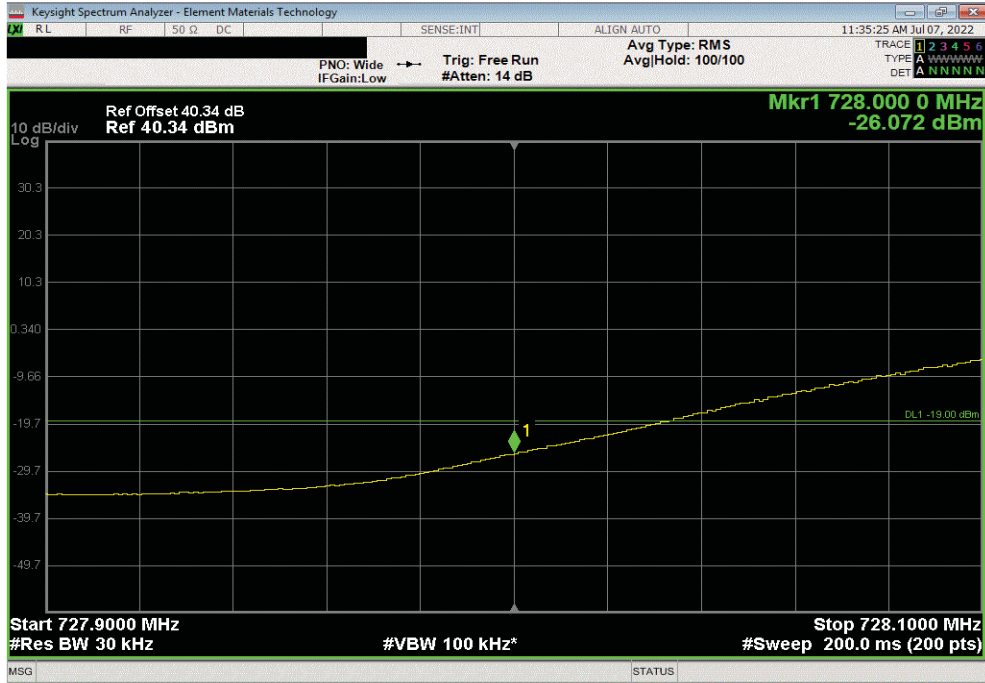


BAND EDGE COMPLIANCE - MULTIBAND MULTICARRIER

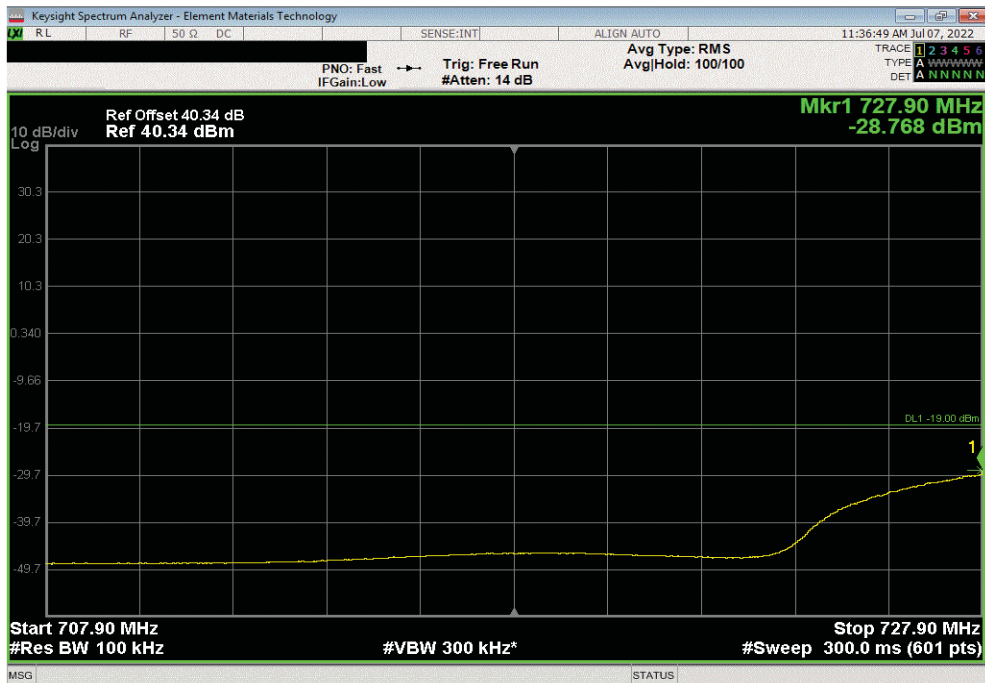


TbTx 2022.05.02.0 XMit 2022.02.07.0

LTE Multicarrier Multiband, Port 2, 256-QAM Modulation, Test Case 3, LTE5 Carrier 1, 730.5 MHz						
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result		
1	728	-26.07	-19	Pass		



LTE Multicarrier Multiband, Port 2, 256-QAM Modulation, Test Case 3, LTE5 Carrier 1, 730.5 MHz						
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result		
2	727.9	-28.77	-19	Pass		



BAND EDGE COMPLIANCE - MULTIBAND MULTICARRIER

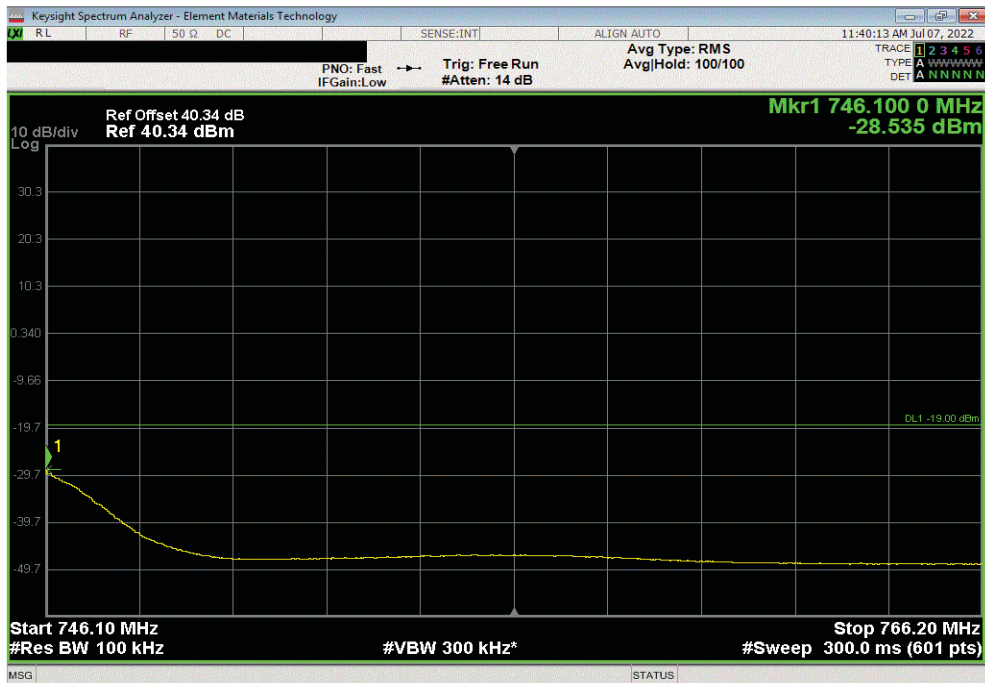


TbTx 2022.05.02.0 XMit 2022.02.07.0

LTE Multicarrier Multiband, Port 2, 256-QAM Modulation, Test Case 3, LTE5 Carrier 2, 743.5 MHz						
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result		
1	746	-26.54	-19	Pass		



LTE Multicarrier Multiband, Port 2, 256-QAM Modulation, Test Case 3, LTE5 Carrier 2, 743.5 MHz						
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result		
2	746.1	-28.54	-19	Pass		

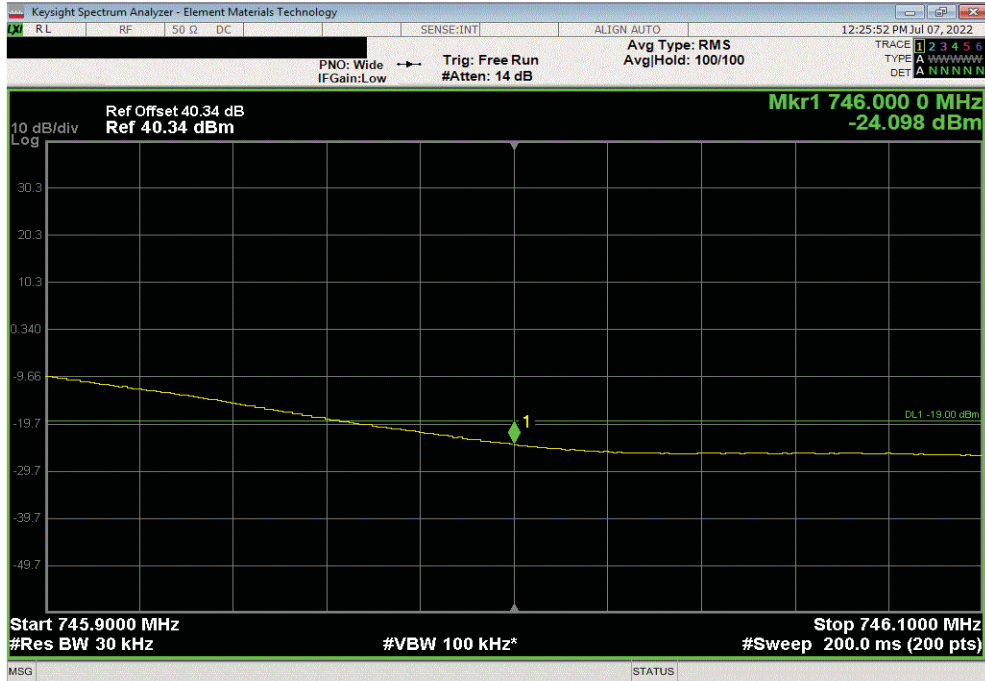


BAND EDGE COMPLIANCE - MULTIBAND MULTICARRIER

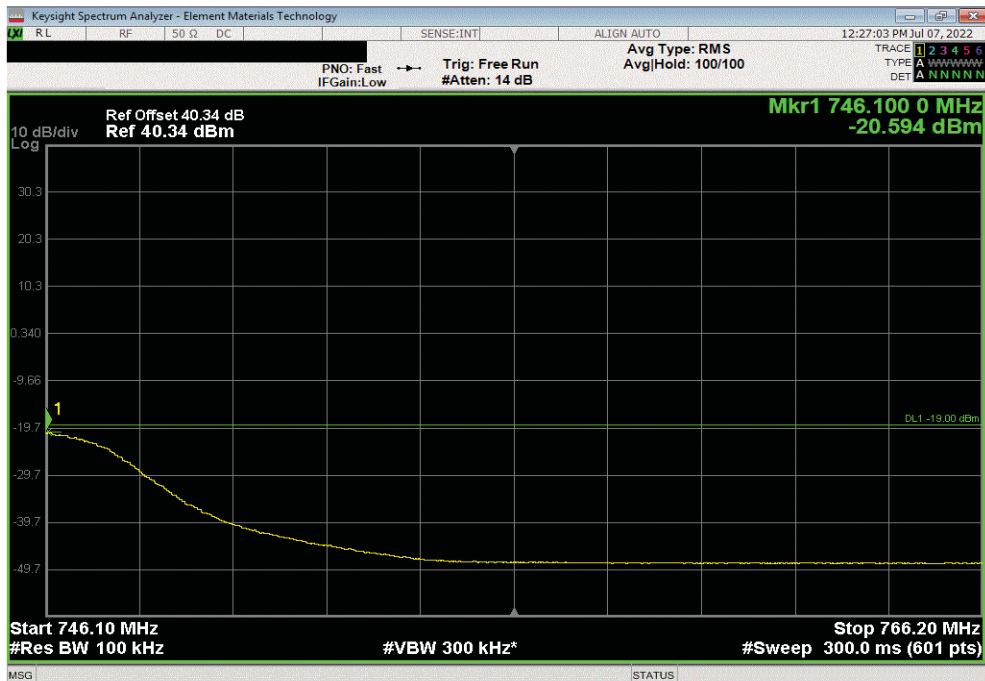


TbTx 2022.05.02.0 XMit 2022.02.07.0

LTE Multicarrier Multiband, Port 2, 256-QAM Modulation, Test Case 4, LTE5 n85 Carrier 1, 743.5 MHz						
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result		
1	746	-24.1	-19	Pass		



LTE Multicarrier Multiband, Port 2, 256-QAM Modulation, Test Case 4, LTE5 n85 Carrier 1, 743.5 MHz						
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result		
2	746.1	-20.59	-19	Pass		

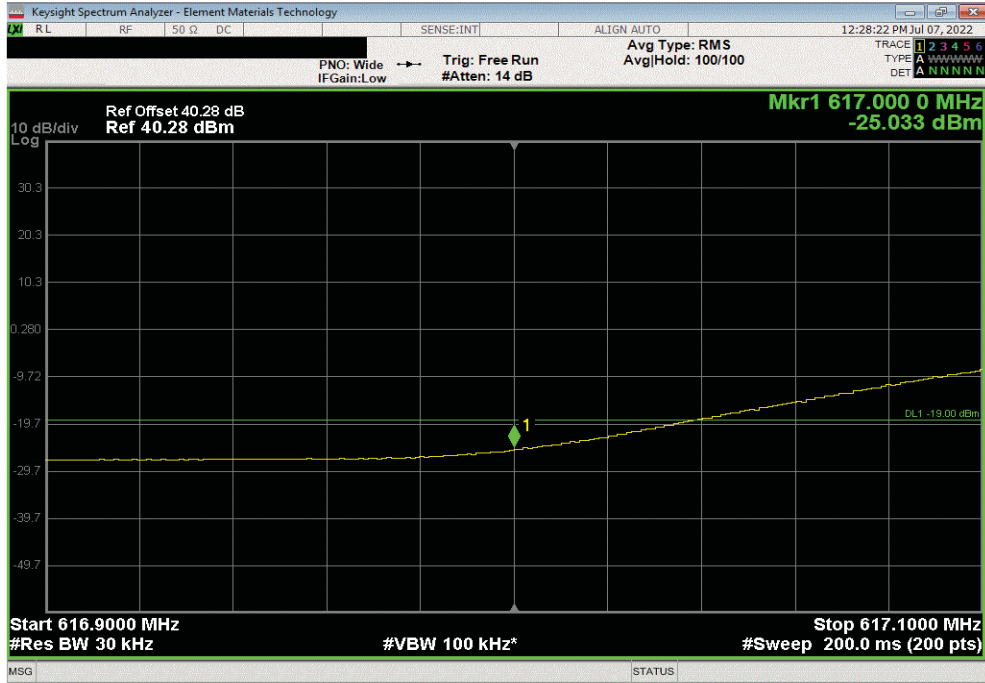


BAND EDGE COMPLIANCE - MULTIBAND MULTICARRIER

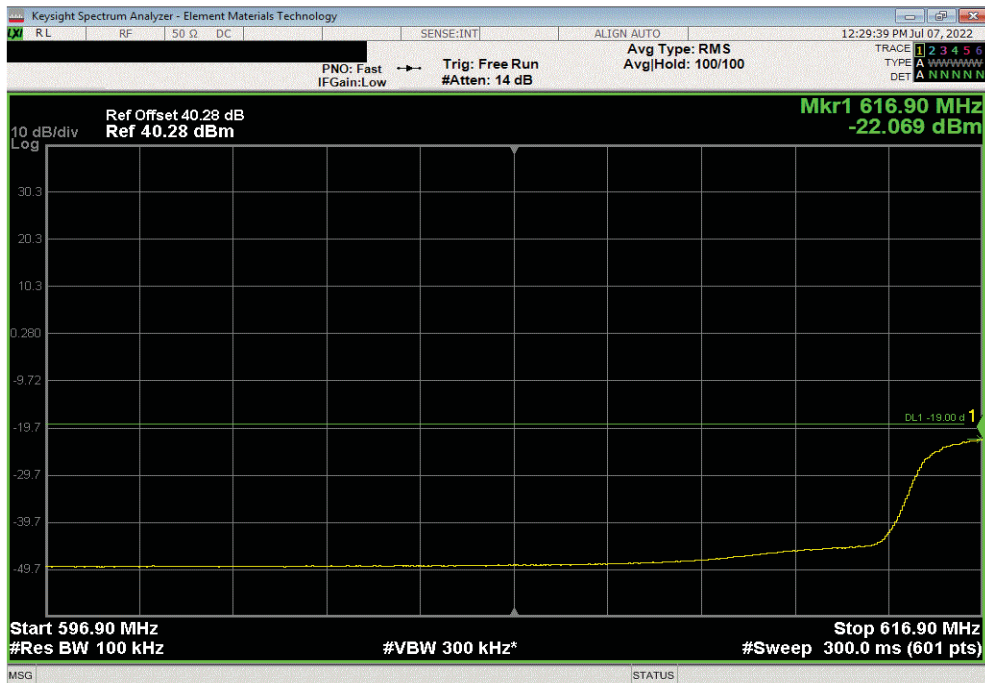


TelTx 2022.05.02.0 XMit 2022.02.07.0

LTE Multicarrier Multiband, Port 2, 256-QAM Modulation, Test Case 4, LTE5 n71 Carrier 1, 619.5 MHz						
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result		
1	617	-25.03	-19	Pass		



LTE Multicarrier Multiband, Port 2, 256-QAM Modulation, Test Case 4, LTE5 n71 Carrier 1, 619.5 MHz						
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result		
2	616.9	-22.07	-19	Pass		



SPURIOUS CONDUCTED EMISSIONS - Band 71 LTE



XMH 2022.02.07.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Block - DC	Fairview Microwave	SD3239	ANE	2022-03-02	2023-03-02
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFQ	2022-01-17	2023-01-17

TEST DESCRIPTION

The antenna port spurious emissions were measured at the RF output terminal of the EUT through 3 different attenuation configurations which continues through to the RF input of the spectrum analyzer. Analyzer plots utilizing a resolution bandwidth called out by the client's test plan were made for each modulation type from 9 KHz to 8 GHz. The conducted power of spurious emissions, up to the 10th harmonic of the transmit frequency, were investigated to ensure they were less than the limits also called out by the client's test plan shown below.

The measurement methods are detailed in KDB 971168 D01v03 section 6 and ANSI C63.26-2015.

Per FCC 2.1057(a)(1) and RSS Gen 6.13, the upper level of measurement is the 10th harmonic of the highest fundamental frequency.

These measurements are for the frequency band after the first 100 kHz bands immediately outside and adjacent to the frequency block.

RF conducted emissions testing was performed only on one port. The AHLOB antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown in output power testing) and antenna port 2 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i, and 6.4.

Per section 27.53(g) and RSS 130 4.7, the power of any emission outside of the authorized operating frequency range cannot exceed -13 dBm. The limit is adjusted to -19 dBm [-13 dBm -10 log (4)] per FCC KDB 662911D01 v02r01 because the BTS may operate as a 4 port MIMO transmitter.

The limit for the 9kHz to 150kHz frequency range was adjusted to -39dBm to correct for a spectrum analyzer RBW of 1kHz versus required RBW of 100kHz [i.e.: -39dBm = -19dBm -10log(100kHz/1kHz)]. The limit for the 150kHz to 20MHz frequency range was adjusted to -29dBm to correct for a spectrum analyzer RBW of 10kHz versus required RBW of 100kHz [i.e.: -29dBm = -19dBm -10log(100kHz/10kHz)]. The required limit of -19dBm with a RBW of > 100kHz was used for all other frequency ranges. (See ANSI C63.26-2015 paragraph 5.7.2a for details on the Limit/RBW scaling method)

SPURIOUS CONDUCTED EMISSIONS - Band 71 LTE



Tel: 2022.06.03.0 XM: 2022.02.07.0

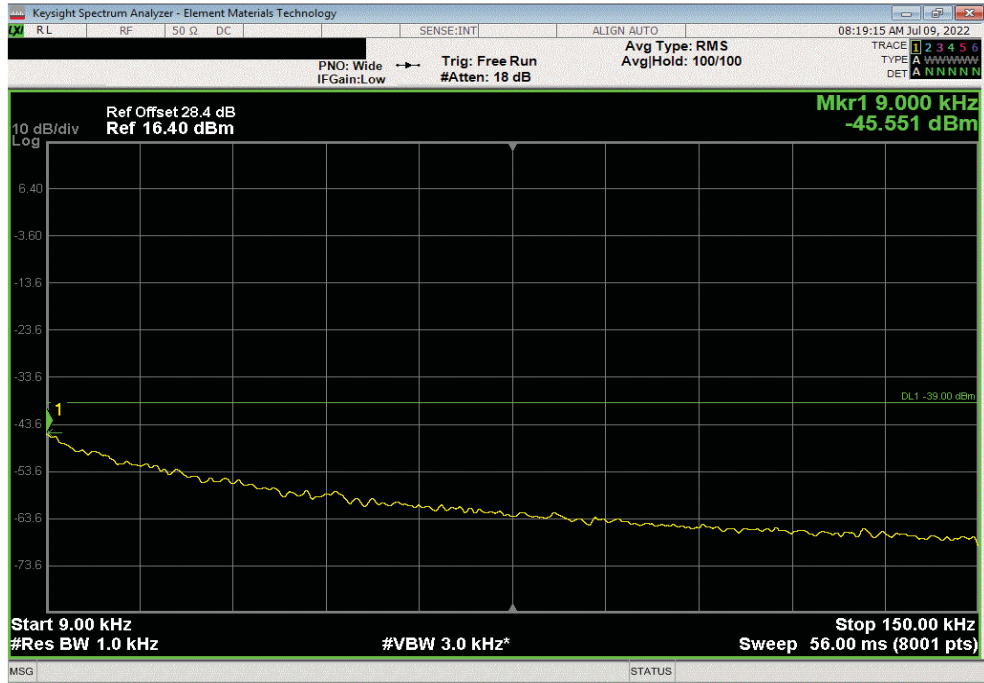
EUT: AHLOB		Work Order: NOKI0043	
Serial Number: YK220900029		Date: 11-Jul-22	
Customer: Nokia Solutions and Networks		Temperature: 21.1 °C	
Attendees: Mitchell Hill, John Rattanavong		Humidity: 56.1% RH	
Project: None		Barometric Pres.: 1014 mbar	
Tested by: Marty Martin		Job Site: TX07	
Power: 54 VDC			
TEST SPECIFICATIONS			
FCC 27:2022		Test Method	
RSS-130 Issue 2:2019		ANSI C63.26:2015	
		ANSI C63.26:2015	
COMMENTS			
All losses in the measurement path were accounted for: attenuators, cables, DC block and filter when in use. The carriers were enabled at maximum power on the middle channels of the respective bands. The port power is at maximum. The following carrier configurations were tested: B71 LTE5 (40W) + B85 LTE5 (40W), B71 LTE10 (60W) + B85 NB IoT SA (20W), B71 LTE15 (80W), and B71 LTE20 (80W).			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1, 2, 3	Signature <i>Marty Martin</i>	
		Frequency Range	Measured Freq (MHz)
			Max Value (dBm)
			Limit (dBm)
			Result
Port 2, LTE, Band 71, 617 MHz - 652 MHz			
5 MHz Bandwidth			
256-QAM Modulation			
		Mid Ch. B71 LTE5 634.5MHz + B85 LTE5 737.0MHz	9 kHz - 150 kHz
		Mid Ch. B71 LTE5 634.5MHz + B85 LTE5 737.0MHz	150 kHz - 20 MHz
		Mid Ch. B71 LTE5 634.5MHz + B85 LTE5 737.0MHz	20 MHz - 1.2 GHz
		Mid Ch. B71 LTE5 634.5MHz + B85 LTE5 737.0MHz	1.2 GHz - 8 GHz
			0.01
			-45.551
			-39
			Pass
			0.15
			-35.176
			-29
			Pass
			766
			-31.93
			-19
			Pass
			4031.07
			-43.27
			-19
			Pass
10 MHz Bandwidth			
256-QAM Modulation			
		Mid Ch. B71 LTE10 634.5 MHz + B85 NB IoT SA 737.0MHz	9 kHz - 150 kHz
		Mid Ch. B71 LTE10 634.5 MHz + B85 NB IoT SA 737.0MHz	150 kHz - 20 MHz
		Mid Ch. B71 LTE10 634.5 MHz + B85 NB IoT SA 737.0MHz	20 MHz - 1.2 GHz
		Mid Ch. B71 LTE10 634.5 MHz + B85 NB IoT SA 737.0MHz	1.2 GHz - 8 GHz
			0.01
			-45.436
			-39
			Pass
			0.15
			-34.772
			-29
			Pass
			765.76
			-32.03
			-19
			Pass
			4021.55
			-43.21
			-19
			Pass
15 MHz Bandwidth			
QPSK Modulation			
		Mid Ch. 634.5 MHz	9 kHz - 150 kHz
		Mid Ch. 634.5 MHz	150 kHz - 20 MHz
		Mid Ch. 634.5 MHz	20 MHz - 1.2 GHz
		Mid Ch. 634.5 MHz	1.2 GHz - 8 GHz
			0.01
			-45.088
			-39
			Pass
			0.15
			-34.356
			-29
			Pass
			737.29
			-25.43
			-19
			Pass
			3999.33
			-43.15
			-19
			Pass
16-QAM Modulation			
		Mid Ch. 634.5 MHz	9 kHz - 150 kHz
		Mid Ch. 634.5 MHz	150 kHz - 20 MHz
		Mid Ch. 634.5 MHz	20 MHz - 1.2 GHz
		Mid Ch. 634.5 MHz	1.2 GHz - 8 GHz
			0.01
			-45.09
			-39
			Pass
			0.15
			-34.42
			-29
			Pass
			737.29
			-25.09
			-19
			Pass
			4012.48
			-43
			-19
			Pass
64-QAM Modulation			
		Mid Ch. 634.5 MHz	9 kHz - 150 kHz
		Mid Ch. 634.5 MHz	150 kHz - 20 MHz
		Mid Ch. 634.5 MHz	20 MHz - 1.2 GHz
		Mid Ch. 634.5 MHz	1.2 GHz - 8 GHz
			0.01
			-45.823
			-39
			Pass
			0.15
			-34.126
			-29
			Pass
			737.29
			-26
			-19
			Pass
			4017.92
			-43.05
			-19
			Pass
256-QAM Modulation			
		Mid Ch. 634.5 MHz	9 kHz - 150 kHz
		Mid Ch. 634.5 MHz	150 kHz - 20 MHz
		Mid Ch. 634.5 MHz	20 MHz - 1.2 GHz
		Mid Ch. 634.5 MHz	1.2 GHz - 8 GHz
			0.01
			-45.258
			-39
			Pass
			0.16
			-34.671
			-29
			Pass
			737.29
			-25.38
			-19
			Pass
			4010.21
			-43.12
			-19
			Pass
20 MHz Bandwidth			
256-QAM Modulation			
		Mid Ch. 634.5 MHz	9 kHz - 150 kHz
		Mid Ch. 634.5 MHz	150 kHz - 20 MHz
		Mid Ch. 634.5 MHz	20 MHz - 1.2 GHz
		Mid Ch. 634.5 MHz	1.2 GHz - 8 GHz
			0.01
			-45.711
			-39
			Pass
			0.15
			-35.676
			-29
			Pass
			737.25
			-25.99
			-19
			Pass
			4028.35
			-43.02
			-19
			Pass

SPURIOUS CONDUCTED EMISSIONS - Band 71 LTE

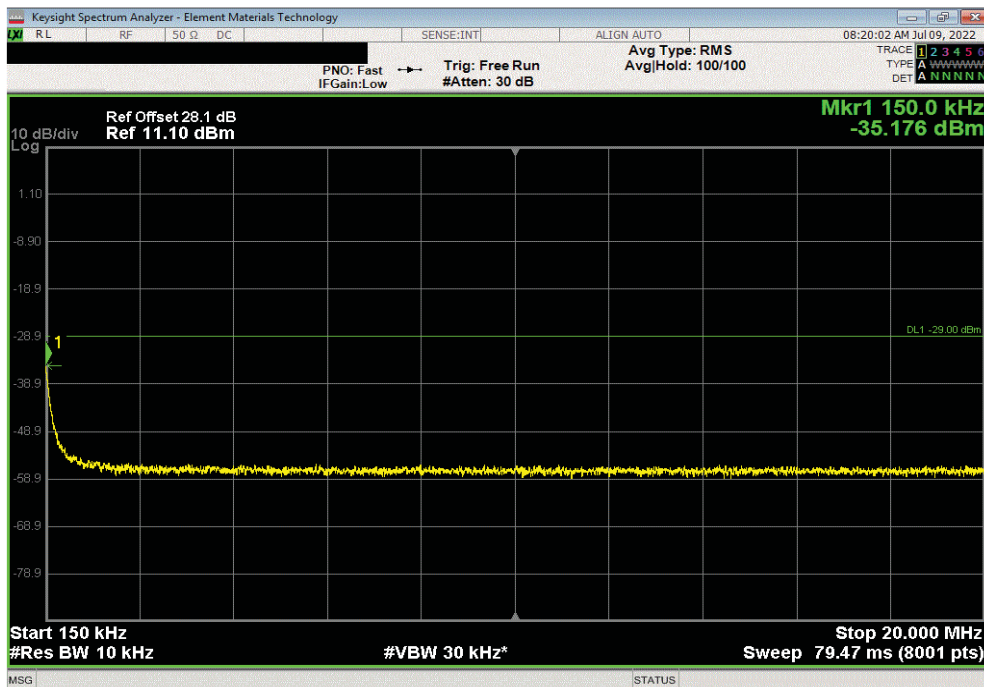


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, Band n71, 617 MHz - 652 MHz, 5 MHz Bandwidth, 256-QAM Modulation, Mid Ch. B71 LTE5 634.5MHz + B85 LTE5 737.0MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
9 kHz - 150 kHz	0.01	-45.551	-39	Pass	



Port 2, LTE, Band n71, 617 MHz - 652 MHz, 5 MHz Bandwidth, 256-QAM Modulation, Mid Ch. B71 LTE5 634.5MHz + B85 LTE5 737.0MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
150 kHz - 20 MHz	0.15	-35.176	-29	Pass	

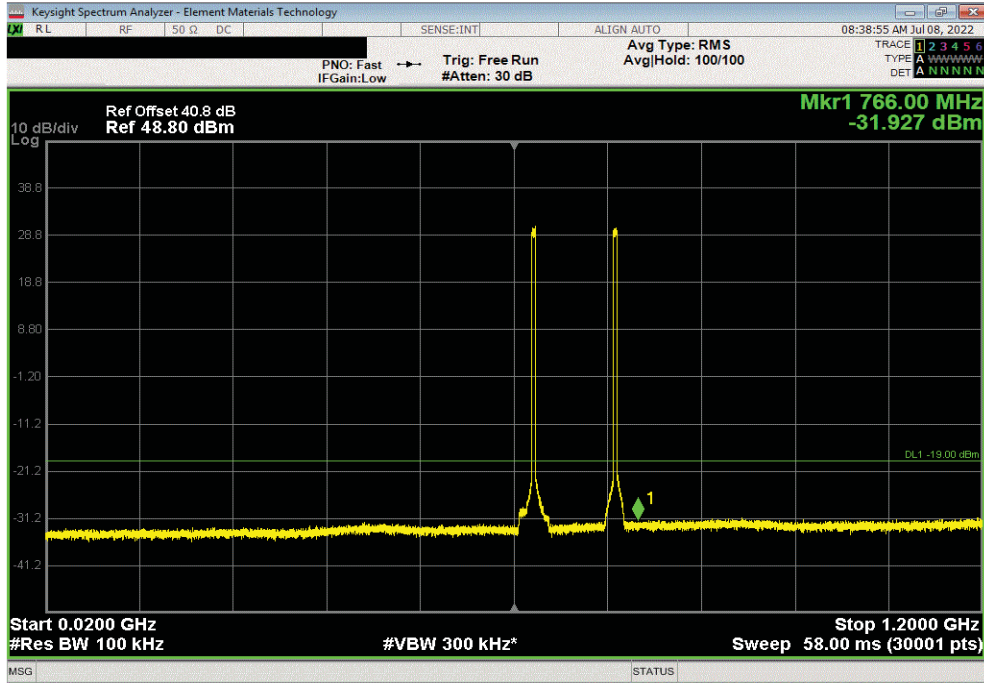


SPURIOUS CONDUCTED EMISSIONS - Band 71 LTE

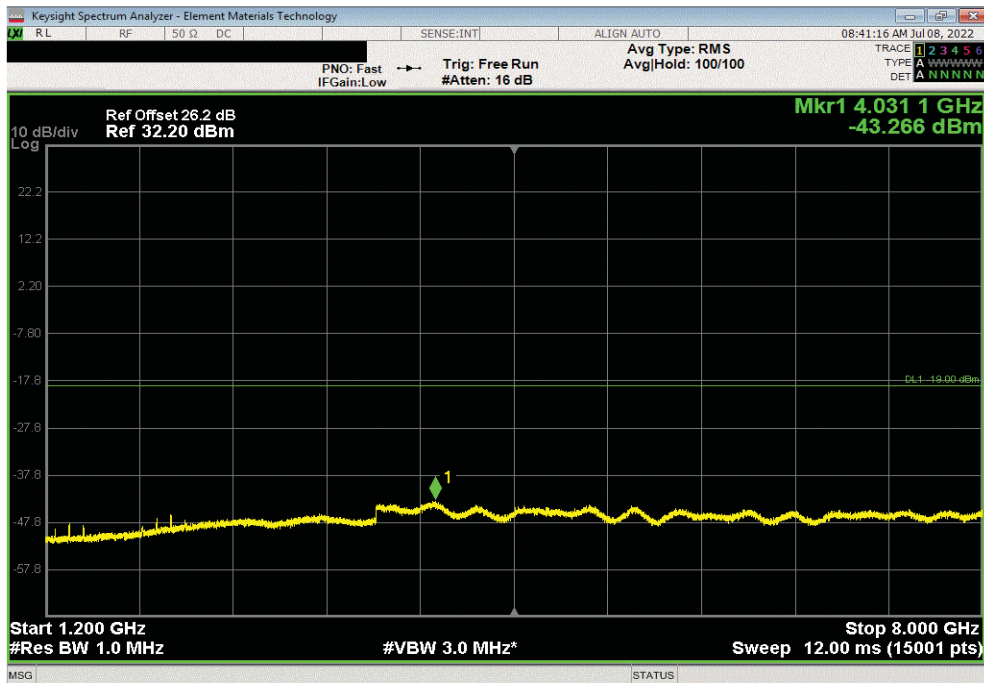


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, Band n71, 617 MHz - 652 MHz, 5 MHz Bandwidth, 256-QAM Modulation, Mid Ch. B71 LTE5 634.5MHz + B85 LTE5 737.0MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
20 MHz - 1.2 GHz	766	-31.93	-19	Pass	



Port 2, LTE, Band n71, 617 MHz - 652 MHz, 5 MHz Bandwidth, 256-QAM Modulation, Mid Ch. B71 LTE5 634.5MHz + B85 LTE5 737.0MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
1.2 GHz - 8 GHz	4031.07	-43.27	-19	Pass	

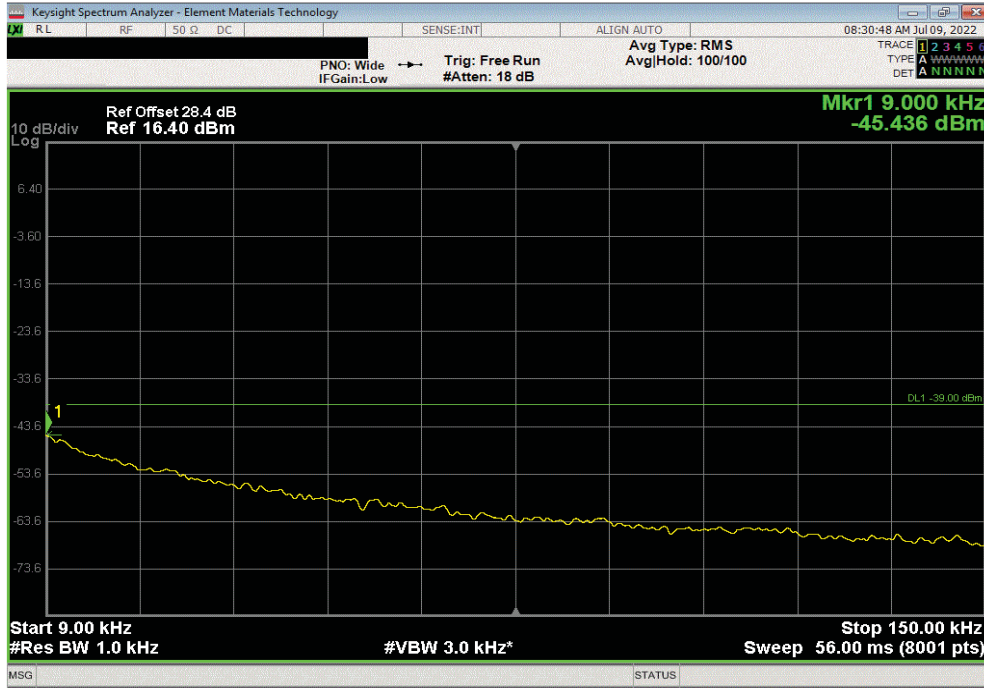


SPURIOUS CONDUCTED EMISSIONS - Band 71 LTE

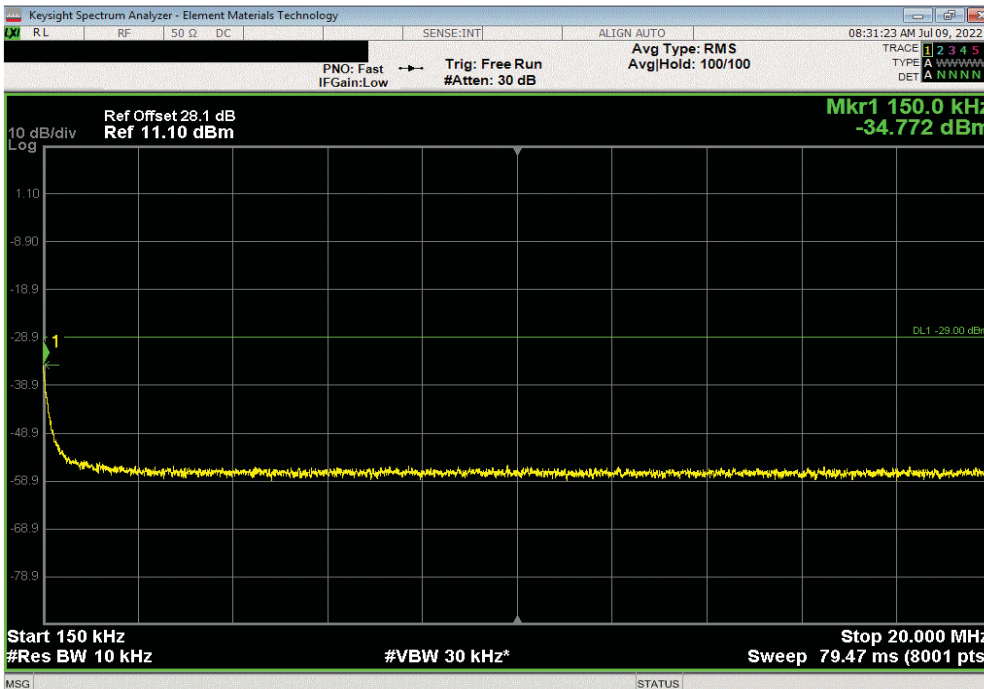


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, Band n71, 617 MHz - 652 MHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Ch. B71 LTE10 634.5 MHz + B85 NB IoT SA 737.0MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
9 kHz - 150 kHz	0.01	-45.436	-39	Pass	



Port 2, LTE, Band n71, 617 MHz - 652 MHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Ch. B71 LTE10 634.5 MHz + B85 NB IoT SA 737.0MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
150 kHz - 20 MHz	0.15	-34.772	-29	Pass	

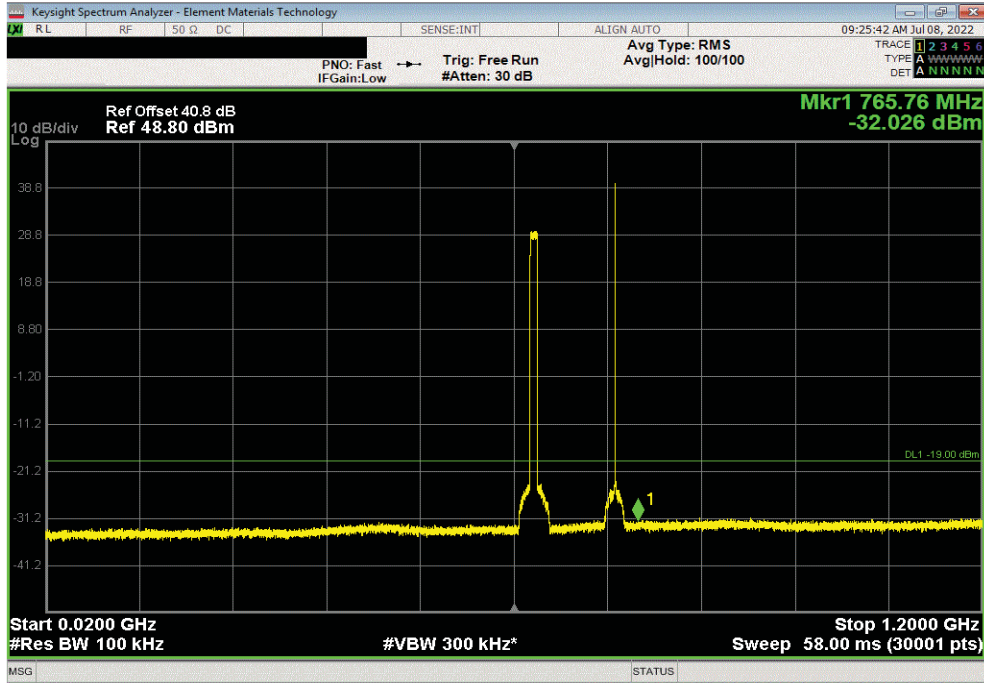


SPURIOUS CONDUCTED EMISSIONS - Band 71 LTE

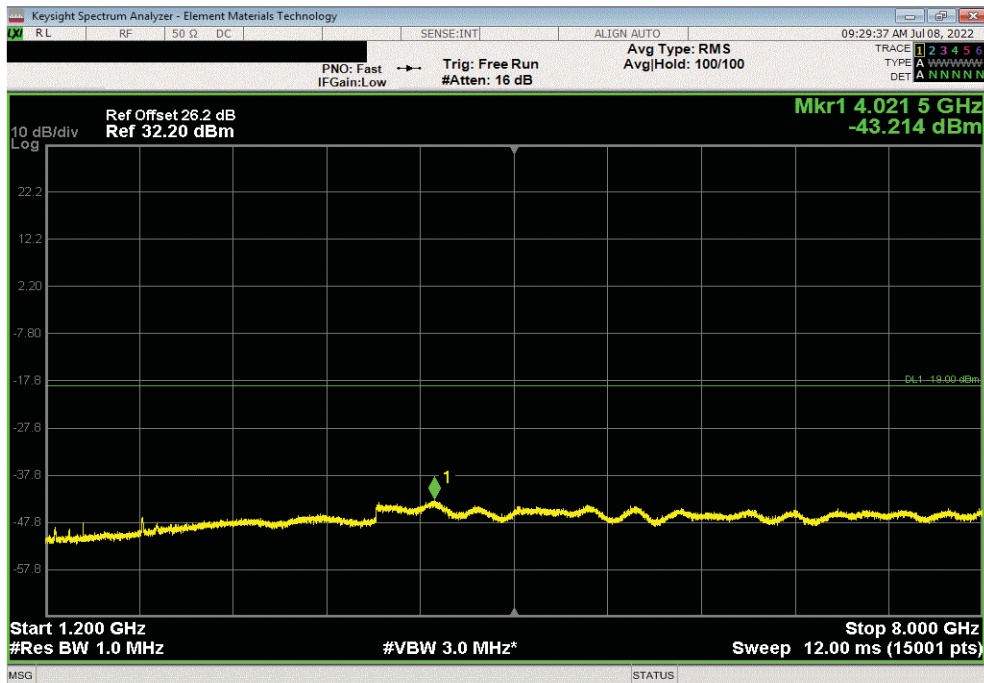


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, Band n71, 617 MHz - 652 MHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Ch. B71 LTE10 634.5 MHz + B85 NB IoT SA 737.0MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
20 MHz - 1.2 GHz	765.76	-32.03	-19	Pass	



Port 2, LTE, Band n71, 617 MHz - 652 MHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Ch. B71 LTE10 634.5 MHz + B85 NB IoT SA 737.0MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
1.2 GHz - 8 GHz	4021.55	-43.21	-19	Pass	

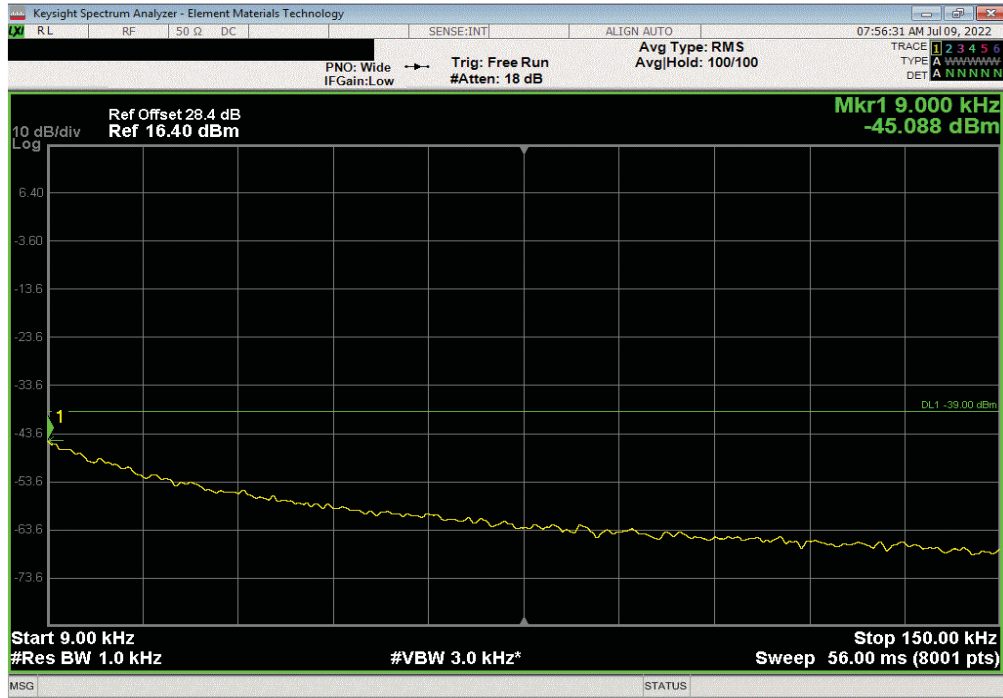


SPURIOUS CONDUCTED EMISSIONS - Band 71 LTE

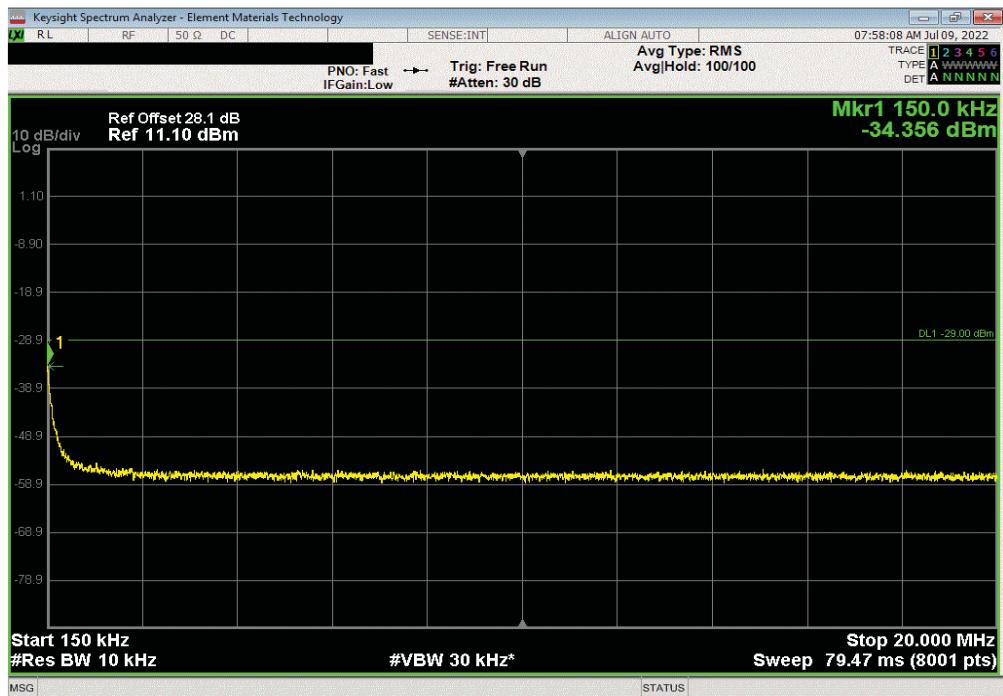


TbTx 2022.06.03.0 XMI 2022.02.07.0

Port 2, LTE, Band n71, 617 MHz - 652 MHz, 15 MHz Bandwidth, QPSK Modulation, Mid Ch. 634.5 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
9 kHz - 150 kHz	0.01	-45.088	-39	Pass	



Port 2, LTE, Band n71, 617 MHz - 652 MHz, 15 MHz Bandwidth, QPSK Modulation, Mid Ch. 634.5 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
150 kHz - 20 MHz	0.15	-34.356	-29	Pass	

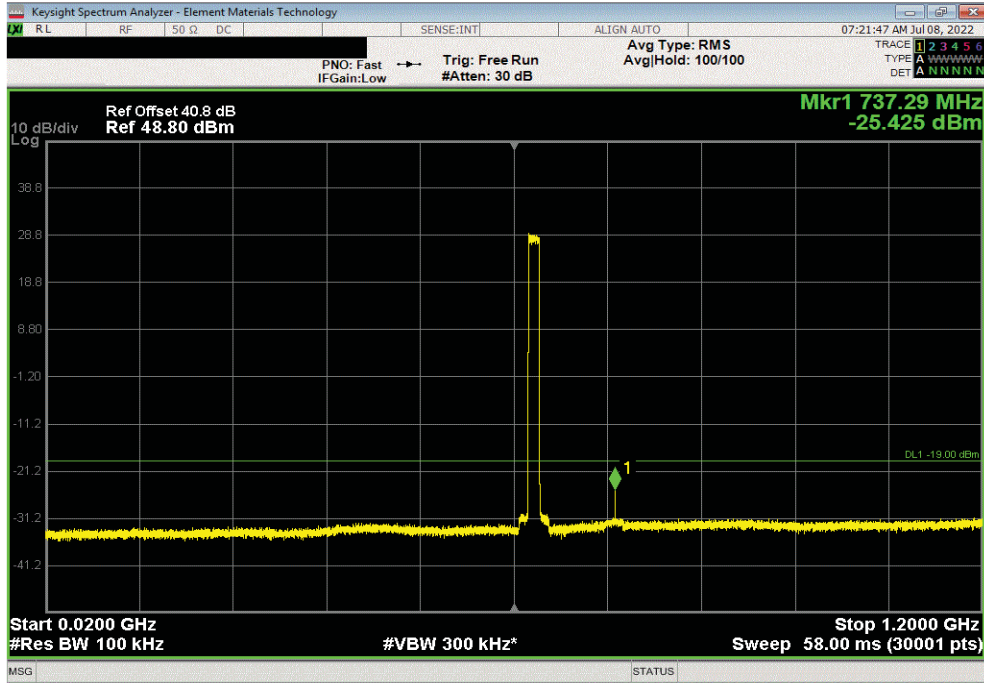


SPURIOUS CONDUCTED EMISSIONS - Band 71 LTE

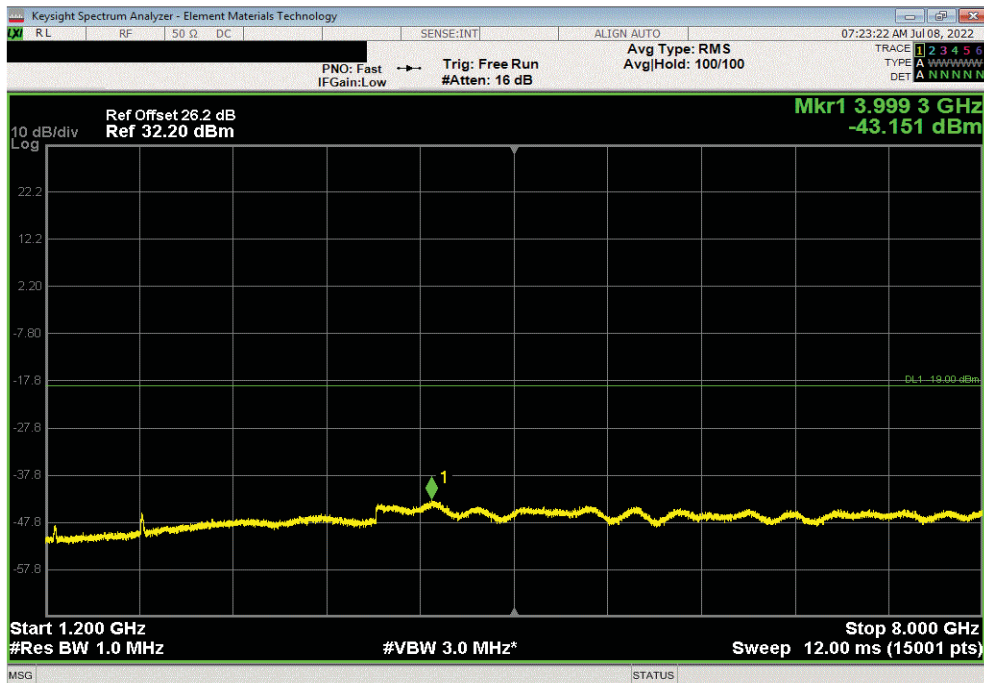


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, Band n71, 617 MHz - 652 MHz, 15 MHz Bandwidth, QPSK Modulation, Mid Ch. 634.5 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result
20 MHz - 1.2 GHz	737.29	-25.43	-19	Pass



Port 2, LTE, Band n71, 617 MHz - 652 MHz, 15 MHz Bandwidth, QPSK Modulation, Mid Ch. 634.5 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result
1.2 GHz - 8 GHz	3999.33	-43.15	-19	Pass

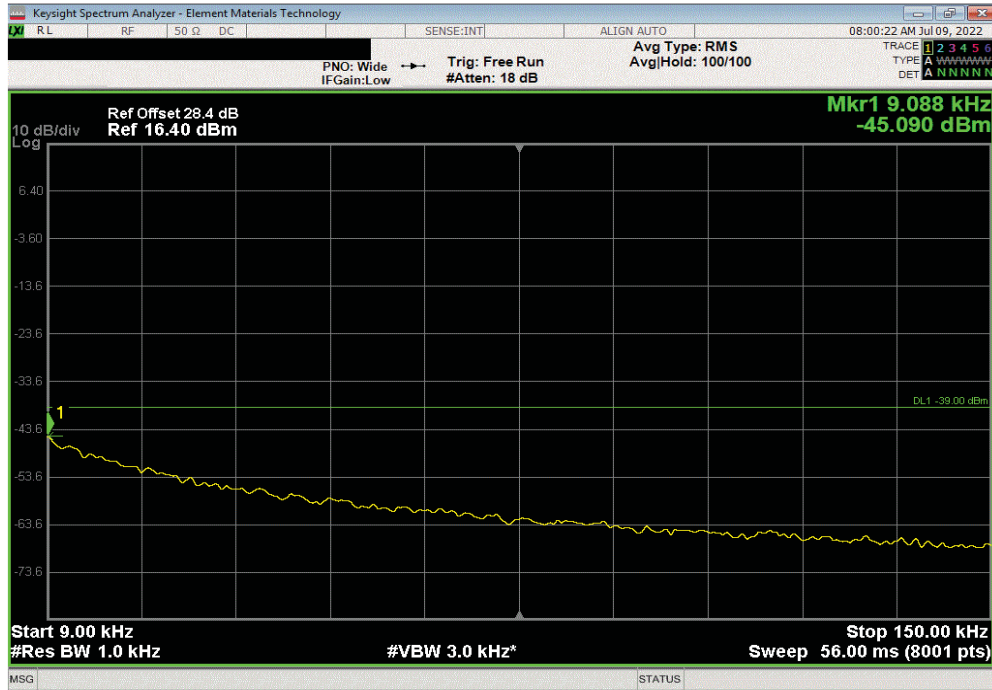


SPURIOUS CONDUCTED EMISSIONS - Band 71 LTE

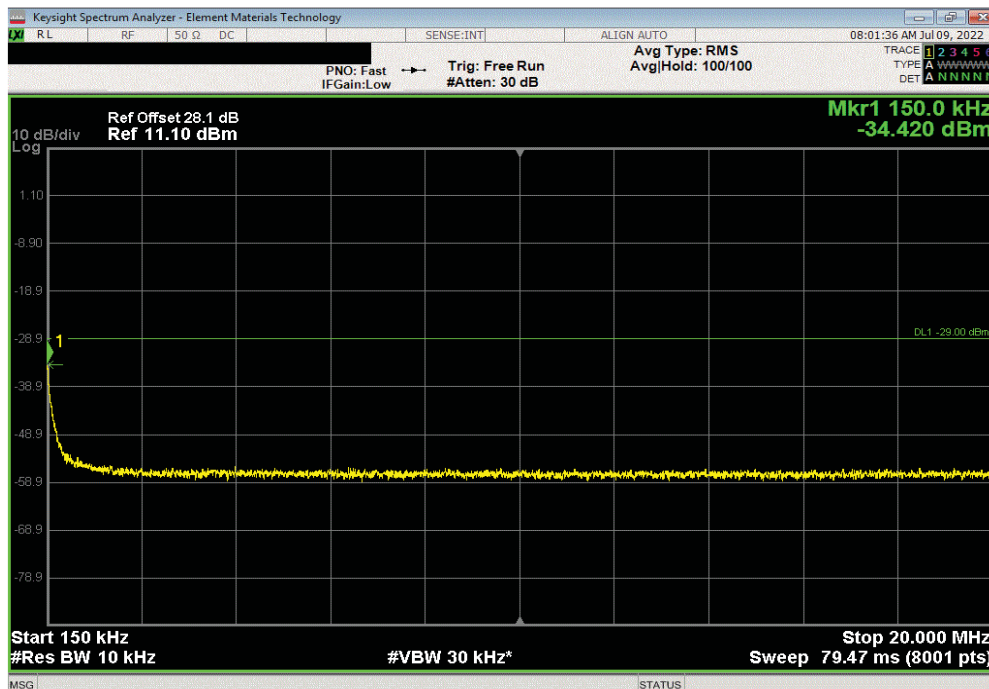


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, Band n71, 617 MHz - 652 MHz, 15 MHz Bandwidth, 16-QAM Modulation, Mid Ch. 634.5 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
9 kHz - 150 kHz	0.01	-45.09	-39	Pass	



Port 2, LTE, Band n71, 617 MHz - 652 MHz, 15 MHz Bandwidth, 16-QAM Modulation, Mid Ch. 634.5 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
150 kHz - 20 MHz	0.15	-34.42	-29	Pass	

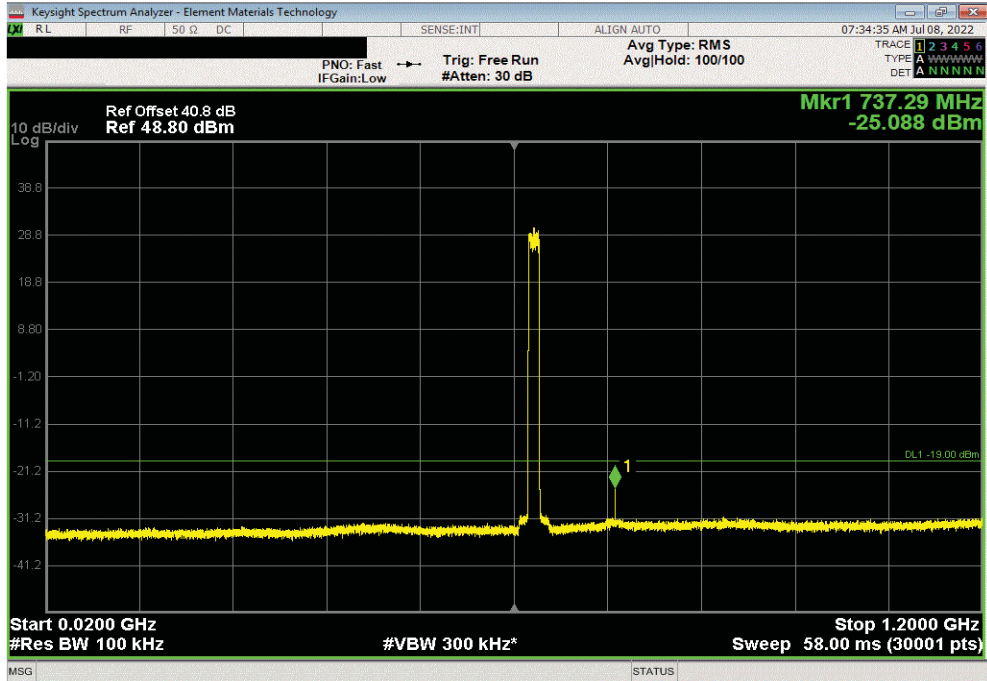


SPURIOUS CONDUCTED EMISSIONS - Band 71 LTE

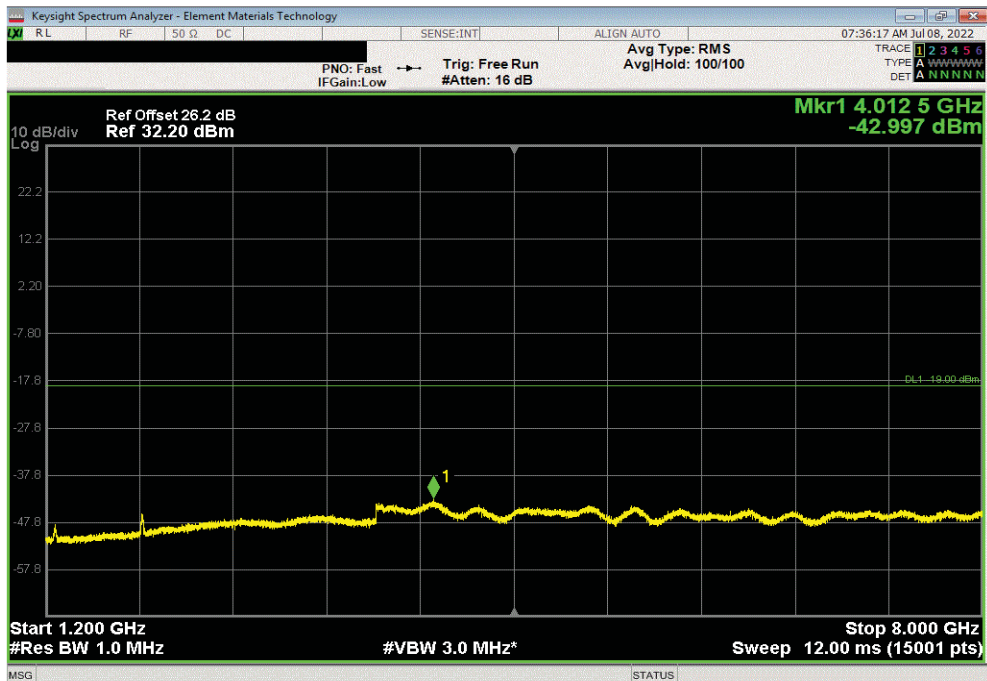


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, Band n71, 617 MHz - 652 MHz, 15 MHz Bandwidth, 16-QAM Modulation, Mid Ch. 634.5 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result
20 MHz - 1.2 GHz	737.29	-25.09	-19	Pass



Port 2, LTE, Band n71, 617 MHz - 652 MHz, 15 MHz Bandwidth, 16-QAM Modulation, Mid Ch. 634.5 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result
1.2 GHz - 8 GHz	4012.48	-43	-19	Pass

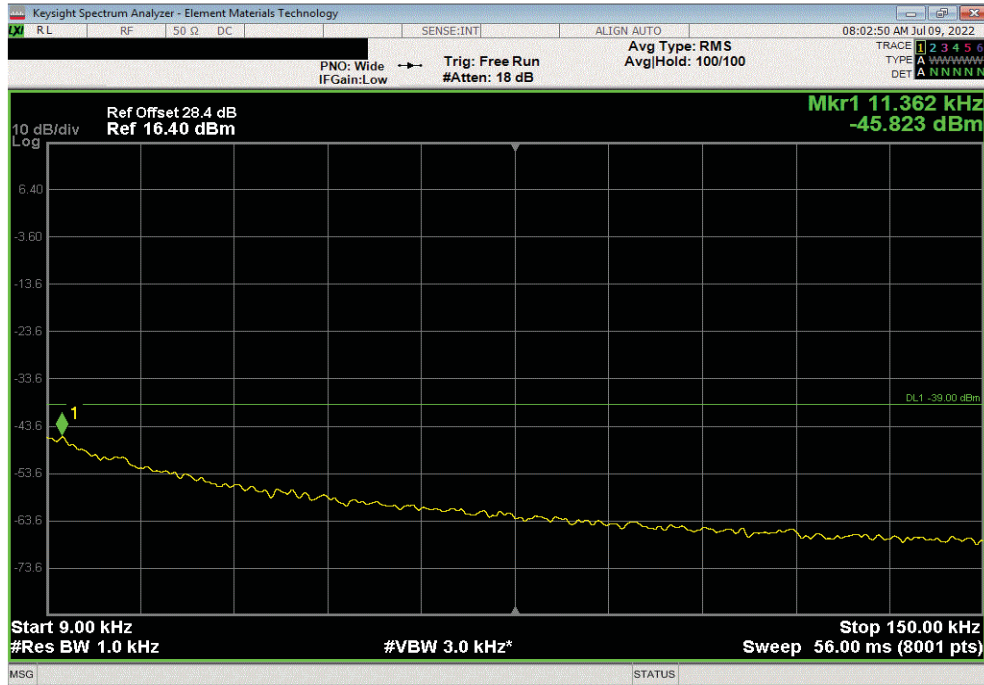


SPURIOUS CONDUCTED EMISSIONS - Band 71 LTE

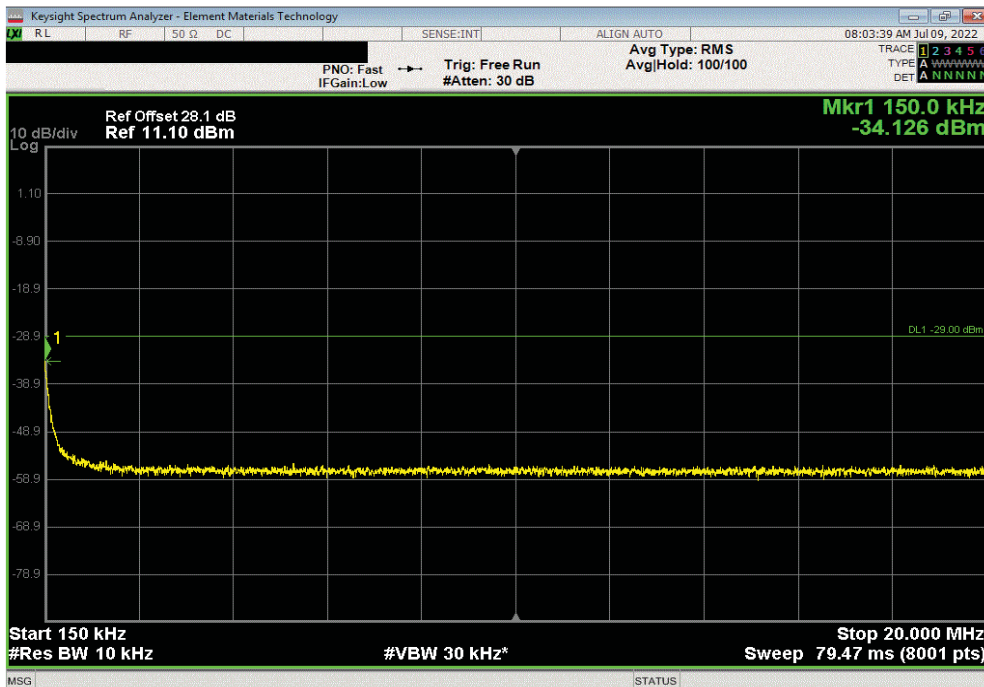


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, Band n71, 617 MHz - 652 MHz, 15 MHz Bandwidth, 64-QAM Modulation, Mid Ch. 634.5 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
9 kHz - 150 kHz	0.01	-45.823	-39	Pass	



Port 2, LTE, Band n71, 617 MHz - 652 MHz, 15 MHz Bandwidth, 64-QAM Modulation, Mid Ch. 634.5 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
150 kHz - 20 MHz	0.15	-34.126	-29	Pass	

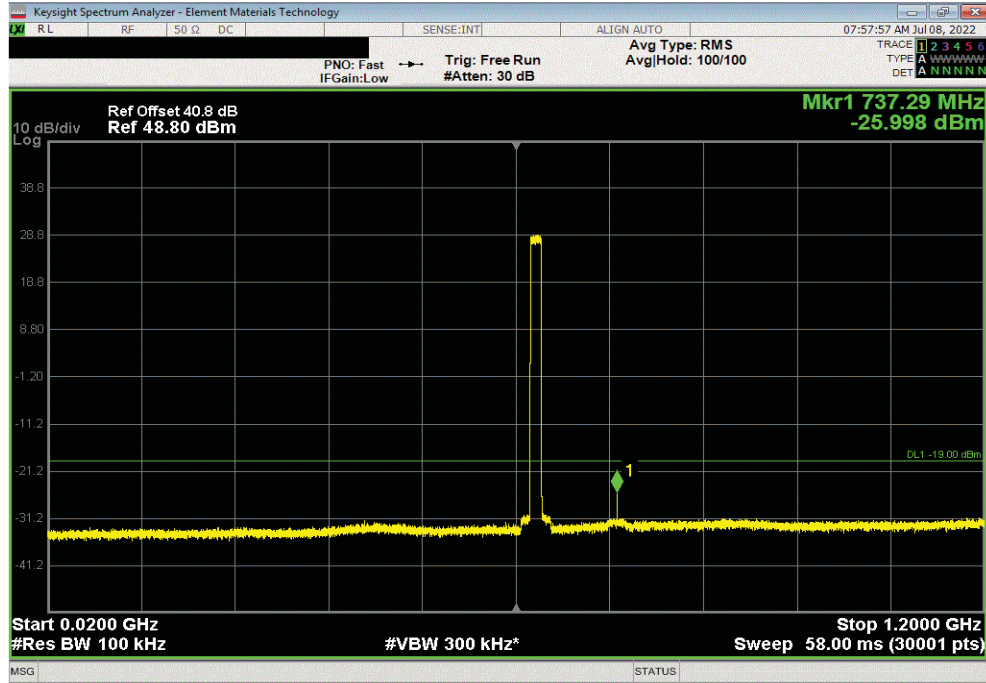


SPURIOUS CONDUCTED EMISSIONS - Band 71 LTE

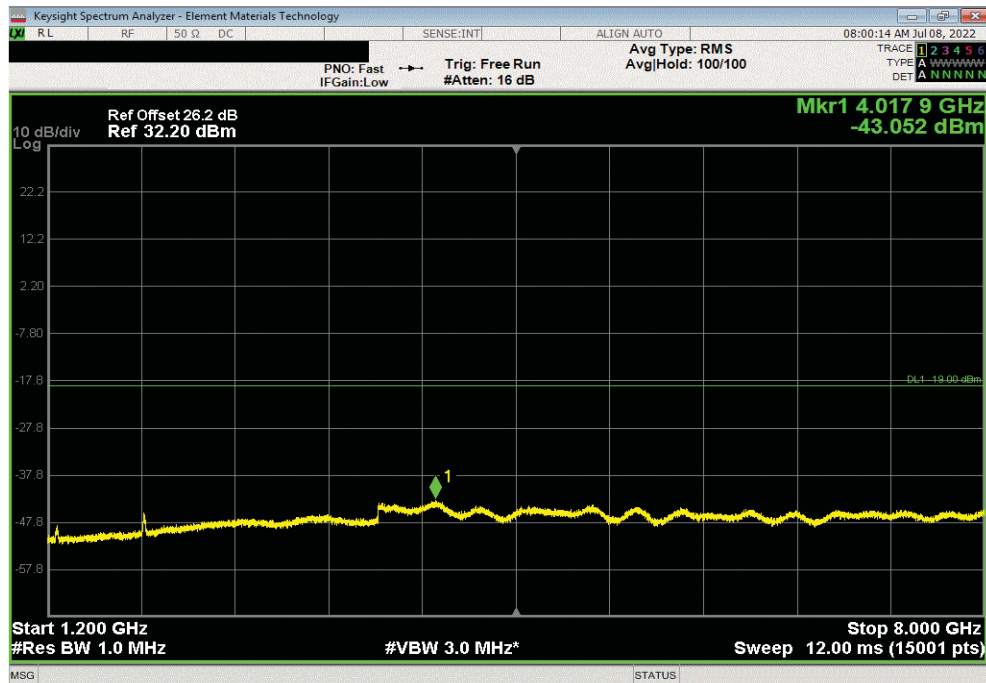


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, Band n71, 617 MHz - 652 MHz, 15 MHz Bandwidth, 64-QAM Modulation, Mid Ch. 634.5 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result
20 MHz - 1.2 GHz	737.29	-26	-19	Pass



Port 2, LTE, Band n71, 617 MHz - 652 MHz, 15 MHz Bandwidth, 64-QAM Modulation, Mid Ch. 634.5 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result
1.2 GHz - 8 GHz	4017.92	-43.05	-19	Pass

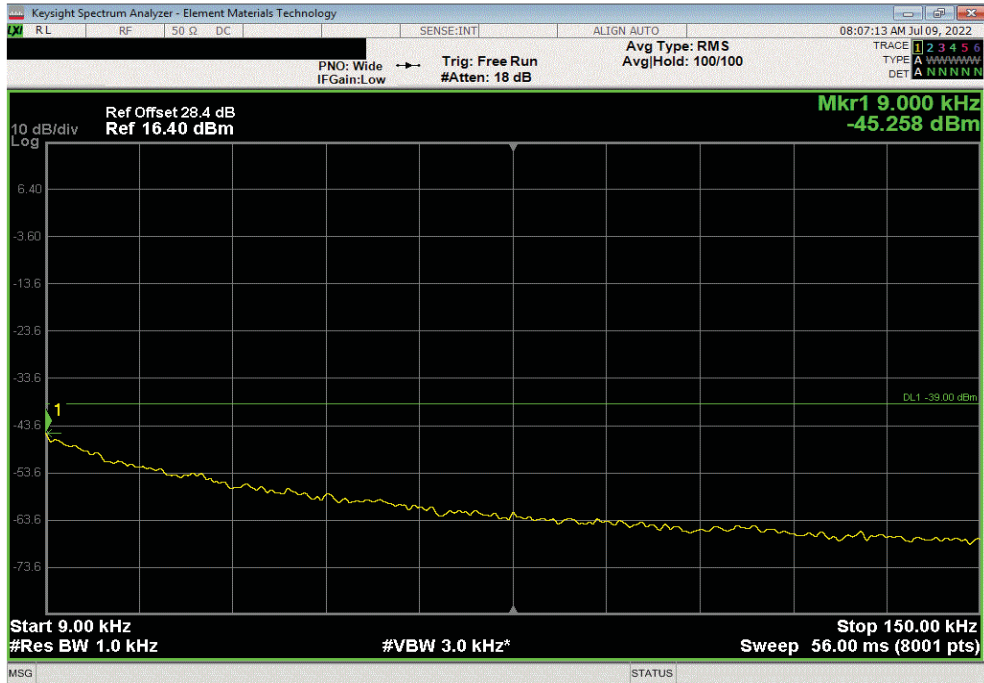


SPURIOUS CONDUCTED EMISSIONS - Band 71 LTE

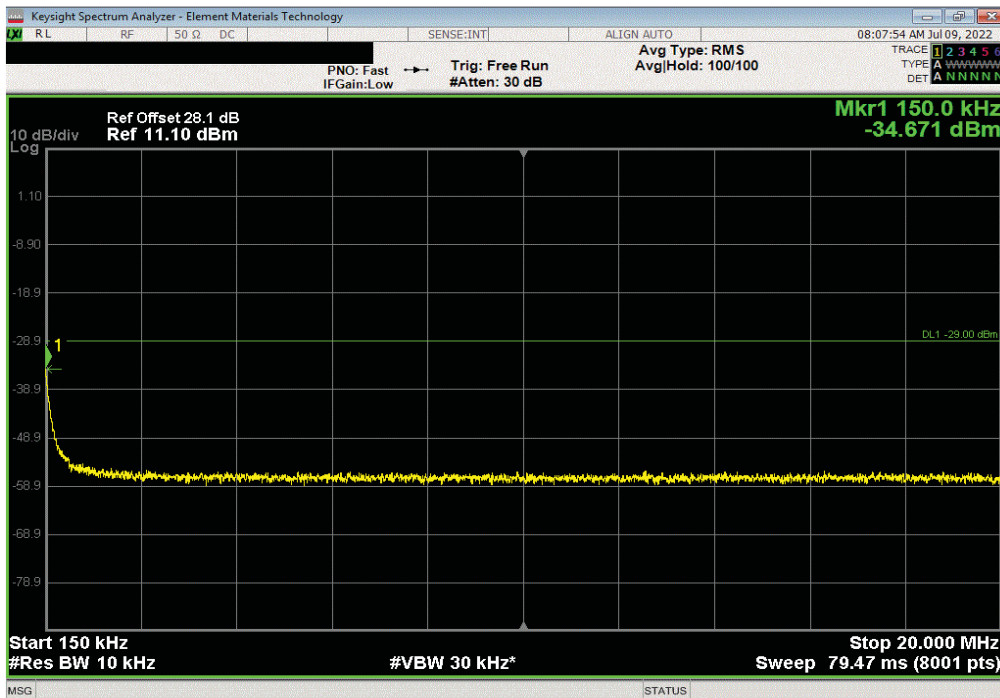


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, Band n71, 617 MHz - 652 MHz, 15 MHz Bandwidth, 256-QAM Modulation, Mid Ch. 634.5 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
9 kHz - 150 kHz	0.01	-45.258	-39	Pass	



Port 2, LTE, Band n71, 617 MHz - 652 MHz, 15 MHz Bandwidth, 256-QAM Modulation, Mid Ch. 634.5 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
150 kHz - 20 MHz	0.16	-34.671	-29	Pass	

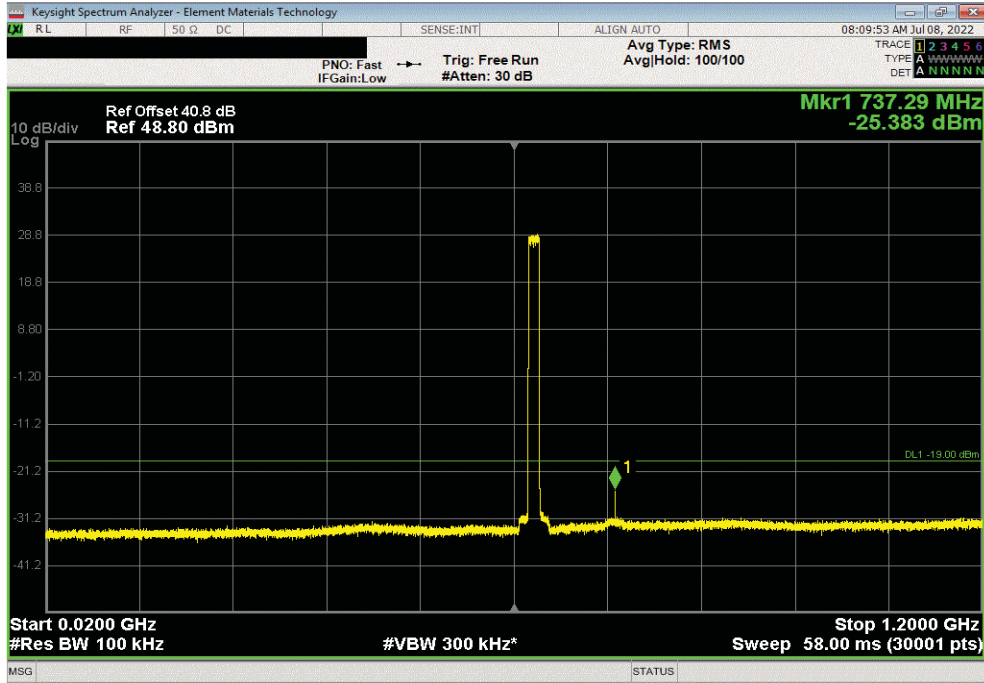


SPURIOUS CONDUCTED EMISSIONS - Band 71 LTE

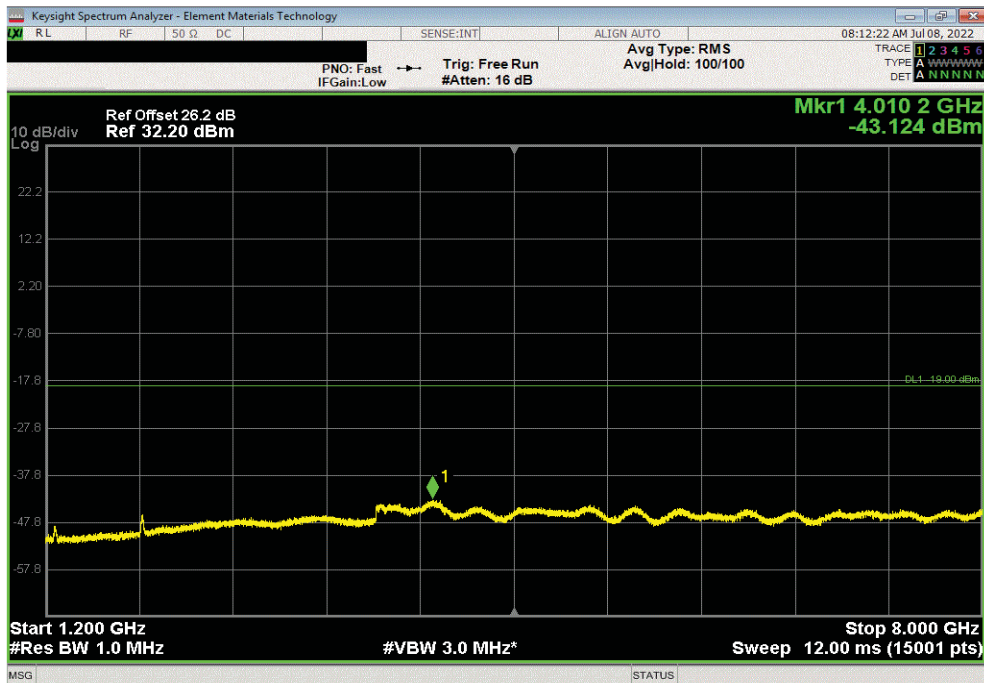


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, Band n71, 617 MHz - 652 MHz, 15 MHz Bandwidth, 256-QAM Modulation, Mid Ch. 634.5 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
20 MHz - 1.2 GHz	737.29	-25.38	-19	Pass	



Port 2, LTE, Band n71, 617 MHz - 652 MHz, 15 MHz Bandwidth, 256-QAM Modulation, Mid Ch. 634.5 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
1.2 GHz - 8 GHz	4010.21	-43.12	-19	Pass	

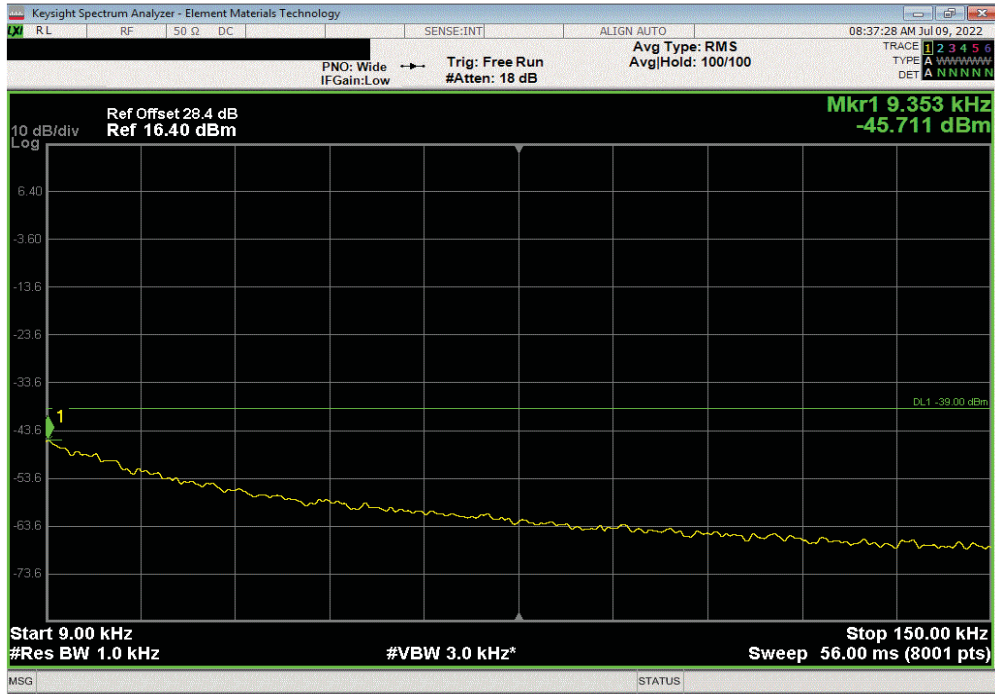


SPURIOUS CONDUCTED EMISSIONS - Band 71 LTE

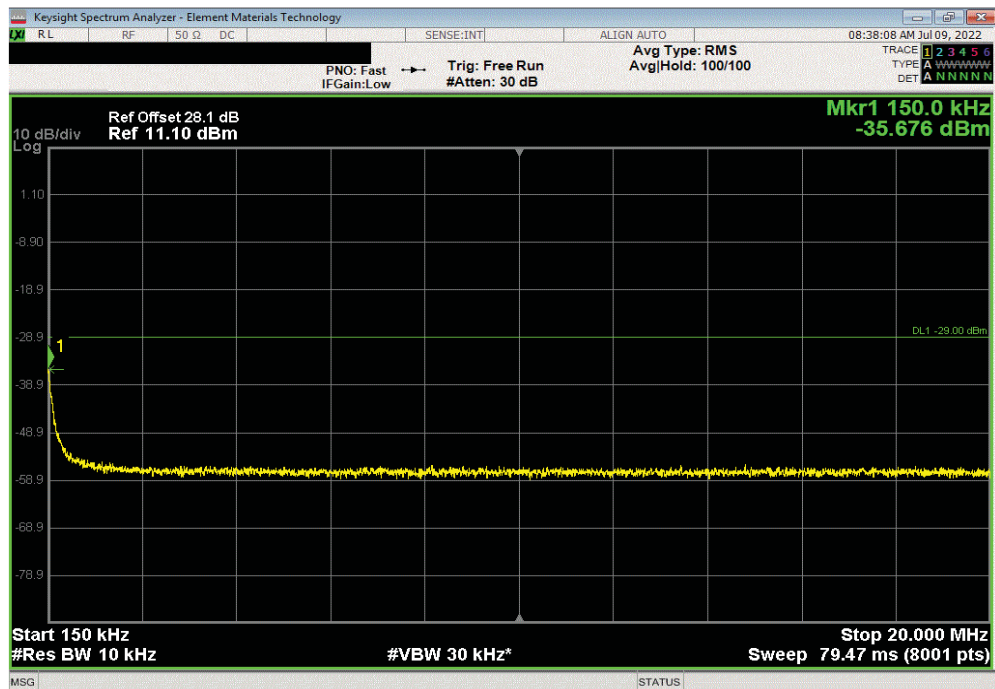


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, Band n71, 617 MHz - 652 MHz, 20 MHz Bandwidth, 256-QAM Modulation, Mid Ch. 634.5 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
9 kHz - 150 kHz	0.01	-45.711	-39	Pass	



Port 2, LTE, Band n71, 617 MHz - 652 MHz, 20 MHz Bandwidth, 256-QAM Modulation, Mid Ch. 634.5 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
150 kHz - 20 MHz	0.15	-35.676	-29	Pass	

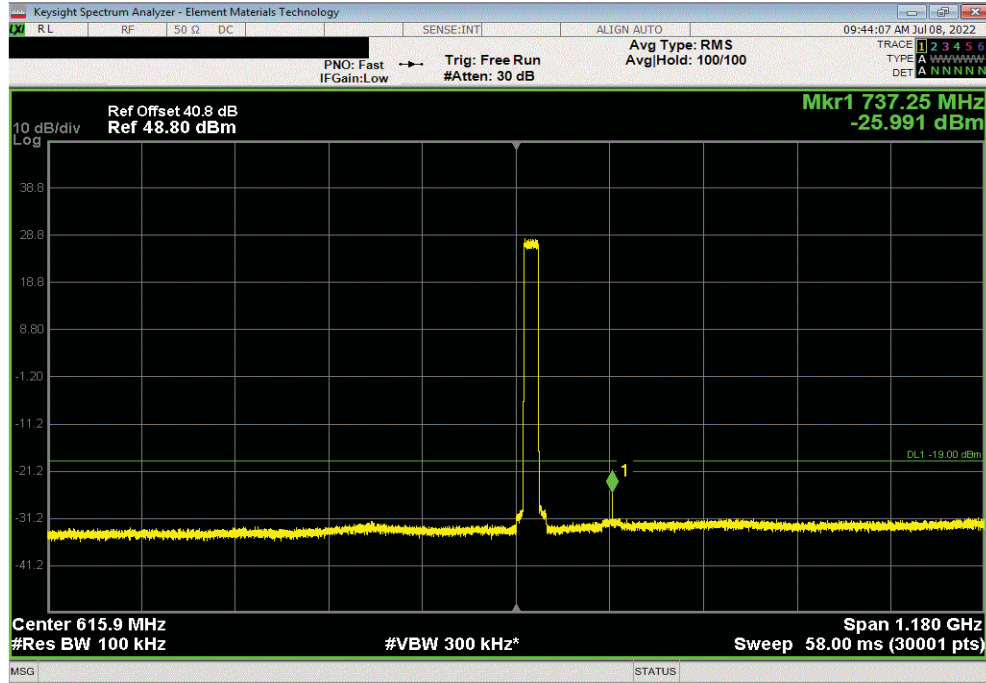


SPURIOUS CONDUCTED EMISSIONS - Band 71 LTE

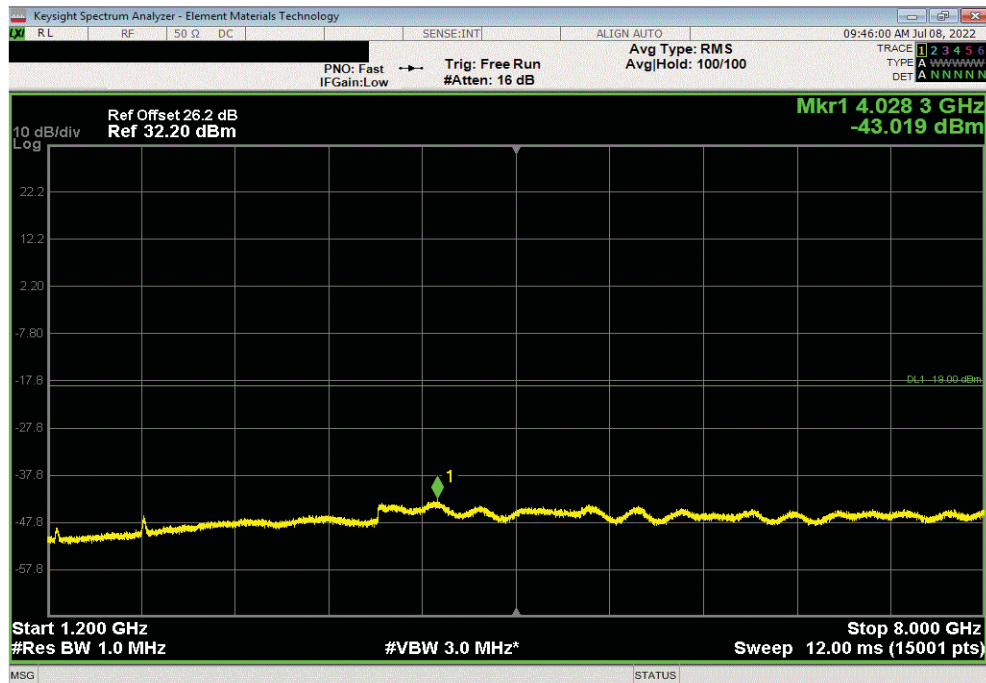


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, Band n71, 617 MHz - 652 MHz, 20 MHz Bandwidth, 256-QAM Modulation, Mid Ch. 634.5 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result
20 MHz - 1.2 GHz	737.25	-25.99	-19	Pass



Port 2, LTE, Band n71, 617 MHz - 652 MHz, 20 MHz Bandwidth, 256-QAM Modulation, Mid Ch. 634.5 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result
1.2 GHz - 8 GHz	4028.35	-43.02	-19	Pass



SPURIOUS CONDUCTED EMISSIONS - Band 85 LTE



XMH 2022.02.07.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Block - DC	Fairview Microwave	SD3239	ANE	2022-03-02	2023-03-02
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFQ	2022-01-17	2023-01-17

TEST DESCRIPTION

The antenna port spurious emissions were measured at the RF output terminal of the EUT through 3 different attenuation configurations which continues through to the RF input of the spectrum analyzer. Analyzer plots utilizing a resolution bandwidth called out by the client's test plan were made for each modulation type from 9 KHz to 8 GHz. The conducted power of spurious emissions, up to the 10th harmonic of the transmit frequency, were investigated to ensure they were less than the limits also called out by the client's test plan shown below.

The measurement methods are detailed in KDB 971168 D01v03 section 6 and ANSI C63.26-2015.

Per FCC 2.1057(a)(1) and RSS Gen 6.13, the upper level of measurement is the 10th harmonic of the highest fundamental frequency.

These measurements are for the frequency band after the first 100 kHz bands immediately outside and adjacent to the frequency block.

RF conducted emissions testing was performed only on one port. The AHLOB antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown in output power testing) and antenna port 2 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i, and 6.4.

Per section 27.53(g) and RSS 130 4.7, the power of any emission outside of the authorized operating frequency range cannot exceed -13 dBm. The limit is adjusted to -19 dBm [-13 dBm -10 log (4)] per FCC KDB 662911D01 v02r01 because the BTS may operate as a 4 port MIMO transmitter.

The limit for the 9kHz to 150kHz frequency range was adjusted to -39dBm to correct for a spectrum analyzer RBW of 1kHz versus required RBW of 100kHz [i.e.: -39dBm = -19dBm -10log(100kHz/1kHz)]. The limit for the 150kHz to 20MHz frequency range was adjusted to -29dBm to correct for a spectrum analyzer RBW of 10kHz versus required RBW of 100kHz [i.e.: -29dBm = -19dBm -10log(100kHz/10kHz)]. The required limit of -19dBm with a RBW of > 100kHz was used for all other frequency ranges. (See ANSI C63.26-2015 paragraph 5.7.2a for details on the Limit/RBW scaling method)

SPURIOUS CONDUCTED EMISSIONS - Band 85 LTE



TM7x 2022.06.03.0 XMI 2022.02.07.0

EUT: AHLOB	Work Order: NOKI0043
Serial Number: YK220900029	Date: 14-Jul-22
Customer: Nokia Solutions and Networks	Temperature: 20.5 °C
Attendees: Mitchell Hill, John Rattanavong	Humidity: 56.2% RH
Project: None	Barometric Pres.: 1020 mbar
Tested by: Marty Martin	Power: 54 VDC
	Job Site: TX07
TEST SPECIFICATIONS	
FCC 27:2022	Test Method: ANSI C63.26:2015
RSS-130 Issue 2:2019	ANSI C63.26:2015
COMMENTS	
The carriers were enabled at maximum power on the middle channels of the respective bands. The port power is at maximum. The following carrier configurations were tested: B85 LTE10 (60W) + B71 NB IoT SA (20W), and B85 LTE15 (80W). The B85 LTE5 (40W) carrier was tested in previous report section.	
DEVIATIONS FROM TEST STANDARD	
None	
Configuration #	1,2,3
	Signature
	Frequency Range
	Measured Freq (MHz)
	Max Value (dBm)
	Limit < (dBm)
	Result

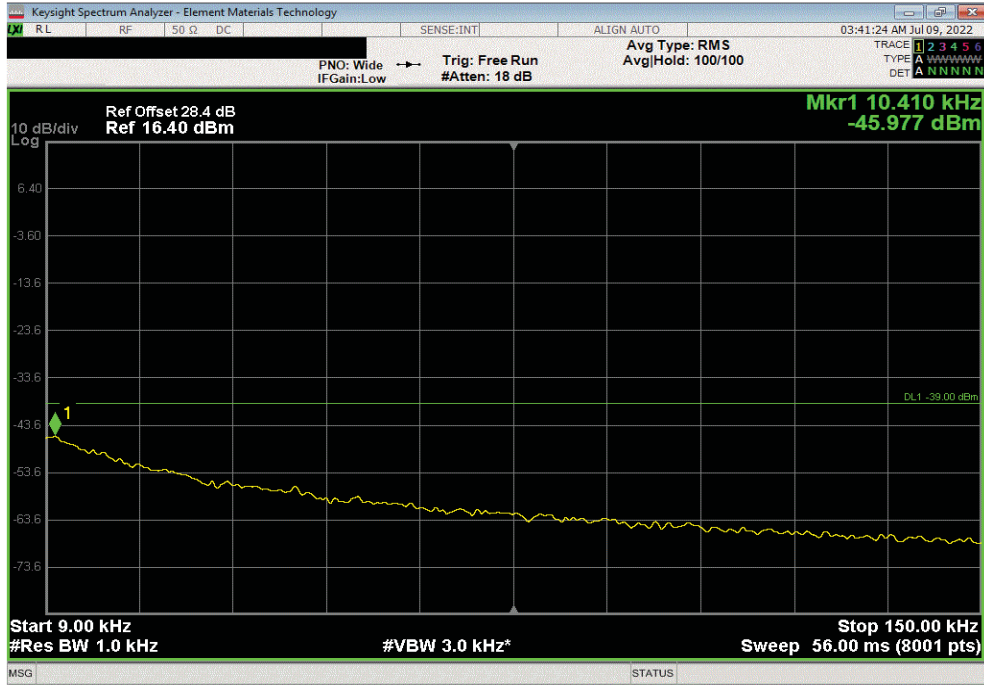
Configuration #	1,2,3	Signature	Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
Port 2, LTE, Band 85, 728 MHz - 746 MHz								
10 MHz Bandwidth								
QPSK Modulation								
			Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz	9 kHz - 150 kHz	0.01	-45.98	-39	Pass
			Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz	150 kHz - 20 MHz	0.15	-34.49	-29	Pass
			Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz	20 MHz - 1.2 GHz	765.76	-32.75	-19	Pass
			Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz	1.2 GHz - 8 GHz	3993.44	-42.83	-19	Pass
16-QAM Modulation								
			Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz	9 kHz - 150 kHz	0.01	-45.13	-39	Pass
			Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz	150 kHz - 20 MHz	0.15	-34.91	-29	Pass
			Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz	20 MHz - 1.2 GHz	766	-32.27	-19	Pass
			Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz	1.2 GHz - 8 GHz	4014.29	-42.91	-19	Pass
64-QAM Modulation								
			Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz	9 kHz - 150 kHz	0.01	-46.13	-29	Pass
			Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz	150 kHz - 20 MHz	0.15	-34.72	-29	Pass
			Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz	20 MHz - 1.2 GHz	765.88	-32.26	-19	Pass
			Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz	1.2 GHz - 8 GHz	4000.69	-43.24	-19	Pass
256-QAM Modulation								
			Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz	9 kHz - 150 kHz	0.01	-45.78	-39	Pass
			Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz	150 kHz - 20 MHz	0.15	-34.8	-29	Pass
			Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz	20 MHz - 1.2 GHz	765.69	-32.63	-19	Pass
			Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz	1.2 GHz - 8 GHz	4011.12	-43.05	-19	Pass
15 MHz Bandwidth								
QPSK Modulation								
			Mid Ch. 737 MHz	9 kHz - 150 kHz	0.01	-45.67	-39	Pass
			Mid Ch. 737 MHz	150 kHz - 20 MHz	0.15	-34.27	-29	Pass
			Mid Ch. 737 MHz	20 MHz - 1.2 GHz	765.96	-32.16	-19	Pass
			Mid Ch. 737 MHz	1.2 GHz - 8 GHz	4023.36	-43.2	-19	Pass
16-QAM Modulation								
			Mid Ch. 737 MHz	9 kHz - 150 kHz	0.01	-45.49	-39	Pass
			Mid Ch. 737 MHz	150 kHz - 20 MHz	0.15	-35.5	-29	Pass
			Mid Ch. 737 MHz	20 MHz - 1.2 GHz	766	-32.69	-19	Pass
			Mid Ch. 737 MHz	1.2 GHz - 8 GHz	3988.91	-43.14	-19	Pass
64-QAM Modulation								
			Mid Ch. 737 MHz	9 kHz - 150 kHz	0.01	-46.17	-39	Pass
			Mid Ch. 737 MHz	150 kHz - 20 MHz	0.15	-34.11	-29	Pass
			Mid Ch. 737 MHz	20 MHz - 1.2 GHz	765.72	-32.31	-19	Pass
			Mid Ch. 737 MHz	1.2 GHz - 8 GHz	4004.32	-43.15	-19	Pass
256-QAM Modulation								
			Mid Ch. 737 MHz	9 kHz - 150 kHz	0.01	-45.71	-39	Pass
			Mid Ch. 737 MHz	150 kHz - 20 MHz	0.15	-33.84	-29	Pass
			Mid Ch. 737 MHz	20 MHz - 1.2 GHz	765.92	-32.42	-19	Pass
			Mid Ch. 737 MHz	1.2 GHz - 8 GHz	4007.49	-43.02	-19	Pass

SPURIOUS CONDUCTED EMISSIONS - Band 85 LTE

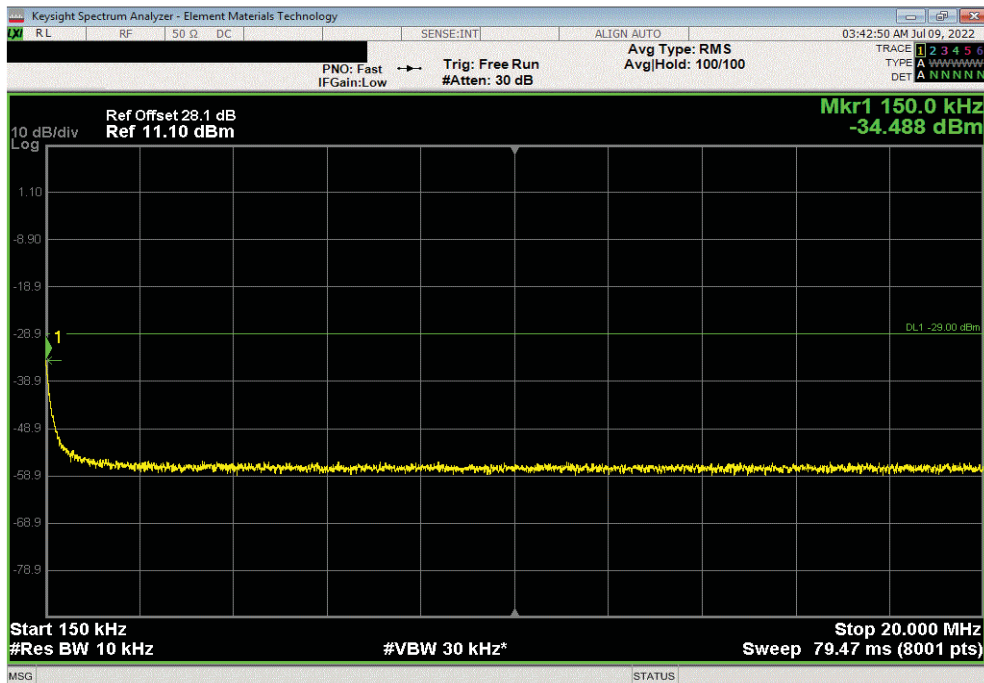


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, Band n85, 728 MHz - 746 MHz, 10 MHz Bandwidth, QPSK Modulation, Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
9 kHz - 150 kHz	0.01	-45.98	-39	Pass	



Port 2, LTE, Band n85,, 728 MHz - 746 MHz, 10 MHz Bandwidth, QPSK Modulation, Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
150 kHz - 20 MHz	0.15	-34.49	-29	Pass	

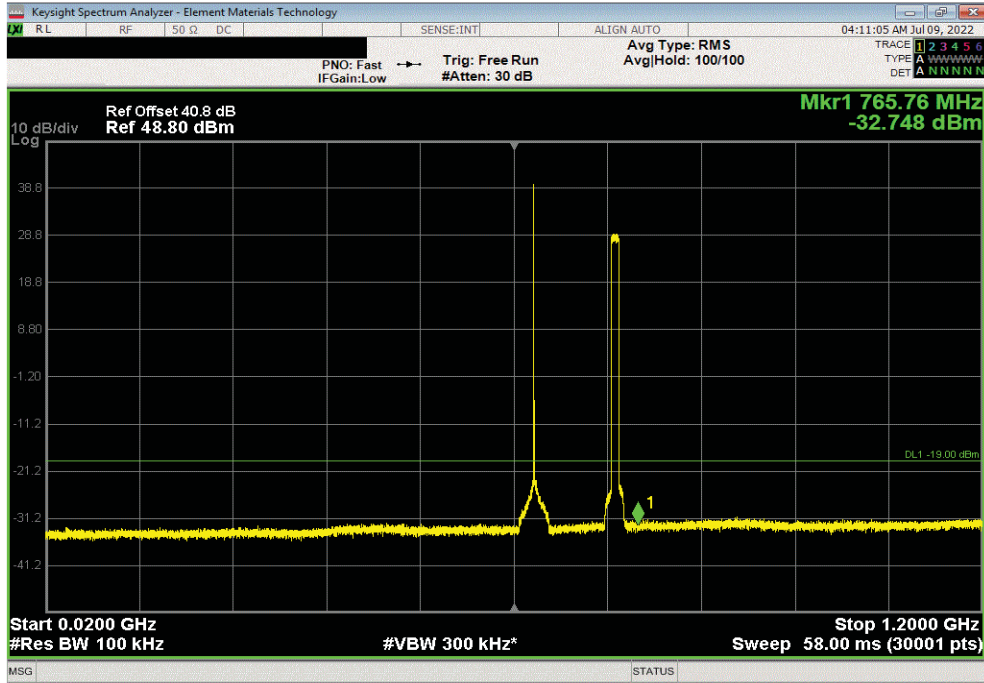


SPURIOUS CONDUCTED EMISSIONS - Band 85 LTE

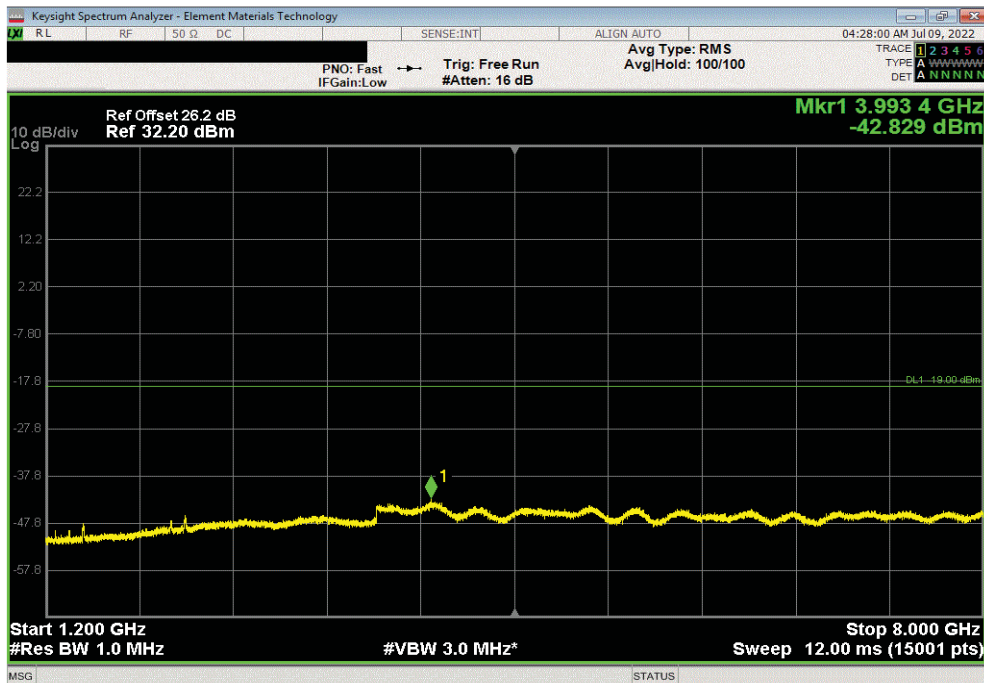


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, Band n85, 728 MHz - 746 MHz, 10 MHz Bandwidth, QPSK Modulation, Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
20 MHz - 1.2 GHz	765.76	-32.75	-19	Pass



Port 2, LTE, Band n85, 728 MHz - 746 MHz, 10 MHz Bandwidth, QPSK Modulation, Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
1.2 GHz - 8 GHz	3993.44	-42.83	-19	Pass

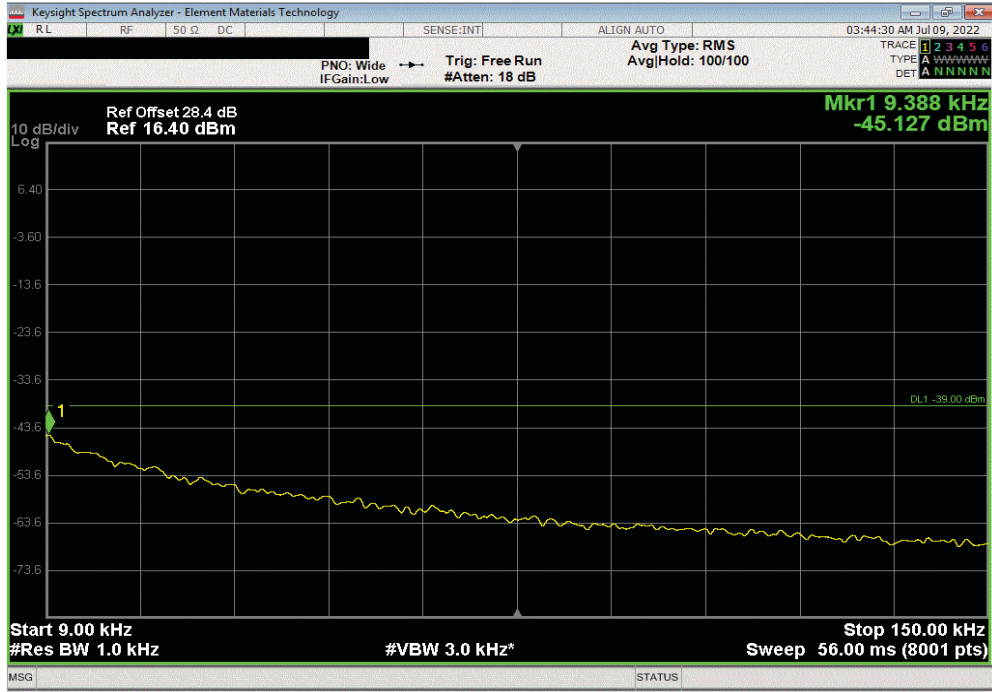


SPURIOUS CONDUCTED EMISSIONS - Band 85 LTE

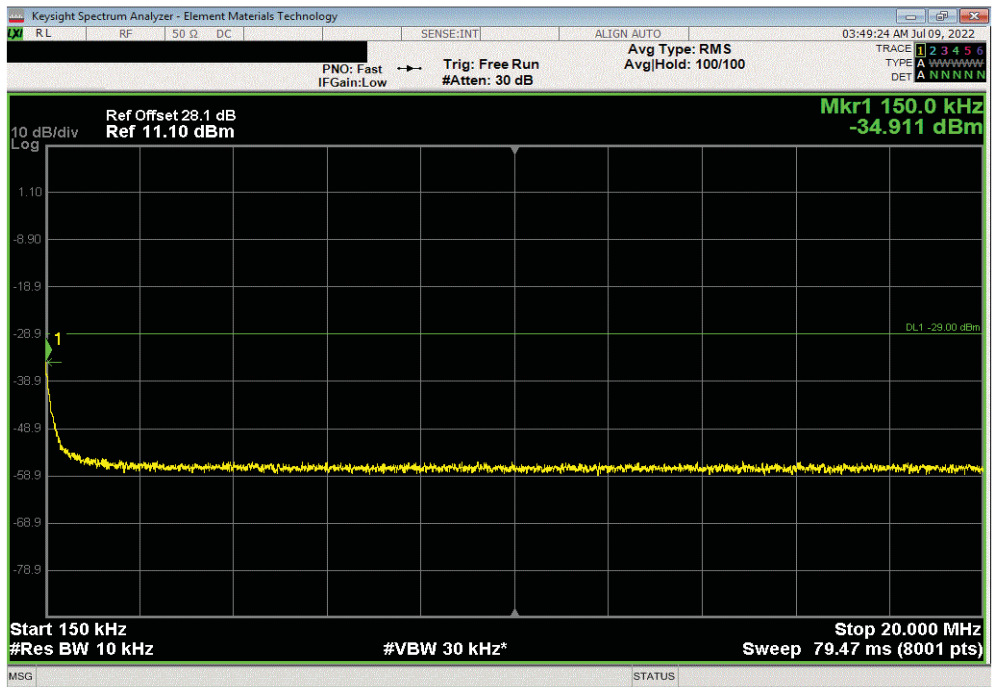


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, Band n85, 728 MHz - 746 MHz, 10 MHz Bandwidth, 16-QAM Modulation, Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
9 kHz - 150 kHz	0.01	-45.13	-39	Pass	



Port 2, LTE, Band n85, 728 MHz - 746 MHz, 10 MHz Bandwidth, 16-QAM Modulation, Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
150 kHz - 20 MHz	0.15	-34.91	-29	Pass	

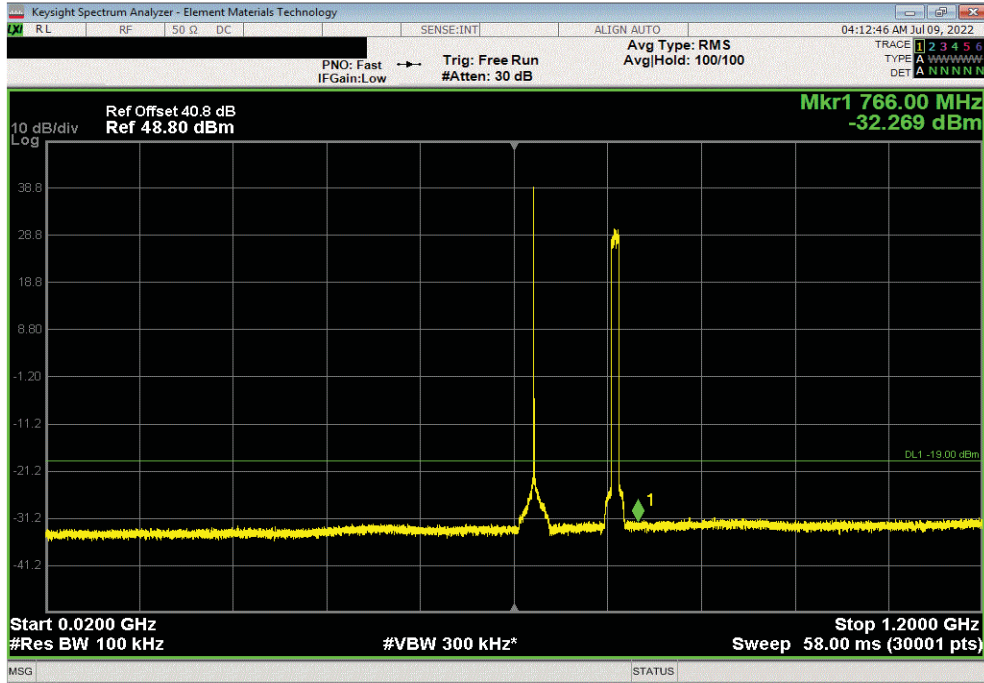


SPURIOUS CONDUCTED EMISSIONS - Band 85 LTE

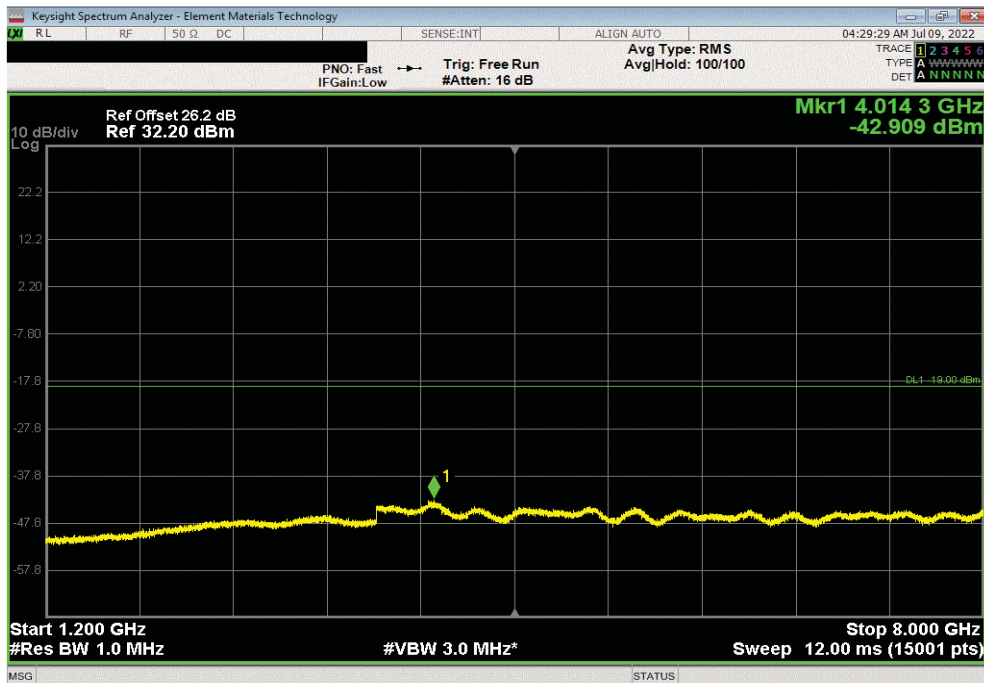


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, Band n85, 728 MHz - 746 MHz, 10 MHz Bandwidth, 16-QAM Modulation, Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
20 MHz - 1.2 GHz	766	-32.27	-19	Pass



Port 2, LTE, Band n85, 728 MHz - 746 MHz, 10 MHz Bandwidth, 16-QAM Modulation, Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
1.2 GHz - 8 GHz	4014.29	-42.91	-19	Pass

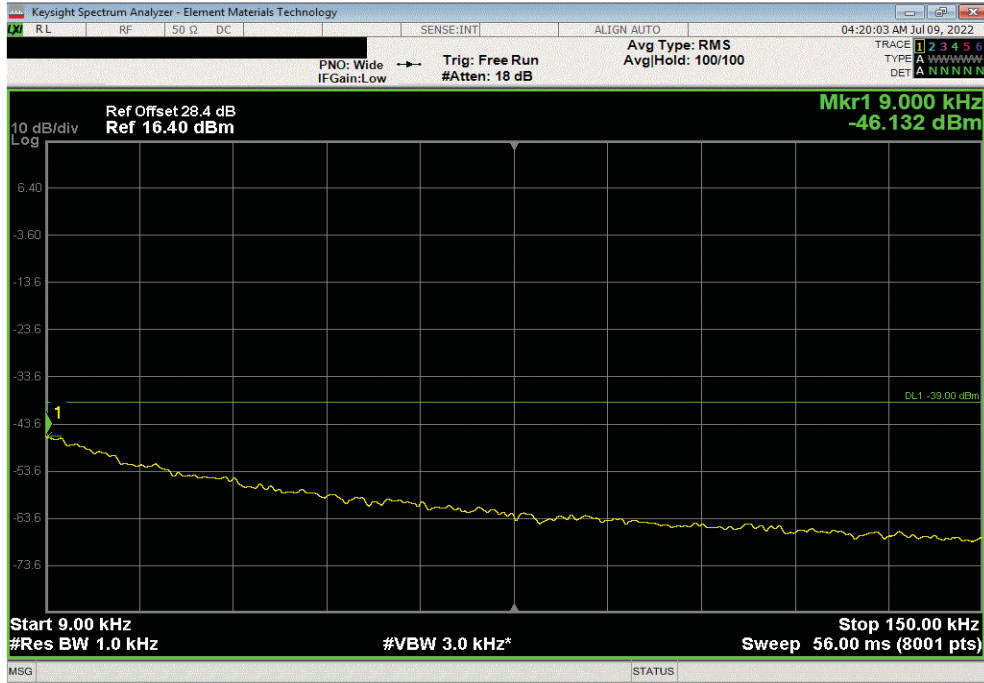


SPURIOUS CONDUCTED EMISSIONS - Band 85 LTE

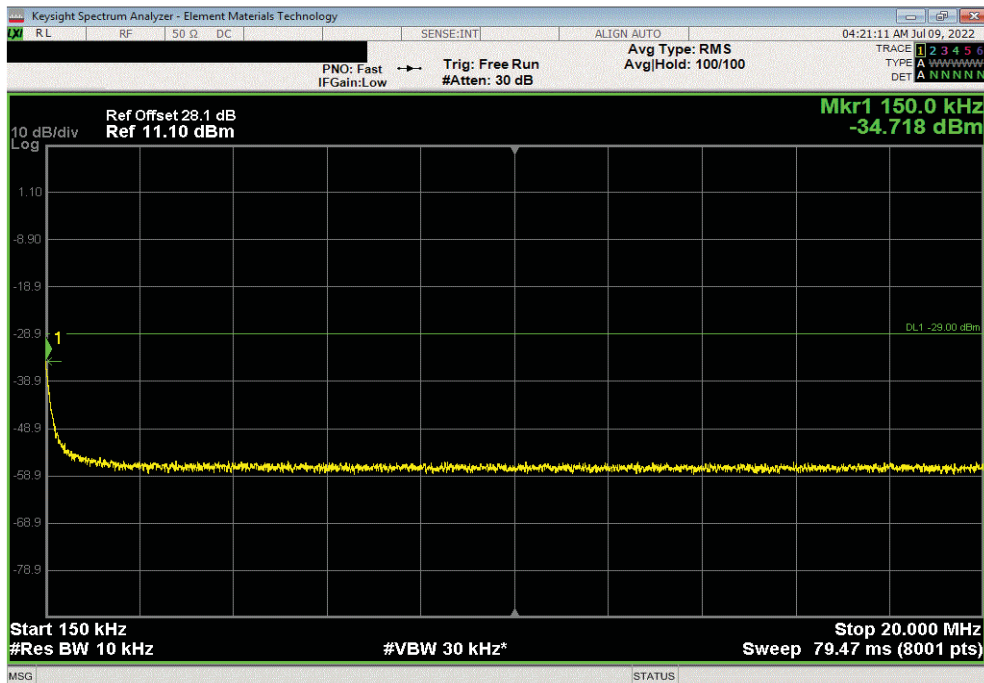


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, Band n85, 728 MHz - 746 MHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
9 kHz - 150 kHz	0.01	-46.13	-29	Pass	



Port 2, LTE, Band n85, 728 MHz - 746 MHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
150 kHz - 20 MHz	0.15	-34.72	-29	Pass	

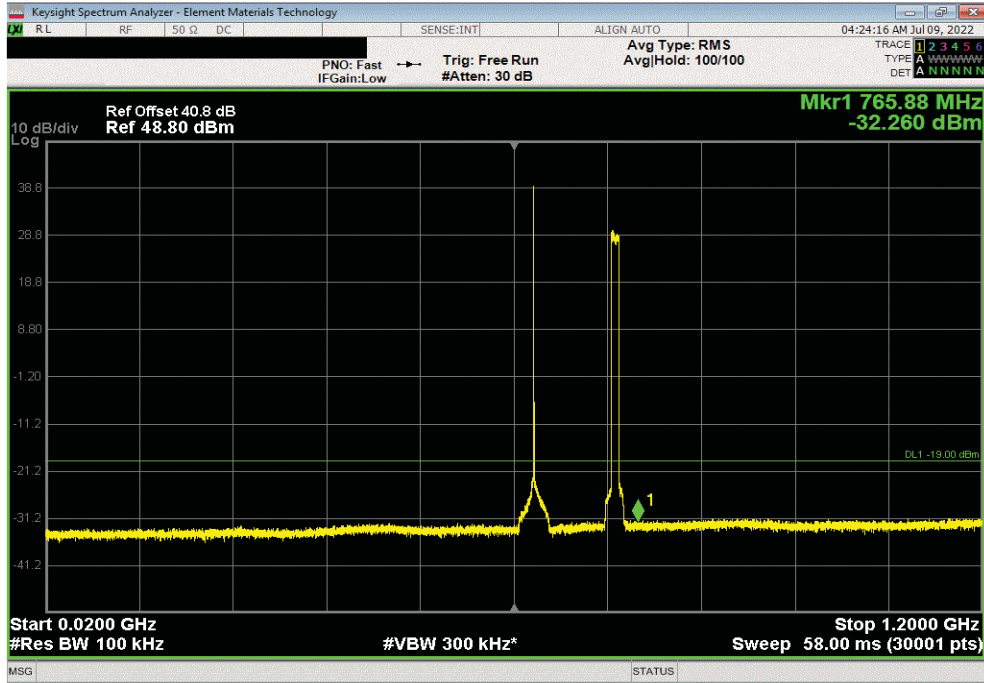


SPURIOUS CONDUCTED EMISSIONS - Band 85 LTE

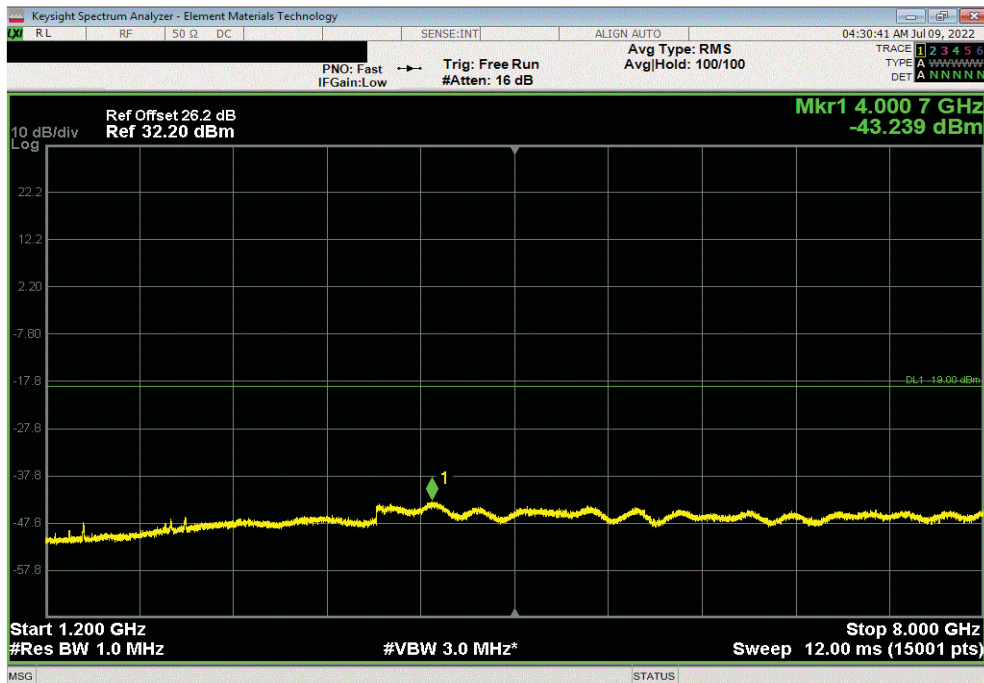


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, Band n85, 728 MHz - 746 MHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
20 MHz - 1.2 GHz	765.88	-32.26	-19	Pass



Port 2, LTE, Band n85, 728 MHz - 746 MHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
1.2 GHz - 8 GHz	4000.69	-43.24	-19	Pass

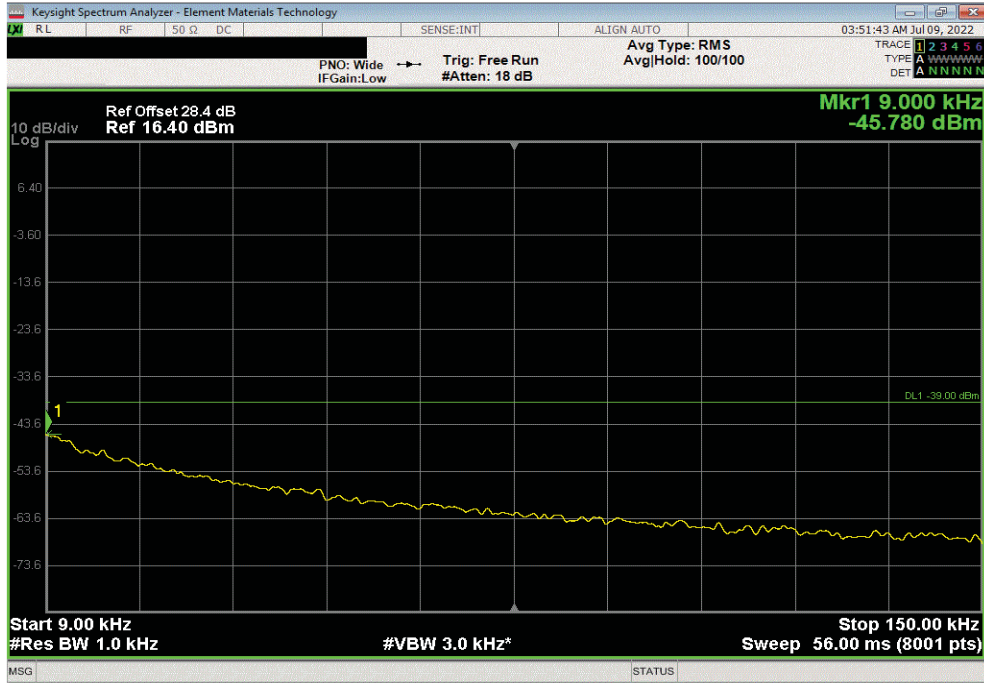


SPURIOUS CONDUCTED EMISSIONS - Band 85 LTE

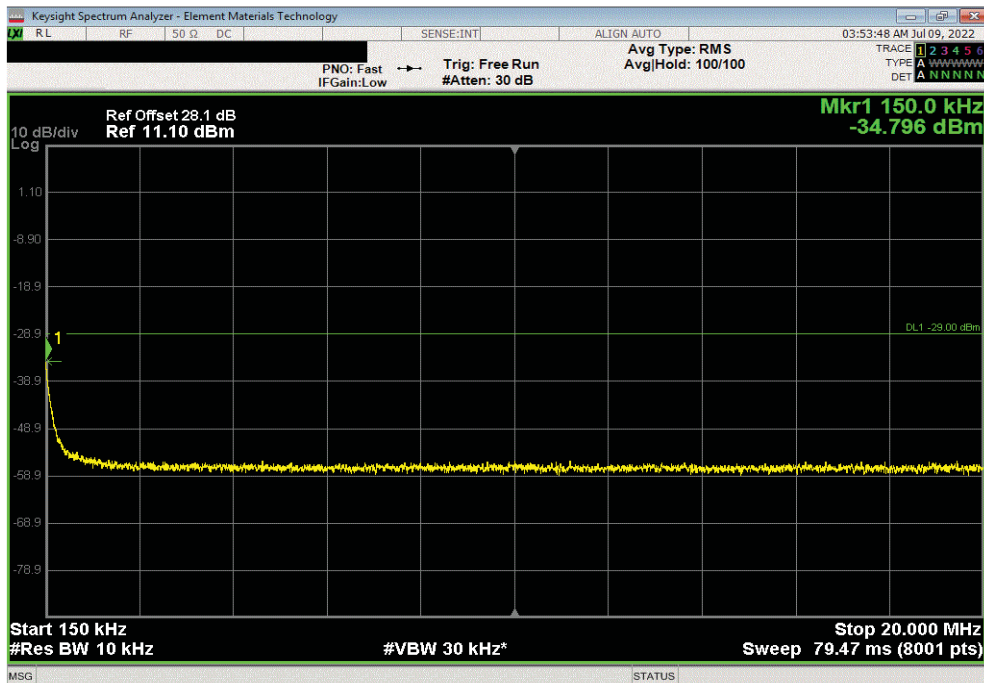


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, Band n85, 728 MHz - 746 MHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
9 kHz - 150 kHz	0.01	-45.78	-39	Pass	



Port 2, LTE, Band n85, 728 MHz - 746 MHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
150 kHz - 20 MHz	0.15	-34.8	-29	Pass	

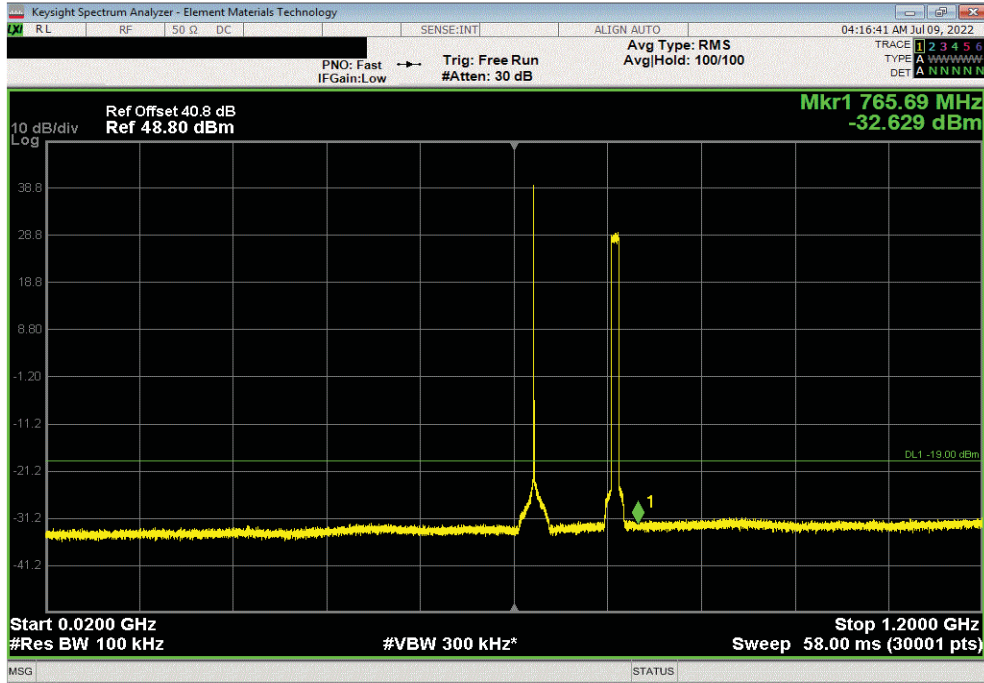


SPURIOUS CONDUCTED EMISSIONS - Band 85 LTE

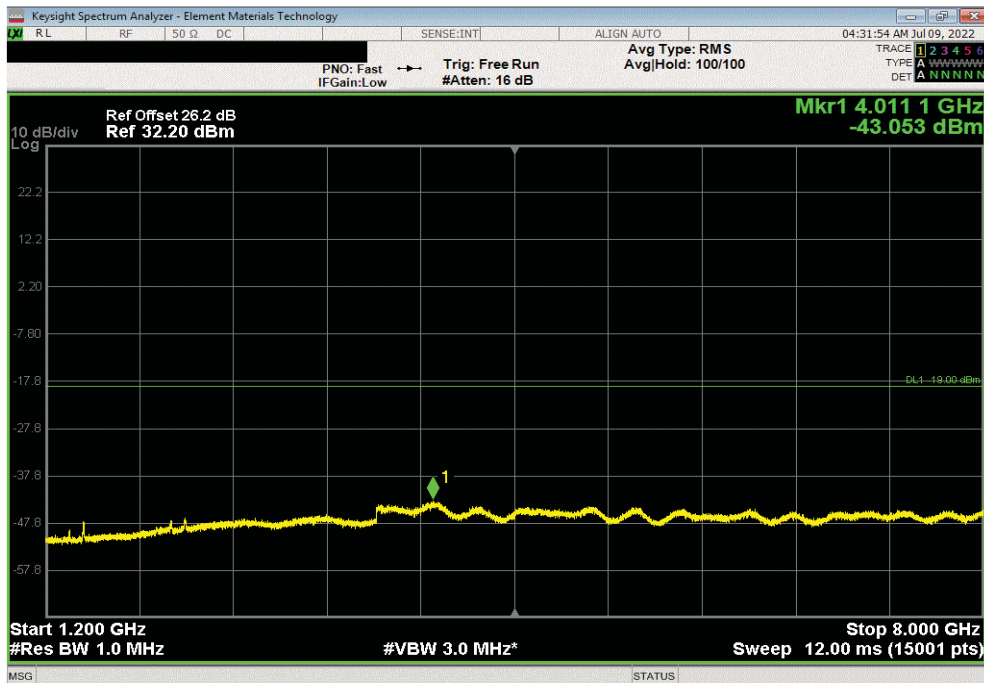


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, Band n85, 728 MHz - 746 MHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
20 MHz - 1.2 GHz	765.69	-32.63	-19	Pass



Port 2, LTE, Band n85, 728 MHz - 746 MHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Ch. B85 LTE10 737 MHz + B71 NB IoT SA 634.5MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
1.2 GHz - 8 GHz	4011.12	-43.05	-19	Pass

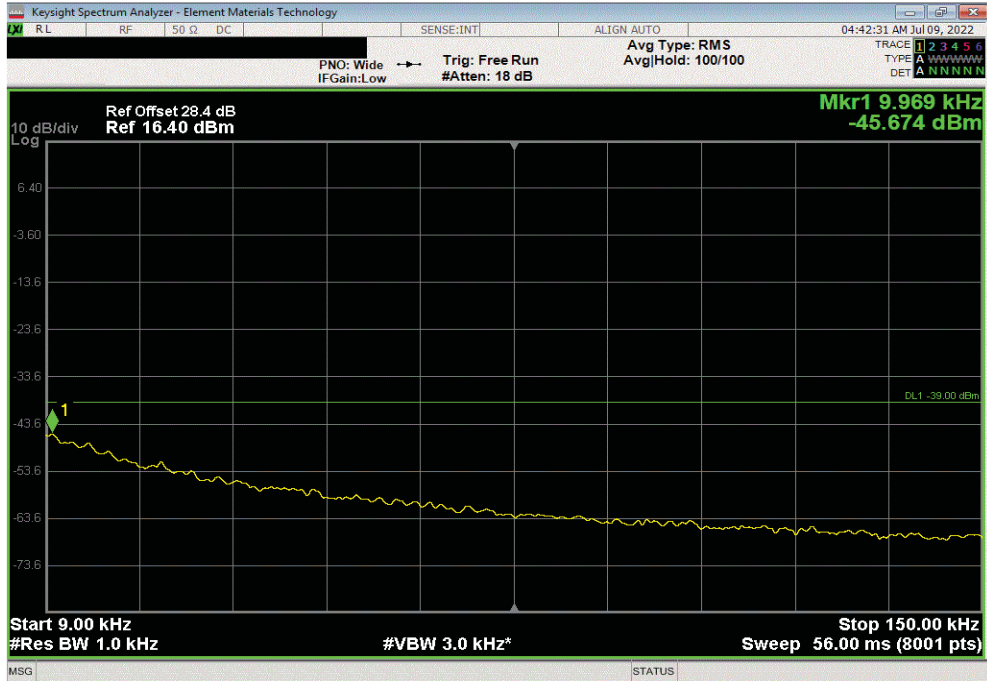


SPURIOUS CONDUCTED EMISSIONS - Band 85 LTE

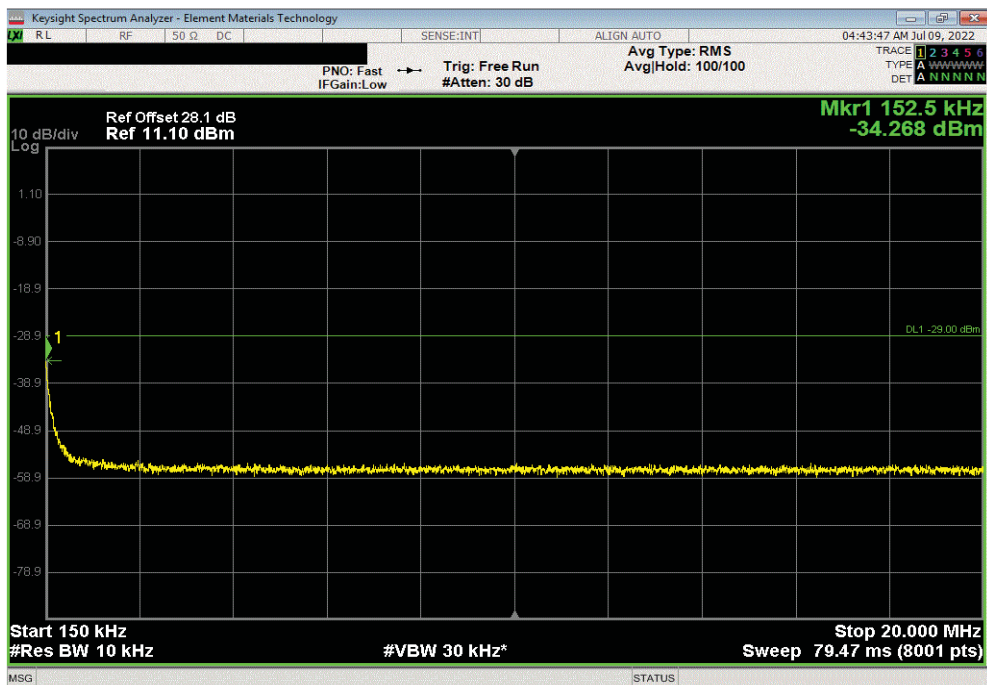


TbTx 2022.06.03.0 XMI 2022.02.07.0

Port 2, LTE, Band n85, 728 MHz - 746 MHz, 15 MHz Bandwidth, QPSK Modulation, Mid Ch. 737 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
9 kHz - 150 kHz	0.01	-45.67	-39	Pass	



Port 2, LTE, Band n85, 728 MHz - 746 MHz, 15 MHz Bandwidth, QPSK Modulation, Mid Ch. 737 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
150 kHz - 20 MHz	0.15	-34.27	-29	Pass	

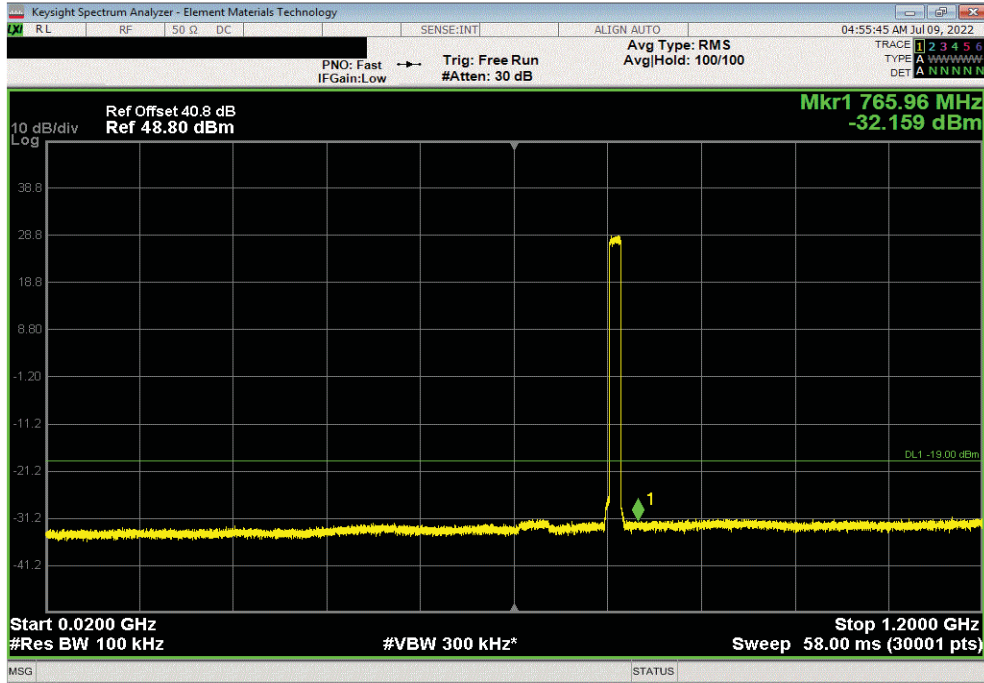


SPURIOUS CONDUCTED EMISSIONS - Band 85 LTE

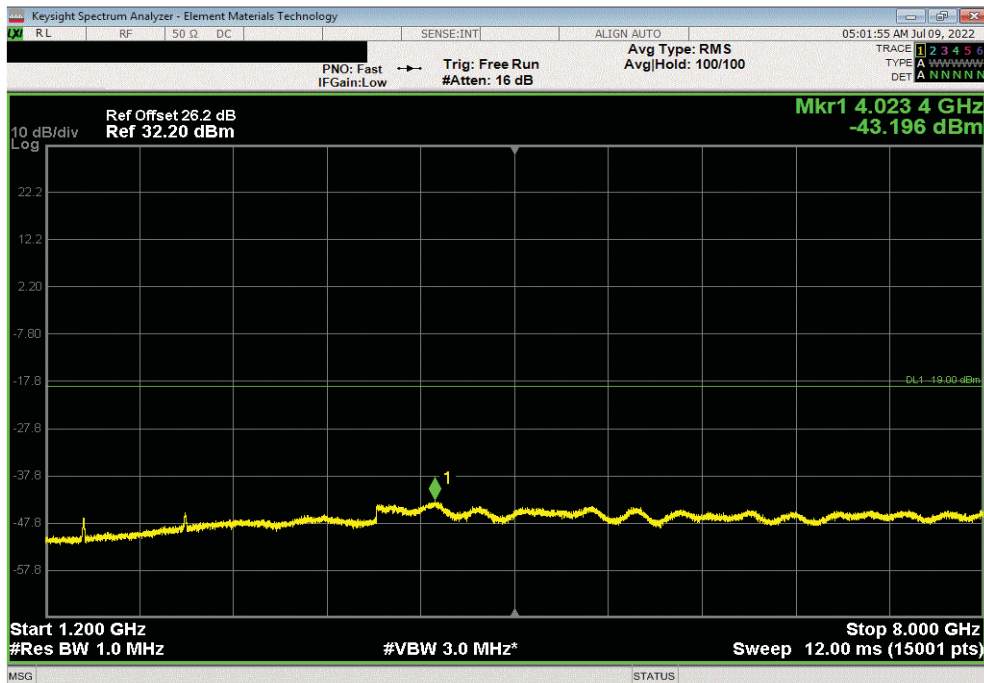


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, Band n85, 728 MHz - 746 MHz, 15 MHz Bandwidth, QPSK Modulation, Mid Ch. 737 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
20 MHz - 1.2 GHz	765.96	-32.16	-19	Pass



Port 2, LTE, Band n85, 728 MHz - 746 MHz, 15 MHz Bandwidth, QPSK Modulation, Mid Ch. 737 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
1.2 GHz - 8 GHz	4023.36	-43.2	-19	Pass

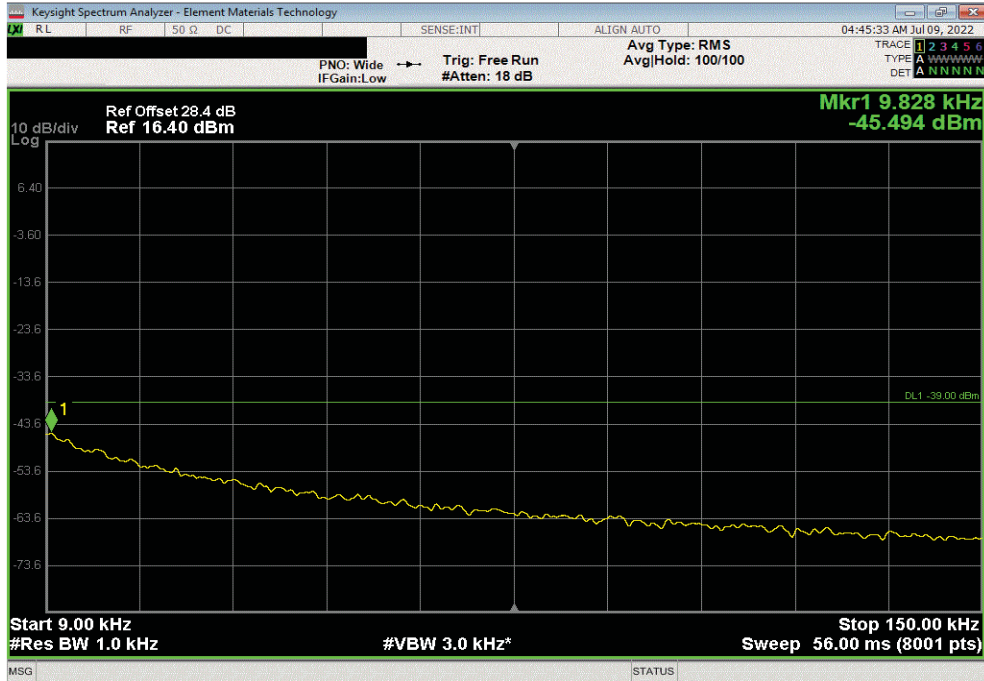


SPURIOUS CONDUCTED EMISSIONS - Band 85 LTE

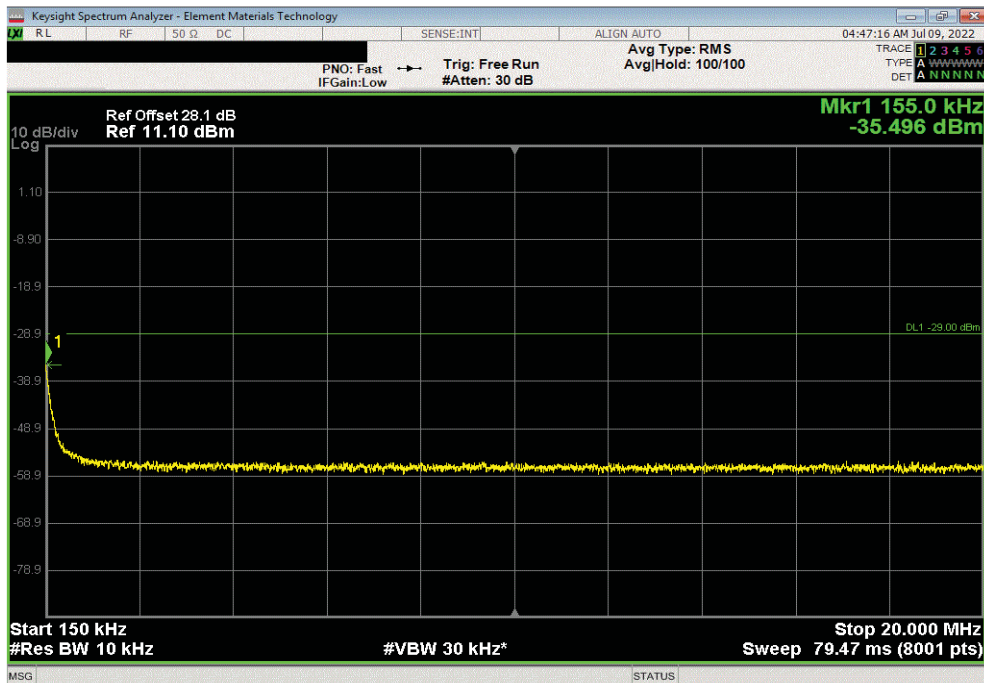


TbTx 2022.06.03.0 XMI 2022.02.07.0

Port 2, LTE, Band n85, 728 MHz - 746 MHz, 15 MHz Bandwidth, 16-QAM Modulation, Mid Ch. 737 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
9 kHz - 150 kHz	0.01	-45.49	-39	Pass	



Port 2, LTE, Band n85, 728 MHz - 746 MHz, 15 MHz Bandwidth, 16-QAM Modulation, Mid Ch. 737 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
150 kHz - 20 MHz	0.15	-35.5	-29	Pass	

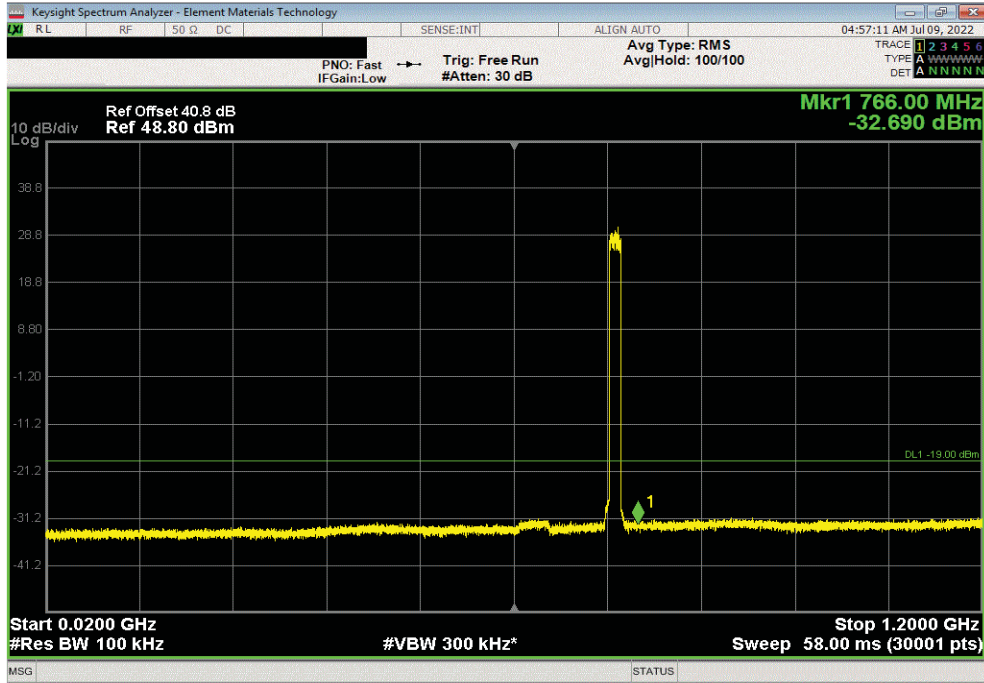


SPURIOUS CONDUCTED EMISSIONS - Band 85 LTE

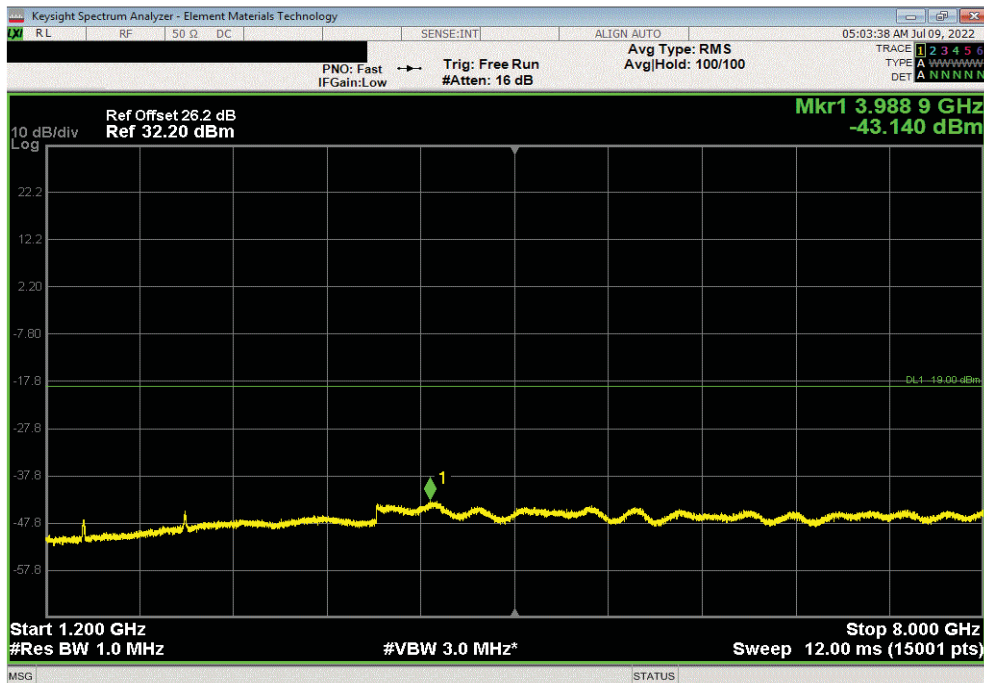


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, Band n85, 728 MHz - 746 MHz, 15 MHz Bandwidth, 16-QAM Modulation, Mid Ch. 737 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
20 MHz - 1.2 GHz	766	-32.69	-19	Pass



Port 2, LTE, Band n85, 728 MHz - 746 MHz, 15 MHz Bandwidth, 16-QAM Modulation, Mid Ch. 737 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
1.2 GHz - 8 GHz	3988.91	-43.14	-19	Pass

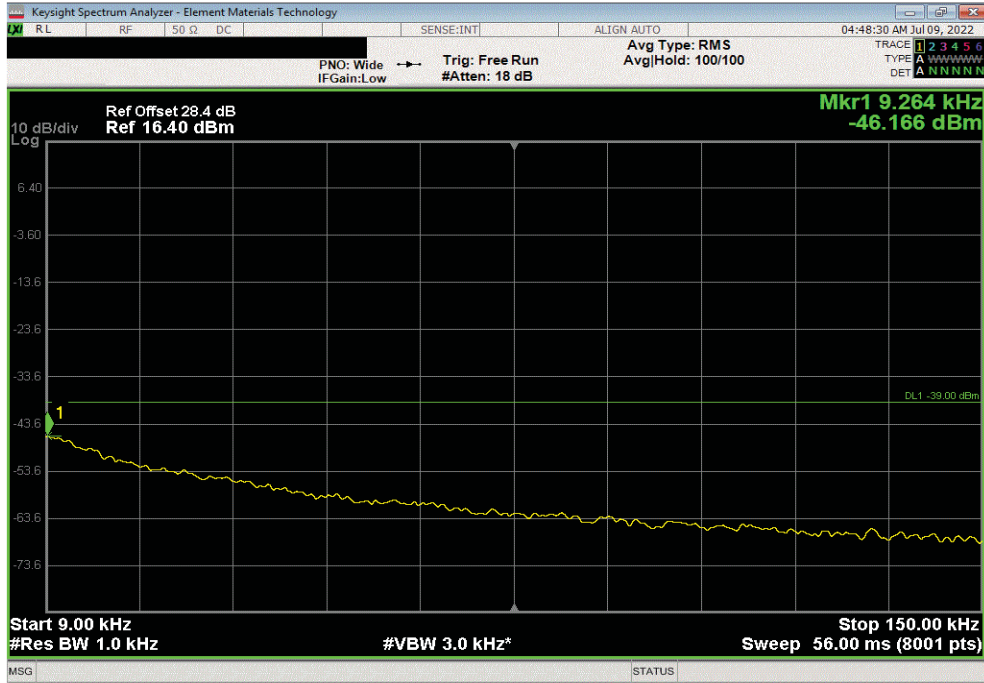


SPURIOUS CONDUCTED EMISSIONS - Band 85 LTE

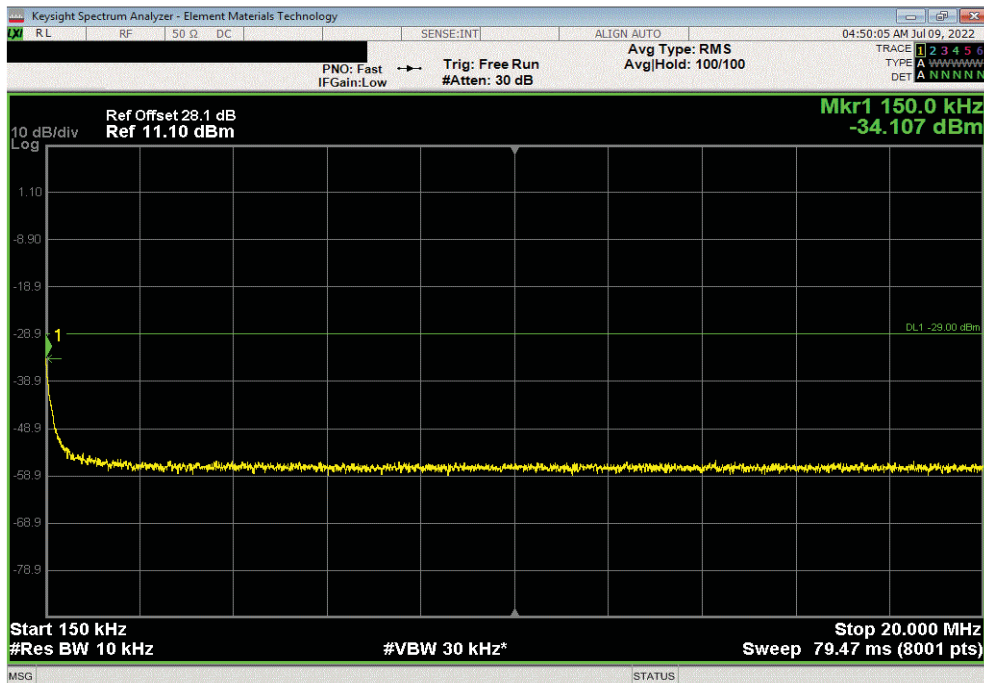


TbTx 2022.06.03.0 XMI 2022.02.07.0

Port 2, LTE, Band n85, 728 MHz - 746 MHz, 15 MHz Bandwidth, 64-QAM Modulation, Mid Ch. 737 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
9 kHz - 150 kHz	0.01	-46.17	-39	Pass	



Port 2, LTE, Band n85, 728 MHz - 746 MHz, 15 MHz Bandwidth, 64-QAM Modulation, Mid Ch. 737 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
150 kHz - 20 MHz	0.15	-34.11	-29	Pass	

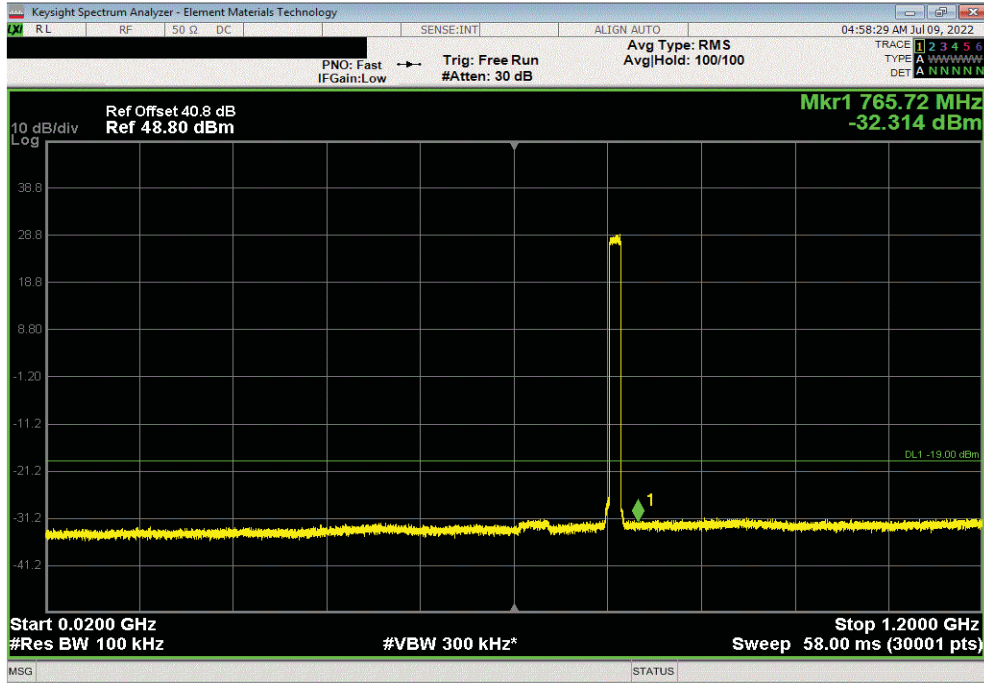


SPURIOUS CONDUCTED EMISSIONS - Band 85 LTE

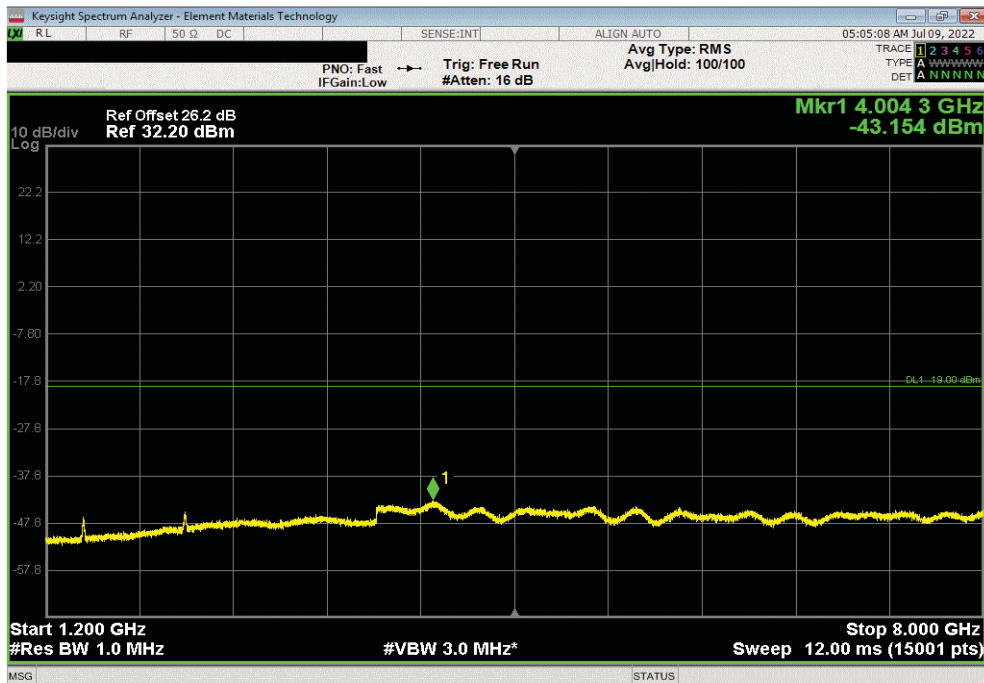


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, Band n85, 728 MHz - 746 MHz, 15 MHz Bandwidth, 64-QAM Modulation, Mid Ch. 737 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
20 MHz - 1.2 GHz	765.72	-32.31	-19	Pass



Port 2, LTE, Band n85, 728 MHz - 746 MHz, 15 MHz Bandwidth, 64-QAM Modulation, Mid Ch. 737 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
1.2 GHz - 8 GHz	4004.32	-43.15	-19	Pass

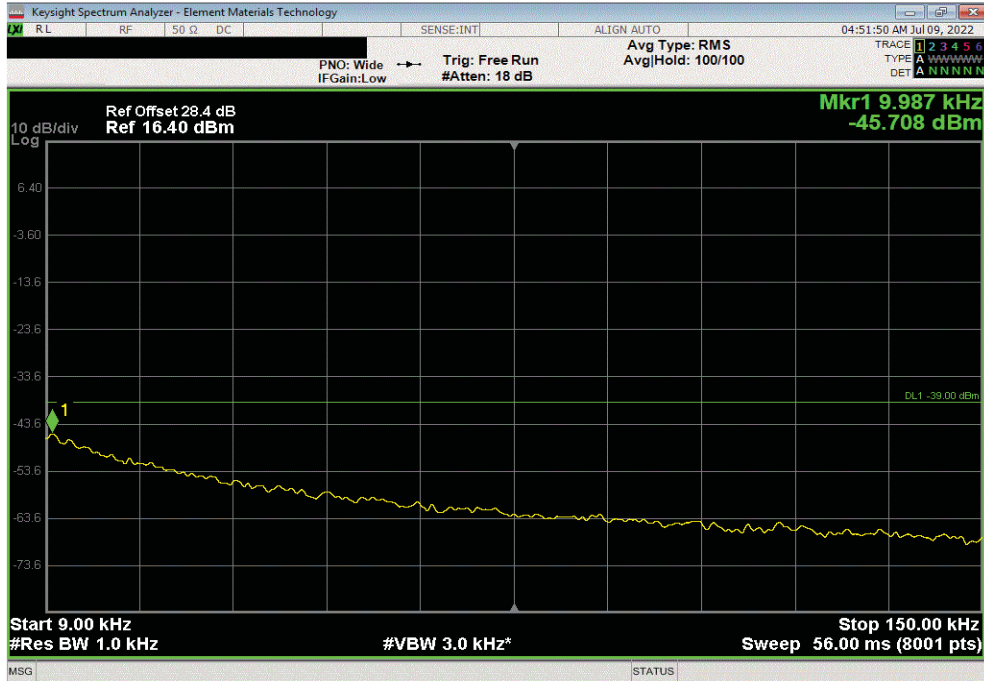


SPURIOUS CONDUCTED EMISSIONS - Band 85 LTE

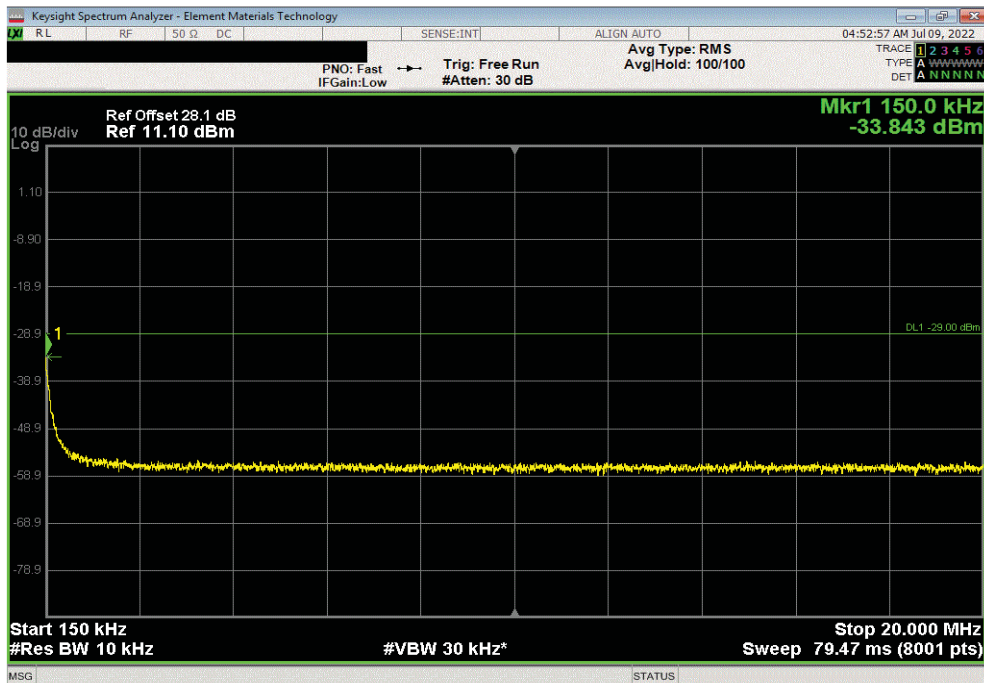


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, Band n85, 728 MHz - 746 MHz, 15 MHz Bandwidth, 256-QAM Modulation, Mid Ch. 737 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
9 kHz - 150 kHz	0.01	-45.71	-39	Pass	



Port 2, LTE, Band n85, 728 MHz - 746 MHz, 15 MHz Bandwidth, 256-QAM Modulation, Mid Ch. 737 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
150 kHz - 20 MHz	0.15	-33.84	-29	Pass	

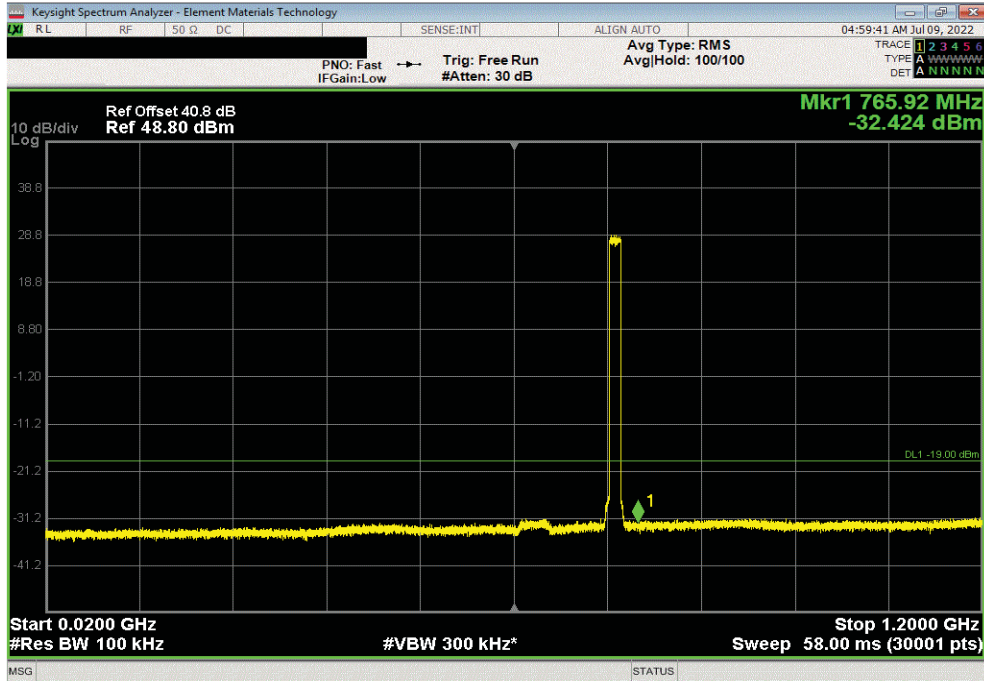


SPURIOUS CONDUCTED EMISSIONS - Band 85 LTE

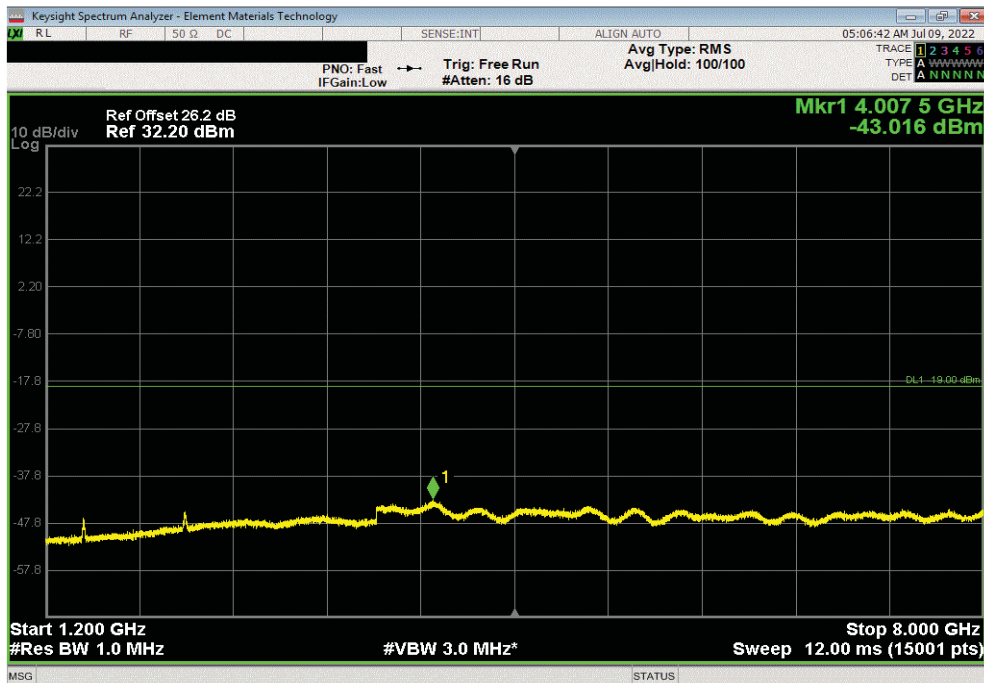


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, Band n85, 728 MHz - 746 MHz, 15 MHz Bandwidth, 256-QAM Modulation, Mid Ch. 737 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
20 MHz - 1.2 GHz	765.92	-32.42	-19	Pass



Port 2, LTE, Band n85, 728 MHz - 746 MHz, 15 MHz Bandwidth, 256-QAM Modulation, Mid Ch. 737 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
1.2 GHz - 8 GHz	4007.49	-43.02	-19	Pass



SPURIOUS CONDUCTED EMISSIONS - Band 71 NB IoT GB



XMH 2022.02.07.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Block - DC	Fairview Microwave	SD3239	ANE	2022-03-02	2023-03-02
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFQ	2022-01-17	2023-01-17

TEST DESCRIPTION

The antenna port spurious emissions were measured at the RF output terminal of the EUT through 3 different attenuation configurations which continues through to the RF input of the spectrum analyzer. Analyzer plots utilizing a resolution bandwidth called out by the client's test plan were made for each modulation type from 9 KHz to 8 GHz. The conducted power of spurious emissions, up to the 10th harmonic of the transmit frequency, were investigated to ensure they were less than the limits also called out by the client's test plan shown below.

The measurement methods are detailed in KDB 971168 D01v03 section 6 and ANSI C63.26-2015.

Per FCC 2.1057(a)(1) and RSS Gen 6.13, the upper level of measurement is the 10th harmonic of the highest fundamental frequency.

These measurements are for the frequency band after the first 100 kHz bands immediately outside and adjacent to the frequency block.

RF conducted emissions testing was performed only on one port. The AHLOB antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown in output power testing) and antenna port 2 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i, and 6.4.

Per section 27.53(g) and RSS 130 4.7, the power of any emission outside of the authorized operating frequency range cannot exceed -13 dBm. The limit is adjusted to -19 dBm [-13 dBm -10 log (4)] per FCC KDB 662911D01 v02r01 because the BTS may operate as a 4 port MIMO transmitter.

The limit for the 9kHz to 150kHz frequency range was adjusted to -39dBm to correct for a spectrum analyzer RBW of 1kHz versus required RBW of 100kHz [i.e.: -39dBm = -19dBm -10log(100kHz/1kHz)]. The limit for the 150kHz to 20MHz frequency range was adjusted to -29dBm to correct for a spectrum analyzer RBW of 10kHz versus required RBW of 100kHz [i.e.: -29dBm = -19dBm -10log(100kHz/10kHz)]. The required limit of -19dBm with a RBW of > 100kHz was used for all other frequency ranges. (See ANSI C63.26-2015 paragraph 5.7.2a for details on the Limit/RBW scaling method)

SPURIOUS CONDUCTED EMISSIONS - Band 71 NB IoT GB



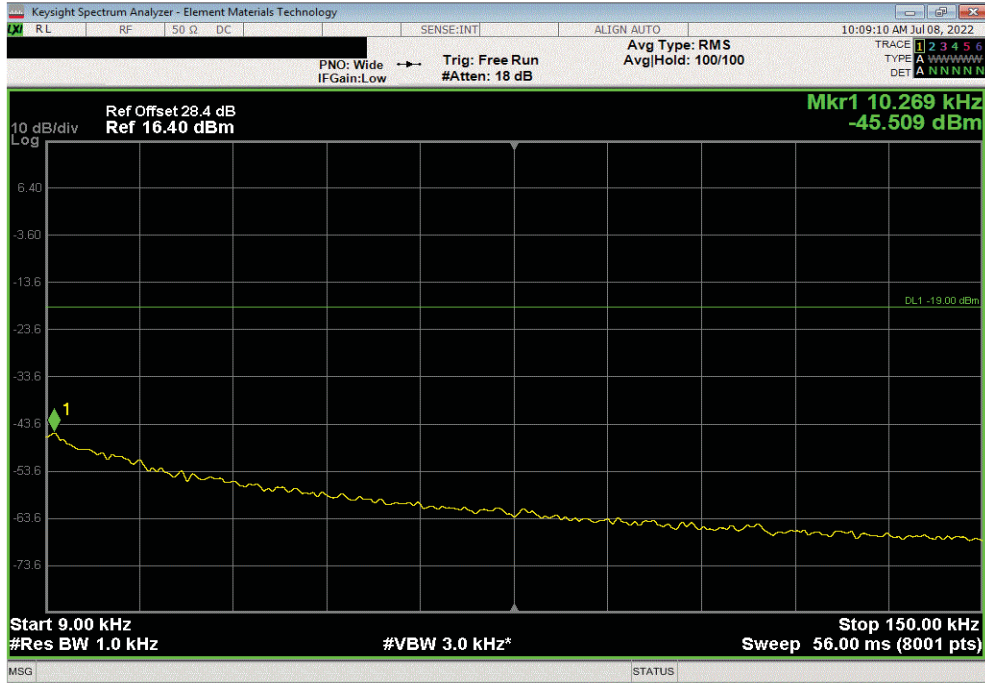
EUT: AHLOB		Work Order: NOKI0043				
Serial Number: YK220900029		Date: 13-Jul-22				
Customer: Nokia Solutions and Networks		Temperature: 20.5 °C				
Attendees: Mitchell Hill, John Rattanavong		Humidity: 55.7% RH				
Project: None		Barometric Pres.: 1018 mbar				
Tested by: Marty Martin	Power: 54 VDC	Job Site: TX07				
TEST SPECIFICATIONS		Test Method				
FCC 27:2022		ANSI C63.26:2015				
RSS-130 Issue 2:2019		ANSI C63.26:2015				
COMMENTS						
All losses in the measurement path were accounted for: attenuators, cables, DC block and filter when in use. The carriers were enabled at maximum power on the middle channels of the respective bands. The port power is at maximum. The following carrier configurations were tested: B71 LTE10 NB IoT GB (60W) + B85 NB IoT SA (20W), B71 LTE15 NB IoT GB (80W), and B71 LTE20 NB IoT GB (80W).						
DEVIATIONS FROM TEST STANDARD						
None						
Configuration #	1, 2, 3	Signature <i>Marty Martin</i>				
		Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
Port 2, LTE, Band 71, 617 MHz - 652 MHz						
10 MHz Bandwidth						
N-TM						
		Mid Ch. B71 LTE10 NB IoT GB 634.5 MHz + B85 NB IoT SA 737.0MHz	9 kHz - 150 kHz	0.01	-45.51	-39 Pass
		Mid Ch. B71 LTE10 NB IoT GB 634.5 MHz + B85 NB IoT SA 737.0MHz	150 kHz - 20 MHz	0.15	-34.12	-29 Pass
		Mid Ch. B71 LTE10 NB IoT GB 634.5 MHz + B85 NB IoT SA 737.0MHz	20 MHz - 1.2 GHz	766	-32.25	-19 Pass
		Mid Ch. B71 LTE10 NB IoT GB 634.5 MHz + B85 NB IoT SA 737.0MHz	1.2 GHz - 8 GHz	4044.67	-43.18	-19 Pass
15 MHz Bandwidth						
N-TM						
		Mid Ch. 634.5 MHz	9 kHz - 150 kHz	0.01	-45.59	-39 Pass
		Mid Ch. 634.5 MHz	150 kHz - 20 MHz	0.15	-34.65	-29 Pass
		Mid Ch. 634.5 MHz	20 MHz - 1.2 GHz	737.29	-25.86	-19 Pass
		Mid Ch. 634.5 MHz	1.2 GHz - 8 GHz	3997.52	-43.2	-19 Pass
20 MHz Bandwidth						
N-TM						
		Mid Ch. 634.5 MHz	9 kHz - 150 kHz	0.01	-44.65	-39 Pass
		Mid Ch. 634.5 MHz	150 kHz - 20 MHz	0.15	-34.7	-29 Pass
		Mid Ch. 634.5 MHz	20 MHz - 1.2 GHz	737.29	-24.4	-19 Pass
		Mid Ch. 634.5 MHz	1.2 GHz - 8 GHz	4005.23	-43.19	-19 Pass

SPURIOUS CONDUCTED EMISSIONS - Band 71 NB IoT GB

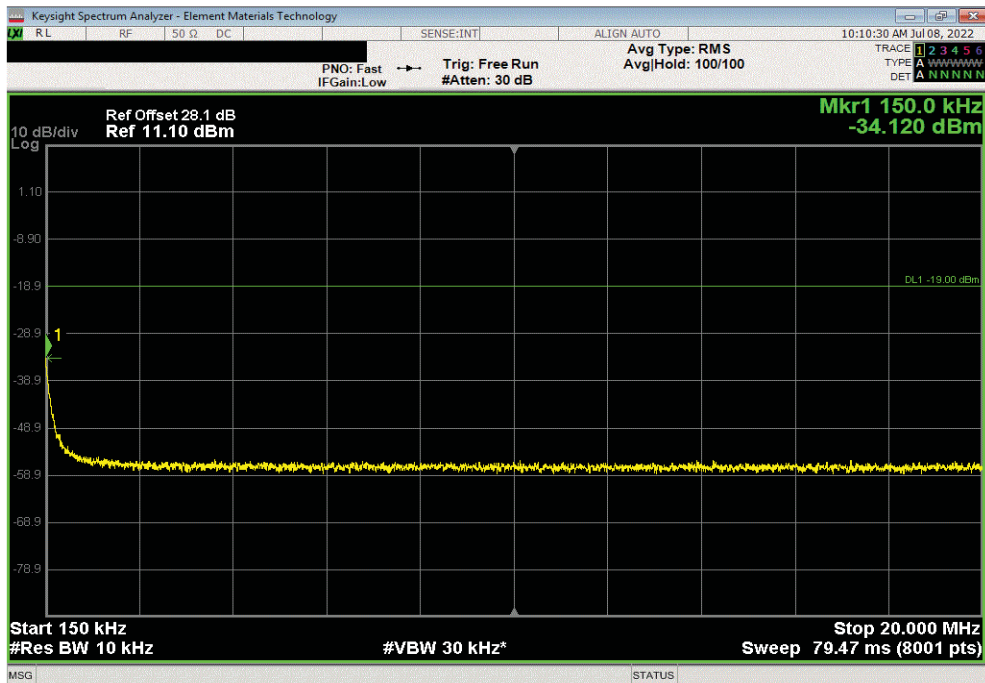


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, Band n71, 617 MHz - 652 MHz, 10 MHz Bandwidth, N-TM, Mid Ch. B71 LTE10 NB IoT GB 634.5 MHz + B85 NB IoT SA 737.0MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
9 kHz - 150 kHz	0.01	-45.51	-39	Pass	



Port 2, LTE, Band n71, 617 MHz - 652 MHz, 10 MHz Bandwidth, N-TM, Mid Ch. B71 LTE10 NB IoT GB 634.5 MHz + B85 NB IoT SA 737.0MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
150 kHz - 20 MHz	0.15	-34.12	-29	Pass	

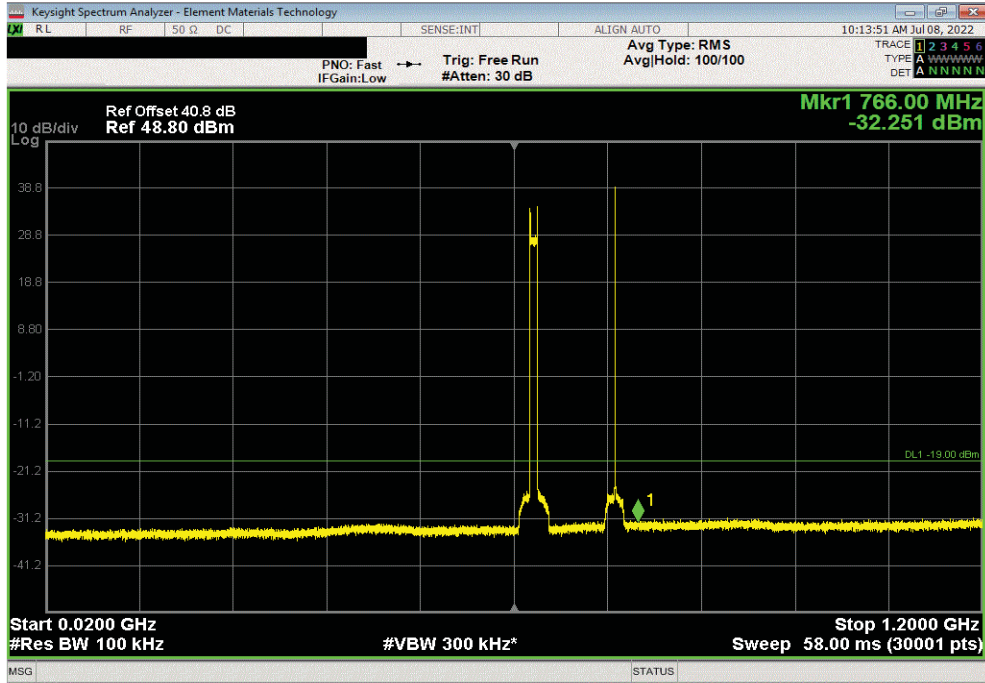


SPURIOUS CONDUCTED EMISSIONS - Band 71 NB IoT GB

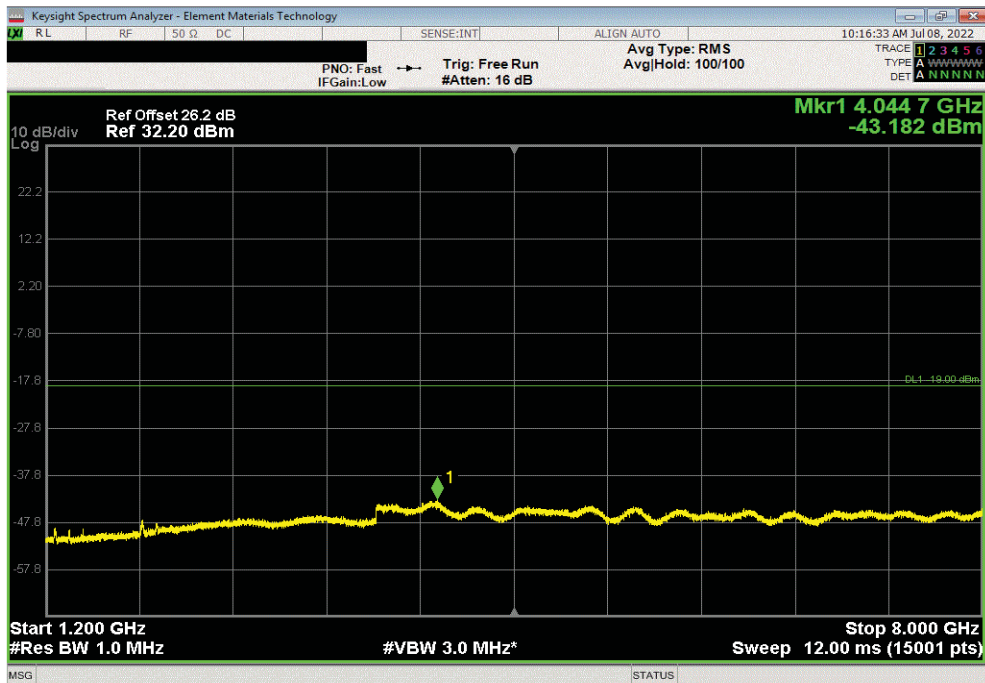


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, Band n71, 617 MHz - 652 MHz, 10 MHz Bandwidth, N-TM, Mid Ch. B71 LTE10 NB IoT GB 634.5 MHz + B85 NB IoT SA 737.0MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
20 MHz - 1.2 GHz	766	-32.25	-19	Pass



Port 2, LTE, Band n71, 617 MHz - 652 MHz, 10 MHz Bandwidth, N-TM, Mid Ch. B71 LTE10 NB IoT GB 634.5 MHz + B85 NB IoT SA 737.0MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
1.2 GHz - 8 GHz	4044.67	-43.18	-19	Pass

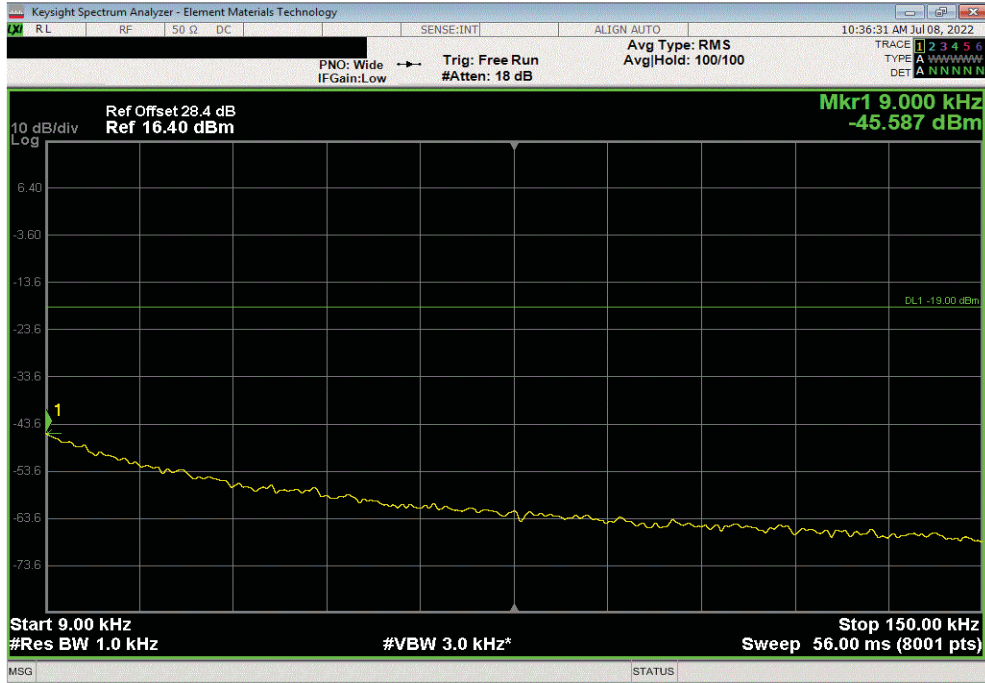


SPURIOUS CONDUCTED EMISSIONS - Band 71 NB IoT GB

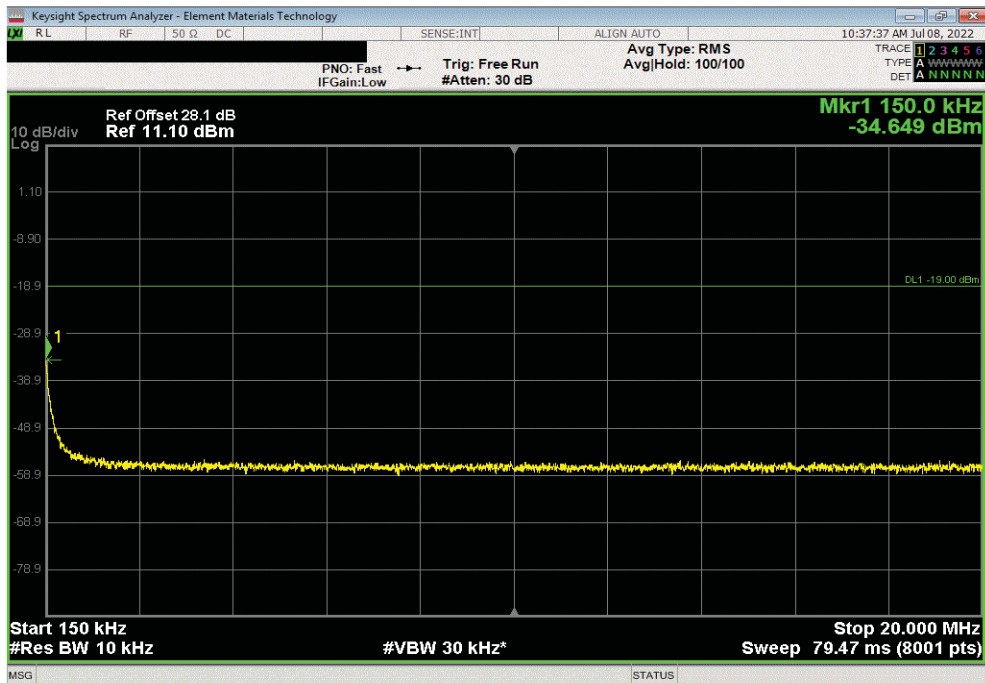


TbTx 2022.06.03.0 XMI 2022.02.07.0

Port 2, LTE, Band n71, 617 MHz - 652 MHz, 15 MHz Bandwidth, N-TM, Mid Ch. 634.5 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
9 kHz - 150 kHz	0.01	-45.59	-39	Pass	



Port 2, LTE, Band n71, 617 MHz - 652 MHz, 15 MHz Bandwidth, N-TM, Mid Ch. 634.5 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
150 kHz - 20 MHz	0.15	-34.65	-29	Pass	

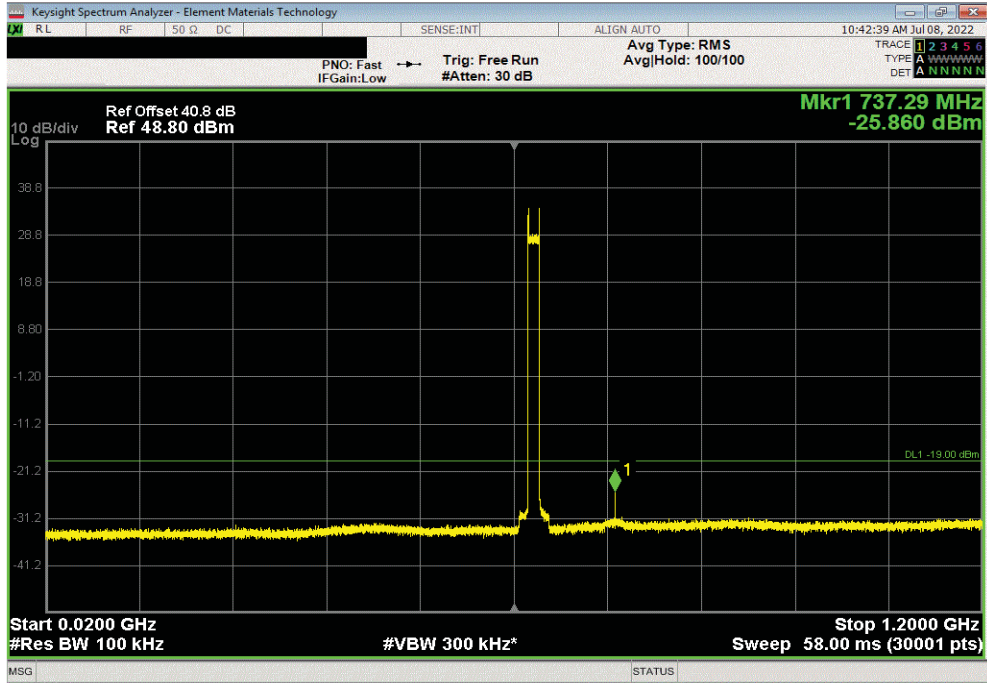


SPURIOUS CONDUCTED EMISSIONS - Band 71 NB IoT GB

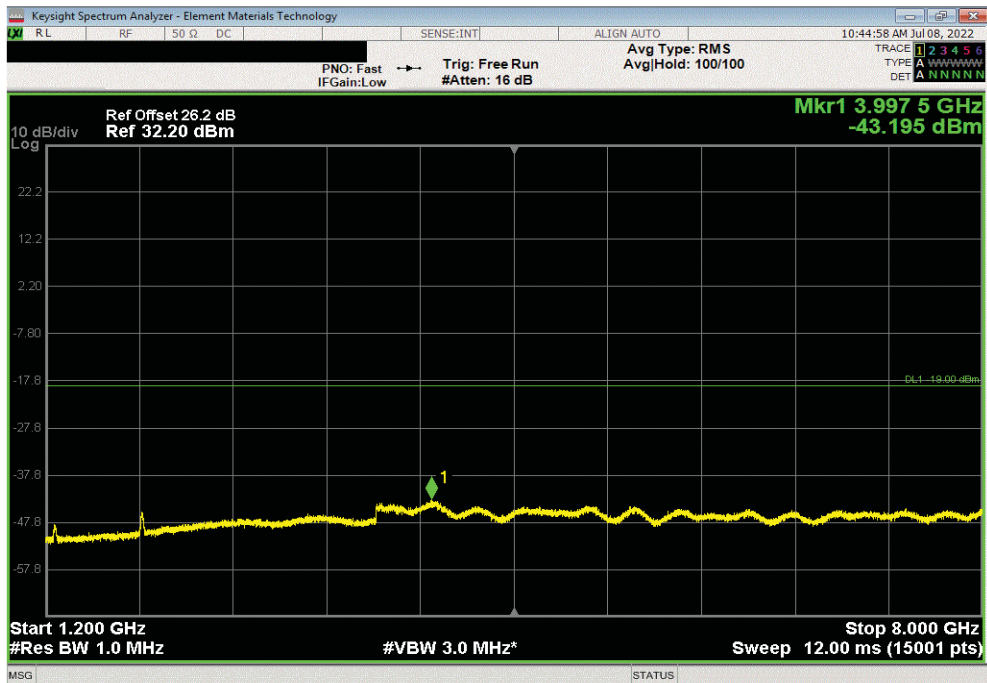


TbTx 2022.06.03.0 XMI 2022.02.07.0

Port 2, LTE, Band n71, 617 MHz - 652 MHz, 15 MHz Bandwidth, N-TM, Mid Ch. 634.5 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
20 MHz - 1.2 GHz	737.29	-25.86	-19	Pass



Port 2, LTE, Band n71, 617 MHz - 652 MHz, 15 MHz Bandwidth, N-TM, Mid Ch. 634.5 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
1.2 GHz - 8 GHz	3997.52	-43.2	-19	Pass

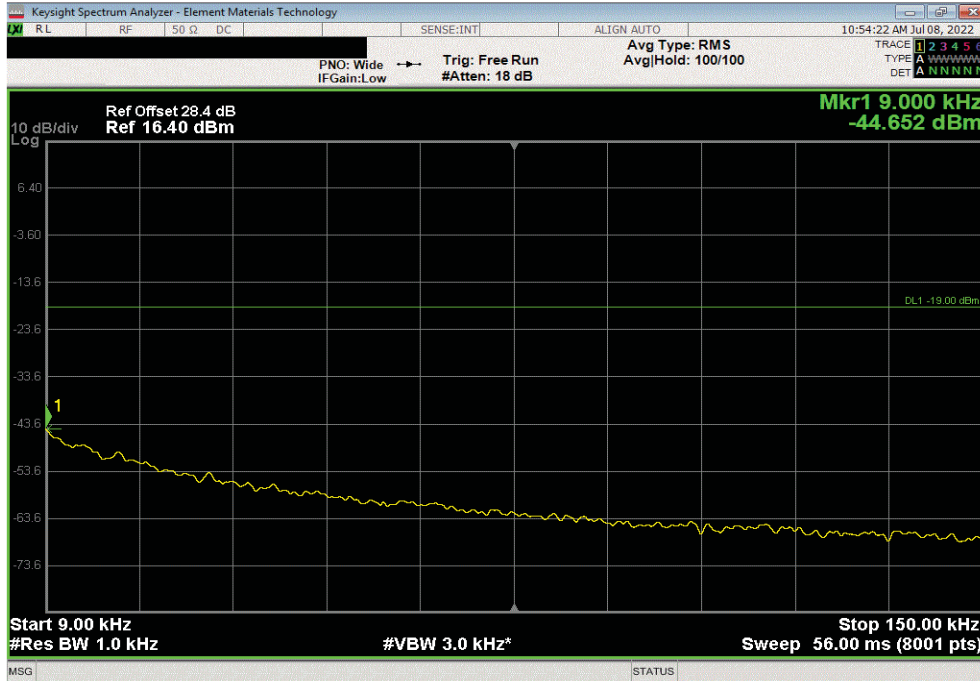


SPURIOUS CONDUCTED EMISSIONS - Band 71 NB IoT GB

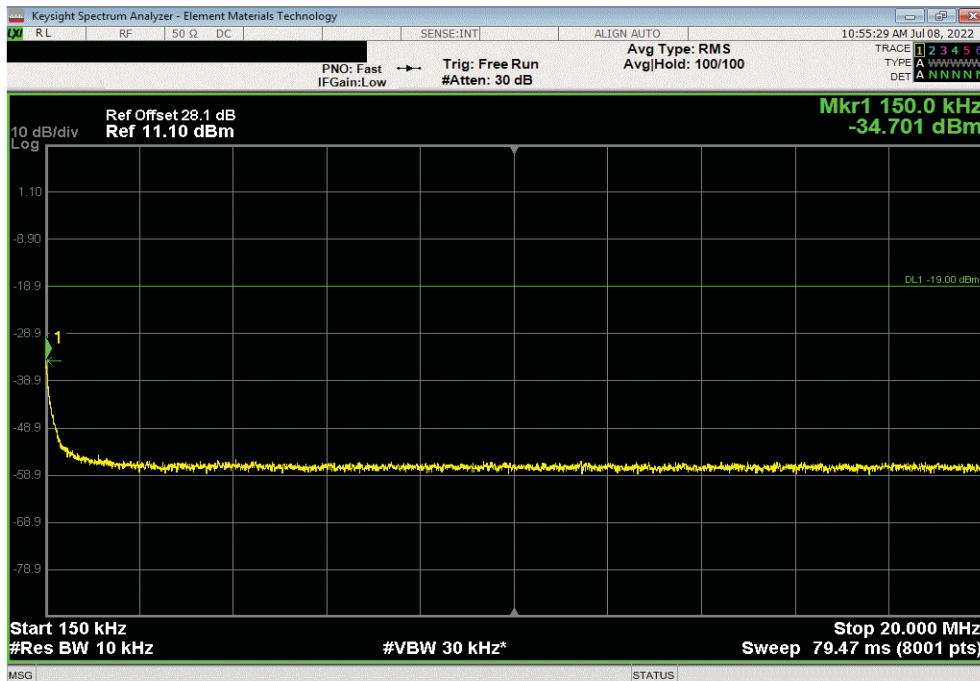


TbTx 2022.06.03.0 XMI 2022.02.07.0

Port 2, LTE, Band n71, 617 MHz - 652 MHz, 20 MHz Bandwidth, N-TM, Mid Ch. 634.5 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
9 kHz - 150 kHz	0.01	-44.65	-39	Pass	



Port 2, LTE, Band n71, 617 MHz - 652 MHz, 20 MHz Bandwidth, N-TM, Mid Ch. 634.5 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
150 kHz - 20 MHz	0.15	-34.7	-29	Pass	

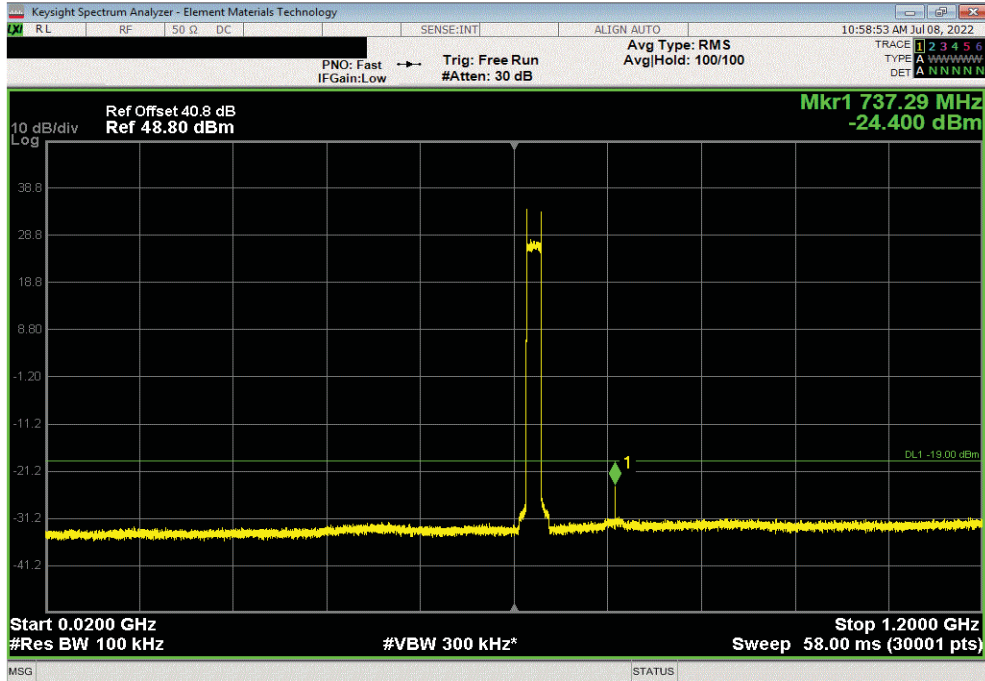


SPURIOUS CONDUCTED EMISSIONS - Band 71 NB IoT GB

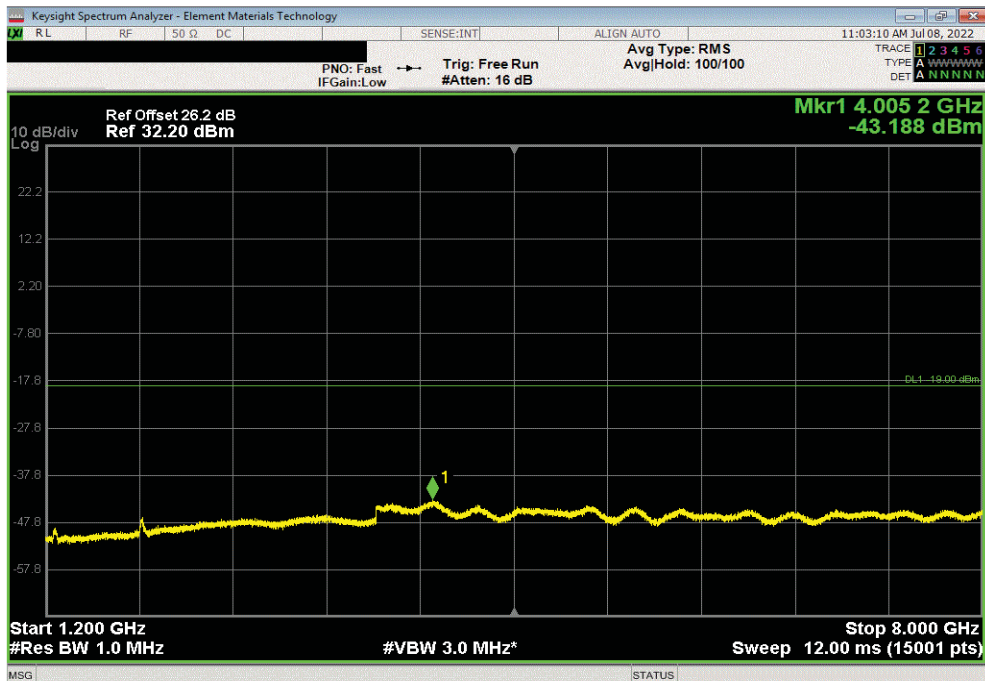


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, Band n71, 617 MHz - 652 MHz, 20 MHz Bandwidth, N-TM, Mid Ch. 634.5 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
20 MHz - 1.2 GHz	737.29	-24.4	-19	Pass



Port 2, LTE, Band n71, 617 MHz - 652 MHz, 20 MHz Bandwidth, N-TM, Mid Ch. 634.5 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
1.2 GHz - 8 GHz	4005.23	-43.19	-19	Pass



SPURIOUS CONDUCTED EMISSIONS - Band 85 NB IoT GB



XMH 2022.02.07.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Block - DC	Fairview Microwave	SD3239	ANE	2022-03-02	2023-03-02
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFQ	2022-01-17	2023-01-17

TEST DESCRIPTION

The antenna port spurious emissions were measured at the RF output terminal of the EUT through 3 different attenuation configurations which continues through to the RF input of the spectrum analyzer. Analyzer plots utilizing a resolution bandwidth called out by the client's test plan were made for each modulation type from 9 KHz to 8 GHz. The conducted power of spurious emissions, up to the 10th harmonic of the transmit frequency, were investigated to ensure they were less than the limits also called out by the client's test plan shown below.

The measurement methods are detailed in KDB 971168 D01v03 section 6 and ANSI C63.26-2015.

Per FCC 2.1057(a)(1) and RSS Gen 6.13, the upper level of measurement is the 10th harmonic of the highest fundamental frequency.

These measurements are for the frequency band after the first 100 kHz bands immediately outside and adjacent to the frequency block.

RF conducted emissions testing was performed only on one port. The AHLOB antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown in output power testing) and antenna port 2 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i, and 6.4.

Per section 27.53(g) and RSS 130 4.7, the power of any emission outside of the authorized operating frequency range cannot exceed -13 dBm. The limit is adjusted to -19 dBm [-13 dBm -10 log (4)] per FCC KDB 662911D01 v02r01 because the BTS may operate as a 4 port MIMO transmitter.

The limit for the 9kHz to 150kHz frequency range was adjusted to -39dBm to correct for a spectrum analyzer RBW of 1kHz versus required RBW of 100kHz [i.e.: -39dBm = -19dBm -10log(100kHz/1kHz)]. The limit for the 150kHz to 20MHz frequency range was adjusted to -29dBm to correct for a spectrum analyzer RBW of 10kHz versus required RBW of 100kHz [i.e.: -29dBm = -19dBm -10log(100kHz/10kHz)]. The required limit of -19dBm with a RBW of > 100kHz was used for all other frequency ranges. (See ANSI C63.26-2015 paragraph 5.7.2a for details on the Limit/RBW scaling method)

SPURIOUS CONDUCTED EMISSIONS - Band 85 NB IoT GB



EUT: AHLOB	Work Order: NOKI0043
Serial Number: YK220900029	Date: 13-Jul-22
Customer: Nokia Solutions and Networks	Temperature: 21.1 °C
Attendees: Mitchell Hill, John Rattanavong	Humidity: 53% RH
Project: None	Barometric Pres.: 1017 mbar
Tested by: Marty Martin	Power: 54 VDC
	Job Site: TX07

TEST SPECIFICATIONS		Test Method	
FCC 27:2022		ANSI C63.26:2015	
RSS-130 Issue 2:2019		ANSI C63.26:2015	

COMMENTS
 All losses in the measurement path were accounted for: attenuators, cables, DC block and filter when in use. The carriers were enabled at maximum power on the middle channels of the respective bands. The port power is at maximum. The following carrier configurations were tested: B85 LTE10 NB IoT GB (60W) + B71 NB IoT SA (20W), and B85 LTE15 NB IoT GB (80W).

DEVIATIONS FROM TEST STANDARD
 None

Configuration #	1, 2, 3	Signature <i>Marty Martin</i>
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Port 2, LTE	Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
10 MHz Bandwidth + NB IoT SA 200 kHz					
E-TM1.1 with N-TM					
	Mid Ch. B85 LTE10 NB IoT GB 737 MHz + B71 NB IoT SA 634.5MHz	9 kHz - 150 kHz	0.01	-45.83	-39 Pass
	Mid Ch. B85 LTE10 NB IoT GB 737 MHz + B71 NB IoT SA 634.5MHz	150 kHz - 20 MHz	0.15	-34.35	-29 Pass
	Mid Ch. B85 LTE10 NB IoT GB 737 MHz + B71 NB IoT SA 634.5MHz	20 MHz - 1.2 GHz	766.04	-32.4	-19 Pass
	Mid Ch. B85 LTE10 NB IoT GB 737 MHz + B71 NB IoT SA 634.5MHz	1.2 GHz - 8 GHz	4013.39	-43.18	-19 Pass
15 MHz Bandwidth					
E-TM1.1 with N-TM Modulation					
	Mid Ch. 737 MHz	9 kHz - 150 kHz	0.01	-46.04	-39 Pass
	Mid Ch. 737 MHz	150 kHz - 20 MHz	0.15	-34.18	-29 Pass
	Mid Ch. 737 MHz	20 MHz - 1.2 GHz	765.72	-32.36	-19 Pass
	Mid Ch. 737 MHz	1.2 GHz - 8 GHz	3982.11	-43.06	-19 Pass

SPURIOUS CONDUCTED EMISSIONS - Band 85 NB IoT GB

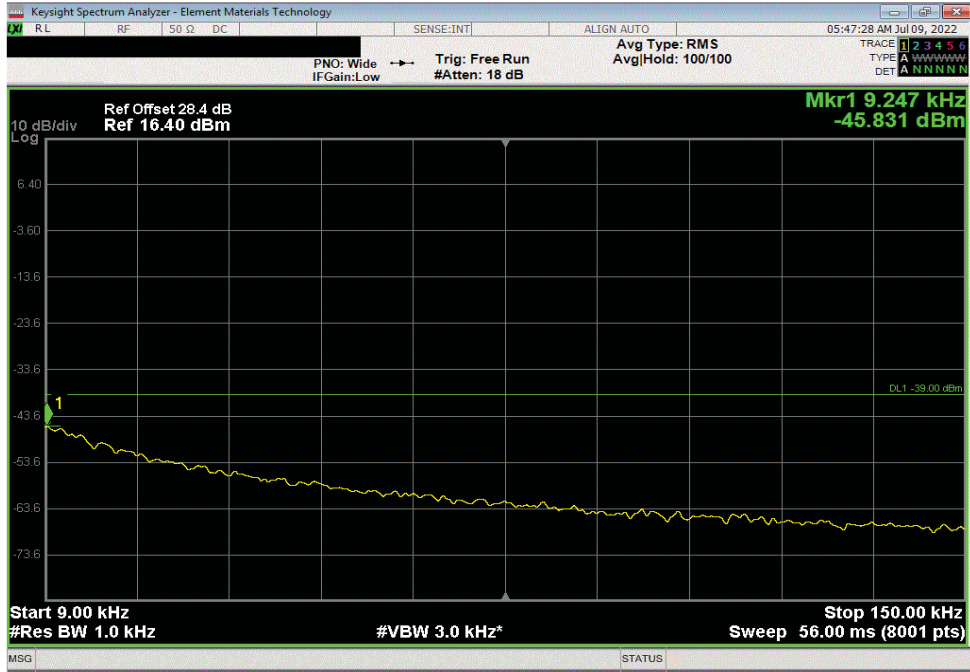


TbTb 2022.06.03.0

XMI 2022.02.07.0

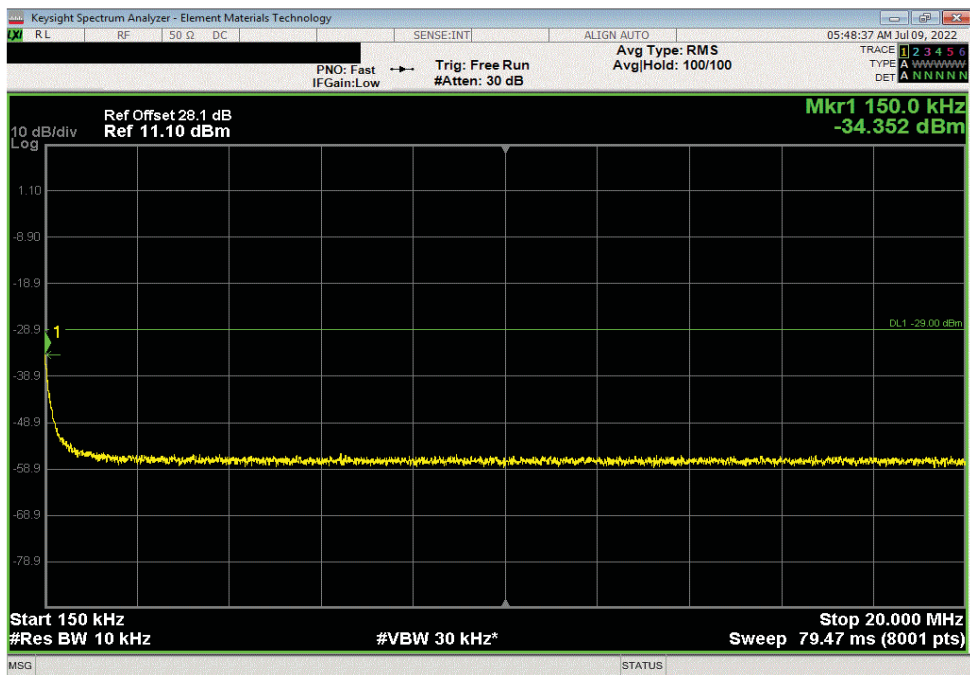
Port 2, LTE, MultiBand MultiCarrier, 10 MHz Bandwidth + NB IoT SA 200 kHz, E-TM1.1 with N-TM Modulation, Mid Ch. B85 LTE10 NB IoT GB 737 MHz + B71 NB IoT SA 634.5MHz

Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
9 kHz - 150 kHz	0.01	-45.83	-39	Pass



Port 2, LTE, MultiBand MultiCarrier, 10 MHz Bandwidth + NB IoT SA 200 kHz, E-TM1.1 with N-TM Modulation, Mid Ch. B85 LTE10 NB IoT GB 737 MHz + B71 NB IoT SA 634.5MHz

Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
150 kHz - 20 MHz	0.15	-34.35	-29	Pass



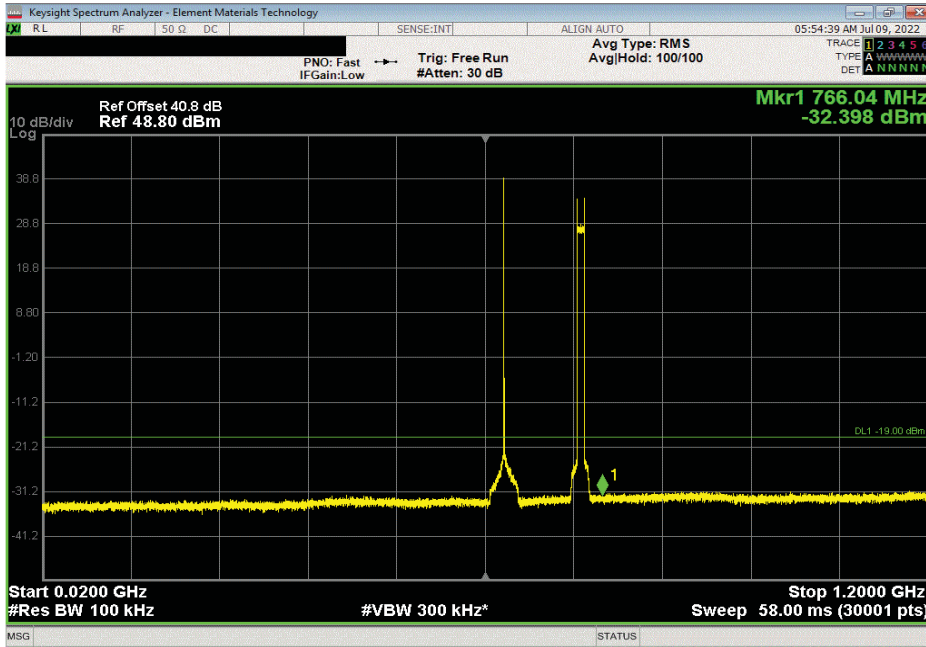
SPURIOUS CONDUCTED EMISSIONS - Band 85 NB IoT GB



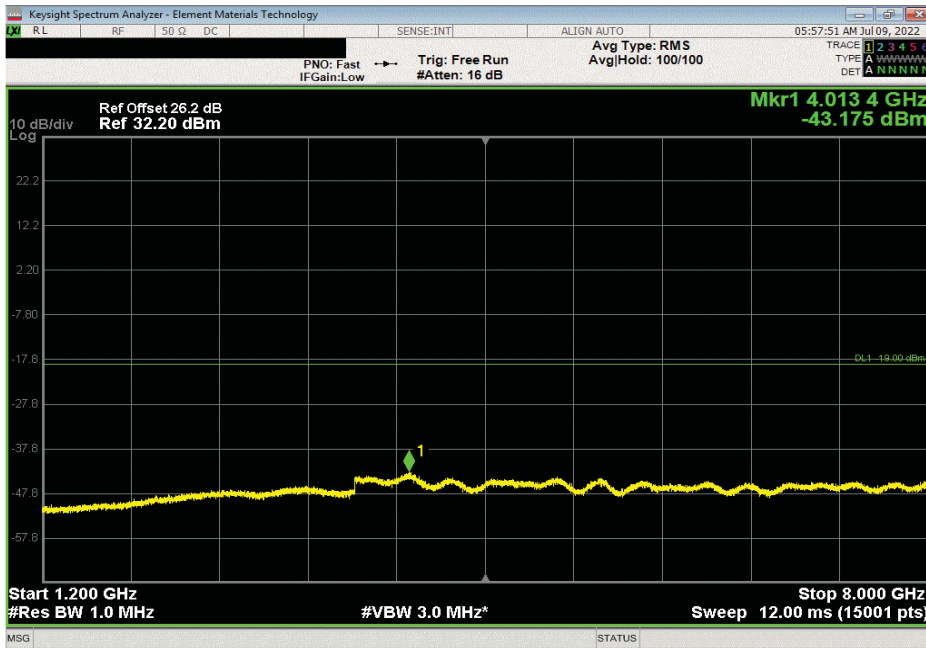
TmTx 2022.06.03.0

XMM 2022.02.07.0

Port 2, LTE, MultiBand MultiCarrier, 10 MHz Bandwidth + NB IoT SA 200 kHz, E-TM1.1 with N-TM Modulation, Mid Ch. B85 LTE10 NB IoT GB 737 MHz + B71 NB IoT SA 634.5MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
20 MHz - 1.2 GHz	766.04	-32.4	-19	Pass	



Port 2, LTE, MultiBand MultiCarrier, 10 MHz Bandwidth + NB IoT SA 200 kHz, E-TM1.1 with N-TM Modulation, Mid Ch. B85 LTE10 NB IoT GB 737 MHz + B71 NB IoT SA 634.5MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
1.2 GHz - 8 GHz	4013.39	-43.18	-19	Pass	

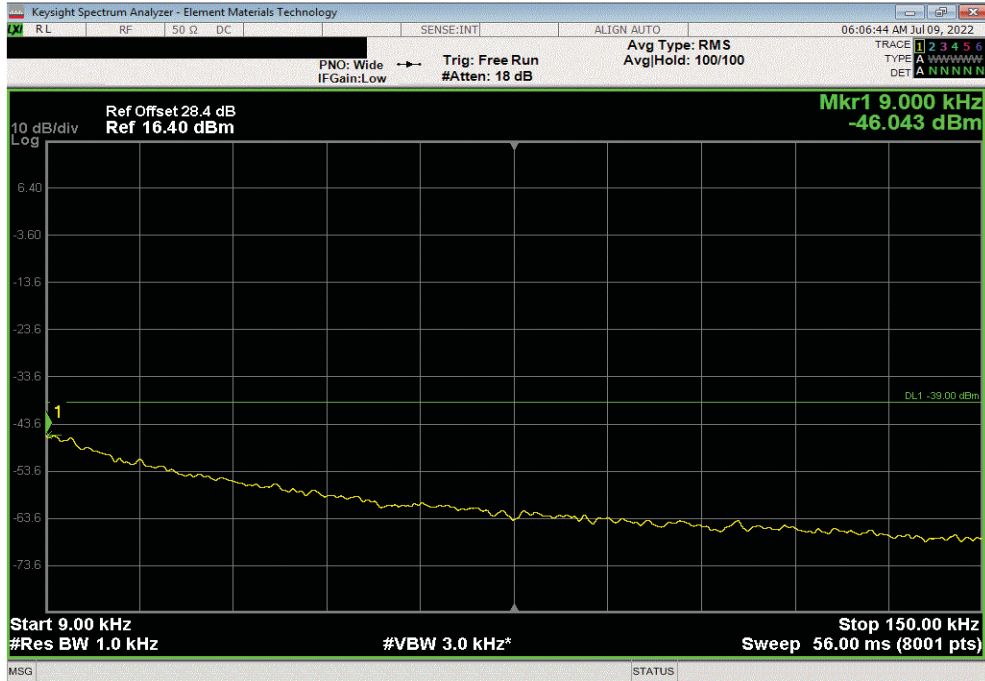


SPURIOUS CONDUCTED EMISSIONS - Band 85 NB IoT GB

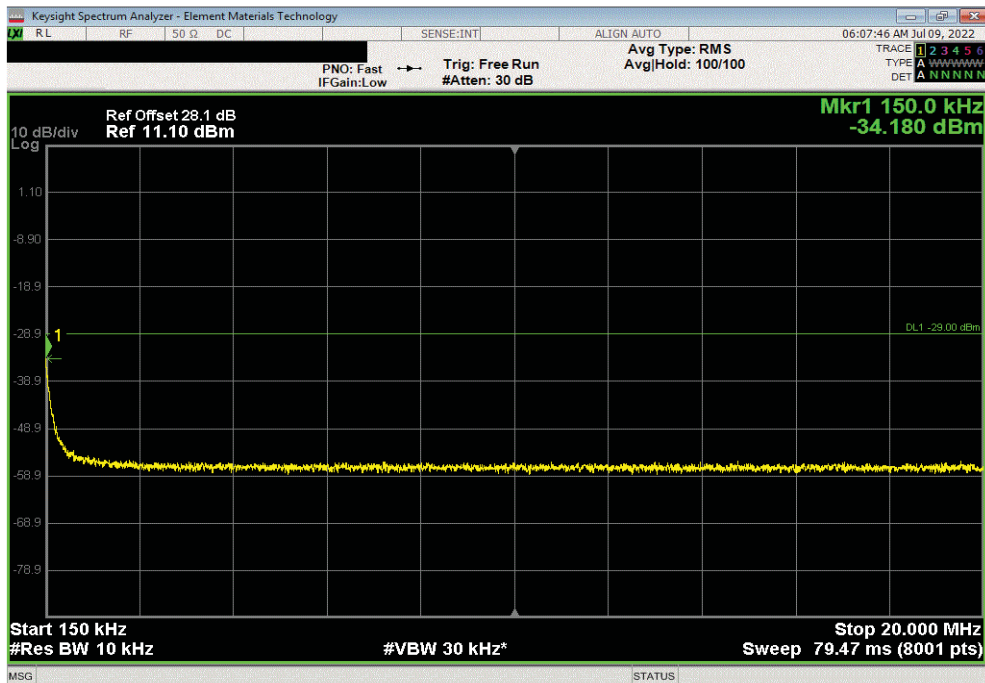


TbTx 2022.06.03.0 XMI 2022.02.07.0

Port 2, LTE, MultiBand MultiCarrier, 15 MHz Bandwidth, E-TM1.1 with N-TM Modulation, Mid Ch. 737 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
9 kHz - 150 kHz	0.01	-46.04	-39	Pass	



Port 2, LTE, MultiBand MultiCarrier, 15 MHz Bandwidth, E-TM1.1 with N-TM Modulation, Mid Ch. 737 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
150 kHz - 20 MHz	0.15	-34.18	-29	Pass	

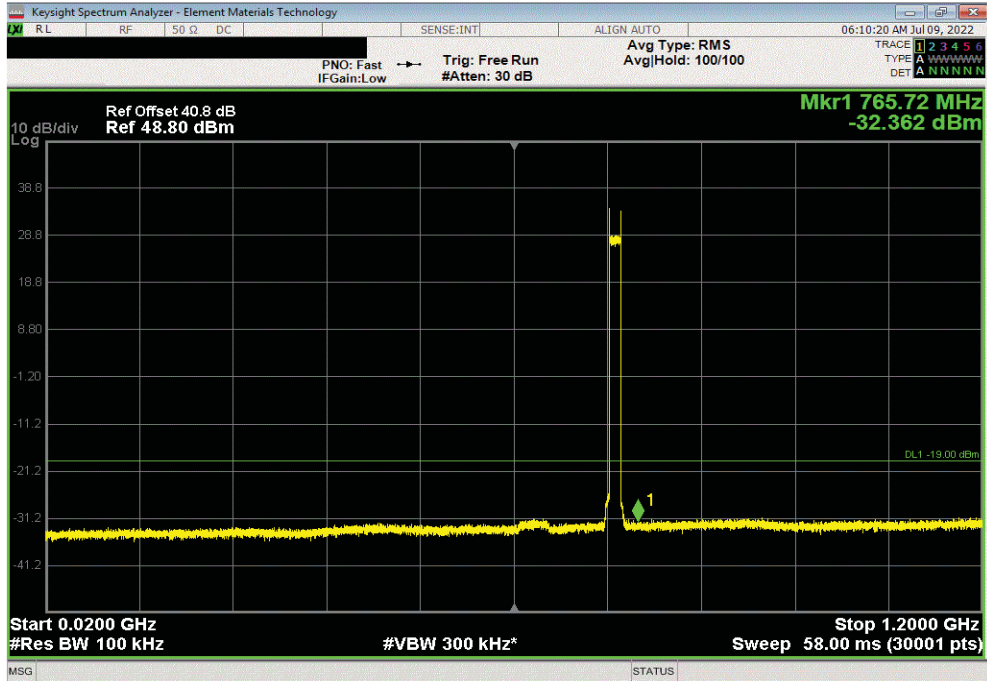


SPURIOUS CONDUCTED EMISSIONS - Band 85 NB IoT GB

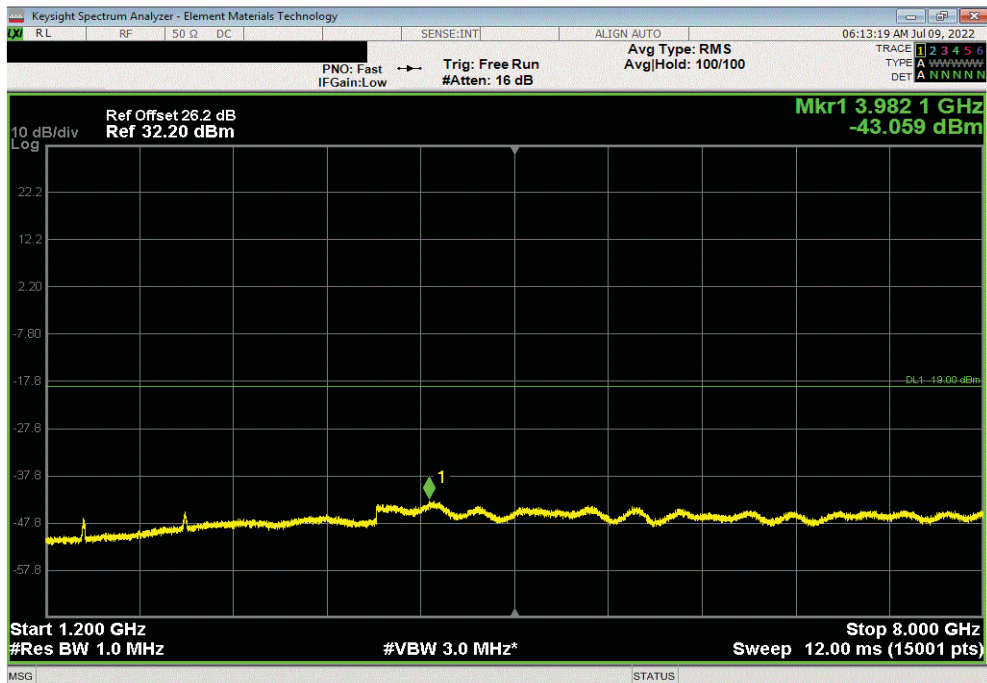


TbTx 2022.06.03.0 XMit 2022.02.07.0

Port 2, LTE, MultiBand MultiCarrier, 15 MHz Bandwidth, E-TM1.1 with N-TM Modulation, Mid Ch. 737 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
20 MHz - 1.2 GHz	765.72	-32.36	-19	Pass



Port 2, LTE, MultiBand MultiCarrier, 15 MHz Bandwidth, E-TM1.1 with N-TM Modulation, Mid Ch. 737 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
1.2 GHz - 8 GHz	3982.11	-43.06	-19	Pass



SPURIOUS CONDUCTED EMISSIONS - NB IoT SA



XMH 2022.02.07.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST DESCRIPTION

The Band 71 and Band 85 Narrow Band IoT Standalone spurious emission test cases were performed as part of the spurious emission tests for other channel types. See Spurious emission test section of other channel types for details.

SPURIOUS CONDUCTED EMISSIONS - MULTIBAND MULTICARRIER



XMIT 2022.02.07.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Block - DC	Fairview Microwave	SD3239	ANE	2022-03-02	2023-03-02
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFQ	2022-01-17	2023-01-17

TEST DESCRIPTION

The antenna port spurious emissions were measured at the RF output terminal of the EUT through 3 different attenuation configurations which continues through to the RF input of the spectrum analyzer. Analyzer plots utilizing a resolution bandwidth called out by the client's test plan were made for each modulation type from 9 kHz to 8 GHz. The conducted power of spurious emissions, up to the 10th harmonic of the transmit frequency, were investigated to ensure they were less than the limits also called out by the client's test plan shown below. The measurement methods are detailed in KDB 971168 D01v03 section 6 and ANSI C63.26-2015.

These measurements are for frequency band after the first 100 kHz bands immediately outside and adjacent to the frequency block. RF conducted emissions testing was performed only on one port. The AHLOB antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown in output power testing) and antenna port 2 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i, and 6.4.

Per section 27.53(g) and RSS 130 4.7, the power of any emission outside of the authorized operating frequency range cannot exceed -13 dBm. The limit is adjusted to -19 dBm [-13 dBm -10 log (4)] per FCC KDB 662911D01 v02r01 because the BTS may operate as a 4 port MIMO transmitter.

The limit for the 9kHz to 150kHz frequency range was adjusted to -39dBm to correct for a spectrum analyzer RBW of 1kHz versus required RBW of 100kHz [i.e.: -39dBm = -19dBm -10log(100kHz/1kHz)]. The limit for the 150kHz to 20MHz frequency range was adjusted to -29dBm to correct for a spectrum analyzer RBW of 10kHz versus required RBW of 100kHz [i.e.: -29dBm = -19dBm -10log(100kHz/10kHz)]. The required limit of -19dBm with a RBW of \geq 100kHz was used for all other frequency ranges.

Multi-carrier test cases have been developed as shown below:

Multi-Carrier Test Case 1: 3GPP Band 71 Multicarriers_Three LTE5 carriers using two carriers (with minimum spacing between carrier frequencies) at the lower band edge (619.5 & 624.5MHz) and a third carrier with maximum spacing between the other two carrier frequencies (649.5MHz) at the upper band edge. The LTE5 channel bandwidth was selected to maximize carrier power spectral density. The carriers are operated at maximum power for a total port power of 80 watts (~26.6W/Band 71 carriers). 3GPP Band 85 carrier is not enabled.

Multi-Carrier Test Case 2: 3GPP Band 71 Multicarriers_ One LTE 20MHz carrier (627.0 MHz) and one LTE 15MHz carrier (644.5MHz) cover all of the Band 71 bandwidth. The largest channel bandwidth is selected to maximize carrier OBW. The carriers are operated at maximum power for a total port power of 80 watts (~40W/Band 71 carriers). 3GPP Band 85 carrier is not enabled.

Multi-Carrier Test Case 3: 3GPP Band 85 Multicarrier_Two LTE5 carriers using two carriers (with maximum spacing between carrier frequencies) at the lower band edge (730.5MHz) and at the upper band edge (743.5MHz). The LTE5 channel bandwidth was selected to maximize carrier power spectral density. The carriers are operated at maximum power for a total port power of 80 watts (~40W/Band 85 carrier). 3GPP Band 71 carrier is not enabled.

Multi-Carrier Test Case 4: 3GPP Band 71 and Band 85 Multicarrier Multiband: Three LTE 5MHz carriers using two carriers (with minimum spacing between carrier frequencies) at the Band 71 lower band edge (619.5 & 624.5MHz) and a third carrier with maximum spacing between the other two carrier frequencies (743.5MHz) at the Band 85 upper band edge. The smallest channel bandwidth was selected to maximize carrier power spectral density. The carriers were operated at maximum power (~26.6W/ Band 71 carrier and ~26.6W Band 85 carrier) for a total port power of 80 watts.

SPURIOUS CONDUCTED EMISSIONS - MULTIBAND MULTICARRIER



TMTx 2022.06.03.0 MM 2022.02.07.0

EUT: AHLOB	Work Order: NOKI0043
Serial Number: YK22090029	Date: 11-Jul-22
Customer: Nokia Solutions and Networks	Temperature: 21.3 °C
Attendees: Mitchell Hill, John Rattanavong	Humidity: 55.2% RH
Project: None	Barometric Pres.: 1014 mbar
Tested by: Marty Martin	Power: 54 VDC
	Job Site: TX07

TEST SPECIFICATIONS	Test Method
FCC 27.2022	ANSI C63.26:2015
RSS-130 Issue 2:2019	ANSI C63.26:2015

COMMENTS
 All measurement path losses were accounted for in the reference level offset including any attenuators, filters and DC blocks. Band 71 and Band 85 carriers were operating at maximum power in each applicable test case to achieve a total port power of 80 watts. The following are measurements for a single output port.

DEVIATIONS FROM TEST STANDARD
 None

Configuration #	1, 2, 3	Signature <i>Marty Martin</i>
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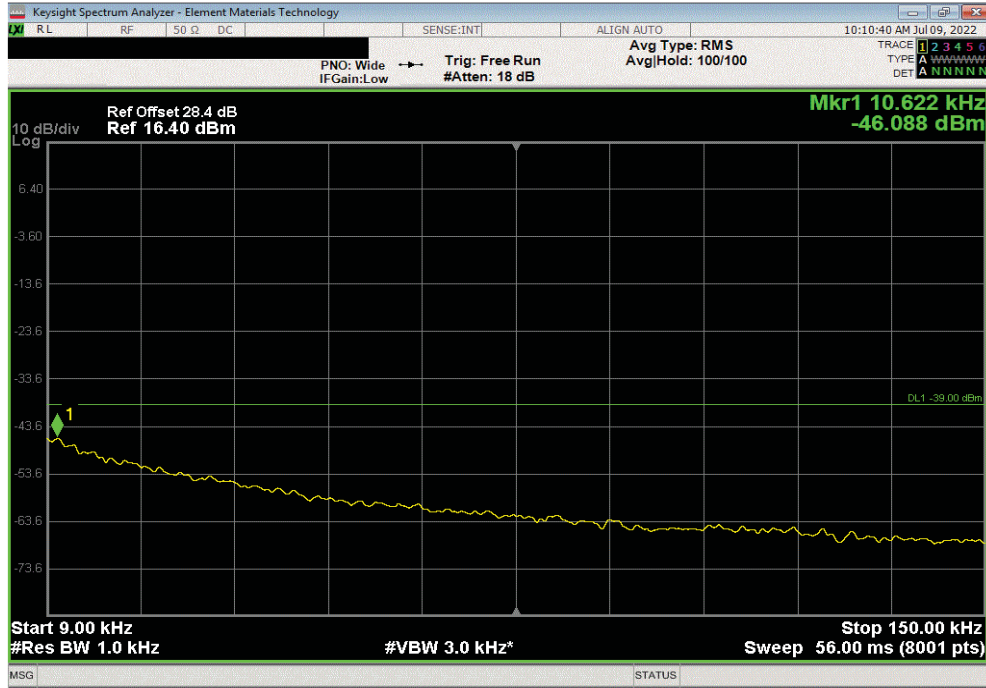
	Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
LTE Multicarrier Multiband Port 2					
	QPSK Modulation				
Test Case 1: Band 71 LTE5 (3 Carriers: 619.5 MHz, 624.5 MHz, 649.5 MHz)	9 kHz - 150 kHz	0.01	-46.088	-39	Pass
Test Case 1: Band 71 LTE5 (3 Carriers: 619.5 MHz, 624.5 MHz, 649.5 MHz)	150 kHz - 20 MHz	0.15	-35.176	-29	Pass
Test Case 1: Band 71 LTE5 (3 Carriers: 619.5 MHz, 624.5 MHz, 649.5 MHz)	20 MHz - 1.2 GHz	737.29	-24.56	-19	Pass
Test Case 1: Band 71 LTE5 (3 Carriers: 619.5 MHz, 624.5 MHz, 649.5 MHz)	1.2 GHz - 8 GHz	4026.53	-42.91	-19	Pass
Test Case 2: Band 71 LTE15 (Single Carrier: 644.5 MHz), Band 71 LTE20 (Single Carrier: 627 MHz)	9 kHz - 150 kHz	0.01	-45.509	-39	Pass
Test Case 2: Band 71 LTE15 (Single Carrier: 644.5 MHz), Band 71 LTE20 (Single Carrier: 627 MHz)	150 kHz - 20 MHz	0.15	-34.879	-29	Pass
Test Case 2: Band 71 LTE15 (Single Carrier: 644.5 MHz), Band 71 LTE20 (Single Carrier: 627 MHz)	20 MHz - 1.2 GHz	737.29	-24.71	-19	Pass
Test Case 2: Band 71 LTE15 (Single Carrier: 644.5 MHz), Band 71 LTE20 (Single Carrier: 627 MHz)	1.2 GHz - 8 GHz	3992.08	-44.02	-19	Pass
Test Case 3: Band 85 LTE5 (2 Carriers: 730.5 MHz, 743.5 MHz)	9 kHz - 150 kHz	0.01	-46.28	-39	Pass
Test Case 3: Band 85 LTE5 (2 Carriers: 730.5 MHz, 743.5 MHz)	150 kHz - 20 MHz	0.15	-34.574	-29	Pass
Test Case 3: Band 85 LTE5 (2 Carriers: 730.5 MHz, 743.5 MHz)	20 MHz - 1.2 GHz	639.16	-31.25	-19	Pass
Test Case 3: Band 85 LTE5 (2 Carriers: 730.5 MHz, 743.5 MHz)	1.2 GHz - 8 GHz	4030.16	-43.14	-19	Pass
Test Case 4: Band 71 LTE5 (2 Carriers: 619.5 MHz, 624.5 MHz), Band 85 LTE5 (Single Carrier: 743.5 MHz)	9 kHz - 150 kHz	0.01	-45.162	-39	Pass
Test Case 4: Band 71 LTE5 (2 Carriers: 619.5 MHz, 624.5 MHz), Band 85 LTE5 (Single Carrier: 743.5 MHz)	150 kHz - 20 MHz	0.15	-34.718	-29	Pass
Test Case 4: Band 71 LTE5 (2 Carriers: 619.5 MHz, 624.5 MHz), Band 85 LTE5 (Single Carrier: 743.5 MHz)	20 MHz - 1.2 GHz	766.2	-32.36	-19	Pass
Test Case 4: Band 71 LTE5 (2 Carriers: 619.5 MHz, 624.5 MHz), Band 85 LTE5 (Single Carrier: 743.5 MHz)	1.2 GHz - 8 GHz	4029.25	-43.26	-19	Pass

SPURIOUS CONDUCTED EMISSIONS - MULTIBAND MULTICARRIER

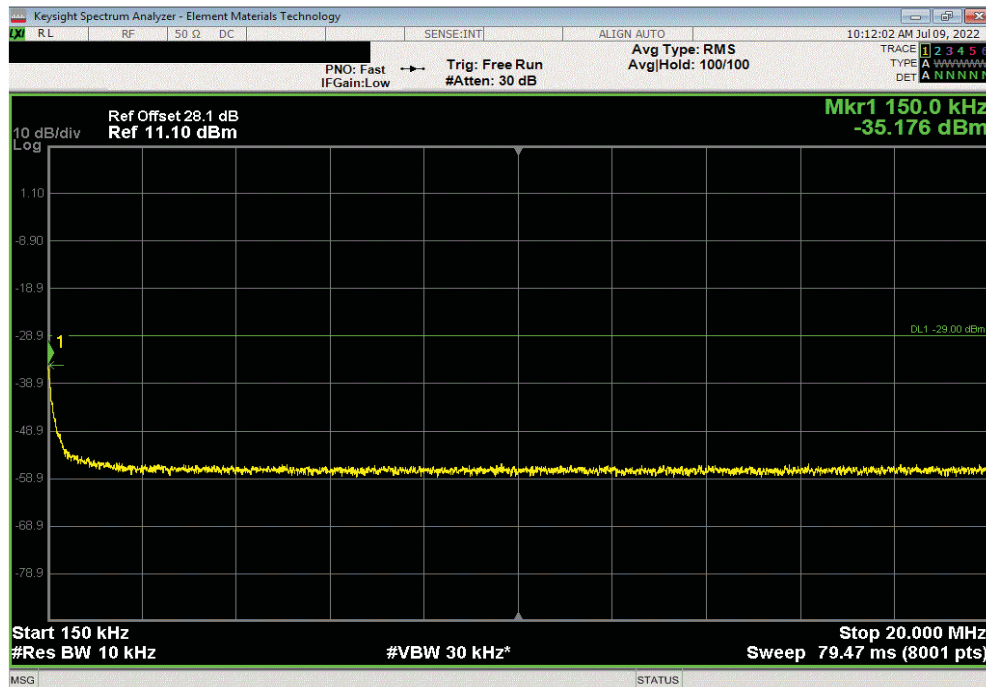


TbTx 2022.06.03.0 XMI 2022.02.07.0

LTE Multicarrier Multiband, Port 2, QPSK Modulation, Test Case 1: Band 71 LTE5 (3 Carriers: 619.5 MHz, 624.5 MHz, 649.5 MHz)					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
9 kHz - 150 kHz	0.01	-46.088	-39	Pass	



LTE Multicarrier Multiband, Port 2, QPSK Modulation, Test Case 1: Band 71 LTE5 (3 Carriers: 619.5 MHz, 624.5 MHz, 649.5 MHz)					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
150 kHz - 20 MHz	0.15	-35.176	-29	Pass	



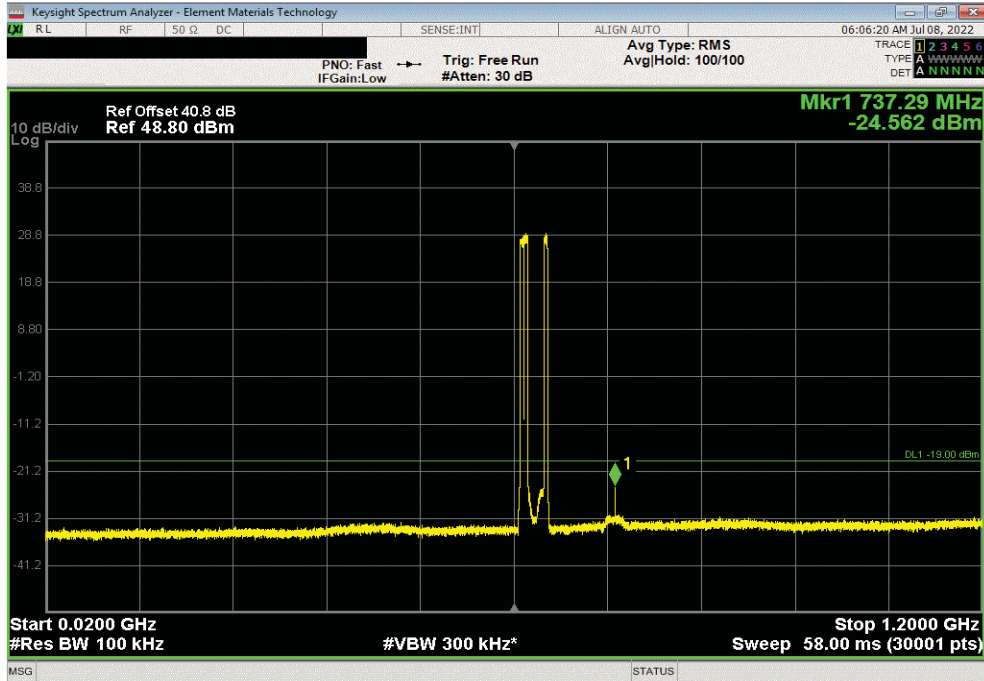
SPURIOUS CONDUCTED EMISSIONS - MULTIBAND MULTICARRIER



TbTx 2022.06.03.0 XMit 2022.02.07.0

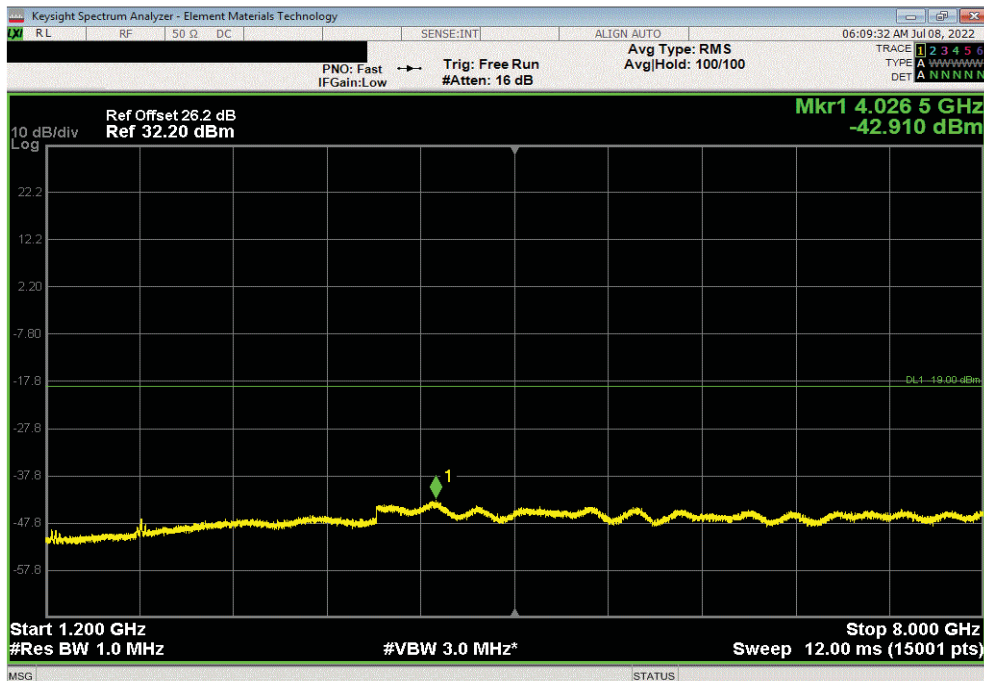
LTE Multicarrier Multiband, Port 2, QPSK Modulation, Test Case 1: Band 71 LTE5 (3 Carriers: 619.5 MHz, 624.5 MHz, 649.5 MHz)

Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
20 MHz - 1.2 GHz	737.29	-24.56	-36	Pass



LTE Multicarrier Multiband, Port 2, QPSK Modulation, Test Case 1: Band 71 LTE5 (3 Carriers: 619.5 MHz, 624.5 MHz, 649.5 MHz)

Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
1.2 GHz - 8 GHz	4026.53	-42.91	-30	Pass

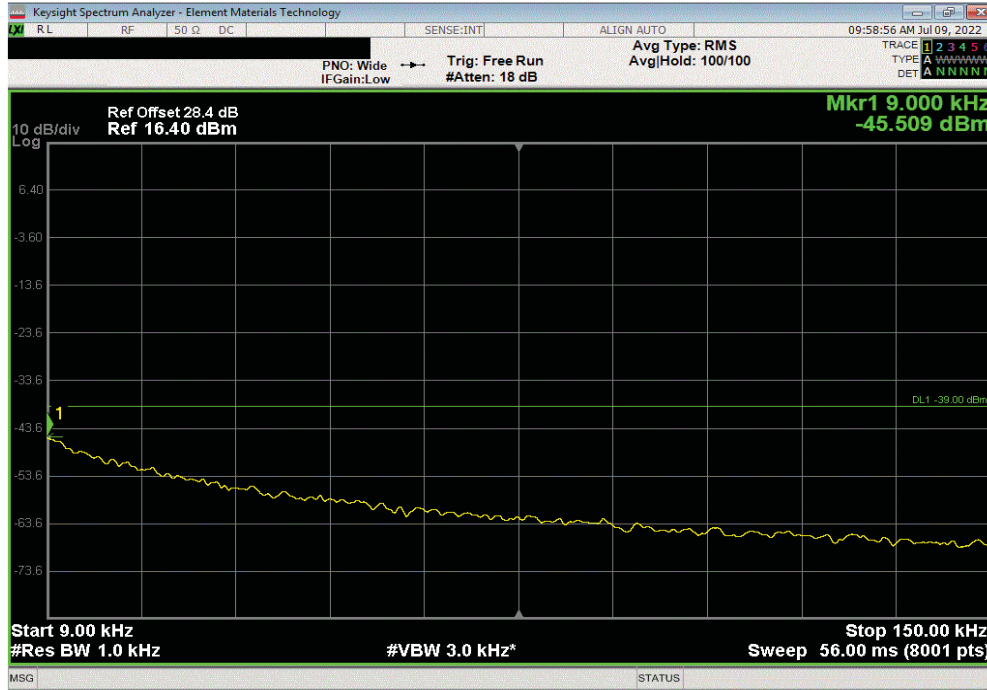


SPURIOUS CONDUCTED EMISSIONS - MULTIBAND MULTICARRIER

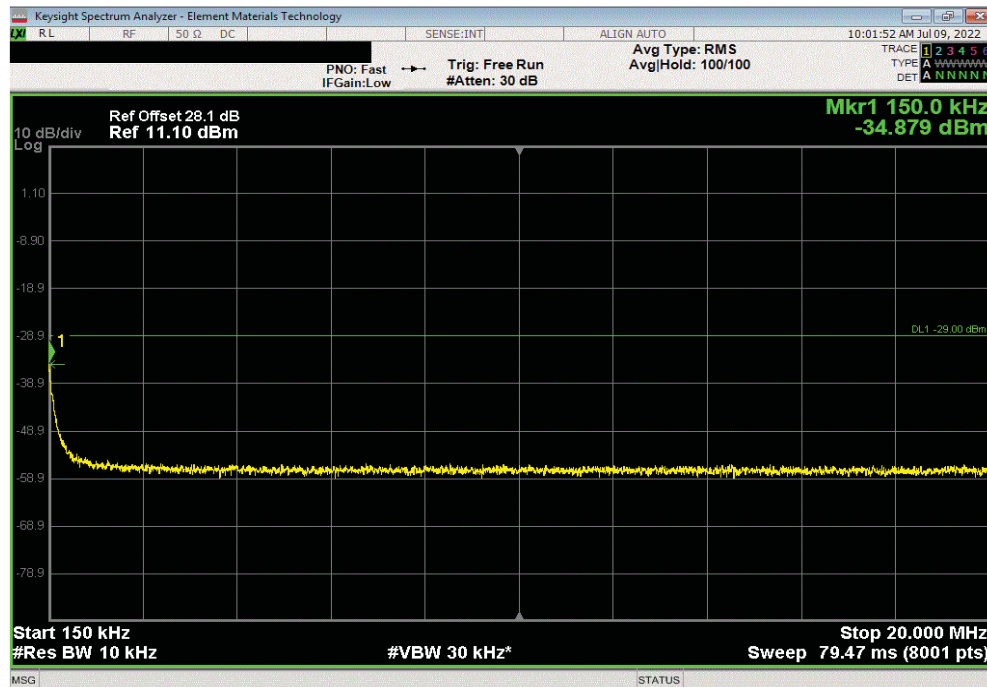


TbTx 2022.06.03.0 XMit 2022.02.07.0

LTE Multicarrier Multiband, Port 2, QPSK Modulation, Test Case 2: Band 71 LTE15 (Single Carriers: 644.5 MHz), Band 71 LTE20 (Single Carrier: 627 MHz)					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
9 kHz - 150 kHz	0.01	-45.509	-39	Pass	



LTE Multicarrier Multiband, Port 2, QPSK Modulation, Test Case 2: Band 71 LTE15 (Single Carriers: 644.5 MHz), Band 71 LTE20 (Single Carrier: 627 MHz)					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
150 kHz - 20 MHz	0.15	-34.879	-29	Pass	

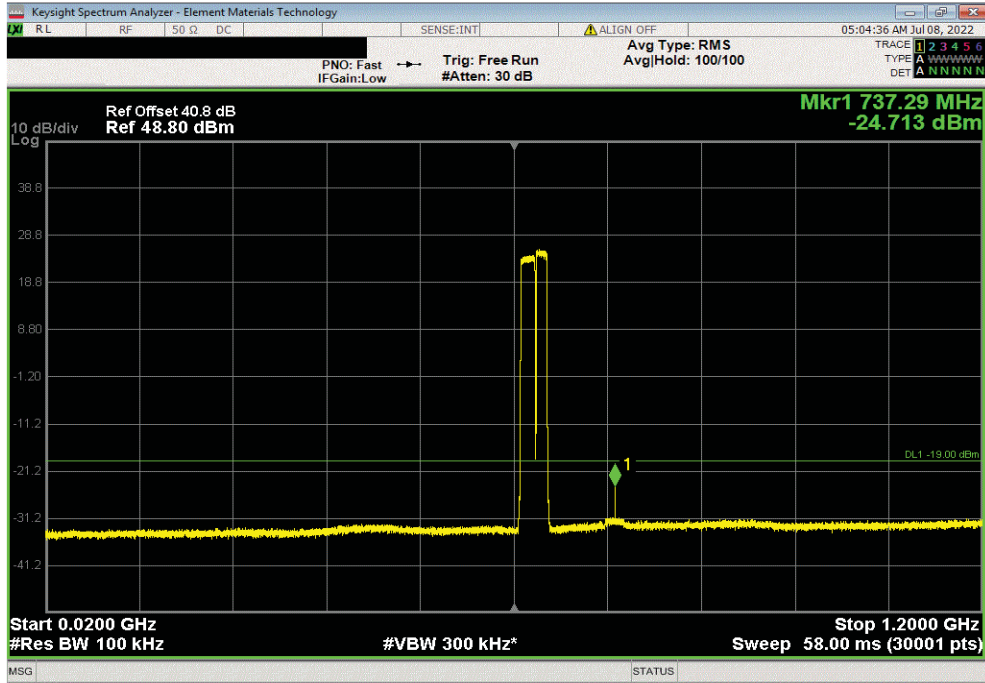


SPURIOUS CONDUCTED EMISSIONS - MULTIBAND MULTICARRIER

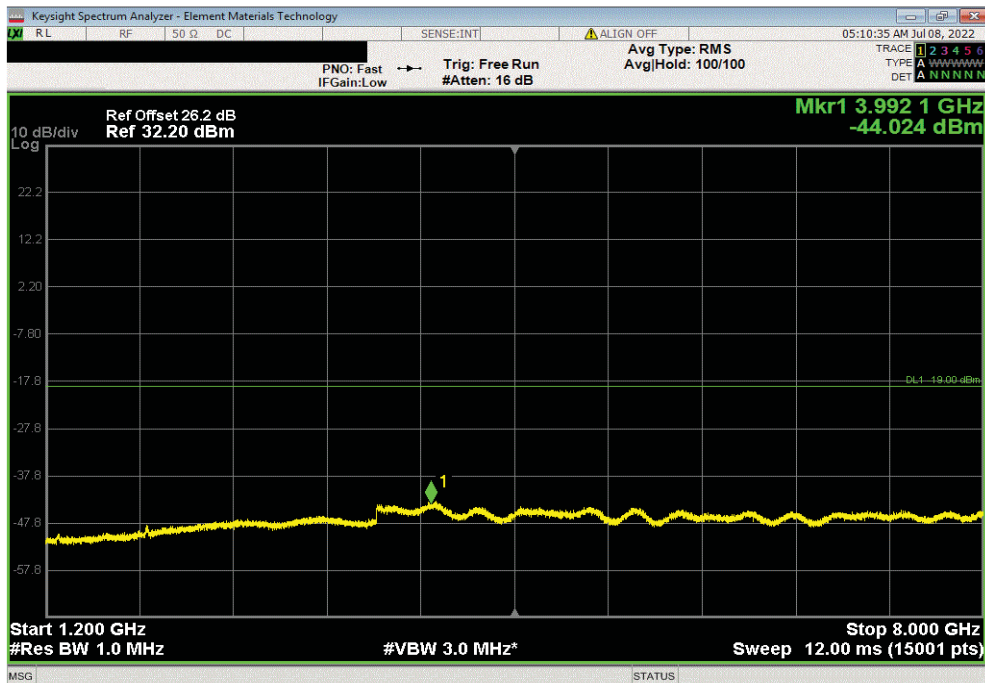


TbTx 2022.06.03.0 XMit 2022.02.07.0

LTE Multicarrier Multiband, Port 2, QPSK Modulation, Test Case 2: Band 71 LTE15 (Single Carriers: 644.5 MHz), Band 71 LTE20 (Single Carrier: 627 MHz)				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
20 MHz - 1.2 GHz	737.29	-24.71	-36	Pass



LTE Multicarrier Multiband, Port 2, QPSK Modulation, Test Case 2: Band 71 LTE15 (Single Carriers: 644.5 MHz), Band 71 LTE20 (Single Carrier: 627 MHz)				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
1.2 GHz - 8 GHz	3992.08	-44.02	-30	Pass

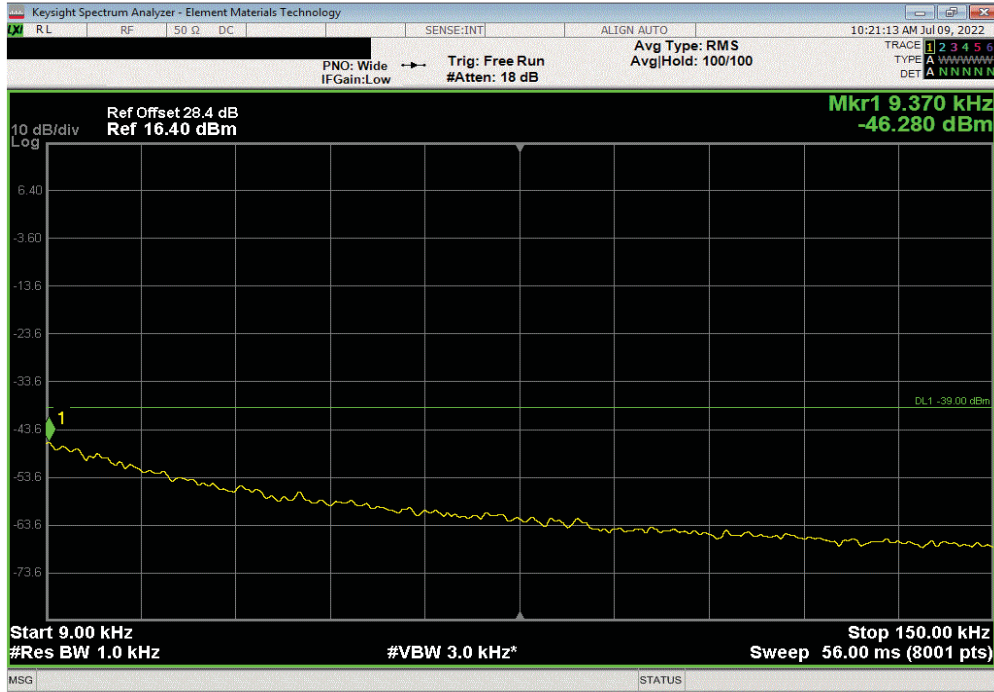


SPURIOUS CONDUCTED EMISSIONS - MULTIBAND MULTICARRIER

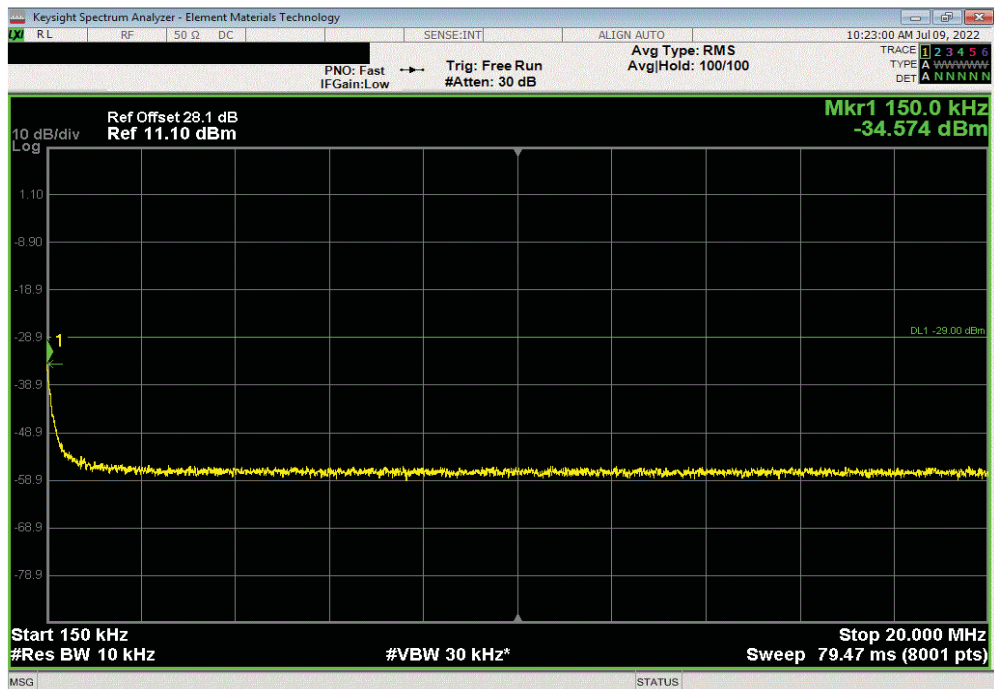


TbTx 2022.06.03.0 XMI 2022.02.07.0

LTE Multicarrier Multiband, Port 2, QPSK Modulation, Test Case 3: Band 85 LTE5 (2 Carriers: 730.5 MHz, 743.5 MHz)					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
9 kHz - 150 kHz	0.01	-46.28	-39	Pass	



LTE Multicarrier Multiband, Port 2, QPSK Modulation, Test Case 3: Band 85 LTE5 (2 Carriers: 730.5 MHz, 743.5 MHz)					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
150 kHz - 20 MHz	0.15	-34.574	-29	Pass	

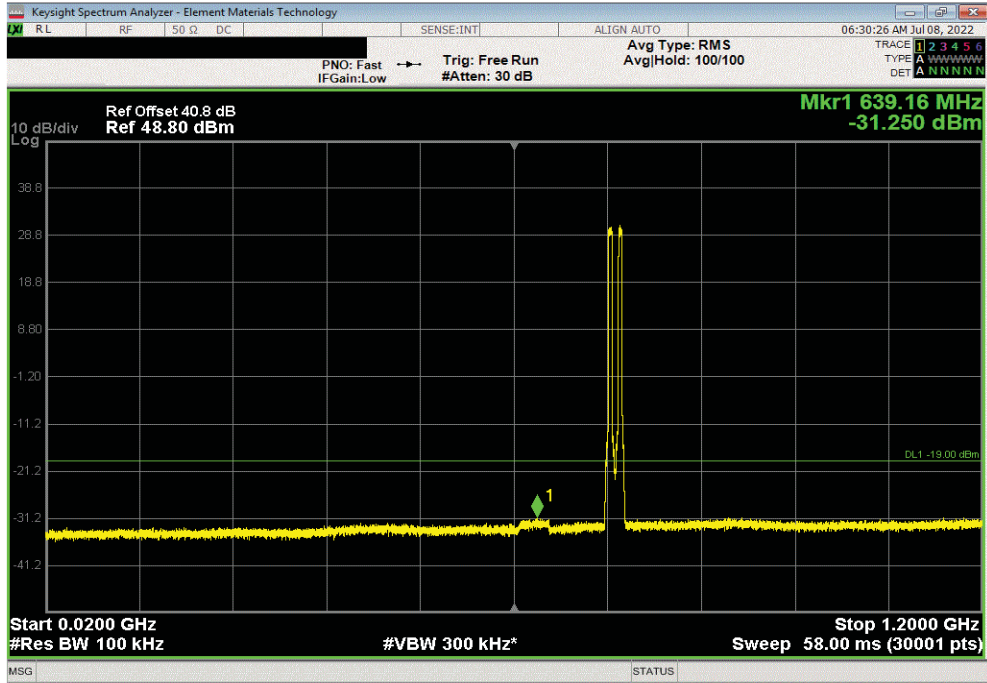


SPURIOUS CONDUCTED EMISSIONS - MULTIBAND MULTICARRIER

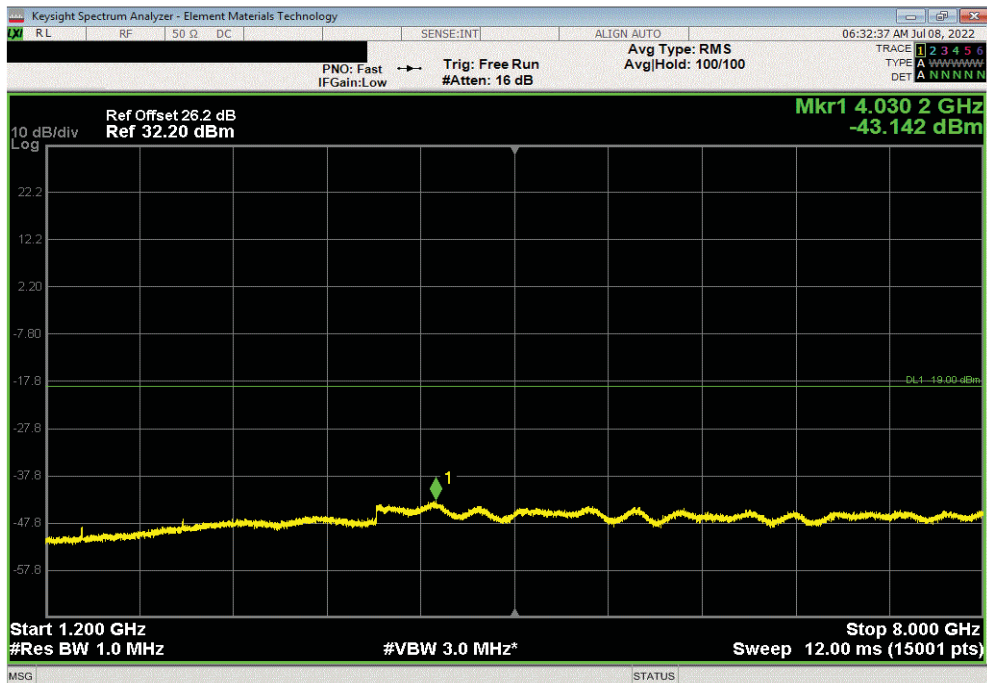


TbTx 2022.06.03.0 XMit 2022.02.07.0

LTE Multicarrier Multiband, Port 2, QPSK Modulation, Test Case 3: Band 85 LTE5 (2 Carriers: 730.5 MHz, 743.5 MHz)				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
20 MHz - 1.2 GHz	639.16	-31.25	-54	Pass



LTE Multicarrier Multiband, Port 2, QPSK Modulation, Test Case 3: Band 85 LTE5 (2 Carriers: 730.5 MHz, 743.5 MHz)				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
1.2 GHz - 8 GHz	4030.16	-43.14	-30	Pass

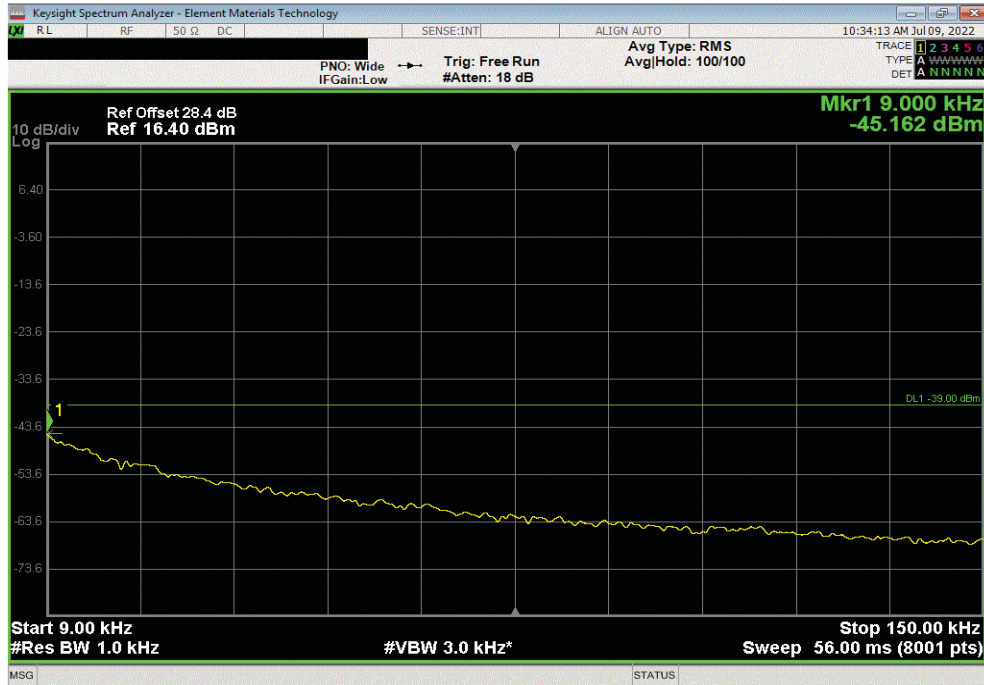


SPURIOUS CONDUCTED EMISSIONS - MULTIBAND MULTICARRIER

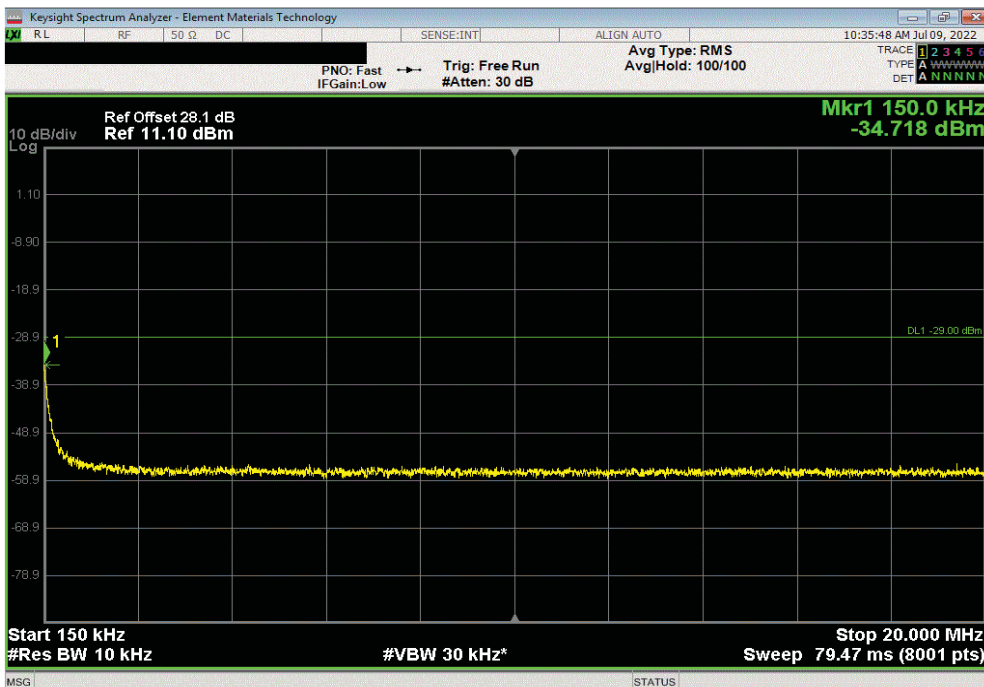


TbTx 2022.06.03.0 XMit 2022.02.07.0

LTE Multicarrier Multiband, Port 2, QPSK Modulation, Test Case 4: Band 71 LTE5 (2 Carriers: 619.5 MHz, 624.5 MHz), Band 85 LTE5 (Single Carrier: 743.5 MHz)					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
9 kHz - 150 kHz	0.01	-45.162	-39	Pass	



LTE Multicarrier Multiband, Port 2, QPSK Modulation, Test Case 4: Band 71 LTE5 (2 Carriers: 619.5 MHz, 624.5 MHz), Band 85 LTE5 (Single Carrier: 743.5 MHz)					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
150 kHz - 20 MHz	0.15	-34.718	-29	Pass	

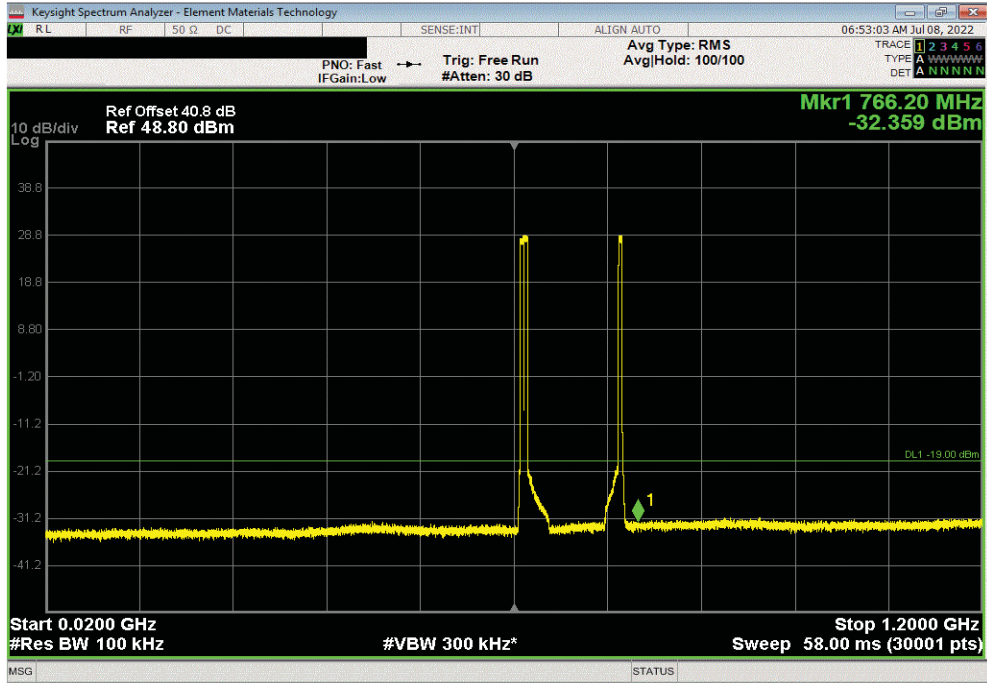


SPURIOUS CONDUCTED EMISSIONS - MULTIBAND MULTICARRIER

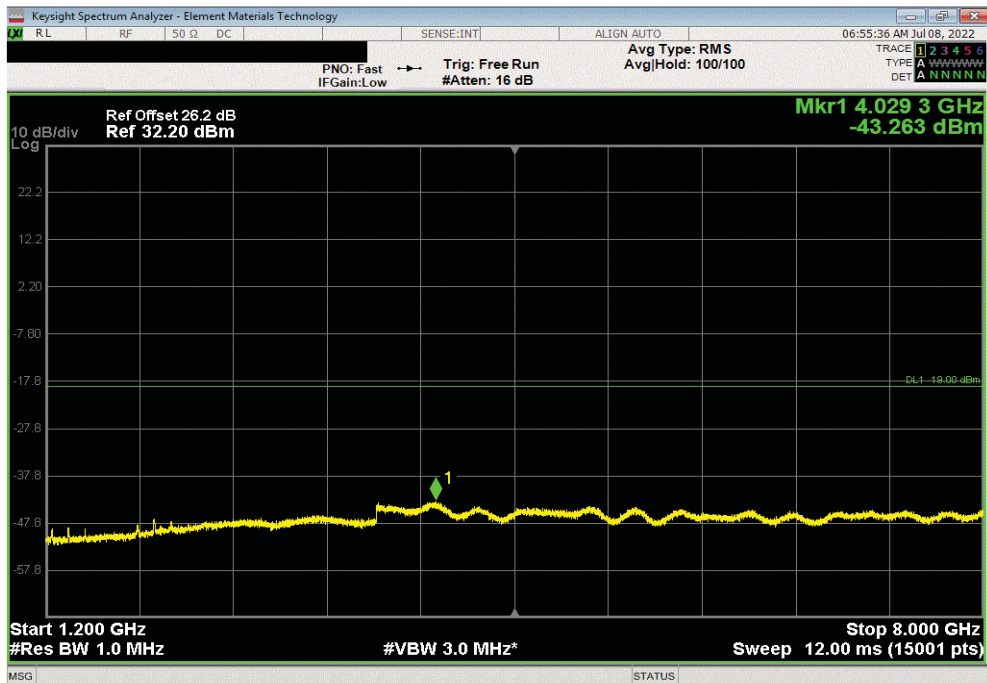


TbTx 2022.06.03.0 XMit 2022.02.07.0

LTE Multicarrier Multiband, Port 2, QPSK Modulation, Test Case 4: Band 71 LTE5 (2 Carriers: 619.5 MHz, 624.5 MHz), Band 85 LTE5 (Single Carrier: 743.5 MHz)				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
20 MHz - 1.2 GHz	766.2	-32.36	-36	Pass



LTE Multicarrier Multiband, Port 2, QPSK Modulation, Test Case 4: Band 71 LTE5 (2 Carriers: 619.5 MHz, 624.5 MHz), Band 85 LTE5 (Single Carrier: 743.5 MHz)				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
1.2 GHz - 8 GHz	4029.25	-43.26	-30	Pass



End of Test Report