TEST REPORT

FCC Test for AT1K01-A00

APPLICANT SAMSUNG Electronics Co., Ltd.

REPORT NO. HCT-RF-1907-FC011-R2

DATE OF ISSUE 19 August 2019

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HCT Co., Ltd.



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TEST REPORT FCC Test for AT1K01-A00	REPORT NO. HCT-RF-1907-FC011-R2 DATE OF ISSUE 19 August 2019 FCC ID A3LAT1K01-A00
Applicant	A3LAT1K01-A00 SAMSUNG Electronics Co., Ltd. 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of

	Korea
Product Name	AU(AT1K01)
 Model Name	AT1K01-A00
Date of Test	July 11, 2019 ~ July 30, 2019
Test Standard Used	CFR 47 Part 2, Part 30
	The result shown in this test report refer only to the sample(s) tested unless otherwise stated

otherwise stated. This test results were applied only to the test methods required by the standard.

Tested by Kwang Il Yoon

Technical Manager Jong Seok Lee

HCT CO., LTD. Soo Chan Lee CEO





REVISION HISTORY

The revision history for this test report is shown in table.

Revision No.	Date of Issue	Description
0	30 July 2019	Initial Release
1	06 August 2019	We corrected a few typos. We added a note on page 9.
2	19 August 2019	We corrected a typo on page 268.

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rules under normal use and maintenance.



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1. GENERAL INFORMATION

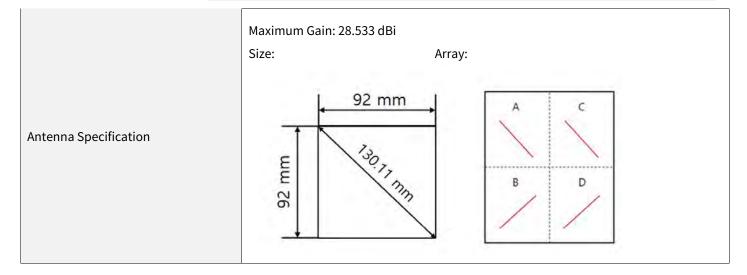
1.1. APPLICANT INFORMATION

Company Name	Samsung Electronics Co., Ltd.			
Company Address	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea			

1.2. PRODUCT INFORMATION

ЕИТ Туре	AU(AT1K01)							
Equipment Class	5GB-Part 30 Fixed Trans	5GB-Part 30 Fixed Transmitter						
Power Supply	AC (100 ~ 240) V	AC (100 ~ 240) V						
	For 1 Path:	For 1 Path:						
Output Power	Mode	dBm	W					
	1CC	48	63.1					
	2CC	51	125.9					
	3CC							
	4~8CC	251.2						
Frequency Range	Total (4 Path) MAX: 60 dBm (1 000 W) 27 500 MHz ~ 28 350 MHz							
	Mode	QPSK (G7D)	16QAM / 64QAM (W7D)					
Emission Designator	1CC	97M9G7D	98M0W7D					
	8CC	788MG7D	788MW7D					
Channel Bandwidths	1CC: 100 MHz ~ 8CC: 800 MHz							
Modulation Type	QPSK, 16QAM, 64QAM							





1.3. TEST INFORMATION

FCC Rule Parts	CFR 47 Part 2, Part 30
Maaauramantatandarda	ANSI C63.26-2015, KDB 971168 D01 v03r01, KDB 662911 D01 v02r01,
Measurement standards	KDB 662911 D02 v01, KDB 842590 D01 v01
Place of Test	HCT CO., LTD.
	74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do,
	17383, Rep. of KOREA



2. FACILITIES AND ACCREDITATIONS

2.1. FACILITIES

The SAC(Semi-Anechoic Chamber) and conducted measurement facility used to collect the radiated data are located at the 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA. The site is constructed in conformance with the requirements of ANSI C63.4 (Version: 2014) and CISPR Publication 22. Detailed description of test facility was submitted to the Commission and accepted dated April 02, 2018 (Registration Number: KR0032).

2.2. EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."



3. TEST SPECIFICATIONS

3.1. STANDARDS

The following tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 2, Part 30

Description	Reference	Results
Occupied Bandwidth	§ 2.1049	Compliant
EIRP Density	§ 30.202	Compliant
Conducted Output Power	§ 2.1046	Compliant
Band Edge	§2.1051, §30.203	Compliant
Radiated Spurious Emissions	§ 2.1051, § 30.203	Compliant
Frequency Stability	§ 2.1055	Compliant



3.2. ADDITIONAL DESCRIPTIONS ABOUT TEST

- All tests is performed by radiated measurement and applied below conditions.

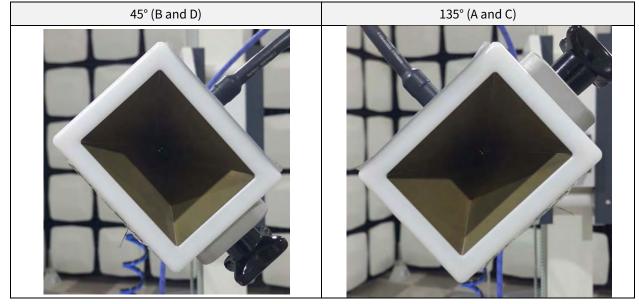
: Used measurement distance with far field of test such as EIRP, OBW and Band edge are as follow.

Wavelength = Speed of light / Measurement frequency = 30 / 2 835 = 0.01058 (2 X (Max antenna length of EUT)²) / Wavelength = (2 X (0.1301)²)/ 0.01058=**3.199 m So, measurement distance is 3.5 m.**

: Spurious emissions measurement distance is shown in table below (Reference : Measurement Antenna Dimension).

Frequency Rage (GHz)	Wavelength (cm)	Far Field Distance (m)	Measurement Distance(m)
18~40	18 ~ 40 0.75		3.75
40 ~ 60	0.50	1.354	3.75
60 ~90	0.33	0.856	3.75
90 ~ 100	0.30	0.409	3.75

: Radiated test is performed on various angle of antenna and following location is worst test case.



- CC means component carriers and EUT support 1 cc ~ 8 cc.

- Test was performed the carrier 1 and 8 case having maximum output power and maximum PSD(It means the worst case.).

- Unwanted radiated emissions test was performed on state of all EUT antenna path is operated with a maximum output power level.

- Transmitter output signals are correlated.



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- Because of the EUT using TDD technology, it cannot be configured to transmit continuously and measurement instrument cannot be configured to measure only during active transmissions. So we perform the measurement using duty cycle method.

			М	easuren	nent Res	ult of HT	1K01-57	A Transm	nit On/	Off Timing			
Spectrum Ar Channel Por			Spectrum A Swept SA	nalyzer 2	+			New Ar			Ö.	Frequency	1
	Counting	g DC	Freq R		#Atlen: 20 dl Preamp: Off	Gate: IF Ga		Avg Type. Vo Trig: Free Ri		123456 WWWWWW PNNNNN	27.9000	requency 00000 GHz	Settings
1 Spectrum Scale/Div 1 Log	0 dB	•			ef LvI Offse ef Level 126				ΔMkr	625.5 μs 5.64 dB		000 Hz pt Span Span	
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87.0 77.0						mp-http://houries	W				Start Fre 27.9000	q 00000 GHz	
67.0 57.0 47.0											Stop Fre 27.9000	9 00000 GHz	
Center 27.9 Res BW 8 M		GHz			#Video BW	50 MHz		Sw	eep 1.07	Span 0 Hz ms (1000 pts)	CF Step	TO TUNE	
5 Marker Tab Mode 1 Δ2 2 F		▼ Scale t) (Δ)	X 499.7 µs (25.60 µs	Υ Δ) -1.603 103.0 dB		ion F	unction Width	Fun	ction Value	8.00000 Auto Mar Freq Offs)	
3 Δ4 4 F 5 6	1	t	(Δ)	625.5 µs (25.60 µs	Δ) 5.640 103.0 dB						0 Hz X Axis S Log Lin		
15	2			2, 2019 28 AM	0						Donar Ti Soon Jo	ac- ailt	

- The EUT duty cycle is calculated according to ANSI C63.26 - 5.2.4.3.4.

Duty Cycle = On-time / Transmitter period = 0.4997 ms / 0.6255 ms = 0.798 Duty Correction = 10 log (1/duty cycle) = 10 log (1/0.798) = 0.975 dB



3.3. MAXIMUM MEASUREMENTUNCERTAINTY

The value of the measurement uncertainty for the measurement of each parameter.

Coverage factor k = 2, Confidence levels of 95 %

Description	Condition	Uncertainty		
Occupied Bandwidth	-	\pm 0.31 MHz		
Conducted Output Power				
EIRP Density	28 GHz	\pm 5.05 dB		
Band Edge				
	9 kHz ~ 30 MHz	± 3.40 dB		
	30 MHz ~ 1 GHz	\pm 4.80 dB		
Radiated Spurious Emissions	1 GHz ~ 18 GHz	\pm 5.70 dB		
	18 GHz ~ 40 GHz	\pm 5.05 dB		
	40 GHz ~ 100 GHz	± 4.59 dB		
Frequency Stability	-	69.61 kHz		

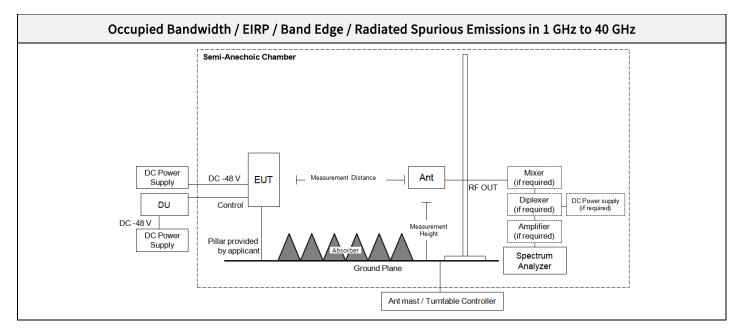
3.4. STANDARDS ENVIRONMENTAL TEST CONDITIONS

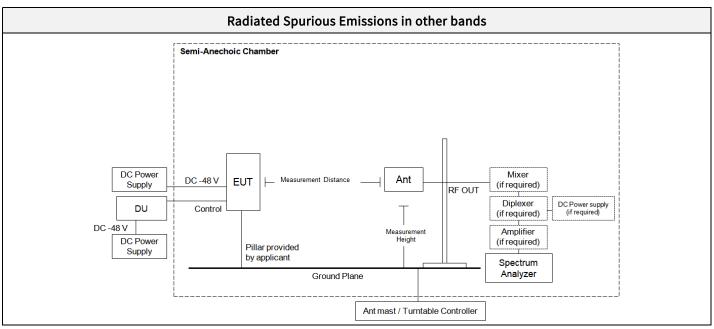
Temperature :	+15 °C to +35 °C
Relative humidity:	30 % to 60 %
Air pressure	860 mbar to 1 060 mbar



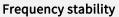


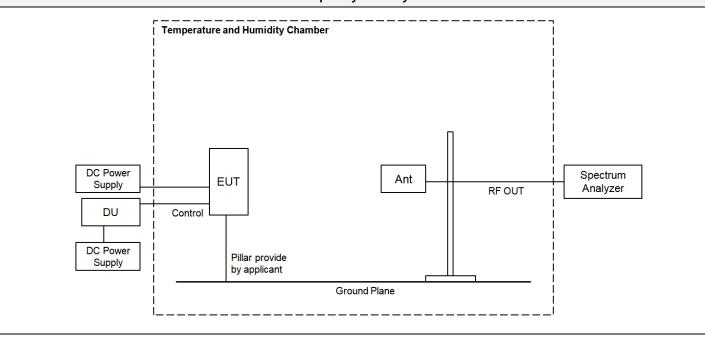
3.5. TEST DIAGRAMS













4. TEST EQUIPMENTS

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Agilent	N9030B / PXA Signal Analyzer	08/29/2018	Annual	MY55480167
Schwarzbeck	BBHA 9170 / Horn Antenna	12/04/2017	Biennial	BBHA9170541
KIKUSUI	PWR800L / DC Power Supply	07/18/2019	Annual	RE002047
Innco system	CO3000 / Controller(Antenna mast)	N/A	N/A	CO3000-4p
Innco system	MA4640/800-XP-EP / Antenna Position Tower	N/A	N/A	N/A
Rohde&Schwarz	FSW / Spectrum Analyzer	09/27/2018	Annual	101256
Rohde&Schwarz	FSP / Spectrum Analyzer	09/19/2018	Annual	836650/016
Rohde & Schwarz	Loop Antenna	01/18/2019	Biennial	1513-175
Emco	2090 / Controller	N/A	N/A	060520
Ets	Turn Table	N/A	N/A	N/A
Schwarzbeck	VULB 9168 / Hybrid Antenna	08/31/2018	Biennial	00895
Schwarzbeck	BBHA 9120D / Horn Antenna	06/28/2019	Biennial	9120D-1300
OML INC.	WR-19 Horn Antenna / Horn Antenna	04/23/2018	Biennial	18042301
OML INC.	WR-19 Horn Antenna / Horn Antenna	04/23/2018	Biennial	18042302
OML INC.	WR-12 Horn Antenna / Horn Antenna	04/23/2018	Biennial	18042301
OML INC.	WR-12 Horn Antenna / Horn Antenna	04/23/2018	Biennial	18042302
OML INC.	WR-08 Horn Antenna / Horn Antenna	05/01/2018	Biennial	18050101
OML INC.	WR-08 Horn Antenna / Horn Antenna	05/01/2018	Biennial	18050102
OML INC.	OML WR19 / Harmonic Mixer	09/27/2018	Annual	W19HWD
OML INC.	OML WR12 / Harmonic Mixer	09/27/2018	Annual	W12HWD
OML INC.	OML WR08 / Harmonic Mixer	09/27/2018	Annual	W08HWD
OML INC.	WR-19 / Source Module	09/27/2018	Annual	S19MS-A-160516-1
OML INC.	WR-12 / Source Module	09/27/2018	Annual	S12MS-A-160419-1
OML INC.	WR-08 / Source Module	09/27/2018	Annual	S08MS-A-160419-1
NANGYEUL CO., LTD.	NY-THR18750 / Temperature and Humidity Chamber	10/30/2018	Annual	NY-2009012201A
Rohde & Schwarz	SMV100A / Signal Generator	07/15/2019	Annual	177633

Note:

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.

2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.



5. TEST RESULT

5.1. OCCUPIED BANDWIDTH

FCC Rules

Test Requirements:

§ 2.1049 Measurements required: Occupied bandwidth.

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured under the specified conditions of § 2.1049 (a) through (i) as applicable.

Test Procedures:

The measurement is performed in accordance with Section 5.4.3 and 5.4.4 of ANSI C63.26.

5.4.3 Occupied bandwidth-Relative measurement procedure

a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be wide enough to see sufficient roll off of the signal to make the measurement.

b) The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set \geq 3 × RBW.

c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation. See guidance provided in 4.2.3.

NOTE-Step a), step b), and step c) may require iteration to adjust within the specified tolerances.

d) The dynamic range of the spectrum analyzer at the selected RBW shall be more than 10 dB below the target "−X dB" requirement, i.e., if the requirement calls for measuring the −26 dB OBW, the spectrum analyzer noise floor at the selected RBW shall be at least 36 dB below the reference level.

e) Set spectrum analyzer detection mode to peak, and the trace mode to max hold.

f) Determine the reference value by either of the following:

1) Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value).

2) Set the EUT to transmit an unmodulated carrier. Set the spectrum analyzer marker to the level of the carrier.

g) Determine the "-X dB amplitude" as equal to (Reference Value -X). Alternatively, this calculation can be performed on the spectrum analyzer using the delta-marker measurement function.

h) If the reference value was determined using an unmodulated carrier, turn the EUT modulation on, then either clear the existing trace or start a new trace on the spectrum analyzer and allow the new trace to stabilize. Otherwise the trace from step f) shall be used for step i).

i) Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the "-X dB amplitude" determined in step f). If a marker is below this "-X dB amplitude" value it should be as close as possible to this value. The OBW is the positive frequency difference between the two markers. The spectral envelope can cross the "-X dB amplitude" at multiple points. The lowest or highest frequency shall be selected as the frequencies that are the farthest away from the center frequency at which the spectral envelope crosses the "-X dB amplitude."

j) The OBW shall be reported by providing plot(s) of the measuring instrument display, to include markers depicting the relevant frequency and amplitude information (e.g., marker table). The frequency and amplitude axis and scale shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

5.4.4 Occupied bandwidth—Power bandwidth (99%) measurement procedure

a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts (typically a span of 1.5 × OBW is sufficient).

b) The nominal IF filter 3 dB bandwidth (RBW) shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be



set \geq 3 × RBW.

c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation. See guidance provided in 4.2.3.

NOTE—Step a), step b), and step c) may require iteration to adjust within the specified tolerances.

d) Set the detection mode to peak, and the trace mode to max-hold.

e) If the instrument does not have a 99% OBW function, recover the trace data points and sum directly in linear power terms. Place the recovered amplitude data points, beginning at the lowest frequency, in a running sum until 0.5% of the total is reached. Record that frequency as the lower OBW frequency. Repeat the process until 99.5% of the total is reached and record that frequency as the upper OBW frequency. The 99% power OBW can be determined by computing the difference these two frequencies.

f) The OBW shall be reported and plot(s) of the measuring instrument display shall be provided with the test report. The frequency and amplitude axis and scale shall be clearly labeled. Tabular data can be reported in addition to the plot(s).

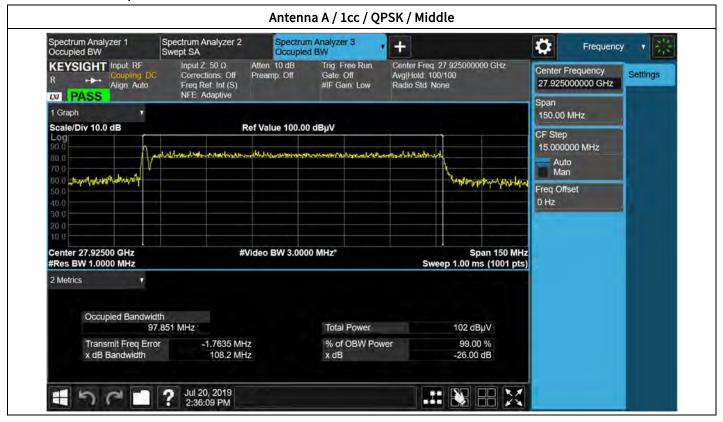


Test Results: Tabular Data of Occupied Bandwidth

Ant.	Ant. Angle	CC	Channel	Freq. (GHz)	Mod.	Measured OBW (MHz)	
					QPSK	97.851	
		1			16QAM	97.839	
	1250				64QAM	97.886	
A	135°				QPSK	787.814	
		8			16QAM	787.527	
					64QAM	786.785	
					QPSK	97.734	
		1			16QAM	97.767	
	459				64QAM	97.722	
В	45°				QPSK	787.678	
		8			16QAM	785.749	
			Middle	27.025	64QAM	786.059	
			Middle	27.925	QPSK	96.968	
		1	1			16QAM	97.079
6	135°					64QAM	96.959
С	135					QPSK	787.620
		8			16QAM	786.622	
					64QAM	786.727	
					QPSK	97.565	
		1			16QAM	97.613	
	459				64QAM	97.556	
D	45°				QPSK	786.890	
		8			16QAM	786.562	
					64QAM	786.458	

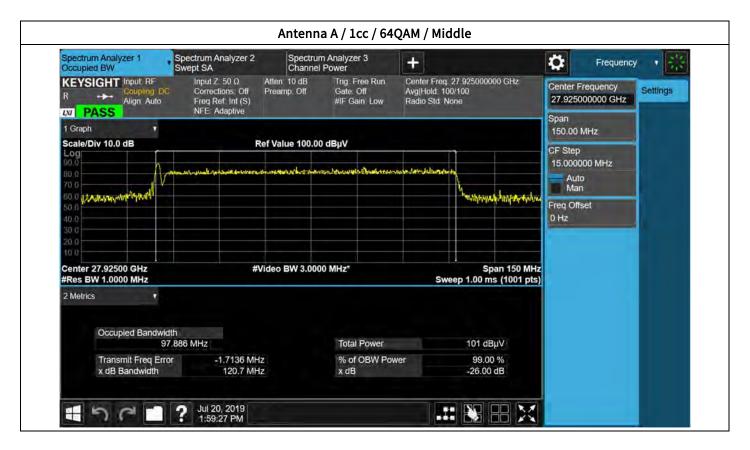


Plot Data of RF Occupied Bandwidth



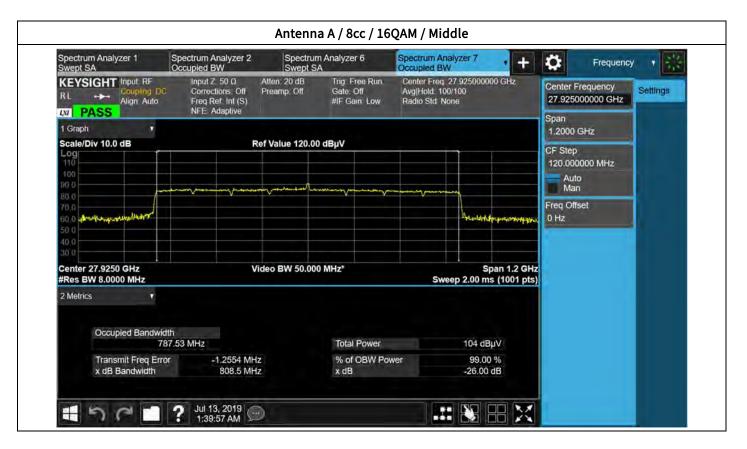
Spectrum Analyzer 1 Occupied BW	Spectrum Analyzer 2 Swept SA	Spectrur Channel	n Analyzer 3 Power	+		Frequency	· • 33
R	Input Z 50 Ω Corrections: Off Freq Ref. Int (S) NFE: Adaptive	Atten: 10 dB Preamp: Off	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq: Avg[Hold: 100 Radio Std: No		Center Frequency 27.925000000 GHz	Settings
I Graph V Scale/Div 10.0 dB		Ref Value 100.00) dBµV			Span 150.00 MHz CF Step	
90.0 80.0 70.0 60.0 10.0 10.0 10.0 10.0	. per perto consento per			and an	Multinesentiantaniere	0 Hz	
Center 27.92500 GHz #Res BW 1.0000 MHz 2 Metrics • Occupied Bandwic		Vīdeo BW 3.000	0 MHz*	Swe	Span 150 MHz ep 1.00 ms (1001 pts) 102 dBuV		
Transmit Freq Erro x dB Bandwidth			% of OBW Pov x dB	ver	99.00 % -26.00 dB		





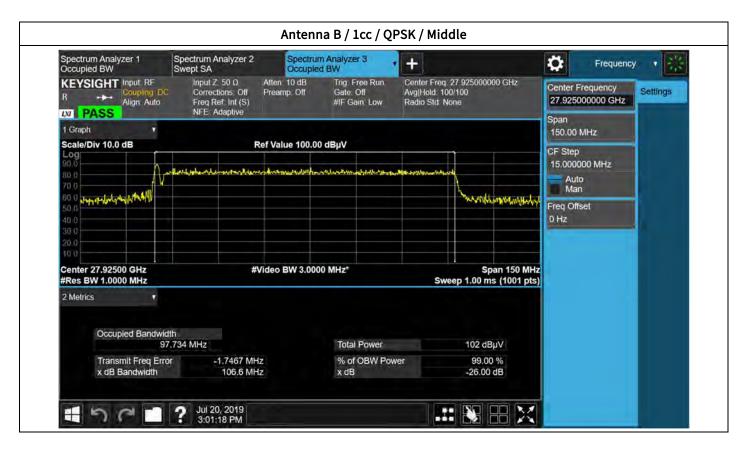
Spectrum Analyzer 1 Swept SA	Spectrum Analyzer 2 Occupied BW	Spectrur Swept S	m Analyzer 6 A	Spectrum Ana Occupied BW	alyzer 7	+ 🗘 Fre	equency 🔹 👬
RL Align. Auto	Input Z: 50 Ω Corrections: Off Freq Ref: Int (S) NFE: Adaptive	Atten: 20 dB Preamp: Off	Trig. Free Run Gate: Off #IF Gain: Low	Center Freq 2 Avg[Hold: 100 Radio Std: No		Center Frequer 27.925000000	Octuinda
1 Graph v Scale/Div 10.0 dB		Ref Value 120.00				Span 1.2000 GHz	
Log 110 90.0			о авру			CF Step 120.000000 M	Hz
80.0 70.0 60.0 50.0	a and a second and a second a			~ <u></u>	halputyterergentilit	Man Freq Offset 0 Hz	
40.0 30.0 Center 27.9250 GHz #Res BW 8.0000 MHz		/ideo BW 50.00	0 MHz*	Swe	Span 1.2 ep 2.00 ms (1001		
2 Metrics Coccupied Bandwid 78	1th 87.81 MHz		Total Power		104 dBµV		
Transmit Freq Erro x dB Bandwidth	or -1.3356 MH 805.0 MH		% of OBW Pov x dB	wer	99.00 % -26.00 dB		





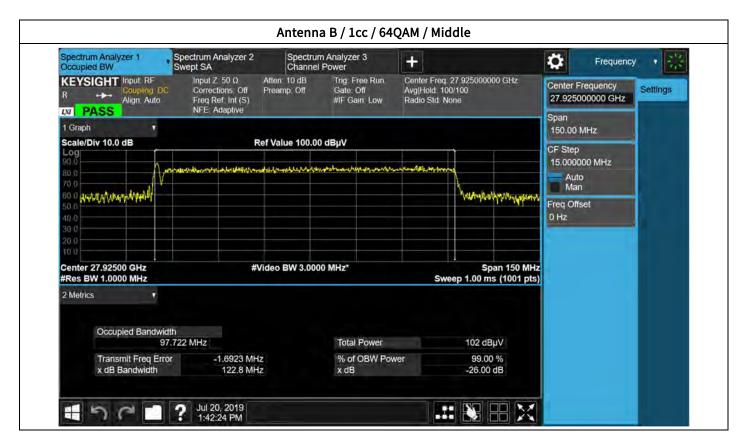
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KEYSIGHT Input RF RL Align Auto	Input Z: 50 Ω Corrections: Off Freq Ref Int (S) NFE: Adaptive	Atten: 20 dB Preamp: Off	Preamp: Off Gate: Off A		nter Freq: 27.925000000 GHz g Hold: 100/100 dio Std: None		and the second se	requency 00000 GHz	Settings
1 Graph 🔹							Span 1.2000 (GHz	
Scale/Div 10.0 dB Log 110 400 90.0		Ref Value 120.00	О авµv				CF Step 120.000 Auto Man		
80 0 70 0 60 0 40 0 40 0 40 0					HotMaytero	uan shaangharah	Freq Offs 0 Hz	set	
Center 27.9250 GHz #Res BW 8.0000 MHz	1	/ideo BW 50.00	0 MHz*	Swe		pan 1.2 GHz s (1001 pts)			
2 Metrics Occupied Bandwid 78 Transmit Freq Error	36.79 MHz	łz	Total Power % of OBW Po	wer	104 dB 99.00				
x dB Bandwidth	805,2 MH	iz	x dB		-26.00	dB			





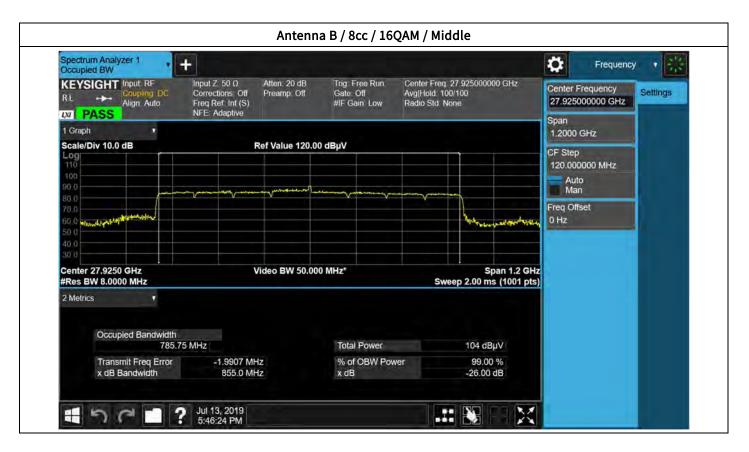
Spectrum Analyzer 1 Occupied BW	Spectrum Analyzer 2 Swept SA	Spectrur	n Analyzer 3 d BW	+		Frequenc	y 🔹 👬
R	Input Z: 50 Ω Corrections: Off Freq Ref: Int (S) NFE: Adaptive	Atten: 10 dB Preamp: Off	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq 2 Avg Hold: 100 Radio Std: No		Center Frequency 27.925000000 GHz	Settings
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60 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						Freq Offset 0 Hz	
Center 27.92500 GHz #Res BW 1.0000 MHz	#	Video BW 3.000	0 MHz*	Swe	Span 150 MH ep 1.00 ms (1001 pts		
2 Metrics Occupied Bandwid 97 Transmit Freq Error	.767 MHz	17	Total Power % of OBW Pow	er.	101 dBµV 99.00 %		
x dB Bandwidth	116.0 MH		x dB	EI	-26.00 dB		





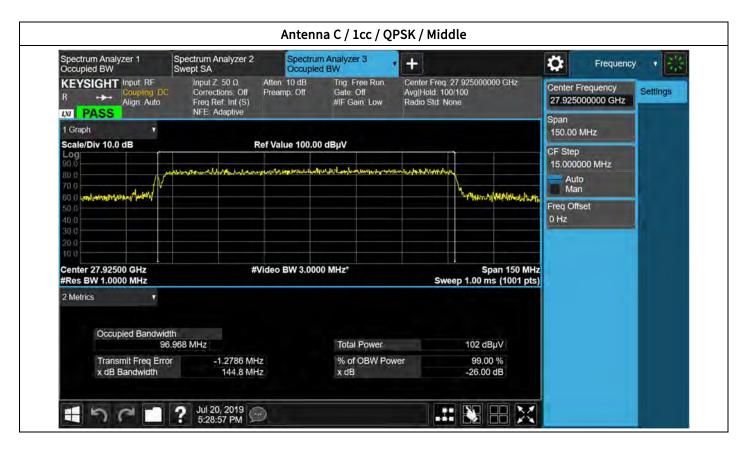
Spectrum Analyzer 1 Occupied BW	+					Ö.	Frequency	· · · · · · · · · · · · · · · · · · ·
KEYSIGHT RL		Atten: 20 dB Preamp: Off	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq. 27 Avg Hold: 100/1 Radio Std: None		Center Fr 27.92500	equency 00000 GHz	Settings
LVI PASS 1 Graph						Span 1.2000 G	iHz	
Scale/Div 10.0 dB	R	ef Value 120.00				CF Step 120.0000 Auto Man		
80 0 70 0 50 0 50 0 40 0 30 0					and the second second	Freq Offse 0 Hz	et	
Center 27.9250 GHz #Res BW 8.0000 MHz	Vi	deo BW 50.00	0 MHz*	Sweep	Span 1.2 GHz 2.00 ms (1001 pts)			
5.5193	88 MHz		Total Power		104 dBµV			
Transmit Freq Error x dB Bandwidth	-1.1333 MHz 881.3 MHz		% of OBW Pow x dB	ver	99.00 % -26.00 dB			





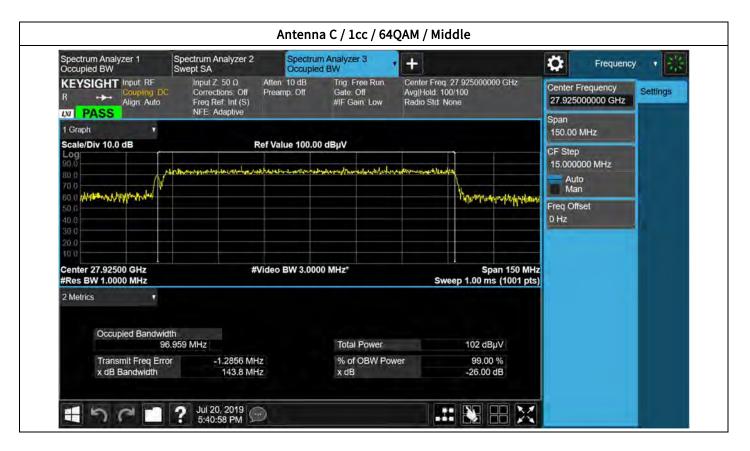
Spectrum Analyzer 1 Occupied BW	÷			Frequenc	y 🔹 🚟
RL Align. Auto	Input Z 50 Ω Atten: 20 Corrections: Off Preamp. C Freq Ref. Int (S) NFE: Adaptive		Center Freq: 27.925000000 GHz Avg Hold: 100/100 Radio Std: None	Center Frequency 27.925000000 GHz	Settings
1 Graph				Span 1.2000 GHz	
Scale/Div 10.0 dB	Ref Value	20.00 dBµV		CF Step 120.000000 MHz Auto Man	
80 0 70.0 50 0 40.0 30 0			and the second s	Freq Offset	
Center 27.9250 GHz #Res BW 8.0000 MHz	Video BW	50.000 MHz*	Span 1.2 GF Sweep 2.00 ms (1001 pts		
2 Metrics Coccupied Bandwidth 786.0	D6 MHz	Total Power	104 dBµV		
Transmit Freq Error x dB Bandwidth	-1.0588 MHz 805.3 MHz	% of OBW Po x dB	wer 99.00 % -26.00 dB		





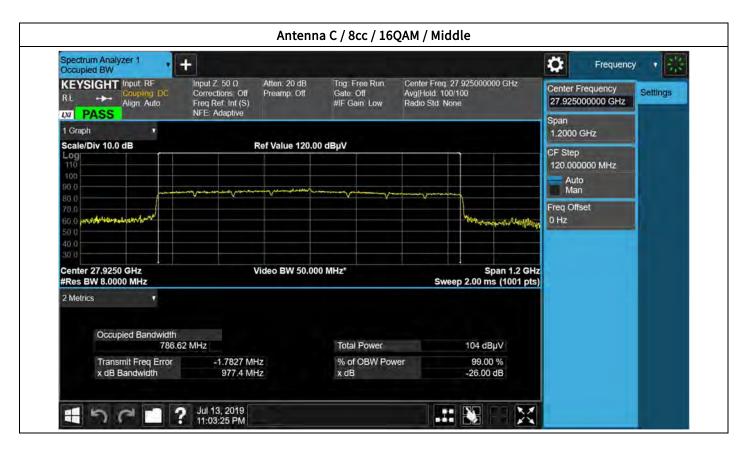
	Spectrum Analyzer 2 Swept SA	Spectrum	n Analyzer 3 d BW	+		Frequenc	y • 5,5
R Align. Auto	Input Z: 50 Ω Corrections: Off Freq Ref: Int (S) NFE: Adaptive	Atten: 10 dB Preamp: Off	Tng. Free Run Gate: Off #IF Gain: Low	Center Freq. 2 Avg Hold 100 Radio Std No		Center Frequency 27.925000000 GHz	Settings
Transformer Contraction Contractic Cont		ef Value 100.00	dBµV			Span 150.00 MHz CF Step	
Log 90.0 80.0 70.0 60.0 Ju, History Mary Mary Mary Mary Mary Mary Mary Ma	nananan talamat katamat katal	arsta Arthansa Antonia Mareka	sekondernanskakanskaksisk		y approximation and real and real and	15.000000 MHz Auto Man	
50.0 40.0 30.0 20.0						9 Freq Offset 0 Hz	
10 0 Center 27.92500 GHz #Res BW 1.0000 MHz	#\	/ideo BW 3.000	0 MHz*	Swee	Span 150 Mi ep 1.00 ms (1001 pt		
2 Metrics • Occupied Bandwidtl 97.	n 079 MHz		Total Power		101 dBµV		
Transmit Freq Error x dB Bandwidth	-1.2875 MH 149.1 MH		% of OBW Powers x dB	er	99.00 % -26.00 dB		





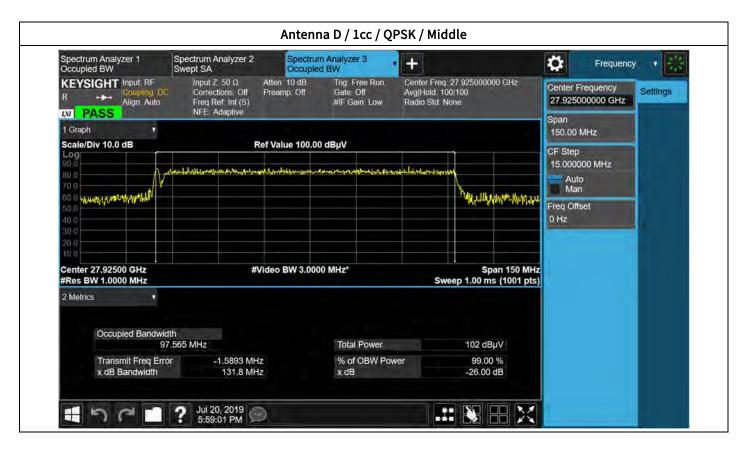
Spectrum Analyzer 1 Occupied BW				Frequenc	y 🔹 👬
KEYSIGHT Input: RF RL +++ Align: Auto	Input Z 50 Ω Atten: 20 d Corrections: Off Preamp: Of Freq Ref. Int (S) NFE: Adaptive		Center Freq: 27.925000000 GHz Avg Hold: 100/100 Radio Std: None	Center Frequency 27.925000000 GHz	Settings
W PASS 1 Graph ▼ Scale/Div 10.0 dB	Ref Value 12	20.00 dBuV		Span 1.2000 GHz	
Log				CF Step 120.000000 MHz	
100 90.0	man and the second	hannen		Auto Man	
80 0 70.0 60 0 negrotience of the state of 			Wheneserperandersh	Freq Offset 0 Hz	
30 0 Center 27.9250 GHz #Res BW 8.0000 MHz	Video BW 5	0.000 MHz*	Span 1.2 GH Sweep 2.00 ms (1001 pts		
2 Metrics Occupied Bandwidth 787.62	2 MHz	Total Power	104 dBµV		
Transmit Freq Error x dB Bandwidth	-1.4567 MHz 966.8 MHz	% of OBW Pov x dB	ver 99.00 % -26.00 dB		





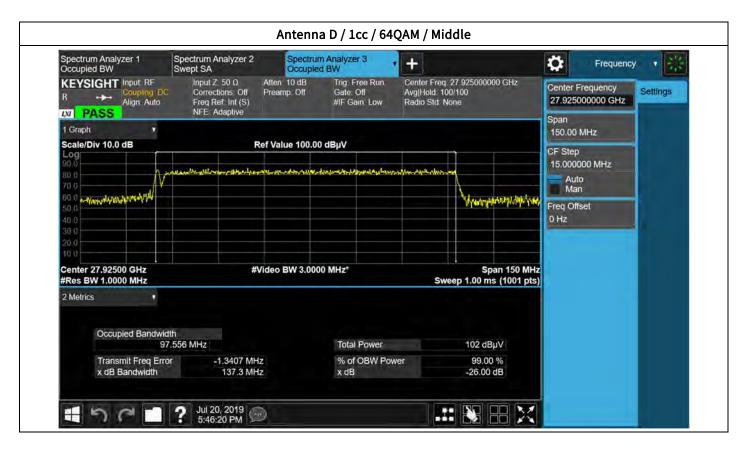
Spectrum Analyzer 1 Occupied BW				Frequenc	y • 👬
RL Align: Auto	Input Z 50 Ω Atten: 20 dB Corrections: Off Freq Ref. Int (S) NFE: Adaptive		Center Freq: 27.925000000 GHz Avg Hold: 100/100 Radio Std: None	Center Frequency 27.925000000 GHz	Settings
1 Graph v Scale/Div 10.0 dB	Ref Value 120			Span 1.2000 GHz	
Log 110				CF Step 120.000000 MHz	
100 90.0 80.0	warden			Auto Man	
80 0 70.0 60 0 and Aluman and Aluman 50 0 40.0			Antonio	Freq Offset 0 Hz	
30 0 Center 27.9250 GHz #Res BW 8.0000 MHz	Video BW 50	.000 MHz*	Span 1.2 GH Sweep 2.00 ms (1001 pts		
2 Metrics Occupied Bandwidth 786.73	MHz	Total Power	104 dBµV		
Transmit Freq Error x dB Bandwidth	-1.6396 MHz 945.6 MHz	% of OBW Pow x dB	ver 99.00 % -26.00 dB		





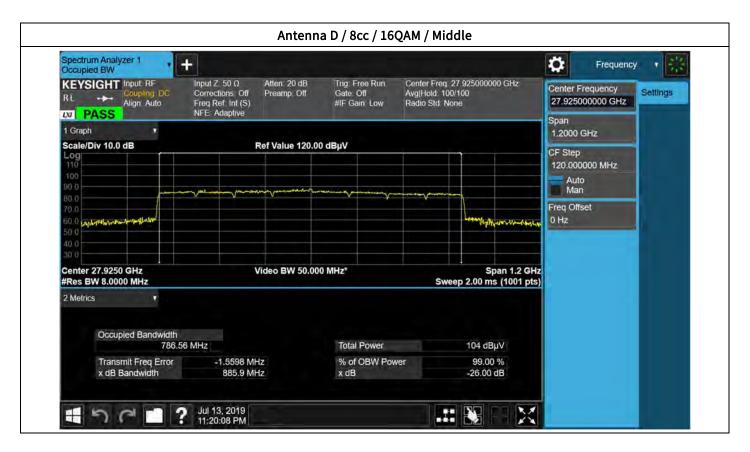
Spectrum Analyzer 1 Occupied BW	Spectrum Analyzer 2 Swept SA	Spectrum	n Analyzer 3 d BW	+		Frequency	1 1 33
R Align Auto		Atten: 10 dB Preamp: Off	Trig. Free Run Gate: Off #IF Gain: Low	Center Freq. 2 Avg(Hold: 100 Radio Std: No		Center Frequency 27.925000000 GHz	Settings
1 Graph v Scale/Div 10.0 dB		Ref Value 100.00) dBuV			Span 150.00 MHz CF Step	
Log 90.0 70.0 60.0 50.0 50.0 40.0 30.0 20.0 10.0 Center 27.92500 GHz #Res BW 1.0000 MHz	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Video BW 3.000			۲۰۰۰ ۲۰۰۰ ۲۰۰۰ ۲۰۰۰ ۲۰۰۰ ۲۰۰۰ ۲۰۰۰ ۲۰۰	15.000000 MHz	
2 Metrics	97.613 MHz		Total Power % of OBW Pow x dB		102 dBµV 99.00 % -26.00 dB		





Spectrum Analyzer 1 Occupied BW	+			Frequenc	y 🔹 👬
KEYSIGHT Input: RF RL Align: Auto	Input Z 50 Ω Atten: 20 0 Corrections: Off Preamp. C Freq Ref. Int (S) NFE: Adaptive		Center Freq: 27.925000000 GHz AvglHold: 100/100 Radio Std: None	Center Frequency 27.925000000 GHz	Settings
Date of the second seco		20.00 dBµV		Span 1.2000 GHz	
110 Log			يصحم وعمة والعصيرية	CF Step 120.000000 MHz	
100 90.0			-	Auto Man	
80 0 70 0 60 0 50 0 40 0			an with the main market	Freq Offset 0 Hz	
Center 27.9250 GHz #Res BW 8.0000 MHz	Video BW :	50.000 MHz*	Span 1.2 GF Sweep 2.00 ms (1001 pt		
2 Metrics	9 MHz	Total Power	104 dBµV		
Transmit Freq Error x dB Bandwidth	-1,5305 MHz 1,044 GHz	% of OBW Po x dB	wer 99.00 % -26.00 dB		





Spectrum Analyzer 1 Occupied BW	t			Frequency •
KEYSIGHT Input: RF RL Align: Auto	Input Z 50 Ω Atten: 20 d Corrections: Off Preamp: O Freq Ref. Int (S) NFE: Adaptive		Center Freq: 27.925000000 GHz Avg Hold: 100/100 Radio Std: None	Center Frequency Settings 27.925000000 GHz
UT PASS 1 Graph v Scale/Div 10.0 dB	Ref Value 1	20.00 48:0/	F.	Span 1.2000 GHz
Log 110 100 90.0				CF Step 120.000000 MHz Auto
80 0 70 0 60 0 mm			and have been been and the second an	Man Freq Offset 0 Hz
40.0 30.0 Center 27.9250 GHz #Res BW 8,0000 MHz	Video BW 5	0.000 MHz*	Span 1.2 GF Sweep 2.00 ms (1001 pt	
2 Metrics				
Occupied Bandwidth 786.4	6 MHz	Total Power	105 dBµV	
Transmit Freq Error x dB Bandwidth	-1.7813 MHz 856.6 MHz	% of OBW Pov x dB	ver 99.00 % -26.00 dB	



5.2. EIRP DENSITY

FCC Rules

Test Requirements:

§ 30.202 Power limits.

(a) For fixed and base stations operating in connection with mobile systems, the average power of the sum of all antenna elements is limited to an equivalent isotopically radiated power (EIRP) density of +75dBm/100 MHz. For channel bandwidths less than 100 megahertz the EIRP must be reduced proportionally and linearly based on the bandwidth relative to 100 megahertz.

Test Procedures:

The measurement is performed in accordance with Section 5.2.4.4.2 of ANSI C63.26.

- a) Set span to 2 × to 3 × the OBW.
- b) Set RBW = 1% to 5% of the OBW.
- c) Set VBW \geq 3 × RBW.
- d) Set number of measurement points in sweep \geq 2 × span / RBW.
- e) Sweep time:
 - 1) Set = auto-couple, or

2) Set ≥ [10 × (number of points in sweep) × (transmission symbol period)] for single sweep (automation-compatible) measurement.

- f) Detector = power averaging (rms).
- g) Set sweep trigger to "free run."

h) Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple. To accurately determine the average power over the on and off time of the transmitter, it can be necessary to increase the number of traces to be averaged above 100, or if using a manually configured sweep time, increase the sweep time.

i) Compute power by integrating the spectrum across the OBW of the signal using the instrument's band or channel power measurement function with band/channel limits set equal to the OBW band edges. If the instrument does not have a band or channel power function, sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.

j) Add 10 log (1/duty cycle) to the measured power level to compute the average power during continuous transmission.

Note:

- 1) Test distance is determined to 3.5 m by far field condition; see test descriptions on page 8.
- 2) In this test, EUT is operated only measurement path is turned on and path has straight beamforming.
- 3) For 8 cc measurement, test is performed for all carriers of 100 MHz bandwidth, but recorded only maximum output level.
- 4) The angle of antenna is set as maximum radiated power conditions.
- 5) EIRP is calculated from measured value according to section 5.2.7 of ANSI C62.26-2015, and the formula is as follows.

EIRP (dBm) = E (dBμV/m) + 20log(3.5 m) – 104.77

= E (dBµV/m) -93.89



6) E (dB μ V/m) value is considered AFCL and Duty cycle factor and it as follow.

 $E (dB_{\mu}V/m) = measurement value (dB_{\mu}V) + AFCL (28 GHz) + Duty cycle correction (80 %)$ = measurement value (dB_{\mu}V) + 45.44+ 0.975

- 7) According to section 6.4 of ANSI C63.26-2015, MIMO EIRP is calculated by co-polarized antenna arrays (A and C / B and D). Total MIMO EIRP is calculated by correlated signals(A and C and B and D)
- 8) The output tolerance of the EUT in the specification is ± 3 dB and test result satisfies this condition.
- 9) Sample calculation:

95.51 dBμV (measured Value) + 10.88(distance) - 104.77 +45.44(AFCL) + 0.975 (Duty) = 48.04 dBm (Final EIRP)



Test Results:

Tabular Data of EIRP Density per path

Ant.	Ant.	CC	Channel	Frequency	Mod.	Measured Level	Limit	Calculated	
AIIC.	Angle		Channet	(GHz)	Mou.	(dBuV)	(dBm)	EIRP (dBm)	
		0				QPSK	95.51		48.04
			Low	27.55	16QAM	95.60		48.13	
					64QAM	95.38		EIRP (dBm) 48.04 48.13 47.91 47.95 48.07 47.95 48.07 47.95 48.07 47.95 48.07 47.95 48.07 47.95 48.07 47.95 48.07 47.22 47.66 46.75 47.01 46.65 45.69 46.31 46.37 45.69 46.19 47.12 48.18 48.19 47.67 47.64 48.17 47.36 48.11 47.78 45.69 45.35 46.47 46.22 46.47 46.22 46.41	
					QPSK	95.42			
		1	Middle	27.925	16QAM	95.54			
					64QAM	94.69		47.22	
					QPSK	95.03		EIRP (dBm) 48.04 48.13 47.91 47.95 48.07 47.95 48.07 47.95 48.07 47.91 47.95 48.07 47.91 47.95 48.07 47.91 47.95 48.07 47.69 47.66 46.75 47.01 46.65 45.93 46.31 46.37 45.69 46.22 46.19 47.12 48.18 48.19 47.67 47.64 48.17 47.78 45.69 45.35 46.47 46.22 46.47 46.22	
			High	28.3	16QAM	95.16		47.69	
	1050				64QAM	95.13	75	47.66	
А	135°				QPSK	94.22	75		
			Low	27.9	16QAM	94.48		47.01	
					64QAM	94.12		46.65	
					QPSK	93.40		45.93	
		8	Middle	27.925	16QAM	93.78		46.31	
					64QAM	93.84		46.37	
					QPSK	93.16		EIRP (dBm) 48.04 48.13 47.91 47.95 48.07 47.95 48.07 47.95 48.07 47.95 48.07 47.95 48.07 47.95 48.07 47.95 48.07 47.22 47.66 46.75 47.01 46.65 45.93 46.31 46.37 45.69 46.19 47.12 48.18 48.19 47.67 47.64 48.17 47.36 48.11 47.78 45.69 45.35 46.47 46.22	
			High	27.95	16QAM	93.69		46.22	
					64QAM	93.66		46.19	
					QPSK	94.58		47.12	
			Low	27.55	16QAM	95.65		48.18	
					64QAM	95.66		48.19	
					QPSK	95.14		47.67	
		1	Middle	27.925	16QAM	95.11		47.64	
					64QAM	95.64		$\begin{array}{c} 47.91 \\ 47.95 \\ 48.07 \\ 47.95 \\ 48.07 \\ 47.22 \\ 47.56 \\ 47.69 \\ 47.69 \\ 47.69 \\ 47.61 \\ 46.75 \\ 47.01 \\ 46.65 \\ 45.93 \\ 46.31 \\ 46.37 \\ 45.69 \\ 46.22 \\ 46.19 \\ 47.12 \\ 48.18 \\ 48.19 \\ 47.67 \\ 47.67 \\ 47.67 \\ 47.67 \\ 47.64 \\ 48.17 \\ 47.36 \\ 48.11 \\ 47.78 \\ 45.69 \\ 45.35 \\ 46.47 \\ 46.22 \\ 46.41 \\ 46.29 \\ 45.69 \\ 45.69 \end{array}$	
					QPSK	94.83		47.36	
			High	28.3	16QAM	95.58		48.11	
D	459				64QAM	95.25	75	47.78	
В	45°				QPSK	93.16	75	45.69	
			Low	27.9	16QAM	92.82		45.35	
					64QAM	93.94		46.47	
					QPSK	93.69		46.22	
		8	Middle	27.925	16QAM	93.88		46.41	
					64QAM	93.76		48.13 47.91 47.95 48.07 47.95 48.07 47.95 47.22 47.56 47.69 47.66 46.75 47.01 46.65 45.93 46.31 46.37 45.69 46.22 46.19 47.12 48.18 48.19 47.67 47.64 48.17 47.36 48.11 47.78 45.69 45.35 46.47 46.22 46.41 46.29 45.69	
					QPSK	93.16		45.69	
			High	27.95	16QAM	93.31		45.84	
					64QAM	93.89		46.42	





Ant.	Ant.	СС	Channel	Frequency	Mod.	Measured Level	Limit	Calculated
	Angle			(GHz)		(dBuV)	(dBm)	EIRP (dBm)
			Low		QPSK	95.44		47.97
				27.55	16QAM	94.60		47.14
					64QAM	95.06		47.59
					QPSK	95.17		47.70
		1	Middle	27.925	16QAM	94.80		47.14 47.59
					64QAM	95.27		47.81
					QPSK	93.99		46.53
			High	28.3	16QAM	94.22		46.75
	1050				64QAM	94.31	75	46.84
C	135°				QPSK	93.60	75	EIRP (dBm) 47.97 47.14 47.59 47.70 47.33 47.81 46.53 46.75 46.84 46.13 45.34 45.43 45.43 45.43 45.43 45.43 45.43 45.43 45.43 45.43 45.43 45.43 45.43 45.43 45.87 46.27 46.90 45.49 45.98 46.90 46.53 47.89 48.04 47.52 46.78 46.95 46.96 45.97 45.88 45.86 46.23 46.20 46.35
			Low	27.9	16QAM	92.81		
					64QAM	92.90		45.43
					QPSK	93.34		45.87
		8	Middle	27.925	16QAM	93.74		46.27
					64QAM	93.56		46.09
					QPSK	92.96		45.49
			High	27.95	16QAM	93.37		45.87 46.27 46.09 45.49 45.90 46.27 45.98 46.90 46.53
					64QAM	93.74		
					QPSK	93.45		45.98
			Low	27.55	16QAM	94.36		46.27 45.98 46.90
					64QAM	94.00		46.53
					QPSK	95.36		47.89
		1	Middle	27.925	16QAM	95.51		48.04
					64QAM	94.99		47.52
					QPSK	94.25		46.78
			High	28.3	16QAM	94.42		46.95
	45°				64QAM	94.43	75	EIRP (dBm) 47.97 47.14 47.59 47.70 47.33 47.81 46.53 46.75 46.84 46.13 45.34 45.34 45.34 45.43 45.43 45.43 45.43 45.43 45.43 45.90 45.90 45.49 45.90 46.27 46.09 45.49 45.90 46.53 47.89 46.90 46.53 47.89 48.04 47.52 46.78 46.95 46.95 46.95 46.95
D	45				QPSK	93.44	75	45.97
			Low	27.9	16QAM	93.35		45.88
					64QAM	93.33		45.86
					QPSK	93.70		46.23
		8	Middle	27.925	16QAM	93.67		46.20
					64QAM	93.81		46.35
					QPSK	92.98		45.51
			High	27.95	16QAM	93.45		45.98
					64QAM	93.45		45.98



Tabular Data of EIRP Density for MIMO

Ant.	сс	Ch.	Mod.	Ant A EIRP (dBm)	Ant C EIRP (dBm)	Limit (dBm)	Calculated EIRP (dBm)
			QPSK	48.04	47.97		51.02
		Low	16QAM	48.13	47.14		50.67
			64QAM	47.91	47.59		50.76 50.84 50.73 50.54 50.09 50.26 50.28 49.46 49.27
			QPSK	47.95	47.70		50.84
	1	Middle	16QAM	48.07	47.33		50.73
			64QAM	47.22	47.81		50.54
		QPSK 47.56 High 16QAM 47.69	47.56	46.53		50.09	
			16QAM	47.69	46.75		50.26
A+C			64QAM	47.66	46.84	75	50.28
A+C			QPSK	46.75	46.13	15	49.46
		Low	16QAM	47.01	45.34		50.28 49.46
			64QAM	46.65	45.43		
			QPSK	45.93	45.87		48.91
	8	Middle	16QAM	46.31	46.27		49.30
			64QAM	46.37	46.09		49.24
			QPSK	45.69	45.49		48.60
		High	16QAM	46.22	45.90		49.07
			64QAM	46.19	46.27		49.24



Ant.	сс	Ch.	Mod.	Ant B EIRP (dBm)	Ant D EIRP (dBm)	Limit (dBm)	Calculated EIRP (dBm)
			QPSK	47.12	45.98	49.60 50.60 50.45	49.60
		Low	16QAM	48.18	46.90		50.60
			64QAM	48.19	46.53		50.45
			QPSK	47.67	47.89		50.79
	1	Middle	16QAM	47.64	48.04	2 50.87 8 50.09 5 50.58 5 50.40 75	50.85
			64QAM	48.17	47.52		50.87
			QPSK	47.36	46.78		50.09
		High	16QAM	48.11	46.95		50.58
B+D			64QAM	47.78	46.96		50.40
B+D			QPSK	45.69	45.97		48.84
		Low	16QAM	45.35	45.88		
			64QAM	46.47	45.86		49.19
			QPSK	46.22	46.23		49.24
	8	Middle	16QAM	46.41	46.20		49.32
			64QAM	46.29	46.35		49.33
			QPSK	45.69	45.51		48.61
		High	16QAM	45.84	45.98		48.92
			64QAM	46.42	45.98		49.22





Ant.	СС	Ch.	Mod.	Ant. A (dBm)	Ant. B (dBm)	Ant. C (dBm)	Ant. D (dBm)	Limit (dBm)	Calculated EIRP (dBm)
			QPSK	48.04	47.12	47.97	45.98		53.37
		Low	16QAM	48.13	48.18	47.14	46.9		53.65
			64QAM	47.91	48.19	47.59	46.53		53.62
			QPSK	47.95	47.67	47.7	47.89		53.82
	1	Middle	16QAM	48.07	47.64	47.33	48.04		53.80
			64QAM	47.22	48.17	47.81	47.52		53.71
		High	QPSK	47.56	47.36	46.53	46.78		53.10
			16QAM	47.69	48.11	46.75	46.95		53.43
			64QAM	47.66	47.78	46.84	46.96	75	53.35
A+B+C+D		Low Middle	QPSK	46.75	45.69	46.13	45.97	75	52.17
			16QAM	47.01	45.35	45.34	45.88		51.97
			64QAM	46.65	46.47	45.43	45.86		52.15
			QPSK	45.93	46.22	45.87	46.23		52.09
	8		16QAM	46.31	46.41	46.27	46.2		52.32
			64QAM	46.37	46.29	46.09	46.35		52.30
			QPSK	45.69	45.69	45.49	45.51		51.62
		High	16QAM	46.22	45.84	45.9	45.98		52.01
			64QAM	46.19	46.42	46.27	45.98		52.24

Note : A and C / B and D is cross pol. and correlated signals.



Plot Data of EIRP Density Tabular per path

Spectrum Ana Channel Pow		pectrum Analyzer 2 wept SA	Spectrur Channel	m Analyzer 3 Power	+	Frequenc	у 🔹 👯
		Input Z 50 Ω Corrections Off Freq Ref Int (S) NFE. Adaptive	Atten: 20 dB Preamp: Off #PNO: Fast	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq 27.550000000 GHz Avg Hold: 100/100 Radio Std None	Center Frequency 27.550000000 GHz	Settings
1 Graph						Span 200.00 MHz	
Scale/Div 10	.0 dB		Ref Value 100.00	0 dBµV		CF Step	
90.0						20.000000 MHz	
80.0			win marine whether	๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛		Auto Man	
70 0 60 0						Freq Offset 0 Hz	
50.0	a margaret				for a transfer to the option	of the	
40.0	aller and how was a set	A444					
20.0							
10.0							
Center 27,55 #Res BW 1.0		#	Video BW 3.000	00 MHz*	Span 200 Sweep 1.00 ms (1001		
2 Metrics	-						
Total Char	nnel Power	95.51 dBµV / 100	MHz				
Total Pow	er Spectral Densih	y 15.51 dB	JV/Hz				

Spectrum Analyzer 1 Channel Power	Spectrum Analyzer 2 Swept SA	Spectrum Channel	n Analyzer 3 Power	+		Frequenc	y + 👬
R Align: Auto	Input Z: 50 Ω Corrections: Off Freq Ref. Int (S) NFE: Adaptive	Atten: 20 dB Preamp: Off #PNO: Fast	Trig: Free Run Gate: Off #IF Gain: Low	Center Free Avg Hold 1 Radio Std 1		Center Frequency 27.550000000 GHz	Settings
1 Graph T						Span 200.00 MHz	
Scale/Div 10.0 dB		ef Value 100.00) dBµV			CF Step 20.000000 MHz	
80.0	-					Auto Man	
60 0						Freq Offset 0 Hz	
40.0 унитераторатораторания 30.0	ntrad			V			
20.0							
10.0 Center 27.5500 GHz #Res BW 1.0000 MHz	#\	/ideo BW 3.000	0 MHz*	Sv	Span 200 MHz veep 1.00 ms (1001 pts)		
2 Metrics •							
Total Channel Power	95.60 dBµV / 100						
Total Power Spectral Densi	ty 15.60 dBµ	V/Hz					



Spectrum Ana Channel Pow		pectrum Analyzer 2 wept SA	Spectrur Channel	m Analyzer 3 Power	+		Ö.	Frequency	· * #
KEYSIGH R ++-		Input Z 50 Ω Corrections: Off Freq Ref. Int (S) NFE. Adaptive	Atten: 20 dB Preamp: Off #PNO: Fast	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq 27.5500000 Avg Hold: 100/100 Radio Std: None	000 GHz	Center Fi 27.5500	equency 00000 GHz	Settings
1 Graph	*	10/24/060/27/2					Span 200.00 M	٨Hz	
Scale/Div 10	.0 dB		Ref Value 100.00) авµv			CF Step 20.0000	00 MHz	
80.0		man					Auto Man		
60 0			ا السب ا				Freq Offs 0 Hz	et	
40.0	and any traditional	ma	ا حصا ا			۵۹ <mark>میکاوریدریدومکامی^سریزگذر</mark>		_	
30.0 20.0									
10.0									
Center 27.55 #Res BW 1.0			Video BW 3.000		Sweep 1.00 m	oan 200 MHz is (1001 pts)			
2 Metrics	,								
Total Char		95.38 dBµV / 100							
Total Powe	er Spectral Densit	y 15.38 dB	µV/Hz						

	Spectrum Analyzer 2 Swept SA	Spectrur	n Analyzer 3 Power	+		Frequenc	r * 蒜
REYSIGHT Input RF R Align: Auto	Input Z: 50 Ω Corrections: Off Freq Ref. Int (S) NFE: Adaptive	Atten: 20 dB Preamp: Off #PNO: Fast	Trig. Free Run Gate: Off #IF Gain: Low	Center Freq. 27.925 Avg Hold: 100/100 Radio Std: None	000000 GHz	Center Frequency 27.925000000 GHz	Settings
1 Graph						Span 200.00 MHz	
Scale/Div 10.0 dB		Ref Value 100.00	Завру			CF Step 20.000000 MHz	
70.0	- Warner		alaran yan ang kanan			Man Freq Offset	
60 0 50.0 mm	want				-	0 Hz	
30.0							
10.0							
Center 27.9250 GHz #Res BW 1.0000 MHz		Video BW 3.000	0 MHz*	Sweep 1.0	Span 200 MHz 0 ms (1001 pts)		
2 Metrics	95.42 dBµV / 100	MHz					
Total Power Spectral Dens	sity 15.42 dBj	IV/Hz					



Spectrum Analyzer 1 Channel Power	Spectrum Analyzer 2 Swept SA	Spectrur Channel	n Analyzer 3 Power	+		Ö,	Frequency •
KEYSIGHT R +++ Coupling DC Align: Auto	Input Z 50 Ω Corrections: Off Freq Ref: Int (S) NFE: Adaptive	Atten: 20 dB Preamp: Off #PNO: Fast	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq. 27.925 Avg Hold: 100/100 Radio Std: None	000000 GHz	Center Free 27.925000	Settings
1 Graph 🔹		Land at all	S. 44 . 4			Span 200.00 MH	z
Scale/Div 10.0 dB		Ref Value 100.00) dBµV			CF Step 20.000000 Auto	MHz
70.0	a mil					Man Freq Offset 0 Hz	
40.0 30.0				Nahrdhuyat	Martinetran		
20.0							
Center 27,9250 GHz #Res BW 1.0000 MHz		#Video BW 3.000	0 MHz	Sweep 1.0	Span 200 MHz 00 ms (1001 pts)		
2 Metrics	95.54 dBµV / 10						
Total Power Spectral Der	isity 15.54 de	βµV/Hz					

Spectrum Analyzer 1 Channel Power	Spectrum Analyzer 2 Swept SA	Spectrun Channel	n Analyzer 3 Power	+	Frequency	1 1 23
R Align: Auto	Input Z 50 Ω Corrections: Off Freq Ref: Int (S) NFE: Adaptive	Atten: 20 dB Preamp: Off #PNO Fast	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq: 27.925000000 GHz Avg Hold: 100/100 Radio Std: None	Center Frequency 27.925000000 GHz	Settings
1 Graph v Scale/Div 10.0 dB		Ref Value 100.00) dBµV		Span 200.00 MHz CF Step	
Log					20.000000 MHz	
80.0	A management	- war war war war		mmy	Auto Man	
70.0 60.0					Freq Offset 0 Hz	
50.0 may	untrij			person all warmer	Awa	
30.0						
20.0						
Center 27.9250 GHz #Res BW 1.0000 MHz	#	Video BW 3.000	0 MHz*	Span 200 M Sweep 1.00 ms (1001 p		
2 Metrics						
Total Channel Power	94.69 dBµV / 100) MHz				
Total Power Spectral Den	sity 14.69 dB	uV/Hz				





			Ante	nna A / 1cc / (QPSK / High	
Spectrum Anal Channel Powe		Spectrum Analyz Swept SA	er 2 Spectr Chann	um Analyzer 3 el Power	• 🕂	Frequency •
	Input: RF Coupling: DC Align: Auto	Freq Ref Int.	Off Preamp: Off (S) #PNO: Fast	Trig. Free Run Gate: Off #IF Gain: Low	Center Freq. 28.300000000 GHz Avg Hold: 100/100 Radio Std: None	Center Frequency 28.30000000 GHz Settings
LN 1 Graph		NFE: Adaptiv	see alaa	S. Martin		Span 200.00 MHz
Scale/Div 10.0) dB		Ref Value 100.			CF Step 20.000000 MHz Auto
70.0 60.0				**************************************		Man Freq Offset 0 Hz
40.0					Januashaalkaaandumbaadhaa	
20.0 10,0 Center 28,300	0 GHz		#Video BW 3.00	200 MH 7*	Span 200 Mi	
#Res BW 1.00 2 Metrics					Sweep 1.00 ms (1001 pt	
Total Chann		95.03 dBµV /				
Total Power	Spectral Den	Jul 20, 201	dBµV/Hz			
15	C L	12:49:50 A	vi			

Spectrum Analyzer 1 Channel Power		pectrum Ar wept SA	halyzer 2	Spectru Channe	m Analyzer 3 I Power	• +		O	Frequency	· · · · · · · · · · · · · · · · · · ·
KEYSIGHT Input R Align	RF ling DC Auto	Input Z Correcti Freq Re NFE: Ac	ons: Off f: Int (S)	Atten: 20 dB Preamp: Off #PNO Fast	Trig: Free Run. Gate: Off #IF Gain: Low	Avg H	r Freq: 28 300000000 GHz Iold: 100/100 Std: None	28.3000	requency 000000 GHz	Settings
1 Graph Scale/Div 10.0 dB	•		,	Ref Value 100.0	0 dBµV			Span 200.00 I CF Step	MHz	
20 0 80 0			4.00-00-00					20.0000 Auto Man)	
70.0 60.0 50.0								Freq Offs 0 Hz		
40.0		~1					pulmanaspectrations produce	ing -		
20.0										
Center 28.3000 GHz #Res BW 1.0000 MH			#	Video BW 3.00	00 MHz*		Span 200 M Sweep 1.00 ms (1001 p			
2 Metrics Total Channel Pov	wer	95.16 de	8µV / 100	MHz						
Total Power Spec	tral Densit	y 1	5.16 dBµ	V/Hz						



Spectrum Anal Channel Power		Spectrum Analyz Swept SA		hannel F	Analyzer 3 Power	• +		Ø	Frequency	· · · · · · · · · · · · · · · · · · ·
KEYSIGHT R ++-	Input: RF Coupling: DC Align: Auto	Input Z 50 Ω Corrections: Freq Ref Int NFE Adaptiv	Off Preamp: (S) #PNO Fa	Off	Trig. Free Run Gate: Off #IF Gain: Low	Avg	er Freq: 28.300000000 GHz fold: 100/100 o Std: None	28.3000	requency 000000 GHz	Settings
1 Graph		Transfer and the second second						Span 200.00	MHZ	
Scale/Div 10.0	dB		Ref Value	100.00	dBµV				1000 H	
20.0								CF Step 20.0000		
80.0		A						Auto		
70.0		Immo				human		Mar		
60.0		L L						Freq Off	set	
50.0		- all						0 Hz		
40.0	man						anna hatan ana hara hara hara	in l		
30.0							and the second second			
20.0										
10,0										
Center 28.300 #Res BW 1.00			#Video BW	3.0000	MHz"		Span 200 Mi Sweep 1.00 ms (1001 pl			
2 Metrics Total Chann	el Power	95.13 dBµV /	100 MHz							
Total Power	Spectral Dens	sity 15:13	dBµV/Hz							
Total Fores	opedabi Beri		oopinite							

	Spectrum Analyzer 2 Occupied BW	Spectrun Channel	n Analyzer 6 Power	• +	Frequency	· • 🚟
RL Align Auto	Input Z: 50 Q Corrections: Off Freq Ref. Int (S) NFE: Adaptive	Atten: 20 dB Preamp: Off #PNO Fast	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq. 27 950000000 GHz Avg Hold: 100/100 Radio Std: None	Center Frequency 27.950000000 GHz	Settings
1 Graph		oreas - cento	dent la		Span 200.00 MHz	
Scale/Div 10.0 dB		Ref Value 110.00	dΒμV		CF Step 20.000000 MHz Auto	
80.0			and the second		Man Freq Offset 0 Hz	
50.0						
20,0						
Center 27.9500 GHz #Res BW 1.0000 MHz	#	Video BW 3.000	0 MHz*	Span 200 M Sweep 1.00 ms (1001 p		
2 Metrics	94.22 dBµV / 100) MHz				
Total Power Spectral Dens						



Spectrum Anal Swept SA	yzer 1	Spectrum Analyze Occupied BW	r 2 Spect Chan	trum Analyzer 6 nel Power	• +	Frequenc	y 🔹 🚟
	Input RF Couping DC Align Auto	Input Z 50 Ω Corrections: C Freq Ref. Int (NFE: Adaptive	S) #PNO Fast	Trig. Free Run Gate: Off #IF Gain: Low	Center Freq. 27.950000000 GHz Avg[Hold: 100/100 Radio Std: None	Center Frequency 27.950000000 GHz	Settings
1 Graph						Span 200.00 MHz	
Scale/Div 10.0	dB		Ref Value 120	.00 dBµV		CF Step 20.000000 MHz Auto Man	
90.0 80.0 70.0					~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Freq Offset 0 Hz	
60.0 50.0 40.0							
30,0							
Center 27.950 #Res BW 1.00		·	#Video BW 3.0	0000 MHz*	Span 200 Span 200 Sweep 1.00 ms (1001		
2 Metrics Total Chanr	• Nel Power	94.48 dBµV /	100 MHz				
Total Power	Spectral Den	sity 14.48	dBµV/Hz				

Spectrum Analy Swept SA	zer 1	Spectrum Analyzer 2 Occupied BW	Spectrur Channel	n Analyzer 6 Power	• +	Frequenc	y 🔹 🚟
	Input RF Coupling DC Align Aulo	Input Z 50 Ω Corrections: Off Freq Ref. Int (S) NFE: Adaptive	Atten: 20 dB Preamp: Off #PNO_Fast	Trig. Free Run Gate: Off #IF Gain: Low	Center Freq: 27 950000000 GHz Avg Hold: 100/100 Radio Std: None	Center Frequency 27.950000000 GHz	Settings
1 Graph	÷.		Sector - Marco	. Aurola		Span 200.00 MHz	
Scale/Div 10.0	dB		Ref Value 110.00) dBµV		CF Step 20.000000 MHz	
90.0		A				Auto Man	
70.0	and the second		erentet to the second second			Freq Offset 0 Hz	1
50.0					Y		
30.0							
20.0 Center 27.9500 #Res BW 1.000			Video BW 3.000	0 MHz*	Span 200 Sweep 1.00 ms (1001		
2 Metrics							
Total Channe	el Power	94.12 dBµV / 10	0 MHz				
Total Power	Spectral Den	sity 14.12 dB	µV/Hz				





Spectrum Anal Swept SA	yzer 1	Spectrum Analyzer 2 Occupied BW	Spectrur Swept S	n Analyzer 6 A	Spectrum Analyzer 7 Channel Power	Frequency 🔹 🔆
	Input RF Coupling DC Align Auto	Input Z 50 Ω Corrections: Off Freq Ref: Int (S) NFE: Adaptive	Atten: 20 dB Preamp: Off #PNO: Fast	Trig. Free Run Gate: Off #IF Gain: Low	Center Freq: 27.975000000 GHz Avg[Hold: 100/100 Radio Std: None	Center Frequency 27.975000000 GHz
1 Graph						Span 200.00 MHz
Scale/Div 10.0) dB		Ref Value 110.00) dBµV		CF Step 20.000000 MHz Auto Man
70 0 60.0 50.0 40.0						Freq Offset 0 Hz
30.0 20.0 Center 27.975	0 GHz		Video BW 3.000	00 MHz*	Span 200 /	MHZ
#Res BW 1.00 2 Metrics Total Chann	,	93.40 dBµV / 10	0 MHz		Sweep 1.00 ms (1001	pts)
Same apart	r Spectral Den					

Spectrum Analyzer 1 Swept SA	Spectrum Analyze Occupied BW	r 2 Spectrur Swept S	n Analyzer 6 A	Spectrum Analyzer 7	F 🔅 Frequency 🔹	쁥
KEYSIGHT RL →→ Align /	ng DC Corrections: C	S) #PNO Fast	Trig Free Run Gate: Off #IF Gain: Low	Center Freq: 27.975000000 GHz Avg Hold: 100/100 Radio Std: None	Center Frequency 27.975000000 GHz	gs
1 Graph		And the Article	.att		Span 200.00 MHz	
Scale/Div 10.0 dB		Ref Value 110.00	0 dBµV		CF Step 20.000000 MHz Auto	
80.0	~~~~				Man Freq Offset 0 Hz	
50.0 40.0 30.0						
20.0						
Center 27.9750 GHz #Res BW 1.0000 MHz		#Video BW 3.000	00 MHz*	Span 200 Span 200 Sweep 1.00 ms (1001		
2 Metrics Total Channel Pow	• er 93.78 dBµV /	100 MHz				
Total Power Spectr	al Density 13.78	aBµV/Hz				



Spectrum Anal Swept SA	yzer 1	Spectrum Analyze Occupied BW	er 2 Spectrur Swept S	m Analyzer 6 SA	Spectrum Analyzer 7 Channel Power	- 🔅 Frequenc	/ * 😤
	Input RF Coupling DC Align Auto	Input Z 50 Ω Corrections: 0 Freq Ref Int 0 NFE: Adaptive	S) #PNO Fast	Trig. Free Run Gate: Off #IF Gain: Low	Center Freq. 27.975000000 GHz Avg Hold: 100/100 Radio Std: None	Center Frequency 27.975000000 GHz	Settings
1 Graph						Span 200.00 MHz	
Scale/Div 10.	0 dB		Ref Value 110.0	0 dBµV		CF Step	
Log						20.000000 MHz	
90.0						Auto Man	
70 0						Freq Offset 0 Hz	
50.0						-	
40.0							
30.0							
20,0							
Center 27.975 #Res BW 1.00			#Video BW 3.000	00 MHz*	Span 200 M Sweep 1.00 ms (1001 p		
2 Metrics	8						
Total Chan	nel Power	93.84 dBµV	100 MHz				
Total Powe	r Spectral Dens	sity 13.84	dBµV/Hz				

Spectrum Analyze Swept SA	ř 1.	Spectrum Analyzer 2 Occupied BW	Spectrur Swept S	n Analyzer 6 A	Spectrum Analyzer 7 Channel Power	• +	O	Frequency	- * 益
	iput RF oupling DC- lign Auto	Input Z: 50 Ω Corrections: Off Freq Ref: Int (S) NFE: Adaptive	Atten: 20 dB Preamp: Off #PNO: Fast	Tng: Free Run Gate: Off #IF Gain: Low	Center Freq: 28 00000000 Avg Hold: 100/100 Radio Std: None	GHz	28.0000	requency 00000 GHz	Settings
1 Graph	÷						Span 200.00 M	MHz	
Scale/Div 10.0 de	3		Ref Value 110.00	0 dBµV			CF Step 20.0000	00 MHz	
90.0							Auto Man		
70.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~					****	Freq Offs 0 Hz	set	
50.0									
30.0									
Center 28,0000 G #Res BW 1.0000			#Video BW 3.000	00 MHz*	Spar Sweep 1.00 ms	n 200 MHz (1001 pts)			
2 Metrics	÷								
Total Channel I	Power	93.16 dBµV / 10	0 MHz						
Total Power Sp	bectral Den	sity 13.16 dE	βµV/Hz						





Spectrum Analy Swept SA	/zer 1	Spectrum Analyz Occupied BW	er 2	Spectrur Swept S	n Analyzer 6 A	Spectrum Analyzer 7 Channel Power	+	Ö.	Frequency	- (品
	Input RF Goupling DC Align Auto	Input Z 50 Ω Corrections: (Freq Ref. Int NFE: Adaptiv	Ofi (S)	Atten: 20 dB Preamp: Off #PNO: Fast	Trig. Free Run Gate: Off #IF Gain: Low	Center Freq. 28.000000000 Avg Hold: 100/100 Radio Std: None		and the second second	equency 0000 GHz	Settings
1 Graph				and the second second				Span 200.00 M	Hz	
Scale/Div 10.0	dB		Re	of Value 110.00) dBµV			CF Step 20.00000 Auto Man	0 MHz	
80.0 70.0 60.0			<u> </u>		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			Freq Offse 0 Hz	ıt.	
50.0 40.0 30.0						Ψ				
20,0 Center 28,000			ti Vi	ideo BW 3.000	0.0447	Snar	200 MHz			
#Res BW 1.00				1020 1011 5,000	IO MILLE	Sweep 1.00 ms (
2 Metrics Total Chann		93.69 dBµV								
Total Power	Spectral Der	nsity 13.6	9 dBµ∖	//Hz						

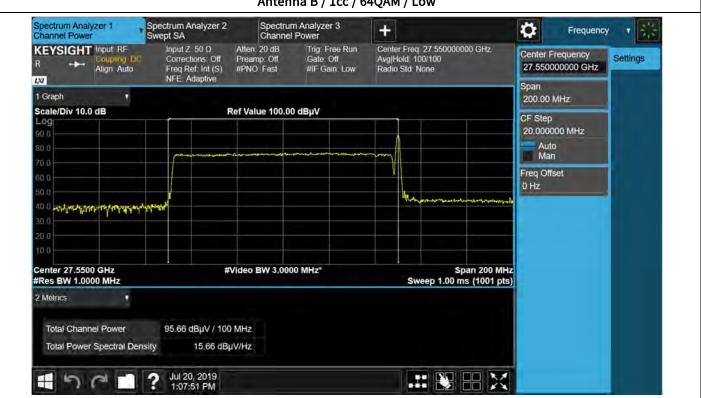
Spectrum Analyzer 1 Swept SA	Spectrum Analyzer 2 Occupied BW	Spectrur Swept S	n Analyzer 6 A	Spectrum Analyzer 7	+ 🔅 Frequency	/ * 蒜
RL +++ Align Auto	Input Z 50 Ω Corrections: Off Freq Ref Int (S) NFE: Adaptive	Atten 20 dB Preamp Off #PNO Fast	Trig. Free Run Gate: Off #IF Gain: Low	Center Freq: 28 000000000 GHz Avg Hold: 100/100 Radio Std: None	Center Frequency 28.000000000 GHz	Settings
1 Graph V	10000 000000				Span 200.00 MHz	
Scale/Div 10.0 dB Log 100 90.0		Ref Value 110.00) dBµV		CF Step 20.000000 MHz Auto Man	
80.0 70.0 60.0 50.0					Freq Offset 0 Hz	
40.0						
Center 28.0000 GHz #Res BW 1.0000 MHz	#	Video BW 3.000	0 MHz*	Span 200 Sweep 1.00 ms (1001		
2 Metrics Total Channel Power Total Power Spectral Der	93.66 dBµV / 100 Isity 13.66 dB					



Spectrum Ana Channel Pow		pectrum Analyzer wept SA	2 Spectru Channe	m Analyzer 3	+	Frequency •
	T Input RF	Input Z: 50 Ω Corrections: Off Freq Ref. Int (S) NFE: Adaptive	Atten: 20 dB Preamp: Off	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq. 27.550000000 GHz Avg Hold: 100/100 Radio Std: None	Center Frequency 27.55000000 GHz
1 Graph						Span 200.00 MHz
Scale/Div 10	.0 dB		Ref Value 100.0	0 dBµV		CF Step 20.000000 MHz
80.0		manna		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		Auto Man
70.0 60.0						Freq Offset 0 Hz
	and and a support	ww			Munungenerginese	
20.0						
10,0						
Center 27.55 #Res BW 1.0			#Video BW 3.00	00 MHz*	Span 200 Sweep 1.00 ms (100	
2 Metrics						
Total Char	nnel Power	94.58 dBµV / 1	00 MHz			
Total Powe	er Spectral Densit	y 14.58 d	IBµV/Hz			
15	2	Jul 20, 2019 12:13:20 PM				

Spectrum Analyzer 1 Channel Power	Spectrum Analyzer 2 Swept SA	Spectrur Channel	n Analyzer 3 Power	+	Ç Frequen	cy 🕴 👬
R Align: Auto	G Corrections: Off Freq Ref: Int (S) NFE: Adaptive	Atten: 20 dB Preamp: Off #PNO: Fast	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq: 27.550000000 GH Avg Hold: 100/100 Radio Std: None	¹² Center Frequency 27.550000000 GHz	Settings
1 Graph V Scale/Div 10.0 dB		Ref Value 100.00			Span 200.00 MHz	
Log 90 0			бавру		CF Step 20.000000 MHz	
80.0					Auto Man	
60.0					Freq Offset 0 Hz	
50.0 40.0 www.www.way/////www.wa 30.0	uakubud			Mandersongingungenhause		
20.0						
Center 27.5500 GHz #Res BW 1.0000 MHz		Video BW 3.000	0 MHz*	Span 20 Sweep 1.00 ms (10		
2 Metrics • Total Channel Power	95.65 dBµV / 10) MHz				
Total Power Spectral De	ensity 15.65 dB	µV/Hz				



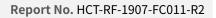


Spectrum Analyzer 1 Occupied BW	Spectrum Analyzer 2 Swept SA	2 Spectrum Channel	n Analyzer 3 Power	· +	🗘 Fre	equency v 👯
KEYSIGHT Input: RF R Align: Aut	DC Corrections: Off	Atten: 20 dB Preamp: Off #PNO Fast	Tng: Free Run Gate: Off #IF Gain Low	Center Freq: 27.925000000 Avg Hold: 100/100 Radio Std: None	27.925000000	Jennings
1 Graph		Autoba collected	and the second		Span 200.00 MHz	
Scale/Div 10.0 dB		Ref Value 100.00) dBµV		CF Step 20.000000 MH	z
80.0	American	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mmy	Auto Man	
70.0 60.0					Freq Offset 0 Hz	
50.0 margasuppersonantalists	matentin			proprinter		_
30.0						
10.0						
Center 27.9250 GHz #Res BW 1.0000 MHz		#Video BW 3.000	0 MHz*	Spar Sweep 1.00 ms	n 200 MHz (1001 pts)	
2 Metrics						
Total Channel Power	95.14 dBµV / 10	0 MHz				
Total Power Spectral I	Density 15.14 dE	μV/Hz				



Spectrum Ana Occupied BW		Spectrum Analyze Swept SA		Spectru	m Analyzer 3 Power	• +		Ø	Frequency	
		Input Z 50 Ω Corrections: 0 Freq Ref: Int i NFE: Adaptive	S) #PNO	p: Off	Trig. Free Rur Gate: Off #IF Gain: Low	Avg H	r Freq. 27.925000000 GHz Iold: 100/100 Std: None	27.9250	requency 000000 GHz	Settings
1 Graph			5 4 6 7 6		a management			Span 200.00 I	MHz	
Scale/Div 10. Log 90.0 80.0 70.0 60.0 50.0 40.0 30.0	0 dB	urol	Ref Valu		0 dBµV		Minertengereigtenertengen	CF Step 20.0000 Auto Mar Freq Offe 0 Hz	000 MHz D 1	
20.0 10.0 Center 27.925 #Res BW 1.00 2 Metrics			#Video E	W 3.000	00 MHz*		Span 200 M Sweep 1.00 ms (1001 p			
Total Chan Total Powe	nel Power r Spectral Densi	95.11 dBµV / ly 15.11	100 MHz dBµV/Hz							

Spectrum Analyzer 1 Channel Power	Spectrum Analyzer 2 Swept SA	Spectrun Channel	n Analyzer 3 Power	+	Frequency	· • #
R Align. Auto	Input Z 50 Ω Corrections: Off Freq Ref. Int (S) NFE: Adaptive	Atten: 20 dB Preamp: Off #PNO: Fast	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq: 27.925000000 GHz Avg Hold: 100/100 Radio Std: None	Center Frequency 27.925000000 GHz	Settings
1 Graph V Scale/Div 10.0 dB	1000000000000000	Ref Value 100.00) dBul/		Span 200.00 MHz	
			авру		CF Step 20.000000 MHz	
80.0	A	مەيى ^{يىر} ئەم يەم يەر يېزلىسىر خىيەلىي مەرچى		may	Auto Man	
60.0					Freq Offset 0 Hz	
40.0	ww			an a	atra	
20.0						
10,0						
Center 27.9250 GHz #Res BW 1.0000 MHz		Video BW 3.000	0 MHz*	Span 200 M Sweep 1.00 ms (1001		
2 Metrics V						
Total Channel Power	95.64 dBµV / 10	0 MHz				
Total Power Spectral Den	sity 15.64 dB	µV/Hz				





				Anter	ina B / 1cc	: / QPSH	(/ High				
Spectrum Ana Channel Powe	yzer 1 r	Spectrum Analy Swept SA	zer 2	Spectru	n Analyzer 3 Power	• +			0	Frequency	· •
	Input RF Coupling DC Align Auto	Freq Ref: In	Ofi Pro	en: 20 dB eamp: Off NO: Fast	Trig. Free R Gate: Off #IF Gain: Lo	Avg	ter Freq. 28.300 Hold: 100/100 io Std: None	000000 GHz	Center Fr 28.3000	requency 00000 GHz	Settings
LNI 1 Graph		NFE Adapt							Span 200.00 M	ЛНz	
Scale/Div 10.			Ref	Value 100.00	σαβμν				CF Step 20.0000 Auto		
70.0 60.0 50.0		M							Man Freq Offs 0 Hz	-	
2.2.10	word &	mentel					Monthement	marin-personal land			
20.0 10.0 Center 28.300			th fi de	eo BW 3.000				Span 200 MHz			
#Res BW 1.00			W V100	50 BW 5.000			Sweep 1.	00 ms (1001 pts)			
Total Chan	nel Power	94.83 dBµ\	/ 100 MH	z							
Total Powe	r Spectral Den	sity 14.8	3 dBµV/H	2							
15	6	? Jul 20, 20 12:15:31)19 AM								

Spectrum Analy Channel Power	zer 1	Spectrum A Swept SA	nalyzer 2	Spectru Channe	m Analyzer 3 I Power	+		Ö	Frequency	· · · · · · · · · · · · · · · · · · ·
KEYSIGHT R -→	Input RF Coupling DC Align Auto		ions: Off of Int (S)	Atten: 20 dB Preamp: Off #PNO: Fast	Tng: Free Run Gate: Off #IF Gain: Low	Avg H	r Freq. 28 300000000 GHz old: 100/100 Std: None	28.3000	Frequency 000000 GHz	Settlings
1 Graph								Span 200.00	MHz	
Scale/Div 10.0	dB			Ref Value 100.0	0 авµV			CF Step 20.0000	000 MHz	
80.0		1		*******		mm		Aut Mar		
60.0								Freq Off 0 Hz	set	
40.0	and the second	~					passa ana ana ana ana ana ana ana ana ana	N		
30.0										
10,0 Center 28.3000	GHz		#	Video BW 3.000	00 MHz*		Span 200 Mł	iz		
#Res BW 1.000							Sweep 1.00 ms (1001 pt			
2 Metrics Total Chann	el Power	05.58.4	BµV / 100	MH2						
The second second	Spectral Dens		15.58 dBu							



Spectrum Anal Channel Powe		Spect Swep	rum Analyzer t SA		trum Ana		• +		Q.	Frequency	• 3
KEYSIGHT R -+-	Input RF Coupling DC Align Auto	(F	nput Z 50 Ω Corrections: Off Freq Ref: Int (S NFE: Adaptive		G	ig. Free Run ate: Off F Gain: Low	Avg	er Freq. 28.300000000 GHz łołd: 100/100 9 Std: None	28.3000	requency 000000 GHz	Settings
1 Graph	•								Span 200.00	MHz	
Scale/Div 10.0	dB			Ref Value 10	0.00 dBµ	v			CF Step	1	
20.0									20.0000		
80.0									Auto		
70.0			mananan	***************	view of the second		Lund		Mar		
60.0									Freq Off 0 Hz	set	
50.0	when the most	MIL							UTIZ		
40.0	and here and the second							wanter and a stranger and a	ማ		
30.0											
10.0											
Center 28.300 #Res BW 1.00				#Video BW 3.	0000 MH	z*		Span 200 Mł Sweep 1.00 ms (1001 pt			
2 Metrics Total Chann	el Power	95	5.25 dBµV / 1	00 MHz							
Total Power	Spectral Den	sity	15.25 d	BµV/Hz							

Childrine Power	÷				Frequency	y y 👔
RL Align Auto	Input Z 50 Ω Corrections: Off Freq Ref. Int (S) NFE: Adaptive	Atten: 20 dB Preamp: Off #PNO: Fast	Trig Free Run Gate: Off #IF Gain: Low	Center Freq: 28 000000000 GHz Avg[Hold: 100/100 Radio Std: None	Center Frequency 28.000000000 GHz	Settlings
1 Graph V					Span 200.00 MHz	
Scale/Div 10.0 dB		Ref Value 110.00) dBµV		CF Step 20.000000 MHz	
0.0					Auto Man	
70.0			a construction and a second		Freq Offset 0 Hz	1
50.0				Υ		
30.0						
20.0 Center 28.0000 GHz		¥Video BW 3.000	0 MHz*	Span 200 M		
#Res BW 1.0000 MHz 2 Metrics •				Sweep 1.00 ms (1001 p		
Total Channel Power	93.16 dBµV / 10	0 MHz				
Total Power Spectral Densit	y 13.16 dE	βµV/Hz				



	Dupling DC	Input Z 50 Ω Corrections: Of		Trig. Free Run Gate: Off	Center Freq. 27.950000000 GHz Avg[Hold: 100/100	Center Frequency	Settings
	Align: Auto	Freq Ref. Int (S NFE: Adaptive) #PNO Fast	#IF Gain: Low	Radio Std: None	27.950000000 GHz	
1 Graph						Span 200.00 MHz	
Scale/Div 10.	0 dB		Ref Value 110.00) dBµV		CF Step	
100						20.000000 MHz	
90.0		A				Auto Man	
80.0	warman and a start of the start			and man and a second and	vening pointemannen and	Freq Offset	1
60.0		_¥¥				0 Hz	
50.0							
40.0							
30.0							
20,0							
Center 27.950 #Res BW 1.00			#Video BW 3.000	0 MHz*	Sweep 1.00 ms (1001		
2 Metrics	0						
		00.00.00.00.00.00					
Total Chan	nel Power r Spectral Density	92.82 dBµV /	100 MHz dBµV/Hz				

Spectrum Analy Channel Power		+							Ö	Frequency	1 2.5
KEYSIGHT	Input RF Coupling DC Align Auto	Input Z 50 Ω Corrections: C Freq Ref. Int I NFE: Adaptive	Off Pream (S) #PNO	ip: Off	Trig Free R Gate: Off #IF Gain: Lo	Avg He	Freq: 27 850000000 old: 100/100 Std: None	GHz		requency 000000 GHz	Settings
1 Graph		Transfer College 20.5							Span 200.00	MHz	
Scale/Div 10.0	dB		Ref Valu	ue 110.00	0 dBµV				CF Step 20.0000		
90.0									Auto Mar		
80.0 70.0		-	~	minon			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		Freq Off	set	
60.0 50.0		Y				أصر بعد					
40.0											
20.0											
Center 27.8500 #Res BW 1.000			#Video E	SW 3.000	0 MHz		Spar Sweep 1.00 ms	1 200 MHz (1001 pts)			
2 Metrics											
Total Channe	el Power	93.94 dBµV	100 MHz								
Total Power	Spectral Density	y 13.94	dBµV/Hz								



	Coupling DC	Input Z 50 Ω Corrections: 0		Trig: Free Run Gate: Off	Center Freq: 27.975000000 GHz Avg[Hold: 100/100	Center Frequency	Settings
RL	Align Auto	Freq Ref. Int NFE: Adaptive	(S) #PNO Fast	#IF Gain: Low	Radio Std: None	27.975000000 GHz	
1 Graph						Span 200.00 MHz	
Scale/Div 10	0 dB		Ref Value 110.	00 dBµV		CF Step	
100						20.000000 MHz	
90.0 80.0		A				Auto Man	
70.0		m lonnon	and the second	and and an and a second and and	many promotion	Freq Offset	1
60.0		N V				0 Hz	
50.0							
40.0							
30.0							
20,0							
Center 27.97 #Res BW 1.0			#Video BW 3.0	000 MHz*	Span 20 Sweep 1.00 ms (100		
2 Metrics	•						
1 August 197			1100100				
Total Chan	nel Power	93.69 dBµV	100 MHz				

Spectrum Analyzer 1 Channel Power	ŧ				Frequency	1 1 🚟
R L Align. Auto	Input Z 50 Ω Corrections: Off Freq Ref. Int (S) NFE: Adaptive	Atten: 20 dB Preamp: Off #PNO: Fast	Tng Free Run Gate: Off #IF Gain: Low	Center Freq: 27.975000000 GHz Avg Hold: 100/100 Radio Std: None	Center Frequency 27.975000000 GHz	Settings
1 Graph		Service - energy			Span 200.00 MHz	
Scale/Div 10.0 dB		Ref Value 110.00) dBµV		CF Step 20.000000 MHz	
90.0	A				Auto Man	
70.0		and the second	ante har and a star and a star and a		Freq Offset 0 Hz	
50.0				Y		
30.0						
20.0						
Center 27.9750 GHz #Res BW 1.0000 MHz	#	Video BW 3.000	0 MHz*	Span 200 Sweep 1.00 ms (1001		
2 Metrics	93.88 dBµV / 100) MHz				
Total Power Spectral Density	13.88 dB	W/Hz				



KEYSI RL	GHT Input: RF Goupling DC Align: Auto	Input Z 50 Ω Corrections: Off	Atten: 20 dB Preamp: Off #PNO: Fast	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq: 27.875000000 G Avg Hold: 100/100 Radio Std: None	Hz Center Frequency Settings
LNI .	Align Auto	Freq Ref. Int (S) NFE: Adaptive	#PNO: Fast	#IF Gain, Low	Radio Sta None	Span
1 Graph						200.00 MHz
Scale/Di	iv 10.0 dB		Ref Value 110.00) dBµV		CF Step
100						20.000000 MHz
90.0					A CONTRACTOR	Auto Man
80.0		-			minimum	Freq Offset
70 0 60.0					NV N	0 Hz
50.0		\vee				
40.0						
30.0						
20,0						
	27.8750 GHz W 1.0000 MHz		#Video BW 3.000	0 MHz*	Span 2 Sweep 1.00 ms (10	200 MHz 001 pts)
2 Metrics	i.					
Total	Channel Power	93.76 dBµV / 1	00 MHz			

Spectrum Analyzer 1 Channel Power	÷				Frequency 🔹
RL +++ Align: Auto	Input Z 50 Ω Corrections: Off Freq Ref. Int (S) NFE: Adaptive	Atten: 20 dB Preamp: Off #PNO: Fast	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq: 28 00000000 GHz Avg Hold: 100/100 Radio Std: None	Center Frequency 28.00000000 GHz Settings
1 Graph v					Span 200.00 MHz
Scale/Div 10.0 dB		Ref Value 110.00) dBµV		CF Step 20.000000 MHz
90.0					Auto Man
70.0			a constant and a second se		Freq Offset 0 Hz
50.0					
30.0					
20.0					
Center 28.0000 GHz #Res BW 1.0000 MHz	4	Video BW 3.000	0 MHz*	Span 200 Sweep 1.00 ms (1001	
2 Metrics					
Total Channel Power	93.16 dBµV / 10	0 MHz			
Total Power Spectral Density	y 13.16 dB	iµV/Hz			



	Input RF Goupling DC Align Auto	Input Z 50 Ω Corrections: C Freq Ref: Int (Trig: Free Run Gate: Off #IF Gain: Low	Center Freq. 28.00000000 G Avg Hold: 100/100 Radio Std: None	Hz Center Frequency 28.000000000 GHz	Settings
LNI	Cigit Cuto	NFE: Adaptive		WIF Gain, LOW	haulo Sta Nolle	Span	
1 Graph						200.00 MHz	
Scale/Div 10.	0 dB		Ref Value 110.00) dBµV		CF Step 20.000000 MHz	
90.0						Auto Man	
80.0 70.0		Man	V			Freq Offset 0 Hz	
60.0 50.0		-1 r					
40.0							
30.0			ا حصا ک				
Center 28.000 #Res BW 1.00			#Video BW 3.000	0 MHz*	Span 2 Sweep 1.00 ms (1	200 MHz 001 pts)	
2 Metrics	8						
Total Chan	nel Power	93.31 dBµV /	100 MHz				

Spectrum Analyzer 1 Channel Power	+				Frequenc	y 👎 🚟
RL Align Auto	Input Z 50 Ω Corrections: Off Freq Ref: Int (S) NFE: Adaptive	Atten: 20 dB Preamp: Off #PNO: Fast	Trig Free Run Gate: Off #IF Gain: Low	Center Freq 28 000000000 GHz Avg[Hold: 100/100 Radio Std: None	Center Frequency 28.000000000 GHz	Settings
1 Graph v	1002 000 000				Span 200.00 MHz	
Scale/Div 10.0 dB		Ref Value 110.00) dBµV		CF Step 20.000000 MHz	
90.0					Auto Man	
70.0					Freq Offset 0 Hz	1
50.0				Ψ		
30.0						
20.0						
Center 28.0000 GHz #Res BW 1.0000 MHz		Video BW 3.000	0 MHz*	Span 200 Sweep 1.00 ms (1001		
2 Metrics						
Total Channel Power	93.89 dBµV / 10	0 MHz				
Total Power Spectral Density	y 13.89 dB	βµV/Hz				



Spectrum Ana Channel Powe	lyzer 1 S	pectrum Analyzer wept SA	2 Spectrur Channel	m Analyzer 3 Power	+	Frequency	• 湯
KEYSIGH R -+	Coupling DC Align: Auto	Input Z 50 Ω Corrections: Off Freq Ref. Int (S) NFE: Adaptive		Trig: Free Run Gate: Off #IF Gain: Low	Center Freq. 27.550000000 GHz Avg Hold: 100/100 Radio Std: None	Center Frequency 27.550000000 GHz	Settings
1 Graph						Span 200.00 MHz	
Scale/Div 10. Log 90.0 80.0 70.0 60.0 50.0	0 dB		Ref Value 100.00	0 dBµV		CF Step 20.000000 MHz Auto Man Freq Offset 0 Hz	
30.0 20.0 10.0 Center 27.55		**	#Video BW 3.000	00 MHz*	Span 200 MH		
#Res BW 1.00 2 Metrics Total Chan Total Powe	,	95.44 dBµV / 1 у 15.44 d	00 MHz BµV/Hz		Sweep 1.00 ms (1001 pt	5	

Spectrum Analyzer 1 Channel Power	Spectrum Analyzer 2 Swept SA	Spectrur Channel	n Analyzer 3 Power	+	Frequency	1 1 1 1 1 1 1
REYSIGHT Input RF Coupling DC Align Auto	Input Z: 50 Ω Corrections: Off Freq Ref: Int (S) NFE: Adaptive	Atten: 20 dB Preamp: Off #PNO: Fast	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq. 27.550000000 GHz Avg Hold: 100/100 Radio Std: None	Center Frequency 27.550000000 GHz	Settings
1 Graph V Scale/Div 10.0 dB		Ref Value 100.00	dBu)/		Span 200.00 MHz	
			ивни		CF Step 20.000000 MHz	
80.0					Auto Man	
60,0					Freq Offset 0 Hz	
40.0 Harry Marca Androg Harris	maka					
20.0						
10.0 Center 27,5500 GHz #Res BW 1.0000 MHz	#	Video BW 3.000	0 MHz*	Span 200 M Sweep 1.00 ms (1001 p		
2 Metrics 🔹 🔻						
Total Channel Power	94.60 dBµV / 100					
Total Power Spectral Den	sity 14.60 dB	JV/HZ				



Spectrum Ana Channel Powe	llyzer 1	Spectrum Analyze Swept SA	er 2	Spectrur Channel	m Analyzei Power	13	+		Ö	Frequency	· • 😤
KEYSIGH R -+	T Input: RF Goupling DC Align: Auto	Input Z 50 Ω Corrections: C Freq Ref: Int (NFE: Adaptive	Dfi P S) #	Atten: 20 dB Preamp: Off #PNO: Fast	Gate: 0	ree Run Off in: Low	Avg H	er Freq. 27 550000000 GHz łold: 100/100 o Std: None		requency 000000 GHz	Settings
1 Graph		Longing College of							Span 200.00 I	MHz	
Scale/Div 10.	0 dB		Ref	f Value 100.00) dBµV				CF Step		
20.0								عدية تحصيرا أتكا	20.0000	00 MHz	
80.0		· ·····		*~~~~		a special states and		A	Auto Mar		
70.0 60.0							Į		Freq Offs	set	
50.0								further and the second second	0 Hz		
40.0 minutes	us the production	www									
30.0											
20.0											
Center 27.55 #Res BW 1.0			#Vic	deo BW 3.000	0 MHz*			Span 200 M Sweep 1.00 ms (1001 p			
2 Metrics											
Total Chan	nel Power	95.06 dBµV /	100 M	/Hz							
Total Powe	er Spectral Dens	ity 15.06	dBµV/	/Hz							

Spectrum Analyze Occupied BW	er 1 Sp Sv	bectrum Analyzer : wept SA	2 Spectrum Channel	n Analyzer 3 Power	+	Frequency	1 1 22
	iput RF oupling DC- lign Auto	Input Z: 50 Ω Corrections: Off Freq Ref: Int (S) NFE: Adaptive	Atten: 20 dB Preamp: Off #PNO: Fast	Trig. Free Run Gate: Off #IF Gain: Low	Center Freq. 27.925000000 GHz Avg Hold: 100/100 Radio Std: None	Center Frequency 27.925000000 GHz	Settings
1 Graph			Anosa Cordi	e de la compañía de l		Span 200.00 MHz	
Scale/Div 10.0 dl			Ref Value 100.00	ο dBμV		CF Step 20.000000 MHz Auto	
70.0 60.0 50.0	anne mort Mapped	and the second s			Marrinonmana	Marı Freq Offset 0 Hz	
40.0							
10.0 Center 27,9250 G #Res BW 1.0000			#Video BW 3.000	00 MHz*	Span 200 M Sweep 1.00 ms (1001 p		
2 Metrics	Power	95.17 dBµV / 10	00 MHz				
Total Power Sp							



Spectrum Anal Occupied BW		Spectrum Analy Swept SA	zer 2	Spectrur	m Analyze Power	r3 ;	+		Q.	Frequency	· · · · · · · · · · · · · · · · · · ·
	Input RF Coupling DC Align Auto	Input Z 50 0 Corrections: Freq Ref. In NFE: Adapt	Ofi Pre	en: 20 dB eamp: Off NO: Fast	Gate: (ree Run Off in: Low	Avg H	r Freq: 27.925000000 GHz old: 100/100 Std: None	27.9250	requency 000000 GHz	Settings
1 Graph									Span 200.00 I	MHz	
Scale/Div 10.0	dB		Ref	/alue 100.00	0 dBµV				CF Step		
90.0									20.0000	00 MHz	
80.0		Ammon	manna.		monorm	in the second	mm		Auto Man		
70.0 60.0									Freq Offs 0 Hz		
40.0	warrywendowda	rind						and a second a second s	and the second s	_	
30.0											
20.0											
10,0											
Center 27.925 #Res BW 1.00			#Vide	eo BW 3.000	0 MHz*			Span 200 Mi Sweep 1.00 ms (1001 pt			
2 Metrics Total Chann	el Power	94.80 dBµ\	/ 100 MH	7							
	Spectral Densi		0 dBµV/H								
Total Power	opectral Densi	iy 14.0	о авруга	2							

Spectrum Analyz Occupied BW	zer 1	Spectru Swept S	m Analyzer 2 SA	Spectru Channe	n Analyzer 3 Power	+		Ö	Frequency	· • 🚟
	Input RF Coupling DC Align Aulo	Co Fre	ut Z: 50 Ω rrections: Off eq Ref. Int (S) E: Adaptive	Atten: 20 dB Preamp: Off #PNO: Fast	Trig: Free Run Gate: Off #IF Gain: Low	Avg Ho	Freq: 27.925000000 GHz Id: 100/100 Sld: None	27.9250	requency 000000 GHz	Settings
1 Graph	۲			anna anna				Span 200.00	MHz	
Scale/Div 10.0 (Log	dB			Ref Value 100.0	0 dBµV			CF Step 20.0000	000 MHz	
80.0		M		***********	atura di anti anti anti anti anti anti anti ant	many		Auto Mar		
60.0								Freq Off 0 Hz	set	
40.0 40.0	A Carrier of the set of	-					weather when a service of the servic	~		
30.0										
10,0										
Center 27.9250 #Res BW 1.000			#	Video BW 3.000	00 MHz*		Span 200 MH Sweep 1.00 ms (1001 pt			
2 Metrics										
Total Channe	Power	95.	27 dBµV / 100	MHz						
Total Power S	Spectral Den	sity	15.27 dB	JV/Hz						



Spectrum Ana Channel Pow	alyzer 1 er	Spectrum Analy Swept SA	/zer 2	Spectrur Channel	n Analyzer 3 Power	+		Q	Frequency	· · #
	T Input: RF Coupling DC Align: Auto	Input Z 50 Corrections Freq Ref. In NFE: Adap	: Off nt (S)	Atten: 20 dB Preamp: Off #PNO: Fast	Trig: Free Run Gate: Off #IF Gain: Low	Avg He	Freq: 28.300000000 GHz dd: 100/100 Std: None		Frequency 000000 GHz	Settings
LNI 1 Graph		NFL Adap		an as				Span 200.00	MHz	
Scale/Div 10 Log 90.0 80.0 70.0 60.0 50.0 40.0 30.0 20.0 10.0 Center 28.30				Ref Value 100.00			ຳ້ຳລັງກະ ^{ແນງໃ} ນທາງ ¹ ພາງລູກງາງຄຳກາ Span 200 MH	Freq Off 0 Hz	000 MHz o 1	
#Res BW 1.0 2 Metrics Total Char		93.99 dBµ nsity 13. 7:56:30 /	V / 100 99 dBj	MHz			Sweep 1.00 ms (1001 pts	5)		

Spectrum Analyzer 1 Channel Power	Spectrum Analyzer 2 Swept SA	Spectrur Channel	n Analyzer 3 Power	+	Frequency	1 1 1 1 1 1 1 1
R +++ Align: Auto	Input Z: 50 Ω Corrections: Off Freq Ref: Int (S) NFE: Adaptive	Atten: 20 dB Preamp: Off #PNO: Fast	Tng: Free Run Gate: Off #IF Gain: Low	Center Freq. 28.300000000 GHz Avg Hold: 100/100 Radio Std: None	Center Frequency 28.30000000 GHz	Settings
1 Graph v Scale/Div 10.0 dB		Ref Value 100.00) dBµV		Span 200.00 MHz CF Step	
80.0	Aprentine		1970 1 1 ¹⁰ 10 10 10 10 10 10 10 10 10 10 10 10 10		20.000000 MHz Auto Man	
70.0 60.0 50.0					Freq Offset 0 Hz	
40.0				patrolation and a property of the	hunt	
20.0						
Center 28,3000 GHz #Res BW 1.0000 MHz	#	Video BW 3.000	0 MHz*	Span 200 / Sweep 1.00 ms (1001		
2 Metrics	94.22 dBµV / 100) MHz				
Total Power Spectral Der	nsity 14.22 dBj	JV/Hz				



Spectrum Anal Channel Powe		ectrum Analyze vept SA	er 2	Spectrur	n Analyzer Power	3	+		Ö	Frequency	· · #
	Input RF Coupling DC Align Auto	Input Z: 50 Ω Corrections: C Freq Ref: Int (NFE: Adaptive	fi Prea S) #PN	n: 20 dB mp: Off O: Fast	Trig: Fr Gate: C #IF Gai	Dfī	Avglh	r Freq. 28.300000000 GHz Iold: 100/100 Std: None		Frequency 000000 GHz	Settings
1 Graph									Span 200.00	MHz	
Scale/Div 10.0 Log 90.0 80.0 70.0 60.0 50.0 40.0 30.0 20.0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		lue 100.00	Jasho			างกระการคราวจากระการคราว	Freq Off 0 Hz	000 MHz o n	
10.0 Center 28.300 #Res BW 1.00			#Video	BW 3.000	0 MHz*			Span 200 M Sweep 1.00 ms (1001 p			
2 Metrics Total Chann Total Power	el Power Spectral Density	94.31 dBµV 14.31	100 MHz dBµV/Hz								

Spectrum Analyzer Channel Power		F				Frequency	1 2.5
KEYSIGHT Inp RL +++ Co Alig	ut RF upling DC yn Aulo	Input Z 50 Ω Corrections: O Freq Ref. Int (S NFE: Adaptive	s) #PNO Fast	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq 27.85000000 GHz Avg Hold: 100/100 Radio Std: None	Center Frequency 27.850000000 GHz	Settings
1 Graph			Same			Span 200.00 MHz	
Scale/Div 10.0 dB			Ref Value 110.0	0 dBµV		CF Step 20.000000 MHz	
80.0						Auto Man	
70,0	~~~~~~	\	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	an anna anna anna anna anna anna anna		Freq Offset 0 Hz	
50.0		¥					
30.0							
Center 27.8500 GI #Res BW 1.0000 M			#Video BW 3.00	00 MHz*	Span 200 M Sweep 1.00 ms (1001 p		
2 Metrics	•						
Total Channel P	ower	93.60 dBµV /	100 MHz				
Total Power Spe	ectral Density	13.60	dBµV/Hz				



Spectrum Ana Channel Powe	Input RF	Input Z 50 0			Ing. Free Run	Center Freq. 27.850	000000 GHz	Center E	requency	
RL +++	Coupling DC Align Auto	Corrections: Freq Ref: In	t (S) #PNO Fa		Sate: Off #F Gain: Low	Avg Hold: 100/100 Radio Std: None		and the second second	00000 GHz	Settings
LM		NFE: Adapti	ve					Span		
1 Graph	*		P-Orthogo	10.00 10				200.00	MHz	
Scale/Div 10.) dB		Ref Value 1	10.00 dBj	1V	1 1 1		CF Step		
100								20.0000		
90.0								Auto Man		
80.0	manne	y pumo	ser man		m			Freq Offs	set	
60.0						¥Υ		0 Hz		
50.0		W								
40.0										
30.0										
20,0										
Center 27.850 #Res BW 1.00			#Video BW	3.0000 MI	iz"	Sweep 1.0	Span 200 MHz 00 ms (1001 pts)			
2 Metrics	Ū.							1		
Total Chan	el Power	92.81 dBµV	/ / 100 MHz							
	nel Power Spectral Densily		/ / 100 MHz 31 dBµV/Hz							

Spectrum Analyzer 1 Channel Power	÷				Frequenc	y y 👔
RL Align: Auto	Input Z 50 Ω Corrections: Off Freq Ref. Int (S) NFE: Adaptive	Atten: 20 dB Preamp: Off #PNO: Fast	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq 27 850000000 GHz Avg[Hold: 100/100 Radio Std: None	Center Frequency 27.850000000 GHz	Settings
1 Graph					Span 200.00 MHz	
Scale/Div 10.0 dB		Ref Value 110.00) dBµV		CF Step 20.000000 MHz	
90.0					Auto Man	
70.0	my former				Freq Offset 0 Hz	
50 0	V					
40.0						
20.0						
Center 27.8500 GHz #Res BW 1.0000 MHz		Video BW 3.000	0 MHZ"	Span 200 N Sweep 1.00 ms (1001		
2 Metrics						
Total Channel Power	92.90 dBµV / 10	0 MHz				
Total Power Spectral Densi	ty 12.90 dB	μV/Hz				



Channel Power	+	0 Ω Atten: 20 dB	The Free Days		Frequenc	1.00
	t RF Input Z 5 pling DC Correction Auto Freq Ref. NFE Ada	ns: Off Preamp: Off Int (S) #PNO Fast	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq. 27.975000000 GHz Avg Hold: 100/100 Radio Std: None	Center Frequency 27.975000000 GHz	Settings
1 Graph					Span 200.00 MHz	
Scale/Div 10.0 dB		Ref Value 110.0	0 dBµV		CF Step	
100					20.000000 MHz	
80.0	Δ.				Auto Man	
70.0		man and a second and	ating and a second second second		Freq Offset	1
60.0	<u> </u>				0 Hz	
50.0						
40.0						
30.0						
20,0						
Center 27.9750 GH #Res BW 1.0000 MI		#Video BW 3.00	00 MHz*	Span 200 N Sweep 1.00 ms (1001 p		
2 Metrics						
Total Channel Po	wer 03 34 dB	μV / 100 MHz				
Total Ghannel Fo		3.34 dBµV/Hz				

Spectrum Analyzer 1 Channel Power	÷				Frequency	/ • 蒜
RL +++ Align: Auto	Input Z: 50 Ω Corrections: Off Freq Ref Int (S) NFE: Adaptive	Atten: 20 dB Preamp: Off #PNO: Fast	Trig Free Run Gate: Off #IF Gain: Low	Center Freq. 27 875000000 GHz Avg Hold: 100/100 Radio SId: None	27.875000000 GHz	Settings
1 Graph		and the second			Span 200.00 MHz	
Scale/Div 10.0 dB		Ref Value 110.00) dBµV		CF Step 20.000000 MHz	
90.0					Auto Man	
70.0	my personal	and a star and a star and a star			Freq Offset 0 Hz	
50.0	Y					
30.0						
20,0						
Center 27.8750 GHz #Res BW 1.0000 MHz		Video BW 3.000	0 MHz*	Span 200 Sweep 1.00 ms (100		
2 Metrics						
Total Channel Power	93.74 dBµV / 10	0 MHz				
Total Power Spectral Dens	ity 13.74 dE	μV/Hz				



Channel Po	HT Input RF	Input Z 50 Q	Atten: 20 dB	Trig. Free Run	Center Freq. 27.875000000 G	Frequency	1 2.5
	Align Auto	Corrections: O Freq Ref. Int (5	f Preamp: Off	Gate: Off #IF Gain: Low	Avg Hold: 100/100 Radio Std: None	Center Frequency 27.875000000 GHz	Settings
LNI		NFE Adaptive			and the second second	Span	
1 Graph						200.00 MHz	
Scale/Div	10.0 dB		Ref Value 110.00) dBµV		CF Step	
100						20.000000 MHz	
90.0 80.0						Auto Man	
70.0	month and the second	man from the second		-		Freq Offset	
60.0					Y V	0 Hz	
50.0							
40.0							
30.0							
20,0							
Center 27. #Res BW 1	8750 GHz 1.0000 MHz		#Video BW 3.000	0 MHz	Span 2 Sweep 1.00 ms (10	200 MHz 001 pts)	
2 Metrics	0						
Total Ch	annel Power	93.56 dBµV /	100 MHz				
Total Po	wer Spectral Densit	13.56	dBµV/Hz				

Spectrum Analyzer 1 Channel Power	t				🔅 Frequency 🔹
RL -+- Align Auto	Input Z 50 Ω Corrections: Off Freq Ref. Int (S) NFE: Adaptive	Atten: 20 dB Preamp: Off #PNO_Fast	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq: 28 000000000 GHz Avg Hold: 100/100 Radio Sld: None	28.00000000 GHz
1 Graph		on the second			Span 200.00 MHz
Scale/Div 10.0 dB		Ref Value 110.00) dBµV		CF Step 20.000000 MHz
90.0	λ				Auto Man
70.0	-				Freq Offset 0 Hz
50.0				Ψ.	
30.0					
20.0					
Center 28.0000 GHz #Res BW 1.0000 MHz	1	Video BW 3.000	0 MHz*	Span 20 Sweep 1.00 ms (100	
2 Metrics					
Total Channel Power	92.96 dBµV / 10	0 MHz			
Total Power Spectral Density	12.96 dB	µV/Hz			



KEYSIGH	Watterline FIC	Input Z 50 Ω Corrections: Off	Atten: 20 dB Preamp: Off	Trig. Free Run Gate: Off	Center Freq: 28.000000000 GHz AvglHold: 100/100	Center Frequency	Settings
RL	Align: Auto	Freq Ref: Int (S) NFE: Adaptive	#PNO Fast	#IF Gain: Low	Radio Std None	28.00000000 GHz	
1 Graph	•					Span 200.00 MHz	
Scale/Div 10	.0 dB		Ref Value 110.00) dBµV		CF Step	
100						20.000000 MHz	
80.0		A				Auto Man	
70 0	~~~~		****	with the states and the		Freq Offset	1
60.0		11				U HZ	
50.0							
30.0							
20,0							
Center 28.00 #Res BW 1.0		-	#Video BW 3.000	00 MHz"	Span 200 r Sweep 1.00 ms (1001		
2 Metrics							
Total Char	nnel Power	93.37 dBµV / 10	00 MHz				
Total Pow	er Spectral Densih	y 13.37 dE	BuW/Hz				

Childrin Gr Ower	÷				Frequency	1 22
RL +++ Align: Auto	Input Z 50 Ω Corrections: Off Freq Ref. Int (S) NFE: Adaptive	Atten: 20 dB Preamp: Off #PNO: Fast	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq. 28.00000000 GHz Avg Hold: 100/100 Radio Std: None	Center Frequency 28.00000000 GHz	Settings
1 Graph V		and the second	Alle		Span 200.00 MHz	
Scale/Div 10.0 dB		Ref Value 110.00) dBµV		CF Step 20.000000 MHz	
90.0	6				Auto Man	
70.0	and francessinger	-	*****		Freq Offset 0 Hz	
50.0				V		
30.0						
20,0						
Center 28.0000 GHz #Res BW 1.0000 MHz		Video BW 3.000	0 MHz*	Span 200 Span 200 Sweep 1.00 ms (1001		
2 Metrics						
Total Channel Power	93.74 dBµV / 10	0 MHz				
Total Power Spectral Densit	y 13.74 dE	μV/Hz				



Spectrum Anal Channel Powe	yzer 1 Sp r Sv	ectrum Analyzer : vept SA	2 Spectrur Channel	m Analyzer 3 Power	+	Frequency	· · #
KEYSIGHT R ++-	Input RF Goupling DC Align Auto	Input Z 50 Ω Corrections: Off Freq Ref: Int (S) NFE: Adaptive	Atten: 20 dB Preamp: Off #PNO Fast	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq. 27.550000000 GHz Avg Hold: 100/100 Radio Std: None	Center Frequency 27.550000000 GHz	Settings
1 Graph		to L. Parspire	subs in all	se estatut		Span 200.00 MHz	
Scale/Div 10.0) dB		Ref Value 100.00	0 dBµV		CF Step 20.000000 MHz	
80.0						Auto Man	
60 0 50 0						Freq Offset 0 Hz	
	Herenary Antone Property of the	here			Hander of the second seco		
20.0							
10.0 Center 27.550 #Res BW 1.00			#Video BW 3.000	00 MHz*	Span 200 / Sweep 1.00 ms (1001		
2 Metrics Total Chann	nel Power	93.45 dBuV / 10	00 MHz				
	Spectral Density						

Spectrum Analyzer Channel Power		ectrum Analyzer 2 ept SA	Spectru Channel	n Analyzer 3 Power	+	Frequenc	y 🔹 🏭
	it RF pling DC n Aulo	Input Z 50 Ω Corrections: Off Freq Ref. Int (S) NFE: Adaptive	Atten: 20 dB Preamp: Off #PNO: Fast	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq: 27.550000000 GHz Avg Hold: 100/100 Radio Std: None	Center Frequency 27.550000000 GHz	Settings
1 Graph Scale/Div 10.0 dB			Ref Value 100.0	0 dBµV	-	Span 200.00 MHz CF Step	
90 0 80 0						20.000000 MHz Auto Man	
70.0						Freq Offset 0 Hz	
40.0 0 00000000000000000000000000000000	angentari angentari kangentari kangentari kangentari kangentari kangentari kangentari kangentari kangentari kan Kangentari kangentari kangentari kangentari kangentari kangentari kangentari kangentari kangentari kangentari ka	w			محفقه يقلينيون عل، 200 م محمد المحمد علم عمر م محمد المحمد علم عمر علم م		
20.0							
Center 27,5500 GH #Res BW 1.0000 M			Video BW 3.000	00 MHz*	Span 200 M Sweep 1.00 ms (1001		
2 Metrics Total Channel Po		94.36 dBµV / 100					
Total Power Spe	ctral Density	14.36 dB	uV/Hz				



Spectrum Ana Channel Pow	er Sp	ectrum Analyzer vept SA		um Analyzer 3 el Power	+	Frequency	/ • 影
	T Input: RF Goupling DC Align: Auto	Input Z: 50 Ω Corrections: Of Freq Ref: Int (S NFE: Adaptive		Trig: Free Run Gate: Off #IF Gain: Low	Center Freq: 27.550000000 GHz Avg Hold: 100/100 Radio Std: None	Center Frequency 27.550000000 GHz	Settings
Lvo 1 Graph			-			Span 200.00 MHz	
Scale/Div 10	.0 dB		Ref Value 100.0	00 dBµV		CF Step 20.000000 MHz	
80.0		mana	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	and the second second	many	Auto	
70.0 60.0						Freq Offset 0 Hz	
40.0	Phalomontal participation	pul			per an	Telefore and the second s	
30.0							
10,0							
Center 27.55 #Res BW 1.0			#Video BW 3.00	00 MHz*	Span 200 Sweep 1.00 ms (1001		
2 Metrics	ġ.						
Total Chan	inel Power	94.00 dBµV /	100 MHz				
Total Powe	er Spectral Density	14.00 0	βBµV/Hz				

Spectrum Analyzer 1 Occupied BW	Sp	ectrum An vept SA	alyzer 2	Spectru Channe	m Analyzer 3 Power	* +		0	Frequency	· · #
	RF Ning. DC Aulo	Input Z 1 Correctio Freq Ref NFE: Ad	ns: Off Int (S)	Atten: 20 dB Preamp: Off #PNO Fast	Tng: Free Ru Gate: Off #IF Gain: Low	Avg	ar Freq. 27.925000000 GHz told: 100/100 o Std: None		requency 000000 GHz	Settlings
1 Graph	Ŧ							Span 200.00	MHz	
Scale/Div 10.0 dB			R	ef Value 100.0	0 dBµV			CF Step 20.0000	000 MHz	
80.0		Arman		angenter and an and an an	man and the second	hourse		Auto Mar		
70.0 60.0		1V						Freq Off 0 Hz	set	
40.0	and the second	~					Northern and the second and the second and the second second second second second second second second second s	6776		
30.0										
10,0										
Center 27.9250 GHz #Res BW 1.0000 MH			#\	ideo BW 3.000	00 MHz*		Span 200 M Sweep 1.00 ms (1001			
2 Metrics										
Total Channel Por	wer	95.36 de	μV / 100	MHz						
Total Power Spec	tral Density	1	5.36 dBµ	V/Hz						



Spectrum Analy Occupied BW			strum Ana pt SA	lyzer 2	Spectru Channe	m Analyz Power	er 3	+		Ö	Frequency	· · · · · · · ·
KEYSIGHT R ++-	Input RF Goupling DC Align Auto		Input Z 5 Correction Freq Ref NFE Ada	ns: Off Int (S)	Atten: 20 dB Preamp: Off #PNO: Fast	Gate:	Free Run Off iain: Low	Avg	r Freq. 27.925000000 GHz Iold: 100/100 Std: None	27.9250	requency 000000 GHz	Settings
1 Graph										Span 200.00 I	MHz	
Scale/Div 10.0	dB		-		Ref Value 100.0	0 dBµV				CF Step		
90.0										20.0000	00 MHz	
80.0			Amo	manin	m		and some man	many		Auto Man		
70.0 60.0			ĮΫ							Freq Offs 0 Hz	set	
40.0	nghanasallinalynth	wind							Manhalloganhandanaga	44		
30.0												
20.0												
10,0												
Center 27.9250 #Res BW 1.000				- #	Video BW 3.00	00 MHz*			Span 200 MH Sweep 1.00 ms (1001 pt			
2 Metrics	,				the state of the s							
Total Chann			95.51 dB									
Total Power	Spectral Dens	sity	1	5.51 dB	µV/Hz							

Spectrum Analyzer 1 Occupied BW	Spectrum Analyzer 2 Swept SA	Spectrur Channel	n Analyzer 3 Power	• +	0	Frequency	· · · · · · · · · · · · · · · · · · ·
R + Align: Auto	Input Z: 50 Ω Corrections: Off Freq Ref. Int (S) NFE: Adaptive	Atten: 20 dB Preamp: Off #PNO: Fast	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq. 27.9250000 Avg Hold: 100/100 Radio Std: None	27	nter Frequency .925000000 GHz	Settlings
1 Graph		Antis Conti			Spa 20	an 0.00 MHz	
Scale/Div 10.0 dB		Ref Value 100.00	0 dBµV			Step .000000 MHz	
80.0	1,					Auto Man	
60.0					Fre 0 H	q Offset Iz	
40.0	verned			Mayayananahanan	enversion of the second second		
30 0 20 0							
10,0							
Center 27.9250 GHz #Res BW 1.0000 MHz		#Video BW 3.000		Sweep 1.00 m	an 200 MHz s (1001 pts)		
2 Metrics							
Total Channel Power	94.99 dBµV / 10	0 MHz					
Total Power Spectral D	ensity 14.99 dB	BµV/Hz					



Spectrum Anal Channel Powe		pectrum Analyze wept SA			m Analyzer 3 I Power	+	-)		0	Frequency	· · #
KEYSIGHT R ++-	Input RF Goupling DC Align Auto	Input Z 50 Ω Corrections: O Freq Ref. Int (S NFE: Adaptive	5) #PNO [Off	Trig: Free Ru Gate: Off #IF Gain: Low	Avg	nter Freq. 28.3000 Hold: 100/100 dio Std: None	00000 GHz		requency 00000 GHz	Settings
1 Graph									Span 200.00 I	MHz	
Scale/Div 10.0	dB		Ref Value	e 100.00	0 dBµV				CF Step 20.0000		
80.0 70.0		Armin		*****	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	in mana	γ		Auto Mar		
60 0 50 0									Freq Off: 0 Hz	set	
40.0		~1					planutureday	mpppharent			
20.0											
Center 28.300 #Res BW 1.00			#Video BN	N 3.000	00 MHz*		Sweep 1.0	Span 200 MHz 0 ms (1001 pts)			
2 Metrics											
Total Chann	el Power	94.25 dBµV /	100 MHz								
Total Power	Spectral Densit	y 14.25	dBµV/Hz								

	Spectrum Analyzer 2 Swept SA	Spectrur Channel	m Analyzer 3 Power	+	Frequenc	v • 👬
R +++ Align Auto	Input Z 50 Ω Corrections: Off Freq Ref. Int (S) NFE: Adaptive	Atten: 20 dB Preamp: Off #PNO: Fast	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq. 28.300000000 GF Avg Hold: 100/100 Radio Std: None	28,30000000 GHz	Settings
1 Graph v Scale/Div 10.0 dB		Ref Value 100.00	0 dBµV		Span 200.00 MHz CF Step	
90 0 80.0					20.000000 MHz Auto Man	
70.0					Freq Offset 0 Hz	
40.0 30.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			yararasingapasintutasinda	uutravla	
20.0						
Center 28.3000 GHz #Video BW 3.0000 MHz* Span 200 MHz #Res BW 1.0000 MHz Sweep 1.00 ms (1001 pts)						
2 Metrics	94.42 dBµV / 100) MHz				
Total Power Spectral Den	sity 14.42 dB	uV/Hz				