



FCC Test Report

FCC ID: 2AR7Z-18US117

Applicant: Shenzhen Topwell Technology Co., Ltd
Address: Room B518-520, Yousong Keji Building, Donghuan 1st Road, Longhua New District, Shenzhen City, Guangdong Province, China
Manufacturer: Shenzhen Topwell Technology Co., Ltd
Address: Room B518-520, Yousong Keji Building, Donghuan 1st Road, Longhua New District, Shenzhen City, Guangdong Province, China
EUT: Home Assistant for Seniors and Disabled
Trade Mark: Sofihub
Model Number: 18US1-1.7
Date of Receipt: Jul. 04, 2021
Test Date: Jul. 04, 2021 - Jul. 12, 2021
Date of Report: Jul. 12, 2021
Prepared By: Shenzhen DL Testing Technology Co., Ltd.
Address: 101-201, Building C, Shuanghuan, No.8, Baoqing Road, Baolong Industrial Zone, Baolong Street, Longgang District, Shenzhen, Guangdong, China
Applicable Standards: FCC CFR Title 47 Part22 Subpart H
FCC CFR Title 47 Part24 Subpart E
FCC CFR Title 47 Part27 Subpart E
ANSI/ TIA/ EIA-603-D-2010
FCC KDB 971168 D01 Power Meas. License Digital Systems v02v02
ANSI C63.4:2014
Test Result: Pass
Report Number: DL-20210712045E

Prepared (Test Engineer): Pxing Huang

Reviewer (Supervisor): Jack Bu

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This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Shenzhen DL Testing Technology Co., Ltd.

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**1. TEST SUMMARY**

Test Items	Test Requirement	Result
Conducted RF Output Power	2.1046	PASS
Peak to Average Ratio	2.1055,22.355 24.235,27.54	PASS
99% & -26 dB Occupied Bandwidth	2.1049, 22.917 24.238,	PASS
Frequency Stability	2.1055, 22.355 24.235, 27.54	PASS
Conducted Out of Band Emissions	2.1051,2.1057 22.917, 24.238 27.53(h) /27.53(m)	PASS
Band Edge	2.1051,2.1057 22.917, 24.238 27.53(h) /27.53(m)	PASS
Transmitter Radiated Power (EIPR/ERP)	22.913, 24.232 27.50(d)(4)/27.50(h)(2)	PASS
Radiated Out of Band Emissions	2.1053,2.1057 22.917, 24.238 27.53(h) /27.53(m)	PASS

**2. GENERAL PRODUCT INFORMATION****2.1. Description of Device (EUT)**

Product Name:	Home Assistant for Seniors and Disabled
Trademark	Sofihub
Model No.:	18US1-1.7
Model Difference	The product's different for model name and outlook color.
Operation Frequency:	GSM 850MHz: Tx: 824.00 - 849.00MHz; Rx: 869.00 - 894.00MHz GSM 1900MHz: Tx: 1850.00 - 1910.00MHz; Rx: 1930.00 - 1990.00MHz WCDMA Band II: Tx: 1850.00 - 1910.00MHz; Rx: 1930.00 - 1990.00MHz WCDMA Band V: Tx: 824.00 - 849.00MHz; Rx: 869.00 - 894.00MHz LTE Band 2: Tx: 1850.00 - 1910.00MHz; Rx: 1930.00 - 1990.00MHz LTE Band 4: Tx: 1710.00 - 1755.00MHz; Rx: 2110.00 - 2155.00MHz LTE Band 5: Tx: 824.00 - 849.00MHz; Rx: 869.00 - 894.00MHz LTE Band 7: Tx: 2500.00 - 2570.00MHz; Rx: 2620.00 - 2690.00MHz
Modulation technology:	GSM/GPRS/EGPRS Mode with GMSK Modulation WCDMA Mode with BPSK Modulation HSDPA Mode with QPSK, 16QAM Modulation HSUPA Mode with QPSK, 16QAM Modulation LTE Mode with QPSK, 16QAM
Antenna Type:	External Antenna
Antenna gain:	2.0dBi
Power supply:	DC 3.7V from battery DC 6V from adapter
GPRS Class:	12
EGPRS Class:	12
LTE Category	4
Hardware Version	HV10
Software Version	SV10



2.2. Product Function

Refer to Technical Construction Form and User Manual.

2.3. Independent Operation Modes

During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission.

Test modes		
Band	Radiated	Conducted
GSM 850	GSM GPRS(1Tx slot) EGPRS(1Tx slot)	GSM GPRS(1Tx slot) EGPRS(1Tx slot)
PCS 1900	GSM GPRS(1Tx slot) EGPRS(1Tx slot)	GSM GPRS(1Tx slot) EGPRS(1Tx slot)
WCDMA Band II	RMC/ HSDPA/ HSUPA/ DC-HSDPA	RMC/ HSDPA/ HSUPA/ DC-HSDPA
WCDMA Band V	RMC/ HSDPA/ HSUPA/ DC-HSDPA	RMC/ HSDPA/ HSUPA/ DC-HSDPA
LTE Band 2	Bandwidth:(MHz)1.4/3/5/10/15/20MHz Modulation: QPSK/16QAM RB:1/50%/100%	Bandwidth:(MHz)1.4/3/5/10/15/20MHz Modulation: QPSK/16QAM RB:1/50%/100%
LTE Band 4	Bandwidth:(MHz)1.4/3/5/10/15/20MHz Modulation: QPSK/16QAM RB:1/50%/100%	Bandwidth:(MHz)1.4/3/5/10/15/20MHz Modulation: QPSK/16QAM RB:1/50%/100%
LTE Band 5	Bandwidth:(MHz)1.4/3/5/10/15/20MHz Modulation: QPSK/16QAM RB:1/50%/100%	Bandwidth:(MHz)1.4/3/5/10/15/20MHz Modulation: QPSK/16QAM RB:1/50%/100%
LTE Band 7	Bandwidth:(MHz)1.4/3/5/10/15/20MHz Modulation: QPSK/16QAM RB:1/50%/100%	Bandwidth:(MHz)1.4/3/5/10/15/20MHz Modulation: QPSK/16QAM RB:1/50%/100%

Test Channel(MHz)			
Band	Low	Middle	High
GSM 850	824.2	836.6	848.8
PCS 1900	1850.2	1880	1909.8
WCDMA Band II	1852.4	1880	1907.6
WCDMA Band V	826.4	836.6	846.6
LTE Band 2	1850.7	1880	1909.3
LTE Band 4	1710.7	1732.5	1754.3
LTE Band 5	824.7	836.5	848.3
LTE Band 7	2502.5	2535	2567.5

Note: for LTE mode, if the bandwidth is different, the test frequency is changed.



3. TEST SITES

3.1. Test Facilities

Site Description

Name of Firm : Shenzhen DL Testing Technology Co., Ltd.

Site Location : 101-201, Building C, Shuanghuan, No.8, Baoqing Road, Baolong Industrial Zone, Baolong Street, Longgang District, Shenzhen, Guangdong, China

3.2. Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 1.38\text{dB}$
2	RF power,conducted	$\pm 0.16\text{dB}$
3	Spurious emissions,conducted	$\pm 0.21\text{dB}$
4	All emissions,radiated(<1G)	$\pm 4.68\text{dB}$
5	All emissions,radiated(>1G)	$\pm 4.89\text{dB}$
6	Temperature	$\pm 0.5^{\circ}\text{C}$
7	Humidity	$\pm 2\%$



3.3. List of Test and Measurement Instruments

3.3.1. For conducted emission at the mains terminals test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
843 Shielded Room	ChengYu	843 Room	843	Nov. 25, 2019	Nov. 24, 2022
EMI Receiver	R&S	ESR	101421	Dec. 07, 2020	Dec. 06, 2021
LISN	R&S	ENV216	102417	Dec. 07, 2020	Dec. 06, 2021
843 Cable 1#	ChengYu	CE Cable	001	Dec. 07, 2020	Dec. 06, 2021
843 Cable 1#	FUJIKURA	843C1#	001	2016.08.27	2017.08.26

3.3.2. For radiated test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer (9kHz-26.5GHz)	Agilent	E4408B	MY50140780	Dec. 07, 2020	Dec. 06, 2021
Test Receiver (9kHz-7GHz)	R&S	ESRP7	101393	Dec. 07, 2020	Dec. 06, 2021
Bilog Antenna (30MHz-1GHz)	R&S	VULB9162	00306	Dec. 07, 2020	Dec. 06, 2021
Horn Antenna (1GHz-18GHz)	Schwarzbeck	BBHA9120D	02139	Dec. 07, 2020	Dec. 06, 2021
Horn Antenna (18GHz-40GHz)	A.H. Systems	SAS-574	588	Dec. 07, 2020	Dec. 06, 2021
Amplifier (9KHz-6GHz)	Schwarzbeck	BBV9743B	00153	Dec. 07, 2020	Dec. 06, 2021
Amplifier (1GHz-18GHz)	EMEC	EM01G8GA	00270	Dec. 07, 2020	Dec. 06, 2021
Amplifier (18GHz-40GHz)	Quanjuda	DLE-161	97	Dec. 07, 2020	Dec. 06, 2021
Loop Antenna (9KHz-30MHz)	Schwarzbeck	FMZB1519B	00014	Dec. 07, 2020	Dec. 06, 2021
RF cables1 (9kHz-1GHz)	ChengYu	966	004	Dec. 07, 2020	Dec. 06, 2021
RF cables2 (1GHz-40GHz)	ChengYu	966	003	Dec. 07, 2020	Dec. 06, 2021
Antenna connector	Florida RF Labs	N/A	RF 01#	Dec. 07, 2020	Dec. 06, 2021
Power probe	KEYSIGHT	U2021XA	MY55210018	Dec. 07, 2020	Dec. 06, 2021
Signal Analyzer 9kHz-26.5GHz	Agilent	N9020A	MY55370280	Dec. 07, 2020	Dec. 06, 2021
Test Receiver 20kHz-40GHz	R&S	ESU 40	100376	Dec. 07, 2020	Dec. 06, 2021
D.C. Power Supply	LongWei	PS-305D	010964729	Dec. 07, 2020	Dec. 06, 2021
Signal Amplifier	DAZE	ZN3380B	11235	Dec. 07, 2020	Dec. 06, 2021
High Pass filter	KANGMAI	WHKX1.0/1.5G-10SS	40	Dec. 07, 2020	Dec. 06, 2021
Filter	COM-MW	ZBSF-C836.5-25-X	BCTC042	Dec. 07, 2020	Dec. 06, 2021
Filter	COM-MW	ZBSF-C1747.5-75-X2	BCTC045	Dec. 07, 2020	Dec. 06, 2021
Filter	COM-MW	ZBSF-C1880-60-X2	BCTC047	Dec. 07, 2020	Dec. 06, 2021
Splitter	Agilent	11435B	1125162	Dec. 07, 2020	Dec. 06, 2021
RF CONDUCTED TEST					
System Simulator	Agilent	E5515C	GB43130252	Dec. 07, 2020	Dec. 06, 2021



Spectrum Analyzer	Agilent	N9020A	MY45108040	Dec. 07, 2020	Dec. 06, 2021
DC Power Supply	LongWei	PS-305D	010965682	Dec. 07, 2020	Dec. 06, 2021
Constant temperature and humidity box	GF	GTH-800-40-2P	MAA9906-012	Dec. 07, 2020	Dec. 06, 2021
Universal radio communication tester	R&S	CMW500	115295	Dec. 07, 2020	Dec. 06, 2021



4. TEST SET-UP

4.1. Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the Operating Instructions.

4.2. Block Diagram of Test Set-up

System Diagram of Connections between EUT and Simulators



4.3. Test Environment:

Ambient conditions in the test laboratory:

Items	Actual
Temperature (°C)	21~23
Humidity (%RH)	50~65



5. EMISSION TEST RESULTS

5.1. Conducted RF Output Power

5.1.1. Limit

According to FCC section 2.1046(a) , FCC part22.913(a) and FCC part 24.232(b) ,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).

5.1.2. Test Setup

The EUT, which is powered by the adapter, 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.

5.1.3. Test Result

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

Measurement data



The conducted power tables are as follows:

Average Conducted Power (dBm)						
Band	GSM850			PCS1900		
Channel	128	190	251	512	661	810
Frequency (MHz)	824.20	836.60	848.80	1850.20	1880.00	1909.80
GSM (GMSK, 1 TX slot)	32.24	32.27	32.49	29.77	29.61	29.68
GPRS (GMSK, 1 TX slot)	32.25	32.26	32.46	28.75	28.20	28.66
GPRS (GMSK, 2 TX slot)	31.40	31.51	31.71	27.99	27.44	27.91
GPRS (GMSK, 3 TX slot)	29.34	29.53	29.73	26.33	26.47	26.53
GPRS (GMSK, 4 TX slot)	27.45	27.42	27.62	24.34	24.36	24.82
EGPRS(GMSK, 1 TX slot)	32.21	32.22	32.18	29.29	29.16	29.32
EGPRS(GMSK, 2 TX slot)	31.48	31.49	31.69	27.37	27.42	27.39
EGPRS(GMSK, 3 TX slot)	29.49	29.48	29.68	26.38	26.42	26.48
EGPRS(GMSK, 4 TX slot)	27.46	27.43	27.63	24.45	24.37	24.43
EGPRS (8PSK, 1 TX slot)	26.38	26.85	26.43	24.63	24.62	24.98
EGPRS (8PSK, 2 TX slot)	25.43	25.57	25.49	23.46	23.40	23.72
EGPRS (8PSK, 3 TX slot)	23.51	23.43	23.61	23.42	22.36	22.33
EGPRS (8PSK, 4 TX slot)	22.48	22.35	22.57	21.32	21.10	21.42

Average Conducted Power						
Band	WCDMA Band II.			WCDMA Band V.		
Frequency	1852.4	1880.0	1907.6	826.4	836.6	846.6
RMC 12.2Kbps	24.13	24.65	24.26	22.79	22.68	22.66
RMC 64kbps	24.09	24.59	24.22	22.73	22.56	22.58
RMC 144kbps	24.10	24.61	24.19	22.67	22.45	22.50
RMC 384kbps	24.07	24.57	24.17	22.61	22.34	22.41
HSDPA Subtest-1	24.11	24.64	24.24	22.42	22.34	22.39
HSDPA Subtest-2	24.10	24.62	24.23	22.36	22.33	22.39
HSDPA Subtest-3	24.08	24.61	24.21	22.31	22.29	22.31
HSDPA Subtest-4	24.07	24.59	24.19	22.28	22.20	22.33
HSUPA Subtest-1	24.12	24.63	24.25	22.26	22.29	22.27
HSUPA Subtest-2	24.09	24.62	24.23	22.23	22.18	22.29
HSUPA Subtest-3	24.07	24.61	24.22	22.36	22.28	22.33
HSUPA Subtest-4	24.13	24.65	24.26	22.18	22.21	22.29



Average Conducted Power						
Band	LTE Band 2			Channel/Frequency (MHz)		
Bandwidth	Modulation	RB size	RB offset	18607/1850.7	18900/1880	19193/1909.3
1.4MHz	QPSK	1	0	23.52	23.49	23.53
		1	2	23.57	23.66	23.60
		1	5	23.61	23.26	23.71
		3	0	23.48	23.57	23.42
		3	2	23.51	23.47	23.50
		3	3	23.42	23.45	23.24
		6	0	22.53	22.51	22.42
	16QAM	1	0	22.59	23.16	22.68
		1	2	22.44	23.13	22.48
		1	5	22.60	22.92	22.24
Average Conducted Power						
Band	LTE Band 2			Channel/Frequency (MHz)		
Bandwidth	Modulation	RB size	RB offset	18615/1851.5	18900/1880	19185/1908.5
3MHz	QPSK	1	0	23.45	23.45	23.43
		1	7	23.41	23.62	23.34
		1	14	23.39	23.42	23.72
		8	0	22.42	22.36	22.44
		8	4	22.38	22.39	22.34
		8	7	22.47	22.41	22.54
		15	0	22.52	22.50	22.51
	16QAM	1	0	22.79	22.41	22.57
		1	7	22.58	22.51	22.64
		1	14	22.40	22.74	22.47
Average Conducted Power						
Band	LTE Band 2			Channel/Frequency (MHz)		
Bandwidth	Modulation	RB size	RB offset	18625/1852.5	18900/1880	19175/1907.5
5MHz	QPSK	1	0	23.42	23.43	23.39
		1	13	23.39	23.58	23.31
		1	24	23.36	23.37	23.68
		12	0	22.39	22.31	22.40
		12	6	22.36	22.35	22.29
		12	13	22.45	22.39	22.50
		25	0	22.50	22.49	22.49
	16QAM	1	0	22.76	22.37	22.54
		1	13	22.55	22.49	22.61
		1	24	22.37	22.72	22.43



Average Conducted Power						
Band	LTE Band 2			Channel/Frequency (MHz)		
Bandwidth	Modulation	RB size	RB offset	18650/1855	18900/1880	19150/1905
10MHz	QPSK	1	0	23.44	23.44	23.42
		1	25	23.42	23.63	23.35
		1	49	23.38	23.37	23.68
		25	0	22.39	22.31	22.40
		25	13	22.36	22.35	22.29
		25	25	22.45	22.39	22.50
		50	0	22.50	22.49	22.49
	16QAM	1	0	22.76	22.37	22.54
		1	25	22.55	22.49	22.61
		1	49	22.37	22.72	22.43
Average Conducted Power						
Band	LTE Band 2			Channel/Frequency (MHz)		
Bandwidth	Modulation	RB size	RB offset	18675/1857.5	18900/1880	19125/1902.5
15MHz	QPSK	1	0	23.44	23.44	23.42
		1	38	23.42	23.63	23.35
		1	74	23.38	23.37	23.68
		36	0	22.39	22.31	22.40
		36	18	22.36	22.35	22.29
		36	39	22.45	22.39	22.50
		75	0	22.50	22.49	22.49
	16QAM	1	0	22.76	22.37	22.54
		1	38	22.55	22.49	22.61
		1	74	22.37	22.72	22.43
Average Conducted Power						
Band	LTE Band 2			Channel/Frequency (MHz)		
Bandwidth	Modulation	RB size	RB offset	18700/1860	18900/1880	19100/1900
15MHz	QPSK	1	0	23.44	23.44	23.42
		1	38	23.42	23.63	23.35
		1	74	23.38	23.37	23.68
		36	0	22.39	22.31	22.40
		36	18	22.36	22.35	22.29
		36	39	22.45	22.39	22.50
		75	0	22.50	22.49	22.49
	16QAM	1	0	22.76	22.37	22.54
		1	38	22.55	22.49	22.61
		1	74	22.37	22.72	22.43

Note: Measurement Uncertainty: ± 2.6 dB.



Average Conducted Power						
Band	LTE Band 4			Channel/Frequency (MHz)		
Bandwidth	Modulation	RB size	RB offset	19957/1710.7	20175/1732.5	20393/1754.3
1.4MHz	QPSK	1	0	23.88	23.58	23.73
		1	2	23.50	23.66	23.68
		1	5	23.60	23.74	23.65
		3	0	24.00	23.77	23.79
		3	2	23.95	23.83	23.71
		3	3	23.87	23.86	23.69
		6	0	22.89	22.91	22.79
	16QAM	1	0	22.94	22.32	22.99
		1	2	23.24	22.43	23.25
		1	5	23.06	22.48	23.05
Average Conducted Power						
Band	LTE Band 4			Channel/Frequency (MHz)		
Bandwidth	Modulation	RB size	RB offset	19965/1711.5	20175/1732.5	20385/1753.5
3MHz	QPSK	1	0	23.90	23.62	23.79
		1	7	23.53	23.71	23.90
		1	14	23.63	23.79	23.46
		8	0	23.10	22.89	23.04
		8	4	23.07	22.93	22.89
		8	7	22.97	22.97	23.16
		15	0	22.92	22.95	23.11
	16QAM	1	0	22.97	22.34	23.32
		1	7	23.27	22.48	23.73
		1	14	23.08	22.52	24.00
Average Conducted Power						
Band	LTE Band 4			Channel/Frequency (MHz)		
Bandwidth	Modulation	RB size	RB offset	19975/1712.5	20175/1732.5	20375/1752.5
5MHz	QPSK	1	0	23.87	23.60	23.75
		1	13	23.51	23.67	23.87
		1	24	23.60	23.74	23.42
		12	0	23.07	22.84	23.00
		12	6	23.05	22.89	22.84
		12	13	22.95	22.95	23.12
		25	0	22.90	22.94	23.09
	16QAM	1	0	22.94	22.30	23.29
		1	13	23.24	22.46	23.70
		1	24	23.05	22.50	23.96



Average Conducted Power						
Band	LTE Band 4			Channel/Frequency (MHz)		
Bandwidth	Modulation	RB size	RB offset	20000/1715	20175/1732.5	20350/1750
10MHz	QPSK	1	0	23.89	23.61	23.78
		1	25	23.54	23.72	23.91
		1	49	23.62	23.78	23.45
		25	0	23.10	22.89	23.04
		25	13	23.08	22.94	22.88
		25	25	22.97	22.99	23.17
		50	0	22.98	22.96	23.13
	16QAM	1	0	22.96	22.33	23.31
		1	25	23.27	22.50	23.73
		1	49	23.08	22.52	23.99
Average Conducted Power						
Band	LTE Band 4			Channel/Frequency (MHz)		
Bandwidth	Modulation	RB size	RB offset	18675/1857.5	18900/1880	19125/1902.5
15MHz	QPSK	1	0	23.88	23.57	23.76
		1	38	23.52	23.71	23.88
		1	74	23.59	23.73	23.41
		36	0	23.08	22.85	23.01
		36	18	23.05	22.89	22.84
		36	39	22.94	22.96	23.13
		75	0	22.96	22.92	23.08
	16QAM	1	0	22.91	22.31	23.29
		1	38	23.25	22.47	23.71
		1	74	23.05	22.48	23.96
Average Conducted Power						
Band	LTE Band 4			Channel/Frequency (MHz)		
Bandwidth	Modulation	RB size	RB offset	18700/1860	18900/1880	19100/1900
15MHz	QPSK	1	0	23.85	23.53	23.73
		1	50	23.51	23.67	23.86
		1	99	23.57	23.72	23.38
		50	0	23.05	22.80	22.97
		50	25	23.03	22.85	22.81
		50	50	22.91	22.91	23.09
		100	0	22.93	22.87	23.04
	16QAM	1	0	22.89	22.27	23.24
		1	50	23.21	22.45	23.67
		1	99	23.03	22.45	23.94

Note: Measurement Uncertainty: ± 2.6 dB.



Average Conducted Power						
Band	LTE Band 5			Channel/Frequency (MHz)		
Bandwidth	Modulation	RB size	RB offset	20407/824.7	20525/836.5	20643/848.3
1.4MHz	QPSK	1	0	23.44	23.39	23.67
		1	2	23.73	23.73	23.76
		1	5	23.65	23.46	23.66
		3	0	23.58	23.48	23.75
		3	2	23.62	23.56	23.67
		3	3	23.76	23.60	23.74
		6	0	22.79	22.74	22.89
	16QAM	1	0	23.27	22.97	22.86
		1	2	23.59	22.93	22.97
		1	5	23.55	22.74	22.66
Average Conducted Power						
Band	LTE Band 5			Channel/Frequency (MHz)		
Bandwidth	Modulation	RB size	RB offset	20415/825.5	20525/836.5	20635/847.5
3MHz	QPSK	1	0	23.67	23.63	23.65
		1	7	23.85	23.57	23.81
		1	14	23.47	23.45	23.59
		8	0	22.93	22.82	22.80
		8	4	22.72	22.68	22.72
		8	7	22.90	22.75	23.01
		15	0	22.91	22.90	22.90
	16QAM	1	0	23.24	23.27	22.51
		1	7	23.20	23.23	23.60
		1	14	22.14	23.36	22.79
Average Conducted Power						
Band	LTE Band 5			Channel/Frequency (MHz)		
Bandwidth	Modulation	RB size	RB offset	20425/826.5	20525/836.5	20625/846.5
5MHz	QPSK	1	0	23.66	23.59	23.39
		1	13	23.83	23.56	23.31
		1	24	23.44	23.40	23.68
		12	0	22.91	22.78	22.40
		12	6	22.69	22.63	22.29
		12	13	22.87	22.72	22.50
		25	0	22.89	22.86	22.49
	16QAM	1	0	23.19	23.25	22.54
		1	13	23.18	23.20	22.61
		1	24	22.37	22.72	22.43



Average Conducted Power						
Band	LTE Band 5			Channel/Frequency (MHz)		
Bandwidth	Modulation	RB size	RB offset	20450/829	20525/836.5	20600/844
10MHz	QPSK	1	0	23.44	23.44	23.42
		1	25	23.42	23.63	23.35
		1	49	23.38	23.37	23.68
		25	0	22.39	22.31	22.40
		25	13	22.36	22.35	22.29
		25	25	22.45	22.39	22.50
		50	0	22.50	22.49	22.49
	16QAM	1	0	22.76	22.37	22.54
		1	25	22.55	22.49	22.61
		1	49	22.37	22.72	22.43

Note: Measurement Uncertainty: ± 2.6 dB.



Average Conducted Power						
Band	LTE Band 7			Channel/Frequency (MHz)		
Bandwidth	Modulation	RB size	RB offset	20775/2502.5	21100/2535	21425/2567.5
5MHz	QPSK	1	0	23.78	23.96	23.96
		1	13	23.59	23.80	23.53
		1	24	23.53	23.85	24.01
		12	0	23.05	23.04	23.17
		12	6	22.77	22.35	22.29
		12	13	22.75	22.39	22.50
		25	0	22.61	22.49	22.49
	16QAM	1	0	22.44	22.37	22.54
		1	13	22.55	22.49	22.61
		1	24	22.37	22.72	22.43
Average Conducted Power						
Band	LTE Band 7			Channel/Frequency (MHz)		
Bandwidth	Modulation	RB size	RB offset	20800/2505	21100/2535	21400/2565
10MHz	QPSK	1	0	23.44	23.44	23.42
		1	25	23.42	23.63	23.35
		1	49	23.38	23.37	23.68
		25	0	22.39	22.31	22.40
		25	13	22.36	22.35	22.29
		25	25	22.45	22.39	22.50
		50	0	22.50	22.49	22.49
	16QAM	1	0	22.76	22.37	22.54
		1	25	22.55	22.49	22.61
		1	49	22.37	22.72	22.43
Average Conducted Power						
Band	LTE Band 7			Channel/Frequency (MHz)		
Bandwidth	Modulation	RB size	RB offset	20825/2507.5	21100/2535	21375/2562.5
15MHz	QPSK	1	0	23.44	23.44	23.42
		1	38	23.42	23.63	23.35
		1	74	23.38	23.37	23.68
		36	0	22.39	22.31	22.40
		36	18	22.36	22.35	22.29
		36	39	22.45	22.39	22.50
		75	0	22.50	22.49	22.49
	16QAM	1	0	22.76	22.37	22.54
		1	38	22.55	22.49	22.61
		1	74	22.37	22.72	22.43



Average Conducted Power						
Band	LTE Band 7			Channel/Frequency (MHz)		
Bandwidth	Modulation	RB size	RB offset	20850/2510	21100/2535	21350/2560
15MHz	QPSK	1	0	23.44	23.44	23.42
		1	38	23.42	23.63	23.35
		1	74	23.38	23.37	23.68
		36	0	22.39	22.31	22.40
		36	18	22.36	22.35	22.29
		36	39	22.45	22.39	22.50
		75	0	22.50	22.49	22.49
	16QAM	1	0	22.76	22.37	22.54
		1	38	22.55	22.49	22.61
		1	74	22.37	22.72	22.43

Note: Measurement Uncertainty: ± 2.6 dB.



5.2. -26dB and 99% Occupied Bandwidth

5.2.1. Limit

According to FCC section 2.1049 and FCC part22.913(a) and FCC part24.232(b), 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,

5.2.2. Test Setup

The EUT, which is powered by the adapter, 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.



5.2.3. Test Result

EUT Mode	Channel	Frequency (MHz)	99% Occupy bandwidth (MHz)	-26dB bandwidth (MHz)
GSM 850 (GSM)	128	824.2	0.24238	0.2995
	190	836.6	0.24436	0.2993
	251	848.8	0.24313	0.2992
GSM 850 (GMSK)	128	824.2	0.24459	0.3101
	190	836.6	0.24409	0.3110
	251	848.8	0.24655	0.3179
GSM 850 (8-PSK)	128	824.2	0.24516	0.3087
	190	836.6	0.24420	0.3037
	251	848.8	0.24425	0.3071
PCS 1900 (GSM)	512	1850.2	0.24879	0.2989
	661	1880.0	0.24256	0.2997
	810	1909.8	0.24740	0.2974
PCS 1900 (GMSK)	512	1850.2	0.24640	0.3129
	661	1880.0	0.24719	0.3164
	810	1909.8	0.24779	0.3119
PCS 1900 (8-PSK)	512	1850.2	0.24309	0.3113
	661	1880.0	0.24398	0.3094
	810	1909.8	0.24504	0.3089
WCDMA Band II (RMC)	9262	1852.4	4.1233	4.670
	9400	1880.0	4.1253	4.686
	9538	1907.6	4.1161	4.650
WCDMA Band V (RMC)	4132	826.4	4.1336	4.672
	4183	836.6	4.1268	4.683
	4233	846.6	4.1278	4.672

Note: Measurement Uncertainty: $\pm 20\text{Hz}$.



LTE Band 2						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	18607	1850.7	1.1256	1.371
			18900	1880.0	1.1259	1.384
			19193	1909.3	1.1397	1.348
		3	18615	1851.5	2.7426	3.070
			18900	1880.0	2.7485	3.061
			19185	1908.5	2.7446	3.065
		5	18625	1852.5	4.5338	5.017
			18900	1880.0	4.5128	5.050
			19175	1907.5	4.5067	5.042
		10	18650	1855.0	9.0436	10.160
			18900	1880.0	9.0125	10.060
			19150	1905.0	9.0271	10.020
		15	18675	1857.5	13.4950	14.760
			18900	1880.0	13.4120	14.690
			19125	1902.5	13.4400	14.770
		20	18700	1860.0	17.9180	19.250
			18900	1880.0	17.8340	19.250
			19100	1900.0	17.8700	19.540
100%	16QAM	1.4	18607	1850.7	1.1266	1.338
			18900	1880.0	1.1202	1.337
			19193	1909.3	1.1233	1.375
		3	18615	1851.5	2.7349	3.078
			18900	1880.0	2.7630	3.088
			19185	1908.5	2.7370	3.052
		5	18625	1852.5	4.5173	5.024
			18900	1880.0	4.5391	5.043
			19175	1907.5	4.5312	5.052
		10	18650	1855.0	9.0501	10.070
			18900	1880.0	9.0213	9.971
			19150	1905.0	9.0066	10.030
		15	18675	1857.5	13.4840	14.750
			18900	1880.0	13.4740	14.740
			19125	1902.5	13.4370	14.810
		20	18700	1860.0	17.9370	19.440
			18900	1880.0	17.8390	19.300
			19100	1900.0	17.8820	19.310



LTE Band 4						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	19957	1710.7	1.1187	1.336
			20175	1732.5	1.1225	1.352
			20393	1754.3	1.1389	1.342
		3	19965	1711.5	2.7418	3.072
			20175	1732.5	2.7414	3.041
			20385	1753.5	2.7397	3.060
		5	19975	1712.5	4.5353	5.022
			20175	1732.5	4.5163	5.039
			20375	1752.5	4.5110	4.977
		10	20000	1715	9.0304	10.160
			20175	1732.5	9.0190	10.080
			20350	1750	9.0257	10.080
		15	20025	1717.5	13.4420	14.840
			20175	1732.5	13.4270	14.690
			20325	1747.5	13.4580	14.740
		20	20050	1720	17.8450	19.140
			20175	1732.5	17.8980	19.250
			20300	1745	17.9200	19.470
100%	16QAM	1.4	19957	1710.7	1.1300	1.341
			20175	1732.5	1.1249	1.337
			20393	1754.3	1.1220	1.343
		3	19965	1711.5	2.7620	3.064
			20175	1732.5	2.7345	3.056
			20385	1753.5	2.7381	3.068
		5	19975	1712.5	4.5154	5.010
			20175	1732.5	4.5315	5.030
			20375	1752.5	4.5227	5.045
		10	20000	1715	9.0398	10.020
			20175	1732.5	9.0187	10.100
			20350	1750	9.0298	10.060
		15	20025	1717.5	13.4350	14.680
			20175	1732.5	13.4650	14.730
			20325	1747.5	13.4680	14.740
		20	20050	1720	17.8750	19.340
			20175	1732.5	17.9060	19.400
			20300	1745	17.8860	19.330



LTE Band 5						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	20407	824.7	1.1280	1.367
			20525	836.5	1.1241	1.356
			20643	848.3	1.1375	1.357
		3	20415	825.5	2.7416	3.073
			20525	836.5	2.7496	3.062
			20635	847.5	2.7442	3.073
		5	20425	826.5	4.5303	5.002
			20525	836.5	4.5143	5.054
			20625	846.5	4.5067	5.042
		10	20450	829	9.0483	10.090
			20525	836.5	9.0285	10.030
			20600	844	9.0205	10.050
100%	16QAM	1.4	20407	824.7	1.1247	1.341
			20525	836.5	1.1232	1.337
			20643	848.3	1.1166	1.343
		3	20415	825.5	2.7675	3.064
			20525	836.5	2.7338	3.056
			20635	847.5	2.7411	3.068
		5	20425	826.5	4.5116	5.010
			20525	836.5	4.5293	5.030
			20625	846.5	4.5347	5.045
		10	20450	829	9.0441	10.020
			20525	836.5	9.0298	10.100
			20600	844	9.0152	10.060



LTE Band 7						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	5	20775	2502.5	4.5122	1.367
			21100	2535	4.0539	1.356
			21425	2567.5	4.5293	1.357
		10	20800	2505	9.0373	3.073
			21100	2535	9.0048	3.062
			21400	2565	9.0260	3.073
		15	20825	2507.5	13.4670	5.002
			21100	2535	13.4420	5.054
			21375	2562.5	13.4590	5.042
		20	20850	2510	17.8700	10.090
			21100	2535	17.8630	10.030
			21350	2560	17.8950	10.050
100%	16QAM	5	20775	2502.5	4.5357	5.037
			21100	2535	4.5306	5.055
			21425	2567.5	4.5117	5.025
		10	20800	2505	9.0432	10.020
			21100	2535	9.0084	10.040
			21400	2565	9.0287	10.010
		15	20825	2507.5	13.4520	14.730
			21100	2535	13.4650	14.760
			21375	2562.5	13.4680	14.710
		20	20850	2510	17.8590	19.380
			21100	2535	17.8920	19.350
			21350	2560	17.8460	19.390

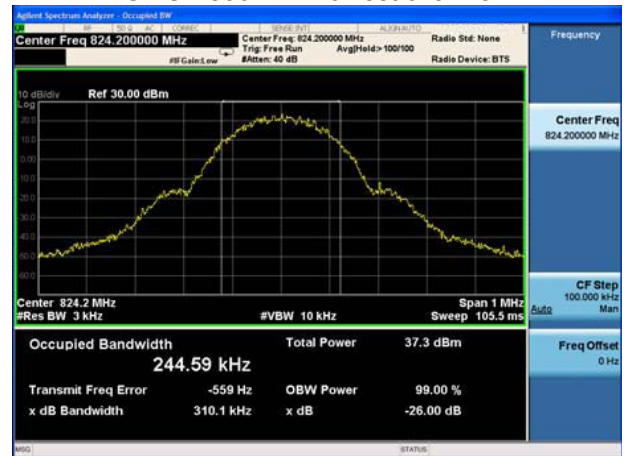


Test plot as follows:

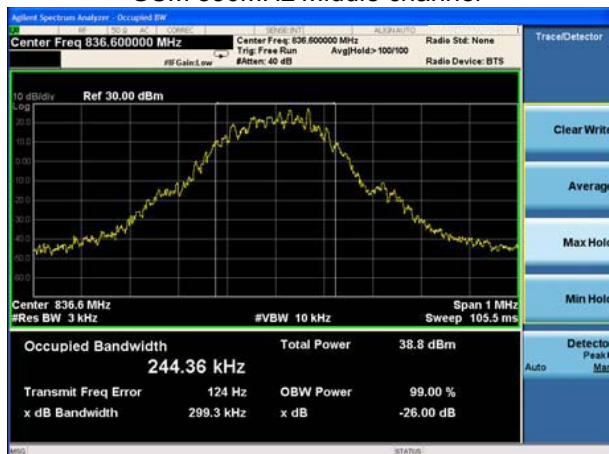
GSM 850MHz Lowest channel



GMSK 850MHz Lowest channel



GSM 850MHz Middle channel



GMSK 850MHz Middle channel



GSM 850MHz Highest channel:



GMSK 850MHz Highest channel:

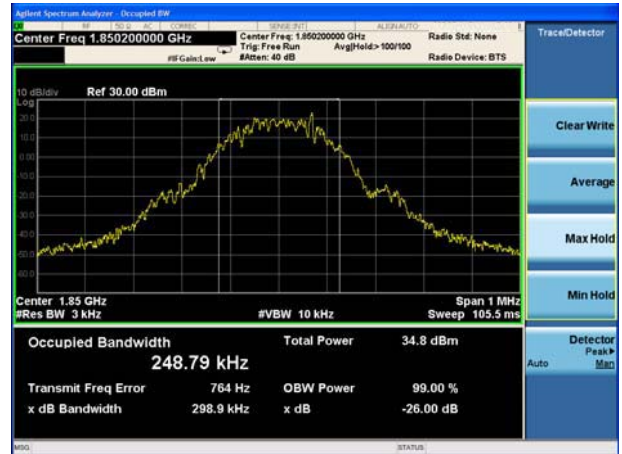




8-PSK 850MHz Lowest channel



PCS 1900 Lowest channel



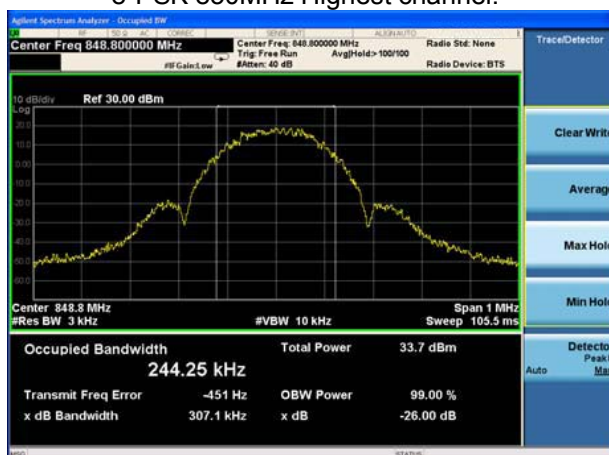
8-PSK 850MHz Middle channel



PCS 1900 Middle channel



8-PSK 850MHz Highest channel:



PCS 1900 Highest channel:





GMSK PCS 1900 Lowest channel



8-PSK PCS 1900 Lowest channel



GMSK PCS 1900 Middle channel



8-PSK PCS 1900 Middle channel



GMSK PCS 1900 Highest channel:



PCS 1900 Highest channel:

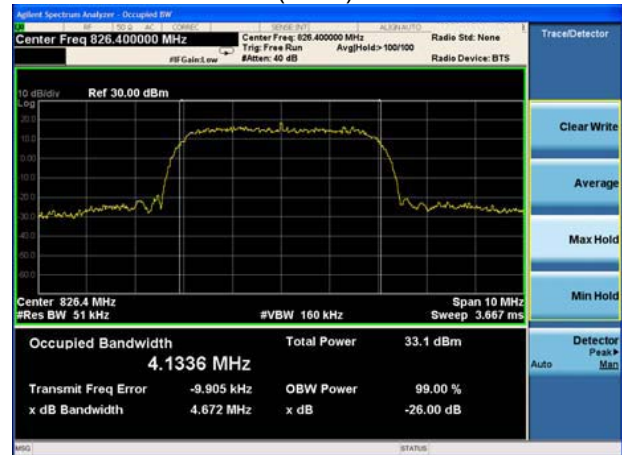




WCDMA Band II (RMC) Lowest channel



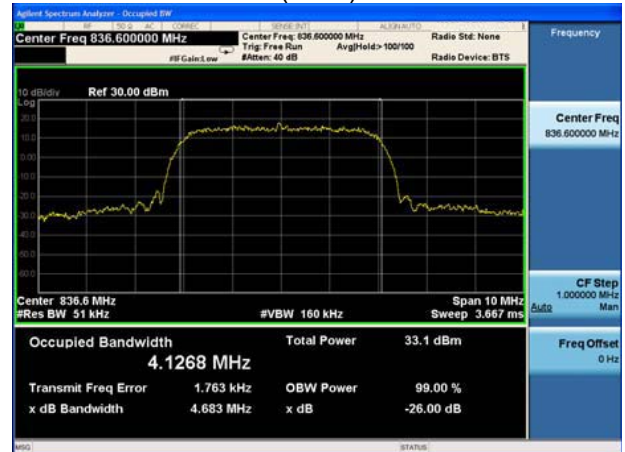
WCDMA Band V (RMC) Lowest channel



WCDMA Band II (RMC) Middle channel



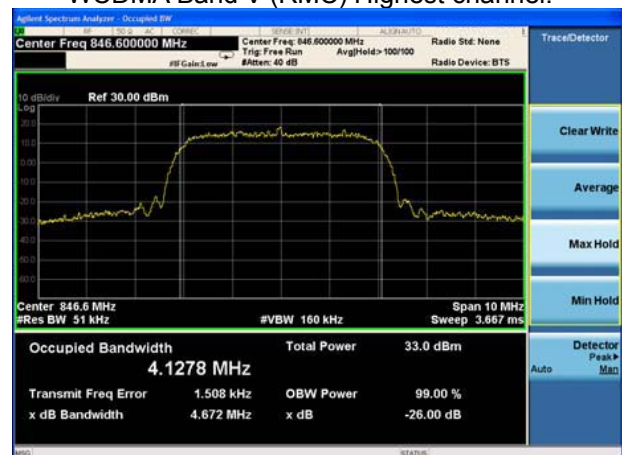
WCDMA Band V (RMC) Middle channel



WCDMA Band II (RMC) Highest channel:



WCDMA Band V (RMC) Highest channel:

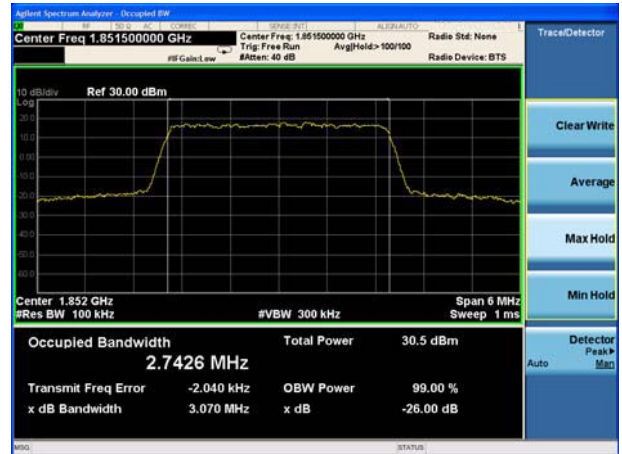




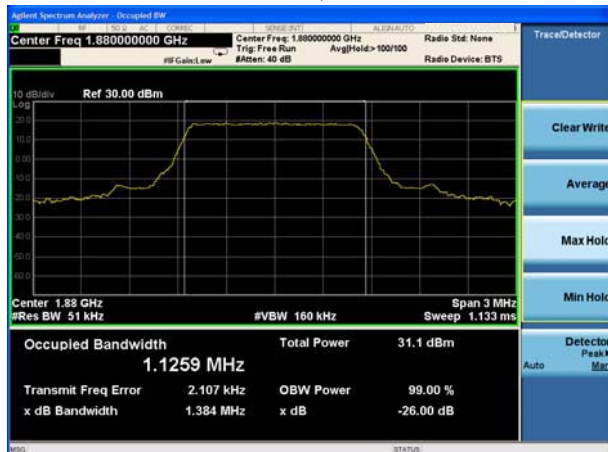
LTE Band 2 1.4MHz QPSK Lowest channel



LTE Band 2 3MHz QPSK Lowest channel



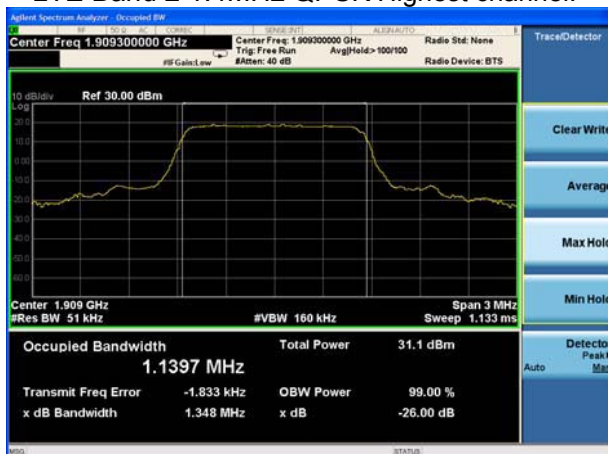
LTE Band 2 1.4MHz QPSK Middle channel



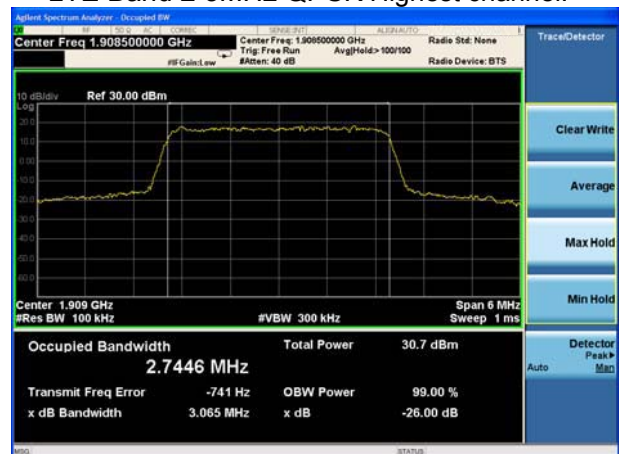
LTE Band 2 3MHz QPSK Middle channel



LTE Band 2 1.4MHz QPSK Highest channel:

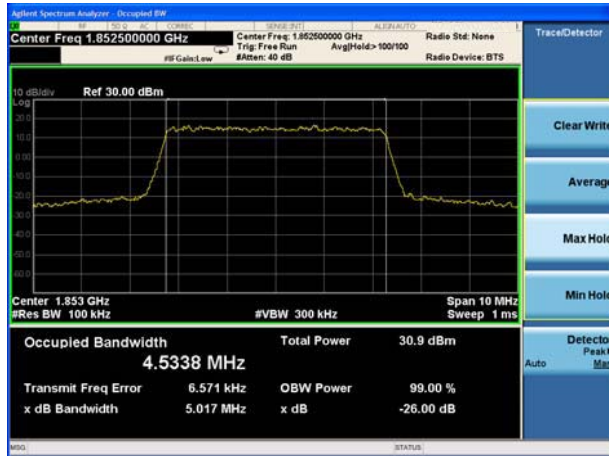


LTE Band 2 3MHz QPSK Highest channel:





LTE Band 2 5MHz QPSK Lowest channel



LTE Band 2 10MHz QPSK Lowest channel



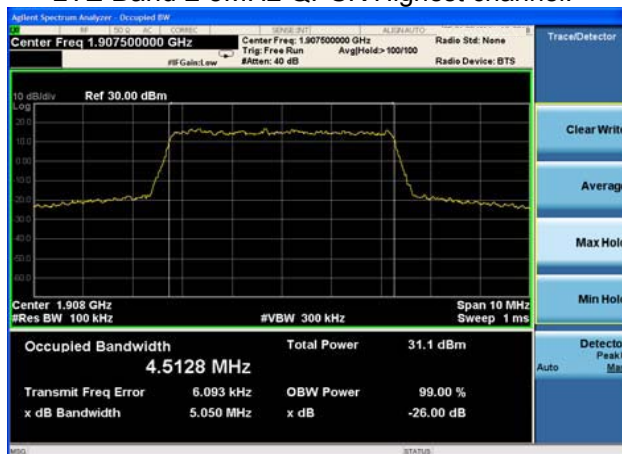
LTE Band 2 5MHz QPSK Middle channel



LTE Band 2 10MHz QPSK Middle channel



LTE Band 2 5MHz QPSK Highest channel:

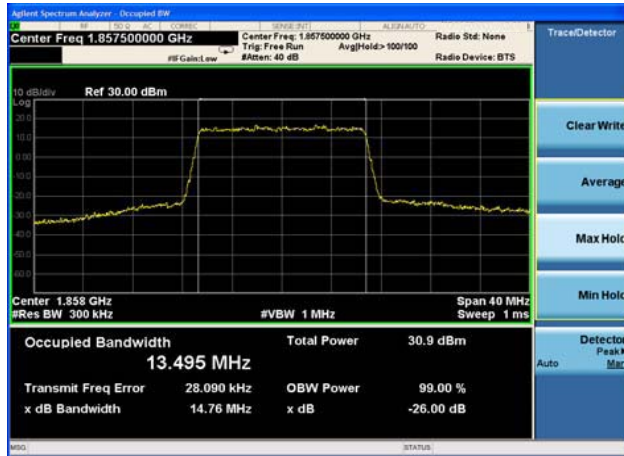


LTE Band 2 10MHz QPSK Highest channel:





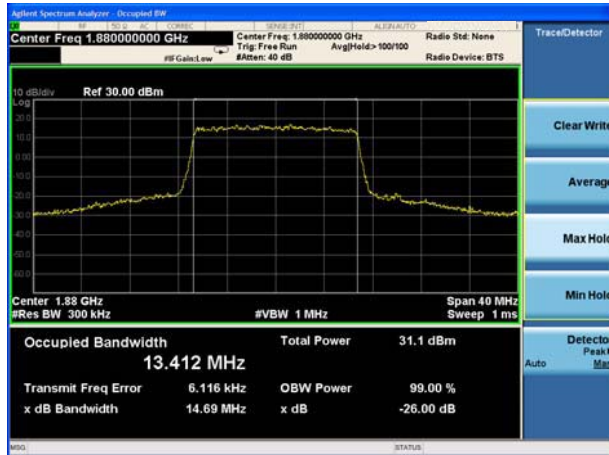
LTE Band 2 15MHz QPSK Lowest channel



LTE Band 2 20MHz QPSK Lowest channel



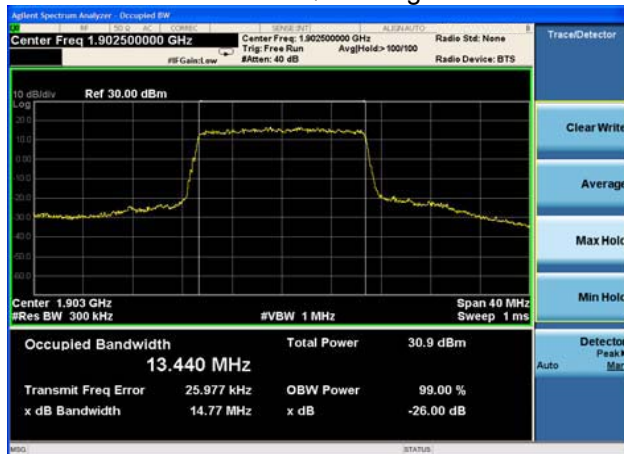
LTE Band 2 15MHz QPSK Middle channel



LTE Band 2 20MHz QPSK Middle channel



LTE Band 2 15MHz QPSK Highest channel:



LTE Band 2 20MHz QPSK Highest channel:





LTE Band 2 1.4MHz 16QAM Lowest channel



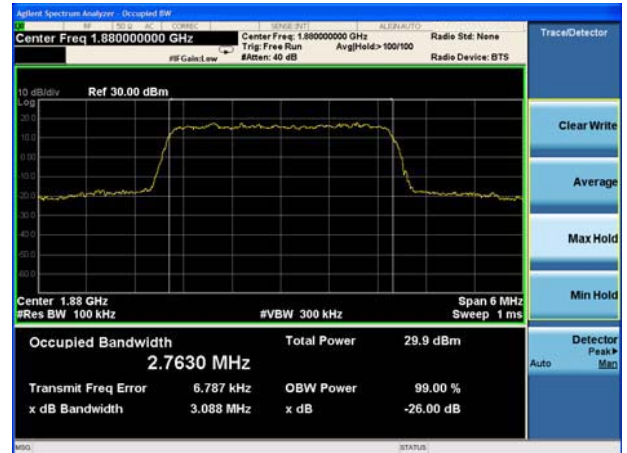
LTE Band 2 3MHz 16QAM Lowest channel



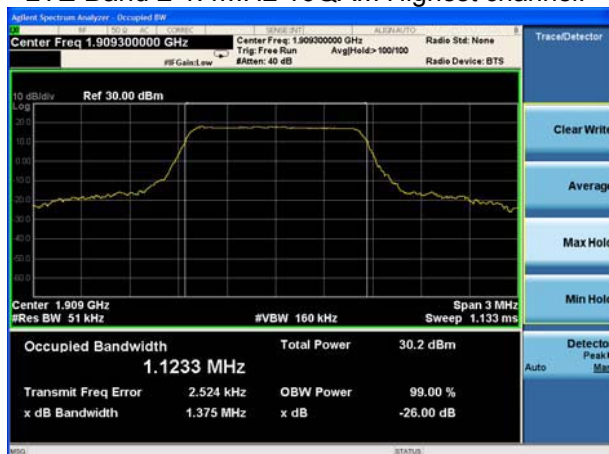
LTE Band 2 1.4MHz 16QAM Middle channel



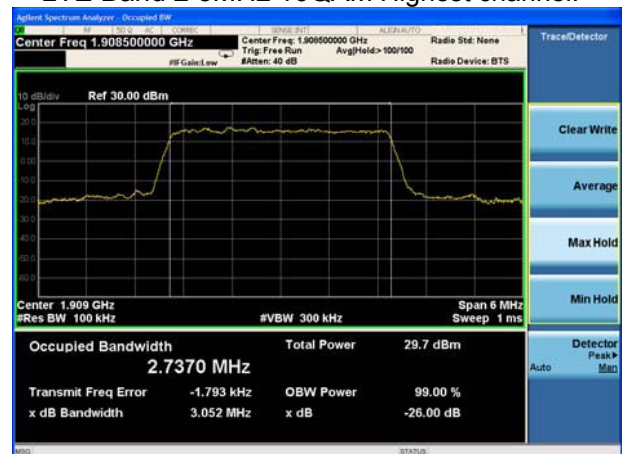
LTE Band 2 3MHz 16QAM Middle channel



LTE Band 2 1.4MHz 16QAM Highest channel:



LTE Band 2 3MHz 16QAM Highest channel:





LTE Band 2 5MHz 16QAM Lowest channel



LTE Band 2 10MHz 16QAM Lowest channel



LTE Band 2 5MHz 16QAM Middle channel



LTE Band 2 10MHz 16QAM Middle channel



LTE Band 2 5MHz 16QAM Highest channel:

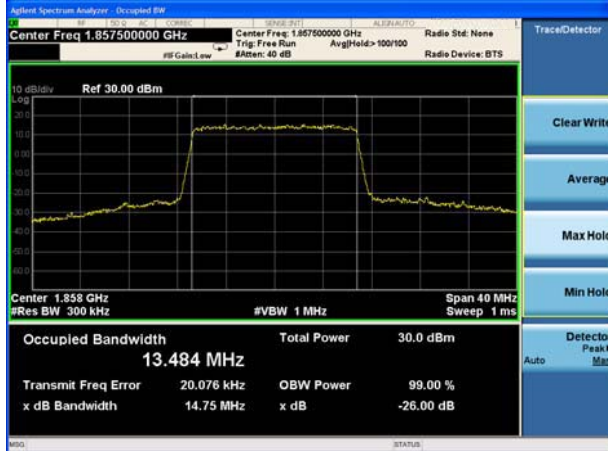


LTE Band 2 10MHz 16QAM Highest channel:





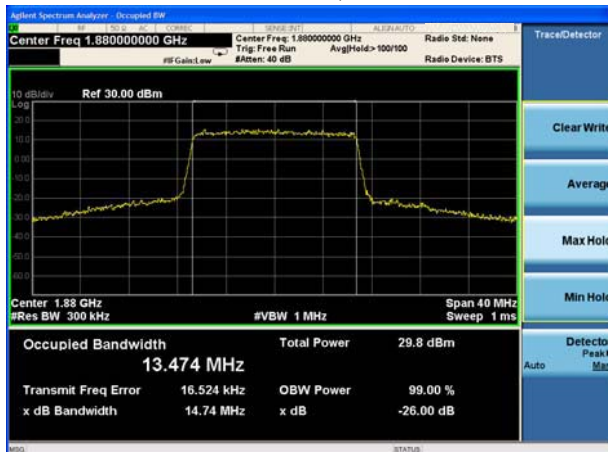
LTE Band 2 15MHz 16QAM Lowest channel



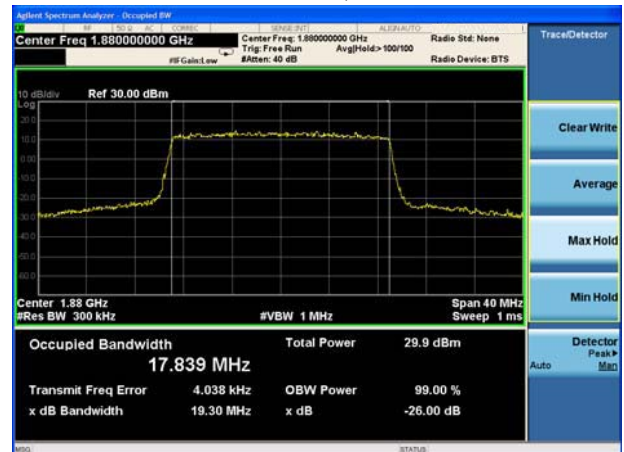
LTE Band 2 20MHz 16QAM Lowest channel



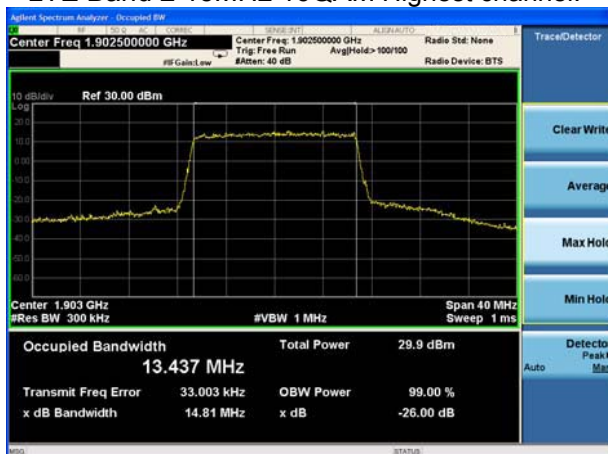
LTE Band 2 15MHz 16QAM Middle channel



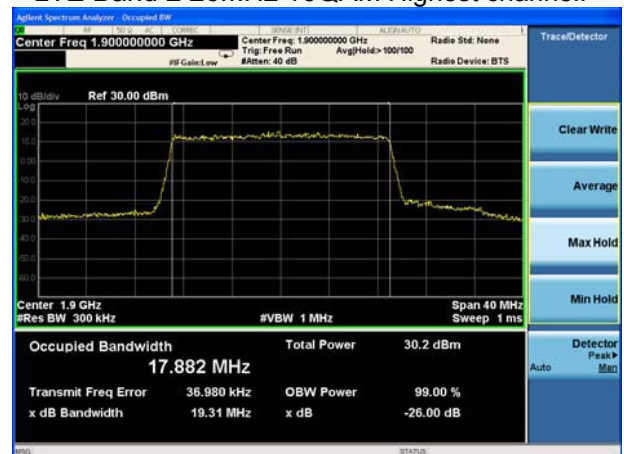
LTE Band 2 20MHz 16QAM Middle channel



LTE Band 2 15MHz 16QAM Highest channel:



LTE Band 2 20MHz 16QAM Highest channel:

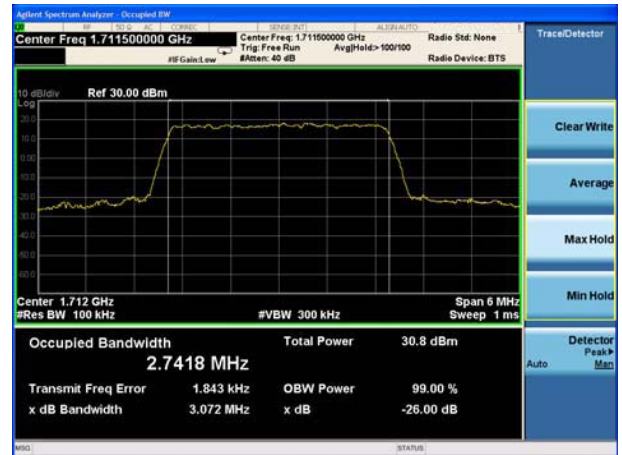




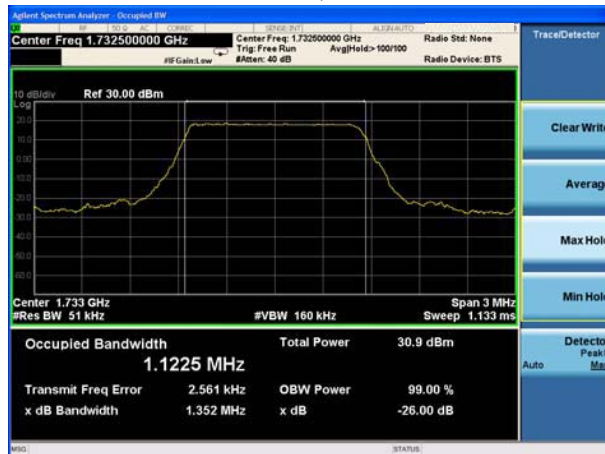
LTE Band 4 1.4MHz QPSK Lowest channel



LTE Band 4 3MHz QPSK Lowest channel



LTE Band 4 1.4MHz QPSK Middle channel



LTE Band 4 3MHz QPSK Middle channel



LTE Band 4 1.4MHz QPSK Highest channel:



LTE Band 4 3MHz QPSK Highest channel:





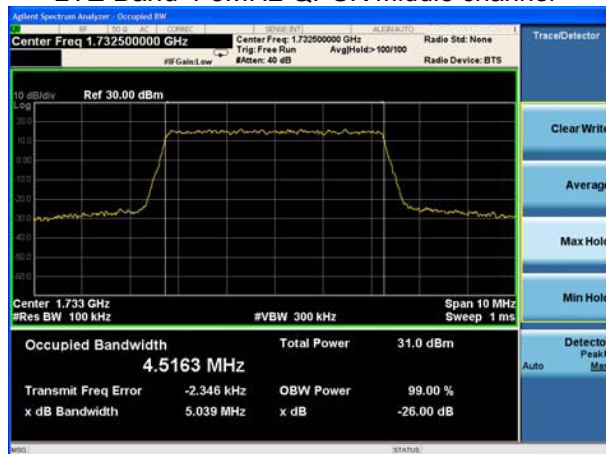
LTE Band 4 5MHz QPSK Lowest channel



LTE Band 4 10MHz QPSK Lowest channel



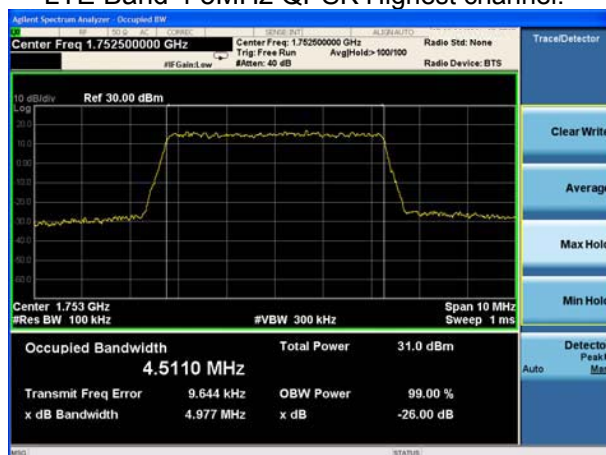
LTE Band 4 5MHz QPSK Middle channel



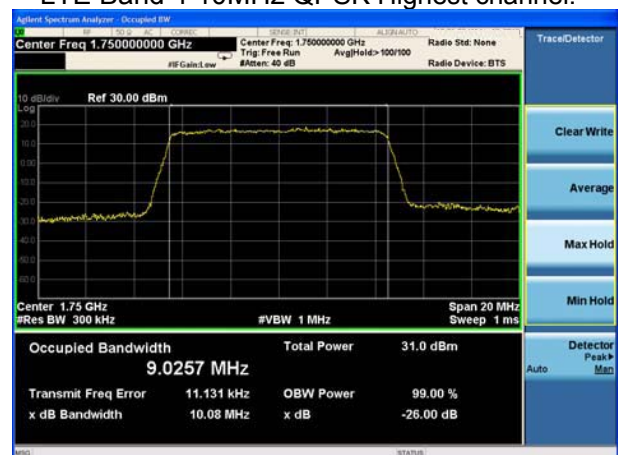
LTE Band 4 10MHz QPSK Middle channel



LTE Band 4 5MHz QPSK Highest channel:

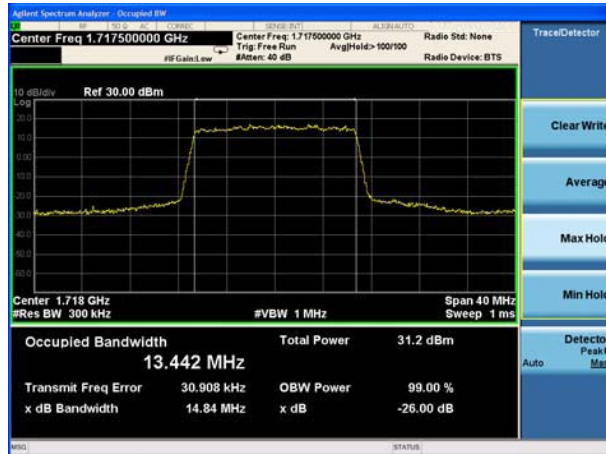


LTE Band 4 10MHz QPSK Highest channel:

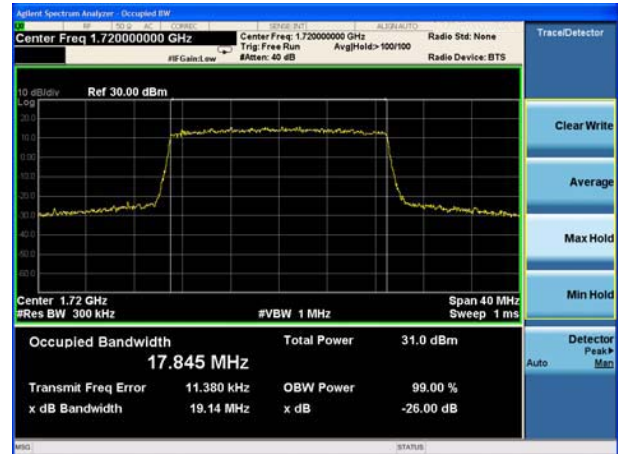




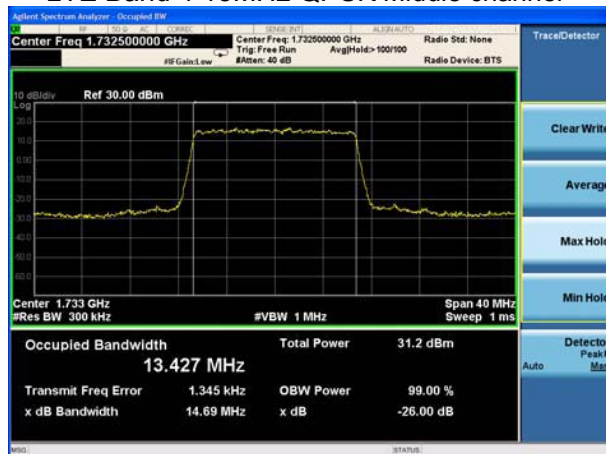
LTE Band 4 15MHz QPSK Lowest channel



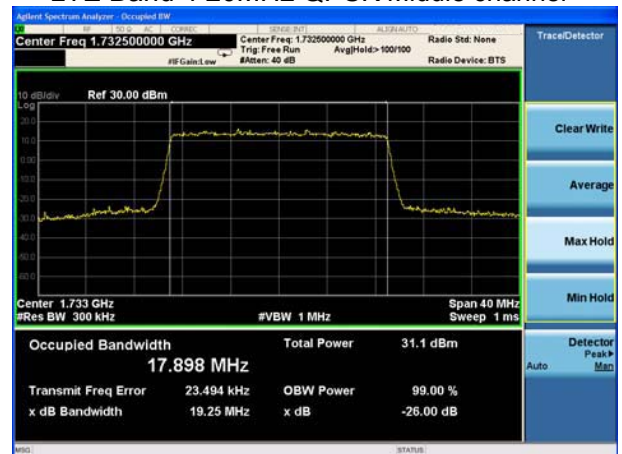
LTE Band 4 20MHz QPSK Lowest channel



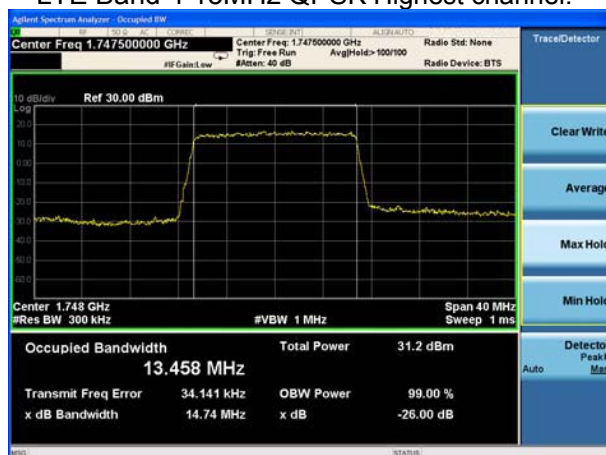
LTE Band 4 15MHz QPSK Middle channel



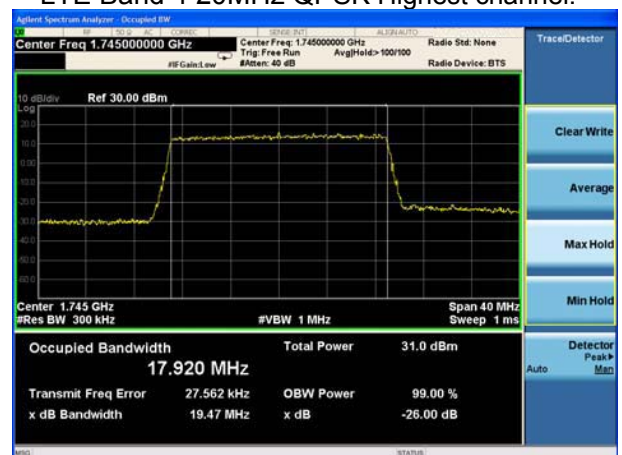
LTE Band 4 20MHz QPSK Middle channel



LTE Band 4 15MHz QPSK Highest channel:



LTE Band 4 20MHz QPSK Highest channel:





LTE Band 4 1.4MHz 16QAM Lowest channel



LTE Band 4 3MHz 16QAM Lowest channel



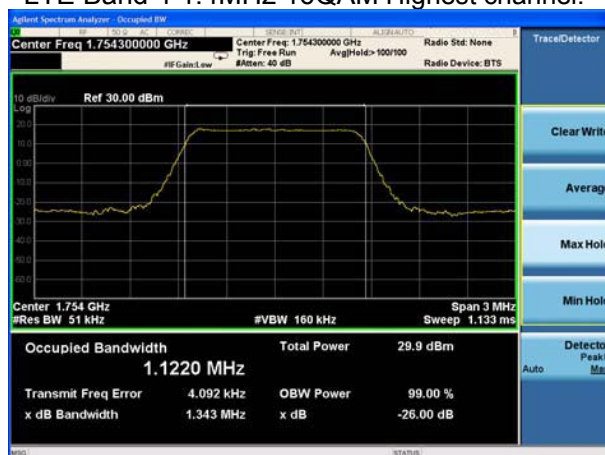
LTE Band 4 1.4MHz 16QAM Middle channel



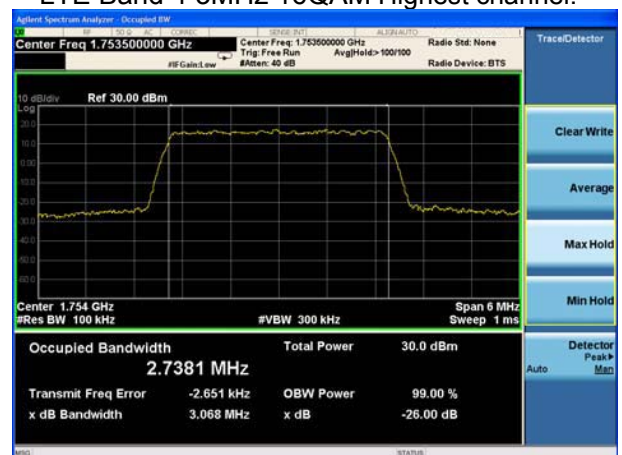
LTE Band 4 3MHz 16QAM Middle channel



LTE Band 4 1.4MHz 16QAM Highest channel:

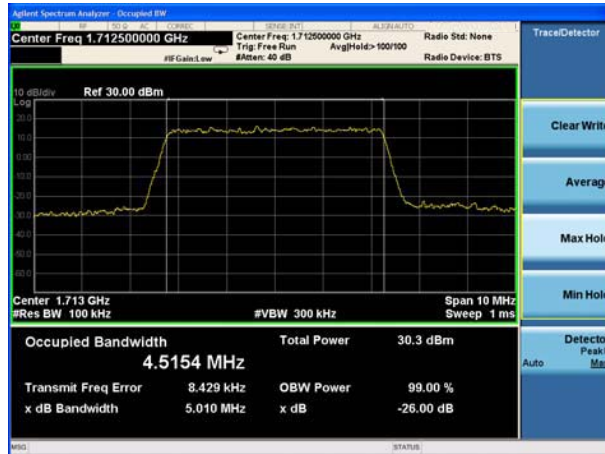


LTE Band 4 3MHz 16QAM Highest channel:





LTE Band 4 5MHz 16QAM Lowest channel



LTE Band 4 10MHz 16QAM Lowest channel



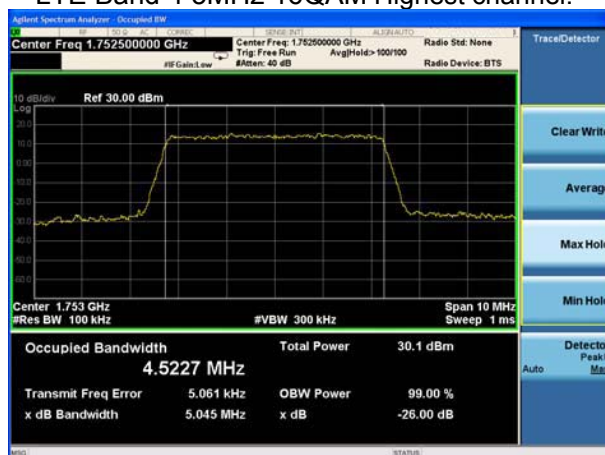
LTE Band 4 5MHz 16QAM Middle channel



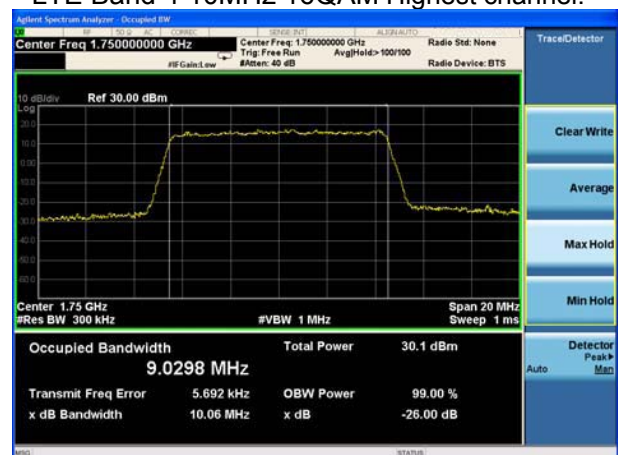
LTE Band 4 10MHz 16QAM Middle channel



LTE Band 4 5MHz 16QAM Highest channel:

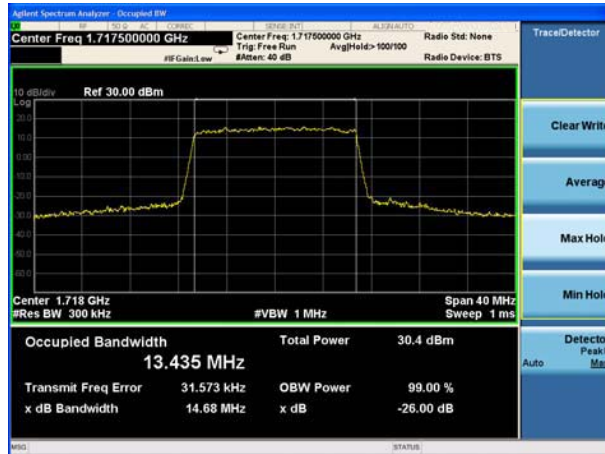


LTE Band 4 10MHz 16QAM Highest channel:

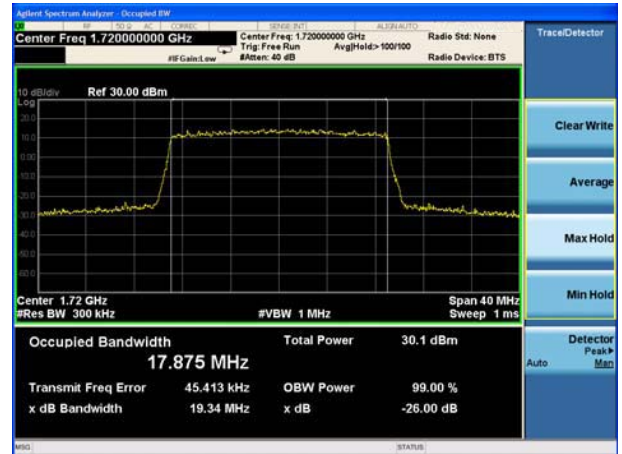




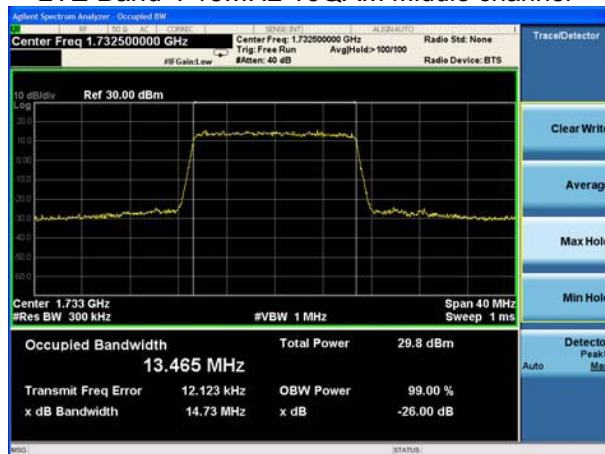
LTE Band 4 15MHz 16QAM Lowest channel



LTE Band 4 20MHz 16QAM Lowest channel



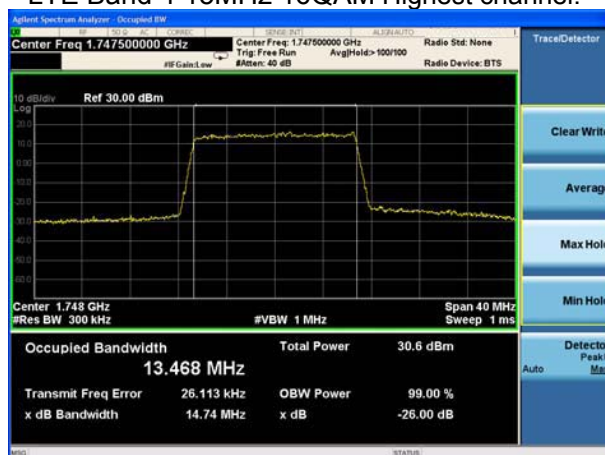
LTE Band 4 15MHz 16QAM Middle channel



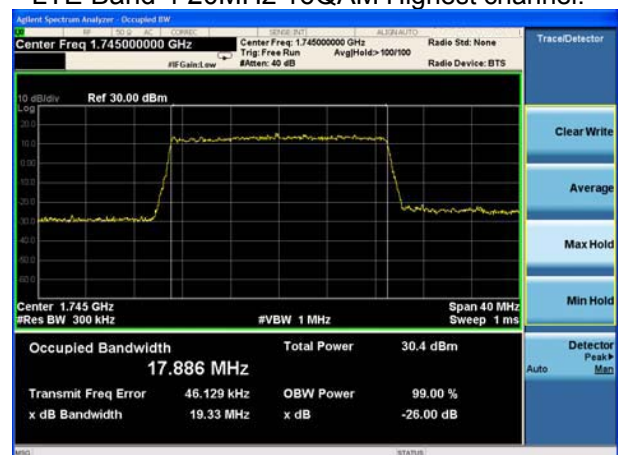
LTE Band 4 20MHz 16QAM Middle channel



LTE Band 4 15MHz 16QAM Highest channel:



LTE Band 4 20MHz 16QAM Highest channel:

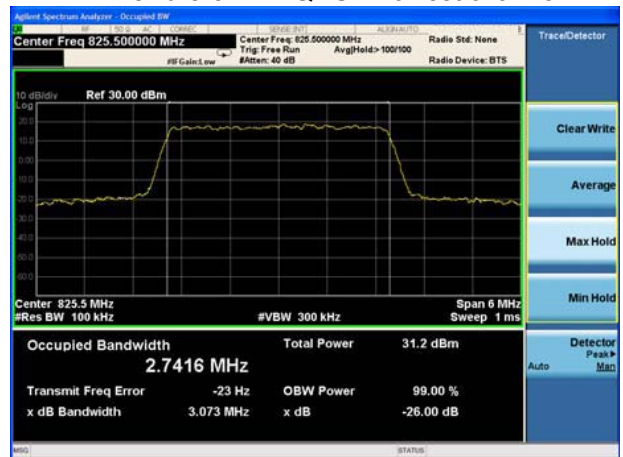




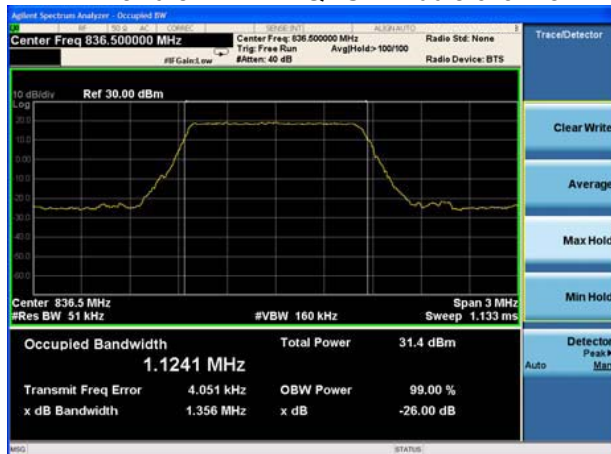
LTE Band 5 1.4MHz QPSK Lowest channel



LTE Band 5 3MHz QPSK Lowest channel



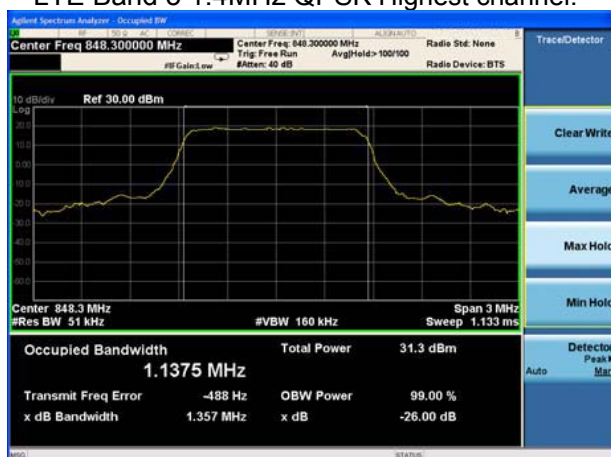
LTE Band 5 1.4MHz QPSK Middle channel



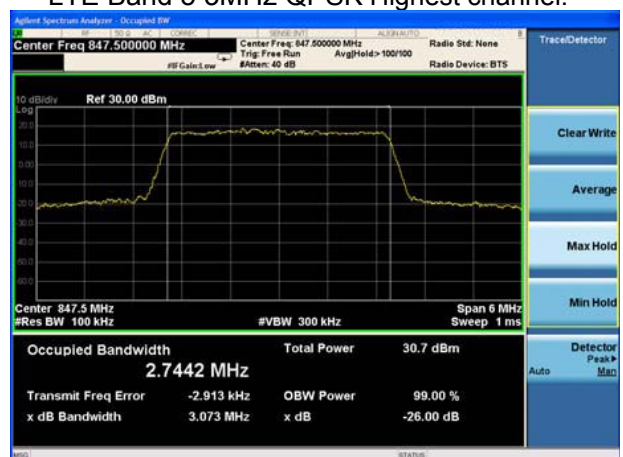
LTE Band 5 3MHz QPSK Middle channel



LTE Band 5 1.4MHz QPSK Highest channel:



LTE Band 5 3MHz QPSK Highest channel:





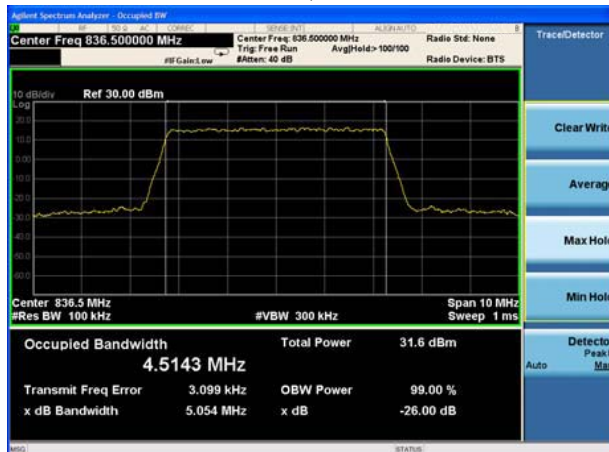
LTE Band 5 5MHz QPSK Lowest channel



LTE Band 5 10MHz QPSK Lowest channel



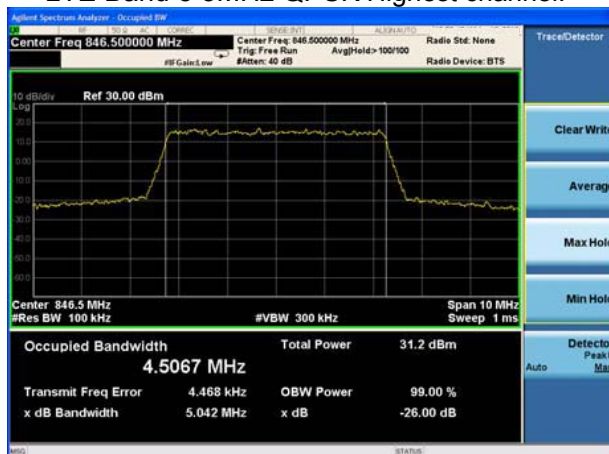
LTE Band 5 5MHz QPSK Middle channel



LTE Band 5 10MHz QPSK Middle channel



LTE Band 5 5MHz QPSK Highest channel:

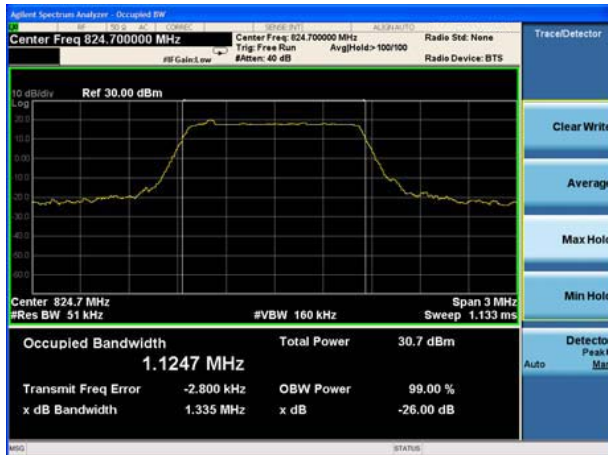


LTE Band 5 10MHz QPSK Highest channel:





LTE Band 5 1.4MHz 16QAM Lowest channel



LTE Band 5 3MHz 16QAM Lowest channel



LTE Band 5 1.4MHz 16QAM Middle channel



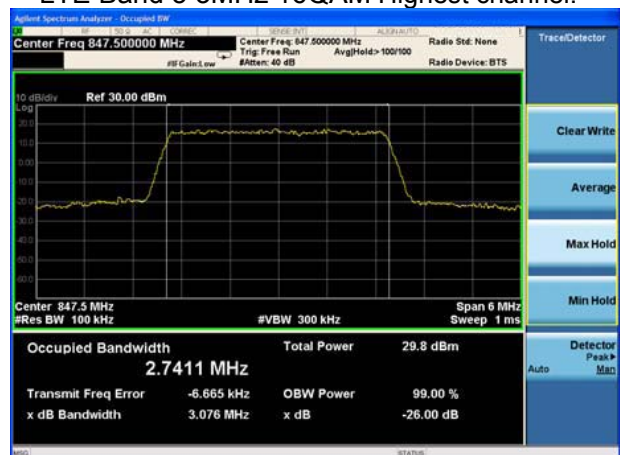
LTE Band 5 3MHz 16QAM Middle channel



LTE Band 5 1.4MHz 16QAM Highest channel:



LTE Band 5 3MHz 16QAM Highest channel:





LTE Band 5 5MHz 16QAM Lowest channel



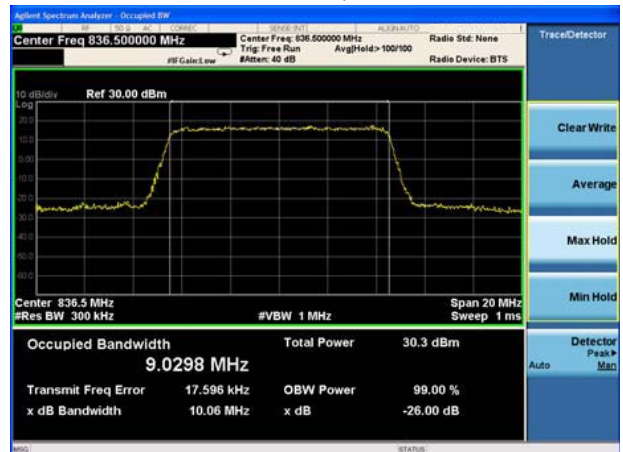
LTE Band 5 10MHz 16QAM Lowest channel



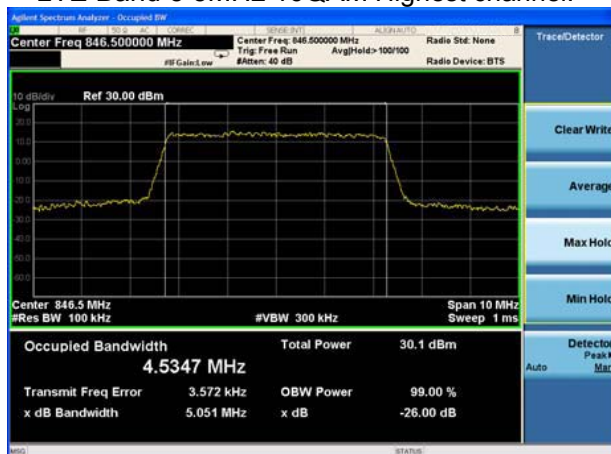
LTE Band 5 5MHz 16QAM Middle channel



LTE Band 5 10MHz 16QAM Middle channel



LTE Band 5 5MHz 16QAM Highest channel:



LTE Band 5 10MHz 16QAM Highest channel:





LTE Band 7 5MHz QPSK Lowest channel



LTE Band 7 10MHz QPSK Lowest channel



LTE Band 7 5MHz QPSK Middle channel



LTE Band 7 10MHz QPSK Middle channel



LTE Band 7 5MHz QPSK Highest channel:



LTE Band 7 10MHz QPSK Highest channel:





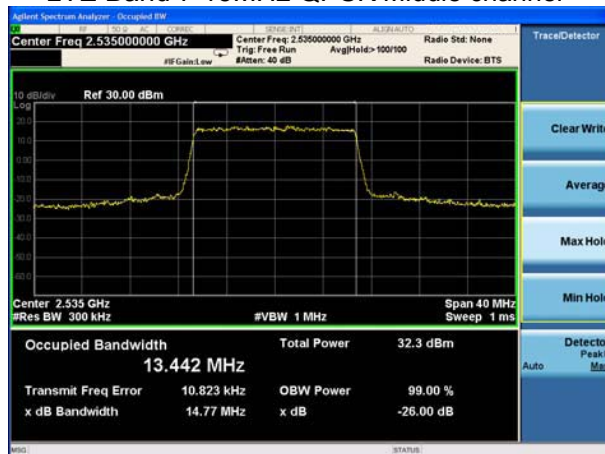
LTE Band 7 15MHz QPSK Lowest channel



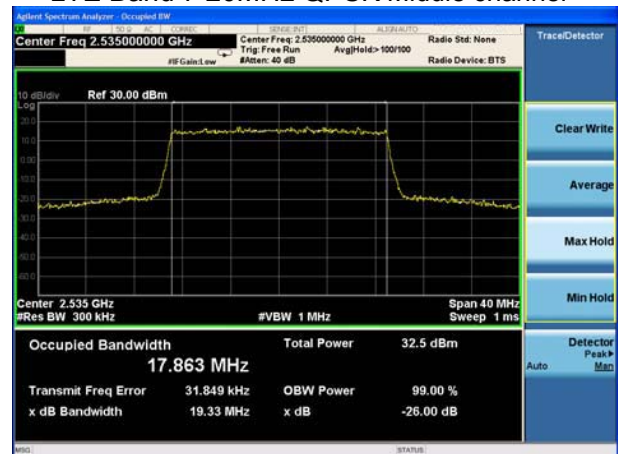
LTE Band 7 20MHz QPSK Lowest channel



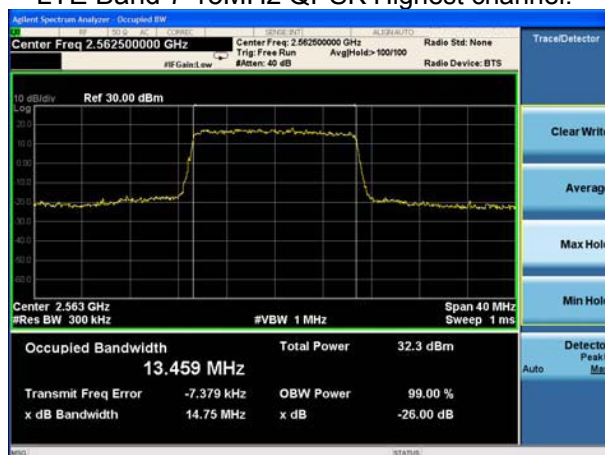
LTE Band 7 15MHz QPSK Middle channel



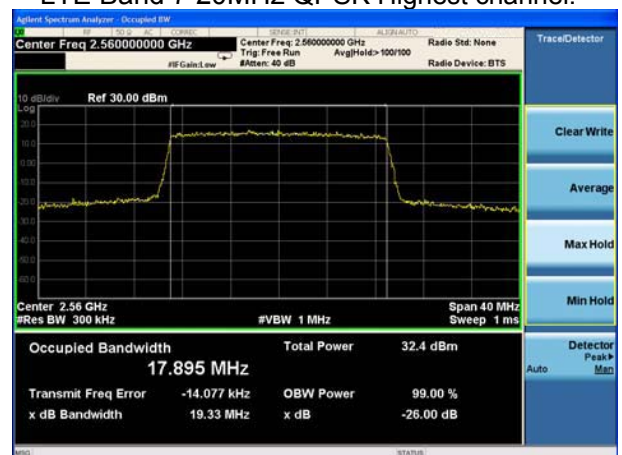
LTE Band 7 20MHz QPSK Middle channel



LTE Band 7 15MHz QPSK Highest channel:



LTE Band 7 20MHz QPSK Highest channel:





LTE Band 7 5MHz 16QAM Lowest channel



LTE Band 7 10MHz 16QAM Lowest channel



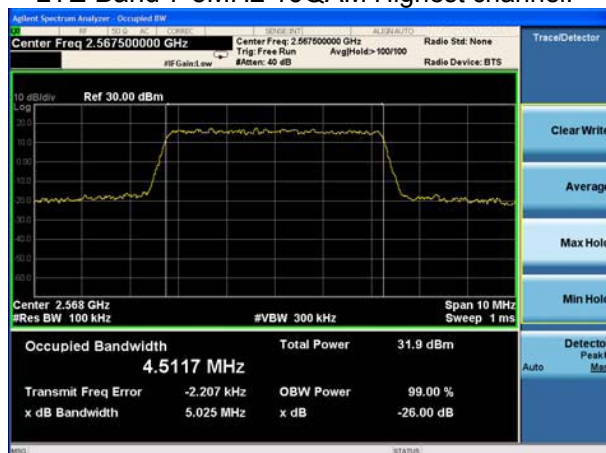
LTE Band 7 5MHz 16QAM Middle channel



LTE Band 7 10MHz 16QAM Middle channel



LTE Band 7 5MHz 16QAM Highest channel:



LTE Band 7 10MHz 16QAM Highest channel:

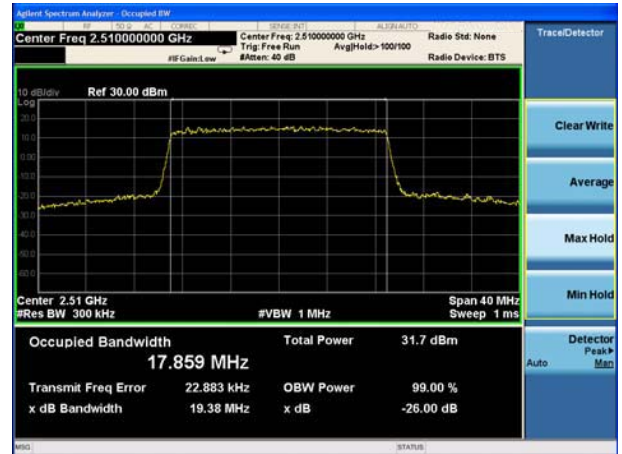




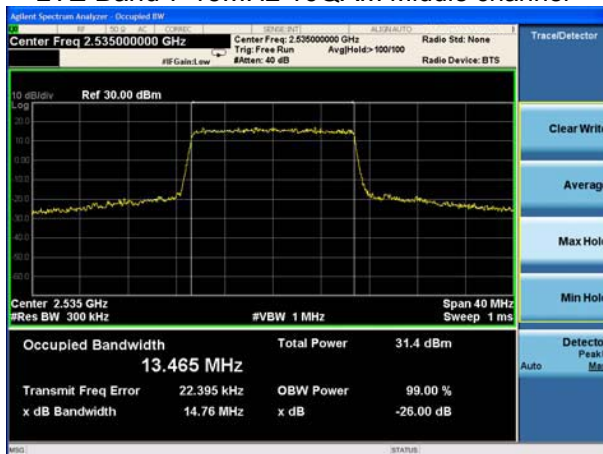
LTE Band 7 15MHz 16QAM Lowest channel



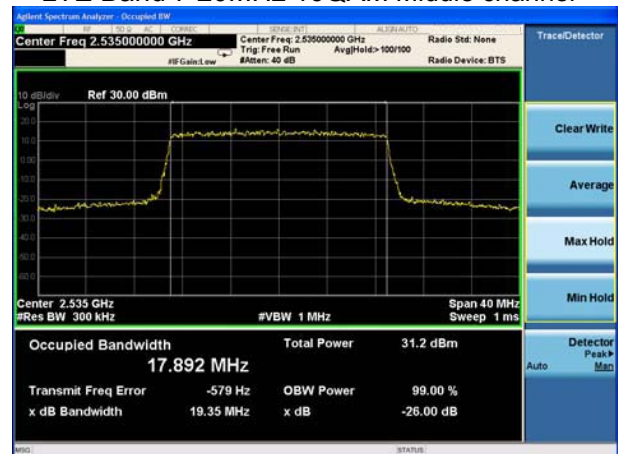
LTE Band 7 20MHz 16QAM Lowest channel



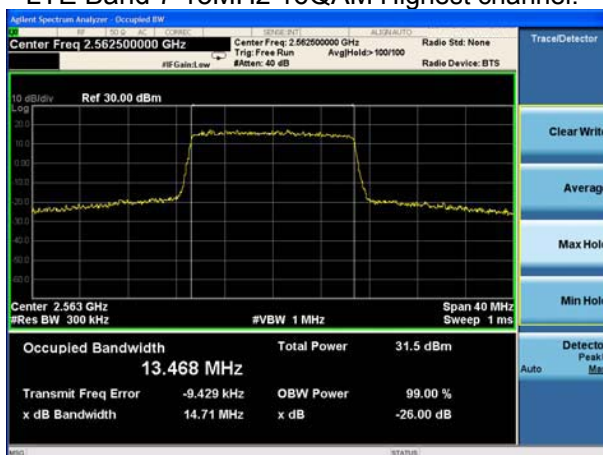
LTE Band 7 15MHz 16QAM Middle channel



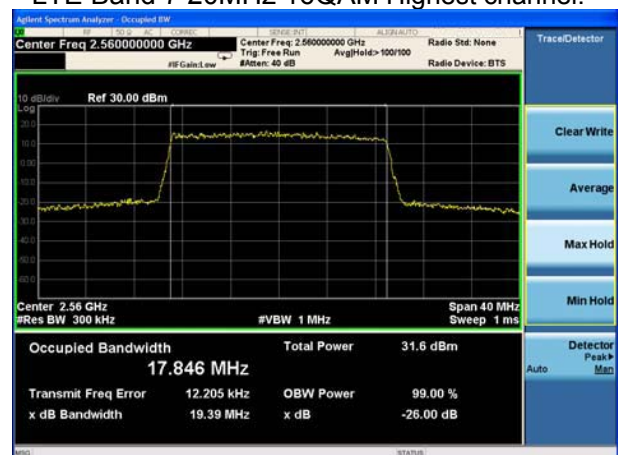
LTE Band 7 20MHz 16QAM Middle channel



LTE Band 7 15MHz 16QAM Highest channel:



LTE Band 7 20MHz 16QAM Highest channel:



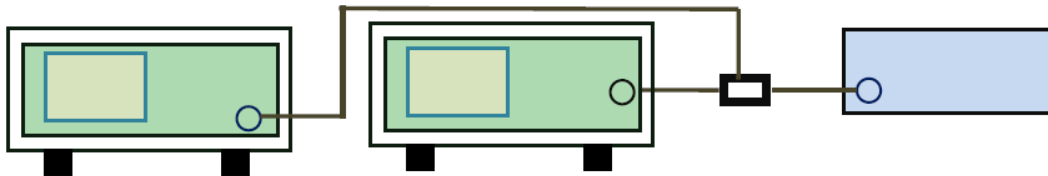


5.3. Peak to Average Ratio

5.3.1. Limit

According to FCC section 27.50(d)(5) , the peak to average ratio(PAR) of the transmission may not exceed 13dB.

5.3.2. Test Setup



5.3.3. Test Procedure

According with KDB 971168 v02r02

1. The signal analyzer' s CCDF measurement profile is enabled
2. Frequency = carrier center frequency
3. Measurement BW > Emission bandwidth of signal
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal " RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the " on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

5.3.4. Test Result



Measurement data as follows:

Band	Channel	Conducted power(dBm)		Peak-Average Ratio(PAR)	Limit (dB)	Result
		Peak	Average			
GSM 850 (GSM)	Low	34.65	33.67	0.98	≤13	Pass
	Middle	34.35	33.48	0.87	≤13	Pass
	High	34.58	33.65	0.93	≤13	Pass
GSM 850 (GMSK)	Low	30.62	29.60	1.02	≤13	Pass
	Middle	30.59	29.54	1.05	≤13	Pass
	High	30.62	29.61	1.01	≤13	Pass
GSM 850 (8-PSK)	Low	30.55	29.43	1.12	≤13	Pass
	Middle	30.52	29.46	1.06	≤13	Pass
	High	30.72	29.61	1.11	≤13	Pass
GSM 1900 (GSM)	Low	30.68	29.80	0.88	≤13	Pass
	Middle	30.75	29.86	0.89	≤13	Pass
	High	30.75	29.91	0.84	≤13	Pass
GSM 1900 (GMSK)	Low	30.51	29.57	0.94	≤13	Pass
	Middle	30.58	29.61	0.97	≤13	Pass
	High	30.62	29.71	0.91	≤13	Pass
GSM 1900 (8-PSK)	Low	30.54	29.51	1.03	≤13	Pass
	Middle	30.73	29.64	1.09	≤13	Pass
	High	30.83	29.68	1.15	≤13	Pass
WCDMA Band II (RMC)	Low	26.82	23.78	3.04	≤13	Pass
	Middle	26.84	23.78	3.06	≤13	Pass
	High	26.68	23.57	3.11	≤13	Pass
WCDMA Band V (RMC)	Low	26.68	23.80	2.88	≤13	Pass
	Middle	26.87	23.98	2.89	≤13	Pass
	High	26.82	23.89	2.93	≤13	Pass

Note: Measurement Uncertainty: ±0.2 dB.



Band	Bandwidth (MHz)	Channel	Conducted power(dBm)		Peak-Average Ratio(PAR)	Limit (dB)	Result
			Peak	Average			
LTE Band 2 (QPSK)	1.4	Low	27.40	22.41	4.99	≤13	Pass
		Middle	27.48	22.65	4.83	≤13	Pass
		High	27.11	22.27	4.84	≤13	Pass
	3	Low	27.57	22.44	5.13	≤13	Pass
		Middle	27.56	22.62	4.94	≤13	Pass
		High	27.33	22.30	5.03	≤13	Pass
	5	Low	27.50	22.42	5.08	≤13	Pass
		Middle	27.52	22.61	4.91	≤13	Pass
		High	27.30	22.28	5.02	≤13	Pass
	10	Low	27.61	22.50	5.11	≤13	Pass
		Middle	27.58	22.63	4.95	≤13	Pass
		High	27.44	22.32	5.12	≤13	Pass
	15	Low	27.71	22.48	5.23	≤13	Pass
		Middle	27.54	22.59	4.95	≤13	Pass
		High	27.53	22.27	5.26	≤13	Pass
	20	Low	27.66	22.45	5.21	≤13	Pass
		Middle	27.55	22.54	5.01	≤13	Pass
		High	27.47	22.23	5.24	≤13	Pass
LTE Band 2 (16QAM)	1.4	Low	27.19	21.39	5.80	≤13	Pass
		Middle	27.19	21.57	5.62	≤13	Pass
		High	27.21	21.59	5.62	≤13	Pass
	3	Low	27.33	21.42	5.91	≤13	Pass
		Middle	27.24	21.50	5.74	≤13	Pass
		High	27.47	21.62	5.85	≤13	Pass
	5	Low	27.24	21.40	5.84	≤13	Pass
		Middle	27.12	21.46	5.66	≤13	Pass
		High	27.35	21.57	5.78	≤13	Pass
	10	Low	27.28	21.43	5.85	≤13	Pass
		Middle	27.21	21.51	5.70	≤13	Pass
		High	27.55	21.61	5.94	≤13	Pass
	15	Low	27.33	21.40	5.93	≤13	Pass
		Middle	27.13	21.46	5.67	≤13	Pass
		High	27.58	21.57	6.01	≤13	Pass
	20	Low	27.34	21.38	5.96	≤13	Pass
		Middle	27.17	21.42	5.75	≤13	Pass
		High	27.59	21.54	6.05	≤13	Pass



Band	Bandwidth (MHz)	Channel	Conducted power(dBm)		Peak-Average Ratio(PAR)	Limit (dB)	Result
			Peak	Average			
LTE Band 4 (QPSK)	1.4	Low	27.87	23.01	4.86	≤13	Pass
		Middle	27.84	22.79	5.05	≤13	Pass
		High	28.02	22.96	5.06	≤13	Pass
	3	Low	27.85	22.87	4.98	≤13	Pass
		Middle	27.98	22.83	5.15	≤13	Pass
		High	28.18	22.99	5.19	≤13	Pass
	5	Low	27.73	22.85	4.88	≤13	Pass
		Middle	27.95	22.82	5.13	≤13	Pass
		High	28.12	22.97	5.15	≤13	Pass
	10	Low	27.74	22.93	4.81	≤13	Pass
		Middle	27.96	22.84	5.12	≤13	Pass
		High	28.22	23.01	5.21	≤13	Pass
	15	Low	27.65	22.91	4.74	≤13	Pass
		Middle	27.92	22.80	5.12	≤13	Pass
		High	28.26	22.96	5.30	≤13	Pass
	20	Low	27.64	22.88	4.76	≤13	Pass
		Middle	27.84	22.75	5.09	≤13	Pass
		High	28.15	22.92	5.23	≤13	Pass
LTE Band 4 (16QAM)	1.4	Low	27.20	21.53	5.67	≤13	Pass
		Middle	27.64	21.77	5.87	≤13	Pass
		High	27.53	21.64	5.89	≤13	Pass
	3	Low	27.34	21.56	5.78	≤13	Pass
		Middle	27.76	21.81	5.95	≤13	Pass
		High	27.68	21.67	6.01	≤13	Pass
	5	Low	27.16	21.54	5.62	≤13	Pass
		Middle	27.65	21.77	5.88	≤13	Pass
		High	27.55	21.62	5.93	≤13	Pass
	10	Low	27.17	21.57	5.60	≤13	Pass
		Middle	27.70	21.82	5.88	≤13	Pass
		High	27.65	21.66	5.99	≤13	Pass
	15	Low	27.03	21.54	5.49	≤13	Pass
		Middle	27.60	21.77	5.83	≤13	Pass
		High	27.60	21.62	5.98	≤13	Pass
	20	Low	27.07	21.52	5.55	≤13	Pass
		Middle	27.54	21.73	5.81	≤13	Pass
		High	27.55	21.59	5.96	≤13	Pass



Band	Bandwidth (MHz)	Channel	Conducted power(dBm)		Peak-Average Ratio(PAR)	Limit (dB)	Result
			Peak	Average			
LTE Band 5 (QPSK)	1.4	Low	28.17	23.07	5.10	≤13	Pass
		Middle	28.03	23.03	5.00	≤13	Pass
		High	28.10	23.07	5.03	≤13	Pass
	3	Low	28.38	23.16	5.22	≤13	Pass
		Middle	28.23	23.08	5.15	≤13	Pass
		High	28.29	23.12	5.17	≤13	Pass
	5	Low	28.34	23.14	5.20	≤13	Pass
		Middle	28.19	23.04	5.15	≤13	Pass
		High	28.21	23.07	5.14	≤13	Pass
	10	Low	28.31	23.11	5.20	≤13	Pass
		Middle	28.13	22.99	5.14	≤13	Pass
		High	28.14	23.03	5.11	≤13	Pass
LTE Band 5 (16QAM)	1.4	Low	27.41	21.52	5.89	≤13	Pass
		Middle	27.52	21.72	5.80	≤13	Pass
		High	27.64	21.77	5.87	≤13	Pass
	3	Low	27.58	21.56	6.02	≤13	Pass
		Middle	27.75	21.77	5.98	≤13	Pass
		High	27.76	21.79	5.97	≤13	Pass
	5	Low	27.51	21.53	5.98	≤13	Pass
		Middle	27.66	21.72	5.94	≤13	Pass
		High	27.64	21.75	5.89	≤13	Pass
	10	Low	27.51	21.51	6.00	≤13	Pass
		Middle	27.61	21.68	5.93	≤13	Pass
		High	27.62	21.72	5.90	≤13	Pass



Band	Bandwidth (MHz)	Channel	Conducted power(dBm)		Peak-Average Ratio(PAR)	Limit (dB)	Result
			Peak	Average			
LTE Band 7 (QPSK)	5	Low	28.11	22.98	5.13	≤13	Pass
		Middle	27.99	23.11	4.88	≤13	Pass
		High	28.15	23.25	4.90	≤13	Pass
	10	Low	28.28	23.06	5.22	≤13	Pass
		Middle	28.15	23.13	5.02	≤13	Pass
		High	28.18	23.11	5.07	≤13	Pass
	15	Low	28.20	23.04	5.16	≤13	Pass
		Middle	28.14	23.09	5.05	≤13	Pass
		High	28.21	23.06	5.15	≤13	Pass
	20	Low	28.07	23.01	5.06	≤13	Pass
		Middle	28.18	23.04	5.14	≤13	Pass
		High	28.19	23.02	5.17	≤13	Pass
LTE Band 7 (16QAM)	5	Low	27.93	22.00	5.93	≤13	Pass
		Middle	27.76	22.06	5.70	≤13	Pass
		High	27.55	21.84	5.71	≤13	Pass
	10	Low	28.08	22.03	6.05	≤13	Pass
		Middle	27.95	22.11	5.84	≤13	Pass
		High	27.77	21.88	5.89	≤13	Pass
	15	Low	27.95	22.00	5.95	≤13	Pass
		Middle	27.88	22.06	5.82	≤13	Pass
		High	27.79	21.84	5.95	≤13	Pass
	20	Low	27.83	21.98	5.85	≤13	Pass
		Middle	27.92	22.02	5.90	≤13	Pass
		High	27.81	21.81	6.00	≤13	Pass



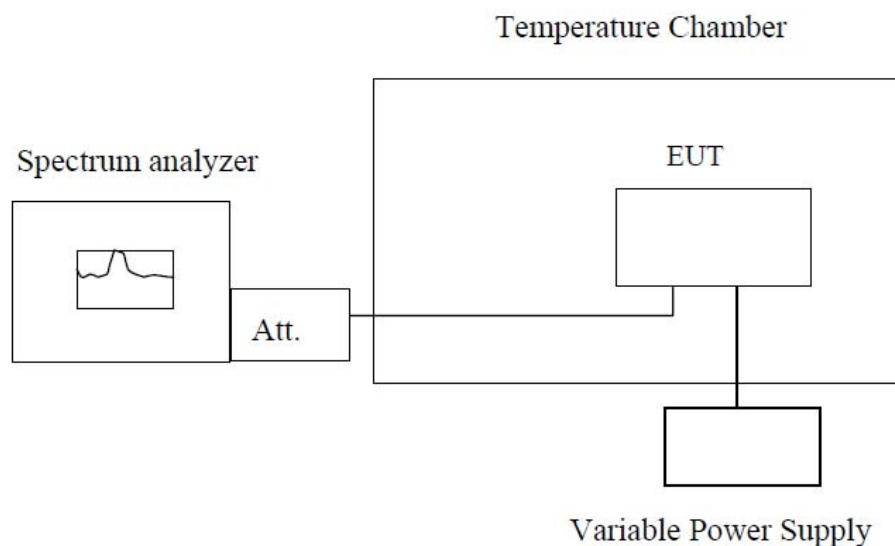
5.4. Frequency Stability

5.4.1. Limit

According to FCC section 22.355 and FCC section 24.235, 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 -40°C to $+80^{\circ}\text{C}$ 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.

5.4.2. Test Setup



Note : Measurement setup for testing on Antenna connector

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

5.4.3. Test Result

The nominal, highest and lowest extreme voltages are separately 3.7VDC, 4.25VDC and 3.34VDC

which are specified by the applicant; the normal temperature here used is 25°C . The frequency

deviation limit of 850MHz band is $\pm 2.5\text{ppm}$, and 1900MHz is $\pm 1\text{ppm}$

For LTE mode, only test the max bandwidth.



Test Conditions			Frequency Deviation			Result
Band	Power(Vdc)	Temperature (°C)	Frequency Error(Hz)	ppm	Limit	
GSM850 (GSM link) Middle channel =836.6MHz	3.7	-40	65	0.0777	±2.5	PASS
	3.7	-30	66	0.0789		
	3.7	-40	41	0.0490		
	3.7	-10	43	0.0514		
	3.7	0	33	0.0394		
	3.7	10	24	0.0287		
	3.7	20	26	0.0311		
	3.7	30	27	0.0323		
	3.7	40	43	0.0514		
	3.7	50	28	0.0335		
	3.7	60	33	0.0394		
	3.7	70	53	0.0634		
	3.7	80	55	0.0657		
	4.25	25	36	0.0430		
	3.70	25	25	0.0299		
	3.33	25	27	0.0323		
GPRS850 (Middle channel =836.6MHz	3.7	-40	56	0.0669	±2.5	PASS
	3.7	-30	53	0.0634		
	3.7	-20	34	0.0406		
	3.7	-10	26	0.0311		
	3.7	0	33	0.0394		
	3.7	10	24	0.0287		
	3.7	20	21	0.0251		
	3.7	30	28	0.0335		
	3.7	40	35	0.0418		
	3.7	50	37	0.0442		
	3.7	60	34	0.0406		
	3.7	70	42	0.0502		
	3.7	80	44	0.0526		
	4.25	25	29	0.0347		
	3.70	25	25	0.0299		
	3.33	25	31	0.0371		
EGPRS GSM850 Middle channel =836.6MHz	3.7	-40	56	0.0669	±2.5	PASS
	3.7	-30	51	0.0610		
	3.7	-20	32	0.0383		
	3.7	-10	26	0.0311		
	3.7	0	19	0.0227		
	3.7	10	27	0.0323		
	3.7	20	43	0.0514		
	3.7	30	32	0.0383		
	3.7	40	28	0.0335		
	3.7	50	36	0.0430		
	3.7	60	47	0.0562		
	3.7	70	54	0.0645		
	3.7	80	46	0.0550		
	4.25	25	29	0.0347		
	3.70	25	31	0.0371		
	3.33	25	27	0.0323		



Test Conditions			Frequency Deviation			Result
Band	Power(Vdc)	Temperature(°C)	Frequency Error(Hz)	ppm	Limit	
PCS1900 (GSM link) Middle channel =1880MHz	3.7	-40	56	0.0298	±1	PASS
	3.7	-30	72	0.0383		
	3.7	-20	51	0.0271		
	3.7	-10	38	0.0202		
	3.7	0	41	0.0218		
	3.7	10	35	0.0186		
	3.7	20	40	0.0213		
	3.7	30	28	0.0149		
	3.7	40	34	0.0181		
	3.7	50	41	0.0218		
	3.7	60	45	0.0239		
	3.7	70	56	0.0298		
	3.7	80	65	0.0346		
	4.25	25	33	0.0176		
	3.70	25	27	0.0144		
	3.33	25	29	0.0154		
GPRS1900 Middle channel =1880MHz	3.7	-40	65	0.0346	±1	PASS
	3.7	-30	68	0.0362		
	3.7	-20	42	0.0223		
	3.7	-10	21	0.0112		
	3.7	0	35	0.0186		
	3.7	10	37	0.0197		
	3.7	20	42	0.0223		
	3.7	30	36	0.0191		
	3.7	40	28	0.0149		
	3.7	50	41	0.0218		
	3.7	60	32	0.0170		
	3.7	70	53	0.0282		
	3.7	80	35	0.0186		
	4.25	25	27	0.0144		
	3.70	25	26	0.0138		
	3.33	25	28	0.0149		
EGPRS 1900 Middle channel =1880MHz	3.7	-40	56	0.0298	±1	PASS
	3.7	-30	62	0.0330		
	3.7	-20	36	0.0191		
	3.7	-10	42	0.0223		
	3.7	0	31	0.0165		
	3.7	10	34	0.0181		
	3.7	20	29	0.0154		
	3.7	30	46	0.0245		
	3.7	40	28	0.0149		
	3.7	50	33	0.0176		
	3.7	60	47	0.0250		
	3.7	70	66	0.0351		
	3.7	80	34	0.0181		
	4.25	25	29	0.0154		
	3.70	25	42	0.0223		
	3.33	25	39	0.0207		



Test Conditions			Frequency Deviation			Result
Band	Power(Vdc)	Temperature(°C)	Frequency Error(Hz)	ppm	Limit	
WCDMA Band II Middle channel= 1880.0MHz	3.7	-40	65	0.0346	±1	PASS
	3.7	-30	85	0.0452		
	3.7	-20	36	0.0191		
	3.7	-10	43	0.0229		
	3.7	0	61	0.0324		
	3.7	10	48	0.0255		
	3.7	20	63	0.0335		
	3.7	30	78	0.0415		
	3.7	40	49	0.0261		
	3.7	50	27	0.0144		
	3.7	60	43	0.0229		
	3.7	70	38	0.0202		
	3.7	80	44	0.0234		
	4.25	25	42	0.0223		
	3.70	25	38	0.0202		
	3.33	25	41	0.0218		
WCDMA Band V Middle channel= 836.6MHz	3.7	-40	66	0.0789	±2.5	PASS
	3.7	-30	75	0.0896		
	3.7	-20	34	0.0406		
	3.7	-10	38	0.0454		
	3.7	0	46	0.0550		
	3.7	10	29	0.0347		
	3.7	20	37	0.0442		
	3.7	30	42	0.0502		
	3.7	40	26	0.0311		
	3.7	50	31	0.0371		
	3.7	60	42	0.0502		
	3.7	70	47	0.0562		
	3.7	80	28	0.0335		
	4.25	25	29	0.0347		
	3.70	25	35	0.0418		
	3.33	25	42	0.0502		



Test Conditions			Frequency Deviation			Result
Band	Power(Vdc)	Temperature(°C)	Frequency Error(Hz)	ppm	Limit	
LTE Band 2 Bandwidth 20MHz QPSK Middle channel =1880MHz	3.7	-40	68	0.0362	±1	PASS
	3.7	-30	83	0.0441		
	3.7	-20	36	0.0191		
	3.7	-10	48	0.0255		
	3.7	0	67	0.0356		
	3.7	10	54	0.0287		
	3.7	20	66	0.0351		
	3.7	30	74	0.0394		
	3.7	40	44	0.0234		
	3.7	50	37	0.0197		
	3.7	60	56	0.0298		
	3.7	70	41	0.0218		
	3.7	80	46	0.0245		
	4.25	25	44	0.0234		
	3.70	25	53	0.0282		
	3.33	25	43	0.0229		
LTE Band 2 Bandwidth 20MHz 16QAM Middle channel =1880MHz	3.7	-40	76	0.0404	±1	PASS
	3.7	-30	74	0.0394		
	3.7	-20	38	0.0202		
	3.7	-10	45	0.0239		
	3.7	0	48	0.0255		
	3.7	10	34	0.0181		
	3.7	20	31	0.0165		
	3.7	30	49	0.0261		
	3.7	40	45	0.0239		
	3.7	50	43	0.0229		
	3.7	60	41	0.0218		
	3.7	70	38	0.0202		
	3.7	80	46	0.0245		
	4.25	25	32	0.0170		
	3.70	25	39	0.0207		
	3.33	25	35	0.0186		



Test Conditions			Frequency Deviation			Result
Band	Power(Vdc)	Temperature(°C)	Frequency Error(Hz)	ppm	Limit	
LTE Band 4 Bandwidth 20MHz QPSK Middle channel =1732.5MHz	3.7	-40	73	0.0421	±1	PASS
	3.7	-30	81	0.0468		
	3.7	-20	54	0.0312		
	3.7	-10	44	0.0254		
	3.7	0	57	0.0329		
	3.7	10	42	0.0242		
	3.7	20	53	0.0306		
	3.7	30	72	0.0416		
	3.7	40	66	0.0381		
	3.7	50	43	0.0248		
	3.7	60	51	0.0294		
	3.7	70	32	0.0185		
	3.7	80	37	0.0214		
	4.25	25	52	0.0300		
	3.70	25	46	0.0266		
	3.33	25	43	0.0248		
LTE Band 4 Bandwidth 20MHz 16QAM Middle channel =1732.5MHz	3.7	-40	87	0.0502	±1	PASS
	3.7	-30	75	0.0433		
	3.7	-20	36	0.0208		
	3.7	-10	33	0.0190		
	3.7	0	54	0.0312		
	3.7	10	47	0.0271		
	3.7	20	55	0.0317		
	3.7	30	47	0.0271		
	3.7	40	54	0.0312		
	3.7	50	47	0.0271		
	3.7	60	51	0.0294		
	3.7	70	49	0.0283		
	3.7	80	62	0.0358		
	4.25	25	32	0.0185		
	3.70	25	30	0.0173		
	3.33	25	43	0.0248		

Note: Measurement Uncertainty: ±20Hz.



Test Conditions			Frequency Deviation			Result
Band	Power(Vdc)	Temperature(°C)	Frequency Error(Hz)	ppm	Limit	
LTE Band 5 Bandwidth 10MHz QPSK Middle channel =836.5MHz	3.7	-40	65	0.0777	±2.5	PASS
	3.7	-30	76	0.0909		
	3.7	-20	45	0.0538		
	3.7	-10	65	0.0777		
	3.7	0	53	0.0634		
	3.7	10	43	0.0514		
	3.7	20	56	0.0669		
	3.7	30	53	0.0634		
	3.7	40	65	0.0777		
	3.7	50	35	0.0418		
	3.7	60	43	0.0514		
	3.7	70	37	0.0442		
	3.7	80	54	0.0646		
	4.25	25	25	0.0299		
	3.70	25	31	0.0371		
	3.33	25	36	0.0430		
LTE Band 5 Bandwidth 10MHz 16QAM Middle channel =836.5MHz	3.7	-40	65	0.0777	±2.5	PASS
	3.7	-30	65	0.0777		
	3.7	-20	33	0.0395		
	3.7	-10	31	0.0371		
	3.7	0	44	0.0526		
	3.7	10	25	0.0299		
	3.7	20	36	0.0430		
	3.7	30	48	0.0574		
	3.7	40	24	0.0287		
	3.7	50	36	0.0430		
	3.7	60	43	0.0514		
	3.7	70	57	0.0681		
	3.7	80	52	0.0622		
	4.25	25	28	0.0335		
	3.70	25	32	0.0383		
	3.33	25	46	0.0550		

Note: Measurement Uncertainty: ±20Hz.



Test Conditions			Frequency Deviation			Result
Band	Power(Vdc)	Temperature(°C)	Frequency Error(Hz)	ppm	Limit	
LTE Band 7 Bandwidth 20MHz QPSK Middle channel =2535MHz	3.7	-40	75	0.0296	±1	PASS
	3.7	-30	65	0.0256		
	3.7	-20	39	0.0154		
	3.7	-10	44	0.0174		
	3.7	0	63	0.0249		
	3.7	10	47	0.0185		
	3.7	20	66	0.0260		
	3.7	30	73	0.0288		
	3.7	40	42	0.0166		
	3.7	50	24	0.0095		
	3.7	60	51	0.0201		
	3.7	70	34	0.0134		
	3.7	80	42	0.0166		
	4.25	25	47	0.0185		
	3.70	25	32	0.0126		
LTE Band 7 Bandwidth 20MHz 16QAM Middle channel =2535MHz	3.33	25	46	0.0181	±1	PASS
	3.7	-40	62	0.0245		
	3.7	-30	73	0.0288		
	3.7	-20	37	0.0146		
	3.7	-10	32	0.0126		
	3.7	0	47	0.0185		
	3.7	10	22	0.0087		
	3.7	20	36	0.0142		
	3.7	30	43	0.0170		
	3.7	40	25	0.0099		
	3.7	50	37	0.0146		
	3.7	60	48	0.0189		
	3.7	70	55	0.0217		
	3.7	80	59	0.0233		
	4.25	25	22	0.0087		
	3.70	25	31	0.0122		
	3.33	25	46	0.0181		

Note: Measurement Uncertainty: ±20Hz.

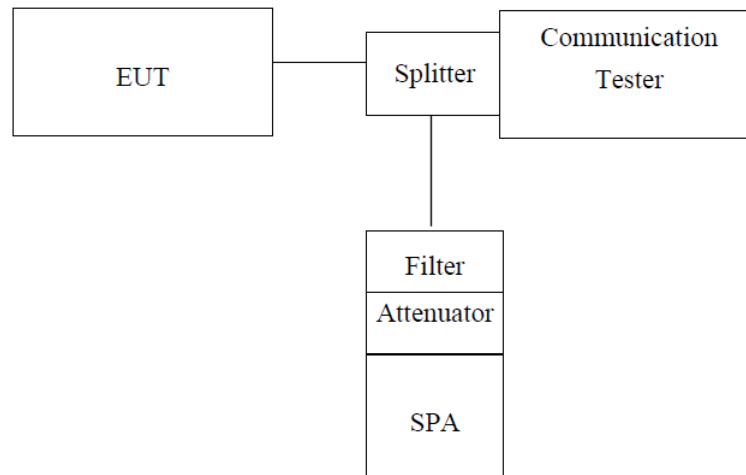


5.5. Conducted Spurious Emissions

5.5.1. Limit

According to FCC section 22.917(a) and FCC section 24.238(a), 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.

5.5.2. Test Setup



Note: Measurement setup for testing on Antenna connector

5.5.3. Measurement Procedure

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic.

For the out of band: Set the RBW, VBW = 100KHz, Start=30MHz, Stop= 10th harmonic.

Limit = -13dBm

5.5.4. Test Result

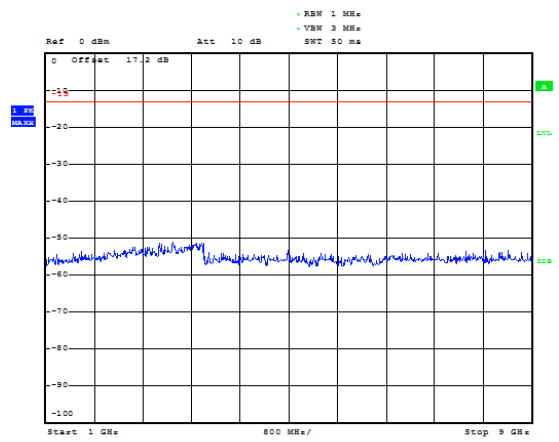
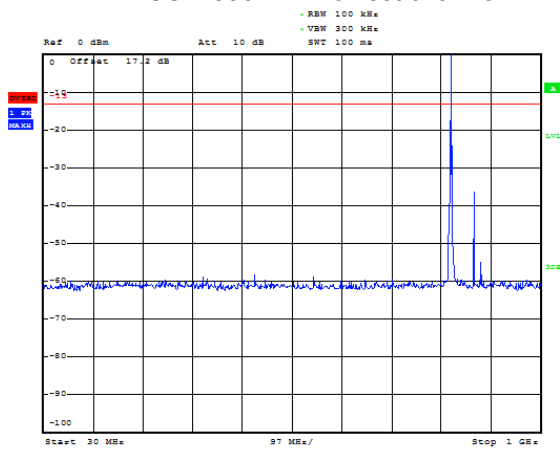
The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the out of band emissions.

For LTE mode, the plot only show the min and max bandwidth's data.

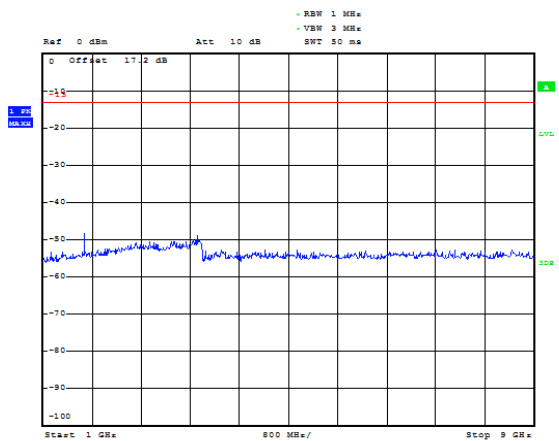
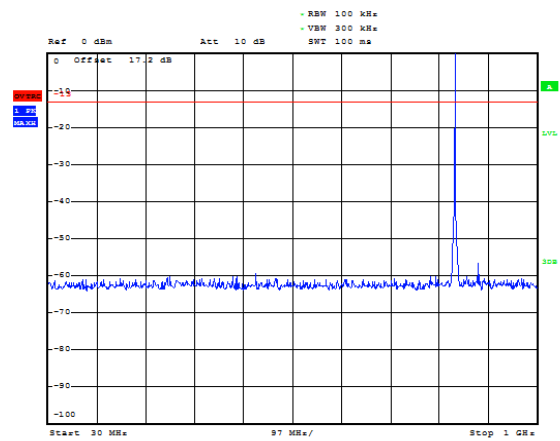
Test plot as follows:



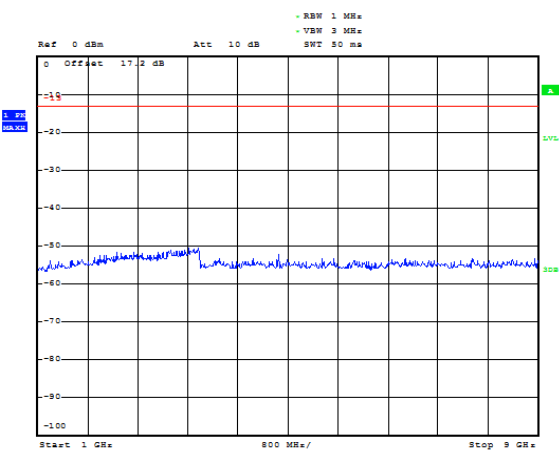
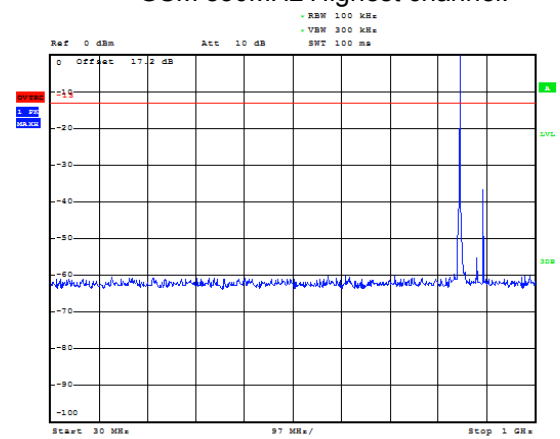
GSM 850MHz Lowest channel



GSM 850MHz Middle channel

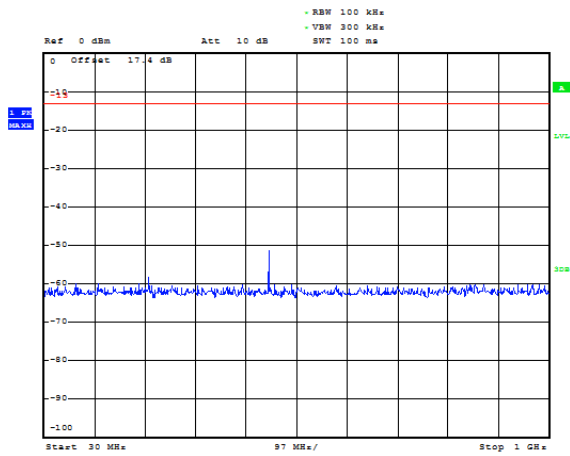


GSM 850MHz Highest channel:

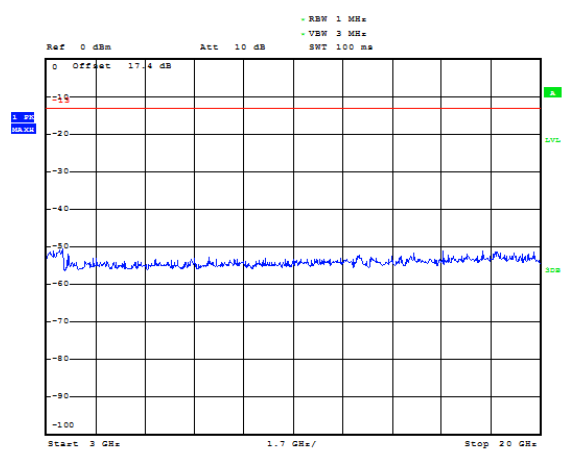
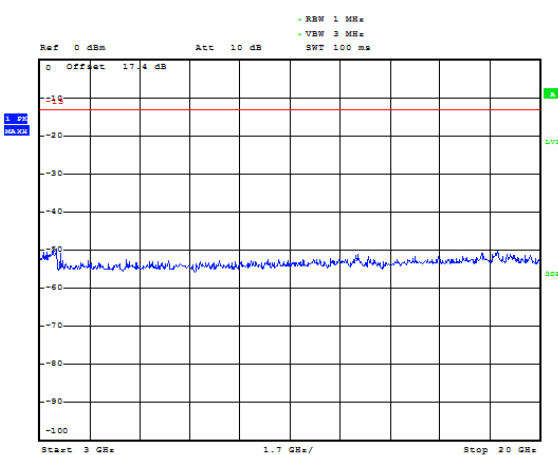
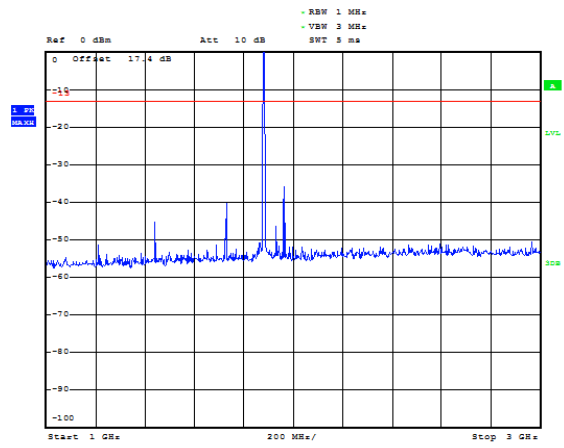
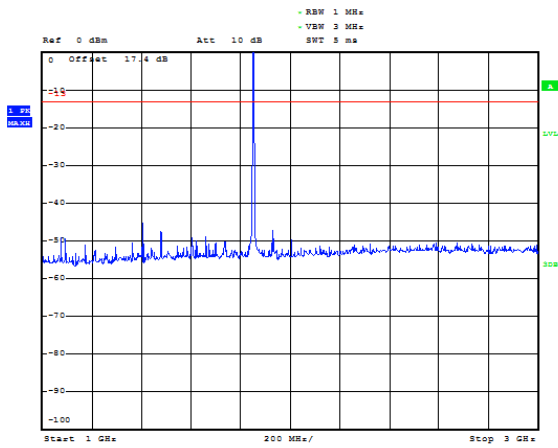
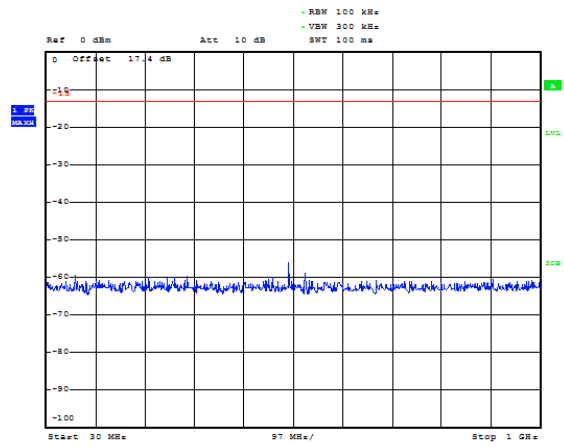




GSM 1900 Lowest channel

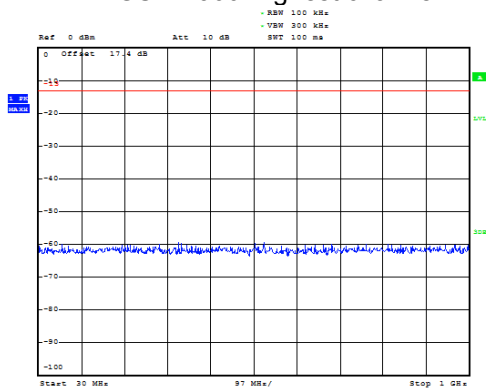


GSM 1900 Middle channel

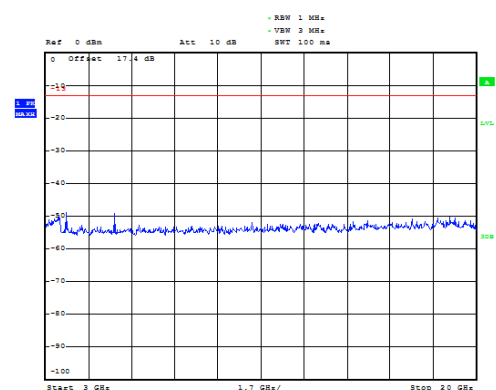
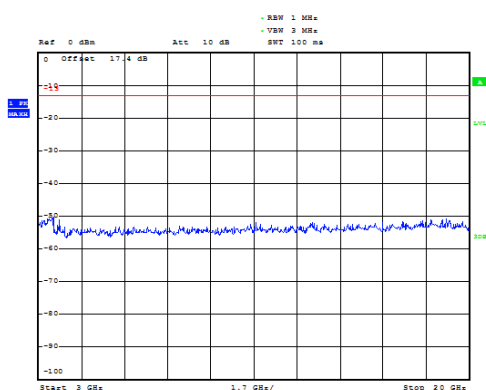
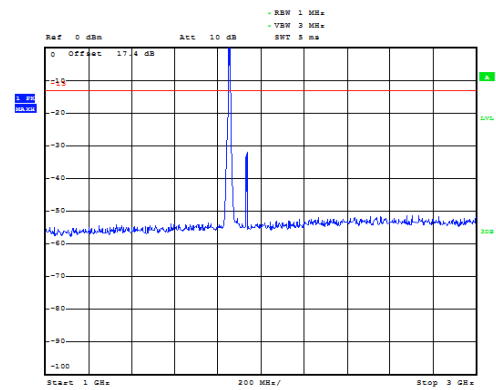
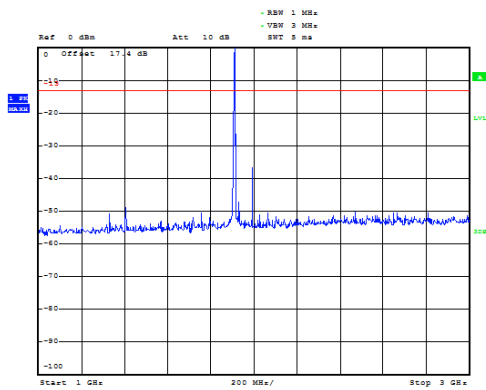
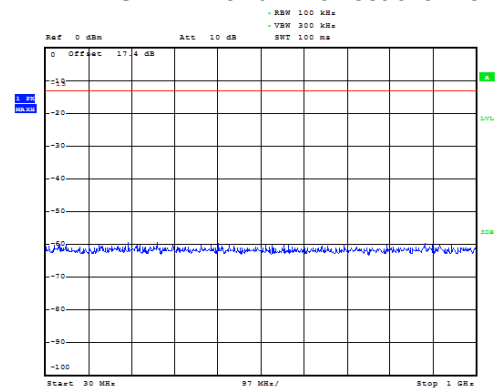




GSM 1900 Highest channel:

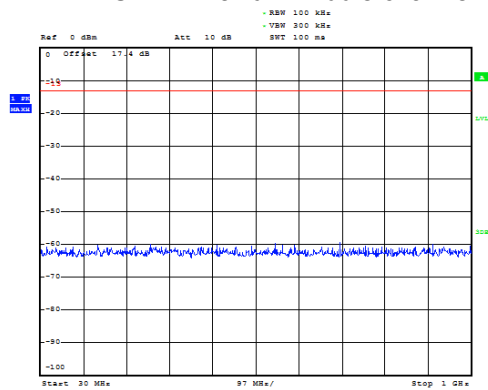


WCDMA Band II Lowest channel

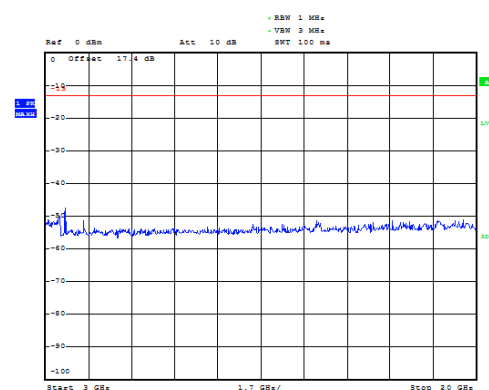
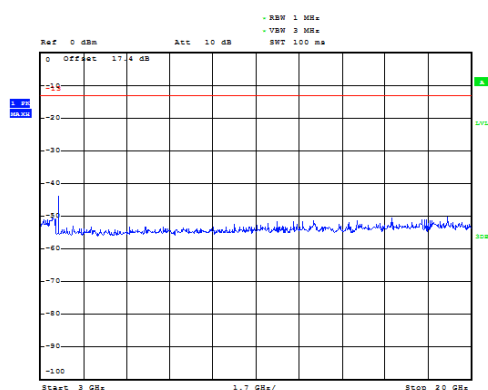
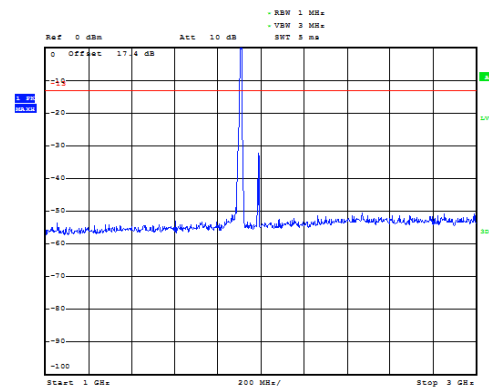
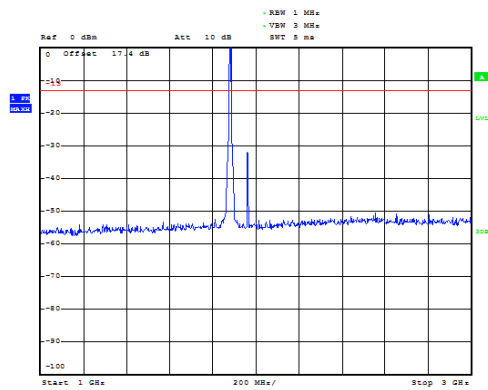
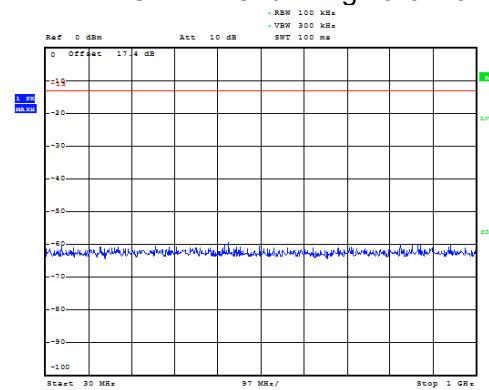




WCDMA Band II Middle channel:

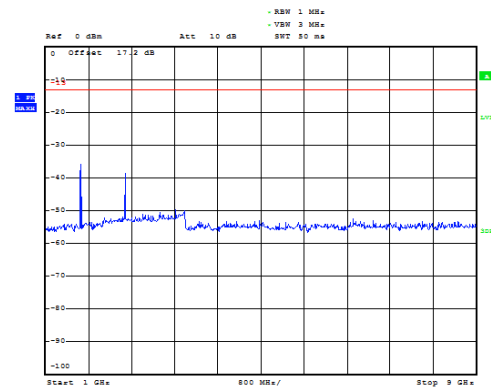
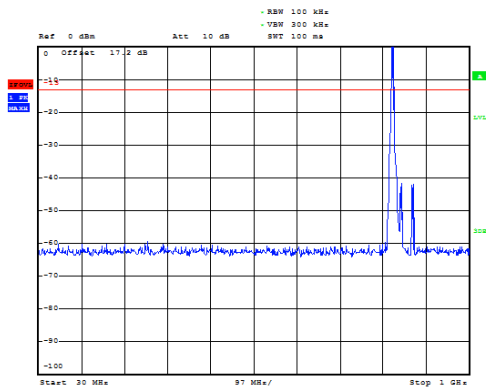


WCDMA Band II High channel

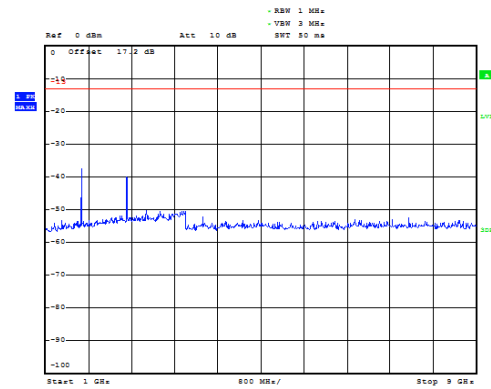
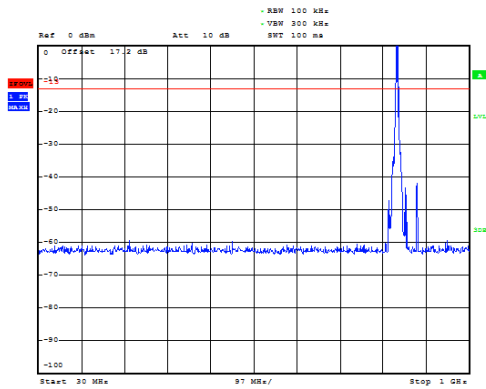




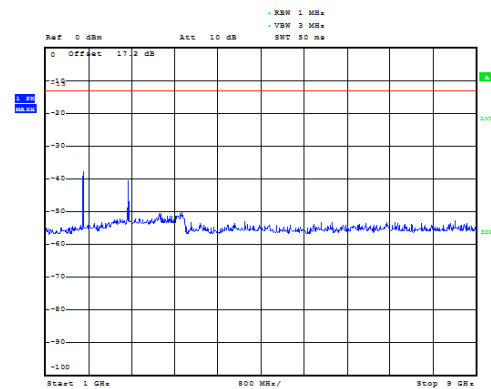
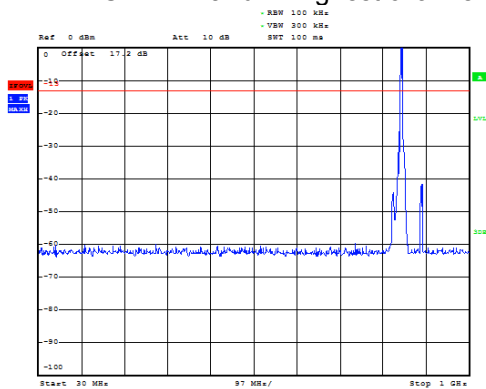
WCDMA Band V Lowest channel



WCDMA Band V Middle channel

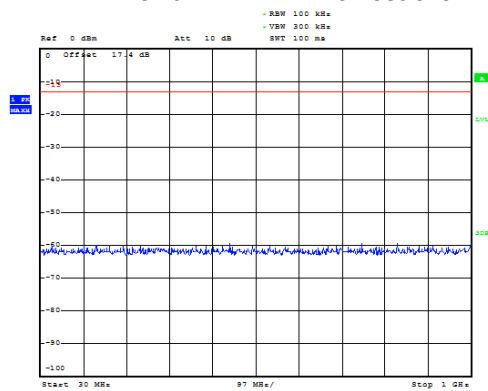


WCDMA Band V Highest channel:





LTE Band 2 1.4MHz Lowest channel



LTE Band 2 1.4MHz Middle channel

