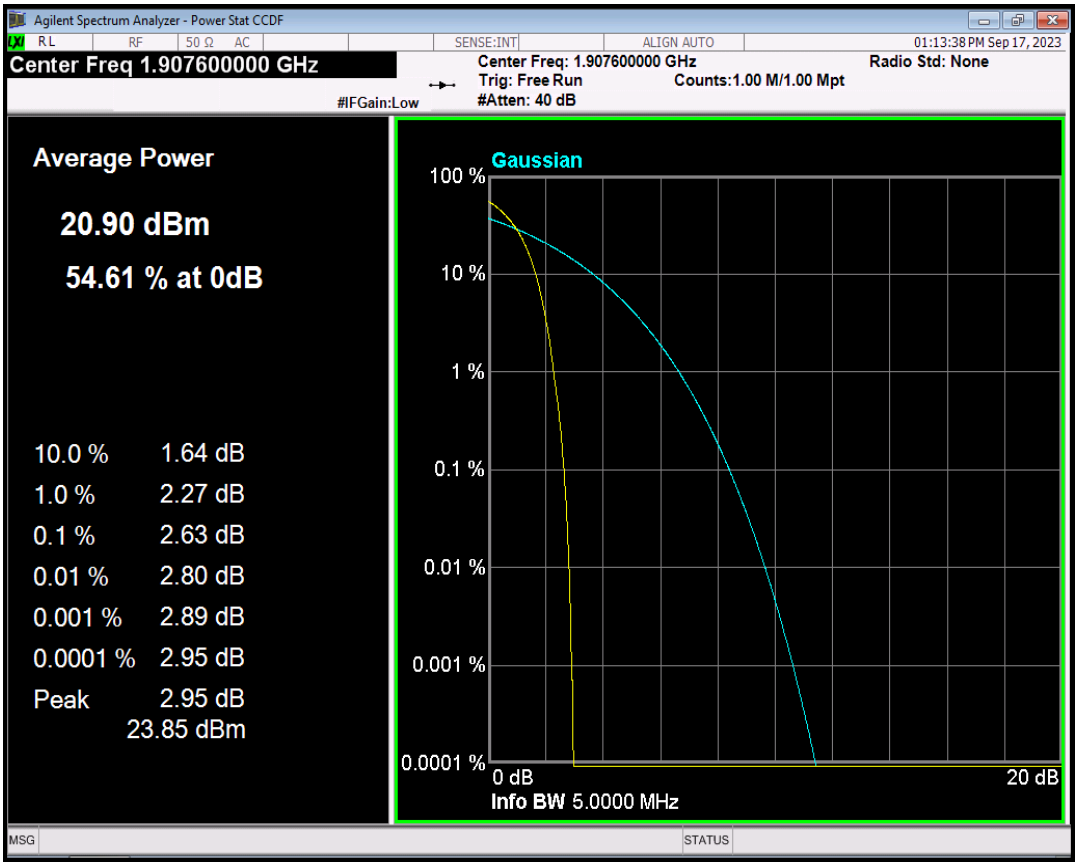
WCDMA Band2 Channel=9262



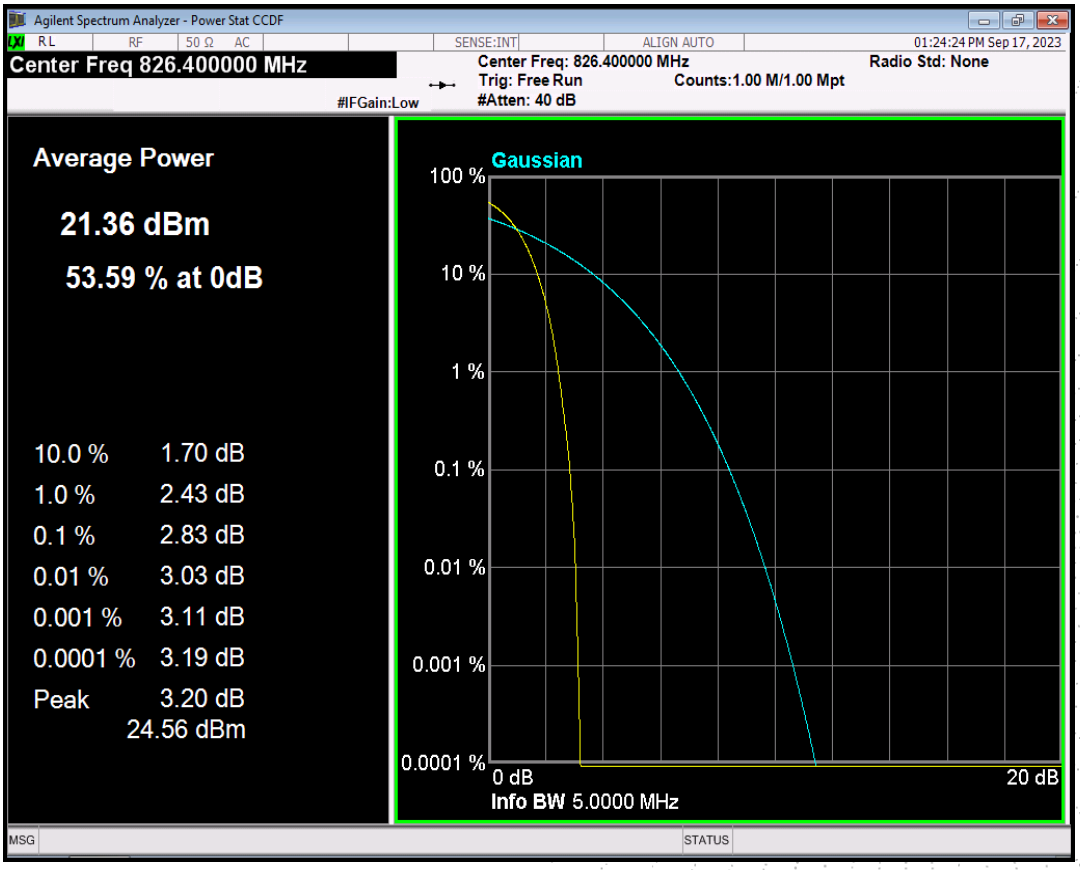
WCDMA Band2 Channel=9400



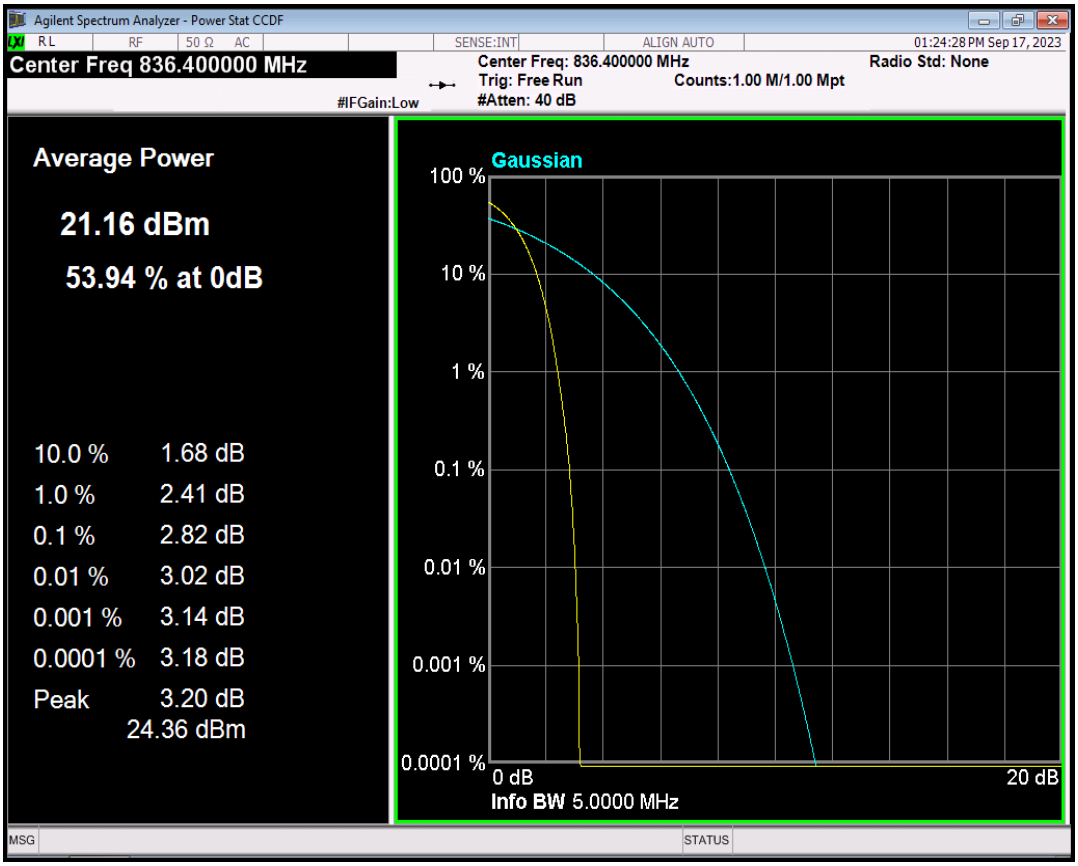
WCDMA Band2 Channel=9538



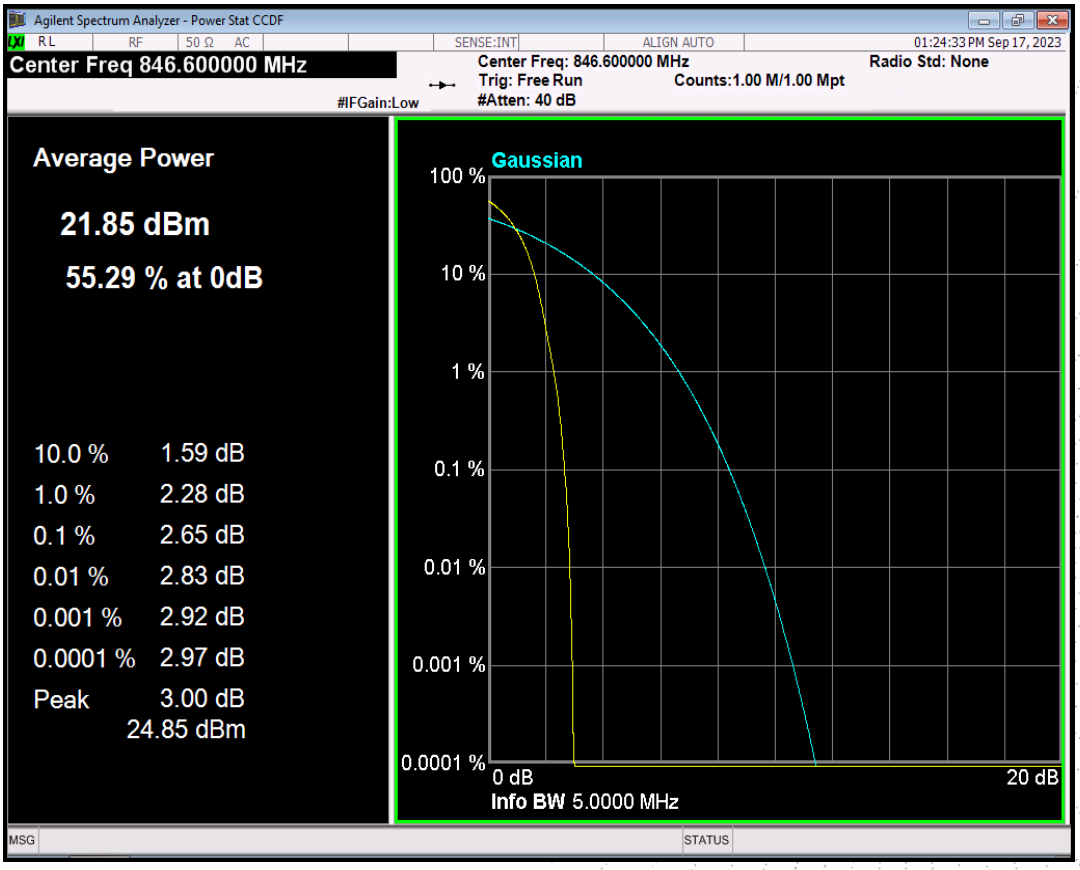
WCDMA Band5 Channel=4132



WCDMA Band5 Channel=4182

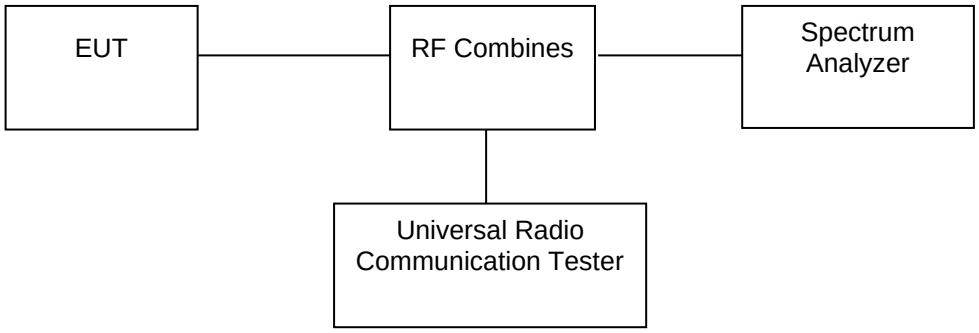


WCDMA Band5 Channel=4233



8. Emission Bandwidth

8.1 Block Diagram Of Test Setup



8.2 Limit

According to §22.917(b),The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

According to §24.238(b), The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

8.3 Test procedure

The RF output terminal of the transmitter was connected to the input of the spectrum analyzer via a suitable attenuation. The RBW of the spectrum analyzer was set to 10kHz for GSM mode and 100kHz for WCDMA mode, VBW shall be at least 3 times the RBW, and the 26dB bandwidth was recorded.

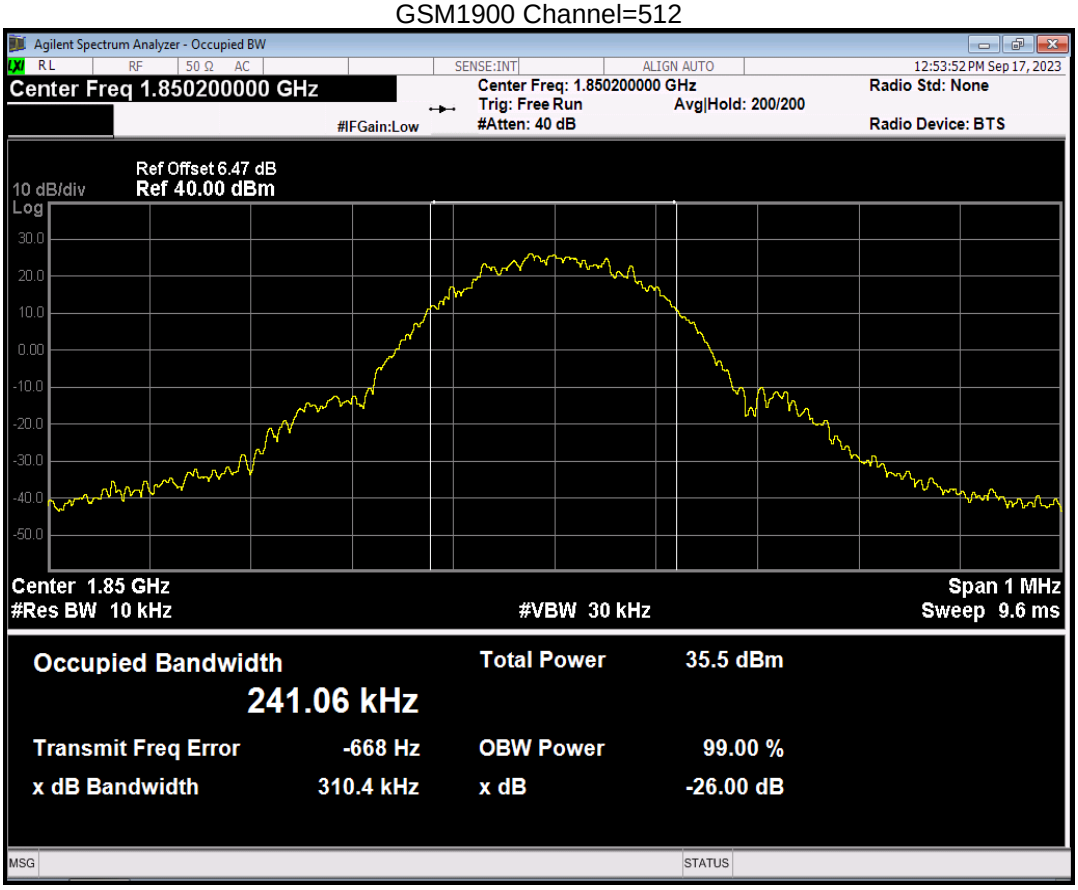
8.4 Test Result

Band	Channel	Frequency (MHz)	99% OBW (kHz)	-26dB EBW (kHz)	Verdict
GSM850	128	824.2	243.619	318.167	PASS
GSM850	190	836.6	245.814	309.452	PASS
GSM850	251	848.8	244.564	313.710	PASS
GSM1900	512	1850.2	241.059	310.389	PASS
GSM1900	661	1880	246.045	318.536	PASS
GSM1900	810	1909.8	245.014	317.988	PASS

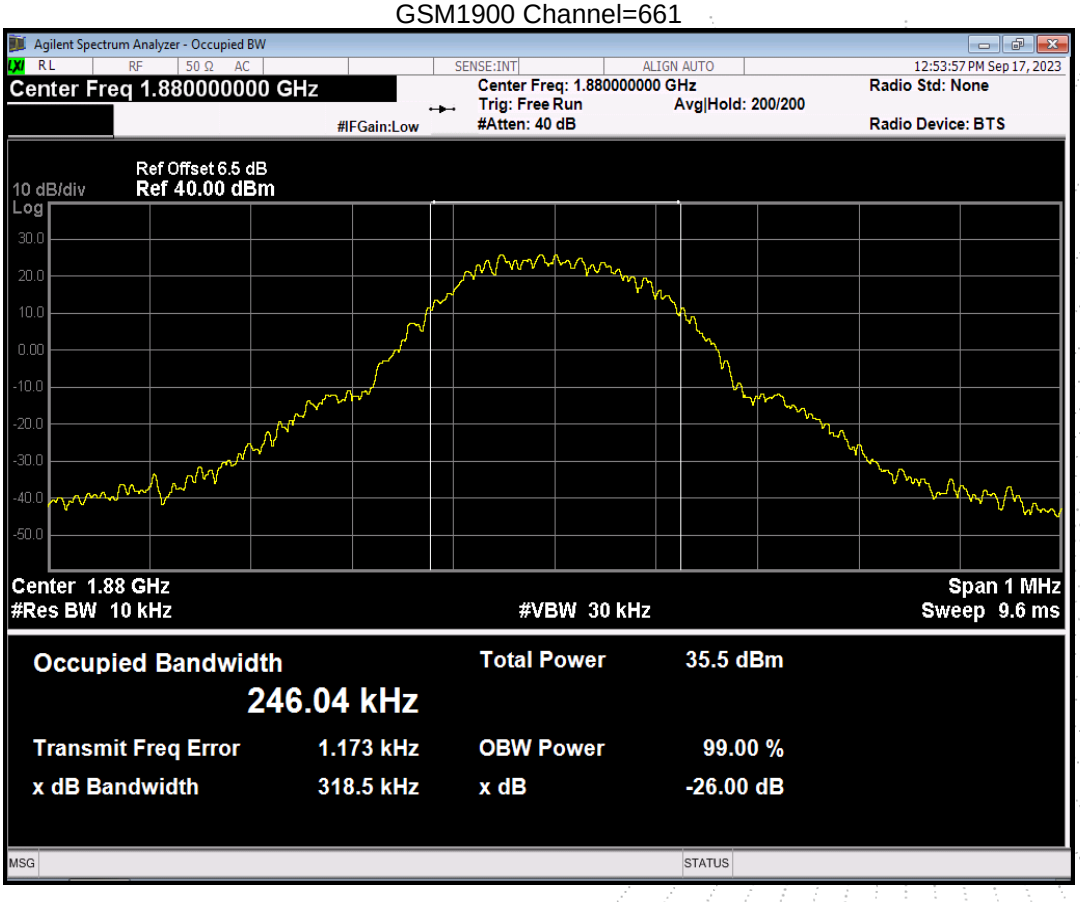
Band	Channel	Frequency (MHz)	99% OBW (kHz)	-26dB EBW (kHz)	Verdict
GPRS1900	512	1850.2	238.278	308.36	PASS
GPRS1900	661	1880	244.51	315.008	PASS
GPRS1900	810	1909.8	248.206	318.764	PASS
GPRS850	128	824.2	248.076	323.317	PASS
GPRS850	190	836.6	249.647	321.953	PASS
GPRS850	251	848.8	244.368	314.284	PASS

Band	Channel	Frequency (MHz)	99% OBW (kHz)	-26dB EBW (kHz)	Verdict
EGPRS1900	512	1850.2	254.633	320.172	PASS
EGPRS1900	661	1880	260.419	323.067	PASS
EGPRS1900	810	1909.8	256.233	321.53	PASS
EGPRS850	128	824.2	251.039	303.411	PASS
EGPRS850	190	836.6	231.224	282.119	PASS
EGPRS850	251	848.8	242.998	293.37	PASS

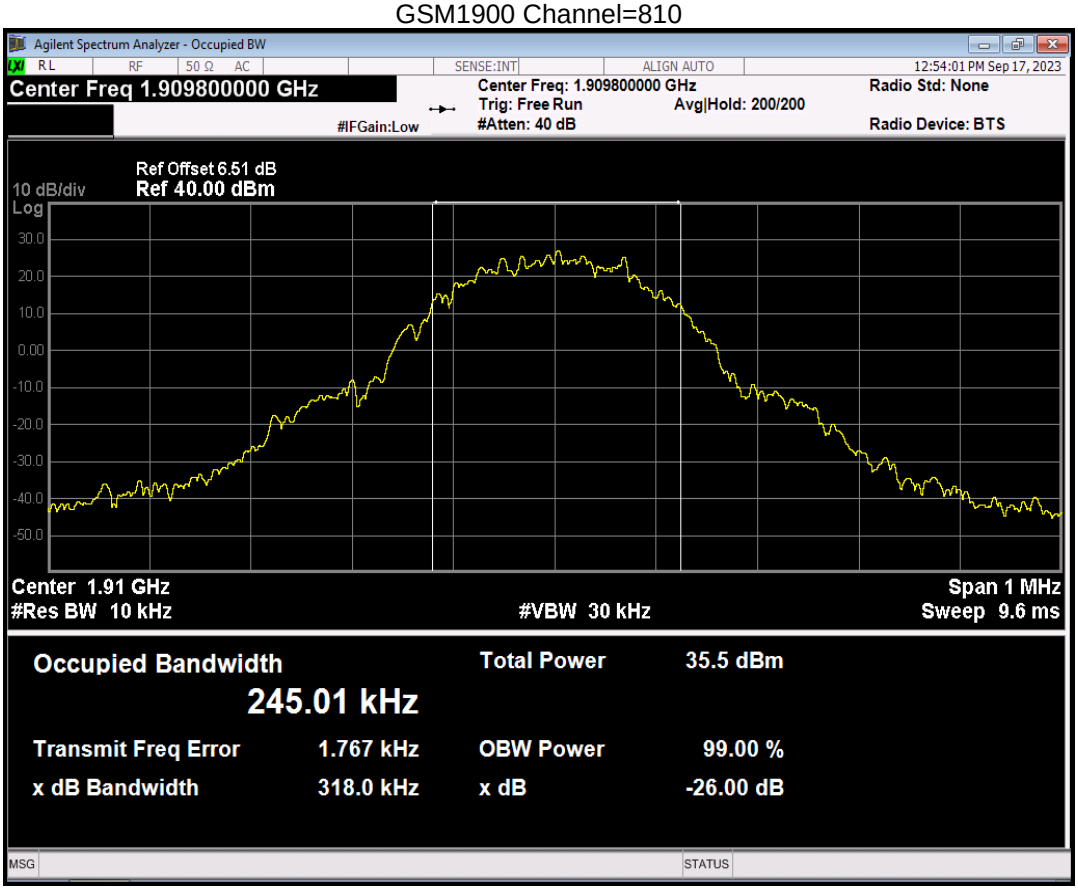
GSM1900 Channel=512



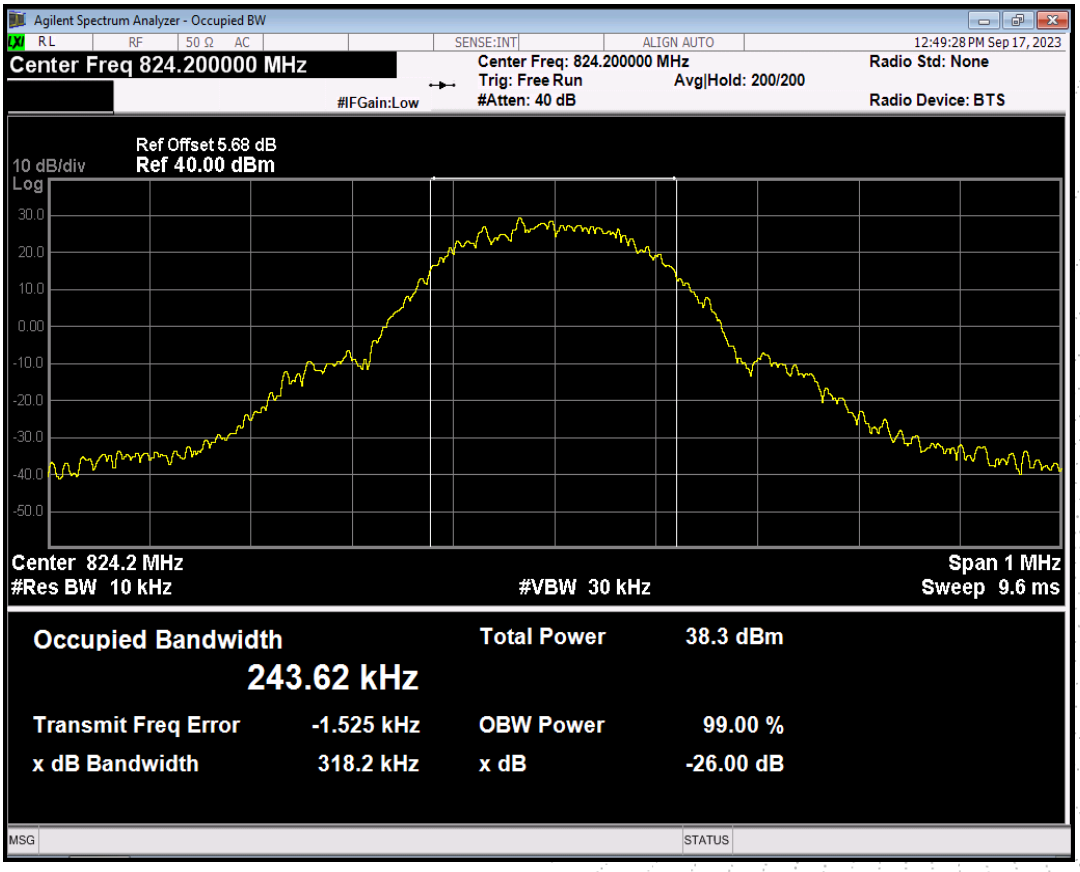
GSM1900 Channel=661



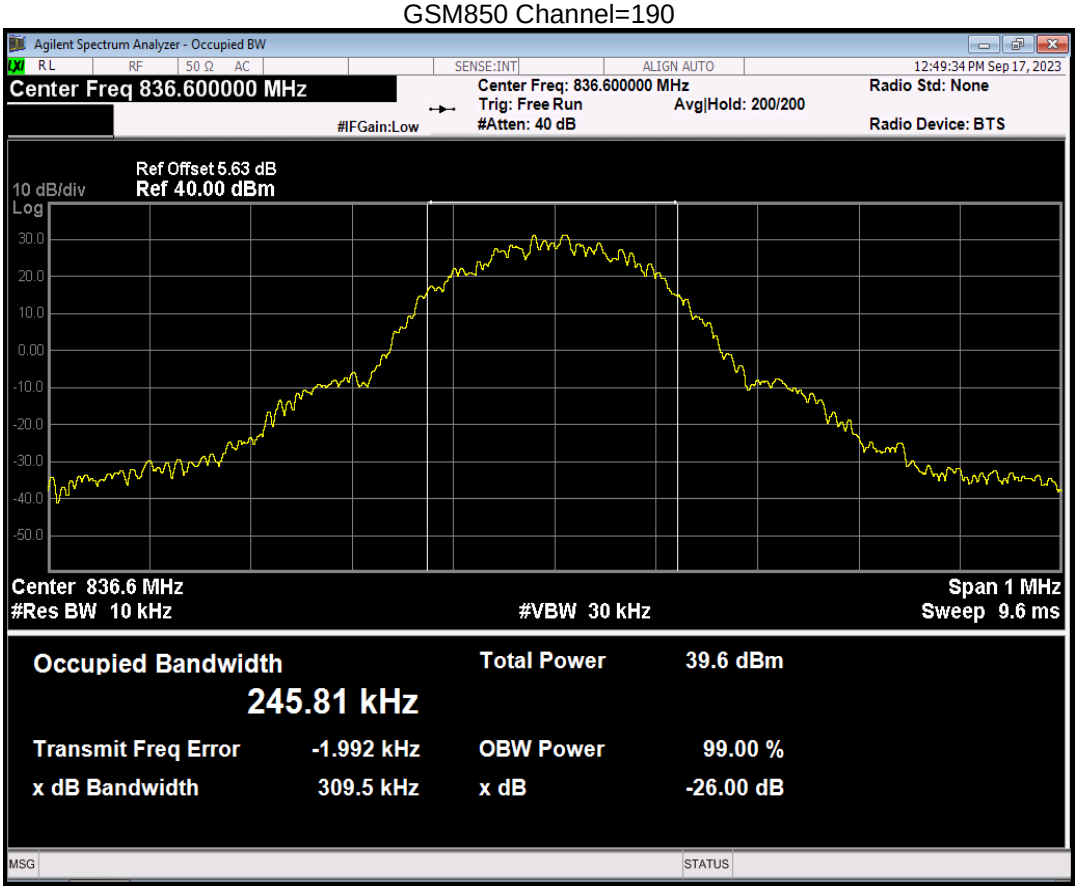
GSM1900 Channel=810



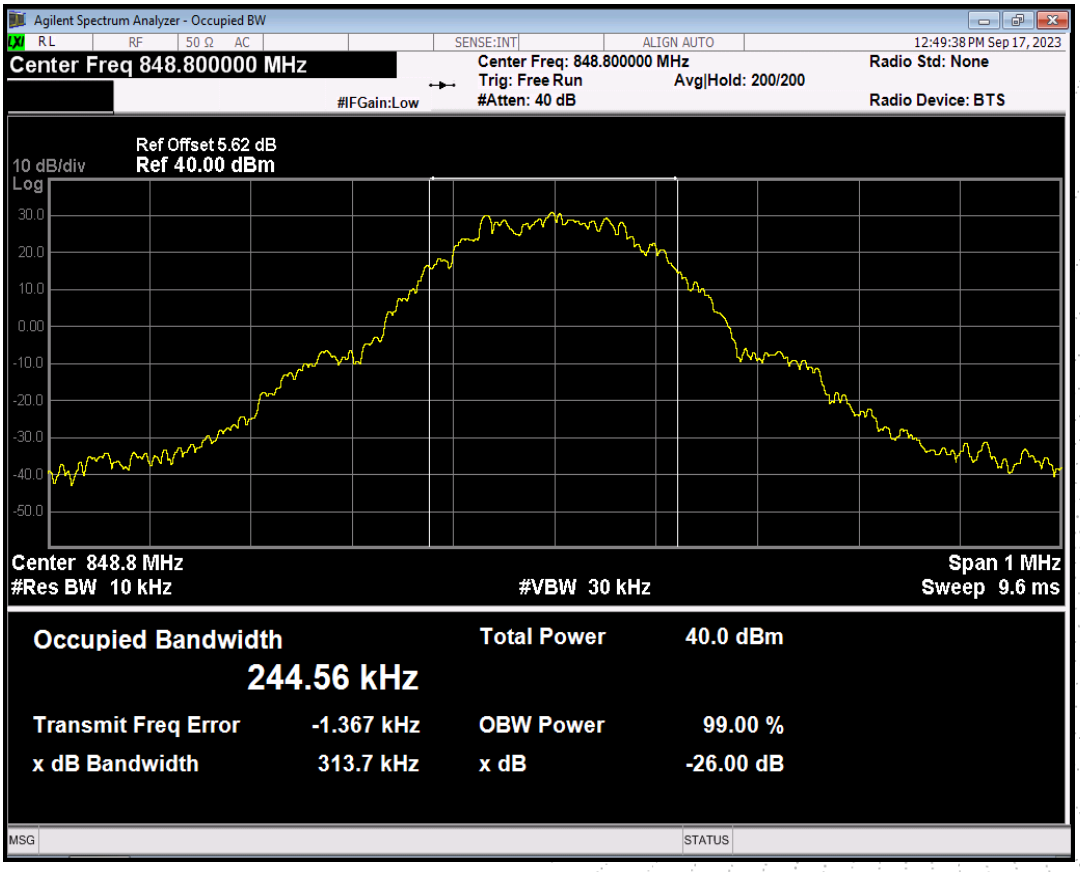
GSM850 Channel=128



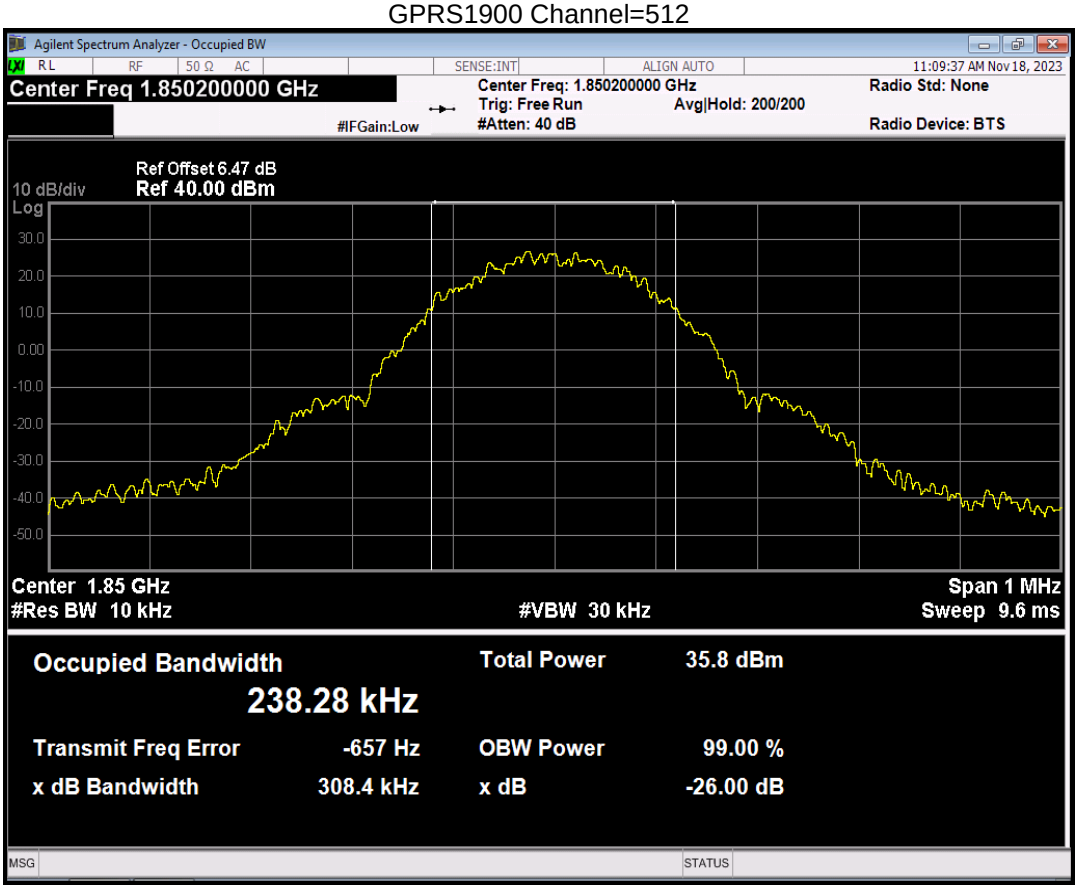
GSM850 Channel=190



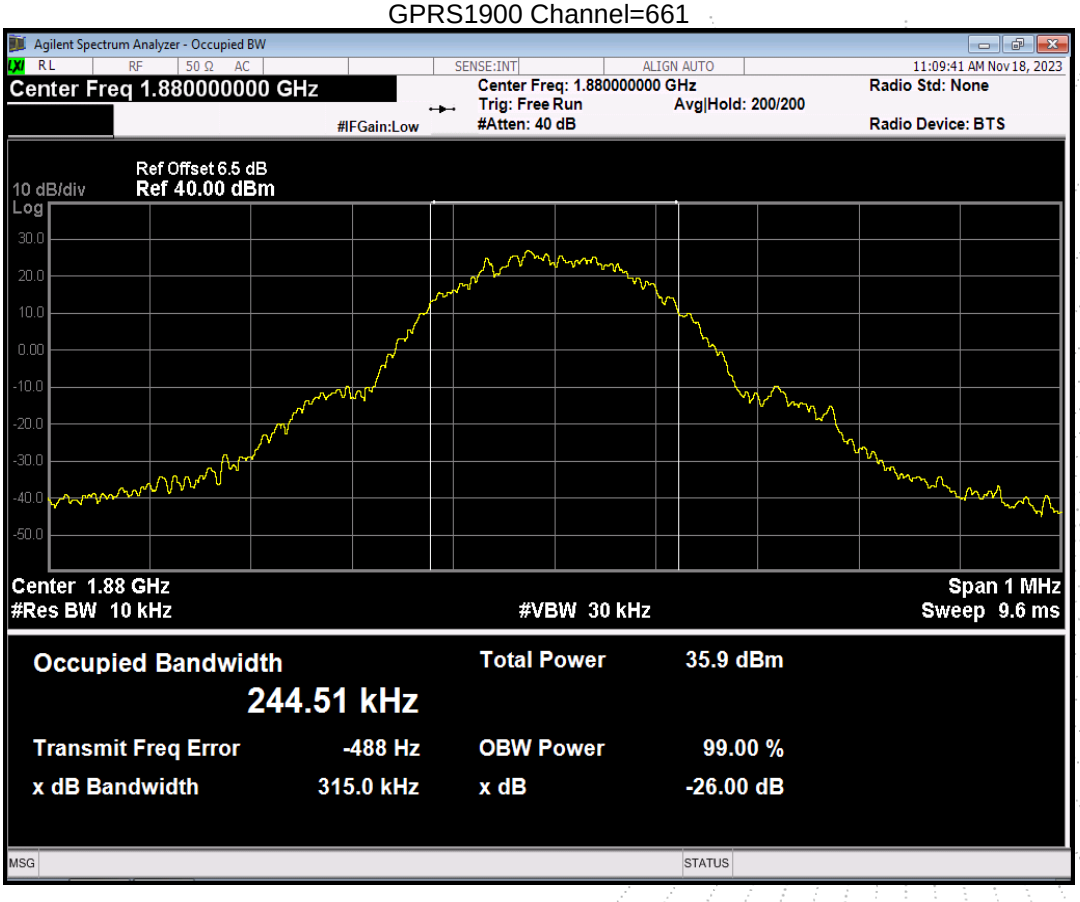
GSM850 Channel=251



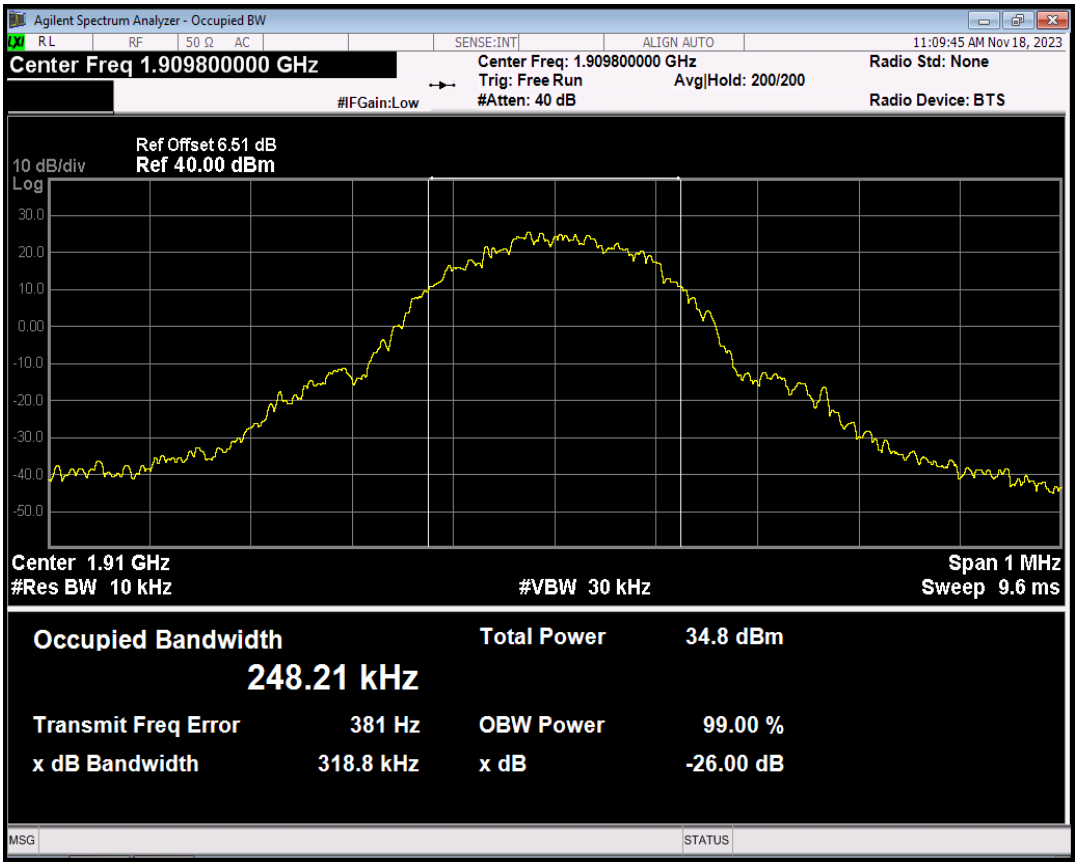
GPRS1900 Channel=512



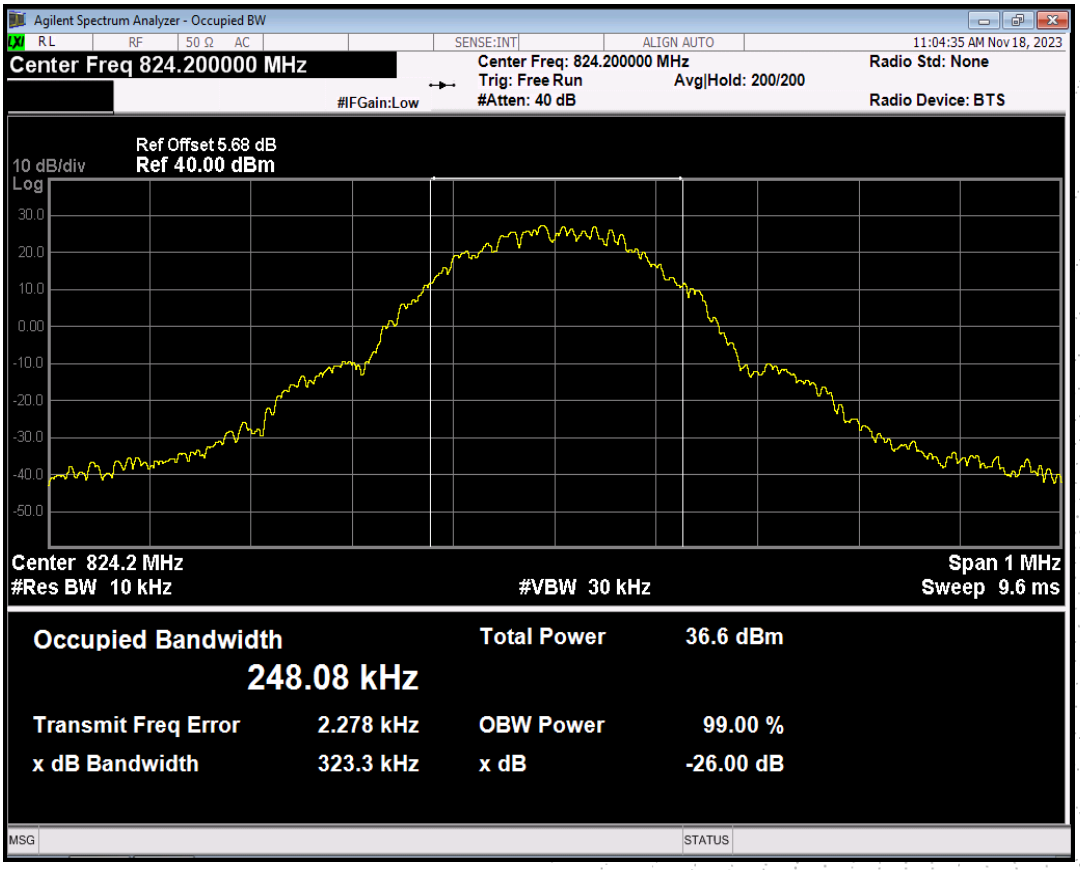
GPRS1900 Channel=661



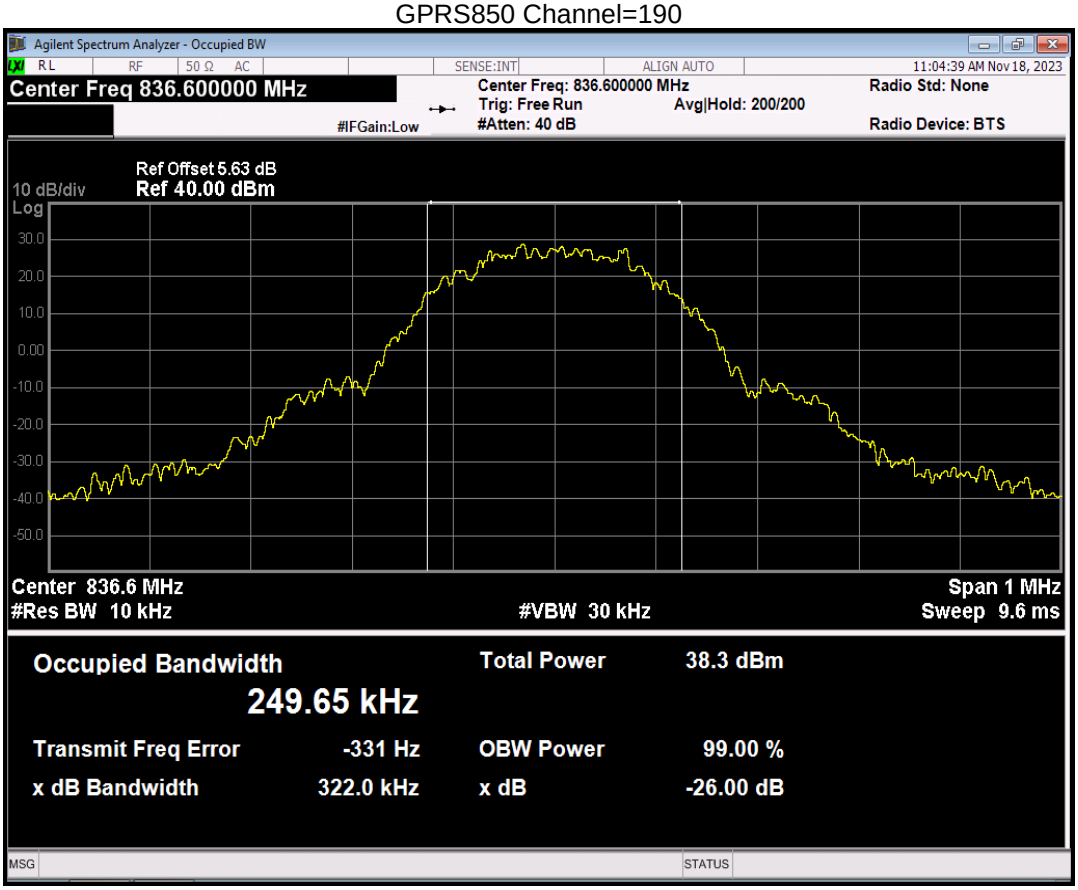
GPRS1900 Channel=810



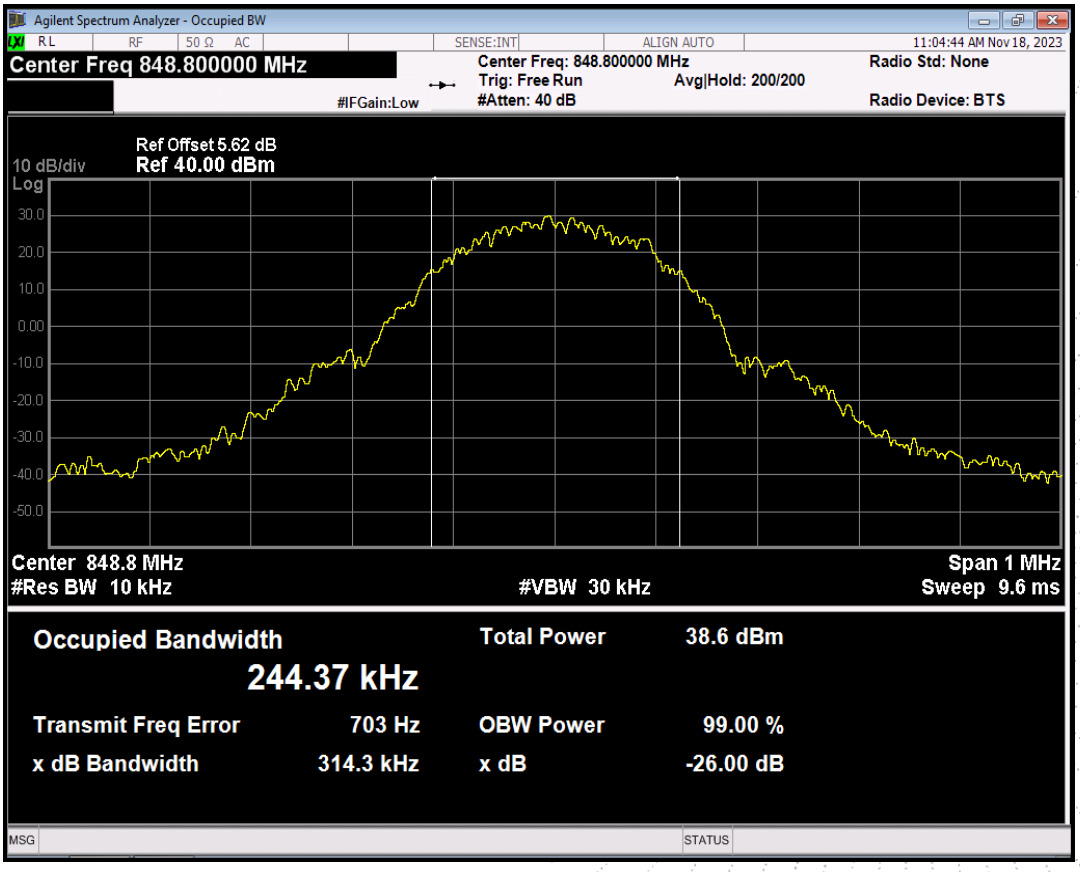
GPRS850 Channel=128



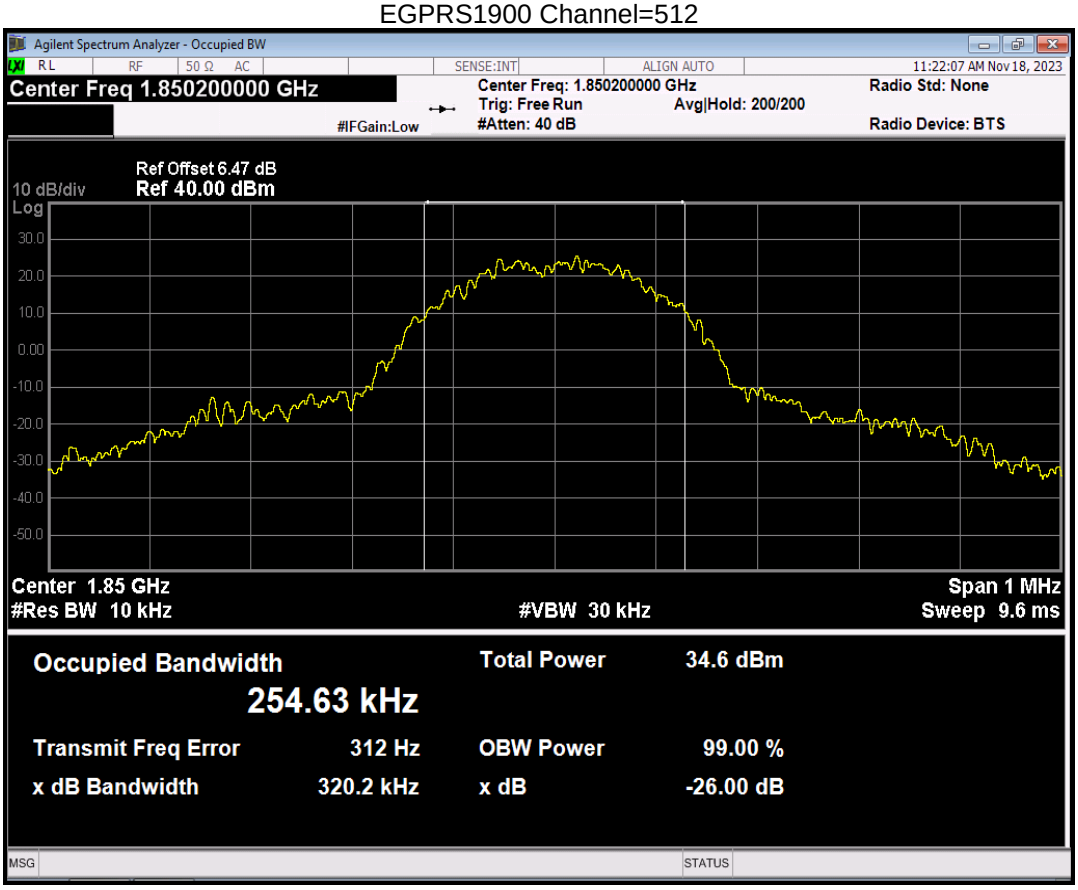
GPRS850 Channel=190



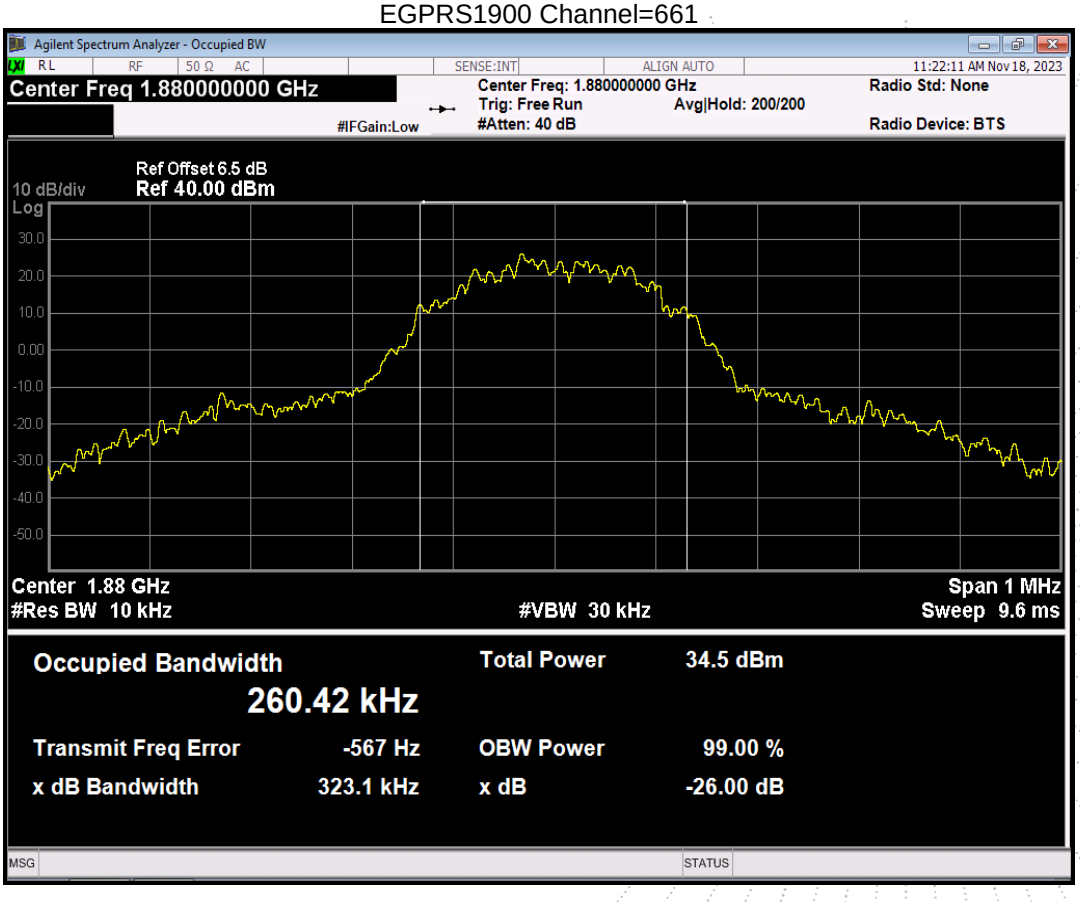
GPRS850 Channel=251



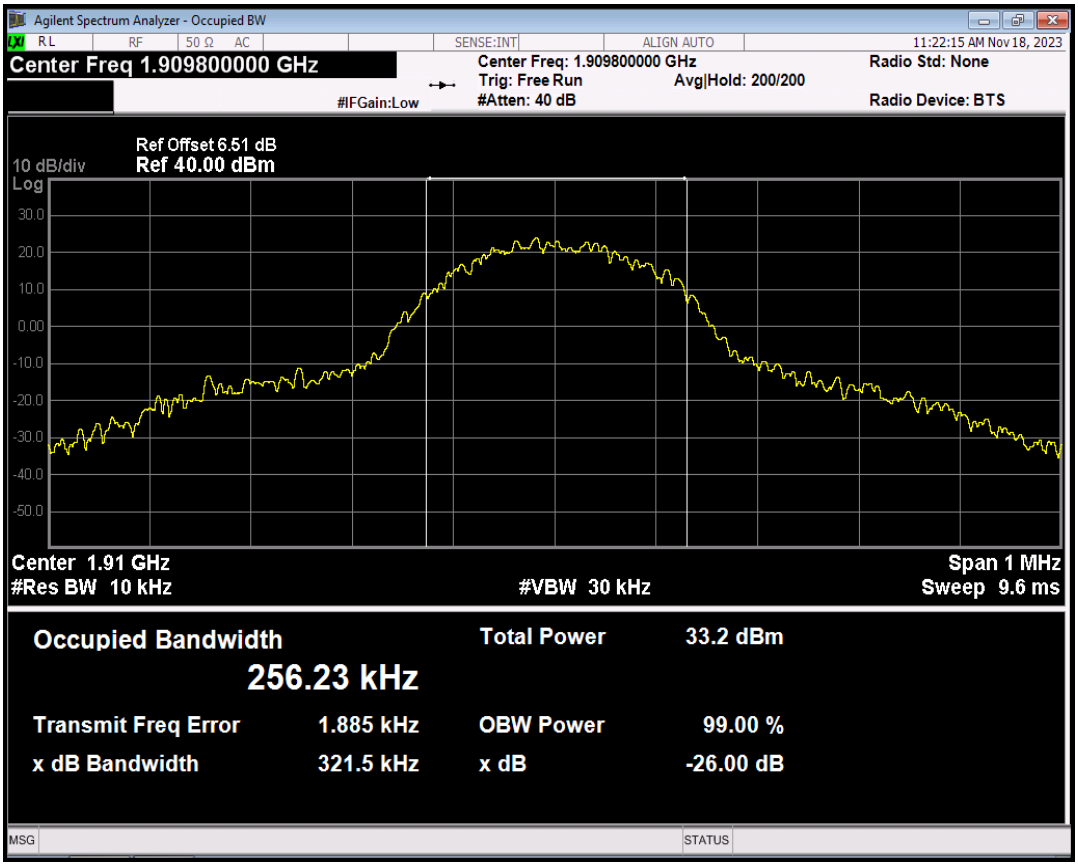
EGPRS1900 Channel=512



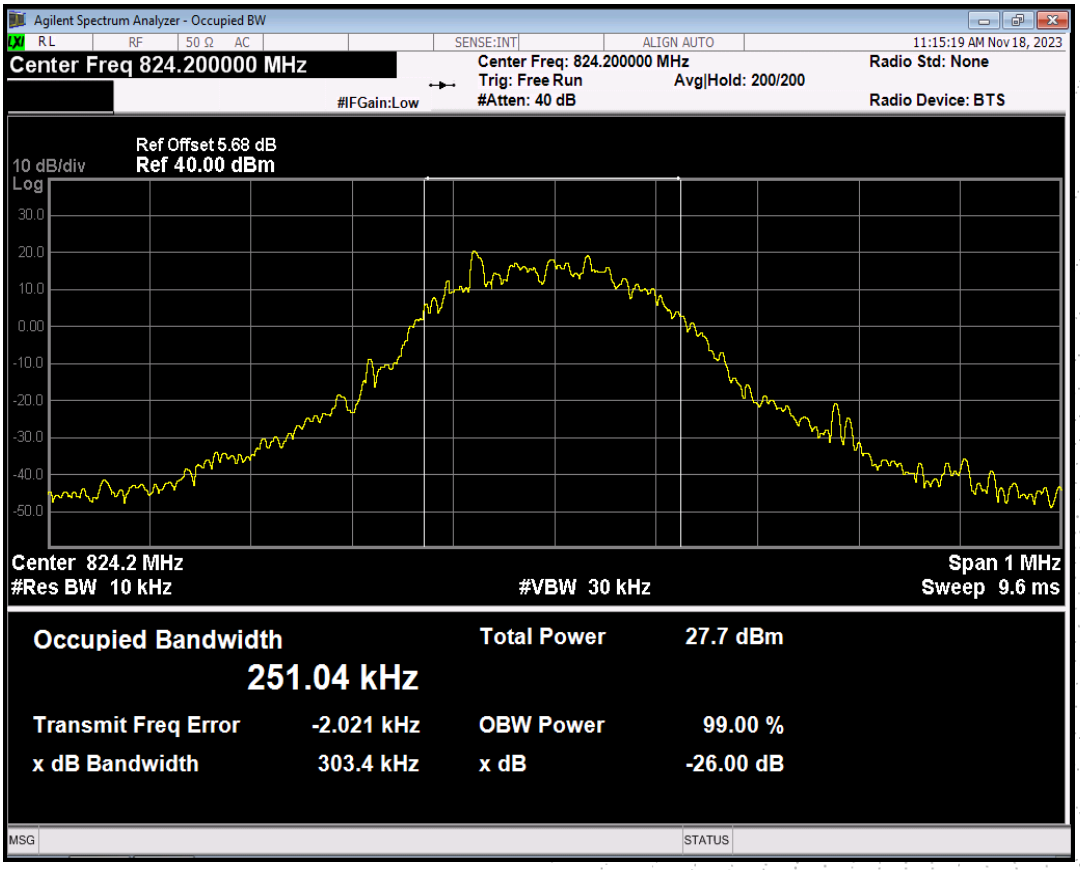
EGPRS1900 Channel=661



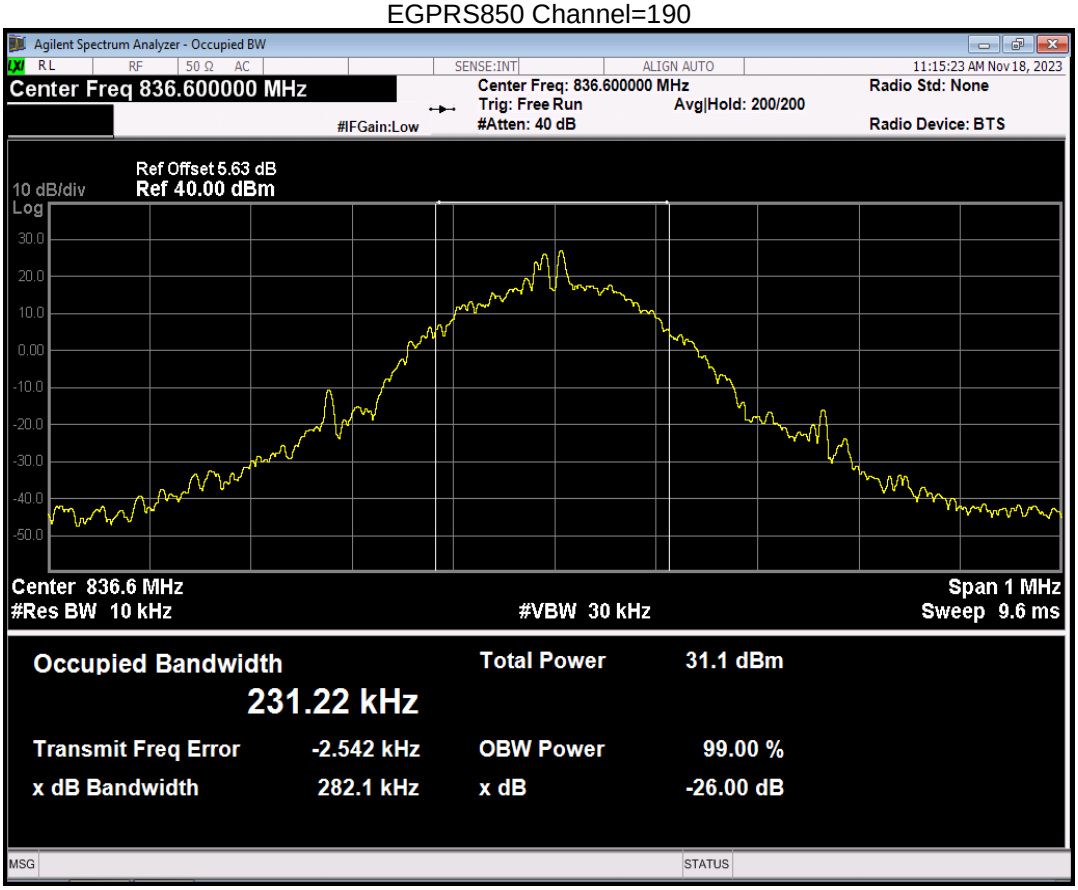
EGPRS1900 Channel=810



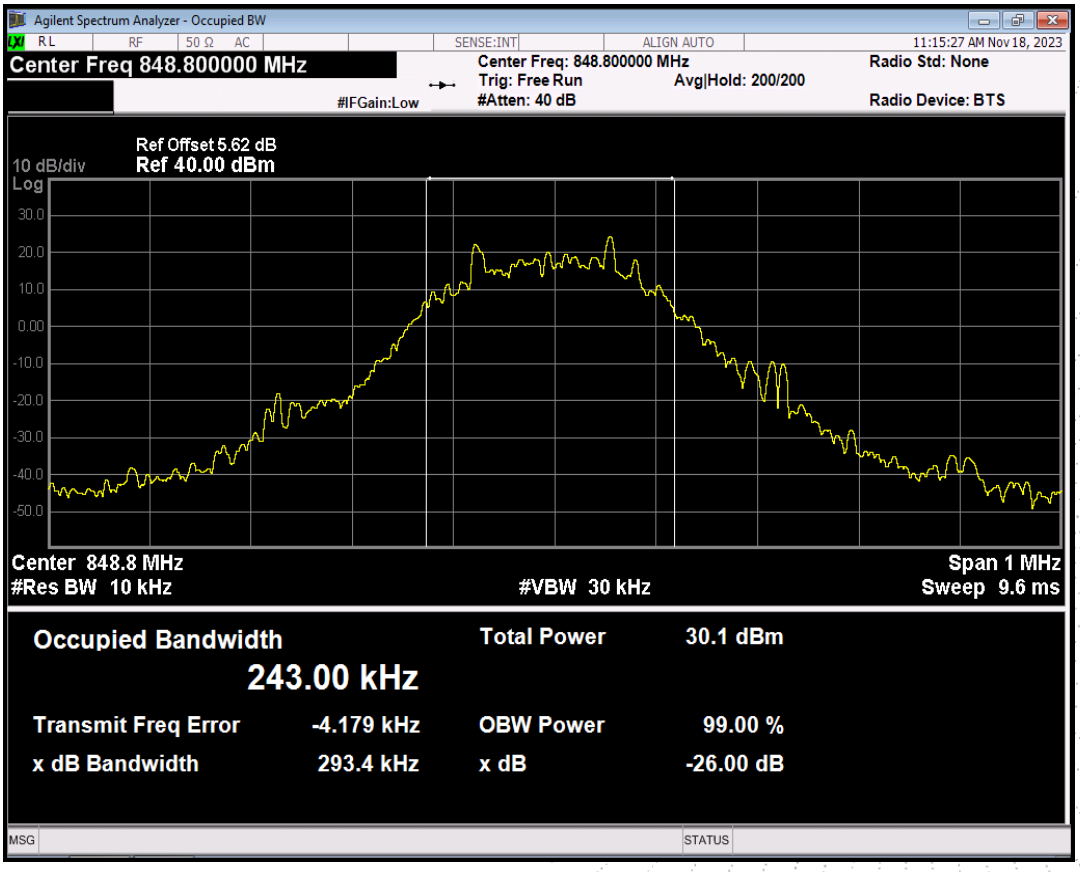
EGPRS850 Channel=128



EGPRS850 Channel=190



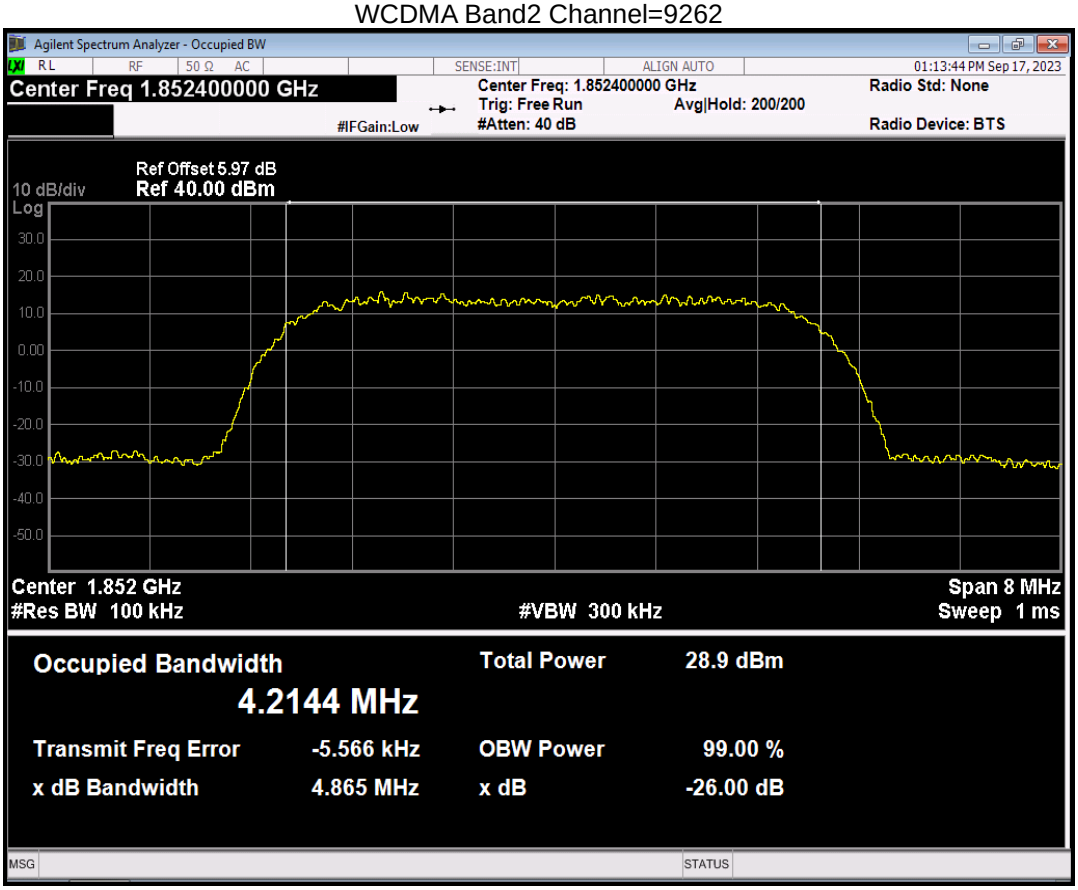
EGPRS850 Channel=251



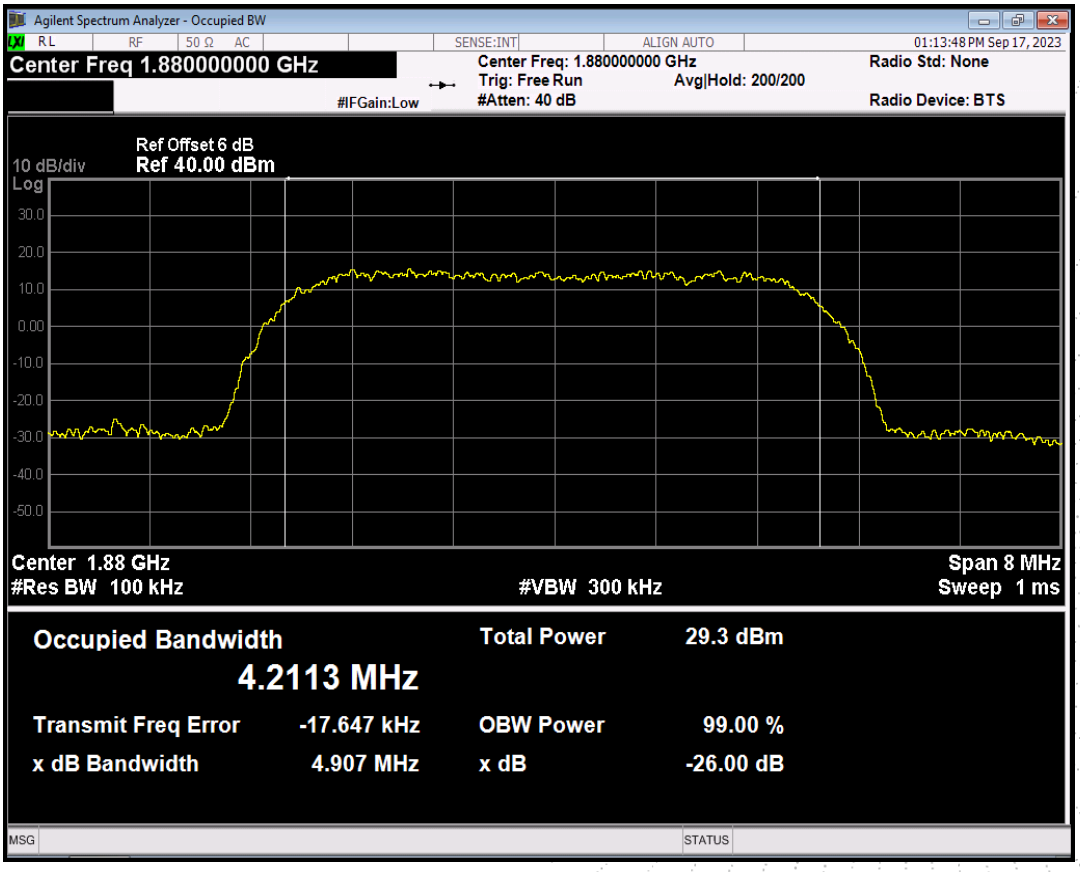
Band	Channel	Frequency (MHz)	99% OBW (kHz)	-26dB EBW (kHz)	Verdict
WCDMA Band2	9262	1852.4	4214.351	4865.021	PASS
WCDMA Band2	9400	1880	4211.273	4907.227	PASS
WCDMA Band2	9538	1907.6	4210.201	4866.475	PASS
WCDMA Band5	4132	826.4	4218.290	4846.945	PASS
WCDMA Band5	4182	836.4	4198.865	4848.878	PASS
WCDMA Band5	4233	846.6	4211.783	4826.114	PASS

Note：In WCDMA, RMC, HSDPA and HSUPA all three tests only reflect the worst mode RMC.

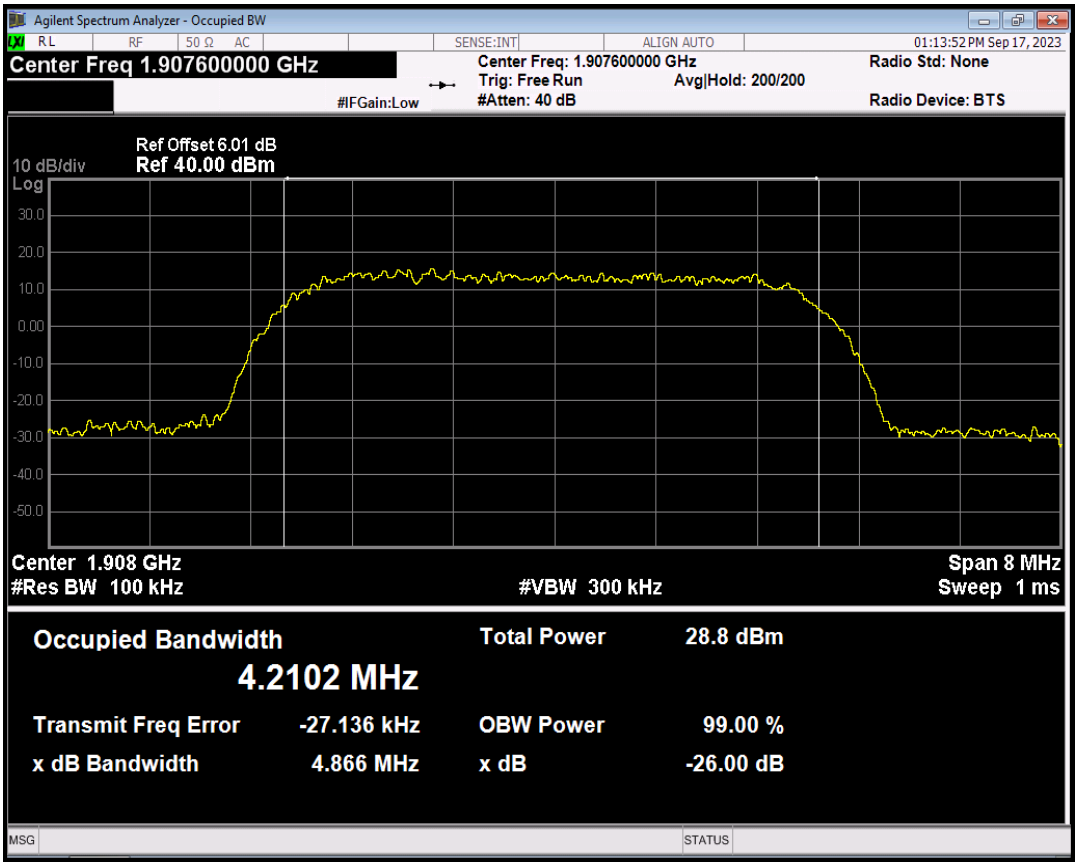
WCDMA Band2 Channel=9262



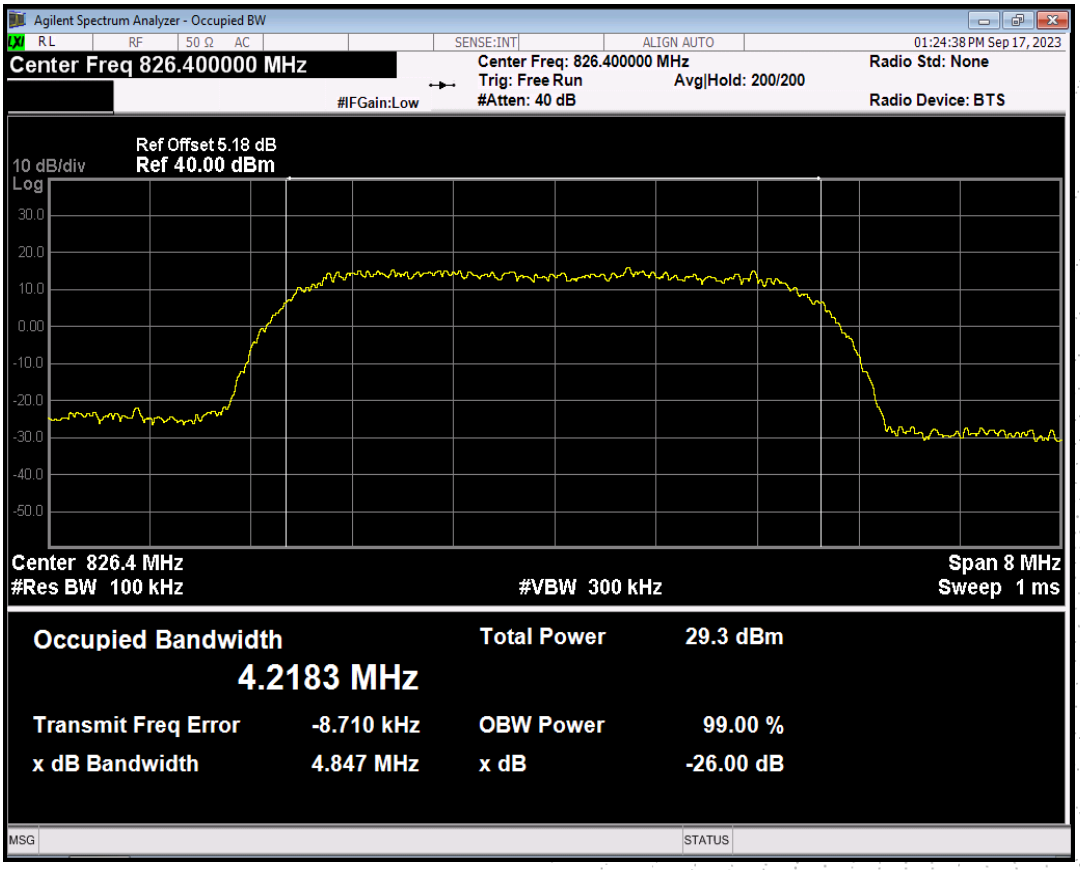
WCDMA Band2 Channel=9400



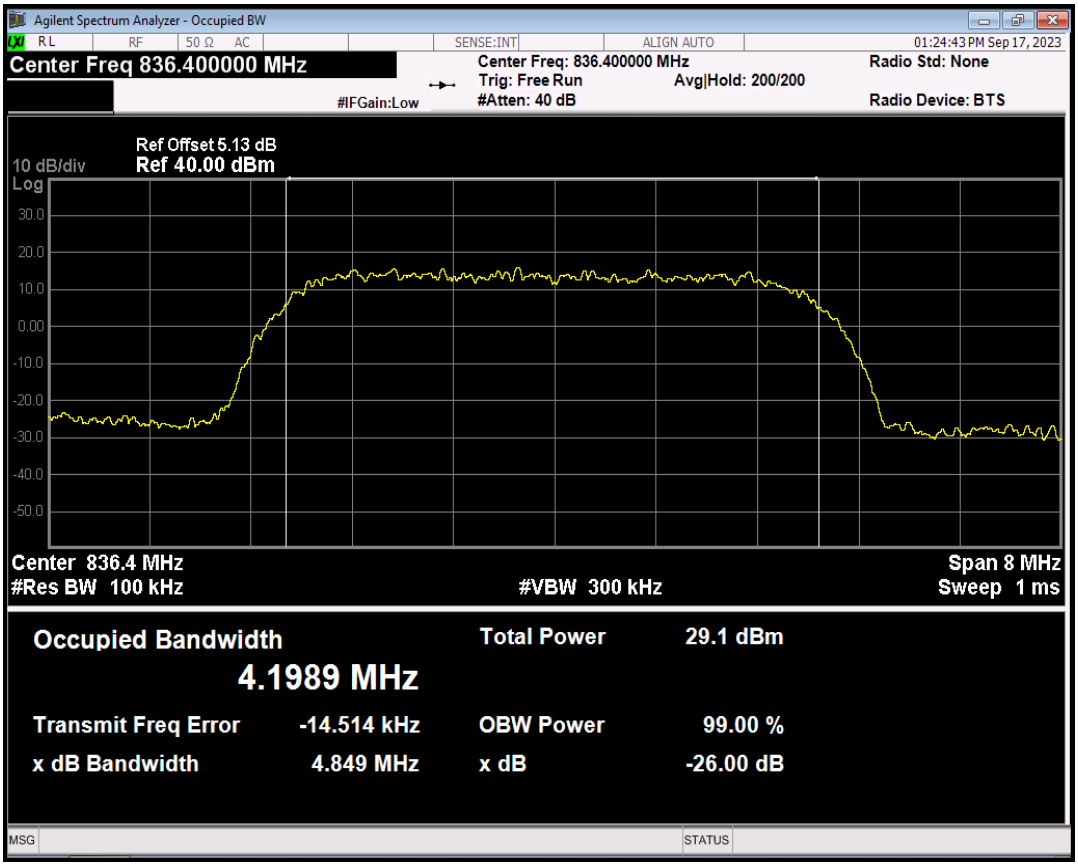
WCDMA Band2 Channel=9538



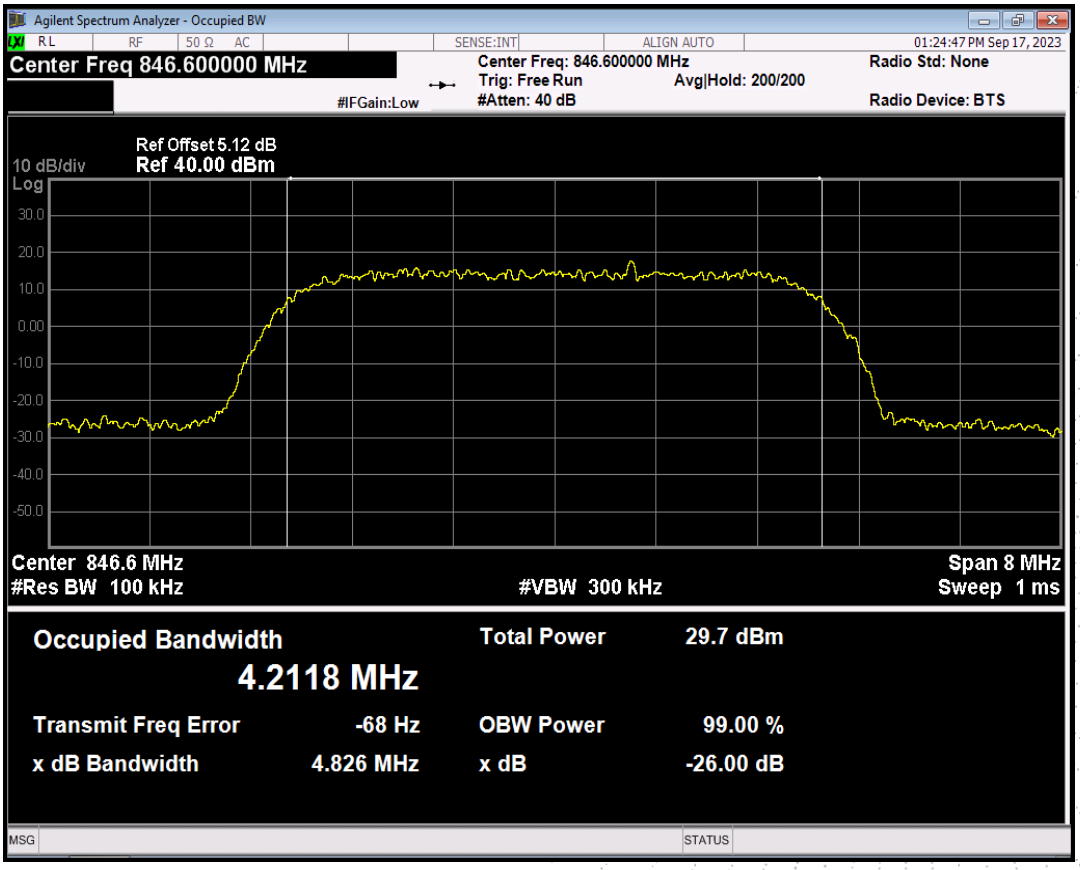
WCDMA Band5 Channel=4132



WCDMA Band5 Channel=4182

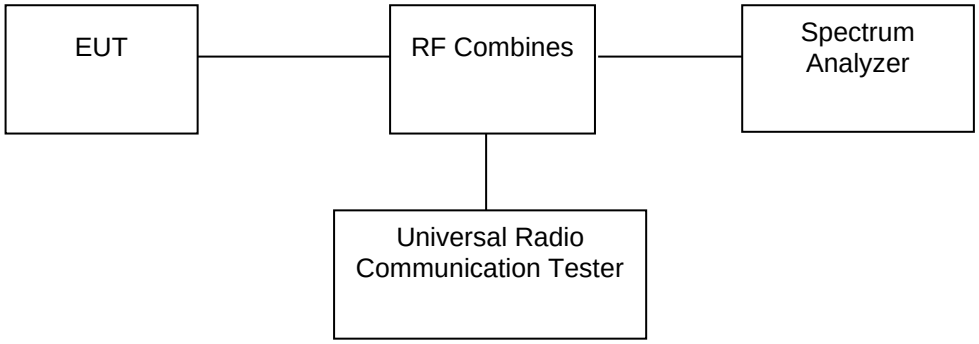


WCDMA Band5 Channel=4233



9. Out of Band Emissions at Antenna Terminal

9.1 Block Diagram Of Test Setup



9.2 Limit

According to §22.917(a), the power of any emissions 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.

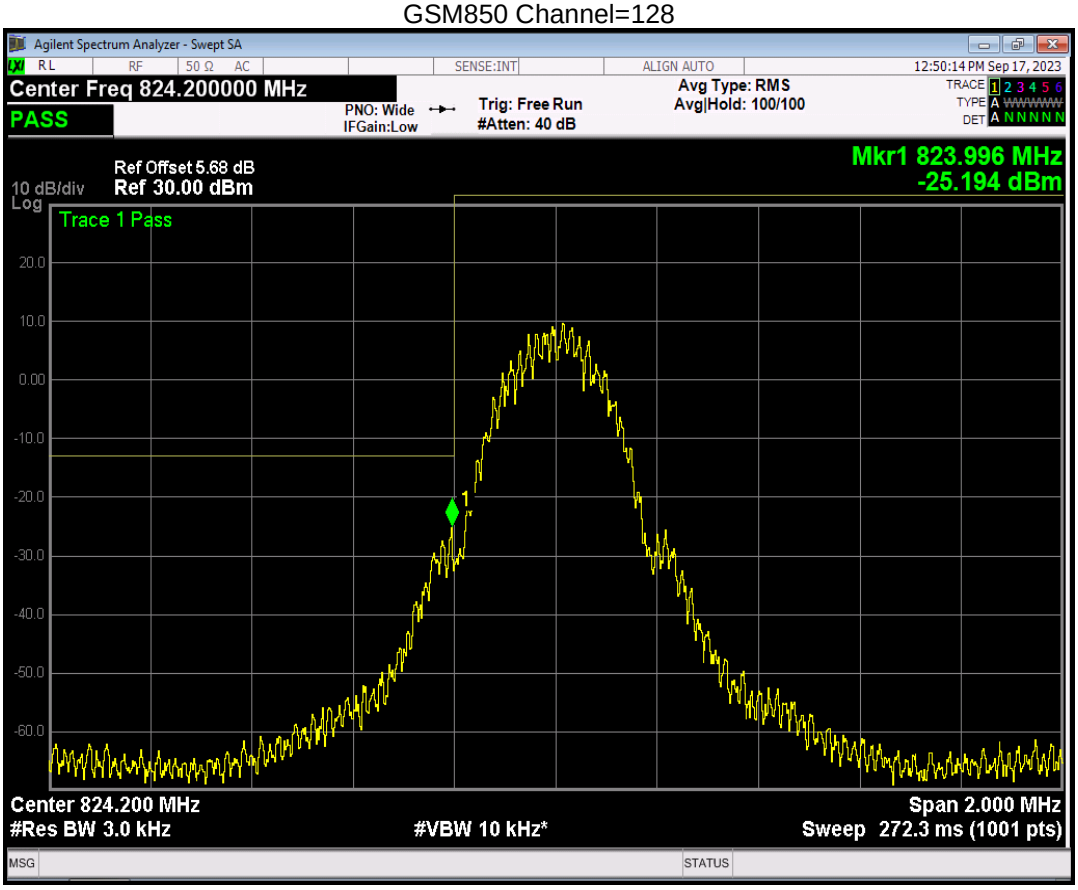
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

9.3 Test procedure

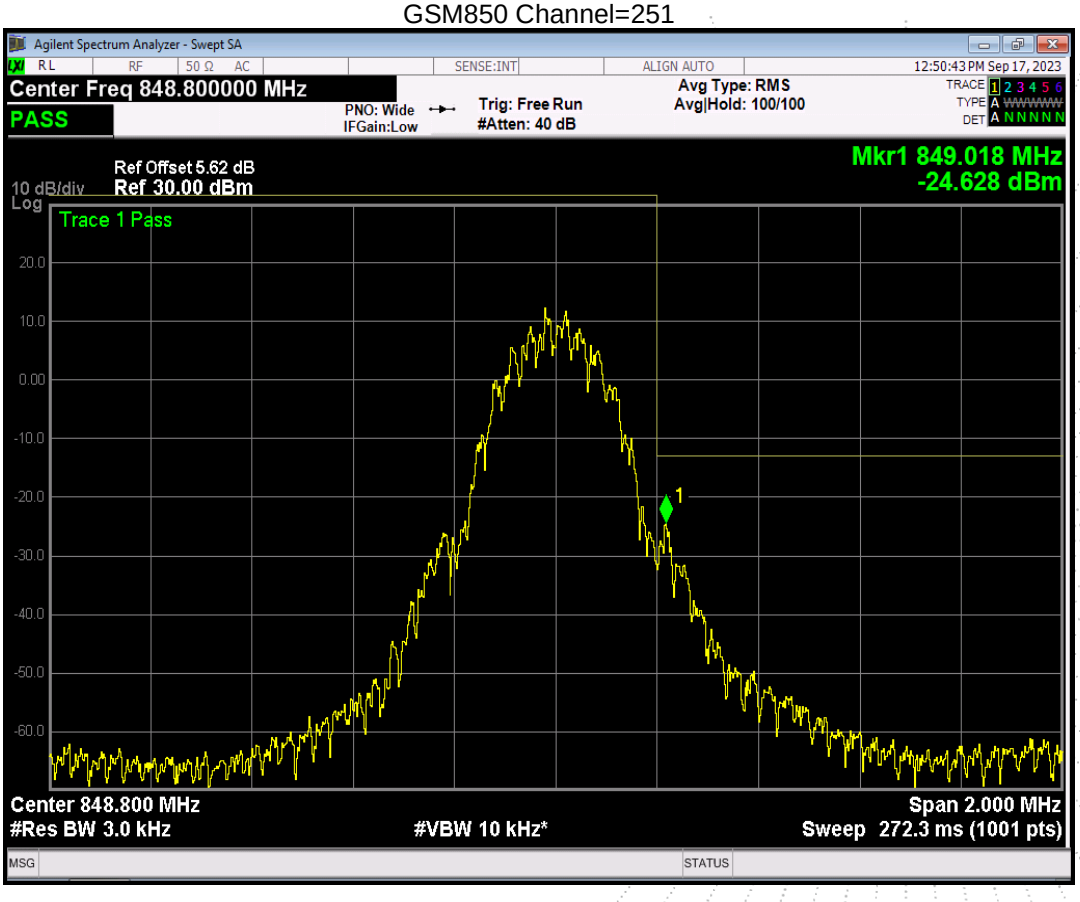
The RF output terminal of the transmitter was connected to the input of the spectrum analyzer via a suitable attenuation. The RBW of the spectrum analyzer was set to 100kHz and 1MHz for the scan frequency from 30MHz to 1GHz and the scan frequency from 1GHz to up to 10^{th} harmonic. At the edge of the authorized frequency block/band：RBW set 1%-5%OBW

9.4 Test Result

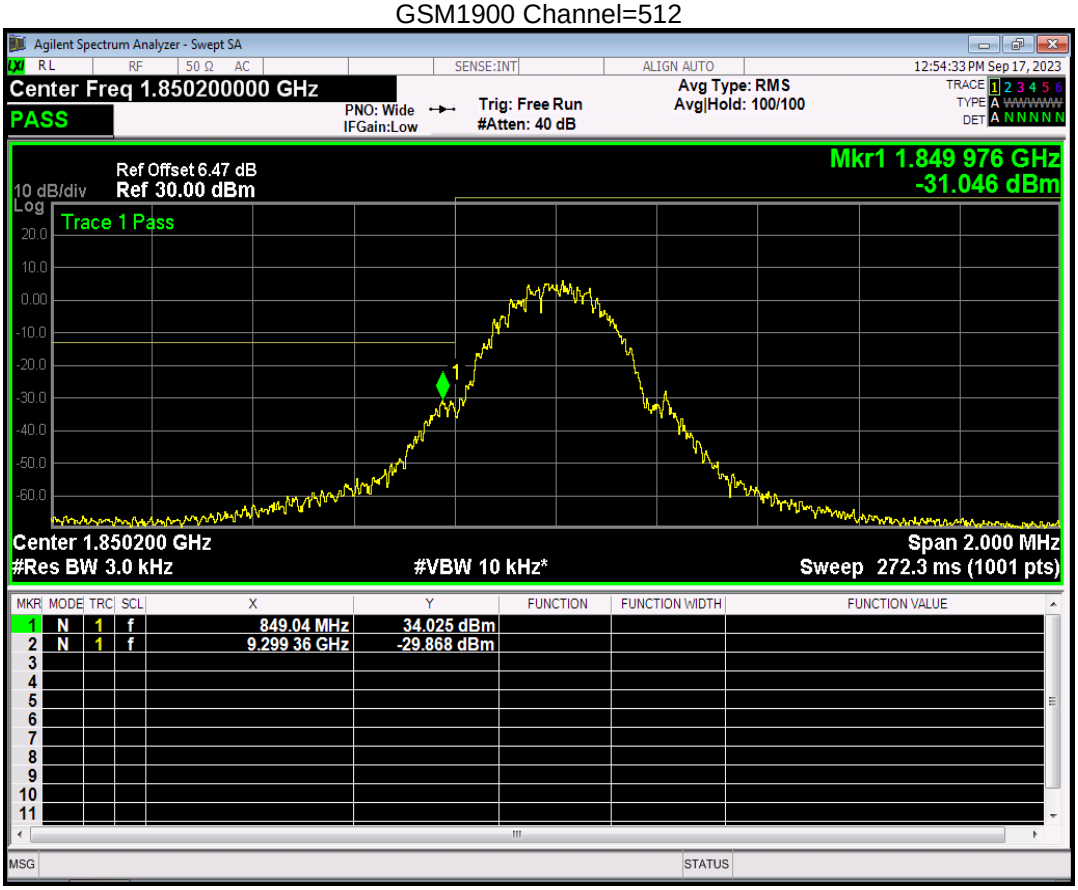
GSM850 Channel=128



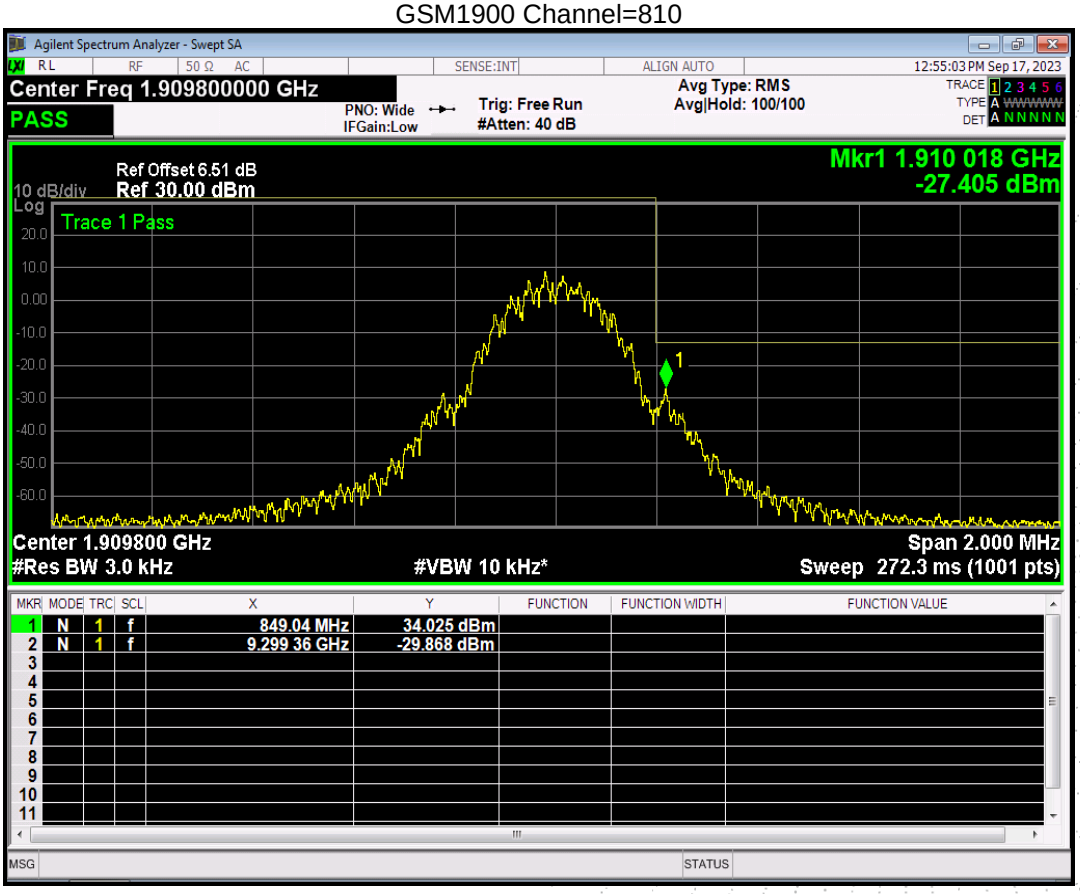
GSM850 Channel=251



GSM1900 Channel=512



GSM1900 Channel=810



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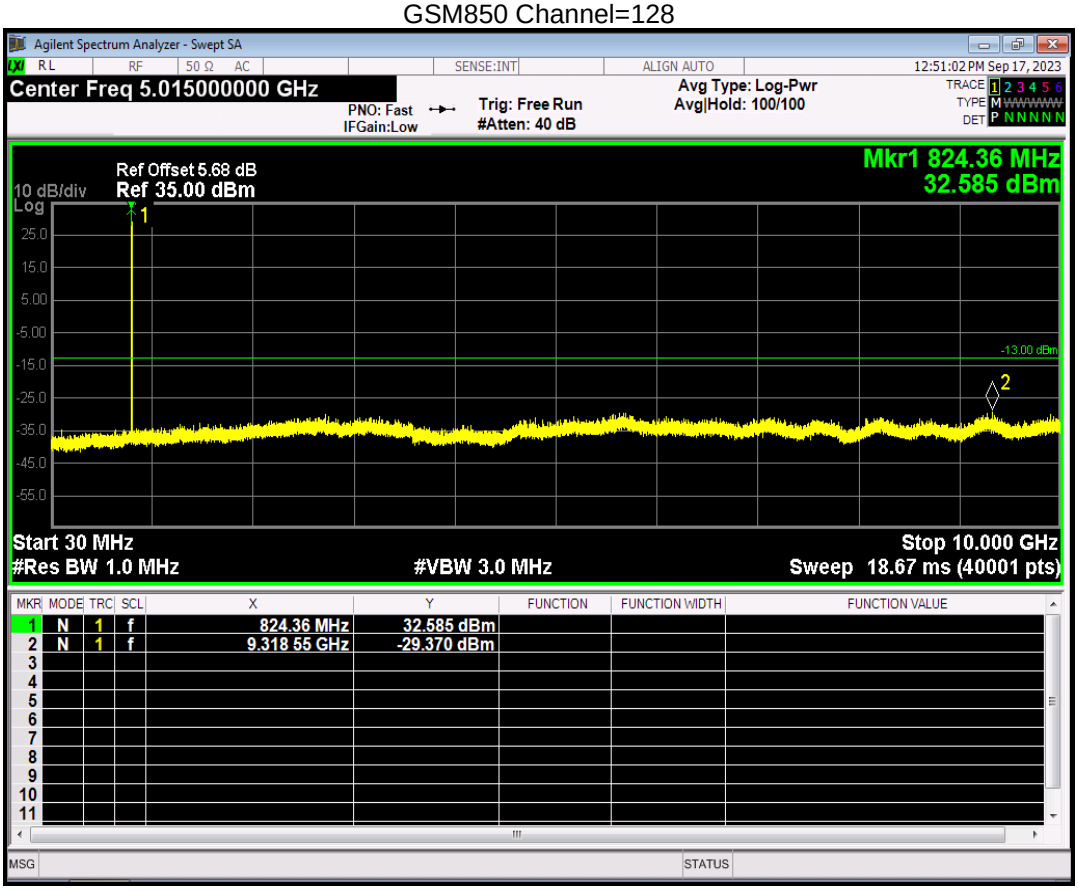
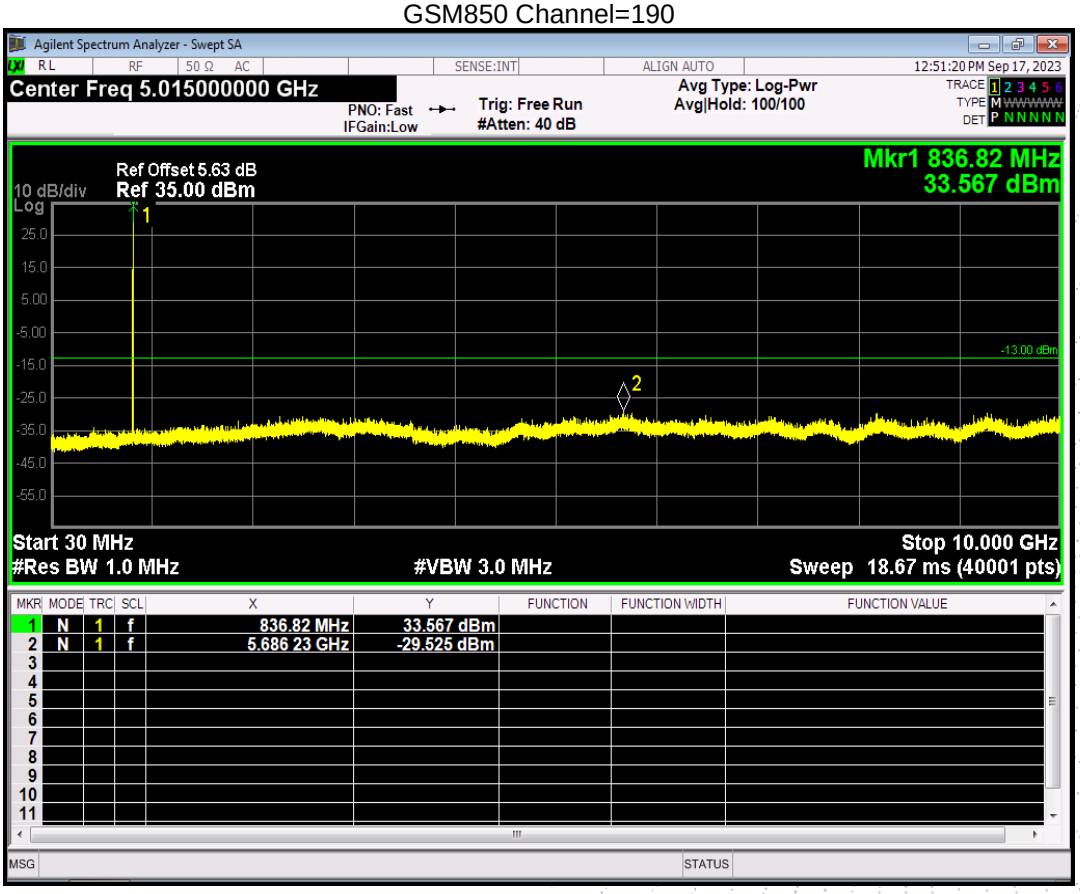


GSM850 Channel=190



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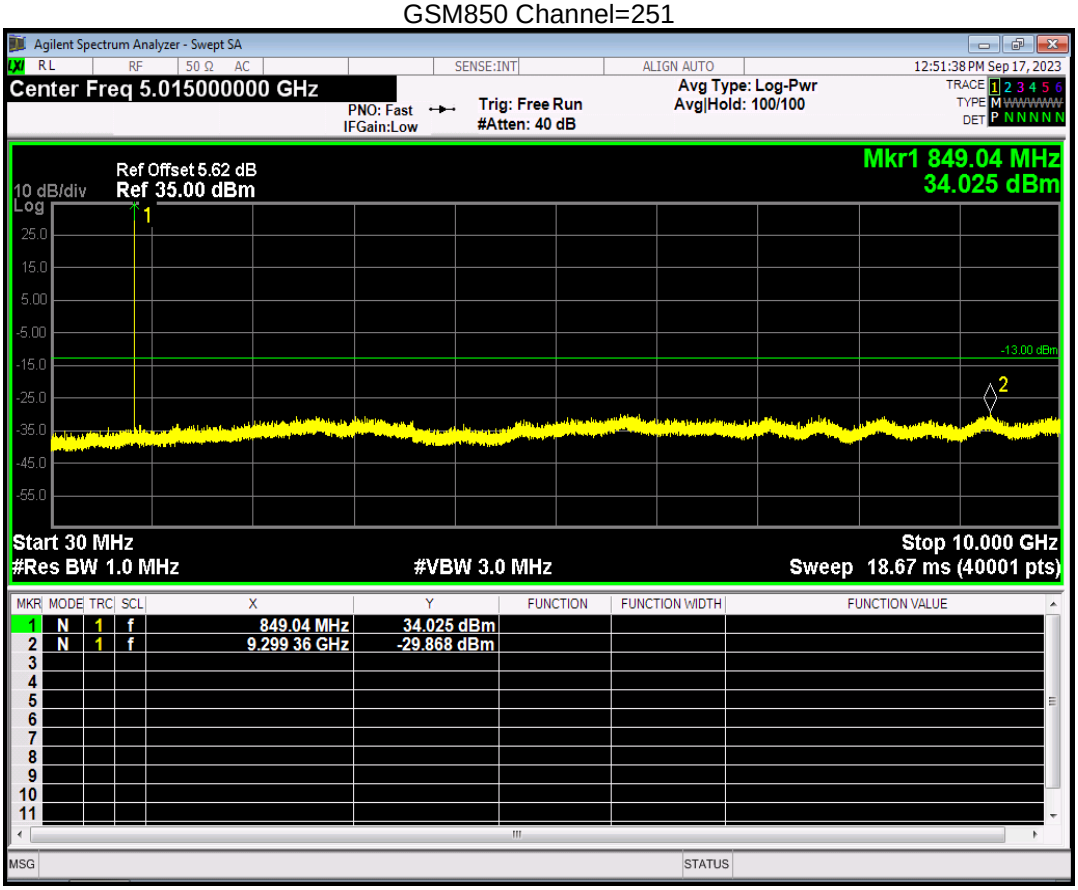

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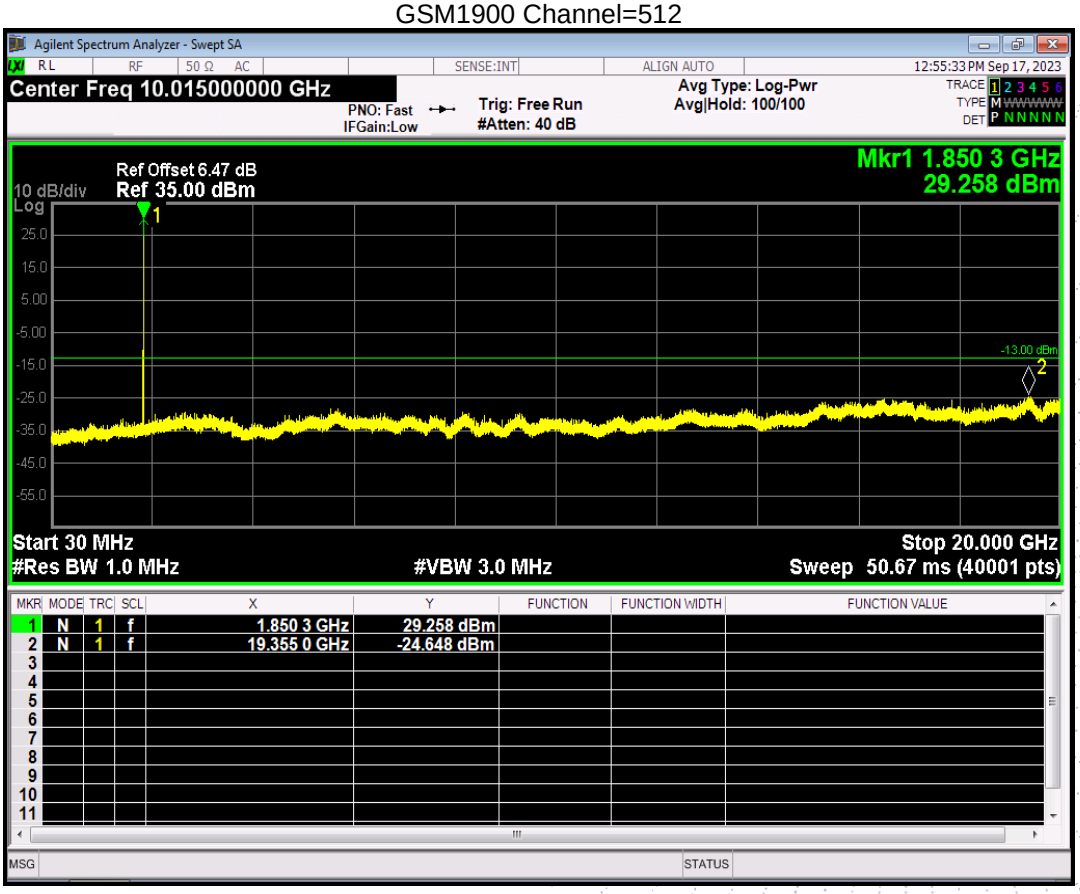
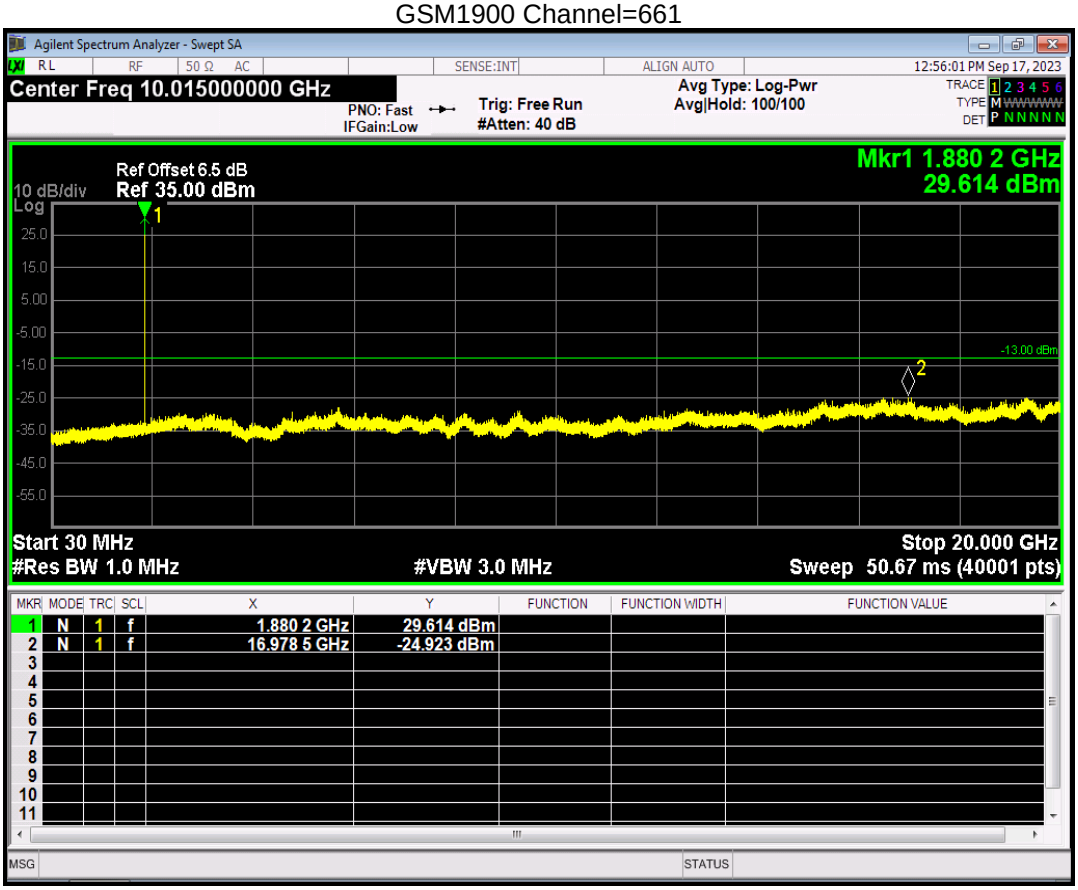


GSM1900 Channel=661



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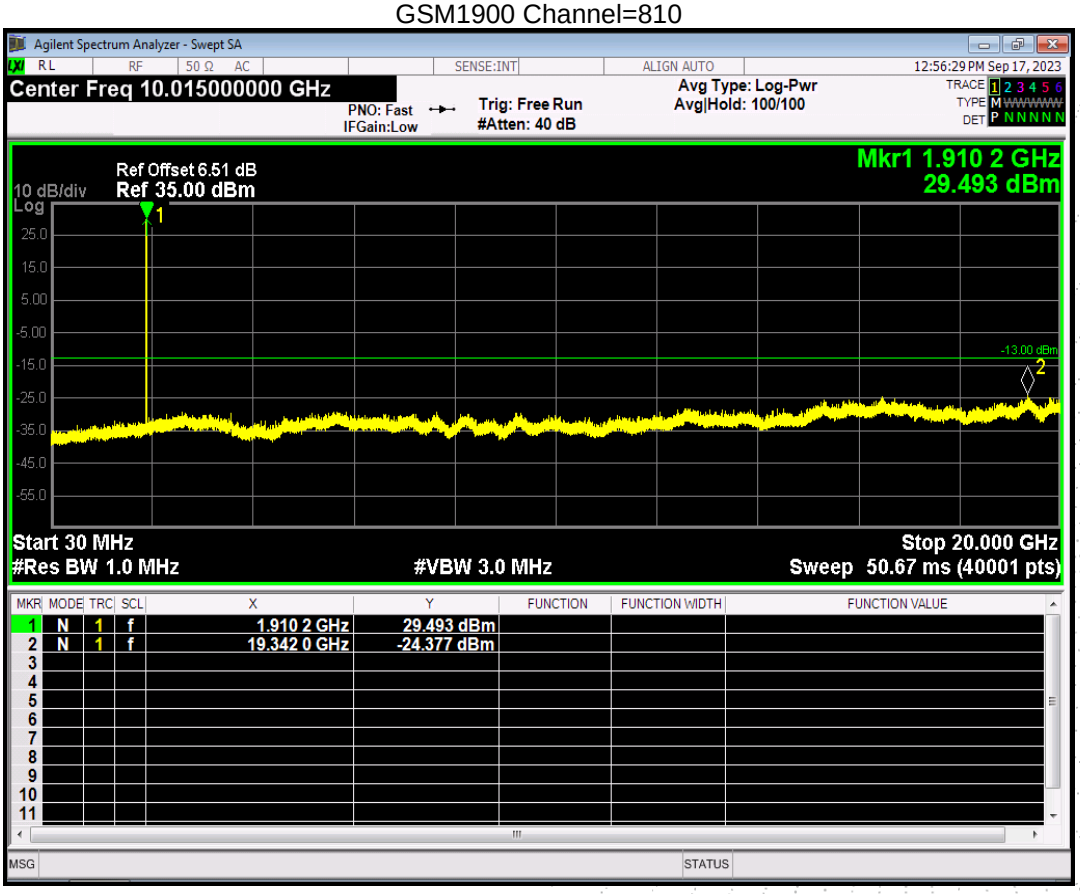

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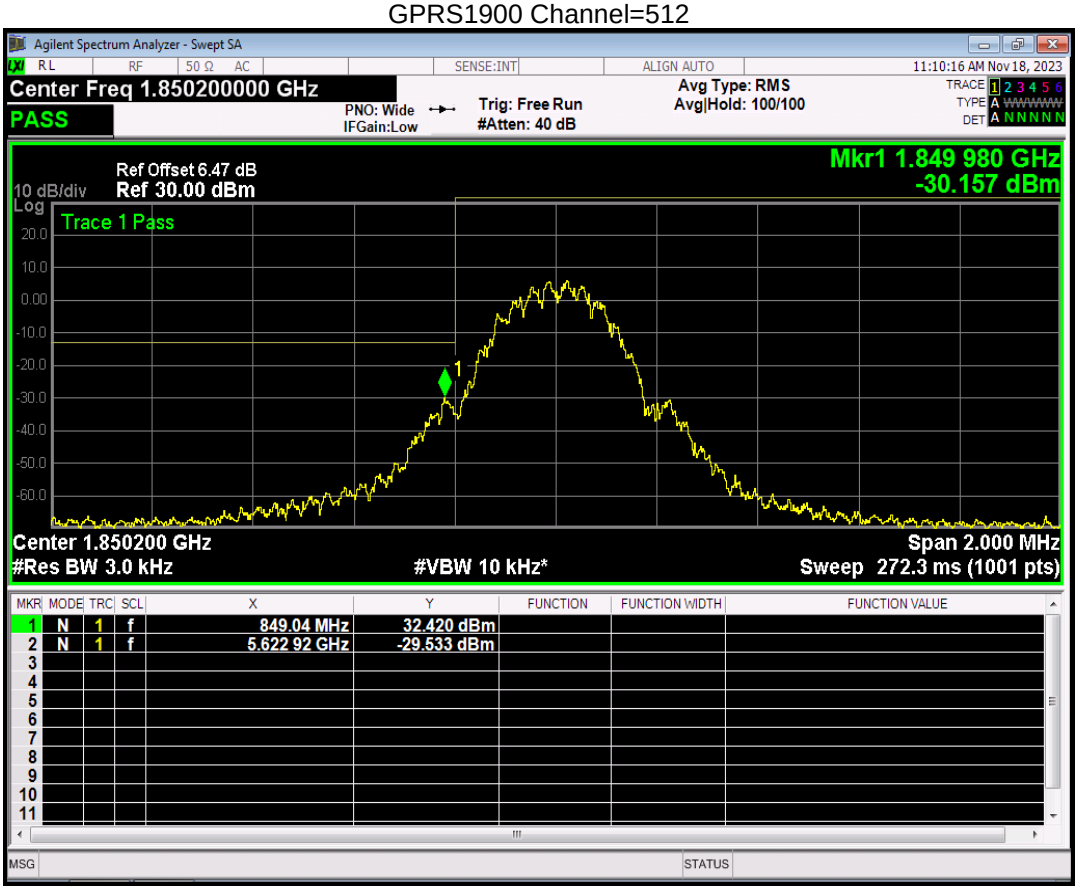

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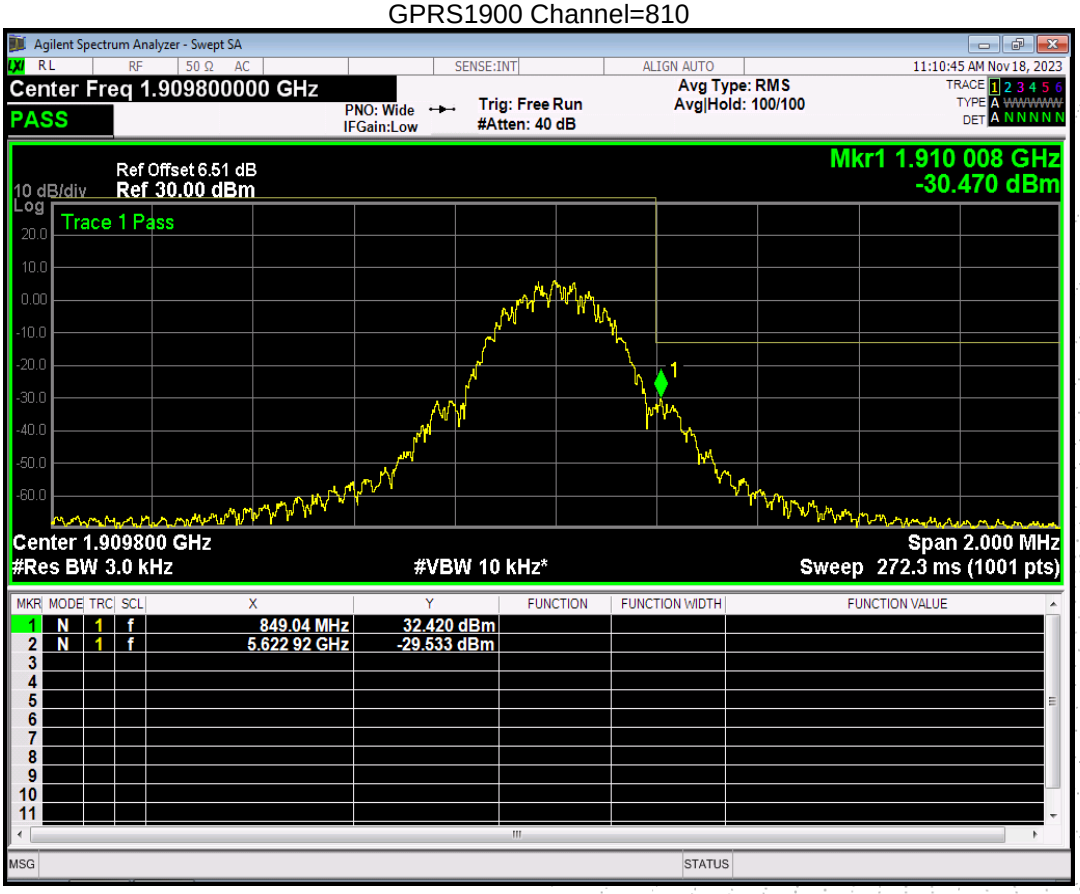

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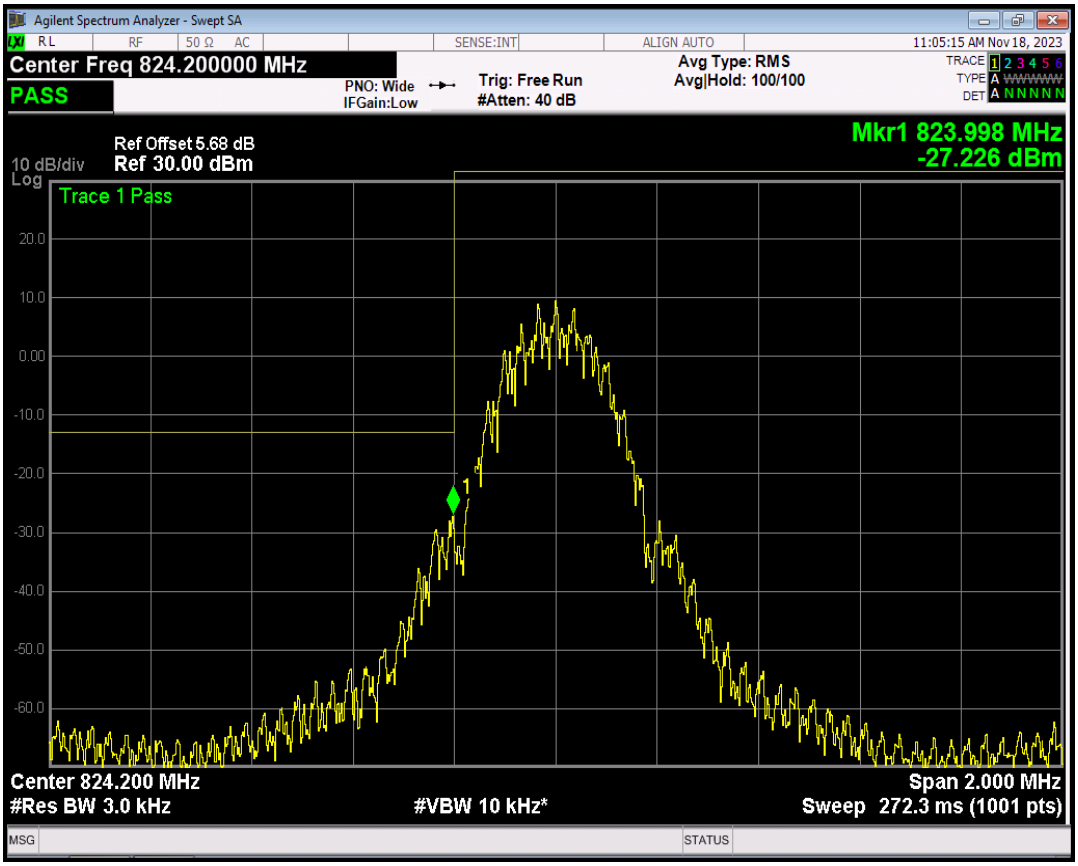

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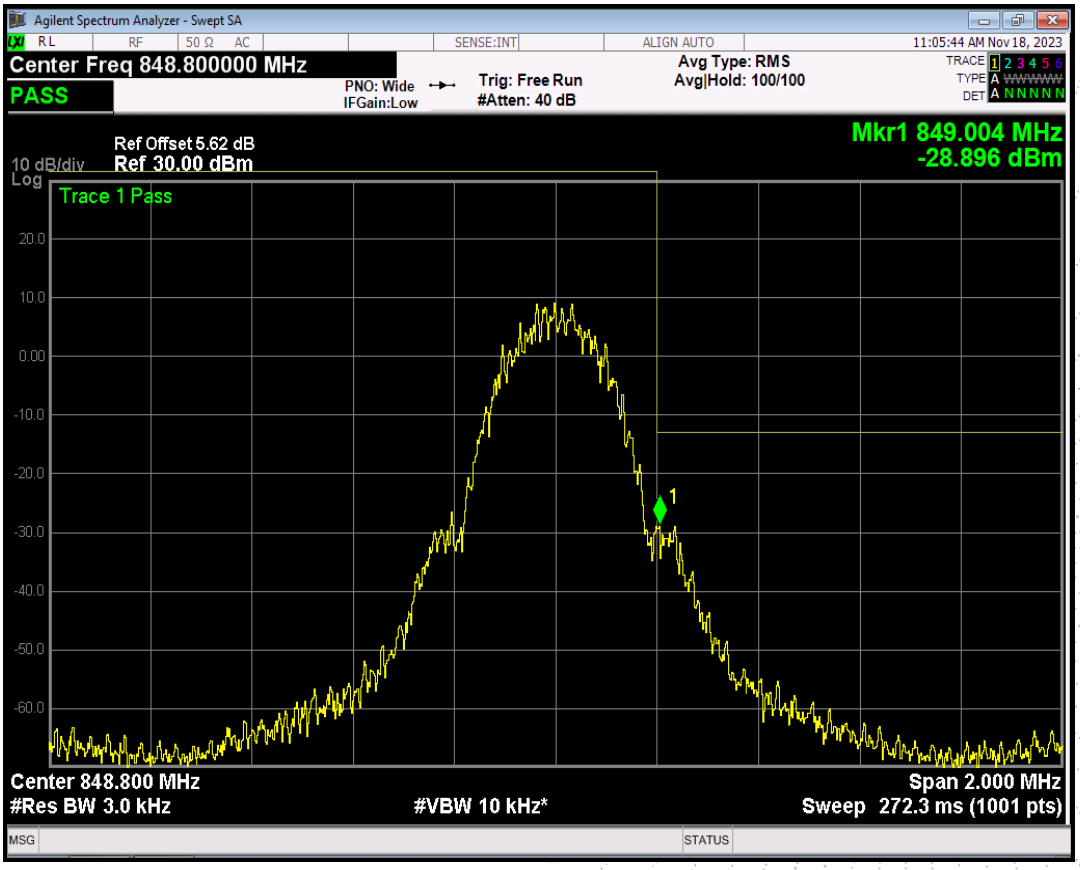

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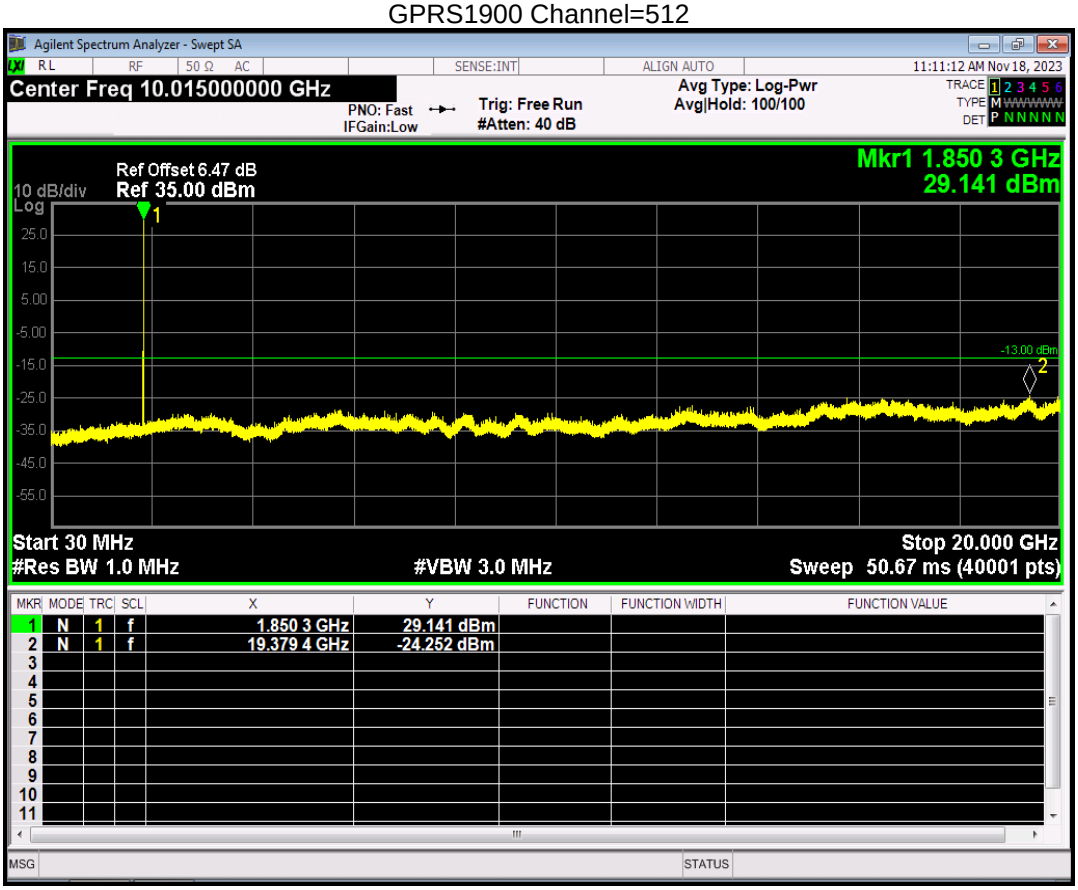

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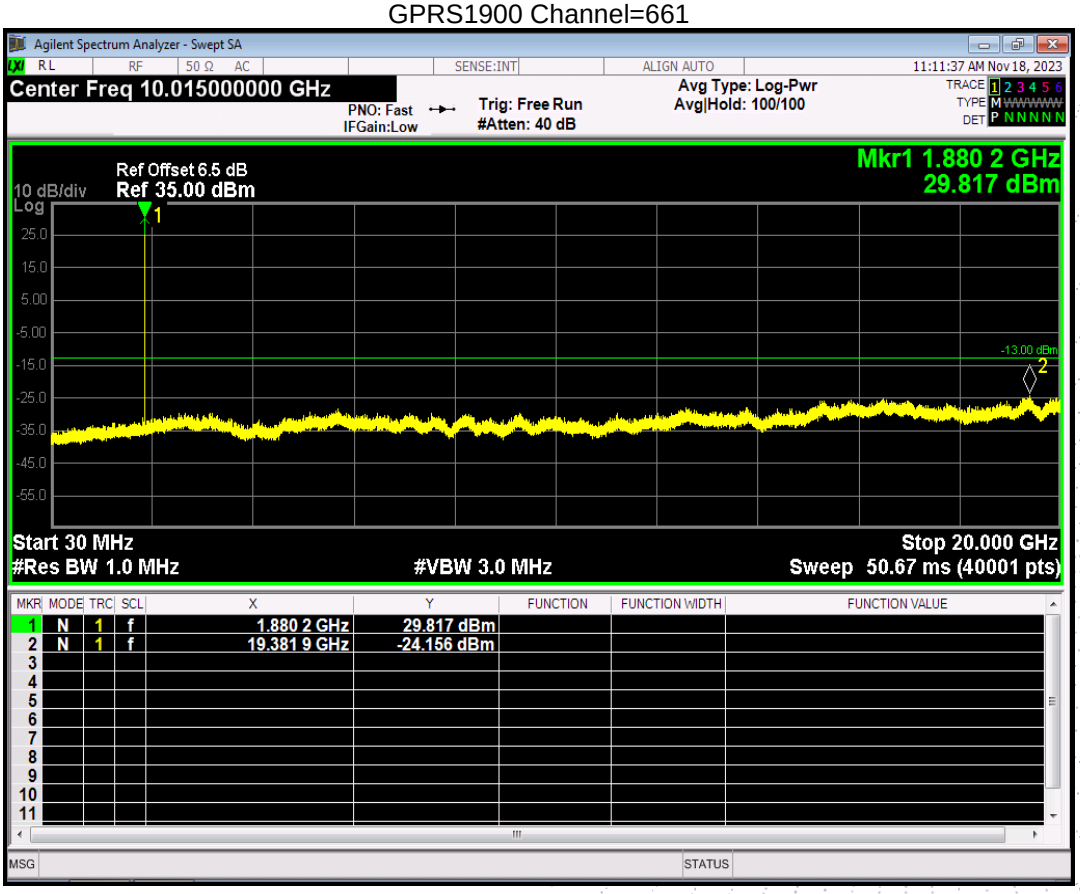

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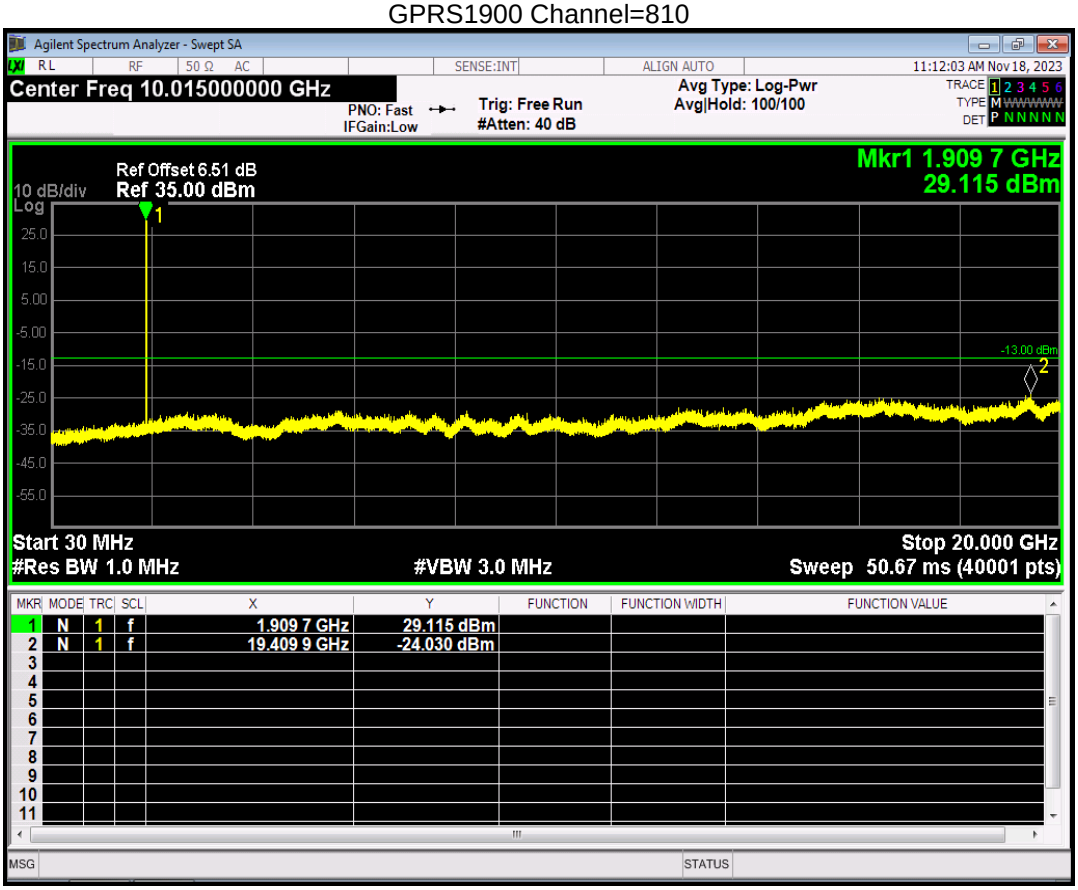

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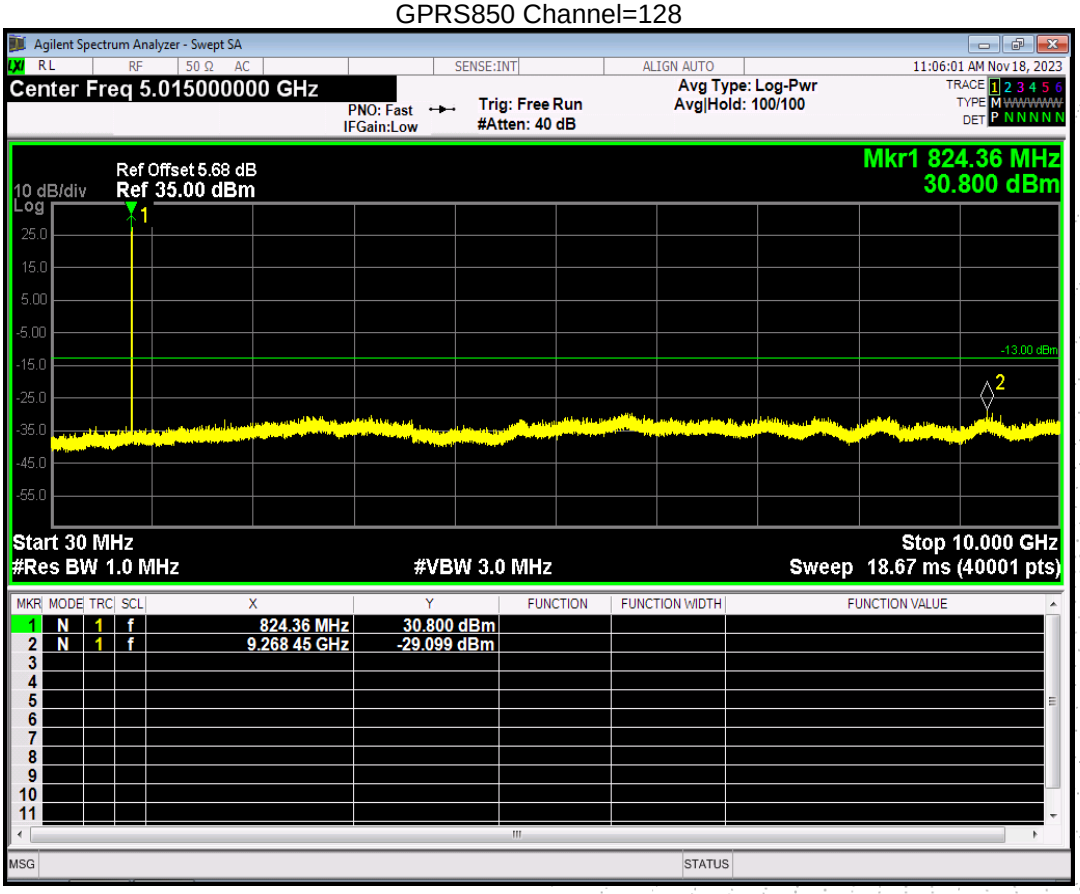

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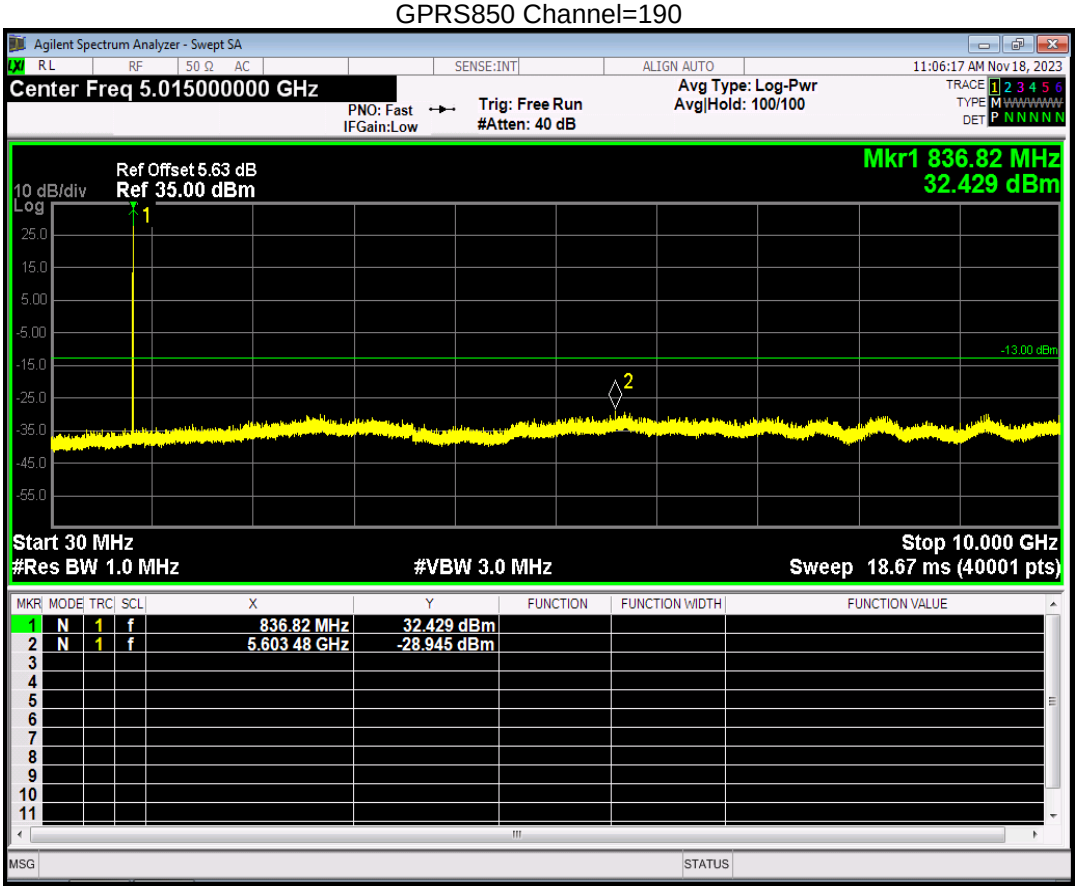

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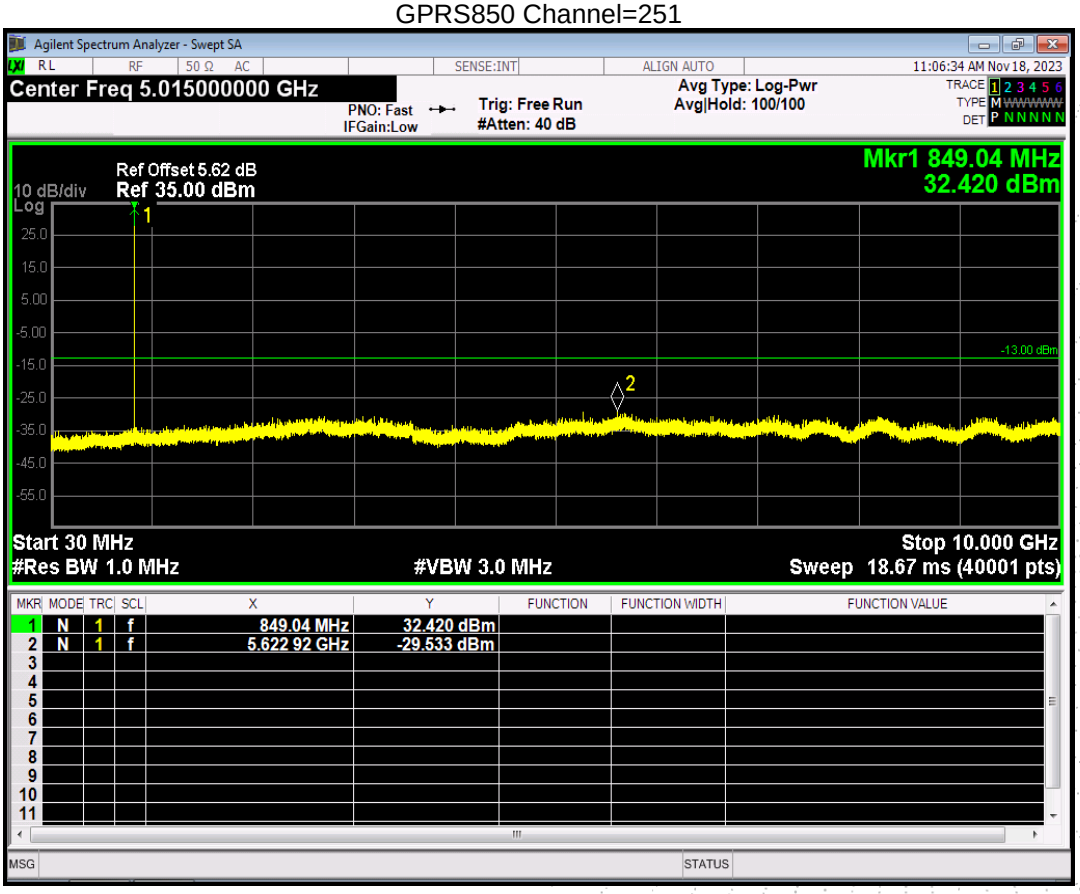

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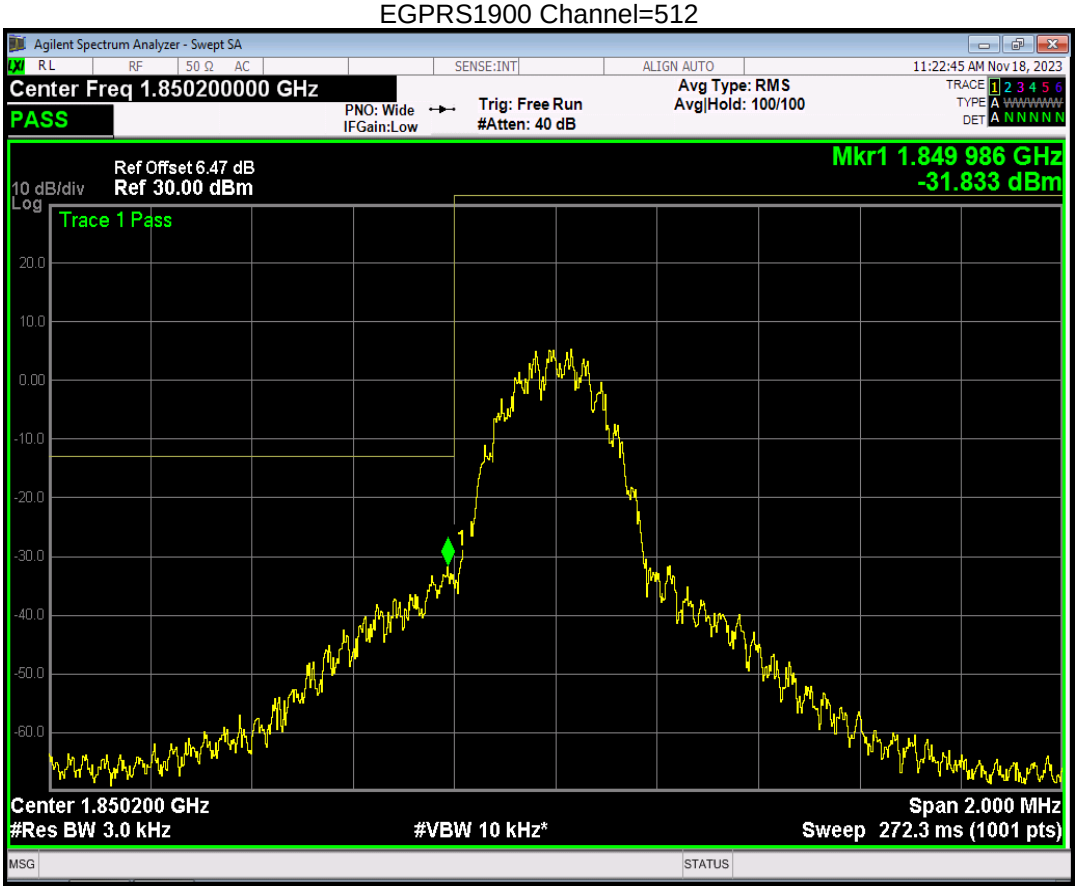

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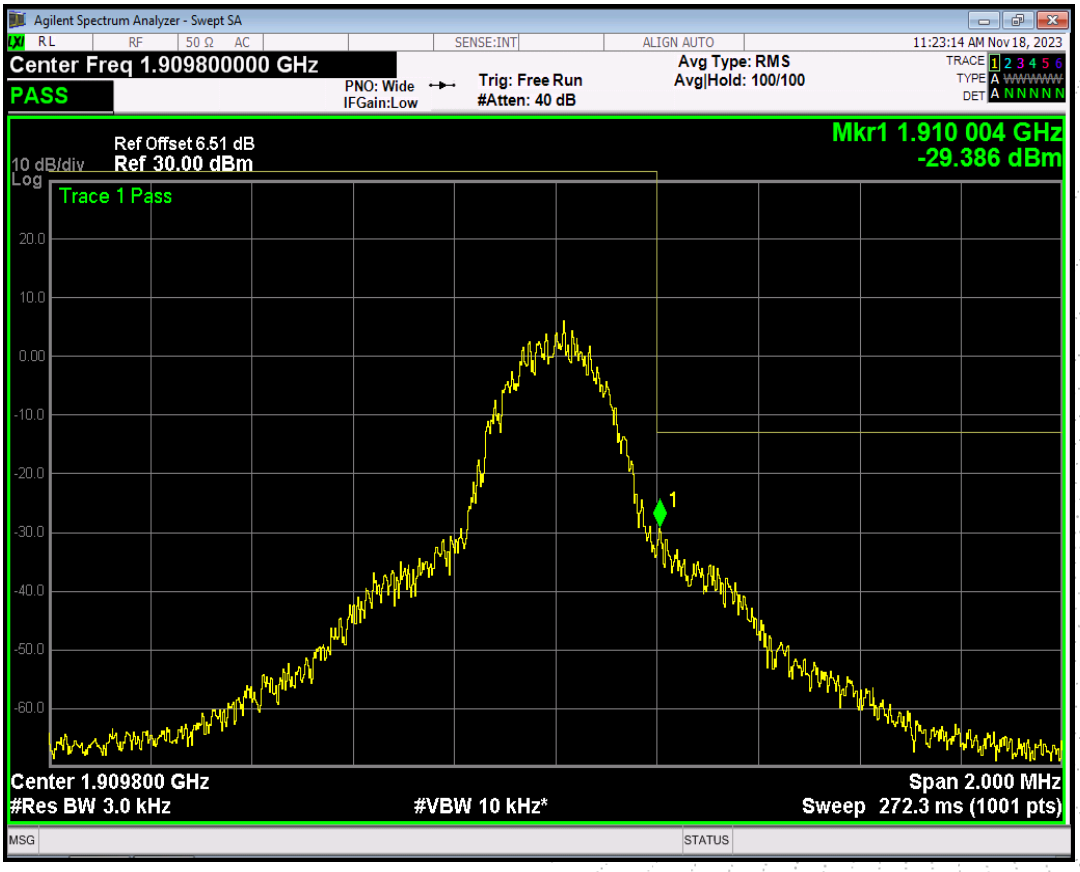

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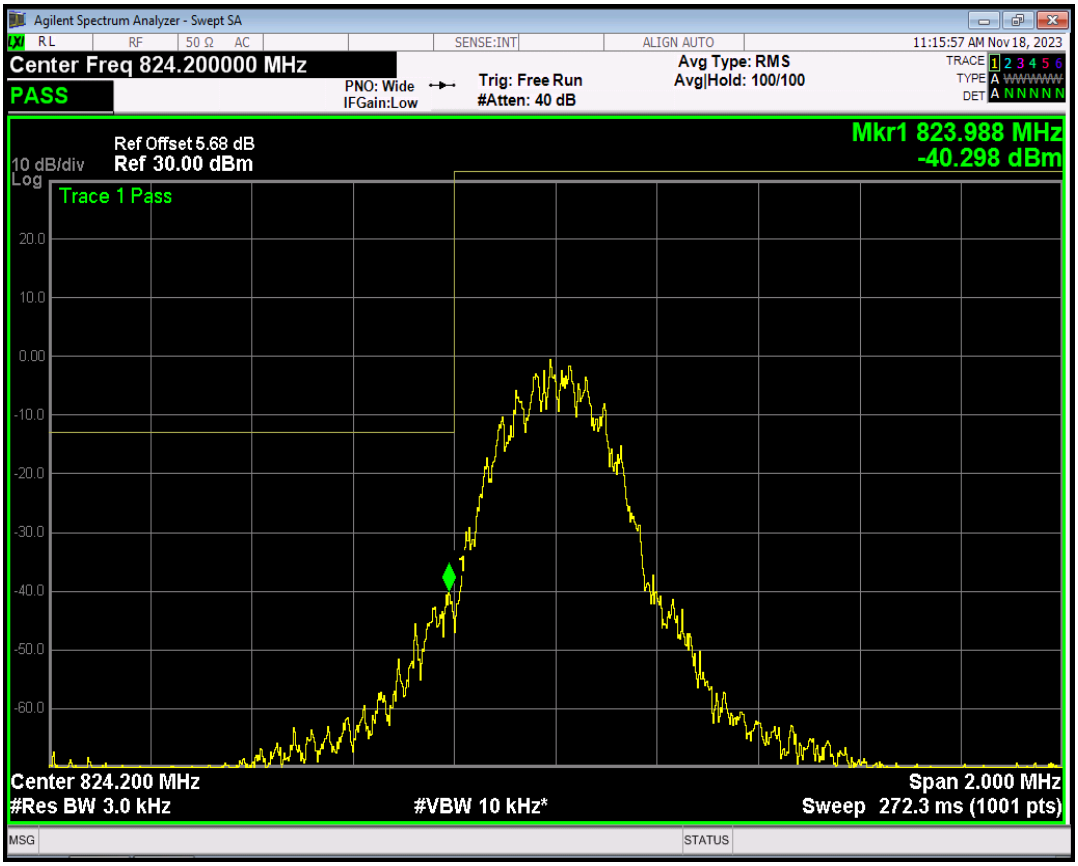

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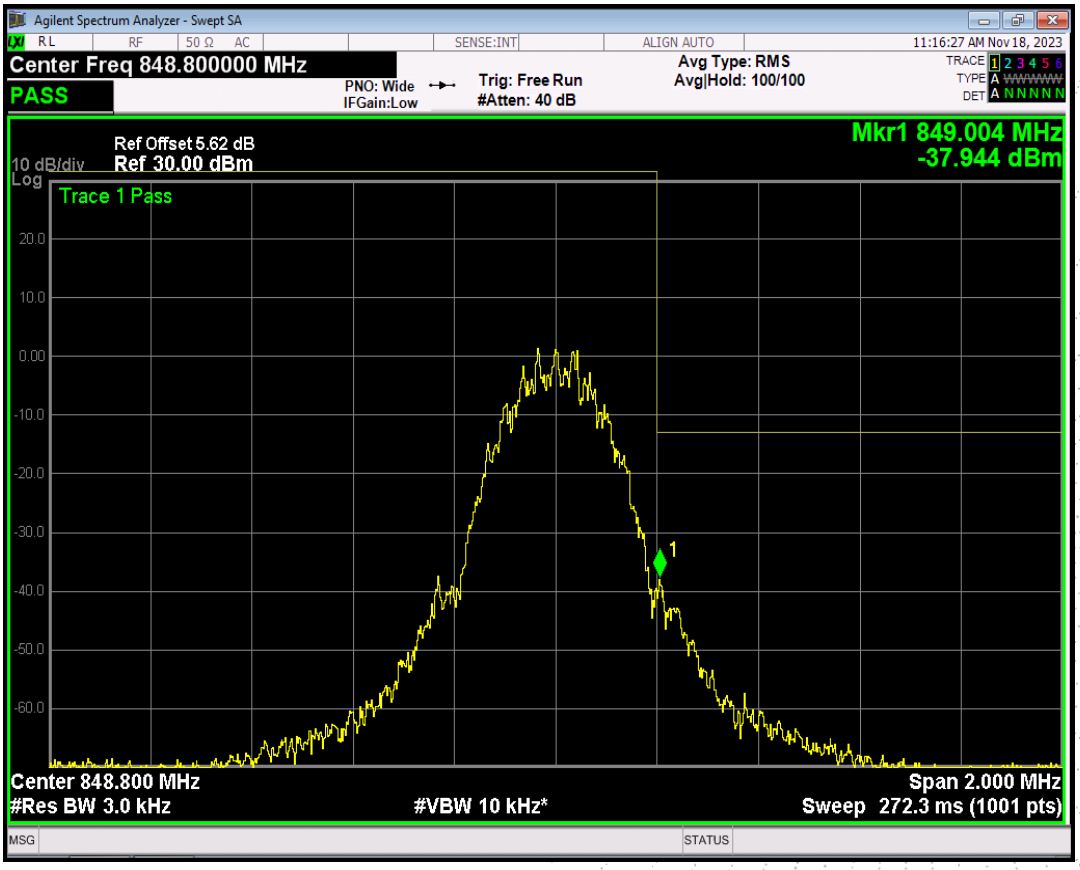

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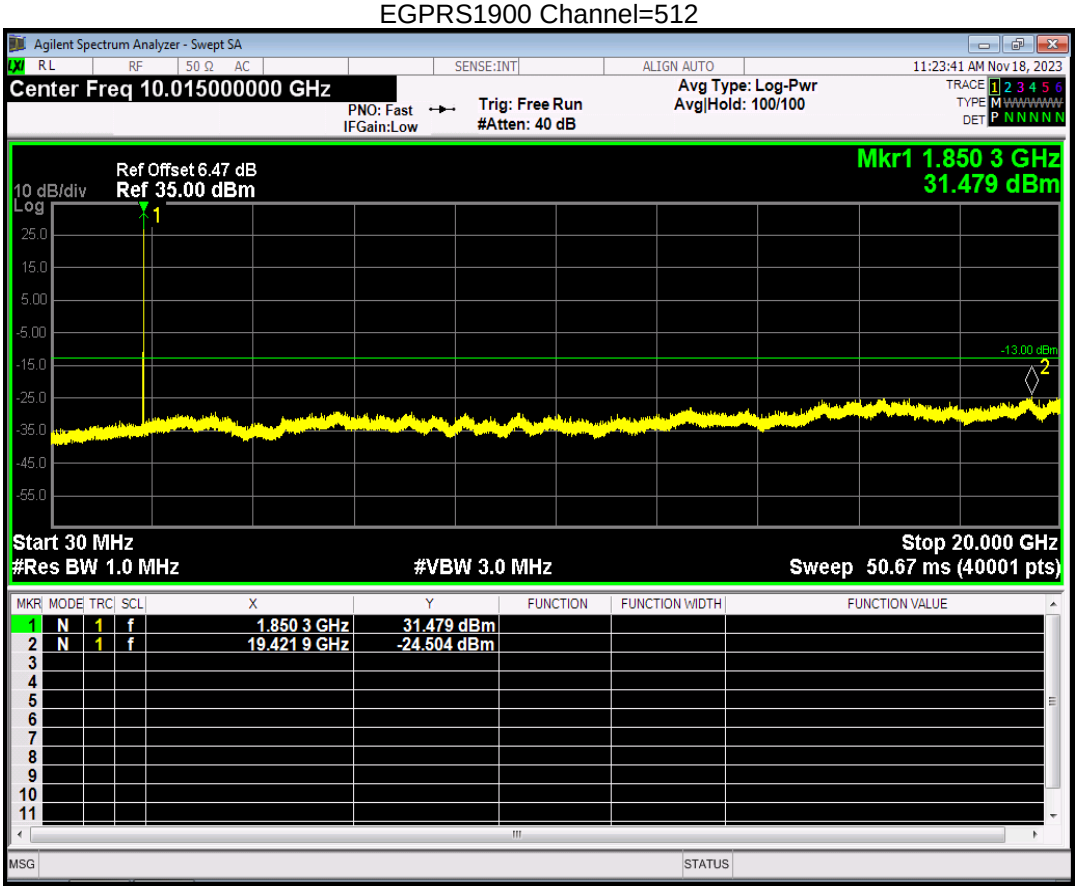

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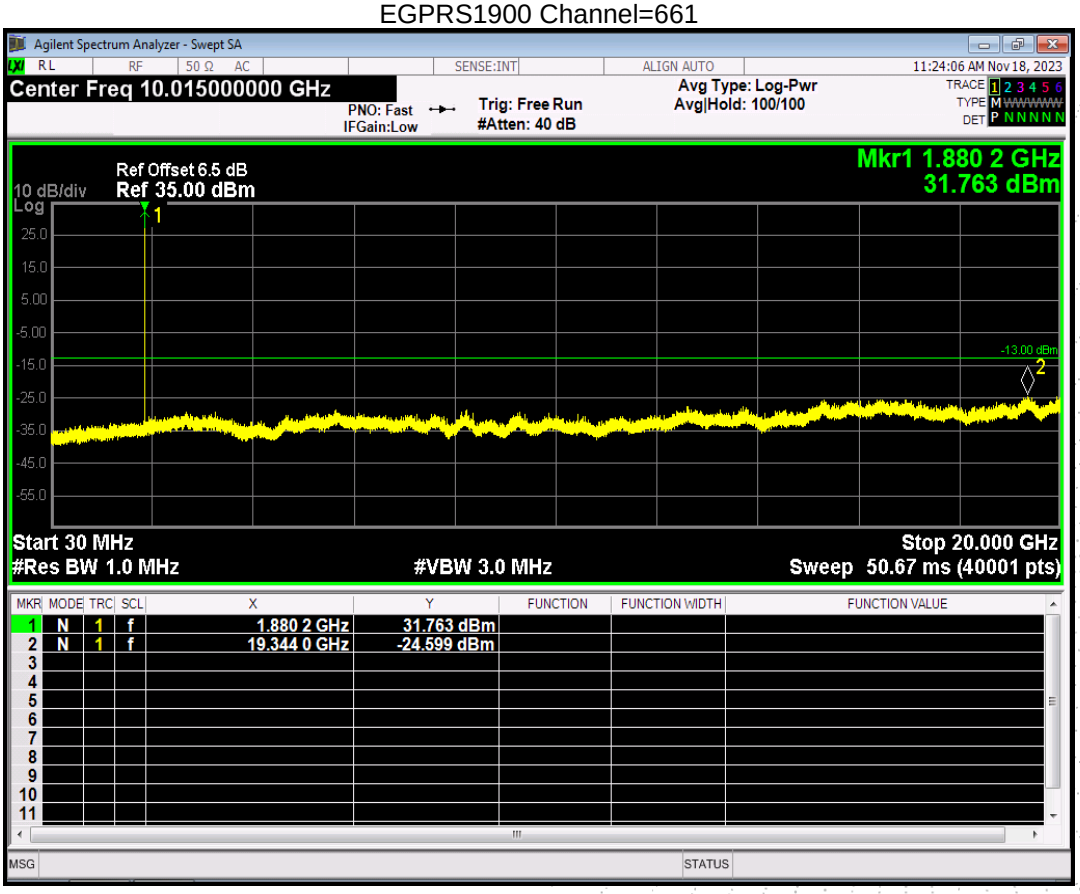

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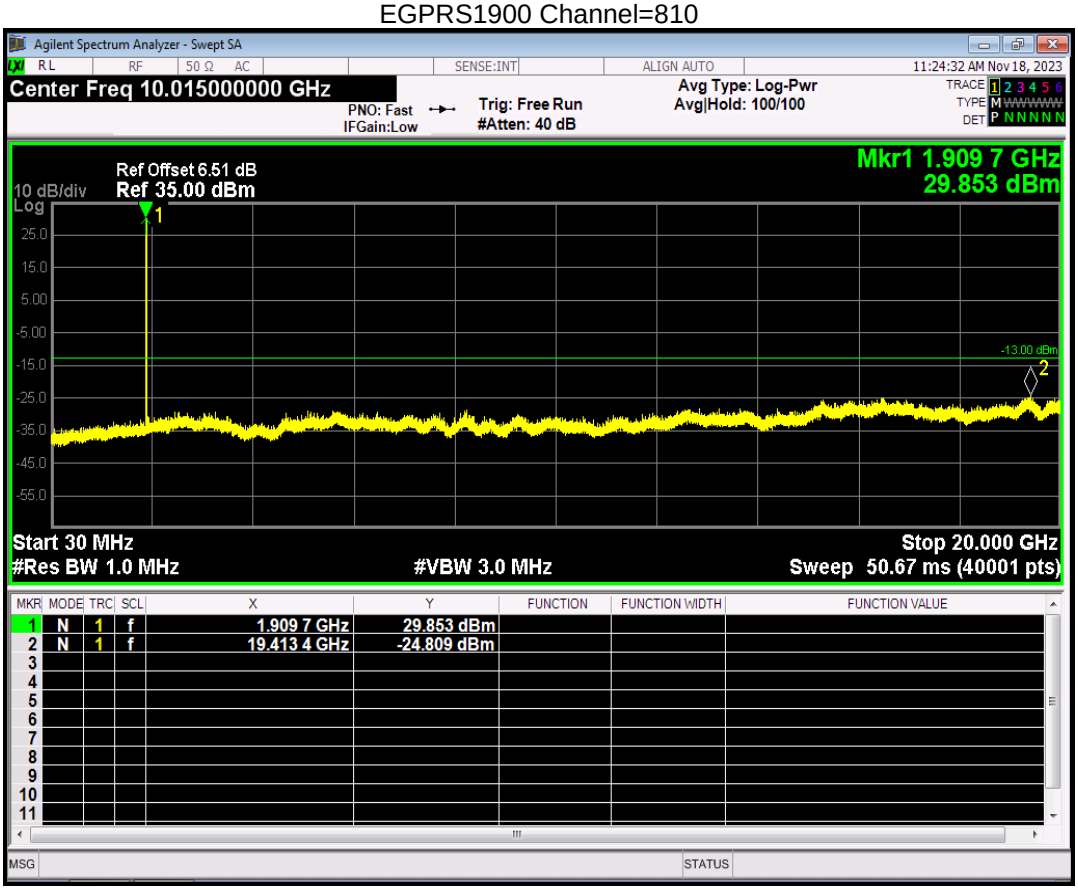

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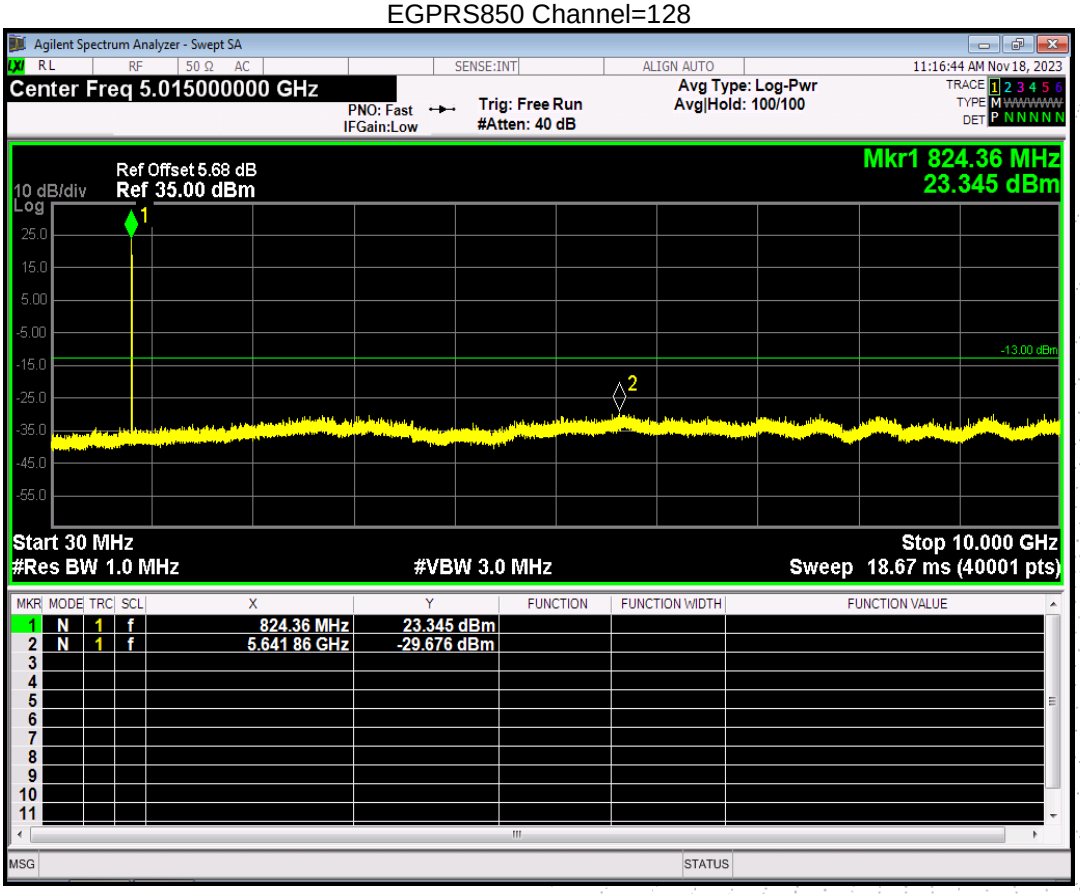

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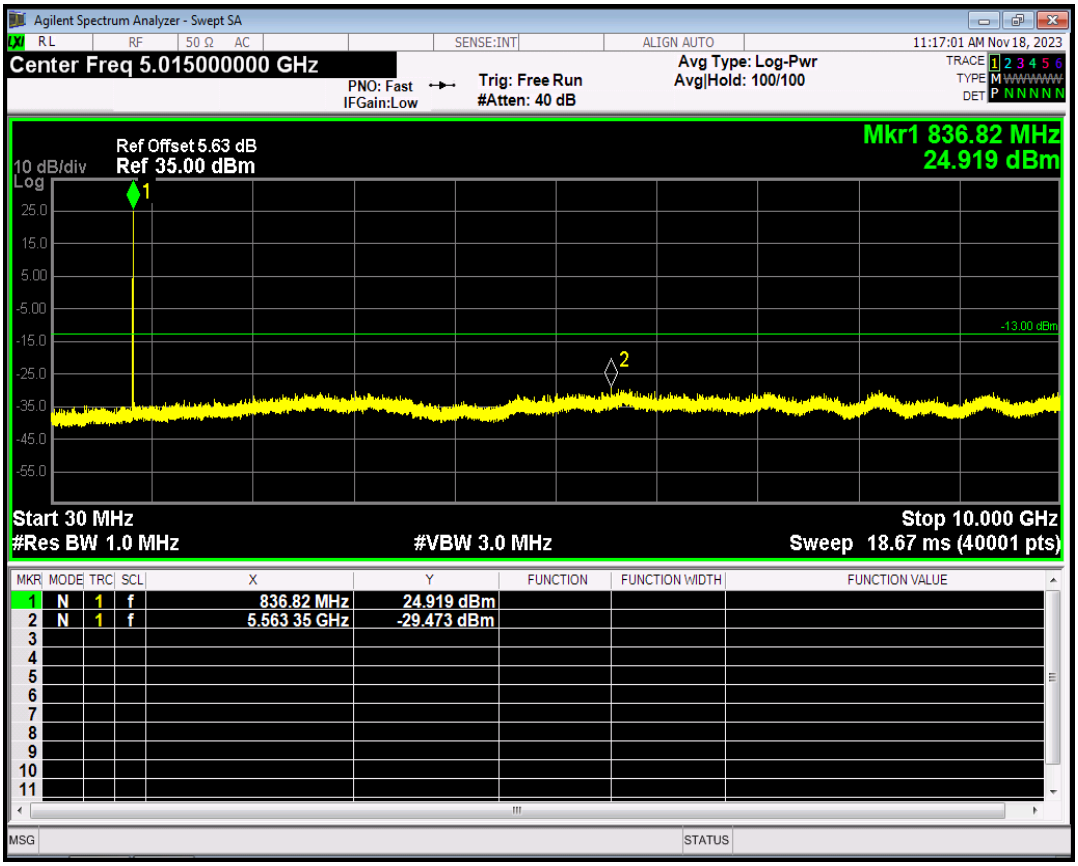

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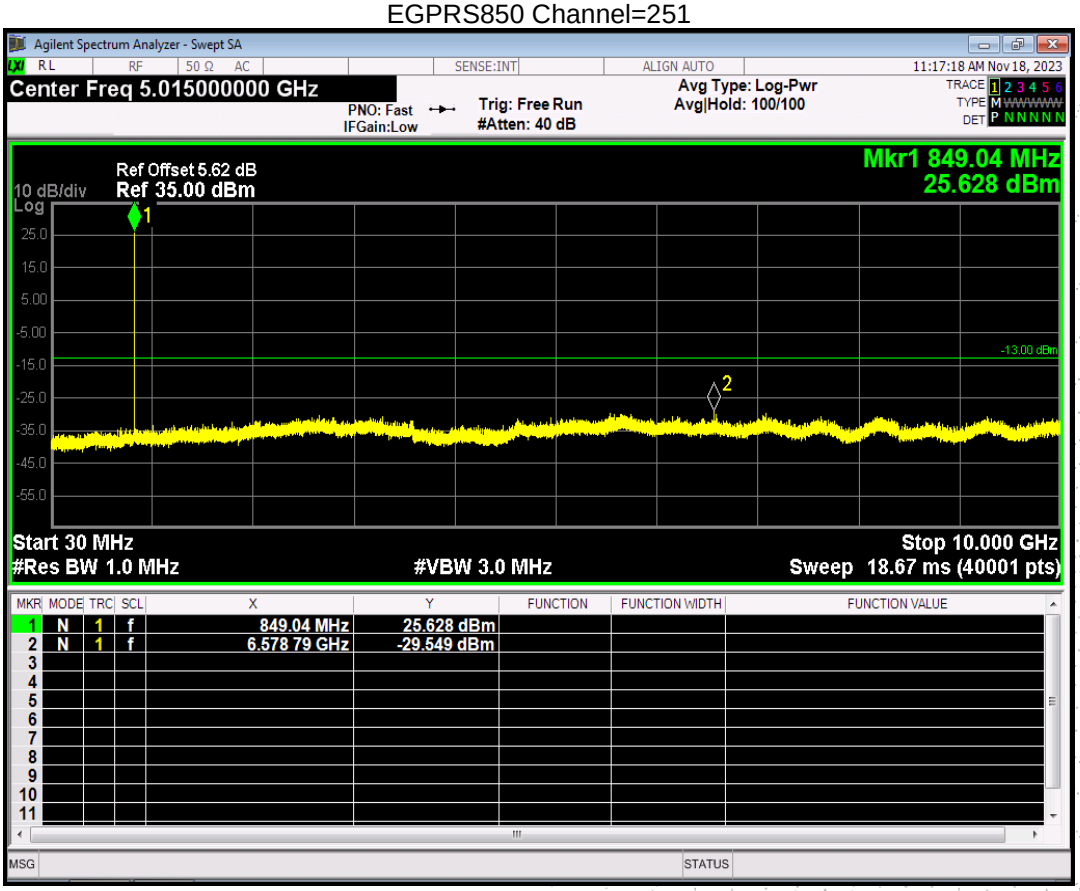
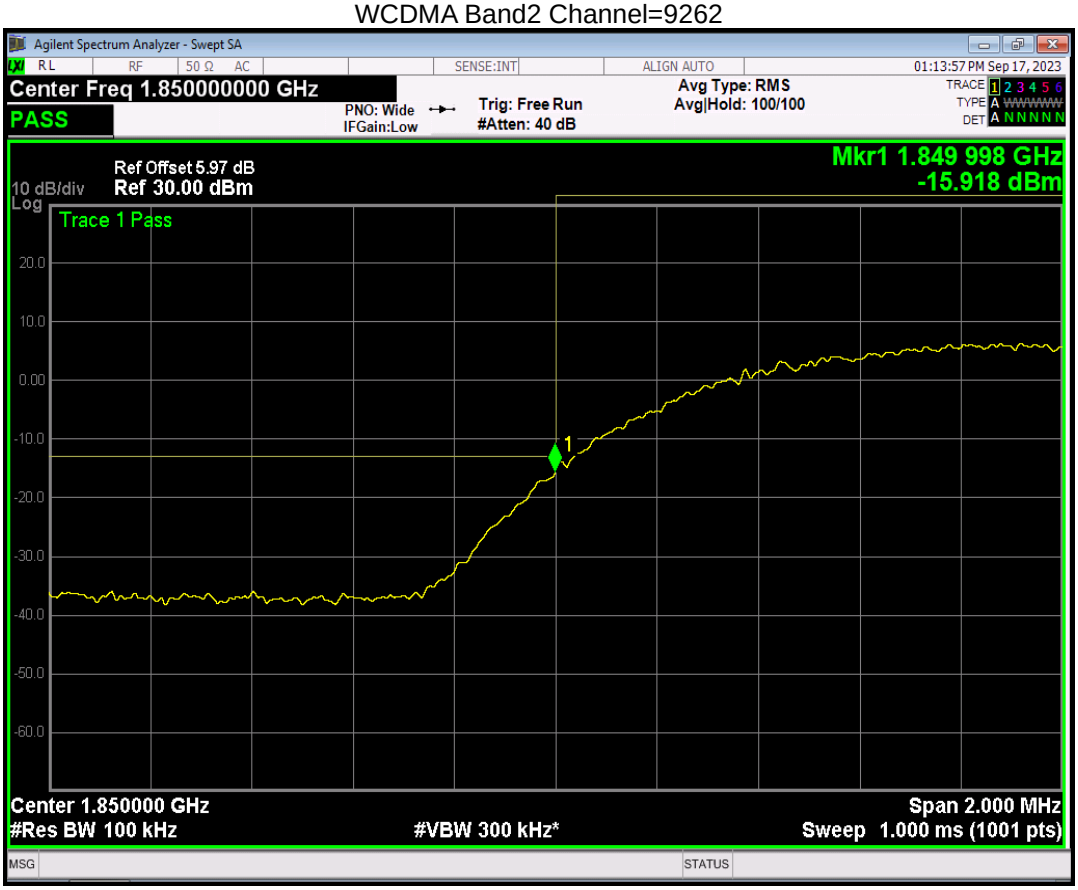
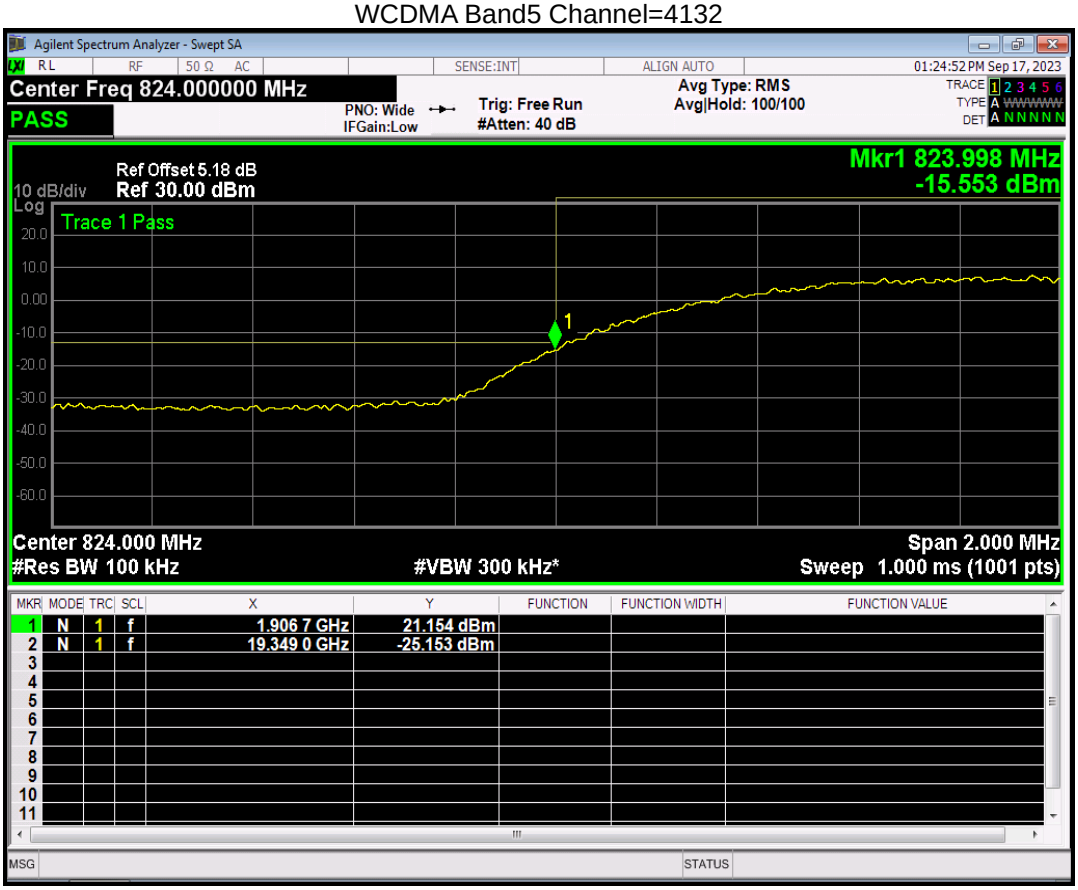


WCDMA Band2 Channel=9262

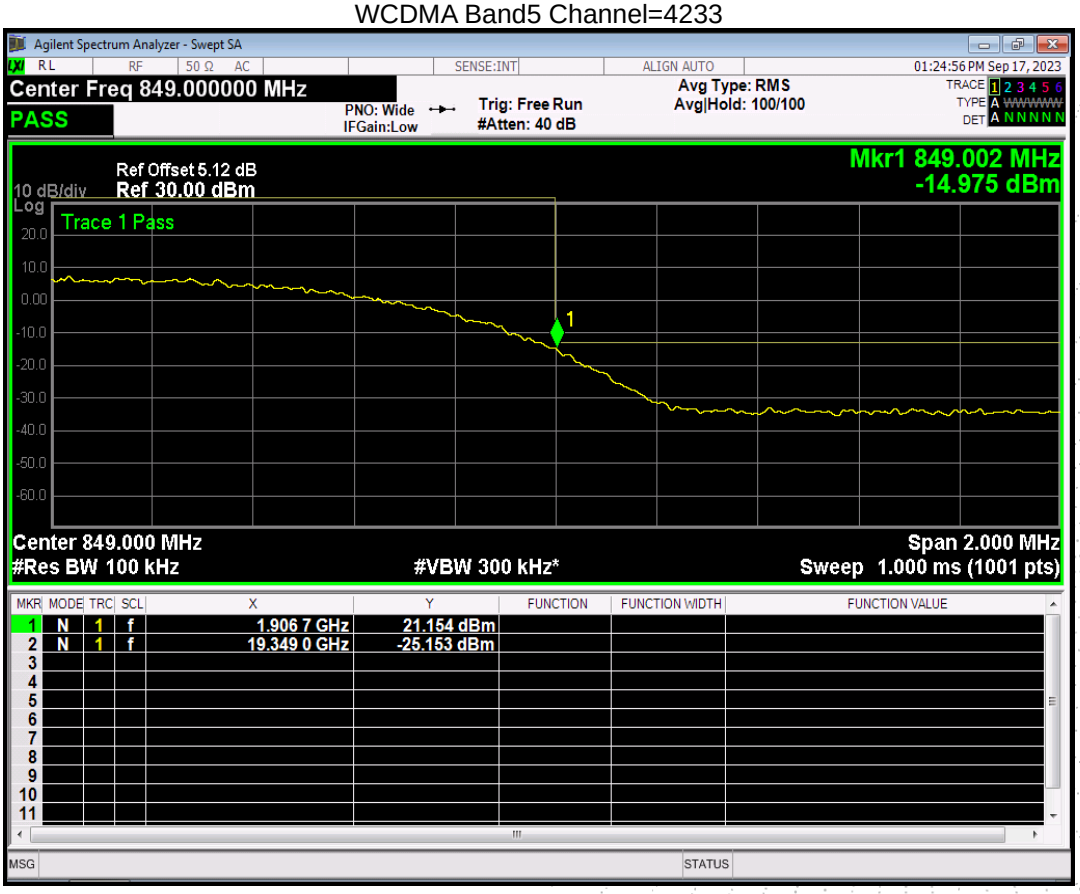


WCDMA Band2 Channel=9538

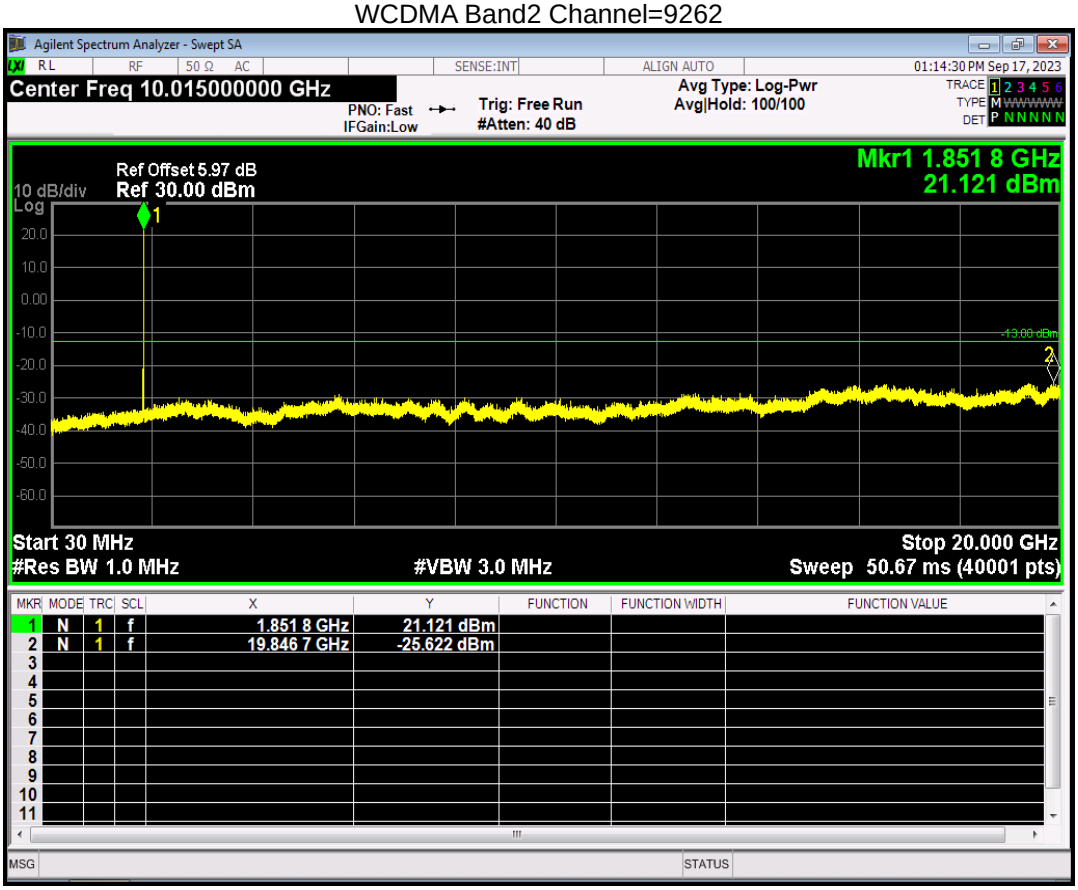
WCDMA Band5 Channel=4132



WCDMA Band5 Channel=4233



WCDMA Band2 Channel=9262



WCDMA Band2 Channel=9400