LTU-Instant Bluetooth Annex

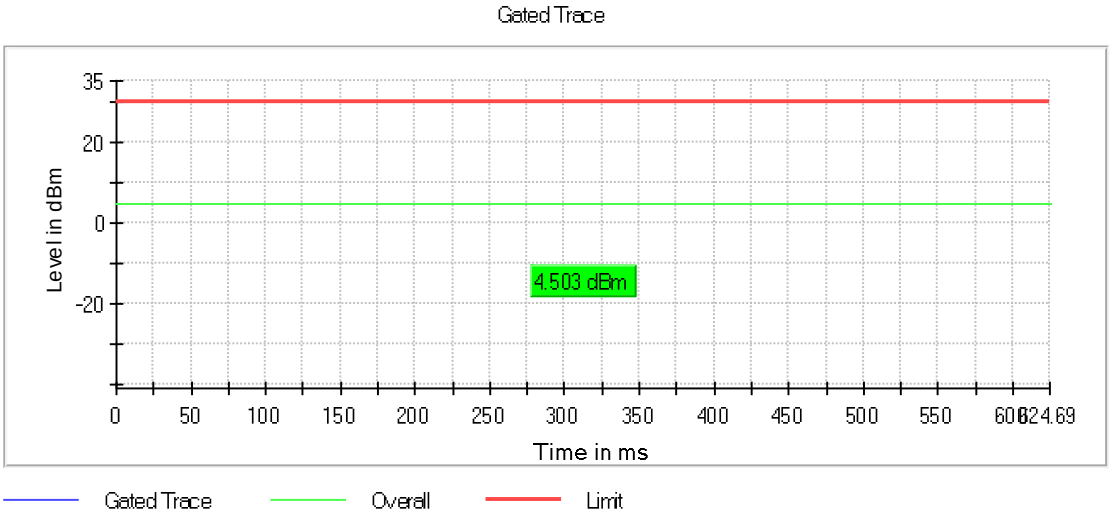
Summary

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)

Result

DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
2402.000000	4.5	30.0	6.5	62.658	PASS



OSP PowerMeter settings

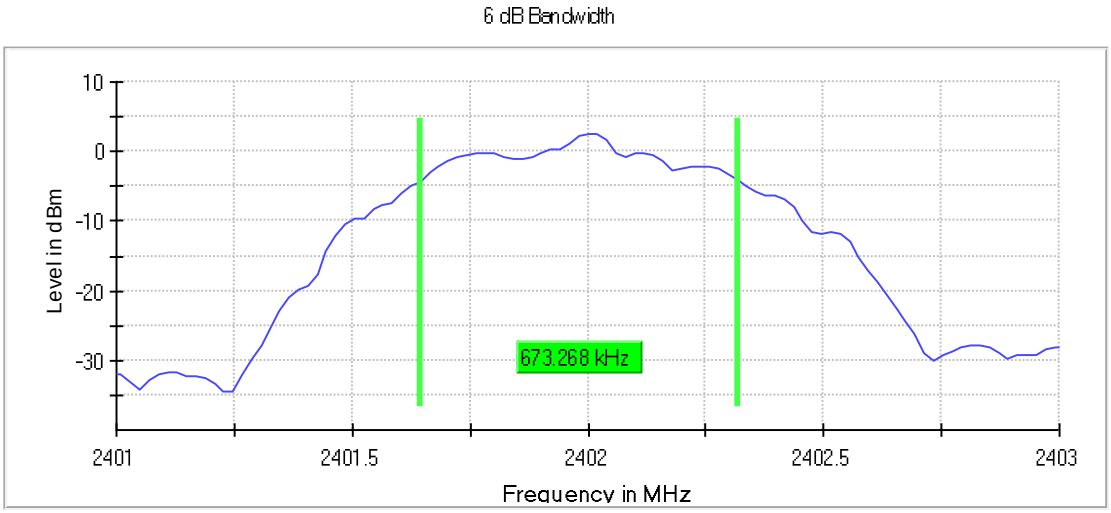
Setting	Instrument Value	Target Value
Measurement Time	1.000 s	1.000 s
Points	1000000	1000000
Time resolution	1.000 µs	1.000 µs

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

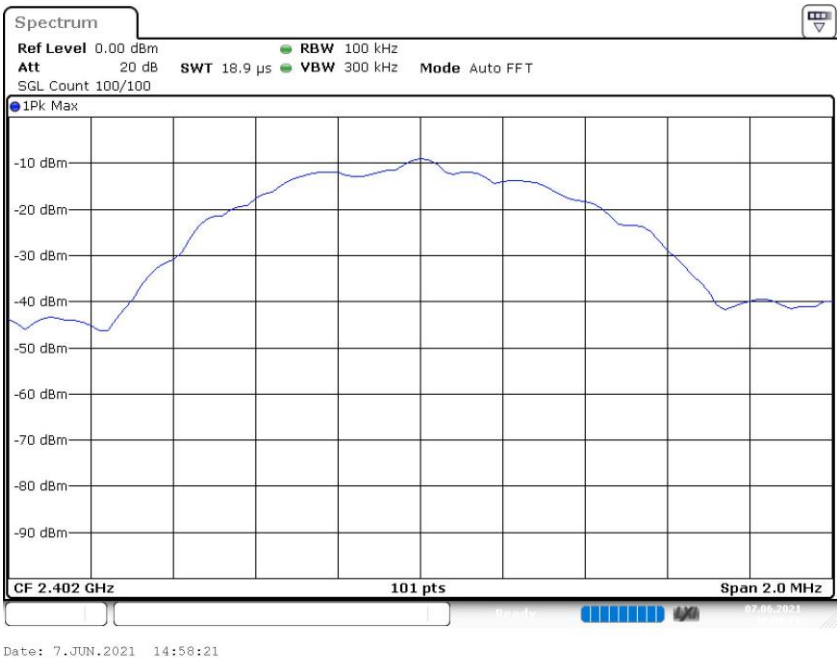
6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2402.000000	0.673268	0.500000	---	2401.643564	2402.316832

DUT Frequency (MHz)	Max Level (dBm)	Result
2402.000000	2.7	PASS



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	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 40
Sweeptime	18.938 µs	AUTO
Reference Level	0.000 dBm	0.000 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

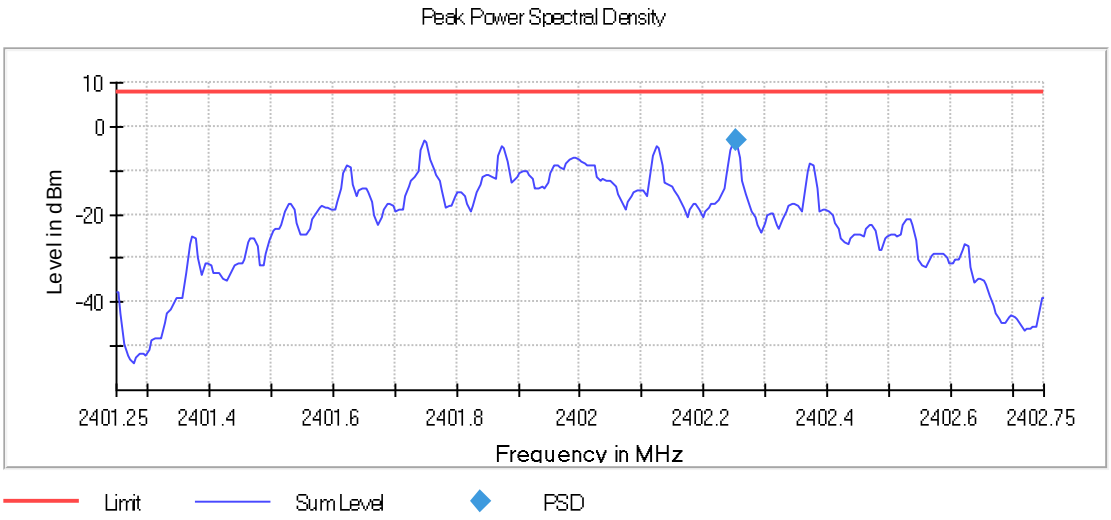
Peak Power Spectral Density (2402 MHz; 15.000 dBm; 1 MHz)

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2402.000000	2402.252500	-3.058	8.0	PASS

Ports

Port	State
1	used



Measurement

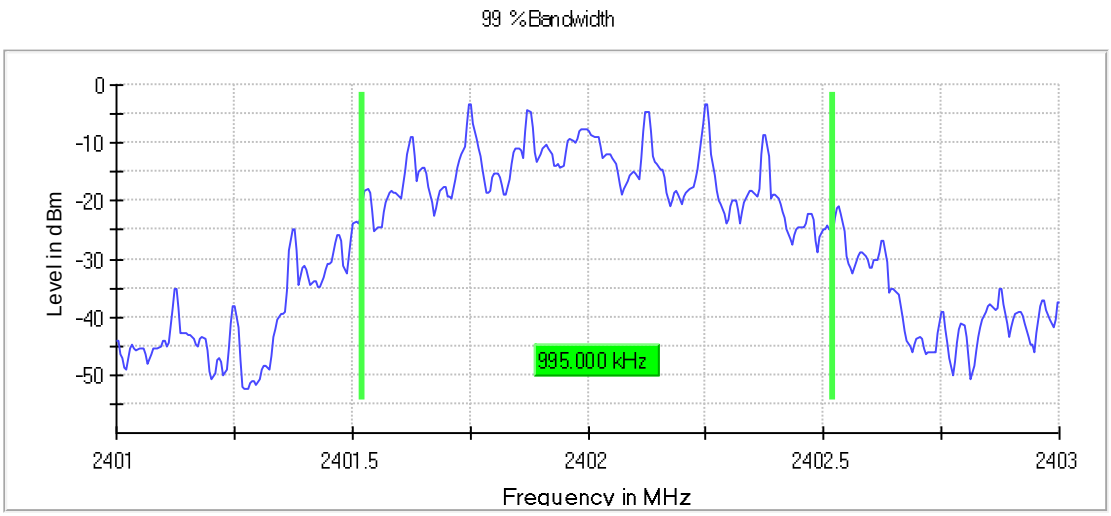
Setting	Instrument Value	Target Value
Start Frequency	2.40125 GHz	2.40125 GHz
Stop Frequency	2.40275 GHz	2.40275 GHz
Span	1.500 MHz	1.500 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	300	~ 300
Sweeptime	1.500 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	Sweep
Preamp	off	off

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

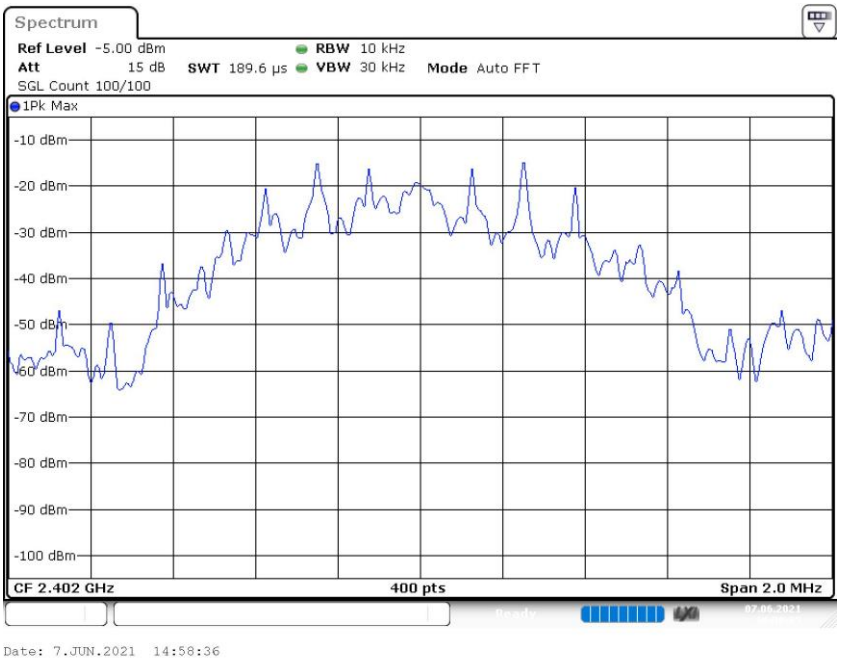
99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2402.000000	0.995000	---	---	2401.522500	2402.517500

DUT Frequency (MHz)	Result
2402.000000	PASS



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)

Result

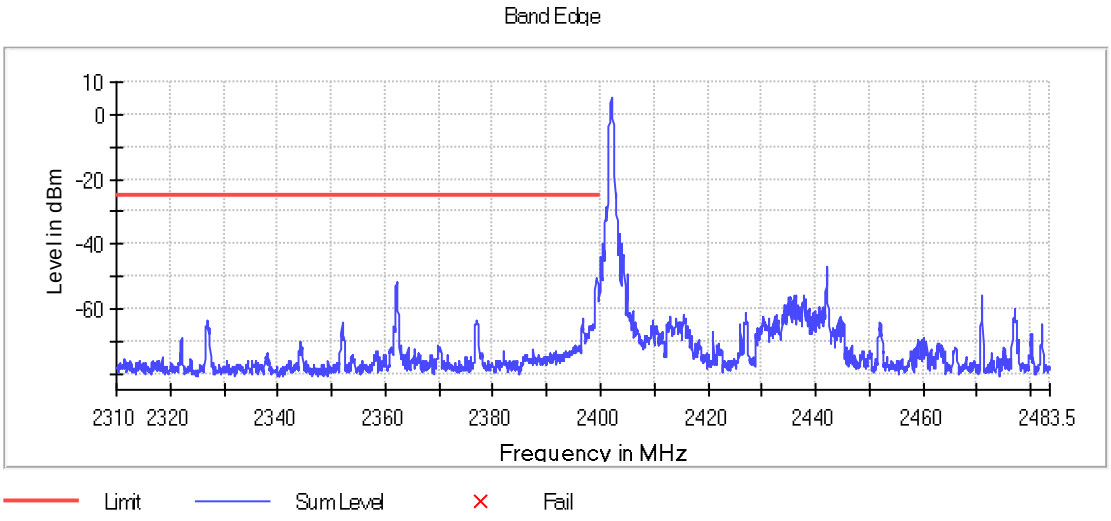
DUT Frequency (MHz)	Result
2402.000000	PASS

Inband Peak

Frequency (MHz)	Level (dBm)
2402.025000	5.2

Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2399.975000	-44.0	19.2	-24.8	PASS
2399.925000	-46.2	21.4	-24.8	PASS
2399.175000	-50.7	25.9	-24.8	PASS
2399.225000	-50.7	25.9	-24.8	PASS
2399.875000	-50.8	26.0	-24.8	PASS
2399.375000	-51.0	26.2	-24.8	PASS
2399.425000	-51.2	26.4	-24.8	PASS
2399.125000	-51.4	26.6	-24.8	PASS
2399.275000	-51.6	26.8	-24.8	PASS
2399.325000	-51.8	27.0	-24.8	PASS
2362.075000	-51.9	27.1	-24.8	PASS
2362.125000	-52.0	27.3	-24.8	PASS
2399.475000	-52.1	27.3	-24.8	PASS
2362.025000	-52.5	27.7	-24.8	PASS
2361.975000	-52.7	27.9	-24.8	PASS



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 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

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	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	1670	~ 1670
Sweeptime	94.727 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 (2402 MHz; 15.000 dBm; 1 MHz)

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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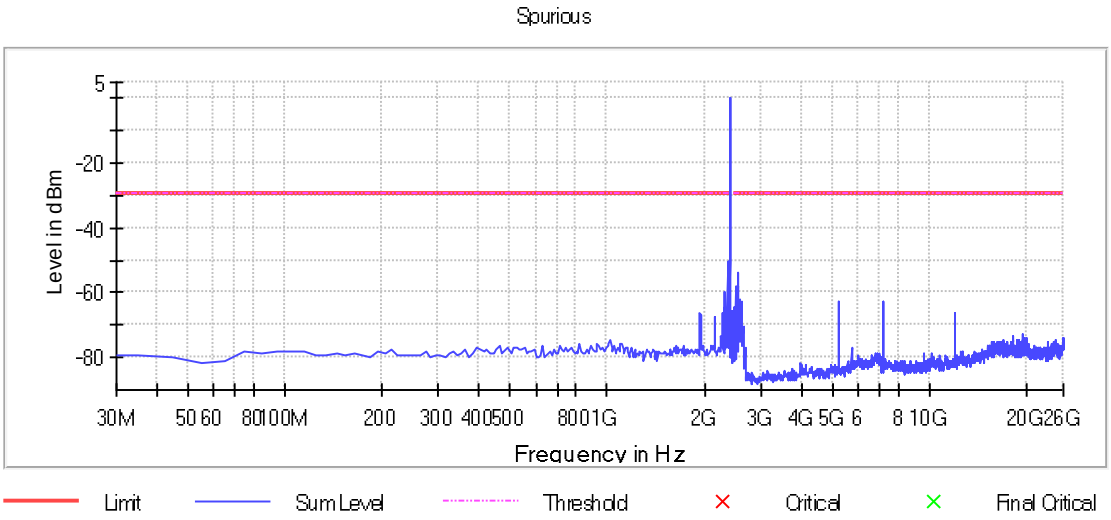
Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2365.147059	-50.1	20.6	-29.5
2395.021008	-50.6	21.1	-29.5
2548.462707	-53.6	24.1	-29.5
2528.474182	-57.8	28.3	-29.5
2498.491394	-57.8	28.3	-29.5
2305.399160	-59.7	30.2	-29.5
2578.445495	-62.3	32.8	-29.5
7205.789099	-62.4	33.0	-29.5
5216.930833	-62.5	33.0	-29.5
2598.434020	-62.6	33.1	-29.5
2325.315126	-64.2	34.7	-29.5
2558.456970	-64.6	35.1	-29.5
2275.525210	-66.3	36.8	-29.5
12013.029431	-66.4	36.9	-29.5
1936.953782	-66.4	36.9	-29.5

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



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) (2402 MHz; 15.000 dBm; 1 MHz)

Result

DUT Frequency (MHz)	Result
2402.000000	PASS

Final measurements

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

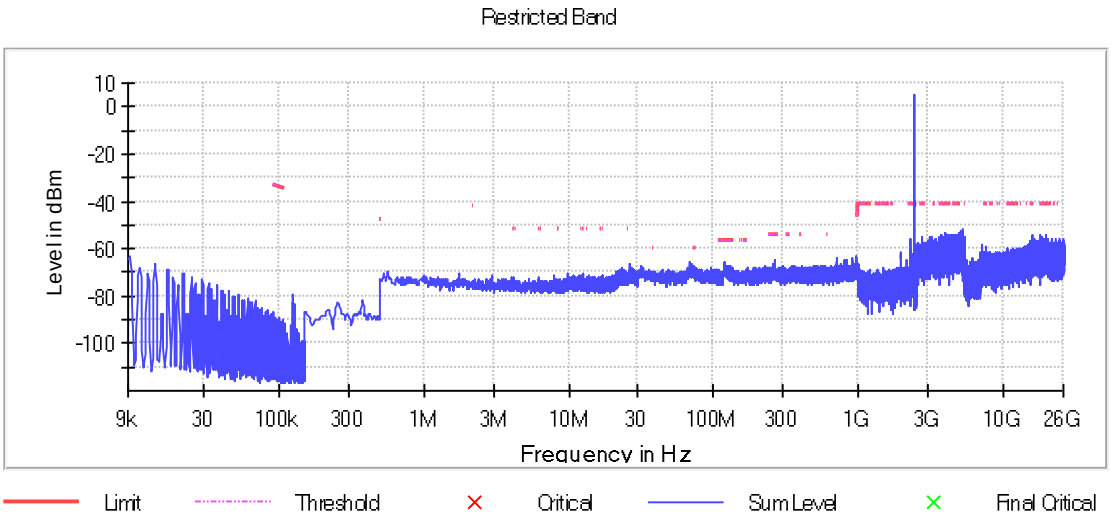
Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
73.175000	-67.7	7.8	-59.9
73.125000	-67.8	7.9	-59.9
74.325000	-68.0	8.1	-59.9
74.925000	-68.1	8.2	-59.9
74.375000	-68.1	8.2	-59.9
74.975000	-68.7	8.8	-59.9
74.875000	-68.7	8.8	-59.9
74.575000	-68.9	9.0	-59.9
74.525000	-69.1	9.2	-59.9
119.075000	-65.8	9.4	-56.4
73.725000	-69.4	9.5	-59.9
74.125000	-69.5	9.6	-59.9

74.175000	-69.5	9.6	-59.9
73.325000	-69.5	9.6	-59.9
119.025000	-66.1	9.7	-56.4

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



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	1	1
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off

Pre Measurement 2

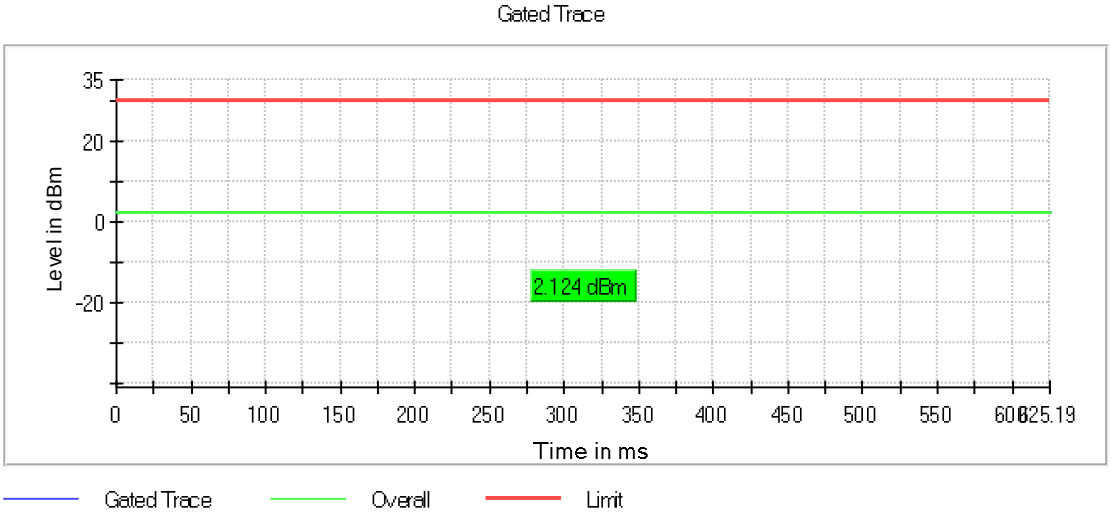
Setting	Instrument Value	Target Value
RBW	300.000 Hz	<= 300.000 Hz
VBW	1.000 kHz	>= 900.000 Hz
SweepPoints	540	~ 540
Sweeptime	6.322 ms	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	30	30

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)

Result

DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
2442.000000	2.1	30.0	4.1	62.708	PASS

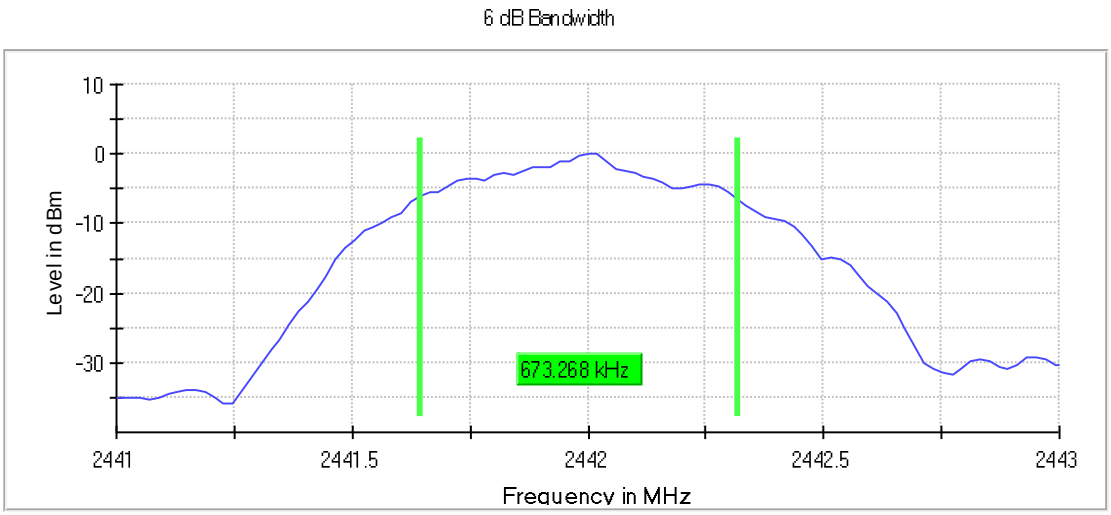


Minimum Emission Bandwidth 6 dB (2442 MHz; 15.000 dBm; 1 MHz)

6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2442.000000	0.673268	0.500000	---	2441.643564	2442.316832

DUT Frequency (MHz)	Max Level (dBm)	Result
2442.000000	0.2	PASS



Bandwidth

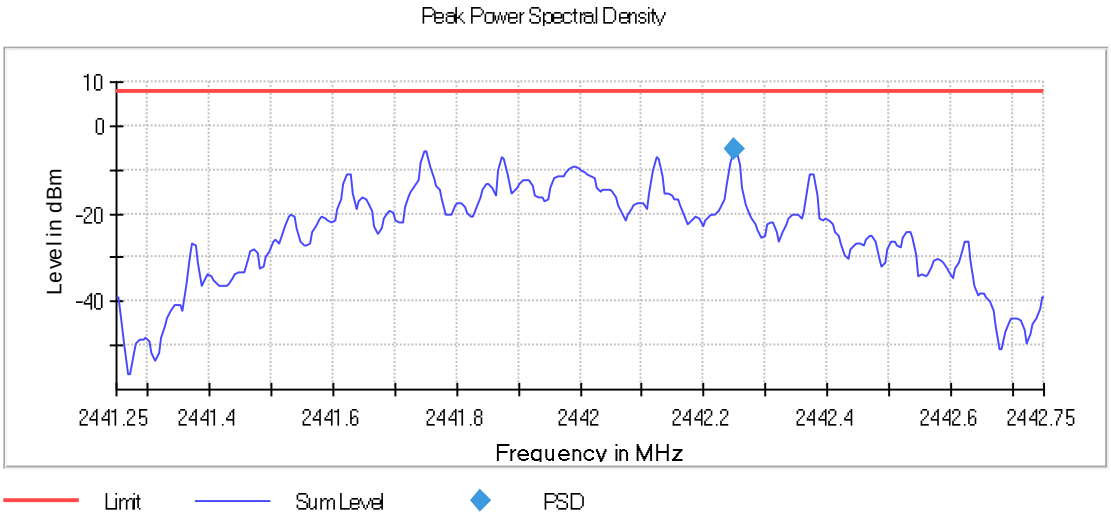
Peak Power Spectral Density (2442 MHz; 15.000 dBm; 1 MHz)

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2442.000000	2442.247500	-5.479	8.0	PASS

Ports

Port	State
1	used

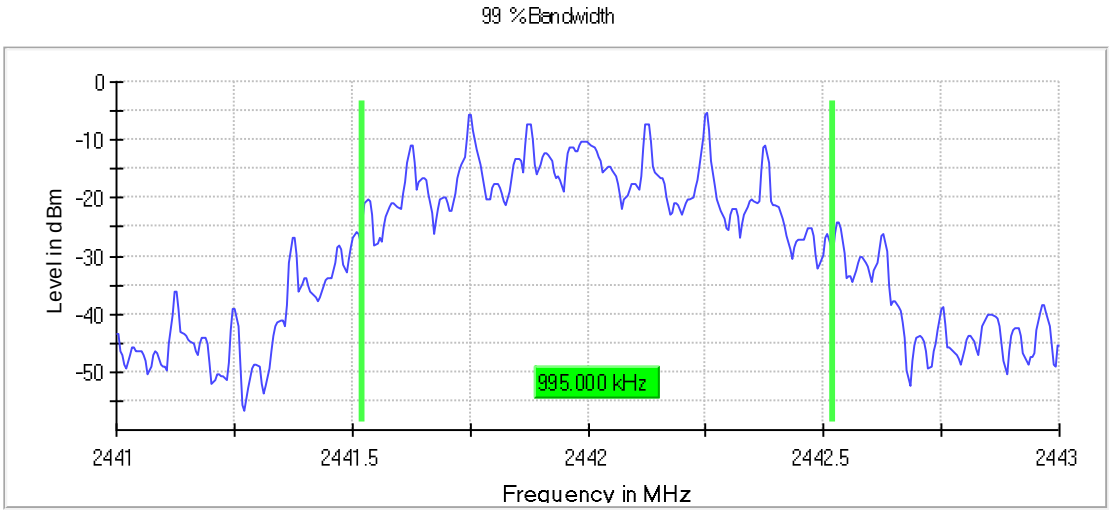


Occupied Channel Bandwidth 99% (2442 MHz; 15.000 dBm; 1 MHz)

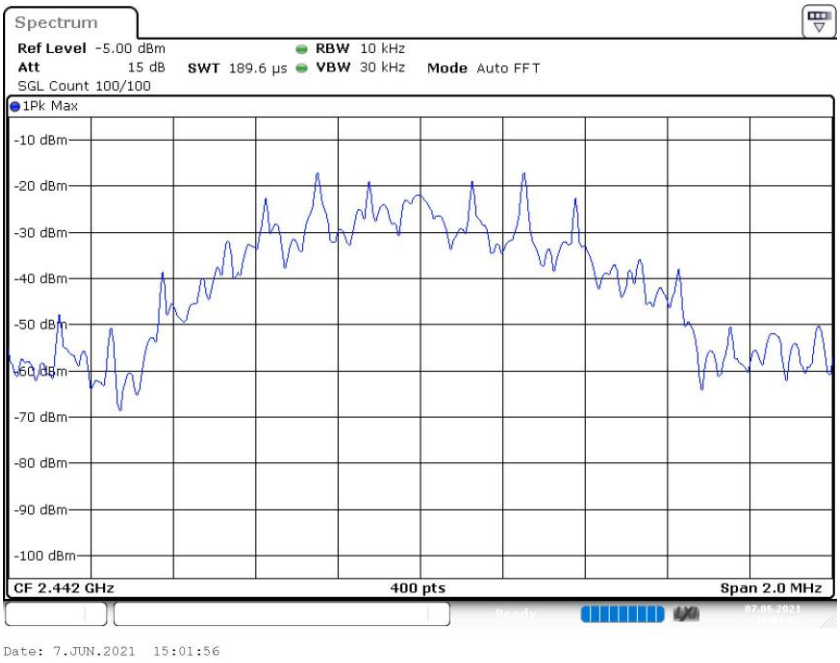
99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2442.000000	0.995000	---	---	2441.522500	2442.517500

DUT Frequency (MHz)	Result
2442.000000	PASS



Bandwidth



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

Result

DUT Frequency (MHz)	Result
2442.000000	PASS

Final measurements

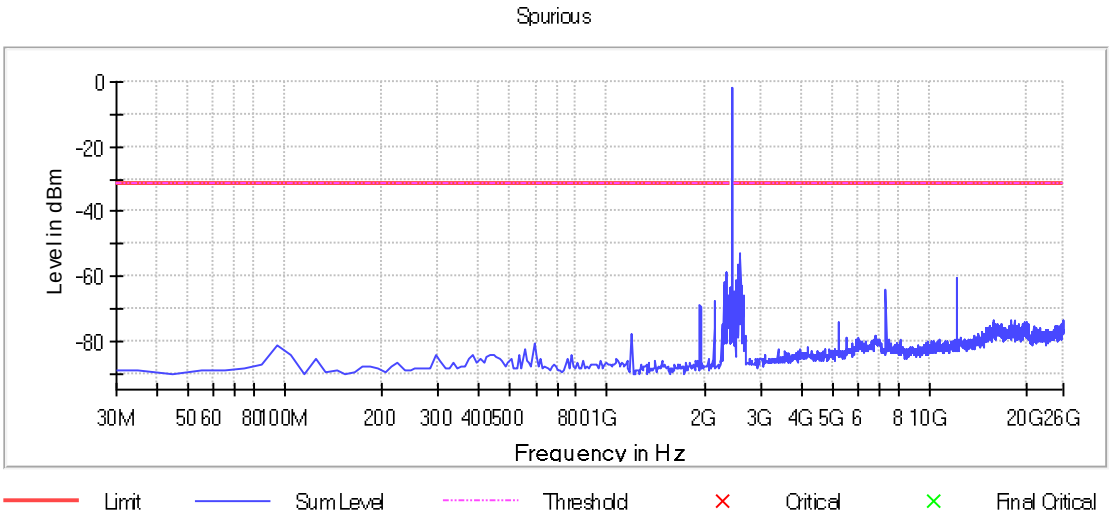
Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
---	---	---	---	---	---

Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2568.451232	-52.6	20.9	-31.8
2588.439758	-54.4	22.6	-31.8
2538.468445	-56.4	24.6	-31.8
2345.231092	-58.5	26.8	-31.8
12212.914683	-60.6	28.8	-31.8
2518.479919	-60.9	29.1	-31.8
2295.441176	-61.7	29.9	-31.8
2618.422546	-63.1	31.4	-31.8
2315.357143	-63.1	31.4	-31.8
2395.021008	-63.8	32.1	-31.8
7325.720251	-64.3	32.5	-31.8
2638.411071	-65.7	34.0	-31.8
2365.147059	-65.9	34.2	-31.8
2156.029412	-67.7	35.9	-31.8
2598.434020	-68.1	36.4	-31.8

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



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

Result

DUT Frequency (MHz)	Result
2442.000000	PASS

Final measurements

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

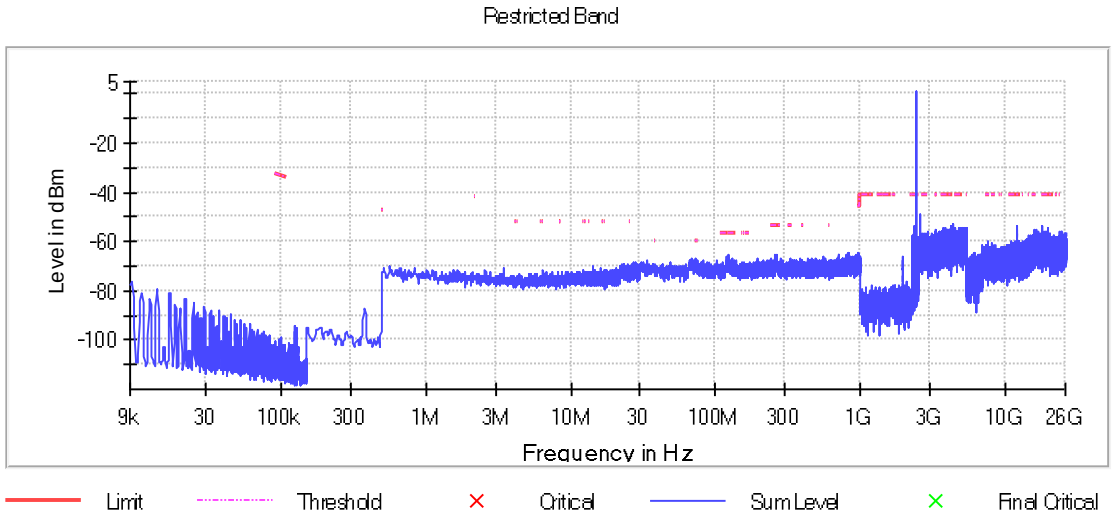
Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
73.925000	-67.7	7.8	-59.9
73.875000	-67.8	7.9	-59.9

73.075000	-68.5	8.6	-59.9
73.125000	-68.6	8.7	-59.9
73.975000	-68.6	8.7	-59.9
123.625000	-65.4	9.0	-56.4
123.575000	-65.4	9.0	-56.4
73.425000	-69.1	9.2	-59.9
73.825000	-69.1	9.2	-59.9
73.475000	-69.2	9.3	-59.9
120.225000	-65.8	9.4	-56.4
120.275000	-65.8	9.4	-56.4
74.875000	-69.4	9.5	-59.9
74.225000	-69.4	9.5	-59.9
74.825000	-69.6	9.7	-59.9

Measurement Settings

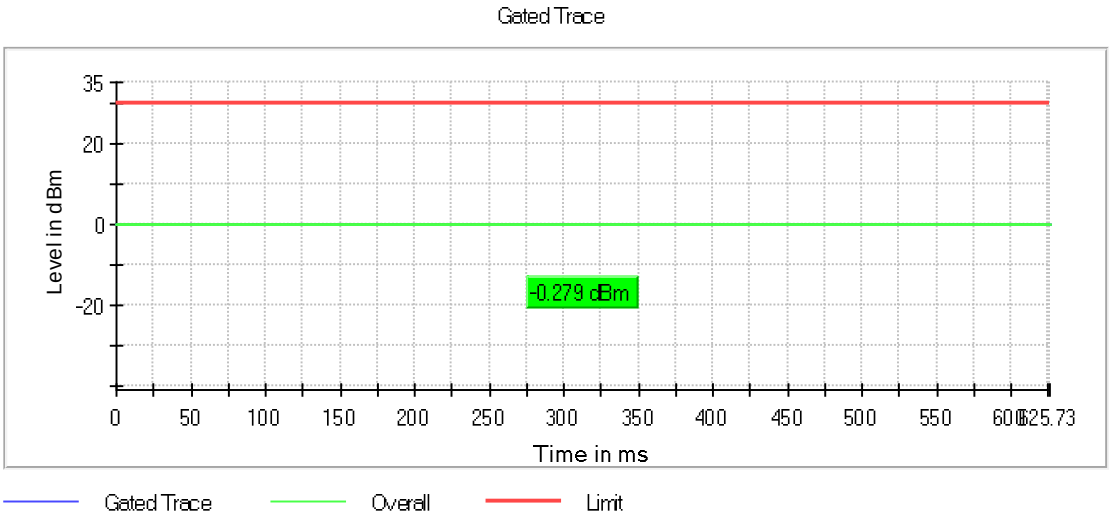
Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
0.009000	0.090000	2	2
0.090000	0.110000	2	2
0.110000	0.150000	2	2
0.150000	0.490000	2	2
0.490000	30.000000	2	2
30.000000	1000.000000	2	2
1000.000000	2400.000000	1	1
2400.000000	2483.500000	1	1
2483.500000	5470.000000	1	1
5470.000000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



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

Result

DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
2480.000000	-0.3	30.0	1.7	62.762	PASS

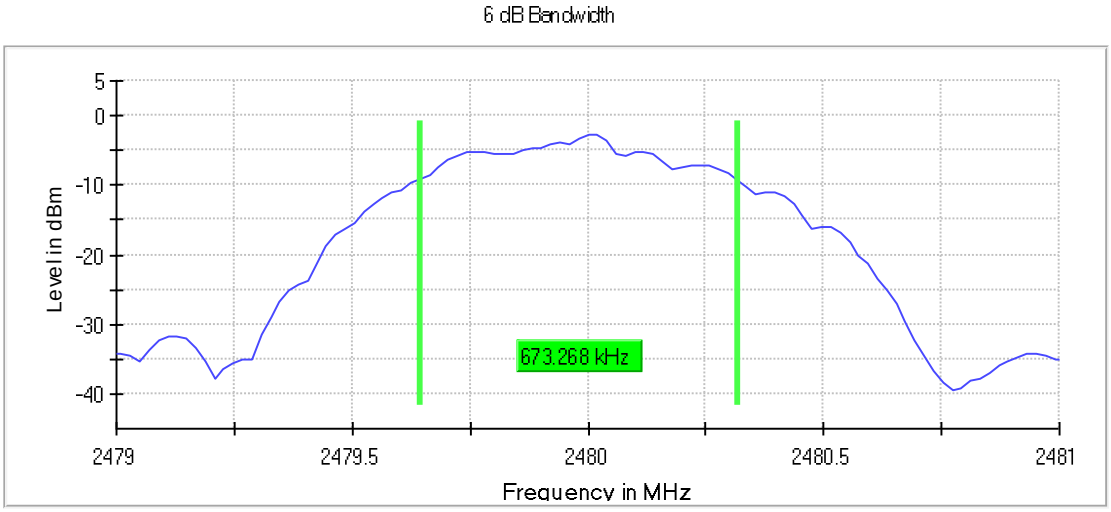


Minimum Emission Bandwidth 6 dB (2480 MHz; 15.000 dBm; 1 MHz)

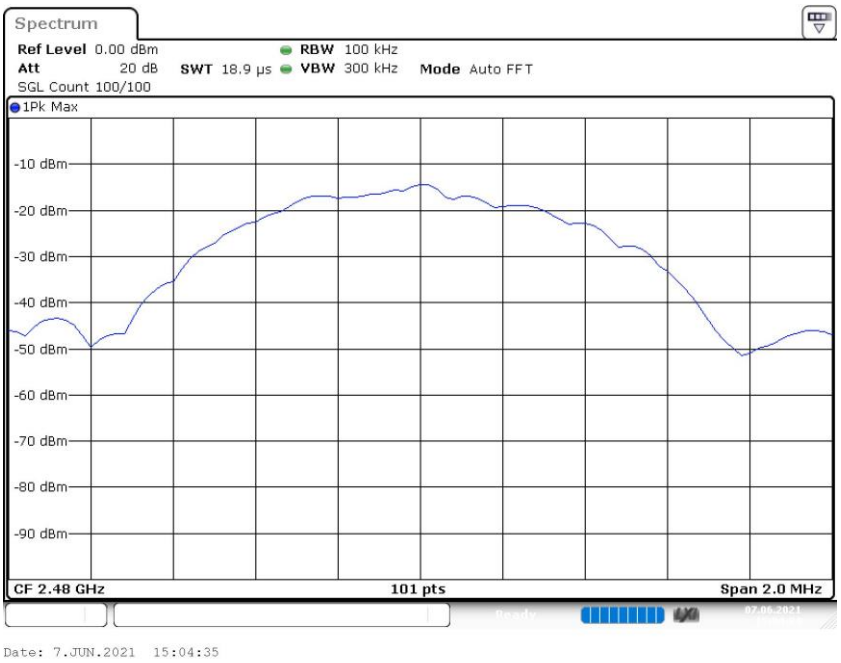
6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	0.673268	0.500000	---	2479.643564	2480.316832

DUT Frequency (MHz)	Max Level (dBm)	Result
2480.000000	-2.7	PASS



Bandwidth



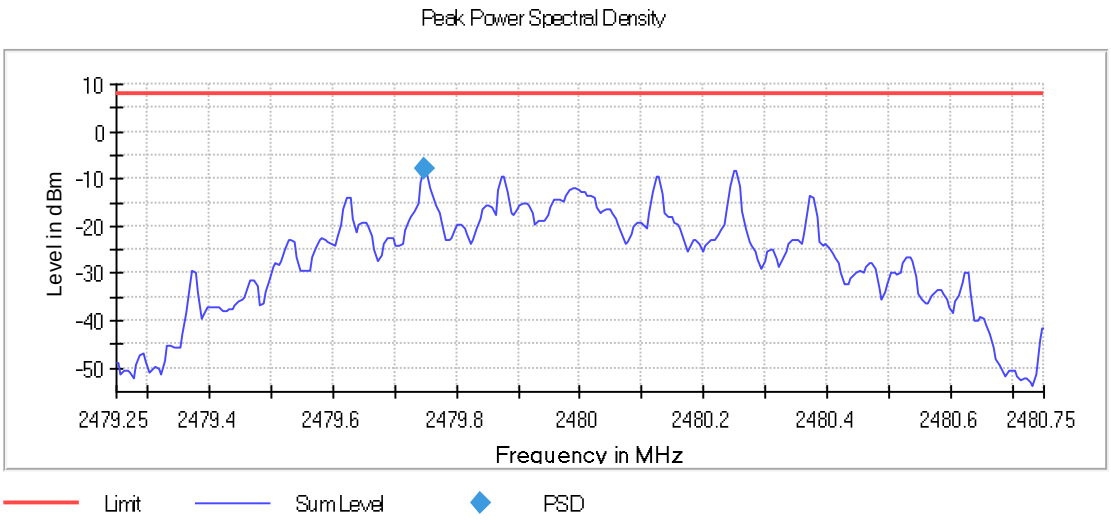
Peak Power Spectral Density (2480 MHz; 15.000 dBm; 1 MHz)

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2480.000000	2479.747500	-7.987	8.0	PASS

Ports

Port	State
1	used

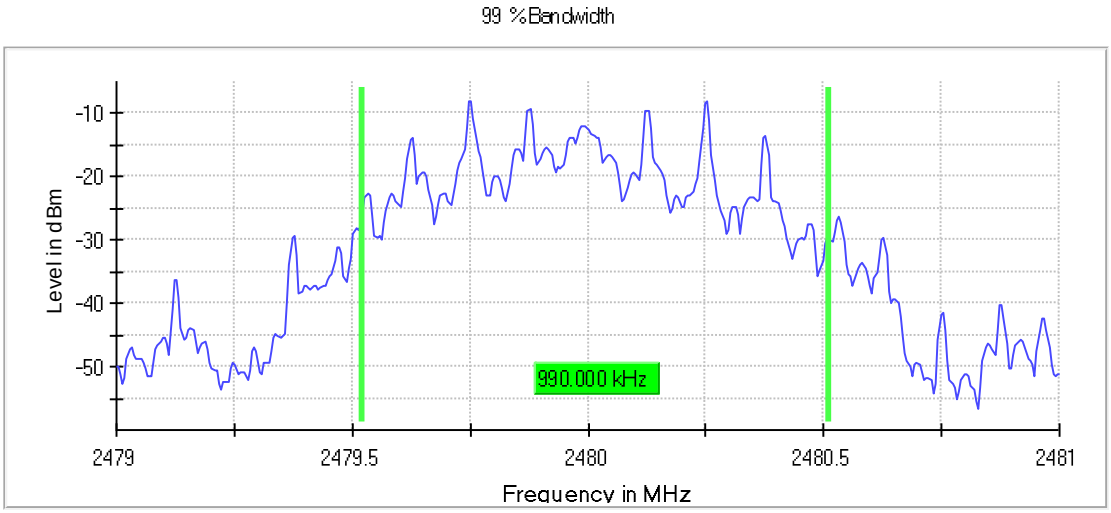


Occupied Channel Bandwidth 99% (2480 MHz; 15.000 dBm; 1 MHz)

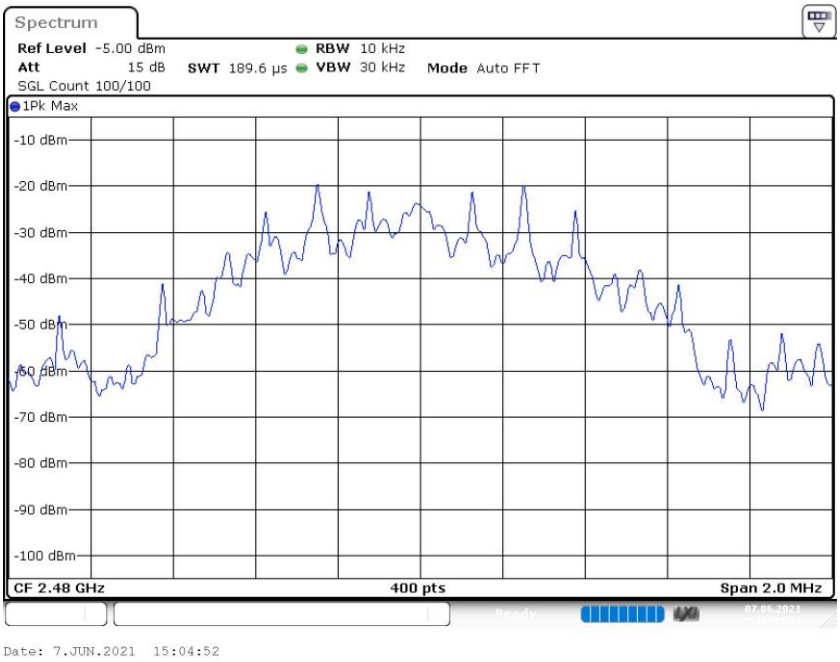
99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	0.990000	---	---	2479.522500	2480.512500

DUT Frequency (MHz)	Result
2480.000000	PASS



Bandwidth



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

Result

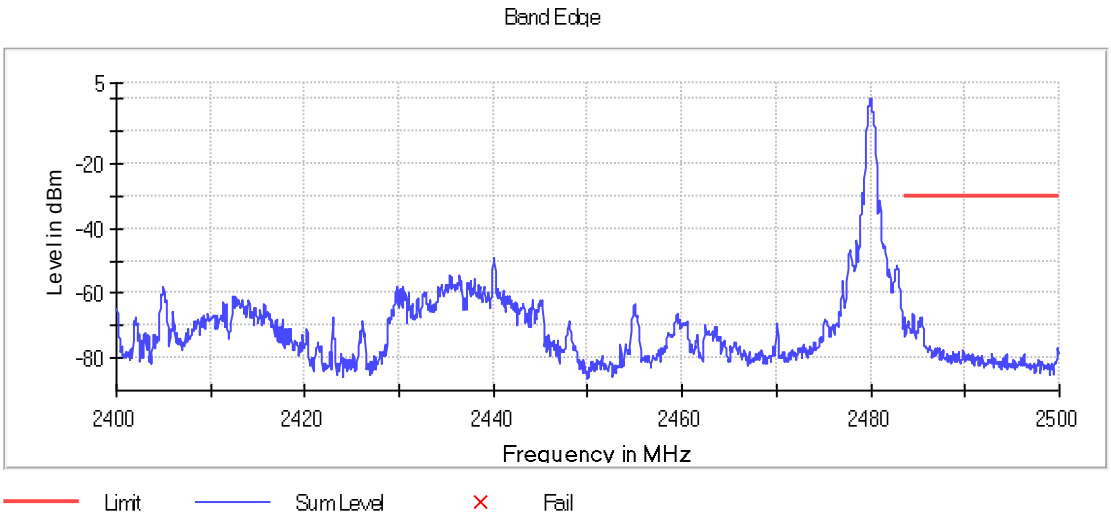
DUT Frequency (MHz)	Result
2480.000000	PASS

Inband Peak

Frequency (MHz)	Level (dBm)
2480.025000	0.1

Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2484.475000	-66.5	36.7	-29.9	PASS
2484.525000	-66.7	36.8	-29.9	PASS
2483.525000	-67.6	37.7	-29.9	PASS
2485.275000	-67.6	37.7	-29.9	PASS
2485.225000	-67.6	37.8	-29.9	PASS
2485.375000	-67.7	37.8	-29.9	PASS
2484.425000	-68.0	38.1	-29.9	PASS
2485.325000	-68.0	38.1	-29.9	PASS
2485.425000	-68.5	38.7	-29.9	PASS
2483.975000	-68.7	38.9	-29.9	PASS
2485.075000	-68.7	38.9	-29.9	PASS
2485.125000	-68.8	39.0	-29.9	PASS
2484.025000	-68.8	39.0	-29.9	PASS
2483.575000	-68.9	39.0	-29.9	PASS
2484.575000	-69.6	39.8	-29.9	PASS



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

Result

DUT Frequency (MHz)	Result
2480.000000	PASS

Final measurements

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

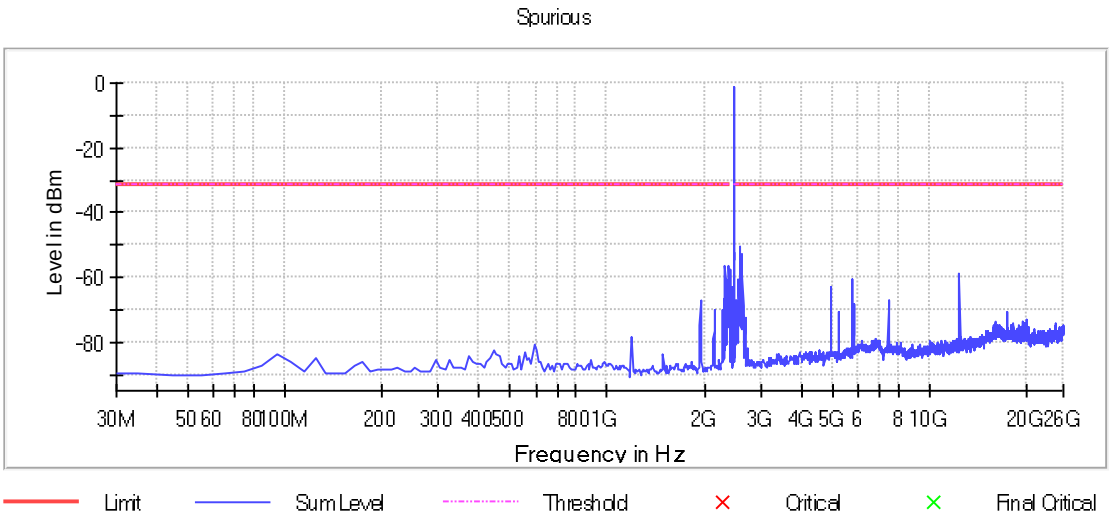
Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2578.445495	-50.2	18.9	-31.4
2608.428283	-53.1	21.7	-31.4
2385.063025	-56.5	25.1	-31.4
2325.315126	-56.5	25.1	-31.4
2375.105042	-57.1	25.7	-31.4
12402.805674	-58.6	27.2	-31.4
2628.416808	-59.5	28.1	-31.4
2558.456970	-60.3	29.0	-31.4
5766.615278	-60.5	29.1	-31.4
2355.189076	-60.7	29.3	-31.4
2335.273109	-61.9	30.5	-31.4

4957.080004	-62.7	31.3	-31.4
2305.399160	-66.8	35.4	-31.4
1946.911765	-66.9	35.5	-31.4
7445.651402	-67.1	35.8	-31.4

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



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

Result

DUT Frequency (MHz)	Result
2480.000000	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)
75.175000	-68.4	8.5	-59.9
73.075000	-68.5	8.6	-59.9
73.825000	-68.8	8.9	-59.9
73.125000	-68.8	8.9	-59.9
73.875000	-68.9	9.0	-59.9
73.475000	-69.0	9.1	-59.9
74.975000	-69.0	9.1	-59.9
73.425000	-69.0	9.1	-59.9
75.025000	-69.1	9.2	-59.9
73.525000	-69.1	9.2	-59.9
73.575000	-69.5	9.6	-59.9
73.325000	-69.5	9.6	-59.9
74.825000	-69.6	9.7	-59.9
2380.250000	-50.9	9.7	-41.2
73.775000	-69.6	9.7	-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