

SPURIOUS CONDUCTED EMISSIONS - BAND 3.45G



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 antenna port spurious emissions were measured at the RF output terminal of the EUT through five different attenuation configurations which continues through to the RF input of the spectrum analyzer. Analyzer plots utilizing a resolution bandwidth called out by the client's test approach were made channel bandwidth from 9 kHz to 40 GHz. The conducted power of spurious emissions, up to the 10th harmonic of the transmit frequency, were investigated to ensure they were less than the limits also called out by the client's test plan (included elsewhere in this report).

RF conducted emissions testing was performed only on one port. The AVQQA antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown in output power testing) and antenna port 1 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i, and 6.4.

The measurement methods for FCC measurements are detailed in KDB971168 D01v03 section 6 and ANSI C63.26-2015. Measurements shall be performed at full power on the channel(s) and bandwidth(s) specified by the compliance lab. These measurements are for frequency bands outside band edge region.

Per FCC 2.1057(a)(1), the upper level of measurement is the 10th harmonic of the highest fundamental frequency. As such, the upper level of the measurement is approximately 40 GHz (3980 MHz * 10) for the AVQQA 3.45G Band.

Per section FCC 27.53(n) and FCC 27.53 (l)(1), power of any emission outside of the authorized operating frequency range cannot exceed, of the two rule parts, the more restrictive limits. Per section 27.53(n), the power of any emission outside band edge region (frequency ranges below 3430MHz and above 3570MHz) cannot exceed -40 dBm/MHz. The limit is adjusted to -58.1 dBm [-40 dBm -10 log (64)] per FCC KDB 662911D01 v02r01 and ANSI C63.26-2015 section 6.4 because the BTS may operate as a 64 port MIMO transmitter. The resolution bandwidth to be used for these measurements must be 1MHz per FCC 27.53(n)(1).

The spurious emission testing was performed using only one modulation type because the Occupied Bandwidth variation between modulation types is small, the average output power variation between modulation types is small and there is significant/good passing margin. The QPSK modulation type was used. (See ANSI C63.26. clause 5.7.2e).

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFQ	2024-03-12	2025-03-12
Generator - Signal	Agilent	N5173B	TIW	2023-08-07	2026-08-07
Block - DC	Fairview Microwave	SD3239	ANE	2024-02-14	2025-02-14
Block - DC	Fairview Microwave	SD3379	AMM	2024-08-15	2025-08-15

SPURIOUS CONDUCTED EMISSIONS - BAND 3.45G



EUT:	AVQQA Remote Radio Head	Work Order:	NOKI0075
Serial Number:	L1242403137	Date:	2024-08-19
Customer:	Nokia Solutions and Networks	Temperature:	23.3°C
Attendees:	David Le, John Rattanavong	Relative Humidity:	52.4%
Customer Project:	None	Bar. Pressure (PMSL):	1016 mbar
Tested By:	Jarrold Brenden	Job Site:	PT14
Power:	54VDC	Configuration:	NOKI0075-1 NOKI0075-3 NOKI0075-4 NOKI0075-5 NOKI0075-6

TEST SPECIFICATIONS

Specification:	Method:
FCC 27:2024	ANSI C63.26:2015

COMMENTS

All losses in the measurement path were accounted for in the reference level offset; attenuators, filters, cables, and DC blocks. Band n77 carriers were enabled at maximum power levels for the 3.45 GHz band in single carrier operating mode configuration.

3.45G Band single Carrier operations: 3.45GHz Band Single Carrier at maximum power for each carrier bandwidth (10, 20, 30 & 40MHz) at Bottom, Middle and Top channels while 3.7GHz Band single NR20 Carrier operates at 100 watts on middle channel.

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass

Tested By

TEST RESULTS

Frequency Range		Frequency (MHz)	Value (dBm)	Limit (dBm)	Result
Port 1					
10 MHz Channel Bandwidth					
QPSK Modulation					
Mid Channel, 3500.01 MHz					
9 kHz to 150 kHz		0.009	-76.586	-58.1	Pass
150 kHz to 30 MHz		0.15	-76.645	-58.1	Pass
30 MHz to 3400 MHz		3207.9	-68.199	-58.1	Pass
4030 MHz to 6000 MHz		4035.17	-64.387	-58.1	Pass
3100 MHz to 3430 MHz		3208.24	-68.718	-58.1	Pass
3570 MHz to 3680 MHz		3602.67	-63.019	-58.1	Pass
4000 MHz to 4200 MHz		4015.2	-62.012	-58.1	Pass
3400 MHz to 4030 MHz		3607.59	-37.289	-31.1	Pass
6 GHz to 13 GHz		10601.8	-64.127	-58.1	Pass
13 GHz to 20 GHz		19966.4	-62.418	-58.1	Pass
20 GHz to 40 GHz		38828.8	-64.082	-58.1	Pass

SPURIOUS CONDUCTED EMISSIONS - BAND 3.45G

Frequency Range		Frequency (MHz)	Value (dBm)	Limit (dBm)	Result
20 MHz Channel Bandwidth					
QPSK Modulation					
Mid Channel, 3500.01 MHz	9 kHz to 150 kHz	0.009	-75.988	-58.1	Pass
	150 kHz to 30 MHz	0.15	-77.052	-58.1	Pass
	30 MHz to 3400 MHz	3148.1	-68.063	-58.1	Pass
	4030 MHz to 6000 MHz	4050.93	-64.606	-58.1	Pass
	3100 MHz to 3430 MHz	3235.3	-68.808	-58.1	Pass
	3570 MHz to 3680 MHz	3640.07	-62.964	-58.1	Pass
	4000 MHz to 4200 MHz	4011.6	-62.023	-58.1	Pass
	3400 MHz to 4030 MHz	3615.38	-37.322	-31.1	Pass
	6 GHz to 13 GHz	8048.2	-64.315	-58.1	Pass
	13 GHz to 20 GHz	19153.7	-62.349	-58.1	Pass
	20 GHz to 40 GHz	38834.4	-65.077	-58.1	Pass
30 MHz Channel Bandwidth					
QPSK Modulation					
Mid Channel, 3500.01 MHz	9 kHz to 150 kHz	0.009	-76.109	-58.1	Pass
	150 kHz to 30 MHz	0.15	-77.096	-58.1	Pass
	30 MHz to 3400 MHz	3232.8	-68.219	-58.1	Pass
	4030 MHz to 6000 MHz	4035.91	-64.445	-58.1	Pass
	3100 MHz to 3430 MHz	3227.38	-68.875	-58.1	Pass
	3570 MHz to 3680 MHz	3592.55	-63.153	-58.1	Pass
	4000 MHz to 4200 MHz	4008	-61.947	-58.1	Pass
	3400 MHz to 4030 MHz	3607.98	-37.481	-31.1	Pass
	6 GHz to 13 GHz	10644.5	-64.522	-58.1	Pass
	13 GHz to 20 GHz	19904.45	-62.733	-58.1	Pass
	20 GHz to 40 GHz	38841.2	-64.444	-58.1	Pass
40 MHz Channel Bandwidth					
QPSK Modulation					
Mid Channel, 3500.01 MHz	9 kHz to 150 kHz	0.09	-76.263	-58.1	Pass
	150 kHz to 30 MHz	0.15	-76.23	-58.1	Pass
	30 MHz to 3400 MHz	3226.9	-68.373	-58.1	Pass
	4030 MHz to 6000 MHz	4032.96	-64.782	-58.1	Pass
	3100 MHz to 3430 MHz	3201.31	-68.579	-58.1	Pass
	3570 MHz to 3680 MHz	3624.67	-63.123	-58.1	Pass
	4000 MHz to 4200 MHz	4008.8	-62.023	-58.1	Pass
	3400 MHz to 4030 MHz	3605.3	-37.454	-31.1	Pass
	6 GHz to 13 GHz	10614.05	-64.368	-58.1	Pass
	13 GHz to 20 GHz	19934.2	-62.509	-58.1	Pass
	20 GHz to 40 GHz	39872	-64.944	-58.1	Pass

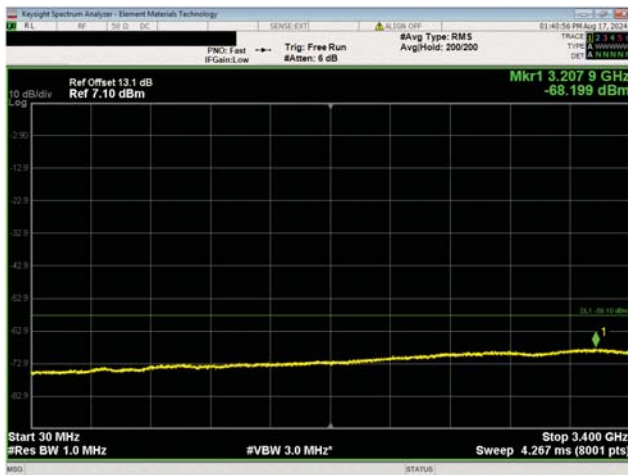
SPURIOUS CONDUCTED EMISSIONS - BAND 3.45G



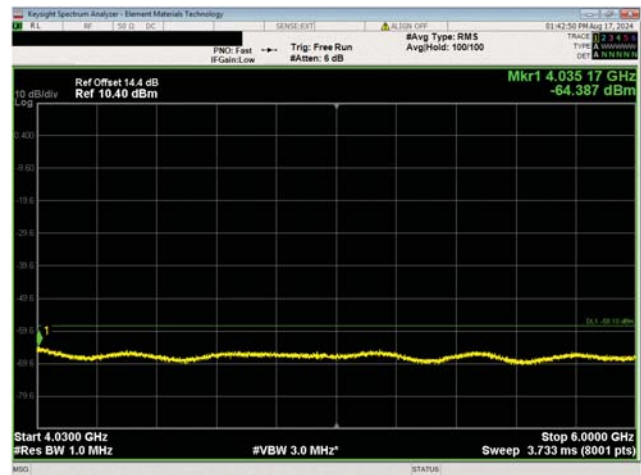
Port 1
10 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz



Port 1
10 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz



Port 1
10 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz



Port 1
10 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz

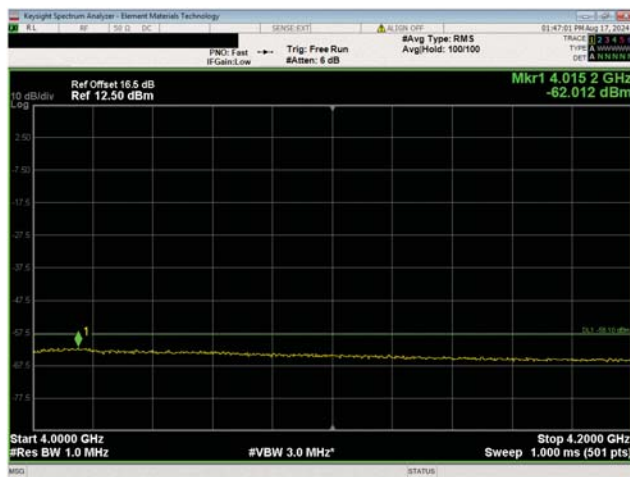
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Port 1
10 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz



Port 1
10 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz

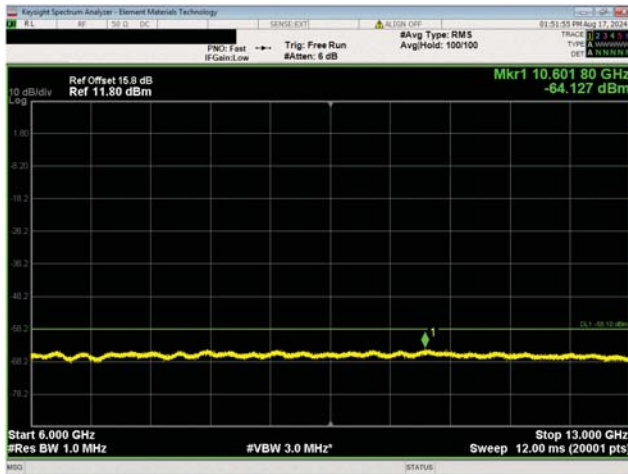


Port 1
10 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz

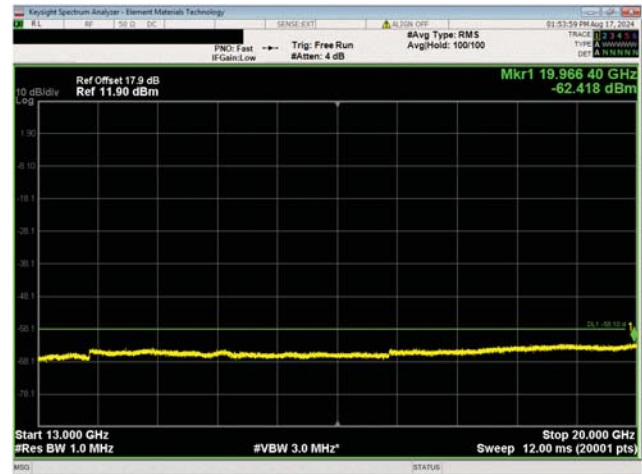


Port 1
10 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz

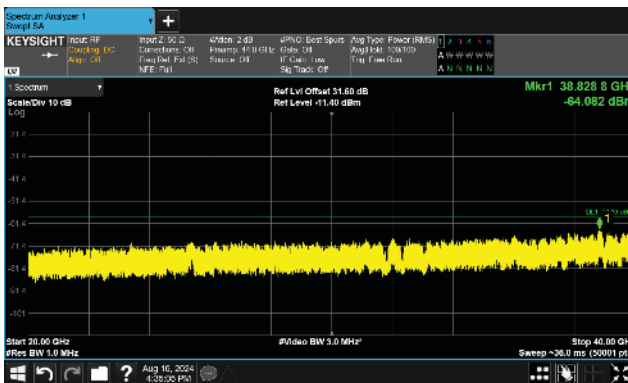
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Port 1
10 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz



Port 1
10 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz

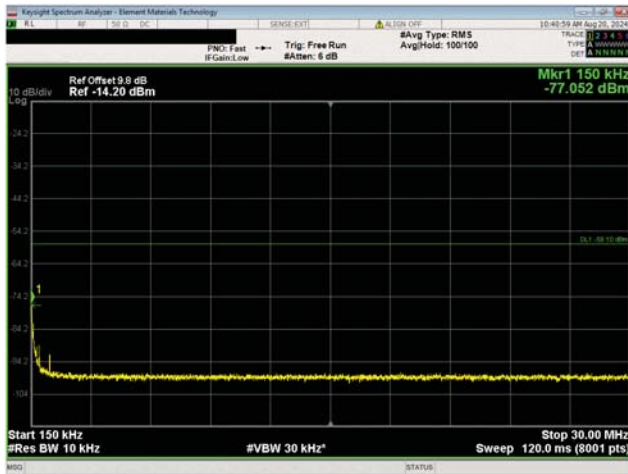


Port 1
10 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz

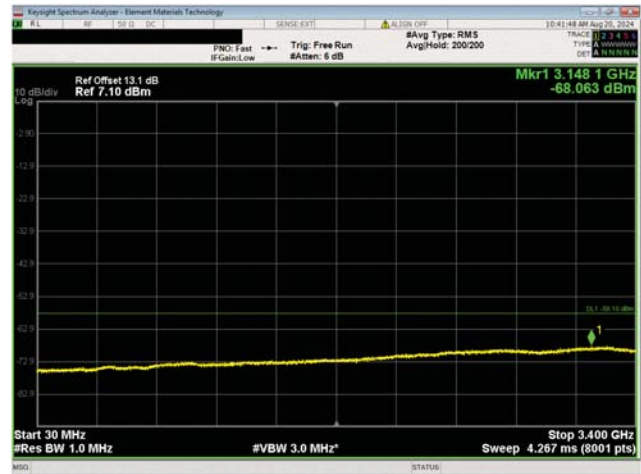


Port 1
20 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz

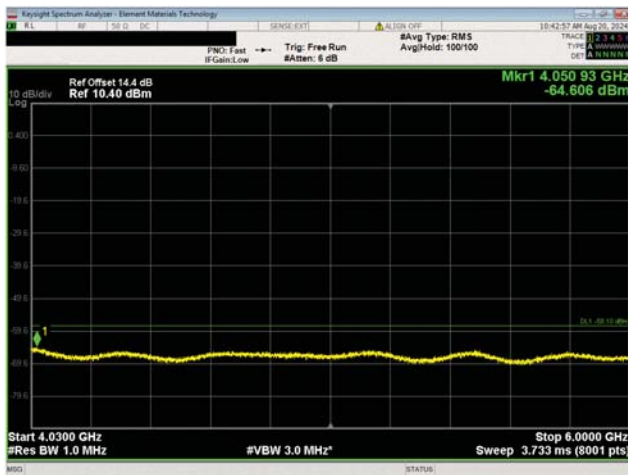
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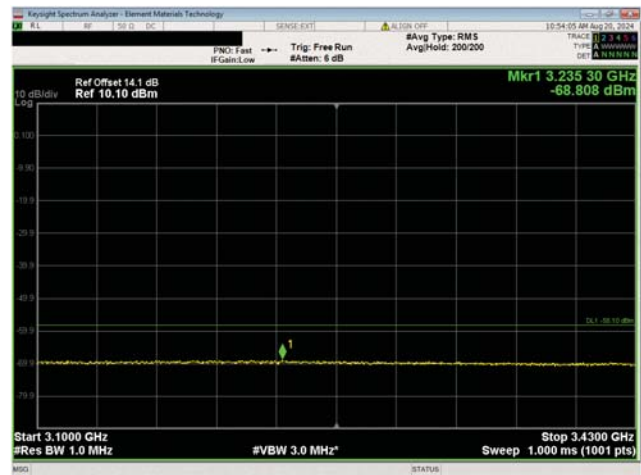
Port 1
20 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz



Port 1
20 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz

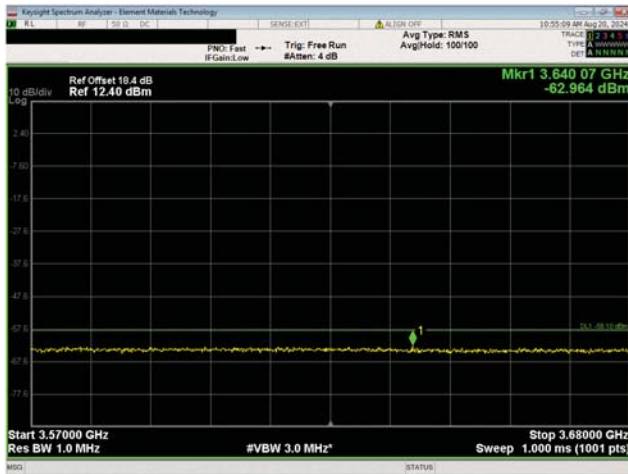


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20 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz

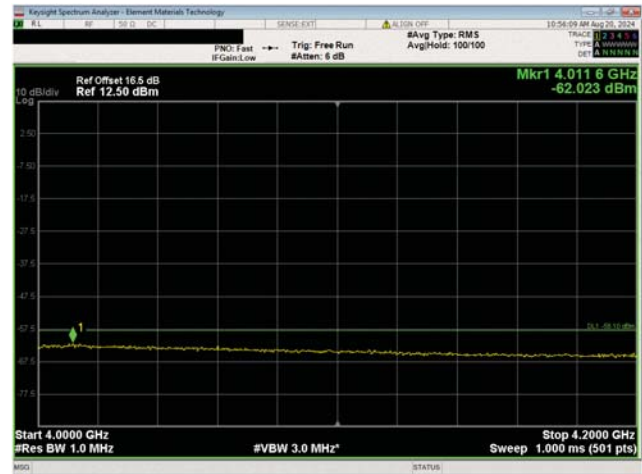


Port 1
20 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz

SPURIOUS CONDUCTED EMISSIONS - BAND 3.45G



Port 1
20 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz



Port 1
20 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz

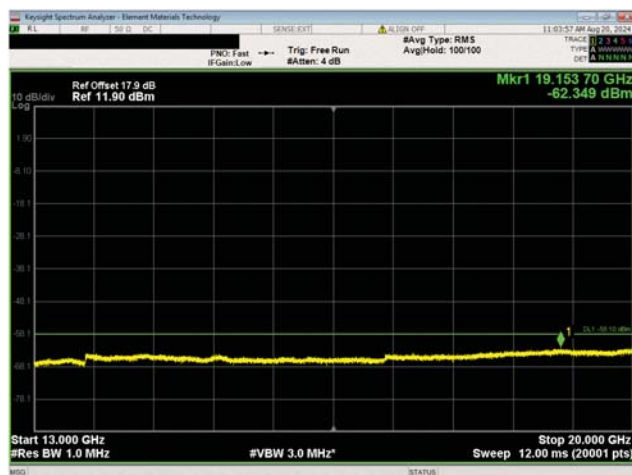


Port 1
20 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz

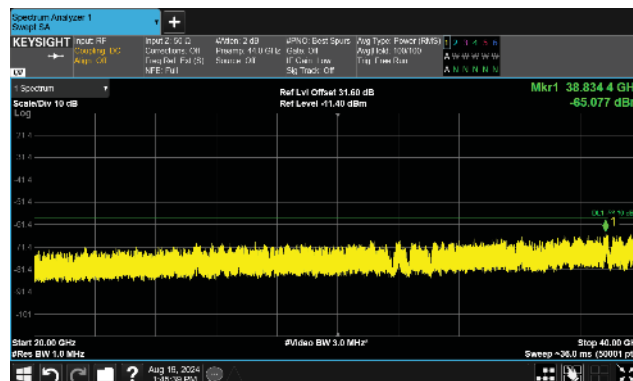


Port 1
20 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz

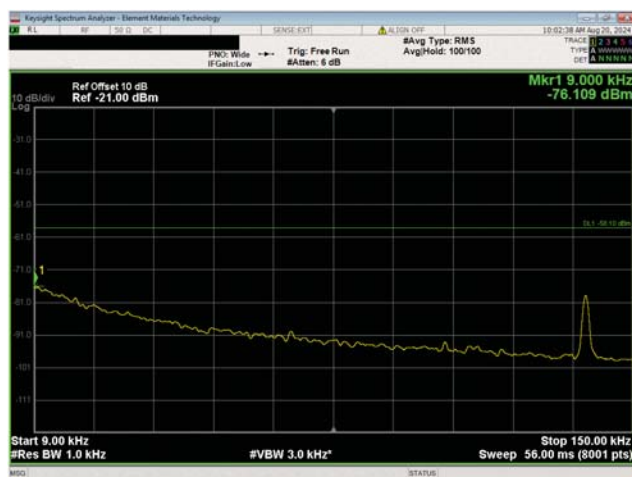
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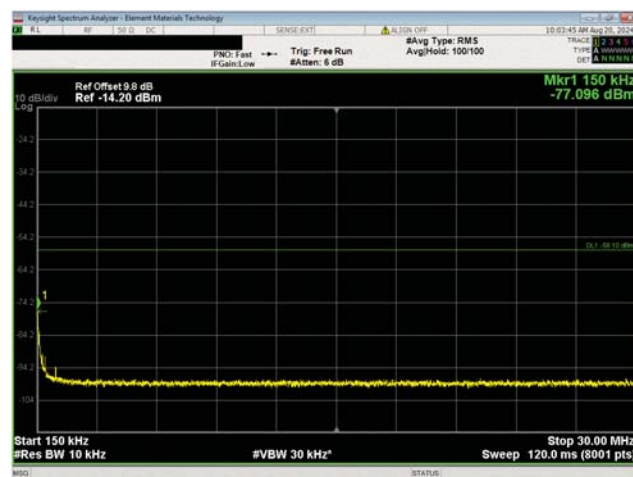
Port 1
20 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz



Port 1
20 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz

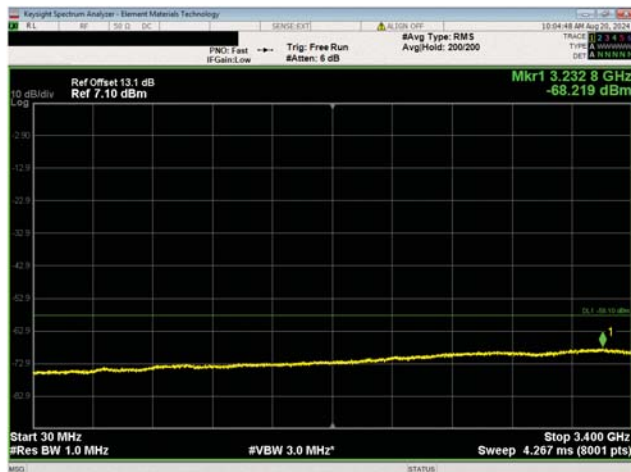


Port 1
30 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz

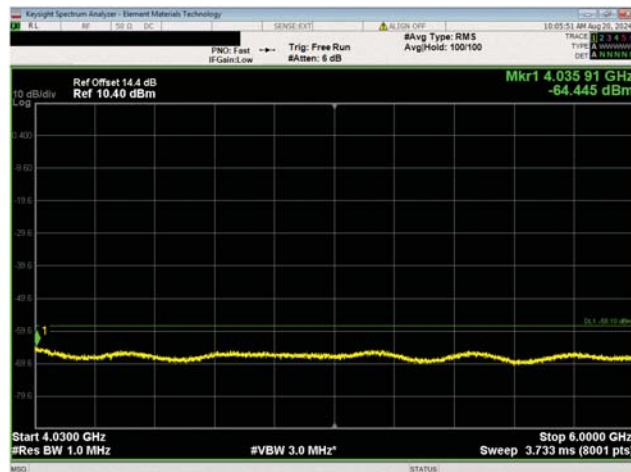


Port 1
30 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz

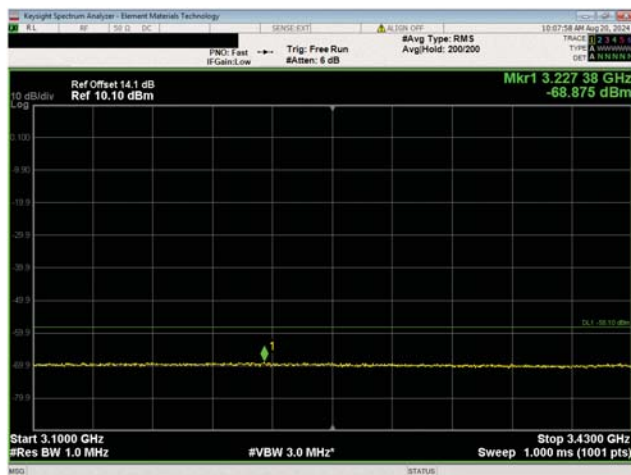
SPURIOUS CONDUCTED EMISSIONS - BAND 3.45G



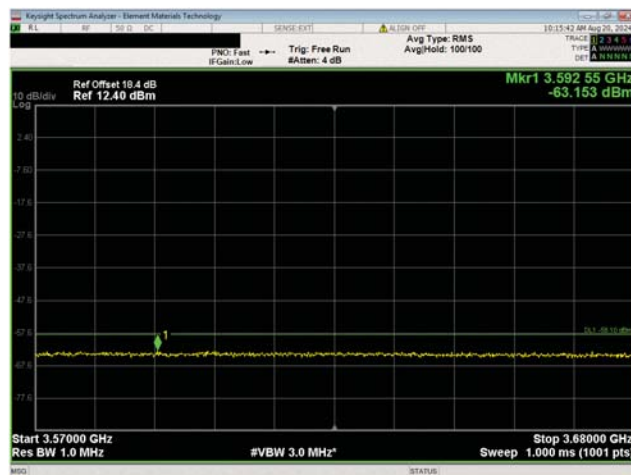
Port 1
30 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz



Port 1
30 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz

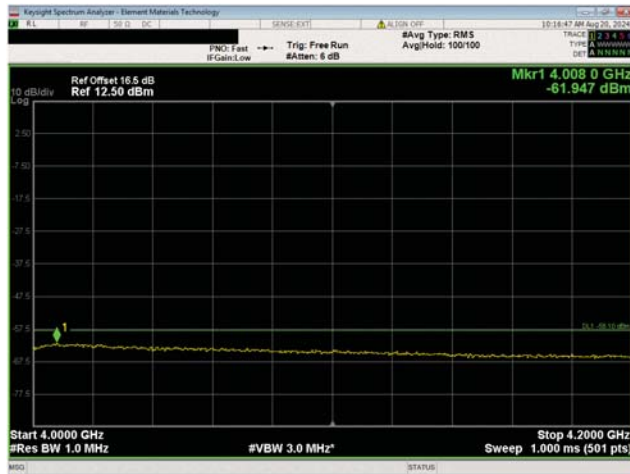


Port 1
30 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz



Port 1
30 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz

SPURIOUS CONDUCTED EMISSIONS - BAND 3.45G



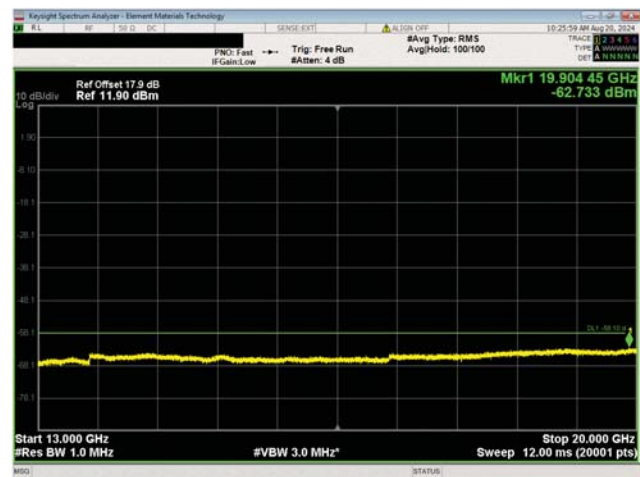
Port 1
30 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz



Port 1
30 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz

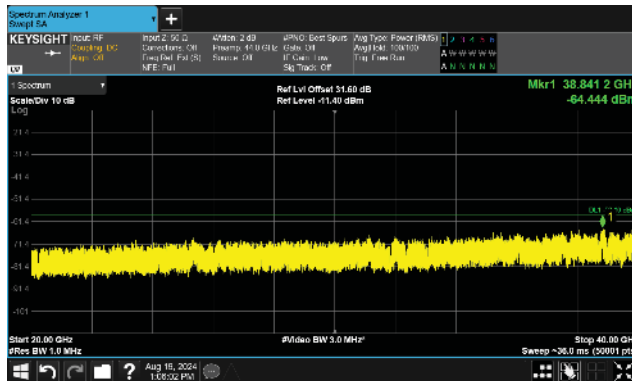


Port 1
30 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz

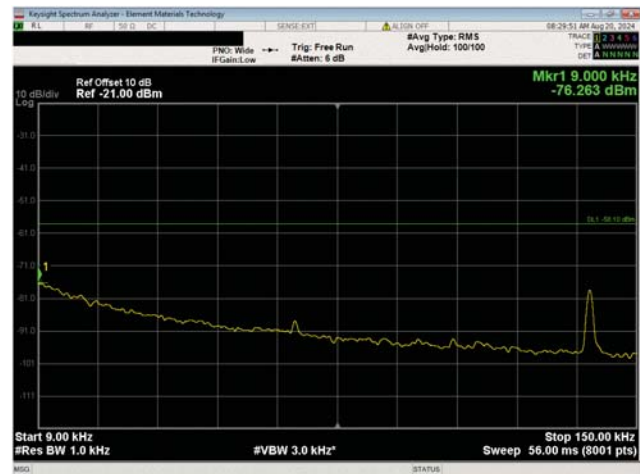


Port 1
30 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz

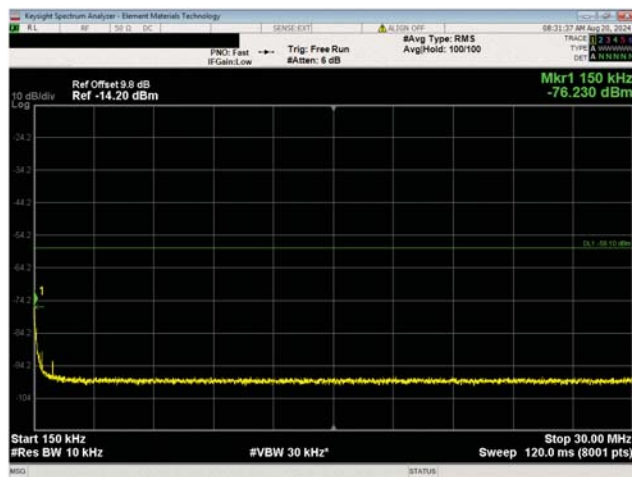
SPURIOUS CONDUCTED EMISSIONS - BAND 3.45G



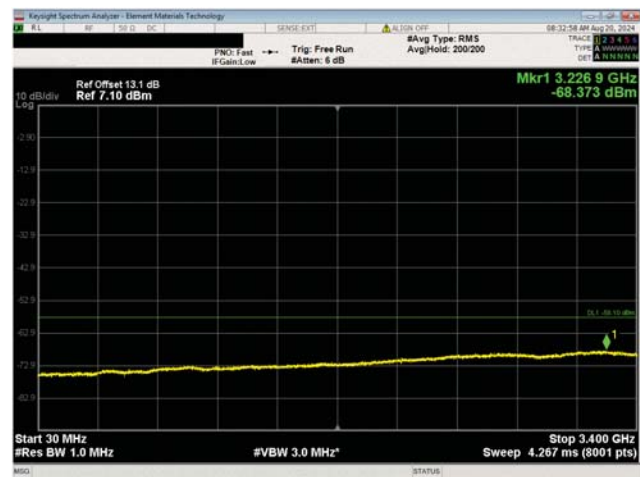
Port 1
30 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz



Port 1
40 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz

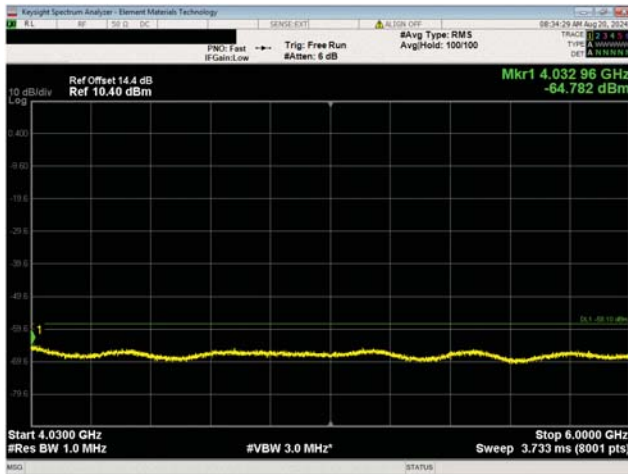


Port 1
40 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz



Port 1
40 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz

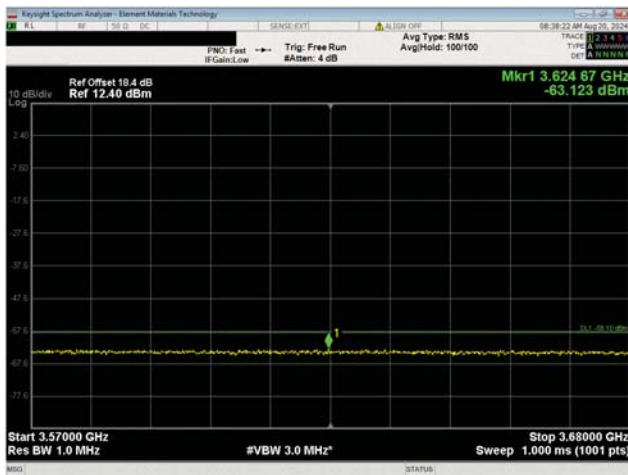
SPURIOUS CONDUCTED EMISSIONS - BAND 3.45G



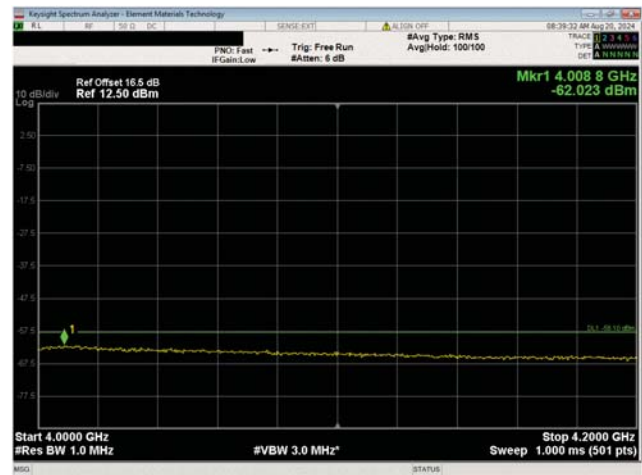
Port 1
40 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz



Port 1
40 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz



Port 1
40 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz



Port 1
40 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz

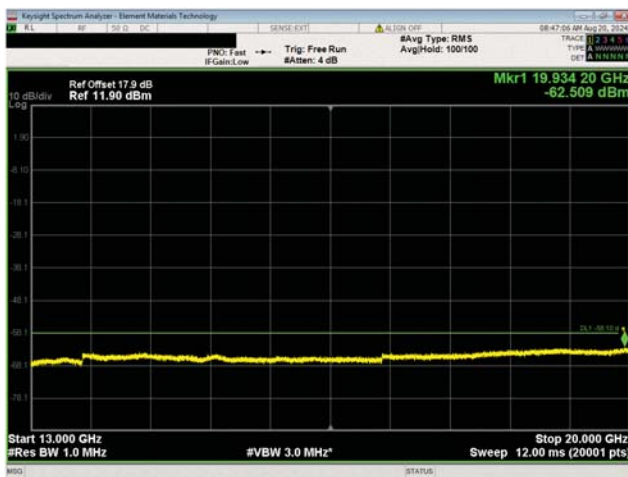
SPURIOUS CONDUCTED EMISSIONS - BAND 3.45G



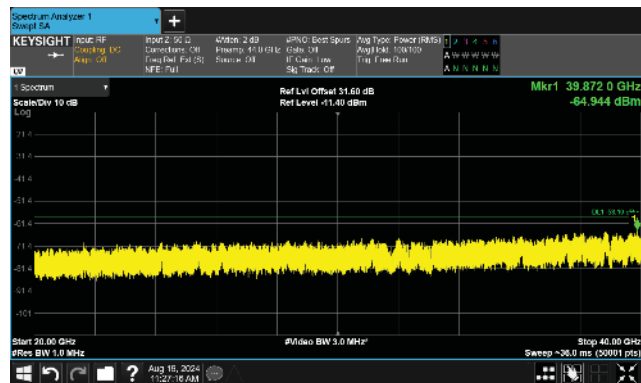
Port 1
40 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz



Port 1
40 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz



Port 1
40 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz



Port 1
40 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3500.01 MHz

SPURIOUS CONDUCTED EMISSIONS - BAND 3.7G



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 antenna port spurious emissions were measured at the RF output terminal of the EUT through four different attenuation configurations which continues through to the RF input of the spectrum analyzer. Analyzer plots utilizing a resolution bandwidth called out by the client's test approach were made for each channel bandwidth from 9 kHz to 40 GHz. The conducted power of spurious emissions, up to the 10th harmonic of the transmit frequency, were investigated to ensure they were less than the limits also called out by the client's test plan (included elsewhere in this report).

RF conducted emissions testing was performed only on one port. The AVQQA antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown in output power testing) and antenna port 1 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i, and 6.4.

The measurement methods for FCC measurements are detailed in KDB971168 D01v03 section 6 and ANSI C63.26-2015. Measurements shall be performed at full power on the channel(s) and bandwidth(s) specified by the compliance lab. These measurements are for frequency band after the first 1.0 MHz bands immediately outside and adjacent to the frequency block.

Per FCC 2.1057(a)(1), the upper level of measurement is the 10th harmonic of the highest fundamental frequency. As such, the upper level of the measurement is approximately 40 GHz (3980 MHz * 10) for the AVQQA 3.7G Band.

Per section 27.53(l)(1), For base station operations in the 3700-3980 MHz band, the conducted power of any emission outside of the authorized operating frequency range cannot exceed -13 dBm. This limit is adjusted to -31.1 dBm [-13 dBm - 10 log (64)] per FCC KDB 662911D01 v02r01 and ANSI C63.26-2015 section 6.4 because the BTS may operate as a 64 port MIMO transmitter. The resolution bandwidth to be used for these measurements must be > 1MHz per FCC 27.53(l)(1)

The spurious emission testing was performed using only one modulation type because the Occupied Bandwidth variation between modulation types is small, the average output power variation between modulation types is small and there is significant/good passing margin. The QPSK modulation type was used. (See ANSI C63.26. clause 5.7.2e).

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFQ	2024-03-12	2025-03-12
Generator - Signal	Agilent	N5173B	TIW	2023-08-07	2026-08-07
Block - DC	Fairview Microwave	SD3239	ANE	2024-02-14	2025-02-14
Block - DC	Fairview Microwave	SD3379	AMM	2024-08-15	2025-08-15

SPURIOUS CONDUCTED EMISSIONS - BAND 3.7G



EUT:	AVQQA Remote Radio Head	Work Order:	NOKI0075
Serial Number:	L1242403137	Date:	2024-08-20
Customer:	Nokia Solutions and Networks	Temperature:	23.3°C
Attendees:	David Le, John Rattanavong	Relative Humidity:	52.1%
Customer Project:	None	Bar. Pressure (PMSL):	1016 mbar
Tested By:	Jarrold Brenden	Job Site:	PT14
Power:	54VDC	Configuration:	NOKI0075-2 NOKI0075-4 NOKI0075-5 NOKI0075-6

TEST SPECIFICATIONS

Specification:	Method:
FCC 27:2024	ANSI C63.26:2015

COMMENTS

All losses in the measurement path were accounted for in the reference level offset; attenuators, filters, cables, and DC blocks. Band n77 carriers were enabled at maximum power levels for the 3.7 GHz band in the single carrier operating mode configuration.

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass

Tested By

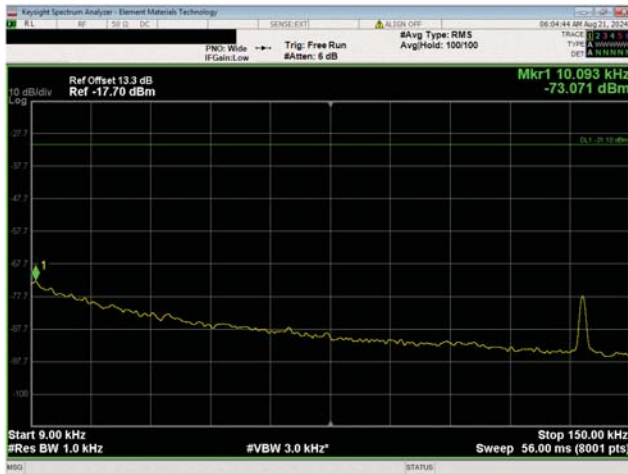
TEST RESULTS

	Frequency Range	Frequency (MHz)	Value (dBm)	Limit (dBm)	Result
Port 1					
20 MHz Channel Bandwidth					
QPSK Modulation					
Mid Channel, 3840.00 MHz	9 kHz to 150 kHz	0.01	-73.071	-31.1	Pass
	150 kHz to 30 MHz	0.15	-74.861	-31.1	Pass
	30 MHz to 3400 MHz	3145.1	-35.741	-31.1	Pass
	3400 MHz to 6000 MHz	4013.6	-36.682	-31.1	Pass
	6 GHz to 13 GHz	10.675.65	-64.424	-31.1	Pass
	13 GHz to 40 GHz	39072.55	-39.569	-31.1	Pass
40 MHz Channel Bandwidth					
QPSK Modulation					
Mid Channel, 3840.00 MHz	9 kHz to 150 kHz	0.009	-72.715	-31.1	Pass
	150 kHz to 30 MHz	0.15	-74.437	-31.1	Pass
	30 MHz to 3400 MHz	3169.2	-35.437	-31.1	Pass
	3400 MHz to 6000 MHz	4017.825	-36.49	-31.1	Pass
	6 GHz to 13 GHz	8067.45	-64.595	-31.1	Pass
	13 GHz to 40 GHz	38416.9	-39.353	-31.1	Pass

SPURIOUS CONDUCTED EMISSIONS - BAND 3.7G

	Frequency Range	Frequency (MHz)	Value (dBm)	Limit (dBm)	Result
60 MHz Channel Bandwidth					
QPSK Modulation					
Mid Channel, 3840.00 MHz	9 kHz to 150 kHz	0.138	-72.924	-31.1	Pass
	150 kHz to 30 MHz	0.15	-74.567	-31.1	Pass
	30 MHz to 3400 MHz	3216.9	-35.665	-31.1	Pass
	3400 MHz to 6000 MHz	4014.25	-36.392	-31.1	Pass
	6 GHz to 13 GHz	8018.8	-64.444	-31.1	Pass
	13 GHz to 40 GHz	38451.1	-39.481	-31.1	Pass
80 MHz Channel Bandwidth					
QPSK Modulation					
Mid Channel, 3840.00 MHz	9 kHz to 150 kHz	0.139	-72.039	-31.1	Pass
	150 kHz to 30 MHz	0.15	-74.12	-31.1	Pass
	30 MHz to 3400 MHz	3212.1	-35.753	-31.1	Pass
	3400 MHz to 6000 MHz	4028.875	-36.547	-31.1	Pass
	6 GHz to 13 GHz	10662	-64.246	-31.1	Pass
	13 GHz to 40 GHz	38410.15	-39.511	-31.1	Pass
100 MHz Channel Bandwidth					
QPSK Modulation					
Mid Channel, 3840.00 MHz	9 kHz to 150 kHz	0.009	-72.859	-31.1	Pass
	150 kHz to 30 MHz	0.161	-75.195	-31.1	Pass
	30 MHz to 3400 MHz	3042.4	-35.531	-31.1	Pass
	3400 MHz to 6000 MHz	4032.125	-36.478	-31.1	Pass
	6 GHz to 13 GHz	10663.75	-64.599	-31.1	Pass
	13 GHz to 40 GHz	38438.95	-39.422	-31.1	Pass

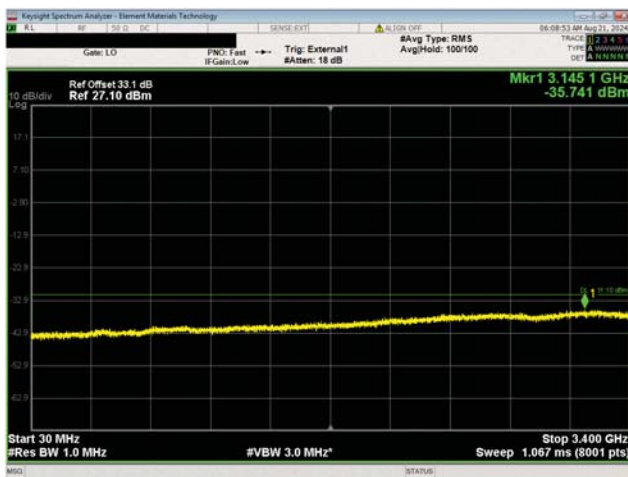
SPURIOUS CONDUCTED EMISSIONS - BAND 3.7G



Port 1
20 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3840.00 MHz



Port 1
20 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3840.00 MHz

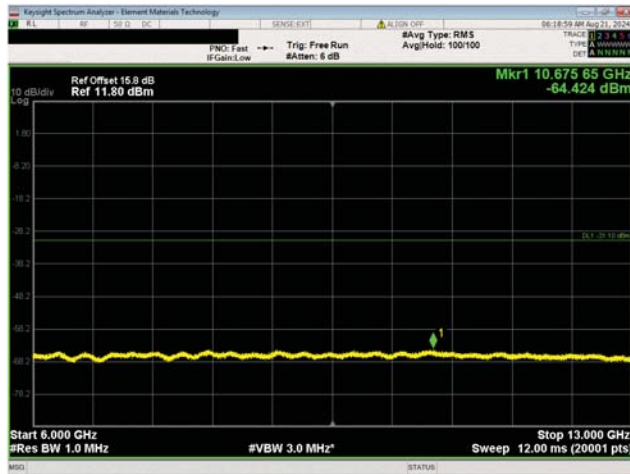


Port 1
20 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3840.00 MHz

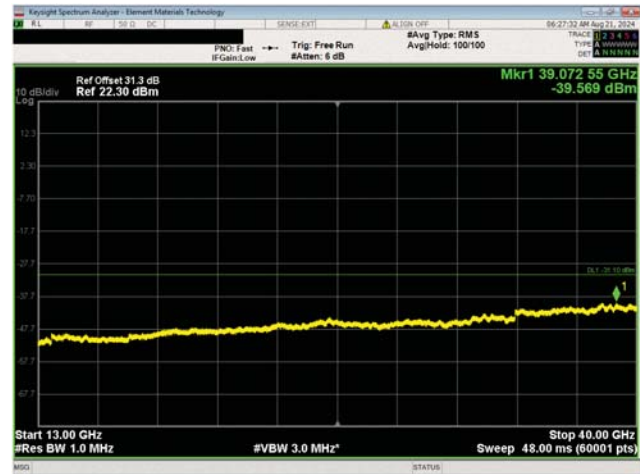


Port 1
20 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3840.00 MHz

SPURIOUS CONDUCTED EMISSIONS - BAND 3.7G



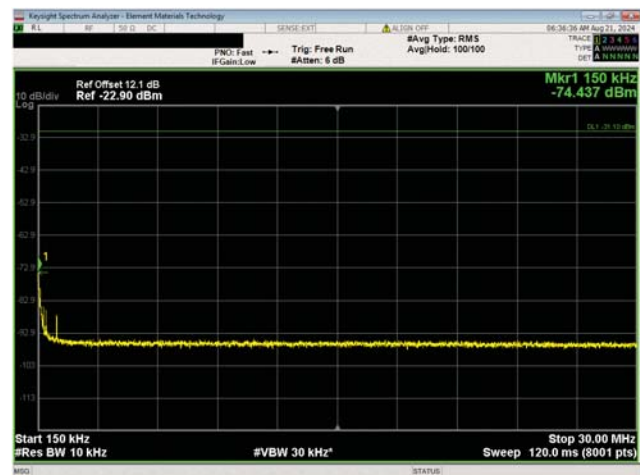
Port 1
20 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3840.00 MHz



Port 1
20 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3840.00 MHz

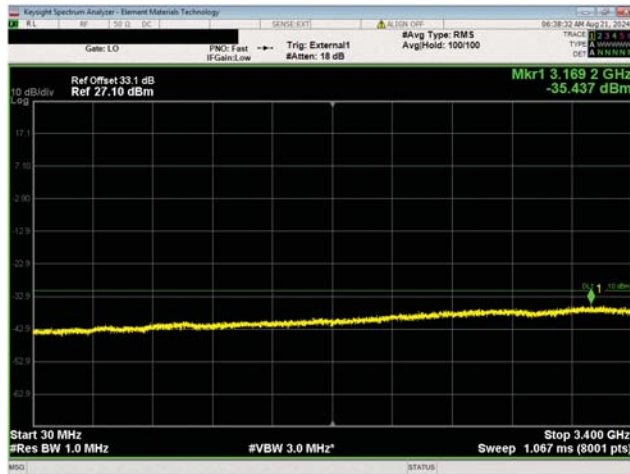


Port 1
40 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3840.00 MHz

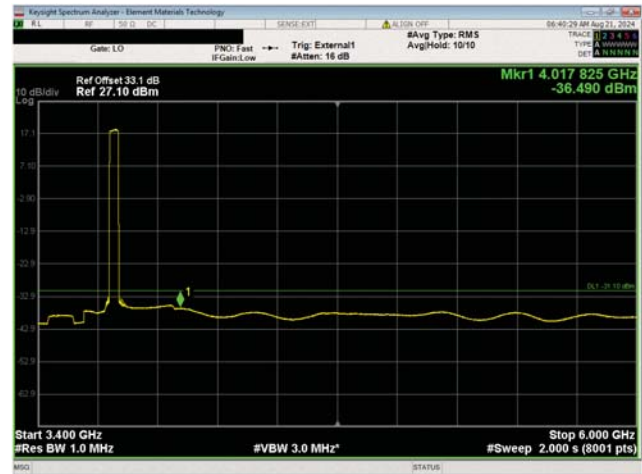


Port 1
40 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3840.00 MHz

SPURIOUS CONDUCTED EMISSIONS - BAND 3.7G



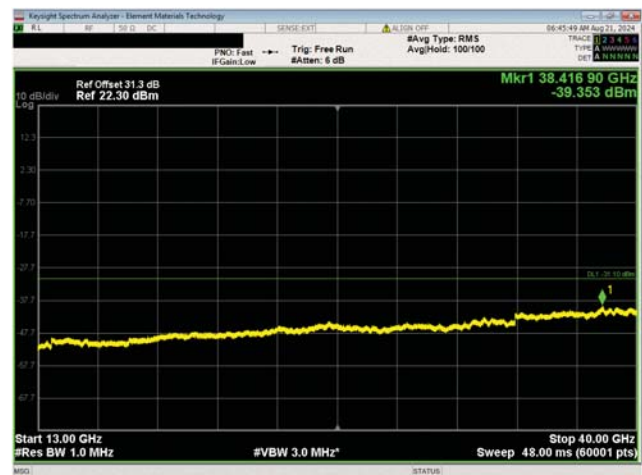
Port 1
40 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3840.00 MHz



Port 1
40 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3840.00 MHz



Port 1
40 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3840.00 MHz



Port 1
40 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3840.00 MHz

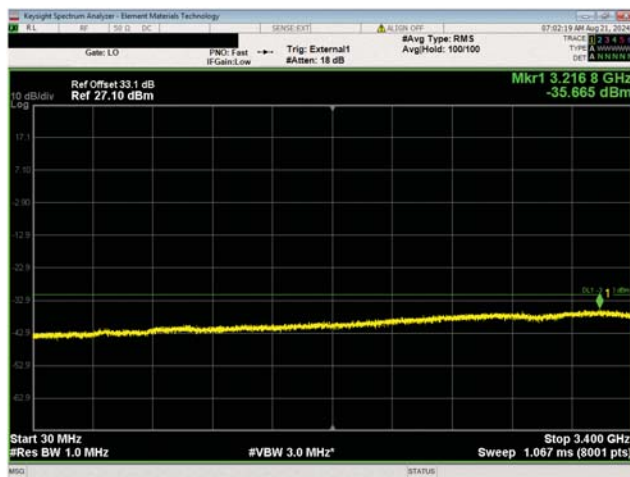
SPURIOUS CONDUCTED EMISSIONS - BAND 3.7G



Port 1
60 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3840.00 MHz



Port 1
60 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3840.00 MHz



Port 1
60 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3840.00 MHz



Port 1
60 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3840.00 MHz

SPURIOUS CONDUCTED EMISSIONS - BAND 3.7G



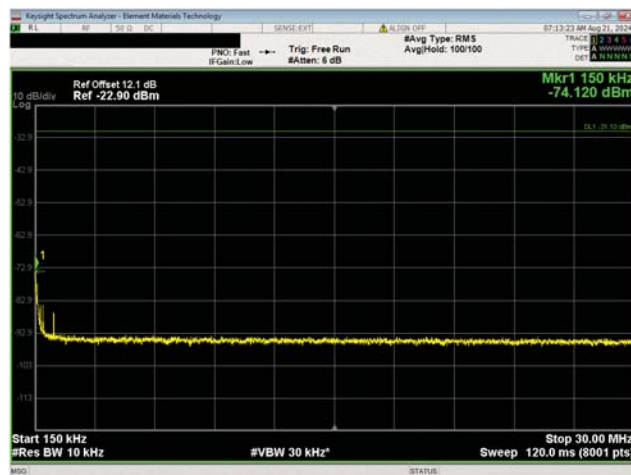
Port 1
60 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3840.00 MHz



Port 1
60 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3840.00 MHz

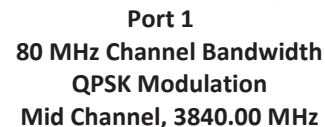
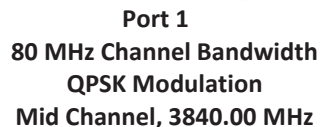
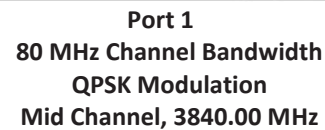
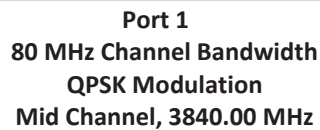


Port 1
80 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3840.00 MHz



Port 1
80 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3840.00 MHz

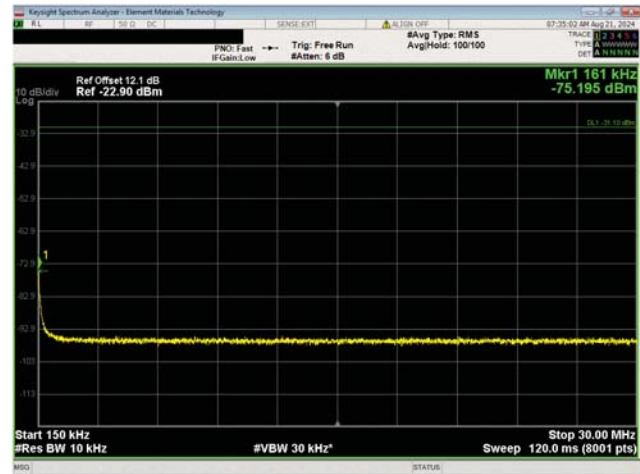
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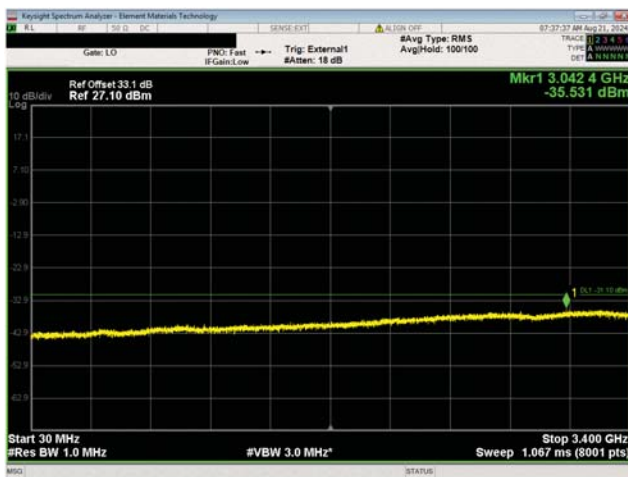
SPURIOUS CONDUCTED EMISSIONS - BAND 3.7G



Port 1
100 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3840.00 MHz



Port 1
100 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3840.00 MHz

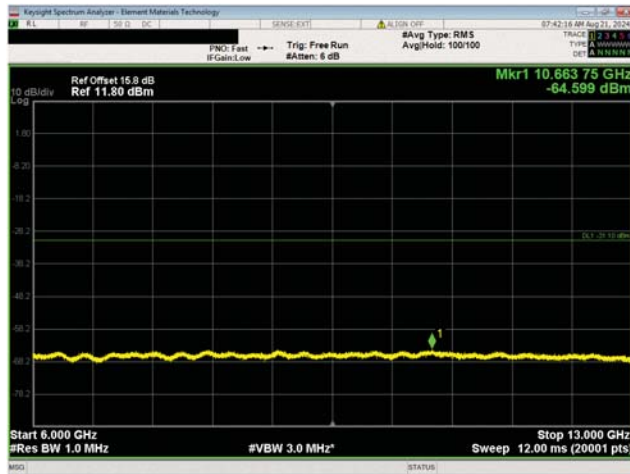


Port 1
100 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3840.00 MHz

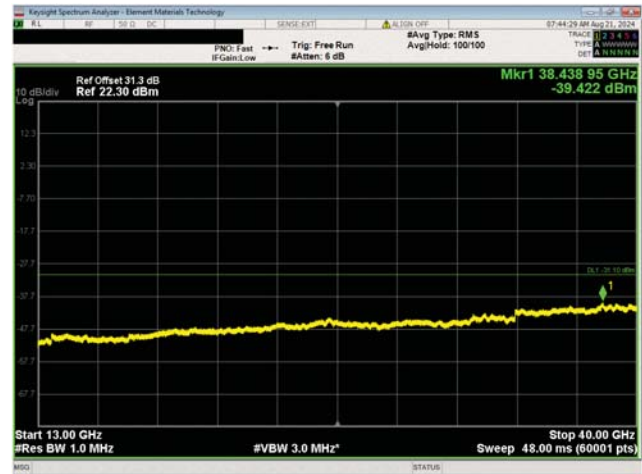


Port 1
100 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3840.00 MHz

SPURIOUS CONDUCTED EMISSIONS - BAND 3.7G



Port 1
100 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3840.00 MHz



Port 1
100 MHz Channel Bandwidth
QPSK Modulation
Mid Channel, 3840.00 MHz

SPURIOUS CONDUCTED EMISSIONS - DUAL BAND



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 antenna port spurious emissions were measured at the RF output terminal of the EUT through five different attenuation configurations which continues through to the RF input of the spectrum analyzer. Analyzer plots utilizing a resolution bandwidth called out by the client's test approach were made for each channel bandwidth from 9 kHz to 40 GHz. The conducted power of spurious emissions, up to the 10th harmonic of the transmit frequency, were investigated to ensure they were less than the limits also called out by the client's test plan (included elsewhere in this report).

RF conducted emissions testing was performed only on one port. The AVQQA antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown in output power testing) and antenna port 1 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i, and 6.4.

The measurement methods for FCC measurements are detailed in KDB971168 D01v03 section 6 and ANSI C63.26-2015. Measurements shall be performed at full power on the channel(s) and bandwidth(s) specified by the compliance lab. These measurements are for frequency bands outside band edge region.

Per FCC 2.1057(a)(1), the upper level of measurement is the 10th harmonic of the highest fundamental frequency. As such, the upper level of the measurement is approximately 40 GHz (3980cMHz * 10) for the AVQQA Dual Band operations.

Per section FCC 27.53(n) and FCC 27.53 (l)(1), power of any emission outside of the authorized operating frequency range cannot exceed, of the two rule parts, the more restrictive limits. Per section 27.53(n), the power of any emission outside band edge region (frequency ranges below 3430MHz and above 3570MHz) cannot exceed -40 dBm/MHz. The limit is adjusted to -58.1 dBm [-40 dBm -10 log (64)] per FCC KDB 662911D01 v02r01 and ANSI C63.26-2015 section 6.4 because the BTS may operate as a 64 port MIMO transmitter. The resolution bandwidth to be used for these measurements must be 1MHz per FCC 27.53(n)(1).

Dual band with 3.45G and 3.7G Band carriers operations test cases using QPSK only:

- a. *Test Case 1.* 3.7GHz Band NR20 Carrier at maximum power at the top channel. 3.45GHz Band NR20 Carrier at maximum power at the bottom channel operating simultaneously. Both carriers are operating at the same power level (1.56W/carrier). Total radio power is 200W.
- b. *Test Case 2.* 3.7GHz Band NR20 Carrier at maximum power at the bottom channel. 3.45GHz Band NR20 Carrier at maximum power at the top channel operating simultaneously. Both carriers are operating at the same power level (1.56W/carrier). Total radio power is 200W.
- c. *Test Case 3.* 3.7GHz Band NR100 Carrier at the top channel. 3.45GHz Band NR40 Carrier at the bottom channel operating simultaneously. Both carriers are operating at the same PSD level (3.75W/carrier for NR100 carrier or PSD level at 2.4W/MHz and 1.56W/carrier for NR40 carrier or PSD level at 2.5W/MHz). Total radio power is 340W.

SPURIOUS CONDUCTED EMISSIONS - DUAL BAND

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFQ	2024-03-12	2025-03-12
Generator - Signal	Agilent	N5173B	TIW	2023-08-07	2026-08-07
Block - DC	Fairview Microwave	SD3239	ANE	2024-02-14	2025-02-14
Block - DC	Fairview Microwave	SD3379	AMM	2024-08-15	2025-08-15

SPURIOUS CONDUCTED EMISSIONS - DUAL BAND



EUT:	AVQQA Remote Radio Head	Work Order:	NOKI0075
Serial Number:	L1242403137	Date:	2024-08-16
Customer:	Nokia Solutions and Networks	Temperature:	23.3°C
Attendees:	David Le, John Rattanaovong	Relative Humidity:	52.1%
Customer Project:	None	Bar. Pressure (PMSL):	1016 mbar
Tested By:	Jarrold Brenden	Job Site:	PT14
Power:	54VDC	Configuration:	NOKI0075-1 NOKI0075-3 NOKI0075-4 NOKI0075-5 NOKI0075-6

TEST SPECIFICATIONS

Specification:	Method:
FCC 27:2024	ANSI C63.26:2015

COMMENTS

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

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass

Tested By

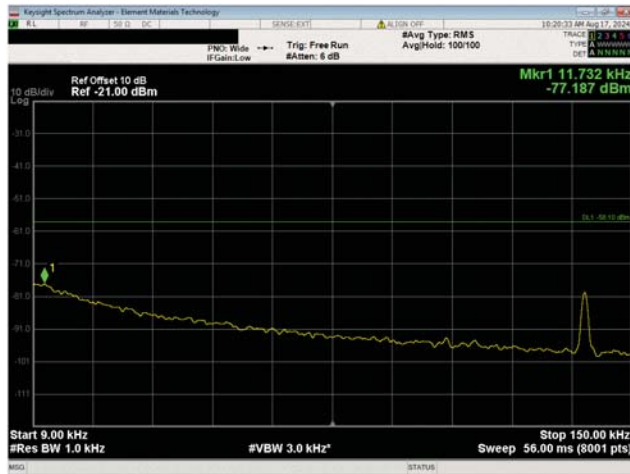
TEST RESULTS

Frequency Range		Frequency (MHz)	Value (dBm)	Limit (dBm)	Result
Port 1					
QPSK Modulation					
Test Case 1					
9 kHz to 150 kHz		0.012	-77.187	-58.1	Pass
150 kHz to 30 MHz		0.15	-76.69	-58.1	Pass
30 MHz to 3400 MHz		3198.6	-68.331	-58.1	Pass
4030 MHz to 6000 MHz		4040.1	-64.689	-58.1	Pass
3100 MHz to 3430 MHz		3231.01	-69.026	-58.1	Pass
3570 MHz to 3680 MHz		3623.9	-63.112	-58.1	Pass
4000 MHz to 4200 MHz		4010	-61.911	-58.1	Pass
3400 MHz to 4030 MHz		3602.39	-37.37	-31.1	Pass
6 GHz to 13 GHz		10623.5	-64.365	-58.1	Pass
13 GHz to 20 GHz		19936.65	-62.588	-58.1	Pass
20 GHz to 40 GHz		38850.4	-64.443	-58.1	Pass

SPURIOUS CONDUCTED EMISSIONS - DUAL BAND

Frequency Range	Frequency (MHz)	Value (dBm)	Limit (dBm)	Result
Test Case 2				
9 kHz to 150 kHz	0.01	-76.225	-58.1	Pass
150 kHz to 30 MHz	0.15	-76.766	-58.1	Pass
30 MHz to 3400 MHz	3231.9	-68.146	-58.1	Pass
4030 MHz to 6000 MHz	4036.16	-64.525	-58.1	Pass
3100 MHz to 3430 MHz	3210.55	-68.744	-58.1	Pass
3570 MHz to 3680 MHz	3606.96	-63.115	-58.1	Pass
4000 MHz to 4200 MHz	4011.6	-61.966	-58.1	Pass
3400 MHz to 4030 MHz	3608.06	-37.301	-31.1	Pass
6 GHz to 13 GHz	8847.95	-64.22	-58.1	Pass
13 GHz to 20 GHz	19928.95	-62.48	-58.1	Pass
20 GHz to 40 GHz	38864.8	-65.035	-58.1	Pass
Test Case 3				
9 kHz to 150 kHz	0.009	-75.702	-58.1	Pass
150 kHz to 30 MHz	0.15	-76.744	-58.1	Pass
30 MHz to 3400 MHz	3191.5	-68.317	-58.1	Pass
4030 MHz to 6000 MHz	4039.36	-64.438	-58.1	Pass
3100 MHz to 3430 MHz	3420.76	-68.761	-58.1	Pass
3570 MHz to 3680 MHz	3658.33	-62.879	-58.1	Pass
4000 MHz to 4200 MHz	4007.6	-60.567	-58.1	Pass
3400 MHz to 4030 MHz	3607.74	-37.343	-31.1	Pass
6 GHz to 13 GHz	10623.85	-64.09	-58.1	Pass
13 GHz to 20 GHz	19223.7	-62.376	-58.1	Pass
20 GHz to 40 GHz	38834.4	-65.311	-58.1	Pass

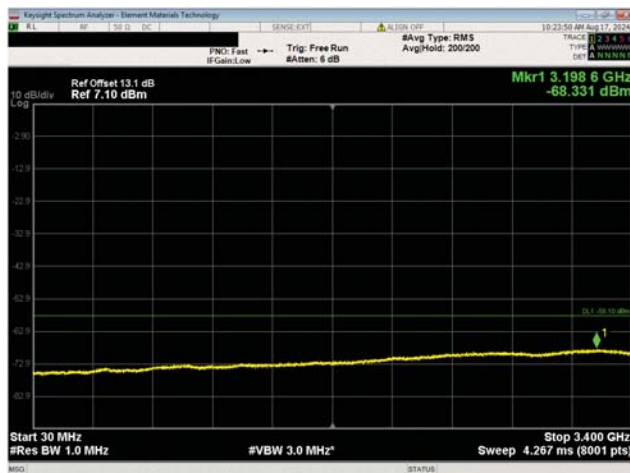
SPURIOUS CONDUCTED EMISSIONS - DUAL BAND



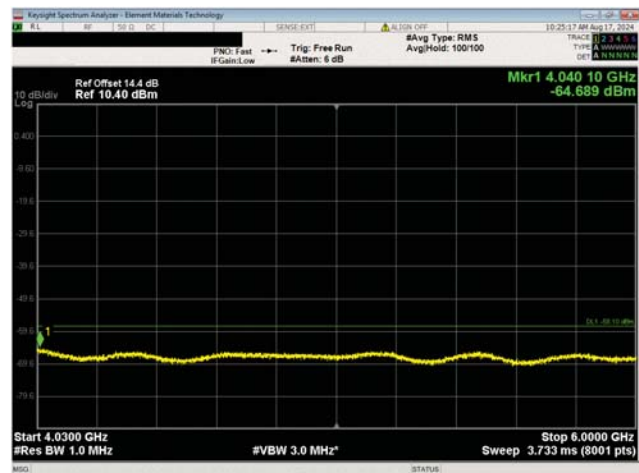
Port 1
QPSK Modulation
Test Case 1



Port 1
QPSK Modulation
Test Case 1

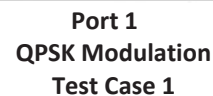
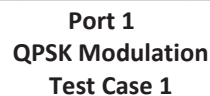
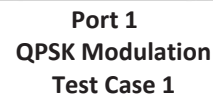
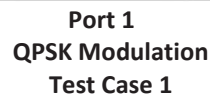


Port 1
QPSK Modulation
Test Case 1



Port 1
QPSK Modulation
Test Case 1

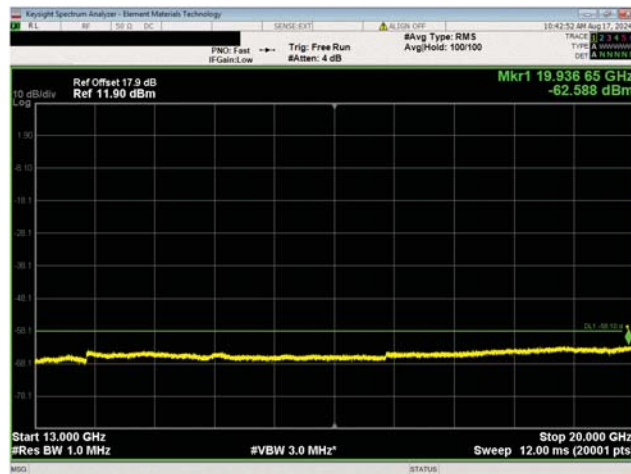
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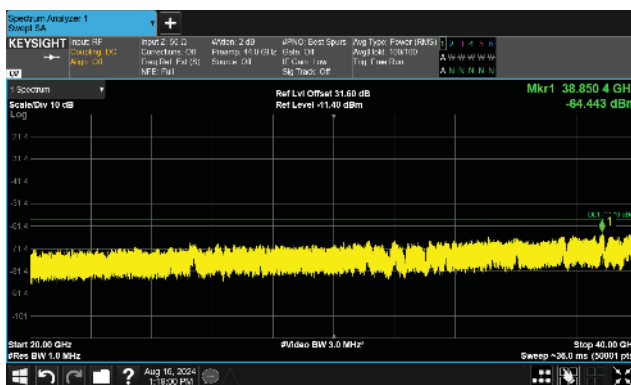
SPURIOUS CONDUCTED EMISSIONS - DUAL BAND



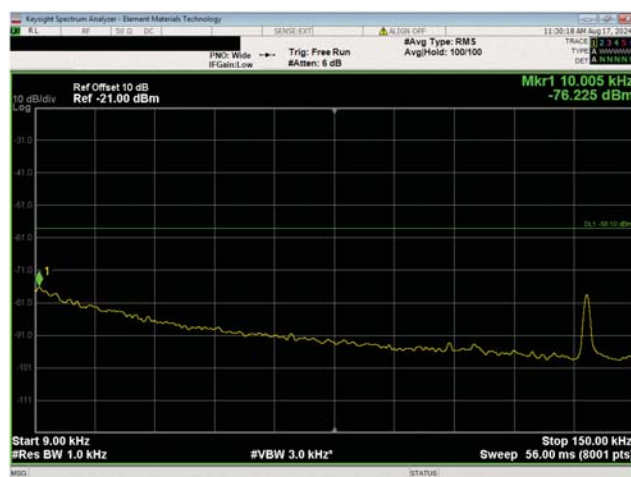
Port 1
QPSK Modulation
Test Case 1



Port 1
QPSK Modulation
Test Case 1



Port 1
QPSK Modulation
Test Case 1

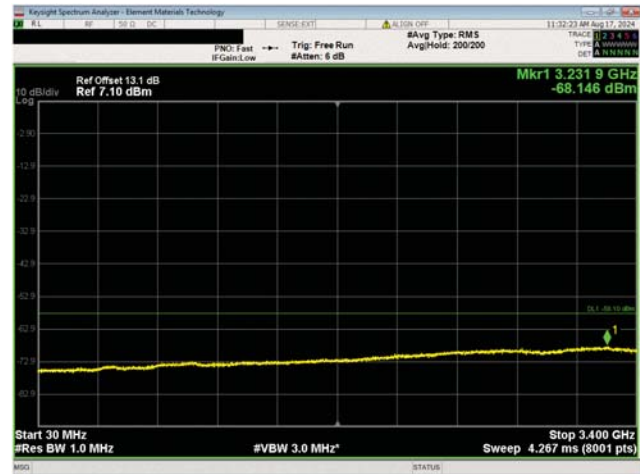


Port 1
QPSK Modulation
Test Case 2

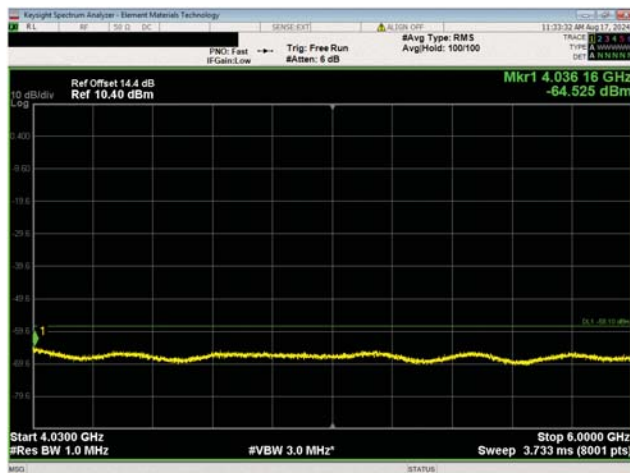
SPURIOUS CONDUCTED EMISSIONS - DUAL BAND



Port 1
QPSK Modulation
Test Case 2



Port 1
QPSK Modulation
Test Case 2

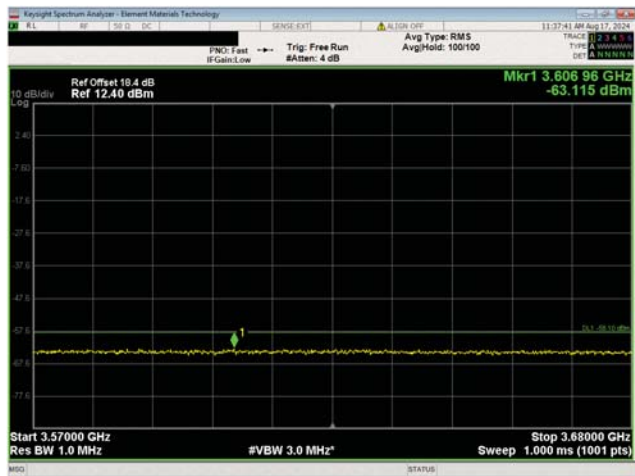


Port 1
QPSK Modulation
Test Case 2

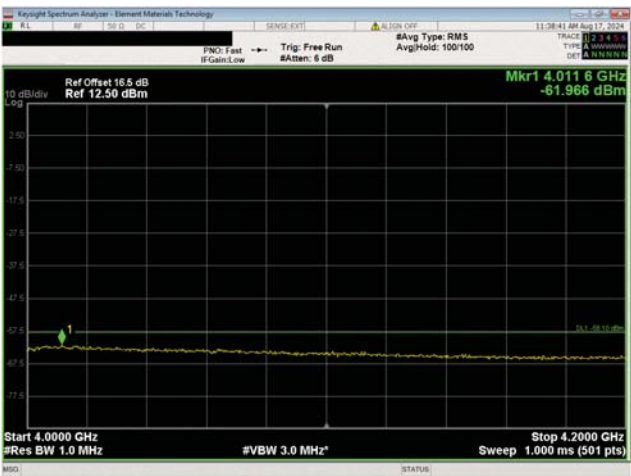


Port 1
QPSK Modulation
Test Case 2

SPURIOUS CONDUCTED EMISSIONS - DUAL BAND



Port 1
QPSK Modulation
Test Case 2



Port 1
QPSK Modulation
Test Case 2

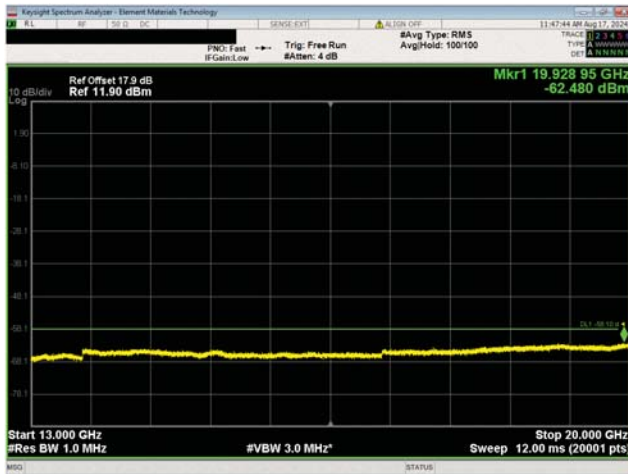


Port 1
QPSK Modulation
Test Case 2

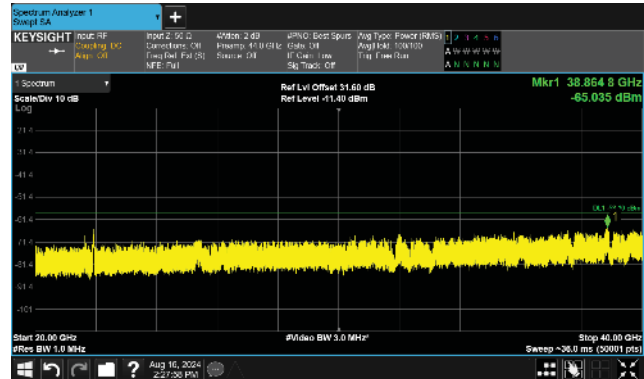


Port 1
QPSK Modulation
Test Case 2

SPURIOUS CONDUCTED EMISSIONS - DUAL BAND



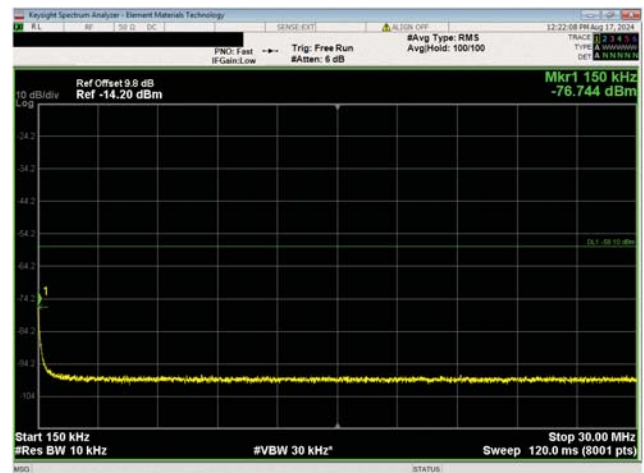
Port 1
QPSK Modulation
Test Case 2



Port 1
QPSK Modulation
Test Case 2

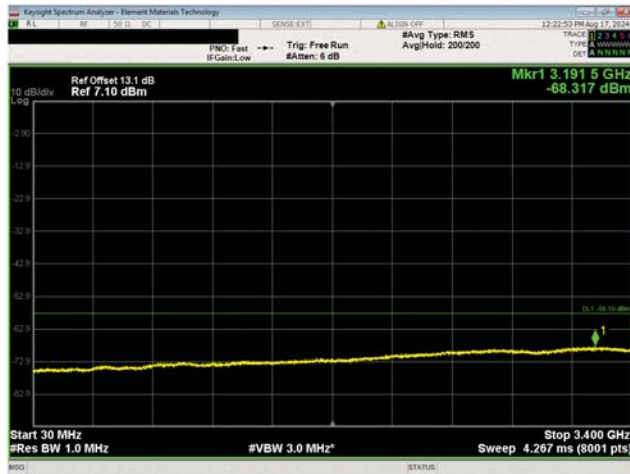


Port 1
QPSK Modulation
Test Case 3

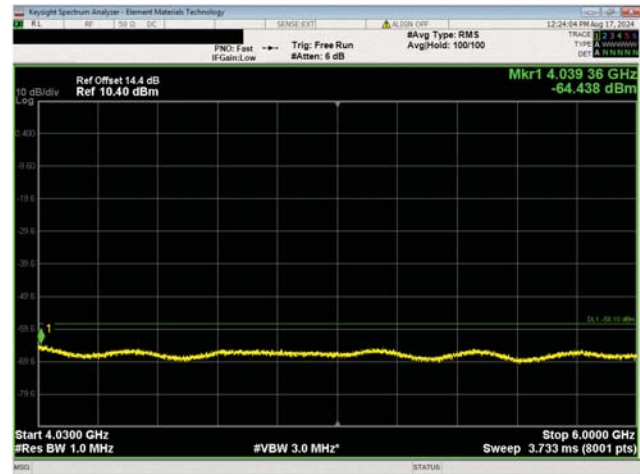


Port 1
QPSK Modulation
Test Case 3

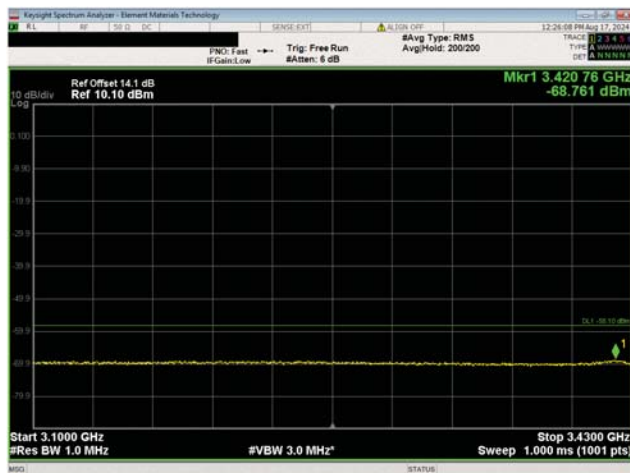
SPURIOUS CONDUCTED EMISSIONS - DUAL BAND



Port 1
QPSK Modulation
Test Case 3



Port 1
QPSK Modulation
Test Case 3



Port 1
QPSK Modulation
Test Case 3



Port 1
QPSK Modulation
Test Case 3

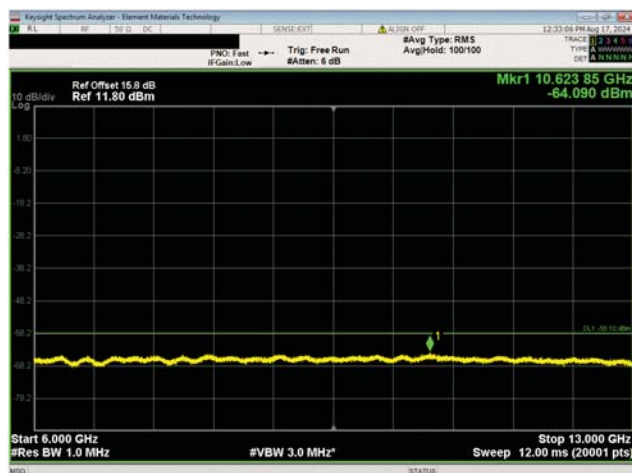
SPURIOUS CONDUCTED EMISSIONS - DUAL BAND



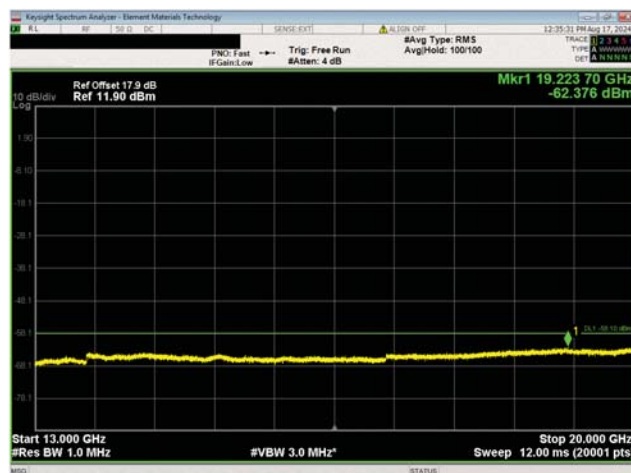
Port 1
QPSK Modulation
Test Case 3



Port 1
QPSK Modulation
Test Case 3

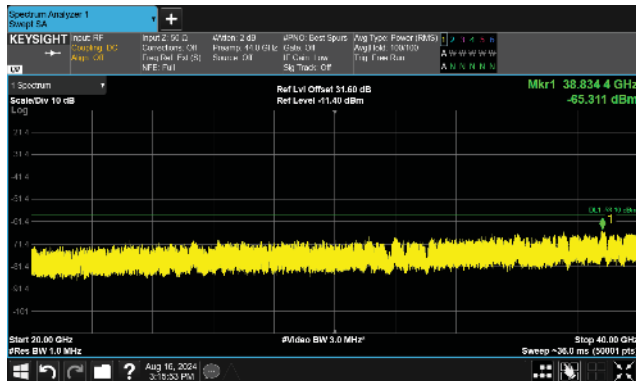


Port 1
QPSK Modulation
Test Case 3



Port 1
QPSK Modulation
Test Case 3

SPURIOUS CONDUCTED EMISSIONS - DUAL BAND



Port 1
QPSK Modulation
Test Case 3

SPURIOUS CONDUCTED EMISSIONS – MULTICARRIER, BAND 3.7G



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 antenna port spurious emissions were measured at the RF output terminal of the EUT through four different attenuation configurations which continues through to the RF input of the spectrum analyzer. Analyzer plots utilizing a resolution bandwidth called out by the client's test approach were made for each channel bandwidth from 9 kHz to 40 GHz. The conducted power of spurious emissions, up to the 10th harmonic of the transmit frequency, were investigated to ensure they were less than the limits also called out by the client's test plan (included elsewhere in this report).

RF conducted emissions testing was performed only on one port. The AVQQA antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown in output power testing) and antenna port 1 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i, and 6.4.

The measurement methods for FCC measurements are detailed in KDB971168 D01v03 section 6 and ANSI C63.26-2015. Measurements shall be performed at full power on the channel(s) and bandwidth(s) specified by the compliance lab. These measurements are for frequency band after the first 1.0 MHz bands immediately outside and adjacent to the frequency block.

Per FCC 2.1057(a)(1), the upper level of measurement is the 10th harmonic of the highest fundamental frequency. As such, the upper level of the measurement is approximately 40 GHz (3980 MHz * 10) for the AVQQA 3.7G Band.

Per section 27.53(l)(1), the power of any emission outside of the authorized operating frequency range cannot exceed -13 dBm/MHz.

The limit is adjusted to -31.1 dBm [-13 dBm -10 log (64)] per FCC KDB 662911D01 v02r01 and ANSI C63.26-2015 section 6.4 because the BTS may operate as a 64 port MIMO transmitter). The resolution bandwidth to be used for these measurements must be > 1MHz per FCC 27.53(l)(1).

3.7G Band multicarrier operations test cases using QPSK only:

- a. *3.7G Band Multicarrier Test Case 1:* 3.7G Band Multicarrier Test Case 1: Two contiguous NR20 carriers with minimum spacing between carrier frequencies at the lower band edge (3710.01 & 3730.02MHz). The smallest channel bandwidth is selected to maximize carrier power spectral density. The carriers are operated at maximum power (~1.56W/carrier) with a total radio power of 200 watts.
- b. *3.7G Band Multicarrier Test Case 2:* 3.7G Band Multicarrier Test Case 2: Two contiguous NR20 carriers with minimum spacing between carrier frequencies at the upper band edge (3949.98 & 3969.99 MHz). The smallest channel bandwidth is selected to maximize carrier power spectral density. The carriers are operated at maximum power (~1.56W/carrier) with a total radio power of 200 watts.
- c. *3.7G Band Multicarrier Test Case 3:* Two contiguous NR100 carriers with minimum spacing between carrier frequencies at the lower band edge (3750.00 & 3850.02MHz). The largest channel bandwidth is selected to maximize radio power. The carrier power for NR100 is ~2.65W/carrier. The total radio power is 340 watts.
- d. *3.7G Band Multicarrier Test Case 4:* Two contiguous NR100 carriers with minimum spacing between carrier frequencies at the upper band edge (3830.01 & 3930.00 MHz). The largest channel bandwidth is selected to maximize radio power. The carrier power for NR100 is ~2.65W/carrier. The total radio power is 340 watts.

SPURIOUS CONDUCTED EMISSIONS – MULTICARRIER, BAND 3.7G

- e. *3.7G Band Multicarrier Test Case 5:* Two non-contiguous NR20 carriers with maximum spacing between carrier frequencies at the lower band edge (3710.01 & 3889.995MHz). The smallest channel bandwidth is selected to maximize carrier power spectral density. The carriers are operated at maximum power (~1.56W/carrier) with a total radio power of 200 watts.
- f. *3.7G Band Multicarrier Test Case 6:* 3.7G Band Multicarrier Test Case 6: Two non-contiguous NR20 carriers with maximum spacing between carrier frequencies at the upper band edge (3789.99 & 3969.99MHz). The smallest channel bandwidth is selected to maximize carrier power spectral density. The carriers are operated at maximum power (~1.56W/carrier) with a total radio power of 200 watts.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFQ	2024-03-12	2025-03-12
Generator - Signal	Agilent	N5173B	TIW	2023-08-07	2026-08-07
Block - DC	Fairview Microwave	SD3239	ANE	2024-02-14	2025-02-14
Block - DC	Fairview Microwave	SD3379	AMM	2024-08-15	2025-08-15

SPURIOUS CONDUCTED EMISSIONS – MULTICARRIER, BAND 3.7G



EUT:	AVQQA Remote Radio Head	Work Order:	NOKI0075
Serial Number:	L1242403137	Date:	2024-08-21
Customer:	Nokia Solutions and Networks	Temperature:	23.3°C
Attendees:	David Le, John Rattanavong	Relative Humidity:	52.1%
Customer Project:	None	Bar. Pressure (PMSL):	1016 mbar
Tested By:	Jarrold Brenden	Job Site:	PT14
Power:	54VDC	Configuration:	NOKI0075-2 NOKI0075-4 NOKI0075-5 NOKI0075-6

TEST SPECIFICATIONS

Specification:	Method:
FCC 27:2024	ANSI C63.26:2015

COMMENTS

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

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass

Tested By

TEST RESULTS

	Frequency Range	Frequency (MHz)	Value (dBm)	Limit (dBm)	Result
Port 1					
QPSK Modulation					
Test Case 1					
NR20, Low Channel, 3710.01 MHz and NR20, Low Channel 3730.02 MHz	9 kHz to 150 kHz	0.139	-72.808	-31.1	Pass
	150 kHz to 30 MHz	0.15	-74.831	-31.1	Pass
	30 MHz to 3400 MHz	3188.5	-35.895	-31.1	Pass
	3400 MHz to 6000 MHz	4014.25	-36.446	-31.1	Pass
	6 GHz to 13 GHz	10631.55	-64.465	-31.1	Pass
	13 GHz to 40 GHz	38414.2	-39.541	-31.1	Pass
Test Case 2					
NR20, High Channel 3949.98 MHz and NR20, High Channel 3969.99 MHz	9 kHz to 150 kHz	0.009	-72.805	-31.1	Pass
	150 kHz to 30 MHz	0.15	-74.786	-31.1	Pass
	30 MHz to 3400 MHz	3213	-35.426	-31.1	Pass
	3400 MHz to 6000 MHz	4040.25	-36.568	-31.1	Pass
	6 GHz to 13 GHz	8064.65	-64.576	-31.1	Pass
	13 GHz to 40 GHz	38413.3	-39.625	-31.1	Pass
Test Case 3					
NR100, Low Channel 3750.00 MHz and NR100, Low Channel 3850.02 MHz	9 kHz to 150 kHz	0.009	-72.84	-31.1	Pass
	150 kHz to 30 MHz	0.15	-73.873	-31.1	Pass
	30 MHz to 3400 MHz	3243.3	-35.748	-31.1	Pass
	3400 MHz to 6000 MHz	4038.95	-36.627	-31.1	Pass
	6 GHz to 13 GHz	10889.15	-64.639	-31.1	Pass
	13 GHz to 40 GHz	38439.85	-39.519	-31.1	Pass

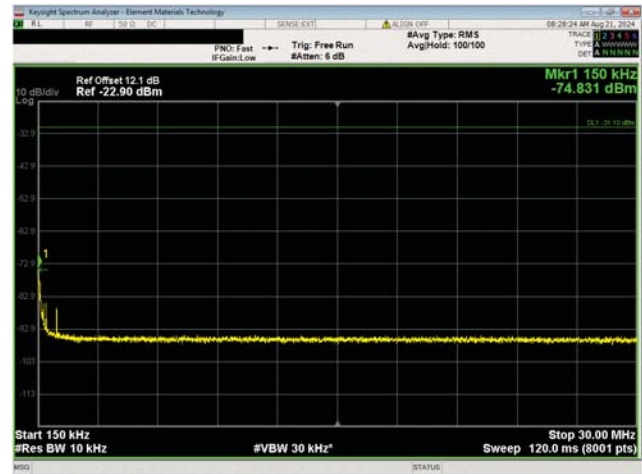
SPURIOUS CONDUCTED EMISSIONS – MULTICARRIER, BAND 3.7G

	Frequency Range	Frequency (MHz)	Value (dBm)	Limit (dBm)	Result
Test Case 4					
NR100, High Channel 3830.02 MHz and NR100, High Channel 3930.00 MHz	9 kHz to 150 kHz	0.139	-72.425	-31.1	Pass
	150 kHz to 30 MHz	0.15	-74.385	-31.1	Pass
	30 MHz to 3400 MHz	3170	-35.673	-31.1	Pass
	3400 MHz to 6000 MHz	4034.725	-36.533	-31.1	Pass
	6 GHz to 13 GHz	10636.45	-64.413	-31.1	Pass
	13 GHz to 40 GHz	38389.45	-39.375	-31.1	Pass
Test Case 5					
NR20, Low Channel 3710.01 MHz and NR20, Low Channel, 3889.995 MHz	9 kHz to 150 kHz	0.01	-72.872	-31.1	Pass
	150 kHz to 30 MHz	0.15	-75.106	-31.1	Pass
	30 MHz to 3400 MHz	3219.3	-35.454	-31.1	Pass
	3400 MHz to 6000 MHz	4027.575	-36.483	-31.1	Pass
	6 GHz to 13 GHz	10626.3	-64.299	-31.1	Pass
	13 GHz to 40 GHz	38408.8	-39.34	-31.1	Pass
Test Case 6					
NR20, High Channel 3789.99 MHz and NR20, High Channel 3969.99 MHz	9 kHz to 150 kHz	0.139	-71.042	-31.1	Pass
	150 kHz to 30 MHz	0.15	-74.276	-31.1	Pass
	30 MHz to 3400 MHz	3067.2	-35.508	-31.1	Pass
	3400 MHz to 6000 MHz	4041.225	-36.69	-31.1	Pass
	6 GHz to 13 GHz	10638.55	-64.157	-31.1	Pass
	13 GHz to 40 GHz	38411.5	-39.361	-31.1	Pass

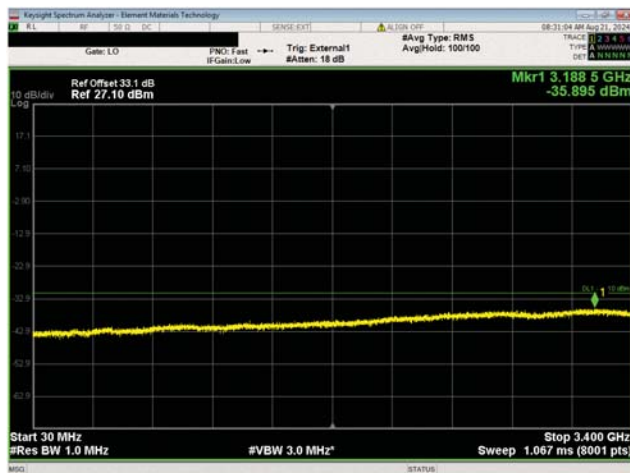
SPURIOUS CONDUCTED EMISSIONS – MULTICARRIER, BAND 3.7G



Port 1
QPSK Modulation
Test Case 1



Port 1
QPSK Modulation
Test Case 1

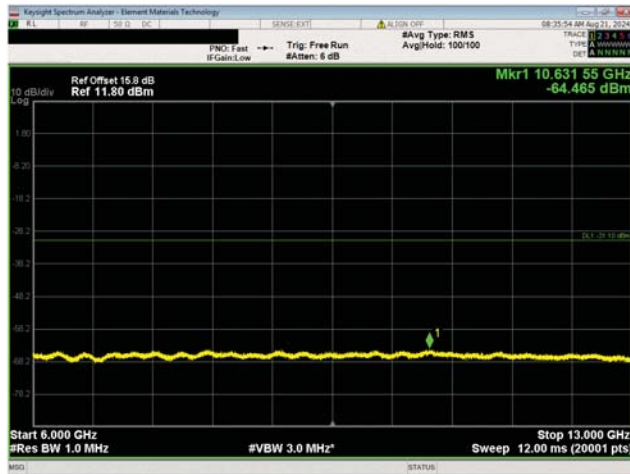


Port 1
QPSK Modulation
Test Case 1

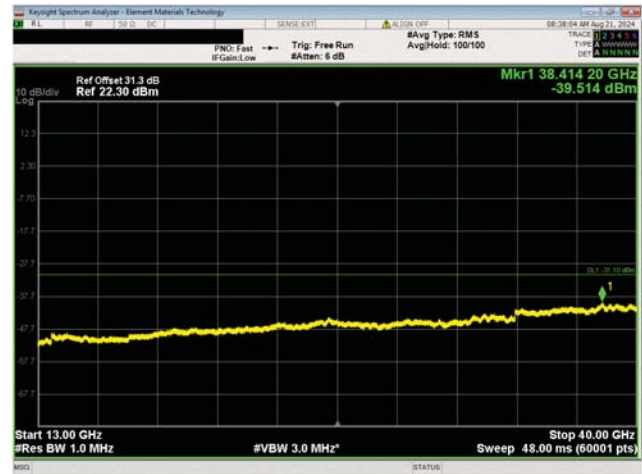


Port 1
QPSK Modulation
Test Case 1

SPURIOUS CONDUCTED EMISSIONS – MULTICARRIER, BAND 3.7G



Port 1
QPSK Modulation
Test Case 1



Port 1
QPSK Modulation
Test Case 1

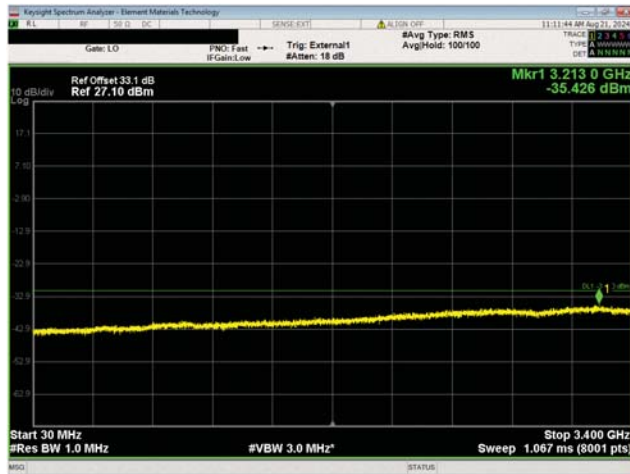


Port 1
QPSK Modulation
Test Case 2



Port 1
QPSK Modulation
Test Case 2

SPURIOUS CONDUCTED EMISSIONS – MULTICARRIER, BAND 3.7G



Port 1
QPSK Modulation
Test Case 2



Port 1
QPSK Modulation
Test Case 2



Port 1
QPSK Modulation
Test Case 2



Port 1
QPSK Modulation
Test Case 2

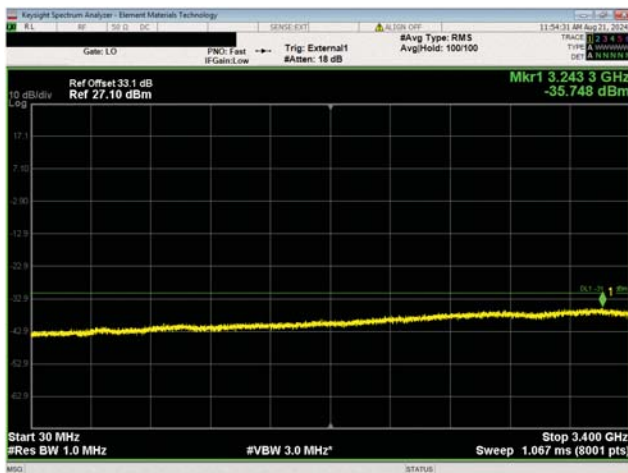
SPURIOUS CONDUCTED EMISSIONS – MULTICARRIER, BAND 3.7G



Port 1
QPSK Modulation
Test Case 3



Port 1
QPSK Modulation
Test Case 3

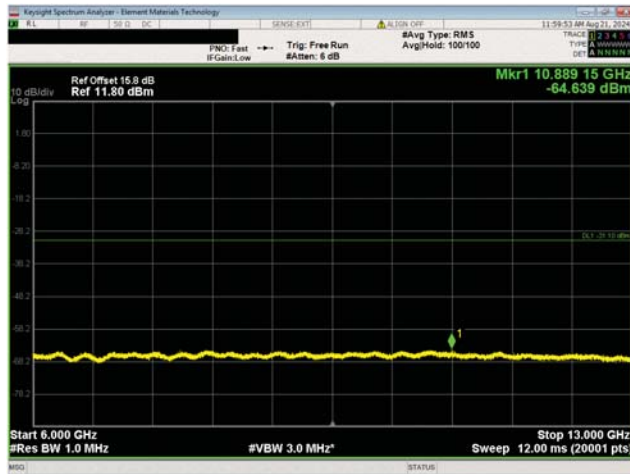


Port 1
QPSK Modulation
Test Case 3

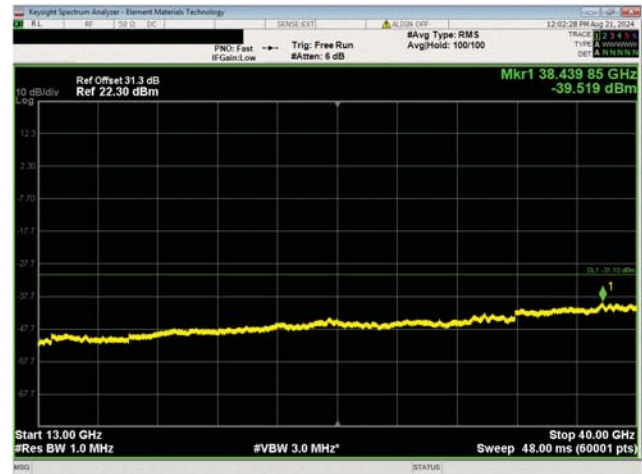


Port 1
QPSK Modulation
Test Case 3

SPURIOUS CONDUCTED EMISSIONS – MULTICARRIER, BAND 3.7G



Port 1
QPSK Modulation
Test Case 3



Port 1
QPSK Modulation
Test Case 3

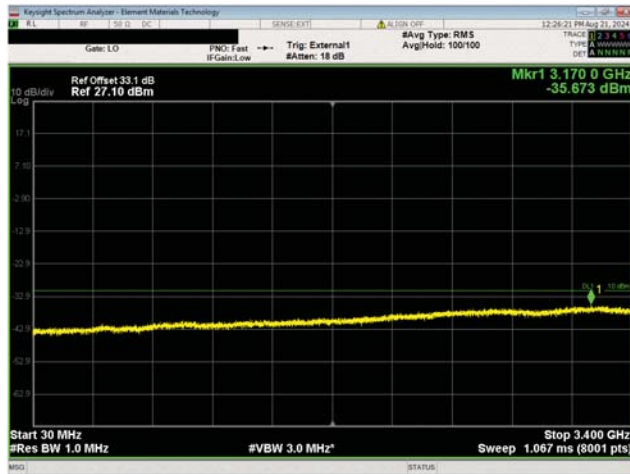


Port 1
QPSK Modulation
Test Case 4



Port 1
QPSK Modulation
Test Case 4

SPURIOUS CONDUCTED EMISSIONS – MULTICARRIER, BAND 3.7G



Port 1
QPSK Modulation
Test Case 4



Port 1
QPSK Modulation
Test Case 4



Port 1
QPSK Modulation
Test Case 4



Port 1
QPSK Modulation
Test Case 4

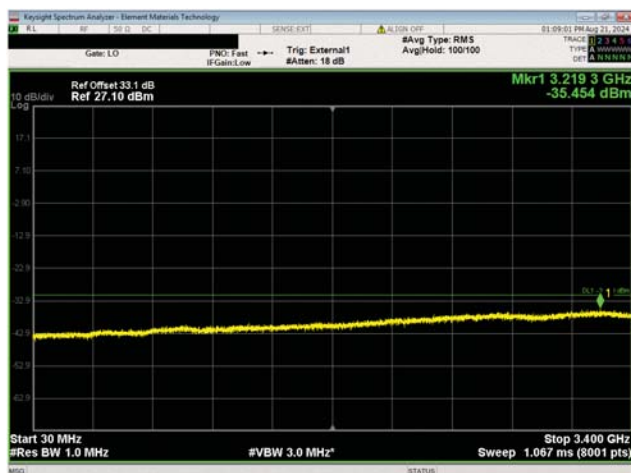
SPURIOUS CONDUCTED EMISSIONS – MULTICARRIER, BAND 3.7G



Port 1
QPSK Modulation
Test Case 5



Port 1
QPSK Modulation
Test Case 5

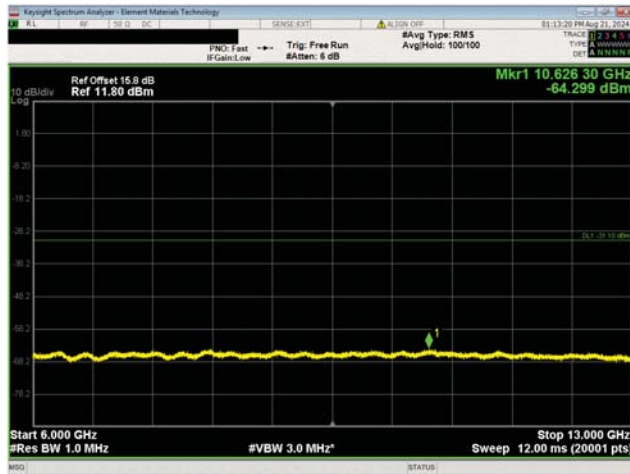


Port 1
QPSK Modulation
Test Case 5

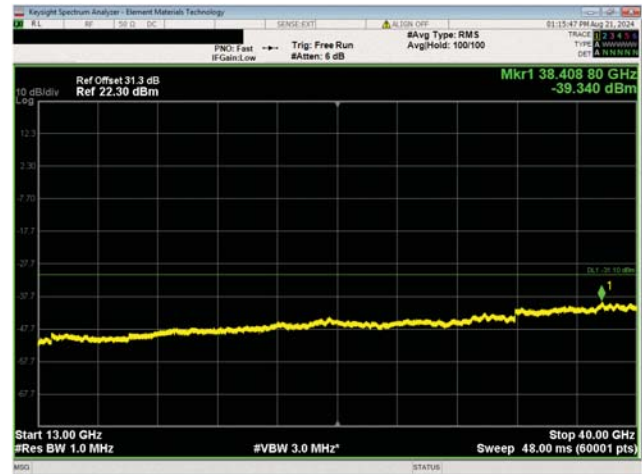


Port 1
QPSK Modulation
Test Case 5

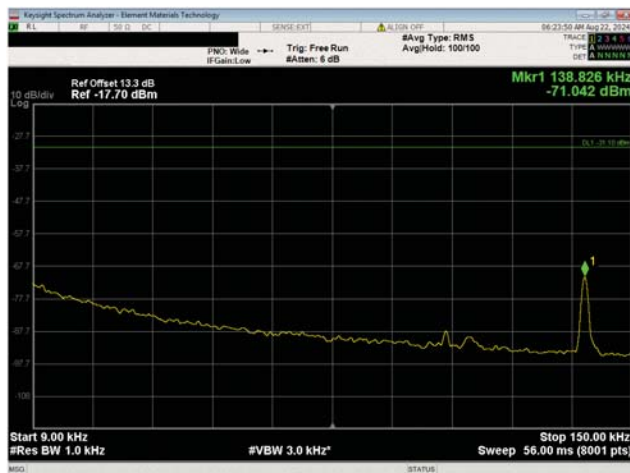
SPURIOUS CONDUCTED EMISSIONS – MULTICARRIER, BAND 3.7G



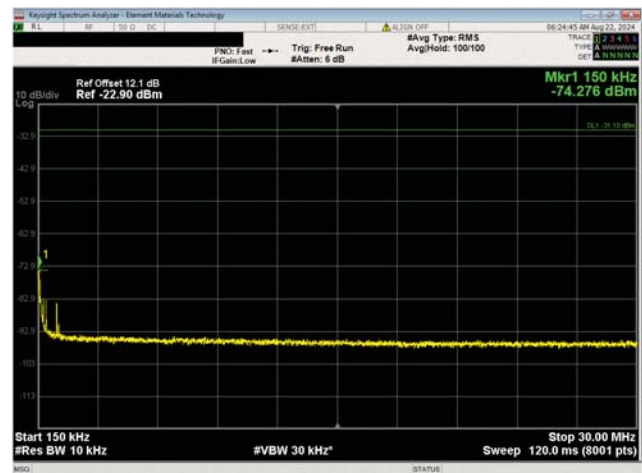
Port 1
QPSK Modulation
Test Case 5



Port 1
QPSK Modulation
Test Case 5

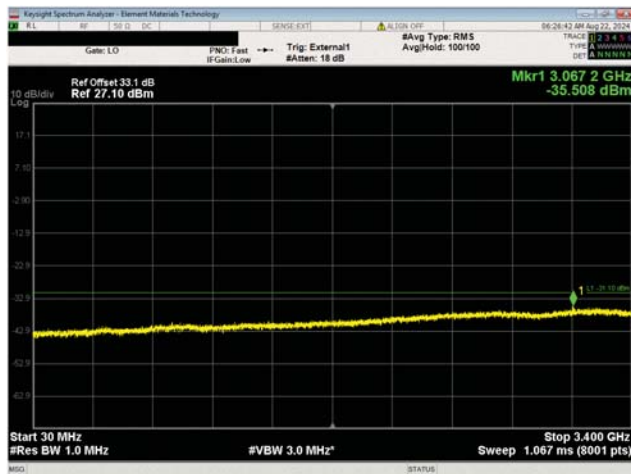


Port 1
QPSK Modulation
Test Case 6

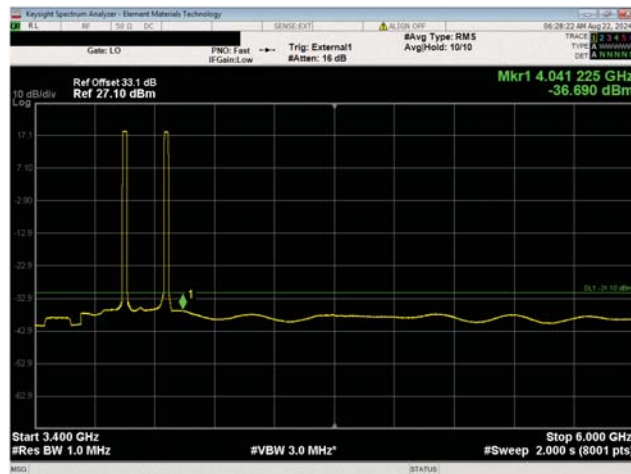


Port 1
QPSK Modulation
Test Case 6

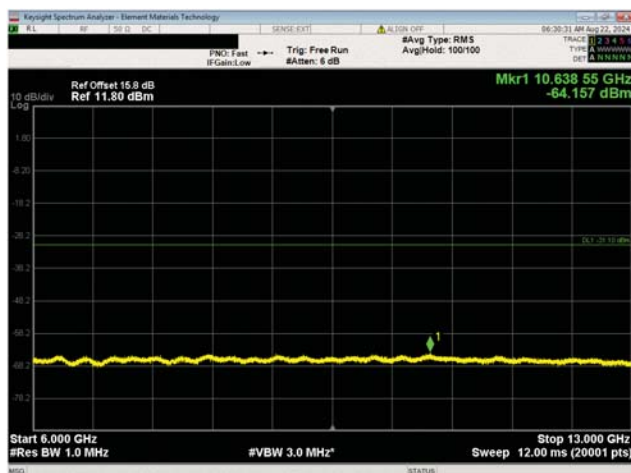
SPURIOUS CONDUCTED EMISSIONS – MULTICARRIER, BAND 3.7G



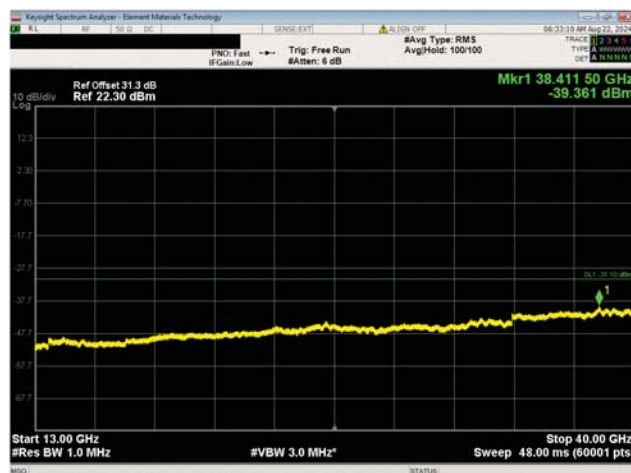
Port 1
QPSK Modulation
Test Case 6



Port 1
QPSK Modulation
Test Case 6



Port 1
QPSK Modulation
Test Case 6



Port 1
QPSK Modulation
Test Case 6

SPURIOUS RADIATED EMISSIONS

TEST DESCRIPTION

The EUT was configured for the required transmit frequencies and the modes as showed in the data sheets.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Measurements at the edges of the allowable band may be presented in an alternative method as provided for in the ANSI C63.10 Marker-Delta method. This method involves performing an in-band fundamental measurement followed by a screen capture of the fundamental and out-of-band emission using reduced measurement instrumentation bandwidths. The amplitude delta measured on this screen capture is applied to the fundamental emission value to show the out-of-band emission level as applied to the limit.

SPURIOUS RADIATED EMISSIONS

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	2024-04-12	2025-04-12
Antenna - Double Ridge	ETS Lindgren	3115	AJL	2022-10-21	2024-10-21
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAJ	2024-03-19	2025-03-19
Antenna - Standard Gain	ETS Lindgren	3160-07	AJF	NCR	NCR
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	PAK	2023-08-29	2024-08-29
Antenna - Standard Gain	ETS Lindgren	3160-08	AJG	NCR	NCR
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	PAL	2023-08-29	2024-08-29
Antenna - Double Ridge	A.H. Systems, Inc.	SAS-574	AXW	2022-09-09	2024-09-09
Amplifier - Pre-Amplifier	Miteq	JSDWK42-18004000-60-5P	PAM	2023-08-30	2024-08-30
Cable	Element	None	TXM	2024-07-09	2025-07-09
Cable	Element	None	TXO	2024-07-09	2025-07-09
Cable	Northwest EMC	18-40GHz	TXE	2023-08-30	2024-08-30
Antenna - Biconilog	ETS Lindgren	3143B	AYF	2023-05-03	2025-05-03
Amplifier - Pre-Amplifier	Fairview Microwave	FMAM63001	PAS	2024-03-19	2025-03-19
Filter - Low Pass	Micro-Tronics	LPM50004	HHV	2024-07-23	2025-07-23

FREQUENCY RANGE INVESTIGATED

30 MHz TO 40 GHz

POWER INVESTIGATED

54VDC

CONFIGURATIONS INVESTIGATED

NOKI0075-8

MODES INVESTIGATED

Test Configuration 1 - 3.45G Band (Low Channel 3470.01 MHz, NR40, QPSK) and 3.7G Band (Mid Channel 3840.00 MHz, NR20, QPSK), Single Mode SFP
Test Configuration 2 - 3.45G Band (High Channel 3529.98 MHz, NR40, QPSK) and 3.7G Band (Mid Channel 3840.00 MHz, NR20, QPSK), Multi Mode SFP
Test Configuration 3 - 3.7G Band (Low Channel 3750.00 MHz, NR100, QPSK), Multi Mode SFP
Test Configuration 4 - 3.7G Band (High Channel 3930.00 MHz, NR100, QPSK), Multi Mode SFP
Test Configuration 5 - 3.7G Band (Mid Channel 3849.99 MHz, NR100, QPSK), Multi Mode SFP
Test Configuration 6 - 3.45G Band (Low Channel 3460.02 MHz, NR20, QPSK) and 3.7G Band (Low Channel 3710.01 MHz, NR20, QPSK), Multi Mode SFP
Test Configuration 7 - 3.45G Band (Mid Channel 3500.01 MHz, NR20, QPSK) and 3.7G Band (Mid Channel 3840.00 MHz, NR20, QPSK), Multi Mode SFP
Test Configuration 8 - 3.45G Band (High Channel 3540.00 MHz, NR20, QPSK) and 3.7G Band (High Channel 3969.99 MHz, NR20, QPSK), Multi Mode SFP

SPURIOUS RADIATED EMISSIONS

EUT:	AVQQA Remote Radio Head	Work Order:	NOKI0075
Serial Number:	L1241906547	Date:	2024-07-30
Customer:	Nokia Solutions and Networks	Temperature:	22.1°C
Attendees:	Mitch Hill, John Rattanaovong	Relative Humidity:	51.1%
Customer Project:	None	Bar. Pressure (PMSL):	1012 mb
Tested By:	Jarrold Brenden	Job Site:	PT01
Power:	54VDC	Configuration:	NOKI0075-8

TEST SPECIFICATIONS

Specification:	Method:
FCC 27.53:2024	ANSI C63.26:2015

TEST PARAMETERS

Run #:	24	Test Distance (m):	3	Ant. Height(s) (m):	1 to 4(m)
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COMMENTS

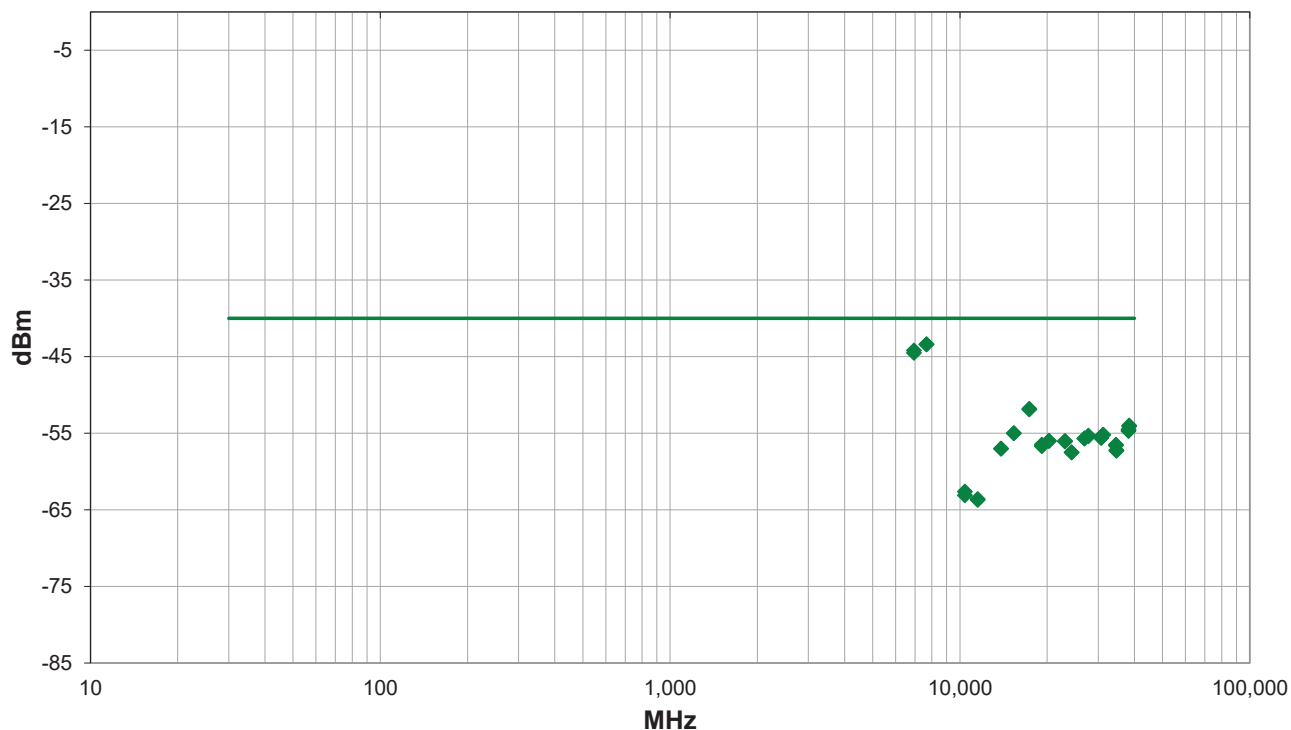
Pole mounted radio. TAB ports routed to 50 ohm terminators. The average emissions were duty cycle corrected up to 100% per the guidance provided in ANSI C63.26:2015 section 5.7.3 (d)(3): $10 \cdot \log(1/\text{Duty Cycle (in dec)})$. The measured duty cycle was seen to be 74% and applied as $10 \cdot \log(1/0.74) = 1.3$ dB upward correction.

EUT OPERATING MODES

Test Configuration 1 - 3.45G Band (Low Channel 3470.01 MHz, NR40, QPSK) and 3.7G Band (Mid Channel 3840.00 MHz, NR20, QPSK), Single Mode SFP

DEVIATIONS FROM TEST STANDARD

None



Run #: 24

PK AV QP

SPURIOUS RADIATED EMISSIONS

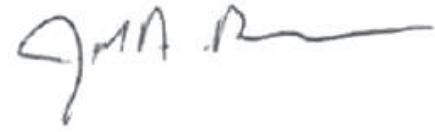
RESULTS - Run #24

Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
7680.000	1.5	181.0	Horz	AV	45.4E-9	-43.4	-40.0	-3.4
7680.000	1.5	305.0	Vert	AV	45.4E-9	-43.4	-40.0	-3.4
6940.020	3.7	97.0	Horz	AV	37.8E-9	-44.2	-40.0	-4.2
6940.020	1.5	48.0	Vert	AV	35.2E-9	-44.5	-40.0	-4.5
17350.050	3.1	346.0	Horz	AV	6.6E-9	-51.8	-40.0	-11.8
17350.050	1.5	233.0	Vert	AV	6.4E-9	-51.9	-40.0	-11.9
38400.000	1.5	169.0	Vert	AV	4.0E-9	-54.0	-40.0	-14.0
38400.000	1.5	321.0	Horz	AV	3.9E-9	-54.1	-40.0	-14.1
38170.110	1.5	178.0	Vert	AV	3.5E-9	-54.5	-40.0	-14.5
38170.110	1.5	226.0	Horz	AV	3.4E-9	-54.7	-40.0	-14.7
15360.000	1.0	157.0	Horz	AV	3.1E-9	-55.0	-40.0	-15.0
15360.000	1.5	82.0	Vert	AV	3.1E-9	-55.0	-40.0	-15.0
31230.090	1.5	217.0	Horz	AV	3.0E-9	-55.2	-40.0	-15.2
31230.090	1.5	145.0	Vert	AV	3.0E-9	-55.2	-40.0	-15.2
27760.080	1.5	132.0	Horz	AV	2.9E-9	-55.3	-40.0	-15.3
27760.080	1.5	27.0	Vert	AV	2.9E-9	-55.4	-40.0	-15.4
30720.000	1.5	41.0	Horz	AV	2.7E-9	-55.6	-40.0	-15.6
30720.000	1.5	75.0	Vert	AV	2.7E-9	-55.6	-40.0	-15.6
26880.000	1.5	99.0	Horz	AV	2.7E-9	-55.7	-40.0	-15.7
26880.000	1.5	90.0	Vert	AV	2.7E-9	-55.7	-40.0	-15.7
20280.060	1.5	282.0	Horz	AV	2.5E-9	-56.0	-40.0	-16.0
20280.060	1.5	302.0	Vert	AV	2.5E-9	-56.0	-40.0	-16.0
23040.000	1.5	47.0	Horz	AV	2.5E-9	-56.0	-40.0	-16.0
23040.000	1.5	104.0	Vert	AV	2.4E-9	-56.1	-40.0	-16.1
19200.000	1.5	230.0	Horz	AV	2.2E-9	-56.5	-40.0	-16.5
34560.000	1.5	3.0	Vert	AV	2.2E-9	-56.5	-40.0	-16.5
34560.000	1.5	222.0	Horz	AV	2.2E-9	-56.6	-40.0	-16.6
19200.000	1.5	148.0	Vert	AV	2.1E-9	-56.7	-40.0	-16.7
13880.040	1.6	76.0	Horz	AV	2.0E-9	-57.0	-40.0	-17.0
13880.040	1.5	52.0	Vert	AV	2.0E-9	-57.0	-40.0	-17.0
34700.100	1.5	347.0	Vert	AV	1.9E-9	-57.2	-40.0	-17.2
34700.100	1.5	201.0	Horz	AV	1.8E-9	-57.3	-40.0	-17.3
24290.070	1.5	342.0	Horz	AV	1.8E-9	-57.5	-40.0	-17.5
24290.070	1.5	105.0	Vert	AV	1.8E-9	-57.5	-40.0	-17.5
10410.000	1.4	30.0	Vert	AV	545.9E-12	-62.6	-40.0	-22.6
10410.000	1.5	44.0	Horz	AV	486.5E-12	-63.1	-40.0	-23.1
11520.000	1.5	39.0	Horz	AV	433.6E-12	-63.6	-40.0	-23.6
11520.000	1.5	247.0	Vert	AV	423.8E-12	-63.7	-40.0	-23.7

SPURIOUS RADIATED EMISSIONS

CONCLUSION

Pass



Tested By

SPURIOUS RADIATED EMISSIONS

EUT:	AVQQA Remote Radio Head	Work Order:	NOKI0075
Serial Number:	L1241906547	Date:	2024-07-29
Customer:	Nokia Solutions and Networks	Temperature:	22.1°C
Attendees:	Mitch Hill, John Rattanaovong	Relative Humidity:	51.3%
Customer Project:	None	Bar. Pressure (PMSL):	1016 mb
Tested By:	Jarrold Brenden	Job Site:	PT01
Power:	54VDC	Configuration:	NOKI0075-8

TEST SPECIFICATIONS

Specification:	Method:
FCC 27.53:2024	ANSI C63.26:2015

TEST PARAMETERS

Run #:	19	Test Distance (m):	3	Ant. Height(s) (m):	1 to 4(m)
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COMMENTS

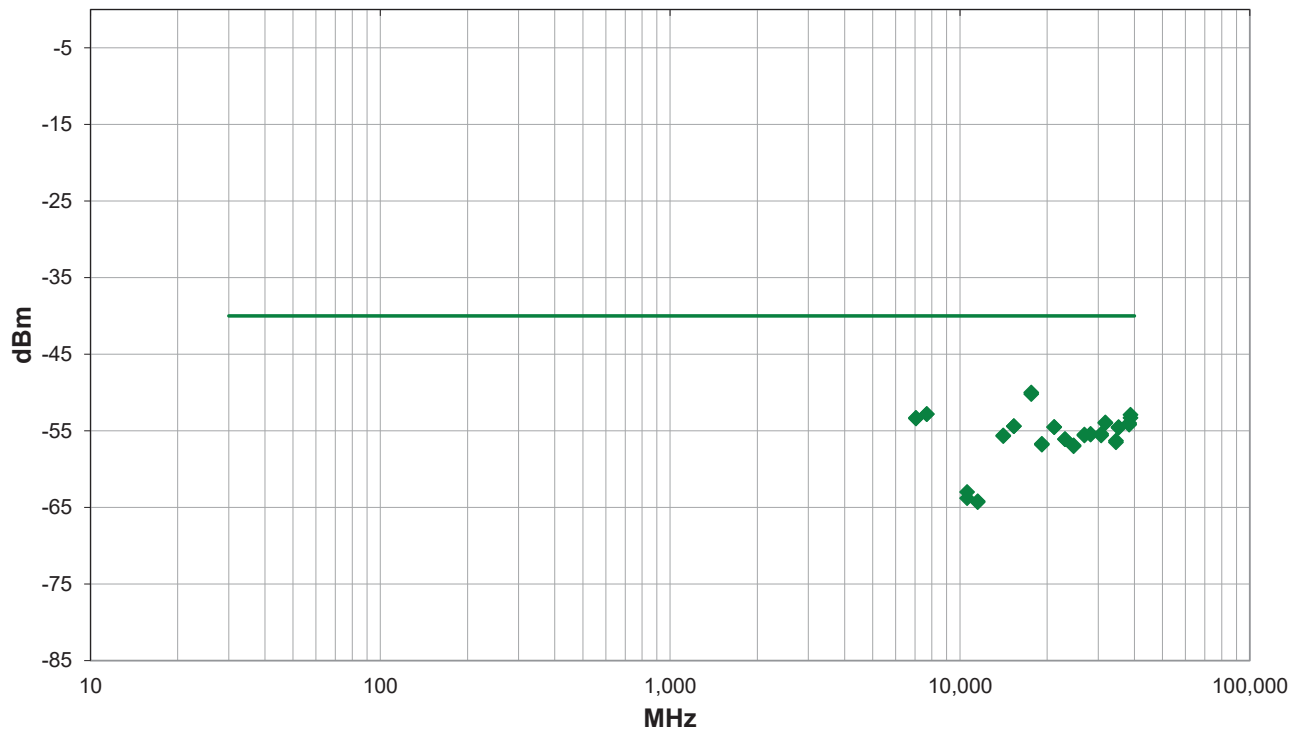
Pole Mounted Radio. TAB ports routed to 50 ohm terminators. The average emissions were duty cycle corrected up to 100% per the guidance provided in ANSI C63.26:2015 section 5.7.3 (d)(3): $10 \cdot \log(1/\text{Duty Cycle(in dec)})$. The measured duty cycle was seen to be 74% and applied as $10 \cdot \log(1/0.74) = 1.3 \text{ dB}$ upward correction.

EUT OPERATING MODES

Test Configuration 2 - 3.45G Band (High Channel 3529.98 MHz, NR40, QPSK) and 3.7G Band (Mid Channel 3840.00 MHz, NR20, QPSK), Multi Mode SFP

DEVIATIONS FROM TEST STANDARD

None



Run #: 19

■ PK ◆ AV ● QP

SPURIOUS RADIATED EMISSIONS

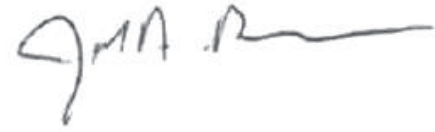
RESULTS - Run #19

Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts/MHz)	EIRP (dBm/MHz)	Spec. Limit (dBm/MHz)	Compared to Spec. (dB)
17648.410	1.5	1.0	Vert	AV	9.9E-9	-50.0	-40.0	-10.0
17649.310	3.3	260.0	Horz	AV	9.5E-9	-50.2	-40.0	-10.2
7681.160	1.5	298.0	Horz	AV	5.2E-9	-52.8	-40.0	-12.8
7681.040	2.8	333.0	Vert	AV	5.2E-9	-52.8	-40.0	-12.8
38829.780	1.5	0.0	Vert	AV	5.1E-9	-52.9	-40.0	-12.9
7060.840	1.5	360.0	Vert	AV	4.6E-9	-53.3	-40.0	-13.3
38829.780	1.5	228.0	Horz	AV	4.6E-9	-53.3	-40.0	-13.3
7060.300	2.3	236.0	Horz	AV	4.5E-9	-53.4	-40.0	-13.4
31769.820	1.5	162.0	Vert	AV	4.0E-9	-53.9	-40.0	-13.9
31769.820	1.5	121.0	Horz	AV	4.0E-9	-54.0	-40.0	-14.0
38400.000	1.5	77.0	Vert	AV	4.0E-9	-54.0	-40.0	-14.0
38400.000	1.5	25.0	Horz	AV	3.8E-9	-54.2	-40.0	-14.2
15358.740	1.5	325.0	Horz	AV	3.6E-9	-54.4	-40.0	-14.4
15358.630	1.5	36.0	Vert	AV	3.6E-9	-54.4	-40.0	-14.4
21179.880	1.5	259.0	Horz	AV	3.5E-9	-54.5	-40.0	-14.5
21179.880	1.5	95.0	Vert	AV	3.5E-9	-54.5	-40.0	-14.5
35299.800	1.5	198.0	Vert	AV	3.5E-9	-54.5	-40.0	-14.5
35299.800	1.5	262.0	Horz	AV	3.4E-9	-54.6	-40.0	-14.6
28239.840	1.5	17.0	Horz	AV	2.9E-9	-55.4	-40.0	-15.4
30720.000	1.5	166.0	Vert	AV	2.9E-9	-55.4	-40.0	-15.4
28239.840	1.5	133.0	Vert	AV	2.8E-9	-55.5	-40.0	-15.5
26880.000	1.5	48.0	Vert	AV	2.8E-9	-55.5	-40.0	-15.5
14118.430	1.5	84.0	Horz	AV	2.7E-9	-55.6	-40.0	-15.6
26880.000	1.5	133.0	Horz	AV	2.7E-9	-55.6	-40.0	-15.6
30720.000	1.5	244.0	Horz	AV	2.7E-9	-55.6	-40.0	-15.6
14118.470	4.0	0.0	Vert	AV	2.7E-9	-55.7	-40.0	-15.7
23040.000	1.5	209.0	Horz	AV	2.4E-9	-56.1	-40.0	-16.1
23040.000	1.5	249.0	Vert	AV	2.4E-9	-56.1	-40.0	-16.1
34560.000	1.5	343.0	Vert	AV	2.3E-9	-56.3	-40.0	-16.3
34560.000	1.5	0.0	Horz	AV	2.2E-9	-56.5	-40.0	-16.5
19200.000	1.5	27.0	Vert	AV	2.1E-9	-56.7	-40.0	-16.7
19200.000	1.5	160.0	Horz	AV	2.1E-9	-56.8	-40.0	-16.8
24709.860	1.5	228.0	Vert	AV	2.0E-9	-56.9	-40.0	-16.9
24709.860	1.5	179.0	Horz	AV	2.0E-9	-57.0	-40.0	-17.0
10588.630	1.5	331.0	Vert	AV	497.9E-12	-63.0	-40.0	-23.0
10588.470	1.5	203.0	Horz	AV	414.1E-12	-63.8	-40.0	-23.8
11518.540	3.1	123.0	Horz	AV	377.7E-12	-64.2	-40.0	-24.2
11518.620	3.8	50.0	Vert	AV	369.1E-12	-64.3	-40.0	-24.3

SPURIOUS RADIATED EMISSIONS

CONCLUSION

Pass



Tested By

SPURIOUS RADIATED EMISSIONS

EUT:	AVQQA Remote Radio Head	Work Order:	NOKI0075
Serial Number:	L1241906547	Date:	2024-07-29
Customer:	Nokia Solutions and Networks	Temperature:	22.1°C
Attendees:	Mitch Hill, John Rattanaovong	Relative Humidity:	53.2%
Customer Project:	None	Bar. Pressure (PMSL):	1019 mb
Tested By:	Jarrold Brenden	Job Site:	PT01
Power:	54VDC	Configuration:	NOKI0075-8

TEST SPECIFICATIONS

Specification:	Method:
FCC 27.53:2024	ANSI C63.26:2015

TEST PARAMETERS

Run #:	22	Test Distance (m):	3	Ant. Height(s) (m):	1 to 4(m)
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COMMENTS

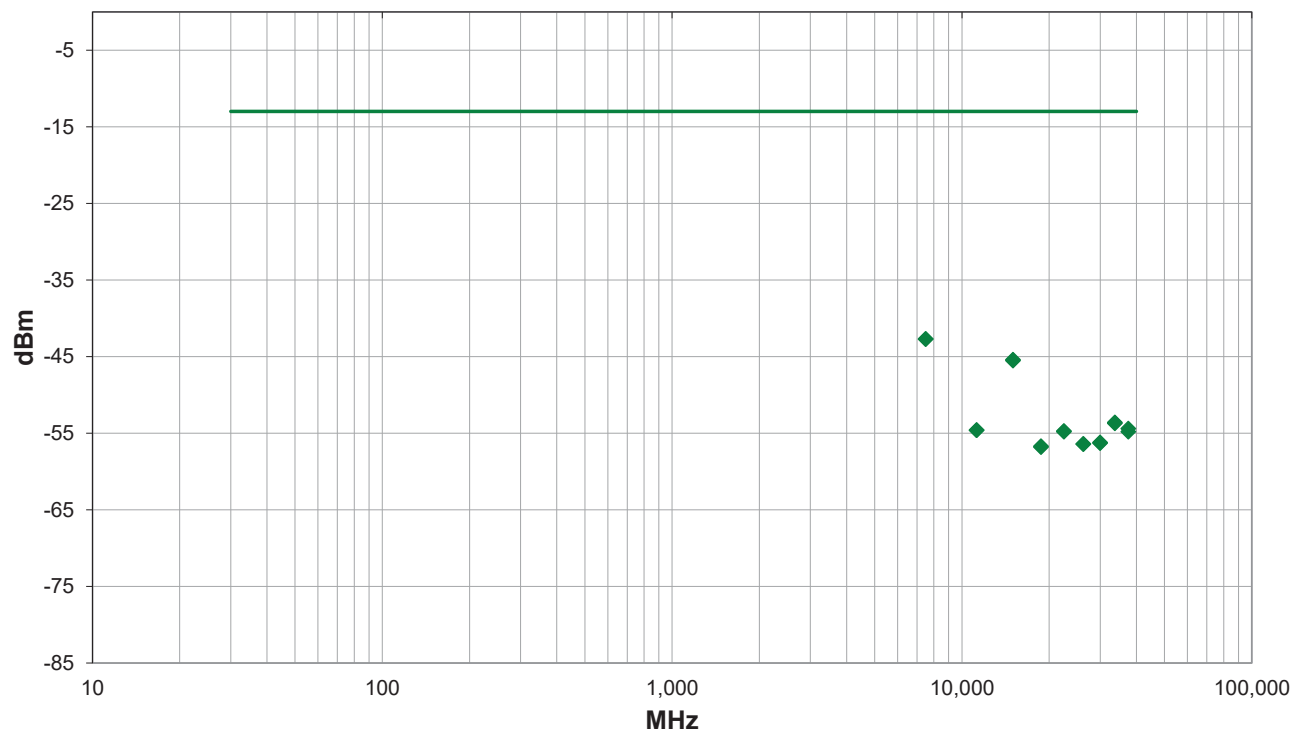
Pole mounted radio. TAB ports routed to 50 ohm terminators. The average emissions were duty cycle corrected up to 100% per the guidance provided in ANSI C63.26:2015 section 5.7.3 (d)(3): $10 \cdot \log(1/\text{Duty Cycle (in dec)})$. The measured duty cycle was seen to be 74% and applied as $10 \cdot \log(1/0.74) = 1.3$ dB upward correction.

EUT OPERATING MODES

Test Configuration 3 - 3.7G Band (Low channel 3750.00 MHz, NR100, QPSK), Multi Mode SFP

DEVIATIONS FROM TEST STANDARD

None



Run #: 22

PK AV QP

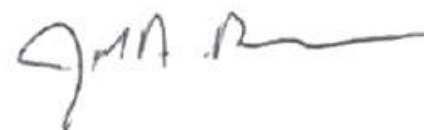
SPURIOUS RADIATED EMISSIONS

RESULTS - Run #22

Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts/MHz)	EIRP (dBm/MHz)	Spec. Limit (dBm/MHz)	Compared to Spec. (dB)
7500.000	2.1	191.0	Horz	AV	53.3E-9	-42.7	-13.0	-29.7
7500.000	1.5	195.0	Vert	AV	53.3E-9	-42.7	-13.0	-29.7
15000.000	4.0	184.0	Vert	AV	28.6E-9	-45.4	-13.0	-32.4
15000.000	3.2	115.0	Horz	AV	28.0E-9	-45.5	-13.0	-32.5
33750.000	1.5	97.0	Vert	AV	4.3E-9	-53.6	-13.0	-40.6
33750.000	1.5	162.0	Horz	AV	4.2E-9	-53.7	-13.0	-40.7
37500.000	1.5	0.0	Vert	AV	3.6E-9	-54.4	-13.0	-41.4
11250.000	1.5	250.0	Horz	AV	3.4E-9	-54.6	-13.0	-41.6
11250.000	1.5	132.0	Vert	AV	3.4E-9	-54.6	-13.0	-41.6
22500.000	1.5	357.0	Horz	AV	3.4E-9	-54.7	-13.0	-41.7
22500.000	1.5	262.0	Vert	AV	3.3E-9	-54.8	-13.0	-41.8
37500.000	1.5	90.0	Horz	AV	3.3E-9	-54.8	-13.0	-41.8
30000.000	1.5	303.0	Vert	AV	2.4E-9	-56.2	-13.0	-43.2
30000.000	1.5	317.0	Horz	AV	2.3E-9	-56.3	-13.0	-43.3
26250.000	1.5	327.0	Horz	AV	2.3E-9	-56.4	-13.0	-43.4
26250.000	1.5	206.0	Vert	AV	2.3E-9	-56.4	-13.0	-43.4
18750.000	1.5	227.0	Horz	AV	2.1E-9	-56.7	-13.0	-43.7
18750.000	1.5	353.0	Vert	AV	2.1E-9	-56.8	-13.0	-43.8

CONCLUSION

Pass



Tested By

SPURIOUS RADIATED EMISSIONS

EUT:	AVQQA Remote Radio Head	Work Order:	NOKI0075
Serial Number:	L1241906547	Date:	2024-07-29
Customer:	Nokia Solutions and Networks	Temperature:	22.5°C
Attendees:	Mitch Hill, John Rattanaovong	Relative Humidity:	53.1%
Customer Project:	None	Bar. Pressure (PMSL):	1018 mb
Tested By:	Jarrold Brenden	Job Site:	PT01
Power:	54VDC	Configuration:	NOKI0075-8

TEST SPECIFICATIONS

Specification:	Method:
FCC 27.53:2024	ANSI C63.26:2015

TEST PARAMETERS

Run #:	25	Test Distance (m):	3	Ant. Height(s) (m):	1 to 4(m)
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COMMENTS

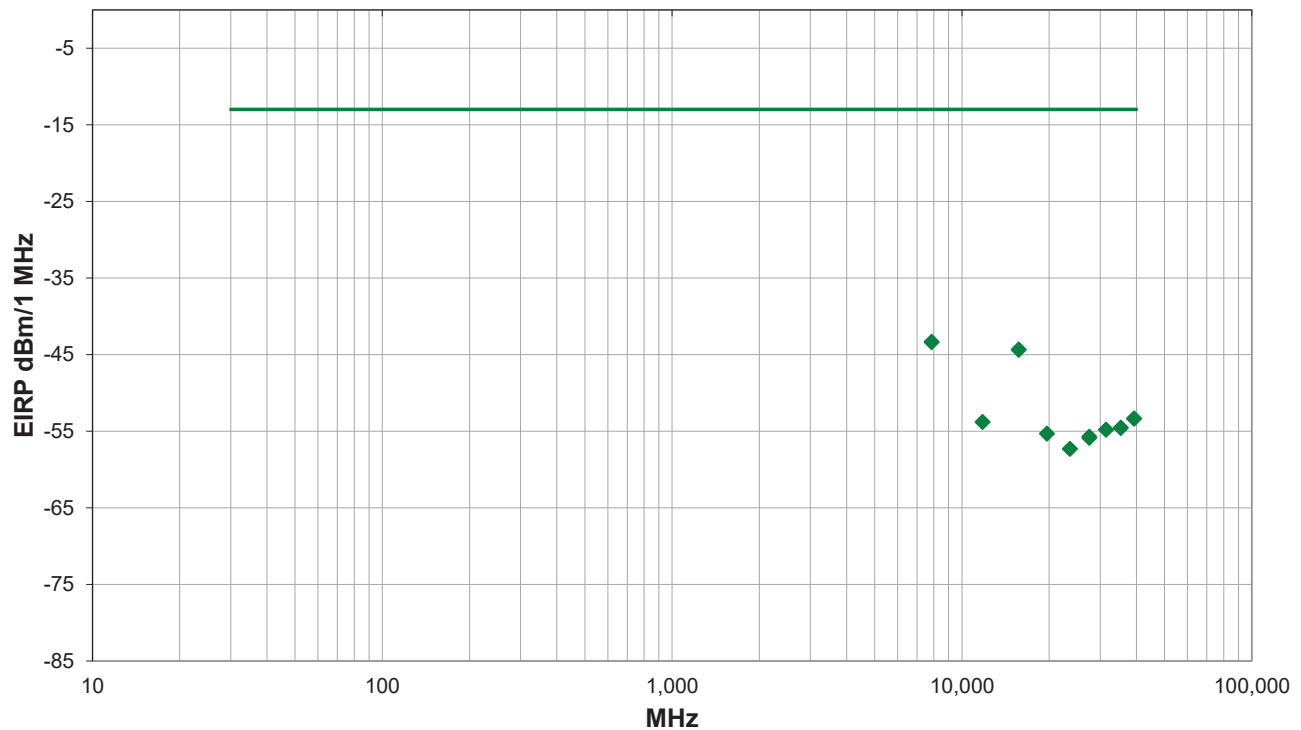
Pole mounted radio. TAB ports routed to 50 ohm terminators. The average emissions were duty cycle corrected up to 100% per the guidance provided in ANSI C63.26:2015 section 5.7.3 (d)(3): $10 \cdot \log(1/\text{Duty Cycle (in dec)})$. The measured duty cycle was seen to be 74% and applied as $10 \cdot \log(1/0.74) = 1.3$ dB upward correction.

EUT OPERATING MODES

Test Configuration 4 - 3.7G Band (High Channel 3930.00 MHz, NR100, QPSK), Multi Mode SFP

DEVIATIONS FROM TEST STANDARD

None



Run #: 25

PK AV QP

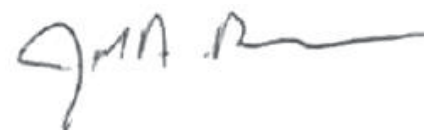
SPURIOUS RADIATED EMISSIONS

RESULTS - Run #25

Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
7860.000	3.1	335.0	Horz	AV	46.5E-9	-43.3	-13.0	-30.3
7860.000	1.5	232.0	Vert	AV	45.4E-9	-43.4	-13.0	-30.4
15720.000	1.5	168.0	Horz	AV	36.9E-9	-44.3	-13.0	-31.3
15720.000	3.5	116.0	Vert	AV	36.1E-9	-44.4	-13.0	-31.4
39300.000	4.0	269.0	Vert	AV	4.6E-9	-53.3	-13.0	-40.3
39300.000	1.5	33.0	Horz	AV	4.5E-9	-53.4	-13.0	-40.4
11790.000	1.5	256.0	Horz	AV	4.1E-9	-53.8	-13.0	-40.8
11790.000	1.5	329.0	Vert	AV	4.1E-9	-53.8	-13.0	-40.8
35370.000	1.5	317.0	Vert	AV	3.5E-9	-54.5	-13.0	-41.5
35370.000	1.5	139.0	Horz	AV	3.4E-9	-54.6	-13.0	-41.6
31440.000	1.5	108.0	Horz	AV	3.3E-9	-54.8	-13.0	-41.8
31440.000	1.5	0.0	Vert	AV	3.3E-9	-54.8	-13.0	-41.8
19650.000	1.5	32.0	Horz	AV	2.9E-9	-55.3	-13.0	-42.3
19650.000	1.5	10.0	Vert	AV	2.9E-9	-55.3	-13.0	-42.3
27510.000	1.5	188.0	Horz	AV	2.7E-9	-55.7	-13.0	-42.7
27510.000	1.5	160.0	Vert	AV	2.6E-9	-55.9	-13.0	-42.9
23580.000	1.5	54.0	Horz	AV	1.8E-9	-57.3	-13.0	-44.3
23580.000	1.5	31.0	Vert	AV	1.8E-9	-57.3	-13.0	-44.3

CONCLUSION

Pass



Tested By

SPURIOUS RADIATED EMISSIONS

EUT:	AVQQA Remote Radio Head	Work Order:	NOKI0075
Serial Number:	L1241906547	Date:	2024-07-29
Customer:	Nokia Solutions and Networks	Temperature:	23.1°C
Attendees:	Mitch Hill, John Rattanaovong	Relative Humidity:	52.4%
Customer Project:	None	Bar. Pressure (PMSL):	1020 mb
Tested By:	Jarrold Brenden	Job Site:	PT01
Power:	54VDC	Configuration:	NOKI0075-8

TEST SPECIFICATIONS

Specification:	Method:
FCC 27.53:2024	ANSI C63.26:2015

TEST PARAMETERS

Run #:	28	Test Distance (m):	3	Ant. Height(s) (m):	1 to 4(m)
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COMMENTS

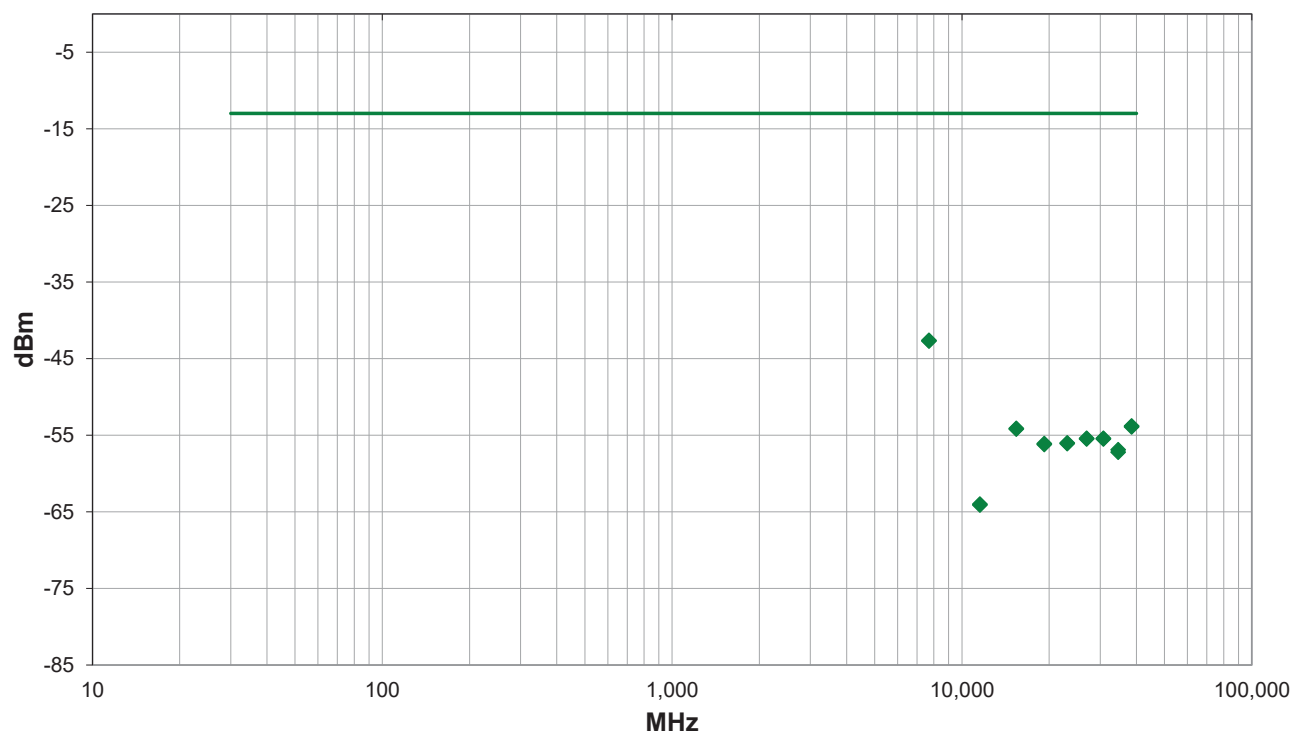
Pole mounted radio. TAB ports routed to 50 ohm terminators. The average emissions were duty cycle corrected up to 100% per the guidance provided in ANSI C63.26:2015 section 5.7.3 (d)(3): $10 \cdot \log(1/\text{Duty Cycle (in dec)})$. The measured duty cycle was seen to be 74% and applied as $10 \cdot \log(1/0.74) = 1.3$ dB upward correction.

EUT OPERATING MODES

Test Configuration 5 - 3.7G Band (Mid Channel 3849.99 MHz, NR100, QPSK), Multi Mode SFP

DEVIATIONS FROM TEST STANDARD

None



Run #: 28

PK AV QP

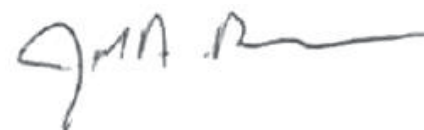
SPURIOUS RADIATED EMISSIONS

RESULTS - Run #28

Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
7699.980	1.5	247.0	Horz	AV	54.6E-9	-42.6	-13.0	-29.6
7699.980	1.5	166.0	Vert	AV	53.3E-9	-42.7	-13.0	-29.7
38499.900	1.5	177.0	Vert	AV	4.1E-9	-53.8	-13.0	-40.8
38499.900	1.5	322.0	Horz	AV	4.0E-9	-53.9	-13.0	-40.9
15399.960	2.7	342.0	Vert	AV	3.9E-9	-54.1	-13.0	-41.1
15399.960	1.5	225.0	Horz	AV	3.8E-9	-54.2	-13.0	-41.2
26949.930	1.5	190.0	Vert	AV	2.9E-9	-55.4	-13.0	-42.4
30799.920	1.5	73.0	Vert	AV	2.9E-9	-55.4	-13.0	-42.4
26949.930	1.5	325.0	Horz	AV	2.8E-9	-55.5	-13.0	-42.5
30799.920	1.5	257.0	Horz	AV	2.8E-9	-55.5	-13.0	-42.5
23099.940	1.5	25.0	Vert	AV	2.5E-9	-56.0	-13.0	-43.0
19249.950	1.5	221.0	Vert	AV	2.4E-9	-56.1	-13.0	-43.1
23099.940	1.5	116.0	Horz	AV	2.4E-9	-56.1	-13.0	-43.1
19249.950	1.5	146.0	Horz	AV	2.4E-9	-56.2	-13.0	-43.2
34649.910	1.5	344.0	Vert	AV	2.0E-9	-56.9	-13.0	-43.9
34649.910	1.5	202.0	Horz	AV	1.9E-9	-57.2	-13.0	-44.2
11549.970	1.5	72.0	Horz	AV	395.5E-12	-64.0	-13.0	-51.0
11549.970	3.9	126.0	Vert	AV	386.5E-12	-64.1	-13.0	-51.1

CONCLUSION

Pass



Tested By

SPURIOUS RADIATED EMISSIONS

EUT:	AVQQA Remote Radio Head	Work Order:	NOKI0075
Serial Number:	L1241906547	Date:	2024-07-29
Customer:	Nokia Solutions and Networks	Temperature:	22.3°C
Attendees:	Mitch Hill, John Rattanaovong	Relative Humidity:	52.3%
Customer Project:	None	Bar. Pressure (PMSL):	1019 mb
Tested By:	Jarrold Brenden	Job Site:	PT01
Power:	54VDC	Configuration:	NOKI0075-8

TEST SPECIFICATIONS

Specification:	Method:
FCC 27.53:2024	ANSI C63.26:2015

TEST PARAMETERS

Run #:	31	Test Distance (m):	3	Ant. Height(s) (m):	1 to 4(m)
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COMMENTS

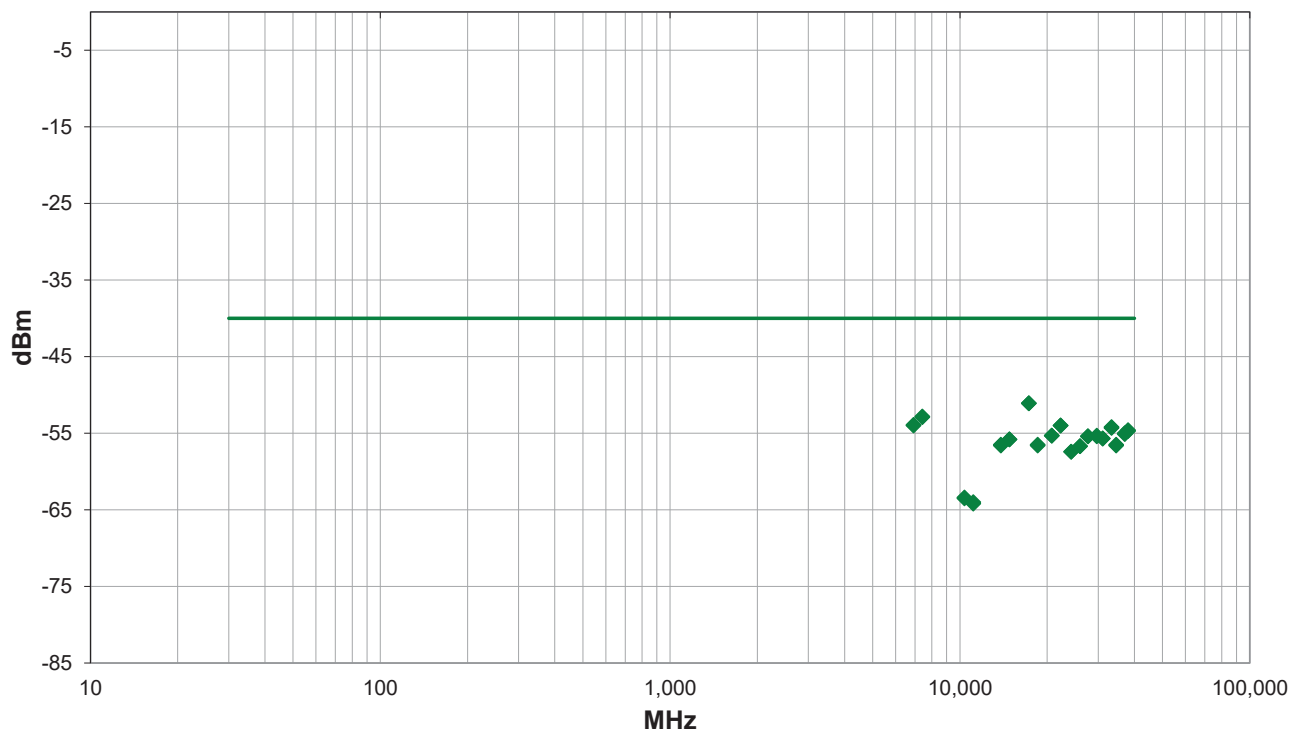
Pole mounted radio. TAB ports routed to 50 ohm terminators. The average emissions were duty cycle corrected up to 100% per the guidance provided in ANSI C63.26:2015 section 5.7.3 (d)(3): $10 \cdot \log(1/\text{Duty Cycle (in dec)})$. The measured duty cycle was seen to be 74% and applied as $10 \cdot \log(1/0.74) = 1.3$ dB upward correction.

EUT OPERATING MODES

Test Configuration 6 - 3.45G Band (Low Channel 3460.02 MHz, NR20, QPSK) and 3.7G Band (Low Channel 3710.01 MHz, NR20, QPSK), Multi Mode SFP

DEVIATIONS FROM TEST STANDARD

None



Run #: 31

PK AV QP

SPURIOUS RADIATED EMISSIONS

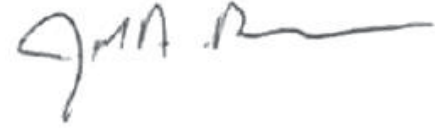
RESULTS - Run #31

Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
17300.100	1.5	294.0	Horz	AV	7.7E-9	-51.1	-40.0	-11.1
17300.100	1.5	173.0	Vert	AV	7.7E-9	-51.1	-40.0	-11.1
7420.020	1.5	170.0	Horz	AV	5.2E-9	-52.8	-40.0	-12.8
7420.020	2.5	120.0	Vert	AV	5.1E-9	-52.9	-40.0	-12.9
6920.040	1.5	320.0	Horz	AV	4.0E-9	-53.9	-40.0	-13.9
6920.040	1.5	156.0	Vert	AV	4.0E-9	-54.0	-40.0	-14.0
22260.060	1.5	319.0	Horz	AV	4.0E-9	-54.0	-40.0	-14.0
22260.060	1.5	272.0	Vert	AV	4.0E-9	-54.0	-40.0	-14.0
33390.090	1.5	178.0	Vert	AV	3.8E-9	-54.2	-40.0	-14.2
33390.090	1.5	247.0	Horz	AV	3.7E-9	-54.3	-40.0	-14.3
38060.220	1.5	359.0	Vert	AV	3.4E-9	-54.6	-40.0	-14.6
38060.220	1.5	359.0	Horz	AV	3.4E-9	-54.7	-40.0	-14.7
37100.100	1.5	330.0	Vert	AV	3.1E-9	-55.0	-40.0	-15.0
37100.100	1.5	340.0	Horz	AV	3.1E-9	-55.1	-40.0	-15.1
20760.120	1.5	299.0	Horz	AV	2.9E-9	-55.3	-40.0	-15.3
20760.120	1.5	131.0	Vert	AV	2.9E-9	-55.3	-40.0	-15.3
29680.080	1.5	202.0	Vert	AV	2.9E-9	-55.3	-40.0	-15.3
27680.160	1.5	269.0	Horz	AV	2.9E-9	-55.4	-40.0	-15.4
27680.160	1.5	116.0	Vert	AV	2.9E-9	-55.4	-40.0	-15.4
29680.080	1.5	324.0	Horz	AV	2.9E-9	-55.4	-40.0	-15.4
31140.180	1.5	196.0	Horz	AV	2.7E-9	-55.7	-40.0	-15.7
31140.180	1.5	126.0	Vert	AV	2.7E-9	-55.7	-40.0	-15.7
14840.040	1.5	241.0	Horz	AV	2.6E-9	-55.8	-40.0	-15.8
14840.040	1.5	67.0	Vert	AV	2.6E-9	-55.8	-40.0	-15.8
13840.080	1.5	0.0	Horz	AV	2.2E-9	-56.5	-40.0	-16.5
18550.050	1.5	310.0	Horz	AV	2.2E-9	-56.5	-40.0	-16.5
34600.200	1.5	0.0	Vert	AV	2.2E-9	-56.5	-40.0	-16.5
13840.080	4.0	275.0	Vert	AV	2.2E-9	-56.6	-40.0	-16.6
18550.050	1.5	209.0	Vert	AV	2.2E-9	-56.6	-40.0	-16.6
34600.200	1.5	168.0	Horz	AV	2.2E-9	-56.6	-40.0	-16.6
25970.070	1.5	54.0	Horz	AV	2.1E-9	-56.7	-40.0	-16.7
25970.070	1.5	171.0	Vert	AV	2.1E-9	-56.7	-40.0	-16.7
24220.140	1.5	199.0	Horz	AV	1.8E-9	-57.4	-40.0	-17.4
24220.140	1.5	9.0	Vert	AV	1.8E-9	-57.4	-40.0	-17.4
10380.060	3.8	236.0	Horz	AV	454.1E-12	-63.4	-40.0	-23.4
10380.060	1.5	124.0	Vert	AV	443.7E-12	-63.5	-40.0	-23.5
11130.030	2.7	30.0	Horz	AV	395.5E-12	-64.0	-40.0	-24.0
11130.030	1.5	261.0	Vert	AV	377.7E-12	-64.2	-40.0	-24.2

SPURIOUS RADIATED EMISSIONS

CONCLUSION

Pass



Tested By

SPURIOUS RADIATED EMISSIONS

EUT:	AVQQA Remote Radio Head	Work Order:	NOKI0075
Serial Number:	L1241906547	Date:	2024-07-29
Customer:	Nokia Solutions and Networks	Temperature:	22.3°C
Attendees:	Mitch Hill, John Rattanaovong	Relative Humidity:	52.4%
Customer Project:	None	Bar. Pressure (PMSL):	1021 mb
Tested By:	Jarrod Brenden	Job Site:	PT01
Power:	54VDC	Configuration:	NOKI0075-8

TEST SPECIFICATIONS

Specification:	Method:
FCC 27.53:2024	ANSI C63.26:2015

TEST PARAMETERS

Run #:	34	Test Distance (m):	3	Ant. Height(s) (m):	1 to 4(m)
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COMMENTS

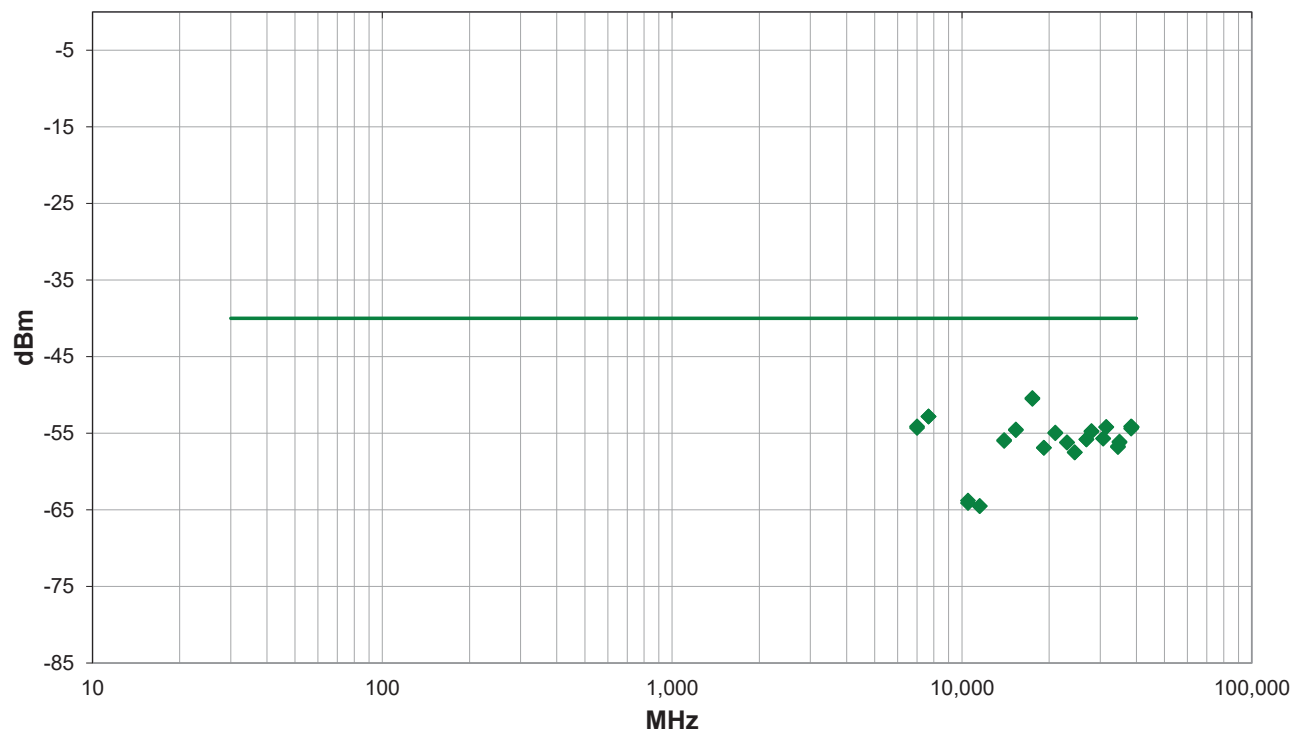
Pole mounted radio. TAB ports routed to 50 ohm terminators. The average emissions were duty cycle corrected up to 100% per the guidance provided in ANSI C63.26:2015 section 5.7.3 (d)(3): $10 \cdot \log(1/\text{Duty Cycle (in dec)})$. The measured duty cycle was seen to be 74% and applied as $10 \cdot \log(1/0.74) = 1.3$ dB upward correction.

EUT OPERATING MODES

Test Configuration 7 - 3.45G Band (Mid Channel 3500.01 MHz, NR20, QPSK) and 3.7G Band (Mid Channel 3840.00 MHz, NR20, QPSK), Multi Mode SFP

DEVIATIONS FROM TEST STANDARD

None



Run #: 34

PK AV QP

SPURIOUS RADIATED EMISSIONS

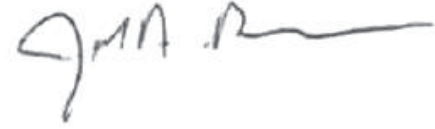
RESULTS - Run #34

Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
17500.050	3.5	85.0	Horz	AV	9.1E-9	-50.4	-40.0	-10.4
17500.050	1.5	124.0	Vert	AV	8.9E-9	-50.5	-40.0	-10.5
7680.000	1.5	266.0	Horz	AV	5.2E-9	-52.8	-40.0	-12.8
7680.000	1.5	318.0	Vert	AV	5.2E-9	-52.8	-40.0	-12.8
7000.020	2.7	207.0	Horz	AV	3.9E-9	-54.1	-40.0	-14.1
38400.000	1.5	31.0	Vert	AV	3.9E-9	-54.1	-40.0	-14.1
31500.090	1.5	311.0	Horz	AV	3.8E-9	-54.2	-40.0	-14.2
31500.090	1.5	6.0	Vert	AV	3.8E-9	-54.2	-40.0	-14.2
38500.110	1.5	181.0	Horz	AV	3.8E-9	-54.2	-40.0	-14.2
38500.110	1.5	158.0	Vert	AV	3.8E-9	-54.2	-40.0	-14.2
7000.020	1.5	99.0	Vert	AV	3.7E-9	-54.3	-40.0	-14.3
38400.000	1.5	304.0	Horz	AV	3.6E-9	-54.4	-40.0	-14.4
15360.000	1.5	317.0	Horz	AV	3.5E-9	-54.5	-40.0	-14.5
15360.000	1.5	159.0	Vert	AV	3.4E-9	-54.6	-40.0	-14.6
28000.080	1.5	98.0	Horz	AV	3.4E-9	-54.7	-40.0	-14.7
28000.080	1.5	306.0	Vert	AV	3.3E-9	-54.8	-40.0	-14.8
21000.060	1.5	266.0	Horz	AV	3.2E-9	-54.9	-40.0	-14.9
21000.060	1.5	95.0	Vert	AV	3.1E-9	-55.0	-40.0	-15.0
30720.000	1.5	334.0	Horz	AV	2.7E-9	-55.7	-40.0	-15.7
30720.000	1.5	35.0	Vert	AV	2.7E-9	-55.7	-40.0	-15.7
26880.000	1.5	339.0	Horz	AV	2.6E-9	-55.8	-40.0	-15.8
26880.000	1.5	331.0	Vert	AV	2.6E-9	-55.8	-40.0	-15.8
14000.040	2.3	360.0	Horz	AV	2.6E-9	-55.9	-40.0	-15.9
14000.040	1.5	0.0	Vert	AV	2.5E-9	-56.0	-40.0	-16.0
35000.100	1.5	62.0	Horz	AV	2.4E-9	-56.1	-40.0	-16.1
23040.000	1.5	21.0	Horz	AV	2.4E-9	-56.2	-40.0	-16.2
23040.000	1.5	54.0	Vert	AV	2.4E-9	-56.2	-40.0	-16.2
35000.100	1.5	260.0	Vert	AV	2.4E-9	-56.2	-40.0	-16.2
34560.000	1.5	351.0	Vert	AV	2.1E-9	-56.7	-40.0	-16.7
34560.000	1.5	80.0	Horz	AV	2.1E-9	-56.8	-40.0	-16.8
19200.000	1.5	7.0	Horz	AV	2.0E-9	-56.9	-40.0	-16.9
19200.000	1.5	98.0	Vert	AV	2.0E-9	-56.9	-40.0	-16.9
24500.070	1.5	264.0	Horz	AV	1.8E-9	-57.5	-40.0	-17.5
24500.070	1.5	360.0	Vert	AV	1.8E-9	-57.5	-40.0	-17.5
10500.030	1.5	21.0	Vert	AV	414.1E-12	-63.8	-40.0	-23.8
10500.030	1.9	337.0	Horz	AV	386.5E-12	-64.1	-40.0	-24.1
11520.000	1.5	176.0	Horz	AV	352.5E-12	-64.5	-40.0	-24.5
11520.000	3.3	152.0	Vert	AV	352.5E-12	-64.5	-40.0	-24.5

SPURIOUS RADIATED EMISSIONS

CONCLUSION

Pass



Tested By

SPURIOUS RADIATED EMISSIONS

EUT:	AVQQA Remote Radio Head	Work Order:	NOKI0075
Serial Number:	L1241906547	Date:	2024-07-30
Customer:	Nokia Solutions and Networks	Temperature:	22.3°C
Attendees:	Mitch Hill, John Rattanaovong	Relative Humidity:	51.2%
Customer Project:	None	Bar. Pressure (PMSL):	1020 mb
Tested By:	Jarrold Brenden	Job Site:	PT01
Power:	54VDC	Configuration:	NOKI0075-8

TEST SPECIFICATIONS

Specification:	Method:
FCC 27.53:2024	ANSI C63.26:2015

TEST PARAMETERS

Run #:	37	Test Distance (m):	3	Ant. Height(s) (m):	1 to 4(m)
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COMMENTS

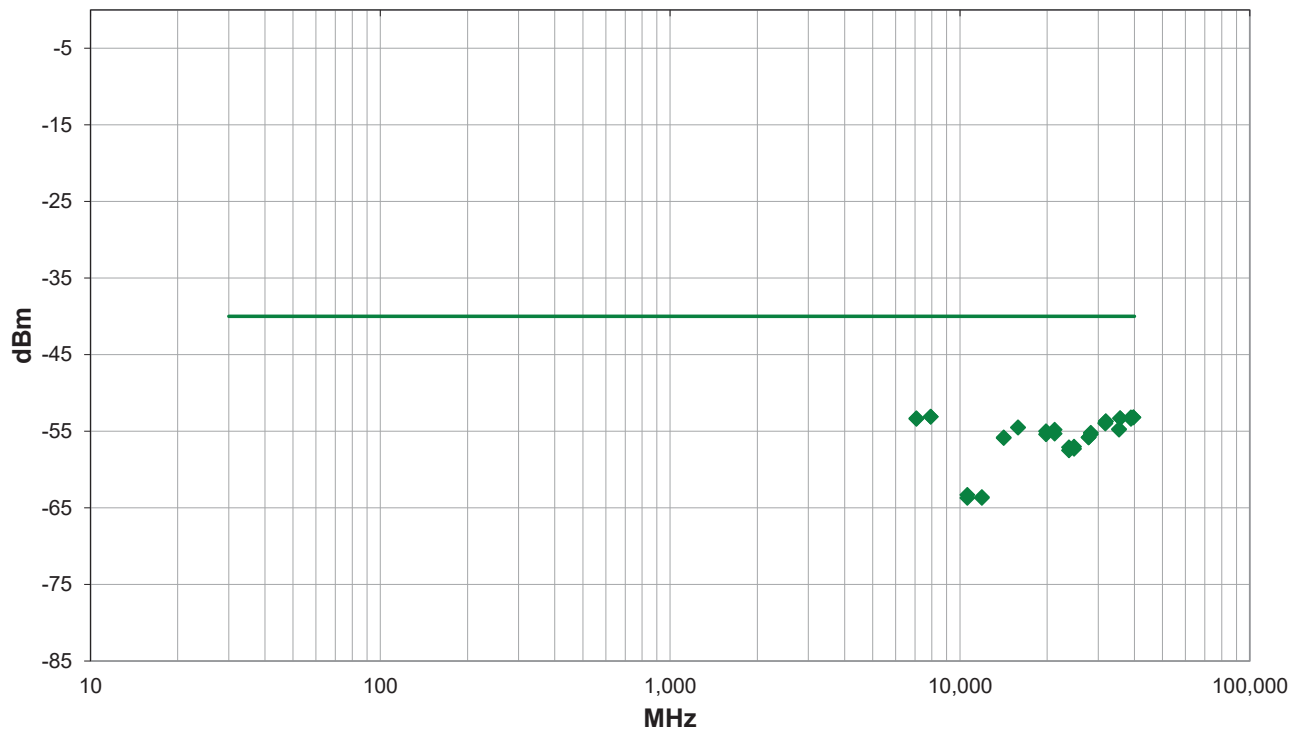
Pole mounted radio. TAB ports routed to 50 ohm terminators. The average emissions were duty cycle corrected up to 100% per the guidance provided in ANSI C63.26:2015 section 5.7.3 (d)(3): $10 \cdot \log(1/\text{Duty Cycle (in dec)})$. The measured duty cycle was seen to be 74% and applied as $10 \cdot \log(1/0.74) = 1.3$ dB upward correction.

EUT OPERATING MODES

Test Configuration 8 - 3.45G Band (High Channel 3540.00 MHz, NR20, QPSK) and 3.7G Band (High Channel 3969.99 MHz, NR20, QPSK), Multi Mode SFP

DEVIATIONS FROM TEST STANDARD

None



Run #: 37

PK AV QP

SPURIOUS RADIATED EMISSIONS

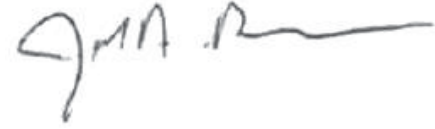
RESULTS - Run #37

Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
7939.980	4.0	305.0	Horz	AV	4.9E-9	-53.1	-40.0	-13.1
7939.980	1.7	356.0	Vert	AV	4.9E-9	-53.1	-40.0	-13.1
38940.000	1.5	8.0	Vert	AV	4.8E-9	-53.2	-40.0	-13.2
39699.900	1.5	32.0	Horz	AV	4.8E-9	-53.2	-40.0	-13.2
39699.900	1.5	89.0	Vert	AV	4.8E-9	-53.2	-40.0	-13.2
7080.000	1.5	220.0	Horz	AV	4.6E-9	-53.3	-40.0	-13.3
35729.910	1.5	134.0	Horz	AV	4.6E-9	-53.3	-40.0	-13.3
35729.910	1.5	14.0	Vert	AV	4.6E-9	-53.3	-40.0	-13.3
7080.000	1.5	186.0	Vert	AV	4.5E-9	-53.4	-40.0	-13.4
38940.000	1.5	202.0	Horz	AV	4.5E-9	-53.4	-40.0	-13.4
31860.000	1.5	204.0	Horz	AV	4.2E-9	-53.7	-40.0	-13.7
31860.000	1.5	348.0	Vert	AV	4.2E-9	-53.7	-40.0	-13.7
31759.920	1.5	63.0	Vert	AV	4.0E-9	-53.9	-40.0	-13.9
31759.920	1.5	43.0	Horz	AV	4.0E-9	-54.0	-40.0	-14.0
15879.000	1.5	295.0	Horz	AV	3.5E-9	-54.5	-40.0	-14.5
15879.000	1.5	261.0	Vert	AV	3.5E-9	-54.5	-40.0	-14.5
35400.000	1.5	310.0	Vert	AV	3.4E-9	-54.7	-40.0	-14.7
21240.000	1.5	32.0	Horz	AV	3.3E-9	-54.8	-40.0	-14.8
35400.000	1.5	285.0	Horz	AV	3.3E-9	-54.8	-40.0	-14.8
19849.950	1.5	260.0	Horz	AV	3.1E-9	-55.0	-40.0	-15.0
28320.000	1.5	140.0	Horz	AV	3.0E-9	-55.2	-40.0	-15.2
21240.000	1.5	32.0	Vert	AV	2.9E-9	-55.3	-40.0	-15.3
19849.950	1.5	349.0	Vert	AV	2.9E-9	-55.4	-40.0	-15.4
28320.000	1.5	266.0	Vert	AV	2.9E-9	-55.4	-40.0	-15.4
14160.000	1.2	30.0	Horz	AV	2.6E-9	-55.8	-40.0	-15.8
27789.930	1.5	73.0	Horz	AV	2.6E-9	-55.8	-40.0	-15.8
27789.930	1.5	312.0	Vert	AV	2.6E-9	-55.8	-40.0	-15.8
14160.000	1.5	191.0	Vert	AV	2.6E-9	-55.9	-40.0	-15.9
24780.000	1.5	0.0	Horz	AV	2.0E-9	-57.0	-40.0	-17.0
23819.000	1.5	181.0	Horz	AV	1.9E-9	-57.1	-40.0	-17.1
24780.000	1.5	190.0	Vert	AV	1.8E-9	-57.3	-40.0	-17.3
23819.000	1.5	221.0	Vert	AV	1.8E-9	-57.5	-40.0	-17.5
10620.000	3.4	320.0	Vert	AV	464.6E-12	-63.3	-40.0	-23.3
11909.970	1.5	256.0	Horz	AV	433.6E-12	-63.6	-40.0	-23.6
10620.000	3.4	248.0	Horz	AV	423.8E-12	-63.7	-40.0	-23.7
11909.970	1.5	339.0	Vert	AV	423.8E-12	-63.7	-40.0	-23.7

SPURIOUS RADIATED EMISSIONS

CONCLUSION

Pass



Tested By

FREQUENCY STABILITY

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 spectrum analyzer is equipped with a precision frequency reference that exceeds the stability requirement of the EUT.

Measurements were made on the single transmit frequency as called out on the data sheets. Testing was done while the EUT was continuously operating.

The primary supply voltage was varied from 85 % to 115% of the nominal voltage while at ambient temperature. Using a temperature chamber, the transmit frequency was recorded at the extremes of the specified temperature range of -30 ° to +50 ° C and at 10°C intervals.

FCC Part 27.54 defines the frequency deviation limit as follows: "The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation."

Results with a frequency error of less than 1000 Hz will show the carrier to be operating within the band. The frequency stability/accuracy radio design is the same for all radio technologies and modulation types.

The frequency stability testing was performed while single NR40 (40MHz) carrier was operating on 3.45G Band at middle channel (3500.02MHz) and the 3.7G Band at middle channel (3840.00MHz) using QPSK modulation. The frequency stability/accuracy radio design is the same for all radio technologies/modulation types.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Spectrum Analyzer	Keysight Technologies, Inc.	N9030B	R336	2023-10-03	2024-10-03
Meter - Multimeter	Fluke	77 IV	MLT	2024-01-29	2025-01-29
Temperature/Humidity Chamber	Envirotronic	EH-64-2-5	R352	NCR	NCR
Over/Temp Protection	Omega	CN76000	R353	NCR	NCR
Process Controller, Temp/Humidity	Watlow	F-4	R354	2023-08-11	2024-08-11
Meter - Temperature/Humidity	Omega Engineering, Inc.	HH414	DVI	2024-02-02	2025-02-02

FREQUENCY STABILITY

EUT:	AVQQA Remote Radio Head	Work Order:	NOKI0075
Serial Number:	L1242403137	Date:	2024-08-06
Customer:	Nokia Solutions and Networks	Temperature:	21.5°C
Attendees:	David Le, John Rattanaovong	Relative Humidity:	52.7%
Customer Project:	None	Bar. Pressure (PMSL):	1020 mbar
Tested By:	Jarrold Brenden	Job Site:	PT14
Power:	See Data Table	Configuration:	NOKI0075-9

TEST SPECIFICATIONS

Specification:	Method:
FCC 27:2024	ANSI C63.26:2015

COMMENTS

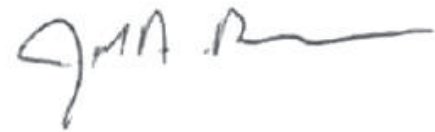
All losses in the measurement path were accounted for in the reference level offset; attenuators, filters, cables and DC blocks where used. The EUT temperature was stabilized to each temperature step (for a minimum of 30 minutes) prior to measurements.

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass



Tested By

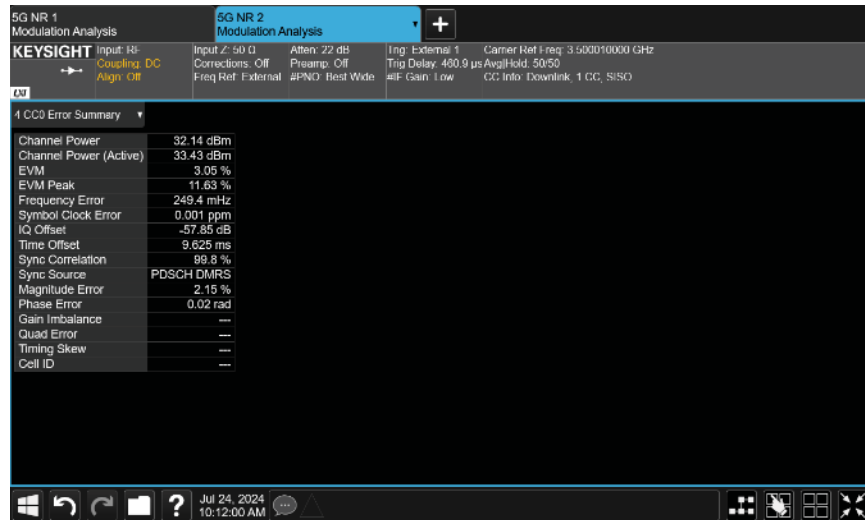
TEST RESULTS

	Value Δ (Hz)	Limit Abs Δ (Hz)	Result
Port 1			
3.45G Band, 3450.00 MHz to 3550.00 MHz			
40 MHz Bandwidth, QPSK			
Nominal Temperature, 20°C			
Low Voltage, 40.8 VDC, Mid Channel 3500.02 MHz	0.2494	1000	Pass
High Voltage, 55.2 VDC, Mid Channel, 3500.02 MHz	0.1906	1000	Pass
Nominal Voltage, 48 VDC			
Extreme Temperature, -30°C, Mid Channel, 3500.02 MHz	0.6067	1000	Pass
Extreme Temperature, -20°C, Mid Channel, 3500.02 MHz	0.1303	1000	Pass
Extreme Temperature, -10°C, Mid Channel, 3500.02 MHz	0.5692	1000	Pass
Extreme Temperature, 0°C, Mid Channel, 3500.02 MHz	0.4829	1000	Pass
Extreme Temperature, 10°C, Mid Channel, 3500.02 MHz	0.5153	1000	Pass
Extreme Temperature, 20°C, Mid Channel, 3500.02 MHz	0.0763	1000	Pass
Extreme Temperature, 30°C, Mid Channel, 3500.02 MHz	0.0483	1000	Pass
Extreme Temperature, 40°C, Mid Channel, 3500.02 MHz	0.3086	1000	Pass
Extreme Temperature, 50°C, Mid Channel, 3500.02 MHz	0.5385	1000	Pass
3.7G Band, 3700.00 MHz to 3980.00 MHz			
40 MHz Bandwidth, QPSK			
Nominal Temperature, 20°C			
Low Voltage, 40.8 VDC, Mid Channel 3840.00 MHz	12.98	1000	Pass
High Voltage, 55.2 VDC, Mid Channel, 3840.00 MHz	16.47	1000	Pass

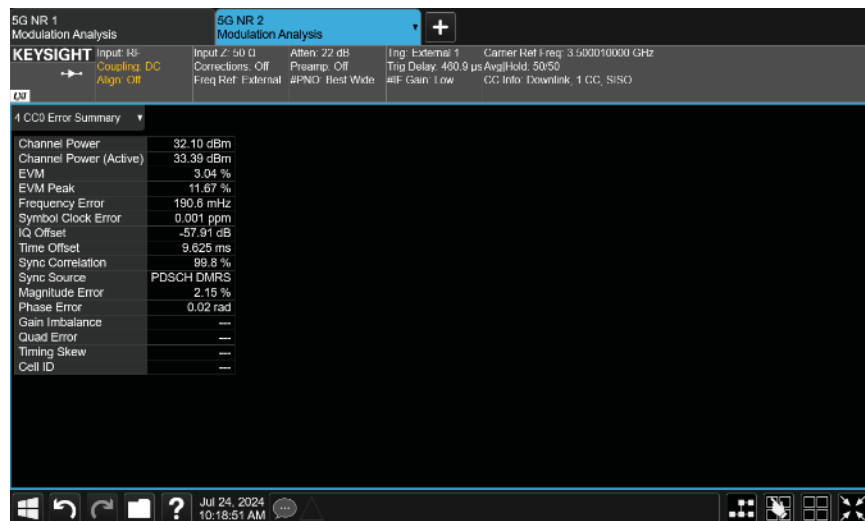
FREQUENCY STABILITY

	Value Δ (Hz)	Limit Abs Δ (Hz)	Result
Nominal Voltage, 48 VDC			
Extreme Temperature, -30°C, Mid Channel, 3840.00 MHz	12.21	1000	Pass
Extreme Temperature, -20°C, Mid Channel, 3840.00 MHz	8.19	1000	Pass
Extreme Temperature, -10°C, Mid Channel, 3840.00 MHz	13.58	1000	Pass
Extreme Temperature, 0°C, Mid Channel, 3840.00 MHz	12.48	1000	Pass
Extreme Temperature, 10°C, Mid Channel, 3840.00 MHz	14.48	1000	Pass
Extreme Temperature, 20°C, Mid Channel, 3840.00 MHz	17.73	1000	Pass
Extreme Temperature, 30°C, Mid Channel, 3840.00 MHz	10.13	1000	Pass
Extreme Temperature, 40°C, Mid Channel, 3840.00 MHz	15.57	1000	Pass
Extreme Temperature, 50°C, Mid Channel, 3840.00 MHz	12.44	1000	Pass

FREQUENCY STABILITY

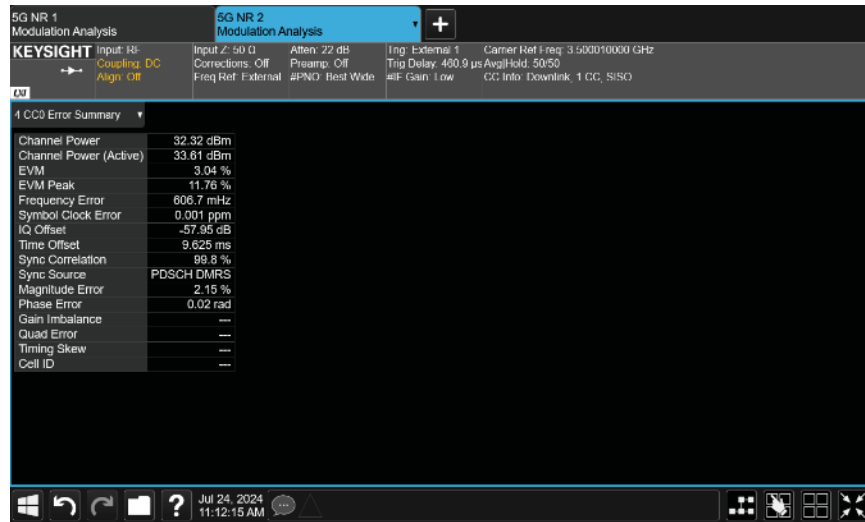


3.45G Band, 3450.00 MHz to 3550.00 MHz
40 MHz Bandwidth, QPSK
Low Voltage, 40.8 VDC, Mid Channel 3500.02 MHz



3.45G Band, 3450.00 MHz to 3550.00 MHz
40 MHz Bandwidth, QPSK
High Voltage, 55.2 VDC, Mid Channel, 3500.02 MHz

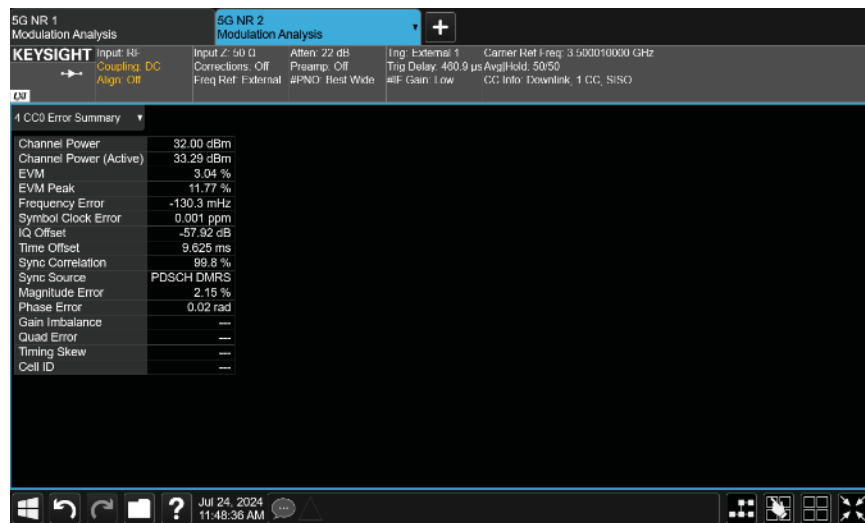
FREQUENCY STABILITY



3.45G Band, 3450.00 MHz to 3550.00 MHz

40 MHz Bandwidth, QPSK

Extreme Temperature, -30°C, Mid Channel, 3500.02 MHz

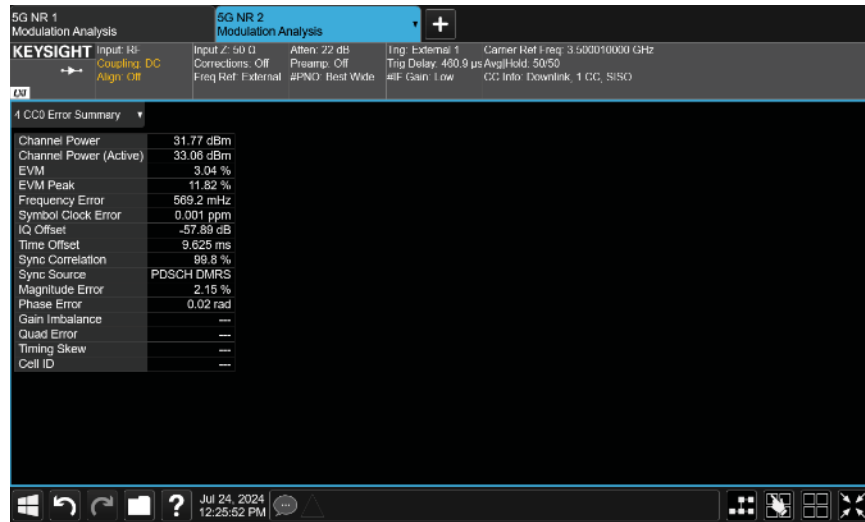


3.45G Band, 3450.00 MHz to 3550.00 MHz

40 MHz Bandwidth, QPSK

Extreme Temperature, -20°C, Mid Channel, 3500.02 MHz

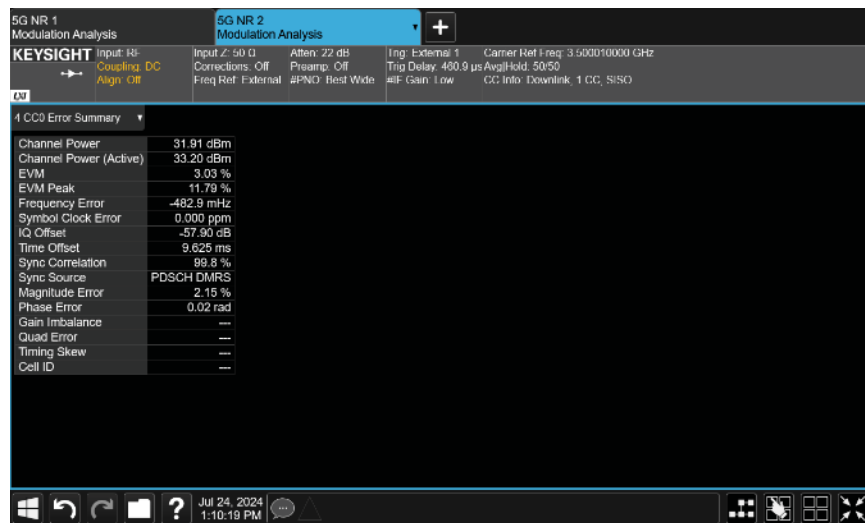
FREQUENCY STABILITY



3.45G Band, 3450.00 MHz to 3550.00 MHz

40 MHz Bandwidth, QPSK

Extreme Temperature, -10°C, Mid Channel, 3500.02 MHz

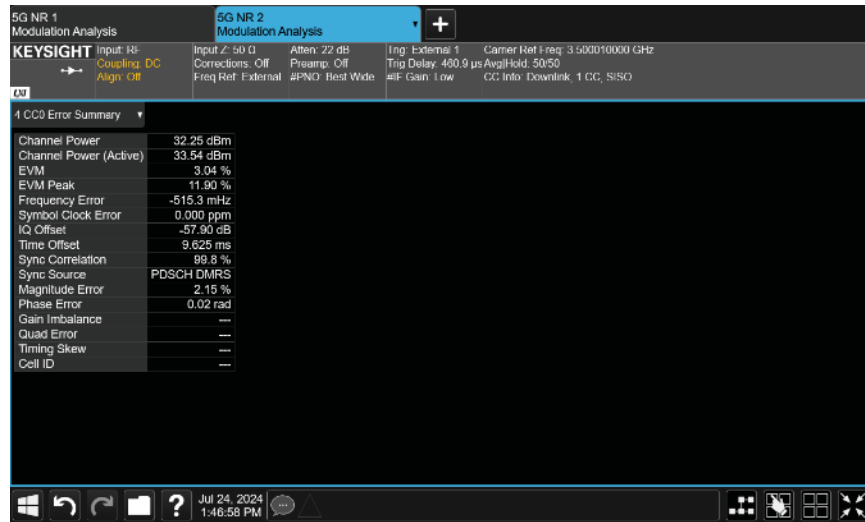


3.45G Band, 3450.00 MHz to 3550.00 MHz

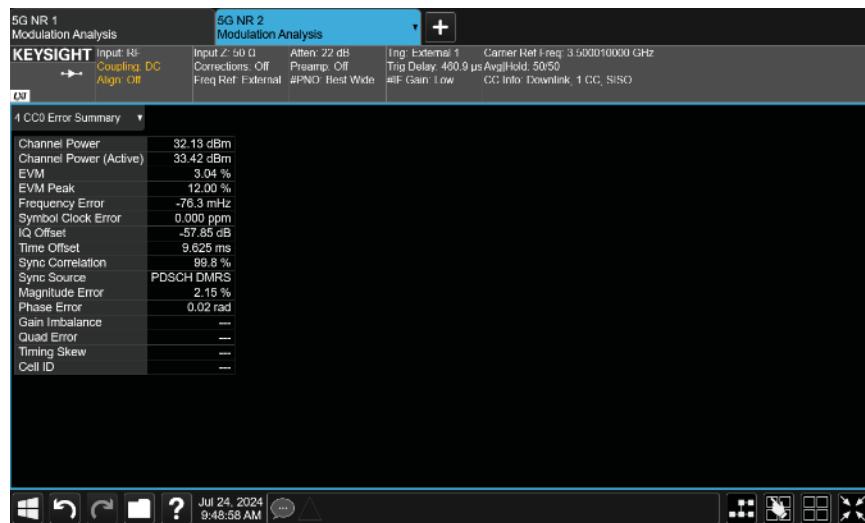
40 MHz Bandwidth, QPSK

Extreme Temperature, 0°C, Mid Channel, 3500.02 MHz

FREQUENCY STABILITY

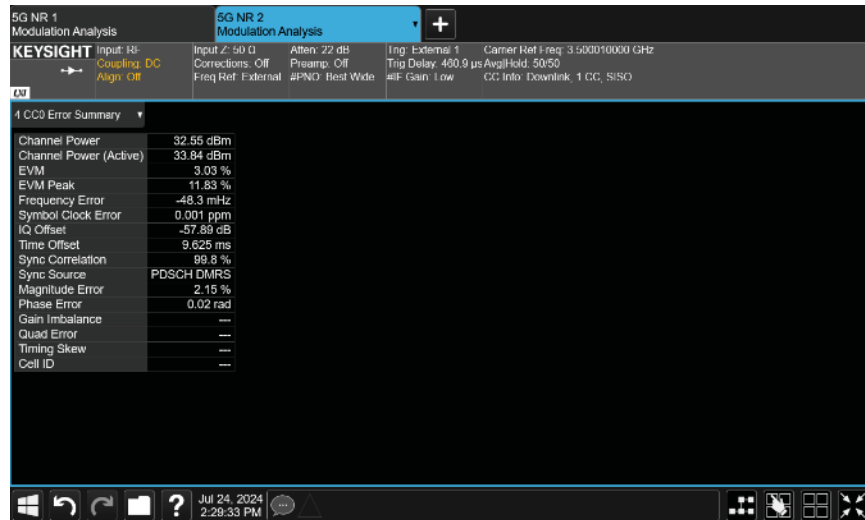


3.45G Band, 3450.00 MHz to 3550.00 MHz
40 MHz Bandwidth, QPSK
Extreme Temperature, 10°C, Mid Channel, 3500.02 MHz

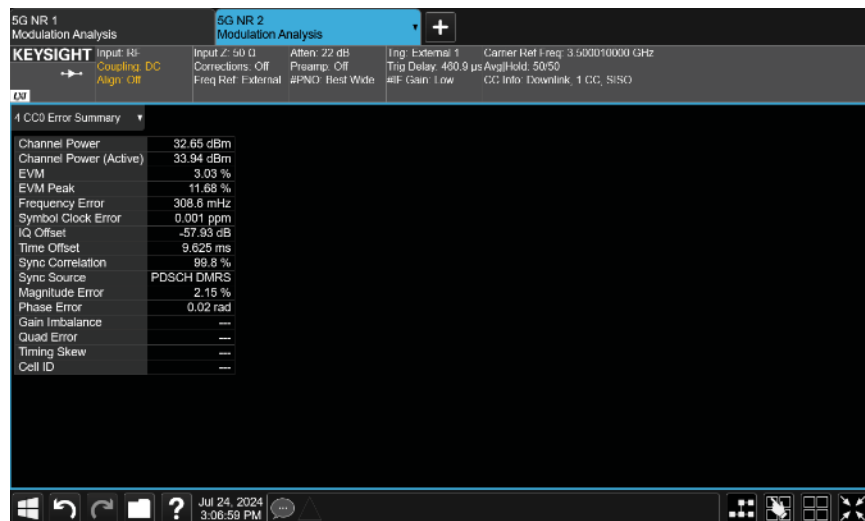


3.45G Band, 3450.00 MHz to 3550.00 MHz
40 MHz Bandwidth, QPSK
Extreme Temperature, 20°C, Mid Channel, 3500.02 MHz

FREQUENCY STABILITY

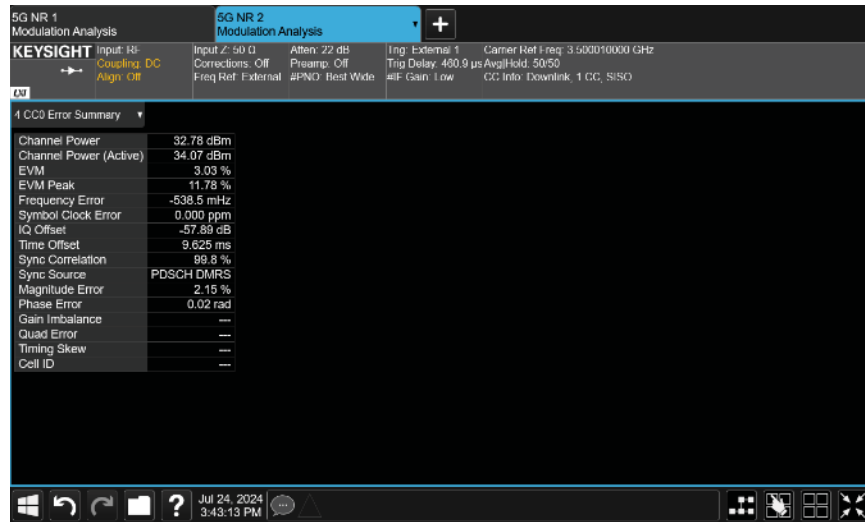


3.45G Band, 3450.00 MHz to 3550.00 MHz
40 MHz Bandwidth, QPSK
Extreme Temperature, 30°C, Mid Channel, 3500.02 MHz



3.45G Band, 3450.00 MHz to 3550.00 MHz
40 MHz Bandwidth, QPSK
Extreme Temperature, 40°C, Mid Channel, 3500.02 MHz

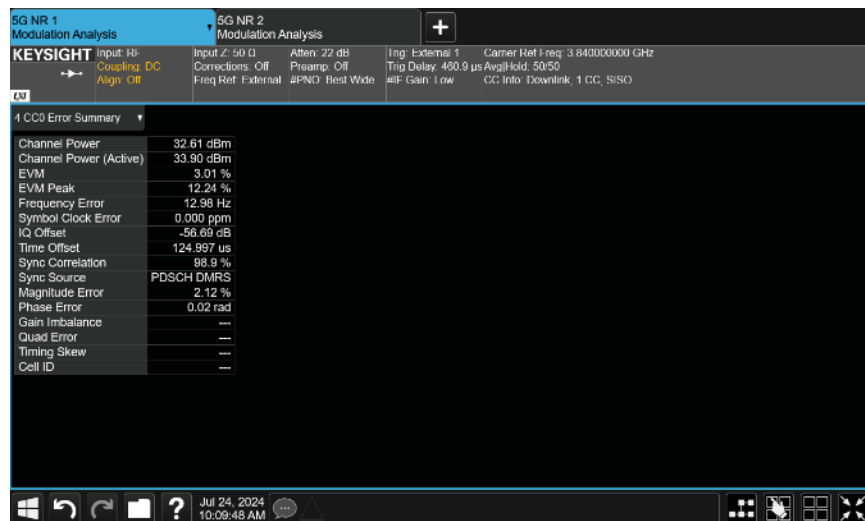
FREQUENCY STABILITY



3.45G Band, 3450.00 MHz to 3550.00 MHz

40 MHz Bandwidth, QPSK

Extreme Temperature, 50°C, Mid Channel, 3500.02 MHz

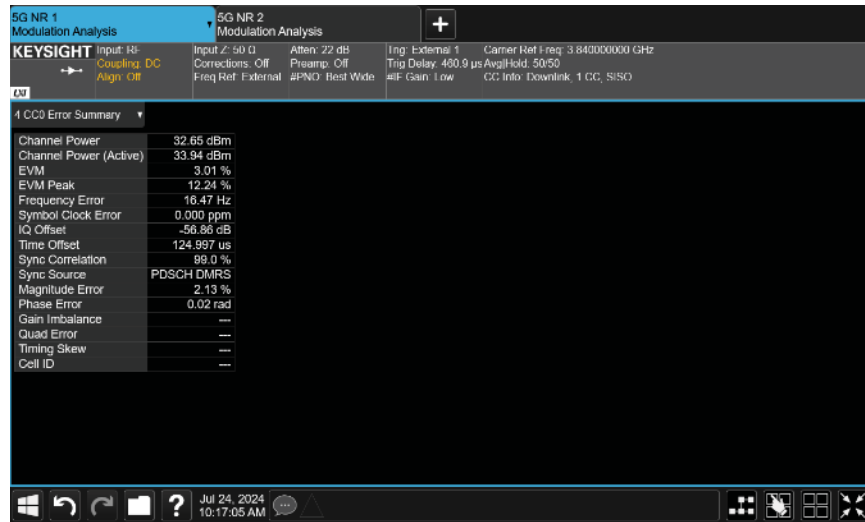


3.7G Band, 3700.00 MHz to 3980.00 MHz

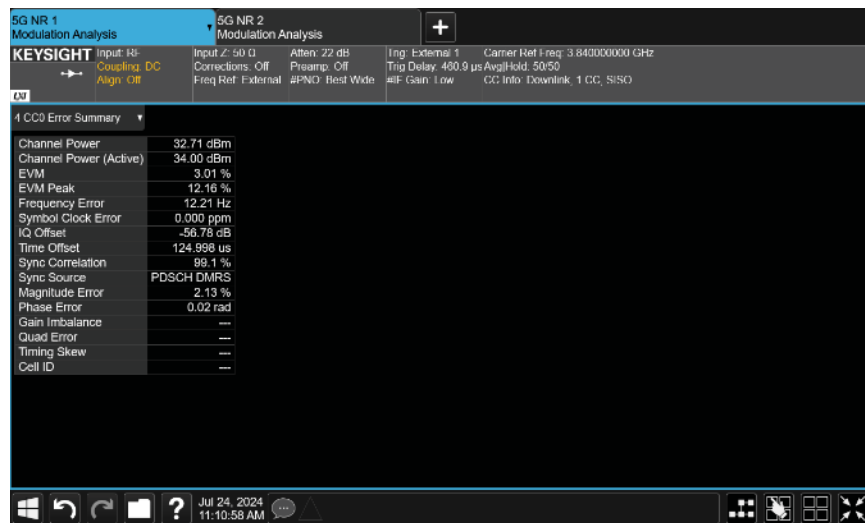
40 MHz Bandwidth, QPSK

Low Voltage, 40.8 VDC, Mid Channel 3840.00 MHz

FREQUENCY STABILITY

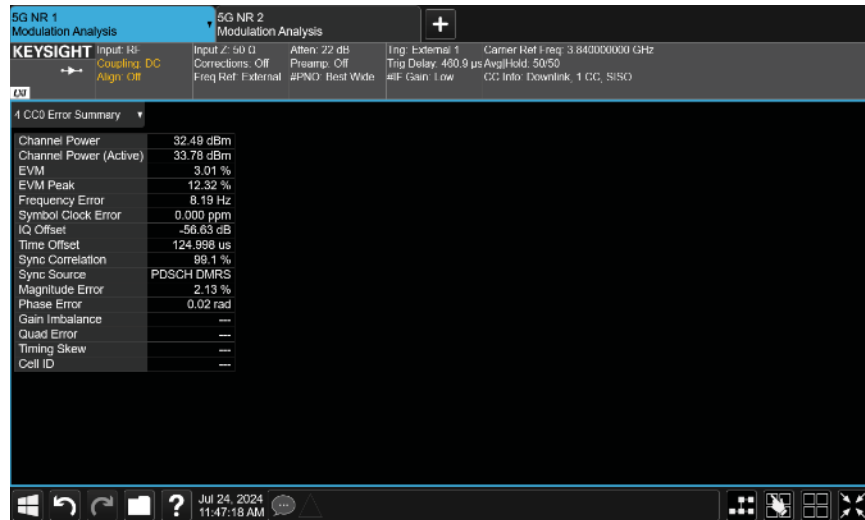


3.7G Band, 3700.00 MHz to 3980.00 MHz
40 MHz Bandwidth, QPSK
High Voltage, 55.2 VDC, Mid Channel, 3840.00 MHz



3.7G Band, 3700.00 MHz to 3980.00 MHz
40 MHz Bandwidth, QPSK
Extreme Temperature, -30°C, Mid Channel, 3840.00 MHz

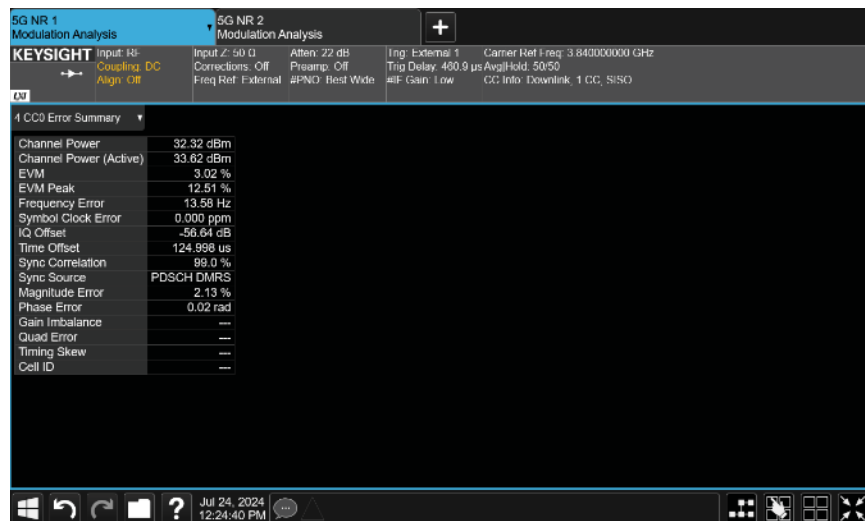
FREQUENCY STABILITY



3.7G Band, 3700.00 MHz to 3980.00 MHz

40 MHz Bandwidth, QPSK

Extreme Temperature, -20°C, Mid Channel, 3840.00 MHz

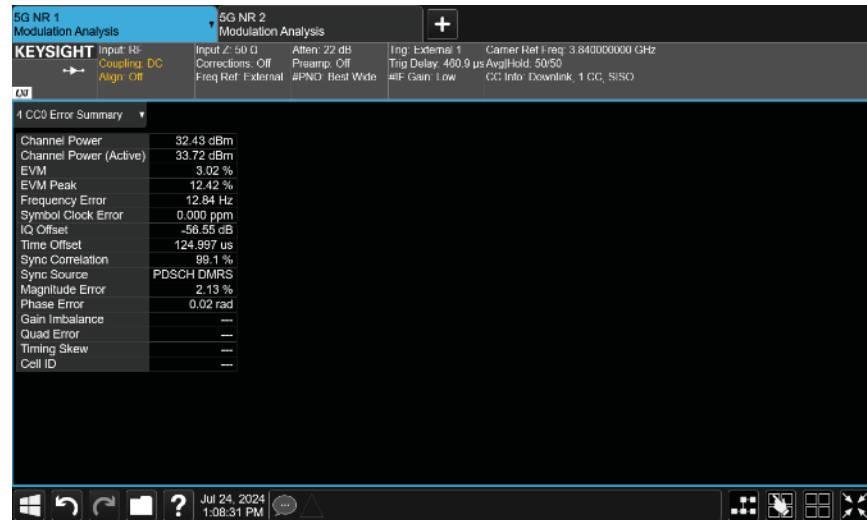


3.7G Band, 3700.00 MHz to 3980.00 MHz

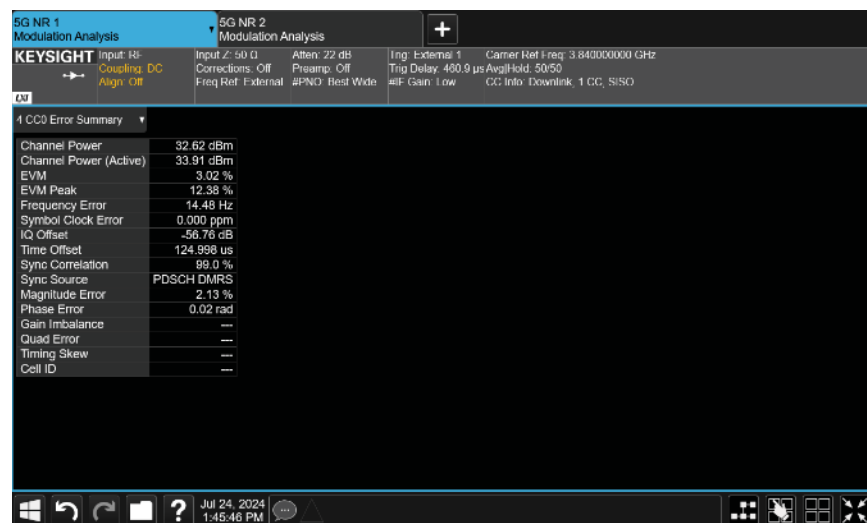
40 MHz Bandwidth, QPSK

Extreme Temperature, -10°C, Mid Channel, 3840.00 MHz

FREQUENCY STABILITY

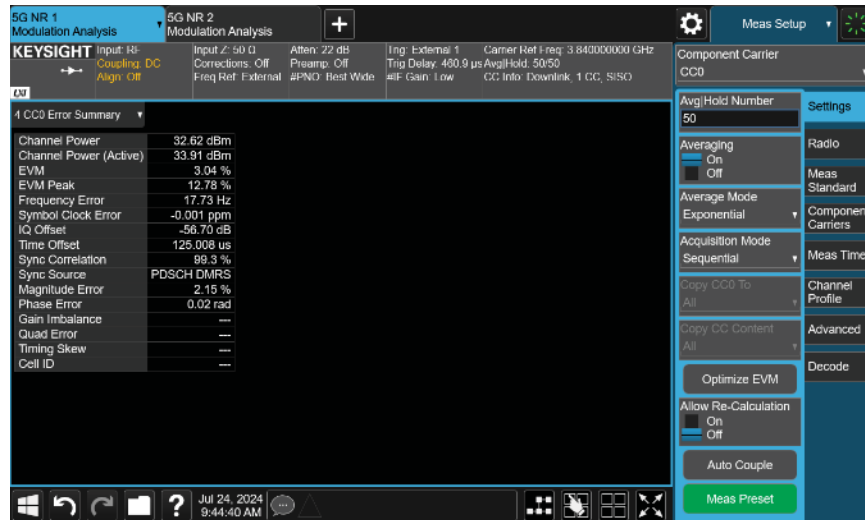


3.7G Band, 3700.00 MHz to 3980.00 MHz
40 MHz Bandwidth, QPSK
Extreme Temperature, 0°C, Mid Channel, 3840.00 MHz

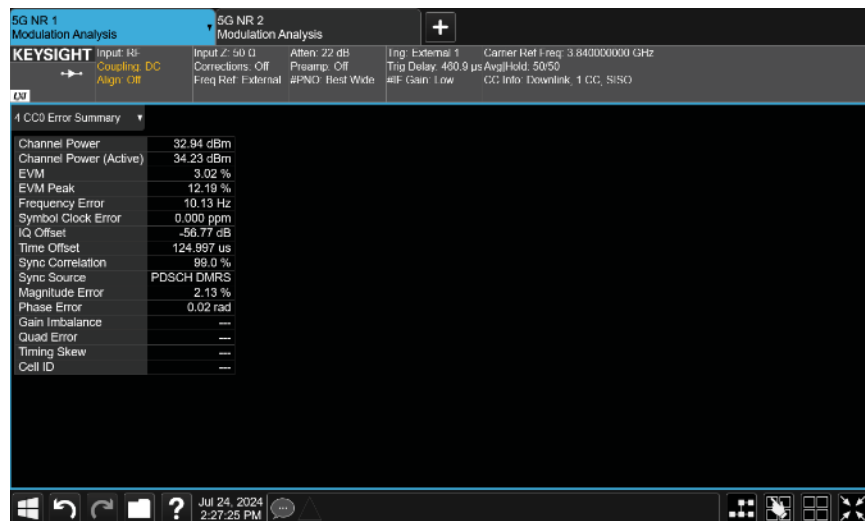


3.7G Band, 3700.00 MHz to 3980.00 MHz
40 MHz Bandwidth, QPSK
Extreme Temperature, 10°C, Mid Channel, 3840.00 MHz

FREQUENCY STABILITY

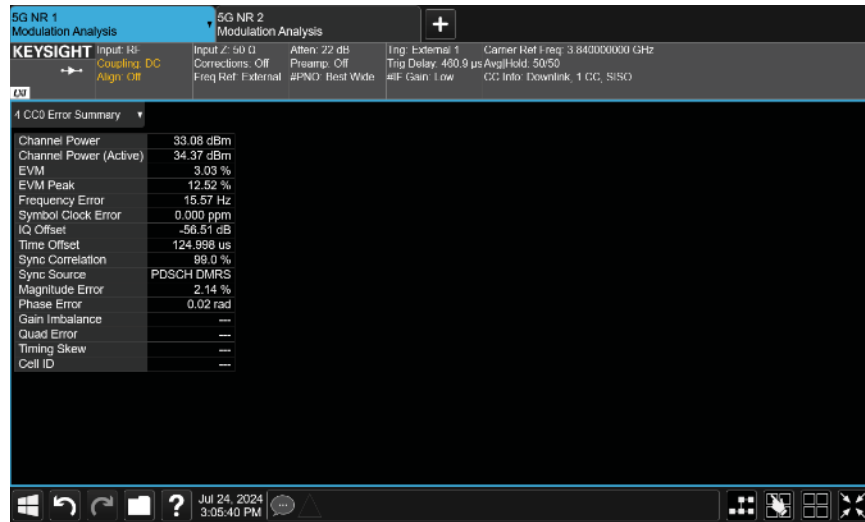


3.7G Band, 3700.00 MHz to 3980.00 MHz
40 MHz Bandwidth, QPSK
Extreme Temperature, 20°C, Mid Channel, 3840.00 MHz

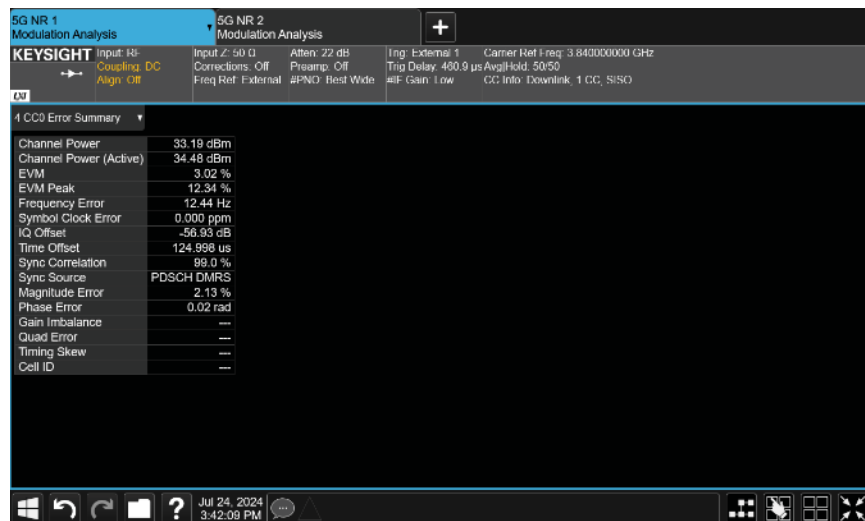


3.7G Band, 3700.00 MHz to 3980.00 MHz
40 MHz Bandwidth, QPSK
Extreme Temperature, 30°C, Mid Channel, 3840.00 MHz

FREQUENCY STABILITY



3.7G Band, 3700.00 MHz to 3980.00 MHz
40 MHz Bandwidth, QPSK
Extreme Temperature, 40°C, Mid Channel, 3840.00 MHz



3.7G Band, 3700.00 MHz to 3980.00 MHz
40 MHz Bandwidth, QPSK
Extreme Temperature, 50°C, Mid Channel, 3840.00 MHz

End of Test Report