





		Port \$	50		
Modulation:	QPSK		Modulation:	16QAM	
Channel:	Middle		Channel:	High	
-+- Trig	Statisticity Statistity Statisticity Statisticity <td>COLUMN THE REAL PROPERTY OF TH</td> <td>ent Spectrum Analyzer - Occupied DW RL SIG ACCOUNT - COUNT Inter Freq 2.662500000 GHz StFGaint w</td> <td>Center Freg: 2862500000 GH2 Trig Free Rn Avg Held: 100/100 \$Atten: 30 dB</td> <td>Frequency</td>	COLUMN THE REAL PROPERTY OF TH	ent Spectrum Analyzer - Occupied DW RL SIG ACCOUNT - COUNT Inter Freq 2.662500000 GHz StFGaint w	Center Freg: 2862500000 GH2 Trig Free Rn Avg Held: 100/100 \$Atten: 30 dB	Frequency
a dSidiy Ref 50,00 dBm	namentumen formation	Center Freq 2.593000000 GHz 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	an interesting the second section of the second seco		Center Fra 2.662500000 GH
enter 2.593 GHz Res BW 1.1 MHz Occupied Bandwidth 53.052 MHz Transmit Freq Error 110.68 kHz x dB Bandwidth 55.62 MHz	#VBW 3 MHz Span 82.5 MHz #VBW 3 MHz Sweep 1 ms Total Power 41.9 dBm OBW Power 99.00 % x dB -26.00 dB	Freq Offset 0 Hz	nter 2.663 GHz es BW 1.1 MHz Dccupied Bandwidth 53.154 MH Fransmit Freq Error 30.573 k < dB Bandwidth 55.53 M	Hz OBW Power 99,00 %	CF Ste 8 250000 MH Auto Ma Freq Offsi 0 H
Modulation:	64QAM High	Max	Modulation: Channel:	256QAM Low	
glient Spectrum Analyzer - Decopied INV Alexandron - Decopied INV enter Freq 2.662500000 GHz - Tri	the Free 285200000 GHz Free 285200000 GHz Free Run Avg Held: 100/100 Radio Device: BTS Radio Device: BTS	Frequency Ce	Inter Freq 2.52350000 GHz Inter Freq 2.52350000 GHz If Gaint we All Gaint we all div Ref 50.00 dBm	Center Frag 2.52300000 GHz Trig Frag 2.52300000 GHz Trig Frag 2.62300000 GHz Skten: 20 dD Radio Device: BTS	Frequency Center Fr 2.523500000 G
enter 2.563 GHz Res BW 1.1 MHz Occupied Bandwidth 53.104 MHz	Total Power 41.8 dBm	Freq Offset 0 Hz	nter 2.524 GHz es BW 1.1 MHz Dccupied Bandwidth 53.042 MH fransmit Freg Error 220.94 k		
Transmit Freq Error 130.81 kHz x dB Bandwidth 55.66 MHz	OBW Power 99.00 % x dB -26.00 dB		dB Bandwidth 55.64 M		



		Port	: 51		
Modulation:	QPSK		Modulation:	16QA	М
Channel:	Low		Channel:	Low	
-+- Tri	nter Freq 2.525500000 GHz Freq Freq 2.525500000 GHz Freq Freq Run Avg Held: 100/100 Freq: 30 dB Radio Device: BTS	Contraction of the local division of the	-+- T	rig: Free Run Avg Hold: 100/100 Radio	SepMMay 11, 2018 Std: None Device: BTS
Instrument Ref 50.00 dBm P	our many or the same in the	Center Freq 2.523500000 GHz	10 diplativ Ref 50.00 dBm Log 20 0 20 0	reaction and the former of the second s	<u>Center Fre</u> 2.523500000 CH
enter 2.524 GHz tes BW 1.1 MHz Occupied Bandwidth 52.961 MHz Transmit Freq Error 208.09 kHz x dB Bandwidth 55.54 MHz	#VBW 3 MHz Span 82.5 MHz #VBW 3 MHz Sweep 1 ms Total Power 42.0 dBm OBW Power 99.00 % x dB -26.00 dB	CF Step 8:250000 MHz Man Freq Offset 0 Hz	Center 2.524 GHz #Res BW 1.1 MHz Occupied Bandwidth 53.136 MHz Transmit Freq Error 161.75 kH x dB Bandwidth 55.67 MH	#VBW 3 MHz S Total Power 42.0 dBm 2 2 OBW Power 99.00 %	он
Modulation: Channel:	64QAM High		Modulation: Channel:	ومیں 256QA Low	
dBfalint w BAt	The Free 2.85500000 GHz Radio Std: None Free Run Avg Held: 100/100 Rei Device: BTS	Prequency Center Freq 2.662500000 GHz	10 dB/dl/w Ref 50.00 dBm	enter Freq: 2.523500000 GHz Radio rig: Free Run Avg Hold: 100/100	SHIPPIMay 11, 2018 Sti: Yone Device: BTS Center Fre 2.523500000 CH
enter 2.663 GHz Res BW 1.1 MHz Occupied Bandwidth 52.979 MHz	#VBW 3 MHz Span 82.5 MHz #VBW 3 MHz Sweep 1 ms Total Power 41.7 dBm OBW Power 99.00 %	CF Step 825000 MHz Man Freq Offset 0 Hz	Center 2.524 GHz #Res BW 1.1 MHz Occupied Bandwidth 53.011 MHz Transmit Freq Error 136.93 kHz	#VBW 3 MHz s Total Power 41.8 dBm	OF
Transmit Freq Error178.38 kHzx dB Bandwidth55.67 MHz	x dB -25.00 dB		x dB Bandwidth 55.62 MH		



		Por	t 52		
Modulation:	QPSK		Modulation:	16QAM	
Channel:	Middle		Channel:	Middle	
-+- Trig	ter Free Z 55000000 GHz 2 500100 GHz 2 5000000 GHz 2 50000000 GHz 2 50000000 GHz 2 500 None Free Run Avg Nel2: 100/100 Free Run A	Frequency	-+- Tri	response Free 2.55000000 GHz Radio Std: New Free Run Arg[Held: 100/100 an: 30 dB Radio Device: B	Frequency
0 dB/dl/w Ref 50.00 dBm	alimination of the second s	Center Freq 2.593000000 GHz	10 dB/dl/v Ref 50.00 dBm	milited allowing of a functions and the	Center Fri 2.593000000 Gi
enter 2.593 GHz Res BW 1.1 MHz Occupied Bandwidth	#VBW 3 MHz Span 82.5 MHz #VBW 3 MHz Sweep 1 ms Total Power 41.9 dBm	CF Step 8:250000 MHz Auto Man Freq Offset	Center 2.593 GHz #Res BW 1.1 MHz Occupied Bandwidth	#VBW 3 MHz Span 82.5 Sweep Total Power 42.0 dBm	
53.007 MHz Transmit Freq Error 89.701 kHz x dB Bandwidth 55.61 MHz	OBW Power 99.00 % x dB -26.00 dB	0 Hz	52.979 MHz Transmit Freq Error 214.24 kHz x dB Bandwidth 55.70 MHz	OBW Power 99.00 % x dB -26.00 dB	0)
Modulation:	64QAM		Modulation:	256QAM	
Channel:	Low		Channel:	High	
O dB/ditu Ref 50.00 dBm	Ref Freg 2.82500000 GHz Free Run AvgHold: 100100 Ren: 30 dB Radio Std: None Radio Std: None Radio Device: BTS	Frequency Center Freq 2.52350000 GHz	-+- Tri	Radio Device: B	Center Fr
The second second second	#VEW SIMP2 Sweep This	CF Step 8250000 MHz Auto Man	Center 2.663 GHz #Res BW 1.1 MHz	Span 82.5 #VBW 3 MHz Sweep	
Occupied Bandwidth 53.021 MHz Transmit Freq Error 178.89 kHz x dB Bandwidth 55.68 MHz	Total Power 41.8 dBm OBW Power 99.00 % x dB -26.00 dB	Freq Offset 0 Hz	Occupied Bandwidth 52.934 MHz Transmit Freq Error 135.60 kHz x dB Bandwidth 55.69 MHz	Total Power 41.5 dBm OBW Power 99.00 % x dB -26.00 dB	Freq Offs 01



		Por	t 53		
Modulation:	QPSK		Modulation:	16QAM	
Channel:	High		Channel:	Low	
-+- Tri	The Fire 2.85200000 GHz Radio Std: None gree Run Avglitoid: 100/100 Radio Device: BTS	Frequency	-+- 1	esteriori (22-17-00 Million enter Freg 2.52300000 GHz Radio Stati Ner Gyree Run Avg Hold: 100100 tten: 30 dB Radio Device:	Frequency
Cott Ref 50.00 dBm 00 0 00 0 00 0 00 0 00 0 00 0 00 0 00 0 00 0 00 0 00 0 00 0 000 0 000 0 000 0 000 0 000 0		Center Freq 2.562500000 GHz	10 dB/div Ref 50.00 dBm	international production of the second s	Center F) 2.523600000 C
enter 2.663 GHz Res BW 1.1 MHz Occupied Bandwidth 52.998 MHz	#VBW 3 MHz Span 82.5 MHz #VBW 3 MHz Sweep 1 ms Total Power 41.8 dBm	CF Step 8:250000 MHz Auto Man Freq Offset 0 Hz	Center 2.524 GHz #Res BW 1.1 MHz Occupied Bandwidth 52.994 MHz	#VBW 3 MHz Span 82. #VBW 3 MHz Sweep Total Power 42.1 dBm	
Transmit Freq Error 78.121 kHz x dB Bandwidth 55.45 MHz Modulation:			Transmit Freq Error 220.09 kHz x dB Bandwidth 55.62 MHz cm. Modulation:		
Channel:	Middle		Channel:	Low	
-+- Tri	Refere Run Avglifeld: 100/100 Ref. 7:00 Bit Radio Std: None Radio Std: None Radio Device: BTS	Frequency Center Freq 2.69300000 GHz	-+- 1	nter Freg 2.85300000 GHz Radio Stat: Nor giftree Rin Avgilield: 100100 tten: 30 dD Radio Stat: Radio Device:	Center F 2.523500000 (
enter 2.593 GHz Res BW 1.1 MHz	Span 82.5 MHz #VBW 3 MHz Sweep 1 ms	CF Step 8.250000 MHz Auto Man	Center 2.524 GHz #Res BW 1.1 MHz	Span 82. #VBW 3 MHz Sweep	
Occupied Bandwidth 53.052 MHz Transmit Freq Error 150.13 kHz x dB Bandwidth 55.69 MHz	OBW Power 99.00 %	Freq Offset 0 Hz	Occupied Bandwidth 52.952 MHz Transmit Freq Error 169.41 kHz x dB Bandwidth 55.57 MHz	OBW Power 99.00 %	FreqOff



		Por	t 54		
Modulation:	Modulation: QPSK		Modulation:	16QAM	
Channel:	Low		Channel:	Middle	
-+- Tr	SINCE INT DE 2727794144/11, 2018 Inter Freq 2.53500000 GHz Radio Std: None BjFreq Run Avg Nold: 100/100 Iten: 30 dB Radio Device: BTS	Frequency	-+- Trig:	ALEXAND 02:05:1741 May 11, 2018 er Freig 2.893000000 GHz Radio Std: None Freig 2.893000000 GHz Radio Std: None Freig 2.893000000 GHz Radio Device: BTS	Frequency
dBlaiv Ref 50.00 dBm	branie warman providenting	Center Freq 2.523500000 GHz	10 dB/div Ref 50.00 dBm		Center Fr 2.593000000 G
enter 2.524 GHz tes BW 1.1 MHz Occupied Bandwidth 52.998 MHz Transmit Freq Error 119.09 kHz x dB Bandwidth 55.55 MHz	Total Power 41.8 dBm OBW Power 99.00 %	CF Step 825000 MHz Man Freq Offset 0 Hz	Center 2.593 GHz #Res BW 1.1 MHz Occupied Bandwidth 53.059 MHz Transmit Freq Error 179.96 kHz x dB Bandwidth 55.59 MHz	Span 82.5 MHz System 2 Sweep 1 ms Total Power 41.6 dBm OBW Power 99.00 % x dB -26.00 dB	CF Ste 825000 Mi Mo Freq Offs 0)
Modulation: Channel:	Gastanis 64QAM Middle		Modulation: Channel:	256QAM Middle	
-+- Tr	Anter Here Run Avglifeld: 100/00 S1 Jet Avg 31, 2014 Radio Stat: None Radio Device: BTS Avglifeld: 100/00 Radio Device: BTS Avglifeld: 100/00 Radio Device: BTS	Frequency Center Freq 2.593000000 GHz	-+- Trig:	Program avg/Hold: 100/100 09/7/31/44/4/11,2000 Program Avg/Hold: 100/100 n: 30 dB Radio Std: None Radio Device: BTS	Frequency Center Fr 2.69300000 C
	Span 82.5 MHz #VBW 3 MHz Sweep 1 ms	CF Step 8:250000 MHz VLD Man		wow Similar Sweep This	CF St 8:250000 M WD N
enter 2.593 GHz les BW 1.1 MHz Occupied Bandwidth 53.036 MHz Transmit Freq Error 152.92 kHz	The second se	Freq Offset 0 Hz	Occupied Bandwidth 52.994 MHz Transmit Freg Error 161.01 kHz	Total Power 41.5 dBm OBW Power 99.00 %	Freq Off





		Por	t 55		
Modulation:	QPSK		Modulation:	16QA	M
Channel:	Middle		Channel:	Middl	e
-+- Trig	EFFRE 2.55000000 GHz Radio Std: Kone Free Z.55000000 GHz Radio Std: Kone Free Run Avg Hold: 100/100 Radio Device: BTS	Frequency	-+- Tri	nter Freq: 2.693000000 GHz Radio 5 g: Free Run Avg Hold: 100/100	on MMAgy 11, 2010 Std: None Frequency Device: BTS
r dBlain. Ref 50.00 dBm	nelstrumunul miselituiteeled	Center Freq 2.693000000 GHz	10 dB/dlv Ref 50.00 dBm	and and an and an and and and and and an	Center Fri 2.593000000 Cl
enter 2.593 GHz Res BW 1.1 MHz Occupied Bandwidth 53.120 MHz	#VBW 3 MHz Span 82.5 MHz #VBW 3 MHz Sweep 1 ms Total Power 41.8 dBm		Center 2.593 GHz Res BW 1.1 MHz Occupied Bandwidth 53.000 MHz		an 82.5 MHz weep 1 ms Freq Offs 01
Transmit Freq Error 93.852 kHz x dB Bandwidth 55.64 MHz	OBW Power 99.00 % x dB -26.00 dB		Transmit Freq Error 121.09 kHz x dB Bandwidth 55.73 MHz	OBW Power 99.00 % x dB -26.00 dB	
Modulation:	64QAM		Modulation:	256QA	M
Channel:	Middle		Channel:	Middl	e
-+- Trig	And State St	Frequency Center Freq 2.693000000 GHz	10 dB/dlv Ref 50,00 dBm	Radio 5 Free Run AvglHold: 100/100 Radio 5 Radio 5 Radio 5 Radio 5 Radio 5 Radio 5	B 194 May 11, 2010 Std: None Device: BTS Center Fr 2.593000000 C
enter 2.593 GHz Res BW 1.1 MHz	Span 82.5 MHz #VBW 3 MHz Sweep 1 ms	CF Step 8 250000 MHz Auto Man	Center 2.593 GHz #Res BW 1.1 MHz	Spa #VBW 3 MHz S	an 82.5 MHz weep 1 ms
Occupied Bandwidth 52.967 MHz Transmit Freq Error 154.27 kHz x dB Bandwidth 55.64 MHz	Total Power 41.8 dBm OBW Power 99.00 % x dB -26.00 dB	Freq Offset 0 Hz	Occupied Bandwidth 52.997 MHz Transmit Freq Error 147.10 kHz x dB Bandwidth 55.61 MHz	Total Power 41.5 dBm OBW Power 99.00 % x dB -26.00 dB	0
		A Design of the local division of the			a state and a second



		Por	t 56		
Modulation:	QPSK		Modulation:	16	QAM
Channel:	Low		Channel:	L	-ow
-+- Tr	Silical 201 State NUTO 102 3729 541 May 11, 2018 Inter Freig: 2.523600000 GHz Radio Std: None g; Freig: 2.523600000 GHz ter: 30 dB Radio Device: BTS Radio Device: BTS	Frequency	-+- Tric	since 2.623600000 GH2 Freq: 2.623600000 GH2 Freq: Run Avg Hold: 100/100 en: 30 dB	Radio Std: None Frequency Radio Device: BTS
Bildiu Ref 50.00 dBm 99	and the second and a second	Center Freq 2.523500000 GHz	10 dB/div Ref 50.00 dBm	nsqlaqtimtionriniqurgay qilliraqilginadid	Center F/ 2.523600000 C
enter 2.524 GHz Res BW 1.1 MHz Occupied Bandwidth 52.977 MHz Transmit Freq Error 66.414 kHz x dB Bandwidth 55.53 MHz	OBW Power 99.00 %	CF Step 8 250000 MHz Auto Man Freq Offset 0 Hz	Center 2.524 GHz #Res BW 1.1 MHz Occupied Bandwidth 53.036 MHz Transmit Freq Error 156.29 kHz x dB Bandwidth 55.66 MHz	OBW Power 9	Span 82.5 MHz Sweep 1 ms 8 dBm Freq Offs 9.00 % .00 dB
Modulation: Channel:	64QAM High		Modulation: Channel:		6QAM .ow
alEGaint av 16 AlEGaint av 18 Alegaint av 18 Alegai	ALL AND DEVELOPMENTS DEVELOPMENTS, 2019 Inter Freq: 2.85200000 GHz Radio Std: None G: Freq Run Avg Held: 100/100 Radio Device: BTS addio Device: BTS	Frequency Center Freq 2.66250000 GHz	10 dB/dl/v Ref 50,00 dBm	Register Free 2.82500000 GH2 Free Run Avg[Hold: 100100 an:30 dB	Radio Device: BTS Radio Device: BTS Center F 2.523500000 c
	Span 82.5 MHz #VBW 3 MHz Sweep 1 ms	CF Step 8:250000 MHz Auto Man	Center 2.524 GHz #Res BW 1.1 MHz	#VBW 3 MHz	Span 82.5 MHz Sweep 1 ms
enter 2.563 GHz Res BW 1.1 MHz Occupied Bandwidth 53.119 MHz Transmit Freq Error 127.73 kHz x dB Bandwidth 55.66 MHz	Total Power 41.5 dBm OBW Power 99.00 %	Freq Offset 0 Hz	Occupied Bandwidth 52.989 MHz Transmit Freq Error 177.33 kHz x dB Bandwidth 55.72 MHz	OBW Power 9	4 dBm Freq Off 9.00 % .00 dB



		Por	t 57		
Modulation:	QPSK		Modulation:	16QAM	
Channel:	Low		Channel:	Middle	
-+- Tri	ref Freq 2.52560000 GHz Radio Std: None gree Run Avgilieid: 100100 Radio Device: BTS	Frequency	-+- 1	res 20000000 GHz Radio Stat. Ner fg: Free Run Avg Hold: 100/100 tten: 30 dB Radio Device;	Frequency
Bilditu Ref 50.00 dBm 00 0 <td>Not and a series of the series</td> <td>Center Freq 2.523500000 GHz</td> <td>10 dB/div Ref 50.00 dBm Log 200 300 300 000 100 000 000 000 000 000 0</td> <td>ne or and the second second</td> <td>Center Fr 2.593000000 G</td>	Not and a series of the series	Center Freq 2.523500000 GHz	10 dB/div Ref 50.00 dBm Log 200 300 300 000 100 000 000 000 000 000 0	ne or and the second	Center Fr 2.593000000 G
enter 2.524 GHz Res BW 1.1 MHz Occupied Bandwidth 53,000 MHz Transmit Freq Error 113.37 kHz x dB Bandwidth 55.66 MHz	OBW Power 99.00 %	CF Step 8250000 MHz Auto Man Freq Offset 0 Hz	Center 2.593 GHz #Res BW 1.1 MHz Occupied Bandwidth 53.187 MHz Transmit Freq Error 74,649 kHz x dB Bandwidth 55,72 MHz	OBW Power 99.00 %	
Modulation: Channel:	Gerards 64QAM High		Modulation: Channel:	Costantis 256QAM Middle	
-+- Tri	Control Contro	Frequency Center Freq 2.66250000 GHz	-+- 1	State Strift State Strift State Strift State Strift Radio Strift<	Center F1 2.503000000 C
enter 2.663 GHz	#VBW 3 MHz Span 82.5 MHz #VBW 3 MHz Sweep 1 ms	Augur man	Center 2.593 GHz #Res BW 1.1 MHz	#VBW 3 MHz Span 82: Total Power 41.5 dBm	1 ms
Res BW 1.1 MHz Occupied Bandwidth 53.108 MHz Transmit Freg Error 71.252 kHz x dB Bandwidth 55.72 MHz	OBW Power 99.00 %	Freq Offset 0 Hz	Occupied Bandwidth 52.951 MHz Transmit Freq Error 163.53 kHz x dB Bandwidth 55.64 MHz	OBW Power 99.00 %	FreqOff





		Por	t 58		
Modulation:	QPSK		Modulation:	1	6QAM
Channel:	Middle		Channel:		High
-+- Tri	ter: 20 dB ter: 57 eg 2.56300000 GHz Radio Std: None g: Free Run Avg Hold: 100/100 ter: 30 dB Radio Device: BTS	Frequency	-+- Tr	anci pri Inter Freq: 2.862600000 GHz ig: Freq Run Avg Hold: 100/100 tten: 30 dB	TTO Decit SPEMMey 31, 2018 Radio Std: None Prequency Radio Device: BTS
0 d8/d/w Ref 50,00 dBm	manghan malanda ang phalanan naliking	Center Freq 2.593000000 GHz	O dB/dlw Ref 50.00 dBm Cop	manundus mary subrana	Center Fi 2.662600000 C
enter 2.593 GHz Res BW 1.1 MHz Occupied Bandwidth 52.980 MHz	#VBW 3 MHz Span 82.5 MHz #VBW 3 MHz Sweep 1 ms Total Power 41.7 dBm	CF Step 8:250000 MHz <u>Auto</u> Man Freq Offset 0 Hz	Center 2.663 GHz Res BW 1.1 MHz Occupied Bandwidth 53.079 MHz		Span 82.5 MHz Sweep 1 ms 11.3 dBm Freq off
Transmit Freq Error 115.63 kHz x dB Bandwidth 55.66 MHz	OBW Power 99,00 % x dB -26.00 dB		Transmit Freq Error 4.542 kHz x dB Bandwidth 55.56 MHz		99,00 % 26,00 dB
Modulation:	64QAM		Modulation:	2	56QAM
Channel:	High		Channel:	Ν	Aiddle
-+- Tri	Radio Device: BTS	Frequency Center Freq 2.662500000 GHz	Tr. Tr	nter Freq 2.6900000 GHz freq Freq Rin Arg Held: 100/100 tten: 30 dD	Radio Device: BTS
enter 2.663 GHz Res BW 1.1 MHz	Span 82.5 MHz #VBW 3 MHz Sweep 1 ms	CFStep 8:250000 MHz Auto Man	Center 2.593 GHz #Res BW 1.1 MHz	#VBW 3 MHz	Span 82.5 MHz Sweep 1 ms
Occupied Bandwidth 52.974 MHz Transmit Freq Error x dB Bandwidth 55.57 MHz	Total Power 41.4 dBm OBW Power 99,00 % x dB -26.00 dB	Freq Offset 0 Hz	Occupied Bandwidth 52.945 MHz Transmit Freq Error 120.82 kHz x dB Bandwidth 55.66 MHz	OBW Power	99,00 % 26,00 dB



		Por	t 59		
Modulation:	QPSK		Modulation:	16QAM	
Channel:	Low		Channel:	Middle	
-+- 11	Inter Freq 2.82300000 OHz Radio Std: None grees Run Avg Hold: 100/100 Itten: 30 dB Radio Device: BTS	Frequency	-+- Tr	Sectors D3 26 41 594 May 11, 2018 Inter Freq 2.68300000 GHz Radio Stat: None g: Free Run Avg Held: 100/100 Iten: 30 dB Radio Device: BTS	Frequency
0 dB/d/w Ref 50.00 dBm		Center Freq 2.523500000 GHz	IC dB/dile Ref 50.00 dBm Col		Center Fri 2.593000000 Gi
Senter 2.524 GHz Res BW 1.1 MHz Occupied Bandwidth 53.135 MHz Transmit Freq Error 160.92 kHz x dB Bandwidth 55.77 MHz	OBW Power 99.00 %	CF Step 8:25000 MHz Auto Man Freq Offset 0 Hz	Center 2.593 GHz Res BW 1.1 MHz Occupied Bandwidth 53.157 MHz Transmit Freq Error 126.42 kHz x dB Bandwidth 55.65 MHz	#VBW 3 MHz Span 82.5 MHz #VBW 3 MHz Sweep 1 ms Total Power 41.5 dBm OBW Power 99.00 % x dB -26.00 dB	CFSte 8250000 Mi to Mi Freq Offs 01
Modulation:	64QAM High		Modulation: Channel:	256QAM Low	
glimtSpectrum Analyzer - Occupied INV AL Sign Compared INV enter Freq 2.652500000 GHz - Cr	nter Freq 2.86250000 GHz Radio Std: None gFreq Run Avg Hold: 100/100 Radio Device: BTS	Frequency Center Freq	Aglient Spectrum Analyztr - Decopied INV Dr. R. Center Freq 2.523500000 GHz CC	nter Freg 2.82360000 GHz Radio Sta: None gree Run Avgliveld: 100/100 Radio Device: BTS	Frequency
000 000 001 001 001 001 001 001	condemonstrative productions of the second	2.562500000 GHz	1900 2000 100 1000 1	an dependent of the second of	2.523500000 G
n ()	أتحصر ويرز أأكما ويجرز محدر الم				
	Span 82.5 MHz #VBW 3 MHz Sweep 1 ms	CF Stép 8:250000 MHz <u>Auto</u> Man	Center 2.524 GHz #Res BW 1.1 MHz	Span 82.5 MHz #VBW 3 MHz Sweep 1 ms	8.250000 M
Center 2.663 GHz Res BW 1.1 MHz Occupied Bandwidth 53.189 MHz Transmit Freq Error 114.55 kHz x dB Bandwidth 55.58 MHz	#VBW 3 MHz Sweep 1 ms Total Power 41.4 dBm OBW Power 99,00 %	Auto Man		#VBW 3 MHz Sweep 1 ms Total Power 41.5 dBm OBW Power 99.00 %	CF Str 8:250000 M Ito M Freq Offs 0



		Por	t 60		
Modulation:	QPSK		Modulation:	16QAM	
Channel:	Low		Channel:	Middle	
-+- 1	ester 2010 02:00 00 00 00 00 00 00 00 00 00 00 00 00	Frequency	-+- Tric	SPACE PUT DECREMENTO DECREMENTO <thdecremento< th=""> DECREMENTO <thdecremento< th=""> DECREMENTO DECREMENTO</thdecremento<></thdecremento<>	Frequency
dBlaiv Ref 50,00 dBm	entrefitan notice of the second se	Center Freq 2.523500000 GHz	10 dB/d/w Ref 50,00 dBm	and a feature of the second	Center Fr 2.593000000 G
enter 2.524 GHz Res BW 1.1 MHz Occupied Bandwidth 53.041 MHz Transmit Freq Error 66.210 kHz x dB Bandwidth 55.55 MHz	OBW Power 99.00 %	CF Step 8 250000 Mitz Auto Man Freq Offset 0 Hz	Center 2.593 GHz #Res BW 1.1 MHz Occupied Bandwidth 53.015 MHz Transmit Freq Error 109.37 kHz x dB Bandwidth 55,72 MHz	#VBW 3 MHz Span 82.5 MHz #VBW 3 MHz Sweep 1 ms Total Power 41.9 dBm OBW Power 99,00 % x dB -26.00 dB	CF Str 8250000 M M Freq Offs 0
Modulation: Channel:	64QAM Middle		Modulation: Channel:	256QAM Low	
dB/div Ref 50.00 dBm	anter Fra; 2.592000000 GHz rg: Fra; 2.592000000 GHz rg: Fra; 2.592000000 GHz rg: Fra; 2.592000000 GHz Radio Std: None Radio Device: BTS Radio Device: BTS	Frequency Center Freq 2.69300000 GHz	10 dB/dl/v Ref 50,00 dBm	hter Free 2.62560000 GHz Free 2.62560000 GHz Free Run AvgNeld: 100100 en:30 dB - Radio Device: BTS	Prequency Center FI 2.523500000 C
0			4810		
enter 2.593 GHz Res BW 1.1 MHz Occupied Bandwidth 53.025 MHz Transmit Freq Error 155.30 kHz x dB Bandwidth 55.65 MHz	Total Power 41.3 dBm	CF Step 8 250000 MHz Auto Man Freq Offset 0 Hz	Center 2.524 GHz #Res BW 1.1 MHz Occupied Bandwidth 52.967 MHz Transmit Freq Error 212.19 kHz x dB Bandwidth 55.70 MHz	#VBW 3 MHz Span 82.5 MHz #VBW 3 MHz Sweep 1 ms Total Power 41.5 dBm OBW Power 99,00 % x dB -26.00 dB	CF St 8250000 M Muto M Freq Off 0



		Por	t 61		
Modulation:	QPSK		Modulation:	16QAM	
Channel:	Middle		Channel:	Low	
-+- Trig	ter Free 2.959000000 GHz 2000000 Radio Std: None Free Run AvglHeid: 100/100 en: 30 dB Radio Device: BTS	Frequency	-+- T	en Statistic Statistics (Statistics) en Statistics (Statistics) en Statistics (Statistics) en Statistics (Statistics) en Statistics) en Statistics (Statistics) en Statistics) en Statistics en Statistics) en Statistics en	Frequency
C dE/diu Ref 50.00 dBm	Alaga kanalan Mang Josephin antikapan Anga kanalan Mang Josephin antikapan	Center Freq 2.59300000 GHz	10 dB/d/u Ref 50.00 dBm	parture to the second of the s	Center Fra 2.523500000 GH
enter 2.593 GHz Res BW 1.1 MHz Occupied Bandwidth	Span 82.5 MHz #VBW 3 MHz Sweep 1 ms Total Power 41.4 dBm	CF Step 8:250000 MHz <u>Avto</u> Man Freq Offset	Center 2.524 GHz #Res BW 1.1 MHz	Span 82.5 M #VBW 3 MHz Sweep 1 Total Power 41.9 dBm	
52.973 MHz Transmit Freq Error 188.04 kHz x dB Bandwidth 55.76 MHz	OBW Power 99,00 % x dB -26.00 dB	0 Hz	53.106 MHz Transmit Freq Error 121.79 kHz x dB Bandwidth 55.60 MHz	2 OBW Power 99.00 %	()
Modulation:	64QAM		Modulation:	256QAM	
Channel:	Low		Channel:	Low	
BiFGain:tww FArt	Radio Device: BTS	Frequency Center Freq 2.52350000 GHz	-+- 1	enter Free 2.82300000 GHz Radio Stel: None fig Free Run Avgilled: 100/100 Radio Device: BTS	Center Fr 2.523500000 Cl
enter 2.524 GHz Res BW 1.1 MHz	Span 82.5 MHz #VBW 3 MHz Sweep 1 ms	CF Step 8:250000 MHz Auto Man	Center 2.524 GHz #Res BW 1.1 MHz	Span 82.5 M #VBW 3 MHz Sweep 1	
Occupied Bandwidth 53.025 MHz Transmit Freq Error 165.88 kHz x dB Bandwidth 55.83 MHz	Total Power 41.9 dBm OBW Power 99,00 % x dB -26.00 dB	Freq Offset 0 Hz	Occupied Bandwidth 52.968 MHz Transmit Freg Error 184.55 kHz x dB Bandwidth 55.59 MHz	2 OBW Power 99.00 %	Freq Offs 0



		Por	t 62			
Modulation: QPSK			Modulation:	16QAM		
Channel:	Low		Channel:	High		
-+- Trig	ter Freg 253500000 GHz Radio Std: None Freg 263500000 GHz Radio Std: None en: 30 dB Radio Device: BTS	Frequency	-+- Tr	sale for example of the second	Frequency	
d Sirálv Ref 50.00 dBm	Newtoning attend for a proposal the transmission of the second states of	Center Freq 2.523500000 GHz	10 dB/dilv Ref 50.00 dBm	un aparticles of any providence of the second states of the second state	Center Fr 2.662500000 G	
enter 2.524 GHz Res BW 1.1 MHz Occupied Bandwidth 53.069 MHz Transmit Freq Error 138.28 kHz x dB Bandwidth 55.68 MHz	#VBW 3 MHz Span 82.5 MHz #VBW 3 MHz Sweep 1 ms Total Power 41.8 dBm OBW Power 99.00 % x dB -26.00 dB	CF Step 8:25000 MHz Auto Man Freq Offset 0 Hz	Center 2.663 GHz #Res BW 1.1 MHz Occupied Bandwidth 53.065 MHz Transmit Freq Error 91.027 kHz x dB Bandwidth 55.54 MHz	OBW Power 99.00 %		
Modulation: Channel:	64QAM High		Modulation: Channel:	256QAM Low		
-+- Trig	the FFee 2 85200000 GHz Free Run AvglHold: 100/100 Radio Std: Nene Radio Device: BTS	Frequency Center Freq 2.66250000 GHz	-+- Tr	Inter Free 2.55300000 GHz g: Free Run Avg Held: 100/100 Iten: 30 dB Radio Std: Nene Radio Device: BTS	Center F	
Occupied Bandwidth	#VBW 3 MHz Span 82.5 MHz #VBW 3 MHz Sweep 1 ms Total Power 41.6 dBm	CF Step 8:250000 MHz Auto Man Freq Offset 0 Hz	Center 2.524 GHz #Res BW 1.1 MHz Occupied Bandwidth 53.005 MHz	Span 82.5 MH #VBW 3 MHz Sweep 1 m Total Power 41.5 dBm		
53.075 MHz Transmit Freq Error 72.642 kHz x dB Bandwidth 55.51 MHz	OBW Power 99.00 % x dB -26.00 dB		Transmit Freq Error 190.47 kHz x dB Bandwidth 55.54 MHz			



		Port 63				
Modulation: QPSK		Modula	ation:	16QAM		
Channel:	Low	Chan	nel:	el: Low		
Tri	nter Freq: 2.533500000 GHz Freq: 2.533500000 GHz Freq: 3.635 May 11, 2018 Radio Ste: None Freq: 3.0 dB Radio Device: BTS	Aglient Spectrum Analyzer - Doc Frequency Center Freq 2.52350	0.C CORREC 3	Freq: 2.523500000 GHz • Run Avg Hold: 100/100 10 dB	2 82-92.27544 May 11, 2000 Radio Std: None Radio Device: BTS	
0 dB/dlu Ref 50.00 dBm	northittening proceedingthing	Center Freq 523500000 GHz 523500000 GHz 10 0 000 10 0 10 0 10 0 10 0 10 0 10 0		orningosaling performen	Center Fr 2.523500000 G	
enter 2.524 GHz Res BW 1.1 MHz Occupied Bandwidth 53.052 MHz	#VBW 3 MHz Span 82.5 MHz #VBW 3 MHz Sweep 1 ms Total Power 41.7 dBm	CF Step 8250000 MH2 Man Freq Offset 0 Hz	2010	BW 3 MHz Total Power 41	Span 82.5 MHz Sweep 1 ms .7 dBm Freq Offs 0	
Transmit Freq Error 61.621 kHz x dB Bandwidth 55.61 MHz	OBW Power 99,00 % x dB -26.00 dB	Transmit Freq Erro x dB Bandwidth	55.51 MHz		99.00 % 5.00 dB	
Modulation:	64QAM	Modula	ation:	25	6QAM	
Channel:	Middle	Chan	nel:		Low	
-+- Tri	g: Free Run Avg Held: 100/100 Radio Device: BTS	300 000 000 000 000 000 000 000 000 000	DD000 GH2 SIFGaint aw SAtten: 3	2000 00 Free: 2.53500000 GHz = Run Avg He/d: 100/100 00 dB	Institution Billion Control of Conter Fr Radio Device: BTS Center Fr 2523500000 C	
enter 2.593 GHz Res BW 1.1 MHz	Span 82.5 MHz #VBW 3 MHz Sweep 1 ms	CF Step 8 250000 MHz 2 Man #Res BW 1.1 MHz	#V	BW 3 MHz	Span 82.5 MHz Sweep 1 ms	
Occupied Bandwidth 52.996 MHz Transmit Freg Error 184.87 kHz x dB Bandwidth 55.53 MHz	Total Power 41.5 dBm OBW Power 99.00 % x dB -26.00 dB	Freq Ortset 0 Hz Transmit Freq Erro x dB Bandwidth	53.005 MHz	OBW Power	.5 dBm Freq Off 99.00 % 5.00 dB	

7. UNWANTED CONDUCTED EMISSIONS

FCC Rules

Test Requirements:

§ 2.1051 Measurements required: Spurious emissions at antenna terminals.

The radio frequency voltage or powers generated within the equipment and appearing on a spurious frequency shall be checked at the equipment output terminals when properly loaded with a suitable artificial antenna. Curves or equivalent data shall show the magnitude of each harmonic and other spurious emission that can be detected when the equipment is operated under the conditions specified in §2.1049 as appropriate. The magnitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be specified.

§ 27.53 Emission limits.

(m) For BRS and EBS stations, the power of any emissions outside the licensee's frequency bands of operation shall be attenuated below the transmitter power (P) measured in watts in accordance with the standards below. If a licensee has multiple contiguous channels, out-of-band emissions shall be measured from the upper and lower edges of the contiguous channels.

(2) For digital base stations, the attenuation shall be not less than 43 + 10 log (P) dB, unless a documented interference complaint is received from an adjacent channel licensee with an overlapping Geographic Service Area. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS No. 1 on the same terms and conditions as adjacent channel BRS or EBS licensees. Provided that a documented interference complaint cannot be mutually resolved between the parties prior to the applicable deadline, then the following additional attenuation requirements shall apply:

Test Procedures:

The measurement is performed in accordance with Section 5.7.3 and 5.7.4 of ANSI C63.26.

5.7.3 Out-of-band unwanted emissions measurements

a) Set the spectrum analyzer center frequency to the block, band, or channel edge frequency. b) Set the span wide enough to capture the fundamental emission closest to the authorized block or band edge, and to include all modulation products that spill into the immediately adjacent frequency band. In some cases, it may be possible to set the center frequency and span so as to encompass the fundamental emission and the unwanted out-of-band (band-edge) emissions on either side of the authorized block, band, or channel. This can be accomplished with a single (slow) sweep, if adequate overload protection and sufficient dynamic range can be maintained. c) Set the number of points in sweep $\geq 2 \times \text{span} / \text{RBW}.$

d) Sweep time should be auto for peak detection. For rms detection the sweep time should be

set as follows:

1) Omitted

2) Omitted

3) If the device cannot be configured to transmit continuously (duty cycle < 98%) and a freerunning sweep must be used, set the sweep time so that the averaging is performed over multiple on/off cycles by setting the sweep time > (number of points in sweep) × (transmitter period) (i.e., the transmit on-time + the off-time). The spectrum analyzer readings shall subsequently be corrected by [10 log (1/duty cycle)]. This assumes that the transmission period and duty cycle is relatively constant (duty cycle variation $\leq \pm 2\%$).

4) Omitted

e) The test report shall include the plots of the measuring instrument display and the measured data.

f) See Annex I for example emission mask plots.

5.7.4 Spurious unwanted emission measurements

a) Set the spectrum analyzer start frequency to the lowest frequency generated by the EUT, without going below 9 kHz, and the stop frequency to the lower frequency covered by the measurements previously performed in 5.7.3. As an alternative, the stop frequency can be set to the value specified in 5.1.1, depending on the EUT operating range, if the resulting plot can clearly demonstrate compliance for all frequencies not addressed by the out-of-band emissions measurements performed as per 5.7.3.

b) When using an average power (rms) detector, ensure that the number of points in the sweep \geq 2 × (span / RBW). This may require that the measurement range defined by the start and stop frequencies be subdivided, depending on the spectrum analyzer capabilities. This requirement does not apply to peak-detected power measurements. When average power is specified by the applicable regulation, a peak-detector can be utilized for preliminary measurements to accommodate wider frequency spans. Any emissions found in the preliminary measurement to exceed the applicable limit(s) shall be further examined using a power averaging (rms) detector with the minimum number of measurement points as defined above.

c) The sweep time should be set to auto-couple for performing peak-detector measurements. For measurements that use a power averaging (rms) detector, the sweep time shall be set as described for out-of-band emissions measurements in item d) of 5.7.3.

d) Identify and measure the highest spurious emission levels in each frequency range. It is not necessary to re-measure the out-of-band emissions as a part of this test. Record the frequencies and amplitudes corresponding to the measured emissions and capture the data plots.

e) Repeat step b) through step d) for the upper spurious emission frequency range if not already captured by a wide span measurement performed as per the alternative provided in step a). The upper frequency for this measurement is defined in 5.1.1 as a function of the EUT operating



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range.

f) Compare the results with the corresponding limit in the applicable regulation.

g) The test report shall include the data plots of the measuring instrument display and the measured data.

Note:

- 1) In 9 kHz to 30 MHz band, RBW narrower than reference bandwidth is used. So following correction factor is applied.
 - 10 log [(reference bandwidth)/(resolution bandwidth)]
 - 9 kHz to 150 kHz applied 1 kHz RBW, 10 log (1 kHz / 1MHz) = 30 dB
 - 150 kHz to 30 MHz applied 100 kHz RBW, 10 log (10 kHz / 1 MHz) = 20 dB
 - Because of test equipment's noise specification, we used N9030A signal analyzer for these bands.
- 2) Due to 64x64 MIMO operations, a correction has been added to the limit according to KDB 662911 D01 v02r01.

- MIMO correction: $10 \log(N_{ANT}) = 10 \log(64) = 18.062 \text{ dB}$

 Since the EUT cannot be configured to transmit continuously and a free-running sweep must be used, duty correction has been added in accordance with 5.7.3 d) 3) of ANSI C63.26-2015.

- Duty Correction = 10 log (1/duty cycle) = 10 log (1/0.744) = 1.284 dB

4) For the same reason as above 3), Sweep time is calculated as follows.

- Sweep time > number of point in sweep x transmit period = 1001 x 5 ms = 5005 ms

5) Because the emission limit is calculated by MIMO-Summing, only one output port that measured maximum output power is tested as the worst condition.

- Port 31, 20 MHz + 20 MHz + 20 MHz / 3 Carriers, 64QAM

- 6) Only MIMO correction was applied to the result table limit.
 - Limit = -13 dB -18.062 dB = -31.062 dB
- 7) All corrections including RBW, MIMO, and Duty Cycle were applied to the plot limit.
 - Limit for 9 kHz to 150 kHz = -13 dB -18.062 dB 1.284 dB 30 dB = -62.346 dB
 - Limit for 150 kHz to 30 MHz = -13 dB -18.062 dB 1.284 dB 20 dB = -52.346 dB
 - Limit for other bands = -13 dB 18.062 dB 1.284 dB = -32.346 dB



Test Results:

Band edge of 20 MHz + 20 MHz + 20 MHz Bandwidth / 3 Carriers

Port	Modulation	Point	Frequency (MHz)	Measured band edge (dBm)
Port 31	640AM	Left	2496.00	-35.361
FULSI	Port 31 64QAM	Right	2690.00	-34.553

* Because the results corrected by duty cycle are recorded, they do not match the test plot.

Emission below 1 GHz of 20 MHz + 20 MHz + 20 MHz Bandwidth / 3 Carriers

Port Modulation	Madulation	lation Observal				leasured emission (dBm)		
	Channel Frequency (Frequency (MHz)	9 kHz ~ 150 kHz	150 kHz ~ 30 MHz	30 MHz ~ 1 GHz			
	Port 31 64QAM	Low	2 526.00	-53.140	-61.597	-45.935		
Port 31		Middle	2 593.00	-53.539	-61.618	-45.912		
		High	2 660.00	-53.688	-62.081	-45.939		

* Because the results corrected by duty cycle and RBW are recorded, they do not match the test plot.

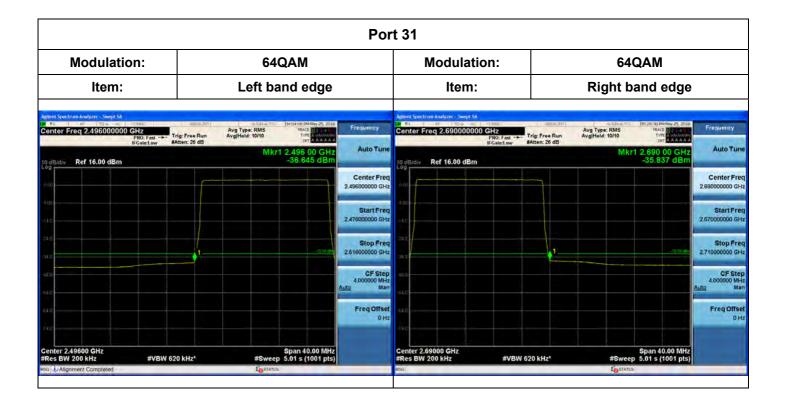
Emission above 1 GHz of 20 MHz + 20 MHz + 20 MHz Bandwidth / 3 Carriers

Port Modulation	lation Channel Frequency			Measured emission (dBm)		
		requency (MHZ)	1 GHz ~ 2.486 GHz	2.970 GHz ~ 12.75 GHz	12.75 GHz ~ 26.5 GHz	
	Low	2 526.00	-46.208	-46.654	-41.391	
Port 31	Port 31 64QAM	Middle	2 593.00	-49.590	-46.911	-41.333
		High	2 660.00	-49.730	-44.702	-41.239

* Because the results corrected by duty cycle are recorded, they do not match the test plot.



Plots of Band edge - 20 MHz + 20 MHz + 20 MHz Bandwidth / 3 Carriers

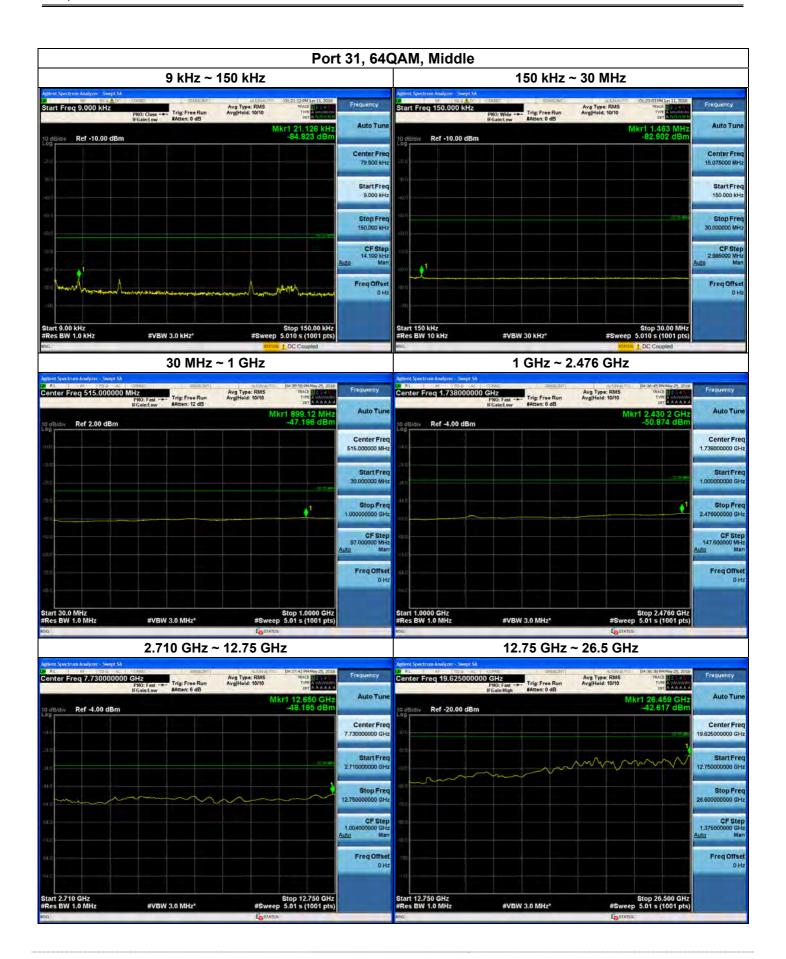




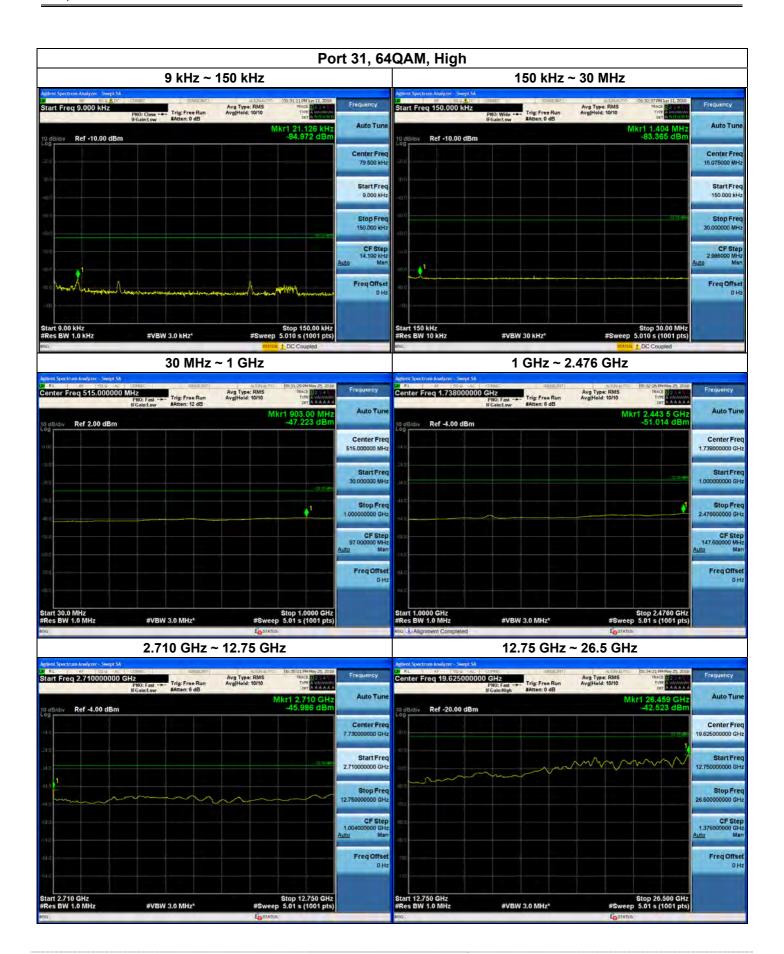
Plots of Unwanted Conducted Emission - 20 MHz + 20 MHz + 20 MHz Bandwidth / 3 Carriers











8. RADIATED EMISSIONS

FCC Rules

Test Requirements:

§ 2.1053 Measurements required: Field strength of spurious radiation.

(a) Measurements shall be made to detect spurious emissions that may be radiated directly from the cabinet, control circuits, power leads, or intermediate circuit elements under normal conditions of installation and operation. Curves or equivalent data shall be supplied showing the magnitude of each harmonic and other spurious emission. For this test, single sideband, independent sideband, and controlled carrier transmitters shall be modulated under the conditions specified in paragraph (c) of §2.1049, as appropriate. For equipment operating on frequencies below 890 MHz, an open field test is normally required, with the measuring instrument antenna located in the far-field at all test frequencies. In the event it is either impractical or impossible to make open field measurements (e.g. a broadcast transmitter installed in a building) measurements will be accepted of the equipment as installed. Such measurements must be accompanied by a description of the site where the measurements were made showing the location of any possible source of reflections which might distort the field strength measurements. Information submitted shall include the relative radiated power of each spurious emission with reference to the rated power output of the transmitter, assuming all emissions are radiated from halfwave dipole antennas.

(b) The measurements specified in paragraph (a) of this section shall be made for the following equipment:

(1) Those in which the spurious emissions are required to be 60 dB or more below the mean power of the transmitter.

(2) All equipment operating on frequencies higher than 25 MHz.

(3) All equipment where the antenna is an integral part of, and attached directly to the transmitter.

(4) Other types of equipment as required, when deemed necessary by the Commission.

Test Procedures:

The measurement is performed in accordance with Section 5.5.4 and 5.5.3.2 of ANSI C63.26.

a) Place the EUT in the center of the turntable. The EUT shall be configured to transmit into the standard non-radiating load (for measuring radiated spurious emissions), connected with cables of minimal length unless specified otherwise. If the EUT uses an adjustable antenna, the antenna shall be positioned to the length that produces the worst case emission at the fundamental operating frequency.

b) Each emission under consideration shall be evaluated:

1) Raise and lower the measurement antenna in accordance 5.5.2, as necessary to enable



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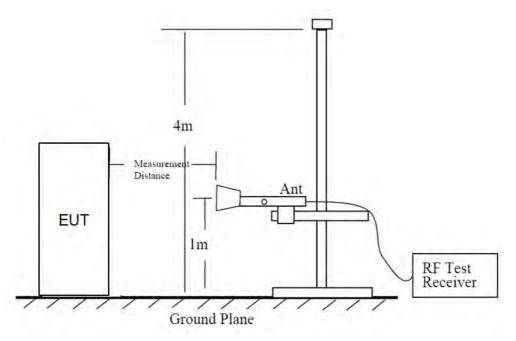
detection of the maximum emission amplitude relative to measurement antenna height. 2) Rotate the EUT through 360° to determine the maximum emission level relative to the axial position.

3) Return the turntable to the azimuth where the highest emission amplitude level was observed.

4) Vary the measurement antenna height again through 1 m to 4 m again to find the height associated with the maximum emission amplitude.

5) Record the measured emission amplitude level and frequency using the appropriate RBW.c) Repeat step b) for each emission frequency with the measurement antenna oriented in both the horizontal and vertical polarizations to determine the orientation that gives the maximum emissions amplitude.

Test Setup:



Note:

- According to SVSWR requirement in ANSI 63.4 (2014), we performed the radiated test at 3.75 m distance from center of turn table. So, we applied the distance factor (reference distance: 3 m).
- 2) Distance extrapolation factor = 20 log (test distance / specific distance) (dB)
- 3) Position for testing is set according to floor-standing EUTs of ANSI C63.26 5.5.2.3.2



Test Result:

Ch.	Frequency (MHz)	Measured Level (dBuV/m)	Measured Power (dBm)	Ant. Factor (dB/m)	C.L (dB)	A.G. (dB)	D.F. (dB)	Pol.	Result (dBm)
			No Criti	cal Peaks Foun	ıd				

* C.L.: Cable Loss / A.G.: Ant. Gain / D.F.: Distance Factor (3.75 m)

9. FREQUENCY STABILITY

FCC Rules

Test Requirements:

§ 2.1055 Measurements required: Frequency stability.

- (a) The frequency stability shall be measured with variation of ambient temperature as follows:
 - (1) From -30° to + 50° centigrade for all equipment except that specified in paragraphs (a) (2) and (3) of this section.

§ 27.54 Frequency stability.

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

Test Procedures:

The measurement is performed in accordance with Section 5.6.4 and 5.6.5 of ANSI C63.26.

5.6.4 Frequency stability over variations in temperature

a) Supply the EUT with a nominal 60 Hz ac voltage, dc voltage, or install a new or fully charged battery in the EUT.

b) If possible a dummy load should be connected to the EUT because an antenna near the metallic walls of an environmental test chamber could affect the output frequency of the EUT. If the EUT is equipped with a permanently attached, adjustable-length antenna, the EUT should be placed in the center of the chamber with the antenna adjusted to the shortest length possible.c) Turn on the EUT, and tune it to the center frequency of the operating band.

d) Couple the transmitter output to the measuring instrument through a suitable attenuator and coaxial cable. If connection to the EUT output is not possible, make the measurement by connecting an antenna to the measuring instrument with a suitable length of coaxial cable and placing the measuring antenna near the EUT (e.g., 15 cm away).

NOTE—An instrument that has an adequate level of accuracy as specified by the procuring or regulatory authority is the recommended measuring instrument.

e) Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument, but is strong enough to allow measurement of the operating or fundamental frequency of the EUT). Adjust the detector bandwidth and span settings to achieve a resolution capable of accurate frequency measurements over the applicable frequency stability limits.
f) Turn the EUT off, and place it inside the environmental temperature chamber. For devices that have oscillator heaters, energize only the heater circuit.

g) Set the temperature control on the chamber to the highest temperature specified in the regulatory requirements for the type of device, and allow the oscillator heater and the chamber

temperature to stabilize. Unless otherwise instructed by the regulatory authority, this temperature should be 50 $\,^\circ\text{C}.$

h) While maintaining a constant temperature inside the environmental chamber, turn on the EUT and allow sufficient time for the EUT temperature to stabilize.

i) Measure the frequency.

j) Switch off the EUT, but do not switch off the oscillator heater.

k) Lower the chamber temperature to the next level that is required by the standard and allow the temperature inside the chamber to stabilize. Unless otherwise instructed by the regulators, this temperature step should be 10 °C.

I) Repeat step h) through step k) down to the lowest specified temperature. Unless otherwise instructed by the regulators, this temperature should be -30 °C. When the frequency stability limit is stated as being sufficient such that the fundamental emissions stay within the authorized bands of operation, a reference point shall be established at the applicable unwanted emissions limit using a RBW equal to the RBW required by the unwanted emissions specification of the applicable regulatory standard. These reference points measured using the lowest and highest channel of operation shall be identified as f_L and f_H respectively. The worst-case frequency offset determined in the above methods shall be added or subtracted from the values of f_L and f_H and the resulting frequencies must remain within the band.

m) Omitted

5.6.5 Frequency stability when varying supply voltage

a) Couple the transmitter output to the measuring instrument through a suitable attenuator and coaxial cable. If connection to the EUT output is not possible make the measurement by connecting an antenna to the measuring instrument with a suitable length of coaxial cable and placing the measuring antenna near the EUT (e.g., 15 cm away)

b) Supply the EUT with nominal ac or dc voltage. The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided. Effects on frequency of transmitter keying (except for broadcast transmitters) and any heating element cycling at the nominal supply voltage and at each extreme also shall be shown.

c) Turn on the EUT, and couple its output to a frequency counter or other frequency-measuring instrument.

d) Tune the EUT to the center frequency of the operating band. Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument, but is strong enough to allow measurement of the operating or fundamental frequency of the EUT). Adjust the detector bandwidth and span settings to achieve a resolution capable of accurate frequency measurements over the applicable frequency stability limits.

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NOTE—An instrument that has an adequate level of accuracy as specified by the procuring or regulatory authority is the recommended measuring instrument.

e) Measure the frequency.

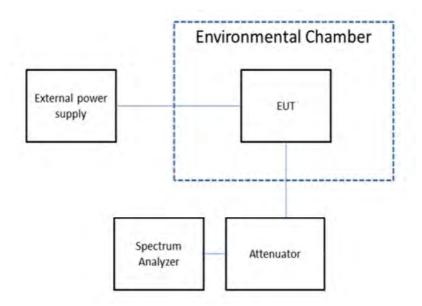
f) Unless otherwise specified, vary primary supply voltage from 85% to 115% of the nominal value for other than hand carried battery equipment.

g) For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer.

h) Repeat the frequency measurement.

NOTE—For band-edge compliance, it can be required to make these measurements at the low and high channel of the operating band.

Test Setup:



Note:

1) The results of the frequency stability test shown above the frequency deviation measured values are very small and similar trend for each port, so we are attached only the worst case data.





Test Results:

Reference: Voltage = DC -48 V at 20°C, Frequency = 2 593.0 MHz								
Voltage (%)	Temp.(℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (Hz)	ppm			
	+20(Ref)	2 593 000 119	118.900	0.000	0.00000			
	-30	2 593 000 119	118.540	-0.360	-0.00014			
	-20	2 593 000 118	118.110	-0.790	-0.00030			
	-10	2 593 000 119	118.800	-0.100	-0.00004			
100 %	0	2 593 000 118	117.770	-1.130	-0.00044			
	+10	2 593 000 119	119.050	0.150	0.00006			
	+30	2 593 000 119	119.080	0.180	0.00007			
	+40	2 593 000 119	118.940	0.040	0.00002			
	+50	2 593 000 120	120.120	1.220	0.00047			
115 %	+20	2 593 000 119	118.570	-0.330	-0.00013			
85 %	+20	2 593 000 120	119.520	0.620	0.00024			

Reference: Voltage = DC -48 V at 20°C, Frequency = 2 593.0 MHz