

Annex 1: Measurement diagrams to
PARTIAL TEST REPORT
No.: 18-1-0097201T19a_C03

According to:
Title 47 CFR, Chapter I
FCC Regulations, Subchapter B
Part 22, Part 24, Part 27

ISED-Regulations RSS-132 Issue 3, RSS-133 Issue 6,
RSS-139 Issue 3, RSS-Gen Issue 5
RSS-130 Issue 2

for

Actia Nordic AB

103360002
Telematics Device

FCC-ID: 2AGKK103360002
ISED-ID: 20839-103360002

Laboratory Accreditation
 Deutsche Akkreditierungsstelle D-PL-12047-01-01 D-PL-12047-01-03 D-PL-12047-01-04
accredited according to DIN EN ISO/IEC 17025:2018
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Table of contents

1. MEASUREMENT DIAGRAMS.....	3
1.1. Conducted Power Verification.....	3
1.2. Magnetic field emissions radiated (LTE Band 12)	4
1.3. Spurious emissions radiated (LTE Band 12)	8
1.4. Radiated emissions on LTE B12 band-edge, EUT Internal Antenna.....	12
1.5. Radiated emissions on LTE B12 band-edge, EUT External Antenna	16

1. Measurement diagrams

1.1. Conducted Power Verification

EUT Information

Manufacturer:	Actia Nordic AB
Product:	103360002
Product type:	Telematics Device
SW version:	1
HW version:	H1
Serial number:	AN103350102B163
Power Supply:	13,8 V DC

LTE Band 12					LTE Band 12			
Signal-BW	QPSK		16-QAM		QPSK		16-QAM	
	Peak	RMS	Peak	RMS	Peak	RMS	Peak	RMS
1.4	26.51	22.31	26.38	22.03	26.51	22.48	26.38	22.15
3	26.34	21.31	26.20	22.15				
5	26.23	22.48	26.20	22.04				
10	26.15	20.00	26.18	20.00				

Remarks:

- Resource Block(RB) allocation setting taken from module report as worst case.
- Worst case found RB# 1, Start RB# High(24), please see module report(link given below)

1.2. Magnetic field emissions radiated (LTE Band 12)

2.01_Magnetic_Emission_EUT_laying

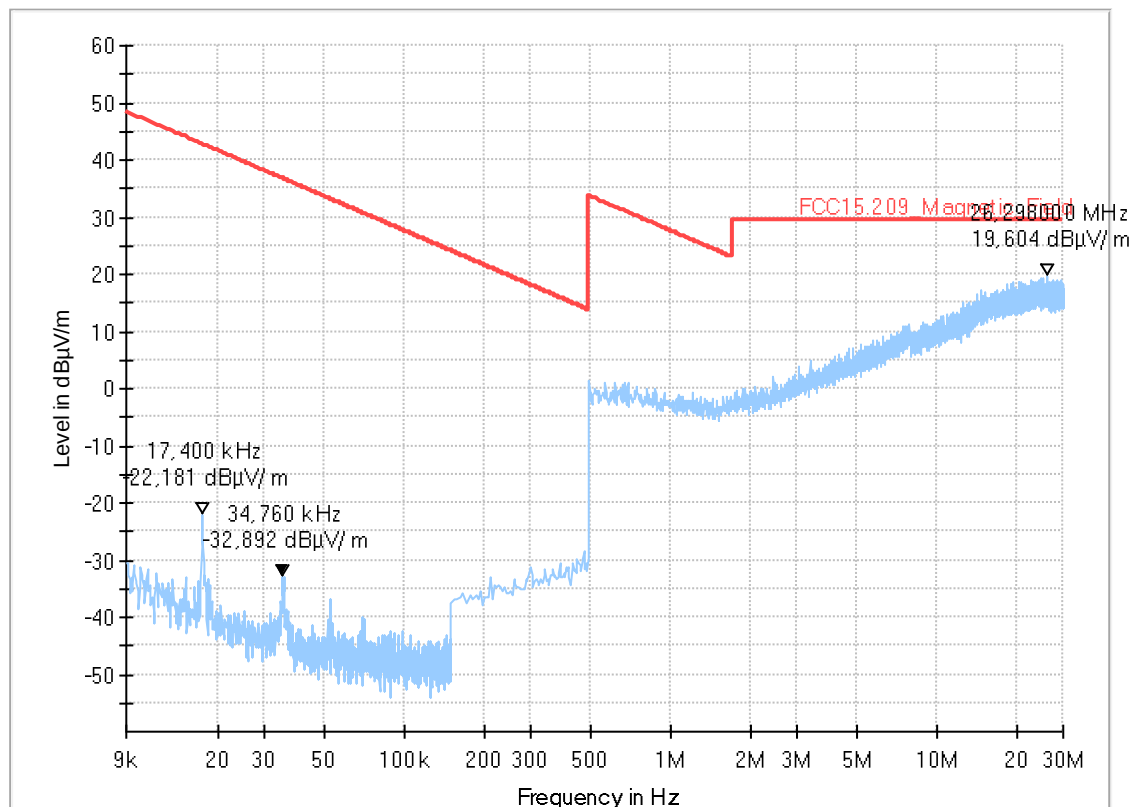
Common Information

Test Description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test Site Location:	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
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarization
Used Filter:	bypass
Test Standard:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	LKu
Operating Mode:	1
Comment 1:	Internal Antenna
Environmental Conditions::	Humidity : 40%rH; Temperature: 20°C
EUT Setup:	laying
Verdict:	Passed

EUT Information

PMT number:	18-1-00972S20
Manufacturer:	Actia Nordic AB
Product:	103360002
Product type:	Telematics Device
SW version:	1
HW version:	H1
Serial number:	AN103350102B160
Power Supply:	13,8 V DC

Full Spectrum



2.02_Magnetic_Emission_EUT_standing

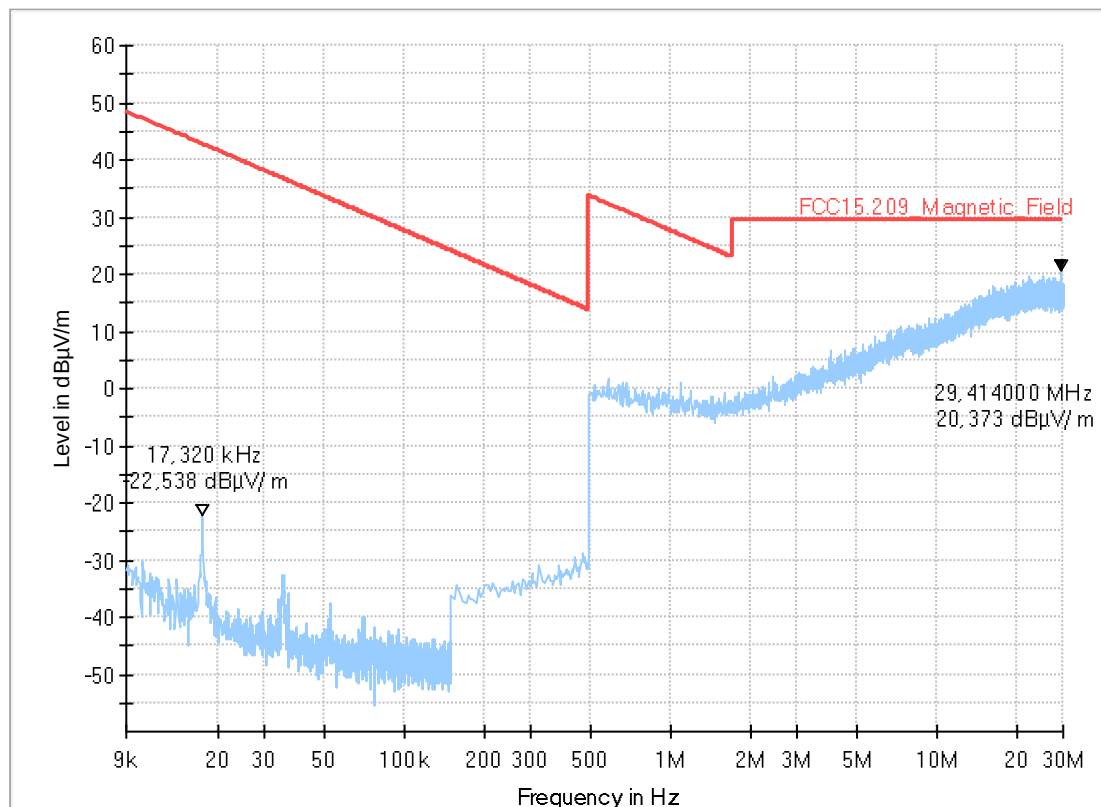
Common Information

Test Description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test Site Location:	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
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarization
Used Filter:	bypass
Test Standard:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	LKu
Operating Mode:	1
Comment 1:	Internal Antenna
Environmental Conditions:	Humidity : 40%rH; Temperature: 20°C
EUT Setup:	standing
Verdict:	Passed

EUT Information

please see the Diagram 2.01

Full Spectrum



2.03_Magnetic_Emission_EUT_laying

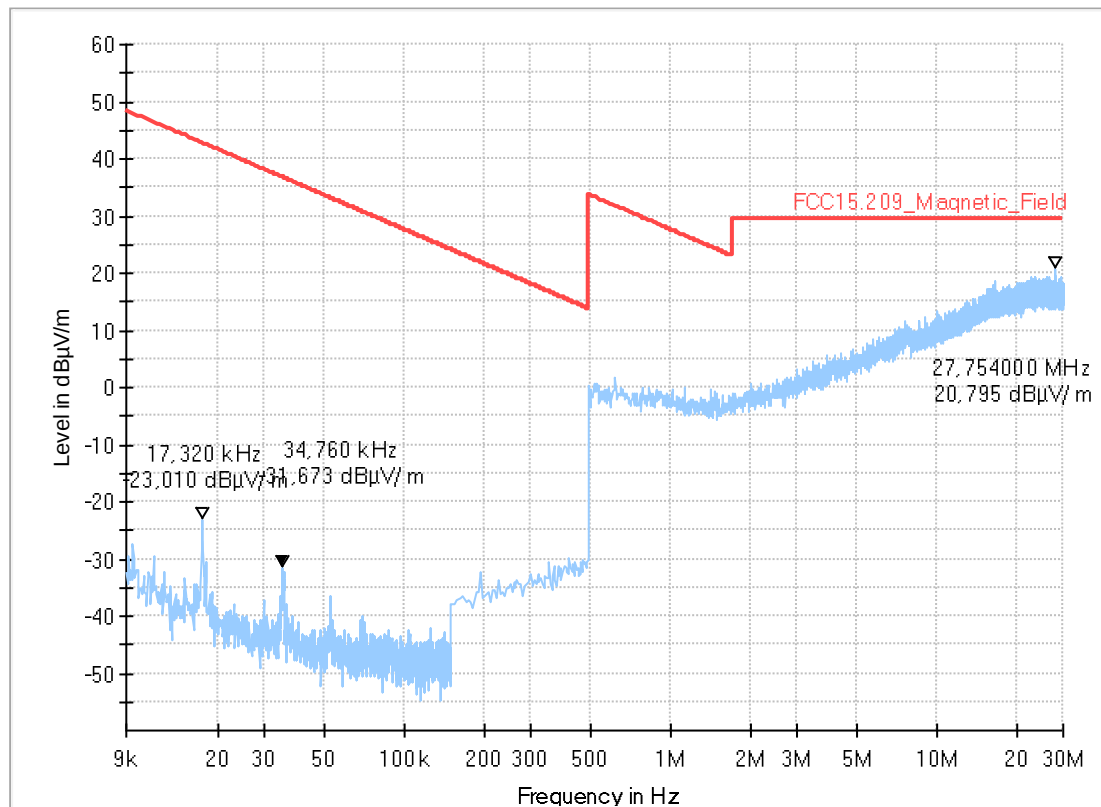
Common Information

Test Description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test Site Location:	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
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarization
Used Filter:	bypass
Test Standard:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	LKu
Operating Mode:	1
Comment 1:	Internal Antenna
Environmental Conditions:	Humidity : 40%rH; Temperature: 20°C
EUT Setup:	laying
Verdict:	Passed

EUT Information

please see the Diagram 2.01

Full Spectrum



2.04_Magnetic_Emission_EUT_standing

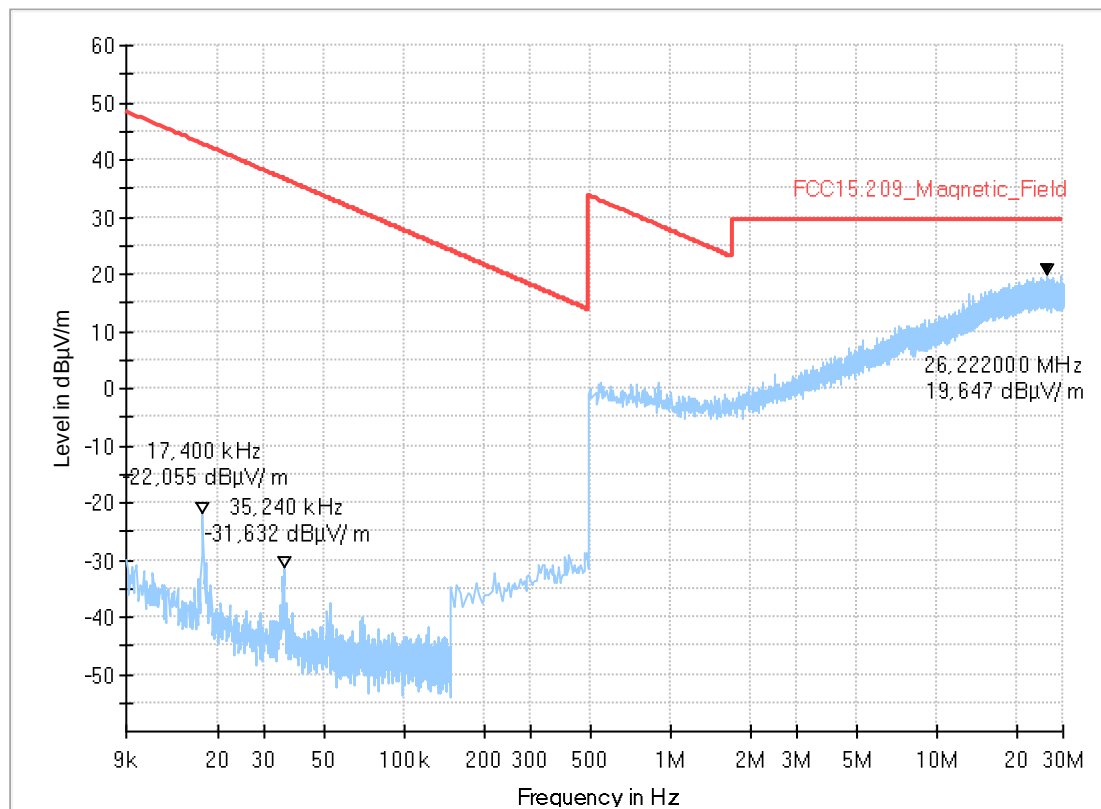
Common Information

Test Description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test Site Location:	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
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarization
Used Filter:	bypass
Test Standard:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	LKu
Operating Mode:	1
Comment 1:	Internal Antenna
Environmental Conditions:	Humidity : 40%rH; Temperature: 20°C
EUT Setup:	standing
Verdict:	Passed

EUT Information

please see the Diagram 2.01

Full Spectrum



1.3. Spurious emissions radiated (LTE Band 12)

8.01_Traffic_mode_LTE_FDD_Band_12_laying

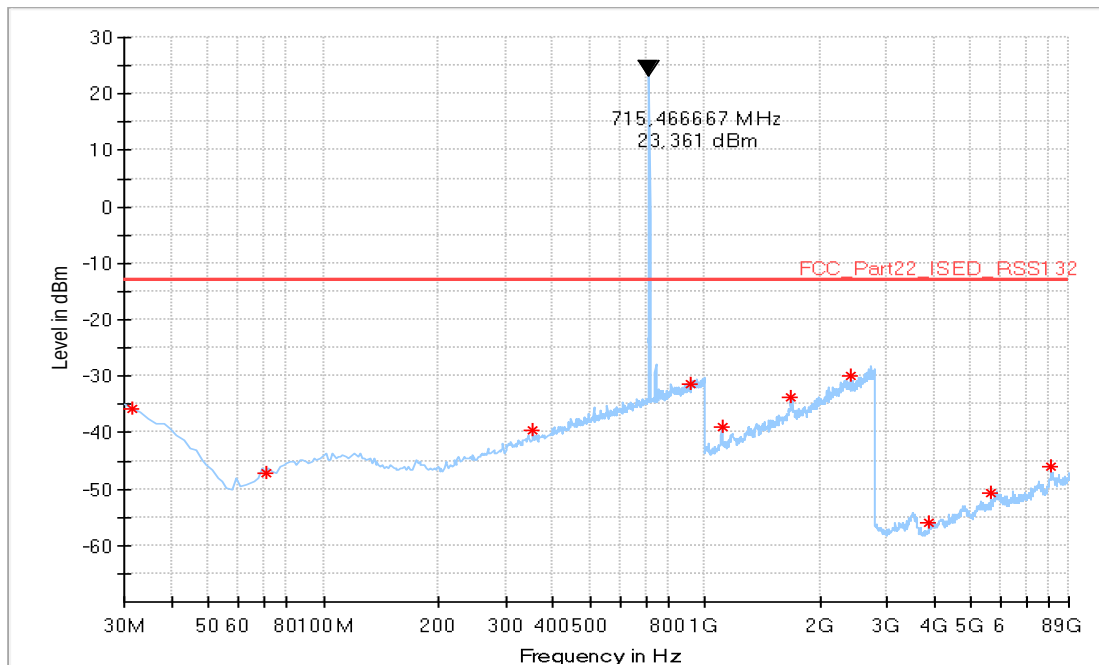
Common Information

Test Description:	Radiated Spurious Emission
Test Site:	FAR
Test Standard:	FCC FCC Part 27.53
Antenna polarisation:	vertical / horizontal
Operating Mode:	1
Operator:	npe
Comment:	EUT standing + EUT internal antenna
Environmental Conditions:	Humidity : 44%rH; Temperature: 22°C
EUT Setup:	2
Verdict:	Passed

EUT Information

please see the Diagram 2.01

Full Spectrum



Critical Freqs

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
31.616667	-35.79	-13.00	22.79	155.0	V	315.0
70.416667	-47.25	-13.00	34.25	155.0	H	0.0
354.950000	-39.57	-13.00	26.57	155.0	H	135.0
917.550000	-31.52	-13.00	18.52	155.0	V	180.0
1108.000000	-39.05	-13.00	26.05	155.0	H	210.0
1681.000000	-33.63	-13.00	20.63	155.0	H	165.0
2419.000000	-30.05	-13.00	17.05	155.0	H	30.0
3854.000000	-56.11	-13.00	43.11	155.0	H	300.0
5631.333333	-50.67	-13.00	37.67	155.0	H	255.0
8090.666667	-46.09	-13.00	33.09	155.0	V	210.0

8.02_Traffic_mode_LTE_FDD_Band_12_standing

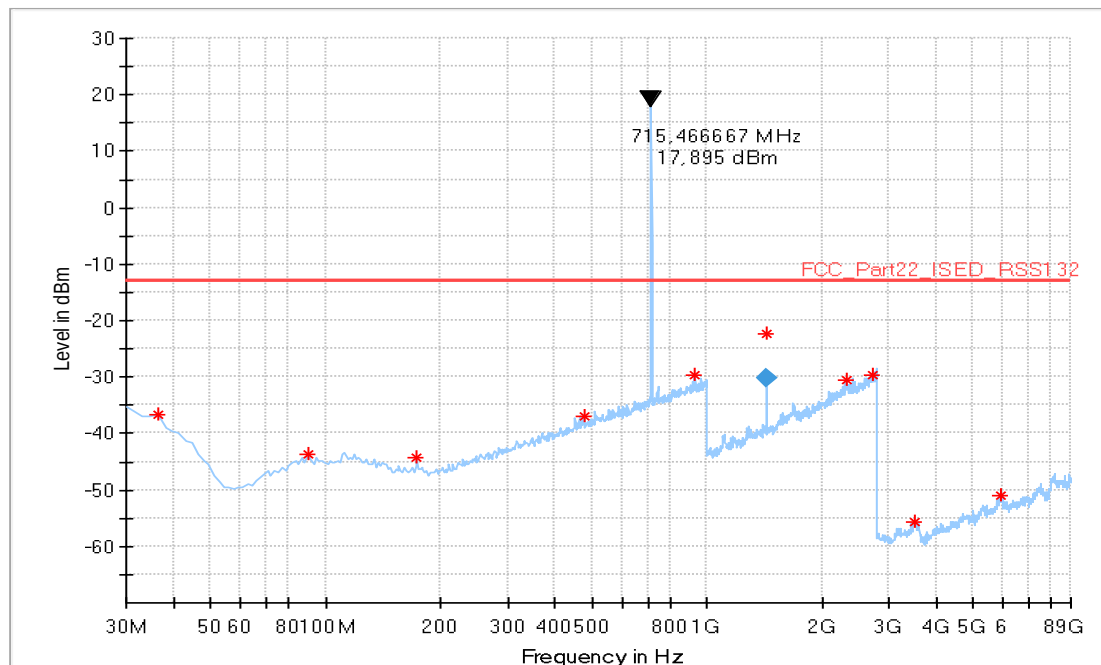
Common Information

Test Description:	Radiated Spurious Emission
Test Site:	FAR
Test Standard:	FCC FCC Part 27.53
Antenna polarisation:	vertical / horizontal
Operating Mode:	1
Operator:	npe
Comment:	EUT standing + EUT internal antenna
Environmental Conditions::	Humidity : 44%RH; Temperature: 22°C
EUT Setup:	2
Verdict:	Passed

EUT Information

please see the Diagram 2.01

Full Spectrum



Final Result

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
1431.350000	-30.27	-	17.27	100.0	100.000	155.0	H	203.0	0.0	-65

Critical Freqs

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Elevation (deg)	Height (cm)	Pol	Azimuth (deg)
36.466667	-36.55	-13.00	23.55	0.0	155.0	H	90.0
89.816667	-43.62	-13.00	30.62	0.0	155.0	H	135.0
173.883333	-44.31	-13.00	31.31	0.0	155.0	H	90.0
476.200000	-36.93	-13.00	23.93	0.0	155.0	H	45.0
927.250000	-29.72	-13.00	16.72	0.0	155.0	V	135.0
1431.350000	-22.20	-13.00	19.23	0.0	155.0	H	203.0
2332.000000	-30.40	-13.00	17.40	0.0	155.0	V	300.0
2710.000000	-29.77	-13.00	16.77	0.0	155.0	H	255.0
3502.666667	-55.56	-13.00	42.56	0.0	155.0	H	120.0
5879.333333	-51.03	-13.00	38.03	0.0	155.0	H	75.0

8.03_Traffic_mode_LTE_FDD_Band_12_laying

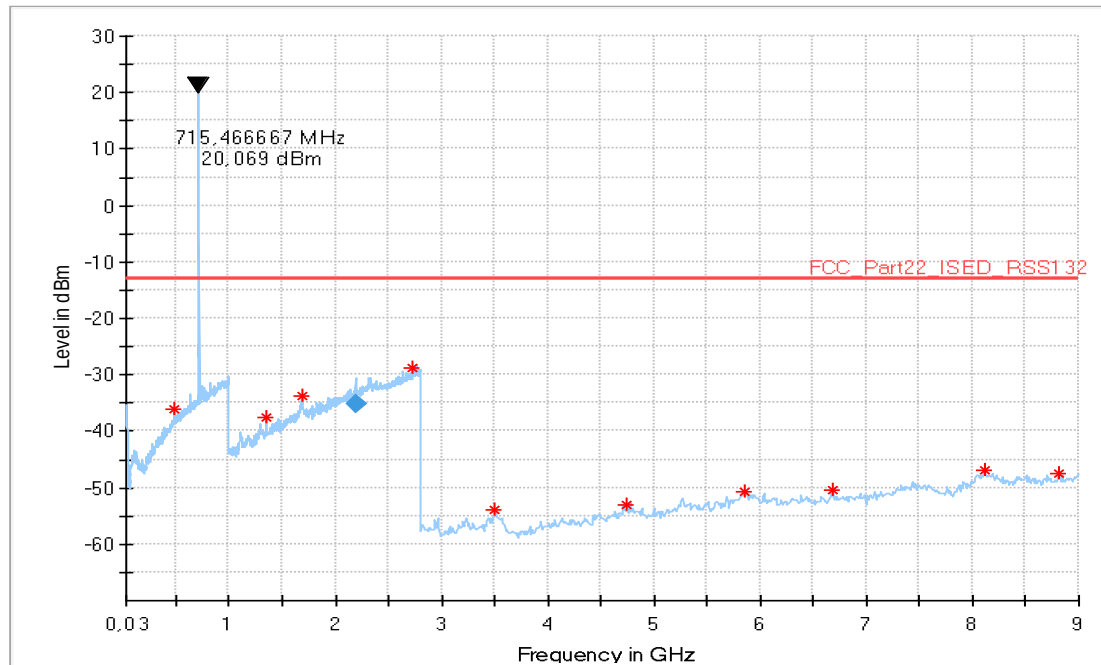
Common Information

Test Description:	Radiated Spurious Emission
Test Site:	FAR
Test Standard:	FCC FCC Part 27.53
Antenna polarisation:	vertical / horizontal
Operating Mode:	1
Operator:	npe
Comment:	EUT standing + EUT internal antenna
Environmental Conditions:	Humidity : 44%rH; Temperature: 22°C
EUT Setup:	2
Verdict:	Passed

EUT Information

please see the Diagram 2.01

Full Spectrum



Final Result

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Marg in (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
2193.550000	-35.17	-	22.17	100.0	100.000	155.	V	210.0	0.0	-60

Critical_Freqs

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Marg in (dB)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
489.133333	-36.20	-	23.20	155.	V	135.0	0.0	-80
1345.000000	-37.54	-	24.54	155.	V	210.0	0.0	-66
1681.000000	-33.80	-	20.80	155.	V	345.0	0.0	-61
2725.000000	-28.69	-	15.69	155.	H	120.0	0.0	-57
3502.666667	-53.85	-	40.85	155.	V	300.0	0.0	-91
4742.666667	-52.94	-	39.94	155.	V	165.0	0.0	-89
5848.333333	-50.59	-	37.59	155.	H	30.0	0.0	-86
6685.333333	-50.51	-	37.51	155.	H	165.0	0.0	-85
8111.333333	-47.04	-	34.04	155.	V	30.0	0.0	-80
8803.666667	-47.35	-	34.35	155.	H	255.0	0.0	-82

8.04_Traffic_mode_LTE_FDD_Band_12_standing

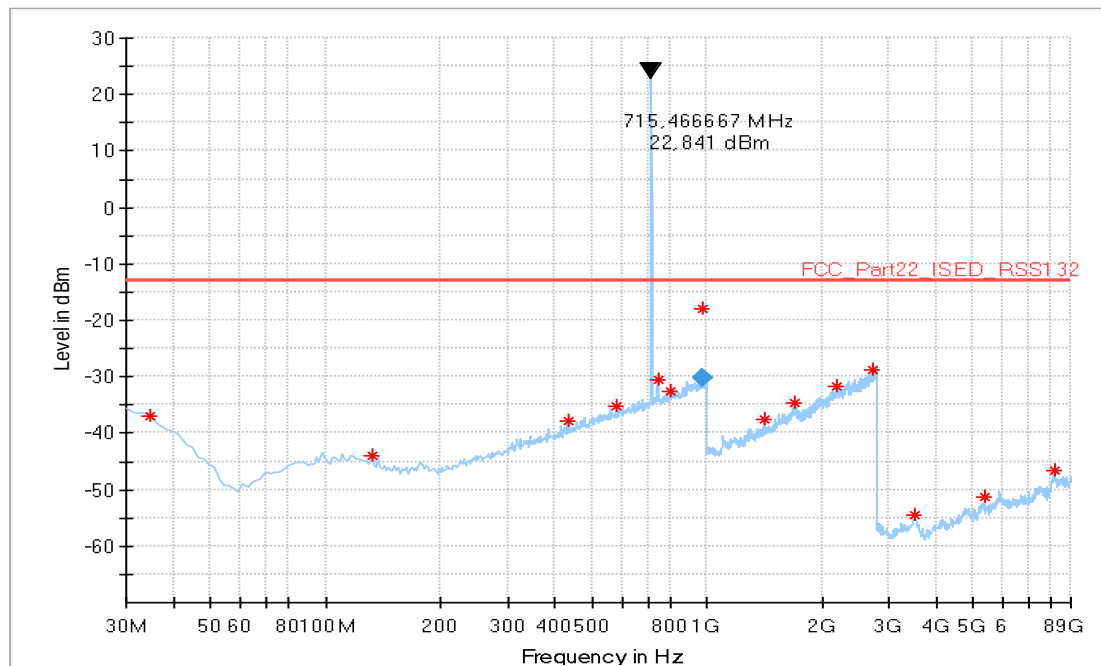
Common Information

Test Description:	Radiated Spurious Emission
Test Site:	FAR
Test Standard:	FCC FCC Part 27.53
Antenna polarisation:	vertical / horizontal
Operating Mode:	1
Operator:	npe
Comment:	EUT standing + EUT internal antenna
Environmental Conditions:	Humidity : 44%rH; Temperature: 22°C
EUT Setup:	2
Verdict:	Passed

EUT Information

please see the Diagram 2.01

Full Spectrum



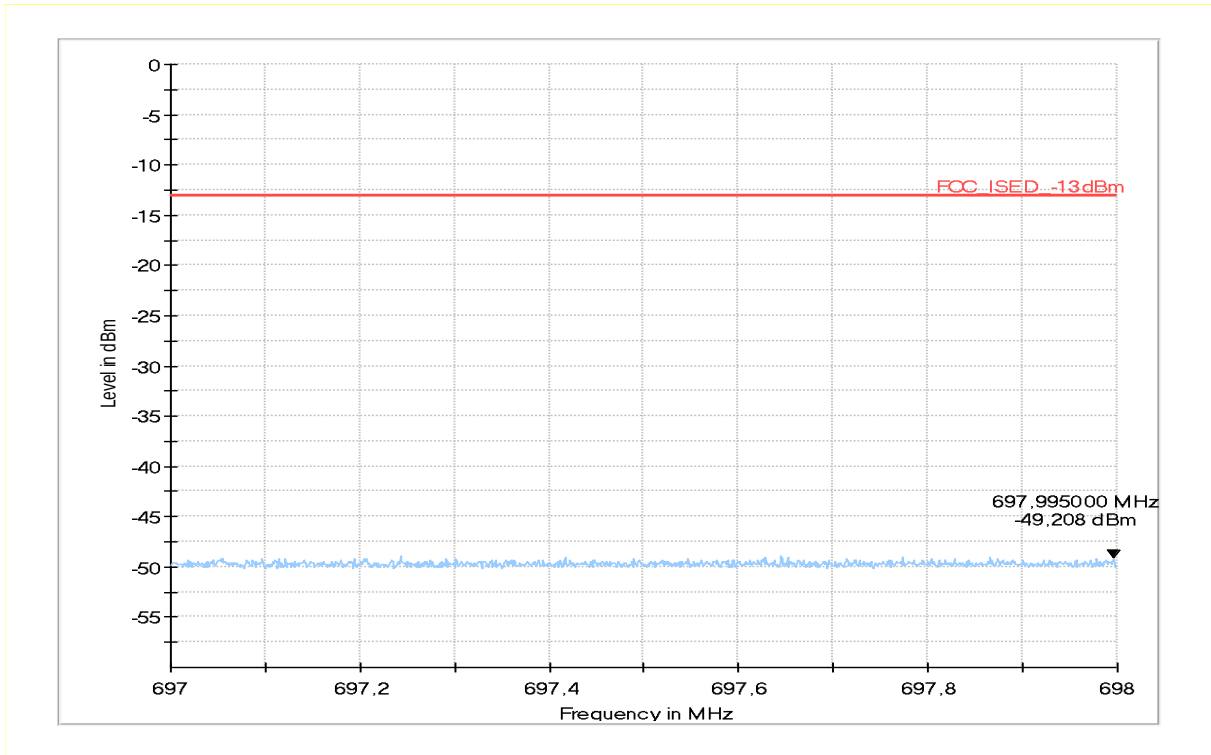
Final Result

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
979.850000	-30.20	-	17.20	100.0	100.000	155.	H	255.0	0.0	-73

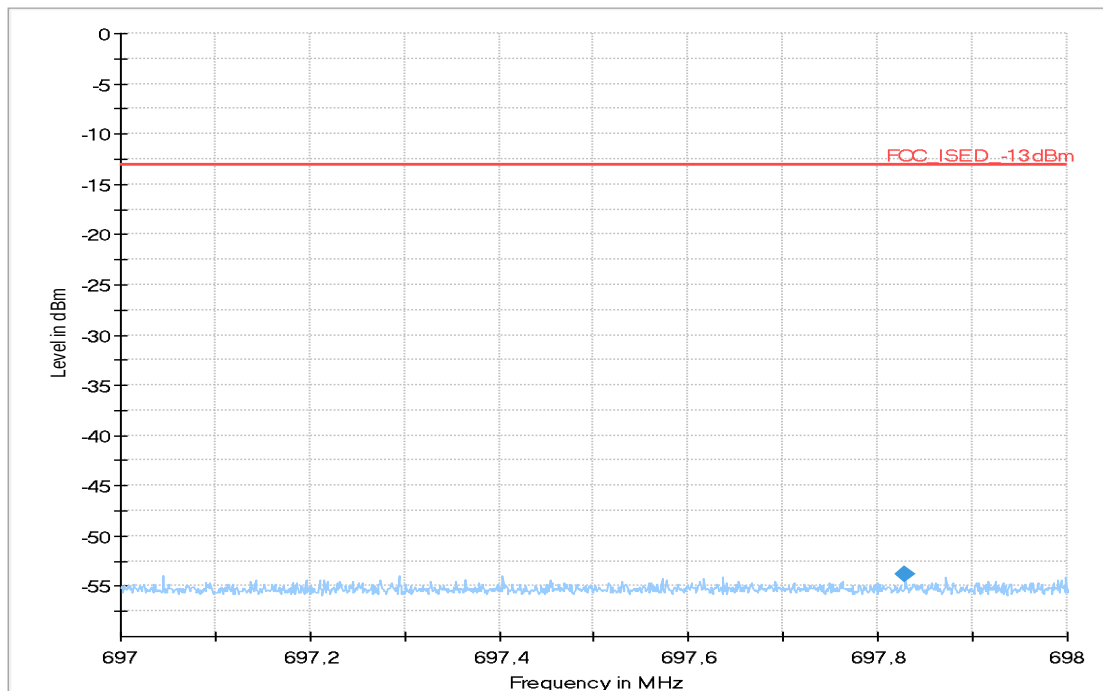
Critical Freqs

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
34.850000	-37.01	-13.00	24.01	155.0	H	135.0
131.850000	-44.07	-13.00	31.07	155.0	H	225.0
430.933333	-37.86	-13.00	24.86	155.0	V	135.0
579.666667	-35.32	-13.00	22.32	155.0	V	90.0
742.950000	-30.56	-13.00	17.56	155.0	V	135.0
799.533333	-32.68	-13.00	19.68	155.0	V	135.0
979.850000	-17.89	-13.00	16.95	155.0	H	255.0
1411.000000	-37.61	-13.00	24.61	155.0	V	345.0
1690.000000	-34.53	-13.00	21.53	155.0	V	120.0
2188.000000	-31.60	-13.00	18.60	155.0	H	120.0
2713.000000	-28.67	-13.00	15.67	155.0	V	30.0
3502.666667	-54.50	-13.00	41.50	155.0	H	75.0
5342.000000	-51.20	-13.00	38.20	155.0	V	345.0
8121.666667	-46.63	-13.00	33.63	155.0	V	165.0

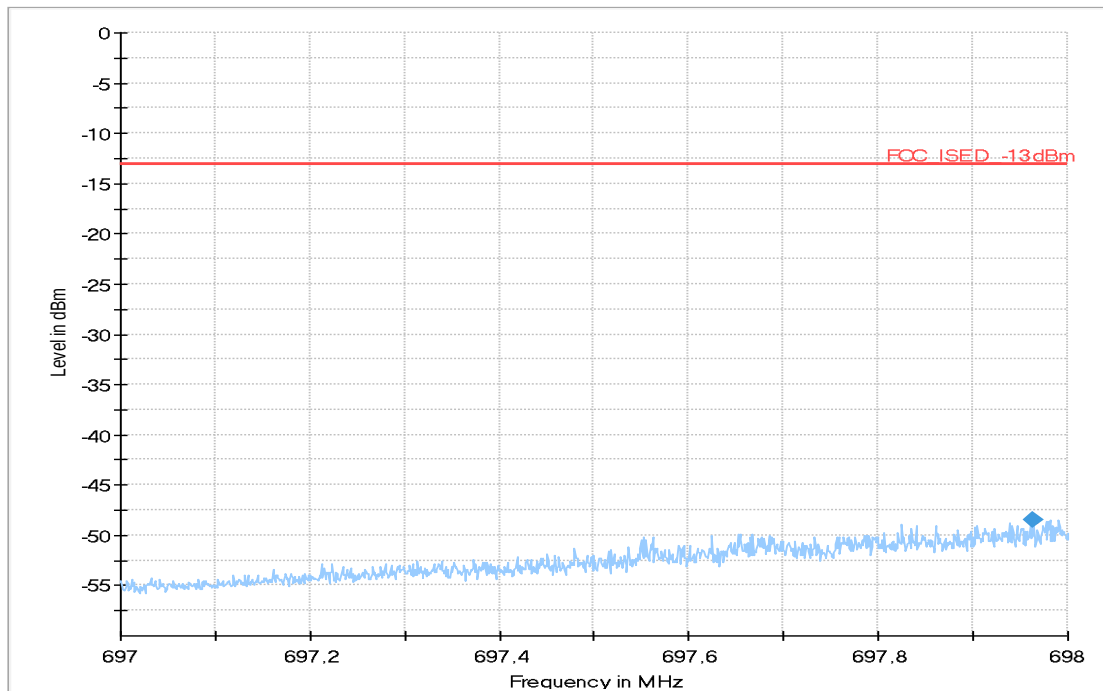
1.4. Radiated emissions on LTE B12 band-edge, EUT Internal Antenna



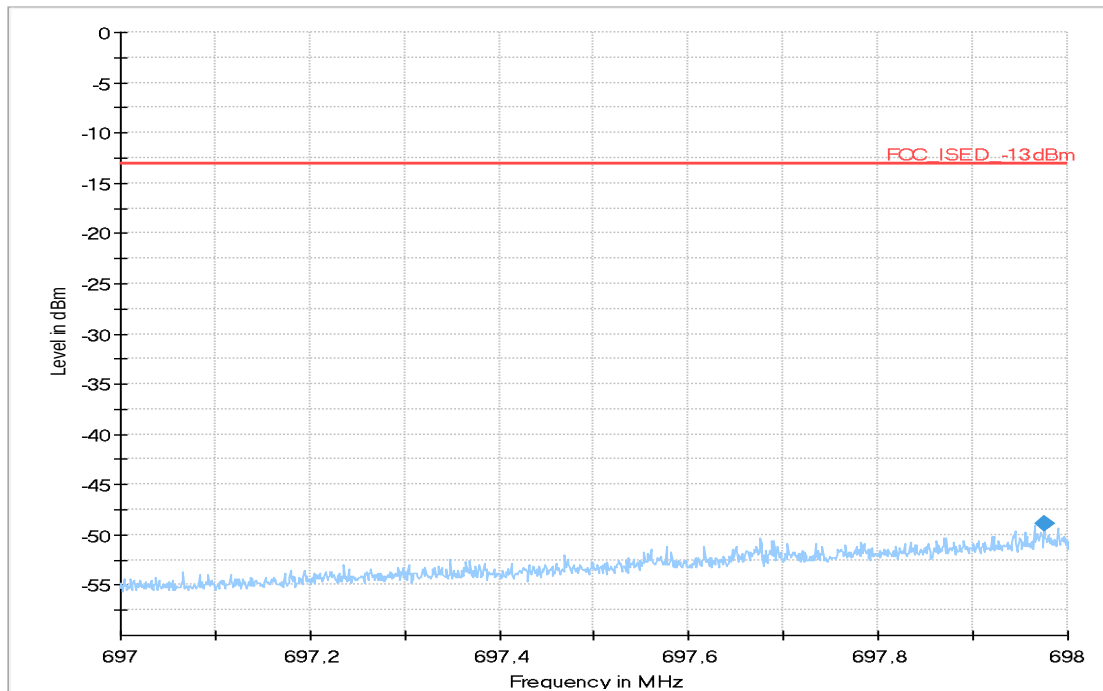
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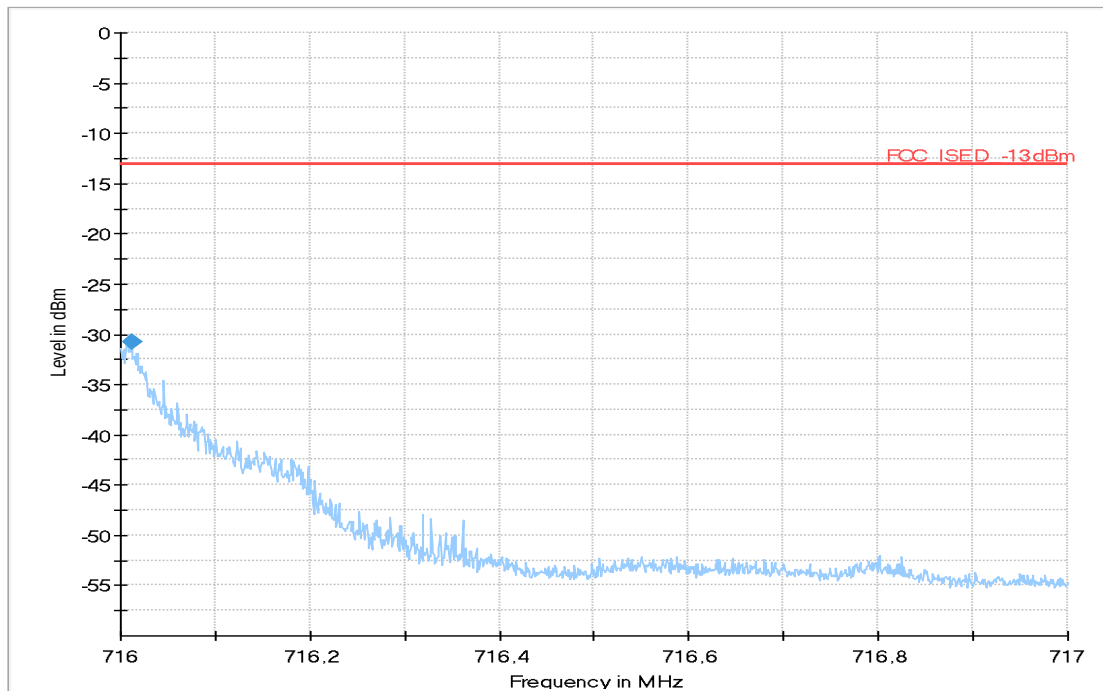
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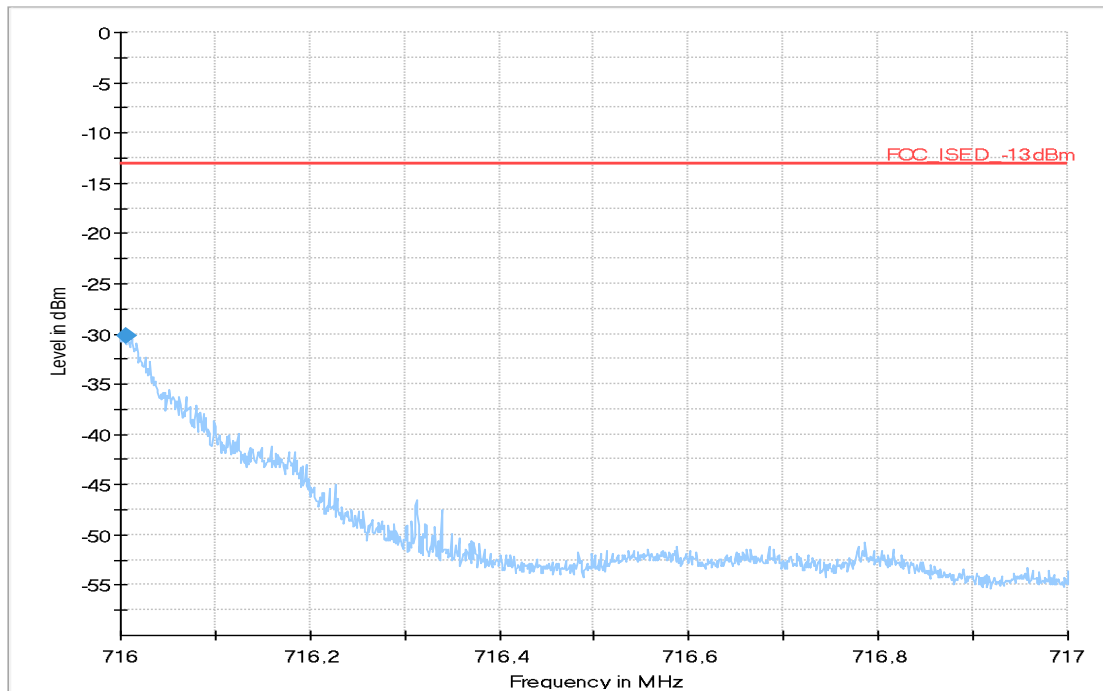
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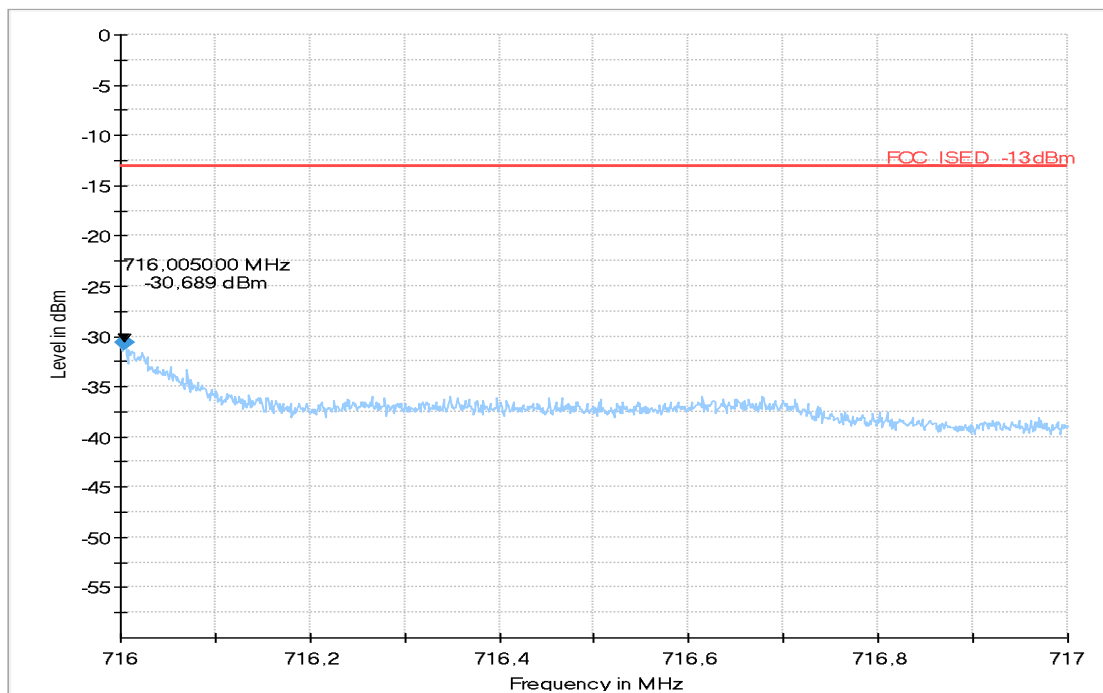
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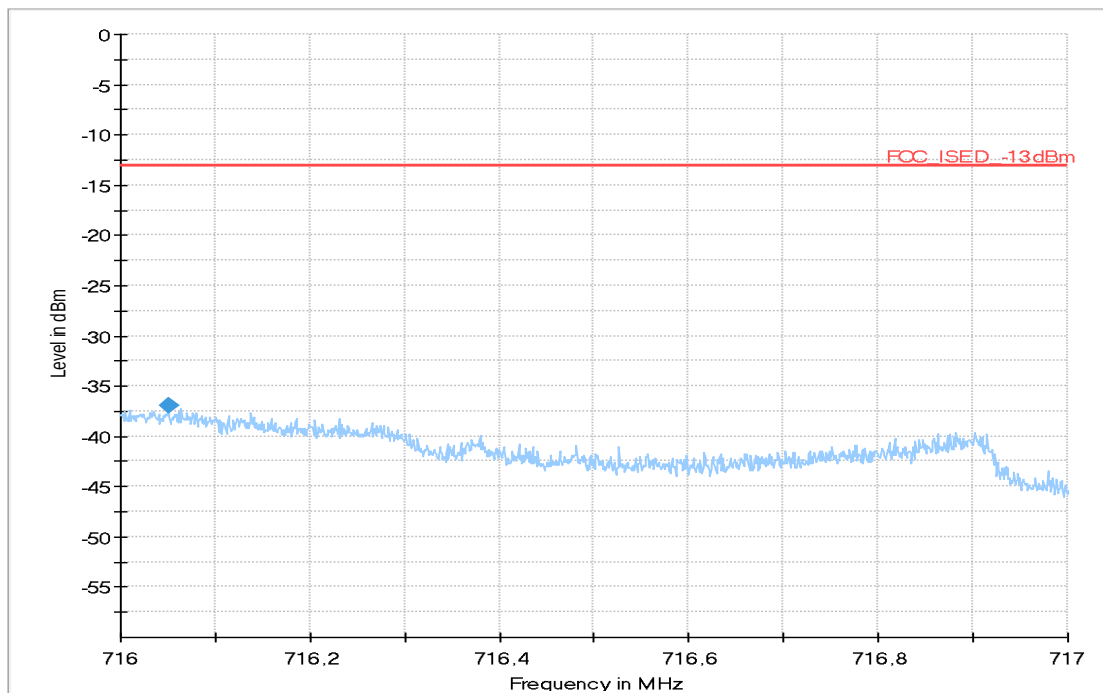
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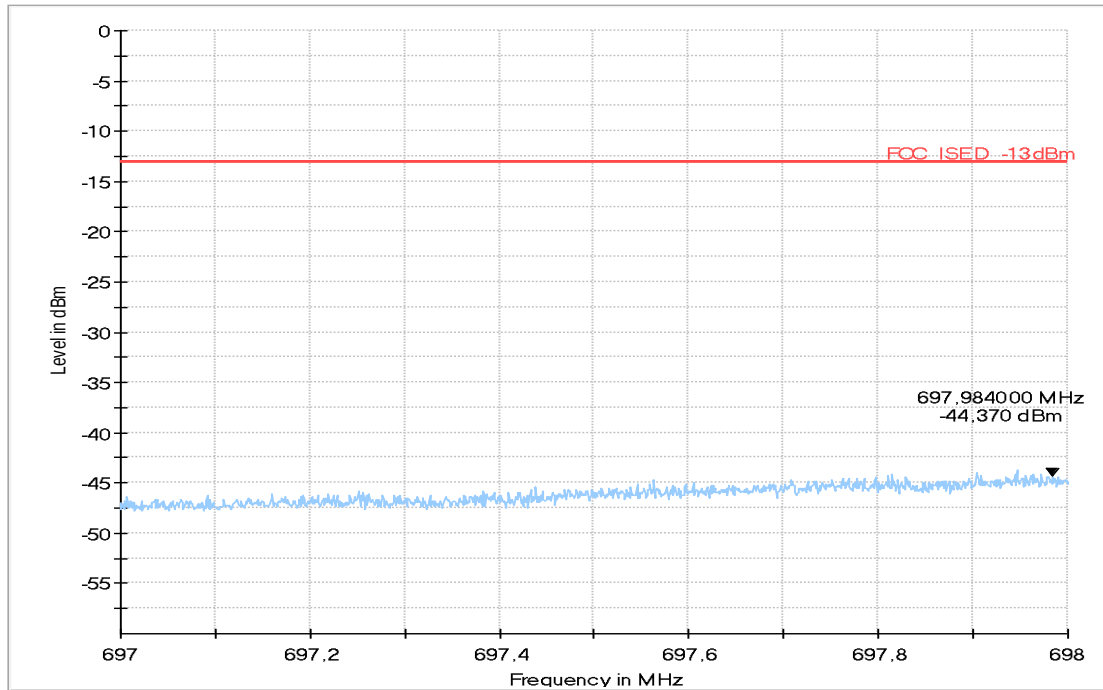


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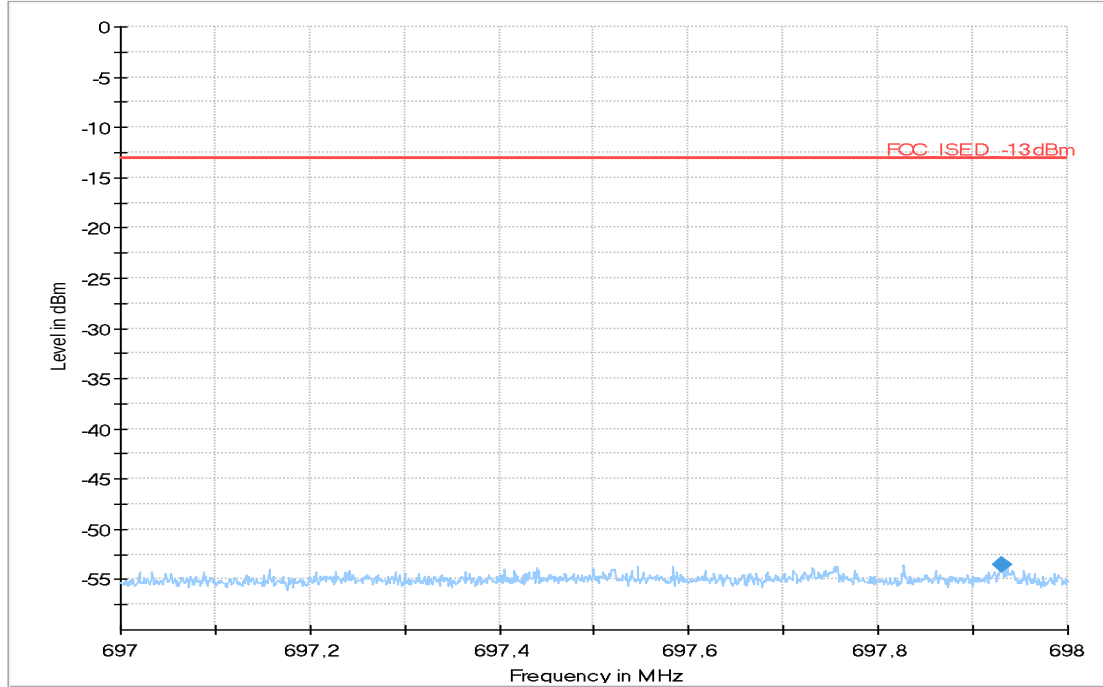


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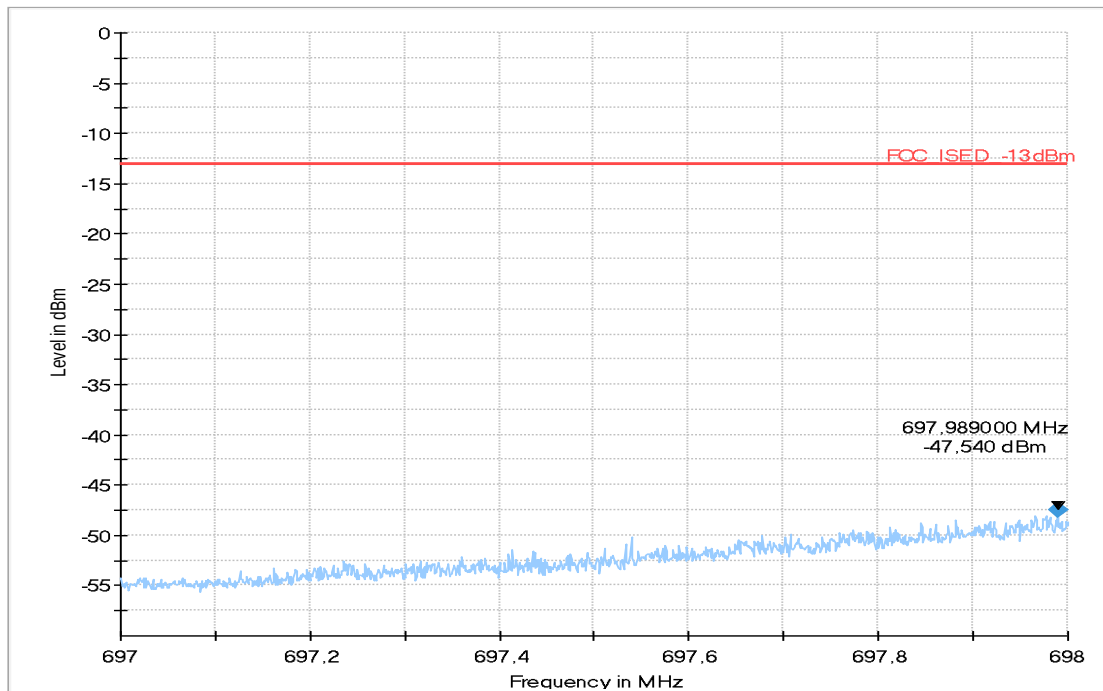
1.5. Radiated emissions on LTE B12 band-edge, EUT External Antenna



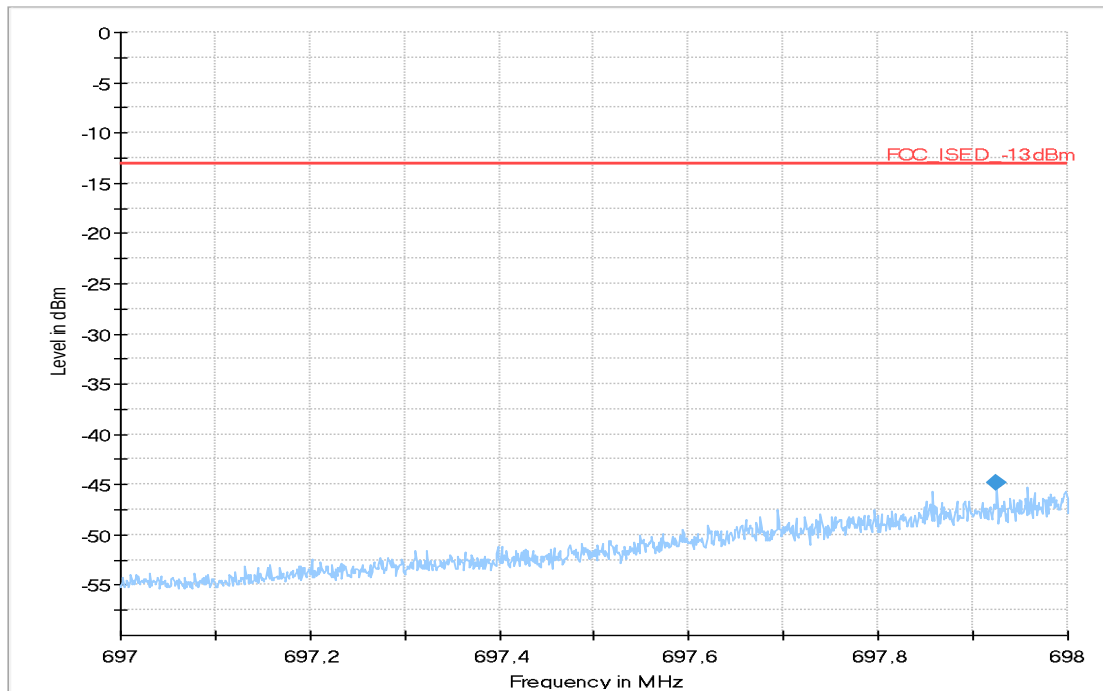
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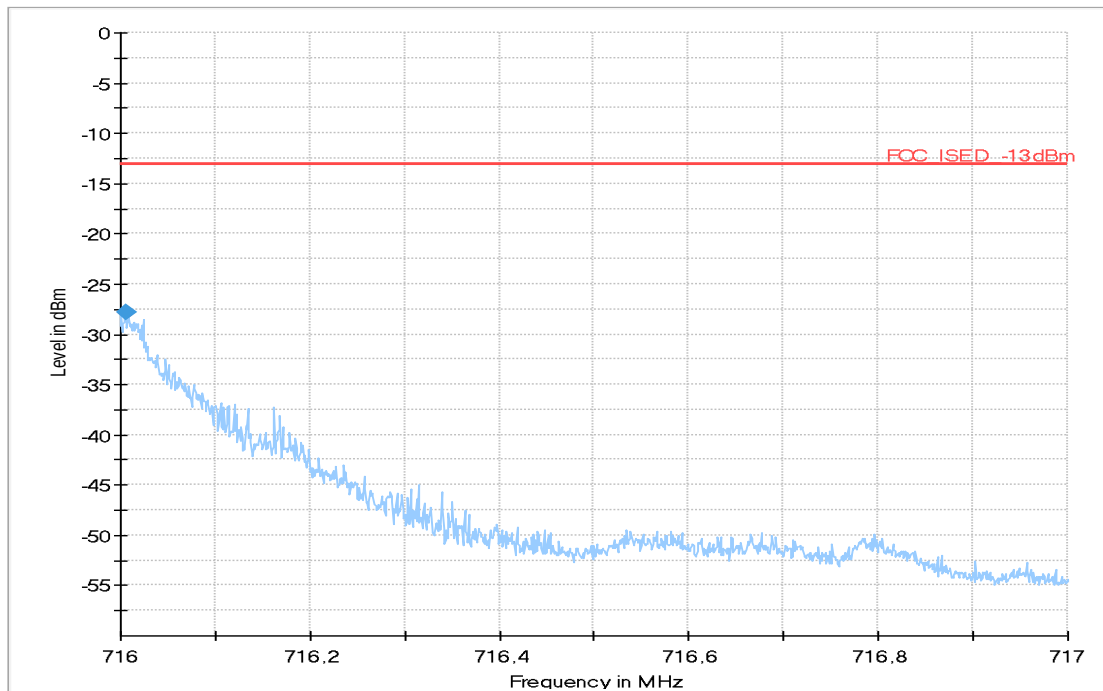
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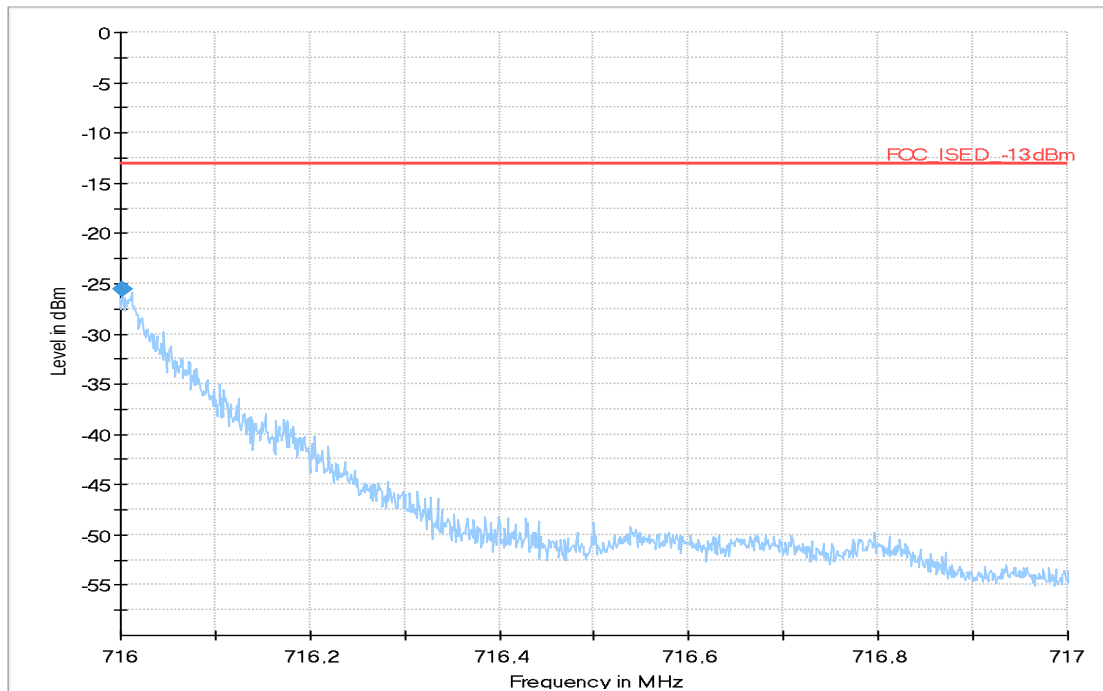
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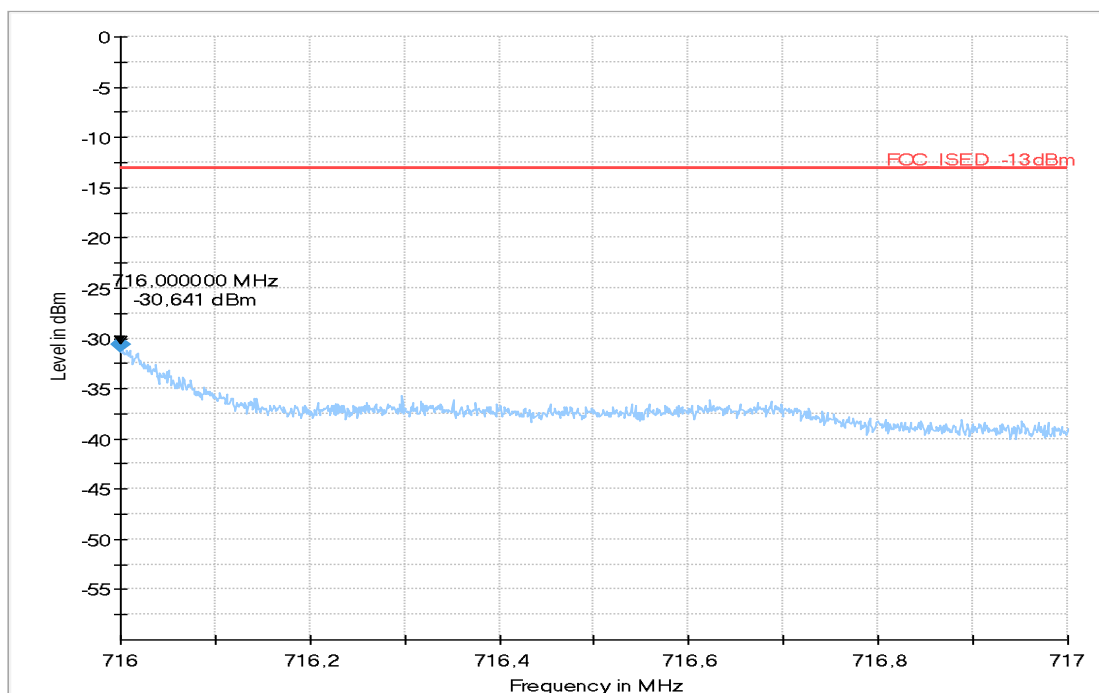
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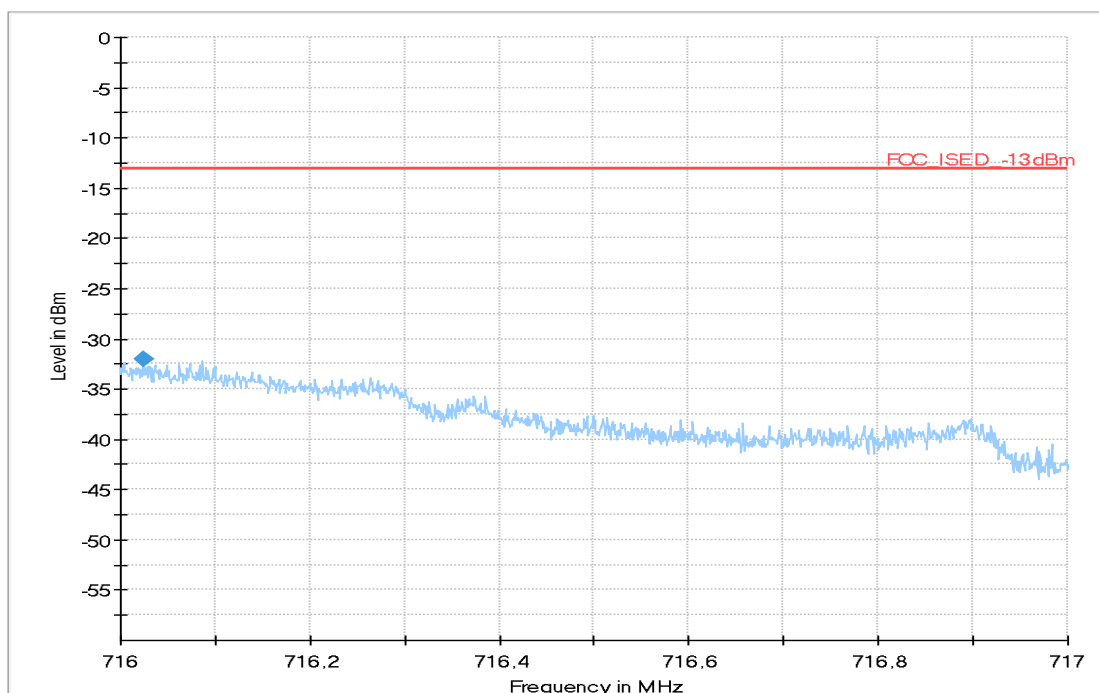
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9.1207b_BE_TX_LTE_band_12_Channel_23155_QPSK_RB#1_low_BW_5MHz_EUT_position_standing



9.1208a_BE_TX_LTE_band_12_Channel_23155_QPSK_RB#25_BW_5MHz_EUT_position_laying



9.1208b_BE_TX_LTE_band_12_Channel_23155_QPSK_RB#25_BW_5MHz_EUT_position_standing

End of Annex