

Annex 1: Measurement diagrams to  
**TEST REPORT**  
 No.: TR15-1-0007501-02c







According to:  
**FCC Regulations**  
 Part 22, Part 24, Part 27

**IC-Regulations**  
 RSS-132 Issue 3, RSS-133 Issue 6,  
 RSS-139 Issue 3, RSS-Gen Issue 4

for

peiker acoustic GmbH & Co. KG  
 GSM/W-CDMA/LTE Module  
 V1140-101-1

**FCC-ID:** QWY-V1140-101-1  
**IC:** 6588A-V11401011  
**PMN:** V1140-101-1  
**HVIN:** V1140-101-1

Laboratory Accreditation and Listings			
 <b>DAKkS</b> Deutsche Akkreditierungsstelle D-PL-12047-01-01	 FEDERAL COMMUNICATIONS COMMISSION <b>FCC</b> USA MRA US-EU 0003	 Industry Canada Reg. No.: 3462D-1 Reg. No.: 3462D-2 Reg. No.: 3462D-3	 Voluntary Controls for Electromagnetic Emissions Reg. No.: R-2666 C-2914, T-1967, G-301
 <b>WiFi</b> ALLIANCE AUTHORIZED RF LABORATORY	 <b>CTIA Authorized Test Lab</b> LAB CODE 20011130-00		
accredited according to DIN EN ISO/IEC 17025			
<p align="center"> <b>CETECOM GmbH</b>            Laboratory Radio Communications &amp; Electromagnetic Compatibility            Im Teelbruch 116 • 45219 Essen • Germany            Registered in Essen, Germany, Reg. No.: HRB Essen 8984            Tel.: + 49 (0) 20 54 / 95 19-954 • Fax: + 49 (0) 20 54 / 95 19-964            E-mail: info@cetecom.com • Internet: www.cetecom.com         </p>			

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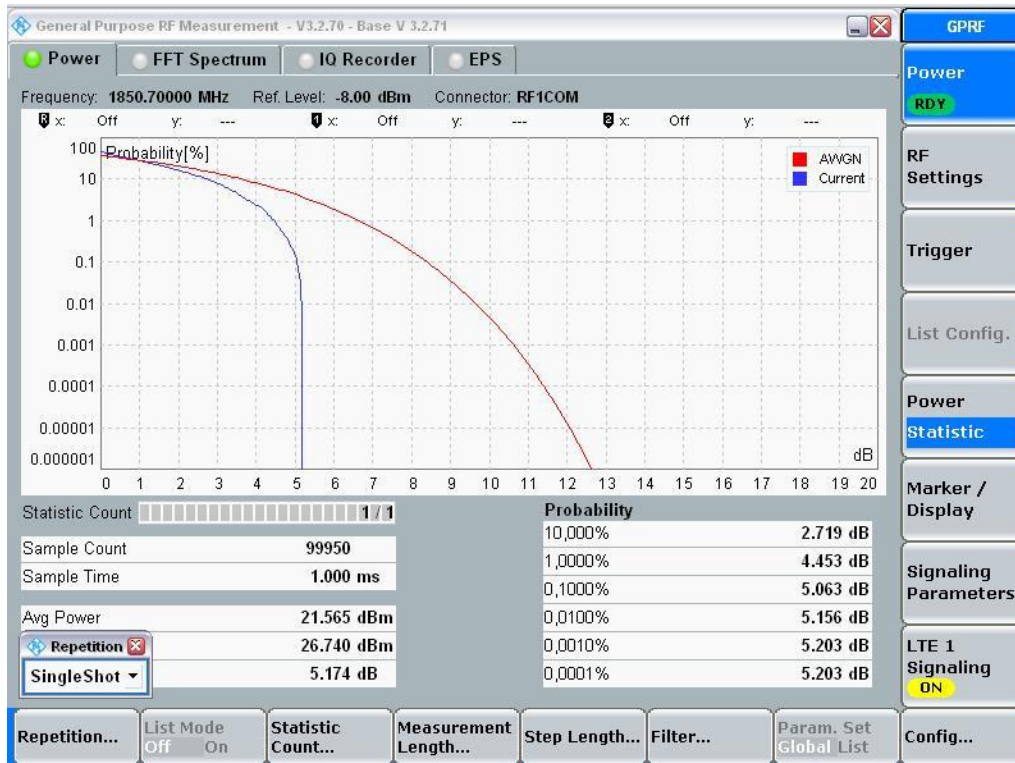
# 1. Measurement diagrams LTE-mode

## 1.1. PAPR-Value (CCDF plots)

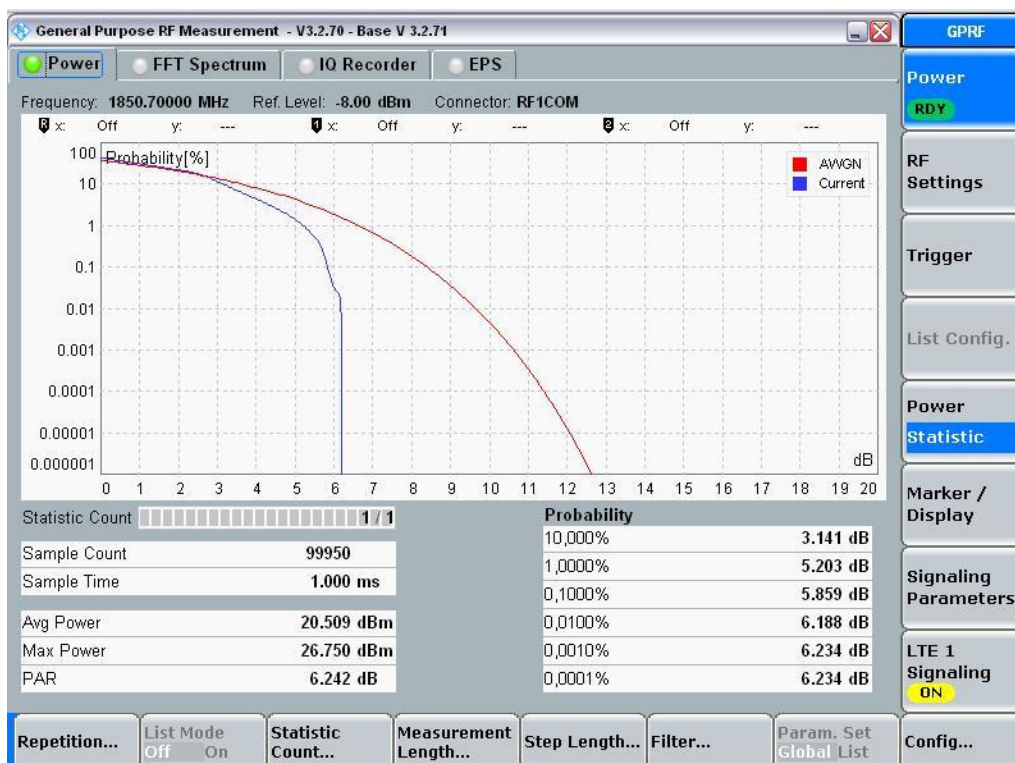
### 1.1.1. LTE Band 2

Worst-Case of each maximum Peak to Average power value was tested with the CCDF method

#### 1.1.1.1. 1.4MHz signal bandwidth

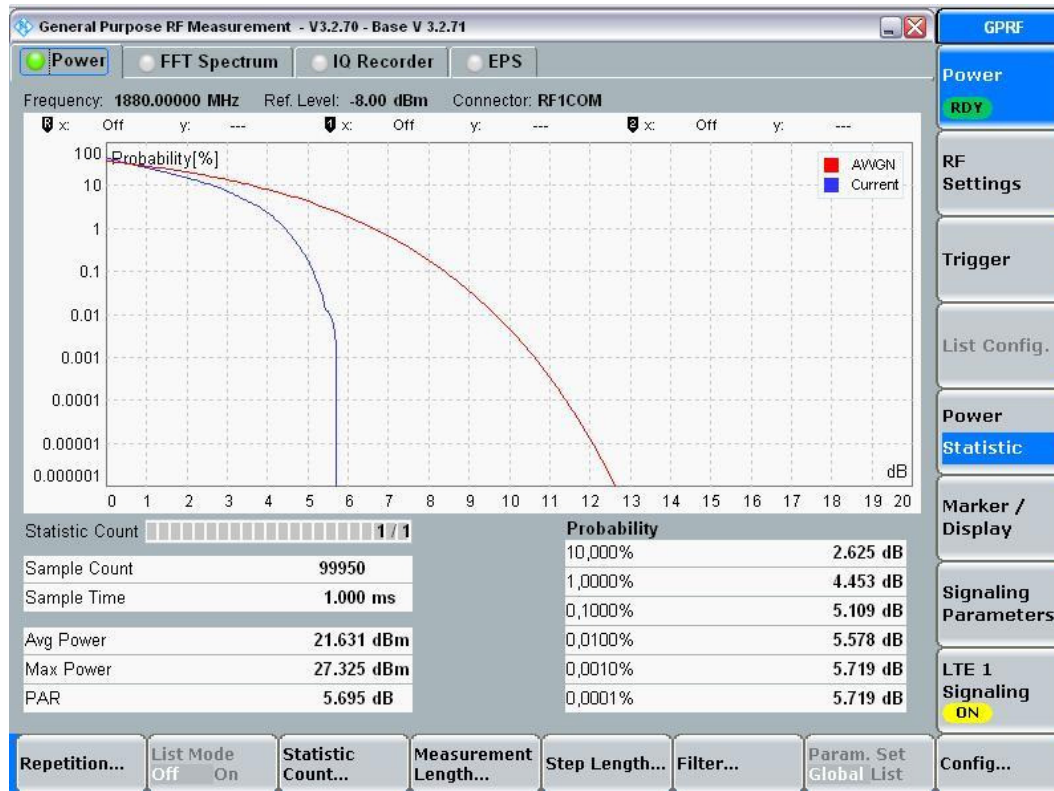


QPSK, Ch18607, 100% RB (6RBs)

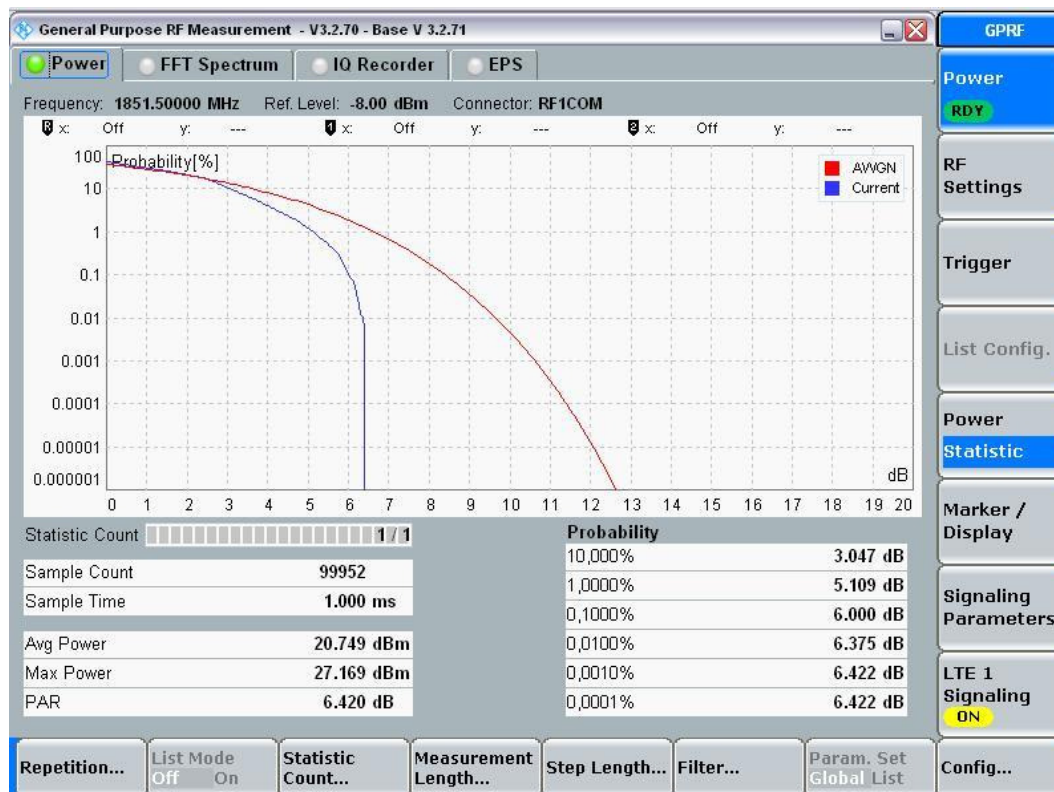


16-QAM, Ch18607, 100% RB (6RBs)

1.1.1.2. 3MHz signal bandwidth

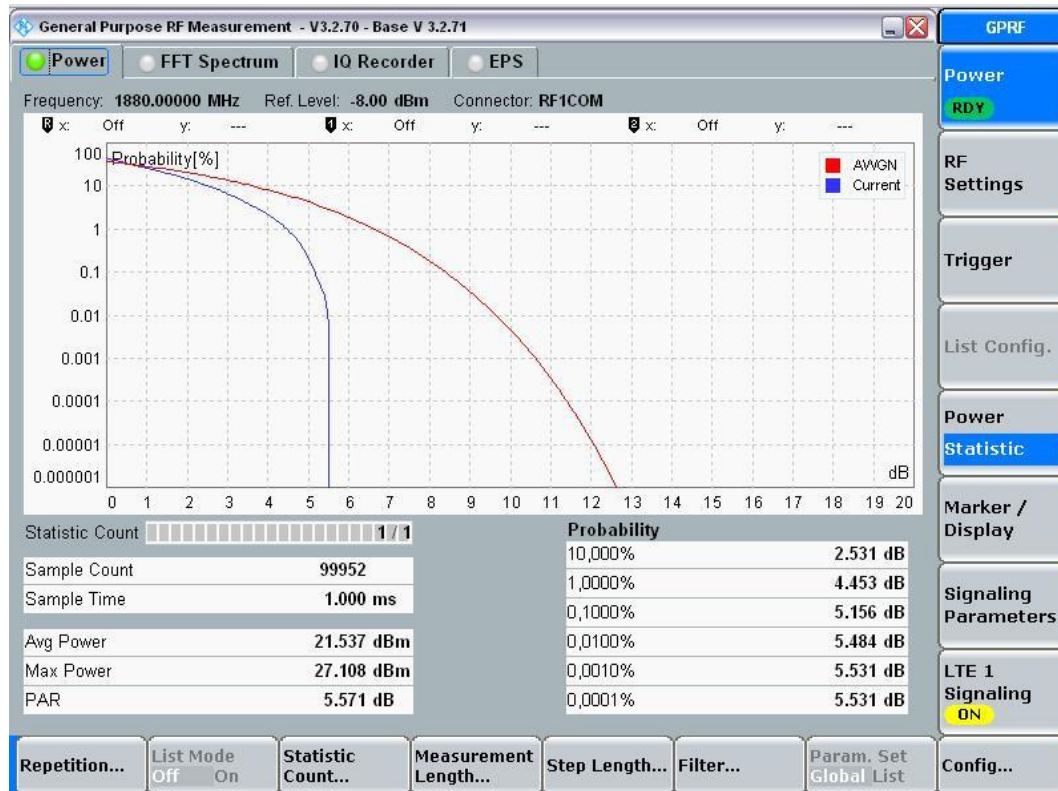


QPSK, Ch18900, 100% RB (15RBs)

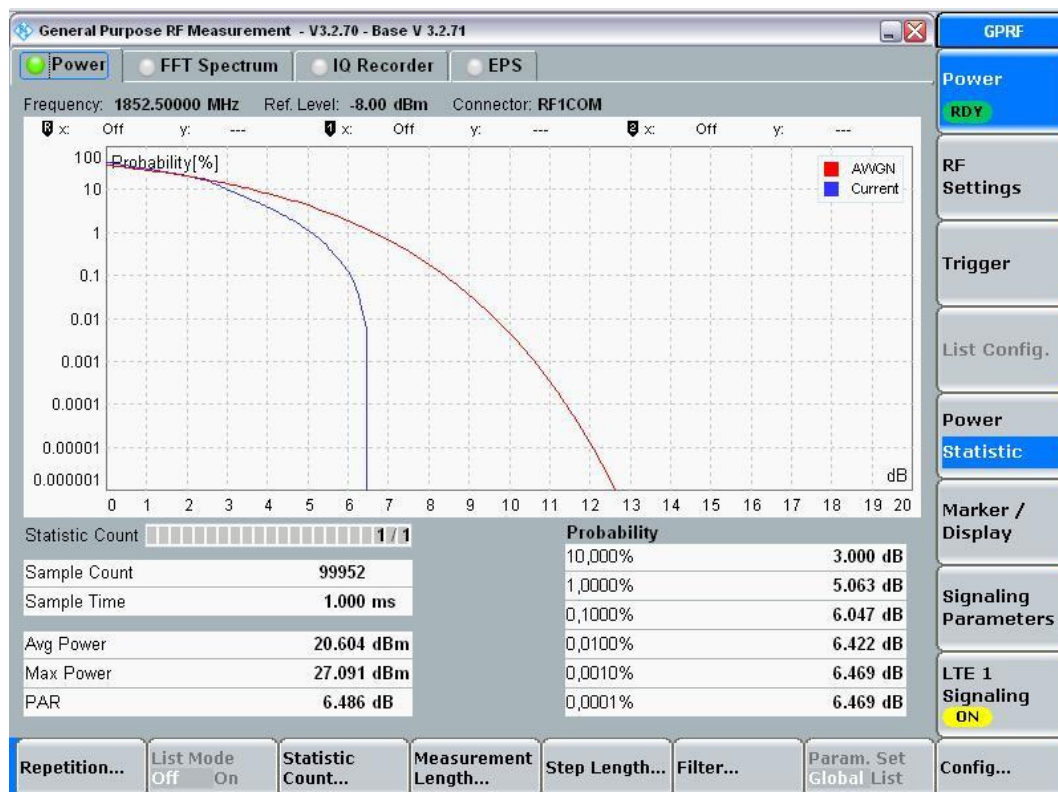


16-QAM, Ch18615, 100% RB (15RBs)

1.1.1.3. 5MHz signal bandwidth

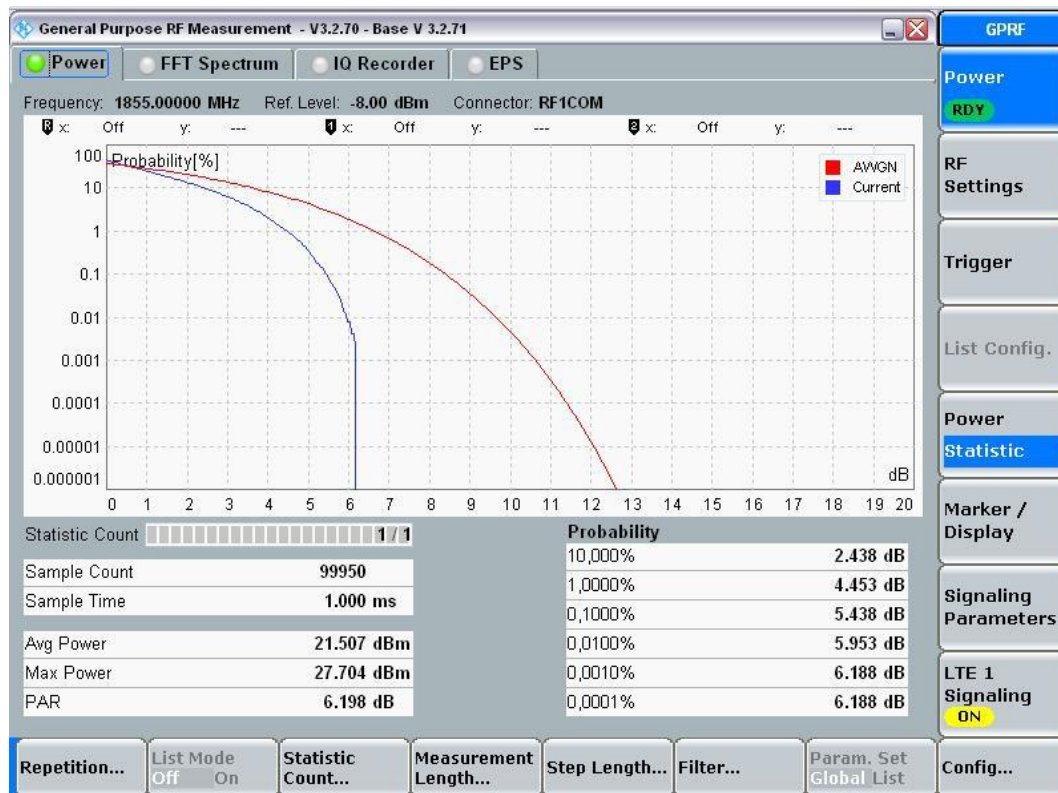


QPSK, Ch18900, 100% RB (25RBs)

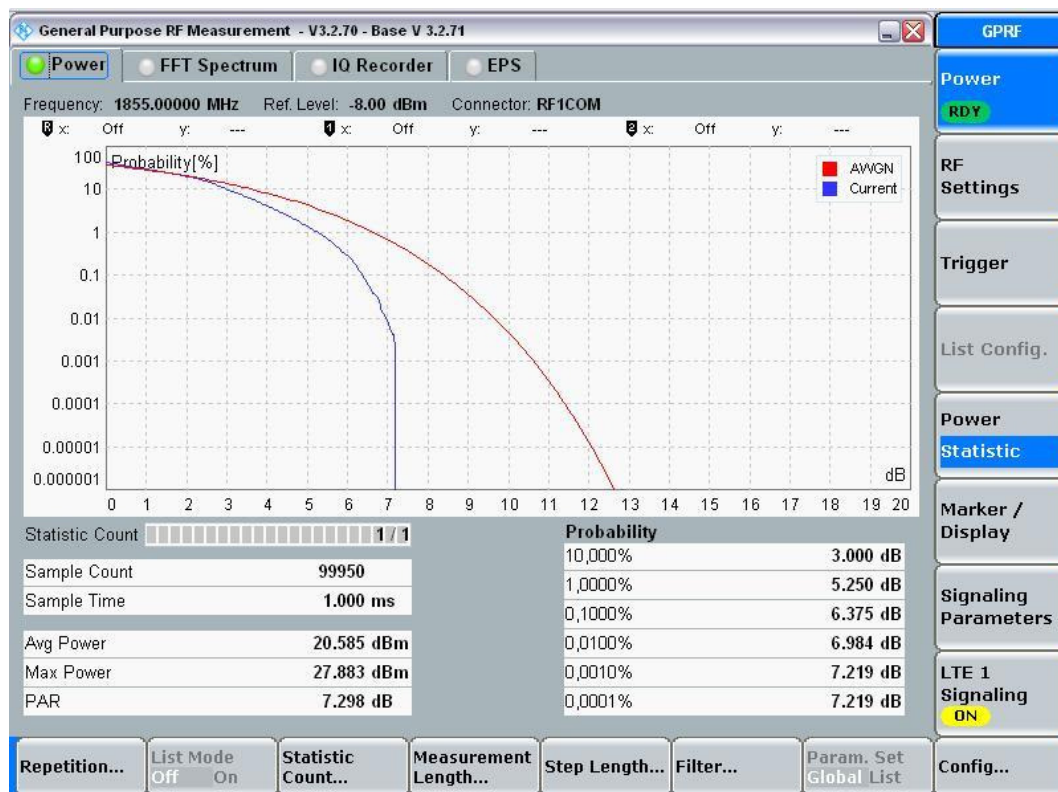


16-QAM, Ch18625, 100% RB (25RBs)

1.1.1.4. 10MHz signal bandwidth

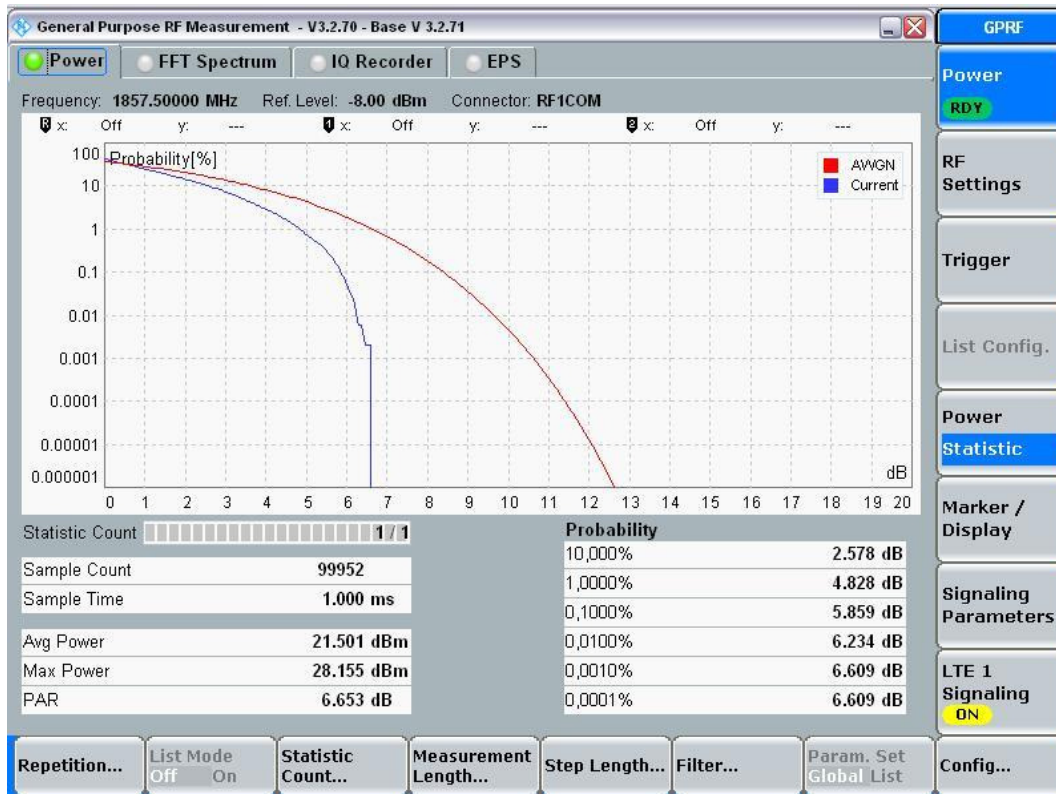


QPSK, Ch18650, 100% RB (50RBs)

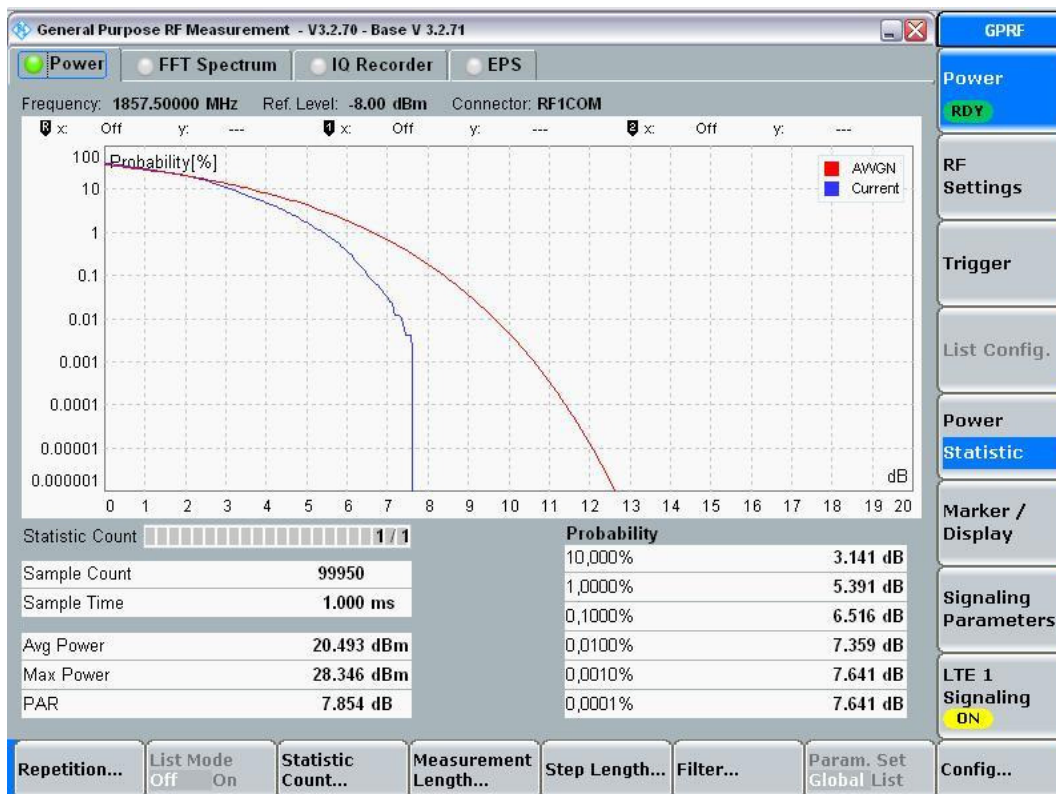


16-QAM, Ch18650, 100% RB (50RBs)

1.1.1.5. 15MHz signal bandwidth



QPSK, Ch18675, 100% RB (75RBs)

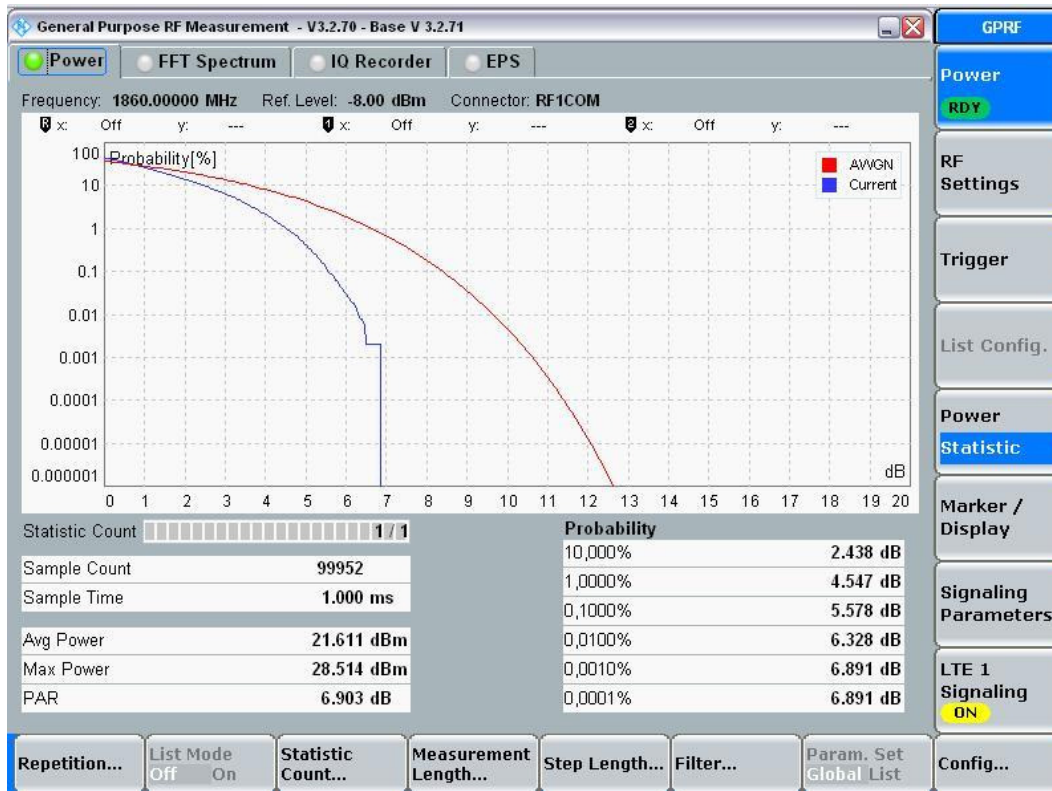


16-QAM, Ch18675, 100% RB (75RBs)

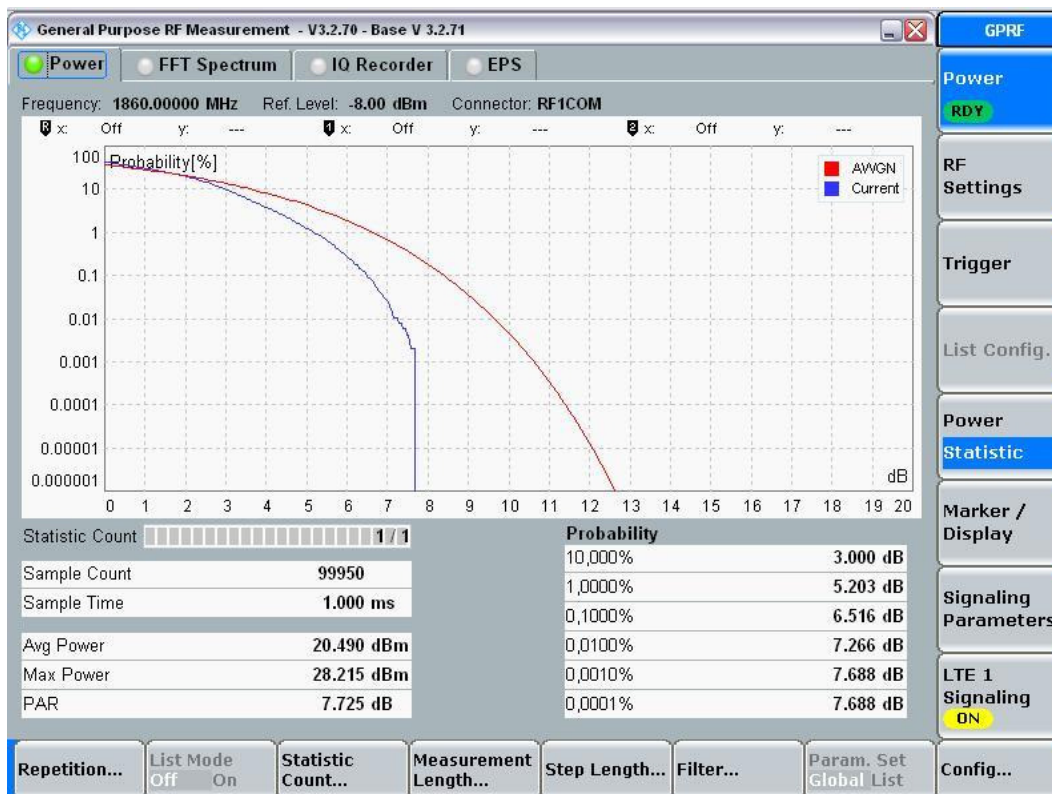




1.1.1.6. 20MHz signal bandwidth



QPSK, Ch18700, 100% RB (100RBs)



16-QAM, Ch18700, 100% RB (100RBs)

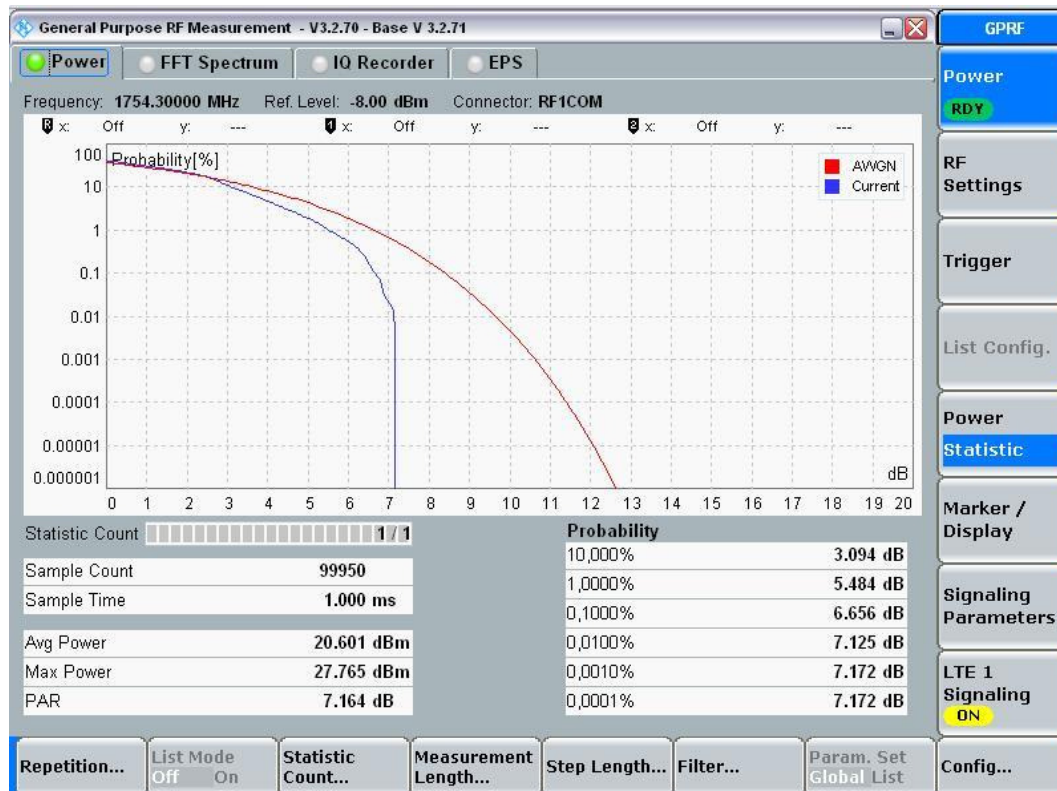
### 1.1.2. LTE Band 4

Worst-Case of each maximum Peak to Average power value was tested with the CCDF method

#### 1.1.2.1. 1.4MHz signal bandwidth



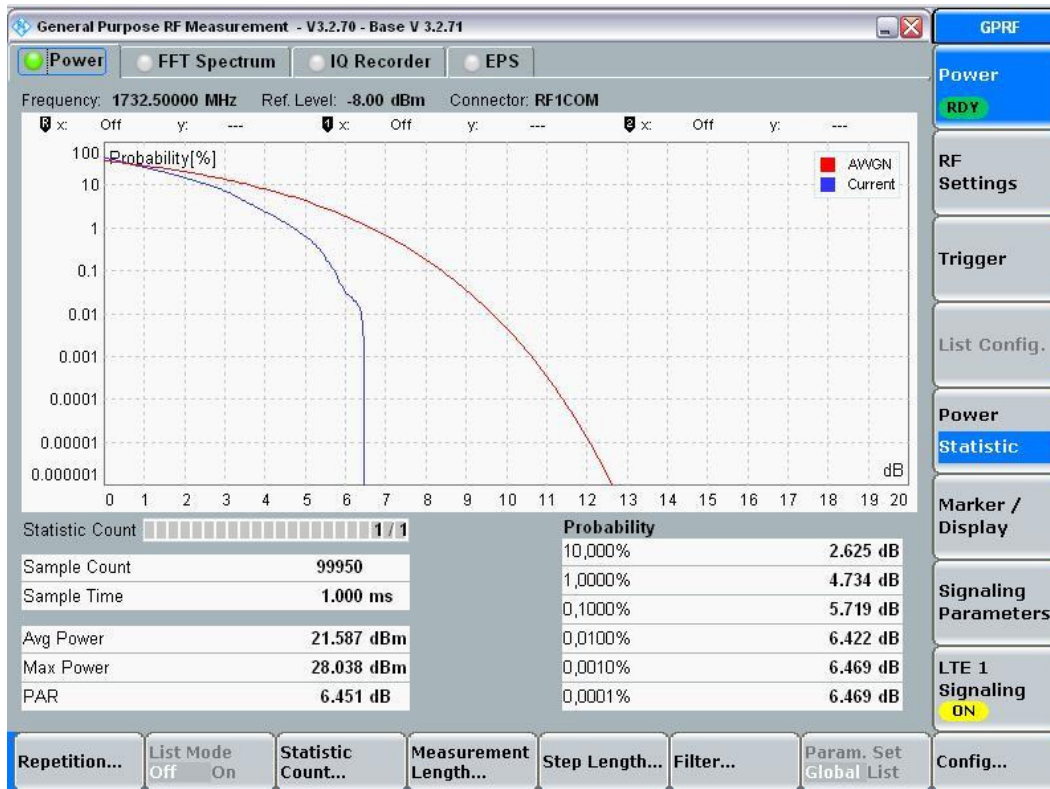
QPSK, Ch20393, 100% RB (6RBs)



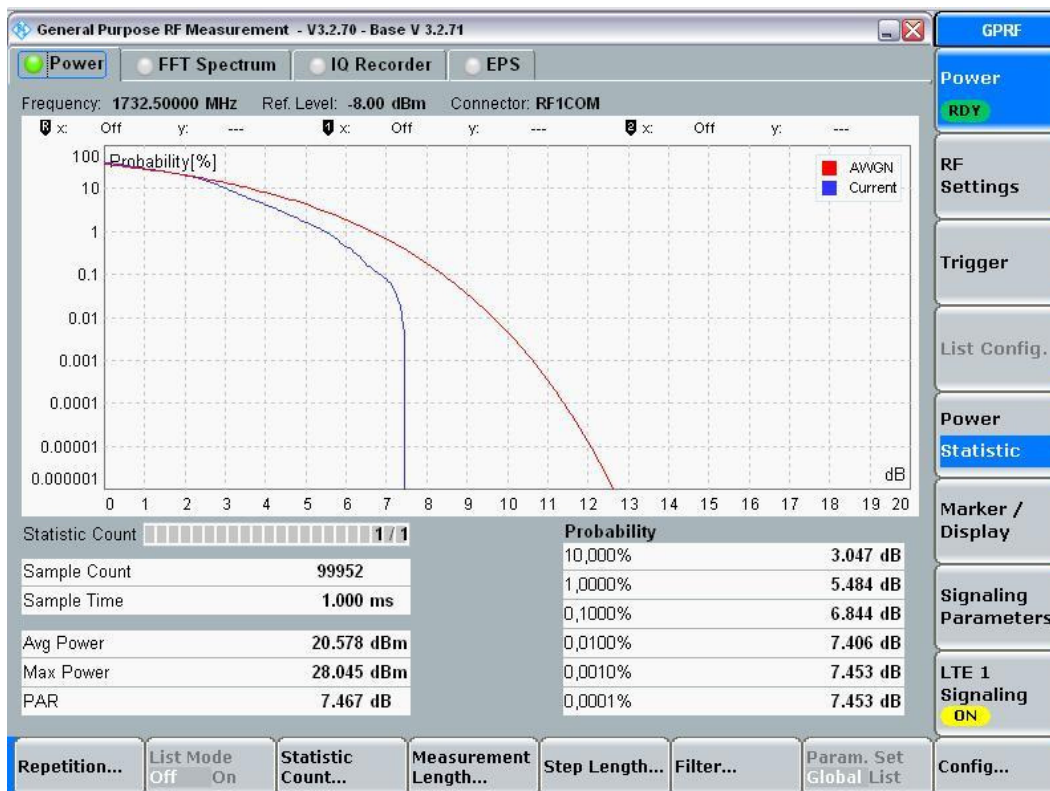
16-QAM, Ch20393, 100% RB (6RBs)



1.1.2.2. 3MHz signal bandwidth

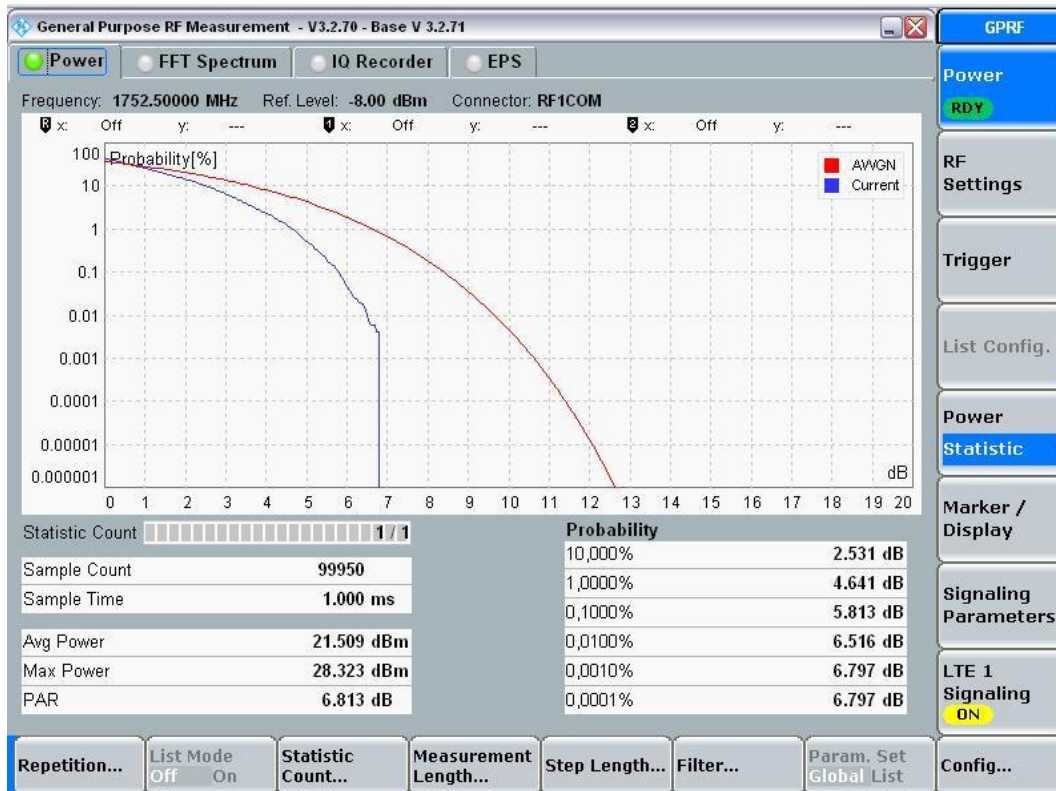


QPSK, Ch20175, 100% RB (15RBs)



16-QAM, Ch20175, 100% RB (15RBs)

1.1.2.3. 5MHz signal bandwidth

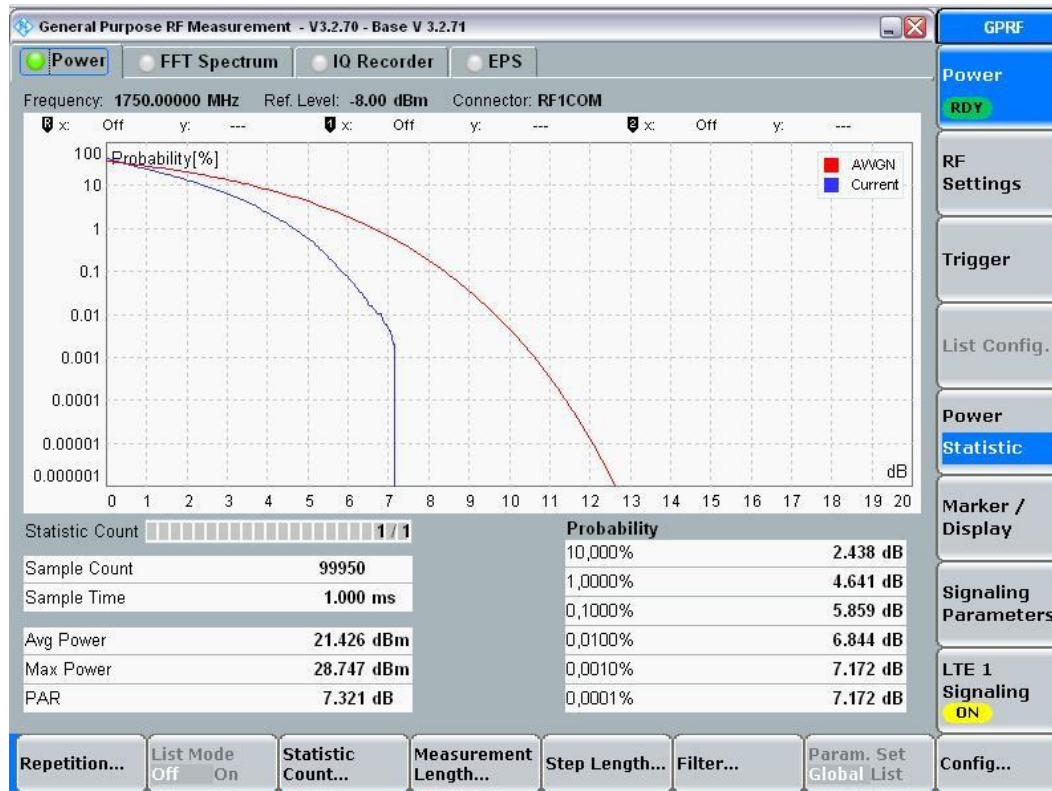


QPSK, Ch20375, 100% RB (25RBs)

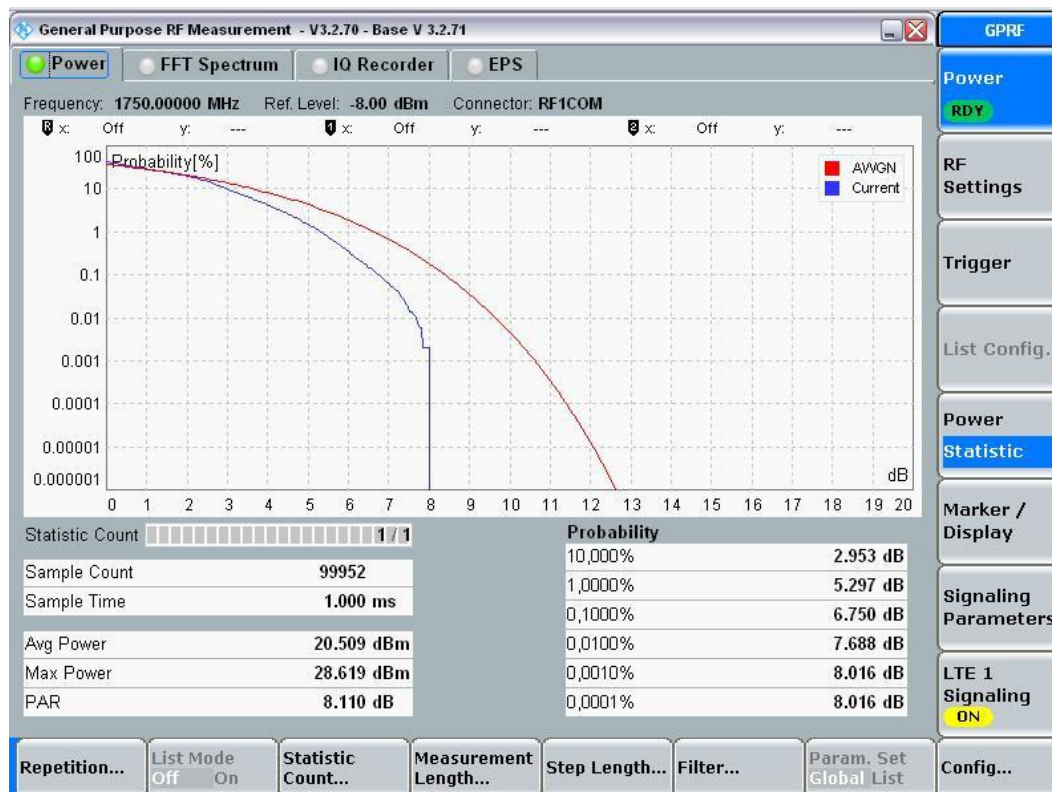


16-QAM, Ch20375, 100% RB (25RBs)

1.1.2.4. 10MHz signal bandwidth

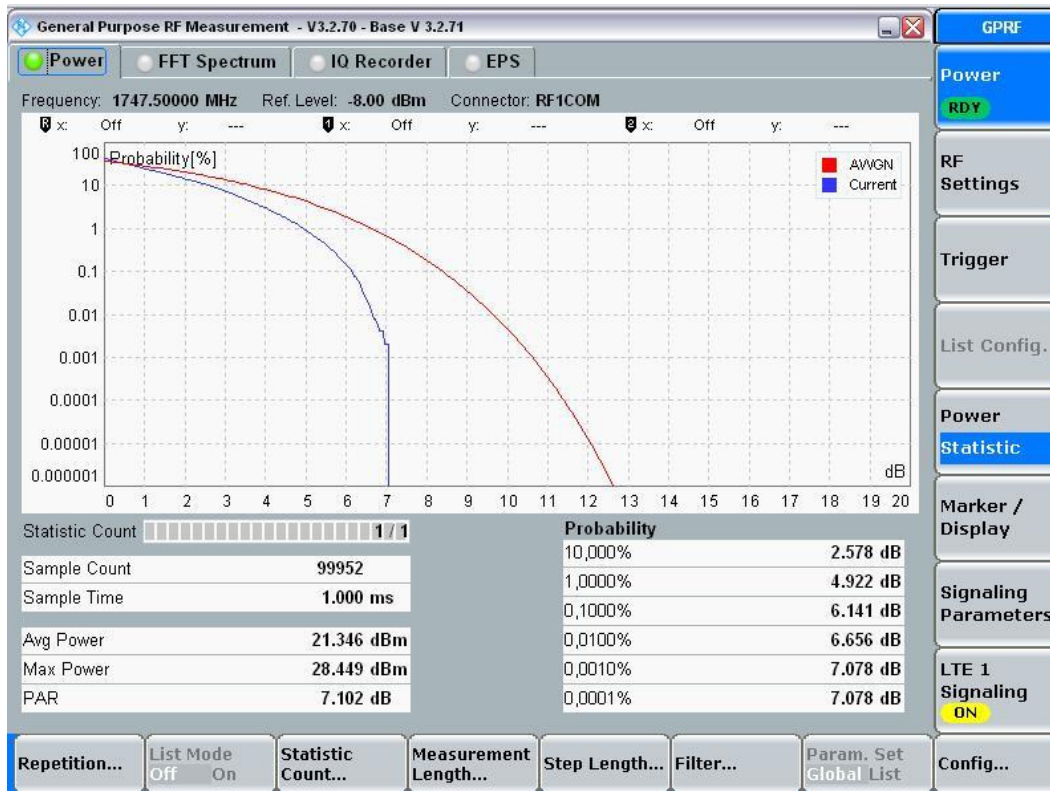


QPSK, Ch20350, 100% RB (50RBs)

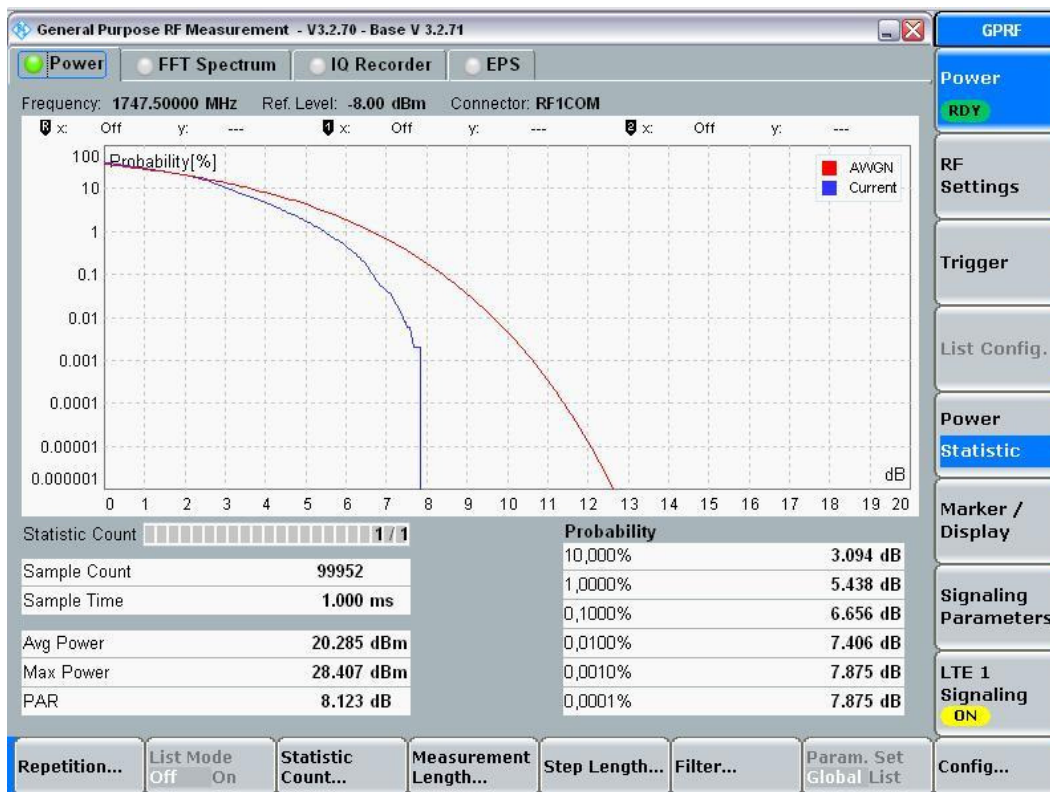


16-QAM, Ch20350, 100% RB (50RBs)

1.1.2.5. 15MHz signal bandwidth



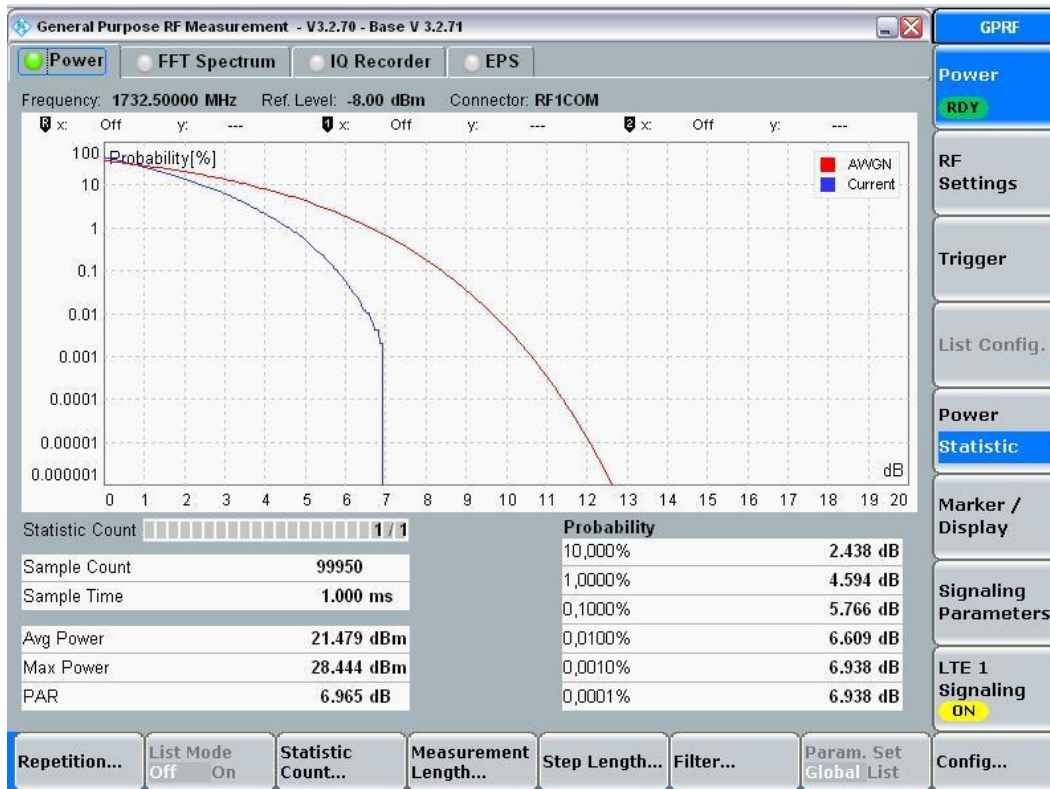
QPSK, Ch20325, 100% RB (75RBs)



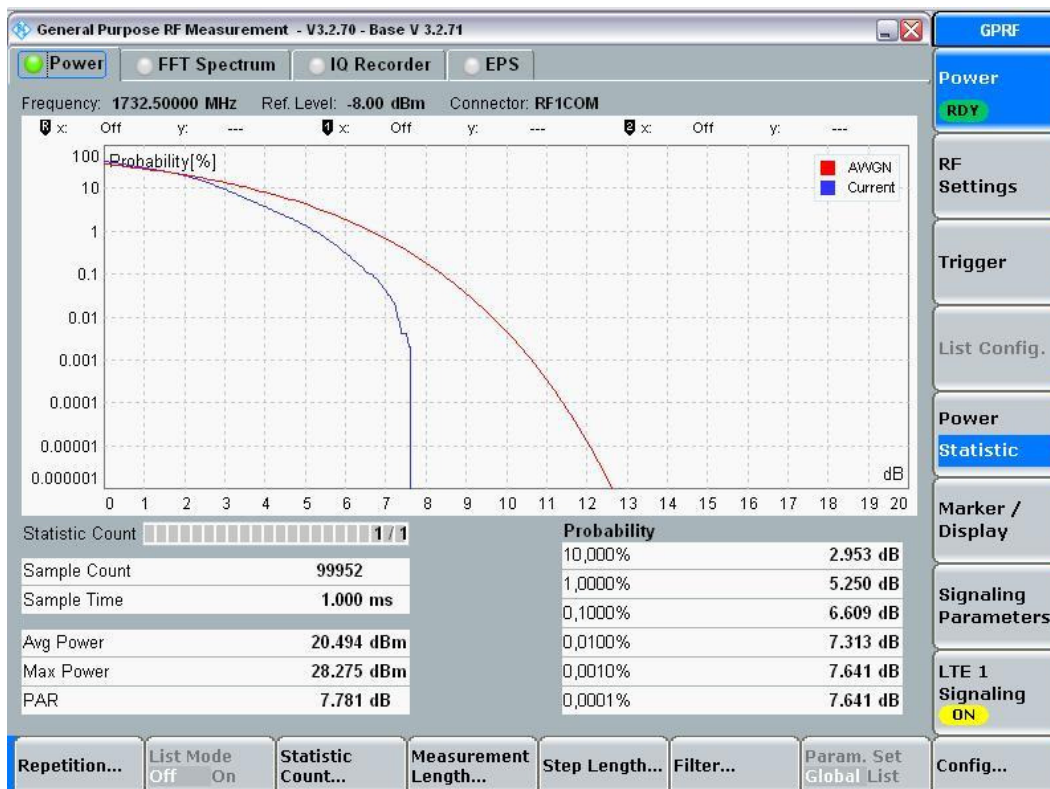
16-QAM, Ch20325, 100% RB (75RBs)



1.1.2.6. 20MHz signal bandwidth



QPSK, Ch20175, 100% RB (100RBs)

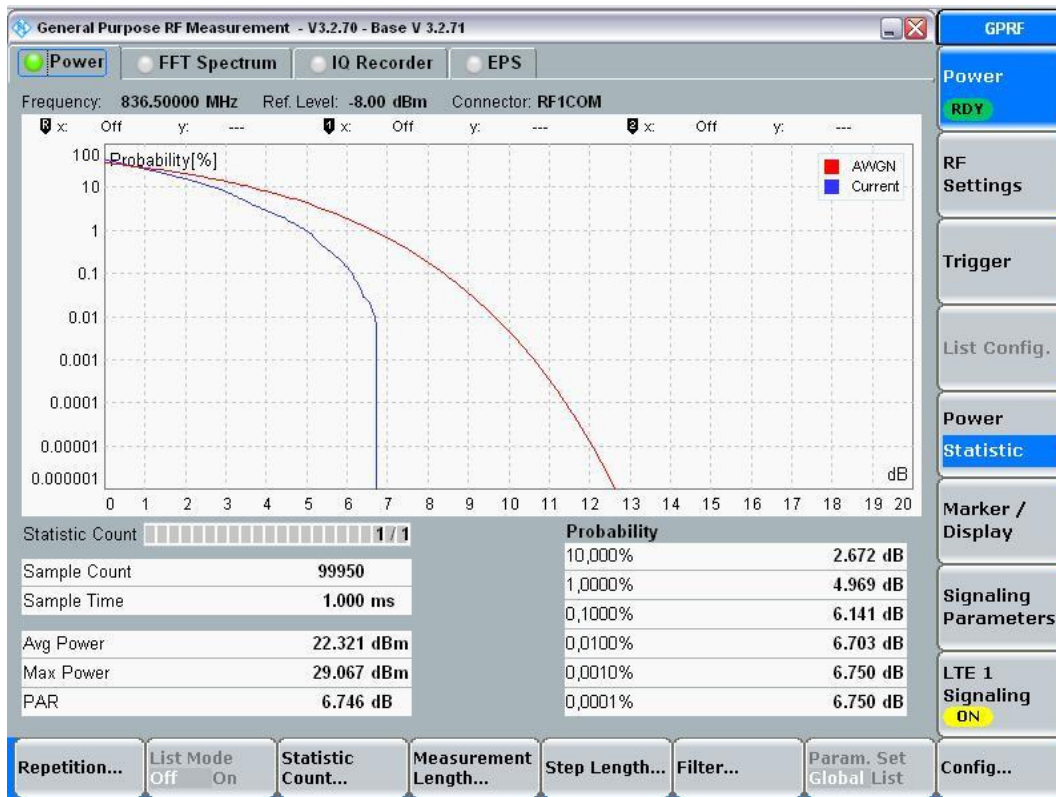


16-QAM, Ch20175, 100% RB (100RBs)

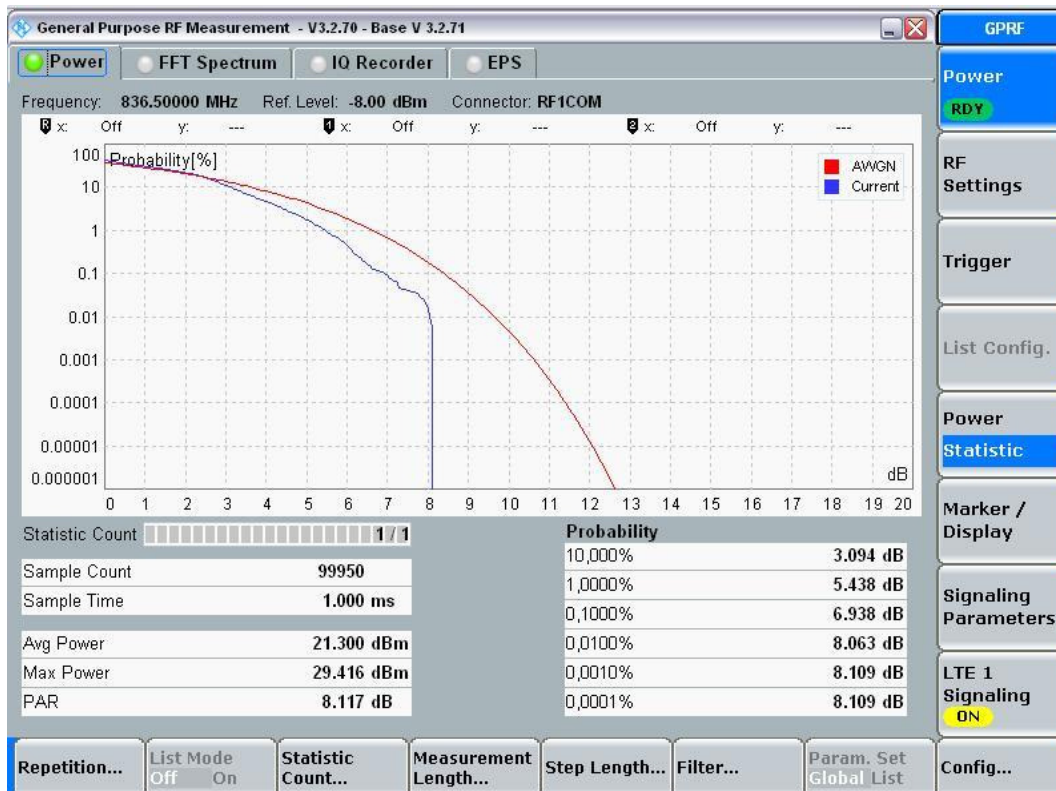
### 1.1.3. LTE Band 5

Worst-Case of each maximum Peak to Average power value was tested with the CCDF method

#### 1.1.3.1. 1.4MHz signal bandwidth



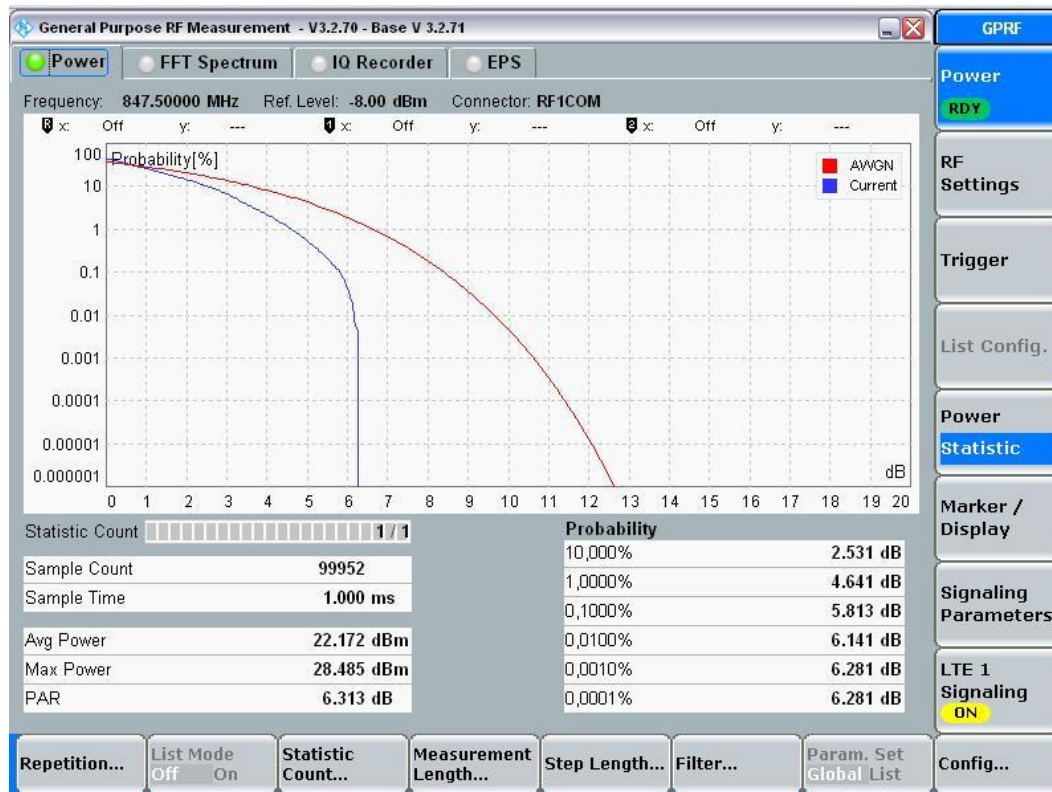
QPSK, Ch20525, 100% RB (6RBs)



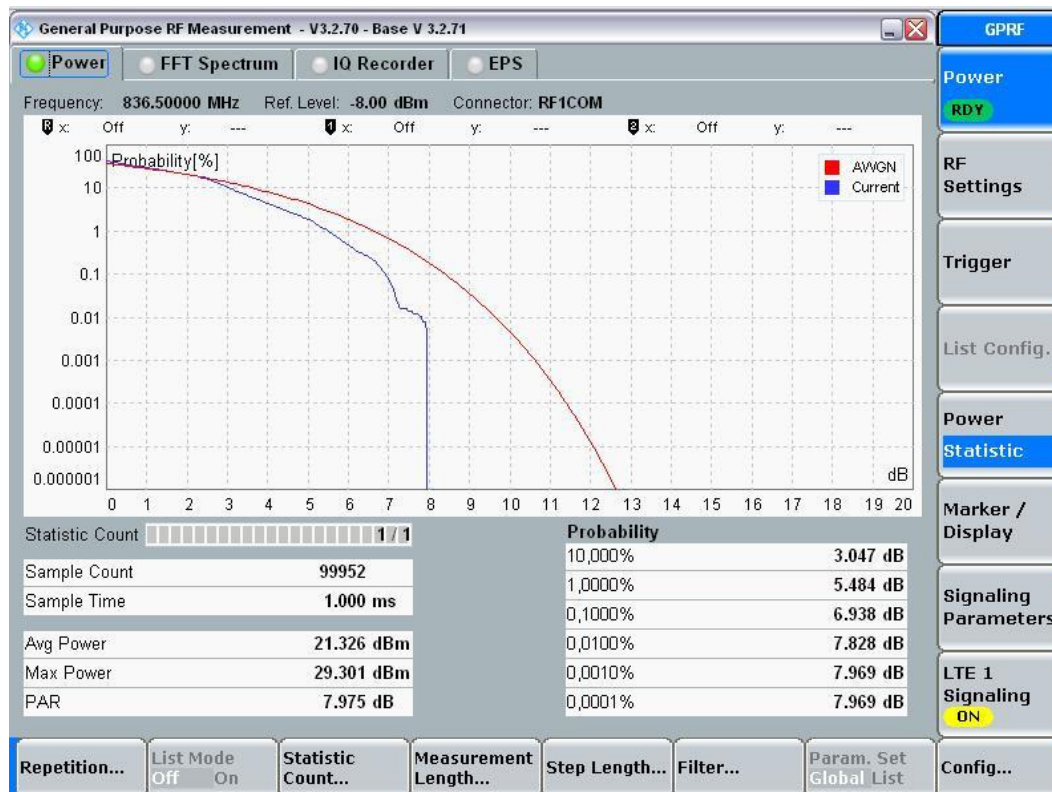
16-QAM, Ch20525, 100% RB (6RBs)



1.1.3.2. 3MHz signal bandwidth

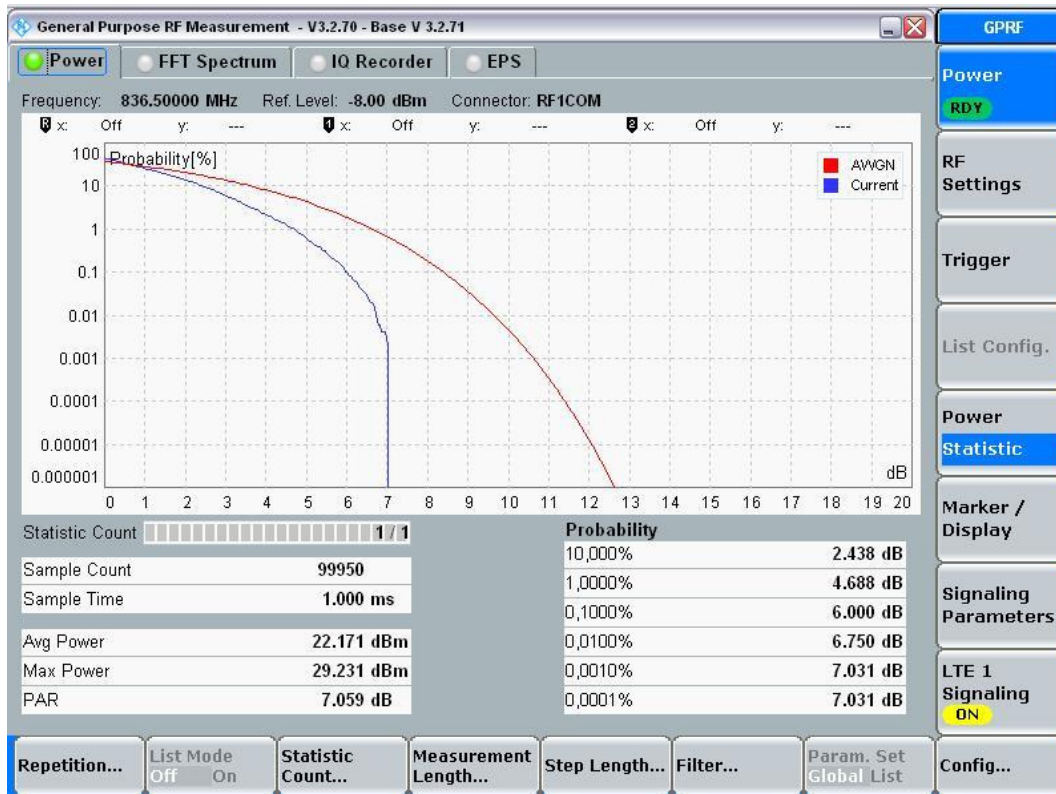


QPSK, Ch20635, 100% RB (15RBs)

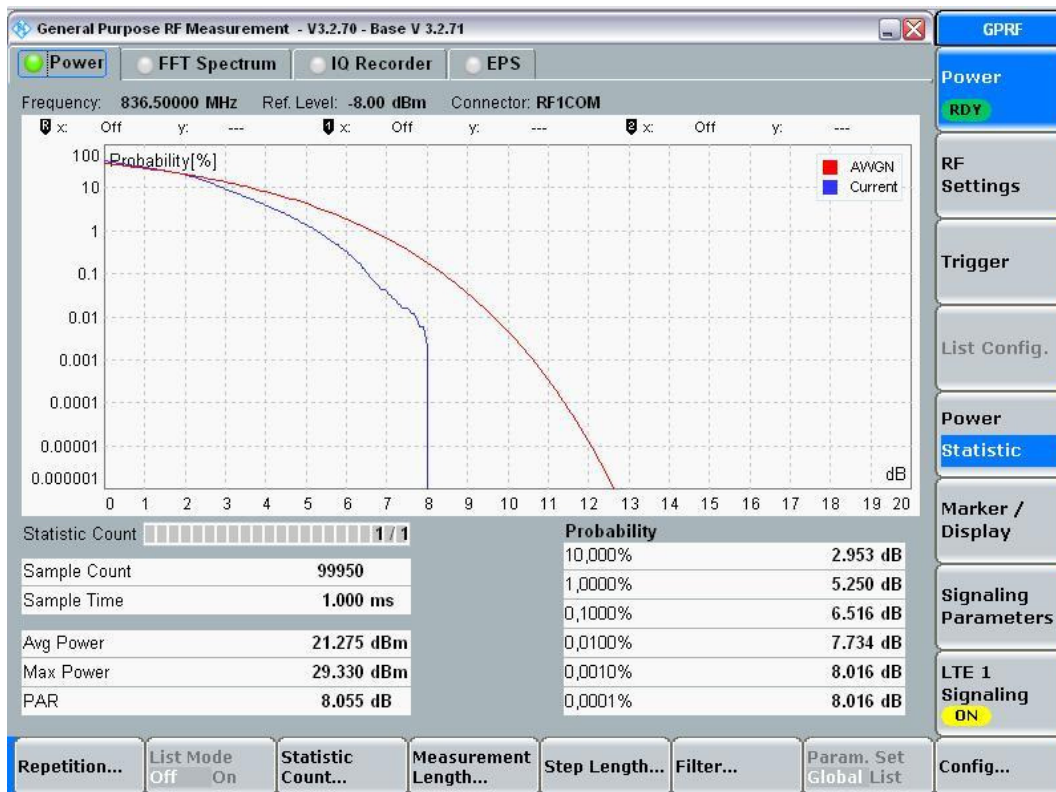


16-QAM, Ch20525, 100% RB (15RBs)

1.1.3.3. 5MHz signal bandwidth

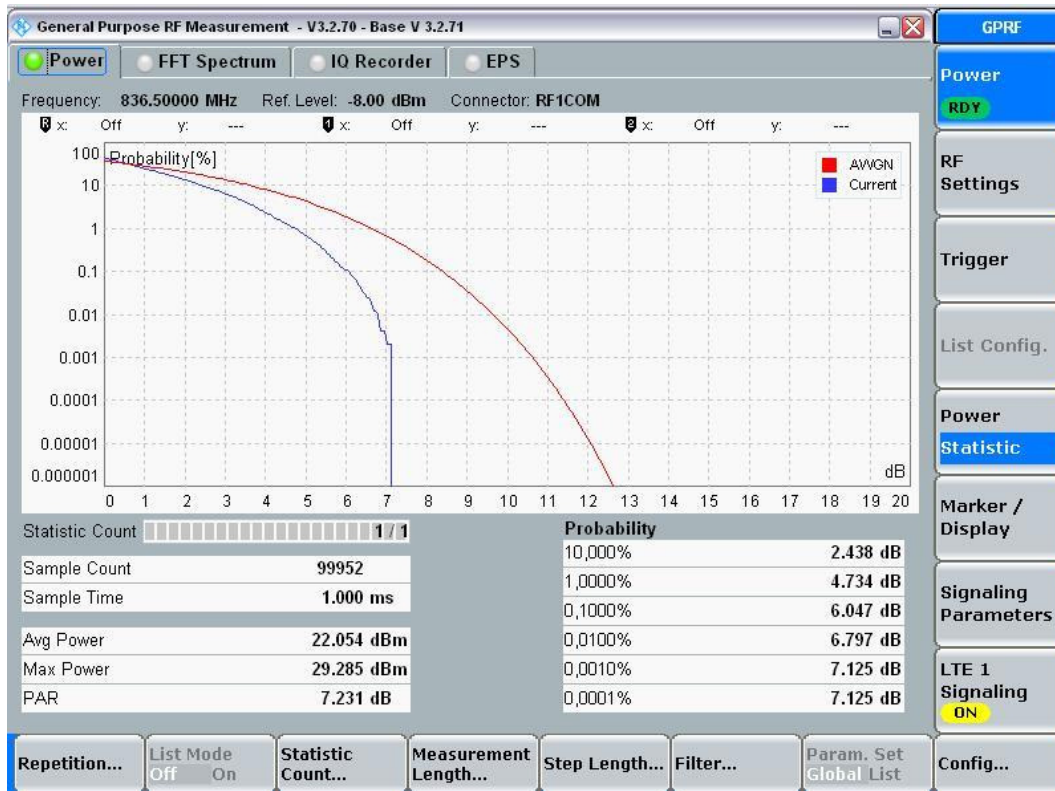


QPSK, Ch20525, 100% RB (25RBs)

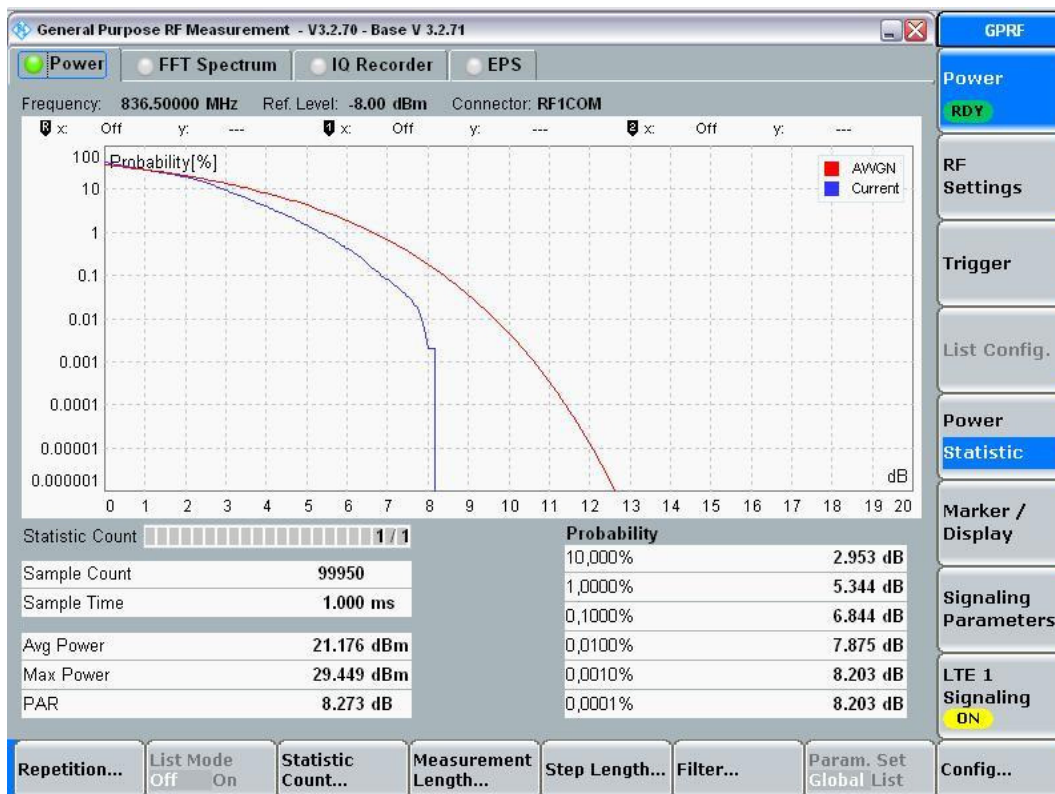


16-QAM, Ch20525, 100% RB (25RBs)

1.1.3.4. 10MHz signal bandwidth



QPSK, Ch20525, 100% RB (50RBs)



16-QAM, Ch20525, 100% RB (50RBs)

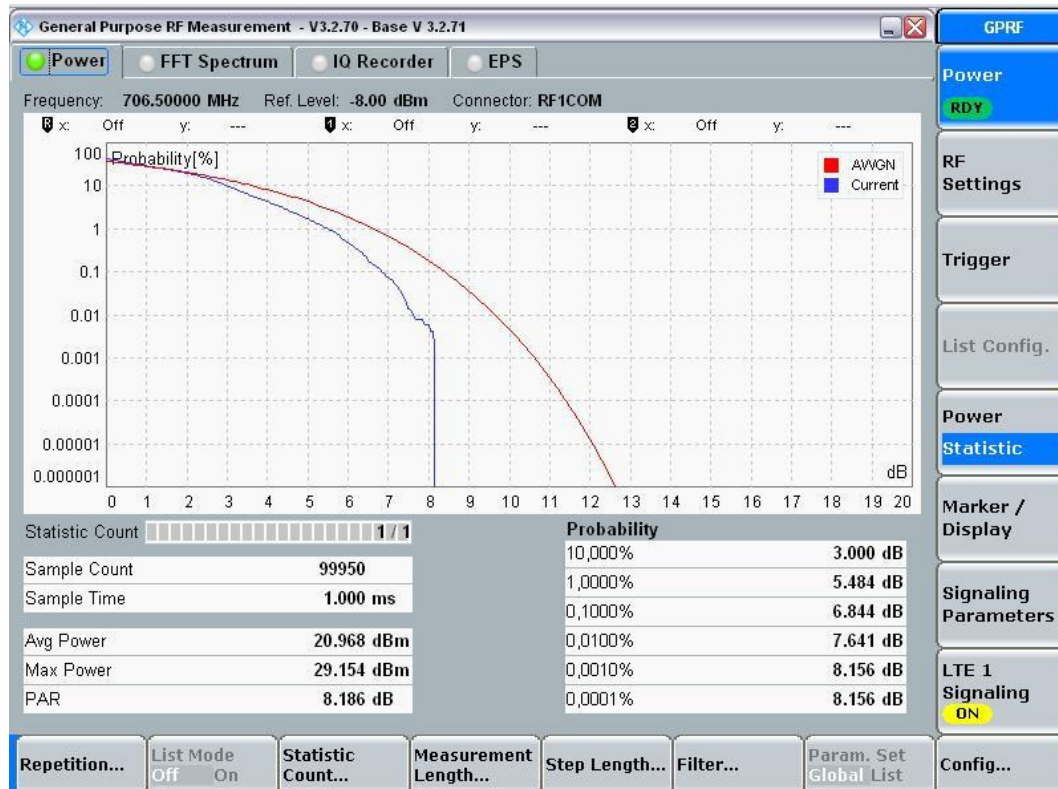
### 1.1.4. LTE Band 17

Worst-Case of each maximum Peak to Average power value was tested with the CCDF method

#### 1.1.4.1. 5MHz signal bandwidth



QPSK, Ch23755, 100% RB (25RBs)

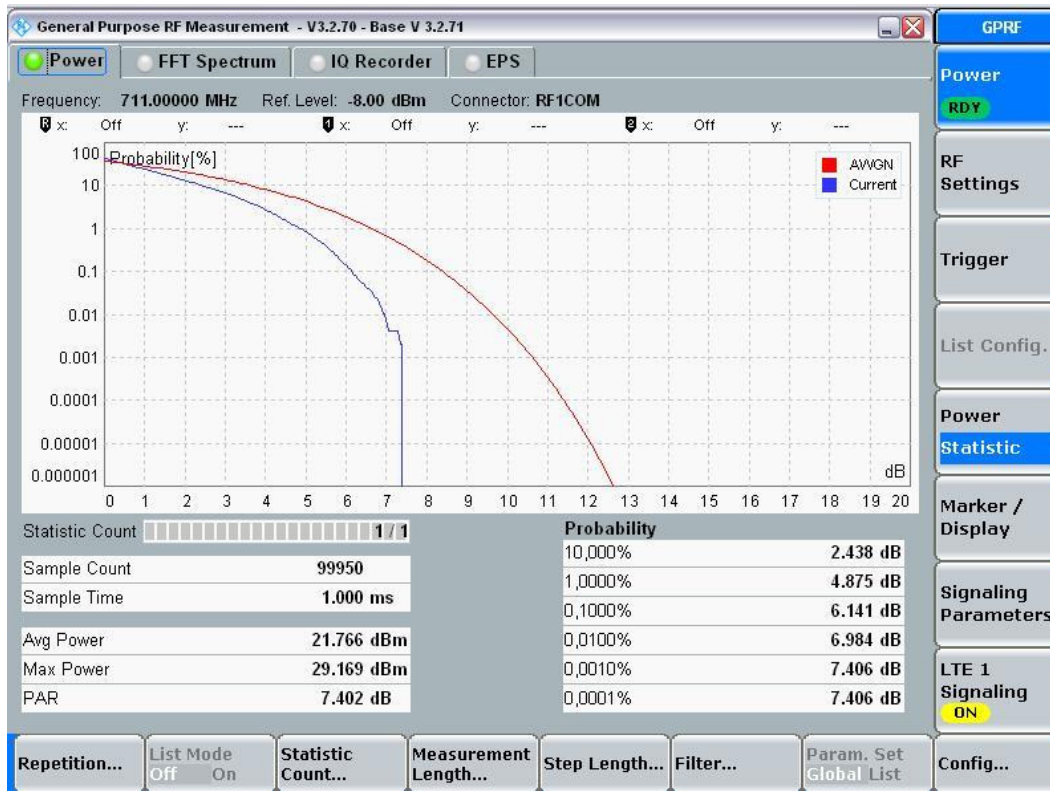


16-QAM, Ch23755; 100% RB (25RBs)

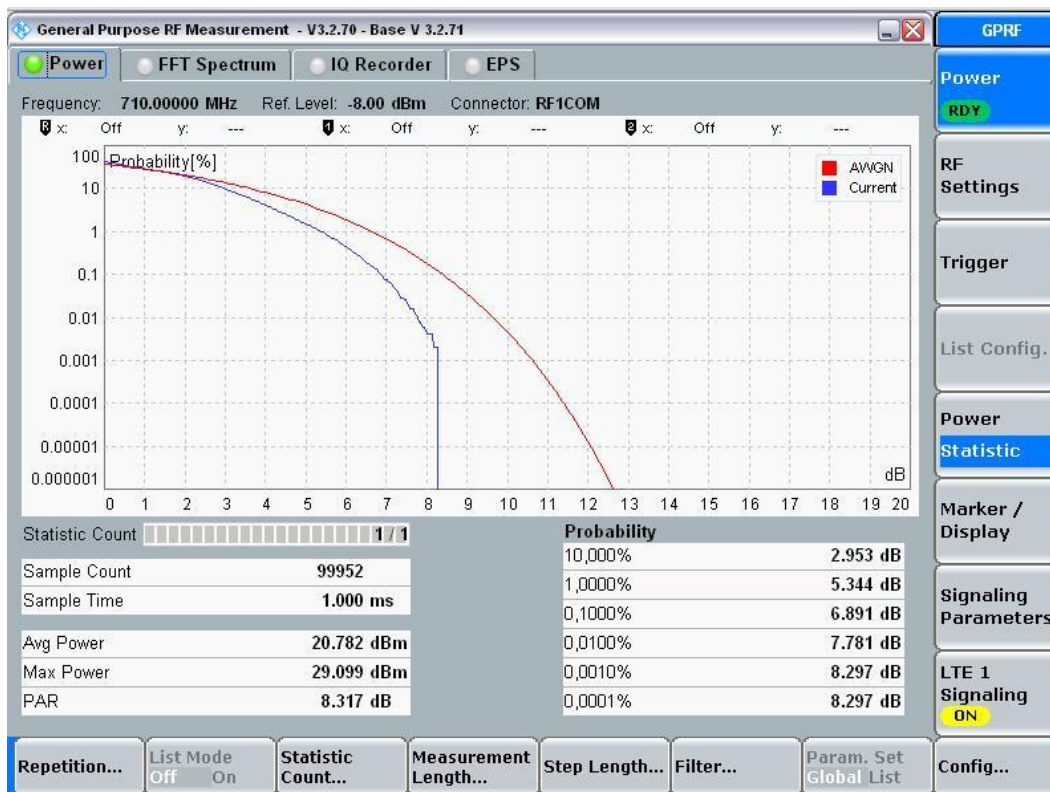




1.1.4.2. 10MHz signal bandwidth



QPSK, Ch23800, 100% RB (50RBs)



16-QAM, Ch23790; 100% RB (50RBs)

## 1.2. Spurious emissions radiated (LTE Band II)

### 8.20\_RSE\_R\_LTE\_FDD2\_CH18607\_BW\_1.4MHz

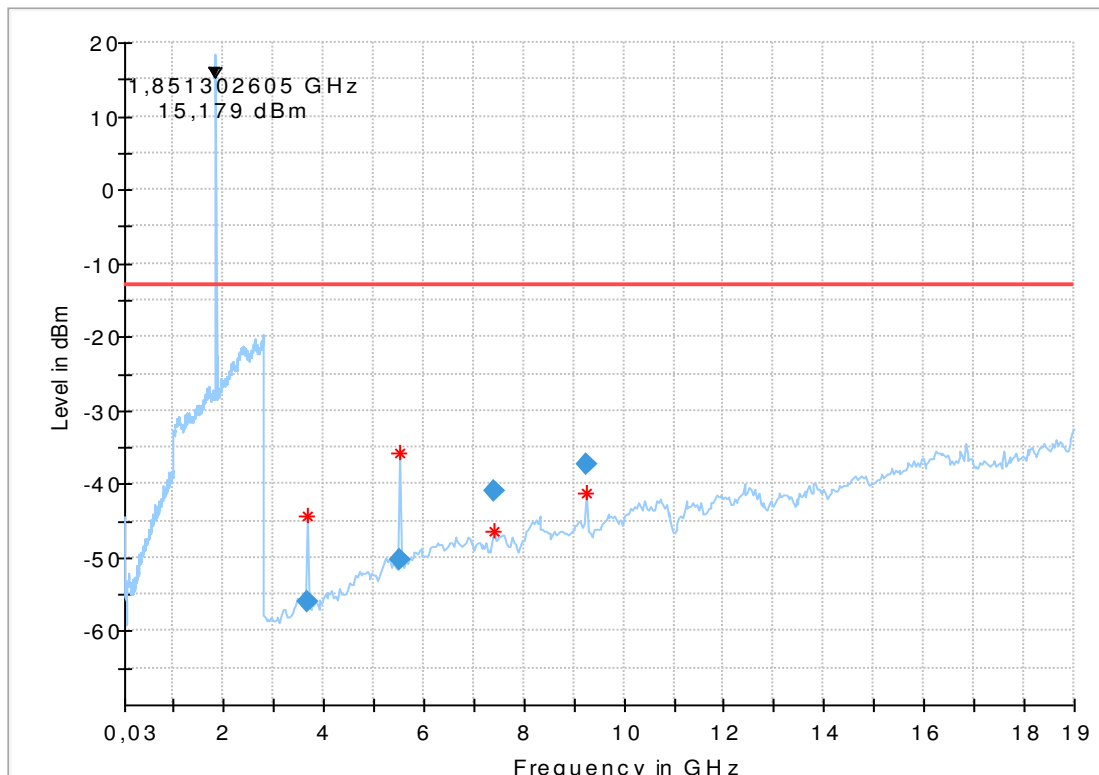
#### Common Information

Test Description:	Radiated Spurious Emissions UMTS FDDII
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 24
Operating Mode:	UE allocated channel 18607 (fc = 1850,7MHz); bw 1.4MHz; 1RB Low, QPSK
Environmental Conditions:	Humidity: 53%rH; Temperature: 22:3°C
Operator:	MRa

#### EUT Information

Manufacturer:	peiker acoustic GmbH & Co. KG
EuT:	PKD0424AB1 (f)
Model:	V1140-101-1
-----	
HW Version:	tbd (please refer to test report)
SW Version:	M9615A-CETWTDZM-6.3.1.100087
Serial Number:	NA#1036
IMEI:	353812-07-000002-2
Connected Interfaces:	shark antenna (US version) with ground plane, microphone, loudspeaker, cables
Power Supply:	12 VDC
Comments:	

Full Spectrum



#### Final Result

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
3688.552104	-55.87	-	42.87	10000.0	1000.000	V	157.0	0.0	-94.9
5527.680361	-50.28	-	37.28	10000.0	1000.000	V	-42.0	90.0	-89.9
7400.976954	-40.91	-	27.91	10000.0	1000.000	H	300.0	90.0	-84.3
9251.327655	-37.44	-	24.44	10000.0	1000.000	H	322.0	90.0	-81.6



### 1.3. Spurious emissions radiated (LTE Band IV)

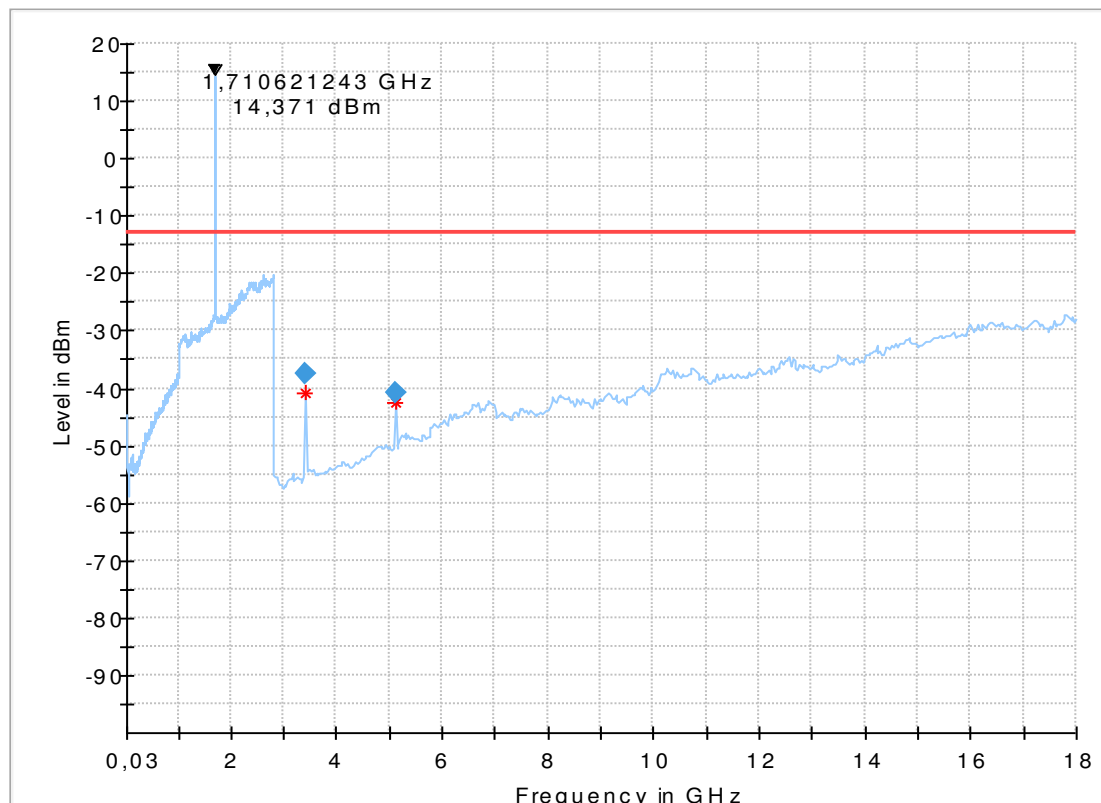
#### Diagram No.: 8.40\_RSE\_R\_LTE\_FDD4\_CH19957\_BW\_1.4MHz

#### Common Information

Test Description:	Radiated Spurious Emissions LTE Band 4
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test specification:	FCC Part 27.917
Operating Mode:	MS allocated channel 19957: bw:1.4MHz 1RB Low, QPSK
Environmental Conditions:	Humidity: 47%rH; Temperature: 22:3°C
Operator Name:	MRA

#### EUT Information

Manufacturer:	peiker acoustic GmbH & Co. KG
EuT:	PKD0424AB1 (f)
Model:	V1140-101-1
-----	
HW Version:	tbd (please refer to test report)
SW Version:	M9615A-CETWTDZM-6.3.1.100087
Serial Number:	NA#1036
IMEI:	353812-07-000002-2
Connected Interfaces:	shark antenna (US version) with ground plane, microphone, loudspeaker, cables
Power Supply:	12 VDC
Comments:	



#### Final Result

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margi n (dB)	Heigh t (cm)	Pol	Azimut h (deg)	Elevatio n (deg)	Corr. (dB)
3420.611223	-37.62	-13.00	24.62	155.0	V	-20.0	90.0	-95.0
5130.030060	-40.69	-13.00	27.69	155.0	V	25.0	90.0	-90.6



### 1.4. Spurious emissions radiated (LTE Band V)

## 8.50\_RSE\_R\_LTE\_FDD5\_Ch20407\_BW\_1.4MHz

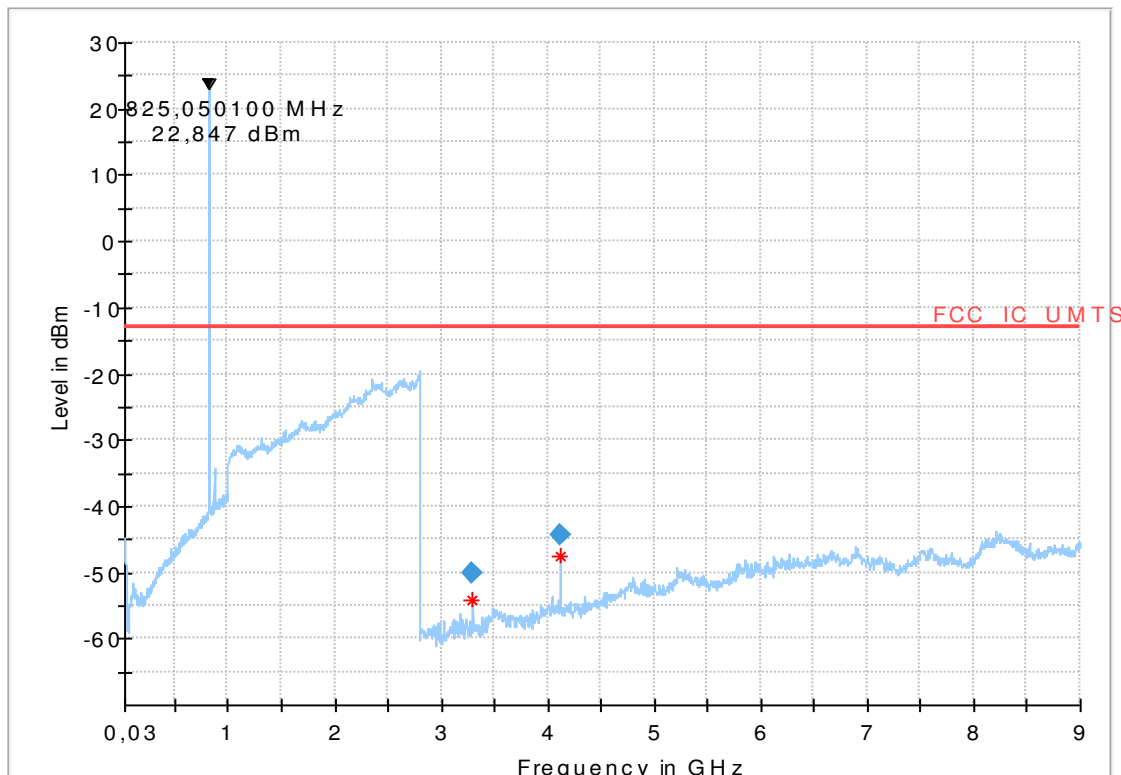
#### Common Information

Test Description:	Radiated Spurious Emissions LTE FDD Band 5
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 22.917(a) / RSS-132: Issue 3
Operating Mode:	UE allocated channel 20407 (fc = 824,7MHz); bw 1.4MHz; 1RB Low, QPSK
Environmental Conditions:	Humidity: 53%rH; Temperature: 22:3°C
Operator:	MRA

#### EUT Information

Manufacturer:	peiker acoustic GmbH & Co. KG
EuT:	PKD0424AB1 (f)
Model:	V1140-101-1
-----	
HW Version:	tbd (please refer to test report)
SW Version:	M9615A-CETWTDZM-6.3.1.100087
Serial Number:	NA#1036
IMEI:	353812-07-000002-2
Connected Interfaces:	shark antenna (US version) with ground plane, microphone, loudspeaker, cables
Power Supply:	12 VDC
Comments:	

Full Spectrum



#### Final Result

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
3296.923847	-50.06	13.00	37.06	10000.0	1000.000	V	188.0	90.0	-95.7
4121.172345	-44.22	13.00	31.22	10000.0	1000.000	H	59.0	90.0	-93.3



### 1.5. Spurious emissions radiated (LTE Band XVII)

#### 8.172\_RSE\_R\_LTE\_FDD17\_CH23790\_BW\_5MHz

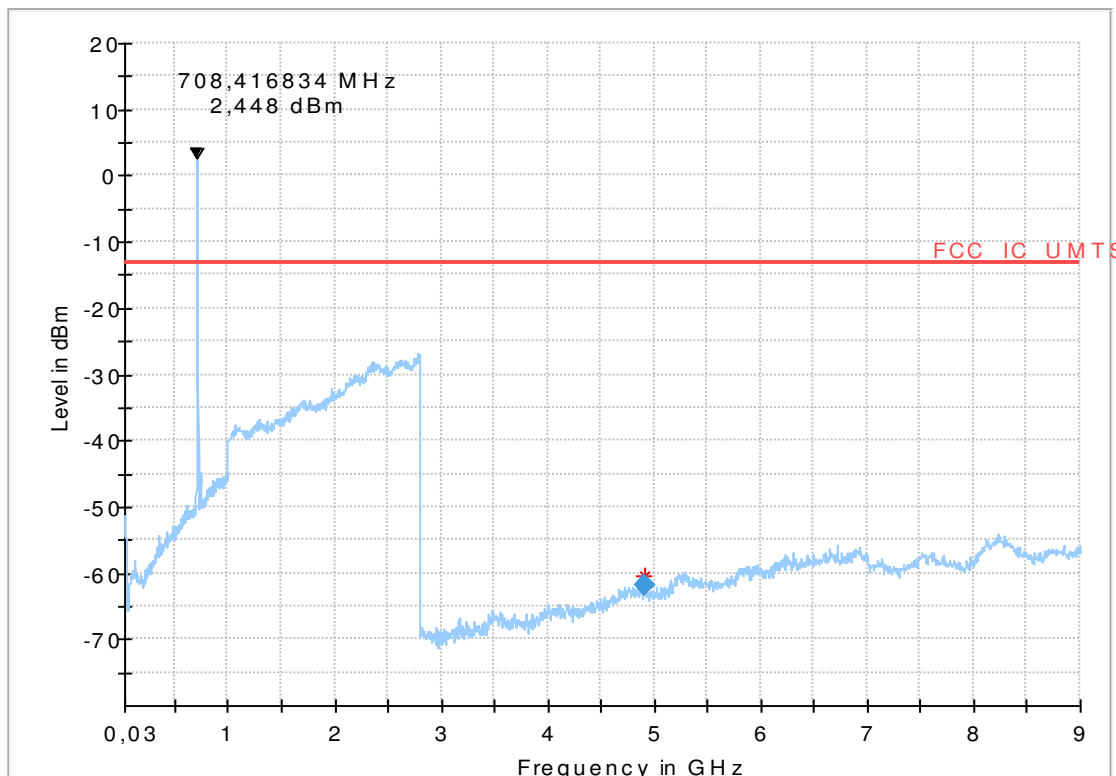
#### Common Information

Test Description:	Radiated Spurious Emissions LTE Band 17
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 27.917(a)
Operating Mode:	UE allocated channel 23790 (fc = 710,0MHz); bw 5MHz; 25RB, QPSK
Environmental Conditions:	Humidity: 53%RH; Temperature: 22:3°C
Operator:	MRA

#### EUT Information

Manufacturer:	peiker acoustic GmbH & Co. KG
EuT:	PKD0424AB1 (f)
Model:	V1140-101-1
-----	
HW Version:	tbd (please refer to test report)
SW Version:	M9615A-CETWTDZM-6.3.1.100087
Serial Number:	NA#1036
IMEI:	353812-07-000002-2
Connected Interfaces:	shark antenna (US version) with ground plane, microphone, loudspeaker, cables
Power Supply:	12 VDC
Comments:	

Full Spectrum



#### Final Result

Frequency (MHz)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
4904.355083	-	48.93	2000.0	V	100.0	0.0	-90.7





## 1.6. Radiated emissions – band-edge (LTE Band II)

### 1.6.1. Low Band-Edge

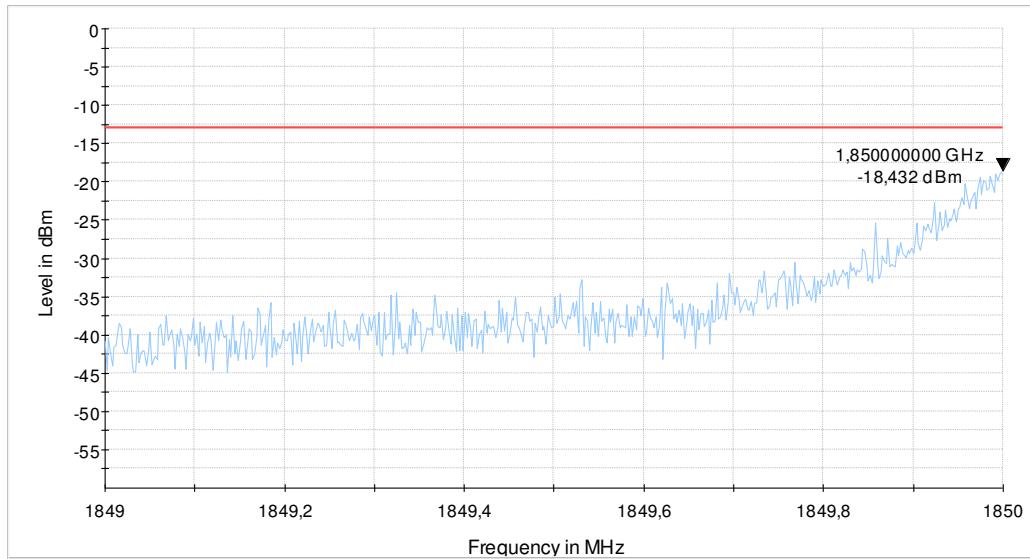


Diagram 9.20a, Channel 18607, QPSK, 1RB low

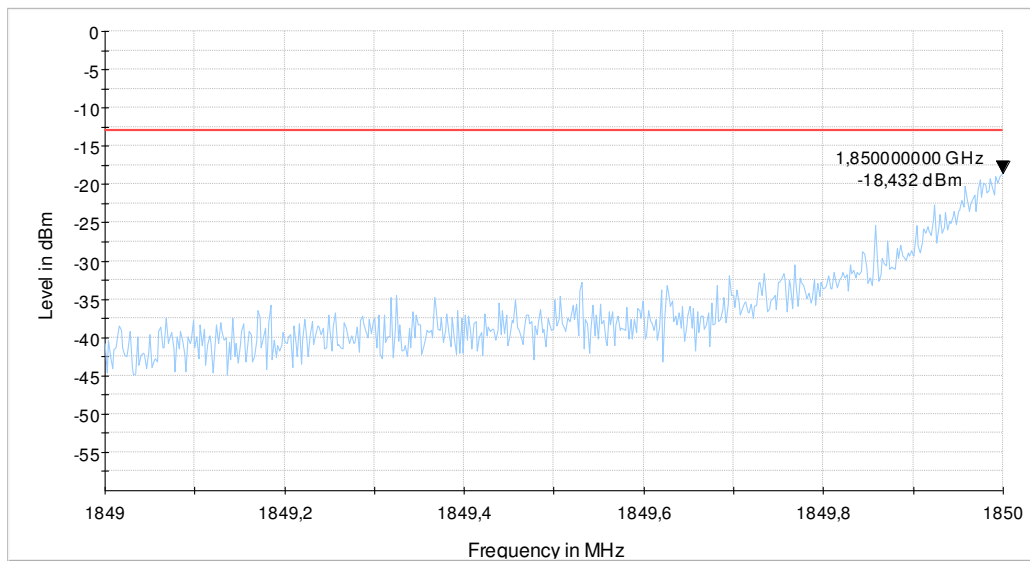
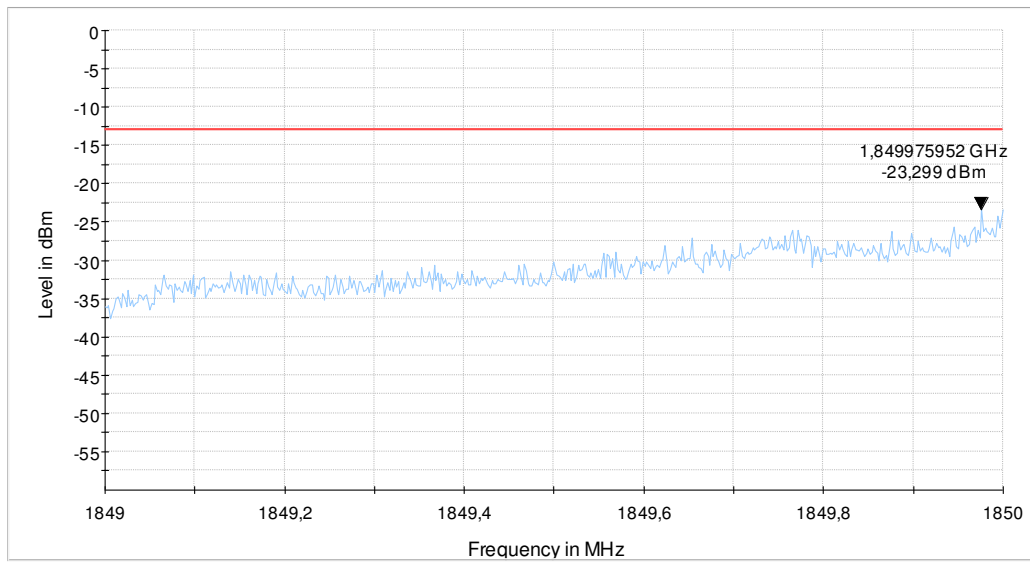
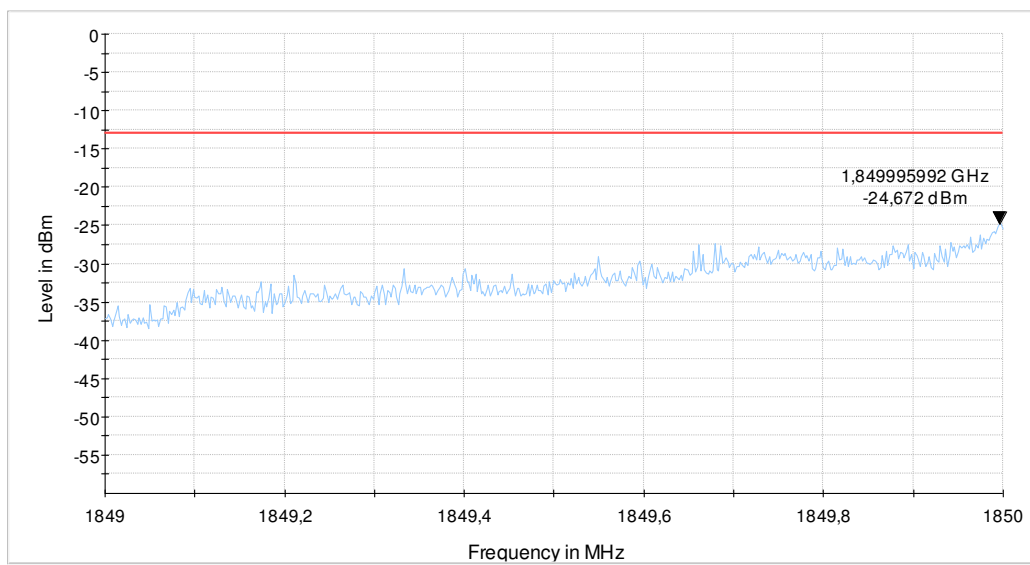
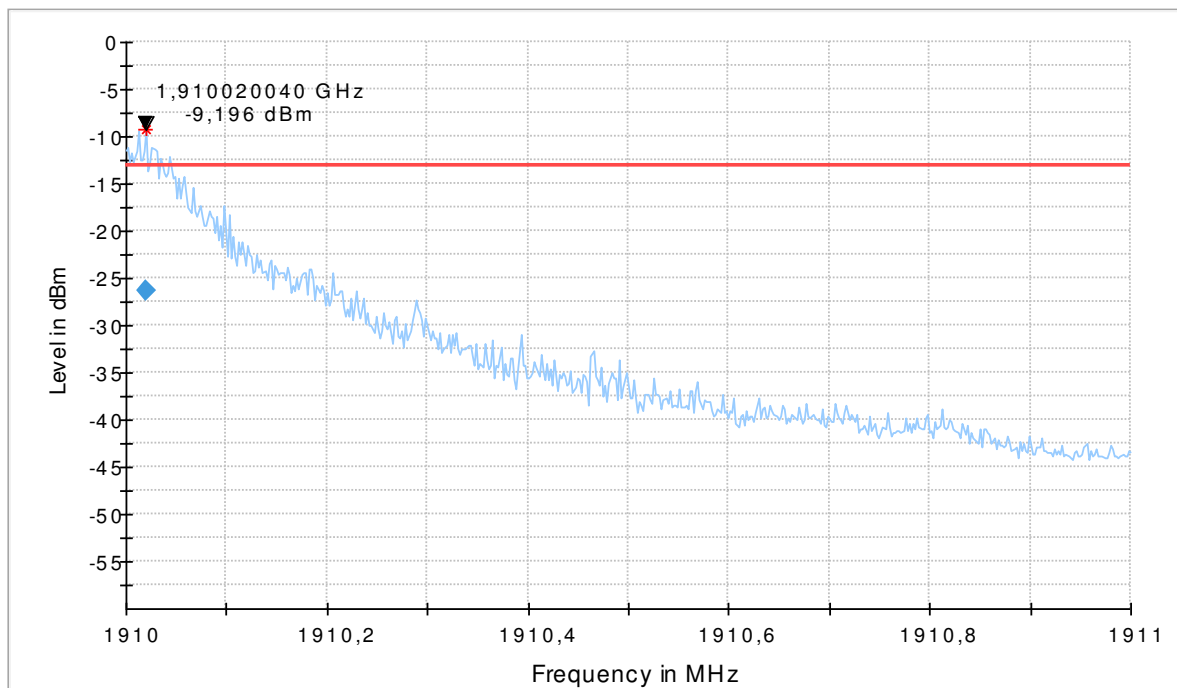
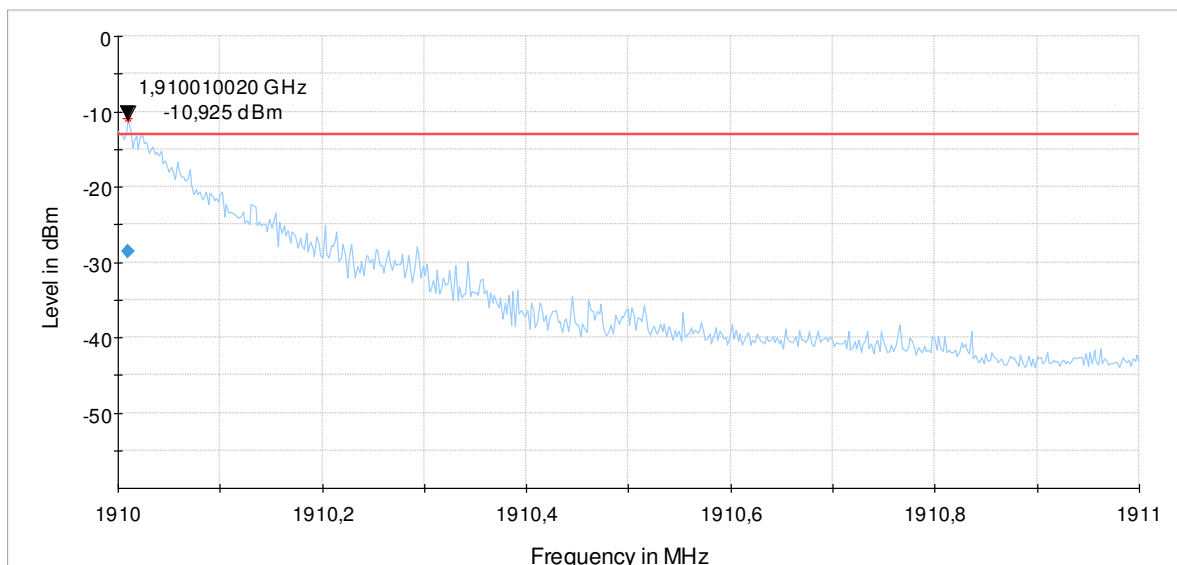
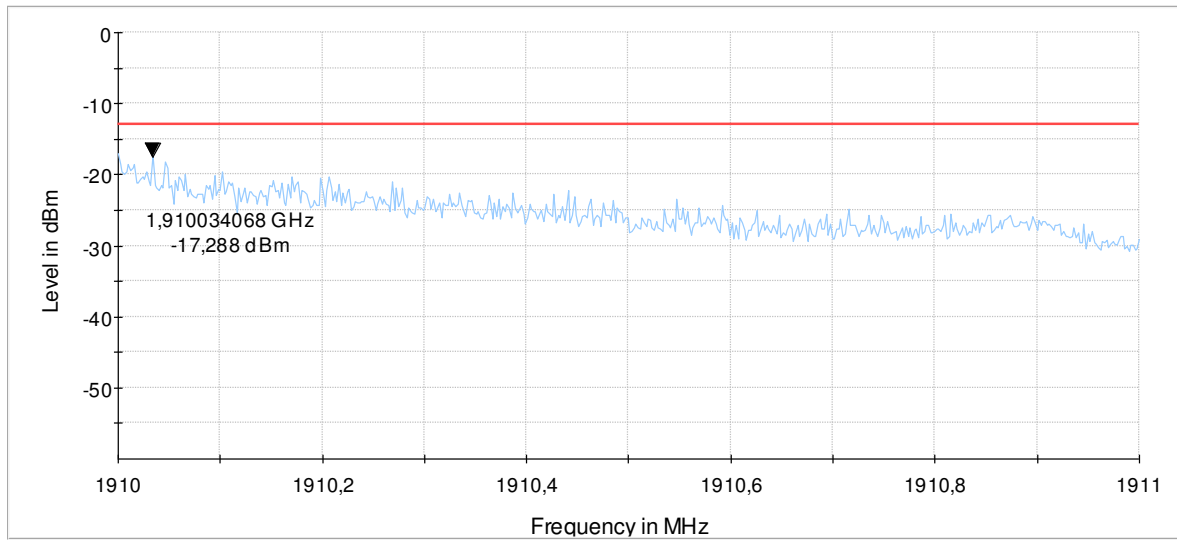
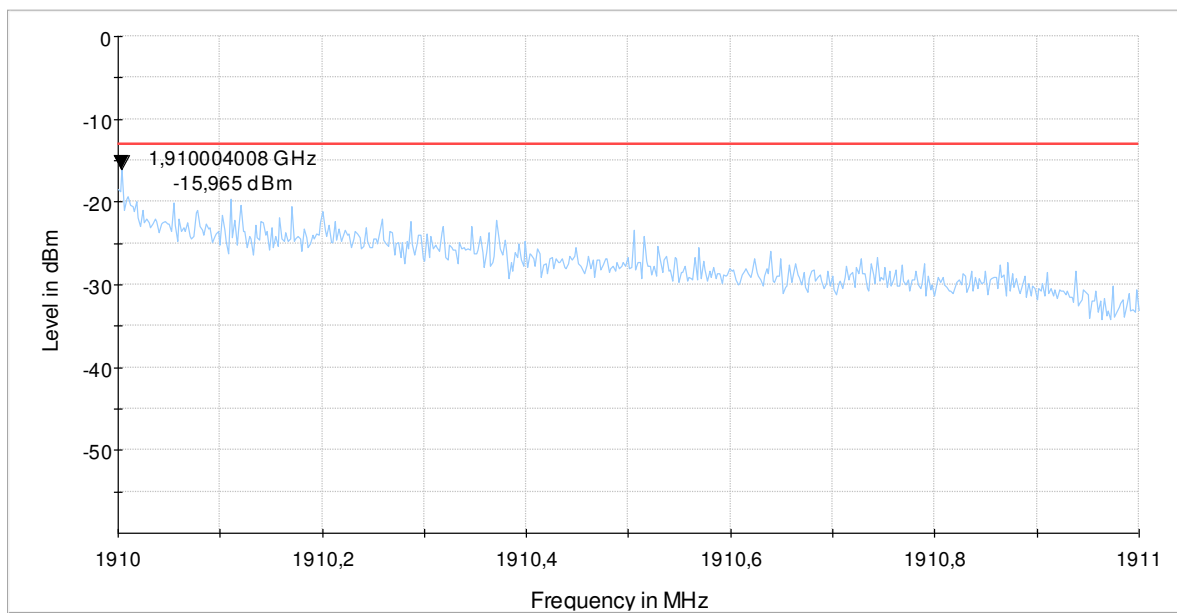
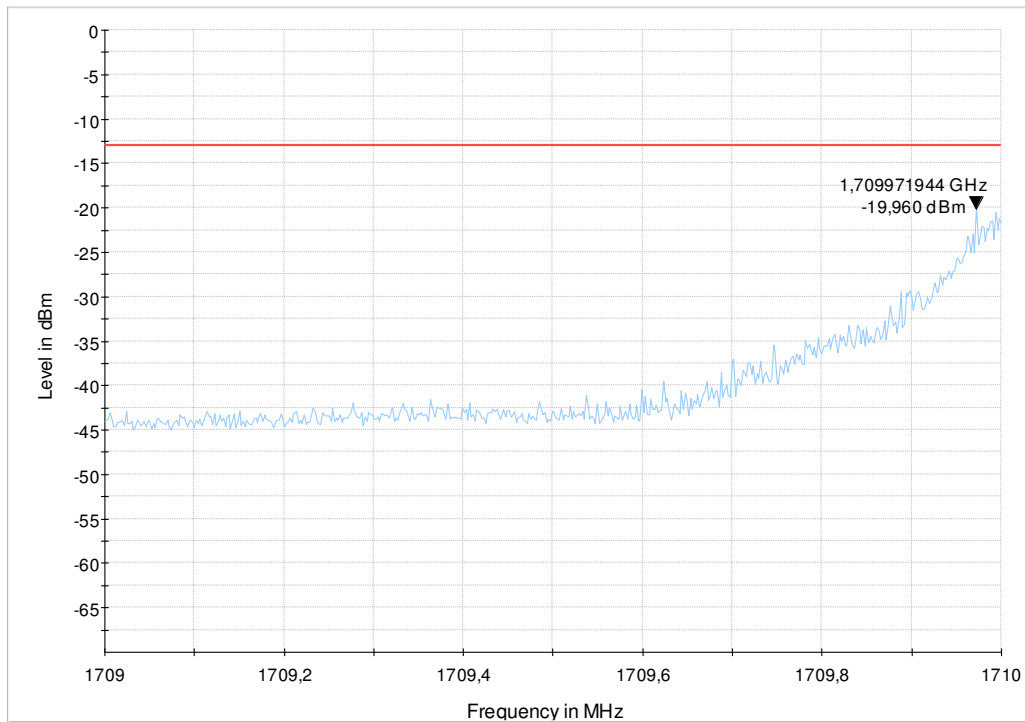
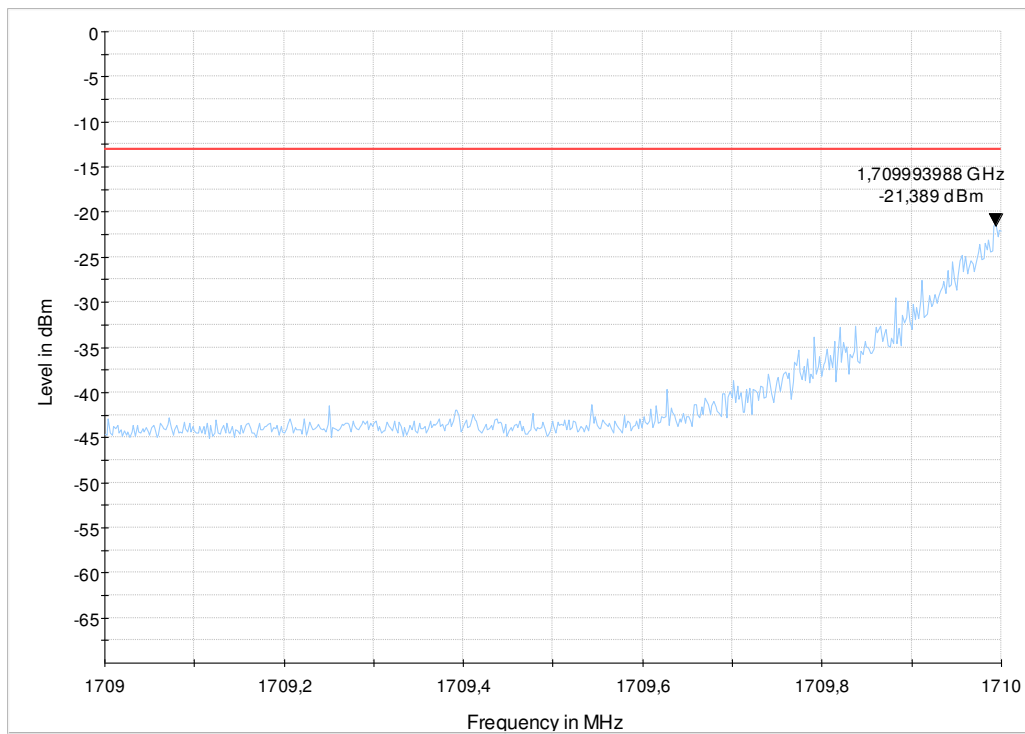


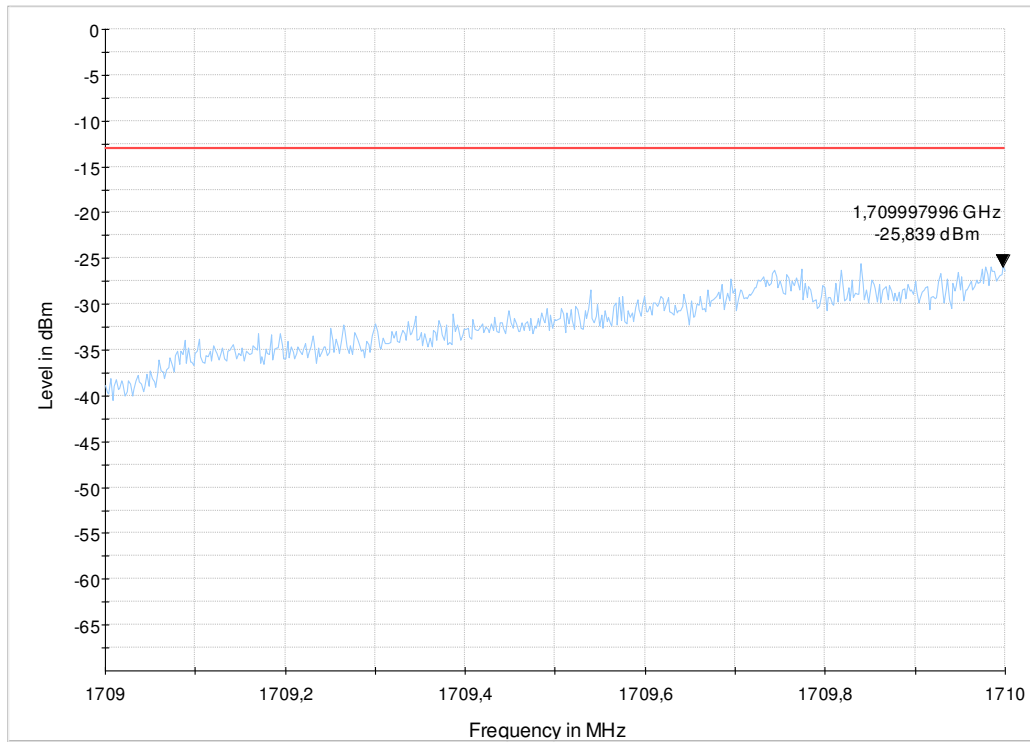
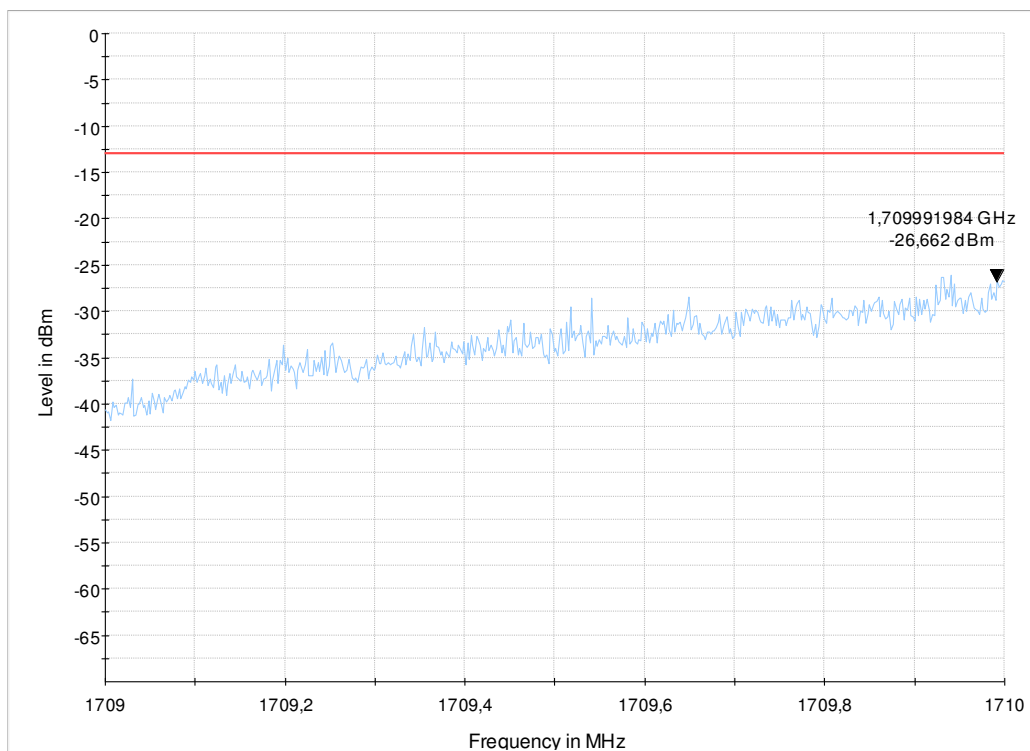
Diagram 9.20b, Channel 18607, 16-QAM, 1RB low

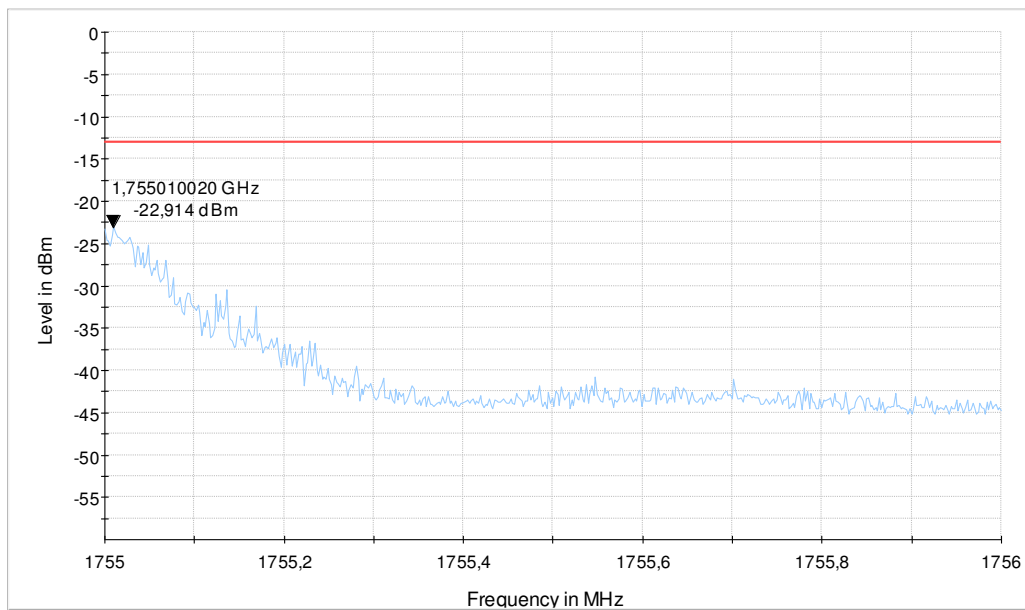
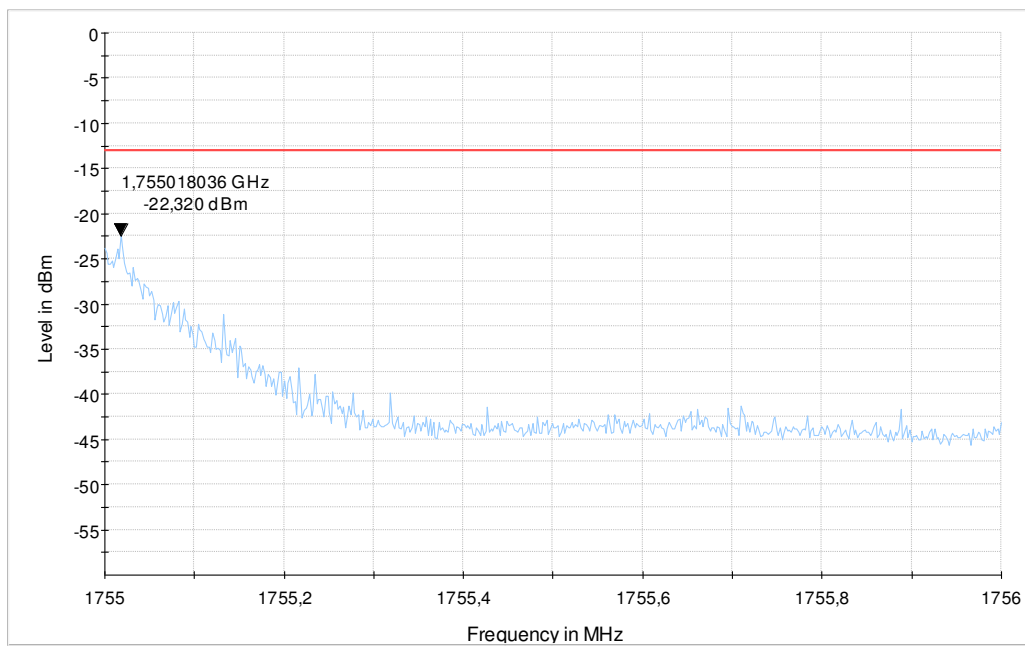
**Diagram 9.21a, Channel 18607, QPSK, 6RBs****Diagram 9.21b, Channel 18607, 16-QAM, 6RBs**

**1.6.2. High Band-Edge****Diagram 9.22a, Channel 1913, QPSK, 1RB high (re-measurement with RMS detector, level= -26.37dBm)****Diagram 9.22b: Channel 1913, 16-QAM, 1RB high (re-measurement with RMS detector, level= -28.58dBm)**

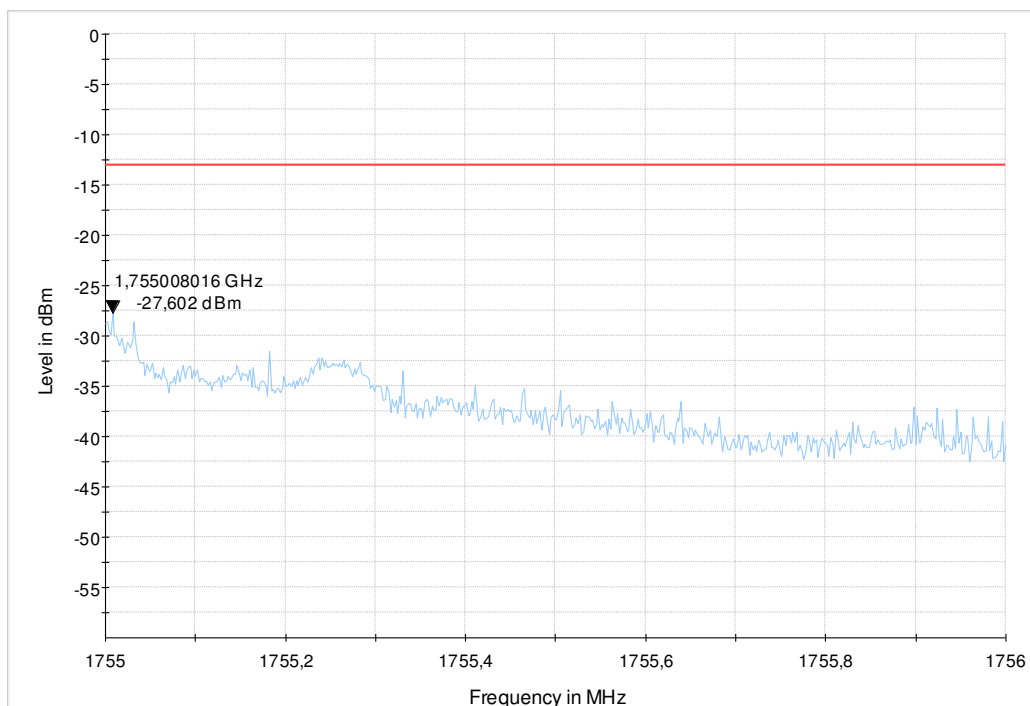
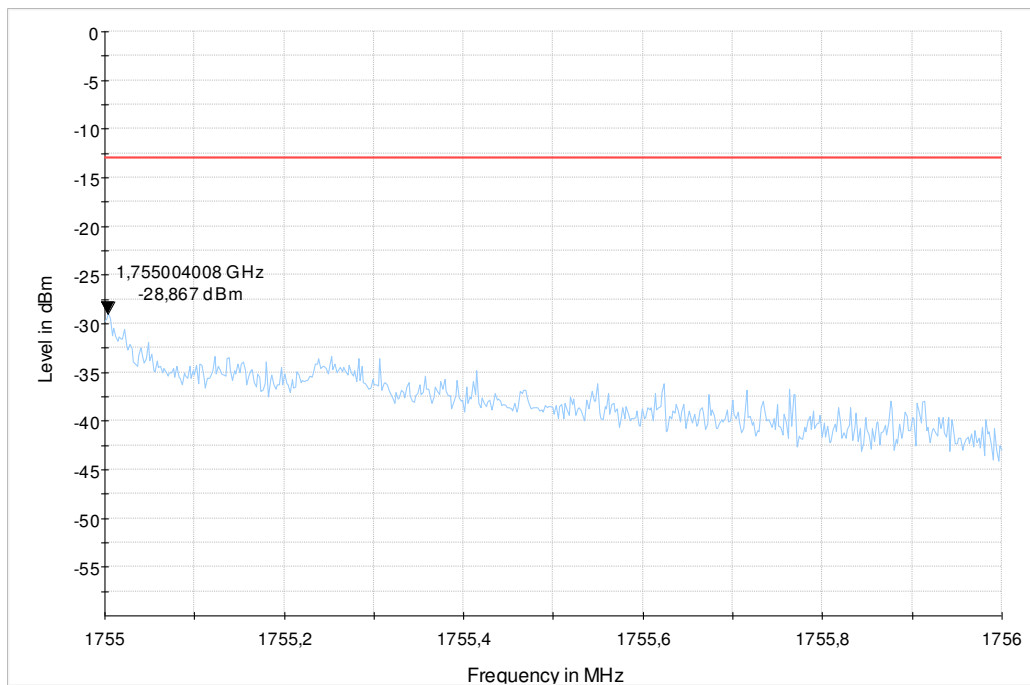
**Diagram 9.23a, Channel 19193, QPSK, 6RBs****Diagram 9.23b, Channel 191193, 16-QAM, 6RBs**

**1.7. Radiated emissions – band-edge (LTE Band IV)****1.7.1. Low Band-Edge****Diagram 9.40a, Channel 19957, QPSK, 1RB low****Diagram 9.40b, Channel 19957, 16-QAM, 1RB low**

**Diagram 9.41a, Channel 19957, QPSK, 6RBs****Diagram 9.41b, Channel 19957, 16-QAM, 6RBs**

**1.7.2. High Band-Edge****Diagram 9.42a, Channel 20393, QPSK, 1RB high****Diagram 9.42b, Channel 20393, 16-QAM, 1RB high**



**Diagram 9.43a, Channel 20393, QPSK, 6RBs****Diagram 9.43b, Channel 20393, 16-QAM, 6RBs**

## 1.8. Radiated emissions – band-edge (LTE Band V)

### 1.8.1. Low Band-Edge

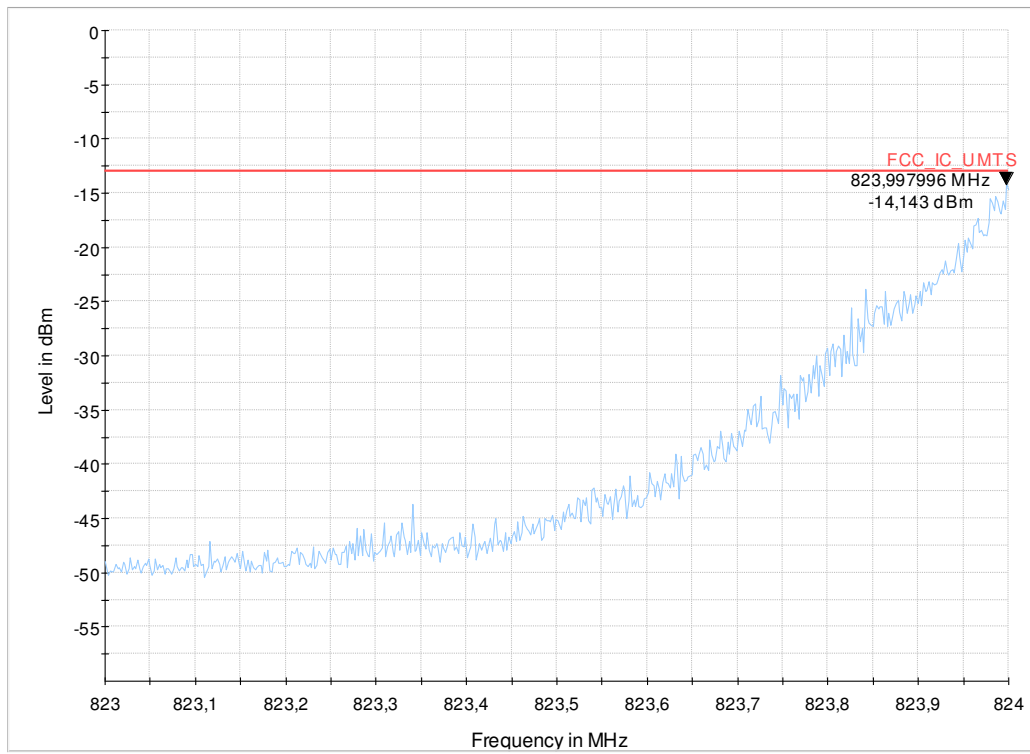
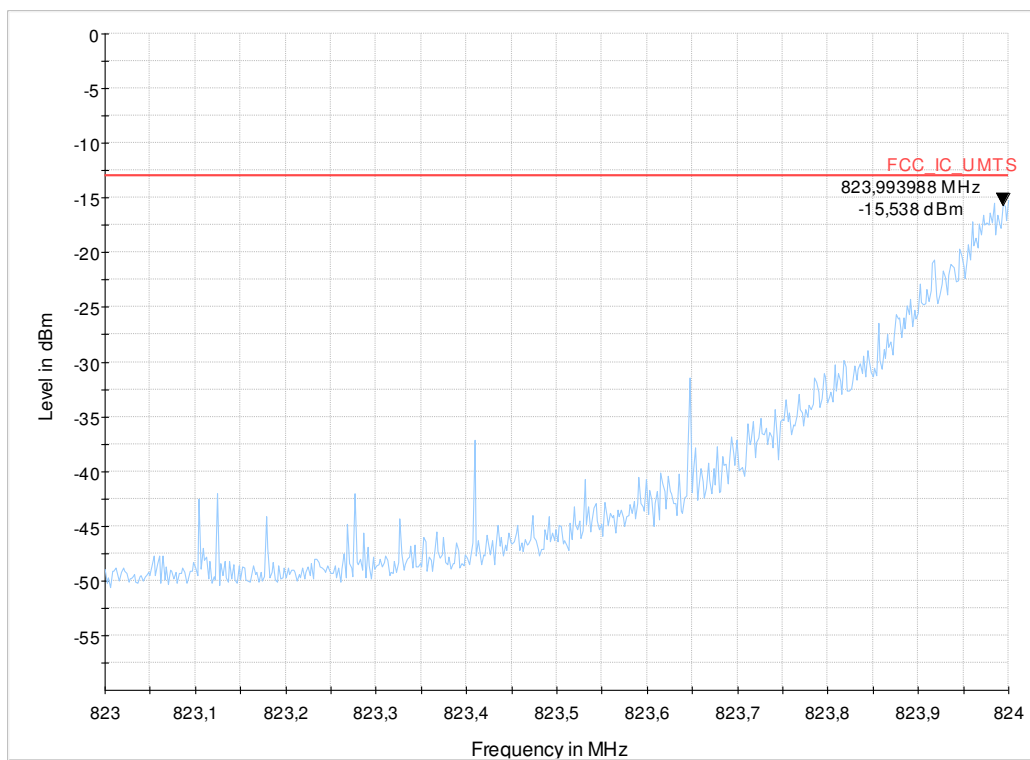
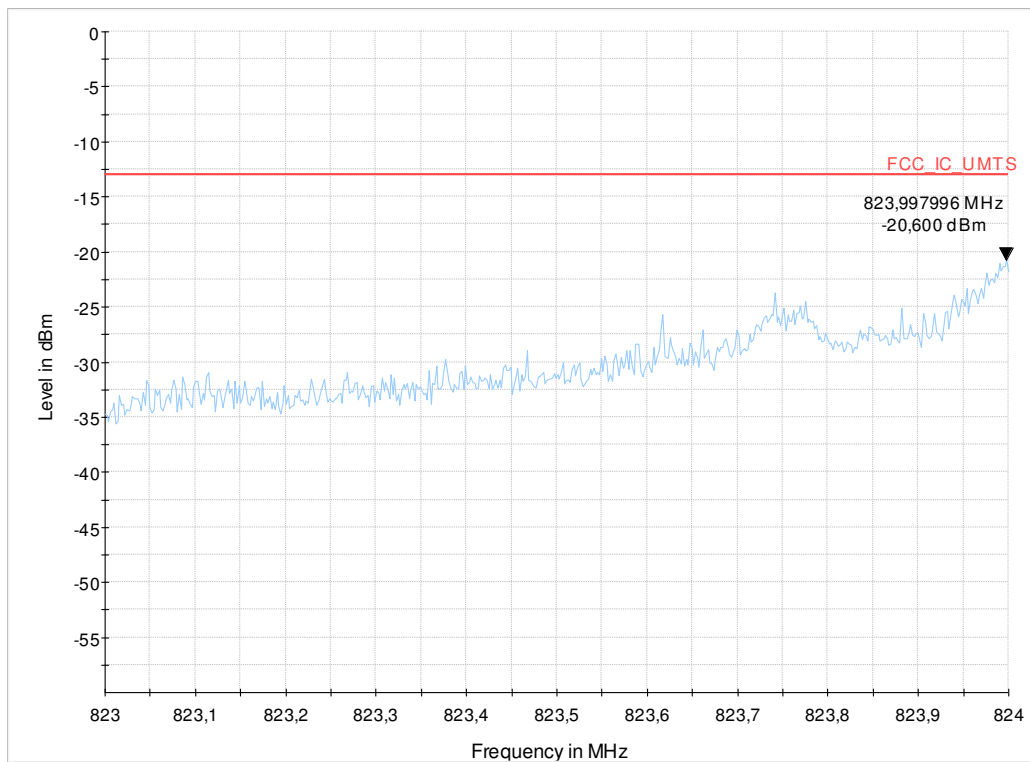
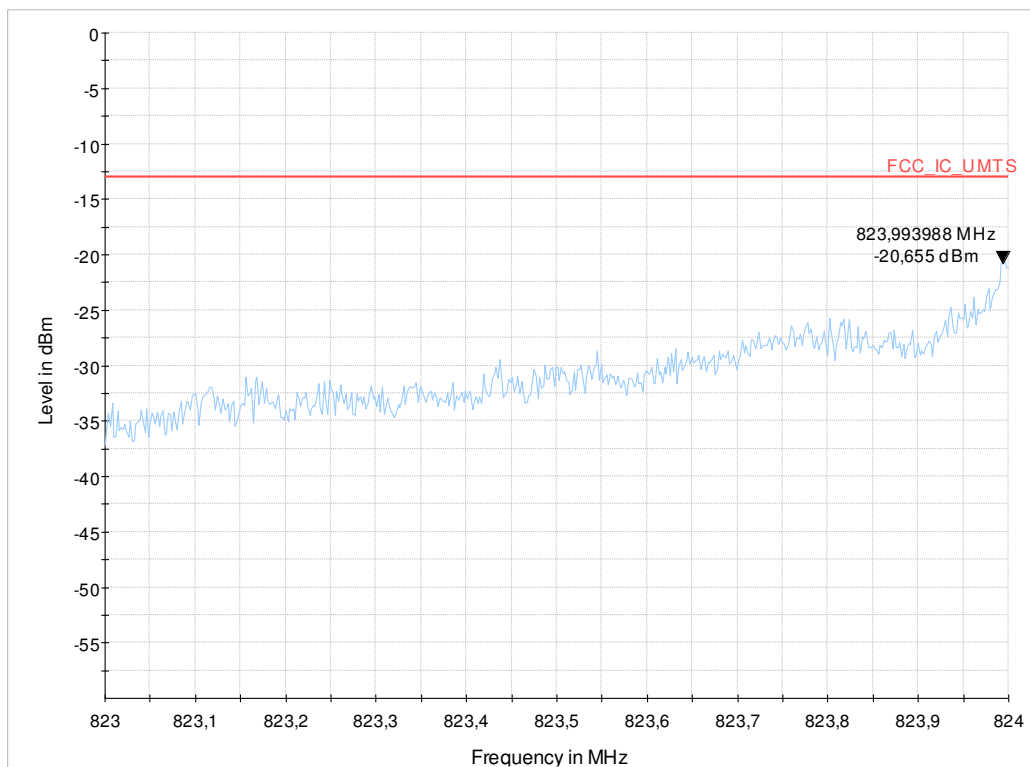
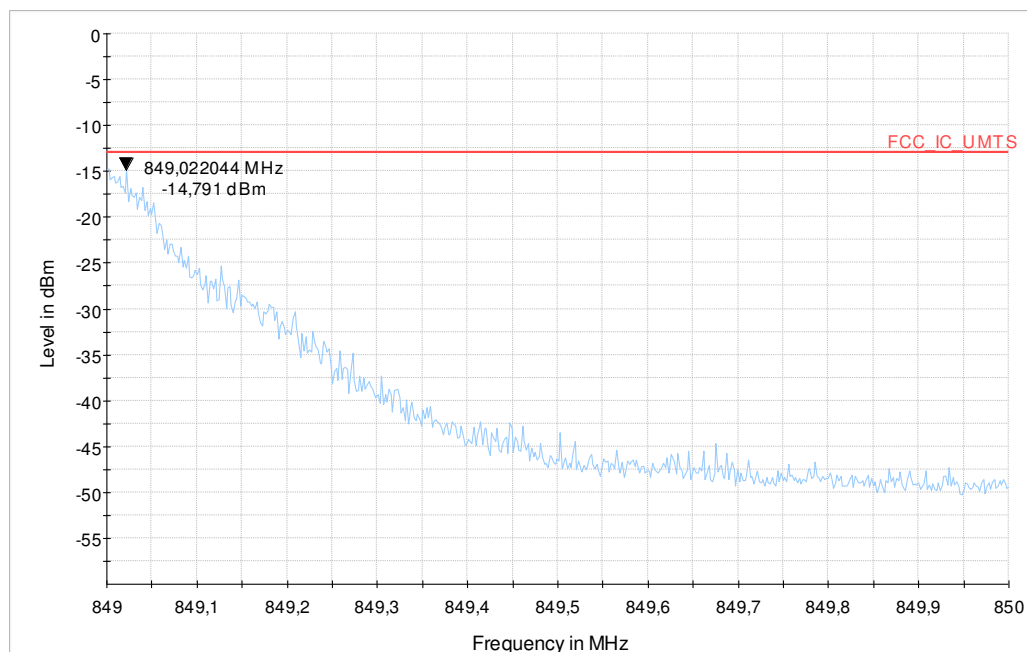
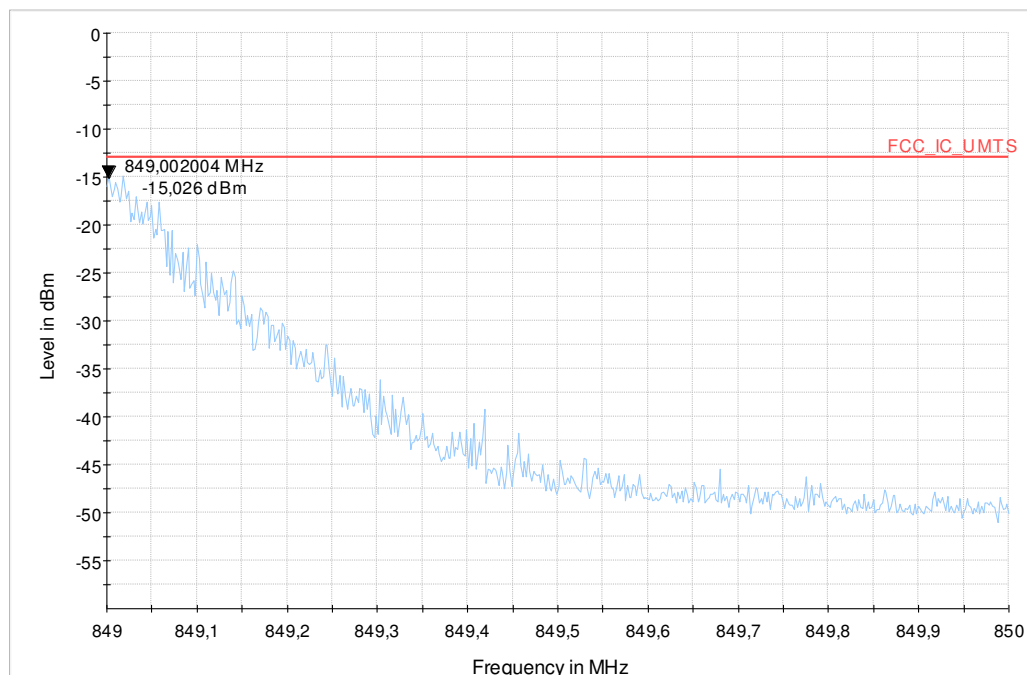
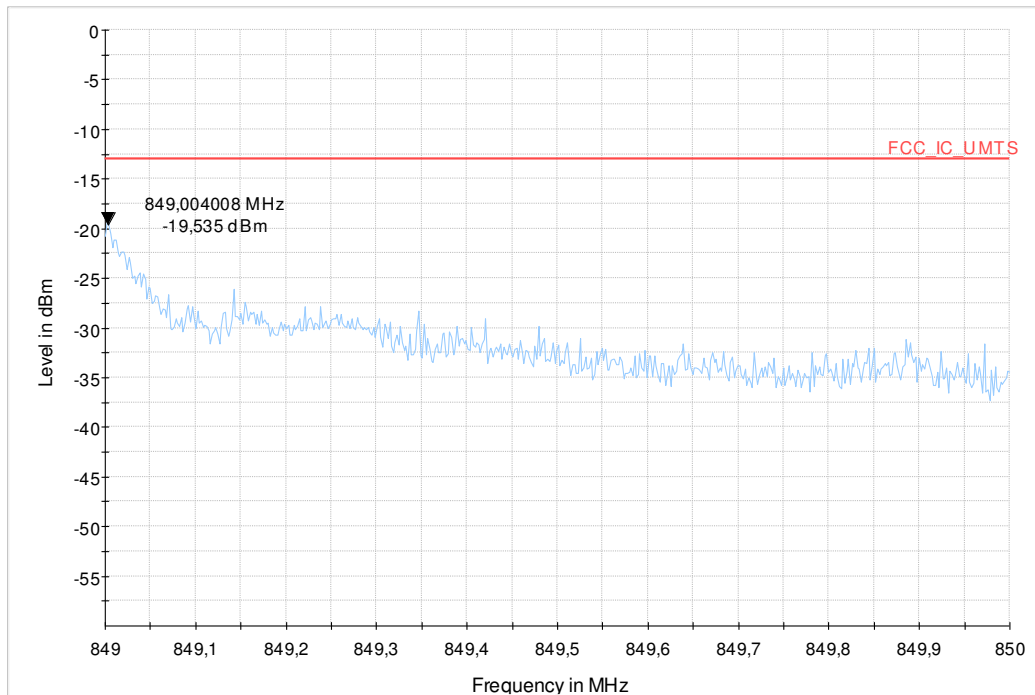
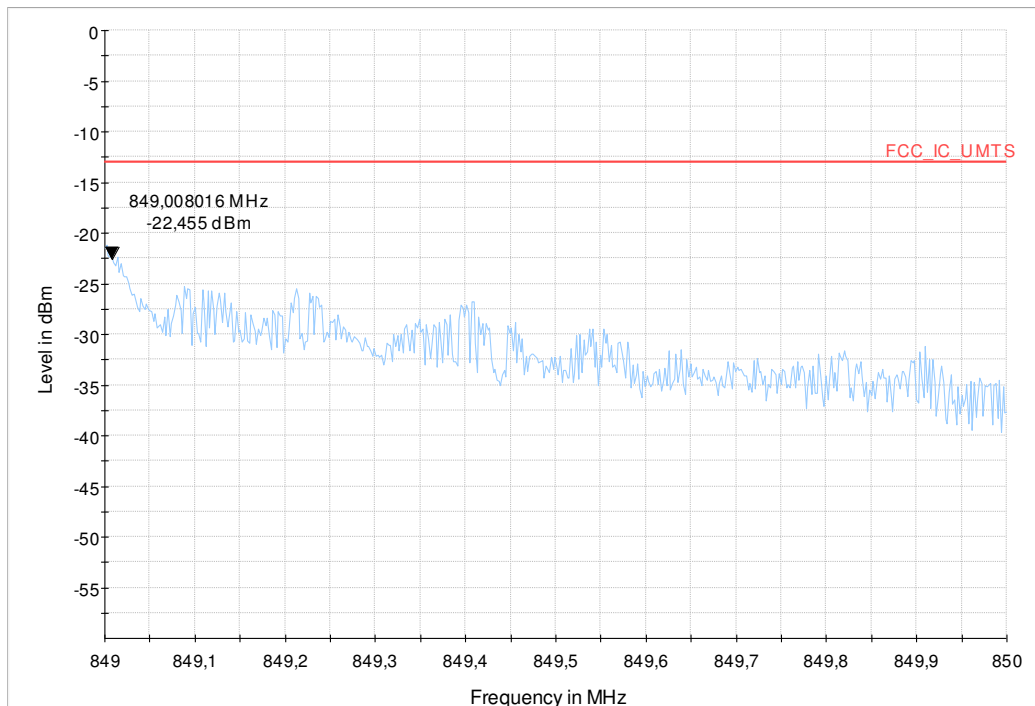


Diagram 9.500a, Channel 20407, QPSK, 1RB low



**Diagram 9.500b, Channel 20407, 16-QAM, 1RB low****Diagram 9.501a, Channel 20407, QPSK, 6RBs****Diagram 9.501b, Channel 20407, 16-QAM, 6RBs**

**1.8.2. High Band-Edge****Diagram 9.502a, Channel 20643, QPSK, 1RB high****Diagram 9.502b, Channel 20643, 16-QAM, 1RB high**

**Diagram 9.503a, Channel 20643, QPSK, 6RBs****Diagram 9.503b, Channel 20643, 16-QAM, 6RBs**

## 1.9. Radiated emissions – band-edge (LTE Band XVII)

### 1.9.1. Low Band-Edge

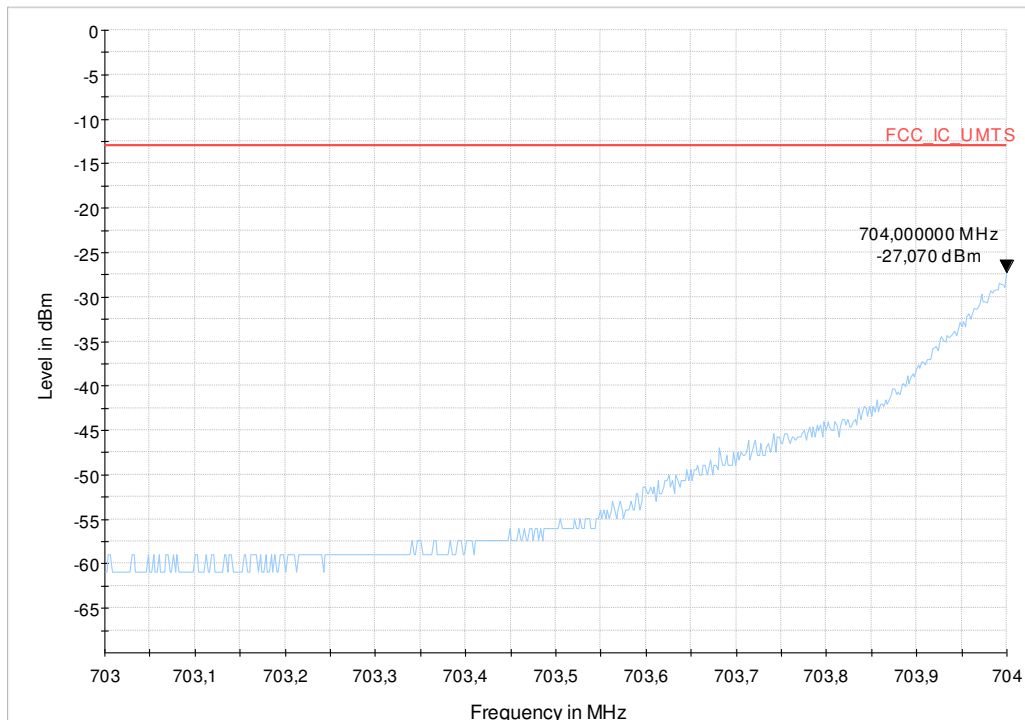


Diagram 9.1701a, Channel 23755, QPSK, 1RB low

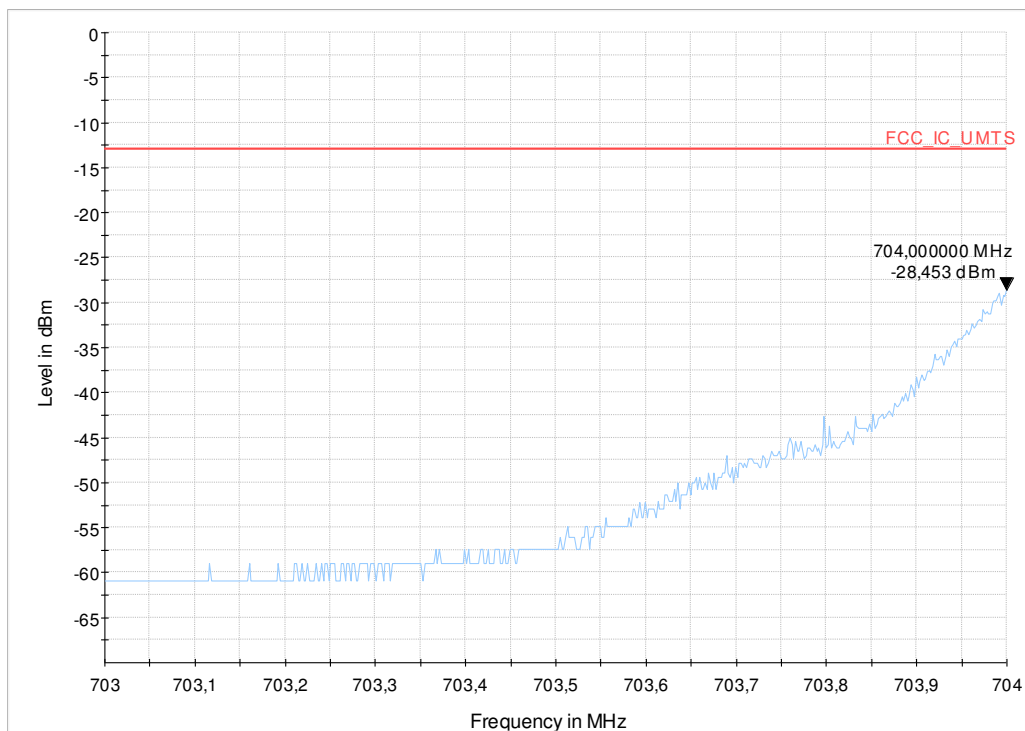
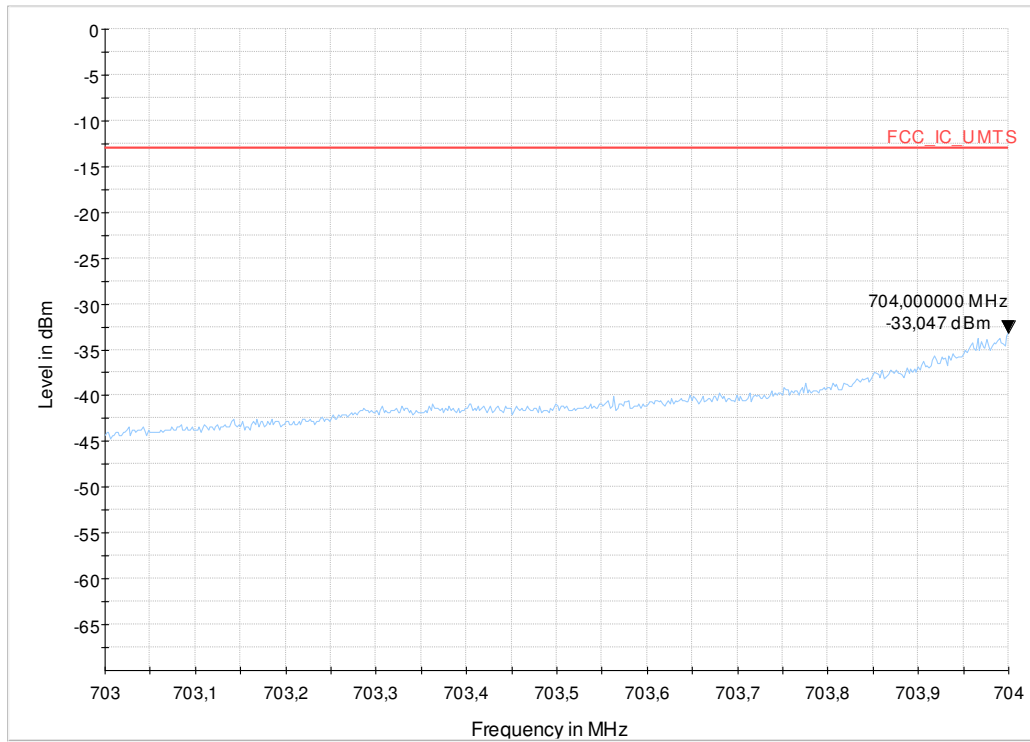
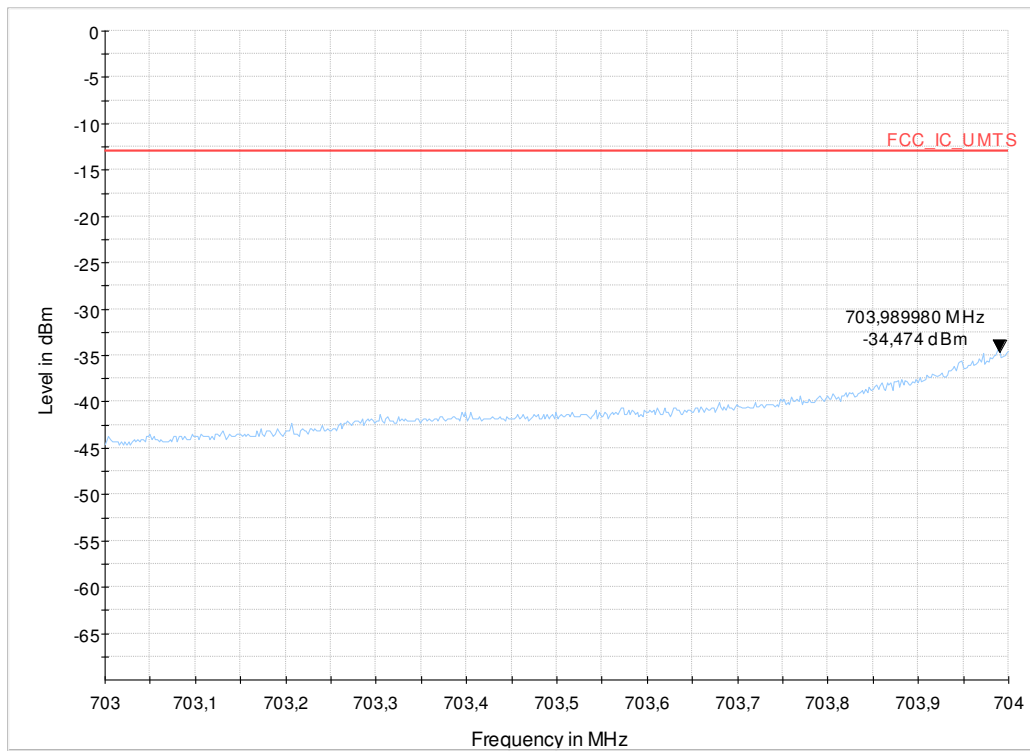
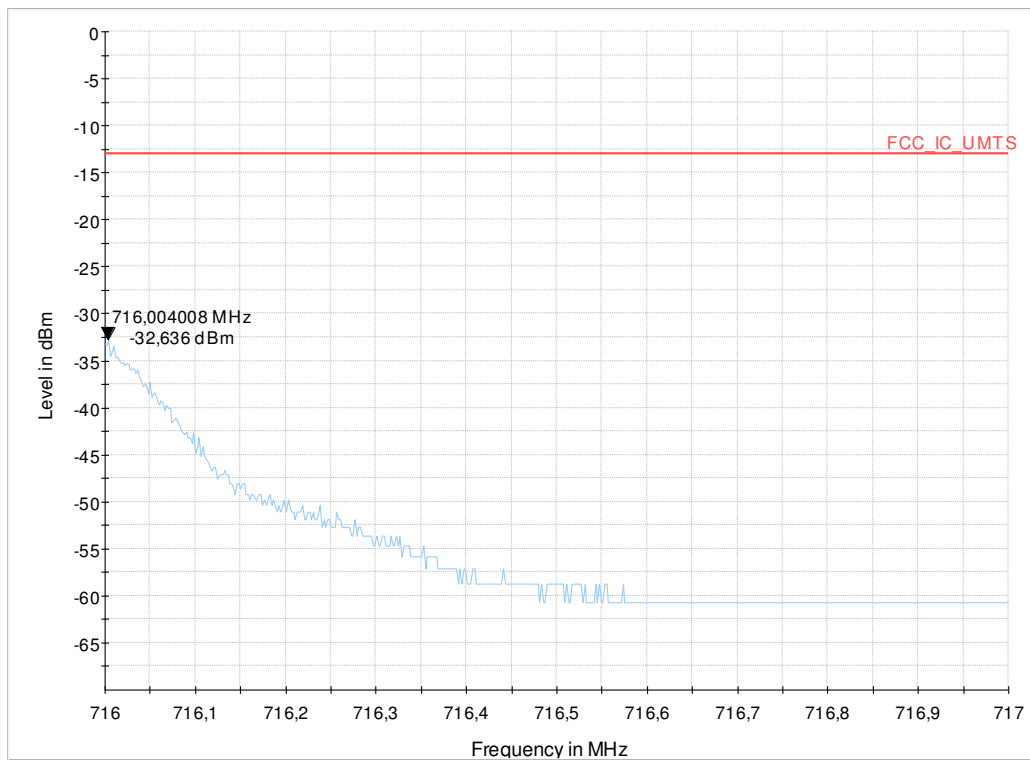
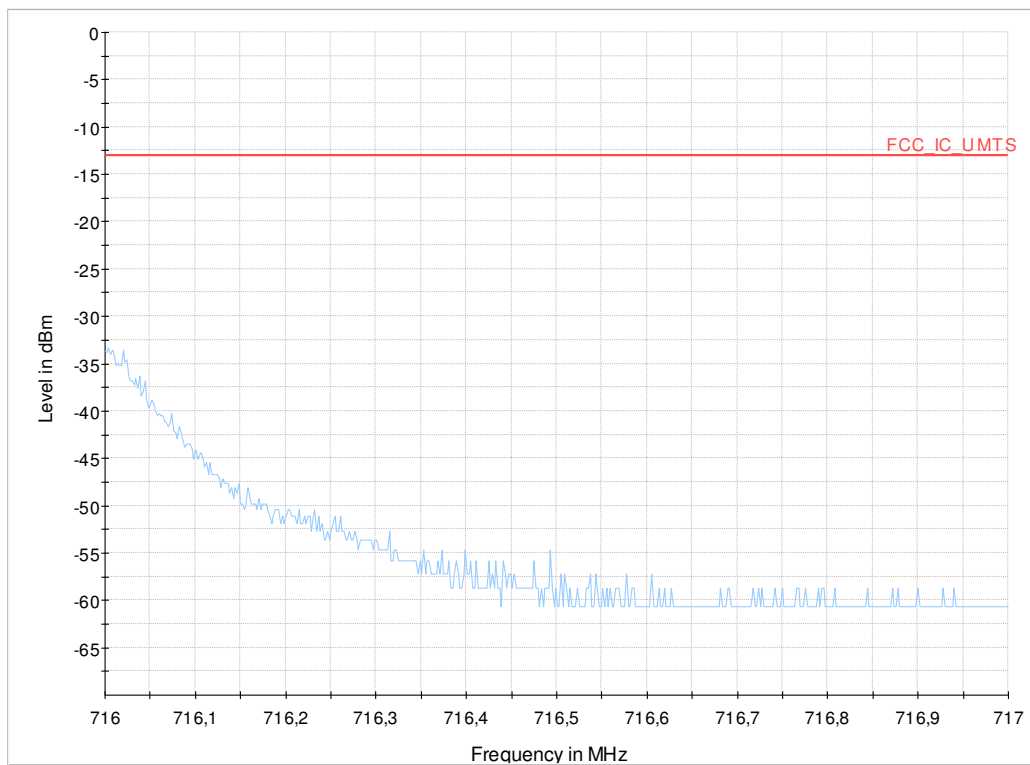
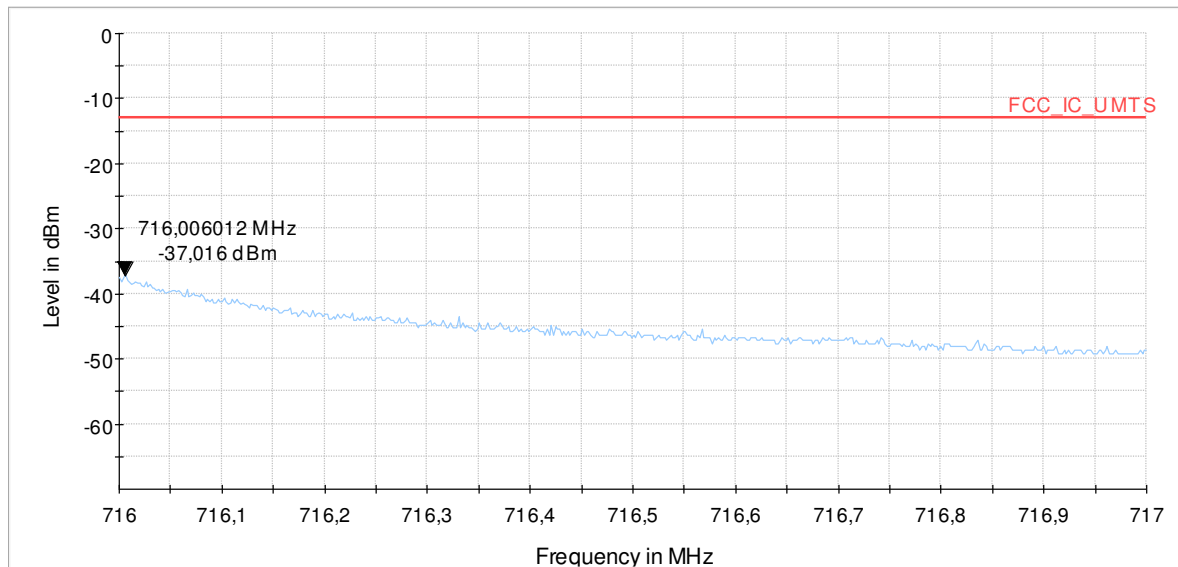
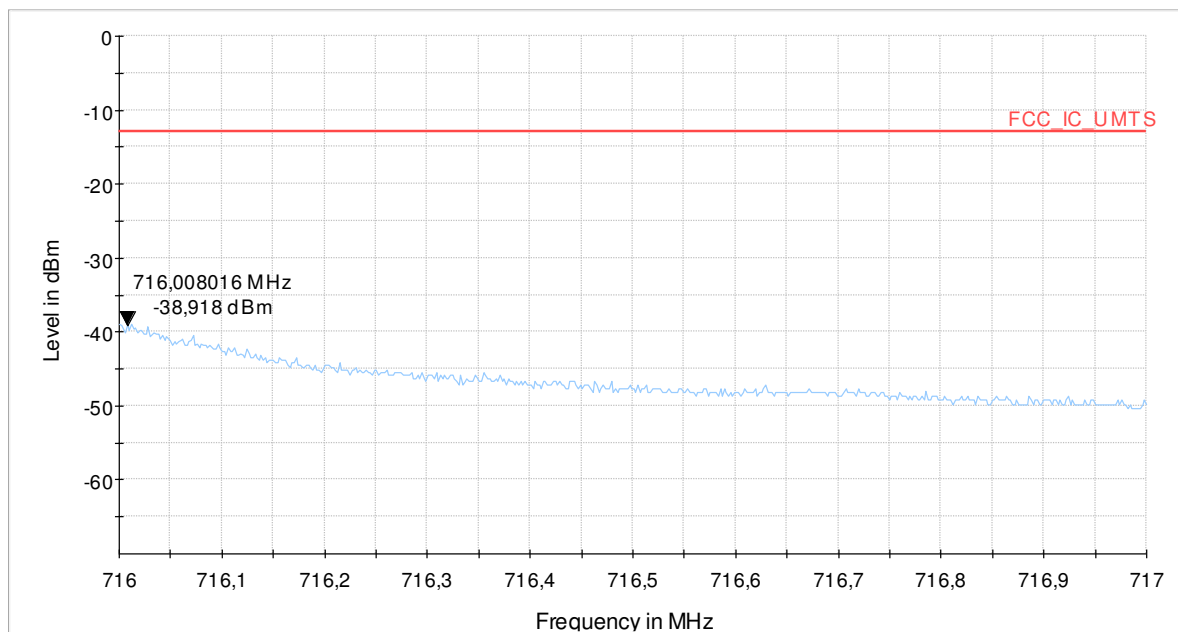


Diagram 9.1701b, Channel 23755, 16-QAM, 1RB low

**Diagram 9.1702a, Channel 23755, QPSK, 25RBs****Diagram 9.1702b, Channel 23755, 16-QAM, 25RBs**

**1.9.2. High Band-Edge****Diagram 9.1703a, Channel 23825, QPSK, 1RB high****Diagram 9.1703b, Channel 23825, 16-QAM, 1RB high**



**Diagram 9.1704a, Channel 23825, QPSK, 25RBs****Diagram 9.1704b, Channel 23825, 16-QAM, 25RBs**