Sverige

Accred. no. 10363
Testing
ISO/IEC 17025

Report On

FCC Testing of the
Ericsson AIR 3268 B48, KRD 901 254/3, LTE and NR (3550-3700 MHz) Base Station in accordance with FCC CFR 47 Part 2 and FCC CFR 47 Part 96

COMMERCIAL-IN-CONFIDENCE

FCC: TA8AKRD901254

PREPARED BY	APPROVED BY	DATED
Maggie Whiting Key Account Manager	Steve Scarfe Authorised Signatory	24 November 2022

Document 75956604 Report 02 Issue 2 **November-2022**

CONTENTS

SECTION 1

REPORT INFORMATION

1.1 REPORT DETAILS

Manufacturer	Ericsson
Address	Torshamnsgatan 23 Kista SE-16480 Stockholm Sweden
Product Name & Product Number	AIR 3268 B48 - KRD 901 254/3
Serial Number(s)	Module 1 - E23E345114 Module 2 - E23E352423 Module 3 - E23E352422
Software Version	Module 1 - CXP2030039/7 Rev R35A89 Module 2 -- CXP2030039/7 Rev R35A89 Module 3 - CXP2030039/7 Rev R35A89
Hardware Version	Module 1 – R1B Module 2 – R1B Module 3 – R1B
Non-Tested Variant (See Section 1.11 Additional Information)	AIR 3268 B48 - KRD 901 254/1 AIR 3268 B48 - KRD 901 254/11 AIR 3268 B48 - KRD 901 254/31
Test Specification/Issue/Date	FCC CFR 47 Part 2: 2021 FCC CFR 47 Part 96: 2021
Test Plan	FCC Test Plan AIR 3268 B48 Rev E 221027
Start of Test	02-November-2022
Finish of Test	17-November-2022
Name of Engineer(s)	Hector Moreno, Shashi Kiran, Ashok Kumar & Shakir Salman
Related Document(s)	KDB 971168 D01 v02r02 KDB 662911 D01 v02r01 ANSI C63.26-2015

ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate compliance with and FCC CFR 47 Part 2: 2021 and FCC CFR 47 Part 96: 2021. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s).

Hector Moreno, Shashi Kiran, Ashok Kumar & Shakir Salman

This report has been amended to Issue 1 and should be read in place of Issue 1. This report has been amended to remove references FCC Tracking Inquiry Number 154167 Section 2.1.5.

1.2 BRIEF SUMMARY OF RESULTS

The tests that have been selected are detailed in the customer Test Plan as defined in section 1.1 of this report. The Test Plan is based on the TÜV SÜD FCC Test Plan Rationale, available on request.

A brief summary of results for each configuration, in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 96, is shown below.

Section	Specification Clause		Test Description	Result
	FCC CFR 47 Part 2	FCC CFR 47 Part 96		
2.1	2.1046	96.41 (b)(c)(g)	Peak Output Power and Peak to Average Ratio - Conducted	Pass
2.2	2.1049	96.41 (e)(3)(i)	Occupied Bandwidth	Pass
2.3	2.1051	96.41 (e)(1)(i)	Band Edge	Pass
2.4	2.1051	96.41 (e)(1)(i), (e)(2), (e)(3)	Transmitter Spurious Emissions	Pass
2.5	2.1055	-	Frequency Stability	Pass

This test report covers only testing for LTE.

For additional configurations and test cases not contained within this test report, refer to the following reports:

TUV SUD Document 75956604 Report 03 – NR and NR+LTE

Intertek Report 2204406STO-101 contains Transmitter Spurious Radiated Emissions

1.3 TEST RATIONALE

The tests that have been selected are detailed in the customer Test Plan as defined in section 1.1 of this report. The Test Plan is based on the TÜV SÜD FCC Test Plan Rationale, available on request.

1.4 CONFIGURATION DESCRIPTION

Config No	RAT	No Of carriers	Carrier Bandwidth	Carrier Frequency Configuration (MHz)			
				Channel position B (MHz)	Channel position M (MHz)	Channel position T (MHz)	Power (dBm) per RDNB connector
1	LTE	1	10 MHz	3555	3625	3695	19.56
			20 MHz	3560	3625	3690	22.3
2 MC-1		2	10 MHz	-	3555 + 3695	-	2x 19.52
			20 MHz	-	3560 + 3690	-	2x 22.27
2 MC-2			10 MHz	3555 + 3565	3620 + 3630	3685 + 3695	2x 19.52
			20 MHz	3560 + 3580	3615 + 3635	3670 + 3690	2x 22.27
3		6	10 MHz	-	3555 + 3565 + 3575 + 3675 + 3685 + 3695	-	6x 19.52
		5	20 MHz	-	3560 + 3580 + 3600 + 3670 + 3690	-	5x 22.27

1.5 DECLARATION OF BUILD STATUS

Equipment Description			
Technical Description: (Please provide a brief description of the intended use of the equipment including the technologies the product supports)	Antenna Integrated Radio Unit, B48, CBRS, LTE		
Manufacturer:	Ericsson AB		
Model:	AIR 3268 B48		
Part Number:	KRD 901 254/1 With Antenna, Security Unlocked. KRD 901 254/11 With Antenna, Security Locked KRD 901 254/3 CAB-unit, Security Unlocked KRD 901 254/31 CAB unit, Security Locked		
Hardware Version:	R1B		
Software Version:	CXP2030039/7 Rev R35A89		
FCC ID of the product under test	TA8AKRD901254		
Intentional Radiators			
RAT	LTE		
Frequency Range (MHz to MHz)	3550 - 3700 MHz		
Conducted Declared Output Power (dBm)	30,4 dBm		
Antenna Gain (dBi)	11 (Layer compensated gain) , 23 (Effective gain)		
Supported Bandwidth(s) (MHz)	10,20 MHz		
Modulation Scheme(s)	QPSK, 16QAM, 64QAM, 256QAM		
Declared Worst Case Modulation Scheme & Test Model to be used	QPSK – TM 1.1		
IBW	150 MHz		
OBW	100 MHz (Contingous and Non-Contingous)		
ITU Emission Designator	8M97W7D, 17M9W7D, 97M5W7D (CA)		
Duty Cycle	67.6%		
Maximum number of carriers	6	2	
Maximum Total Power EIRP	47 dBm per 10MHz		
Max Power per carrier	34W (All Branches)		
Unintentional Radiators			
Highest frequency generated or used in the device or on which the device operates or tunes	CPRI 25,78 GHz		
Class B Digital Device (Use in residential environment only)	Class B Digital Device		
DC Power Supply (Delete if Not Applicable)			
Nominal voltage:	-48V		
Operating voltage:	-54.5V		
Extreme upper voltage:	-58.5V		
Extreme lower voltage:	-36V		
Max current:	15A at -36VDC and Max 10A at -48VDC		
Temperature			
Minimum temperature:	-40°C		
Maximum temperature:	55°C		
Antenna Characteristics			
Temporary antenna connector	State impedance	50	Ohm
Integral antenna	Type:	AAS (Advanced Antenna System)	
Standard Antenna Jack	No	If yes, describe how user is prohibited from changing antenna (if not professional installed):	
Equipment is only ever professionally installed	Yes		
Non-standard Antenna Jack	No		
Antenna detail specification			
EIRP Limit to be used	FCC		

Ancillaries			
Manufacturer:	Model:	Part Number:	Country of Origin:
SFP28 25GBASE-LR I-Temp SFP28	RDH 102 75/3 R1A SEP6300LH-E1-W		China
I hereby declare that I am entitled to sign on behalf of the manufacturer and that the information supplied is correct and complete.			
Name:	Hans Östgaard		
Position held:	Regulatory Engineer		
Email address:	hans .ostgaard@ericsson.com		
Telephone number:	+4670307364		
Date:	08/07/2022		

No responsibility will be accepted by TÜV SÜD as to the accuracy of the information declared in this document by the manufacturer.

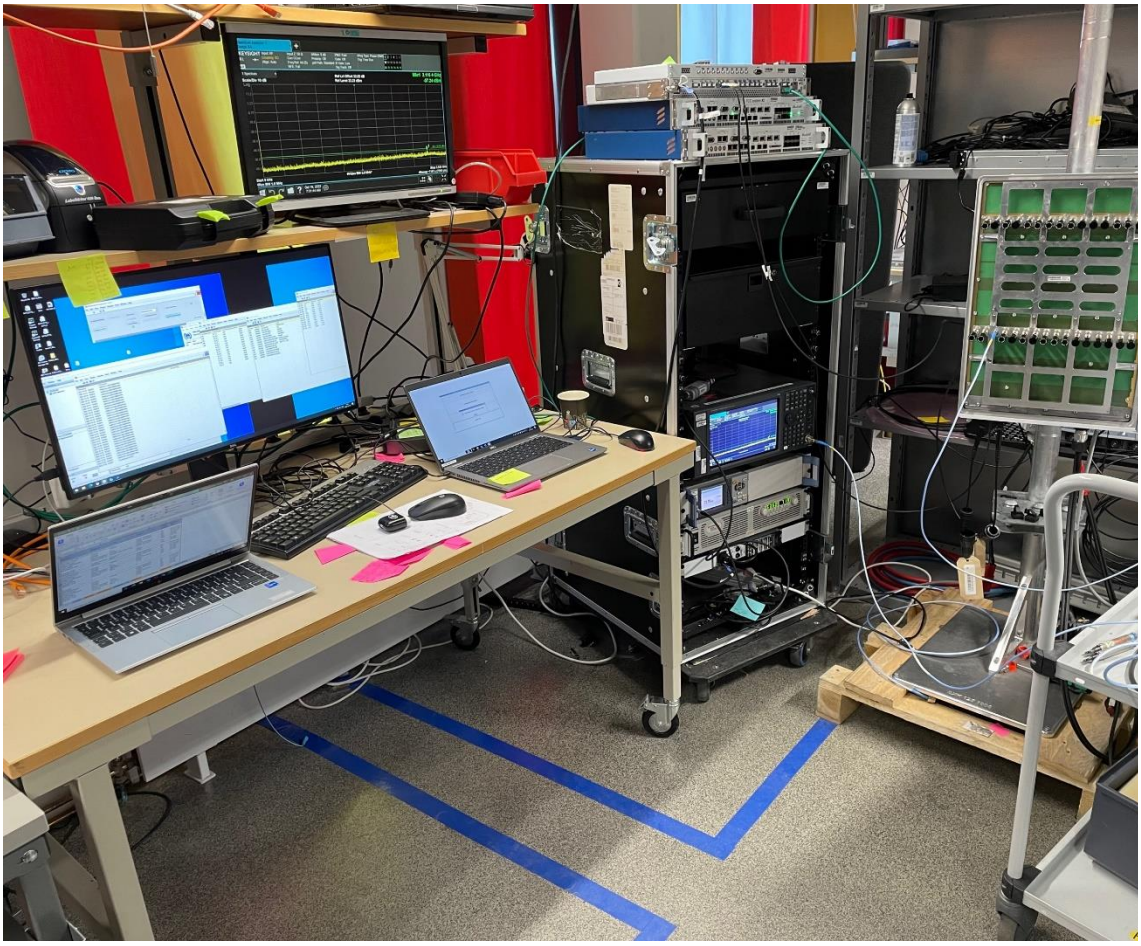
1.6 PRODUCT INFORMATION

1.6.1 Technical Description

The Equipment Under Test (EUT) AIR 3268 B48 - KRD 901 254/3 is an Ericsson AB Radio Unit working in the public mobile service Band 48 band which provides communication connections to Band 48 network.

The EUT is declared as operating from a nominal -48V DC supply.

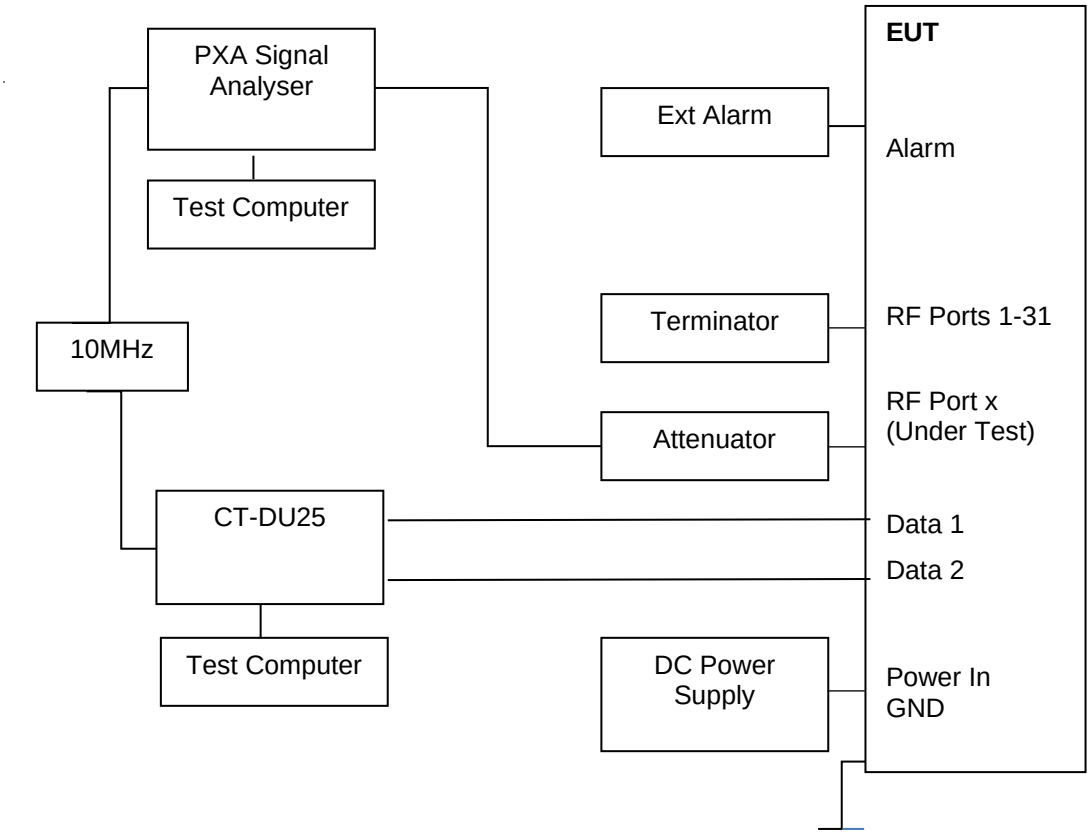
The Equipment Under Test (EUT) is shown in the photograph below. A full technical description can be found in the Manufacturer's documentation.



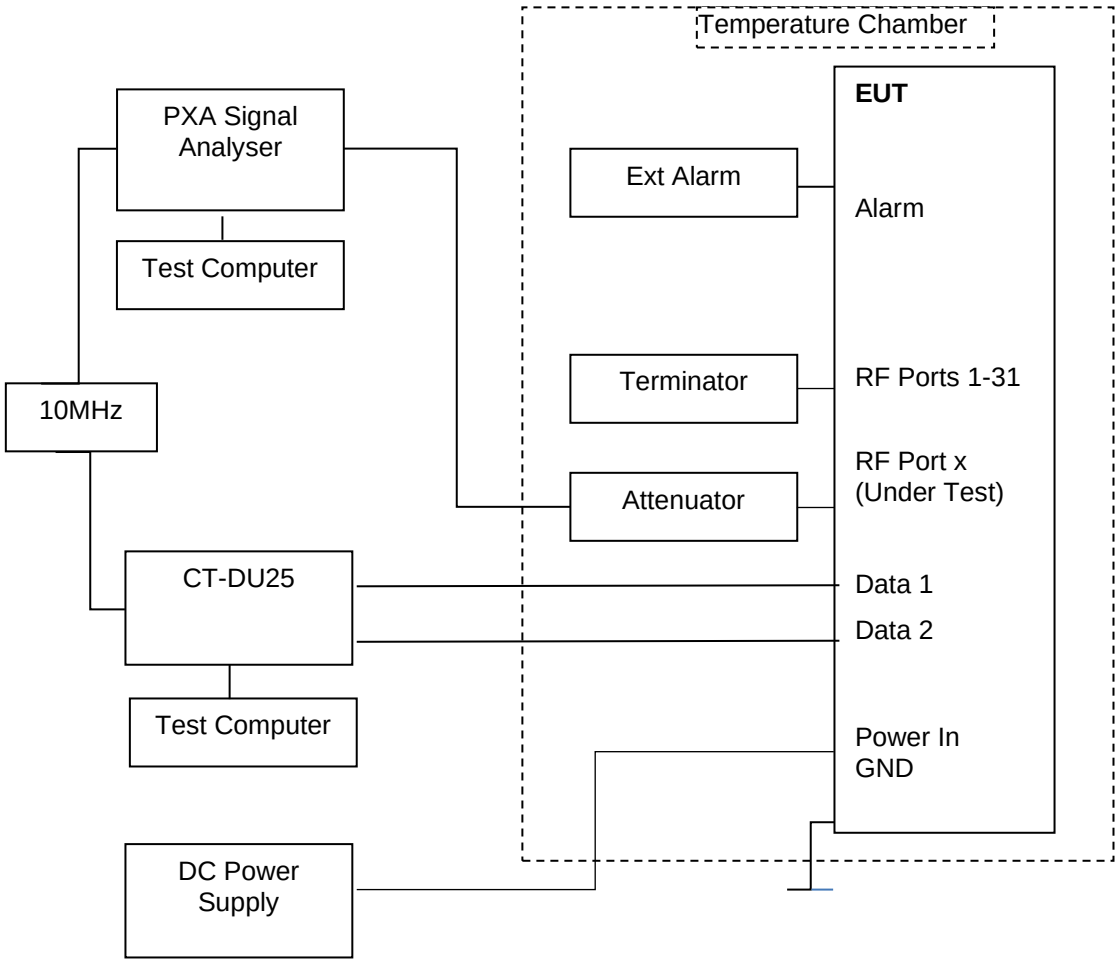
Equipment Under Test

1.7 TEST SETUP

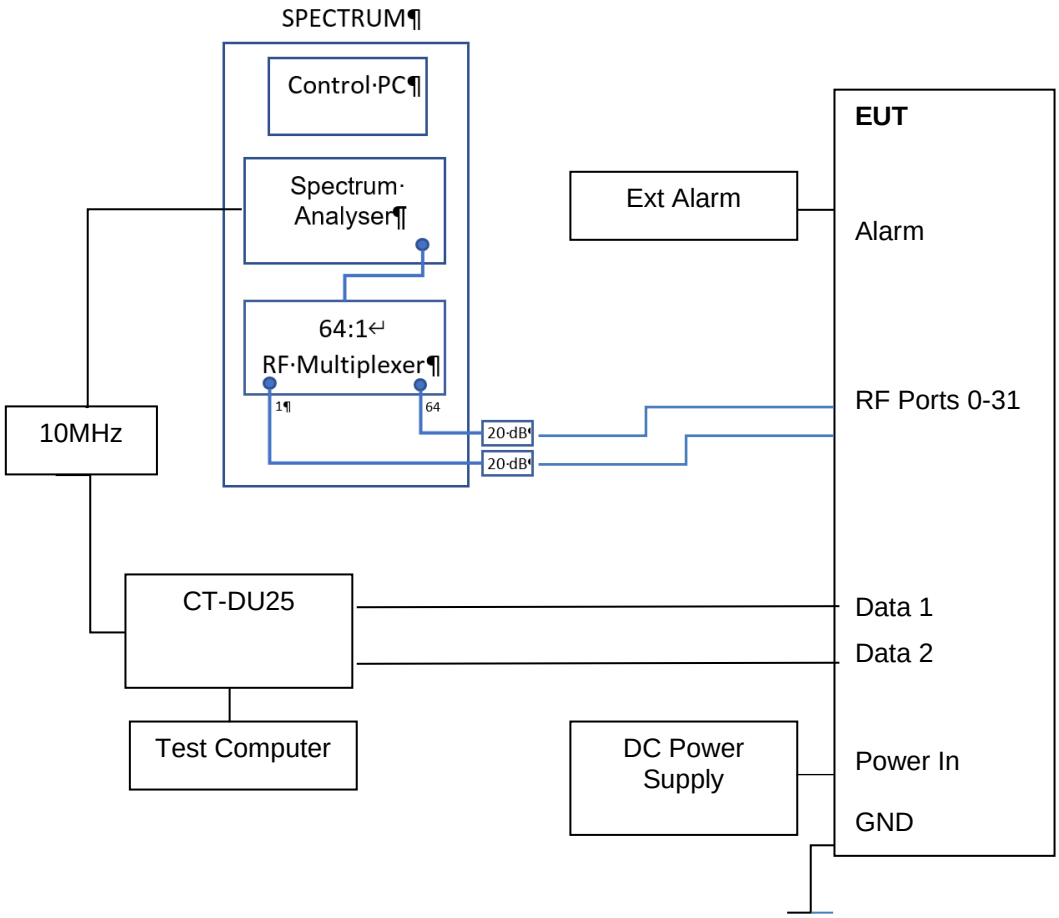
Conducted Test Set Up – Band Edge, Conducted Emissions



Conducted Test Set Up – Frequency Stability
Dashed line indicates equipment inside the Temperature Chamber for testing



Conducted Test Set Up, Power, PSD, PAR, Occupied Bandwidth



1.8 TEST CONDITIONS

For all tests the EUT was set up in accordance with the relevant test standard and to represent typical operating conditions. Tests were applied with the EUT situated as described in the Test Method for each Test.

The EUT was powered from a -54V DC supply unless otherwise stated.

563983 Ericsson Test Laboratory, Kista
Postal Address: Ericsson AB, Isafjordsgatan 10, Stockholm, SE-16 440, Sweden

Under our group Swedac Accreditation, TÜV SÜD Sverige conducted the following tests Ericsson Test Lab, Kista.

Test Name	Name of Engineer(s)	Radio Serial Number
Peak Output Power and Peak to Average Ratio - Conducted	Shashi Kiran & Hector Moreno	Module 1 - E23E345114
Occupied Bandwidth	Shashi Kiran & Hector Moreno	Module 1 - E23E345114
Band Edge	Shakir Salman	Module 2 - E23E352423
Transmitter Spurious Emissions	Shakir Salman	Module 2 - E23E352423
Frequency Stability	Ashok Kumar	Module 3 - E23E352422

1.9 DEVIATION FROM THE STANDARD

No deviations from the applicable test standards or test plan were made during testing.

1.10 MODIFICATION RECORD

No modifications were made to the EUT during testing.

1.11 ADDITIONAL INFORMATION

The Test Plan is based on the TUV SUD Document FCC and ISED Test Plan Rationale for Base Station Equipment.

Pre-testing was performed in accordance with the Test Plan to establish the worst-case Port, modulation schemes and bandwidths.

The Port with the highest power, worst case port was Port 12.
Worst case modulation was QPSK.
Worst case bandwidth was 20MHz

For Max number of Carriers 5 x 20 MHz was selected for test, as 20MHz bandwidth was identified as the worst case.

This EUT uses the same port for Tx and Rx and therefore RX Spurious Emisisons has not been performed.
Rx Spurious Emissions have been covered by testing to FCC Part 15B, which are covered by a seprate test report.

Ericsson have provided the following details about the variants of the AIR 3268 B48, KRD 901 254/3. The differences between KRD 901 254/3 and KRD 901 254/1, KRD 901 254/11 and KRD 901 254/31 are as below:
KRD 901 254/1 (with un-security software and antenna)
KRD 901 254/11** (with security software and antenna)
KRD 901 254/3*(with un-security software and CAB/RDNB board for testing purpose)
KRD 901 254/31(with security software and CAB/RDNB board for testing purpose)

Note*: Tested unit
Note**: This will be the marketed, sold unit.

To expedite testing three AIR 3268 B48 radios were used, the Hardware and Software Versions were identical. The table in Section 1.8 indicates which units were used for which tests and refers to them throughout as Module 1, Module 2 and Module 3. Ericsson declared that testing on Modules 2 and 3 should use the same worst case Ports that were measured on Module 1 as this would be representative.

Throughout this report the power unit dBm is used. dBm is a unit of level used to indicate that a power level is expressed in decibels (dB) with reference to one milliwatt (mW). It is used as a convenient measure of absolute power because of its capability to express both very large and very small values in a short form.

SECTION 2

TEST DETAILS

2.1 PEAK OUTPUT POWER AND PEAK TO AVERAGE RATIO - CONDUCTED

2.1.1 Specification Reference

FCC CFR 47 Part 96, Clause 96.41 (b)(c)(g)
FCC CFR 47 Part 2, Clause 2.1046

2.1.2 Date of Test and Modification State

03 and 07-November-2022 - Modification State 0

2.1.3 Test Equipment Used

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

2.1.4 Environmental Conditions

Ambient Temperature	23.02-23.20 °C
Relative Humidity	38.2-38.8%

2.1.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01, clause 5.2.1, FCC KDB 662911 D01 and ANSI C63.26 Clause 6.4.3.2.2

The plot results presented are the measured worst case and represent typical performance for all bands and antenna ports, plot data performance is on file and available on request.

Duty Cycle Correction Factor (DCCF) was added to the spectrum analyser reference level offset.

2.1.6 Test Results

Configuration 1

Maximum Output Power 19.56 dBm per Port

DUT Configuration			
Carrier Configuration:	LTE 10 MHz 1C QPSK	Duty Cycle (%):	67.4
RFBW:	10 MHz	DCCF (dB):	1.71
		Peak Antenna Gain (dBi):	11.00

Test Channel	Number of Measurements	PWR (dBm)			Total EIRP (dBm)	Limit (dBm/10MHz)	Margin (dB)
		Min	Max	Σ			
Bottom (3555 MHz)	32	19.33	19.81	34.62	45.62	47.00	-1.38
Middle (3625 MHz)	32	17.87	19.49	33.89	44.89	47.00	-2.11
Top (3695 MHz)	32	18.64	19.26	33.93	44.93	47.00	-2.07

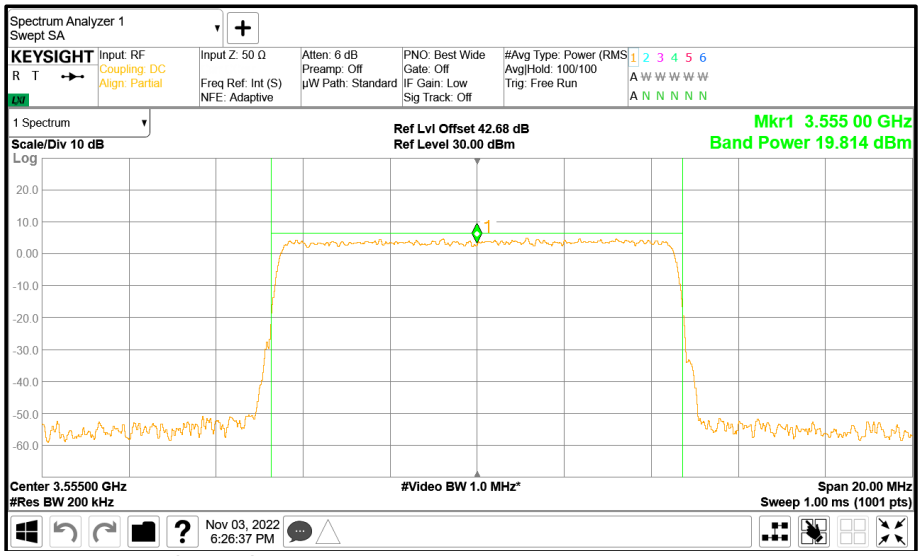
FCC Maximum Output Power Results

Remarks

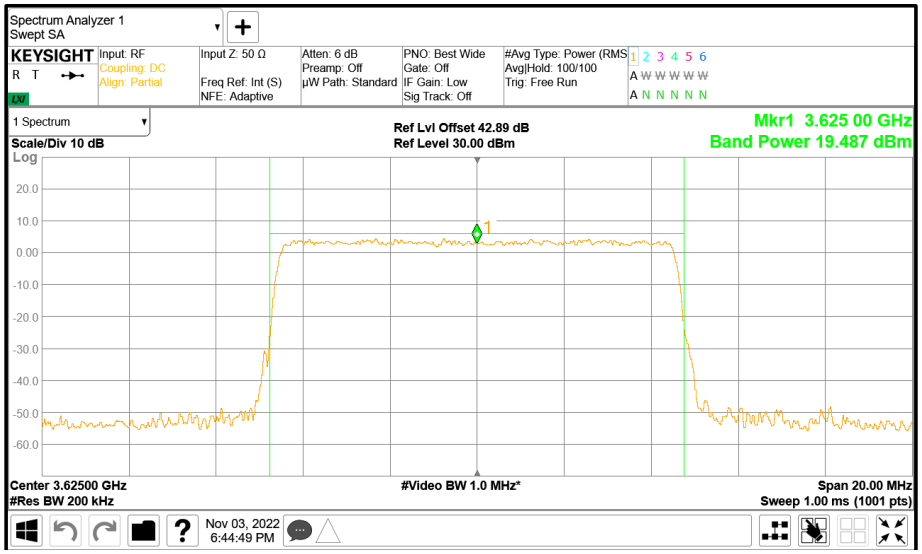
In accordance with FCC KDB 662911 D01 V02r01 E 1) for In-Band Measurements, Measure and sum calculation has been made.

∑ = Summed power over all 32 ports.

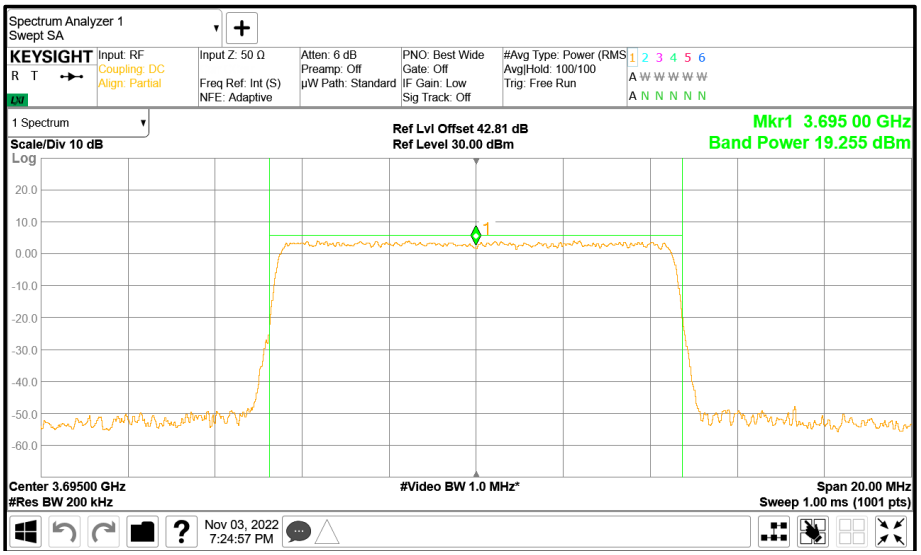
Total EIRP = Summed Power on all 32 Ports + Antenna Gain.



Bottom Channel Port 22



Middle Channel Port 9



Top Channel Port 10

Test Channel	Number of Measurements	PSD (dBm/MHz)			EIRP (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
		Min	Max	∑			
Bottom (3555 MHz)	32	10.71	12.01	25.67	36.67	37.00	-0.33
Middle (3625 MHz)	32	10.15	10.90	24.81	35.81	37.00	-1.19
Top (3695 MHz)	32	9.68	11.41	24.97	35.97	37.00	-1.03

FCC Maximum Power Spectral Density Results

Remarks

∑ = In accordance with ANSI C63.26 6.4.3.2.2 Measure and sum the spectra across all 32 ports.

Total PSD = Summed PSD on all 32 Ports + Antenna Gain.

Test Channel	Number of Measurements	PAPR (dB)		Limit (dB)	Margin (dB)
		Min	Max		
Bottom (3555 MHz)	32	8.48	8.65	13.00	-4.36
Middle (3625 MHz)	32	8.45	8.65	13.00	-4.35
Top (3695 MHz)	32	8.45	8.66	13.00	-4.34

Peak To Average Power Ratio Results

Configuration 1

Maximum Output Power 22.3 dBm

DUT Configuration			
Carrier Configuration:	LTE 20 MHz 1C QPSK	Duty Cycle (%):	67.6
RFBW:	20 MHz	DCCF (dB):	1.70
		Peak Antenna Gain (dBi):	11.00

Test Channel	Number of Measurements	PWR (dBm)			Total EIRP (dBm)	Calculated Total EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)
		Min	Max	∑				
Bottom (3560 MHz)	32	21.81	22.69	37.28	48.28	45.76	47.00	-1.24
Middle (3625 MHz)	32	21.80	22.68	37.29	48.29	45.77	47.00	-1.23
Top (3690 MHz)	32	22.23	23.11	37.64	48.64	46.12	47.00	-0.88

FCC Maximum Output Power Results

Remarks

In accordance with FCC KDB 662911 D01 V02r01 E 1) for In-Band Measurements, Measure and sum calculation has been made.

∑ = Summed power over all 32 ports.

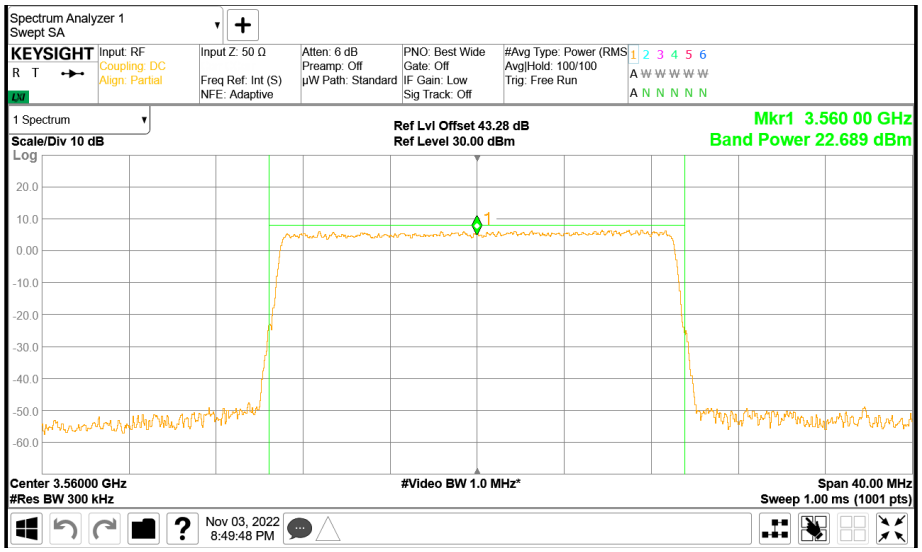
Total EIRP = Summed Power on all 32 Ports + Antenna Gain.

In accordance with ANSI C63.26-2015, 5.2.4 Average power and power spectral density measurements, Clause 5.2.4.1 General
When a reference bandwidth is specified in conjunction with average conducted power, ERP, or EIRP limits, then the average PSD is measured to demonstrate compliance to the relevant limits.

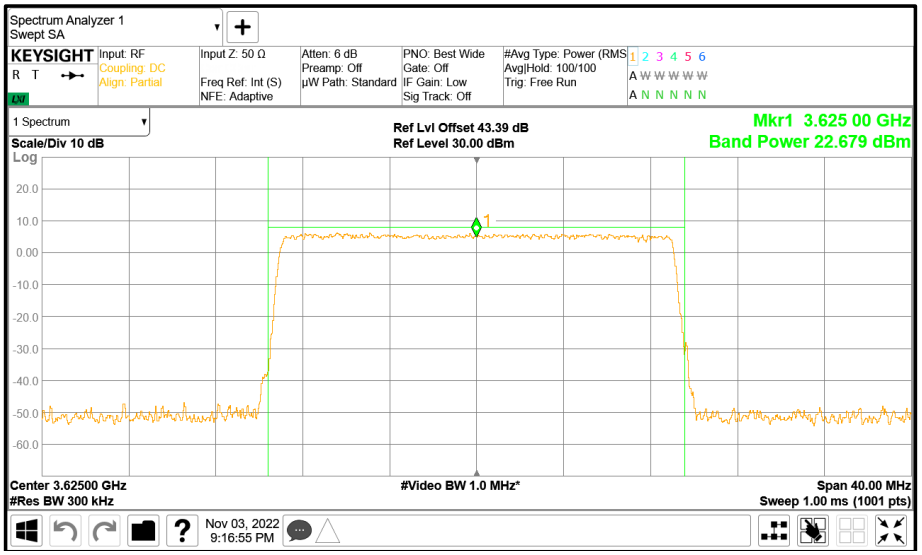
In leui of measurements in a 10MHz bandwidth the power was measured and Total EIRP dBm calculated as above, and then the dBm/10MHz Total EIRP was calculated using the measured 99% Occupied Bandwidth in the following formula;

Total EIRP-10log/measured Bandwidth/10MHz

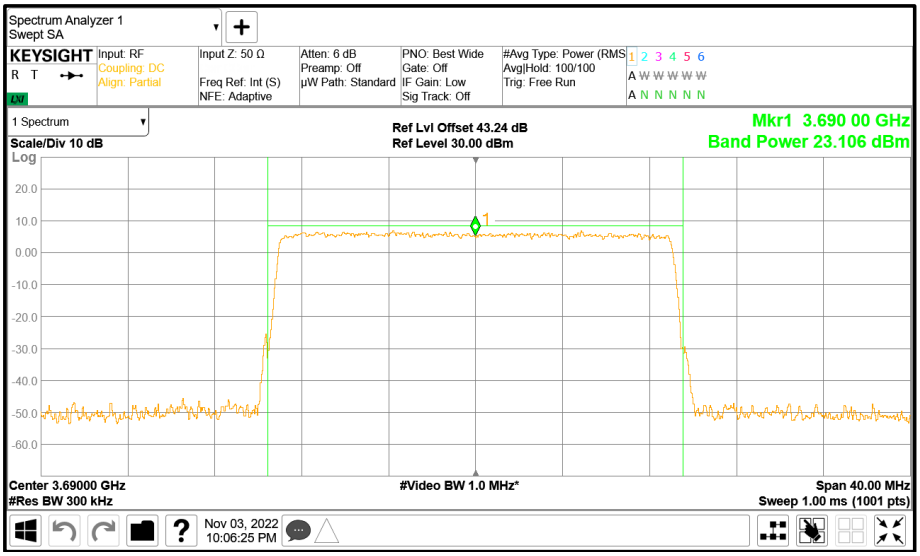
Ie 48.64dBm – (10log(17.88/10)) = 48.64-2.52 = 46.12 dBm/10MHz



Bottom Channel Port 30



Middle Channel Port 20



Top Channel Port 30

Test Channel	Number of Measurements	PSD (dBm/MHz)			Total PSD (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
		Min	Max	∑			
Bottom (3560 MHz)	32	10.75	11.94	25.43	36.43	37.00	-0.57
Middle (3625 MHz)	32	10.77	11.47	25.36	36.36	37.00	-0.64
Top (3690 MHz)	32	10.59	12.27	25.62	36.62	37.00	-0.38

FCC Maximum Power Spectral Density Results

Remarks

∑ = In accordance with ANSI C63.26 6.4.3.2.2 Measure and sum the spectra across all 32 ports.

Total PSD = Summed PSD on all 32 Ports + Antenna Gain.

Test Channel	Number of Measurements	PAPR (dB)		Limit (dB)	Margin (dB)
		Min	Max		
Bottom (3560 MHz)	32	8.51	8.74	13.00	-4.26
Middle (3625 MHz)	32	8.50	8.77	13.00	-4.23
Top (3690 MHz)	32	8.58	8.87	13.00	-4.13

Peak To Average Power Ratio Results

Configuration 2

Maximum Output Power 2 x 19.52 dBm

DUT Configuration			
Carrier Configuration:	LTE 10 MHz 2C	Duty Cycle (%):	67.5
RFBW:	10 MHz	DCCF (dB):	1.71
		Peak Antenna Gain (dBi):	11.00

Test Channel	Number of Measurements	PWR (dBm)			Total EIRP (dBm)	Calculated Total EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)
		Min	Max	∑				
Middle (3625 MHz)	32	20.20	23.24	37.05	48.05	45.30	47.00	-1.70

FCC Maximum Output Power Results

Remarks

In accordance with FCC KDB 662911 D01 V02r01 E 1) for In-Band Measurements, Measure and sum calculation has been made.

∑ = Summed power over all 32 ports.

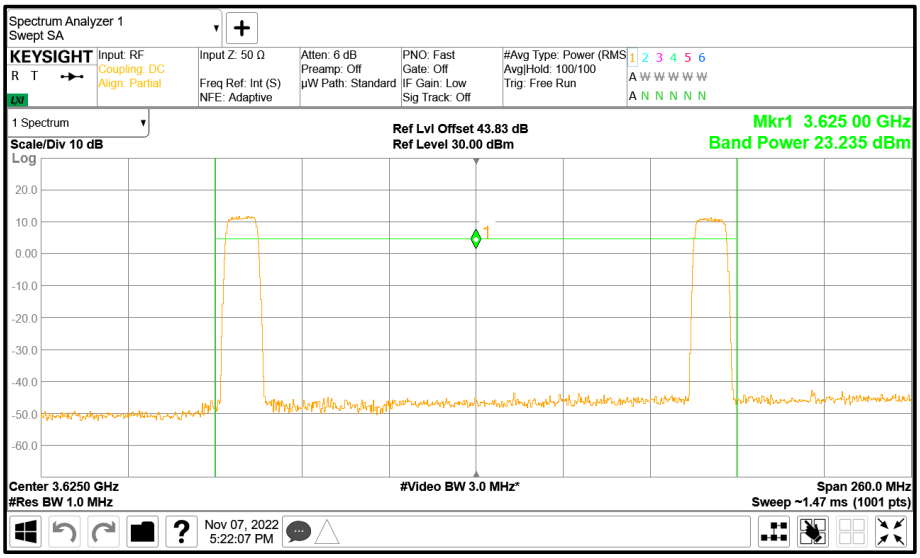
Total EIRP = Summed Power on all 32 Ports + Antenna Gain.

In accordance with ANSI C63.26-2015, 5.2.4 Average power and power spectral density measurements, Clause 5.2.4.1 General
When a reference bandwidth is specified in conjunction with average conducted power, ERP, or EIRP limits, then the average PSD is measured to demonstrate compliance to the relevant limits.

In leui of measurements in a 10MHz bandwidth the power was measured and Total EIRP dBm calculated as above, and then the dBm/10MHz Total EIRP was calculated using the measured 99% Occupied Bandwidth in the following formula;

Total EIRP-10log/measured Bandwidth/10MHz

Ie 48.64dBm – (10log(17.88/10)) = 48.64-2.52 = 46.12 dBm/10MHz



Middle Channel Port 13

Test Channel	Number of Measurements	PSD (dBm/MHz)			Total PSD (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
		Min	Max	∑			
Middle (3625 MHz)	32	9.62	11.89	25.10	36.10	37.00	-0.90

FCC Maximum Power Spectral Density Results

Remarks

∑ = In accordance with ANSI C63.26 6.4.3.2.2 Measure and sum the spectra across all 32 ports.

Total PSD = Summed PSD on all 32 Ports + Antenna Gain.

Configuration 2

Maximum Output Power 2 x 22.27 dBm

DUT Configuration			
Carrier Configuration:	LTE 20 MHz 2C	Duty Cycle (%):	67.6
RFBW:	20 MHz	DCCF (dB):	1.70
		Peak Antenna Gain (dBi):	11.00

Test Channel	Number of Measurements	PWR (dBm)			EIRP (dBm)	Calculated Total EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)
		Min	Max	∑				
Middle (3625 MHz)	32	23.56	25.91	40.02	51.02	45.26	47.00	-1.71

FCC Maximum Output Power Results

Remarks

In accordance with FCC KDB 662911 D01 V02r01 E 1) for In-Band Measurements, Measure and sum calculation has been made.

∑ = Summed power over all 32 ports.

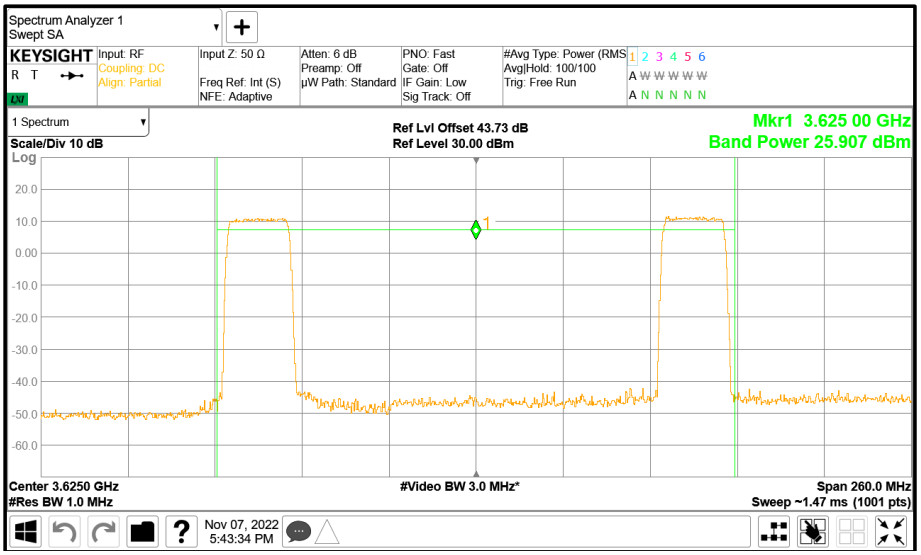
Total EIRP = Summed Power on all 32 Ports + Antenna Gain.

In accordance with ANSI C63.26-2015, 5.2.4 Average power and power spectral density measurements, Clause 5.2.4.1 General
When a reference bandwidth is specified in conjunction with average conducted power, ERP, or EIRP limits, then the average PSD is measured to demonstrate compliance to the relevant limits.

In leui of measurements in a 10MHz bandwidth the power was measured and Total EIRP dBm calculated as above, and then the dBm/10MHz Total EIRP was calculated using the measured 99% Occupied Bandwidth in the following formula;

Total EIRP-10log/measured Bandwidth/10MHz

Ie 48.64dBm – (10log(17.88/10)) = 48.64-2.52 = 46.12 dBm/10MHz



Middle Channel Port 2

Test Channel	Number of Measurements	PSD (dBm/MHz)			Total PSD (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
		Min	Max	∑			
Middle (3625 MHz)	32	9.52	11.80	25.00	36.00	37.00	-1.00

FCC Maximum Power Spectral Density Results

Remarks

∑ = In accordance with ANSI C63.26 6.4.3.2.2 Measure and sum the spectra across all 32 ports.

Total PSD = Summed PSD on all 32 Ports + Antenna Gain.

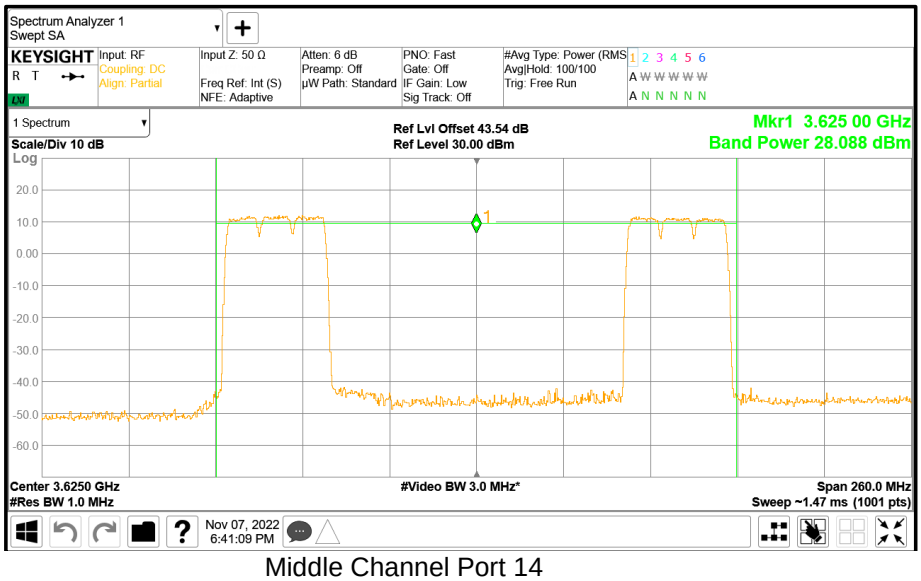
Configuration 3

Maximum Output Power 6 x 19.52 dBm

DUT Configuration			
Carrier Configuration:	LTE 10 MHz 6C QPSK P12	Duty Cycle (%):	67.4
RFBW:	10 MHz	DCCF (dB):	1.71
		Peak Antenna Gain (dBi):	11.00

Test Channel	Number of Measurements	PWR (dBm)			EIRP (dBm)	Calculated Total EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)
		Min	Max	∑				
Middle (3625 MHz)	32	26.02	28.09	42.16	53.16	45.47	47.00	-1.53

FCC Maximum Output Power Results



Middle Channel Port 14

Test Channel	Number of Measurements	PSD (dBm/MHz)			EIRP (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
		Min	Max	∑			
Middle (3625 MHz)	32	10.15	12.11	25.46	36.46	37.00	-0.54

FCC Maximum Power Spectral Density Results

Remarks

In accordance with FCC KDB 662911 D01 V02r01 E 1) for In-Band Measurements, Measure and sum calculation has been made.

∑ = Summed power over all 32 ports.

Total EIRP = Summed Power on all 32 Ports + Antenna Gain.

Configuration 3

Maximum Output Power 5 x 22.27 dBm

DUT Configuration			
Carrier Configuration:	LTE 20 MHz 5C QPSK P12	Duty Cycle (%):	67.6
RFBW:	20 MHz	DCCF (dB):	1.70
		Peak Antenna Gain (dBi):	11.00

Test Channel	Number of Measurements	PWR (dBm)			Total EIRP (dBm)	Calculated Total EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)
		Min	Max	∑				
Middle (3625 MHz)	32	27.32	30.16	44.04	55.04	45.15	47.00	-1.85

FCC Maximum Output Power Results

Remarks

In accordance with FCC KDB 662911 D01 V02r01 E 1) for In-Band Measurements, Measure and sum calculation has been made.

∑ = Summed power over all 32 ports.

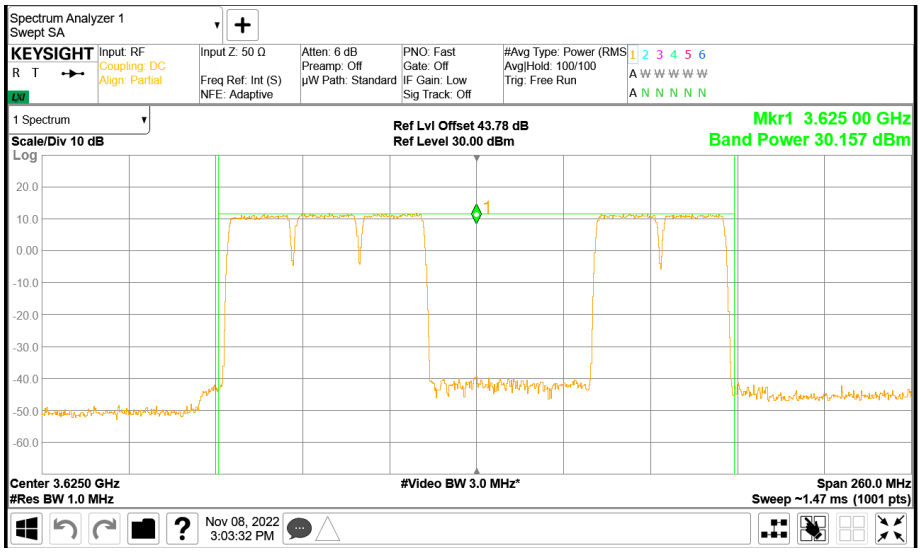
Total EIRP = Summed Power on all 32 Ports + Antenna Gain.

In accordance with ANSI C63.26-2015, 5.2.4 Average power and power spectral density measurements, Clause 5.2.4.1 General
When a reference bandwidth is specified in conjunction with average conducted power, ERP, or EIRP limits, then the average PSD is measured to demonstrate compliance to the relevant limits.

In leui of measurements in a 10MHz bandwidth the power was measured and Total EIRP dBm calculated as above, and then the dBm/10MHz Total EIRP was calculated using the measured 99% Occupied Bandwidth in the following formula;

Total EIRP-10log/measured Bandwidth/10MHz

Ie 48.64dBm – (10log(17.88/10)) = 48.64-2.52 = 46.12 dBm/10MHz



Middle Channel Port 4

Test Channel	Number of Measurements	PSD (dBm/MHz)			Total PSD (dBm/MHz)	Limit (dBm)	Margin (dB)
		Min	Max	∑			
Middle (3625 MHz)	32	10.02	11.78	25.22	36.22	37.00	-0.78

FCC Maximum Power Spectral Density Results

Remarks

∑ = In accordance with ANSI C63.26 6.4.3.2.2 Measure and sum the spectra across all 32 ports.

Total PSD = Summed PSD on all 32 Ports + Antenna Gain.

FCC CFR 47 Part 2, Clause 2.1046
FCC CFR 47 Part 96, Clause 96.41 (b)(c)(g)

Limit	
Maximum EIRP	Category A CBSD Maximum EIRP: 30 dBm/10 MHz Maximum PSD: 20 dBm/MHz Category B CBSD Maximum EIRP: 47 dBm/10 MHz Maximum PSD: 37 dBm/MHz
Peak to Average Ratio	13 dB

2.2 OCCUPIED BANDWIDTH

2.2.1 Specification Reference

FCC CFR 47 Part 96, Clause 96.41 (e)(3)
FCC CFR 47 Part 2, Clause 2.1049

2.2.2 Date of Test and Modification State

04, 07 and 08 -November-2022 - Modification State 0

2.2.3 Test Equipment Used

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

2.2.4 Environmental Conditions

Ambient Temperature	22.5-23.7°C
Relative Humidity	38.2-40.2%

2.2.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01, Clause 4.2 and 4.3. The Spectrum Analyser RBW was configured to be at least 1% of the channel bandwidth of the carrier to be measured.

For 26 dB Bandwidth, in accordance with KDB 971168 D01, a peak detector and a trace setting of Max Hold were used. The trace was allowed to stabilise. Using the Spectrum Analyser function, the 26dB measurement result was obtained.

4.2 Occupied bandwidth – relative measurement procedure
The reference value is the highest level of the spectral envelope of the modulated signal, unless otherwise specified in an applicable rule section.
Subclause 5.4.3 of ANSI C63.26-2015 is applicable.

4.3 Occupied bandwidth – power bandwidth (99 %) measurement procedure
Subclause 5.4.4 of ANSI C63.26-2015 is applicable (wherein the recommendation is to use the 99 % power bandwidth function of a spectrum analyzer).

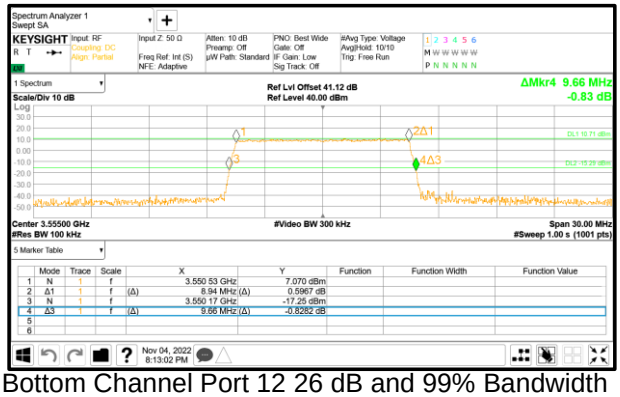
2.2.6 Test Results

Configuration 1

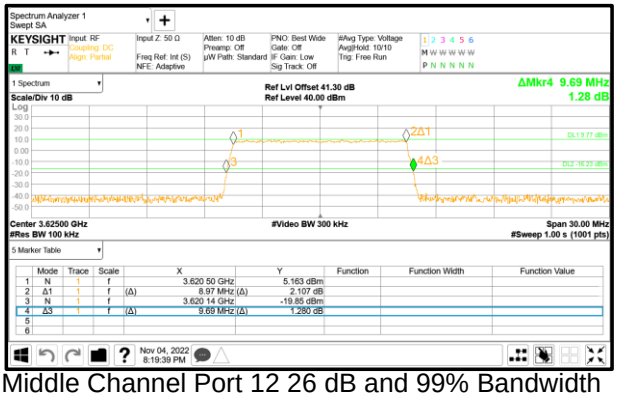
Maximum Output Power 19.56 dBm

DUT Configuration			
Carrier Configuration:	LTE 10 MHz 1C QPSK P12	Duty Cycle (%):	-
RFBW:	10 MHz	DCCF (dB):	-
		Peak Antenna Gain (dBi):	-

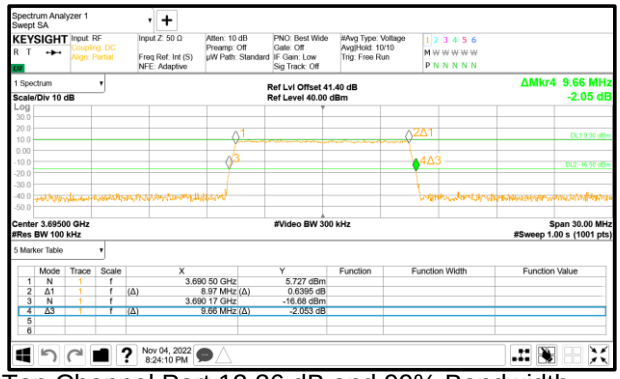
Test Channel	Port	Bandwidth (MHz)	
		99% OBW	26 dB EBW
Bottom (3555 MHz)	12	8.940	9.660
Middle (3625 MHz)	12	8.970	9.690
Top (3695 MHz)	12	8.970	9.660



Bottom Channel Port 12 26 dB and 99% Bandwidth



Middle Channel Port 12 26 dB and 99% Bandwidth



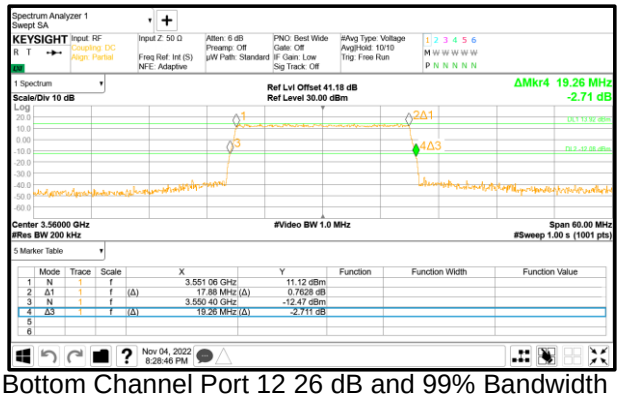
Top Channel Port 12 26 dB and 99% Bandwidth

Configuration 1

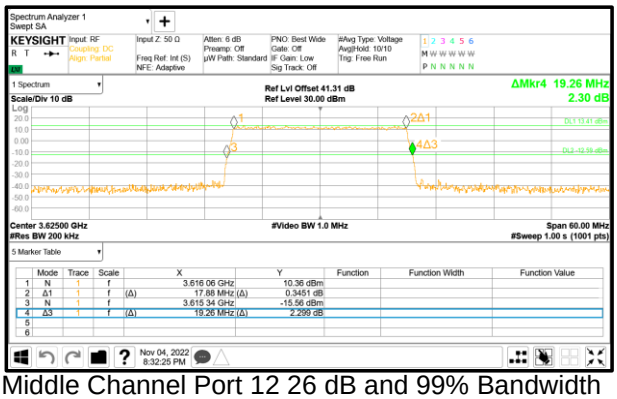
Maximum Output Power 22.3 dBm

DUT Configuration			
Carrier Configuration:	LTE 20 MHz 1C QPSK P 12	Duty Cycle (%):	-
RFBW:	20 MHz	DCCF (dB):	-
		Peak Antenna Gain (dBi):	-

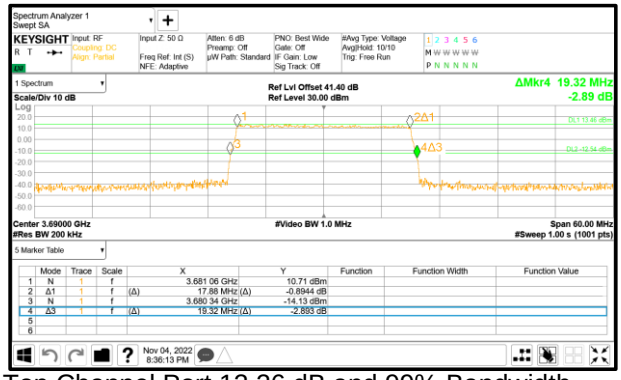
Test Channel	Port	Bandwidth (MHz)	
		99% OBW	26 dB EBW
Bottom (3560 MHz)	12	17.880	19.260
Middle (3625 MHz)	12	17.880	19.260
Top (3690 MHz)	12	17.880	19.320



Bottom Channel Port 12 26 dB and 99% Bandwidth



Middle Channel Port 12 26 dB and 99% Bandwidth



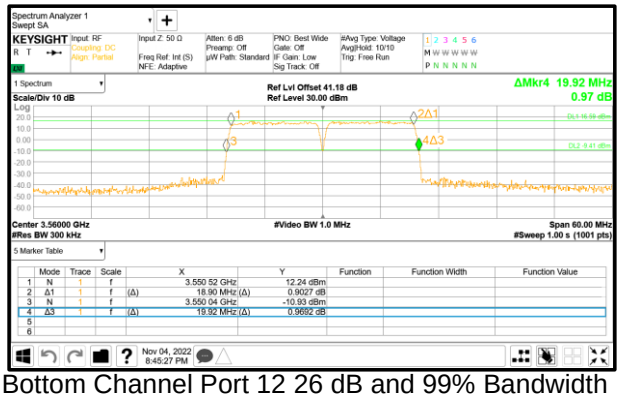
Top Channel Port 12 26 dB and 99% Bandwidth

Configuration 2

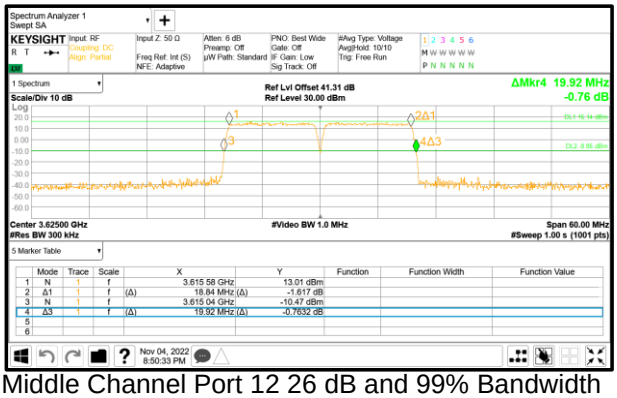
Maximum Output Power 2 x 19.52 dBm

DUT Configuration			
Carrier Configuration:	LTE 10 MHz 2C QPSK P12	Duty Cycle (%):	-
RFBW:	10 MHz	DCCF (dB):	-
		Peak Antenna Gain (dBi):	-

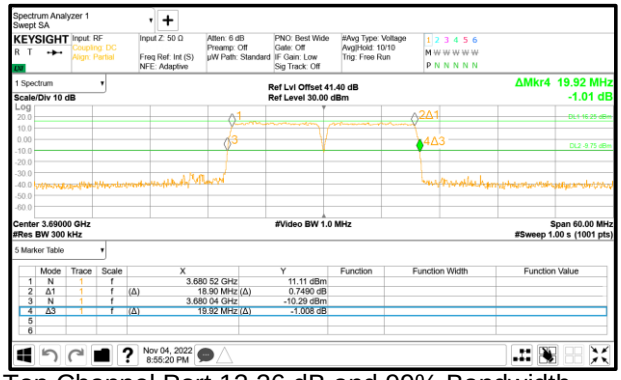
Test Channel	Port	Bandwidth (MHz)	
		99% OBW	26 dB EBW
Bottom (3560 MHz)	12	18.900	19.920
Middle (3625 MHz)	12	18.840	19.920
Top (3690 MHz)	12	18.900	19.920



Bottom Channel Port 12 26 dB and 99% Bandwidth



Middle Channel Port 12 26 dB and 99% Bandwidth



Top Channel Port 12 26 dB and 99% Bandwidth

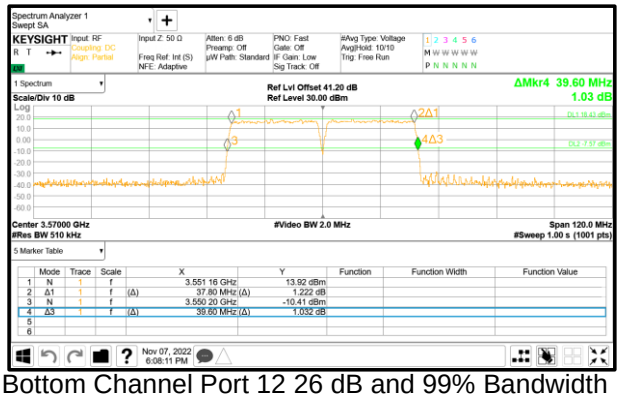
<

Configuration 2

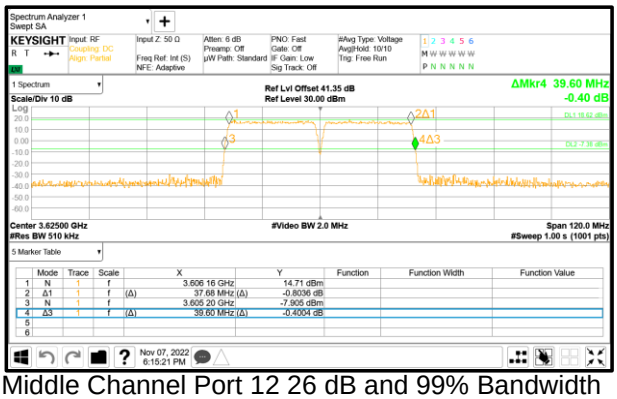
Maximum Output Power 2 x 22.27 dBm

DUT Configuration			
Carrier Configuration:	LTE 20 MHz 2C QPSK P12	Duty Cycle (%):	-
RFBW:	20 MHz	DCCF (dB):	-
		Peak Antenna Gain (dBi):	-

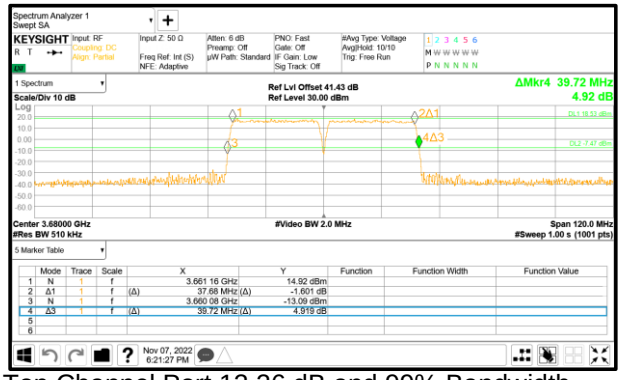
Test Channel	Port	Bandwidth (MHz)	
		99% OBW	26 dB EBW
Bottom (3570 MHz)	12	37.800	39.600
Middle (3625 MHz)	12	37.680	39.600
Top (3680 MHz)	12	37.680	39.720



Bottom Channel Port 12 26 dB and 99% Bandwidth



Middle Channel Port 12 26 dB and 99% Bandwidth



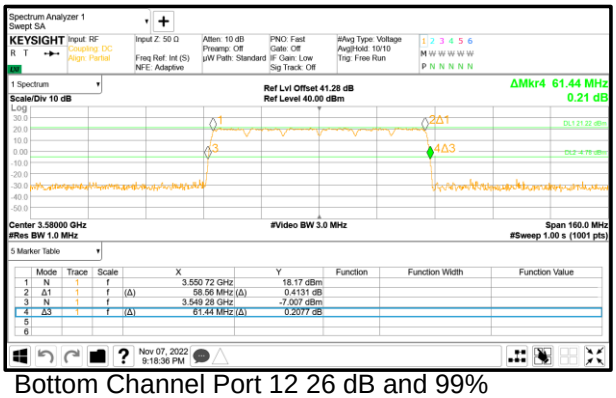
Top Channel Port 12 26 dB and 99% Bandwidth

Configuration 3

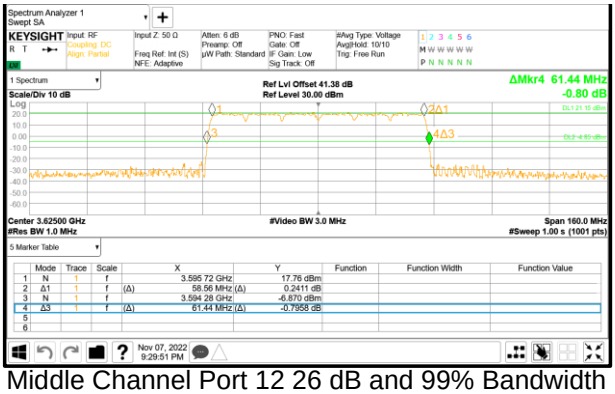
Maximum Output Power 6 x 19.52 dBm

DUT Configuration			
Carrier Configuration:	LTE 10 MHz 6C port 12	Duty Cycle (%):	-
RFBW:	60 MHz	DCCF (dB):	-
		Peak Antenna Gain (dBi):	-

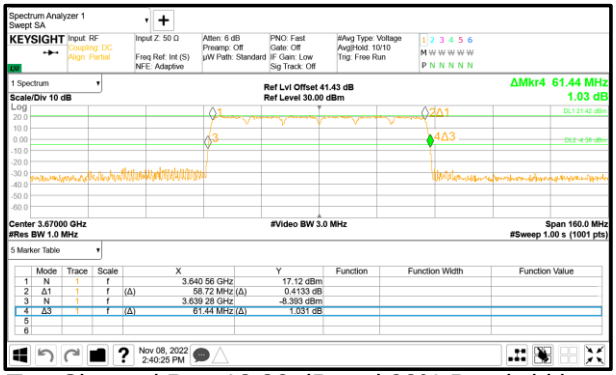
Test Channel	Port	Bandwidth (MHz)	
		99% OBW	26 dB EBW
Bottom (3600 MHz)	12	58.560	61.440
Middle (3625 MHz)	12	58.560	61.440
Top (3650 MHz)	12	58.720	61.440



Bottom Channel Port 12 26 dB and 99% Bandwidth



Middle Channel Port 12 26 dB and 99% Bandwidth



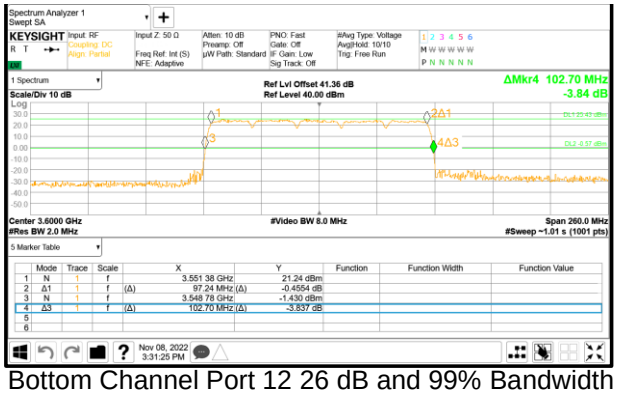
Top Channel Port 12 26 dB and 99% Bandwidth

Configuration 3

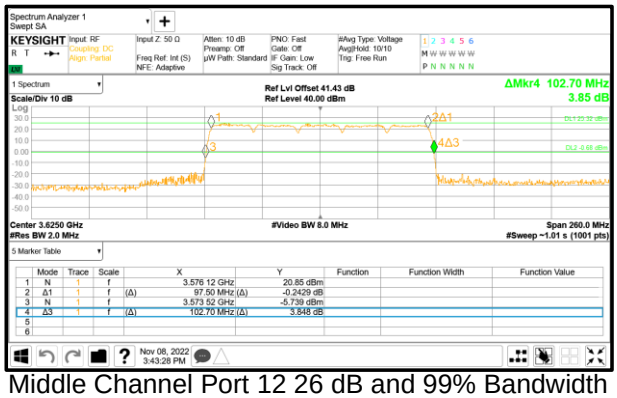
Maximum Output Power 5 x 22.27 dBm

DUT Configuration			
Carrier Configuration:	LTE 20 MHz 5C QPSK P12	Duty Cycle (%):	-
RFBW:	20 MHz	DCCF (dB):	-
		Peak Antenna Gain (dBi):	-

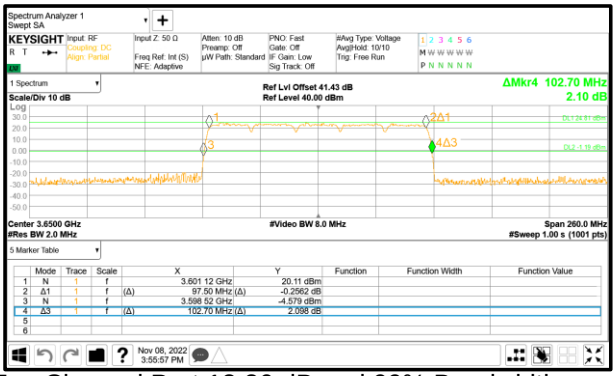
Test Channel	Port	Bandwidth (MHz)	
		99% OBW	26 dB EBW
Bottom (3580 MHz)	12	97.240	102.700
Middle (3625 MHz)	12	97.500	102.700
Top (3670 MHz)	12	97.500	102.700



Bottom Channel Port 12 26 dB and 99% Bandwidth



Middle Channel Port 12 26 dB and 99% Bandwidth



Top Channel Port 12 26 dB and 99% Bandwidth

2.3 BAND EDGE

2.3.1 Specification Reference

FCC CFR 47 Part 96, Clause 96.41 (e)(1)(i)
FCC CFR 47 Part 2, Clause 2.1051

2.3.2 Date of Test and Modification State

09 and 14 November-2022 - Modification State 0

2.3.3 Test Equipment Used

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

2.3.4 Environmental Conditions

Ambient Temperature	22.5 - 22.9°C
Relative Humidity	39.1 - 41.9%

2.3.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01, Clause 6.0.

Band Edge measurements were used an Integration Bandwidth of at least 1% of the measured 26dB Bandwidth.

Each antenna port has been declared as being equivalent, therefore measurements were made on one antenna port only. To account for this, the limit was tightened by 10 * Log(N), where N is equal to the number of MIMO antenna ports.

For single port, the limit was calculated as being -13 dBm - 10 * Log (32) = -28.05 dBm.

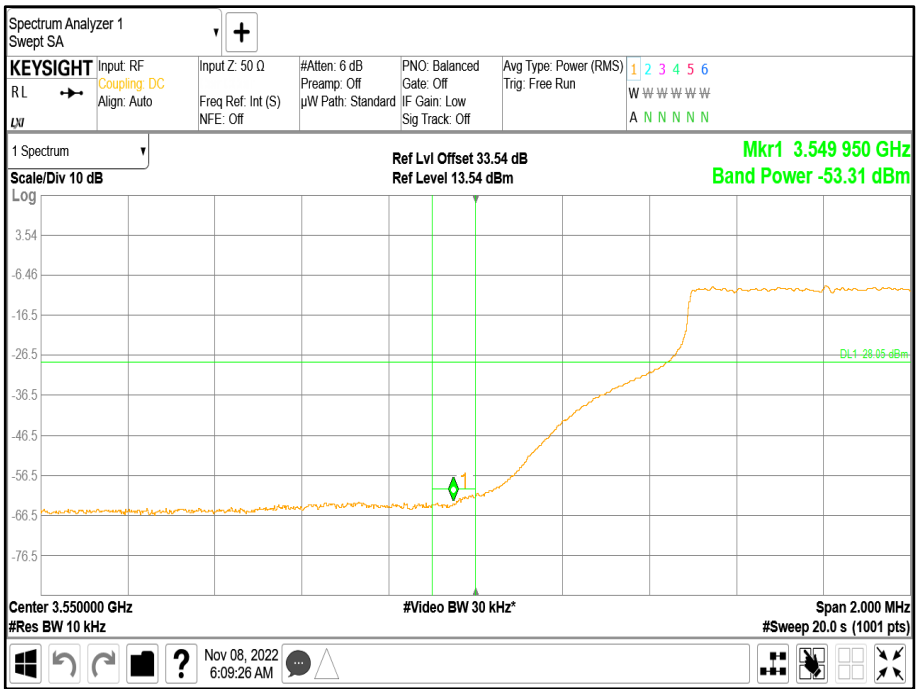
2.3.6 Test Results

Configuration 1

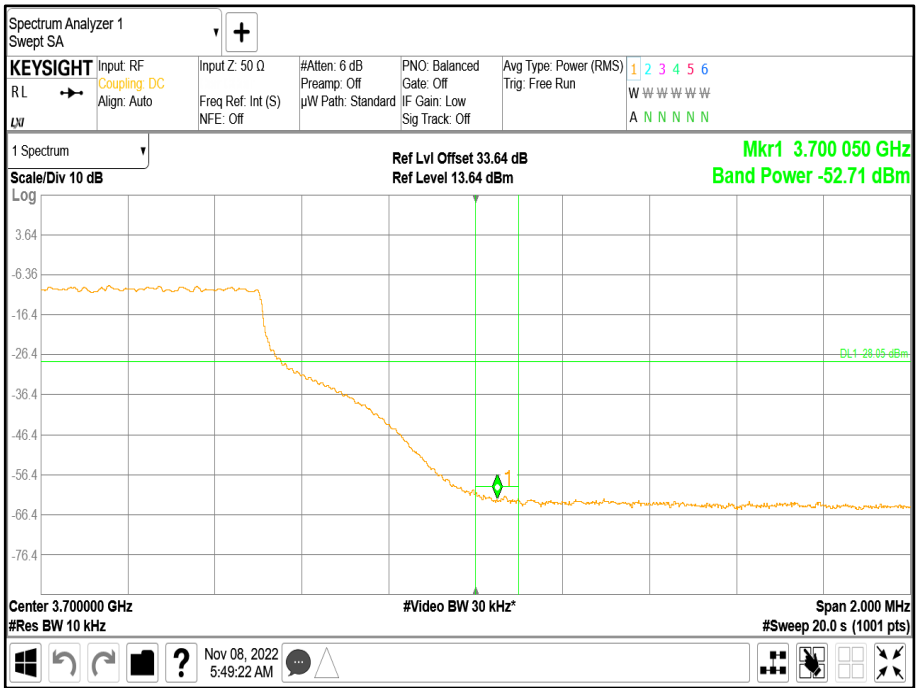
Maximum Output Power 19.56 dBm

Antenna	LTE Modulation	LTE Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
12	QPSK	10.0 MHz	3,555.0	3,695.0
12	QPSK	20.0 MHz	3,560.0	3,690.0

Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position B



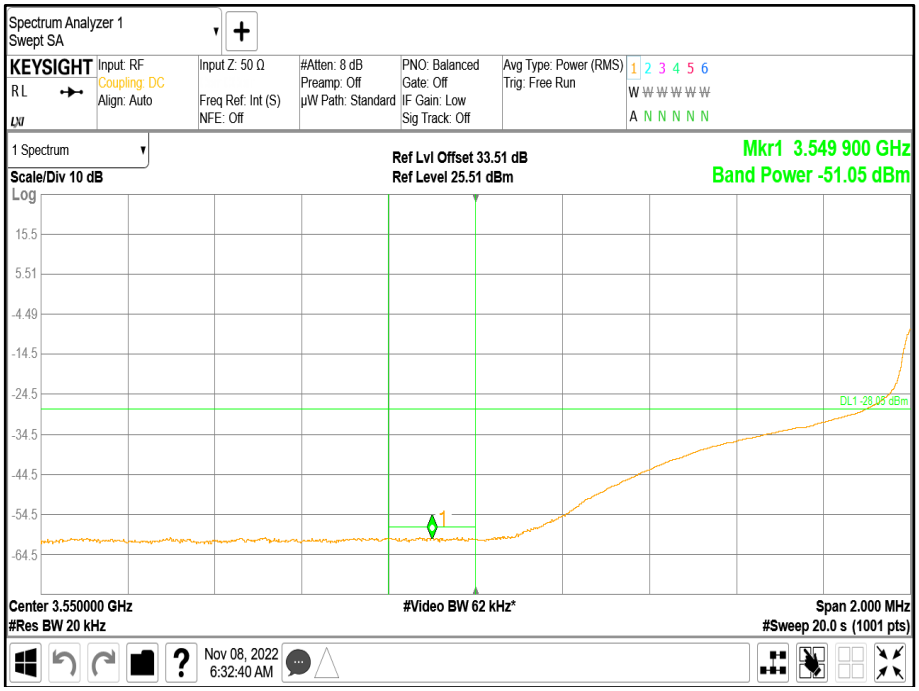
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position T



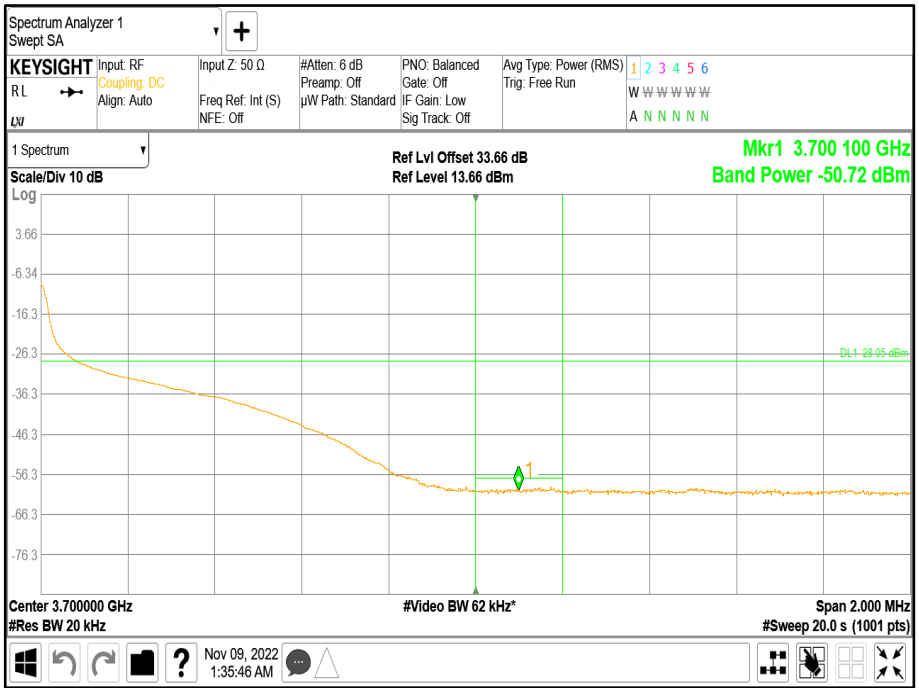
Configuration 1

Maximum Output Power 22.3 dBm

Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position B



Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position T

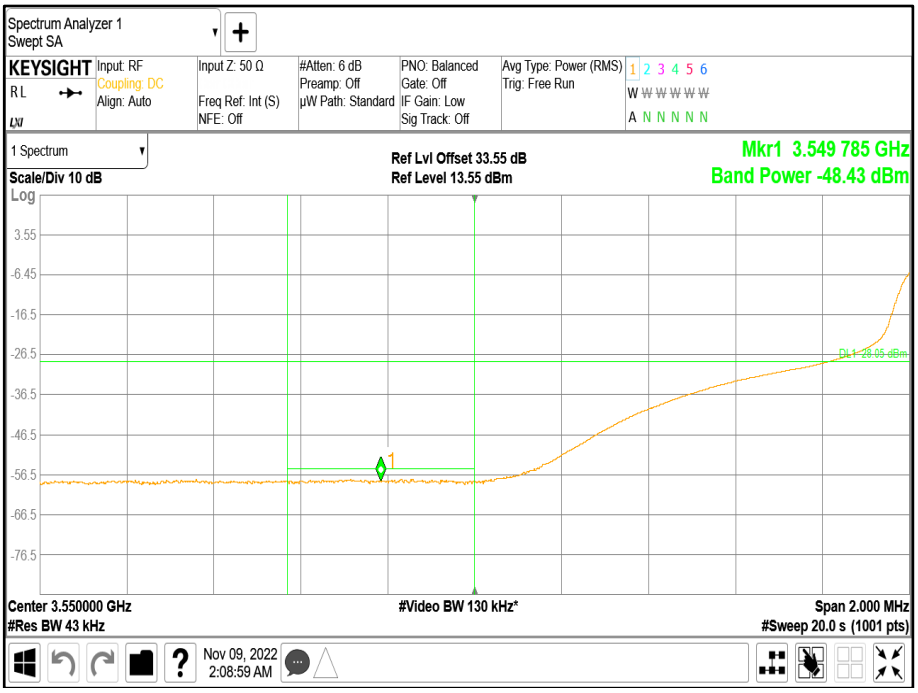


Configuration 2

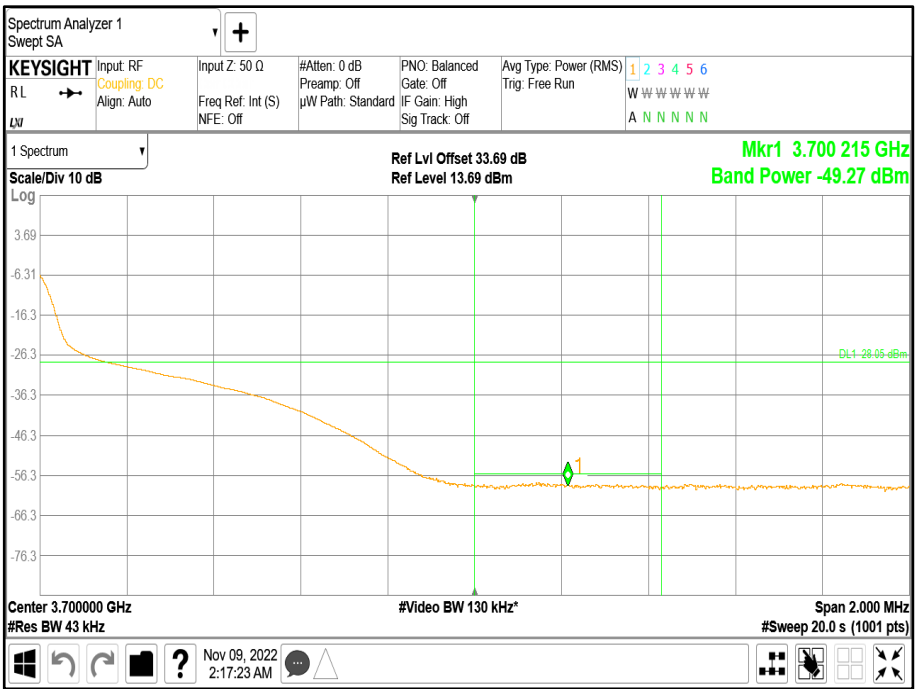
Maximum Output Power 2 x 22.27 dBm

Antenna	LTE Modulation	LTE Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
12	QPSK	20.0 MHz	3560 + 3580	3670 + 3690

Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position B



Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position T

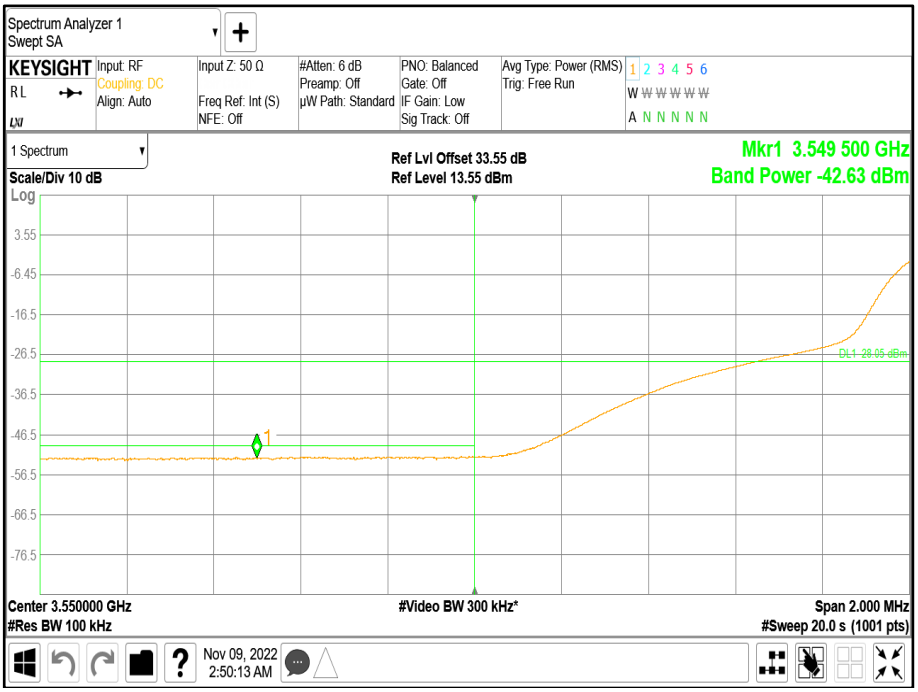


Configuration 3

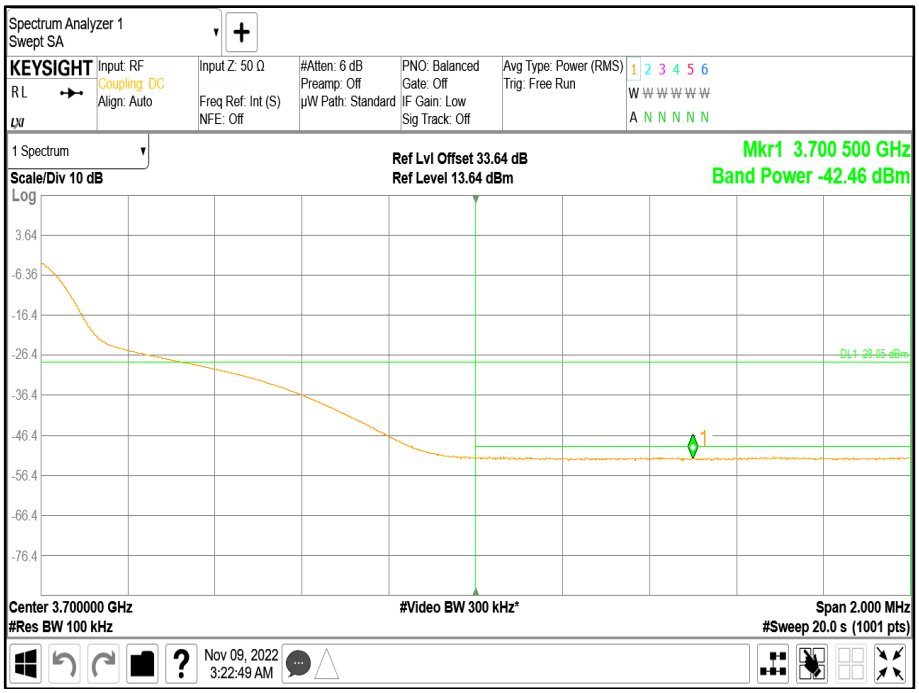
Maximum Output Power 5 x 22.27 dBm

Antenna	LTE Modulation	LTE Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
12	QPSK	20.0 MHz	3560 + 3580 + 3600 + 3620 + 3640	3610 + 3630 + 3650 + 3670 + 3690

Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position B



Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position T



FCC CFR 47 Part 2, Clause 2.1051
FCC CFR 47 Part 96, Clause 96.41 (e)(1)(i)

Limit	-13 dBm -10log(32) = -28.05 dBm (32 port MIMO)

2.4 TRANSMITTER SPURIOUS EMISSIONS

2.4.1 Specification Reference

FCC CFR 47 Part 96, Clause 96.41 (e)(1), (e)(2), (e)(3)
FCC CFR 47 Part 2, Clause 2.1051

2.4.2 Date of Test and Modification State

11, 15,16 and 17-November-2022 - Modification State 0

2.4.3 Test Equipment Used

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

2.4.4 Environmental Conditions

Ambient Temperature	22.4 - 22.9°C
Relative Humidity	35.7 - 41.9%

2.4.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01, Clause 6.1.

Each antenna port has been declared as being equivalent, therefore measurements were made on one antenna port only. To account for this, the limit was tightened by 10 * Log(N), where N is equal to the number of MIMO antenna ports.

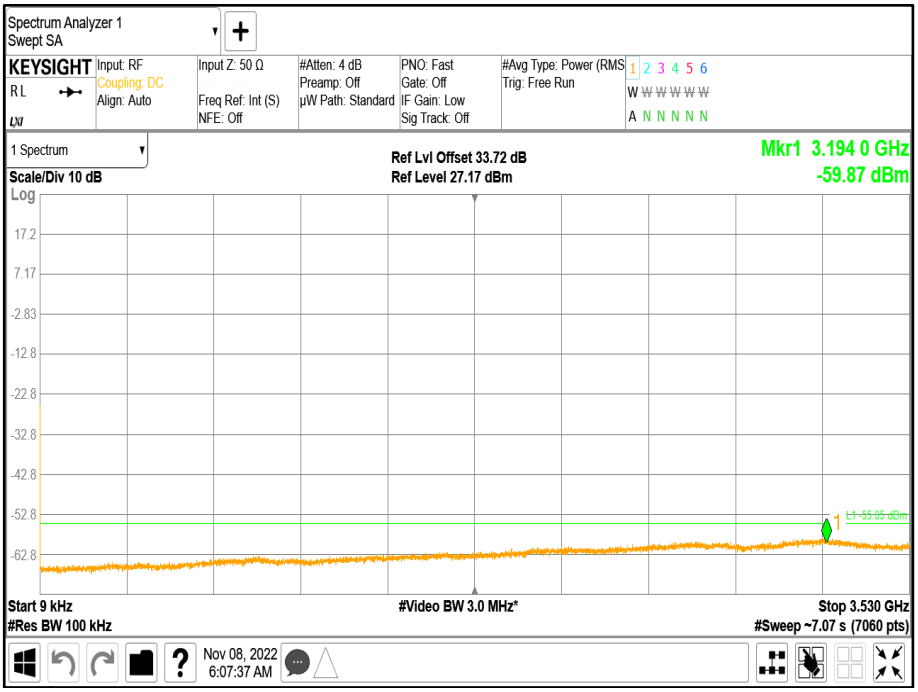
For single port, the limit was calculated as below:
Range 0.009 to 3530 MHz = -40 dBm - 10 * Log (32) = -55.05 dBm.
Range 3530 to 3650 MHz = -25 Bm - 10 * Log (32) = - 40.05dBm.
Range 3650 to 3660 MHz = -13 dBm - 10 * Log (32) = -28.05 dBm.
Range 3700 to 3710 MHz = -13 dBm - 10 * Log (32) = -28.05 dBm.
Range 3710 to 3720 MHz = -25 Bm - 10 * Log (32) = - 40.05dBm.
Range 3720 to 40000 MHz = -40 dBm - 10 * Log (32) = -55.05 dBm.

2.4.6 Test Results

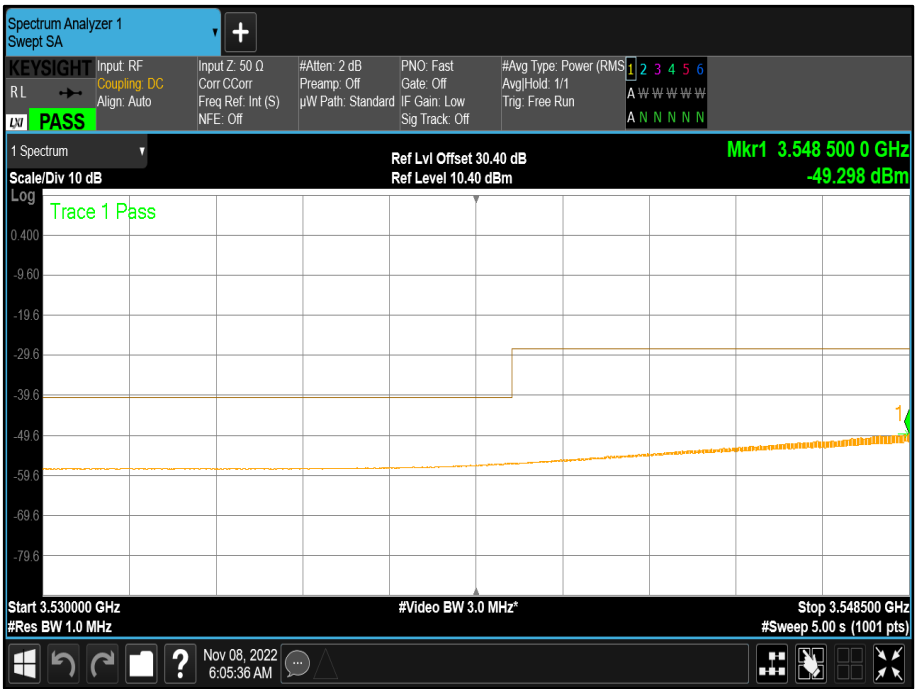
Configuration 1

Maximum Output Power 19.56 dBm

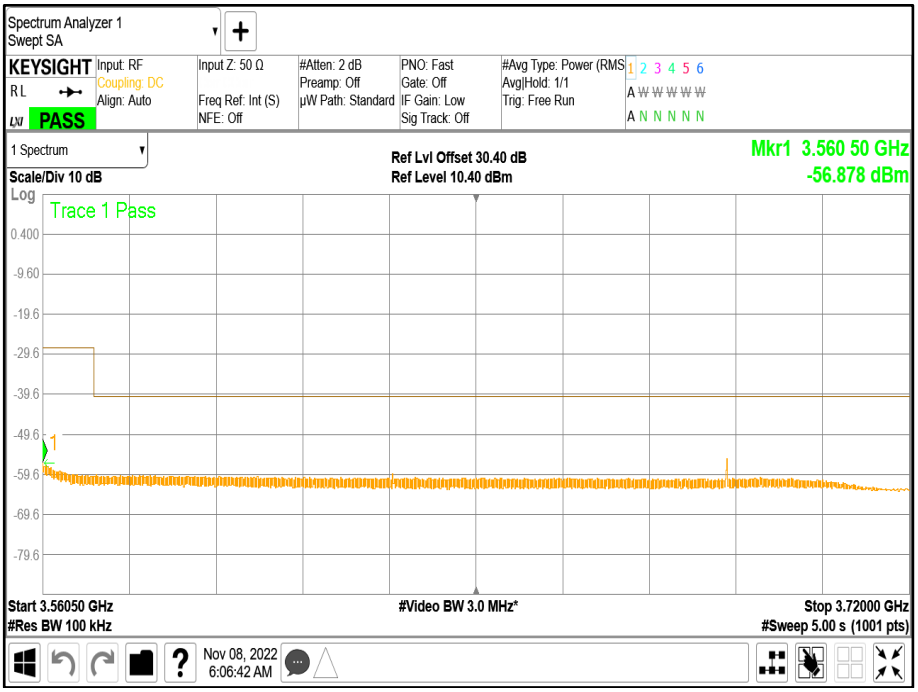
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position B - Band 1 - Range 0.009 to 3530 MHz



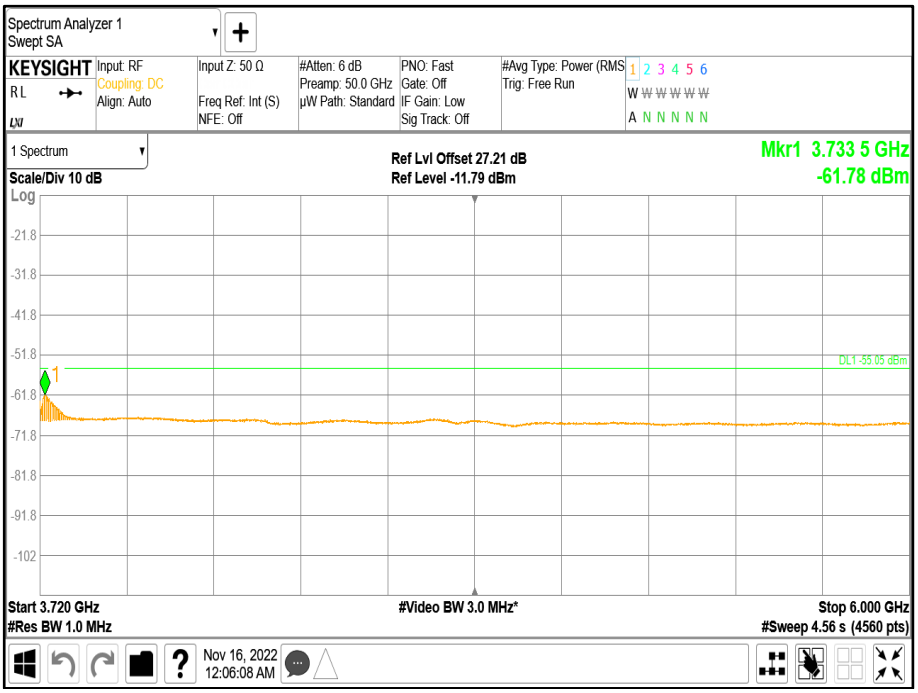
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position B - Band Mask_Low - Range 3530 to 3720 MHz - Mask_Low



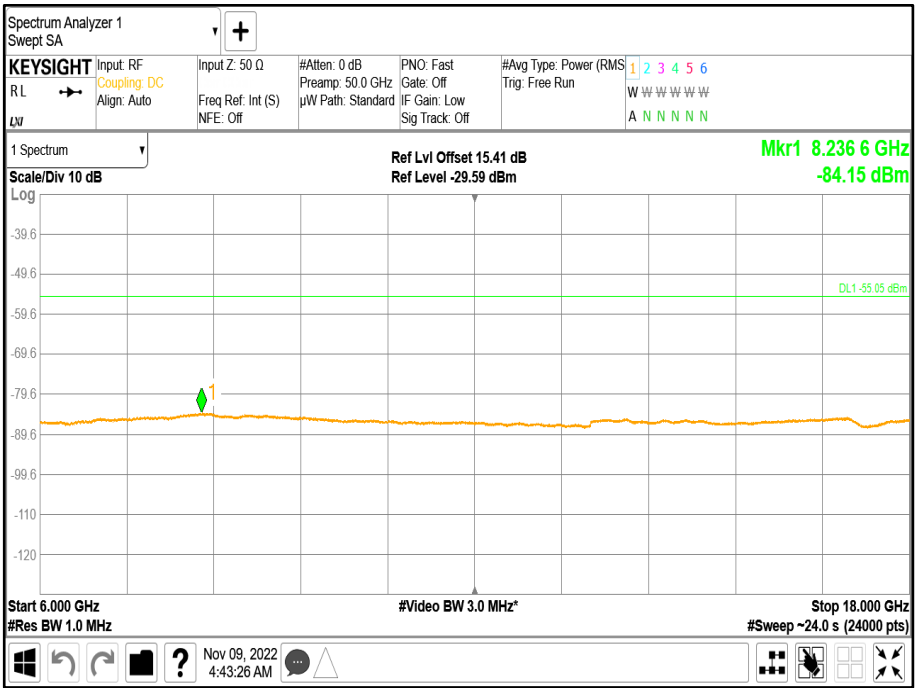
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position B - Band Mask_High - Range 3530 to 3720 MHz - Mask_High



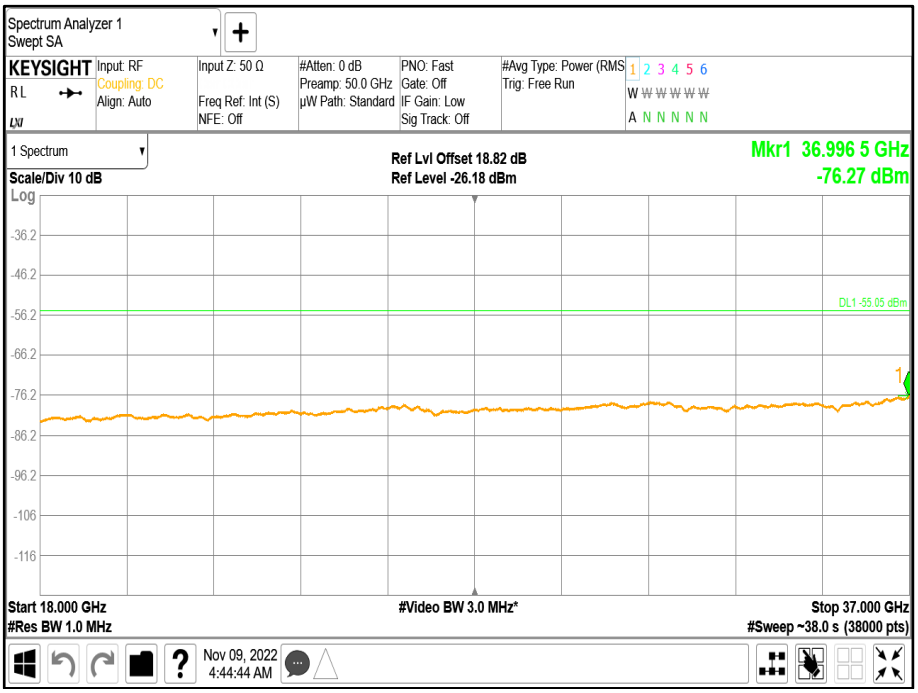
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position B - Band 2 - Range 3720 to 6000 MHz



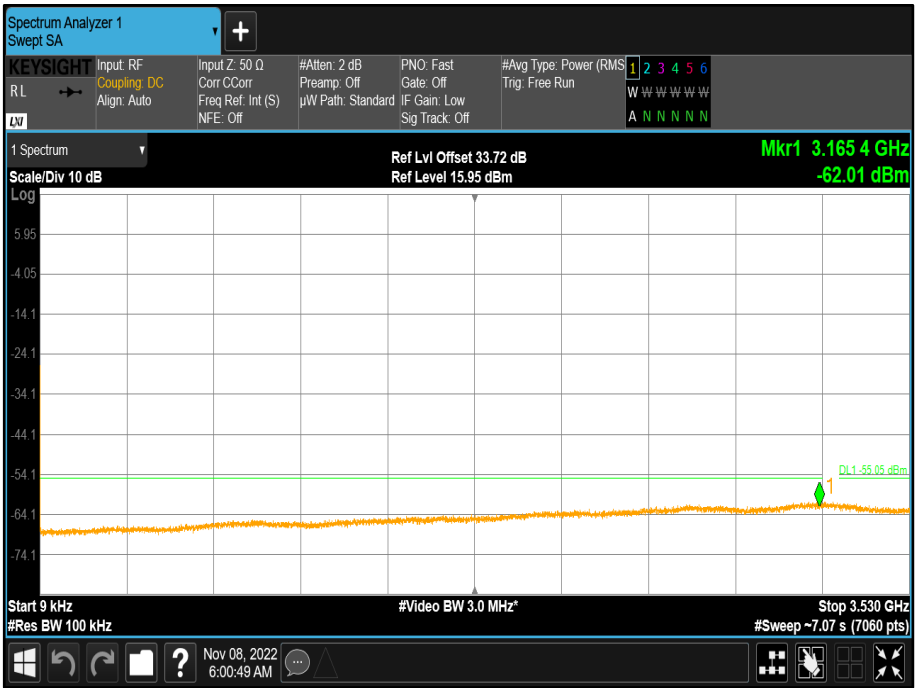
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position B - Band 3 - Range 6000 to 18000 MHz



Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position B - Band 4 - Range 18000 to 37000 MHz

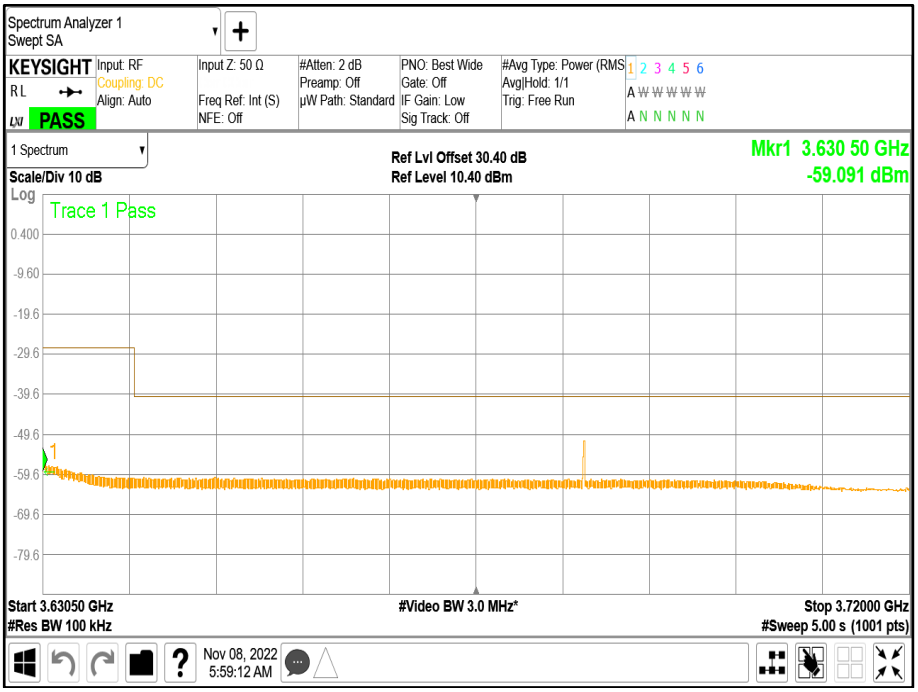


Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position M - Band 1 - Range 0.009 to 3530 MHz

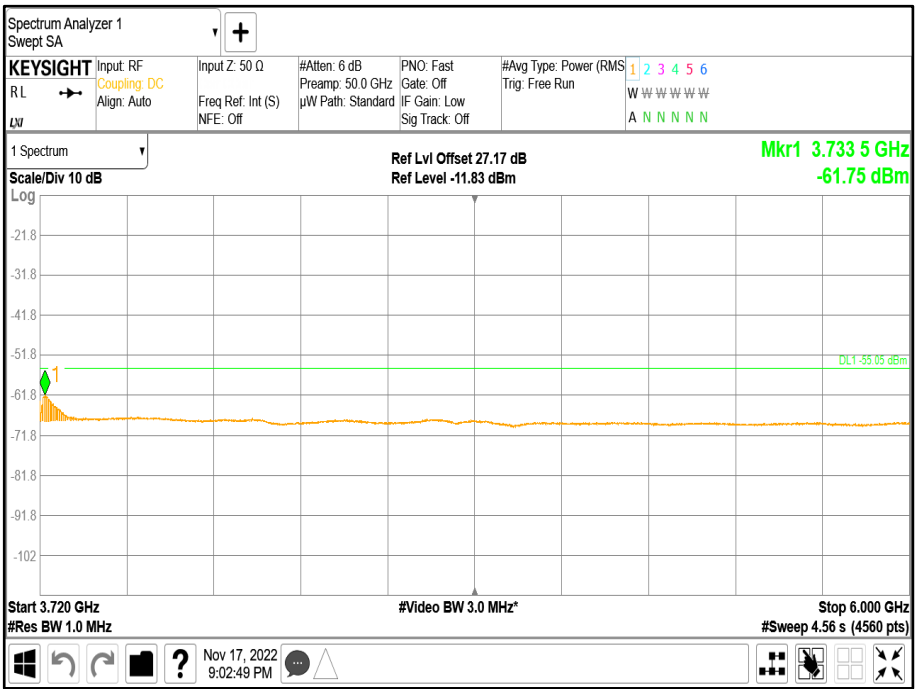


Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position M - Band Mask_Low - Range 3530 to 3720 MHz - Mask_Low

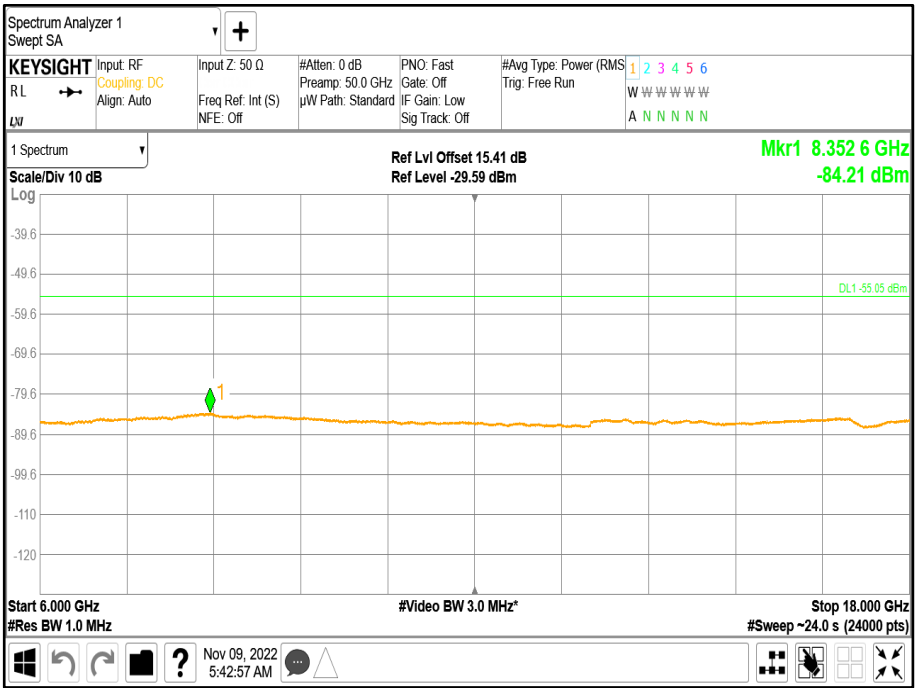
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position M - Band Mask_High - Range 3530 to 3720 MHz - Mask_High



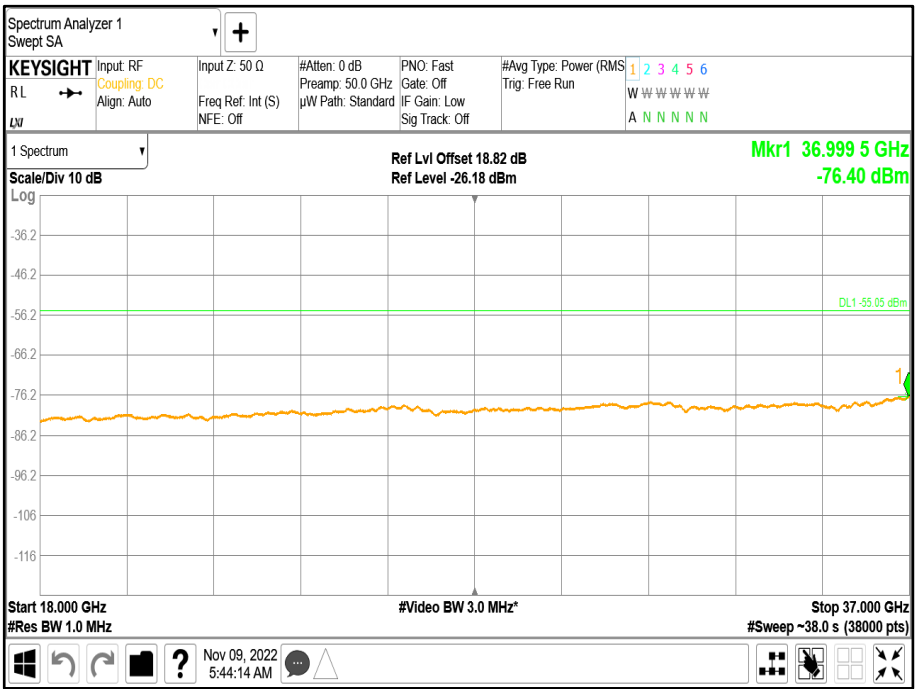
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position M - Band 2 - Range 3720 to 6000 MHz



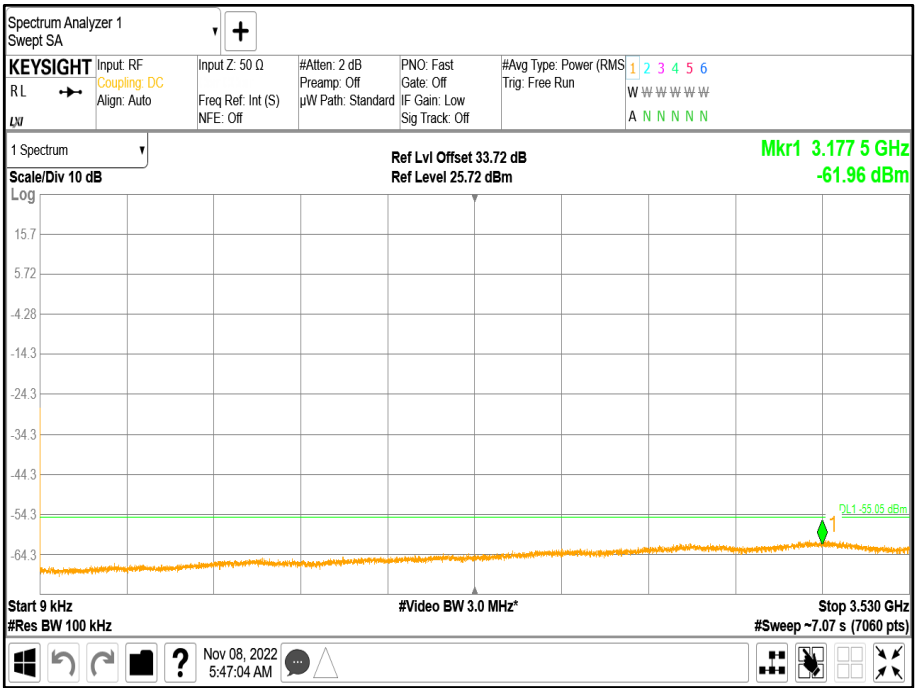
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position M - Band 3 - Range 6000 to 18000 MHz



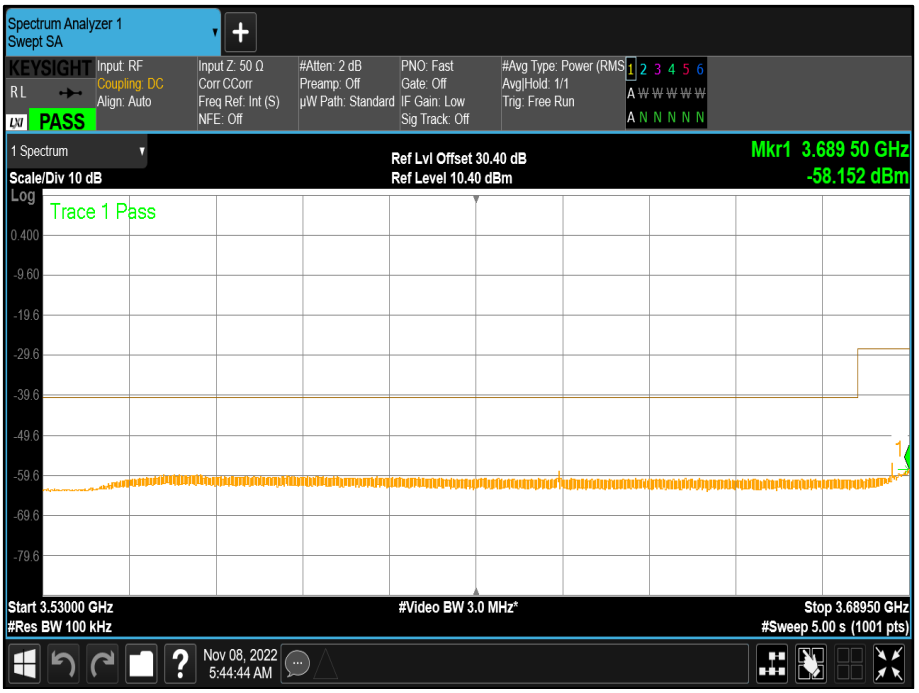
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position M - Band 4 - Range 18000 to 37000 MHz



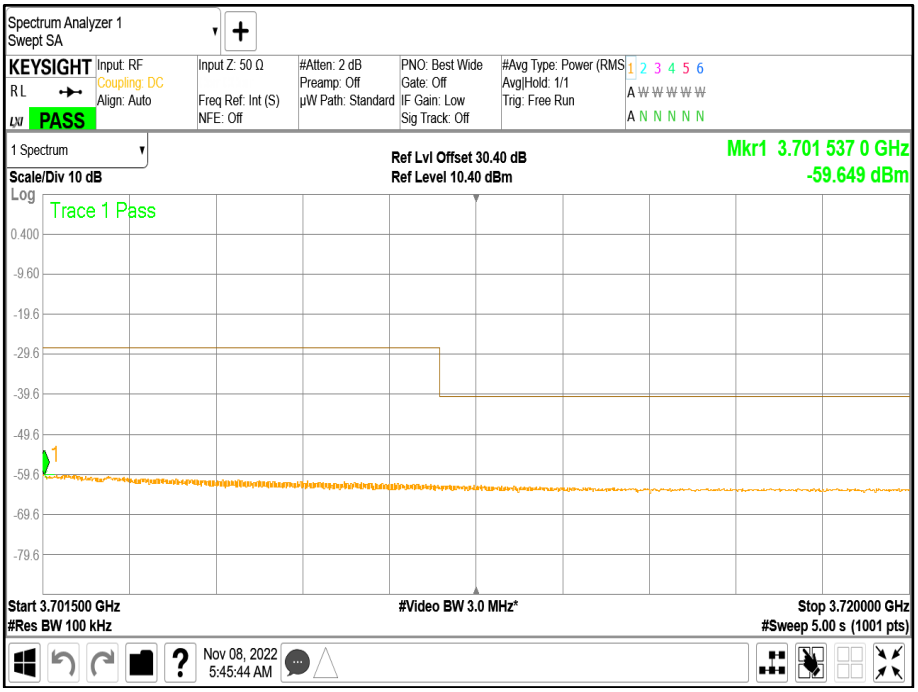
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position T - Band 1 - Range 0.009 to 3530 MHz



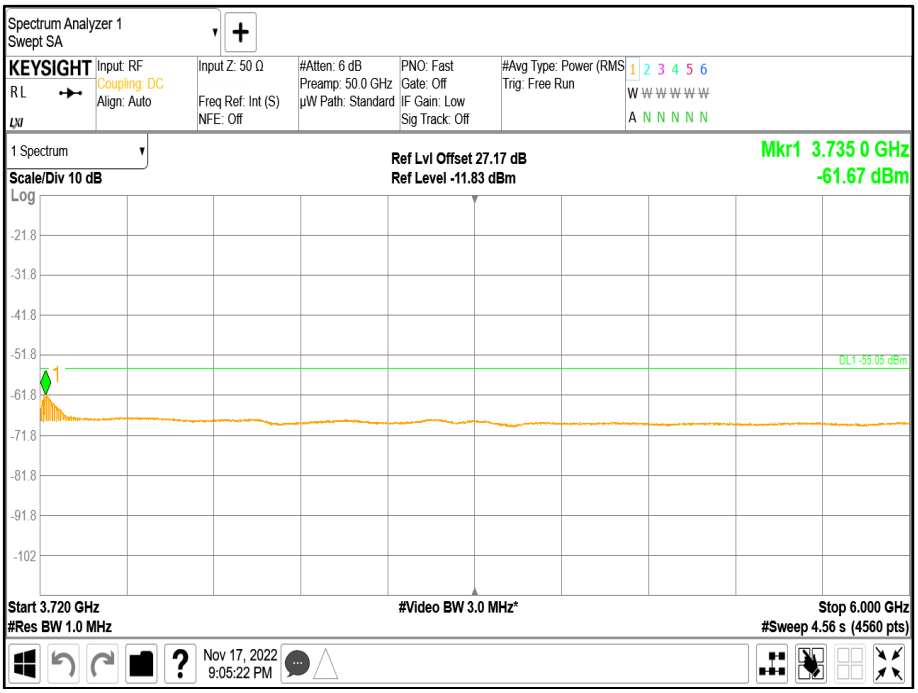
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position T - Band Mask_Low - Range 3530 to 3720 MHz - Mask_Low



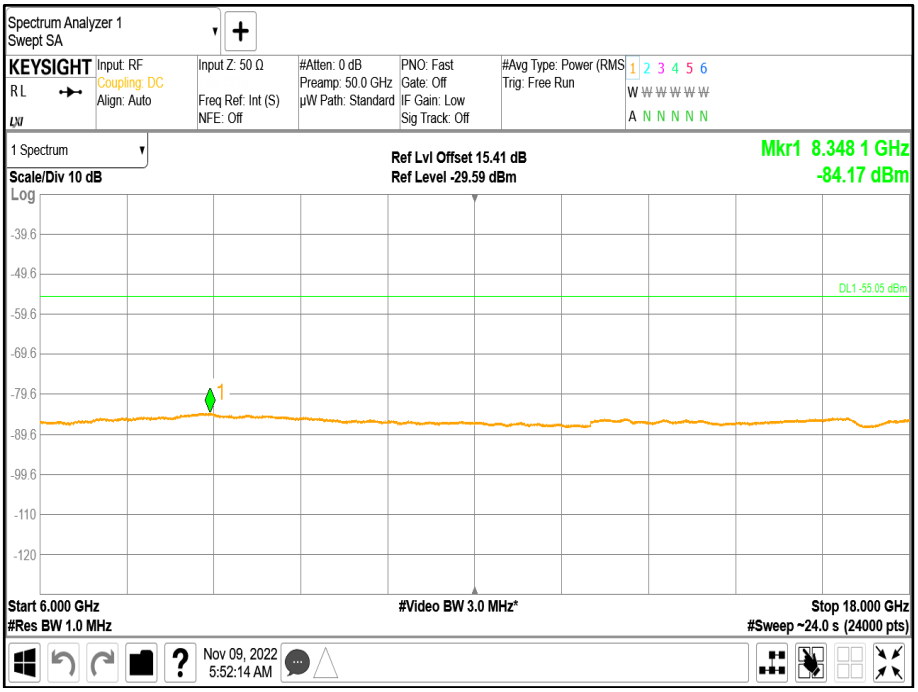
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position T - Band Mask_High - Range 3530 to 3720 MHz - Mask_High



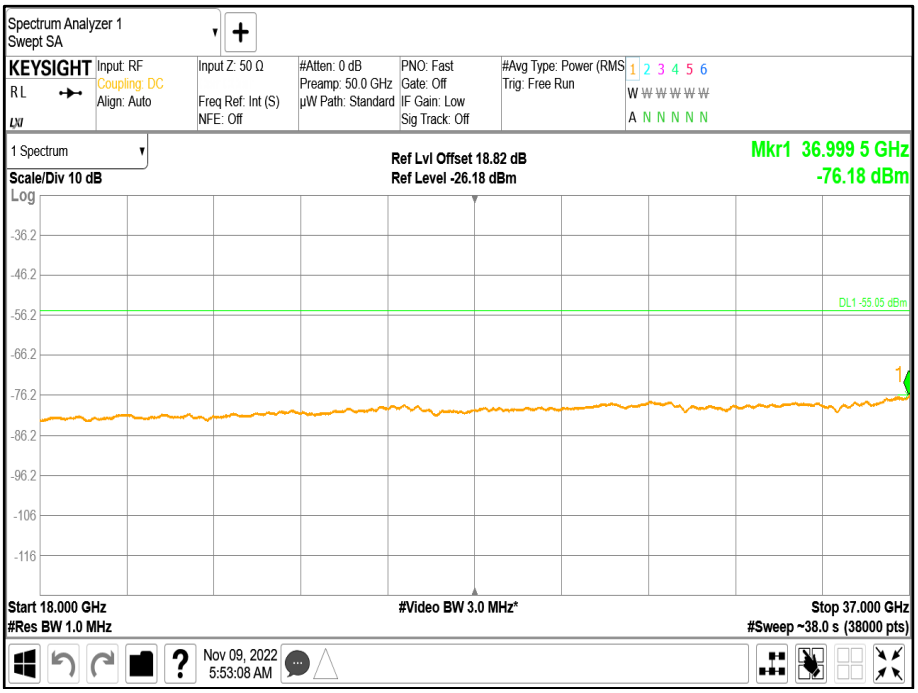
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position T - Band 2 - Range 3720 to 6000 MHz



Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position T - Band 3 - Range 6000 to 18000 MHz



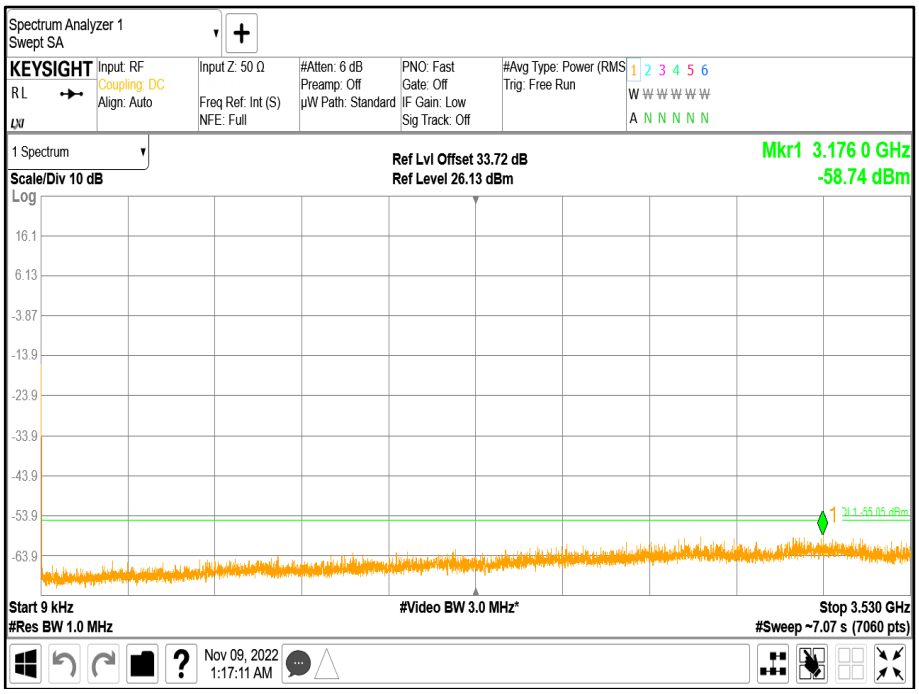
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position T - Band 4 - Range 18000 to 37000 MHz



Configuration 1

Maximum Output Power 22.3 dBm

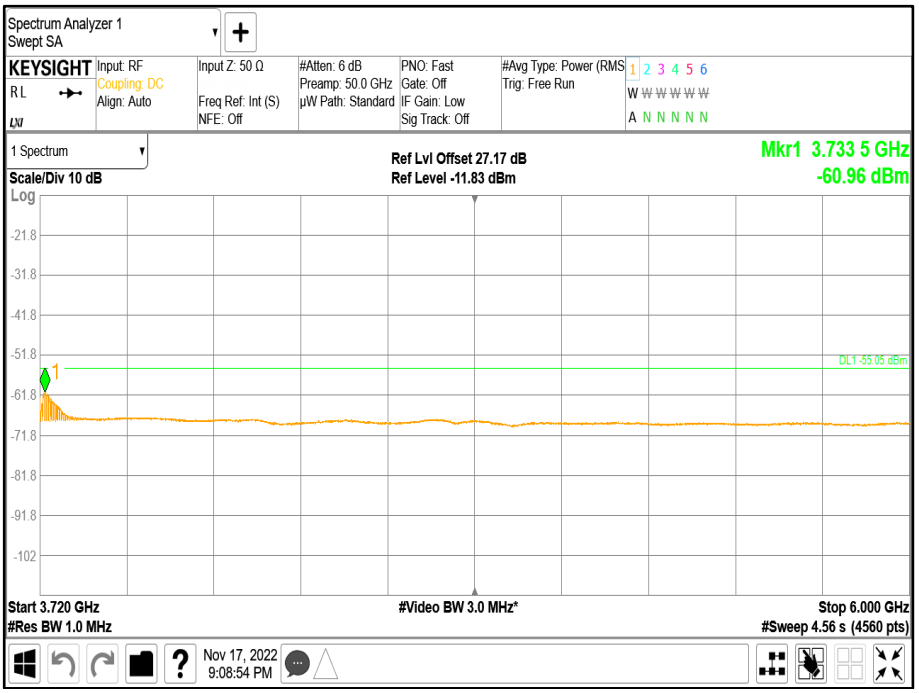
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position B - Band 1 - Range 0.009 to 3530 MHz



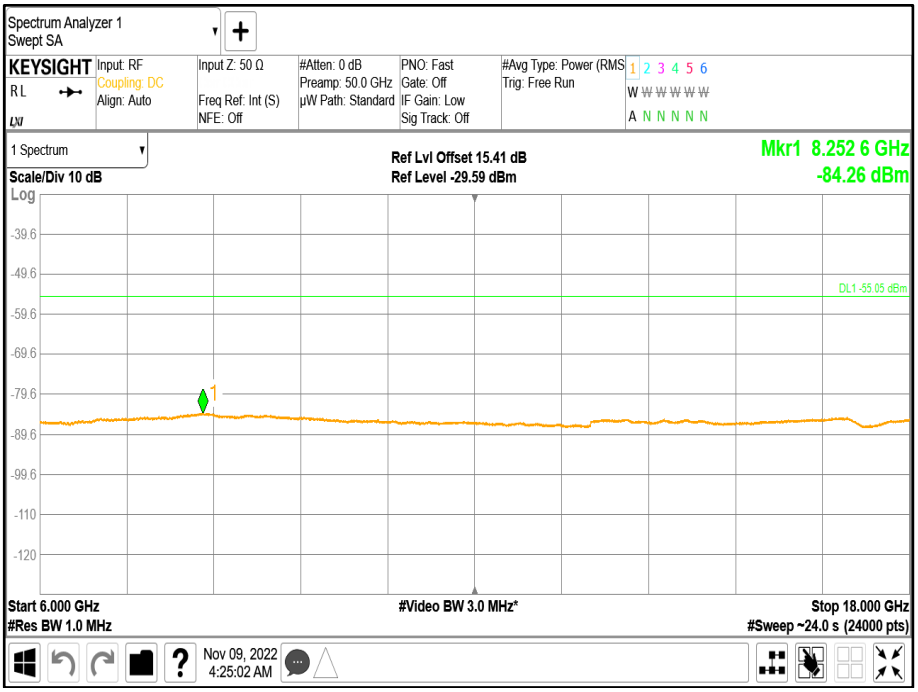
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position B - Band Mask_Low - Range 3530 to 3720 MHz - Mask_Low

Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position B - Band Mask_High - Range 3530 to 3720 MHz - Mask_High

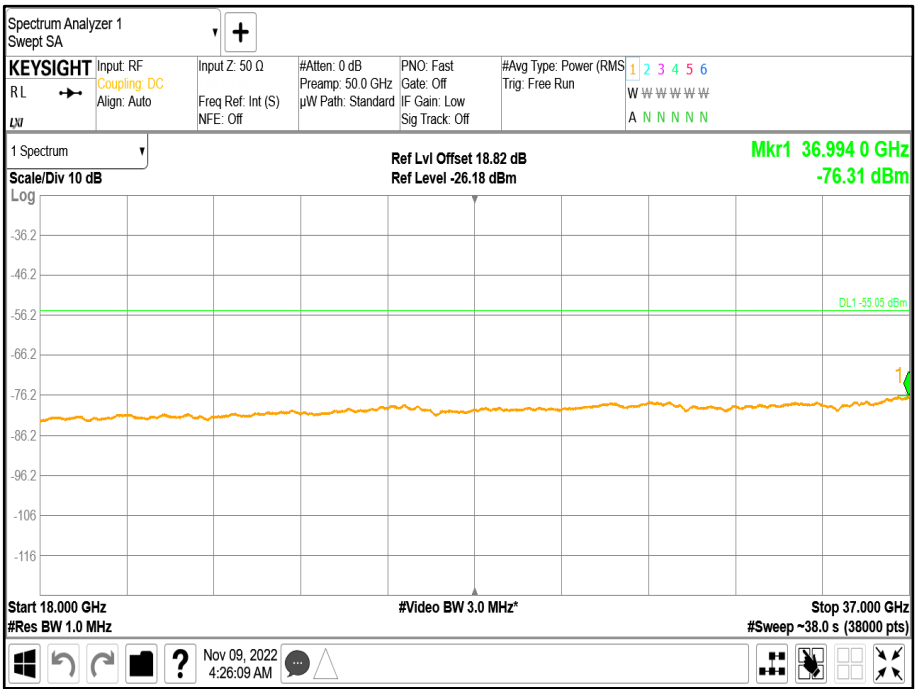
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position B - Band 2 - Range 3720 to 6000 MHz



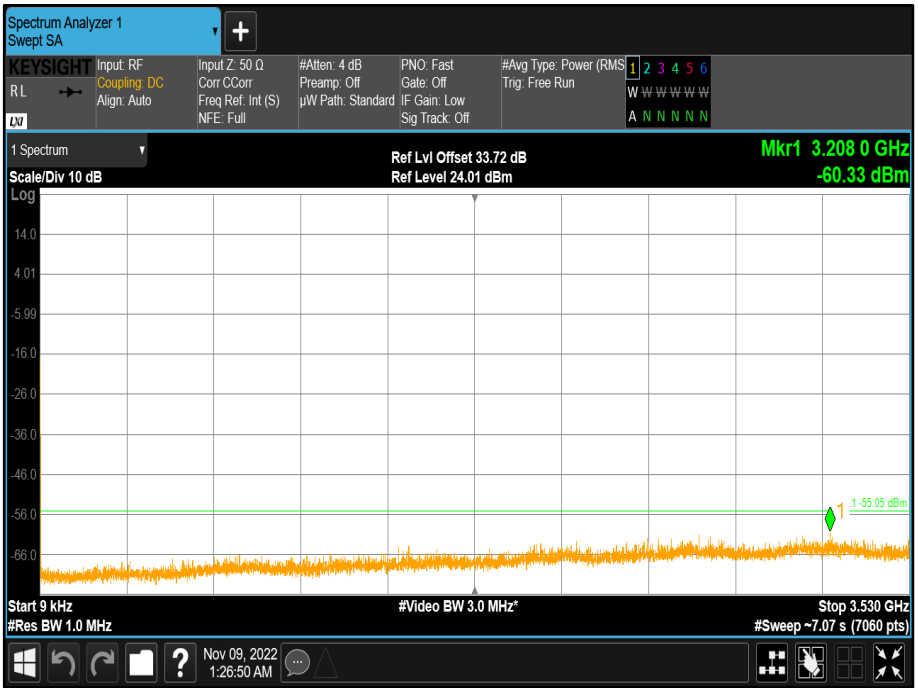
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position B - Band 3 - Range 6000 to 18000 MHz



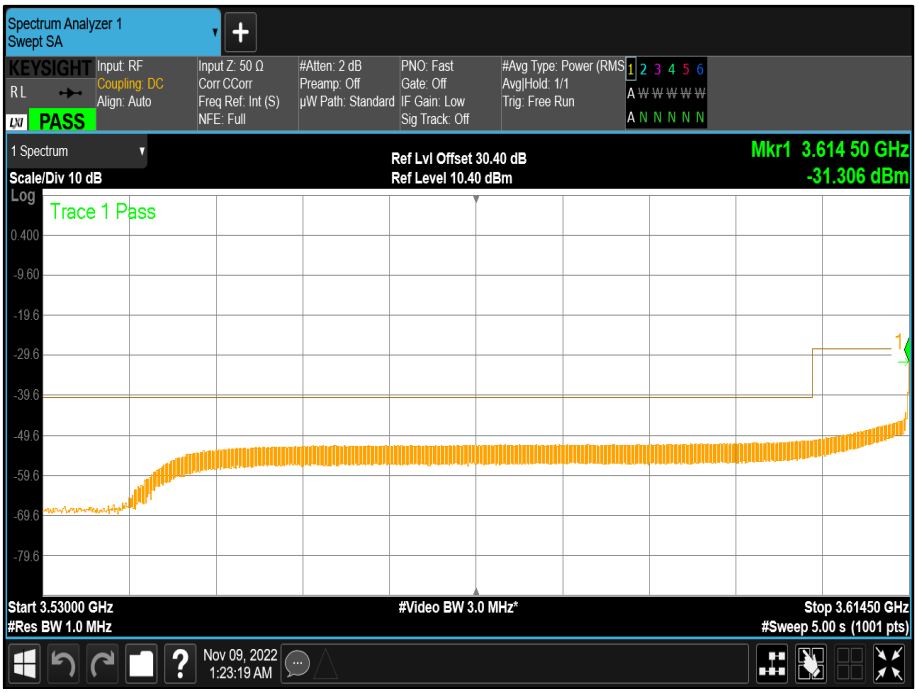
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position B - Band 4 - Range 18000 to 37000 MHz



Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position M - Band 1 - Range 0.009 to 3530 MHz

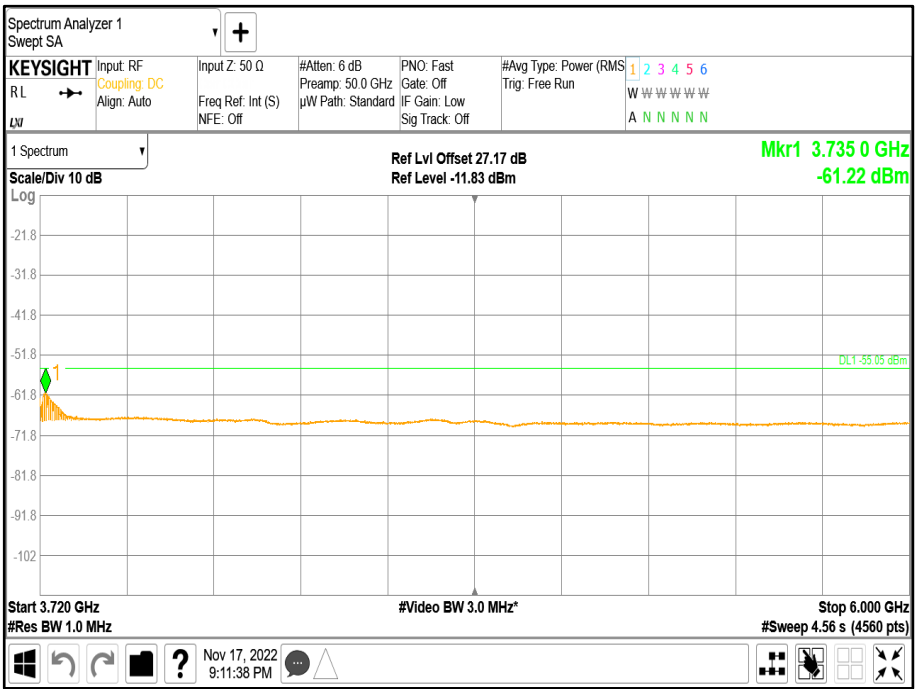


Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position M - Band Mask_Low - Range 3530 to 3720 MHz - Mask_Low

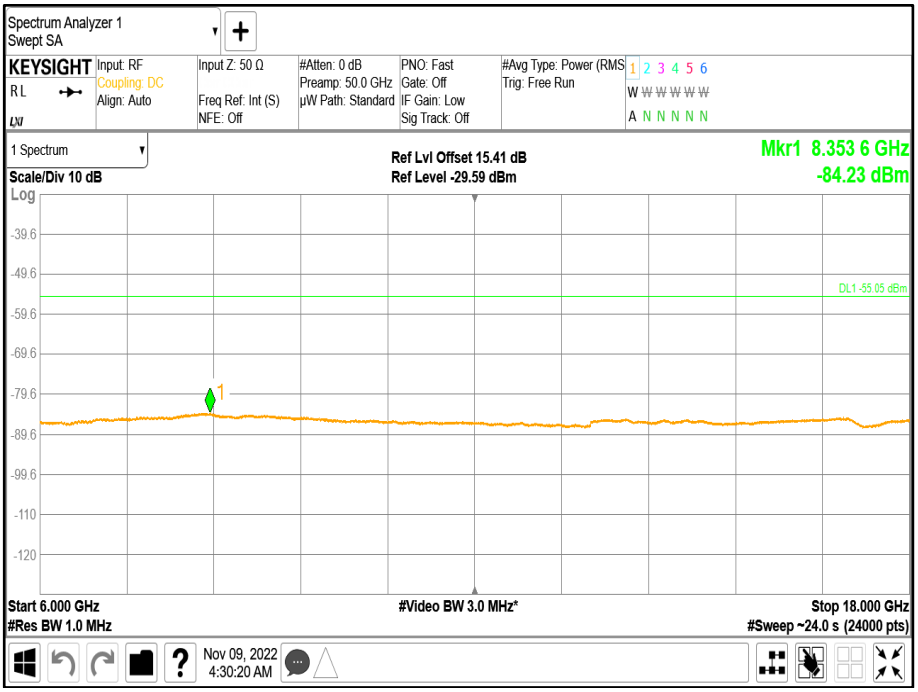


Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position M - Band Mask_High - Range 3530 to 3720 MHz - Mask_High

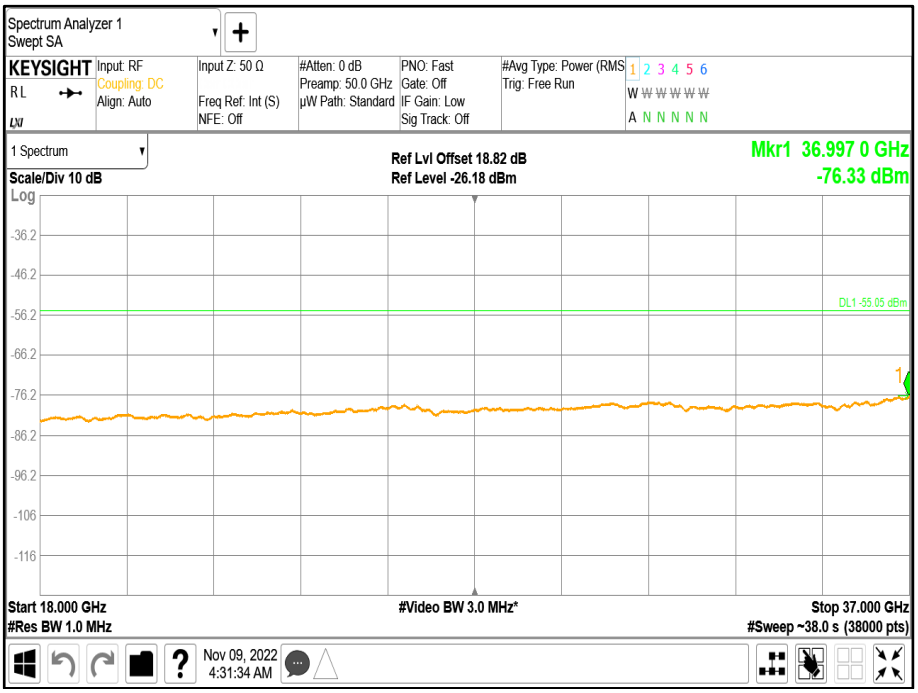
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position M - Band 2 - Range 3720 to 6000 MHz



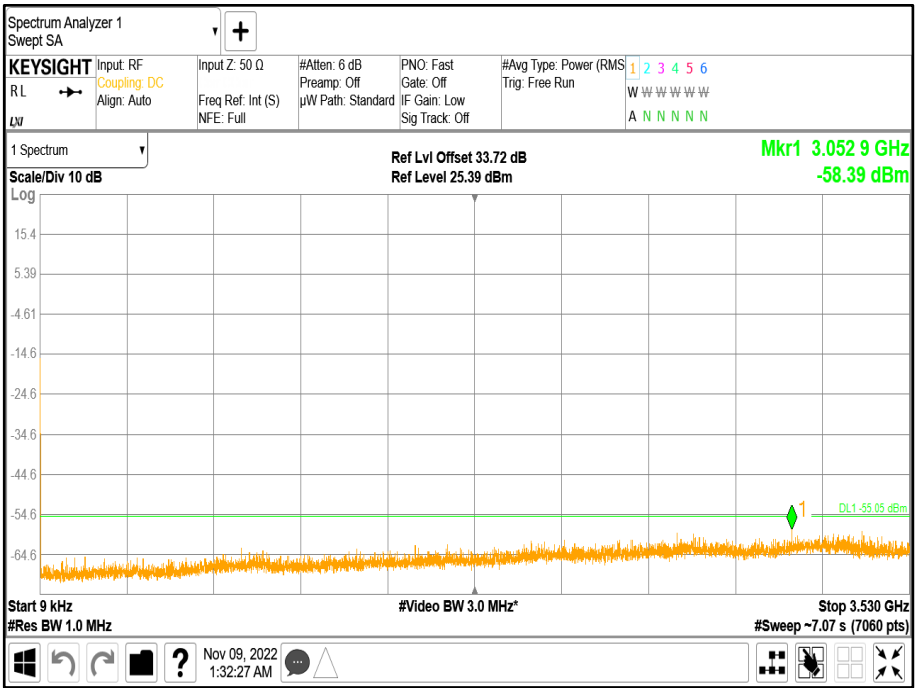
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position M - Band 3 - Range 6000 to 18000 MHz



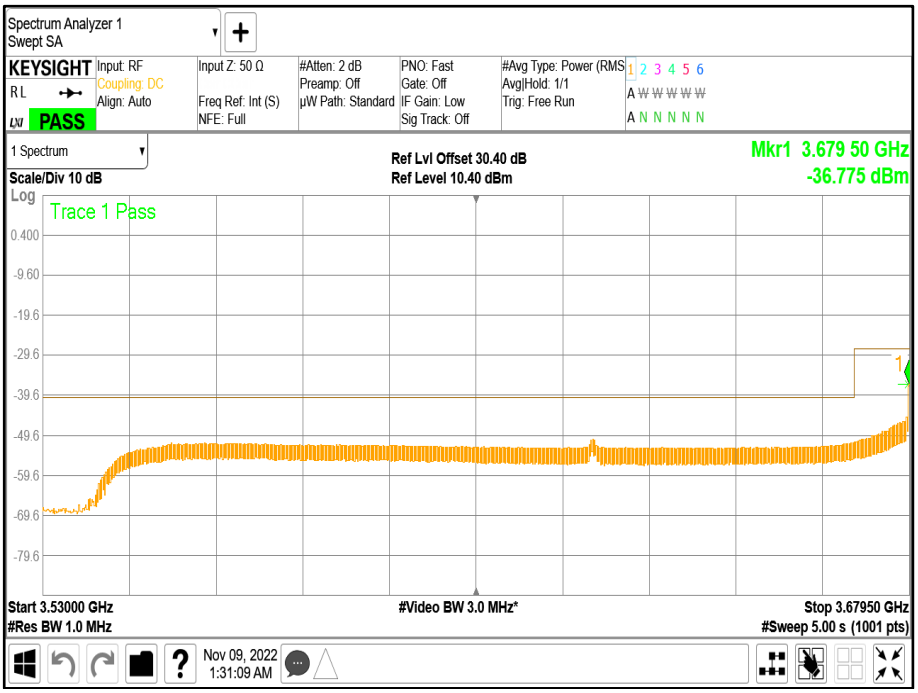
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position M - Band 4 - Range 18000 to 37000 MHz



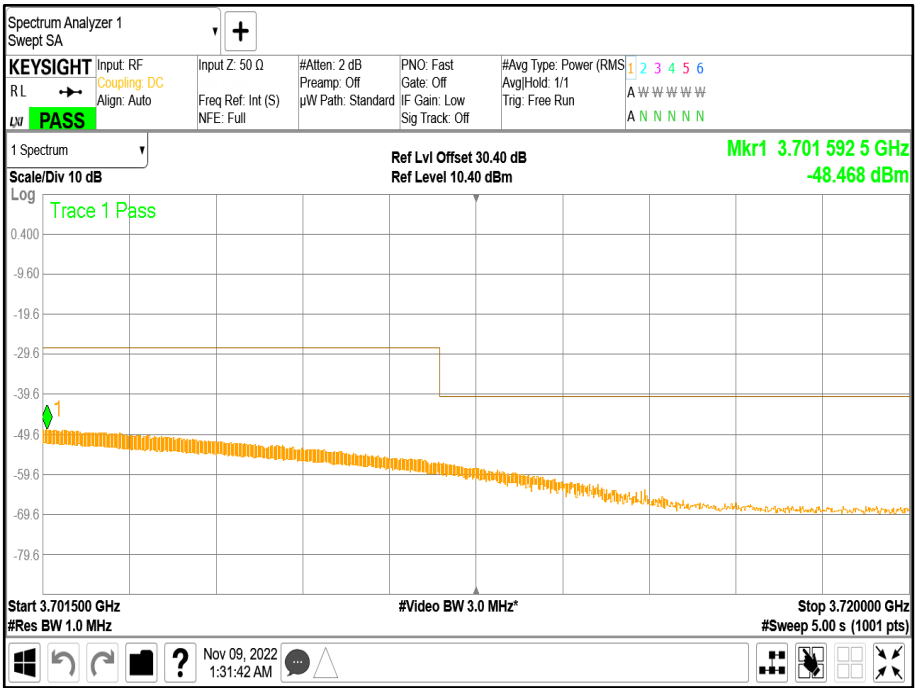
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position T - Band 1 - Range 0.009 to 3530 MHz



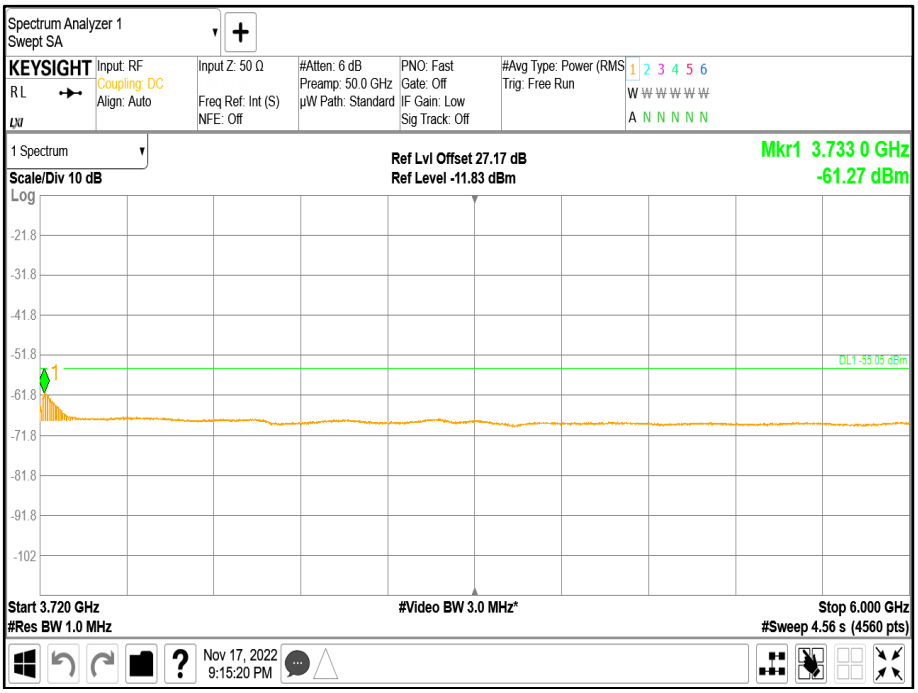
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position T - Band Mask_Low - Range 3530 to 3720 MHz - Mask_Low



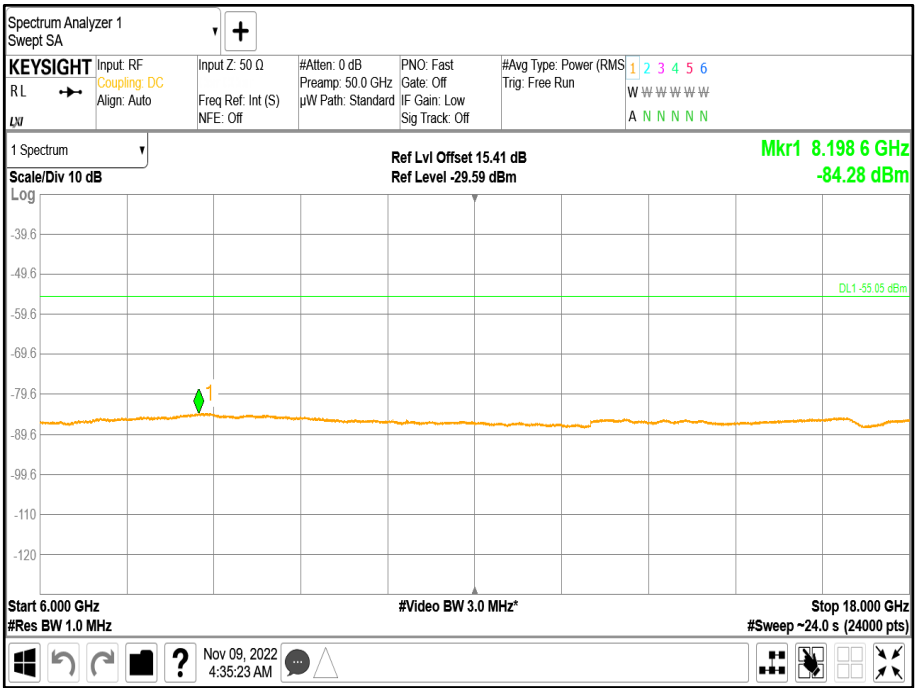
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position T - Band Mask_High - Range 3530 to 3720 MHz - Mask_High



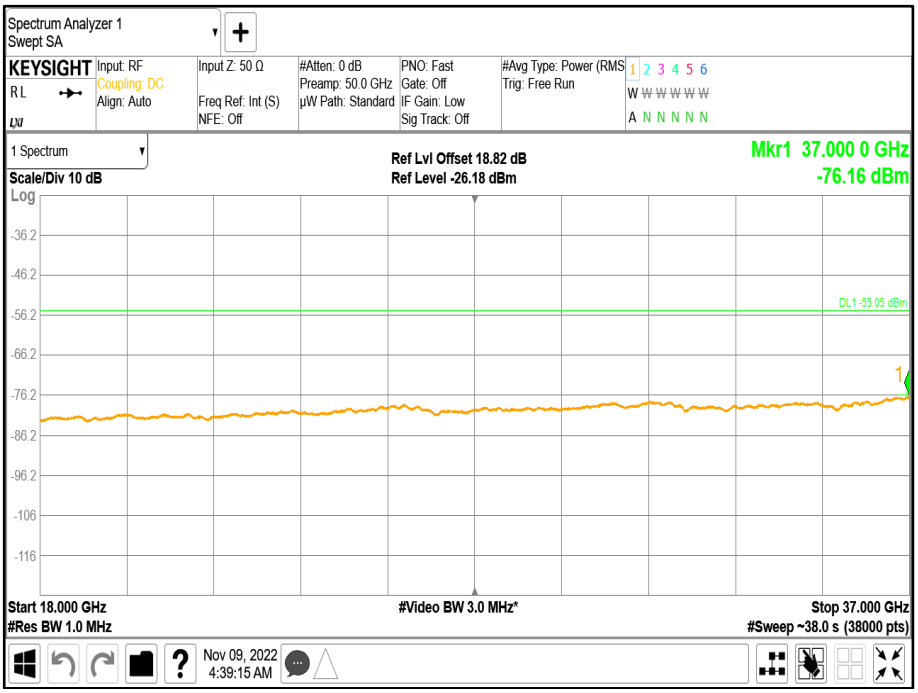
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position T - Band 2 - Range 3720 to 6000 MHz



Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position T - Band 3 - Range 6000 to 18000 MHz



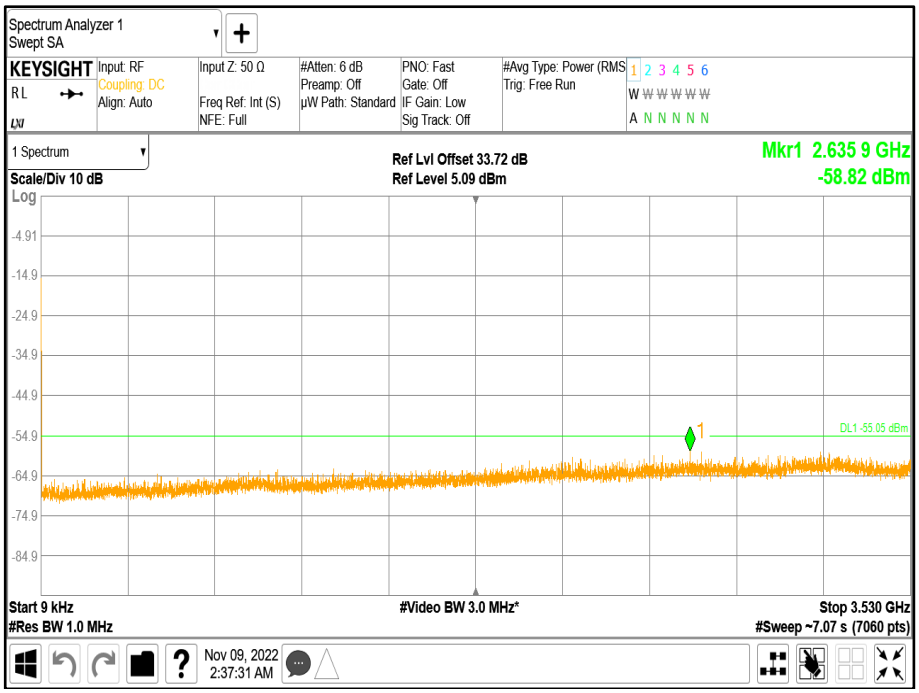
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position T - Band 4 - Range 18000 to 37000 MHz



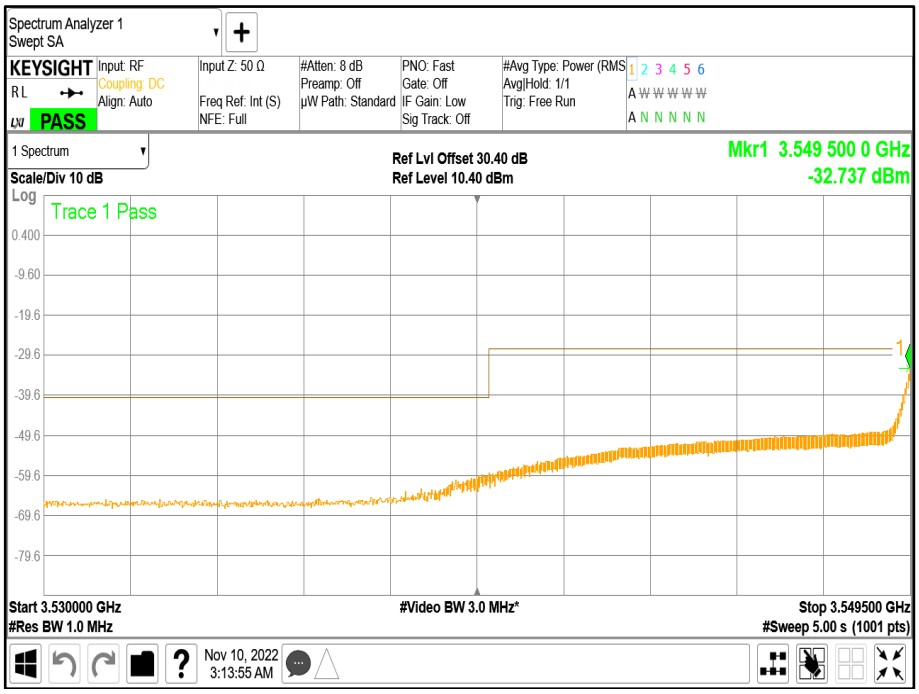
Configuration 2

Maximum Output Power 2 x 22.27 dBm

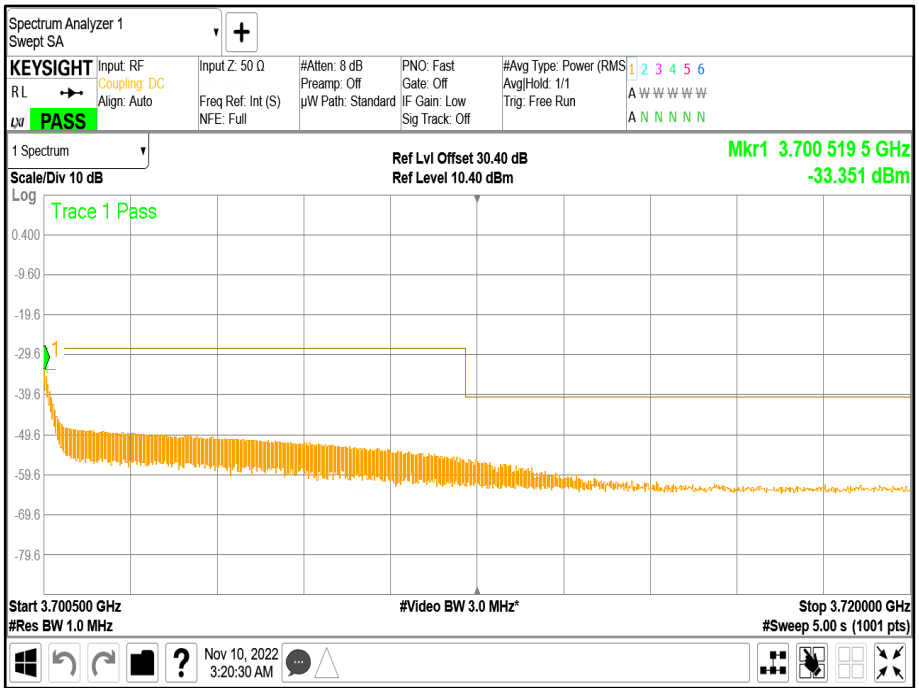
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position M - Band 1 - Range 0.009 to 3530 MHz



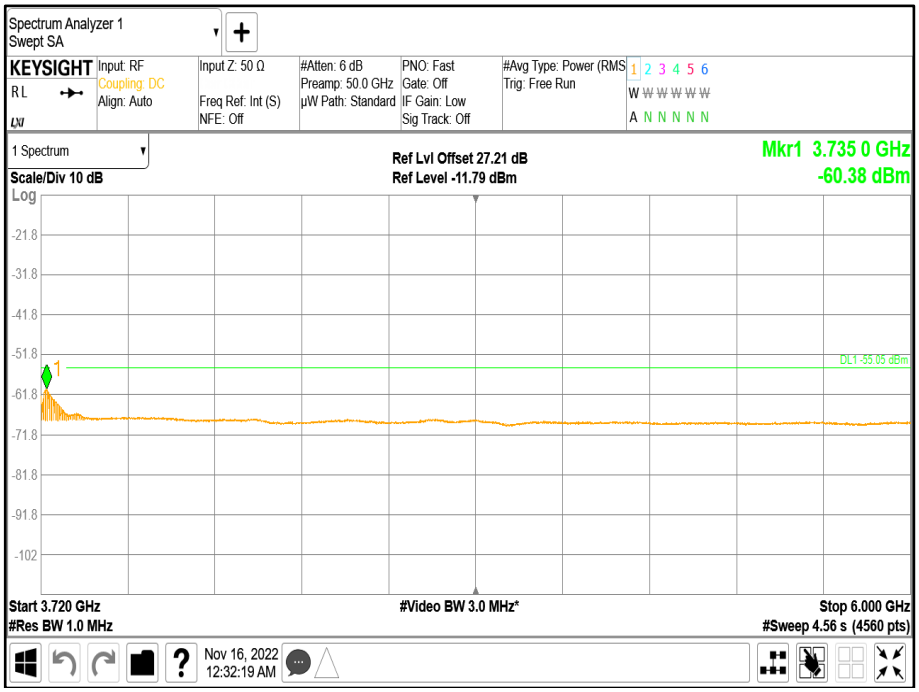
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position M - Band Mask_Low - Range 3530 to 3720 MHz - Mask_Low



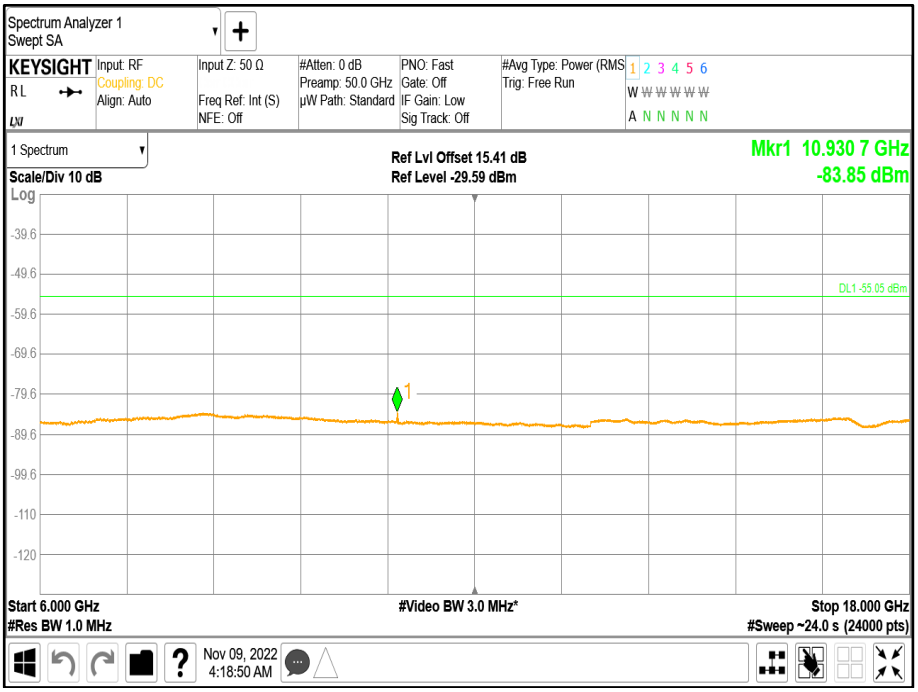
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position M - Band Mask_High - Range 3530 to 3720 MHz - Mask_High



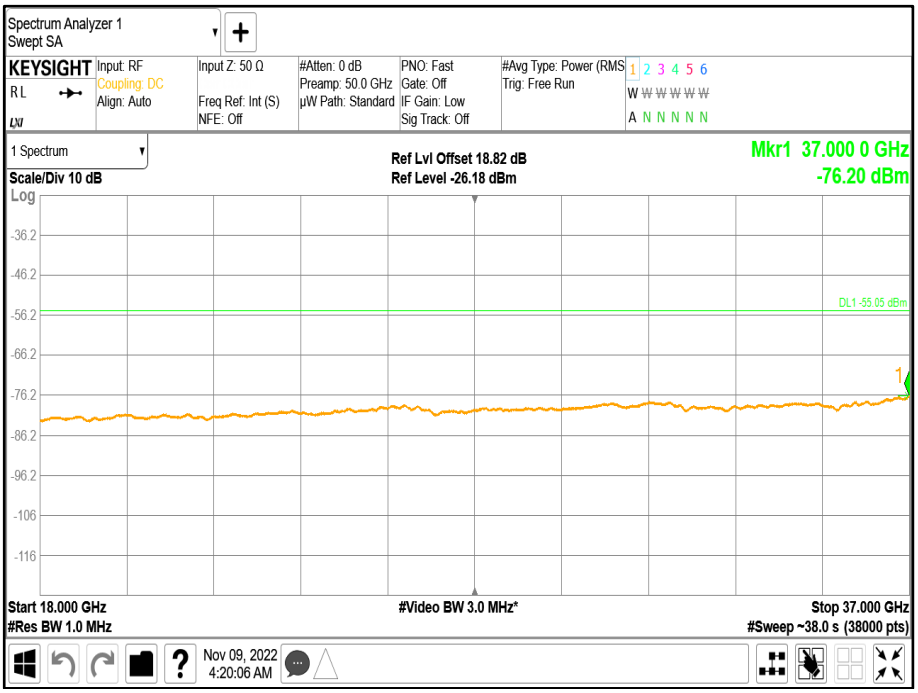
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position M - Band 2 - Range 3720 to 6000 MHz



Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position M - Band 3 - Range 6000 to 18000 MHz



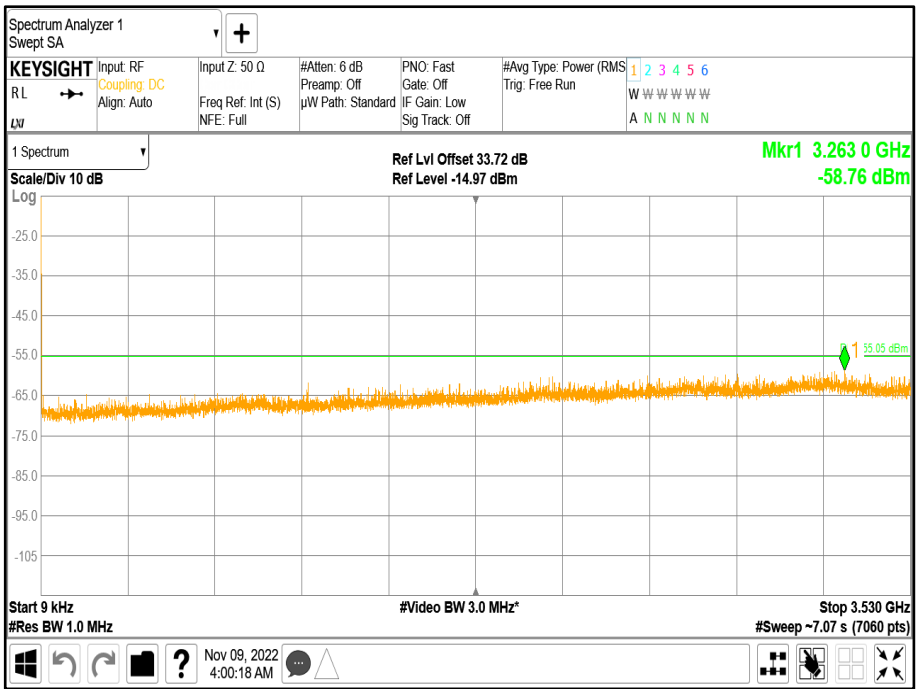
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position M - Band 4 - Range 18000 to 37000 MHz



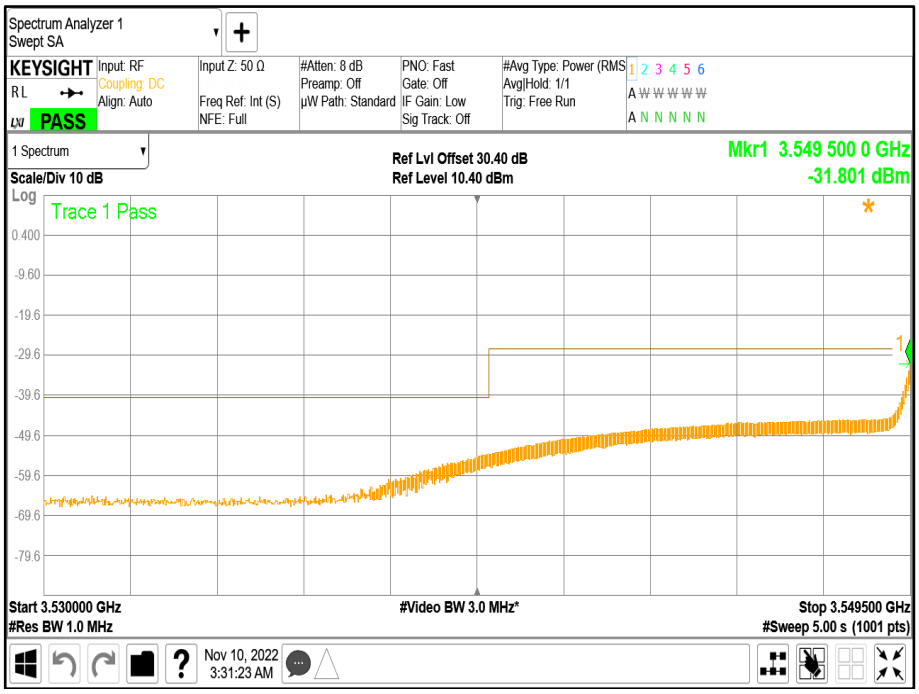
Configuration 3

Maximum Output Power 5 x 22.27 dBm

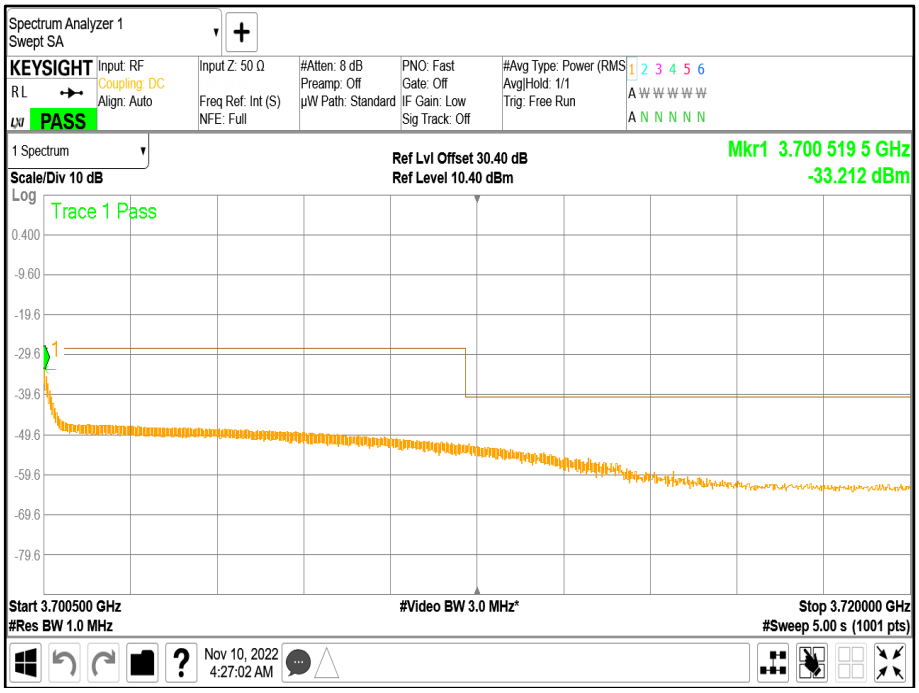
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position M - Band 1 - Range 0.009 to 3530 MHz



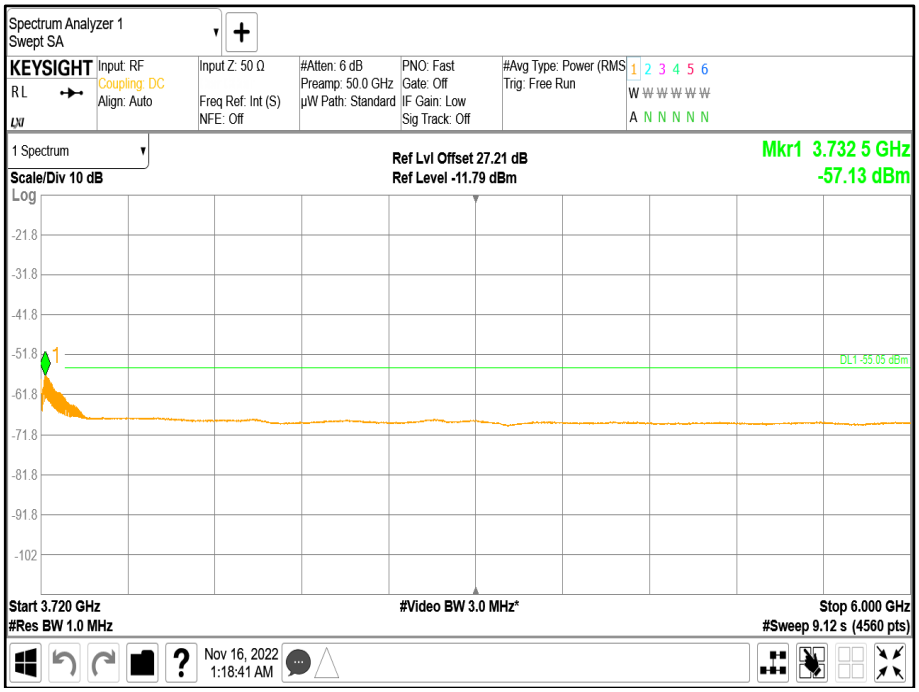
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position M - Band Mask_Low - Range 3530 to 3720 MHz - Mask_Low



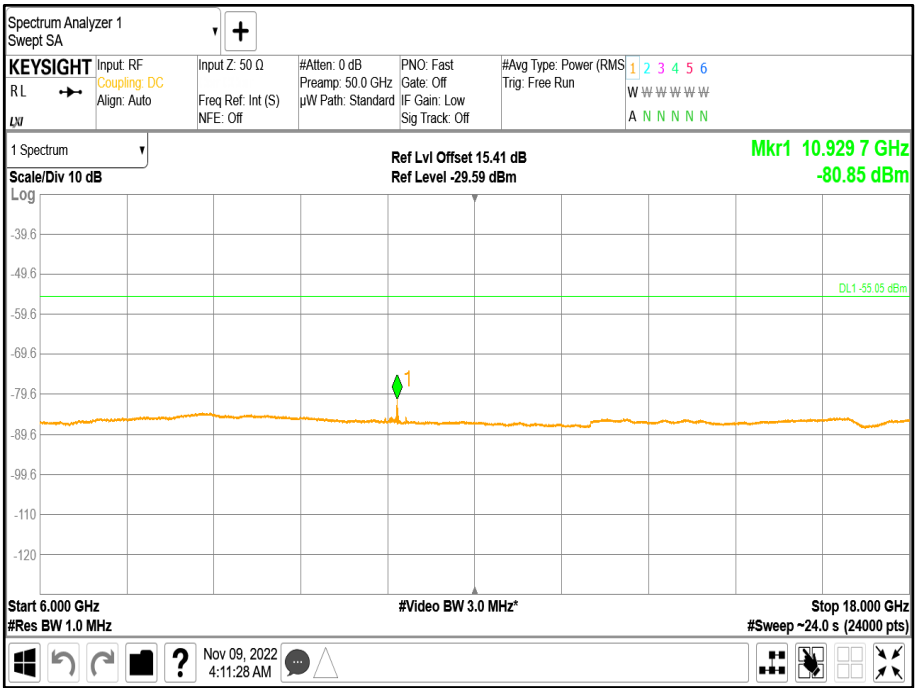
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position M - Band Mask_High - Range 3530 to 3720 MHz - Mask_High



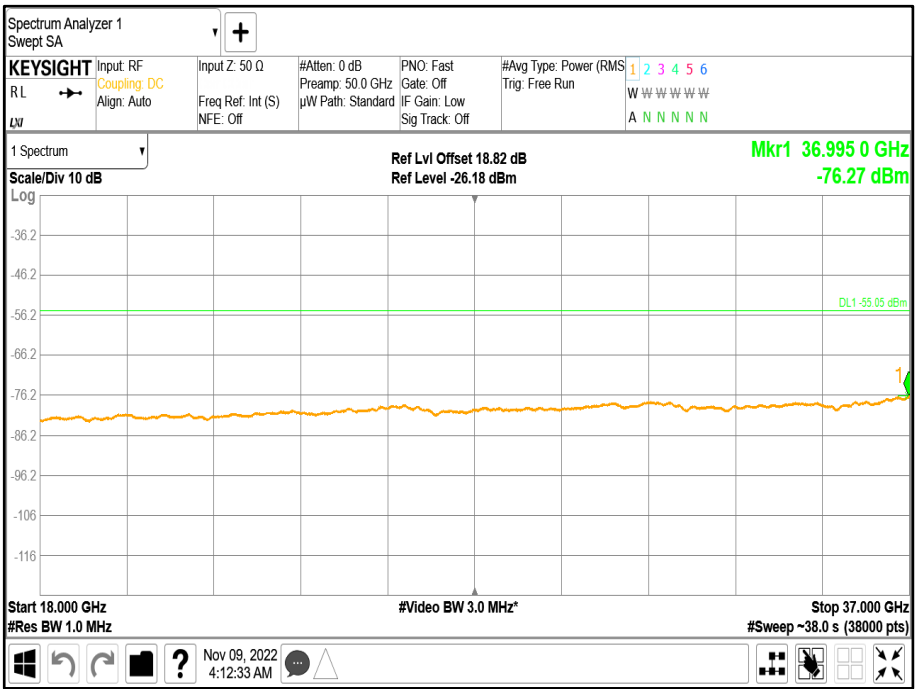
Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position M - Band 2 - Range 3720 to 6000 MHz



Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position M - Band 3 - Range 6000 to 18000 MHz



Antenna 12 - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position M - Band 4 - Range 18000 to 37000 MHz



Limit Clauses 96.41 e(1)(i), e (2) and e(3)

3530-3450 MHz = -25 dBm/MHz 3540-3550 MHz = -13 dBm/MHz 3700-3710 MHz = -13 dBm/MHz 3710-3720 MHz = -25 dBm/MHz
9 kHz-3530 MHz = -40 dBm/MHz 3720 MHz - 40 GHz = -40 dBm/MHz

2.5 FREQUENCY STABILITY

2.5.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1055

2.5.2 Date of Test and Modification State

16-November-2022 - Modification State 0

2.5.3 Test Equipment Used

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

2.5.4 Environmental Conditions

Ambient Temperature 22.6°C
Relative Humidity 39.6%

2.5.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01, Clause 9 and ANSI C63.26 Clause 5.6

2.5.6 Test Results

Configuration 1

Maximum Output Power 22.30 dBm

Temperature	Voltage	Frequency Error (Hz)
		Channel Position M
-30°C	-48.0 V DC	3.10
-20°C	-48.0 V DC	2.88
-10°C	-48.0 V DC	1.82
0°C	-48.0 V DC	3.34
+10°C	-48.0 V DC	2.70
+20°C	-40.8 V DC	2.76
+20°C	-48.0 V DC	2.24
+20°C	-55.2 V DC	2.79
+30°C	-48.0 V DC	2.44
+40°C	-48.0 V DC	2.32
+50°C	-48.0 V DC	1.94

FCC CFR 47 Part 2, Clause 2.1055

Limit	The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

SECTION 3

TEST EQUIPMENT USED

3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Maximum Peak Output Power and Peak to Average Ratio - Conducted					
PXA Signal Analyzer	Keysight	N9030B	BAMS-1002016870	12	24-May-2023
Thermo Hygrobarometer	RS PRO	1160	TE5824	12	19-Jul-2023
Power Supply	Agilent Technologies	N8738A	BAMS-1001518021	N/A	O/P Mon
Multimeter	FLUKE	75III	TE0455	12	01-Dec-22
Spectrum Sysyem	TUV SUD	-	TE5991	N/A	O/P Mon
Occupied Bandwidth					
PXA Signal Analyzer	Keysight	N9030B	BAMS-1002016870	12	24-May-2023
Thermo Hygrobarometer	RS PRO	1160	TE5824	12	19-Jul-2023
Power Supply	Agilent Technologies	N8738A	BAMS-1001518021	N/A	O/P Mon
Multimeter	FLUKE	75III	TE0455	12	01-Dec-22
Spectrum Sysyem	TUV SUD	-	TE5991	N/A	O/P Mon
Band Edge					
PXA Signal Analyzer	Keysight	N9030B	BAMS-1002020934	12	15-Feb-2023
Network Analyzer	Agilent Technologies	N5230A	BAMS-1000635869	12	22-Sep-2023
Power Supply	Agilent Technologies	N8738A	BAMS-1001674522	N/A	O/P Mon
Multimeter	FLUKE	75III	TE0455	12	01-Dec-22
Thermo Hygrobarometer	RS PRO	1160	TE5824	12	19-Jul-2023
Attenuator 20dB	Aerflex	6834-20-11	QM935	N/A	O/P Mon
Attenuator 10dB	Weinsnchel	56-10	T3528	N/A	O/P Mon
Transmitter Spurious Emissions					
PXA Signal Analyzer	Keysight	N9030B	BAMS-1002020934	12	15-Feb-2023
Network Analyzer	Agilent Technologies	N5230A	BAMS-1000635869	12	22-Sep-2023
Power Supply	Agilent Technologies	N8738A	BAMS-1001674522	N/A	O/P Mon
Multimeter	FLUKE	75III	TE0455	12	01-Dec-22
Thermo Hygrobarometer	RS PRO	1160	TE5824	12	19-Jul-2023
Attenuator 20dB	Aerflex	6834-20-11	QM935	N/A	O/P Mon
Attenuator 10dB	Weinsnchel	56-10	T3528	N/A	O/P Mon
High Pass filter	RF-Lambda	RHPF23G06G40	-	N/A	O/P Mon
Band rejection filter	Creoway	CW-DPF-3550-3700-E13-M2	BAMS-1017040477	N/A	O/P Mon
Frequency Stability					
Signal & Spectrum Analyzer	R&S	FSW	BAMS 1001988511	12	16-Dec-2022
Thermo Hygro Barometer	RS PRO	1160	5824	12	19-Jul-2023
Thermometer	Fluke	51 K/J	2267	12	25-Jan-2023
Climatic Chamber	Vötsch	VCS 50017/S	BAMS 1001235892	-	O/P Mon
Power Supply	Keysight	N8738A	BAMS 1001643633	-	O/P Mon
Digital Multimeter	Fluke	79 SERIES II	3057	12	22-Aug-2023

N/A – Not Applicable
O/P Mon – Output Monitored with Calibrated Equipment

3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:-

Test Discipline	Frequency / Parameter		MU	MU Unit
Conducted Maximum Peak Output Power-Spectrum	3550 MHz to 3700 MHz		±1.38	dB
Conducted Emissions- HP-VEE Software	9kHz to 37GHz		±1.83	dB
Frequency Stability - HP-VEE Software	3550 MHz to 3700 MHz		± 127	Hz
Occupied Bandwidth - Spectrum	Up to 20 MHz Bandwidth	10 MHz Bandwidth	± 96144	Hz
		20 MHz Bandwidth	± 190404	Hz
PSD - Spectrum	3550 MHz to 3700 MHz		±1.38	dB
Band Edge - HP-VEE Software	3550 MHz to 3700 MHz		±1.38	dB

Measurement Uncertainty Decision Rule

Determination of conformity with the specification limits is based on the results of the compliance measurement and does not take into account measurement instrumentation uncertainty as defined in ANSI C63.26:2015 Clause 1.3.

Risk: The uncertainty of measurement about the measured result is negligible with regard to the final pass/fail decision. The measurement result can be directly compared with the test limit to determine conformance with the requirement (compare IEC Guide 115). The level of risk to falsely accept and falsely reject items is further described in ILAC-G8

3.3 MEASUREMENT SOFTWARE USED

List of measurement software versions used for testing.

Instrument	Manufacturer	Type No.	TE No.	Software Version
PXA Signal Analyser (Spectrum)	Keysight	N9030B	BAMS-1002016870	2022 Update 2.0 Revision A.32.02
PXA Signal Analyser (HP-VEE SW)	Keysight	N9030B	BAMS 1002020934	2022 Update 1.0 Revision A.31.05
HP-VEE Software	TUV SUD	HP_VEE	N/A	V3.34
Spectrum	TUV SUD	SCU004	TE5991	1.4.1/1.6.1/1.8.0/1.8.1/1.8.2

SECTION 5

ACCREDITATION, DISCLAIMERS AND COPYRIGHT

4.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT

Accred. no. 10363
Testing
ISO/IEC 17025

This report relates only to the actual item/items tested.

Our Swedac Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our Swedac Accreditation.

Results of tests not covered by our Swedac Accreditation Schedule are marked NSA (Not Swedac Accredited).

TÜV SÜD Sverige

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ANNEX A

MODULE LIST

Configurations Module 1 (Spectrum)			
Product	Product No	R-State	Serial No
CT-DU25	LPC102500/1	R3B	T01G522082
AIR 3268 B48	KRD 901 254/3	R1B	E23E345114
Software Version:	CXP2030039/7	Revision:	R35A89
Configurations Module 2(FCC software)			
Product	Product No	R-State	Serial No
CT-DU25	LPC102500/1	R3B	T01G522634
AIR 3268 B48	KRD 901 254/3	R1B	E23E352423
Software Version:	CXP2030039/7	Revision:	R35A89
Configurations Module 3 (Frequency Stability)			
Product	Product No	R-State	Serial No
CT-DU25	LPC102500/1	R3B	T01G522634
AIR 3268 B48	KRD 901 254/3	R1B	E23E352422
Software Version:	CXP2030039/7	Revision:	R35A89