



Hermon Laboratories Ltd. P.O. Box 23, Binyamina 3055001, Israel Tel. +972 4628 8001 Fax. +972 4628 8277 E-mail: mail@hermonlabs.com

TEST REPORT

ACCORDING TO: FCC 47CFR part 96

FOR:

Airspan Networks Inc. LTE Base Station Radio Model: AirSpeed AS1030, 3.550-3.700 GHz (B48) FCC ID: PIDAS1030A

This report is in conformity with ISO/ IEC 17025. The "A2LA Accredited" symbol endorsement applies only to the tests and calibrations that are listed in the scope of Hermon Laboratories accreditation. The test results relate only to the items tested. This test report shall not be reproduced in any form except in full with the written approval of Hermon Laboratories Ltd.



Table of contents

1	Applicant information	3
2	Equipment under test attributes	3
3	Manufacturer information	3
4	Test details	3
5	Tests summary	4
6	EUT description	5
6.1	General information	5
6.2	Ports and lines	5
6.3	Support and test equipment	5
6.4	Changes made in the EUT	5
6.5	Test configuration	6
6.6	Transmitter characteristics	
7	Transmitter tests according to 47CFR part 96	9
7.1	Maximum EIRP and maximum power spectral density	9
7.2	Peak-to-average power ratio (PAPR) test	
7.3	Occupied bandwidth test	45
7.4	Emission outside the fundamental test	
7.5	Radiated spurious emission measurements	
7.6	Spurious emissions at RF antenna connector test	101
7.7	Frequency stability test	
8	APPENDIX A Test equipment and ancillaries used for tests	153
9	APPENDIX B Test equipment correction factors	
10	APPENDIX C Measurement uncertainties	
11	APPENDIX D Test laboratory description	
12	APPENDIX E Specification references	
13	APPENDIX F Manufacturer's declaration of additional to be used antennas	
14	APPENDIX G Abbreviations and acronyms	165



1 Applicant information

Client name:	Airspan Networks Inc.
Address:	777 Yamato, Road Suite 310 Boca Raton, FL 33431, USA
Telephone:	+1 561 893 8670
Fax:	+1 561 893 8671
E-mail:	zlevi@airspan.com
Contact name:	Mr. Zion Levi

2 Equipment under test attributes

Product name: LTE Base Station Radio			
Product type:	Transceiver		
Model(s):	AirSpeed AS1030, 3.550-3.700 GHz (B48)		
Serial number:	E85A4572871E		
Product Code:	AS103-U48-B03DP		
Hardware version:	A0		
Software release:	SR 17.50		
Receipt date	05-Oct-20		

3 Manufacturer information

Manufacturer name:	Airspan Networks Inc.			
Address:	777 Yamato, Road Suite 310 Boca Raton, FL 33431, USA			
Telephone:	+1 561 893 8670			
Fax:	+1 561 893 8671			
E-Mail:	zlevi@airspan.com			
Contact name:	Mr. Zion Levi			

4 Test details

Project ID:	40716
Location:	Hermon Laboratories Ltd. P.O. Box 23, Binyamina 3055001, Israel
Test started:	21-Jul-20
Test completed:	20-Oct-20
Test specification(s):	FCC 47CFR part 96



5 Tests summary

Test	Status
Transmitter characteristics	
Section 96.41(b), Maximum EIRP and maximum power spectral density	Pass
Section 96.41(g), Peak-to- average power ratio	Pass
Section 2.1049, Occupied bandwidth	Pass
Section 96.41(e), Emission mask	Pass
Section 96.41(e)(2), Radiated spurious emissions	Pass
Section 96.41(e)(3), Conducted spurious emissions	Pass
Section 2.1055, Frequency stability	Pass

Testing was completed against all relevant requirements of the test standard. The results obtained indicate that the product under test complies in full with the requirements tested.

The test results relate only to the items tested. Pass/ fail decision was based on nominal values.

	Name and Title	Date	Signature
Tested by:	Mr. A. Morozov, test engineer, EMC & Radio	21-Jul-20 – 20-Oct-20	fr
Reviewed by:	Mrs. S. Peysahov Sheynin, test engineer, EMC & Radio	03-Nov-20	
Approved by:	Mr. S. Samokha, technical manager, EMC & Radio	09-Nov-20	Can



6 EUT description

Note: The following data in this clause is provided by the customer and represents his sole responsibility

6.1 General information

The EUT, Mobile Digital station, AirSpeed 3.55-3.7GHz, Band 48, is part of a LTE broadband fixed cellular wireless access system. The system provides a radio link between an end-user (a subscriber) and a network to give high-speed data access. The AirSpeed's transceiver/receiver (Up to 64 QAM modulation, data rate up to 95 Mbps) equipped with a 17 dBi external antenna. Advanced Antenna Techniques 2x2 MIMO are supported. The maximum RF output power (not including antenna gain) is 31.96 dBm for 17 dBi and it can be reduced by software. Antennas 1/2 is one sector and antennas 3/4 is another sector.

The AirSpeed is installed outdoors. The Subscriber transmits and receives traffic to and from the base station respectively. The transceiver provides subscribers with "always-on" Internet, high speed data only, or data and voice (VoIP) services and is configured with a unique base station reference number, preventing the LTE UE from relocating to another subscriber premises without authorization.

Note: The AS1030 equipment defined as Category B CBSD (Citizens Broadband Radio Service Device) Antennas 1/2 arrange one sector while antenna 1 is cross polarized to antenna 2 and antennas 3/4 arrange another sector while antenna 3 is cross polarized to antenna 4. The transmitter output signals are completely uncorrelated. The sectors are either non overlapping by operation on different frequency channels or by different sectors coverage without overlapping of antenna beams.

According to manufacturer's declaration provided in Appendix F of the test report the following specific external antennas may be used in conjunction with this model radio at the appropriate listed power settings.

Port type	Port description	Connected from	Connected to	ed to Qty. Cable type		Cable length, m
Power	DC power	EUT	AC/DC adapter	1	Unshielded	20
Signal	Ethernet	EUT	Laptop	1	Shielded	20
Signal*	Serial*	Not connected	Not connected	1	NA	NA
Signal	Optic Port	EUT	Laptop	1	Unshielded	20
Signal	GPS	EUT	NA	1	NA	NA

6.2 Ports and lines

*for maintenance only

6.3 Support and test equipment

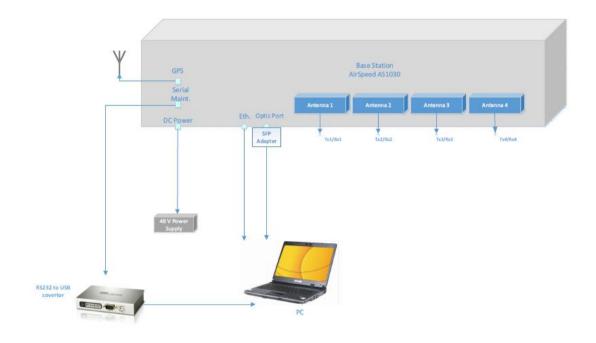
Description	Manufacturer	Model number	Serial number
Laptop	Dell	E7450	8TYRP32
USB to RS-232 convertor	ATEN	UC2324	NA
AC/DC adapter	MW	PSP-600-48	NA
SFP adapter	Finisar	FTLF1318P3BTL	NSE0AQC
GPS antenna	Tallysman	32-3010-0	01252012

6.4 Changes made in the EUT

No changes were implemented in the EUT during testing.



6.5 Test configuration



6.6 Transmitter characteristics

Type of equipment										
V Stand-alone (Equipment with or without its own control provisions)										
Combined equipment (Equipment where the radio part is fully integrated within another type of equipment)										
Plug-in card (Equipment intended for a variety of host systems)										
Intended use Condition of use										
V fixed										
mobile						from all peo				
portable	May o	perate a	t a dist	ance clos	ser than	20 cm to hu	ıman body	/		
Assigned frequency range			3550.	0 – 3700	.0 MHz					
Operating frequency (full ba	ınds)		3555.0	0 – 3695.	0 MHz					
RF channel spacing			10 MF	Iz, 20 M⊦	łz					
Maximum rated output powe	er		At trar	nsmitter 5	50 Ω RF	output conn	nector (per	port)		*31.96 dBm
				No						
							ious varial			
Is transmitter output power	variable	e?	v	Yes	V		d variable	with step	o size	0.25 dB
						um RF pow				-30 dBm
					maxin	num RF pov	wer at ante	enna con	nector	dBm
Antenna connection										
unique coupling	v	cton	ndard connector			Integral		V		ary RF connector
unque couping	v	Stari						without temporary RF connector		porary RF connector
Antenna/s technical charact	eristics	5								
Туре	Ν	Manufact	turer		Mod	del number			Gain	
*External	A	ALPHA V	Wireless Ltd.			AW3782		17 dBi		
External		ALPHA V				AW3014 18 dBi				
External	A	ALPHA V	Vireles	s Ltd.	AW	AW3170 2		20.5 dBi	i	
External	L	_aird Ltd			HDI	DA3W-25		25 dBi		
Transmitter aggregate data	rate/s, N	N bps								
Transmitter 26dBc pov	ver band	dwidth	_				Туре	of modu		
	tor barre	amatri			QPSK			16QAM		64QAM
10 MHz 20 MHz					10.7			22.7 45.4		<u> </u>
Type of multiplexing				тг	23.4 DD			40.4		30
Modulating test signal (base	eband)				RBS					
Maximum transmitter duty of		normal	use	0.						
Transmitter power source	,			0.						
-	ninal ra	ted volt	ade			Ratt	ery type			
		ited volt		48	VDC	Dall				
		ted volt				Free	quency			
Common power source for t			-	/er		V		/es		no
					a la facta a		(

* - The worst case of antenna configuration delivering the highest conducted power per port was tested



6.7 Table of calculations for the MAX EIRP at frequency range 3550 – 3700 MHz with different antenna configurations

Antenna configuration	Antenna Vendor	Antenna Model Number	Antenna Peak Gain (dB)	Signal Bandwidth (MHz)	Maximum Conducted Power (dBm)	EIRP (dBm/10MHz)	EIRP per Bandwidth (dBm)	Operational Category
1*	ALPHA	AW3782	17	10.0	28.99	45.99	45.99	В
T	ALFHA	AW3782	17	20.0	31.96	46.45	48.96	В
2		AW3014	18.0	10.0	27.99	45.99	45.99	В
2	ALPHA	AW3014	18.0	20.0	30.96	46.45	48.96	В
3		414/2170	20 F	10.0	25.49	45.99	45.99	В
3	ALPHA	AW3170	20.5	20.0	28.46	46.45	48.96	D
4	Laird		25.0	10.0	20.99	45.99	45.99	В
4	Lairú	HDDA3W-25	25.0	20.0	23.96	46.45	48.96	D

* - The worst case of antenna configuration delivering the highest conducted power was tested



Test specification:	Section 96.41(b), Maximum EIRP and maximum power spectral density							
Test procedure:	Section 96.41(e)(3)							
Test mode:	Compliance	Verdict: PASS						
Date(s):	22-Apr-20	verdict.	FA33					
Temperature: 24 °C	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC					
Remarks:								

7 Transmitter tests according to 47CFR part 96

7.1 Maximum EIRP and maximum power spectral density

7.1.1 General

This test was performed to measure the maximum EIRP and maximum spectral power density at the transmitter RF antenna connector. Specification test limits are given in Table 7.1.1, Table 7.1.2.

Table 7.1.1 Maximum EIRP limits

Assigned frequency renge MHz	EIRP
Assigned frequency range, MHz	dBm/10 MHz
3550 - 3700	47.0

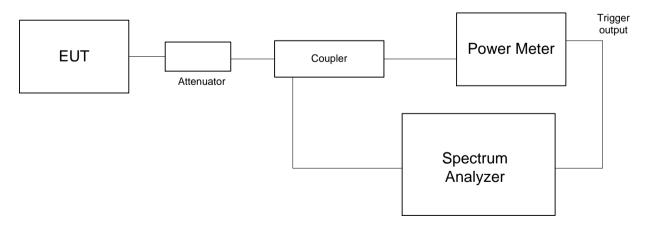
Table 7.1.2 Peak spectral power density limits

Assigned frequency range,	Measurement bandwidth,	Peak spectral power density,
MHz	MHz	dBm
3550 - 3700	1.0	37.0

7.1.2 Test procedure

- 7.1.2.1 The EUT was set up as shown in Figure 7.1.1, energized and its proper operation was checked.
- 7.1.2.2 The EUT was adjusted to produce maximum available to end user RF output power.
- **7.1.2.3** The frequency span of spectrum analyzer was set to capture the entire 6 dB band of the transmitter, in average mode with resolution bandwidth set to 1.0 MHz, video bandwidth wider than resolution bandwidth, sweep time and sufficient number of sweeps was allowed for trace stabilization.
- **7.1.2.4** Spectrum analyzer was set in average mode, sufficient number of sweeps was allowed for trace stabilization and peak spectral power density was measured as provided in Table 7.1.3, Table 7.1.4 and the associated plots.

Figure 7.1.1 Maximum EIRP and power spectral density test setup





Test specification:	Section 96.41(b), Maximu	Section 96.41(b), Maximum EIRP and maximum power spectral density						
Test procedure:	Section 96.41(e)(3)							
Test mode:	Compliance	Verdict:	PASS					
Date(s):	22-Apr-20	verdict.	FA33					
Temperature: 24 °C	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC					
Remarks:								

Table 7.1.3 Maximum EIRP test results

ASSIGNED FREQUENCY RANGE: DETECTOR USED: VIDEO BANDWIDTH: CHANNEL SPACING: 3550.0 – 3700.0 MHz Average (gated) ≥ Resolution bandwidth 10 MHz

Frequency		RF Output	power		Antenna				
, MHz	Chain RF#1, dBm	Chain RF#2, dBm	Chain RF#3, dBm	Chain RF#4, dBm	gain, dBi	EIRP*, dBm/10 MHz	Limit, dBm/10 MHz	Margin, dB**	Verdict
Modulation	QPSK				-				
3555.0	28.89	28.59	28.88	28.80	17.0	45.89	47.0	-1.11	Pass
3625.0	28.72	28.99	28.74	28.98	17.0	45.99	47.0	-1.01	Pass
3695.0	28.86	28.86	28.79	28.82	17.0	45.86	47.0	-1.14	Pass
Modulation	16QAM								
3555.0	28.61	28.55	28.82	28.73	17.0	45.82	47.0	-1.18	Pass
3625.0	28.53	28.78	28.81	28.85	17.0	45.85	47.0	-1.15	Pass
3695.0	28.78	28.81	28.89	28.76	17.0	45.89	47.0	-1.11	Pass
Modulation	64QAM								
3555.0	28.82	28.52	28.80	28.79	17.0	45.82	47.0	-1.18	Pass
3625.0	28.91	28.84	28.87	28.98	17.0	45.98	47.0	-1.02	Pass
3695.0	28.85	28.77	28.77	28.82	17.0	45.85	47.0	-1.15	Pass

* - EIRP = Max SA reading (Chains #1&2 and #3&4) + Antenna gain: The transmitter output signal are completely uncorrelated, antennas 1/2 is one sector and antennas 3/4 is another sector.

20 MHz

** - Margin = EIRP, dBm - specification limit.

CHANNEL SPACING:

	ACING.									
Frequenc		RF Output	power		Antenna	EIRP,	EIRP*,	Limit,	Manain	
y, MHz	Chain RF#1, dBm	Chain RF#2, dBm	Chain RF#3, dBm	Chain RF#4, dBm	gain, dBi	dBm/20 MHz	dBm/10 MHz	dBm/10 MHz	Margin, dB**	Verdict
Modulatio	n QPSK									
3560.0	31.65	31.51	31.79	31.80	17.0	48.80	46.29	47.0	-0.71	Pass
3625.0	31.82	31.83	31.91	31.96	17.0	48.96	46.45	47.0	-0.55	Pass
3690.0	31.73	31.90	31.73	31.83	17.0	48.90	46.39	47.0	-0.61	Pass
Modulatio	n 16QAM									
3560.0	31.51	31.49	31.76	31.79	17.0	48.79	46.28	47.0	-0.72	Pass
3625.0	31.63	31.73	31.70	31.72	17.0	48.73	46.22	47.0	-0.78	Pass
3690.0	31.73	31.69	31.64	31.53	17.0	48.73	46.22	47.0	-0.78	Pass
Modulatio	n 64QAM									
3560.0	31.56	31.52	31.62	31.76	17.0	48.76	46.25	47.0	-0.75	Pass
3625.0	31.80	31.81	31.79	31.75	17.0	48.81	46.30	47.0	-0.70	Pass
3690.0	31.71	31.77	31.63	31.64	17.0	48.77	46.26	47.0	-0.74	Pass

* - EIRP = Max SA reading (Chains #1&2 and #3&4) - 10*log[OBW(MHz) / 10 MHz]] + Antenna gain =

Max SA reading – 2.51 dB + Antenna gain: The transmitter output signal are completely uncorrelated, antennas 1/2 is one sector and antennas 3/4 is another sector.

** - Margin = EIRP, dBm - specification limit.



Test specification:	Section 96.41(b), Maximu	Im EIRP and maximum powe	er spectral density
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	Verdict:	PASS
Date(s):	22-Apr-20	verdict.	FA33
Temperature: 24 °C	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

Table 7.1.4 Peak spectral power density test results

SSIGNED FREC ETECTOR USE IDEO BANDWID IUMBER OF CH/	D: DTH:	GE:			Average	- 3700.0 MHz (gated) ution bandwidth			
Frequency,		SA Reading, o	Bm/MHz		Antenna	Total PSD*,	Limit,	Margin,	Verdic
MHz	Chain RF#1,	Chain RF#2,	Chain RF#3,	Chain RF#4,	gain, dBi	dBm/ MHz	dBm/MHz	dB	t
Channel space	ing 10 MHz						-		
Modulation Q	PSK								
3555.0	19.92	19.75	19.98	19.90	17.0	36.98	37.0	-0.02	Pass
3625.0	19.84	19.94	19.86	19.96	17.0	36.96	37.0	-0.04	Pass
3695.0	19.84	19.89	19.92	19.92	17.0	36.92	37.0	-0.08	Pass
Modulation 1	6QAM								
3555.0	19.96	19.83	19.96	19.88	17.0	36.96	37.0	-0.04	Pass
3625.0	19.84	19.86	19.95	19.92	17.0	36.95	37.0	-0.05	Pass
3695.0	19.95	19.94	19.97	19.97	17.0	36.97	37.0	-0.03	Pass
Modulation 6	4QAM								
3555.0	19.98	19.81	19.93	19.90	17.0	36.98	37.0	-0.02	Pass
3625.0	19.93	19.92	19.97	19.95	17.0	36.97	37.0	-0.03	Pass
3695.0	19.97	19.97	19.90	19.88	17.0	36.97	37.0	-0.03	Pass
Channel space	ing 20 MHz								
Modulation Q	PSK								
3560.0	19.98	19.85	19.93	19.85	17.0	36.98	37.0	-0.02	Pass
3625.0	19.85	19.86	19.98	19.91	17.0	36.98	37.0	-0.02	Pass
3690.0	19.91	19.97	19.98	19.92	17.0	36.98	37.0	-0.02	Pass
Modulation 1	6QAM			•					
3560.0	19.77	19.93	19.91	19.94	17.0	36.94	37.0	-0.06	Pass
3625.0	19.76	19.83	19.83	19.93	17.0	36.93	37.0	-0.07	Pass
3690.0	19.89	19.94	19.92	19.97	17.0	36.97	37.0	-0.03	Pass
Modulation 6	4QAM								
3560.0	19.83	19.86	19.90	19.93	17.0	36.93	37.0	-0.07	Pass
3625.0	19.96	19.93	19.96	19.88	17.0	36.96	37.0	-0.04	Pass
3690.0	19.90	19.95	19.89	19.99	17.0	36.99	37.0	-0.01	Pass

* - Total PSD = Max SA reading (Chains #1&2 or chains #3&4) + Antenna Gain: The transmitter output signal are completely uncorrelated, antennas 1/2 is one sector and antennas 3/4 is another sector.

** - Margin = Total PSD, dBm - specification limit.

Reference numbers of test equipment used

HL 4355 HL 3901 HL 4366 HL 3301 HL 3302

Full description is given in Appendix A.

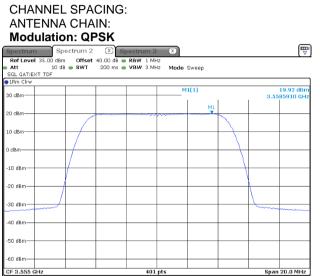


Test specification:	Section 96.41(b), Maximum EIRP and maximum power spectral density						
Test procedure:	Section 96.41(e)(3)						
Test mode:	Compliance	Verdict:	PASS				
Date(s):	22-Apr-20	verdict.	FA00				
Temperature: 24 °C	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC				
Remarks:							

Plot 7.1.1 Peak spectral power density at low frequency

10 MHz

1



Spectrum	Spectrum 2						⊎
	10 dB 👄 SWT	40.00 dB 👄 RBW 1 200 ms 👄 VBW 3		Sweep			
SGL GAT:EXT TDF	-						
30 dBm			м	1[1]			19.96 dBr 87410 GH
				M1			
20 dBm-					La contra de la co		
10 dBm-							
0 dBm					\rightarrow		
-10 dBm							
)		
-20 dBm							
-30 dBm	~					James	
-40 dBm							
-50 dBm							
-60 dBm							
CF 3.555 GHz		4					20.0 MHz

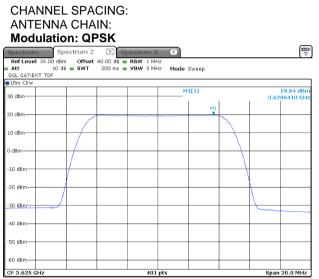
1Rm Clrw						
30 dBm			M1[1]		3.5	19.98 dBr 570950 GH
20 dBm-			M1			
	1	1				
L0 dBm						
) dBm		-		+		
10 dBm						
10 000						
20 dBm						
30 dBm	~	-		-	~~~~~	
40 dBm				_		
50 dBm						
So upin						



Test specification:	Section 96.41(b), Maximu	Section 96.41(b), Maximum EIRP and maximum power spectral density						
Test procedure:	Section 96.41(e)(3)							
Test mode:	Compliance	Verdict:	PASS					
Date(s):	22-Apr-20	veraici.	FA33					
Temperature: 24 °C	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC					
Remarks:	-		·					

Plot 7.1.2 Peak spectral power density at mid frequency

10 MHz



Spectrum	Spectrum		pectrum 3	X				
Ref Level 35. Att SGL GAT:EXT T 1Rm Cirw	10 dB 👄 SWT	et 40.00 dB 200 ms	VBW 1 MH:		еер			
30 dBm				MIL	u		3.62	19.84 dBr 85410 GH
20 dBm					M1	~		
10 dBm						\rightarrow		
0 dBm						\rightarrow		
-10 dBm								
-20 dBm								
-30 dBm	~						·	· · · · · · · · · · · · · · · · · · ·
-40 dBm								
-50 dBm								
-60 dBm								

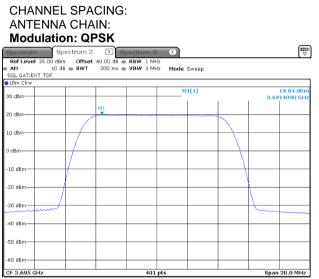
Spectrum	pectrum 2	X Sp	ectrum 3	X				I
Ref Level 35.00 dB Att 10 c SGL GAT:EXT TDF			RBW 1 MHz VBW 3 MHz		Sweep			
●1Rm Clrw								
30 dBm				м	1[1]		3.62	19.93 dBm 87410 GHz
20 dBm					M1			
10 dBm						\sum		
0 dBm	1							
-10 dBm	1							
-20 dBm								
-30 dBm								
-40 dBm								
-50 dBm								
-60 dBm								
CF 3.625 GHz			401 p	ts			Span	20.0 MHz



Test specification:	Section 96.41(b), Maximu	Im EIRP and maximum powe	er spectral density
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	Verdict:	PASS
Date(s):	22-Apr-20	verdict.	FA33
Temperature: 24 °C	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:		· · · ·	

Plot 7.1.3 Peak spectral power density at high frequency

10 MHz



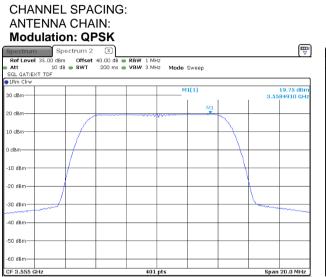
Spectrum	Spectrum		pectrum 3	X			⊽
Ref Level 35.0 Att SGL GAT:EXT TD 1Rm Cirw	10 dB 👄 SWT		VBW 1 MHz	Mode Sweep	0		
30 dBm				M1[1]			19.95 dBr
		M1				3.69	13590 GH
20 dBm-		~~~~~					
10 dBm							
0 dBm							
-10 dBm							
-20 dBm							
-30 dBm							
-40 dBm						~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
-50 dBm							
-60 dBm		_					<u> </u>

Spectrum	Spectrum 2		ectrum 3	X			
	00 dBm Offset 10 dB SWT DF		RBW 1 MHz VBW 3 MHz	Mode Sweep			
●1Rm Clrw							
30 dBm				M1[1]			19.97 dBm 14090 GHz
20 dBm		M1					
10 dBm							
0 dBm					+		
-10 dBm					+		
-20 dBm							
-30 dBm							
-50 0011	~~~					human	
-40 dBm					1	1	
-50 dBm					-		
-60 dBm					_		
CF 3.695 GHz	I		401 pt	s		Span	20.0 MHz



Test specification:	Section 96.41(b), Maximu	Im EIRP and maximum powe	er spectral density
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	Verdict:	PASS
Date(s):	22-Apr-20	verdict.	FA33
Temperature: 24 °C	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

Plot 7.1.4 Peak spectral power density at low frequency



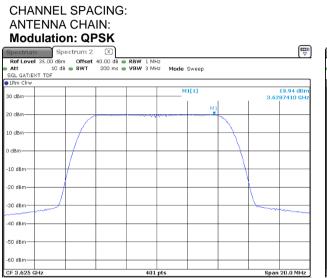
Spectrum Ref Level 35 Att	Spectrum						H
SGL GAT:EXT 1		et 40.00 dB 👄 1 200 ms 👄 1		1ode Sweep			
30 dBm				M1[1]			19.83 dB
30 abm				M1	1	3.55	84910 GF
20 dBm			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	•	~		
10 dBm	(7		
0 dBm							
-10 dBm					\vdash		
-20 dBm					1		
-30 dBm	man -					hum	mm
-40 dBm				_			
				1	1		

Spectrum	Spectrum 2	×		
	10 dB 👄 SWT	40.00 dB • RBW 1 MH 200 ms • VBW 3 MH		
●1Rm Clrw				
30 dBm			M1[1]	 19.81 dBm 3.5585910 GHz
20 dBm			M1	
10 dBm				
0 dBm				
-10 dBm				
-20 dBm				
-30 dBm	~			
-40 dBm				
-50 dBm				
-60 dBm				
CF 3.555 GHz		401	pts	Span 20.0 MHz



Test specification:	Section 96.41(b), Maximum EIRP and maximum power spectral density				
Test procedure:	Section 96.41(e)(3)				
Test mode:	Compliance	Verdict:	PASS		
Date(s):	22-Apr-20	verdict.	FA00		
Temperature: 24 °C	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC		
Remarks:					

Plot 7.1.5 Peak spectral power density at mid frequency



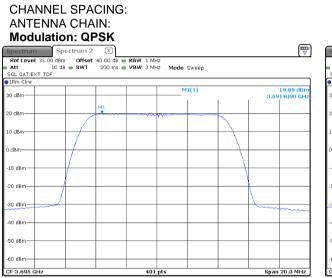
meaale	tion: 16QA	M		
Spectrum Ref Level 35.00 d	Spectrum 2 🗵			
	idB ● SWT 200 m		Sweep	
1Rm Clrw				
30 dBm		n	41[1]	19.86 dB 3.6285410 GF
20 dBm			M1	
EU GBAT		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
10 dBm-				
0 dBm				
-10 dBm				
-20 dBm				
-30 dBm	/			manum
-40 dBm				

Spectrum	pectrum 2	X						
Ref Level 35.00 dB Att 10 c SGL GAT:EXT TDF	m Offset dB 🖶 SWT				Sweep			
●1Rm Clrw								
30 dBm				M	1[1]		3.62	19.92 dBm 86410 GHz
20 dBm-					M1	~		
10 dBm						\mathbf{i}		
IU dBm								
0 dBm								
-10 dBm	1							
-20 dBm								
-30 dBm	(
-40 dBm								
-50 dBm								
-60 dBm								
CF 3.625 GHz			401	pts			Span	20.0 MHz



Test specification:	Section 96.41(b), Maximum EIRP and maximum power spectral density				
Test procedure:	Section 96.41(e)(3)				
Test mode:	Compliance	Verdict:	PASS		
Date(s):	22-Apr-20	verdict.	FA00		
Temperature: 24 °C	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC		
Remarks:					

Plot 7.1.6 Peak spectral power density at high frequency



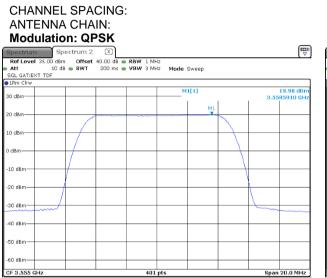
10 MH: 2	z					
_	ation: 16	QAM				_
Spectrum Ref Level 35.00 Att SGL GAT:EXT TDF		00 dB • RBW 1 M 00 ms • VBW 3 M		veep		u T
●1Rm Clrw						
30 dBm			M1[1]		L9.94 dBi L3590 GF
20 dBm	M:		vv·			
10 dBm	- / -			\rightarrow		
0 dBm	-/			\rightarrow		
-10 dBm						
-20 dBm						
-30 dBm					·	
-40 dBm						
-50 dBm						
-60 dBm						
CF 3.695 GHz		40	1 pts		Span	20.0 MHz

Spectrum	Sp	ectrum 2	X						
Ref Level Att SGL GAT:EX	10 dB	Offset e SWT		RBW 1 MH VBW 3 MH		Sweep			
●1Rm Clrw									
30 dBm					м	1[1]			19.97 dBm 14090 GHz
20 dBm-			M1						
					4000				
10 dBm									
0 dBm		/							
-10 dBm		<u> </u>					$ \rightarrow $		
-20 dBm		1					1		
aa . (a									
-30,d8m								· · · · · ·	·······
-40 dBm									
-50 dBm									
-60 dBm									
CF 3.695 G	Hz			401	pts			Span	20.0 MHz



Test specification:	Section 96.41(b), Maximu	Im EIRP and maximum powe	er spectral density
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	Verdict:	PASS
Date(s):	22-Apr-20	verdict.	FA00
Temperature: 24 °C	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

Plot 7.1.7 Peak spectral power density at low frequency



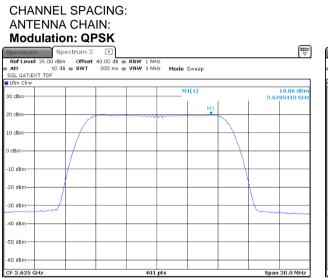
10 MH 3								
Modu	lation: 1							G
Spectrum Ref Level 35.0	Spectrum 2	2 × 10.00 dB • R						
Att	10 dB 👄 SWT			Mode S	weep			
SGL GAT:EXT TD 1Rm Clrw	F							
30 dBm				M1	[1]		3.55	19.96 dBi i84910 GH
					M1		0.00	04910 0
20 dBm					X	~		
10 dBm						\rightarrow		
						$\langle \rangle$		
0 dBm								
-10 dBm								
-20 dBm								
-30 dBm							Lunn	
-40 dBm								
-50 dBm								
-60 dBm								
CF 3.555 GHz			401 pt					20.0 MH:

Spectrum	ectrum 2	X						
Ref Level 35.00 dB Att 10 d SGL GAT:EXT TDF			RBW 1 MH VBW 3 MH		Sweep			
●1Rm Clrw								
30 dBm				м	1[1]		3.55	19.93 dBm 84910 GHz
20 dBm-					M1			
10 dBm						\mathbf{i}		
IU dBm								
0 dBm	1							
-10 dBm	/					$\left \right\rangle$		
-20 dBm	<u> </u>					· · · ·		
-30 dBm	·							
-40 dBm								
-50 dBm								
-60 dBm								
CF 3.555 GHz			401	pts			Span	20.0 MHz



Test specification:	Section 96.41(b), Maximu	Im EIRP and maximum powe	er spectral density
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	Verdict:	PASS
Date(s):	22-Apr-20	verdict.	FA00
Temperature: 24 °C	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

Plot 7.1.8 Peak spectral power density at mid frequency



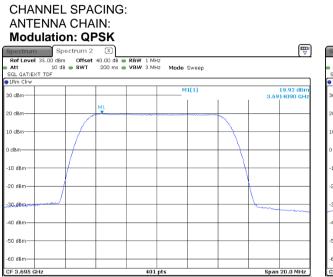
[//	6QAN	01. 1	uulati	
							ectrum 2		Spectrum
			Sweep		VBW 3 M				Att
								KT TDF	SGL GAT:E
9.95 dB 5410 GI			[1]	M					30 dBm
			M1						20 dBm
		r and a second							20 GBm-
									10 dBm
									0 dBm
							/		
							/		-10 dBm
									-20 dBm
	\setminus	/						/	-30 dBm
~~~~~								mu	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
									-4U dBm
									-50 dBm
_									-40 dBm

Spectrum	Spec	trum 2	X						
Ref Level 35 Att SGL GAT:EXT T	10 dB (			RBW 1 MH VBW 3 MH		Sweep			
●1Rm Clrw									
30 dBm					м	1[1]			19.97 dBm 13090 GHz
20 dBm-			M1				-		
							$\square$		
10 dBm									
0 dBm									
-10 dBm	/	,					+		
-20 dBm							· · ·		
-30 dBm									
								Jun	
-40 dBm									
-50 dBm									
-60 dBm									
CF 3.625 GHz				401	pts		1	Span	20.0 MHz



Test specification:	Section 96.41(b), Maximu	Im EIRP and maximum powe	er spectral density
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	Verdict:	PASS
Date(s):	22-Apr-20	verdict:	PASS
Temperature: 24 °C	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:	· · · ·	· · · ·	

# Plot 7.1.9 Peak spectral power density at high frequency



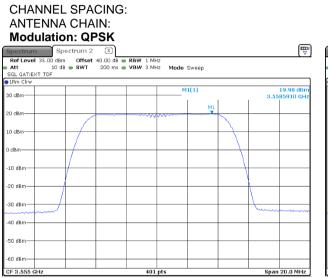
10 MH 3	z							
Modul	ation: 1		1					_
Spectrum Ref Level 35.00	Spectrum 2	2 X						Ū
	10 dB 👄 SWT		VBW 3 MHz		Sweep			
SGL GATEXT TDF 1Rm Clrw								
30 dBm				M	1[1]		3.69	19.97 dBn 13590 GH
		M1						
20 dBm-	/	/	·····	~~~~~		~		
10 dBm		-				$\rightarrow$		
0 dBm								
U GBM	1							
-10 dBm								
-20 dBm						1		
-30 dBm	~						L	
-40 dBm								
50 db-								
-50 dBm								
-60 dBm		-						
CF 3.695 GHz			401 p	ts			Spar	20.0 MHz

Spectrum	Sp	ectrum 2	X						₽
Ref Level Att SGL GAT:EX	10 dB	Offset e SWT		RBW 1 MH VBW 3 MH		Sweep			
⊖1Rm Clrw									
30 dBm					м	1[1]			19.90 dBm 12590 GHz
20 dBm-			M1						
10 dBm									
0 dBm		/							
-10 dBm							$ \rightarrow $		
-20 dBm		/					1		
-30 dBm	/								
-JO UDII								hann	
-40 dBm									
-50 dBm									
-60 dBm									
CF 3.695 GI	lz			401	pts			Span	20.0 MHz



Test specification:	Section 96.41(b), Maximu	Im EIRP and maximum powe	er spectral density
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	Verdict:	PASS
Date(s):	22-Apr-20	verdict.	FA00
Temperature: 24 °C	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

#### Plot 7.1.10 Peak spectral power density at low frequency



Mx[1]		3.55	19.88 dBi 384910 GH
		3.55	
		3.55	
M1			
	~		
		$\backslash$	
		mine	
			<u> </u>
			Span

Spectrum		ectrum 2							₩
Ref Level 3		Offset SWT				_			
Att SGL GAT:EXT		Sw1	200 ms 🖷	VBW 3 MF	z Mode	Sweep			
●1Rm Clrw									
30 dBm					м	1[1]			19.90 dBm 85910 GHz
20 dBm						M1			
10 dBm									
0 dBm									
-10 dBm		/					$ \rightarrow $		
-20 dBm	,						1		
20 000	/								
-30 dBm								Lauren	
-40 dBm									
-50 dBm									
(0.4%)									
-60 dBm									
CF 3.555 GH	z			401	pts			Span	20.0 MHz



Test specification:	Section 96.41(b), Maximum EIRP and maximum power spectral density				
Test procedure:	Section 96.41(e)(3)				
Test mode:	Compliance	Verdict:	PASS		
Date(s):	22-Apr-20	verdict.	FA00		
Temperature: 24 °C	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC		
Remarks:					

# Plot 7.1.11 Peak spectral power density at mid frequency



Spectrum	Spectrur	n 2 🛛						<b>₩</b>
Ref Level 35. Att			<ul> <li>RBW 1 MH</li> <li>VBW 3 MH</li> </ul>		Sween			
SGL GAT:EXT T					0.000			
-				м	1[1]			19.92 dBi
30 dBm						1	3.62	11600 GH
20 dBm			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~		~~~~		
10 dBm	/							
						$  \rangle$		
0 dBm								
-10 dBm								
-20 dBm						1		
-30 dBm								
-30 dbm	~						hum	······
-40 dBm								
-50 dBm								
-60 dBm								

Spectrum	ectrum 2	X						
Ref Level 35.00 dBr Att 10 d SGL GAT:EXT TDF					Sweep			
●1Rm Clrw								
30 dBm				м	1[1]			19.95 dBm 86410 GHz
20 dBm-				····	M1	~		
10 dBm						$\sum$		
0 dBm	1							
-10 dBm	/							
-20 dBm	(							
-30 dBm								
							~~~~~~	
-40 dBm								
-50 dBm								
-60 dBm								
CF 3.625 GHz			401	pts			Span	20.0 MHz



Test specification:	Section 96.41(b), Maximum EIRP and maximum power spectral density				
Test procedure:	Section 96.41(e)(3)				
Test mode:	Compliance	Verdict:	PASS		
Date(s):	22-Apr-20	verdict:	PASS		
Temperature: 24 °C	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC		
Remarks:	· · ·				

Plot 7.1.12 Peak spectral power density at high frequency



Spectrum Ref Level 35. Att	Spectrum 00 dBm Offs 10 dB • SWT	et 40.00 dB	 RBW 1 MH VBW 3 MH 		ер		Į₽
SGL GAT:EXT T	DF						
30 dBm				M1[1	1	3.6	19.97 dBr 912590 GH
		M1					
20 dBm-		- J	~~~~~	///	man and a second se		
10 dBm						_	
0. 40							
0 dBm					1	\ \	
-10 dBm							
-20 dBm							
						Λ	
-30 dBm						hum	
-40 dBm							
-50 dBm							
-60 dBm							
CF 3.695 GHz			401	nts		Sna	1 20.0 MHz

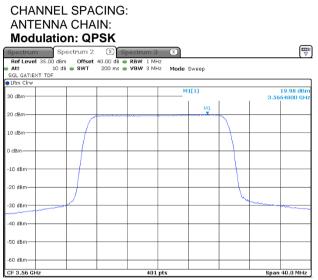
Spectrum Spectrum 2 X Ref Level 35.00 dBm Offset 40.00 dB RBW 1 MHz Att 10 dB SWT 200 ms VBW 3 MHz SGL GATEXT TOF 1 Mode Sweep 19.88 dBn 3.6914090 GH M1[1] 30 dBm 20 dBr 10 dBn -10 dBm -20 dBm--30 dBm--40 dBm· -50 dBm· -60 dBm-CF 3.695 GH 401 pts Span 20.0 MHz



Test specification:	Section 96.41(b), Maximum EIRP and maximum power spectral density				
Test procedure:	Section 96.41(e)(3)				
Test mode:	Compliance	Verdict:	PASS		
Date(s):	22-Apr-20	verdict.	FA00		
Temperature: 24 °C	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC		
Remarks:					

Plot 7.1.13 Peak spectral power density at low frequency

20 MHz



Spectrum Ref Level 35.0	Spectrum 2 👾	Spectrum :				⊽
SGL GAT:EXT TE	10 dB 👄 SWT 20	0 ms - VBW 3 M		Sweep		
9 1Rm Clrw 30 dBm			MI	[1]		L9.77 dBr 58800 GH
20 dBm				M1		
10 dBm					\rightarrow	
0 dBm						
-10 dBm						
-20 dBm						
-30 dBm						
-40 dBm						
-50 dBm						
-60 dBm			1 pts			40.0 MHz

Spectrum	Spectrum 2	Spectrum 3	X		
Att 1 SGL GAT:EXT TDF		00 dB 👄 RBW 1 MH 00 ms 👄 VBW 3 MH)	
●1Rm Clrw					
30 dBm			M1[1]		19.83 dBm 3.5664800 GHz
20 dBm-				M1	
10 dBm					
0 dBm					
-10 dBm					
-20 dBm					
-20 UBIII					
-30 dBm	~			~	
-40 dBm					
-50 dBm					
-60 dBm					
CF 3.56 GHz		401	pts		Span 40.0 MHz

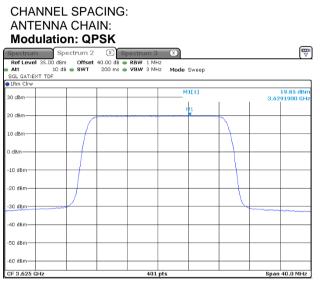


Test specification:	Section 96.41(b), Maximum EIRP and maximum power spectral density				
Test procedure:	Section 96.41(e)(3)				
Test mode:	Compliance	Verdict:	PASS		
Date(s):	22-Apr-20	verdict.	FA00		
Temperature: 24 °C	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC		
Remarks:					

Plot 7.1.14 Peak spectral power density at mid frequency

20 MHz

1



Spectrum		Spectrum 3 (X	ר		⊽
Ref Level 35.0 Att SGL GAT:EXT TD	10 dB 👄 SWT 200 r	dB ● RBW 1 MHz ns ● VBW 3 MHz MH	ode Sweep		
1Rm Clrw					
30 dBm			M1[1]		19.76 dBi 01900 GH
			M1		
20 dBm				and	
10 dBm					
0 dBm					
-10 dBm					
-20 dBm					
-30 dBm					
-GO UBIN					 ·····
-40 dBm					
-50 dBm					
-60 dBm					

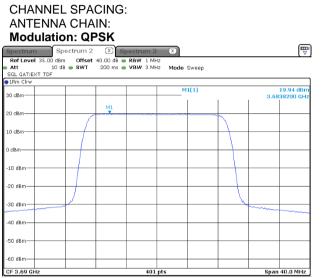
Spectrum	Spectrum 2				
SGL GAT:EXT T	10 dB 👄 SWT	40.00 dB RBW 1 MH 200 ms VBW 3 MH			
●1Rm Clrw					
30 dBm			M1[1]		19.96 dBm 3.6298900 GHz
20 dBm-			M1		
10 dBm					
10 dBm					
0 dBm					
-10 dBm				+ $+$ $+$	
-20 dBm				+ $+$	
-30 dBm					
-30 0811					
-40 dBm					
-50 dBm					
-60 dBm					
CF 3.625 GHz	1	401	pts		Span 40.0 MHz



Test specification:	Section 96.41(b), Maximum EIRP and maximum power spectral density					
Test procedure:	Section 96.41(e)(3)					
Test mode:	Compliance	Verdict:	PASS			
Date(s):	22-Apr-20	verdict.	FA00			
Temperature: 24 °C	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC			
Remarks:	-					

Plot 7.1.15 Peak spectral power density at high frequency

20 MHz



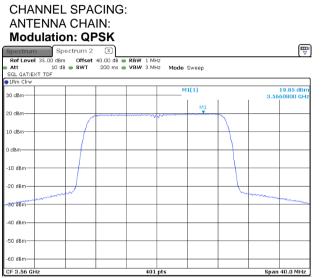
Spectrum	Spectrum 2		ectrum 3	X				
Ref Level 35.0 Att SGL GAT:EXT TD	10 dB 👄 SWT	40.00 dB 👄 200 ms 👄			Sweep			
●1Rm Clrw	, in the second s							-
30 dBm				M	[1]			19.91 dBr 38200 GH
20 dBm-		M1 T						
						\sum		ĺ
10 dBm								
0 dBm								
-10 dBm								
-20 dBm								
-30 dBm							· ·····	
-40 dBm								
-50 dBm								<u> </u>
-60 dBm								
-du ubiii								40.0 MHz

Spectrum	Spectrum 2	Spectrum :	x X		
	.0 dB 👄 SWT	40.00 dB • RBW 1 M 200 ms • VBW 3 M			
●1Rm Clrw					
30 dBm			M1[1]		19.90 dBm 3.6859100 GHz
20 dBm-		ME			
10 dBm					
0 dBm					
-10 dBm					
-20 dBm					
-30 dBm	~			- h	
-40 dBm	_				
-50 dBm					
-60 dBm					
CF 3.69 GHz		401	l pts		Span 40.0 MHz



Test specification:	Section 96.41(b), Maximum EIRP and maximum power spectral density				
Test procedure:	Section 96.41(e)(3)				
Test mode:	Compliance	Verdict:	PASS		
Date(s):	22-Apr-20	verdict.	FA00		
Temperature: 24 °C	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC		
Remarks:					

Plot 7.1.16 Peak spectral power density at low frequency



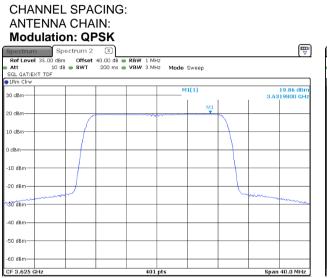
woau	lation: 16	QAM					
Spectrum Ref Level 35. Att SGL GAT:EXT T	10 dB 👄 SWT	X 0.00 dB • RBW 1 200 ms • VBW 3		чеер			Ē
●1Rm Clrw			M1[1]			19.93 dB
30 dBm			<u> </u>			3.56	69800 GH
20 dBm			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	M1	~		
					\mathbf{i}		
10 dBm-							
0 dBm							
-10 dBm					\rightarrow		
-20 dBm					Ľ,		
-30 dBm	-					- man	mun
-40 dBm							

Spectrum	Spectrum 2	X			ĺ	
	dBm Offset OdB 👄 SWT	40.00 dB e RBW 1 MH 200 ms e VBW 3 MH				
●1Rm Clrw						
30 dBm			M1[1]		19.86 d 3.5674800 (
20 dBm-			EM T			
				$\left \right\rangle$		
10 dBm						
0 dBm						_
-10 dBm						
-20 dBm						
-30-d8m	man and a start of the start of			~	m	
						~~
-40 dBm						
-50 dBm						_
-60 dBm						
CF 3.56 GHz		401	pts		Span 40.0 Mi	Hz



Test specification:	Section 96.41(b), Maximum EIRP and maximum power spectral density					
Test procedure:	Section 96.41(e)(3)					
Test mode:	Compliance	Verdict:	PASS			
Date(s):	22-Apr-20	verdict.	FA00			
Temperature: 24 °C	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC			
Remarks:						

Plot 7.1.17 Peak spectral power density at mid frequency



20 MH	z					
	lation: 16QA					_
SGL GAT:EXT TD	10 dB 👄 SWT 200 m	B 👄 RBW 1 MHz	e Sweep			Į,
1Rm Clrw			M1[1]			19.83 dB
30 dBm			MILLI			19.83 UBI 19800 GH
20 dBm			M1			
10 dBm						
0 dBm						
-10 dBm						
-20 dBm						
-30.dem	~~~			L.		would be a set of the
-40 dBm						
-50 dBm						
-60 dBm						
CF 3.625 GHz		401 pts			Span	40.0 MHz

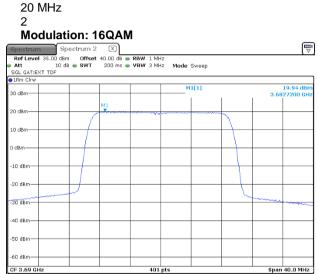
Spectrum	pectrum 2	X					
Ref Level 35.00 dB Att 10 d SGL GAT:EXT TDF	m Offset 18 e SWT			le Sweep			
1Rm Clrw							
30 dBm				M1[1]			19.93 dBm 10800 GHz
20 dBm-				M1			
					\sum		
L0 dBm							
) dBm							
10 dBm				_	+		
20 dBm-							
					- L.	m	
30 dBm							
40 dBm							
50 dBm				_			
60 dBm							
CF 3.625 GHz			401 pts				40.0 MHz



Test specification:	Section 96.41(b), Maximum EIRP and maximum power spectral density				
Test procedure:	Section 96.41(e)(3)				
Test mode:	Compliance	Verdict:	PASS		
Date(s):	22-Apr-20	verdict.	FA00		
Temperature: 24 °C	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC		
Remarks:					

Plot 7.1.18 Peak spectral power density at high frequency



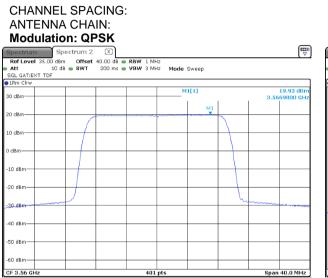


Spectrum	Spectrum 2	X				
Ref Level 35 Att SGL GAT:EXT	10 dB 👄 SWT	40.00 dB 👄 RBW 3 200 ms 👄 VBW 3				
●1Rm Clrw						
30 dBm			M1[1]			19.95 dBm 51100 GHz
20 dBm		M1				
10 dBm						
0 dBm						
-10 dBm						
-20 dBm						
~30 d8m				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
-40 dBm						
-50 dBm						
-60 dBm						
CF 3.69 GHz			401 pts		Snan	40.0 MHz
GI 0.09 GHZ			tor hea		əpan	HOLD MINZ



Test specification:	Section 96.41(b), Maximum EIRP and maximum power spectral density					
Test procedure:	Section 96.41(e)(3)					
Test mode:	Compliance	Verdict:	PASS			
Date(s):	22-Apr-20	verdict.	PA33			
Temperature: 24 °C	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC			
Remarks:						

Plot 7.1.19 Peak spectral power density at low frequency



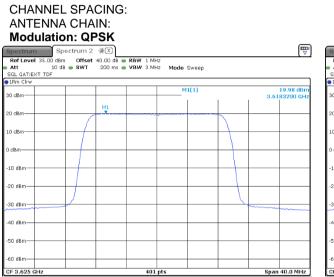
20 MH 3	Iz				
-	lation: 16Q	AM			
	10 dB 👄 SWT 200	dB 👄 RBW 1 MHz	Mode Sweep		
SGL GAT:EXT TD 1Rm Clrw	F				
30 dBm			M1[1]		19.91 dB 3.5668800 GF
20 dBm			M1	~	
10 dBm				\rightarrow	
0 dBm					
-10 dBm					
-20 dBm					
-30 dBm					
-40 dBm					
-50 dBm					
-60 dBm					
CF 3.56 GHz		401 pts			Span 40.0 MH:

Spectrum	Spectrum 2	X					
	00 dBm Offset			_			
Att SGL GAT:EXT T	10 dB 👄 SWT	200 ms 👄 VBW	3 MHz Mode 9	Sweep			
●1Rm Clrw							
30 dBm-			M	(1)			19.90 dBm 66800 GHz
20 dBm				M1			
					\mathbf{i}		
10 dBm							
0 dBm							
-10 dBm							
-20 dBm							
-30 dBm							
-40 dBm							
-40 UBIT							
-50 dBm							
-60 dBm							
CF 3.56 GHz			401 pts			Span	40.0 MHz



Test specification: Section 96.41(b), Maximum EIRP and maximum power spectral density						
Test procedure:	Section 96.41(e)(3)					
Test mode:	Compliance	Verdict:	PASS			
Date(s):	22-Apr-20	verdict.	FA00			
Temperature: 24 °C	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC			
Remarks:						

Plot 7.1.20 Peak spectral power density at mid frequency



Spectrum Ref Level 35. Att SGL GAT:EXT T	00 dBm Offset 40.0	X 0 dB 👄 RBW 1 MH	-		U.S.
		00 ms 👄 VBW 3 MH			
1Rm Clrw			M1[1]		19.83 dBi
30 dBm				1 1	3.6211100 GH
20 dBm-		M1			
10 dBm					
0 dBm					
-10 dBm					
-10 UBII					
-20 dBm				+++	
-30 dBm					
~~~~					
-40 dBm					

Spectrum	Spectrum 2	$\times$						□
Ref Level 35.00 Att 3 SGL GAT:EXT TDF	10 dB 👄 SWT			Mode S	weep			
●1Rm Clrw								
30 dBm				мц	11			19.96 dBm 80200 GHz
20 dBm		M1						
10 dBm								
0 dBm								
-10 dBm						$\rightarrow$		
-20 dBm-								
-30 dBm	~~~					~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		mm
-40 dBm								
-50 dBm								
-60 dBm								
CF 3.625 GHz			401 pt	5			span	40.0 MHz



Test specification:	ecification: Section 96.41(b), Maximum EIRP and maximum power spectral density					
Test procedure:	Section 96.41(e)(3)					
Test mode:	Compliance	Verdict:	PASS			
Date(s):	22-Apr-20	verdict.	FA00			
Temperature: 24 °C	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC			
Remarks:						

#### Plot 7.1.21 Peak spectral power density at high frequency



Ref Level 35.0		$\boxtimes$			7
Att	10 dB 👄 SWT	40.00 dB • RBW 200 ms • VBW			
SGL GAT:EXT TD 1Rm Clrw	F				
30 dBm			M1[1]		19.92 dB 28200 GF
20 dBm		M1			
20 UBIN				man of the second se	
10 dBm					 
0 dBm					 
-10 dBm					
-10 UBIN					
-20 dBm					 
-30 dBm	- have			- L	 
-40 dBm					 m
-40 UBII					
-50 dBm					

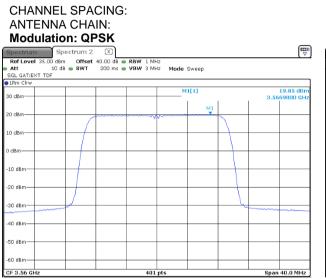
	ectrum 2							
Ref Level 35.00 dBr			RBW 1 MHz					
Att 10 d SGL GAT:EXT TDF	B 👄 SWT	200 ms 👄	VBW 3 MH2	Mode	Sweep			
IRm Clrw								
UTKIII CITW	1				1[1]			19.89 dBm
30 dBm				ML.	1[1]			19.89 UBM 33200 GHz
						1		
20 dBm		M1						
20 GBM-	1					1		
						$  \rangle$		
10 dBm						+		
						+		
0 dBm								
-10 dBm								
10 0000								
-20 dBm								
-20 dBm								
-30 dBm	×					- ~		
-40 dBm								
-50 dBm								
	1							
	1							
-60 dBm								
CF 3.69 GHz			401 p	ts		1	Span	40.0 MHz



Test specification: Section 96.41(b), Maximum EIRP and maximum power spectral density						
Test procedure:	Section 96.41(e)(3)					
Test mode:	Compliance	Verdict:	PASS			
Date(s):	22-Apr-20	verdict.	FA00			
Temperature: 24 °C	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC			
Remarks:						

# Plot 7.1.22 Peak spectral power density at low frequency

20 MHz



Ref Level 35.0		$\boxtimes$						
SGL GAT:EXT TO	10 dB 👄 SWT	0.00 dB 👄 RB 200 ms 👄 VB			Sweep			
-				M	I[1]			19.94 dBr
30 dBm						1	3.56	62800 GH
20 dBm-					M1	~		
			Ĩ			$\mathbf{X}$		
10 dBm								
0 dBm								
-10 dBm								
-20 dBm								
-20 ubiii								
-30 dBm						<u> </u>	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
-40 dBm								
-50 dBm								
-60 dBm								

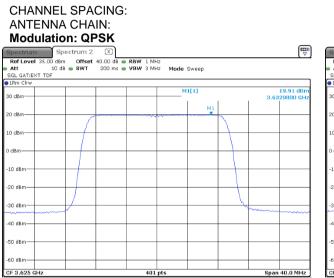
Spectrum	Spectrum 2						E
	00 dBm Offset			_			
Att SGL GAT:EXT TE	10 dB 👄 SWT	200 ms 👄 VBW	3 MHz Mode	Sweep			
• 1Rm Clrw	-						
30 dBm			M	1[1]			19.93 dBm 74800 GHz
20 dBm				M1	-		
					$\mathcal{A}$		
10 dBm							
0 dBm							
-10 dBm							
-20 dBm							
-30 dBm					L		
-40 dBm						1	
-50 dBm							
-60 dBm							
CF 3.56 GHz	1		401 pts			Span	40.0 MHz



Test specification:	Section 96.41(b), Maximu	Section 96.41(b), Maximum EIRP and maximum power spectral density						
Test procedure:	Section 96.41(e)(3)							
Test mode:	Compliance	Verdict:	PASS					
Date(s):	22-Apr-20	verdict.	FA00					
Temperature: 24 °C	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC					
Remarks:								

# Plot 7.1.23 Peak spectral power density at mid frequency

20 MHz



	Spectrum 2 0 dBm Offset	40.00 dB •					U U
SGL GAT:EXT TD	10 dB 👄 SWT		VBW 3 MH		Sweep		
30 dBm				м	1[1]		19.93 dBi 80200 GH
20 dBm		м1 <b>Т</b>				~	
10 dBm						$\rightarrow$	
0 dBm						+	
-10 dBm						+	
-20 dBm						+	
-30 dBm						h	 ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
-40 dBm							
-50 dBm							
-60 dBm							

Spectrum	Spectrum 2	X					Ē
Ref Level 35.00 Att 11 SGL GAT:EXT TDF	dBm Offset IdB 🖶 SWT			Mode Sweep			
●1Rm Clrw							
30 dBm				M1[1]			19.88 dBm 80200 GHz
20 dBm		M1 T					
					$\square$		
10 dBm							
0 dBm							
-10 dBm					+		
-20 dBm							
-30 dBm	m					~	
-40 dBm							
-50 dBm	_						
-60 dBm							
CF 3.625 GHz			401 pts			Span	40.0 MHz



Test specification:	Section 96.41(b), Maximu	Section 96.41(b), Maximum EIRP and maximum power spectral density						
Test procedure:	Section 96.41(e)(3)							
Test mode:	Compliance	Verdict:	PASS					
Date(s):	22-Apr-20	verdict.	FA00					
Temperature: 24 °C	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC					
Remarks:								

#### Plot 7.1.24 Peak spectral power density at high frequency



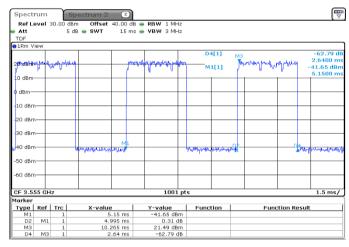
# Modulation: 16QAM Spectrum Spectrum

Spectrum	Spectrum 2	X						
Ref Level 35.00 d Att 10 SGL GAT:EXT TDF	Bm Offset dB 👄 SWT		RBW 1 MHz VBW 3 MHz		Sweep			
●1Rm Clrw								
30 dBm				M	1[1]			19.99 dBm 28200 GHz
20 dBm		M1						
	1					$\sum$		
10 dBm								
0 dBm								
-10 dBm	+							
-20 dBm								
-30 dBm								
	~~~							
-40 dBm								
-50 dBm								
-60 dBm								
CF 3.69 GHz			401 p	ts			Span	40.0 MHz



Test specification:	Section 96.41(b), Maximu	Section 96.41(b), Maximum EIRP and maximum power spectral density						
Test procedure:	Section 96.41(e)(3)							
Test mode:	Compliance	Verdict:	PASS					
Date(s):	22-Apr-20	verdict.	FA33					
Temperature: 24 °C	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC					
Remarks:			-					

Plot 7.1.25 Transmission pulse duration and pulse period



Duty cycle factor = $10*\log(2.64/5.00) = -2.77$

Spect				ctrum 2	X									7
	evel	30.00		Offset			3W 1 MH							
Att		į	5 dB	SWT	15 m	s 👄 VI	в w змн	z						
TDF														
1Rm V	iew													
									D4[1]					-58.82 d
00 d0m										мз				2.6550 m
20 dBm	Mult	MAN			handala	the proving	1047-616-4		M1[1]	Typh	allinghermatin	-4pm	-	-41.80 dBr
10 dBm	- 1					¥.	<u> </u>		_	1	, V · V			4.7000 m
										1				
0 dBm—	_								_					
-10 dBm			_						_	-				
-20 dBm			_						_					
-30 dBrr			-						_	-				
										L.				
-40 dBm	-+		HOMAN AL	Alababipadad	13			Uninvertinely		k -		- 0/	nilhaka	the property
									111			1		
-50 dBrr			-									-		
-60 dBrr			-									-		
CF 3.5	5 GHz						1001	pts			1	-		1.5 ms/
larker														
Type	Ref	Trc		X-value		Y	value	Eur	ction	1	Eun	ction	Result	
M1		1			4.7 ms		41.80 dB		ocion	-	- T un	ocion	nosun	
D2	M1	1			995 ms		1.39 (
MЗ		1			9.8 ms		16.61 dB	m						
D4	MЗ	1		2.0	55 ms		-58.82 (

Duty cycle factor = $10^{10}(2.66/5.00) = -2.74$



Test specification: Section 96.41(g), Peak-to- average power ratio						
Test procedure:	Section 96.41(g)					
Test mode:	Compliance	Verdict:	PASS			
Date(s):	21-Jul-20	verdict.	FA33			
Temperature: 24.3. °C	Relative Humidity: 48 %	Air Pressure: 1010 hPa	Power: 48 VDC			
Remarks:						

7.2 Peak-to-average power ratio (PAPR) test

7.2.1 General

This test was performed to measure the peak to average power ratio at RF antenna connector. Specification test limits are given in Table 7.2.1.

Table 7.2.1 Peak-to-average po	ower ratio limits
--------------------------------	-------------------

Assigned frequency range MHT	Peak to average power ratio limit			
Assigned frequency range, MHz	Probability, %	dB		
3550.0 - 3700.0	0.1	13.0		

7.2.2 Test procedure

- **7.2.2.1** The EUT was set up as shown in Figure 7.2.1, energized and its proper operation was checked.
- 7.2.2.2 The EUT was adjusted to produce maximum available to the end user RF output power.
- **7.2.2.3** The peak to average power ratio was measured with power meter as provided in Table 7.2.2 and the associated plots.

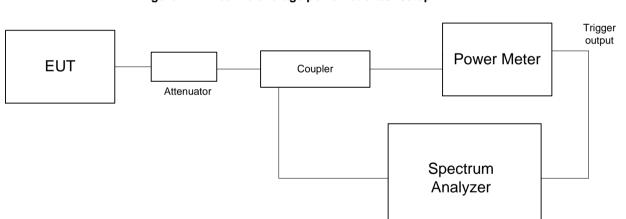


Figure 7.2.1 Peak-to-average power ratio test setup



Test specification: Section 96.41(g), Peak-to- average power ratio						
Test procedure:	Section 96.41(g)					
Test mode:	Compliance	Verdict:	PASS			
Date(s):	21-Jul-20	verdict.	FA33			
Temperature: 24.3. °C	Relative Humidity: 48 %	Air Pressure: 1010 hPa	Power: 48 VDC			
Remarks:						

Table 7.2.2 Peak-to-average power ratio test results

DPERATING FREQUEN DETECTOR USED: MODULATING SIGNAL: RANSMITTER OUTPU			3550 – 3700 MHz Peak/Average PRBS Maximum	
Carrier frequency, MHz	Peak to average ratio, dB	Limit, dBm	Margin, dB	Verdict
Channel spacing 10 M	Hz		-	
Modulation QPSK				
3555.0	8.12	13.0	-4.88	Pass
3625.0	8.14	13.0	-4.86	Pass
3695.0	8.17	13.0	-4.74	Pass
Modulation 16QAM				
3555.0	8.20	13.0	-4.80	Pass
3625.0	8.14	13.0	-4.86	Pass
3695.0	8.23	13.0	-4.77	Pass
Modulation 64QAM				
3555.0	8.26	13.0	-4.74	Pass
3625.0	8.29	13.0	-4.71	Pass
3695.0	8.23	13.0	-4.77	Pass
Channel spacing 20 M	Hz			
Modulation QPSK				
3560.0	7.86	13.0	-5.14	Pass
3625.0	7.88	13.0	-5.12	Pass
3690.0	7.94	13.0	-5.06	Pass
Modulation 16QAM				
3560.0	7.94	13.0	-5.06	Pass
3625.0	7.97	13.0	-5.03	Pass
3690.0	7.91	13.0	-5.09	Pass
Modulation 64QAM				
3560.0	7.88	13.0	-5.12	Pass
3625.0	7.91	13.0	-5.09	Pass
3690.0	7.94	13.0	-5.06	Pass

Reference numbers of test equipment used

HL 4355 HL 3901 HL 4366 HL 3301	HL 3302
---------------------------------	---------

Full description is given in Appendix A.