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Report On

FCC and IC Testing of the CBRSYS6500 in accordance with FCC CFR 47 Part 2 and FCC CFR 47 Part 22

COMMERCIAL-IN-CONFIDENCE

FCC ID: 2AQSOCBRSYS6500

PREPARED BY

liktorov

Nikolai Viktorov Test Personnel October 2018

APPROVED BY

DATED

Drysdale

Scott Drysdale Authorised Signatory

December 18, 2018

Page 1 of 36

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SECTION 1

REPORT INFORMATION



1.1 REPORT DETAILS

Manufacturer	Octasic inc.
Address	300-401 Molson St, Montreal, QC, H1Y 3L1
Product Name	CBRSYS6500 (CBRRFE6400+CBRSYS6000)
Product Number	CBRSYS6000 - CBRSYS6008-RE-3E CBRRFE6400 - CBRRFE6407-NC100-EE1
Serial Number(s)	CBRSYS6000 – F-00190 CBRRFE6400 – K-15468
Hardware Version	CBRSYS6000 - 3.0 CBRRFE6400 - 3.1
Test Specification/Issue/Date	FCC CFR 47 Part 2: 2016 FCC CFR 47 Part 22: 2016
Start of Test	October 12, 2018
Finish of Test	December 17, 2018
Name of Test Personnel(s)	Scott Drysdale and Nikolai Viktorov
Related Document(s)	KDB 971168 D01 v02r02 KDB 662911 D01 v02r01



1.2 BRIEF SUMMARY OF RESULTS

A brief summary of results for each configuration, in accordance with FCC CFR 47 Part 2 and FCC CFR 47 Part 22 is shown below.

		Specification Clause		
Section	FCC CFR 47 Part 2	FCC CFR 47 Part 22	Test Description	Result
2.1	2.1046	22.913(a)	Maximum Peak Output Power, ERP, and Peak to Average Ratio - Conducted	Pass
2.2	2.1049	22.917(b)	Occupied Bandwidth	Pass
2.3	2.1051	22.917(b	Band Edge	Pass
2.4	2.1051	22.917(a) (b)	Transmitter Spurious Emissions	Pass
2.5	2.1055	22.355	Frequency Stability	Pass
-	-	15.111	Receiver Spurious Emissions	N/A ¹

 N/A^1 – Not Applicable, as this is a transceiver.



1.3 CONFIGURATION DESCRIPTION

The CBRSYS6500 supports Single Mode operation from a single port configuration.

The CBRSYS6500 supports CDMA2K in Band 0 (869 MHz - 894 MHz).

TX test cases: Maximum Conducted Output Power, Spurious Emissions at Antenna Terminals (\pm 1MHz) and Conducted Spurious Emissions, measurements were performed on the RF Port. The test limits shown are representative of the worst case. All testing was performed with the EUT transmitting at maximum RF power unless as designated setting by client, otherwise stated.

The EUT was powered via a 120V 60Hz power supply.

CDMA2K B0 (869 MHz - 894 MHz) Channel Configurations

All tests

ſ	RAT	No. of	Carrier Bandwidth	Carrier Fre	equency Configuration	(MHz)
	NA1	Carriers	(MHz)	Bottom (BRFBW)	Middle (MRFBW)	Top (TRFBW)
	С	1	1.48	869.76 + 871.02	881.52	891.96 + 893.22



1.4 DECLARATION OF BUILD STATUS

	MAIN EUT
MANUFACTURING DESCRIPTION	CBRSYS6500
MANUFACTURER	Octasic inc.
ТҮРЕ	Portable Base Station Unit with Transportable Amplification Unit
PART NUMBER	CBRSYS6000 - CBRSYS6008-RE-3E CBRRFE6400 - CBRRFE6407-NC100-EE1
SERIAL NUMBER	CBRSYS6000 – F-00190 CBRRFE6400 – K-15468
HARDWARE VERSION	CBRSYS6000 - 3.0 CBRRFE6400 - 3.1
TRANSMITTER OPERATING RANGE	B0 869 – 894 MHz
RECEIVER OPERATING RANGE	B0 815 – 849 MHz
COUNTRY OF ORIGIN	CBRSYS6000 - India CBRRFE6400 - Canada
EMISSION DESIGNATOR(S): (i.e. G1D, GXW)	CDMA2K: G7W
MODULATION TYPES: (i.e. GMSK, QPSK)	CDMA2K: QPSK
HIGHEST INTERNALLY GENERATED FREQUENCY	894 MHz
OUTPUT POWER (W or dBm)	20W
FCC ID	2AQSOCBRSYS65000
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	The Transportable Amplification Unit (TAU) is a powerful multiband RF front-end (RFE) designed for use as a Transportable Amplification Unit (TAU) in conjunction with a Portable Base station Unit (PBU). The EUT fits in a standard 19" 6U rack.



1.5 PRODUCT INFORMATION

1.5.1 Technical Description

The Equipment Under Test (EUT) operates from a 120V 60Hz supply.

The CBRRFE6400 Transportable Amplification Unit (TAU) is a powerful multiband RF front-end (RFE) designed for use as a Transportable Amplification Unit (TAU) in conjunction with a Portable Base station Unit (PBU) such as the CBRSYS6000. The TAU ships in a ruggedized case and fits in a standard 19" 6U rack.

Depending on band configuration it can support up to 8 bands. It has a high sensitivity multiband receiver and an interference mitigation and suppression mechanism to maintain sensitivity in the presence of interference. The transmitter can transmit up to 100W peak per band. The TAU has automatic RF power control per band for coverage optimization and a standby mode to optimize power consumption.

The CBRSYS6000 Portable Base station Unit (PBU) is multi-channel, software-defined radio (SDR) based base station system for wireless applications like Network in a Box (NIB). It is designed to fit in a standard 19" 3U rack-two PBUs can be fit in a standard 3U rack and ships in a ruggedized 3U rackmount case.

The PBU has a basic RF front end that internally combines the TX signals and splits the RX signals of each SDR. It can be coupled with a high-power RF front end Transportable Amplification Unit (TAU) such as the CBRRFE6400 for a complete system. The PBU is controlled over wired Ethernet and has a USB service port for maintenance access to the serial ports of each SDR. The PBU has built-in fans for thermal management.

The Equipment Under Test (EUT) is shown in the photograph below. A full technical description can be found in the Manufacturer's documentation.

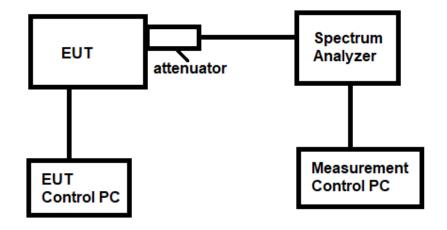


Equipment Under Test





1.6 TEST SETUP





1.7 TEST CONDITIONS

For all tests, the EUT was set up in accordance with the relevant test standard and to represent typical operating conditions. Tests were applied with the EUT situated in a shielded enclosure, test laboratories or a chamber as appropriate.

The EUT was powered from a 120V 60Hz supply.

FCC Measurement Facility Accreditation Designation Number: CA6845 - TUV SUD Canada (Laval)

1.8 DEVIATION FROM THE STANDARD

No deviations from the applicable test standards or test plan were made during testing.

1.9 MODIFICATION RECORD

No modifications were made to the EUT during testing.

1.10 ALTERNATIVE TEST SITE

Under our Accreditation, TÜV SÜD Canada, Laval conducted the following tests at the TÜV SÜD Canada, Ottawa location.

1.11 ADDITIONAL INFORMATION

The CBRSYS6000 Portable Base station Unit (PBU) is multi-channel, software-defined radio (SDR) based base station system for wireless applications like Network in a Box (NIB). It is designed to fit in a standard 19" 3U rack-two PBUs can be fit in a standard 3U rack and ships in a ruggedized 3U rackmount case.

Depending on band configuration it can support up to 8 bands. It has a high sensitivity multiband receiver and an interference mitigation and suppression mechanism to maintain sensitivity in the presence of interference. The transmitter can transmit up to 100W peak per band.



SECTION 2

TEST DETAILS



2.1 MAXIMUM PEAK OUTPUT POWER AND PEAK TO AVERAGE RATIO - CONDUCTED

2.1.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1046 FCC CFR 47 Part 22, Clause 22.913(a)

2.1.2 Date of Test and Modification State

November 29, 2018 - Modification State 0

2.1.3 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.1.4 Environmental Conditions

Ambient Temperature23°CRelative Humidity37%

2.1.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01, clause 5.2.1 and summed in accordance with FCC KDB 662911 D01.

2.1.6 Test Results



Maximum Target Output Power 40 dBm

		Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power			
Antenna	Modulation		Channel Position B			
				Average Power		
			PAR (dB)	dBm	dBm/MHz	
A	QPSK	1.48 MHz	8.11	39.35	38.23	

RL ver Stat CCD 04:25:19 AM Dec 11, 2018 Radio Std: None Center Freq 869.760000 MHz SE SENSE:INT Center Freq: 869.760000 MHz Trig: Free Run Counts:10.0 M/10.0 Mpt #Atten: 24 dB #IFGain:Low Average Power Gaussian 100 % 39.13 dBm 36.94 % at 0dB 10 % 1% 10.0 % 3.62 dB 0.1 % 1.0 % 6.50 dB 0.1 % 8.11 dB 0.01 % 9.08 dB 0.01 % 0.001 % 9.89 dB 0.0001 % 11.22 dB 0.001 % 11.25 dB Peak 50.38 dBm 0.0001 % 0 dB Info BW 80.000 MHz 20 dB STATUS



Maximum Target Output Power 43 dBm

		Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power			
Antenna	Modulation		Channel Position B2			
				Average Power		
			PAR (dB)	dBm	dBm/MHz	
A	QPSK	1.48 MHz	7.46	42.84	41.87	

RL 04:44:45 AM Dec 11, 2018 Radio Std: None SE Center Freq 871.020000 MHz SENSE:INT Center Freq: 871.020000 MHz Trig: Free Run Counts:10.0 M/10.0 Mpt #Atten: 26 dB #IFGain:Low Average Power Gaussian 100 % 42.72 dBm 37.68 % at 0dB 10 % 1% 10.0 % 3.62 dB 0.1 % 1.0 % 6.28 dB 0.1 % 7.46 dB 0.01 % 0.01 % 8.04 dB 0.001 % 8.49 dB 0.0001 % 8.66 dB 0.001 % 8.67 dB Peak 51.39 dBm 0.0001 % 0 dB Info BW 80.000 MHz 20 dB STATUS



Maximum Target Output Power 43 dBm

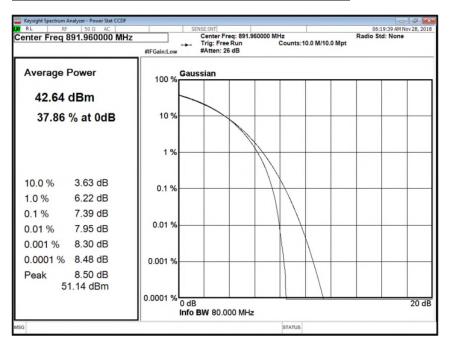
			Peak to Average Ratio (PAR) / Output Power			
Antenna		Carrier Bandwidth	Channel Position M			
	Modulation			Average Power		
			PAR (dB)	dBm	dBm/MHz	
A	QPSK	1.48 MHz	7.56	42.68	41.93	

RL 05:05:34 AM Dec 11, 2018 Radio Std: None SE Center Freq 881.520000 MHz SENSE:INT Center Freq: 881.520000 MHz Trig: Free Run Counts:10.0 M/10.0 Mpt #Atten: 26 dB #IFGain:Low Average Power Gaussian 100 % 42.62 dBm 37.68 % at 0dB 10 % 1% 10.0 % 3.63 dB 0.1 % 1.0 % 6.28 dB 0.1 % 7.56 dB 0.01 % 8.21 dB 0.01 % 0.001 % 8.58 dB 0.0001 % 8.84 dB 0.001 % 8.88 dB Peak 51.50 dBm 0.0001 % 0 dB Info BW 80.000 MHz 20 dB STATUS



Maximum Target Output Power 43 dBm

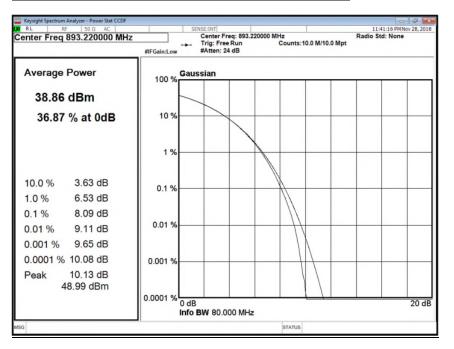
		Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power			
Antenna			Channel Position T2			
	Modulation			Average Power		
			PAR (dB)	dBm	dBm/MHz	
A	QPSK	1.48 MHz	7.39	42.82	41.93	





Maximum Target Output Power 40 dBm

Antenna			Peak to Average Ratio (PAR) / Output Power			
		Carrier Bandwidth	Channel Position T			
	Modulation			Average Power		
			PAR (dB)	dBm	dBm/MHz	
A	QPSK	1.48 MHz	8.09	38.99	38.00	



Limit	
Peak to Average Ratio	13 dB



2.2 OCCUPIED BANDWIDTH

2.2.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1049 FCC CFR 47 Part 22, Clause 22.917(b)

2.2.2 Date of Test and Modification State

November 29, 2018 - Modification State 0

2.2.3 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.2.4 Environmental Conditions

Ambient Temperature23°CRelative Humidity37%

2.2.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01.

2.2.6 Test Results

Maximum Target Output Power B:40dBm M:43dBm T:40dBm

			Result (KHz)					
Antenna	Modulation	odulation Carrier		Channel Position B		Position M	Channel	Position T
	Bandwidth	Bandwidth	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth
A	QPSK	1.48 MHz	1265.08	1415.78	1263.09	1415.18	1263.94	1411.73



Antenna A - Bandwidth QPSK - Channel B

Keysight Spectrum Analyzer - Occupied BW				
RL RF 50 Ω AC enter Freq 869.760000 M	Hz #FGain:Low	Center Freq: 869.760000 Trig: Free Run #Atten: 24 dB	MHz Avg Hold: 50/50	04:29:11 AMDec 11, 20 Radio Std: None Radio Device: BTS
dB/div Ref 36.96 dBm			L II	
.0		kaynamin	mound	
4	1			
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	~			-
0				
enter 869.8 MHz				Span 3 M
tes BW 15 kHz		#VBW 47 kHz		Sweep 16.4
Occupied Bandwidti	, 2651 MHz	Total Power	39.3 dBm	
Transmit Freq Error	756 Hz	% of OBW Power	99.00 %	
x dB Bandwidth	1.416 MHz	x dB	-26.00 dB	
			STATUS	

Antenna A - Bandwidth QPSK - Channel M

Keysight Spectrum Analyzer - Occupied BW RL RF 50 Ω AC		SENSE:INT		05:06:16 AM Dec 11, 20
Center Freq 881.520000 N	Hz #FGain:Low	Center Freq: 881.520000 M	Hz Avg Hold: 50/50	Radio Std: None Radio Device: BTS
0 dB/div Ref 40.45 dBm	<u> </u>		11	
0.5		mmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmm	normany	
150				
0.6 marganet and the second				Marcon march
3.6				
9.6				
enter 881.5 MHz Res BW 15 kHz		#VBW 47 kHz		Span 3 Mi Sweep 16.4 n
Occupied Bandwidt	2631 MHz	Total Power	42.8 dBm	
Transmit Freq Error	-221 Hz	% of OBW Power	99.00 %	
x dB Bandwidth	1.415 MHz	x dB	-26.00 dB	
G			STATUS	



Antenna A - Bandwidth QPSK - Channel T

Keysight Spec	ctrum Analyzer - Occupied BW		envice that		
	RF 50 Ω AC eq 893.220000 N	1Hz	Center Freq: 893.220000 Trig: Free Run	MHz Avg Hold: 50/50	11:41:49 PMNov 28, 20 Radio Std: None
		#IFGain:Low	#Atten: 24 dB		Radio Device: BTS
dB/div	Ref 36.34 dBm				
g	Rei 30.34 ubii				
3		mun	manner	mon	
.3		K		The second se	
6					
7	/				
7	mound				monson
.7					
7					
.7					
	3.2 MHz				Span 2.5 M
les BW	13 kHz		#VBW 39 kHz		Sweep 18.27
Occup	ied Bandwidt	h	Total Power	39.0 dBm	
	1.2	2639 MHz			
Transm	nit Freq Error	-1.889 kHz	% of OBW Power	99.00 %	
x dB Ba	andwidth	1.412 MHz	x dB	-26.00 dB	



2.3 BAND EDGE

2.3.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1051 FCC CFR 47 Part 22, Clause 22.917(b)

2.3.2 Date of Test and Modification State

November 29, 2018- Modification State 0

2.3.3 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.3.4 Environmental Conditions

Ambient Temperature23°CRelative Humidity37%

2.3.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01 Clause 6. The EUT was connected to a Spectrum Analyser via an attenuator and switching box. The path loss between the EUT and the Spectrum Analyser was measured using a Network Analyser. The measured path loss was entered as a Reference Level Offset in the Spectrum Analyser. The Spectrum Analyser RBW was adjusted to be at least 1% of the measured 26dB Bandwidth. Using an RMS detector, the frequency spectrum up to 1MHz away from the Band Edge was Investigated.

The EUT has one transmit port, testing was performed on this port with a test limit of $43+10\log(P) = -13 \text{ dBm}$.

2.3.6 Test Results

Maximum Target Output Power T:40dBm B:40dBm

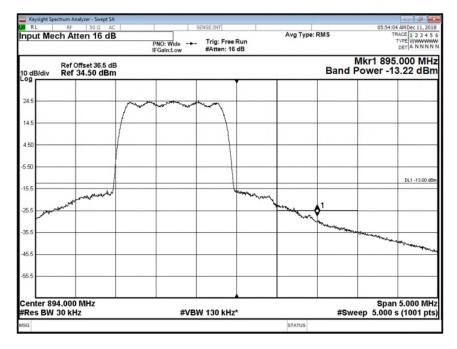
Antonno	Madulation	Corrier Denduidth	Band Edg	ge (MHz)
Antenna	Modulation	Carrier Bandwidth	Channel Position B	Channel Position T
A	QPSK	1.48 MHz	869.76	893.22



Antenna A - Modulation QPSK - Channel B, 1.48MHz
--

		Analyzer - Swept							0
RL arker	2 869	F 50 Ω		SENSE:		Avg Ty	pe: RMS		9 AM Dec 11, 20 RACE 1 2 3 4
			Ph IFC		g: Free Run tten: 22 dB				DET A N N N
dB/di		f Offset 36.5 f 42.50 dE					Band	Mkr2 869 Power -1	
2.5					1				
2.5					-	- many			
2.5					1	-			
50					1				
50					1			1	
			-		8 ²			1	DL1 -13.00
.5				1 manual more	- marker			mun	hand
			manna						
.5	and the second s	- Alland							
.5									
	869.00 W 30 H	00 MHz KHz		#VBW 13	0 kHz*		#Sw	Spar veep 5.000	n 5.000 M s (1001 p
RI MODE	TRC SC	U	х	Y	FUNCTION	FUNCTION WIDTH		FUNCTION VALUE	
N	1 1		868.000 MHz 869.000 MHz	-29.77 dBm	Band Power Band Power	1.000 MHz 30.00 kHz			-13.16 dl
3	<u> </u>		003.000 1112	-13,10 0.011	Dariu i ower	50.00 KHZ			-10.00 01
5									
1									
3									
1									
9									
9					m				,

Antenna A - Modulation QPSK - Channel T, 1.48MHz



	L	limit	-13 dBm
--	---	-------	---------



2.4 TRANSMITTER SPURIOUS EMISSIONS

2.4.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1051 FCC CFR 47 Part 22, Clause 22.917(a)(b)

2.4.2 Date of Test and Modification State

November 29, 2018- Modification State 0

2.4.3 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.4.4 Environmental Conditions

Ambient Temperature23°CRelative Humidity37%

2.4.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01 Clause 6. The EUT was connected to a Spectrum Analyser via an attenuator and switching box. Prior to testing, a Network Analyser was used to calibrate the path loss between the EUT and the Spectrum Analyser. The worst-case path loss in the measured ranges was entered as a reference level offset. Over the measured ranges, the RBW was set to 1MHz with a VBW of 3MHz. All measurement results are specified as average with an RMS detector being used in conjunction with a trace setting of Max Hold. Measurements were performed in configurations of the EUT as reported below.

Testing was performed on this port with a test limit of $43+10\log(P) = -13$ dBm.

2.4.6 Test Results

Maximum Target Output Power B:40dBm, M:43dBm, T:40dBm CDMA2K 1.48 MHz Bandwidth setting



Antenna A - Modulation QPSK - Channel B

RL of Leve	RF 50 Ω.▲ 1 48.50 dBm			SENSE:INT	#Avg Type: RMS	04:31:53 AM TRACE TYPE	Dec 11, 2 1 2 3 4 WWWW
		NFE	PNO: Fast	#Atten: 30 dB		DET	ANNN
dBidiy	Ref Offset 36.5 Ref 48.50 dE	dB				Mkr1 869 37.7	.6 M 0 dE
dB/div	1101 40.00 42			T			
.5			_				
5							
.5							
.5							
50							
.5		++-			_		1-13.004
.5							
		1				1	
.5		1			الفاويلية بريدينا أحمع ومعرفا التقارب	المراجع المح والمراجع	
5 mats de	and had at at	inter hereit	Standing Handle		and the second se	and the summer of the	
1.11.1	and the second sec						
es BW	1.0 MHz		#V	BW 3.0 MHz*	#S	Stop 4.1 weep 8.000 s (8	000 p
es BW		AC 0000 GHz	2	SENSE:INT	#S #Avg Type: RMS	weep 8.000 s (8	000 p
Keysight Spr	1.0 MHz ectrum Analyzer - Swept RF 50 Ω req 8.000000	AC 0000 GHz NFE				weep 8.000 s (8 04:32:16 Au TRACE TYPE DET	000 p
Keysight Spir RL	1.0 MHz ectrum Analyzer - Swept RF 50 Ω	AC 0000 GHz NFE dB	Z PNO: Fast	SENSE:INT		weep 8.000 s (8	0000 p
Keysight Spe RL enter F	1.0 MHz estrum Analyzer - Swepr RF 50 Ω req 8.000000 Ref Offset 37.5	AC 0000 GHz NFE dB	Z PNO: Fast	SENSE:INT		weep 8.000 s (8	0000 p
Keysight Spr RL enter F	1.0 MHz estrum Analyzer - Swepr RF 50 Ω req 8.000000 Ref Offset 37.5	AC 0000 GHz NFE dB	Z PNO: Fast	SENSE:INT		weep 8.000 s (8	0000 p
Keysight Spi RL enter Fi	1.0 MHz estrum Analyzer - Swepr RF 50 Ω req 8.000000 Ref Offset 37.5	AC 0000 GHz NFE dB	Z PNO: Fast	SENSE:INT		weep 8.000 s (8	0000 p
Keysight Spi RL enter Fi	1.0 MHz estrum Analyzer - Swepr RF 50 Ω req 8.000000 Ref Offset 37.5	AC 0000 GHz NFE dB	Z PNO: Fast	SENSE:INT		weep 8.000 s (8	000 p
Keysight Spirit	1.0 MHz estrum Analyzer - Swepr RF 50 Ω req 8.000000 Ref Offset 37.5	AC 0000 GHz NFE dB	Z PNO: Fast	SENSE:INT		weep 8.000 s (8	000 p Dec 11, 21 12 3 4 WWW A NNN 5 GH 0 dB
Keysight Spi RL enter F	1.0 MHz estrum Analyzer - Swepr RF 50 Ω req 8.000000 Ref Offset 37.5	AC 0000 GHz NFE dB	Z PNO: Fast	SENSE:INT		weep 8.000 s (8	000 p Dec 11, 21 12 3 4 WWW A NNN 5 GH 0 dB
dB/div 9 00 00 00	1.0 MHz estrum Analyzer - Swepr RF 50 Ω req 8.000000 Ref Offset 37.5	AC 0000 GHz NFE dB	Z PNO: Fast	SENSE:INT		weep 8.000 s (8	000 p Dec 11, 21 12 3 4 WWW A NNN 5 GH 0 dB
dB/div g dB/div g o o o o	1.0 MHz estrum Analyzer - Swepr RF 50 Ω req 8.000000 Ref Offset 37.5	AC 0000 GHz NFE dB	Z PNO: Fast	SENSE:INT		weep 8.000 s (8	000 p
Keysight Spi R.L	1.0 MHz estrum Analyzer - Swepr RF 50 Ω req 8.000000 Ref Offset 37.5	AC 0000 GHz NFE dB	Z PNO: Fast	SENSE:INT		weep 8.000 s (8	000 p 0 0 0 0 0 0 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 0 0 0 0 0 0
dB/div g dB/div g dB/div g dB/div g dB/div g dB/div g dB/div g dB/div g dB/div g dB/div g dB/div g db	1.0 MHz estrum Analyzer - Swepr RF 50 Ω req 8.000000 Ref Offset 37.5	AC 0000 GHz NFE dB	Z PNO: Fast	SENSE:INT		weep 8.000 s (8	000 p 0 0 0 0 0 0 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 0 0 0 0 0 0
Keydight Spin Rc	1.0 MHz estrum Analyzer - Swepr RF 50 Ω req 8.000000 Ref Offset 37.5	AC 0000 GHz NFE dB	Z PNO: Fast	SENSE:INT		weep 8.000 s (8	000 p Dec 11, 21 12 3 4 WWW A NNN 5 GH 0 dB
dB/div g dB/div g dB/div g dB/div g dB/div g dB/div g dB/div g dB/div g dB/div g dB/div g dB/div g dB/div g db pi db	1.0 MHz estrum Analyzer - Swepr RF 50 Ω req 8.000000 Ref Offset 37.5	AC 0000 GHz NFE dB	Z PNO: Fast	SENSE:INT		weep 8.000 s (8	000 p Dec 11, 21 12 3 4 WWW A NNN 5 GH 0 dB
Keydight Spin Rc	1.0 MHz estrum Analyzer - Swepr RF 50 Ω req 8.000000 Ref Offset 37.5	AC 0000 GHz NFE dB	Z PNO: Fast	SENSE:INT		weep 8.000 s (8	000 p Dec 11, 21 12 3 4 WWW A NNN 5 GH 0 dB
Horizont Generalization RL	1.0 MHz	AC 0000 GHz NFE dB	Z PNO: Fast	SENSE:INT		weep 8.000 s (8	0000 p 000 p 000 p 011,2 03 4 A NNN A NNN 5 G F 0 dB 0 dB



RL	RF 50 Ω	AC		SENSE:INT					AM Dec 11, 20
enter F	req 15.0000	NFE	PNO: Fast	Trig: Free #Atten: 10		#Avg Type:	RMS	Т	ACE 1 2 3 4 1 YPE WWWW DET A NNNI
0 dB/div	Ref Offset 38. Ref 20.00 d						N	1kr1 17.6 -41	84 5 GI .79 dB
0.0									
.00									
0.0	_	_							DL1 -13.00
0.0									
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			IFGain:Low	#Atten: 14	4 dB		Mkr1 6	
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dB/div	Ref Offset 37.5 dB Ref 20.00 dBm	3	IFGain:Low	#Atten: 14	4 dB			12 3 4 TYPE WWWW DET A NNN 873 7 GH 43.71 dB
dB/div	Ref Offset 37.5 dE Ref 20.00 dBm	3	IFGain:Low	#Atten: 14	4 dB			873 7 GH
dB/div	Ref Offset 37.5 db Ref 20.00 dBm	3	IFGain:Low	#Atten: 14	4 dB			873 7 GH
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010	Ref Offset 37.5 dE Ref 20.00 dBm	3	IFGain:Low	#Atten: 14	4 dB			873 7 GH
dB/div 9 0.0 0.0	Ref Offset 37.5 dB	3	IFGain:Low	#Atten: 14	4 dB			.873 7 GH 43.71 dB
dB/div 9 0.0 0.0	Ref Offset 37.5 dt Ref 20.00 dBm	3	IFGain:Low	#Atten: 14	4 dB			.873 7 GH 43.71 dB
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dB/div 9 0.0 0.0	Ref Offset 37.5 dB Ref 20.00 dBm	3	IFGain:Low	#Atten: 14	4 dB			.873 7 GH 43.71 dB
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dB/div	Ref Offset 37.5 db	3	IFGain:Low	#Atten: 14				.873 7 GH 43.71 dB



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Antenna A - Modulation QPSK - Channel T

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enter F		50 Ω AC 00000000 G NFE	PNO: Fast -	Trig: Free		#Avg Type:	RMS	TR	AM Dec 13, 20 ACE 1 2 3 4 5 YPE WWWW DET A N N N
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es BW 1.0 MHz	#V	BW 3.0 MHz*	#Swe	eep 17.00 s (17000 pts

nit -13dBm



2.5 FREQUENCY STABILITY

2.5.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1055 FCC CFR 47 Part 22, Clause 22.355

2.5.2 Date of Test and Modification State

October 12 and 15th, 2018 - Modification State 0

2.5.3 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.5.4 Environmental Conditions

Ambient Temperature23°CRelative Humidity36%

2.5.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01.

2.5.6 Test Results

Maximum Target Output Power 43 dBm

Tamparatura	Veltere	Frequency Error (Hz)
Temperature	Voltage	Channel Position M
-30°C	120V AC	EUT non-operational
-20°C	120V AC	EUT non-operational
-10°C	120V AC	0
0°C	120V AC	0
+10°C	120V AC	0
+20°C	99V AC	0
+20°C	120V AC	0
+20°C	135V AC	0
+30°C	120V AC	0
+40°C	120V AC	0
+50°C	120V AC	0

Limit +/- 1 ppm



SECTION 3

TEST EQUIPMENT USED



3.1 **TEST EQUIPMENT USED**

List of absolute measuring and other principal items of test equipment.

Instrument	Manufacturer	Туре No.	Serial No	Calibration Period (months)	Calibration Due
PXA Signal Analyzer	Keysight	N9030A	MY53310519	12	2019-07-17

N/A – Not Applicable O/P Mon – Output Monitored with Calibrated Equipment



3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:-

Test Discipline	Frequency / Parameter	MU
Conducted Maximum Peak Output Power	30 MHz to 20 GHz Amplitude	± 0.1 dB
Conducted Emissions	30 MHz to 20 GHz Amplitude	± 2.3 dB
Frequency Stability	30 MHz to 2 GHz	± 5.0 Hz
Occupied Bandwidth	Up to 20 MHz Bandwidth	± 1.1 Hz
Band Edge	30 MHz to 20 GHz Amplitude	± 2.3 dB



SECTION 5

ACCREDITATION, DISCLAIMERS AND COPYRIGHT



4.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT



This report relates only to the actual item/items tested.

This report does not imply product endorsement by any government, accreditation agency, or TÜV SÜD Canada Inc.

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