



RF TEST REPORT

Applicant	TP-LINK TECHNOLOGIES CO.,LTD.
FCC ID	TE7C5V1
Brand	TP-LINK
Product	C5 FDD-LTE Smartphone
Model	TP701C
Report No.	RXA1601-0001RF02
Issue Date	May 16, 2016

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 2/ FCC CFR 47 Part 24H(2015)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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Summary of measurement results

No.	Test Case	Clause in FCC rules	Verdict
1	RF power output	2.1046	PASS
2	Effective Isotropic Radiated power	24.232	PASS
3	Occupied Bandwidth	2.1049	PASS
4	Band Edge Compliance	24.238	PASS
5	Peak-to-Average Power Ratio	24.232/KDB 971168 D01(5.7)	PASS
6	Frequency Stability	2.1055 / 24.235	PASS
7	Spurious Emissions at Antenna Terminals	2.1051 / 24.238	PASS
8	Radiates Spurious Emission	2.1053 / 24.238	PASS
Date of Testing: January 4, 2016 ~ January 20, 2016			

1. Test Laboratory

1.1. Notes of the test report

This report shall not be reproduced in full or partial, without the written approval of **TA technology (shanghai) co., Ltd**. The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above. This report must not be used by the client to claim product certification, approval, or endorsement by CNAS or any government agencies.

1.2. Test facility

CNAS (accreditation number:L2264)

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS).

FCC (recognition number is 428261)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

IC (recognition number is 8510A)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Canada to perform electromagnetic emission measurement.

VCCI (recognition number is C-4595, T-2154, R-4113, G-766)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Japan to perform electromagnetic emission measurement.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.



1.3. Testing Location

Company: TA Technology (Shanghai) Co., Ltd.
Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong
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2. General Description of Equipment under Test

Client Information

Applicant	TP-LINK TECHNOLOGIES CO., LTD.
Applicant address	Building 24 (floors 1,3,4,5) and 28 (floors1-4) Central Science and Technology Park,Shennan Rd, Nanshan, Shenzhen,China
Manufacturer	TP-LINK TECHNOLOGIES CO., LTD.
Manufacturer address	Building 24 (floors 1,3,4,5) and 28 (floors1-4) Central Science and Technology Park,Shennan Rd, Nanshan, Shenzhen,China

General information

Model:	TP701C		
Product IMEI:	SIM 1:868983020009872 SIM 2:868983020011233		
Hardware Version:	AL815_MB_PCB_V2.0		
Software Version:	H10S100D03B20151124R1001		
Power Supply:	Battery/AC adapter		
Antenna Type:	Internal Antenna		
Test Mode(s):	GSM1900; WCDMA Band II; LTE Band II;		
Test Modulation:	(GSM)GMSK,8PSK; (WCDMA)QPSK; (LTE)QPSK,16QAM		
GPRS/EGPRS Multislot Class:	12		
HSDPA UE Category:	14		
HSUPA UE Category:	6		
DC-HSDPA UE Category:	24		
HSPA+ UE Category:	14		
Maximum E.I.R.P.	GSM 1900: 28.92dBm WCDMA Band II: 21.60dBm LTE Band II: 20.89dBm		
Rated Power Supply Voltage:	3.8V		
Extreme Voltage:	Minimum: 3.6V Maximum: 4.35V		
Extreme Temperature:	Lowest: 0°C Highest: +50°C		
Operating Frequency Range(s)	Band	Tx (MHz)	Rx (MHz)
	GSM1900	1850 ~ 1910	1930 ~ 1990
	WCDMA Band II	1850 ~ 1910	1930 ~ 1990
	LTE Band II	1850 ~ 1910	1930 ~ 1990
EUT Accessory			
Battery	Manufacturer: DongGuan Amperex Technology Co., Ltd Model: NBL-42A2200 Power Rating: DC 3.8V, Li-ion		
Note: The information of the EUT is declared by the manufacturer. Please refer to the specifications or user manual for details.			



3. Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC CFR47 Part 2 (2015)

FCC CFR 47 Part 24H (2015)

ANSI/TIA 603-D (2010)

KDB 971168 D01 Power Meas License Digital Systems v02r02

4. Test Configuration

There is more than one SIM card slot, each one should be applied throughout the compliance test respectively, and however, only the worst case (SIM 1) will be recorded in this report.

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes. EUT stand-up position (Z axis), lie-down position (X, Y axis). Receiver antenna polarization (horizontal and vertical), the worst emission was found in position (Z axis, vertical polarization) and the worst case was recorded.

All mode and data rates and positions and RB size and modulations were investigated.

Subsequently, only the worst case emissions are reported.

The following testing in GSM/WCDMA/LTE is set based on the maximum RF Output Power.

Test modes are chosen to be reported as the worst case configuration below for GSM 1900 and WCDMA Band II:

	Test items	Modes	Modulation
Conducted Test cases	RF power output	GSM 1900	GSM/GPRS/EGPRS
		WCDMA Band II	RMC/HSDPA/HSUPA/DC-HSDPA
	Effective Isotropic Radiated power	GSM 1900	GSM/GPRS/EGPRS
		WCDMA Band II	RMC
	Occupied Bandwidth	GSM 1900	GSM/GPRS/EGPRS
		WCDMA Band II	RMC
	Band Edge Compliance	GSM 1900	GSM/GPRS/EGPRS
		WCDMA Band II	RMC
	Peak-to-Average Power Ratio	GSM 1900	GSM/GPRS/EGPRS
		WCDMA Band II	RMC
	Frequency Stability	GSM 1900	GSM/GPRS/EGPRS
		WCDMA Band II	RMC
Radiated Test cases	Radiates Spurious Emission	GSM 1900	GPRS
		WCDMA Band II	RMC
		GSM 1900	GPRS
		WCDMA Band II	RMC

Test modes are chosen to be reported as the worst case configuration below for LTE Band II:

Test items	Bandwidth (MHz)						Modulation		RB			Test Channel		
	1.4	3	5	10	15	20	QPSK	16QAM	1	50%	100%	L	M	H
RF power output	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Effective Isotropic Radiated power	O	O	O	O	O	O	O	O	-	-	O	O	O	O
Occupied Bandwidth	O	O	O	O	O	O	O	O	-	-	O	O	O	O
Band Edge Compliance	O	O	O	O	O	O	O	O	O	-	O	O	-	O
Peak-to-Average Power Ratio	O	O	O	O	O	O	O	O	-	-	O	O	O	O
Frequency Stability	O	O	O	O	O	O	O	O	-	-	O	-	O	-
Conducted Spurious Emissions	O	O	O	O	O	O	O	-	O	-	-	O	O	O
Radiates Spurious Emission	O	O	O	O	O	O	O	-	O	-	-	O	O	O
Note	1. The mark "O" means that this configuration is chosen for testing. 2. The mark "-" means that this configuration is not testing.													

5. Test Case Results

5.1.RF Power Output

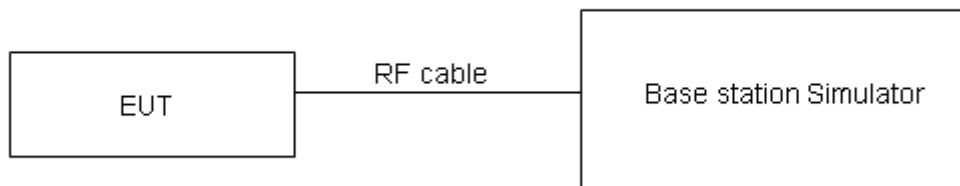
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

During the process of the testing, The EUT is controlled by the Base Station Simulator to ensure max power transmission and proper modulation.

Test Setup



The loss between RF output port of the EUT and the input port of the tester has been taken into consideration.

Limits

No specific RF power output requirements in part 2.1046.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 0.4$ dB.

Test Results

GSM 1900		Conducted Power(dBm)		
		Channel 512	Channel 661	Channel 810
		1850.2(MHz)	1880(MHz)	1909.8(MHz)
GSM	Results	28.83	29.22	29.66
GPRS (GMSK)	1TXslot	28.83	29.23	29.66
	2TXslots	28.09	28.50	29.03
	3TXslots	26.28	26.73	27.41
	4TXslots	25.20	25.64	26.35
EGPRS (8PSK)	1TXslot	24.88	24.72	25.24
	2TXslots	24.01	23.83	24.15
	3TXslots	22.04	22.22	22.62
	4TXslots	21.08	20.86	21.21

Note:

- 1) The maximum RF Output Power numbers are marks in bold.
- 2) The following testing in GPRS/EGPRS is set to 1TXslot based on the maximum RF Output Power.

WCDMA Band II		Conducted Power(dBm)		
		Channel 9262	Channel 9400	Channel 9538
		1852.4(MHz)	1880(MHz)	1907.6(MHz)
RMC		21.97	21.73	22.43
HSDPA	Sub - Test 1	22.06	21.82	22.40
	Sub - Test 2	21.92	21.61	22.46
	Sub - Test 3	21.95	21.83	22.40
	Sub - Test 4	21.86	21.89	22.41
HSUPA	Sub - Test 1	20.83	20.75	21.21
	Sub - Test 2	20.01	20.05	20.00
	Sub - Test 3	20.25	20.06	20.38
	Sub - Test 4	20.04	20.03	20.05
	Sub - Test 5	20.89	20.78	21.37
DC-HSDPA	Sub - Test 1	21.77	21.54	22.26
	Sub - Test 2	21.71	21.50	22.21
	Sub - Test 3	21.55	21.31	22.11
	Sub - Test 4	21.58	21.35	22.14

Note:

- 1) The maximum RF Output Power numbers are marks in bold.
- 2) The following testing in RMC based on the maximum RF Output Power.

LTE FDD Band 2				Conducted Power(dBm)		
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				18607/1850.7	18900/1880	19193/1909.3
1.4MHz	QPSK	1	0	21.07	20.95	21.01
		1	2	20.94	20.97	20.96
		1	5	20.90	21.02	21.12
		3	0	20.65	20.69	20.71
		3	2	20.66	20.71	20.73
		3	3	20.66	20.74	20.74
		6	0	19.98	20.06	20.03
	16QAM	1	0	20.12	20.29	20.17
		1	2	20.09	20.30	20.13
		1	5	20.07	20.40	20.18
		3	0	19.93	20.03	20.04
		3	2	19.99	20.00	20.03
		3	3	19.96	20.03	20.08
		6	0	19.04	19.15	19.18
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				18615/1851.5	18900/1880	19185/1908.5
3MHz	QPSK	1	0	20.97	20.85	20.91
		1	7	20.85	20.87	20.87
		1	14	20.81	20.93	21.03
		8	0	19.91	19.95	19.98
		8	4	19.92	19.97	19.99
		8	7	19.92	20.00	20.00
		15	0	19.89	19.96	19.93
	16QAM	1	0	20.02	20.19	20.07
		1	7	20.00	20.20	20.03
		1	14	19.97	20.31	20.09
		8	0	19.78	19.88	19.89
		8	4	19.85	19.85	19.88
		8	7	19.81	19.88	19.93
		15	0	18.94	19.05	19.09
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				18625/1852.5	18900/1880	19175/1907.5
5MHz	QPSK	1	0	21.00	20.89	20.95
		1	13	20.88	20.91	20.90
		1	24	20.84	20.96	21.06
		12	0	19.94	19.99	20.01
		12	6	19.95	20.01	20.02
		12	13	19.95	20.03	20.04
		25	0	19.92	19.99	19.96



	16QAM	1	0	20.06	20.23	20.10
		1	13	20.03	20.24	20.07
		1	24	20.00	20.34	20.12
		12	0	19.81	19.91	19.92
		12	6	19.88	19.89	19.91
		12	13	19.84	19.91	19.96
		25	0	18.98	19.08	19.12
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				18650/1855	18900/1880	19150/1905
10MHz	QPSK	1	0	21.02	20.90	20.96
		1	25	20.89	20.92	20.91
		1	49	20.85	20.97	21.07
		25	0	19.96	20.00	20.02
		25	13	19.97	20.02	20.04
		25	25	19.97	20.05	20.05
		50	0	19.93	20.01	19.98
	16QAM	1	0	20.07	20.24	20.12
		1	25	20.04	20.25	20.08
		1	49	20.02	20.35	20.13
		25	0	19.83	19.93	19.94
		25	13	19.89	19.90	19.93
		25	25	19.86	19.93	19.98
		50	0	18.99	19.10	19.13
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				18675/1857.5	18900/1880	19125/1902.5
15MHz	QPSK	1	0	21.04	20.92	20.98
		1	38	20.92	20.94	20.94
		1	74	20.87	20.99	21.09
		36	0	19.98	20.02	20.04
		36	18	19.99	20.04	20.06
		36	39	19.99	20.07	20.07
		75	0	19.95	20.03	20.00
	16QAM	1	0	20.09	20.26	20.14
		1	38	20.06	20.27	20.10
		1	74	20.04	20.37	20.16
		36	0	19.85	19.95	19.96
		36	18	19.91	19.92	19.95
		36	39	19.88	19.95	20.00
		75	0	19.01	19.12	19.16
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				18700/1860	18900/1880	19100/1900
20MHz	QPSK	1	0	21.05	20.93	21.00
		1	50	20.93	20.95	20.95



		1	99	20.89	21.01	21.11
		50	0	19.99	20.03	20.06
		50	25	20.00	20.05	20.07
		50	50	20.00	20.08	20.09
		100	0	19.97	20.04	20.01
	16QAM	1	0	20.10	20.27	20.15
		1	50	20.08	20.29	20.12
		1	99	20.05	20.39	20.17
		50	0	19.86	19.96	19.97
		50	25	19.93	19.93	19.96
		50	50	19.89	19.96	20.01
		100	0	19.02	19.13	19.17

Note:

1) The following testing in worst case based on the maximum RF Output Power.

5.2. Effective Isotropic Radiated Power

Ambient condition

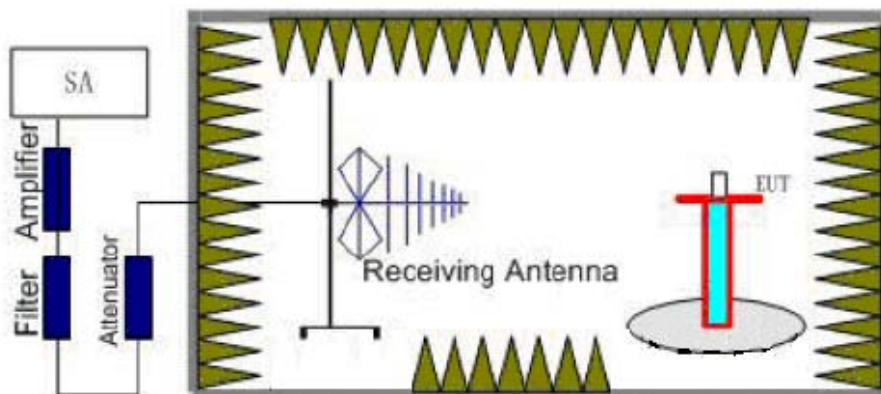
Temperature	Relative humidity
21°C ~25°C	40%~60%

Methods of Measurement

The measurement procedures in ANSI/TIA 603-D are used.

1. The EUT was placed on a turntable with 1.5 meter height in a fully anechoic chamber.
2. The EUT was set at 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. GSM operating modes: Set RBW= 1MHz, VBW= 3MHz, RMS detector over burst;
UMTS operating modes: Set RBW= 100 KHz, VBW= 300 KHz, RMS detector over frame, and use channel power option with bandwidth=5MHz, per section 4.0 of KDB 971168 D01.
4. The table was rotated 360 degrees to determine the position of the highest radiated power.
5. The height of the receiving antenna is adjusted to look for the maximum ERP/EIRP.
6. Taking the record of maximum ERP/EIRP.
7. A dipole antenna was substituted in place of the EUT and was driven by a signal generator.
8. The conducted power at the terminal of the dipole antenna is measured.
9. Repeat step 3 to step 5 to get the maximum ERP/EIRP of the substitution antenna.
10. $ERP/EIRP = P_s + E_t - E_s + G_s = P_s + R_t - R_s + G_s$
 P_s (dBm) : Input power to substitution antenna.
 G_s (dBi or dBd) : Substitution antenna Gain.
 $E_t = R_t + AF$
 $E_s = R_s + AF$
 $EIRP = ERP + 2.15$
 AF (dB/m) : Receive antenna factor
 R_t : The highest received signal in spectrum analyzer for EUT.
 R_s : The highest received signal in spectrum analyzer for substitution antenna.

Test Setup



Limits

Rule Part 24.232(b) specifies that "Mobile/portable stations are limited to 2 watts EIRP. Peak power" and Rule Part 24.232(c) specifies that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage".

Limit (EIRP)	$\leq 2 \text{ W}$ (33 dBm)
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Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 1.19 \text{ dB}$

Test Results:

Mode	Polarization	Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	Conclusion
GSM 1900	H	1850.2	-29.24	-55.38	0	1.92	28.06	Pass
	H	1880	-29.57	-55.84	0	1.94	28.21	Pass
	H	1909.8	-28.76	-55.78	0	1.90	28.92	Pass
	V	1850.2	-29.96	-56.18	0	1.92	28.14	Pass
	V	1880	-29.79	-56.61	0	1.94	28.76	Pass
	V	1909.8	-30.46	-56.64	0	1.90	28.08	Pass
GPRS 1900	H	1850.2	-33.18	-55.38	0	1.92	24.12	Pass
	H	1880	-32.81	-55.84	0	1.94	24.97	Pass
	H	1909.8	-32.29	-55.78	0	1.90	25.39	Pass
	V	1850.2	-33.98	-56.18	0	1.92	24.12	Pass
	V	1880	-33.56	-56.61	0	1.94	24.99	Pass
	V	1909.8	-33.27	-56.64	0	1.90	25.27	Pass
EGPRS 1900	H	1850.2	-35.33	-55.38	0	1.92	21.97	Pass
	H	1880	-34.22	-55.84	0	1.94	23.56	Pass
	H	1909.8	-32.15	-55.78	0	1.90	25.53	Pass
	V	1850.2	-34.01	-56.18	0	1.92	24.09	Pass
	V	1880	-35.68	-56.61	0	1.94	22.87	Pass
	V	1909.8	-32.36	-56.64	0	1.90	26.18	Pass
WCDMA Band II	H	1852.4	-35.78	-55.22	0	1.91	21.35	Pass
	H	1880	-36.49	-55.84	0	1.94	21.29	Pass
	H	1907.6	-36.60	-55.78	0	1.92	21.10	Pass
	V	1852.4	-36.71	-56.19	0	1.91	21.39	Pass
	V	1880	-37.26	-56.61	0	1.94	21.52	Pass
	V	1907.6	-37.17	-56.77	0	1.92	21.60	Pass

LTE Band II								
bandwidth	Polarization	Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	Conclusion
1.4 MHz (QPSK)	H	1850.7	-37.86	-54.89	0.00	1.90	18.93	Pass
	H	1880	-39.23	-56.66	0.00	1.92	19.35	Pass
	H	1909.3	-40.12	-58.09	0.00	1.91	19.88	Pass
	V	1850.7	-37.37	-55.05	0.00	1.90	19.58	Pass
	V	1880	-37.61	-56.41	0.00	1.92	20.72	Pass
	V	1909.3	-39.58	-57.85	0.00	1.91	20.18	Pass
1.4 MHz (16QAM)	H	1850.7	-38.56	-54.89	0.00	1.90	18.23	Pass
	H	1880	-39.97	-56.66	0.00	1.92	18.61	Pass
	H	1909.3	-41.46	-58.09	0.00	1.91	18.54	Pass
	V	1850.7	-38.28	-55.05	0.00	1.90	18.67	Pass
	V	1880	-39.58	-56.41	0.00	1.92	18.75	Pass
	V	1909.3	-41.04	-57.85	0.00	1.91	18.72	Pass
3 MHz (QPSK)	H	1851.5	-37.87	-54.93	0.00	1.91	18.97	Pass
	H	1880	-39.27	-56.66	0.00	1.94	19.33	Pass
	H	1908.5	-40.23	-58.08	0.00	1.91	19.76	Pass
	V	1851.5	-37.98	-55.04	0.00	1.91	18.97	Pass
	V	1880	-37.67	-56.41	0.00	1.94	20.68	Pass
	V	1908.5	-39.73	-57.86	0.00	1.91	20.04	Pass
3 MHz (16QAM)	H	1851.5	-38.37	-54.93	0.00	1.91	18.47	Pass
	H	1880	-40.48	-56.66	0.00	1.94	18.12	Pass
	H	1908.5	-41.75	-58.08	0.00	1.91	18.24	Pass
	V	1851.5	-37.81	-55.04	0.00	1.91	19.14	Pass
	V	1880	-39.20	-56.41	0.00	1.94	19.15	Pass
	V	1908.5	-40.56	-57.86	0.00	1.91	19.21	Pass
5 MHz (QPSK)	H	1852.5	-37.94	-54.98	0.00	1.92	18.96	Pass
	H	1880	-39.19	-56.66	0.00	1.94	19.41	Pass
	H	1907.5	-39.93	-58.05	0.00	1.90	20.02	Pass
	V	1852.5	-36.67	-55.14	0.00	1.92	20.39	Pass
	V	1880	-37.59	-56.41	0.00	1.94	20.76	Pass
	V	1907.5	-39.85	-57.97	0.00	1.90	20.02	Pass
5 MHz (16QAM)	H	1852.5	-38.67	-54.98	0.00	1.92	18.23	Pass
	H	1880	-40.36	-56.66	0.00	1.94	18.24	Pass
	H	1907.5	-41.69	-58.05	0.00	1.90	18.26	Pass
	V	1852.5	-37.87	-55.14	0.00	1.92	19.19	Pass
	V	1880	-39.11	-56.41	0.00	1.94	19.24	Pass
	V	1907.5	-40.62	-57.97	0.00	1.90	19.25	Pass
10 MHz (QPSK)	H	1855	-38.79	-55.09	0.00	1.91	18.21	Pass
	H	1880	-39.23	-56.66	0.00	1.94	19.37	Pass
	H	1905	-43.24	-58.01	0.00	1.92	16.69	Pass



LTE Band II								
bandwidth	Polarization	Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	Conclusion
	V	1855	-37.37	-55.08	0.00	1.91	19.62	Pass
	V	1880	-37.62	-56.41	0.00	1.94	20.73	Pass
	V	1905	-41.76	-57.81	0.00	1.92	17.97	Pass
10 MHz (16QAM)	H	1855	-38.88	-55.09	0.00	1.91	18.12	Pass
	H	1880	-40.28	-56.66	0.00	1.94	18.32	Pass
	H	1905	-41.41	-58.01	0.00	1.92	18.52	Pass
	V	1855	-37.76	-55.08	0.00	1.91	19.23	Pass
	V	1880	-39.03	-56.41	0.00	1.94	19.32	Pass
	V	1905	-40.45	-57.81	0.00	1.92	19.28	Pass
15 MHz (QPSK)	H	1857.5	-37.44	-55.23	0.00	1.93	19.72	Pass
	H	1880	-39.27	-56.66	0.00	1.94	19.33	Pass
	H	1902.5	-40.92	-57.95	0.00	1.92	18.95	Pass
	V	1857.5	-36.49	-55.24	0.00	1.93	20.68	Pass
	V	1880	-37.70	-56.41	0.00	1.94	20.65	Pass
	V	1902.5	-38.75	-57.69	0.00	1.92	20.86	Pass
15 MHz (16QAM)	H	1857.5	-38.89	-55.23	0.00	1.93	18.27	Pass
	H	1880	-40.15	-56.66	0.00	1.94	18.45	Pass
	H	1902.5	-41.33	-57.95	0.00	1.92	18.54	Pass
	V	1857.5	-37.91	-55.24	0.00	1.93	19.26	Pass
	V	1880	-39.08	-56.41	0.00	1.94	19.27	Pass
	V	1902.5	-40.27	-57.69	0.00	1.92	19.34	Pass
20 MHz (QPSK)	H	1860	-38.51	-55.35	0.00	1.93	18.77	Pass
	H	1880	-39.48	-56.66	0.00	1.94	19.12	Pass
	H	1900	-40.55	-57.86	0.00	1.92	19.23	Pass
	V	1860	-36.61	-55.31	0.00	1.93	20.63	Pass
	V	1880	-37.46	-56.41	0.00	1.94	20.89	Pass
	V	1900	-39.36	-57.66	0.00	1.92	20.22	Pass
20 MHz (16QAM)	H	1860	-38.54	-55.35	0.00	1.93	18.74	Pass
	H	1880	-40.35	-56.66	0.00	1.94	18.25	Pass
	H	1900	-41.07	-57.86	0.00	1.92	18.71	Pass
	V	1860	-38.12	-55.31	0.00	1.93	19.12	Pass
	V	1880	-39.10	-56.41	0.00	1.94	19.25	Pass
	V	1900	-40.24	-57.66	0.00	1.92	19.34	Pass

5.3.Occupied Bandwidth

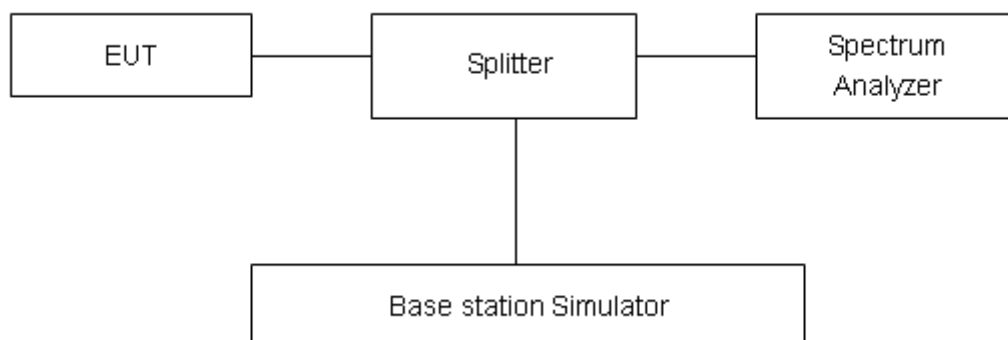
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The occupied bandwidth is measured using spectrum analyzer. RBW is set to 3kHz, VBW is set to 10kHz for GSM 1900, RBW is set to 51kHz, VBW is set to 160kHz for WCDMA Band II and RBW is set to 51kHz, VBW is set to 160kHz for LTE Band II 1.4MHz and RBW is set to 100kHz,VBW is set to 300kHz for LTE Band II 3MHz and RBW is set to 300kHz,VBW is set to 1MHz for LTE Band II 10/15/20MHz. 99% power and -26dBc occupied bandwidths are recorded. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

No specific occupied bandwidth requirements in part 2.1049.

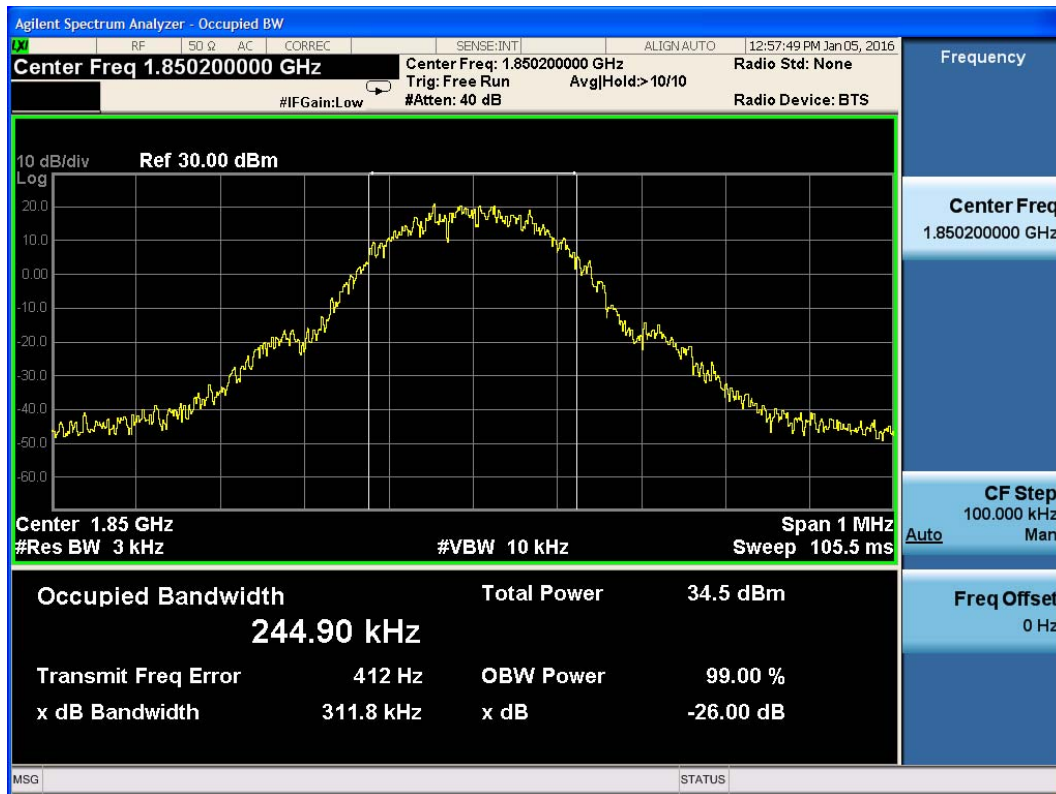
Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 624\text{Hz}$.

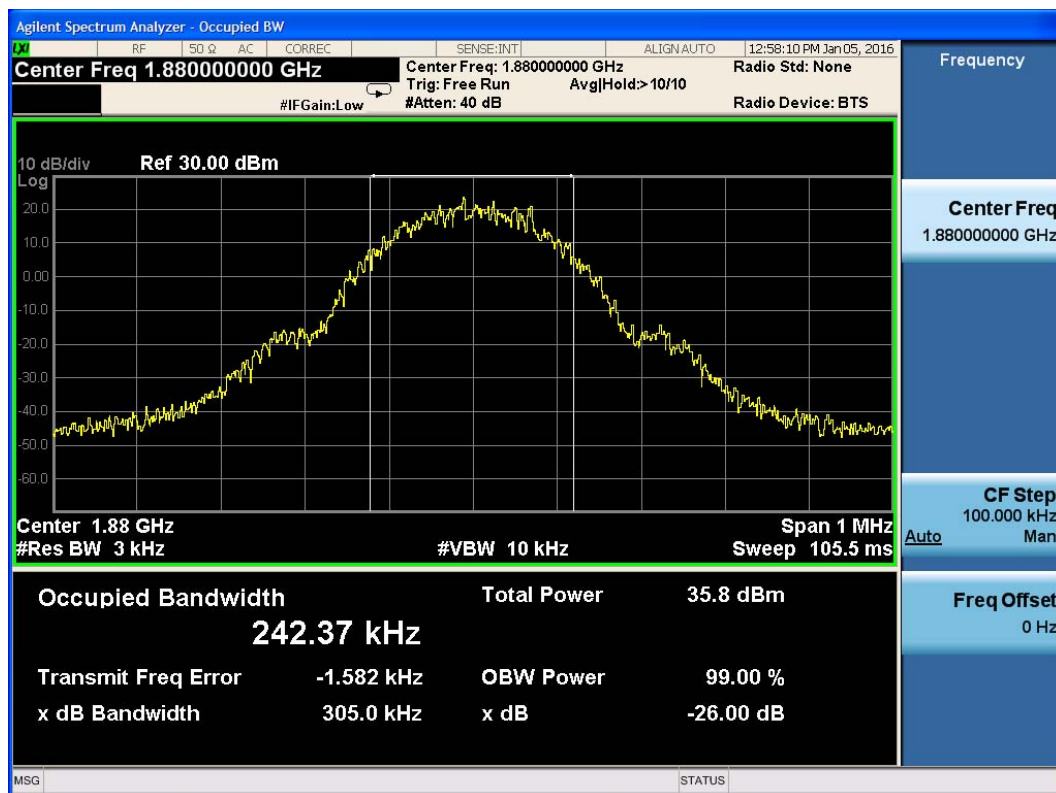
Test Result

Mode	Channel	Frequency (MHz)	99% Power Bandwidth (kHz)	-26dBc Bandwidth(kHz)
GSM 1900 (GSM)	512	1850.2	244.90	311.8
	661	1880.0	242.37	305.0
	810	1909.8	245.39	309.6
GPRS 1900 (GMSK)	512	1850.2	248.73	316.4
	661	1880.0	245.76	314.1
	810	1909.8	247.49	310.2
EGPRS 1900 (8-PSK)	512	1850.2	254.51	320.7
	661	1880.0	256.98	314.5
	810	1909.8	252.10	320.0
WCDMA Band II (RMC)	9262	1852.4	4208.6	4836
	9400	1880	4213.9	4798
	9538	1907.6	4197.9	4821

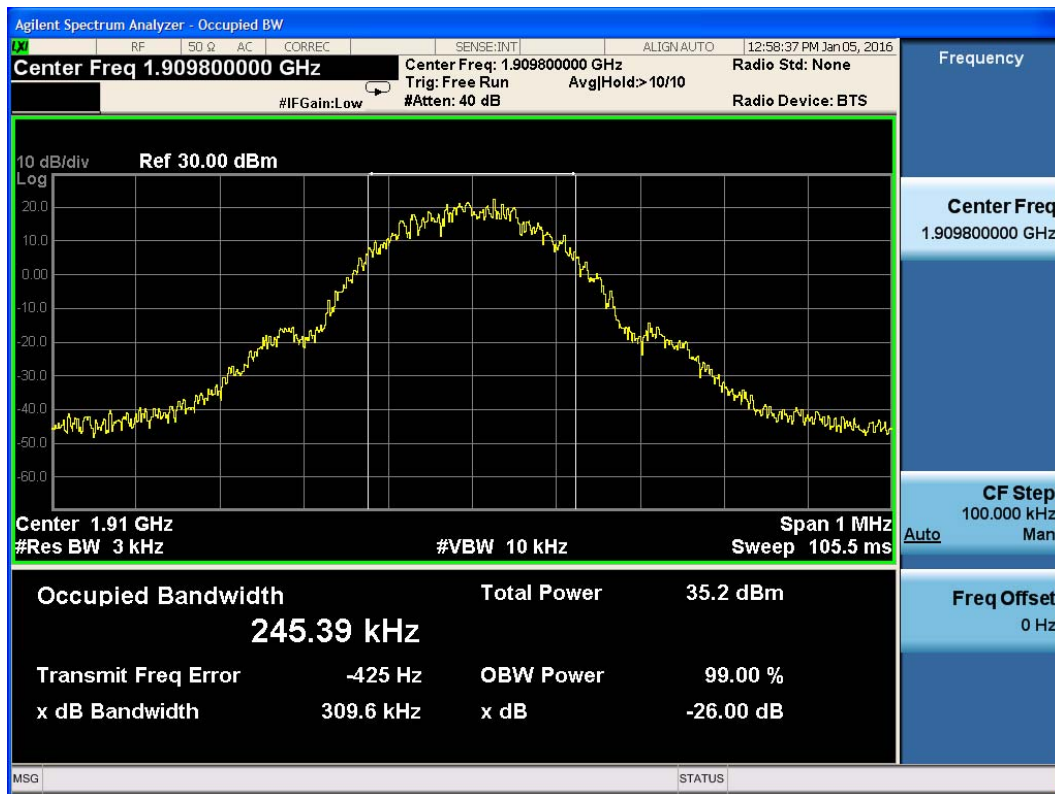
LTE Band II		Channel	Frequency (MHz)	99% Power Bandwidth (MHz)	-26dBc Bandwidth(MHz)
Bandwidth	Modulation				
1.4MHz	QPSK	18607	1850.7	1.1263	1.312
		18900	1880.0	1.1151	1.314
		19193	1909.3	1.1246	1.306
	16QAM	18607	1850.7	1.1129	1.291
		18900	1880.0	1.1229	1.300
		19193	1909.3	1.1152	1.311
3MHz	QPSK	18615	1851.5	2.7329	3.033
		18900	1880	2.7425	3.050
		19185	1908.5	2.7396	3.026
	16QAM	18615	1851.5	2.7368	3.025
		18900	1880	2.7422	3.021
		19185	1908.5	2.7292	3.018
5MHz	QPSK	18625	1852.5	4.5271	5.062
		18900	1880	4.5476	5.059
		19175	1907.5	4.5261	5.025
	16QAM	18625	1852.5	4.5564	5.067
		18900	1880	4.5247	5.030
		19175	1907.5	4.5406	5.105
10MHz	QPSK	18650	1855	9.0437	10.12
		18900	1880	9.0808	10.18
		19150	1905	9.0603	10.18
	16QAM	18650	1855	9.0394	10.06
		18900	1880	9.0776	10.10
		19150	1905	9.0641	10.05
15MHz	QPSK	18675	1857.5	13.486	14.83
		18900	1880	13.537	15.01
		19125	1902.5	13.510	14.83
	16QAM	18675	1857.5	13.510	14.88
		18900	1880	13.538	14.89
		19125	1902.5	13.502	14.69
20MHz	QPSK	18700	1860	17.938	19.43
		18900	1880	17.937	19.32
		19100	1900	17.906	19.48
	16QAM	18700	1860	17.937	19.50
		18900	1880	17.959	19.31
		19100	1900	17.913	19.36



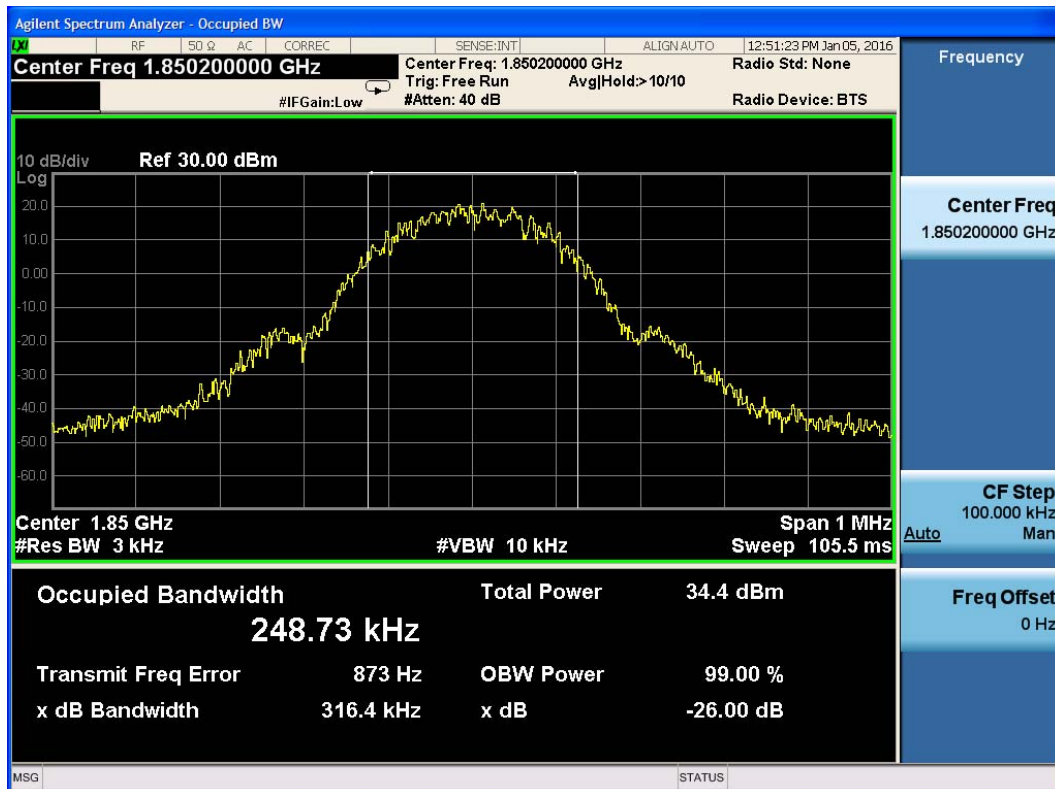
GSM1900 GSM CH512 Occupied Bandwidth



GSM 1900 GSM CH661 Occupied Bandwidth



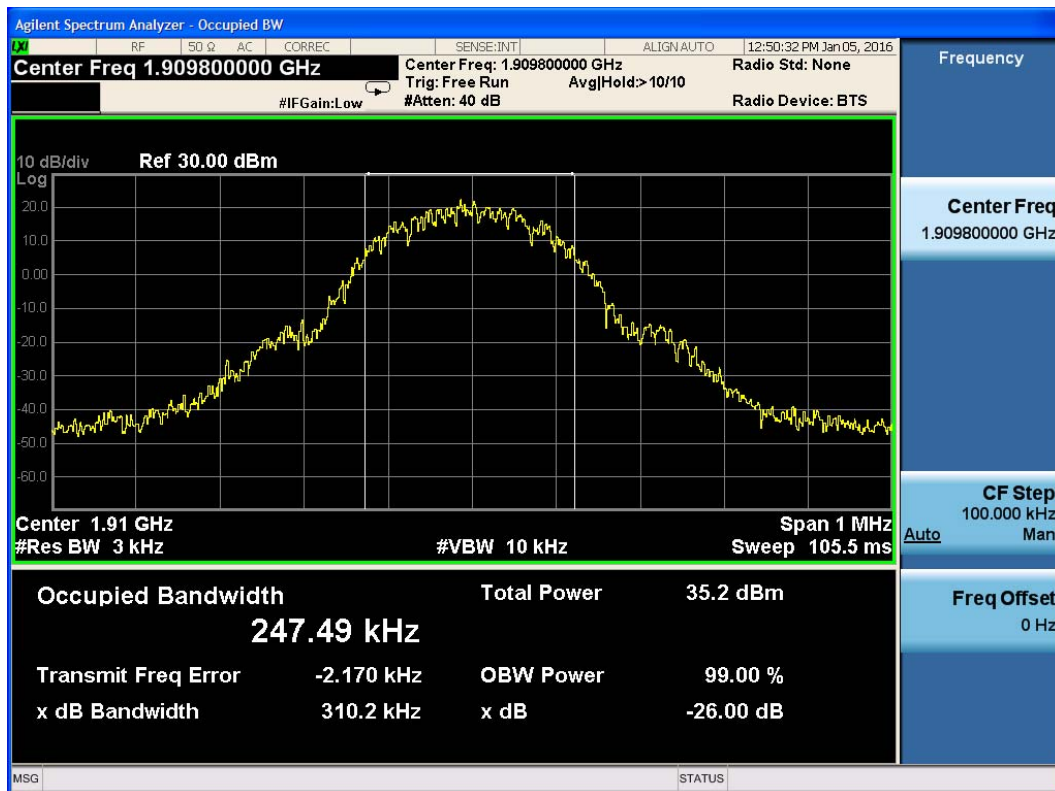
GSM 1900 GSM CH810 Occupied Bandwidth



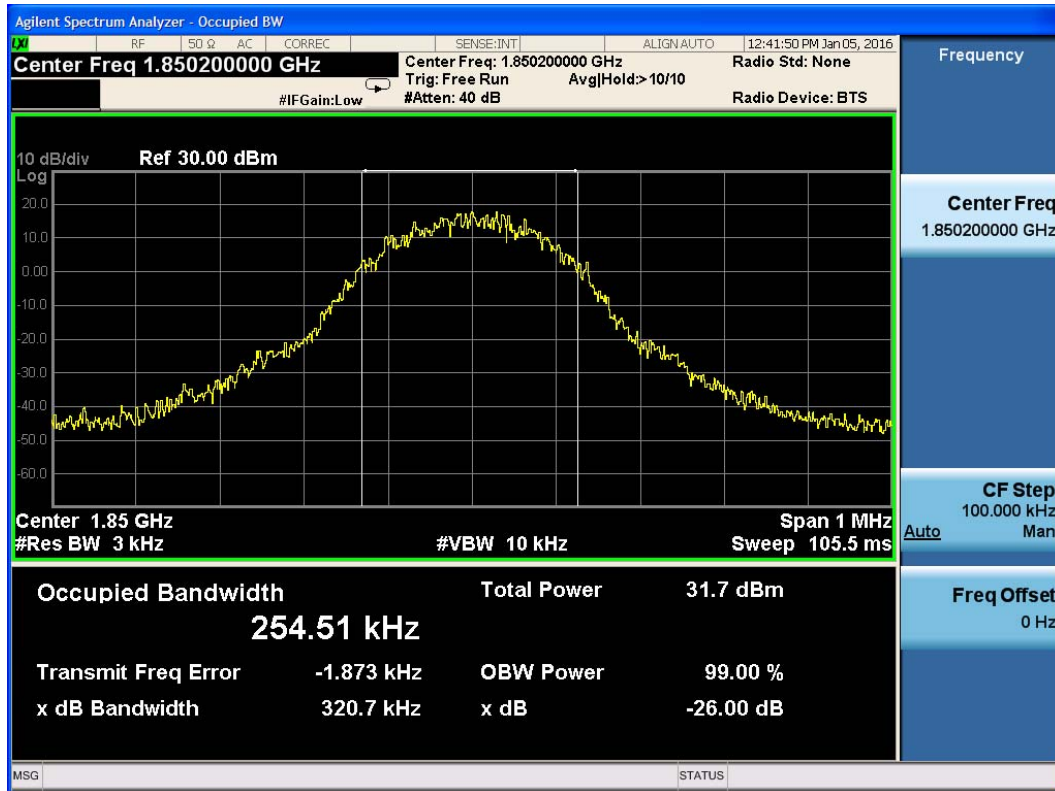
GSM1900 GPRS CH512 Occupied Bandwidth



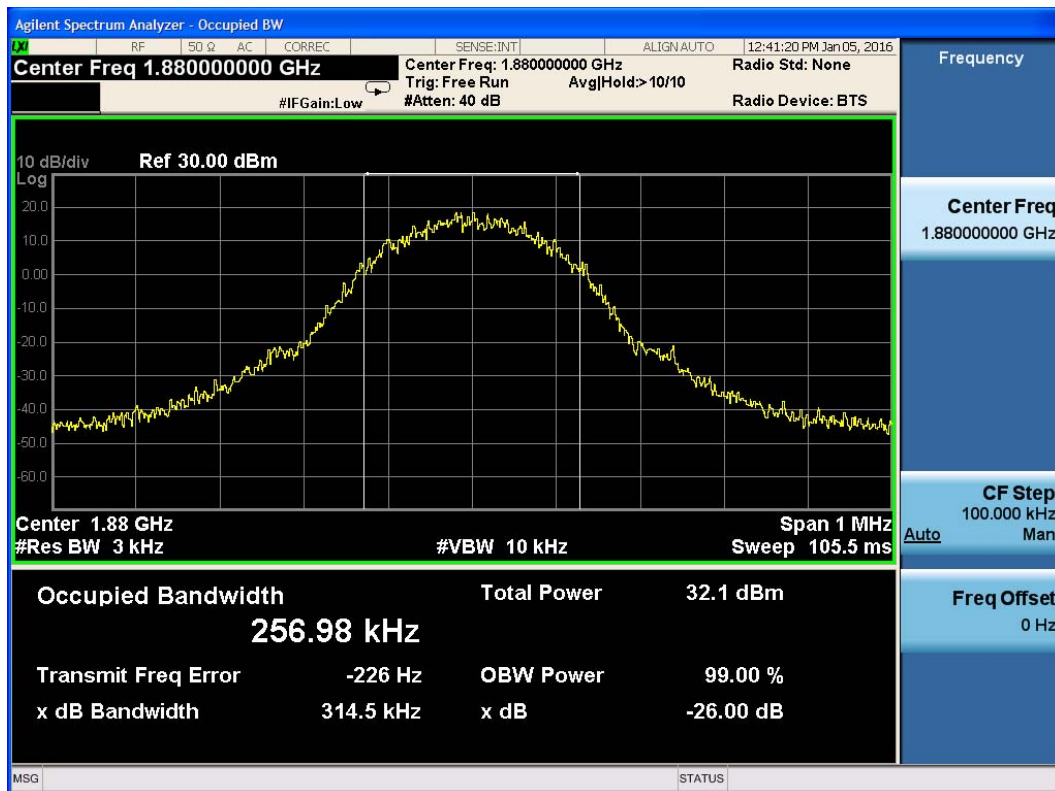
GSM 1900 GPRS CH661 Occupied Bandwidth



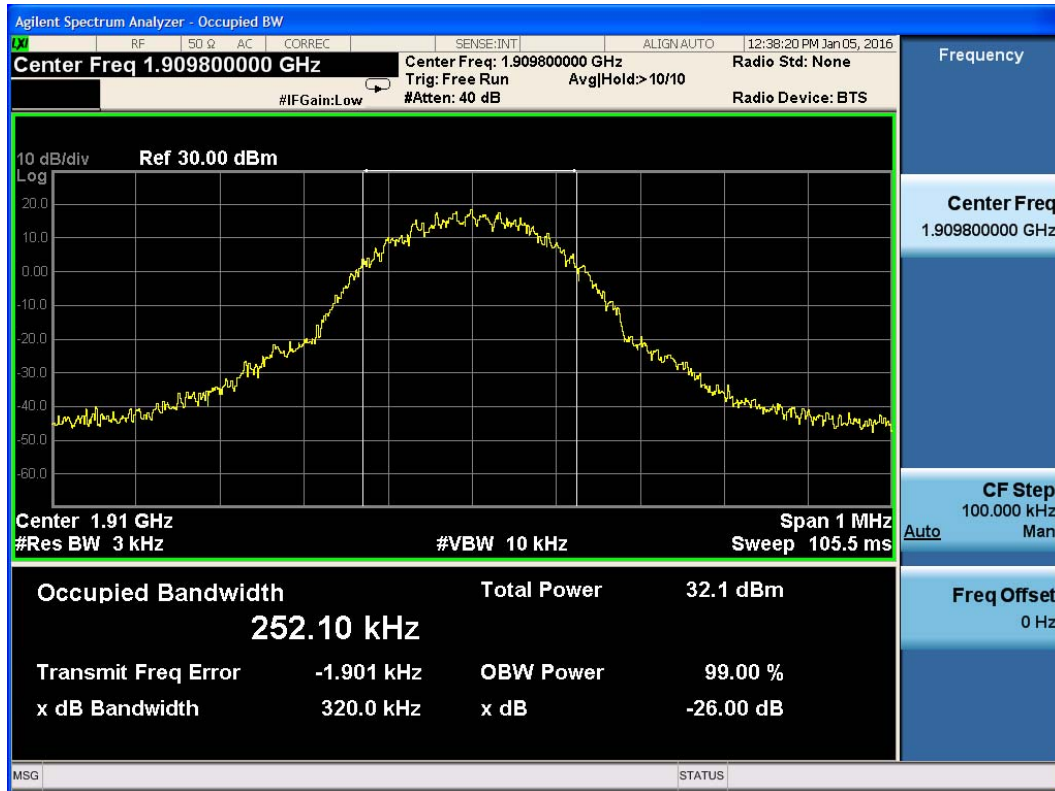
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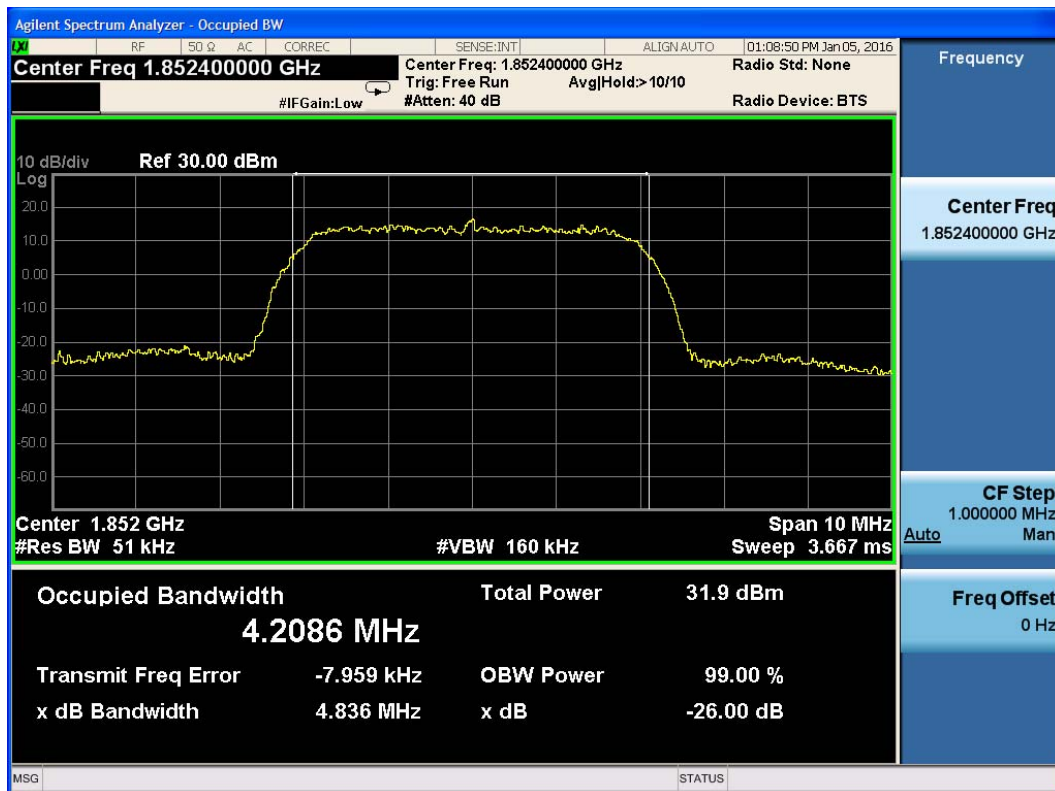
GSM1900 EGPRS CH512 Occupied Bandwidth



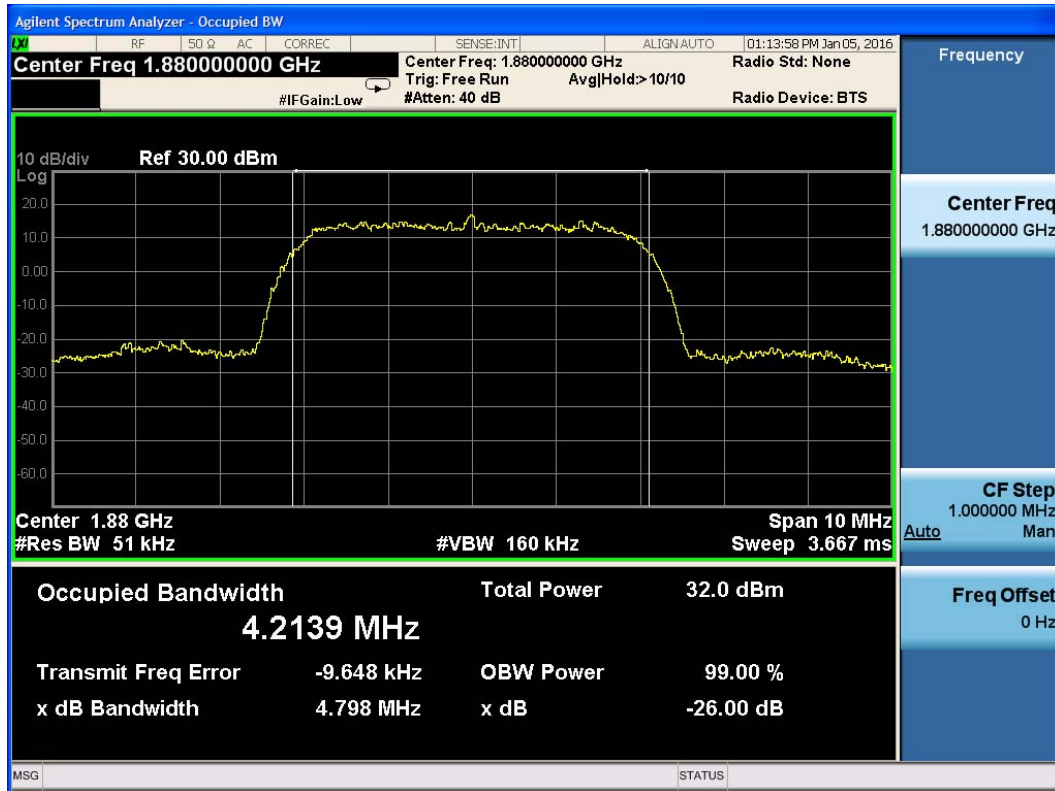
GSM 1900 EGPRS CH661 Occupied Bandwidth



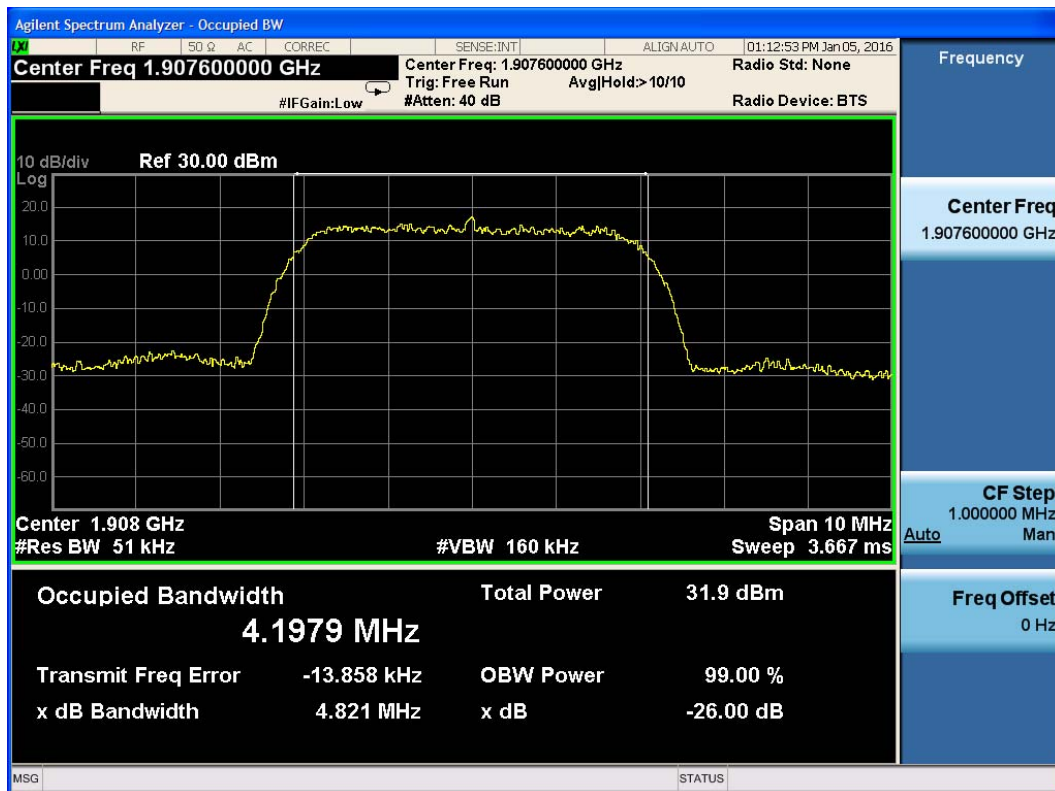
GSM 1900 EGPRS CH810 Occupied Bandwidth



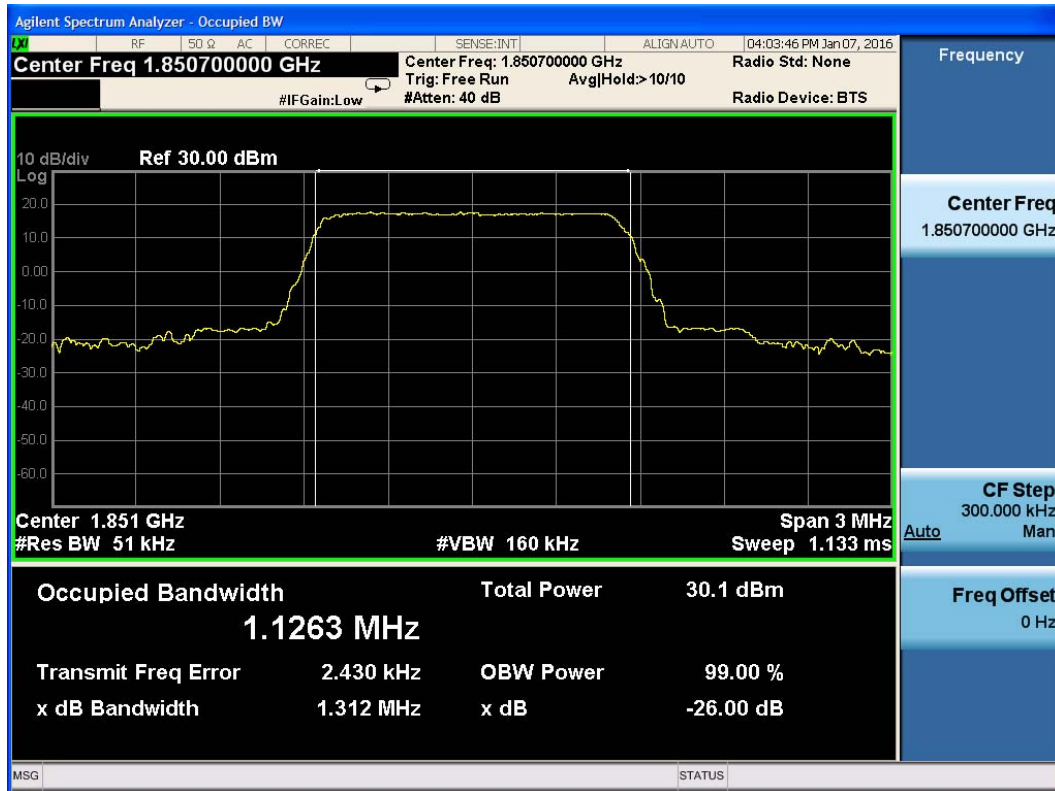
WCDMA Band II RMC CH9262



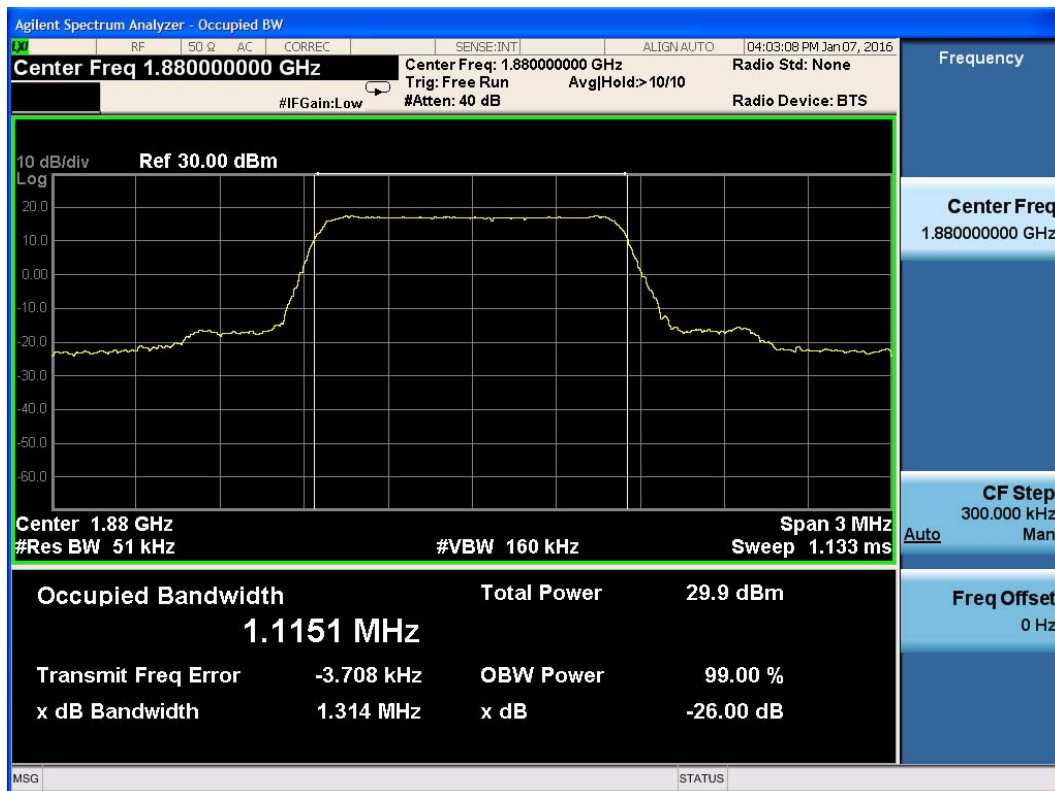
WCDMA Band II RMC CH9400



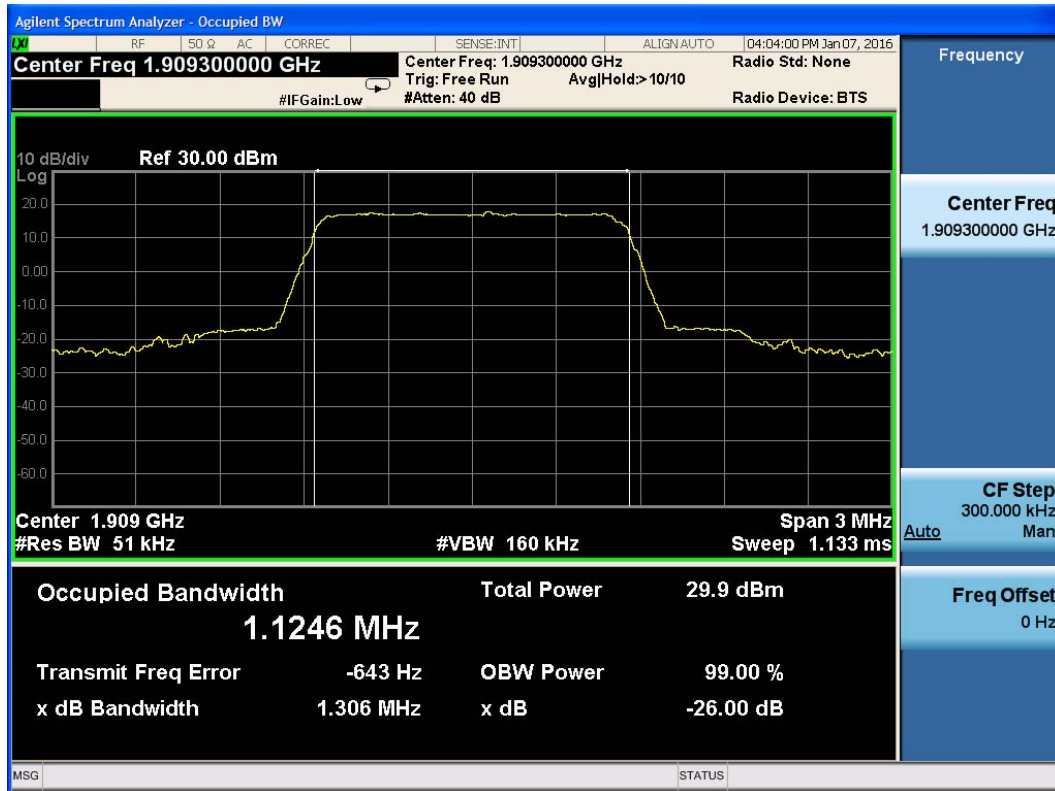
WCDMA Band II RMC CH9538



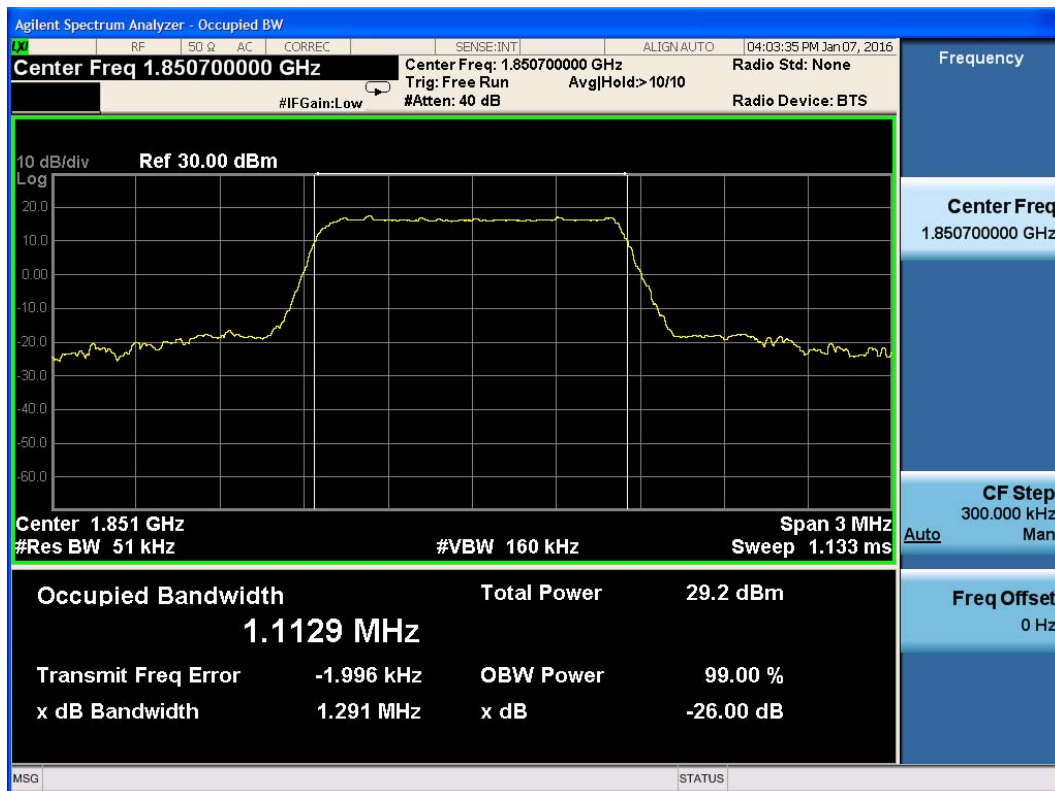
LTE Band II 1.4MHz QPSK CH18607



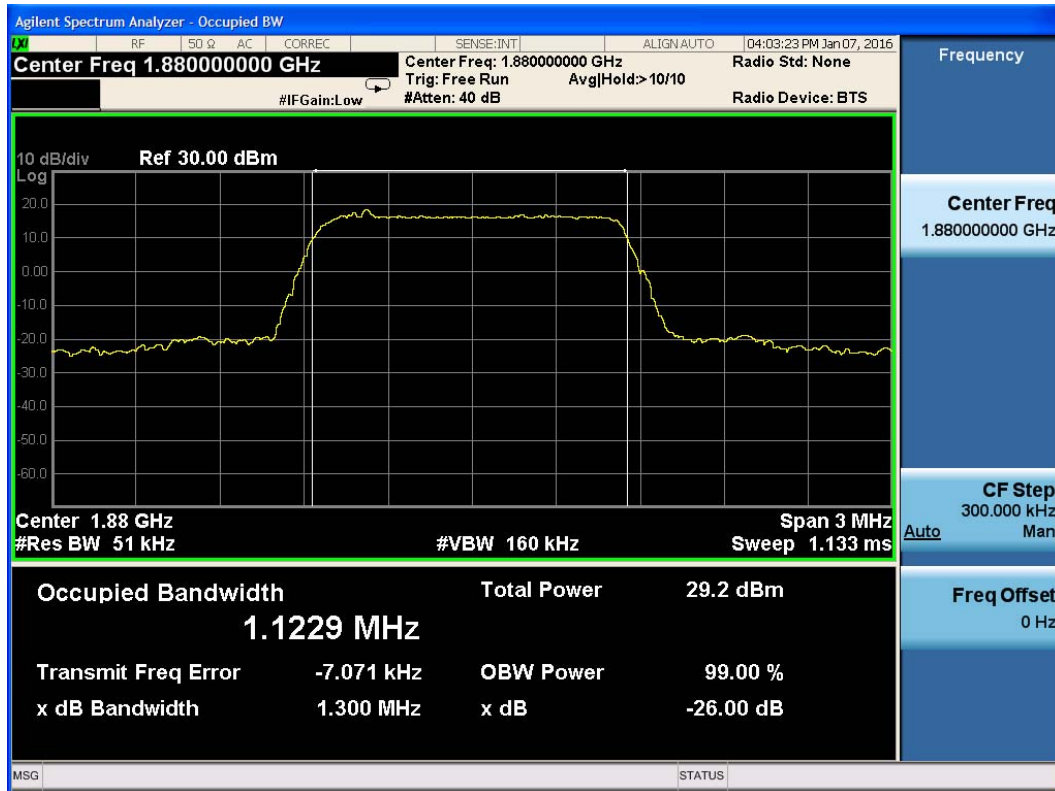
LTE Band II 1.4MHz QPSK CH18900



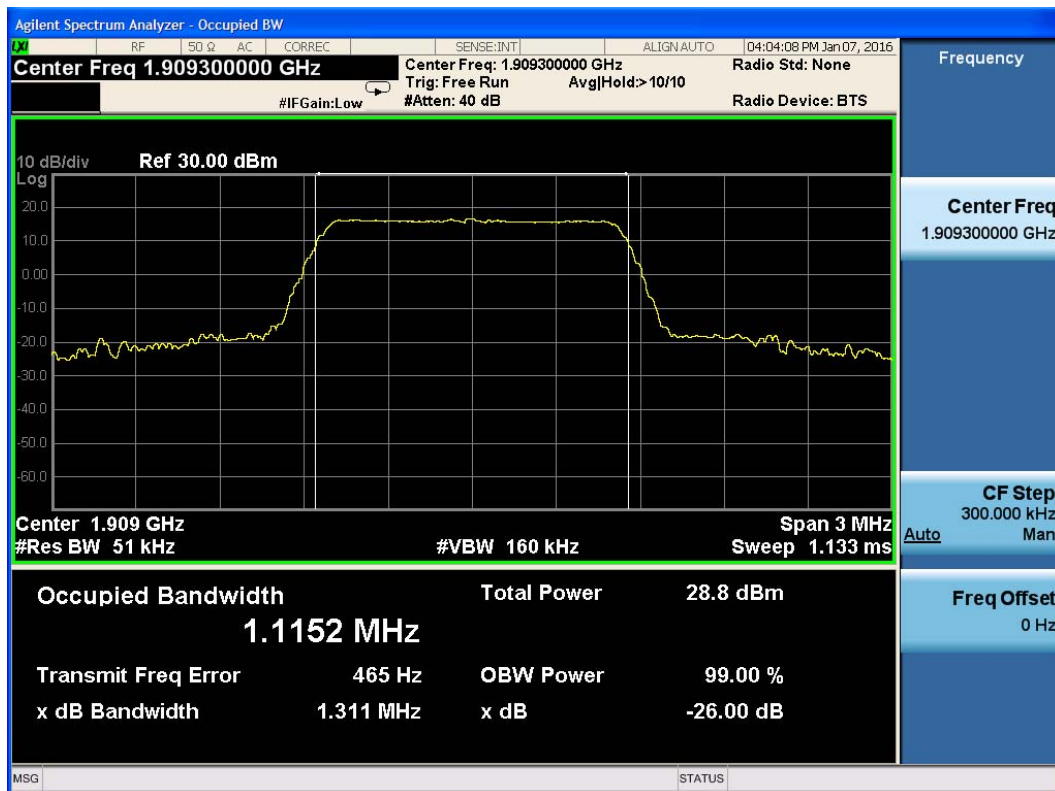
LTE Band II 1.4MHz QPSK CH19193



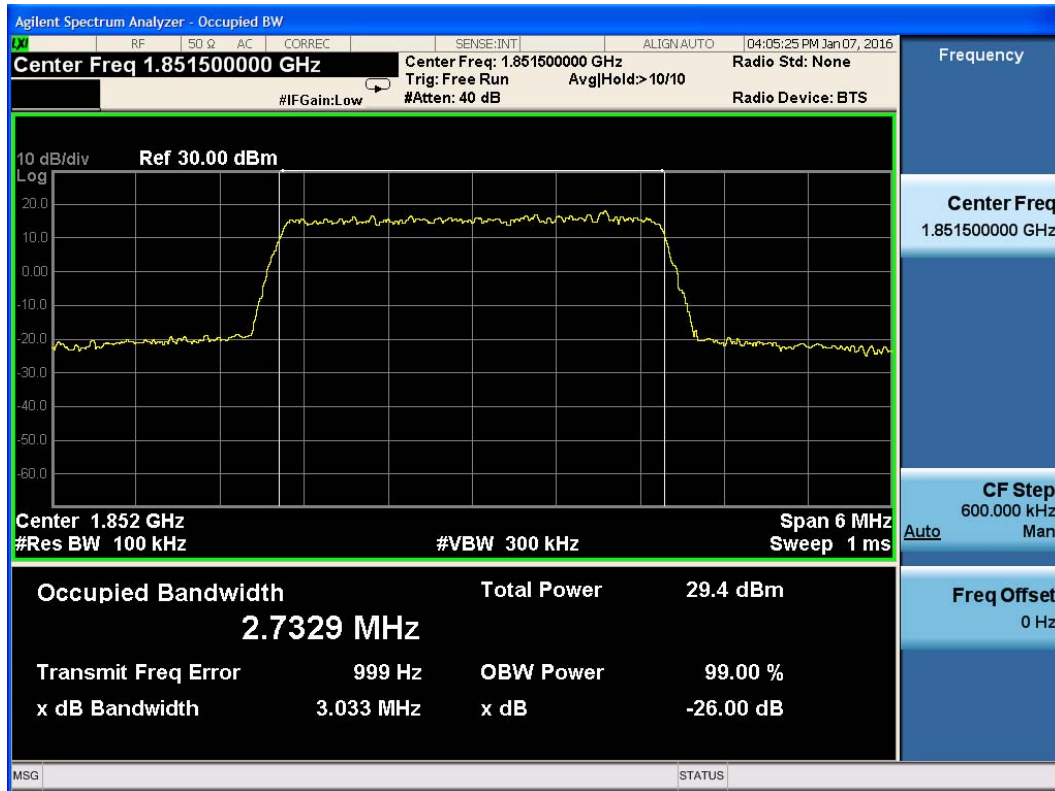
LTE Band II 1.4MHz 16QAM CH18607



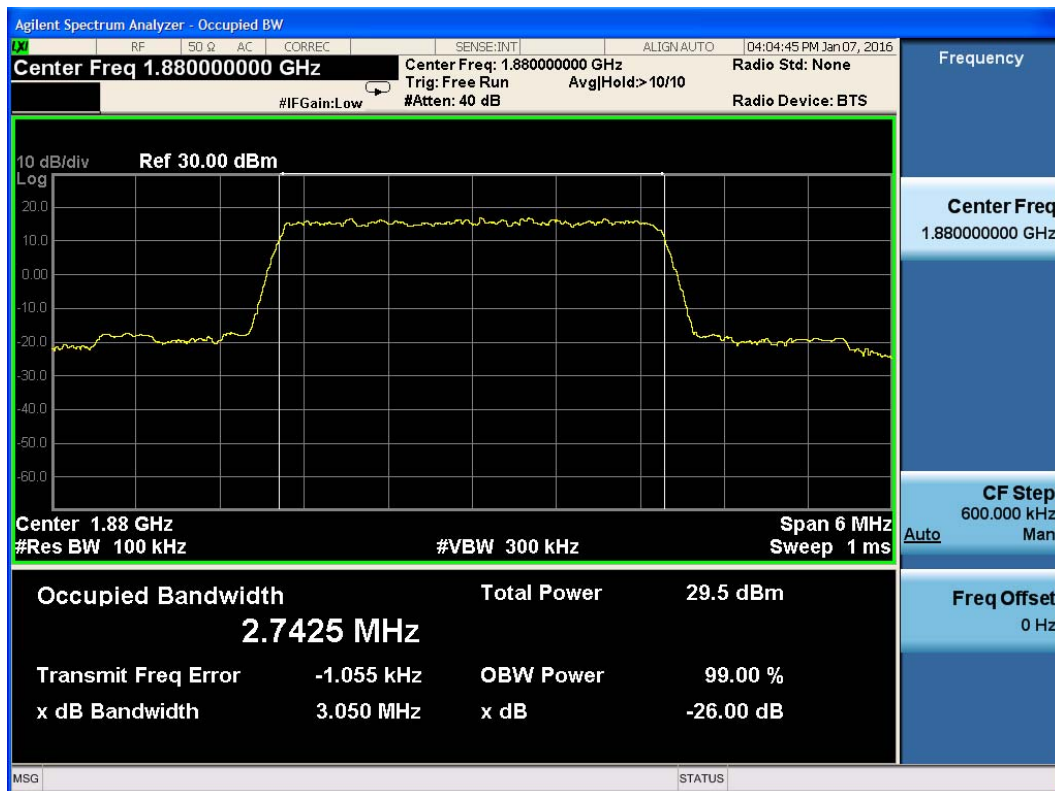
LTE Band II 1.4MHz 16QAM CH18900



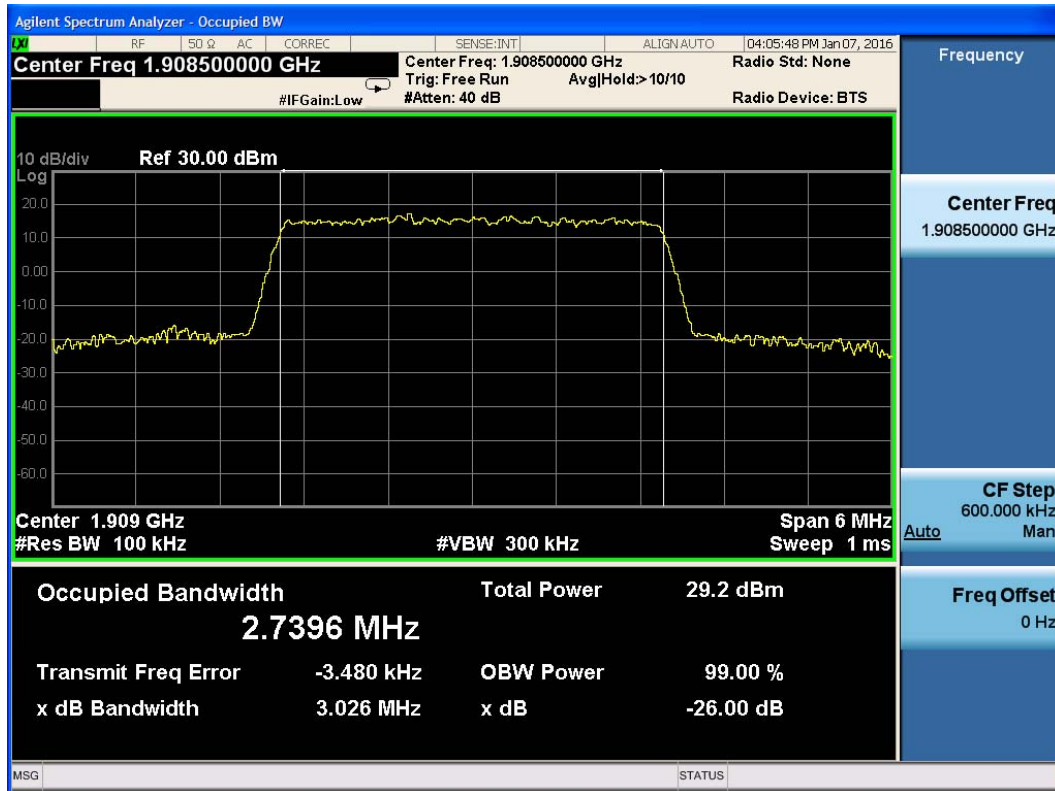
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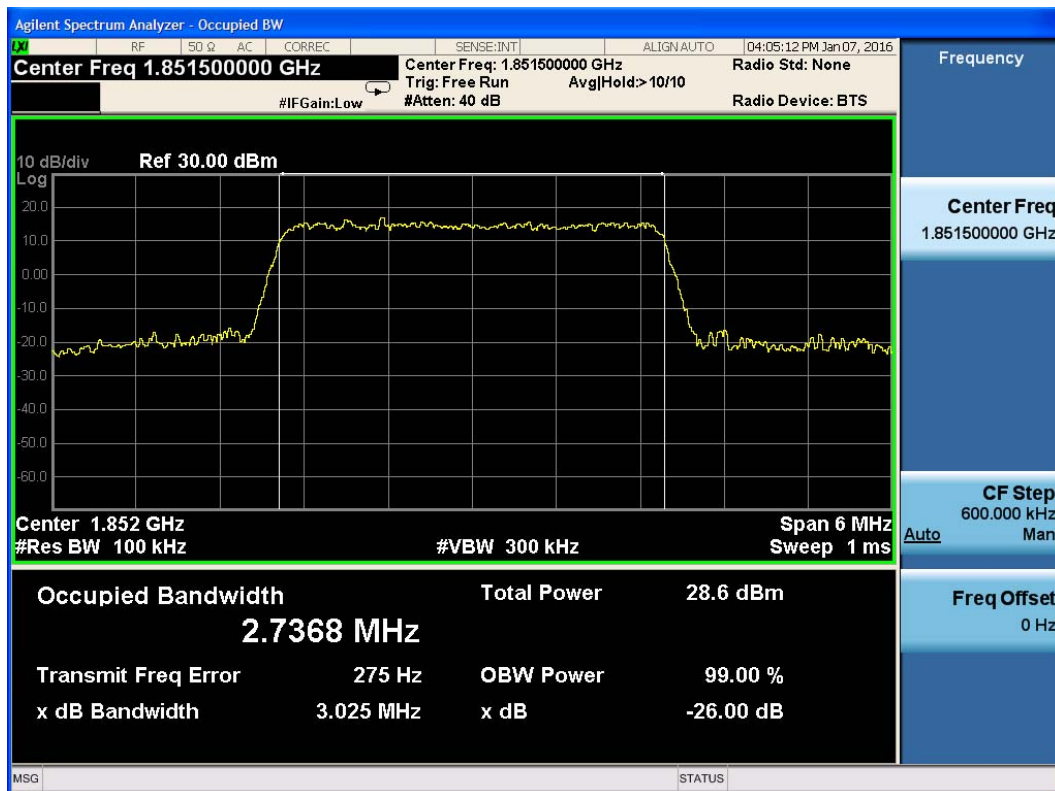
LTE Band II 3MHz QPSK CH18615



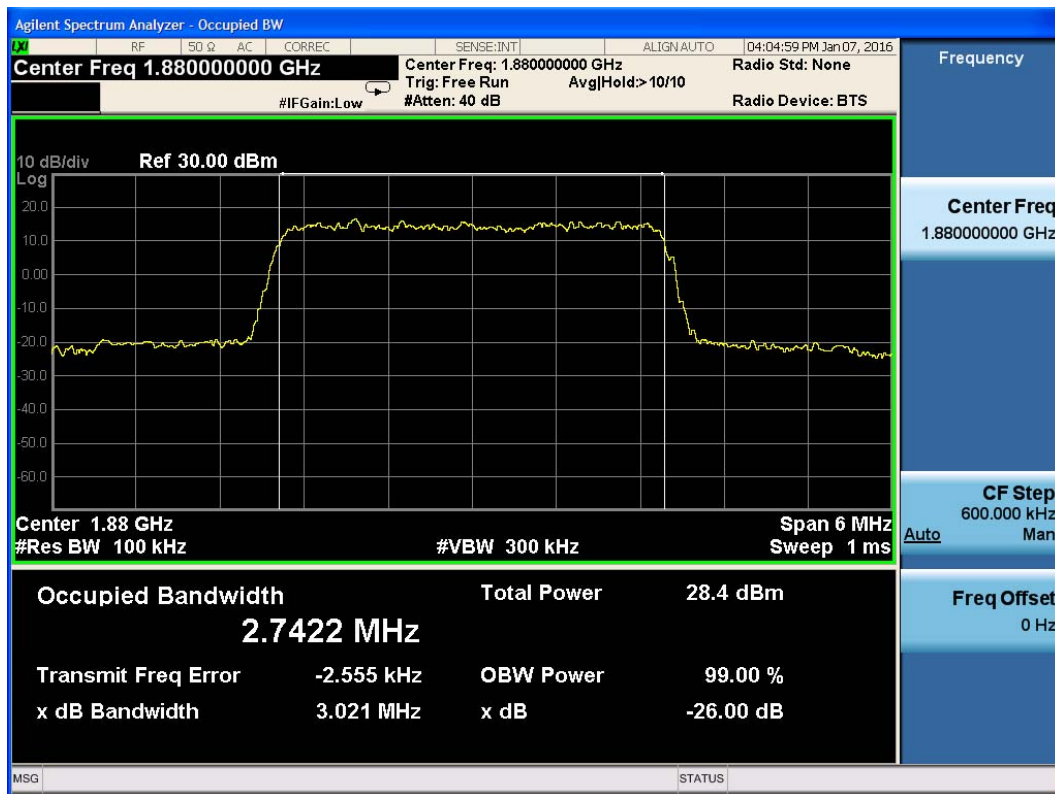
LTE Band II 3MHz QPSK CH18900



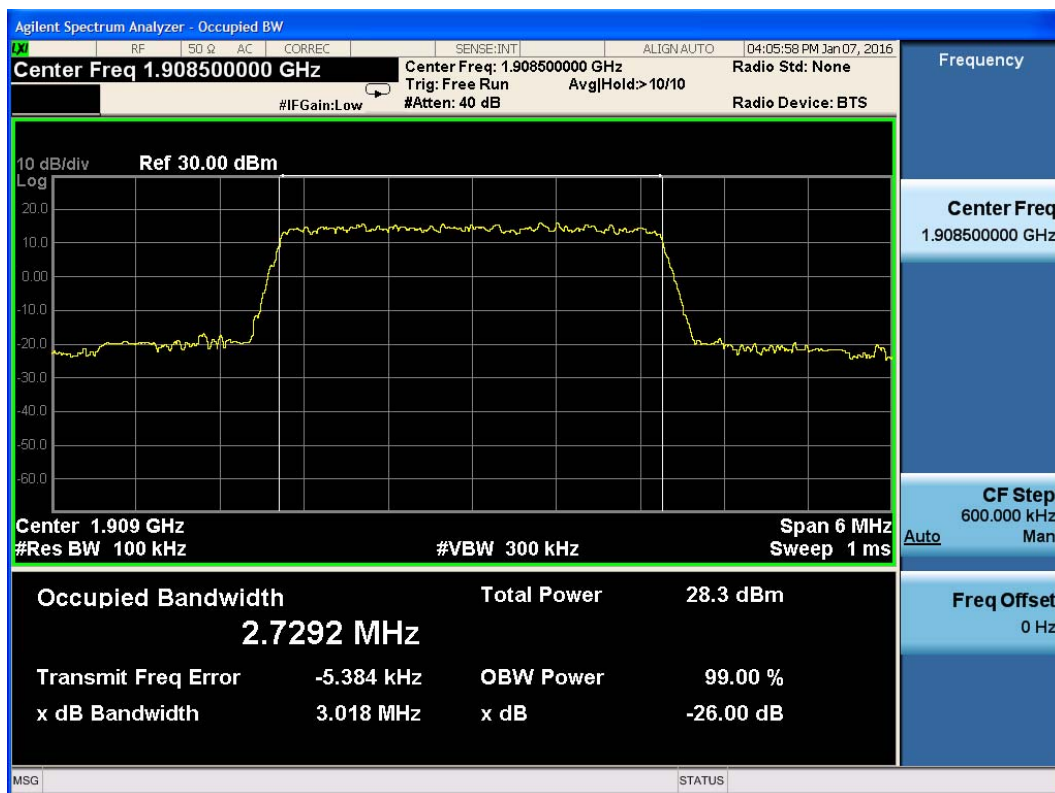
LTE Band II 3MHz QPSK CH19185



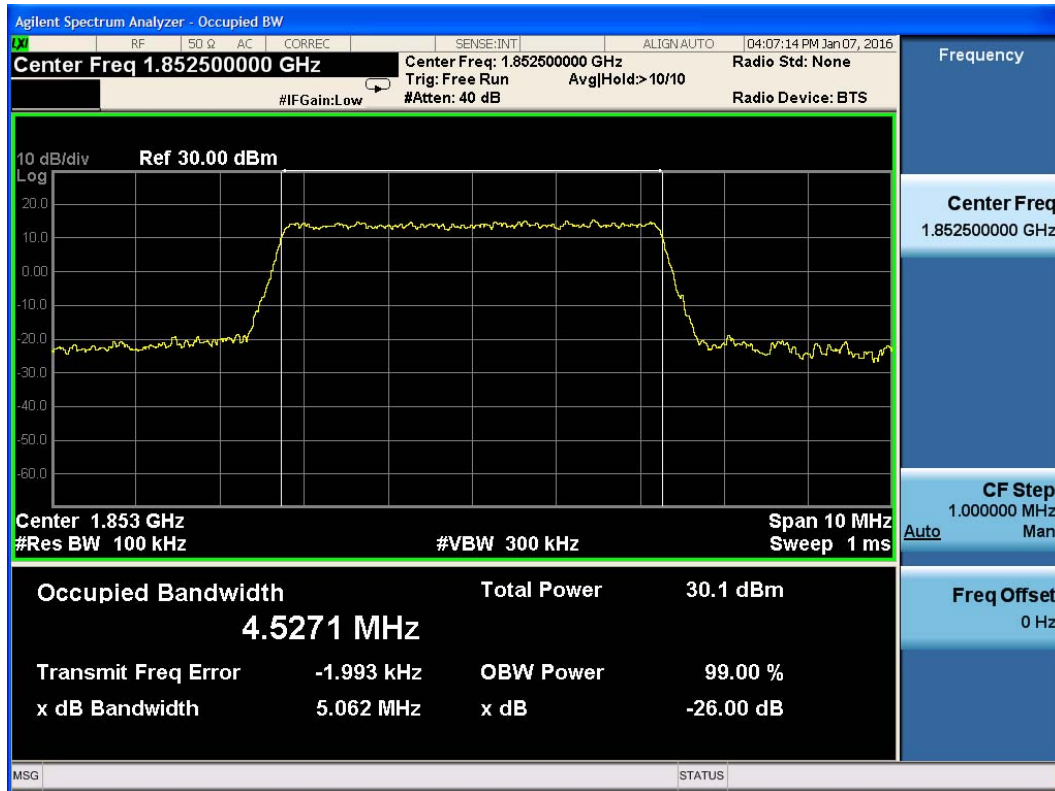
LTE Band II 3MHz 16QAM CH18615



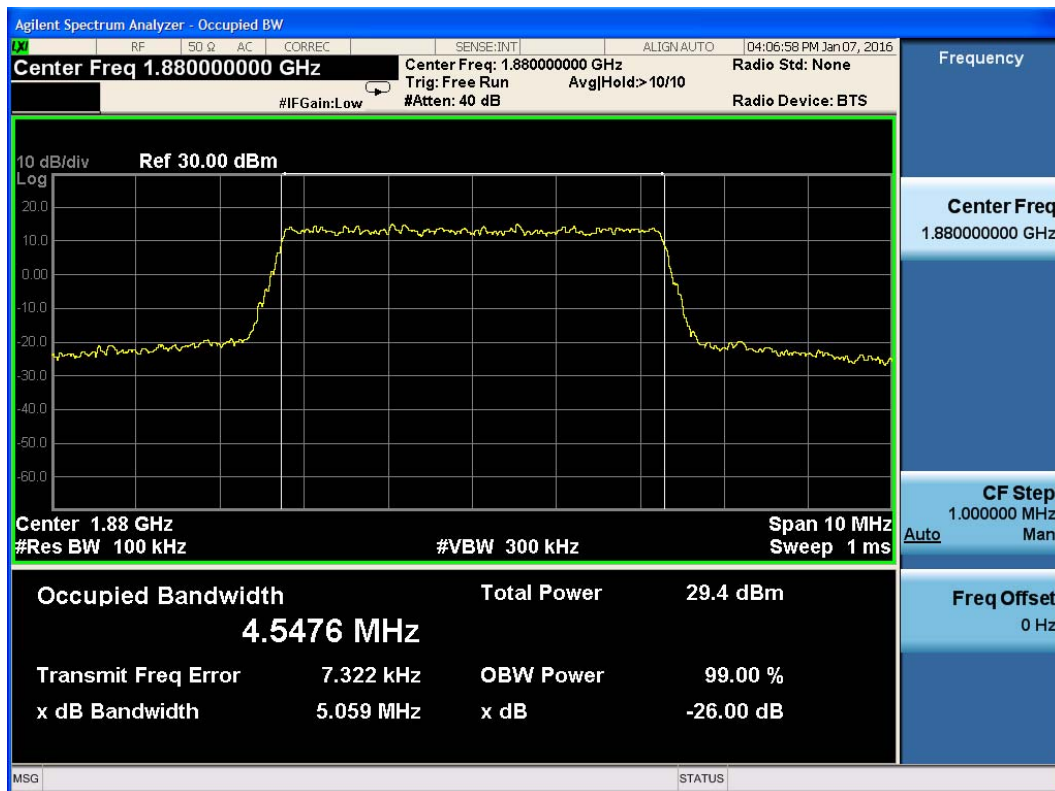
LTE Band II 3MHz 16QAM CH18900



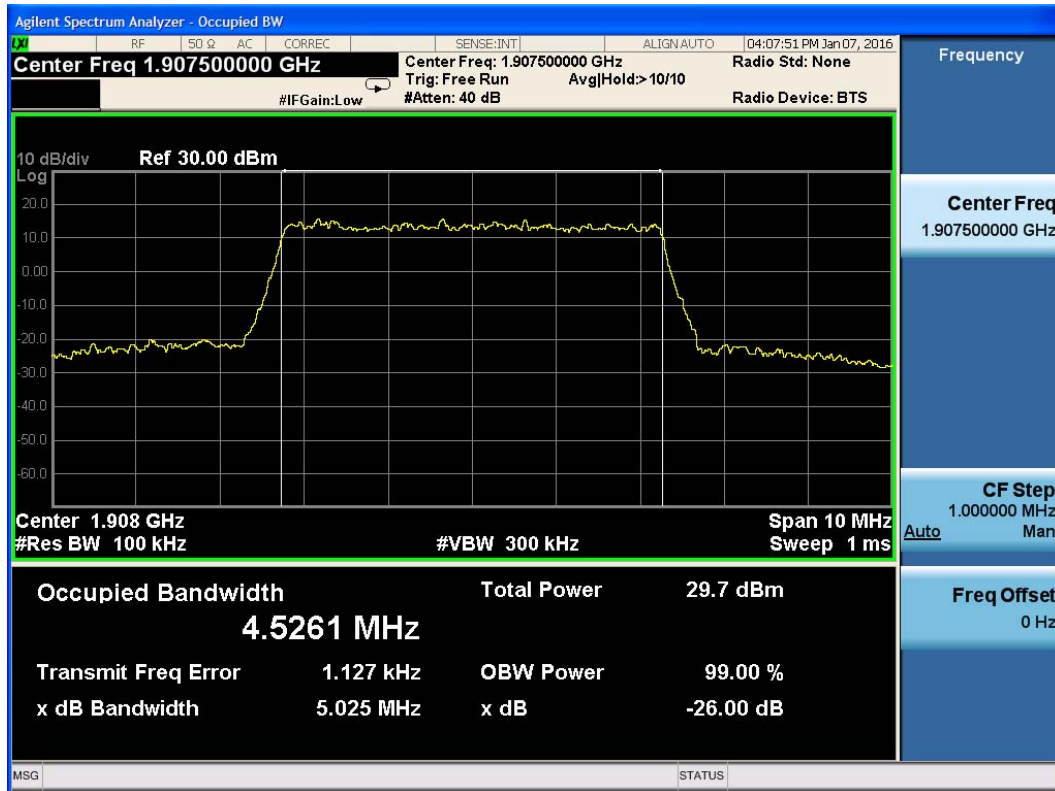
LTE Band II 3MHz 16QAM CH19185



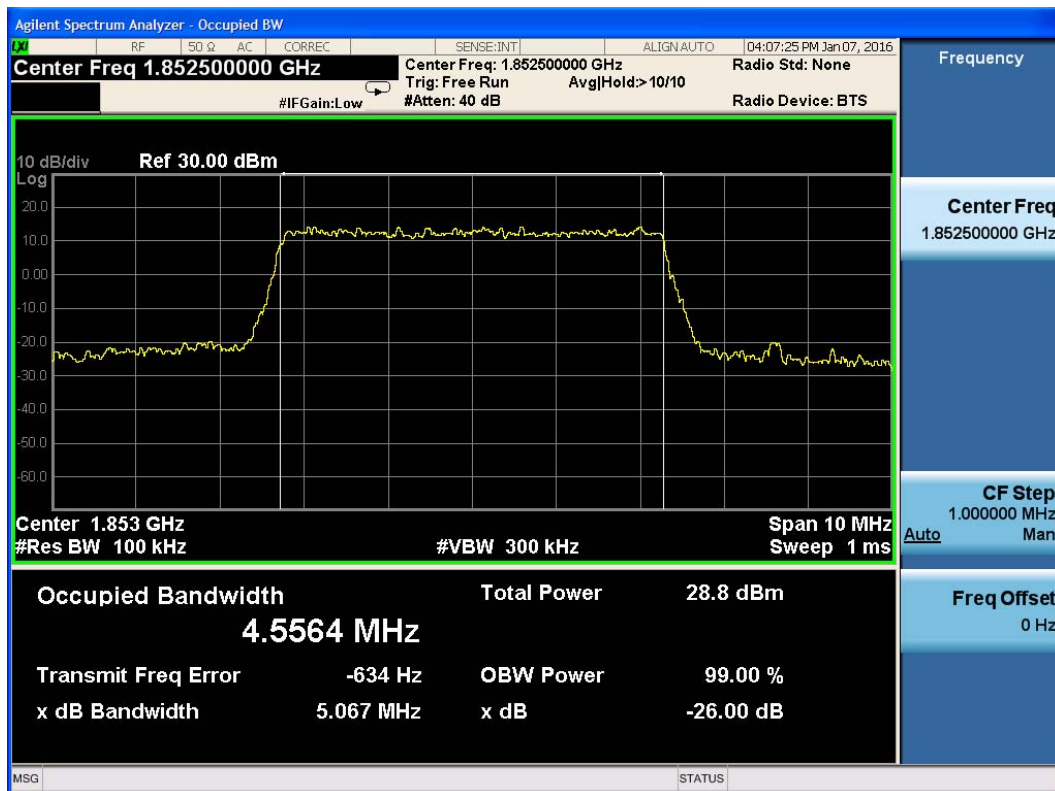
LTE Band II 5MHz QPSK CH18625



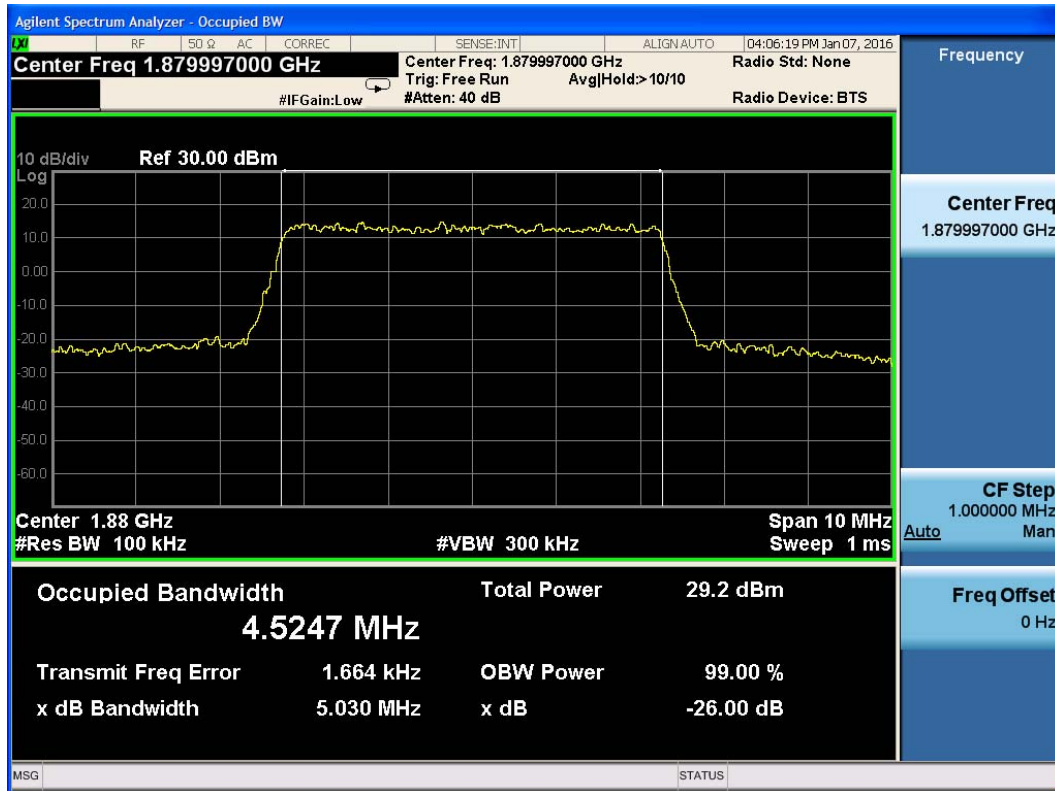
LTE Band II 5MHz QPSK CH18900



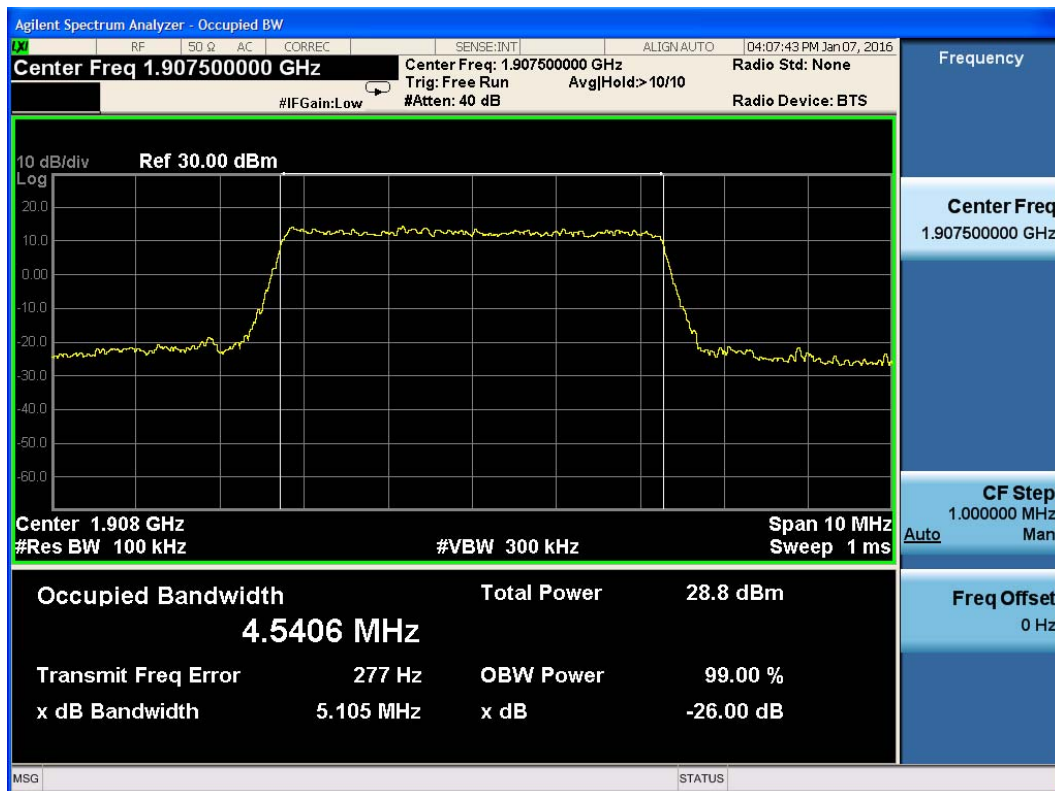
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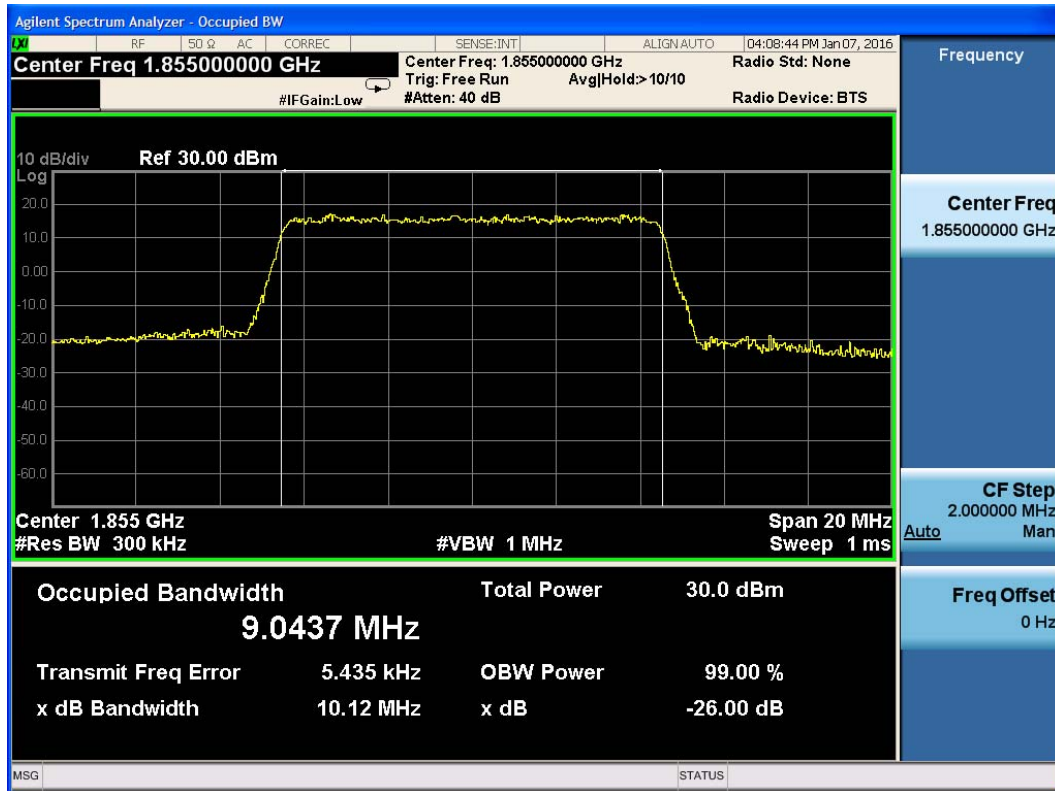
LTE Band II 5MHz 16QAM CH18625



LTE Band II 5MHz 16QAM CH18900



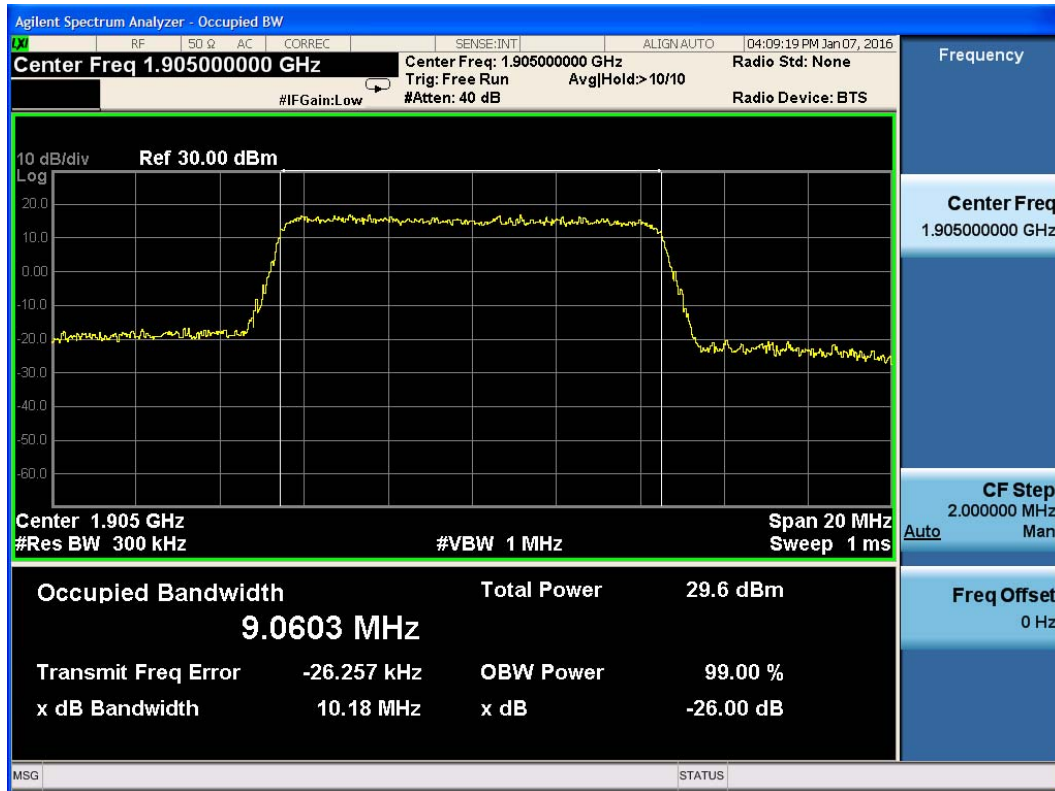
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LTE Band II 10MHz QPSK CH18650



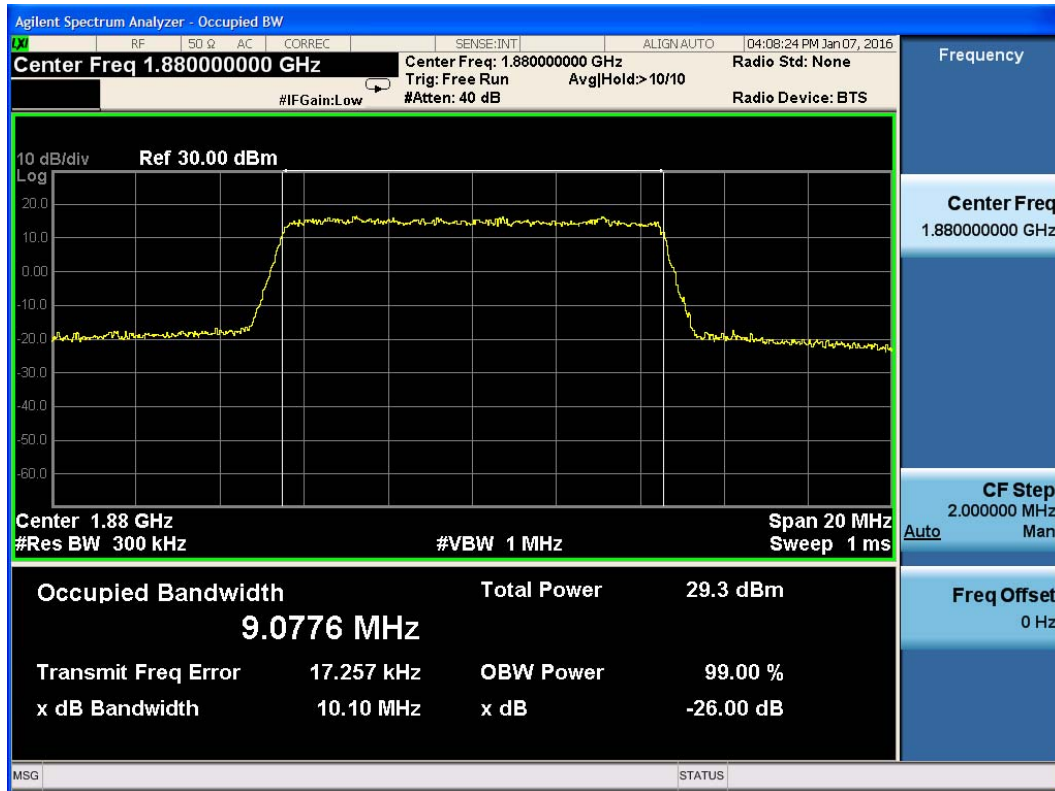
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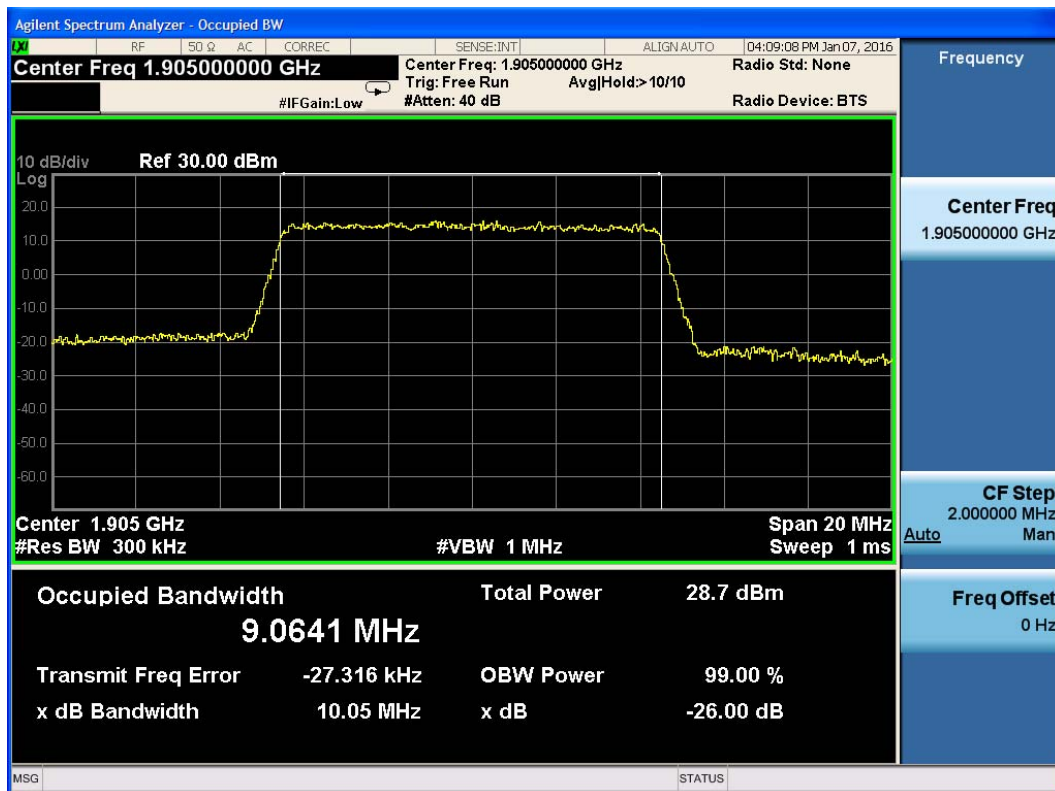
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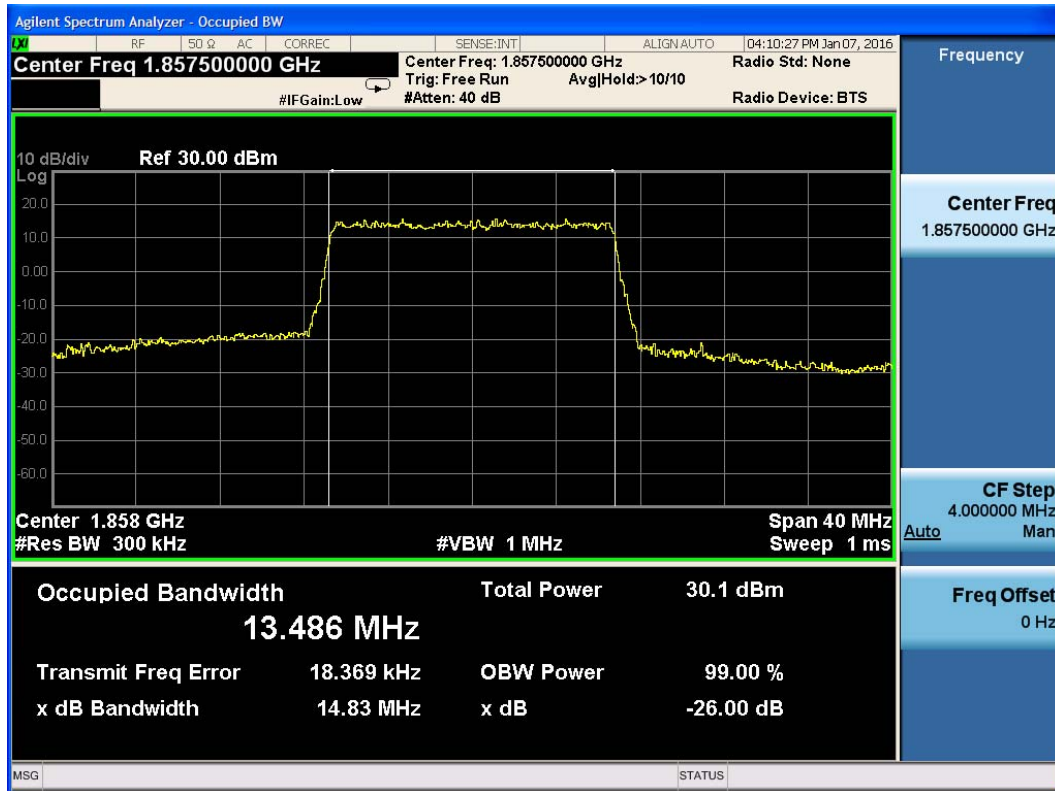
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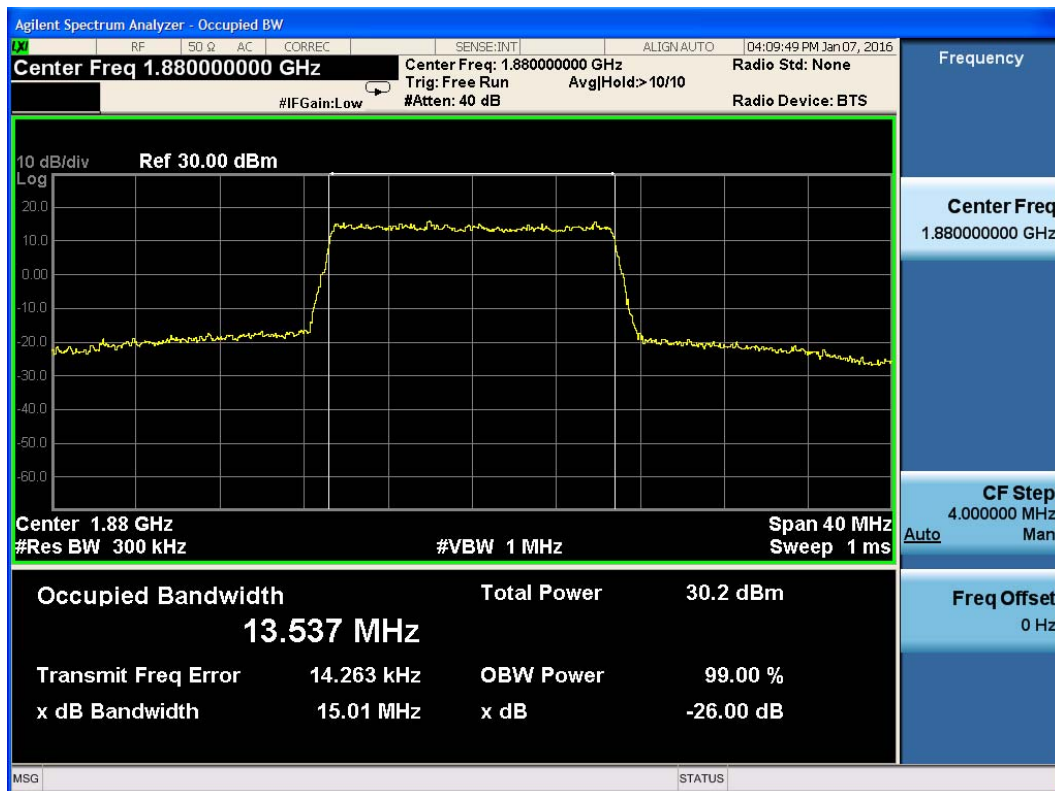
LTE Band II 10MHz 16QAM CH18900



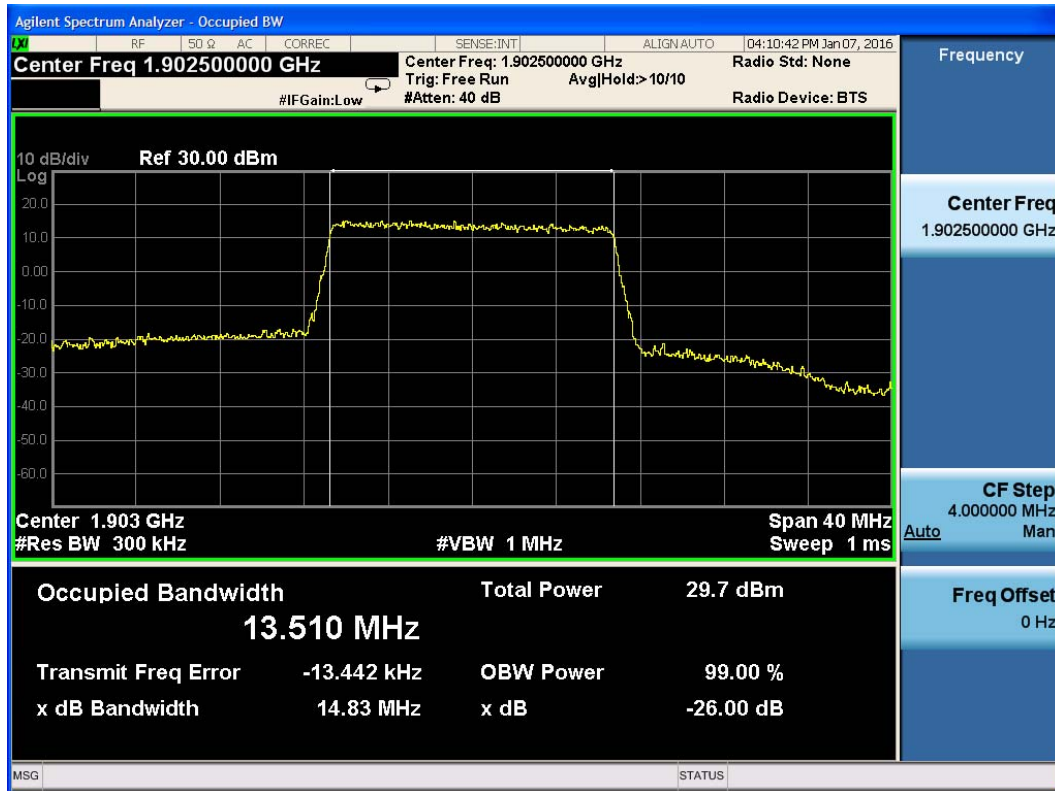
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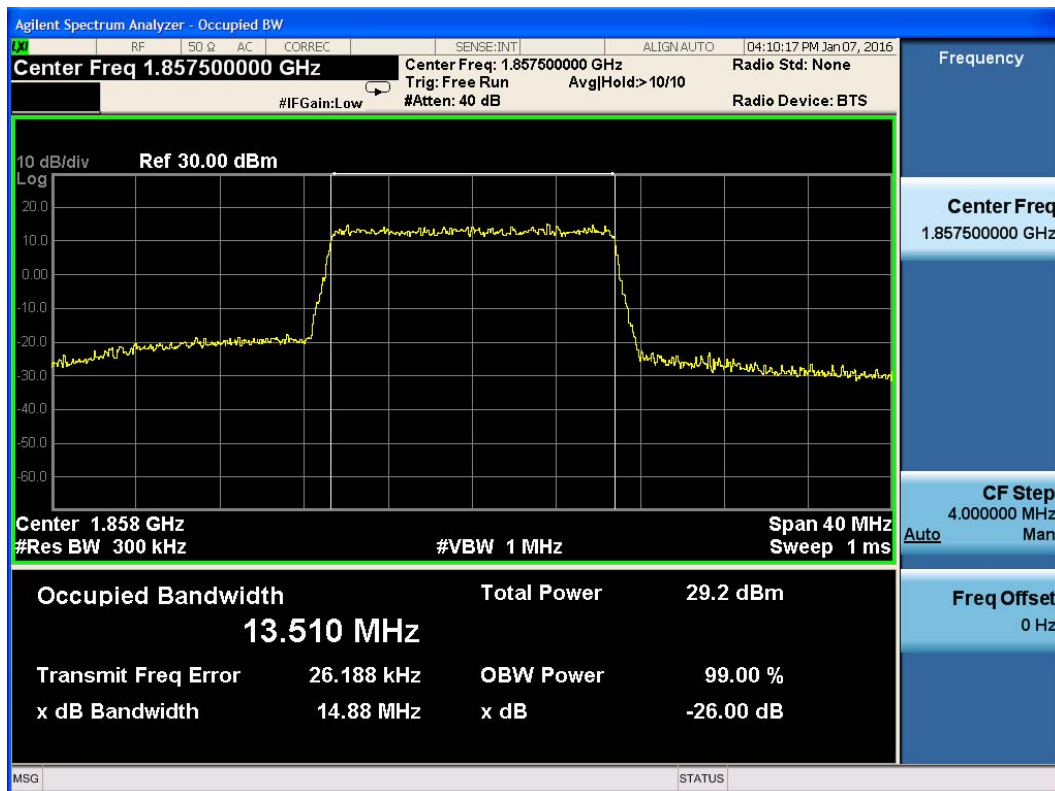
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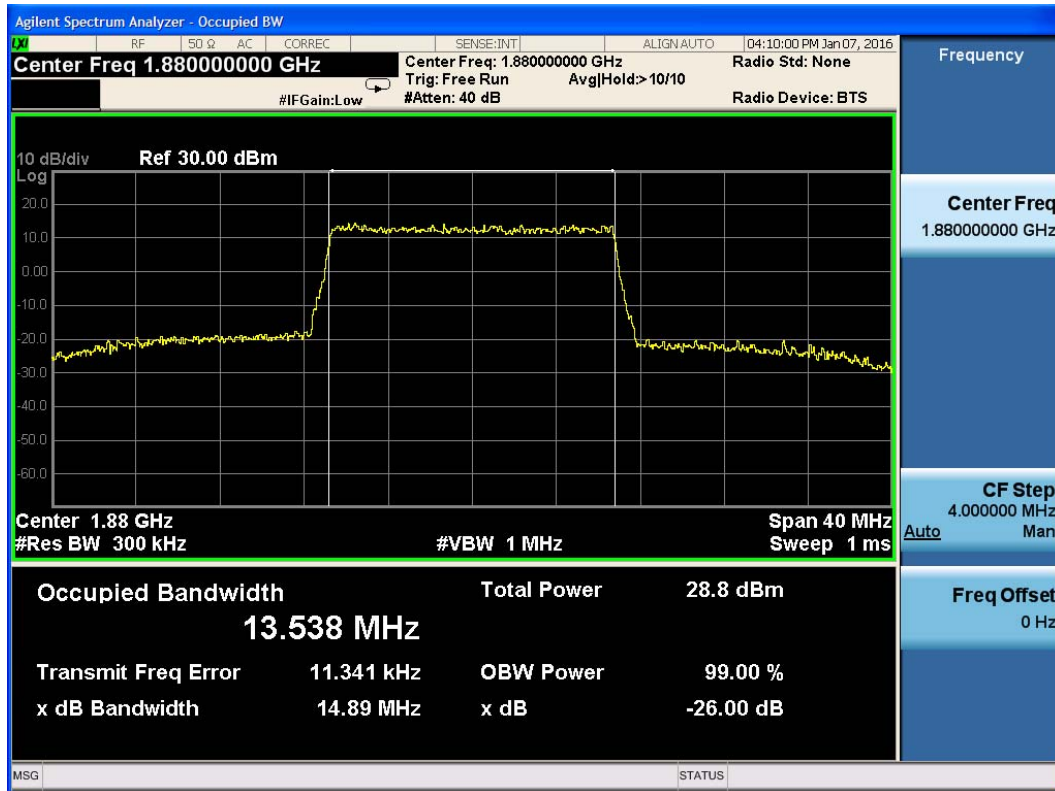
LTE Band II 15MHz QPSK CH18900



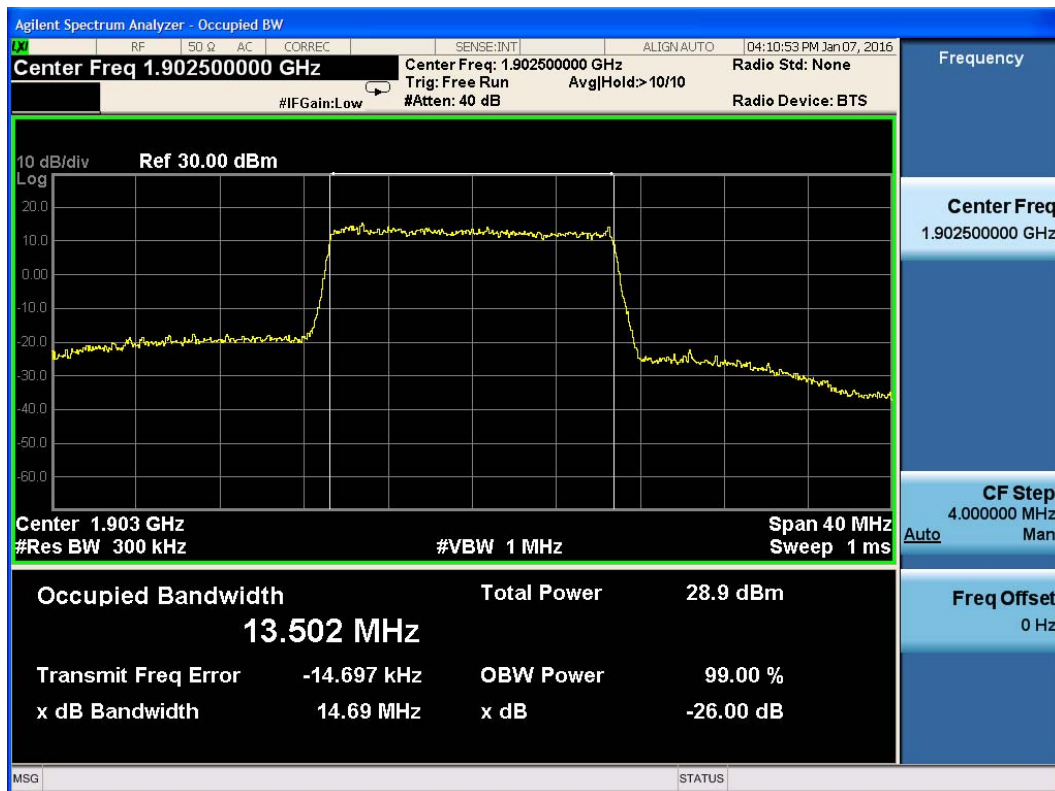
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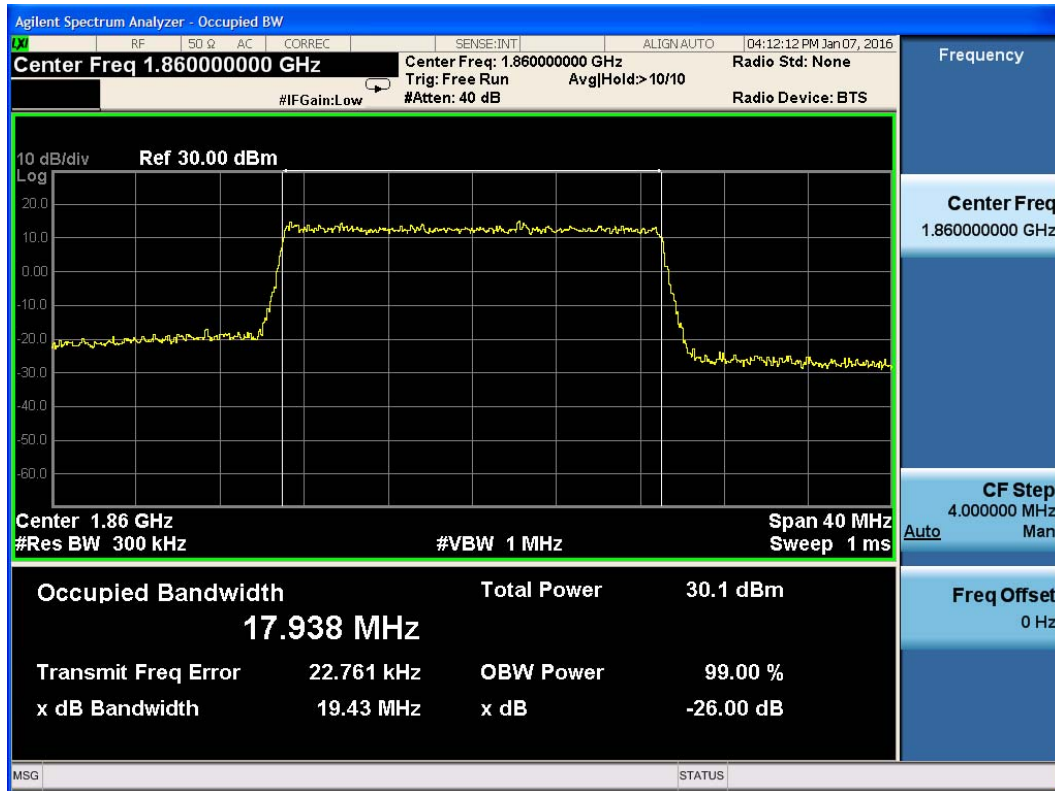
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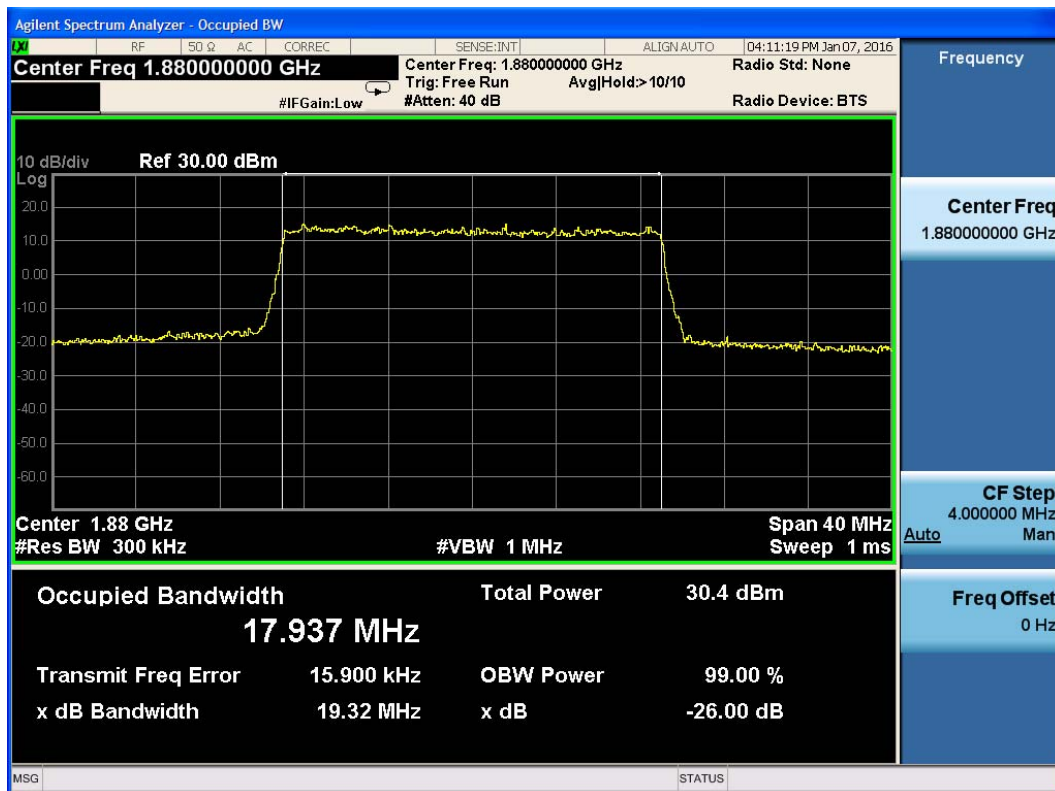
LTE Band II 15MHz 16QAM CH18900



LTE Band II 15MHz 16QAM CH19125



LTE Band II 20MHz QPSK CH18700



LTE Band II 20MHz QPSK CH18900