



# RF TEST REPORT

Product Name: 4G PHONE

Model Name: Q4

FCC ID: 2A8MA-Q4

Issued For : QUALITY TECNOLOGY SAS

STREET 13 # 15 61 OF 501, CENTRO DE NEGOCIOS AV  
COLON, BOGOTA - COLOMBIA

Issued By : Shenzhen LGT Test Service Co., Ltd.

Room 205, Building 13, Zone B, Chen Hsong Industrial Park,  
No.177 Renmin West Road, Jinsha Community, Kengzi Street,  
Pingshan New District, Shenzhen, China

Report Number: LGT22H040RF02

Sample Received Date: August 31, 2022

Date of Tested: August 31, 2022 – October 27, 2022

Date of Issue: October 28, 2022

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## TEST REPORT CERTIFICATION

**Applicant** QUALITY TECNOLOGY SAS  
**Address** STREET 13 # 15 61 OF 501, CENTRO DE NEGOCIOS AV  
COLON, BOGOTA - COLOMBIA  
**Manufacturer** shenzhen 7 step technology co., limited  
**Address** Rm2205-2210, Baotong Building, 13th District, Bao'an  
Shenzhen, China  
**Product Name** 4G PHONE  
**Trade Mark** 7 STEP  
**Model Name** Q4  
**Sample Status:** Normal

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC Part 22H and 24E, 27 KDB 971168 D01 v03r01, ANSI C63.26( 2015)	PASS

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### **Revision History**

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	October 28, 2022	LGT22H040RF02	ALL	Initial Issue

## 1 SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

The radiated emission testing was performed according to the procedures of KDB 971168 D01 v03r01 and ANSI C63.26-2015

FCC Rules	Test Description	Test Limit	Test Result	Reference
2.1046	Conducted Output Power	Reporting Only	PASS	
22.913d 24.232d	Peak-to-Average Ratio	< 13 dB	PASS	
2.1046 22.913 24.232 27.50	Effective Radiated Power/Equivalent Isotropic Radiated Power	< 7 Watts max. ERP(Part 22) < 2 Watts max. EIRP(Part 24) < 1 Watts max. EIRP(Part 27)	PASS	
2.1049 22.917 24.238 27.53	Occupied Bandwidth	Reporting Only	PASS	
2.1055 22.355 24.235 27.54	Frequency Stability	< 2.5 ppm (Part 22) Emission must remain in band (Part 24) Emission must remain in band (Part 27)	PASS	
2.1051 22.917 24.238 27.53	Spurious Emission at Antenna Terminals	< $43+10\log_{10}(P[\text{Watts}])$	PASS	
2.1053 22.917 24.238 27.53	Field Strength of Spurious Radiation	< $43+10\log_{10}(P[\text{Watts}])$	PASS	
2.1051 22.917 24.238 27.53	Band Edge	< $43+10\log_{10}(P[\text{Watts}])$	PASS	

## 2 INTRODUCTION

### 2.1 TEST FACTORY

Company Name:	Shenzhen LGT Test Service Co., Ltd.
Address:	Room 205, Building 13, Zone B, Chen Hsong Industrial Park, No.177 Renmin West Road, Jinsha Community, Kengzi Street, Pingshan New District, Shenzhen, China
Accreditation Certificate	FCC Registration No.: 746540
	A2LA Certificate No.: 6727.01

### 2.2 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4-2014. All measurement uncertainty values are shown with a coverage factor of  $k = 2$  to indicate a 95% level of confidence.

No.	Item	Uncertainty
1	RF output power, conducted	$\pm 0.68\text{dB}$
2	Unwanted Emissions, conducted	$\pm 2.988\text{dB}$
3	All emissions, radiated 9K-30MHz	$\pm 2.84\text{dB}$
4	All emissions, radiated 30M-1GHz	$\pm 4.39\text{dB}$
5	All emissions, radiated 1G-6GHz	$\pm 5.10\text{dB}$
6	All emissions, radiated >6G	$\pm 5.48\text{dB}$
7	Conducted Emission (9KHz-150KHz)	$\pm 2.79\text{dB}$
8	Conducted Emission (150KHz-30MHz)	$\pm 2.80\text{dB}$

### 3. PRODUCT INFORMATION

Product Name	4G PHONE
Trade Name	7 STEP
Model Name	Q4
Series Model	N/A
Model Difference	N/A
Tx Frequency:	GSM/GPRS: 850: 824 MHz ~ 849MHz 1900: 1850 MHz ~ 1910MHz WCDMA: Band V: 824 MHz ~ 849 MHz Band II: 1850 MHz ~ 1910 MHz
Rx Frequency:	GSM/GPRS/EDGE: 850: 869 MHz ~ 894 MHz 1900: 1930 MHz ~ 1990MHz WCDMA: Band V: 869 MHz ~ 894 MHz Band II: 1930 MHz ~ 1990 MHz
Max RF Output Power:	GSM850:30.03dBm, PCS1900:27.68dBm GPRS850(1-Slot):30.08dBm, GPRS1900(1-Slot):27.67dBm GPRS850(2-Slot): 28.37dBm, GPRS1900(2-Slot):25.07dBm GPRS850(3-Slot): 26.62dBm, GPRS1900(3-Slot):23.42dBm GPRS850(4-Slot):21.32dBm, GPRS1900(4-Slot):21.32dBm WCDMA Band II:20.04dBm WCDMA Band V:19.18dBm
Modulation Characteristics:	GMSK for GSM/GPRS WCDMA: QPSK; HSDPA: QPSK/16QAM; HSUPA: BPSK
SIM Card:	SIM 1 and SIM 2 is a chipset unit and tested as single chipset, SIM 1 is used to tested.
Antenna:	PIFA
Antenna gain:	2G 850: -1.2 dBi 2G 1800: -0.85 dBi 3G 850: -1.2 dBi 3G 1900: -0.85 dBi
Battery parameter:	Capacity: 1200mAh 4.44Wh Rated Voltage: 3.7 V Charge Limit Voltage:4.2V
Adapter:	Input: 100-240V 50/60Hz 0.15A Ouptut: 5V@0.5A
GPRS/EDGE Class:	Multi-Class12
Extreme Vol. Limits:	4.2V to 3.5V (Nominal 3.8V)
Extreme Temp. Tolerance:	-30℃ to +50℃
Hardware version number:	T280_MB_V2.1

Software version number:	UMS9117_T280P2_KYT_F4_SOS_V01_20220816
<p><i>** Note: The High Voltage 4.2 V and Low Voltage 3.5V was declared by manufacturer, The EUT couldn't be operate normally with higher or lower voltage, the antenna information refer to the manufacturer provide report, applicable only to the tested sample identified in the report.</i></p>	

#### 4 TEST CONFIGURATION OF EQUIPMENT UNDER TEST

Antenna port conducted and radiated test items were performed according to KDB 971168 D01 and ANSI C63.26 2015 Power Meas. License Digital Systems with maximum output power.

Radiated measurements were performed with rotating EUT in different three orthogonal test planes to find the maximum emission.

Radiated emissions were investigated as following frequency range:

1. 30 MHz to 10th harmonic for GSM850 and WCDMA Band V.
2. 30 MHz to 10th harmonic for GSM1900 and WCDMA Band II.

All modes and data rates and positions were investigated.

Test modes are chosen to be reported as the worst case configuration below:

	TEST MODES	
	RADIATED TCS	CONDUCTED TCS
BAND		
GSM 850	GSM LINK GPRS CLASS 12 LINK	GSM LINK GPRS CLASS 12 LINK
GSM 1900	GSM LINK GPRS CLASS 12 LINK	GSM LINK GPRS CLASS 12 LINK
WCDMA BAND V	RMC 12.2KBPS LINK	RMC 12.2KBPS LINK
WCDMA BAND II	RMC 12.2KBPS LINK	RMC 12.2KBPS LINK

## 5 MEASUREMENT INSTRUMENTS

Radiated Test equipment					
Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Until
EMI Test Receiver	R&S	ESU8	100372	2022.04.12	2023.04.11
Active loop Antenna	R&S	HFH2-Z2	POS871398181	2022.06.02	2024.06.01
Spectrum Analyzer	Kesight	N9010B	MY60242508	2022.04.29	2023.04.28
Bilog Antenna	SCHAFFNER	CBL6112B	2705	2022.06.05	2024.06.04
Horn Antenna	SCHWARZBECK	3115	10SL0060	2022.06.02	2024.06.01
Pre-amplifier(0.1M-3GHz)	HP	8447D	2727A05655	2022.04.11	2023.04.10
Pre-amplifier(1-26.5G)	Agilent	8449B	3008A4722	2022.04.13	2023.04.12
RE Cable (9K-1G)	N.A	R01	N.A	2022.05.05	2023.05.04
RE Cable (1-26G)	N.A	R02	N.A	2022.05.05	2023.05.04
Wireless Communications Test Set	R&S	CMW 500	137737	2022.04.29	2023.04.28
Temperature & Humidity	KTJ	TA218B	N.A	2022.05.05	2023.05.04
Testing Software	EMC-I_V1.4.0.3_SKET				

Conducted Test equipment					
Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Until
Signal Analyzer	keysight	N9010B	MY60242508	2022.04.29	2023.04.28
Wireless Communications Test Set	R&S	CMW 500	137737	2022.04.29	2023.04.28
MXG Vector Signal Generator	keysight	N5182B	MY59100717	2022.06.02	2023.06.01
RF Automatic Test system	MW	MW100-RFCB	MW220324LG-33	2022.04.29	2023.04.28
Temperature & Humidity	KTJ	TA218B	N.A	2022.05.05	2023.05.04
Temperature& Humidity test chamber	AISRY	LX-1000L	171200018	2022.05.10	2023.05.09
Attenuator	eastsheep	90db	N.A	2022.04.29	2023.04.28
Router	WAVLINK	WL-WN575A2	WL1512260336	N.C.R	N.C.R
Router	TP-LINK	TL-WR885N	1125074010735	N.C.R	N.C.R
Testing Software	MTS8200_V2.0.0.0				

Equipment with a calibration date of “NCR” shown in this list was not used to make direct calibrated measurements.

## 6 TEST ITEMS

### 6.1 CONDUCTED OUTPUT POWER

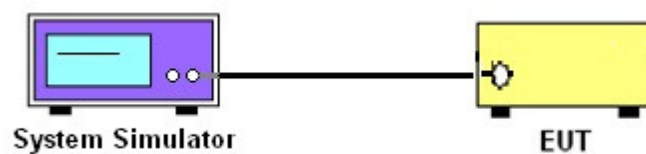
#### TEST OVERVIEW

A system simulator was used to establish communication with the EUT. Its parameters were set to enforce EUT transmitting at the maximum power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

#### TEST PROCEDURES

1. The transmitter output port was connected to the system simulator.
2. Set eut at maximum power through the system simulator.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record the power level from the system simulator.

#### TEST SETUP



#### TEST RESULT

Note: Test data See APPENDIX I.

## 6.2 PEAK TO AVERAGE RATIO

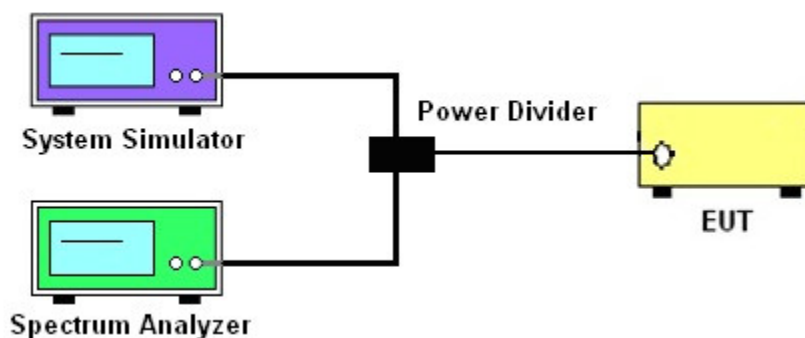
### TEST OVERVIEW

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.

### TEST PROCEDURES

1. The testing follows FCC KDB 971168 v03r01 section.
2. The eut was connected to the peak and av system simulator& spectrum analyzer.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Set the test probe and measure average power of the spectrum analysis,

### TEST SETUP



### TEST RESULT

Note: Test data See APPENDIX I.

### 6.3 TRANSMITTER RADIATED POWER (EIRP/ERP)

#### TEST OVERVIEW

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI C63.26 2015 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically polarized broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

#### TEST PROCEDURE

1. The testing follows FCC KDB 971168 Section 5.8 and ANSI C63.26-2015 Section 5.2.
2. The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.
3. 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.
4. The frequency range up to tenth harmonic of the fundamental frequency was investigated.
5. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a nonradiating cable. The absolute levels of the spurious emissions were measured by the substitution.
6. Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to ANSI C63.26-2015. The EUT was replaced by the substitution antenna at same location, and then a known power from S.G. was applied into the dipole antenna through a Tx cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna.  
 $EIRP = S.G \text{ Level} + \text{Gain} - \text{Cable loss}$ ;  $ERP = S.G \text{ Level} + \text{Gain} - \text{Cable loss} - 2.15$ .

#### TEST RESULT

Note: Test data See APPENDIX I.

## 6.4 OCCUPIED BANDWIDTH

### TEST OVERVIEW

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured.

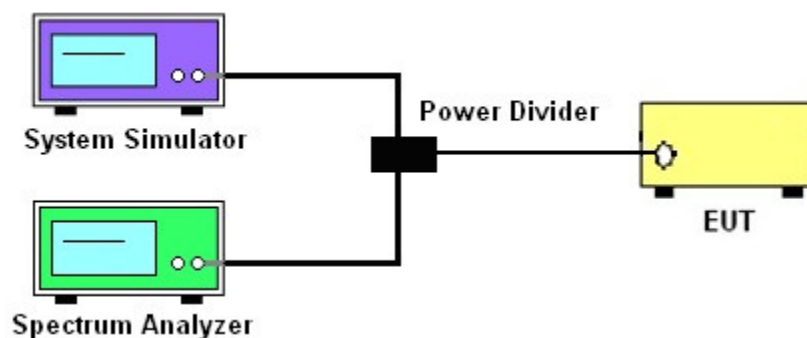
The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.

All modes of operation were investigated and the worst case configuration results are reported in this section.

### TEST PROCEDURE

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2.  $RBW = 1 - 5\%$  of the expected OBW
3.  $VBW \geq 3 \times RBW$
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5% of the 99% occupied bandwidth observed in Step 7

### TEST SETUP



### TEST RESULT

Note: Test data See APPENDIX I.

## 6.5 FREQUENCY STABILITY

### TEST OVERVIEW

Frequency stability testing is performed in accordance with the guidelines of ANSI C63.26 2015.

The frequency stability of the transmitter is measured by:

- a.) Temperature: The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.
- b.) Primary Supply Voltage: The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

For Part 22, the frequency stability of the transmitter shall be maintained within  $\pm 0.00025\%$  ( $\pm 2.5$  ppm) of the center frequency. For Part 24 the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

### TEST PROCEDURE

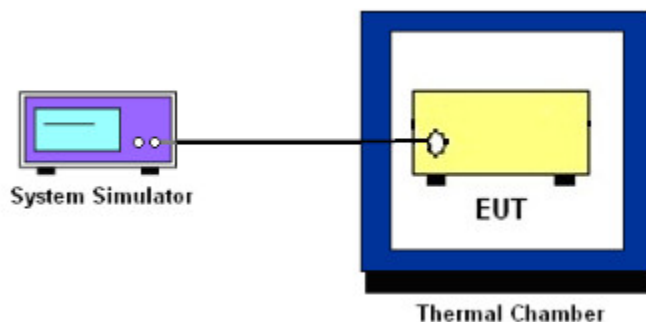
#### Temperature Variation

1. The testing follows FCC KDB 971168 D01 section 9.0
2. The EUT was set up in the thermal chamber and connected with the system simulator.
3. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
4. With power OFF, the temperature was raised in 10°C steps up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

#### Voltage Variation

1. The testing follows FCC KDB 971168 D01 Section 9.0.
2. The EUT was placed in a temperature chamber at  $25 \pm 5^\circ \text{C}$  and connected with the system simulator.
3. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
4. The variation in frequency was measured for the worst case.

### TEST SETUP



### TEST RESULT

Note: Test data See APPENDIX I.

## 6.6 SPURIOUS EMISSIONS AT ANTENNA TERMINALS

### TEST OVERVIEW

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least  $43 + 10 \log (P)$  dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

### TEST PROCEDURE

1. The testing FCC KDB 971168 D01 v03r01 Section 6.0. and ANSI C63.26-2015-Section 5.7.
2. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
3. The RF output of EUT was connected to the spectrum analyzer by an RF cable and attenuator. The path loss was compensated to the results for each measurement.
4. The middle channel for the highest RF power within the transmitting frequency was measured.
5. The conducted spurious emission for the whole frequency range was taken.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

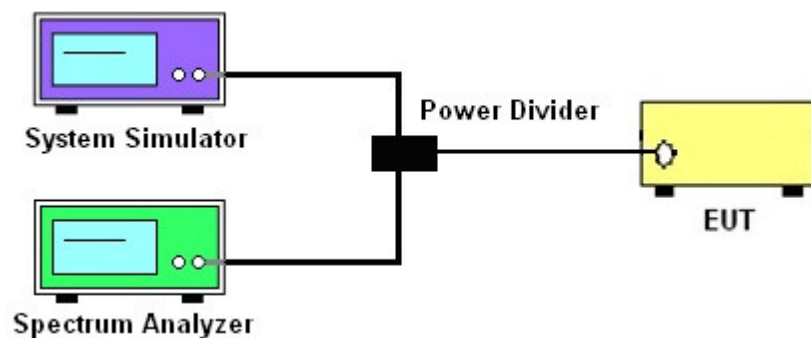
7. The limit line is derived from  $43 + 10\log(P)$  dB below the transmitter power P(Watts)

$$= P(W) - [43 + 10\log(P)] \text{ (dB)}$$

$$= [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)}$$

$$= -13\text{dBm}.$$

### TEST SETUP



### TEST RESULT

Note: Test data See APPENDIX I.

## 6.7 BAND EDGE

### TEST OVERVIEW

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

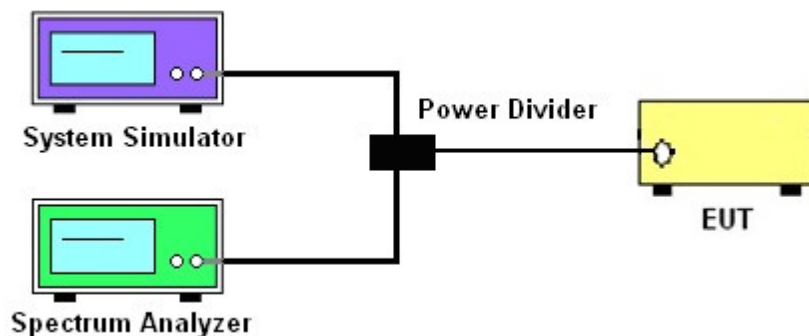
The minimum permissible attenuation level of any spurious emission is  $43 + \log_{10}(P[\text{Watts}])$ , where P is the transmitter power in Watts.

### TEST PROCEDURE

1. The testing FCC KDB 971168 D01 v03r01 Section 6.0 and ANSI C63.26-2015-Section 5.7
2. Start and stop frequency were set such that the band edge would be placed in the center of the Plot.
3. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
4. The RF output of EUT was connected to the spectrum analyzer by an RF cable and attenuator. The path loss was compensated to the results for each measurement.
5. The band edges of low and high channels for the highest RF powers were measured.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

7. The limit line is derived from  $43 + 10\log(P)$  dB below the transmitter power P(Watts)  
 $= P(W) - [43 + 10\log(P)] \text{ (dB)}$   
 $= [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)}$   
 $= -13\text{dBm}.$

### TEST SETUP



### TEST RESULT

Note: Test data See APPENDIX I.

## 6.8 FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

### TEST OVERVIEW

Radiated spurious emissions measurements are performed using the substitution method described in ANSI C63.26-2015 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using horizontally and vertically polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized horn antennas. All measurements are performed as peak measurements while the EUT is operating at maximum power and at the appropriate frequencies.

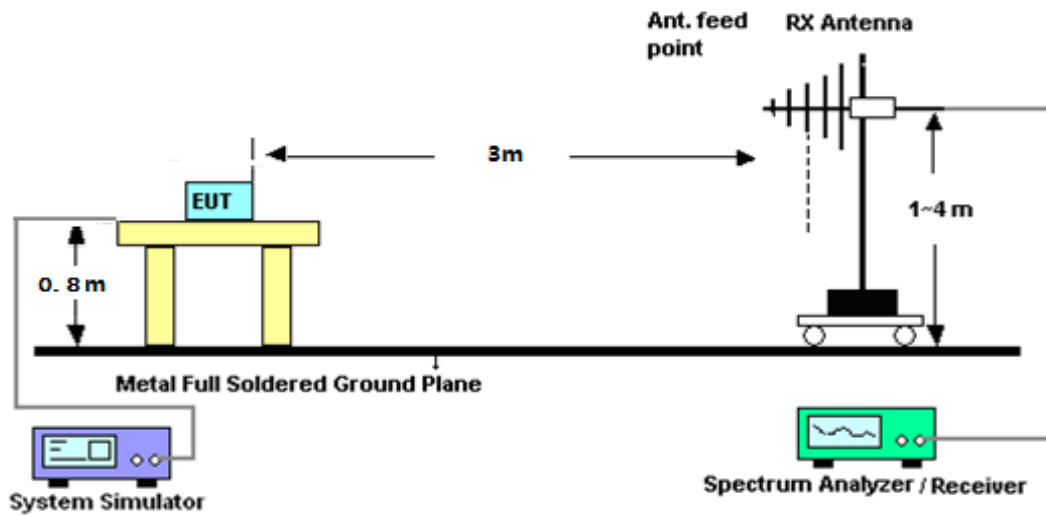
It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

### TEST PROCEDURE

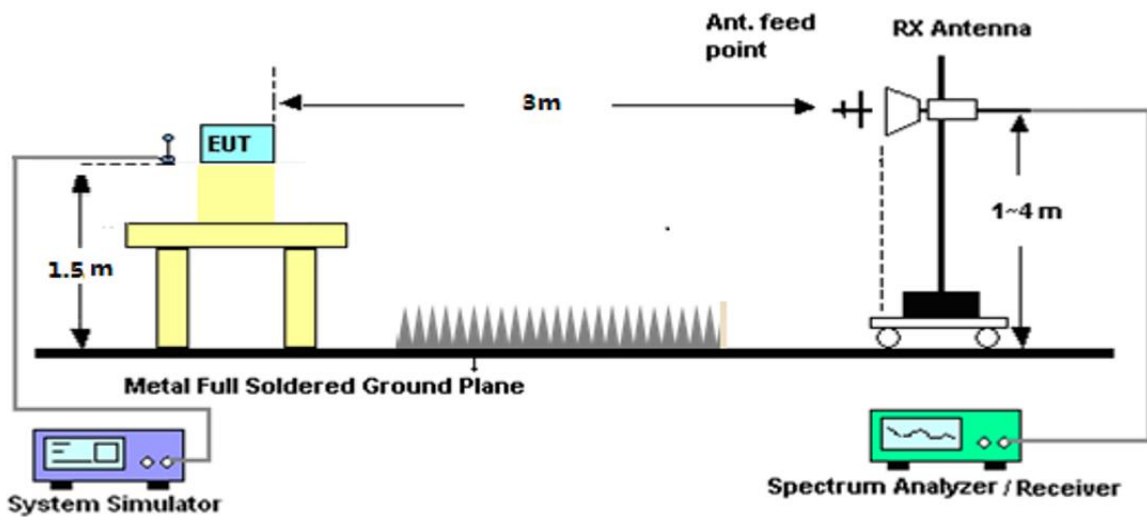
1. The testing FCC KDB 971168 D01 Section 5.8 and ANSI C63.26-2015-Section 5.5.
2. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
3. VBW  $\geq 3 \times$  RBW
4. Span = 1.5 times the OBW
5. No. of sweep points  $> 2 \times$  span/RBW
6. Detector = Peak
7. Trace mode = max hold
8. The trace was allowed to stabilize
9. Effective Isotropic Spurious Radiation was measured by substitution method according to TIA/EIA-603-D. The EUT was replaced by the substitution antenna at same location, and then a known power from S.G. was applied into the dipole antenna through a Tx cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna.  
 $P_{Mea} = S.G \text{ Level} + \text{Ant-Cable loss}$ ;  $\text{Margin} = P_{Mea} - \text{Limit}$ .

## TEST SETUP

For radiated test from 30MHz to 1GHz



For radiated test from above 1GHz



## TEST RESULT

Note: Test data See APPENDIX I.

# APPENDIX I. TESTRESULT

2G

CONDUCTED OUTPUT POWER

Band	Channel	Frequency (MHz)	Power (dBm)	Gain (dBm)	ERP (dBm)	ERP Limit (dBm)	Verdict
GSM850	128	824.2	33.70	-1.2	30.35	38.45	PASS
GSM850	190	836.6	33.59	-1.2	30.24	38.45	PASS
GSM850	251	848.8	33.57	-1.2	30.22	38.45	PASS

Band	Channel	Frequency (MHz)	Power (dBm)	Gain (dBm)	EIRP (dBm)	EIRP Limit (dBm)	Verdict
GSM1900	512	1850.2	28.49	-0.85	27.64	33	PASS
GSM1900	661	1880	28.72	-0.85	27.87	33	PASS
GSM1900	810	1909.8	29.02	-0.85	28.17	33	PASS

Band	Channel	Frequency (MHz)	Power (dBm)	Gain (dBm)	ERP (dBm)	ERP Limit (dBm)	Verdict
GPRS850 1 Slot	128	824.2	33.75	-1.2	30.4	38.45	PASS
GPRS850 1 Slot	190	836.6	33.64	-1.2	30.29	38.45	PASS
GPRS850 1 Slot	251	848.8	33.63	-1.2	30.28	38.45	PASS
GPRS850 2 Slot	128	824.2	31.66	-1.2	28.31	38.45	PASS
GPRS850 2 Slot	190	836.6	32.04	-1.2	28.69	38.45	PASS
GPRS850 2 Slot	251	848.8	32.04	-1.2	28.69	38.45	PASS
GPRS850 3 Slot	128	824.2	29.76	-1.2	26.41	38.45	PASS
GPRS850 3 Slot	190	836.6	30.29	-1.2	26.94	38.45	PASS
GPRS850 3 Slot	251	848.8	30.28	-1.2	26.93	38.45	PASS
GPRS850 4 Slot	128	824.2	27.78	-1.2	24.43	38.45	PASS
GPRS850 4 Slot	190	836.6	28.35	-1.2	25	38.45	PASS
GPRS850 4 Slot	251	848.8	28.37	-1.2	25.02	38.45	PASS

Band	Channel	Frequency (MHz)	Power (dBm)	Gain (dBm)	EIRP (dBm)	EIRP Limit (dBm)	Verdict
GPRS1900 1 Slot	512	1850.2	28.52	-0.85	27.67	33	PASS
GPRS1900 1 Slot	661	1880	28.67	-0.85	27.82	33	PASS

GPRS1900 1 Slot	810	1909.8	29.01	-0.85	28.16	33	PASS
GPRS1900 2 Slot	512	1850.2	25.86	-0.85	25.01	33	PASS
GPRS1900 2 Slot	661	1880	26.05	-0.85	25.2	33	PASS
GPRS1900 2 Slot	810	1909.8	26.41	-0.85	25.56	33	PASS
GPRS1900 3 Slot	512	1850.2	24.24	-0.85	23.39	33	PASS
GPRS1900 3 Slot	661	1880	24.42	-0.85	23.57	33	PASS
GPRS1900 3 Slot	810	1909.8	24.76	-0.85	23.91	33	PASS
GPRS1900 4 Slot	512	1850.2	22.21	-0.85	21.36	33	PASS
GPRS1900 4 Slot	661	1880	22.31	-0.85	21.46	33	PASS
GPRS1900 4 Slot	810	1909.8	22.66	-0.85	21.81	33	PASS

## FREQUENCY STABILITY

Band	Channel	Frequency (MHz)	Result(Hz)	Result (ppm)	Low Limit (ppm)	high Limit (ppm)	Verdict
GSM1900	512	1850.2	1.90	0.001	-2.5	2.5	PASS
GSM1900	661	1880	12.62	0.007	-2.5	2.5	PASS
GSM1900	810	1909.8	4.04	0.002	-2.5	2.5	PASS
GSM850	128	824.2	-5.29	-0.006	-2.5	2.5	PASS
GSM850	190	836.6	4.46	0.005	-2.5	2.5	PASS
GSM850	251	848.8	-3.29	-0.004	-2.5	2.5	PASS

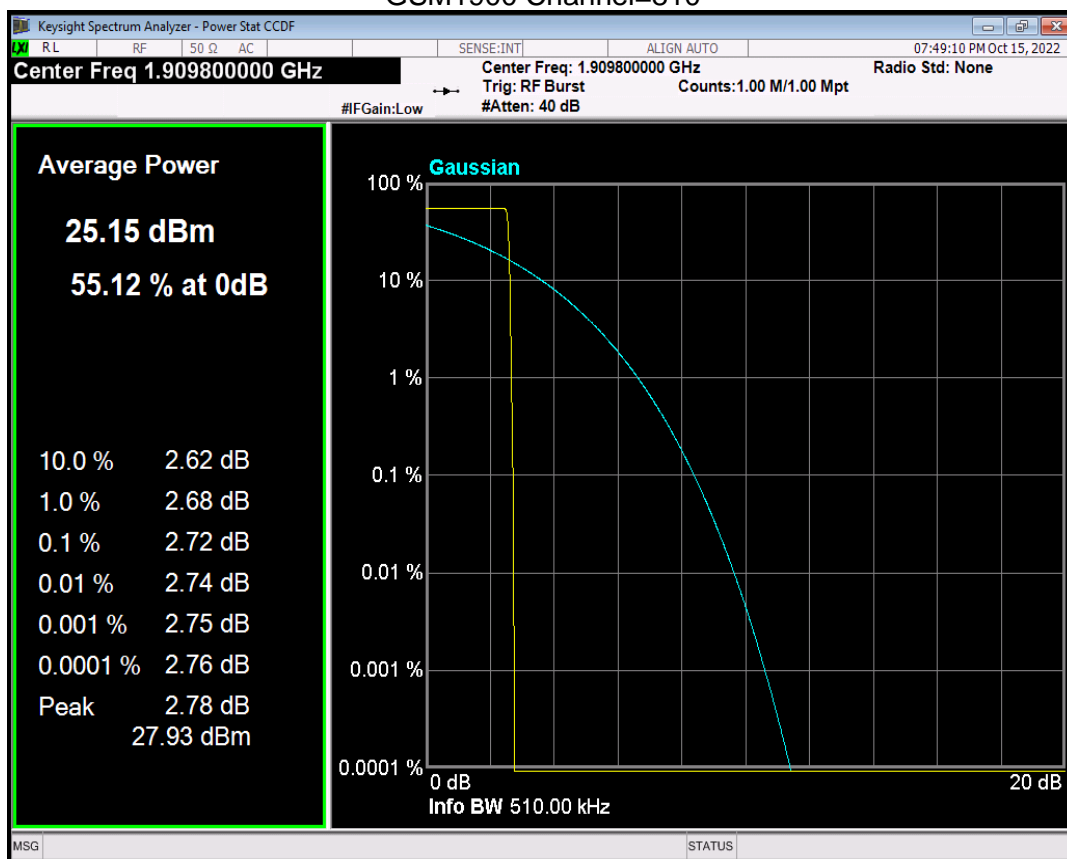
Band	Channel	Frequency (MHz)	Result (Hz)	Result (ppm)	Low Limit (ppm)	high Limit (ppm)	Verdict
GPRS1900	512	1850.2	16.8855	0.01	-2.500	2.5	PASS
GPRS1900	661	1880	7.522603	0.00	-2.500	2.5	PASS
GPRS1900	810	1909.8	12.17177	0.01	-2.500	2.5	PASS
GPRS850	128	824.2	-7.425745	-0.01	-2.500	2.5	PASS
GPRS850	190	836.6	14.88378	0.02	-2.500	2.5	PASS
GPRS850	251	848.8	10.39604	0.01	-2.500	2.5	PASS

# PEAK-TO-AVERAGE RATIO

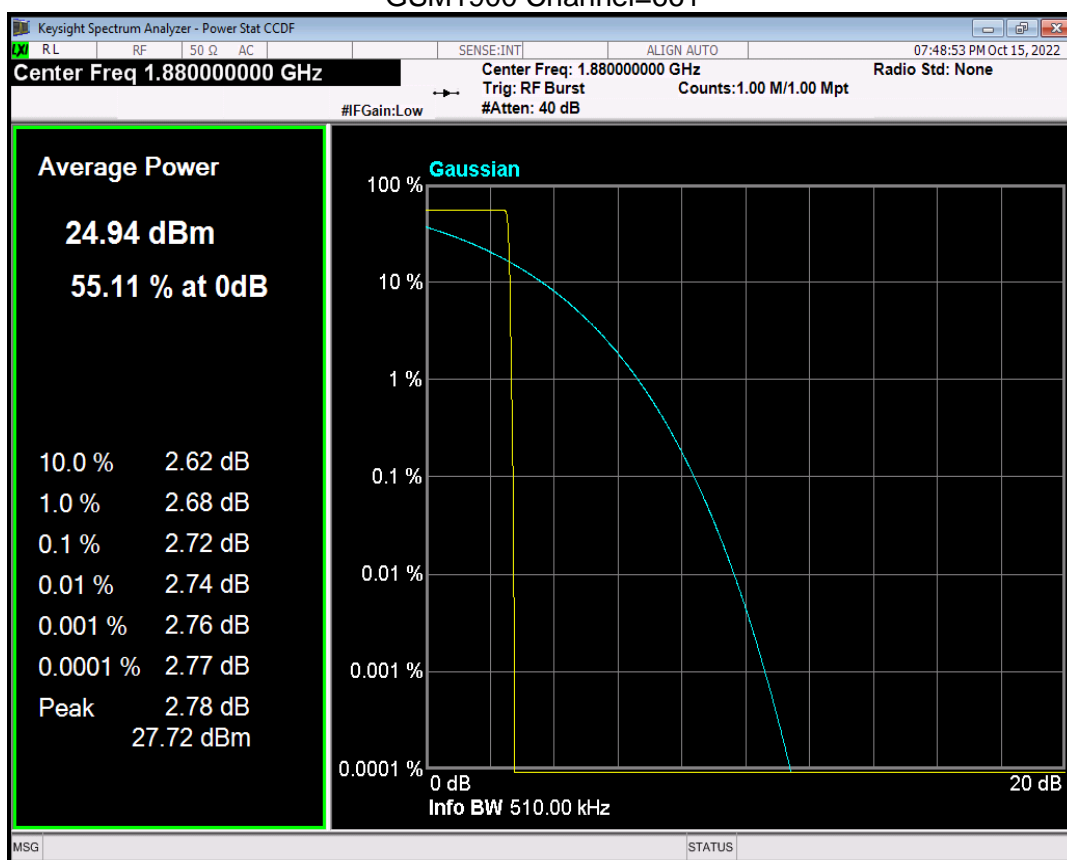
Band	Channel	Frequency (MHz)	Result (dB)	high Limit (dB)	Verdict
GSM1900	512	1850.2	2.73	13	PASS
GSM1900	661	1880	2.72	13	PASS
GSM1900	810	1909.8	2.72	13	PASS
GSM850	128	824.2	2.69	13	PASS
GSM850	190	836.6	2.69	13	PASS
GSM850	251	848.8	2.69	13	PASS

Band	Channel	Frequency (MHz)	Result (dB)	high Limit (dB)	Verdict
GPRS1900	512	1850.2	2.748978102	13.00	PASS
GPRS1900	661	1880	2.74999154	13.00	PASS
GPRS1900	810	1909.8	2.748710263	13.00	PASS
GPRS850	128	824.2	2.722980392	13.00	PASS
GPRS850	190	836.6	2.708209765	13.00	PASS
GPRS850	251	848.8	2.708863636	13.00	PASS

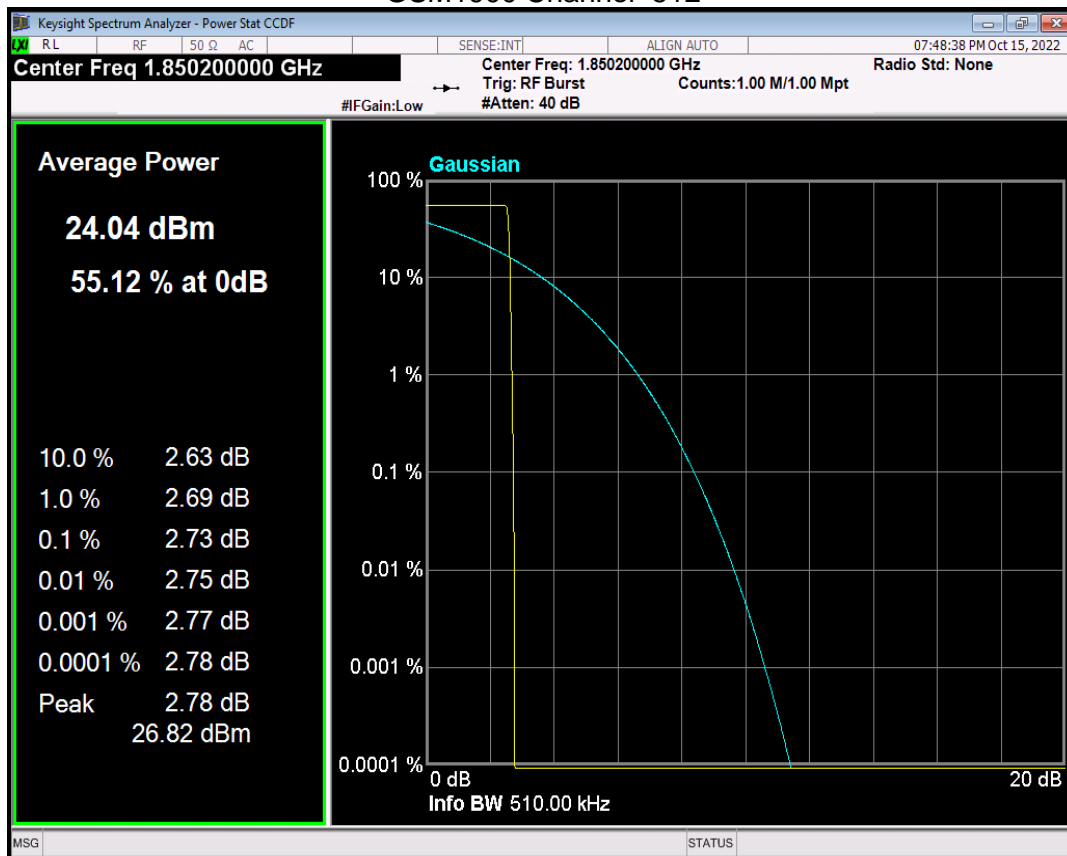
## GSM1900 Channel=810



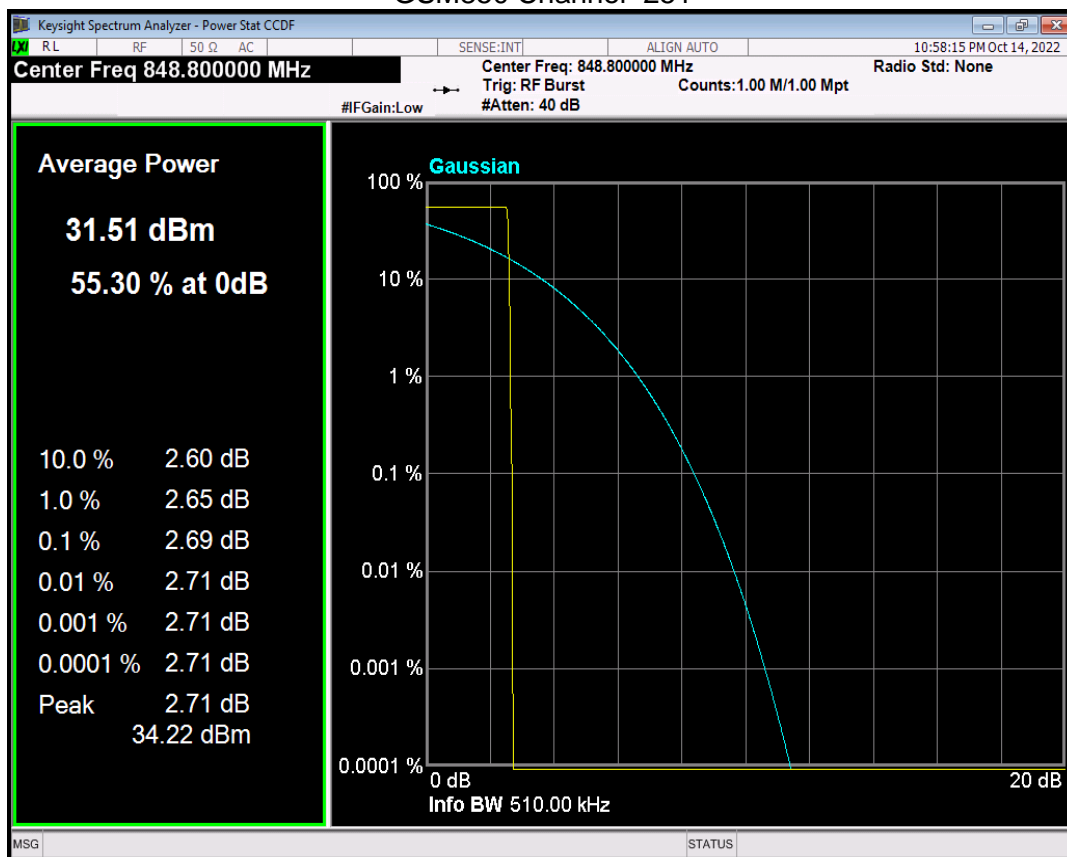
## GSM1900 Channel=661



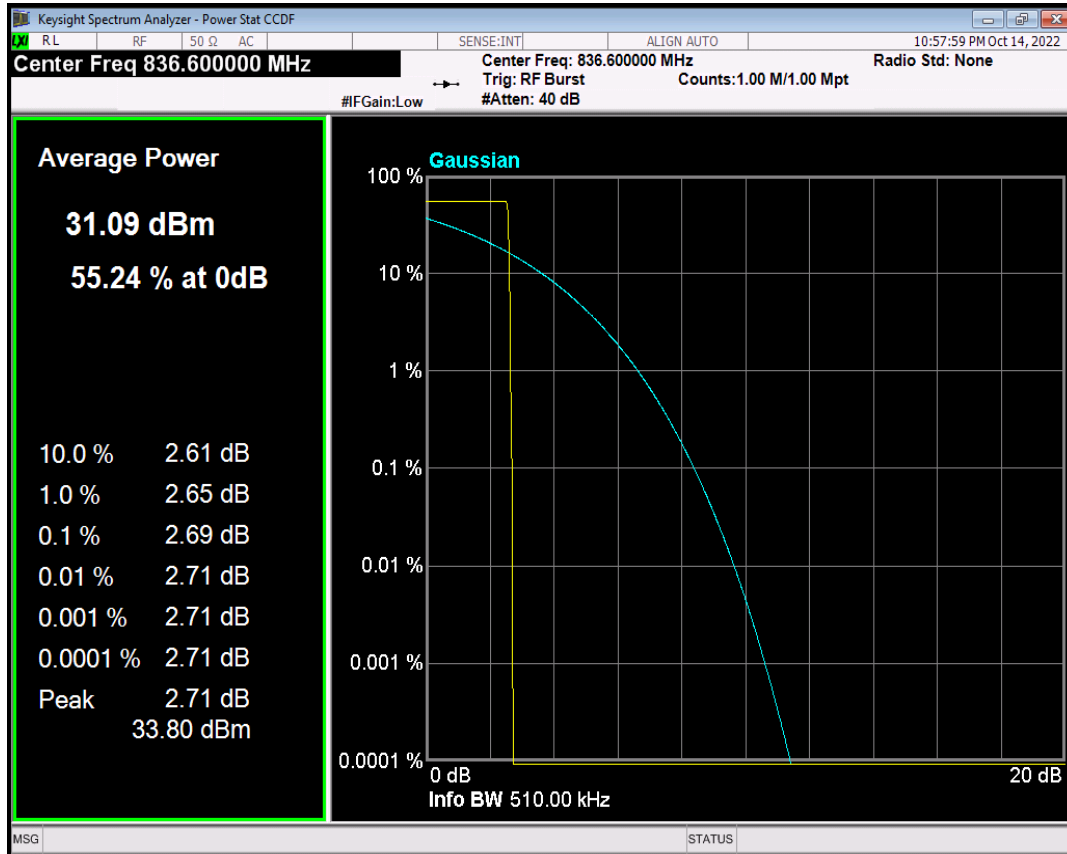
## GSM1900 Channel=512



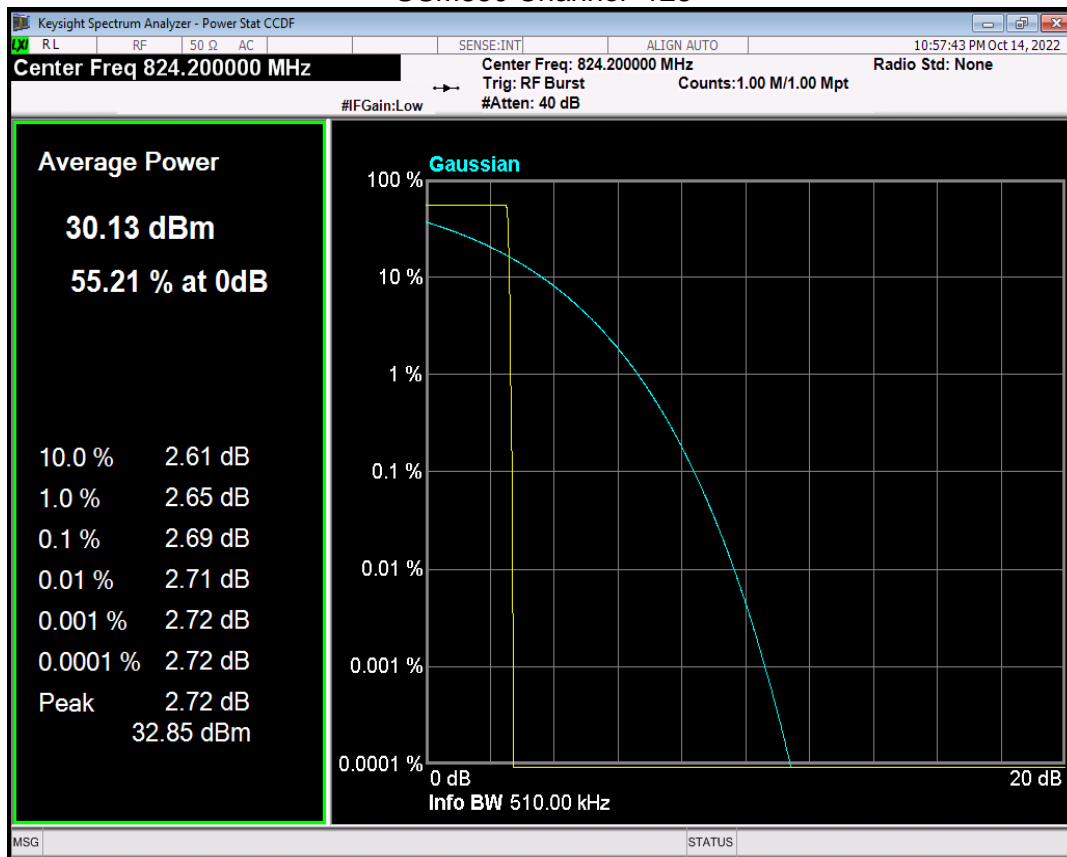
## GSM850 Channel=251



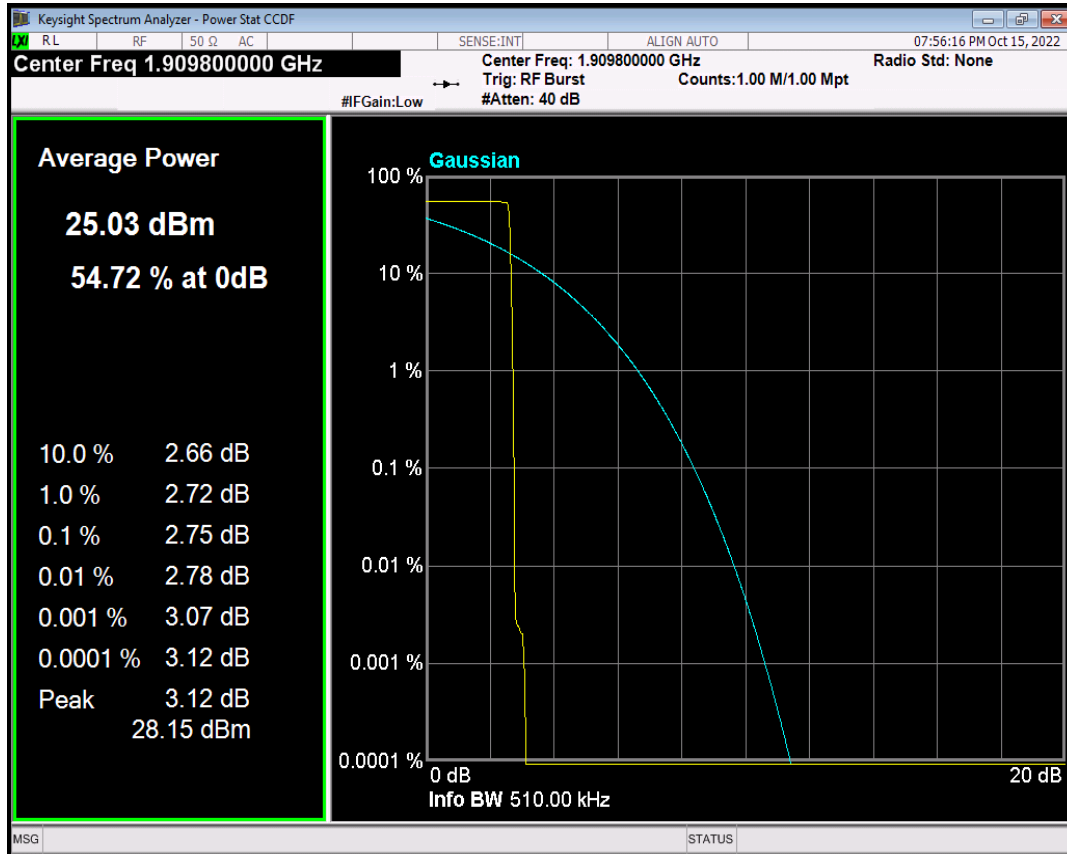
## GSM850 Channel=190



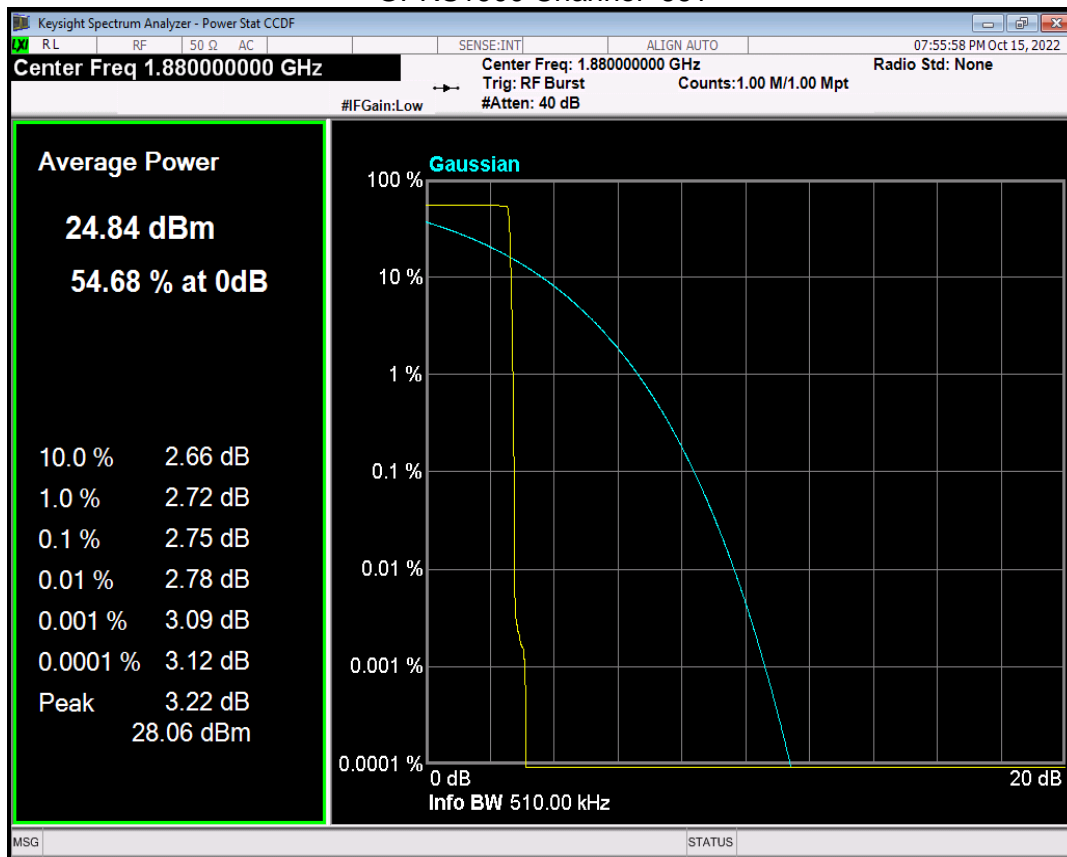
## GSM850 Channel=128



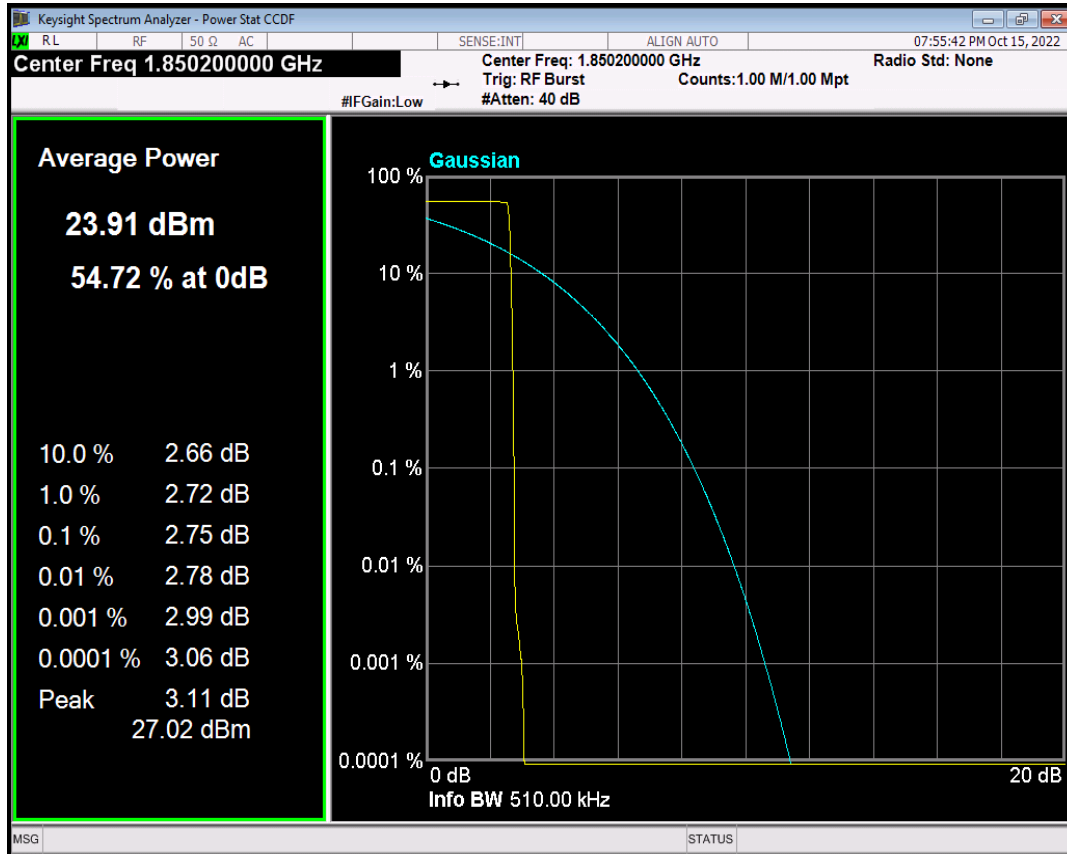
## GPRS1900 Channel=810



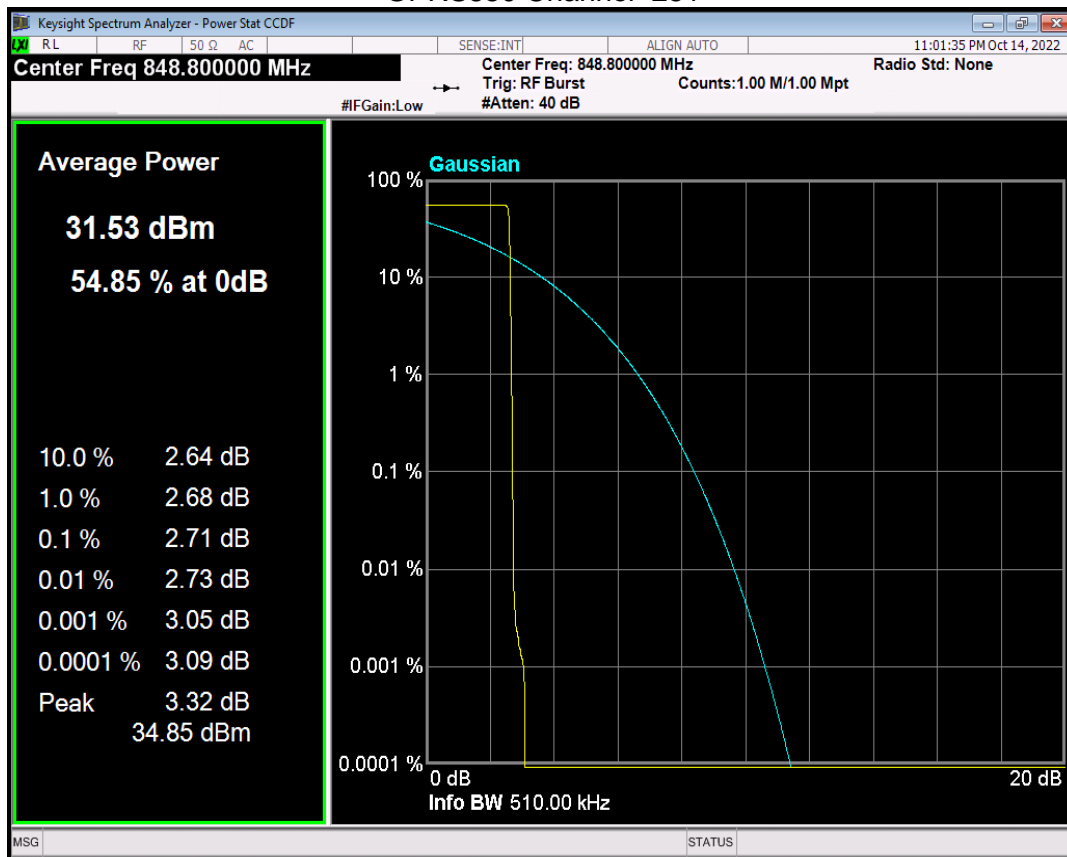
## GPRS1900 Channel=661



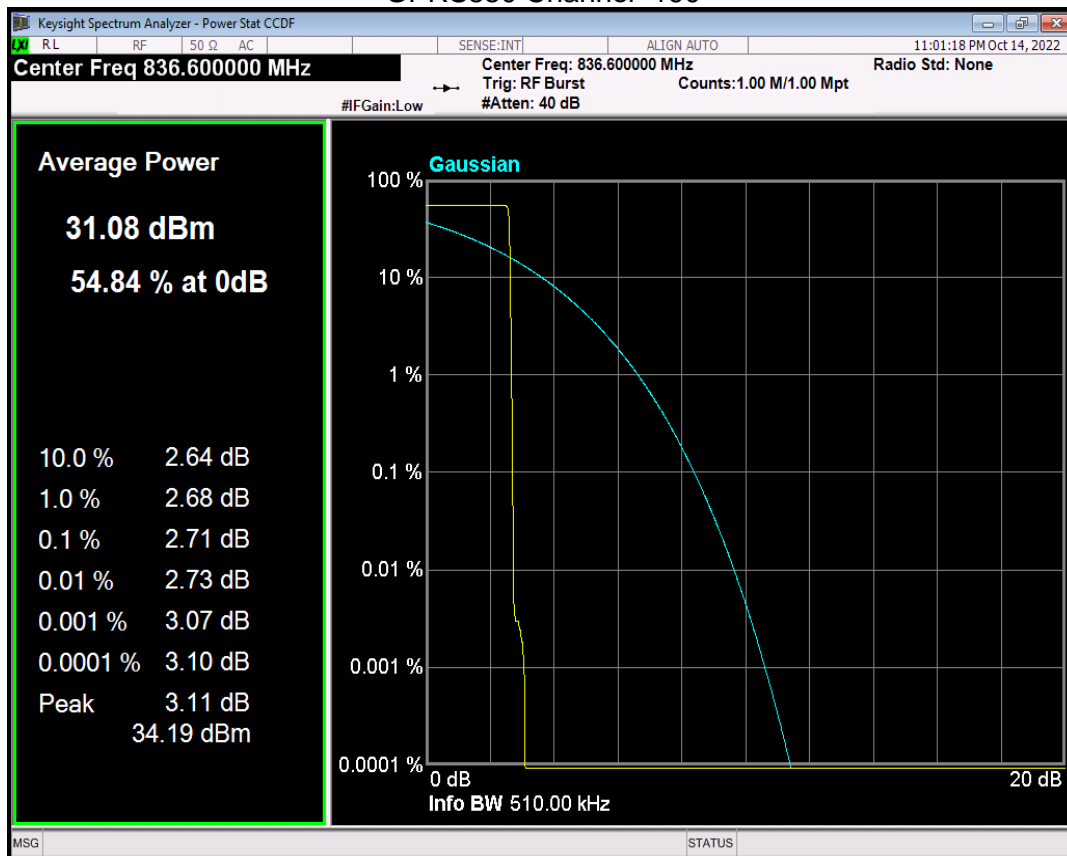
## GPRS1900 Channel=512



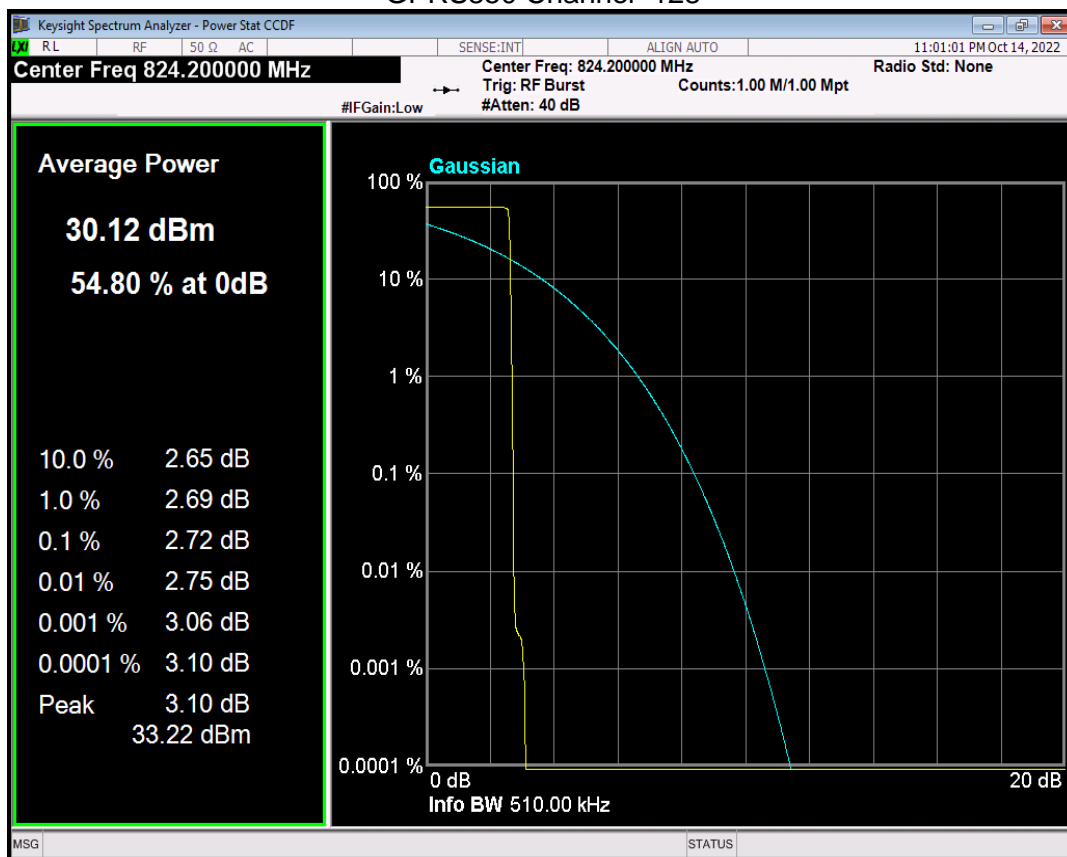
## GPRS850 Channel=251



## GPRS850 Channel=190



## GPRS850 Channel=128

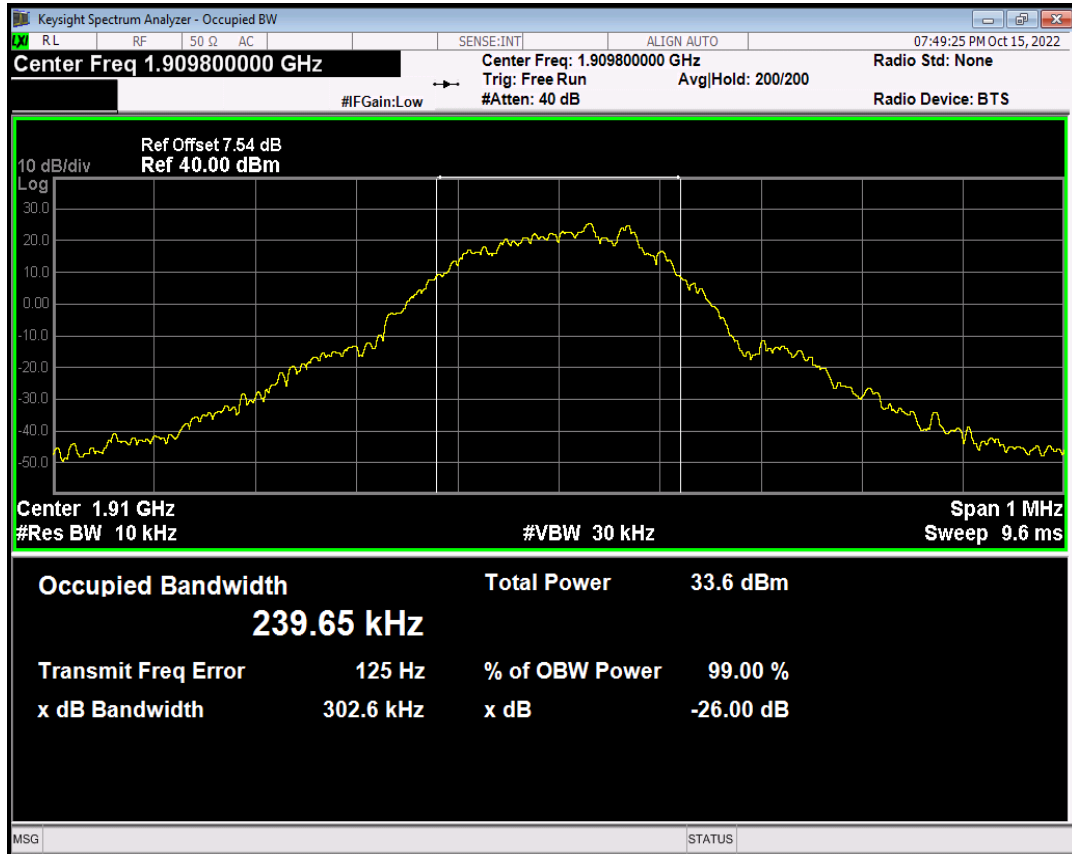


## OCCUPIED BANDWIDTH

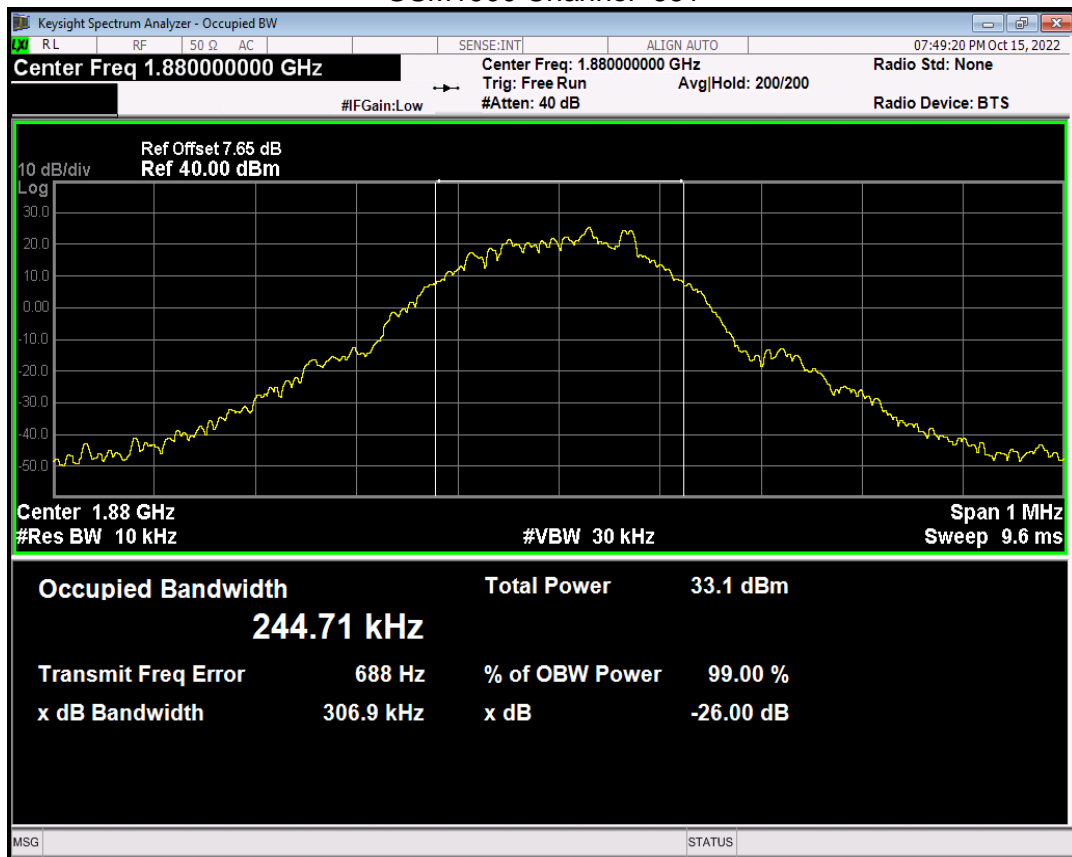
Band	Channel	Frequency (MHz)	99% OBW (kHz)	-26dB EBW (kHz)	Verdict
GSM1900	512	1850.2	242.693	304.801	PASS
GSM1900	661	1880	244.708	306.905	PASS
GSM1900	810	1909.8	239.650	302.616	PASS
GSM850	128	824.2	242.114	302.063	PASS
GSM850	190	836.6	240.237	305.409	PASS
GSM850	251	848.8	237.036	300.466	PASS

Band	Channel	Frequency (MHz)	99% OBW (kHz)	-26dB EBW (kHz)	Verdict
GPRS1900	512	1850.2	241.154	307.592	PASS
GPRS1900	661	1880	246.578	309.631	PASS
GPRS1900	810	1909.8	243.280	316.888	PASS
GPRS850	128	824.2	248.389	321.553	PASS
GPRS850	190	836.6	237.629	316.421	PASS
GPRS850	251	848.8	245.456	318.057	PASS

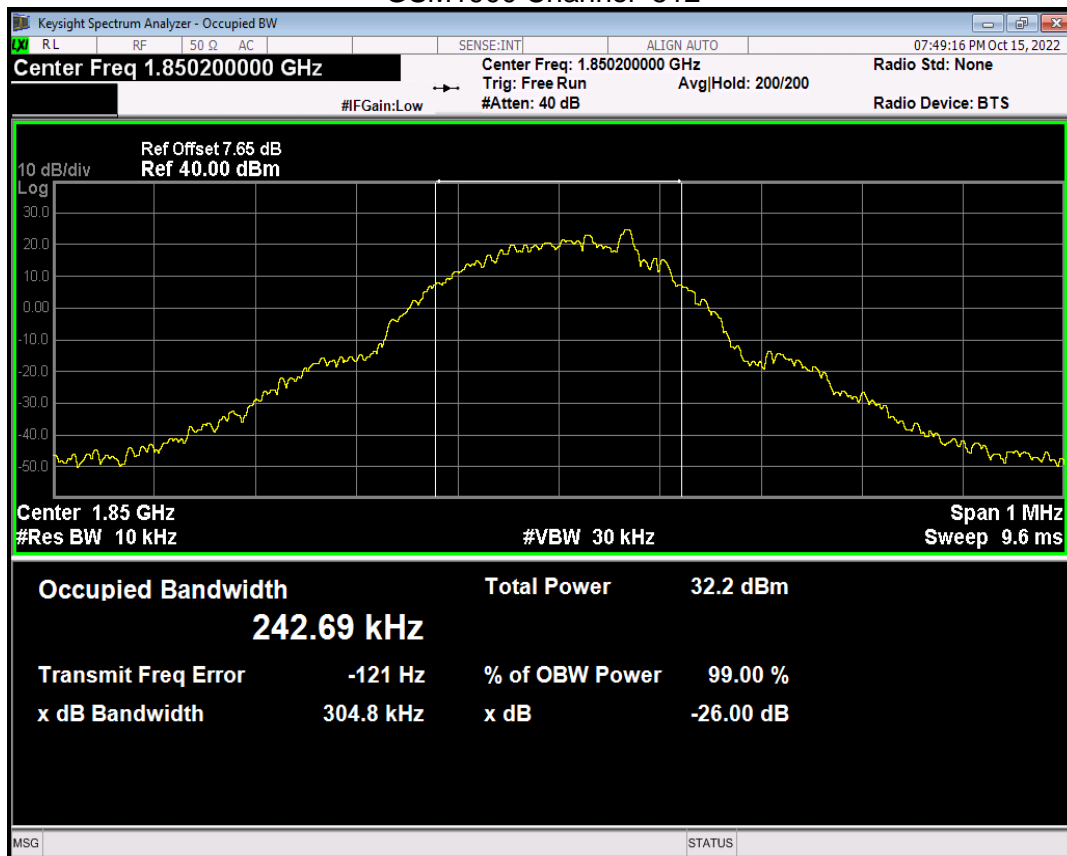
# GSM1900 Channel=810



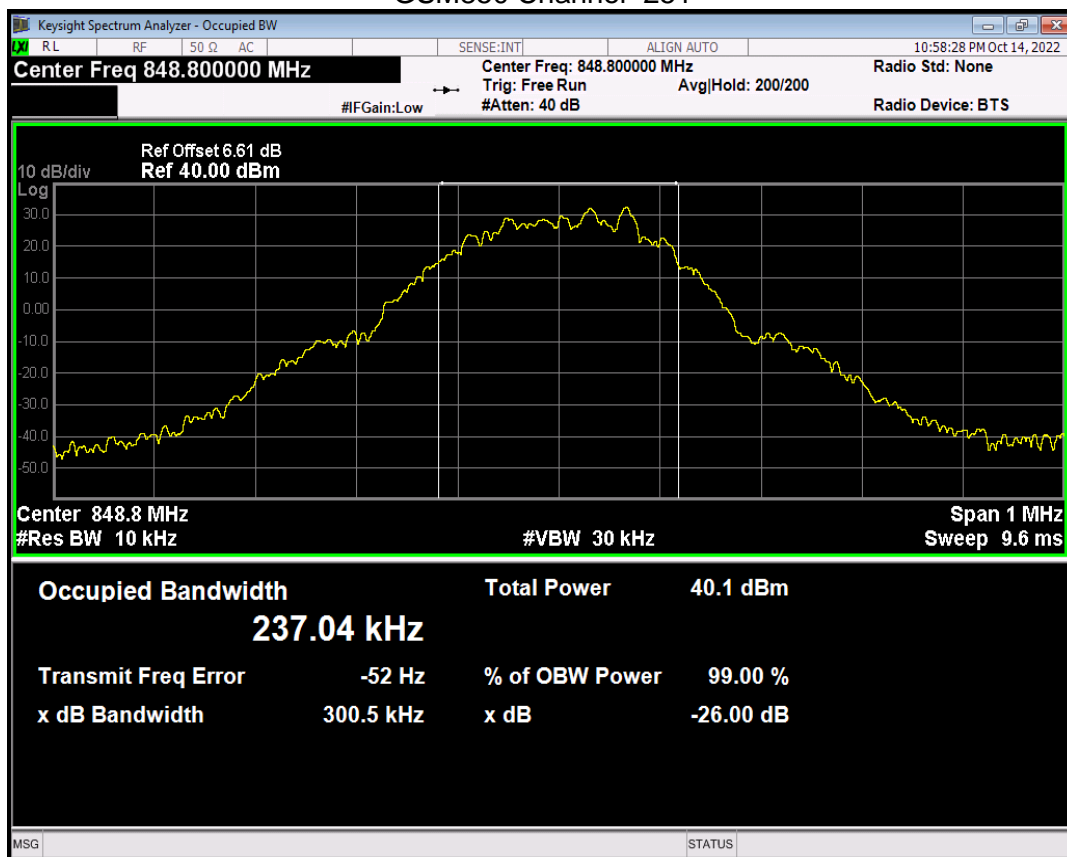
# GSM1900 Channel=661



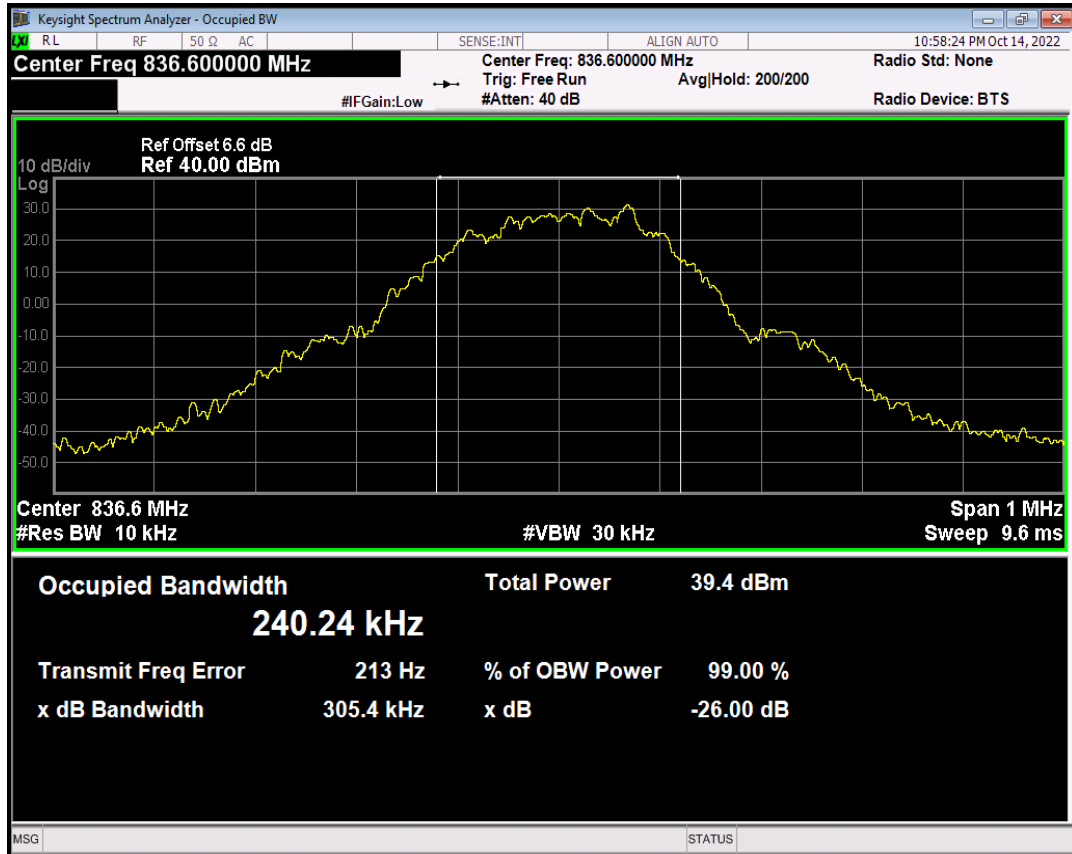
# GSM1900 Channel=512



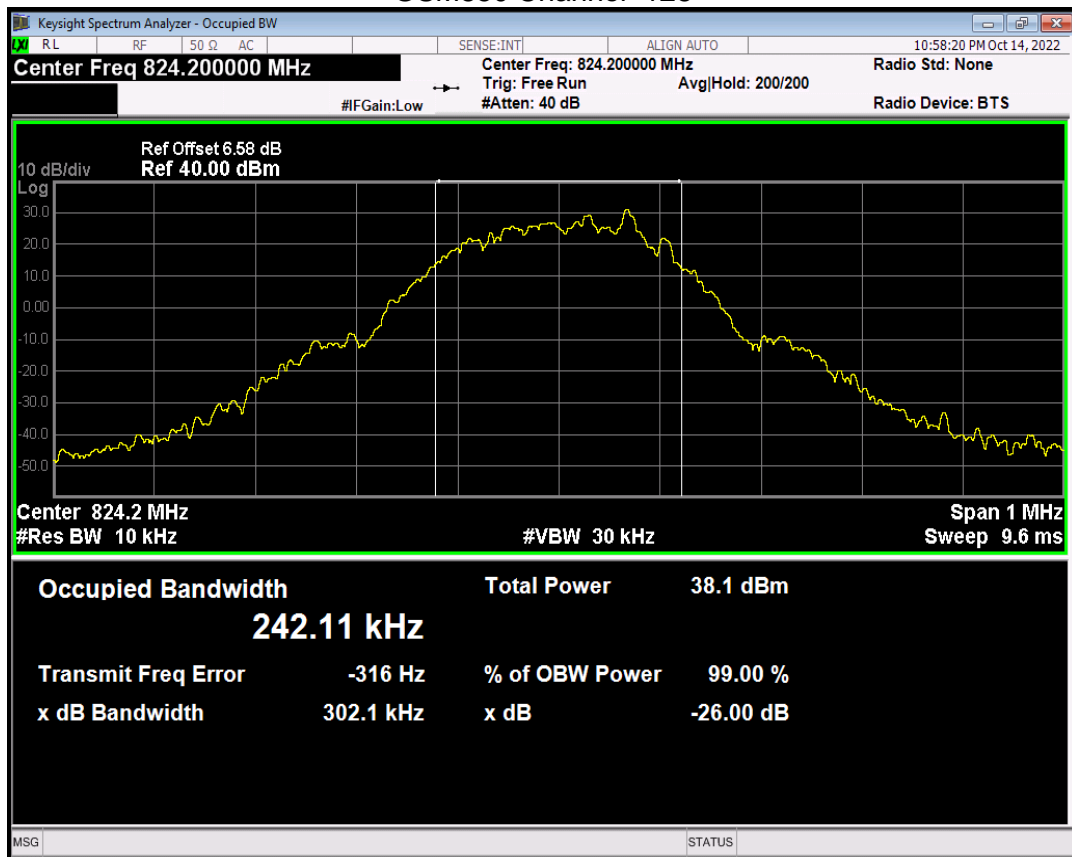
# GSM850 Channel=251



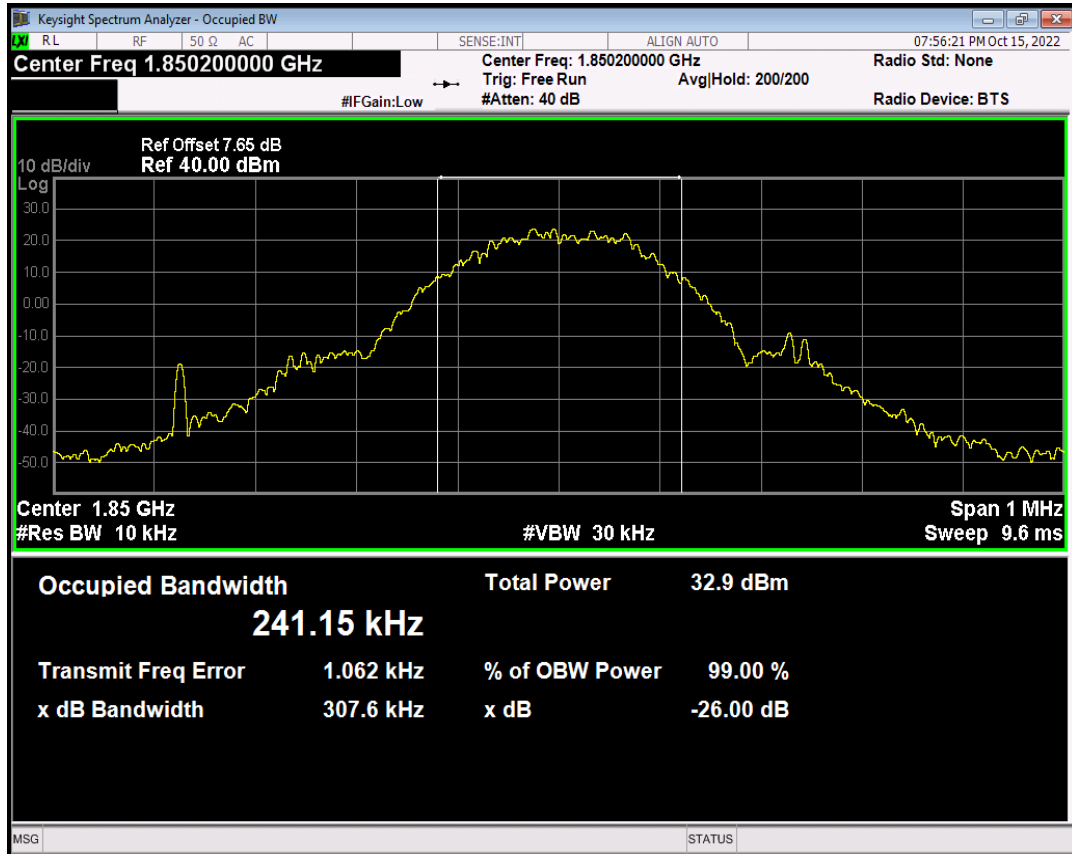
# GSM850 Channel=190



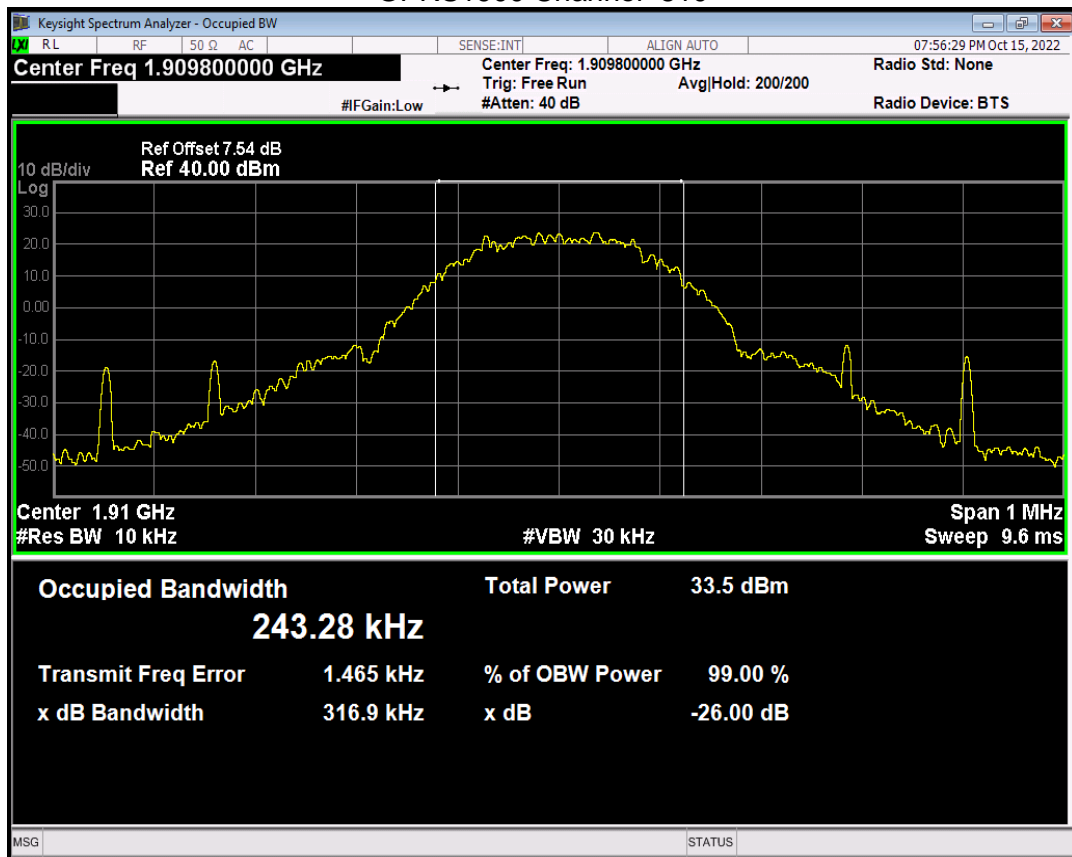
# GSM850 Channel=128



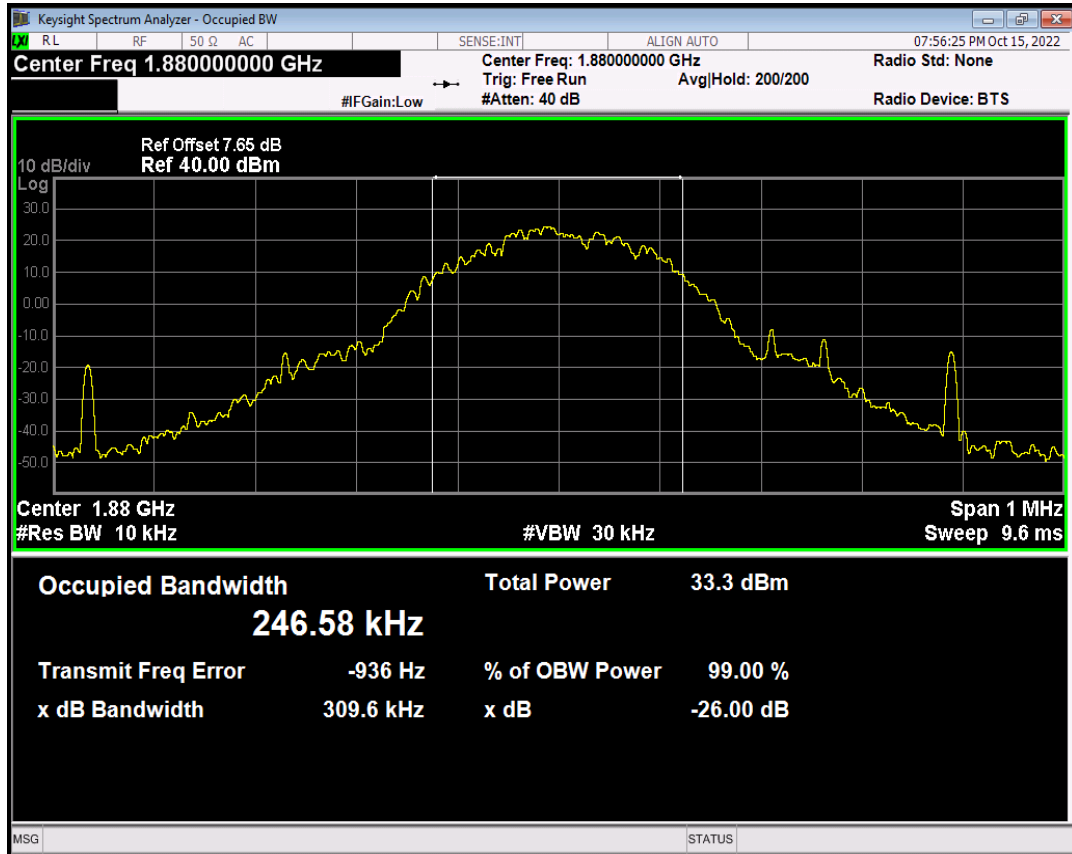
## GPRS1900 Channel=512



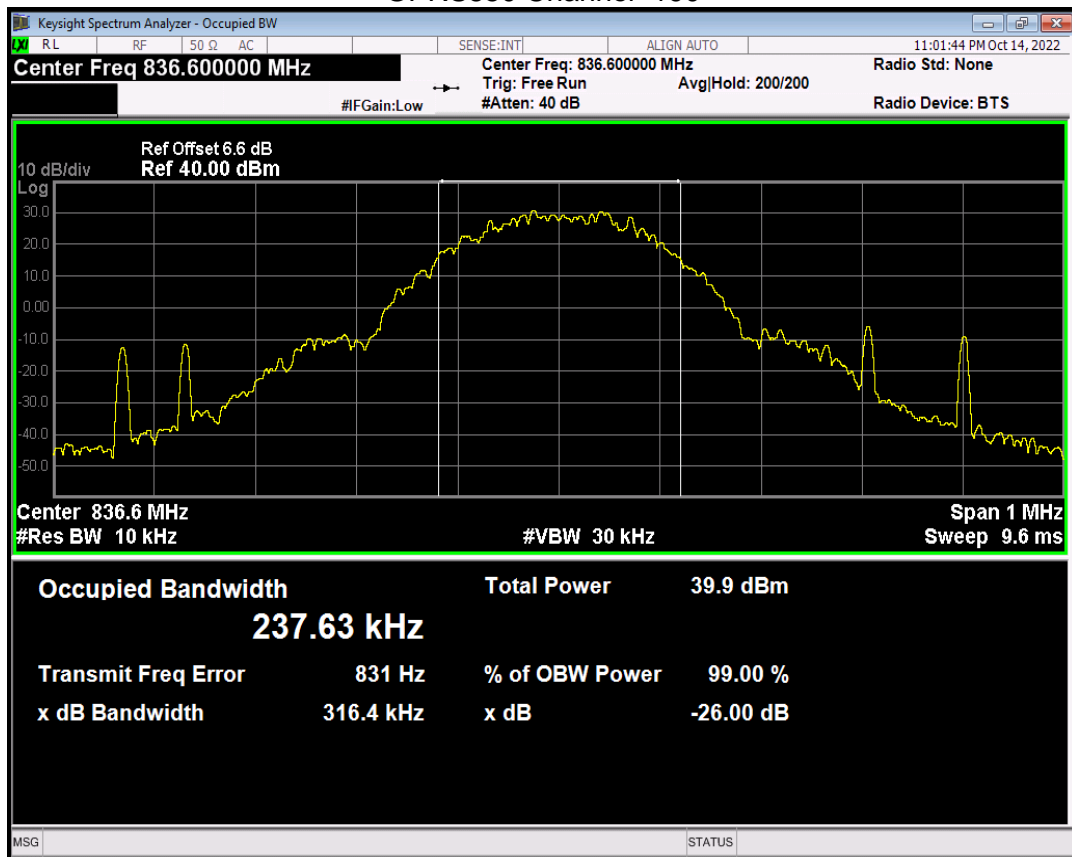
## GPRS1900 Channel=810



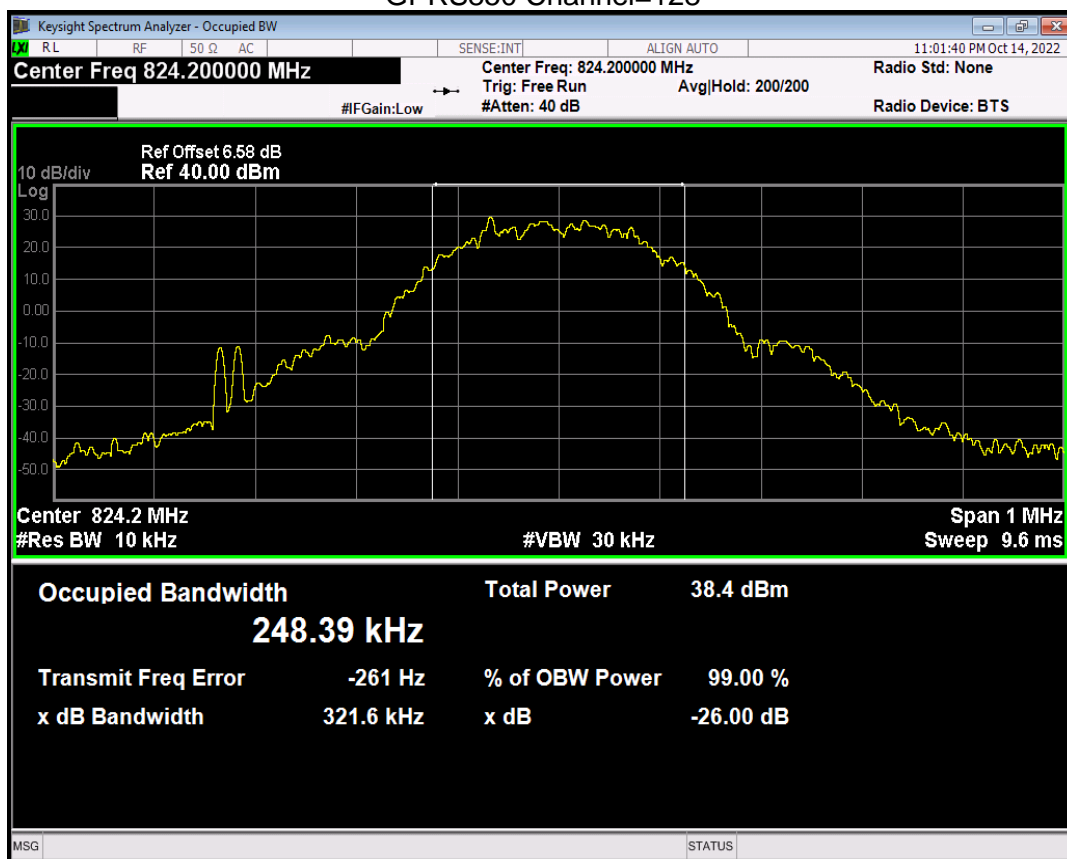
# GPRS1900 Channel=661



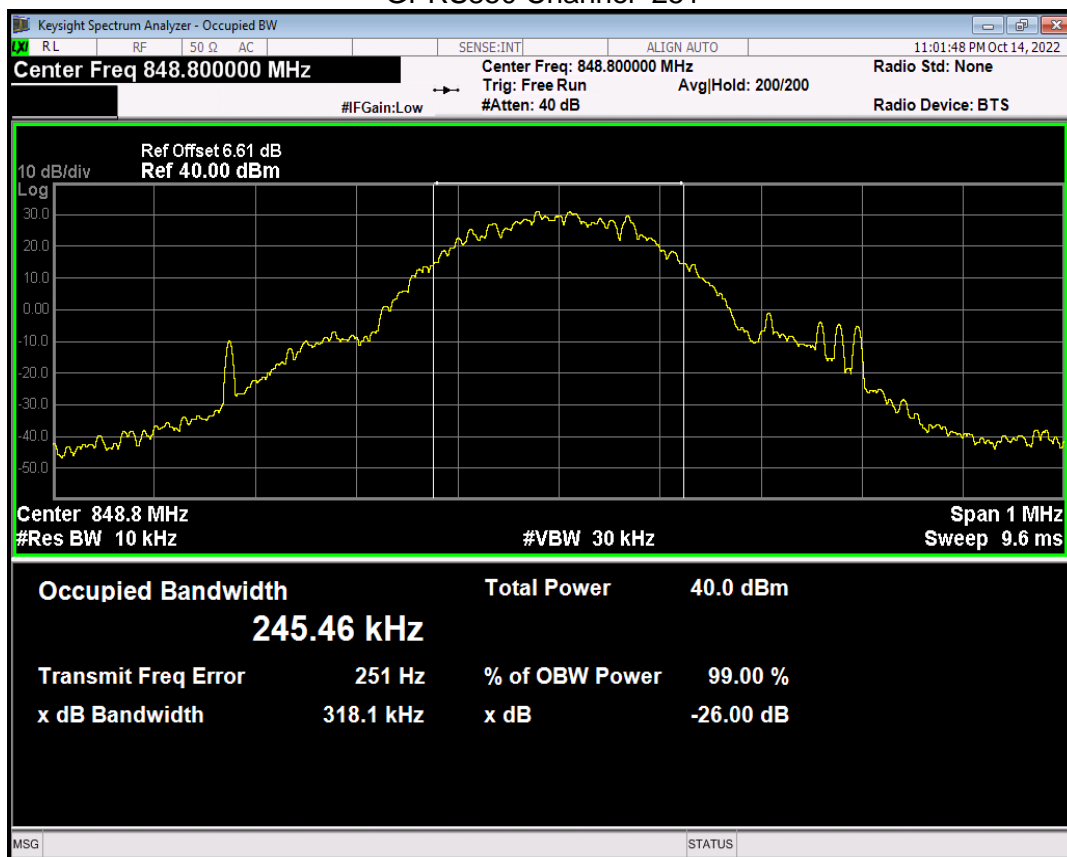
# GPRS850 Channel=190



# GPRS850 Channel=128



# GPRS850 Channel=251

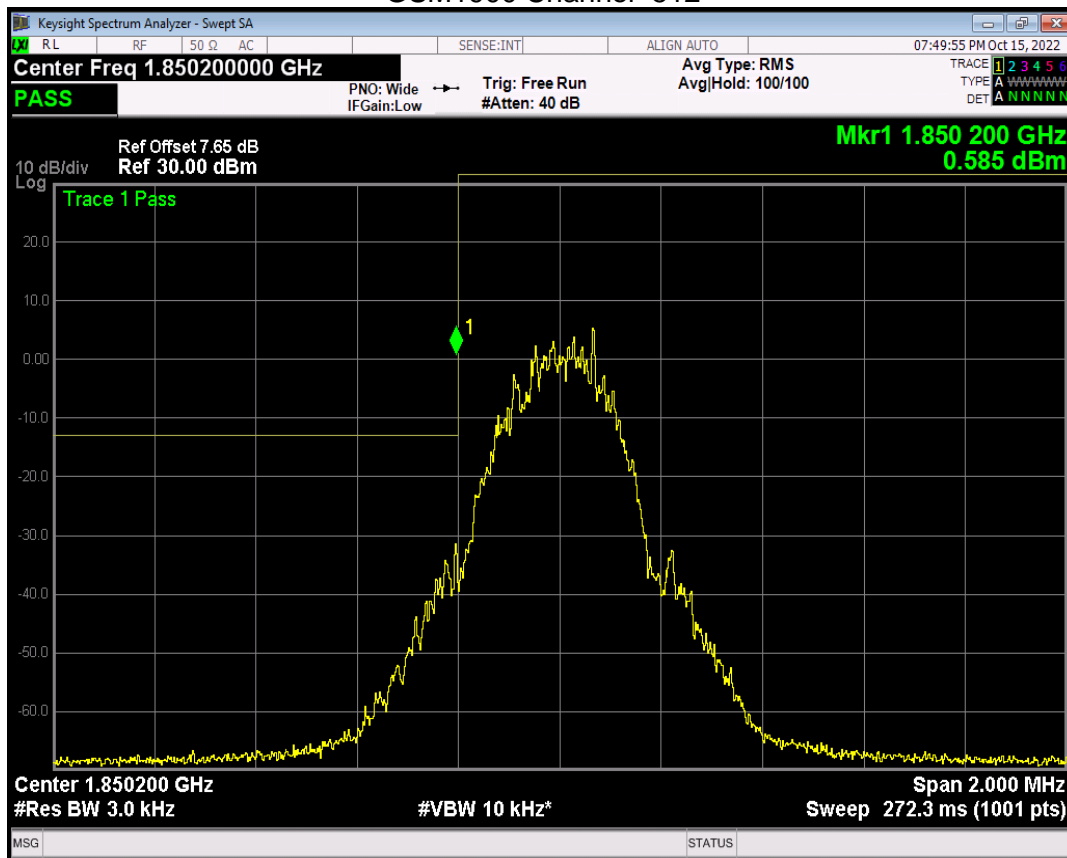


## BAND EDGE

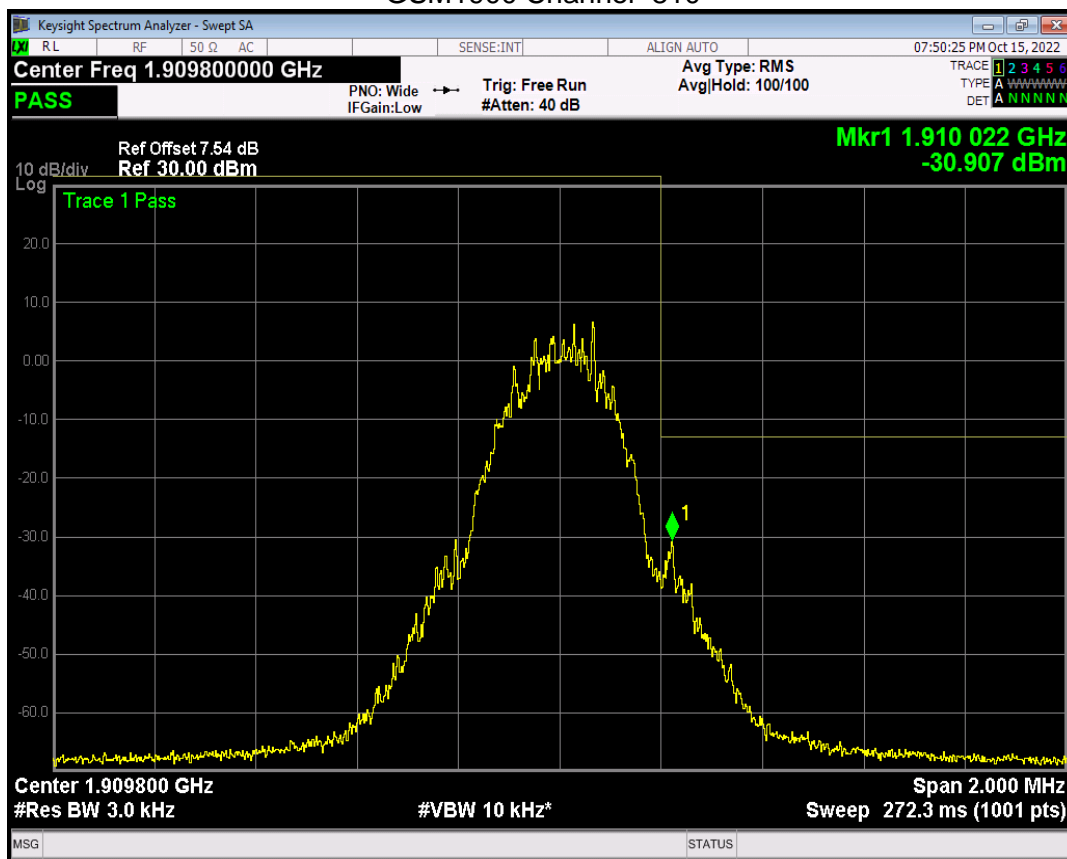
Band	Channel	Frequency (MHz)	Spur Freq (MHz)	Spur Level (dBm)	Limit (dBm)	Verdict
GSM1900	512	1850.2	1850.00	-31.35	-13	PASS
GSM1900	810	1909.8	1910.02	-30.90	-13	PASS
GSM850	128	824.2	824.00	-24.75	-13	PASS
GSM850	251	848.8	849.02	-23.24	-13	PASS

Band	Channel	Frequency (MHz)	Spur Freq (MHz)	Spur Level (dBm)	Limit (dBm)	Verdict
GPRS1900	512	1850.2	1849.99	-34.07	-13	PASS
GPRS1900	810	1909.8	1910.02	-32.72	-13	PASS
GPRS850	128	824.2	823.98	-27.16	-13	PASS
GPRS850	251	848.8	849.02	-26.43	-13	PASS

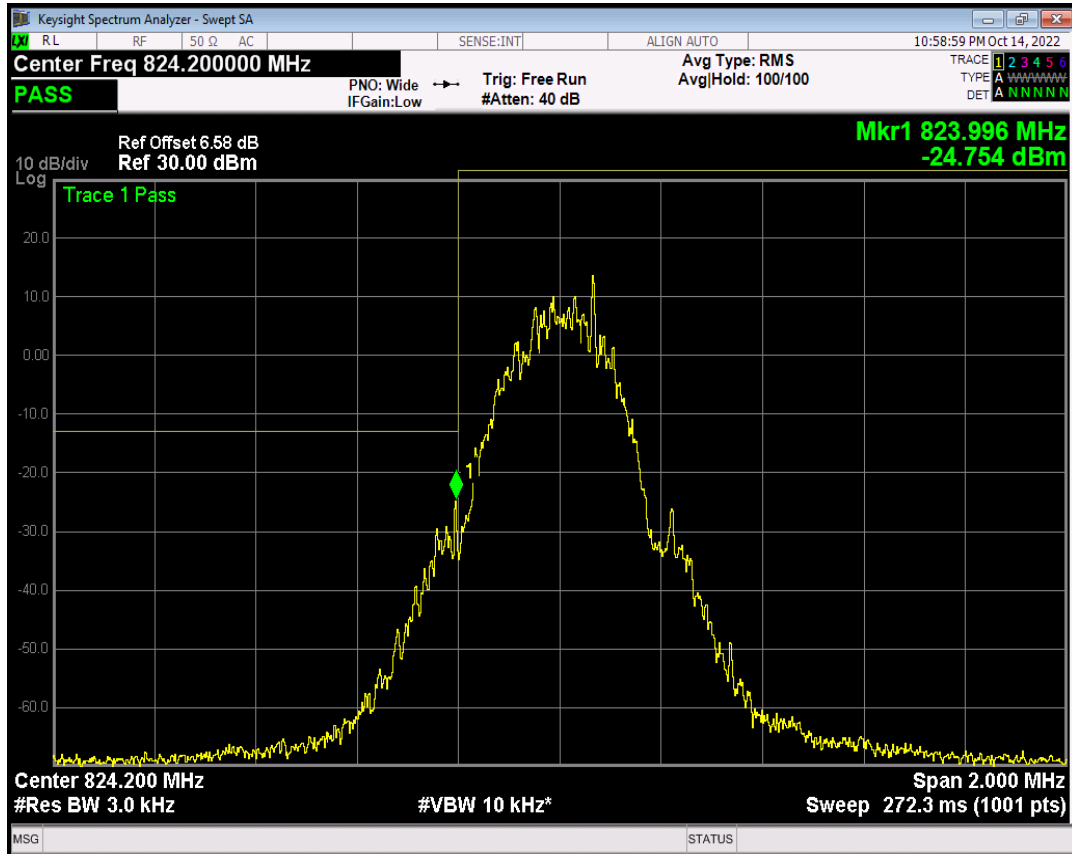
# GSM1900 Channel=512



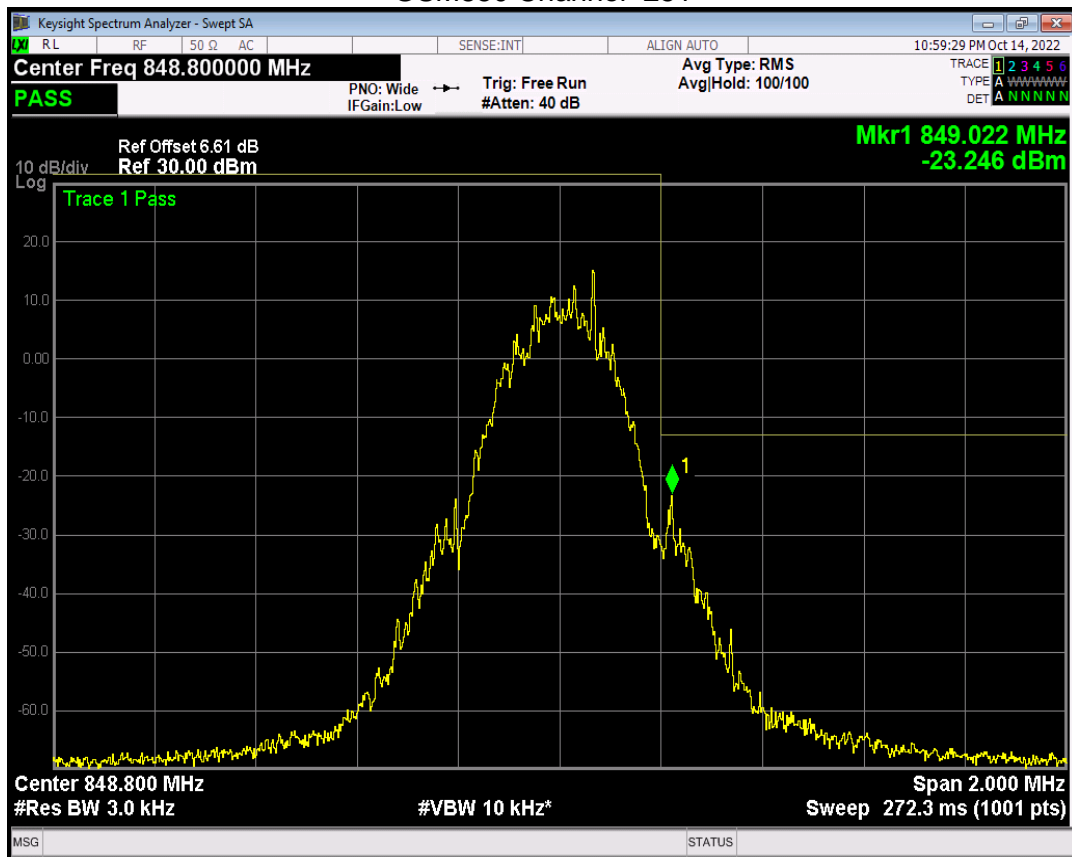
# GSM1900 Channel=810



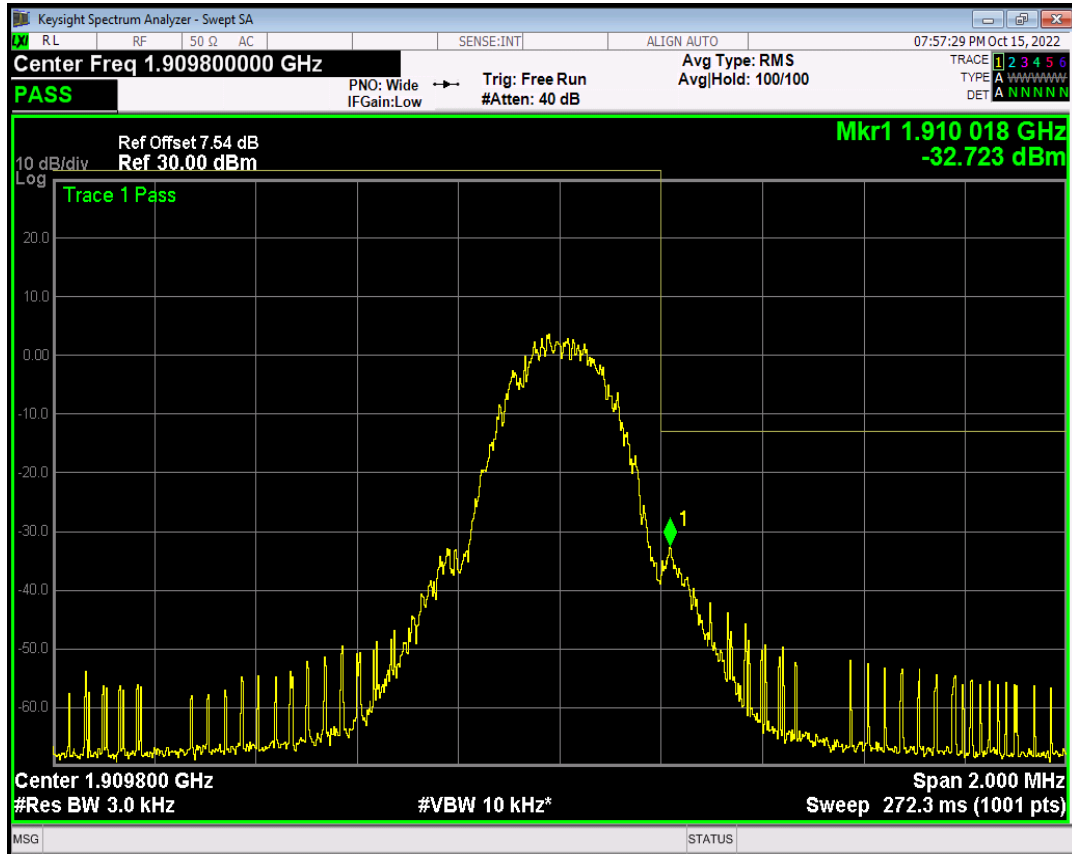
# GSM850 Channel=128



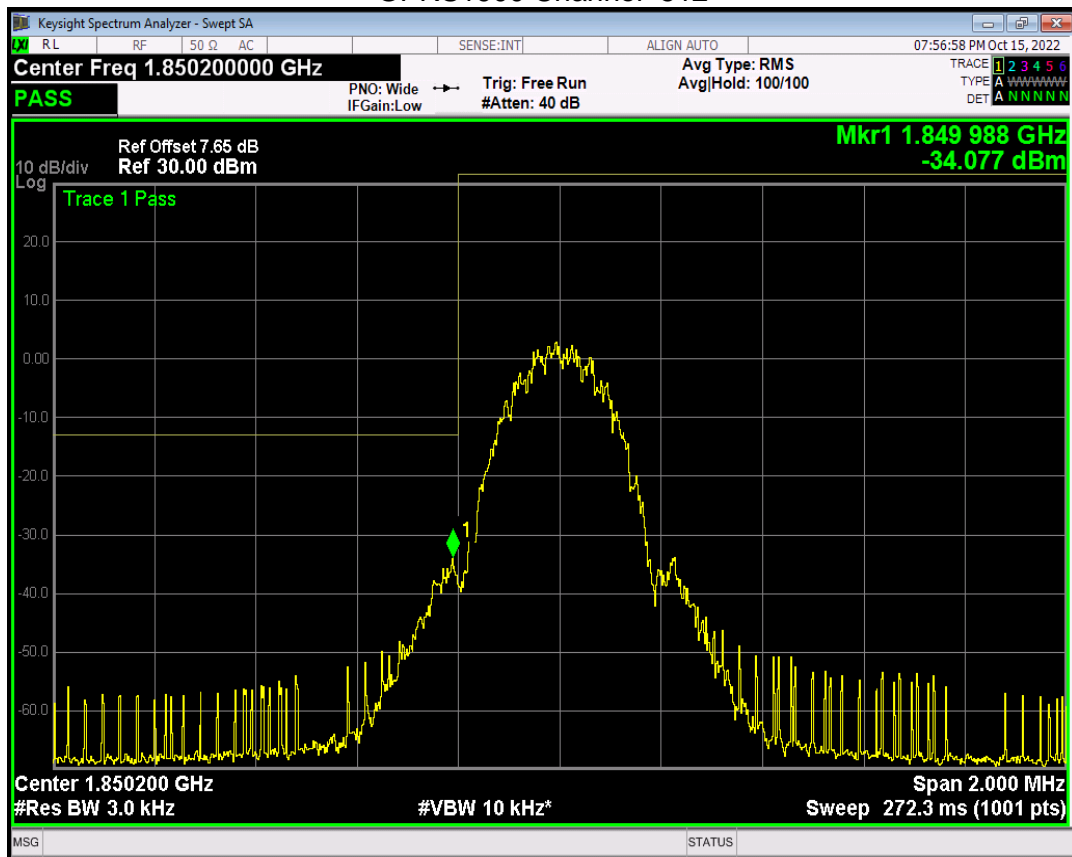
# GSM850 Channel=251



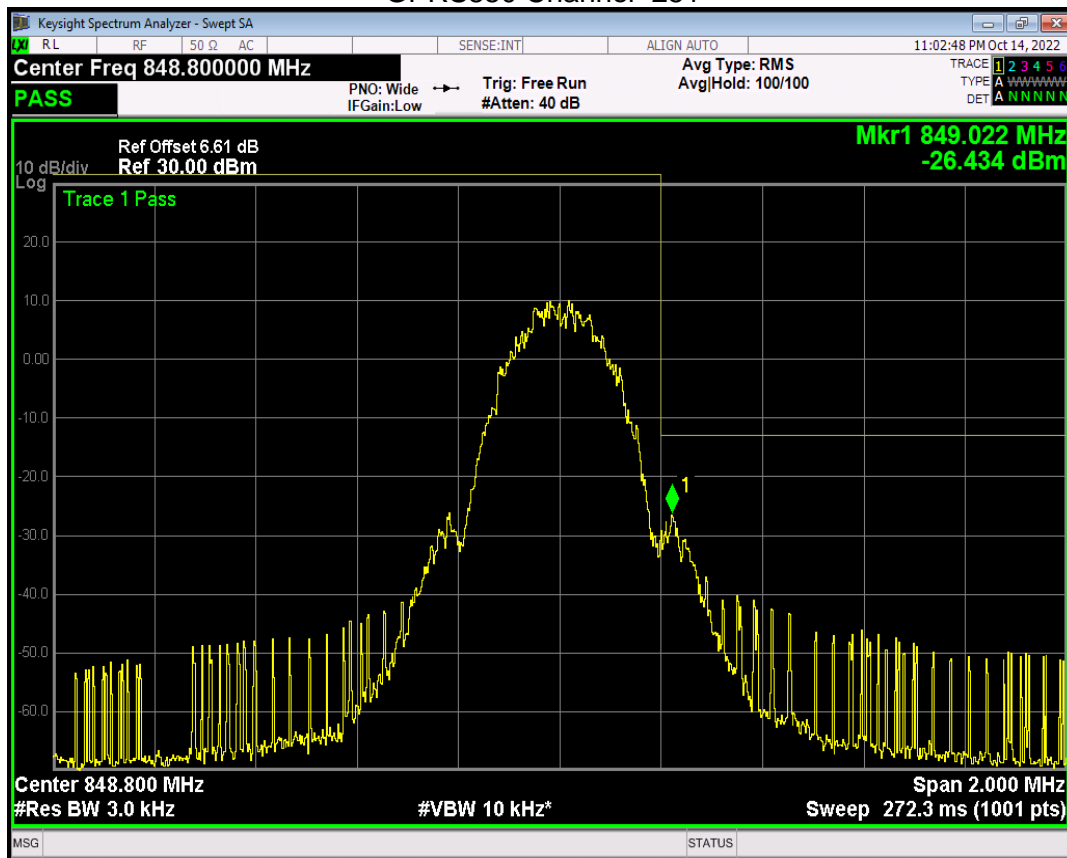
# GPRS1900 Channel=810



# GPRS1900 Channel=512



# GPRS850 Channel=251



# GPRS850 Channel=128

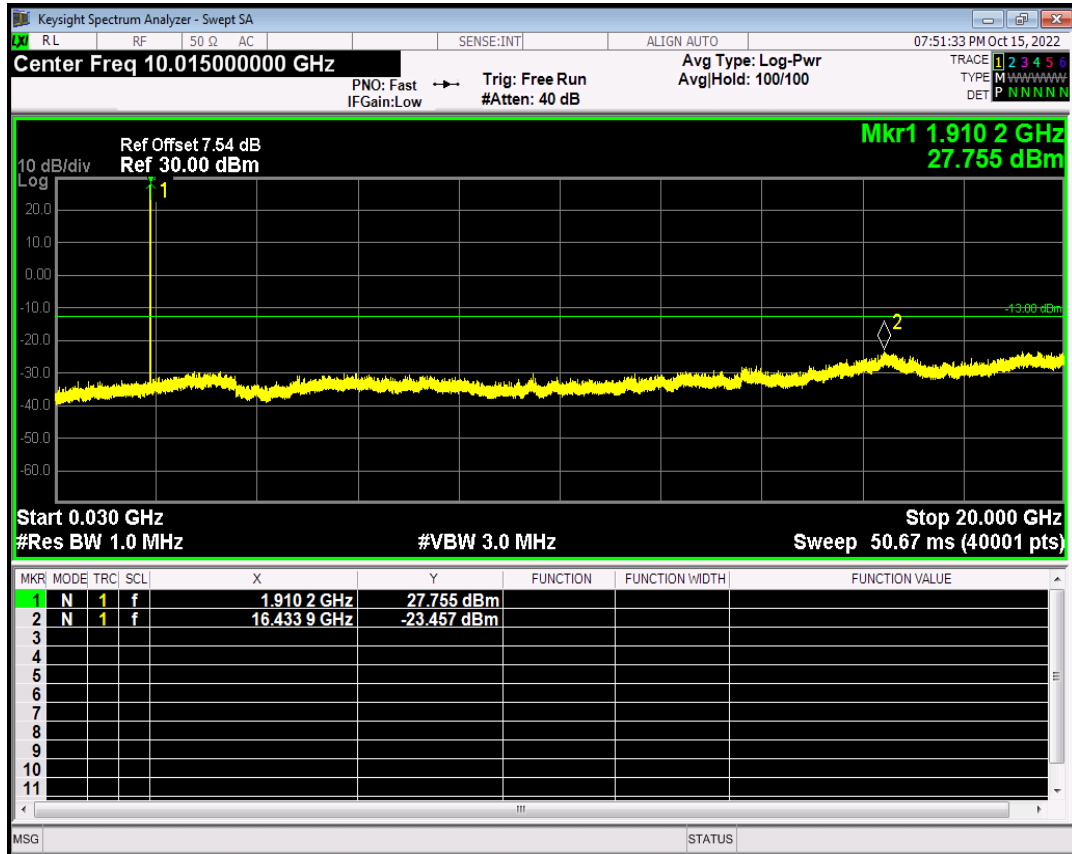


## OUT-OF-BAND EMISSIONS

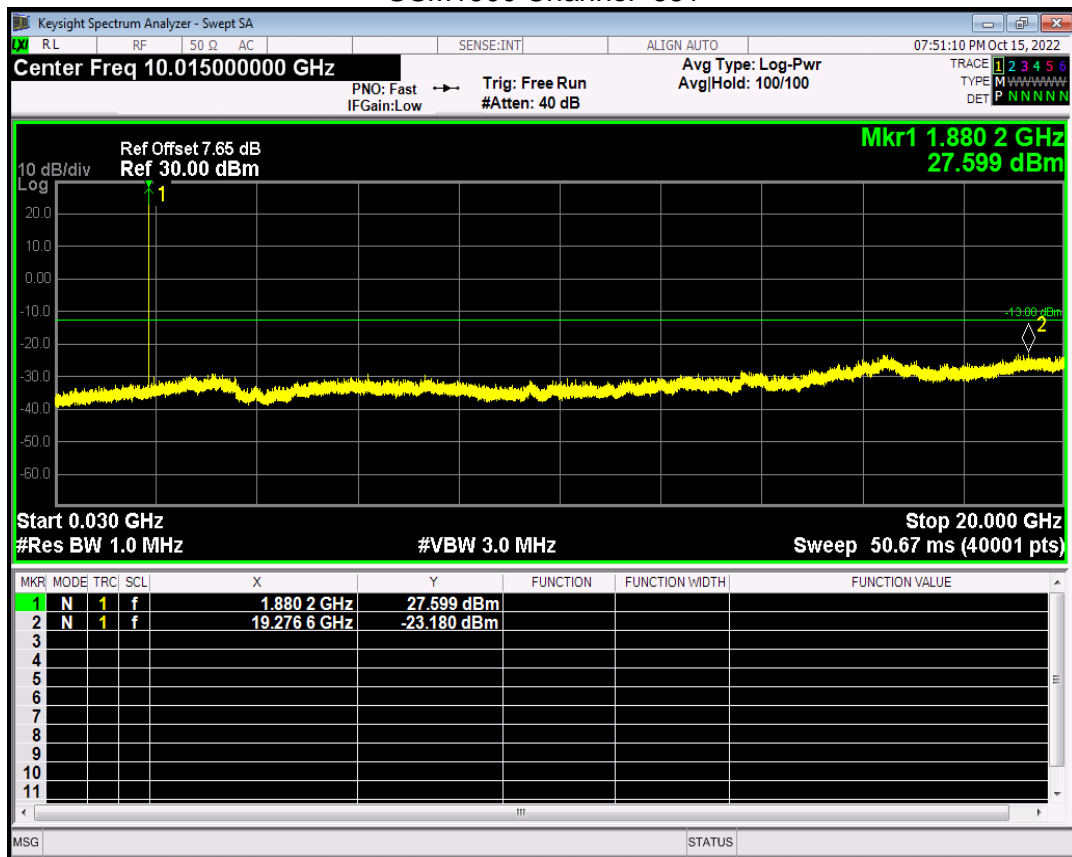
Band	Channel	Frequency (MHz)	Spur Freq (MHz)	Spur Level (dBm)	Limit (dBm)	Verdict
GSM1900	512	1850.2	19242.64	-23.13	-13	PASS
GSM1900	661	1880	19276.59	-23.18	-13	PASS
GSM1900	810	1909.8	16433.86	-23.45	-13	PASS
GSM850	128	824.2	3136.90	-30.25	-13	PASS
GSM850	190	836.6	2760.28	-30.14	-13	PASS
GSM850	251	848.8	3589.04	-30.22	-13	PASS

Band	Channel	Frequency (MHz)	Spur Freq (MHz)	Spur Level (dBm)	Limit (dBm)	Verdict
GPRS1900	512	1850.2	19988.52	-23.35	-13	PASS
GPRS1900	661	1880	16452.83	-22.33	-13	PASS
GPRS1900	810	1909.8	19534.20	-22.59	-13	PASS
GPRS850	128	824.2	2662.83	-30.32	-13	PASS
GPRS850	190	836.6	3143.38	-30.00	-13	PASS
GPRS850	251	848.8	3169.80	-29.12	-13	PASS

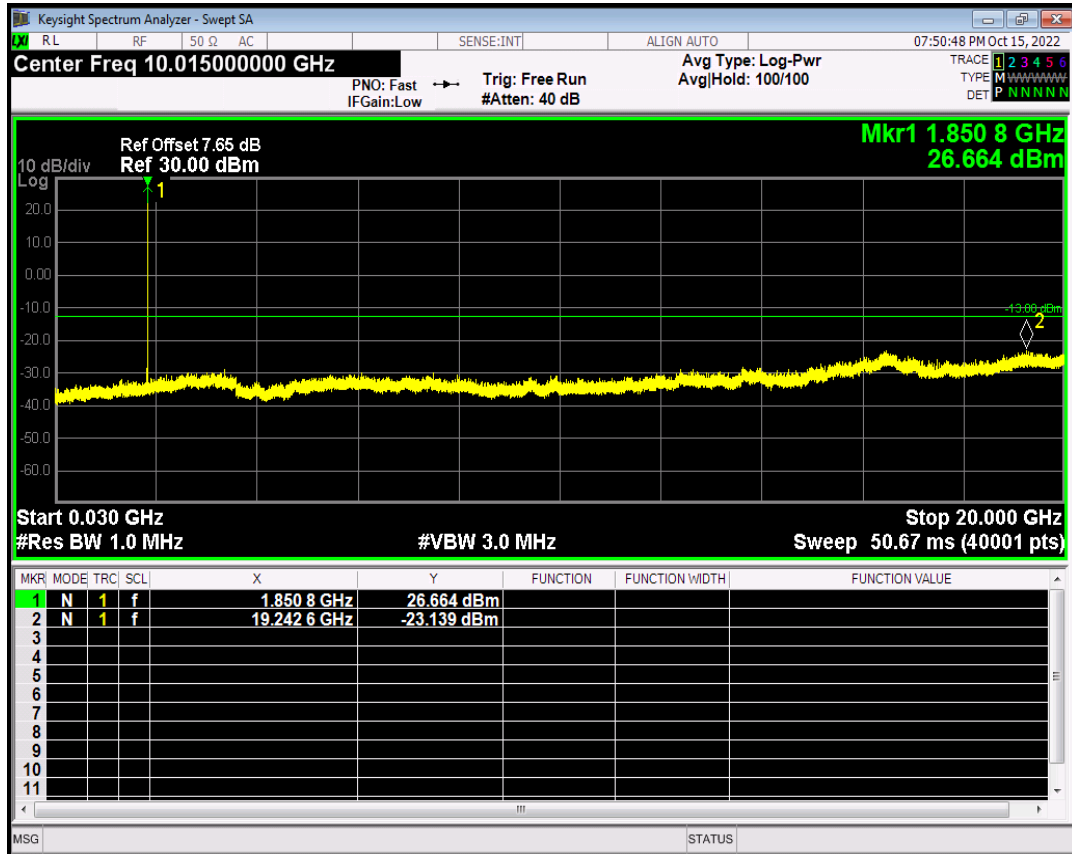
# GSM1900 Channel=810



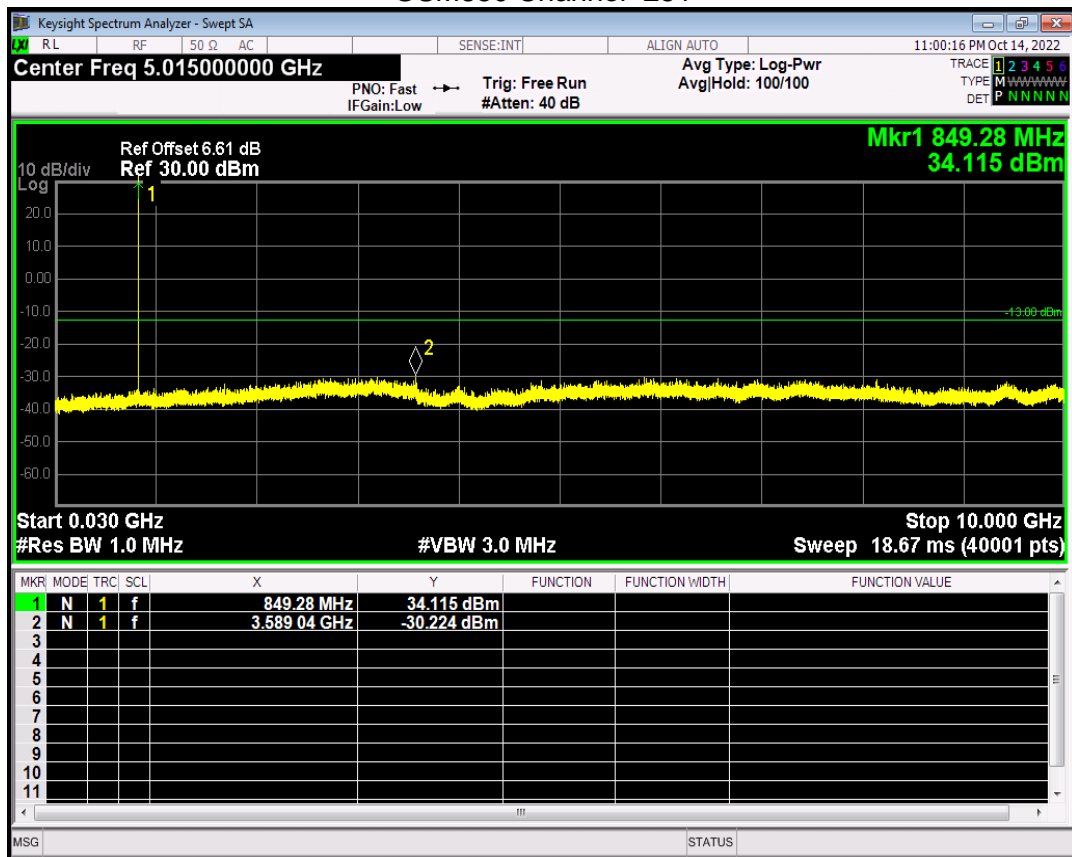
# GSM1900 Channel=661



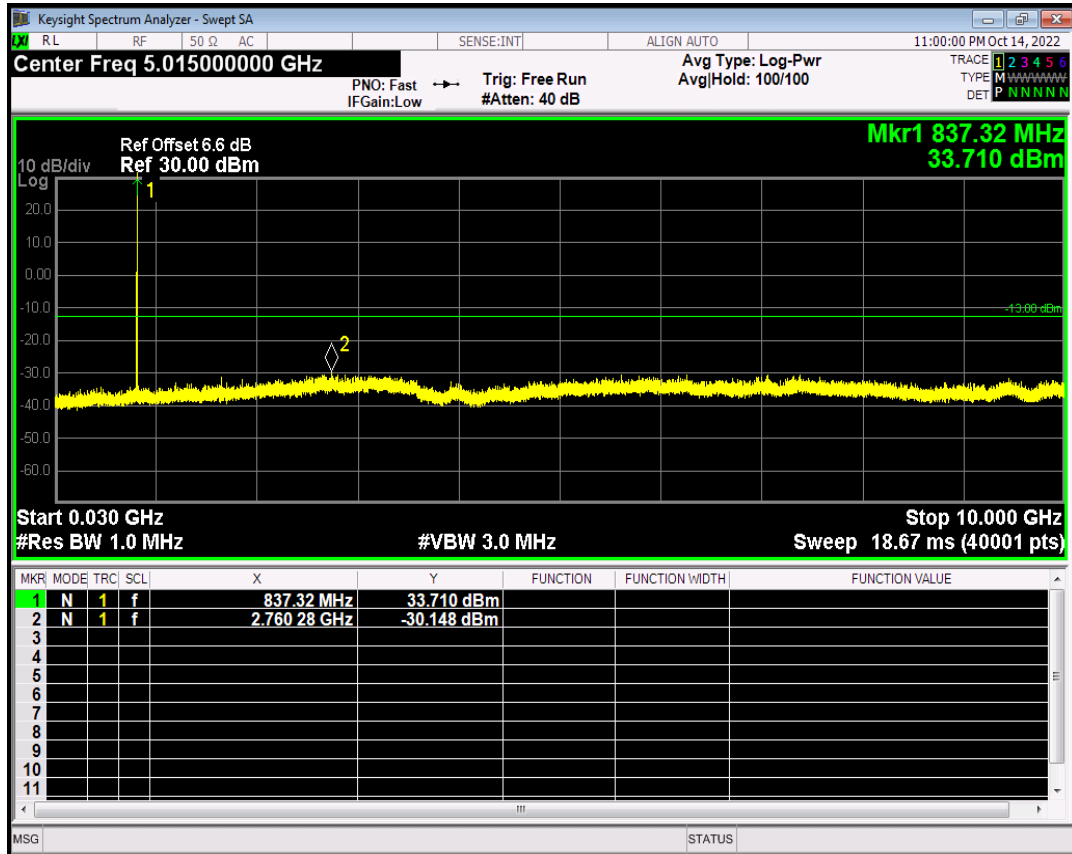
# GSM1900 Channel=512



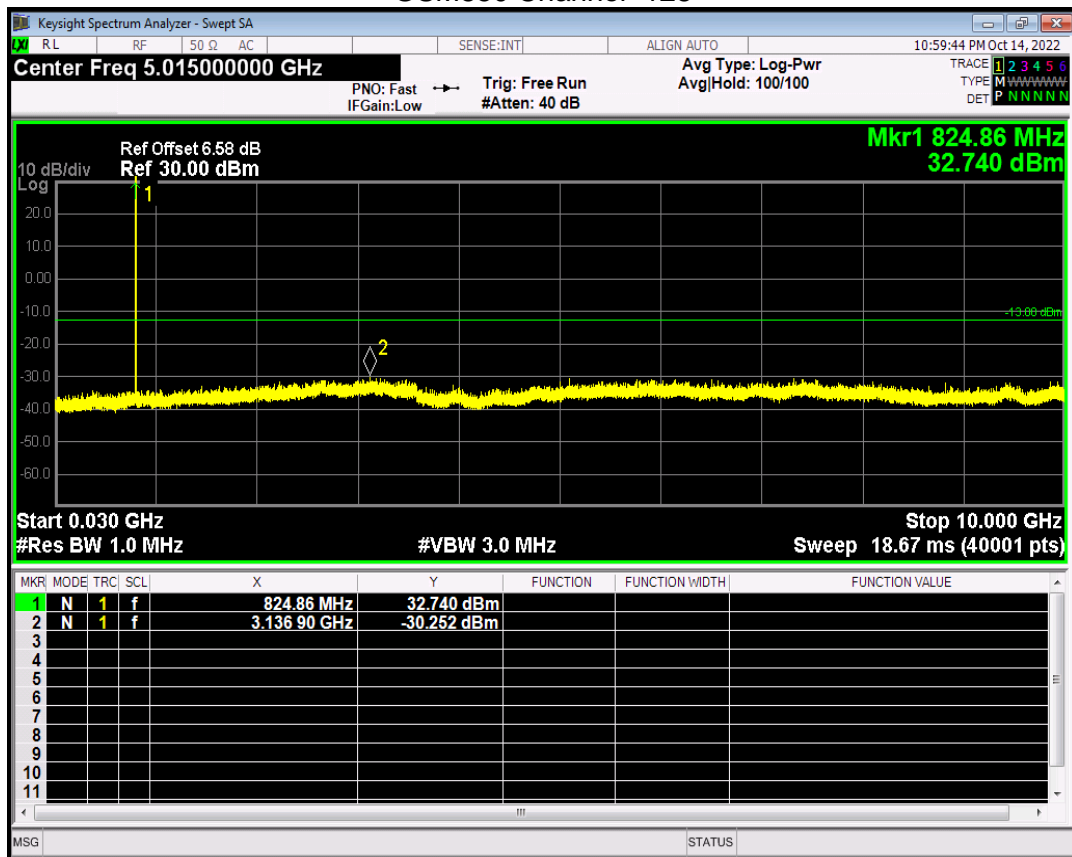
# GSM850 Channel=251



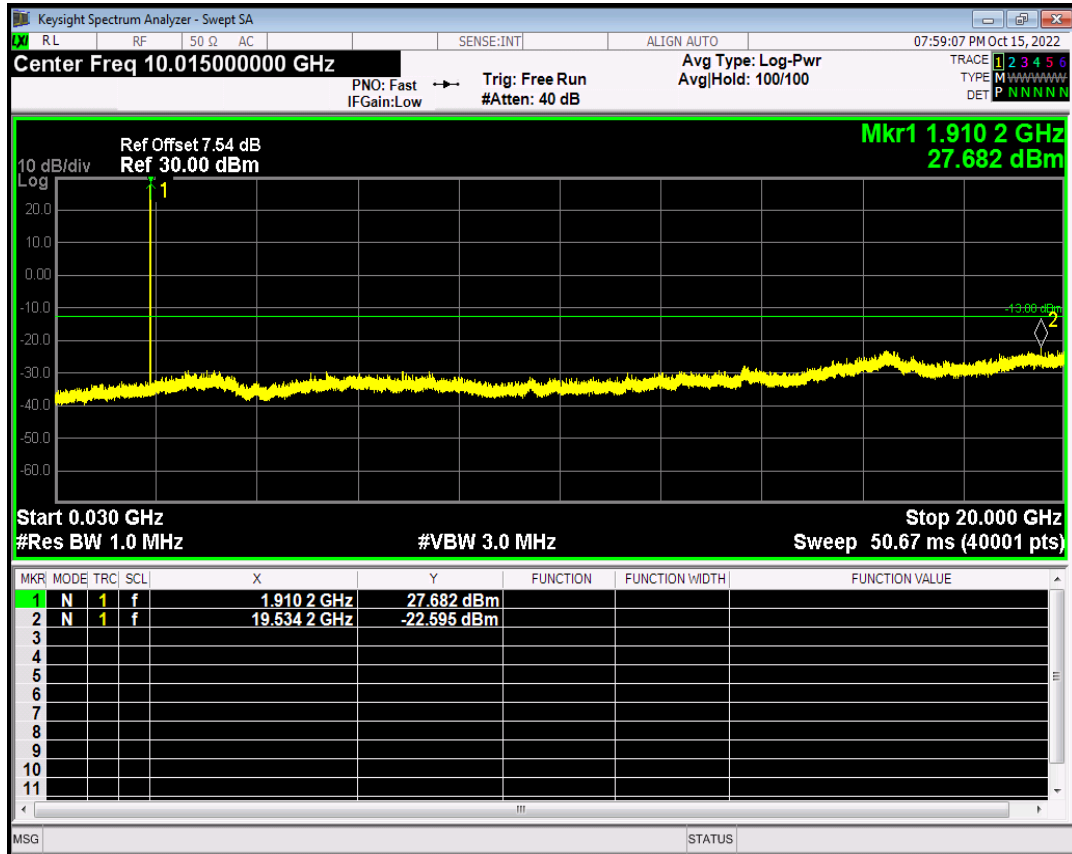
# GSM850 Channel=190



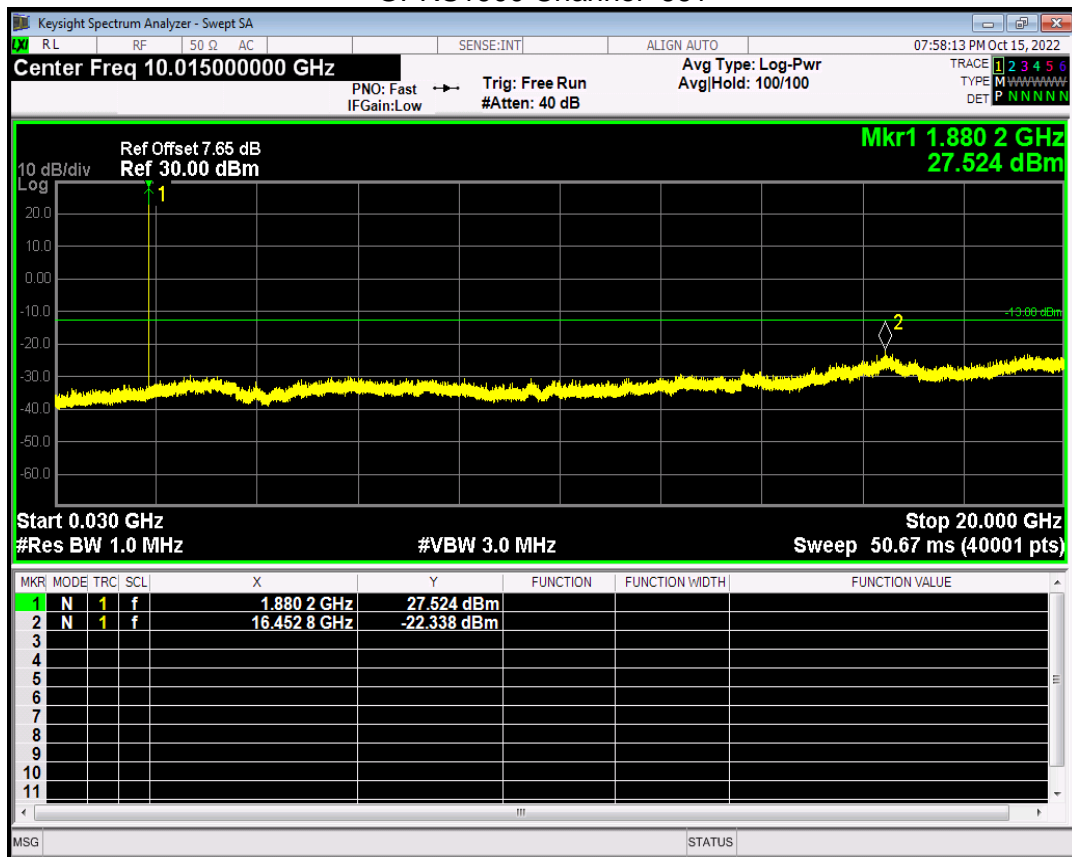
# GSM850 Channel=128



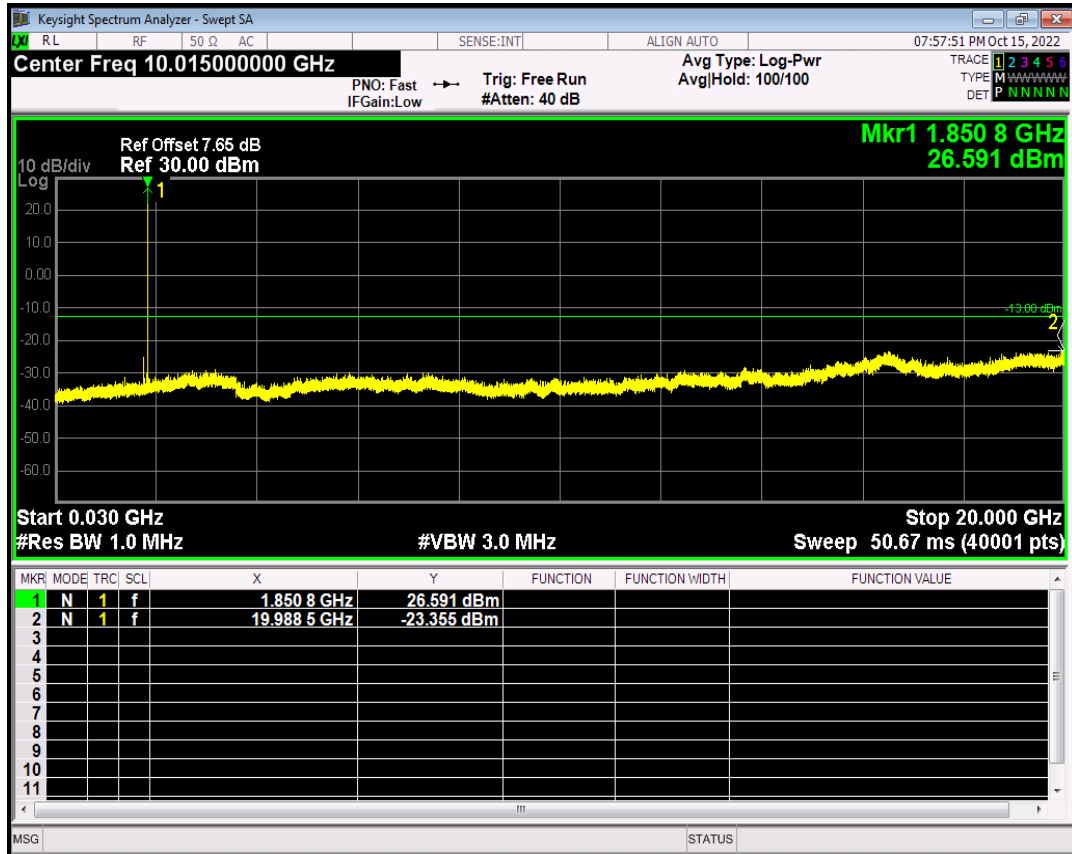
# GPRS1900 Channel=810



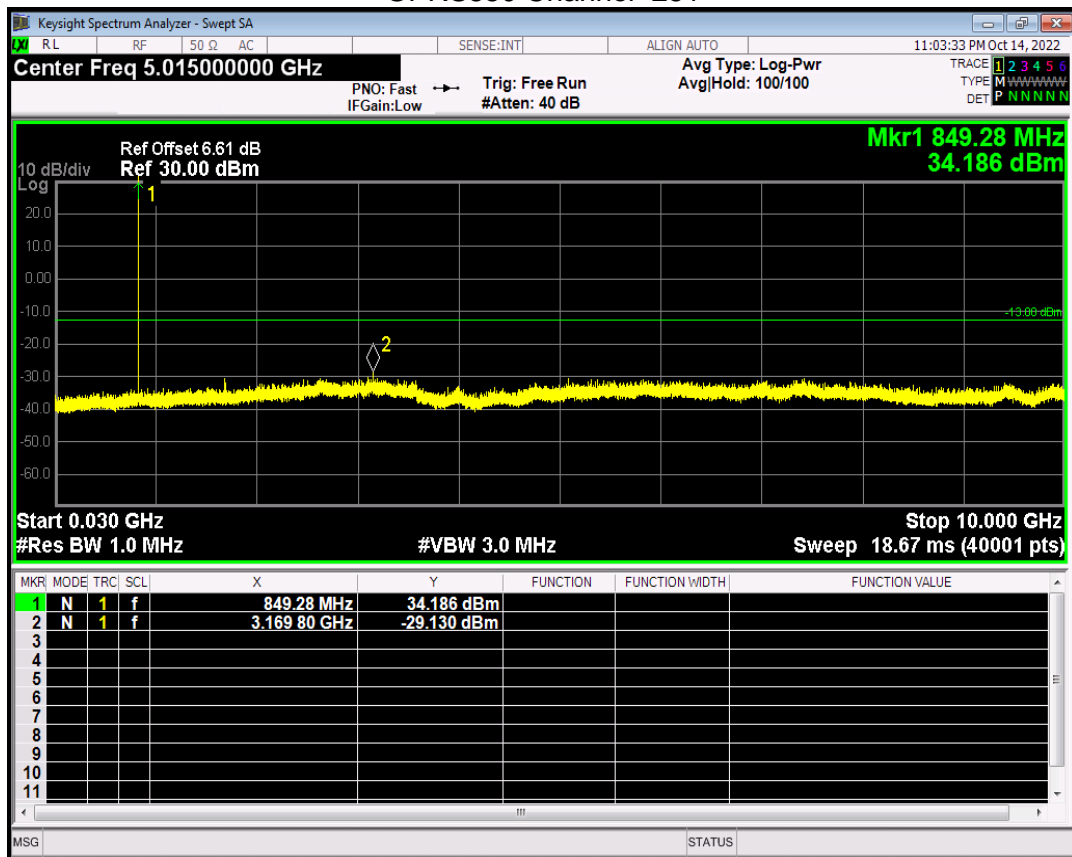
# GPRS1900 Channel=661



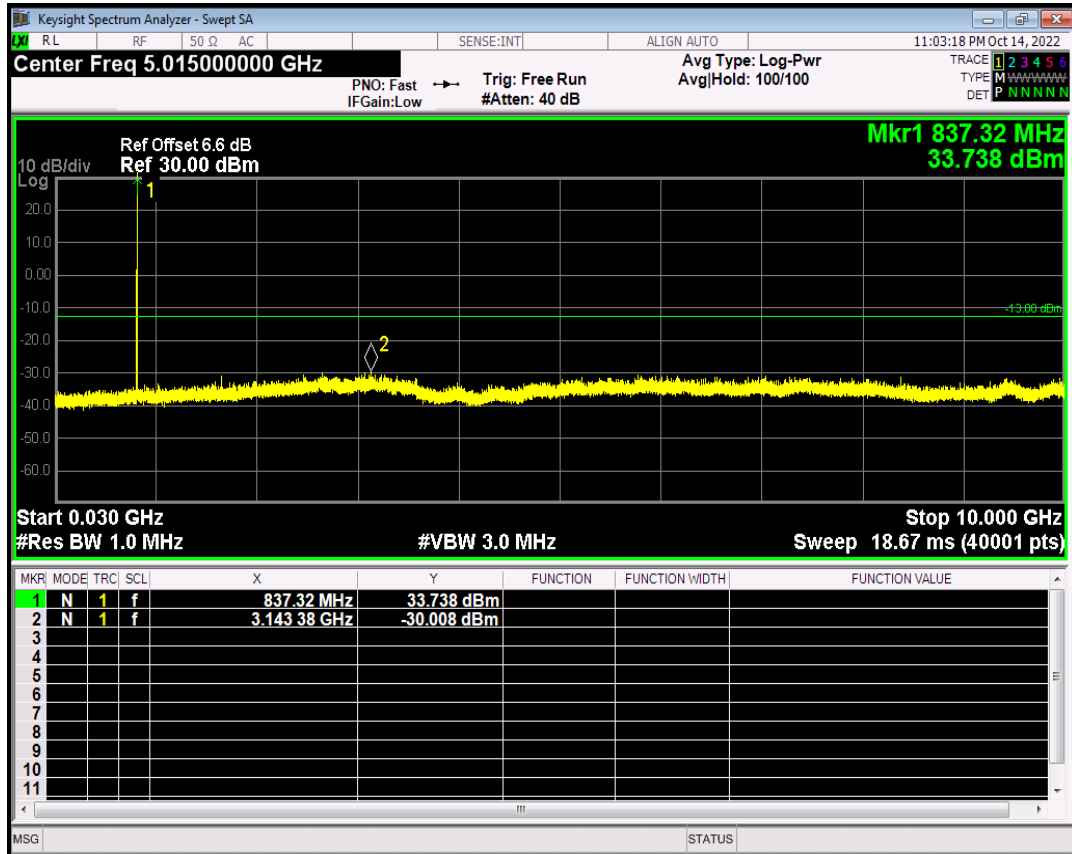
# GPRS1900 Channel=512



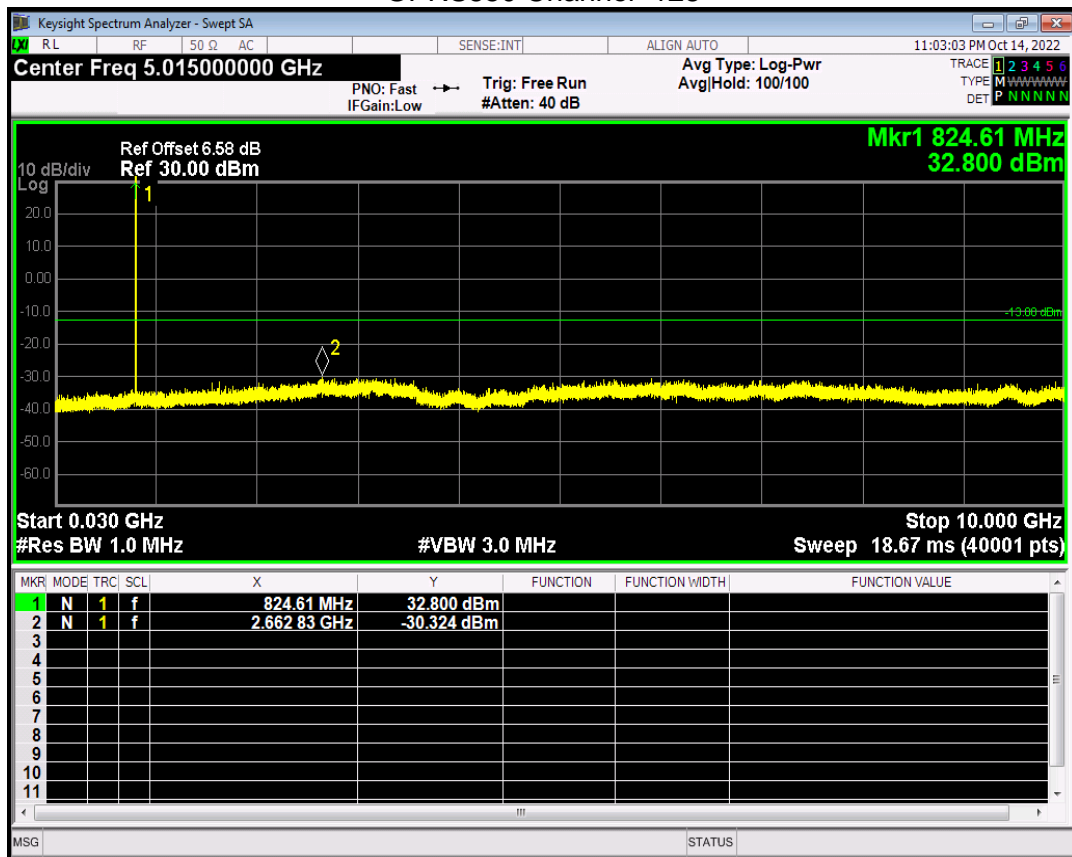
# GPRS850 Channel=251



# GPRS850 Channel=190



# GPRS850 Channel=128



## 3G

## CONDUCTED OUTPUT POWER

Band	Channel	Frequency (MHz)	Power (dBm)	Gain (dBm)	EIRP (dBm)	EIRP Limit (dBm)	Verdict
WCDMA Band2	9262	1852.4	21.18	-0.85	19.98	33	PASS
WCDMA Band2	9400	1880	19.39	-0.85	18.19	33	PASS
WCDMA Band2	9538	1907.6	19.83	-0.85	18.63	33	PASS

Band	Channel	Frequency (MHz)	Power (dBm)	Gain (dBm)	ERP (dBm)	ERP Limit (dBm)	Verdict
WCDMA Band5	4132	826.4	22.45	-1.2	19.18	38.45	PASS
WCDMA Band5	4182	836.4	22.33	-1.2	19.06	38.45	PASS
WCDMA Band5	4233	846.6	22.45	-1.2	19.18	38.45	PASS

Band	Channel	Frequency (MHz)	Power (dBm)	Gain (dBm)	EIRP (dBm)	EIRP Limit (dBm)	Verdict
HSDPA Band2 Subtest1	9262	1852.4	18.61	-0.85	17.76	33	PASS
HSDPA Band2 Subtest2	9262	1852.4	18.16	-0.85	17.31	33	PASS
HSDPA Band2 Subtest3	9262	1852.4	17.75	-0.85	16.90	33	PASS
HSDPA Band2 Subtest4	9262	1852.4	17.37	-0.85	16.52	33	PASS
HSDPA Band2 Subtest1	9400	1880	18.63	-0.85	17.78	33	PASS
HSDPA Band2 Subtest2	9400	1880	18.31	-0.85	17.46	33	PASS
HSDPA Band2 Subtest3	9400	1880	18.04	-0.85	17.19	33	PASS
HSDPA Band2 Subtest4	9400	1880	17.67	-0.85	16.82	33	PASS
HSDPA Band2 Subtest1	9538	1907.6	18.47	-0.85	17.62	33	PASS
HSDPA Band2 Subtest2	9538	1907.6	18.24	-0.85	17.39	33	PASS
HSDPA Band2	9538	1907.6	17.94	-0.85	17.09	33	PASS

Subtest3							
HSDPA Band2 Subtest4	9538	1907.6	17.55	-0.85	16.70	33	PASS

Band	Channel	Frequency (MHz)	Power (dBm)	Gain (dBm)	ERP (dBm)	ERP Limit (dBm)	Verdict
HSDPA Band5 Subtest1	4132	826.4	22.43	-1.2	19.08	38.45	PASS
HSDPA Band5 Subtest2	4132	826.4	21.93	-1.2	18.58	38.45	PASS
HSDPA Band5 Subtest3	4132	826.4	21.69	-1.2	18.34	38.45	PASS
HSDPA Band5 Subtest4	4132	826.4	21.46	-1.2	18.11	38.45	PASS
HSDPA Band5 Subtest1	4182	836.4	22.43	-1.2	19.08	38.45	PASS
HSDPA Band5 Subtest2	4182	836.4	22.34	-1.2	18.99	38.45	PASS
HSDPA Band5 Subtest3	4182	836.4	21.97	-1.2	18.62	38.45	PASS
HSDPA Band5 Subtest4	4182	836.4	21.62	-1.2	18.27	38.45	PASS
HSDPA Band5 Subtest1	4233	846.6	21.96	-1.2	18.61	38.45	PASS
HSDPA Band5 Subtest2	4233	846.6	21.66	-1.2	18.31	38.45	PASS
HSDPA Band5 Subtest3	4233	846.6	21.44	-1.2	18.09	38.45	PASS
HSDPA Band5 Subtest4	4233	846.6	21.18	-1.2	17.83	38.45	PASS

Band	Channel	Frequency (MHz)	Power (dBm)	Gain (dBm)	EIRP (dBm)	EIRP Limit (dBm)	Verdict
HSUPA Band2 Subtest1	9262	1852.4	18.89	-0.85	18.04	33	PASS
HSUPA Band2 Subtest2	9262	1852.4	18.82	-0.85	17.97	33	PASS
HSUPA Band2 Subtest3	9262	1852.4	18.53	-0.85	17.68	33	PASS
HSUPA Band2 Subtest4	9262	1852.4	18.68	-0.85	17.83	33	PASS
HSUPA Band2 Subtest5	9262	1852.4	18.52	-0.85	17.67	33	PASS
HSUPA Band2 Subtest1	9400	1880	18.86	-0.85	18.01	33	PASS
HSUPA Band2 Subtest2	9400	1880	18.99	-0.85	18.14	33	PASS
HSUPA Band2 Subtest3	9400	1880	18.68	-0.85	17.83	33	PASS
HSUPA Band2 Subtest4	9400	1880	18.98	-0.85	18.13	33	PASS
HSUPA Band2 Subtest5	9400	1880	18.79	-0.85	17.94	33	PASS
HSUPA Band2 Subtest1	9538	1907.6	18.53	-0.85	17.68	33	PASS
HSUPA Band2 Subtest2	9538	1907.6	18.58	-0.85	17.73	33	PASS
HSUPA Band2 Subtest3	9538	1907.6	18.33	-0.85	17.48	33	PASS
HSUPA Band2 Subtest4	9538	1907.6	18.68	-0.85	17.83	33	PASS
HSUPA Band2 Subtest5	9538	1907.6	18.49	-0.85	17.64	33	PASS

Band	Channel	Frequency (MHz)	Power (dBm)	Gain (dBm)	ERP (dBm)	ERP Limit (dBm)	Verdict
HSUPA Band5 Subtest1	4132	826.4	22.52	-1.2	19.17	38.75	PASS
HSUPA Band5 Subtest2	4132	826.4	22.32	-1.2	18.97	38.75	PASS
HSUPA Band5 Subtest3	4132	826.4	21.89	-1.2	18.54	38.75	PASS
HSUPA Band5 Subtest4	4132	826.4	22.22	-1.2	18.87	38.75	PASS
HSUPA Band5 Subtest5	4132	826.4	22.19	-1.2	18.84	38.75	PASS
HSUPA Band5 Subtest1	4182	836.4	22.54	-1.2	19.19	38.75	PASS
HSUPA Band5 Subtest2	4182	836.4	22.57	-1.2	19.22	38.75	PASS
HSUPA Band5 Subtest3	4182	836.4	22.32	-1.2	18.97	38.75	PASS
HSUPA Band5 Subtest4	4182	836.4	22.58	-1.2	19.23	38.75	PASS
HSUPA Band5 Subtest5	4182	836.4	22.43	-1.2	19.08	38.75	PASS
HSUPA Band5 Subtest1	4233	846.6	21.8	-1.2	18.45	38.75	PASS
HSUPA Band5 Subtest2	4233	846.6	21.9	-1.2	18.55	38.75	PASS
HSUPA Band5 Subtest3	4233	846.6	21.78	-1.2	18.43	38.75	PASS
HSUPA Band5 Subtest4	4233	846.6	21.95	-1.2	18.60	38.75	PASS
HSUPA Band5 Subtest5	4233	846.6	21.74	-1.2	18.39	38.75	PASS

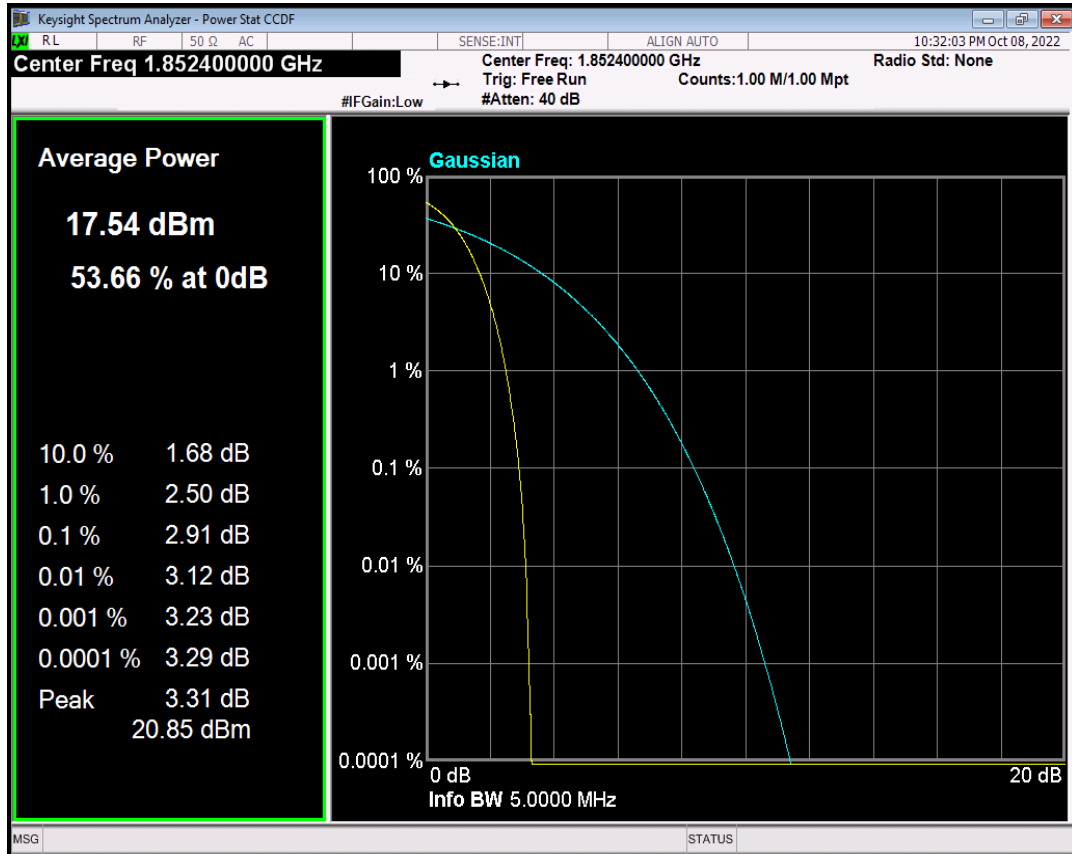
## FREQUENCY STABILITY

Band	Channel	Frequency (MHz)	Result (Hz)	Result (ppm)	Low Limit (ppm)	high Limit (ppm)	Verdict
WCDMA Band2	9262	1852.4	1.32	0.001	-2.5	2.5	PASS
WCDMA Band2	9400	1880	4.27	0.002	-2.5	2.5	PASS
WCDMA Band2	9538	1907.6	-0.19	0.000	-2.5	2.5	PASS
WCDMA Band5	4132	826.4	-1.72	-0.002	-2.5	2.5	PASS
WCDMA Band5	4182	836.4	-0.32	0.000	-2.5	2.5	PASS
WCDMA Band5	4233	846.6	0.44	0.001	-2.5	2.5	PASS

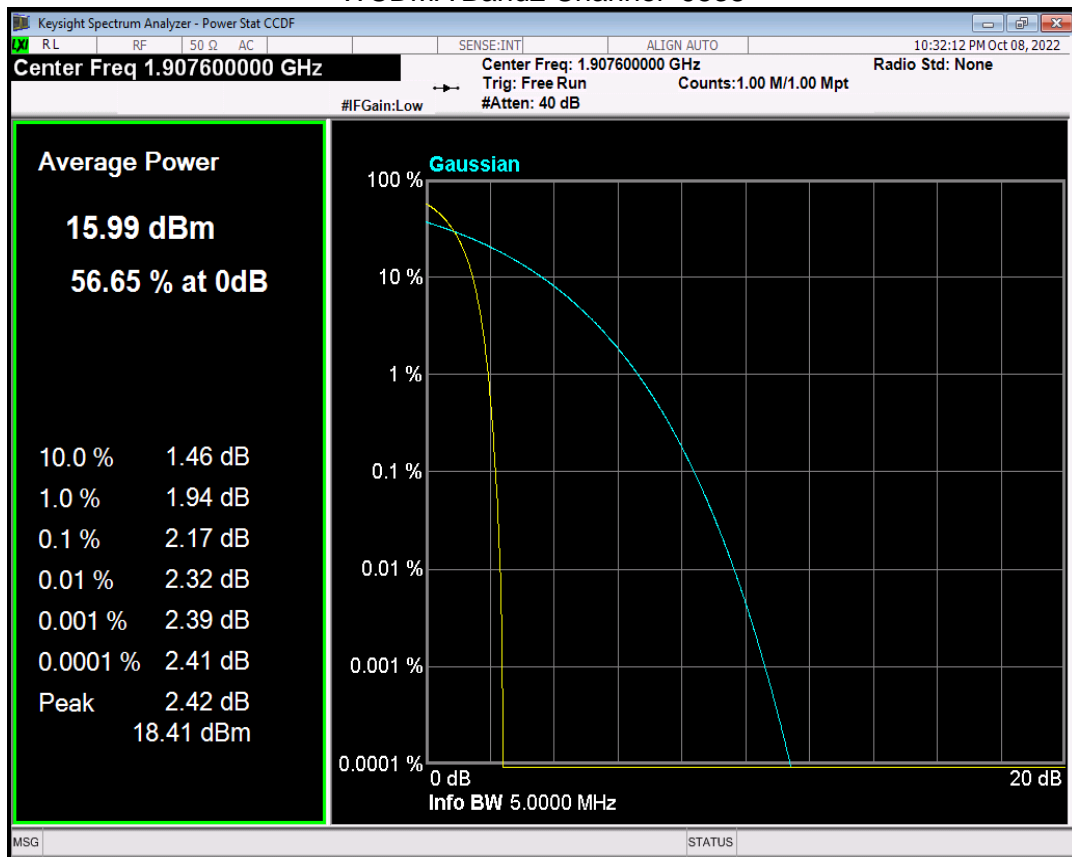
# PEAK-TO-AVERAGE RATIO

Band	Channel	Frequency (MHz)	Result (dB)	high Limit (dB)	Verdict
WCDMA Band2	9262	1852.4	2.91	13	PASS
WCDMA Band2	9400	1880	2.17	13	PASS
WCDMA Band2	9538	1907.6	2.92	13	PASS
WCDMA Band5	4132	826.4	3.09	13	PASS
WCDMA Band5	4182	836.4	2.99	13	PASS
WCDMA Band5	4233	846.6	2.94	13	PASS

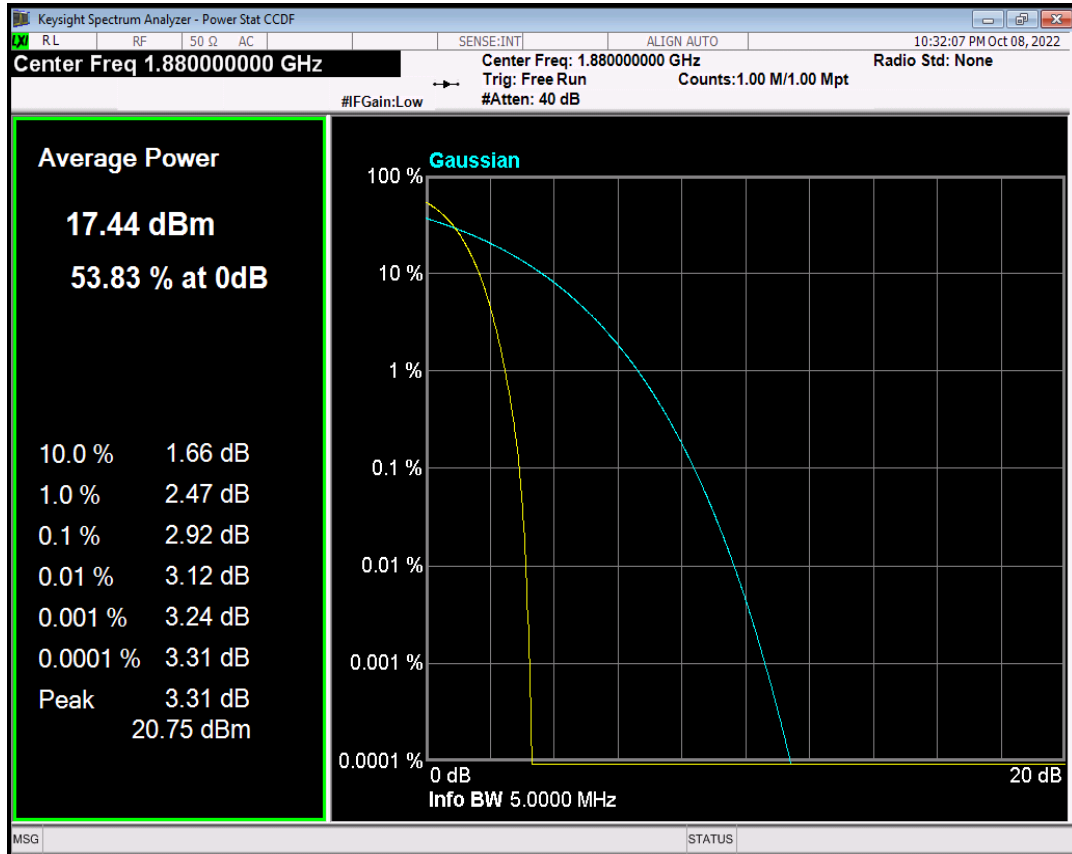
## WCDMA Band2 Channel=9262



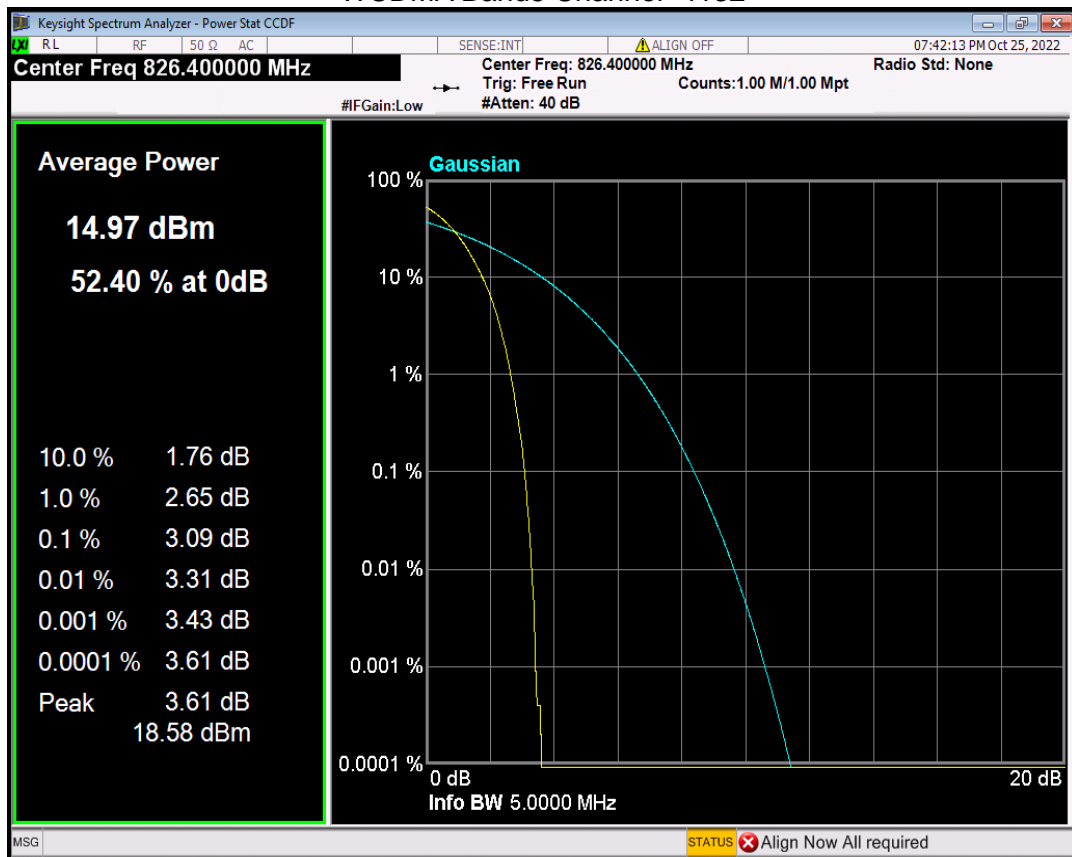
## WCDMA Band2 Channel=9538



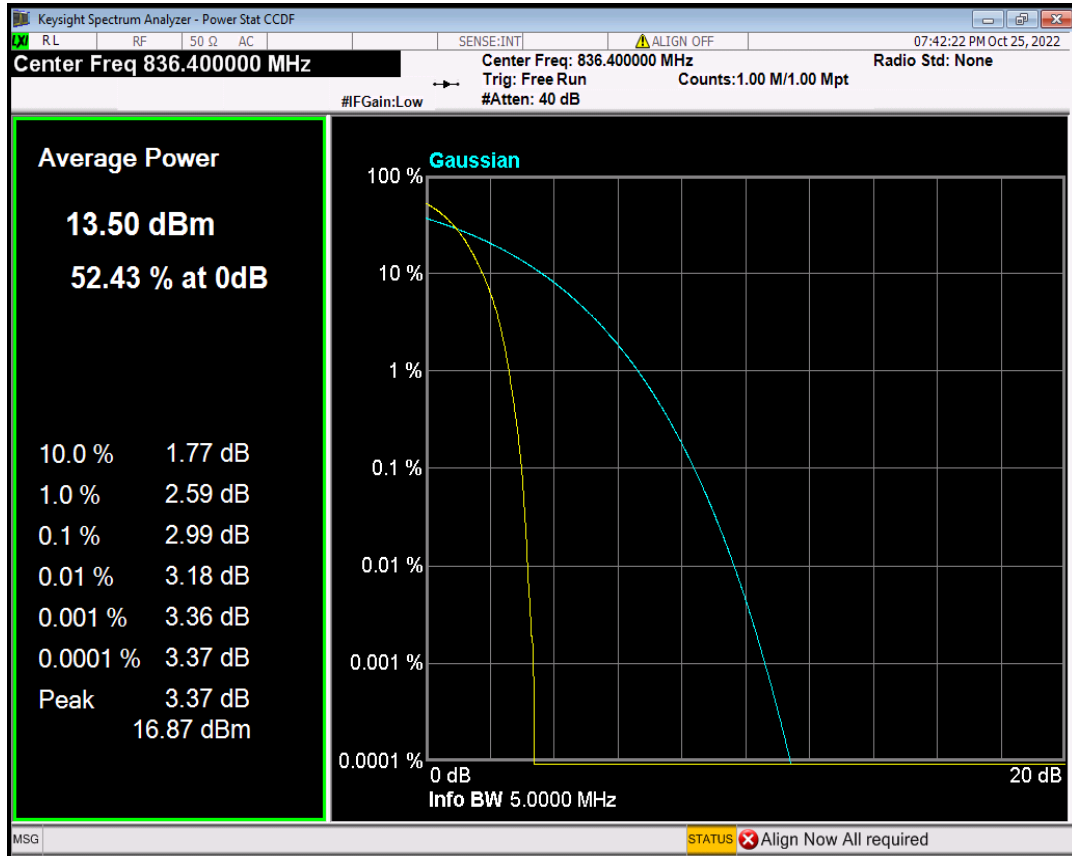
# WCDMA Band2 Channel=9400



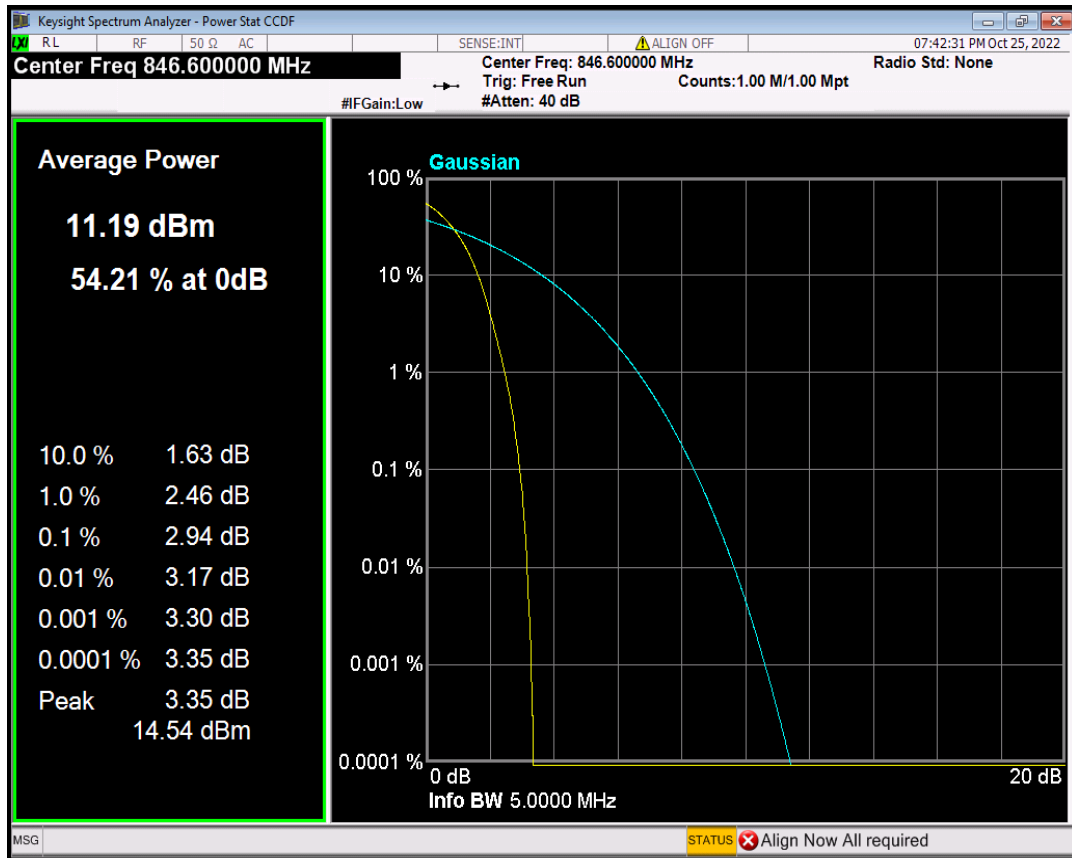
# WCDMA Band5 Channel=4132



# WCDMA Band5 Channel=4182



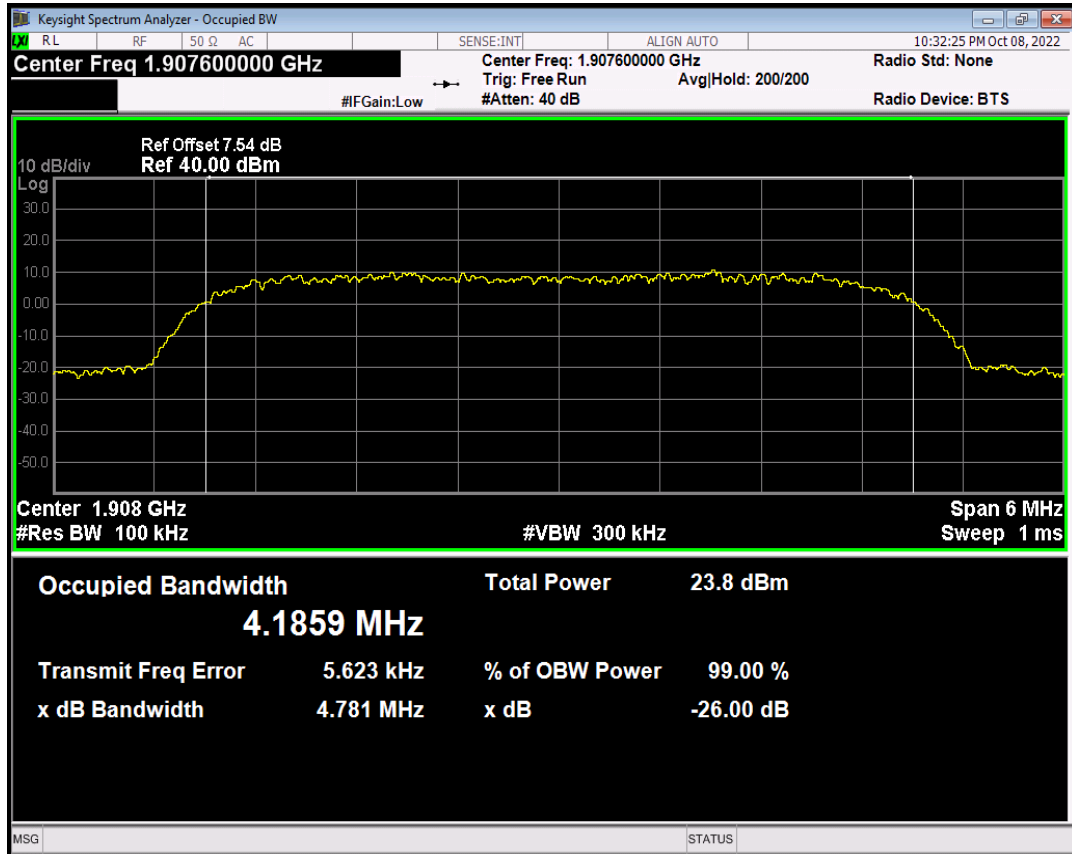
# WCDMA Band5 Channel=4233



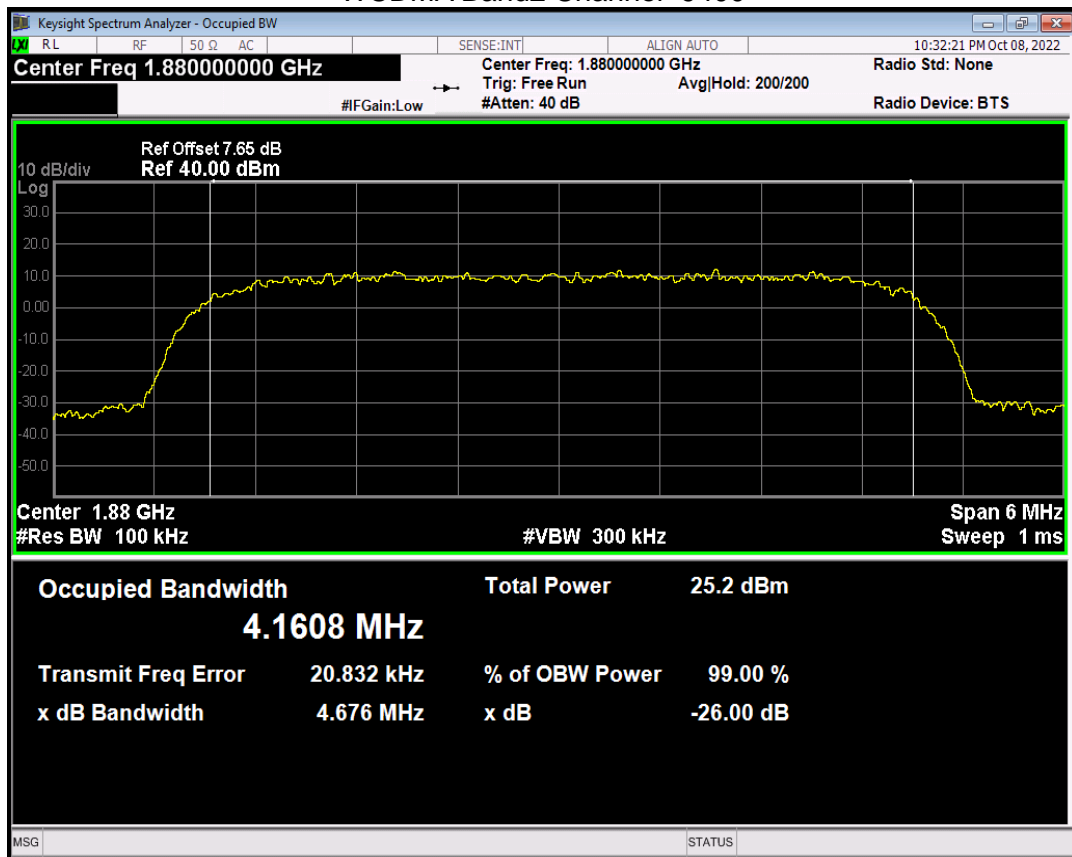
## OCCUPIED BANDWIDTH

Band	Channel	Frequency (MHz)	99% OBW (MHz)	-26dB EBW (MHz)	Verdict
WCDMA Band2	9262	1852.4	4.1859	4.781	PASS
WCDMA Band2	9400	1880	4.1608	4.676	PASS
WCDMA Band2	9538	1907.6	4.1393	4.652	PASS
WCDMA Band5	4132	826.4	4.1494	4.637	PASS
WCDMA Band5	4182	836.4	4.1629	4.677	PASS
WCDMA Band5	4233	846.6	4.1579	4.661	PASS

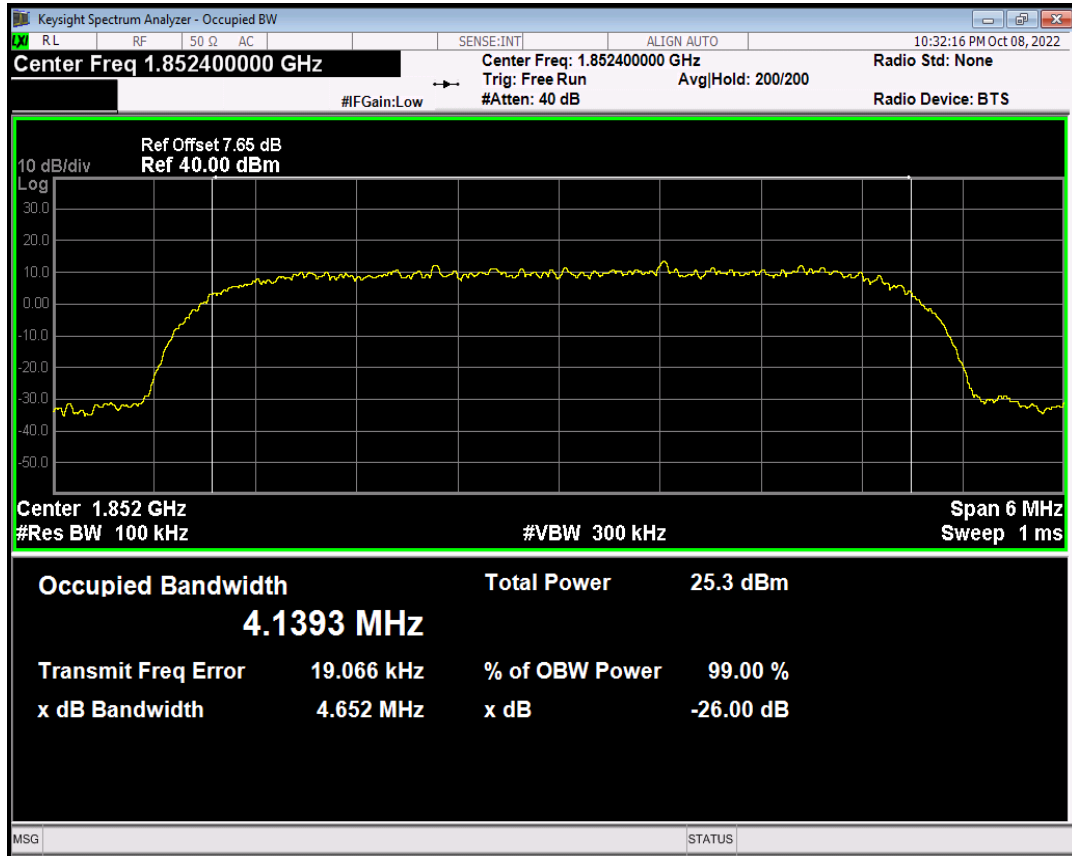
# WCDMA Band2 Channel=9538



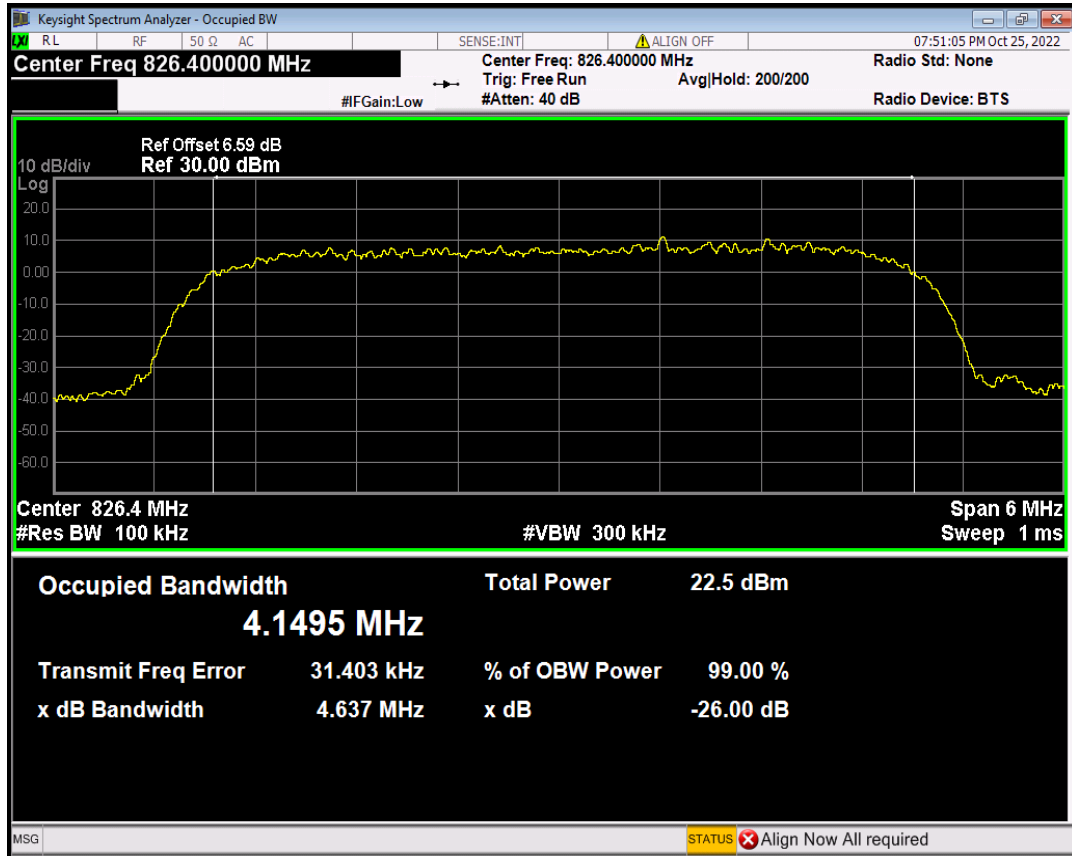
# WCDMA Band2 Channel=9400



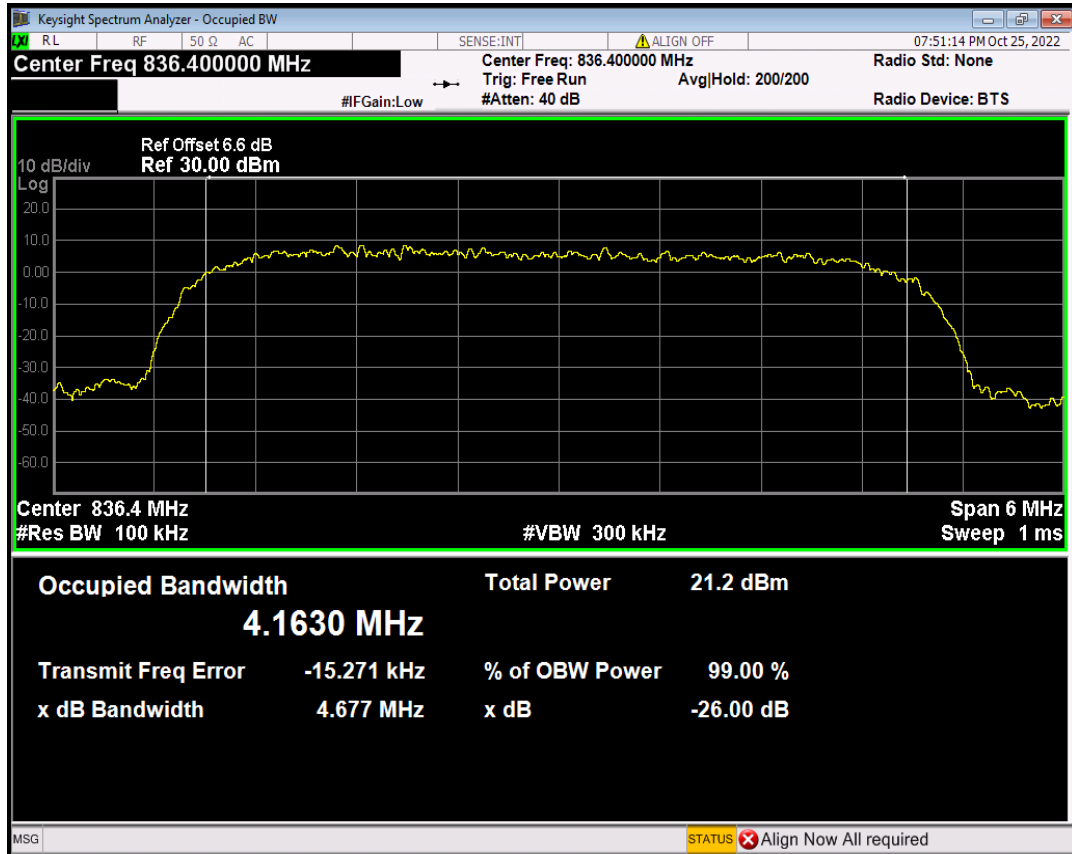
# WCDMA Band2 Channel=9262



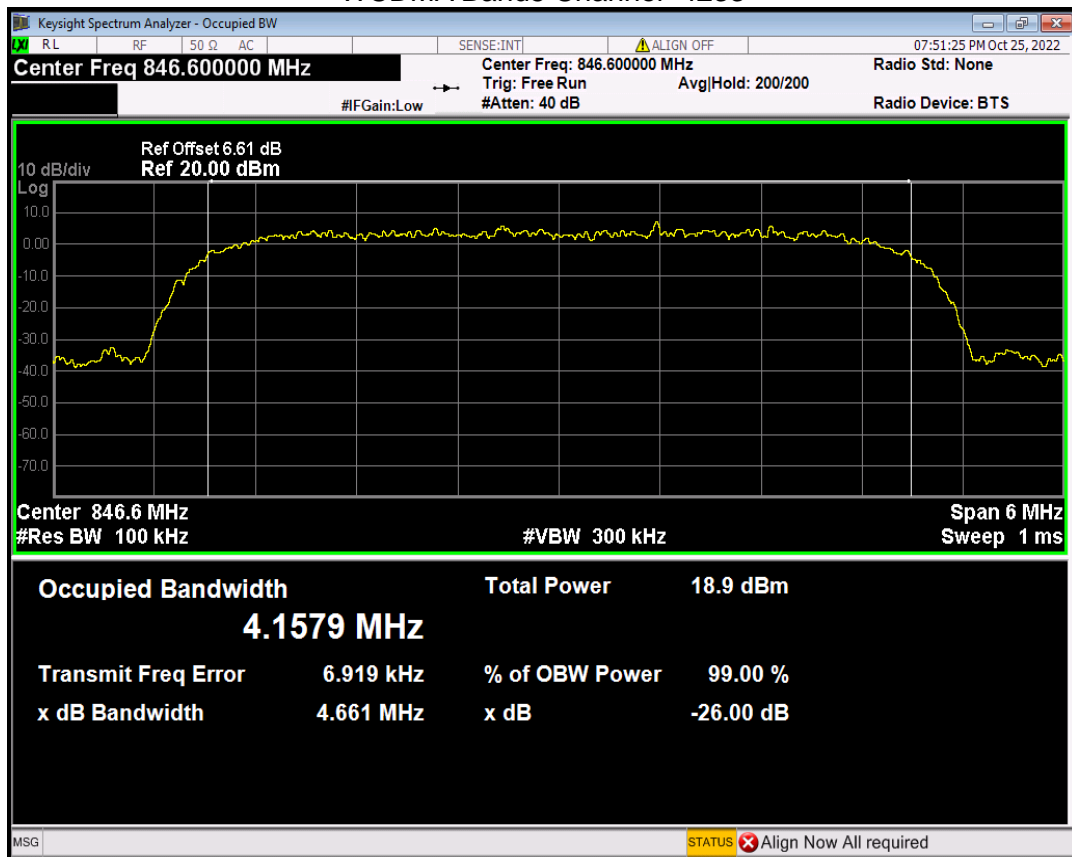
# WCDMA Band5 Channel=4132



# WCDMA Band5 Channel=4182



# WCDMA Band5 Channel=4233



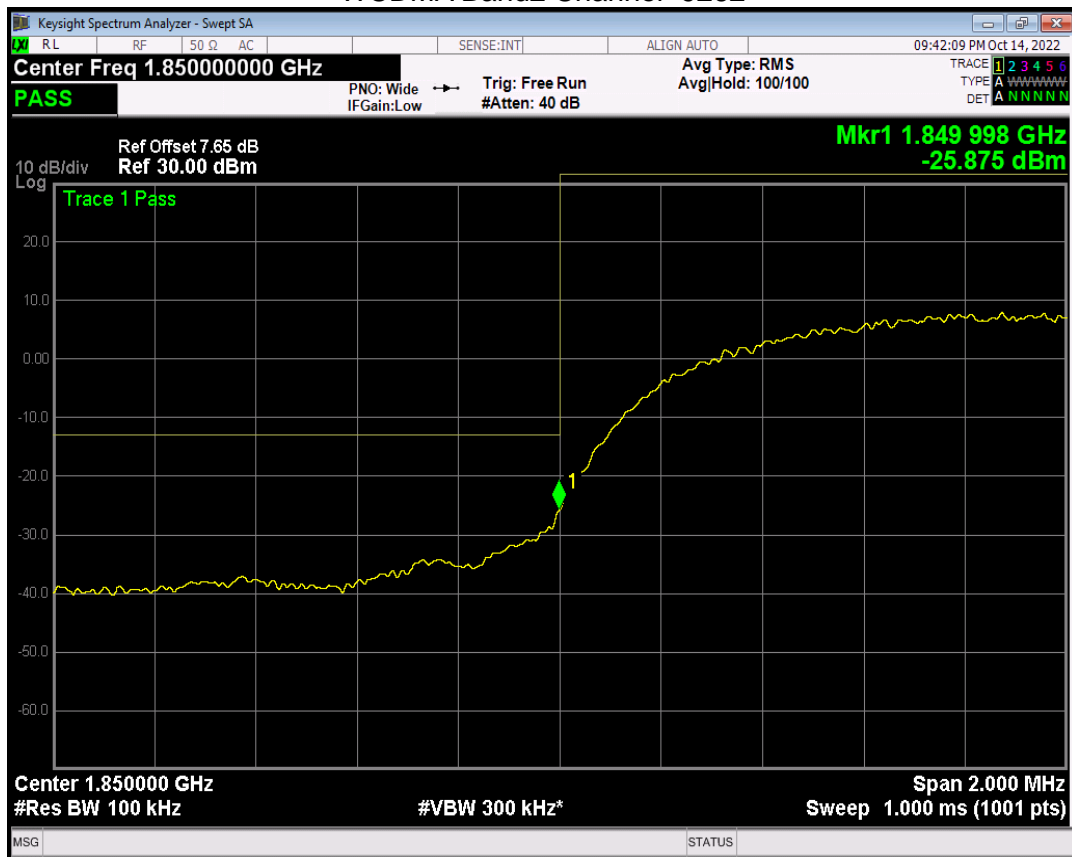
## BAND EDGE

Band	Channel	Frequency (MHz)	Spur Freq (MHz)	Spur Level (dBm)	Limit (dBm)	Verdict
WCDMA Band2	9262	1852.4	1850.00	-25.87	-13	PASS
WCDMA Band2	9538	1907.6	1910.00	-28.20	-13	PASS
WCDMA Band5	4132	826.4	824.00	-36.40	-13	PASS
WCDMA Band5	4233	846.6	849.00	-36.05	-13	PASS

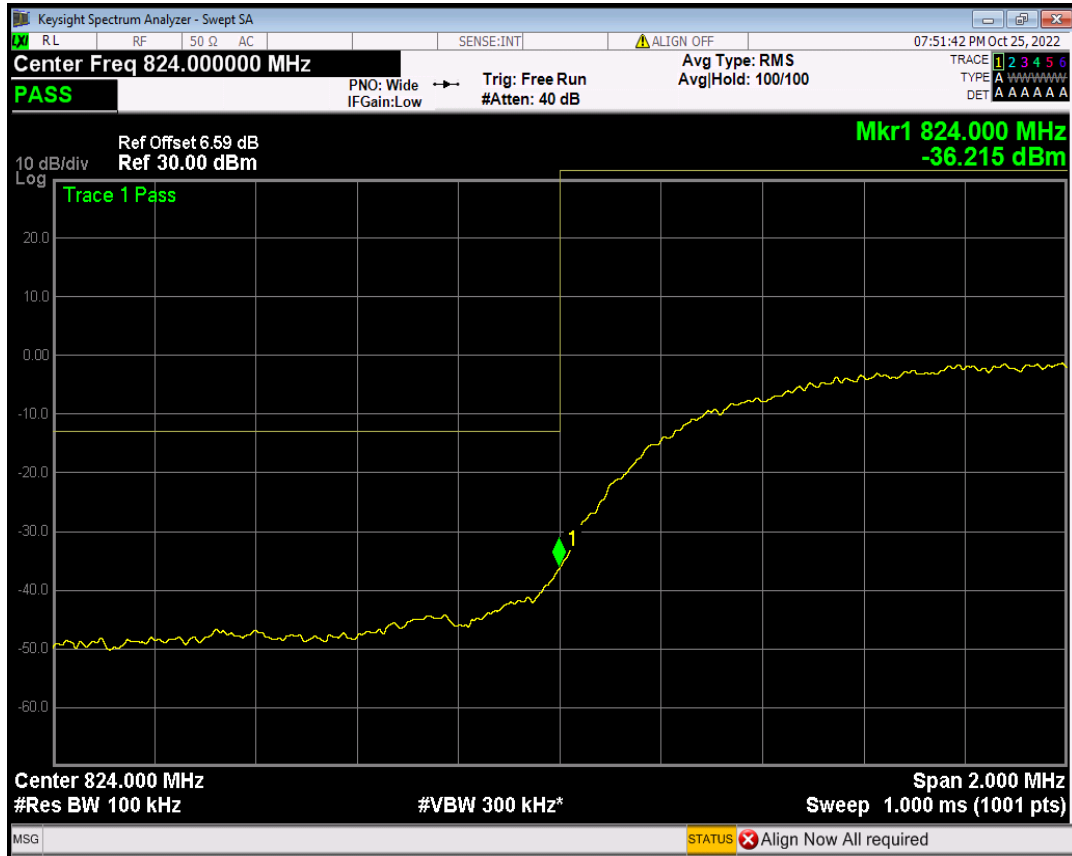
# WCDMA Band2 Channel=9538



# WCDMA Band2 Channel=9262



# WCDMA Band5 Channel=4132

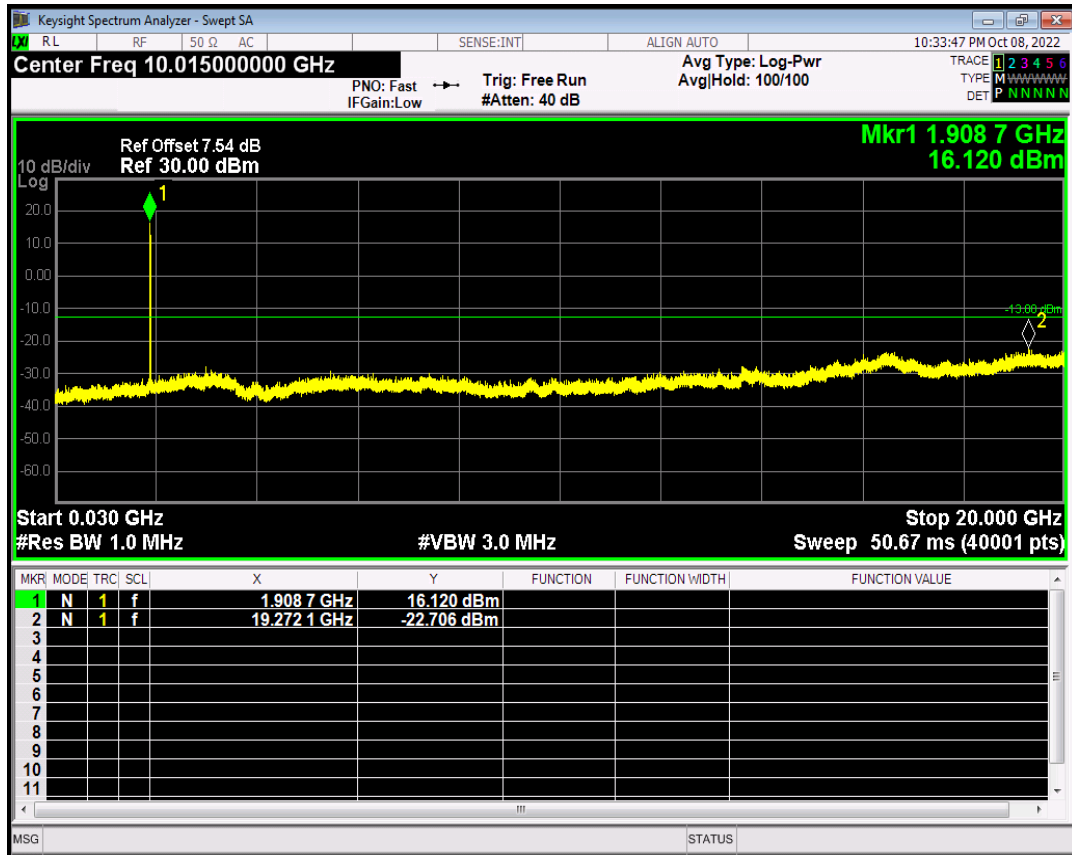


# WCDMA Band5 Channel=4233

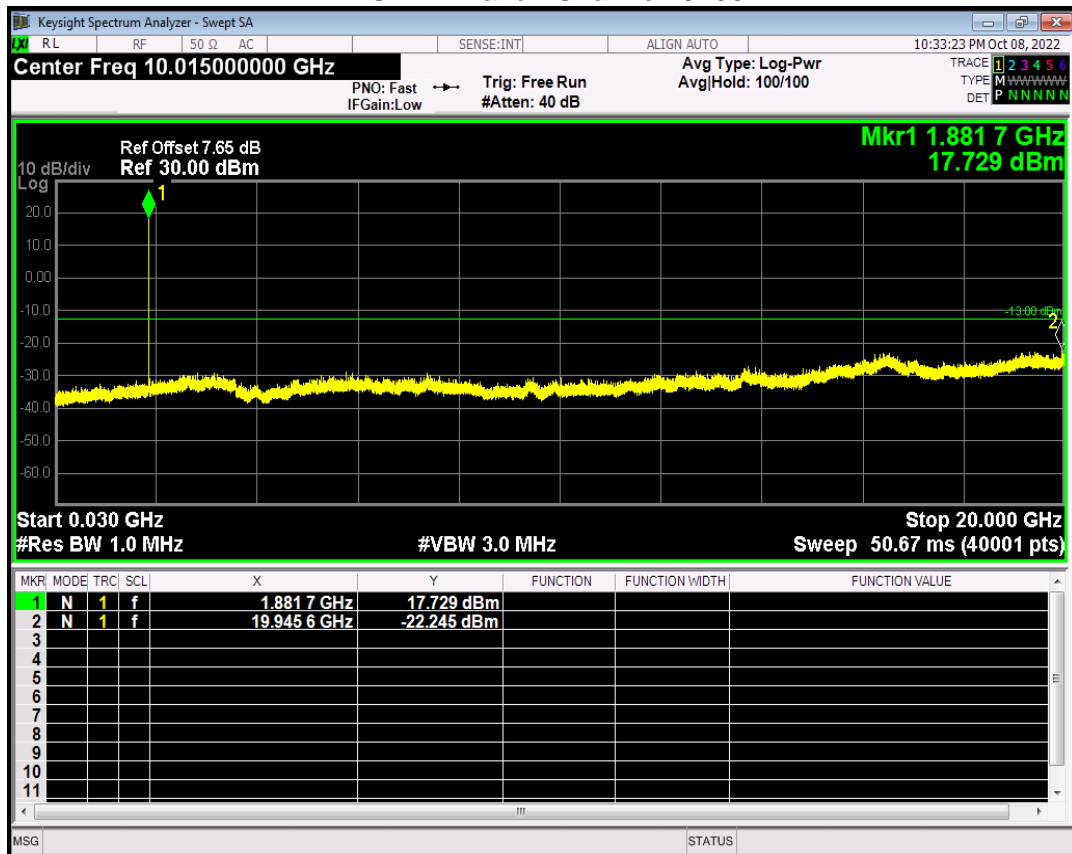


## OUT-OF-BAND EMISSIONS

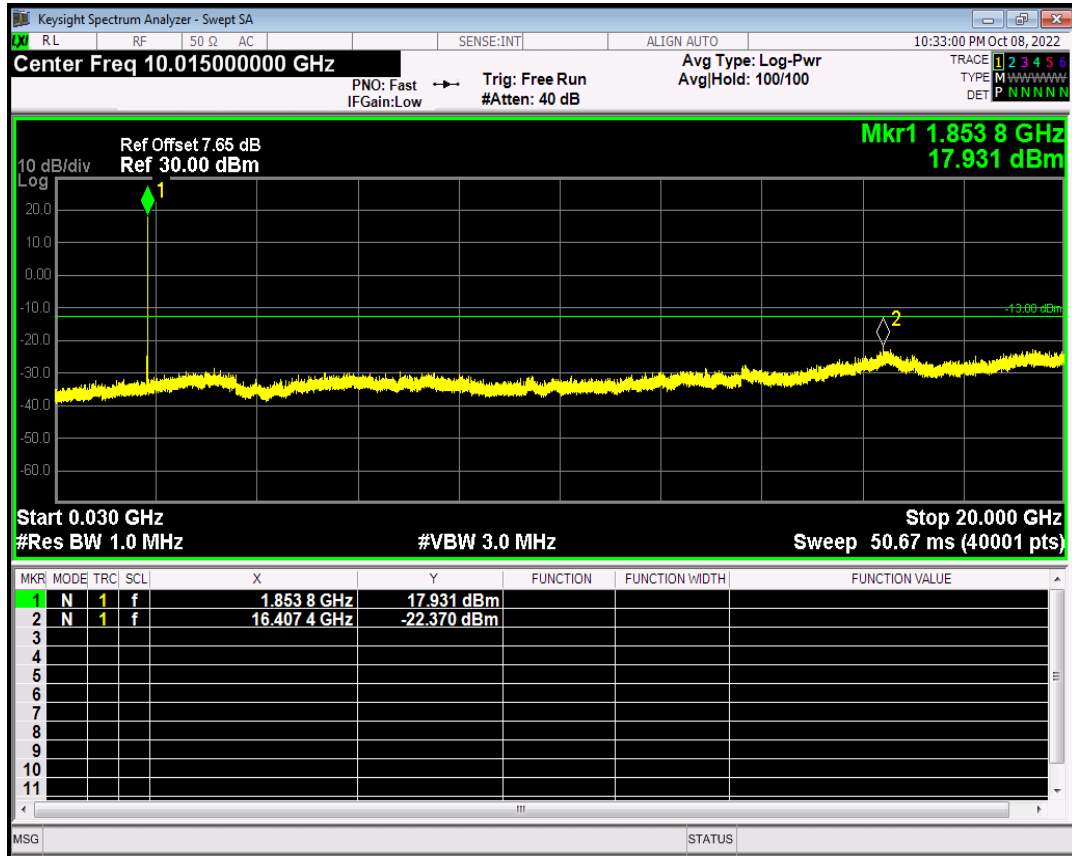
### WCDMA Band2 Channel=9538



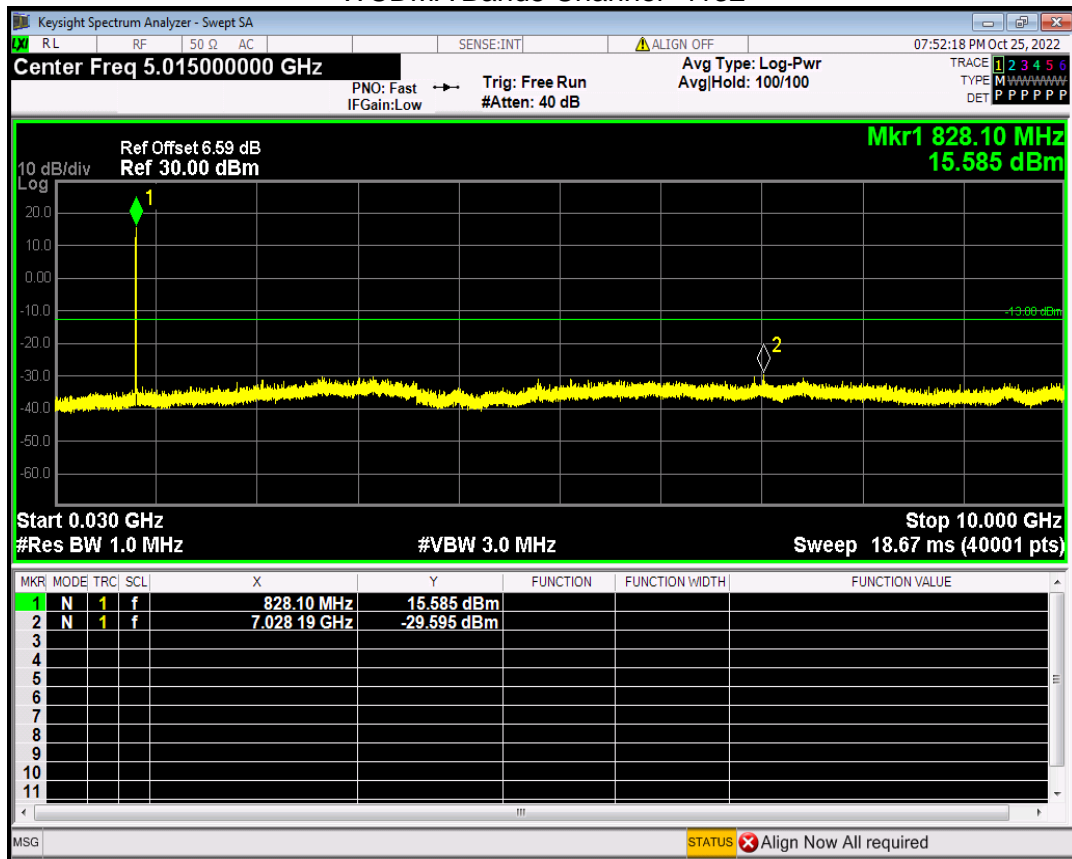
### WCDMA Band2 Channel=9400



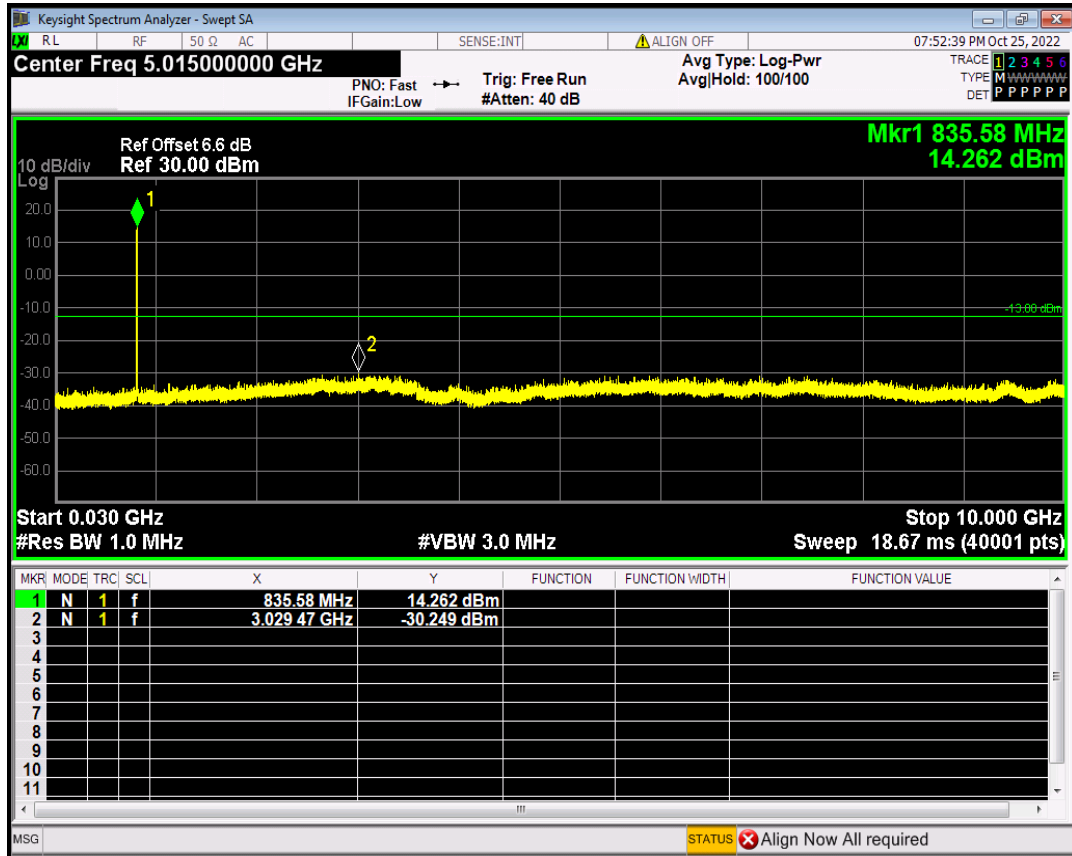
# WCDMA Band2 Channel=9262



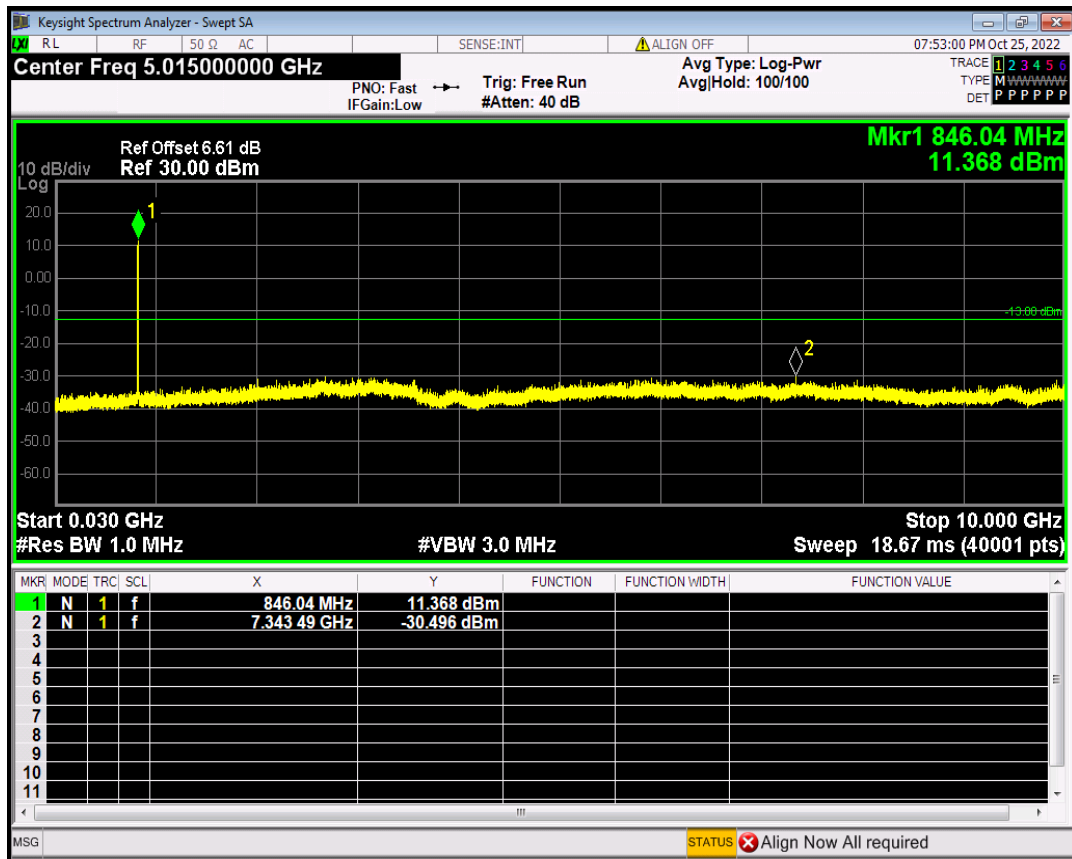
# WCDMA Band5 Channel=4132



# WCDMA Band5 Channel=4182



# WCDMA Band5 Channel=4233



## APPENDIX II- PHOTOS OF TEST SETUP

Note: See test photos in setup photo document for the actual connections between Product and support equipment.

\*\*\*\*\*END OF THE REPORT\*\*\*\*\*