

Wave-Nano BLE Annex

Summary

Test	Frequency (MHz)	Nominal Power (dBm)	Nominal Bandwidth (MHz)	Result
RF output power	2402.000	15.0	1.000000	PASS
Minimum Emission Bandwidth 6 dB	2402.000	15.0	1.000000	PASS
Peak Power Spectral Density	2402.000	15.0	1.000000	PASS
Occupied Channel Bandwidth 99%	2402.000	15.0	1.000000	PASS
Band Edge low	2402.000	15.0	1.000000	PASS
Tx Spurious Emission	2402.000	15.0	1.000000	PASS
Emissions in restricted frequency bands (Average)	2402.000	15.0	1.000000	PASS
RF output power	2442.000	15.0	1.000000	PASS
Minimum Emission Bandwidth 6 dB	2442.000	15.0	1.000000	PASS
Peak Power Spectral Density	2442.000	15.0	1.000000	PASS
Occupied Channel Bandwidth 99%	2442.000	15.0	1.000000	PASS
Tx Spurious Emission	2442.000	15.0	1.000000	PASS
Emissions in restricted frequency bands (Average)	2442.000	15.0	1.000000	PASS
RF output power	2480.000	15.0	1.000000	PASS
Minimum Emission Bandwidth 6 dB	2480.000	15.0	1.000000	PASS
Peak Power Spectral Density	2480.000	15.0	1.000000	PASS
Occupied Channel Bandwidth 99%	2480.000	15.0	1.000000	PASS
Band Edge high	2480.000	15.0	1.000000	PASS
Tx Spurious Emission	2480.000	15.0	1.000000	PASS
Emissions in restricted frequency bands (Average)	2480.000	15.0	1.000000	PASS

RF output power (2402 MHz; 15.000 dBm; 1 MHz)

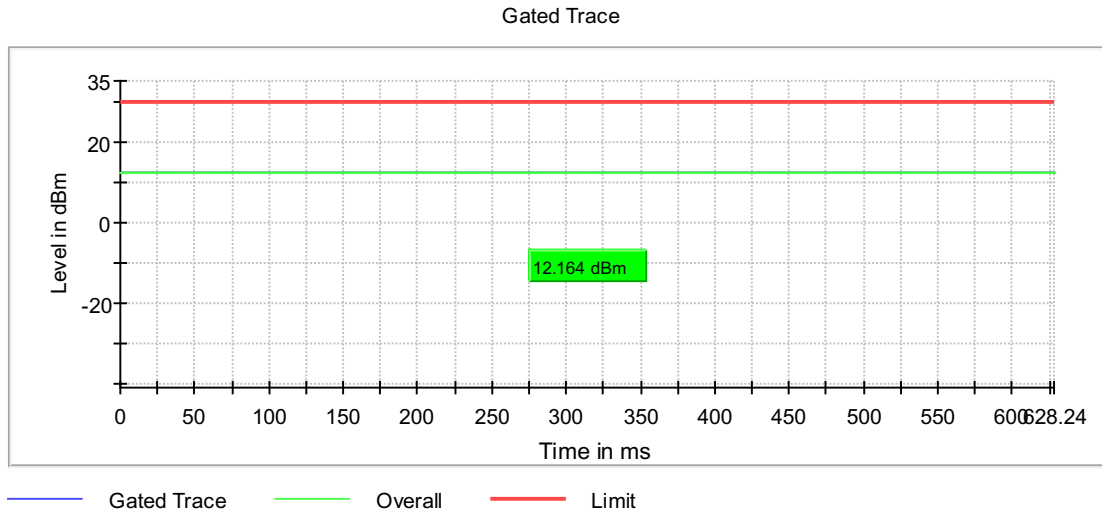
Customized settings.

Test according to FCC title 47 part 15 §15.247(b), KDB 558074 D01 DTS Meas Guidance v05 and ANSI C63.10-2013 11.9.2.3.2

Measurement uncertainty calculated in accordance with ETSI TR 100 028-1.
Expanded Combined Uncertainty of absolute Level Measurement (K=2) < 1 dB

Result

DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
2402.000000	12.2	30.0	14.2	63.024	PASS



OSP PowerMeter settings

Setting	Instrument Value	Target Value
Measurement Time	1.000 s	1.000 s
Points	1000000	1000000
Time resolution	1.000 μ s	1.000 μ s

Minimum Emission Bandwidth 6 dB (2402 MHz; 15.000 dBm; 1 MHz)

Customized settings.

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v05 and ANSI C63.10-2013 11.8.1

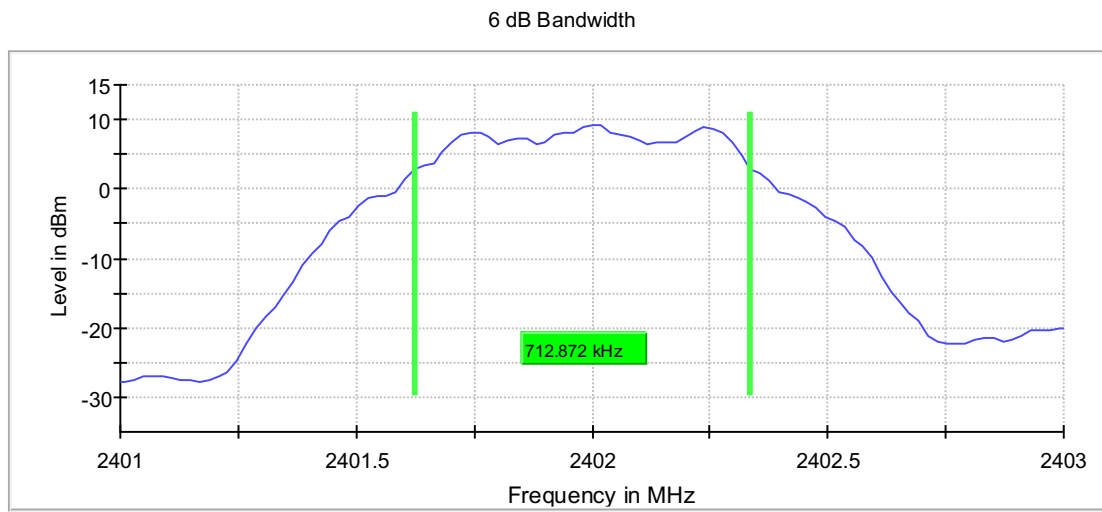
Measurement uncertainty calculated in accordance with ETSI TR 100 028-1.
Expanded Uncertainty (K=2) < 2%

6 dB Bandwidth

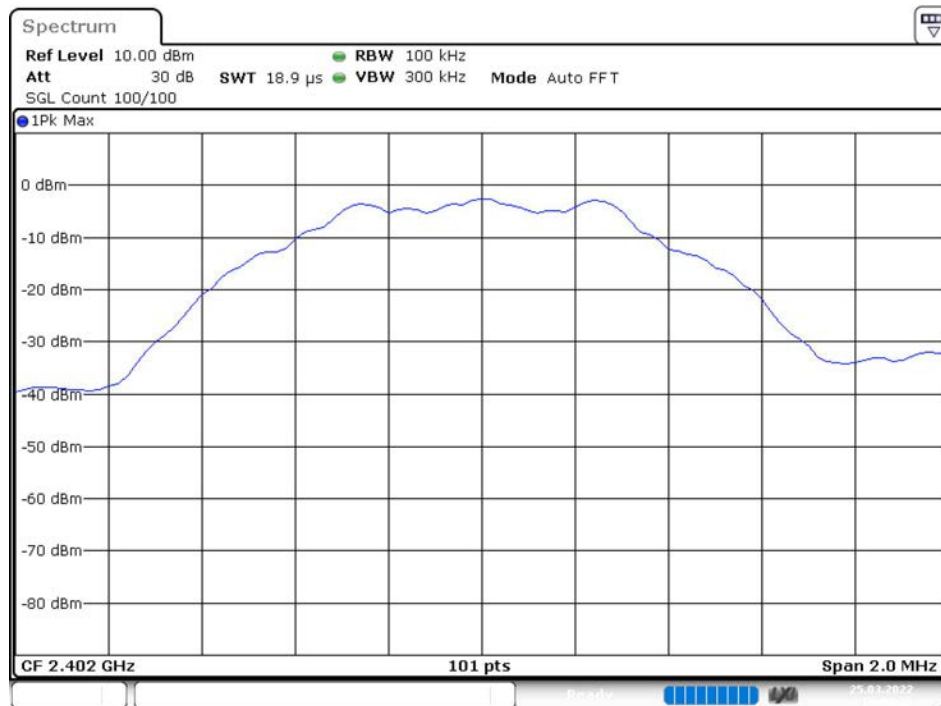
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2402.000000	0.712872	0.500000	---	2401.623762	2402.336634

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2402.000000	9.2	PASS



Bandwidth



Date: 25.MAR.2022 10:09:32

Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40300 GHz	2.40300 GHz
Span	2.000 MHz	2.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 40
Sweptime	18.938 μ s	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off

Peak Power Spectral Density (2402 MHz; 15.000 dBm; 1 MHz)

Customized settings.

Test according to FCC title 47 part 15 §15.247(a),(e), KDB 558074 D01 DTS Meas Guidance v05 F and ANSI C63.10-2013

Measurement uncertainty calculated in accordance with ETSI TR 100 028-1.
 Expanded Uncertainty (K=2) < 1.3 dB

Result

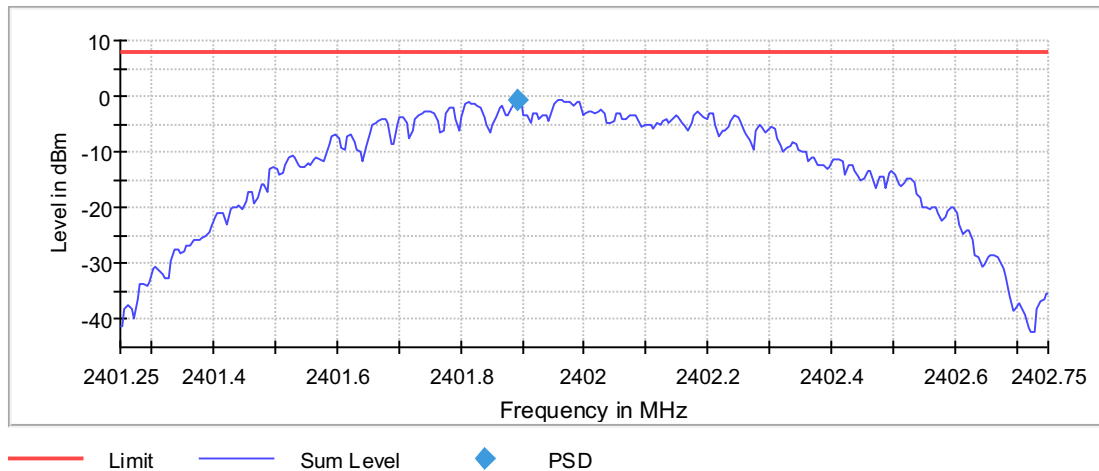
DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
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2402.000000	2401.892500	-0.504	8.0	PASS
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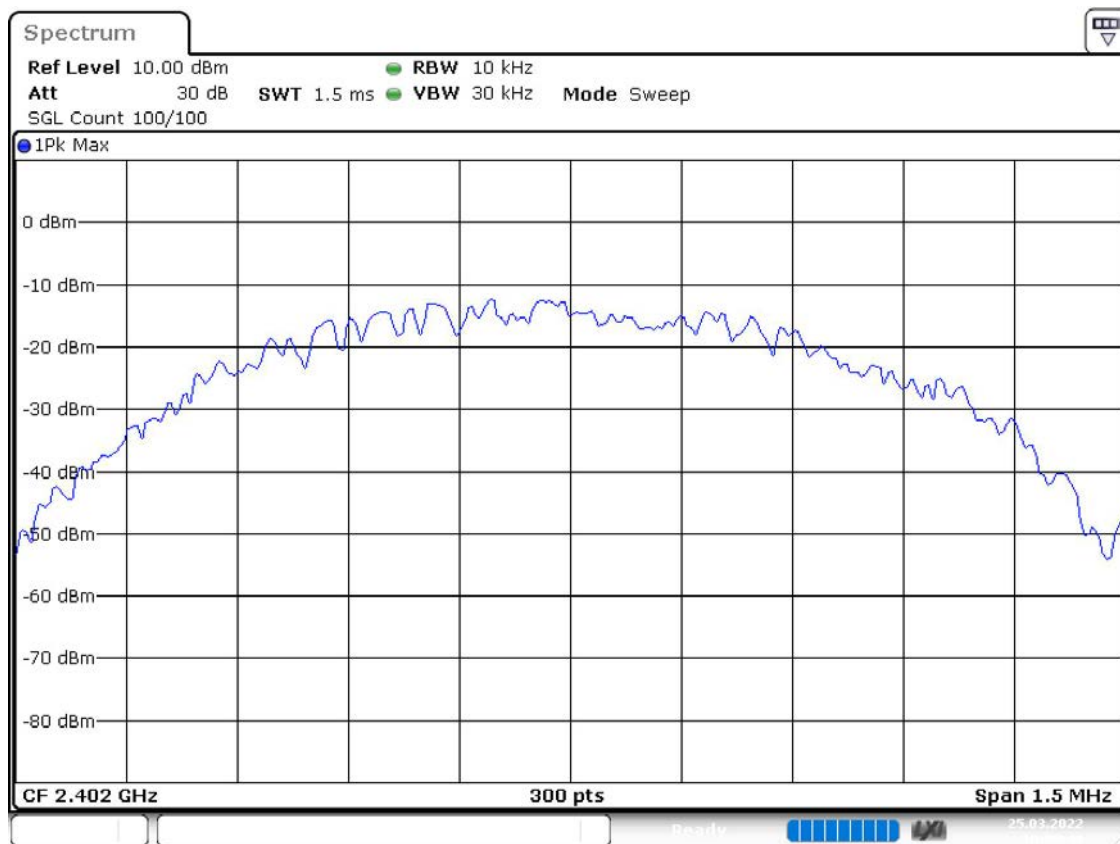
Ports

Port	State
1	used

Peak Power Spectral Density



PSD Connector 1



Date: 25.MAR.2022 10:09:41

Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40125 GHz	2.40125 GHz
Stop Frequency	2.40275 GHz	2.40275 GHz
Span	1.500 MHz	1.500 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	300	~ 300
SweepTime	1.500 ms	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	Sweep
Preamp	off	off

Occupied Channel Bandwidth 99% (2402 MHz; 15.000 dBm; 1 MHz)

Customized settings.

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v05 and ANSI C63.10-2013 11.8.1

Measurement uncertainty calculated in accordance with ETSI TR 100 028-1.
Expanded Uncertainty (K=2) < 2%

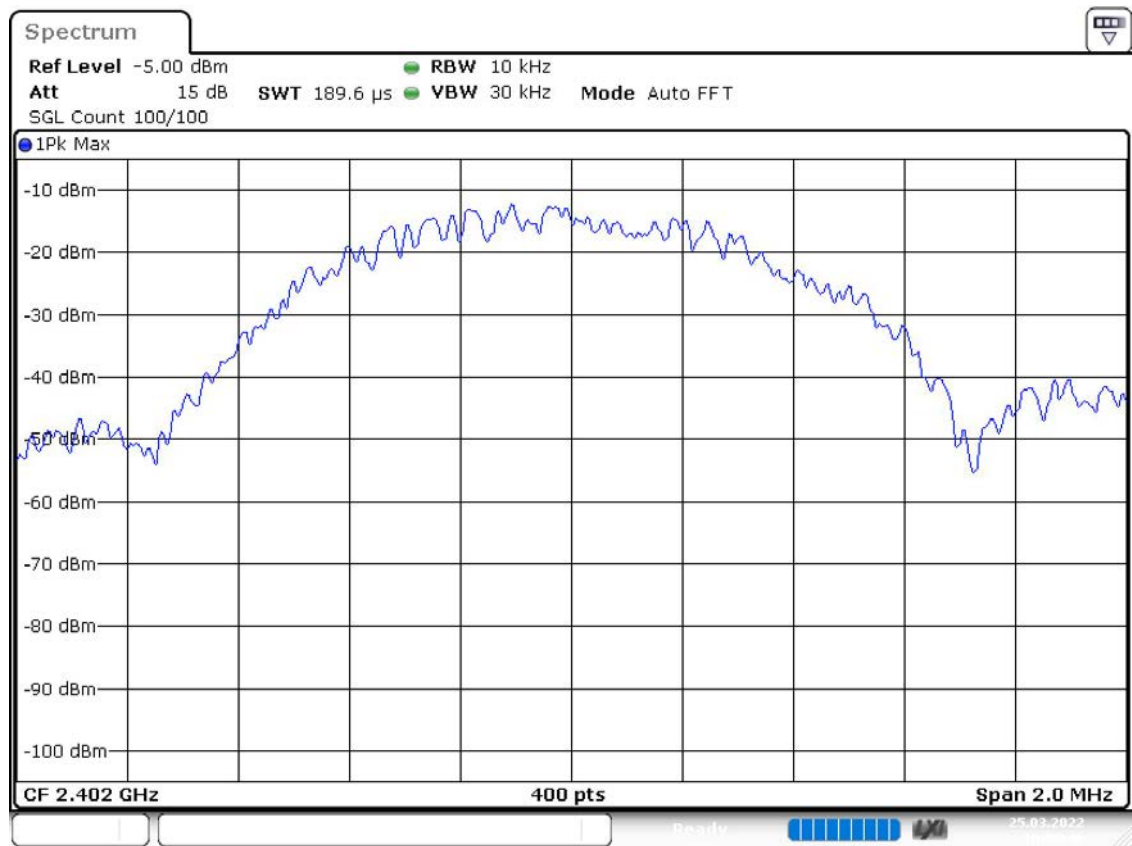
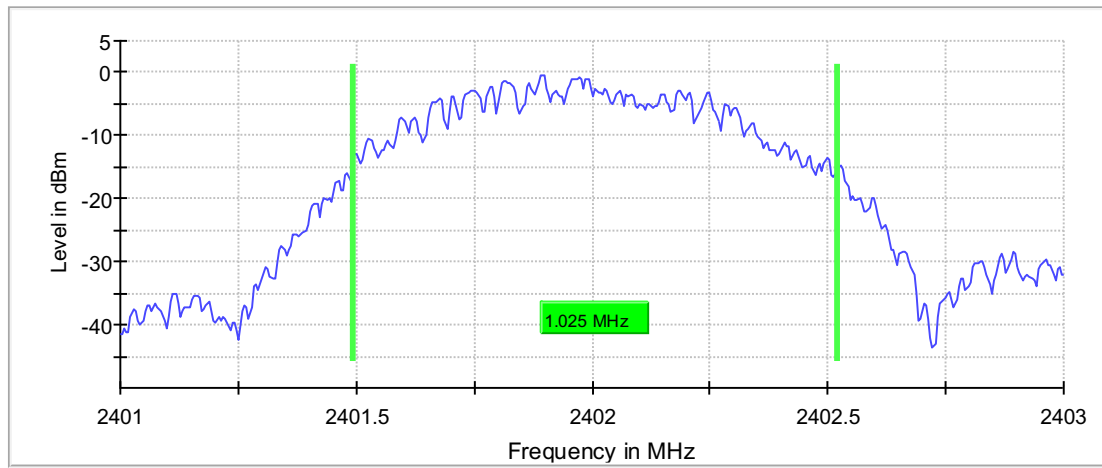
99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2402.000000	1.025000	---	---	2401.492500	2402.517500

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2402.000000	PASS

99 % Bandwidth



Date: 25.MAR.2022 10:09:46

Bandwidth

Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40300 GHz	2.40300 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	>= 10.000 kHz

VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	400	~ 400
SweepTime	189.648 μs	AUTO
Reference Level	-5.000 dBm	-5.000 dBm
Attenuation	15.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off

Band Edge low (2402 MHz; 15.000 dBm; 1 MHz)

Customized settings.

Test according to FCC title 47 part 15 §15.247(d), KDB 558074 D01 DTS Meas Guidance v05 8.7 and ANSI C63.10-2013

Measurement uncertainty calculated in accordance with ETSI TR 100 028-1.
Expanded Uncertainty (K=2) < 0.8 dB

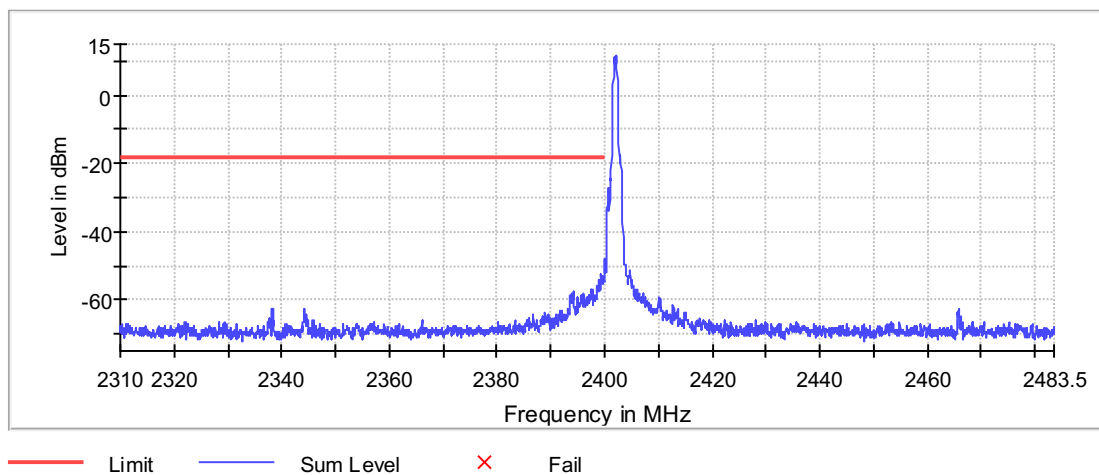
Result

DUT Frequency (MHz)	Result
2402.000000	PASS

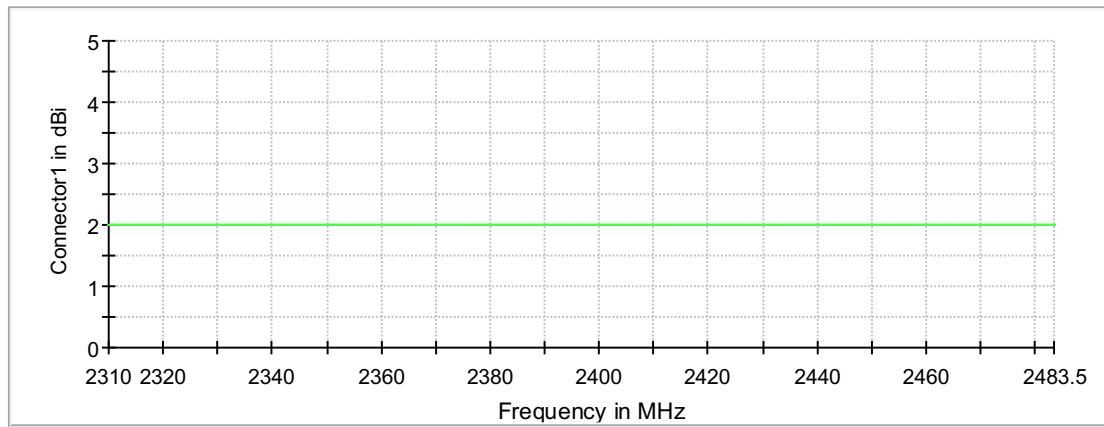
Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2399.975000	-47.8	29.7	-18.1	PASS
2399.925000	-48.3	30.2	-18.1	PASS
2399.875000	-50.6	32.5	-18.1	PASS
2399.225000	-52.5	34.4	-18.1	PASS
2399.775000	-52.8	34.7	-18.1	PASS
2399.275000	-52.8	34.7	-18.1	PASS
2399.375000	-52.8	34.7	-18.1	PASS
2399.725000	-52.9	34.8	-18.1	PASS
2399.425000	-53.0	34.9	-18.1	PASS
2399.525000	-53.0	34.9	-18.1	PASS
2399.175000	-53.0	34.9	-18.1	PASS
2399.475000	-53.2	35.0	-18.1	PASS
2399.325000	-53.2	35.1	-18.1	PASS
2399.675000	-53.6	35.5	-18.1	PASS
2399.625000	-54.2	36.1	-18.1	PASS

Band Edge

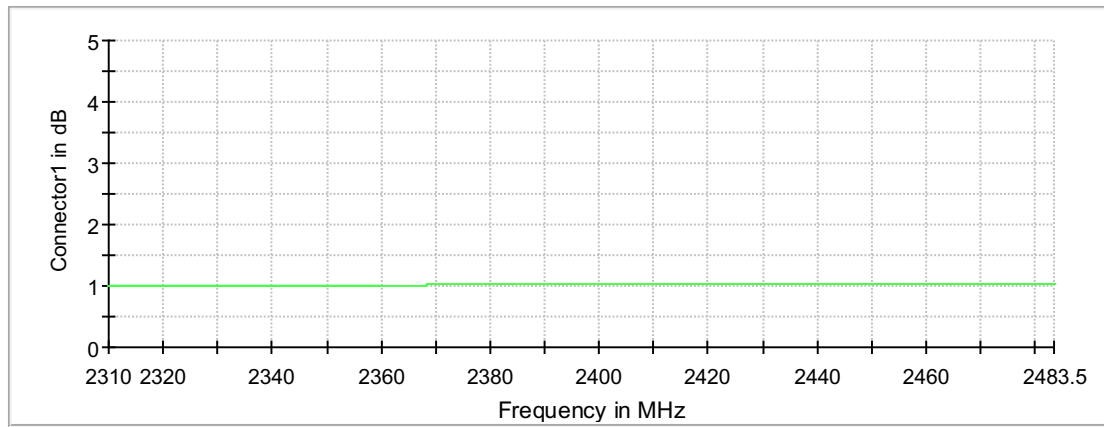


Gain



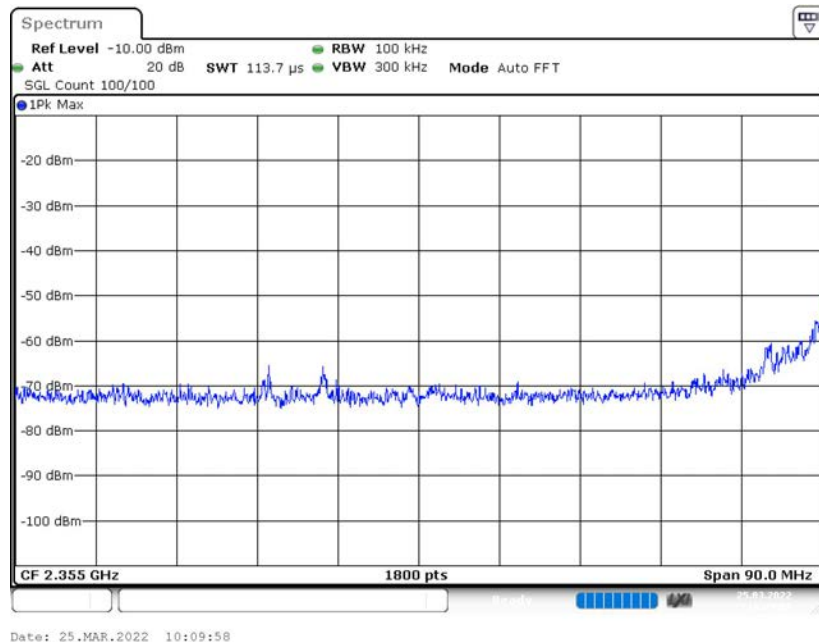
Connector1

Attenuation

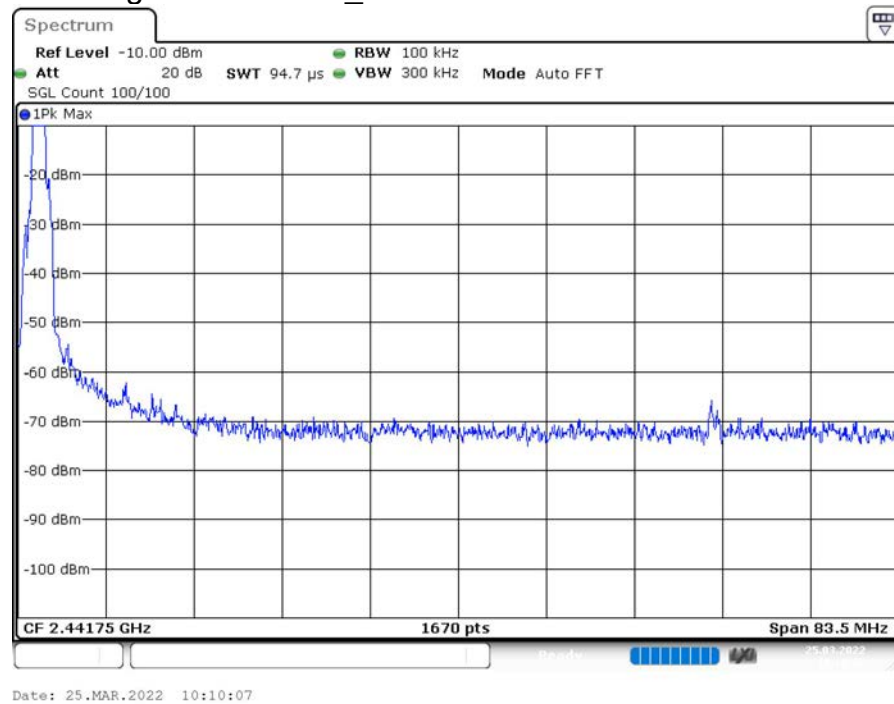


Connector1

Band Edge Connector 1_0



Band Edge Connector 1_1



Measurement 1

Setting	Instrument Value	Target Value
Start Frequency	2.31000 GHz	2.31000 GHz
Stop Frequency	2.40000 GHz	2.40000 GHz
Span	90.000 MHz	90.000 MHz
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz

SweepPoints	1800	~ 1800
SweepTime	113.672 μ s	AUTO
Reference Level	-10.000 dBm	-30.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off

Measurement 2

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.48350 GHz	2.48350 GHz
Span	83.500 MHz	83.500 MHz
RBW	100.000 kHz	$\leq$ 100.000 kHz
VBW	300.000 kHz	$\geq$ 300.000 kHz
SweepPoints	1670	~ 1670
SweepTime	94.727 μ s	AUTO
Reference Level	-10.000 dBm	-30.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off

Tx Spurious Emission (2402 MHz; 15.000 dBm; 1 MHz)

Customized settings.

Test according to FCC title 47 part 15 §15.247(d), KDB 558074 D01 DTS Meas Guidance v05 8.5 and ANSI C63.10-2013 11.11.2 & 11.11.3

Measurement uncertainty calculated in accordance with ETSI TR 100 028-1.
Expanded Uncertainty ($K=2$) < 1.8 dB

Result

DUT Frequency (MHz)	Result
2402.000000	PASS

Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
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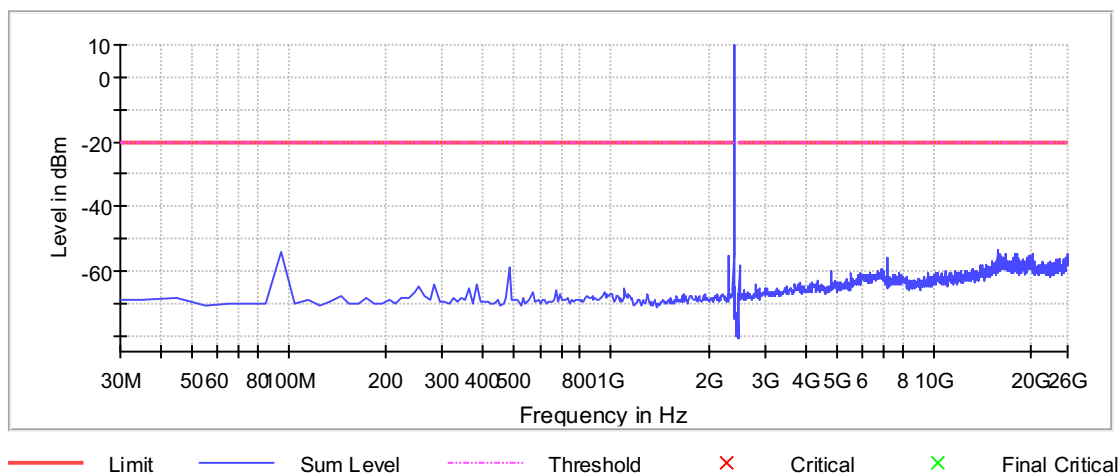
Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
15840.832023	-53.4	33.2	-20.2
94.726891	-54.3	34.1	-20.2
20238.307586	-54.4	34.2	-20.2
17849.678814	-54.6	34.3	-20.2
17889.655865	-54.7	34.5	-20.2
18209.472269	-54.7	34.5	-20.2
2395.021008	-54.7	34.5	-20.2
16800.281237	-54.7	34.5	-20.2
25975.014343	-54.9	34.6	-20.2
16130.665640	-55.0	34.7	-20.2
2305.399160	-55.0	34.8	-20.2
20338.250212	-55.2	34.9	-20.2
19898.502656	-55.2	34.9	-20.2
18199.478007	-55.3	35.1	-20.2
15800.854972	-55.3	35.1	-20.2

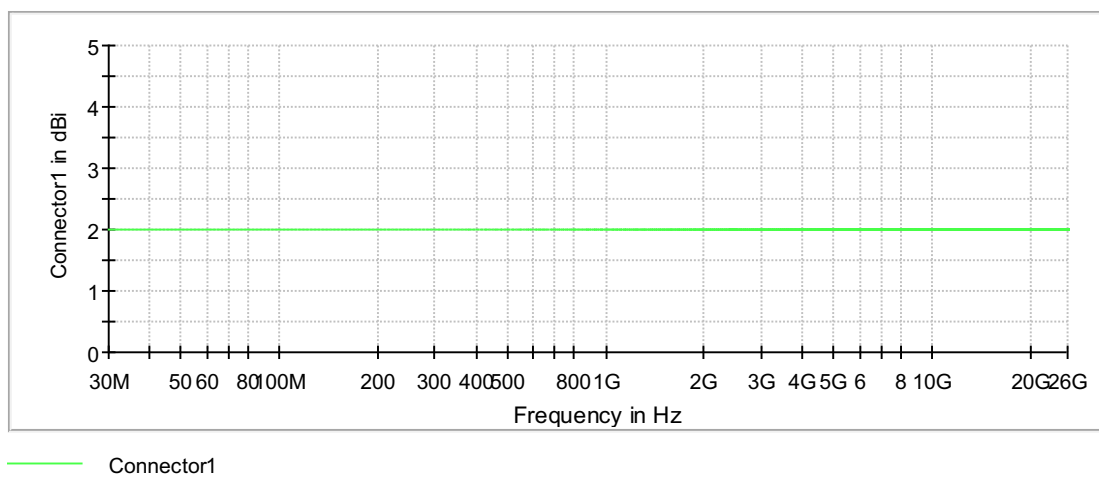
Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	2400.000000	1	1
2400.000000	2483.500000	1	1
2483.500000	26000.000000	1	1

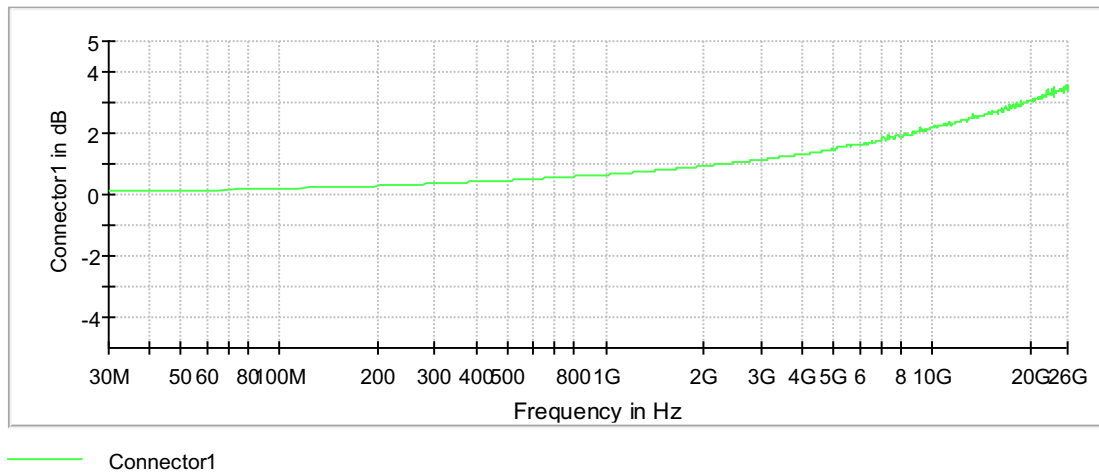
Spurious



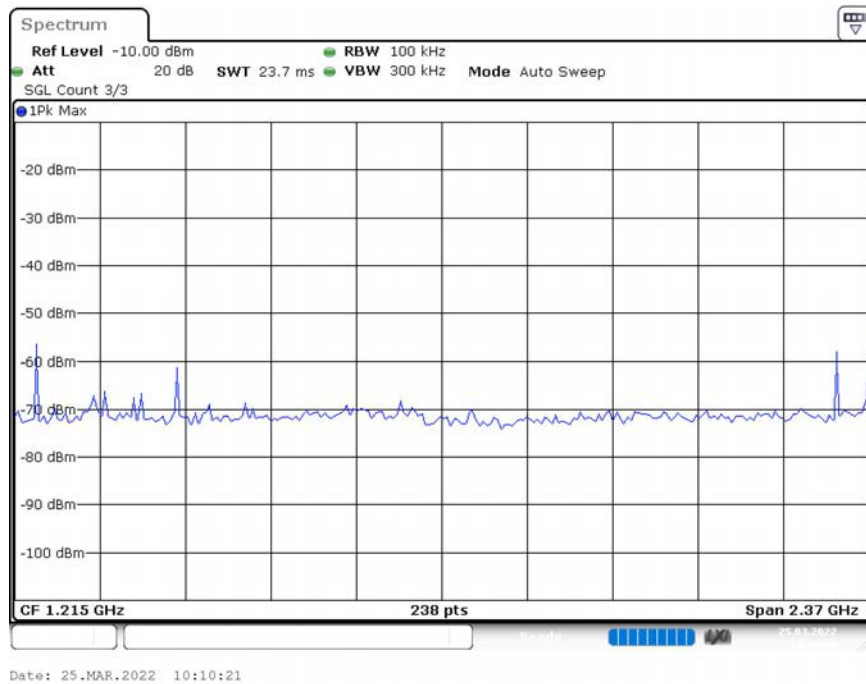
Gain



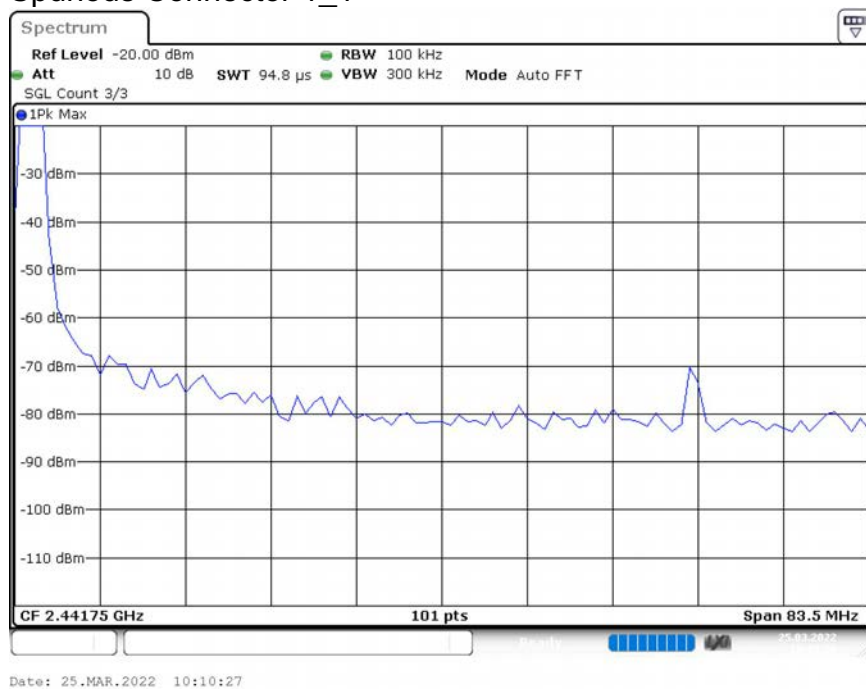
Attenuation



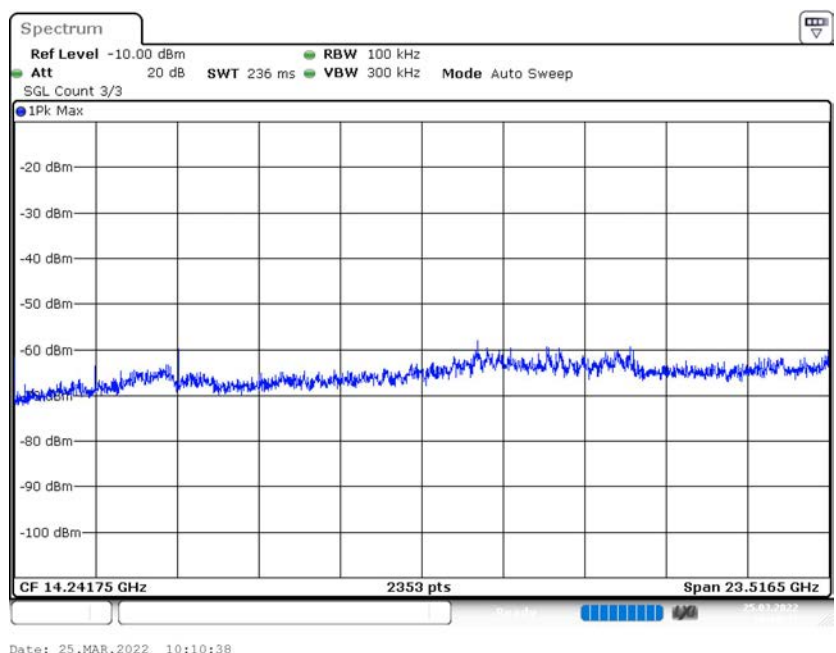
Spurious Connector 1_0



Spurious Connector 1_1



Spurious Connector 1_2



Pre Measurement 1

Setting	Instrument Value	Target Value
RBW	100.000 kHz	≤ 100.000 kHz
VBW	300.000 kHz	≥ 300.000 kHz
SweepPoints	238	~ 238
SweepTime	23.700 ms	AUTO
Reference Level	-10.000 dBm	-30.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	3	3
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off

Emissions in restricted frequency bands (Average) (2402 MHz; 15.000 dBm; 1 MHz)

Customized settings.

Test according to FCC title 47 part 15 §15.247(d), KDB 558074 D01 DTS Meas Guidance v05 8.6 and ANSI C63.10-2013 11.12.2.6

Measurement uncertainty calculated in accordance with ETSI TR 100 028-1.
 Expanded Uncertainty ($K=2$) < 1.8 dB

Result

DUT Frequency (MHz)	Result
2402.000000	PASS

Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
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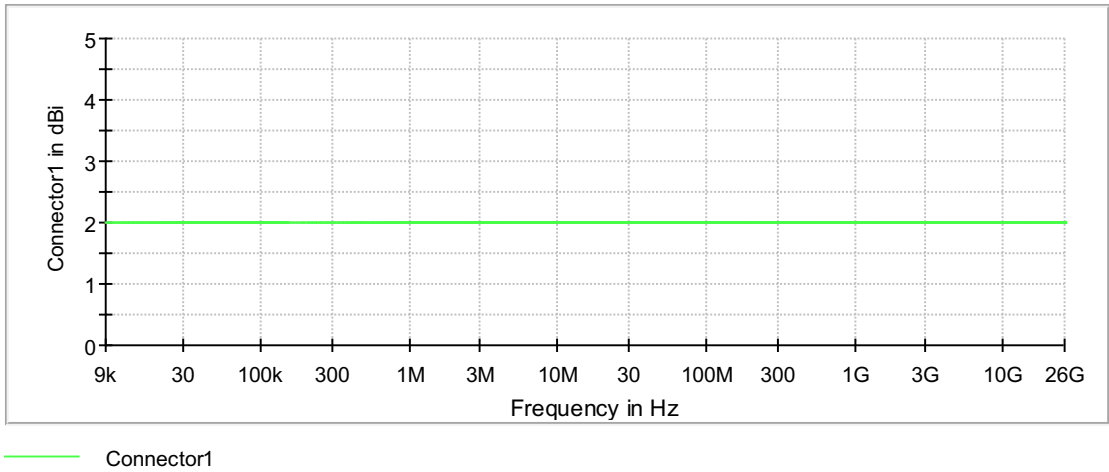
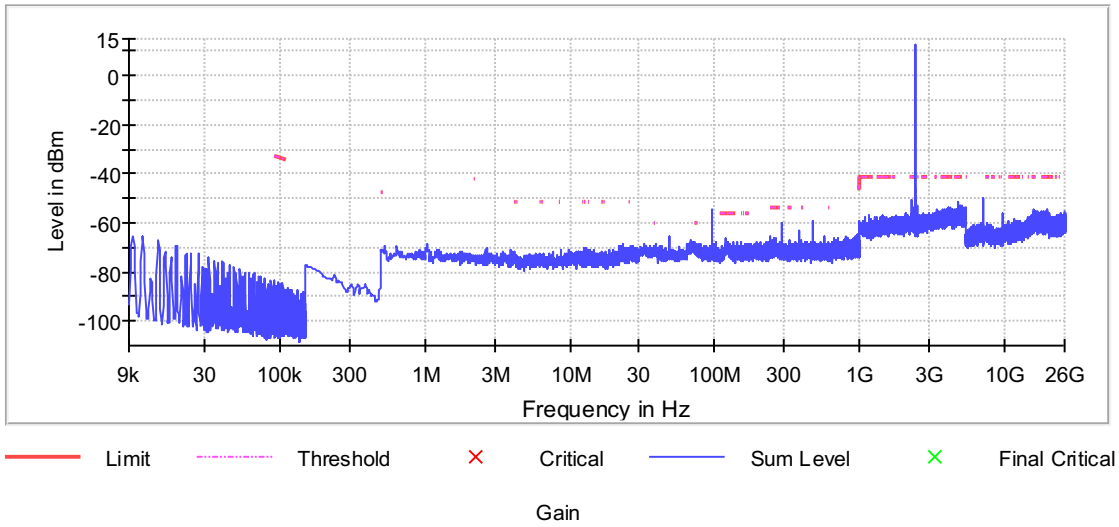
Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
73.675000	-69.0	9.1	-59.9
74.175000	-69.0	9.1	-59.9
73.725000	-69.1	9.2	-59.9
37.825000	-69.4	9.5	-59.9
73.125000	-69.5	9.6	-59.9
73.075000	-69.6	9.7	-59.9
37.875000	-69.6	9.7	-59.9
73.425000	-69.8	9.9	-59.9
73.325000	-69.8	9.9	-59.9
73.375000	-69.8	9.9	-59.9
74.125000	-70.0	10.1	-59.9
74.225000	-70.1	10.2	-59.9
117.625000	-66.6	10.2	-56.4
117.575000	-66.7	10.3	-56.4
73.625000	-70.2	10.3	-59.9

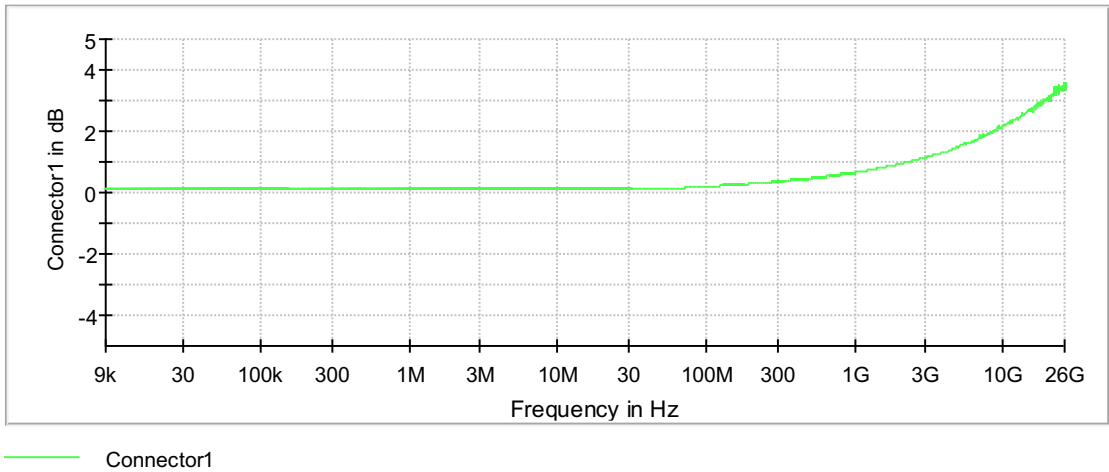
Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
0.009000	0.090000	2	2
0.090000	0.110000	2	2
0.110000	0.150000	2	2
0.150000	0.490000	2	2
0.490000	30.000000	2	2
30.000000	1000.000000	2	2
1000.000000	2400.000000	1	1
2400.000000	2483.500000	1	1
2483.500000	5470.000000	1	1
5470.000000	7000.000000	1	1
7000.000000	16000.000000	1	1
16000.000000	26000.000000	1	1

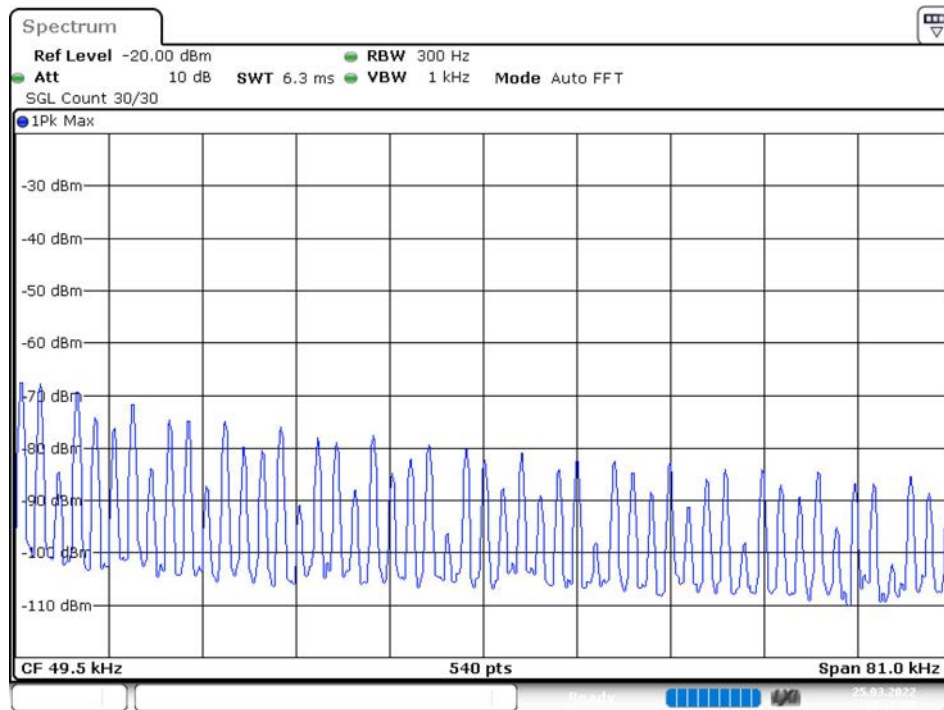
Restricted Band



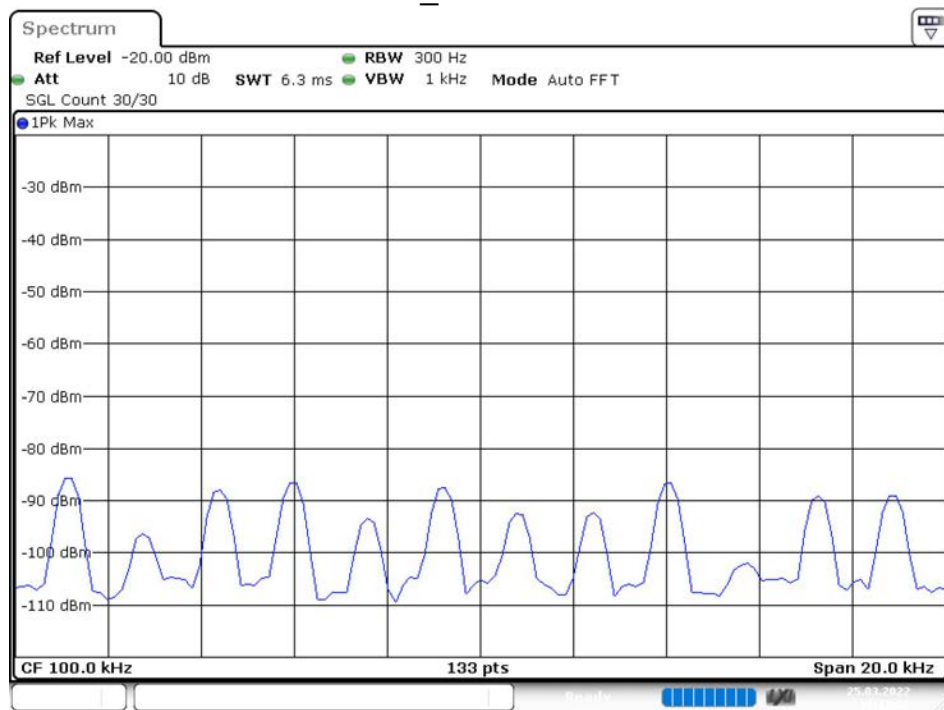
Attenuation



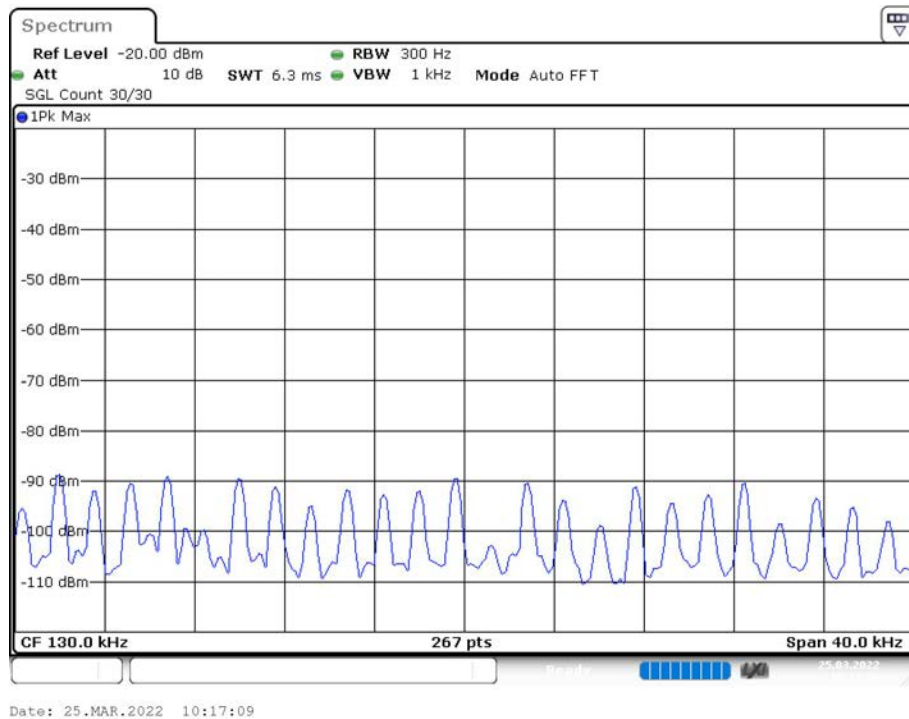
Restricted Band Connector 1_0



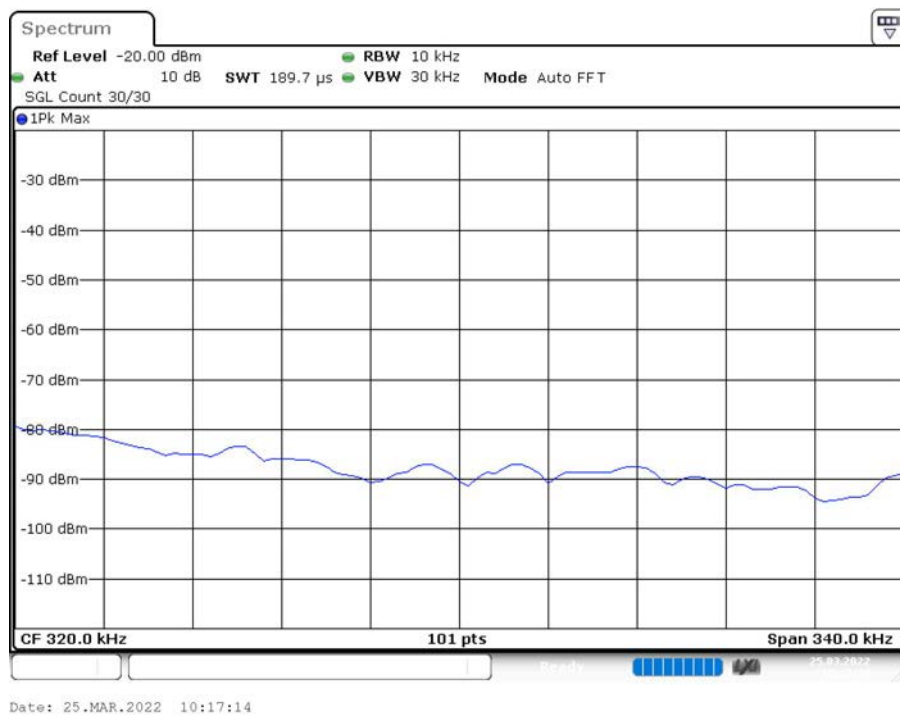
Restricted Band Connector 1_1



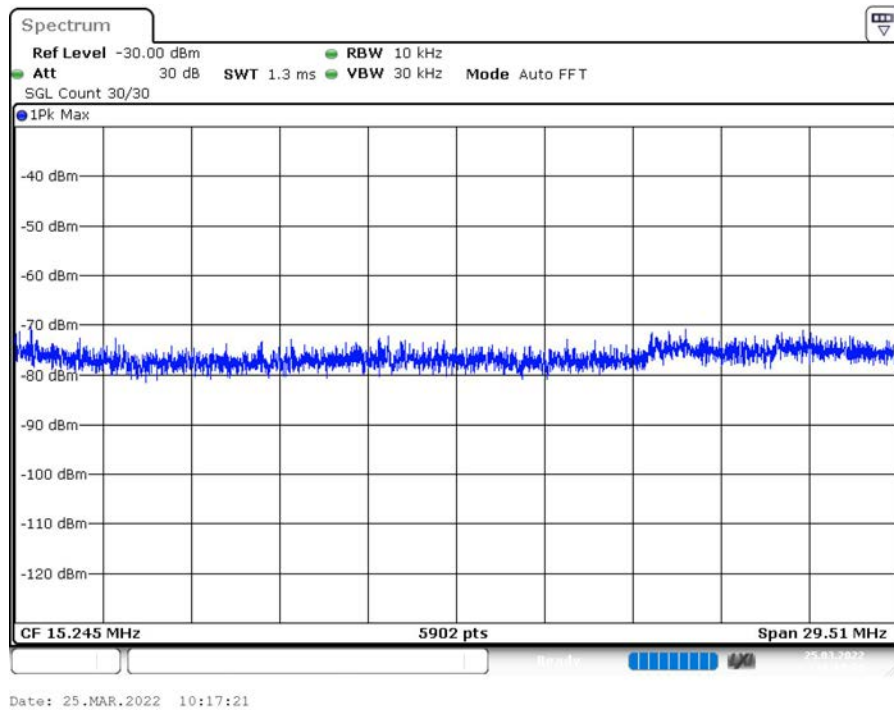
Restricted Band Connector 1_2



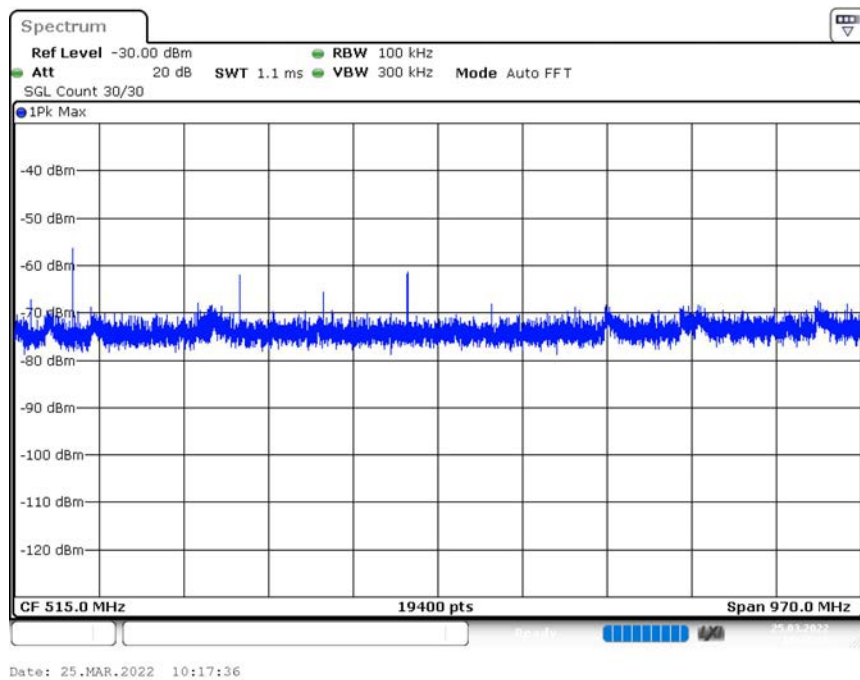
Restricted Band Connector 1_3



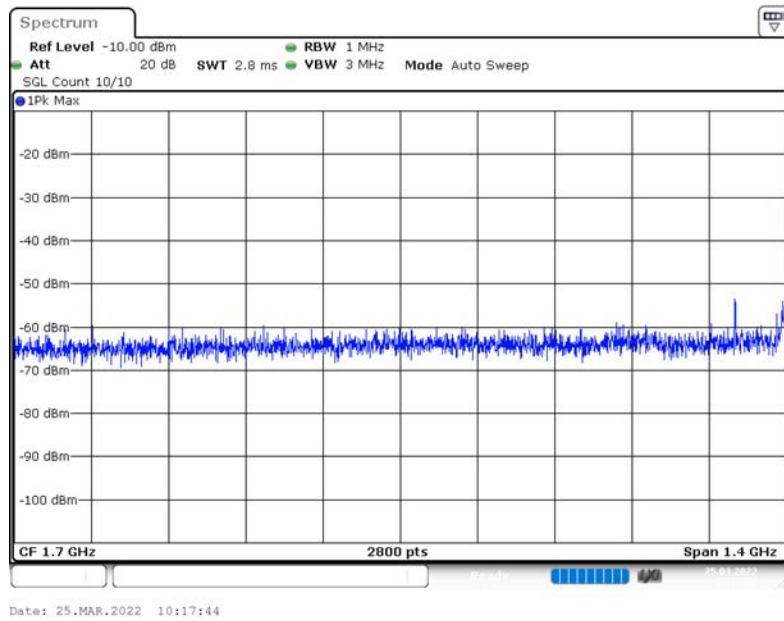
Restricted Band Connector 1_4



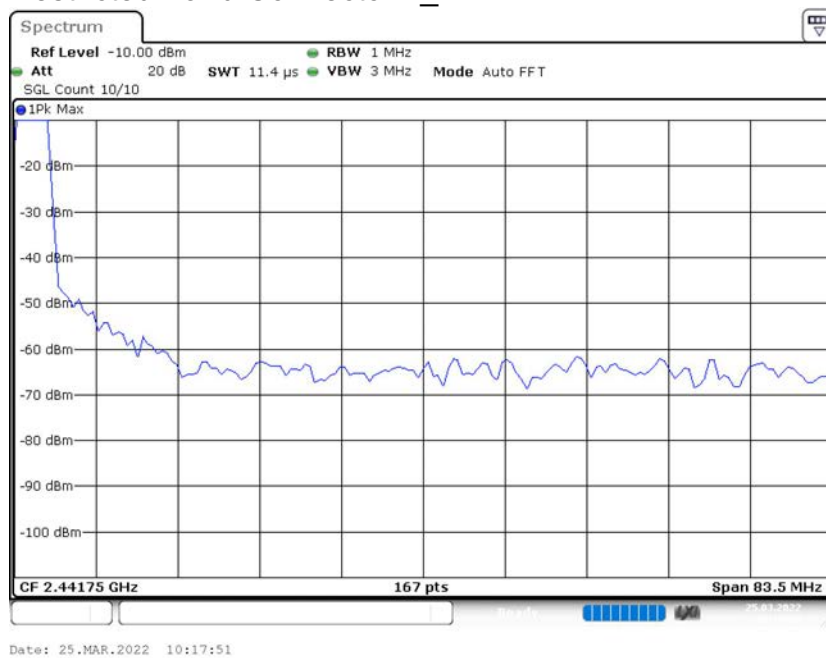
Restricted Band Connector 1_5



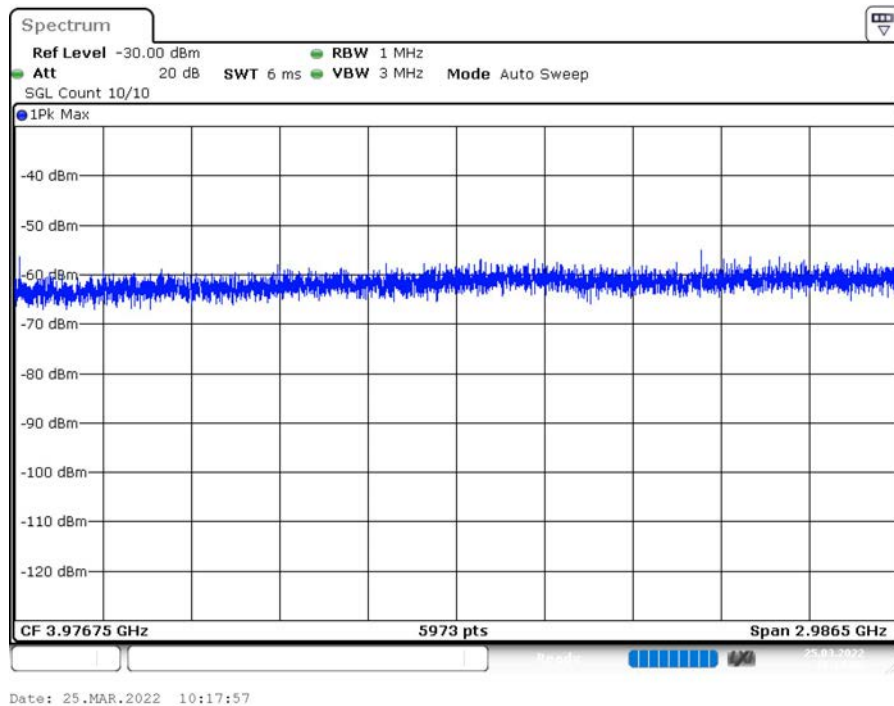
Restricted Band Connector 1_6



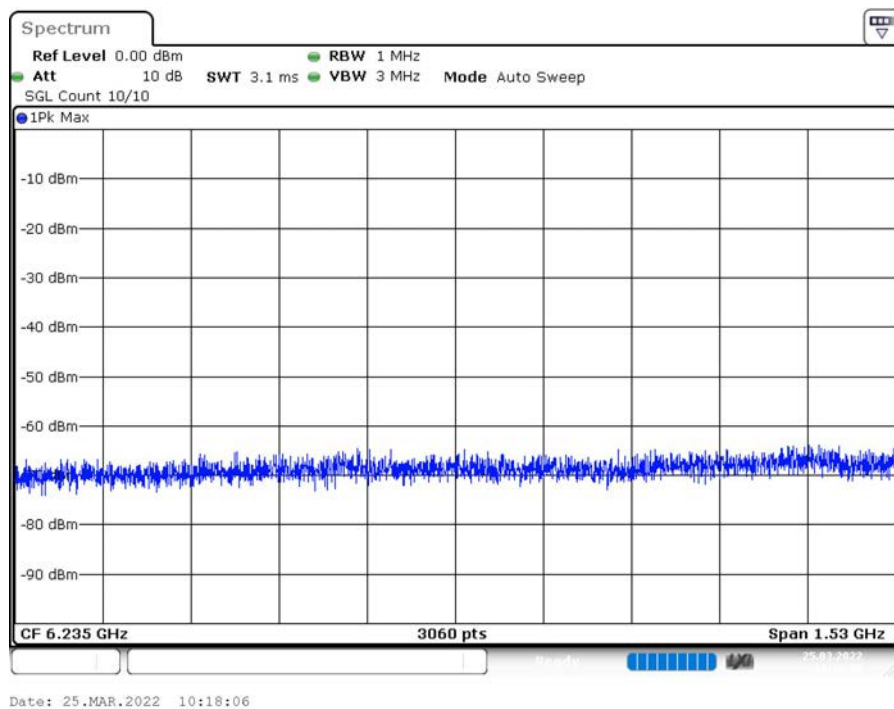
Restricted Band Connector 1_7



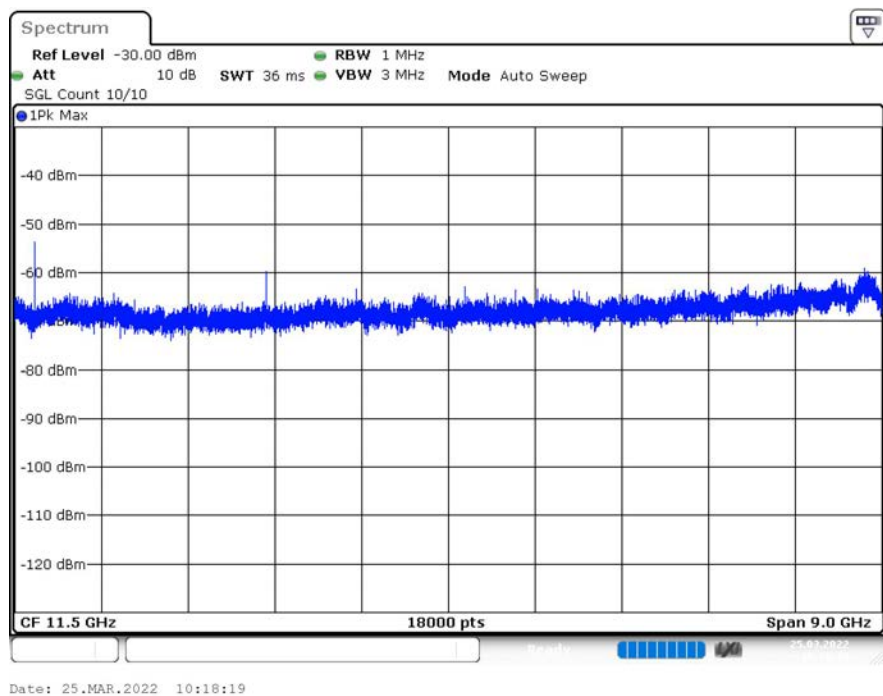
Restricted Band Connector 1_8



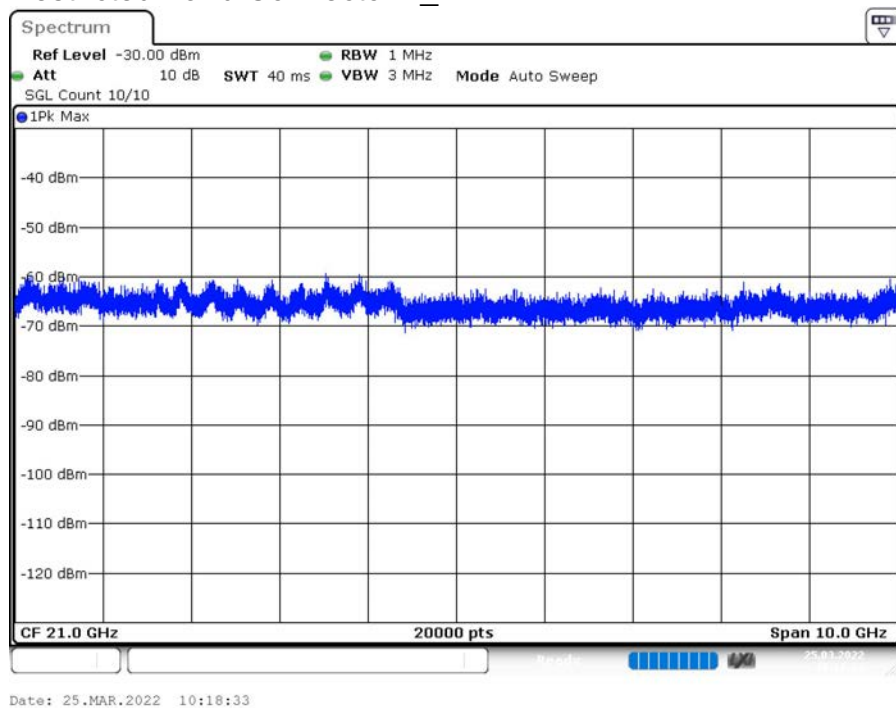
Restricted Band Connector 1_9



Restricted Band Connector 1_10



Restricted Band Connector 1_11



Pre Measurement 1

Setting	Instrument Value	Target Value
RBW	1.000 MHz	<= 1.000 MHz
VBW	3.000 MHz	>= 3.000 MHz
SweepPoints	2800	~ 2800
SweepTime	2.800 ms	AUTO
Reference Level	-10.000 dBm	-30.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	10	10
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off

Pre Measurement 2

Setting	Instrument Value	Target Value
RBW	300.000 Hz	<= 300.000 Hz
VBW	1.000 kHz	>= 900.000 Hz
SweepPoints	540	~ 540
SweepTime	6.322 ms	AUTO
Reference Level	-20.000 dBm	-30.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	30	30
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off

RF output power (2442 MHz; 15.000 dBm; 1 MHz)

Customized settings.

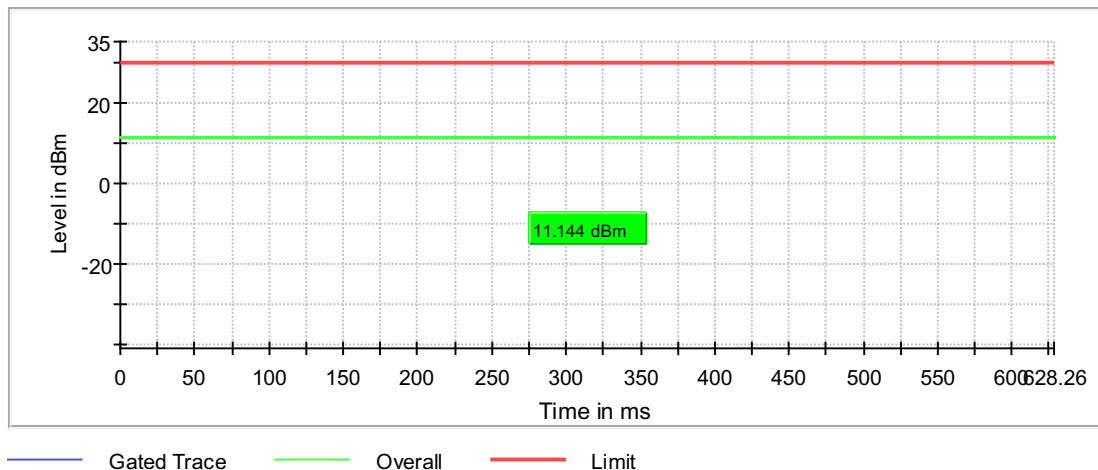
Test according to FCC title 47 part 15 §15.247(b), KDB 558074 D01 DTS Meas Guidance v05 and ANSI C63.10-2013 11.9.2.3.2

Measurement uncertainty calculated in accordance with ETSI TR 100 028-1.
Expanded Combined Uncertainty of absolute Level Measurement (K=2) < 1 dB

Result

DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
2442.000000	11.1	30.0	13.1	63.026	PASS

Gated Trace



OSP PowerMeter settings

Setting	Instrument Value	Target Value
Measurement Time	1.000 s	1.000 s
Points	1000000	1000000
Time resolution	1.000 μ s	1.000 μ s

Minimum Emission Bandwidth 6 dB (2442 MHz; 15.000 dBm; 1 MHz)

Customized settings.

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v05 and ANSI C63.10-2013 11.8.1

Measurement uncertainty calculated in accordance with ETSI TR 100 028-1.
Expanded Uncertainty (K=2) < 2%

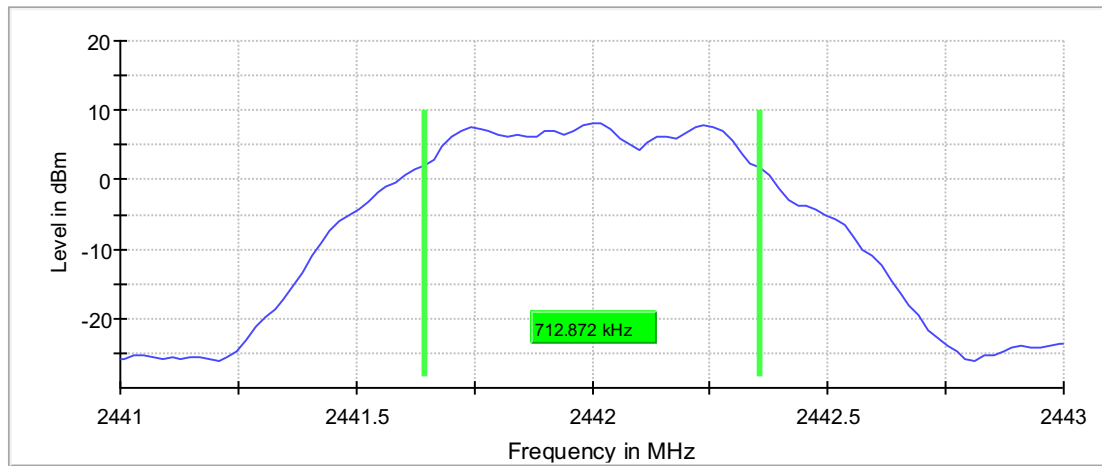
6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2442.000000	0.712872	0.500000	---	2441.643564	2442.356436

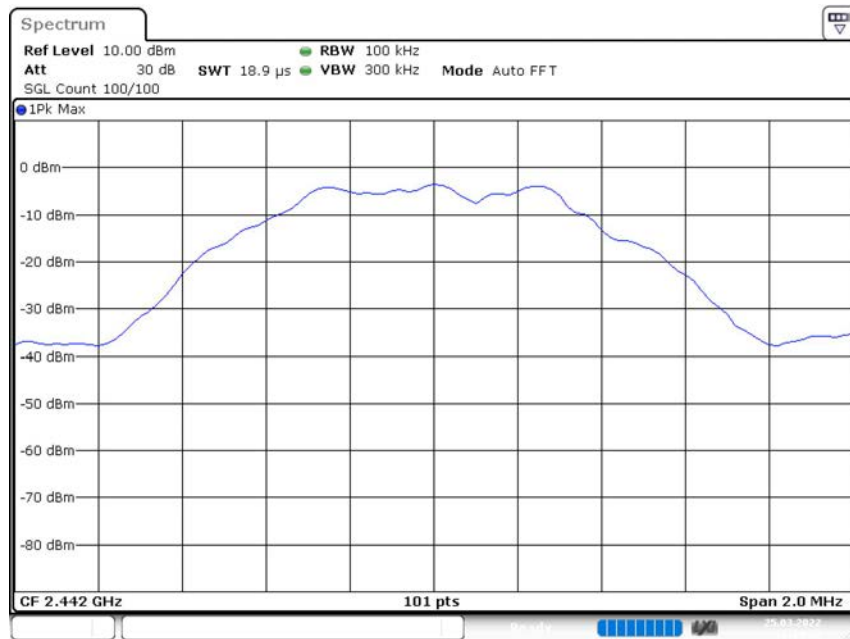
(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2442.000000	8.1	PASS

6 dB Bandwidth



Bandwidth



Date: 25.MAR.2022 10:19:57

Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.44100 GHz	2.44100 GHz
Stop Frequency	2.44300 GHz	2.44300 GHz
Span	2.000 MHz	2.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 40
Sweptime	18.938 μ s	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB

Trace Mode	Max Hold	Max Hold
Sweep type	FFT	AUTO
Preamp	off	off

Peak Power Spectral Density (2442 MHz; 15.000 dBm; 1 MHz)

Customized settings.

Test according to FCC title 47 part 15 §15.247(a),(e), KDB 558074 D01 DTS Meas Guidance v05 F and ANSI C63.10-2013

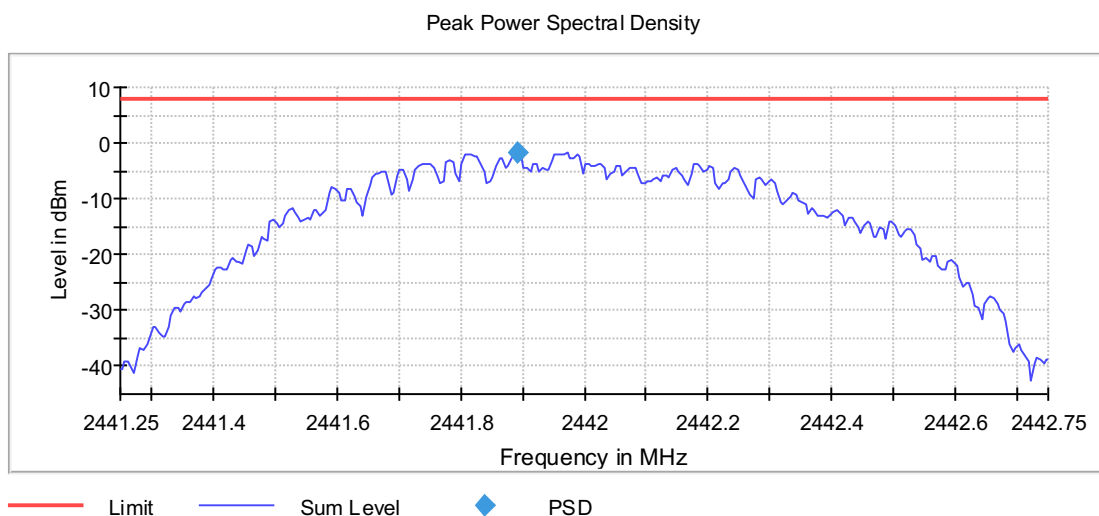
Measurement uncertainty calculated in accordance with ETSI TR 100 028-1.
Expanded Uncertainty (K=2) < 1.3 dB

Result

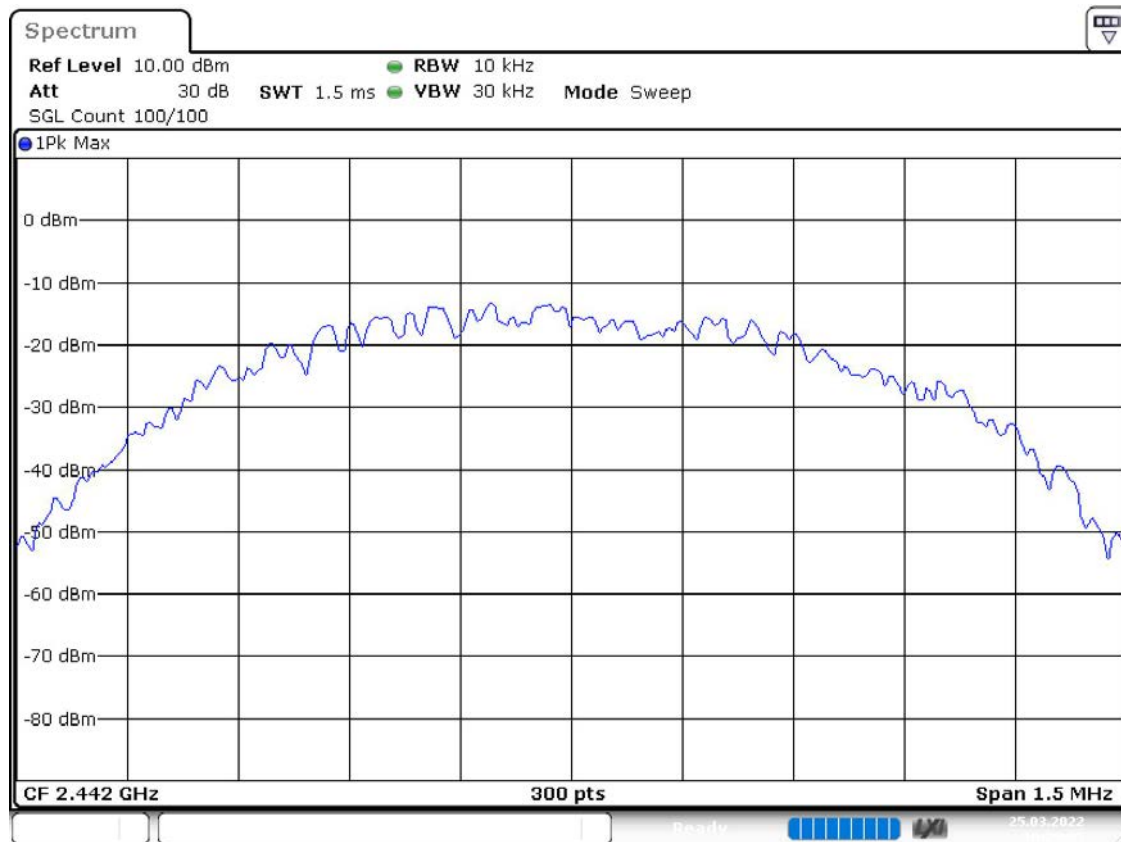
DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2442.000000	2441.892500	-1.545	8.0	PASS

Ports

Port	State
1	used



PSD Connector 1



Date: 25.MAR.2022 10:20:06

Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.44125 GHz	2.44125 GHz
Stop Frequency	2.44275 GHz	2.44275 GHz
Span	1.500 MHz	1.500 MHz
RBW	10.000 kHz	≤ 10.000 kHz
VBW	30.000 kHz	≥ 30.000 kHz
SweepPoints	300	~ 300
SweepTime	1.500 ms	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	Sweep
Preamp	off	off

Occupied Channel Bandwidth 99% (2442 MHz; 15.000 dBm; 1 MHz)

Customized settings.

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v05 and ANSI C63.10-2013 11.8.1

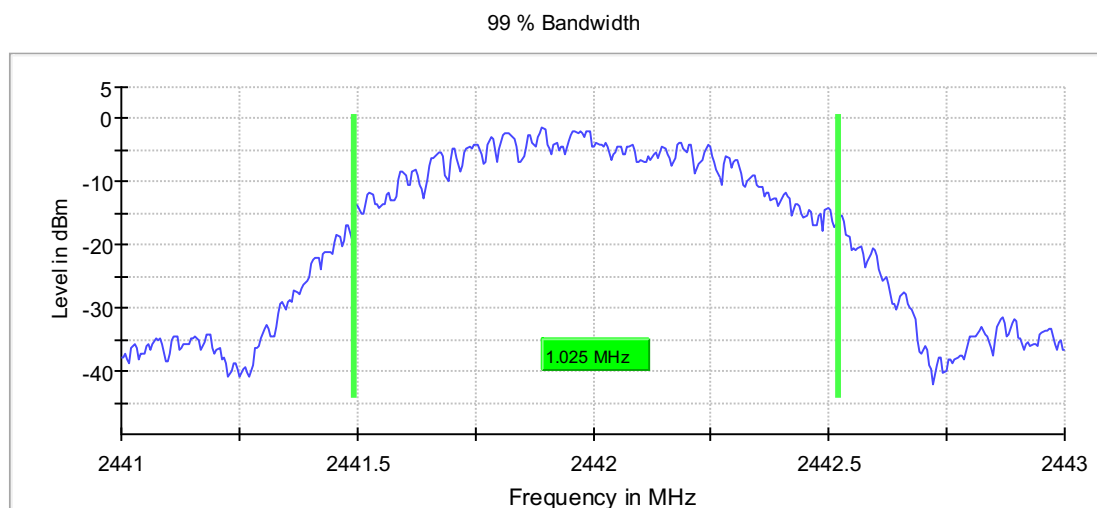
Measurement uncertainty calculated in accordance with ETSI TR 100 028-1.
Expanded Uncertainty (K=2) < 2%

99 % Bandwidth

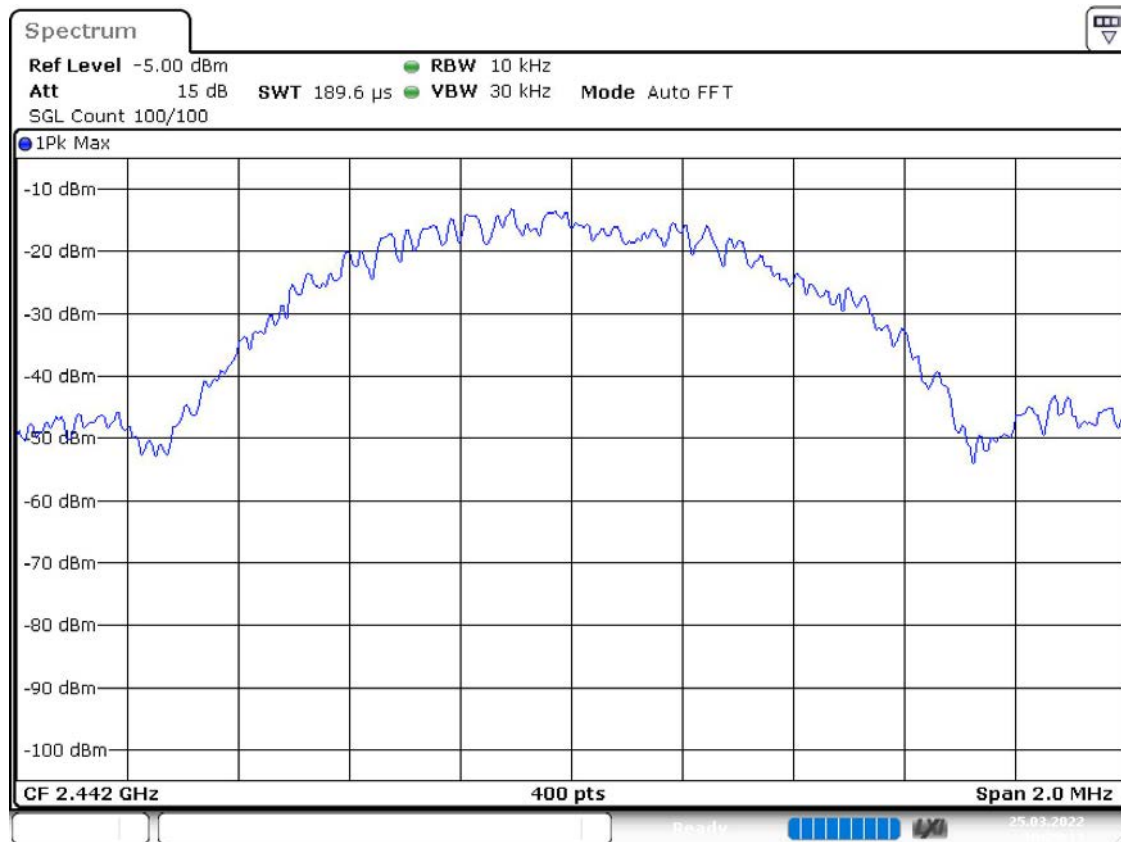
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2442.000000	1.025000	---	---	2441.492500	2442.517500

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2442.000000	PASS



Bandwidth



Date: 25.MAR.2022 10:20:11

Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.44100 GHz	2.44100 GHz
Stop Frequency	2.44300 GHz	2.44300 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	≥ 10.000 kHz
VBW	30.000 kHz	≥ 30.000 kHz
SweepPoints	400	~ 400
SweepTime	189.648 μ s	AUTO
Reference Level	-5.000 dBm	-5.000 dBm
Attenuation	15.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off

Tx Spurious Emission (2442 MHz; 15.000 dBm; 1 MHz)

Customized settings.

Test according to FCC title 47 part 15 §15.247(d), KDB 558074 D01 DTS Meas Guidance v05 8.5 and ANSI C63.10-2013 11.11.2 & 11.11.3

Measurement uncertainty calculated in accordance with ETSI TR 100 028-1.
Expanded Uncertainty (K=2) < 1.8 dB

Result

DUT Frequency (MHz)	Result
2442.000000	PASS

Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
---	---	---	---	---	---

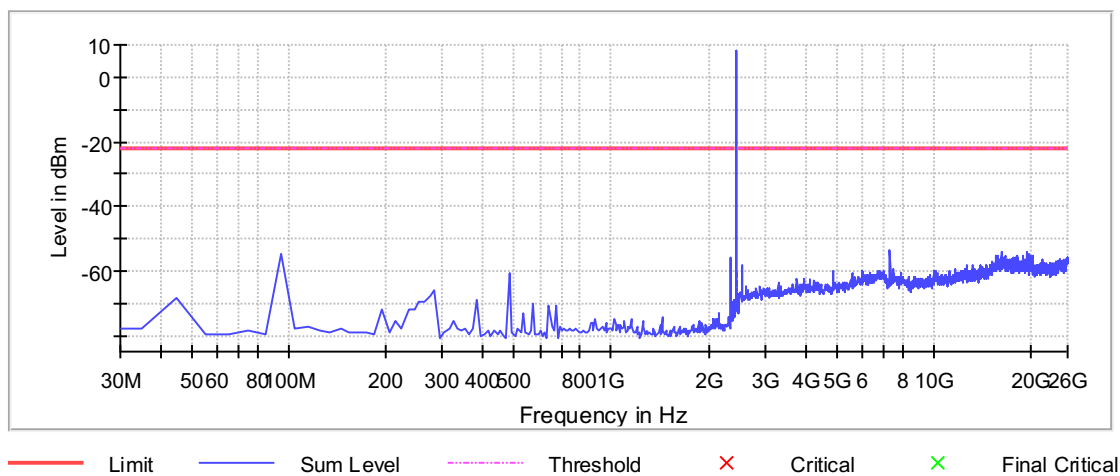
Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
7325.720251	-53.5	31.5	-22.0
16170.642690	-53.9	31.9	-22.0
19558.697726	-54.0	32.0	-22.0
19848.531343	-54.5	32.5	-22.0
19508.726413	-54.7	32.7	-22.0
94.726891	-54.7	32.7	-22.0
16590.401721	-55.0	33.0	-22.0
15900.797599	-55.1	33.0	-22.0
18159.500956	-55.2	33.1	-22.0
20268.290374	-55.3	33.3	-22.0
16150.654165	-55.3	33.3	-22.0
15890.803336	-55.4	33.3	-22.0
16180.636953	-55.4	33.4	-22.0
15511.021356	-55.4	33.4	-22.0
19798.560030	-55.5	33.4	-22.0

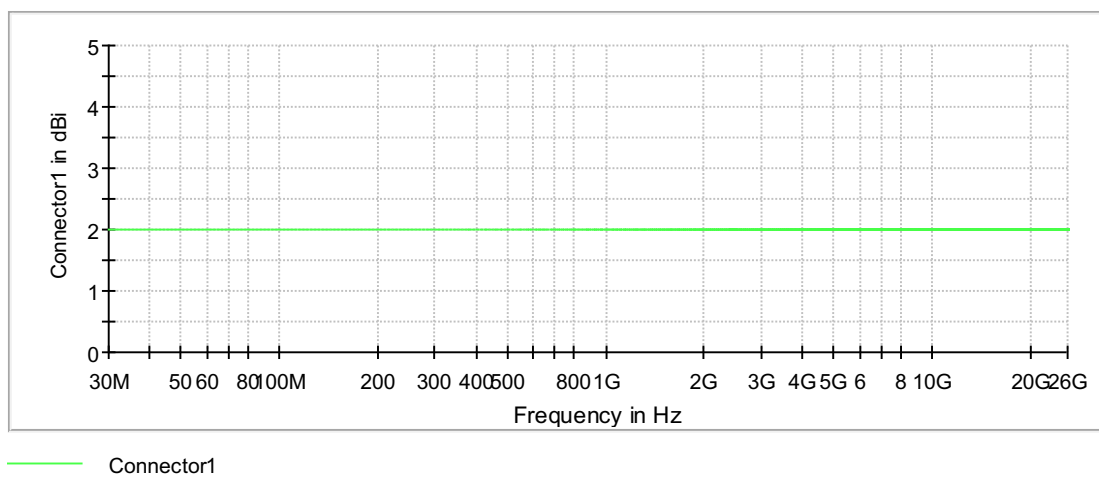
Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	2400.000000	1	1
2400.000000	2483.500000	1	1
2483.500000	26000.000000	1	1

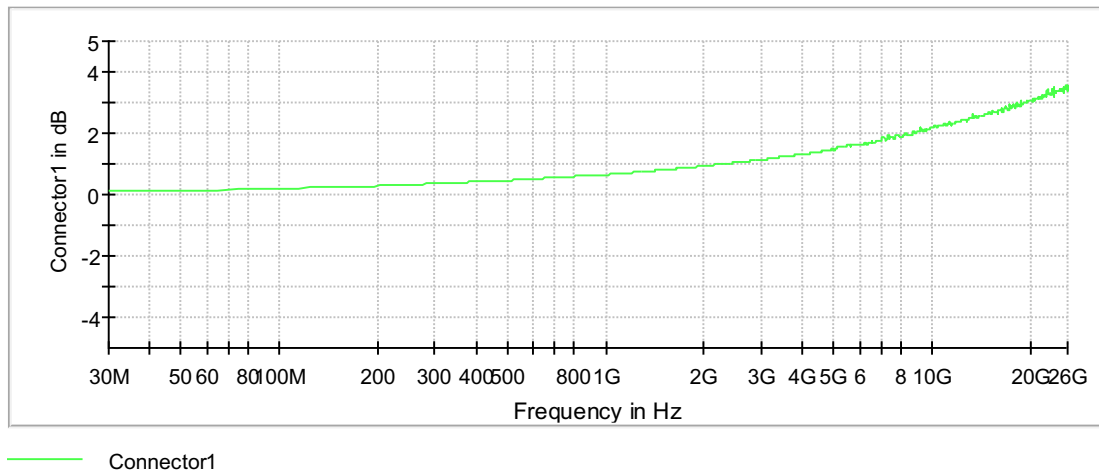
Spurious



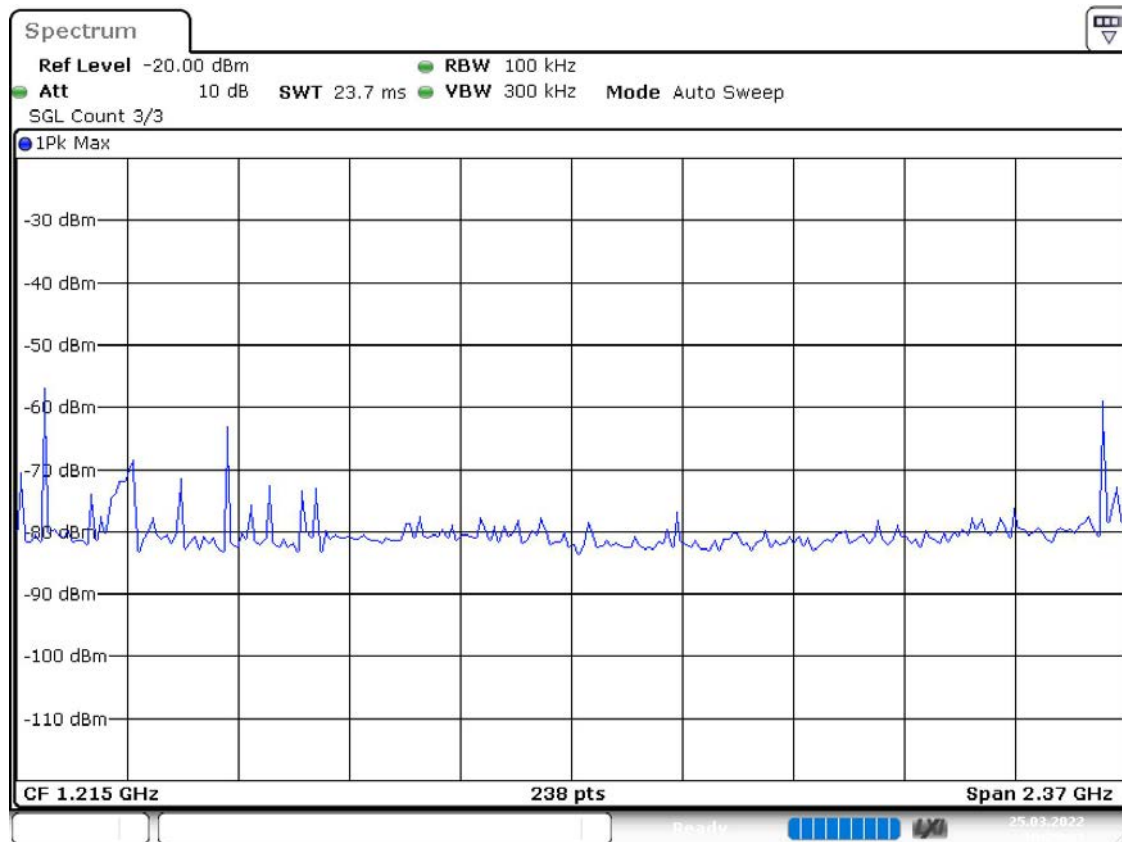
Gain



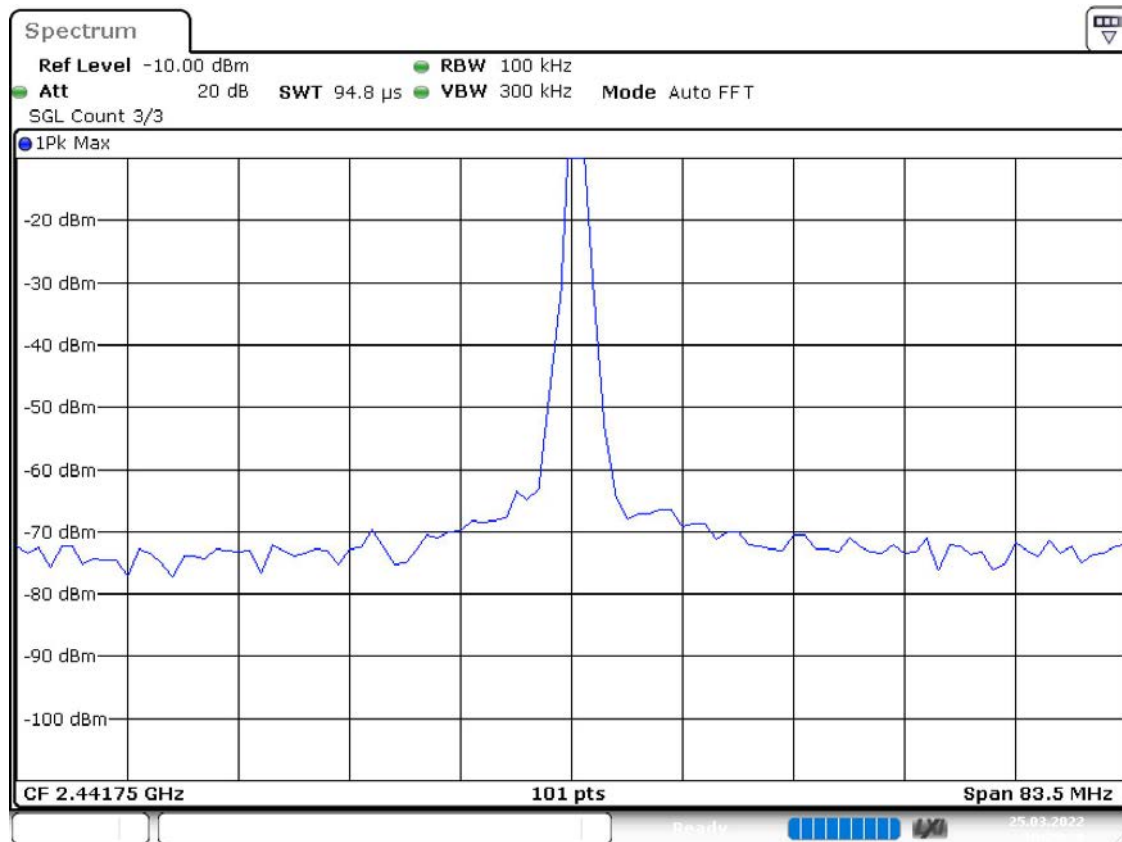
Attenuation



Spurious Connector 1_0

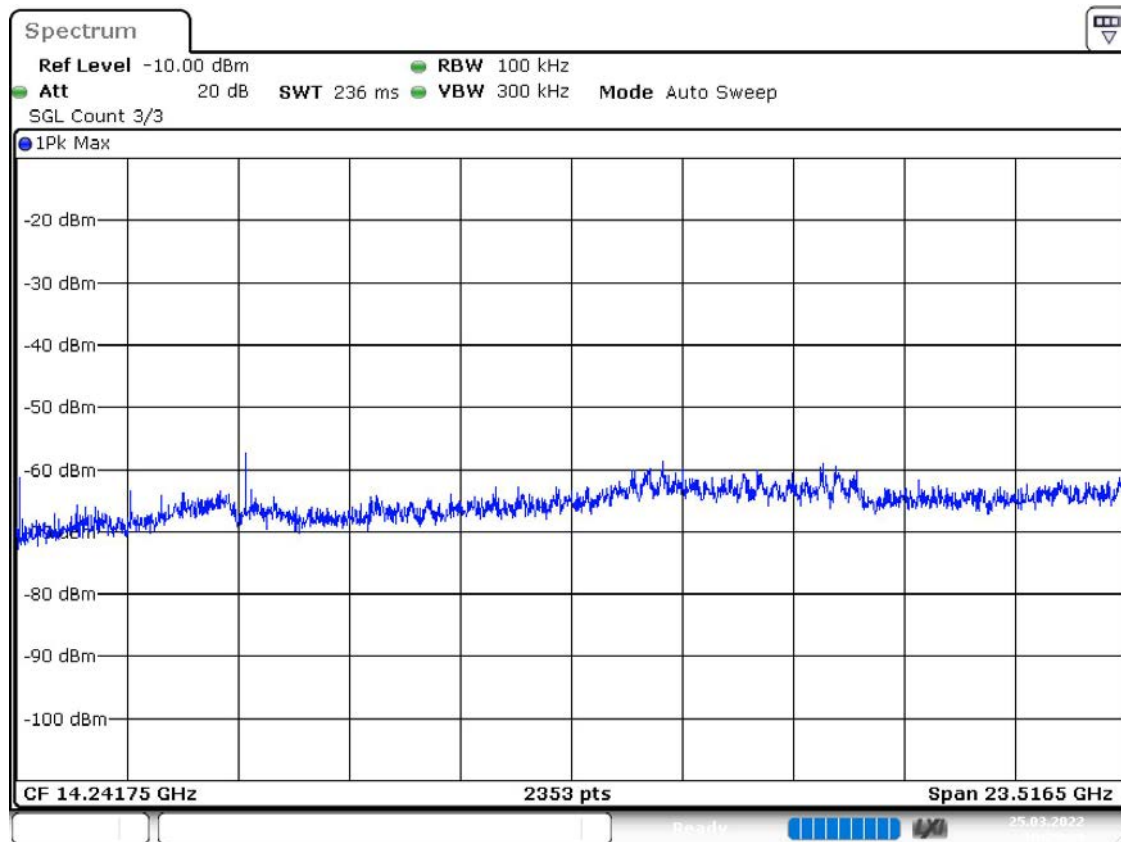


Spurious Connector 1_1



Date: 25.MAR.2022 10:20:29

Spurious Connector 1_2



Date: 25.MAR.2022 10:20:40

Pre Measurement 1

Setting	Instrument Value	Target Value
RBW	100.000 kHz	≤ 100.000 kHz
VBW	300.000 kHz	≥ 300.000 kHz
SweepPoints	238	~ 238
Sweeptime	23.700 ms	AUTO
Reference Level	-20.000 dBm	-30.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	3	3
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off

Emissions in restricted frequency bands (Average) (2442 MHz; 15.000 dBm; 1 MHz)

Customized settings.

Test according to FCC title 47 part 15 §15.247(d), KDB 558074 D01 DTS Meas Guidance v05 8.6 and ANSI C63.10-2013 11.12.2.6

Measurement uncertainty calculated in accordance with ETSI TR 100 028-1.
Expanded Uncertainty (K=2) < 1.8 dB

Result

DUT Frequency (MHz)	Result
2442.000000	PASS

Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
---	---	---	---	---	---

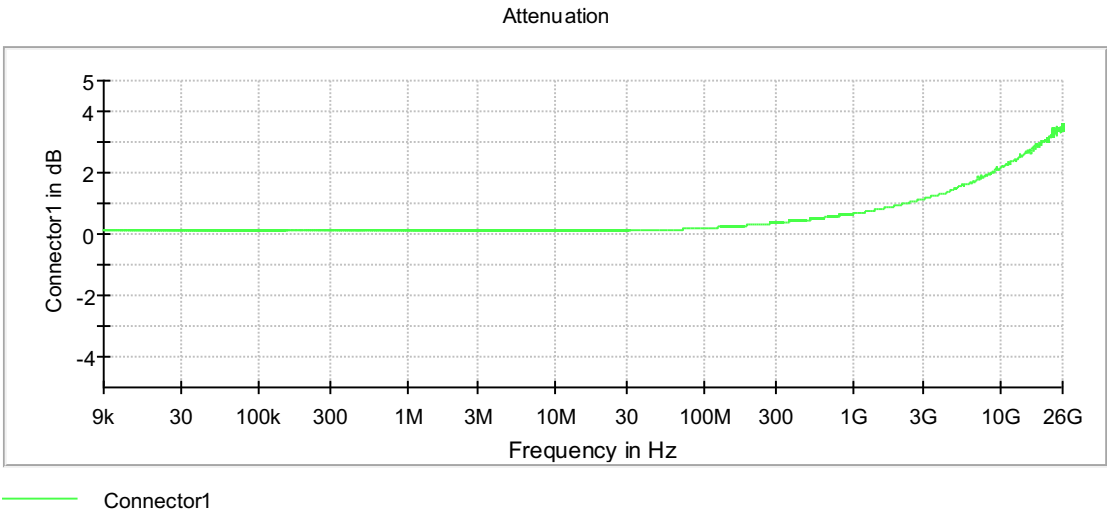
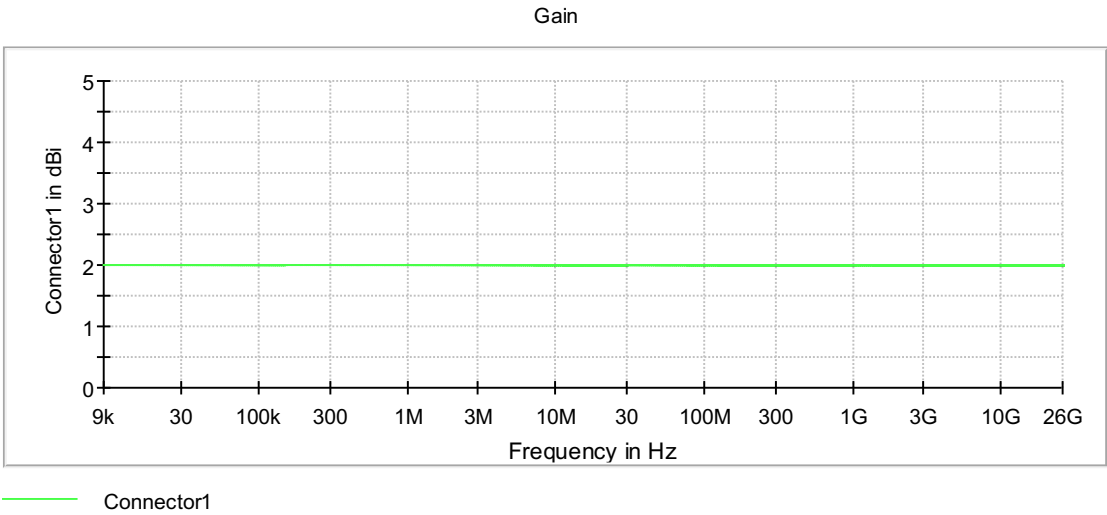
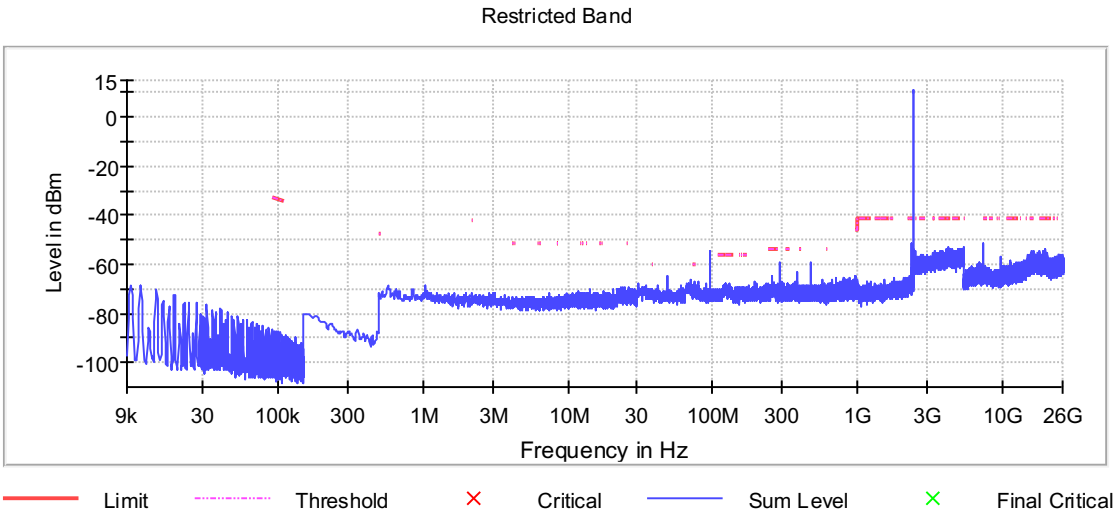
Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
74.275000	-67.3	7.4	-59.9
75.125000	-68.0	8.1	-59.9
74.225000	-68.1	8.2	-59.9
75.075000	-68.2	8.3	-59.9
74.325000	-68.4	8.5	-59.9
73.375000	-68.8	8.9	-59.9
73.925000	-69.0	9.1	-59.9
73.875000	-69.0	9.1	-59.9
73.325000	-69.0	9.1	-59.9
73.425000	-69.7	9.8	-59.9
75.175000	-69.7	9.8	-59.9
73.475000	-69.8	9.9	-59.9
74.475000	-69.9	10.0	-59.9
37.875000	-69.9	10.0	-59.9
74.975000	-69.9	10.0	-59.9

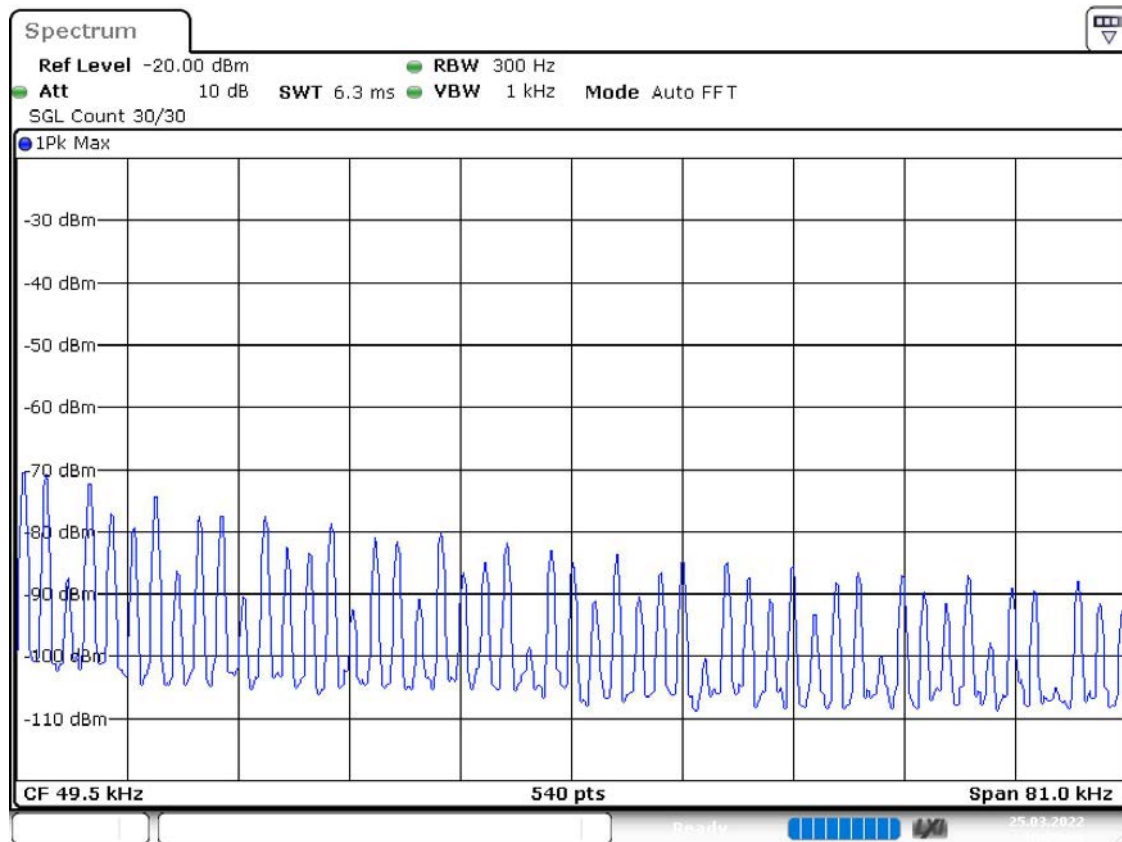
Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
0.009000	0.090000	2	2
0.090000	0.110000	2	2
0.110000	0.150000	2	2
0.150000	0.490000	2	2
0.490000	30.000000	2	2
30.000000	1000.000000	2	2
1000.000000	2400.000000	1	1
2400.000000	2483.500000	1	1
2483.500000	5470.000000	1	1
5470.000000	7000.000000	1	1

7000.000000	16000.000000	1	1
16000.000000	26000.000000	1	1

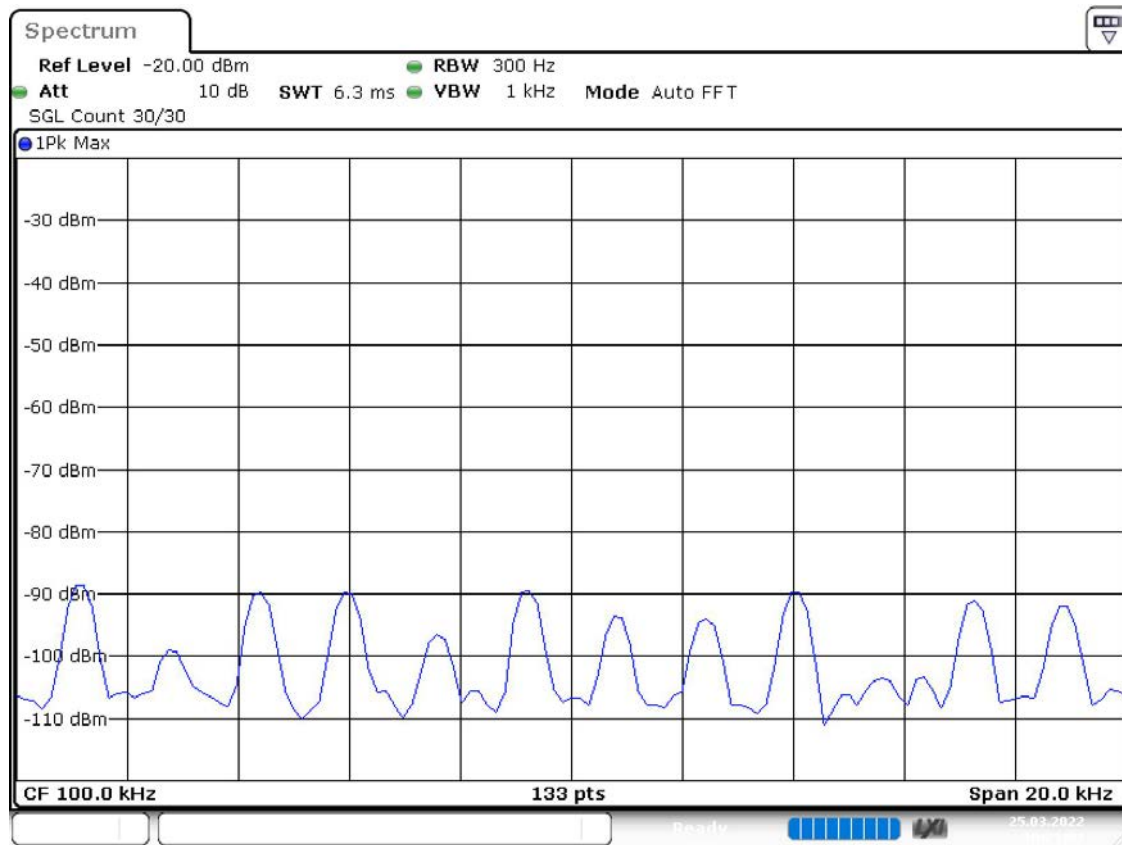


Restricted Band Connector 1_0

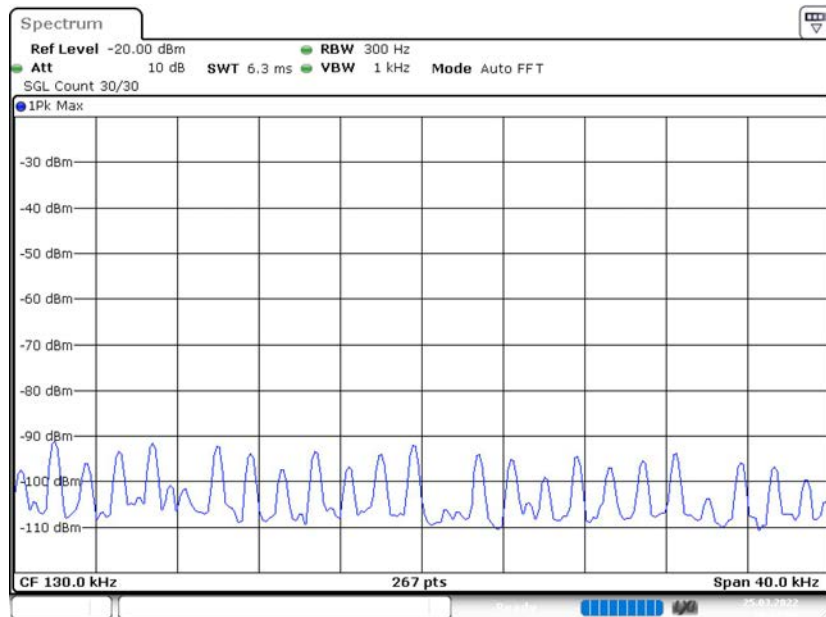


Date: 25.MAR.2022 10:20:57

Restricted Band Connector 1_1



Restricted Band Connector 1_2



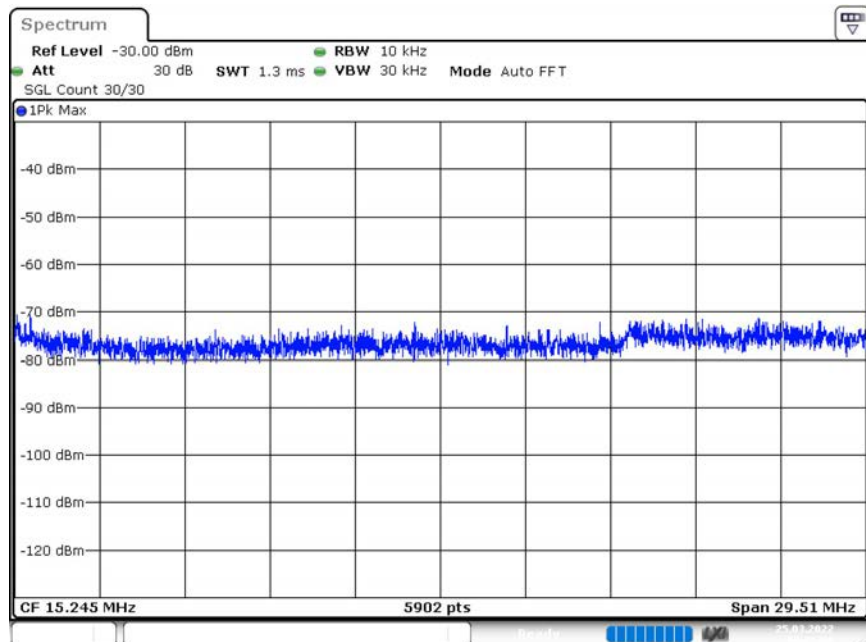
Date: 25.MAR.2022 10:21:09

Restricted Band Connector 1_3

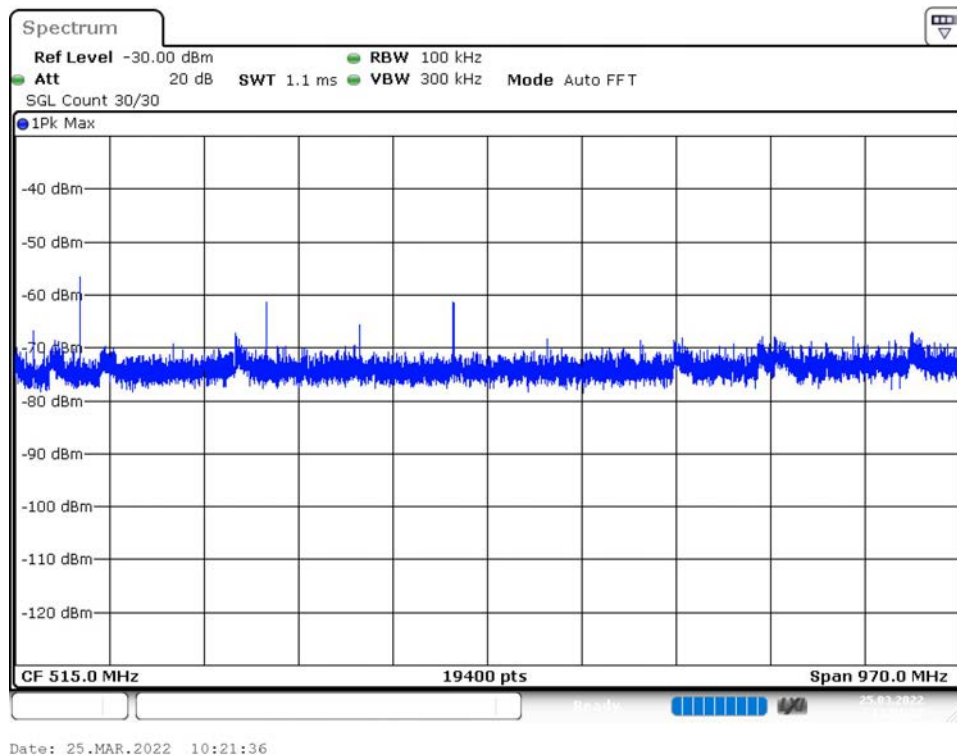


Date: 25.MAR.2022 10:21:14

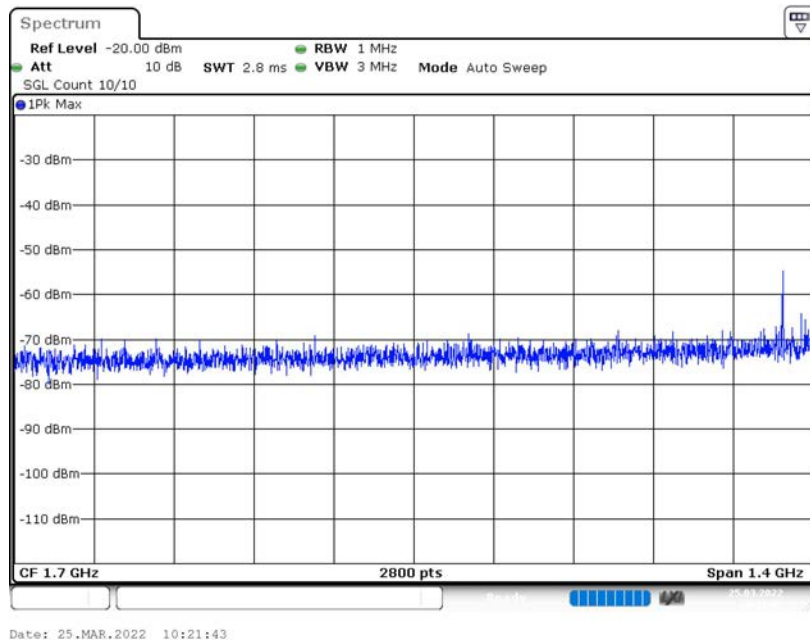
Restricted Band Connector 1_4



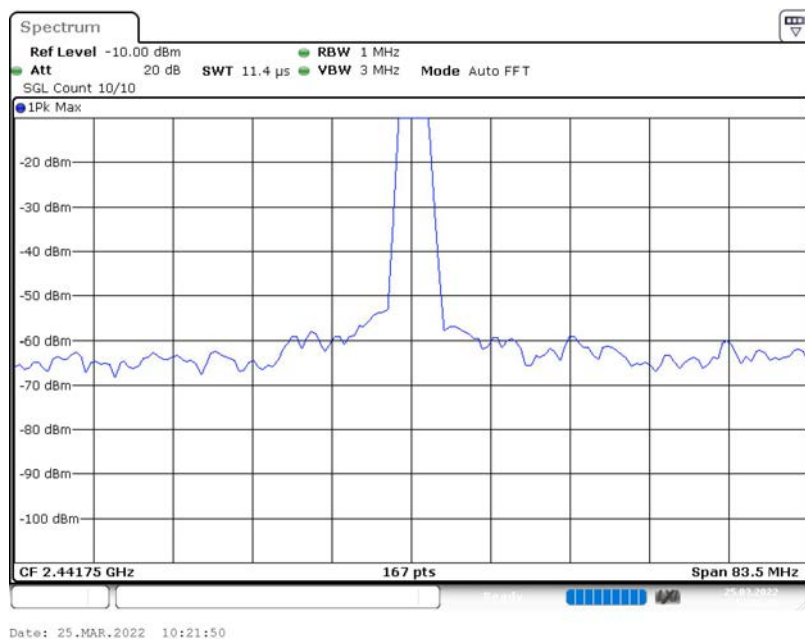
Restricted Band Connector 1_5



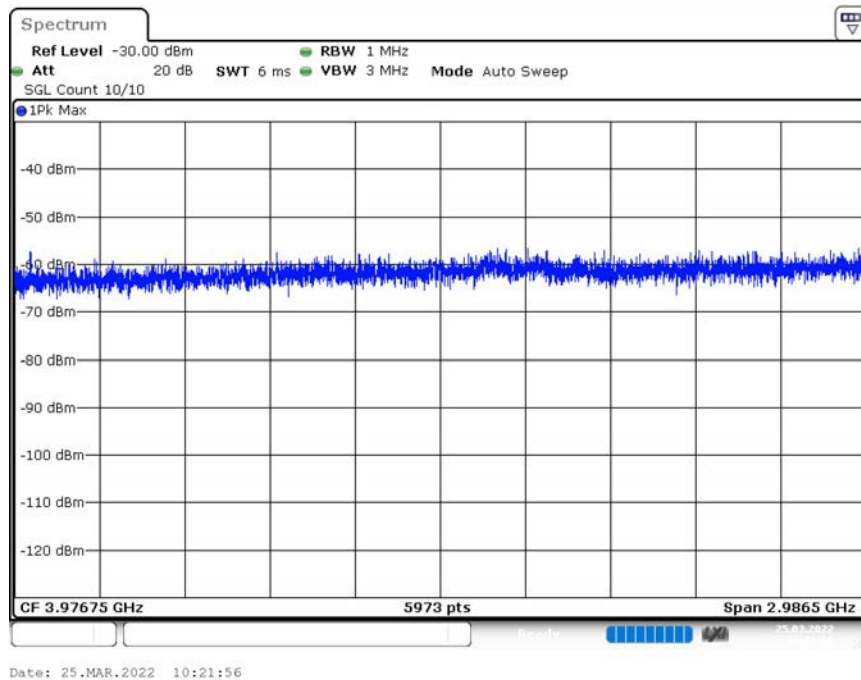
Restricted Band Connector 1_6



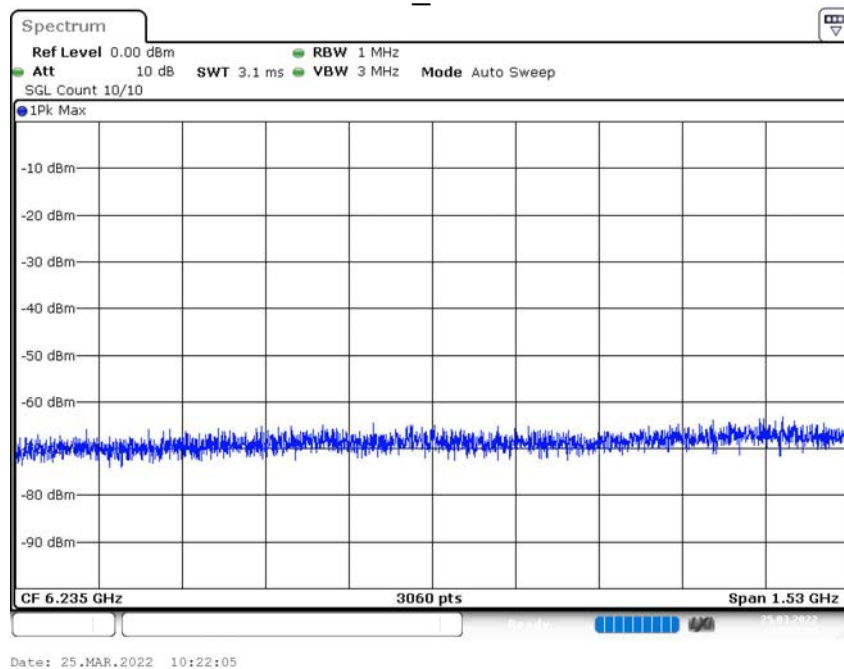
Restricted Band Connector 1_7



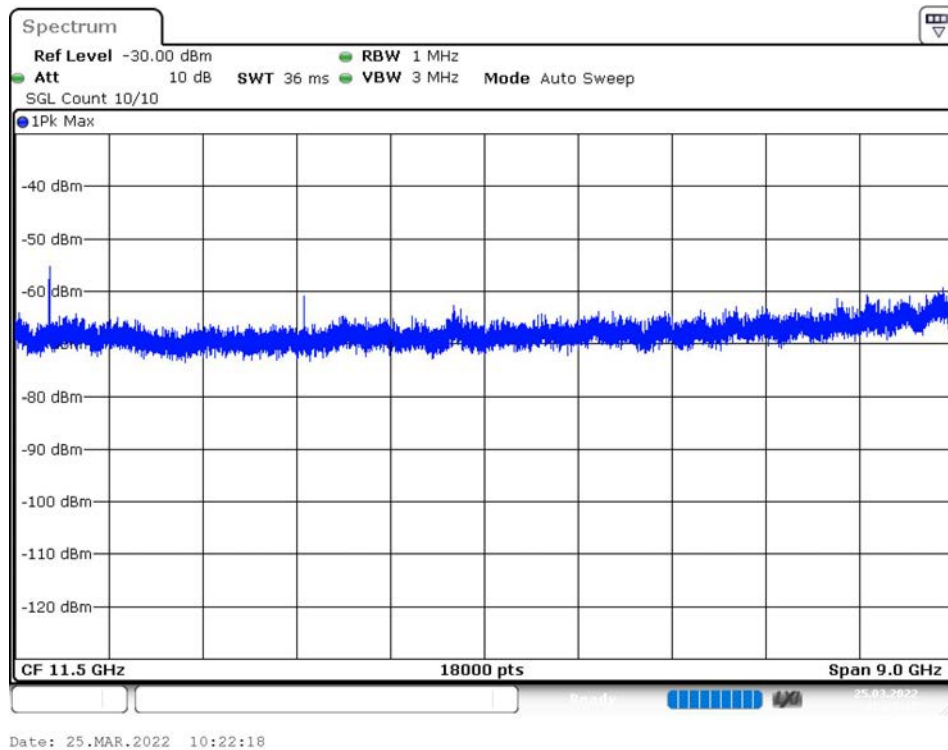
Restricted Band Connector 1_8



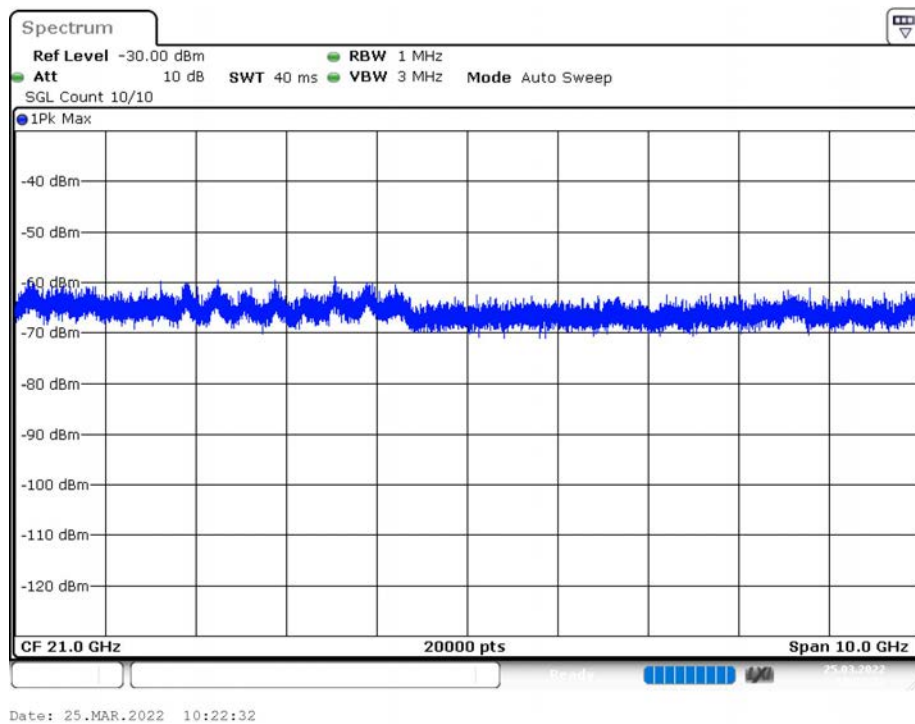
Restricted Band Connector 1_9



Restricted Band Connector 1_10



Restricted Band Connector 1_11



Pre Measurement 1

Setting	Instrument Value	Target Value
RBW	1.000 MHz	<= 1.000 MHz
VBW	3.000 MHz	>= 3.000 MHz
SweepPoints	2800	~ 2800
SweepTime	2.800 ms	AUTO
Reference Level	-20.000 dBm	-30.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	10	10
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off

Pre Measurement 2

Setting	Instrument Value	Target Value
RBW	300.000 Hz	<= 300.000 Hz
VBW	1.000 kHz	>= 900.000 Hz
SweepPoints	540	~ 540
SweepTime	6.322 ms	AUTO
Reference Level	-20.000 dBm	-30.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	30	30
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off

RF output power (2480 MHz; 15.000 dBm; 1 MHz)

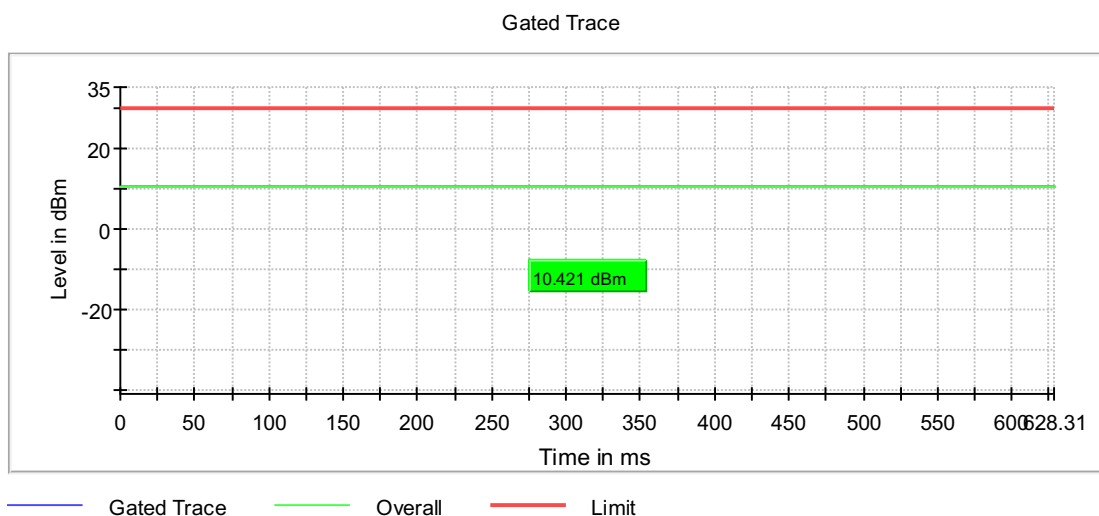
Customized settings.

Test according to FCC title 47 part 15 §15.247(b), KDB 558074 D01 DTS Meas Guidance v05 and ANSI C63.10-2013 11.9.2.3.2

Measurement uncertainty calculated in accordance with ETSI TR 100 028-1.
Expanded Combined Uncertainty of absolute Level Measurement (K=2) < 1 dB

Result

DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
2480.000000	10.4	30.0	12.4	63.031	PASS



OSP PowerMeter settings

Setting	Instrument Value	Target Value
Measurement Time	1.000 s	1.000 s
Points	1000000	1000000
Time resolution	1.000 μ s	1.000 μ s

Minimum Emission Bandwidth 6 dB (2480 MHz; 15.000 dBm; 1 MHz)

Customized settings.

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v05 and ANSI C63.10-2013 11.8.1

Measurement uncertainty calculated in accordance with ETSI TR 100 028-1.
Expanded Uncertainty (K=2) < 2%

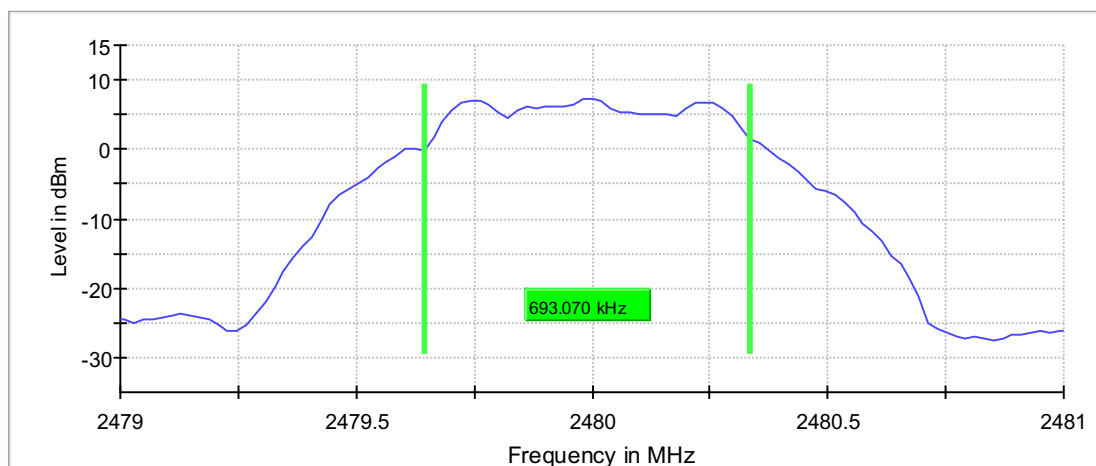
6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	0.693070	0.500000	---	2479.643564	2480.336634

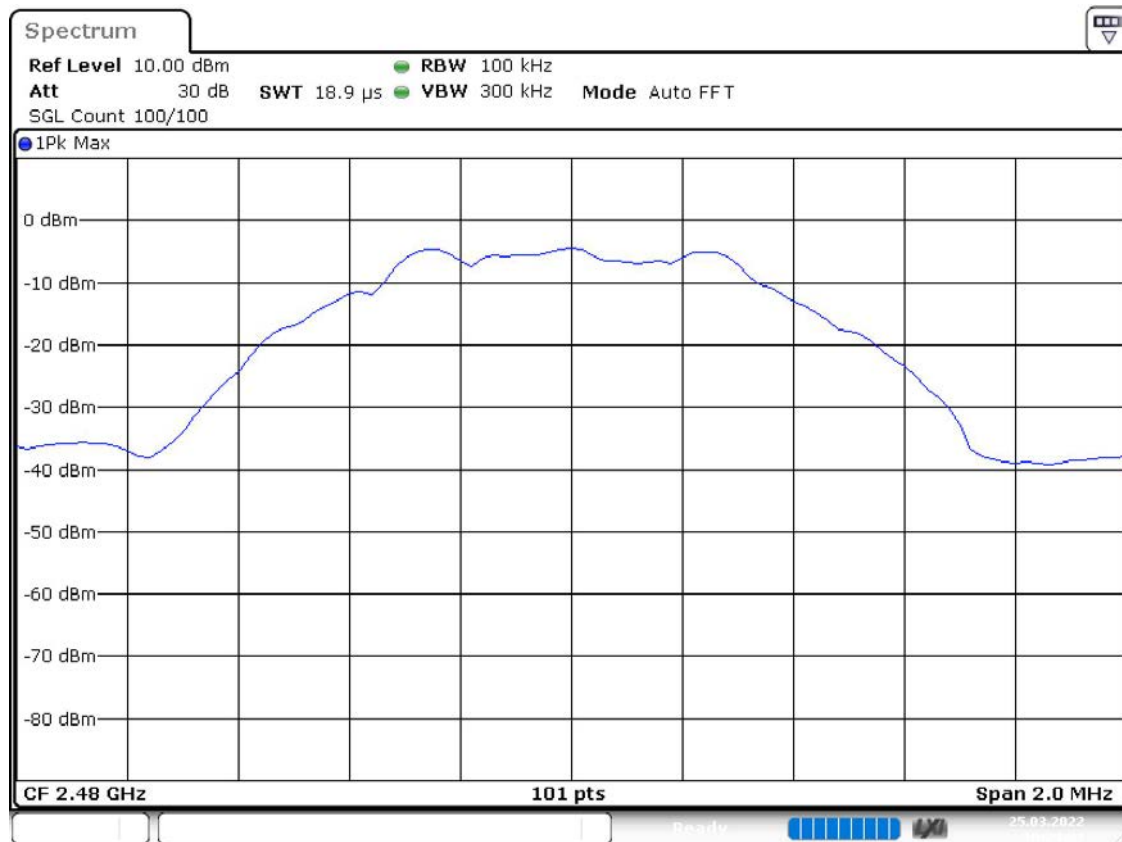
(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2480.000000	7.3	PASS

6 dB Bandwidth



Bandwidth



Date: 25.MAR.2022 10:24:32

Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47900 GHz	2.47900 GHz
Stop Frequency	2.48100 GHz	2.48100 GHz
Span	2.000 MHz	2.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 40
Sweeptime	18.938 μ s	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off

Peak Power Spectral Density (2480 MHz; 15.000 dBm; 1 MHz)

Customized settings.

Test according to FCC title 47 part 15 §15.247(a),(e), KDB 558074 D01 DTS Meas Guidance v05 F and ANSI C63.10-2013

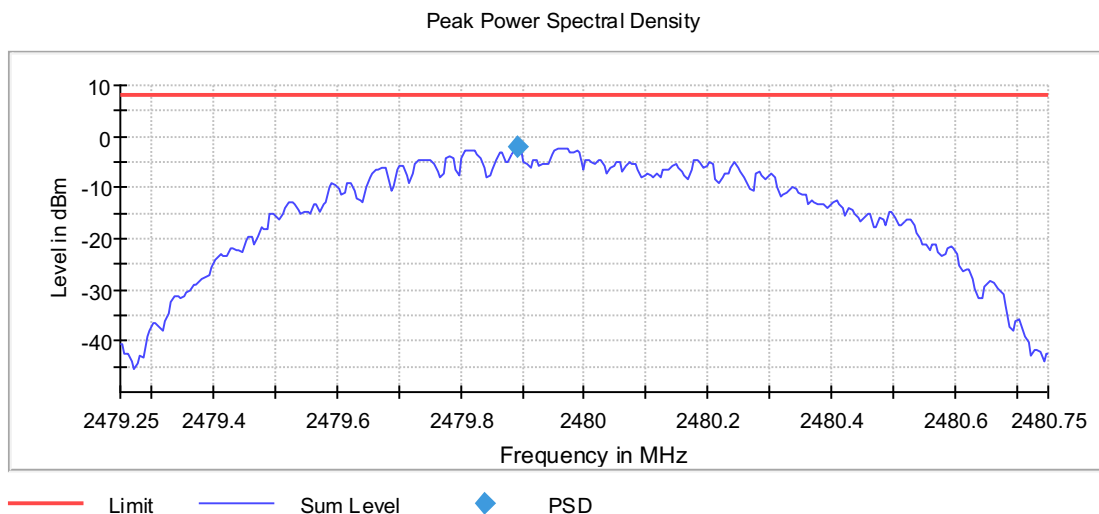
Measurement uncertainty calculated in accordance with ETSI TR 100 028-1.
Expanded Uncertainty (K=2) < 1.3 dB

Result

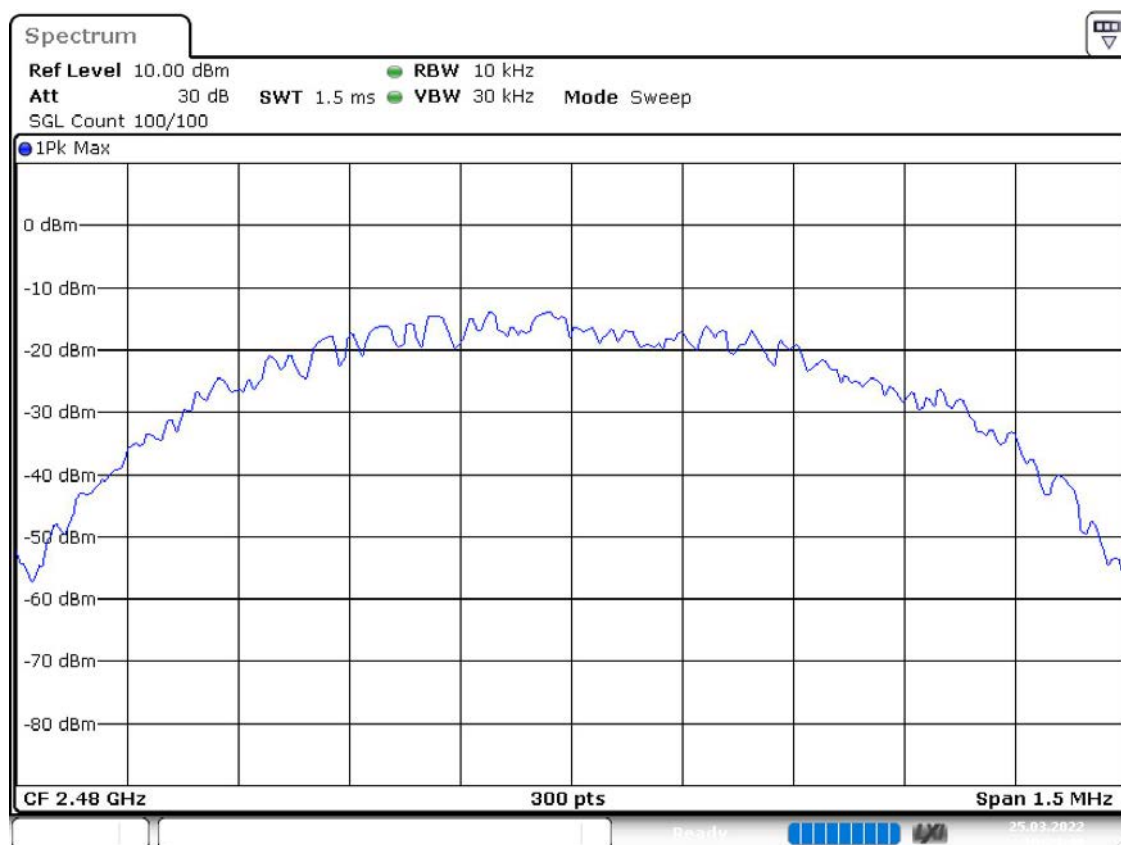
DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2480.000000	2479.892500	-2.088	8.0	PASS

Ports

Port	State
1	used



PSD Connector 1



Date: 25.MAR.2022 10:24:41

Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47925 GHz	2.47925 GHz
Stop Frequency	2.48075 GHz	2.48075 GHz
Span	1.500 MHz	1.500 MHz
RBW	10.000 kHz	≤ 10.000 kHz
VBW	30.000 kHz	≥ 30.000 kHz
SweepPoints	300	~ 300
SweepTime	1.500 ms	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	Sweep
Preamp	off	off

Occupied Channel Bandwidth 99% (2480 MHz; 15.000 dBm; 1 MHz)

Customized settings.

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v05 and ANSI C63.10-2013 11.8.1

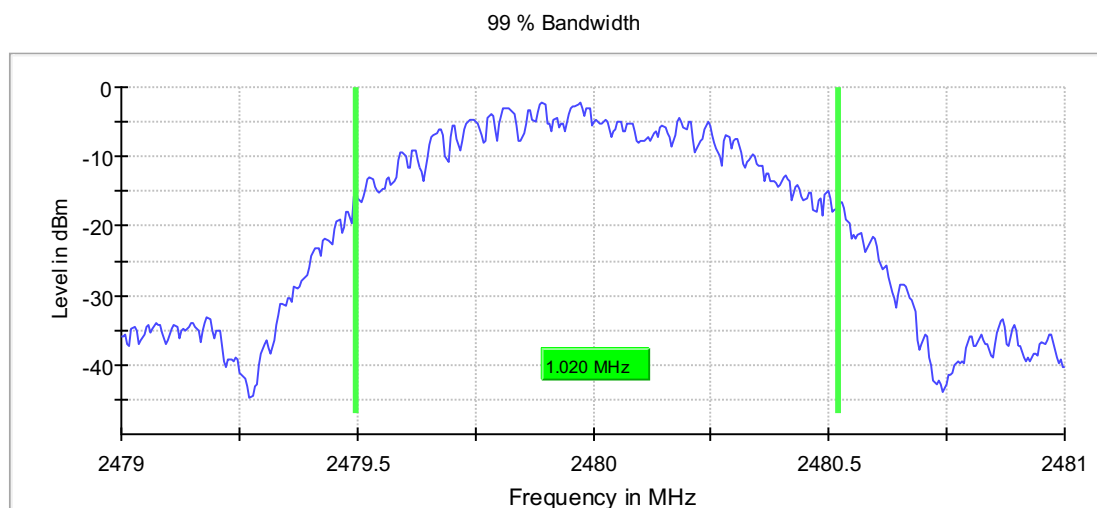
Measurement uncertainty calculated in accordance with ETSI TR 100 028-1.
Expanded Uncertainty (K=2) < 2%

99 % Bandwidth

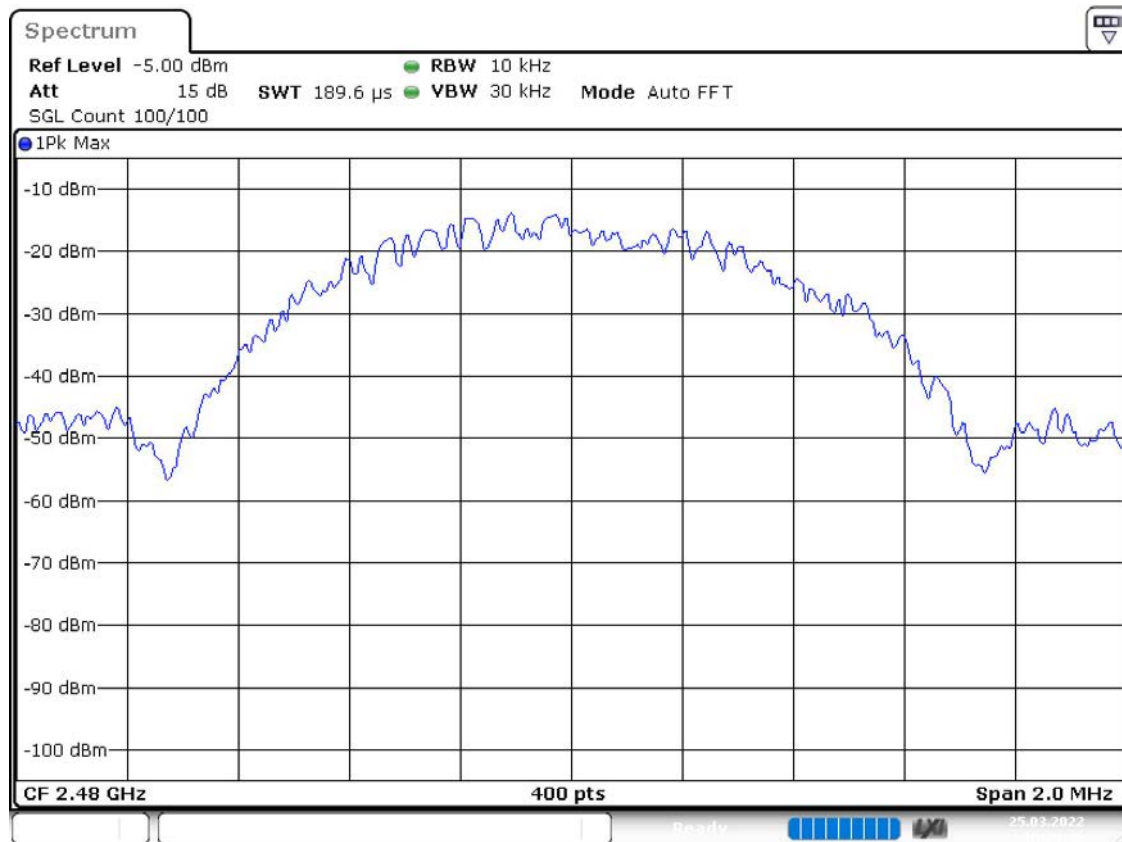
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	1.020000	---	---	2479.497500	2480.517500

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2480.000000	PASS



Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47900 GHz	2.47900 GHz
Stop Frequency	2.48100 GHz	2.48100 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	≥ 10.000 kHz
VBW	30.000 kHz	≥ 30.000 kHz
SweepPoints	400	~ 400
SweepTime	189.648 μ s	AUTO
Reference Level	-5.000 dBm	-5.000 dBm
Attenuation	15.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off

Band Edge high (2480 MHz; 15.000 dBm; 1 MHz)

Customized settings.

Test according to FCC title 47 part 15 §15.247(d), KDB 558074 D01 DTS Meas Guidance v05 8.7 and ANSI C63.10-2013

Measurement uncertainty calculated in accordance with ETSI TR 100 028-1.
Expanded Uncertainty (K=2) < 0.8 dB

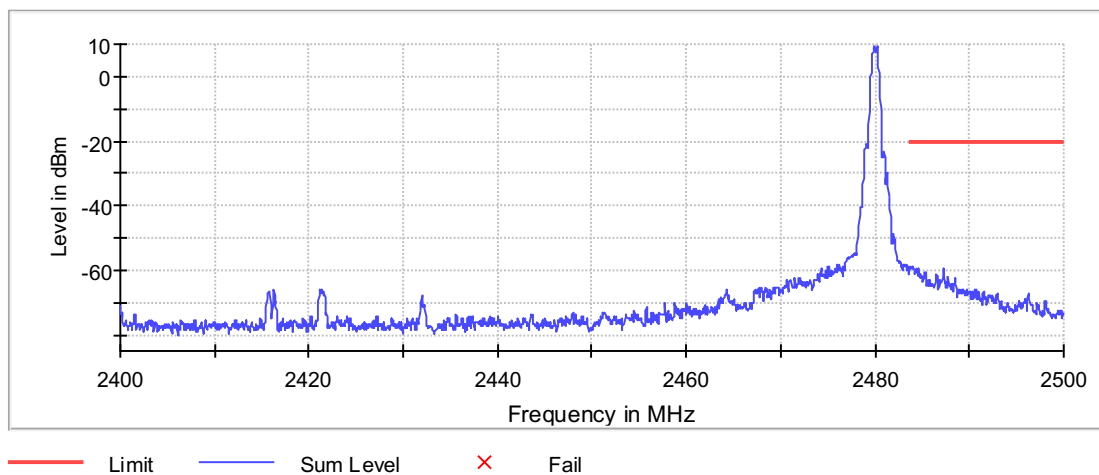
Result

DUT Frequency (MHz)	Result
2480.000000	PASS

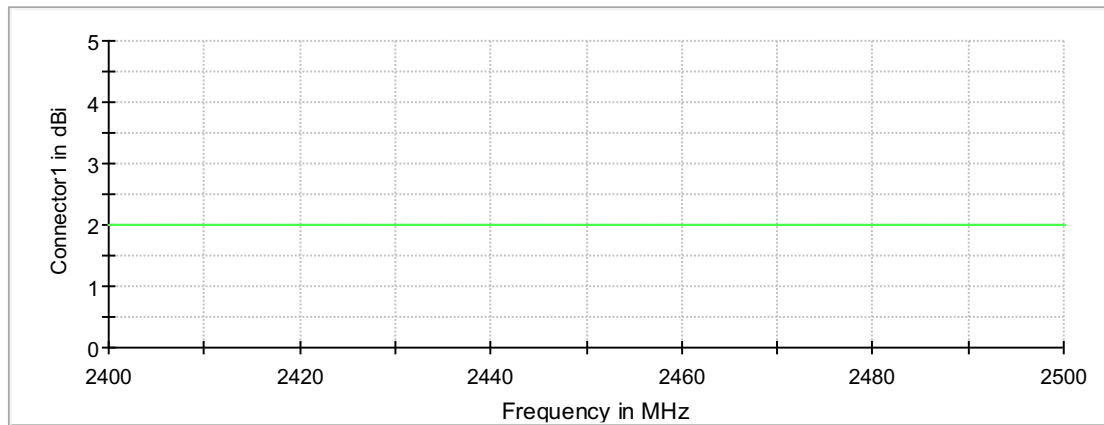
Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2483.725000	-58.8	38.4	-20.4	PASS
2483.775000	-59.0	38.6	-20.4	PASS
2484.075000	-59.0	38.6	-20.4	PASS
2483.975000	-59.0	38.6	-20.4	PASS
2483.825000	-59.1	38.7	-20.4	PASS
2483.925000	-59.1	38.8	-20.4	PASS
2483.875000	-59.2	38.8	-20.4	PASS
2483.575000	-59.3	38.9	-20.4	PASS
2483.525000	-59.4	39.0	-20.4	PASS
2484.325000	-59.5	39.1	-20.4	PASS
2484.375000	-59.6	39.2	-20.4	PASS
2487.225000	-59.6	39.2	-20.4	PASS
2487.275000	-59.6	39.2	-20.4	PASS
2484.625000	-59.6	39.3	-20.4	PASS
2484.025000	-59.7	39.3	-20.4	PASS

Band Edge

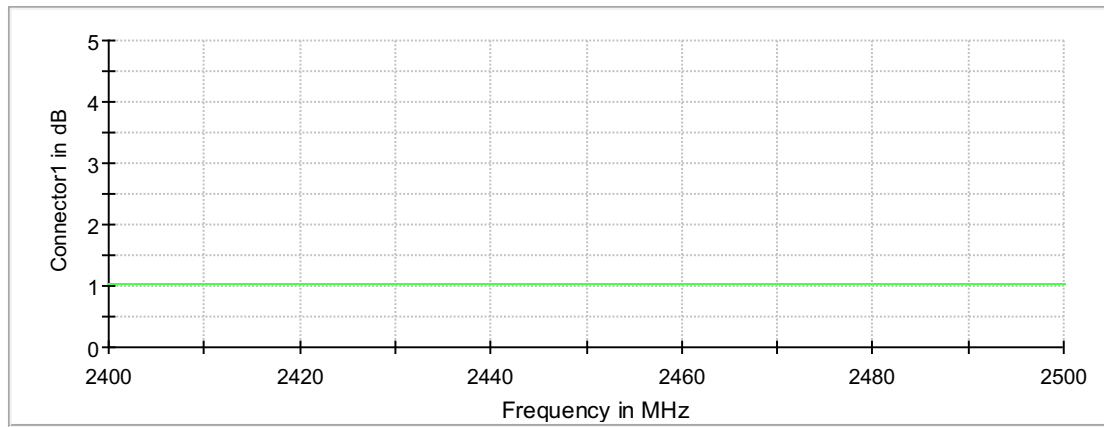


Gain



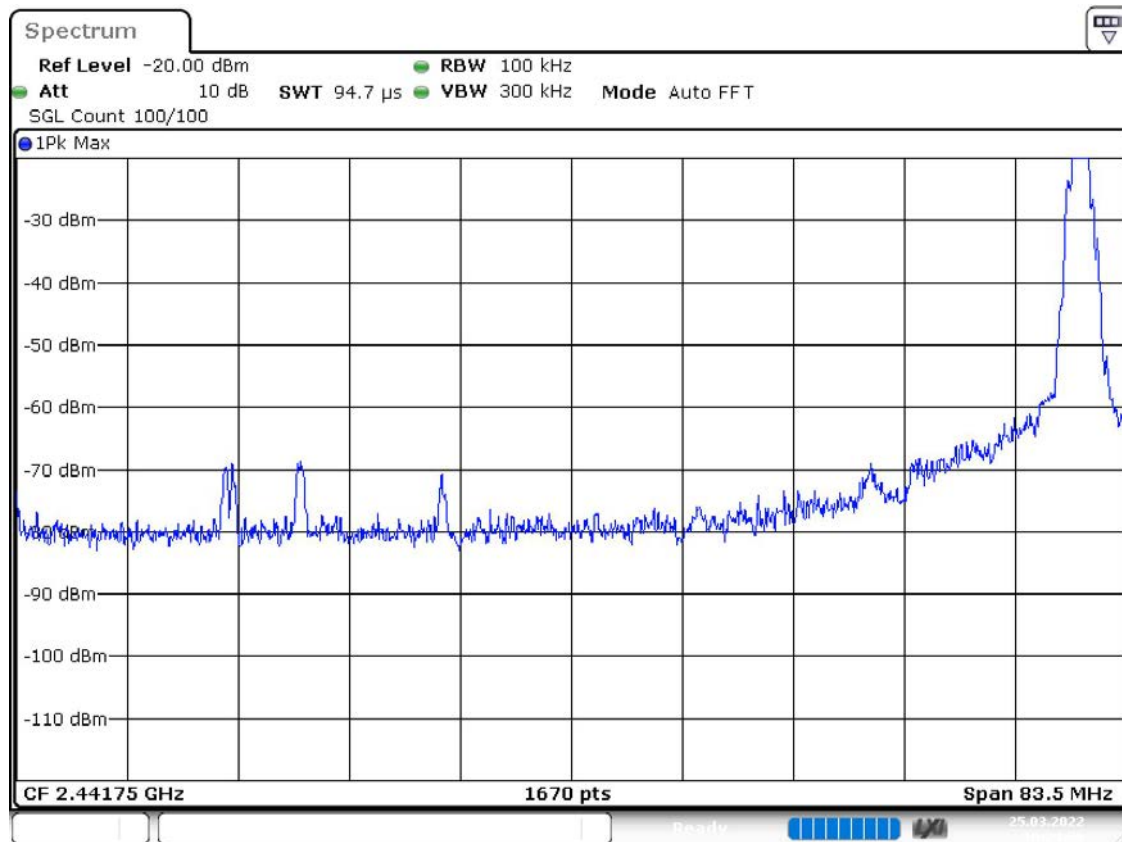
Connector1

Attenuation

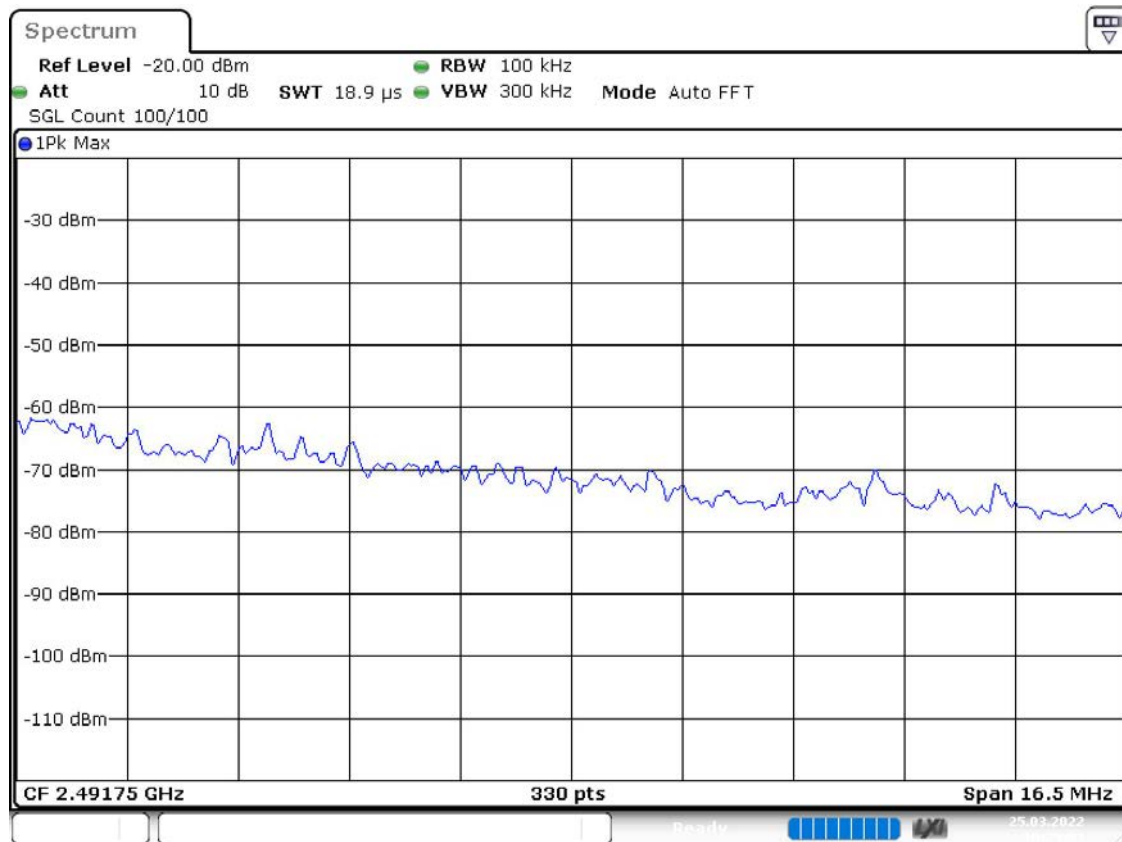


Connector1

Band Edge Connector 1_0



Band Edge Connector 1_1



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Measurement 1

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.48350 GHz	2.48350 GHz
Span	83.500 MHz	83.500 MHz
RBW	100.000 kHz	$\leq$ 100.000 kHz
VBW	300.000 kHz	$\geq$ 300.000 kHz
SweepPoints	1670	$\sim$ 1670
Sweptime	94.727 μ s	AUTO
Reference Level	-20.000 dBm	-30.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off

Measurement 2

Setting	Instrument Value	Target Value
Start Frequency	2.48350 GHz	2.48350 GHz
Stop Frequency	2.50000 GHz	2.50000 GHz
Span	16.500 MHz	16.500 MHz

RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	330	~ 330
SweepTime	18.945 µs	AUTO
Reference Level	-20.000 dBm	-30.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off

Tx Spurious Emission (2480 MHz; 15.000 dBm; 1 MHz)

Customized settings.

Test according to FCC title 47 part 15 §15.247(d), KDB 558074 D01 DTS Meas Guidance v05 8.5 and ANSI C63.10-2013 11.11.2 & 11.11.3

Measurement uncertainty calculated in accordance with ETSI TR 100 028-1.
Expanded Uncertainty (K=2) < 1.8 dB

Result

DUT Frequency (MHz)	Result
2480.000000	PASS

Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
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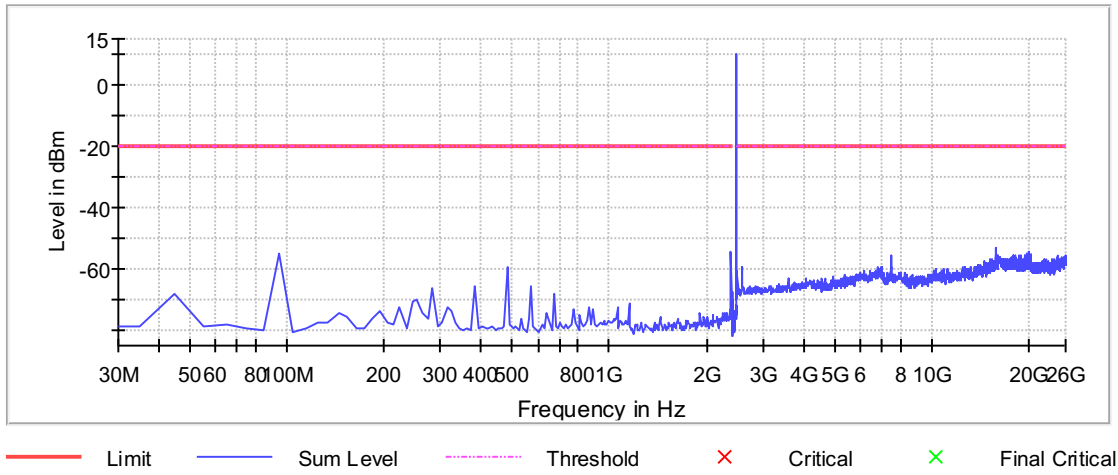
Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
15830.837760	-53.1	33.3	-19.8
15810.849235	-54.2	34.5	-19.8
19878.514131	-54.3	34.5	-19.8
2385.063025	-54.4	34.6	-19.8
15820.843498	-54.5	34.8	-19.8
20228.313323	-54.7	35.0	-19.8
19838.537080	-55.0	35.2	-19.8
19868.519868	-55.2	35.5	-19.8
94.726891	-55.3	35.5	-19.8
19538.709201	-55.4	35.6	-19.8
25975.014343	-55.4	35.6	-19.8
17859.673077	-55.5	35.7	-19.8
19918.491181	-55.5	35.7	-19.8
18869.093604	-55.5	35.7	-19.8
16120.671377	-55.5	35.7	-19.8

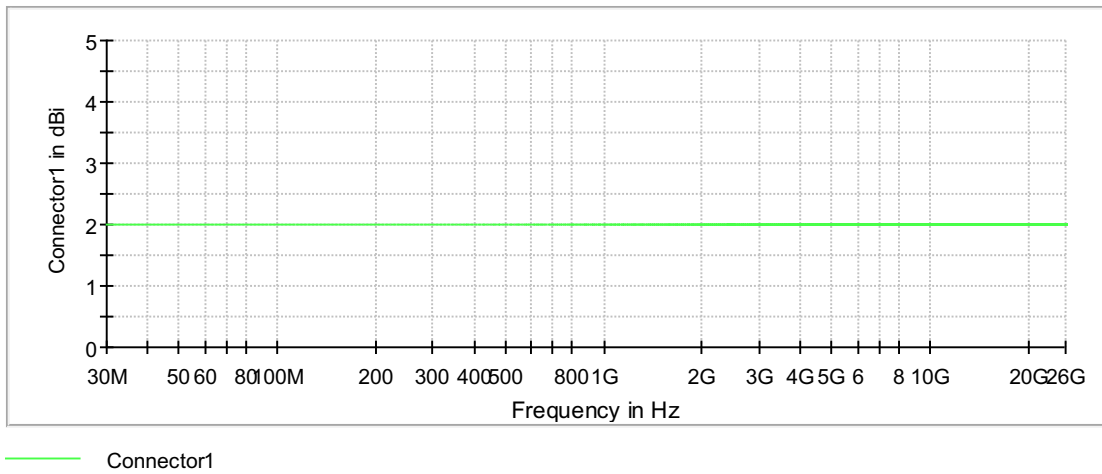
Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	2400.000000	1	1
2400.000000	2483.500000	1	1
2483.500000	26000.000000	1	1

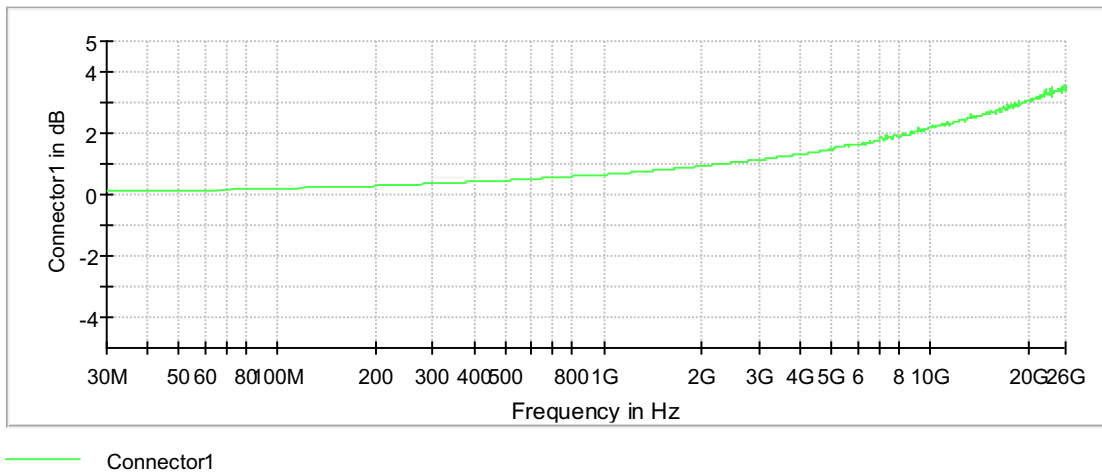
Spurious



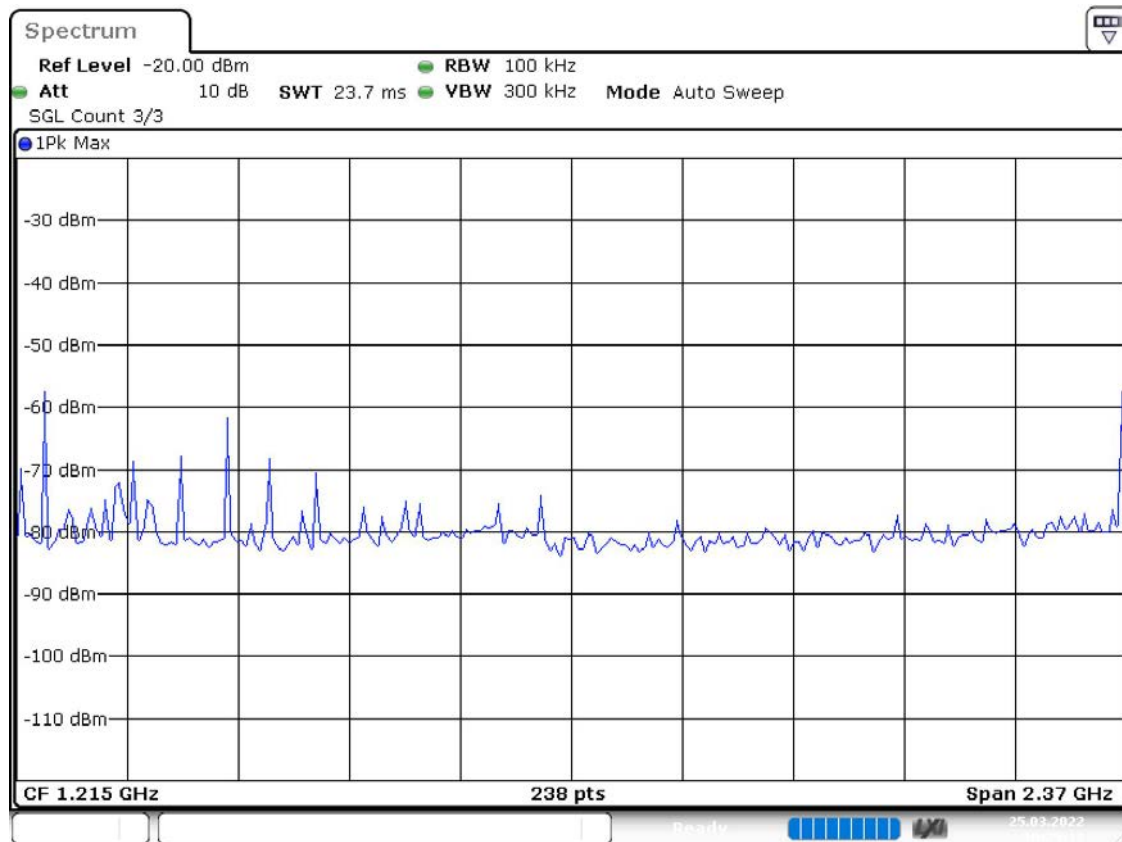
Gain



Attenuation

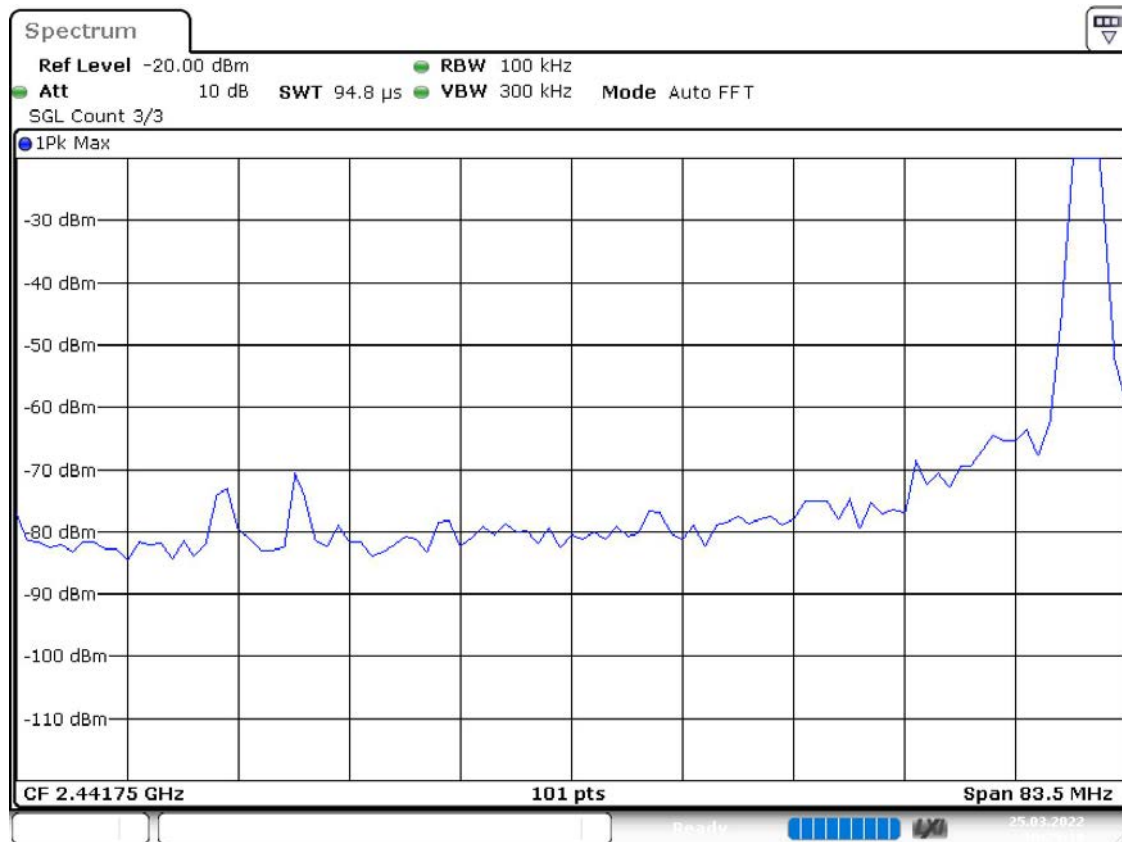


Spurious Connector 1_0

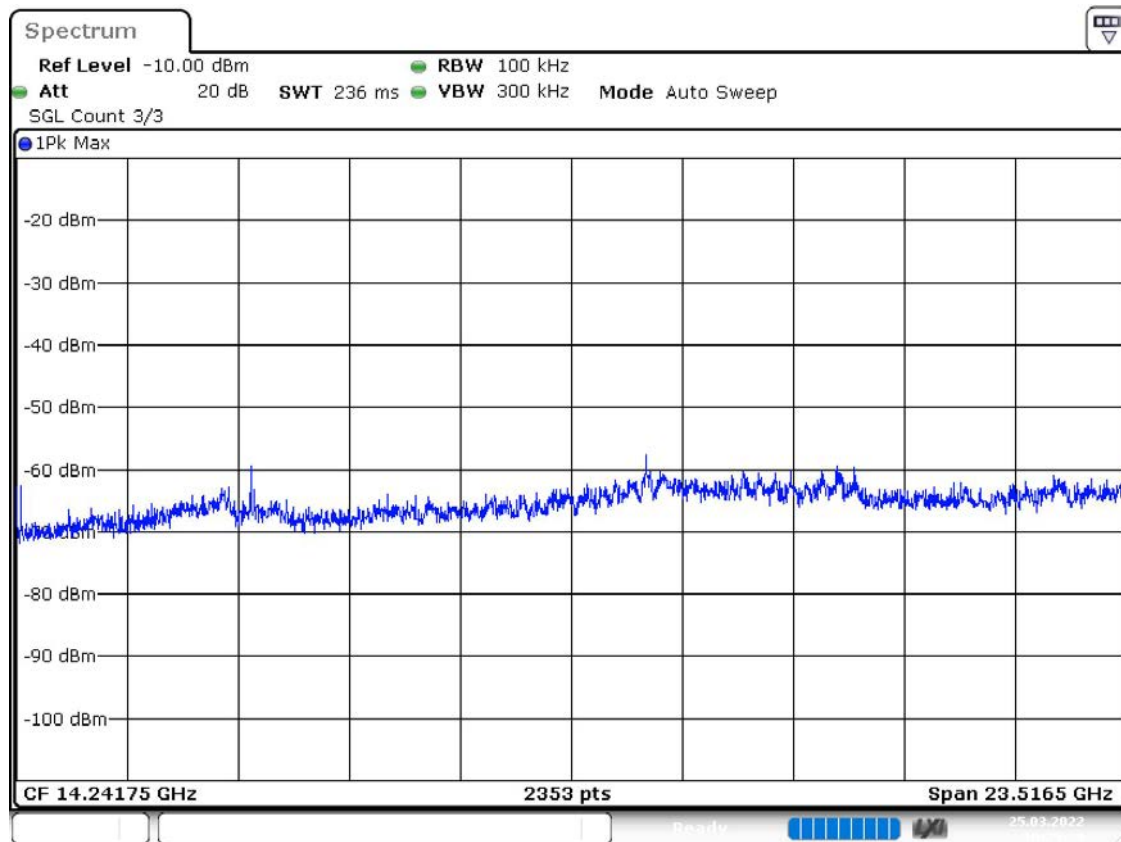


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Spurious Connector 1_1



Spurious Connector 1_2



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Pre Measurement 1

Setting	Instrument Value	Target Value
RBW	100.000 kHz	≤ 100.000 kHz
VBW	300.000 kHz	≥ 300.000 kHz
SweepPoints	238	~ 238
Sweeptime	23.700 ms	AUTO
Reference Level	-20.000 dBm	-30.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	3	3
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off

Emissions in restricted frequency bands (Average) (2480 MHz; 15.000 dBm; 1 MHz)

Customized settings.

Test according to FCC title 47 part 15 §15.247(d), KDB 558074 D01 DTS Meas Guidance v05 8.6 and ANSI C63.10-2013 11.12.2.6

Measurement uncertainty calculated in accordance with ETSI TR 100 028-1.
Expanded Uncertainty (K=2) < 1.8 dB

Result

DUT Frequency (MHz)	Result
2480.000000	PASS

Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
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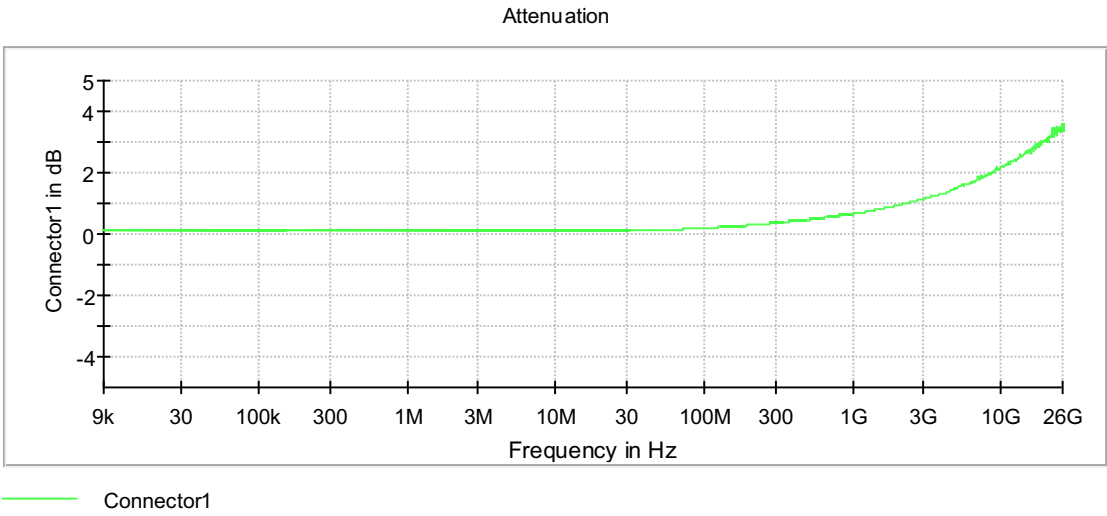
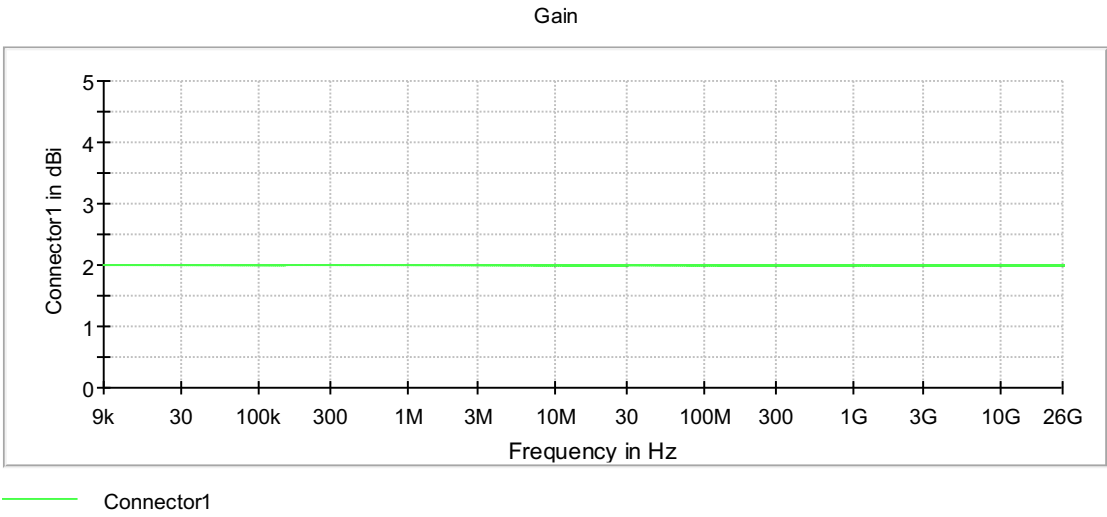
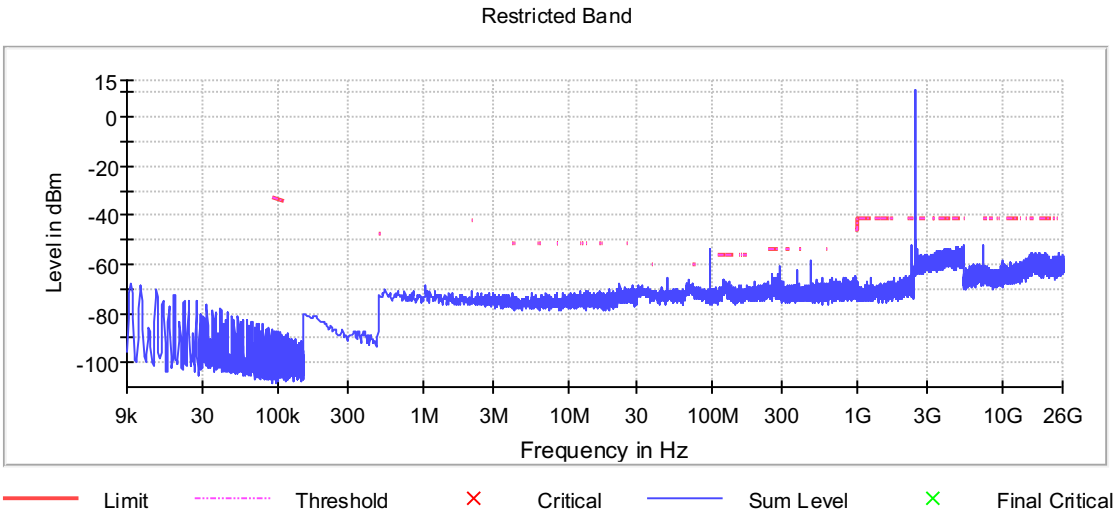
Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2484.250000	-49.9	8.7	-41.2
2484.750000	-50.1	8.9	-41.2
119.425000	-66.1	9.7	-56.4
256.025000	-63.7	9.8	-53.9
119.375000	-66.3	9.9	-56.4
73.025000	-69.9	10.0	-59.9
283.125000	-64.0	10.1	-53.9
255.975000	-64.1	10.2	-53.9
118.775000	-66.6	10.2	-56.4
73.725000	-70.2	10.3	-59.9
73.775000	-70.3	10.4	-59.9
283.075000	-64.3	10.4	-53.9
73.325000	-70.4	10.5	-59.9
73.375000	-70.5	10.6	-59.9
283.175000	-64.6	10.7	-53.9

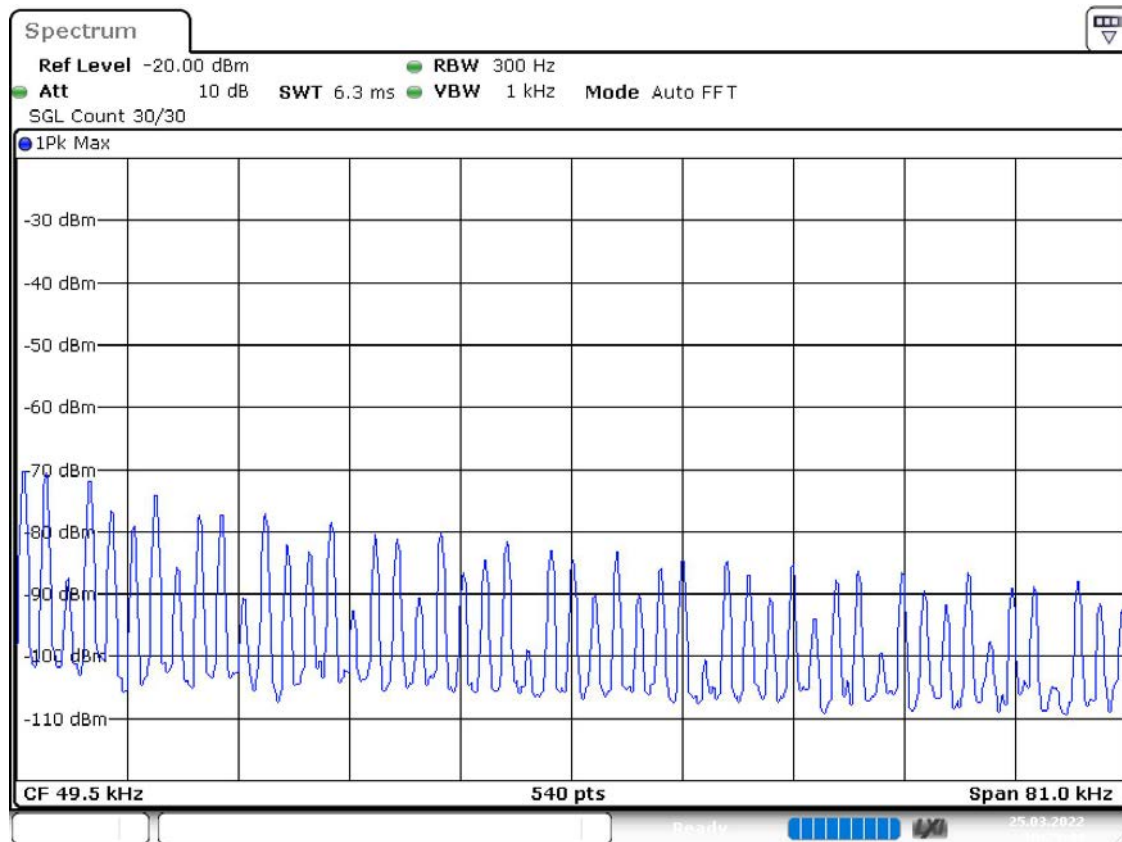
Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
0.009000	0.090000	2	2
0.090000	0.110000	2	2
0.110000	0.150000	2	2
0.150000	0.490000	2	2
0.490000	30.000000	2	2
30.000000	1000.000000	2	2
1000.000000	2400.000000	1	1
2400.000000	2483.500000	1	1
2483.500000	5470.000000	1	1
5470.000000	7000.000000	1	1

7000.000000	16000.000000	1	1
16000.000000	26000.000000	1	1

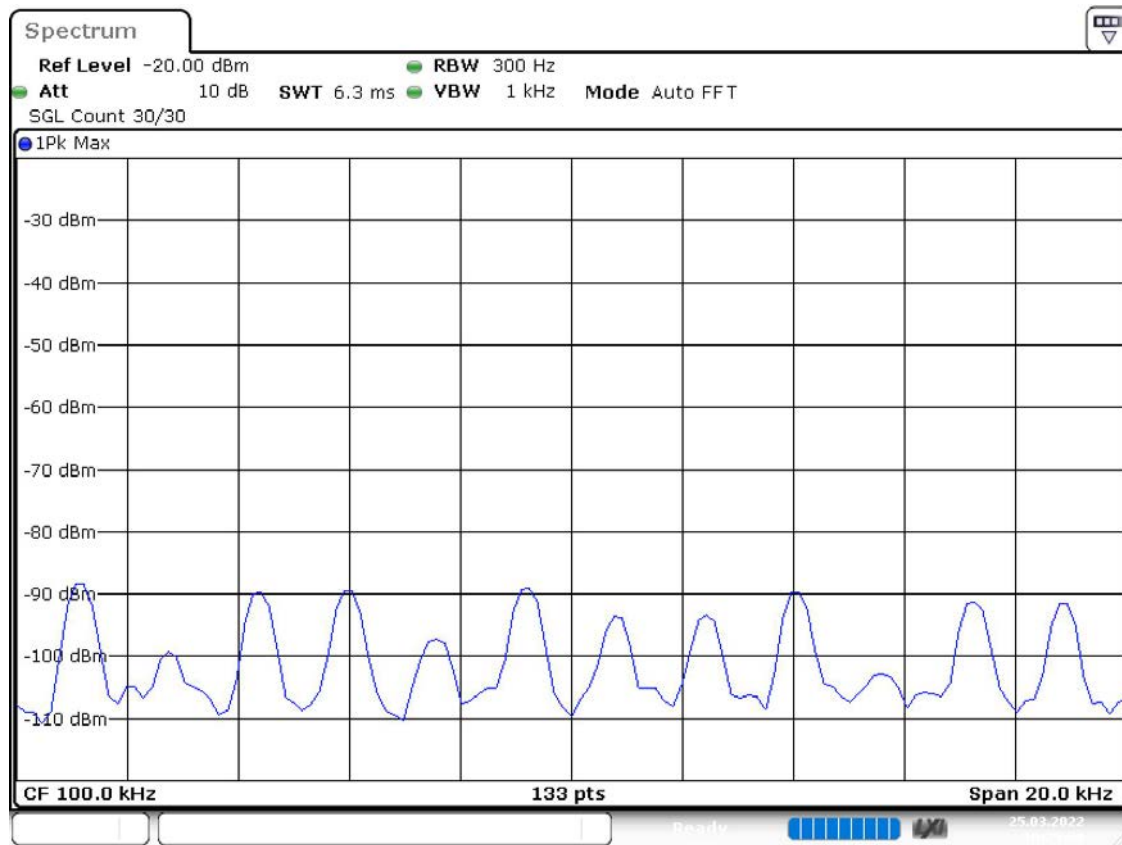


Restricted Band Connector 1_0

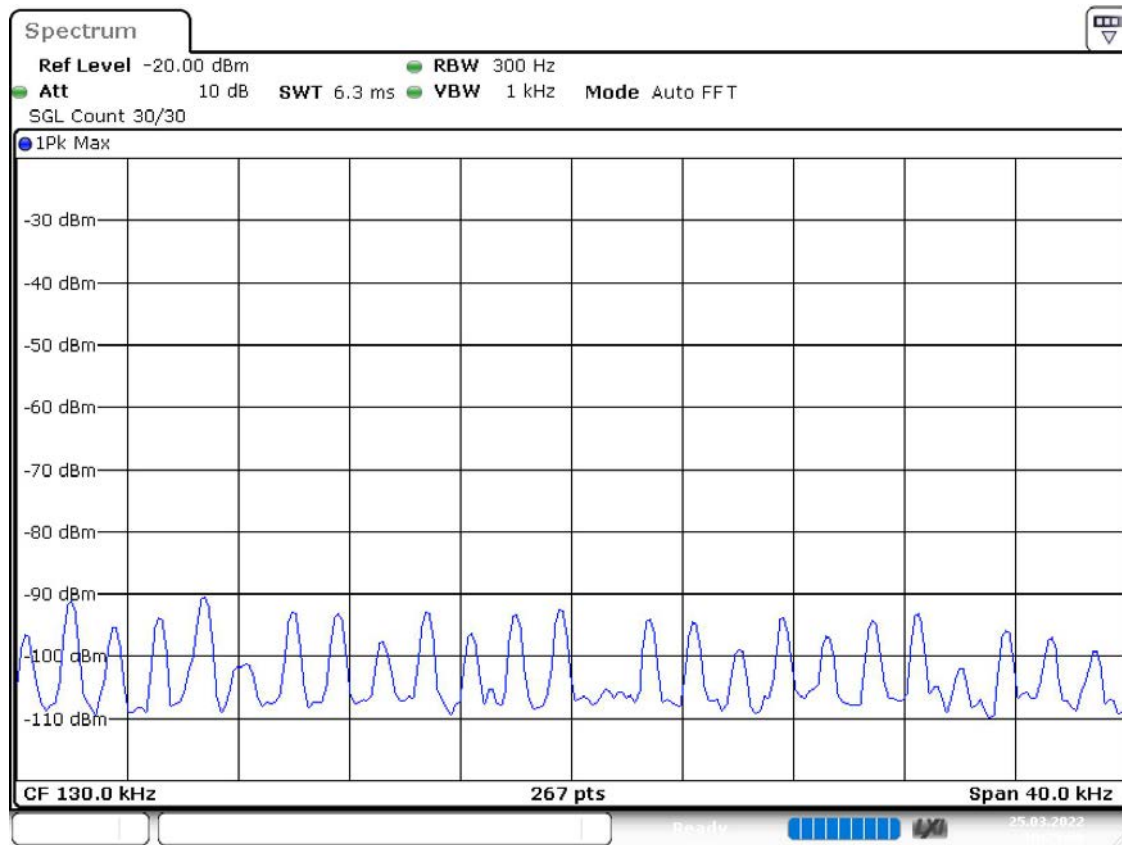


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Restricted Band Connector 1_1

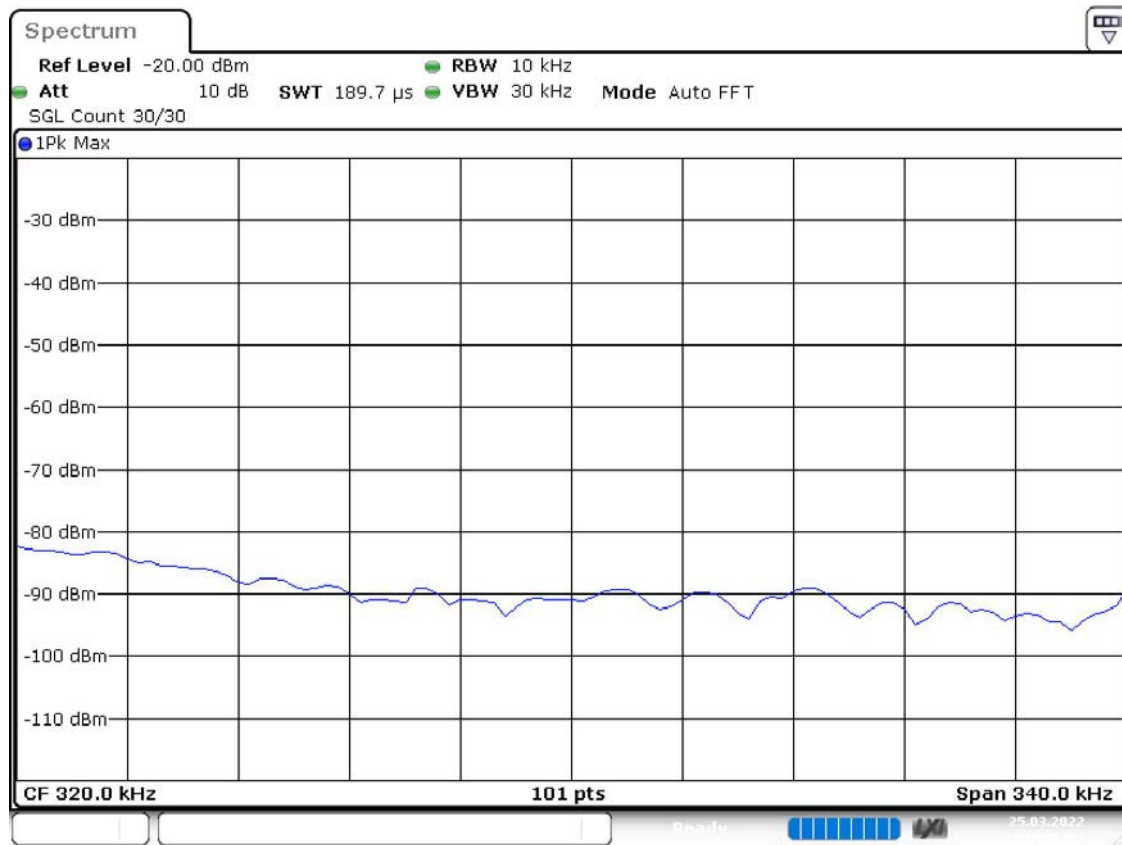


Restricted Band Connector 1_2



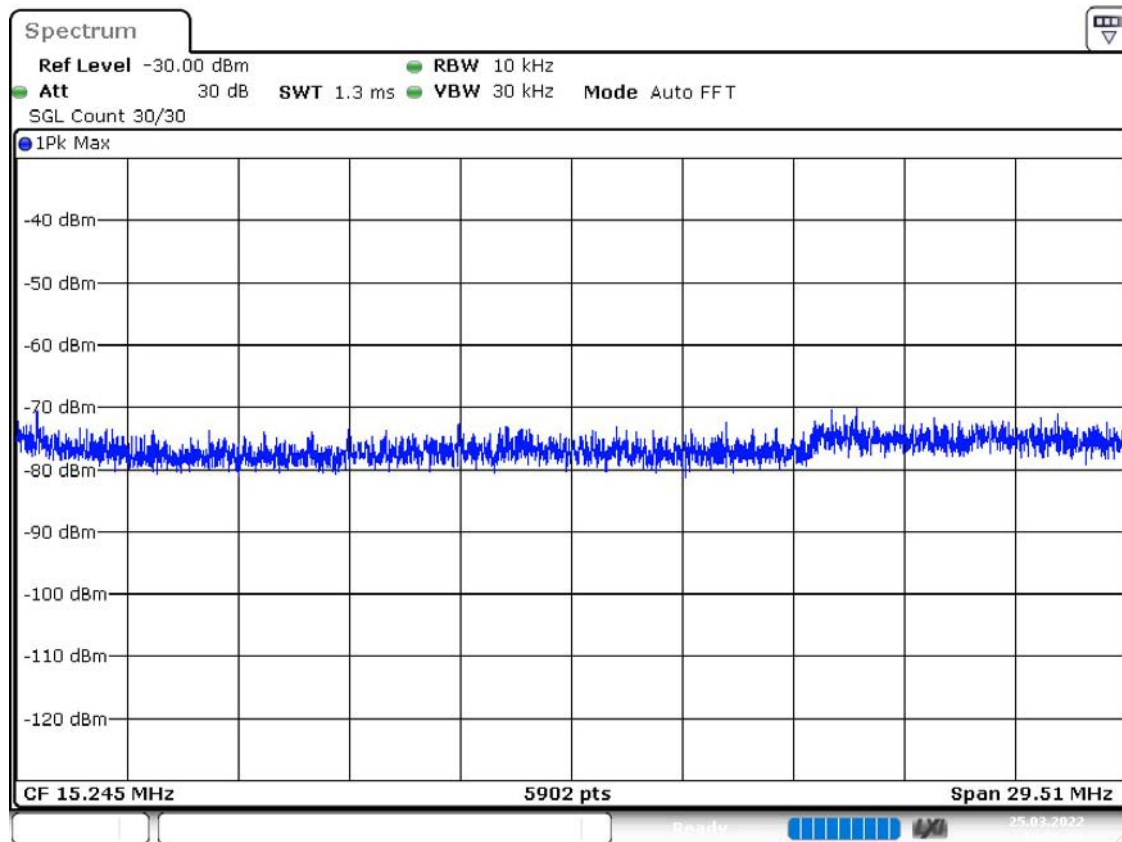
Date: 25.MAR.2022 10:25:56

Restricted Band Connector 1_3

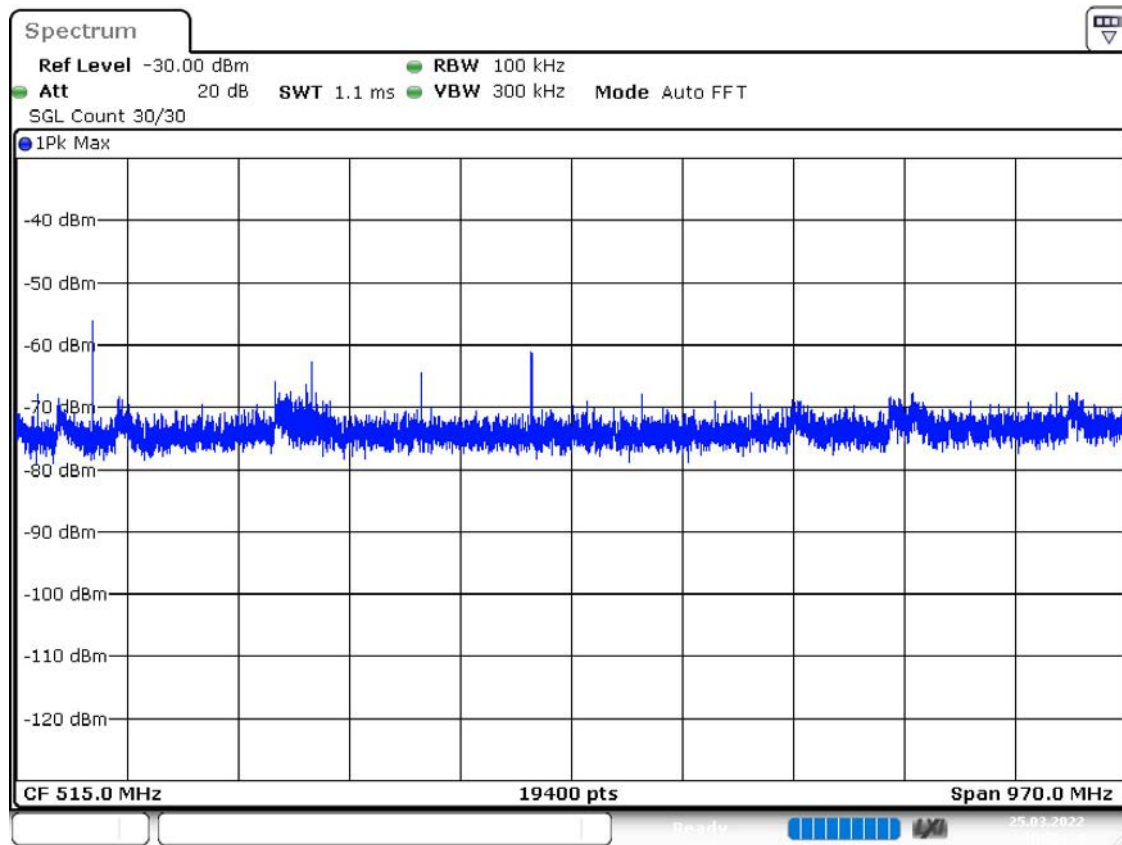


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Restricted Band Connector 1_4

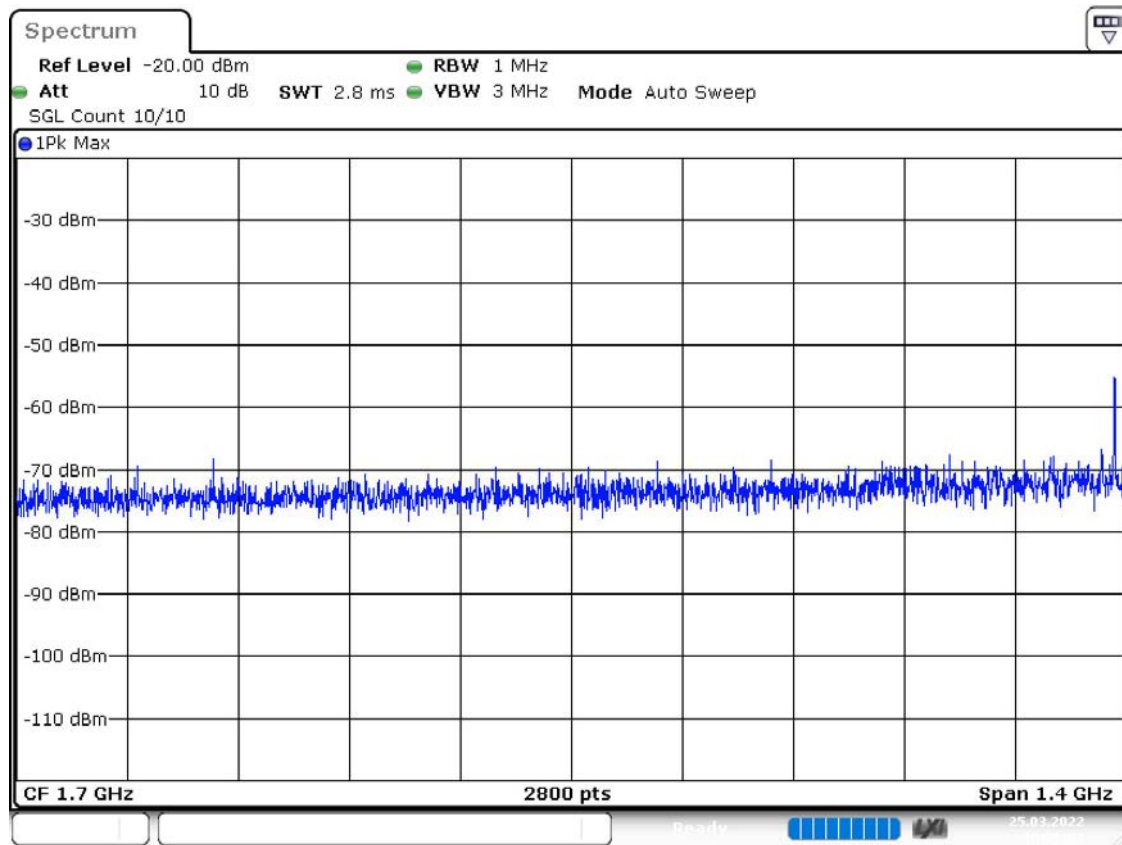


Restricted Band Connector 1_5

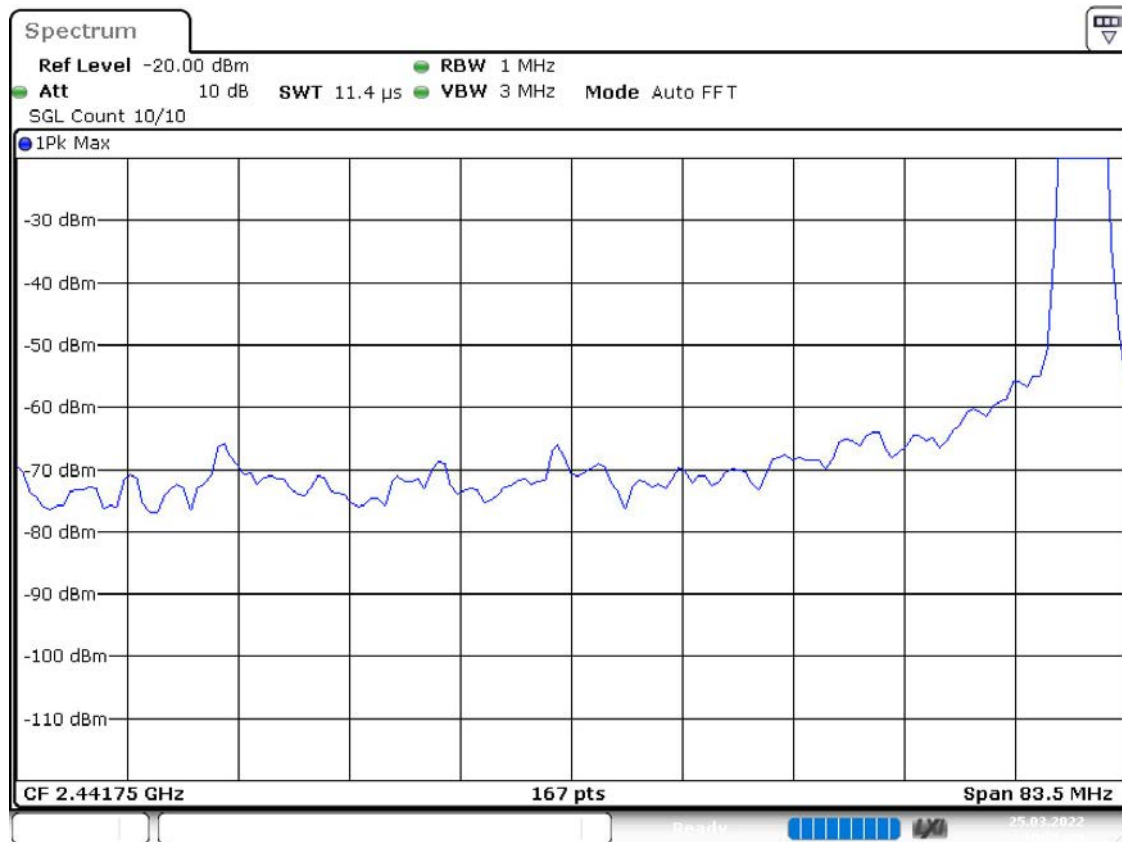


Date: 25.MAR.2022 10:26:25

Restricted Band Connector 1_6

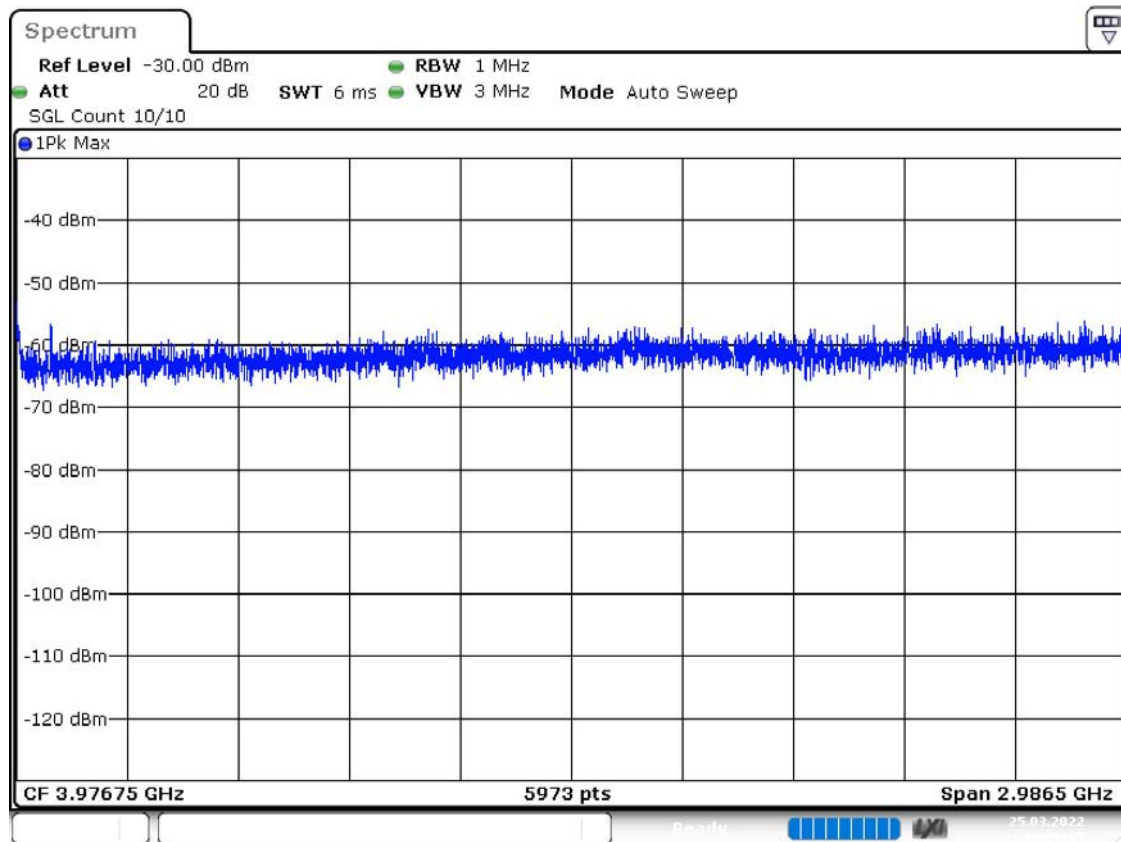


Restricted Band Connector 1_7

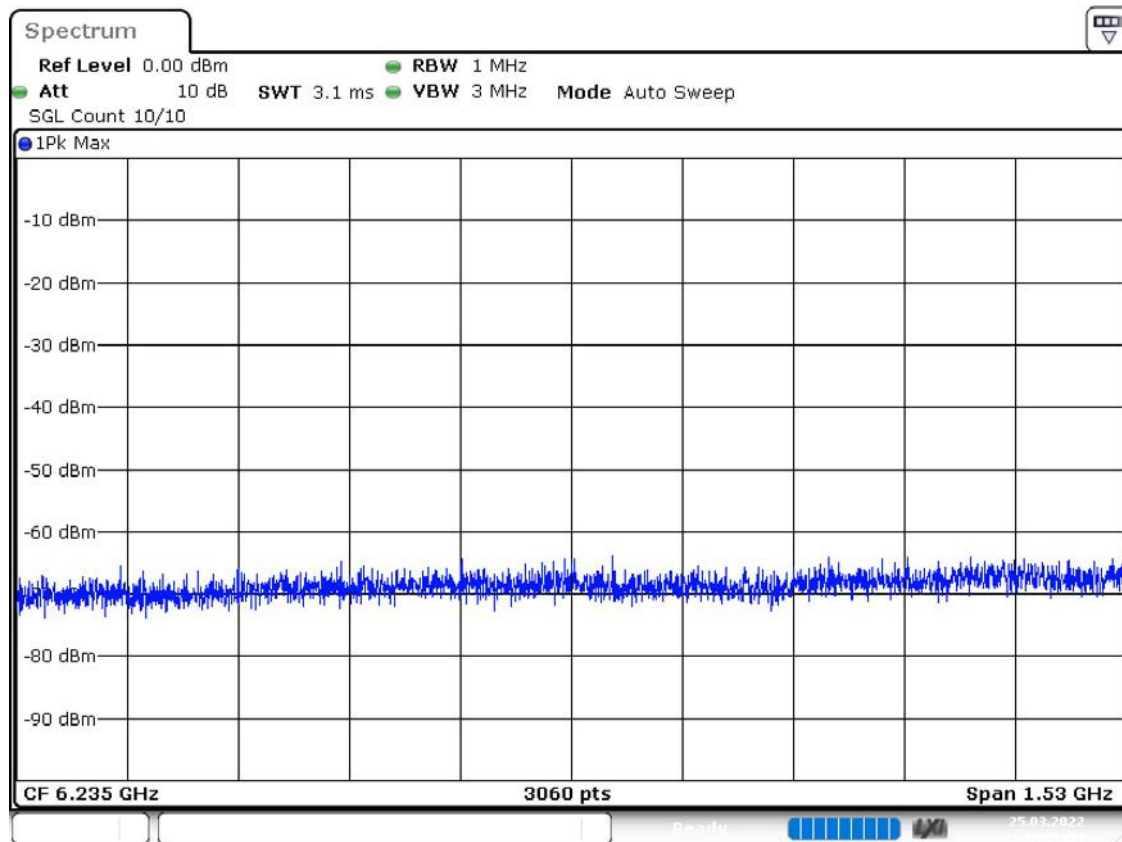


Date: 25.MAR.2022 10:26:39

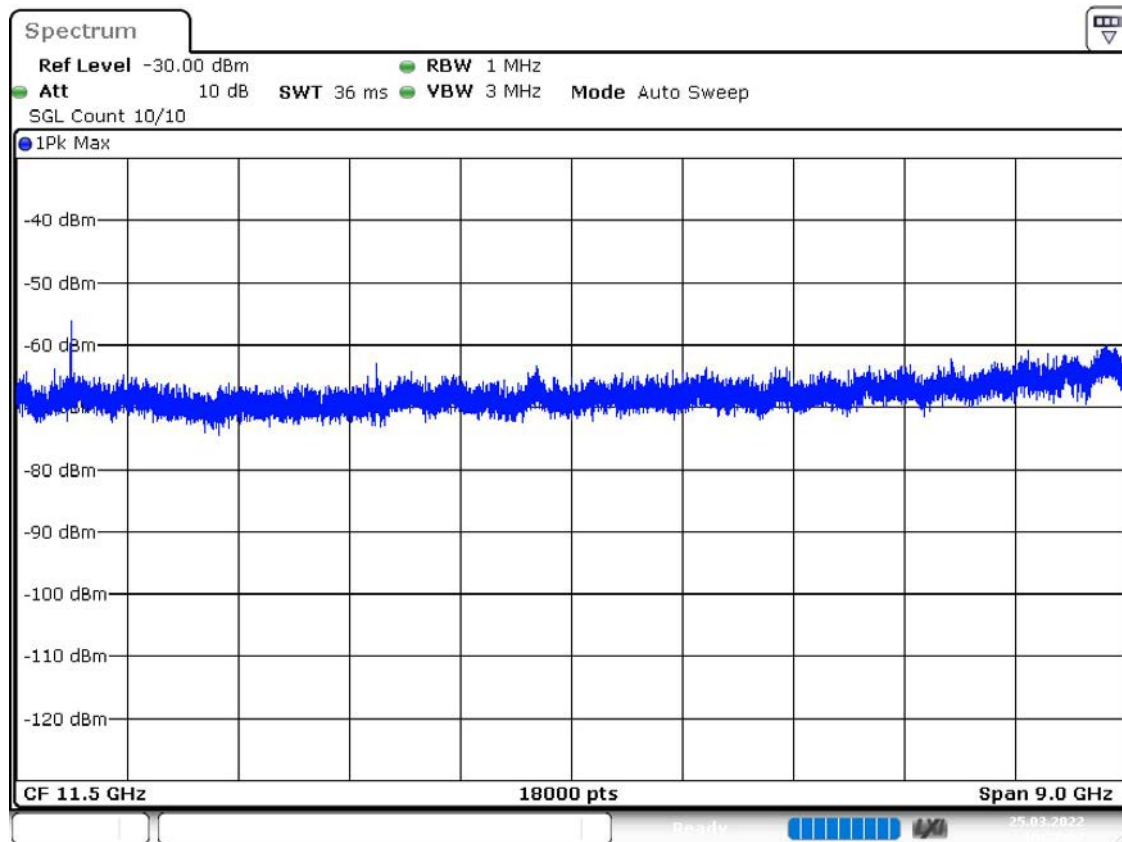
Restricted Band Connector 1_8



Restricted Band Connector 1_9

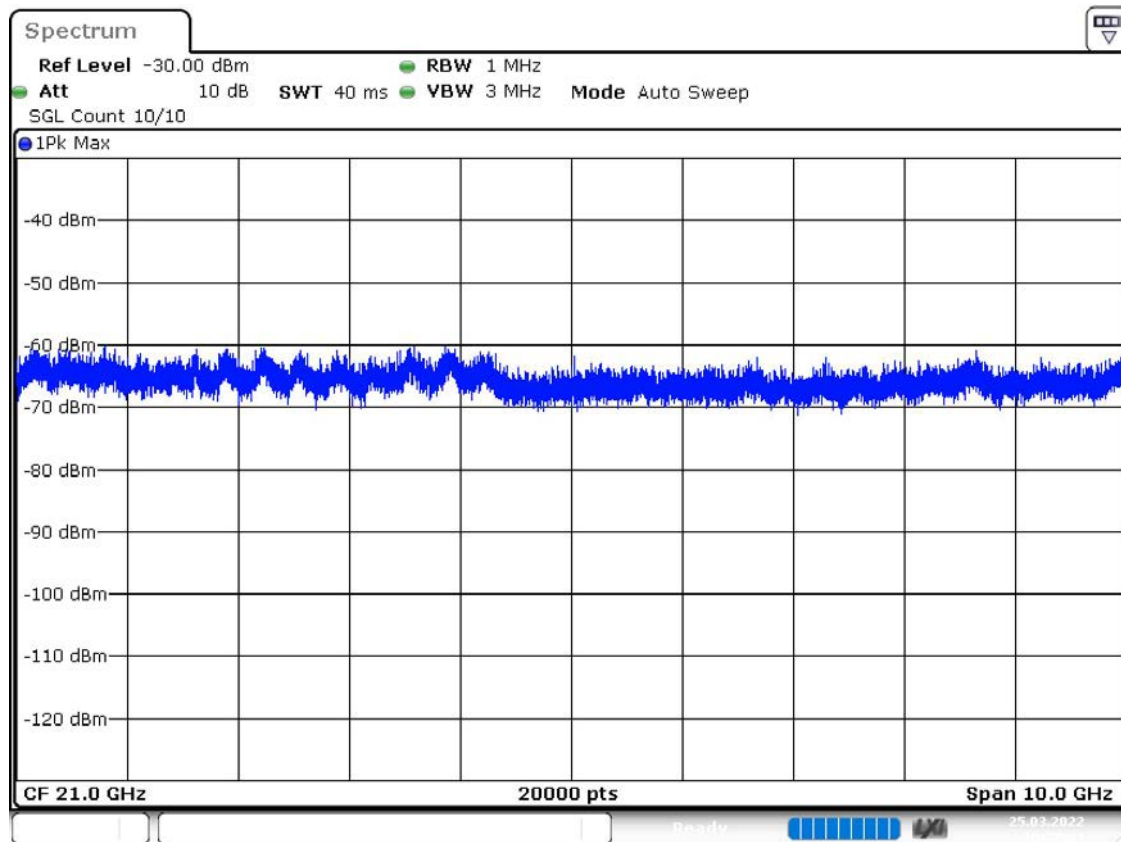


Restricted Band Connector 1_10



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Restricted Band Connector 1_11



Date: 25.MAR.2022 10:27:22

Pre Measurement 1

Setting	Instrument Value	Target Value
RBW	1.000 MHz	≤ 1.000 MHz
VBW	3.000 MHz	≥ 3.000 MHz
SweepPoints	2800	~ 2800
SweepTime	2.800 ms	AUTO
Reference Level	-20.000 dBm	-30.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	10	10
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off

Pre Measurement 2

Setting	Instrument Value	Target Value
RBW	300.000 Hz	≤ 300.000 Hz
VBW	1.000 kHz	≥ 900.000 Hz
SweepPoints	540	~ 540
SweepTime	6.322 ms	AUTO
Reference Level	-20.000 dBm	-30.000 dBm
Attenuation	10.000 dB	AUTO

Detector	MaxPeak	MaxPeak
SweepCount	30	30
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off