



REPORT No.: SZ18060250W04

TEST REPORT

APPLICANT : Entel PCS Telecomunicaciones S.A.

PRODUCT NAME : Smartphone

MODEL NAME : Smart 9

BRAND NAME : ÖWN

FCC ID : 2AO8VSMART9

STANDARD(S) : 47 CFR Part 22 Subpart H
47 CFR Part 24 Subpart E
47 CFR Part 27 Subpart L

TEST DATE : 2018-06-29 to 2018-07-07

ISSUE DATE : 2018-07-10

Tested by:

Su Hang
Su Hang (Test Engineer)

Approved by:

Peng Huarui
Peng Huarui (Supervisor)

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Change History		
Issue	Date	Reason for change
1.0	2018-07-10	First edition



1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	Entel PCS Telecomunicaciones S.A.
Applicant Address:	Costanera Sur 2760, Torre C, Piso 18, las condes,Santiago,Chile
Manufacturer:	Shenzhen Tinno Mobile Technology Corp.
Manufacturer Address:	4/F.,H-3 Building,OCT Eastern Industrial Park. NO.1 XiangShan East Road.,Nan Shan District,Shenzhen,P.R.China.

1.2. Equipment Under Test (EUT) Description

Product Name:	Smartphone
Serial No:	(N/A, marked #1 by test site)
Hardware Version:	V1.0
Software Version:	OWN_SMART_9_8.0
Modulation Type:	GSM,GPRS Mode with GMSK Modulation
Operating Frequency Range:	GSM 850MHz: Tx: 824.20 - 848.80MHz (at intervals of 200kHz); Rx: 869.20 - 893.80MHz (at intervals of 200kHz) GSM 1900MHz: Tx: 1850.20 - 1909.80MHz (at intervals of 200kHz); Rx: 1930.20 - 1989.80MHz (at intervals of 200kHz) WCDMA 850MHz Tx: 826.4 - 846.6MHz (at intervals of 200kHz); Rx: 871.4 - 891.6MHz (at intervals of 200kHz) WCDMA 1700MHz Tx: 1712.4 – 1752.6MHz (at intervals of 200kHz); Rx: 2112.4 - 2152.6MHz (at intervals of 200kHz) WCDMA 1900MHz Tx: 1852.4 - 1907.6MHz (at intervals of 200kHz); Rx: 1932.4 - 1987.6MHz (at intervals of 200kHz)
Multi-slot Class:	GPRS: Multislot Class12; EGPRS: Multislot Class12
Emission Designators:	GSM 850:248KGXW,GSM 1900:246KGXW EGPRS850:246KG7W, EGPRS1900:245KG7W, WCDMA 850:4M14F9W , WCDMA1700:4M19F9W



	WCDMA1900:4M17F9W	
Antenna Type:	PIFA Antenna	
Antenna Gain:	GSM 850 / WCDMA 850:	-3.5 dBi
	GSM 1900 / WCDMA 1900:	-1.0 dBi
	WCDMA 1700:	-3.0 dBi
Operating voltage:	Normal(NV):	3.85V
	Lowest(LV):	3.55V
	Highest(HV):	4.4V

Note 1: The transmitter (Tx) frequency arrangement of the Cellular 850MHz band used by the EUT can be represented with the formula $F(n)=824.2+0.2*(n-128)$, $128 \leq n \leq 251$; the lowest, middle, highest channel numbers (ARFCHs) used and tested in this report are separately 128 (824.2MHz), 190 (836.6MHz) and 251 (848.8MHz).

Note 2: The transmitter (Tx) frequency arrangement of the PCS 1900MHz band used by the EUT can be represented with the formula $F(n)=1850.2+0.2*(n-512)$, $512 \leq n \leq 810$; the lowest, middle and highest channel numbers (ARFCHs) used and tested in this report are separately 512 (1850.2MHz), 661 (1880.0MHz) and 810 (1909.8MHz).

Note 3: The transmitter (Tx) frequency arrangement of the WCDMA 850MHz band used by the EUT can be represented with the formula $F(n)=826.4+0.2*(n-4132)$, $4132 \leq n \leq 4233$; the lowest, middle and highest channel numbers (ARFCHs) used and tested in this report are separately 4132 (826.4MHz), 4175(835MHz) and 4233 (846.6MHz).

Note 4: The transmitter (Tx) frequency arrangement of the WCDMA 1900MHz band used by the EUT can be represented with the formula $F(n)=1852.4+0.2*(n-9262)$, $9262 \leq n \leq 9538$; the lowest, middle and highest channel numbers (ARFCHs) used and tested in this report are separately 9262 (1852.4MHz), 9400 (1880MHz) and 9538 (1907.6MHz).

Note 5: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.



1.3. Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 2, Part 22, Part 24 and Part 27 for the EUT FCC ID Certification:

No	Identity	Document Title
1	47 CFR Part 2 (10-1-12 Edition)	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	47 CFR Part 22 (10-1-12 Edition)	Public Mobile Services
3	47 CFR Part 24 (10-1-12 Edition)	Personal Communications Services
4	47 CFR Part 27 (10-1-12 Edition)	Miscellaneous Wireless Communications Services

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Test Date	Test Engineer	Result
1	2.1046	Conducted RF Output Power	Jul 04, 2018	Su Hang	PASS
2	24.232(d) 27.50(d)	Peak - Average Ratio	Jul 04&06, 2018	Su Hang	PASS
3	2.1049	99% Occupied Bandwidth	Jul 04&06, 2018	Su Hang	PASS
4	2.1055, 22.355, 24.235, 27.54	Frequency Stability	Jul 04&06, 2018	Su Hang	PASS
5	2.1051, 22.917(a), 24.238(a), 27.53(h)	Conducted Out of Band Emissions	Jul 04&06, 2018	Su Hang	PASS
6	2.1051, 22.917(a), 24.238(a), 27.53(h)	Band Edge	Jul 04&06, 2018	Su Hang	PASS
7	22.913(a), 24.232(a)	Transmitter Radiated Power (EIPR/ERP)	Jul 07, 2018	Wu Zhongwen	PASS
8	2.1051, 22.917(a), 24.238(a), 27.53(h)	Radiated Out of Band Emissions	Jun 29, 2018 Jul 03, 2018	Wu Zhongwen	PASS

Note: The tests were performed according to the method of measurements prescribed in KDB971168 D01 v03 (Oct 27, 2017) and ANSI/TIA-603-E-2016.



1.4. Environmental Conditions

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

Temperature (°C):	15 - 35
Relative Humidity (%):	30 -60
Atmospheric Pressure (kPa):	86-106

2.47 CFR Part 2, Part 22H & 24E&27L Requirements

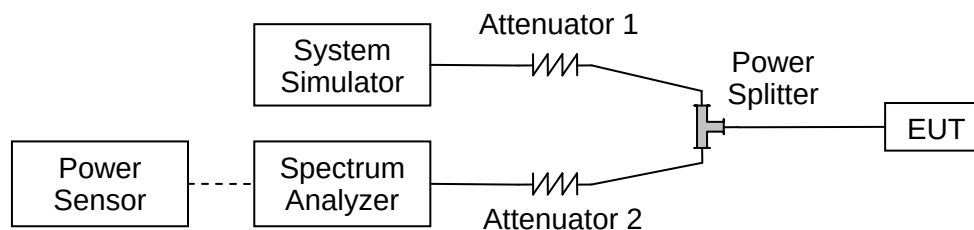
2.1. Conducted RF Output Power

2.1.1. Requirement

According to FCC section 2.1046(a), for transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in FCC section 2.1033(c)(8).

2.1.2. Test Description

Test Setup:



The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power i.e. Power Control Level (PCL) = 5 and Power Class = 4. A call is established between the EUT and the SS.



2.1.3. Test Results

The lowest, middle and highest channels are selected to perform testing to verify the conducted RF output power of the EUT.

GSM Test Verdict:

Band	Channel	Frequency (MHz)	Measured Output Power	Limit	Verdict
			dBm	dBm	
GSM 850MHz	128	824.2	33.99	35	PASS
	190	836.6	33.74		PASS
	251	848.8	34.07		PASS
GSM 1900MHz	512	1850.2	29.78	32	PASS
	661	1880.0	31.15		PASS
	810	1909.8	31.41		PASS
GPRS 850MHz	128	824.2	32.97	35	PASS
	190	836.6	32.65		PASS
	251	848.8	32.65		PASS
GPRS 1900MHz	512	1850.2	29.11	32	PASS
	661	1880.0	29.24		PASS
	810	1909.8	29.28		PASS
EGPRS 850MHz	128	824.2	29.35	35	PASS
	190	836.6	29.19		PASS
	251	848.8	29.29		PASS
EGPRS 1900MHz	512	1850.2	27.56	32	PASS
	661	1880.0	27.92		PASS
	810	1909.8	27.95		PASS

Note 1: For the GPRS and EGPRS model, all the slots were tested and just the worst data was recorded in this report.

**WCDMA Test Verdict:**

Item	band	WCDMA 850			WCDMA 1700			WCDMA 1900		
	ARFCN	4132	4175	4233	1312	1412	1513	9262	9400	9538
	subtest	dBm			dBm			dBm		
5.2(WCDMA)	non	23.36	23.42	23.41	23.37	23.24	23.26	23.87	23.73	23.82
HSDPA	1	22.41	22.47	22.49	22.31	22.44	22.46	23.07	22.94	23.16
	2	22.42	22.48	22.52	22.33	22.40	22.51	23.04	22.98	23.19
	3	21.89	21.96	22.01	21.92	21.91	21.98	22.54	22.50	22.66
	4	21.93	21.96	21.97	21.90	21.89	21.97	22.52	22.49	22.63
HSUPA	1	22.45	22.51	22.51	22.34	22.39	22.50	22.94	22.86	23.07
	2	20.44	20.47	20.49	20.41	20.38	20.49	20.91	20.90	21.07
	3	21.44	21.52	21.50	21.42	21.37	21.50	21.96	21.87	22.08
	4	20.41	20.49	20.52	20.43	20.40	20.53	20.96	20.86	21.10
	5	22.46	22.49	22.48	22.44	22.39	22.49	22.94	22.88	23.10
HSPA+	1	21.33	21.45	20.97	21.05	21.30	21.47	22.09	22.98	21.77

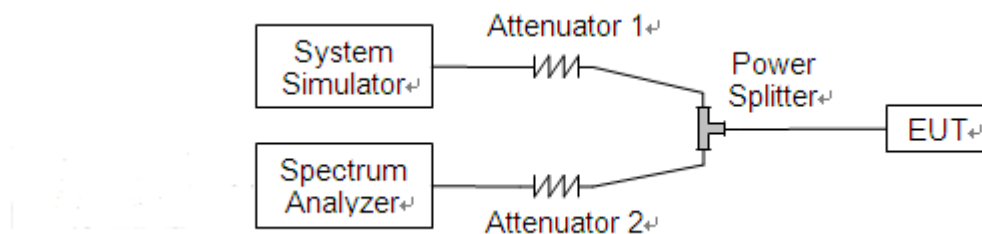
2.2. Peak to Average Ratio

2.2.1. Requirement

According to FCC 24.232(d) the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

2.2.2. Test Description

Test Setup:



The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power i.e. Power Control Level (PCL) = 5 and Power Class = 4. A call is established between the EUT and the SS.

2.2.3. Test procedure

1. For GSM/EGPRS operating mode:

- Set RBW=1MHz, VBW=3MHz, peak detector in spectrum analyzer.
- Set EUT in maximum output power, and triggered the burst signal.
- Measured respectively the peak level and mean level, and the deviation was recorded as Peak to Average ratio.

2. For UMTS operating mode:

- Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
- The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1%.



2.2.4. Test Result

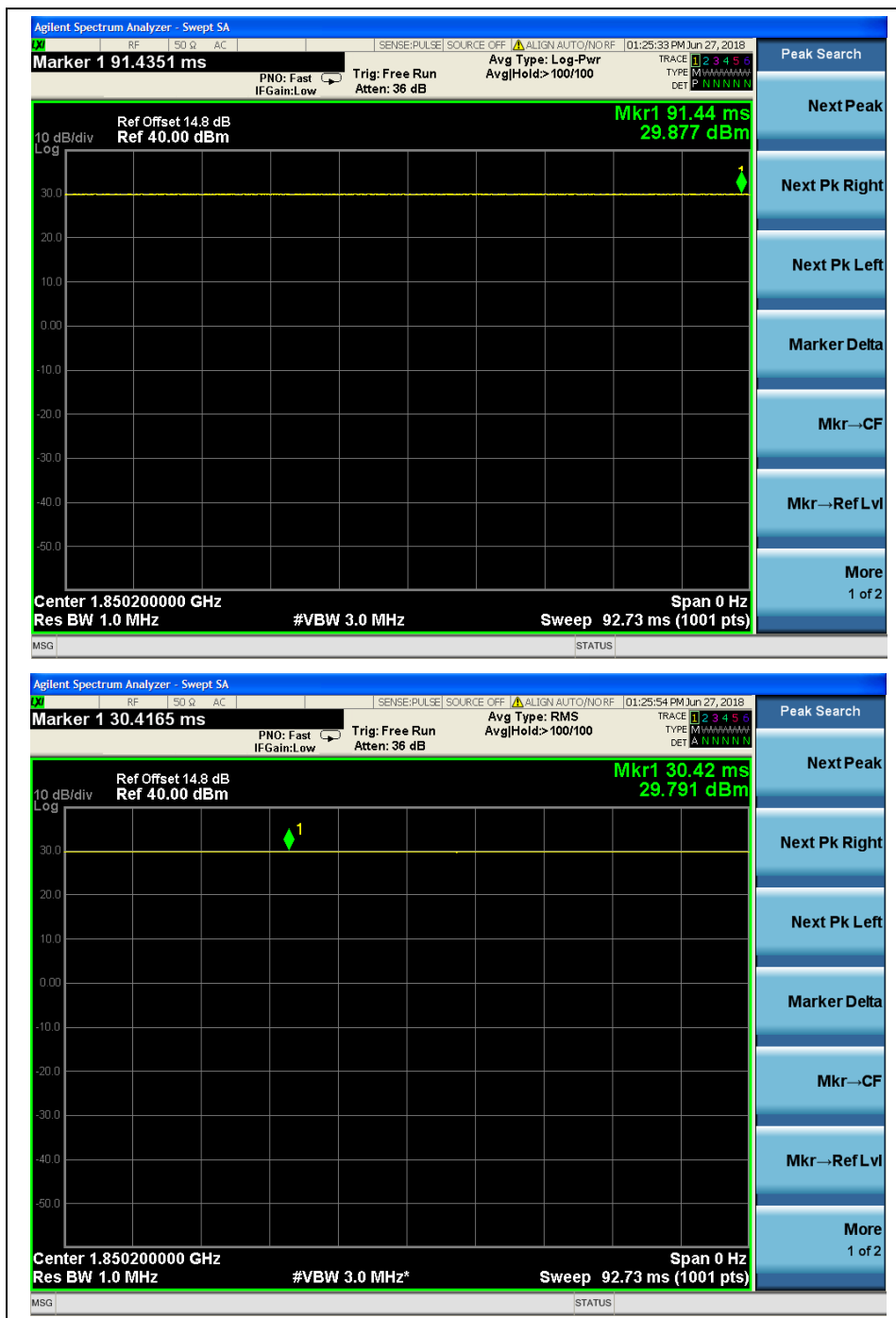
The lowest, middle and highest channels are selected to perform testing to verify the conducted RF output peak power of the Module.

A. Test Verdict:

Band	Channel	Frequency (MHz)	Peak to Average ratio		Limit	Verdict
			dB	Refer to Plot	dB	
GSM 1900MHz	512	1850.2	0.09	Plot A1 to A3	13	PASS
	661	1880.0	0.05			PASS
	810	1909.8	0.05			PASS
EGPRS 1900MHz	512	1850.2	0.12	Plot B1 to B3	13	PASS
	661	1880.0	0.09			PASS
	810	1909.8	0.07			PASS
WCDMA 1900MHz	9262	1852.4	2.61	Plot C1 to C3	13	PASS
	9400	1880.0	2.63			PASS
	9538	1907.6	2.90			PASS
WCDMA 1700MHz	1312	1712.4	2.39	Plot D1 to D3	13	PASS
	1412	1732.4	2.22			PASS
	1513	1752.6	2.74			PASS



B. Test Plots:



(Plot A1, GSM 1900 MHz, Channel = 512)



(Plot A2, GSM 1900 MHz, Channel = 661)



(Plot A3, GSM 1900MHz, Channel = 810)



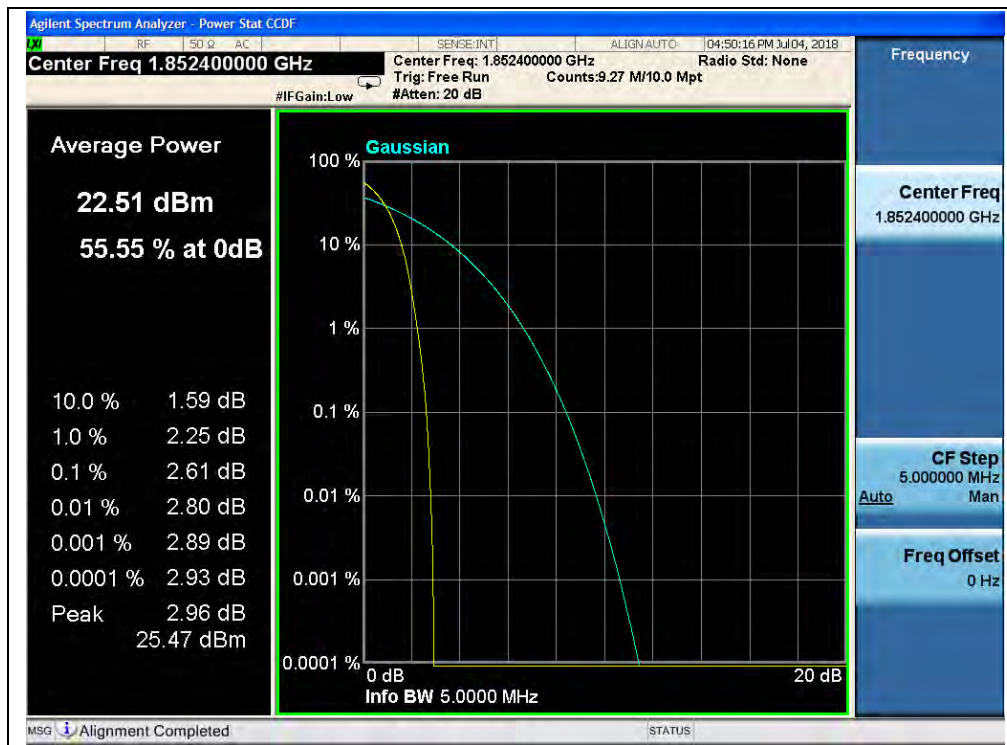
(Plot B1, EGPRS 1900 MHz, Channel = 512)



(Plot B2, EGPRS 1900 MHz, Channel = 661)



(Plot B3, EGPRS 1900MHz, Channel = 810)



(Plot C1, WCDMA 1900MHz, Channel = 9262)



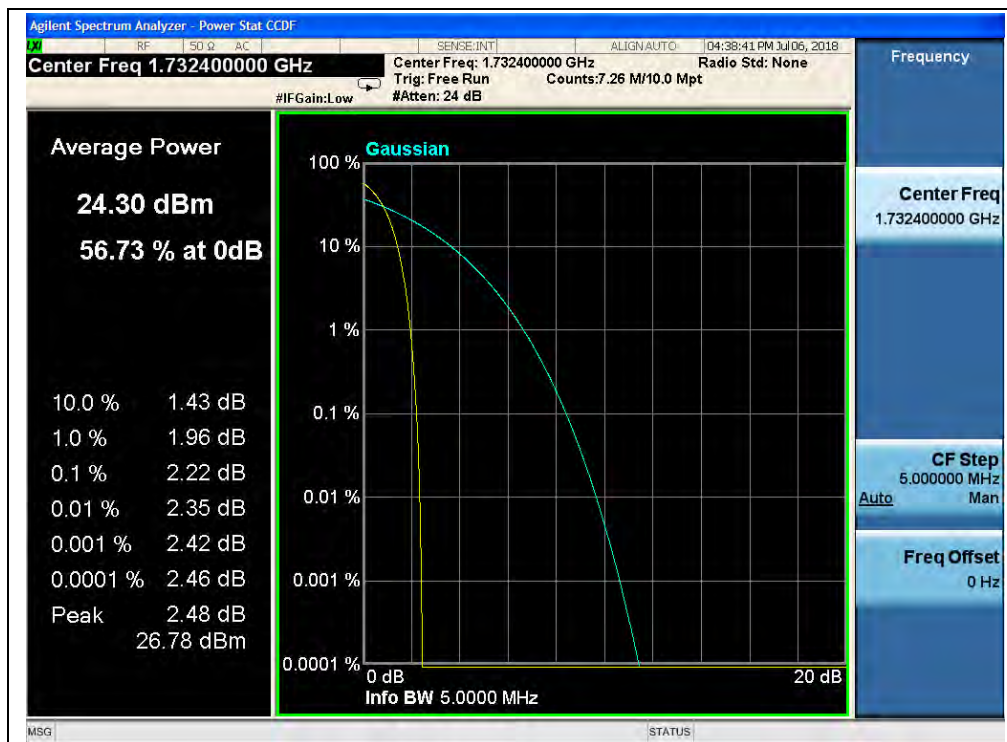
(Plot C2, WCDMA 1900MHz, Channel = 9400)



(Plot C3, WCDMA 1900MHz, Channel = 9538)



(Plot D1, WCDMA 1700MHz, Channel = 1312)



(Plot D2, WCDMA 1700MHz, Channel = 1412)



(Plot D3, WCDMA 1700MHz, Channel = 1513)

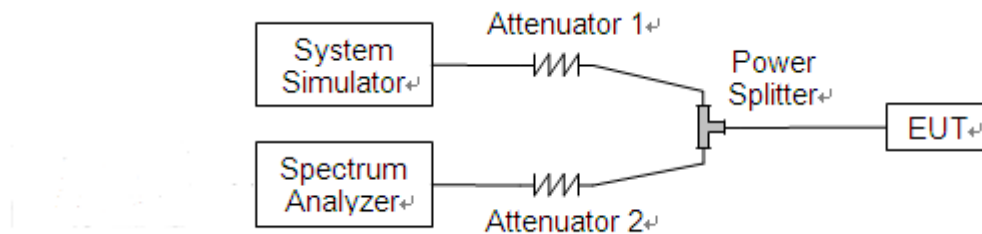
2.3. 99% Occupied Bandwidth

2.3.1. Requirement

According to FCC section 2.1049, the occupied bandwidth 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. Occupied bandwidth is also known as the 99% emission bandwidth.

2.3.2. Test Description

Test Setup:



The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power i.e. Power Control Level (PCL) = 5 and Power Class = 4. A call is established between the EUT and the SS.



2.3.3. Test Result

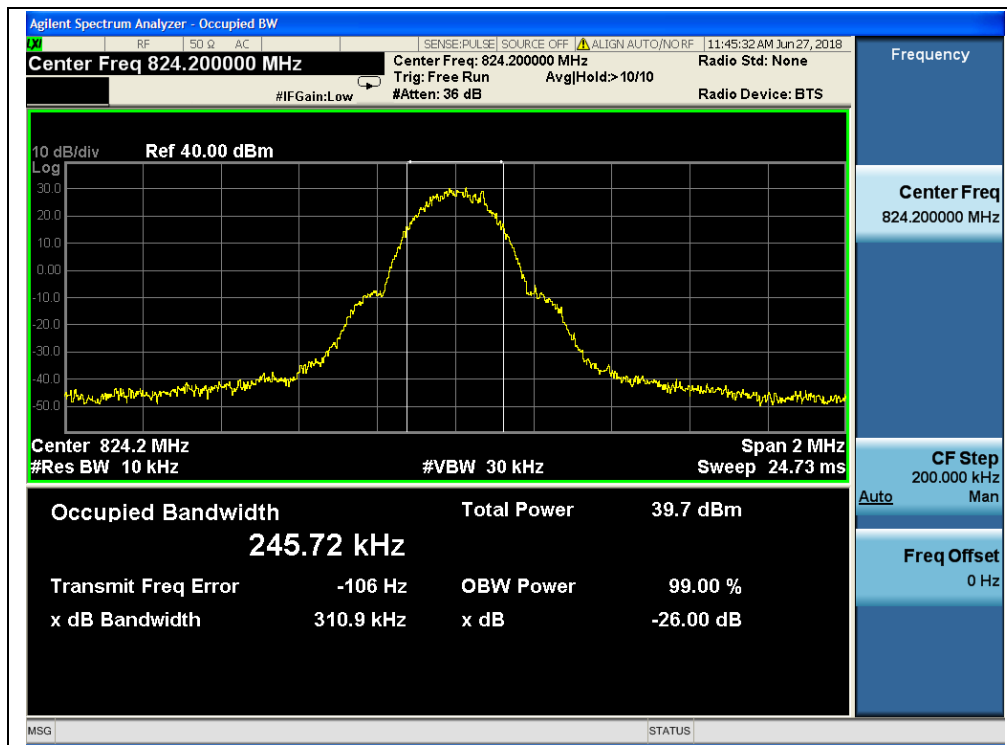
The lowest, middle and highest channels are selected to perform testing to record the 99% occupied bandwidth.

GSM Test Verdict:

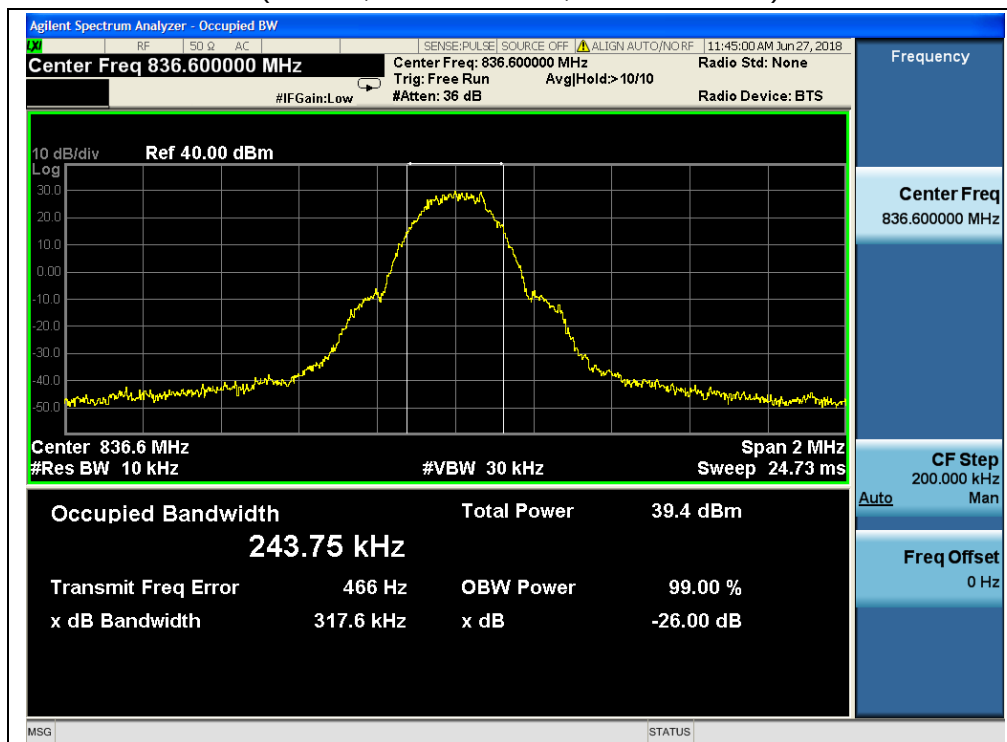
Band	Channel	Frequency (MHz)	26dB bandwidth (kHz)	99% Occupied Bandwidth (kHz)	Refer to Plot
GSM 850MHz	128	824.2	310.9	245.72	Plot A1 to A3
	190	836.6	317.6	243.75	
	251	848.8	310.3	247.87	
GSM 1900MHz	512	1850.2	310.7	242.35	Plot B1 to B3
	661	1880.0	314.1	245.66	
	810	1909.8	314.3	243.24	
GPRS 850MHz	128	824.2	316.8	246.15	Plot C1 to C3
	190	836.6	315.3	242.38	
	251	848.8	312.5	242.92	
GPRS 1900MHz	512	1850.2	307.3	240.61	Plot D1 to D3
	661	1880.0	316.6	245.96	
	810	1909.8	312.5	244.50	
EGPRS 850MHz	128	824.2	316.2	243.32	Plot E1 to E3
	190	836.6	315.8	246.12	
	251	848.8	310.6	245.61	
EGPRS 1900MHz	512	1850.2	316.5	245.29	Plot F1 to F3
	661	1880.0	312.3	244.81	
	810	1909.8	316.2	243.58	



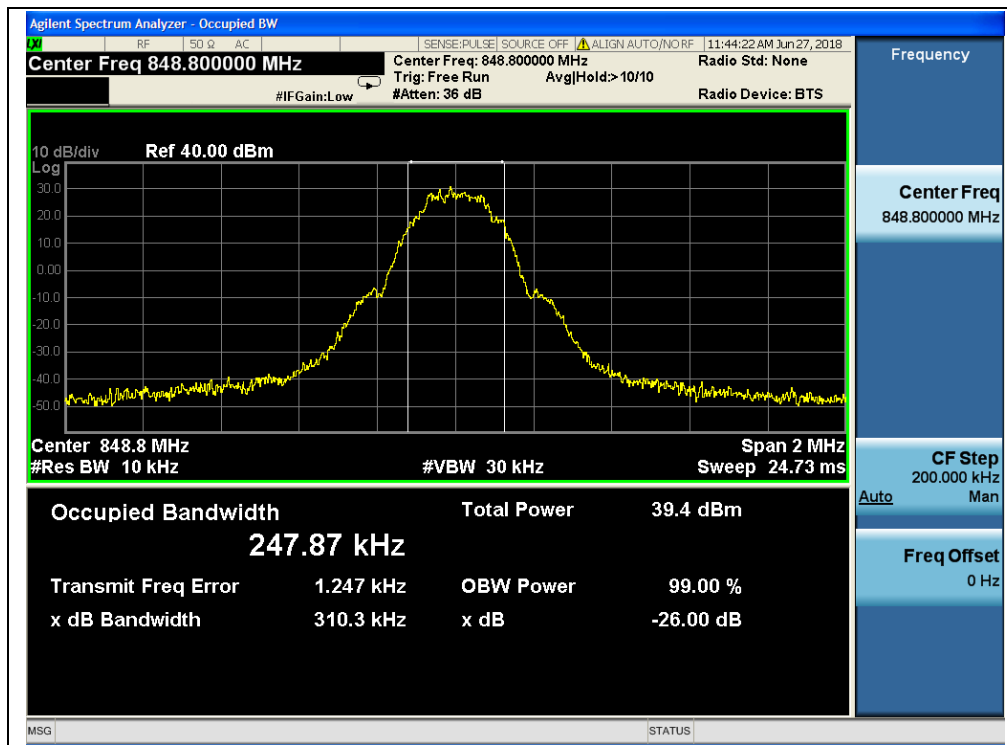
Test Plots:



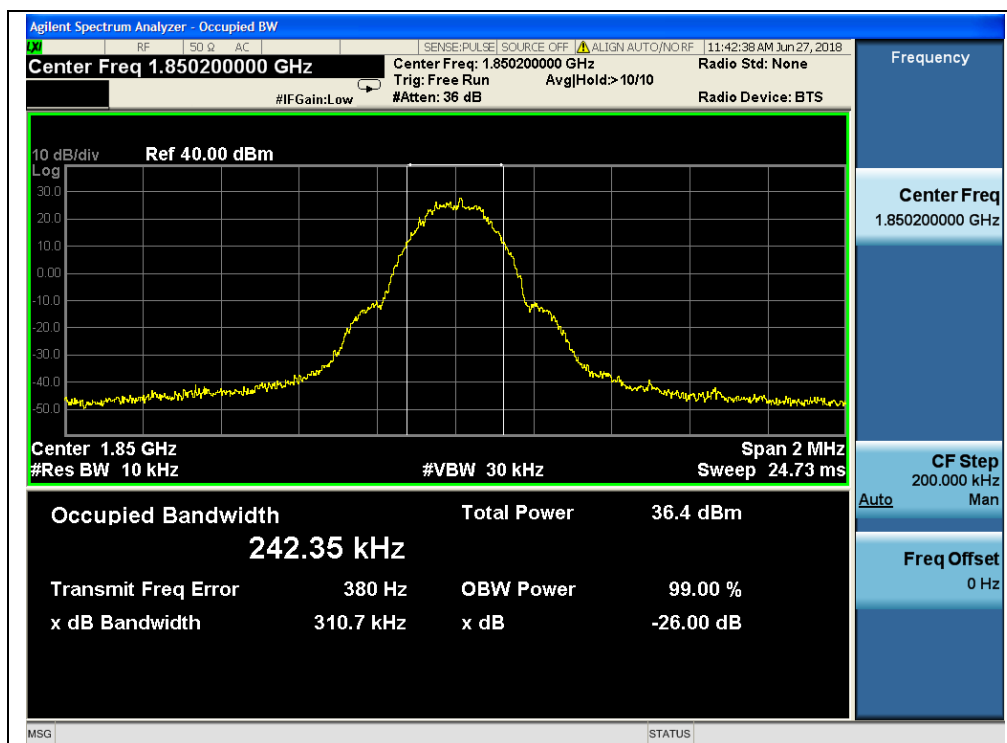
(Plot A1, GSM 850MHz, Channel = 128)



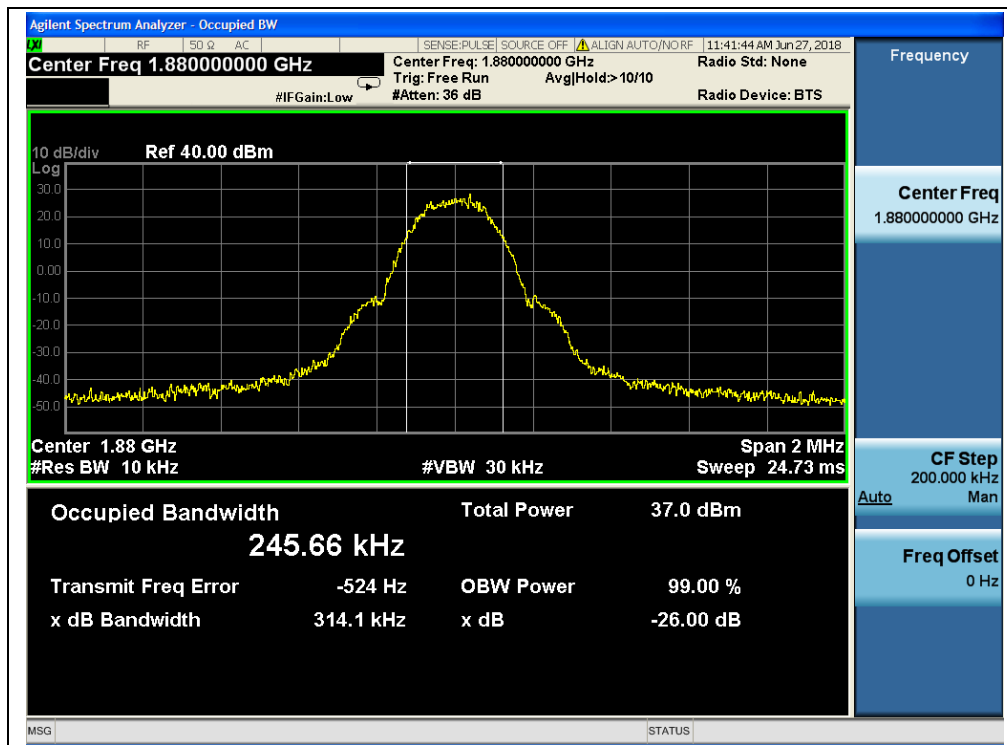
(Plot A2, GSM 850MHz, Channel = 190)



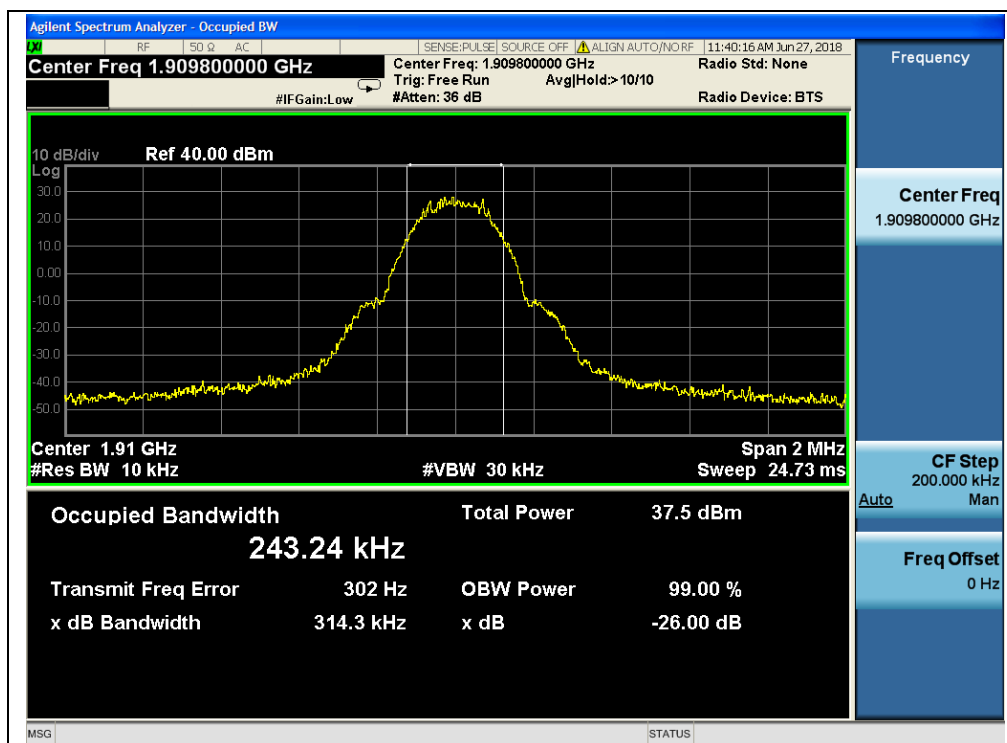
(Plot A3, GSM 850MHz, Channel = 251)



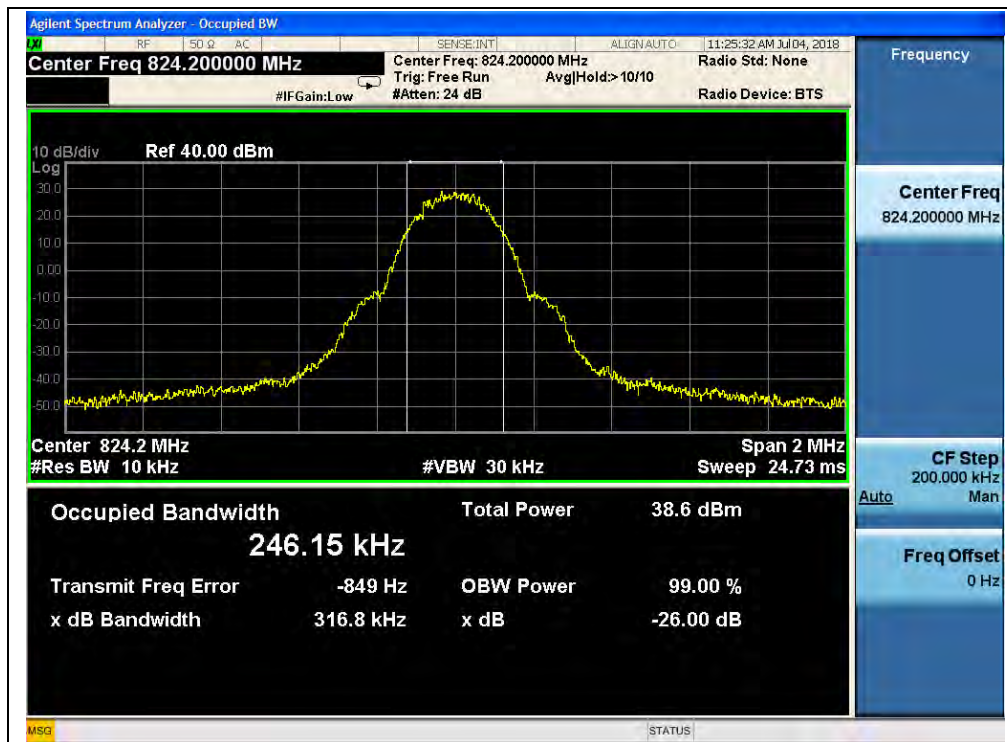
(Plot B1, GSM1900MHz, Channel = 512)



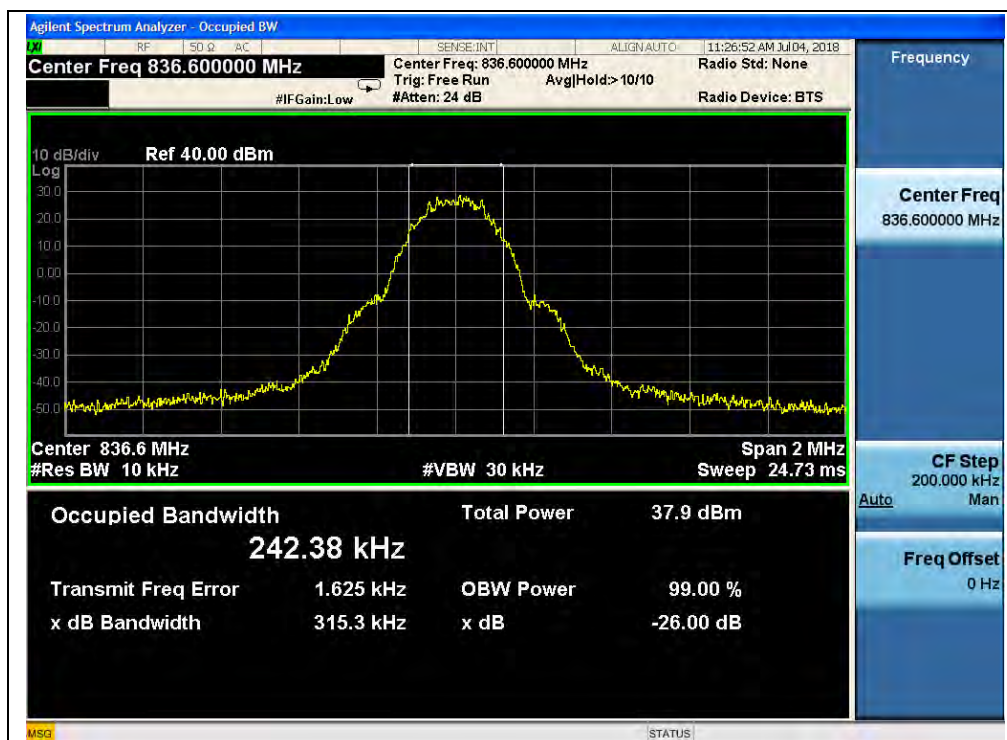
(Plot B2, GSM1900MHz, Channel = 661)



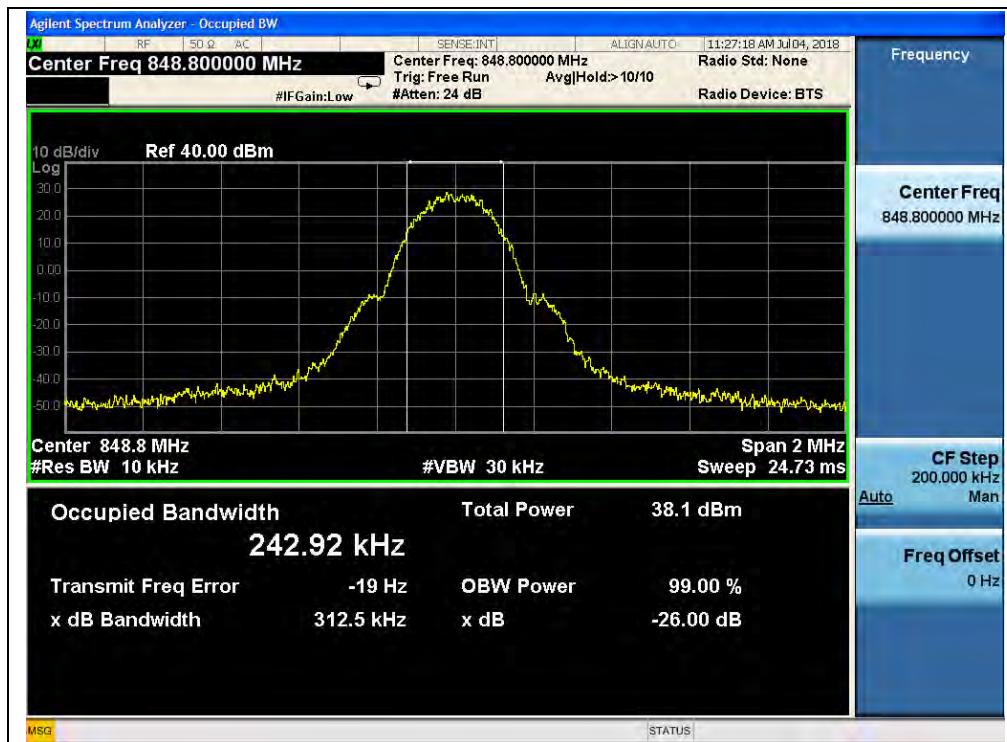
(Plot B3, GSM 1900MHz, Channel = 810)



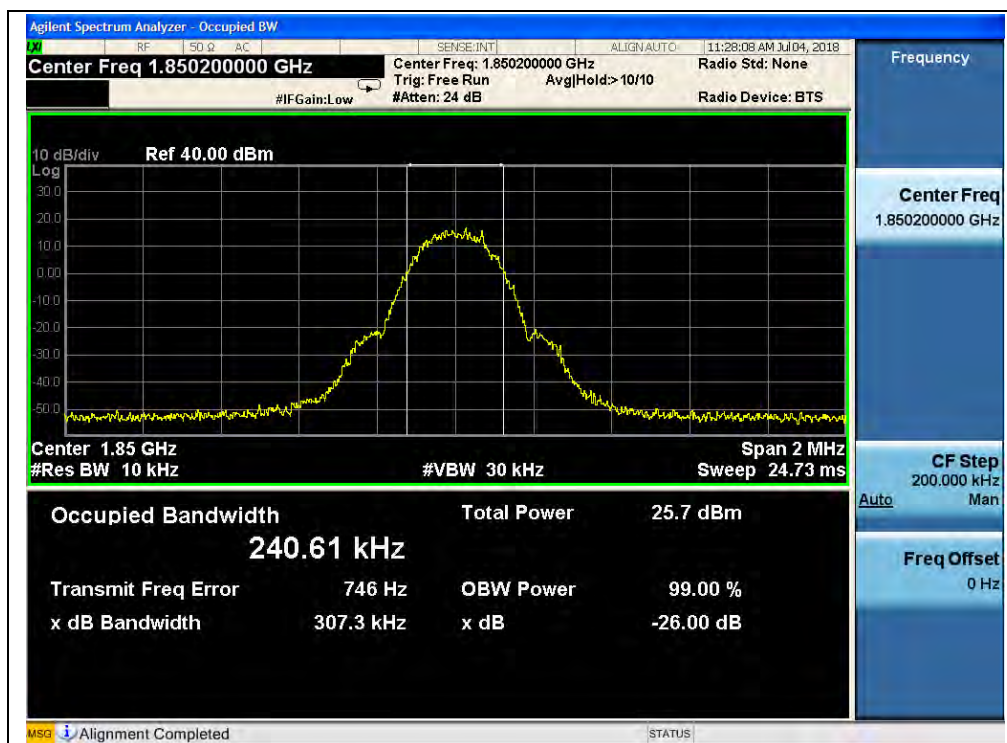
(Plot C1, GPRS 850MHz, Channel = 128)



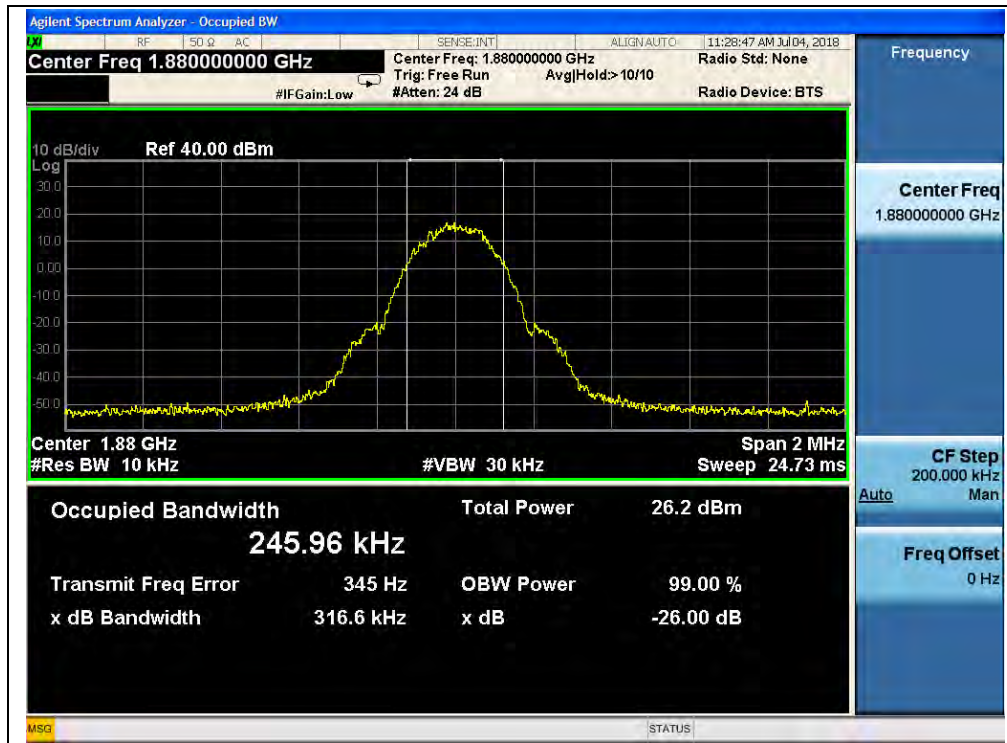
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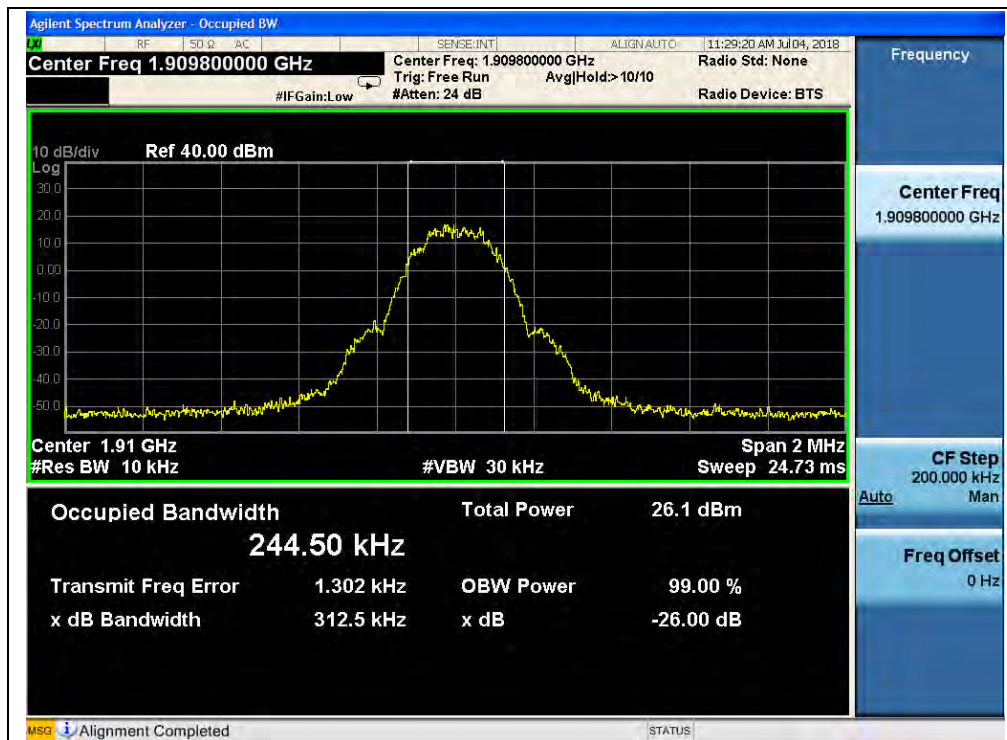
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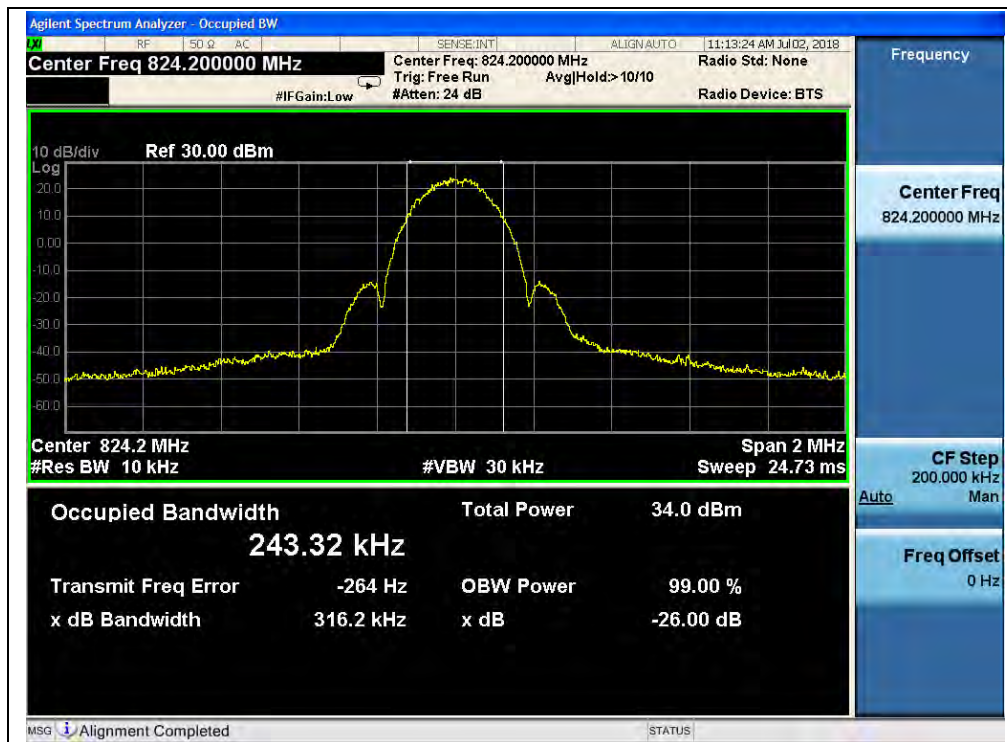
(Plot D1, GPRS1900MHz, Channel = 512)



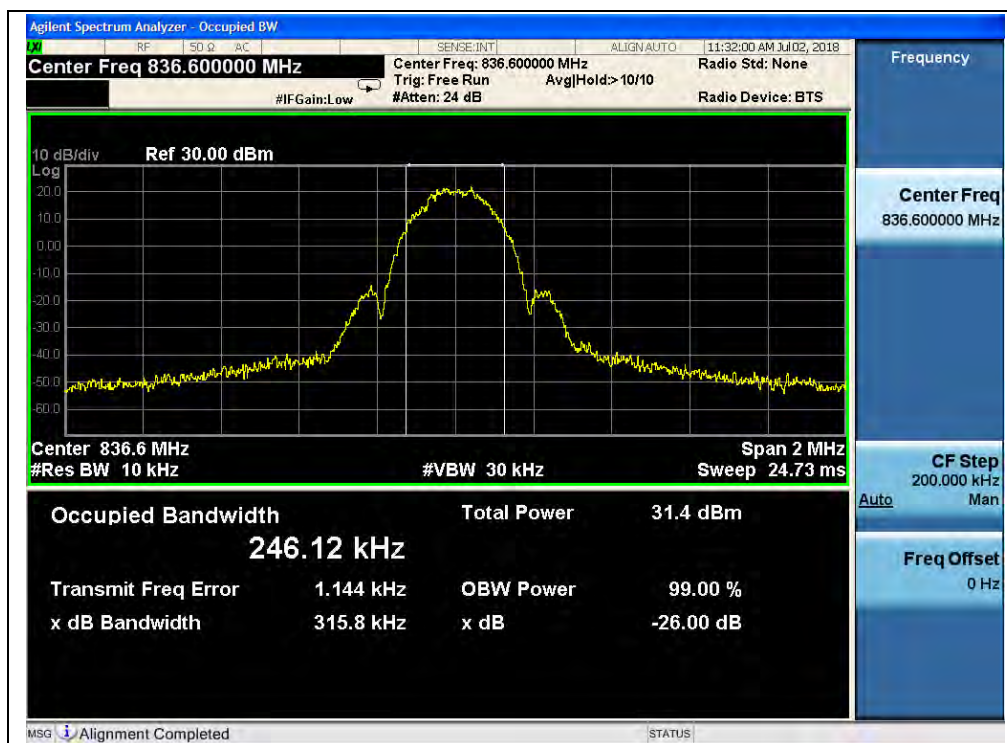
(Plot D2, GPRS1900MHz, Channel = 661)



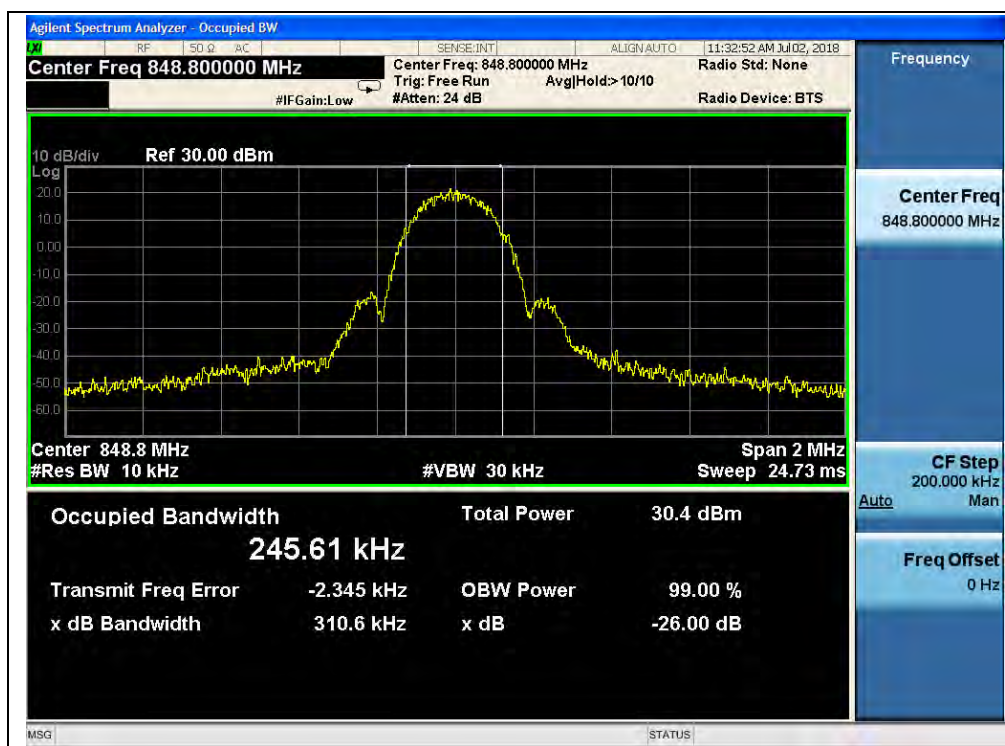
(Plot D3, GPRS 1900MHz, Channel = 810)



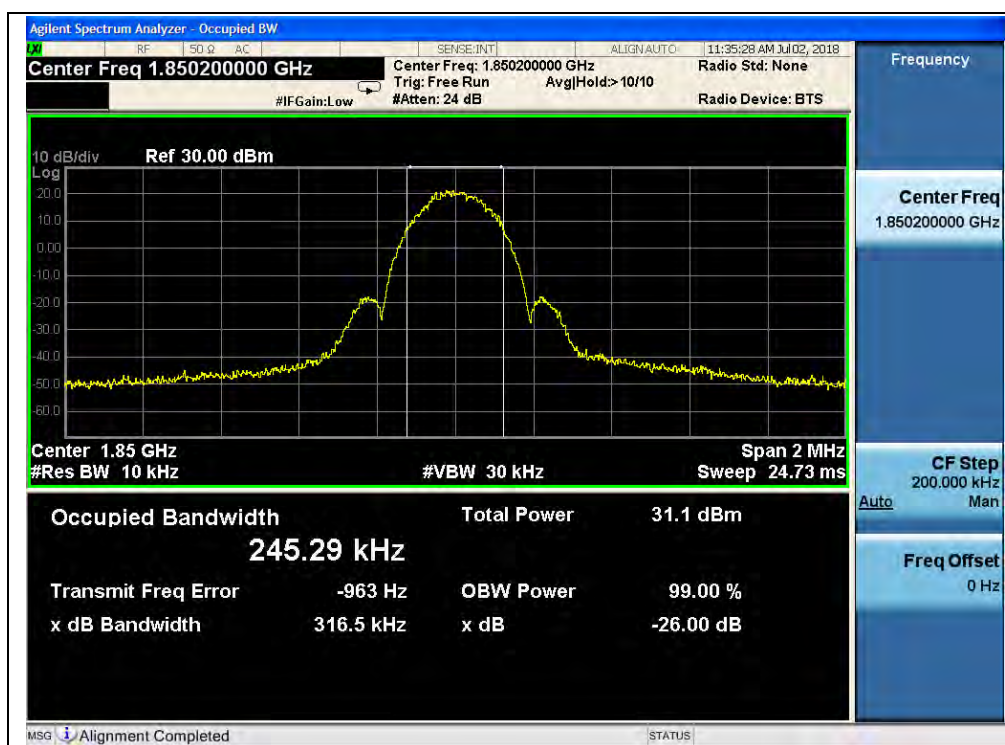
(Plot E1, EGPRS 850MHz, Channel = 128)



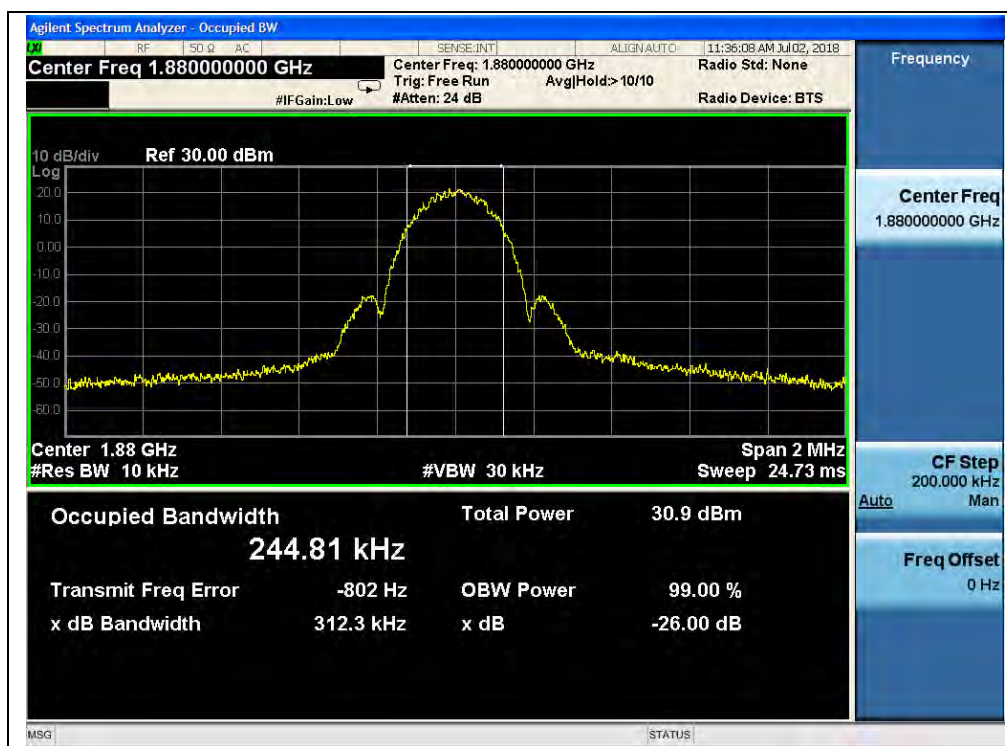
(Plot E2, EGPRS 850MHz, Channel = 190)



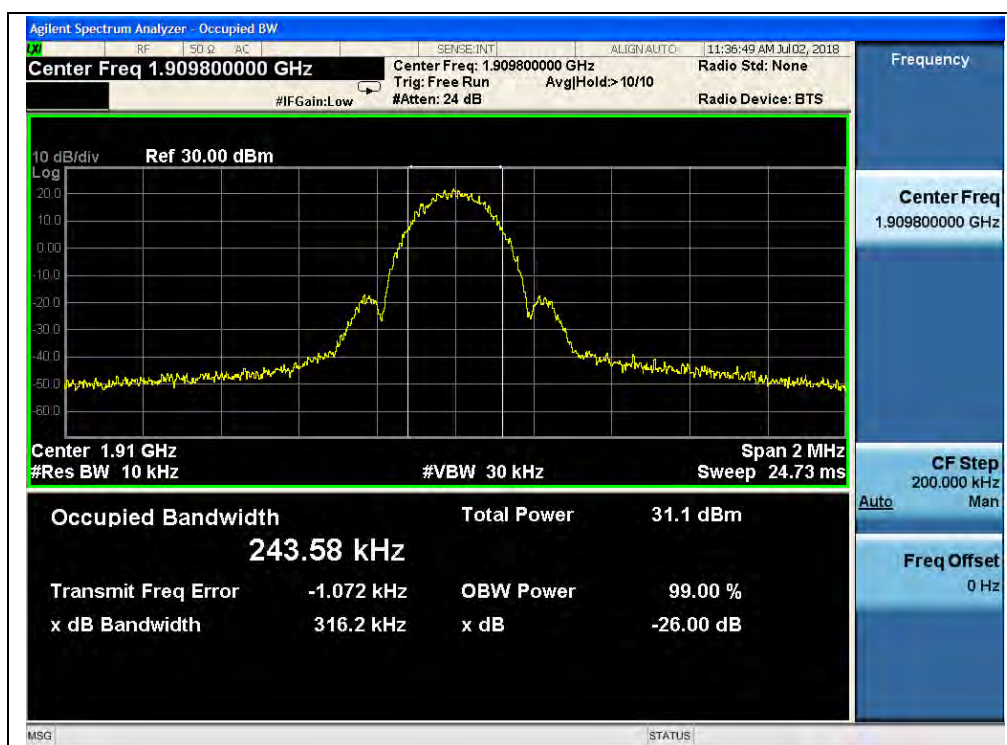
(Plot E3, EGPRS 850MHz, Channel = 251)



(Plot F1, EGPRS1900MHz, Channel = 512)



(Plot F2, EGPRS1900MHz, Channel = 661)



(Plot F3, EGPRS 1900MHz, Channel = 810)

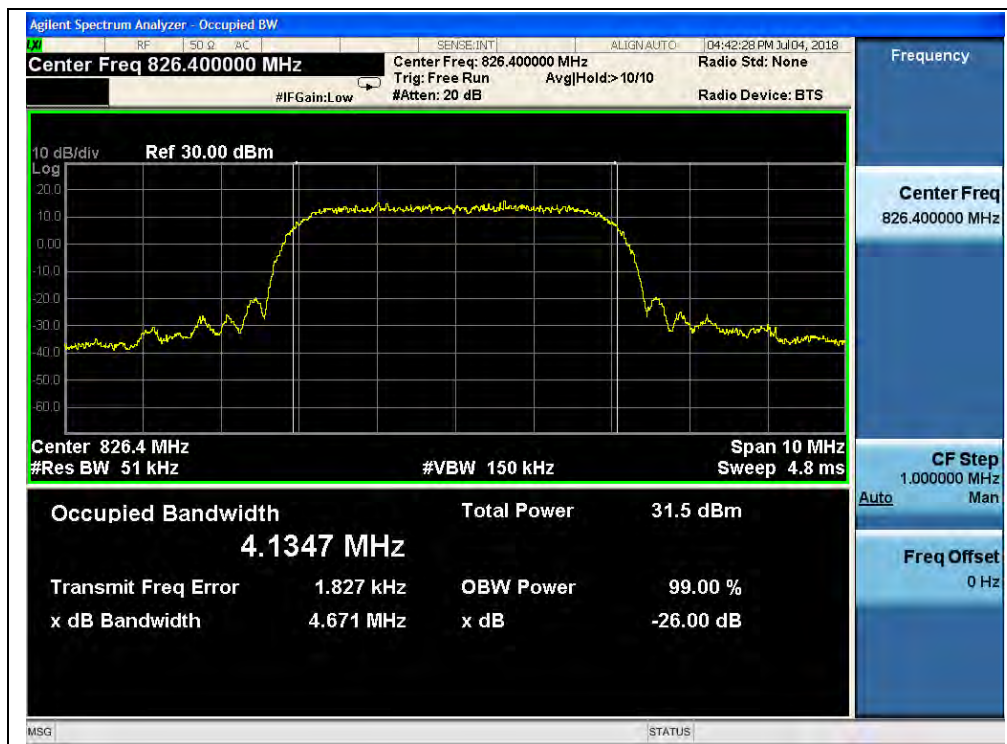
**WCDMA Test Verdict:**

Band	Channel	Frequency (MHz)	26dB bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Refer to Plot
WCDMA 850MHz	4132	826.4	4.671	4.1347	Plot G1 to G3
	4175	835.0	4.689	4.1289	
	4233	846.6	4.681	4.1265	
WCDMA 1700MHz	1312	1712.4	4.746	4.1497	Plot H1 to H3
	1412	1732.4	4.760	4.1525	
	1513	1752.6	4.697	4.1322	
WCDMA 1900MHz	9262	1852.4	4.716	4.1499	Plot I1 to I3
	9400	1880.0	4.720	4.1527	
	9538	1907.6	4.685	4.1359	
HSDPA 850MHz	4132	826.4	4.675	4.1214	Plot J1 to J3
	4175	835.0	4.688	4.1323	
	4233	846.6	4.694	4.1250	
HSDPA 1700MHz	1312	1712.4	4.749	4.1484	Plot K1 to K3
	1412	1732.4	4.755	4.1553	
	1513	1752.6	4.681	4.1318	
HSDPA 1900MHz	9262	1852.4	4.717	4.1455	Plot L1 to L3
	9400	1880.0	4.716	4.1521	
	9538	1907.6	4.694	4.1506	
HSUPA 850MHz	4132	826.4	4.670	4.1075	Plot M1 to M3
	4175	835.0	4.672	4.1282	
	4233	846.6	4.673	4.1265	
HSUPA 1700MHz	1312	1712.4	4.734	4.1435	Plot N1 to N3
	1412	1732.4	4.755	4.1550	
	1513	1752.6	4.710	4.1295	
HSUPA 1900MHz	9262	1852.4	4.730	4.1525	Plot O1 to O3
	9400	1880.0	4.718	4.1477	
	9538	1907.6	4.696	4.1456	



Band	Channel	Frequency (MHz)	26dB bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Refer to Plot
HSPA+ 850MHz	4132	826.4	4.688	4.1268	Plot P1 to P3
	4175	835.0	4.683	4.1335	
	4233	846.6	4.684	4.1222	
HSPA+ 1700MHz	1312	1712.4	4.782	4.1889	Plot Q1 to Q3
	1412	1732.4	4.765	4.1783	
	1513	1752.6	4.676	4.1310	
HSPA+ 1900MHz	9262	1852.4	4.725	4.1498	Plot R1 to R3
	9400	1880.0	4.732	4.1565	
	9538	1907.6	4.699	4.1343	

Test Plots:



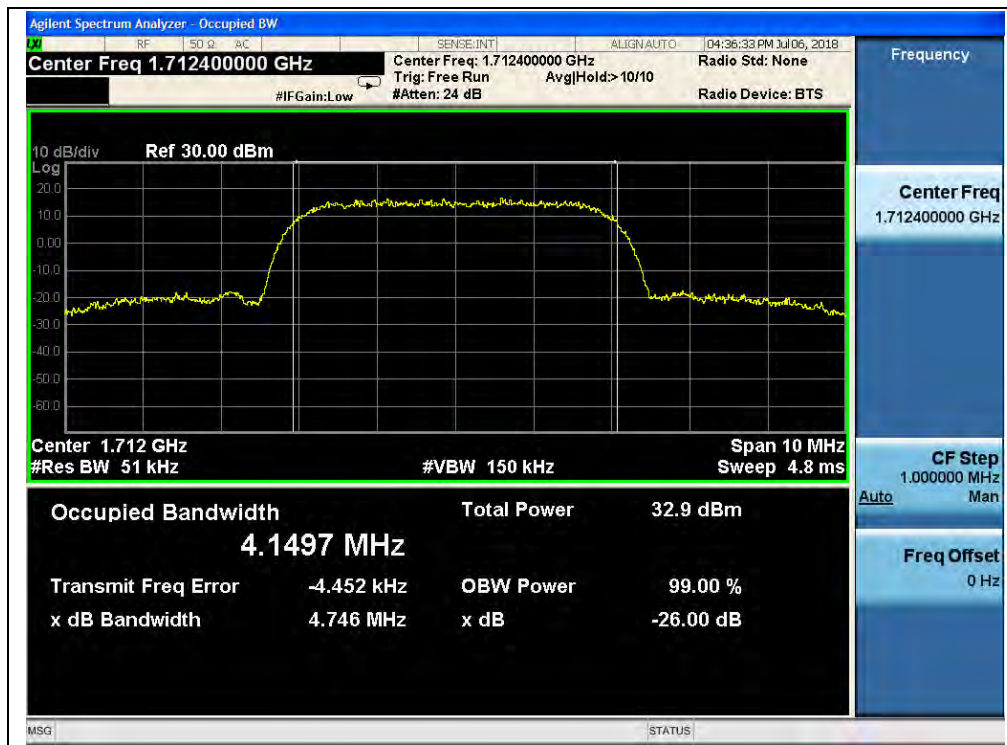
(Plot G1, WCDMA 850MHz, Channel = 4132)



(Plot G2, WCDMA 850 MHz, Channel = 4175)



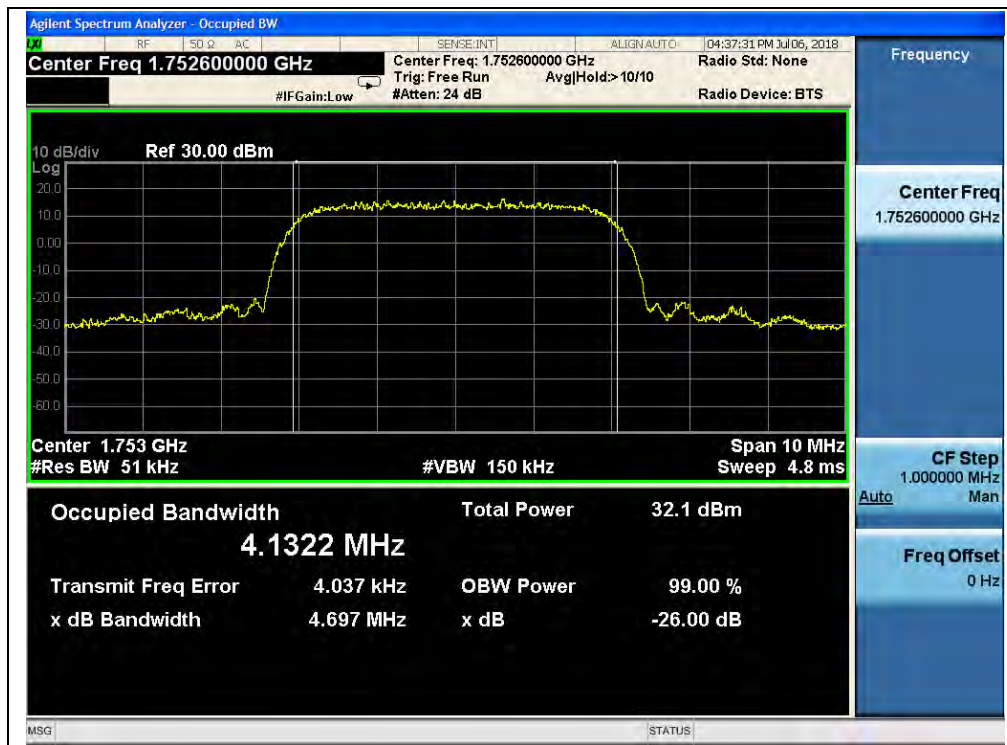
(Plot G3, WCDMA 850MHz, Channel = 4233)



(Plot H1, WCDMA 1700MHz, Channel = 1312)



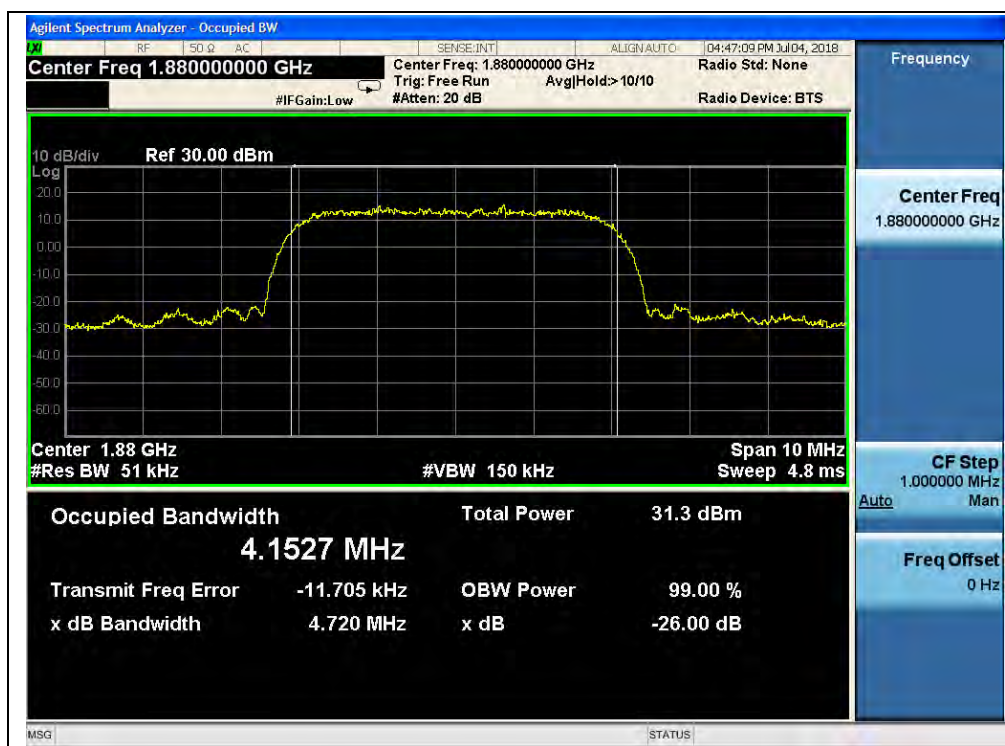
(Plot H2, WCDMA 1700 MHz, Channel = 1412)



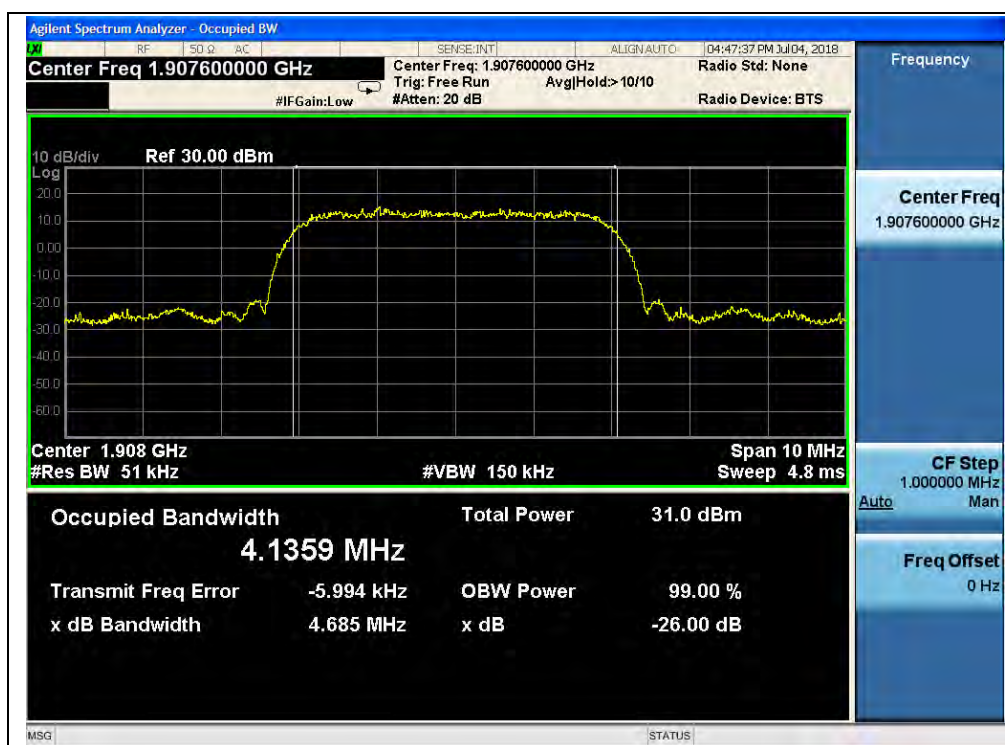
(Plot H3, WCDMA1700MHz, Channel = 1513)



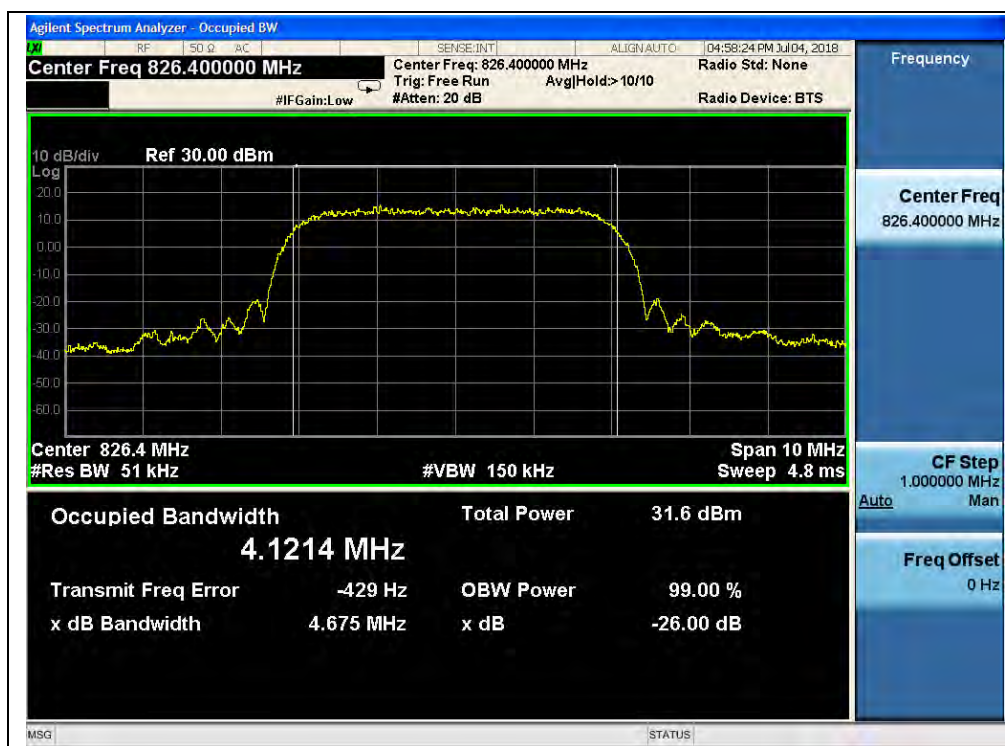
(Plot I1, WCDMA 1900MHz, Channel = 9262)



(Plot I2, WCDMA 1900 MHz, Channel = 9400)



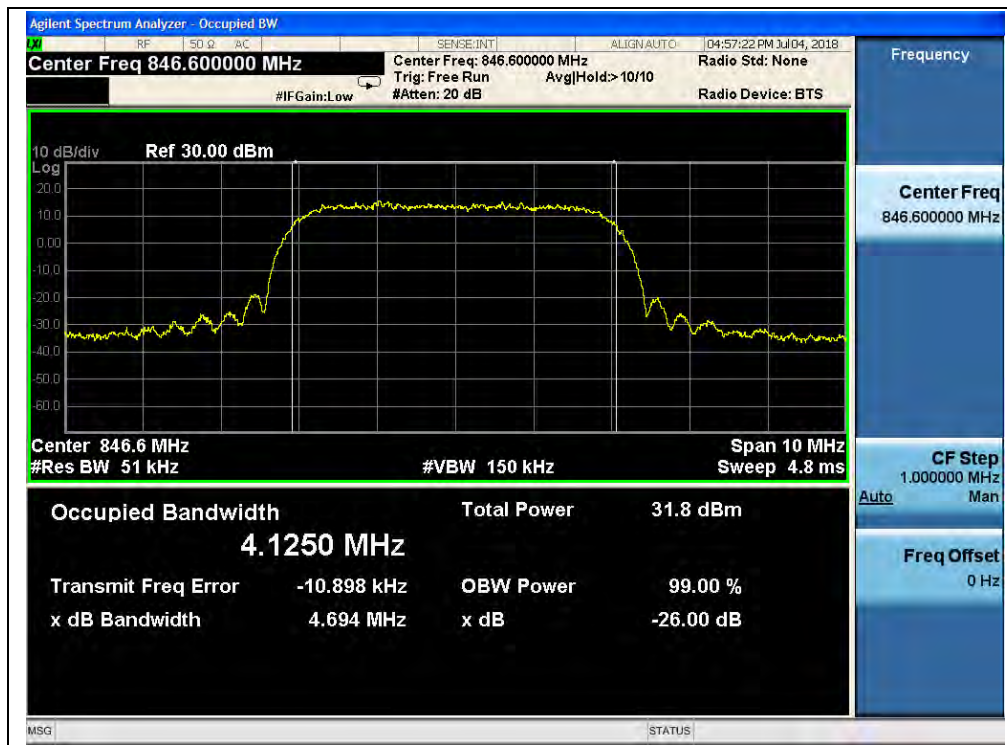
(Plot I3, WCDMA1900MHz, Channel = 9538)



(Plot J1, HSDPA 850MHz, Channel = 4132)



(Plot J2, HSDPA 850 MHz, Channel = 4175)



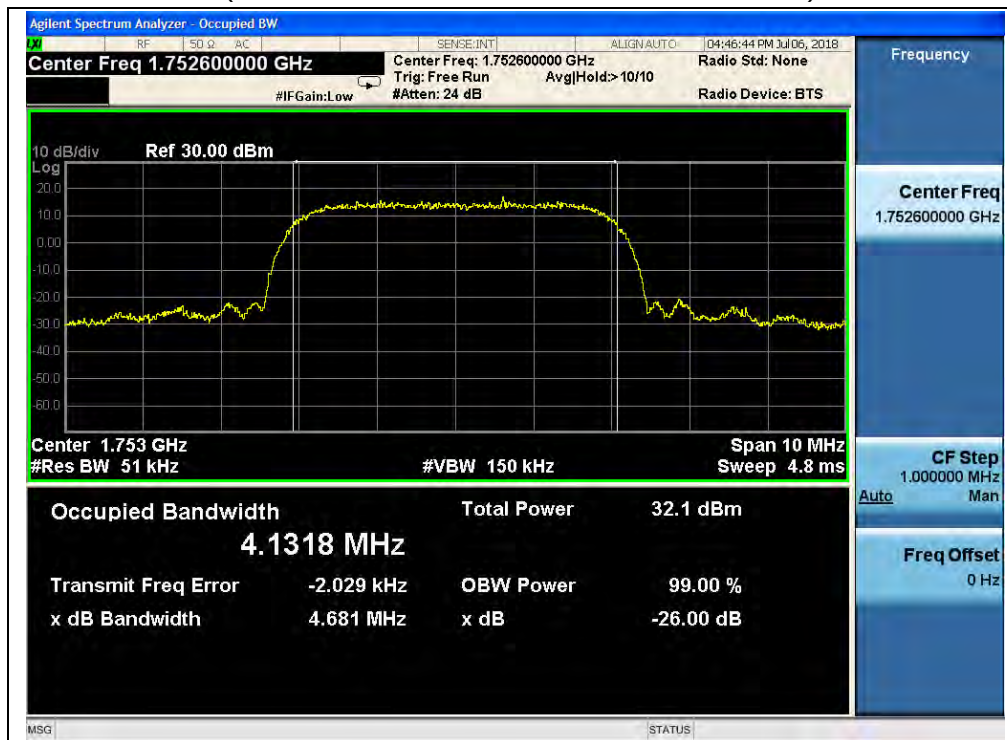
(Plot J3, HSDPA 850MHz, Channel = 4233)



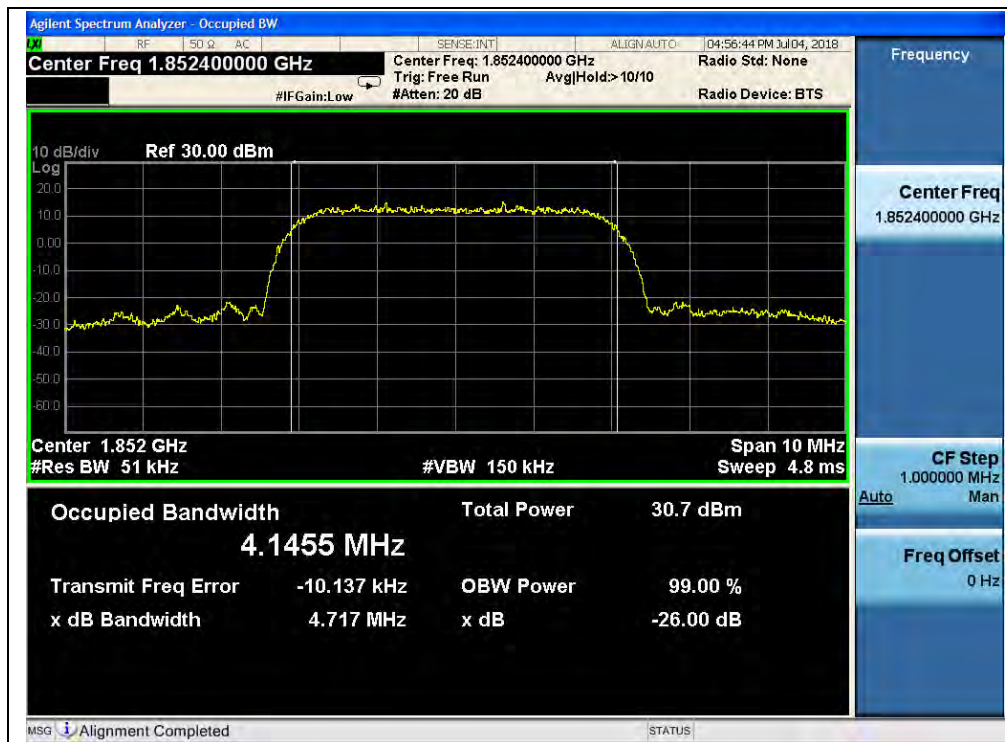
(Plot K1, HSDPA 1700MHz, Channel = 1312)



(Plot K2, HSDPA 1700 MHz, Channel = 1412)



(Plot K3, HSDPA 1700MHz, Channel = 1513)



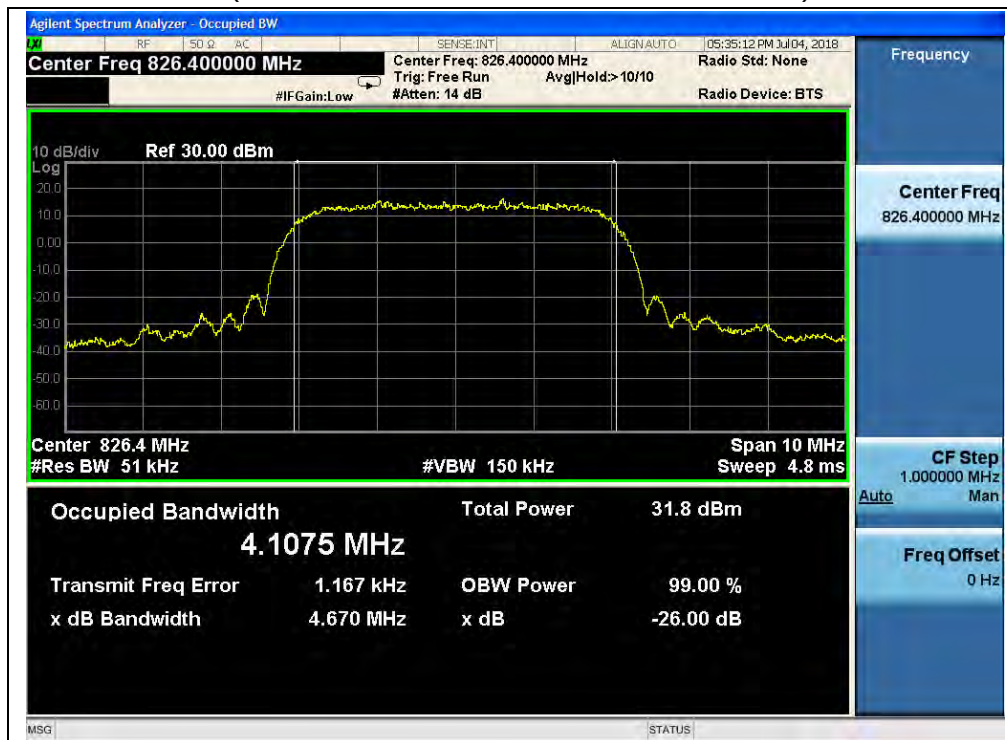
(Plot L1, HSDPA 1900MHz, Channel = 9262)



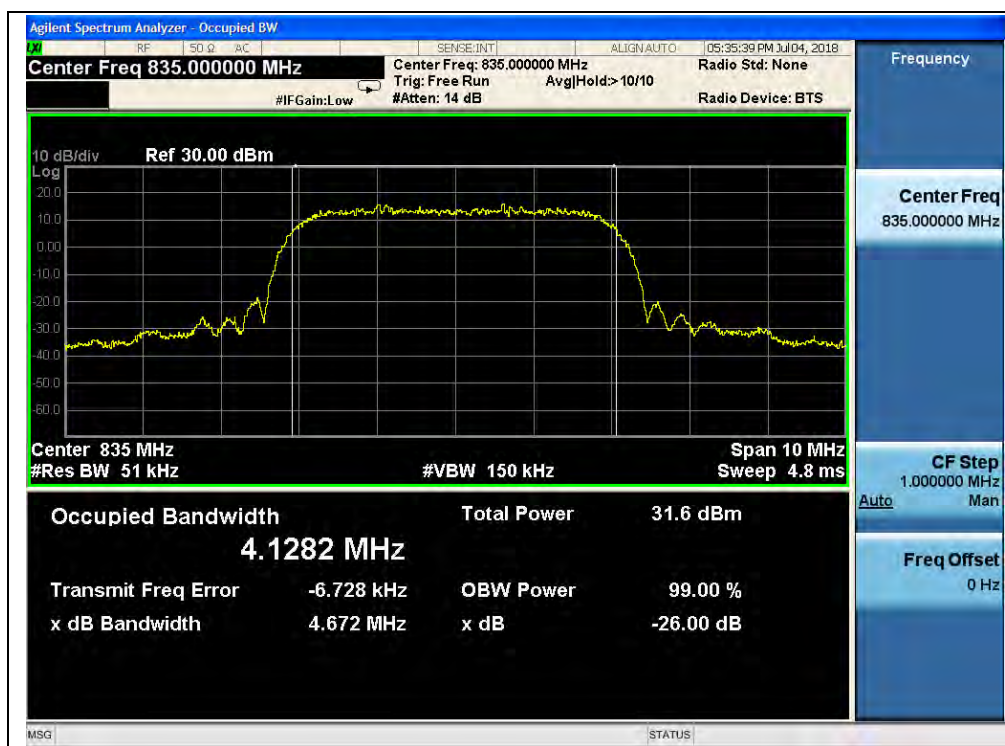
(Plot L2, HSDPA 1900 MHz, Channel = 9400)



(Plot L3, HSDPA 1900MHz, Channel = 9538)



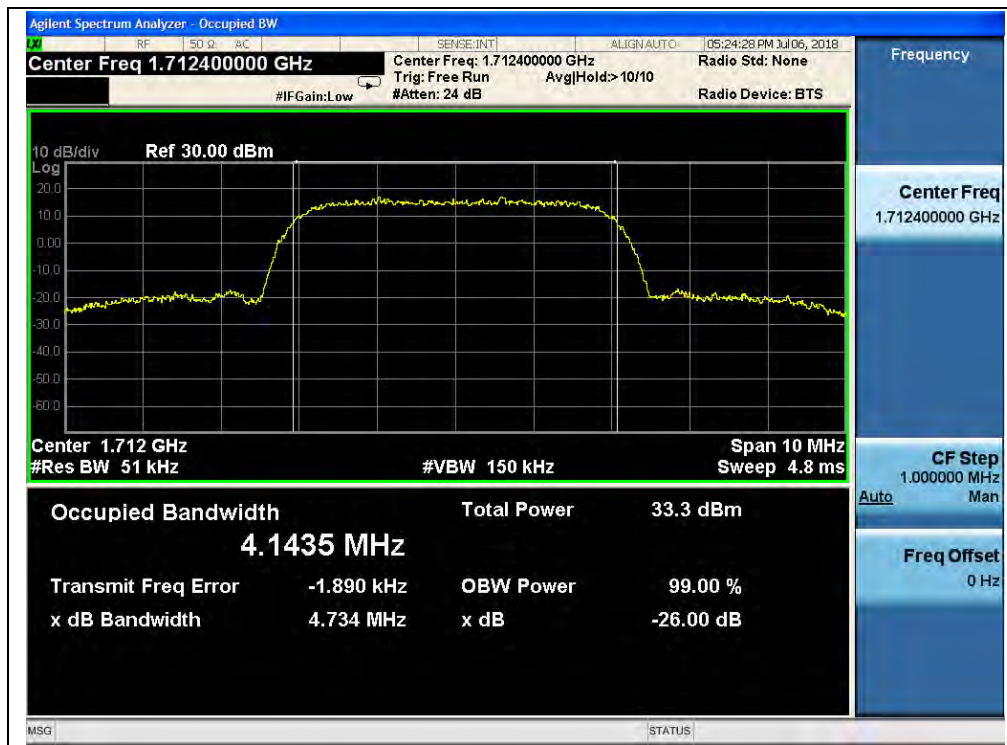
(Plot M1, HSUPA 850MHz, Channel = 4132)



(Plot M2, HSUPA 850 MHz, Channel = 4175)



(Plot M3, HSUPA 850MHz, Channel = 4233)



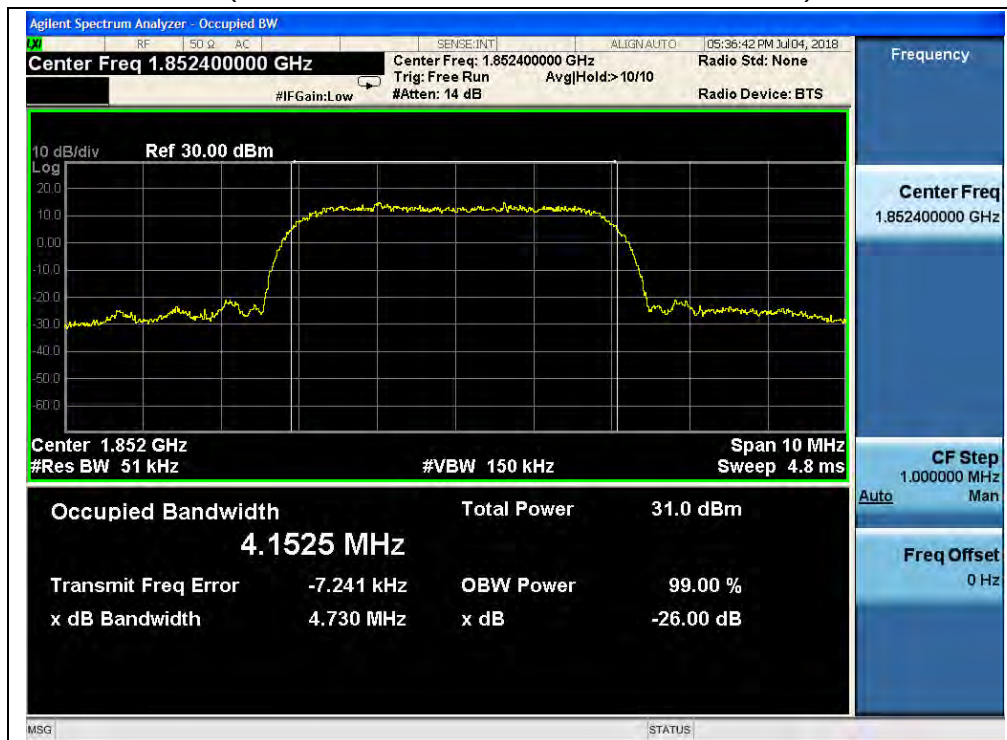
(Plot N1, HSUPA 1700MHz, Channel =1312)



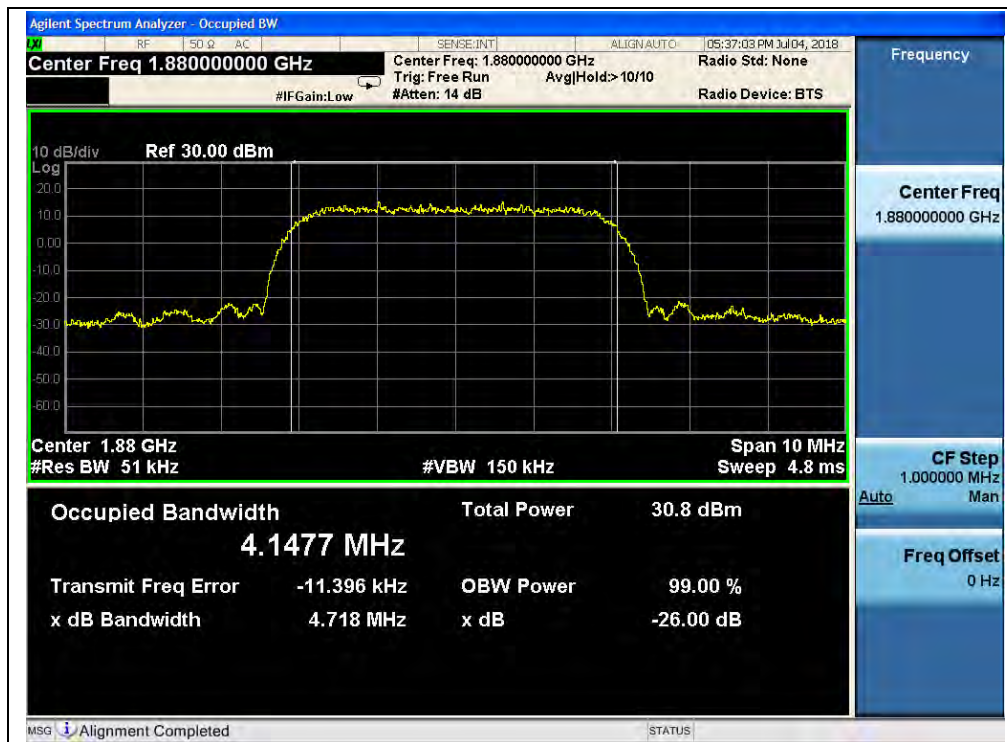
(Plot N2, HSUPA 1700 MHz, Channel = 1412)



(Plot N3, HSUPA 1700MHz, Channel = 1513)



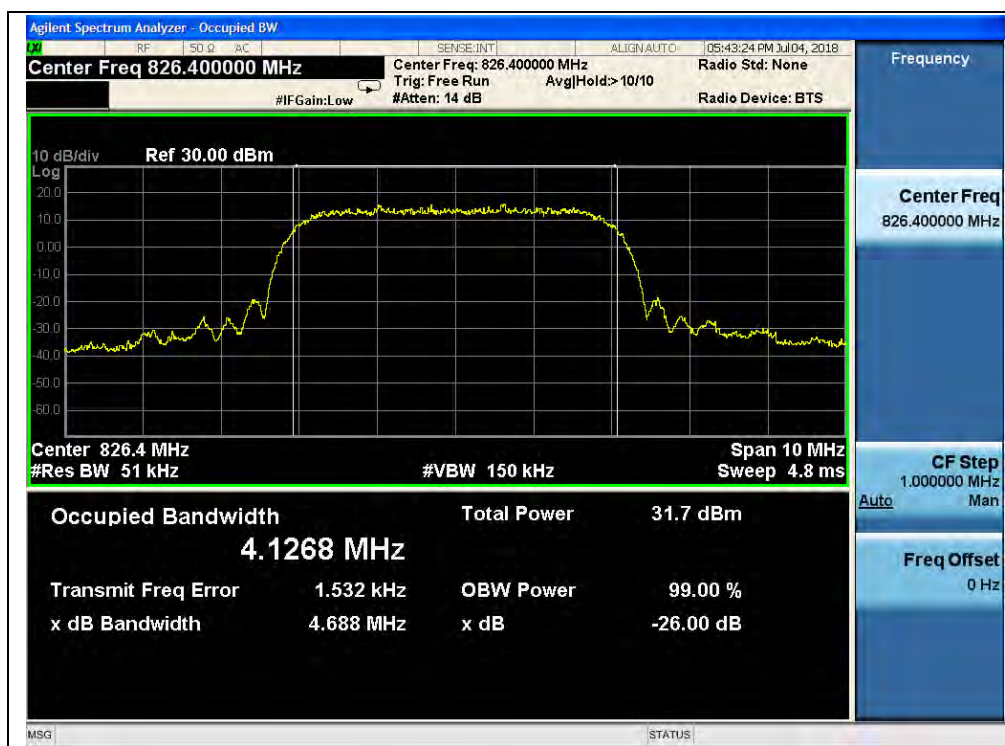
(Plot O1, HSUPA 1900MHz, Channel = 9262)



(Plot O2, HSUPA 1900 MHz, Channel = 9400)



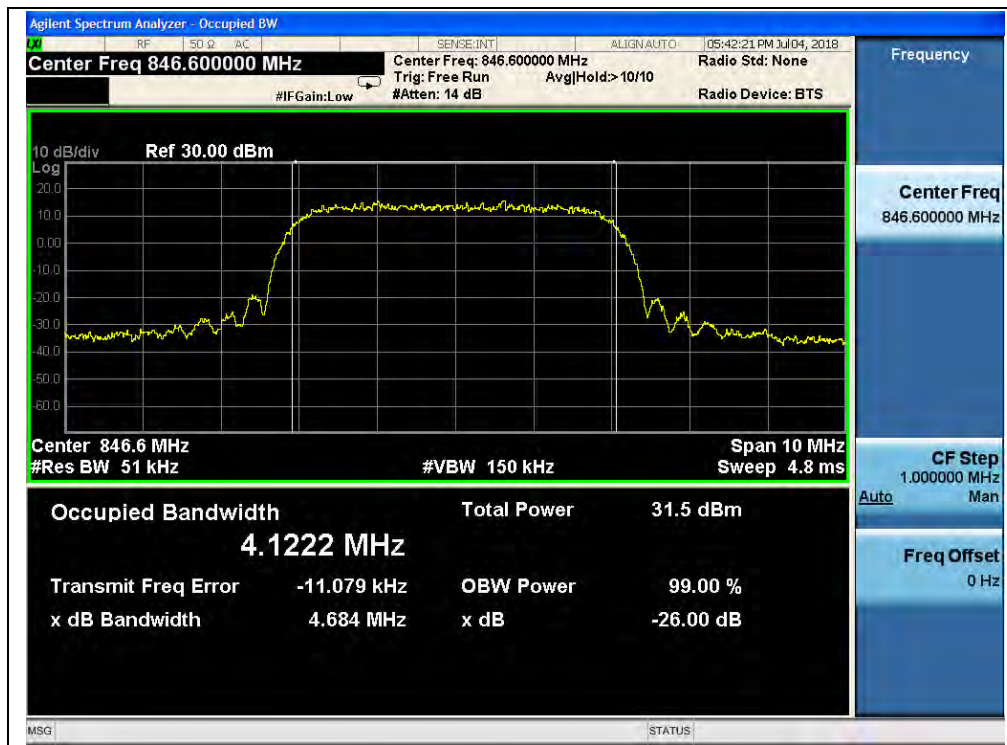
(Plot O3, HSUPA 1900MHz, Channel = 9538)



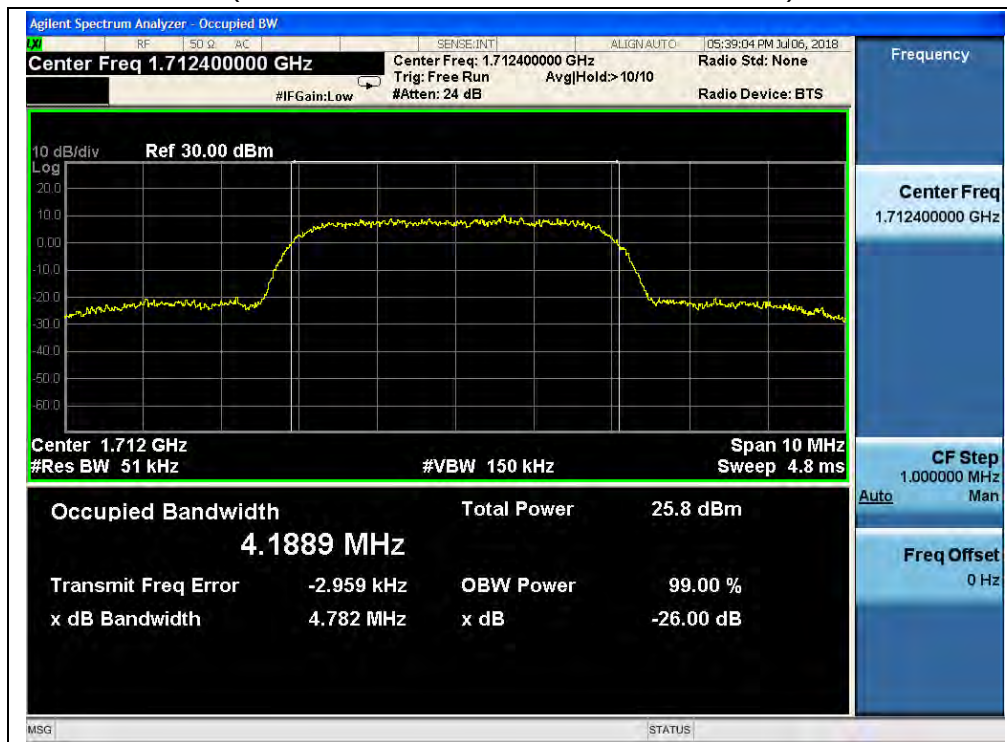
(Plot P1, HSPA+ 850MHz, Channel = 4132)



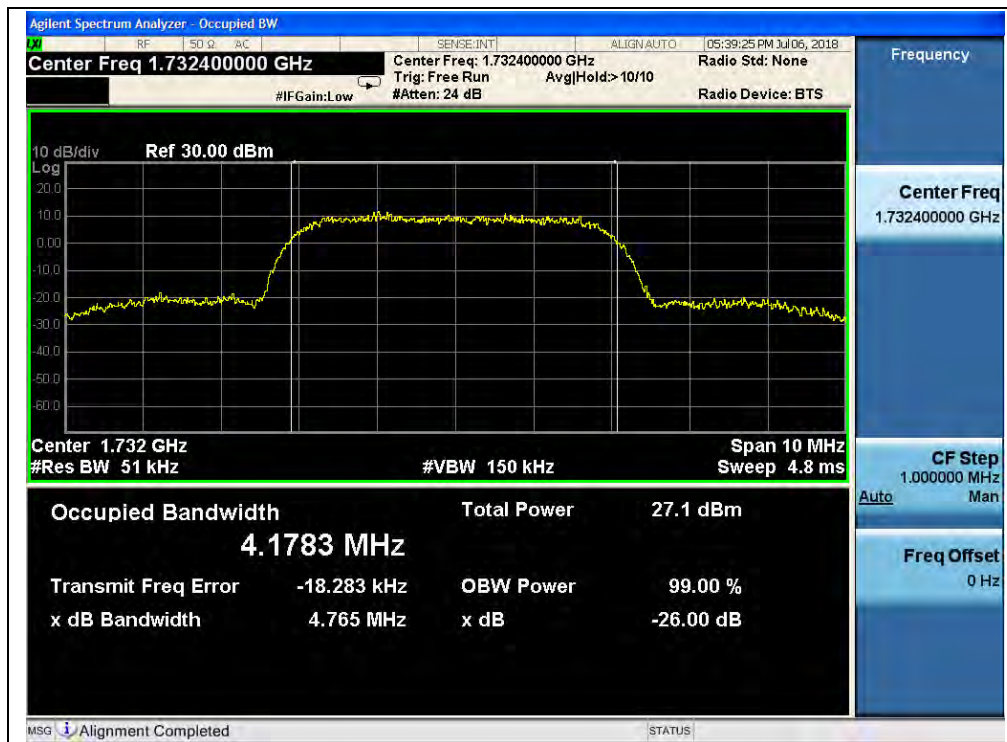
(Plot P2, HSPA+850 MHz, Channel = 4175)



(Plot P3, HSPA+ 850MHz, Channel = 4233)



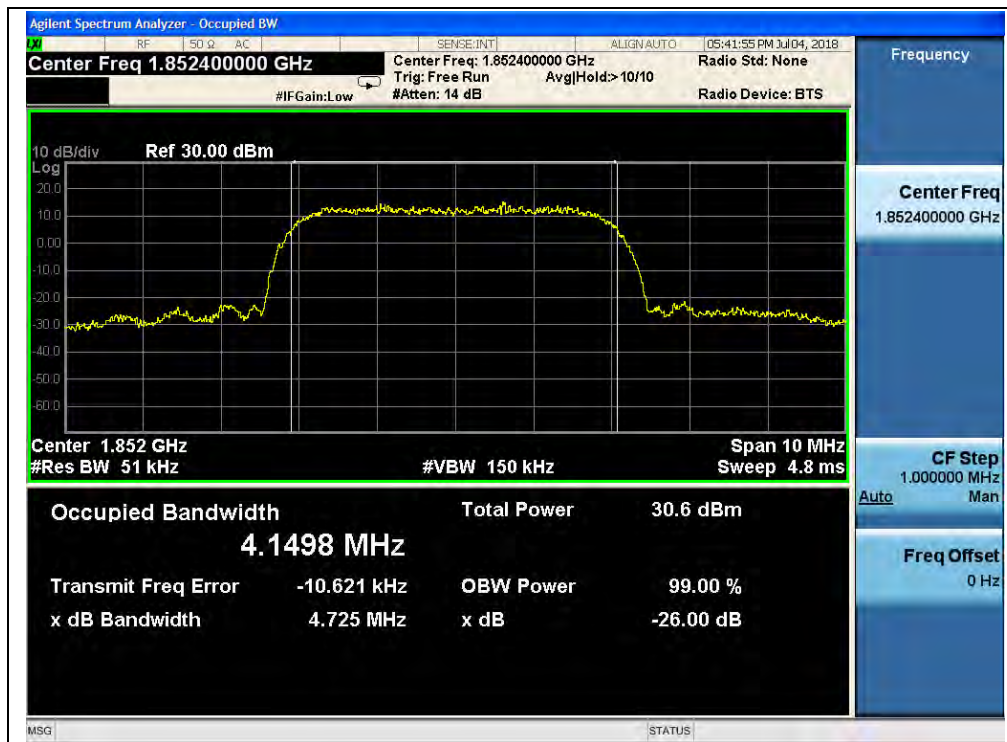
(Plot Q1, HSPA+ 1700MHz, Channel =1312)



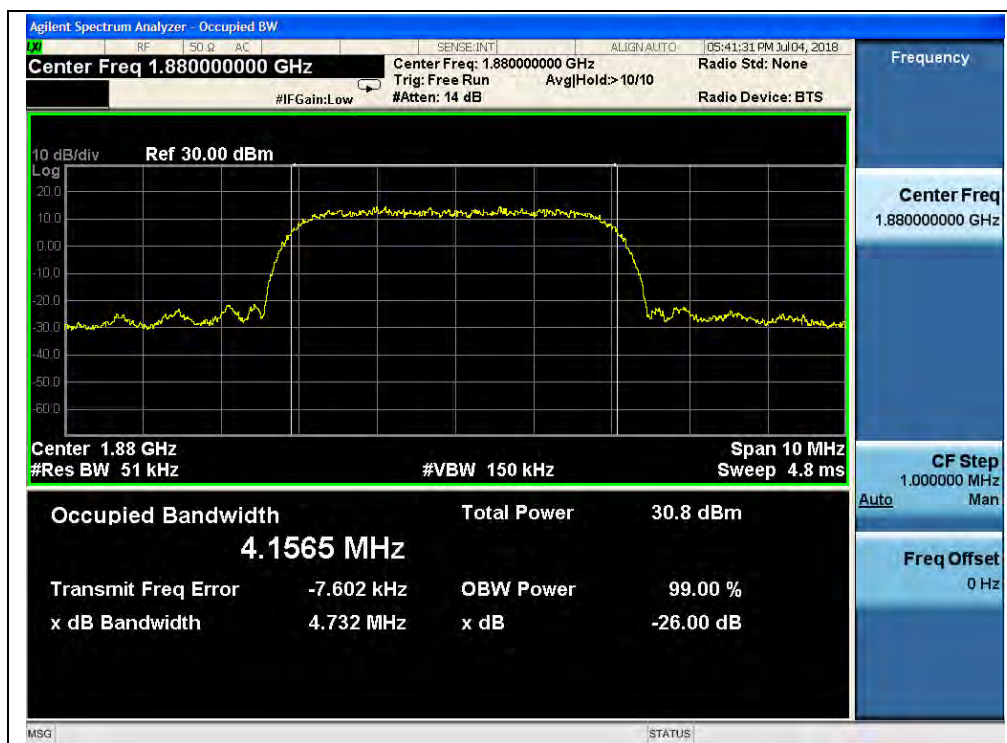
(Plot Q2, HSPA+ 1700 MHz, Channel = 1412)



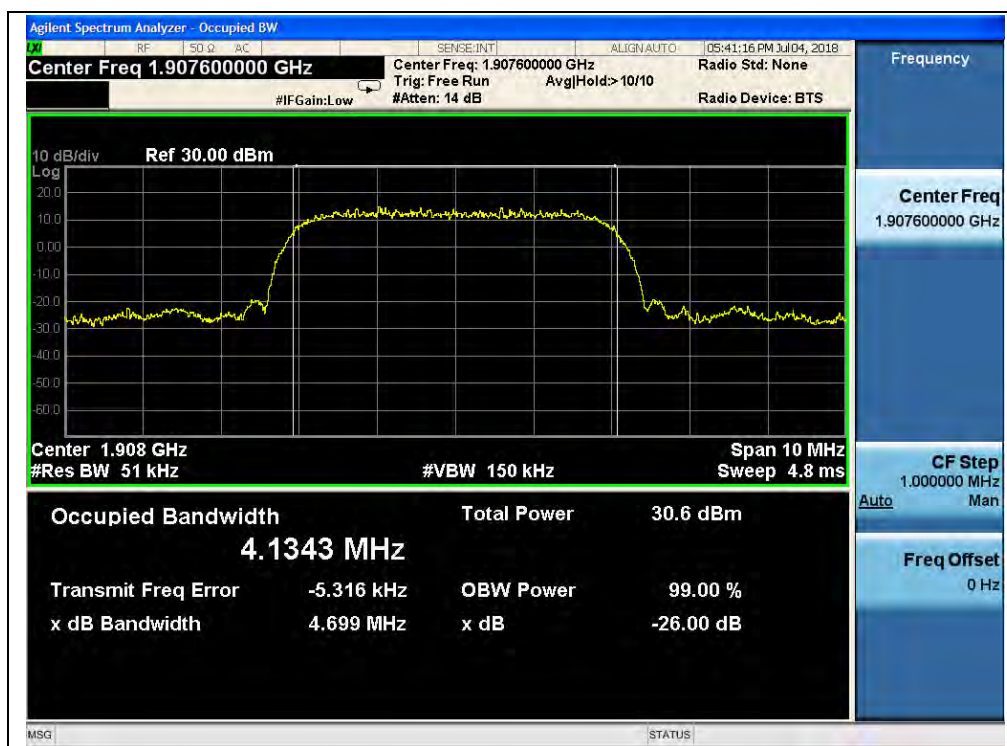
(Plot Q3, HSPA+ 1700MHz, Channel = 1513)



(Plot R1, HSPA+ 1900MHz, Channel = 9262)



(Plot R2, HSPA+ 1900 MHz, Channel = 9400)



(Plot R3, HSPA+ 1900MHz, Channel = 9538)

2.4. Frequency Stability

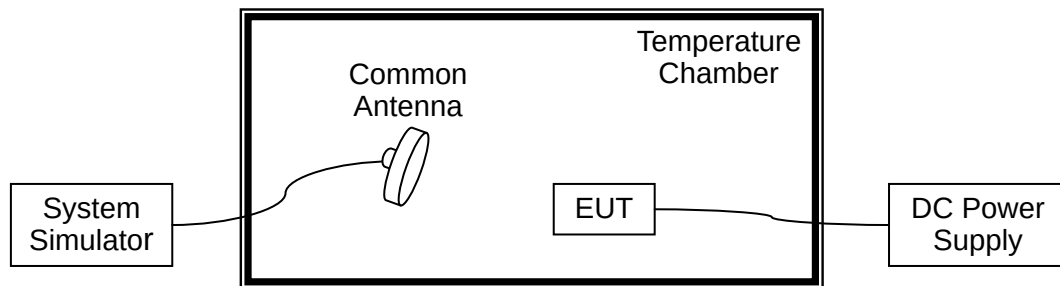
2.4.1. Requirement

According to FCC section 22.355, 24.235 and 27.54, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. According to FCC section 2.1055, the test conditions are:

- (a) The temperature is varied from -30°C to $+50^{\circ}\text{C}$ at intervals of not more than 10°C .
- (b) For hand carried battery powered equipment, the primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacture. The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided.

2.4.2. Test Description

Test Setup:



The EUT, which is powered by the DC Power Supply directly, is located in the Temperature Chamber. The EUT is commanded by the System Simulator (SS) to operate at the maximum output power i.e. Power Control Level (PCL) = 5 and Power Class = 4. A call is established between the EUT and the SS via a Common Antenna.

**2.4.3. Test Result**

The nominal, highest and lowest extreme voltages are separately 3.85VDC, 4.40VDC and 3.55VDC, which are specified by the applicant; the normal temperature here used is 25°C. The frequency deviation limit of 850MHz band is ± 2.5 ppm, and 1900MHz is ± 1 ppm.

A. Test Verdict:**GSM 850MHz Band**

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 128 (824.2MHz)		Channel = 190 (836.6MHz)		Channel = 251 (848.8MHz)		
		Hz	Limits	Hz	Limits	Hz	Limits	
3.85	-30	-7.42	±2060.5	24.08	±2091.5	6.00	±2122	PASS
	-20	32.15		26.97		8.44		
	-10	-22.31		2.38		1.14		
	0	24.65		-4.92		35.25		
	+10	-16.83		15.92		26.94		
	+20	-10.05		31.68		-15.56		
	+30	24.97		18.89		20.41		
	+40	38.9		14.57		-5.85		
	+50	35.75		-22.54		8.53		
4.40	+20	28.32		-9.86		4.06		
3.55	+20	1.39		10.99		-3.98		

GSM 1900MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 512 (1850.2MHz)		Channel = 661 (1880.0MHz)		Channel = 810 (1909.8MHz)		
		Hz	Limits	Hz	Limits	Hz	Limits	
3.85	-30	-3.71	±1850.2	32.56	±1880.0	-3.28	±1909.8	PASS
	-20	32.97		32.87		4.41		
	-10	31.99		41.41		17.81		
	0	22.71		24.50		22.97		
	+10	15.72		7.81		10.45		
	+20	17.68		5.07		29.23		
	+30	-2.38		8.42		33.87		
	+40	23.51		7.01		32.98		
	+50	21.4		-4.43		16.82		
4.40	+20	9.72		23.42		26.58		
3.55	+20	23.81		6.62		-3.45		



EGPRS 850MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 128 (824.2MHz)		Channel = 190 (836.6MHz)		Channel = 251 (848.8MHz)		
		Hz	Limits	Hz	Limits	Hz	Limits	
3.85	-30	5.58	±2060.5	4.25	±2091.5	7.63	±2122	PASS
	-20	4.8		7.53		-13.19		
	-10	-17.83		6.41		8.65		
	0	-13.32		6.49		-20.49		
	+10	0.83		10.61		20.24		
	+20	-8.66		3.63		21.65		
	+30	4.76		9.95		-14.48		
	+40	22.73		-2.37		20.24		
	+50	-17.33		-0.24		14.85		
4.40	+20	-17.83		11.4		8.65		
3.55	+20	-13.32		13.63		-14.56		

EGPRS 1900MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 512 (1850.2MHz)		Channel = 661 (1880.0MHz)		Channel = 810 (1909.8MHz)		
		Hz	Limits	Hz	Limits	Hz	Limits	
3.85	-30	-13.5	±1850.2	7.41	±1880.0	-14.41	±1909.8	PASS
	-20	20.02		17.2		12.74		
	-10	-9.49		-19.14		23.98		
	0	-15.13		-17.77		22.39		
	+10	-25.49		31.4		-12.82		
	+20	11.67		-12.12		24.98		
	+30	-15.93		-17.73		18.59		
	+40	22.19		10.6		-9.00		
	+50	15.84		17.74		12.6		
4.40	+20	14.05		-28.18		-0.74		
3.55	+20	-19.25		7.21		24.01		



WCDMA 850MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 4123 (826.4MHz)		Channel = 4175 (835MHz)		Channel = 4233 (846.6MHz)		
		Hz	Limit	Hz	Limit	Hz	Limit	
3.85	-30	-11.6	±2066	6.34	±2087.5	14.03	±2116.5	PASS
	-10	9.42		8.39		3.38		
	0	-4.46		6.35		8.67		
	+10	12.13		-5.33		1.59		
	+20	-0.31		-5.89		-0.96		
	+30	7.67		6.1		-2.21		
	+40	14.59		19.76		2.98		
	+50	2.97		9.36		-11.15		
	-20	-6.81		0.03		-13.13		
4.40	+20	-7.71		3.87		1.77		
3.55	+20	3.71		14.03		-12.45		

WCDMA 1700MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 1312 (1712.4MHz)		Channel = 1412 (1732.4MHz)		Channel = 1513 (1752.6MHz)		
		Hz	Limit	Hz	Limit	Hz	Limit	
3.85	-30	10.92	±4281	26.23	±4331	18.37	±4381.5	PASS
	-10	23.62		14.02		35.84		
	0	31.37		25.01		14.52		
	+10	29.69		6.58		-22.08		
	+20	7.86		33.17		37.72		
	+30	12.41		29.85		30.58		
	+40	-1.42		34.76		16.84		
	+50	6.22		26.18		35.83		
	-20	19.19		28.47		-14.09		
4.40	+20	26.54		22.37		-14.32		
3.55	+20	29.56		14.03		8.35		



WCDMA 1900MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 9262 (1852.4MHz)		Channel = 9400 (1880.0MHz)		Channel = 9538 (1907.6MHz)		
		Hz	Limits	Hz	Limits	Hz	Limits	
3.85	-30	-22.65	±1852.4	-19.51	±1880	6.13	±1907.6	PASS
	-10	-6.66		21.33		2.97		
	0	17.73		23.58		-7.96		
	+10	-20.68		21.12		6.63		
	+20	19.47		11.12		11.23		
	+30	22.05		21.59		9.68		
	+40	17.05		17.70		15.83		
	+50	-13.8		22.37		-12.67		
	-20	-10.55		32.67		11.02		
4.40	+20	-12.22		-11.96		-12.94		
3.55	+20	28.91		-17.69		-11.83		

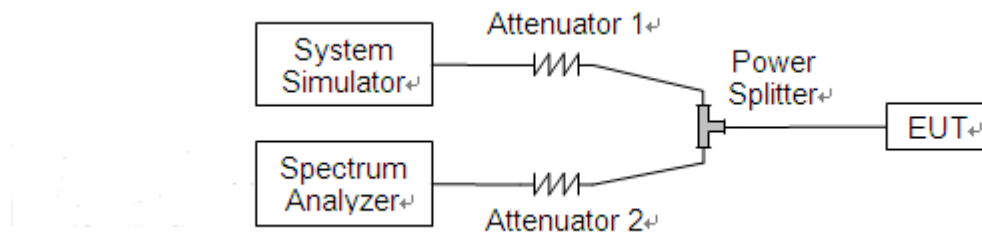
2.5. Conducted Out of Band Emissions

2.5.1. Requirement

According to FCC section 22.917(a), 24.238(a) and 27.53(h) the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43+10\log(P)$ dB. This calculated to be -13dBm.

2.5.2. Test Description

Test Setup:



The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power i.e. Power Control Level (PCL) = 5 and Power Class = 4. A call is established between the EUT and the SS.



2.5.3. Test Result

The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the out of band emissions.

GSM Test Verdict:

Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GSM 850MHz	128	824.2	-23.44	Plot A1 to A1.1	-13	PASS
	190	836.6	-23.86	Plot A2 to A2.1		PASS
	251	848.8	-22.42	Plot A3 to A3.1		PASS
GSM 1900MHz	512	1850.2	-17.57	Plot B1 to B1.1	-13	PASS
	661	1880.0	-18.54	Plot B2 to B2.1		PASS
	810	1909.8	-17.69	Plot B3 to B3.1		PASS
EGPRS 850MHz	128	824.2	-28.91	Plot C1 to C1.1	-13	PASS
	190	836.6	-28.13	Plot C2 to C2.1		PASS
	251	848.8	-28.77	Plot C3 to C3.1		PASS
EGPRS 1900MHz	512	1850.2	-23.86	Plot D1 to D1.1	-13	PASS
	661	1880.0	-24.37	Plot D2 to D2.1		PASS
	810	1909.8	-23.90	Plot D3 to D3.1		PASS