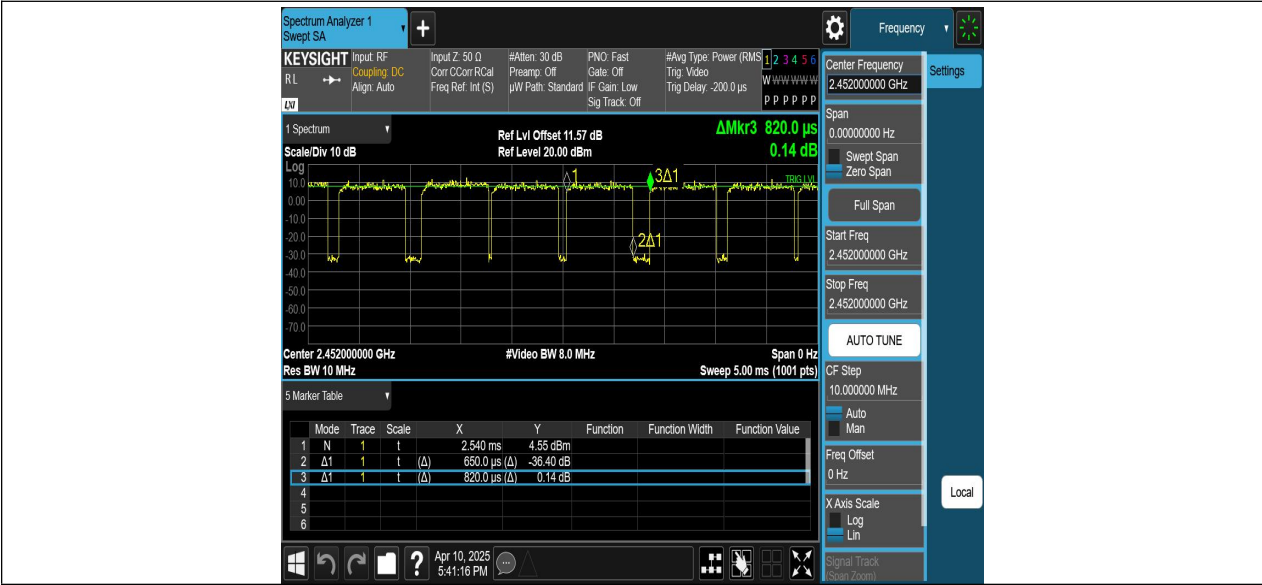




9. 6 dB DTS Bandwidth and 99 % Occupied Bandwidth

9.1. Block diagram of test setup

Same as section 8.1

9.2. Limits

CFR 47 FCC Part15 (15.247) Subpart C ISED RSS-247 ISSUE 3			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC 15.247(a)(2) ISED RSS-247 5.2 (a)	6 dB Bandwidth	≥ 500 kHz	2400-2483.5
ISED RSS-Gen Clause 6.7	99 % Occupied Bandwidth	For reporting purposes only.	2400-2483.5

9.3. Test Procedure

Connect the UUT to the spectrum analyzer and use the following settings:

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	For 6 dB Bandwidth :100 kHz For 99 % Occupied Bandwidth :1 % to 5 % of the occupied bandwidth
VBW	For 6 dB Bandwidth: $\geq 3 \times$ RBW For 99 % Occupied Bandwidth : $\geq 3 \times$ RBW
Trace	Max hold
Sweep	Auto couple

Allow the trace to stabilize and measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB and 99 % relative to the maximum level measured in the fundamental emission.

9.4. Results

6dB bandwidth:

Test Mode	Ant.	Freq. (MHz)	DTS BW (MHz)	FL (MHz)	FH (MHz)	Limit (MHz)	Verdict
11B	Ant1	2412	10.000	2406.960	2416.960	0.5	PASS
	Ant2	2412	9.000	2407.480	2416.480	0.5	PASS
	Ant1	2437	9.040	2432.480	2441.520	0.5	PASS
	Ant2	2437	10.000	2431.960	2441.960	0.5	PASS
	Ant1	2462	9.080	2457.440	2466.520	0.5	PASS
	Ant2	2462	10.040	2456.960	2467.000	0.5	PASS
11G	Ant1	2412	16.280	2403.840	2420.120	0.5	PASS
	Ant2	2412	16.280	2403.840	2420.120	0.5	PASS
	Ant1	2437	16.280	2428.840	2445.120	0.5	PASS
	Ant2	2437	16.360	2428.800	2445.160	0.5	PASS
	Ant1	2462	16.360	2453.800	2470.160	0.5	PASS
	Ant2	2462	16.280	2453.840	2470.120	0.5	PASS
11N20MIMO	Ant1	2412	17.560	2403.200	2420.760	0.5	PASS
	Ant2	2412	17.560	2403.200	2420.760	0.5	PASS
	Ant1	2437	17.520	2428.240	2445.760	0.5	PASS
	Ant2	2437	17.080	2428.440	2445.520	0.5	PASS
	Ant1	2462	17.520	2453.200	2470.720	0.5	PASS
	Ant2	2462	17.320	2453.200	2470.520	0.5	PASS
11N40MIMO	Ant1	2422	34.960	2404.560	2439.520	0.5	PASS
	Ant2	2422	35.280	2404.480	2439.760	0.5	PASS

	Ant1	2437	35.120	2419.400	2454.520	0.5	PASS
	Ant2	2437	34.720	2419.800	2454.520	0.5	PASS
	Ant1	2452	35.280	2434.240	2469.520	0.5	PASS
	Ant2	2452	35.120	2434.400	2469.520	0.5	PASS

99 % bandwidth:

Test Mode	Ant.	Channel Freq. (MHz)	OCB (MHz)	FL (MHz)	FH (MHz)	Limit (MHz)	Verdict
11B	Ant1	2412	14.859	2404.5156	2419.3746	---	---
	Ant2	2412	14.836	2404.5277	2419.3637	---	---
	Ant1	2437	14.832	2429.5492	2444.3812	---	---
	Ant2	2437	14.877	2429.5335	2444.4105	---	---
	Ant1	2462	14.876	2454.4594	2469.3354	---	---
	Ant2	2462	14.825	2454.4931	2469.3181	---	---
11G	Ant1	2412	16.935	2403.4831	2420.4181	---	---
	Ant2	2412	16.982	2403.4475	2420.4295	---	---
	Ant1	2437	16.958	2428.4890	2445.4470	---	---
	Ant2	2437	16.940	2428.4946	2445.4346	---	---
	Ant1	2462	16.919	2453.4647	2470.3837	---	---
	Ant2	2462	16.932	2453.4563	2470.3883	---	---
11N20MIMO	Ant1	2412	17.924	2403.0348	2420.9588	---	---
	Ant2	2412	17.957	2402.9816	2420.9386	---	---
	Ant1	2437	17.889	2428.0357	2445.9247	---	---
	Ant2	2437	17.988	2427.9685	2445.9565	---	---
	Ant1	2462	17.920	2452.9590	2470.8790	---	---
	Ant2	2462	17.933	2453.0092	2470.9422	---	---
11N40MIMO	Ant1	2422	35.951	2403.9990	2439.9500	---	---
	Ant2	2422	35.956	2403.9753	2439.9313	---	---
	Ant1	2437	35.920	2418.9958	2454.9158	---	---
	Ant2	2437	35.953	2418.9990	2454.9520	---	---
	Ant1	2452	35.925	2433.9673	2469.8923	---	---
	Ant2	2452	35.876	2433.9948	2469.8708	---	---

9.5. Original test data

6dB bandwidth:





11B_Ant1_2462

Spectrum Analyzer 1
Sweep SA

KEYSIGHT

Input: RF
Coupling: DC
Align: Auto

Input Z: 50 Ω
Corr: CCor RCal
Freq Ref: Int (S)

#Atten: 30 dB
Preamp: Off
μW Path: Standard

PNO: Fast
Gate: Off
IF Gain: Low
Sig Track: Off

#Avg Type: Power (RMS)
Avg/Hold: 100/100
Trig: Free Run

1 2 3 4 5 6
M W W W W W
P P P P P P

Center Frequency
2.46200000 GHz

Span
40.0000000 MHz

Sweep Span
Zero Span

Full Span

Start Freq
2.442000000 GHz

Stop Freq
2.482000000 GHz

AUTO TUNE

CF Step
4.0000000 MHz

Auto
Man

Freq Offset
0 Hz

X Axis Scale
Log
Lin

Signal Track
(Span Zoom)

Local

1 Spectrum

Scale/Div 10 dB

Log

Ref Lvl Offset 11.73 dB
Ref Level 20.00 dBm

ΔMkr3 9.08 MHz
-1.06 dB

DU 1 -2.77 dBm

Center 2.46200 GHz
#Res BW 100 kHz
#Video BW 300 kHz
Span 40.00 MHz
Sweep 1.53 ms (1001 pts)

5 Marker Table

Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	1	f	2.45744 GHz	0.83 dBm		
2	N	1	f	2.46100 GHz	5.23 dBm		
3	Δ1	1	f (Δ)	9.08 MHz (Δ)	-1.06 dB		
4							
5							
6							

Apr 10, 2025
12:25:53 PM

11B_Ant2_2462

Spectrum Analyzer 1
Sweep SA

KEYSIGHT

Input: RF
Coupling: DC
Align: Auto

Input Z: 50 Ω
Corr: CCor RCal
Freq Ref: Int (S)

#Atten: 30 dB
Preamp: Off
μW Path: Standard

PNO: Fast
Gate: Off
IF Gain: Low
Sig Track: Off

#Avg Type: Power (RMS)
Avg/Hold: 100/100
Trig: Free Run

1 2 3 4 5 6
M W W W W W
P P P P P P

Center Frequency
2.46200000 GHz

Span
40.0000000 MHz

Sweep Span
Zero Span

Full Span

Start Freq
2.442000000 GHz

Stop Freq
2.482000000 GHz

AUTO TUNE

CF Step
4.0000000 MHz

Auto
Man

Freq Offset
0 Hz

X Axis Scale
Log
Lin

Signal Track
(Span Zoom)

Local

1 Spectrum

Scale/Div 10 dB

Log

Ref Lvl Offset 11.67 dB
Ref Level 20.00 dBm

ΔMkr3 10.04 MHz
0.08 dB

DU 1 -3.01 dBm

Center 2.46200 GHz
#Res BW 100 kHz
#Video BW 300 kHz
Span 40.00 MHz
Sweep 1.53 ms (1001 pts)

5 Marker Table

Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	1	f	2.45696 GHz	-2.48 dBm		
2	N	1	f	2.46300 GHz	2.99 dBm		
3	Δ1	1	f (Δ)	10.04 MHz (Δ)	0.08 dB		
4							
5							
6							

Apr 10, 2025
4:22:04 PM

11G_Ant1_2412





11G Ant1 2462



11G Ant2 2462



11N20MIMO Ant1 2412





11N40MIMO Ant2 2422



11N40MIMO Ant1 2437



11N40MIMO Ant2 2437