



A.3 Transmitter unwanted emissions at Band Edge

A.3.1 Reference

FCC CFR 47 Part 2, Clause 2.1051 FCC CFR 47 Part 27, Clause 27.53(I)

A.3.2 Method of measurement

The conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz.

For MIMO mode configurations, the limit was adjusted with a correction of -18.06dB [10Log64] by using the Measure and Add 10Log(N) dB technique according to KDB 662911 D01 Multiple Transmitter Output accounting for simultaneous transmission from antenna ports. Then the limit was adjusted to -31.06dBm.

In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed and a RBW of 1MHz for measurements of emissions > 1MHz away from the band edges.

The limit was adjusted with -6.02dB [10Log(50/200)] to compensate for the reduced measurement bandwidth 50KHz for emission less than 1MHz away from the NR 20MHz band edges.

The limit was adjusted with -9.03dB [10Log(50/400)] to compensate for the reduced measurement bandwidth 50KHz for emission less than 1MHz away from the NR 40MHz and 2C 20MHz band edges.

The limit was adjusted with -12.04dB [10Log(50/800)] to compensate for the reduced measurement bandwidth 50KHz for emission less than 1MHz away from the NR 2C 40MHz band edges.

The limit was adjusted with -13.01dB [10Log(50/1000)] to compensate for the reduced measurement bandwidth 50KHz for emission less than 1MHz away from the NR 100MHz and 2C 100MHz band edges.

For MIMO mode, the limit was adjusted with -13.01dB [10Log(50/1000)] to compensate for the reduced measurement bandwidth 50KHz for emission more than 1MHz away from the band edges. The limit of -44.07dBm was used for emission more than 1MHz away from the 2C NR 20MHz band edges. Spectrum analyzer detector was set as RMS.

A.3.3 Measurement limit

The conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz.





A.3.4 Measurement result

Configuration NR-MIMO-1C, 256QAM

Band Edge Frequency	Channel Bandwidth	RBW	Limit(dBm)
Channel Position B 3700MHz	NR 20.0 MHz	50KHz/1MHz	-37.09/-31.06
Channel Position T 3980MHz	NR 20.0 MHz	50KHz/1MHz	-37.09/-31.06

Port 63, Channel Position B, 20.0 MHz

Spectrum Analy Channel Power	zer 4	Spectrum An Swept SA	alyzer 8	Spectru Swept S	m Analyzer 9 A		+		
	Input RF Coupling DC Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref. Ext (S) NFE: Off	4Atten: 6 dB Preamp: Off pW Path: Standard	PNO: Best Wide Gale: LO IF Gain: Low Sig Track: Off	Avg Type: P Avg[Hold: 6 Trig: Extern	ower (RMS) <mark>1</mark> 2 100 A ++ al 1 A N	3456 WWWW NNNN		
1 Spectrum								Mkr1 3.70	0 000 GHz
Scale/Div 10 d	в			Ref Level 10.0	0 dBm			-4	7.995 dBm
=•9									
0.00									
-10.0									
-20.0							and the second se		
-30.0					/				D1 1 - 37 00 office
-40.0					1				
50.0									
-60.0									
70.0									
-00.0									
Center 3.7000 #Res BW 51 kl	00 GHz Hz		^	#Video BW 20	0 kHz*			S #Sweep 3.	pan 2.000 MHz 00 s (1001 pts)
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Spectrum Analy Channel Power	yzer 4 r	Spectrum Ar Swept SA	nalyzer 8	Spectru Swept 1	ım Analyzer 9 SA		+		ĺ
KEYSIGHT ↔	Input RF Coupling, DC Align: Auto	Input Z: 50 0 Corr CCorr Freq Ref. Ext (S) NFE: Off	4Atten: 6 dB Preamp: Off µW Path: Standard	PNO: Best Wide Gate: LO I IF Gain: Low Sig Track: Off	Avg Type: P Avg[Hold: 5 Trig. Extern	lower (RMS) 12 /100 A ++ al 1 A ++ A N	3456 WWWW NNNN		
1 Spectrum								Mkr1 3.6	99 000 GHz
Scale/Div 10 d	B			Ref Level 10.0	0 dBm			-3	3.815 dBm
0.00									
-10.0									
-20.0									
-30.0									DI 1.31.07.0
-40.0									
-50.0									
-60.0									
-70.0									
-00.0									
Start 3.694000 #Res BW 1.0 N	GHz IHZ			#Video BW 3.0	0 MHz*			Sto #Sweep ~3	o 3.699000 GHz .02 s (1001 pts)
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Port 63, Channel Position T, 20.0 MHz







Spectrum Analy Channel Power	yzer 4 r	Spectrum Ar Swept SA	alyzer 8	Spectr	um Analyzer 9 SA		+		
	Input: RF Coupling: DC Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref. Ext (S) NFE: Off	#Atten: 6 dB Preamp: Off µW Path: Standard	PNO: Best Wo Gale: LO IF Gain: Low Sig Track: Off	le Awg Type: P Awg Hold: 5 Trig: Extern	lower (RMS) 12/ /100 A 11 al 1 A 11 A 11	3456 ////////////////////////////////////		
1 Spectrum								Mkr1 3.9	81 000 GHz
Scale/Div 10 d	B			Ref Level 10.	00 dBm			-3	3.224 dBm
Log									
0.00									
-10.0									
-20.0									
.30.0 1									
.40.0									
50.0									
-50.0									
-60.0									
-70.0									
-80.0									
#Res BW 1.0 N	AHz			AVIDED BW 3	.0 WH2			#Sweep ~3	.02 s (1001 pts)
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Configuration NR-MIMO-1C, 256QAM

Band Edge Frequency	Channel Bandwidth	RBW	Limit(dBm)
Channel Position B 3700MHz	NR 40.0 MHz	50KHz/1MHz	-40.10/-31.06
Channel Position T 3980MHz	NR 40.0 MHz	50KHz/1MHz	-40.10/-31.06

Port 63, Channel Position B, 40.0 MHz

Spectrum Analyzer Channel Power		Spectrum Ar Swept SA	alyzer 8	Spectru Swept S	n Analyzer 9 A	+	
	iut: RF upling: DC gri: Auto	Input Z: 50 Ω Corr CCorr Freq Ref: Ext (S) NFE: Off	#Atten: 6 dB Preamp: Off pW Path: Standard	PNO: Best Wide Gale: LO IF Gain: Low Sig Track: Off	Avg Type: Power (Avg Hold: 10/100 Trig. External 1	RMS) 1 2 3 4 5 6 A W W W W A N N N N N	
Spectrum							Mkr1 3.700 000 GH
cale/Div 10 dB				Ref Level 10.0) dBm		-43.933 dBr
Log				ľ			
							DL1-40.10 dl
enter 3.700000 C Res BW 51 kHz	3Hz			#Video BW 200) kHz*		Span 2.000 M #Sweep 3.00 s (1001 pt
1 7 C		Feb 15, 2023 3:07:04 PM	ÐA				

Spectrum Analy Channel Power	zer 4	Spectrum An Swept SA	valyzer 8	Spectrun Swept S	n Analyzer 9 A	• +		
	Input RF Coupling DC Align: Auto	Input Z: 50 Q Corr CCorr Freq Ref: Ext (S) NFE: Off	#Atten: 6 dB Preamp: Off µW Path: Standard	PNO: Best Wide Gale: LO IF Gain: Low Sig Track: Off	Avg Type: Power (R Avg Hold: 5/100 Trig: External 1	MS) 1 2 3 4 5 6 A ** ** *** A N N N N N		
1 Spectrum							Mkr1 3.699 00) GHz
Scale/Div 10 d	в			Ref Level 10.00	dBm		-32.918	dBm
0.00								
-10.0								
-20.0								
-30.0							0.1.	11.0Z o
-40.0								
-50.0								
-60.0								
-70.0								
-80.0								
Start 3.694000 #Res BW 1.0 N	GHz 1Hz			#Video BW 3.0	MHz*		Stop 3.699 #Sweep ~3.02 s (1	000 GHz 001 pts)
1	<□ □ ?	Feb 15, 2023 3:09:11 PM						X





Port 63, Channel Position T, 40.0 MHz



Spectru Channe	m Analy I Power	zer 4		Spectrum Ar Swept SA	alyzer 8	Spect	rum Analyzer 9 t SA		+		
KEYS	IGHT	Input RF Coupling DC Align: Auto	Inpu Corr Free NFE	tZ:50Ω CCorr R⊌f.Ext(S) ∶Off	4Atten: 6 dB Preamp: Off µW Path: Standard	PNO: Best W Gale: LO IF Gain: Low Sig Track: Off	de Avg Type: I Avg[Hold. 6 Trig. Extern	Power (RMS) 1 2 2100 A 11 aul 1 A 11 A 10	3456 ////////////////////////////////////		
1 Spects	um									Mkr1 3.98	1 000 GHz
Scale/E	Div 10 d	в				Ref Level 10	.00 dBm			-3	3.392 dBm
0.00											
-10.0											
-20.0											
30.01	1										DL 1 -31 07 oBm
40.0											
50.0											
-60.0											
70.0											
20.0											
100.0											
Start 3. #Res B	981000 W 1.0 N	GHz IHz	-			#Video BW	3.0 MHz*			Stop #Sweep ~3.	3.986000 GHz 02 s (1001 pts)
	5		? Fel 3:	5 15, 2023 26:27 PM	DA						BX

Configuration NR-MIMO-1C, 256QAM

Band Edge Frequency	Channel Bandwidth	RBW	Limit(dBm)
Channel Position B 3700MHz	NR 100.0 MHz	50KHz/1MHz	-44.07/-31.06
Channel Position T 3980MHz	NR 100.0 MHz	50KHz/1MHz	-44.07/-31.06

Port 63, Channel Position B, 100.0 MHz

Spectrum Analy Channel Power	zer 4	Spectrum An Swept SA	alyzer 8	• +					
	Input: RF Coupling: DC Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref. Ext (S) NFE: Off	#Alten: 6 dB Preamp: Off pW Path: Standard	PNO: Best Wide Gale: LO IF Gain: Low Sig Track: Off	Avg Type: Po Avg Hold: 11- Trig: External	wer (RMS) 1 2 100 A 11 1 A N	3456 ₩₩₩₩ NNNN		
1 Spectrum								Mkr1 3.70	0 000 GHz
Scale/Div 10 d	в			Ref Level 10.00) dBm			-4	5.428 dBm
Log									
0.00									1
-10.0									
-20.0									
-30.0									
-40.0									DL1 -44.08 dBm
-50.0			×						
-60.0									
-70.0									
-80.0									
Center 3.7000 #Res BW 51 kl	00 GHz Hz		^	#Video BW 200	kHz*			s #Sweep 3.0	pan 2.000 MHz 00 s (1001 pts)
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Spectrum Analy Channel Power	yzer 4	Spectrum Ar Swept SA	nalyzer 8	Spectru Swept 3	ım Analyzer 9 SA	•	+		
KEYSIGHT →→	Input: RF Coupling: DC Align: Auto	Input Z: 50 Ω Corr CCorr Fruq Rof: Ext (S) NFE: Off	#Atten: 6 dB Preamp: Off pW Path: Standard	PNO: Best Wid Gate: LO I IF Gain: Low Sig Track: Off	e Avg Type: P Avg[Hold: 6/ Trig: Externa	lower (RMS) 12 /100 A 11 al 1 A 11 A 11	3450 WWWW NNNN		
1 Spectrum								Mkr1	3.699 000 GH
Scale/Div 10 d	в			Ref Level 10.0	00 dBm				-35.361 dBn
L09									
									DL1-31-07 c
								_	
Start 3.694000 #Res BW 1.0 N	GHz IHz			#Video BW 3.	0 MHz*	~		#Swee	Stop 3.699000 GH p ~3.02 s (1001 pts
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Port 63, Channel Position T, 100.0 MHz

Spectrum Analy Channel Power	zer 4	Spectrum An Swept SA	alyzer 8	Spectru Swept S	m Analyzer 9 SA		+		
KEYSIGHT	Input RF Coupling DC Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref: Ext (S) NFE: Off	#Atten: 6 dB Preamp: Off pW Path: Standard	PNO: Best Wide Gale: LO IF Gain: Low Sig Track: Off	Avg Type: F Avg[Hold: 9 Trig: Extern	lower (RMS) 12/2 /100 A 11 al 1 A 11 A 10	3456 WWWW NNNN		
1 Spectrum								Mkr1 3.98	30 000 GHz
Scale/Div 10 d	в			Ref Level 10.0	0 dBm			-4	5.689 dBm
0.00	_								
-30.0					4				
					·				DL1 -44.08 dBm
Center 3.98000 #Res BW 51 ki	0 GHz Hz			#Video BŴ 20	0 kHz*			s#Sweep 3.	pan 2.000 MHz 00 s (1001 pts)
1 5	C 2 ?	Feb 15, 2023 11:12:36 AM							

Spectrum Anal Channel Powe	yzer 4 r		Spectrum Analyzer 8 Swept SA			ctrum A pt SA	nalyzer 9		+		
KEYSIGHT	Input RF Coupling DC Align: Auto	Inpu Con Free NFE	it Z: 50 Ω :CCorr a Ref. Ext (S) ::Off	#Atten: 6 dB Preamp: Off pW Path: Standard	PNO: Best W Gate: LO IF Gain: Low Sig Track: Of		Avg Type: P Avg Hold, 5 Trig: Extern	ower (RMS) 1 2 100 A + al 1 A +	3456 ////////////////////////////////////		
1 Spectrum	,									Mkr1 3.98	1 000 GHz
Scale/Div 10 c	B				Ref Level 1	0.00 de	3m			-3	6.095 dBm
0.00											
10.0											
-20.0											
-30.0 1											DI 1-31.07 dBm
-40.0											
-50.0											
-60.0											
-70.0											
-80.0											
Start 3.981000 #Res BW 1.0 I	GHz IHz		^		#Video BW	3.0 MH	iz*			Stop #Sweep ~3.	3.986000 GHz 02 s (1001 pts)
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Configuration NR-MIMO-2C, 256QAM

Band Edge Frequency	Channel Bandwidth	RBW	Limit(dBm)
Channel Position B 3700MHz	NR 20.0 MHz	50KHz/50KHz	-40.10/-44.07
Channel Position T 3980MHz	NR 20.0 MHz	50KHz/50KHz	-40.10/-44.07

Port 63, Channel Position B, 2C 20.0 MHz

Spectrum Analy Channel Power	zer 4	Spectrum An Swept SA	alyzer 8	Spectru Swept S	m Analyzer 9 A		Spectrum Analyze Occupied BW	er 10	+
	Input RF Coupling DC Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref. Ext (S) NFE: Off	#Atten: 6 dB Preamp: Off µW Path: Standard	PNO: Best Wide Gale: LO IF Gain: Low Sig Track: Off	Awg Type: F Awg[Hold, 1 Trig: Extern	lower (RMS) <mark>1</mark> 2 8/100 A ++ al 1 A N	3456 WWWW NNNN		
1 Spectrum							N	1kr1 3.700 00	0 GHz
Scale/Div 10 d	в			Ref Level 10.0) dBm			-44.98	7 dBm
								(
0.00									
-10.0									
-20.0					1				
-30.0									
-40.0				•	14			DL	-40.10 dBm
-50.0									
-60 0									
-70.0									
-80.0									
Center 3.7000 #Res BW 51 kl	00 GHz Hz			#Video BW 20) kHz*			Span 2 #Sweep 3.00 s (.000 MHz 1001 pts)
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Spectrum Analy Channel Power	zer 4	Spectrum Ar Swept SA	Spectrum Analyzer 8 Swept SA				Spectrum An Occupied BV	alyzer 10 /		+
KEYSIGHT	Input RF Coupling DC Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref. Ext (S) NFE: Off	#Atten: 6 dB Preamp: Off µW Path: Standard	PNO: Best Wide Gate: LO IF Gain: Low Sig Track: Off	Avg Type: P Avg[Hold: 5 Trig. Extern	ower (RMS) 12 100 A 11 al 1 A 11 A N	3456 WWWW NNNN			
1 Spectrum								Mkr1	3.698 950) GHz
Scale/Div 10 d	в			Ref Level 10.00) dBm				-48.022	dBm
0.00										
-40.0										
-50.0							aan daga aadaa 197 ya baad			•
Start 3 694000	GHz			Wideo BW 200	1111-1				Stop 3 6990	00 04+
#Res BW 51 kl	lz			ATTACO BAT 200				#Swe	ep ~3.02 s (1	001 pts)
1	례∎?	Feb 15, 2023 2:37:10 PM	\mathbb{D}							X

Port 63, Channel Position T, 2C 20.0 MHz

Spectrum Analy Channel Power	zer 4	Spectrum An Swept SA	Spectrum Analyzer 8 Swept SA		um Analyzer 9 SA		Spectrum Analyzer Occupied BW	10	+
	Input RF Coupling DC Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref. Ext (S) NFE: Off	4Atten: 6 dB Preamp: Off µW Path: Standard	PNO: Best Wid Gate: LO IF Gain: Low Sig Track: Off	e Avg Type: F Avg[Hold, 6 Trig. Extern	20wer (RMS) 12 2100 A 11 al 1 A 11 A N	3 4 5 6 WWWW N N N N		
1 Spectrum							MI	kr1 3.980 000) GHz
Scale/Div 10 d	В			Ref Level 10.	10 dBm			-41.269	dBm
0.00									
-10.0									
-20.0									
-30.0				\sim					
-40.0					\ \			DL1-4	10.10 dBm
-50.0						· · · · · · · · · · · · · · · · · · ·			
-60.0									
-70.0									
-80.0									
Center 3.98000 #Res BW 51 ki	0 GHz Hz			#Video BW 2	JO kHz*			Span 2.0 #Sweep 3.00 s (10	00 MHz 001 pts)
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Spectrum Analyzer 4 Spect Channel Power Swep			Spectrum Swept SA	Analyzer 8	Spectr Swept	um Analyzer 9 SA	Spectrum Occupied	Spectrum Analyzer 10 Occupied BW		
KEY	SIGHT	Input RF Coupling DC Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref. Ext (S NFE: Off	#Atten: 6 dB Preamp: Off pW Path: Standard	PNO: Best Wo Gale: LO IF Gain: Low Sig Track: Off	le Avg Type: Po Avg[Hold: 91 Trig: External	wor(RMS) 1 2 3 4 5 6 00 A W W W W 1 A N N N N N			
1 Spec	trum							Mkr1 3.9	81 025 GHz	
Scale	/Div 10 d	в			Ref Level 10.	00 dBm		-	49.405 dBm	
0.00 -										
-10.0										
-20.0										
-30.0										
-40.0	1								DL1-44.07 dBm	
-50.0	<u></u>				A.M. 11					
-60.0										
-70.0										
-80.0										
Start 3 #Res I	3.981000 BW 51 ki	GHz Iz		*	#Video BW 2	00 kHz*		Sto #Sweep ~:	op 3.986000 GHz 3.02 s (1001 pts)	
	5		Feb 15, 2023 2:54:49 PM	\odot				.: 8		

Configuration NR-MIMO-2C, 256QAM

Band Edge Frequency	Channel Bandwidth	RBW	Limit(dBm)
Channel Position B 3700MHz	NR 40.0 MHz	50KHz/1MHz	-43.11/-31.06
Channel Position T 3980MHz	NR 40.0 MHz	50KHz/1MHz	-43.11/-31.06

Port 63, Channel Position B, 2C 40.0 MHz

Spectru Channel	m Analy. Power	zer 4			Spectrum A Swept SA	nalyzer 8	•	Spectrun Swept SA	n Analyzer 9 N			Spectrum Occupied	Anaiyzer 1 BW	D		+
KEYS	IGHT	Input Coupl Align	RF ling: DC Auto	Inp Co Fre NFI	ut Z:50 Ω TCCorr q Ref. Ext.(S) E:Off	#Atten: 6 dB Preamp: Off pW Path: Standard	PNO: E Gale: L IF Gair Sig Tra	Best Wide "O 1: Low Ick: Off	Avg Type: F Avg[Hold: 1 Trig. Extern	Power (RMS) 1/100 al 1	1 2 A₩* A N	3456 ₩₩₩₩ NNNN				
1 Spectr	um												Mkr	1 3.70	0 0 0 0	GHz
Scale/D	iv 10 dl	3					Ref Le	vel 10.00	dBm					-45	6.869	dBm
LOg																
0.00															1	<i>c</i>
-10.0															1	
-20.0																
-30.0																
10.0										ſ						
-40.0									/						0114	
-50.0					addicard by Contraction and St											
-60.0																
.70.0																
-80.0																
Center #Res B	3.70000 N 51 kH	0 GH	z				#Vide	BW 200	kHz*					Sp Sweep 3.0	an 2.0 0 s (10	00 MHz 101 pts
	רי ור	2		? 1	ab 15, 2023 :41:30 PM										H	X

Spectrum Analy Channel Power	zer 4	Spectrum An Swept SA	alyzer 8	Spectrum Swept SA	i Analyzer 9 V	Spectrum Ana Occupied BW	alyzer 10		+
KEYSIGHT ↔ ™	Input RF Coupling DC Align: Auto	Input Z: 50 Q Corr CCorr Freq Ref. Ext (S) NFE: Off	#Atten: 6 dB Preamp: Off µW Path: Standard	PNO: Best Wide Gale: LO IF Gain: Low Sig Track: Off	Avg Type: Power (Avg Hold: 6/100 Trig: External 1	RMS) 1 2 3 4 5 6 A ** ** ** ** A N N N N N			
1 Spectrum	٠						Mkr1	3.698 99	5 GHz
Scale/Div 10 d	В			Ref Level 10.00	dBm			-34.028	dBm
0.00				Ĭ					
-10.0									
-20.0									
30.0								0.17	31.07.0 1
-40.0									
-50.0									
-50 0									
-80.0									
Start 3.694000 #Res BW 1.0 N	GHz IHz			#Video BW 3.0	MHz*		#Swee	Stop 3.699	000 GHz 001 pts)
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Port 63, Channel Position T, 2C 40.0 MHz



Spectrum An Channel Pov	alyzer 4 er	Spectrum Ana Swept SA	alyzer 8	Spectru Swept 3	im Analyzer 9 SA		Spectrum Analy Occupied BW	/zer 10	+
KEYSIGH ↔	Coupling DC Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref. Ext (S) NFE: Off	4Atten: 6 dB Preamp. Off µW Path: Standard	PNO Best Wide Gate: LO IF Gain: Low Sig Track: Off	 Avg Type: P Avg[Hold: 9/ Trig: Externa 	ower (RMS) <mark>1</mark> 2 100 A H al 1 A N	3456 WWWW NNNN		
1 Spectrum								Mkr1 3.98	31 000 GHz
Scale/Div 10	dB			Ref Level 10.0	0 dBm			-3	5.225 dBm
0.00									
-10.0									
-20.0									
30.0 1									DI 1-31.07 dBm
-40.0									
-50.0									
-60 0									
-70.0									
-80.0									
Start 3.9810 #Res BW 1.0	00 GHz			#Video BW 3.	0 MHz*			Stop #Sweep ~3.	o 3.986000 GHz 02 s (1001 pts)
1	C -	Peb 15, 2023 2:12:19 PM							

Configuration NR-MIMO-2C, 256QAM

Band Edge Frequency	Channel Bandwidth	RBW	Limit(dBm)
Channel Position B 3700MHz	NR 100.0 MHz	50KHz/1MHz	-44.07/-31.06
Channel Position T 3980MHz	NR 100.0 MHz	50KHz/1MHz	-44.07/-31.06

Port 63, Channel Position B, 2C 100.0 MHz

Spectrum Analy Channel Power	zer 4	Spectrum Ar Swept SA	alyzer 8	Spectrun Swept S	n Analyzer 9 N		+		Í
KEYSIGHT	Input: RF Coupling: DC Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref. Ext (S) NFE: Off	#Atten: 6 dB Preamp: Off µW Path: Standard	PNO: Best Wide Gale: LO IF Gain: Low Sig Track: Off	Awg Type: Pow Awg Hold: 7/10 Trig: External 1	er (RMS) 12 0 A +++ A N 1	3456 ****		
1 Spectrum								Mkr1 3.70	0 000 GHz
Scale/Div 10 d	в			Ref Level 10.00	dBm			-4	6.735 dBm
Log				Ĩ					
-10.0									
-20.0									
-30.0								And the second sec	
-40.0									Did di Martin
-50.0					and the second s				DC1444.00 CDM
-60.0									
-70.0									
-80.0									
Center 3.70000 #Res BW 51 ki	00 GHz Hz			#Video BW 200	kHz*			S #Sweep 3.	pan 2.000 MHz 00 s (1001 pts)
1		Feb 15, 2023 1:10:57 PM	ÐA					🔌	





Spectrum Analy Channel Power	yzer 4 r	Spectrum Ar Swept SA	valyzer 8	Spectru Swept	um Analyzer 9 SA		+		
KEYSIGHT →→	Input: RF Coupling DC Align: Auto	Input Z' 50 Ω Corr CCorr Freq Ref. Ext (S) NFE: Off	4Atten: 6 dB Preamp: Off pW Path: Standard	PNO: Best Wid Gate: LO I IF Gain: Low Sig Track: Off	e Avg Type: P Avg[Hold, S Trig. Extern	lower (RMS) 12 /100 A 11 al 1 A 11 A 11	3456 WWWW NNNN		
1 Spectrum	•							Mkr1	3.699 000 GH
Scale/Div 10 d	B			Ref Level 10.0	00 dBm				-35.703 dBm
Start 3.694000 #Res BW 1.0 h	GHz WHz			#Video BW 3.	0 MHz*			#Swee	Stop 3.699000 GH p ~3.02 s (1001 pts
4 5	CI - ?	Feb 15, 2023 1:14:00 PM							

Port 63, Channel Position T, 2C 100.0 MHz

Spectrum Anal Channel Powe	yzer 4 r	Spectrum A Swept SA	nalyzer 8	Spectrun Swept S	n Analyzer 9 A		+		
KEYSIGHT	Input RF Coupling DC Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref: Ext (S) NFE: Off	#Atten: 6 dB Preamp: Off µW Path: Standard	PNO: Best Wide Gale: LO IF Gain: Low Sig Track: Off	Avg Type: Pe Avg[Hold, 9/ Trig. Externe	ower (RMS) <mark>1 2</mark> 100 A 11 I 1 A 11 A N	3456 WWWW NNNN		
1 Spectrum								Mkr1 3.9	80 000 GHz
Scale/Div 10 c	B			Ref Level 10.00	dBm				46.026 dBm
0.00									
	\setminus								
-40.0									Distant Manifest
									00144.000000
Center 3.9800 #Res BW 51 k	00 GHz Hz			#Video BW 200	kHz*		~	#Sweep 3	Span 2.000 MHz 3.00 s (1001 pts)
15	C [Feb 15, 2023 1:21:02 PM	DA						H H 🗙

Spectrum Analy Channel Power	zer 4		Spectrum An Swept SA	alyzer 8		Spectrum Swept SA	Analyzer 9		+		
KEYSIGHT	Input: RF Coupling: DC Align: Auto	Inpu Con Free NFE	it Z: 50 Ω ·CCorr a Ref. Ext (S) :: Off	#Atten: 6 dB Preamp: Off µW Path: Standard	PNO: B Gale: L IF Gain Sig Trai	est Wide D Low k: Off	Avg Type: F Avg[Hold, 7 Trig. Extern	lower (RMS) 1 2 /100 A + al 1 A +	3456 ////////////////////////////////////		
1 Spectrum										Mkr1 3.98	1 005 GHz
Scale/Div 10 d	В				RefLet	rel 10.00 d	1Bm			-3	5.152 dBm
0.00											
-10.0											
-20.0											
-30.0 1											DI 1-31.07 dBm
-40.0											
-50.0											
-60 0											
-70.0											
-80.0											
Start 3.981000 #Res BW 1.0 h	GHz IHz				#Video	BW 3.0 N	Hz*			Stop #Sweep ~3.	3.986000 GHz 02 s (1001 pts)
3	C .	Fe 1:	b 15, 2023 23:38 PM							.:: 💦	





A.4 Transmitter unwanted emissions - Conducted Spurious Emission

A.4.1 Reference

FCC CFR 47 Part 2, Clause 2.1051 FCC CFR 47 Part 27, Clause 27.53(I)

A.4.2 Method of measurement

In accordance with FCC rules, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz.

For MIMO mode configurations, the limit was adjusted with a correction of -18.06dB [10Log64] by using the Measure and Add 10Log(N) dB technique according to FCC KDB 662911 D01 Multiple Transmitter Output accounting for simultaneous transmission from antenna ports. Then the limit was adjusted to -31.06dBm.

The spurious emissions from the antenna terminal were measured. The transmitter output power was attenuated using an attenuator and the frequency spectrum investigated from 3kHz to 40GHz. The resolution bandwidth of 1MHz was employed. The spectrum analyzer detector was set to RMS.

A.4.3 Measurement limit

The conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz.





A.4.4 Measurement results

Configuration NR-MIMO-1C, 256QAM

Channel Bandwidth	RBW (MHz)	Limit (dBm)
20.0 MHz	1.0	-31.06

Port 63, Channel Position B

Spectrum Anal Swept SA	yzer 1		Spectrum Ar Swept SA	alyzer 2	+					
KEYSIGHT	Input F Couplin Align: J	er XII DC Nuto	Input Z: 50 Ω Corr CCorr Freq Ref. Ext (S) NFE: Off	#Atten: 28 dB Preamp: Off pW Path: Standard	PNO: Fast Gale: Off IF Gain: Low Sig Track: Off	Avg Type: F Avg[Hold: 5 Trig: Extern	lower (RMS) 12 /100 A ++- al 1 A N	3456 ₩₩₩₩ NNNN		
1 Spectrum									Mkr1	3.694 0 GHz
Scale/Div 10 c	B				Ref Level 30.0	0 dBm				-37.568 dBm
20.0 10.0 0.00										
-10.0								1	2	DL1 31.97 dBm
-60.0										
Start 3 kHz #Res BW 1.0 f	4Hz				#Video BW 3.) MHz*			#Sweep~	Stop 5.000 GHz 10.0 s (10001 pts)
5 Marker Table		•								
Mode	Trace	Scale	х		Y	Function	Functio	n Width	Funct	ion Value
2 N 3 4 5 5	ł	ł	3.6	94 0 GH2 86 0 GH2	-37.57 dBm -38.05 dBm					
1	2		Feb 17, 2023 9:24:45 AM	ÐA						

Spectrun Swept Sa	n Analy A	zer 1		Spectrum A Swept SA	nalyzer 2	• +					
KEYSI	GHT	Input RF Coupling, DC Align: Auto	Inpu Corr Frec NFE	t Z: 50 Ω CCorr Ref: Ext (S) : Off	4Atten: 10 dB Preamp: Off pW Path: Standard	PNO: Fast Gate: Off d IF Gain: Low Sig Track: Off	Awg Type: F Awg[Hold: 5 Trig: Extern	lower (RMS) 12 (100 A 1) al 1 A 1) A 1	3456 ////////////////////////////////////		
1 Spectru	um									Mkr1	38.457 8 GHz
Scale/Di	iv 10 d	в				Ref Level -20	.00 dBm				-36.404 dBm
20.0											011-31 - Ber
											In-
-40.0											
-50.0		Luni		~							
-60.0											
-70.0											
80.0											
-90.0											
-100											
-110											
Start 5.0 #Res BV	00 GHz N 1.0 N	IHz				#Video BW 3	.0 MHz*			#Sweep	Stop 40.00 GHz ~10.0 s (80001 pts)
	5		? Fel 9:	25:57 AM	\mathbf{P}						

Port 63, Channel Position M

Spect Swep	rum Anal t SA	/zer 1		Spectrum Ar Swept SA	nalyzer 2	+					
KEY	'SIGHT ·≁·	Input I Coupli Align J	ref Ng DC Auto	Input Z' 50 Q Corr CCorr Freq Ref. Ext (S) NFE: Off	#Atten: 28 dB Preamp: Ott µW Path: Standard	PNO: Fast Gale: Off IF Gain: Low Sig Track: Off	Awg Type: F Awg Hold: 5 Trig: Extern	lower (RMS) 12/ /100 A 11 al 1 A 11 A N	3456 WWWW NNNN		
1 Spe	ctrum									Mkr2 3	.986 0 GHz
Scale	/Div 10 c	в				Ref Level 30.	00 dBm			4	8.009 dBm
Log 20.0 10.0 -10.0 -20.0 -30.0 -40.0 -50.0 -60.0 Start	3 kHz					#Video BW 3	0 MHz*		<u>\$1</u> _	2	DL1 31 37 dBm
#Res	BW 1.0 P	IHz								#Sweep ~10	.0 s (10001 pts)
5 Mar	ker Table		۲								
	Mode	Trace	Scale	×		Y	Function	Functio	in Width	Function	n Value
2	N	+	_	3.0	194 U GHZ 186 0 GHZ	-38.30 dBn -38.01 dBn	1				_
3 4 5 6											
	5	2		Feb 17, 2023 9:20:52 AM	ÐA						HX





Spectrum Analy Swept SA	izer 1	Spectrum Ar Swept SA	nalyzer 2	• +				
KEYSIGHT	Input: RF Coupling: DC Align: Auto	Input Z: 50 Q Corr CCorr Freq Ref. Ext (S) NFE: Off	#Atton: 10 dB Preamp: Off pW Path: Standard	PNO: Fast Gale: Off IF Gain: Low Sig Track: Off	Avg Type: Pow Avg[Hold, 5/10 Trig: External 1	er (RMS) 1 2 3 4 5 6 A W W W W A N N N N N		
1 Spectrum	٠						Mkr1 38.	453 0 GHz
Scale/Div 10 d	в			Ref Level -20.0	0 dBm		-30	6.345 dBm
Log								
-30.0								
-40.0							······	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
-50.0								
-60.0	••••••	······································						
-70.0								
80.0								
200.0								
-90.0								
-100								
-110								
Start 5.00 GHz #Res BW 1.0 N	IHz		~	#Video BW 3.	0 MHz*		s #Sweep ~10.0	itop 40.00 GHz 0 s (80001 pts)
ر	a di	Feb 17, 2023 9:22:14 AM	ÐA					

Port 63, Channel Position T

Spect Swept	rum Anal t SA	yzer 1		Spectrum Ar Swept SA	halyzer 2	+					
KEY	'SIGHT ·≁·	Input F Couplin Align: J	RF Ng DC Auto	Input Z: 50 Ω Corr CCorr Freq Ref. Ext (S) NFE: Off	#Atten: 28 dB Preamp: Off µW Path: Standard	PNO: Fast Gale: Off I IF Gain: Low Sig Track: Of	Avg Type: F Avg[Hold, 5 Trig. Extern	Power (RMS) 1 2 2100 A 11 aul 1 A 11 A 10	3456 WWWW NNNN		
1 Spe	ctrum									Mkr2	3.986 0 GHz
Scale	/Div 10 c	B				Ref Level 3	0.00 dBm				-36.509 dBm
20.0											
10.0											
0.00											
-10.0											
-20.0										2	DL1 31.07 dBm
-40.0										J	
-50.0											
-60.0											
Start #Res	3 kHz BW 1.0 P	4Hz				#Video BW	3.0 MHz*			#Sweep~1	Stop 5.000 GHz 10.0 s (10001 pts)
5 Mari	ker Table										
	Mode	Trace	Scale	х		Y	Function	Functio	n Width	Functi	ion Value
1	N	1	t	3.6	94 0 GHz	-38.38 dE	Im				
3	N		_	3.9	ao o Ghz	~30.51 dB	K 11				
4											
5											
	5	ali	712	Feb 17, 2023	A					•• 1	
<u> </u>		۱. I		9:17:22 AM							

Spectrum Ana Swept SA	lyzer 1	Spectrum Ar Swept SA	alyzer 2	• +					
	Input RF Coupling DC Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref. Ext (S) NFE: Off	#Atten: 10 dB Preamp: Off pW Path: Standard	PNO: Fast Gale: Off IF Gain: Low Sig Track: Off	Avg Type: Pr Avg[Hold, S/ Trig, Externe	ower (RMS) 12 100 A 11 al 1 A 11 A N	3 4 5 6 WWWW NNNN		
1 Spectrum								Mkr1 3	38.453 4 GHz
Scale/Div 10	dB			Ref Level -20.	00 dBm				-36.103 dBm
-30.0									01.31 1 50
-40.0									min
-50.0				~~~~~				~~~~~	
-60.0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~							
-70.0									
-80.0									
-90.0									
-100									
-110									
Start 5.00 GH #Res BW 1.0	z MHz			#Video BW 3	.0 MHz*			#Sweep ~	Stop 40.00 GHz 10.0 s (80001 pts)
1	C 🗖 ?	Feb 17, 2023 9:18:29 AM							





Configuration NR-MIMO-1C, 256QAM

Channal Randwidth	RBW	Limit
	(MHz)	(dBm)
40.0 MHz	1.0	-31.06

Port 63, Channel Position B

Spect Swept	rum Anal I SA	yzer 1		Spectrum Ar Swept SA	alyzer 2	+					
KEY	SIGHT	Input F Couplin Align: J	RF Ng DC Auto	Input Z' 50 Q Corr CCorr Freq Ref. Ext (S) NFE: Off	#Atten: 28 dB Preamp: Off µW Path: Standard	PNO: Fast Gale: Off IF Gain: Low Sig Track: Off	Avg Type: F Avg[Hold: 5 Trig: Extern	ower (RMS) 1 2 100 A al 1 A N	3456 ****		
1 Spe	ctrum									Mkr1	3.694 0 GHz
Scale	/Div 10 c	B				Ref Level 30.	00 dBm				-34.228 dBm
Log 20.0 10.0 -10.0 -20.0 -30.0 -40.0 50.0 -60.0 Start	3 kHz					#Video BW 3	.0 MHz*			¢ ²	Cl.1.31.37 eCrs
#Res	BW 1.0 I	IHZ								#Sweep ~	10.0 s (10001 pts)
5 Mar	ker Table										
1 2 3	Mode N N	Trace 1	Scale f	X 3.6 3.5	94 0 GHz 86 0 GHz	Y -34.23 dBr -37.60 dBr	Function n	Function	i Width	Funct	ion Value
4 5 6		-1		E-6 (7, 0000							
	5	C		9:04:24 AM	DA						

Spectrum Analy Swept SA	/zer 1	Spectrum Ar Swept SA	alyzer 2	• +					
	Input RF Coupling DC Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref. Ext (S) NFE: Off	#Atten: 10 dB Preamp: Off µW Path: Standard	PNO: Fast Gale: Off IF Gain: Low Sig Track: Off	Avg Type: Po Avg[Hold, 5/1 Trig. External	wer (RMS) 1 2 00 A +++ 1 A N	3 4 5 6 ****		
1 Spectrum								Mkr1 38	.453 0 GHz
Scale/Div 10 d	в			Ref Level -20.	00 dBm			-3	6.270 dBm
-30.0									01-31 A Be
-40.0							~		min
-50.0									
-60.0		down and the second							
-70.0									
80.0									
-90.0									
-100									
-110									
Start 5.00 GHz #Res BW 1.0 M	/Hz			#Video BW 3.	0 MHz*			#Sweep ~10.	Stop 40.00 GHz 0 s (80001 pts)
۲	<□ □ ?	Feb 17, 2023 9:06:54 AM						.:: እ	

Port 63, Channel Position M

Spectrur Swept S	m Analı A	zer 1		, Sp Sv	ectrum Ani vept SA	alyzer 2		+						
KEYS	IGHT	Input F Couplin Align: 7	RF Vg. DC Vulo	Input Z Corr CC Freq Re NFE: O	50 Ω čorr af. Ext (S) ff	#Atten: 28 dB Preamp: Off pW Path: Standard	PNO Fa Gale: O IF Gain: Sig Trac	ist f Low k:Off	Avg Type: P Avg[Hold: 5 Trig: Extern	ower (RMS) 100 A al 1 A	23450 WWWWW NNNN			
1 Spectr													Mkr2 3	.986 0 GHz
Scale/D	iv 10 d	в					Ref Lev	el 30.00	dBm				-3	7.586 dBm
20.0 10.0												-		
0.00 -10.0														
-30.0 -40.0											1	Ļ	2	DL1-31.07 dBm
-60.0										, ,				
#Res B	N 1.0 h	IHz					#VIGEO	BW 5.01	VINZ.				#Sweep ~10	.0 s (10001 pts)
5 Marker	r Table		•											
1 N	Mode	Trace	Scale		X 2.60		Y	1 dBm	Function	Fund	tion Width		Function	n Value
2	N	i	-		3.98	6 0 GHz	-37.5	9 dBm						
3 4 5 6														
	5	2		Feb 1 9:09:	7, 2023 20 AM								.:: 🔌	





Spectrum Analy Swept SA	/zer 1	Spectrum An Swept SA	alyzer 2	• +					
	Input RF Coupling DC Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref: Ext (S) NFE: Off	4Atten: 10 dB Preamp: Off pW Path: Standard	PNO: Fast Gale: Off IF Gain: Low Sig Track: Off	Avg Type: P Avg Hold. & Trig. Extern	lower (RMS) 1 2 /100 A 10 al 1 A 10 A N	3456 WWWW NNNN		
1 Spectrum								Mkr1 38	.473 6 GHz
Scale/Div 10 d	в			Ref Level -20.	00 dBm			-3	6.418 dBm
-30.0									01.11 1 En
-40.0									min
-50.0				~~~~~					
-60.0	~~~~~	·····							
-70.0									
80.0									
-90 0									
-100									
-110									
Start 5.00 GHz #Res BW 1.0 N	IHz			#Video BW 3	0 MHz*			#Sweep ~10.	Stop 40.00 GHz 0 s (80001 pts)
1	례∎?	Feb 17, 2023 9:10:46 AM							

Port 63, Channel Position T

Spectrum Anal Swept SA	yzer 1		Spectrum Ar Swept SA	alyzer 2		+					
KEYSIGHT	Input F Couplin Align: A	er XII DC Valo	Input Z: 50 Ω Corr CCorr Freq Ref. Ext (S) NFE: Off	#Atten: 28 dB Preamp: Off pW Path: Standard	PNO: F Gate: C IF Gain Sig Tra	ast III : Low ck: Off	Avg Type: P Avg Hold, S/ Trig, Externa	ower (RMS) 12 100 A ++ al 1 A N	3456 WWWW NNNN		
1 Spectrum										Mkr2 3	3.986 0 GHz
Scale/Div 10 c	/B				Ref Le	vel 30.00	dBm				35.011 dBm
Log						T					
20.0											
0.00											
										2	
									<u></u>	<u>۲</u>	DL1 31.07 dbm
-40.0		_									
50.0											
Start 3 kHz					#Video	BW 3.0	MHz*				Stop 5.000 GHz
#Res BW 1.0 I	iHz									#Sweep ~10	0.0 s (10001 pts)
5 Marker Table		•									
Mode	Trace	Scale	х		Y		Function	Functio	n Width	Functio	in Value
1 N	1	1	3.6	94 0 GHz	-37.	98 dBm					
3	1	- 1	3.5	86 U GHZ	-35.	UT dBm					
4											_
5											
0											
1	C		Feb 17, 2023 9:13:27 AM	$\square \triangle$							

Spectrum Analy Swept SA	/zer 1	Spectrum A Swept SA	halyzer 2	• +					
KEYSIGHT	Input: RF Coupling: DC Align: Auto	Input Z' 50 Ω Corr CCorr Freq Ref. Ext (S) NFE: Off	#Alten: 10 dB Preamp: Off pW Path: Standard	PNO: Fast Gale: Off IF Gain: Low Sig Track: Off	Avg Type: Po Avg[Hold: 6/ Trig: Externa	ower (RMS) 12 100 A ++ I 1 A ++ A N	3456 ////////////////////////////////////		
1 Spectrum								Mkr1 3	3.450 8 GHz
Scale/Div 10 d	в			Ref Level -20.	00 dBm				36.302 dBm
-30.0									01-11 - 80
									min
				~~~~~					
-00.0	~~~	mhmu-							
Start 5.00 GHz #Res BW 1.0 M	IHz			#Video BW 3.	0 MHz*			#Sweep ~1	Stop 40.00 GHz 0.0 s (80001 pts)
15		Feb 17, 2023 9:14:57 AM	ÐA						





#### Configuration NR-MIMO-1C, 256QAM

Channel Rendwidth	RBW	Limit
	(MHz)	(dBm)
100.0 MHz	1.0	-31.06

Port 63, Channel Position B

Spectr Swept	um Anal SA	yzer 1		•	Spectr Swept	um Ana SA	alyzer 2	Ì	+									
KEY	SIGHT	Input F Couplin Align: J	RF Ng DC Auto	Inpu Cor Fro NFE	ut Z: 50 C TCCorr q Ref. Ex E: Off		#Atten: 28 dB Preamp: Off µW Path: Standard	PNO: F Gate: C IF Gain Sig Tra	ast III : Low ck: Off	Avg Type: F Avg[Hold: 5 Trig: Extern	ower (RMS /100 al 1	0 <mark>1 2</mark> A ₩ 1 A N	34 ₩₩ NN	56 ////				
1 Spec	.trum															Mkr	1 3.6	94 0 GHz
Scale	'Div 10 c	B						Ref Le	vel 30.0	00 dBm							-34	.926 dBm
Log									Ĭ									
10.0														-				
0.00																		
-10.0																		
-20.0														1		2		DL1 31.07 dBm
-30.0												_			4			
50.0																		
-60.0																		
Start 3 #Res I	kHz BW 1.0 P	4Hz						#Video	BW 3.	0 MHz*						#Sweep	St ~10.0	op 5.000 GHz s (10001 pts)
5 Mark	er Table																	
	Mode	Trace	Scale			x		Y		Function	F	unction	n Widt	ħ		Fur	iction V	alue
1	N	1	1			3.65	4 0 GHz	-34.	93 dBm									
2	N					3.98	6 U GHZ		69 GBM									
4																		
5																		
	5	2		Fe 9	b 17, 20 :29:03 A	23 M												田実

Spectrum Analy Swept SA	/zer 1	Spectrum Ar Swept SA	alyzer 2	• +				
	Input RF Coupling DC Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref. Ext (S) NFE: Off	#Atten: 10 dB Preamp: Off µW Path: Standard	PNO: Fast Gale: Off IF Gain: Low Sig Track: Off	Avg Type: Pov Avg[Hold: 9/10 Trig: External	ver (RMS) 1 2 3 4 5 00 A W W W 1 A N N N N	V W V N	
1 Spectrum							Mkr	38.454 3 GHz
Scale/Div 10 d	в			Ref Level -20.	00 dBm			-36.425 dBm
-30.0								011-31 dm
-40.0								min
-50.0	1			~~~~~				
-00.0		··········						
-70.0								
-80.0								
-90.0								
-100								
-110								
Start 5.00 GHz #Res BW 1.0 M	IHz			#Video BW 3.	0 MHz*		#Swee	Stop 40.00 GHz p ~10.0 s (80001 pts)
<b>۲</b>	례∎?	Feb 17, 2023 9:31:00 AM	ÐA				.::	

Port 63, Channel Position M

Spec Swep	trum Anal It SA	zer 1		Spectrum A Swept SA	nalyzer 2	+						
KEY	′SIGHT ·≁·	Input I Coupli Align J	RF Ng DC Auto	Input Z 50 Ω Corr CCorr Freq Ref. Ext (S) NFE: Off	#Atten: 28 dB Preamp: Off pW Path: Standard	PNO: Fast Gale: Off IF Gain: Low Sig Track: Off	Avg Type: F Avg[Hold: 5 Trig: Extern	lower (RMS) 12/ /100 A 11 al 1 A 11 A N	345 ////////////////////////////////////	5 4 1		
1 Spe	sctrum										Mkr2 3	3.986 0 GHz
Scal	e/Div 10 c	в				Ref Level 30.	.00 dBm					37.594 dBm
Log 20.0 10.0 -10.0 -20.0 -30.0 -40.0 50.0 -60.0 Start #Res	3 kHz BW 1.0 f	ЛНz				#Video BW 3	.0 MHz*		¹		2 #Sweep~10	<u>DL1 31 97 dBm</u> Stop 5.000 GHz J.0 s (10001 pts)
5 Ma	rkor Tablo											
1 2 3 4 5 6	Mode N N	Trace 1 1	Scale f	X 3. 3.	894 0 GHz 986 0 GHz	Y -37.85 dBr -37.59 dBr	Function n	Functio	on Width		Functio	in Value
-	5	2		Feb 17, 2023 9:34:26 AM	PA							





Spectrum Analy Swept SA	zer 1	Spectrum An Swept SA	alyzer 2	• +					
KEYSIGHT →→- 団	Input RF Coupling DC Align: Auto	Input Z 50 Ω Corr CCorr Freq Ref. Ext (S) NFE: Off	#Atten: 10 dB Preamp: Off pW Path: Standard	PNO: Fast Gale: Off IF Gain: Low Sig Track: Off	Avg Type: P Avg[Hold: 5 Trig: Extern	lower (RMS) 1 2 /100 A 10 al 1 A 10 A N	3456 WWWW NNNN		
1 Spectrum								Mkr1 38	.972 8 GHz
Scale/Div 10 d	в			Ref Level -20.	00 dBm			-3	6.451 dBm
Log									Fil 1 -31 07
-30.0									
50.0									
	-								
70.0									
80.0									
-90.0									
100									
-110									
Start 5.00 GHz #Res BW 1.0 N	IHz			#Video BW 3.	0 MHz*			#Sweep ~10.	Stop 40.00 GHz 0 s (80001 pts)
<b>1</b>	례∎?	Feb 17, 2023 9:35:45 AM	DA					Ň	

# Port 63, Channel Position T

Spect Swept	rum Anal I SA	yzer 1		Spectrum Ar Swept SA	alyzer 2	+					
KEY	SIGHT	Couplin Align. /	rf Ng DC Auto	Input Z: 50 Ω Corr CCorr Freq Ref. Ext (S) NFE: Off	#Atten: 28 dB Preamp: Off pW Path: Standard	PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	Avg Type: P Avg Hold: & Trig: Extern	ower (RMS) 12 100 A 11 al 1 A 11 A N	3456 WWWW NNNN		
1 Spe	ctrum		•							Mkr2 3	.986 0 GHz
Scale	/Div 10 (	B				Ref Level 30.	00 dBm				4.610 dBm
20.0 10.0									-		
0.00											
-20.0 -30.0 -40.0									1	2	DL1-31.07 dBm
-50.0 -60.0											
Start #Res	3 kHz BW 1.0 I	đHz	<u> </u>			#Video BW 3	0 MHz*			#Sweep ~10	Stop 5.000 GHz .0 s (10001 pts)
5 Mar	ker Table		•								
	Mode	Trace	Scale	х		Y	Function	Functio	in Width	Function	n Value
1	N	1	1	3.6	94 0 GHz 86 0 GHz	-38.13 dBn -34.61 dBn	1				
3											
5											
	5	2		Feb 17, 2023 9:38:13 AM	ÐA						

Spectrum Analy Swept SA	izer 1	Spectrum A Swept SA	halyzer 2	• +					
KEYSIGHT →→	Input RF Coupling, DC Align: Auto	Input Z: 50 Q Corr CCorr Freq Ref. Ext (S) NFE: Off	#Atten: 10 dB Preamp: Off µW Path: Standard	PNO: Fast Gale: Off IF Gain: Low Sig Track: Off	Avg Type: F Avg[Hold, 5 Trig. Extern	lower (RMS) 12 /100 A ++ al 1 A +- A N	3456 ////////////////////////////////////		
1 Spectrum								Mkr1 3	8.449 5 GHz
Scale/Div 10 d	в			Ref Level -20.0	0 dBm				36.404 dBm
-30.0									011-31 - 48m
-40.0									min
-50.0									
-60.0	~~~~~	······································							
-70.0									
-80.0									
-90.0									
-100									
-110									
Start 5.00 GHz #Res BW 1.0 N	IHz			#Video BW 3.0	MHz*			#Sweep ~1	Stop 40.00 GHz 0.0 s (80001 pts)
15	allí	Feb 17, 2023							





#### Configuration NR-MIMO-2C, 256QAM

Channal Randwidth	RBW	Limit
Channel Bandwidth	(MHz)	(dBm)
20.0 MHz	1.0	-31.06

Port 63, Channel Position B

Spect Swep	rum Anai t SA	lyzer 1		Spectrum Ar Swept SA	nalyzer 2	+	+					
KEY	SIGH	Coupli Align	RF Ng DC Auto	Input Z' 50 Q Corr CCorr Freq Ref. Ext (S) NFE: Off	#Atten: 28 dB Preamp: Off µW Path: Standard	PNO: Fast Gale: Off IF Gain: Low Sig Track: Off	Avg Type: F Avg[Hold: 5 Trig: Extern	lower (RMS) 12/ /100 A 11 al 1 A 11 A N	3 4 5 6 WWWW N N N N			
1 Spe	ctrum										Mkr1	3.694 0 GHz
Scale	/Div 10	dB				Ref Level 30.0	0 dBm					-33.134 dBm
20.0 10.0 -10.0 -20.0 -30.0 -40.0 -50.0 -60.0 Start	3 kHz					#Video BW 3.0			1	   	2	Cl.1.31.37 cCrs Stop 5.000 GHz
#Res	BW 1.0	MHz									#Sweep ~	10.0 s (10001 pts)
5 Mar	ker Table		•									
1	Mode N	Trace	Scale	X 3.6	94 0 GHz	Y -33.13 dBm	Function	Functio	en Width		Funct	ion Value
2 3 4 5 6	N			3.5	86 U G H2	-37.61 dBm						
	5	C		Feb 17, 2023 9:51:42 AM	ÐA							

Spectrum Analy Swept SA	/zer 1	Spectrum Ar Swept SA	alyzer 2	• +					
	Input RF Coupling DC Align: Auto	Input Z: 50 Ω Gorr CCorr Freq Ref. Ext (S) NFE: Off	#Atten: 10 dB Preamp: Off pW Path: Standard	PNO: Fast Gale: Off IF Gain: Low Sig Track: Off	Awg Type: Po Awg[Hold: 5/1 Trig: External	wer (RMS) 12 00 A +++ 11 A N	3456 NWWW NNNN		
1 Spectrum								Mkr1 38	.451 3 GHz
Scale/Div 10 d	в			Ref Level -20.	00 dBm			-3	6.276 dBm
-30.0									01-31 A Be
-40.0							-		min
-50.0				~~~~~					
-00.0									
-70.0									
80.0									
-90.0									
-100									
-110									
Start 5.00 GHz #Res BW 1.0 M	1Hz			#Video BW 3.	0 MHz*			#Sweep ~10.	Stop 40.00 GHz 0 s (80001 pts)
<b>۲</b>		Feb 17, 2023 9:53:16 AM						.:: እ	

Port 63, Channel Position M

Spectr Swept	um Anal SA	yzer 1		•	Spectrum A Swept SA	nalyzer 2		+								
KEY	SIGHT ++-	Input I Coupli Align J	RF Ng DC Auto	Input Corr C Freq I NFE:	Z 50 Ω CCorr Ref. Ext (S) Off	#Atten: 28 dB Preamp: Off pW Path: Standard	PNO: Fat Gate: Off IF Gain: I Sig Track	st Low : Off	Avg Type: P Avg[Hold: 5/ Trig: Externe	ower (RMS 100 al 1	2 3 4 5 A ** ** ** A N N N N	6 ₩ N				
1 Spec	strum													Mkr2	3.986 0	GHz
Scale	/Div 10 (	B					Ref Leve	el 30.0	00 dBm						37.617	dBm
Log								Ĩ								
10.0																
0.00																
-10.0																
-20.0													. 2		DL1-31	07 dBm
-30.0										-		9	R A			_
50.0						-										
-60.0																
Start 3 #Res I	3 kHz BW 1.0 I	MHz					#Video I	BW 3.	0 MHz*					¥Sweep ~10	Stop 5.00 ).0 s (1000	00 GHz 01 pts)
5 Mark	ter Table															
	Mode	Trace	Scale		¥		Y		Eurotion	E	unction Width			Eurotio	n Value	
1	N	1	1		3.	94 0 GHz	-37.88	3 dBm								
2	N	1	1		3.	986 0 GHz	-37.6	2 dBm								
4																
5																
6																
	ร	2	- ?	Feb 9:5	17, 2023 6:21 AM	PA									; ==	X





Spectrur Swept S	m Analy ;A	zer 1		Spectrum An Swept SA	alyzer 2	• +					
KEYS	IGHT	Input Coupl Align	RF I Ing DC C Auto F	nput Z: 50 Ω Corr Freq Ref. Ext (S) IFE: Off	4Atten: 10 dB Preamp: Off pW Path: Standard	PNO: Fast Gale: Off IF Gain: Low Sig Track: Off	Avg Type: F Avg[Hold: 5 Trig: Extern	lower (RMS) 1 2 /100 A 10 al 1 A 10 A N	3456 WWWW NNNN		
1 Spectre	um									Mkr1 38	.458 3 GHz
Scale/D	iv 10 d	8				Ref Level -20	.00 dBm			-3	6.368 dBm
-30.0											011-31 d Ber
-40.0											min
-50.0		1									
-60.0	~~~~	diller	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~								
-70.0											
80.0											
-90.0											
-100											
-110											
Start 5.0 #Res BV	00 GHz N 1.0 N	Hz				#Video BW 3	.0 MHz*			#Sweep ~10.	Stop 40.00 GHz 0 s (80001 pts)
	5	2	- ?	Feb 17, 2023 9:57:39 AM							

Port 63, Channel Position T

Spectrum Anal Swept SA	yzer 1		Spectrum Ar Swept SA	alyzer 2		+						
KEYSIGHT	Input F Couplin	ti Kg: DC	Input Z: 50 Ω Corr CCorr	#Atten: 28 dB Preamp: Off	PNO: F Gale: C	ast M	Avg Type: P Avg[Hold: 5/	ower (RMS) 100	1 2 3 4 5 A W W W W	6 W		
LUI .	Augn. 7	uio	NFE: Off	pw Pan. Standard	Sig Tra	ck: Off	Ing: Externa	<b>1</b> 1 1	ANNN	N		
1 Spectrum		•									Mkr2 3	3.986 0 GHz
Scale/Div 10 c	/B				Ref Le	vel 30.00	dBm					34.355 dBm
Log						T						
20.0												
10.0												
-10.0												
-20.0												
30.0											2	DL1-31.07 dBm
-50.0												
-60.0												
Start 3 kHz #Res BW 1.0 f	đHz				#Video	BW 3.0	MHz*				#Sweep ~10	Stop 5.000 GHz .0 s (10001 pts)
5 Marker Table		•										
Mode	Trace	Scale	х		Y		Function	Fur	ction Width		Functio	n Value
1 N	1	f	3.6	94 0 GHz	-38.	01 dBm						
2 N	1	_^	3.9	86 0 GHz	-34.	36 dBm						
3												
5												
6												
1	all	2	Feb 17, 2023 🖉								-	
	( – II		10:02:39 AM									

Spectrum Analy Swept SA	/zer 1	Spectrum Ar Swept SA	halyzer 2						
	Input RF Coupling DC Align: Auto	Input Z: 50 Q Corr CCorr Freq Ref. Ext (S) NFE: Off	4Atten: 10 dB Preamp: Off µW Path: Standard	PNO: Fast Gale: Off IF Gain: Low Sig Track: Off	Avg Type: Pr Avg[Hold, 5/ Trig. Externe	ower (RMS) 12 100 A ++ 11 A ++ A N	3456 ////////////////////////////////////		
1 Spectrum								Mkr1 3	8.454 3 GHz
Scale/Div 10 d	в			Ref Level -20.	00 dBm				36.308 dBm
20.0									011-11 - Pm
									. in
-40.0									
-50.0									
-60.0									
Start 5.00 GHz #Res BW 1.0 M	IHz			#Video BW 3.	0 MHz*			#Sweep ~1	Stop 40.00 GHz 0.0 s (80001 pts)
<b>1</b>		Feb 17, 2023 10:14:57 AM	ÐA						





#### Configuration NR-MIMO-2C, 256QAM

Channal Bandwidth	RBW	Limit
Channel Bandwidth	(MHz)	(dBm)
40.0 MHz	1.0	-31.06

Port 63, Channel Position B

Spectrum Analy Swept SA	zer 1	Spectrum. Swept SA	Analyzer 2	+	]				
KEYSIGHT ↔→	Input: RF Coupling: D Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref. Ext (S NFE: Off	#Atten: 28 dB Preamp: Off µW Path: Standar	PNO: Fast Gate: Off d IF Gain: Low Sig Track: Off	Avg Type: F Avg[Hold: 7 Trig. Extern	lower (RMS) 12/ 100 A 111 A N	3456 NWWW NNNN		
1 Spectrum								Mkr1	3.694 0 GHz
Scale/Div 10 d	в			Ref Level 30	0.00 dBm				-34.748 dBm
200 200 100 0.00 -100 -200 -200 -300 -40.0 -60.0								§2	DL1 31.97 dBm
#Res BW 1.0 N	IHz			#Video BW	3.0 MHZ*			#Sweep ~	10.0 s (10001 pts)
5 Marker Table	•								
Mode 1 N 2 N 3 4 5 5	Trace Sc 1 1	ale X	.694 0 GHz .986 0 GHz	Y -34,75 dB -37.29 dB	Function m m	Function	i Width	Fund	tion Value
ر 1	2	Feb 17, 2023 10:19:46 AM	$\mathbf{P}$						

Spectru Swept	um Analy SA	zer 1		Spectrum A Swept SA	nalyzer 2	• +					
KEYS	ight	Input R Couplin Align: A	F In g DC C uto Fi N	put Z: 50 Ω orr CCorr req Ref. Ext (S) FE: Off	#Atten: 10 dB Preamp: Off pW Path: Standard	PNO: Fast Gale: Off J IF Gain: Low Sig Track: Off	Avg Type: F Avg[Hold: 5 Trig: Extern	Power (RMS) 1 2 (100 A % al 1 A N	3456 ////////////////////////////////////		
1 Spect	trum									Mkr1 38	.455 6 GHz
Scale/I	Div 10 d	в				Ref Level -20	.00 dBm			-3	6.428 dBm
Log							Í				011-01-08-0
-30.0 =											. In-
-40.0											
-50.0		ال									
-60.0											
-70.0											
-80.0											
-90.0											
-100											
-110											
-110											
Start 5. #Res B	.00 GHz W 1.0 N	Hz		^		#Video BW 3	.0 MHz*			#Sweep ~10	Stop 40.00 GHz .0 s (80001 pts)
	5			eb 17, 2023 10:21:06 AM	PA					Ň	88 🔀

Port 63, Channel Position M

Spectrum Anal Swept SA	yzer 1	Spectrum Swept SA	Analyzer 2	+				
KEYSIGHT →→ অ	Input RF Coupling DC Align: Auto	Input Z: 50 Q Corr CCorr Freq Ref. Ext (3 NFE: Off	#Atten: 28 dB Preamp: Off W Path: Standar	PNO: Fast Gate: Off d IF Gain: Low Sig Track: Off	Avg Type: Pow Avg[Hold: 5/10 Trig: External	A W W W W W A N N N N N		
1 Spectrum	•						Mkr2 3	8.986 0 GH
Scale/Div 10 c	B			Ref Level 30.0	0 dBm		- 4	37.466 dBi
20.0								
10.0								
10.0								
30.0							- <mark>0</mark> 2	DL1 31-07-6
40.0								
50.0								
tart 3 kHz Res BW 1.0 f	VIHz			#Video BW 3.	0 MHz*		#Sweep ~10	Stop 5.000 G
Marker Table								
Mode	Trace Scal	e X		Y	Function	Function Width	Function	n Value
1 N	1 1		3.694 0 GHz	-37.76 dBm				
3			3.300 U GH2	-37.47 dBm				
4								
6								
		E-1 47 0000						
- ຳ		2 10:23:52 AM						6 HH 🕻





Spectrum Ana Swept SA	ilyzer 1	Spectrum An Swept SA	alyzer 2	• +					
KEYSIGH	T Input RF Coupling DC Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref. Ext (S) NFE: Off	4Atten: 10 dB Preamp: Off pW Path: Standard	PNO: Fast Gale: Off IF Gain: Low Sig Track: Off	Avg Type: F Avg[Hold: 5 Trig: Extern	lower (RMS) 1 2 /100 A 10 al 1 A 10 A N	3 4 5 6 WWWW N N N N		
1 Spectrum								Mkr1 38	.451 3 GHz
Scale/Div 10	dB			Ref Level -20	00 dBm			-3	6.354 dBm
20.0									D1131 - 6m
-30.0									. the
-40.0									
-50.0									
-60.0									
-70.0									
-80.0									
-90.0									
-100									
-110									
Start 5.00 GH #Res BW 1.0	MHz		<u> </u>	#Video BW 3	0 MHz*			#Sweep ~10.	stop 40.00 GHz 0 s (80001 pts)
<b>۲</b>	2	? Feb 17, 2023 10:25:09 AM							

Port 63, Channel Position T

Spectrum Anal Swept SA	yzer 1		Spectrum Ar Swept SA	alyzer 2		+							
KEYSIGHT	Input F Couplin Align: J	RF Kg: DC Nuto	Input Z: 50 Ω Corr CCorr Freq Ref. Ext (S) NFE: Off	4Atten: 28 dB Preamp: Ott pW Path: Standard	PNO: F Gate: C I IF Gain Sig Tra	ast Off 1. Low ick: Off	Avg Type: P Avg[Hold, 5/ Trig: Externa	ower (RMS) 100 al 1	12345 A ** ** ** A ** ** **	6 Wi N			
1 Spectrum		•										Mkr2	3.986 0 GHz
Scale/Div 10 c	(B				Ref Le	vel 30.00	dBm						33.694 dBm
Log													
20.0													
10.0										11			
10.00										11			
-20.0												-	
									A.	1		2	DL1-31.07 dBm
									¥	~			
Start 3 kHz #Res BW 1.0 f	4Hz				#Video	BW 3.0	MHz*					#Sweep ~1	Stop 5.000 GHz 0.0 s (10001 pts)
5 Marker Table		•											
Mode	Trace	Scale	х		Y		Function	Fur	nction Width			Functi	on Value
1 N	1	f	3.6	94 0 GHz	-37.	57 dBm							
2 N	1	_^	3.5	86 0 GHz	-33.	69 dBm					-		
3 4 5													
			Feb 17, 2023										amkz
	<b>-</b>		10:42:32 AM										2 00 🔨

Spectrum Analy Swept SA	rzer 1	Spectrum A Swept SA	nalyzer 2	• +					
KEYSIGHT ↔	Input RF Coupling DC Align: Auto	Input Z: 50 Q Corr CCorr Freq Ref. Ext (S) NFE: Off	4Atten: 10 dB Preamp: Ott µW Path: Standard	PNO: Fast Gale: Off IF Gain: Low Sig Track: Off	Avg Type: F AvgHold, 5 Trig. Extern	Power (RMS) 12 /100 A 11 al 1 A 11 A N	3456 WWWW NNNN		
1 Spectrum								Mkr1 3	8.466 1 GHz
Scale/Div 10 d	в			Ref Level -20.	00 dBm				36.310 dBm
Log									
-30.0									011-11 1 40m
-40.0									man
50.0									
-60.0									
-70.0									
80.0									
-9017									
-100									
-110									
Start 5.00 GHz #Res BW 1.0 M	IHz			#Video BW 3.	0 MHz*			#Sweep ~1	Stop 40.00 GHz 0.0 s (80001 pts)
<b>4</b> N	d	Feb 17, 2023 10:43:40 AM	PA						





#### Configuration NR-MIMO-2C, 256QAM

Channel Rendwidth	RBW	Limit
	(MHz)	(dBm)
100.0 MHz	1.0	-31.06

Port 63, Channel Position B

Spectro Swept	um Anal SA	yzer 1		•	Spectri Swept	um Ana SA	alyzer 2	Ì	+									
KEYS	SIGHT	Input F Couplin Align: J	RF Ng DC Auto	Inpu Cor Fro NFE	ut Z: 50 C TCCorr q Ref. Ex E: Off	) #(S)	#Atten: 28 dB Preamp: Off µW Path: Standard	PNO: F Gate: C IF Gain Sig Tra	ast )ff : Low ck: Off	Avg Type: P Avg[Hold: 5 Trig. Extern	lower (RM /100 ul 1	1S) <mark>1 2</mark> A ₩ A N	34 ₩₩ NN	56 ₩₩ NN				
1 Spec	.trum															Mkr	1 3.6	94 0 GHz
Scale/	Div 10 c	B						Ref Le	vel 30.0	00 dBm							-35.	.699 dBm
Log 20.0									Ĭ									
10.0															-			
0.00																		
-10.0																		
-30.0													_	1_	1	2		DL1 31.07 dBm
-40.0												_	ليب					
-50.0																		
Start 3	kHz							#Video	BW 3.	0 MHz*							Ste	op 5.000 GHz
#Res L	3W 1.0 P	AHZ														#Sweep	~10.0	s (10001 pts)
5 Mark	er Table		•															
	Mode	Trace	Scale		)	x		Y		Function		Function	n Widt	th		Fu	nction V	alue
1	N	1				3.69	4 0 GHz	-35.	70 dBm						=			
3	IN					3.90	6 U GH2											
4																		
6																		
	5	2		Fe 10	b 17, 20 ):37:31 A	23 M												田実

Spectru Swept	um Analı SA	zer 1		Spectrum An Swept SA	alyzer 2	• +					
KEYS	SIGHT	Input RF Coupling Align: Au	E Inp FDC Co ato Fre NF	ut Z: 50 Ω T CCorr q Ref. Ext (S) E: Off	#Atten: 10 dB Preamp: Off µW Path: Standard	PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	Avg Type: P Avg[Hold: 5 Trig. Extern	lower (RMS) 12/ /100 A 11 al 1 A 11 A N	3456 WWWW NNNN		
1 Spect	trum									Mkr1 3	8.458 3 GHz
Scale/	Div 10 d	в				Ref Level -20.	00 dBm				36.261 dBm
-30.0							<u></u>				011-31 - 400
-40.0											min
-50.0		.8				~~~~~					
-60.0	~~~~~	••••••	~~~~~	~~~~							
-70.0											
-80.0											
-90.0											
-100											
-110											
Start 5 #Res E	.00 GHz BW 1.0 N	IHz				#Video BW 3	0 MHz*			#Sweep ~1	Stop 40.00 GHz 0.0 s (80001 pts)
	5	2	<b>?</b>	eb 17, 2023 0:38:53 AM	DA						H H 🗙

Port 63, Channel Position M

Sp Sw	ectrum Anal ept SA	yzer 1		Spectrum A Swept SA	nalyzer 2	+	]			
KI	EYSIGHT	Input F Couplin Align: J	rf Ng DC Auto	Input Z: 50 Q Corr CCorr Freq Ref. Ext (S) NFE: Off	4Atten: 28 dB Preamp: Off µW Path: Standard	PNO: Fast Gale: Off IF Gain: Low Sig Track: Of	Avg Type: F Avg[Hold: S Trig. Extern	1         2         3         4         5           100         A         W         W         W           al 1         A         N         N         N         N	5 44 N	
15	Spectrum								Mkr2 3.98	86 0 GHz
Sc	ale/Div 10 o	B				Ref Level 3	0.00 dBm		-34,1	873 dBm
20	99 0.0									
0. -10	00									
-20 -30	0.0							Q	2	DL1-31.07 dBm
-40	0.0									
Sta #R	art 3 kHz es BW 1.0 l	4Hz				#Video BW	3.0 MHz*		Sto #Sweep ~10.0 s	p 5.000 GHz (10001 pts)
51	Aarker Table		•							
	Mode 1 N	Trace	Scale	X	94 0 GHz	Y 28.62.49	Function	Function Width	Function Va	lue
	2 N	÷	÷	3.5	986 0 GHz	-34.87 dE	m			
	4									- 1
	6									
ŧ	1	2	- ?	Feb 17, 2023 10:46:36 AM	$\square$					





Spectrum Analy Swept SA	izer 1	Spectrum An Swept SA	alyzer 2	• +					
KEYSIGHT ↔→	Input RF Coupling DC Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref. Ext (S) NFE: Off	#Atten: 10 dB Preamp: Off pW Path: Standard	PNO: Fast Gale: Off IF Gain: Low Sig Track: Off	Avg Type: P Avg[Hold, 5 Trig, Extern	ower (RMS) 12 100 A 11 al 1 A 11 A N	3456 WWWW NNNN		
1 Spectrum								Mkr1 38	461 3 GHz
Scale/Div 10 d	в			Ref Level -20.	00 dBm			-3	6.383 dBm
-30.0									011-31 d Ben
-40.0									min
-50.0				~~~~~					
-60.0	•								
-70.0									
-80.0									
-90.0									
-100									
-110									
Start 5.00 GHz #Res BW 1.0 N	IHz			#Video BW 3.	0 MHz*			s #Sweep ~10.	Stop 40.00 GHz 0 s (80001 pts)
<b>۲</b>	ମ∎ ?	Feb 17, 2023 10:47:55 AM							

Port 63, Channel Position T

Spectrum Anal Swept SA	lyzer 1		Spectrum Ar Swept SA	alyzer 2		+						
KEYSIGHT	Couplin Align. /	er Var DC Valo	Input Z: 50 Ω Corr CCorr Freq Ref. Ext (S) NFE: Off	#Atten: 28 dB Preamp: Off µW Path: Standa	PNO: Fas Gale: Off rd IF Gain: L Sig Track	t ow Off	Avg Type: P Avg[Hold, 1 Trig: Extern	lower (RMS) 12 0/100 A 1/ al 1 A 1/ A N	345 WWW NNN	6 //- N		
1 Spectrum											Mkr2 3	3.986 0 GHz
Scale/Div 10 o	dB				Ref Leve	i 30.00 d	Bm					34.157 dBm
Log						Ĭ						
10.0												
0.00												
-10.0												
-20.0									. 1		2	01.1.31.07 dBm
-30.0									<u></u>			
.50.0						-						
-60.0												
Start 3 kHz #Res BW 1.0 l	MHz				#Video B	W 3.0 M	Hz*				#Sweep ~10	Stop 5.000 GHz .0 s (10001 pts)
5 Marker Table												
Mode	Trace	Scale	x		Y		Function	Functio	n Width		Functio	n Value
1 N	1	f	3.6	94 0 GHz	-37.04	dBm						
2 N	1	_^	3.9	86 0 GHz	-34.16	dBm						
4												
5												
6												
3	2		Feb 17, 2023 11:08:54 AM	ÐA							Ň	

Spectrum Analy Swept SA	/zer 1	Spectrum Ar Swept SA	halyzer 2	• +					
KEYSIGHT	Input: RF Coupling: DC Align: Auto	Input Z 50 Q Corr CCorr Freq Ref. Ext (S) NFE: Off	#Alten: 10 dB Preamp: Off pW Path: Standard	PNO: Fast Gale: Off IF Gain: Low Sig Track: Off	Awg Type: Pe Awg Hold: S/ Trig: Externe	ower (RMS) 12 100 A 11 11 A 11 A N	3456 WWWW NNNN		
1 Spectrum								Mkr1 38	3.443 8 GHz
Scale/Div 10 d	в			Ref Level -20.	00 dBm				36.394 dBm
-30.0									011-31 - 80
-40.0									- martin
						·····			
-00.0	~	·····							
Start 5.00 GHz #Res BW 1.0 h	/Hz			#Video BW 3.	0 MHz*			#Sweep ~10	Stop 40.00 GHz
<b>۲</b>		Feb 17, 2023 11:10:07 AM	ÐA						





# A.5 Radiated Spurious Emission

#### A.5.1 Reference

FCC CFR 47 Part 2, Clause 2.1046 FCC CFR 47 Part 27, Clause 27.53(I)

#### A.2.1 Measurement Method

The measurements procedures in C63.26 are used.

The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment.

#### The procedure of radiated spurious emissions is as follows:

Using the test configuration as follow, measure the radiated emissions directly from the EUT and convert the measured field strength or received power to ERP or EIRP, as required, for comparison to the applicable limits.



The emission characteristics of the EUT can be identified from the pre-scan measurement information.

Exploratory radiated measurements (pre-scans) may be performed to determine the general EUT radiated emissions characteristics and, when necessary, the EUT-to-measurement antenna orientation that produces the maximum emission amplitude. Pre-scans shall only be used to determine the emission frequencies (i.e., not amplitude levels). The information garnered from a pre-scan can then be used to perform final compliance measurements using either the substitution or direct field strength method.

For radiated emissions measurements performed at frequencies less than or equal to 1 GHz, the EUT shall be placed on a RF-transparent table or support at a nominal height of 80 cm above the reference ground plane. Radiated measurements shall be made with the measurement

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antenna positioned in both horizontal and vertical polarization. The measurement antenna shall be varied from 1 m to 4 m in height above the reference ground in a search for the relative positioning that produces the maximum radiated signal level (i.e., field strength or received power). When orienting the measurement antenna in vertical polarization, the minimum height of the lowest element of the antenna shall clear the site reference ground plane by at least 25 cm.

The radiated emission measurements of all non-harmonic and harmonics of the transmit frequency through the 10th harmonic were measured with peak detector.

For radiated measurements performed at frequencies above 1 GHz, the EUT shall be placed on an RF transparent table or support at a nominal height of 1.5 m above the ground plane. When maximizing the emissions from the EUT for measurement, the EUT and its transmitting antenna(s) shall be rotated through 360°. For each mode of operation to be tested, the frequency spectrum (based on findings from exploratory measurements) shall be monitored.

Final measurements shall be performed for the worst case combination(s) of variable technical parameters that result in the maximum measured emission amplitude, record the frequency and amplitude of the highest fundamental emission (if applicable), and the frequency and amplitude data for the six highest-amplitude spurious emissions.

The measurements in the frequency range 30 to 1000MHz was performed with a RBW of 100kHz. The measurements in the frequency range 1 to 40GHz was performed with a RBW of 1MHz. Emissions identified within the range 30MHz to 40GHz were then formally measured using a peak detector as the worst case.

### A.5.3 Measurement limit

The limits for outside a licensee's frequency band(s) of operation the power of the spurious emissions have been calculated, as shown below using the following formula:

Field Strength of Carrier - (43 + 10 log (P) dB) dB

Where:

Field Strength is measured in dBµV/m P is measured Transmitter Power in Watts

The field strength of the carrier has been calculated assuming that the power is to be fed to a half-wave tuned dipoles as per 2.1053 (a).

E_(v/m)=(30 x G_i x P_o)^{0.5} / d

Where

G_i is the antenna gain of ideal half-wave dipoles,

 $P_o$  is the power out of the transceiver in W,

d is the measurement distance in meter.

Therefore at 3m measurement distance the field strength using the lowest transceiver output power would be:

 $E_{(v/m)}$ =(30 x 1.64 x 16.56)^{0.5} / 3 = 9.51V/m = 139.57 dBµV/m

As Clause 27.53(I)(1) For operations in the 3700-3980 MHz bands, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:





(1) For base station operations in the 3700–3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz(43 + 10 log(P) dB):

 $43 + 10\log(16.56) = 55.19 \text{ dB}$ Therefore the limit at 3m measurement distance is: 139.57 - 55.19 = 83.81 dBuV/m

These limits have been used to determine Pass or Fail for the harmonics measured and detailed in the following results.

### A.5.4 Measurement results

These results are the worst case.

Configuration NR-MIMO-1C, 16QAM, 80.0M

Channel Position	Channel Frequencies(MHz)
Channel Position B	3740.01
Channel Position M	3840.00
Channel Position T	3940.02

Channel Position B

No emissions were detected within 20dB of the limit.

Channel Position M

No emissions were detected within 20dB of the limit.

Channel Position T

No emissions were detected within 20dB of the limit.

### Configuration NR-MIMO-2C, 16QAM, 100.0M

Channel Position	Channel Frequencies(MHz)
Channel Position B	3750+3849.99
Channel Position M	3790.02+3890.01
Channel Position T	3830.01+3930

**Channel Position B** 

No emissions were detected within 20dB of the limit.

**Channel Position M** 

No emissions were detected within 20dB of the limit.

**Channel Position T** 

No emissions were detected within 20dB of the limit.

#### Configuration NR-MIMO-4C, 16QAM, 20.0M

Channel Position	Channel Frequencies(MHz)
Channel Position B	3710.01+3730.02+3870+3890.01
Channel Position M	3750.01+3770.01+3909.99+3930
Channel Position T	3790.02+3810.03+3950.01+3970.0

Channel Position B

No emissions were detected within 20dB of the limit.

**Channel Position M** 

No emissions were detected within 20dB of the limit.

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Channel Position T No emissions were detected within 20dB of the limit.



Configuration NR-MIMO-4C; 16QAM; 20MHz, Vertical, 30MHz-1GHz



Configuration NR-MIMO-4C; 16QAM; 20MHz, Horizontal, 30MHz-1GHz







Configuration NR-MIMO-4C; 16QAM; 20MHz, Vertical, 1GHz-3GHz



### Configuration NR-MIMO-4C; 16QAM; 20MHz, Horizontal, 1GHz-3GHz







Configuration NR-MIMO-4C; 16QAM; 20MHz, Vertical, 3GHz-6GHz



# Configuration NR-MIMO-4C; 16QAM; 20MHz, Horizontal, 3GHz-6GHz







Configuration NR-MIMO-4C; 16QAM; 20MHz, Vertical, 6GHz-18GHz



Configuration NR-MIMO-4C; 16QAM; 20MHz, Horizontal, 6GHz-18GHz







Configuration NR-MIMO-4C; 16QAM; 20MHz, Vertical, 18GHz-26.5GHz



Configuration NR-MIMO-4C; 16QAM; 20MHz, Horizontal, 18GHz-26.5GHz







Configuration NR-MIMO-4C; 16QAM; 20MHz, Vertical, 26.5GHz-40GHz



Configuration NR-MIMO-4C; 16QAM; 20MHz, Horizontal, 26.5GHz-40GHz





# A.6 Frequency Stability

A.6.1 Reference FCC CFR 47 Part 2, Clause 2.1055 FCC CFR 47 Part 27, Clause 27.54

### A.6.2 Method of measurement

#### **Temperature Variation**

The EUT was tested over the temperature range -30°C to +50°C in 10°C steps with -48 VDC Power Supply. At each temperature step, the Base Station was configured to transmit a [RAT]* at maximum power on the middle channel of the operating band. After achieving thermal balance, the averages of 200 transmission bursts were measured and the result recorded.

#### Voltage Variation

The EUT was tested at the supplied voltages varied from 85 to 115 percent of the nominal value of -48 VDC. At +20°C, the Base Station was configured to transmit a [RAT]* at maximum power on the middle channel of the operating band. The average of 200 transmission bursts was measured and the result recorded.

[RAT]*: NR–256QAM modulation

### A.6.3 Measurement limit

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.





### A.6.4 Measurement results

Configuration NR-MIMO-1C, 256QAM

Maximum Output Power 30.97dBm per port for NR 20MHz, 36.99dBm per port for NR100MHz

# Frequency Error – Temperature Variation

Supply Voltage DC(V)	Temperature	Frequency Stability (Hz)	
		Channel position M	
		Bandwidth	Bandwidth
		20MHz	100MHz
-48	-30	-1.84	4.64
	-20	2.58	-3.49
	-10	2.72	-2.68
	0	-1.95	3.31
	10	-2.23	-2.09
	20	5.77	-7.10
	30	-4.67	4.79
	40	7.56	-5.52
	50	-4.69	-2.56

# Frequency Error – Voltage Variation

Supply Voltage DC(V)	Temperature(°C)	Frequency Stability (Hz) Channel position M	
		Bandwidth	Bandwidth
		20MHz	100MHz
-40.8	20	-9.87	6.09
-55.2	20	-2.35	-5.12





# **ANNEX B: Accreditation Certificate**



***END OF REPORT***