

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			
 DAkkS Deutsche Akkreditierungsstelle D-PL-12047-01-01	 FEDERAL COMMUNICATIONS COMMISSION FCC 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
 WiFi ALLIANCE AUTHORIZED RF LABORATORY	 CTIA Authorized Test Lab LAB CODE 20011130-00		
accredited according to DIN EN ISO/IEC 17025			
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Table of contents

1. MEASUREMENT DIAGRAMS LTE-

MODE	3
1.1. PAPR-Value (CCDF plots)	3
1.2. Spurious emissions radiated (LTE Band II)	26
1.3. Spurious emissions radiated (LTE Band IV)	28
1.4. Spurious emissions radiated (LTE Band V)	30
1.5. Spurious emissions radiated (LTE Band XVII)	32
1.6. Radiated emissions – band-edge (LTE Band II)	34
1.7. Radiated emissions – band-edge (LTE Band IV)	38
1.8. Radiated emissions – band-edge (LTE Band V)	42
1.9. Radiated emissions – band-edge (LTE Band XVII)	46

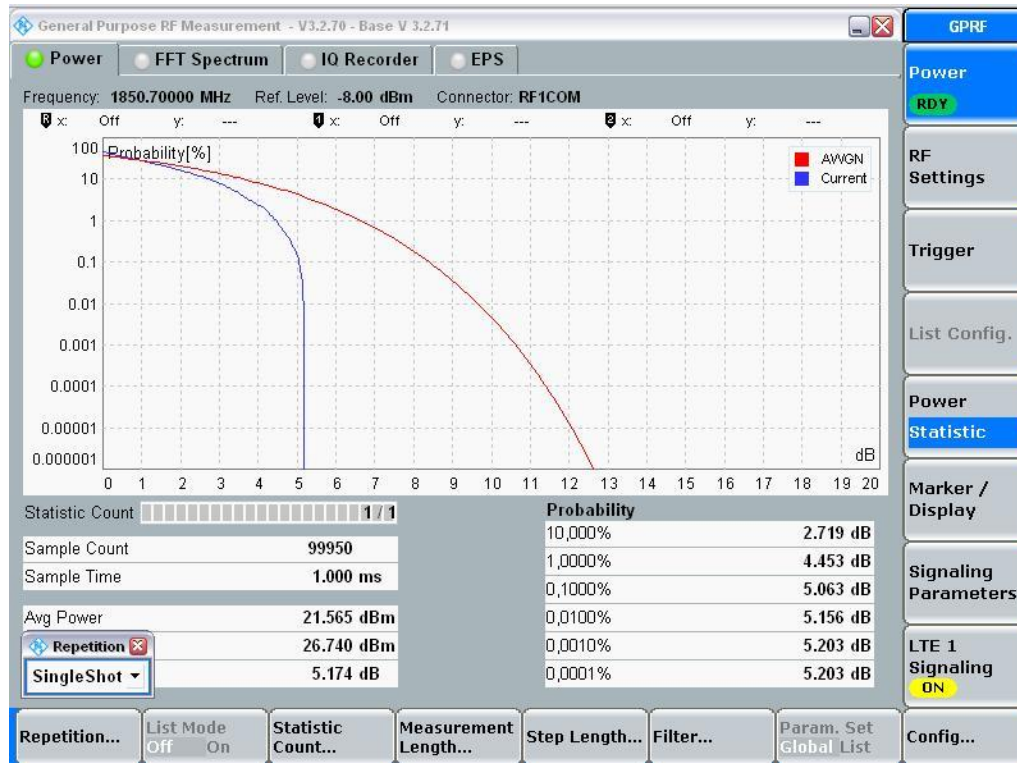
1. Measurement diagrams LTE-mode

1.1. PAPR-Value (CCDF plots)

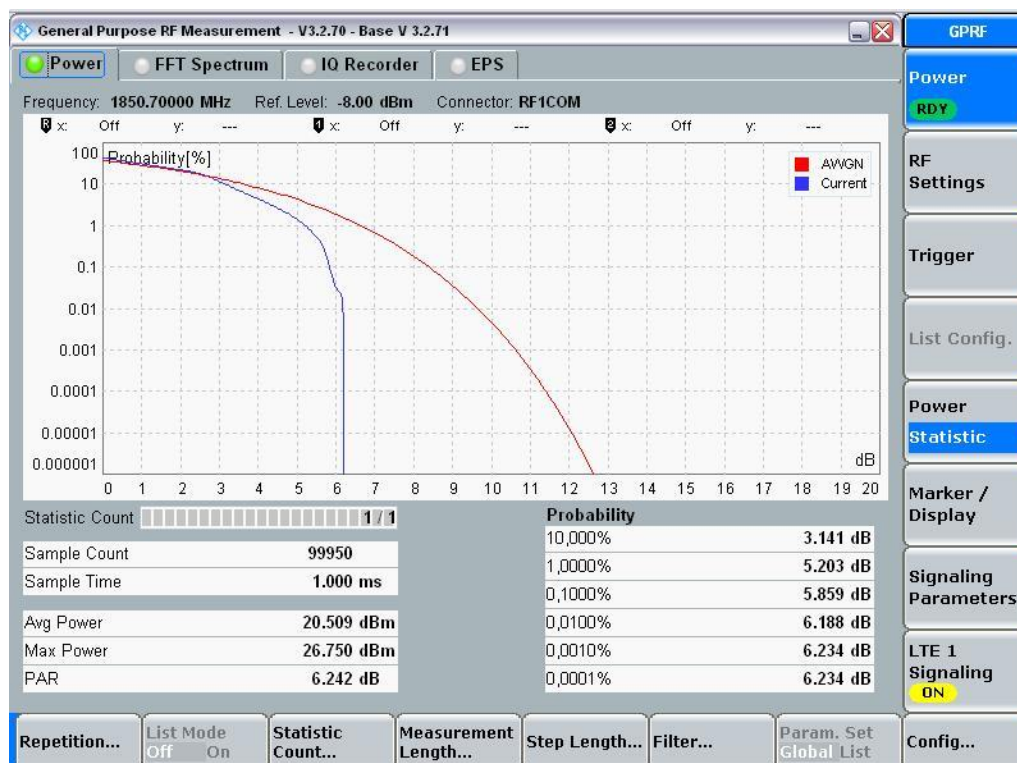
1.1.1. LTE Band 2

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

1.1.1.1. 1.4MHz signal bandwidth

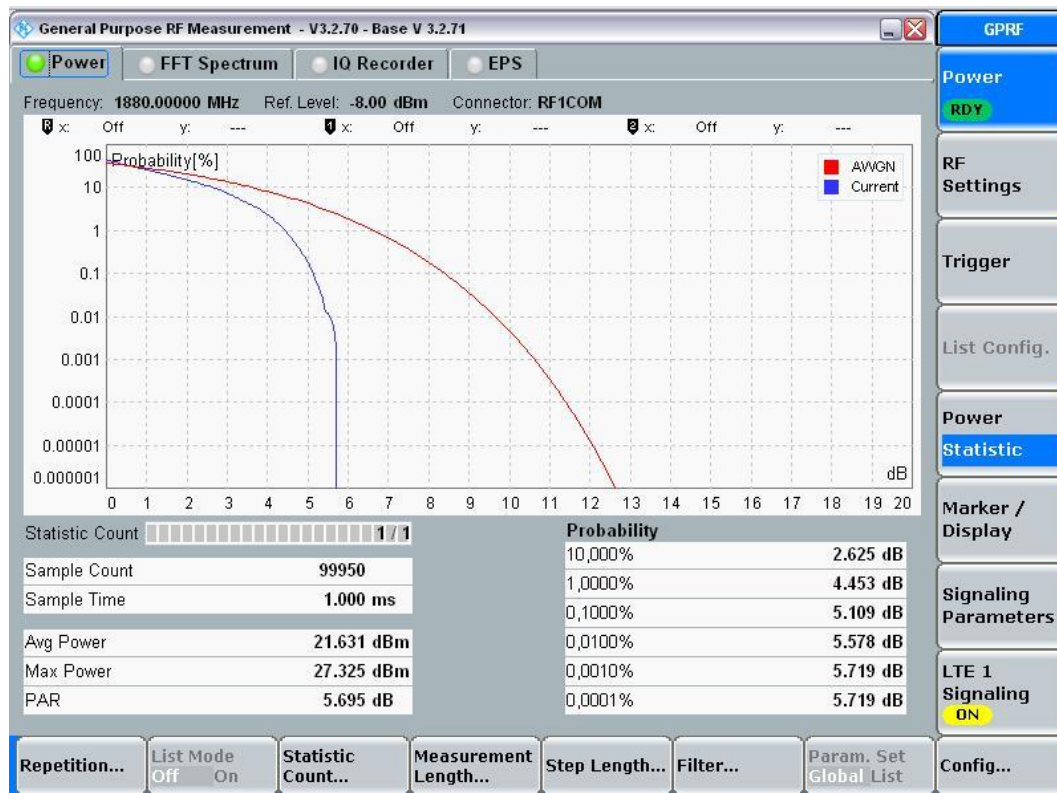


QPSK, Ch18607, 100% RB (6RBs)

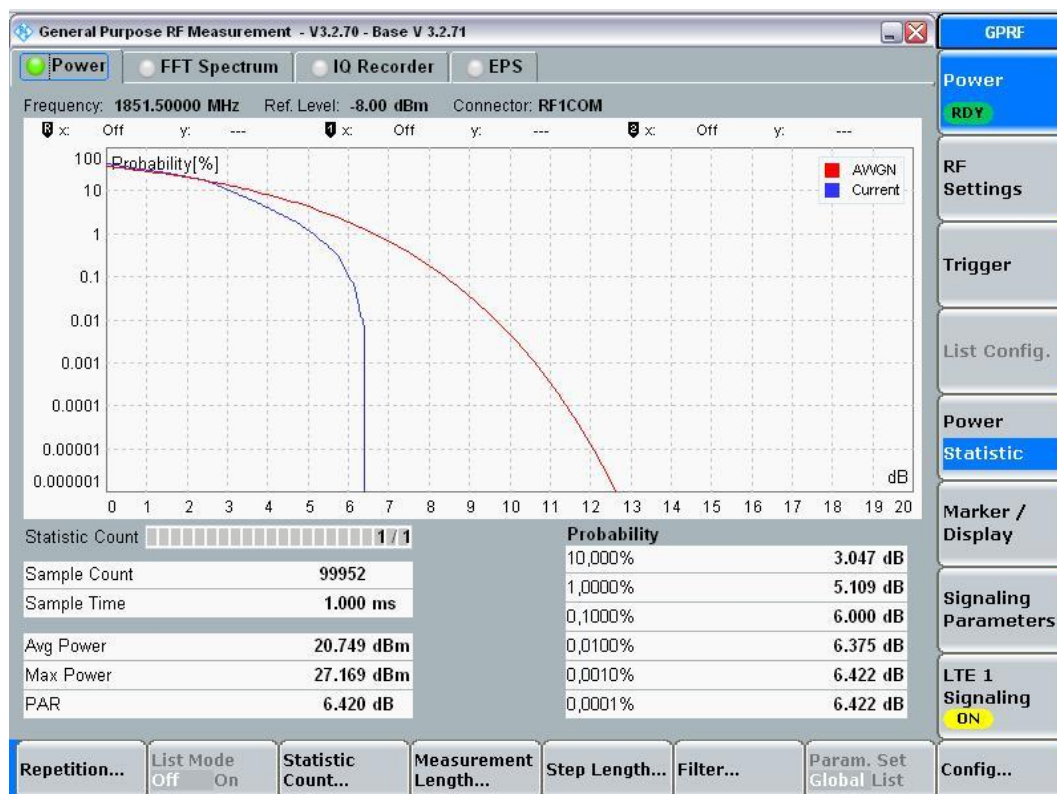


16-QAM, Ch18607, 100% RB (6RBs)

1.1.1.2. 3MHz signal bandwidth

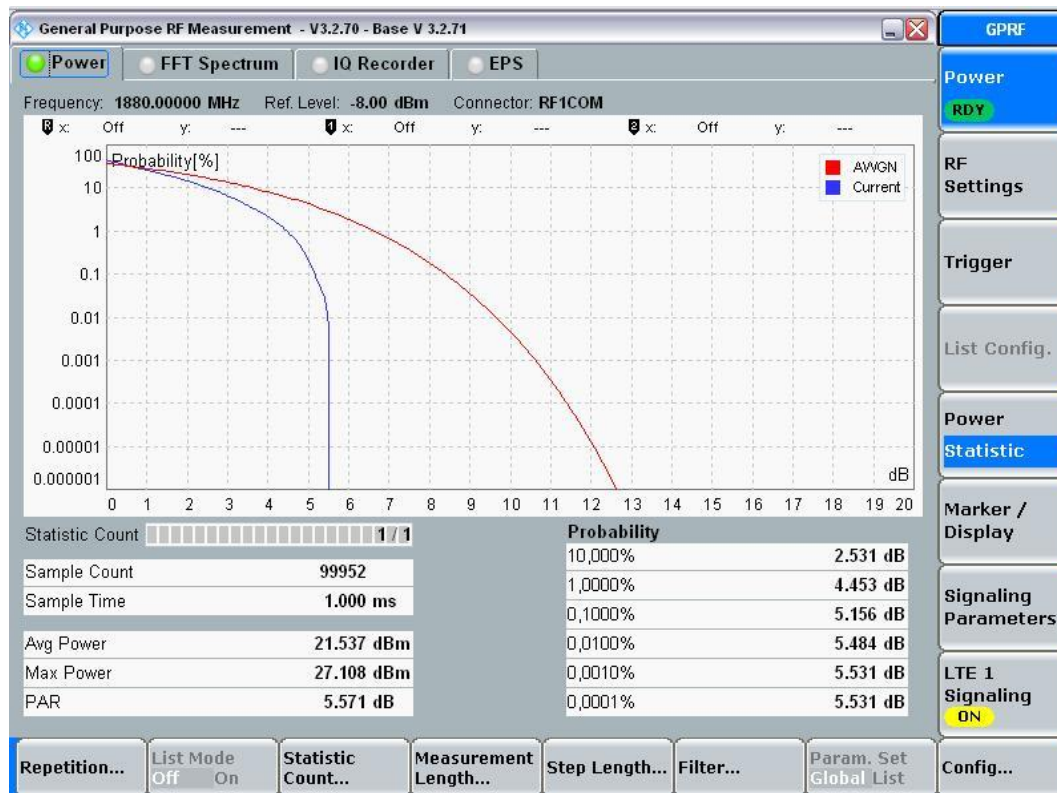


QPSK, Ch18900, 100% RB (15RBs)

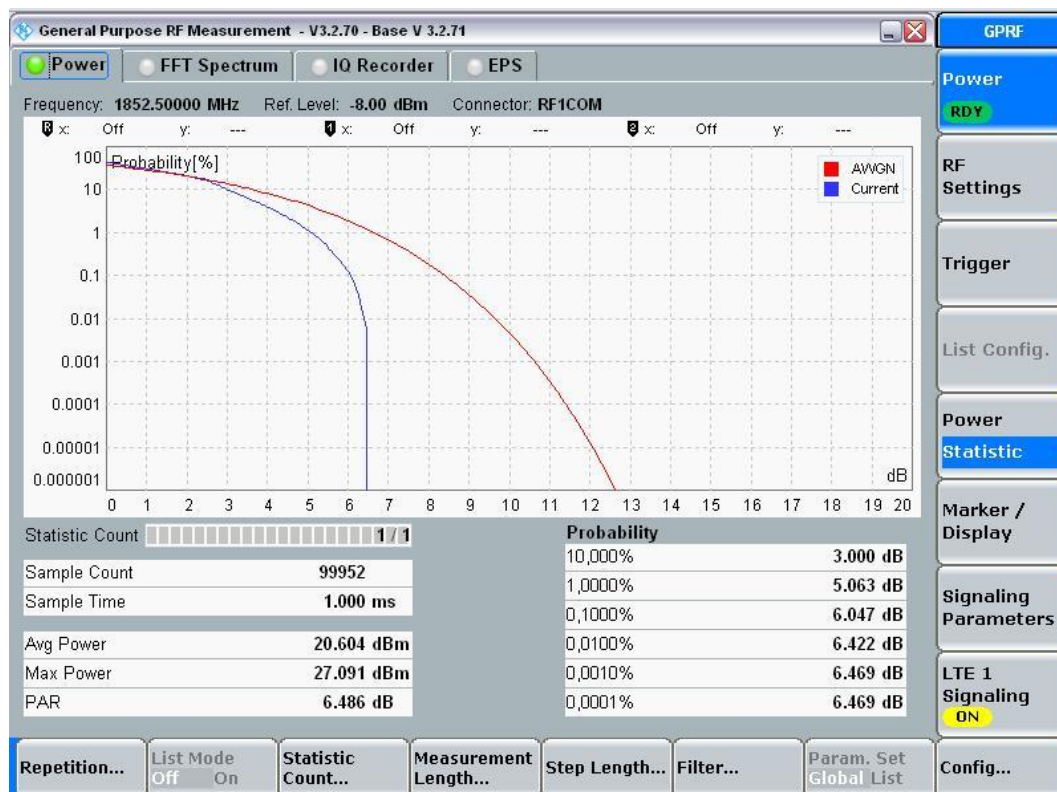


16-QAM, Ch18615, 100% RB (15RBs)

1.1.1.3. 5MHz signal bandwidth

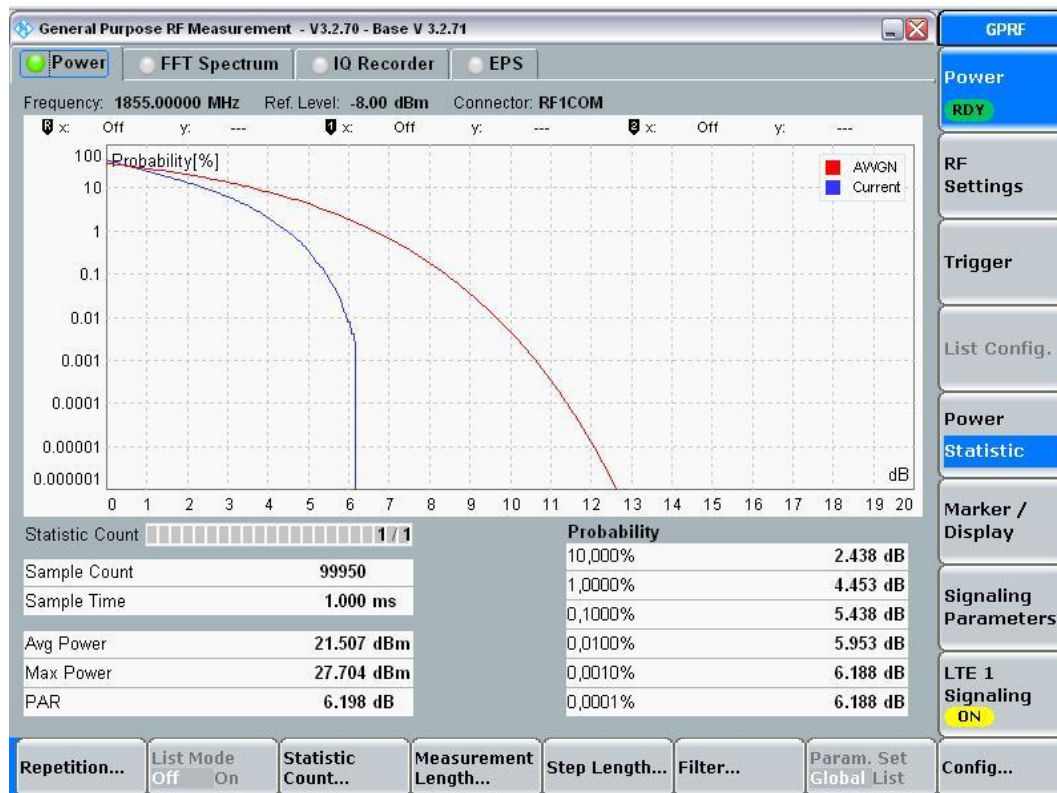


QPSK, Ch18900, 100% RB (25RBs)

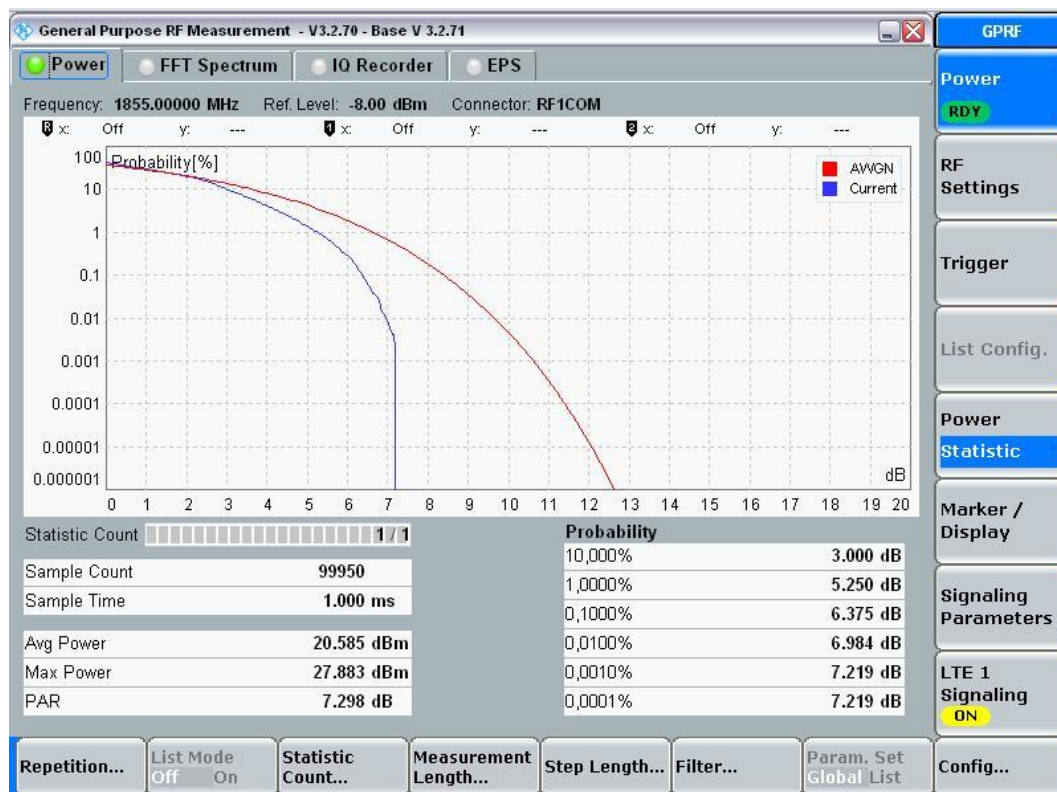


16-QAM, Ch18625, 100% RB (25RBs)

1.1.1.4. 10MHz signal bandwidth

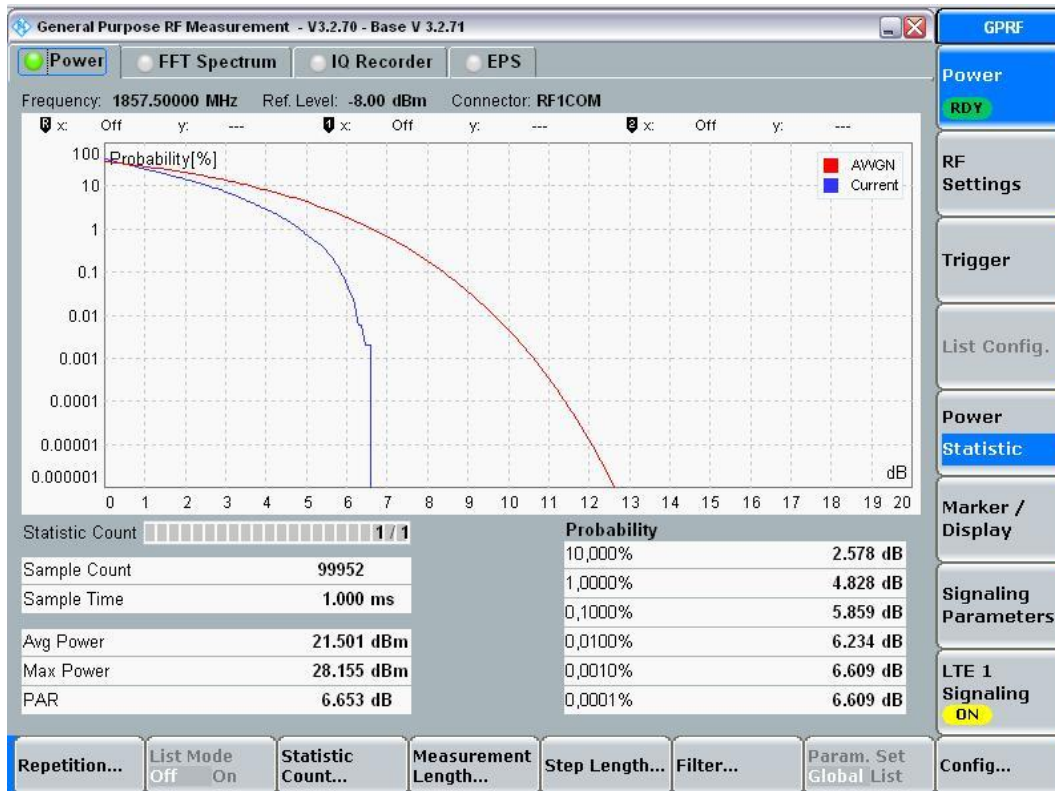


QPSK, Ch18650, 100% RB (50RBs)

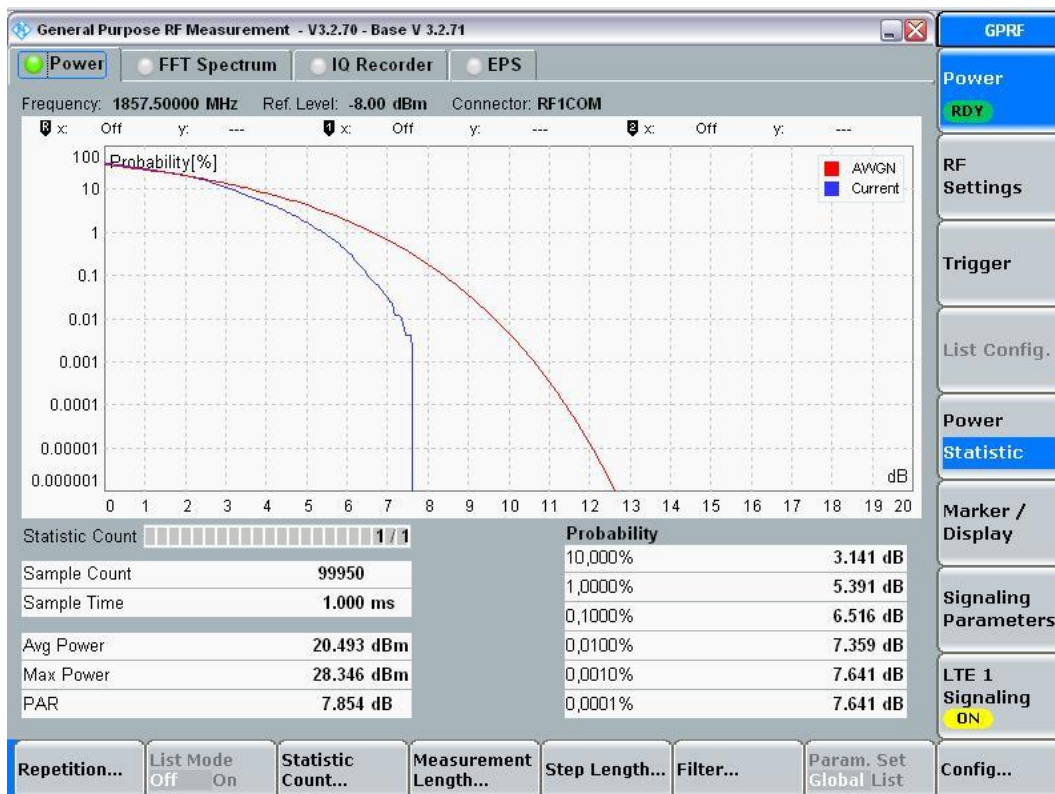


16-QAM, Ch18650, 100% RB (50RBs)

1.1.1.5. 15MHz signal bandwidth

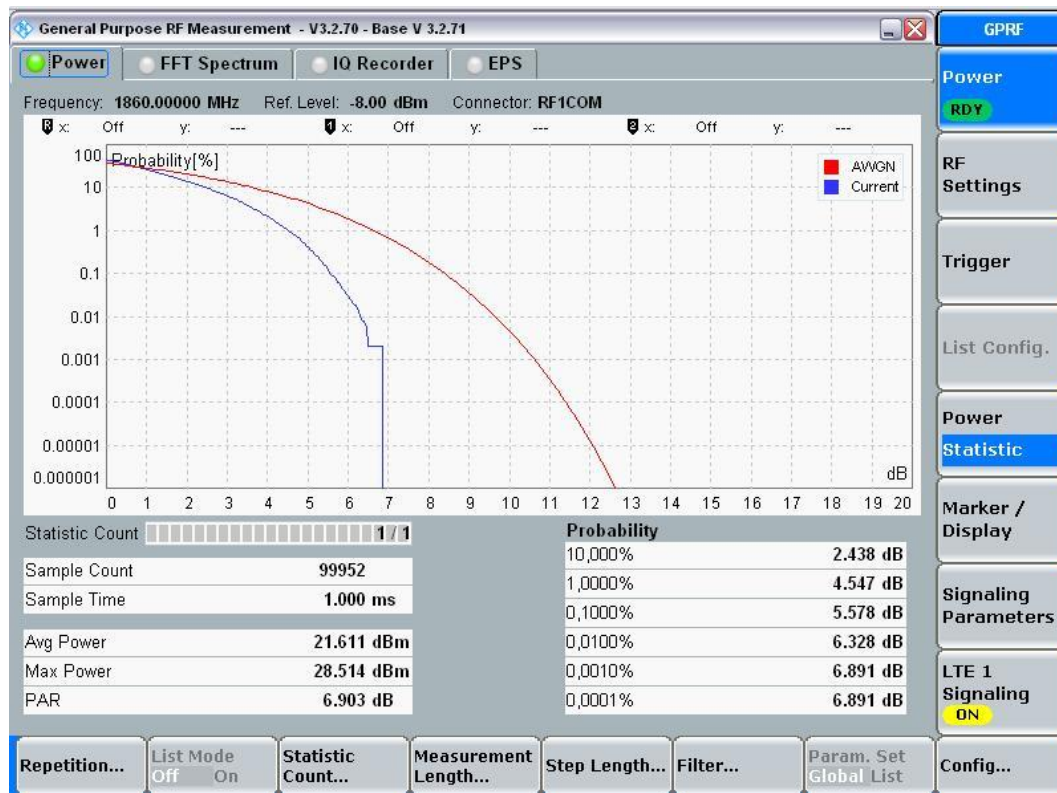


QPSK, Ch18675, 100% RB (75RBs)

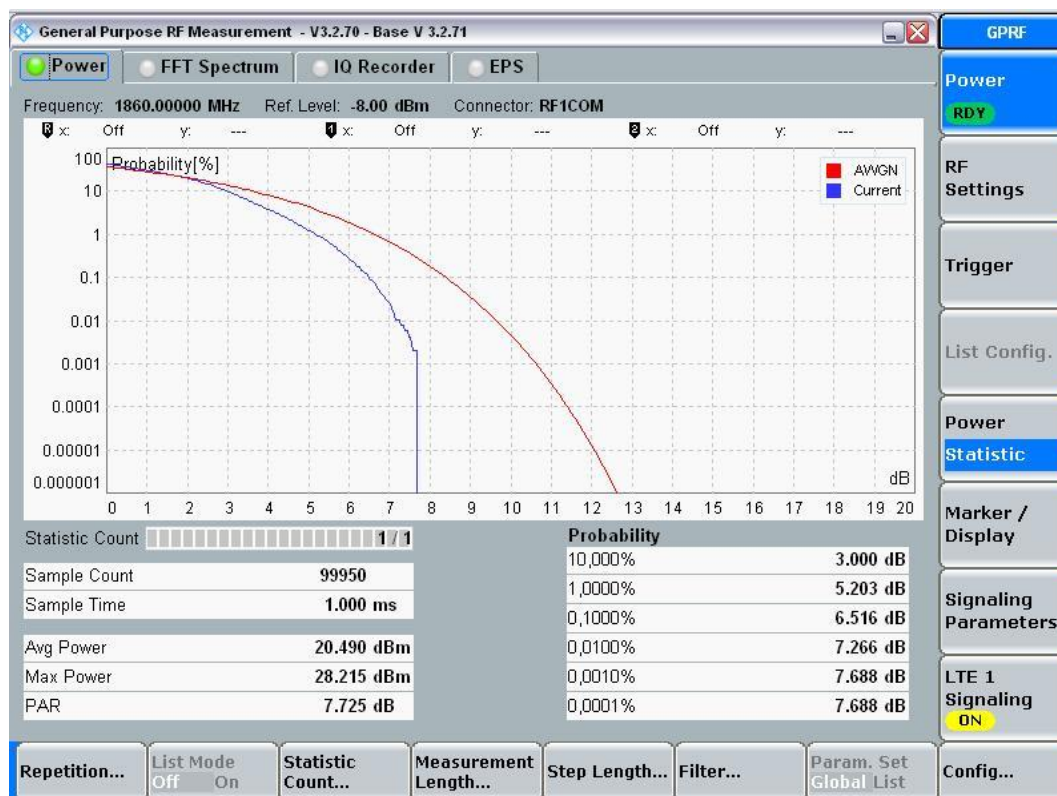


16-QAM, Ch18675, 100% RB (75RBs)

1.1.1.6. 20MHz signal bandwidth



QPSK, Ch18700, 100% RB (100RBs)

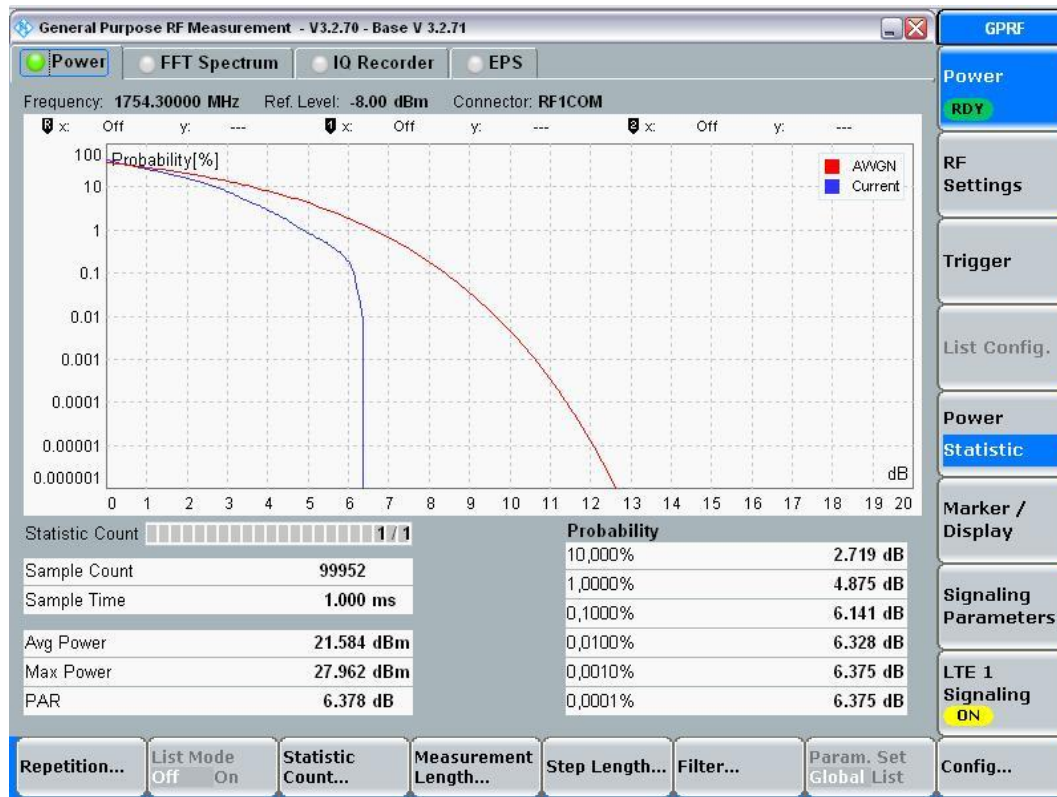


16-QAM, Ch18700, 100% RB (100RBs)

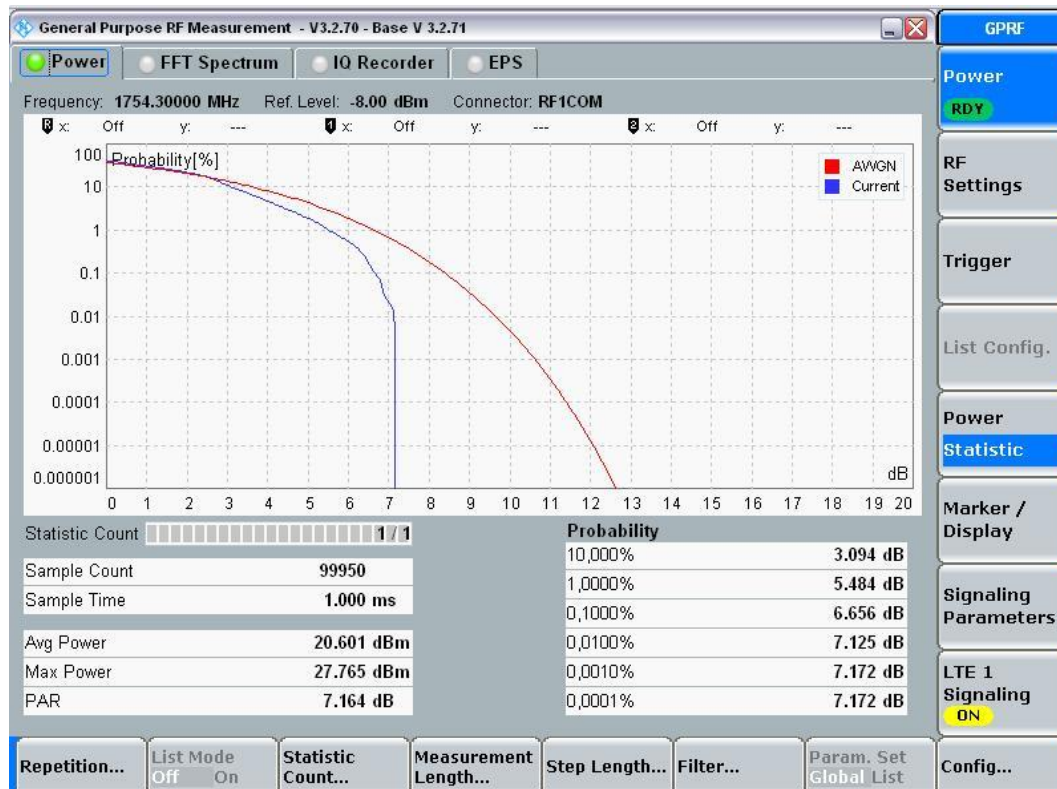
1.1.2. LTE Band 4

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

1.1.2.1. 1.4MHz signal bandwidth

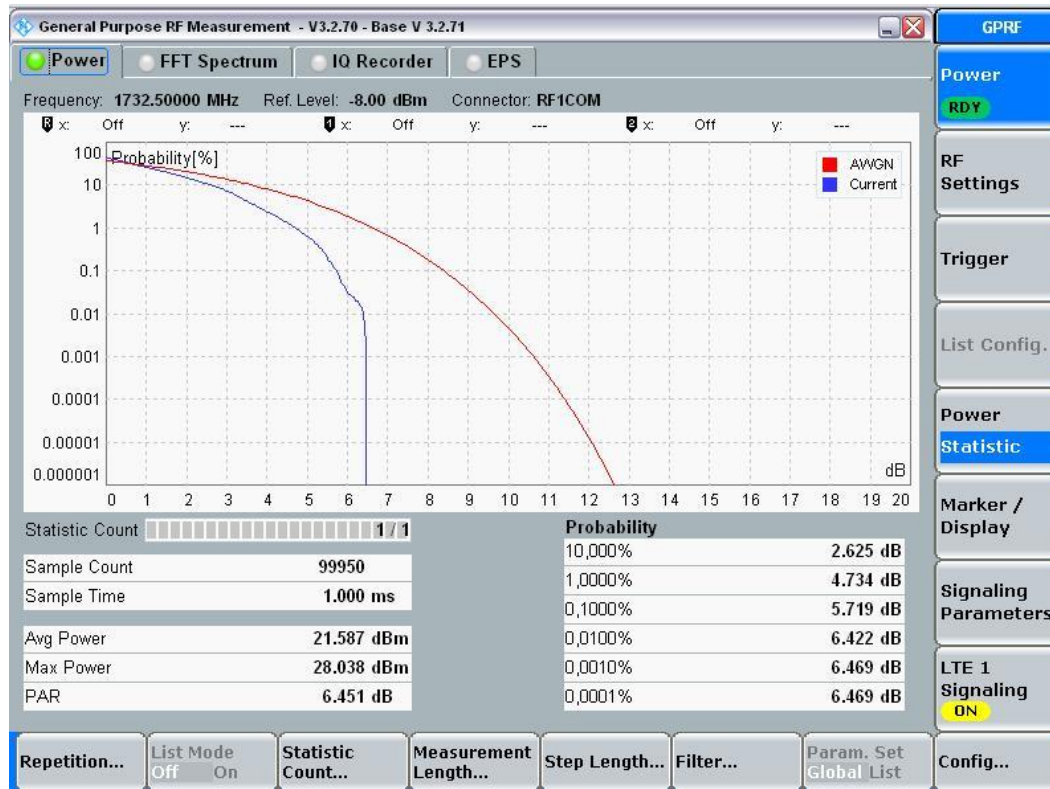


QPSK, Ch20393, 100% RB (6RBs)

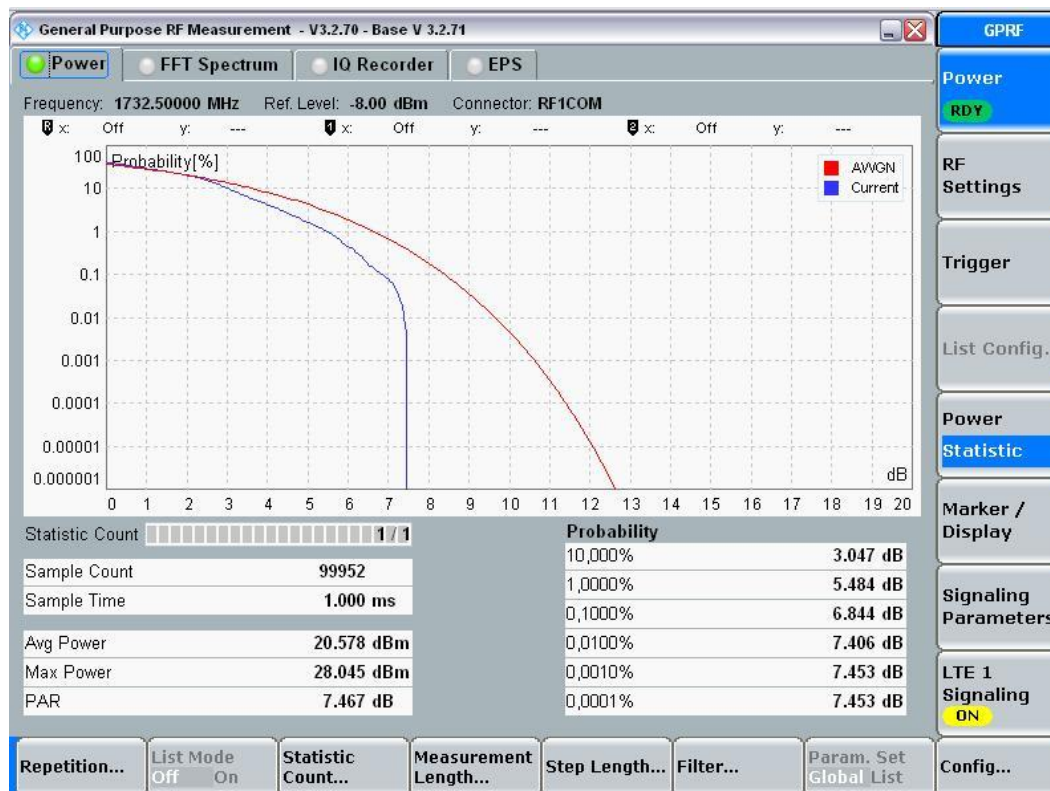


16-QAM, Ch20393, 100% RB (6RBs)

1.1.2.2. 3MHz signal bandwidth

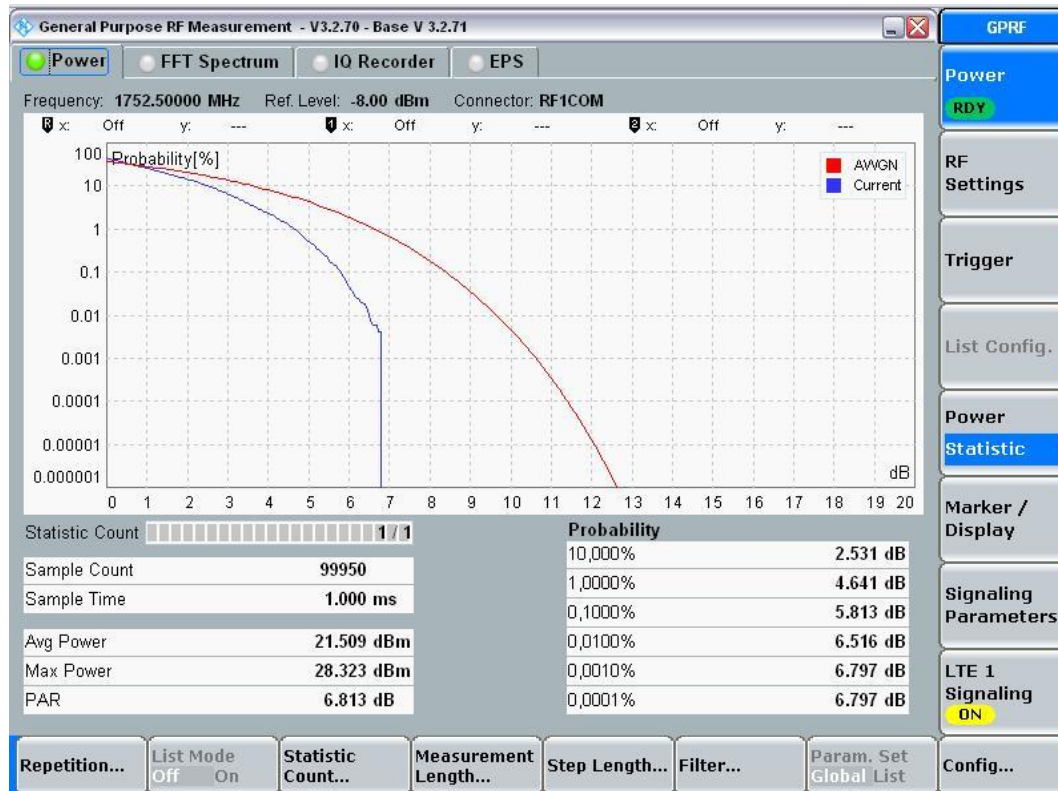


QPSK, Ch20175, 100% RB (15RBs)

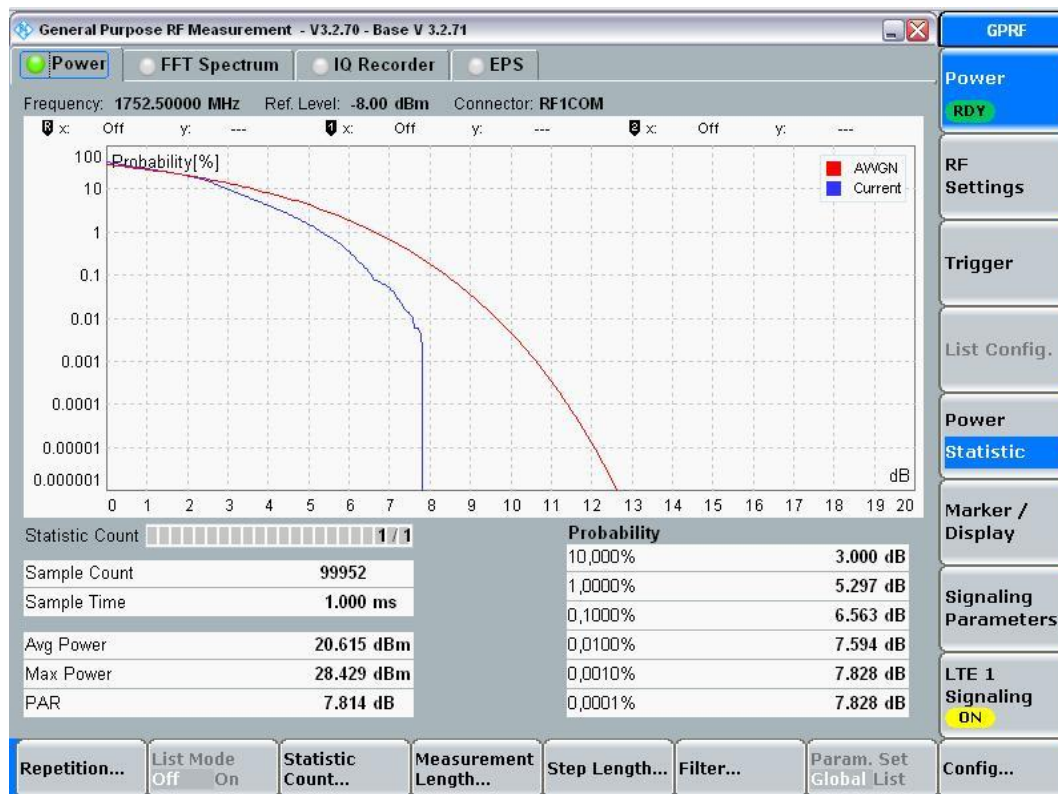


16-QAM, Ch20175, 100% RB (15RBs)

1.1.2.3. 5MHz signal bandwidth

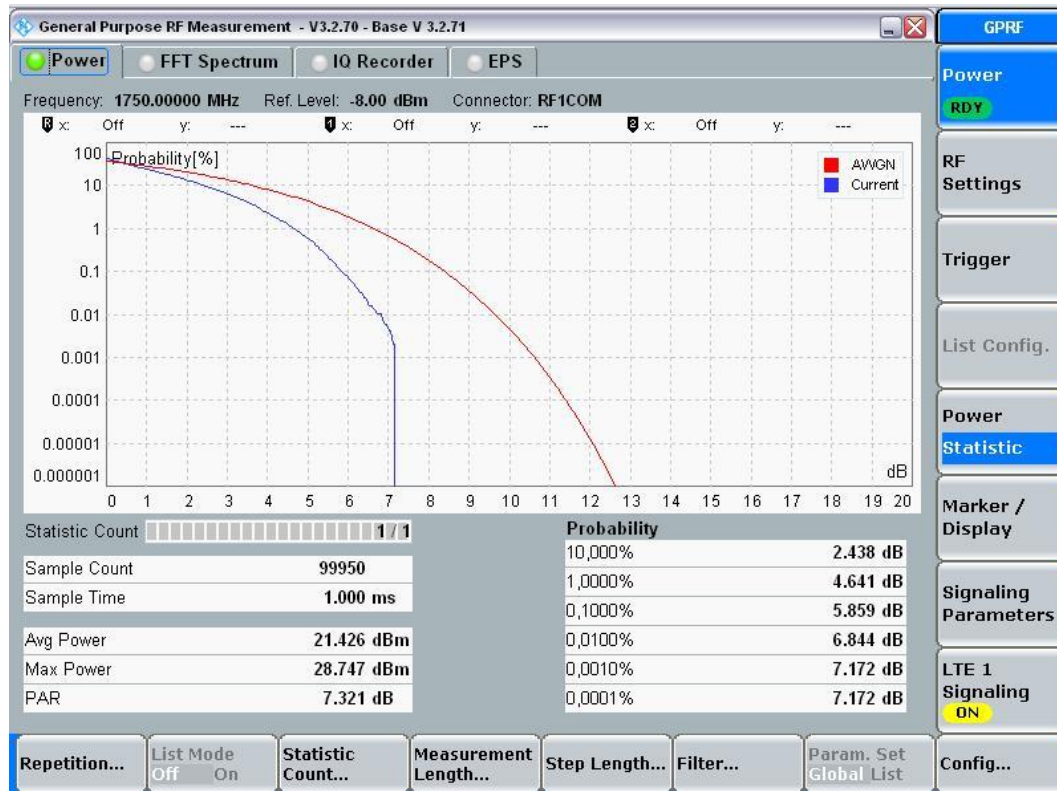


QPSK, Ch20375, 100% RB (25RBs)

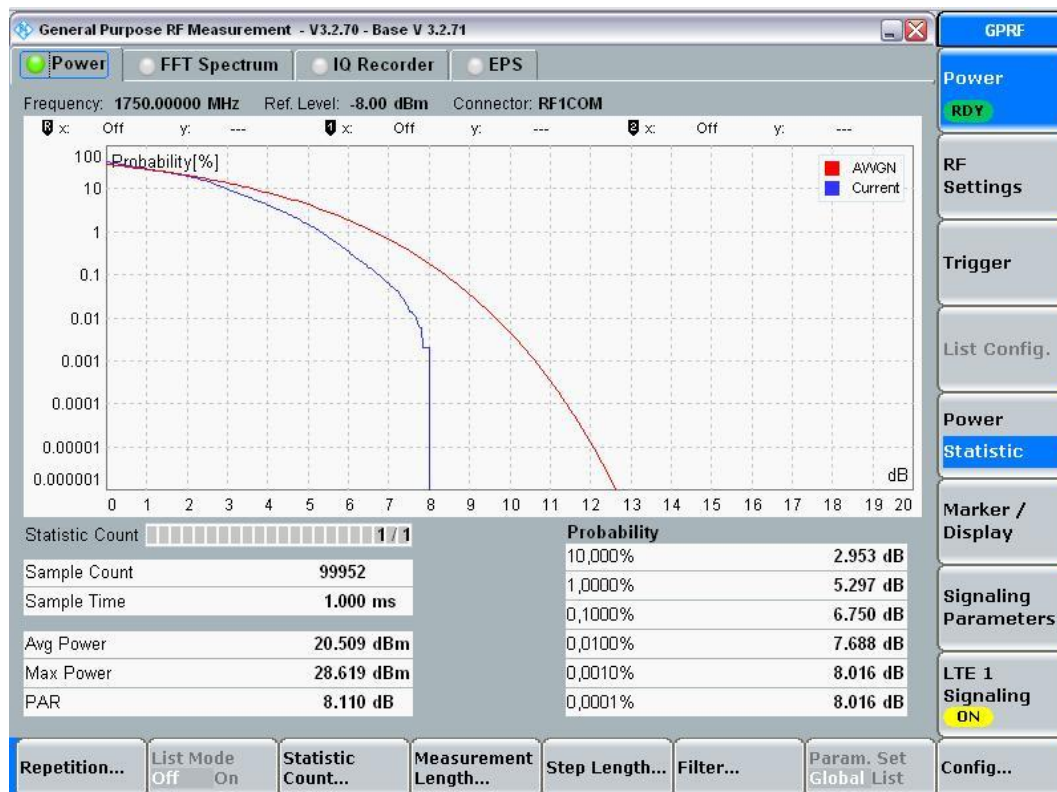


16-QAM, Ch20375, 100% RB (25RBs)

1.1.2.4. 10MHz signal bandwidth

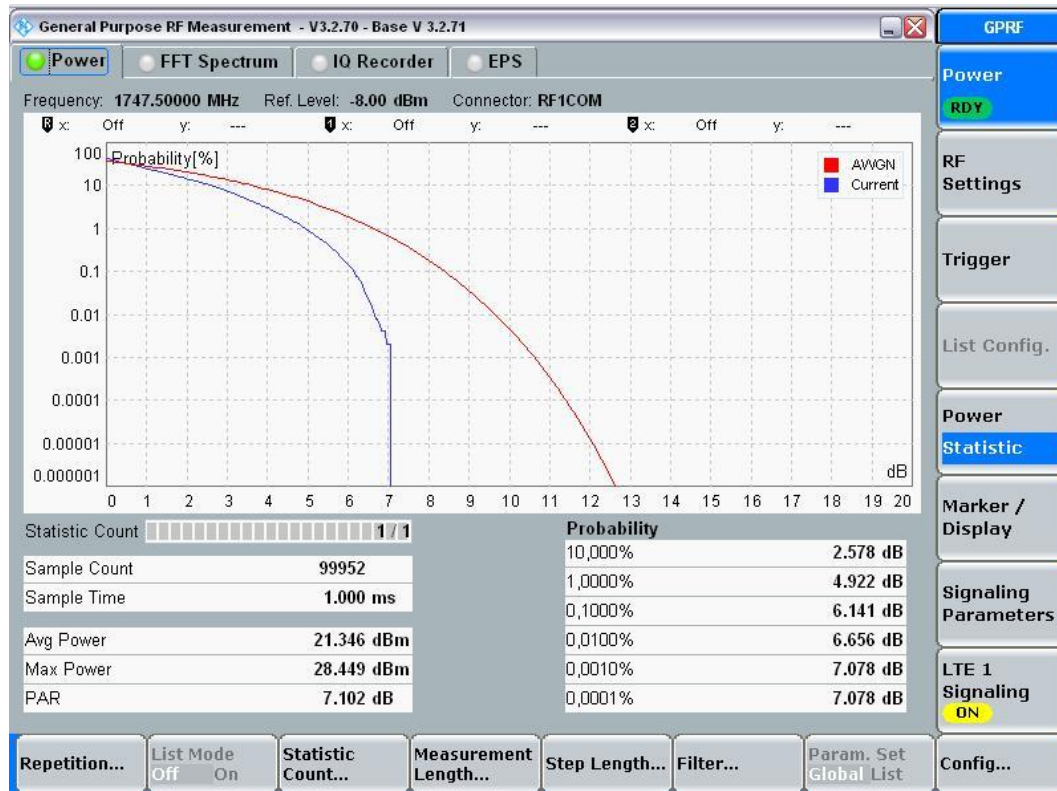


QPSK, Ch20350, 100% RB (50RBs)

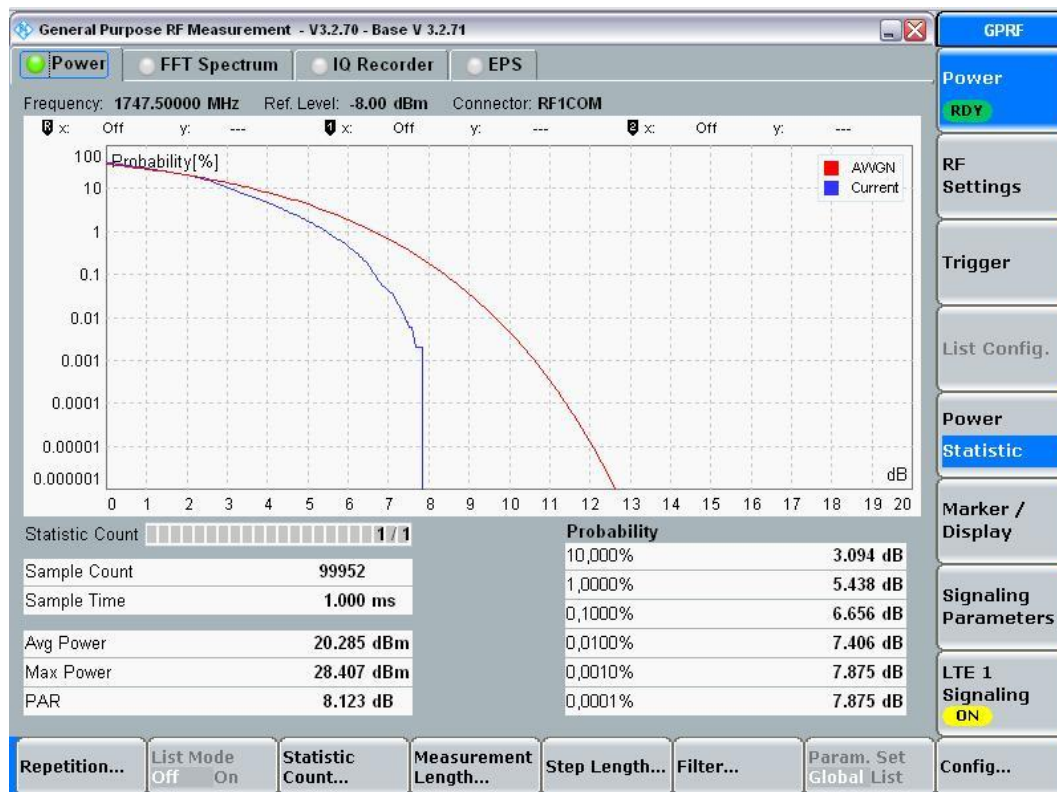


16-QAM, Ch20350, 100% RB (50RBs)

1.1.2.5. 15MHz signal bandwidth

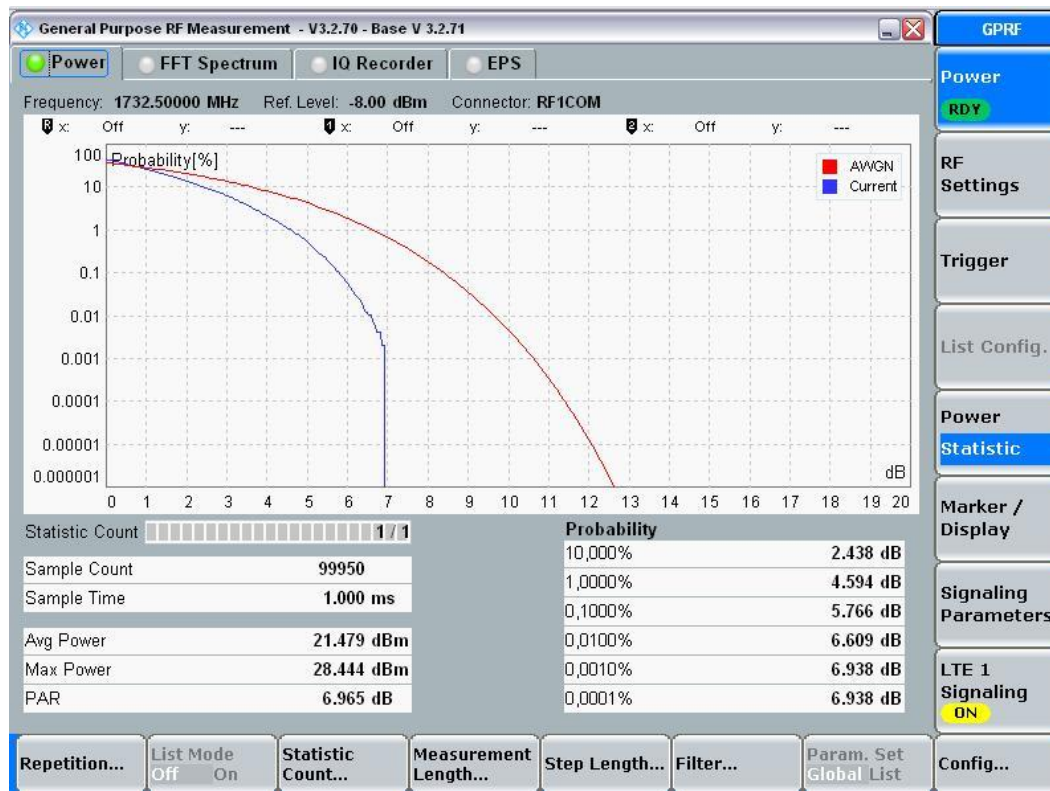


QPSK, Ch20325, 100% RB (75RBs)

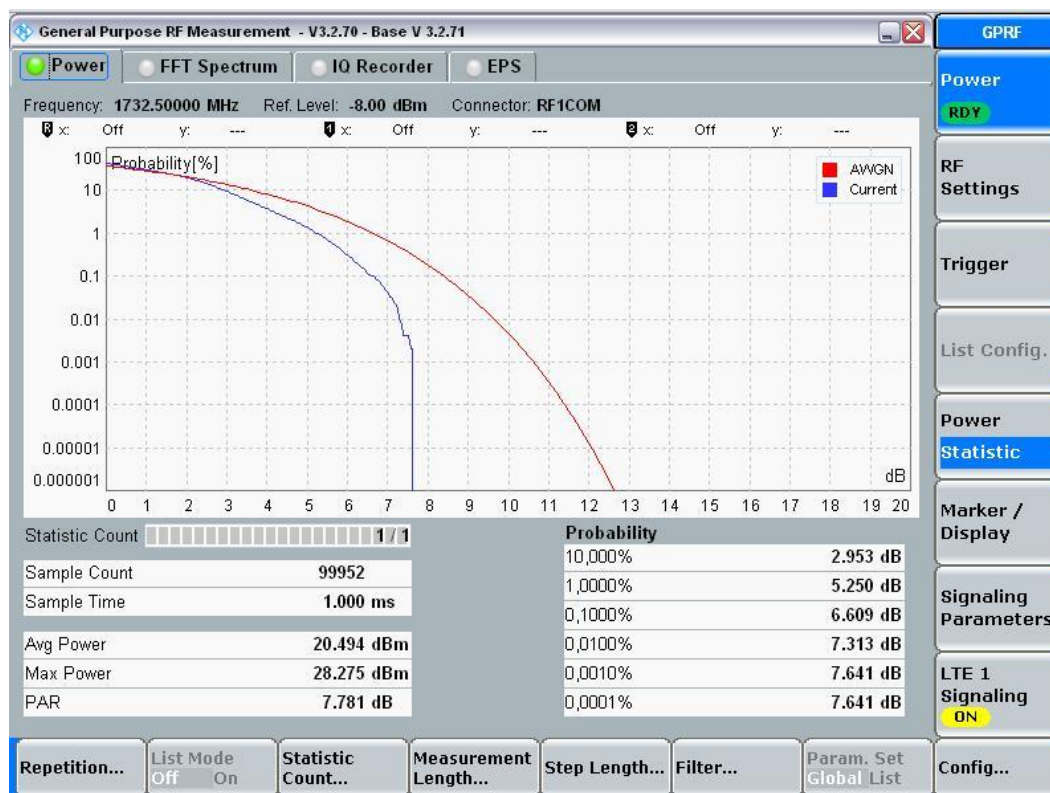


16-QAM, Ch20325, 100% RB (75RBs)

1.1.2.6. 20MHz signal bandwidth



QPSK, Ch20175, 100% RB (100RBs)

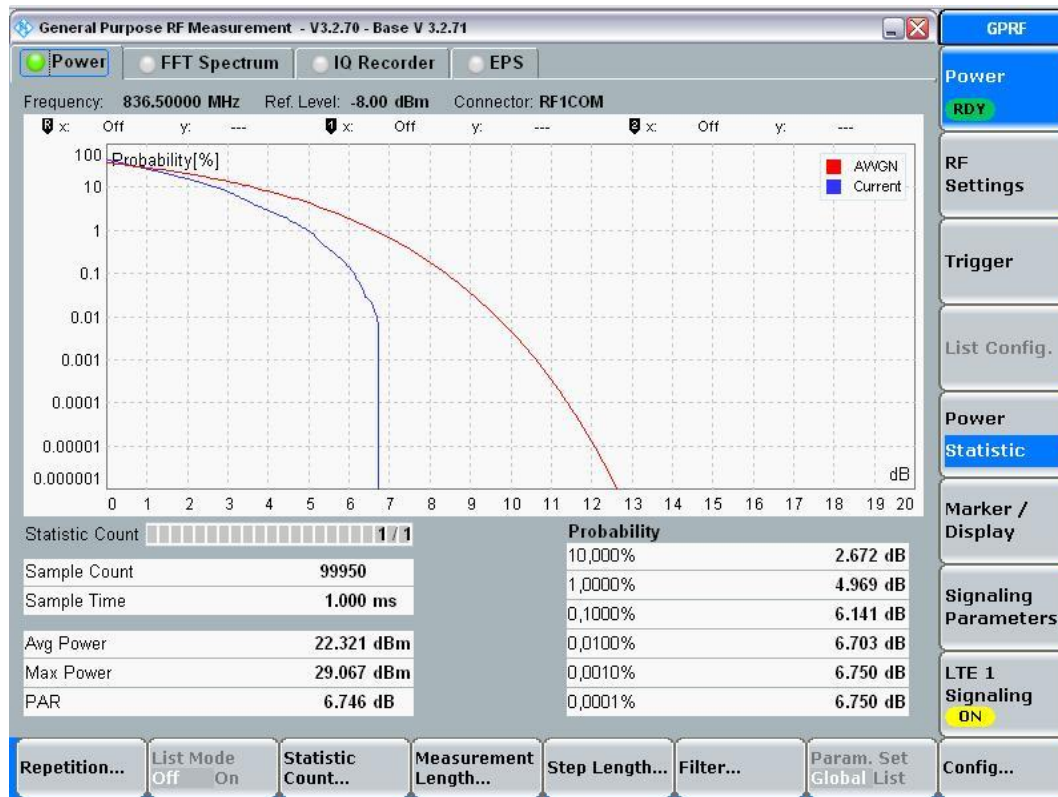


16-QAM, Ch20175, 100% RB (100RBs)

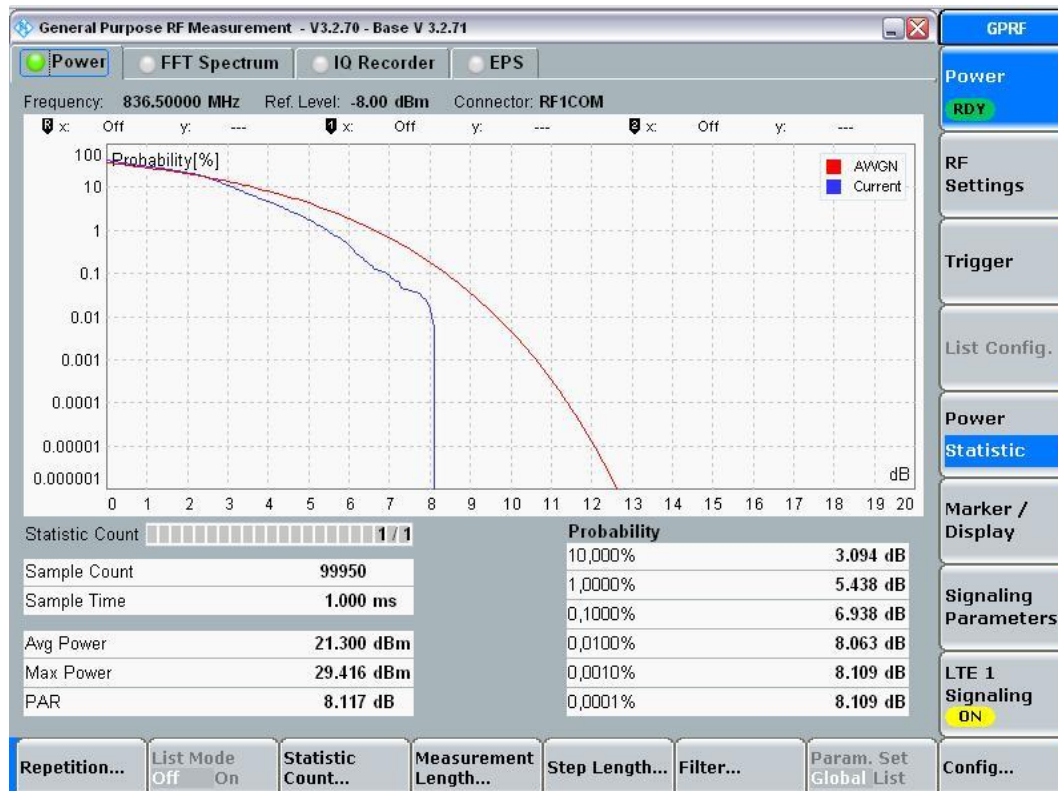
1.1.3. LTE Band 5

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

1.1.3.1. 1.4MHz signal bandwidth

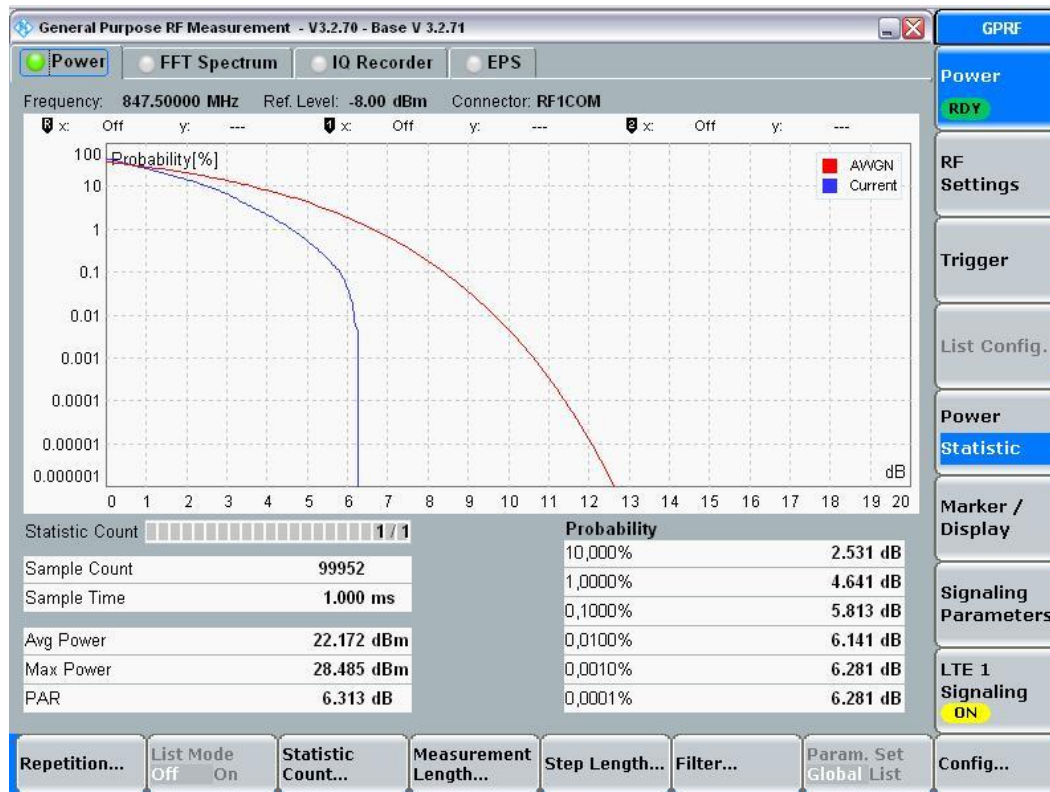


QPSK, Ch20525, 100% RB (6RBs)

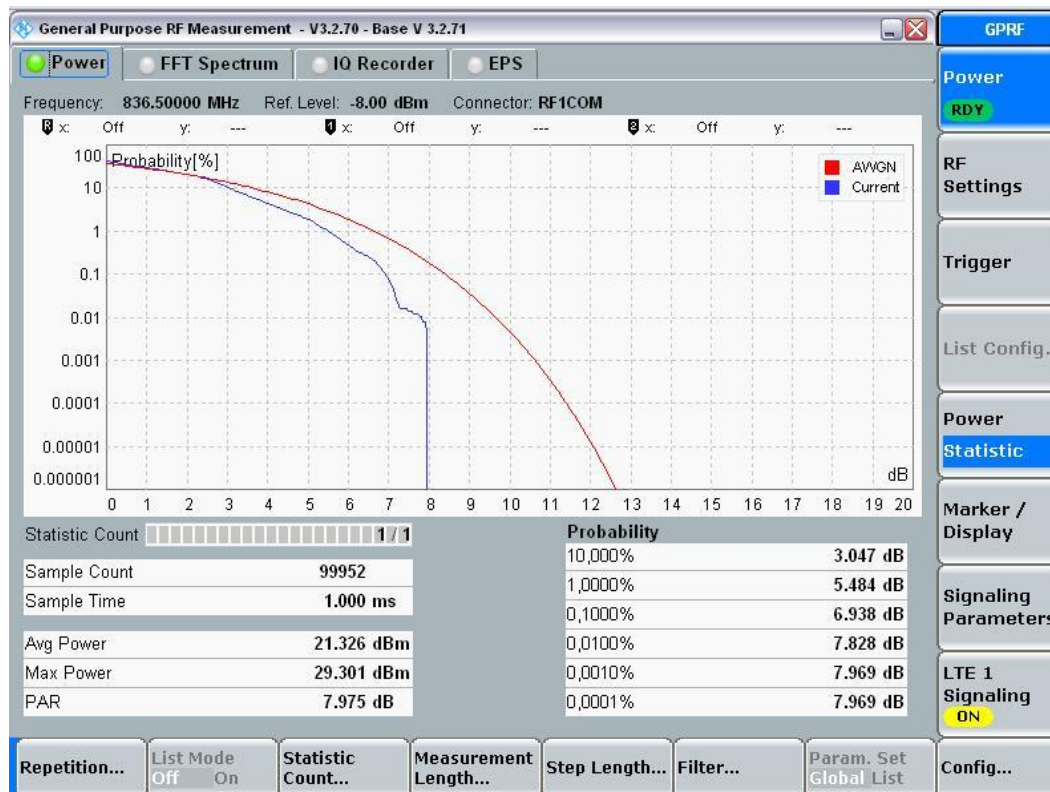


16-QAM, Ch20525, 100% RB (6RBs)

1.1.3.2. 3MHz signal bandwidth

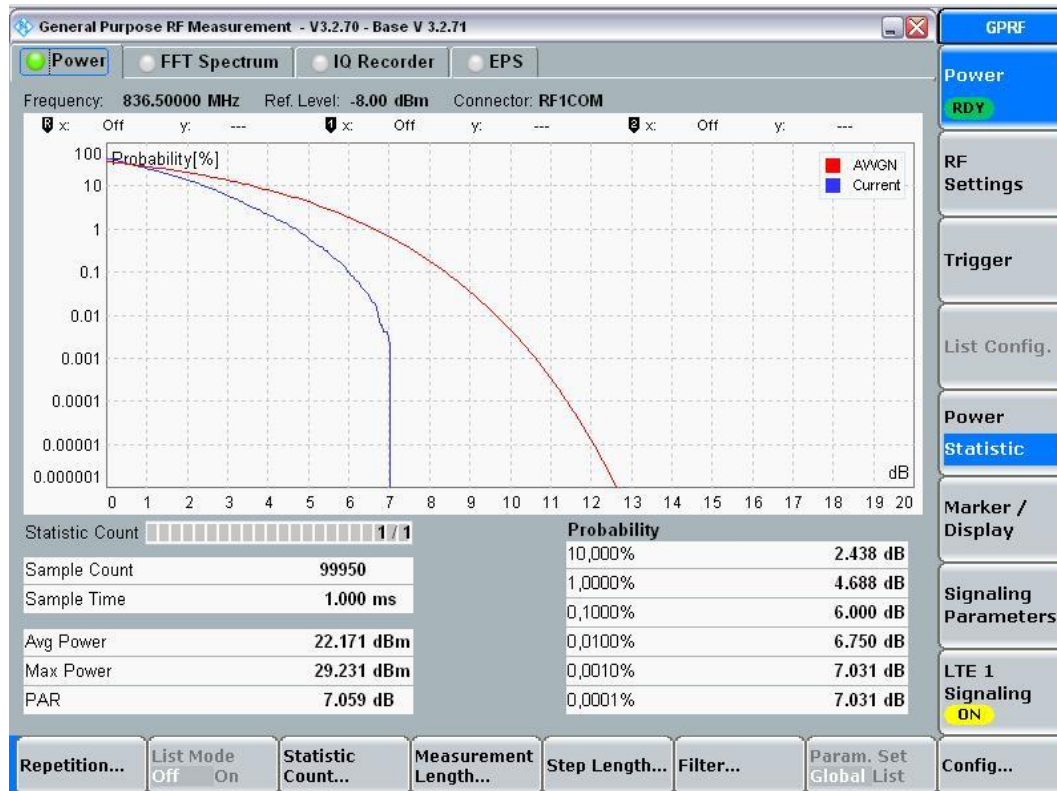


QPSK, Ch20635, 100% RB (15RBs)

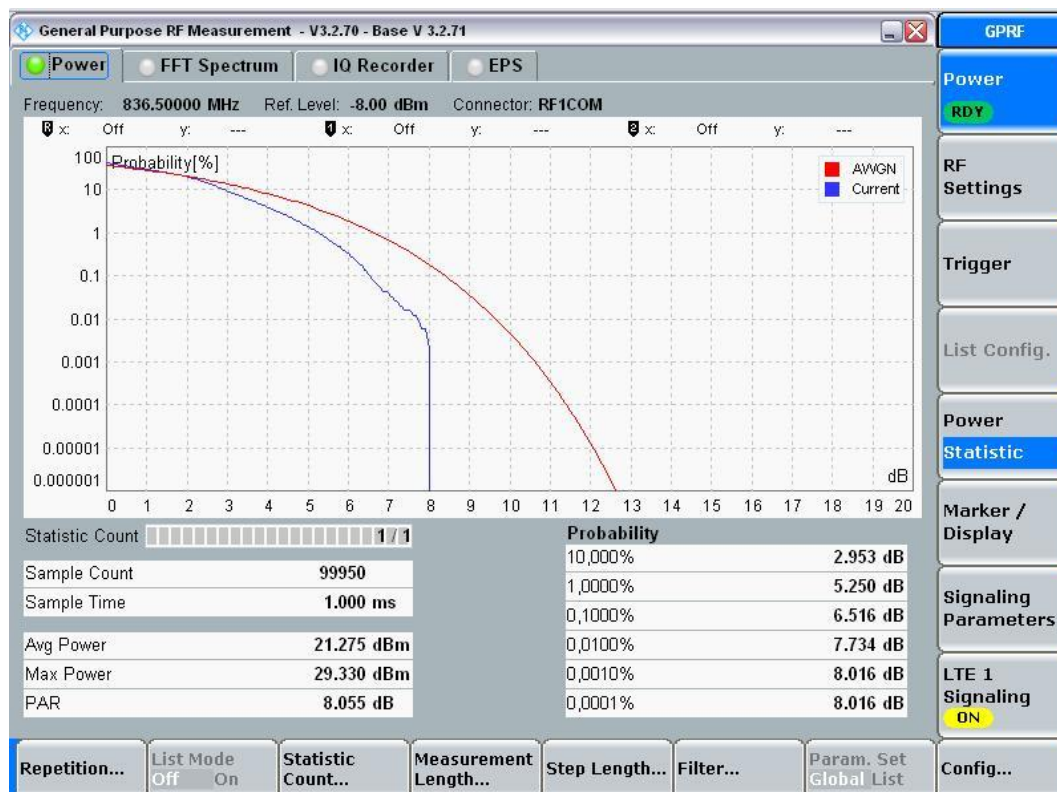


16-QAM, Ch20525, 100% RB (15RBs)

1.1.3.3. 5MHz signal bandwidth

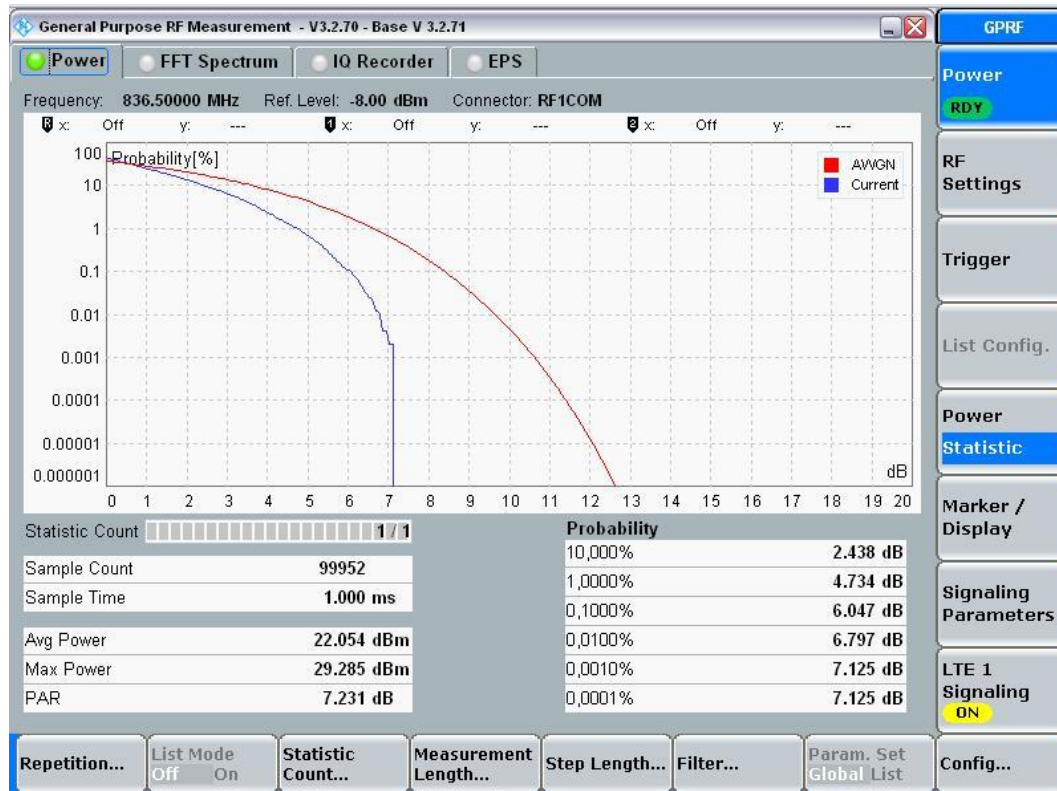


QPSK, Ch20525, 100% RB (25RBs)

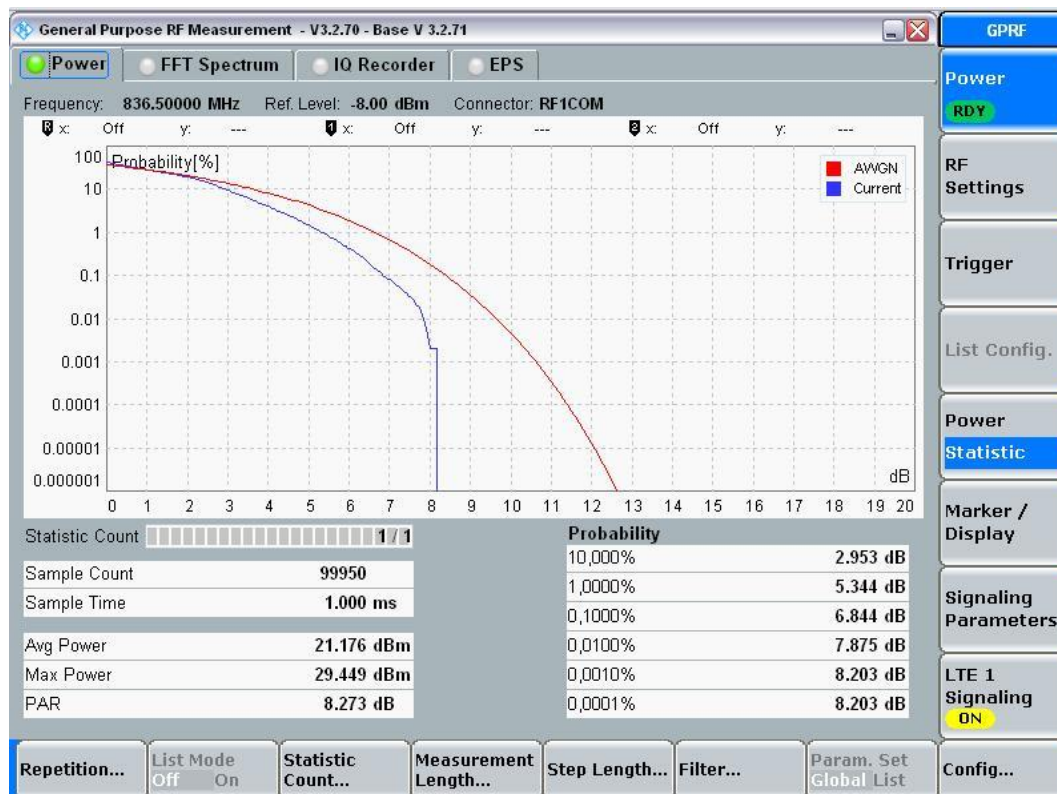


16-QAM, Ch20525, 100% RB (25RBs)

1.1.3.4. 10MHz signal bandwidth



QPSK, Ch20525, 100% RB (50RBs)

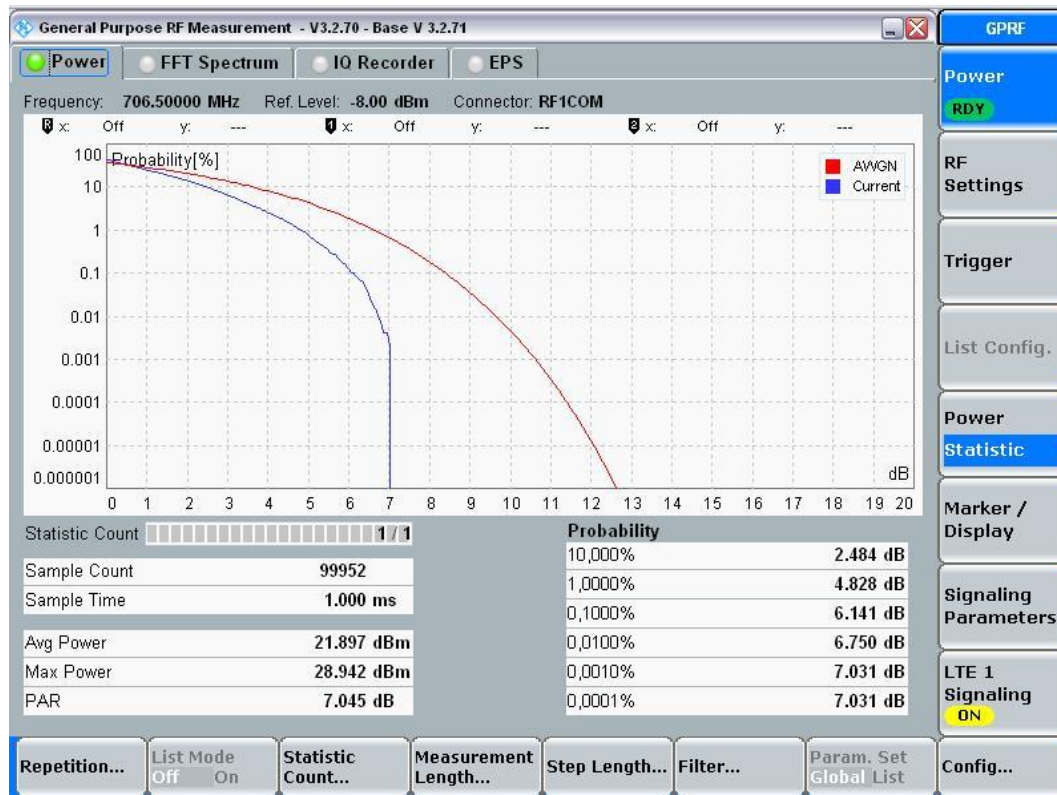


16-QAM, Ch20525, 100% RB (50RBs)

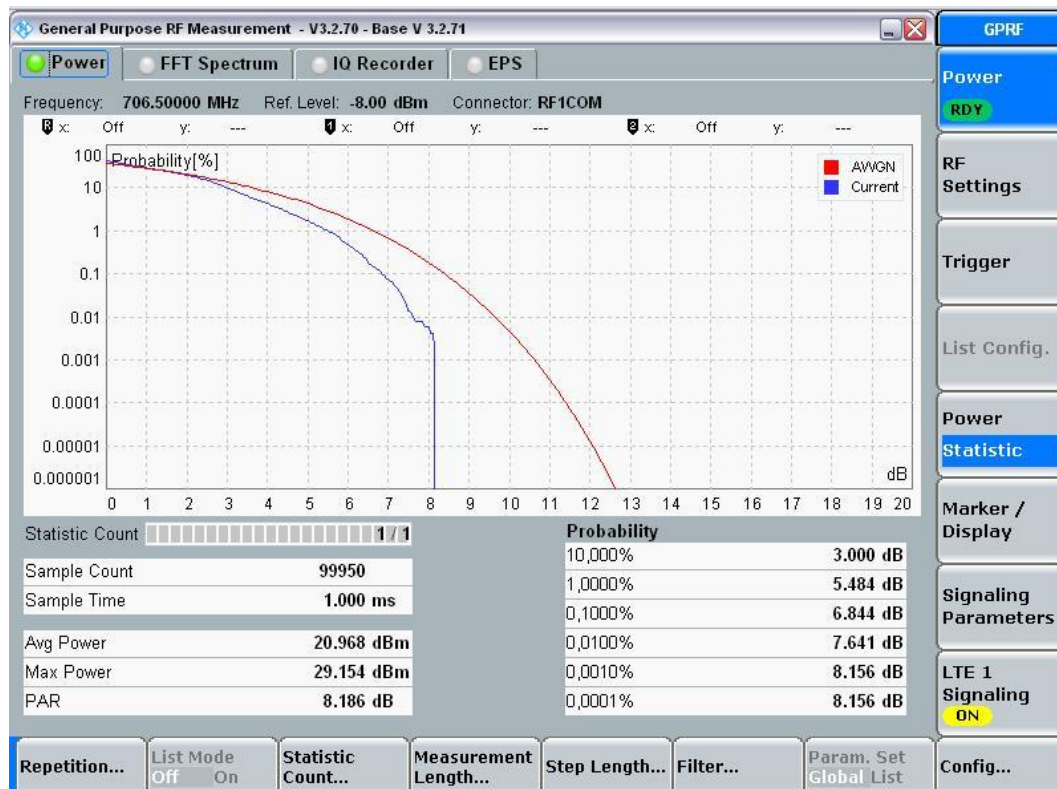
1.1.4. LTE Band 17

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

1.1.4.1. 5MHz signal bandwidth

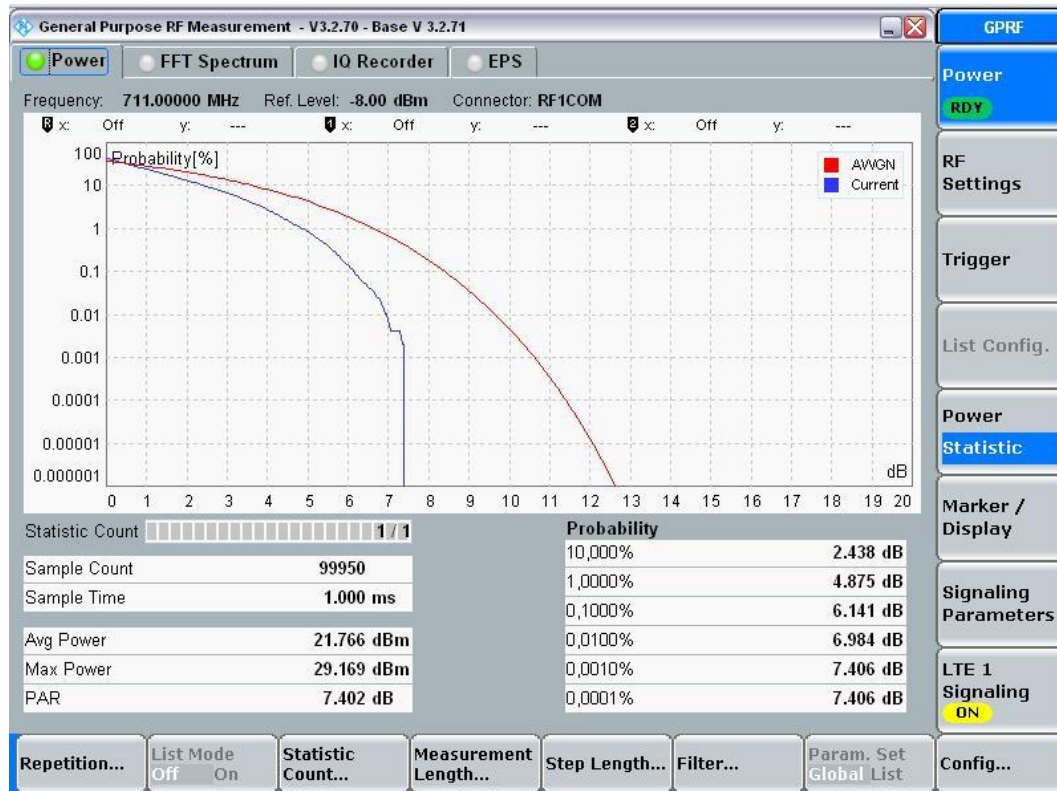


QPSK, Ch23755, 100% RB (25RBs)

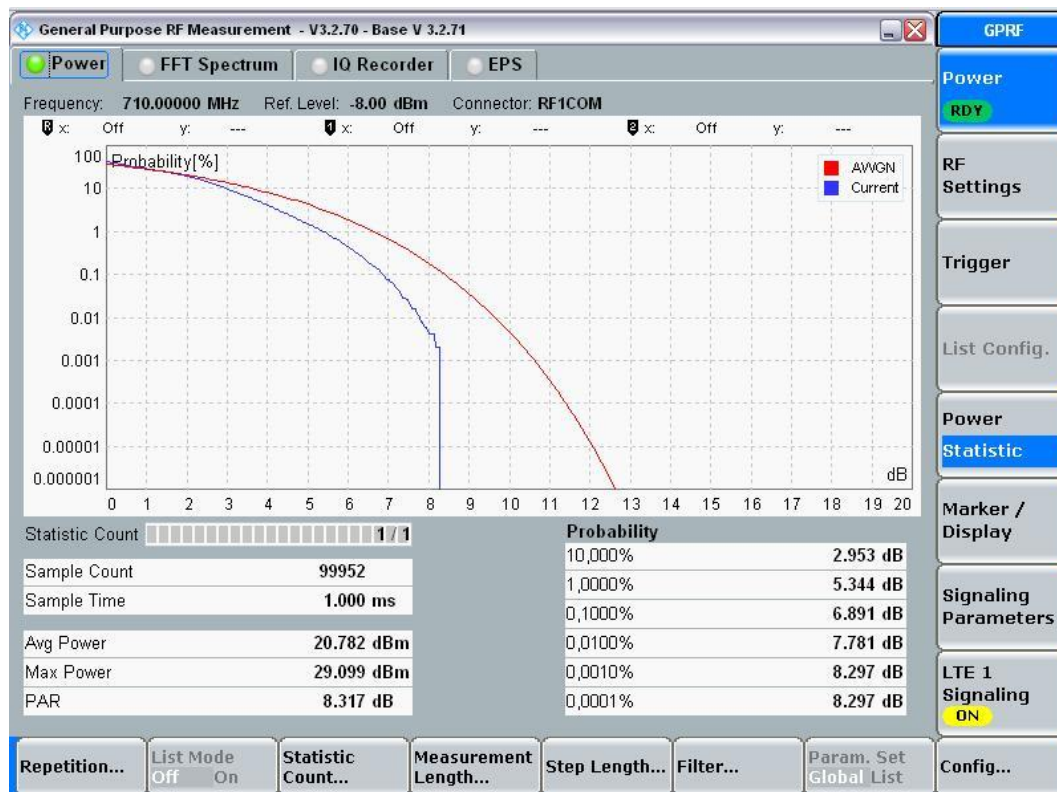


16-QAM, Ch23755; 100% RB (25RBs)

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

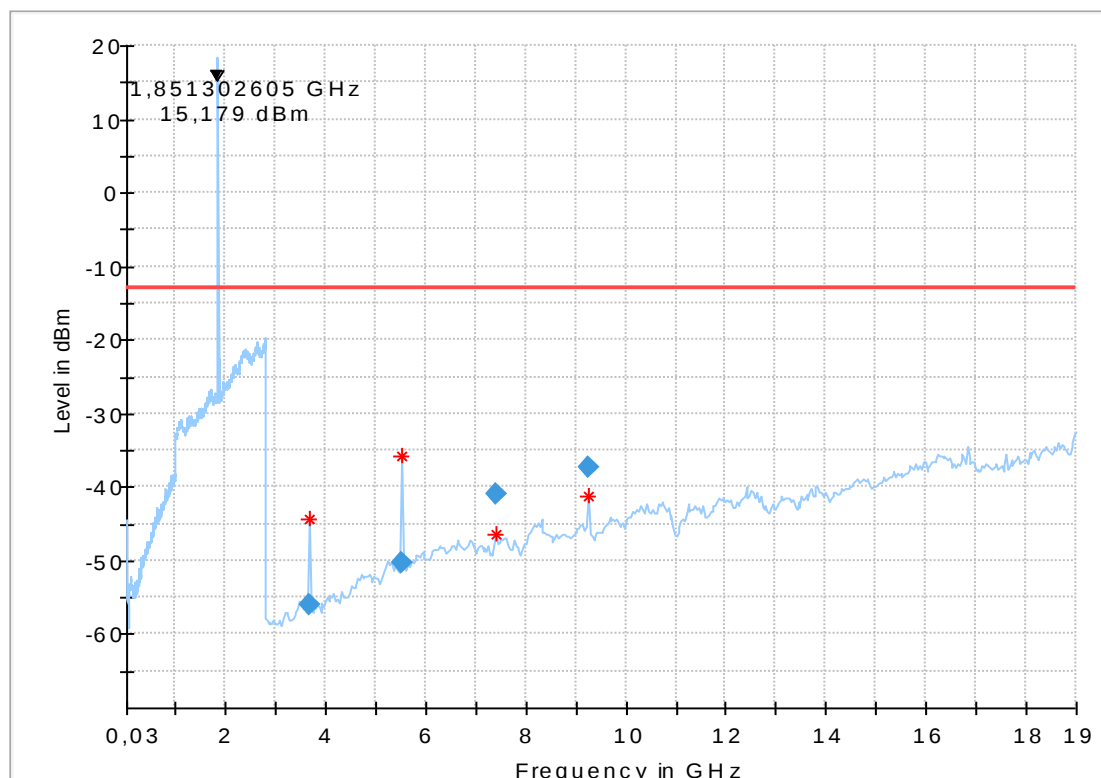
Test Description:	Radiated Spurious Emissions UMTS FDDII
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 24
Operating Mode:	UE allocated channel 18607 (fc = 1850,7MHz); bw 1.4MHz; 1RB Low, QPSK
Environmental Conditions:	Humidity: 53%rH; Temperature: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

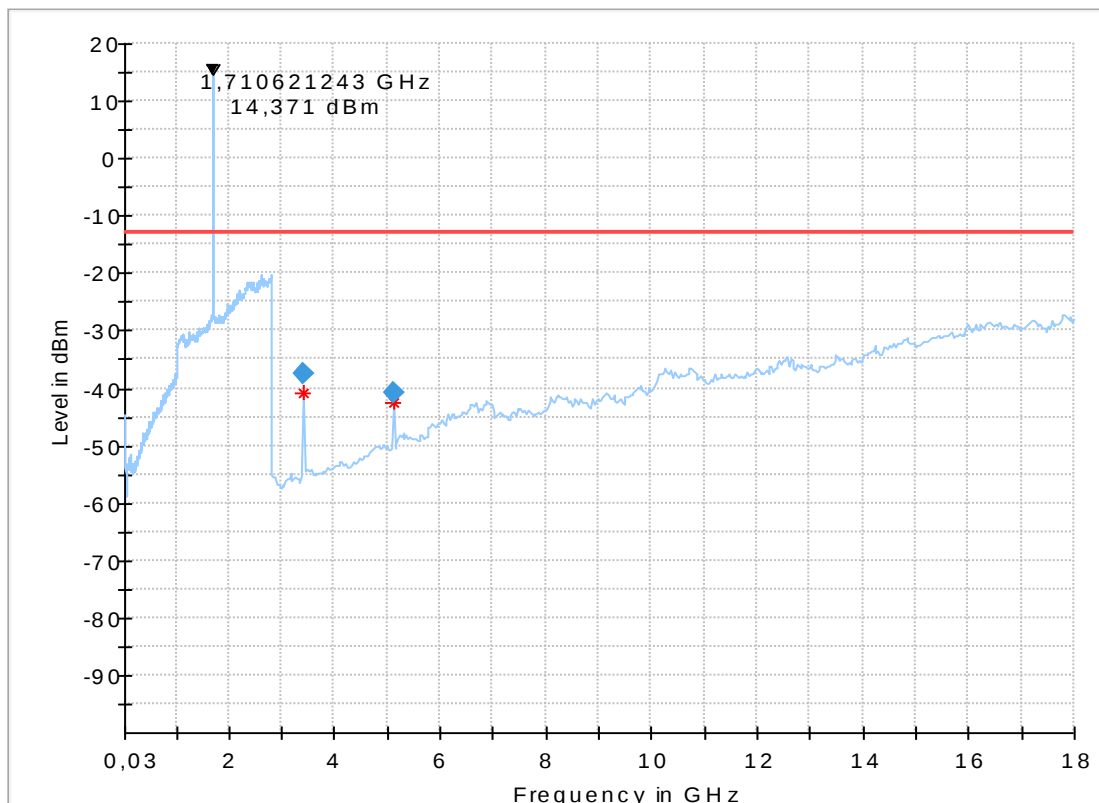
Common Information

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)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Elevation (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

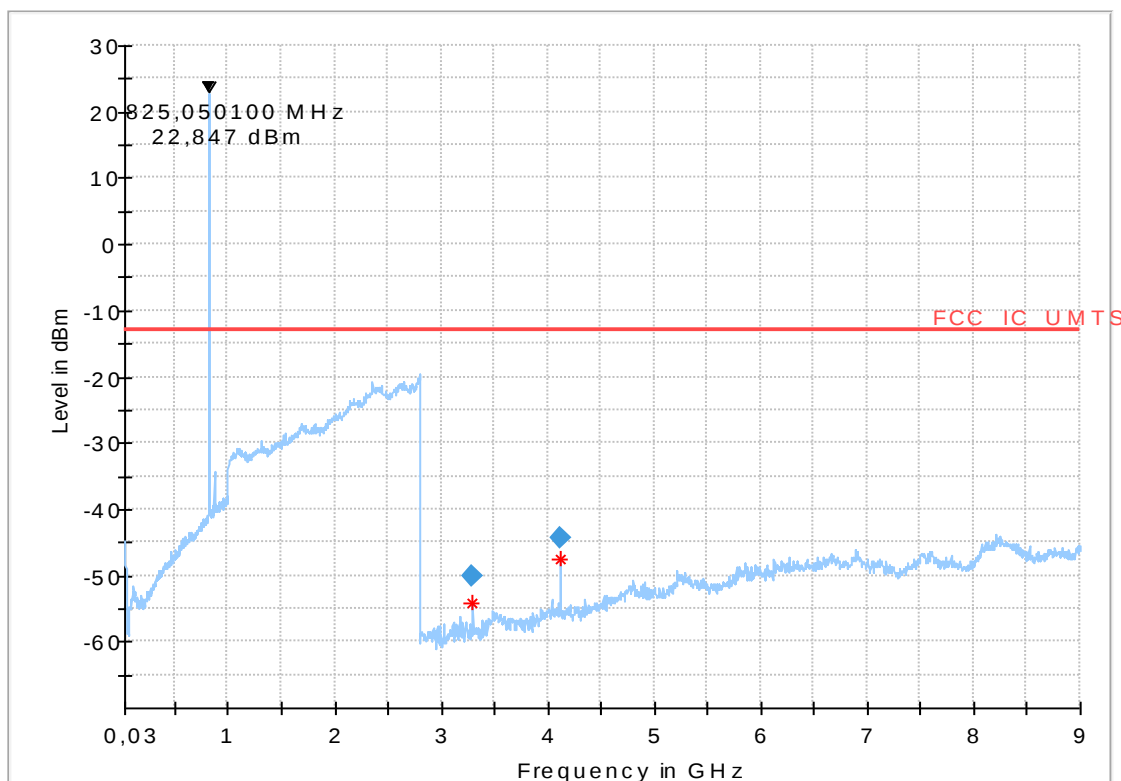
Test Description:	Radiated Spurious Emissions LTE FDD Band 5
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 22.917(a) / RSS-132: Issue 3
Operating Mode:	UE allocated channel 20407 (fc = 824,7MHz); bw 1.4MHz; 1RB Low, QPSK
Environmental Conditions: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

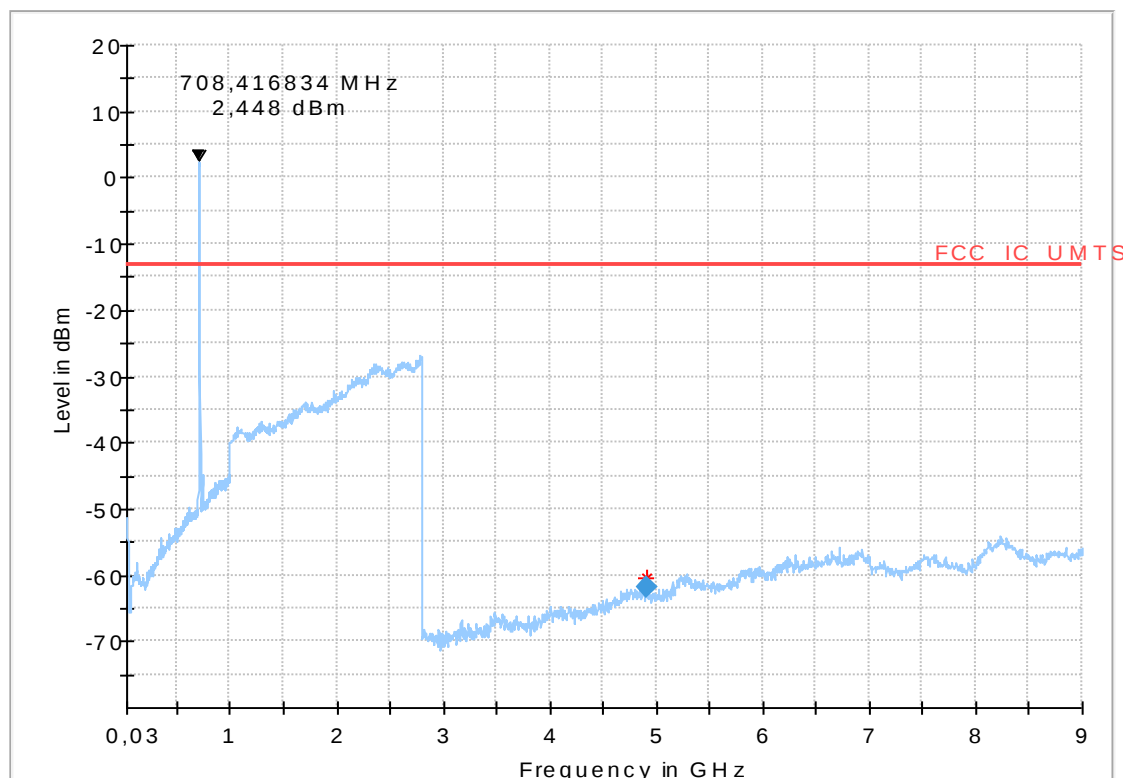
Common Information

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

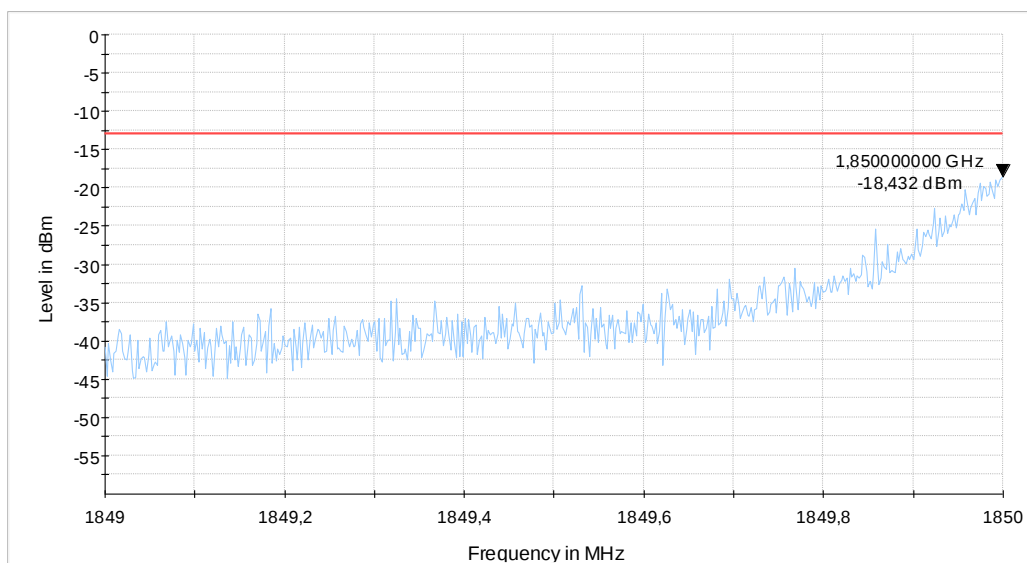


Diagram 9.20a, Channel 18607, QPSK, 1RB low

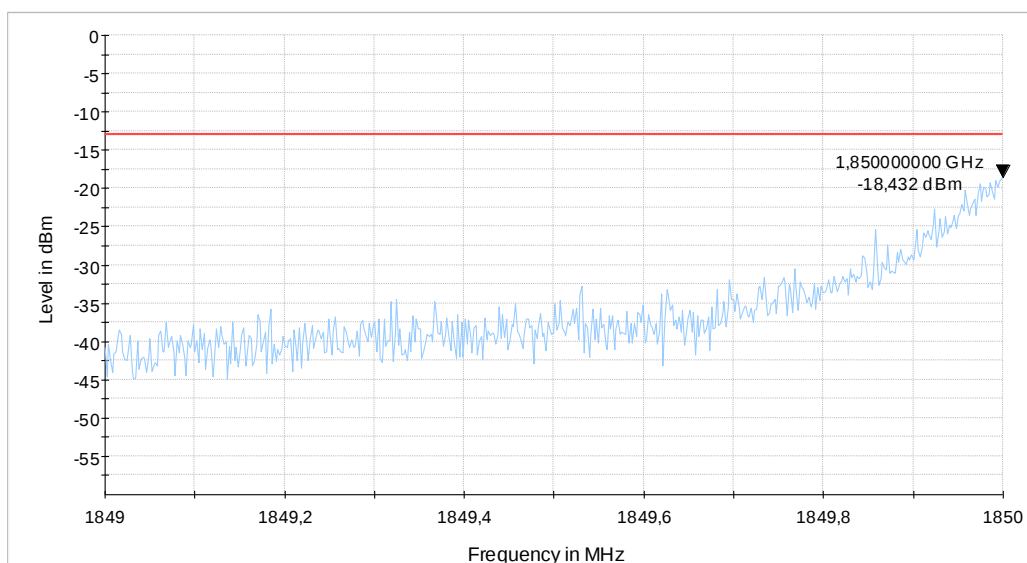


Diagram 9.20b, Channel 18607, 16-QAM, 1RB low

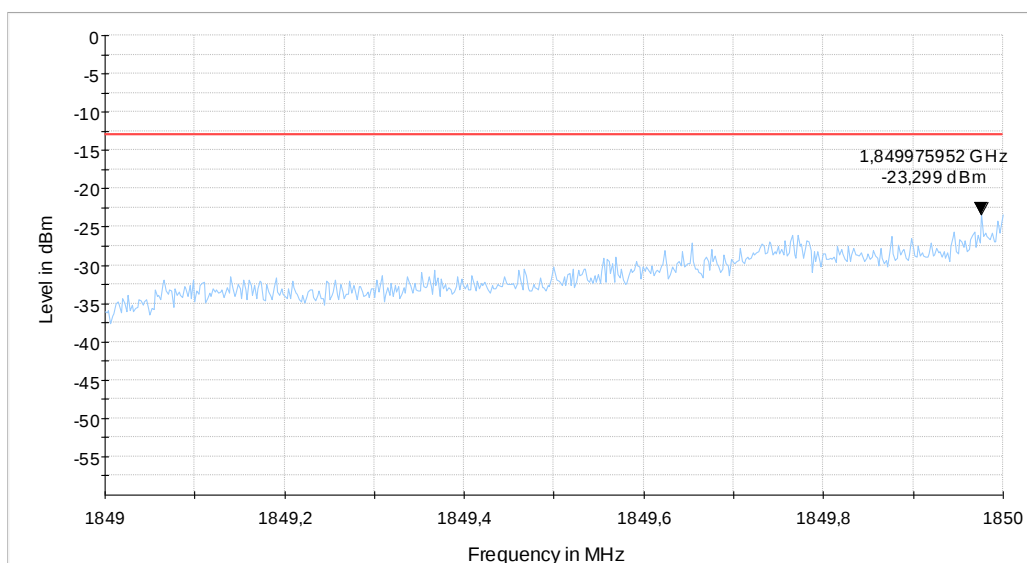


Diagram 9.21a, Channel 18607, QPSK, 6RBs

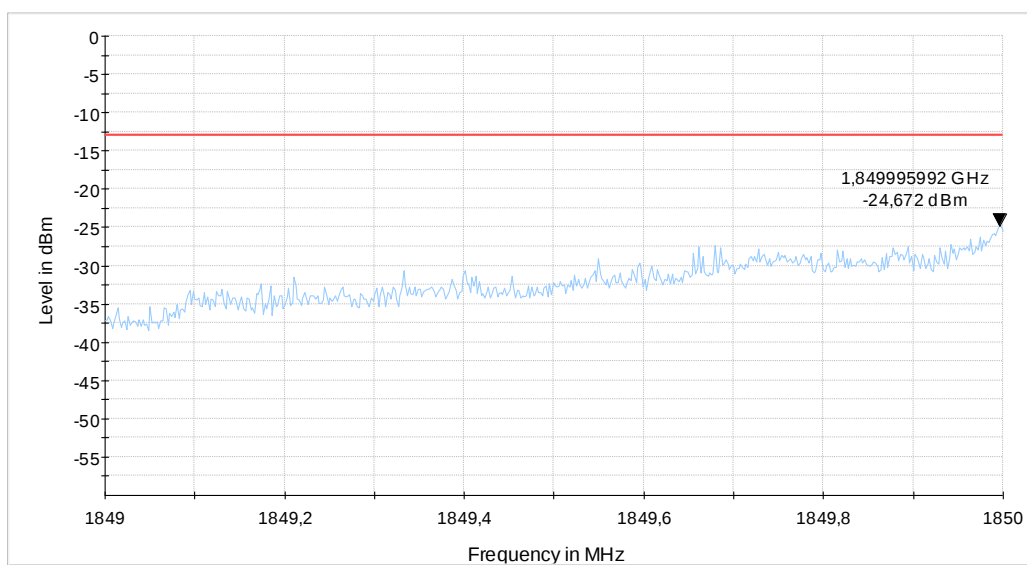


Diagram 9.21b, Channel 18607, 16-QAM, 6RBs

1.6.2. High Band-Edge

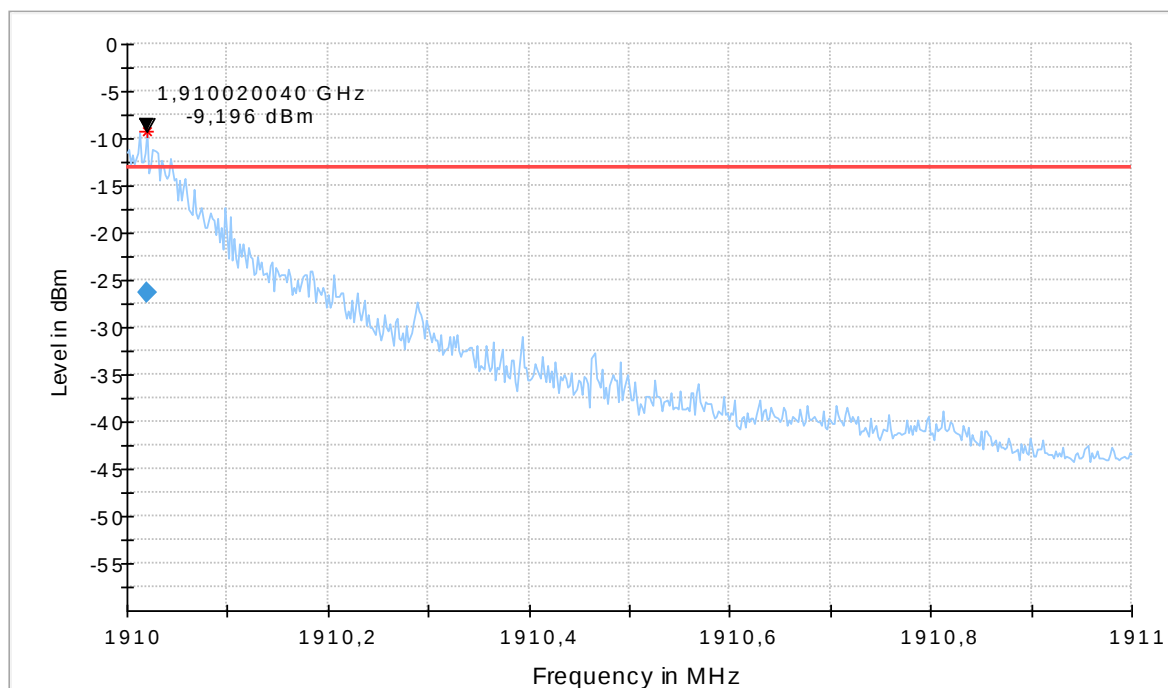


Diagram 9.22a, Channel 19193, QPSK, 1RB high (re-measurement with RMS detector, level= -26.37dBm)

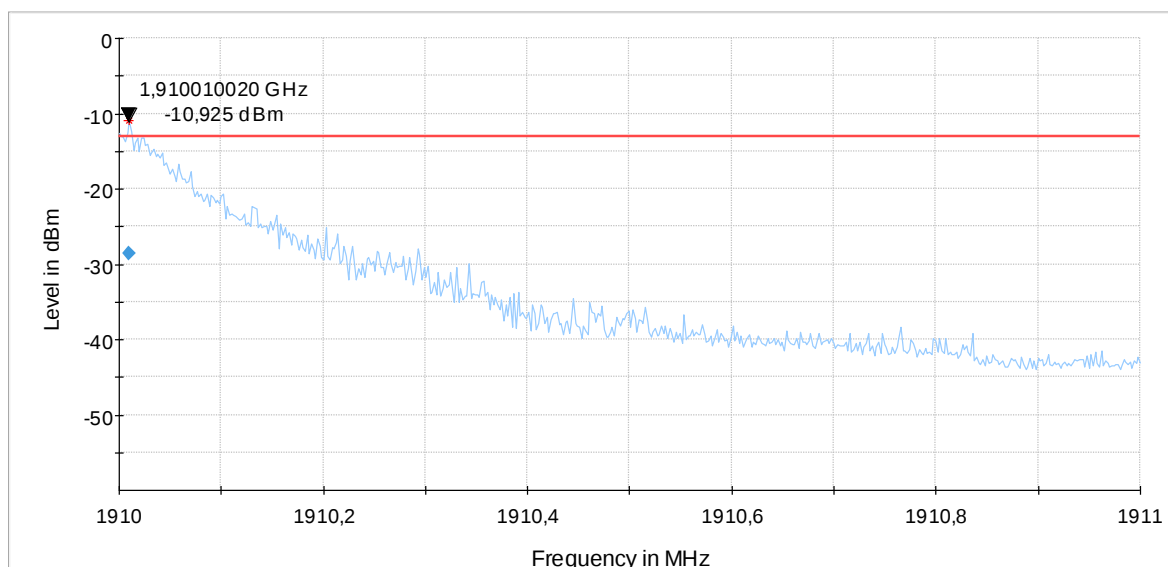


Diagram 9.22b: Channel 19193, 16-QAM, 1RB high (re-measurement with RMS detector, level= -28.58dBm)

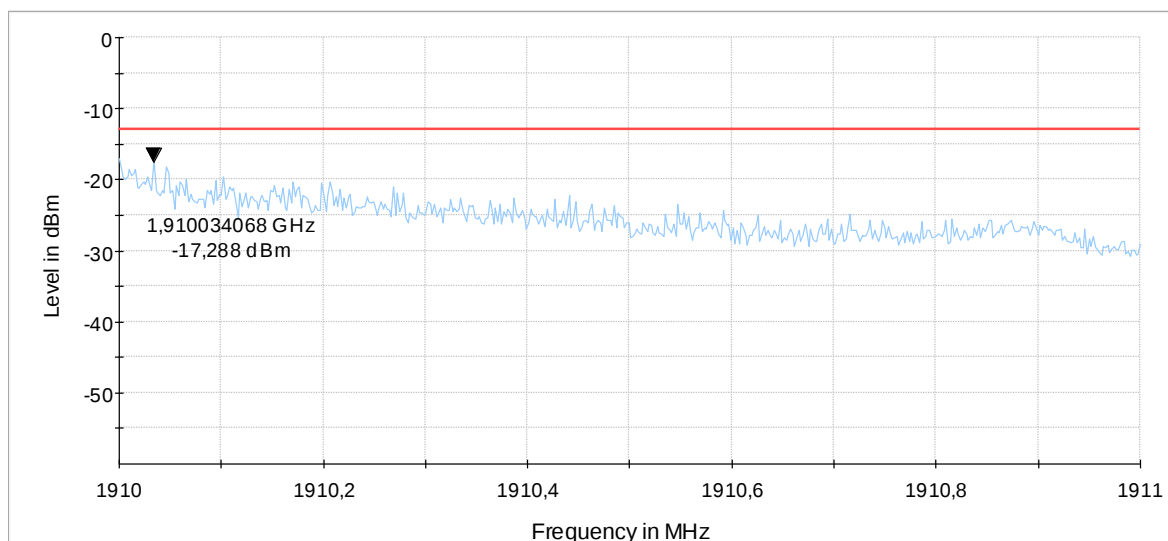


Diagram 9.23a, Channel 19193, QPSK, 6RBs

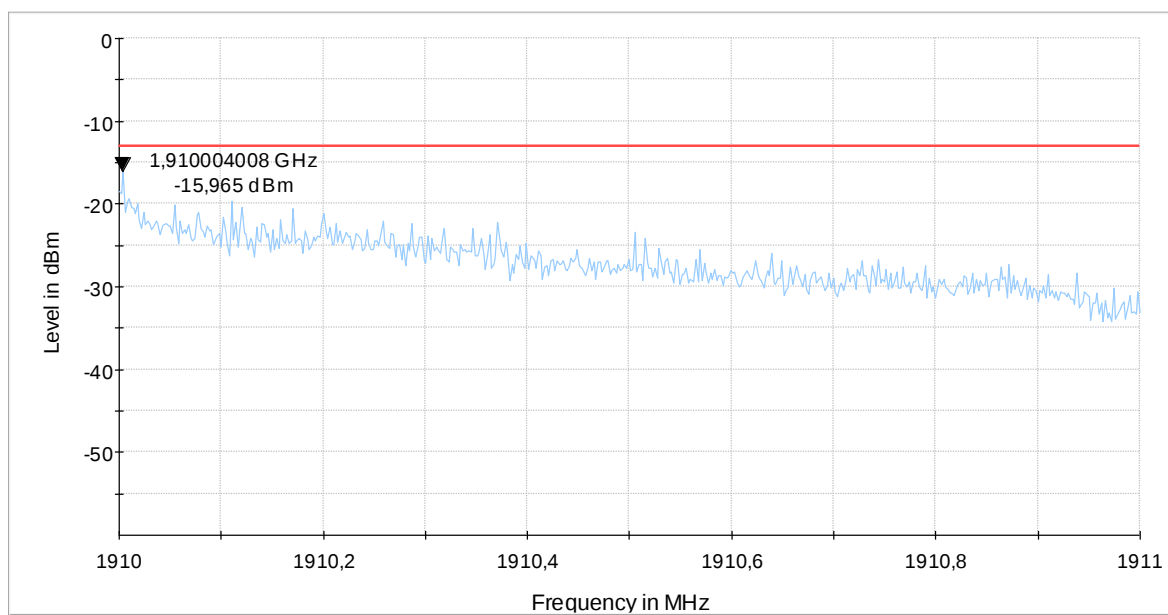


Diagram 9.23b, Channel 191193, 16-QAM, 6RBs

1.7. Radiated emissions – band-edge (LTE Band IV)

1.7.1. Low Band-Edge

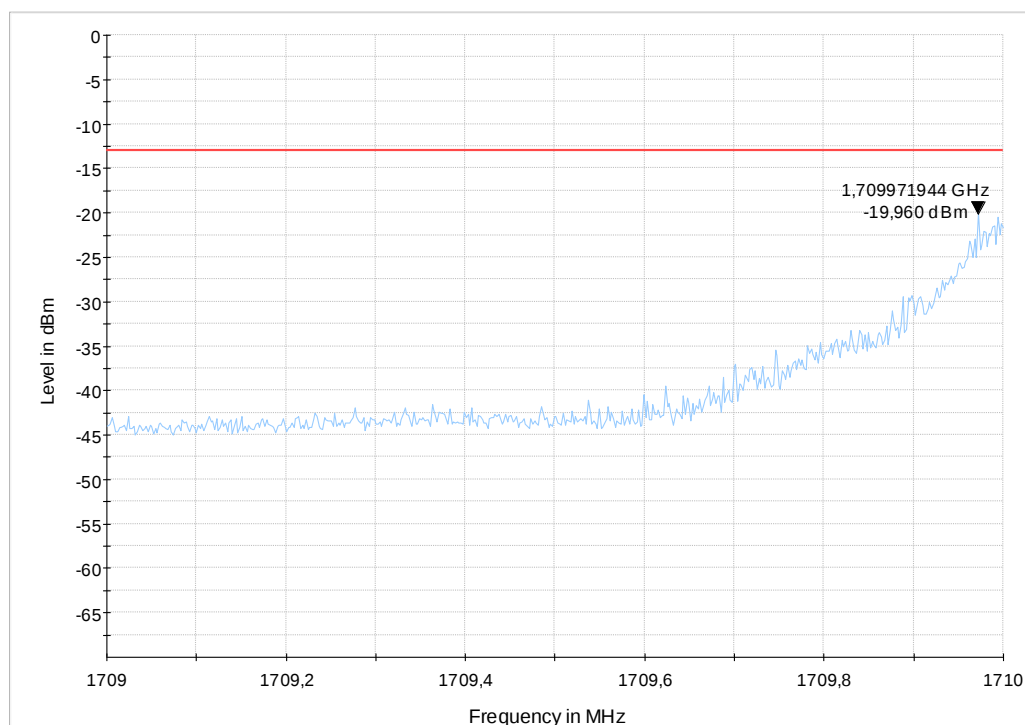


Diagram 9.40a, Channel 19957, QPSK, 1RB low

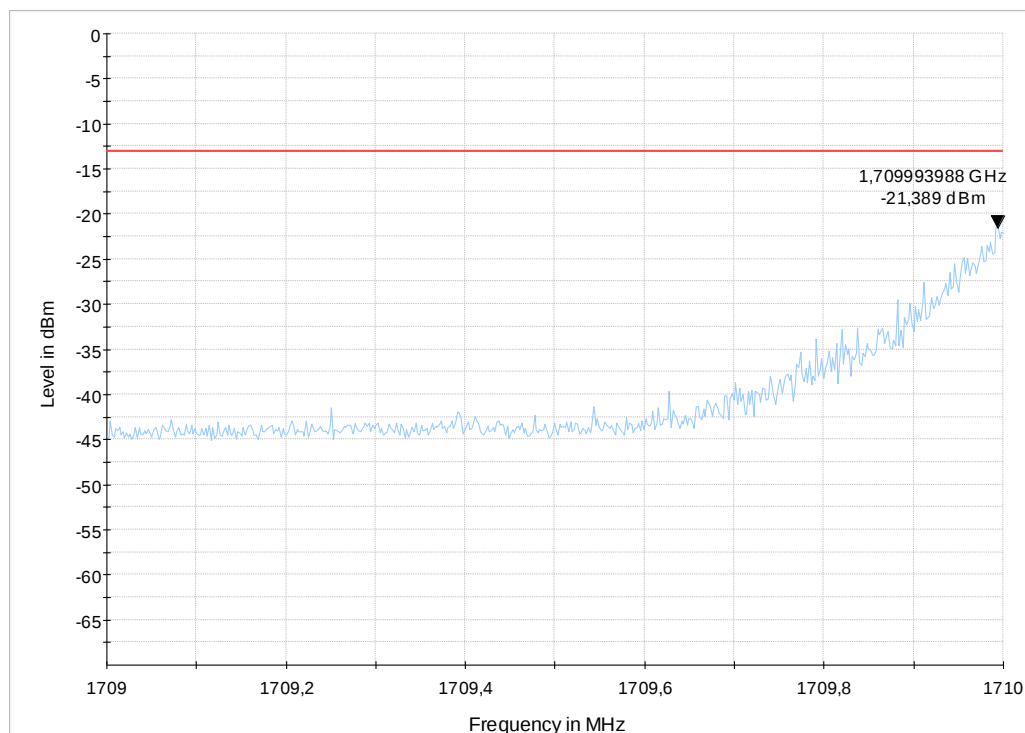


Diagram 9.40b, Channel 19957, 16-QAM, 1RB low

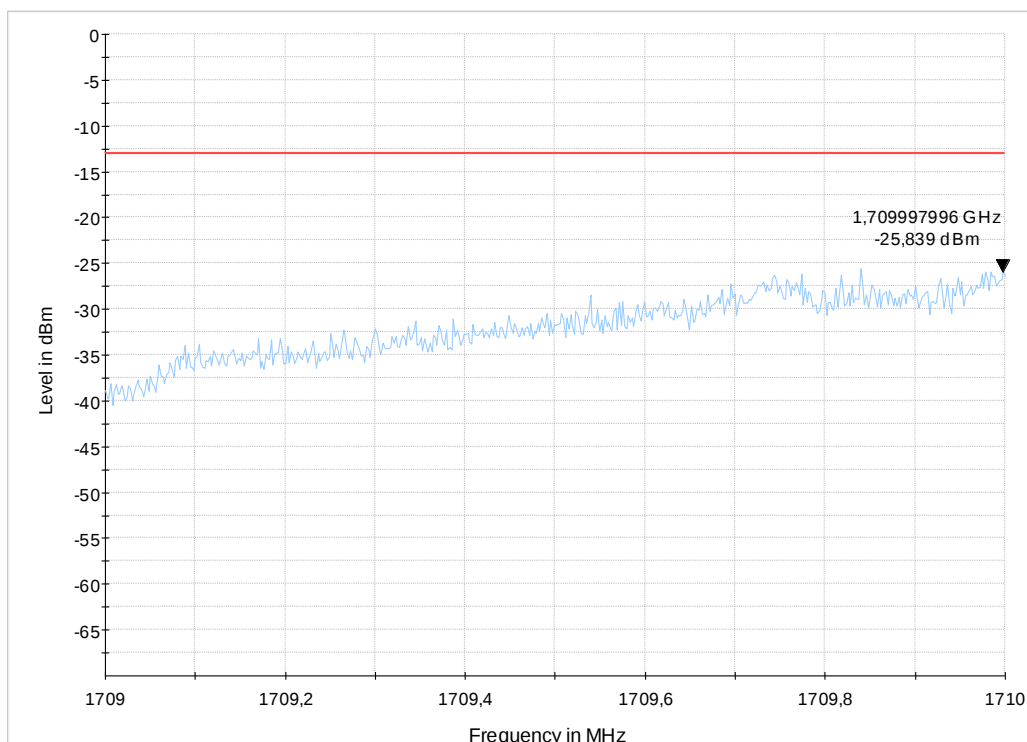


Diagram 9.41a, Channel 19957, QPSK, 6RBs

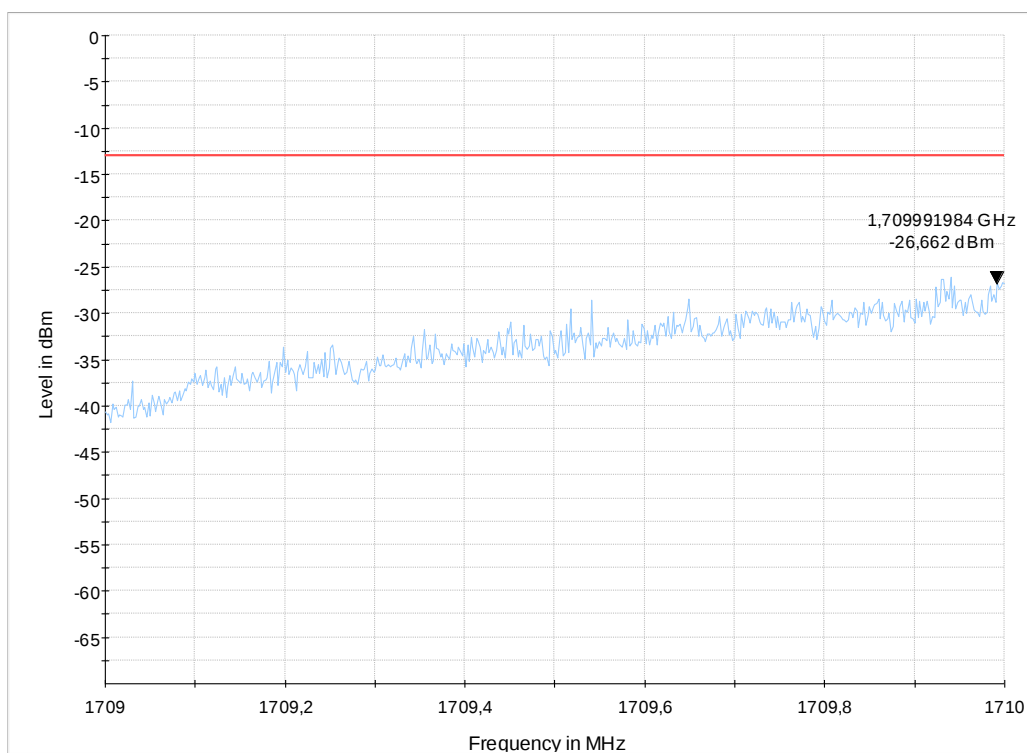


Diagram 9.41b, Channel 19957, 16-QAM, 6RBs

1.7.2. High Band-Edge

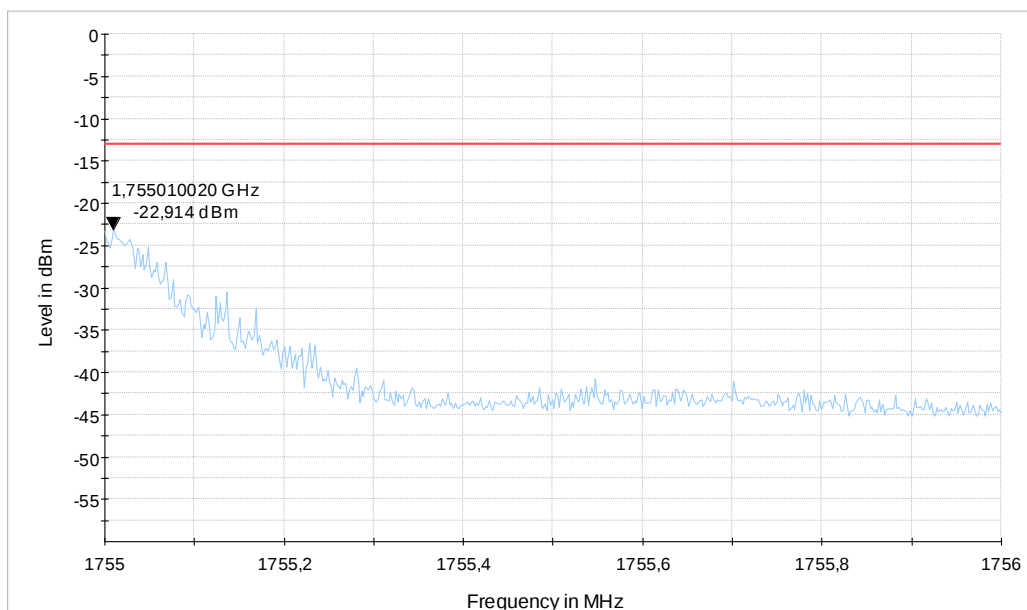


Diagram 9.42a, Channel 20393, QPSK, 1RB high

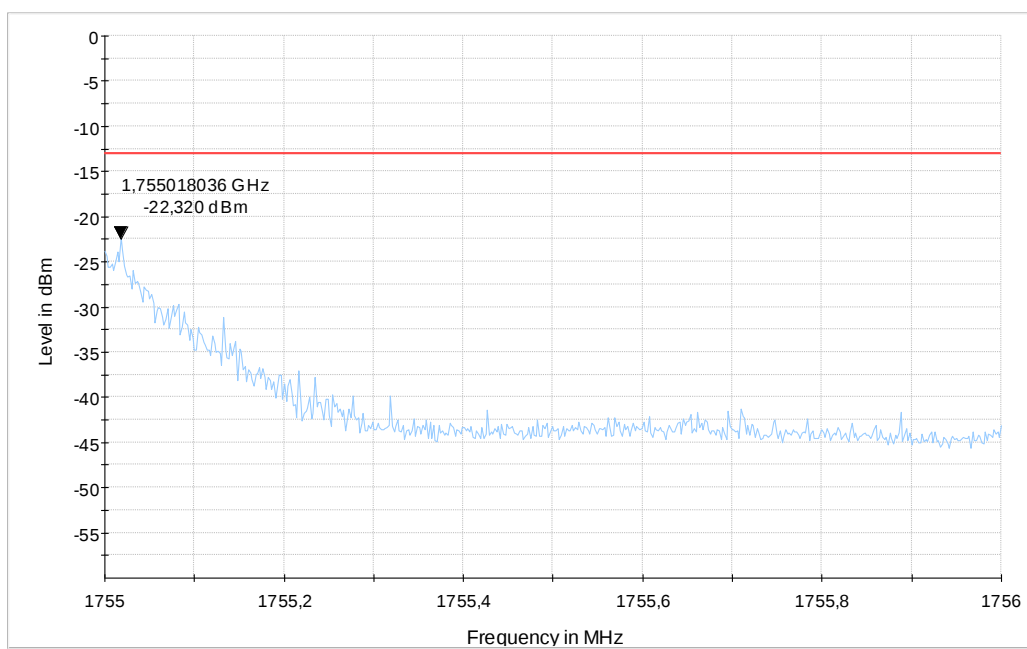


Diagram 9.42b, Channel 20393, 16-QAM, 1RB high

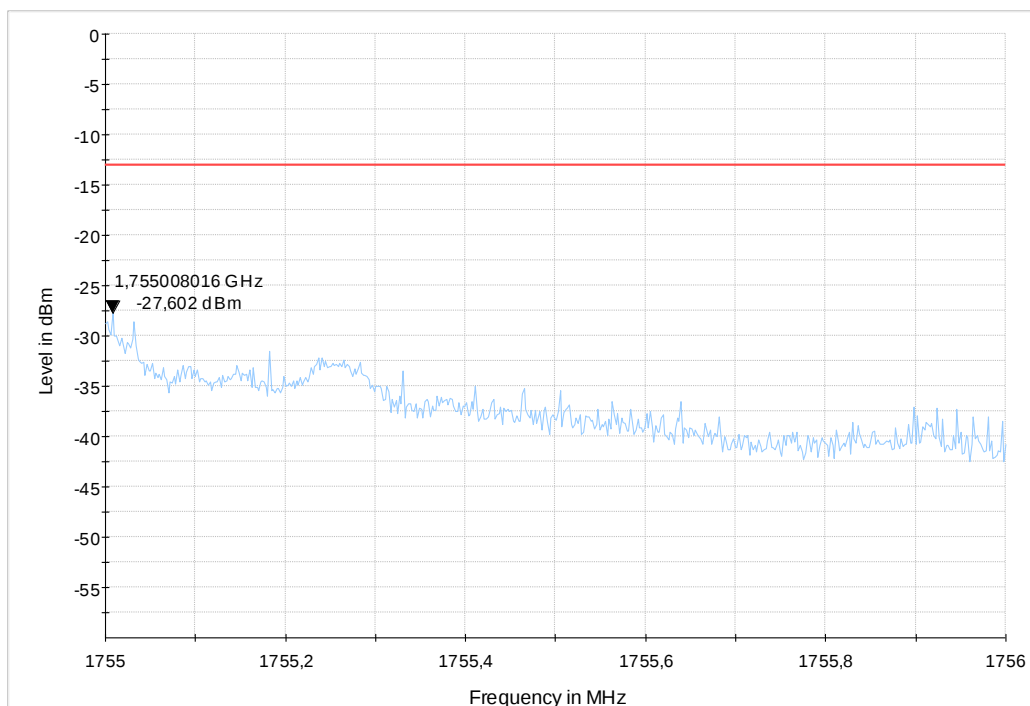


Diagram 9.43a, Channel 20393, QPSK, 6RBs

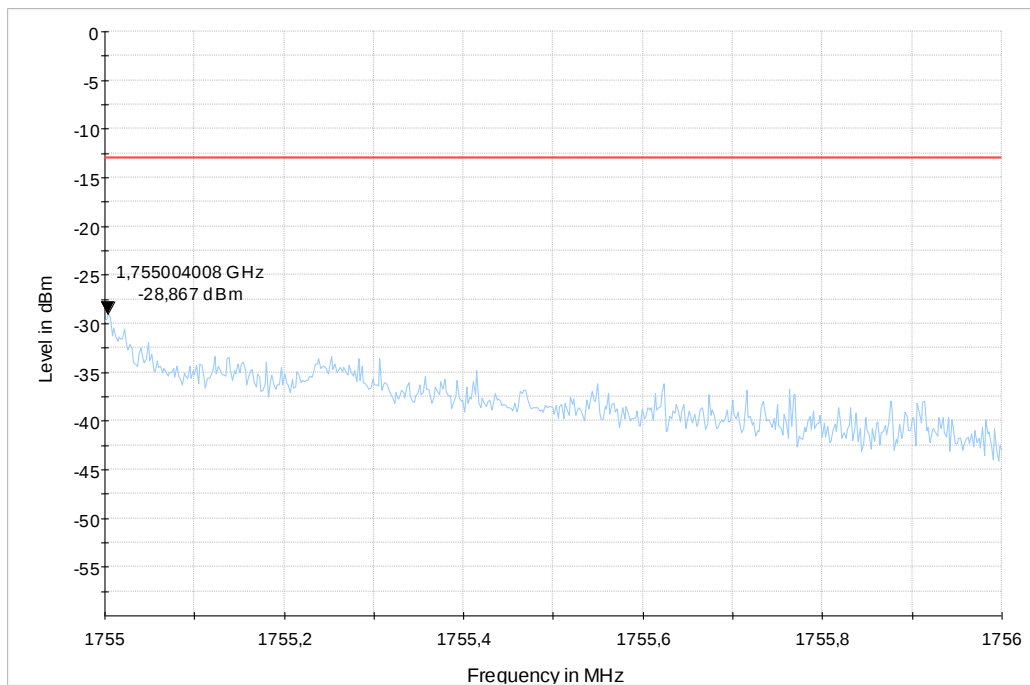


Diagram 9.43b, Channel 20393, 16-QAM, 6RBs

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

1.8.1. Low Band-Edge



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

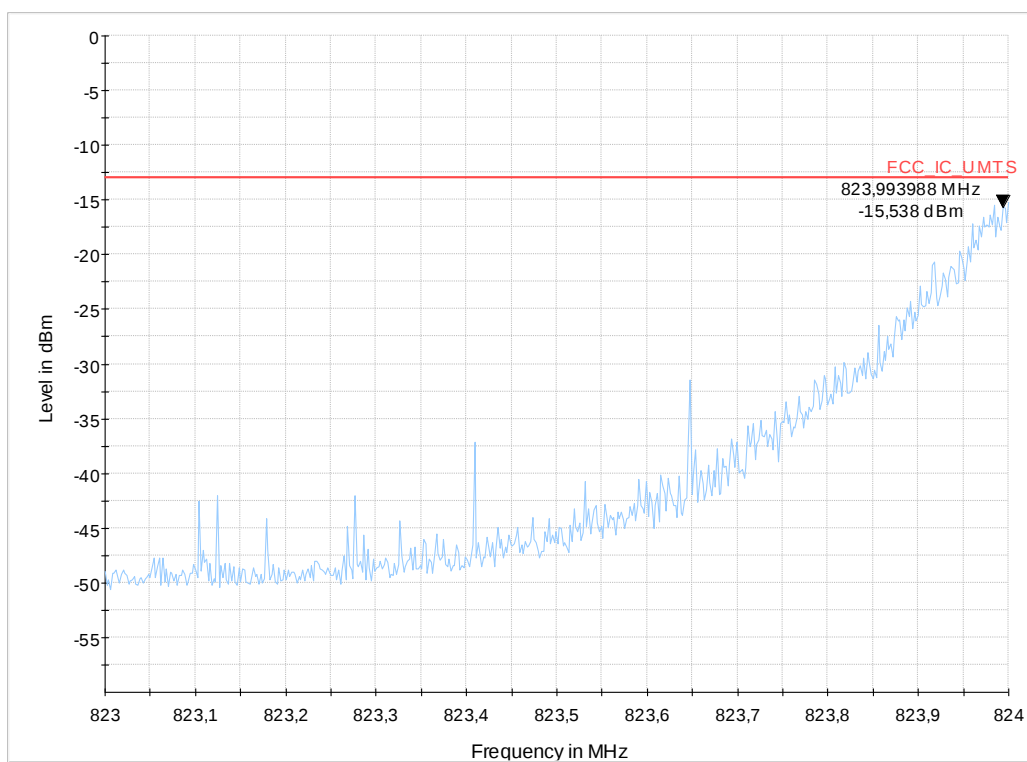


Diagram 9.500b, Channel 20407, 16-QAM, 1RB low

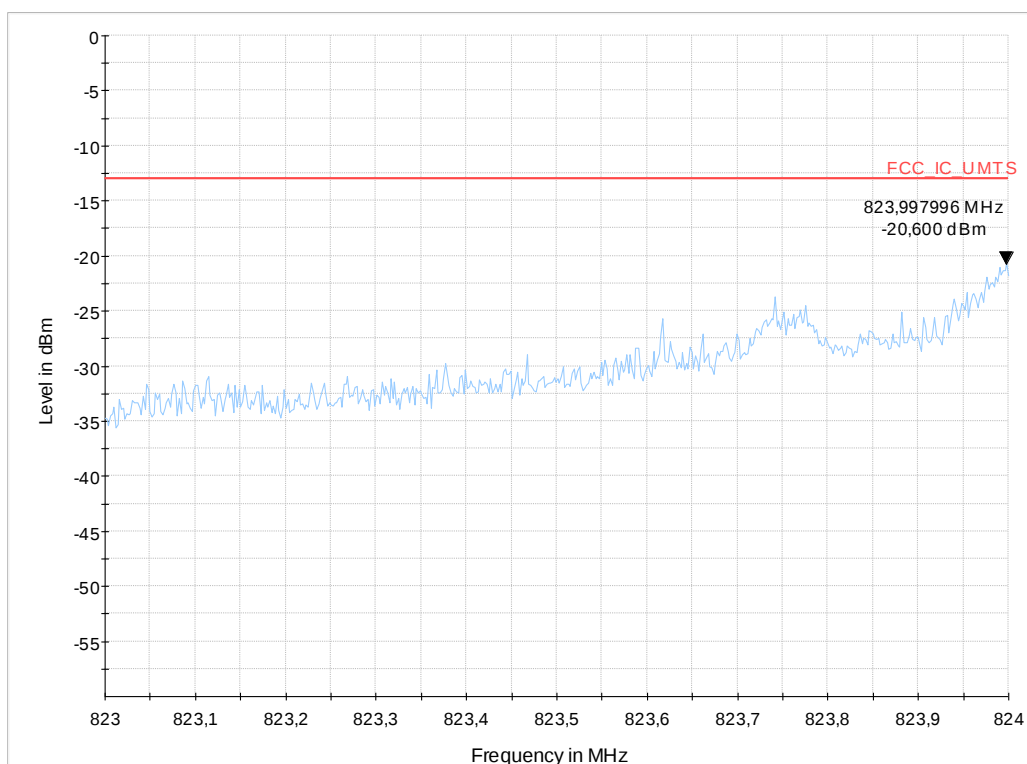


Diagram 9.501a, Channel 20407, QPSK, 6RBs

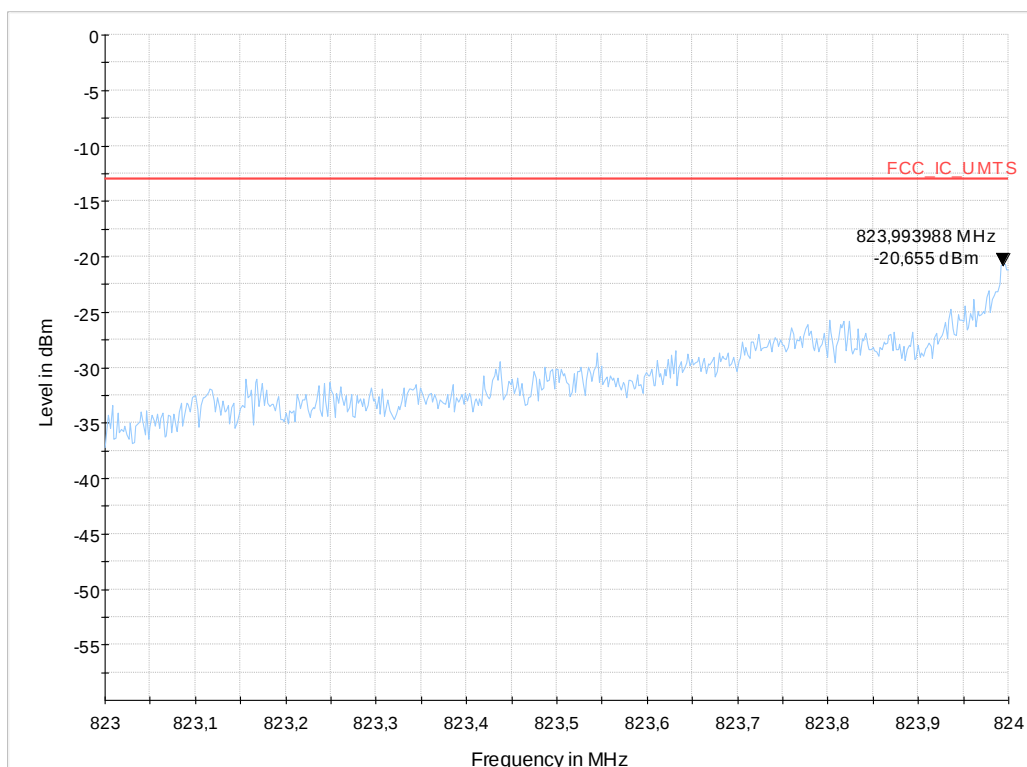


Diagram 9.501b, Channel 20407, 16-QAM, 6RBs

1.8.2. High Band-Edge

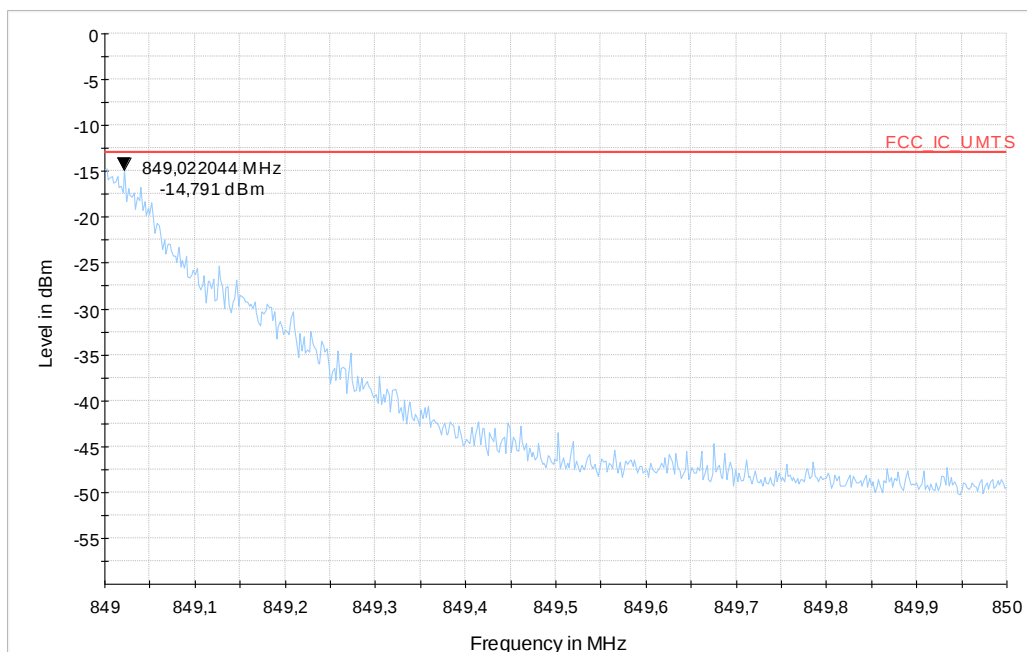


Diagram 9.502a, Channel 20643, QPSK, 1RB high

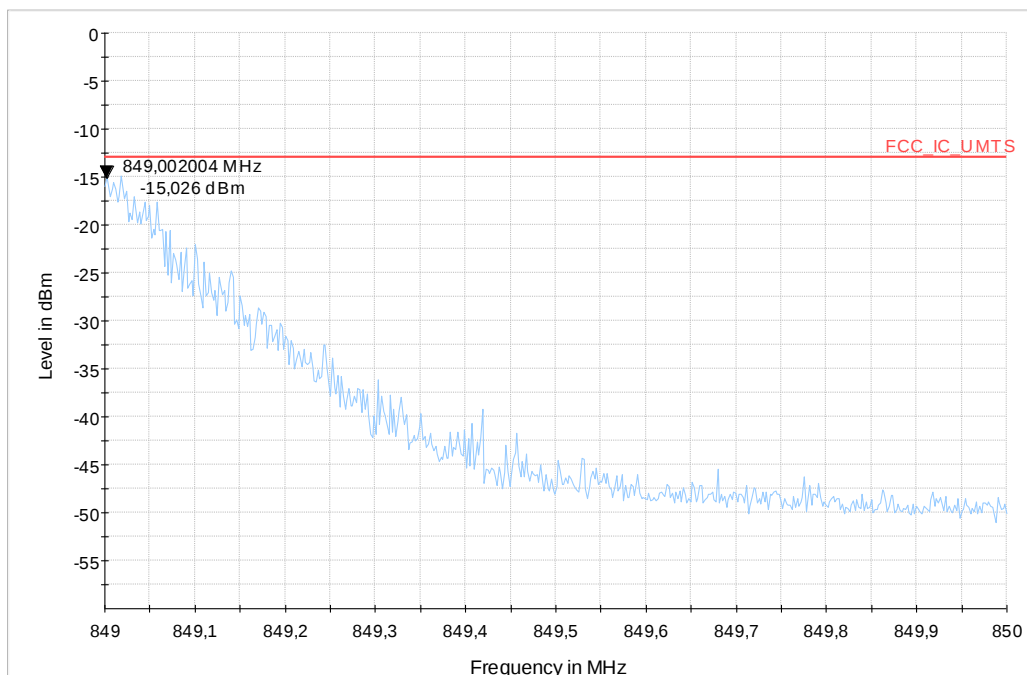


Diagram 9.502b, Channel 20643, 16-QAM, 1RB high

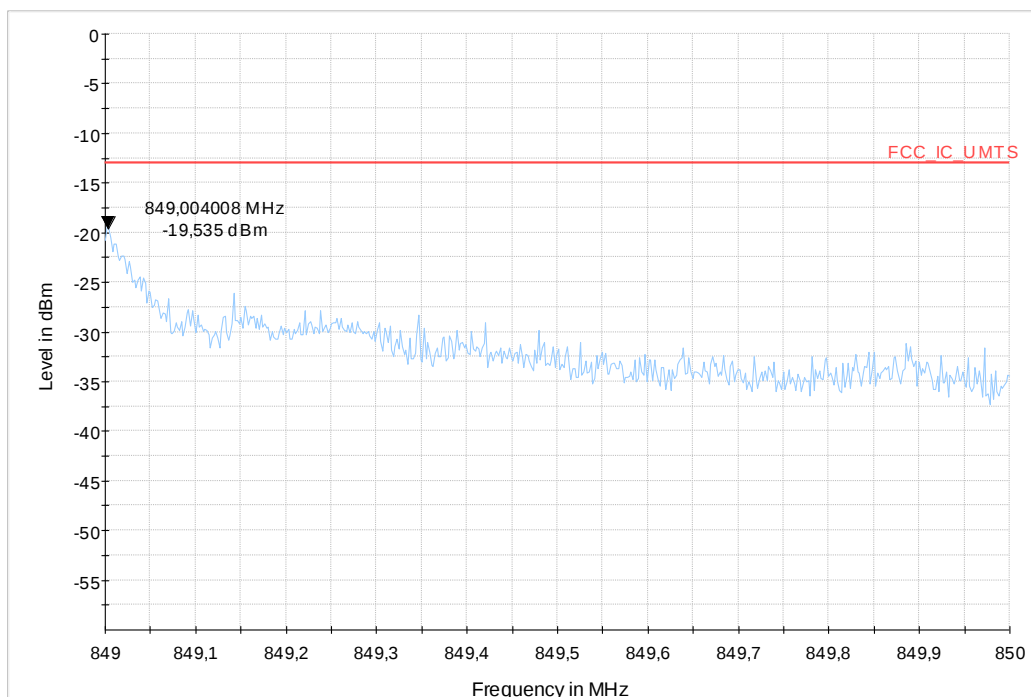


Diagram 9.503a, Channel 20643, QPSK, 6RBs

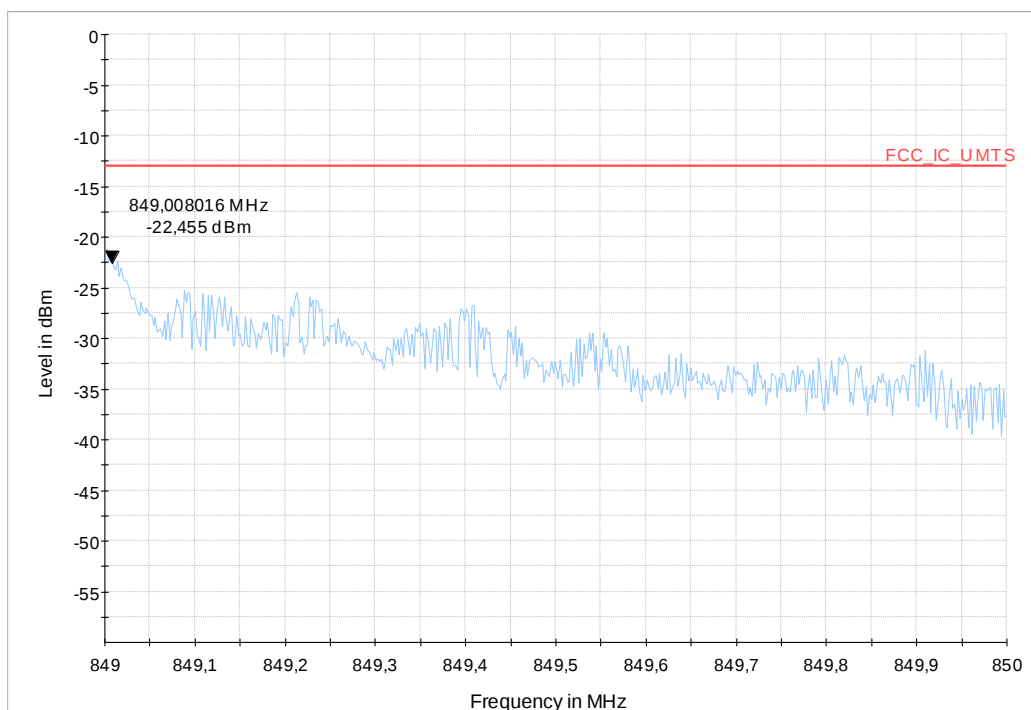


Diagram 9.503b, Channel 20643, 16-QAM, 6RBs

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

1.9.1. Low Band-Edge

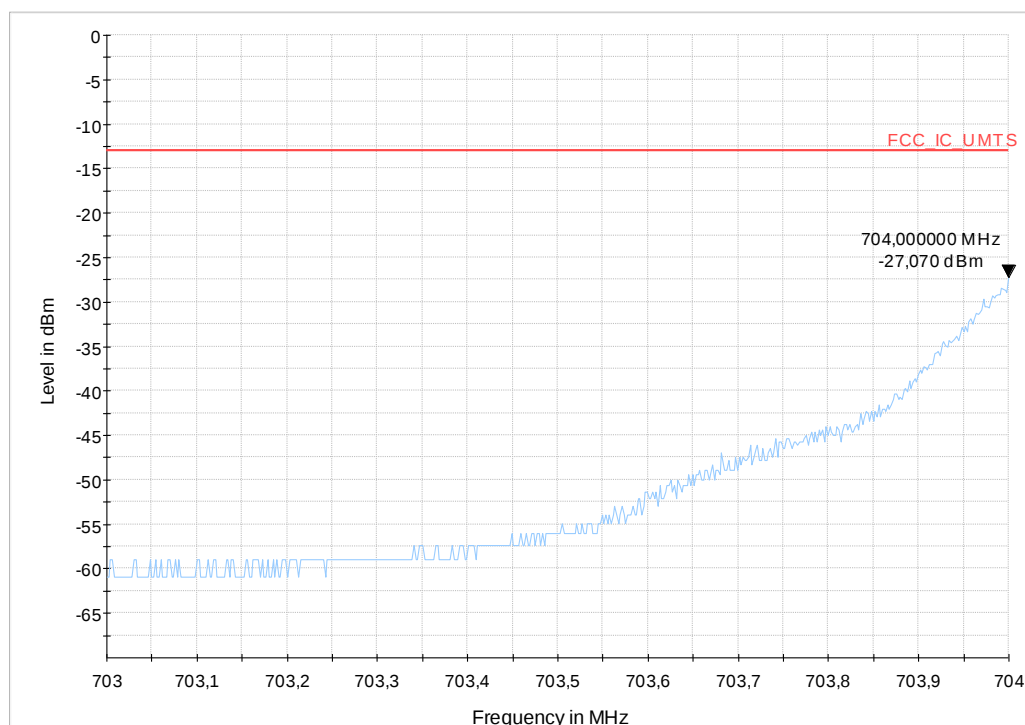


Diagram 9.1701a, Channel 23755, QPSK, 1RB low

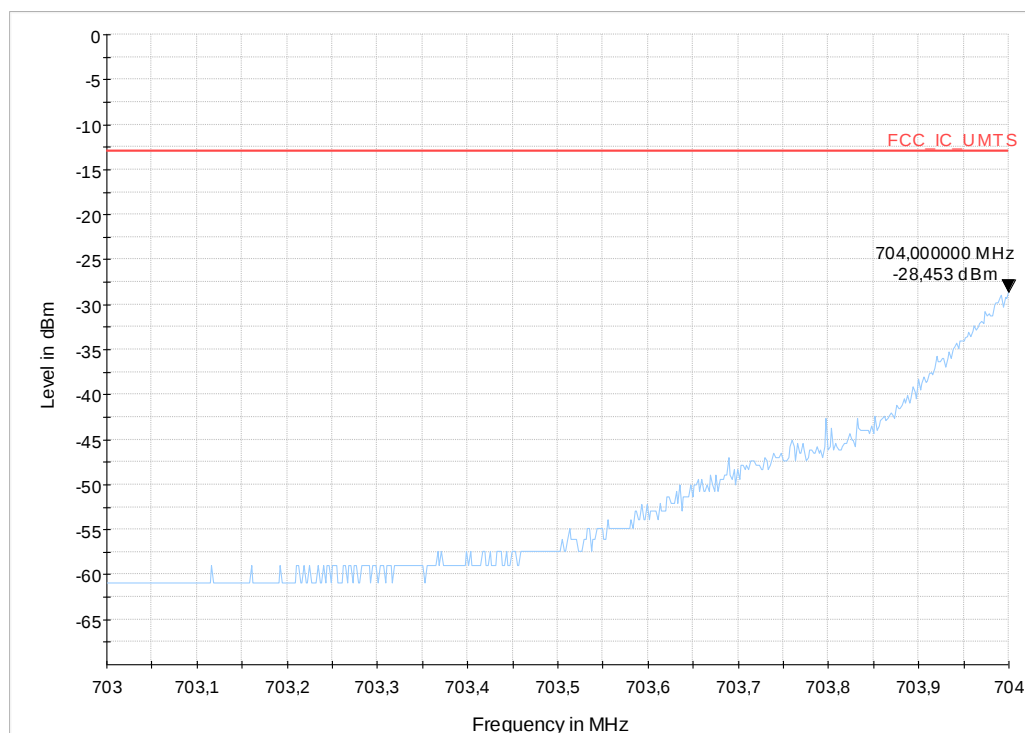


Diagram 9.1701b, Channel 23755, 16-QAM, 1RB low

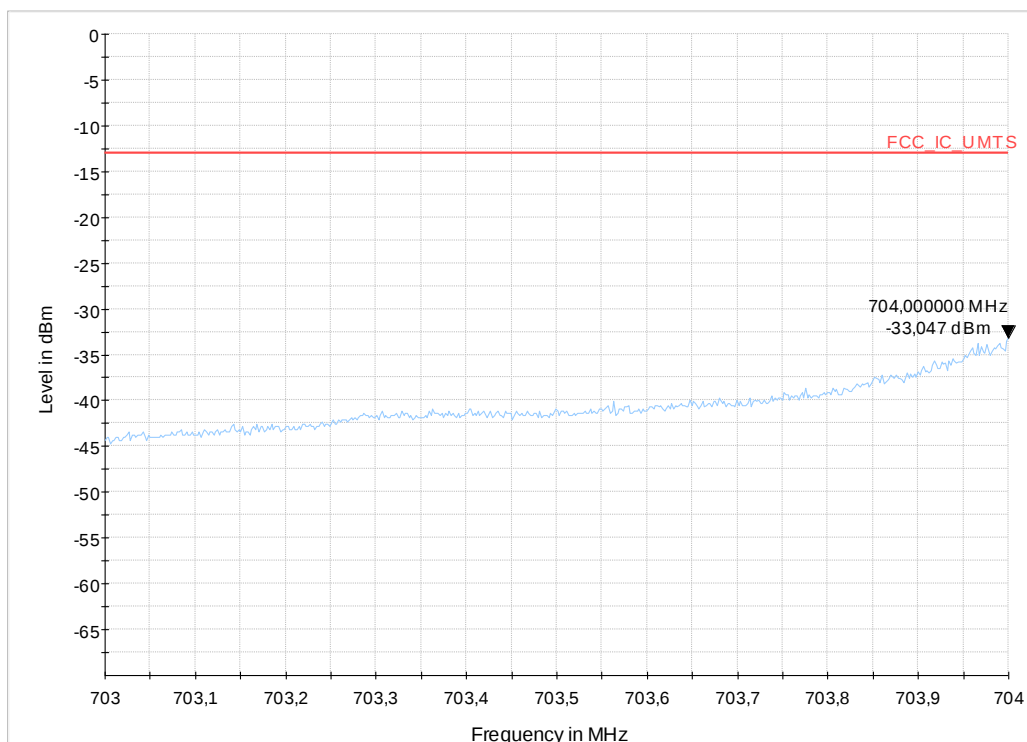


Diagram 9.1702a, Channel 23755, QPSK, 25RBs

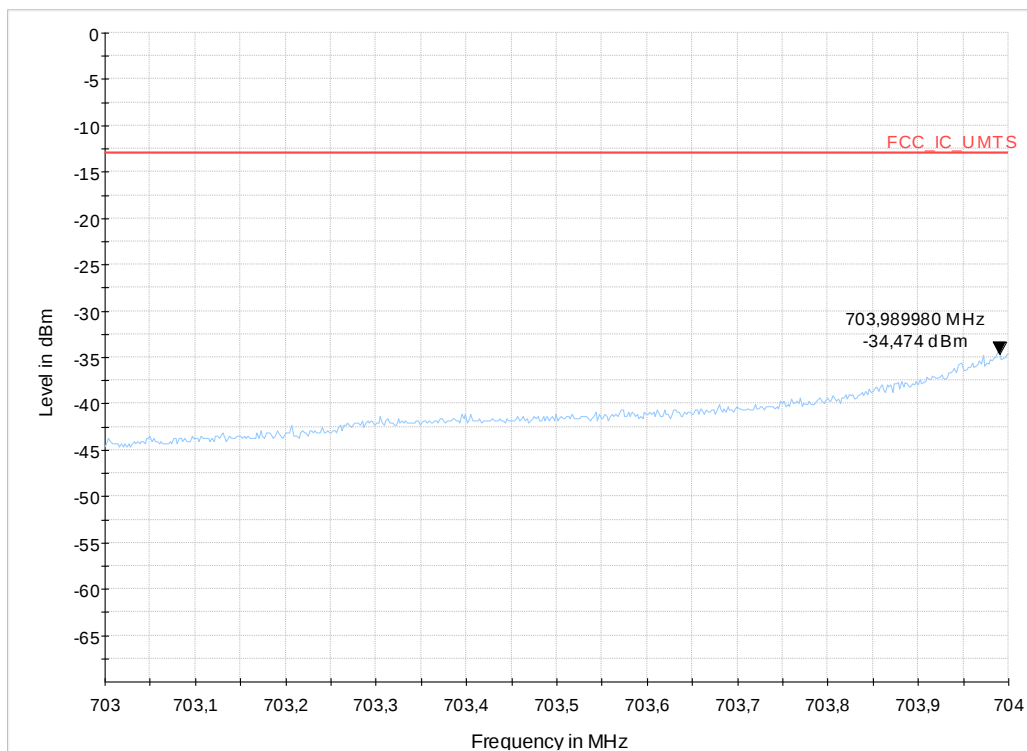


Diagram 9.1702b, Channel 23755, 16-QAM, 25RBs

1.9.2. High Band-Edge

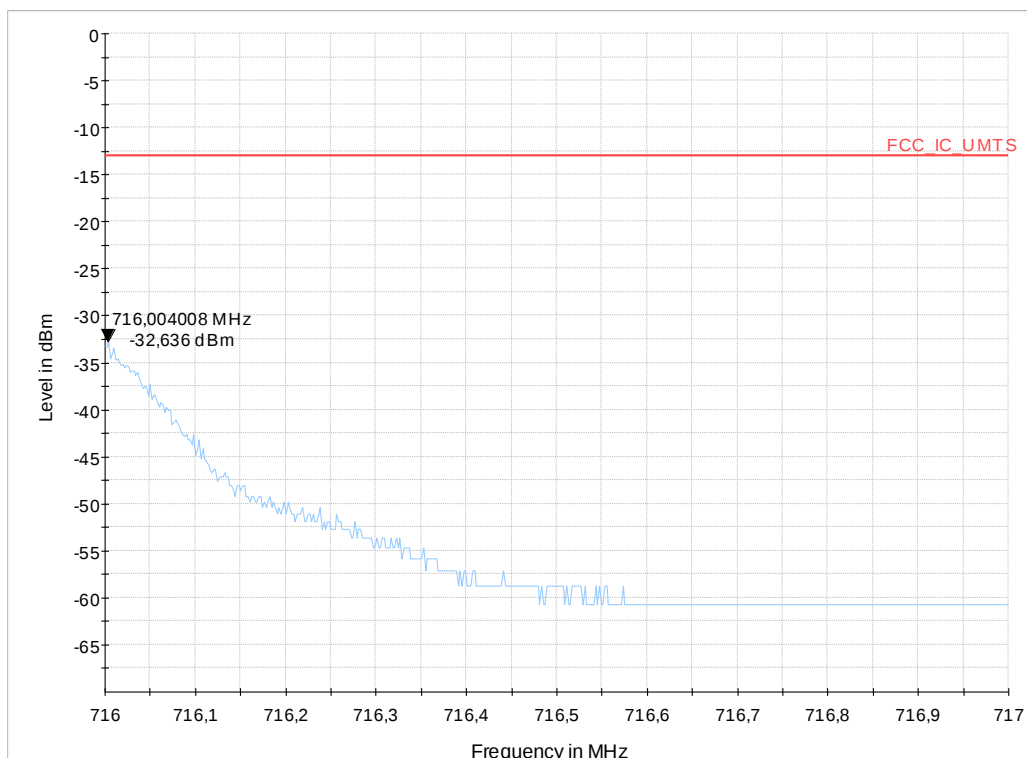


Diagram 9.1703a, Channel 23825, QPSK, 1RB high

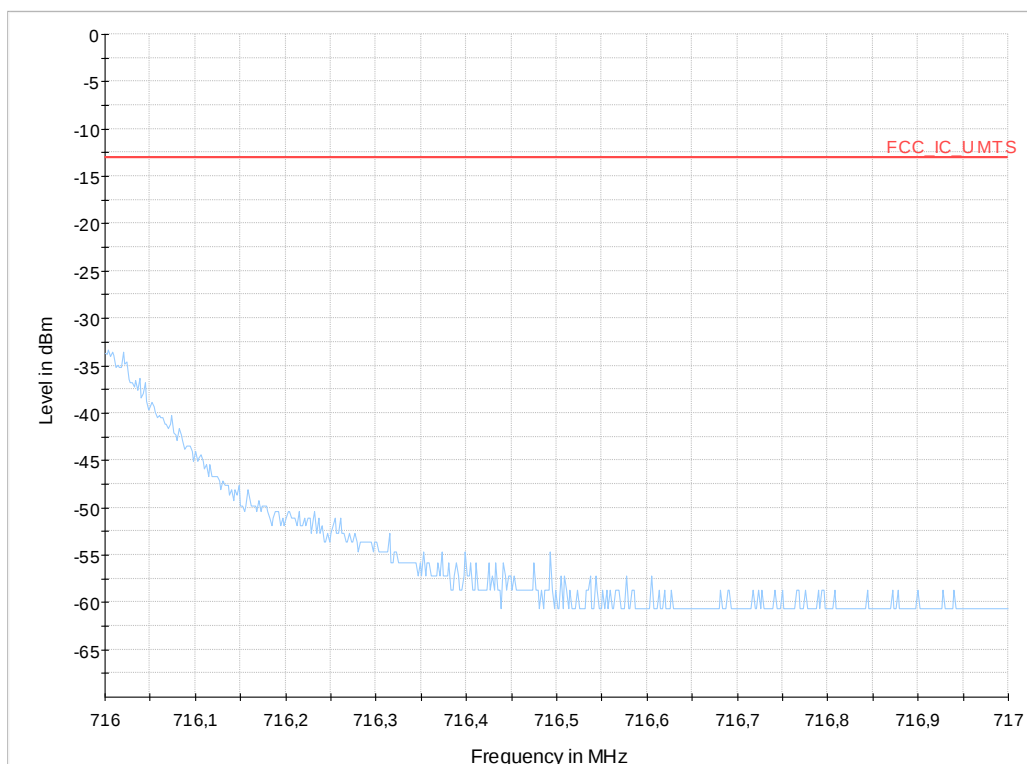


Diagram 9.1703b, Channel 23825, 16-QAM, 1RB high

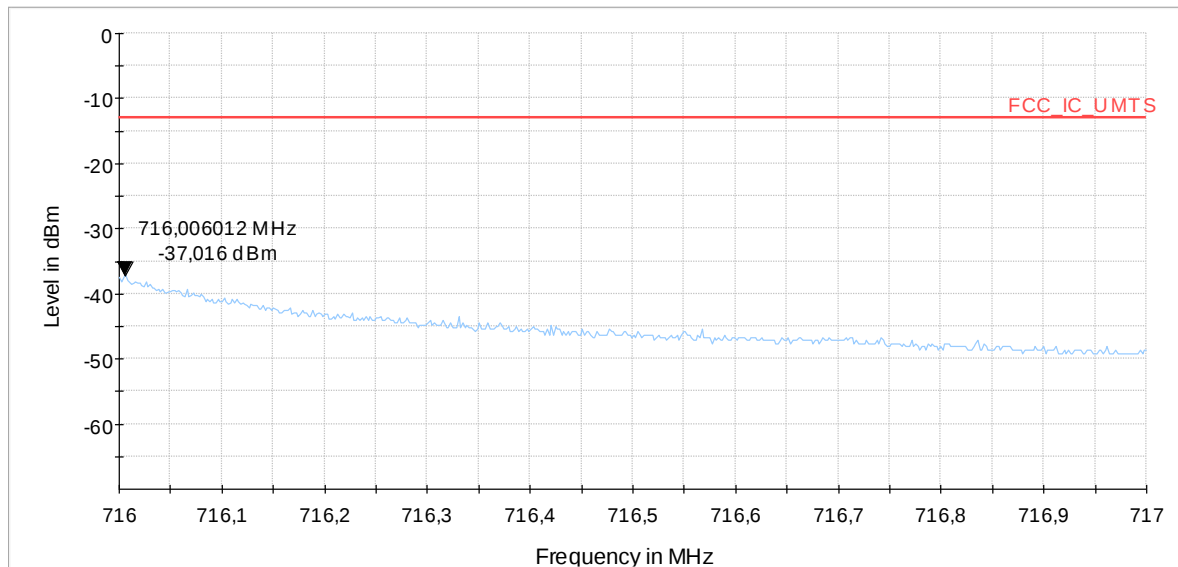


Diagram 9.1704a, Channel 23825, QPSK, 25RBs

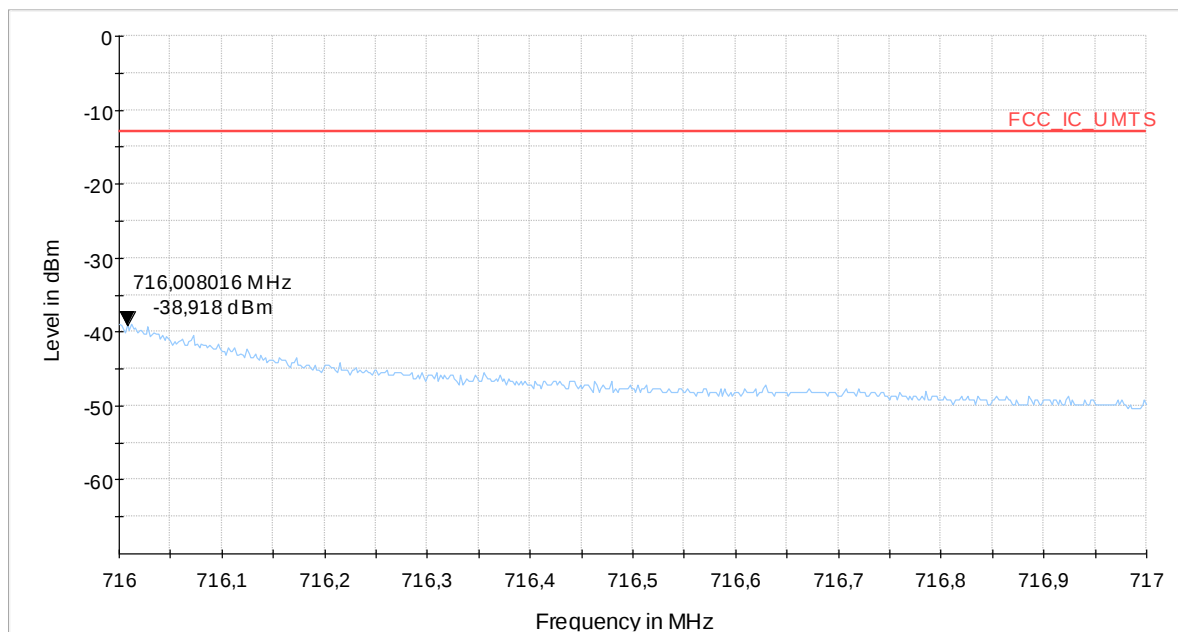


Diagram 9.1704b, Channel 23825, 16-QAM, 25RBs