

Annex 1: Measurement diagrams to  
**TEST REPORT**  
 No.: 17-1-0078101T01a-C1







According to:  
**FCC Regulations**  
 Part 27

for

Gemalto M2M GmbH

EMS31-V

FCC-ID: QIPEMS31-V

Laboratory Accreditation and Listings			
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 <p><b>WiFi</b>          ALLIANCE</p> <p>AUTHORIZED          RF LABORATORY</p>	 <p><b>ctia</b> Authorized<sup>TM</sup>          Test Lab</p> <p>Lab Code: 20011130-00</p>		
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

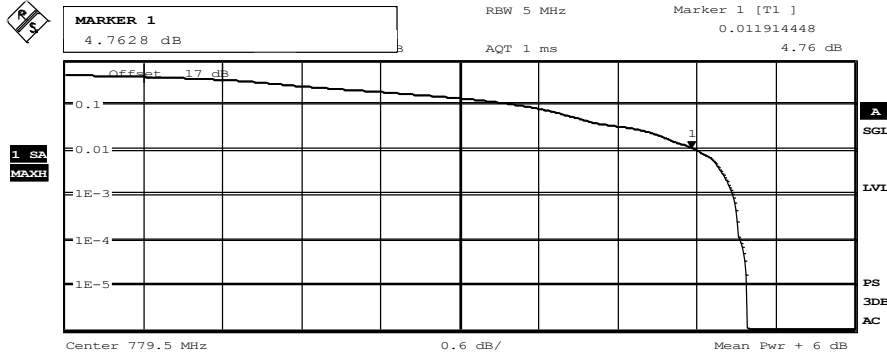
## 1.1. Power conducted LTE-Band 13

LTE-Band 13				QPSK-Modulation			16-QAM-Modulation			max- modulation QPSK	max. modulation 16QAM	max. channel	absolute max. value
channel bandwidth	ARFCN ch. no.	ARFCN-Frequency [MHz]	Resource block allocation	Peak detektor [dBm]	RMS detektor [dBm]	PAR Faktor [dB]	Peak detektor [dBm]	RMS detektor [dBm]	PAR Faktor [dB]				
1,4 MHz	23205	779,5	1 RB low(NB=0)	27,09	23,03	4,06	27	22,81	4,19	23,03	22,81	23,14	23,14
			1 RB high(NB=3)	26,84	22,84	4	27,03	22,68	4,35				
			50% RB mid(NB=1)	26,98	22,84	4,14	27,12	22,76	4,36				
			100% RB(NB=1)	26,96	22,84	4,12	27,15	22,71	4,44				
	23230	782	1 RB low(NB=0)	27,31	22,91	4,4	27,19	23,14	4,05	22,91	23,14		
			1 RB high(NB=7)	26,61	22,72	3,89	27,02	22,93	4,09				
			50% RB mid(NB=3)	26,88	22,63	4,25	27,12	22,85	4,27				
			100% RB(NB=3)	27	22,68	4,32	27,25	22,77	4,48				
	23255	784,5	1 RB low(NB=0)	26,94	22,7	4,24	26,94	22,78	4,16	22,7	22,78		
			1 RB high(NB=3)	26,9	22,67	4,23	26,94	22,7	4,24				
			50% RB mid(NB=1)	26,56	22,55	4,01	26,79	22,49	4,3				
			100% RB(NB=1)	26,69	22,58	4,11	26,7	22,37	4,33				

## 1.2. PAPR-Value (CCDF plots)

### 1.3. LTE Band 13

Worst-Case of each maximum Peak to Average power value was tested with the CCDF method 1.3.1. 1.4Mhz signal bandwidth

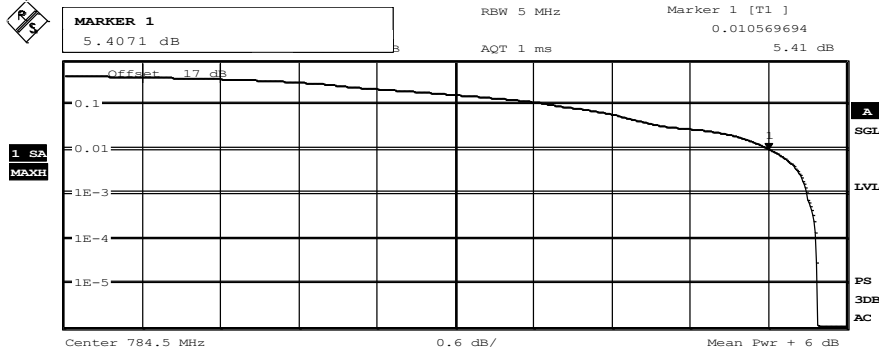


Complementary Cumulative Distribution Function  
 NOF samples: 8000, Usable BW: 7.1MHz

Trace 1	
Mean	22.03 dBm
Peak	27.21 dBm
Crest	5.18 dB
10 %	3.51 dB
1 %	4.81 dB
.1 %	5.08 dB
.01 %	5.13 dB

Date: 13.JUL.2017 13:44:39

#### Ch23205\_1RBlow\_NB1\_QPSK\_BW1,4

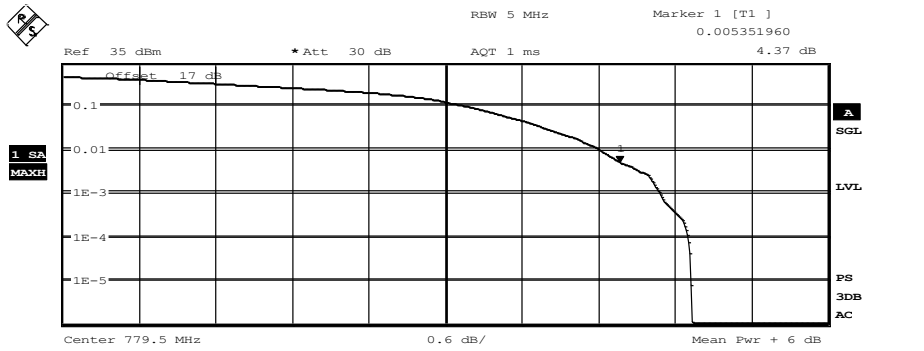


Complementary Cumulative Distribution Function  
 NOF samples: 8000, Usable BW: 7.1MHz

Trace 1	
Mean	21.44 dBm
Peak	27.21 dBm
Crest	5.77 dB
10 %	3.78 dB
1 %	5.42 dB
.1 %	5.70 dB
.01 %	5.77 dB

Date: 13.JUL.2017 13:48:54

#### Ch23255\_1RBlow\_NB6\_QPSK\_BW1,4

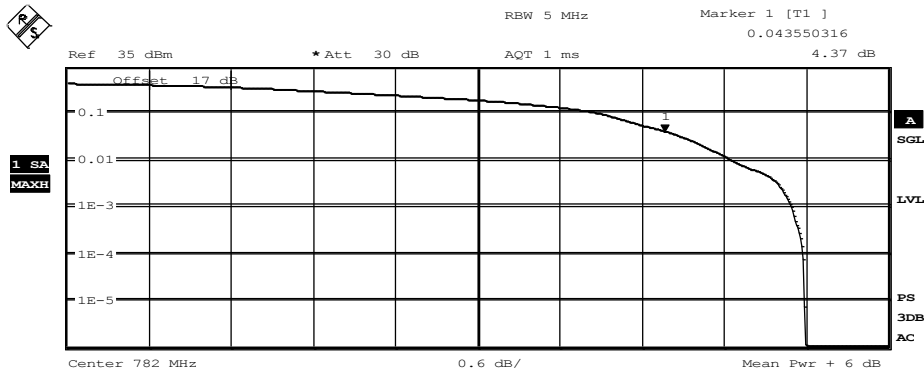


Complementary Cumulative Distribution Function  
NOF samples: 8000, Usable BW: 7.1MHz

Trace 1	
Mean	22.57 dBm
Peak	27.50 dBm
Crest	4.93 dB
10 %	3.19 dB
1 %	4.21 dB
.1 %	4.68 dB
.01 %	4.90 dB

Date: 13.JUL.2017 14:13:16

Ch23205\_100%RB\_NB2\_QAM\_BW1,4



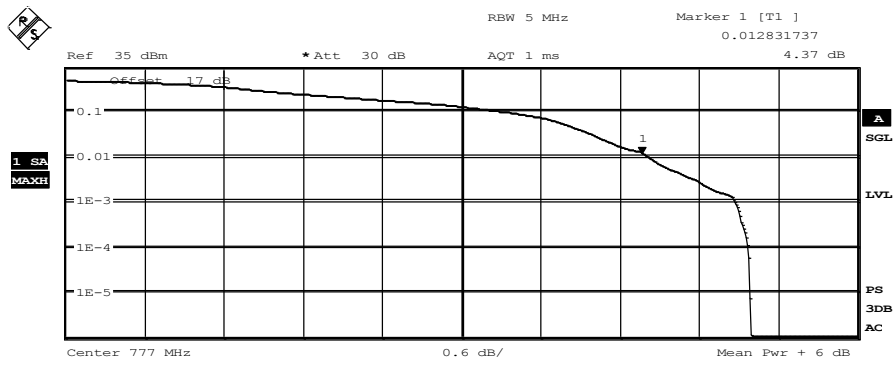
Complementary Cumulative Distribution Function  
NOF samples: 8000, Usable BW: 7.1MHz

Trace 1	
Mean	21.62 dBm
Peak	27.00 dBm
Crest	5.39 dB
10 %	3.91 dB
1 %	4.87 dB
.1 %	5.30 dB
.01 %	5.38 dB

Date: 13.JUL.2017 14:38:11

Ch23230\_1RBlow\_NB1\_QAM\_BW1,4

1.3.0.1. 1.4Mhz signal bandwidth



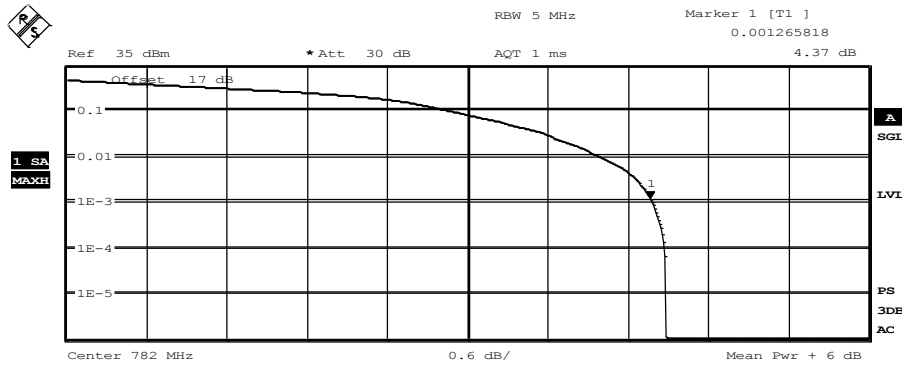
Complementary Cumulative Distribution Function  
NOF samples: 8000, Usable BW: 7.1MHz

Trace 1  
Mean 22.17 dBm  
Peak 27.36 dBm  
Crest 5.19 dB

10 % 3.38 dB  
1 % 4.42 dB  
.1 % 5.08 dB  
.01 % 5.17 dB

Date: 13.JUL.2017 14:01:11

Ch23230\_1RBlow\_NB1\_QPSK\_BW1,4



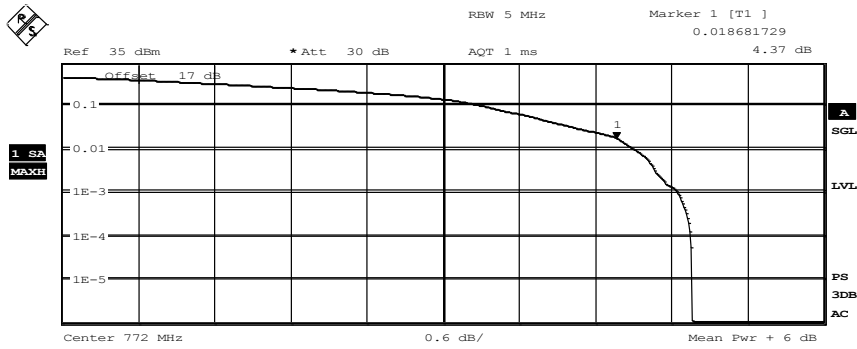
Complementary Cumulative Distribution Function  
NOF samples: 8000, Usable BW: 7.1MHz

Trace 1  
Mean 22.94 dBm  
Peak 27.43 dBm  
Crest 4.48 dB

10 % 2.90 dB  
1 % 4.00 dB  
.1 % 4.38 dB  
.01 % 4.48 dB

Date: 13.JUL.2017 14:57:43

Ch23230\_100%RB\_NB4\_QAM\_BW1,4

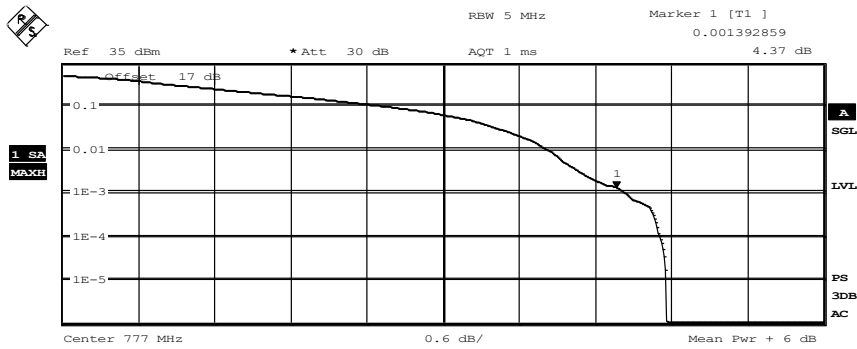


Complementary Cumulative Distribution Function  
 NOF samples: 8000, Usable BW: 7.1MHz

Trace 1	
Mean	22.46 dBm
Peak	27.43 dBm
Crest	4.96 dB
10 %	3.34 dB
1 %	4.51 dB
.1 %	4.86 dB
.01 %	4.95 dB

Date: 13.JUL.2017 14:52:09

### Ch23230\_1RB\_NB1\_QAM\_BW1,4



Complementary Cumulative Distribution Function  
 NOF samples: 8000, Usable BW: 7.1MHz

Trace 1	
Mean	22.88 dBm
Peak	27.64 dBm
Crest	4.76 dB
10 %	2.62 dB
1 %	3.84 dB
.1 %	4.44 dB
.01 %	4.71 dB

Date: 13.JUL.2017 13:52:55

### Ch23230\_50%RB\_NB4\_QPSK\_BW1,4

## 1.4. Spurious emissions radiated (LTE Band 13)

### 1.4.1. Magnetic field strength radiated (LTE Band 13)

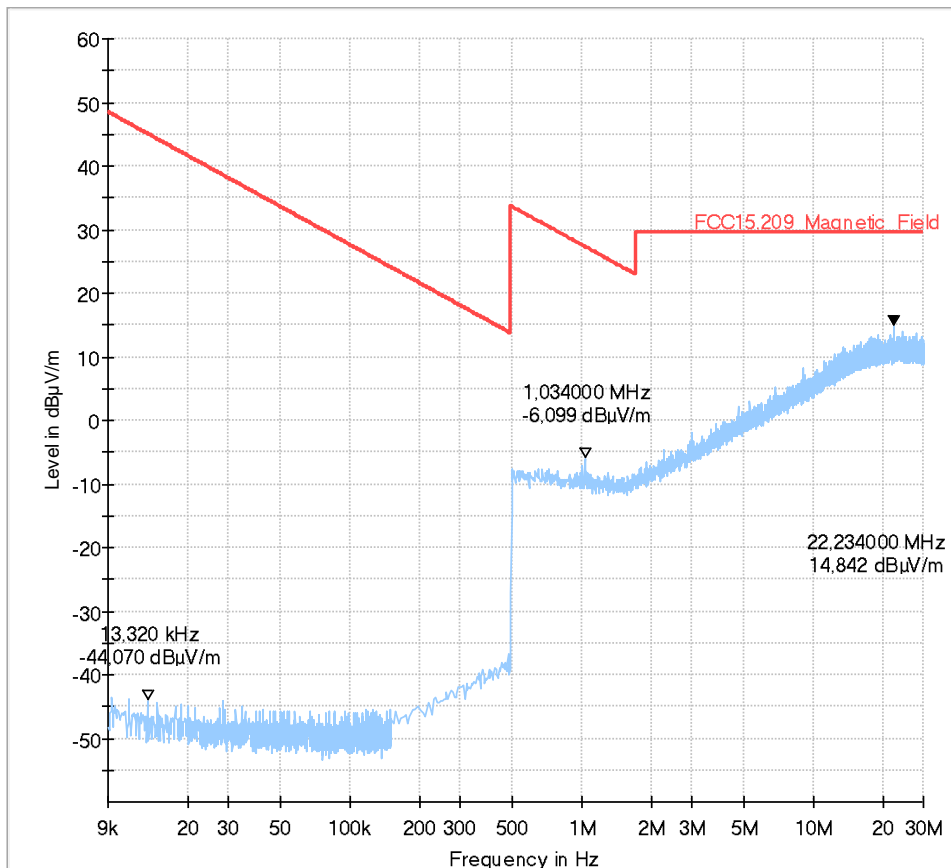
## 2.1301\_RSE\_R\_Ch23205\_1RBlow\_1.4MHZ\_QPSK

### Common Information

Test Description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC32 V9.25.0
Distance correction:	used accord. table, pls. see test report
Technical Data:	Please see page 2 for detailed data of measurement setup
Used filter:	bypass
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 4
Operator Name:	Klv
Power during tests:	13,5 DC V

### EUT Information

Manufacturer:	CINTERION
Model:	EMS31-V
Type:	B1.4
-----	
EUT:	17-1-00781.Gemalto
HW version:	-
SW version:	-
SVN:	-
Config:	-
Serial number:	E400033191-03
Connected Interfaces:	-
Power Supply:	-
Comments:	-





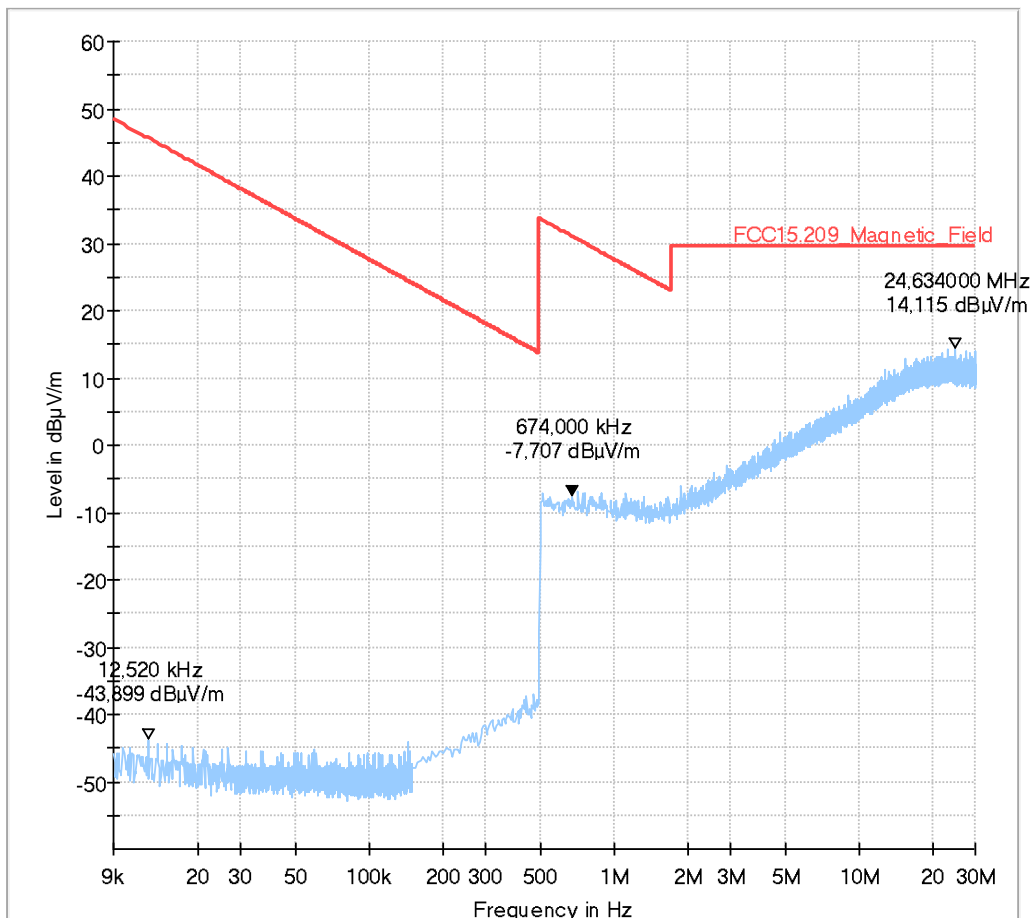
## 2.1302\_RSE\_R\_Ch23230\_1RBlow\_1.4MHZ\_QAM

### Common Information

Test Description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC32 V9.25.0
Distance correction:	used accord. table, pls. see test report
Technical Data:	Please see page 2 for detailed data of measurement setup
Used filter:	bypass
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 4
Operator Name:	Klv
Power during tests:	13,5 DC V

### EUT Information

Manufacturer:	CINTERION
Model:	EMS31-V
Type:	B1.4
-----	
EUT:	17-1-00781.Gemalto
HW version:	-
SW version:	-
SVN:	-
Config:	-
Serial number:	E400033191-03
Connected Interfaces:	-
Power Supply:	-
Comments:	-



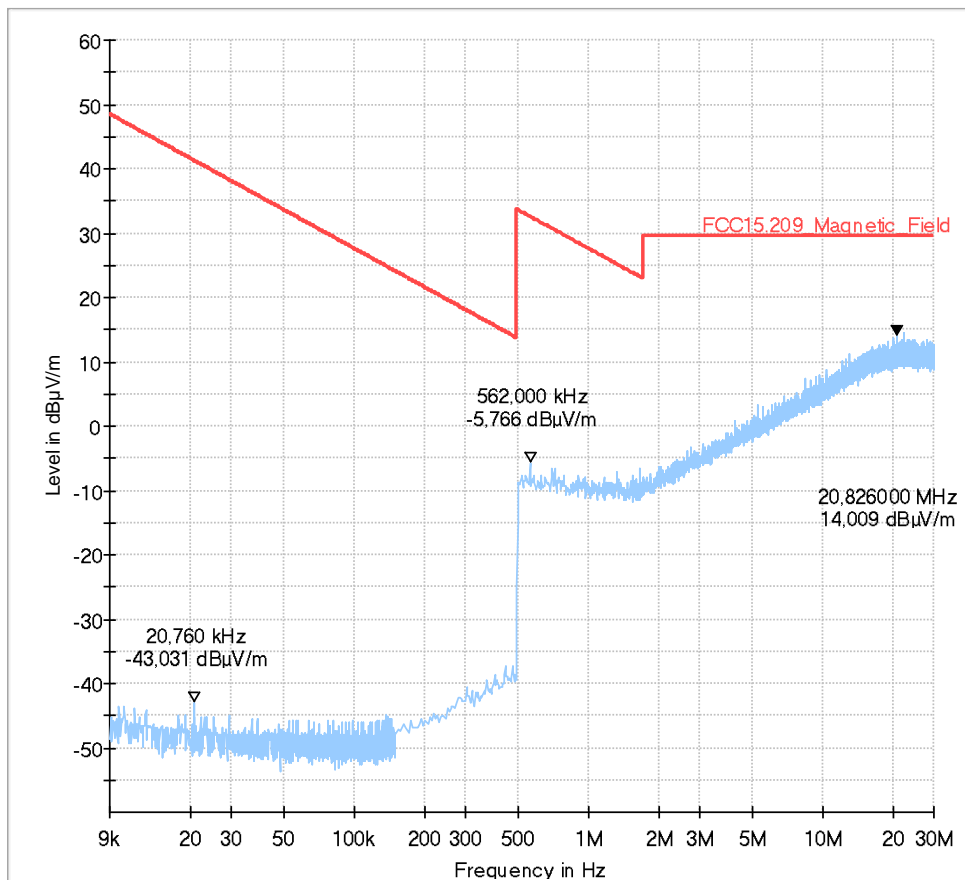
## 2.1303\_RSE\_R\_Ch23255\_1RBlow\_1.4MHZ\_QAM

### Common Information

Test Description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC32 V9.25.0
Distance correction:	used accord. table, pls. see test report
Technical Data:	Please see page 2 for detailed data of measurement setup
Used filter:	bypass
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 4
Operator Name:	Klv
Power during tests:	13,5 DC V

### EUT Information

Manufacturer:	CINTERION
Model:	EMS31-V
Type:	B1.4
-----	
EUT:	17-1-00781.Gemalto
HW version:	-
SW version:	-
SVN:	-
Config:	-
Serial number:	E400033191-03
Connected Interfaces:	-
Power Supply:	-
Comments:	-



1.4.2. Emissions above 30MHz (LTE Band 13)

8.1301\_RSE\_R\_Ch23205\_1RBlow\_1.4MHZ\_QPSK

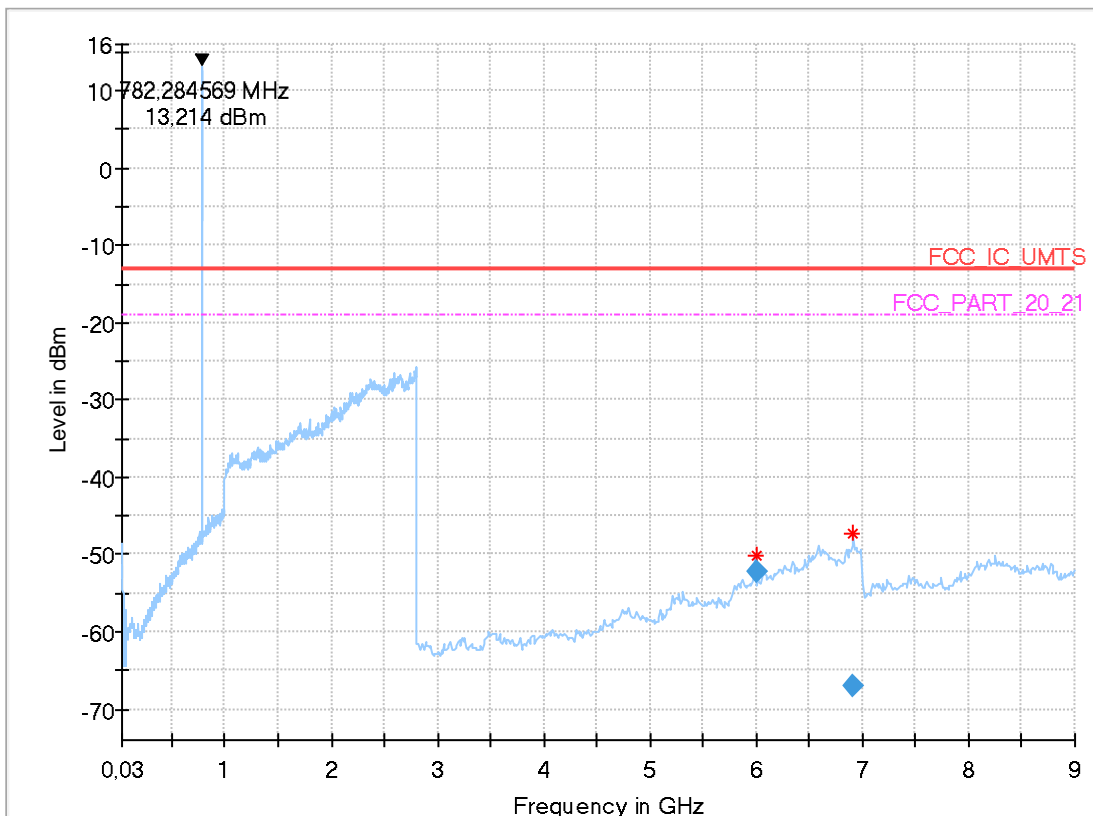
Common Information

Test Description:	Radiated Spurious Emissions UMTS FDDV
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 22.917(a)
Operating Mode:	UE allocated channel 4133/4182/4233 (fc = 826.6/836.4/846.6 MHz), Voice/HSDPA/HSUPA/HSPA+, H-Set x
Environmental Conditions:	Humidity: 70%rH; Temperature: 20°C
Operator:	Klv

EUT Information

Manufacturer:	CINTERION:
-----	-----
HW version:	V1231_Ver.1
SW version:	MPSS.TH.2.0.2-00256
Serial number:	004402580040446
Connected Interfaces:	Multiband antenna LTE + GNSS (9396828-02, S/N: 50110256), Multiband antenna LTE (9396827-02, S/N 50110255) microphone, loudspeaker, cables
Power Supply:	12VDC
Comments:	-

Full Spectrum



Final Result

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
5995.280561	-52.30	-	39.30	1000.0	100.000	155.0	H	10.0	90.0	-87.9
6909.809620	-66.95	-	53.95	1000.0	100.000	155.0	V	69.0	90.0	-84.9

## 8.1302\_RSE\_R\_Ch23230\_1RBlow\_1.4MHZ\_QAM

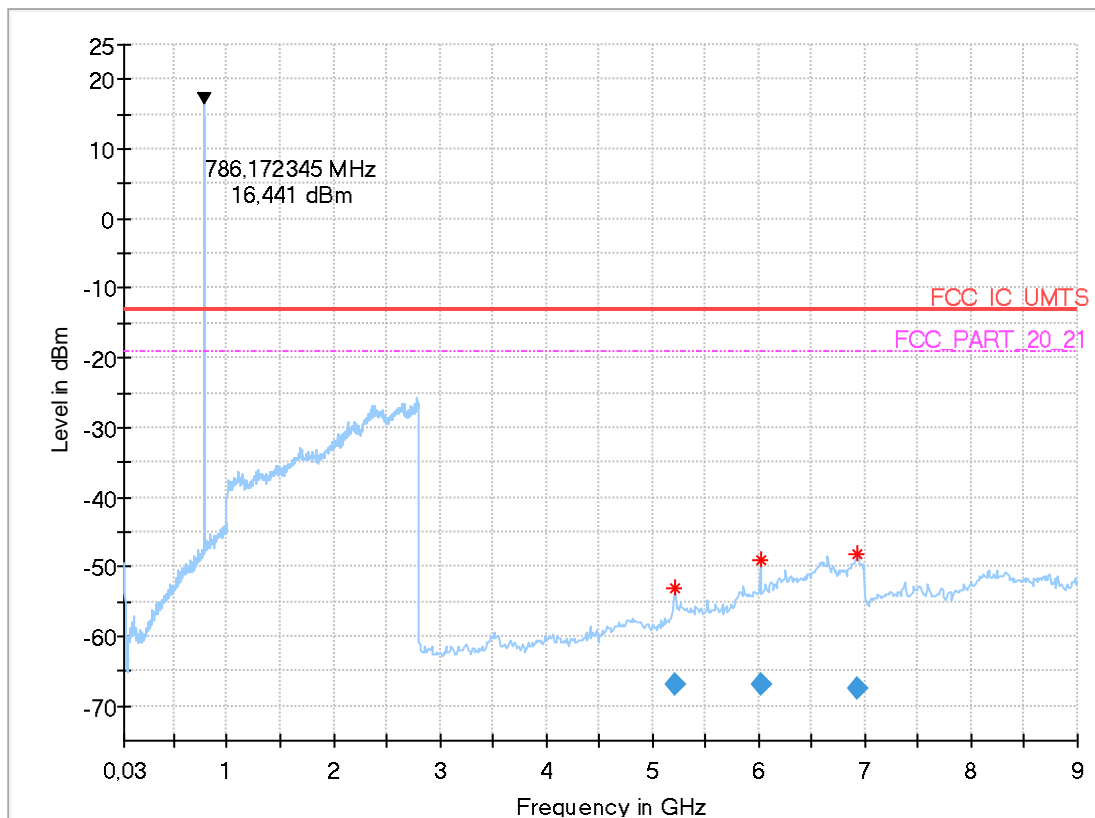
### Common Information

Test Description:	Radiated Spurious Emissions UMTS FDDV
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 22.917(a)
Operating Mode:	UE allocated channel 4133/4182/4233 (fc = 826.6/836.4/846.6 MHz), Voice/HSDPA/HSUPA/HSPA+, H-Set x
Environmental Conditions:	Humidity: 70%rH; Temperature: 20°C
Operator:	Klv

### EUT Information

Manufacturer:	CINTERION:
-----	-----
HW version:	V1231_Ver.1
SW version:	MPSS.TH.2.0.2-00256
Serial number:	004402580040446
Connected Interfaces:	Multiband antenna LTE + GNSS (9396828-02, S/N: 50110256), Multiband antenna LTE (9396827-02, S/N 50110255) microphone, loudspeaker, cables
Power Supply:	12VDC
Comments:	-

Full Spectrum



### Final Result

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
5209.088177	-66.84	-	53.84	1000.0	100.000	155.0	H	43.0	90.0	-89.2
6023.036072	-67.03	-	54.03	1000.0	100.000	155.0	V	-8.0	90.0	-87.8
6935.701403	-67.61	-	54.61	1000.0	100.000	155.0	V	52.0	0.0	-85.0

## 8.1303\_RSE\_R\_Ch23255\_1RBlow\_1.4MHZ\_QAM

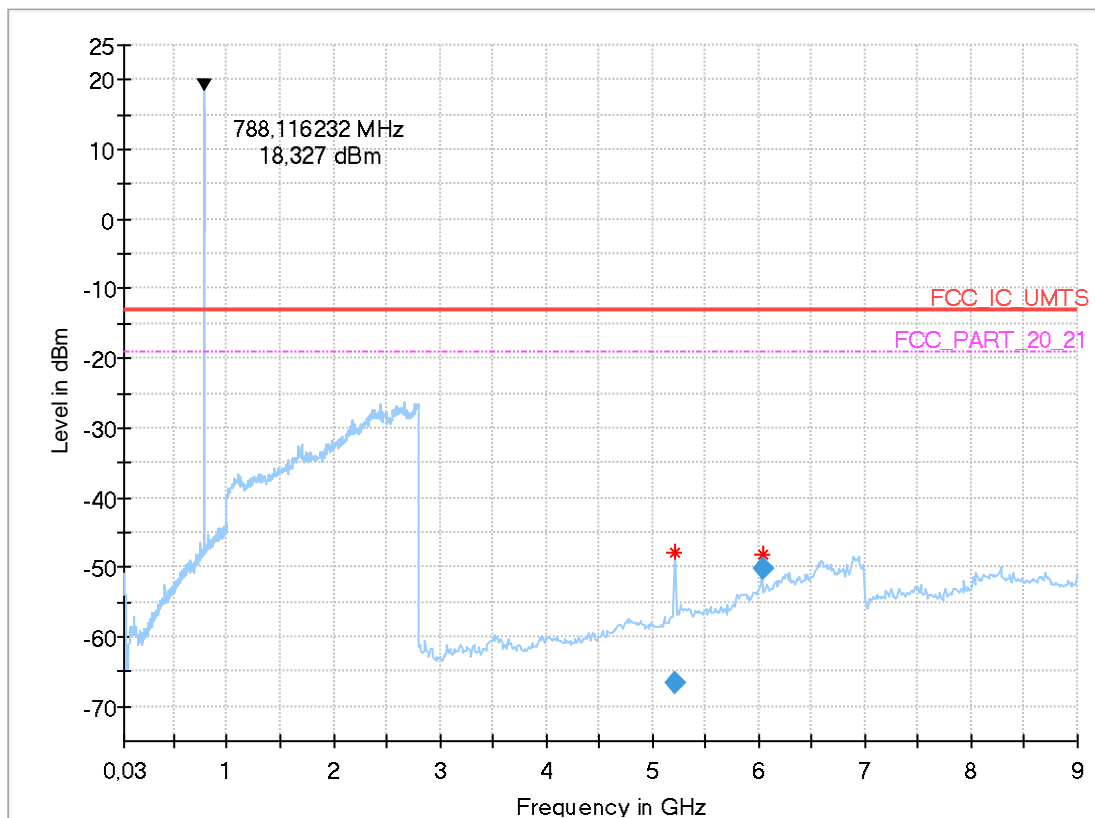
### Common Information

Test Description:	Radiated Spurious Emissions UMTS FDDV
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 22.917(a)
Operating Mode:	UE allocated channel 4133/4182/4233 (fc = 826.6/836.4/846.6 MHz), Voice/HSDPA/HSUPA/HSPA+, H-Set x
Environmental Conditions:	Humidity: 70%rH; Temperature: 20°C
Operator:	Klv

### EUT Information

Manufacturer:	CINTERION:
-----	-----
HW version:	V1231_Ver.1
SW version:	MPSS.TH.2.0.2-00256
Serial number:	004402580040446
Connected Interfaces:	Multiband antenna LTE + GNSS (9396828-02, S/N: 50110256), Multiband antenna LTE (9396827-02, S/N 50110255) microphone, loudspeaker, cables
Power Supply:	12VDC
Comments:	-

Full Spectrum



### Final Result

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
5209.288577	-66.59	-	53.59	1000.0	100.000	155.0	H	44.0	90.0	-89.2
6035.280561	-50.19	-	37.19	1000.0	100.000	155.0	H	59.0	90.0	-87.8

## 1.5. Radiated emissions – band-edge (LTE Band 13)

### 1.5.1. Low Band-Edge

#### 1.5.1.1. Channel 23205, QPSK, 1RBs

### 9.1301a\_RSE\_R\_Ch23205\_1RBlow\_1.4MHZ\_QPSK

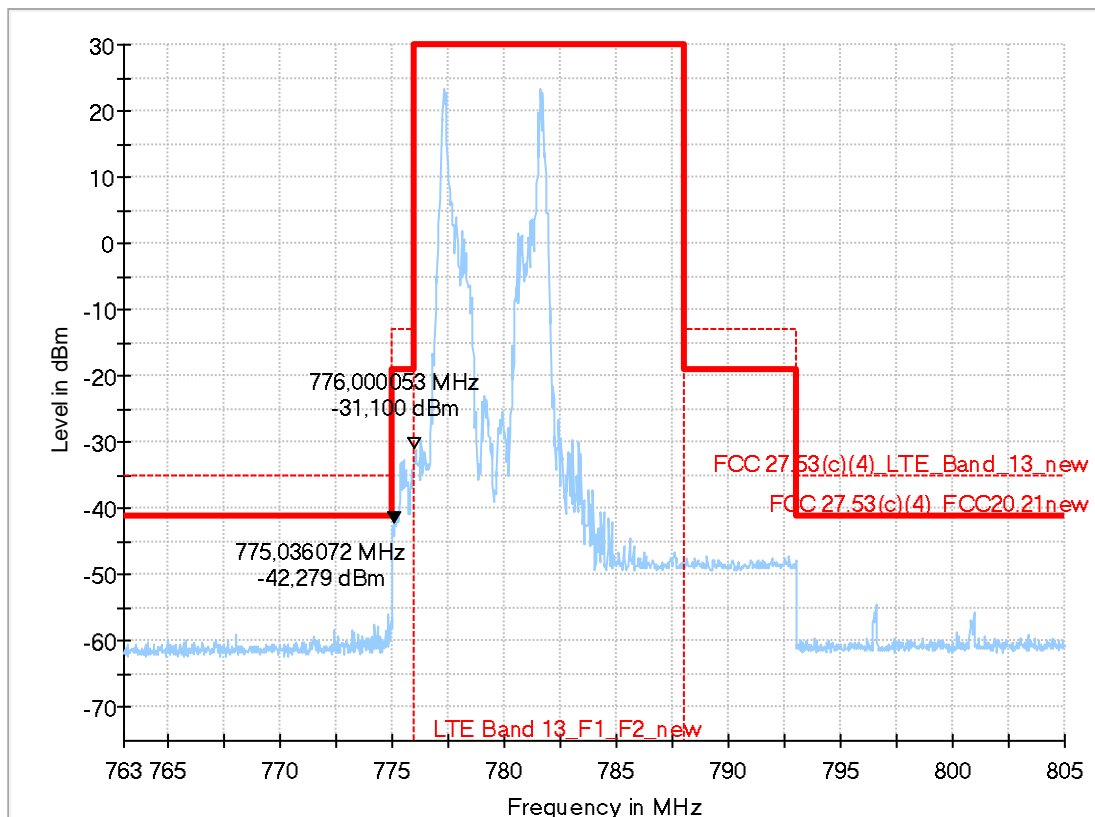
#### Common Information

Test Description:	Radiated Spurious Emissions LTE Band 13
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 27.53
Comm. Link:	LTE Band 13
Operating Mode:	MS allocated channel xxx (UL = 782MHz)
Exclusionband:	Uplink: 776-787MHz Downlink: -31MHz Offset
Environmental Conditions:	Humidity: 70%rH; Temperature: 20°C
Operator:	MBe

#### EUT Information

Manufacturer:	CINTERION:
-----	-----
HW version:	V1231_Ver.1
SW version:	MPSS.TH.2.0.2-00256
Serial number:	004402580040446
Connected Interfaces:	Multiband antenna LTE + GNSS (9396828-02, S/N: 50110256), Multiband antenna LTE (9396827-02, S/N 50110255) microphone, loudspeaker, cables
Power Supply:	12VDC
Comments:	-

Full Spectrum



1.5.1.2. Channel 23205, 16-QAM, 1RBs

9.1301b\_RSE\_R\_Ch23205\_1RBlow\_1.4MHZ\_QAM

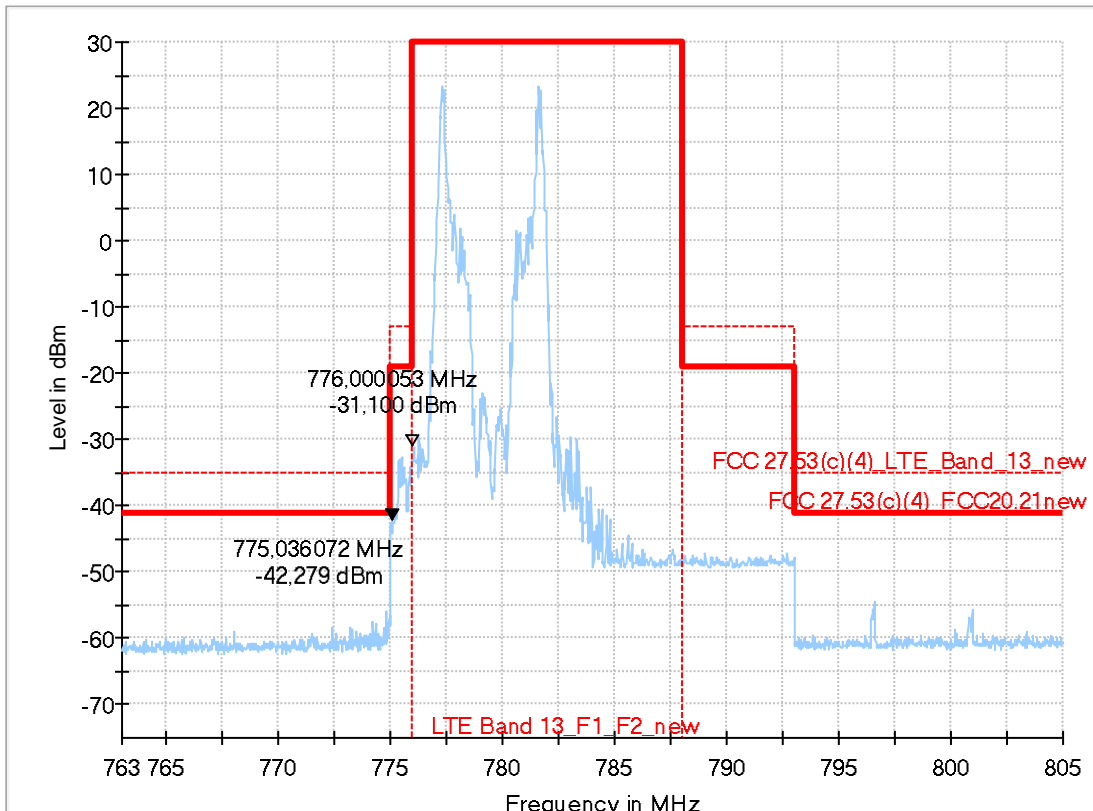
Common Information

Test Description:	Radiated Spurious Emissions LTE Band 13
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 27.53
Comm. Link:	LTE Band 13
Operating Mode:	MS allocated channel xxx (UL = 782MHz)
Exclusionband:	Uplink: 776-787MHz Downlink: -31MHz Offset
Environmental Conditions:	Humidity: 70%rH; Temperature: 20°C
Operator:	MBe

EUT Information

Manufacturer:	CINTERION:
-----	-----
HW version:	V1231_Ver.1
SW version:	MPSS.TH.2.0.2-00256
Serial number:	004402580040446
Connected Interfaces:	Multiband antenna LTE + GNSS (9396828-02, S/N: 50110256), Multiband antenna LTE (9396827-02, S/N 50110255) microphone, loudspeaker, cables
Power Supply:	12VDC
Comments:	-

Full Spectrum



Critical\_Freqs

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas Time	Bandwidth (kHz)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
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1.5.1.3. Channel 23205, QPSK, 6RBs

9.1302a\_RSE\_R\_Ch23205\_6RBlow\_1.4MHZ\_QPSK

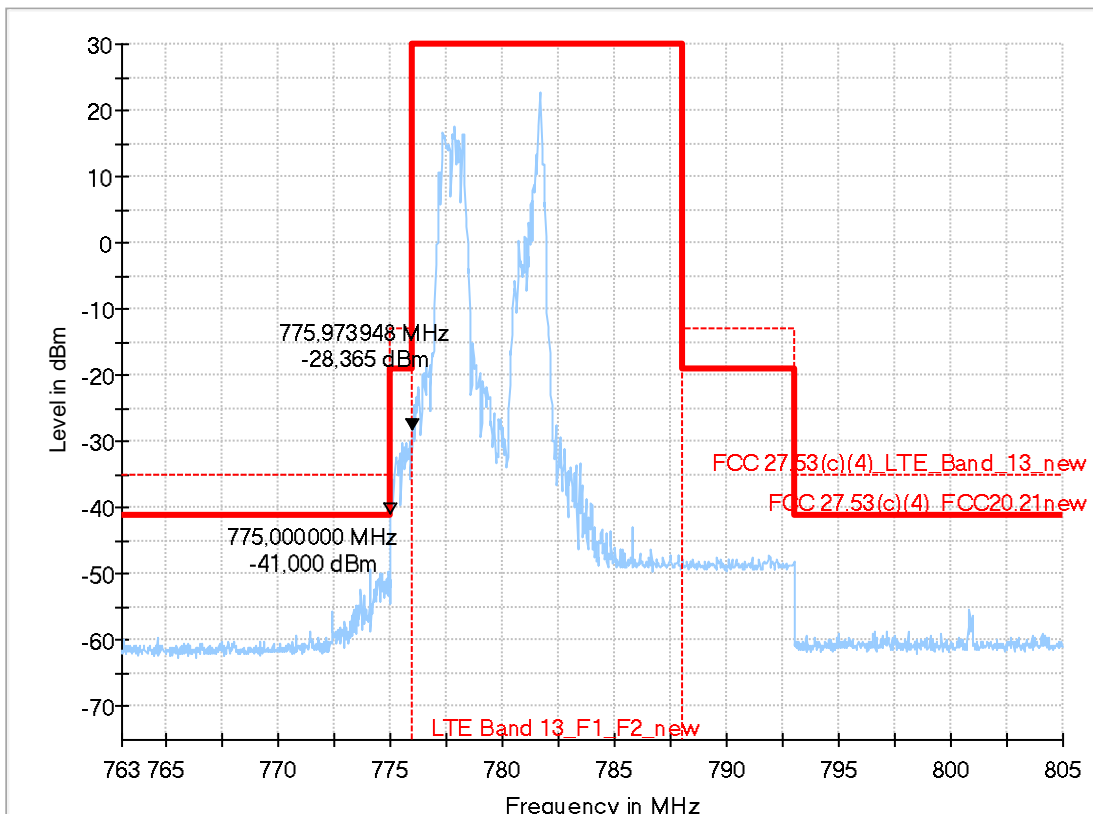
**Common Information**

Test Description:	Radiated Spurious Emissions LTE Band 13
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 27.53
Comm. Link:	LTE Band 13
Operating Mode:	MS allocated channel xxx (UL = 782MHz)
Exclusionband:	Uplink: 776-787MHz Downlink: -31MHz Offset
Environmental Conditions:	Humidity: 70%rH; Temperature: 20°C
Operator:	MBe

**EUT Information**

Manufacturer:	CINTERION:
-----	-----
HW version:	V1231_Ver.1
SW version:	MPSS.TH.2.0.2-00256
Serial number:	004402580040446
Connected Interfaces:	Multiband antenna LTE + GNSS (9396828-02, S/N: 50110256), Multiband antenna LTE (9396827-02, S/N 50110255) microphone, loudspeaker, cables
Power Supply:	12VDC
Comments:	-

Full Spectrum



**Critical\_Freqs**

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
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1.5.1.4. Channel 23205, 16-QAM, 5RBs

9.1302b\_RSE\_R\_Ch23205\_5RBlow\_1.4MHZ\_QAM

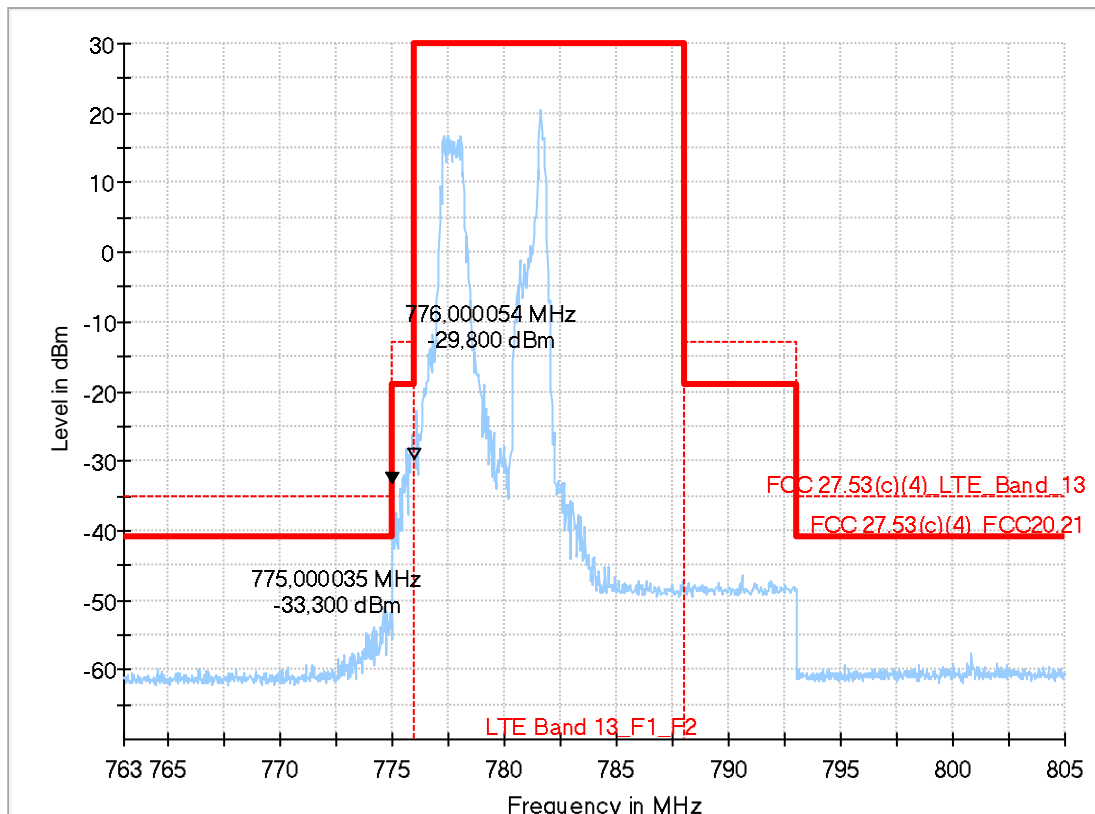
**Common Information**

Test Description:	Radiated Spurious Emissions LTE Band 13
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 27.53
Comm. Link:	LTE Band 13
Operating Mode:	MS allocated channel xxx (UL = 782MHz)
Exclusionband:	Uplink: 776-787MHz Downlink: -31MHz Offset
Environmental Conditions:	Humidity: 70%rH; Temperature: 20°C
Operator:	MBe

**EUT Information**

Manufacturer:	CINTERION:
-----	-----
HW version:	V1231_Ver.1
SW version:	MPSS.TH.2.0.2-00256
Serial number:	004402580040446
Connected Interfaces:	Multiband antenna LTE + GNSS (9396828-02, S/N: 50110256), Multiband antenna LTE (9396827-02, S/N 50110255) microphone, loudspeaker, cables
Power Supply:	12VDC
Comments:	-

Full Spectrum



**Critical\_Freqs**

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
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### 1.5.2. High Band-Edge

#### 1.5.2.1. Channel 23255, QPSK, 1RBs

## 9.1303a\_RSE\_R\_Ch23255\_1RBlow\_1.4MHZ\_QPSK

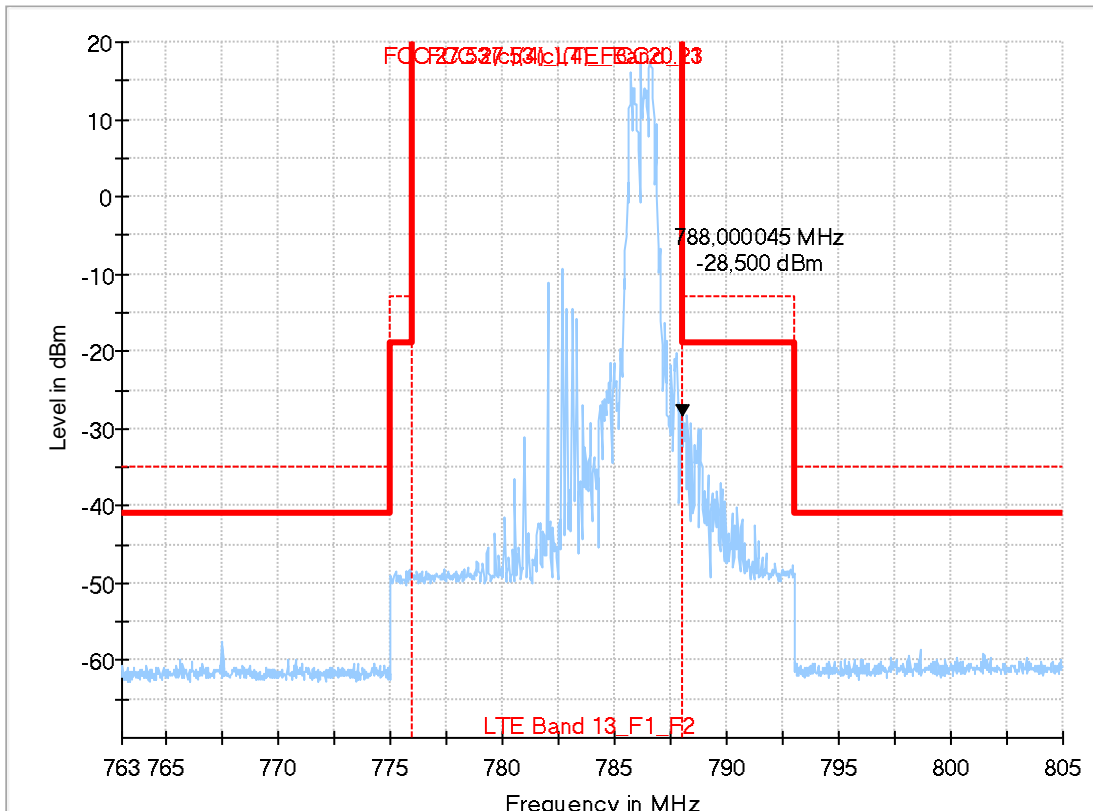
### Common Information

Test Description:	Radiated Spurious Emissions LTE Band 13
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 27.53
Comm. Link:	LTE Band 13
Operating Mode:	MS allocated channel xxx (UL = 782MHz)
Exclusionband:	Uplink: 776-787MHz Downlink: -31MHz Offset
Environmental Conditions:	Humidity: 70%rH; Temperature: 20°C
Operator:	MBe

### EUT Information

Manufacturer:	CINTERION:
-----	-----
HW version:	V1231_Ver.1
SW version:	MPSS.TH.2.0.2-00256
Serial number:	004402580040446
Connected Interfaces:	Multiband antenna LTE + GNSS (9396828-02, S/N: 50110256), Multiband antenna LTE (9396827-02, S/N 50110255) microphone, loudspeaker, cables
Power Supply:	12VDC
Comments:	-

Full Spectrum



### Critical\_Freqs

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
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1.5.2.2. Channel 23255, 16-QAM, 1RBs

9.1303b\_RSE\_R\_Ch23255\_1RBlow\_1.4MHZ\_QAM

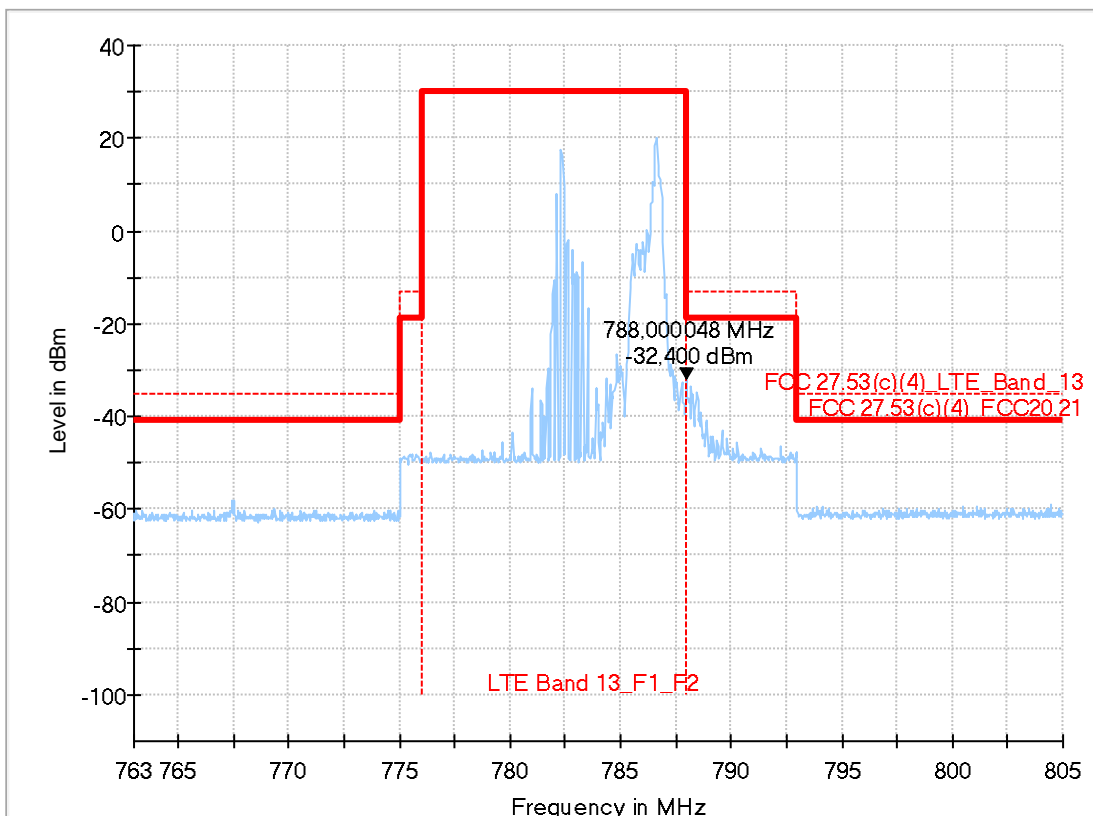
**Common Information**

Test Description:	Radiated Spurious Emissions LTE Band 13
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 27.53
Comm. Link:	LTE Band 13
Operating Mode:	MS allocated channel xxx (UL = 782MHz)
Exclusionband:	Uplink: 776-787MHz Downlink: -31MHz Offset
Environmental Conditions:	Humidity: 70%rH; Temperature: 20°C
Operator:	MBe

**EUT Information**

Manufacturer:	CINTERION:
-----	-----
HW version:	V1231_Ver.1
SW version:	MPSS.TH.2.0.2-00256
Serial number:	004402580040446
Connected Interfaces:	Multiband antenna LTE + GNSS (9396828-02, S/N: 50110256), Multiband antenna LTE (9396827-02, S/N 50110255) microphone, loudspeaker, cables
Power Supply:	12VDC
Comments:	-

Full Spectrum



**Critical\_Freqs**

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
---	---	---	---	---	---	---	---	---	---

1.5.2.3. Channel 23255, QPSK, 6RBs

9.1304a\_RSE\_R\_Ch23255\_6RBlow\_1.4MHZ\_QPSK

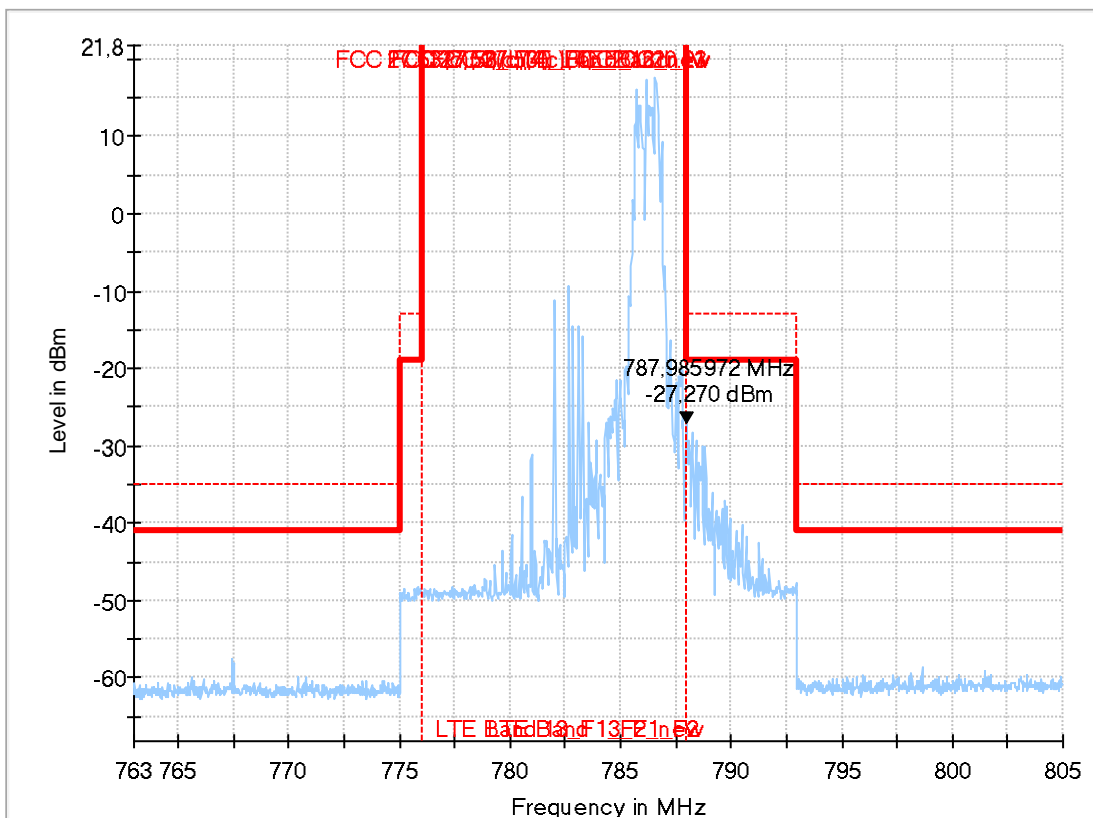
Common Information

Test Description:	Radiated Spurious Emissions LTE Band 13
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 27.53
Comm. Link:	LTE Band 13
Operating Mode:	MS allocated channel xxx (UL = 782MHz)
Exclusionband:	Uplink: 776-787MHz Downlink: -31MHz Offset
Environmental Conditions:	Humidity: 70%rH; Temperature: 20°C
Operator:	MBe

EUT Information

Manufacturer:	CINTERION:
-----	-----
HW version:	V1231_Ver.1
SW version:	MPSS.TH.2.0.2-00256
Serial number:	004402580040446
Connected Interfaces:	Multiband antenna LTE + GNSS (9396828-02, S/N: 50110256), Multiband antenna LTE (9396827-02, S/N 50110255) microphone, loudspeaker, cables
Power Supply:	12VDC
Comments:	-

Full Spectrum



Critical\_Freqs

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
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1.5.2.4. Channel 23255, 16-QAM, 5RBs

9.1304b\_RSE\_R\_Ch23255\_5RBlow\_1.4MHZ\_QAM

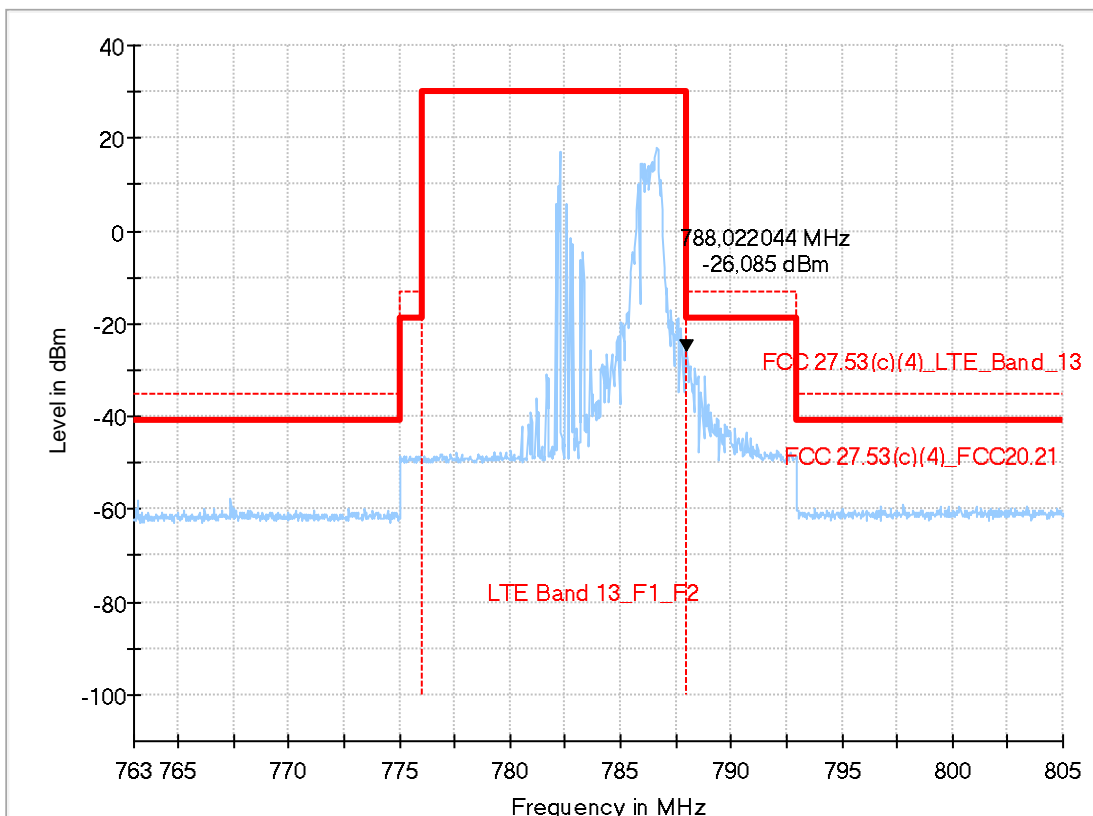
**Common Information**

Test Description:	Radiated Spurious Emissions LTE Band 13
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 27.53
Comm. Link:	LTE Band 13
Operating Mode:	MS allocated channel xxx (UL = 782MHz)
Exclusionband:	Uplink: 776-787MHz Downlink: -31MHz Offset
Environmental Conditions:	Humidity: 70%rH; Temperature: 20°C
Operator:	MBe

**EUT Information**

Manufacturer:	CINTERION:
-----	-----
HW version:	V1231_Ver.1
SW version:	MPSS.TH.2.0.2-00256
Serial number:	004402580040446
Connected Interfaces:	Multiband antenna LTE + GNSS (9396828-02, S/N: 50110256), Multiband antenna LTE (9396827-02, S/N 50110255) microphone, loudspeaker, cables
Power Supply:	12VDC
Comments:	-

Full Spectrum



**Critical\_Freqs**

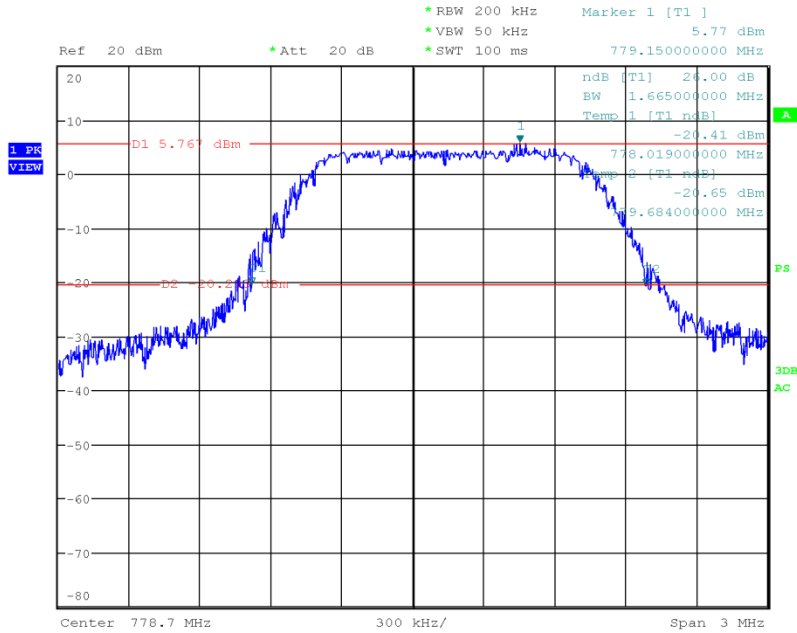
Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
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## 1.6. 26dBc Emission bandwidth

### 1.6.1. LTE Band 13

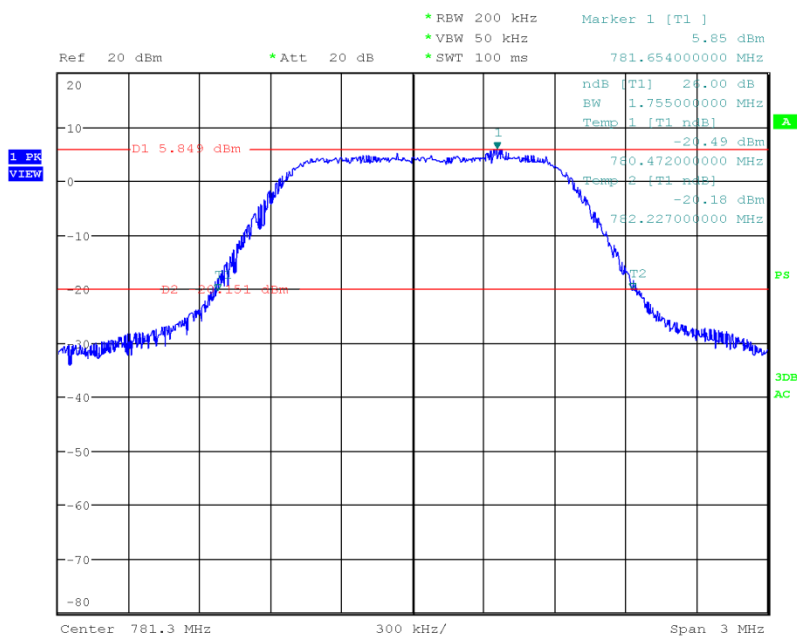
#### 1.6.1.1. BW = 1.4Mhz

QPSK-Modulation



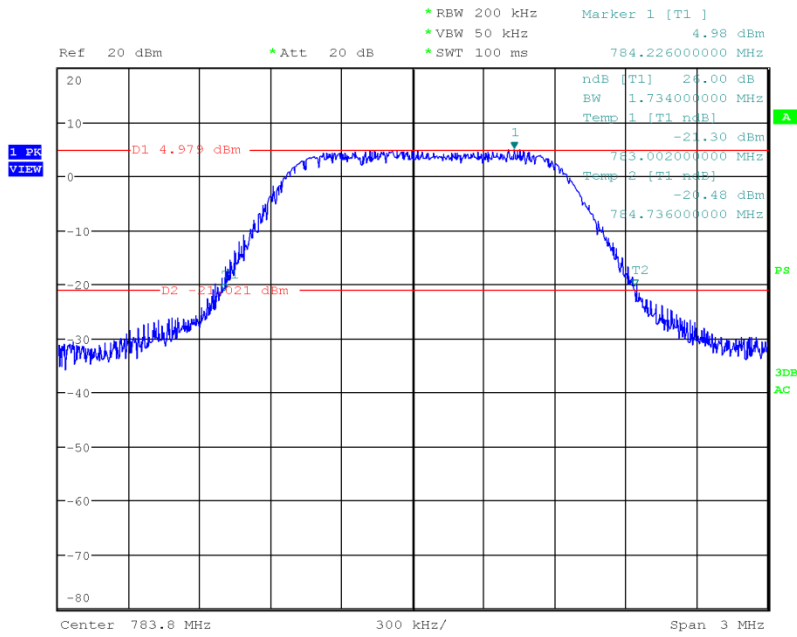
Date: 28.JUN.2017 11:22:55

Diagram 34\_1301\_26 dB



Date: 28.JUN.2017 11:25:16

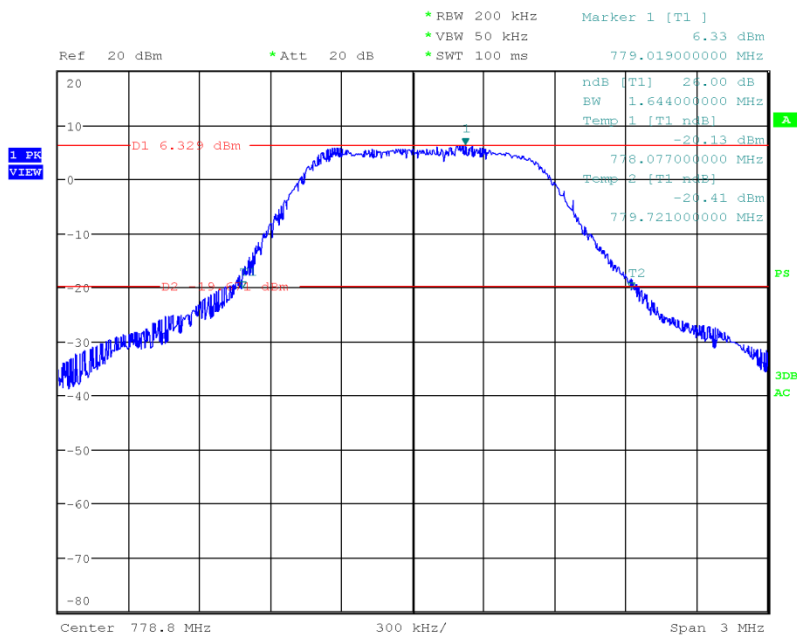
Diagram 34\_1302\_26 dB



Date: 28.JUN.2017 11:29:09

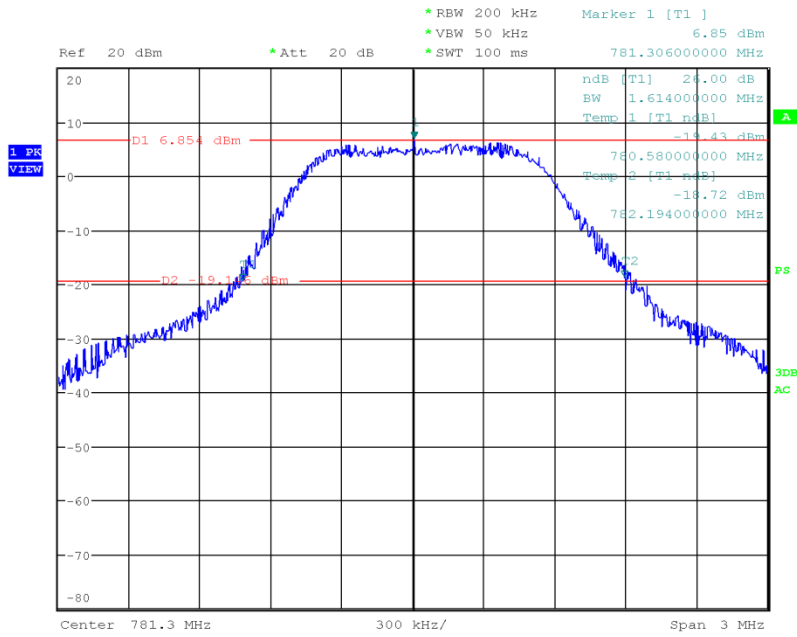
Diagram 34\_1303\_26 dB

### 16-QAM-Modulation



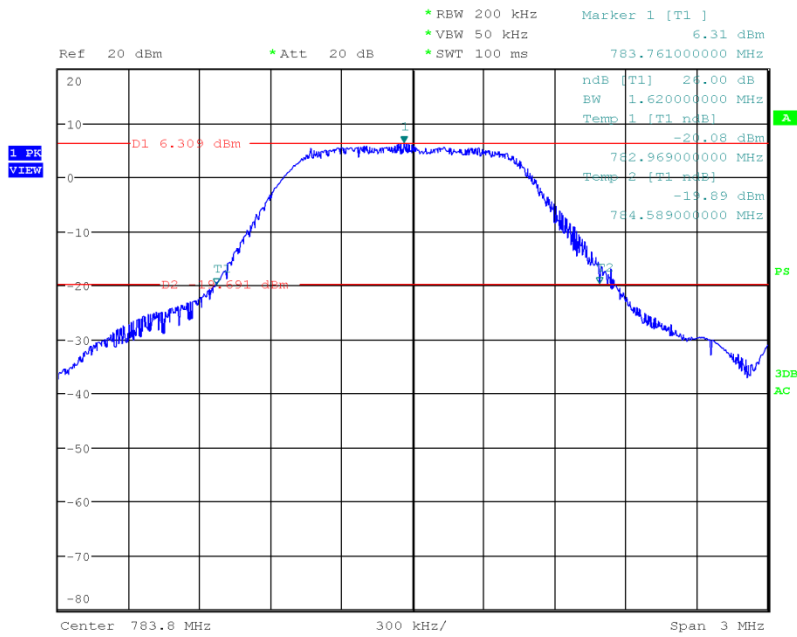
Date: 28.JUN.2017 11:38:56

Diagram 34\_1307\_26 dB



Date: 28.JUN.2017 11:40:29

Diagram 34\_1308\_26 dB



Date: 28.JUN.2017 11:42:49

Diagram 34\_1309\_26 dB

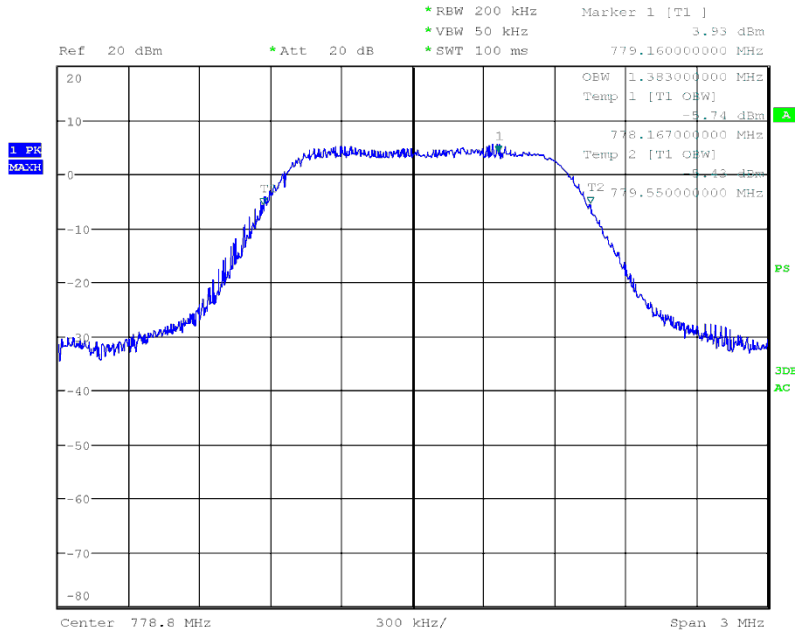




## 1.7. 99% occupied bandwidth

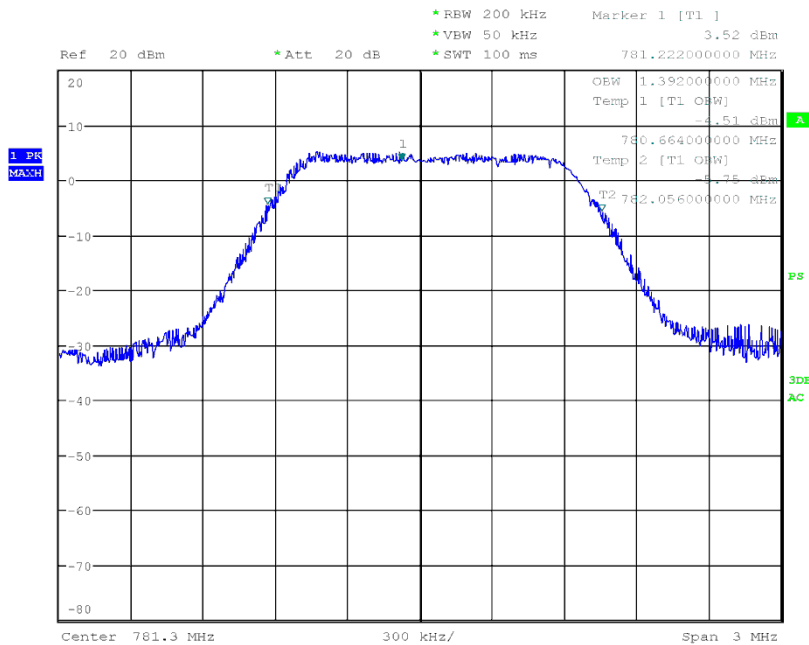
### 1.7.0.1. BW = 1.4Mhz

#### QPSK-Modulation



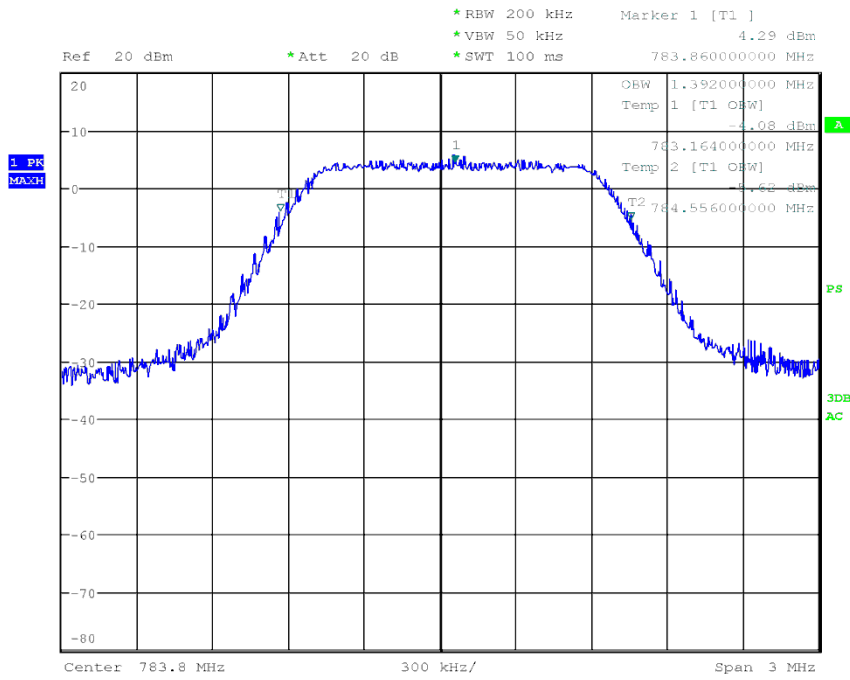
Date: 28.JUN.2017 12:35:57

Diagram 35\_1301



Date: 28.JUN.2017 12:39:52

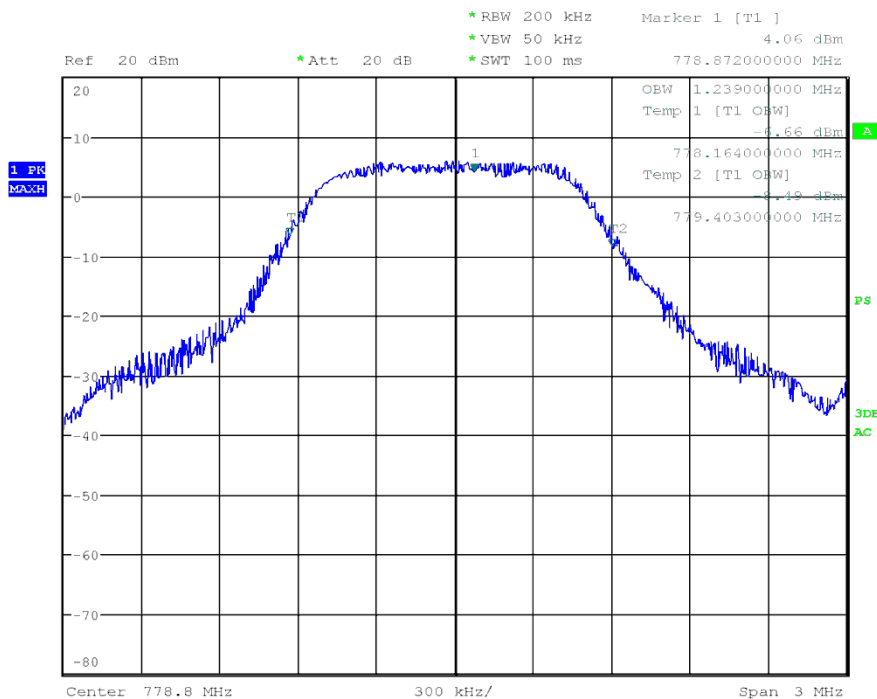
Diagram 35\_1302



Date: 28.JUN.2017 12:44:40

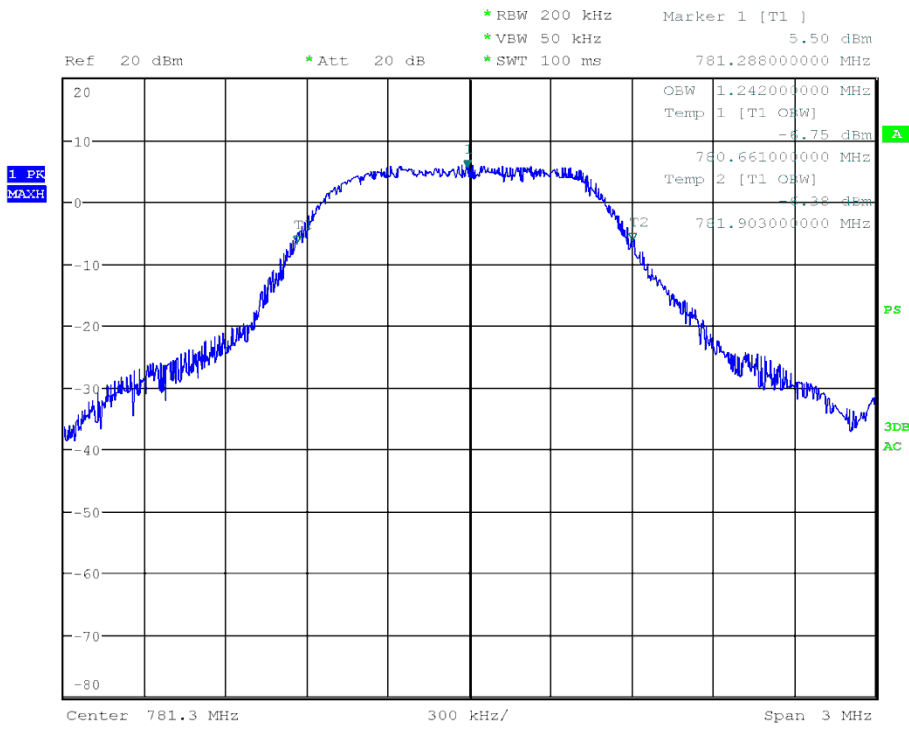
Diagram 35\_1303

16-QAM-Modulation



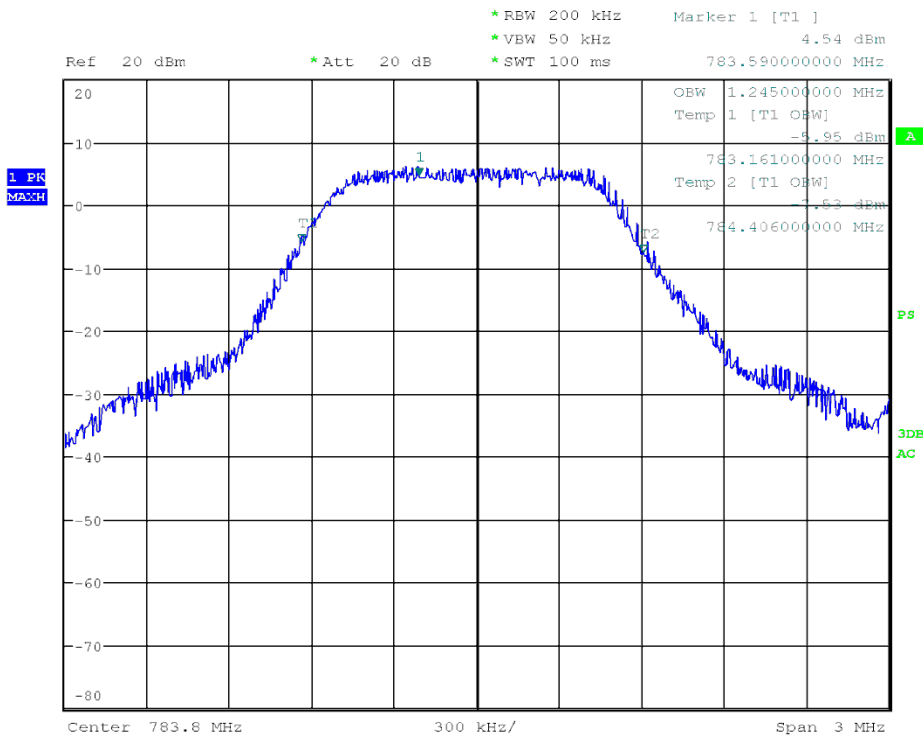
Date: 28.JUN.2017 13:09:30

Diagram 35\_1307



Date: 28.JUN.2017 13:11:01

Diagram 35\_1308



Date: 28.JUN.2017 13:12:52

Diagram 35\_1309

### 1.8. Spurious emissions conducted (LTE Band 13)

#### 1.8.1. Channel Low - QPSK

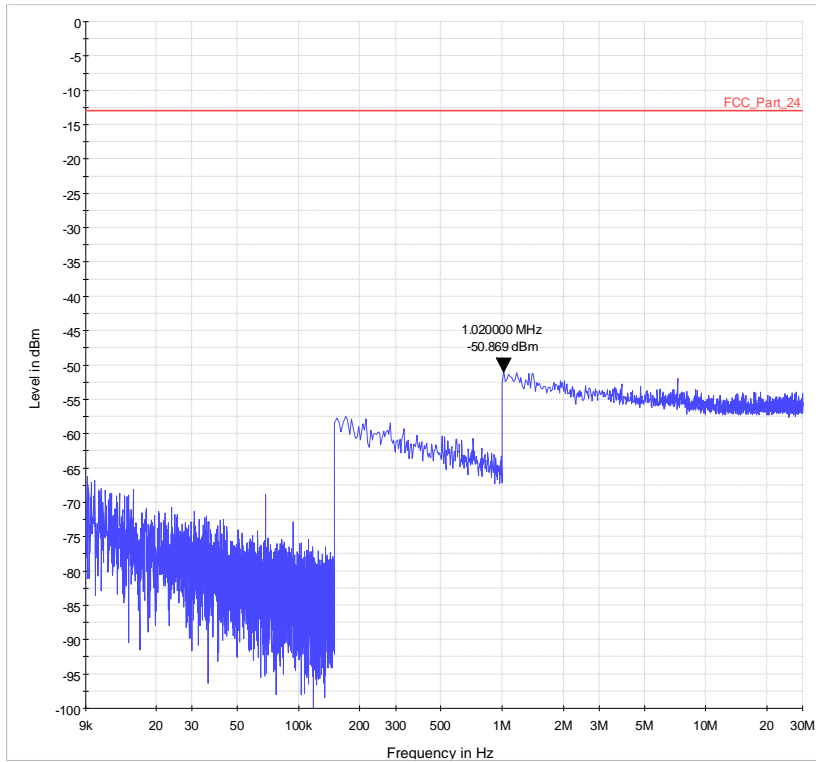


Diagram 36.1300a\_RSE\_C\_Ch23205\_1.4MHZ\_QPSK\_1RBlow

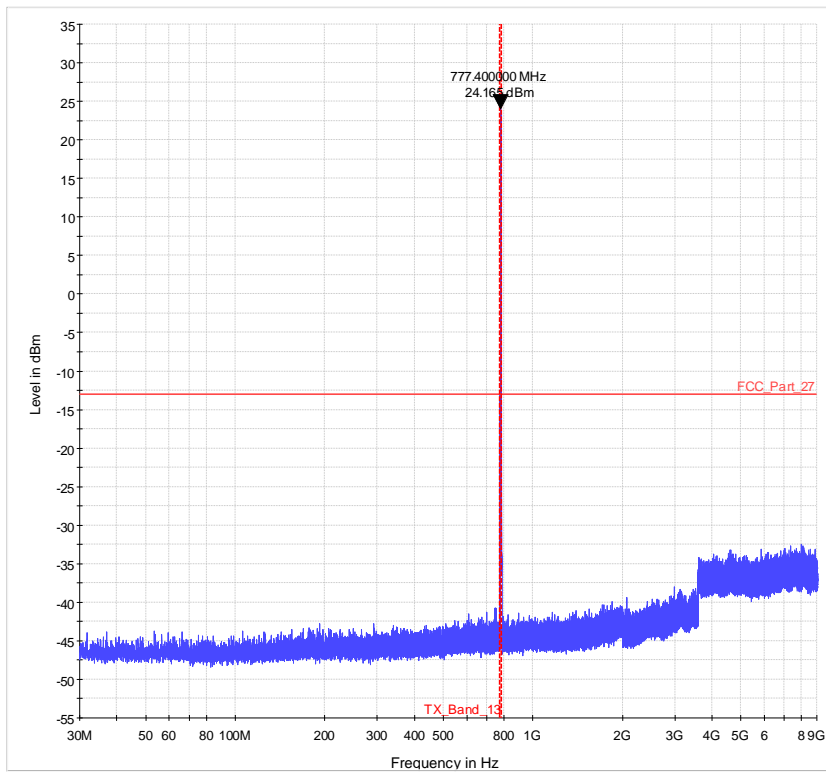


Diagram 36.1301a\_RSE\_C\_Ch23205\_1.4MHZ\_QPSK\_1RBlow

### 1.8.2. Channel Mid - QPSK

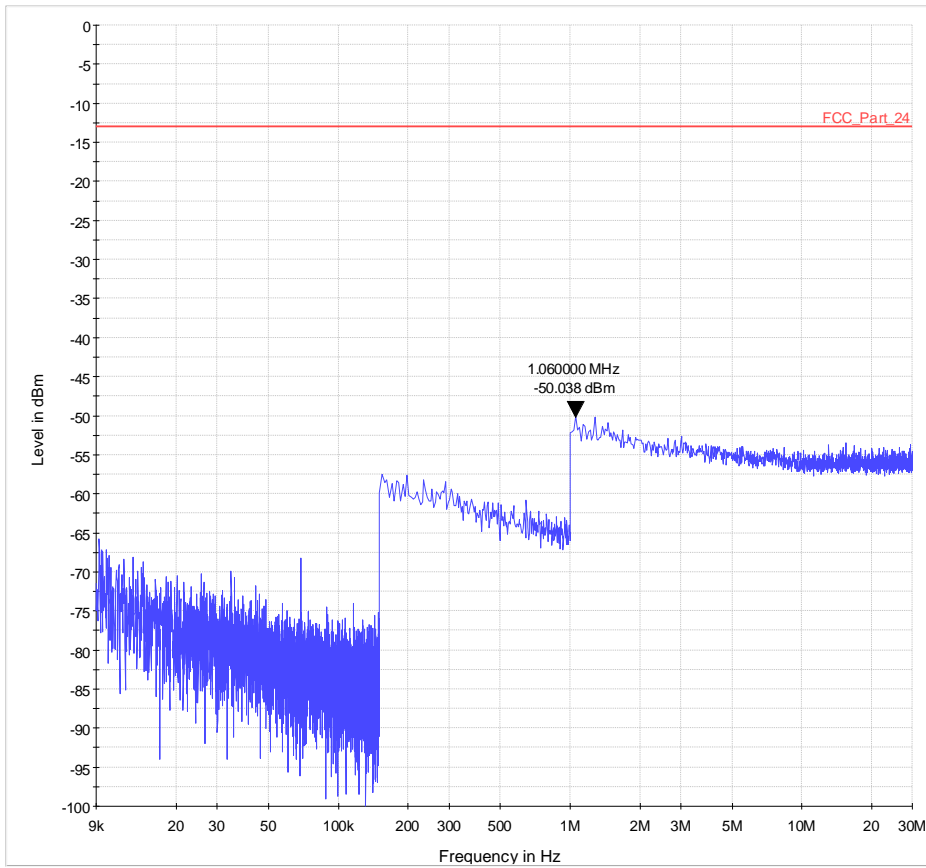


Diagram 36.1302a\_RSE\_C\_Ch23230\_1.4MHZ\_QPSK\_1RBlow

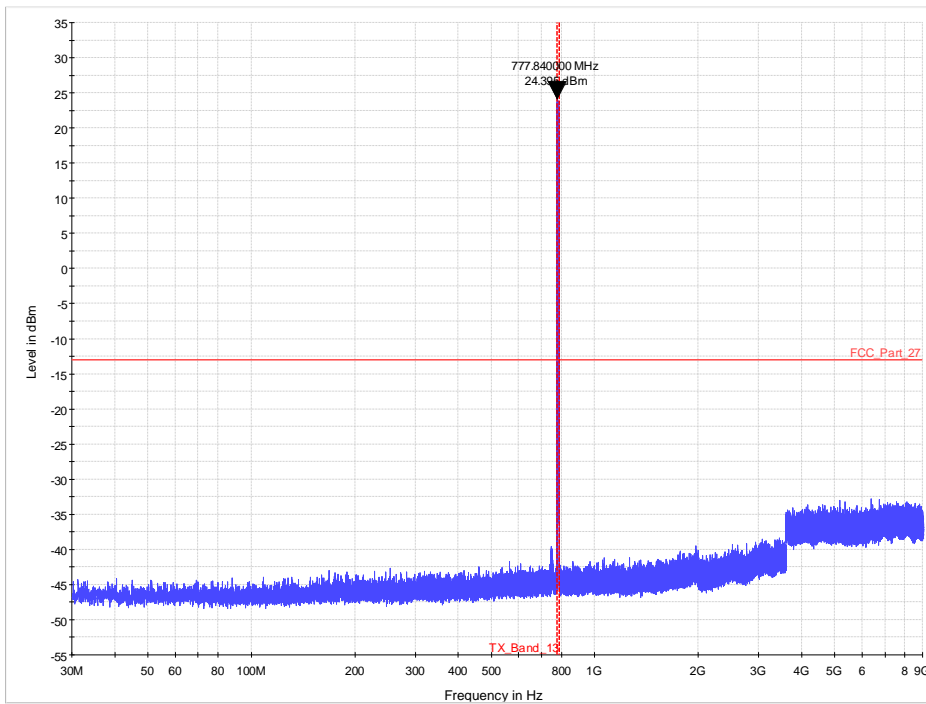


Diagram 36.1303a\_RSE\_C\_Ch23230\_1.4MHZ\_QPSK\_1RBlow

### 1.8.3. Channel High - QPSK

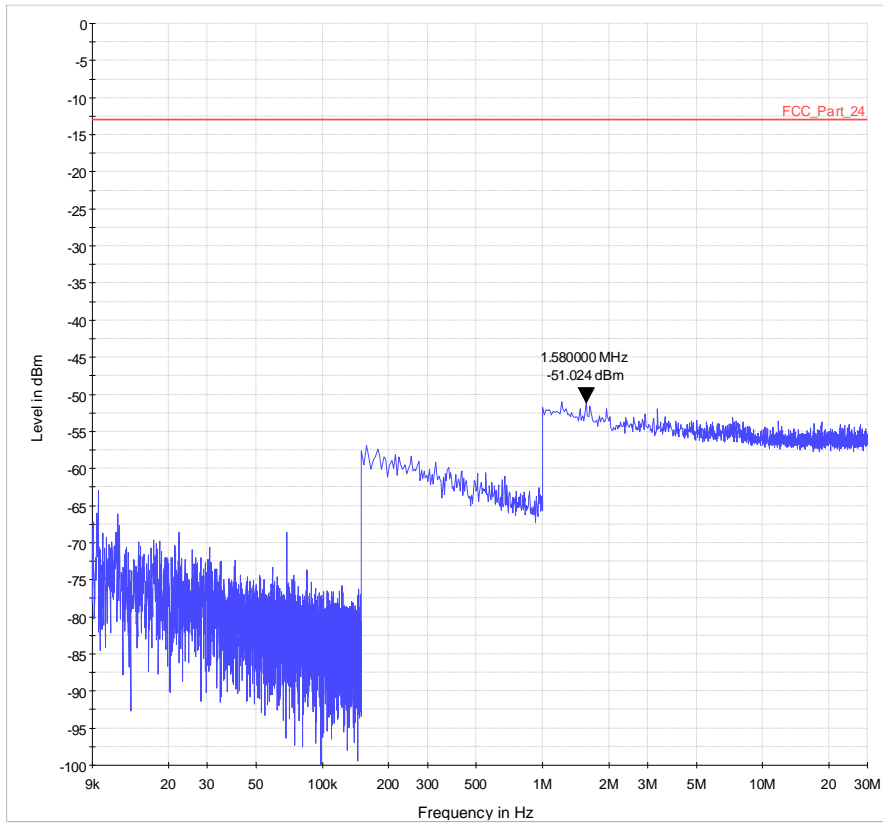


Diagram 36.1304a\_RSE\_C\_Ch23255\_1.4MHZ\_QPSK\_1RBlow

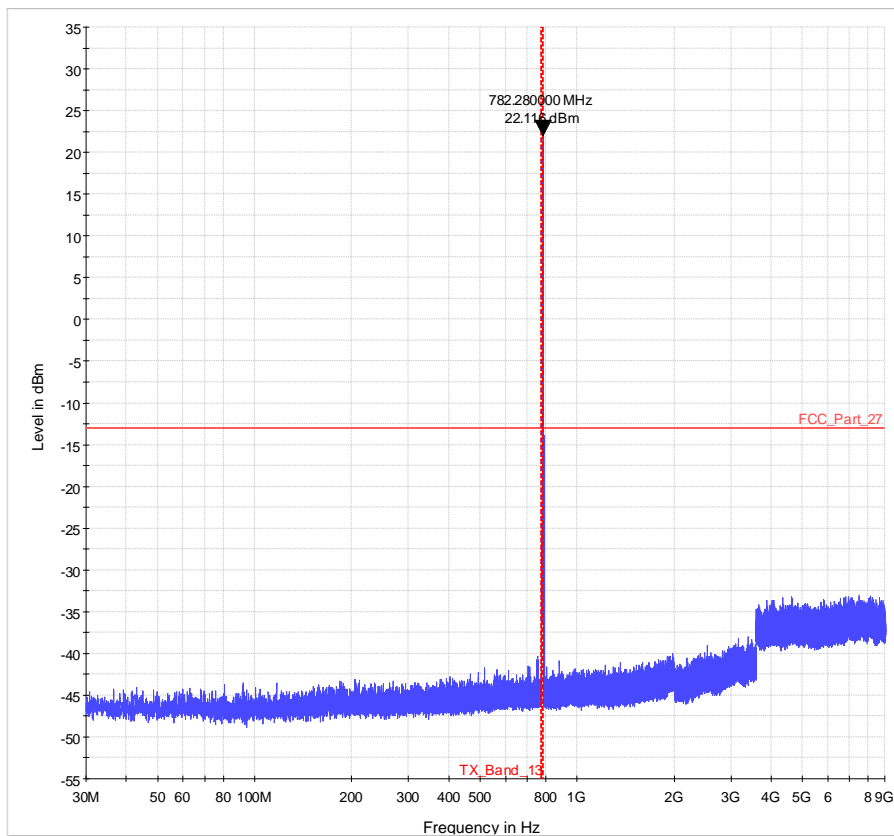


Diagram 36.1305a\_RSE\_C\_Ch23255\_1.4MHZ\_QPSK\_1RBlow

### 1.8.4. Channel Low – 16QAM

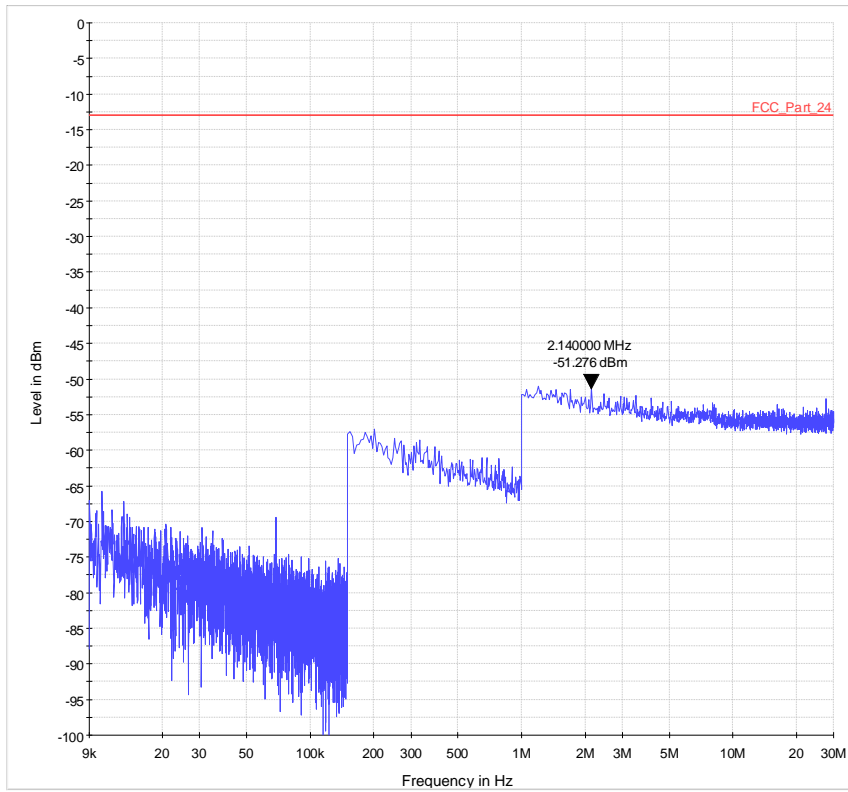


Diagram 36.1300b\_RSE\_C\_Ch23205\_1.4MHZ\_QAM\_1RBlow

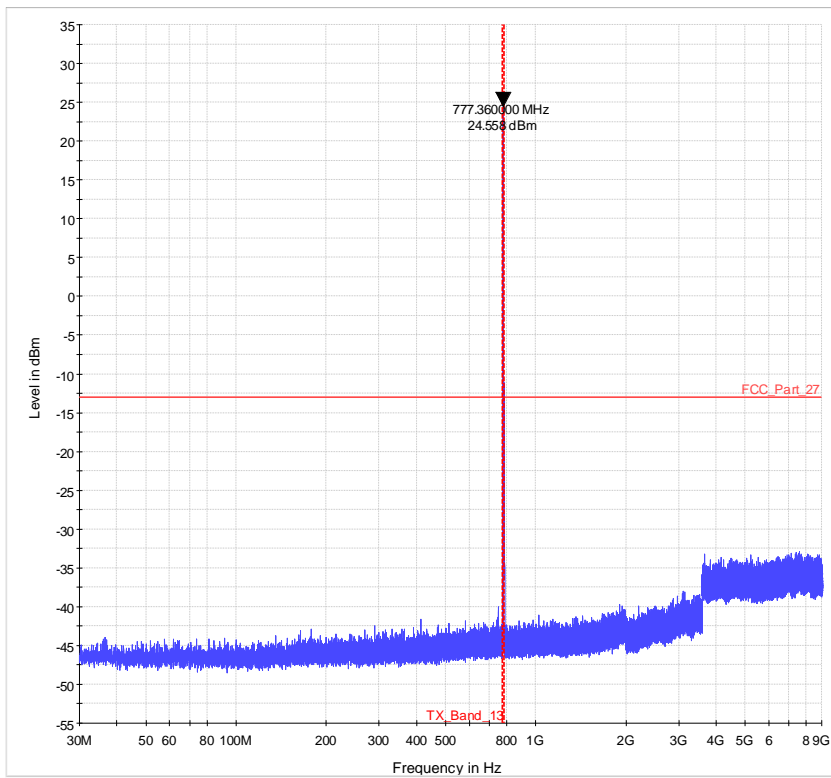


Diagram 36.1301b\_RSE\_C\_Ch23205\_1.4MHZ\_QAM\_1RBlow



### 1.8.5. Channel Mid – 16QAM

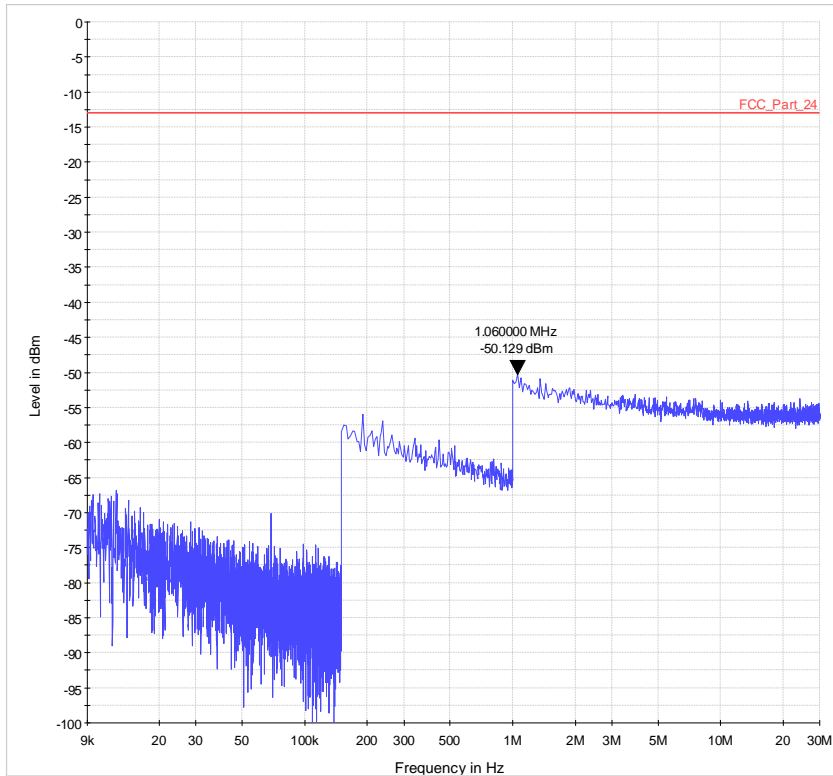


Diagram 36.1302b\_RSE\_C\_Ch23230\_1.4MHZ\_QAM\_1RBlow

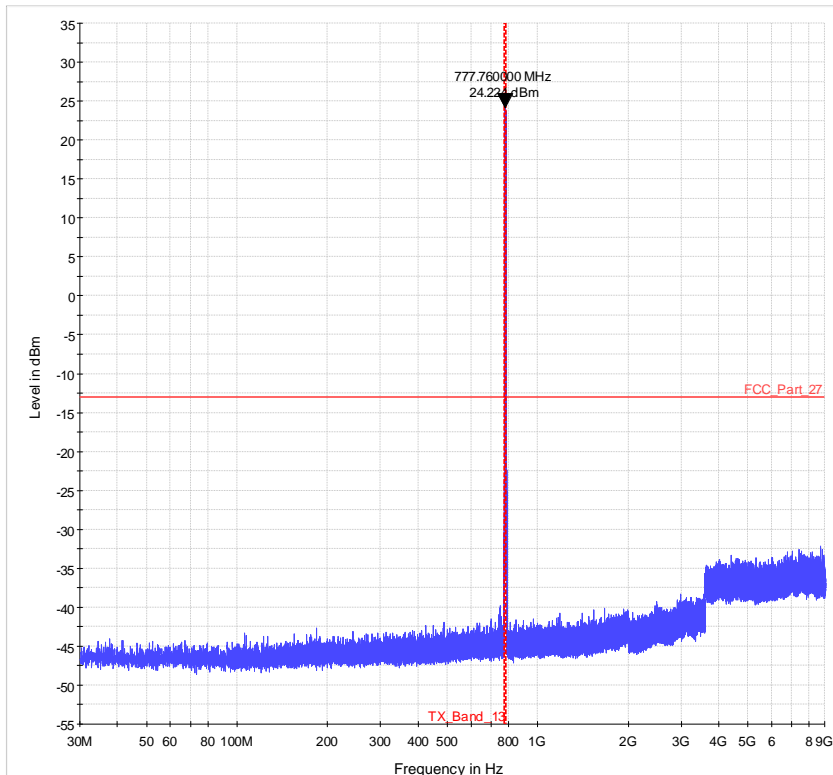


Diagram 36.1303b\_RSE\_C\_Ch23230\_1.4MHZ\_QAM\_1RBlow

### 1.8.6. Channel High – 16QAM

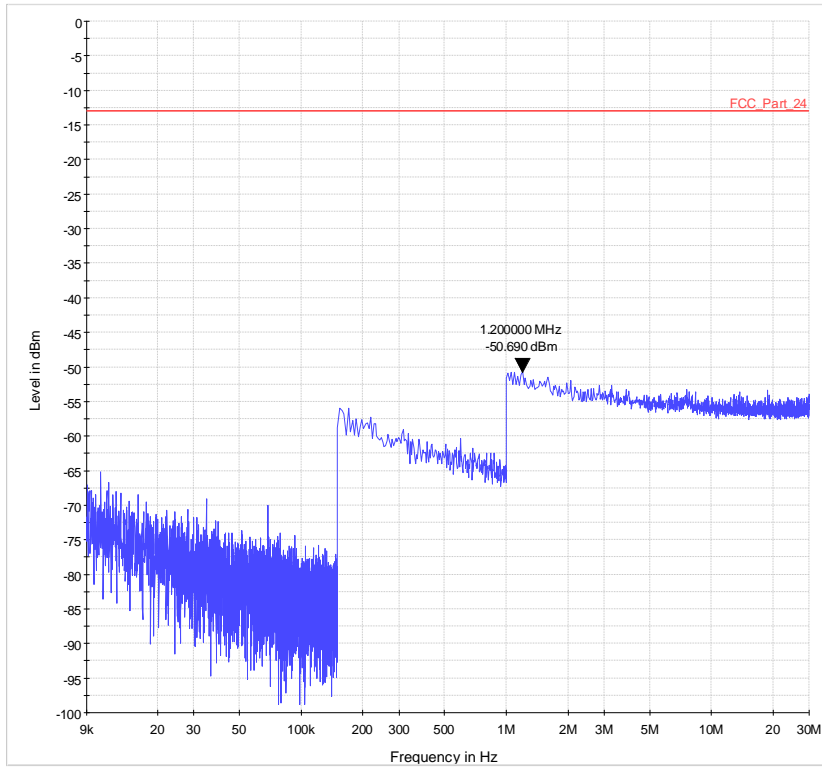


Diagram 36.1304b\_RSE\_C\_Ch23255\_1.4MHZ\_QAM\_1RBlow

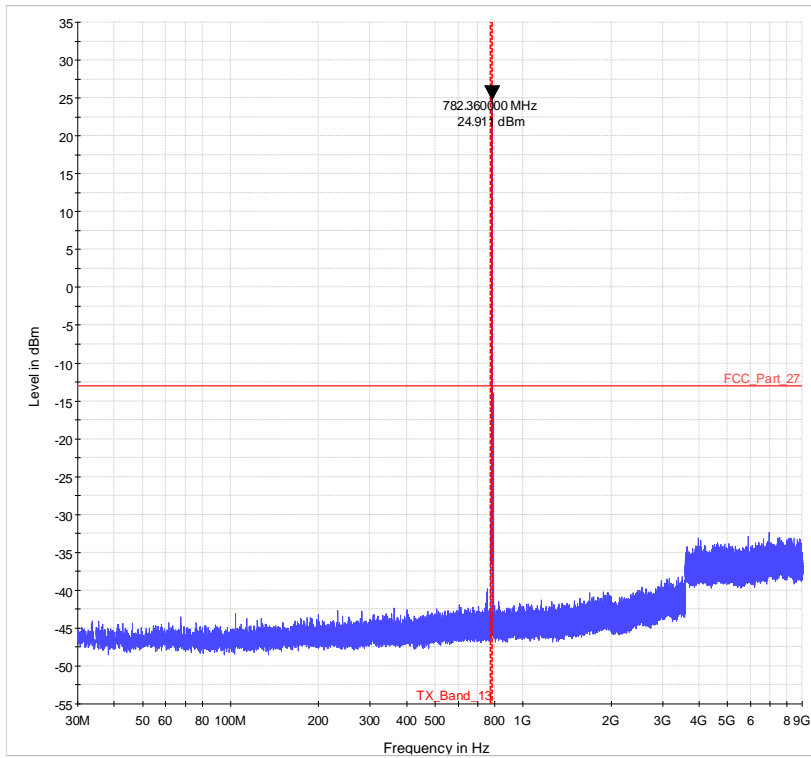


Diagram 36.1305b\_RSE\_C\_Ch23255\_1.4MHZ\_QPSK\_1RBlow

### 1.9. Conducted emissions – band - edge (LTE Band 13)

#### 1.10. Signal bandwidth 1.4Mhz

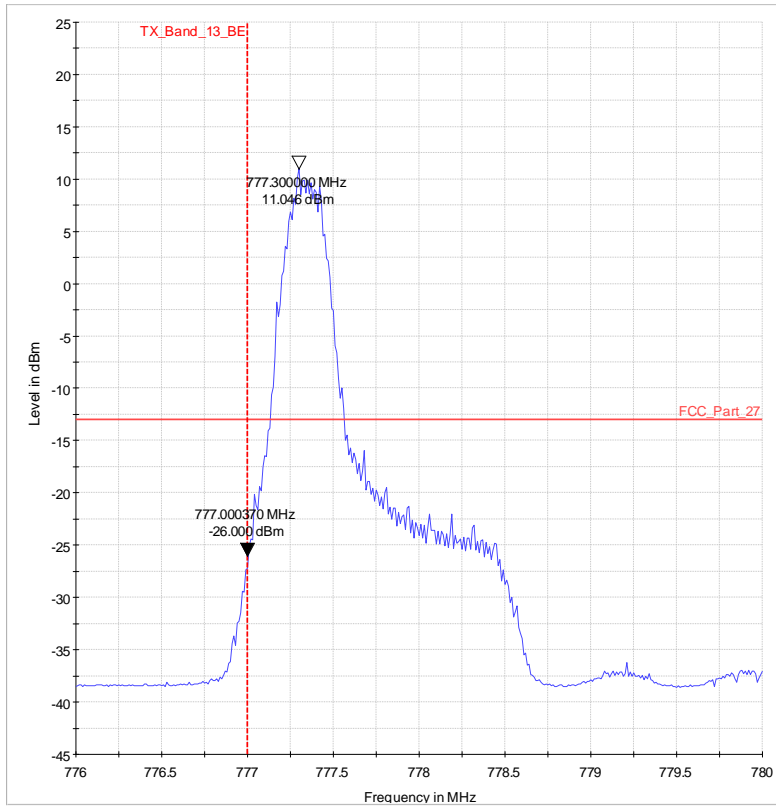


Diagram 37.1305a\_Ch23205\_1.4MHZ\_1RB\_low\_QPSK

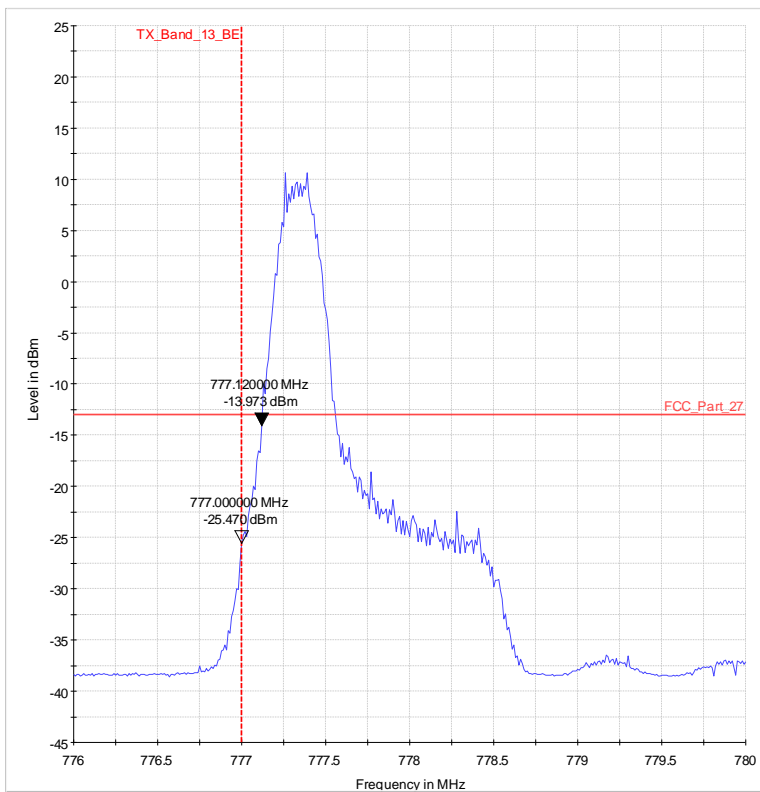


Diagram 37.1305b\_Ch23205\_1.4MHZ\_1RB\_low\_QAM

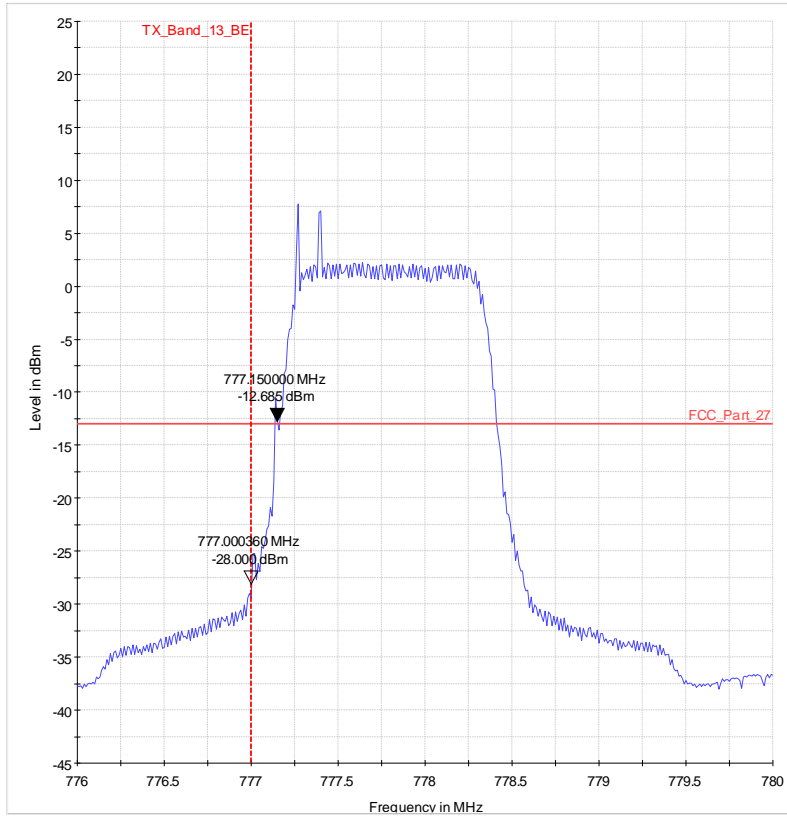


Diagram 37.1306a\_Ch23205\_1.4MHZ\_6RB\_low\_QPSK

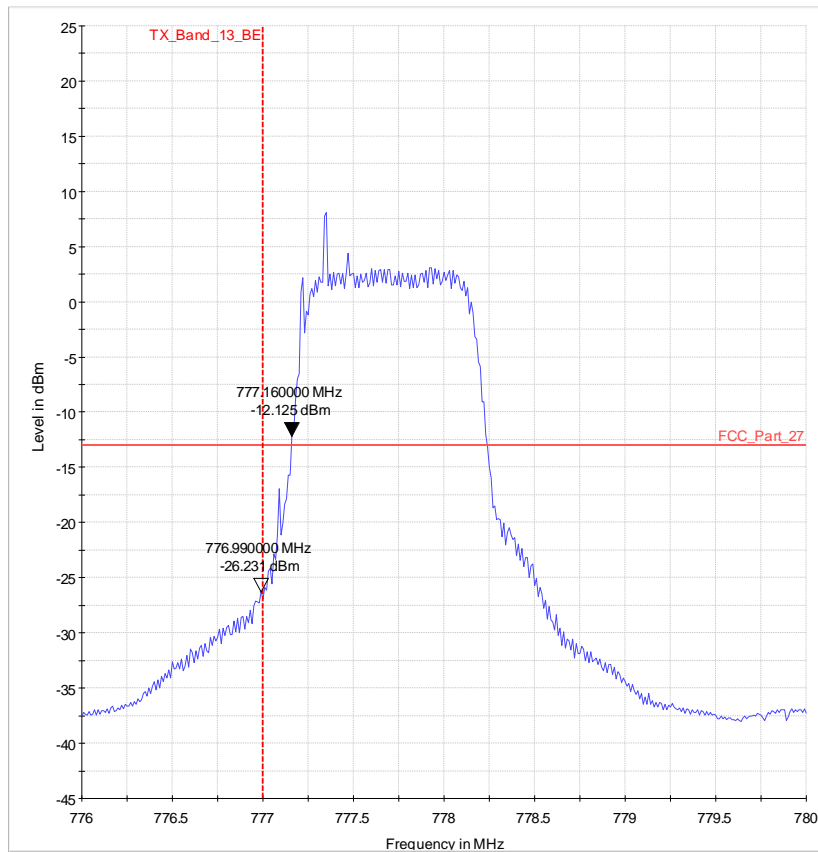


Diagram 37.1306b\_Ch23205\_1.4MHZ\_5RB\_low\_QAM

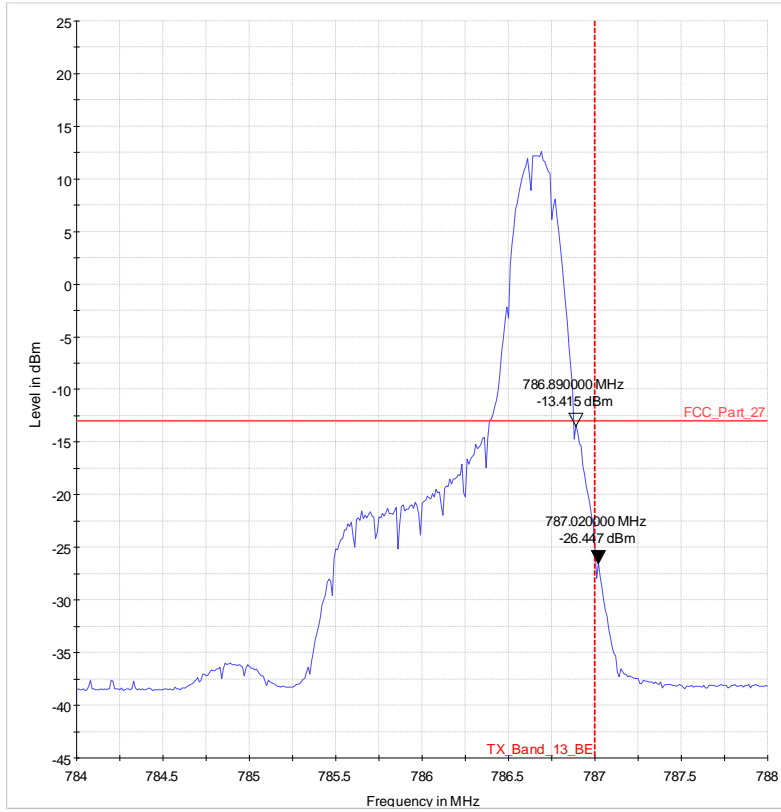


Diagram 37.1309a\_Ch23255\_1.4MHZ\_1RB\_high\_QPSK

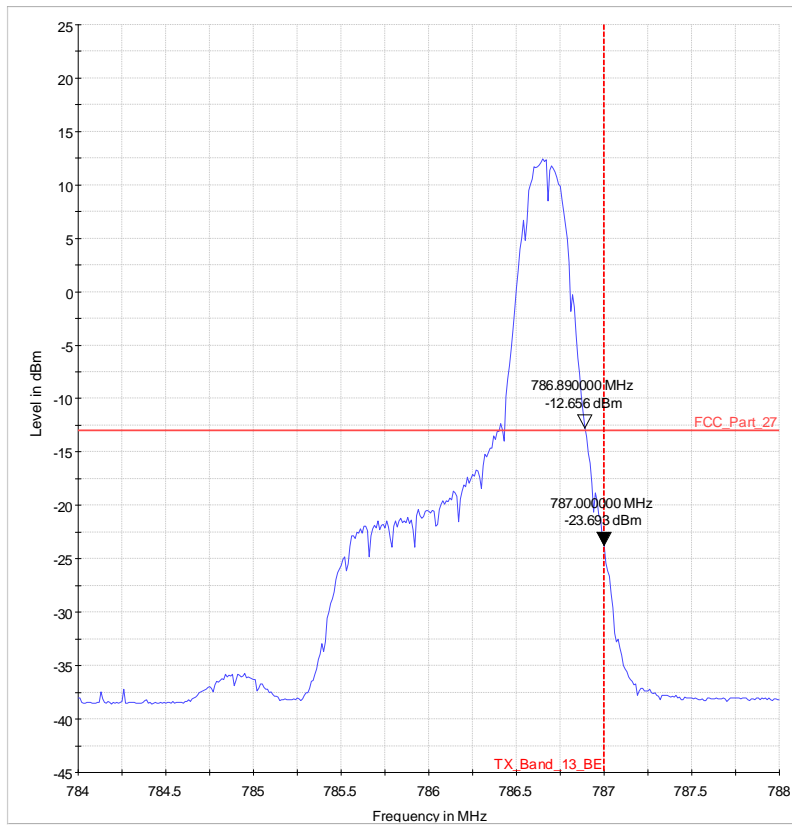


Diagram 37.1309b\_Ch23255\_1.4MHZ\_1RB\_high\_QAM

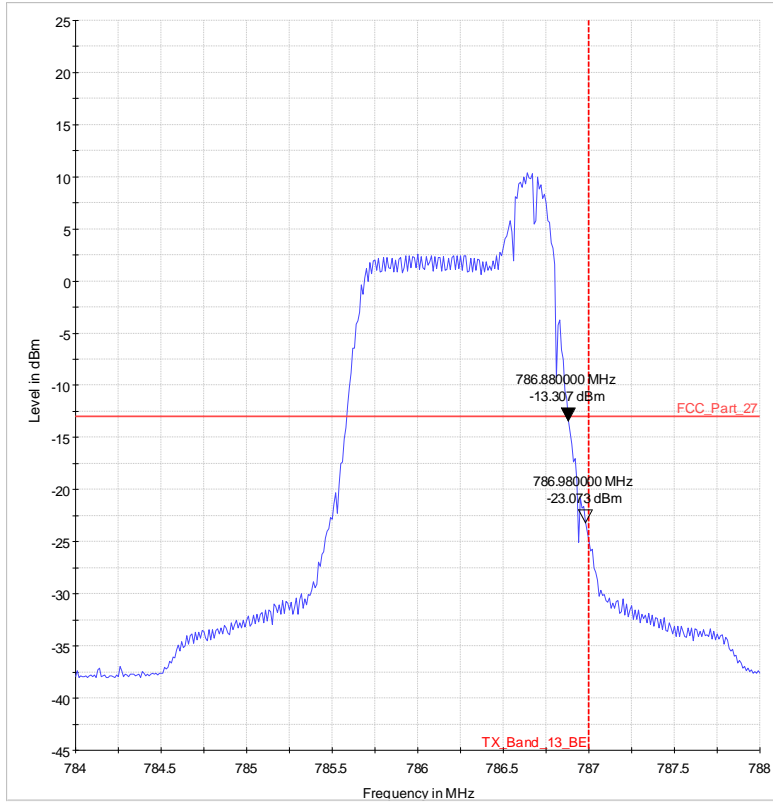


Diagram 37.1310a\_Ch23255\_1.4MHZ\_6RB\_high\_QPSK

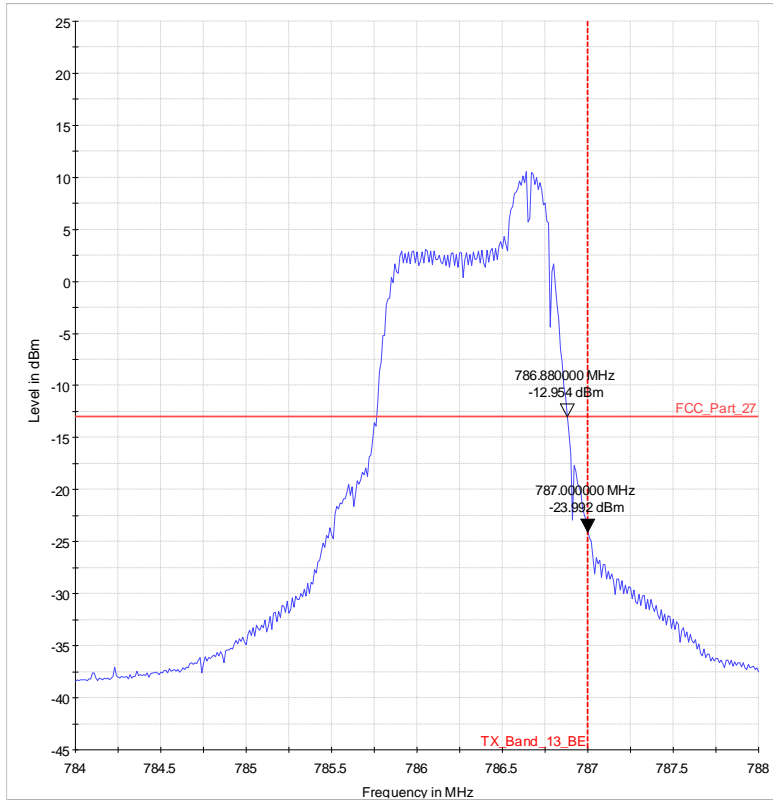


Diagram 37.1310b\_Ch23255\_1.4MHZ\_5RB\_high\_QAM

### 1.10.0.1. Signal bandwidth 1.4Mhz

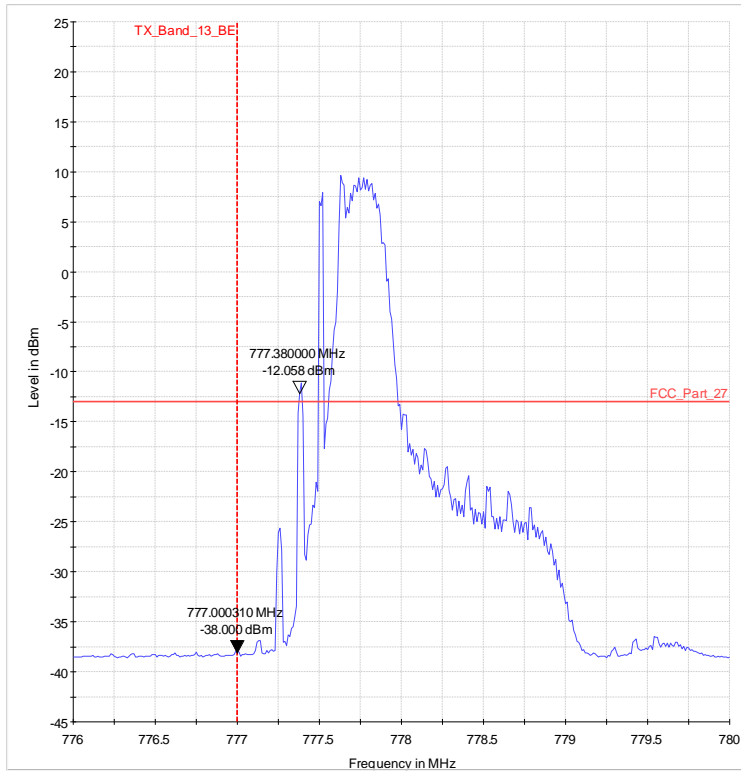


Diagram 37.1307a\_Ch23230\_1.4MHZ\_1RB\_low\_QPSK

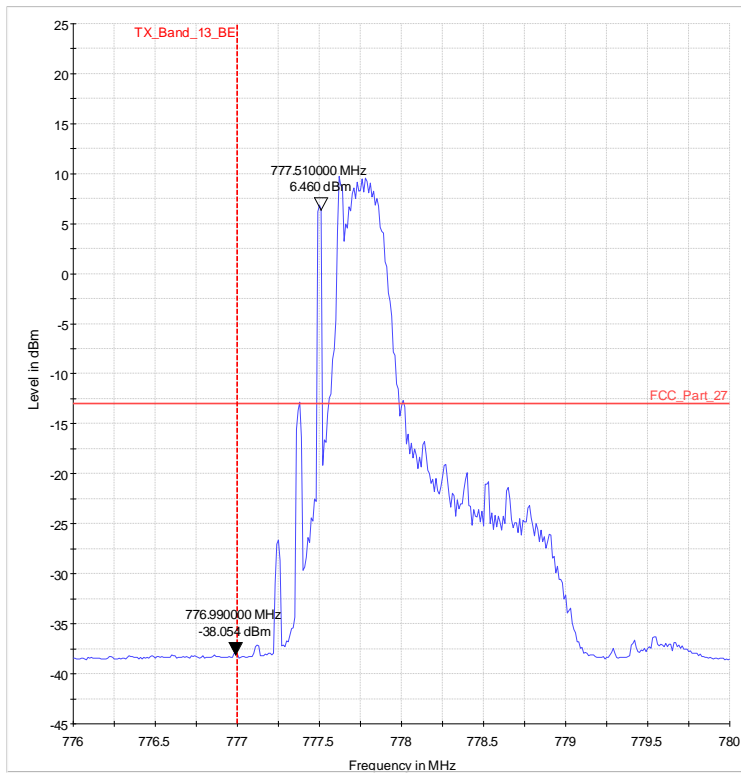


Diagram 37.1307b\_Ch23230\_1.4MHZ\_1RB\_low\_QAM

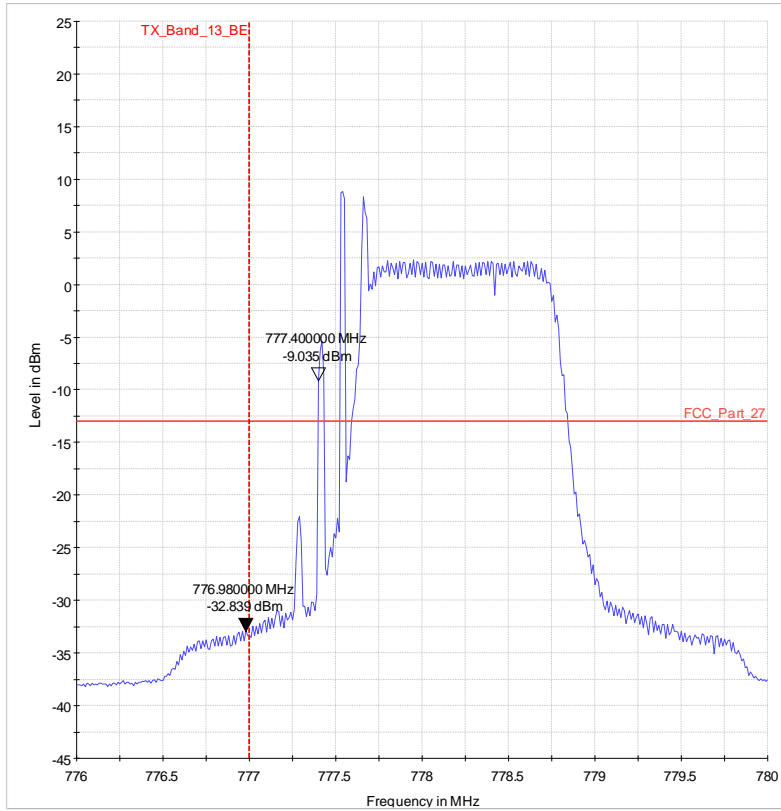


Diagram 37.1308a\_Ch23230\_1.4MHZ\_6RB\_low\_QPSK

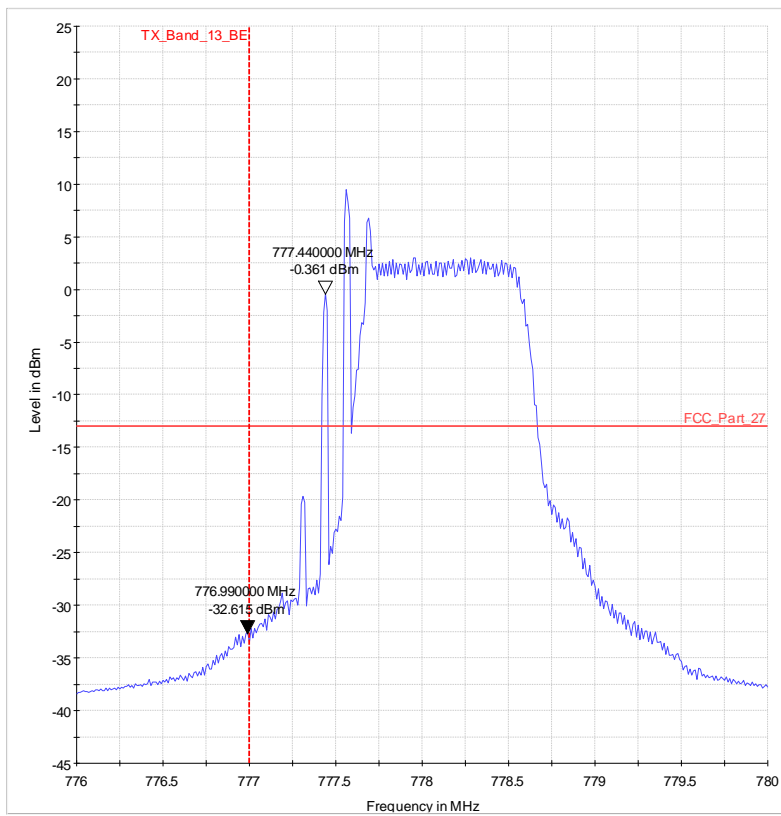


Diagram 37.1308b\_Ch23230\_1.4MHZ\_5RB\_low\_QAM



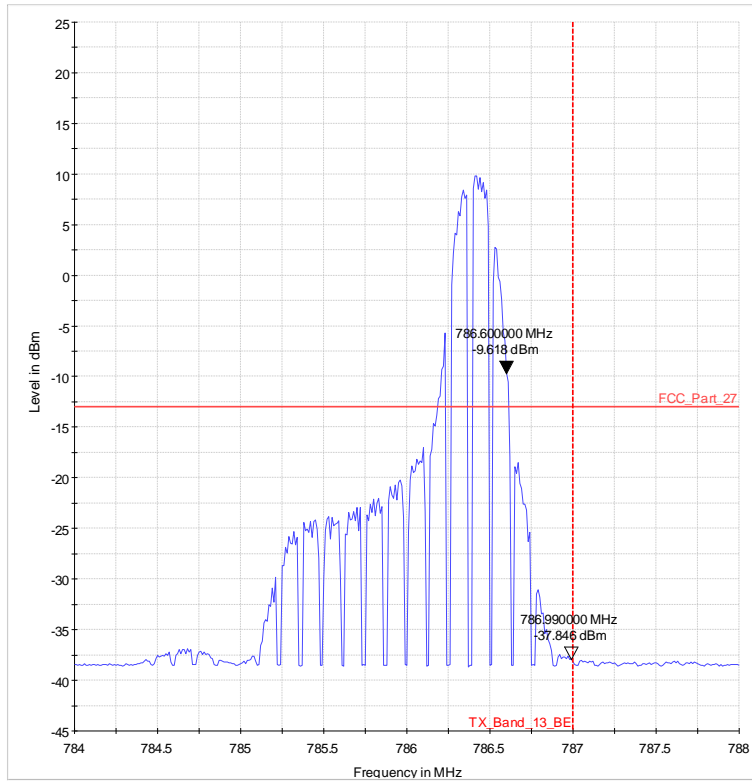


Diagram 37.1311a\_Ch23230\_1.4MHZ\_1RB\_high\_QPSK

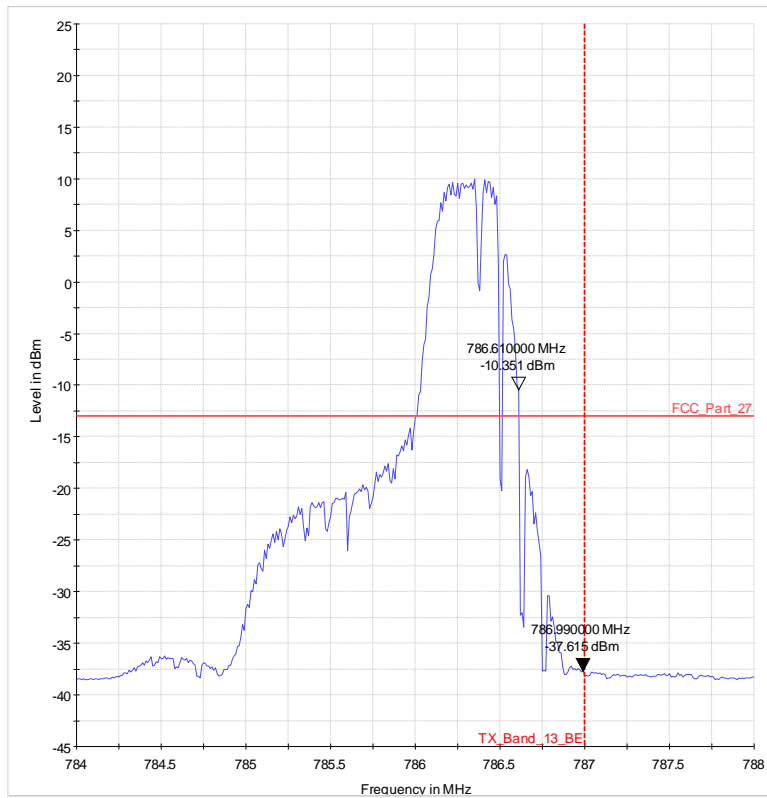


Diagram 37.1311b\_Ch23230\_1.4MHZ\_1RB\_high\_QAM

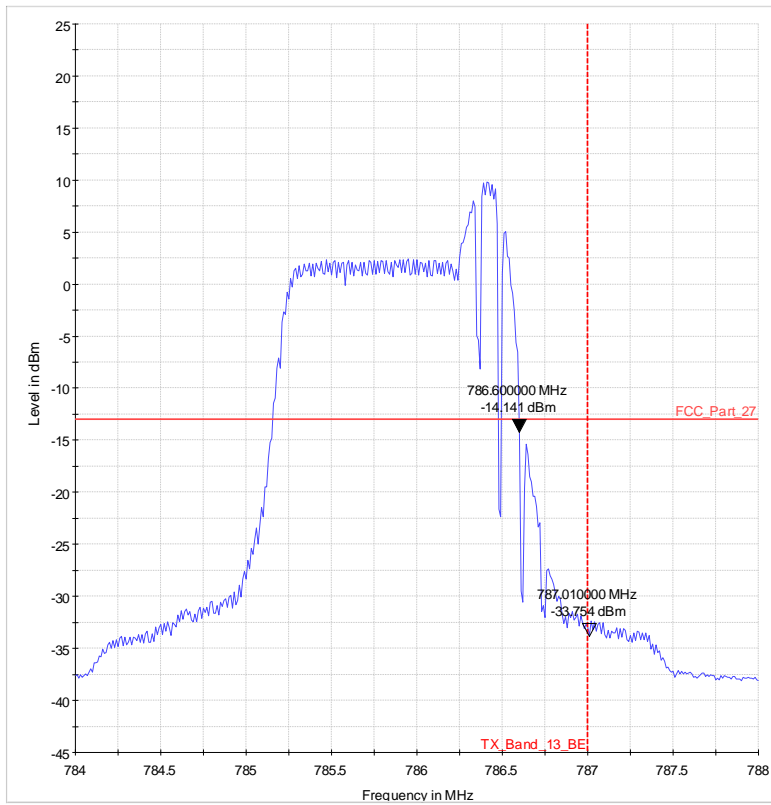


Diagram 37.1312a\_Ch23230\_1.4MHZ\_6RB\_high\_QPSK

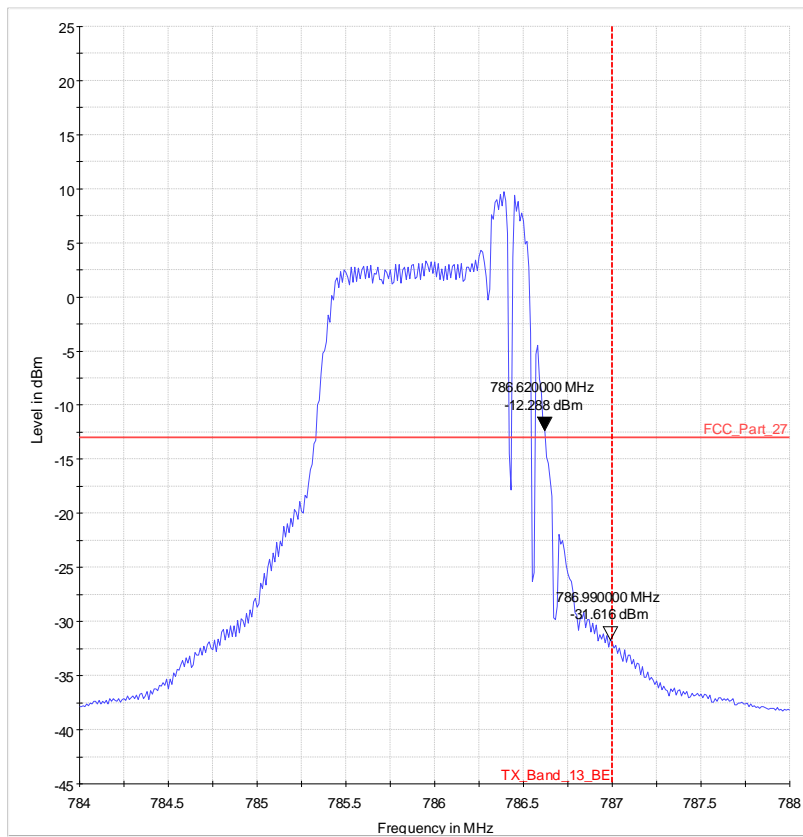


Diagram 37.1312b\_Ch23230\_1.4MHZ\_5RB\_high\_QAM