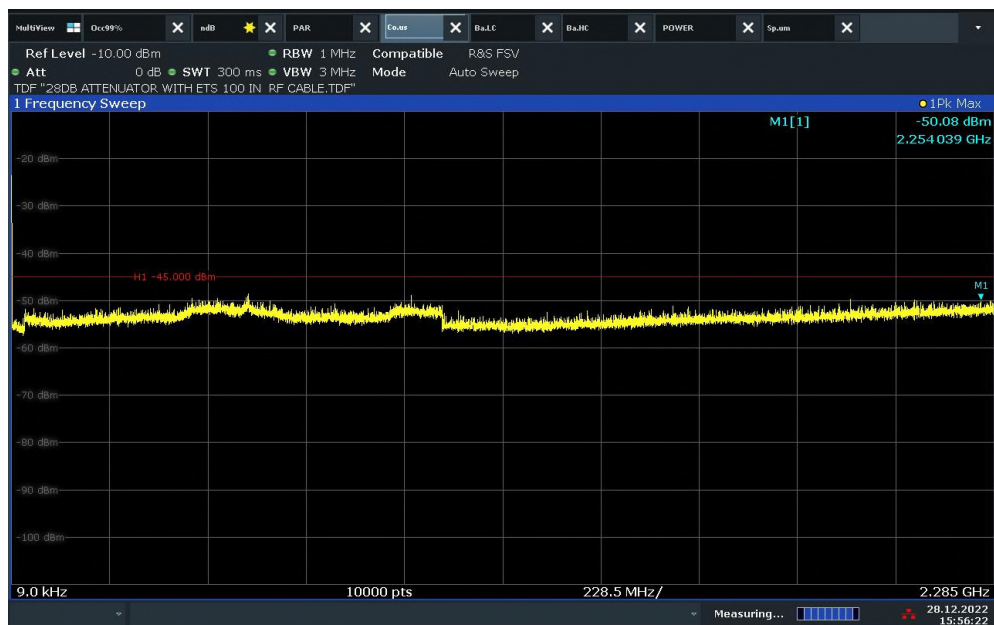


**LTE Band 30 Downlink 10MHz Bandwidth Middle Channel Conducted Spurious Emissions (2370 - 24 GHz)**

16:41:58 28.12.2022

LTE Band 30 Uplink 5MHz Bandwidth Middle Channel Conducted Spurious Emissions (9k - 2285 MHz)

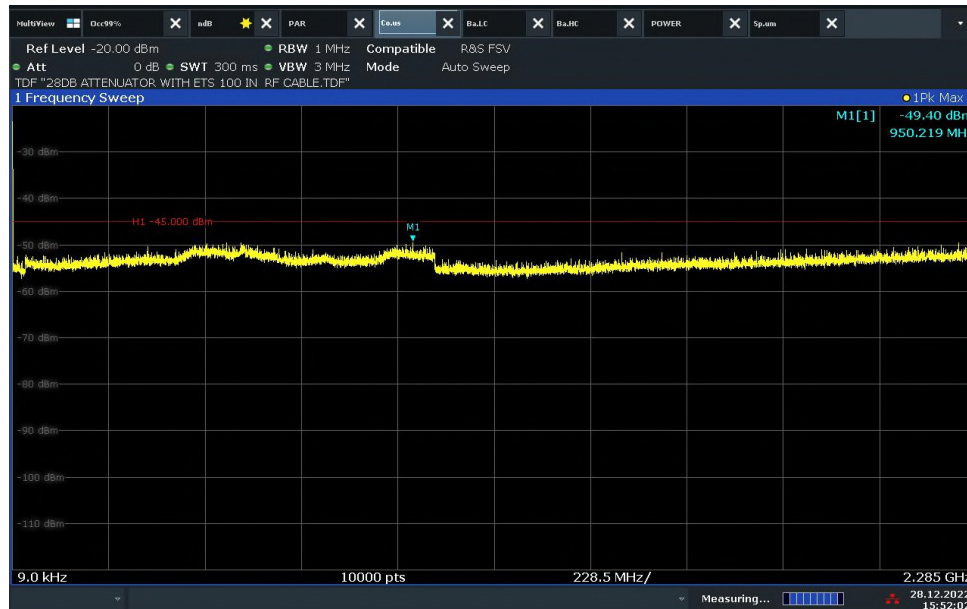
15:56:23 28.12.2022

LTE Band 30 Uplink 5MHz Bandwidth Middle Channel Conducted Spurious Emissions (2200 - 2395 MHz)

13:20:56 29.12.2022

LTE Band 30 Uplink 5MHz Bandwidth Middle Channel Conducted Spurious Emissions (2370 - 24 GHz)

11:34:46 29.12.2022

LTE Band 30 Uplink 10MHz Bandwidth Middle Channel Conducted Spurious Emissions (9k - 2285 MHz)

15:52:02 28.12.2022

LTE Band 30 Uplink 10MHz Bandwidth Middle Channel Conducted Spurious Emissions (2200 - 2395 MHz)

13:14:53 29.12.2022

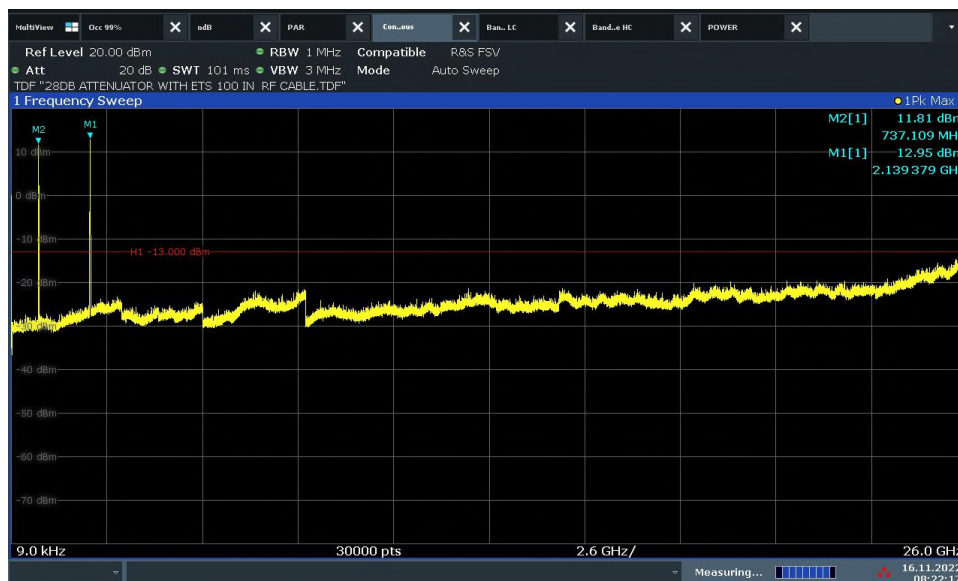


LTE Band 30 Uplink 10MHz Bandwidth Middle Channel Conducted Spurious Emissions (2370 - 24 GHz)



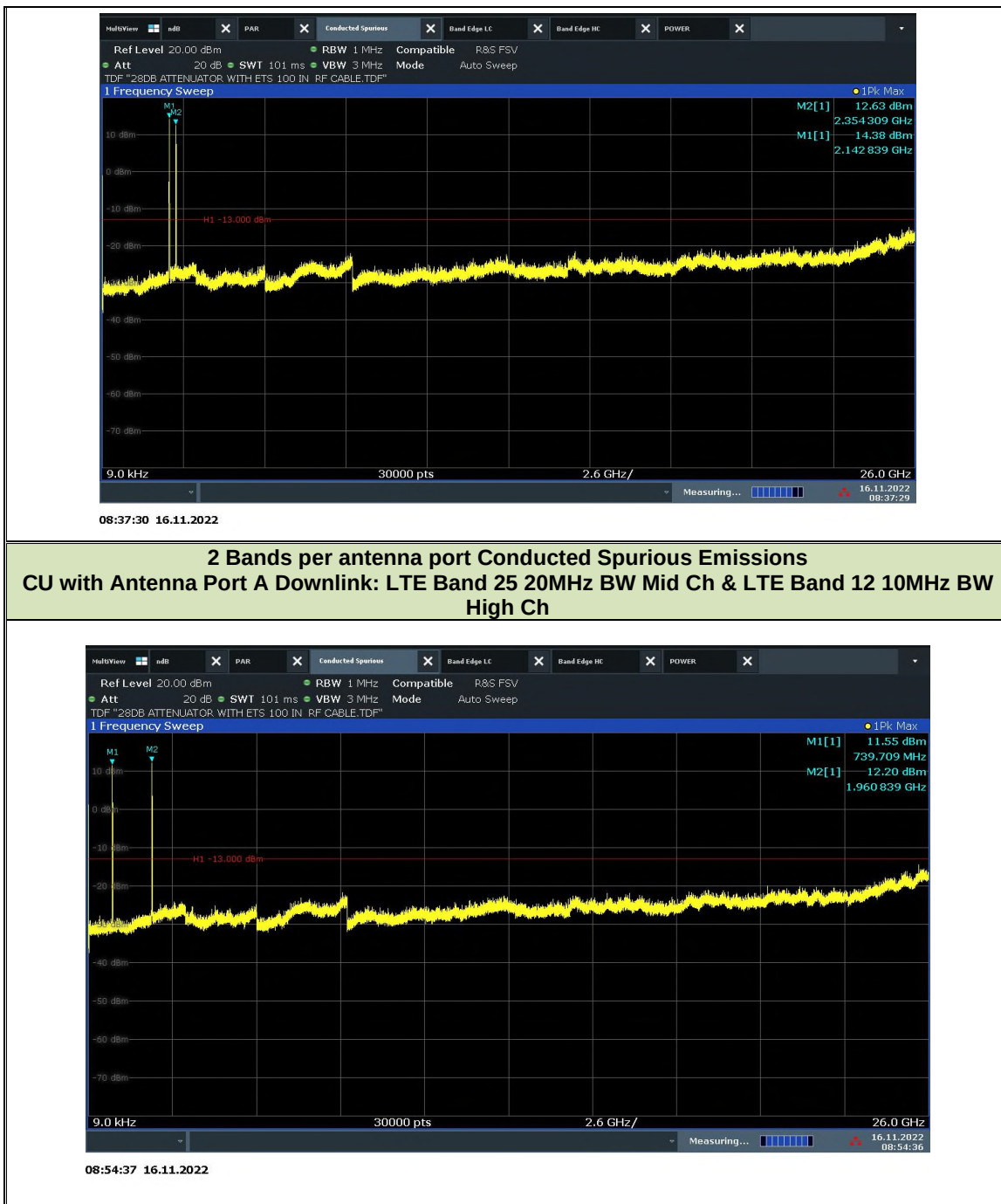
14:16:16 29.12.2022

2 Bands per antenna port Conducted Spurious Emissions CU with Antenna Port A Downlink: LTE Band 4 20MHz BW High Ch & LTE Band 12 10MHz BW High Ch

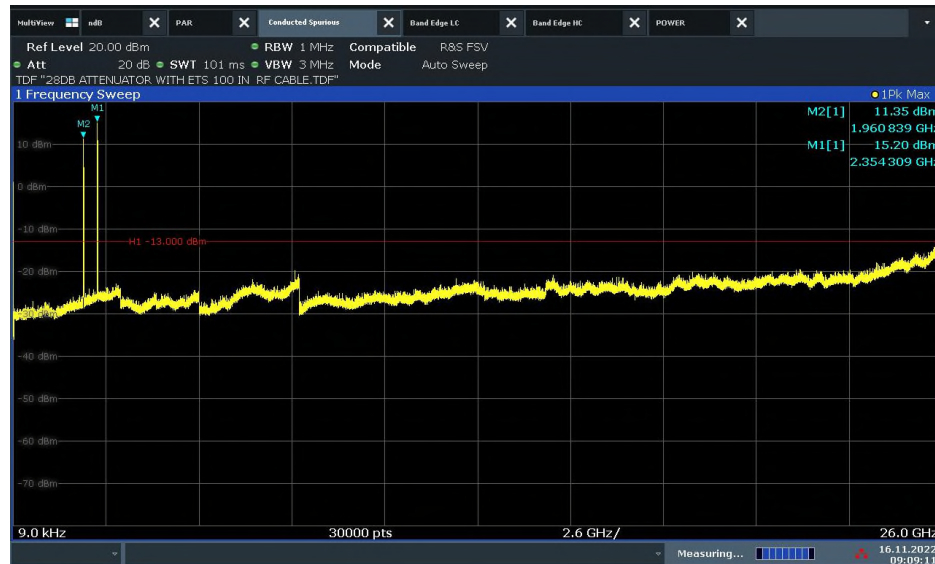


08:22:17 16.11.2022

2 Bands per antenna port Conducted Spurious Emissions CU with Antenna Port A Downlink: LTE Band 4 20MHz BW High Ch & LTE Band 30 10MHz BW Mid Ch

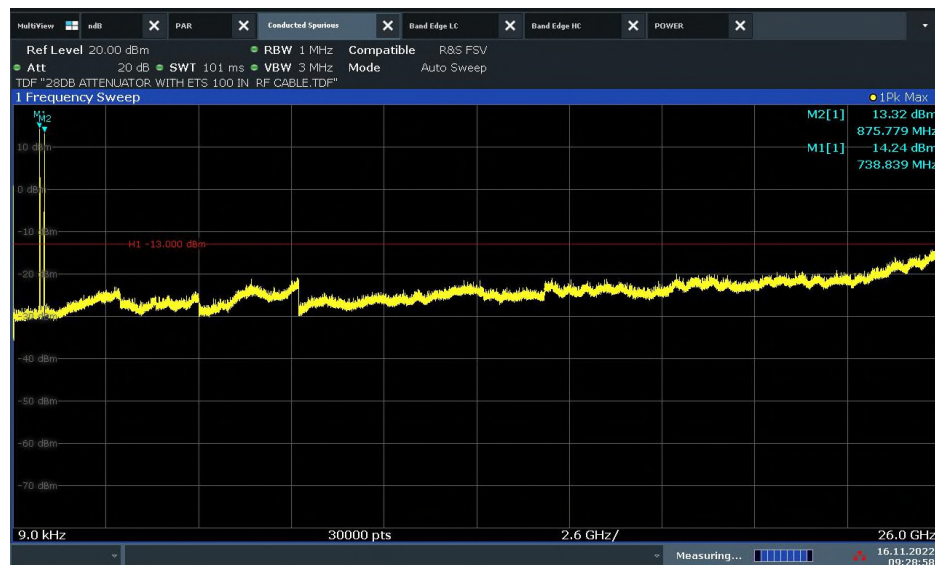


2 Bands per antenna port Conducted Spurious Emissions CU with Antenna Port A Downlink: LTE Band 25 20MHz BW Mid Ch & LTE Band 30 10MHz BW Mid Ch



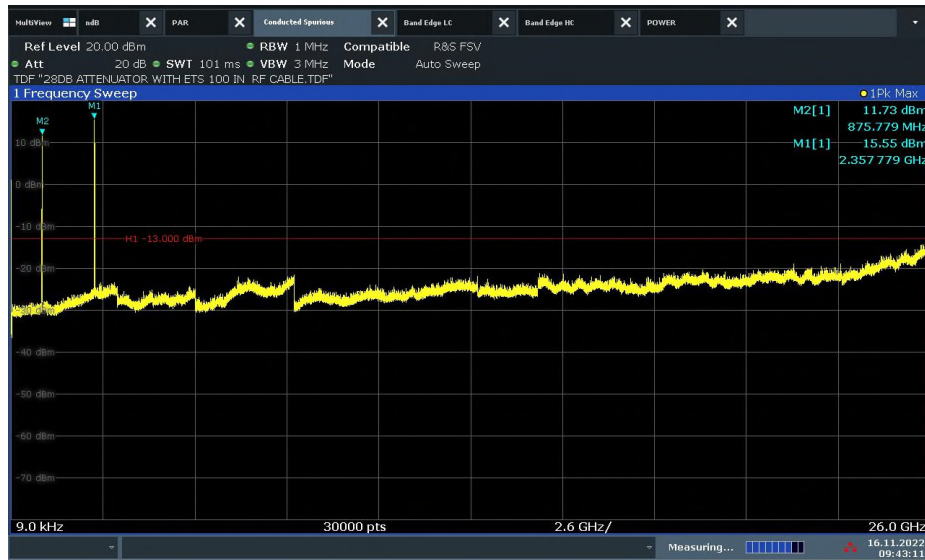
09:09:12 16.11.2022

2 Bands per antenna port Conducted Spurious Emissions CU with Antenna Port A Downlink: WCDMA Band 5 15MHz BW Low Ch & LTE Band 12 10MHz BW High Ch



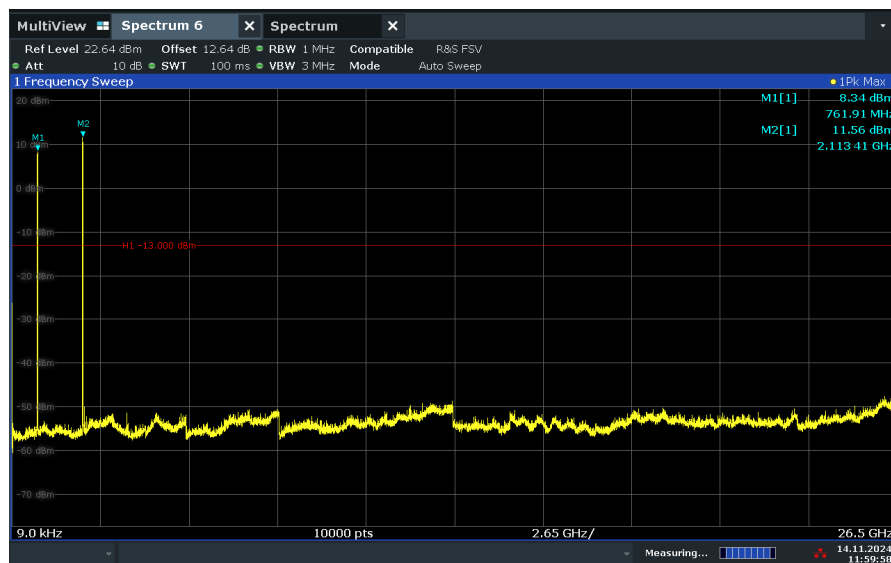
09:28:59 16.11.2022

2 Bands per antenna port Conducted Spurious Emissions
CU with Antenna Port A Downlink: WCDMA Band 5 15MHz BW Low Ch & LTE Band 30 10MHz BW Mid Ch



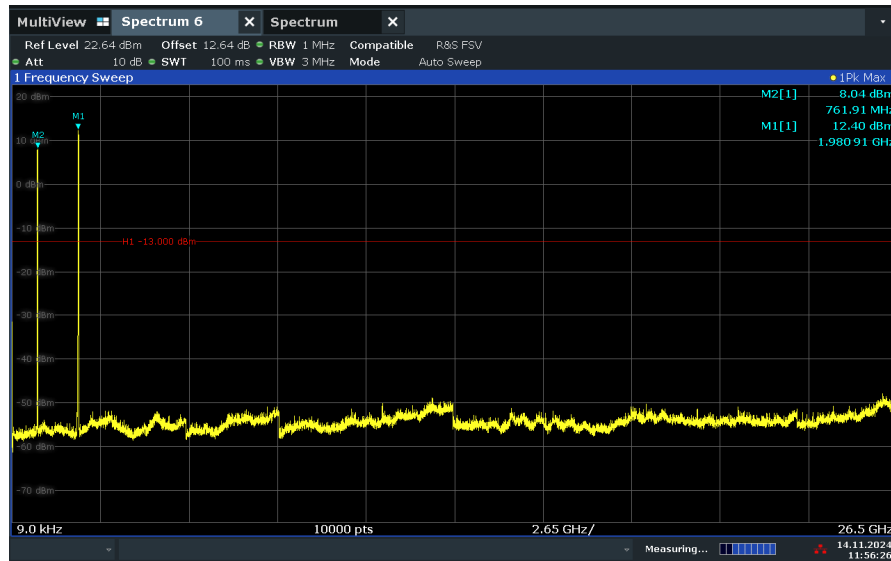
09:43:12 16.11.2022

2 Bands per antenna port Conducted Spurious Emissions
CU with Antenna Port C Downlink: LTE Band 4 20MHz BW High Ch & LTE Band 14 10MHz BW Mid Ch



11:59:59 14.11.2024

2 Bands per antenna port Conducted Spurious Emissions
CU with Antenna Port C Downlink: LTE Band 14 10MHz BW Mid Ch & LTE Band 25 10MHz BW Low Ch



2 Bands per antenna port Conducted Spurious Emissions
Antenna Port A Uplink: LTE Band 4 15MHz BW Low Ch & LTE Band 12 10MHz BW Low Ch



2 Bands per antenna port Conducted Spurious Emissions
Antenna Port A Uplink: LTE Band 4 15MHz BW Low Ch & LTE Band 30 5MHz BW High Ch



12:33:01 15.11.2022

2 Bands per antenna port Conducted Spurious Emissions
Antenna Port A Uplink: LTE Band 25 20MHz BW High Ch & LTE Band 12 10MHz BW Low Ch



12:48:20 15.11.2022

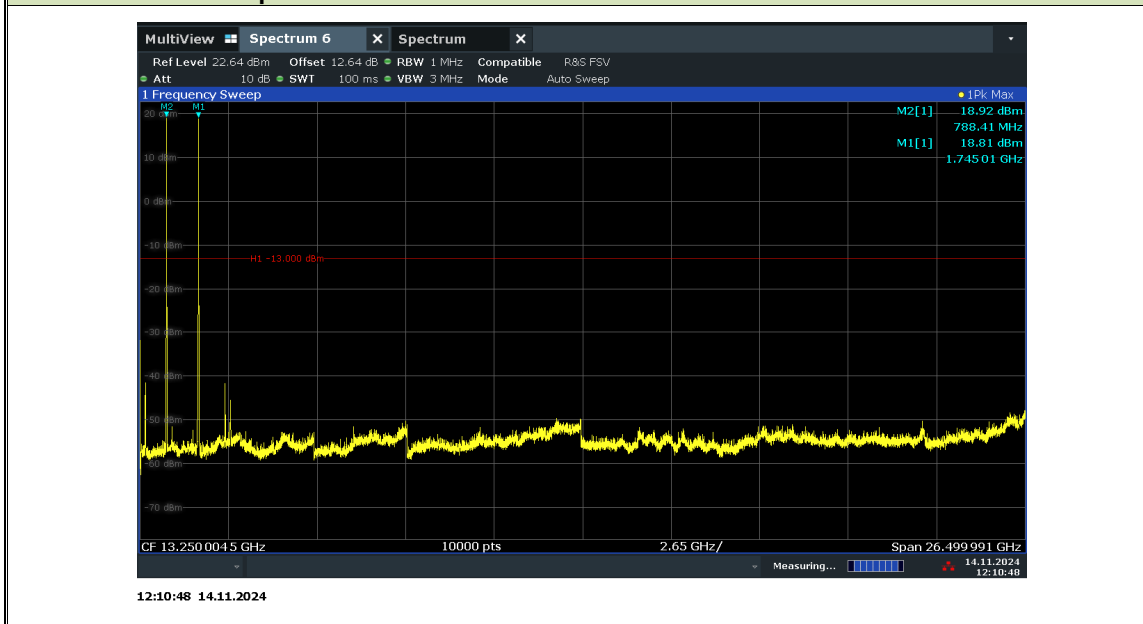
2 Bands per antenna port Conducted Spurious Emissions
Antenna Port A Uplink: LTE Band 25 20MHz BW High Ch & LTE Band 30 5MHz BW High Ch



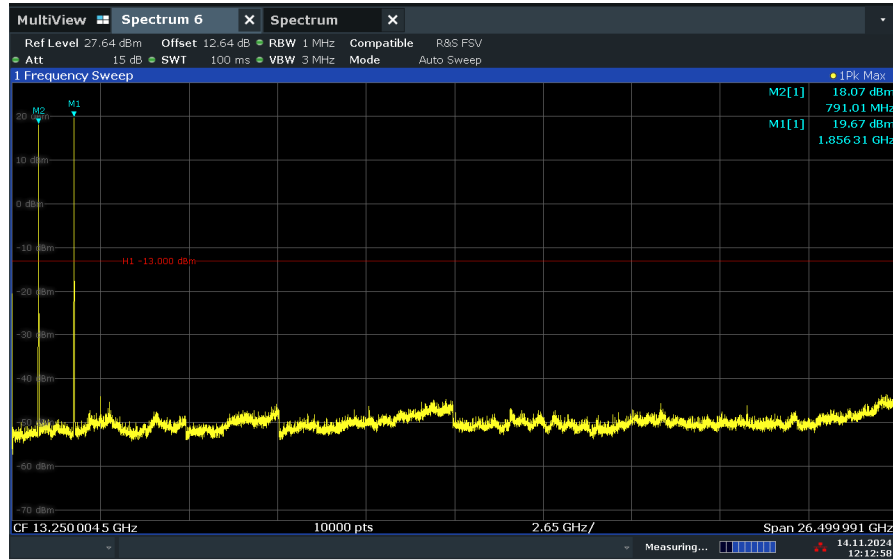
2 Bands per antenna port Conducted Spurious Emissions
Antenna Port A Uplink: WCDMA Band 5 5MHz BW Mid Ch & LTE Band 12 10MHz BW Low Ch



2 Bands per antenna port Conducted Spurious Emissions
Antenna Port A Uplink: WCDMA Band 5 5MHz BW Mid Ch & LTE Band 30 5MHz BW High Ch



2 Bands per antenna port Conducted Spurious Emissions
Antenna Port C Uplink: LTE Band 14 10MHz BW Mid Ch & LTE Band 25 10MHz BW Low Ch



2.7 Noise Limit

2.7.1 Specification Reference

FCC 47 CFR Part 20. Clause 20.21(e)(9)(i)(A)
FCC 47 CFR Part 20. Clause 20.21(e)(9)(i)(I)
KDB935210 D04, Clause 7.7

2.7.2 Standard Applicable

FCC 47 CFR Part 20. Clause 20.21(e)(9)(i)(A) Noise Limits.:

The transmitted noise power in dBm/MHz of frequency selective consumer boosters outside the licensee's spectrum blocks at their uplink and downlink ports shall not exceed the following limits:

(1) -103 dBm/MHz - RSSI

(i) Where RSSI is the downlink composite signal power received in dBm for frequencies in the band of operation outside the licensee's spectrum block as measured after spectrum block filtering is applied and is referenced to the booster's donor port for each band of operation. RSSI is expressed in negative dB units relative to 1 mW.

(ii) Boosters with MSCL less than 40 dB, shall reduce the Noise output in (A) by 40 dB - MSCL, where MSCL is the minimum coupling loss in dB between the wireless device and booster's server port. MSCL must be calculated or measured for each band of operation and provided in compliance test reports.

(2)(i) Maximum downlink noise power shall not exceed $-102.5 \text{ dBm/MHz} + 20 \log_{10}(\text{Frequency})$, where Frequency is the uplink mid-band frequency of the supported spectrum bands in MHz.

(ii) Compliance with Noise limits will use instrumentation calibrated in terms of RMS equivalent voltage, and with booster input ports terminated or without input signals applied within the band of measurement.

FCC 47 CFR Part 20. Clause 20.21(e)(9)(i)(I) Transmit Power Off Mode.

When the consumer booster cannot otherwise meet the noise and gain limits defined herein it must operate in "Transmit Power OFF Mode." In this mode of operation, the uplink and downlink noise power shall not exceed -70 dBm/MHz and uplink gain shall not exceed the lesser of 23 dB or MSCL.

2.7.3 Equipment Under Test and Modification State

Serial No: 370920000139 (NU) and 371929000156 (CU) / Test Configuration A and B

2.7.4 Date of Test/Initial of test personnel who performed the test

August 19 and October 15, 2019/XYZ

2.7.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.7.6 Environmental Conditions

Test performed at TÜV SÜD America Inc. Mira Mesa facility.

Ambient Temperature	24.5 - 26.7°C
Relative Humidity	45.0 - 49.6%
ATM Pressure	98.9 - 99.0kPa

2.7.7 Additional Observations

- This is conducted Test. Test procedure is per Section 7.7 of KDB935210 (D04 Provider Specific Booster Measurements v02r03). Appropriate offset (line losses) applied.
- The EUT operated in Test Mode with the gain set to the maximum gain and a minimum bandwidth setting (5MHz).
- For Maximum Noise (frequency Dependent) testing, setup the EUT according to Figure 6 of Section 7.7 of KDB935210.
- Maximum Noise (frequency Dependent) evaluations are conducted at CU antenna ports. Operational downlink band for WCDMA Band 5 and LTE Band 4, 12, 25, 30 were tested.
- For Maximum Noise (RSSI Dependent and Transmit Power off mode) and Noise Response Time tests, setup the EUT according to Figure 7 or 8 of Section 7.7 of KDB935210 as appropriate.
- Maximum Noise (RSSI Dependent and Transmit Power off mode) and Noise Response Time evaluations are conducted at CU and NU antenna ports. Operational uplink and downlink bands for WCDMA Band 5 and LTE Band 4, 12, 25, 30, were tested.
- Signal generator was configured to transmit: 4.1 MHz AWGN.

2.7.8 Test Results

Maximum Noise (Frequency Dependent)				
Band	Frequency Range (MHz)	Max Noise (dBm/MHz)	Limit* (dBm/MHz)	Margin (dB)
WCDMA Band 5 Downlink (Port A)	869 - 894	-66.06	-43.60	22.46
LTE Band 4 Downlink (Port A)	2110 - 2155	-68.18	-35.92	32.26
LTE Band 12 Downlink (Port A)	729 - 746	-68.0	-45.14	22.86
LTE Band 25 Downlink (Port A)	1930 - 1995	-68.56	-36.65	31.91
LTE Band 30 Downlink (Port A)	2350 - 2360	-61.59	-35.06	26.53

*: $-102.5 \text{ dBm/MHz} + 20 \text{ Log}_{10}(\text{Frequency})$, where Frequency is the uplink mid-band frequency of the supported spectrum bands in MHz. (Downlink only)



Maximum Noise (RSSI Dependent and Transmit Power off mode)					
Band	Frequency (MHz)	Signal Generator Output Level (dBm)	Max Noise (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
WCDMA Band 5 Downlink	869 - 894	-70.7	-76.81	-37.3	39.51
		-60.7	-76.69	-47.3	29.39
		-50.7	-76.96	-57.3	19.66
		-40.7**	-81.46	-67.3	14.16
		-30.7	-81.10	-70.0	11.10
		-20.7	-80.89	-70.0	10.89
WCDMA Band 5 Uplink	824 - 849	-74.7	-78.26	-33.3	44.96
		-64.7	-77.47	-43.3	34.17
		-54.7	-77.81	-53.3	24.51
		-44.7**	-81.36	-63.3	18.06
		-34.7	-81.15	-70.0	11.15
		-24.7	-81.45	-70.0	11.45
LTE Band 4 Downlink	2110 - 2155	-70.4	-71.14	-37.6	33.54
		-60.4	-71.80	-47.6	24.20
		-50.4	-72.43	-57.6	14.83
		-40.4**	-71.84	-67.6	4.24
		-30.4	-72.0	-70.0	2.0
		-20.4	-71.84	-70.0	1.84
LTE Band 4 Uplink	1710 - 1755	-77.0	-78.77	-31.0	47.77
		-67.0	-78.62	-41.0	37.62
		-57.0	-78.36	-51.0	27.36
		-47.0**	-83.62	-61.0	22.62
		-37.0	-81.97	-70.0	11.97
		-27.0	-82.09	-70.0	12.09
LTE Band 12 Downlink	729 - 746	-70.9	-74.53	-37.1	37.43
		-60.9	-79.44	-47.1	32.34
		-50.9	-81.89	-57.1	24.79
		-40.9**	-81.48	-67.1	14.38
		-30.9	-82.10	-70.0	12.10
		-20.9	-81.59	-70.0	11.59
LTE Band 12 Uplink	699 - 716	-74.5	-77.26	-33.5	43.76
		-64.5	-76.75	-43.5	33.25



		-54.5	-78.29	-53.5	24.79
		-44.5**	-79.89	-63.5	16.39
		-34.5	-79.63	-70.0	9.63
		-24.5	-80.67	-70.0	10.67
LTE Band 25 Downlink	2110 - 2155	-72.3	-72.90	-35.7	37.20
		-62.3	-72.28	-45.7	26.58
		-52.3	-72.14	-55.7	16.44
		-42.3**	-72.04	-65.7	6.34
		-32.3	-80.21	-70.0	10.21
		-22.3	-80.72	-70.0	10.72
LTE Band 25 Uplink	1710 - 1755	-79.2	-78.19	-28.8	49.39
		-69.2	-77.72	-38.8	38.92
		-59.2	-78.87	-48.8	30.07
		-49.2**	-83.90	-58.8	25.10
		-39.2	-82.23	-68.8	13.43
		-29.2	-82.32	-70.0	12.32
LTE Band 30 Downlink	2350 - 2360	-79.2	-67.56	-28.8	38.76
		-69.2	-61.87	-38.8	23.07
		-59.2	-61.85	-48.8	13.05
		-49.2**	-61.11	-58.8	2.31
		-39.2	-73.67	-68.8	4.87
		-29.2	73.06	-70.0	-143.06
LTE Band 30 Uplink	2305 - 2315	-75.8	-63.76	-32.2	31.56
		-65.8	-63.83	-42.2	21.63
		-55.8	-63.59	-52.2	11.39
		-45.8**	-73.72	-62.2	11.52
		-35.8	-73.62	-70.0	3.62
		-25.8	-73.99	-70.0	3.99

** : Transmit Power off mode

Noise Response Time				
Band	Frequency (MHz)	Noise Response Time (Sec)	Limit (Sec)	Margin (Sec)
WCDMA Band 5 Downlink	869 - 894	0.425	3	2.575
WCDMA Band 5 Uplink	824 - 849	0.410	3	2.590



LTE Band 4 Downlink	2110 - 2155	0.440	3	2.560
LTE Band 4 Uplink	1710 - 1755	0.640	3	2.360
LTE Band 5 Downlink	869 - 894	0.462	3	2.538
LTE Band 5 Uplink	824 - 849	0.412	3	2.588
LTE Band 12 Downlink	729 - 746	0.405	3	2.595
LTE Band 12 Uplink	699 - 716	0.435	3	2.565
LTE Band 25 Downlink	1930 - 1995	0.440	3	2.560
LTE Band 25 Uplink	1850 - 1915	0.410	3	2.590
LTE Band 30 Downlink	2350 - 2360	0.033	3	2.967
LTE Band 30 Uplink	2305 - 2315	0.410	3	2.590

N/A*: Not Applicable. Maximum Noise always complies with Noise Limit requirement. There is no noise limit change during testing.

2.8 Uplink Inactivity

2.8.1 Specification Reference

FCC 47 CFR Part 20. Clause 20.21(e)(9)(i)(J)
KDB935210 D04, Clause 7.8

2.8.2 Standard Applicable

FCC 47 CFR Part 20. Clause 20.21(e)(9)(i)(J) Uplink Inactivity:

Uplink Inactivity. When a consumer booster is not serving an active device connection after 5 seconds the uplink noise power shall not exceed -70 dBm/MHz.

2.8.3 Equipment Under Test and Modification State

Serial No: 370920000139 (NU) and 371929000156 (CU) / Test Configuration A and B

2.8.4 Date of Test/Initial of test personnel who performed the test

August 08, 13 and October 15, 16, 2019/XYZ

2.8.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.8.6 Environmental Conditions

Test performed at TÜV SÜD America Inc. Mira Mesa facility.

Ambient Temperature	24.5 - 25.8°C
Relative Humidity	45.0 - 53.3%
ATM Pressure	98.9 - 99.0kPa

2.8.7 Additional Observations

- This is conducted Test.
- Test procedure is per Section 7.8 of KDB935210 (D04 Provider Specific Booster Measurements v02r03). Appropriate offset (line losses) applied.
- The EUT operated in Normal Mode with a minimum bandwidth setting (5MHz).
- Setup the EUT according to Figure 1 of Section 6.3.2 of KDB935210.
- Evaluations are conducted at NU antenna ports.
- Operational uplink bands for WCDMA Band 5 and LTE Band 4, 12, 25, 30, were tested.
- Signal: 5MHz WCDMA or LTE.



2.8.8 Test Results

Uplink Inactivity				
Band	Frequency (MHz)	UL Inactive Time (Sec)	Limit (Sec)	Margin (Sec)
WCDMA Band 5 Port A	836.6	1.40	5.0	3.60
LTE Band 4 Port A	1732.5	1.44	5.0	3.56
LTE Band 4 Port B	1732.5	1.47	5.0	3.53
LTE Band 4 Port C	1732.5	1.59	5.0	3.41
LTE Band 12 Port A	707.5	1.67	5.0	3.33
LTE Band 25 Port A	1882.5	1.53	5.0	3.47
LTE Band 25 Port C	1882.5	1.77	5.0	3.23
LTE Band 30 Port A	2310	1.61	5.0	3.39
LTE Band 71 Port A	680.5	1.61	5.0	3.39
WCDMA Band 5 Port A	836.6	1.40	5.0	3.60
LTE Band 4 Port A	1732.5	1.44	5.0	3.56

2.8.9 Sample test Plots

WCDMA Band 5 Uplink 5MHz Bandwidth Mid Channel on NU Port A



11:09:14 23.09.2019

LTE Band 4 Uplink 5MHz Bandwidth Mid Channel on NU Port A



11:16:32 23.09.2019

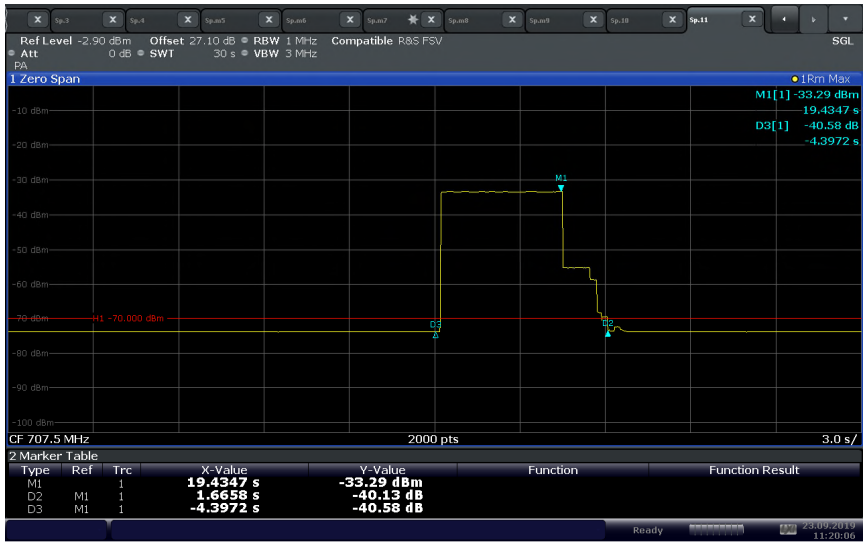


LTE Band 5 Uplink 5MHz Bandwidth Mid Channel on NU Port D



12:48:43 25.10.2019

LTE Band 12 Uplink 5MHz Bandwidth Mid Channel on NU Port A



11:20:06 23.09.2019

LTE Band 25 Uplink 5MHz Bandwidth Mid Channel on NU Port A



11:25:32 23.09.2019

LTE Band 30 Uplink 5MHz Bandwidth Mid Channel on NU Port A



11:35:22 23.09.2019

2.9 Variable Booster Gain

2.9.1 Specification Reference

FCC 47 CFR Part 20. Clause 20.21(e)(9)(i)(C)(1)
FCC 47 CFR Part 20. Clause 20.21(e)(9)(i)(I)
KDB935210 D04, Clause 7.9

2.9.2 Standard Applicable

FCC 47 CFR Part 20. Clause 20.21(e)(9)(i)(C)(1) Booster Gain Limits:
The gain of the frequency selective consumer booster shall meet the limits below.

1) The uplink and downlink gain in dB of a frequency selective consumer booster referenced to its input and output ports shall not exceed BSCL - 28dB - (40 dB - MSCL).

(i) Where BSCL is the coupling loss between the booster's donor port and the base station's input port, and MSCL is the minimum coupling loss in dB between the wireless device and the booster's server port. MSCL must be calculated or measured for each band of operation and provided in compliance test reports.

(ii) In order of preference, BSCL is determined as follows: determine path loss between the base station and the booster; such measurement shall be based on measuring the received forward pilot/control channel power at the booster and reading the pilot/control channel transmit power from the base station as defined in the system information messages sent by the base station; estimate BSCL by assuming that the base station is transmitting at a level of +25 dBm per channel (assume a small, lightly loaded cell) and measuring the total received signal power level within the channel in dBm (RPCH) received at the booster input port. BSCL is then calculated as 25– RPCH; or assume that the BSCL is 70dB without performing any measurement.

FCC 47 CFR Part 20. Clause 20.21(e)(9)(i)(I) Transmit Power Off Mode.

When the consumer booster cannot otherwise meet the noise and gain limits defined herein it must operate in "Transmit Power OFF Mode." In this mode of operation, the uplink and downlink noise power shall not exceed -70 dBm/MHz and uplink gain shall not exceed the lesser of 23 dB or MSCL.

2.9.3 Equipment Under Test and Modification State

Serial No: 110222000051 and 481222000175 / Test Configuration A and B

2.9.4 Date of Test/Initial of test personnel who performed the test

August 08, 13 and October 15, 16, 2019/XYZ

2.9.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.9.6 Environmental Conditions

Test performed at TÜV SÜD America Inc. Mira Mesa facility.

Ambient Temperature	24.5 - 25.8°C
Relative Humidity	45.0 - 53.3%
ATM Pressure	98.9 - 99.0kPa

2.9.7 Additional Observations

- This is conducted Test.
- Test procedure is per Section 7.9 of KDB935210 (D04 Provider Specific Booster Measurements v02r03). Appropriate offset (line losses) applied.
- The EUT operated in Normal Mode
- Setup the EUT according to Figure 1 of Section 6.3.2 of KDB935210.
- Evaluations are conducted at worst case CU and NU antenna ports according to Maximum Booster Gain test result.
- Variable Gain: Operational uplink and downlink bands for WCDMA B5, LTE B4, B12, B25, B30 were tested.
- Uplink Gain Timing: Operational uplink bands for WCDMA B5, LTE B4, B12, B25, B30 were tested.
- Signal: 5MHz WCDMA or LTE.
- MSCL: $L_p = 20\log f + 20\log d - 27.5$

Where: L_p = Basic free space path loss,
 f = frequency in MHz,
 d = separation distance in meters (2m)
lowest MSCL value was utilized.

- BSCL: The coupling loss (in dB) between the donor port (NU) of the Consumer Booster and the input port of the Base Station



2.9.8 Test Results

WCDMA B5 Downlink Gain vs RPCH and BSCL - Middle Channel					
RPCH Power (dBm)	BSCL (dB)	Measured Power (dBm)	Gain (dB)	Limit (dB)	Margin (dB)
-106.5	131.5	-1.13	97.90	98.50	0.60
-96.5	121.5	-1.51	87.52	88.50	0.98
-86.5	111.5	-0.8	78.23	78.50	0.27
-76.5	101.5	-1.5	67.53	68.50	0.97
-66.5	91.5	-1.41	57.62	58.50	0.88
-56.5	81.5	-1.35	47.68	48.50	0.82

WCDMA B5 Uplink Gain vs RPCH and BSCL - Middle Channel					
RPCH Power (dBm)	BSCL (dB)	Measured Power (dBm)	Gain (dB)	Limit (dB)	Margin (dB)
-107.3	142.3	19.39	72.56	99.30	26.74
-97.3	132.3	19.65	72.82	89.30	16.48
-87.3	112.3	19.26	72.43	79.30	6.87
-77.3	102.3	15.27	68.44	69.30	0.86
-67.3	92.3	5.82	58.99	59.30	0.31
-57.3	82.3	-4.46	48.71	49.30	0.59



LTE B12 Downlink Gain vs RPCH and BSCL - Middle Channel					
RPCH Power (dBm)	BSCL (dB)	Measured Power (dBm)	Gain (dB)	Limit (dB)	Margin (dB)
-107.39	132.39	4.48	86.38	99.39	13.01
-97.39	122.39	1.27	73.17	89.39	16.22
-87.39	112.39	8.21	70.11	79.39	9.28
-77.39	102.39	8.27	60.17	69.39	9.22
-67.39	92.39	8.42	50.32	59.39	9.07
-57.39	82.39	8.3	40.2	49.39	9.19

LTE B12 Uplink Gain vs RPCH and BSCL - Middle Channel					
RPCH Power (dBm)	BSCL (dB)	Measured Power (dBm)	Gain (dB)	Limit (dB)	Margin (dB)
-107.4	132.4	19.96	75.95	99.40	23.45
-97.4	122.4	19.59	75.58	89.40	13.82
-87.4	112.4	18.2	74.19	79.40	5.21
-77.4	102.4	8.48	64.47	69.40	4.93
-37.4	92.4	-1.7	54.29	59.40	5.11
-57.4	82.4	-10.38	45.61	49.40	3.79



LTE B25 Downlink Gain vs RPCH and BSCL - Middle Channel					
RPCH Power (dBm)	BSCL (dB)	Measured Power (dBm)	Gain (dB)	Limit (dB)	Margin (dB)
-101.60	126.60	8.09	83.63	93.60	9.97
-91.60	116.60	8.58	74.12	83.60	9.48
-81.60	106.60	8.78	64.32	73.60	9.28
-71.60	96.60	9.25	54.79	63.60	8.81
-61.60	86.60	8.89	44.43	53.60	9.17
-51.60	76.60	8.58	34.12	43.60	9.48

LTE B25 Uplink Gain vs RPCH and BSCL - Middle Channel					
RPCH Power (dBm)	BSCL (dB)	Measured Power (dBm)	Gain (dB)	Limit (dB)	Margin (dB)
-108.60	133.60	19.17	78.41	100.60	22.19
-98.60	123.60	19.21	78.45	90.60	12.15
-88.60	113.60	19.0	78.24	80.60	2.36
-78.60	103.60	9.11	68.35	70.60	2.25
-68.60	93.60	-1.07	58.17	60.60	2.43
-58.60	83.60	-10.68	48.56	50.60	2.04

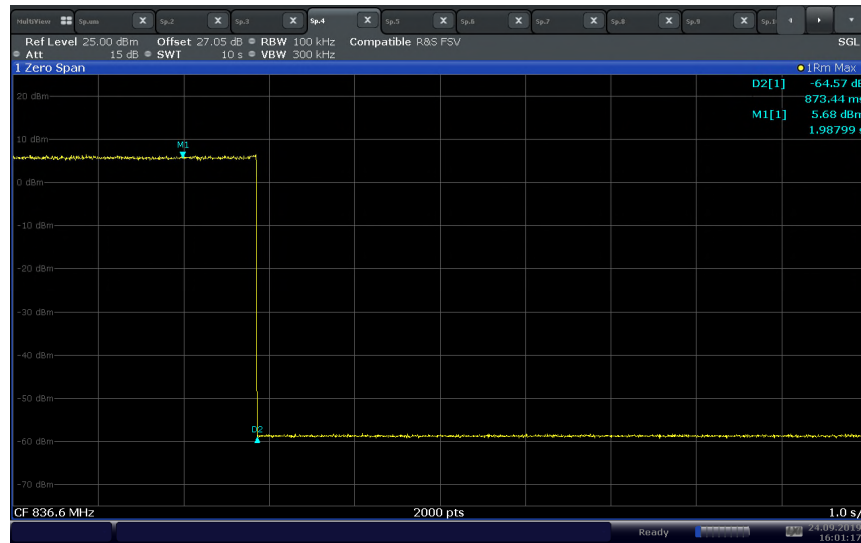


LTE B30 Downlink Gain vs RPCH and BSCL - Middle Channel					
RPCH Power (dBm)	BSCL (dB)	Measured Power (dBm)	Gain (dB)	Limit (dB)	Margin (dB)
-101.28	126.28	7.51	83.23	93.28	10.05
-91.28	116.28	8.79	74.51	83.28	8.77
-81.28	106.28	8.54	64.26	73.28	9.02
-71.28	96.28	8.65	54.37	63.28	8.91
-61.28	86.28	8.88	44.60	53.28	8.68
-51.28	76.28	8.91	34.63	43.28	8.65

LTE B30 Uplink Gain vs RPCH and BSCL - Middle Channel					
RPCH Power (dBm)	BSCL (dB)	Measured Power (dBm)	Gain (dB)	Limit (dB)	Margin (dB)
-108.28	133.28	16.06	74.29	100.28	25.99
-98.28	123.28	16.28	74.51	90.28	15.77
-88.28	113.28	16.36	74.59	80.28	5.69
-78.28	103.28	8.69	66.92	70.28	3.36
-68.28	93.28	-1.08	57.15	60.28	3.13
-58.28	83.28	-10.57	47.66	50.28	2.62

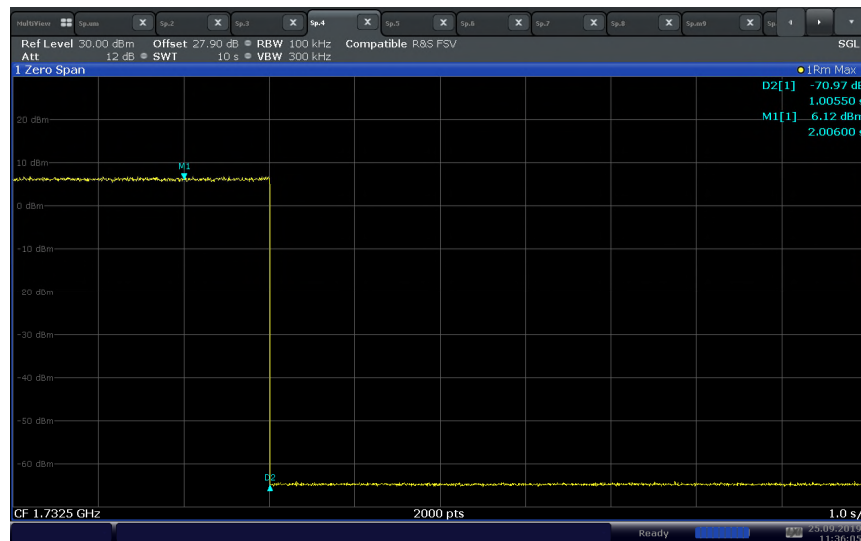
2.9.9 Test Results Plots

WCDMA Band 5 Uplink Gain Timing 5MHz Bandwidth Mid Channel

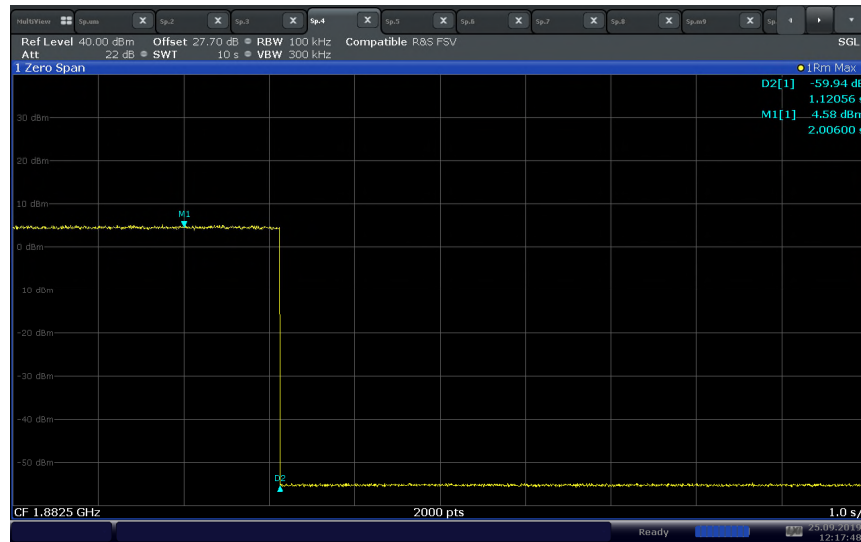


16:01:17 24.09.2019

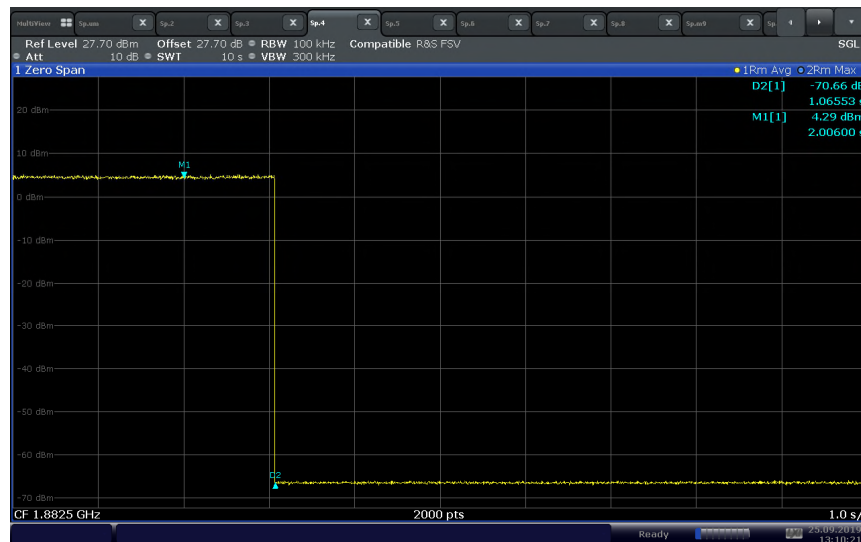
LTE Band 4 Uplink Gain Timing 5MHz Bandwidth Mid Channel



11:36:05 25.09.2019

**LTE Band 12 Uplink Gain Timing 5MHz Bandwidth Mid Channel**

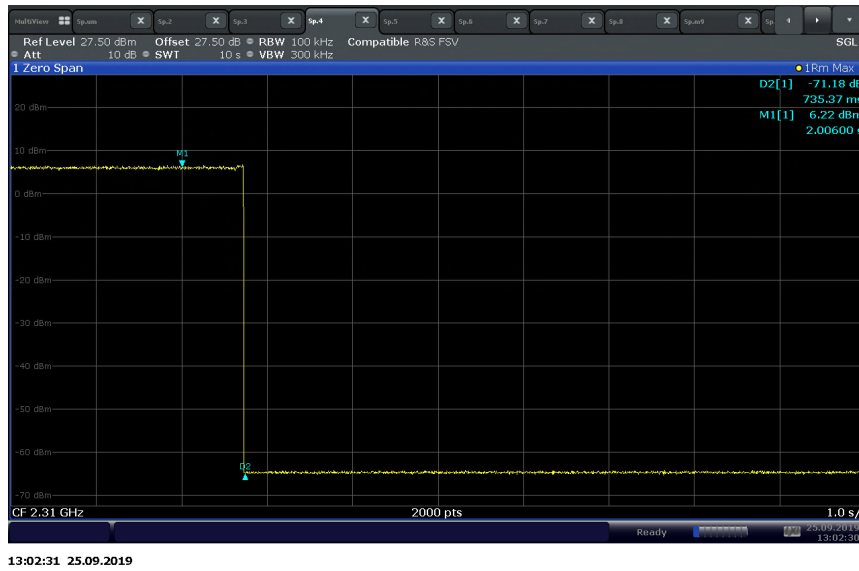
12:17:49 25.09.2019

LTE Band 25 Uplink Gain Timing_5MHz Bandwidth Mid Channel

13:10:22 25.09.2019



LTE Band 30 Uplink Gain Timing_5MHz Bandwidth Mid Channel



2.10 Occupied Bandwidth**2.10.1 Specification Reference**

FCC 47 CFR Part 2, Clause 2.1049
FCC 47 CFR Part 22, Clause 22.917(b)
FCC 47 CFR Part 24, Clause 24.238(b)

2.10.2 Standard Applicable

FCC 47 CFR Part 24, Clause 24.238(b)

The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

26dB Bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated by at least 26 dB below the transmitter power.

Using the occupied bandwidth measurement function in the spectrum analyzer, the 99% occupied bandwidth was measured.

In addition, the 26dB bandwidth was measured in accordance with FCC KDB 971168 D01 V0202 Clause 4.1 using the ndB measurement function in the spectrum analyzer.

- The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
- The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.
- The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be at least 3x RBW.

2.10.3 Equipment Under Test and Modification State

Serial No: 110222000051 and 481222000175 / Test Configuration A and B

2.10.4 Date of Test/Initial of test personnel who performed the test

November 06, 07 and 28, 2022 / MAR

2.10.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.10.6 Environmental Conditions

Test performed at TÜV SÜD America Inc. Mira Mesa facility.

Ambient Temperature	21.8 - 24.3 °C
Relative Humidity	40.0 – 45.3 %
ATM Pressure	99.8 – 101.1kPa

2.10.7 Additional Observations

- This is a conducted test. Both 26dB bandwidth and 99% bandwidth presented.
- Using the occupied bandwidth measurement function in the spectrum analyzer, the 99% occupied bandwidth was measured.



Product Service

- The 26dB bandwidth is measured in accordance with ANSI C63.26 clause 5.4.3 using the ndB measurement function in the spectrum analyzer.
- The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
- The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.
- The RBW is set to 1% of the OBW while the VBW is $\geq 3X$ RBW.
- The detector is peak and the trace mode is max hold.
- All low, middle and high channels were verified. Only test plots for middle channel presented in this test report as the representative configuration.

**2.10.8 Test Results**

WCDMA Band 5 Downlink			
Channel	Frequency (MHz)	OBW (MHz)	-26dB BW (MHz)
4357	871.4	3.87	4.54
4408	881.6	3.87	4.50
4458	891.6	3.88	4.54

WCDMA Band 5 Uplink			
Channel	Frequency (MHz)	OBW (MHz)	-26dB BW (MHz)
4132	826.4	4.04	4.57
4183	836.6	4.05	4.55
4233	846.6	4.05	4.57



LTE Band 4 Downlink				
Bandwidth (MHz)	Channels	Frequency (MHz)	OBW (MHz)	-26dB BW (MHz)
5 MHz	1975	2112.5	4.63	4.97
	2175	2132.5	4.72	4.94
	2375	2152.5	4.70	4.95
10 MHz	2000	2115.0	9.31	10.04
	2175	2132.5	9.29	9.90
	2350	2150.0	9.30	9.87
15 MHz	2025	2117.5	13.64	14.75
	2175	2132.5	13.61	14.84
	2325	2147.5	13.65	14.76
20 MHz	2050	2120.0	18.35	19.66
	2175	2132.5	18.34	19.64
	2300	2145.0	18.42	19.70

LTE Band 4 Uplink				
Bandwidth (MHz)	Channels	Frequency (MHz)	OBW (MHz)	-26dB BW (MHz)
5 MHz	19975	1712.5	4.64	4.94
	20175	1732.5	4.63	4.93
	20375	1752.5	4.64	4.94
10 MHz	20000	1715.0	9.26	9.91
	20175	1732.5	9.25	9.87
	20350	1750.0	9.24	9.88
15 MHz	20025	1717.5	13.68	14.78
	20175	1732.5	13.65	14.77
	20325	1747.5	13.64	14.77
20 MHz	20050	1720.0	18.45	19.70
	20175	1732.5	18.42	19.70
	20300	1745.0	18.31	19.68



LTE Band 12 Downlink				
Bandwidth (MHz)	Channels	Frequency (MHz)	OBW (MHz)	-26dB BW (MHz)
5 MHz	5035	731.5	4.70	5.17
	5095	737.5	4.71	5.17
	5155	743.5	4.73	4.99
10 MHz	5060	734.0	9.17	9.82
	5095	737.5	9.19	9.86
	5130	741.0	9.24	9.87

LTE Band 12 Uplink				
Bandwidth (MHz)	Channels	Frequency (MHz)	OBW (MHz)	-26dB BW (MHz)
5 MHz	23035	701.5	4.60	4.92
	23095	707.5	4.64	4.96
	23155	713.5	4.62	4.93
10 MHz	23060	704.0	9.22	9.81
	23095	707.5	9.25	9.84
	23130	711.0	9.22	9.76



LTE Band 25 Downlink				
Bandwidth (MHz)	Channels	Frequency (MHz)	OBW (MHz)	-26dB BW (MHz)
5 MHz	8065	1932.5	4.48	4.97
	8365	1962.5	4.47	4.95
	8665	1992.5	4.63	4.95
10 MHz	8090	1935.0	8.95	9.63
	8365	1962.5	8.96	9.66
	8640	1990.0	8.95	9.85
15 MHz	8115	1937.5	13.33	14.63
	8365	1962.5	13.37	14.68
	8615	1987.5	13.32	14.69
20 MHz	8140	1940.0	17.83	19.53
	8365	1962.5	17.84	19.51
	8590	1985.0	17.93	19.60

LTE Band 25 Uplink				
Bandwidth (MHz)	Channels	Frequency (MHz)	OBW (MHz)	-26dB BW (MHz)
5 MHz	26065	1852.5	4.47	4.93
	26365	1882.5	4.46	4.93
	26665	1912.5	4.47	4.93
10 MHz	26090	1855.0	8.89	9.86
	26365	1882.5	8.98	9.88
	26640	1910.0	8.95	9.85
15 MHz	26115	1857.5	13.43	14.40
	26365	1882.5	13.37	14.32
	26615	1907.5	13.32	14.38
20 MHz	26140	1860.0	17.98	19.44
	26365	1882.5	18.36	19.55
	26590	1905.0	17.87	19.30

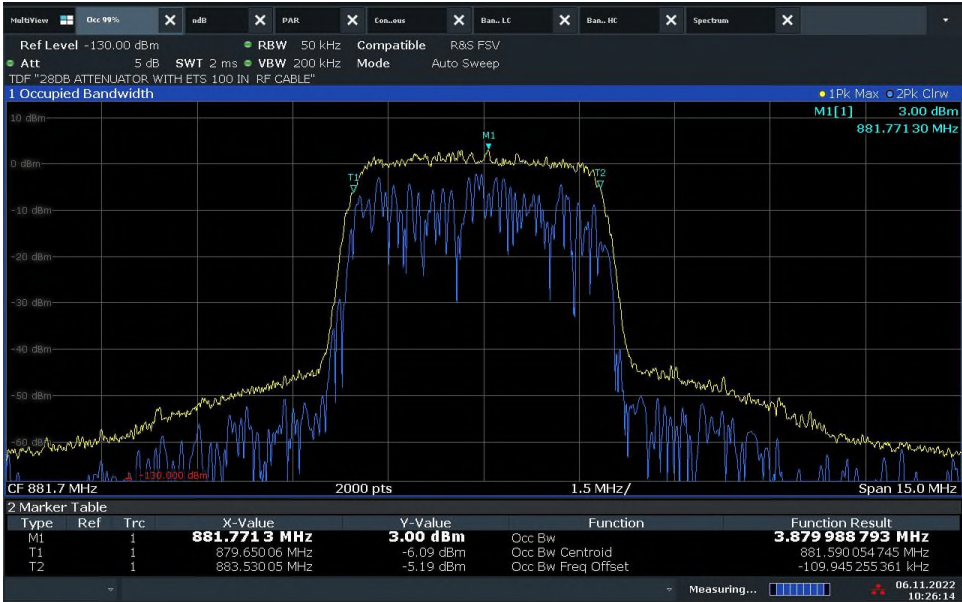


LTE Band 30 Downlink				
Bandwidth (MHz)	Channels	Frequency (MHz)	OBW (MHz)	-26dB BW (MHz)
5 MHz	9795	2352.5	4.69	5.00
	9820	2355.0	4.61	4.99
	9845	2357.5	4.61	5.01
10 MHz	-	-	-	-
	9820	2355.0	9.20	9.81
	-	-	-	-

LTE Band 30 Uplink				
Bandwidth (MHz)	Channels	Frequency (MHz)	OBW (MHz)	-26dB BW (MHz)
5 MHz	27685	2307.5	4.63	4.93
	27710	2310.0	4.63	4.95
	27735	2312.5	4.63	4.95
10 MHz	-	-		
	27710	2310.0	9.24	9.75
	-	-		

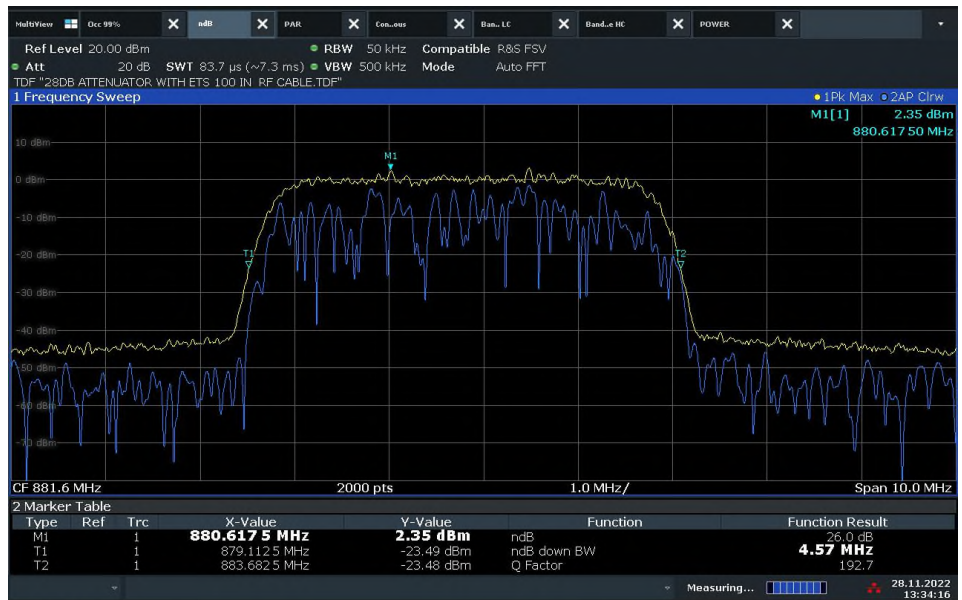


WCDMA Band 5 Downlink Mid Channel 99% OBW



10:26:15 06.11.2022

WCDMA Band 5 Downlink Mid Channel -26dB BW



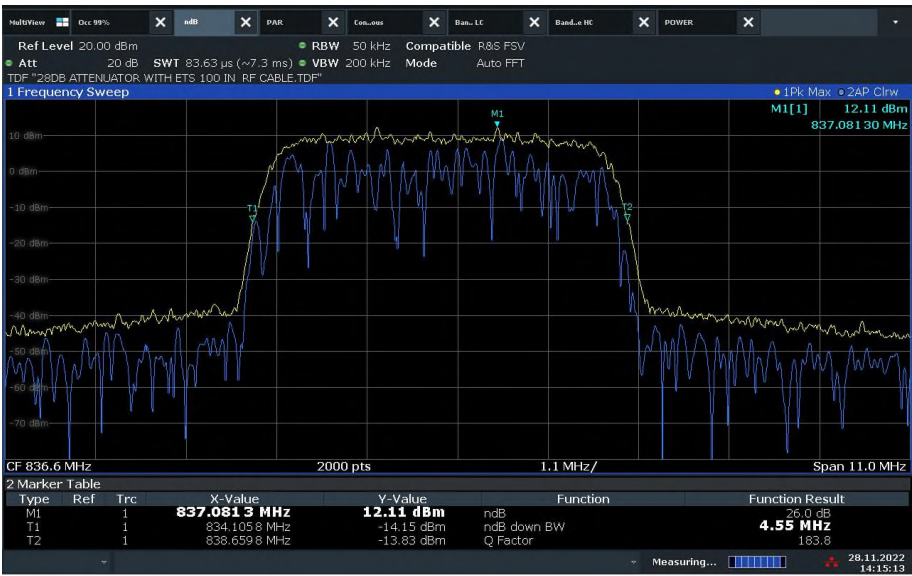
13:34:17 28.11.2022

WCDMA Band 5 Uplink Mid Channel 99% OBW



14:14:59 28.11.2022

WCDMA Band 5 Uplink Mid Channel -26dB BW



14:15:14 28.11.2022

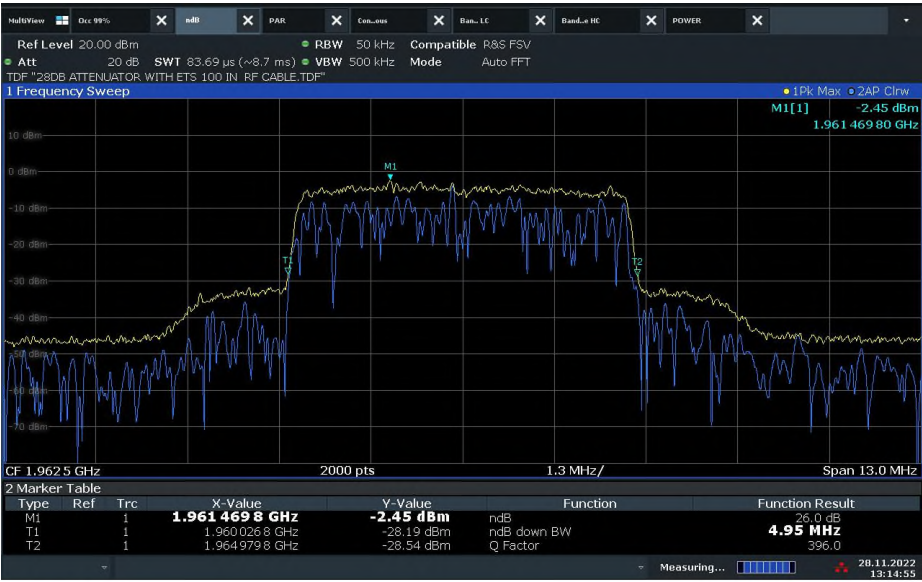


LTE Band 25 Downlink_5 MHz BW_Mid Channel 99% OBW



10:45:34 06.11.2022

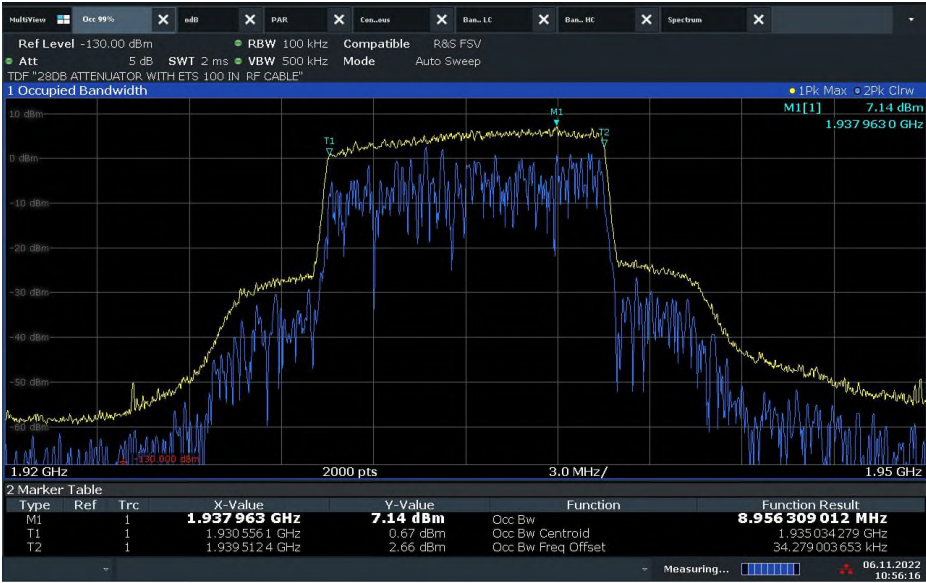
LTE Band 25 Downlink_5 MHz BW_Mid Channel -26dB BW



13:14:56 28.11.2022

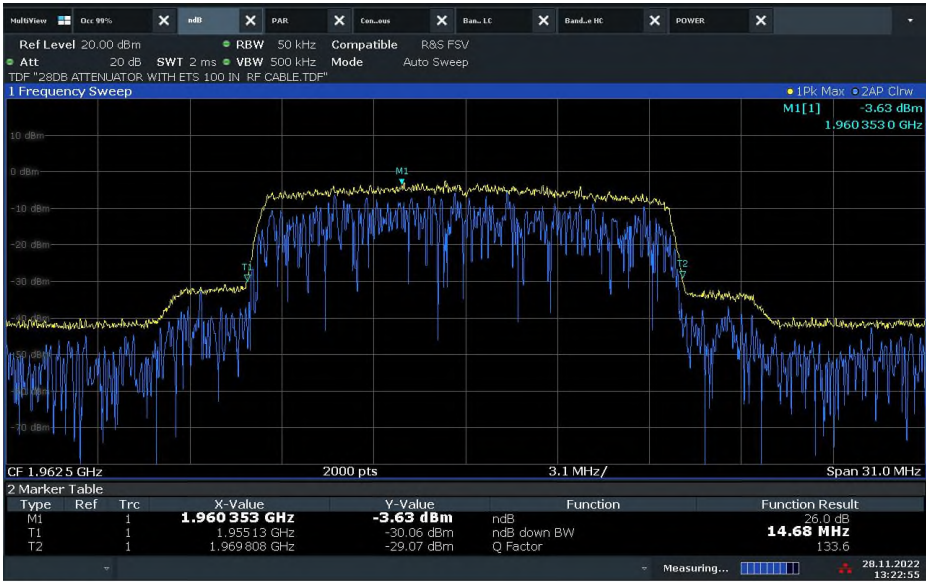


LTE Band 25 Downlink_10 MHz BW_Mid Channel 99% OBW



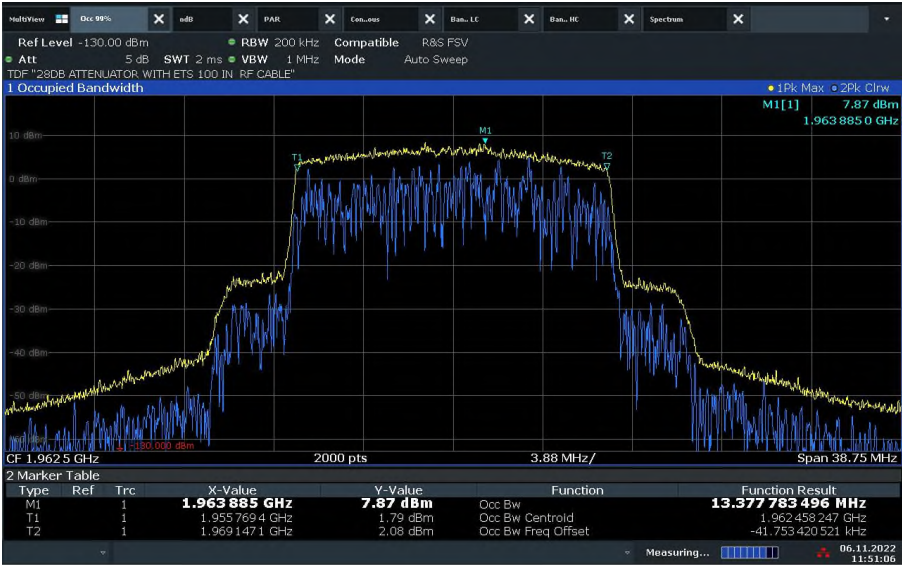
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LTE Band 25 Downlink_10 MHz BW_Mid Channel -26dB BW



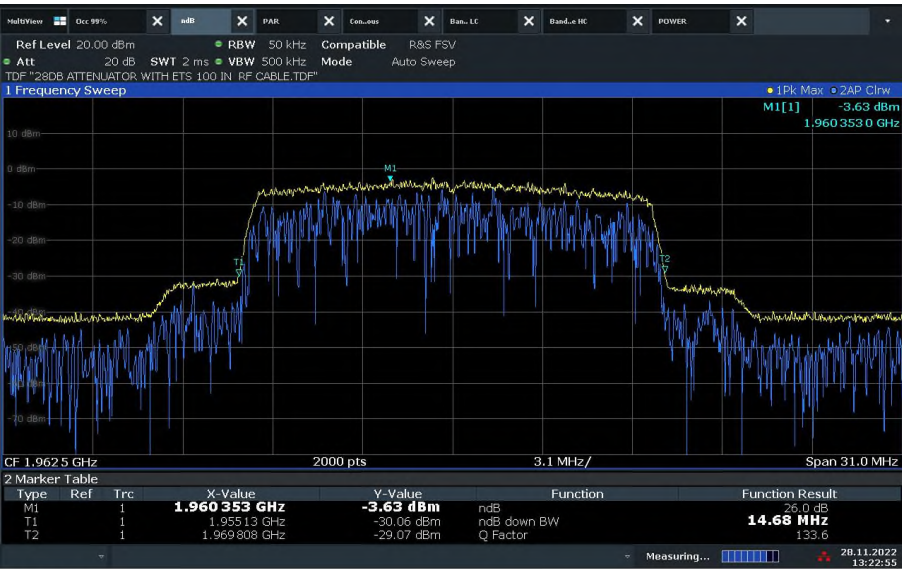
13:22:56 28.11.2022

LTE Band 25 Downlink_15 MHz BW_Mid Channel 99% OBW



11:51:08 06.11.2022

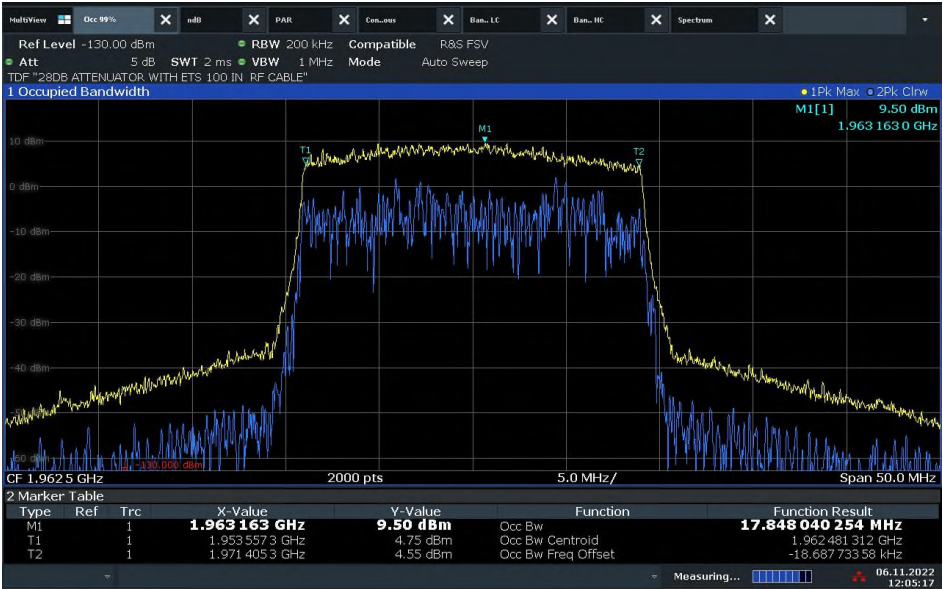
LTE Band 25 Downlink_15MHz BW_Mid Channel -26dB BW



13:22:56 28.11.2022

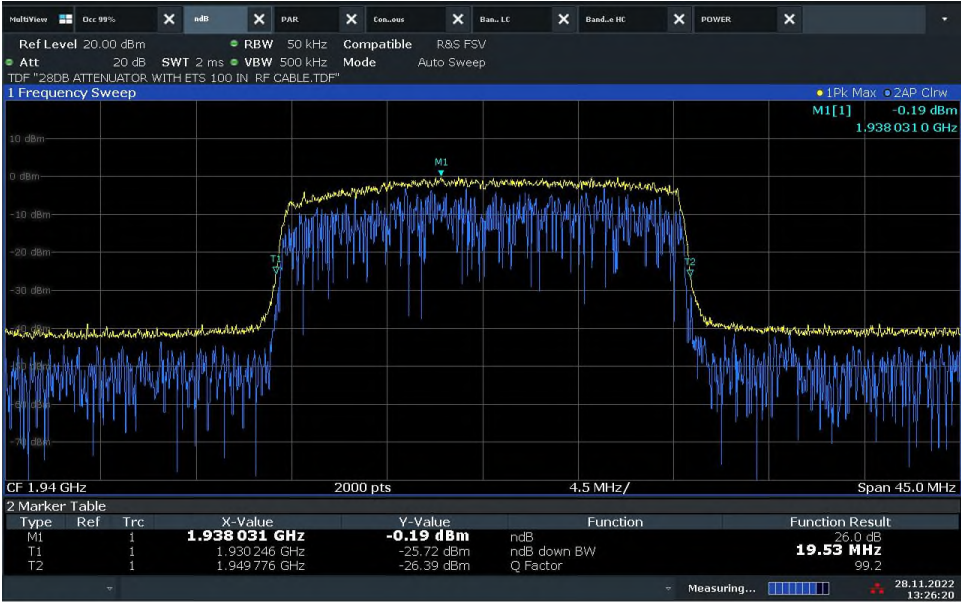


LTE Band 25 Downlink_20 MHz BW_Mid Channel 99% OBW



12:05:18 06.11.2022

LTE Band 25 Downlink_20 MHz BW_Mid Channel -26dB BW



13:26:20 28.11.2022



LTE Band 25 Uplink_5 MHz BW_Mid Channel 99% OBW



13:45:58 28.11.2022

LTE Band 25 Uplink_5 MHz BW_Mid Channel -26dB BW



13:46:12 28.11.2022



LTE Band 25 Uplink_10 MHz BW_Mid Channel 99% OBW



06:32:51 07.11.2022

LTE Band 25 Uplink_10 MHz BW_Mid Channel -26dB BW



13:54:23 28.11.2022



LTE Band 25 Uplink_15 MHz BW_Mid Channel 99% OBW



06:52:27 07.11.2022

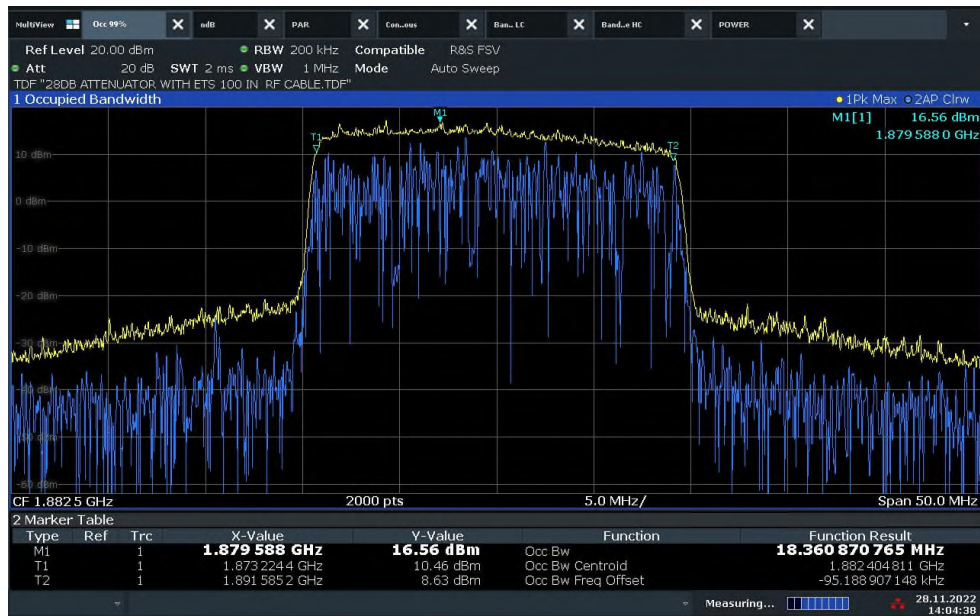
LTE Band 25 Uplink_15 MHz BW_Mid Channel -26dB BW



06:52:57 07.11.2022

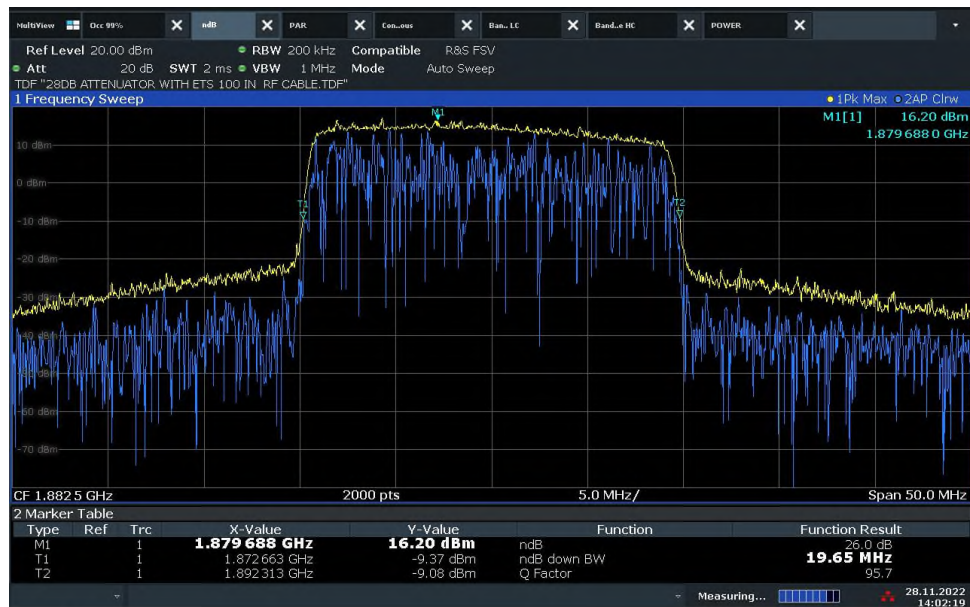


LTE Band 25 Uplink_20 MHz BW_Mid Channel 99% OBW



14:04:38 28.11.2022

LTE Band 25 Uplink_20 MHz BW_Mid Channel -26dB BW



14:02:19 28.11.2022



LTE Band 30 Downlink (5 MHz BW) / Mid Channel 2355.0 MHz / 99%OBW



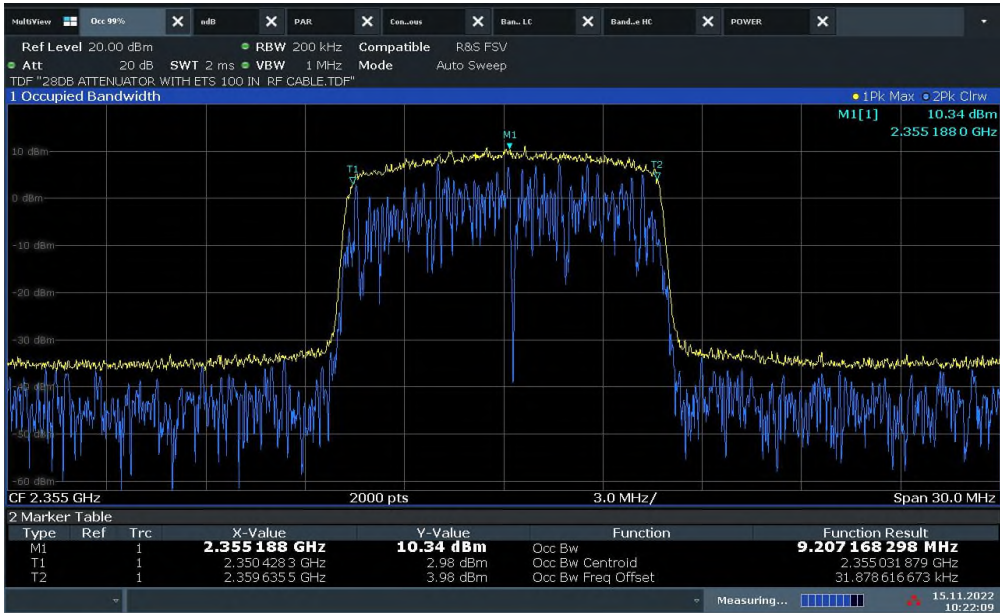
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LTE Band 30 Downlink (5 MHz BW) / Mid Channel 2355.0 MHz / 26dB BW



10:19:52 15.11.2022

LTE Band 30 Downlink (10 MHz BW) / Mid Channel 2355.0 MHz / 99%OBW



10:22:10 15.11.2022

LTE Band 30 Downlink (10 MHz BW) / Mid Channel 2355.0 MHz / 26dB BW



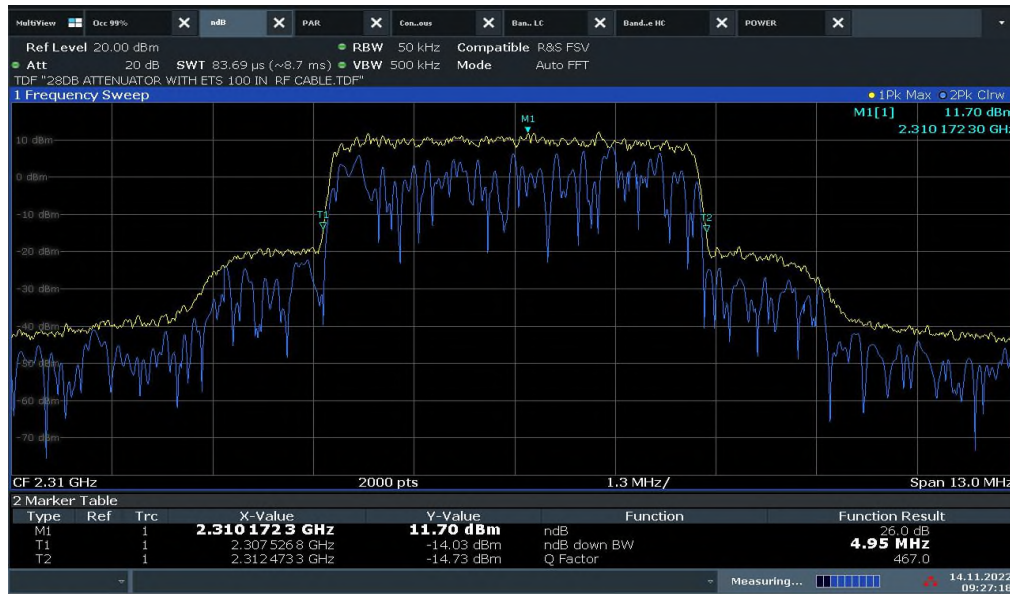
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LTE Band 30 Uplink (5 MHz BW) / Mid Channel 2310.0 MHz / 99%OBW



09:26:56 14.11.2022

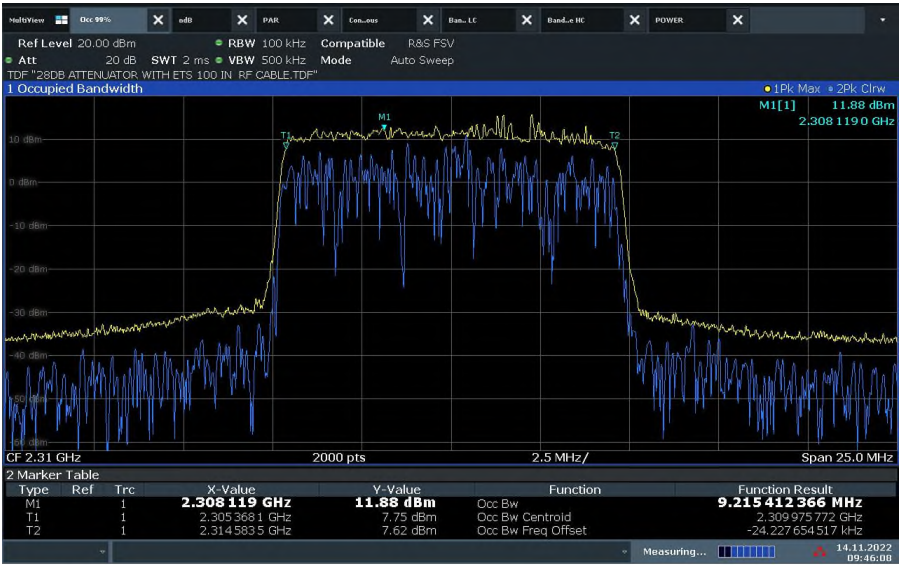
LTE Band 30 Uplink (5 MHz BW) / Mid Channel 2310.0 MHz / 26dB BW



09:27:19 14.11.2022

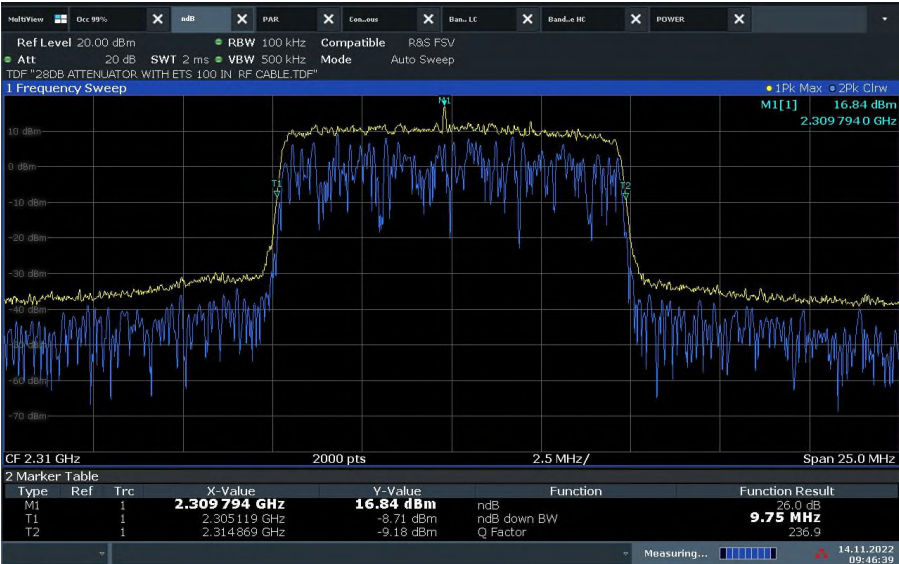


LTE Band 30 Uplink (10 MHz BW) / Mid Channel 2310.0 MHz / 99%OBW



09:46:08 14.11.2022

LTE Band 30 Uplink (10 MHz BW) / Mid Channel 2310.0 MHz / 26dB BW



09:46:40 14.11.2022

2.11 Oscillation Detection**2.11.1 Specification Reference**

FCC 47 CFR Part 20. Clause 20.21(e)(9)(ii)(A)
KDB935210 D04, Clause 7.11

2.11.2 Standard Applicable

FCC 47 CFR Part 20. Clause 20.21(e)(9)(ii)(A) Anti-Oscillation:

Consumer boosters must be able to detect and mitigate (i.e., by automatic gain reduction or shut down), any oscillations in uplink and downlink bands. Oscillation detection and mitigation must occur automatically within 0.3 seconds in the uplink band and within 1 second in the downlink band. In cases where oscillation is detected, the booster must continue mitigation for at least one minute before restarting. After five such restarts, the booster must not resume operation until manually reset.

2.11.3 Equipment Under Test and Modification State

Serial No: 370920000139 (NU) and 371929000156 (CU) / Test Configuration A and B

2.11.4 Date of Test/Initial of test personnel who performed the test

August 08, 13 and October 15, 16, 2019/XYZ

2.11.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.11.6 Environmental Conditions

Test performed at TÜV SÜD America Inc. Mira Mesa facility.

Ambient Temperature	24.5 - 25.8°C
Relative Humidity	45.0 - 53.3%
ATM Pressure	98.9 - 99.0kPa

2.11.7 Additional Observations

- This is conducted Test.
- Test procedure is per Section 7.11 of KDB935210 (D04 Provider Specific Booster Measurements v02r03). Appropriate offset (line losses) applied.
- The EUT operated in Normal Mode when testing Oscillation Mitigation Time. Setup the EUT according to Figure 10 and 11 of Section 7.11 of KDB935210 for Normal Mode.
- The EUT operated in Test Mode when testing Re-Try event. Setup the EUT according to Figure 12 of Section 7.11 of KDB935210 for Test Mode.
- Evaluations are conducted at CU and NU antenna ports.
- Signal: 5MHz WCDMA or LTE.



2.11.8 Test Results Summary

Band	Signal Path	Frequency (MHz)	Mitigation Time (Sec)	Limit (Sec)	Margin (Sec)
WCDMA Band 5 Downlink	CU with NU Port A	881.6	0.043	1	0.957
WCDMA Band 5 Uplink	NU Port A	836.6	0.033	0.3	0.267
LTE Band 4 Downlink	CU with NU Port A	2132.5	0.040	1	0.960
LTE Band 4 Uplink	NU Port A	1732.5	0.035	0.3	0.265
LTE Band 4 Downlink	CU with NU Port C	2132.5	0.023	1	0.977
LTE Band 4 Uplink	NU Port C	1732.5	0.025	0.3	0.275
LTE Band 12 Downlink	CU with NU Port A	737.5	0.025	1	0.975
LTE Band 12 Uplink	NU Port A	707.5	0.025	0.3	0.275
LTE Band 25 Downlink	CU with NU Port A	1962.5	0.038	1	0.962
LTE Band 25 Uplink	NU Port A	1882.5	0.033	0.3	0.267
LTE Band 25 Downlink	CU with NU Port C	1962.5	0.030	1	0.970
LTE Band 25 Uplink	NU Port C	1882.5	0.020	0.3	0.280
LTE Band 30 Downlink	CU with NU Port A	2355.0	0.038	1	0.962
LTE Band 30 Uplink	NU Port A	2310.0	0.033	0.3	0.267



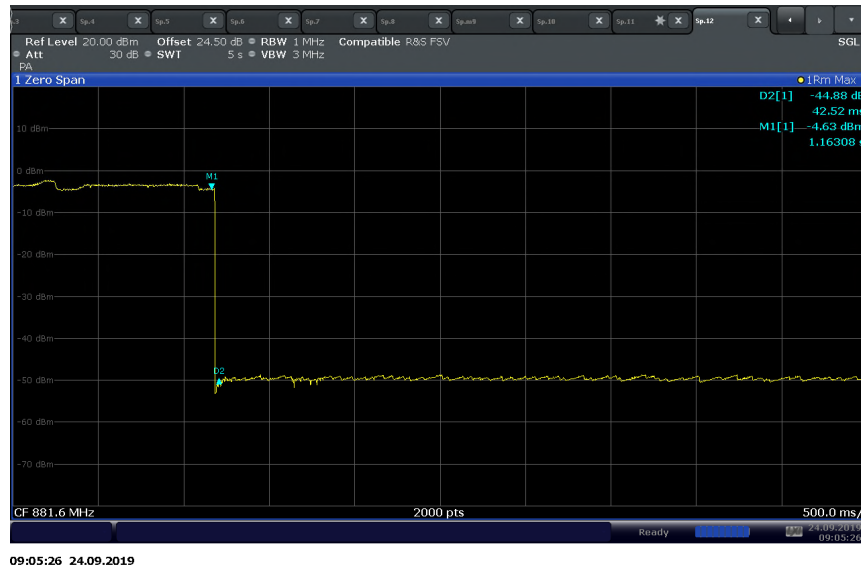
Band	Signal Path	Frequency (MHz)	Re-try Event	Limit Event	Margin (Sec)
WCDMA Band 5 Downlink	CU with NU Port A	881.6	0	5	5
WCDMA Band 5 Uplink	NU Port A	836.6	0	5	5
LTE Band 4 Downlink	CU with NU Port A	2132.5	0	5	5
LTE Band 4 Uplink	NU Port A	1732.5	0	5	5
LTE Band 4 Downlink	CU with NU Port C	2132.5	0	5	5
LTE Band 4 Uplink	NU Port C	1732.5	0	5	5
LTE Band 12 Downlink	CU with NU Port A	737.5	0	5	5
LTE Band 12 Uplink	NU Port A	707.5	0	5	5
LTE Band 25 Downlink	CU with NU Port A	1962.5	0	5	5
LTE Band 25 Uplink	NU Port A	1882.5	0	5	5
LTE Band 25 Downlink	CU with NU Port C	1962.5	0	5	5
LTE Band 25 Uplink	NU Port C	1882.5	0	5	5
LTE Band 30 Downlink	CU with NU Port A	2355.0	0	5	5
LTE Band 30 Uplink	NU Port A	2310.0	0	5	5



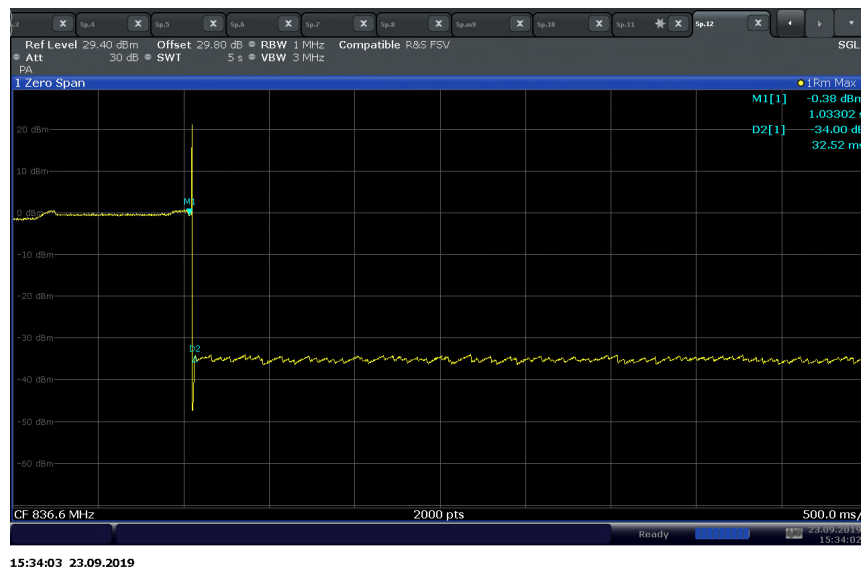
Band	Signal Path	Frequency (MHz)	Level	Peak Oscillation Level	Level
WCDMA Band 5 Downlink	CU with NU Port A	869.27	-71.75	< 2dB	12
WCDMA Band 5 Uplink	NU Port A	826.45	-72.75	< 2dB	12
LTE Band 4 Downlink	CU with NU Port A	2117.02	-70.70	< 2dB	12
LTE Band 4 Uplink	NU Port A	1757.66	-71.54	< 2dB	12
LTE Band 4 Downlink	CU with NU Port C	2145.05	-70.52	< 2dB	12
LTE Band 4 Uplink	NU Port C	1711.84	-71.28	< 2dB	12
LTE Band 12 Downlink	CU with NU Port A	746.38	-72.05	< 2dB	12
LTE Band 12 Uplink	NU Port A	715.91	-71.59	< 2dB	12
LTE Band 25 Downlink	CU with NU Port A	1994.85	-70.20	< 2dB	12
LTE Band 25 Uplink	NU Port A	1917.57	-71.06	< 2dB	12
LTE Band 25 Downlink	CU with NU Port C	1932.11	-71.05	< 2dB	12
LTE Band 25 Uplink	NU Port C	1914.80	-71.24	< 2dB	12
LTE Band 30 Downlink	CU with NU Port A	2349.17	-78.14	< 2dB	12
LTE Band 30 Uplink	NU Port A	2316.0	-67.01	< 2dB	12

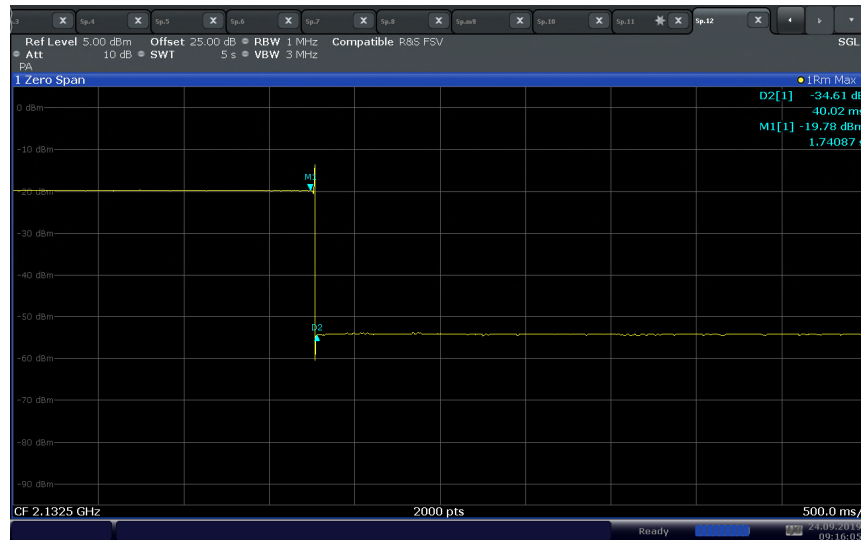
2.11.9 Test Results Plots

Mitigation Time - WCDMA Band 5 Downlink 5MHz Bandwidth Mid Channel - CU with NU Port A

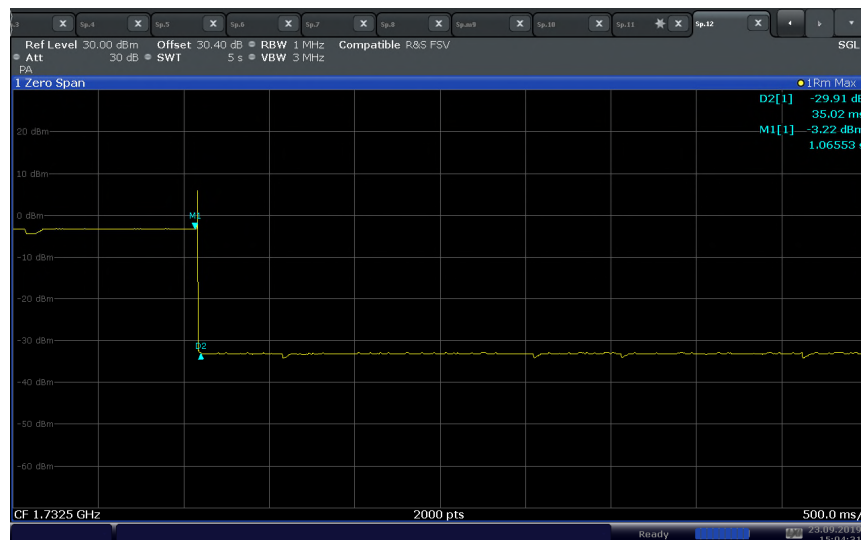


Mitigation Time - WCDMA Band 5 Uplink 5MHz Bandwidth Mid Channel - NU Port A

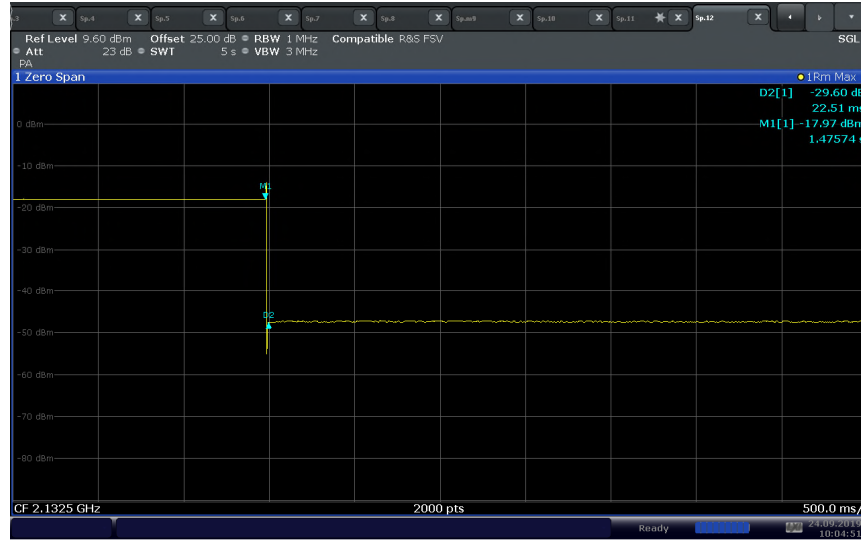


Mitigation Time - LTE Band 4 Downlink 5MHz Bandwidth Mid Channel - CU with NU Port A

09:16:06 24.09.2019

Mitigation Time - LTE Band 4 Uplink 5MHz Bandwidth Mid Channel - NU Port A

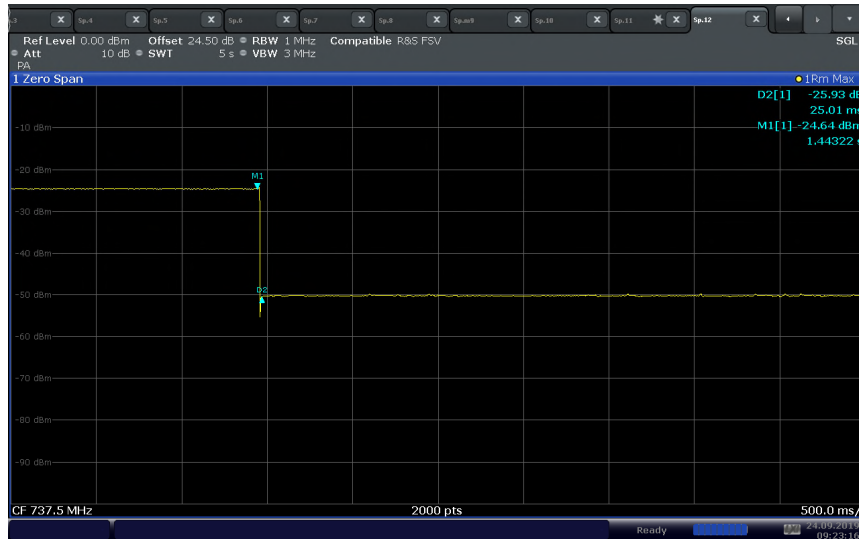
15:04:31 23.09.2019

Mitigation Time - LTE Band 4 Downlink 5MHz Bandwidth Mid Channel - CU with NU Port C

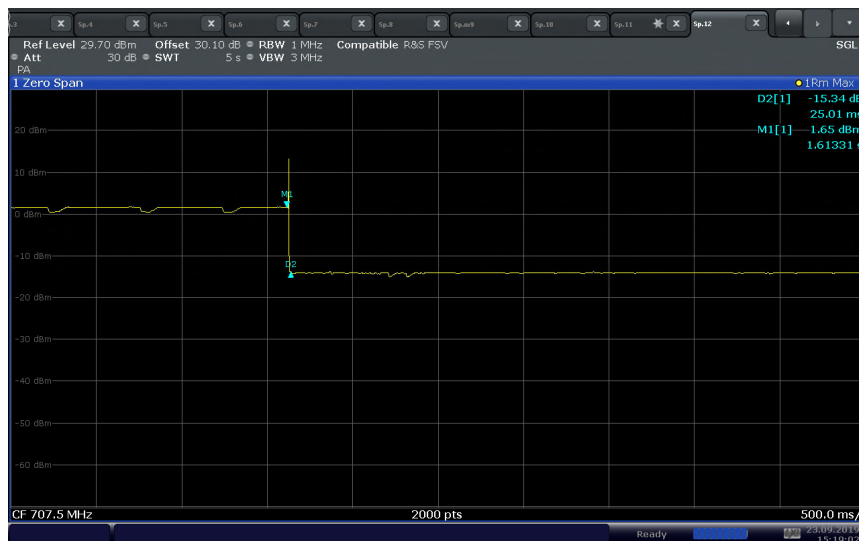
10:04:51 24.09.2019

Mitigation Time - LTE Band 4 Uplink 5MHz Bandwidth Mid Channel - NU Port C

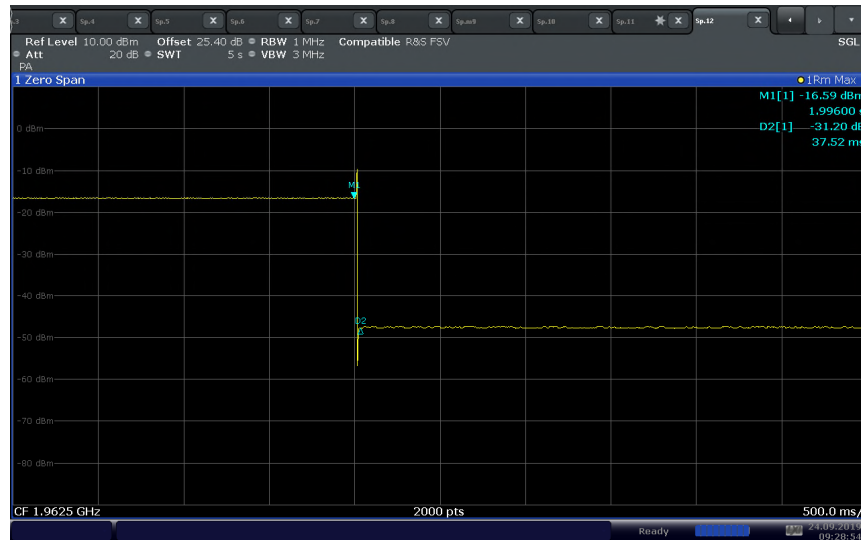
14:33:33 23.09.2019

Mitigation Time - LTE Band 12 Downlink 5MHz Bandwidth Mid Channel - CU with NU Port A

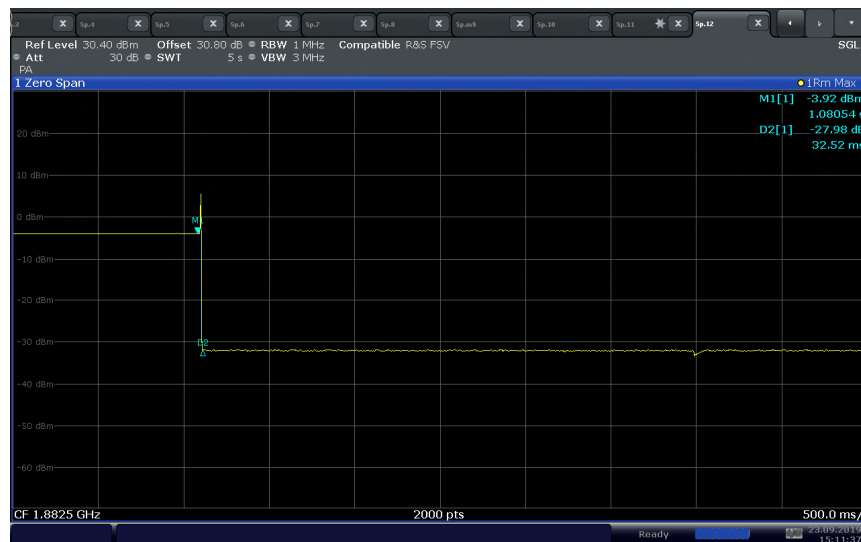
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Mitigation Time - LTE Band 12 Uplink 5MHz Bandwidth Mid Channel - NU Port A

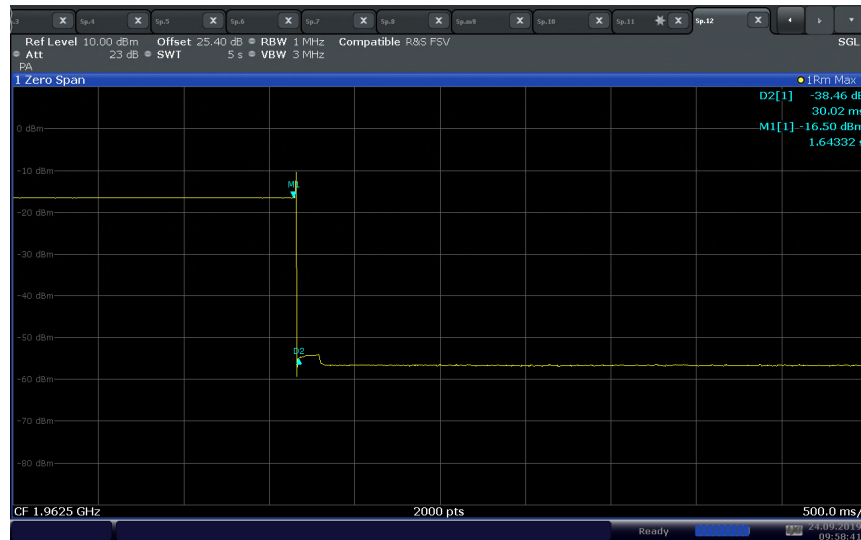
15:19:03 23.09.2019

Mitigation Time - LTE Band 25 Downlink 5MHz Bandwidth Mid Channel - CU with NU Port A

09:28:55 24.09.2019

Mitigation Time - LTE Band 25 Uplink 5MHz Bandwidth Mid Channel - NU Port A

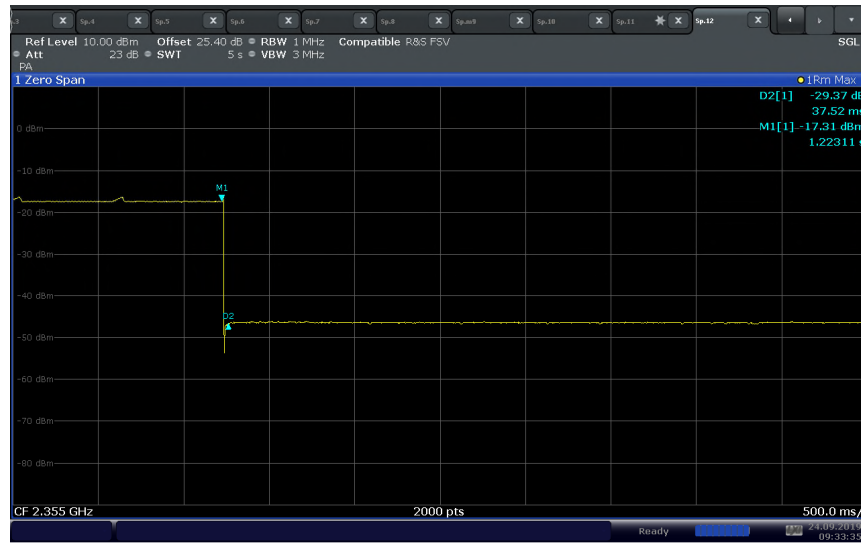
15:11:37 23.09.2019

Mitigation Time - LTE Band 25 Downlink 5MHz Bandwidth Mid Channel - CU with NU Port C

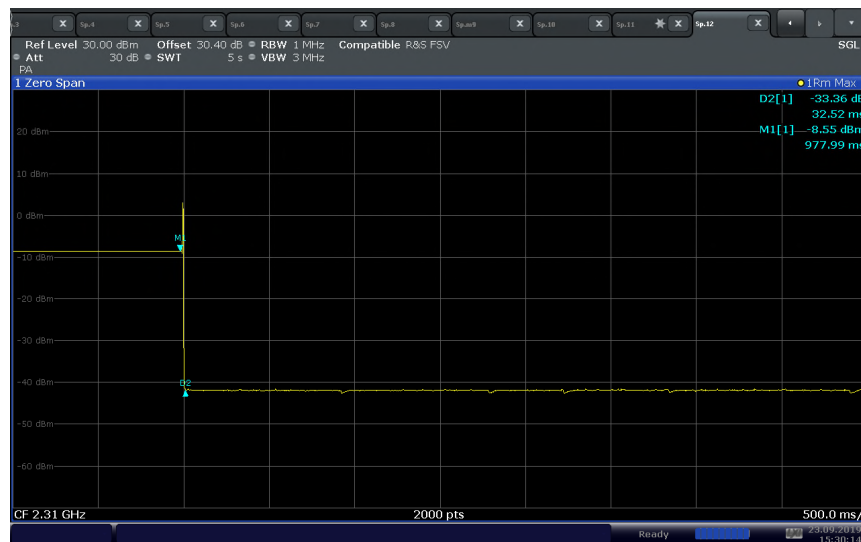
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Mitigation Time - LTE Band 25 Uplink 5MHz Bandwidth Mid Channel - NU Port C

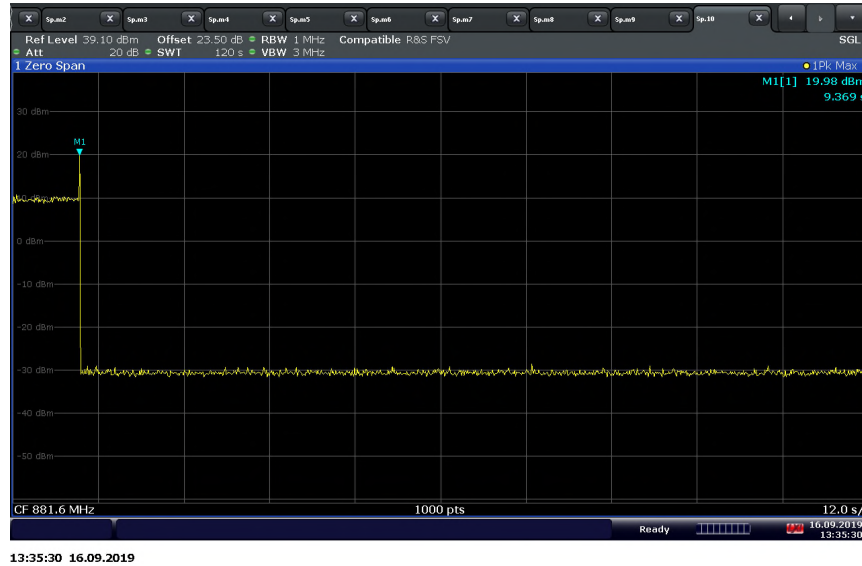
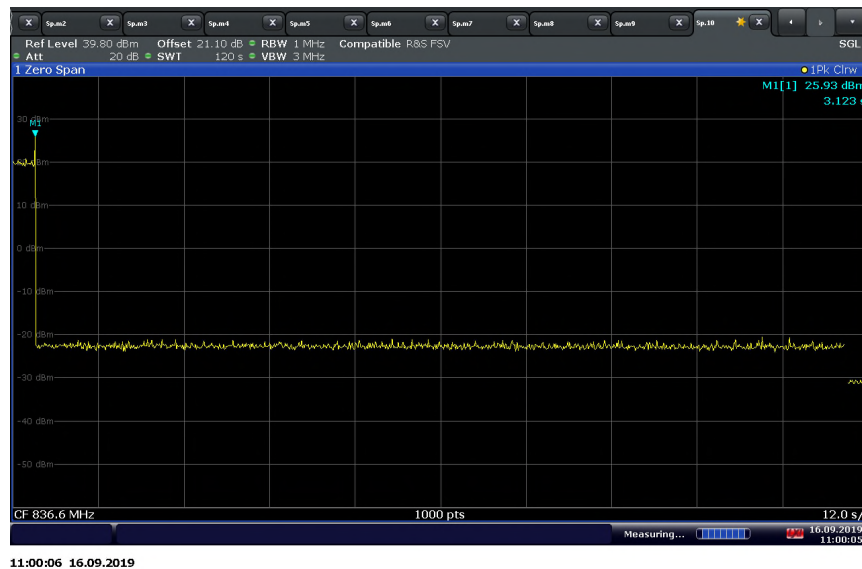
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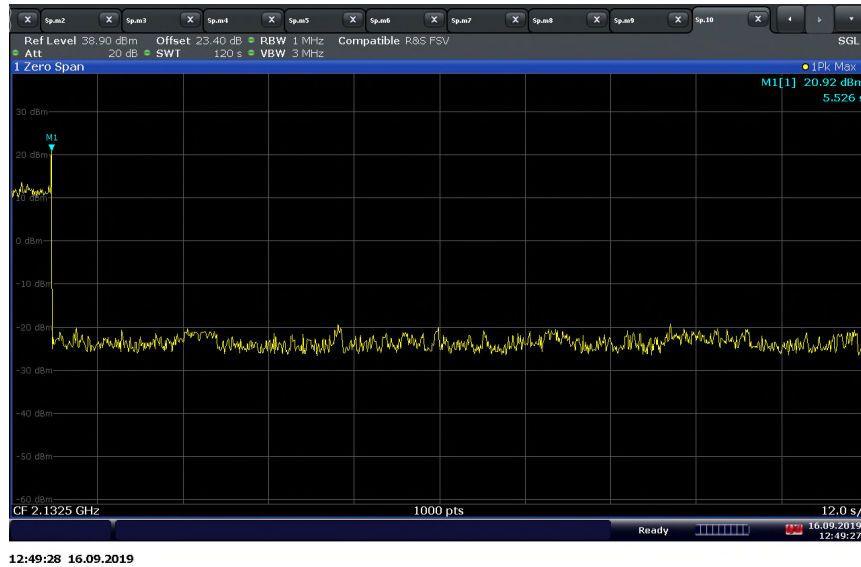
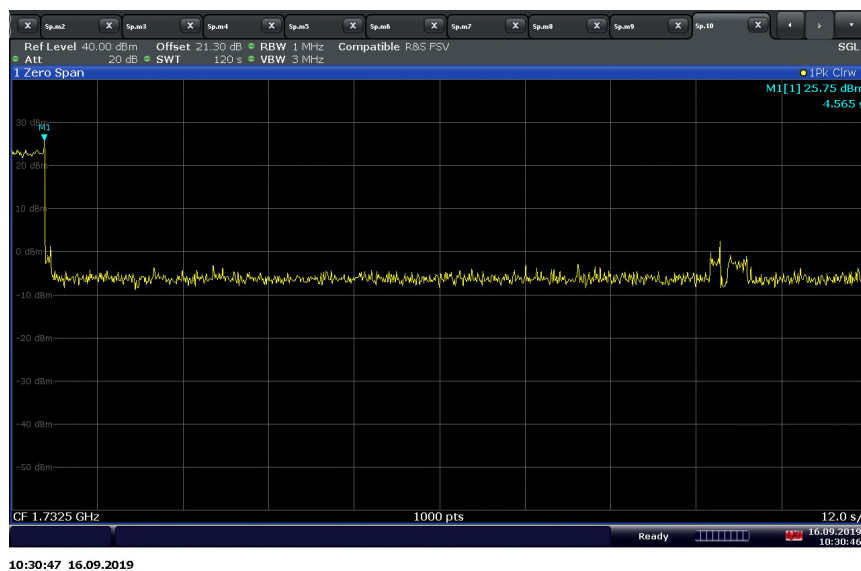
Mitigation Time - LTE Band 30 Downlink 5MHz Bandwidth Mid Channel - CU with NU Port A

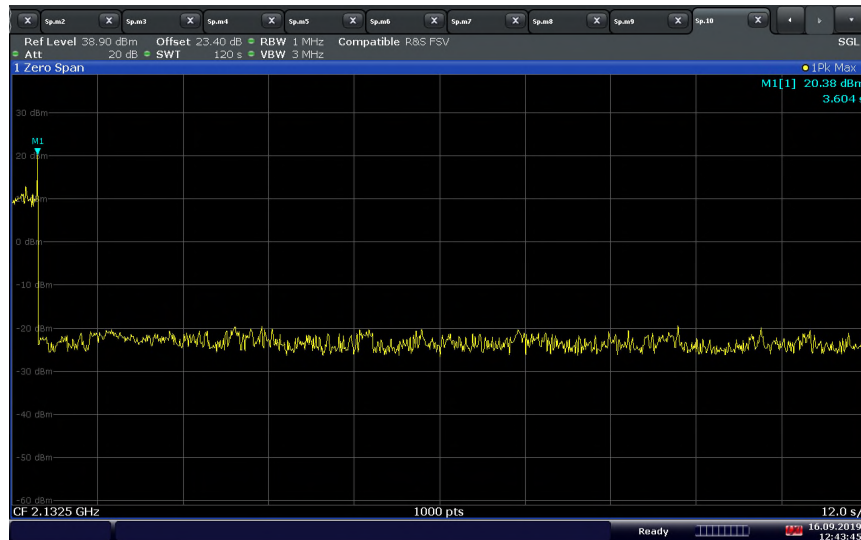
09:33:36 24.09.2019

Mitigation Time - LTE Band 30 Uplink 5MHz Bandwidth Mid Channel - NU Port A

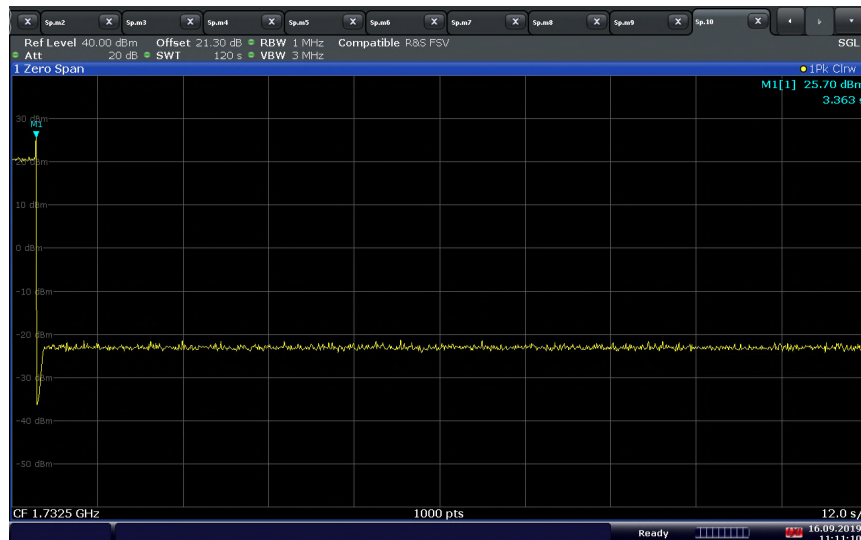
15:30:15 23.09.2019

Retry Event - WCDMA LTE Band 5 Downlink 5MHz Bandwidth Mid Channel - CU with NU Port A**Retry Event - WCDMA LTE Band 5 Uplink 5MHz Bandwidth Mid Channel - NU Port A**

Retry Event - LTE Band 4 Downlink 5MHz Bandwidth Mid Channel - CU with NU Port A**Retry Event - LTE Band 4 Uplink 5MHz Bandwidth Mid Channel - NU Port A**

Retry Event - LTE Band 4 Downlink 5MHz Bandwidth Mid Channel - CU with NU Port C

12:43:46 16.09.2019

Retry Event - LTE Band 4 Uplink 5MHz Bandwidth Mid Channel - NU Port C

11:11:11 16.09.2019