



FCC RF Test Report

APPLICANT : Motorola Mobility, LLC
EQUIPMENT : Mobile Cellular Phone
BRAND NAME : Motorola Mobility, LLC
MODEL NAME : 4079
FCC ID : IHDT56PK2
STANDARD : 47 CFR Part 2, 22(H), 24(E), 27
CLASSIFICATION : PCS Licensed Transmitter Held to Ear (PCE)

The product was received on Aug. 26, 2014 and completely tested on Sep. 16, 2014. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA / EIA-603-C-2004 and the testing has shown the tested sample to be in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager



Testing Laboratory
1190

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APPENDIX A. TEST RESULTS OF CONDUCTED TEST

APPENDIX B. TEST RESULTS OF RADIATED TEST

APPENDIX C. ORIGINAL REPORT



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	Reporting Only	PASS	-
3.5	N/A	Peak-to-Average Ratio	<13 dB	PASS	-
3.6	§2.1049 §22.917(b) §27.53(h)(3)	Occupied Bandwidth	Reporting Only	PASS	-
3.7	§2.1051 §22.917(a) §27.53(g)	Conducted Band Edge Measurement (Band 5) (Band 17)	< 43+10log ₁₀ (P[Watts])	PASS	-
3.8	§2.1051 §22.917(a) §27.53(g)	Conducted Spurious Emission (Band 5) (Band 17)	< 43+10log ₁₀ (P[Watts])	PASS	-
3.9	§2.1055 §22.355 §27.54	Frequency Stability Temperature & Voltage	< 2.5 ppm for Part 22.355 Emission must remain In-band for 27.54	PASS	
4.4	§2.1053 §22.917(a) §27.53(g)	Radiated Spurious Emission (Band 5) (Band 17)	< 43+10log ₁₀ (P[Watts])	PASS	Under limit 31.28 dB at 1688.000 MHz
4.5	§22.913(a)(2)	Effective Radiated Power (Band 5)	ERP < 7 Watt	PASS	
	§27.50(c)(10)	Effective Radiated Power (Band 17)	ERP < 3 Watt		



1 General Description

1.1 Applicant

Motorola Mobility, LLC

222 W Merchandise Mart Plaza, Suite 1800, Chicago, IL 60654, United States

1.2 Manufacturer

Motorola Mobility, LLC

222 W Merchandise Mart Plaza, Suite 1800, Chicago, IL 60654, United States

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Cellular Phone
Brand Name	Motorola Mobility, LLC
Model Name	4079
FCC ID	IHDT56PK2
IMEI Code	990005280005985 990005280013526
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA/LTE/NFC 2.4GHz WLAN 11b/g/n HT20 WLAN 11ac VHT20 5GHz WLAN 11a/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80 Bluetooth v3.0 EDR Bluetooth v4.0 LE
HW Version	P3
EUT Stage	Identical Prototype

Accessory List	
AC Adapter	Brand Name : Motorola
	Model Name : SPN5864A
USB Cable	Brand Name : Motorola
	Model Name : SKN6461A
Earphone	Brand Name : Motorola
	Model Name : SJYN1305A
Battery	Brand Name : Motorola
	Model Name : EQ40



1.4 Product Specification subjective to this standard

Product Specification subjective to this standard	
Tx Frequency	LTE Band 2 : 1850.7 MHz ~ 1909.3 MHz LTE Band 4 : 1710.7 MHz ~ 1754.3 MHz LTE Band 5 : 824.7 MHz ~ 848.3 MHz LTE Band 17 : 706.5 MHz ~ 713.5 MHz
Rx Frequency	LTE Band 2 : 1930.7 MHz ~ 1989.3 MHz LTE Band 4 : 2110.7 MHz ~ 2154.3 MHz LTE Band 5 : 869.7 MHz ~ 893.3 MHz LTE Band 17 : 736.5 MHz ~ 743.5 MHz
Bandwidth	LTE Band 2 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 4 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 5 : 1.4MHz / 3MHz / 5MHz / 10MHz LTE Band 17 : 5MHz / 10MHz
Maximum Output Power to Antenna	LTE Band 5 : 22.65 dBm LTE Band 17 : 22.62 dBm
Type of Modulation	QPSK / 16QAM

1.5 Modification of EUT

No modifications are made to the EUT during all test items.



1.6 Emission Designator

LTE Band 5	QPSK			16QAM		
BW(MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum ERP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum ERP(W)
1.4	1M10G7D	-	0.05	1M10W7D	-	0.04
3	2M74G7D	-	0.05	2M73W7D	-	0.04
5	4M50G7D	-	0.05	4M50W7D	-	0.03
10	9M10G7D	0.013	0.05	9M04W7D	-	0.04

LTE Band 17	QPSK			16QAM		
BW(MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum ERP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum ERP(W)
5	4M51G7D	-	0.02	4M51W7D	-	0.02
10	9M08G7D	0.002	0.02	9M04W7D	-	0.02

1.7 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1022 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	Sporton Site No.	
	TH02-HY	03CH07-HY



1.8 Applicable Standards

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

- ♦ 47 CFR Part 2, 22(H), 24(E), 27
- ♦ ANSI / TIA / EIA-603-C-2004
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v02r01

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.



2 Test Configuration of Equipment Under Test

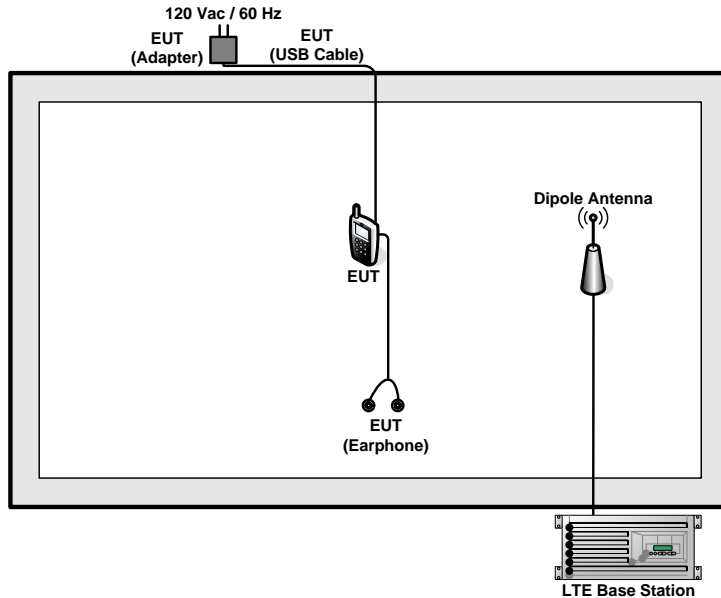
2.1 Test Mode

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v02r01 with maximum output power.

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

Test Items	Band	Bandwidth (MHz)						Modulation		RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
Max. Output Power	5	✓	✓	✓	✓	-	-	✓	✓	✓	✓	✓	✓	✓	✓
	17	-	-	✓	✓	-	-	✓	✓	✓	✓	✓	✓	✓	✓
Peak-to-Average Ratio	5				✓	-	-		✓	✓		✓	✓	✓	✓
	17	-	-		✓	-	-		✓	✓		✓	✓	✓	✓
26dB and 99% Bandwidth	5	✓	✓	✓	✓	-	-	✓	✓			✓	✓	✓	✓
	17	-	-	✓	✓	-	-	✓	✓			✓	✓	✓	✓
Conducted Band Edge	5	✓	✓	✓	✓	-	-	✓	✓	✓		✓	✓		✓
	17	-	-	✓	✓	-	-	✓	✓	✓		✓	✓		✓
Conducted Spurious Emission	5	✓	✓	✓	✓	-	-	✓	✓	✓			✓	✓	✓
	17	-	-	✓	✓	-	-	✓	✓	✓			✓	✓	✓
Frequency Stability	5				✓	-	-	✓				✓		✓	
	17	-	-		✓	-	-	✓				✓		✓	
E.R.P./ E.I.R.P.	5	✓	✓	✓	✓	-	-	✓	✓	✓			✓	✓	✓
	17	-	-	✓	✓	-	-	✓	✓	✓			✓	✓	✓
Radiated Spurious Emission	5	✓	✓	✓	✓	-	-	✓		✓			✓	✓	✓
	17	-	-	✓	✓	-	-	✓		✓			✓	✓	✓
Note	<ol style="list-style-type: none"> The mark "✓" means that this configuration is chosen for testing The mark "-" means that this bandwidth is not supported. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. All modes and data rates and positions were investigated, and found that EUT without the wireless power charger as the worst case test configuration. This report only assessed Band 5 and Band 17, other frequency band exposure evaluation which refer to the Sporton FCC Report, FCC ID: IHDT56PK1, Report No: FG462024B, and Appendix C. 														

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	LTE Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	Fixture	INTEL	NGFF Card Carrier	N/A	N/A	N/A
3.	CHARGER PAD	SAMSUNG	EP-P100IEWE	A3LEPP100IJWU	N/A	shielded, 1.5 m

2.4 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

Example :

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

$$= 4.2 + 10 = 14.2 \text{ (dB)}$$

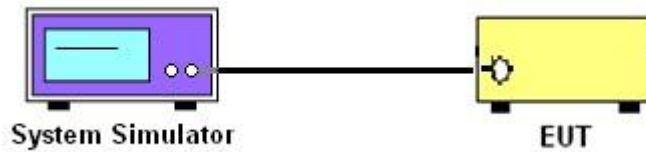
3 Conducted Test Items

3.1 Measuring Instruments

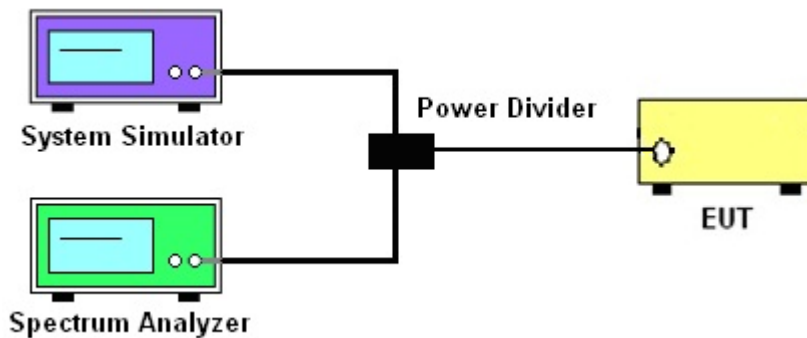
See list of measuring instruments of this test report.

3.2 Test Setup

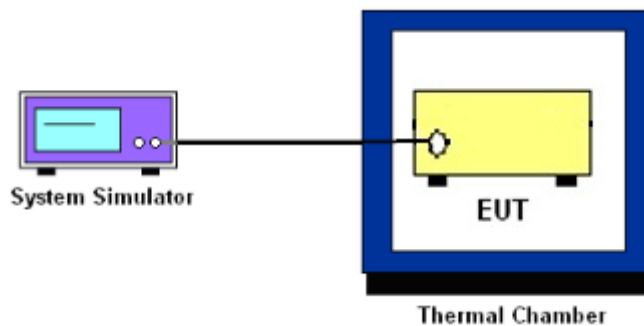
3.2.1 Conducted Output Power



3.2.2 Peak-to-Average Ratio, Occupied Bandwidth ,Conducted Band-Edge and Conducted Spurious Emission



3.2.3 Frequency Stability



3.3 Test Result of Conducted Test

Please refer to Appendix A.



3.4 Conducted Output Power

3.4.1 Description of the Conducted Output Power Measurement

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

3.4.2 Test Procedures

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



3.5 Peak-to-Average Ratio

3.5.1 Description of the PAR Measurement

Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

3.5.2 Test Procedures

1. The testing follows FCC KDB 971168 v02r01 Section 5.7.1.
2. The EUT was connected to spectrum and system simulator via a power divider.
3. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
4. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
5. Record the deviation as Peak to Average Ratio.



3.6 Occupied Bandwidth

3.6.1 Description of Occupied Bandwidth Measurement

The occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

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

3.6.2 Test Procedures

1. The testing follows FCC KDB 971168 v02r01 Section 4.2.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.



3.7 Conducted Band Edge

3.7.1 Description of Conducted Band Edge Measurement

22.917(a)

For operations in the 824 – 849 MHz band, the FCC limit is $43 + 10\log_{10}(P[\text{Watts}])$ dB below the transmitter power $P(\text{Watts})$ in a 100kHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

27.53 (g)

For operations in the 698 -746 MHz band, the FCC limit is $43 + 10\log_{10}(P[\text{Watts}])$ dB below the transmitter power $P(\text{Watts})$ in a 100 kHz bandwidth. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

3.7.2 Test Procedures

1. The testing follows FCC KDB 971168 v02r01 Section 6.0.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The band edges of low and high channels for the highest RF powers were measured. Set RBW $\geq 1\%$ EBW in the 1MHz band immediately outside and adjacent to the band edge.
4. Set spectrum analyzer with RMS detector.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
6. The limit line is derived from $43 + 10\log(P)\text{dB}$ below the transmitter power $P(\text{Watts})$
 $= P(\text{W}) - [43 + 10\log(P)] \text{ (dB)}$
 $= [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)}$
 $= -13\text{dBm}.$



3.8 Conducted Spurious Emission

3.8.1 Description of Conducted Spurious Emission Measurement

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

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

3.8.2 Test Procedures

1. The testing follows FCC KDB 971168 v02r01 Section 6.0.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
4. The middle channel for the highest RF power within the transmitting frequency was measured.
5. The conducted spurious emission for the whole frequency range was taken.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
7. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
8. The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)
= P(W)- [43 + 10log(P)] (dB)
= [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
= -13dBm.



3.9 Frequency Stability

3.9.1 Description of Frequency Stability Measurement

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ ($\pm 2.5\text{ppm}$) of the center frequency.

3.9.2 Test Procedures for Temperature Variation

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

3.9.3 Test Procedures for Voltage Variation

1. The testing follows FCC KDB 971168 v02r01 Section 9.0.
2. The EUT was placed in a temperature chamber at $25\pm 5^{\circ}\text{C}$ and connected with the system simulator.
3. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
4. The variation in frequency was measured for the worst case.

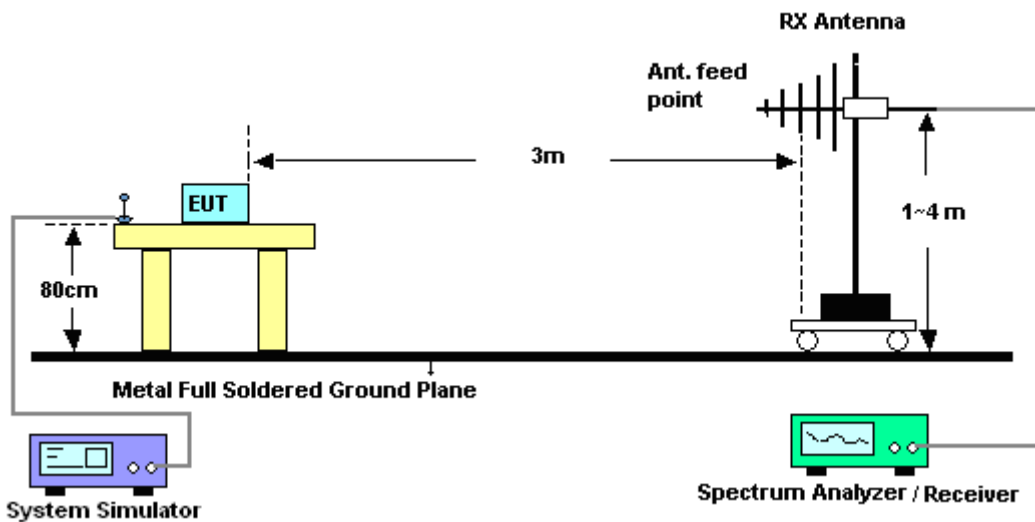
4 Radiated Test Items

4.1 Measuring Instruments

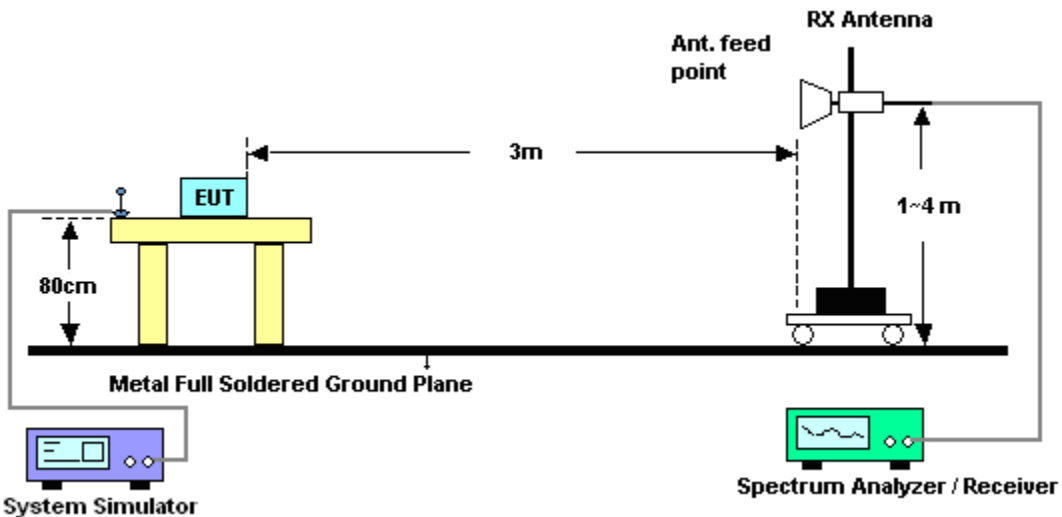
See list of measuring instruments of this test report.

4.2 Test Setup

4.2.1 For radiated test from 30MHz to 1GHz



4.2.2 For radiated test above 1GHz



4.3 Test Result of Radiated Test

Please refer to Appendix B.



4.4 Radiated Spurious Emission

4.4.1 Description of Radiated Spurious Emission

The radiated spurious emission was measured by substitution method according to ANSI / TIA / EIA-603-C-2004. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB.

For LTE Band 17

For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

4.4.2 Test Procedures

1. The testing follows FCC KDB 971168 v02r01 Section 5.8 and ANSI / TIA-603-C-2004 Section 2.2.12.
2. The EUT was placed on a rotatable wooden table with 0.8 meter above ground.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
5. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
7. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
9. Taking the record of output power at antenna port.
10. Repeat step 7 to step 8 for another polarization.
11. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

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

12. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
13. ERP (dBm) = EIRP - 2.15



4.5 Effective Radiated Power and Effective Isotropic Radiated Power

4.5.1 Description of the ERP/EIRP Measurement

Effective radiated power output measurements by substitution method according to ANSI / TIA / EIA-603-C-2004, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas. License Digital Systems v01r02. Mobile and portable (hand-held) stations operating are limited to average ERP of 7 watts with LTE band 5 and 3 watts with LTE band 17.

4.5.2 Test Procedures

1. The testing follows FCC KDB 971168 v02r01 Section 5.2.1. (for CDMA/WCDMA), Section 5.2.2.2 (for GSM/GPRS/EDGE) and ANSI / TIA-603-C-2004 Section 2.2.17.
2. The EUT was placed on a non-conductive rotating platform 0.8 meters high in a semi-anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer with RMS detector.
3. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power. The maximum emission was recorded from analyzer power level (LVL) from the 360 degrees rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations.
4. Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to TIA/EIA-603-C. The EUT was replaced by dipole antenna (substitution antenna) at same location, and then a known power from S.G. was applied into the dipole antenna through a Tx cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna. The correction factor (in dB) = S.G. - Tx Cable loss + Substitution antenna gain - Analyzer reading. Then the EUT's EIRP was calculated with the correction factor, $EIRP = LVL + \text{Correction factor}$ and $ERP = EIRP - 2.15$.



5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
LTE Base Station	Anritsu	MT8820C	6201026480	30MHz~2.7GHz SISO	Jan. 07, 2014	Sep. 14, 2014	Jan. 06, 2015	Conducted (TH02-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz~40GHz	Jun. 09, 2014	Sep. 14, 2014	Jun. 08, 2015	Conducted (TH02-HY)
Thermal Chamber	Ten Billion	TTH-D3SP	TBN-930701	N/A	Jul. 17, 2014	Sep. 14, 2014	Jul. 16, 2015	Conducted (TH02-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV30	101749	10Hz ~ 30GHz	Feb. 10, 2014	Sep. 16, 2014	Feb. 09, 2015	Radiation (03CH07-HY)
Bilog Antenna	Schaffner	CBL6111C	2726	30MHz ~ 1GHz	Oct. 10, 2013	Sep. 16, 2014	Oct. 09, 2014	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	75962	1GHz~18GHz	Aug. 19, 2014	Sep. 16, 2014	Aug. 18, 2015	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10 MHz ~ 1000MHz	Mar. 17, 2014	Sep. 16, 2014	Mar. 16, 2015	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1 GHz~26.5 GHz	Nov. 29, 2013	Sep. 16, 2014	Nov. 28, 2014	Radiation (03CH07-HY)
Turn Table	ChainTek	ChainTek 3000	N/A	0 ~ 360 degree	N/A	Sep. 16, 2014	N/A	Radiation (03CH07-HY)
Antenna Mast	ChainTek	M-400-0	114/8000604/L	N/A	N/A	Sep. 16, 2014	N/A	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 03, 2013	Sep. 16, 2014	Oct. 02, 2014	Radiation (03CH07-HY)
Signal Generator	Rohde & Schwarz	SMF100A	101107	100kHz~40GHz	May 23, 2014	Sep. 16, 2014	May 22, 2015	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00066583	1GHz~18GHz	Jul. 24, 2014	Sep. 16, 2014	Jul. 23, 2015	Radiation (03CH07-HY)



6 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.54
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.72
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Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power)



LTE Band 5 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
1.4	1	0	QPSK	22.58	22.61	22.64
1.4	1	2		22.57	22.53	22.57
1.4	1	5		22.56	22.56	22.61
1.4	3	0		22.49	22.52	22.61
1.4	3	1		22.56	22.51	22.55
1.4	3	2		22.49	22.54	22.53
1.4	6	0		21.62	21.61	21.62
1.4	1	0	16-QAM	21.82	21.84	21.42
1.4	1	2		21.82	21.90	21.50
1.4	1	5		21.71	21.83	21.43
1.4	3	0		21.49	21.52	21.62
1.4	3	1		21.45	21.51	21.64
1.4	3	2		21.47	21.43	21.51
1.4	6	0		20.41	20.49	20.51
3	1	0	QPSK	22.59	22.57	22.60
3	1	7		22.55	22.56	22.56
3	1	14		22.58	22.53	22.56
3	8	0		21.53	21.60	21.59
3	8	4		21.52	21.58	21.60
3	8	7		21.58	21.57	21.61
3	15	0		21.60	21.58	21.65
3	1	0	16-QAM	21.76	21.25	21.15
3	1	7		21.62	21.42	21.35
3	1	14		21.76	21.20	21.38
3	8	0		20.64	20.64	20.73
3	8	4		20.65	20.75	20.67
3	8	7		20.61	20.72	20.76
3	15	0		20.55	20.73	20.63



LTE Band 5 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	22.54	22.52	22.57
5	1	12		22.48	22.50	22.55
5	1	24		22.49	22.42	22.52
5	12	0		21.58	21.54	21.60
5	12	6		21.56	21.61	21.60
5	12	11		21.61	21.61	21.56
5	25	0		21.55	21.55	21.62
5	1	0	16-QAM	21.27	21.26	21.36
5	1	12		21.08	21.32	21.33
5	1	24		21.10	21.20	21.41
5	12	0		20.56	20.65	20.62
5	12	6		20.64	20.64	20.62
5	12	11		20.68	20.63	20.57
5	25	0		20.59	20.58	20.56
10	1	0	QPSK	22.53	22.65	22.55
10	1	24		22.50	22.52	22.43
10	1	49		22.48	22.51	22.47
10	25	0		21.54	21.57	21.62
10	25	12		21.56	21.52	21.57
10	25	24		21.58	21.53	21.52
10	50	0		21.55	21.57	21.59
10	1	0	16-QAM	21.66	21.72	21.83
10	1	24		21.32	21.61	21.83
10	1	49		21.34	21.72	21.68
10	25	0		20.53	20.60	20.58
10	25	12		20.62	20.66	20.62
10	25	24		20.63	20.67	20.56
10	50	0		20.55	20.57	20.60



LTE Band 17 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	22.60	22.57	22.58
5	1	12		22.52	22.43	22.47
5	1	24		22.55	22.55	22.48
5	12	0		21.58	21.54	21.53
5	12	6		21.56	21.45	21.51
5	12	11		21.55	21.51	21.54
5	25	0		21.49	21.48	21.45
5	1	0	16-QAM	21.11	21.12	21.24
5	1	12		21.32	21.20	21.15
5	1	24		21.16	21.23	21.49
5	12	0		20.55	20.46	20.53
5	12	6		20.52	20.47	20.51
5	12	11		20.61	20.52	20.53
5	25	0		20.56	20.60	20.56
10	1	0	QPSK	22.46	22.62	22.59
10	1	24		22.40	22.41	22.49
10	1	49		22.43	22.60	22.54
10	25	0		21.42	21.45	21.43
10	25	12		21.45	21.44	21.52
10	25	24		21.48	21.48	21.54
10	50	0		21.52	21.52	21.58
10	1	0	16-QAM	21.23	21.38	21.59
10	1	24		21.28	21.33	21.64
10	1	49		21.37	21.55	21.90
10	25	0		20.49	20.42	20.47
10	25	12		20.42	20.50	20.55
10	25	24		20.53	20.52	20.66
10	50	0		20.42	20.51	20.47



Peak-to-Average Ratio

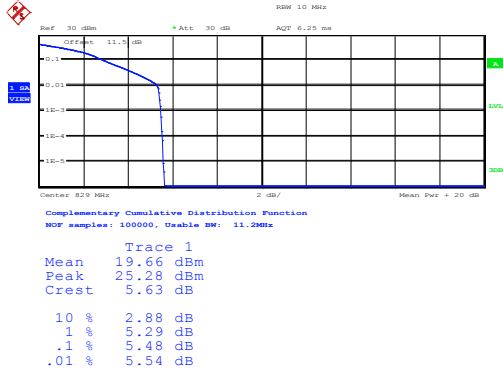
Mode	LTE Band 5 / 10MHz / 16QAM		Limit: 13dB
RB Size	1RB	Full RB	Result
Lowest CH	5.48	6.09	PASS
Middle CH	4.46	5.74	
Highest CH	4.71	6.12	

Mode	LTE Band 17 / 10MHz / 16QAM		Limit: 13dB
RB Size	1RB	Full RB	Result
Lowest CH	5.19	6.19	PASS
Middle CH	4.87	6.22	
Highest CH	4.55	5.83	



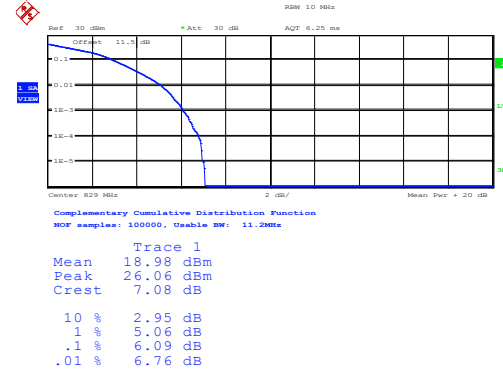
LTE Band 5 / 10MHz / 16QAM

Lowest Channel / 1RB



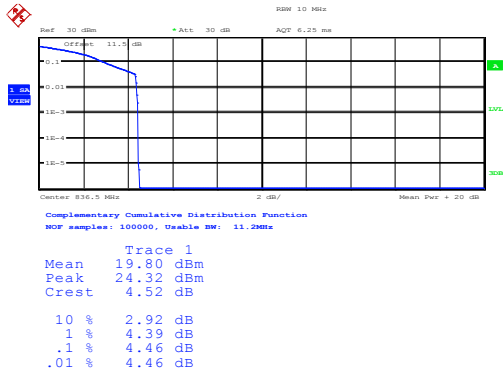
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Lowest Channel / Full RB



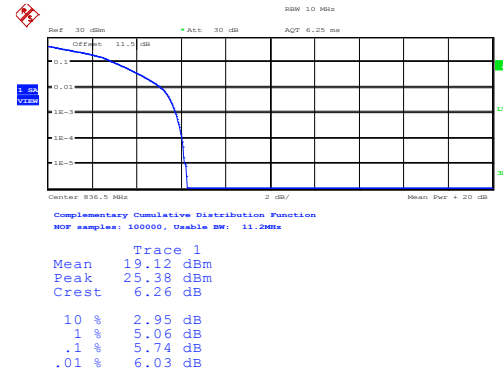
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Middle Channel / 1RB



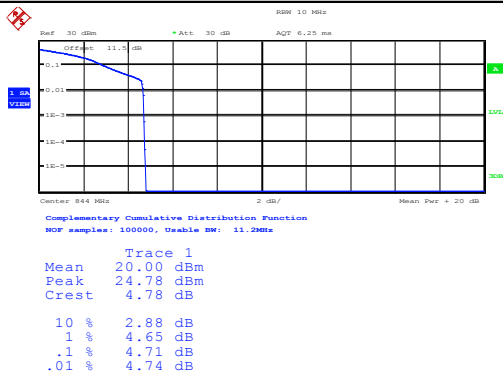
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Middle Channel / Full RB



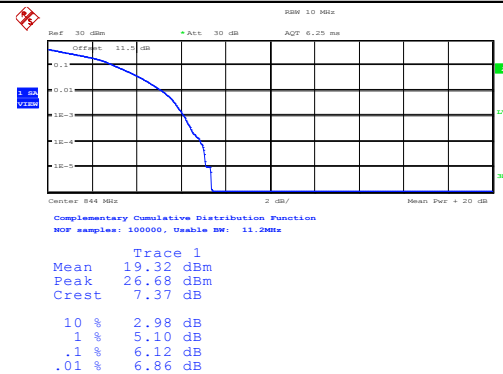
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Highest Channel / 1RB



Date: 14.SEP.2014 11:04:11

Highest Channel / Full RB

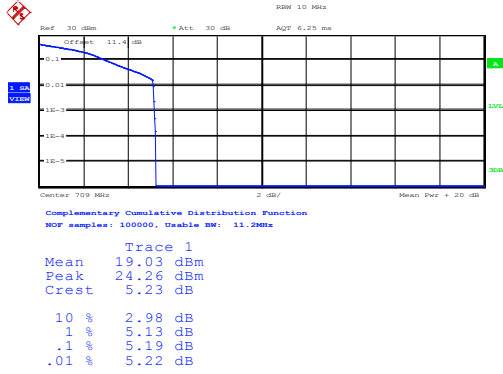


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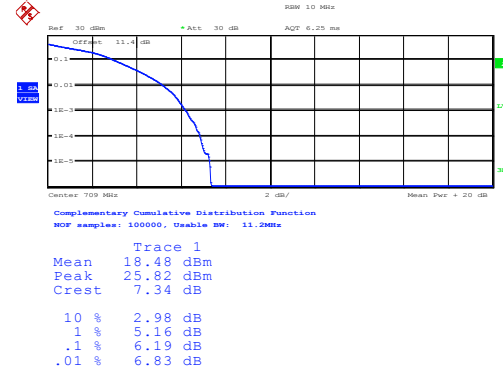
LTE Band 17 / 10MHz / 16QAM

Lowest Channel / 1RB



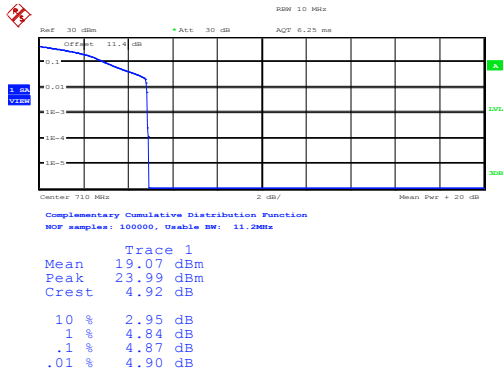
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Lowest Channel / Full RB



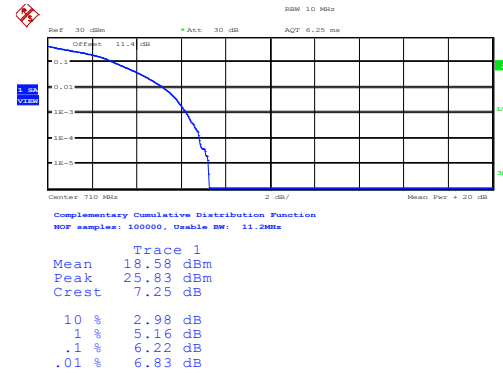
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Middle Channel / 1RB



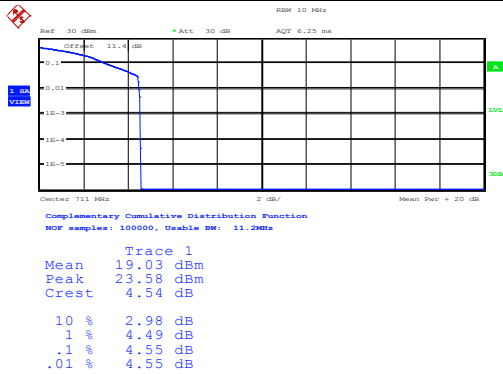
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Middle Channel / Full RB



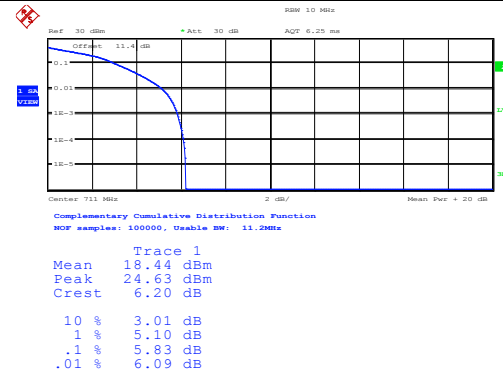
Date: 14.SEP.2014 11:41:19

Highest Channel / 1RB



Date: 14.SEP.2014 11:44:15

Highest Channel / Full RB



Date: 14.SEP.2014 11:44:47



26dB Bandwidth

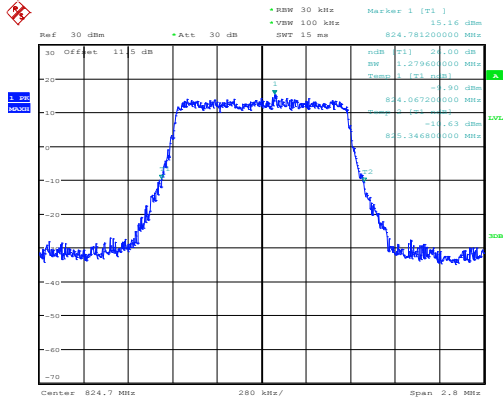
Mode	LTE Band 5 : 26dB BW(MHz)											
	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	1.28	1.30	3.02	3.02	4.95	4.92	10.04	9.98	-	-	-	-
Middle CH	1.29	1.29	3.01	3.01	4.91	4.91	10.10	10.02	-	-	-	-
Highest CH	1.28	1.29	3.02	3.02	4.94	4.94	10.02	10.08	-	-	-	-

Mode	LTE Band 17 : 26dB BW(MHz)											
	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	-	-	-	-	4.92	4.89	10.08	10.04	-	-	-	-
Middle CH	-	-	-	-	4.98	4.93	10.10	10.02	-	-	-	-
Highest CH	-	-	-	-	4.97	4.98	10.08	10.04	-	-	-	-



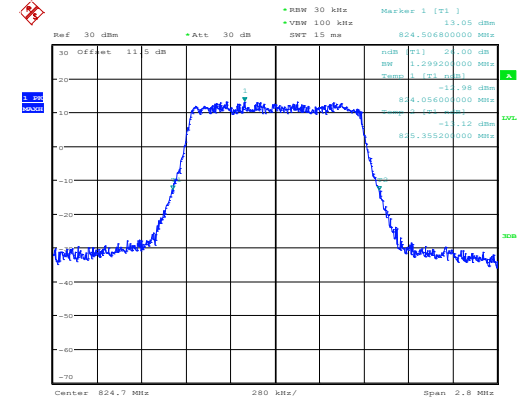
LTE Band 5

Lowest Channel / 1.4MHz / QPSK



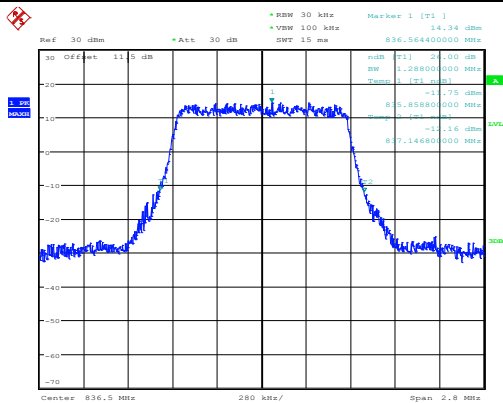
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Lowest Channel / 1.4MHz / 16QAM



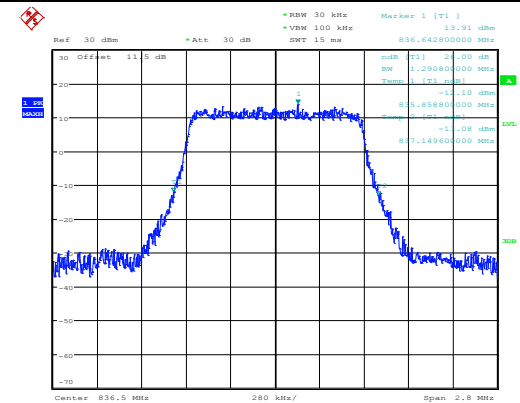
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Middle Channel / 1.4MHz / QPSK



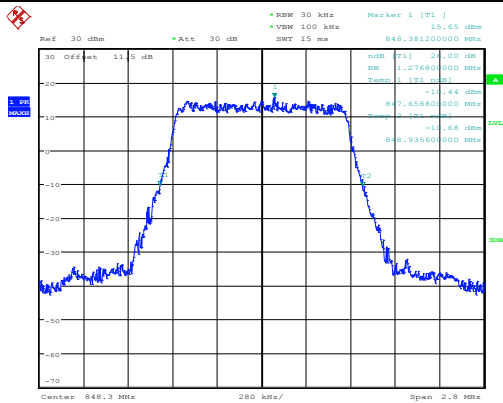
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Middle Channel / 1.4MHz / 16QAM



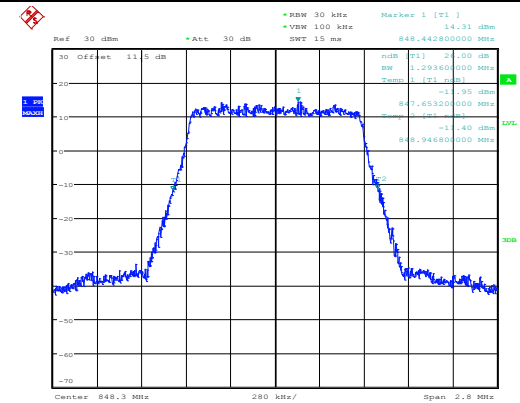
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Highest Channel / 1.4MHz / QPSK



Date: 14.SEP.2014 09:40:45

Highest Channel / 1.4MHz / 16QAM

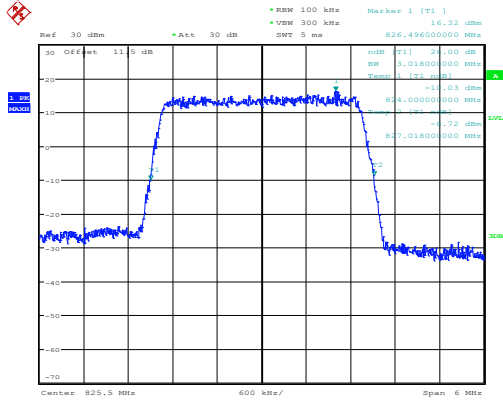


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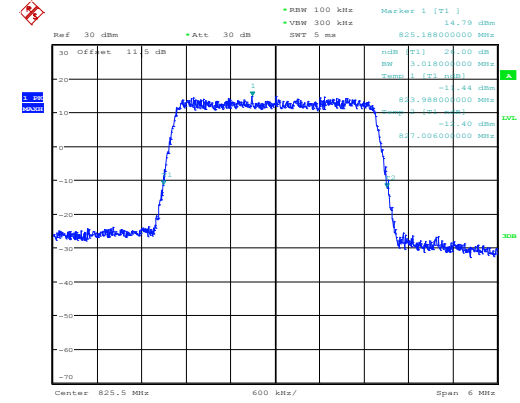
LTE Band 5

Lowest Channel / 3MHz / QPSK



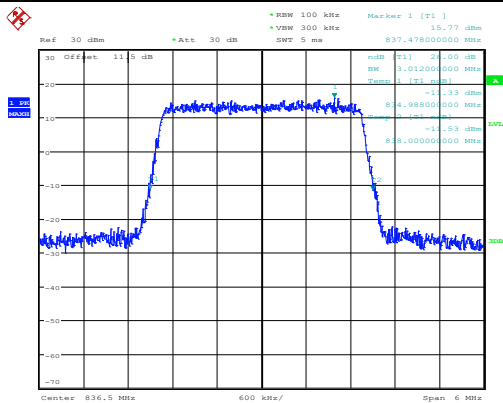
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Lowest Channel / 3MHz / 16QAM



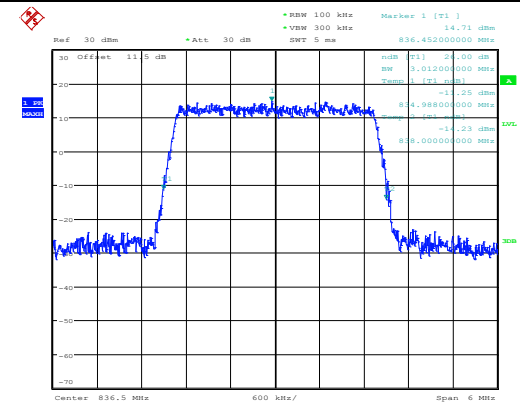
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Middle Channel / 3MHz / QPSK



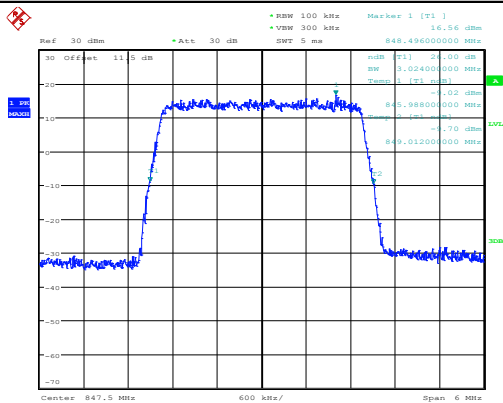
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Middle Channel / 3MHz / 16QAM



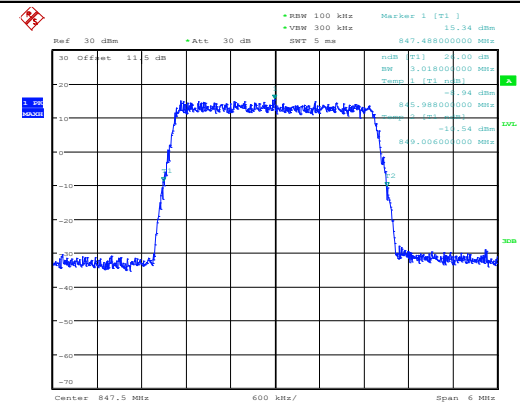
Date: 14.SEP.2014 10:25:08

Highest Channel / 3MHz / QPSK



Date: 14.SEP.2014 10:27:34

Highest Channel / 3MHz / 16QAM

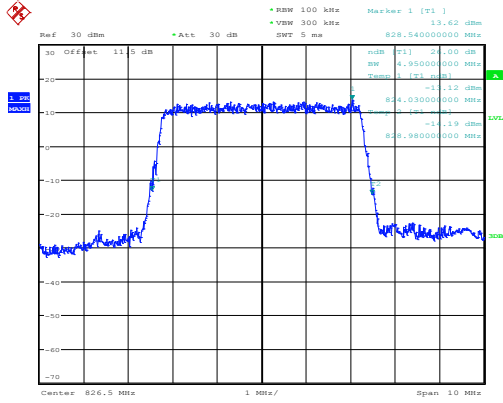


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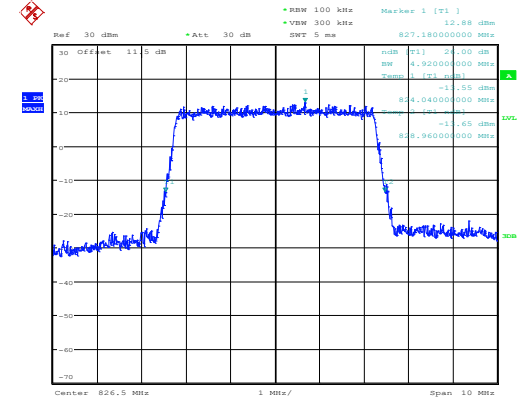
LTE Band 5

Lowest Channel / 5MHz / QPSK



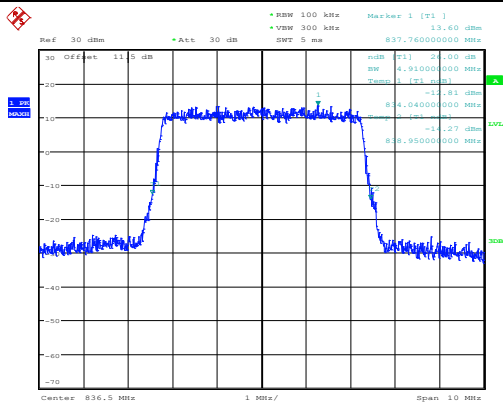
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Lowest Channel / 5MHz / 16QAM



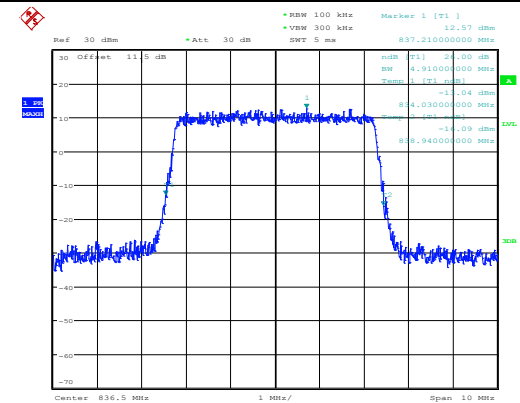
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Middle Channel / 5MHz / QPSK



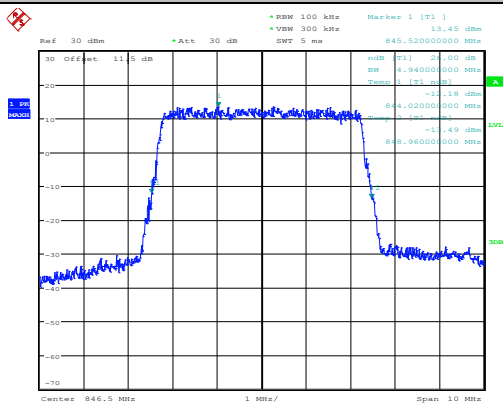
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Middle Channel / 5MHz / 16QAM



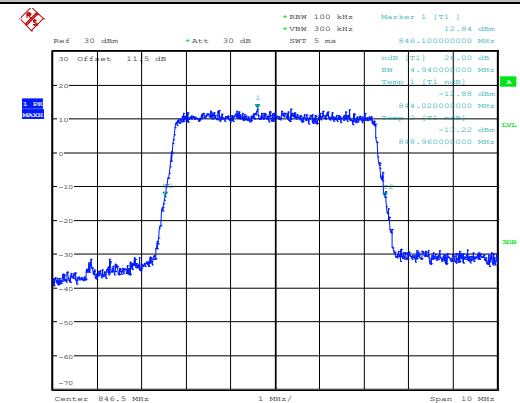
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Highest Channel / 5MHz / QPSK



Date: 14.SEP.2014 10:42:01

Highest Channel / 5MHz / 16QAM

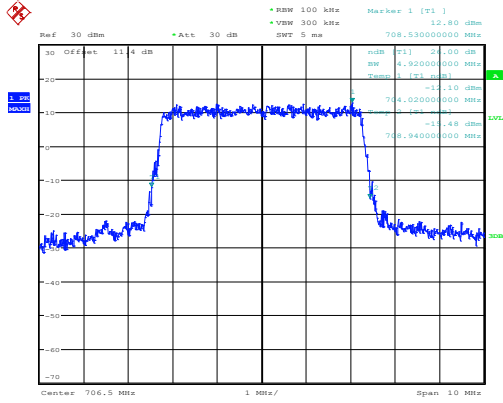


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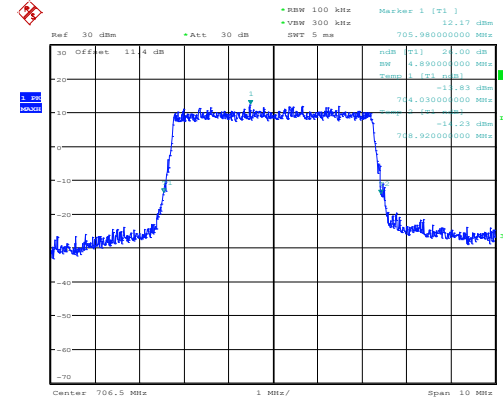
LTE Band 17

Lowest Channel / 5MHz / QPSK



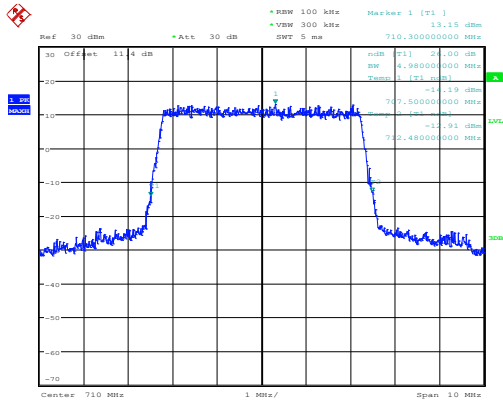
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Lowest Channel / 5MHz / 16QAM



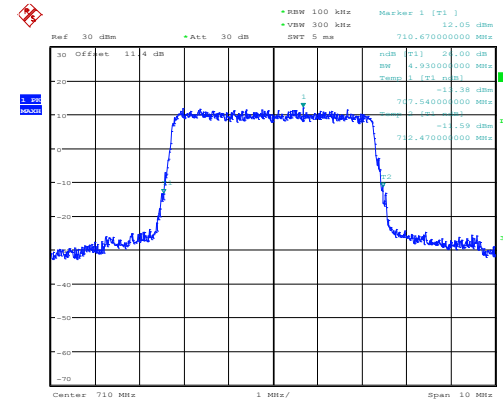
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Middle Channel / 5MHz / QPSK



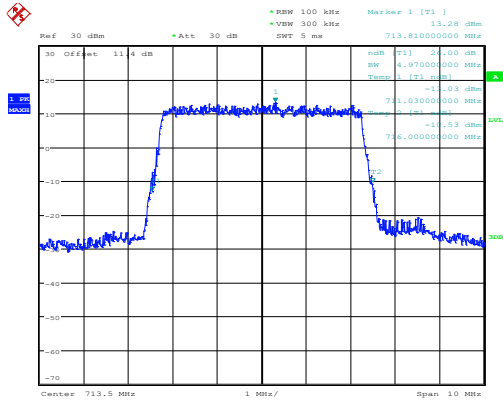
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Middle Channel / 5MHz / 16QAM



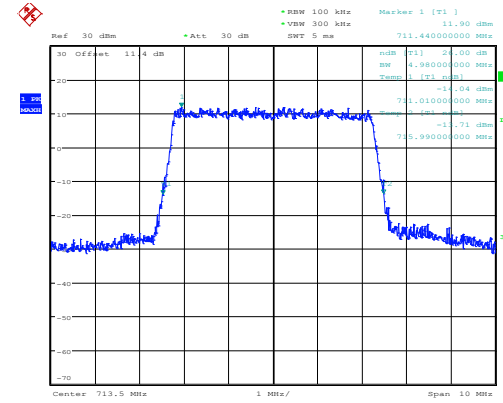
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Highest Channel / 5MHz / QPSK



Date: 14.SEP.2014 11:17:07

Highest Channel / 5MHz / 16QAM

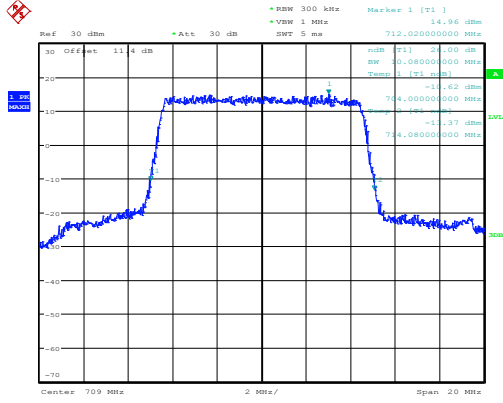


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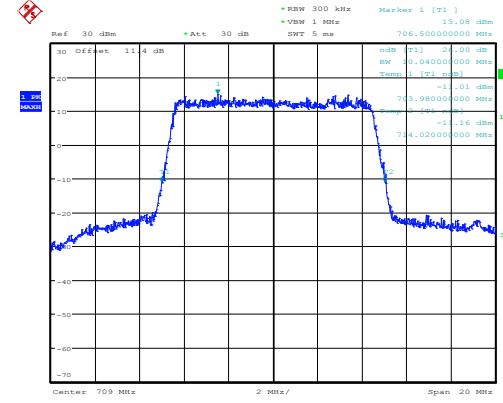
LTE Band 17

Lowest Channel / 10MHz / QPSK



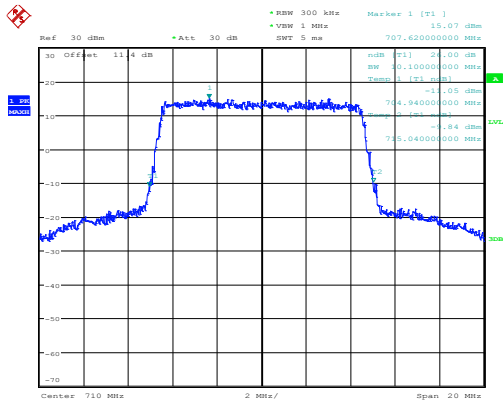
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Lowest Channel / 10MHz / 16QAM



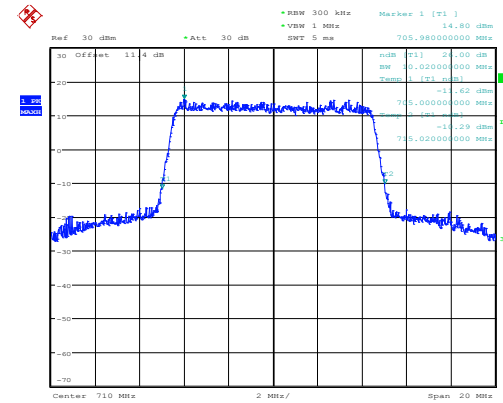
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Middle Channel / 10MHz / QPSK



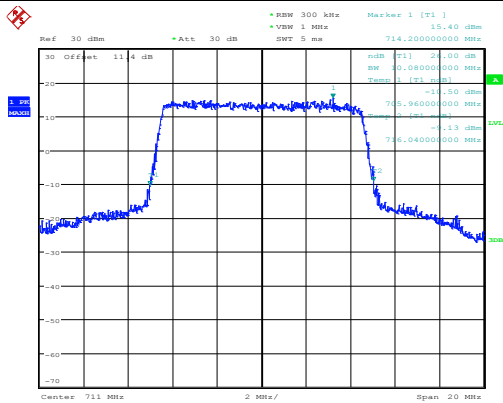
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Middle Channel / 10MHz / 16QAM



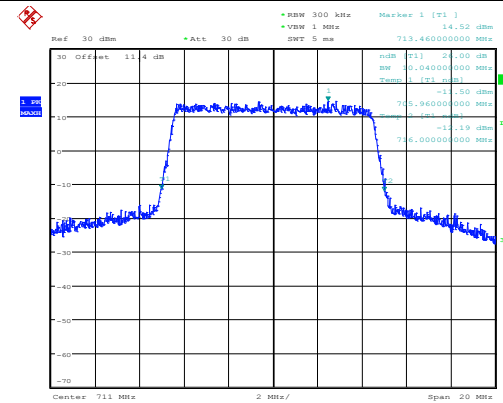
Date: 14.SEP.2014 11:28:53

Highest Channel / 10MHz / QPSK



Date: 14.SEP.2014 11:31:19

Highest Channel / 10MHz / 16QAM



Date: 14.SEP.2014 11:31:35



Occupied Bandwidth

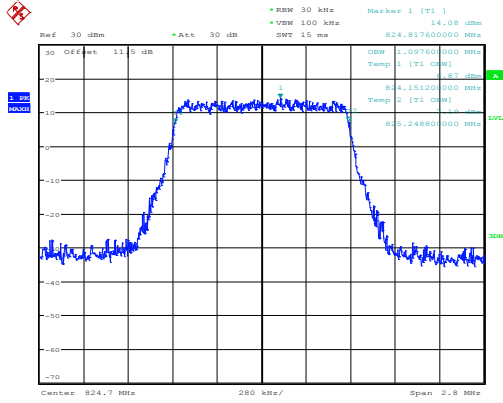
Mode	LTE Band 5 : 99%OBW(MHz)											
	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	1.10	1.10	2.74	2.73	4.49	4.50	9.08	9.04	-	-	-	-
Middle CH	1.10	1.10	2.72	2.72	4.50	4.49	9.06	9.04	-	-	-	-
Highest CH	1.10	1.10	2.71	2.72	4.50	4.48	9.10	9.04	-	-	-	-

Mode	LTE Band 17 : 99%OBW(MHz)											
	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	-	-	-	-	4.50	4.48	9.06	9.04	-	-	-	-
Middle CH	-	-	-	-	4.49	4.49	9.06	9.04	-	-	-	-
Highest CH	-	-	-	-	4.51	4.51	9.08	9.04	-	-	-	-



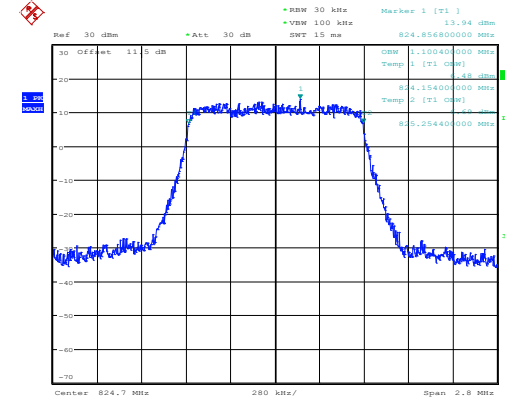
LTE Band 5

Lowest Channel / 1.4MHz / QPSK



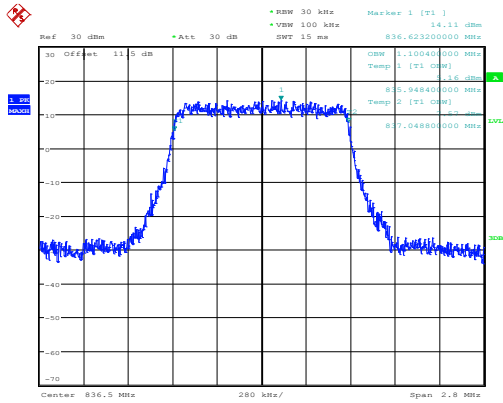
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Lowest Channel / 1.4MHz / 16QAM



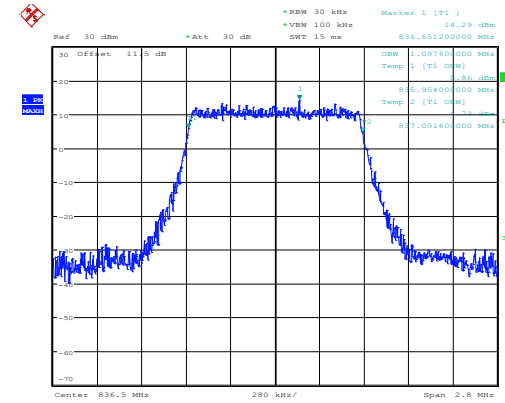
Date: 14.SEP.2014 09:32:05

Middle Channel / 1.4MHz / QPSK



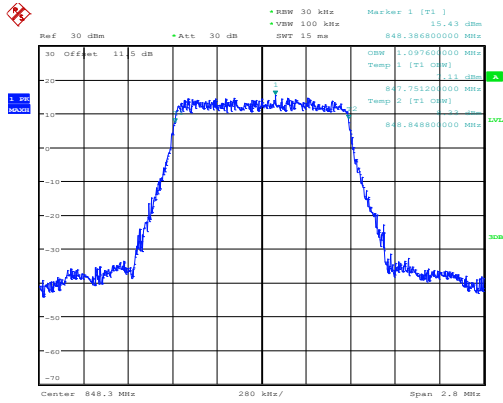
Date: 14.SEP.2014 09:37:34

Middle Channel / 1.4MHz / 16QAM



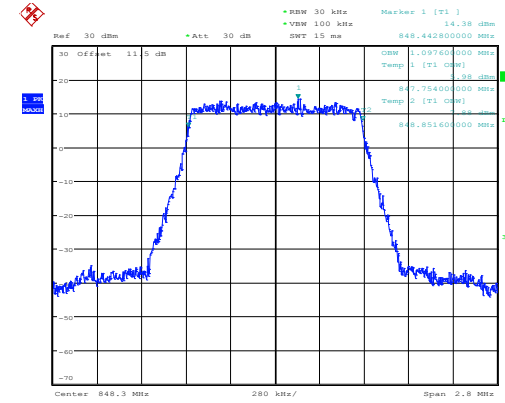
Date: 14.SEP.2014 09:37:48

Highest Channel / 1.4MHz / QPSK



Date: 14.SEP.2014 09:40:15

Highest Channel / 1.4MHz / 16QAM

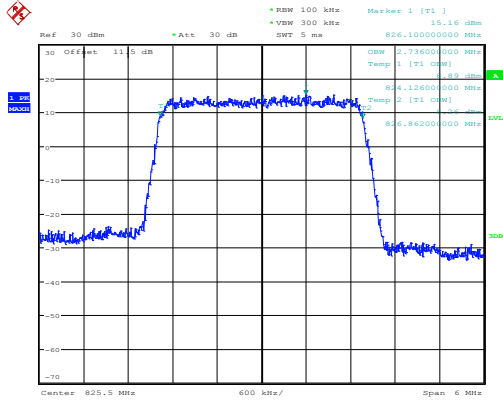


Date: 14.SEP.2014 09:40:29



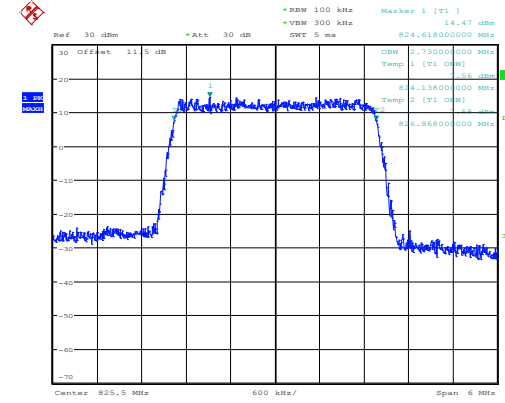
LTE Band 5

Lowest Channel / 3MHz / QPSK



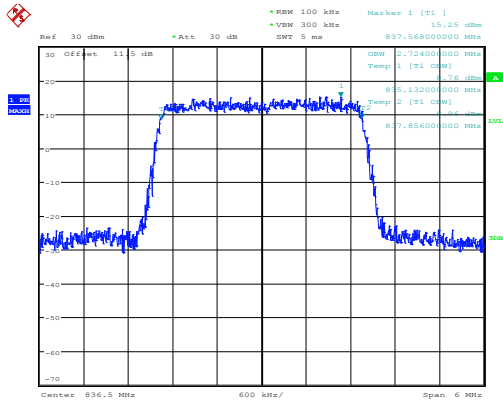
Date: 14.SEP.2014 11:05:33

Lowest Channel / 3MHz / 16QAM



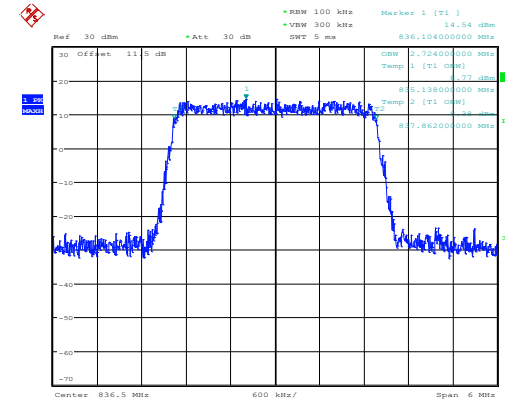
Date: 14.SEP.2014 10:18:52

Middle Channel / 3MHz / QPSK



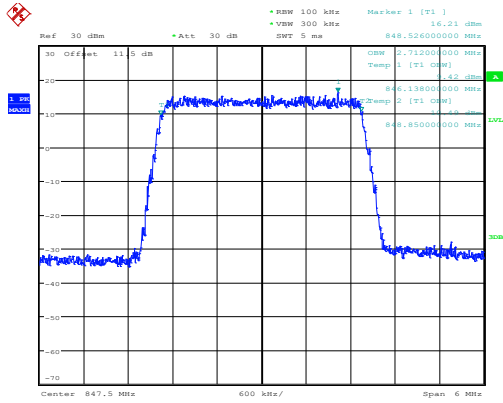
Date: 14.SEP.2014 10:24:22

Middle Channel / 3MHz / 16QAM



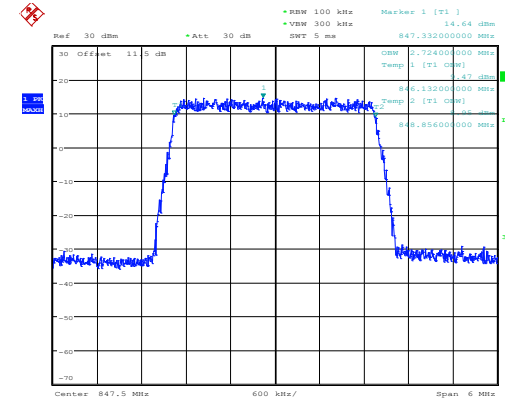
Date: 14.SEP.2014 10:24:36

Highest Channel / 3MHz / QPSK



Date: 14.SEP.2014 10:27:04

Highest Channel / 3MHz / 16QAM

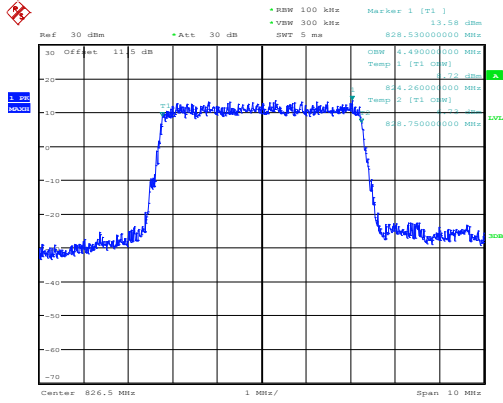


Date: 14.SEP.2014 10:27:18



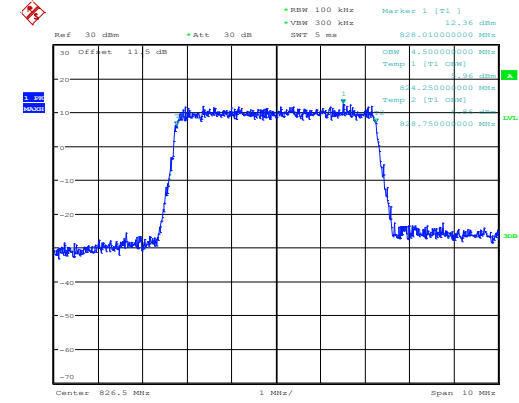
LTE Band 5

Lowest Channel / 5MHz / QPSK



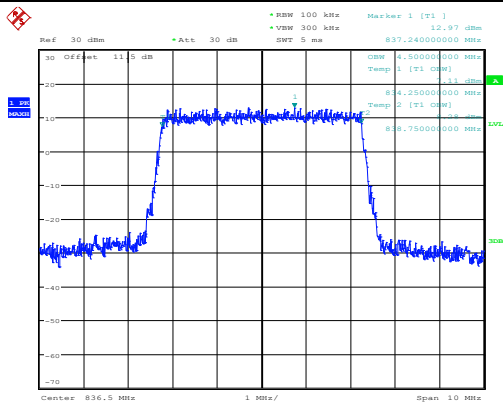
Date: 14.SEP.2014 10:32:51

Lowest Channel / 5MHz / 16QAM



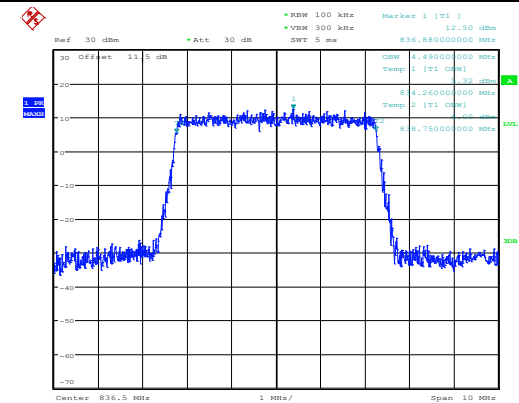
Date: 14.SEP.2014 10:33:05

Middle Channel / 5MHz / QPSK



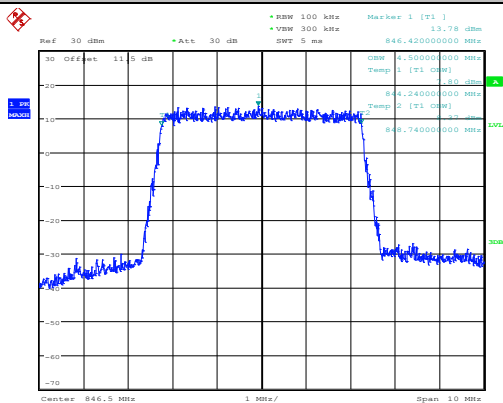
Date: 14.SEP.2014 10:38:49

Middle Channel / 5MHz / 16QAM



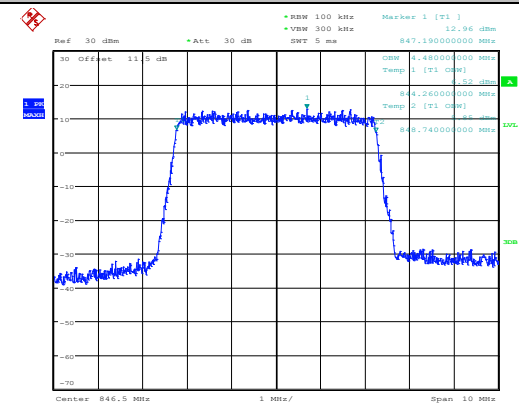
Date: 14.SEP.2014 10:39:03

Highest Channel / 5MHz / QPSK



Date: 14.SEP.2014 10:41:31

Highest Channel / 5MHz / 16QAM

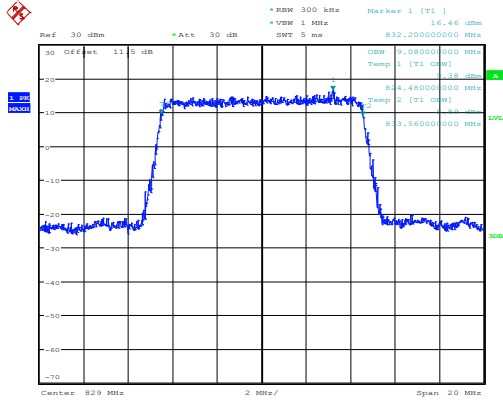


Date: 14.SEP.2014 10:41:45



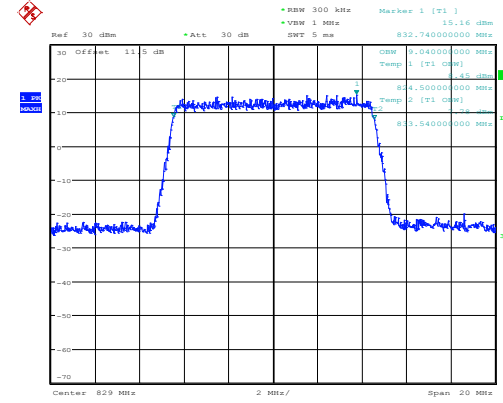
LTE Band 5

Lowest Channel / 10MHz / QPSK



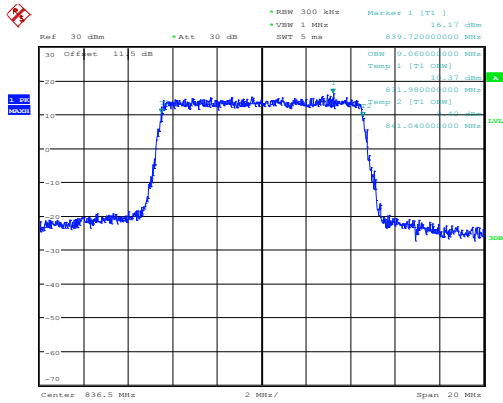
Date: 14.SEP.2014 10:47:18

Lowest Channel / 10MHz / 16QAM



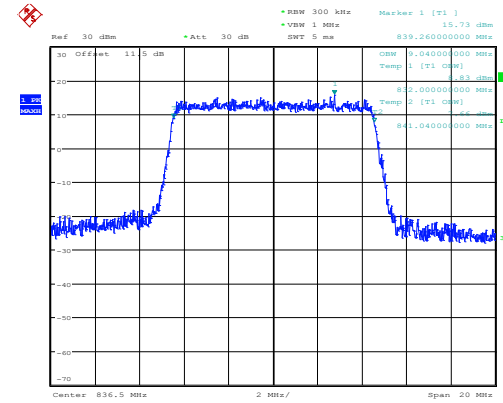
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Middle Channel / 10MHz / QPSK



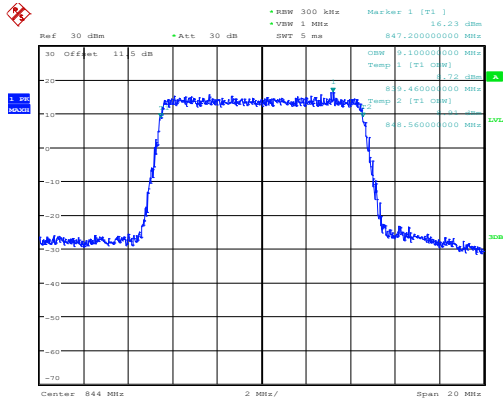
Date: 14.SEP.2014 10:53:02

Middle Channel / 10MHz / 16QAM



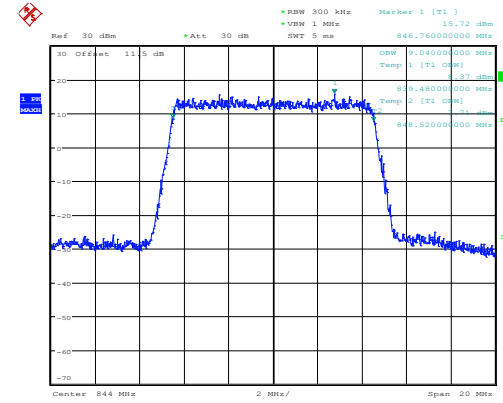
Date: 14.SEP.2014 10:53:16

Highest Channel / 10MHz / QPSK



Date: 14.SEP.2014 10:55:43

Highest Channel / 10MHz / 16QAM

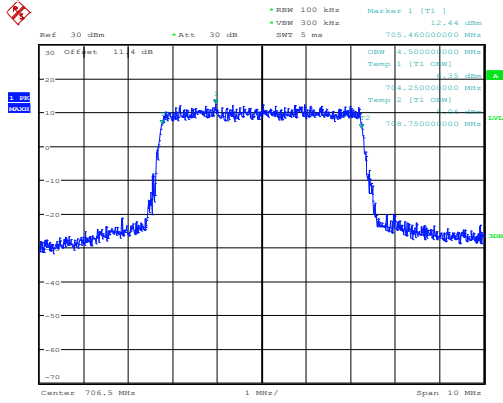


Date: 14.SEP.2014 10:55:57



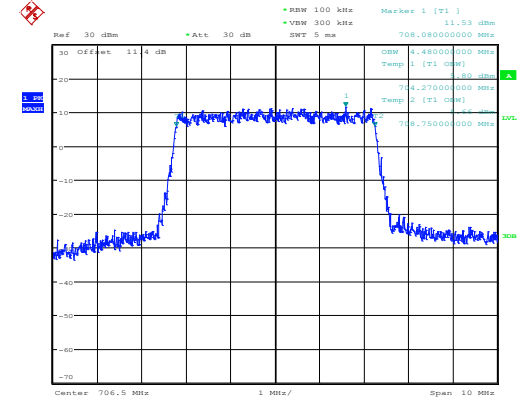
LTE Band 17

Lowest Channel / 5MHz / QPSK



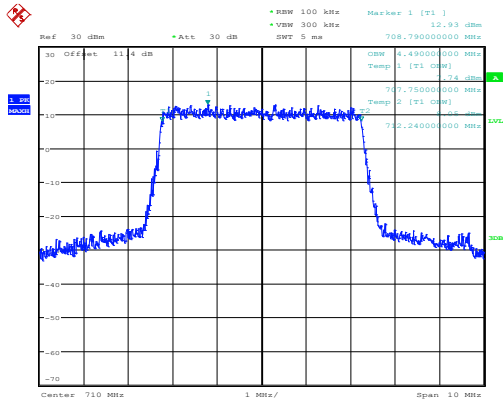
Date: 14.SEP.2014 11:08:11

Lowest Channel / 5MHz / 16QAM



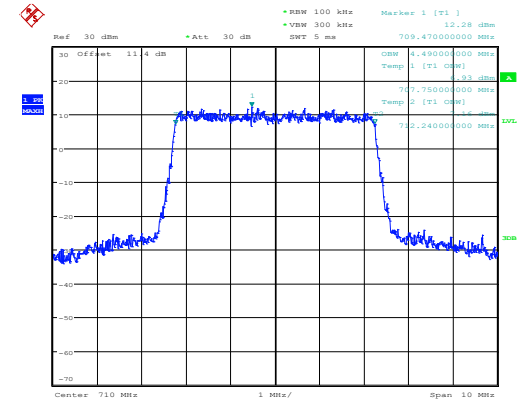
Date: 14.SEP.2014 11:09:25

Middle Channel / 5MHz / QPSK



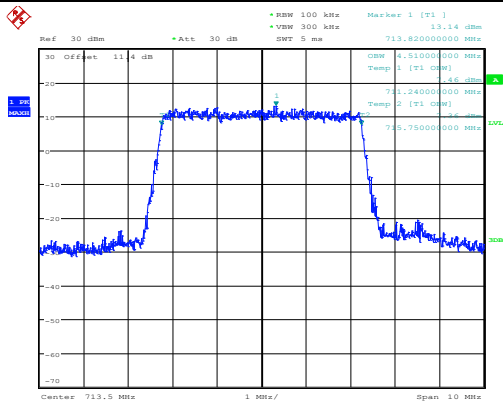
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Middle Channel / 5MHz / 16QAM



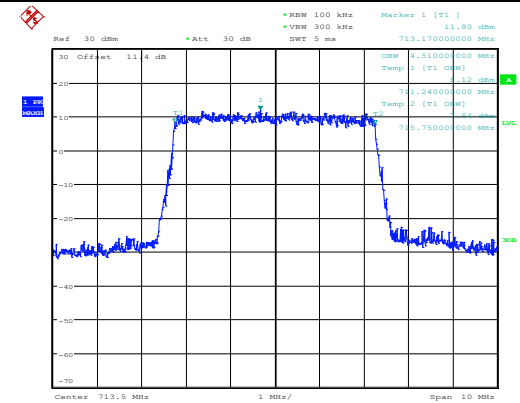
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Highest Channel / 5MHz / QPSK



Date: 14.SEP.2014 11:16:37

Highest Channel / 5MHz / 16QAM

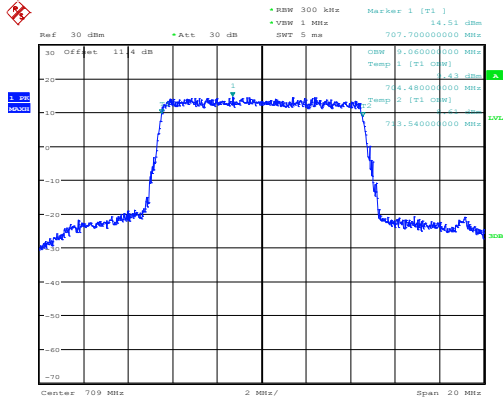


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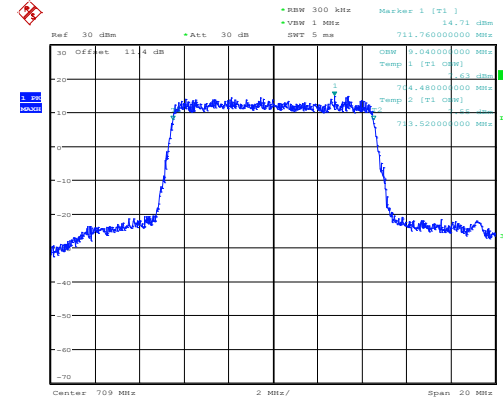
LTE Band 17

Lowest Channel / 10MHz / QPSK



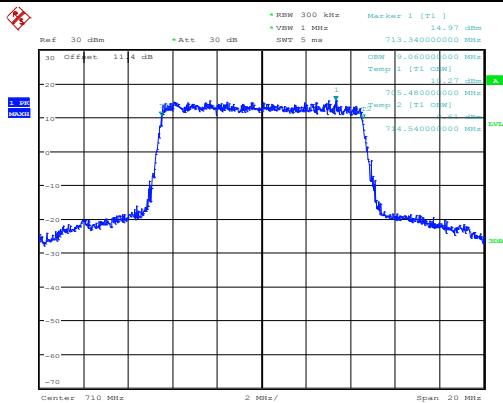
Date: 14.SEP.2014 11:22:24

Lowest Channel / 10MHz / 16QAM



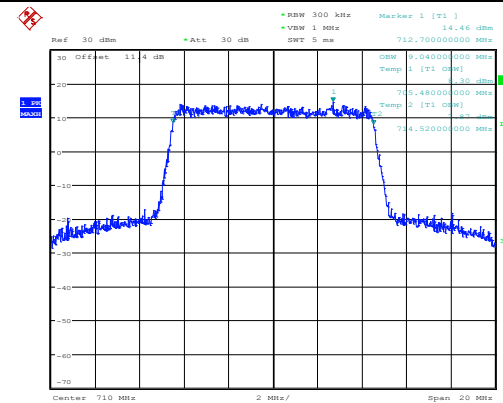
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Middle Channel / 10MHz / QPSK



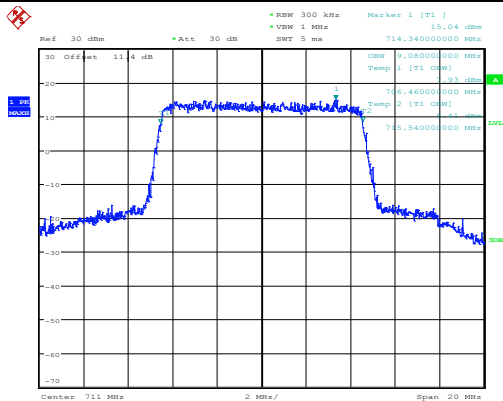
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Middle Channel / 10MHz / 16QAM



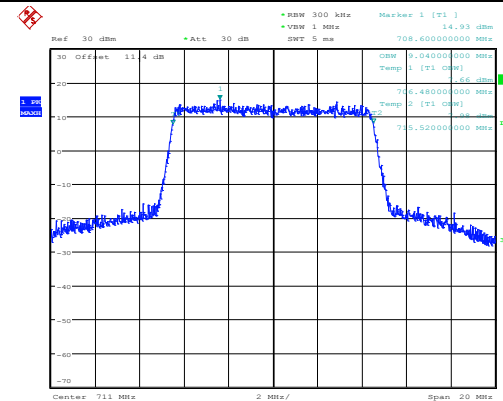
Date: 14.SEP.2014 11:28:21

Highest Channel / 10MHz / QPSK



Date: 14.SEP.2014 11:30:48

Highest Channel / 10MHz / 16QAM



Date: 14.SEP.2014 11:31:02

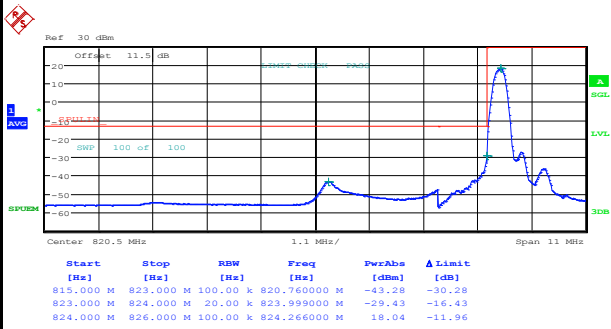


Conducted Band Edge



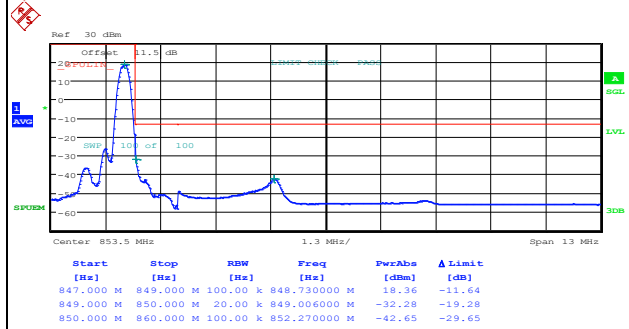
LTE Band 5 / 1.4MHz / QPSK

Lowest Band Edge / 1RB



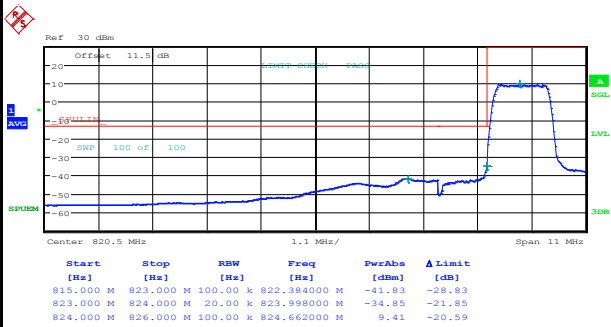
Date: 14.SEP.2014 09:33:22

Highest Band Edge / 1RB



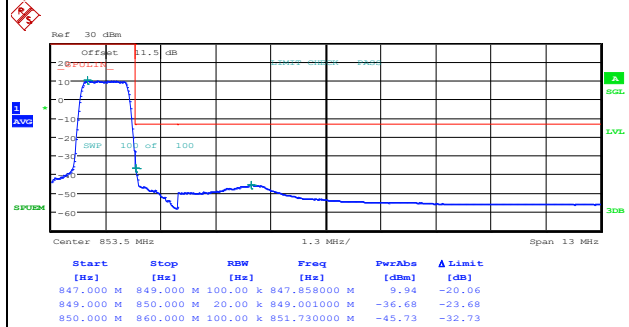
Date: 14.SEP.2014 09:43:18

Lowest Band Edge / Full RB



Date: 14.SEP.2014 09:34:53

Highest Band Edge / Full RB

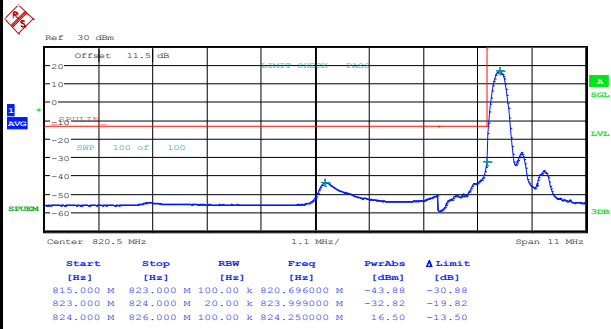


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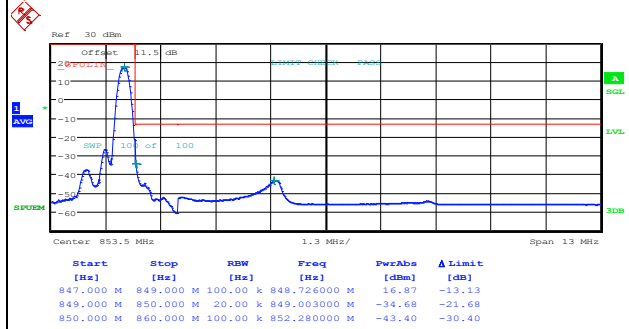
LTE Band 5 / 1.4MHz / 16QAM

Lowest Band Edge / 1 RB



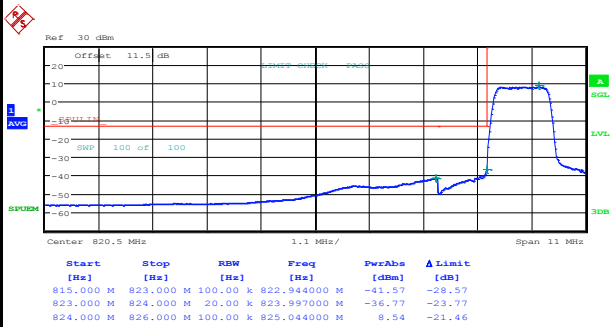
Date: 14.SEP.2014 09:34:08

Highest Band Edge / 1 RB



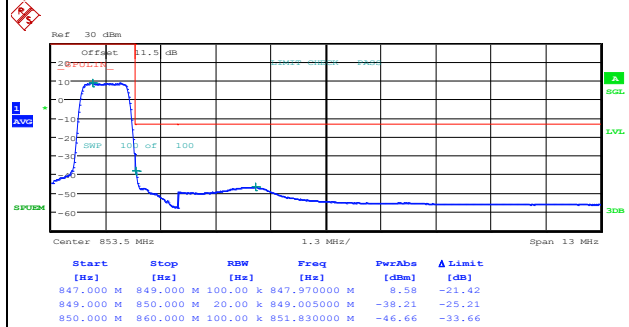
Date: 14.SEP.2014 09:44:03

Lowest Band Edge / Full RB



Date: 14.SEP.2014 09:35:38

Highest Band Edge / Full RB

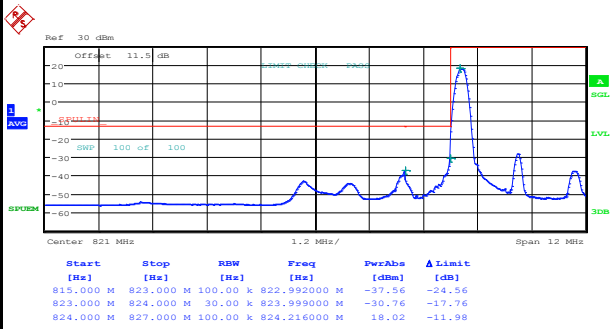


Date: 14.SEP.2014 09:42:32



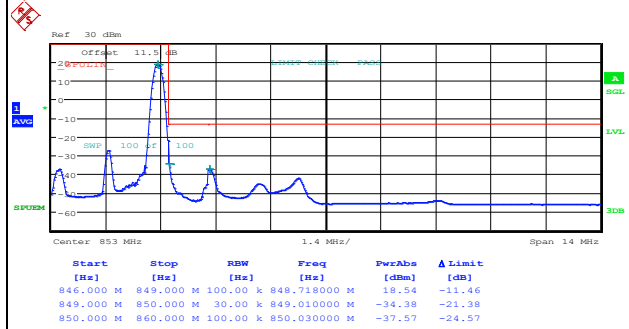
LTE Band 5 / 3MHz / QPSK

Lowest Band Edge / 1RB



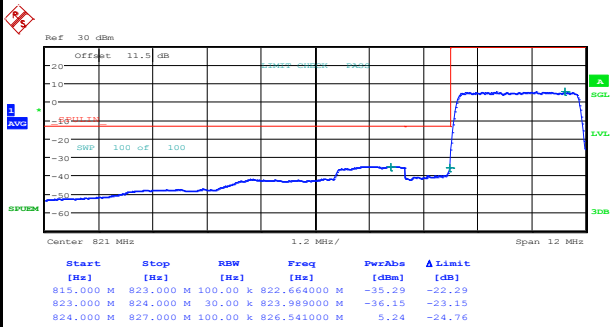
Date: 14.SEP.2014 10:20:11

Highest Band Edge / 1 RB



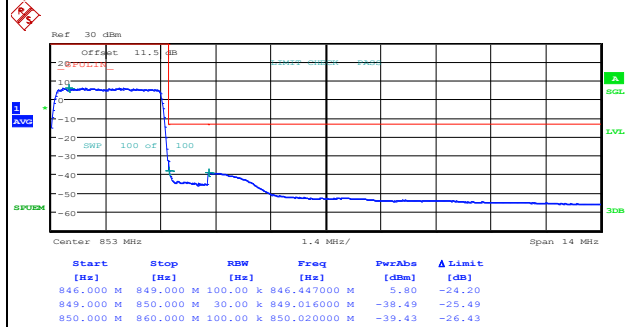
Date: 14.SEP.2014 10:28:35

Lowest Band Edge / Full RB



Date: 14.SEP.2014 10:21:42

Highest Band Edge / Full RB

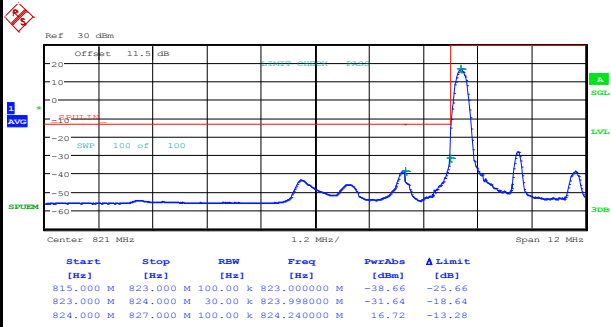


Date: 14.SEP.2014 10:30:06



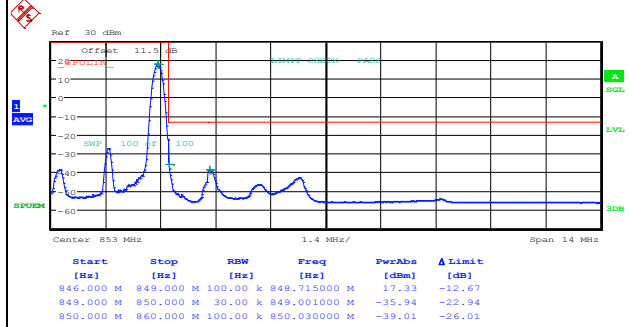
LTE Band 5 / 3MHz / 16QAM

Lowest Band Edge / 1 RB



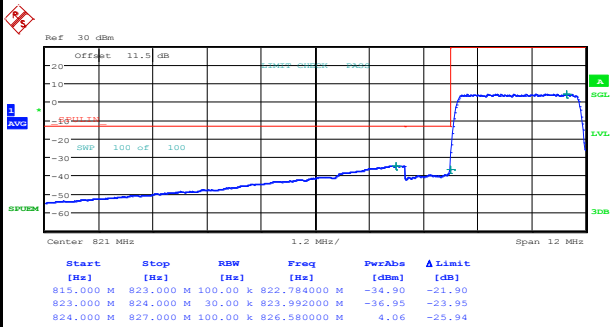
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Highest Band Edge / 1 RB



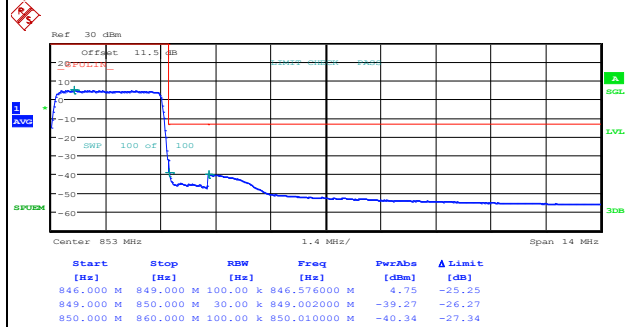
Date: 14.SEP.2014 10:29:21

Lowest Band Edge / Full RB



Date: 14.SEP.2014 10:22:27

Highest Band Edge / Full RB

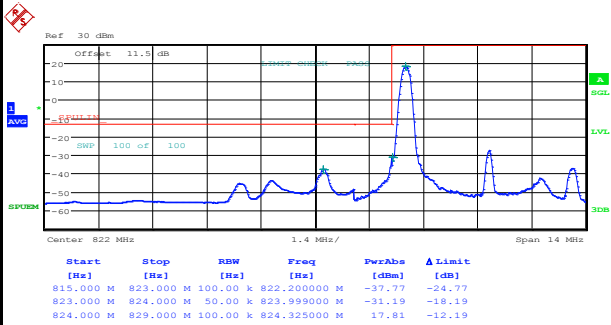


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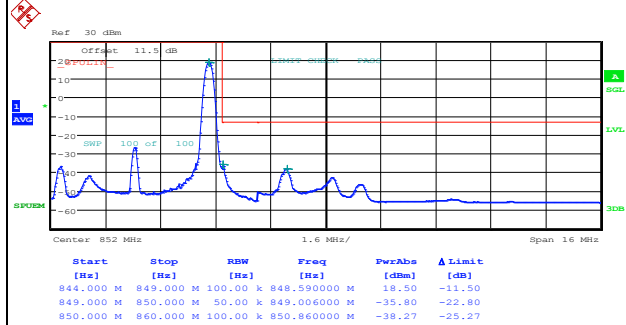
LTE Band 5 / 5MHz / QPSK

Lowest Band Edge / 1 RB



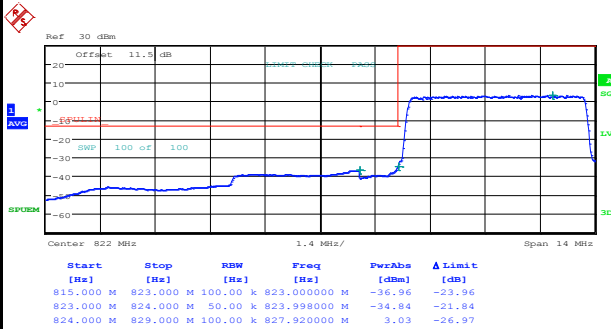
Date: 14.SEP.2014 10:34:22

Highest Band Edge / 1 RB



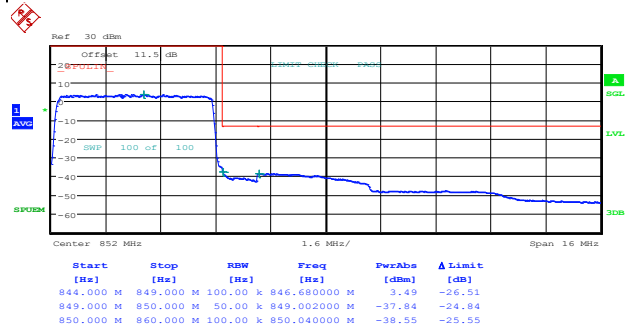
Date: 14.SEP.2014 10:43:03

Lowest Band Edge / Full RB



Date: 14.SEP.2014 10:35:55

Highest Band Edge / Full RB

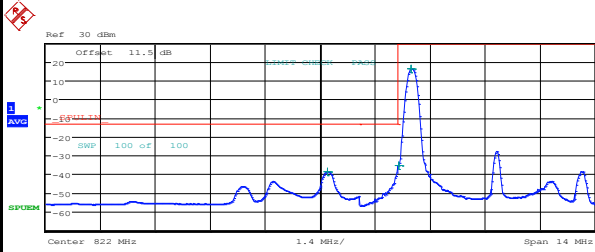


Date: 14.SEP.2014 10:44:34



LTE Band 5 / 5MHz / 16QAM

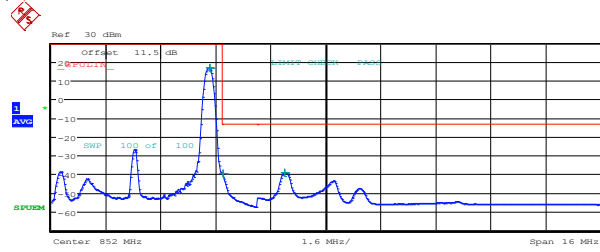
Lowest Band Edge / 1RB



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	Δ Limit [dB]
815.000 M	823.000 M	100.00 k	822.176000 M	-38.91	-25.91
823.000 M	824.000 M	50.00 k	823.999000 M	-35.69	-22.69
824.000 M	829.000 M	100.00 k	824.315000 M	16.34	-13.66

Date: 14.SEP.2014 10:35:08

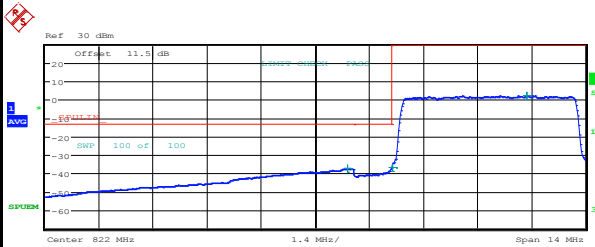
Highest Band Edge / 1 RB



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	Δ Limit [dB]
844.000 M	849.000 M	100.00 k	848.605000 M	16.78	-13.22
849.000 M	850.000 M	50.00 k	849.004000 M	-39.50	-26.50
850.000 M	860.000 M	100.00 k	850.790000 M	-39.24	-26.24

Date: 14.SEP.2014 10:43:48

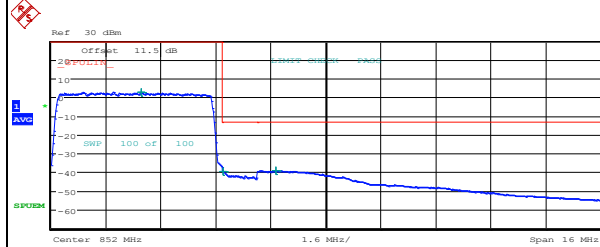
Lowest Band Edge / Full RB



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	Δ Limit [dB]
815.000 M	823.000 M	100.00 k	822.824000 M	-37.48	-24.48
823.000 M	824.000 M	50.00 k	823.993000 M	-36.71	-23.71
824.000 M	829.000 M	100.00 k	827.485000 M	2.22	-27.78

Date: 14.SEP.2014 10:36:43

Highest Band Edge / Full RB



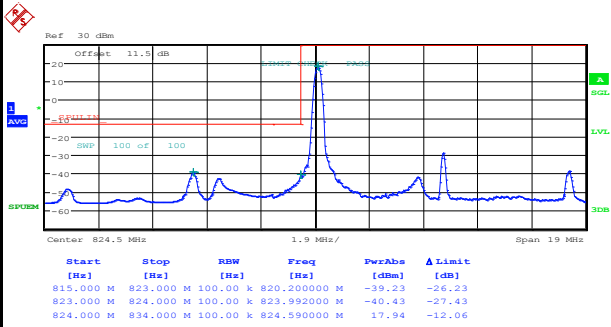
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	Δ Limit [dB]
844.000 M	849.000 M	100.00 k	846.610000 M	2.49	-27.51
849.000 M	850.000 M	50.00 k	849.004000 M	-39.58	-26.58
850.000 M	860.000 M	100.00 k	850.550000 M	-39.39	-26.39

Date: 14.SEP.2014 10:45:19



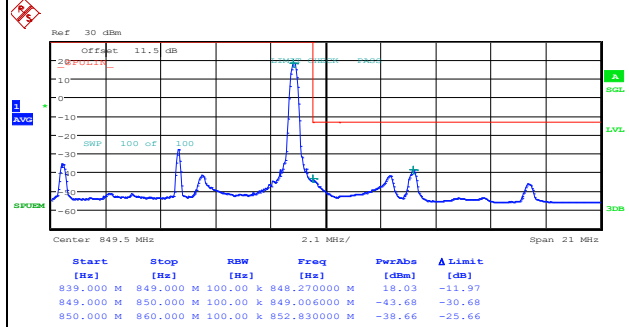
LTE Band 5 / 10MHz / QPSK

Lowest Band Edge / 1 RB



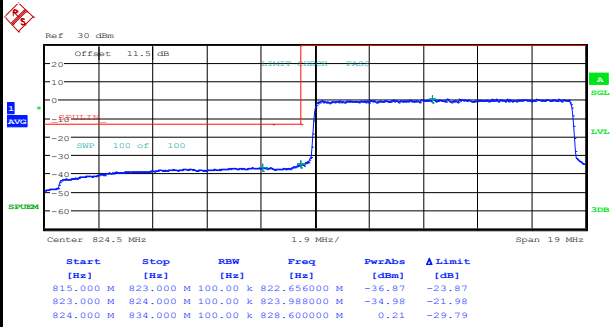
Date: 14.SEP.2014 10:48:51

Highest Band Edge / 1 RB



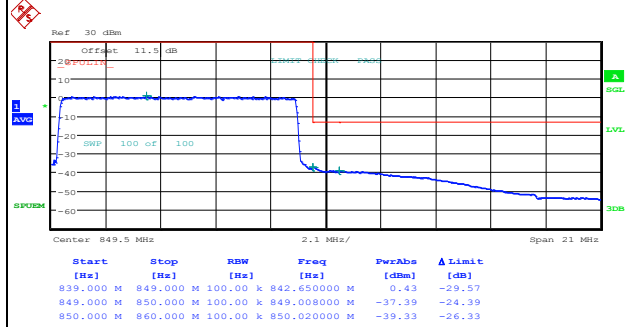
Date: 14.SEP.2014 10:57:15

Lowest Band Edge / Full RB



Date: 14.SEP.2014 10:50:22

Highest Band Edge / Full RB

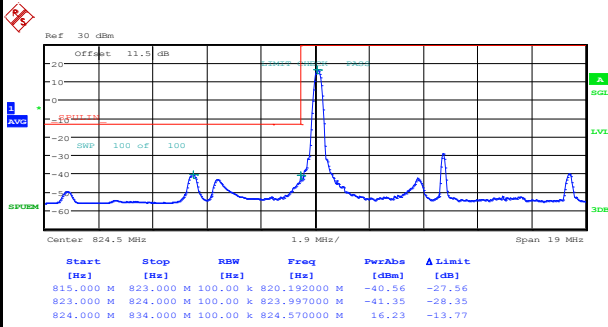


Date: 14.SEP.2014 10:58:46



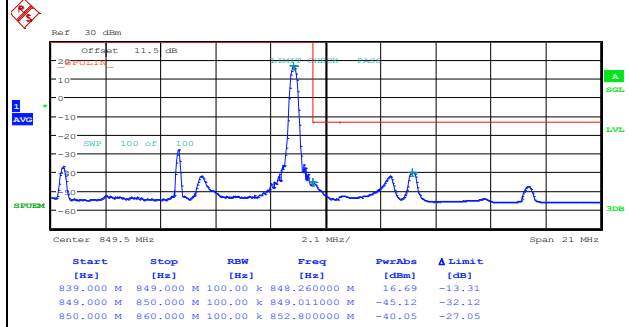
LTE Band 5 / 10MHz / 16QAM

Lowest Band Edge / 1 RB



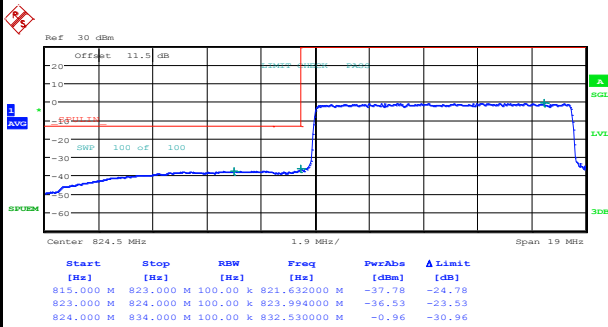
Date: 14.SEP.2014 10:49:36

Highest Band Edge / 1 RB



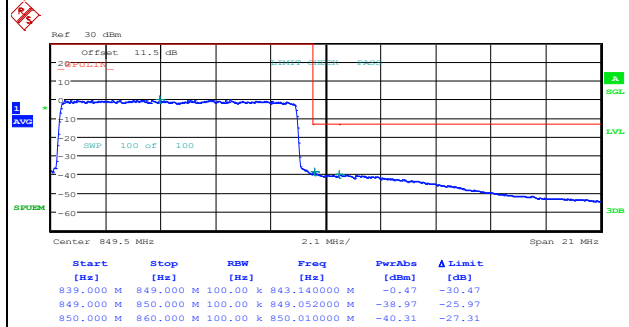
Date: 14.SEP.2014 10:58:01

Lowest Band Edge / Full RB



Date: 14.SEP.2014 10:51:08

Highest Band Edge / Full RB

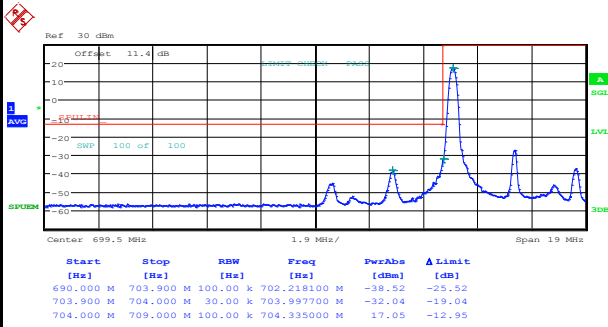


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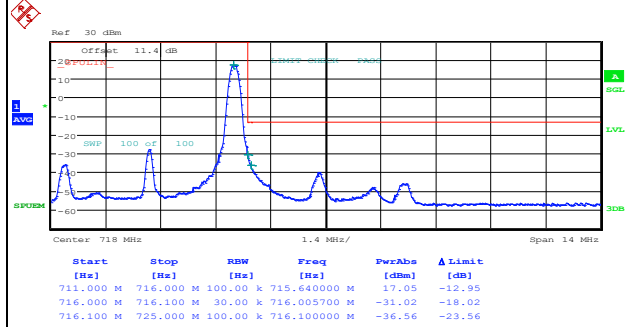
LTE Band 17 / 5MHz / QPSK

Lowest Band Edge / 1 RB



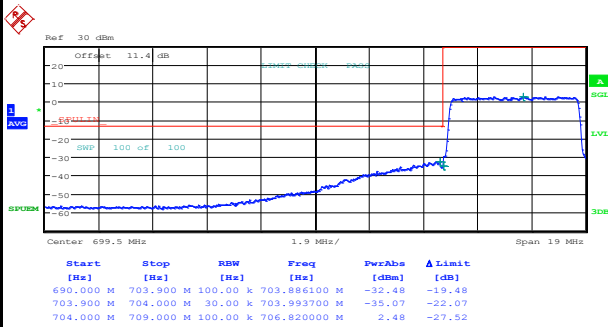
Date: 14.SEP.2014 11:09:43

Highest Band Edge / 1 RB



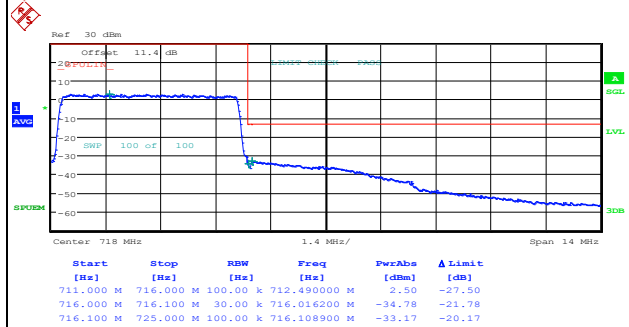
Date: 14.SEP.2014 11:18:09

Lowest Band Edge / Full RB



Date: 14.SEP.2014 11:11:14

Highest Band Edge / Full RB

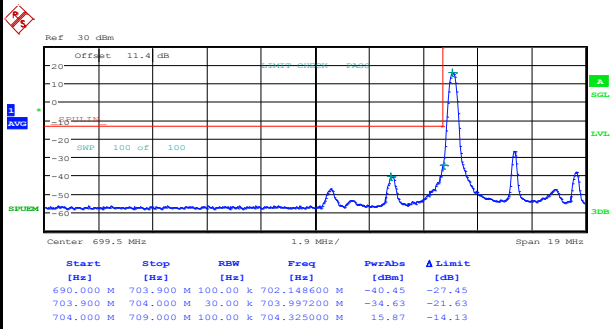


Date: 14.SEP.2014 11:19:39



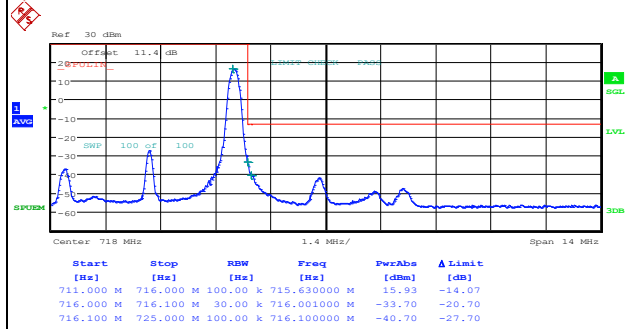
LTE Band 17 / 5MHz / 16QAM

Lowest Band Edge / 1 RB



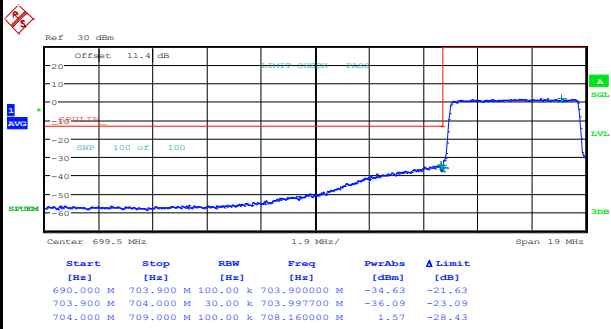
Date: 14.SEP.2014 11:10:28

Highest Band Edge / 1 RB



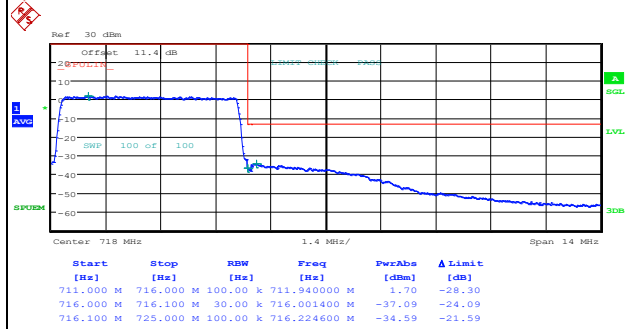
Date: 14.SEP.2014 11:18:54

Lowest Band Edge / Full RB



Date: 14.SEP.2014 11:11:59

Highest Band Edge / Full RB

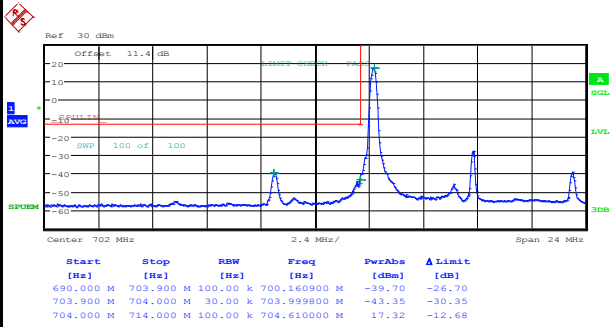


Date: 14.SEP.2014 11:20:25



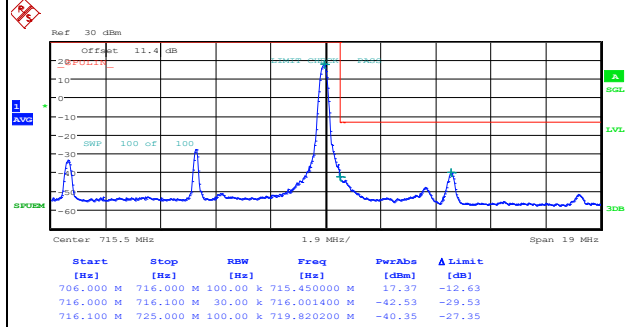
LTE Band 17 / 10MHz / QPSK

Lowest Band Edge / 1 RB



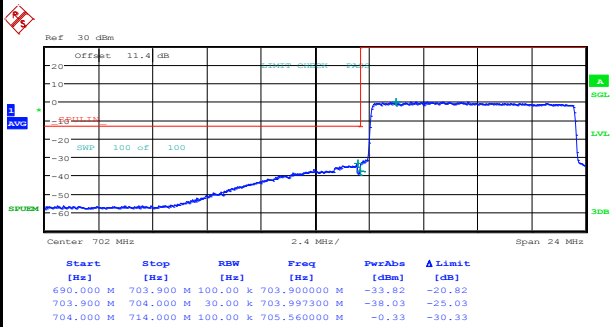
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Highest Band Edge / 1 RB



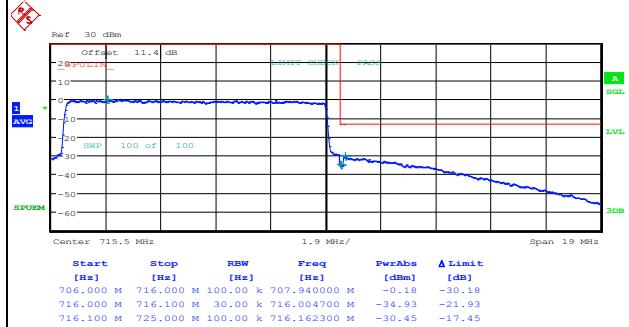
Date: 14.SEP.2014 11:32:20

Lowest Band Edge / Full RB



Date: 14.SEP.2014 11:25:26

Highest Band Edge / Full RB

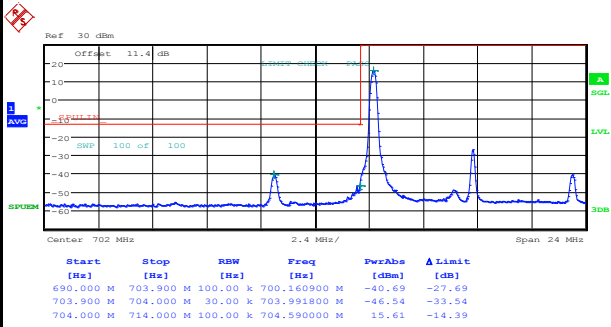


Date: 14.SEP.2014 11:33:51



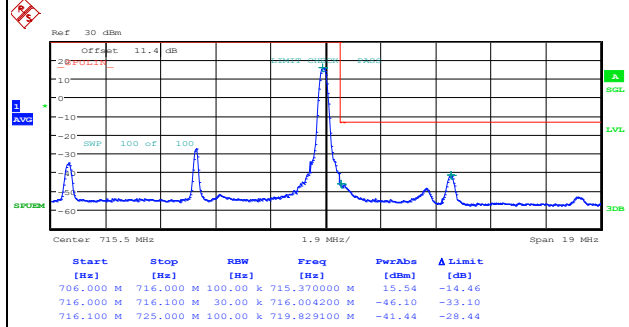
LTE Band 17 / 10MHz / 16QAM

Lowest Band Edge / 1 RB



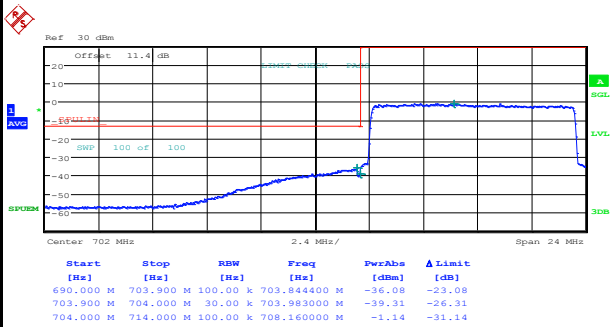
Date: 14.SEP.2014 11:24:41

Highest Band Edge / 1 RB



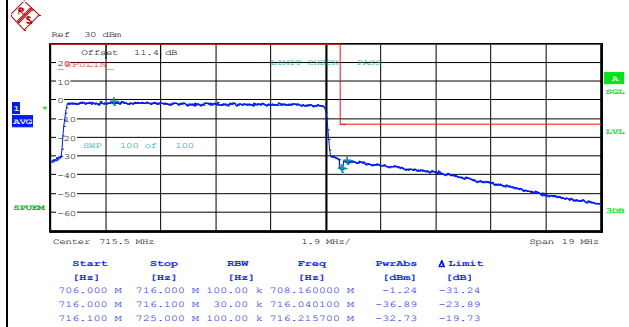
Date: 14.SEP.2014 11:33:05

Lowest Band Edge / Full RB



Date: 14.SEP.2014 11:26:12

Highest Band Edge / Full RB



Date: 14.SEP.2014 11:34:36



Conducted Spurious Emission

Table with 8 columns: Mode, Frequency, RB Size:1RB, Lower CH, Middle CH, Higher CH, Limit, Result. LTE Band 5 / 1.4MHz / QPSK. Result: PASS

Table with 8 columns: Mode, Frequency, RB Size:1RB, Lower CH, Middle CH, Higher CH, Limit, Result. LTE Band 5 / 1.4MHz / 16QAM. Result: PASS

Table with 8 columns: Mode, Frequency, RB Size:1RB, Lower CH, Middle CH, Higher CH, Limit, Result. LTE Band 5 / 3MHz / QPSK. Result: PASS

Table with 8 columns: Mode, Frequency, RB Size:1RB, Lower CH, Middle CH, Higher CH, Limit, Result. LTE Band 5 / 3MHz / 16QAM. Result: PASS



Mode	LTE Band 5 / 5MHz / QPSK						Limit
Frequency	30MHz~1GHz		1GHz~3GHz		3GHz~18GHz		-13dBm
RB Size:1RB	dBm	MHz	dBm	MHz	dBm	MHz	Result
Lower CH	-60.13	919.08	-47.27	2826	-44.99	3500	PASS
Middle CH	-60.45	941.06	-46.70	1668	-44.84	3508	
Higher CH	-60.39	943.44	-46.81	1690	-44.91	3508	

Mode	LTE Band 5 / 5MHz / 16QAM						Limit
Frequency	30MHz~1GHz		1GHz~3GHz		3GHz~18GHz		-13dBm
RB Size:1RB	dBm	MHz	dBm	MHz	dBm	MHz	Result
Lower CH	-60.26	946.94	-47.24	2816	-45.01	3504	PASS
Middle CH	-60.42	899.76	-47.06	2992	-44.90	3500	
Higher CH	-60.45	930.7	-47.08	2998	-44.86	3508	

Mode	LTE Band 5 / 10MHz / QPSK						Limit
Frequency	30MHz~1GHz		1GHz~3GHz		3GHz~18GHz		-13dBm
RB Size:1RB	dBm	MHz	dBm	MHz	dBm	MHz	Result
Lower CH	-60.24	969.2	-46.30	1650	-44.92	3504	PASS
Middle CH	-60.34	245.09	-47.13	3000	-44.96	3504	
Higher CH	-60.31	906.9	-45.95	1680	-44.96	3492	

Mode	LTE Band 5 / 10MHz / 16QAM						Limit
Frequency	30MHz~1GHz		1GHz~3GHz		3GHz~18GHz		-13dBm
RB Size:1RB	dBm	MHz	dBm	MHz	dBm	MHz	Result
Lower CH	-60.39	241.95	-47.21	2834	-44.96	3520	PASS
Middle CH	-60.46	931.82	-47.16	2804	-44.87	3500	
Higher CH	-60.36	905.92	-47.15	2996	-44.88	3500	



Mode	LTE Band 17 / 5MHz / QPSK						Limit
Frequency	30MHz~1GHz		1GHz~3GHz		3GHz~9GHz		-13dBm
RB Size:1RB	dBm	MHz	dBm	MHz	dBm	MHz	Result
Lower CH	-60.26	922.725	-46.42	1408	-45.01	3508	PASS
Middle CH	-60.27	909.25	-46.57	1416	-45.02	3512	
Higher CH	-60.33	907.6	-47.19	2998	-45.05	3516	

Mode	LTE Band 17 / 5MHz / 16QAM						Limit
Frequency	30MHz~1GHz		1GHz~3GHz		3GHz~9GHz		-13dBm
RB Size:1RB	dBm	MHz	dBm	MHz	dBm	MHz	Result
Lower CH	-60.25	920.525	-47.30	2800	-45.01	3508	PASS
Middle CH	-60.29	904.025	-47.28	2996	-45.01	3516	
Higher CH	-60.33	927.675	-47.25	2998	-45.04	3508	

Mode	LTE Band 17 / 10MHz / QPSK						Limit
Frequency	30MHz~1GHz		1GHz~3GHz		3GHz~9GHz		-13dBm
RB Size:1RB	dBm	MHz	dBm	MHz	dBm	MHz	Result
Lower CH	-60.42	956	-47.29	2804	-45.01	3516	PASS
Middle CH	-60.20	949.125	-47.22	1412	-45.04	3504	
Higher CH	-60.28	945.275	-46.47	1414	-45.06	3504	

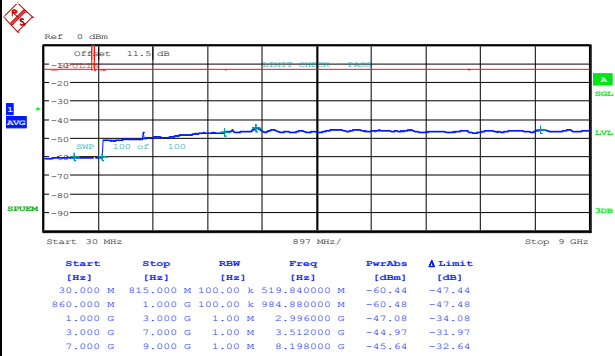
Mode	LTE Band 17 / 10MHz / 16QAM						Limit
Frequency	30MHz~1GHz		1GHz~3GHz		3GHz~9GHz		-13dBm
RB Size:1RB	dBm	MHz	dBm	MHz	dBm	MHz	Result
Lower CH	-60.35	971.4	-47.34	2982	-44.95	3500	PASS
Middle CH	-60.20	929.05	-47.18	2992	-45.00	3508	
Higher CH	-60.35	963.425	-47.20	2998	-44.90	3500	



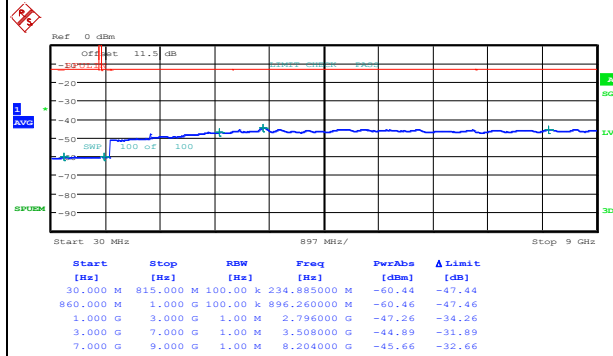
LTE Band 5 / 1.4MHz

Lowest Channel / QPSK

Lowest Channel / 16QAM



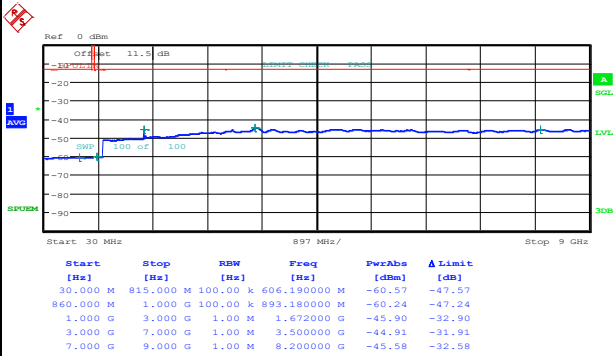
Date: 14.SEP.2014 09:36:29



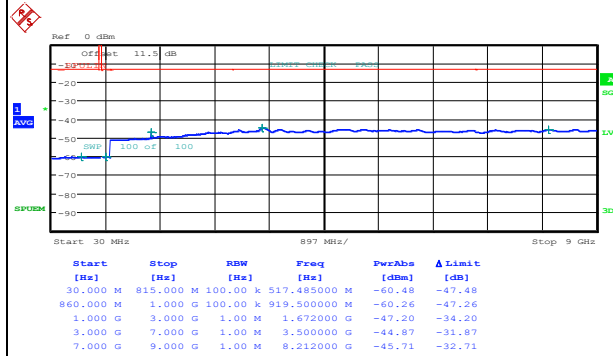
Date: 14.SEP.2014 09:37:19

Middle Channel / QPSK

Middle Channel / 16QAM



Date: 14.SEP.2014 09:39:10



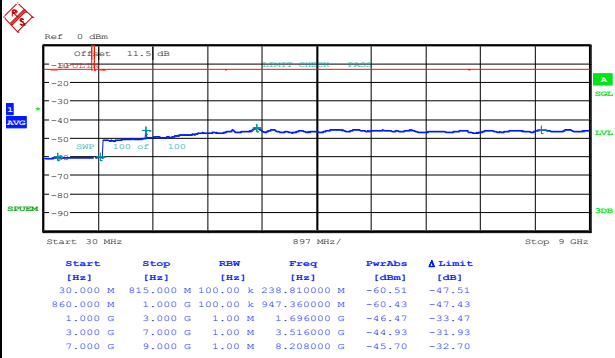
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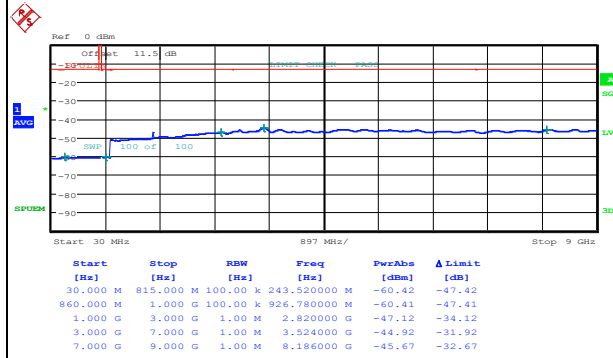
LTE Band 5 / 1.4MHz

Highest Channel / QPSK

Highest Channel / 16QAM



Date: 14.SEP.2014 09:44:54

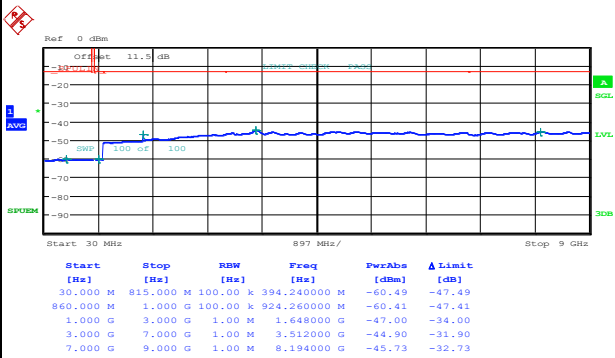


Date: 14.SEP.2014 09:45:44

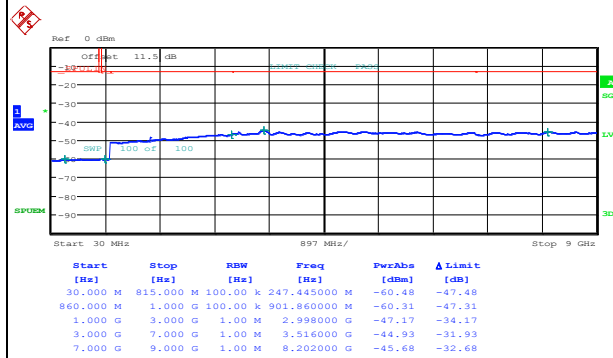
LTE Band 5 / 3MHz

Lowest Channel / QPSK

Lowest Channel / 16QAM



Date: 14.SEP.2014 10:23:18



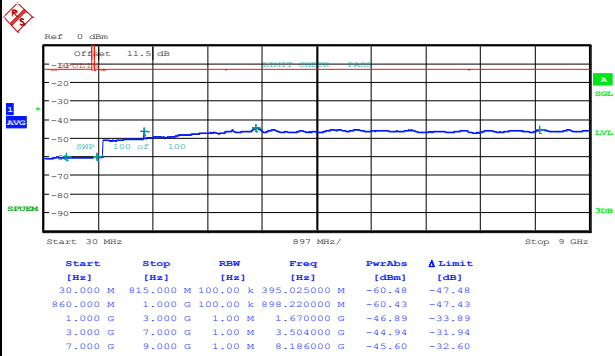
Date: 14.SEP.2014 10:24:08



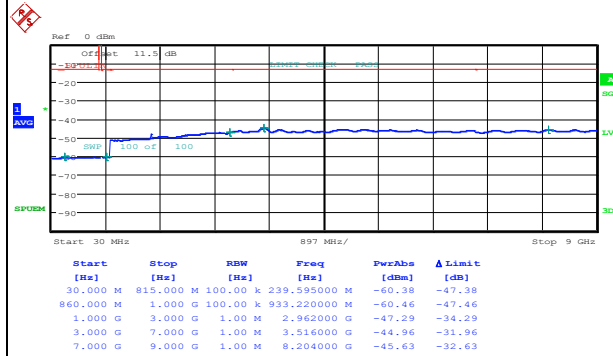
LTE Band 5 / 3MHz

Middle Channel / QPSK

Middle Channel / 16QAM



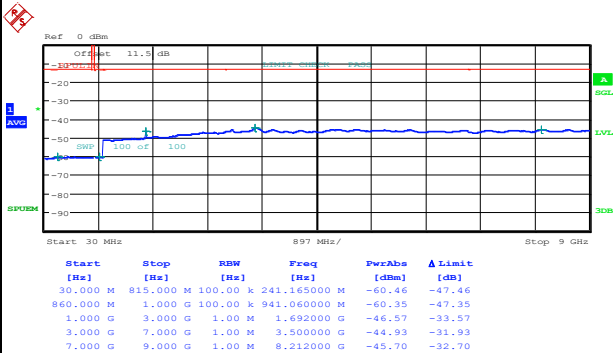
Date: 14.SEP.2014 10:25:59



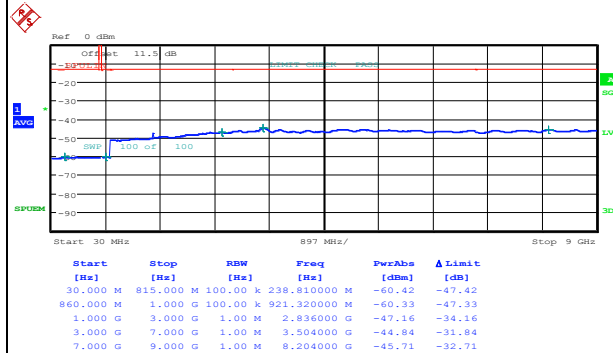
Date: 14.SEP.2014 10:26:49

Highest Channel / QPSK

Highest Channel / 16QAM



Date: 14.SEP.2014 10:31:42



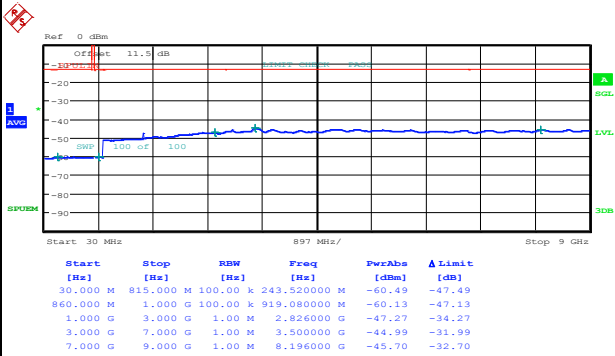
Date: 14.SEP.2014 10:32:32



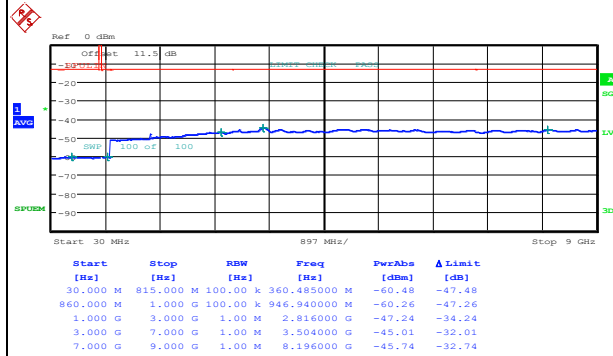
LTE Band 5 / 5MHz

Lowest Channel / QPSK

Lowest Channel / 16QAM



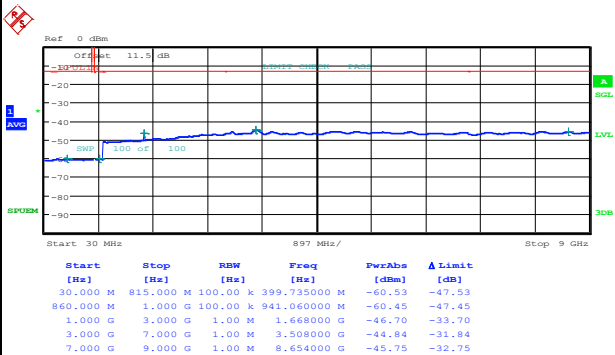
Date: 14.SEP.2014 10:37:33



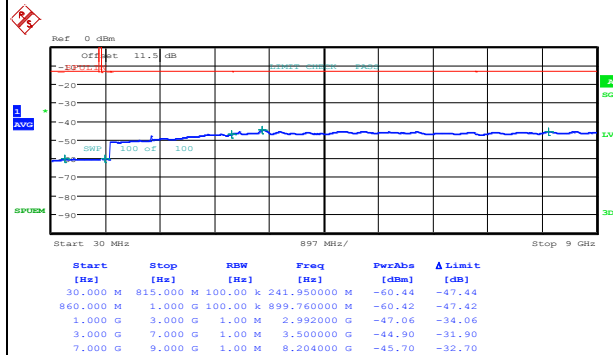
Date: 14.SEP.2014 10:38:35

Middle Channel / QPSK

Middle Channel / 16QAM



Date: 14.SEP.2014 10:40:26



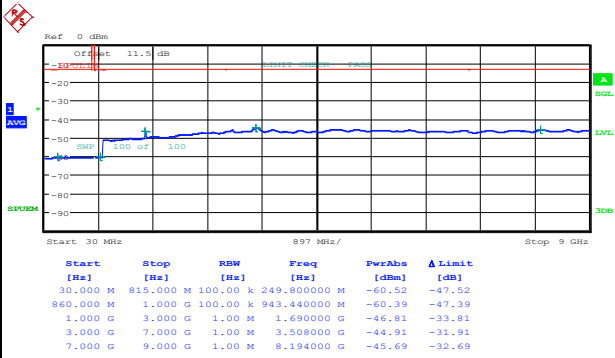
Date: 14.SEP.2014 10:41:17



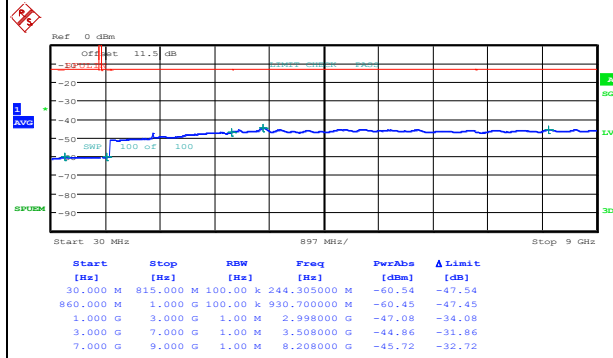
LTE Band 5 / 5MHz

Highest Channel / QPSK

Highest Channel / 16QAM



Date: 14.SEP.2014 10:46:10

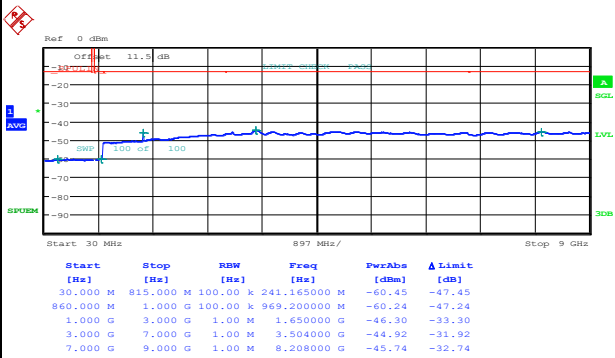


Date: 14.SEP.2014 10:47:00

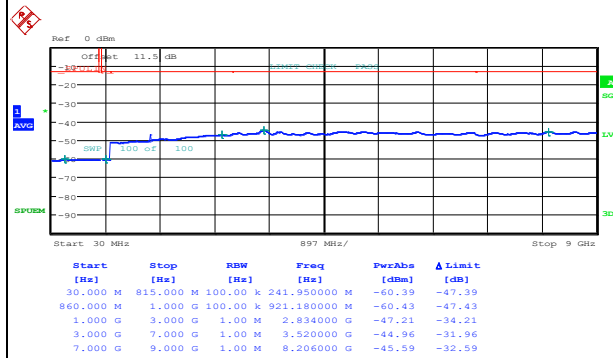
LTE Band 5 / 10MHz

Lowest Channel / QPSK

Lowest Channel / 16QAM



Date: 14.SEP.2014 10:51:58



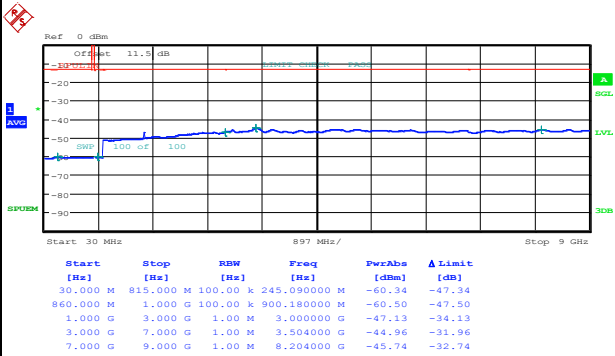
Date: 14.SEP.2014 10:52:48



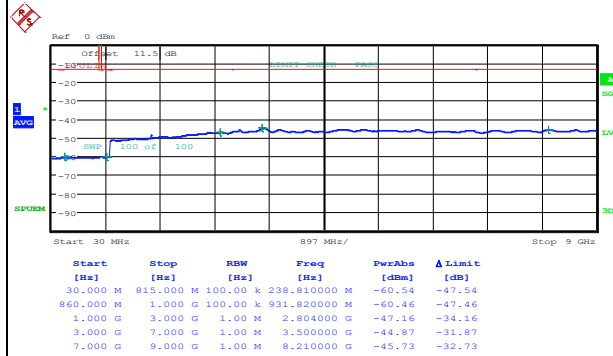
LTE Band 5 / 10MHz

Middle Channel / QPSK

Middle Channel / 16QAM



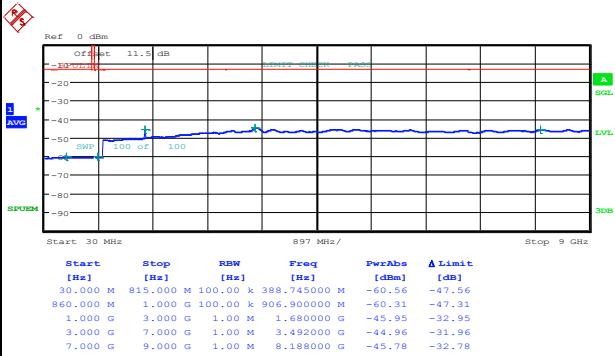
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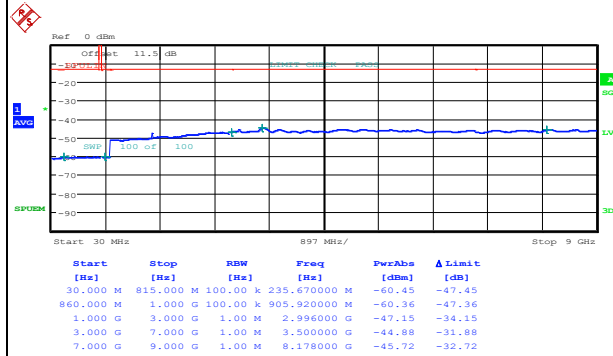
Date: 14.SEP.2014 10:55:29

Highest Channel / QPSK

Highest Channel / 16QAM



Date: 14.SEP.2014 11:00:23



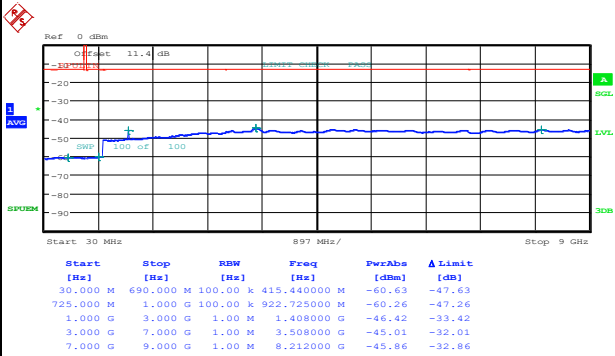
Date: 14.SEP.2014 11:01:13



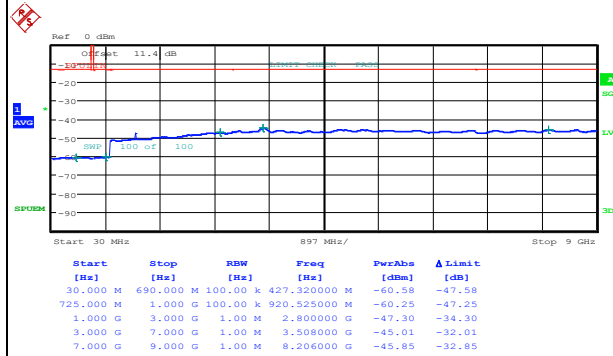
LTE Band 17 / 5MHz

Lowest Channel / QPSK

Lowest Channel / 16QAM



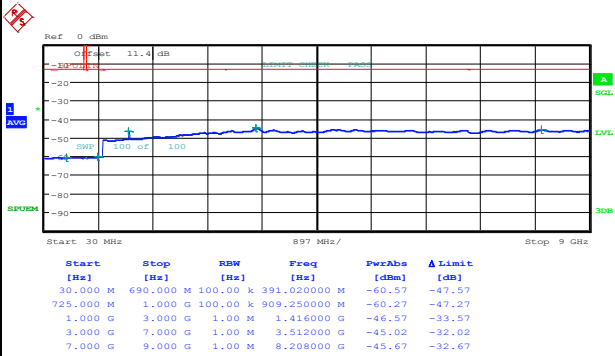
Date: 14.SEP.2014 11:12:49



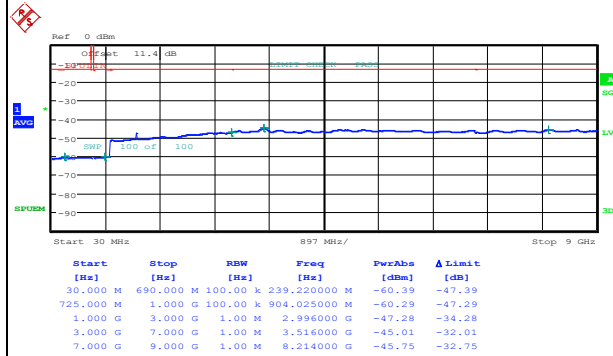
Date: 14.SEP.2014 11:13:40

Middle Channel / QPSK

Middle Channel / 16QAM



Date: 14.SEP.2014 11:15:32



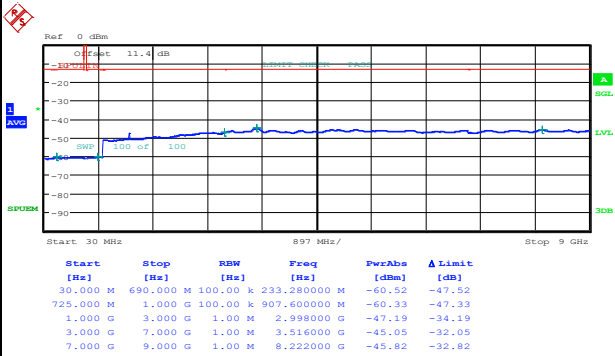
Date: 14.SEP.2014 11:16:23



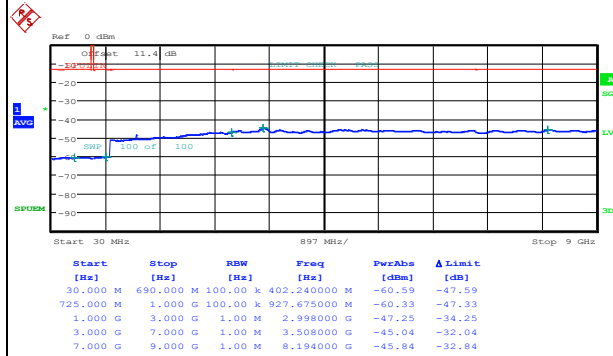
LTE Band 17 / 5MHz

Highest Channel / QPSK

Highest Channel / 16QAM



Date: 14.SEP.2014 11:21:15

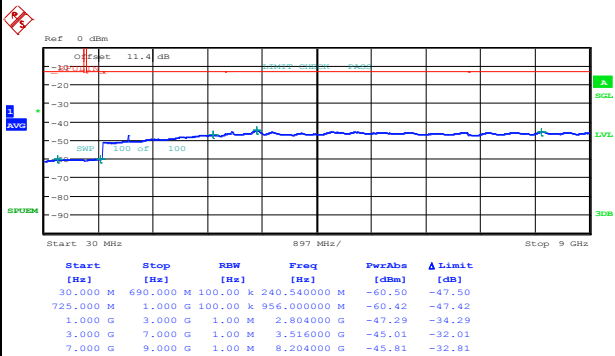


Date: 14.SEP.2014 11:22:05

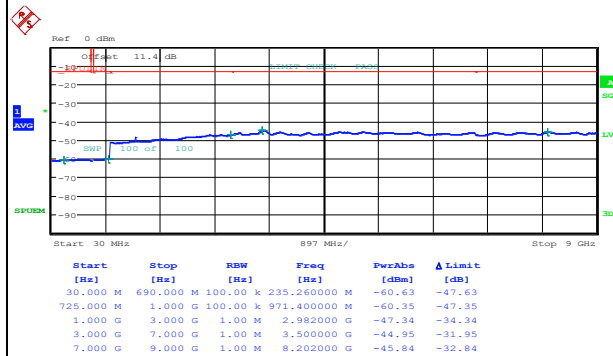
LTE Band 17 / 10MHz

Lowest Channel / QPSK

Lowest Channel / 16QAM



Date: 14.SEP.2014 11:27:02



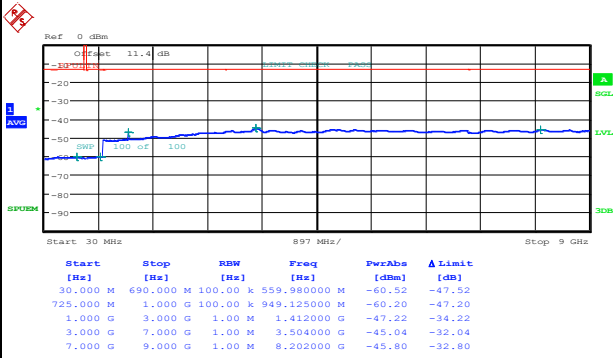
Date: 14.SEP.2014 11:27:53



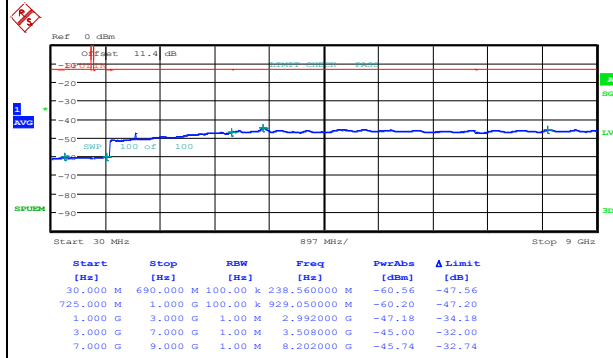
LTE Band 17 / 10MHz

Middle Channel / QPSK

Middle Channel / 16QAM



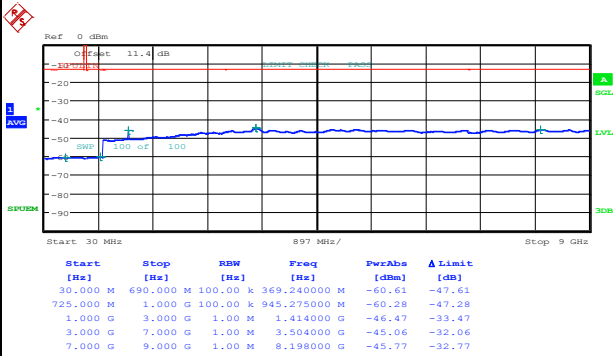
Date: 14.SEP.2014 11:29:43



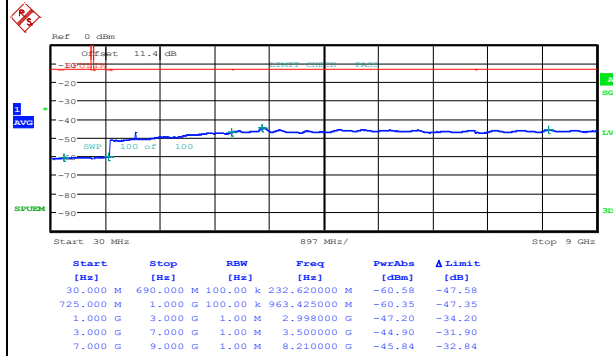
Date: 14.SEP.2014 11:30:34

Highest Channel / QPSK

Highest Channel / 16QAM



Date: 14.SEP.2014 11:35:27



Date: 14.SEP.2014 11:36:18



Frequency Stability

Test Conditions		LTE Band 5 (QPSK) / Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	BW 10MHz	2.5ppm
		Deviation (ppm)	Result
50	Normal Voltage	0.0123	PASS
40	Normal Voltage	0.0104	
30	Normal Voltage	0.0117	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0011	
0	Normal Voltage	0.0016	
-10	Normal Voltage	0.0011	
-20	Normal Voltage	0.0112	
-30	Normal Voltage	0.0126	
20	Maximum Voltage	0.0122	
20	Normal Voltage	0.0000	
20	Battery End Point	0.0018	

Note: Normal Voltage = 3.9V. ; Battery End Point (BEP) = 3.4 V. ; Maximum Voltage =4.35 V



Test Conditions		LTE Band 17 (QPSK) / Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	BW 10MHz	Note 2.
		Deviation (ppm)	Result
50	Normal Voltage	0.0015	PASS
40	Normal Voltage	0.0018	
30	Normal Voltage	0.0023	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0024	
0	Normal Voltage	0.0004	
-10	Normal Voltage	0.0010	
-20	Normal Voltage	0.0017	
-30	Normal Voltage	0.0003	
20	Maximum Voltage	0.0021	
20	Normal Voltage	0.0000	
20	Battery End Point	0.0008	

Note:

1. Normal Voltage = 3.9V. ; Battery End Point (BEP) = 3.4 V. ; Maximum Voltage =4.35 V
2. Note: The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.



Appendix B. Test Results of Radiated Test

ERP/EIRP

LTE Band 5 / 1.4MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	ERP(dBm)	ERP(W)	ERP(dBm)	ERP(W)
Lowest	QPSK	1	0	3.21	0.0021	16.77	0.0475
Middle		1	0	2.91	0.0020	16.04	0.0402
Highest		1	0	3.50	0.0022	16.22	0.0419
Lowest	16QAM	1	0	2.16	0.0016	15.73	0.0374
Middle		1	0	1.83	0.0015	14.96	0.0313
Highest		1	0	2.47	0.0018	15.17	0.0329
Limit	ERP < 7W			Result		PASS	

LTE Band 5 / 3MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	ERP(dBm)	ERP(W)	ERP(dBm)	ERP(W)
Lowest	QPSK	1	0	3.21	0.0021	16.76	0.0474
Middle		1	0	2.96	0.0020	16.03	0.0401
Highest		1	0	3.15	0.0021	15.86	0.0385
Lowest	16QAM	1	0	2.05	0.0016	15.50	0.0355
Middle		1	0	1.76	0.0015	14.81	0.0303
Highest		1	0	1.82	0.0015	14.59	0.0288
Limit	ERP < 7W			Result		PASS	



LTE Band 5 / 5MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	ERP(dBm)	ERP(W)	ERP(dBm)	ERP(W)
Lowest	QPSK	1	0	3.09	0.0020	16.54	0.0451
Middle		1	0	2.87	0.0019	16.04	0.0402
Highest		1	0	3.01	0.0020	15.55	0.0359
Lowest	16QAM	1	0	1.89	0.0015	15.34	0.0342
Middle		1	0	2.02	0.0016	14.92	0.0310
Highest		1	0	2.42	0.0017	15.11	0.0324
Limit	ERP < 7W			Result		PASS	

LTE Band 5 / 10MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	ERP(dBm)	ERP(W)	ERP(dBm)	ERP(W)
Lowest	QPSK	1	0	3.16	0.0021	16.70	0.0468
Middle		1	0	2.65	0.0018	16.06	0.0404
Highest		1	0	2.52	0.0018	15.30	0.0339
Lowest	16QAM	1	0	2.08	0.0016	15.62	0.0365
Middle		1	0	1.54	0.0014	14.97	0.0314
Highest		1	0	1.37	0.0014	14.17	0.0261
Limit	ERP < 7W			Result		PASS	

LTE Band 17 / 5MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	ERP(dBm)	ERP(W)	ERP(dBm)	ERP(W)
Lowest	QPSK	1	0	-4.13	0.0004	12.74	0.0188
Middle		1	0	-3.63	0.0004	13.23	0.0210
Highest		1	0	-3.06	0.0005	13.29	0.0213
Lowest	16QAM	1	0	-4.46	0.0004	12.14	0.0164
Middle		1	0	-4.13	0.0004	12.30	0.0170
Highest		1	0	-3.23	0.0005	12.90	0.0195
Limit	ERP < 3W			Result		PASS	