



#### A.4 Occupied Bandwidth

Occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the mid frequencies frequency. The table below lists the measured 99% BW. Spectrum analyzer plots are included on the following pages.

The measurement method is from ANSI C63.26:

- a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts.
- b) The nominal IF filter 3 dB bandwidth (RBW) shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set ≥ 3 × RBW.
- c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation.
- d) Set the detection mode to peak, and the trace mode to max-hold.

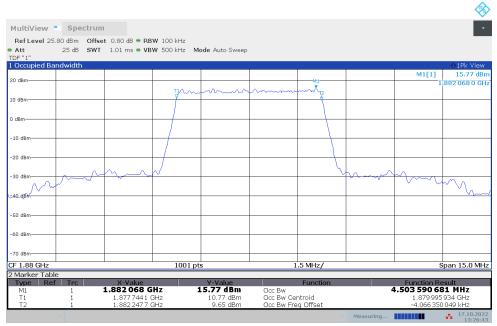




n2 n2,5MHz(99%)

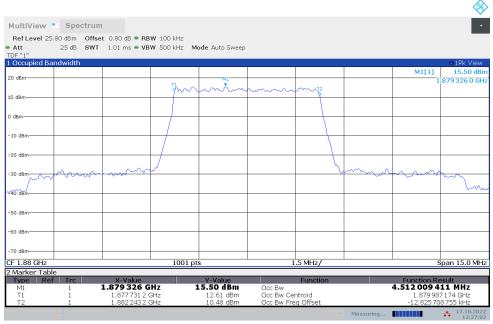
Fragues av (MUz)	Occupied Bandwidth (99%) (MHz)			
Frequency (MHz)	DFT-s-pi/2 BPSK DFT-s-QPSK DFT-s-16QAM			
1880	4.504	4.512	4.506	

# n2,5MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



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### n2,5MHz Bandwidth,DFT-s-QPSK (99% BW)

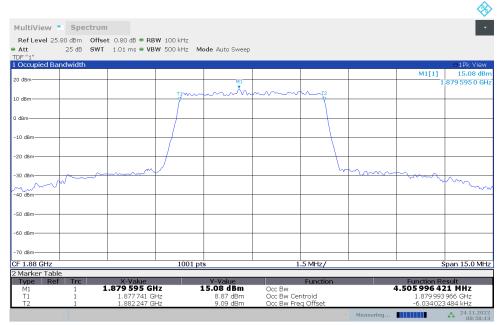


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# n2,5MHz Bandwidth,DFT-s-16QAM (99% BW)



08:58:43 24.11.2022

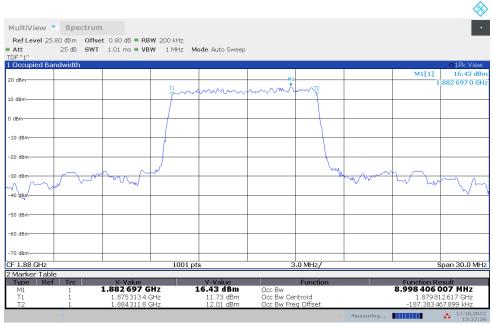




#### n2,10MHz(99%)

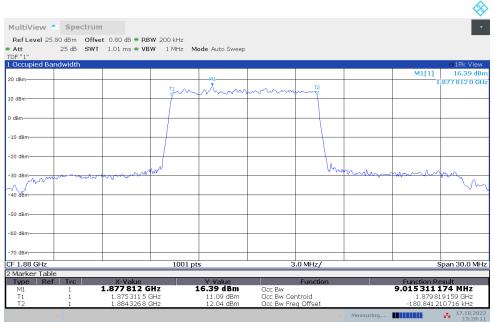
Fragues ov (MIII-)	Occupied Bandwidth (99%) (MHz)		
Frequency (MHz)	DFT-s-pi/2 BPSK DFT-s-QPSK DFT-s-16QAM		DFT-s-16QAM
1880	8.998	9.015	8.997

### n2,10MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



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### n2,10MHz Bandwidth,DFT-s-QPSK (99% BW)

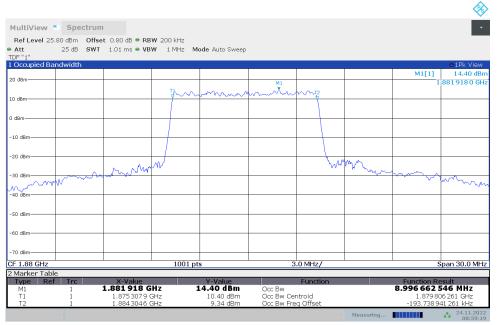


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# n2,10MHz Bandwidth,DFT-s-16QAM (99% BW)



08:59:19 24.11.2022

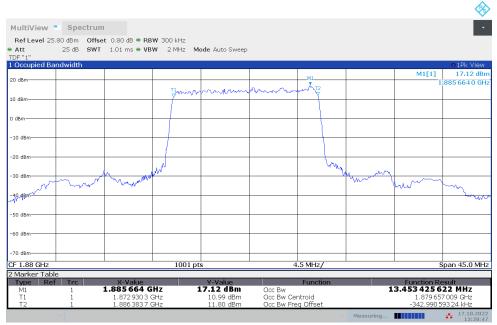




#### n2,15MHz(99%)

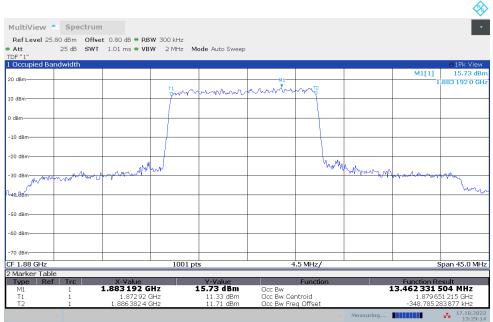
Fragues ov (MIII-)	Occupied Bandwidth (99%) (MHz)		
Frequency (MHz)	DFT-s-pi/2 BPSK DFT-s-QPSK DFT-s-16QA		DFT-s-16QAM
1880	13.453	13.462	13.457

### n2,15MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



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## n2,15MHz Bandwidth,DFT-s-QPSK (99% BW)



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# n2,15MHz Bandwidth,DFT-s-16QAM (99% BW)



08:59:57 24.11.2022

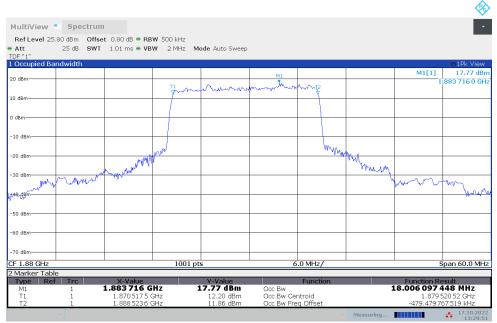




#### n2,20MHz(99%)

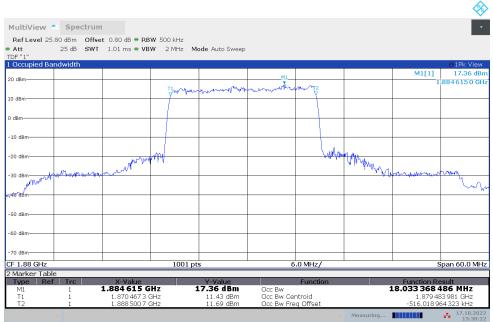
Fragues ov (MI Iz)	Occupied Bandwidth (99%) (MHz)		
Frequency (MHz)	DFT-s-pi/2 BPSK DFT-s-QPSK DFT-s-16QAM		DFT-s-16QAM
1880	18.006	18.033	18.064

### n2,20MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



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### n2,20MHz Bandwidth,DFT-s-QPSK (99% BW)

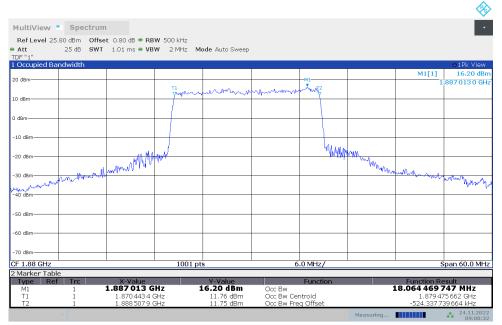


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# n2,20MHz Bandwidth,DFT-s-16QAM (99% BW)



09:00:33 24.11.2022

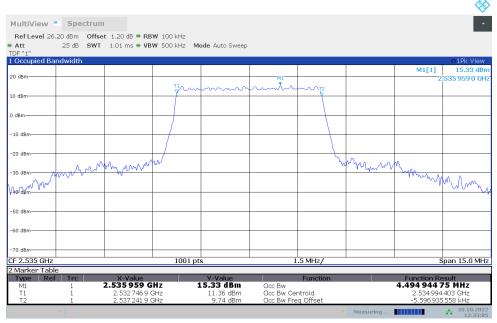




n7 n7,5MHz(99%)

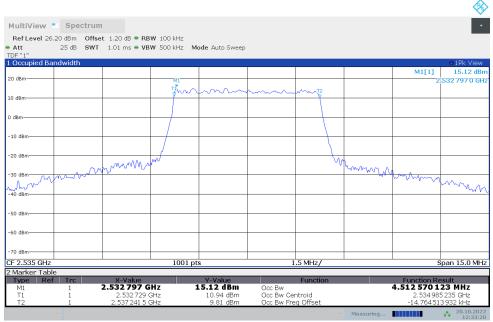
Fragues ov (MIII-)	Occupied Bandwidth (99%) (MHz)		
Frequency (MHz)	DFT-s-pi/2 BPSK DFT-s-QPSK DFT-s-160		DFT-s-16QAM
2535	4.495	4.513	4.502

#### n7,5MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



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### n7,5MHz Bandwidth,DFT-s-QPSK (99% BW)

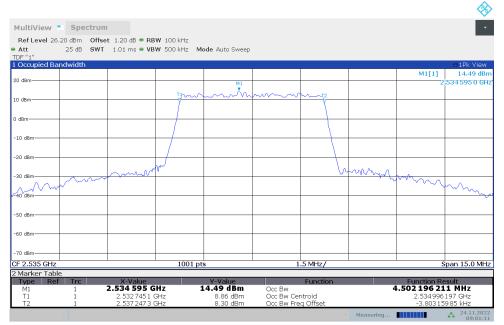


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# n7,5MHz Bandwidth,DFT-s-16QAM (99% BW)



09:01:11 24.11.2022

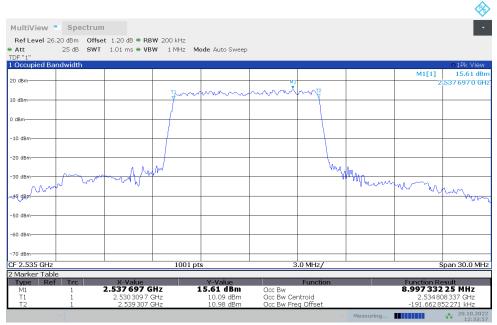




#### n7,10MHz(99%)

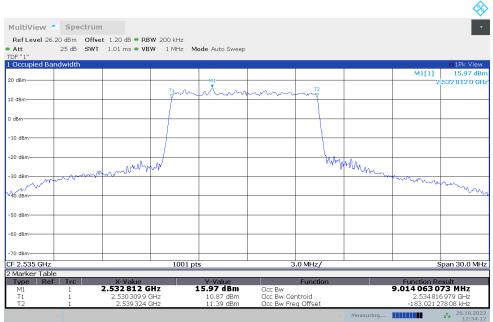
Fragues ov (MIII-)	Occupied Bandwidth (99%) (MHz)		
Frequency (MHz)	DFT-s-pi/2 BPSK DFT-s-QPSK DFT-s-16Q/		DFT-s-16QAM
2535	8.997	9.014	8.990

### n7,10MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



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### n7,10MHz Bandwidth,DFT-s-QPSK (99% BW)

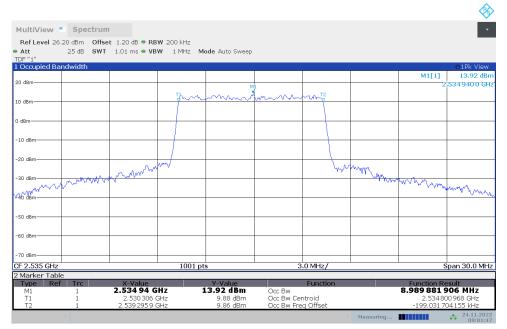


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# n7,10MHz Bandwidth,DFT-s-16QAM (99% BW)



09:01:47 24.11.2022

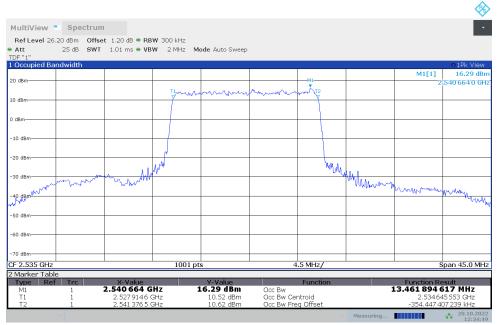




#### n7,15MHz(99%)

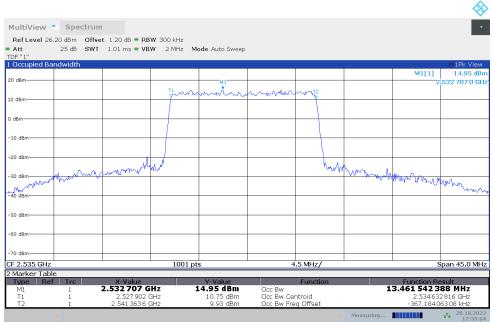
Fragues av (MIII-)	Occupied Bandwidth (99%) (MHz)			
Frequency (MHz)	DFT-s-pi/2 BPSK DFT-s-QPSK DFT-s-16QAM			
2535	13.462	13.462	13.457	

### n7,15MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



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## n7,15MHz Bandwidth,DFT-s-QPSK (99% BW)

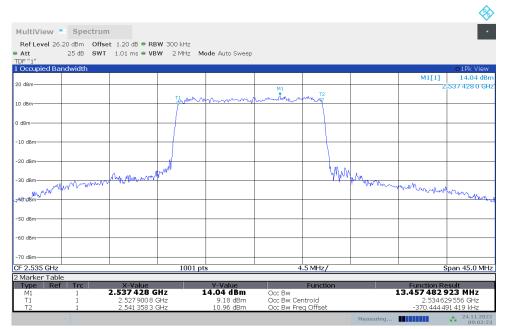


12:35:05 20.10.202





# n7,15MHz Bandwidth,DFT-s-16QAM (99% BW)



09:02:23 24.11.2022

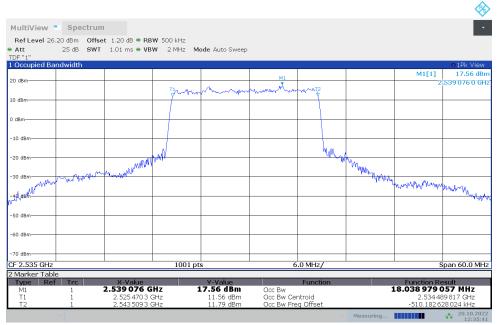




#### n7,20MHz(99%)

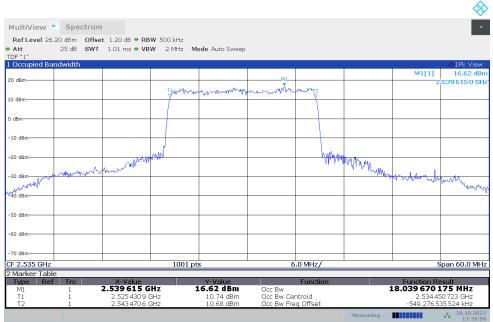
Fragues ov (MI Iz)	Occupied Bandwidth (99%) (MHz)		
Frequency (MHz)	DFT-s-pi/2 BPSK DFT-s-QPSK DFT-s-16QA		DFT-s-16QAM
2535	18.039	18.040	18.094

### n7,20MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



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### n7,20MHz Bandwidth,DFT-s-QPSK (99% BW)

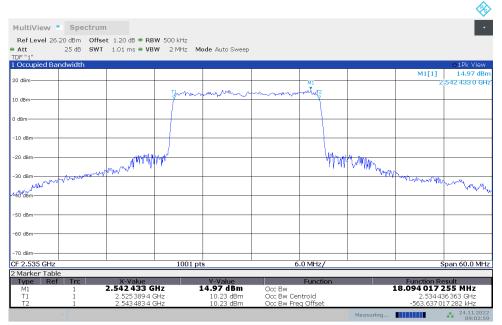


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# n7,20MHz Bandwidth,DFT-s-16QAM (99% BW)



09:02:59 24.11.2022

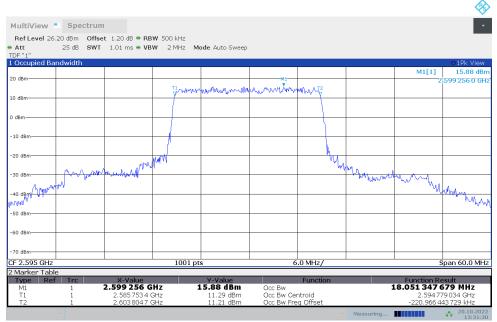




n38 n38,20MHz(99%)

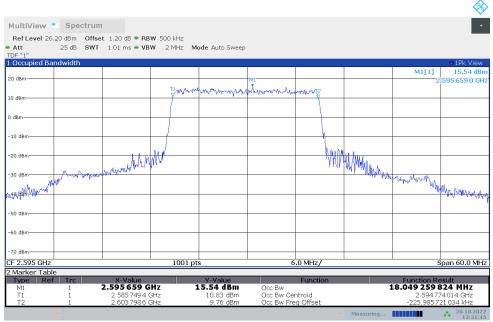
Fraguency (MIII-)	Occupied Bandwidth (99%) (MHz)		
Frequency (MHz)	DFT-s-pi/2 BPSK DFT-s-QPSK DFT-s-16Q		DFT-s-16QAM
2595	18.051	18.049	18.071

#### n38,20MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



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### n38,20MHz Bandwidth,DFT-s-QPSK (99% BW)

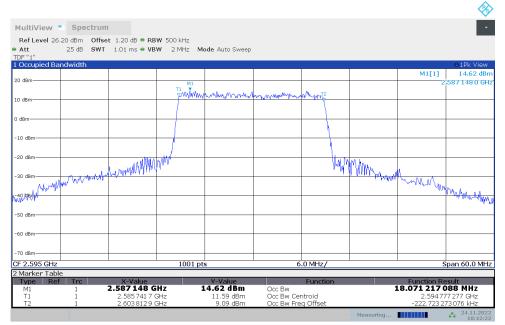


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# n38,20MHz Bandwidth,DFT-s-16QAM (99% BW)



10:42:23 24.11.2022

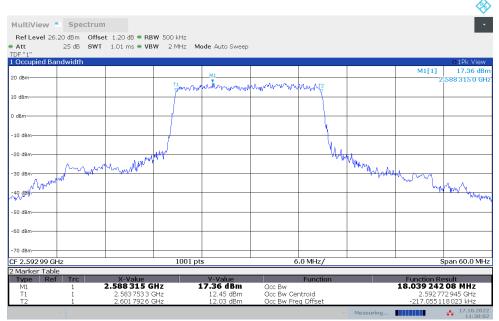




n41 n41,20MHz(99%)

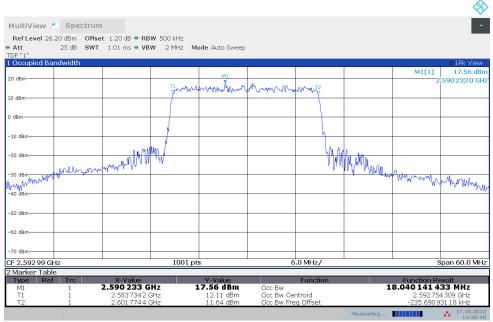
Fragues ov (MLIz)	Occupied Bandwidth (99%) (MHz)		
Frequency (MHz)	DFT-s-pi/2 BPSK DFT-s-QPSK DFT-s-16QAM		DFT-s-16QAM
2592.99	18.039	18.040	18.092

#### n41,20MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



11:30:03 17.10.2022

### n41,20MHz Bandwidth,DFT-s-QPSK (99% BW)

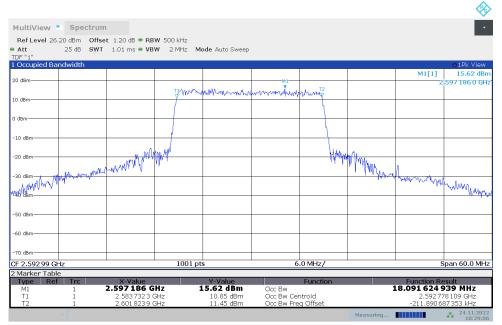


11:30:18 17.10.2022





# n41,20MHz Bandwidth,DFT-s-16QAM (99% BW)



10:29:07 24.11.2022

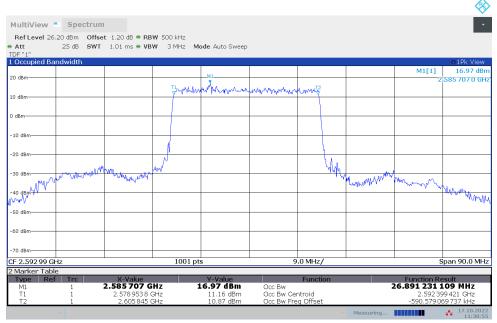




## n41,30MHz(99%)

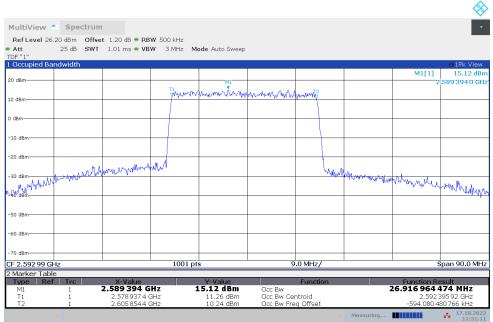
Fraguency (MUz)	Occupied Bandwidth (99%) (MHz)		
Frequency (MHz)	DFT-s-pi/2 BPSK DFT-s-QPSK DFT-s-16QAM		DFT-s-16QAM
2592.99	26.891	26.917	27.026

### n41,30MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



11:30:55 17.10.2022

## n41,30MHz Bandwidth,DFT-s-QPSK (99% BW)

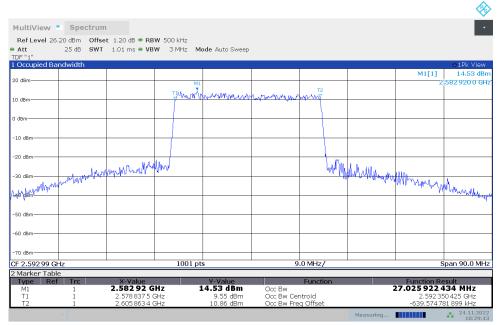


11:31:11 17.10.2022





# n41,30MHz Bandwidth,DFT-s-16QAM (99% BW)



10:29:43 24.11.2022

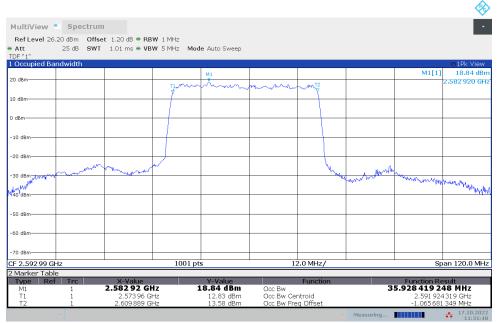




#### n41,40MHz(99%)

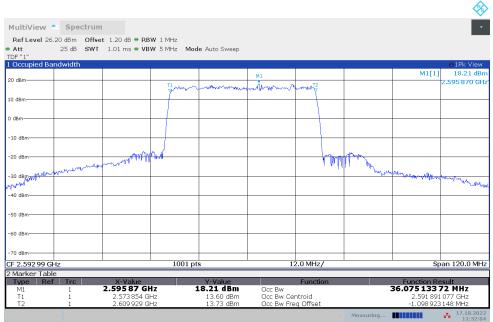
Fraguaday (MHz)	Occupied Bandwidth (99%) (MHz)		
Frequency (MHz)	DFT-s-pi/2 BPSK DFT-s-QPSK DFT-s-16QAM		DFT-s-16QAM
2592.99	35.928	36.075	36.043

### n41,40MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



11:31:49 17.10.2022

### n41,40MHz Bandwidth,DFT-s-QPSK (99% BW)

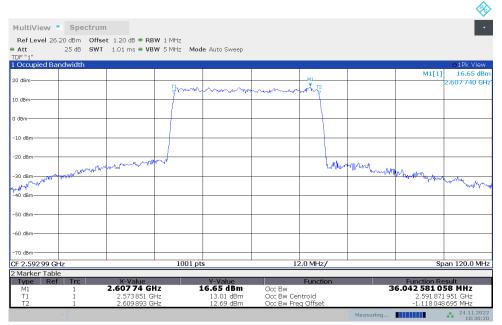


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# n41,40MHz Bandwidth,DFT-s-16QAM (99% BW)



10:30:21 24.11.2022

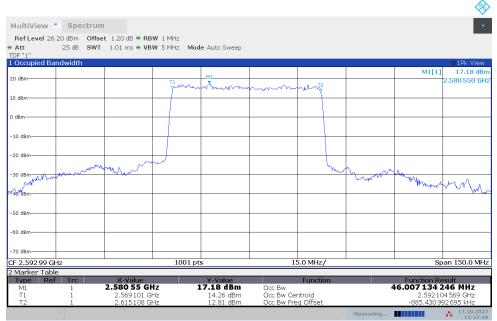




#### n41,50MHz(99%)

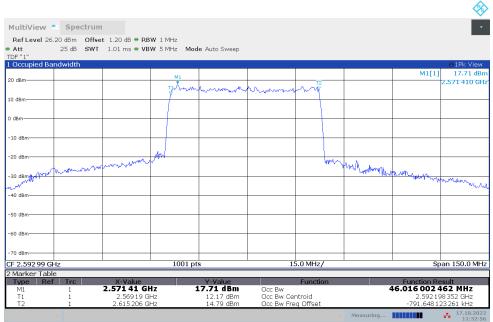
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)		
	DFT-s-pi/2 BPSK	DFT-s-QPSK	DFT-s-16QAM
2592.99	46.007	46.016	45.993

### n41,50MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



11:32:41 17.10.2022

### n41,50MHz Bandwidth,DFT-s-QPSK (99% BW)

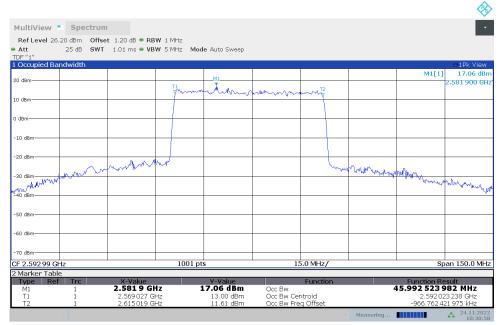


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# n41,50MHz Bandwidth,DFT-s-16QAM (99% BW)



10:30:59 24.11.2022

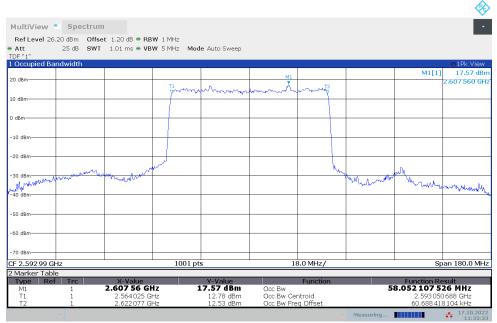




#### n41,60MHz(99%)

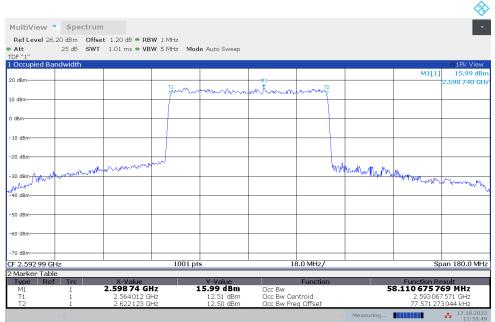
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)		
	DFT-s-pi/2 BPSK	DFT-s-QPSK	DFT-s-16QAM
2592.99	58.052	58.111	58.180

### n41,60MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



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### n41,60MHz Bandwidth,DFT-s-QPSK (99% BW)

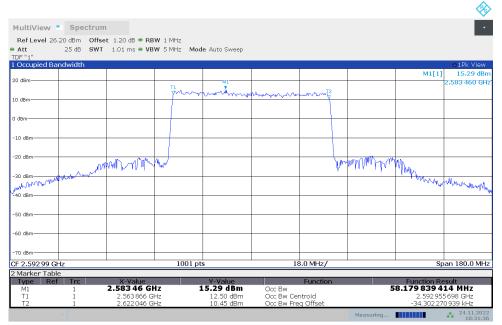


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# n41,60MHz Bandwidth,DFT-s-16QAM (99% BW)



10:31:36 24.11.2022

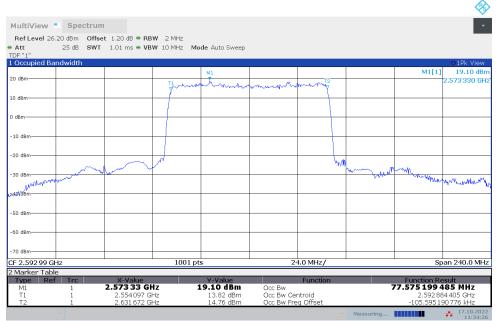




#### n41,80MHz(99%)

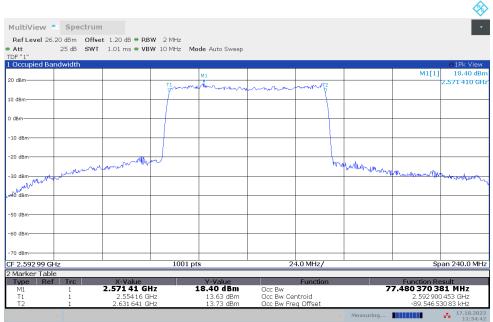
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)		
	DFT-s-pi/2 BPSK	DFT-s-QPSK	DFT-s-16QAM
2592.99	77.575	77.480	77.758

### n41,80MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



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### n41,80MHz Bandwidth,DFT-s-QPSK (99% BW)

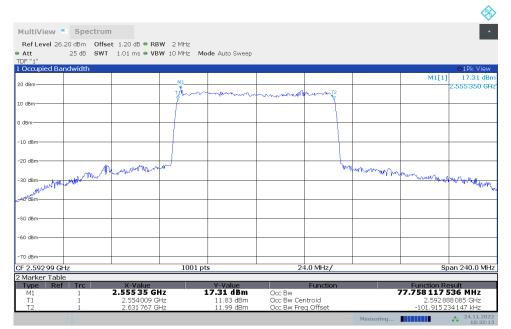


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# n41,80MHz Bandwidth,DFT-s-16QAM (99% BW)



10:32:14 24.11.2022

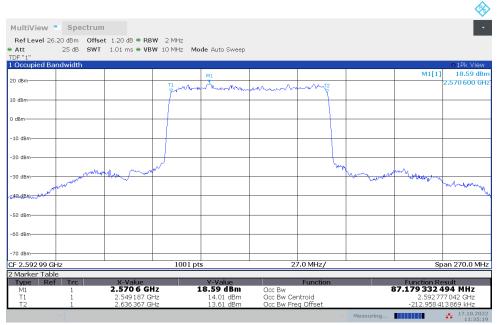




#### n41,90MHz(99%)

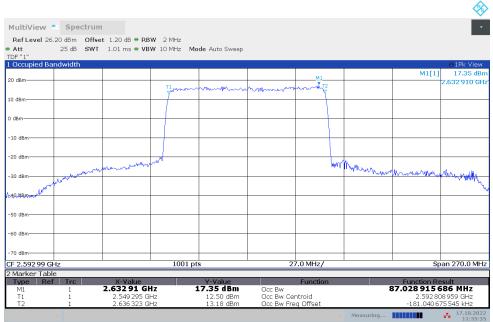
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)		
	DFT-s-pi/2 BPSK	DFT-s-QPSK	DFT-s-16QAM
2592.99	87.179	87.029	86.933

### n41,90MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



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## n41,90MHz Bandwidth,DFT-s-QPSK (99% BW)

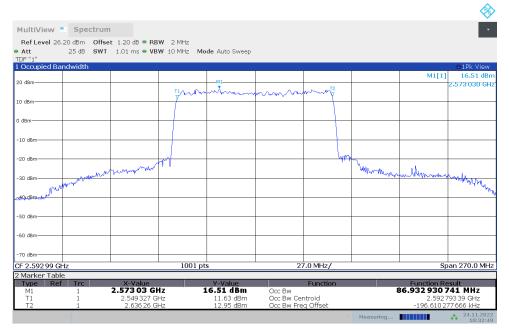


11:35:35 17.10.2022





# n41,90MHz Bandwidth,DFT-s-16QAM (99% BW)



10:32:50 24.11.2022

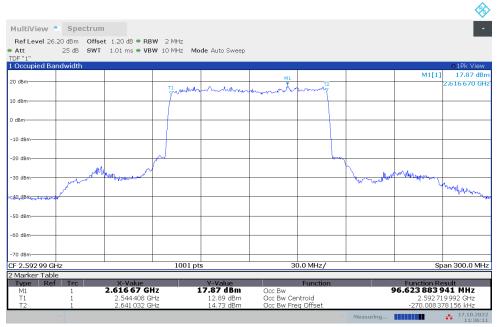




#### n41,100MHz(99%)

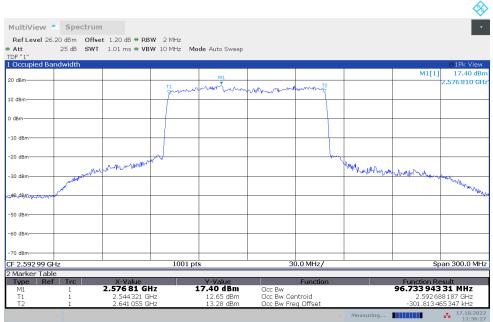
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)		
	DFT-s-pi/2 BPSK	DFT-s-QPSK	DFT-s-16QAM
2592.99	96.624	96.734	96.745

### n41,100MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



11:36:12 17.10.2022

### n41,100MHz Bandwidth,DFT-s-QPSK (99% BW)

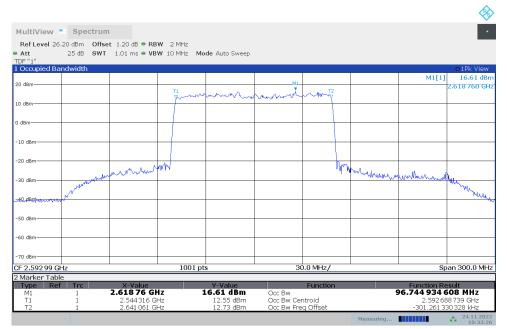


11:36:27 17.10.2022





# n41,100MHz Bandwidth,DFT-s-16QAM (99% BW)



10:33:27 24.11.2022

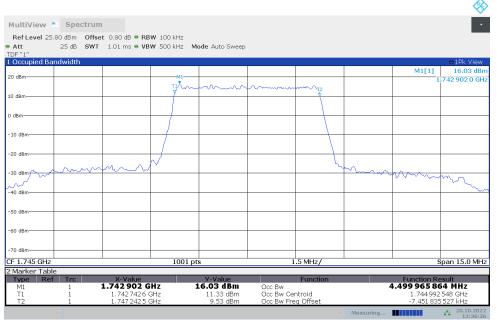




n66 n66,5MHz(99%)

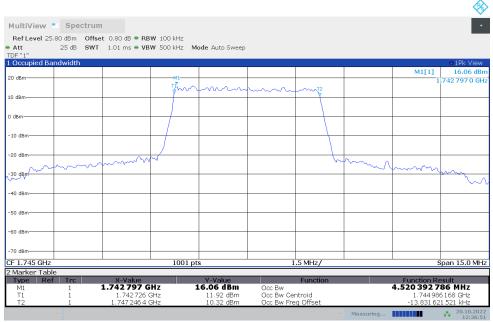
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)		
	DFT-s-pi/2 BPSK	DFT-s-QPSK	DFT-s-16QAM
1745	4.500	4.520	4.501

### n66,5MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



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### n66,5MHz Bandwidth,DFT-s-QPSK (99% BW)



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## n66,5MHz Bandwidth,DFT-s-16QAM (99% BW)



09:03:37 24.11.2022

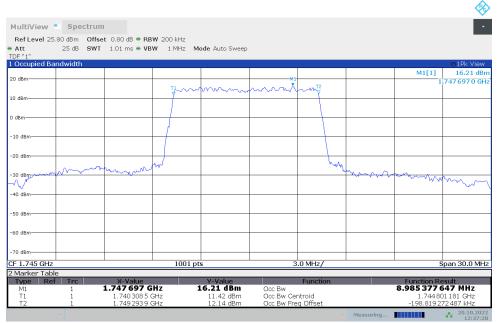




#### n66,10MHz(99%)

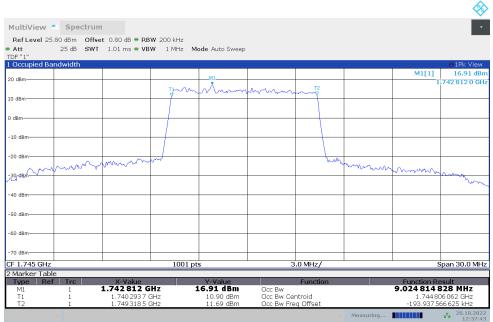
Fraguency (MHz)	Occupied Bandwidth (99%) (MHz)		
Frequency (MHz)	DFT-s-pi/2 BPSK	DFT-s-QPSK	DFT-s-16QAM
1745	8.985	9.025	8.996

## n66,10MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



12:37:29 20.10.2022

## n66,10MHz Bandwidth,DFT-s-QPSK (99% BW)

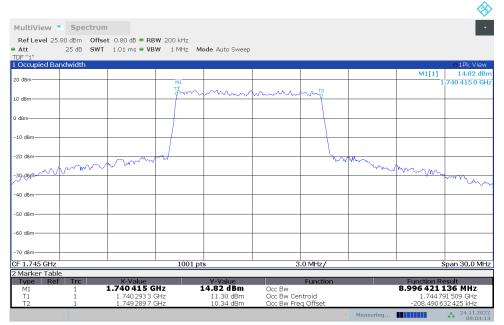


12:37:44 20.10.202





## n66,10MHz Bandwidth,DFT-s-16QAM (99% BW)



09:04:13 24.11.2022

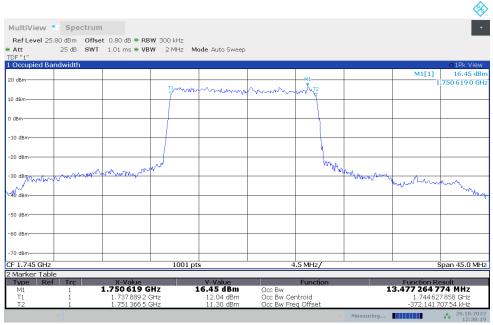




#### n66,15MHz(99%)

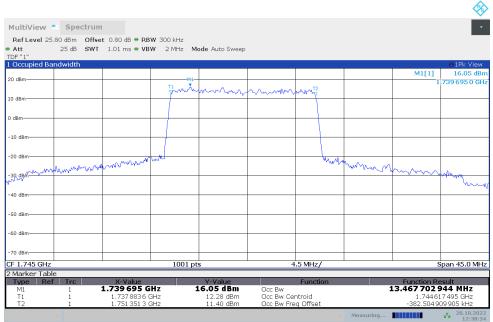
Fraguency (MHz)	Occupied Bandwidth (99%) (MHz)		
Frequency (MHz)	DFT-s-pi/2 BPSK DFT-s-QPSK DFT-s-16QAM		DFT-s-16QAM
1745	13.477	13.468	13.488

## n66,15MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



12:38:20 20.10.2022

## n66,15MHz Bandwidth,DFT-s-QPSK (99% BW)

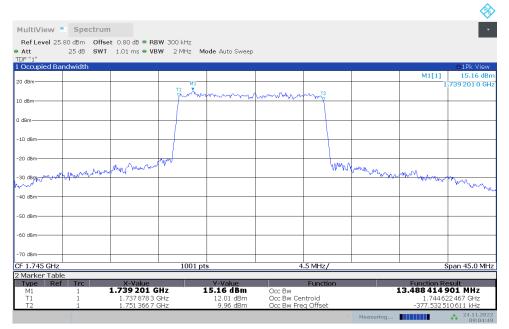


12:38:35 20.10.2022





## n66,15MHz Bandwidth,DFT-s-16QAM (99% BW)



09:04:49 24.11.2022

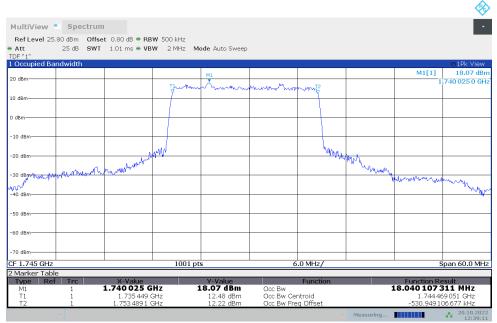




#### n66,20MHz(99%)

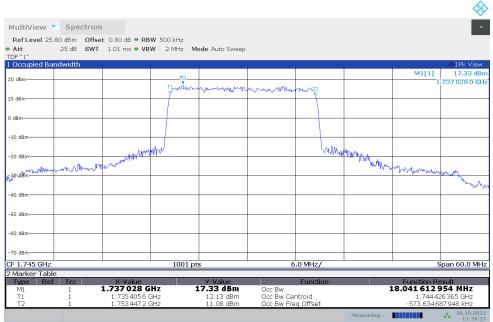
Fraguency (MHz)	Occupied Bandwidth (99%) (MHz)		
Frequency (MHz)	DFT-s-pi/2 BPSK	DFT-s-QPSK	DFT-s-16QAM
1745	18.040	18.042	18.068

## n66,20MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



12:39:12 20.10.2022

## n66,20MHz Bandwidth,DFT-s-QPSK (99% BW)

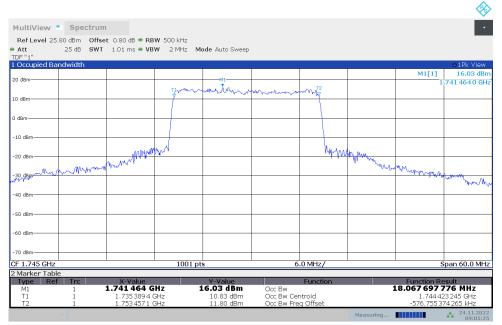


12:39:27 20.10.2022





## n66,20MHz Bandwidth,DFT-s-16QAM (99% BW)



09:05:25 24.11.2022

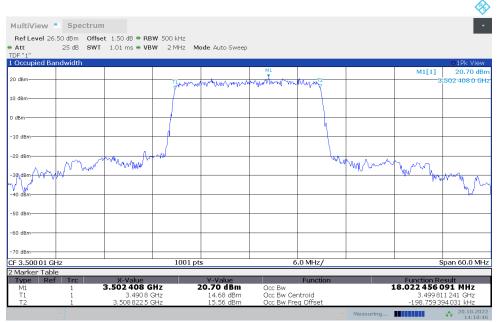




n78L n78L,20MHz(99%)

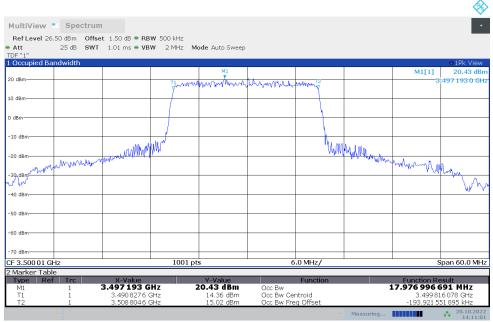
Fraguency (MILI=)	Occupied Bandwidth (99%) (MHz)		
Frequency (MHz)	DFT-s-pi/2 BPSK	DFT-s-QPSK	DFT-s-16QAM
3500.01	18.022	17.977	18.044

#### n78L,20MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



14:10:47 20.10.2022

## n78L,20MHz Bandwidth,DFT-s-QPSK (99% BW)

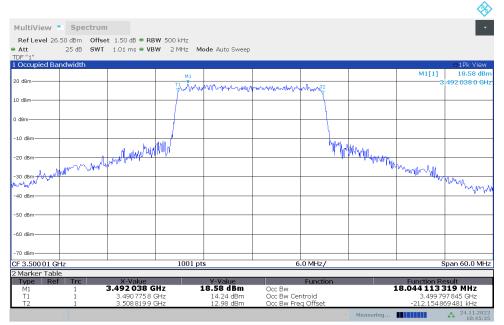


14:11:02 20.10.2022





## n78L,20MHz Bandwidth,DFT-s-16QAM (99% BW)



10:45:36 24.11.2022





#### n78L,30MHz(99%)

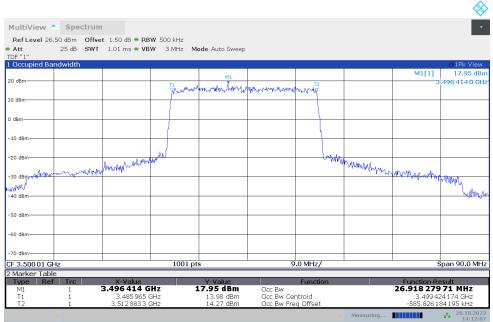
Fraguency (MHz)	Occupied Bandwidth (99%) (MHz)		
Frequency (MHz)	DFT-s-pi/2 BPSK	DFT-s-QPSK	DFT-s-16QAM
3500.01	26.930	26.918	27.014

## n78L,30MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



14:11:39 20.10.2022

## n78L,30MHz Bandwidth,DFT-s-QPSK (99% BW)

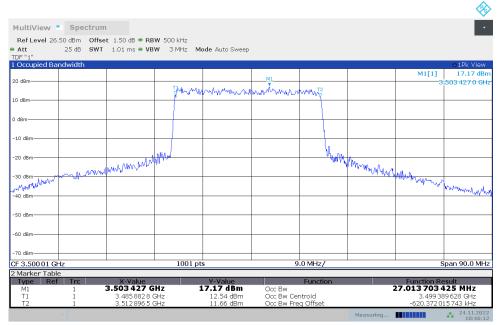


14:12:08 20.10.2022





# n78L,30MHz Bandwidth,DFT-s-16QAM (99% BW)



10:46:12 24.11.2022

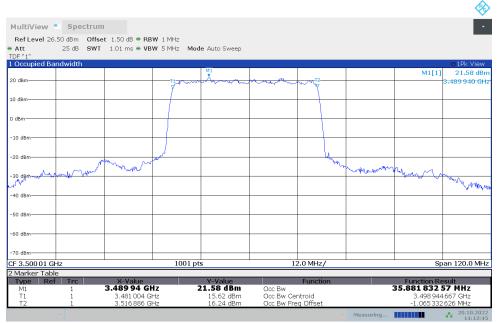




#### n78L,40MHz(99%)

Fraguency (MHz)	Occupied Bandwidth (99%) (MHz)		
Frequency (MHz)	DFT-s-pi/2 BPSK	DFT-s-QPSK	DFT-s-16QAM
3500.01	35.882	36.018	36.057

## n78L,40MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



14:12:45 20.10.2022

## n78L,40MHz Bandwidth,DFT-s-QPSK (99% BW)

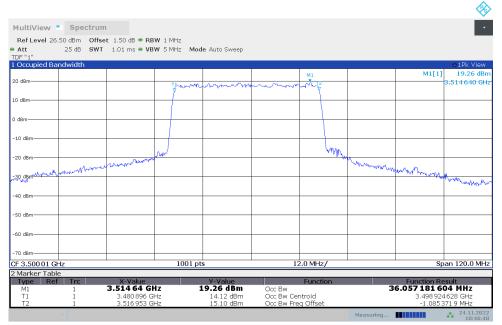


14:13:01 20.10.2022





## n78L,40MHz Bandwidth,DFT-s-16QAM (99% BW)



10:46:49 24.11.2022

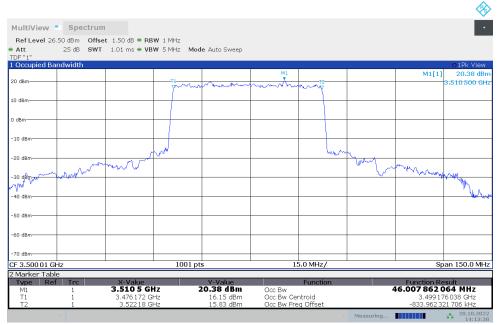




#### n78L,50MHz(99%)

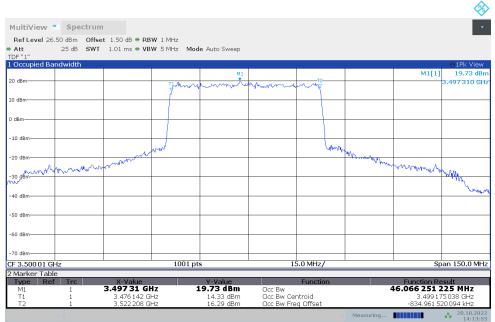
Fraguency (MUz)	Occupied Bandwidth (99%) (MHz)		
Frequency (MHz)	DFT-s-pi/2 BPSK	DFT-s-QPSK	DFT-s-16QAM
3500.01	46.008	46.066	45.932

## n78L,50MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



14:13:39 20.10.2022

## n78L,50MHz Bandwidth,DFT-s-QPSK (99% BW)

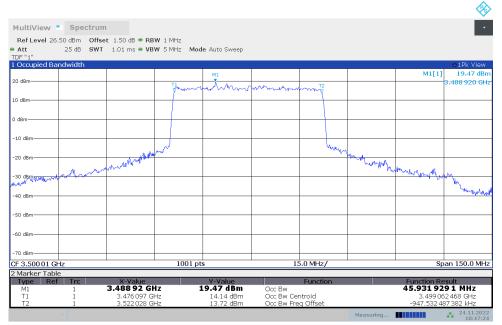


14:13:54 20.10.2022





## n78L,50MHz Bandwidth,DFT-s-16QAM (99% BW)



10:47:25 24.11.2022

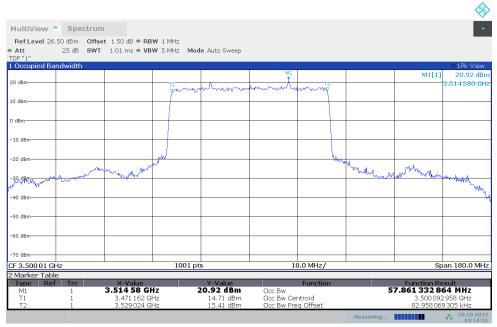




#### n78L,60MHz(99%)

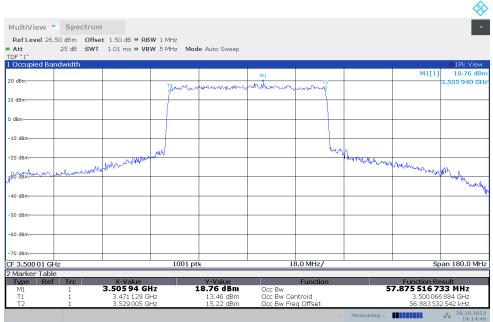
Fraguency (MUz)	Occupied Bandwidth (99%) (MHz)		
Frequency (MHz)	DFT-s-pi/2 BPSK	DFT-s-QPSK	DFT-s-16QAM
3500.01	57.861	57.876	57.990

## n78L,60MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



14:14:32 20.10.2022

## n78L,60MHz Bandwidth,DFT-s-QPSK (99% BW)

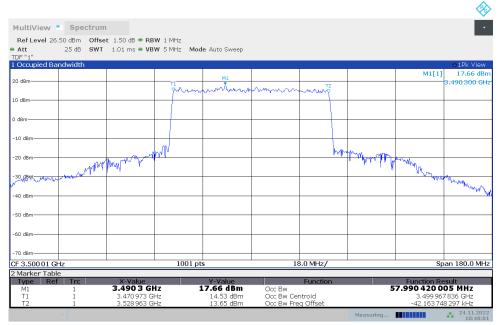


14:14:47 20.10.2022





## n78L,60MHz Bandwidth,DFT-s-16QAM (99% BW)



10:48:02 24.11.2022

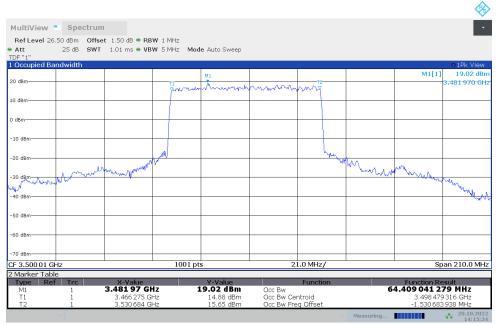




#### n78L,70MHz(99%)

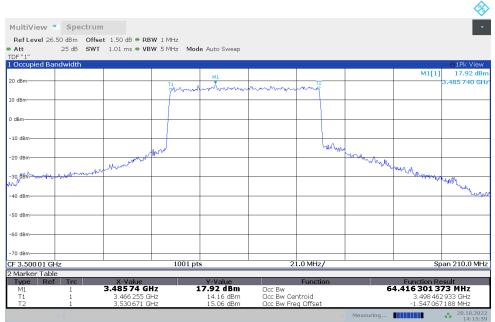
Fraguency (MHz)	Occupied Bandwidth (99%) (MHz)		
Frequency (MHz)	DFT-s-pi/2 BPSK	DFT-s-QPSK	DFT-s-16QAM
3500.01	64.409	64.416	64.245

## n78L,70MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



14:15:25 20.10.2022

## n78L,70MHz Bandwidth,DFT-s-QPSK (99% BW)

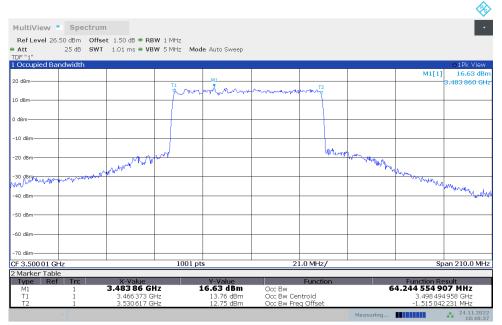


14:15:40 20.10.2022





## n78L,70MHz Bandwidth,DFT-s-16QAM (99% BW)



10:48:38 24.11.2022

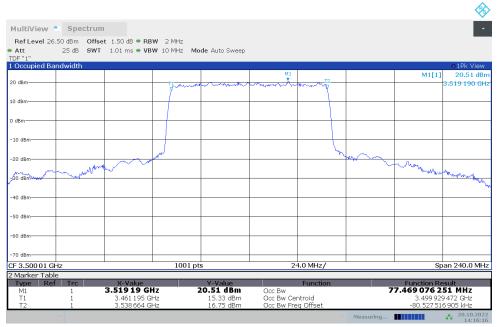




#### n78L,80MHz(99%)

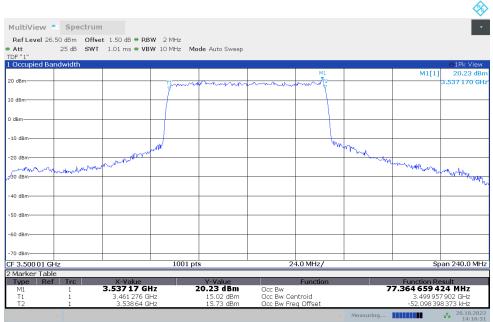
Fraguency (MUz)	Occupied Bandwidth (99%) (MHz)		
Frequency (MHz)	DFT-s-pi/2 BPSK	DFT-s-QPSK	DFT-s-16QAM
3500.01	77.469	77.365	77.708

## n78L,80MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



14:16:17 20.10.2022

## n78L,80MHz Bandwidth,DFT-s-QPSK (99% BW)

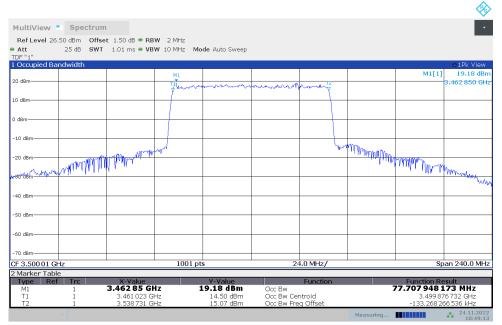


14:16:32 20.10.2022





## n78L,80MHz Bandwidth,DFT-s-16QAM (99% BW)



10:49:14 24.11.2022

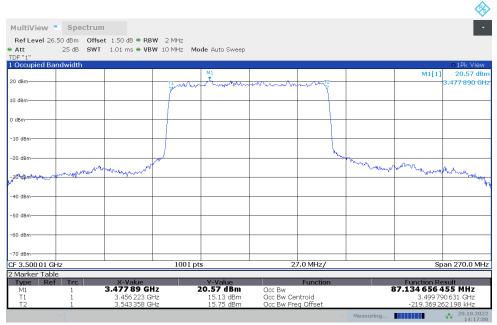




#### n78L,90MHz(99%)

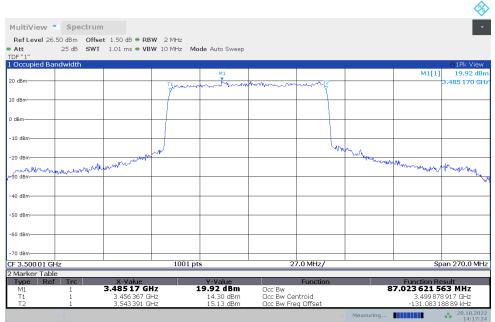
Fraguency (MHz)	Occupied Bandwidth (99%) (MHz)		
Frequency (MHz)	DFT-s-pi/2 BPSK	DFT-s-QPSK	DFT-s-16QAM
3500.01	87.135	87.024	86.886

## n78L,90MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



14:17:09 20.10.2022

## n78L,90MHz Bandwidth,DFT-s-QPSK (99% BW)



14:17:24 20.10.202





## n78L,90MHz Bandwidth,DFT-s-16QAM (99% BW)



Note: The maximum value of expanded measurement uncertainty for this test item is U = 0.626 kHz, k = 2.





#### A.5 Emission Bandwidth

The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. Table below lists the measured -26dBc BW. Spectrum analyzer plots are included on the following pages. The measurement method is from ANSI C63.26:

- a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be wide enough to see sufficient roll off of the signal to make the measurement.
- b) The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set ≥ 3 × RBW.
- c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation.
- d) The dynamic range of the spectrum analyzer at the selected RBW shall be more than 10 dB below the target "-X dB" requirement, i.e., if the requirement calls for measuring the -26 dB OBW, the spectrum analyzer noise floor at the selected RBW shall be at least 36 dB below the reference level.
- e) Set spectrum analyzer detection mode to peak, and the trace mode to max hold.