REPORT

issued by an Accredited Testing Laboratory

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164 80 Stockholm

Radio measurements on 4480 44B71 44B85A C equipment with FCC ID TA8AKRC161922 and IC 287AB-AS161922

Product name: Radio 4480 44B71 44B85A C (with optional fan BKV 106 246/1)
Product number: KRC 161 922/1

RISE Research Institutes of Sweden AB
Vehicles and Automation – EMC-IKT

Performed by

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Testing
ISO/IEC 17025

Summary

Standard Listed part of		Compliant
FCC CFR 47 part 27 / RSS-130 and RSS-Gen		
2.1046/ RSS-130 4.6	RF power output	Yes
2.1049/ RSS-Gen 6.7	Occupied bandwidth	Yes
2.1051/ RSS-130 4.7.1	Band edge	Yes
2.1051/ RSS-130 4.7.1	Spurious emission at antenna terminals	Yes
2.1053/ RSS-130 4.7.1	Field strength of spurious radiation	Yes
2.1055/ RSS130 4.5	Frequency stability	Yes

Description of the test object

Equipment:	Radio 4480 44B71 44B85A C Product number KRC 161 922/1 FCC ID: TA8AKRC161922 IC: 287AB-AS161922
HVIN:	AS161922
FVIN:	-
Hardware revision state:	R1A
Radio Access Technology, RAT and Frequency range:	Band 71: Single RAT: L, NB IoT SA, NR Multi RAT: NR+L+NB IoT SA TX: 617 – 652 MHz RX: 663 – 698 MHz Band B85A: Single RAT: L, NB IoT SA Multi RAT: L+NB IoT SA TX: 728 – 745 MHz RX: 698 – 715 MHz
IBW:	B71: 35 MHz B85A: 17 MHz
Output power:	Maximum output power per carrier: B71: 5 MHz: 40 W 10, 15, 20 MHz: 60 W B85: 5, 10 MHz: 40 W NB IoT SA: 20 W B 71 Maximum total output power per port, per band: 60 W B 85A Maximum total output power per port, per band: 40 W Maximum total output power/port, both bands: With fan 100 W Maximum total output power/port, both bands: Without fan 80 W

Antenna ports B71:	A-D: 4 TX / 4 RX ports
Antenna ports B85A:	A-D: 4 TX / 4 RX ports
Antenna:	No dedicated antenna, handled during licensing.
RF configuration:	Single and multi-carrier, 1-11 carriers per port for both bands(6 in B71 and 5 in B85A band), Non-Contiguous Spectrum (NCS), Contiguous Spectrum (CS). NR: Max 6 carriers per port, TX Diversity, 2x2 MIMO, 4x4 MIMO, Carrier Aggregation (CA) intra-band supported. LTE: Max 6 carriers in B71 and Max 3 in B85A, TX Diversity, 2x2 MIMO, 4x4 MIMO, Carrier Aggregation (CA) intra-band and inter-band supported. NB IoT SA: Max 2 carriers per band and port. NB IoT Guard Band (GB): Max 1 Anchor PRB + 1 Non-Anchor PRB (For 10 MHz LTE carriers and wider). NB IoT Inband (IB): Max 1 Anchor PRB + 1 Non-Anchor PRB (For 5 MHz LTE carriers and wider).
Channel bandwidths:	B71 NR: 5 MHz, 10 MHz 15 MHz and 20 MHz LTE: 5 MHz, 10 MHz 15 MHz and 20 MHz NB IoT SA: 200 kHz B85A LTE: 5 MHz and 10 MHz NB IoT SA: 200 kHz
Sub-carrier spacing:	LTE and NR: 15 kHz
Modulations:	NR: QPSK, 16QAM, 64QAM and 256QAM LTE: QPSK, 16QAM, 64QAM and 256QAM NB IoT SA/ GB/ IB: QPSK, BPSK (BPSK is for up link only)

Emission designators:	NR: 5 MHz, BW: 4M49W7D 10 MHz, BW: 9M29W7D 15 MHz, BW: 14M1W7D 20 MHz, BW: 18M9W7D 35 MHz, BW: 33M8W7D (15+20 MHz, Carrier aggregation) B71: LTE with and without NB IoT IB: 5 MHz, BW: 4M49W7D 10 MHz, BW: 8M95W7D 15 MHz, BW: 13M5W7D 20 MHz, BW: 17M9W7D 35MHz, BW: 33M0W7D (15+20 MHz, Carrier aggregation) NB IoT SA: 200kHz, BW: 192KW7D LTE with NB IoT GB: 10 MHz,BW: 9M39W7D 15 MHz, BW: 14M0W7D 20 MHz, BW: 18M4W7D Band 85A: LTE with and without NB IoT IB: 5 MHz, BW: 4M49W7D 10 MHz, BW: 8M95W7D 15 MHz, BW: 14M2W7D (5+10 MHz, Carrier aggregation) NB IoT SA: 200kHz, BW: 191KW7D LTE with NB IoT GB: 10 MHz, BW: 9M40W7D
RF power Tolerance:	+0.6/ -2.0 dB
CPRI Speed	Up to 10.1 Gbps
Nominal supply voltage:	-48VDC

The information above is supplied by the manufacturer.

Purpose of test

The purpose of the tests is to verify compliance to the performance characteristics specified in applicable items of FCC CFR 47 and RSS-130 and RSS-Gen.

No modifications of the test object was made during the testing.

Operation modes during measurements

NR measurements were performed with the test object transmitting test models as defined in 3GPP TS 38.141-1. Test model NR: FR1-TM1.1 is used to represent QPSK, test model NR: FR1-TM3.2 to represent 16QAM, test model NR: FR1-TM3.1 to represent 64QAM modulation and test model NR: FR1-TM3.1a to represent 256QAM modulation. Test model NR: FR1-TM1.1 was used for all measurements representing worst case.

LTE measurements were performed with the test object transmitting test models as defined in 3GPP TS 36.141. Test model E-TM1.1 was used to represent QPSK, test model E-TM3.2 to represent 16QAM, test model E-TM3.1 to represent 64QAM modulation and E-TM3.1A to represent 256QAM modulation. Test model E-TM1.1 was used for all measurements representing worst case if not otherwise stated.

NB IoT SA/ GB/ IB
NB IoT SA/ GB/ IB measurements were performed with the test object transmitting test model N-TM representing QPSK as defined in 3GPP TS 36.141.

For all measurements the radio was configured with the max output power per port. For measurements noted with B71 the Carrier(s) were configured with the maximum possible output power for the Carrier(s) in that band. The carrier in B85A was a 5 MHz LTE carrier on 736.5 MHz configured with the output power 40 watts.

For measurements noted with B85A in, the Carrier(s) were configured with the maximum possible output power for the Carrier(s) in that band. The carrier in B71 was a 10 MHz LTE carrier on 634.5 MHz configured with the output power of 60 watts.

The fan " BKV 106 246/1" is optional for operations with total output power up to 80W per port and required for operations with total power up to 100W per port. All measurements in this report are performed with the fan installed and the test object configured for maximum total otput power of 100 W per port, representing worst case condition if not otherwise stated.

Conducted measurements

The test object was supplied with -48 VDC by an external power supply. Additional connections are documented in the set-up drawings for conducted measurements.

The signal path of the measurement chain was calibrated with a network analyzer and the correction stored as a transducer factor in the measurement equipment.

Radiated measurements

The test object was powered with -48 VDC by an external power supply. Additional connections are documented in the set-up drawings for radiated measurements.

EUT Emission= SA reading + (CableLosses – Antenna gain(dBi) + TheoreticalPathloss + FilterLoss – LNAgain)

The correction factors are stored in R&S EMC 32 software as separate files and activated as applicable in the Hardware setup, for each measurement configuration. Emissions close or above the limit is verified with the substitution method where the EUT is replaced by a signal generator and an Antenna with known gain.

Test facility

The used semi-anechoic chamber is compliant with ANSI C63.4. RISE is an ISO 17025 accredited test facility for Electromagnetic Compatibility (EMC) and Radio testing. RISE is a Recognized Lab under FCC and ISED (registration No. 3482A) rules for the scope of standards used in this test report.

References

Measurements were done according to relevant parts of the following standards:
ANSI C63.4-2014+ C63.4a-2017
ANSI C63.5-2017
ANSI C63.26-2015
CFR 47 part 2, April 2021
CFR 47 part 27, April 2021
KDB 662911 D01 Multiple Transmitter Output v02r02
KDB 971168 D01 Power Meas License Digital Systems v03r01
KDB 971168 D03 IM Emission Repeater Amp v01
3GPP TS 36.141, version 15.3.0
3GPP TS 38.141-1, version 15.4.0
RSS-130 Issue 2
RSS-Gen Issue 5

Measurement equipment

	Calibration Due	RISE number
Test site Tesla	2021-08	504 114
Test site Marconi	-	15:121
R&S ESU 26	2021-07	902 210
R&S FSQ 40	2021-07	504 143
R&S FSW 43	2021-07	902 073
Control computer with R&S software EMC32 version 10.60.15	-	503 889
RF attenuator	2021-09	902 282
High pass filter 1-20 GHz	2021-06	901 501
Coaxial cable Sucoflex 102EA	2022-04	BX50236
Coaxial cable Sucoflex 102EA	2022-04	BX50237
Coaxial cable, Edison emission	2021-06	BX91501
Coaxial cable	2022-03	504 103
Coaxial cable	2022-03	504 104
Teseq BiConiLog Antenna CBL6143A	2021-08	504 079
ETS Lindgren Horn Antenna 3115	2022-02	902 212
µComp Nordic, Low Noise Amplifier	2022-01	504 160
Temperature and humidity meter, Testo 635	2021-06	504 203
Temperature and humidity meter, Testo 625	2021-06	504 117

Uncertainties

Measurement and test instrument uncertainties are described in the quality assurance documentation ”SP-QD 10885”. The uncertainties are calculated with a coverage factor k=2 (95% level of confidence).
Compliance evaluation is based on a shared risk principle with respect to the measurement uncertainty.

Reservation

The test results in this report apply only to the particular test object as declared in the report.

Delivery of test object

The test object was delivered: 2021-04-14.

Manufacturer's representative

Mikael Jansson, Ericsson AB.

Test engineers

Tomas Isbring and Andreas Björnqvist for radiated tests, RISE
Tomas Lennhager and Björn Skönvall for conducted tests, RISE.

Test participant(-s)

None.

Test frequencies used for conducted measurements

B71 NR:

Frequency [MHz]	Symbolic name	Comment
619.5	B_{5NR}	TX bottom frequency in 5 MHz BW configuration, 46 dBm output power.
622.0	B_{10NR}	TX bottom frequency in 10 MHz BW configuration, 47.8 dBm output power
624.5	B_{15NR}	TX bottom frequency in 15 MHz BW configuration, 47.8 dBm output power
627.0	B_{20NR}	TX bottom frequency in 20 MHz BW configuration, 47.8 dBm output power
634.5	M_{5NR}	TX middle frequency in 5 MHz BW configuration, 46 dBm output power
634.5	M_{10NR}	TX middle frequency in 10 MHz BW configuration, 47.8 dBm output power
634.5	M_{15NR}	TX middle frequency in 15 MHz BW configuration, 47.8 dBm output power
634.5	M_{20NR}	TX middle frequency in 20 MHz BW configuration, 47.8 dBm output power
649.5	T_{5NR}	TX top frequency in 5 MHz BW configuration, 46 dBm output power
647.0	T_{10NR}	TX top frequency in 10 MHz BW configuration, 47.8 dBm output power
644.5	T_{15NR}	TX top frequency in 15 MHz BW configuration, 47.8 dBm output power
642.0	T_{20NR}	TX top frequency in 20 MHz BW configuration, 47.8 dBm output power
619.5 624.5 649.5	Bim_{NR}	TX constellation for Bim, in 5 MHz BW configuration 43 dBm output power per carrier (47.8 dBm total output power).
619.5 644.5 649.5	Tim_{NR}	TX constellation for Tim in 5 MHz BW configuration, 43 dBm output power per carrier (47.8 dBm total output power).
622.0 627.0 632.0 637.0 642.0 647.0	$M6_{5NR}$	TX max carriers constellation in 5 MHz BW configuration, 40 dBm output power per carrier (47.8 dBm total output power).
624.5 642.0	$CA_{NR15+20}$	Carrier Aggregation TX middle 15 MHz + 20 MHz configuration, 44.8 dBm output power per carrier (47.8 dBm total output power).

The RX frequency was configured 46 MHz above the corresponding TX frequency according to the applicable duplex offset for the operating band.

B71 LTE:

Frequency [MHz]	Symbolic name	Comment
619.5	B_{5LTE}	TX bottom frequency in 5 MHz BW configuration, 46 dBm output power.
622.0	B_{10LTE}	TX bottom frequency in 10 MHz BW configuration, 47.8 dBm output power.
624.5	B_{15LTE}	TX bottom frequency in 15 MHz BW configuration, 47.8 dBm output power.
627.0	B_{20LTE}	TX bottom frequency in 20 MHz BW configuration, 47.8 dBm output power.
634.5	M_{5LTE}	TX middle frequency in 5 MHz BW configuration, 46 dBm output power.
634.5	M_{10LTE}	TX middle frequency in 10 MHz BW configuration, 47.8 dBm output power.
634.5	M_{15LTE}	TX middle frequency in 15 MHz BW configuration, 47.8 dBm output power.
634.5	M_{20LTE}	TX middle frequency in 20 MHz BW configuration, 47.8 dBm output power.
649.5	T_{5LTE}	TX top frequency in 5 MHz BW configuration, 46 dBm output power.
647.0	T_{10LTE}	TX top frequency in 10 MHz BW configuration, 47.8 dBm output power.
644.5	T_{15LTE}	TX top frequency in 15 MHz BW configuration, 47.8 dBm output power.
642.0	T_{20LTE}	TX top frequency in 20 MHz BW configuration, 47.8 dBm output power.
619.5 624.5 649.5	Bim_{LTE}	TX constellation for Bim with 5 MHz BW configuration for Bim, 43 dBm output power per carrier (47.8 dBm total output power).
619.5 644.5 649.5	Tim_{LTE}	TX constellation for Tim with 5 MHz BW configuration for Tim, 43 dBm output power per carrier (47.8 dBm total output power).
622.0 627.0 632.0 637.0 642.0 647.0	$M6_{5LTE}$	TX max carrier constellation in 5 MHz BW configuration, 40 dBm output power per carrier (47.8 dBm total output power).
624.5 642.0	$CA_{LTE15+20}$	Carrier Aggregation TX middle 15 MHz + 20 MHz configuration, 44.8 dBm output power per carrier (47.8 dBm total output power).

The RX frequency was configured 46 MHz above the corresponding TX frequency according to the applicable duplex offset for the operating band.

B71 NB IoT SA/ GB/ IB+LTE

Frequency [MHz]	Symbolic name	Comment
IoT=617.3 L=634.5	B_{IoT+L}	TX bottom Frequency for Standalone IoT. LTE carrier with 5 MHz carrier bandwidth. 43 dBm output power for the IoT carrier and 46 dBm output power for the LTE carrier (47.8 dBm total output power).
IoT=PRB0 L=619.5	$B_{IBIoT+L}$	TX bottom Frequency for IoT IB. LTE carrier with 5 MHz carrier bandwidth. NB IoT IB was boosted with 6 dB. Total output power 46 dBm
IoT_1=617.3 IoT_2=618.3 L=634.5	Bim_{2IoT+L}	TX constellation for Bim with a LTE carrier with 5 MHz carrier bandwidth, two NB IoT SA carriers 43 dBm output power per carrier (47.8 dBm total output power).
IoT=PRB0 L=634.5	$M_{IBIoT+L}$	TX middle Frequency for IoT IB. LTE carrier with 5 MHz carrier bandwidth. NB IoT IB was boosted with 6 dB. Total output power 46 dBm
IoT=634.5 L=619.5	M_{IoT+L}	TX Middle Frequency for Standalone IoT. LTE carrier with 5 MHz carrier bandwidth. 43 dBm output power for the IoT carrier and 46 dBm output power for the LTE carrier (47.8 dBm total output power).
IoT=651.7 L=634.5	T_{IoT+L}	TX top Frequency for Standalone IoT. LTE carrier with 5 MHz carrier bandwidth. 43 dBm output power for the IoT carrier and 46 dBm output power for the LTE carrier (47.8 dBm total output power).
IoT_1=650.7 IoT_2=651.7 L=634.5	Tim_{2IoT+L}	TX constellation for Tim with a LTE carrier with 5 MHz carrier bandwidth, two NB IoT SA carriers. 43 dBm output power per carrier (47.8 dBm total output power).
IoT=PRB0 L=649.5	$T_{IBIoT+L}$	TX top Frequency for IoT IB. LTE carrier with 5 MHz carrier bandwidth. NB IoT IB was boosted with 6 dB. Total output power 46 dBm
IoT_1=PRB-1 IoT_2=PRB50 L=622	$B10_{Guard}$	TX constellation for Bottom IoT GB. LTE carrier with 10 MHz carrier bandwidth. IoT GB was boosted with 6 dB. Total output power 47.8 dBm.
IoT_1=PRB-1 IoT_2=PRB50 L=647.0	$T10_{Guard}$	TX constellation for Top IoT GB. LTE carrier with 10 MHz carrier bandwidth. IoT GB was boosted with 6 dB. Total output power 47.8 dBm.
IoT_1=PRB-1 IoT_2=PRB75 L=624.5	$B15_{Guard}$	TX constellation for bottom IoT GB. LTE carrier with 15 MHz carrier bandwidth. NB IoT GB was boosted with 6 dB Total output power 47.8 dBm.
IoT_1=PRB-1 IoT_2=PRB75 L=644.5	$T15_{Guard}$	TX constellation for Top IoT GB. LTE carrier with 15 MHz carrier bandwidth. NB IoT GB was boosted with 6 dB. Total output power 47.8 dBm.
IoT_1=PRB-1 IoT_2=PRB100 L=627.0	$B20_{Guard}$	TX constellation for bottom IoT GB. LTE carrier with 20 MHz carrier bandwidth. NB IoT GB was boosted with 6 dB. Total output power 47.8 dBm.
IoT_1=PRB-1 IoT_2=PRB100 L=642.0	$T20_{Guard}$	TX constellation for Top IoT GB. LTE carrier with 20 MHz carrier bandwidth. NB IoT GB was boosted with 6 dB. Total output power 47.8 dBm.

The RX frequency was configured 46 MHz above the corresponding TX frequency according to the applicable duplex offset for the operating band.

B71 NB IoT SA + LTE + NR

Frequency [MHz]	Symbolic name	Comment
IoT_1=617.3 IoT_2=637.0 LTE_1=620.0 LTE_2=644.0 NR_1=625.0 NR_2=649.0	$Max_{IoT+L+NR}$	TX Frequency for Standalone IoT, LTE and NR. LTE and NR carriers with 5 MHz bandwidth. 40 dBm output power all carriers (47.8 dBm total output power).

The RX frequency was configured 46 MHz above the corresponding TX frequency according to the applicable duplex offset for the operating band.

B85 LTE:

Frequency [MHz]	Symbolic name	Comment
730.5	B_{5LTE}	TX bottom frequency in 5 MHz BW configuration, 46 dBm output power.
733.0	B_{10LTE}	TX bottom frequency in 10 MHz BW configuration, 46 dBm output power.
736.5	M_{5LTE}	TX middle frequency in 5 MHz BW configuration, 46 dBm output power.
735.5	M_{10LTE}	TX middle frequency in 10 MHz BW configuration, 46 dBm output power.
742.5	T_{5LTE}	TX top frequency in 5 MHz BW configuration, 46 dBm output power.
740.0	T_{10LTE}	TX top frequency in 10 MHz BW configuration, 46 dBm output power.
730.5 735.5 742.5	Bim_{LTE}	TX constellation for Bim with 5 MHz BW configuration for Bim, 41.2 dBm output power per carrier (46 dBm total output power).
730.5 737.5 742.5	Tim_{LTE}	TX constellation for Tim with 5 MHz BW configuration for Tim, 41.2 dBm output power per carrier (46 dBm total output power).
730.5 738.0	$CA_{LTE5+10}$	Carrier Aggregation TX middle 5 MHz + 10 MHz configuration, 43.0 dBm output power per carrier (46.0 dBm total output power).

The RX frequency was configured 30 MHz below the corresponding TX frequency according to the applicable duplex offset for the operating band.

B85 NB IoT SA/ GB/ IB+LTE

Frequency [MHz]	Symbolic name	Comment
IoT=728.3 L=735.5	B_{IoT+L}	TX bottom Frequency for Standalone IoT. LTE carrier with 5 MHz carrier bandwidth. 43 dBm output power for the IoT carrier and 43 dBm output power for the LTE carrier (46 dBm total output power).
IoT=PRB0 L=730.5	$B_{IBIoT+L}$	TX bottom Frequency for IoT IB. LTE carrier with 5 MHz carrier bandwidth. NB IoT IB was boosted with 6 dB. Total output power 46 dBm
IoT_1=728.3 IoT_2=729.3 L=742.5	Bim_{2IoT+L}	TX constellation for Bim with a LTE carrier with 5 MHz carrier bandwidth, two NB IoT SA carriers 41.2 dBm output power per carrier (46 dBm total output power).
IoT=PRB0 L=736.5	$M_{IBIoT+L}$	TX middle Frequency for IoT IB. LTE carrier with 10 MHz carrier bandwidth. NB IoT IB was boosted with 6 dB. Total output power 46 dBm
IoT=736.5 L=730.5	M_{IoT+L}	TX Middle Frequency for Standalone IoT. LTE carrier with 5 MHz carrier bandwidth. 43 dBm output power for the IoT carrier and 43 dBm output power for the LTE carrier (46 dBm total output power).
IoT=744.7 L=736.5	T_{IoT+L}	TX top Frequency for Standalone IoT. LTE carrier with 5 MHz carrier bandwidth. 43 dBm output power for the IoT carrier and 43 dBm output power for the LTE carrier (46 dBm total output power).
IoT_1=743.7 IoT_2=744.7 L=730.5	Tim_{2IoT+L}	TX constellation for Tim with a LTE carrier with 5 MHz carrier bandwidth, two NB IoT SA carriers. 41.2 dBm output power per carrier (46 dBm total output power).
IoT=PRB0 L=742.5	$T_{IBIoT+L}$	TX top Frequency for IoT IB. LTE carrier with 5 MHz carrier bandwidth. NB IoT IB was boosted with 6 dB.Total output power 46 dBm
IoT_1=PRB-1 IoT_2=PRB50 L=733.0	$B10_{Guard}$	TX constellation for Bottom IoT GB. LTE carrier with 10 MHz carrier bandwidth. IoT GB was boosted with 6 dB. Total output power 46 dBm.
IoT_1=PRB-1 IoT_2=PRB50 L=740.0	$T10_{Guard}$	TX constellation for Top IoT GB. LTE carrier with 10 MHz carrier bandwidth. IoT GB was boosted with 6 dB. Total output power 46 dBm.
IoT_1=728.3 IoT_2=744.7 L_1=731.5 L_2=736.5 L_3=741.5	$M_{3LTE+2IoT}$	TX constellation for Mid, 3 LTE carrier with 5 MHz carrier bandwidth. IoT Top & Bottom SA. Total output power 46 dBm.

The RX frequency was configured 30 MHz below the corresponding TX frequency according to the applicable duplex offset for the operating band.

Test frequencies used for radiated measurements

B71 LTE

Frequency [MHz]	Symbolic name	Comment
619.5	B_{5LTE}	TX bottom frequency
634.5	$M_{5\text{-}20LTE}$	TX middle frequency
649.5	T_{5LTE}	TX top frequency

B85A LTE

Frequency [MHz]	Symbolic Name	Comment
730.5	B_{5LET}	TX bottom frequency
736.5	$M_{5\text{-}10LTE}$	TX middle frequency
742.5	T_{5LTE}	TX top frequency

B71 LTE + NB IoT GB and NB IoT SA

Frequency [MHz]	Symbolic name	Comment
IoT=617.3 L=634.5	B_{IoT+L}	TX bottom Frequency for Standalone IoT. LTE carrier with 5 MHz carrier bandwidth. 43 dBm output power for the IoT carrier and 46 dBm output power for the LTE carrier (47.8 dBm total output power).
IoT=617.3 L=634.5 L=629.5	$BIM1_{IoT+L}$	TX bottom Frequency for Standalone IoT. LTE carriers with 5 MHz carrier bandwidth. 43 dBm output power for the IoT carrier and 43 dBm output power for the LTE carriers (47.8 dBm total output power).
IoT_1=617.3 IoT_2=618.3 L=634.5	$BIM2_{IoT+L}$	TX bottom Frequencies for Standalone IoT. LTE carrier with 5 MHz carrier bandwidth. 43 dBm output power for the IoT carriers and 43 dBm output power for the LTE carrier (47.8 dBm total output power).
IoT=PRB-1 L=622.0	$B10_{Guard}$	TX constellation for Bottom IoT GB. LTE carrier with 10 MHz carrier bandwidth. IoT GB was boosted with 6 dB. Total output power 47.8 dBm.

B85A LTE + NB IoT GB and NB IoT SA

Frequency [MHz]	Symbolic name	Comment
IoT=744.7 L=730.5	T_{IoT+L}	TX top Frequency for Standalone IoT. LTE carrier with 5 MHz carrier bandwidth. 43 dBm output power for the IoT carrier and 43 dBm output power for the LTE carrier (46 dBm total output power).
IoT=744.7 L=730.5 L=735.5	TIM_{IoT+L}	TX top Frequency for Standalone IoT. LTE carriers with 5 MHz carrier bandwidth. 43 dBm output power for the IoT carrier and 40 dBm output power for the LTE carriers (46 dBm total output power).
IoT_1=744.7 IoT_2=728.3	$2xSA_{IoT}$	TX constellation for bottom and top frequencies for Standalone IoT. 43 dBm output power for the IoT carriers (46 dBm total output power).
IoT=PRB-1 L=740.0	$T10_{Guard}$	TX constellation for Bottom IoT GB. LTE carrier with 10 MHz carrier bandwidth. IoT GB was boosted with 6 dB. Total output power 46 dBm.

B71 NR

Frequency [MHz]	Symbolic Name	Comment
634.5	M_{10NR}	TX middle frequency

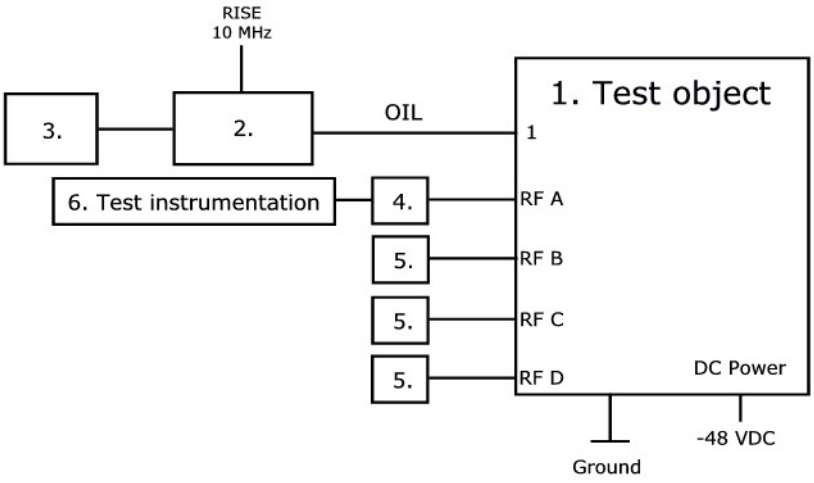
B71 and B85A MR NR+LTE

Frequency [MHz]	Symbolic name	Comment
619.5 742.5	$M_{NR5+LTE5}$	TX constellation for bottom frequency for NR in B71. TX constellation for top frequency for LTE in B85A. NR and LTE carriers with 5 MHz carrier bandwidth. 46 dBm output power for the NR and LTE carriers (49 dBm total output power).
619.5 624.5 629.5 634.5 742.5 737.5	$MAX_{NR5+LTE5}$	TX constellation for bottom frequencies for NR in B71. TX constellation for top frequencies for LTE in B85A. NR and LTE carriers with 5 MHz carrier bandwidth. 41.76 dBm output power for the NR carriers and 43 dBm output power for LTE carriers (50 dBm total output power).

RX frequencies were configured 46 MHz above the corresponding TX frequency according to the applicable duplex offset for the operating band B71.

RX frequencies were configured 30 MHz below the corresponding TX frequency according to the applicable duplex offset for the operating band B85A.

Test setup: conducted measurements



Test object:

1.	Radio 4480 44B71 44B85A C, KRC 161 922/1, rev. R1A, s/n: E23C596932 With Radio Software: CXP 901 3268/15, rev. R85MK21. FCC ID: TA8AKRC161922, IC: 287AB-AS161922

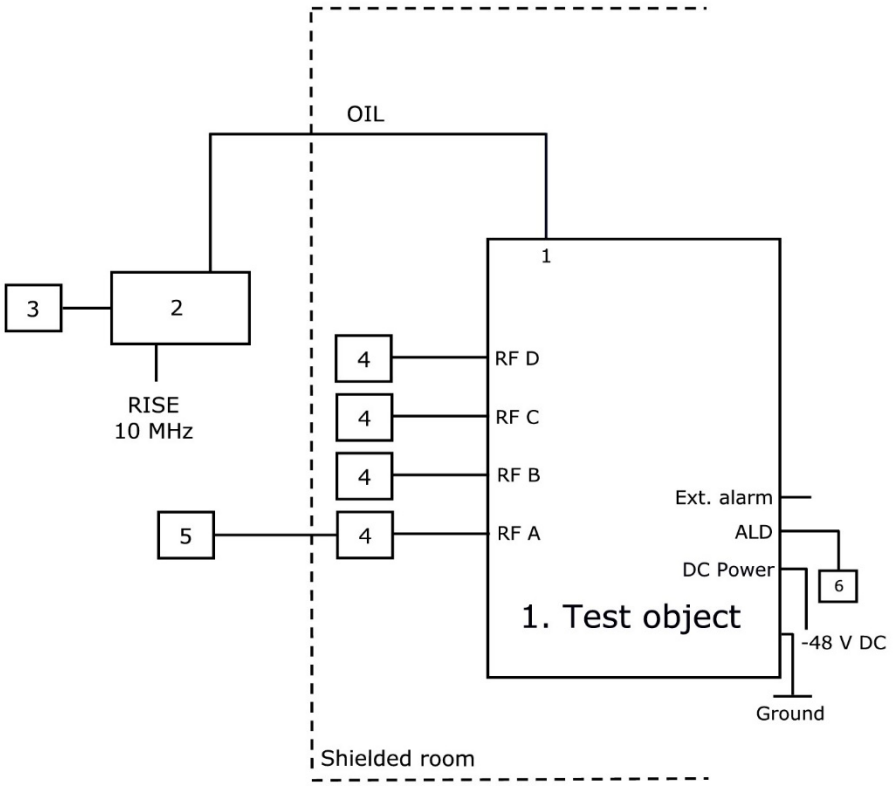
Associated equipment:

2.	Testing Equipment: CT10, LPC 102 487/1, rev. R1C, s/n: T01F265039 with software CXC 173 5312/25, rev. P12A01

Functional test equipment:

3.	Computer, HP ZBook 15u G3, BAMS - 1001835579
4.	RF Attenuator: SP number: 900 691
5.	Terminator, 50 ohm
6.	RISE Test Instrumentation according to measurement equipment list for each test. The signal analyzer was connected to the RISE 10 MHz reference standard during all measurements.

Test setup: radiated measurements



1.	Radio 4480 44B71 44B85A C, KRC 161 922/1, rev. R1A, s/n: E23C596932 With Radio Software: CXP 901 3268/15, rev. R85MK21. FCC ID: TA8AKRC161922, IC: 287AB-AS161922

Associated equipment:

2.	Testing Equipment: CT10, LPC 102 487/1, rev. R1C, s/n: T01F265039 with software CXC 173 5312/25, rev. P12A01

Functional test equipment:

3.	Computer, HP ZBook 15u G3, BAMS - 1001835579
4.	Attenuator/ Terminator
5.	R&S ESIB 26, SP no: 503 885 for supervision purpose only
6.	Remote Control Unit, ANDREW Model: ATM200-A20, Serial: DESA101412073

Interfaces:

Power input configuration DC: -48 VDC	Power
RF A-D, 4.3-10 connector, combined TX/RX	Antenna
1, Optical Interface Link, single mode opto fibre	Signal
ALD Control, shielded multi-wire	Signal
EXT Alarm, shielded multi-wire	Signal
Ground wire	Ground

RF power output measurements according to CFR 47 §27.50/ RSS-130 4.6, conducted

Date	Temperature	Humidity
2021-04-07	23 °C ± 3 °C	20 % ± 5 %
2021-04-08	23 °C ± 3 °C	18 % ± 5 %
2021-04-09	23 °C ± 3 °C	22 % ± 5 %
2021-05-05	23 °C ± 3 °C	25 % ± 5 %
2021-05-06	23 °C ± 3 °C	24 % ± 5 %
2021-05-10	23 °C ± 3 °C	20 % ± 5 %
2021-05-11	23 °C ± 3 °C	21 % ± 5 %
2021-05-27	23 °C ± 3 °C	25 % ± 5 %

Test set-up and procedure

The measurements were made per definition in ANSI C63.26, 5.2.3.4. The test object was connected to a signal analyser measuring peak and RMS output power in CDF mode. A resolution bandwidth of 40 MHz was used if not otherwise specified.

Measurement equipment	RISE number
R&S FSW 43	902 073
RF attenuator	902 282
Coaxial cable Sucoflex 102EA	BX50236
Coaxial cable Sucoflex 102EA	BX50237
Testo 635, temperature and humidity meter	504 203

Measurement uncertainty: 1.1 dB

Results NR B71

CCDF resolution bandwidth of 40 MHz was used for the entirety of B71 NR.

Single carrier NR: FR1-TM1.1

Rated output power level at each RF port 1x 46 dBm/ port.

	Output power CCDF [RMS dBm/ PAR dB]				
Symbolic name	Port RF A	Port RF B	Port RF C	Port RF D	Total power[1)]
B_{5NR}	45.63/8.90	45.71/8.92	45.65/8.90	45.66/8.88	51.68
M_{5NR}	45.64/8.86	45.73/8.90	45.71/8.86	45.67/8.86	51.71
T_{5NR}	45.70/8.88	45.63/8.88	45.63/8.86	45.59/8.88	51.66

[1)]: summed output power according to ANSI C63.26 section 6.4.3.1
Note: The PAR value is the 0.1 % Peak to Average Ratio.

Rated output power level at each RF port 1x 46 dBm/ port.

	Output power per 1 MHz [RMS dBm]					
Symbolic name	Port RF A	Port RF B	Port RF C	Port RF D	Total power[2)]	Maximum Antenn gain[3)] [dBi]/ EIRP Limit [dBm]
M_{5NR}	39.26	39.36	39.38	39.32	45.38	25.6/ 65.15

[2)]: 6 dB (10 $\log_{10}$ (N_{out})) was added to the highest measured power among the measured ports, according to the procedure described in ANSI C63.26 section 6.4.3.2.4.
[3)]: The gain value is the maximum antenna gain that can be used with the tested device for the configuration tested, and still comply with the maximum EIRP limit as defined in SRSP-518. Feeder loss is assumed to be 0 dB in the antenna gain calculation.
The used formula is: Maximum antenna gain (dBi) = EIRP limit (dBm) - Measured Total power[2)]/ 1 MHz (dBm) + feeder loss (dB).
Please note that the maximum EIRP limit for a specific site may be lower due to various site conditions.

Rated output power level at each RF port 1x 47.8 dBm/ port.

	Output power CCDF [RMS dBm/ PAR dB]				
Symbolic name	Port RF A	Port RF B	Port RF C	Port RF D	Total power[1)]
B_{20NR}	47.38/7.50	47.38/7.50	47.34/7.48	47.35/7.48	53.38
M_{10NR}	47.40/7.52	47.55/7.40	47.51/7.40	47.43/7.42	53.49
M_{15NR}	47.35/7.48	47.47/7.48	47.48/7.48	47.39/7.48	53.44
M_{20NR}	47.36/7.50	47.46/7.50	47.47/7.50	47.40/7.50	53.44
T_{20NR}	47.39/7.80	47.45/7.80	47.39/7.80	47.31/7.80	53.41

[1)]: summed output power according to ANSI C63.26 section 6.4.3.1
Note: The PAR value is the 0.1 % Peak to Average Ratio.

Rated output power level at each RF port 1x 47.8 dBm/ port.

	Output power per 1 MHz [RMS dBm]					
Symbolic name	Port RF A	Port RF B	Port RF C	Port RF D	Total power[2)]	Maximum Antenn gain[3)] [dBi]/ EIRP Limit [dBm]
M_{10NR}	37.89	38.05	38.03	37.99	44.05	21.10/ 65.15
M_{15NR}	36.07	36.22	36.21	36.14	42.22	22.93/ 65.15
M_{20NR}	34.83	34.96	34.95	34.89	40.96	24.19/ 65.15

[2)]: 6 dB (10 $\log_{10}$ (N_{out})) was added to the highest measured power among the measured ports, according to the procedure described in ANSI C63.26 section 6.4.3.2.4.
[3)]: The gain value is the maximum antenna gain that can be used with the tested device for the configuration tested, and still comply with the maximum EIRP limit as defined in SRSP-518. Feeder loss is assumed to be 0 dB in the antenna gain calculation.
The used formula is: Maximum antenna gain (dBi) = EIRP limit (dBm) - Measured Total power[2)]/ 1 MHz (dBm) + feeder loss (dB).
Please note that the maximum EIRP limit for a specific site may be lower due to various site conditions.

Multi carrier NR: FR1-TM1.1

Rated output power level at each RF port 6x 40 dBm/ port.

	Output power CCDF [RMS dBm/ PAR dB]				
Symbolic name	Port RF A	Port RF B	Port RF C	Port RF D	Total power[1)]
$M6_{5NR}$	47.35/7.72	47.44/7.60	47.35/7.70	47.39/7.66	53.40

[1)]: summed output power according to ANSI C63.26 section 6.4.3.1
Note: The PAR value is the 0.1 % Peak to Average Ratio.

Carrier aggregation FR1-TM1.1

Rated output power level at each RF port 2x 44.8 dBm/ port.

	Output power CCDF [RMS dBm/ PAR dB]				
Symbolic name	Port RF A	Port RF B	Port RF C	Port RF D	Total power[1)]
$CA_{NR15+20}$	47.46/ 7.72	47.53/ 7.72	47.47/ 7.74	47.44/ 7.72	53.49

[1)]: summed output power according to ANSI C63.26 section 6.4.3.1
Note: The PAR value is the 0.1 % Peak to Average Ratio.

Results LTE B71

CCDF resolution bandwidth of 40 MHz was used for the entirety of B71 LTE.

Single carrier E-TM1.1

Rated output power level at each RF port 1x 46 dBm/ port.

	Output power CCDF [RMS dBm/ PAR dB]				
Symbolic name	Port RF A	Port RF B	Port RF C	Port RF D	Total power[1)]
M_{5LTE}	45.75/ 8.38	46.04/ 8.38	45.95/ 8.38	45.94/ 8.38	51.90

[1)]: summed output power according to ANSI C63.26 section 6.4.3.1
Note: The PAR value is the 0.1 % Peak to Average Ratio.

Rated output power level at each RF port 1x 47.8 dBm/ port.

	Output power CCDF [RMS dBm/ PAR dB]				
Symbolic name	Port RF A	Port RF B	Port RF C	Port RF D	Total power[1)]
B_{10LTE}	47.60/7.36	47.74/ 7.34	47.62/ 7.34	47.69/ 7.34	53.63
B_{15LTE}	47.61/7.36	47.65/ 7.36	47.58/ 7.36	47.66/ 7.34	53.59
B_{20LTE}	47.58/7.36	47.69/ 7.36	47.61/ 7.36	47.67/ 7.36	53.61
M_{10LTE}	47.52/7.32	47.81/ 7.32	47.76/ 7.30	47.72/ 7.32	53.68
M_{15LTE}	47.53/7.34	47.80/ 7.34	47.75/ 7.34	47.71/ 7.34	53.67
M_{20LTE}	47.55/7.36	47.80/ 7.36	47.75/ 7.36	47.73/ 7.36	53.68
T_{10LTE}	47.64/7.46	47.74/ 7.44	47.65/ 7.46	47.63/ 7.44	53.62
T_{15LTE}	47.62/7.54	47.77/ 7.54	47.64/ 7.54	47.64/ 7.64	53.62
T_{20LTE}	47.60/7.60	47.77/ 7.58	47.67/ 7.58	47.66/ 7.58	53.65

[1)]: summed output power according to ANSI C63.26 section 6.4.3.1
Note: The PAR value is the 0.1 % Peak to Average Ratio.

Rated output power level at each RF port 1x 46 dBm/ port.

	Output power per 1 MHz [RMS dBm]					
Symbolic name	Port RF A	Port RF B	Port RF C	Port RF D	Total power[2)]	Maximum Antenn gain[3)] [dBi]/ EIRP Limit [dBm]
M_{5LTE}	39.46	39.74	39.67	39.67	45.74	19.41/ 65.15

[2)]: 6 dB (10 $\log_{10}$ (N_{out})) was added to the highest measured power among the measured ports, according to the procedure described in ANSI C63.26 section 6.4.3.2.4.
[3)]: The gain value is the maximum antenna gain that can be used with the tested device for the configuration tested, and still comply with the maximum EIRP limit as defined in SRSP-518. Feeder loss is assumed to be 0 dB in the antenna gain calculation.
The used formula is: Maximum antenna gain (dBi) = EIRP limit (dBm) - Measured Total power[2)]/ 1 MHz (dBm) + feeder loss (dB).
Please note that the maximum EIRP limit for a specific site may be lower due to various site conditions.

Rated output power level at each RF port 1x 47.8 dBm/ port.

	Output power per 1 MHz [RMS dBm]					
Symbolic name	Port RF A	Port RF B	Port RF C	Port RF D	Total power[2)]	Maximum Antenn gain[3)] [dBi]/ EIRP Limit [dBm]
M_{10LTE}	38.23	38.55	38.49	38.45	44.55	20.60/ 65.15
M_{15LTE}	36.52	36.81	36.72	36.70	42.81	22.34/ 65.15
M_{20LTE}	35.30	35.56	35.51	35.49	41.56	23.59/ 65.15

[2)]: 6 dB (10 $\log_{10}$ (N_{out})) was added to the highest measured power among the measured ports, according to the procedure described in ANSI C63.26 section 6.4.3.2.4.
[3)]: The gain value is the maximum antenna gain that can be used with the tested device for the configuration tested, and still comply with the maximum EIRP limit as defined in SRSP-518. Feeder loss is assumed to be 0 dB in the antenna gain calculation.
The used formula is: Maximum antenna gain (dBi) = EIRP limit (dBm) - Measured Total power[2)]/ 1 MHz (dBm) + feeder loss (dB).
Please note that the maximum EIRP limit for a specific site may be lower due to various site conditions.

Single carrier E-TM3.2

Rated output power level at each RF port 1x 47.8 dBm/ port.

	Output power CCDF [RMS dBm/ PAR dB]				
Symbolic name	Port RF A	Port RF B	Port RF C	Port RF D	Total power[1)]
M_{10LTE}	47.69/ 7.30	47.81/ 7.32	47.78 /7.30	47.69/ 7.30	53.76

1): summed output power according to ANSI C63.26 section 6.4.3.1
Note: The PAR value is the 0.1 % Peak to Average Ratio.

Single carrier E-TM3.1

Rated output power level at each RF port 1x 47.8 dBm/ port.

	Output power CCDF [RMS dBm/ PAR dB]				
Symbolic name	Port RF A	Port RF B	Port RF C	Port RF D	Total power[1)]
M_{10LTE}	47.68/7.32	47.80/ 7.32	47.76/ 7.32	47.67/ 7.32	53.75

1): summed output power according to ANSI C63.26 section 6.4.3.1
Note: The PAR value is the 0.1 % Peak to Average Ratio.

Single carrier E-TM3.1a

Rated output power level at each RF port 1x 47.8 dBm/ port.

	Output power CCDF [RMS dBm/ PAR dB]				
Symbolic name	Port RF A	Port RF B	Port RF C	Port RF D	Total power[1)]
M_{10LTE}	47.68/7.32	47.80/ 7.32	47.76/ 7.32	47.67/ 7.32	53.75

1): summed output power according to ANSI C63.26 section 6.4.3.1
Note: The PAR value is the 0.1 % Peak to Average Ratio.

Multi carrier E-TM1.1

Rated output power level at each RF port 6x 40 dBm/ port.

	Output power CCDF [RMS dBm/ PAR dB]				
Symbolic name	Port RF A	Port RF B	Port RF C	Port RF D	Total power[1)]
$M6_{5LTE}$	47.59/ 7.56	47.69/ 7.54	47.72/ 7.56	47.69/ 7.56	53.69

1): summed output power according to ANSI C63.26 section 6.4.3.1
Note: The PAR value is the 0.1 % Peak to Average Ratio.

Carrier aggregation E-TM1.1
Rated output power level at each RF port 2x 44.8 dBm/ port.

	Output power CCDF [RMS dBm/ PAR dB]				
Symbolic name	Port RF A	Port RF B	Port RF C	Port RF D	Total power[1)]
$CA_{LTE15+20}$	47.61/ 7.60	47.69/ 7.62	47.63/ 7.62	47.58/ 7.62	53.65

[1)]: summed output power according to ANSI C63.26 section 6.4.3.1
Note: The PAR value is the 0.1 % Peak to Average Ratio.

Results NB IoT SA, LTE with NB IoT GB B71

CCDF resolution bandwidth of 5 MHz was used for NB IoT SA.

Due to a 92.7 % duty cycle of the IoT carrier, 0.33 dBm was added to the measured value of the NB IoT Stand Alone carriers according to ANSI C63.26, 5.2.4.4.2, j.

Multi RAT: NB IoT SA: N-TM, LTE: E-TM1.1

Rated output power level at each RF port 1x 43 dBm/ port.

	Output power CCDF [RMS dBm/ PAR dB]				
Symbolic name	Port RF A	Port RF B	Port RF C	Port RF D	Total power[1)]
B_{IoT+L}	42.30/ 5.02	42.34/ 5.02	42.30/ 5.02	42.26/ 5.04	48.32
M_{IoT+L}	42.84/5.04	42.84/ 5.04	42.80/ 5.04	42.85/ 5.04	48.85
T_{IoT+L}	42.11/ 5.04	42.15/ 5.04	42.00/ 5.02	42.05/ 5.04	48.10

[1)]: summed output power according to ANSI C63.26 section 6.4.3.1
Note: The PAR value is the 0.1 % Peak to Average Ratio.

Rated output power level at each RF port 1x 43 dBm/ port.

	Output power per 1 MHz [RMS dBm]					
Symbolic name	Port RF A	Port RF B	Port RF C	Port RF D	Total power[2)]	Maximum Antenn gain[3)] [dBi]/ EIRP Limit [dBm]
M_{IoT+L}	42.99	42.93	42.88	42.90	48.99	16.16/ 65.15

[2)]: 6 dB (10 $\log_{10}$ (N_{out})) was added to the highest measured power among the measured ports, according to the procedure described in ANSI C63.26 section 6.4.3.2.4.
[3)]: The gain value is the maximum antenna gain that can be used with the tested device for the configuration tested, and still comply with the maximum EIRP limit as defined in SRSP-518. Feeder loss is assumed to be 0 dB in the antenna gain calculation.
The used formula is: Maximum antenna gain (dBi) = EIRP limit (dBm) - Measured Total power[2)]/ 1 MHz (dBm) + feeder loss (dB).
Please note that the maximum EIRP limit for a specific site may be lower due to various site conditions.

CCDF resolution bandwidth of 40 MHz was used for NB IoT Guard .

Multi RAT: LTE with NB IoT GB: NB IoT GB: N-TM, LTE: E-TM3.1

Rated output power level at each RF port 1x 47.8 dBm/ port.

	Output power CCDF [RMS dBm/ PAR dB]				
Symbolic name	Port RF A	Port RF B	Port RF C	Port RF D	Total power[1)]
$T10_{Guard}$	47.66/ 7.56	47.62/ 7.56	47.59/ 7.56	47.57/ 7.56	53.63
$T15_{Guard}$	47.67/ 7.64	47.70/ 7.62	47.62/ 7.62	47.58/ 7.62	53.66
$T20_{Guard}$	47.67/ 7.72	47.72/ 7.70	47.65/ 7.70	47.61/ 7.70	53.68

[1)]: summed output power according to ANSI C63.26 section 6.4.3.1
Note: The PAR value is the 0.1 % Peak to Average Ratio.

Results LTE B85A

Single carrier E-TM1.1
Rated output power level at each RF port 1x 46 dBm/ port.

	Output power CCDF [RMS dBm/ PAR dB]				
Symbolic name	Port RF A	Port RF B	Port RF C	Port RF D	Total power[1)]
B_{5LTE}	45.96/ 7.34	45.96/ 7.34	45.93/ 7.34	45.96/ 7.34	51.97
B_{10LTE}	45.96/ 7.38	45.96/ 7.38	45.94/ 7.34	45.94/ 7.38	51.97
M_{5LTE}	45.91/ 7.30	45.94/ 7.32	45.90/ 7.30	45.94/ 7.32	51.91
M_{10LTE}	45.89/ 7.32	45.94/ 7.34	45.87/ 7.32	45.92/ 7.32	51.93
T_{5LTE}	45.86 7.34	45.90/ 7.34	45.84/ 7.34	45.91/ 7.34	51.90
T_{10LTE}	45.86/ 7.32	45.92/ 7.34	45.87/ 7.34	45.93/ 7.34	51.91

[1)]: summed output power according to ANSI C63.26 section 6.4.3.1
Note: The PAR value is the 0.1 % Peak to Average Ratio.

Rated output power level at each RF port 1x 46 dBm/ port.

	Output power per 1 MHz [RMS dBm]					
Symbolic name	Port RF A	Port RF B	Port RF C	Port RF D	Total power[2)]	Maximum Antenn gain[3)] [dBi]/ EIRP Limit [dBm]
B_{5LTE}	39.72	39.78	39.76	39.68	45.78	19.37/ 65.15
B_{10LTE}	36.78	36.84	36.69	36.69	42.84	22.31/ 65.15

[2)]: 6 dB (10 $\log_{10}$ (N_{out})) was added to the highest measured power among the measured ports, according to the procedure described in ANSI C63.26 section 6.4.3.2.4.
[3)]: The gain value is the maximum antenna gain that can be used with the tested device for the configuration tested, and still comply with the maximum EIRP limit as defined in SRSP-518. Feeder loss is assumed to be 0 dB in the antenna gain calculation.
The used formula is: Maximum antenna gain (dBi) = EIRP limit (dBm) - Measured Total power[2)]/ 1 MHz (dBm) + feeder loss (dB).
Please note that the maximum EIRP limit for a specific site may be lower due to various site conditions.

Single carrier E-TM3.2

Rated output power level at each RF port 1x 46 dBm/ port.

	Output power CCDF [RMS dBm/ PAR dB]				
Symbolic name	Port RF A	Port RF B	Port RF C	Port RF D	Total power[1)]
B_{10LTE}	45.90/ 7.36	45.98/ 7.38	45.98/ 7.36	45.99/ 7.38	51.98

[1)]: summed output power according to ANSI C63.26 section 6.4.3.1
Note: The PAR value is the 0.1 % Peak to Average Ratio.

Single carrier E-TM3.1

Rated output power level at each RF port 1x 46 dBm/ port.

	Output power CCDF [RMS dBm/ PAR dB]				
Symbolic name	Port RF A	Port RF B	Port RF C	Port RF D	Total power[1)]
B_{10LTE}	45.91/ 7.38	45.97/ 7.38	45.96/ 7.38	45.97 7.38	51.97

[1)]: summed output power according to ANSI C63.26 section 6.4.3.1
Note: The PAR value is the 0.1 % Peak to Average Ratio.

Single carrier E-TM3.1a

Rated output power level at each RF port 1x 46 dBm/ port.

	Output power CCDF [RMS dBm/ PAR dB]				
Symbolic name	Port RF A	Port RF B	Port RF C	Port RF D	Total power[1)]
B_{10LTE}	45.92/ 7.38	45.97/ 7.40	45.99/ 7.38	45.98/ 7.38	51.99

[1)]: summed output power according to ANSI C63.26 section 6.4.3.1
Note: The PAR value is the 0.1 % Peak to Average Ratio.

Carrier aggregation E-TM1.1

Rated output power level at each RF port 2x 43 dBm/ port.

	Output power CCDF [RMS dBm/ PAR dB]				
Symbolic name	Port RF A	Port RF B	Port RF C	Port RF D	Total power[1)]
$CA_{LTE5+10}$	45.89/ 7.24	45.87/ 7.24	45.80/ 7.24	45.86/ 7.24	51.88

[1)]: summed output power according to ANSI C63.26 section 6.4.3.1
Note: The PAR value is the 0.1 % Peak to Average Ratio.

Results NB IoT SA, LTE with NB IoT GB B85A

CCDF resolution bandwidth of 5 MHz was used for NB IoT SA.

Due to a 92.7 % duty cycle of the IoT carrier, 0.33 dBm was added to the measured value of the NB IoT Stand Alone carriers according to ANSI C63.26, 5.2.4.4.2, j.

Multi RAT: NB IoT SA: N-TM, LTE: E-TM1.1

Rated output power level at each RF port 1x 43 dBm/ port.

	Output power CCDF [RMS dBm/ PAR dB]				
Symbolic name	Port RF A	Port RF B	Port RF C	Port RF D	Total power[1)]
B_{IoT+L}	42.35/ 5.04	42.30/ 5.06	42.38/ 5.06	42.43/ 5.04	48.39
M_{IoT+L}	42.89/5.04	42.90/ 5.06	42.96/ 5.04	42.95/ 5.04	48.95
T_{IoT+L}	42.40/ 5.04	42.40/ 5.04	42.37/ 5.04	42.47/ 5.04	48.43

[1)]: summed output power according to ANSI C63.26 section 6.4.3.1
Note: The PAR value is the 0.1 % Peak to Average Ratio.

Rated output power level at each RF port 1x 43 dBm/ port.

	Output power per 1 MHz [RMS dBm]					
Symbolic name	Port RF A	Port RF B	Port RF C	Port RF D	Total power[2)]	Maximum Antenn gain[3)] [dBi]/ EIRP Limit [dBm]
M_{IoT+L}	43.02	43.09	43.13	43.09	49.13	16.02/ 65.15

[2)]: 6 dB (10 $\log_{10}$ (N_{out})) was added to the highest measured power among the measured ports, according to the procedure described in ANSI C63.26 section 6.4.3.2.4.
[3)]: The gain value is the maximum antenna gain that can be used with the tested device for the configuration tested, and still comply with the maximum EIRP limit as defined in SRSP-518. Feeder loss is assumed to be 0 dB in the antenna gain calculation.
The used formula is: Maximum antenna gain (dBi) = EIRP limit (dBm) - Measured Total power[2)]/ 1 MHz (dBm) + feeder loss (dB).
Please note that the maximum EIRP limit for a specific site may be lower due to various site conditions.

Multi RAT: LTE with NB IoT GB: NB IoT GB: N-TM, LTE: E-TM3.1

CCDF resolution bandwidth of 40 MHz was used for NB IoT Guard .

Rated output power level at each RF port 1x 46 dBm/ port.

	Output power CCDF [RMS dBm/ PAR dB]				
Symbolic name	Port RF A	Port RF B	Port RF C	Port RF D	Total power[1)]
$B10_{Guard}$	45.77/ 7.50	45.84/ 7.50	45.88/ 7.50	45.88/ 7.50	51.86

[1)]: summed output power according to ANSI C63.26 section 6.4.3.1
Note: The PAR value is the 0.1 % Peak to Average Ratio.

Multi RAT: NB IoT SA: N-TM, LTE: E-TM1.1

CCDF resolution bandwidth of 40 MHz was used for LTE + NB IoT SA .

Rated output power level at each RF port 6x 39 dBm/ port.

	Output power CCDF [RMS dBm/ PAR dB]				
Symbolic name	Port RF A	Port RF B	Port RF C	Port RF D	Total power[1)]
$M_{3LTE+2IoT}$	45.71/ 7.48	45.73/ 7.48	45.70/ 7.46	45.74/ 7.44	51.74

[1)]: summed output power according to ANSI C63.26 section 6.4.3.1
Note: The PAR value is the 0.1 % Peak to Average Ratio.

Remark

ERP/EIRP compliance is addressed at the time of licensing, as required by the responsible FCC/ISED Bureau(s). Licensee's are required to take into account maximum antenna gain used in combination with above power settings to prevent the radiated output power to exceed the limits.

Limits

§27.50:
(c) (4) Fixed and base stations located in a county with population density of 100 or fewer persons per square mile, based upon the most recently available population statistics from the Bureau of the Census, and transmitting a signal with an emission bandwidth greater than 1 MHz must not exceed an ERP of 2000 watts/MHz and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 2000 watts/MHz ERP in accordance with Table 4 of this section;

RSS-130 section 4.6/ SRSP-518

For base and fixed equipment other than fixed subscriber equipment, refer to SRSP-518 for the equivalent isotropically radiated power (e.i.r.p.) limits.

Complies?	Yes

Occupied bandwidth measurements according to CFR47 §2.1049/ RSS-Gen 6.7

Date	Temperature	Humidity
2021-04-07	23 °C ± 3 °C	20 % ± 5 %
2021-04-08	23 °C ± 3 °C	18 % ± 5 %
2021-04-09	23 °C ± 3 °C	22 % ± 5 %
2021-05-05	23 °C ± 3 °C	25 % ± 5 %
2021-05-06	23 °C ± 3 °C	24 % ± 5 %
2021-05-10	23 °C ± 3 °C	20 % ± 5 %
2021-05-11	23 °C ± 3 °C	21 % ± 5 %

Test set-up and procedure

The measurements were made per definition in ANSI C63.26, 5.4.4. The output was connected to a signal analyzer using the built in OBW function with the Peak detector activated in max hold.

Measurement equipment	RISE number
R&S FSW 43	902 073
RF attenuator	902 282
Coaxial cable Sucoflex 102EA	BX50236
Coaxial cable Sucoflex 102EA	BX50237
Testo 635, temperature and humidity meter	504 203

Measurement uncertainty: 3.7 dB

Results NR B71

Single carrier NR: FR1-TM1.1

Diagram	Symbolic name	Tested Port	Occupied BW (99%) [MHz]
1.1	B_{5NR}	RF B	4.470
1.2	B_{20NR}	RF B	18.903
1.3	M_{5NR}	RF A	4.468
1.4	M_{5NR}	RF B	4.467
1.5	M_{5NR}	RF C	4.469
1.6	M_{5NR}	RF D	4.469
1.7	M_{10NR}	RF B	9.285
1.8	M_{15NR}	RF B	14.143
1.9	M_{20NR}	RF B	18.901
1.10	T_{5NR}	RF B	4.470
1.11	T_{20NR}	RF B	18.902

Single carrier NR: FR1-TM3.1

Diagram	Symbolic name	Tested Port	Occupied BW (99%) [MHz]
1.12	M_{5NR}	RF B	4.467

Single carrier NR: FR1-TM3.1a

Diagram	Symbolic name	Tested Port	Occupied BW (99%) [MHz]
1.13	M_{5NR}	RF B	4.459

Single carrier NR: FR1-TM3.2

Diagram	Symbolic name	Tested Port	Occupied BW (99%) [MHz]
1.14	M_{5NR}	RF B	4.487

Carrier aggregation NR: FR1-TM1.1

Diagram	Symbolic name	Tested Port	Occupied BW (99%) [MHz]
1.15	$CA_{NR15+20}$	RF B	33.778

Results LTE B71

Single carrier ETM1.1

Diagram	Symbolic name	Tested Port	Occupied BW (99%) [MHz]
1.16	M_{5LTE}	RF B	4.476
1.17	M_{10LTE}	RF B	8.951
1.18	M_{15LTE}	RF B	13.450
1.19	M_{20LTE}	RF B	17.877

Single carrier LTE: ETM3.1

Diagram	Symbolic name	Tested Port	Occupied BW (99%) [MHz]
1.20	M_{5LTE}	RF B	4.481

Single carrier LTE: ETM3.1a

Diagram	Symbolic name	Tested Port	Occupied BW (99%) [MHz]
1.21	M_{5LTE}	RF B	4.486

Single carrier LTE: ETM3.2

Diagram	Symbolic name	Tested Port	Occupied BW (99%) [MHz]
1.22	M_{5LTE}	RF B	4.472

Carrier aggregation LTE: ETM1.1

Diagram	Symbolic name	Tested Port	Occupied BW (99%) [MHz]
1.23	$CA_{LTE15+20}$	RF B	32.979

Results NB IoT SA/ GB B71

Multi RAT: NB IoT SA and LTE

NB IoT SA: N-TM, LTE: E-TM1.1

Diagram	Symbolic name	Tested Port	Occupied BW (99%) [kHz]
1.24	M_{IoT+L}	RF A	190
1.25	M_{IoT+L}	RF B	192
1.26	M_{IoT+L}	RF C	192
1.27	M_{IoT+L}	RF D	192

Multi RAT: NB IoT GB and LTE

LTE with NB IoT GB: NB IoT GB: N-TM, LTE: E-TM3.1

Diagram	Symbolic name	Tested Port	Occupied BW (99%) [MHz]
1.28	$T_{10Guard}$	RF B	9.393
1.29	$T_{15Guard}$	RF B	14.033
1.30	$T_{20Guard}$	RF B	18.429

Results LTE B85A

Single carrier ETM1.1

Diagram	Symbolic name	Tested Port	Occupied BW (99%) [MHz]
1.31	B_{5LTE}	RF A	4.479
1.32	M_{5LTE}	RF A	4.478
1.33	M_{5LTE}	RF B	4.477
1.34	M_{5LTE}	RF C	4.477
1.35	M_{5LTE}	RF D	4.479
1.36	M_{10LTE}	RF A	8.952
1.37	T_{5LTE}	RF A	4.475

Single carrier LTE: ETM3.1

Diagram	Symbolic name	Tested Port	Occupied BW (99%) [MHz]
1.38	M_{5LTE}	RF A	4.486

Single carrier LTE: ETM3.1a

Diagram	Symbolic name	Tested Port	Occupied BW (99%) [MHz]
1.39	M_{5LTE}	RF A	4.484

Single carrier LTE: ETM3.2

Diagram	Symbolic name	Tested Port	Occupied BW (99%) [MHz]
1.40	M_{5LTE}	RF A	4.474

Single carrier LTE: ETM3.2

Diagram	Symbolic name	Tested Port	Occupied BW (99%) [MHz]
1.40	M_{5LTE}	RF A	4.474

Carrier aggregation LTE: ETM1.1

Diagram	Symbolic name	Tested Port	Occupied BW (99%) [MHz]
1.41	$CA_{LTE5+10}$	RF B	14.164

Multi RAT: NB IoT SA and LTE

NB IoT SA: N-TM, LTE: E-TM1.1

Diagram	Symbolic name	Tested Port	Occupied BW (99%) [kHz]
1.42	M_{IoT+L}	RF A	190
1.43	M_{IoT+L}	RF B	190
1.44	M_{IoT+L}	RF C	190
1.45	M_{IoT+L}	RF D	191

Multi RAT: NB IoT GB and LTE

LTE with NB IoT GB: NB IoT GB: N-TM, LTE: E-TM3.1

Diagram	Symbolic name	Tested Port	Occupied BW (99%) [MHz]
1.46	$B10_{Guard}$	RF A	9.395

Diagram 1.1 NR: RF1-TM1.1, B_{5NR}, Port B:

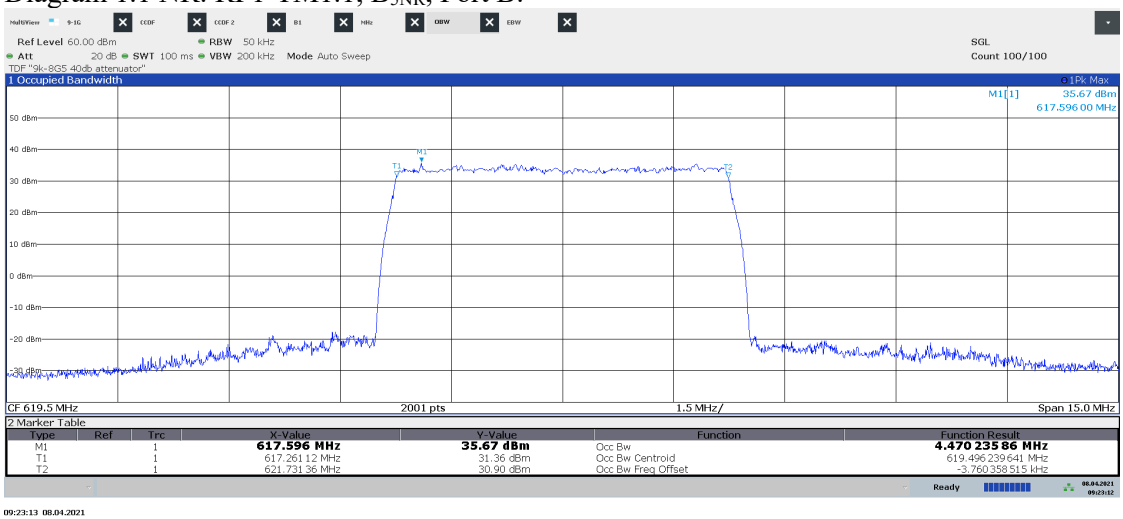


Diagram 1.2 NR: RF1-TM1.1, B_{20NR}, Port B:

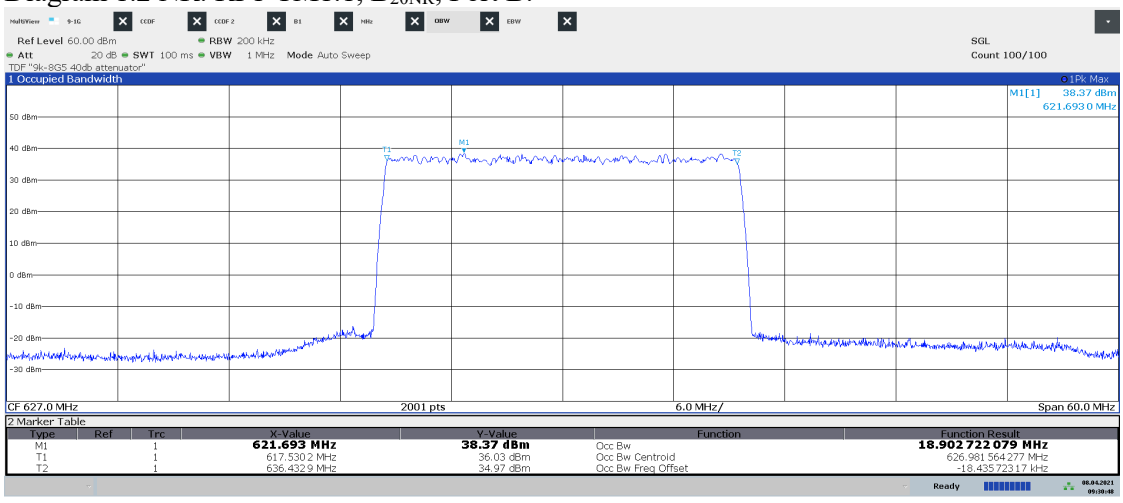


Diagram 1.3 NR: RF1-TM1.1, M_{5NR}, Port A:

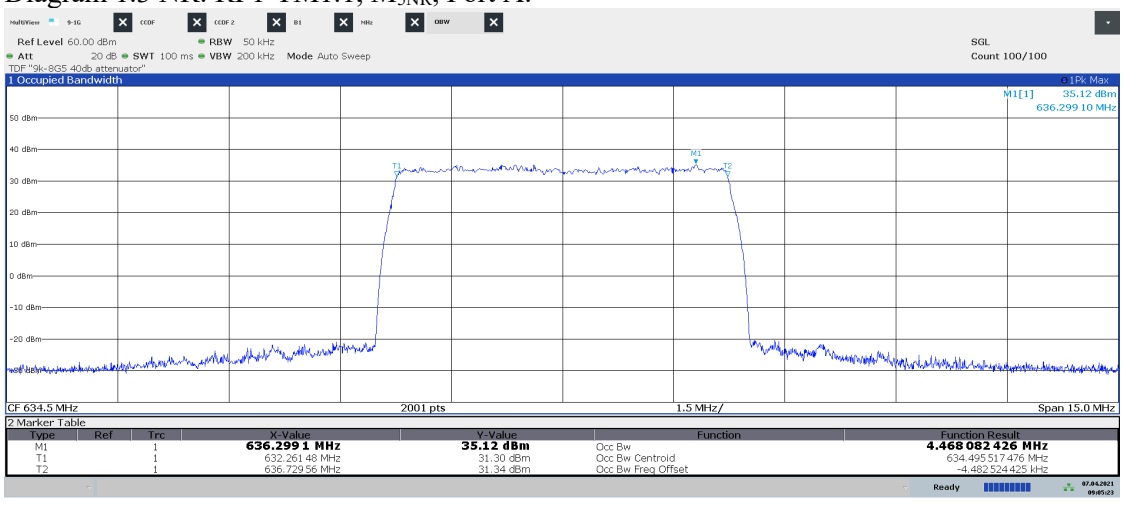


Diagram 1.4 NR: RF1-TM1.1, M_{5NR}, Port B:

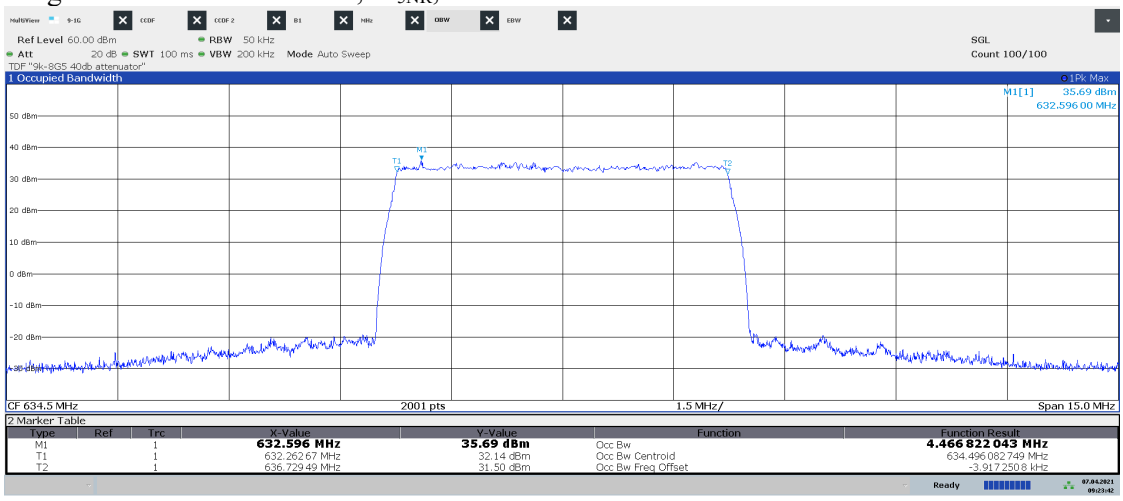


Diagram 1.5 NR: RF1-TM1.1, M_{5NR}, Port C:

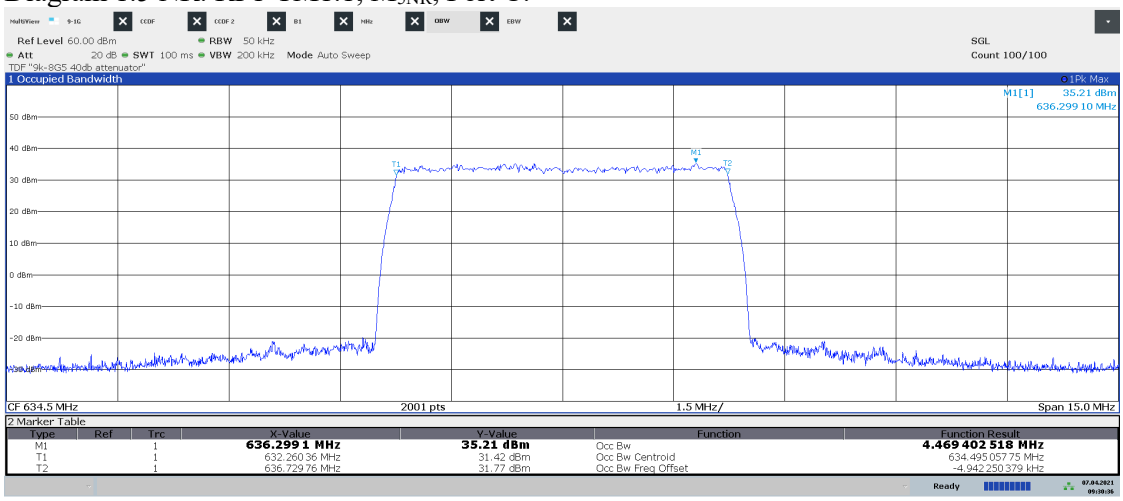


Diagram 1.6 NR: RF1-TM1.1, M_{5NR}, Port D:

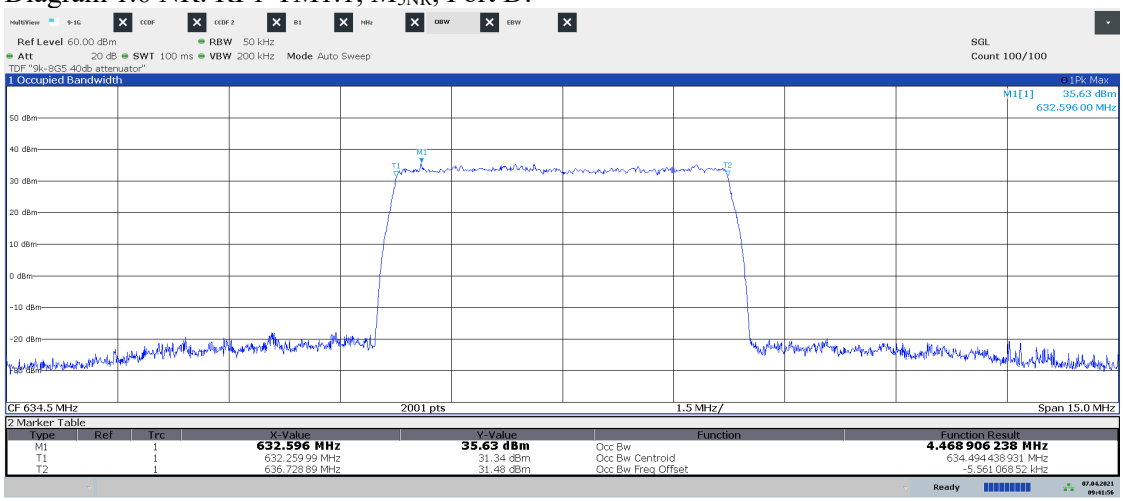


Diagram 1.7 NR: RF1-TM1.1, M_{10NR}, Port B:

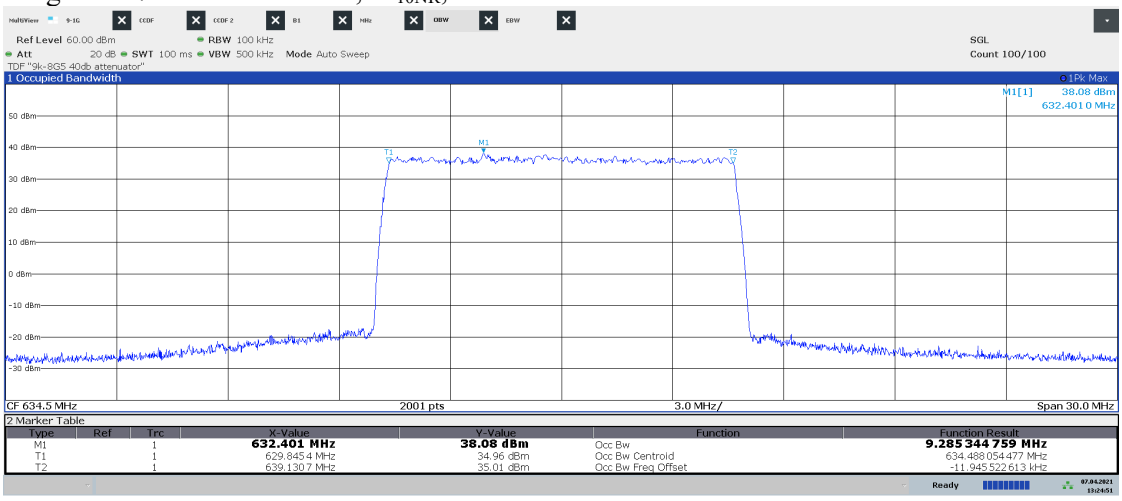


Diagram 1.8 NR: RF1-TM1.1, M_{15NR}, Port B:

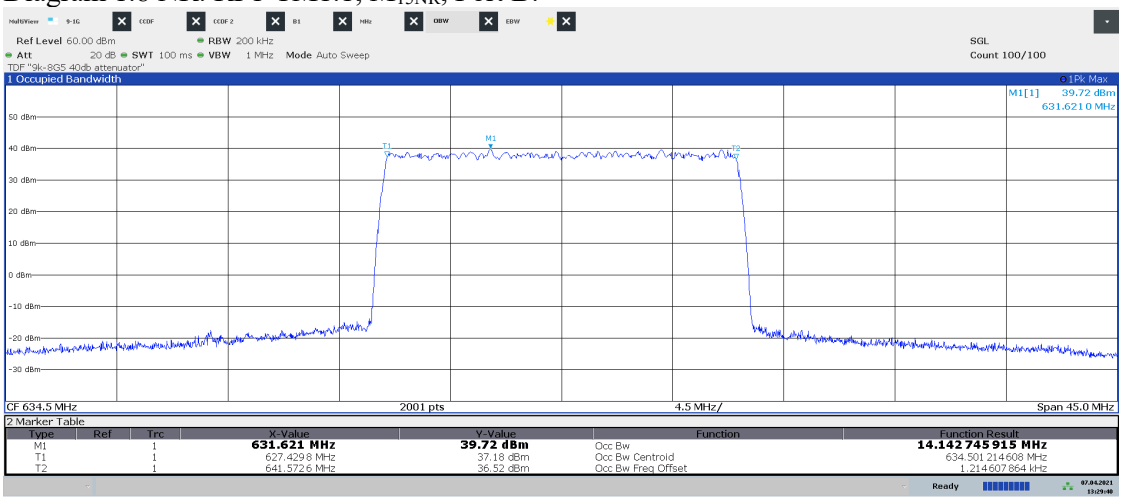


Diagram 1.9 NR: RF1-TM1.1, M_{20NR}, Port B:

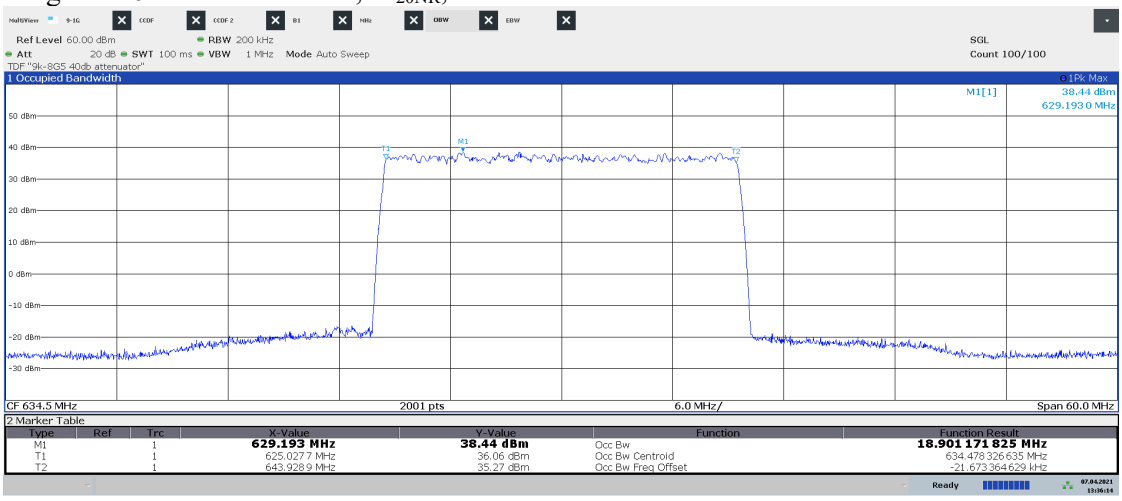


Diagram 1.10 NR: RF1-TM1.1, T_{5NR}, Port B:

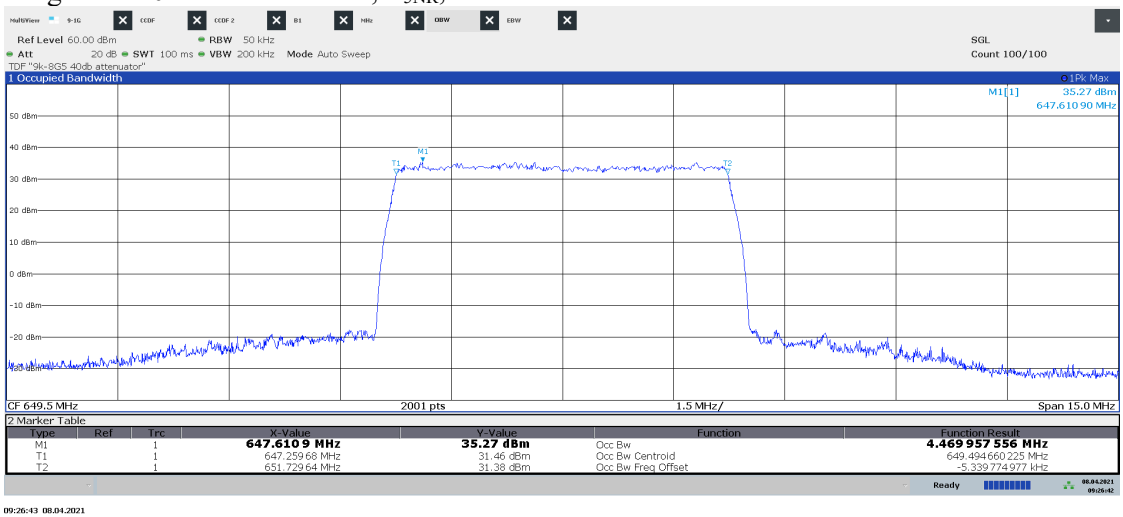


Diagram 1.11 NR: RF1-TM1.1, T_{20NR}, Port B:

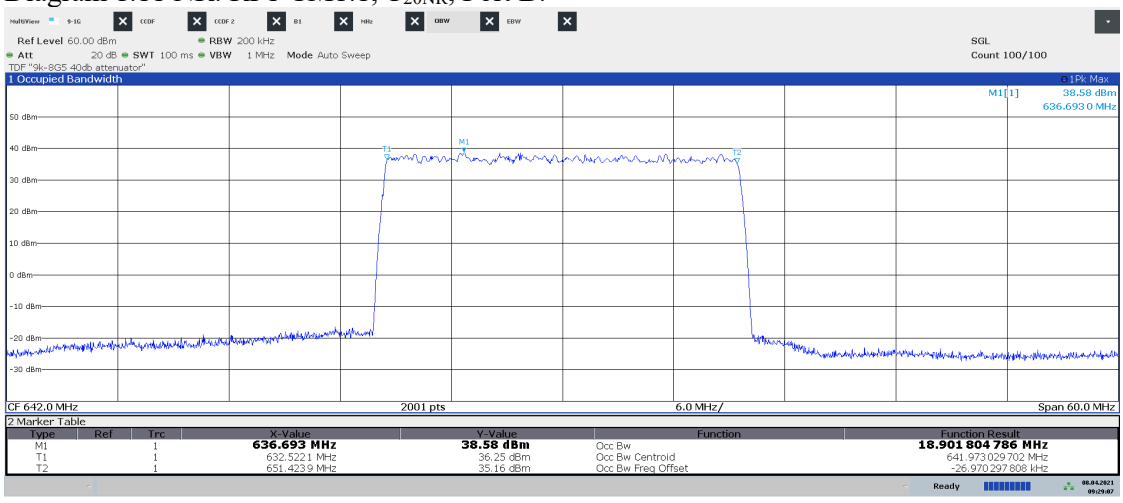


Diagram 1.12 NR: RF1-TM3.1, M_{5NR}, Port B:

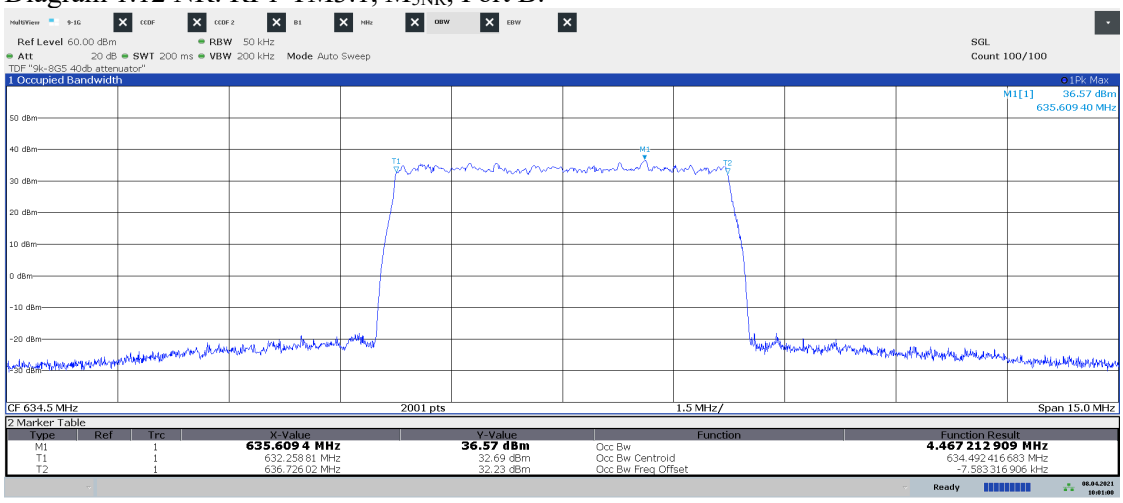


Diagram 1.13 NR: RF1-TM3.1a, M_{5NR}, Port B:

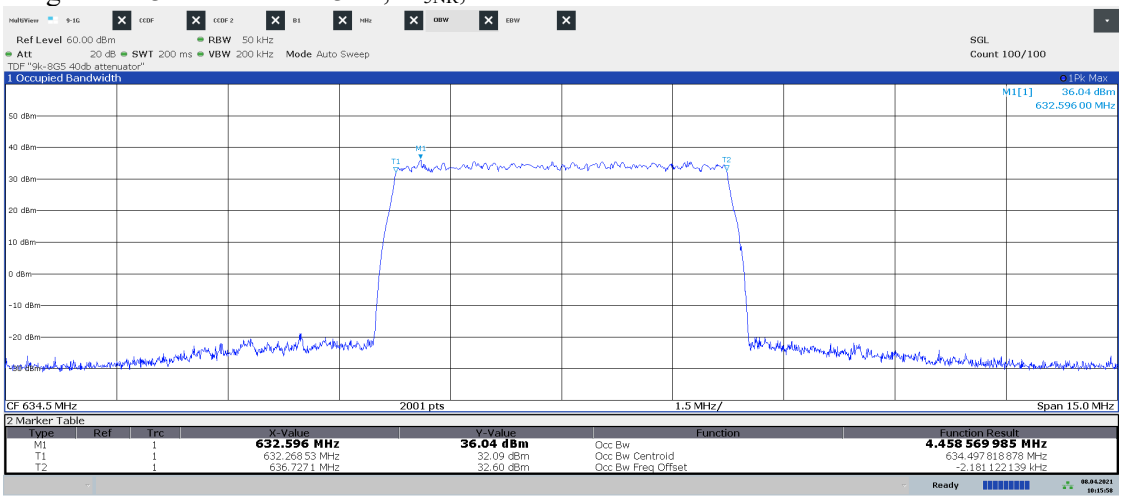


Diagram 1.14 NR: RF1-TM3.2, M_{5NR}, Port B:

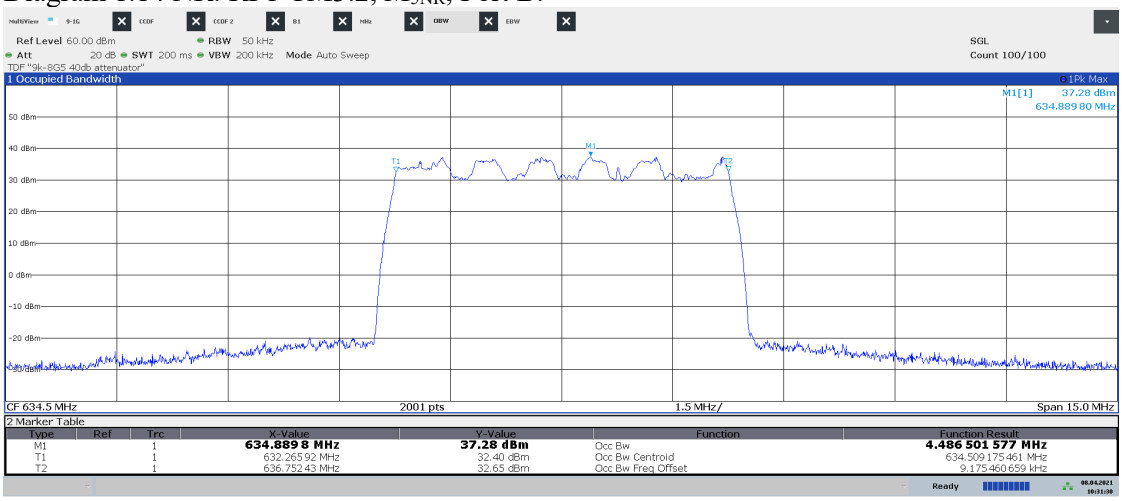


Diagram 1.15 NR: RF1-TM1.1, $CA_{NR15+20}$, Port B:

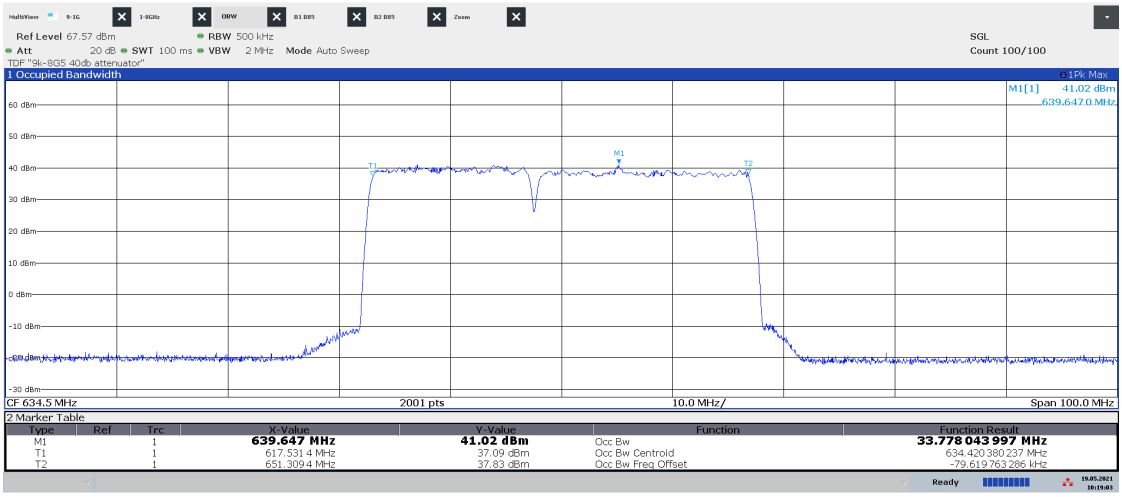


Diagram 1.16 LTE: ETM1.1, M_{5LTE}, Port B:

Diagram 1.17 LTE: ETM1.1, M_{10LTE}, Port B:

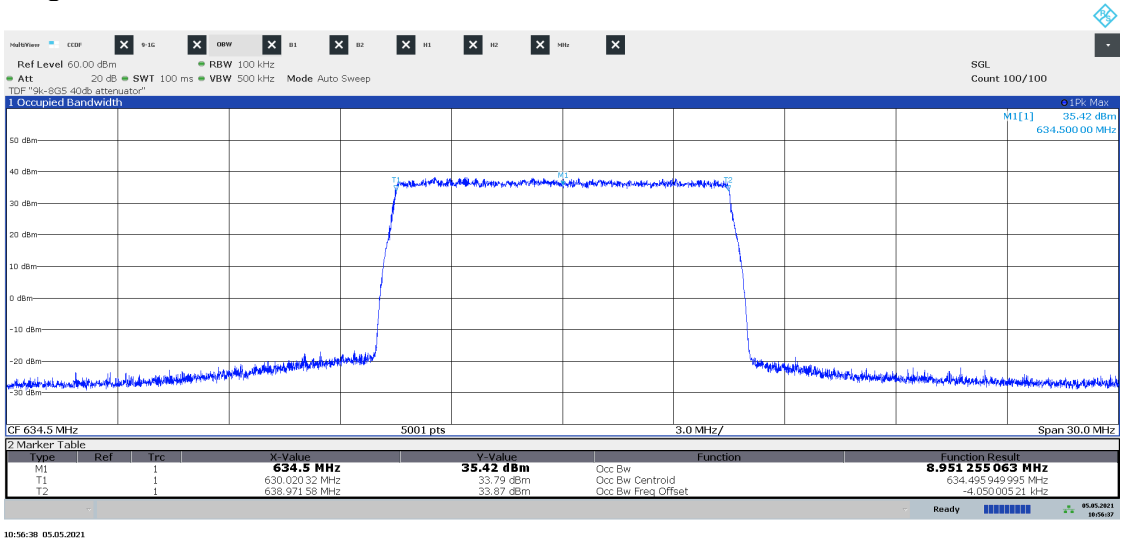


Diagram 1.18 LTE: ETM1.1, M_{15LTE}, Port B:

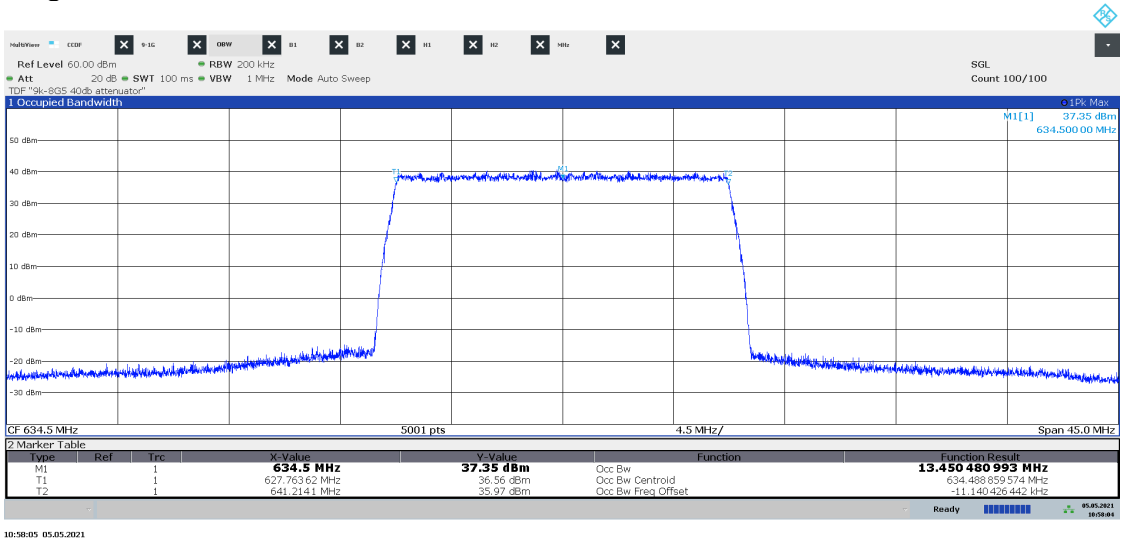


Diagram 1.19 LTE: ETM1.1, M_{20LTE}, Port B:

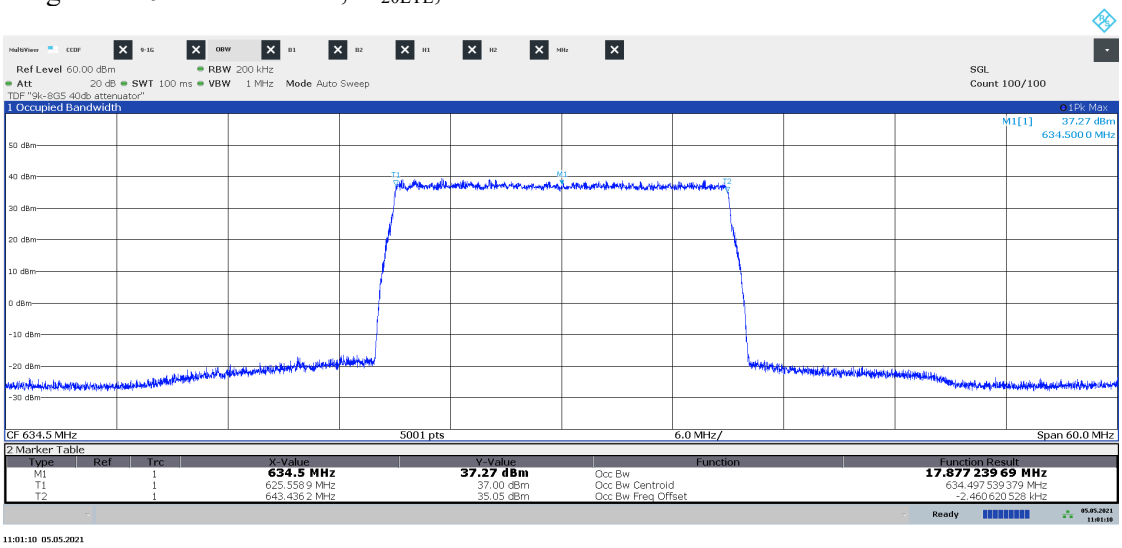


Diagram 1.20 LTE: ETM3.1, M_{5LTE}, Port B:

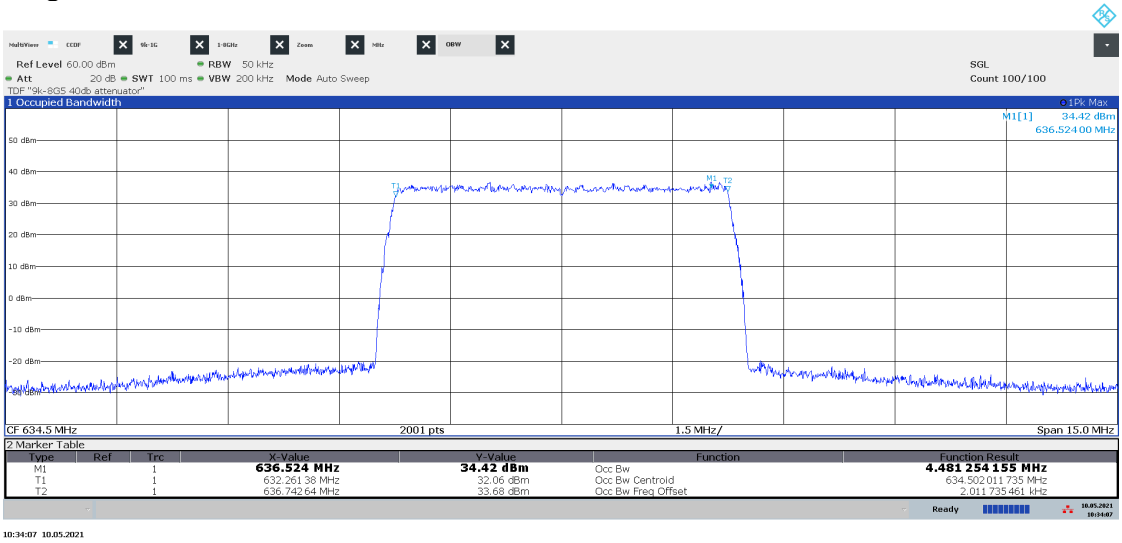


Diagram 1.21 LTE: ETM3.1a, M_{5LTE}, Port B:

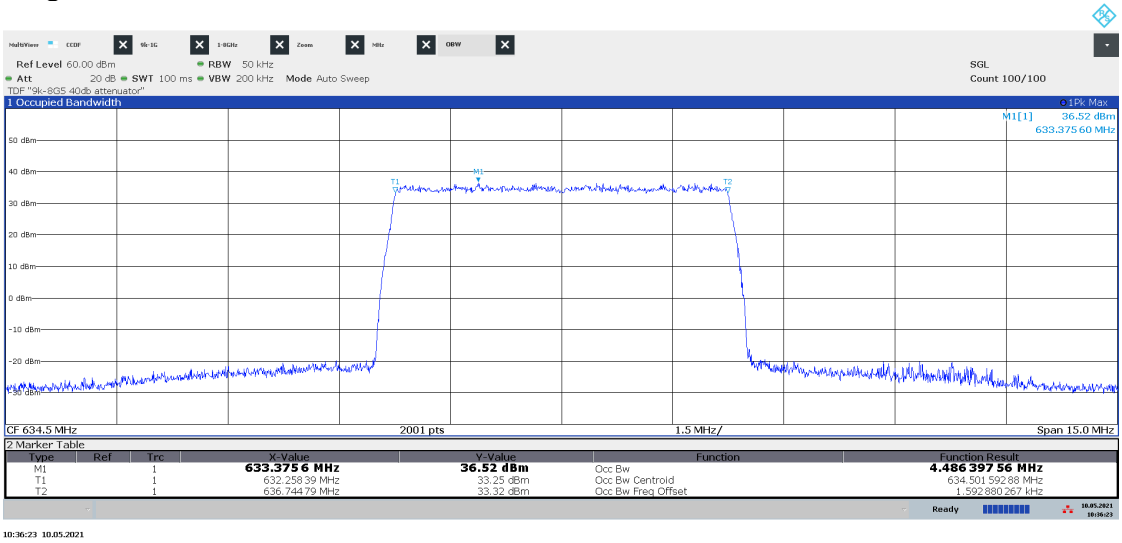


Diagram 1.22 LTE: ETM3.2, M_{5LTE}, Port B:

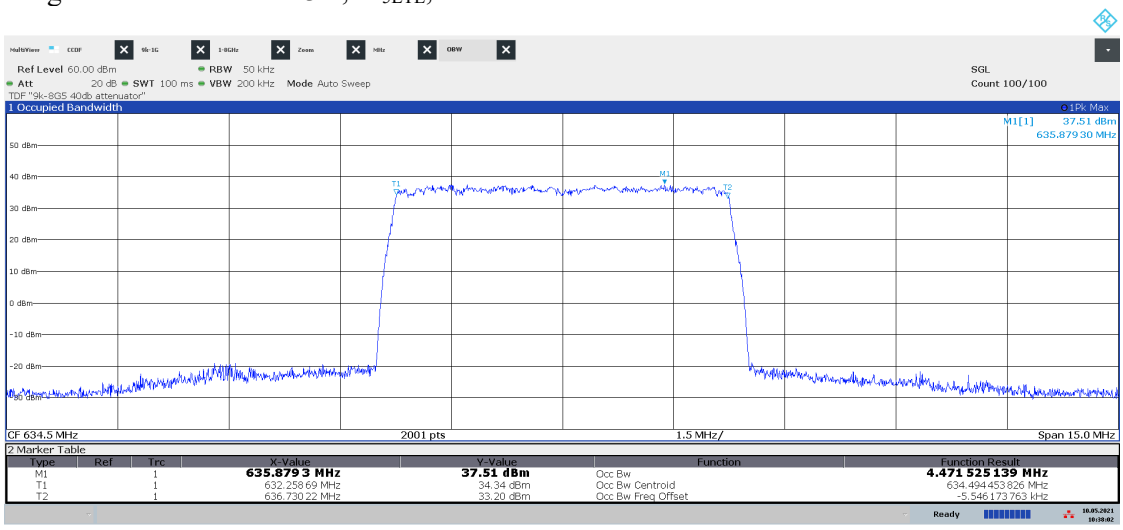


Diagram 1.23 LTE: ETM1.1, $CA_{LTE15+20}$, Port B:

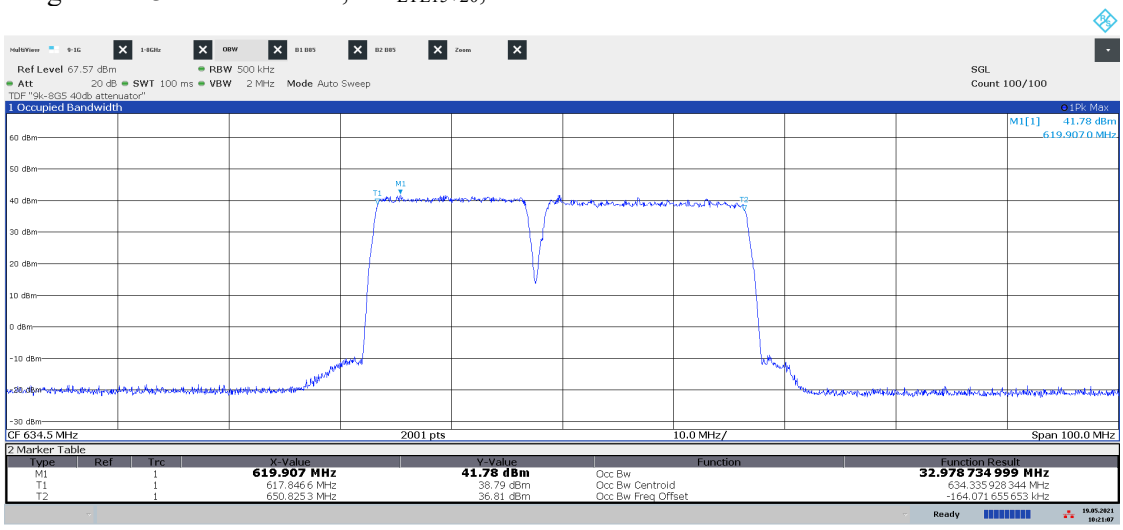


Diagram 1.24 NB IoT SA N-TM, LTE: E-TM1.1, M_{IoT+L}, Port A:

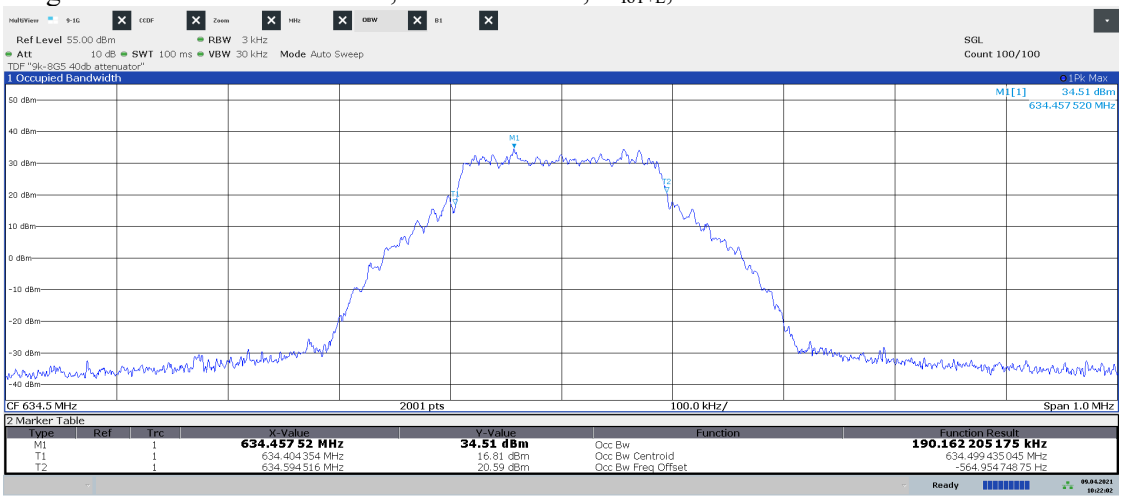


Diagram 1.25 NB IoT SA N-TM, LTE: E-TM1.1, M_{IoT+L}, Port B:

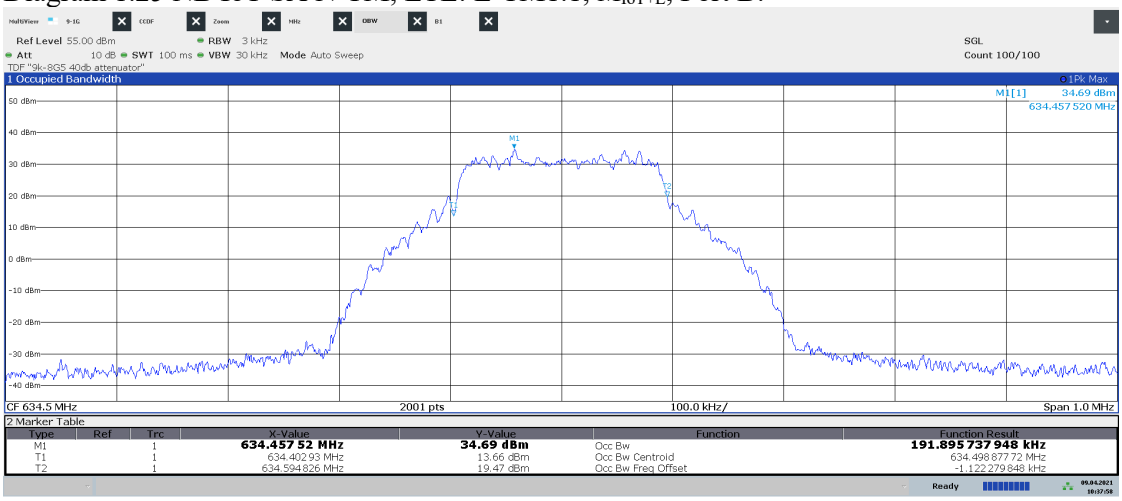


Diagram 1.26 NB IoT SA N-TM, LTE: E-TM1.1, M_{IoT+L}, Port C:

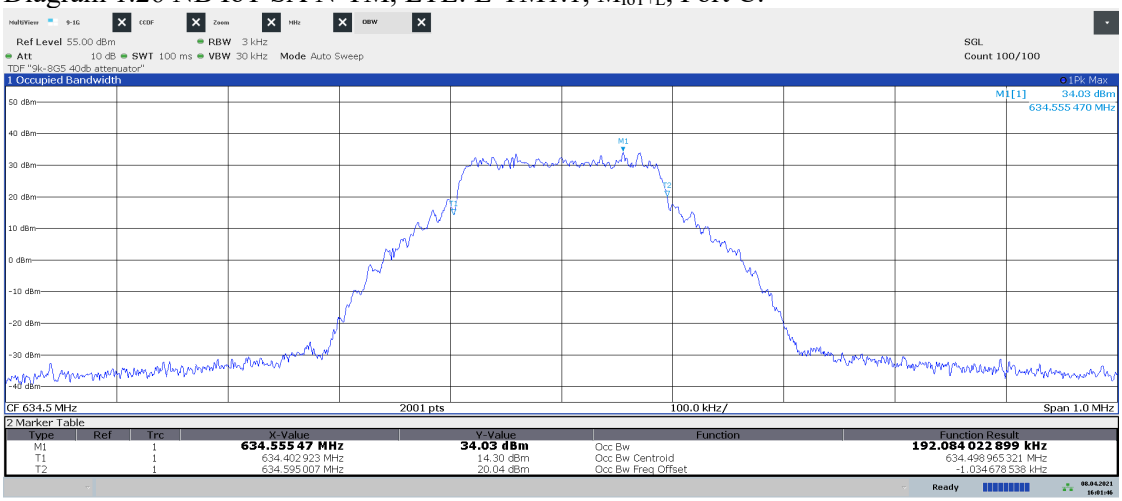


Diagram 1.27 NB IoT SA N-TM, LTE: E-TM1.1, M_{IoT+L}, Port D:

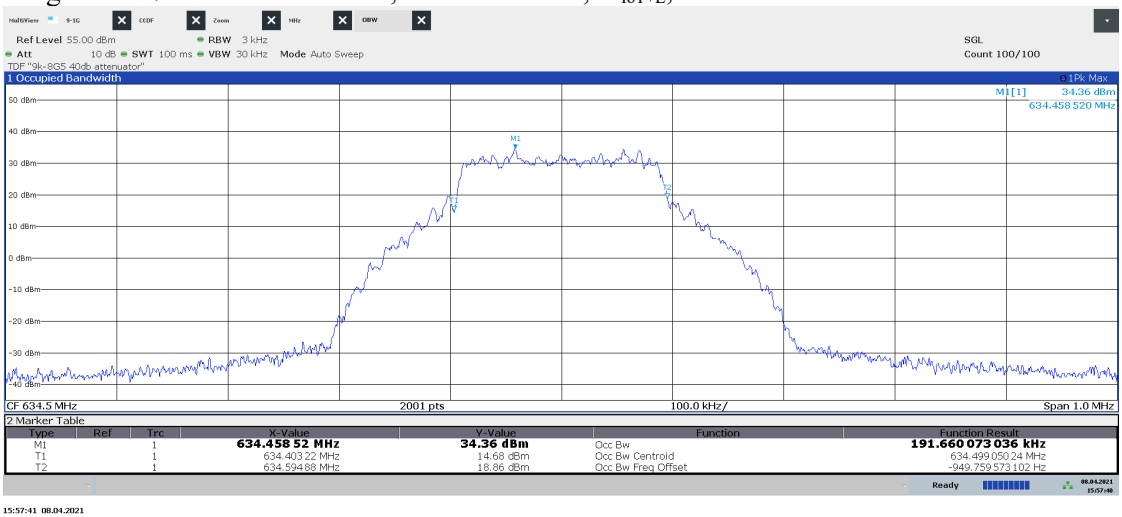


Diagram 1.28 NB IoT GB: N-TM, LTE: E-TM3.1, $T10_{Guard}$, Port B:

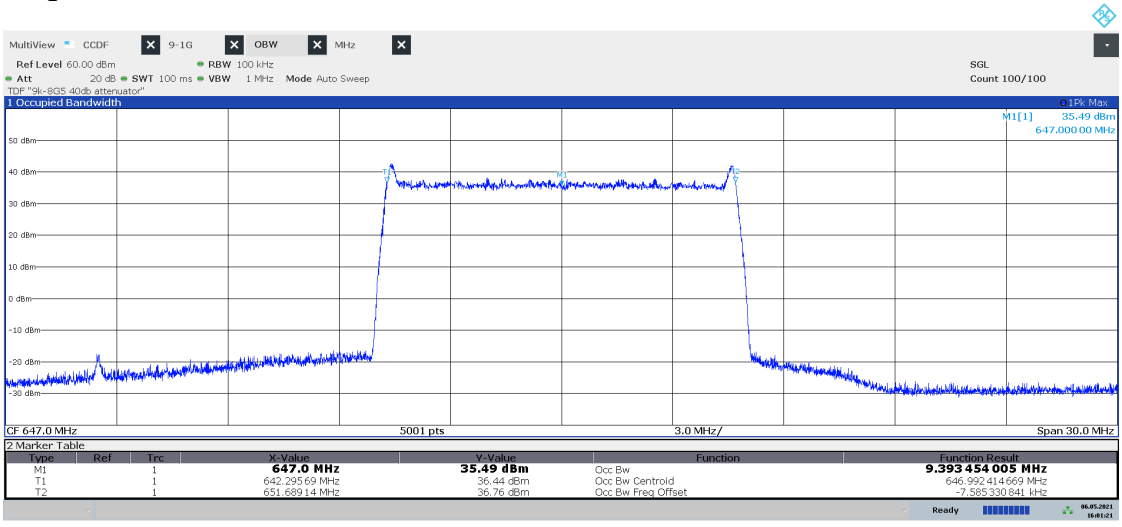


Diagram 1.29 NB IoT GB: N-TM, LTE: E-TM3.1, $T15_{Guard}$, Port B:

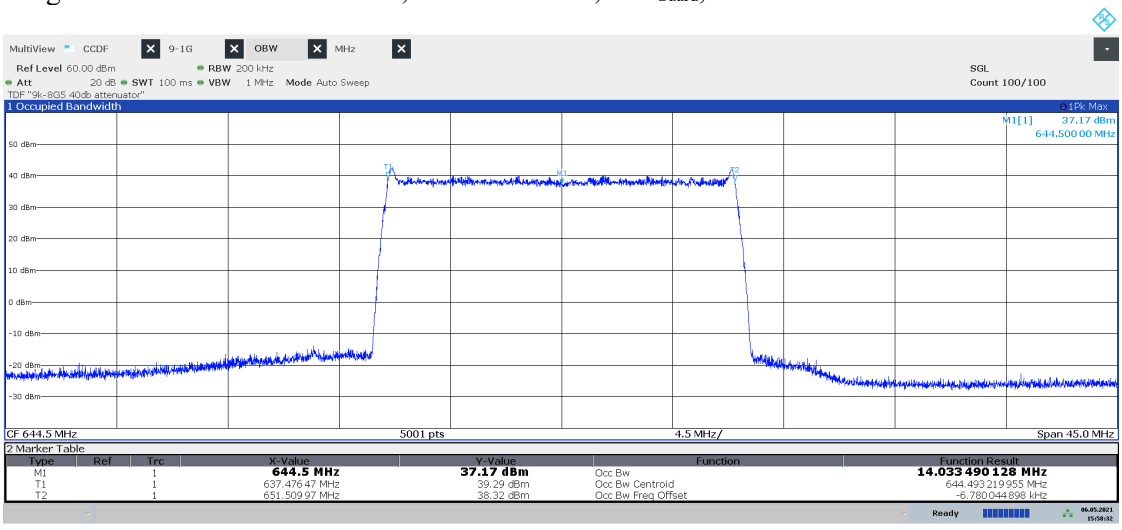


Diagram 1.30 NB IoT GB: N-TM, LTE: E-TM3.1, $T20_{Guard}$, Port B:

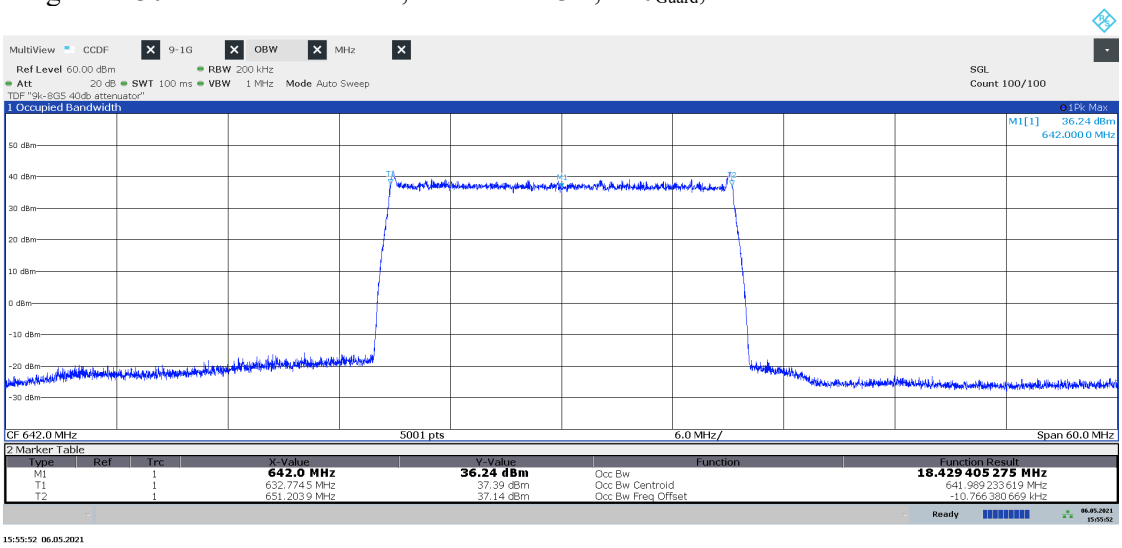


Diagram 1.31 LTE: ETM1.1, B_{5LTE}, Port A:

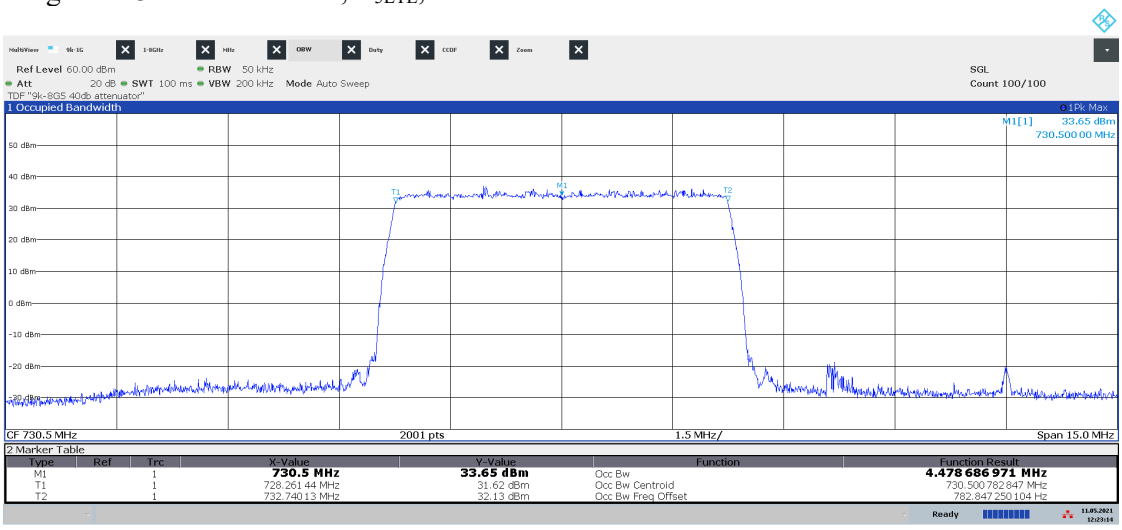


Diagram 1.32 LTE: ETM1.1, M_{5LTE}, Port A:

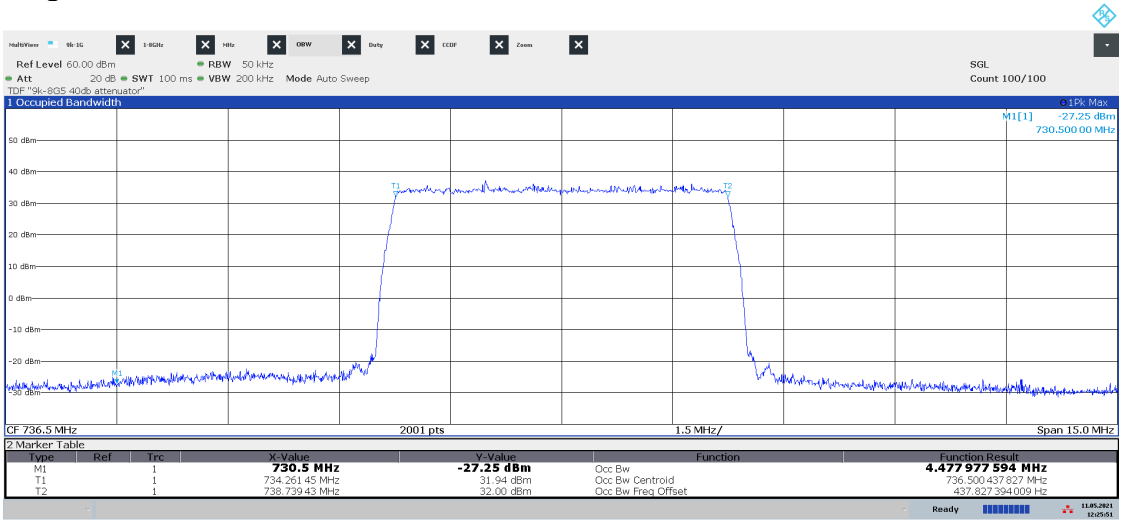


Diagram 1.33 LTE: ETM1.1, M_{5LTE}, Port B:

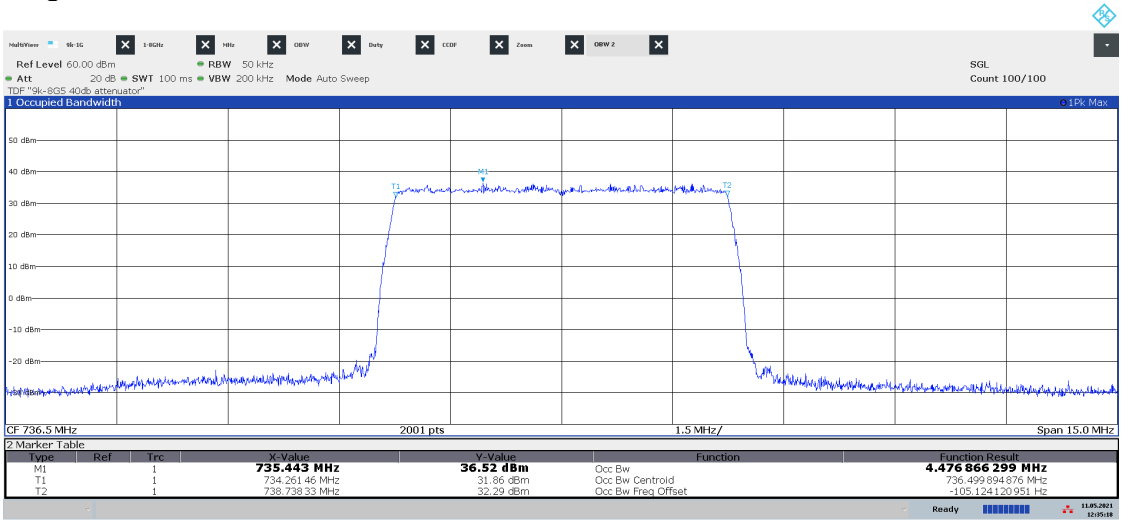


Diagram 1.34 LTE: ETM1.1, M_{5LTE}, Port C:

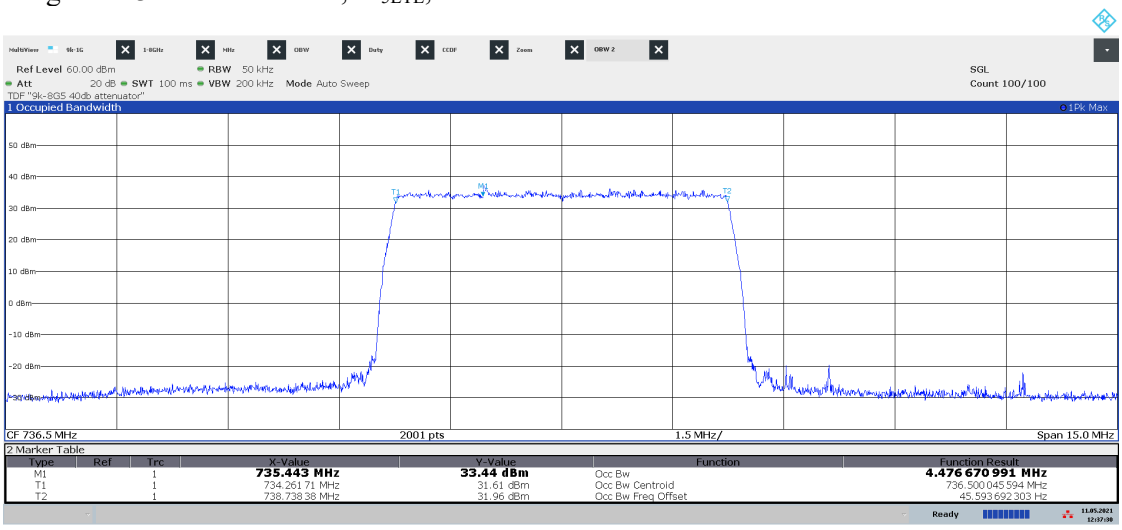


Diagram 1.35 LTE: ETM1.1, M_{5LTE}, Port D:

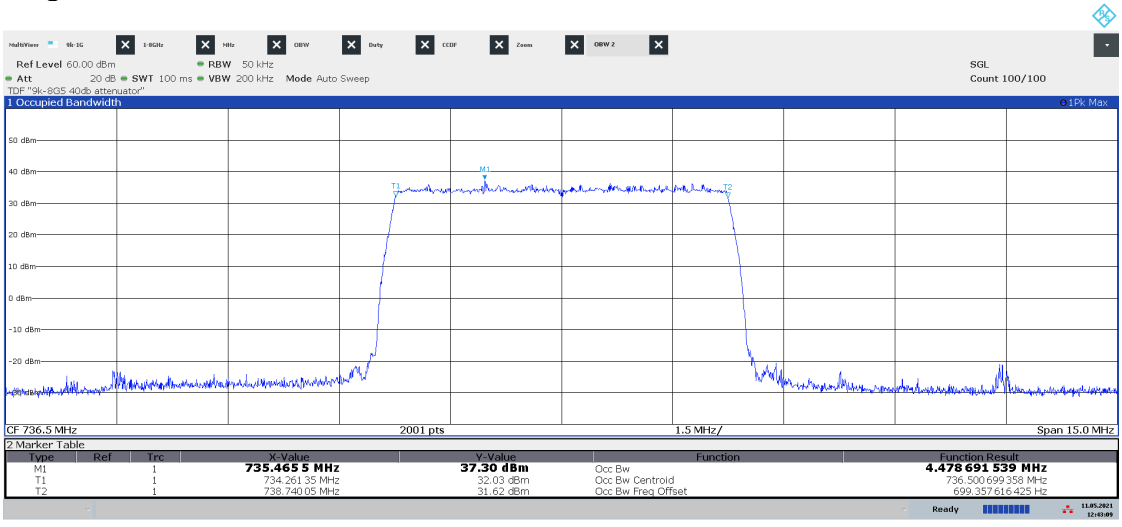


Diagram 1.36 LTE: ETM1.1, M_{10LTE}, Port A:

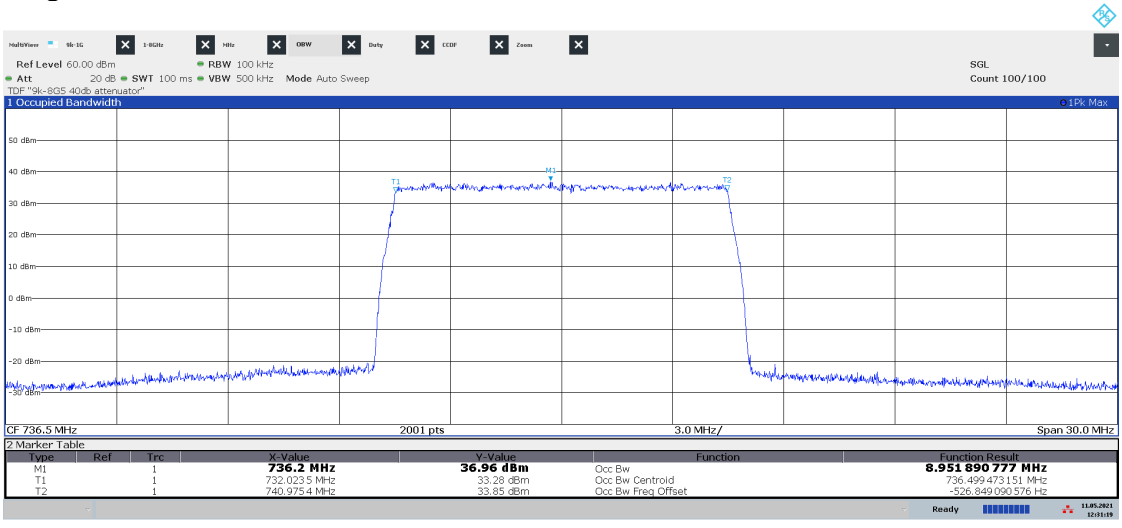


Diagram 1.37 LTE: ETM1.1, T_{5LTE}, Port A:

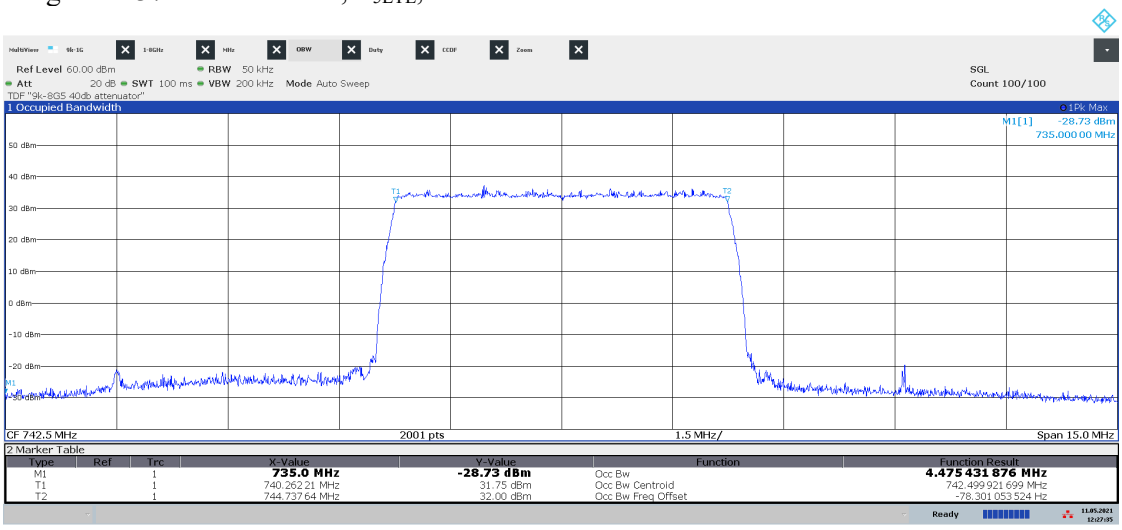


Diagram 1.38 LTE: ETM3.1, M_{5LTE}, Port A:

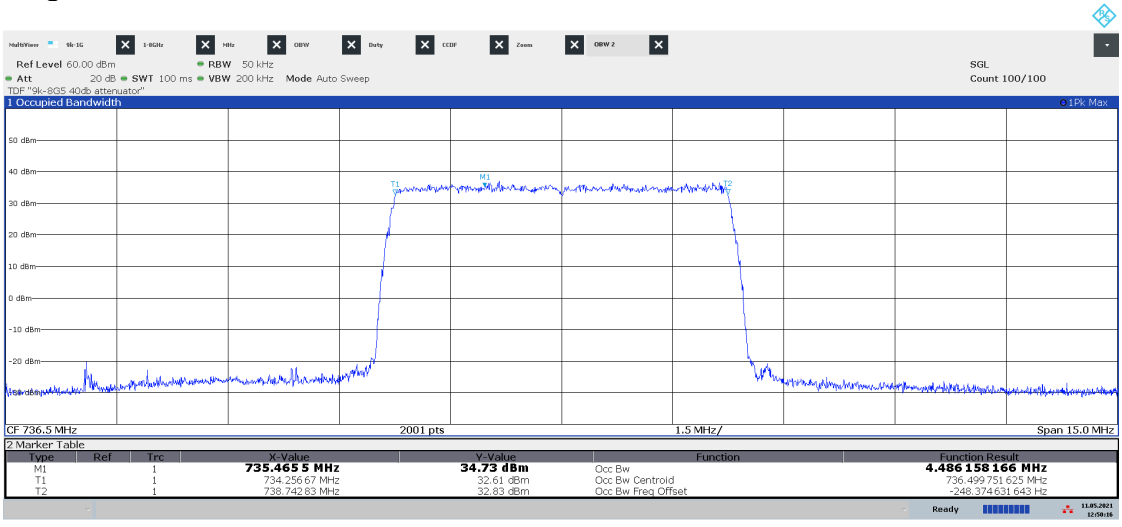


Diagram 1.39 LTE: ETM3.1a, M_{5LTE}, Port A:

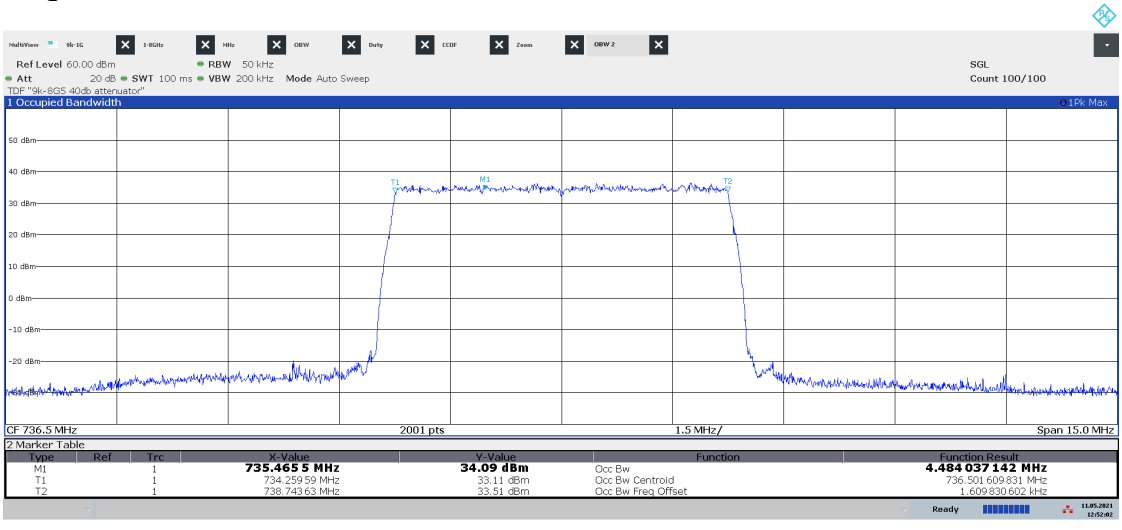


Diagram 1.40 LTE: ETM3.2, M_{5LTE}, Port A:

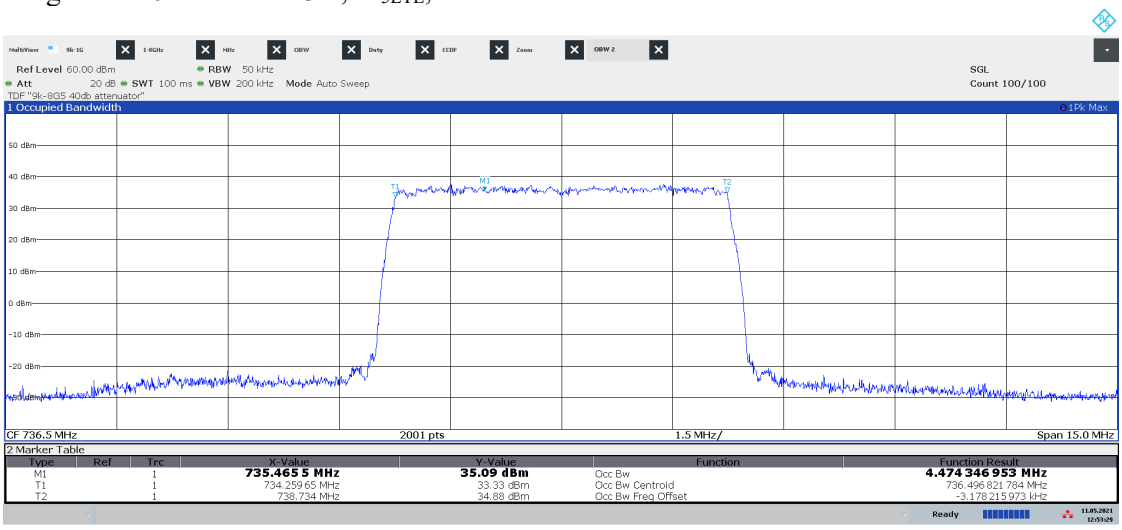
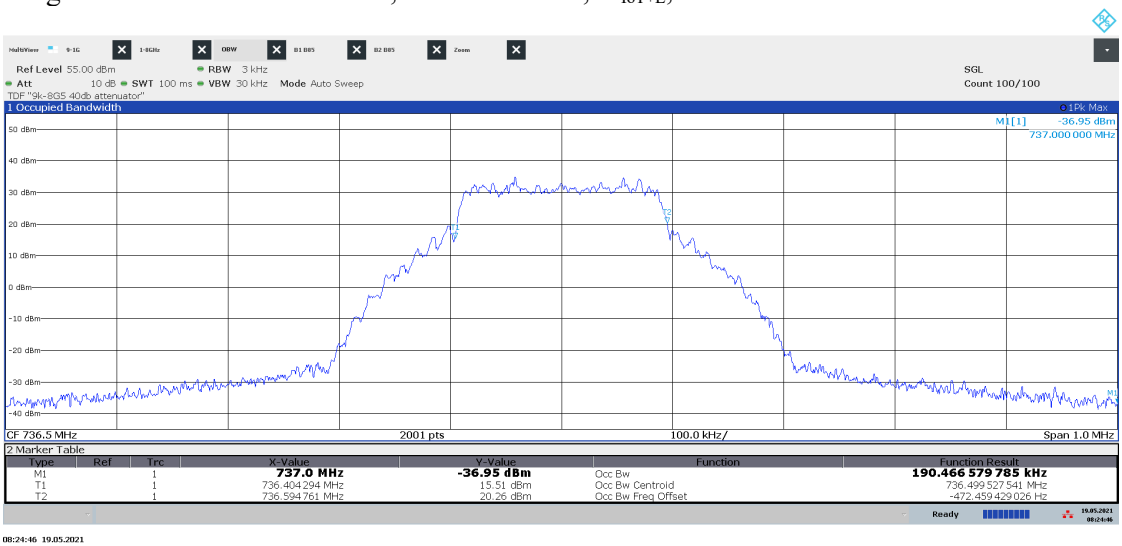


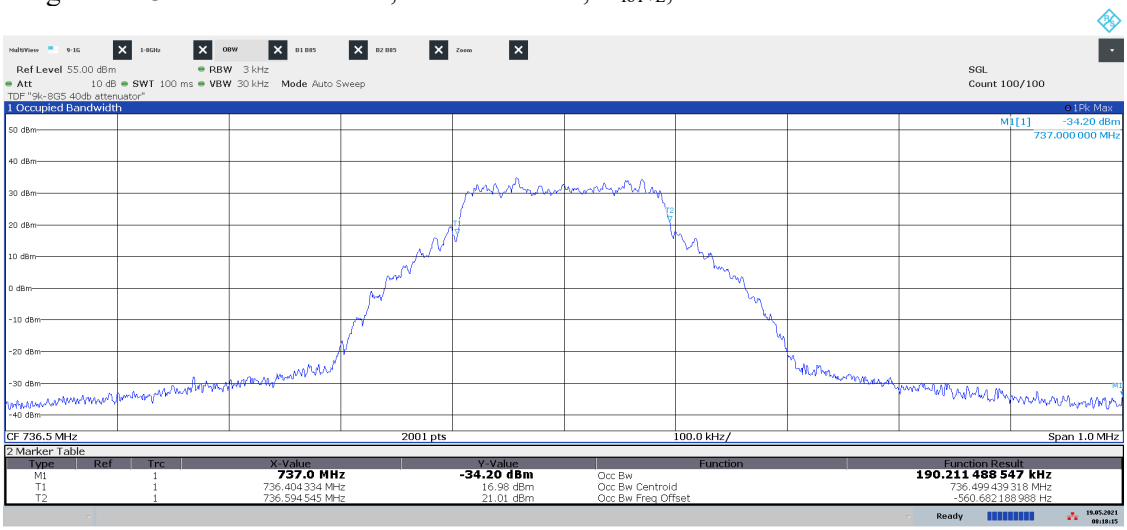
Diagram 1.41 LTE: ETM31.1, $CA_{LTE5+10}$, Port B:

Diagram 1.42 NB IoT SA N-TM, LTE: E-TM1.1, M_{IoT+L}, Port A:



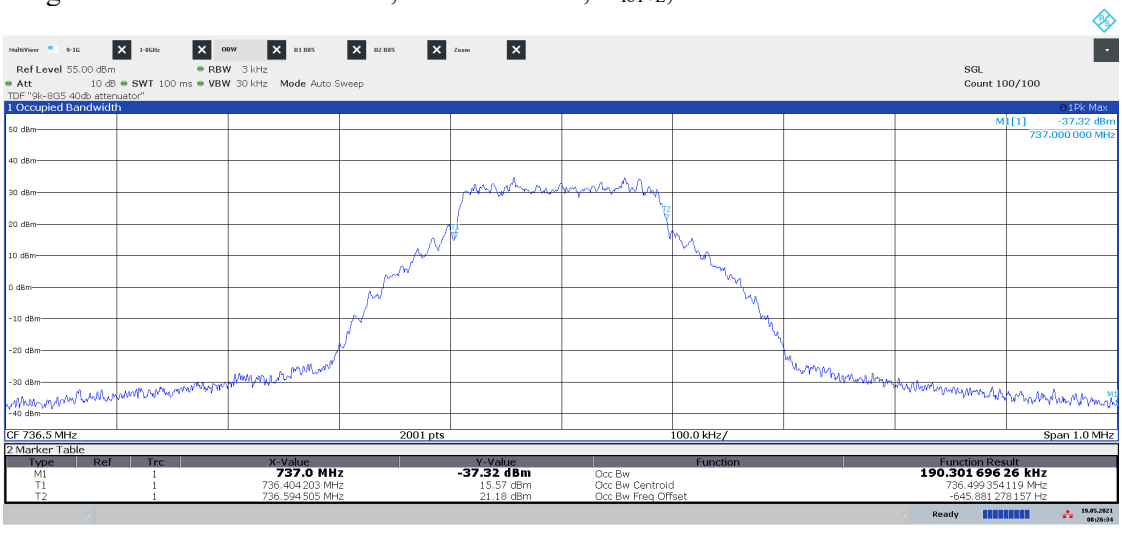
08:24:46 19.05.2021

Diagram 1.43 NB IoT SA N-TM, LTE: E-TM1.1, M_{IoT+L}, Port B:



08:18:16 19.05.2021

Diagram 1.44 NB IoT SA N-TM, LTE: E-TM1.1, M_{IoT+L}, Port C:



08:26:35 19.05.2021

Diagram 1.45 NB IoT SA N-TM, LTE: E-TM1.1, M_{IoT+L}, Port D:

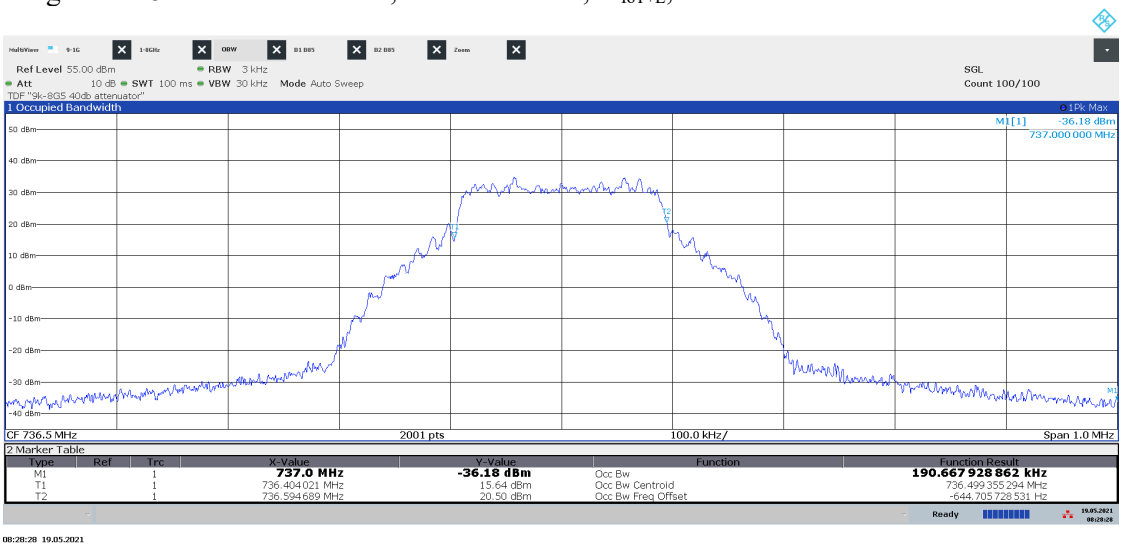
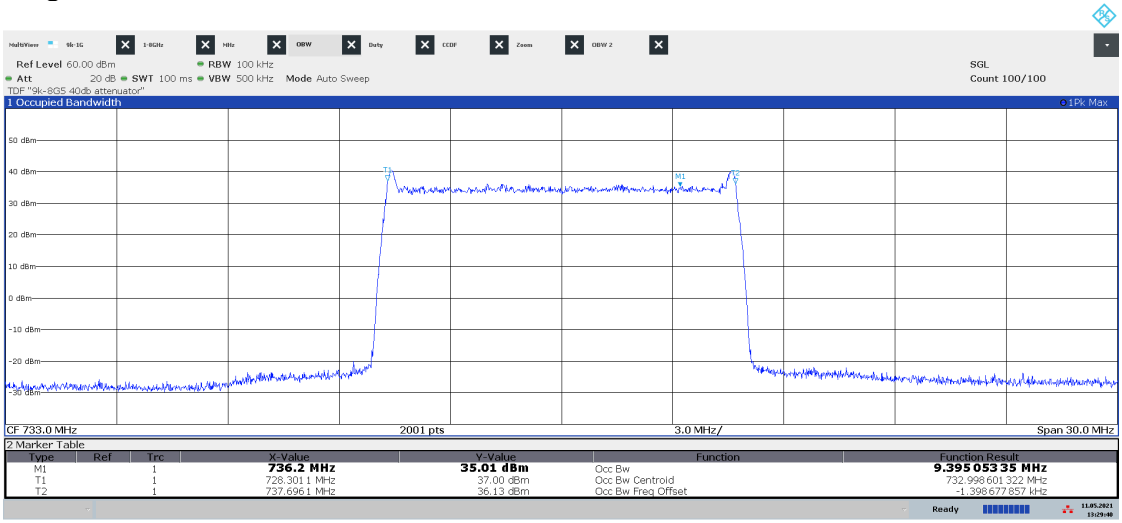


Diagram 1.46 NB IoT GB: N-TM, LTE: E-TM3.1, $B10_{Guard}$, Port B:



Band edge measurements according to CFR 47 §2.1049/ RSS-130 4.7.1

Date	Temperature	Humidity
2021-04-08	23 °C ± 3 °C	18 % ± 5 %
2021-05-03	23 °C ± 3 °C	20 % ± 5 %
2021-05-06	23 °C ± 3 °C	24 % ± 5 %
2021-05-11	23 °C ± 3 °C	21 % ± 5 %
2021-05-18	23 °C ± 3 °C	20 % ± 5 %

Test set-up and procedure

The measurements were made per definition in ANSI C63.26, 5.7.3. The test object was connected to a spectrum analyzer with the RMS detector activated.

The transmitter unwanted emissions shall be measured with a resolution bandwidth of at least 100 kHz. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.

Before comparing the results to the limit, 6 dB [10 log (4)] to cover 4x4 MIMO, should be added according to ANSI C63.26 section 6.4.4.1 c)

Measurement equipment	RISE number
R&S FSW 43	902 073
RF attenuator	902 282
Coaxial cable Sucoflex 102EA	BX50236
Coaxial cable Sucoflex 102EA	BX50237
Testo 635, temperature and humidity meter	504 203

Measurement uncertainty: 2.6 dB

Results NR B71

Single carrier NR: RF1-TM1.1

Diagram	Symbolic name	Tested Port
2.1 a-b	B_{5NR}	RF B
2.2 a-b	B_{10NR}	RF B
2.3 a-b	B_{15NR}	RF B
2.4 a-b	B_{20NR}	RF B
2.5 a-b	T_{5NR}	RF B
2.6 a-b	T_{10NR}	RF B
2.7 a-b	T_{15NR}	RF B
2.8 a-b	T_{20NR}	RF B

Multi carrier NR: RF1-TM1.1

Diagram	Symbolic name	Tested Port
2.9 a-b	Bim_{NR}	RF B
2.10 a-b	Tim_{NR}	RF B

Results LTE B71

Single carrier E-TM1.1

Diagram	Symbolic name	Tested Port
2.11 a-b	B_{5LTE}	RF A
2.12 a-b	B_{5LTE}	RF B
2.13 a-b	B_{5LTE}	RF C
2.14 a-b	B_{5LTE}	RF D
2.15 a-b	B_{10LTE}	RF B
2.16 a-b	B_{15LTE}	RF B
2.17 a-b	B_{20LTE}	RF B
2.18 a-b	T_{5LTE}	RF A
2.19 a-b	T_{5LTE}	RF B
2.20 a-b	T_{5LTE}	RF C
2.21 a-b	T_{5LTE}	RF D
2.22 a-b	T_{10LTE}	RF B
2.23 a-b	T_{15LTE}	RF B
2.24 a-b	T_{20LTE}	RF B

Multi carrier E-TM1.1

Diagram	Symbolic name	Tested Port
2.25 a-b	Bim_{LTE}	RF B
2.26 a-b	Tim_{LTE}	RF B

Results NB IoT SA/ GB B71

Multi RAT: NB IoT SA: N-TM, LTE: E-TM1.1

Diagram	Symbolic name	Tested Port
2.27 a-b	B_{IoT+L}	RF B
2.28 a-b	Bim_{2IoT+L}	RF B
2.29 a-b	T_{IoT+L}	RF B
2.30 a-b	Tim_{2IoT+L}	RF B

LTE with NB IoT GB: NB IoT GB: N-TM, LTE: E-TM3.1

Diagram	Symbolic name	Tested Port
2.31 a-b	$B10_{Guard}$	RF B
2.32 a-b	$B15_{Guard}$	RF B
2.33 a-b	$B20_{Guard}$	RF B
2.34 a-b	$T10_{Guard}$	RF B
2.35 a-b	$T15_{Guard}$	RF B
2.36 a-b	$T20_{Guard}$	RF B

Results LTE B85A

Single carrier E-TM1.1

Diagram	Symbolic name	Tested Port
2.37 a-b	B_{5LTE}	RF A
2.38 a-b	B_{5LTE}	RF B
2.39 a-b	B_{5LTE}	RF C
2.40 a-b	B_{5LTE}	RF D
2.41 a-b	B_{10LTE}	RF B
2.42 a-b	T_{5LTE}	RF A
2.43 a-b	T_{5LTE}	RF B
2.44 a-b	T_{5LTE}	RF C
2.45 a-b	T_{5LTE}	RF D
2.46 a-b	T_{10LTE}	RF B

Multi carrier E-TM1.1

Diagram	Symbolic name	Tested Port
2.47 a-b	Bim_{LTE}	RF B
2.48 a-b	Tim_{LTE}	RF B

Results NB IoT SA/ GB B85A

Multi RAT: NB IoT SA: N-TM, LTE: E-TM1.1

Diagram	Symbolic name	Tested Port
2.49 a-b	B_{IoT+L}	RF B
2.50 a-b	Bim_{2IoT+L}	RF B
2.51 a-b	T_{IoT+L}	RF B
2.52 a-b	Tim_{2IoT+L}	RF B

LTE with NB IoT GB: NB IoT GB: N-TM, LTE: E-TM3.1

Diagram	Symbolic name	Tested Port
2.53 a-b	$B10_{Guard}$	RF B
2.54 a-b	$T10_{Guard}$	RF B

Limits

CFR 47 §27.53 (g)

For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

RSS-130 4.7.1

The unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dBW), by at least 43 + 10 log10 p (watts), dB. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.

Complies?	Yes

Diagram 2.1a NR: RF1-TM1.1, B_{5NR}, Port B:

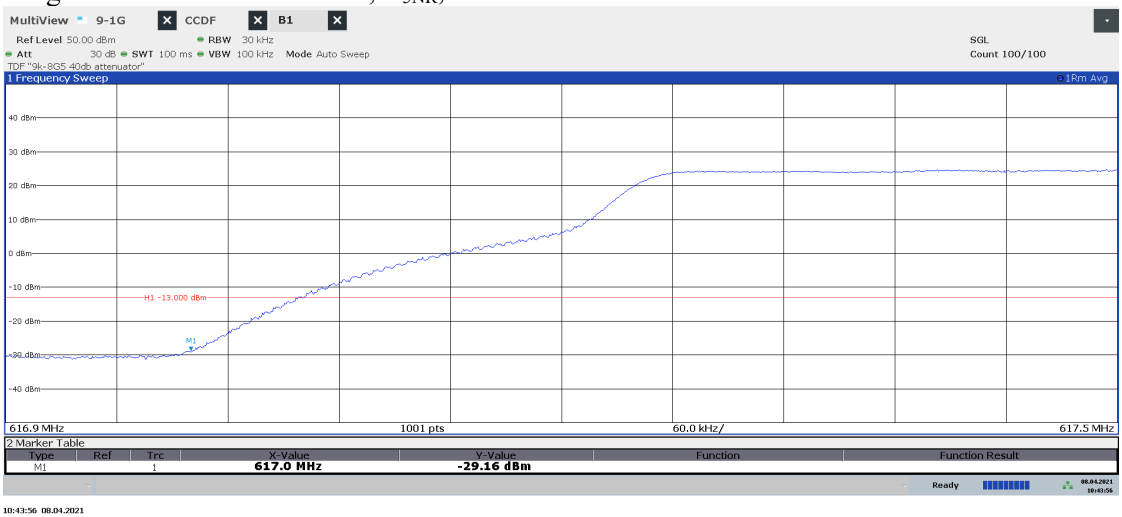


Diagram 2.1b NR: RF1-TM1.1, B_{5NR}, Port B:

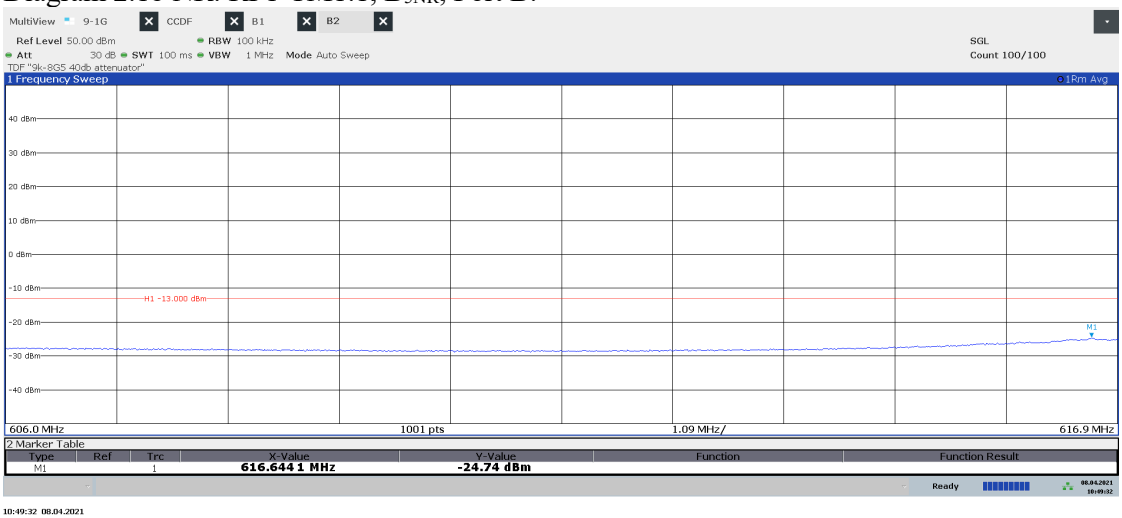


Diagram 2.2a NR: RF1-TM1.1, B_{10NR}, Port B:

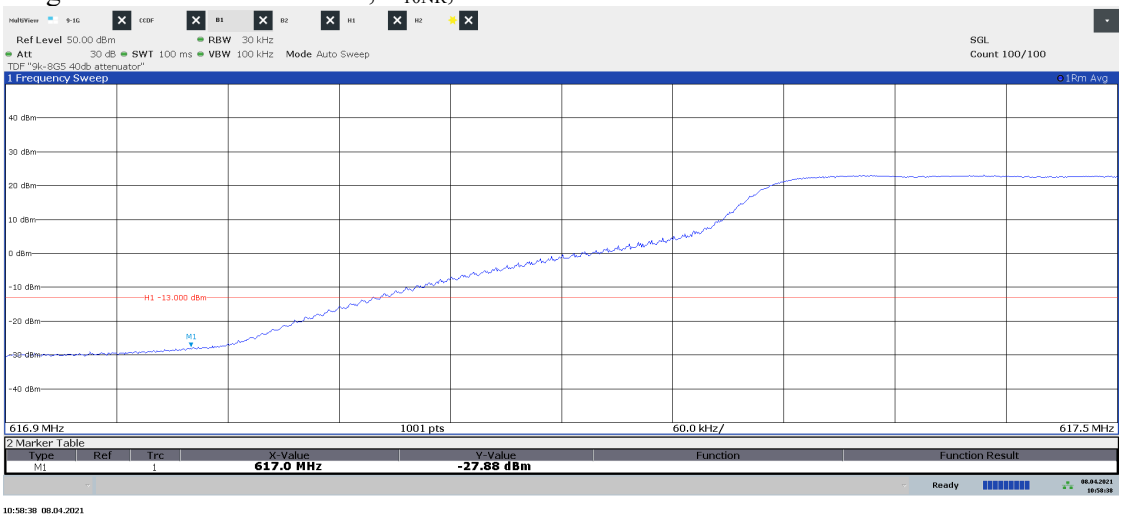


Diagram 2.2b NR: RF1-TM1.1, B_{10NR}, Port B:

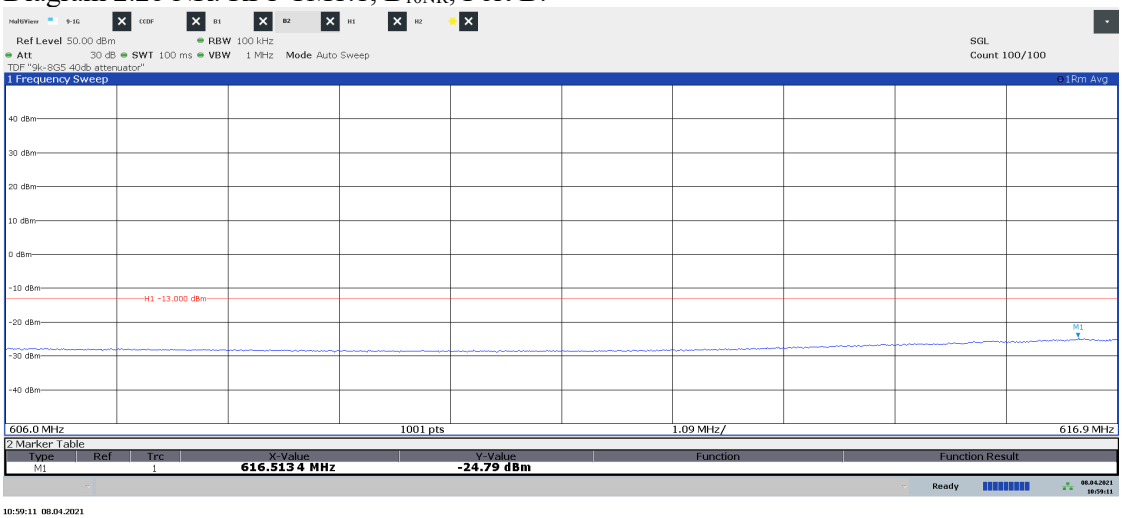


Diagram 2.3a NR: RF1-TM1.1, B_{15NR}, Port B:

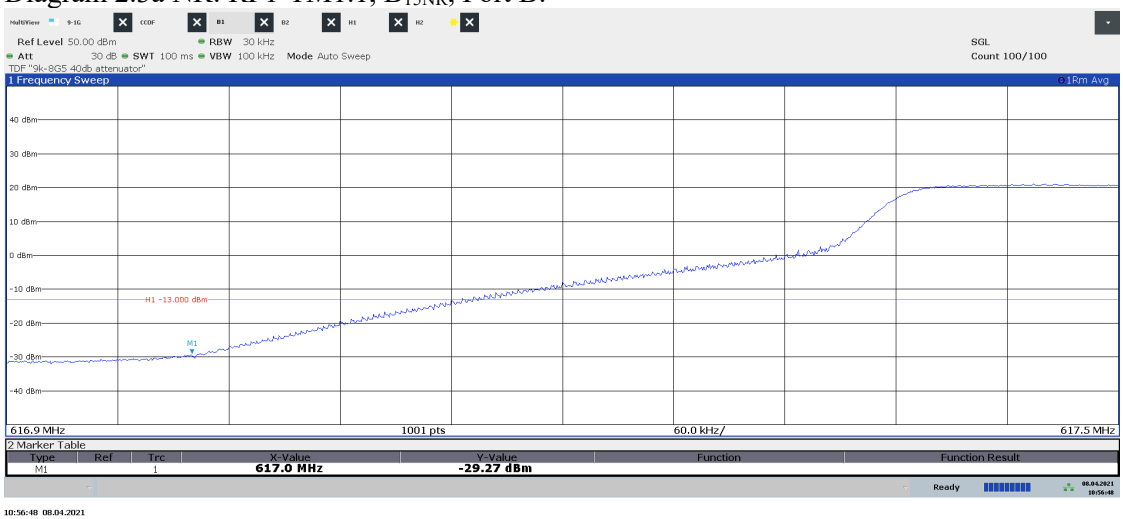


Diagram 2.3b NR: RF1-TM1.1, B_{15NR}, Port B:

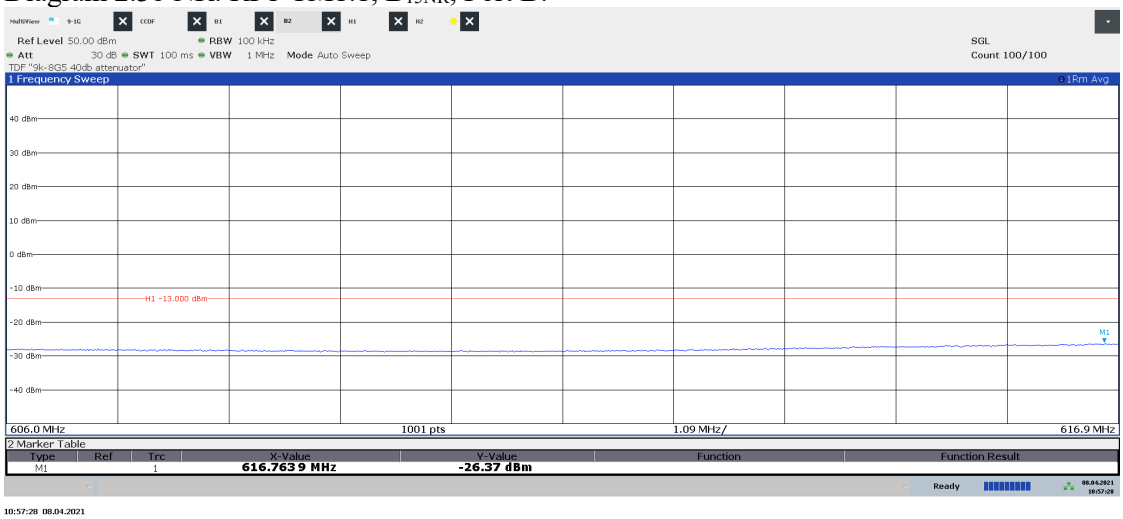


Diagram 2.4a NR: RF1-TM1.1, B_{20NR}, Port B:

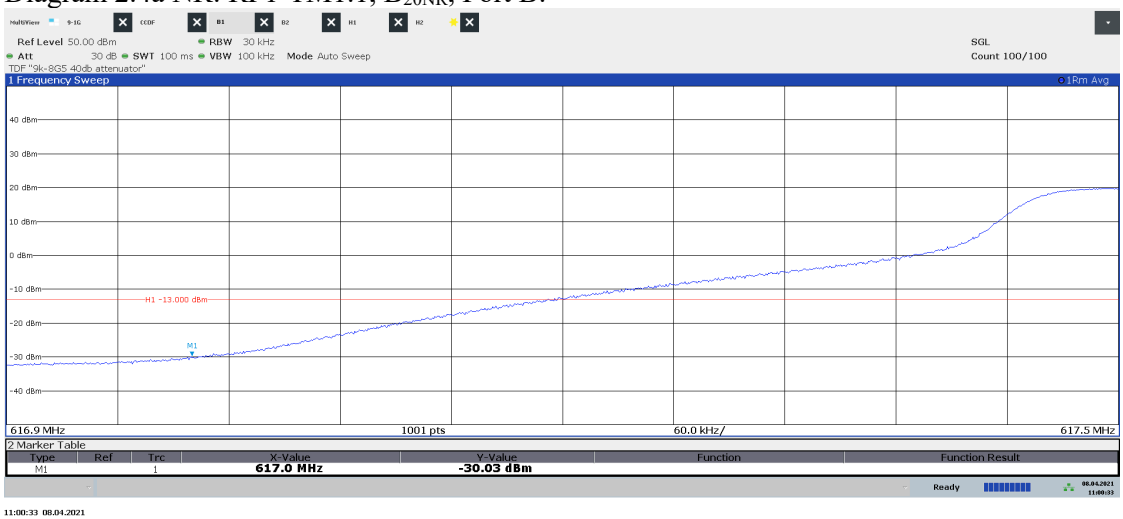


Diagram 2.4b NR: RF1-TM1.1, B_{20NR}, Port B:

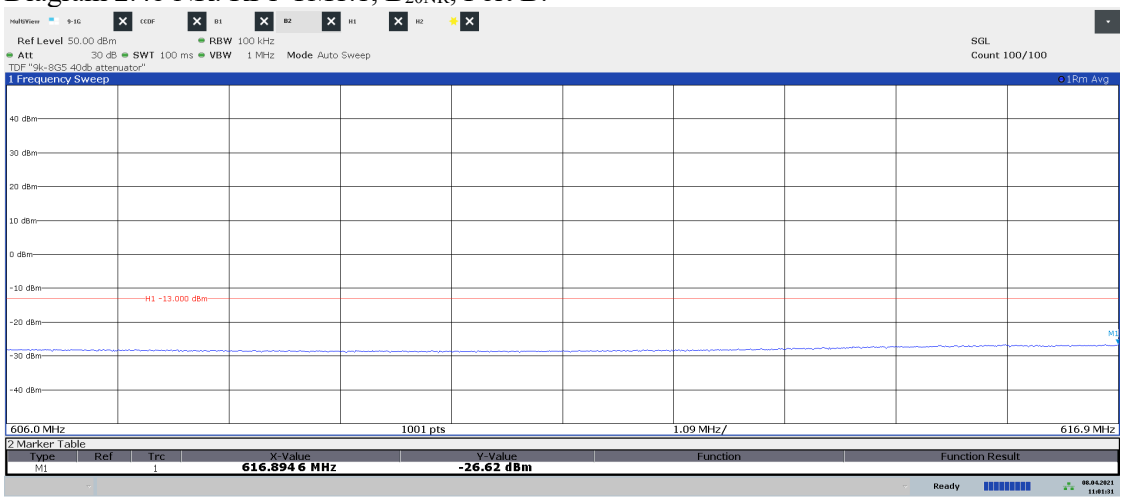


Diagram 2.5a NR: RF1-TM1.1, T_{5NR}, Port B:

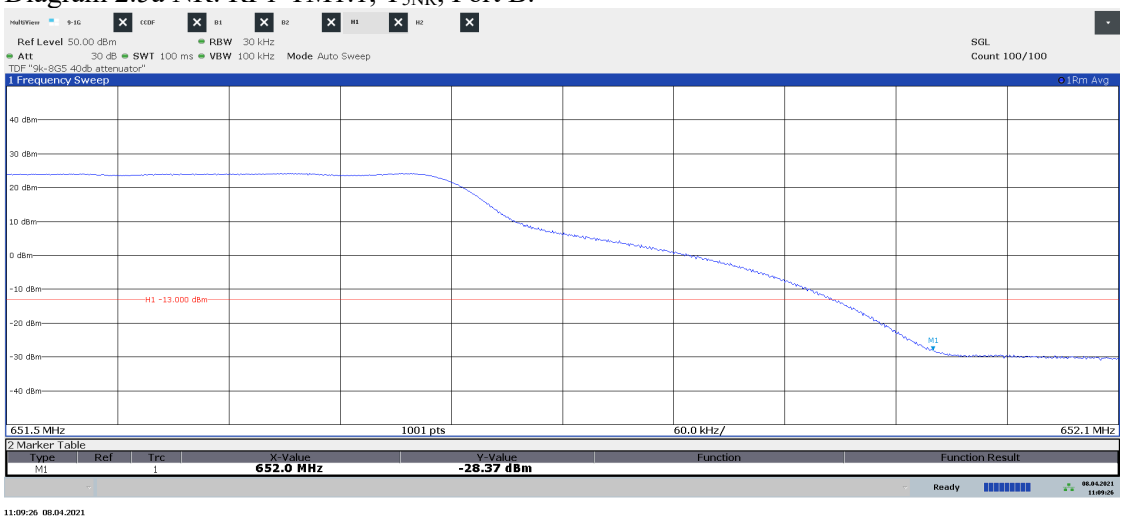


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Diagram 2.5b NR: RF1-TM1.1, T_{5NR}, Port B:

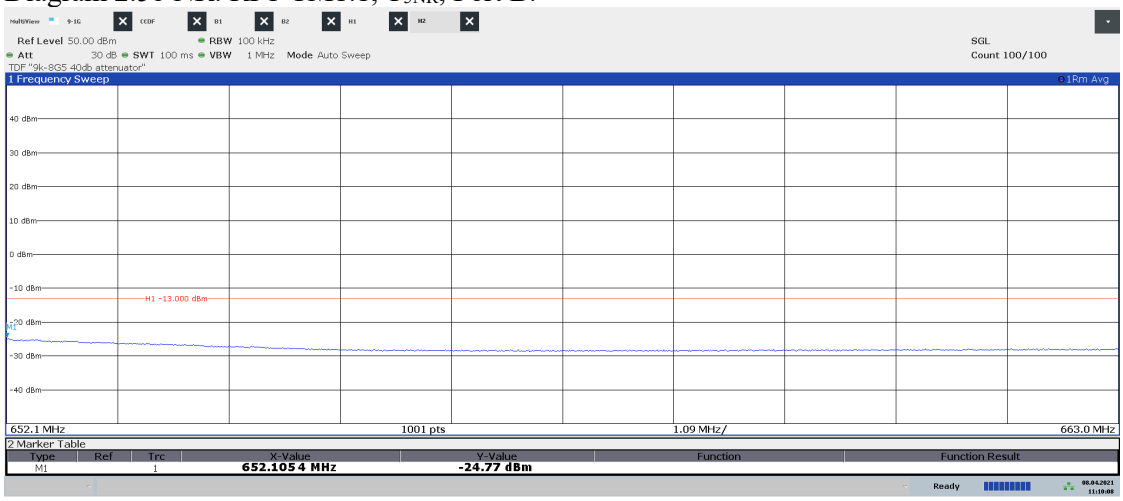

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Diagram 2.6a NR: RF1-TM1.1, T_{10NR}, Port B:

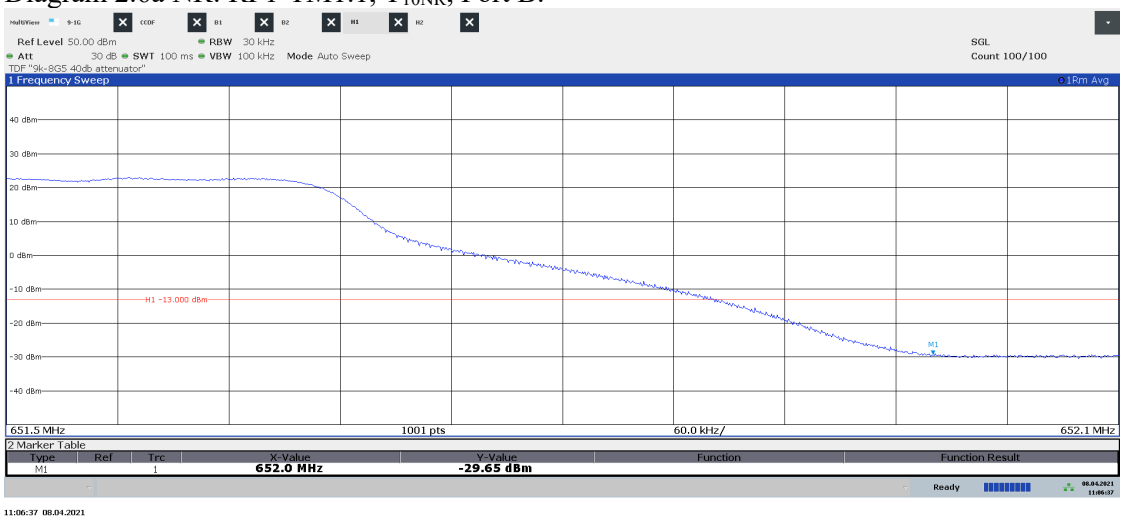

Diagram 2.6b NR: RF1-TM1.1, T_{10NR}, Port B:

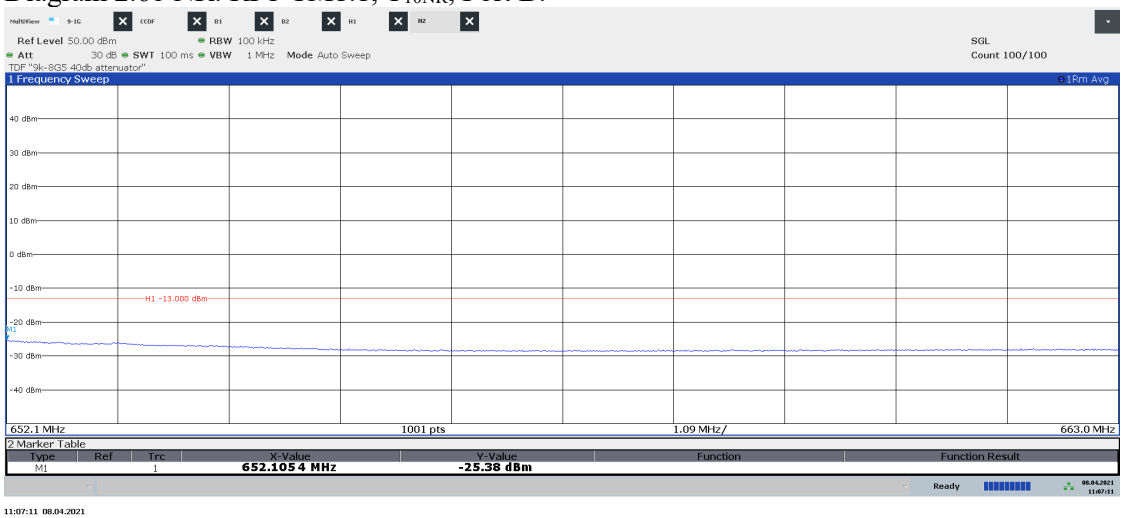

Diagram 2.7a NR: RF1-TM1.1, T_{15NR}, Port B:

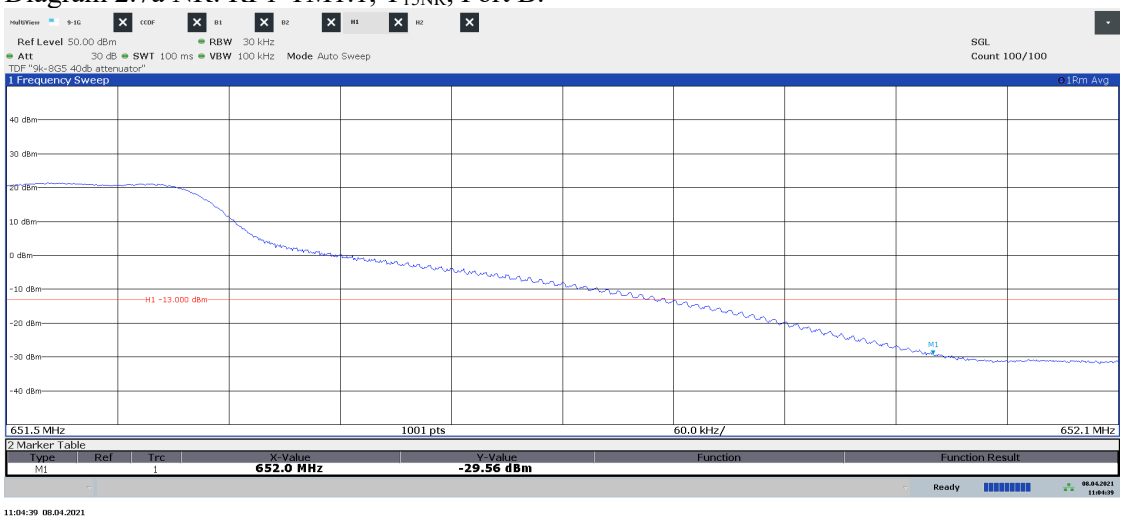

Diagram 2.7b NR: RF1-TM1.1, T_{15NR}, Port B:

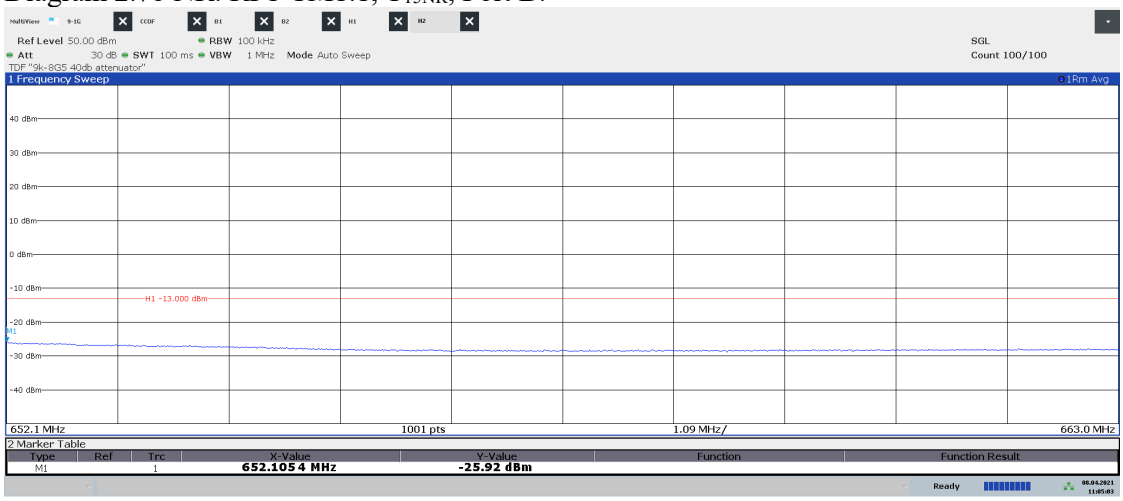

Diagram 2.8a NR: RF1-TM1.1, T_{20NR}, Port B:

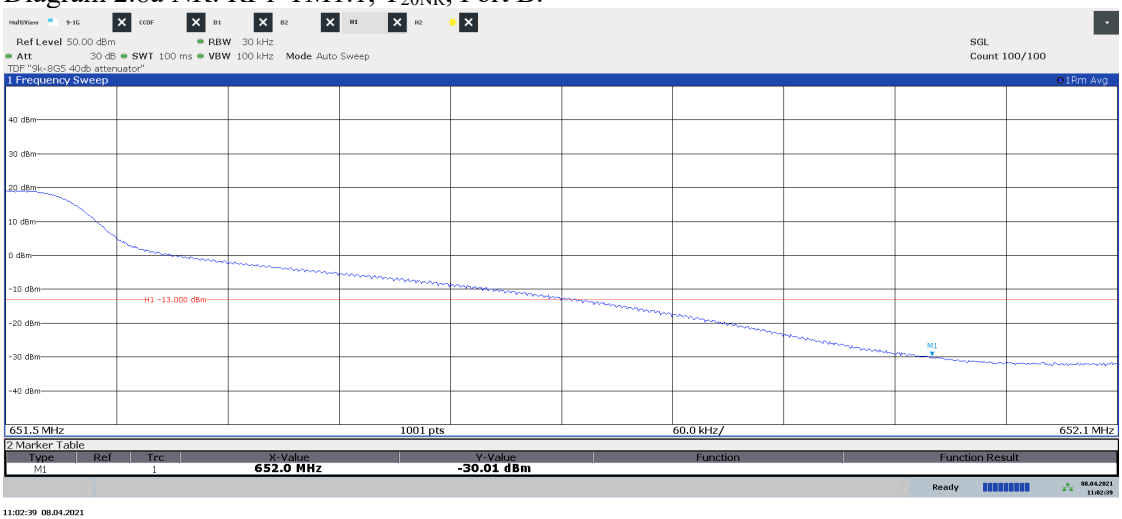

Diagram 2.8b NR: RF1-TM1.1, T_{20NR}, Port B:

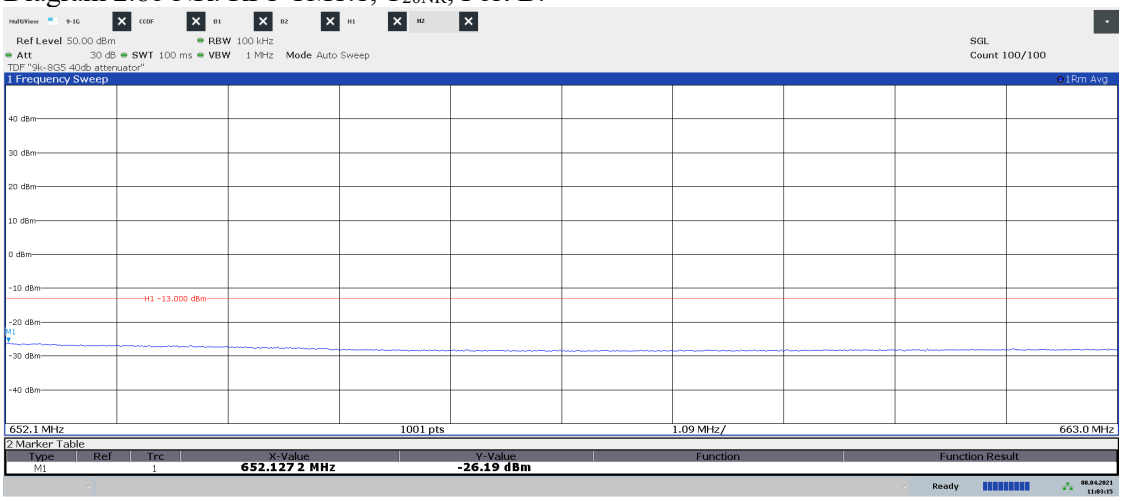

Diagram 2.9a NR: RF1-TM1.1, Bim_{NR}, Port B:

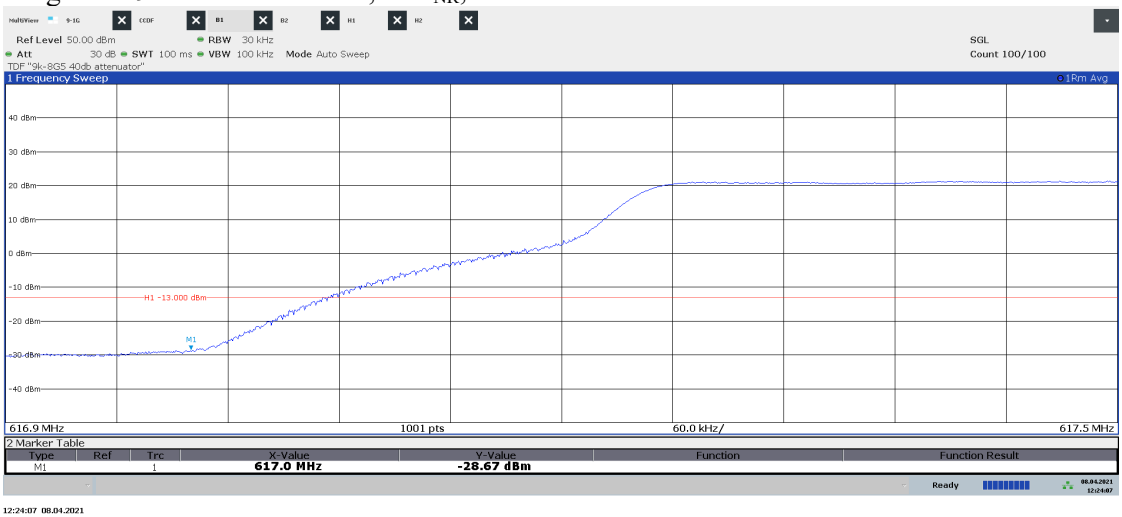

Diagram 2.9b NR: RF1-TM1.1, Bim_{NR}, Port B:

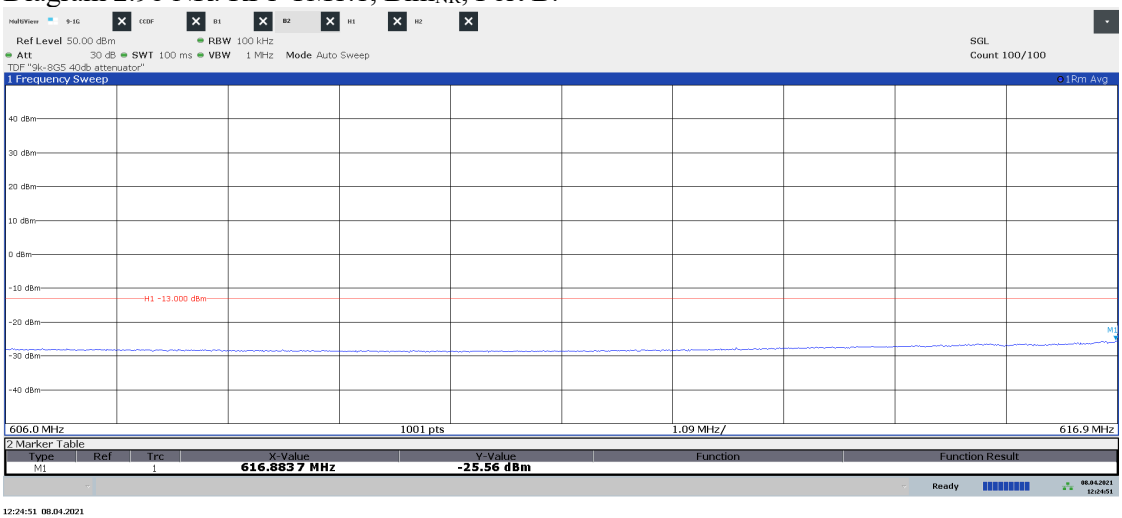

Diagram 2.10a NR: RF1-TM1.1, Tim_{NR}, Port B:

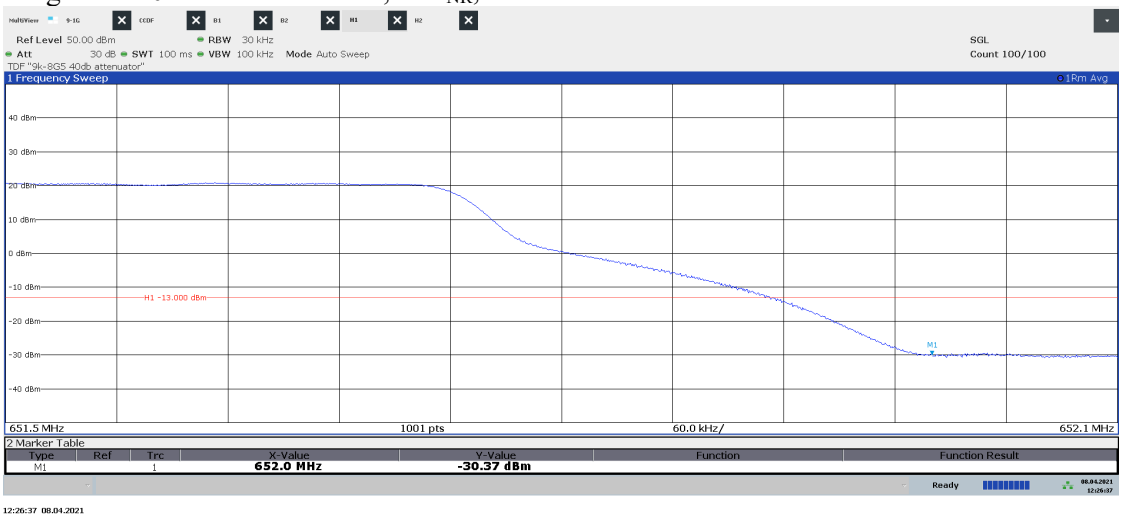

Diagram 2.10b NR: RF1-TM1.1, Tim_{NR}, Port B:

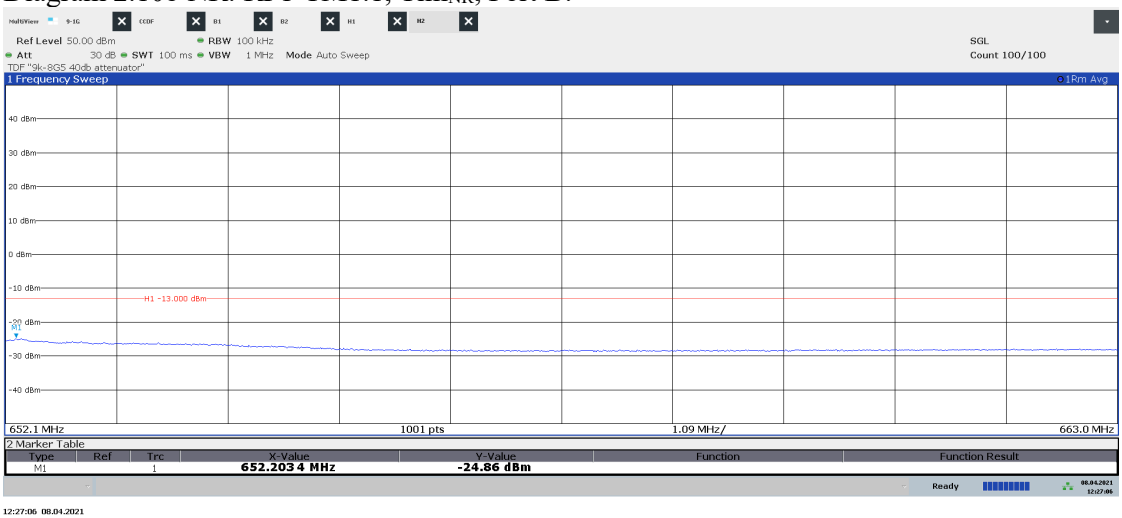

Diagram 2.11a LTE: ETM1.1, B_{5LTE}, Port A:

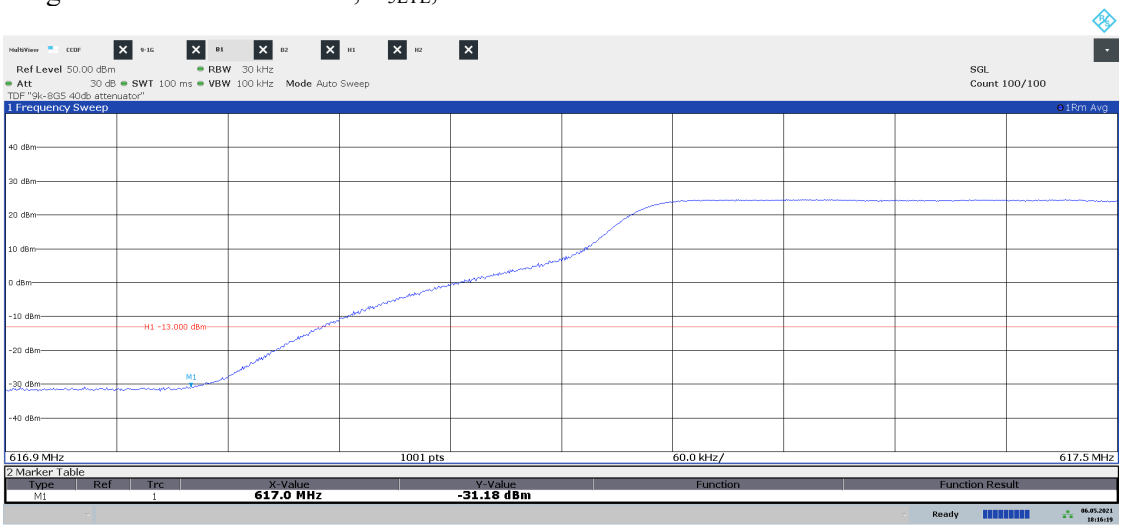

Diagram 2.11b LTE: ETM1.1, B_{5LTE}, Port A:

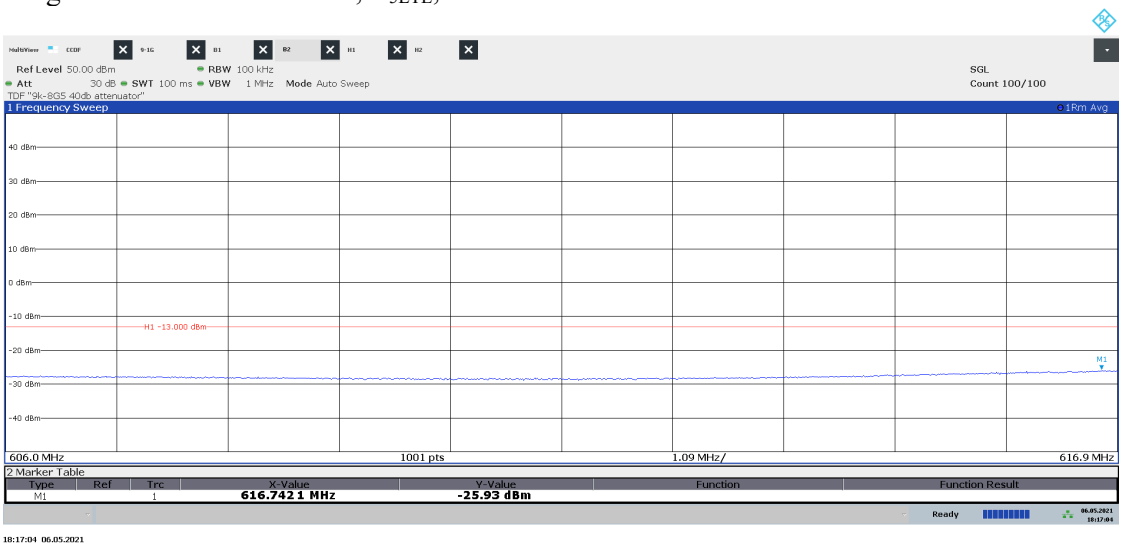

Diagram 2.12a LTE: ETM1.1, B_{5LTE}, Port B:

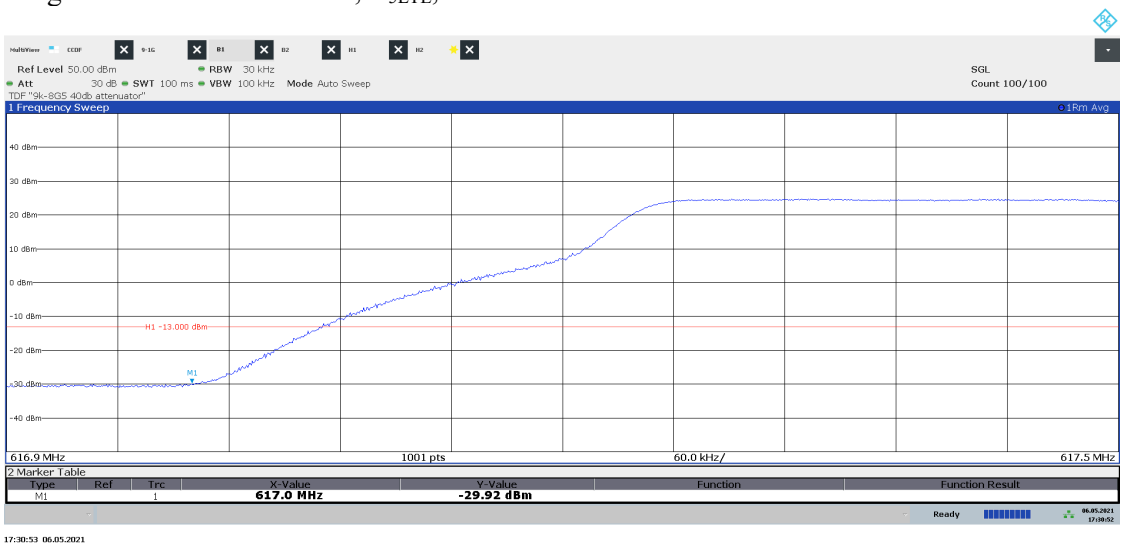

Diagram 2.12b LTE: ETM1.1, B_{5LTE}, Port B:

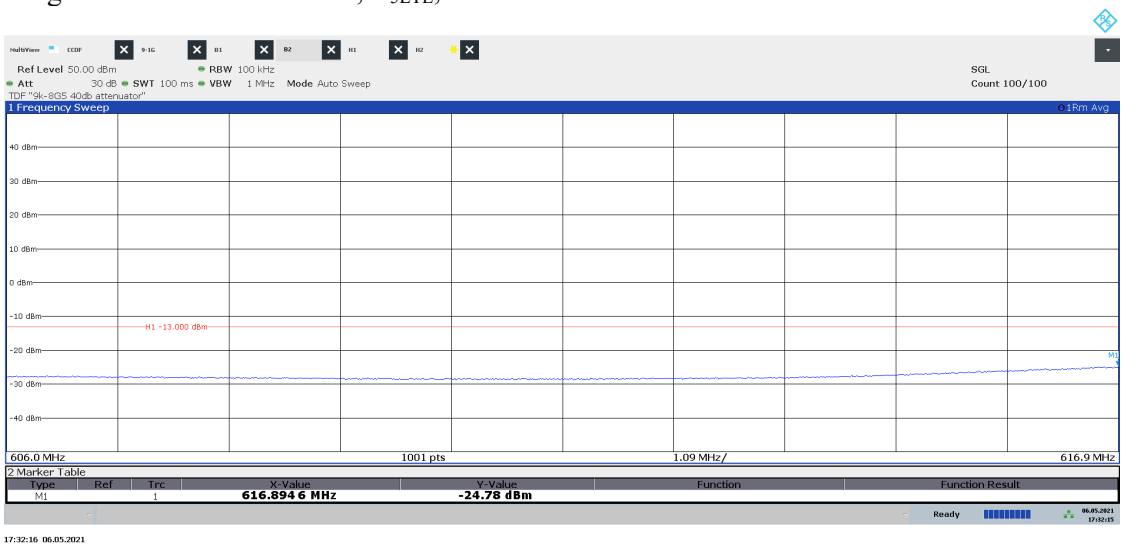

Diagram 2.13a LTE: ETM1.1, B_{5LTE}, Port C:

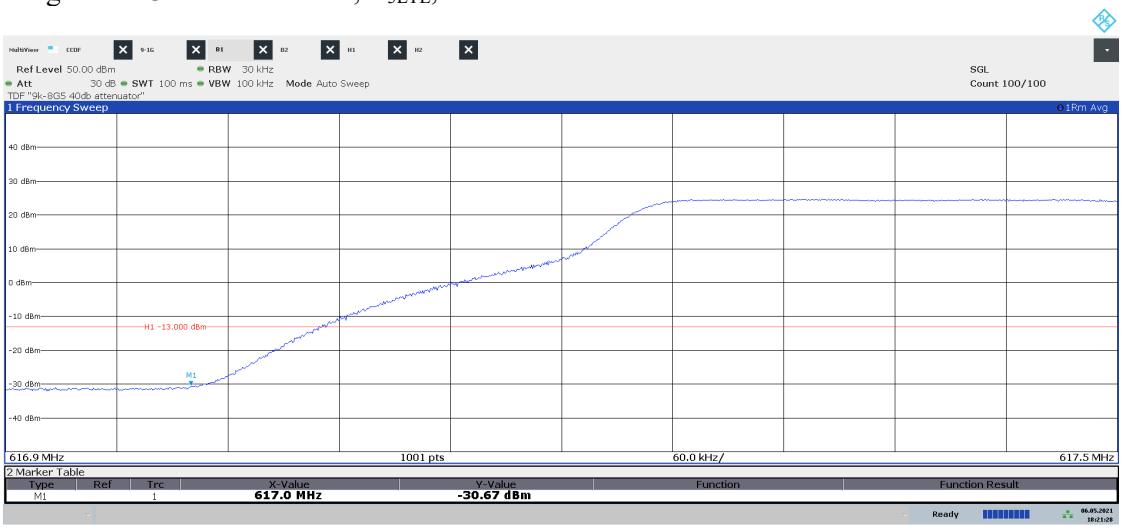

Diagram 2.13b LTE: ETM1.1, B_{5LTE}, Port C:

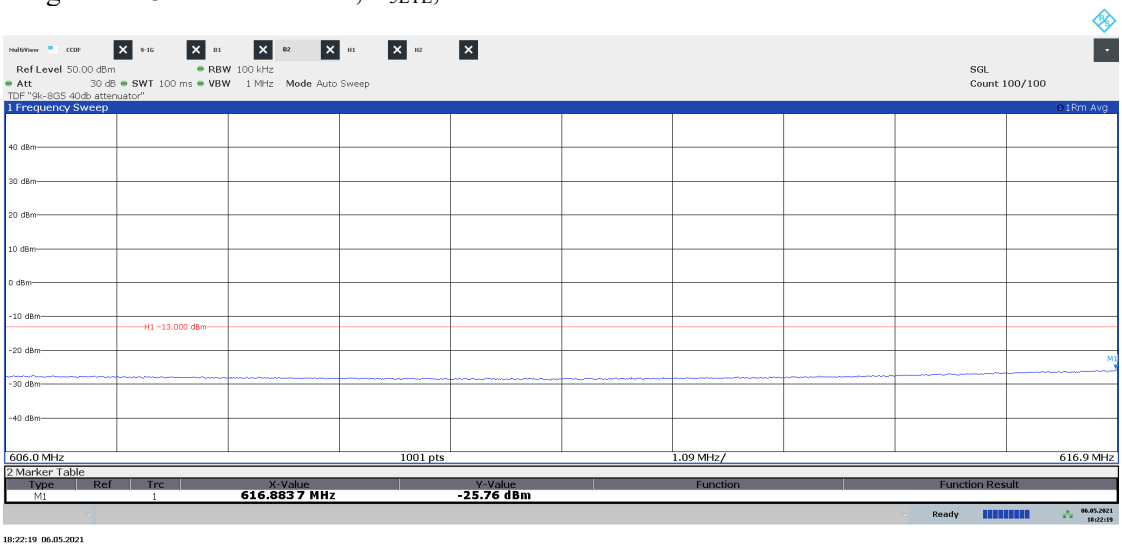

Diagram 2.14a LTE: ETM1.1, B_{5LTE}, Port D:

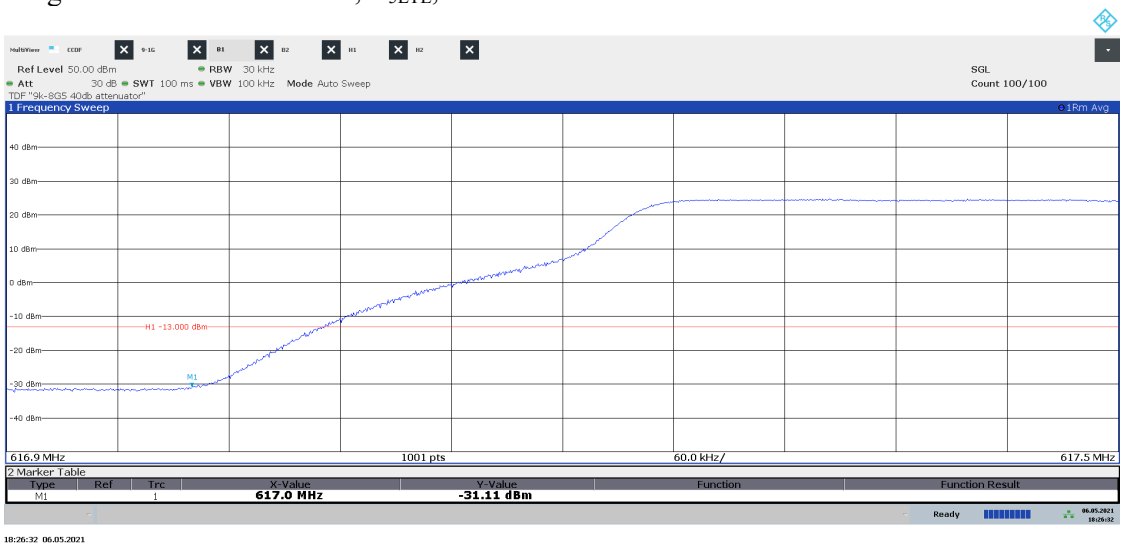

Diagram 2.14b LTE: ETM1.1, B_{5LTE}, Port D:

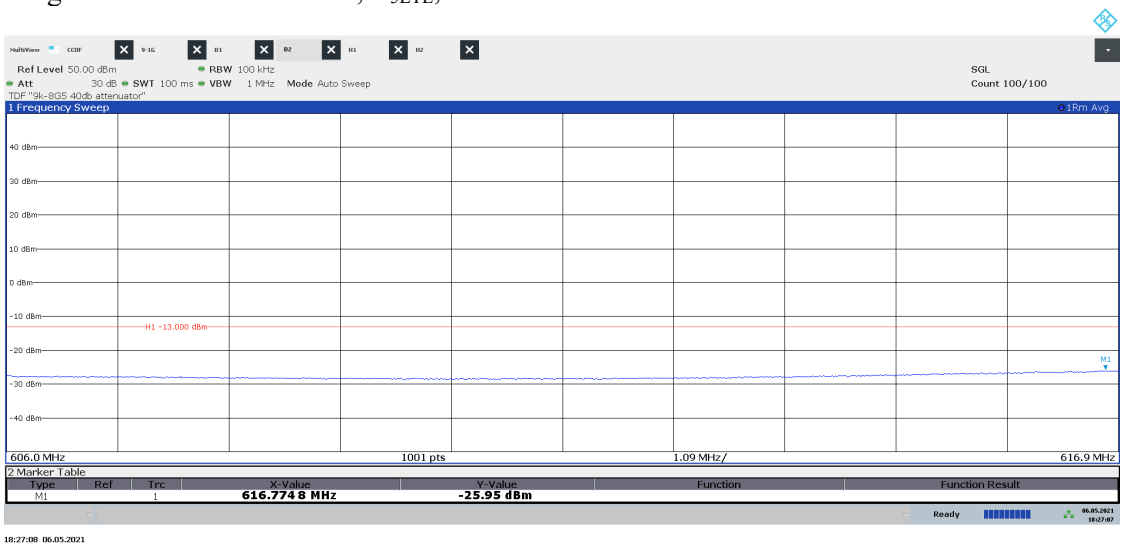

Diagram 2.15a LTE: ETM1.1, B_{10LTE}, Port B:

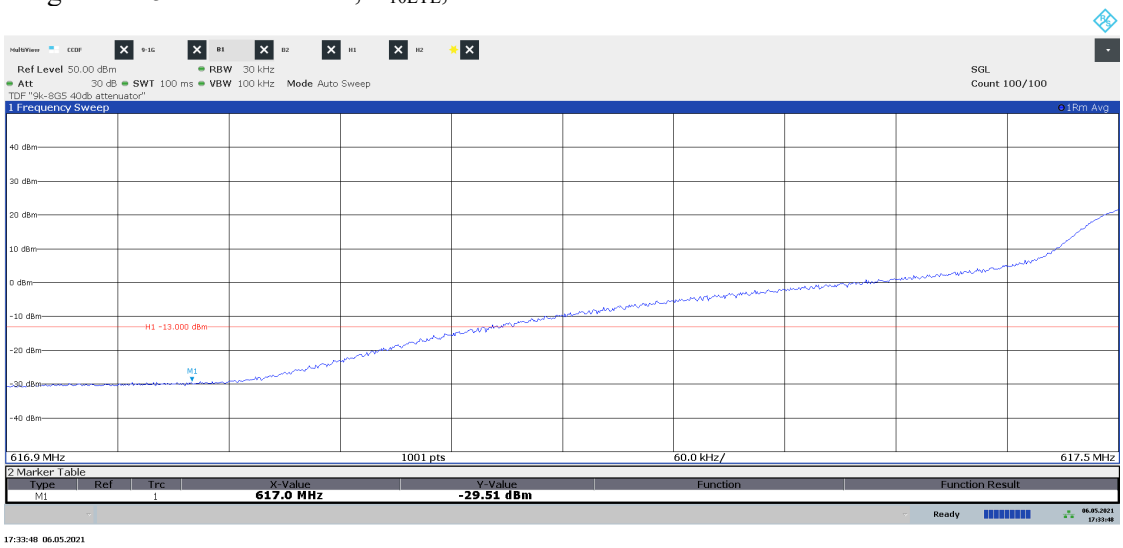

Diagram 2.15b LTE: ETM1.1, B_{10LTE}, Port B:

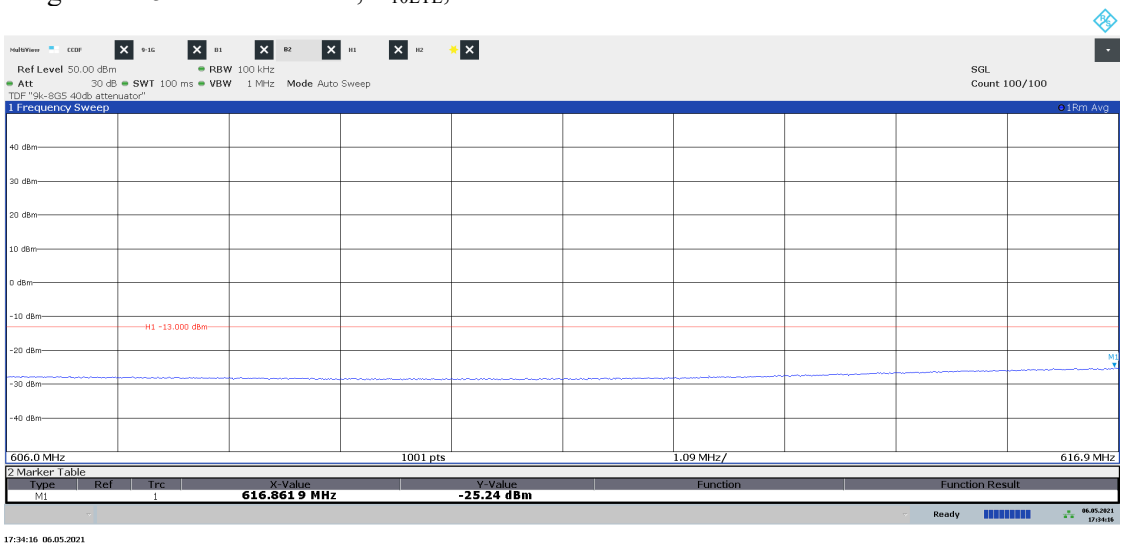

Diagram 2.16a LTE: ETM1.1, B_{15LTE}, Port B:

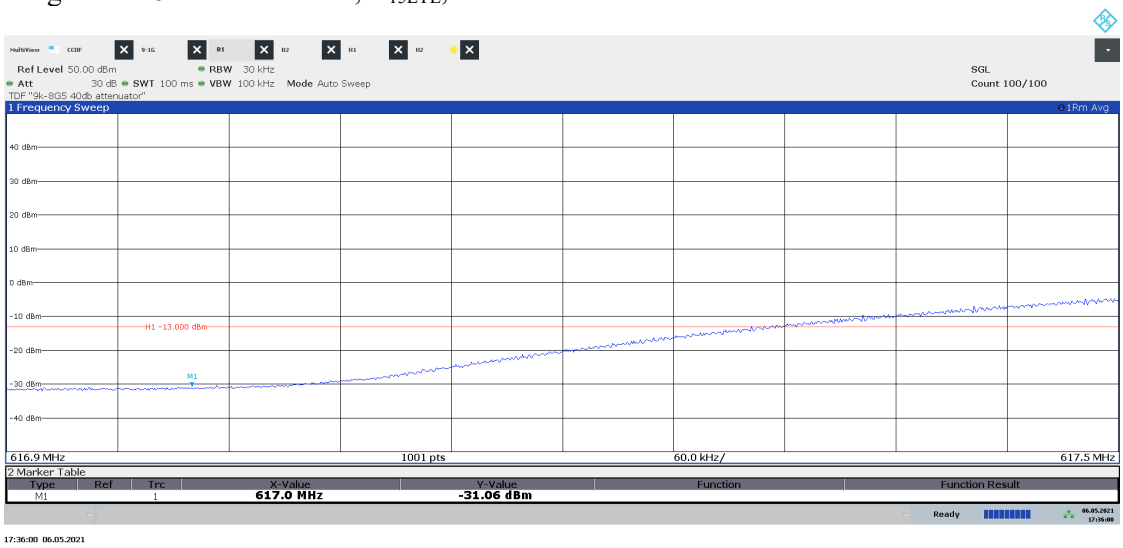

Diagram 2.16b LTE: ETM1.1, B_{15LTE}, Port B:

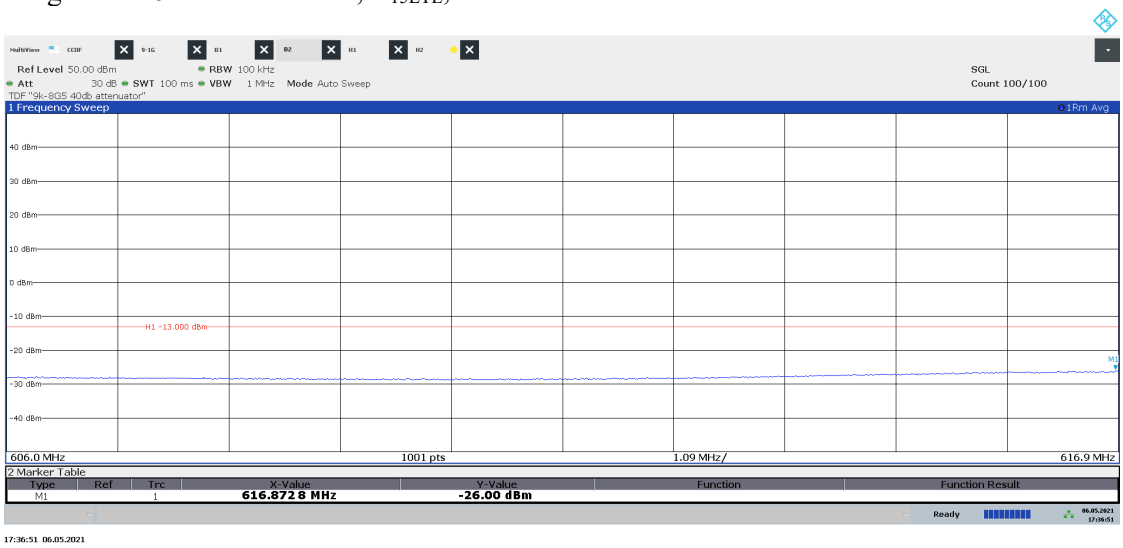

Diagram 2.17a LTE: ETM1.1, B_{20LTE}, Port B:

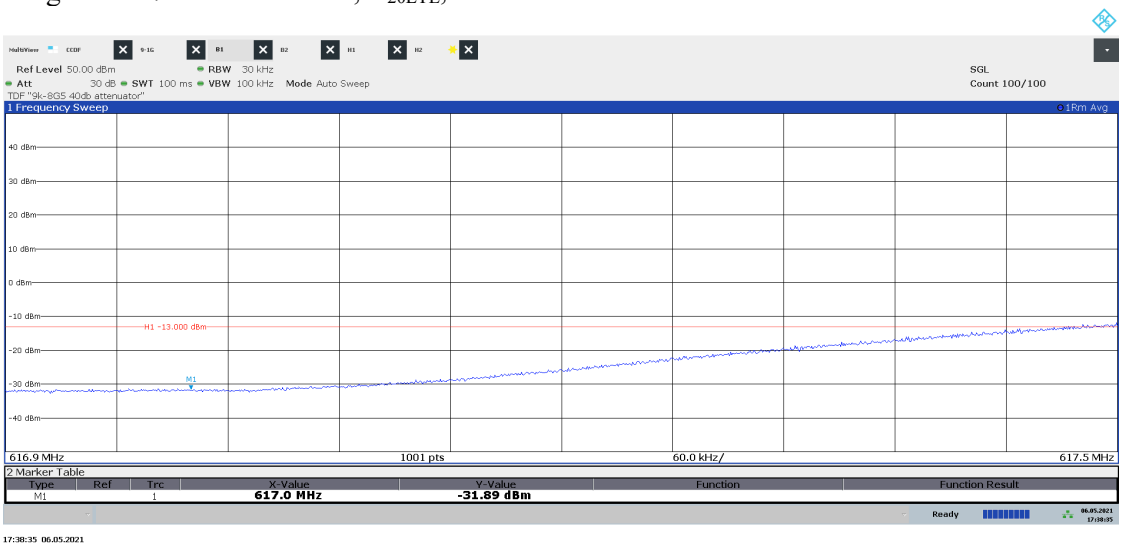

Diagram 2.17b LTE: ETM1.1, B_{20LTE}, Port B:

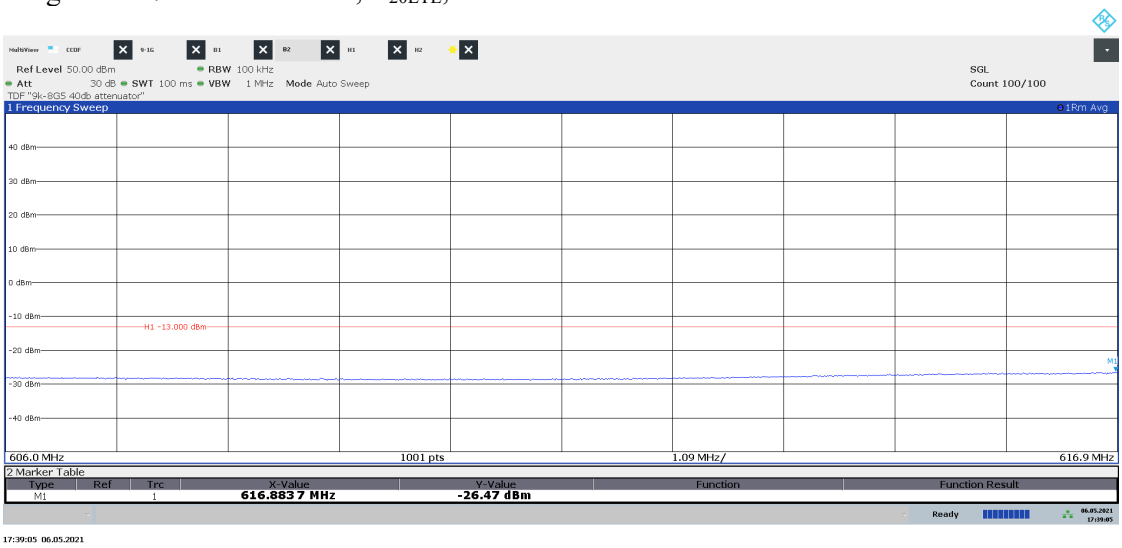

Diagram 2.18a LTE: ETM1.1, T_{5LTE}, Port A:

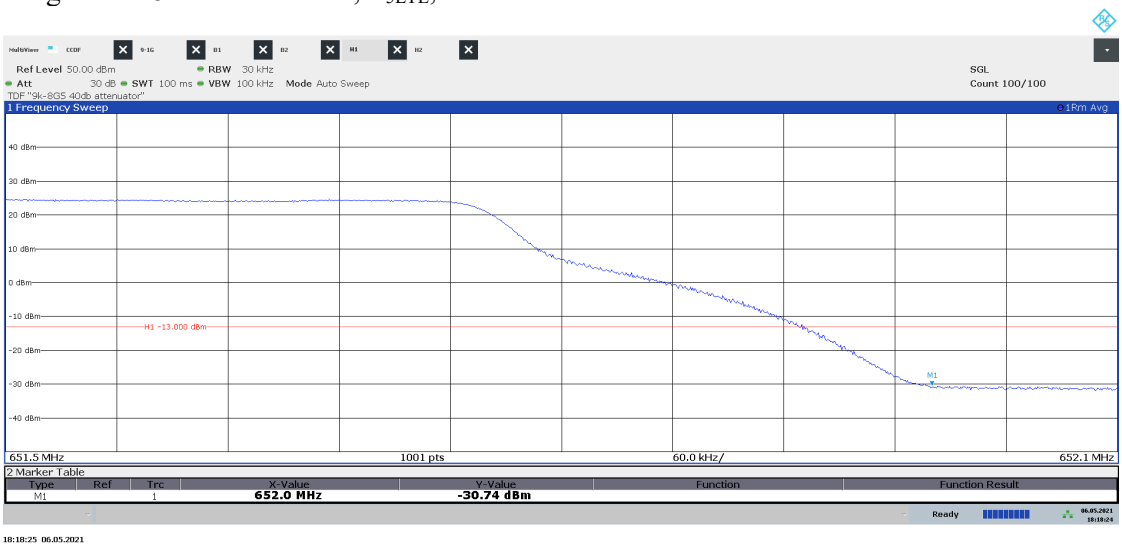

Diagram 2.18b LTE: ETM1.1, T_{5LTE}, Port A:

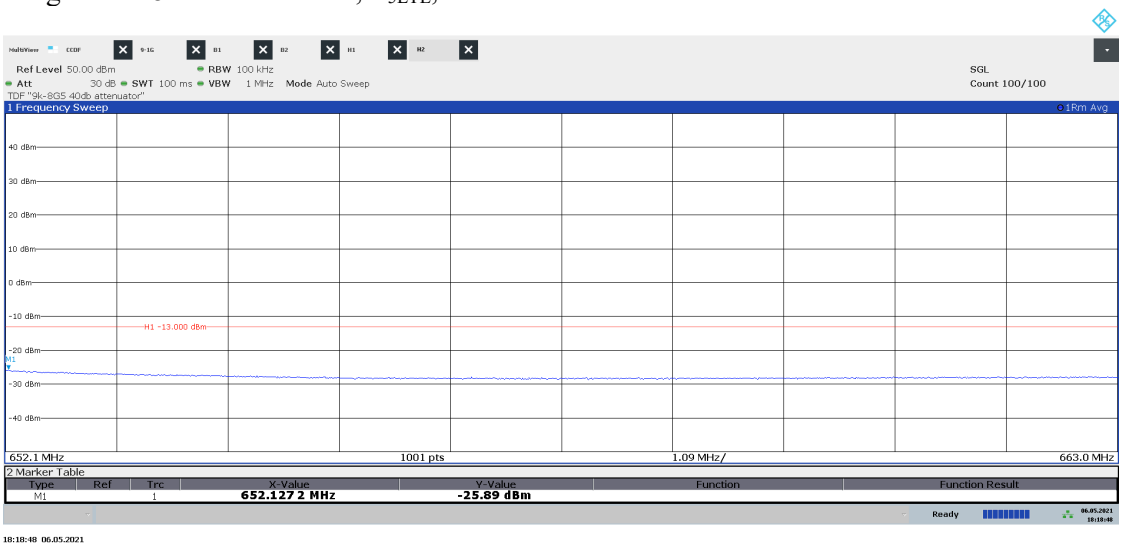

Diagram 2.19a LTE: ETM1.1, T_{5LTE}, Port B:

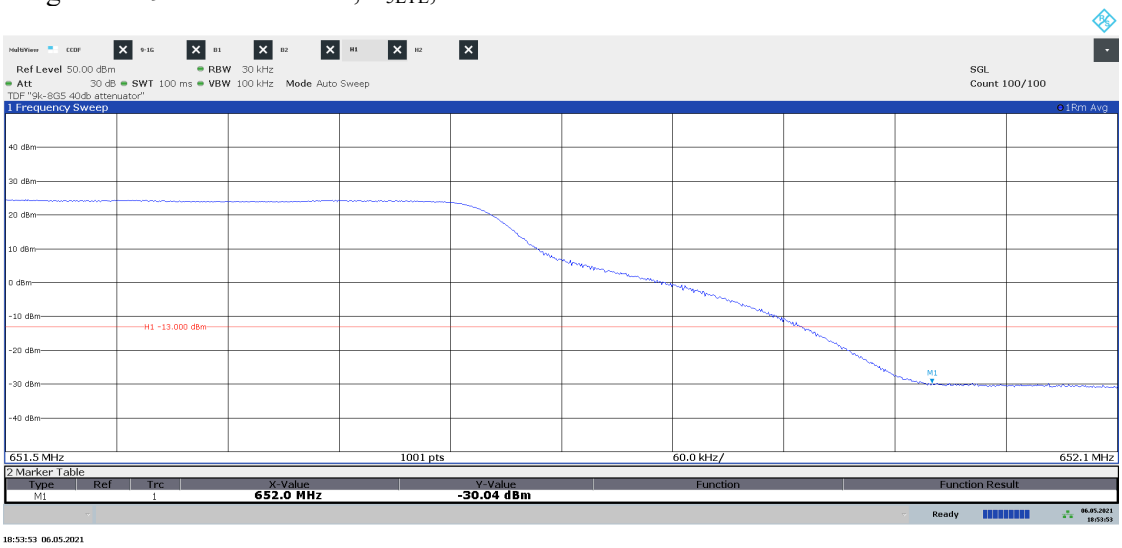

Diagram 2.19b LTE: ETM1.1, T_{5LTE}, Port B:

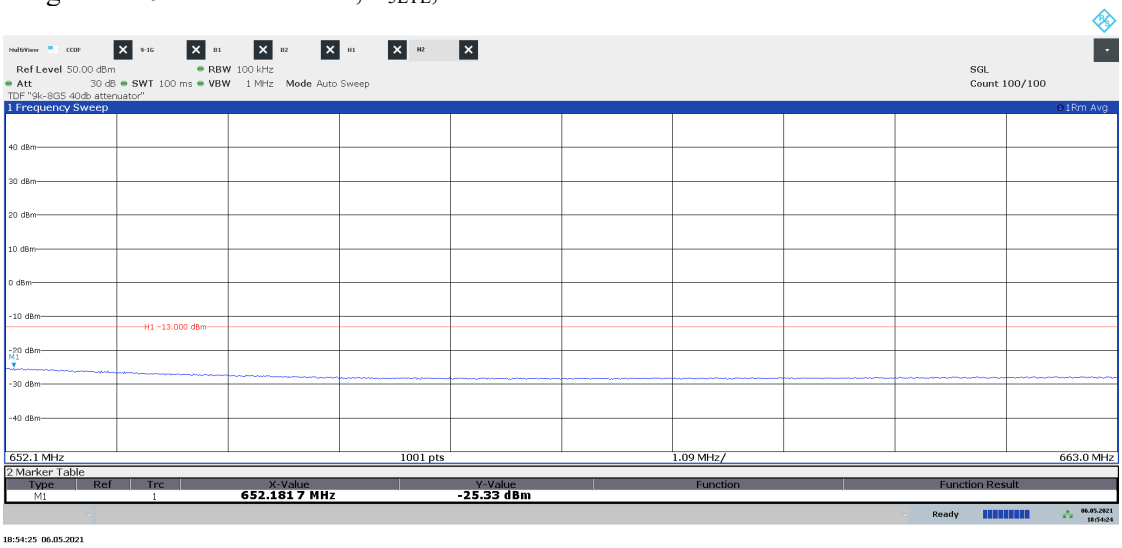

Diagram 2.20a LTE: ETM1.1, T_{5LTE}, Port C:

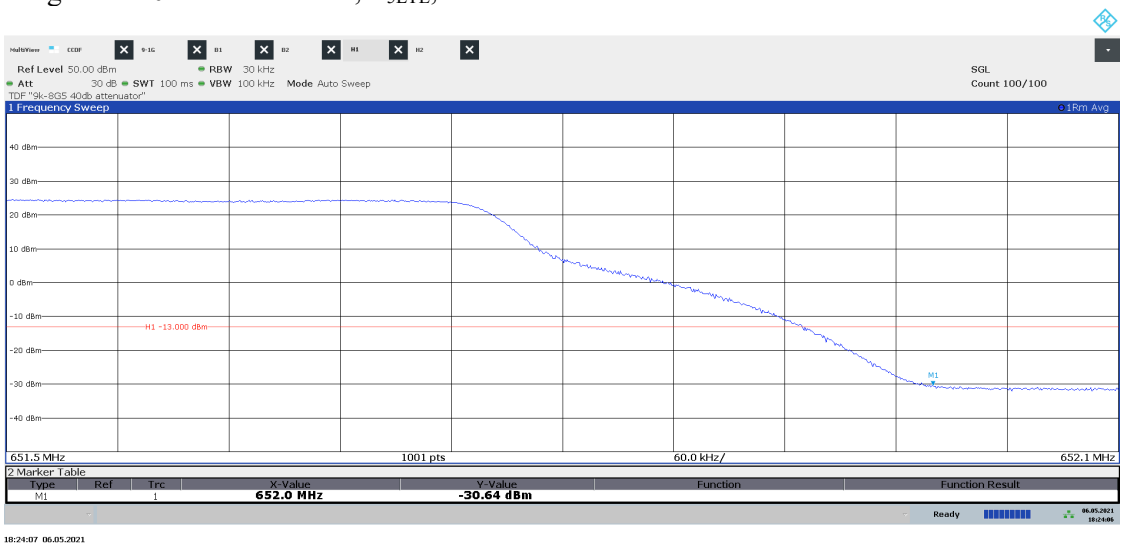

Diagram 2.20b LTE: ETM1.1, T_{5LTE}, Port C:

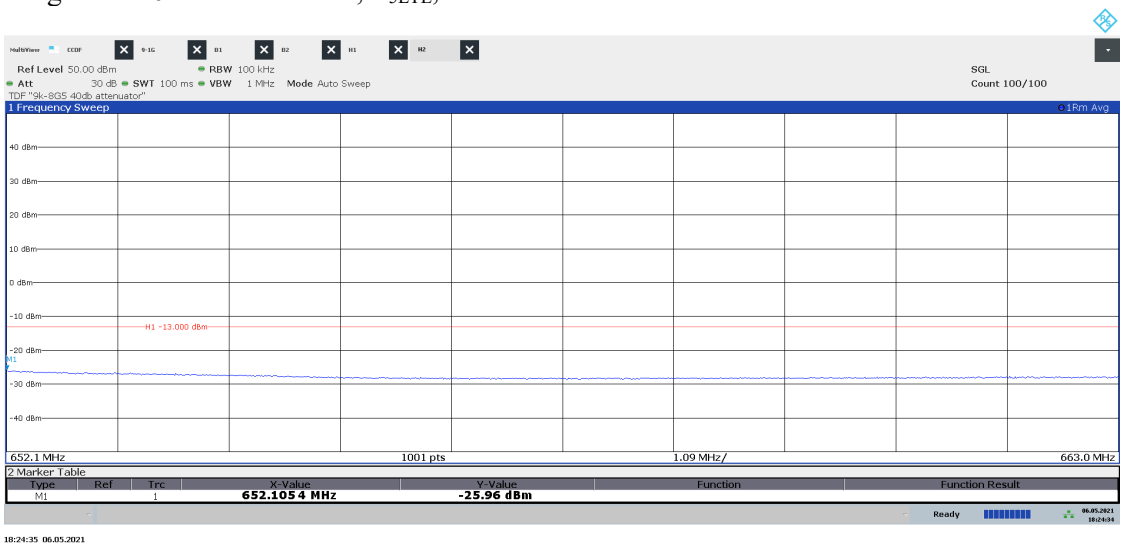

Diagram 2.21a LTE: ETM1.1, T_{5LTE}, Port D:

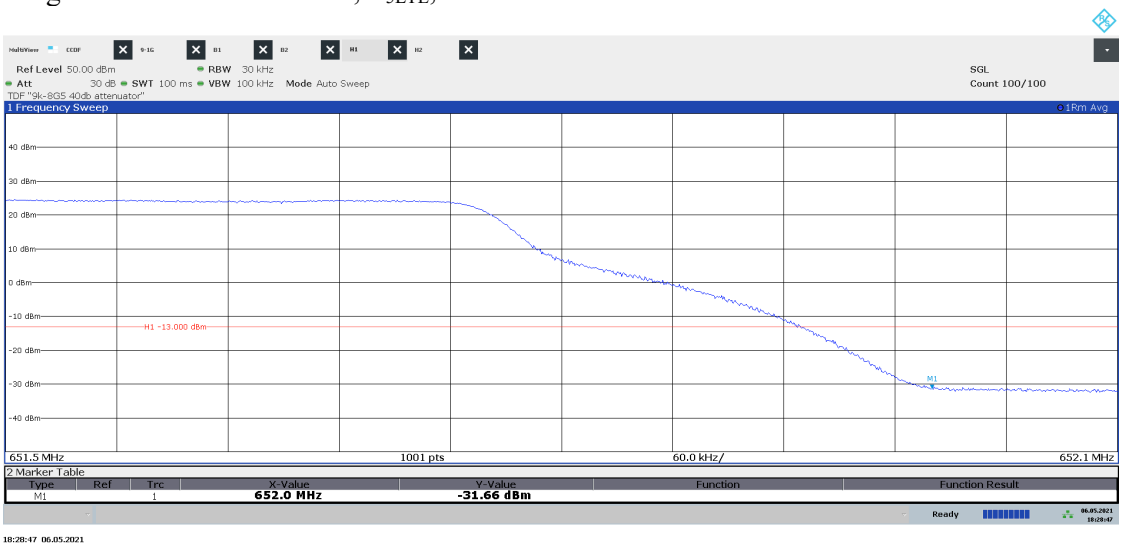

Diagram 2.21b LTE: ETM1.1, T_{5LTE}, Port D:

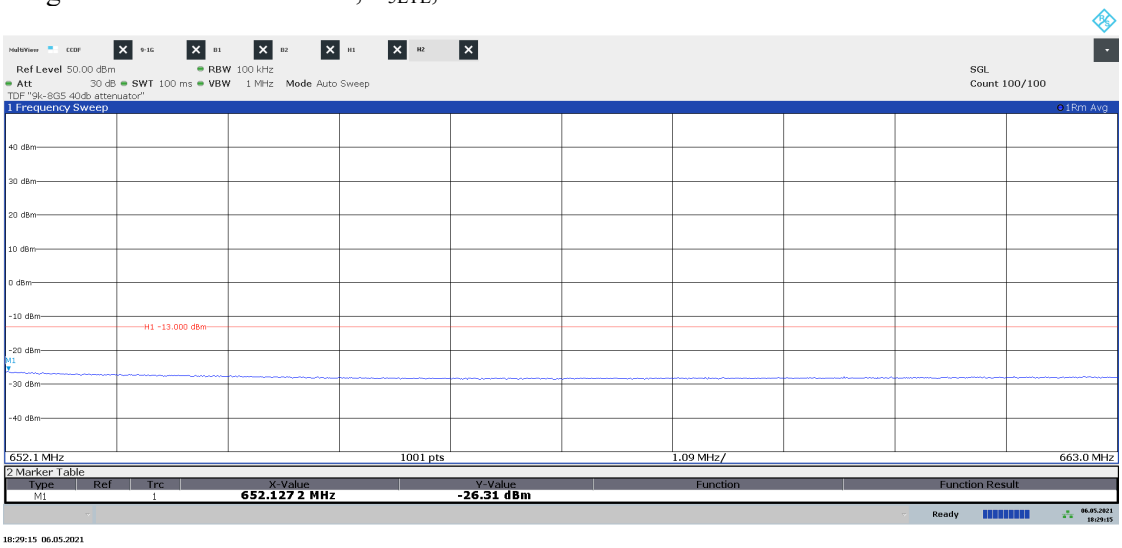

Diagram 2.22a LTE: ETM1.1, T_{10LTE}, Port B:

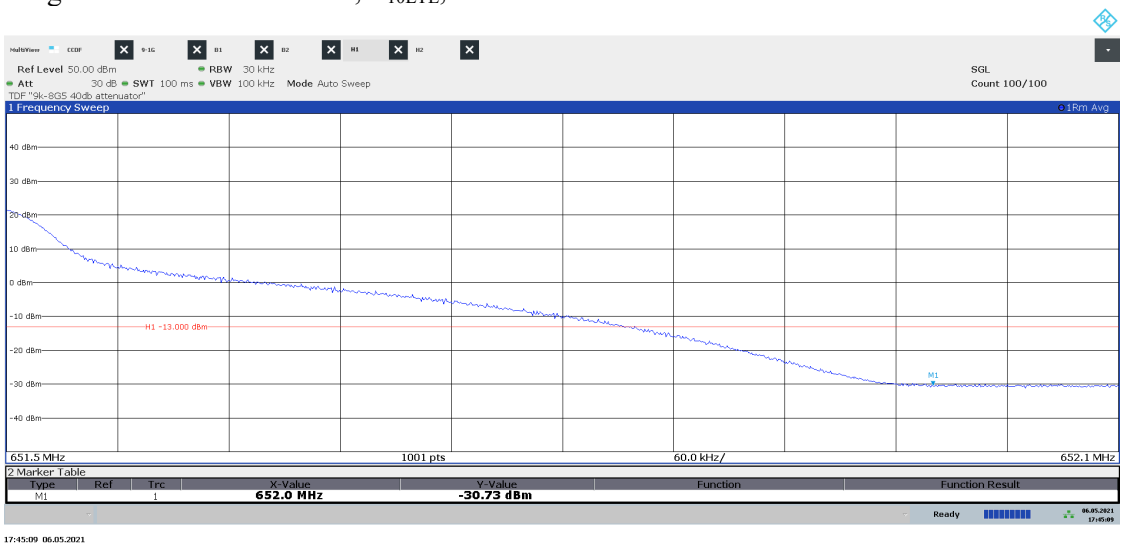

Diagram 2.22b LTE: ETM1.1, T_{10LTE}, Port B:

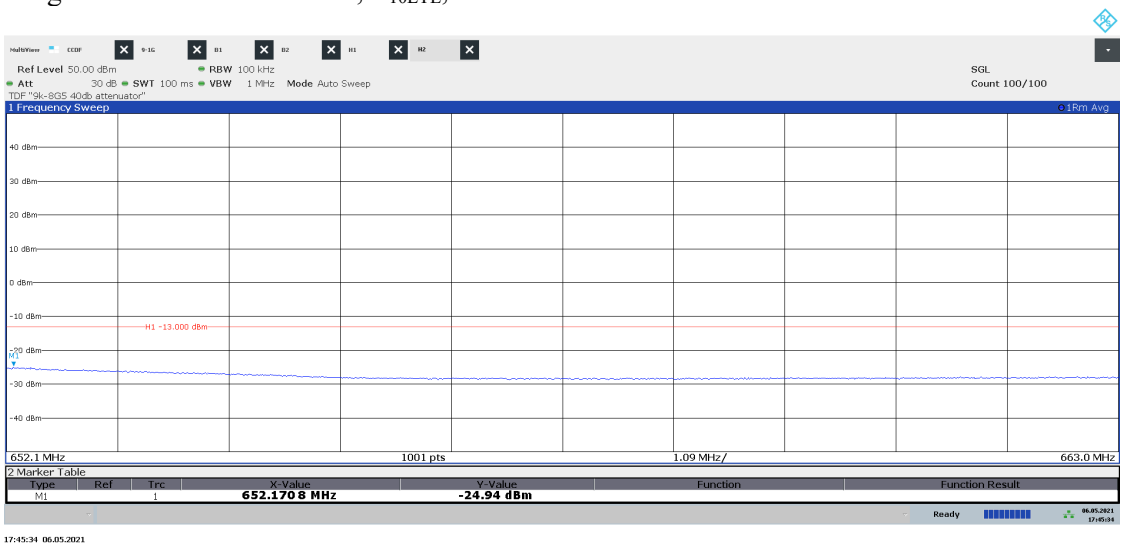

Diagram 2.23a LTE: ETM1.1, T_{15LTE}, Port B:

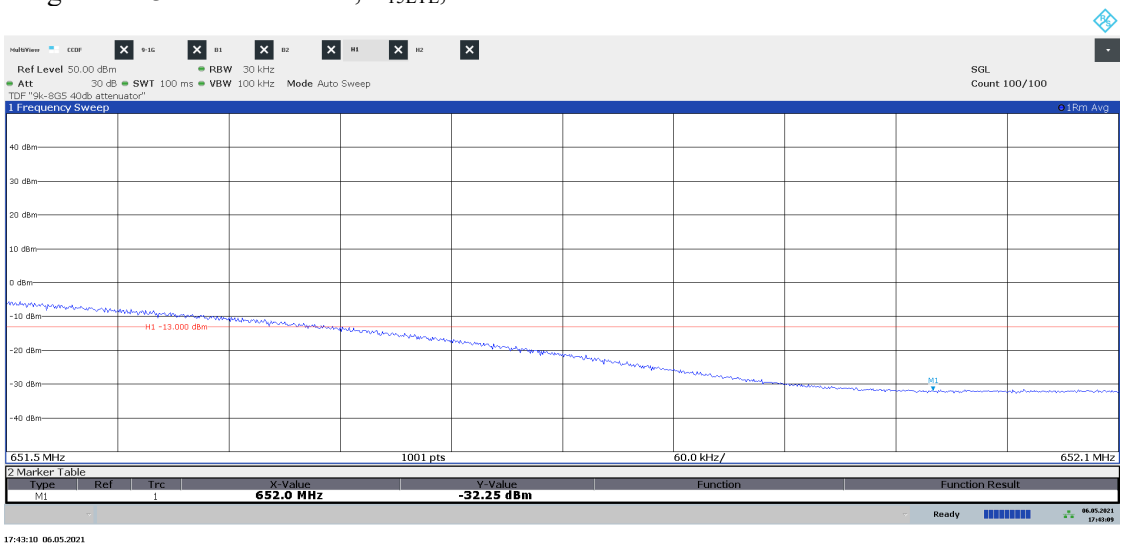

Diagram 2.23b LTE: ETM1.1, T_{15LTE}, Port B:

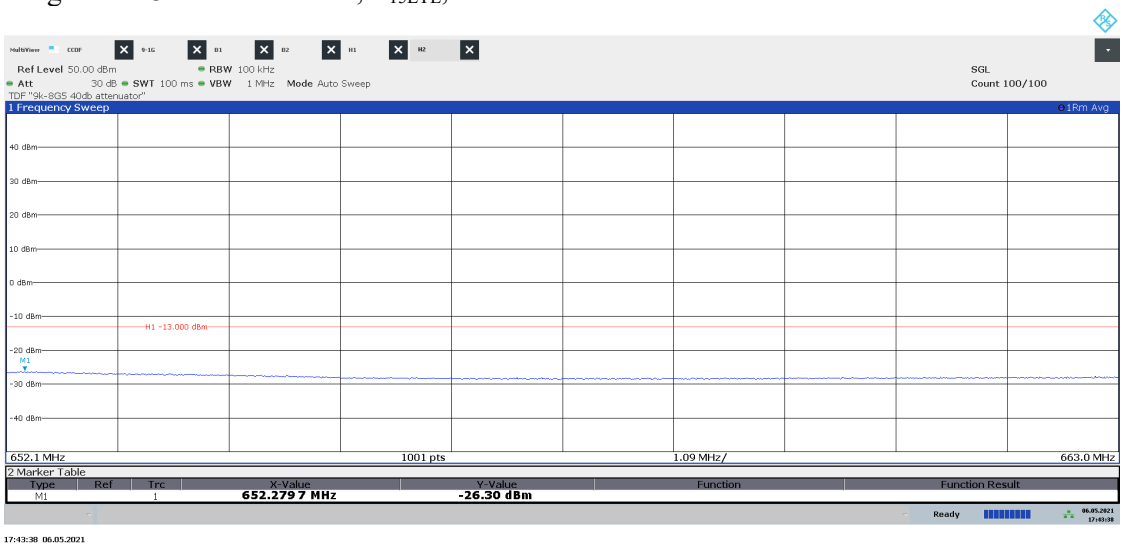

Diagram 2.24a LTE: ETM1.1, T_{20LTE}, Port B:

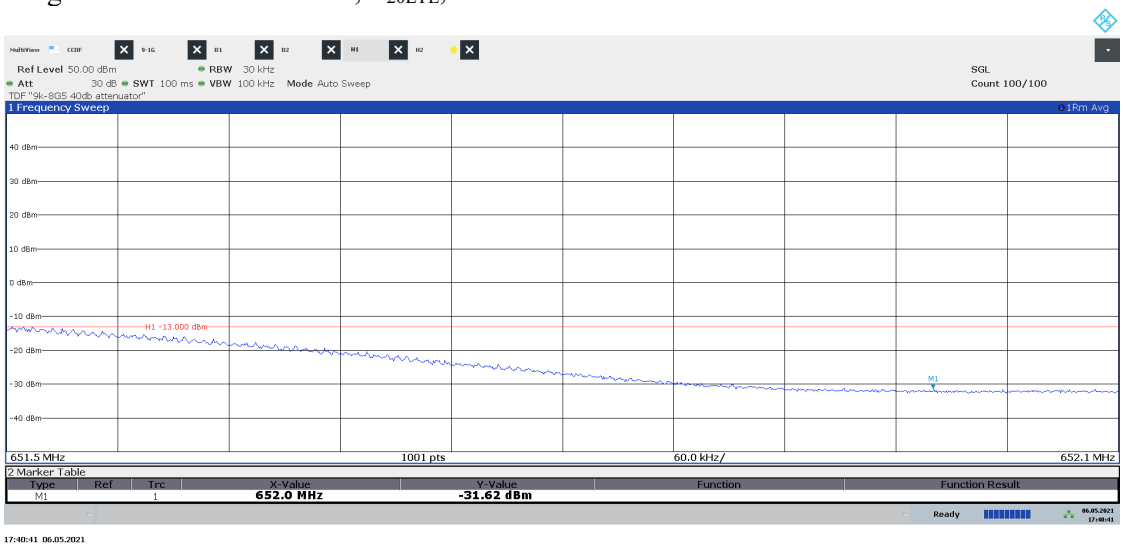

Diagram 2.24b LTE: ETM1.1, T_{20LTE}, Port B:

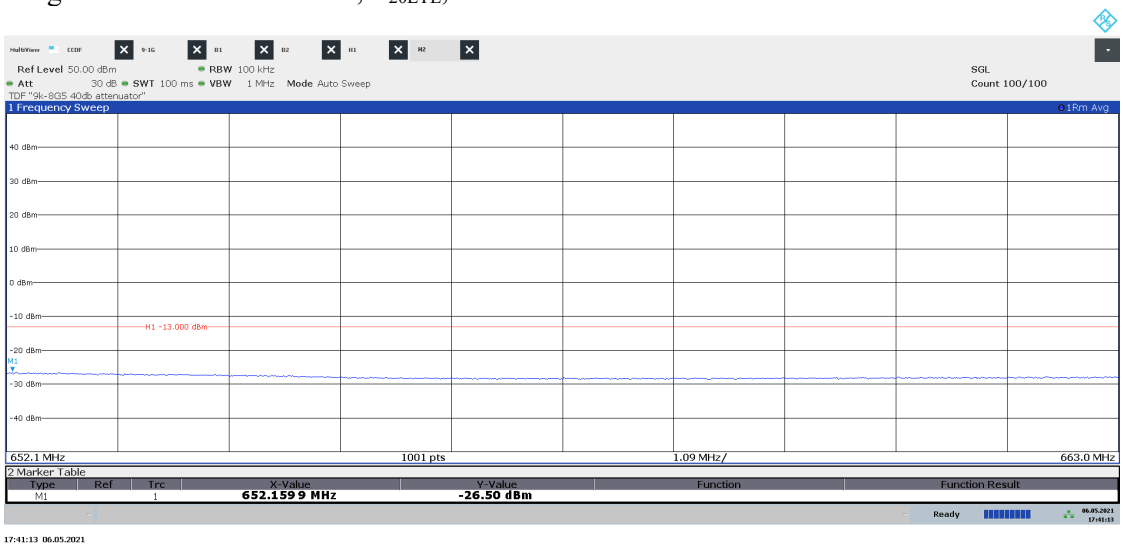

Diagram 2.25a LTE: ETM1.1, Bim_{LTE}, Port B:

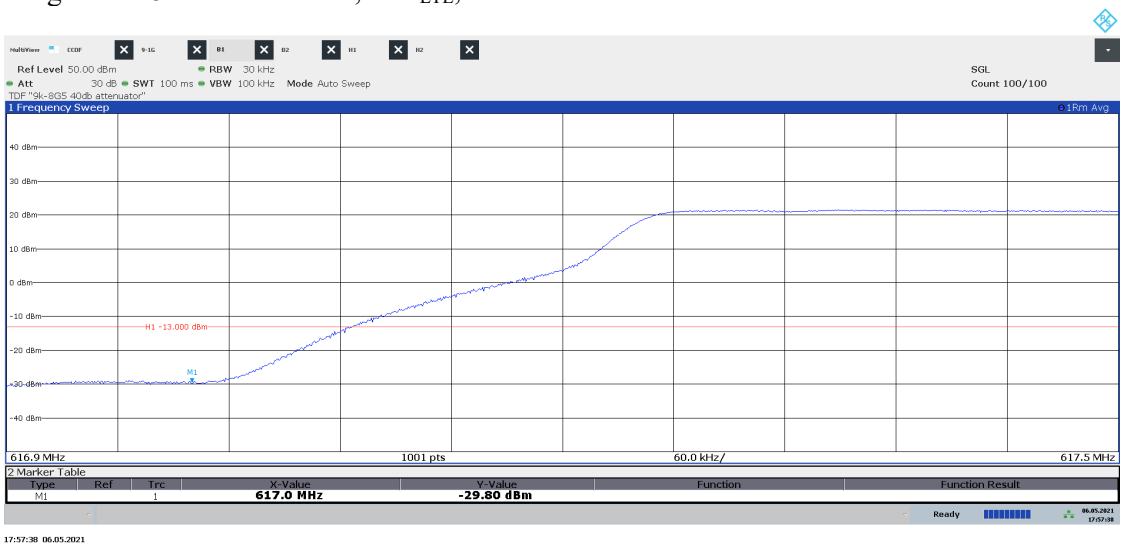

Diagram 2.25b LTE: ETM1.1, Bim_{LTE}, Port B:

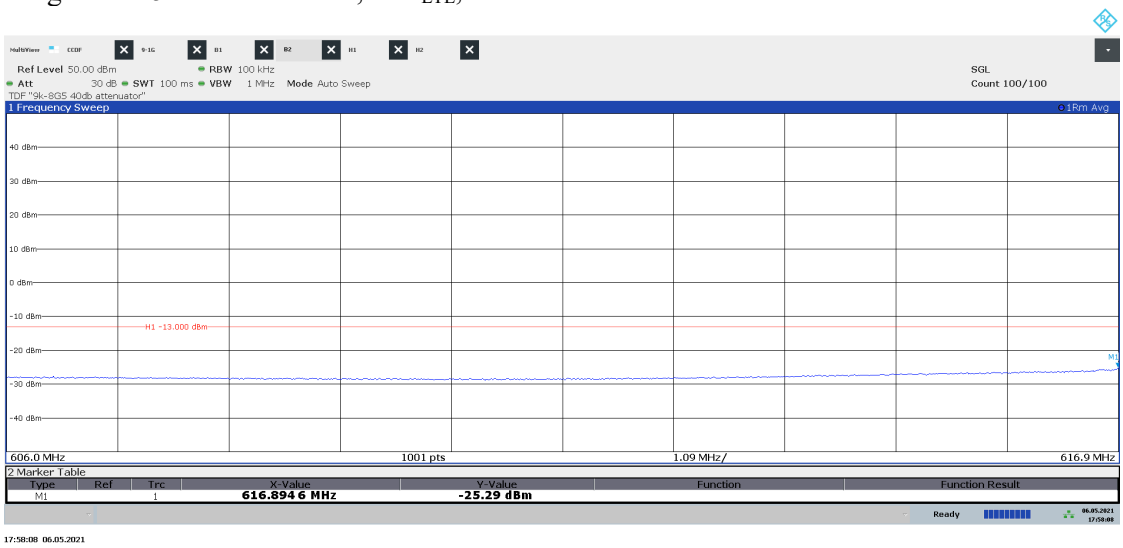

Diagram 2.26a LTE: ETM1.1, Tim_{LTE}, Port B:

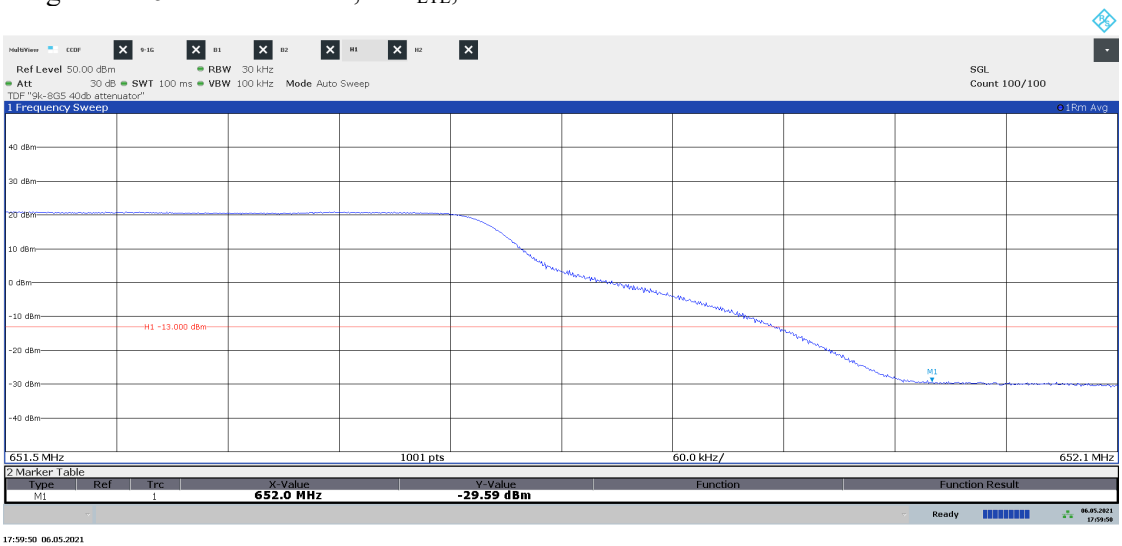

Diagram 2.26b LTE: ETM1.1, Tim_{LTE}, Port B:

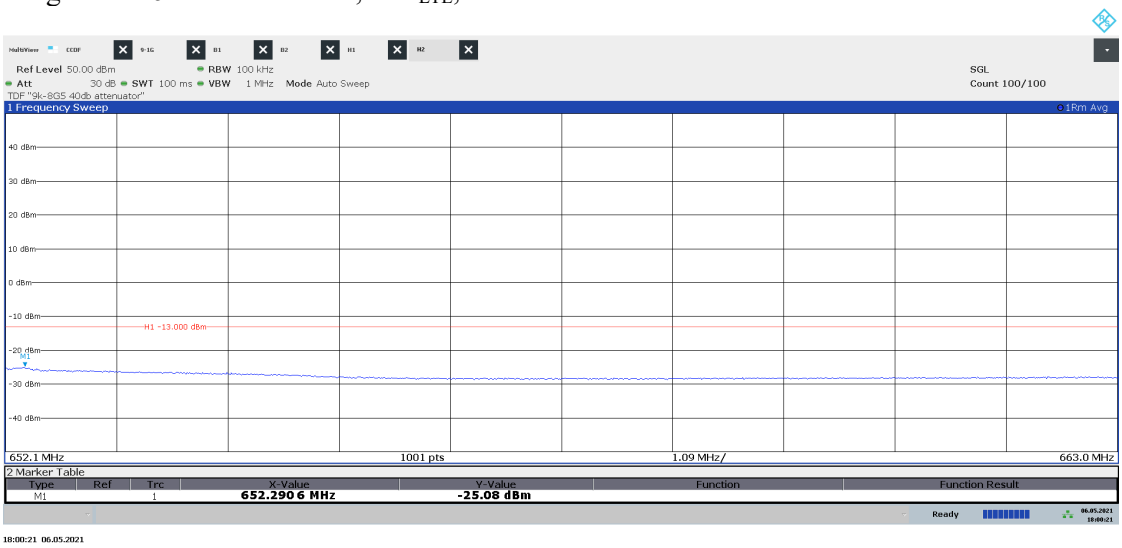

Diagram 2.27a NB IoT SA: N-TM, LTE: E-TM1.1, B_{IoT+L}, Port B:

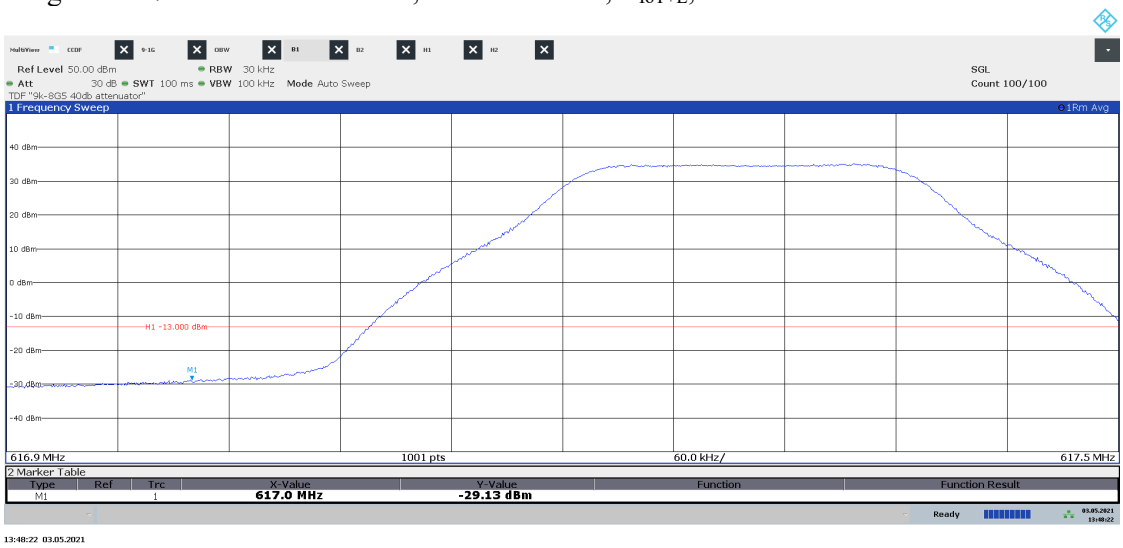

Diagram 2.27b NB IoT SA: N-TM, LTE: E-TM1.1, B_{IoT+L}, Port B:

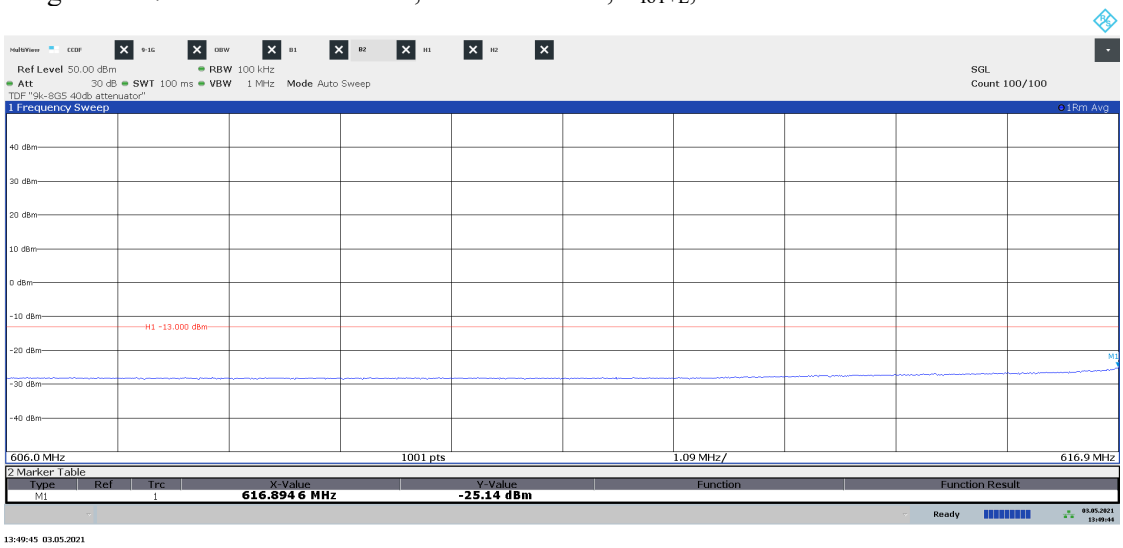

Diagram 2.28a NB IoT SA: N-TM, LTE: E-TM1.1, Bim_{2IoT+L}, Port B:

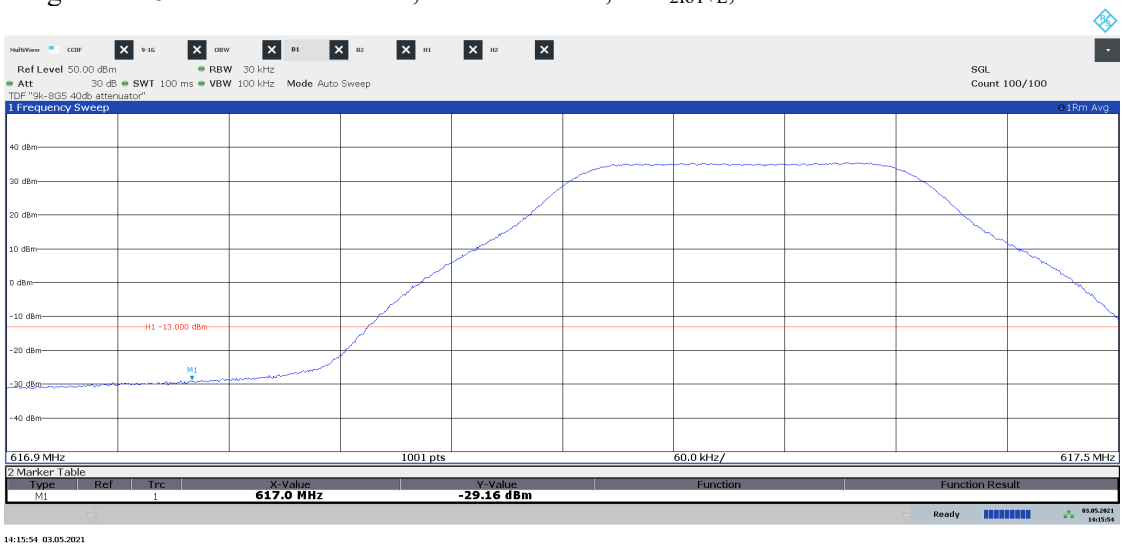

Diagram 2.28b NB IoT SA: N-TM, LTE: E-TM1.1, Bim_{2IoT+L}, Port B:

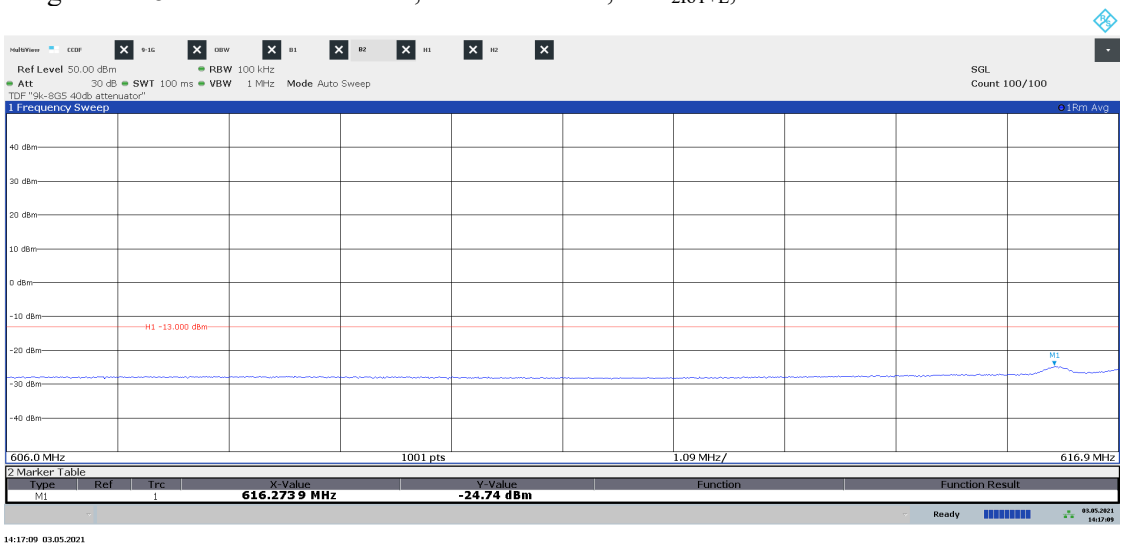

Diagram 2.29a NB IoT SA: N-TM, LTE: E-TM1.1, T_{IoT+L}, Port B:

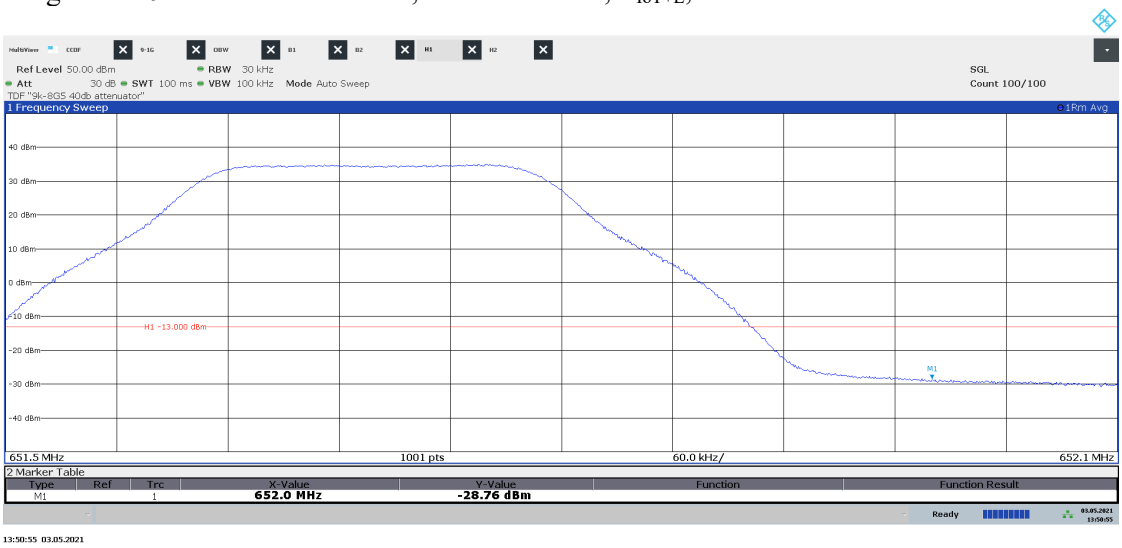

Diagram 2.29b NB IoT SA: N-TM, LTE: E-TM1.1, T_{IoT+L}, Port B:

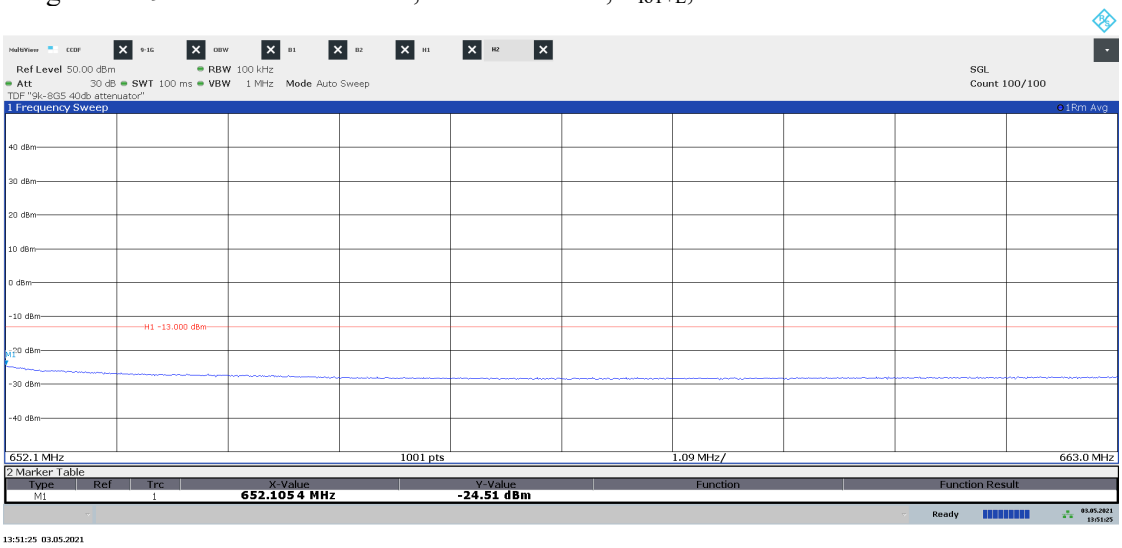

Diagram 2.30a NB IoT SA: N-TM, LTE: E-TM1.1, Tim_{2IoT+L}, Port B:

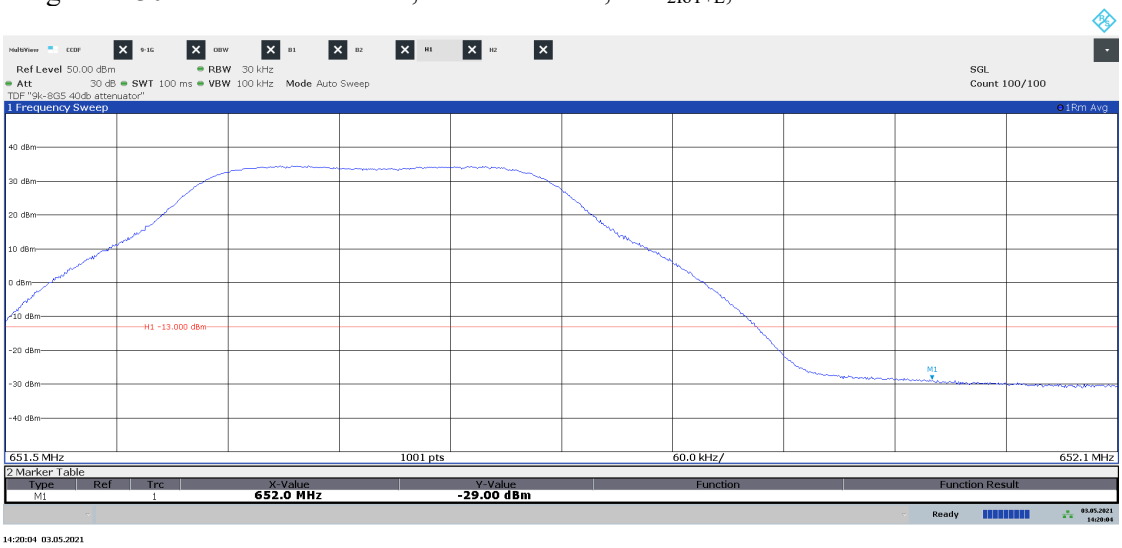

Diagram 2.30b NB IoT SA: N-TM, LTE: E-TM1.1, Tim_{2IoT+L}, Port B:

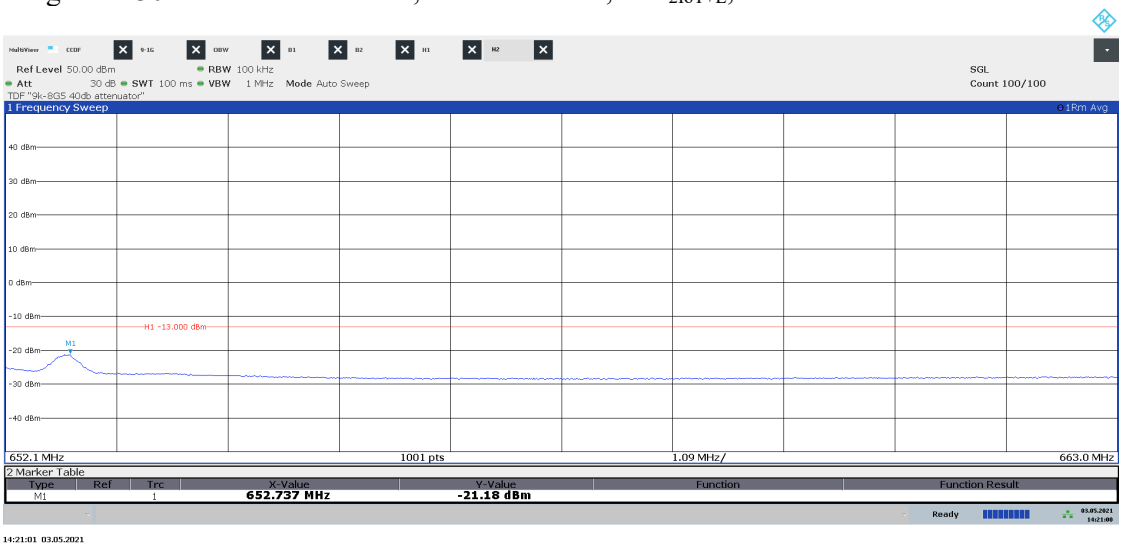

Diagram 2.31a NB IoT SA: N-TM, LTE: E-TM3.1, B10$_{Guard}$, Port B:

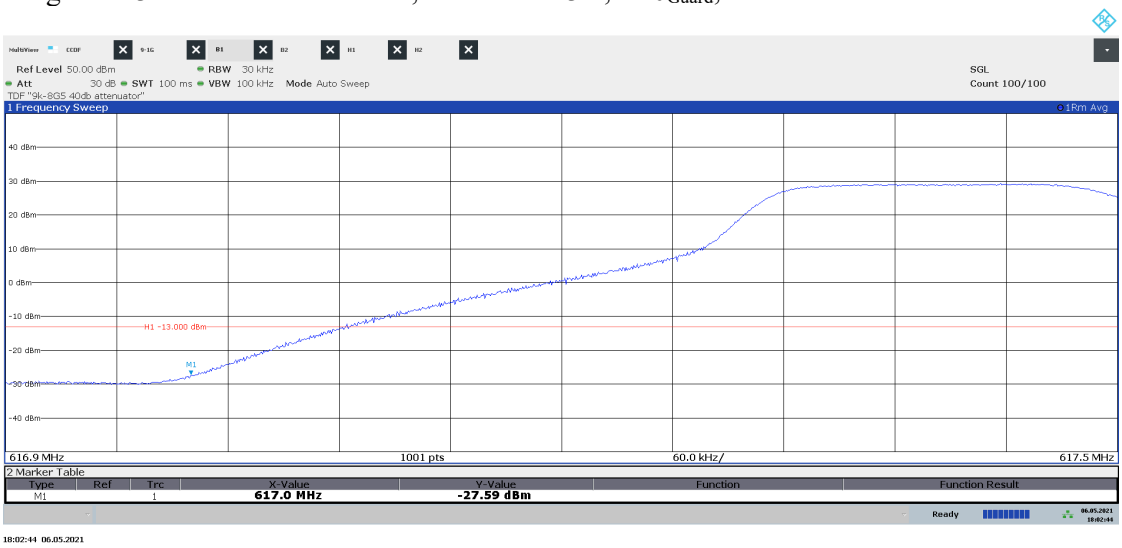

Diagram 2.31b NB IoT SA: N-TM, LTE: E-TM3.1, B10$_{Guard}$, Port B:

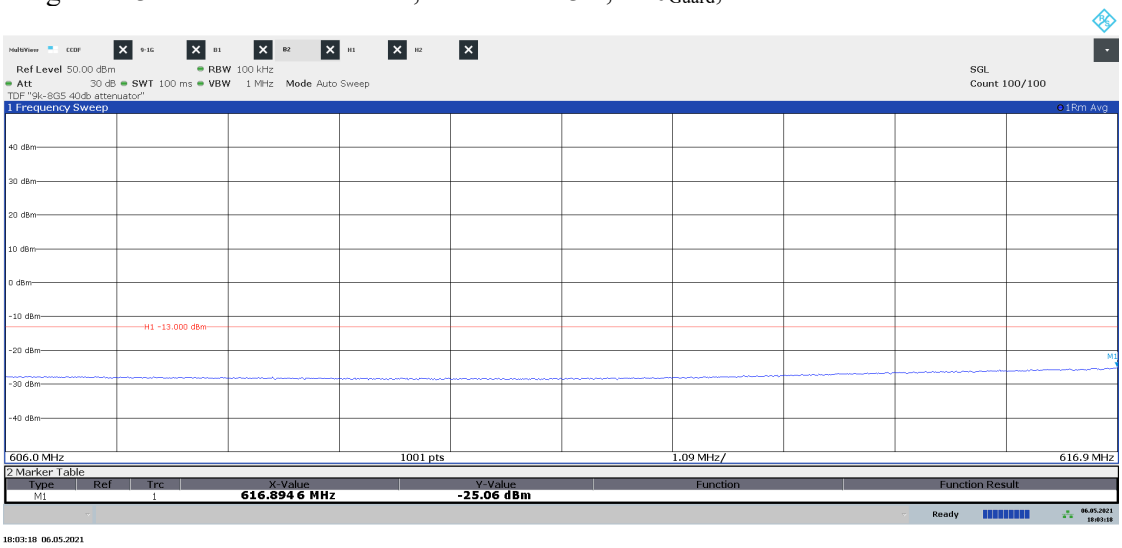

Diagram 2.32a NB IoT SA: N-TM, LTE: E-TM3.1, B15$_{Guard}$, Port B:

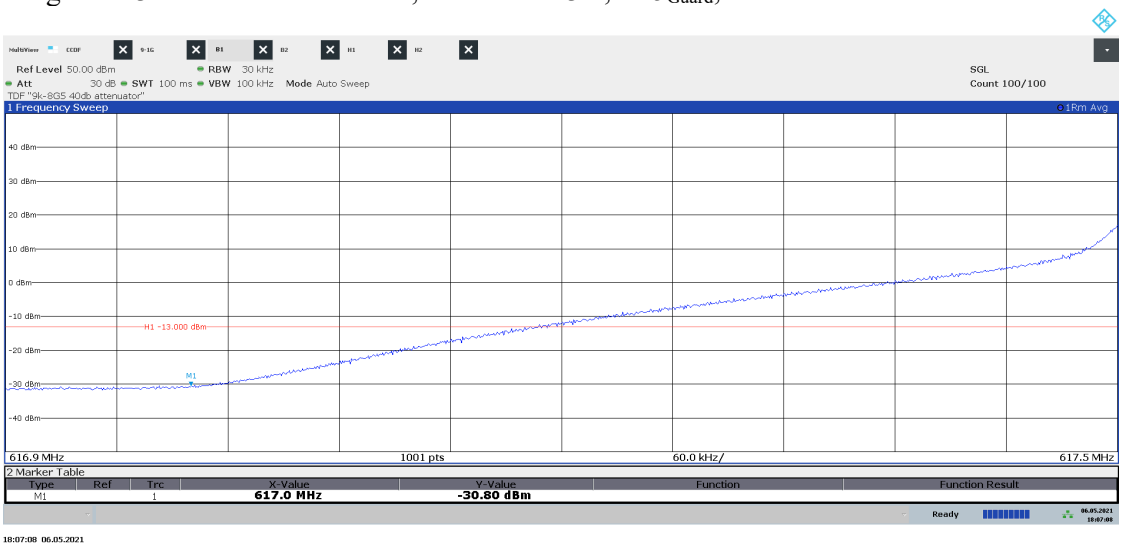

Diagram 2.32b NB IoT SA: N-TM, LTE: E-TM3.1, B15$_{Guard}$, Port B:

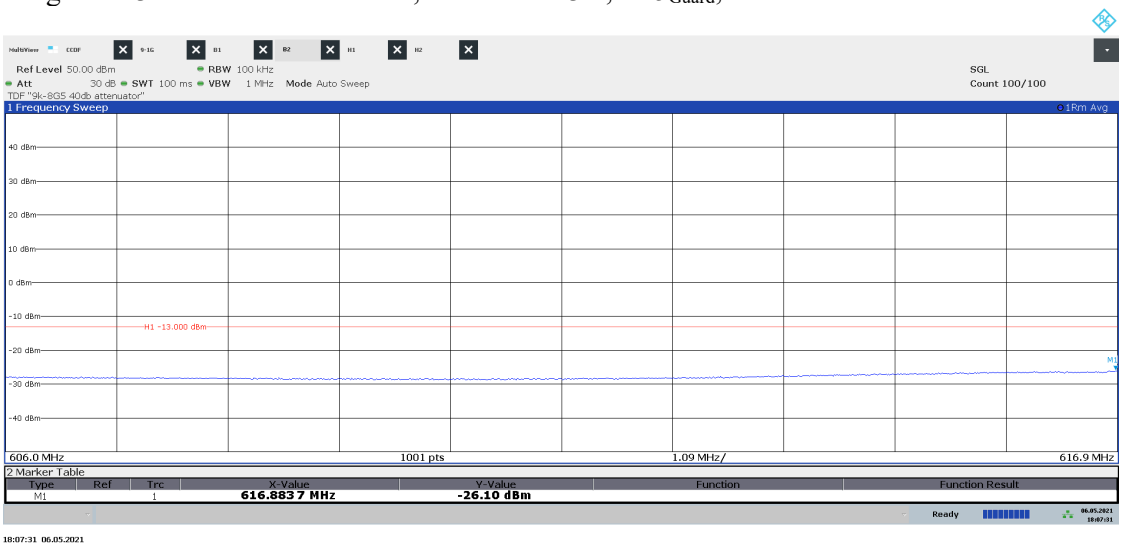

Diagram 2.33a NB IoT SA: N-TM, LTE: E-TM3.1, B20$_{Guard}$, Port B:

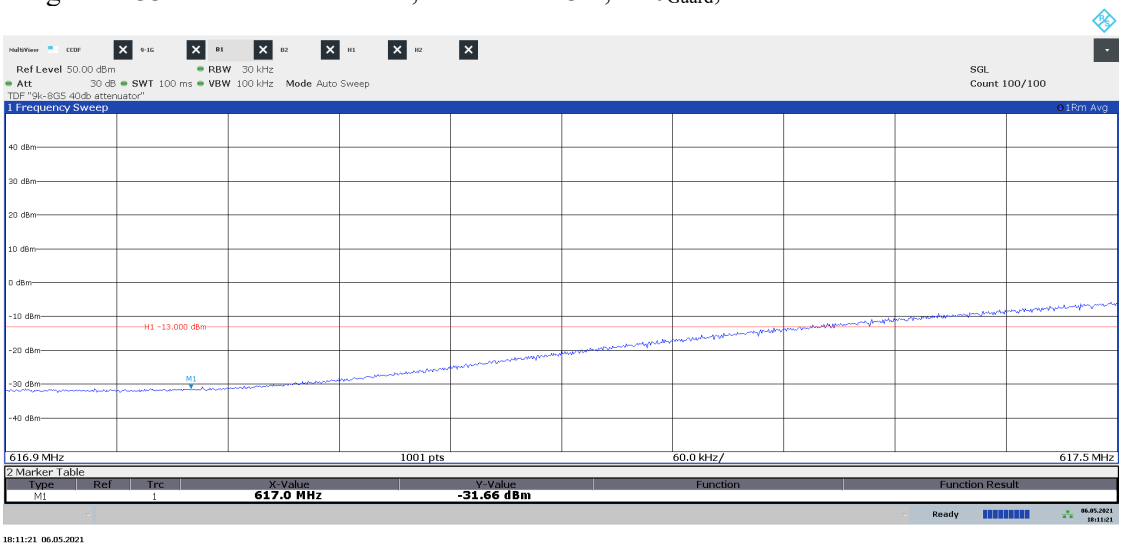

Diagram 2.33b NB IoT SA: N-TM, LTE: E-TM3.1, B20$_{Guard}$, Port B:

Diagram 2.34a NB IoT SA: N-TM, LTE: E-TM3.1, $T10_{Guard}$, Port B:

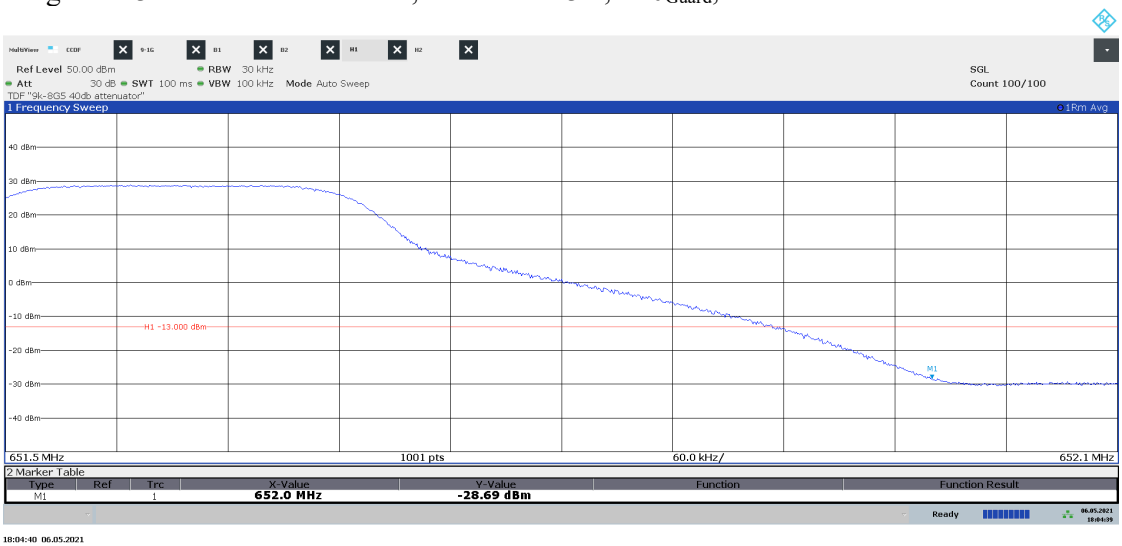

Diagram 2.34b NB IoT SA: N-TM, LTE: E-TM3.1, $T10_{Guard}$, Port B:

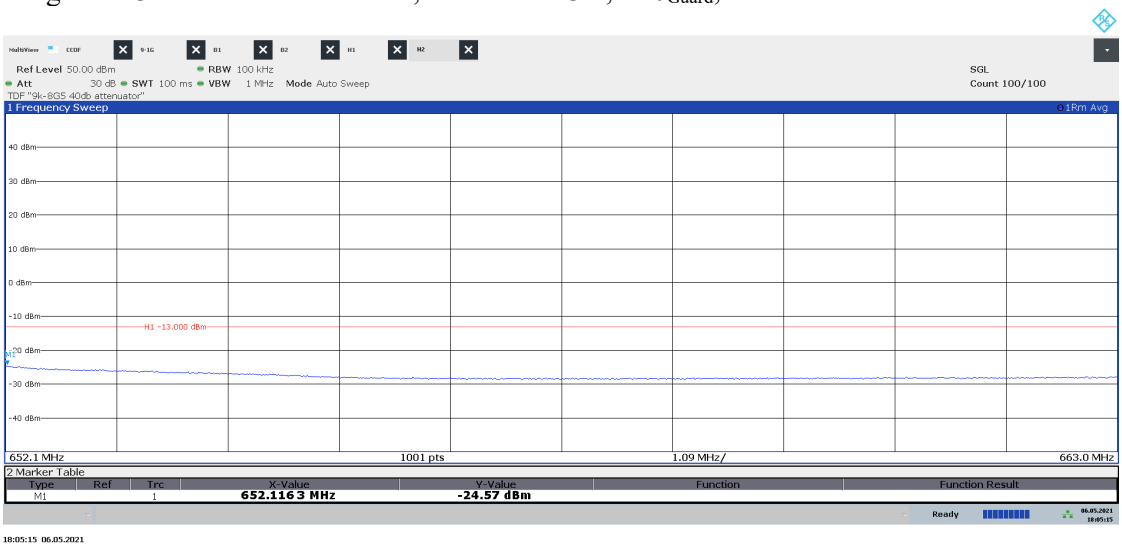

Diagram 2.35a NB IoT SA: N-TM, LTE: E-TM3.1, $T15_{Guard}$, Port B:

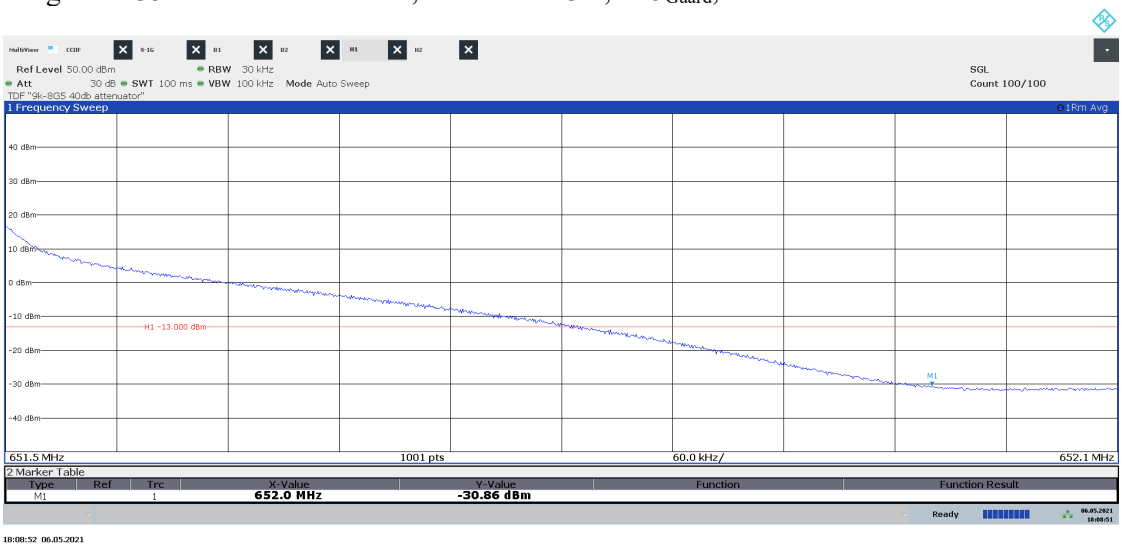

Diagram 2.35b NB IoT SA: N-TM, LTE: E-TM3.1, $T15_{Guard}$, Port B:

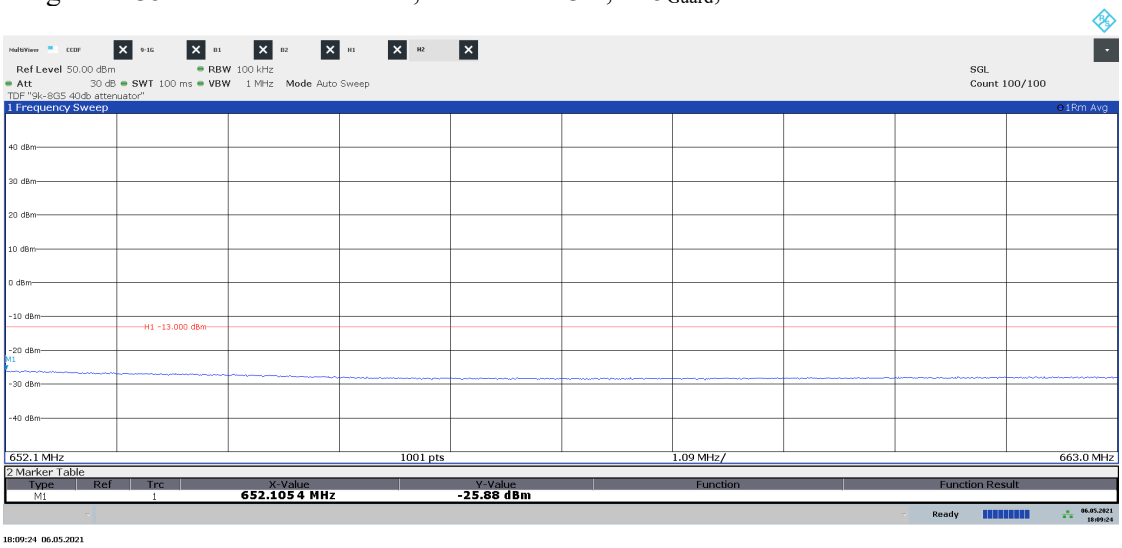

Diagram 2.36a NB IoT SA: N-TM, LTE: E-TM3.1, $T20_{Guard}$, Port B:

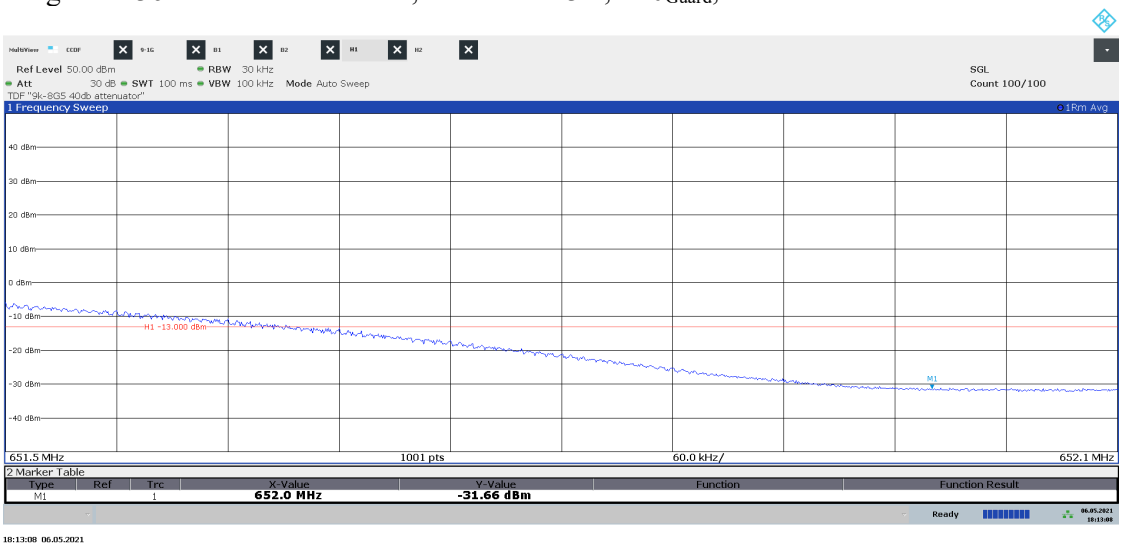

Diagram 2.36b NB IoT SA: N-TM, LTE: E-TM3.1, $T20_{Guard}$, Port B:

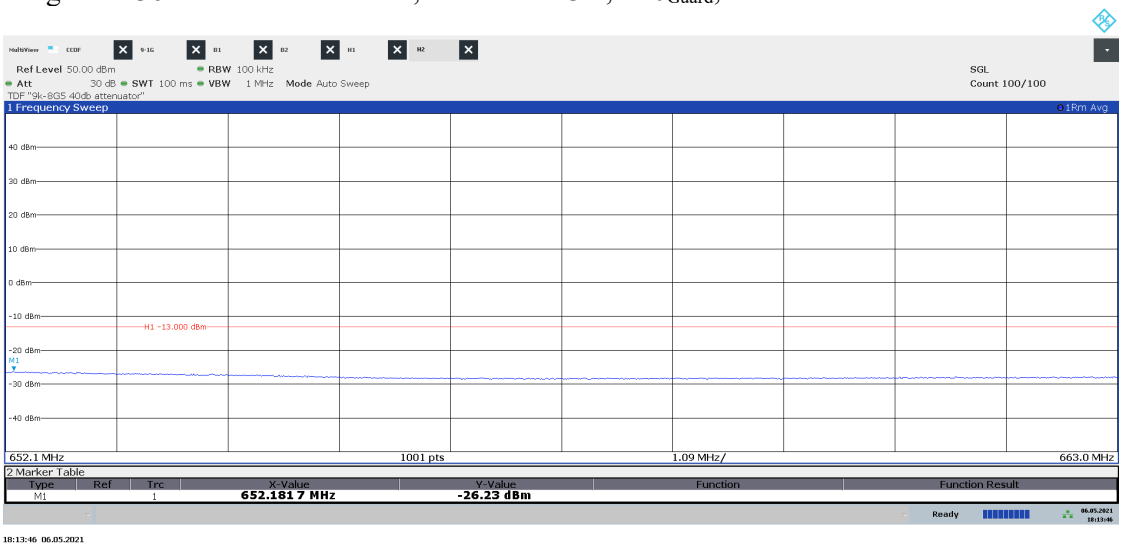

Diagram 2.37a LTE: ETM1.1, B_{5LTE}, Port A:

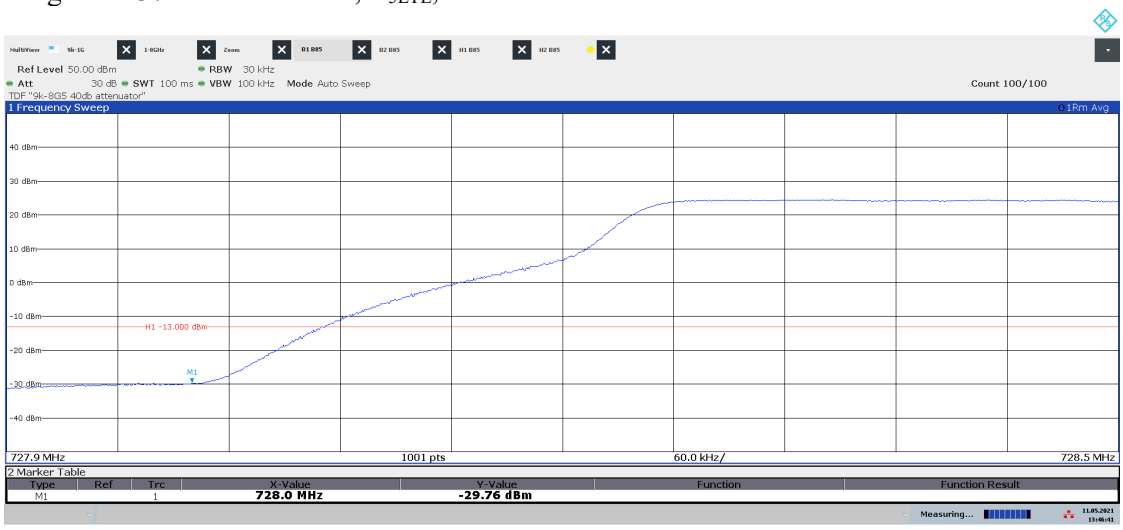

Diagram 2.37b LTE: ETM1.1, B_{5LTE}, Port A:

Diagram 2.38a LTE: ETM1.1, B_{5LTE}, Port B:

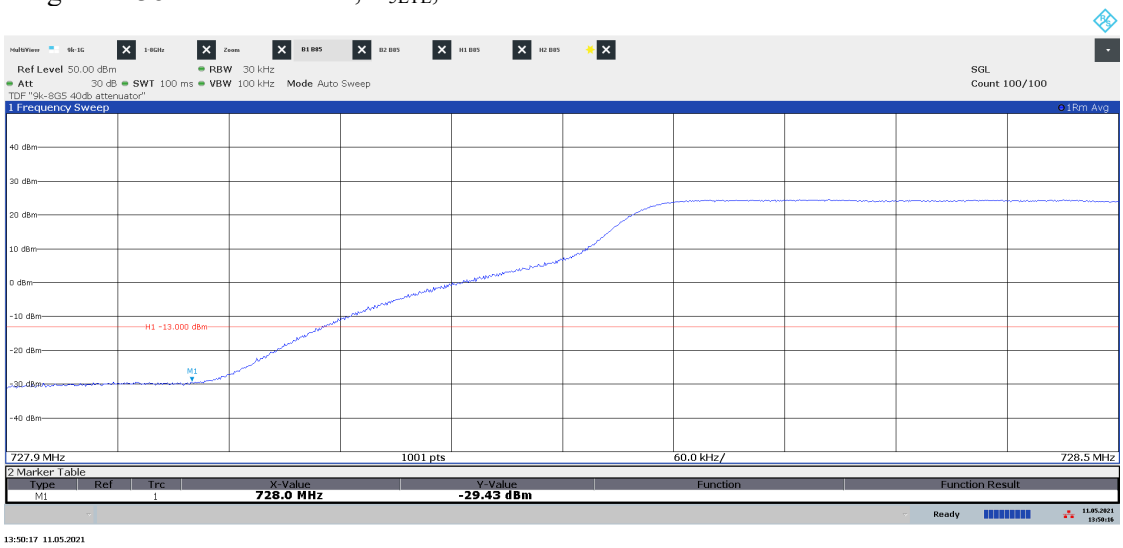

Diagram 2.38b LTE: ETM1.1, B_{5LTE}, Port B:

Diagram 2.39a LTE: ETM1.1, B_{5LTE}, Port C:

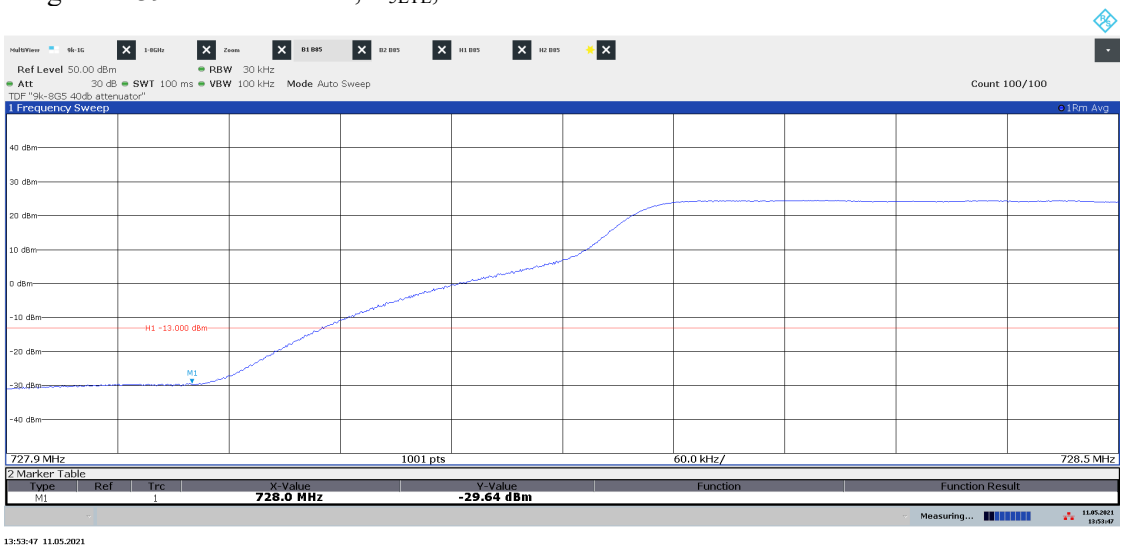

Diagram 2.39b LTE: ETM1.1, B_{5LTE}, Port C:

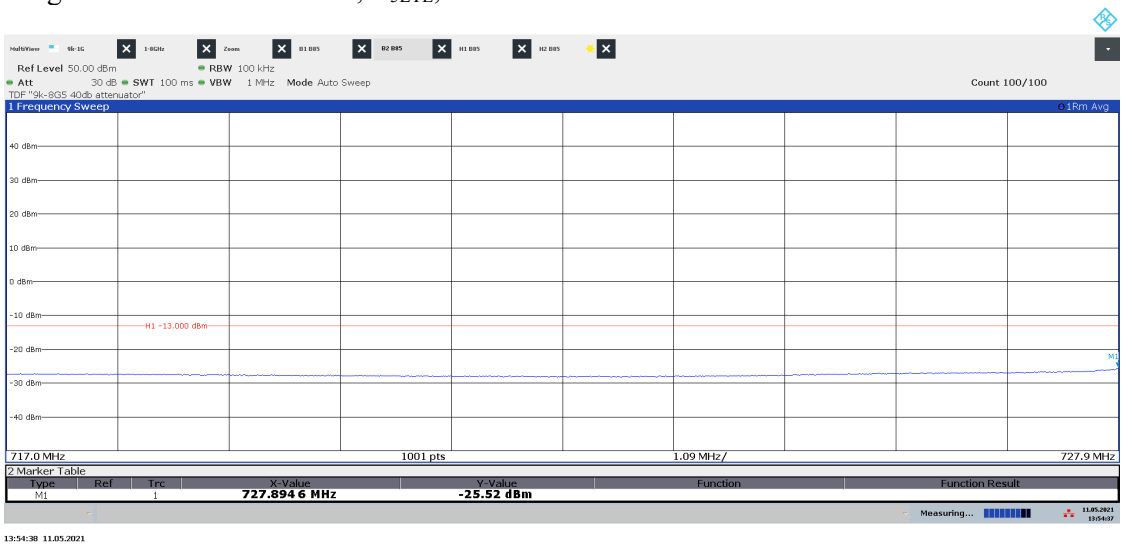

Diagram 2.40a LTE: ETM1.1, B_{5LTE}, Port D:

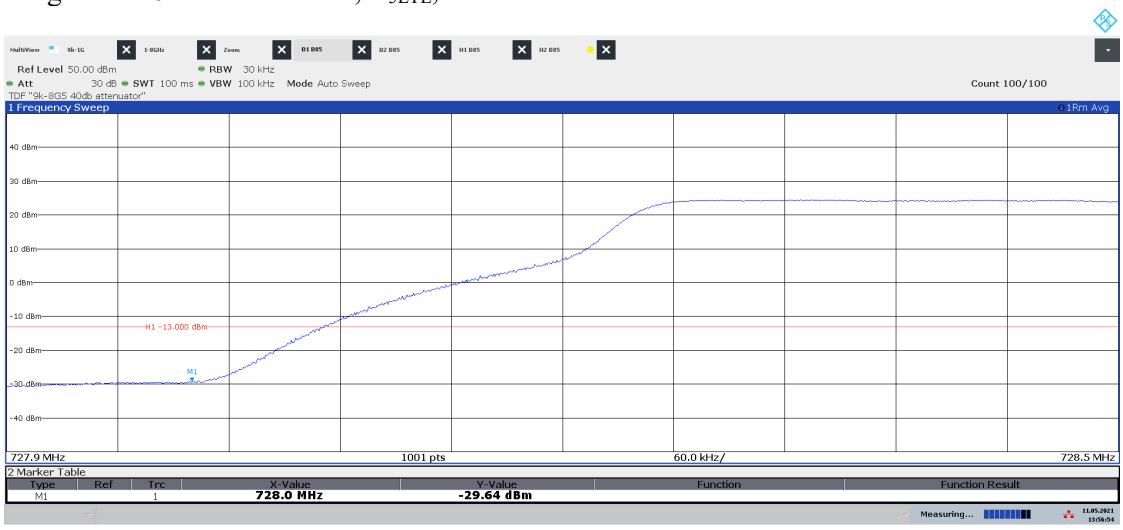

Diagram 2.40b LTE: ETM1.1, B_{5LTE}, Port D:

Diagram 2.41a LTE: ETM1.1, B_{10LTE}, Port B:

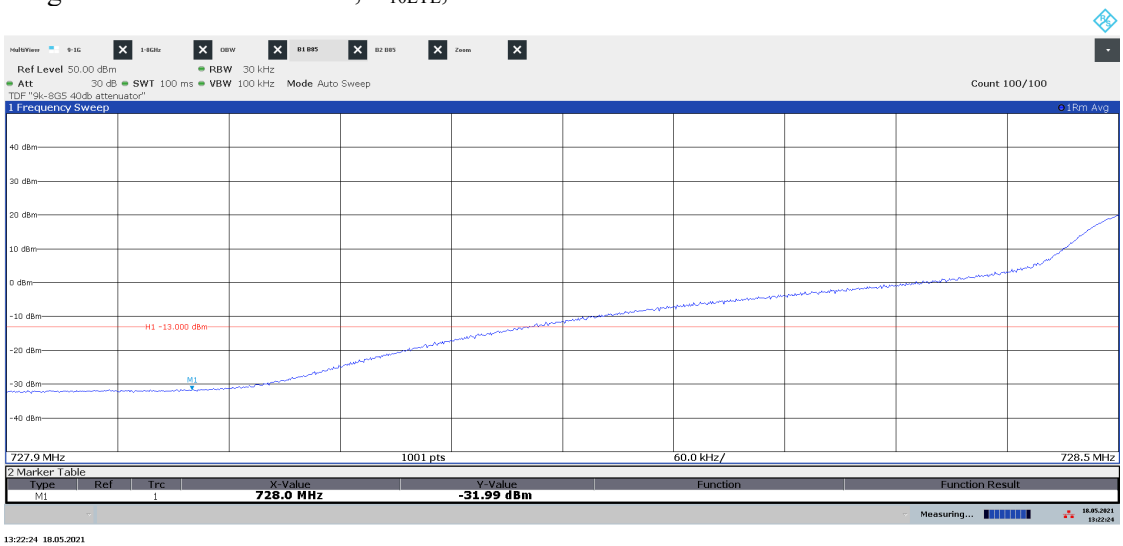

Diagram 2.41b LTE: ETM1.1, B_{10LTE}, Port B:

Diagram 2.42a LTE: ETM1.1, T_{5LTE}, Port A:

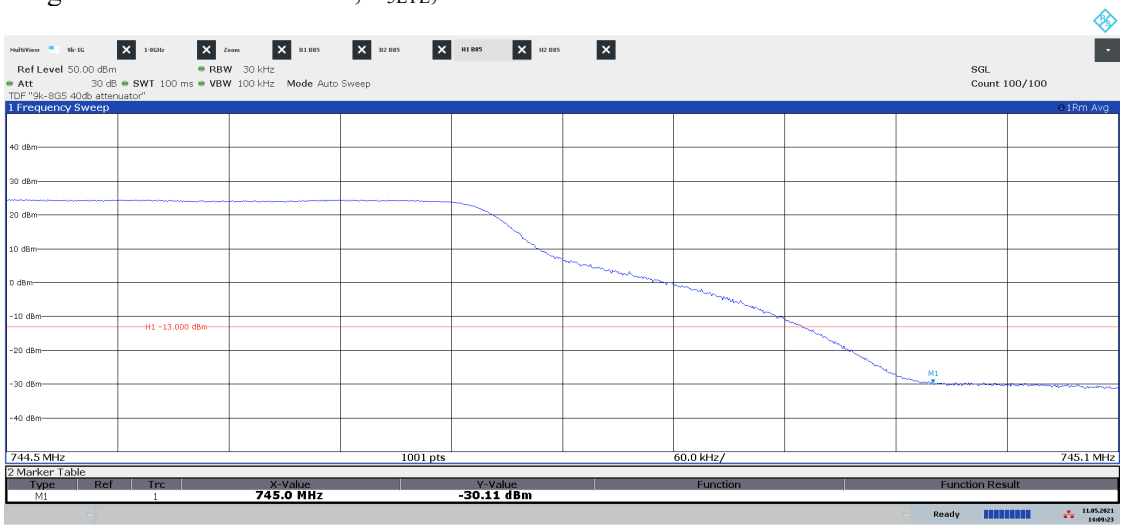

Diagram 2.42b LTE: ETM1.1, T_{5LTE}, Port A:

Diagram 2.43a LTE: ETM1.1, T_{5LTE}, Port B:

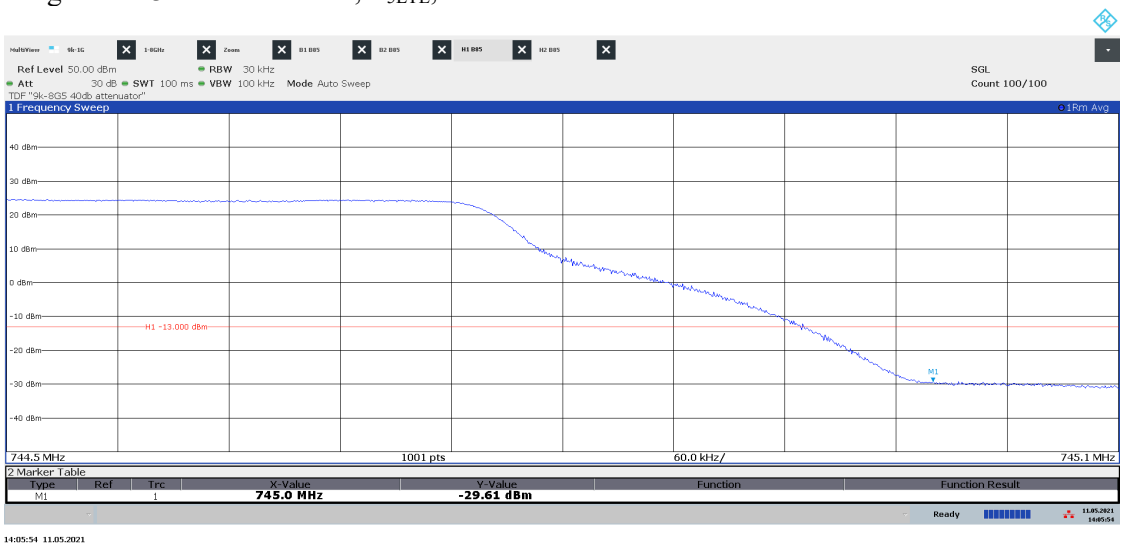

Diagram 2.43b LTE: ETM1.1, T_{5LTE}, Port B:

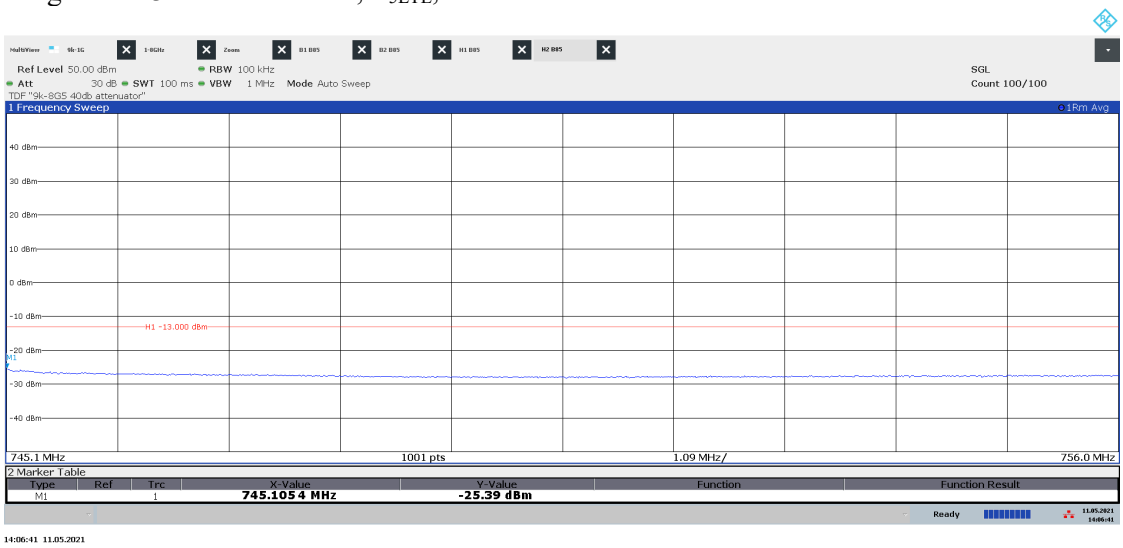

Diagram 2.44a LTE: ETM1.1, T_{5LTE}, Port C:

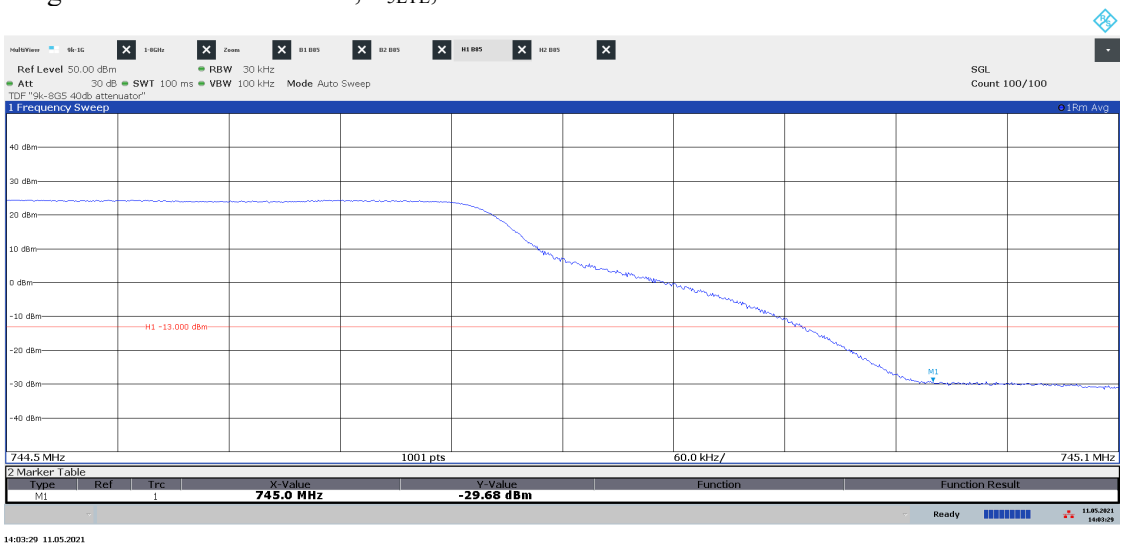

Diagram 2.44b LTE: ETM1.1, T_{5LTE}, Port C: