Radio Test Report
Application for Grant of Equipment Authorization

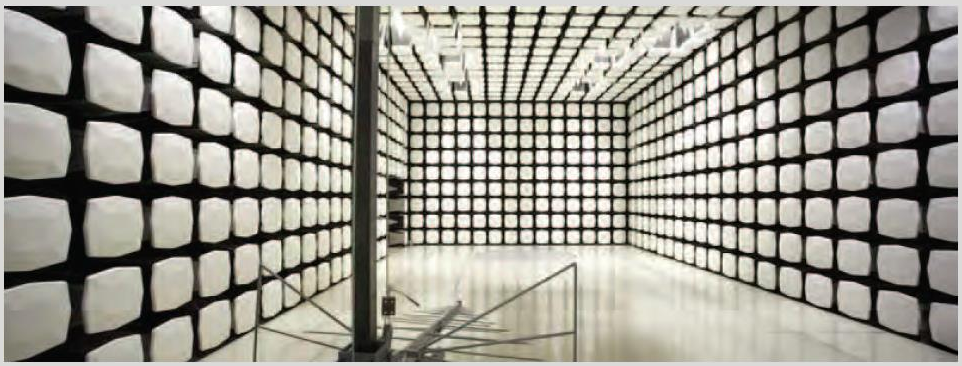
FCC Part 27
[3450MHz – 3550MHz and 3700MHz – 3980MHz]

FCC ID: VBNAVQQA-01

Nokia Solutions and Networks
Airscale Base Transceiver Station Radio Unit

Model: AVQQA

Report: NOKI0086.0 Rev. 0, Issue Date: August 12, 2025



Element Plano
1701 E. Plano Parkway #150
Plano, TX 75074 USA

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element
2023.04.17

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CERTIFICATE OF TEST

Last Date of Test: July 17, 2025
Nokia Solutions and Networks
EUT: Airscale Base Transceiver Station Radio Unit Model AVQQA

Radio Equipment Testing

Standards

Specification	Method
Code of Federal Regulations (CFR) Title 47 Part 2 CFR Title 47 Part 27 Subpart C	ANSI C63.26-2015 with FCC KDB 971168 D01 v03r01 FCC KDB 662911D01 v02r01 FCC KDB 662911D02 v01

Results

Test Description	Specification Sections(s)	Method Section(s)	Result	Comments
RF Output Power	27.50(j),(k)	5.2	Pass	
Power Spectral Density	27.50(j),(k)	5.2	Pass	
Occupied Bandwidth	27.53(l),(n)	5.4	Pass	
Average Power (PAPR) CCDF	27.50(j),(k)	5.2	Pass	
Spurious Conducted Emissions at Band Edge	27.53(l),(n)	5.7	Pass	
Spurious Conducted Out-of-Band Unwanted Emissions	27.53(l),(n)	5.7	Pass	
Spurious Radiated Emissions	27.53(l),(n)	5.5	Pass	

Deviations From Test Standards

None

Approved By:

Adam Bruno, Operations Manager
Signed for and on behalf of Element

Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information. As indicated in the Statement of Work sent with the quotation, Element's standard process is to always use the latest published version of the test methods even when earlier versions are cited in the test specification. Issuance of a purchase order was de facto acceptance of this approach. Otherwise, the client would have advised Element in writing of the specific version of the test methods they wanted applied to the subject testing.

REVISION HISTORY

Revision Number	Description	Date (yyyy-mm-dd)	Page Number
00	None		

FACILITIES

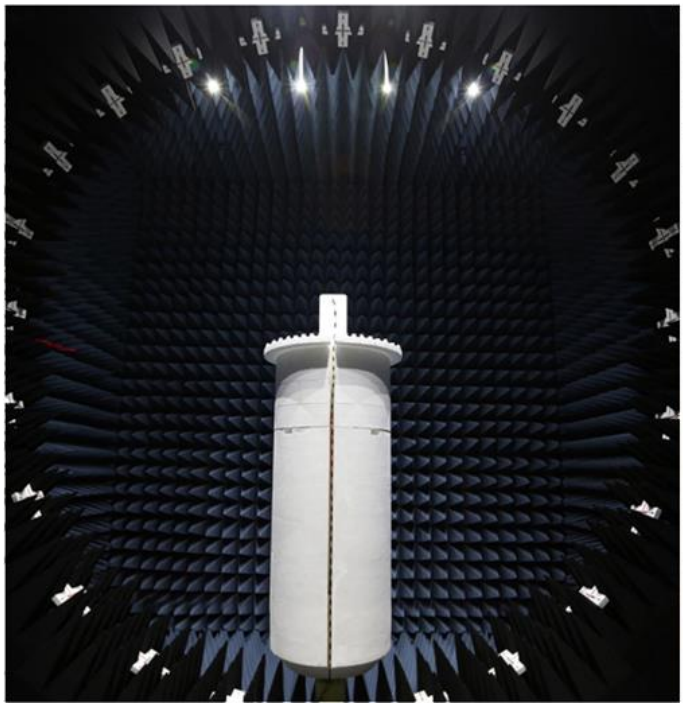
element
2025.07.17

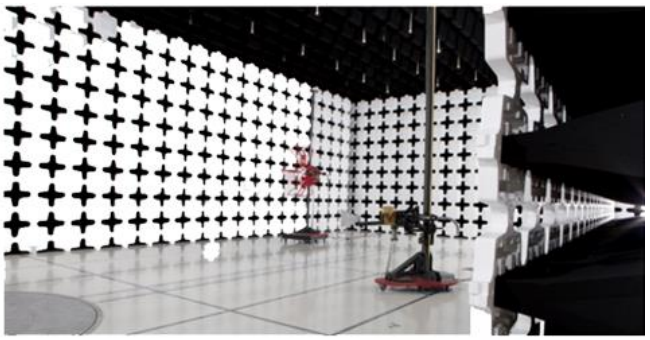
Testing was performed at the following location(s)

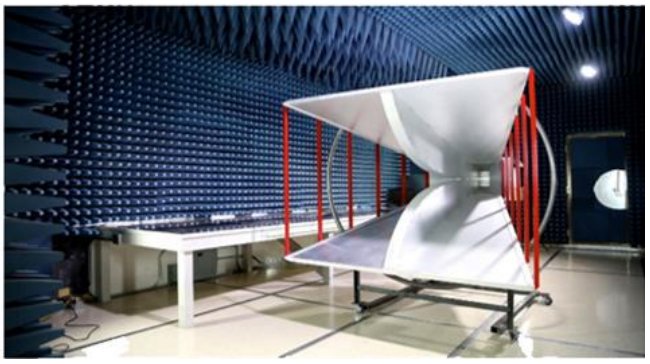
	Location	Labs (1)	Address	A2LA (2)	ISED (3)	BSMI (4)	VCCI (5)	CAB	FDA (6)
☒	Plano Texas	PT01-15	1701 E Plano Pkwy, Ste 150 Plano, TX 75074 (972) 509-2566	214.19	32637	SL2-IN-E-057R	A-0426	US0054	TL-137
☐	Offsite	N/A	See Product Description	N/A	N/A	N/A	N/A	N/A	N/A

See data sheets for specific labs

(1) The lab designations denote individual rooms within each location. (OC01, OC02, OC03, etc.)
(2) A2LA Certificate No.
(3) ISED Company No.
(4) BSMI No.
(5) VCCI Site Filing No.
(6) FDA ASCA No.







MEASUREMENT UNCERTAINTY

element
MU 2025-03-26

Measurement Uncertainty

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

A measurement uncertainty estimation reported is based on statistical analysis that was performed by the laboratory. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (k=2) can be found in the table below. A lab specific value may also be found in the applicable test description section. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-2 as applicable) and are available upon request.

The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

Various Measurements

Test	All Labs (+/-)
Frequency Accuracy (%)	0.0007
Amplitude Accuracy (dB)	1.2
Conducted Power (dB)	1.2
Radiated Power via Substitution (dB)	0.7
Temperature (degrees C)	0.7
Humidity (% RH)	2.5
Voltage (AC) (%)	1
Voltage (DC) (%)	0.7
Near-field Measurement of E-Field (dB)	1.89
Near-field Measurement of H-Field (dB)	2.65

Field Strength Measurements (dB)

Range	PT01 (+/-)
10kHz-30MHz	1.8
30MHz-1GHz 3m	4.9
1GHz-6GHz	5.1
6GHz-18GHz	5

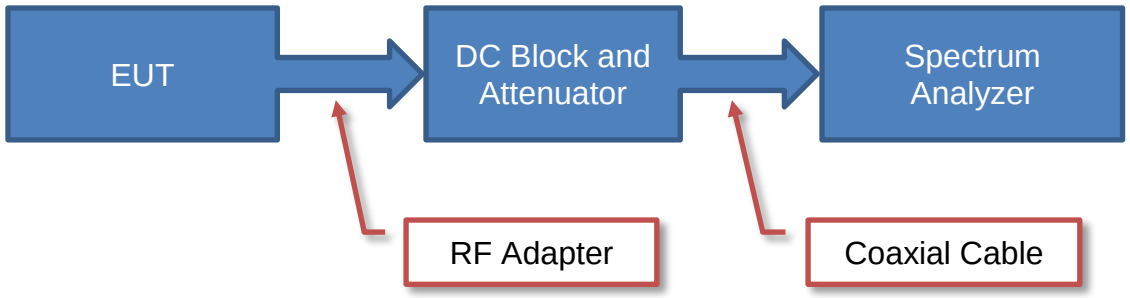
TEST SETUP BLOCK DIAGRAMS

Measurement Bandwidths

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

Unless otherwise stated, measurements were made using the bandwidths and detectors specified. No video filter was used.

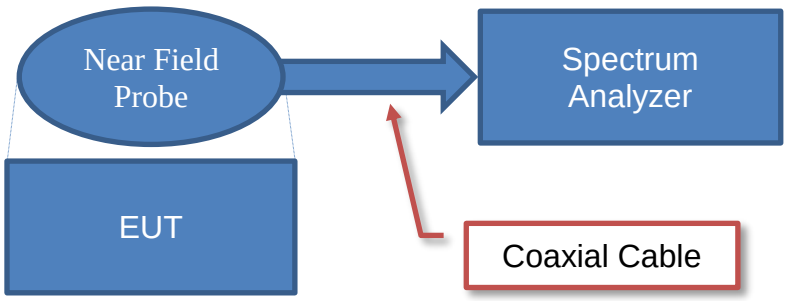
Antenna Port Conducted Measurements



Sample Calculation (logarithmic units)

Measured Value		Measured Level		Reference Level Offset
71.2	=	42.6	+	28.6

Near Field Test Fixture Measurements

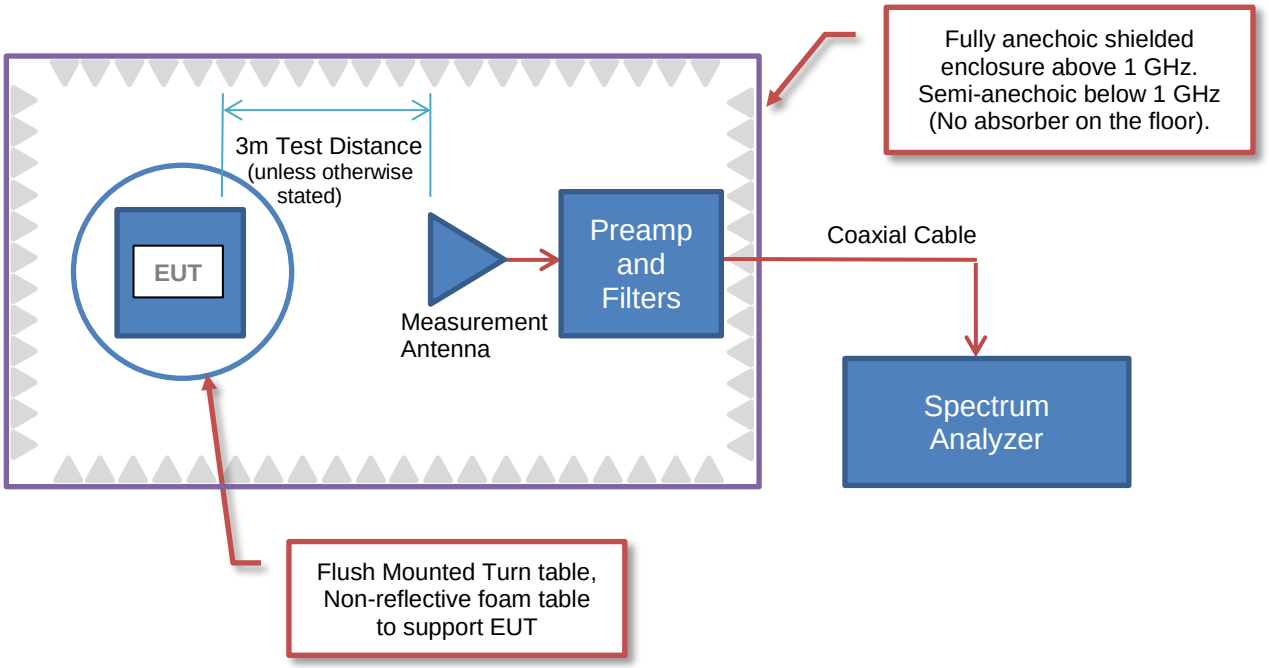


Sample Calculation (logarithmic units)

Measured Value		Measured Level		Reference Level Offset
71.2	=	42.6	+	28.6

TEST SETUP BLOCK DIAGRAMS

Emissions Measurements



Sample Calculation (logarithmic units)

Radiated Emissions:

Measured Level (Amplitude)		Factor: Antenna Factor		Factor: Cable Factor		Factor: Amplifier Gain		Distance Adjustment Factor		External Attenuation		Field Strength
42.6	+	28.6	+	3.1	-	40.8	+	0.0	+	0.0	=	**33.5**

Conducted Emissions:

Measured Level (Amplitude)		Factor: Transducer Factor		Factor: Cable Factor		External Attenuation		Adjusted Level
26.7	+	0.3	+	0.1	+	20.0	=	**47.1**

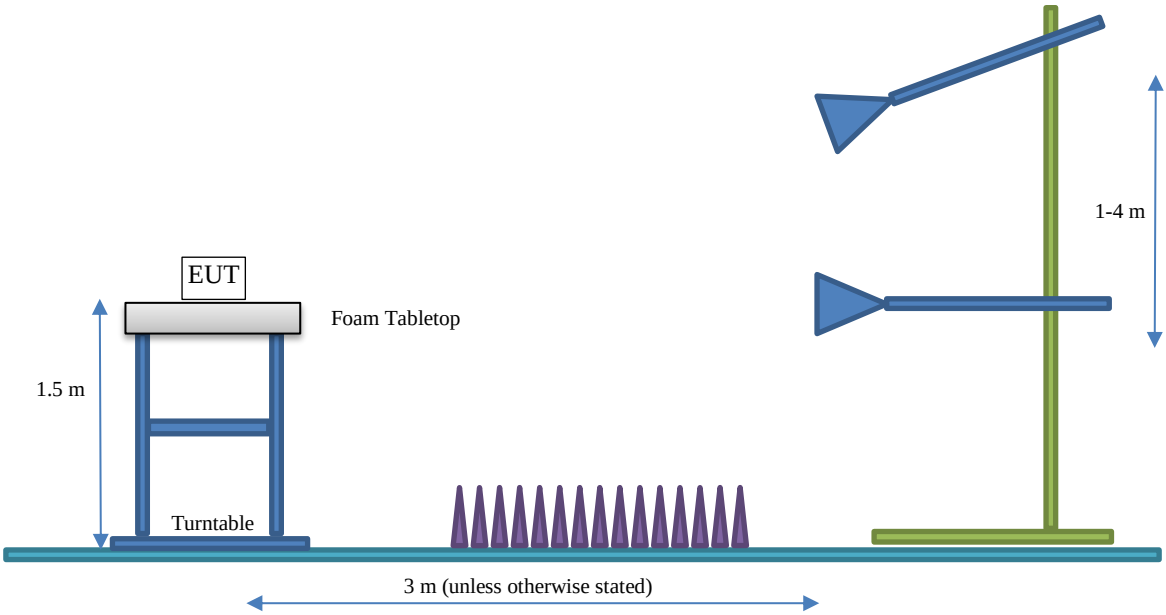
Radiated Power (ERP/EIRP) – Substitution Method:

Measured Level into Substitution Antenna (Amplitude dBm)		Substitution Antenna Factor (dBi)		EIRP to ERP (if applicable)		Measured power (dBm ERP/EIRP)
10.0	+	6.0	-	2.15	=	**13.9/16.0**

TEST SETUP BLOCK DIAGRAMS

Bore Sighting (>1GHz)

The diameter of the illumination area is the dimension of the line tangent to the EUT formed by 3 dB beamwidth of the measurement antenna at the measurement distance. At a 3 meter test distance, the diameter of the illumination area was 3.8 meters at 1 GHz and greater than 2.1 meters up to 6 GHz. Above 1 GHz, when required by the measurement standard, the antenna is pointed for both azimuth and elevation to maintain the receive antenna within the cone of radiation from the EUT. The specified measurement detectors were used for comparison of the emissions to the peak and average specification limits.



EXPLANATION OF ELEMENT PERFORMANCE CRITERIA

How Important Is It To Understand Performance Criteria?

Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this quote were agreed upon by the client, prior to testing. It is the responsibility of the test laboratory to observe the performance of the equipment under test (EUT) and to accurately report those results. The test specification may define the acceptable performance criteria, but in the absence of this the manufacturer has the obligation to express the performance criteria in terms which relate to the performance of its specific product when used as intended, typically based on what the product data sheet or product specification defines.

Examples of functions defined by the manufacturer to be evaluated during testing include, but are not limited to, the following:

- Essential operational modes and states;
- Tests of all peripheral access (hard disks, LAN, printers, keyboard, mouse, etc.);
- Quality of software execution;
- Quality of data display and transmission;
- Quality of speech transmission;
- Any separate “Error” condition mode; ie, it can be a bigger risk that a function happens when it is not supposed to. Both intended operation and error conditions should be considered and tested.
- Ensuring that a radio transmitter continues to transmit and data/speech is not corrupted (additional details provided in the appropriate ETSI EN standard).
- Radio equipment with standby mode(s) of operation. ie, if a radio is supposed to be “idle/standing by” and an EMC test causes the device to transmit when it is not supposed to which triggers an event. See applicable EN 301 489 standard for details;

There is additional guidance related to this concept located in EUANB TGN 34 (section 4). The variety and the diversity of the apparatus within the scope of the EMC Directive make it difficult to define precise criteria for the evaluation of the immunity test results for every product. The manufacturer should consider the risks of not testing a mode or configuration and having potential problems when the device reaches the end-user. Additional testing does add cost, but it can be far cheaper than having to issue a product recall or selling a device that does not work in the real world due to EMC issues.

If a product specific specification is provided that defines a precise performance criterion, this will be used as the basis of the performance assessment. If we are not provided a test plan or a generic performance is defined in the test standard, we will use the following:

- Performance Criteria A
  - The EUT exhibited no change in performance when operating as intended. In this case no changes were observed during the test.
- Performance Criteria B
  - The EUT exhibited a change in performance when operating as intended. In this case the equipment returned to previous operation without any operator intervention, once the test stimulus was removed.
- Performance Criteria C
  - The EUT exhibited a change in performance when operating as intended. In this case the equipment required some operator intervention in order to return to previous operation.
- Performance Criteria D (if applicable)
  - The EUT exhibited a change in performance when operating as intended. In this case the equipment appears to have been damaged and would not recover.

If we are provided a test plan or information detailing the precise criteria for evaluating the test results, we will use that information and reference it as part of the test data.

PRODUCT DESCRIPTION

Client and Equipment under Test (EUT) Information

Company Name:	Nokia Solutions and Networks
Address:	3201 Olympus Blvd
City, State, Zip:	Dallas, TX 75019
Test Requested By:	Steve Mitchell
EUT:	Airscale Base Transceiver Station Radio Unit Model AVQQA
First Date of Test:	July 9, 2025
Last Date of Test:	July 17, 2025
Receipt Date of Samples:	July 9, 2025
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:

AirScale Dual Band MAA 64T64R 192AE Radio Unit (RU) variant AVQQA is being developed under this effort. The AVQQA Radio Unit is designed to support 5G NR (New Radio) TDD (Time Division Duplex) operations. **The scope of testing in this effort is to add NR50 channel bandwidths in 3.45GHz Band, add NR10, NR30, NR50, NR70, and NR90 channel bandwidth in 3.7GHz Band (C-Band) and 5G NR TDD Multiband Multicarrier operations under feature CB013101.**

The AVQQA RU supports 3GPP frequency band n77 operations including the 3.45GHz Band (BTS Tx/Rx: 3450 to 3550 MHz) and 3.7GHz Band (BTS Tx/Rx: 3700 to 3980 MHz). Each band supports 64 transmit/receive paths. The Tx/Rx paths of the 3.45GHz and 3.7GHz Bands are combined and provided to a common antenna assembly.

The AVQQA supports up to 64 port MIMO operation in each band. The 3.45GHz Band maximum RF output power is 200 watts (3.13W/TRX x 64 TRXs). The 3.7GHz Band maximum RF output power is 340 watts (5.31W/TRX x 64 TRXs). The total AVQQA RU RF output power is limited to 340W shared between 3.45GHz and 3.7GHz Bands. The AVQQA RU 3.45GHz Band supports 5G NR TDD bandwidths of 10, 20, 30, 40 and 50MHz. The AVQQA RU 3.7GHz Band supports 5G NR TDD bandwidths of 10, 20, 30, 40, 50, 60, 70, 80, 90 and 100MHz. The single carrier channel bandwidth maximum RF output power per TRX and per Radio are as follows.

Single Carrier 3.45GHz Band Maximum RF Output Power					
Carrier Power per	**NR10**	**NR20**	**NR30**	**NR40**	**NR50**
TRX	0.78 Watts or 28.9 dBm	1.56 Watts or 31.9 dBm	2.34 Watts or 33.7 dBm	3.13 Watts or 34.9 dBm	3.13 Watts or 34.9 dBm
Radio (64 x TRX)	50.0 Watts or 47.0 dBm	100 Watts or 50.0 dBm	150 Watts or 51.8 dBm	200 Watts or 53.0 dBm	200 Watts or 53.0 dBm

Single Carrier 3.7GHz Band Maximum RF Output Power					
Carrier Power per	**NR10**	**NR20**	**NR30**	**NR40**	**NR50-NR100**
TRX	0.78 Watts or 28.9 dBm	1.56 Watts or 31.9 dBm	2.34 Watts or 33.7 dBm	3.13 Watts or 34.9 dBm	5.31 Watts or 37.3 dBm
Radio (64 x TRX)	50.0 Watts or 47.0 dBm	100 Watts or 50.0 dBm	150 Watts or 51.8 dBm	200 Watts or 53.0 dBm	340.0 Watts or 55.3 dBm

PRODUCT DESCRIPTION

The AVQQA RU supports four downlink modulation types (QPSK, 16QAM, 64QAM and 256QAM). The AVQQA RU 530MHz instantaneous bandwidth covers both 3.45GHz and 3.7GHZ Bands. The RU maximum total occupied bandwidth (sum of all simultaneous carriers) is 200MHz. Standalone (single) carrier operation is supported for either band. Multicarrier operations are supported for the for 3.45GHz and 3.7GHz Bands (a maximum of two simultaneous carriers per band; a maximum of four simultaneous carriers over both bands). The AVQQA TDD (time division duplexing) down link duty cycle for 100% RF load is 75%.

The 3.45GHz Band carrier is required to operate simultaneously/concurrently with a 3.7GHz Band carrier (i.e.: standalone operation is not supported for the 3.45GHz Band carriers). Standalone carrier operation is supported for 3.7GHz Band carriers. The radio software supports multicarrier operations for both the 3.45GHz Band and 3.7GHz Band. Simultaneous single carrier operation in each band is supported (i.e.: Dual Band operation). The radio software supports multicarrier operations up to maximum four component carriers (4CC) simultaneous carrier operations.

The AVQQA antenna assembly has an array of 4 rows and 8 columns of (±45°) cross-polarized (orthogonal) radiators. This antenna assembly has a maximum beamforming gain of 26.0 dBi. The sixty-four AVQQA transmitter outputs are connected to the antenna array (thirty-two are connected to +45° radiators/antennas and thirty-two are connected to the -45° radiators/antennas).

The radio unit has external interfaces including DC power (DC IN), ground (GND), optical (OPT1-4) and remote electrical tilt (AISG/EAC). The RU with applicable installation kit is pole mounted.
Tests to be performed include Output power/RF channel power, CCDF- peak to average power ratio, power spectral density (power/1MHz), emission bandwidth (99% and 26 dB down), band edge spurious emissions (± 1MHz), spurious emissions (conducted and radiated), and frequency stability (over required voltage/temperature ranges). The 5G NR modulation types for this testing are setup according to 3GPP TS 38.141-1 Test Models and are NR-FR1-TM 1.1 (QPSK modulation type), NR-FR1-TM 3.2 (16QAM modulation type), NR-FR1-TM 3.1 (64QAM modulation type), and NR-FR1-TM 3.1a (256QAM modulation type).

The AVQQA RU is being offered to support 3.45GHz Band single carrier and multicarrier operation, 3.7GHz (C-Band) Band stand-alone single carrier and multicarrier operation, dual band (3.45GHz & 3.7GHz simultaneous) operation. The FCC regulatory requirements for OOBE differ between the 3.45GHz and 3.7GHz bands. The maximum carrier output for both bands (3.45GHz & 3.7GHz Band) cannot be enabled simultaneously because the total radio power is limited to 340W. The requested operational configurations with the output power limitations and single band regulatory requirements will require that the following AVQQA RU configurations be verified/certified.

(a) 3.45GHz Band Single Carriers at maximum power (200W/Band total)
(b) 3.45GHz Band multicarrier at maximum carrier power
(c) 3.7GHz Band Single Carriers stand-alone operation at maximum power (340W/Band total)
(d) 3.7GHz Band multicarrier at maximum carrier power
(e) Dual band - multicarrier with 3.45GHz Band and 3.7GHz Band carriers

Notes: The 3.45GHz Band carrier is required to operate simultaneously/concurrently with a 3.7GHz Band carrier (i.e.: standalone operation is not supported for the 3.45GHz Band carriers).

The 3GPP frequency Band n77 – FCC 3.45GHz Band (3450-3550 MHz) band edge NR-ARFCNs for 5G NR channel bandwidths (10, 20, 30, 40, and 50 MHz) are provided in Table below. The NR-ARFCN is defined as New Radio - Absolute Radio Frequency Channel Number.

	5G NR NR-ARFCN	Frequency (MHz)	5G NR Channel Bandwidth				
			10 MHz	20 MHz	30 MHz	40 MHz	50 MHz
AVQQA 3.45GHz Band (Antennas 1 through 64)	Band Edge	3450.00	Lower Band Edge				
	630334	3455.01	Bot Ch				
	……						
	630668	3460.02		Bot Ch			
	……						
	631000	3465.00			Bot Ch		
	……						
	631334	3470.01				Bot Ch	
	……						
	631668	3475.02					Bot Ch
	……						
	633334	3500.01	Middle Channel				
	……						
	635000	3525.00					Top Ch
	……						
	635332	3529.98				Top Ch	
	……						
	635666	3534.99			Top Ch		
	……						
	636000	3540.00		Top Ch			
	……						
	636333	3544.995	Top Ch				
	Band Edge	3550.00	Upper Band Edge				

AVQQA 3.45GHz Band – Band Edge 5G NR Frequency Channels

The 3GPP frequency Band n77 – FCC 3.7GHz Band (3700-3980 MHz) band edge NR-ARFCNs for 5G NR channel bandwidths (10, 20, 30, 40, 50, 60, 70, 80, 90 and 100 MHz) are provided in Table below. The NR-ARFCN is defined as New Radio - Absolute Radio Frequency Channel Number.

	5G NR-ARFCN	Frequency (MHz)	5G NR Channel Bandwidth									
			10 MHz	20 MHz	30 MHz	40 MHz	50 MHz	60 MHz	70 MHz	80 MHz	90 MHz	100 MHz
AVQQA 3.7GHz Band (Antennas 1 through 64)	Band Edge	3700.00	Lower Band Edge									
	647000	3705.00	Bot Ch									
	647334	3710.01		Bot Ch								
	647668	3715.02			Bot Ch							
	648000	3720.00				Bot Ch						
	648334	3725.01					Bot Ch					
	648668	3730.02						Bot Ch				
	649000	3735.00							Bot CH			
	649334	3740.01								Bot Ch		
	649668	3745.02									Bot Ch	
	650000	3750.00										Bot Ch
	656000	3840.00	Middle Channel									
	662000	3930.00										Top Ch
	662332	3934.98									Top Ch	
	662666	3939.99								Top Ch		
	663000	3945.00							Top Ch			
	663332	3949.98						Top Ch				
	663666	3954.99					Top Ch					
	664000	3960.00				Top Ch						
	664332	3964.98			Top Ch							
	664666	3969.99		Top Ch								
	665000	3975.00	Top Ch									
	Band Edge	3980.00	Upper Band Edge									

AVQQA 3.7GHz Band – Band Edge 5G NR Frequency Channels

PRODUCT DESCRIPTION

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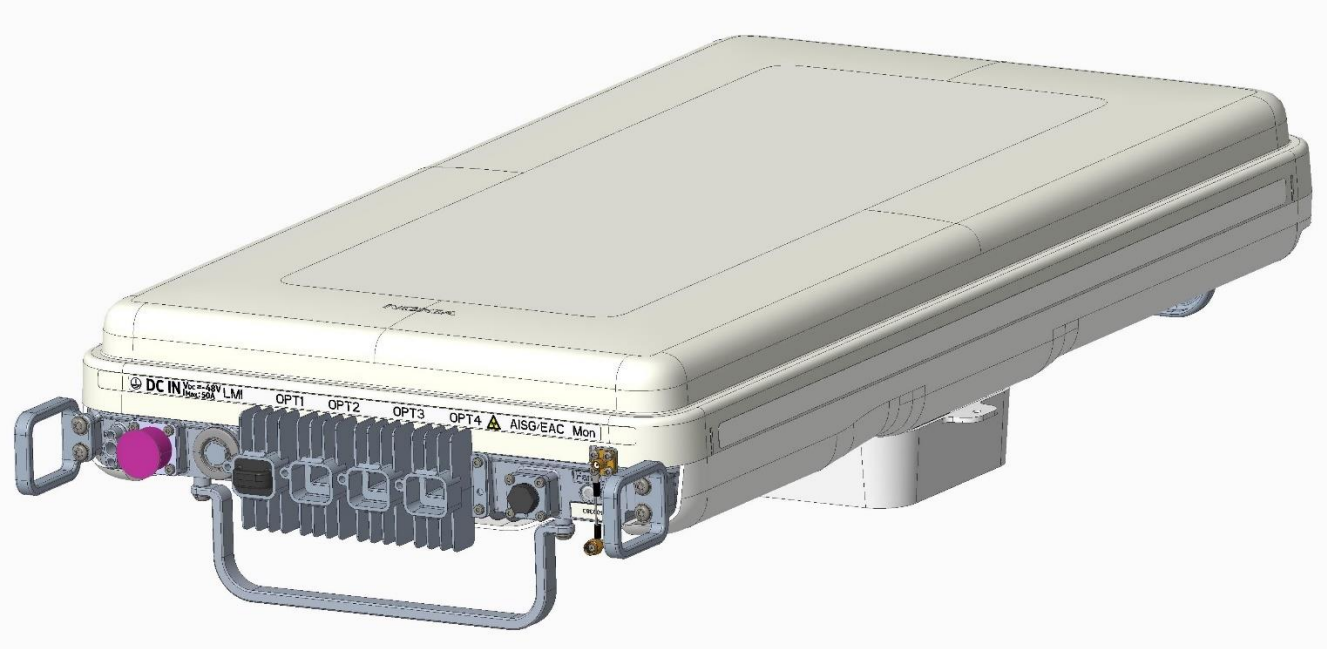
2018-07-17

AVQQA Connector Layout



AVQQA External Interfaces

Name	Qty	Connector Type	Purpose (and Description)
DC IN	1	APPG	Power supply, -48V DC + GND
GND	1	Screw lugs (M8, 2xM5)	Grounding of the Unit
LMI		Minilink42	SW download, for production and R&D test. Not for field use. Disabled in SW by default, for security
OPT1-4	4	SFP+, SFP28 optical LC-connector, SFP56	eCPRI to/from FSMs
AISG/EAC	1	Combined AISG / EAC mech CONNECTOR	AISG to external devices
Mon	1	SMA(F)	To measure RF outputs

Testing Objective:

A permissive change to the original filing is being pursued to add 5GNR TDD NR50 channel bandwidths in 3.45GHz Band, add 5GNR TDD NR10, NR30, NR50, NR70, and NR90 channel bandwidth in 3.7GHz Band (C-Band) and add 5GNR TDD Multi carrier and Multi band/Multi carrier operations up to four component carriers (4CC) under feature CB013101**.**

CONFIGURATIONS

element
2018-07-17

Test Configuration 1 (RF Conducted Testing)

Software/Firmware Running during test	
Description	**Version**
Radio Module Software	RF.SRM7.trunk.20250507.039
Radio Module Software	RF.SRM7.trunk.20250703.047
BTS Software Version (25R3)	SBTS25R3_ENB_9999_250509_000001
BTS Software Version (26R1)	SBTS26R1_ENB_9999_250707_000013

Equipment being tested (include Peripherals)			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AMIA (BTS Cabinet Module)	Nokia Solutions and Networks	473098A.102	J8173107703
ASIB (BTS System Module)	Nokia Solutions and Networks	473764A.102	DH211165881
ABIO (BTS Base Band Module)	Nokia Solutions and Networks	475266A.103	L1220100015
AVQQA (Radio Module Model)	Nokia Solutions and Networks	476596A.M01	L1242501908
10dB Attenuator 50 Watt	RF Lambda.	RFS50G26S10FF	20031701
Band Stop Filter 3450 – 3980MHz 100Watts	CreoWave	CW-BSF-3450-3980-E5-M2	SN 2219003
1 Meter RF cable	Junsho	MWX241-01000KMSKMS/B	J12j104181-00
3 Meter RF cable	Junsho	MWX241-03000KMSKMS/B	J12J105861-00
SFP28 70M MM (radio module)	Nokia	462265	FR214716965
SFP28 70M MM (system module)	Nokia	462265	FR214719830
Lenovo PC T490 #1	Lenovo	T490	PF26RVZ0
Keysight- DC System power supply	Keysight	N8757A	US21D4054S
DC Line filter	Spectrum Control	12-PMB-260-DC-E	1.0001
FPAC (DC-pwr supply)	Nokia	472438A.101	G7111007146
(63) 25W - 50ohm -Terminating Load	API Weinschel, Inc	1427-2	CN1829
(63) 4 Meter- RF cable	CBL	CBL-10F-SMSF-402J-N	402J-N
Fiber Optic cable 2m	Amphenol Fiber Optic	995741A	VZ1701
Reference cable (Frame Clock & Trigger)	Pomona	2249	C-72
Reference cable (Frame Clock & Trigger)	Pomona	2249	C-48
GPS sync cable	Nokia	995426	CA2029
FYGB GPS receiver	Nokia	472748A	71231431
CAT5e data cable (EM-PC)	ETL	E316395	6066M

Cables (Peripheral)					
Description	**Shield (Y/N)**	**Length (m)**	**Ferrite (Y/N)**	**Connection 1**	**Connection 2**
Fiber Optic Cable	N	2 meters	N	ABIO	AVQQA
GPS Receiver Cable	Y	100 meters	N	ASIB	FYGB GPS receiver
Cat-5e Cable	Y	5 meters	N	ASIB	WebEM- PC
Reference cables (Frame Clock & Trigger)	Y	1 meter	N	ASIB	Analyzer
CBL RF-Cable – RF Load Cables (63)	Y	4 meters	N	EUT [AVQQA] Ant ports 2-64	25W -50ohm-Load

CONFIGURATIONS

Cables					
Description	**Shield (Y/N)**	**Length (m)**	**Ferrite (Y/N)**	**Connection 1**	**Connection 2**
RF cable -Junsho	Y	3 meters	N	EUT [AVQQA] TAB port #1	Attenuator 50W/10dB
Attenuator 50W/10dB	Y	N/A	N	RF cable -Junsho	CreoWave - band stop filter
CreoWave - band stop filter	Y	N/A	N	Attenuator 50W/10dB	RF cable -Junsho
RF cable - Junsho	Y	1 meter	N	CreoWave - band stop filter	Analyzer

RF Test Setup Diagram:

Test Setup for 9kHz to 150kHz, 150kHz to 30MHz, 30MHz to 3400MHz and 4030MHz to 6000MHz

Test Configuration 2 (RF Conducted Testing)

Software/Firmware Running during test	
Description	**Version**
Radio Module Software	RF.SRM7.trunk.20250507.039
Radio Module Software	RF.SRM7.trunk.20250703.047
BTS Software Version (25R3)	SBTS25R3_ENB_9999_250509_000001
BTS Software Version (26R1)	SBTS26R1_ENB_9999_250707_000013

Equipment being tested (include Peripherals)			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AMIA (BTS Cabinet Module)	Nokia Solutions and Networks	473098A.102	J8173107703
ASIB (BTS System Module)	Nokia Solutions and Networks	473764A.102	DH211165881
ABIO (BTS Base Band Module)	Nokia Solutions and Networks	475266A.103	L1220100015
AVQQA (Radio Module Model – Multi-carrier Operation)	Nokia Solutions and Networks	476596A.M01	L1242501908

CONFIGURATIONS

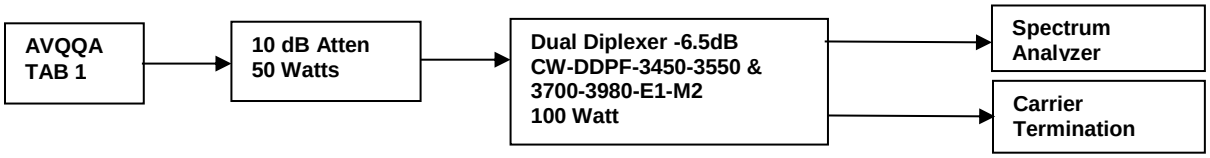
10dB Attenuator 50 Watt	RF Lambda.	RFS50G26S10FF	20031701
Dual Diplex Filter 3450 – 3550MHz & 3700 - 3980MHz 100Watts	CreoWave	CW-DDPF-3450-3550 & 3700-3980-E1-M2	SN 2205002
1 Meter RF cable	Junsho	MWX241-01000KMSKMS/B	J12j104181-00
3 Meter RF cable	Junsho	MWX241-03000KMSKMS/B	J12J105861-00
SFP28 70M MM (radio module)	Nokia	462265	FR214716965
SFP28 70M MM (system module)	Nokia	462265	FR214719830
Lenovo PC T490 #1	Lenovo	T490	PF26RVZ0
Keysight- DC System power supply	Keysight	N8757A	US21D4054S
DC Line filter	Spectrum Control	12-PMB-260-DC-E	1.0001
FPAC (DC-pwr supply)	Nokia	472438A.101	G7111007146
(63) 25W - 50ohm -Terminating Load	API Weinschel, Inc	1427-2	CN1829
(63) 4 Meter- RF cable	CBL	CBL-10F-SMSF-402J-N	402J-N
Fiber Optic cable 2m	Amphenol Fiber Optic	995741A	VZ1701
Reference cable (Frame Clock & Trigger)	Pomona	2249	C-72
Reference cable (Frame Clock & Trigger)	Pomona	2249	C-48
GPS sync cable	Nokia	995426	CA2029
FYGB GPS receiver	Nokia	472748A	71231431
CAT5e data cable (EM-PC)	ETL	E316395	6066M

Cables (Peripheral)					
Description	**Shield (Y/N)**	**Length (m)**	**Ferrite (Y/N)**	**Connection 1**	**Connection 2**
Fiber Optic Cable	N	2 meters	N	ABIO	AVQQA
GPS Receiver Cable	Y	100 meters	N	ASIB	FYGB GPS receiver
Cat-5e Cable	Y	5 meters	N	ASIB	WebEM- PC
Reference cables (Frame Clock & Trigger)	Y	1 meter	N	ASIB	Analyzer
CBL RF-Cable – RF Load Cables (63)	Y	4 meters	N	EUT [AVQQA] Ant ports 2-64	25W -50ohm-Load

Cables					
Description	**Shield (Y/N)**	**Length (m)**	**Ferrite (Y/N)**	**Connection 1**	**Connection 2**
RF cable -Junsho	Y	3 meters	N	EUT [AVQQA] TAB port #1	Attenuator 50W/10dB
Attenuator 50W/10dB	Y	N/A	N	RF cable -Junsho	CreoWave – dual diplexer filer
CreoWave – dual diplexer filer	Y	N/A	N	Attenuator 50W/10dB	RF cable -Junsho
RF cable - Junsho	Y	1 meter	N	CreoWave – dual diplexer filer	Analyzer

RF Test Setup Diagram:

Test Setup for 3100MHz to 3430MHz, 3570MHz to 3680MHz and 4000MHz to 4200MHz



CONFIGURATIONS

Test Configuration 3 (RF Conducted Testing)

Software/Firmware Running during test	
Description	**Version**
Radio Module Software	RF.SRM7.trunk.20250507.039
Radio Module Software	RF.SRM7.trunk.20250703.047
BTS Software Version (25R3)	SBTS25R3_ENB_9999_250509_000001
BTS Software Version (26R1)	SBTS26R1_ENB_9999_250707_000013

Equipment being tested (include Peripherals)			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AMIA (BTS Cabinet Module)	Nokia Solutions and Networks	473098A.102	J8173107703
ASIB (BTS System Module)	Nokia Solutions and Networks	473764A.102	DH211165881
ABIO (BTS Base Band Module)	Nokia Solutions and Networks	475266A.103	L1220100015
AVQQA (Radio Module Model – Multi-carrier Operation)	Nokia Solutions and Networks	476596A.M01	L1242501908
20dB Attenuator 150 Watt DC – 18GHz	Weinschel	66-20-33	BZ1163
1 Meter RF cable	Junsho	MWX241-01000KMSKMS/B	J12j104181-00
3 Meter RF cable	Junsho	MWX241-03000KMSKMS/B	J12J105861-00
SFP28 70M MM (radio module)	Nokia	462265	FR214716965
SFP28 70M MM (system module)	Nokia	462265	FR214719830
Lenovo PC T490 #1	Lenovo	T490	PF26RVZ0
Keysight- DC System power supply	Keysight	N8757A	US21D4054S
DC Line filter	Spectrum Control	12-PMB-260-DC-E	1.0001
FPAC (DC-pwr supply)	Nokia	472438A.101	G7111007146
(63) 25W - 50ohm -Terminating Load	API Weinschel, Inc	1427-2	CN1829
(63) 4 Meter- RF cable	CBL	CBL-10F-SMSF-402J-N	402J-N
Fiber Optic cable 2m	Amphenol Fiber Optic	995741A	VZ1701
Reference cable (Frame Clock & Trigger)	Pomona	2249	C-72
Reference cable (Frame Clock & Trigger)	Pomona	2249	C-48
GPS sync cable	Nokia	995426	CA2029
FYGB GPS receiver	Nokia	472748A	71231431
CAT5e data cable (EM-PC)	ETL	E316395	6066M

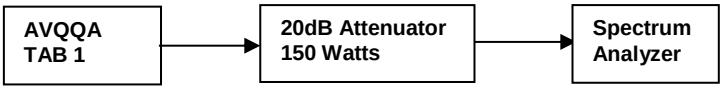
Cables (Peripheral)					
Description	**Shield (Y/N)**	**Length (m)**	**Ferrite (Y/N)**	**Connection 1**	**Connection 2**
Fiber Optic Cable	N	2 meters	N	ABIO	AVQQA
GPS Receiver Cable	Y	100 meters	N	ASIB	FYGB GPS receiver
Cat-5e Cable	Y	5 meters	N	ASIB	WebEM- PC
Reference cables (Frame Clock & Trigger)	Y	1 meter	N	ASIB	Analyzer
CBL RF-Cable – RF Load Cables (63)	Y	4 meters	N	EUT [AVQQA] Ant ports 2-64	25W -50ohm-Load

CONFIGURATIONS

Cables					
Description	**Shield (Y/N)**	**Length (m)**	**Ferrite (Y/N)**	**Connection 1**	**Connection 2**
RF cable -Junsho	Y	3 meters	N	EUT [AVQQA] TAB port #1	Attenuator 150W/20dB
Attenuator 150W/20dB	N	N/A	N	RF cable -Junsho 3 meter	RF cable -Junsho 1 meter
RF cable -Junsho	Y	1 meter	N	Attenuator 150W/20dB	Analyzer

RF Test Setup Diagram:

Test Setup for 3400MHz to 4030MHz and 3400MHz to 6000MHz



CONFIGURATIONS

element
2018-07-17

Test Configuration 4 (RF Conducted Testing)

Software/Firmware Running during test	
Description	**Version**
Radio Module Software	RF.SRM7.trunk.20250507.039
Radio Module Software	RF.SRM7.trunk.20250703.047
BTS Software Version (25R3)	SBTS25R3_ENB_9999_250509_000001
BTS Software Version (26R1)	SBTS26R1_ENB_9999_250707_000013

Equipment being tested (include Peripherals)			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AMIA (BTS Cabinet Module)	Nokia Solutions and Networks	473098A.102	J8173107703
ASIB (BTS System Module)	Nokia Solutions and Networks	473764A.102	DH211165881
ABIO (BTS Base Band Module)	Nokia Solutions and Networks	475266A.103	L1220100015
AVQQA (Radio Module Model – Multi-carrier Operation)	Nokia Solutions and Networks	476596A.M01	L1242501908
10dB Attenuator 50 Watt	RF Lambda.	RFS50G26S10FF	20031701
5.5GHz to 13GHz HPF 100Watts	Microwave Circuits	H6G013G1	2454-01 DC0240
3 Meter RF cable	Junsho	MWX241-03000KMSKMS/B	J12J105861-00
1 Meter RF cable	Junsho	MWX241-01000KMSKMS/B	J12j104181-00
SFP28 70M MM (radio module)	Nokia	462265	FR214716965
SFP28 70M MM (system module)	Nokia	462265	FR214719830
Lenovo PC T490 #1	Lenovo	T490	PF26RVZ0
Keysight- DC System power supply	Keysight	N8757A	US21D4054S
DC Line filter	Spectrum Control	12-PMB-260-DC-E	1.0001
FPAC (DC-pwr supply)	Nokia	472438A.101	G7111007146
(63) 25W -50ohm -Terminating Load	API Weinschel, Inc	1427-2	CN1829
(63) 4 Meter- RF cable	CBL	CBL-10F-SMSF-402J-N	402J-N
Fiber Optic cable 2m	Amphenol Fiber Optic	995741A	VZ1701
Reference cable (Frame Clock & Trigger)	Pomona	2249	C-72
Reference cable (Frame Clock & Trigger)	Pomona	2249	C-48
GPS sync cable	Nokia	995426	CA2029
FYGB GPS receiver	Nokia	472748A	71231431
CAT5e data cable (EM-PC)	ETL	E316395	6066M

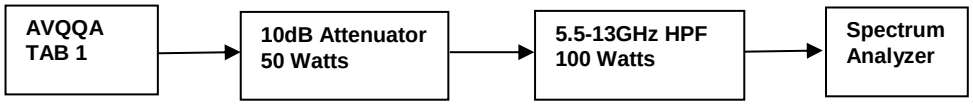
Cables (Peripheral)					
Description	**Shield (Y/N)**	**Length (m)**	**Ferrite (Y/N)**	**Connection 1**	**Connection 2**
Fiber Optic Cable	N	2 meters	N	ABIO	AVQQA
GPS Receiver Cable	Y	100 meters	N	ASIB	FYGB GPS receiver
Cat-5e Cable	Y	5 meters	N	ASIB	WebEM- PC
Reference cables (Frame Clock & Trigger)	Y	1 meter	N	ASIB	Analyzer
CBL RF-Cable – RF Load Cables (63)	Y	4 meters	N	EUT [AVQQA] Ant ports 2-64	25W -50ohm-Load

CONFIGURATIONS

Cables					
Description	**Shield (Y/N)**	**Length (m)**	**Ferrite (Y/N)**	**Connection 1**	**Connection 2**
RF cable -Junsho	Y	3 meters	N	EUT [AVQQA] TAB port #1	Attenuator 50W/10dB
Attenuator 50W/10dB	N	NA	N	RF cable -Junsho	Attenuator 50W/10dB
High Pass Filter – 5.5GHz to 13GHz	N	N/A	N	Attenuator 50W/10dB	RF cable -Junsho
RF cable -Junsho	Y	1 meter	N	High Pass Filter 5.5GHz to 13GHz	Analyzer

RF Test Setup Diagram:

Test Setup for 6GHz to 13GHz



CONFIGURATIONS

element
2018-07-17

Test Configuration 5 (RF Conducted Testing)

Software/Firmware Running during test	
Description	**Version**
Radio Module Software	RF.SRM7.trunk.20250507.039
Radio Module Software	RF.SRM7.trunk.20250703.047
BTS Software Version (25R3)	SBTS25R3_ENB_9999_250509_000001
BTS Software Version (26R1)	SBTS26R1_ENB_9999_250707_000013

Equipment being tested (include Peripherals)			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AMIA (BTS Cabinet Module)	Nokia Solutions and Networks	473098A.102	J8173107703
ASIB (BTS System Module)	Nokia Solutions and Networks	473764A.102	DH211165881
ABIO (BTS Base Band Module)	Nokia Solutions and Networks	475266A.103	L1220100015
AVQQA (Radio Module Model – Multi-carrier Operation)	Nokia Solutions and Networks	476596A.M01	L1242501908
10dB Attenuator (high frequency) 20 Watt	RF Lambda.	RFS20G40A10KFF	24103001
8GHz to 40GHz HPF 15Watts	RF Lambda.	RHOF23G08G40	17102700014
3 Meter RF cable	Junsho	MWX241-03000KMSKMS/B	J12J105861-00
1 Meter RF cable	Junsho	MWX241-01000KMSKMS/B	J12j104181-00
SFP28 70M MM (radio module)	Nokia	462265	FR214716965
SFP28 70M MM (system module)	Nokia	462265	FR214719830
Lenovo PC T490 #1	Lenovo	T490	PF26RVZ0
Keysight- DC System power supply	Keysight	N8757A	US21D4054S
DC Line filter	Spectrum Control	12-PMB-260-DC-E	1.0001
FPAC (DC-pwr supply)	Nokia	472438A.101	G7111007146
(63) 25W -50ohm -Terminating Load	API Weinschel, Inc	1427-2	CN1829
(63) 4 Meter- RF cable	CBL	CBL-10F-SMSF-402J-N	402J-N
Fiber Optic cable 2m	Amphenol Fiber Optic	995741A	VZ1701
Reference cable (Frame Clock & Trigger)	Pomona	2249	C-72
Reference cable (Frame Clock & Trigger)	Pomona	2249	C-48
GPS sync cable	Nokia	995426	CA2029
FYGB GPS receiver	Nokia	472748A	71231431
CAT5e data cable (EM-PC)	ETL	E316395	6066M

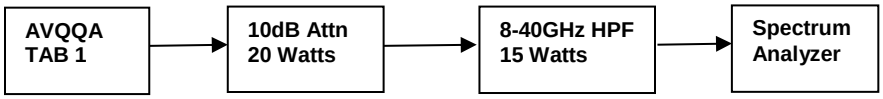
Cables (Peripheral)					
Description	**Shield (Y/N)**	**Length (m)**	**Ferrite (Y/N)**	**Connection 1**	**Connection 2**
Fiber Optic Cable	N	2 meters	N	ABIO	AVQQA
GPS Receiver Cable	Y	100 meters	N	ASIB	FYGB GPS receiver
Cat-5e Cable	Y	5 meters	N	ASIB	WebEM- PC
Reference cables (Frame Clock & Trigger)	Y	1 meter	N	ASIB	Analyzer
CBL RF-Cable – RF Load Cables (63)	Y	4 meters	N	EUT [AVQQA] Ant ports 2-64	25W -50ohm-Load

CONFIGURATIONS

Cables					
Description	**Shield (Y/N)**	**Length (m)**	**Ferrite (Y/N)**	**Connection 1**	**Connection 2**
RF cable -Junsho	Y	3 meters	N	EUT [AVQQA] TAB port #1	Attenuator 20W/10dB
Attenuator 20W/10dB	N	N/A	N	RF cable -Junsho	8–40GHz HPF 15 Watts
8–40GHz HPF 15 Watts	N	N/A	N	Attenuator 20W/10dB	RF cable -Junsho
RF cable -Junsho	Y	1 meter	N	8–40GHz HPF 15 Watts	Analyzer

RF Test Setup Diagram:

Test Setup for 13GHz to 20GHz and 20GHz to 40GHz



CONFIGURATIONS

Test Configuration 7 (Radiated Emissions – AVQQA with Filter adapter plate)

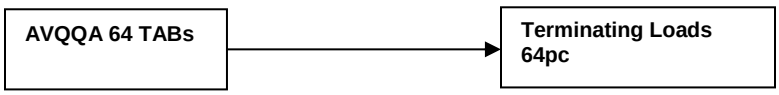
Software/Firmware Running during test	
Description	**Version**
Radio Module Software	RF.SRM7.trunk.20250507.039
Radio Module Software	RF.SRM7.trunk.20250703.047
BTS Software Version (25R3)	SBTS25R3_ENB_9999_250509_000001
BTS Software Version (26R1)	SBTS26R1_ENB_9999_250707_000013

Equipment being tested (include Peripherals)			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AMIA (BTS Cabinet Module)	Nokia Solutions and Networks	473098A.102	J8173107703
ASIB (BTS System Module)	Nokia Solutions and Networks	473764A.102	DH211165881
ABIO (BTS Base Band Module)	Nokia Solutions and Networks	475266A.103	L1220100015
AVQQA (Radio Module Model – Multi-carrier Operation)	Nokia Solutions and Networks	476596A.M01	L1242501908
SFP28 70M MM (radio module)	Nokia	462265	FR214716965
SFP28 70M MM (system module)	Nokia	462265	FR214719830
Lenovo PC T490 #1	Lenovo	T490	PF26RVZ0
Keysight- DC System power supply	Keysight	N8757A	US21D4054S
DC Line filter	Spectrum Control	12-PMB-260-DC-E	1.0001
FPAC (DC-pwr supply)	Nokia	472438A.101	G7111007146
(64) 25W -50ohm -Terminating Load	API Weinschel, Inc	1427-2	CN1829
(64) 4 Meter- RF cable	CBL	CBL-10F-SMSF-402J-N	402J-N
Fiber Optic cable 30m	Amphenol Fiber Optic	995741A	VZ1742
GPS sync cable	Nokia	995426	CA2029
FYGB GPS receiver	Nokia	472748A	71231431

Cables (Peripheral)					
Description	**Shield (Y/N)**	**Length (m)**	**Ferrite (Y/N)**	**Connection 1**	**Connection 2**
Fiber Optic cable	N	30 meters	N	ASIB	AVQQA
Cat-5e cable (CSA)	Y	100 meters	N	ASIB	FYGB GPS receiver
Cat-5e cable	Y	25 meters	N	ASIB	WebEM- PC
AISG/RET	N	2.4m	N	Remote Radio Head Module	Unterminated
Grounding	N	3m	N	Remote Radio Head Module	Turntable Ground

Cables					
Description	**Shield (Y/N)**	**Length (m)**	**Ferrite (Y/N)**	**Connection 1**	**Connection 2**
RF-Cable	Y	4 meters	N	EUT [AVQQA] TAB port #1-64	25w -50ohm Terminating Loads

RF Test Setup Diagram



MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2025-07-09	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
2	2025-07-14	Spurious Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
3	2025-07-16	Band Edge Compliance	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
4	2025-07-09	Average Power	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
5	2025-07-16	Peak to Average Power (PAPR)CCDF	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
6	2025-07-16	Power Spectral Density	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
7	2025-07-16	Occupied Bandwidth	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

OUTPUT POWER – ALL PORTS

element
TbtTx 2025.05.09.1
WTD.2025.03.25.0

TEST DESCRIPTION

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.

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

The fundamental emission Output Power (maximum average conducted output power) was measured using the channels and modes as called out on the following data sheets. The transmit power was set to its default maximum.

Transmitter RF output power - RMS average power measurements were performed for 3450 to 3550MHz Band on all 64 ports for 5G NR 50MHz at the middle channel in order to show the Airscale Base Transceiver Station Radio Unit Model AVQQA antenna ports are all within the manufacturer's rated output power tolerances (the RF power variation between antenna ports is small as shown in this certification testing).

The transmitter RF output power requirements are defined in FCC 2.1046 and FCC Part 27.50(k). The RF output power - average power measurement method for FCC is detailed in section 5.2 of KDB 971168 D01v03r01 and in section 5.2.4.4 of ANSI C63.26 was used to make the measurements. This method uses trace averaging across the ON and OFF times of the EUT transmissions in the spectrum analyzer channel power function using an RMS detector. Following the measurement a duty cycle correction was applied by adding [10 log (1/D)], where D is the duty cycle in decimal, to the measured power to compute the average power during the actual transmission times.

All Measurements were synchronized with the measurement receiver - gated with external trigger input (frame clock (100Hz) provided by the system module. Duty cycle correction is not needed for this testing since the transmit “on” time is synchronized with the measurement receiver.

In 3.45GHz band single carrier operating mode - carriers were enabled at maximum power levels. Simultaneously, 3.7GHz band NR10 carrier were enabled to operate at 30 watts or 0.468W(26.7dBm)/per carrier on the middle channel. All measured power values are expected within tolerance (i.e.: Rated Power ±2.0 dB).

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Keysight Technologies	N9030B	AGA	2025-06-09	2026-06-09
Block - DC	Centric RF	C0140	ANJ	NCR	NCR
Generator - Signal	Agilent	N5173B	TIW	2023-08-07	2026-08-07

Note: The RF Test Setup/ Network (RF cables/Attenuators/filter/etc.) is defined in the configurations section for each test. The RF Test Setup/Network is calibrated using the signal generator and spectrum analyzer prior to test. The RF insertion loss of the RF Test Setup/Network is accounted for by the spectrum analyzer's reference level offset during the RF conducted testing.

OUTPUT POWER – ALL PORTS

element
TbtTx 2025.05.09.1
WTD.2025.03.25.0

EUT:	Airscale Base Transceiver Station Radio Unit Model AVQQA	Work Order:	NOKI0086
Serial Number:	L1242501908	Date:	2025-07-17
Customer:	Nokia Solutions and Networks	Temperature:	26.5°C
Attendees:	John Rattanavong, Mitch Hill	Relative Humidity:	45.6%
Customer Project:	None	Bar. Pressure (PMSL):	1014 mbar
Tested By:	Jarrod Brenden	Job Site:	PT14
Power:	54 VDC	Configuration:	NOKI0086-3

COMMENTS

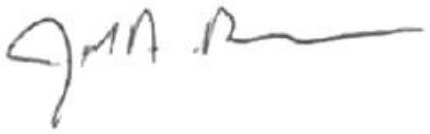
All losses in the measurement path were accounted for in the spectrum analyzer reference level offset; attenuators, filters, cables, and DC blocks.

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass



Tested By

TEST RESULTS

	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Value (dBm)	Value (W)	Results
50 MHz Channel Bandwidth					
QPSK Modulation					
Middle Channel, 3500.01 MHz					
Port 1	34.169	0	34.2	2.6	Within Tolerance
Port 2	34.066	0	34.1	2.6	Within Tolerance
Port 3	34.13	0	34.1	2.6	Within Tolerance
Port 4	33.927	0	33.9	2.5	Within Tolerance
Port 5	34.058	0	34.1	2.6	Within Tolerance
Port 6	33.93	0	33.9	2.5	Within Tolerance
Port 7	33.99	0	34	2.5	Within Tolerance
Port 8	34.013	0	34	2.5	Within Tolerance
Port 9	34.235	0	34.2	2.6	Within Tolerance
Port 10	33.907	0	33.9	2.5	Within Tolerance
Port 11	34.152	0	34.2	2.6	Within Tolerance
Port 12	34.235	0	34.2	2.6	Within Tolerance
Port 13	34.116	0	34.1	2.6	Within Tolerance
Port 14	33.891	0	33.9	2.5	Within Tolerance
Port 15	34.076	0	34.1	2.6	Within Tolerance
Port 16	33.992	0	34	2.5	Within Tolerance
Port 17	33.645	0	33.6	2.3	Within Tolerance
Port 18	33.695	0	33.7	2.3	Within Tolerance
Port 19	33.766	0	33.8	2.4	Within Tolerance

OUTPUT POWER – ALL PORTS

element
TbtTx 2025.05.09.1
WTD.2025.03.25.0

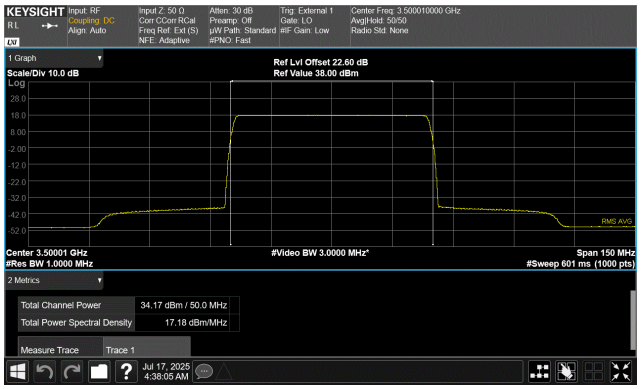
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Value (dBm)	Value (W)	Results
Port 20	33.71	0	33.7	2.3	Within Tolerance
Port 21	33.941	0	33.9	2.5	Within Tolerance
Port 22	34.026	0	34	2.5	Within Tolerance
Port 23	33.879	0	33.9	2.5	Within Tolerance
Port 24	33.902	0	33.9	2.5	Within Tolerance
Port 25	33.603	0	33.6	2.3	Within Tolerance
Port 26	33.541	0	33.5	2.2	Within Tolerance
Port 27	33.584	0	33.6	2.3	Within Tolerance
Port 28	33.447	0	33.4	2.2	Within Tolerance
Port 29	33.898	0	33.9	2.5	Within Tolerance
Port 30	33.758	0	33.8	2.4	Within Tolerance
Port 31	34.067	0	34.1	2.6	Within Tolerance
Port 32	33.83	0	33.8	2.4	Within Tolerance
Port 33	34.193	0	34.2	2.6	Within Tolerance
Port 34	34.27	0	34.3	2.7	Within Tolerance
Port 35	34.116	0	34.1	2.6	Within Tolerance
Port 36	33.929	0	33.9	2.5	Within Tolerance
Port 37	34.131	0	34.1	2.6	Within Tolerance
Port 38	34.09	0	34.1	2.6	Within Tolerance
Port 39	34.072	0	34.1	2.6	Within Tolerance
Port 40	34.157	0	34.2	2.6	Within Tolerance
Port 41	34.164	0	34.2	2.6	Within Tolerance
Port 42	34.046	0	34	2.5	Within Tolerance
Port 43	34.072	0	34.1	2.6	Within Tolerance
Port 44	34.07	0	34.1	2.6	Within Tolerance
Port 45	34.159	0	34.2	2.6	Within Tolerance
Port 46	34.006	0	34	2.5	Within Tolerance
Port 47	33.963	0	34	2.5	Within Tolerance
Port 48	34.061	0	34.1	2.6	Within Tolerance
Port 49	33.703	0	33.7	2.3	Within Tolerance
Port 50	33.781	0	33.8	2.4	Within Tolerance
Port 51	33.729	0	33.7	2.3	Within Tolerance
Port 52	33.603	0	33.6	2.3	Within Tolerance
Port 53	34.086	0	34.1	2.6	Within Tolerance
Port 54	33.981	0	34	2.5	Within Tolerance
Port 55	33.946	0	33.9	2.5	Within Tolerance
Port 56	33.943	0	33.9	2.5	Within Tolerance
Port 57	33.495	0	33.5	2.2	Within Tolerance
Port 58	33.543	0	33.5	2.2	Within Tolerance
Port 59	33.51	0	33.5	2.2	Within Tolerance

OUTPUT POWER – ALL PORTS

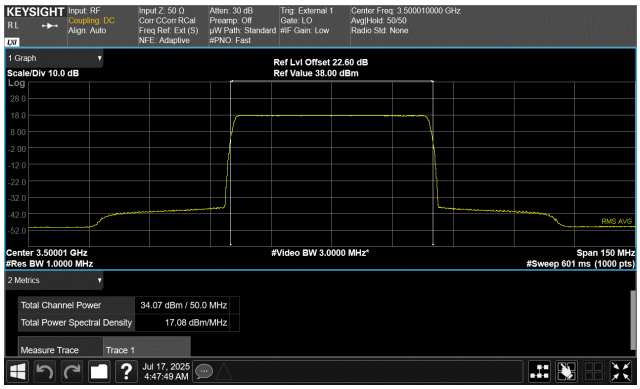
element
TbtTx 2025.05.09.1
WTD.2025.03.25.0

	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Value (dBm)	Value (W)	Results
Port 60	33.383	0	33.4	2.2	Within Tolerance
Port 61	34.002	0	34	2.5	Within Tolerance
Port 62	33.813	0	33.8	2.4	Within Tolerance
Port 63	33.896	0	33.9	2.5	Within Tolerance
Port 64	33.804	0	33.8	2.4	Within Tolerance
ALL PORTS	N/A	N/A	52.0	158.0	Within Tolerance

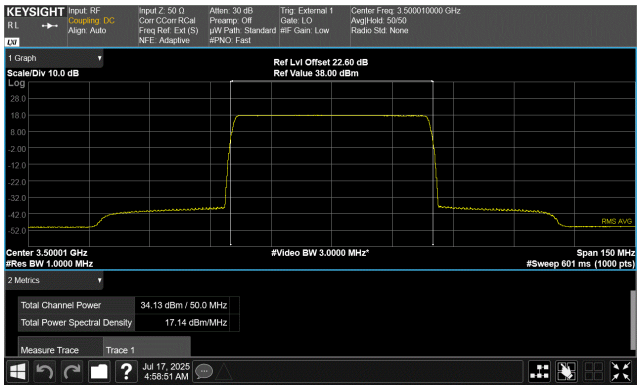
OUTPUT POWER – ALL PORTS



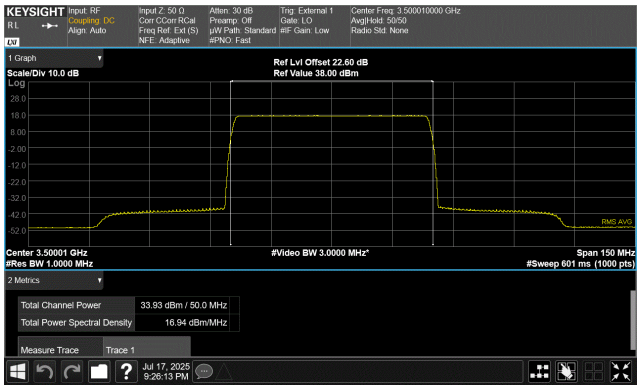
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 1



50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 2

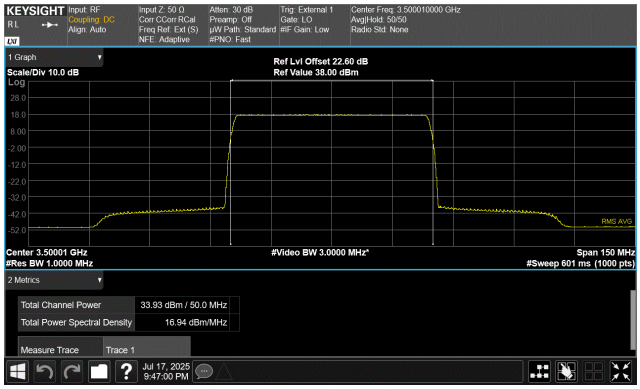


50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 3



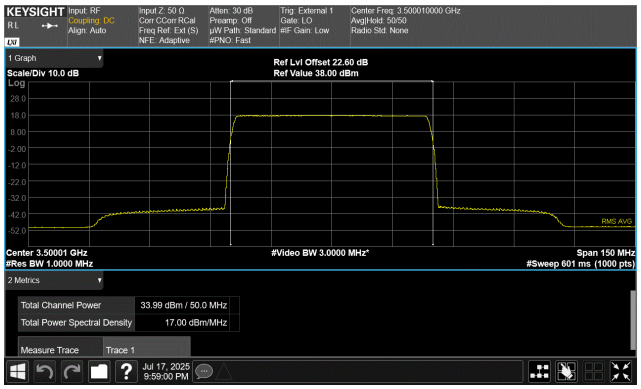
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 4

50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 5

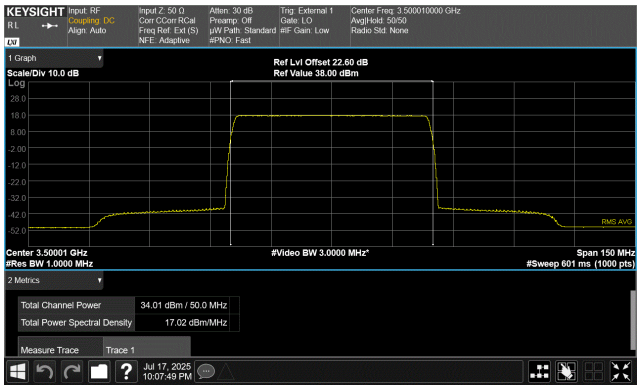


50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 6

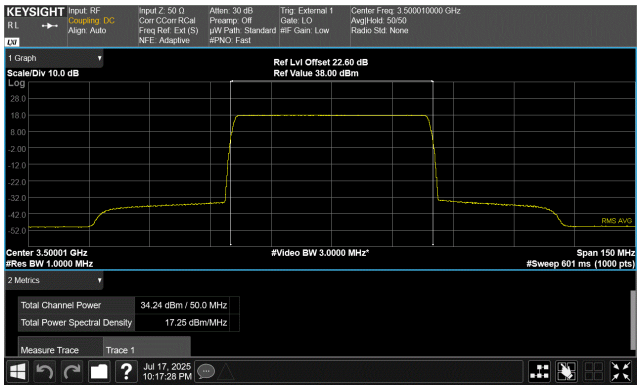
OUTPUT POWER – ALL PORTS



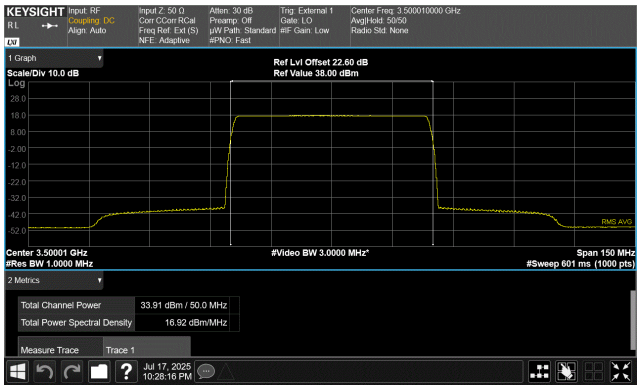
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 7



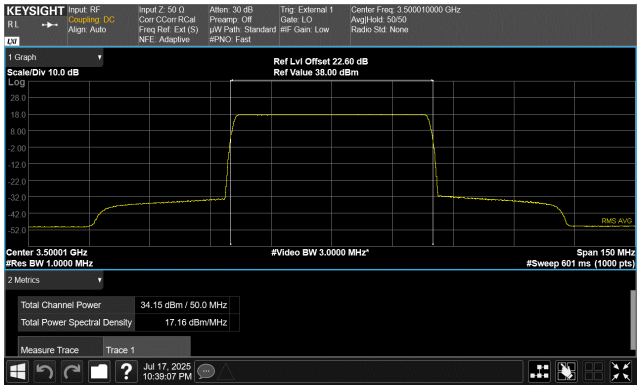
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 8



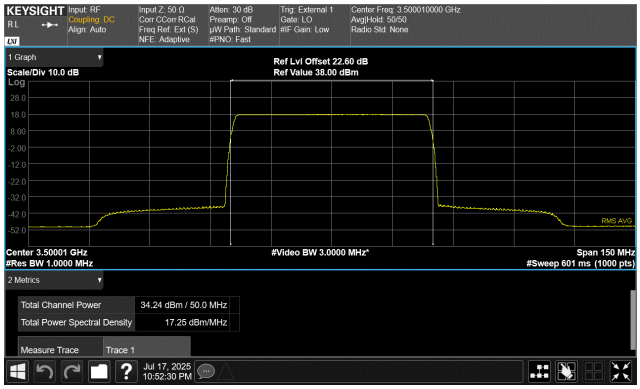
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 9



50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 10

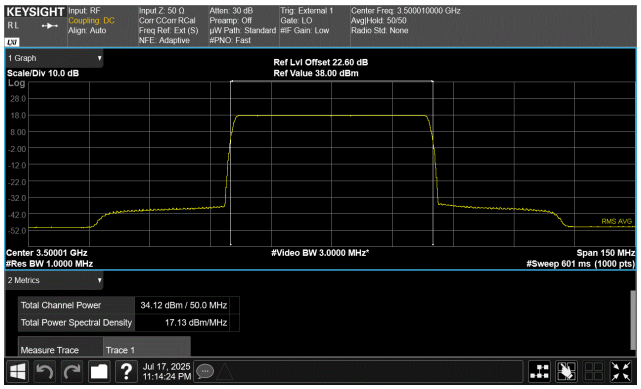


50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 11

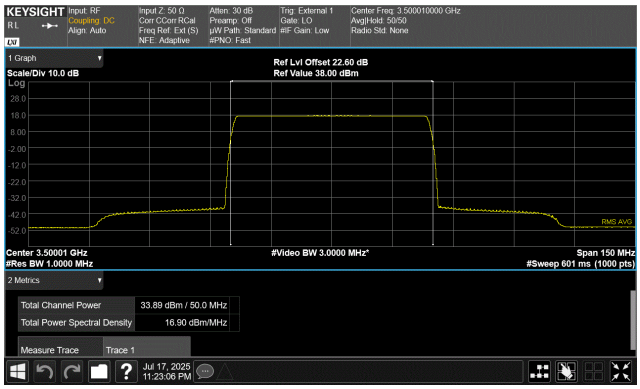


50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 12

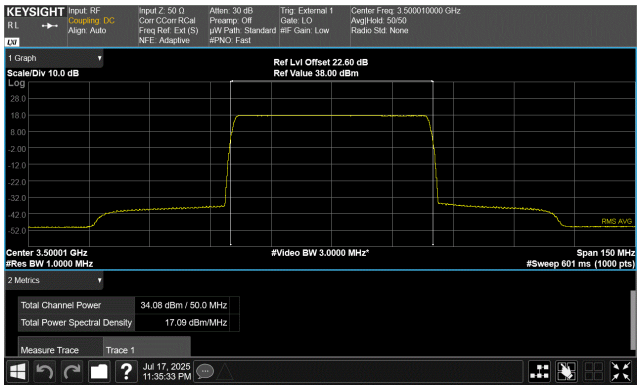
OUTPUT POWER – ALL PORTS



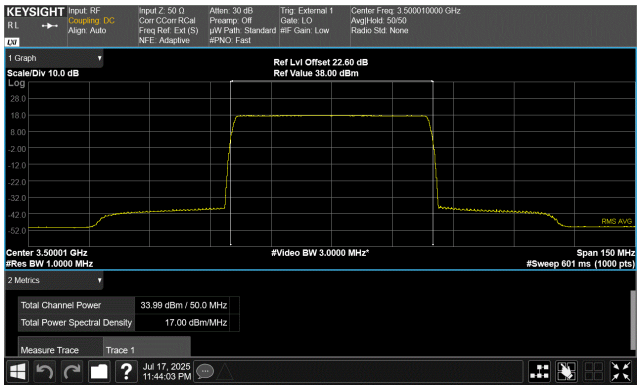
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 13



50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 14

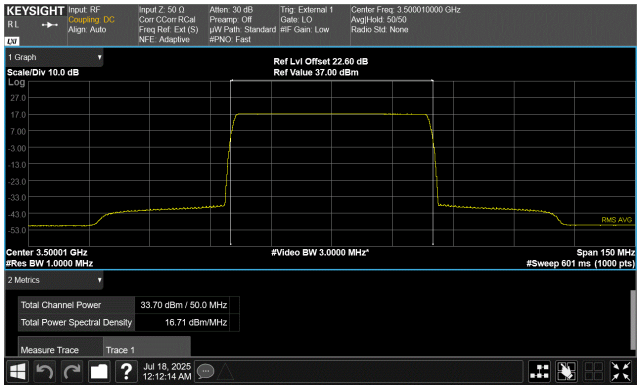


50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 15



50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 16

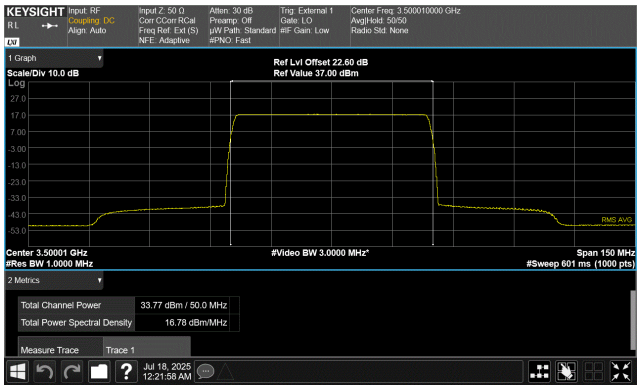
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 17



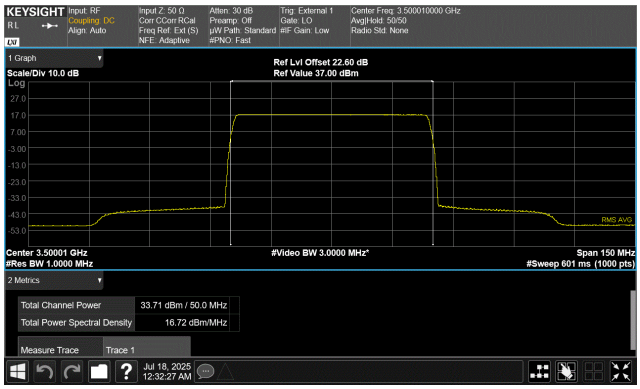
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 18

OUTPUT POWER – ALL PORTS

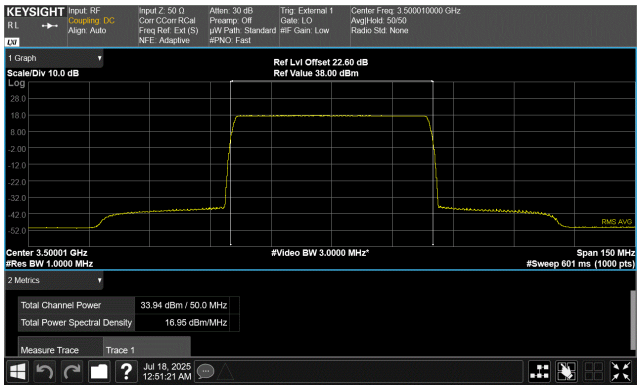
element
TbtTx 2025.05.09.1
WTD.2025.03.25.0



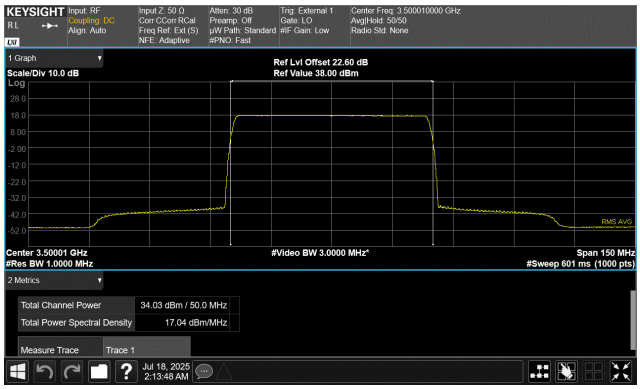
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 19



50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 20



50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 21



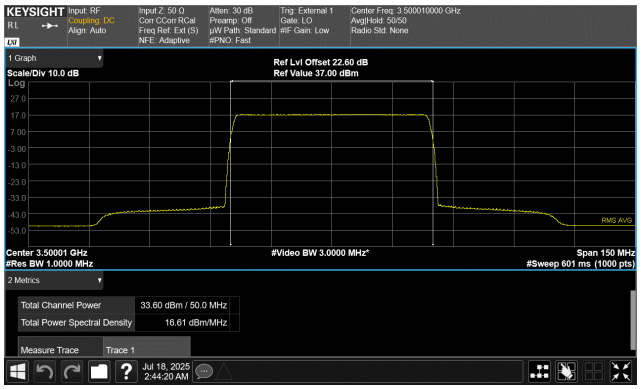
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 22

50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 23

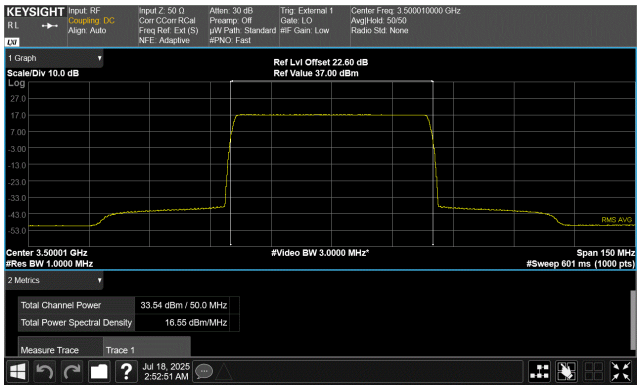
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 24

OUTPUT POWER – ALL PORTS

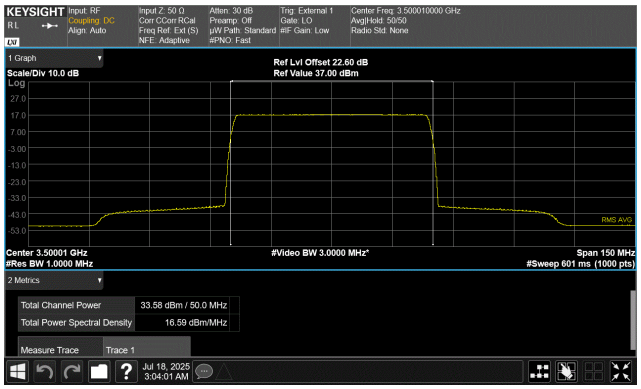
element
TbtTx 2025.05.09.1
WTD.2025.03.25.0



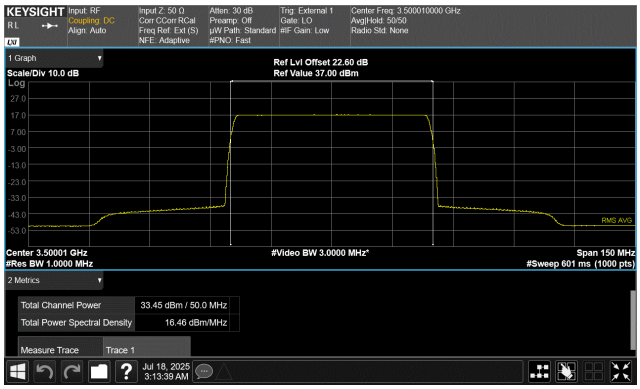
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 25



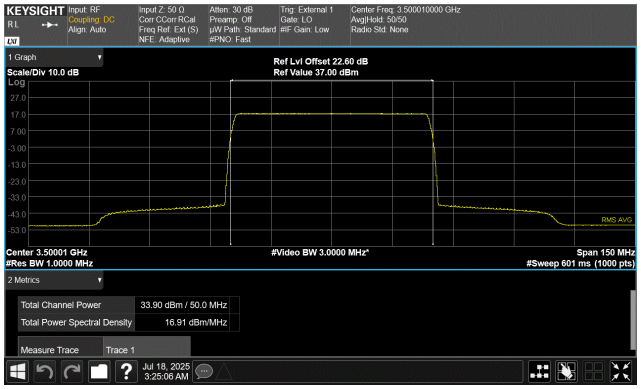
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 26



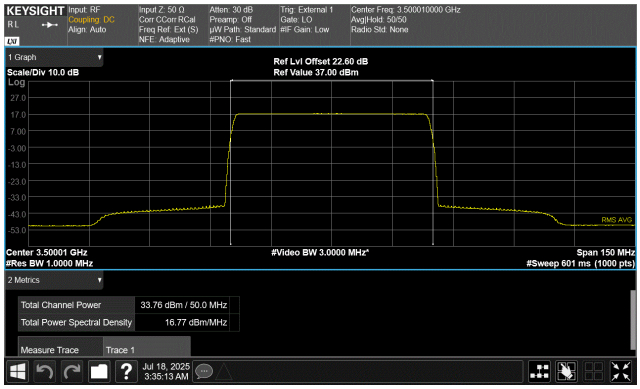
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 27



50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 28



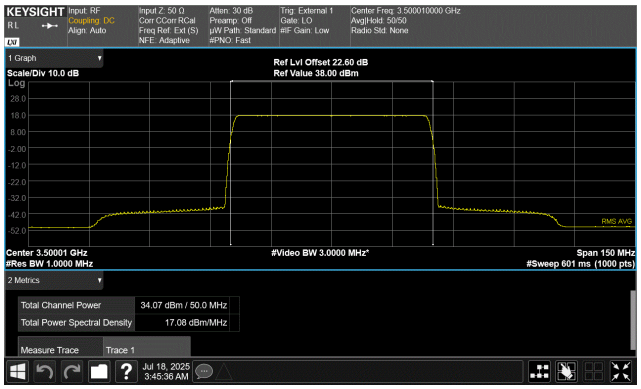
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 29



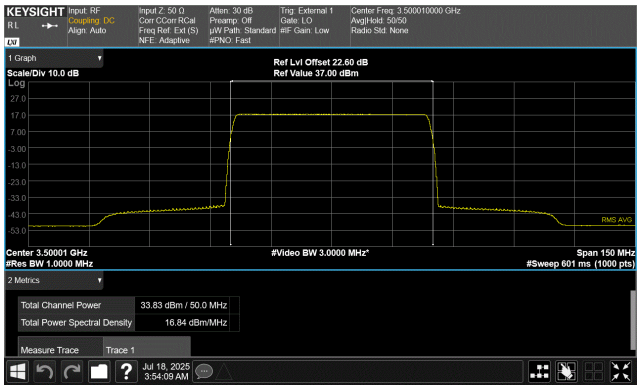
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 30

OUTPUT POWER – ALL PORTS

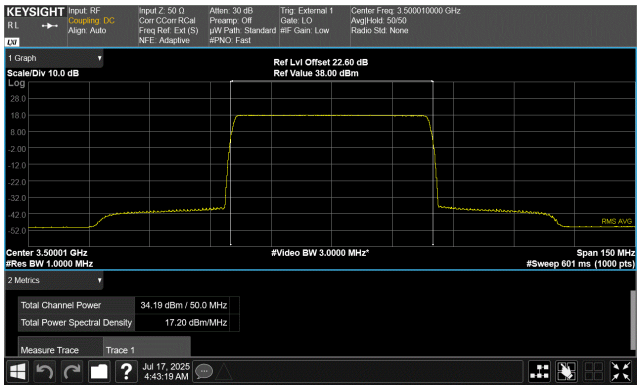
element
TbtTx 2025.05.09.1
WTD.2025.03.25.0



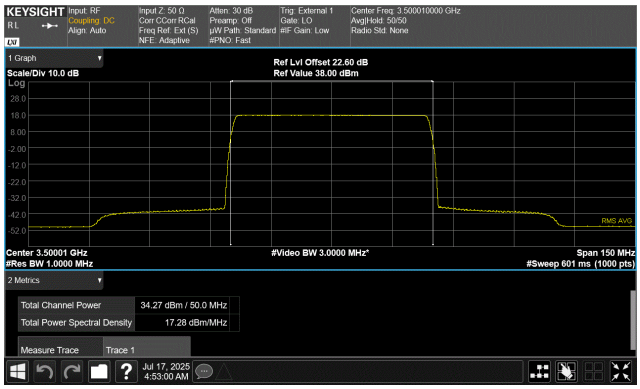
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 31



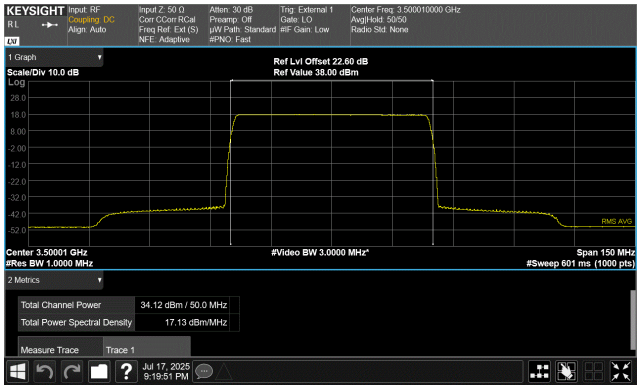
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 32



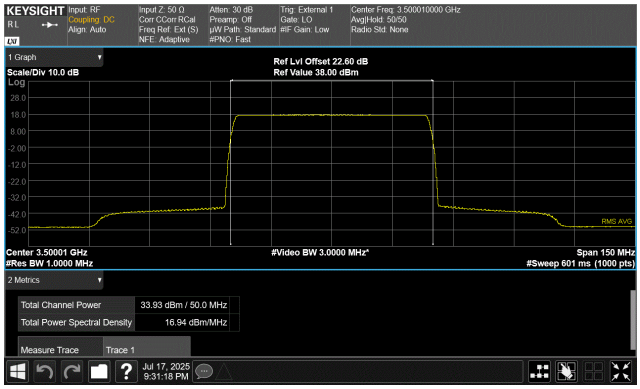
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 33



50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 34



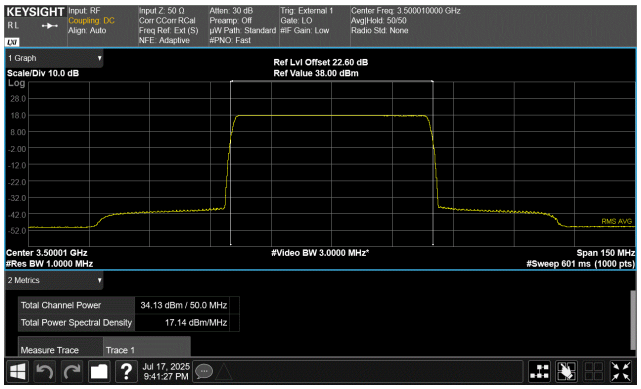
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 35



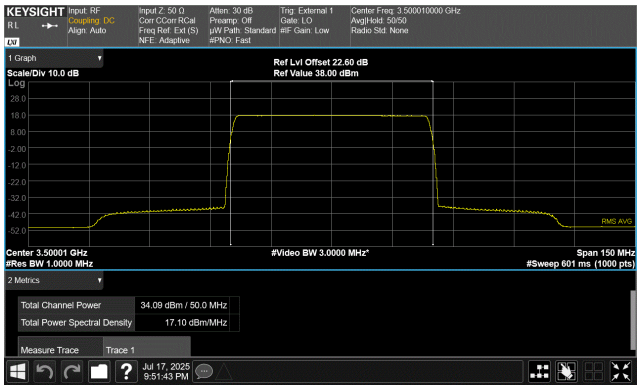
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 36

OUTPUT POWER – ALL PORTS

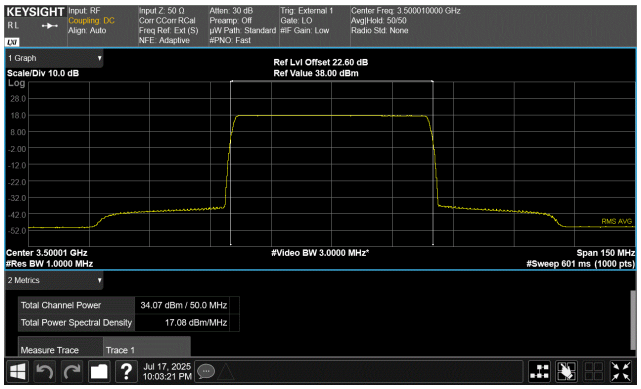
element
TbtTx 2025.05.09.1
WTD.2025.03.25.0



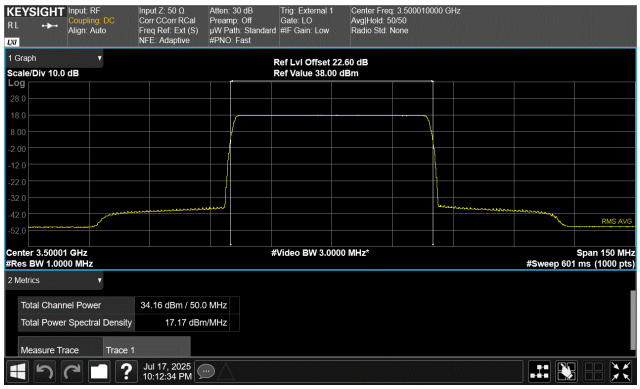
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 37



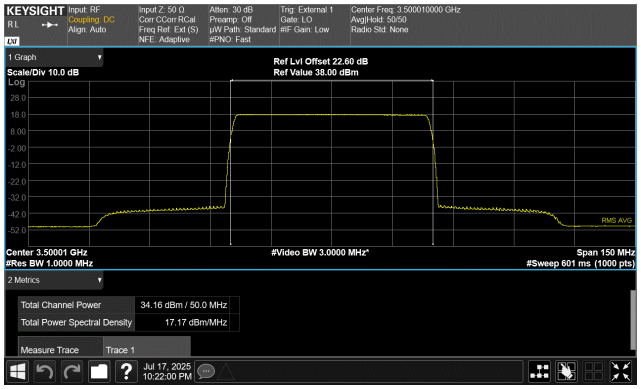
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 38



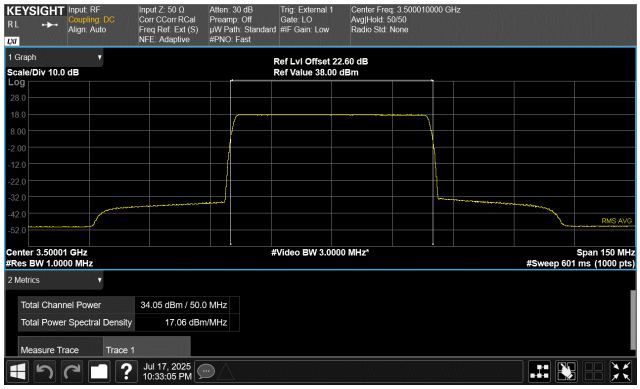
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 39



50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 40



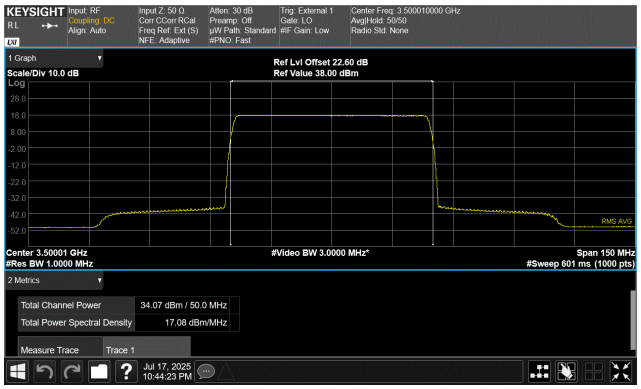
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 41



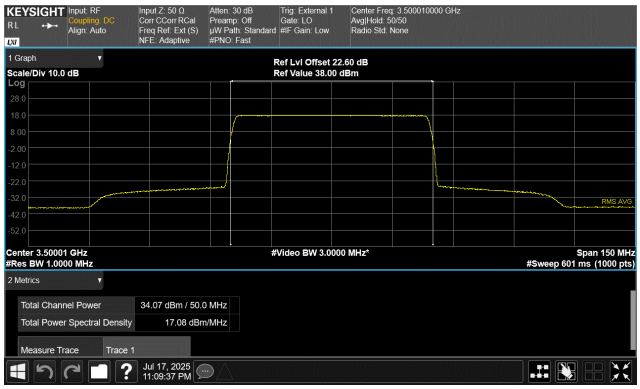
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 42

OUTPUT POWER – ALL PORTS

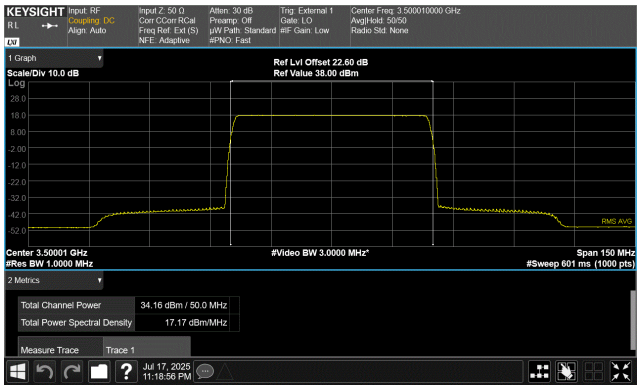
element
TbtTx 2025.05.09.1
WTD.2025.03.25.0



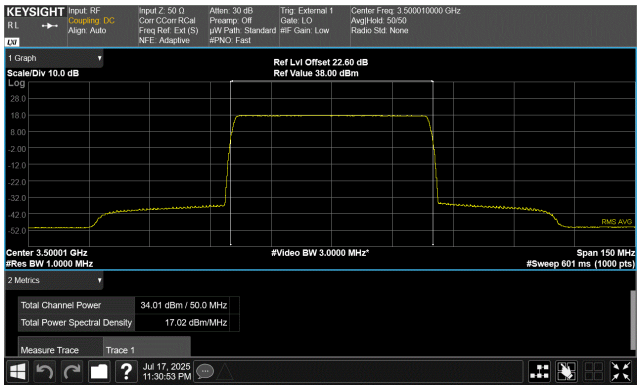
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 43



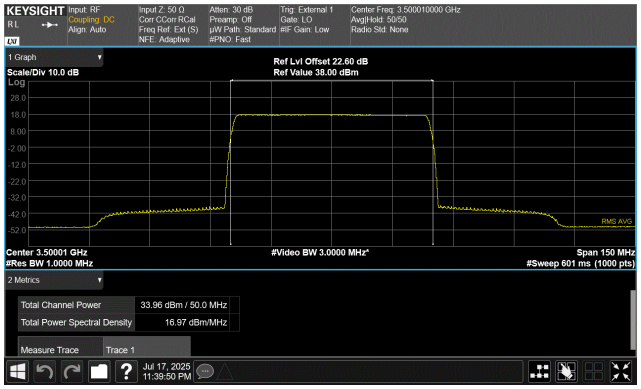
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 44



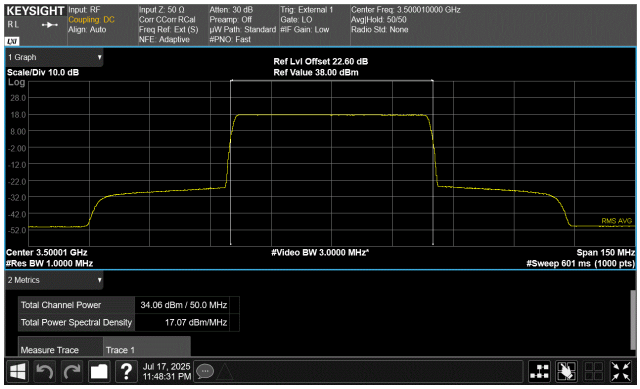
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 45



50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 46



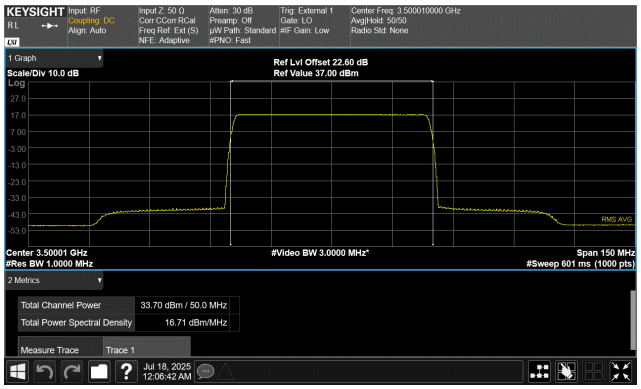
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 47



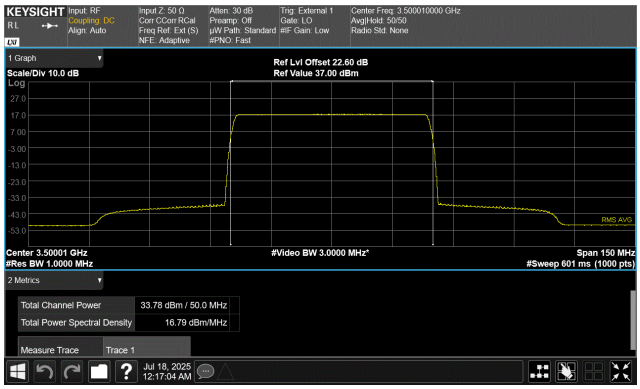
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 48

OUTPUT POWER – ALL PORTS

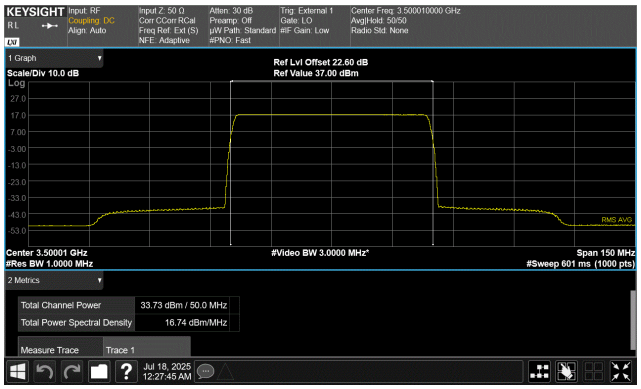
element
TbtTx 2025.05.09.1
WTD.2025.03.25.0



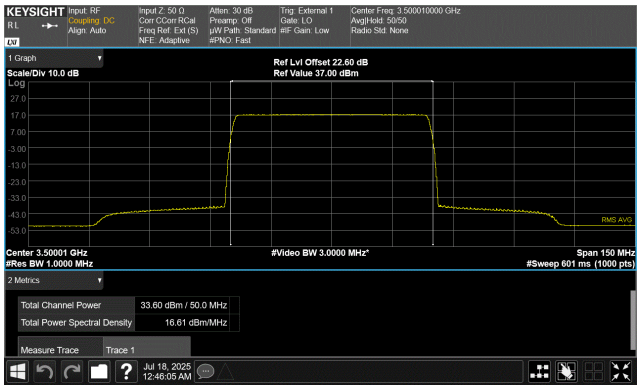
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 49



50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 50

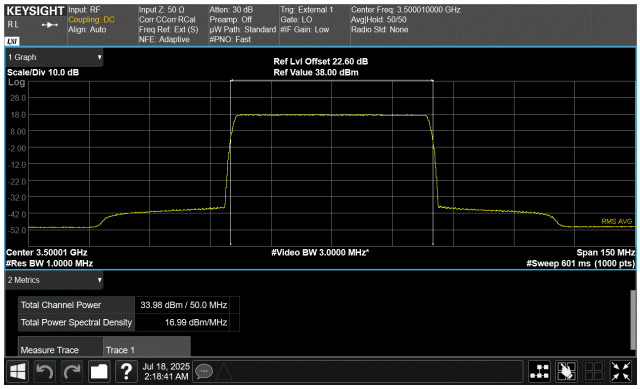


50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 51



50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 52

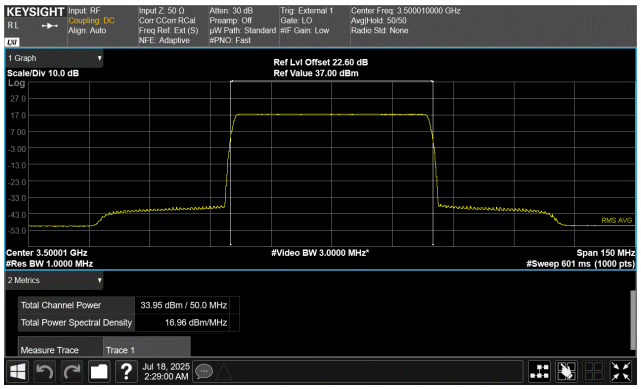
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 53



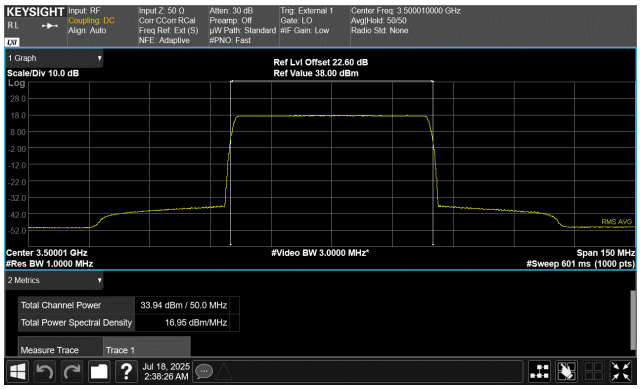
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 54

OUTPUT POWER – ALL PORTS

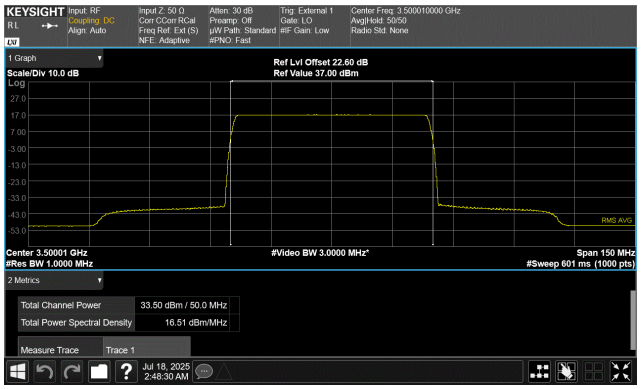
element
TbtTx 2025.05.09.1
WTD.2025.03.25.0



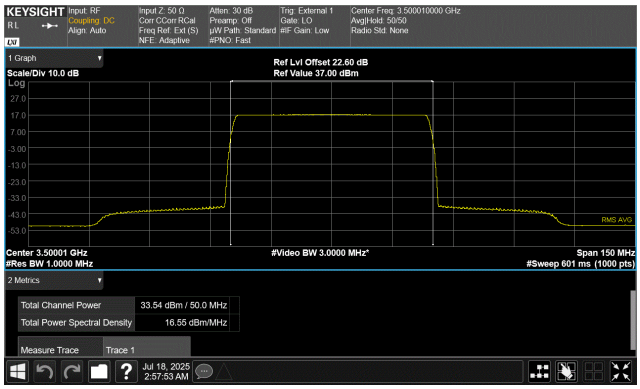
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 55



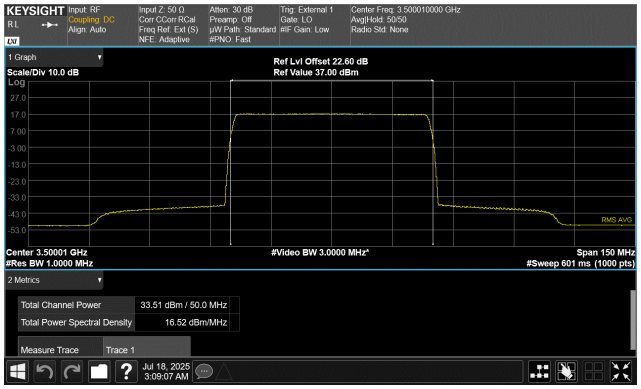
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 56



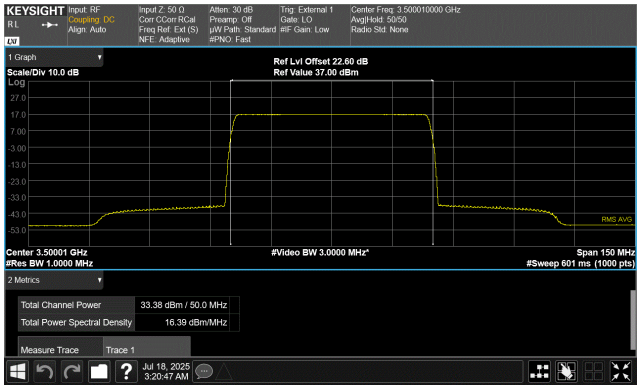
50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 57



50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 58



50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 59



50 MHz Channel Bandwidth
QPSK Modulation
Middle Channel, 3500.01 MHz
Port 60