

Public Utilities Commission

Note for the guidance of Applicants for a Spectrum Authorization under the (Licensing Classification, Authorization and Fee Structure) Regulations, 2002 as amended from time to time.

1. Unless the Commission states otherwise, **two copies** (**one clearly marked CONFIDENTIAL INFORMATION which will be for PUC use only and one excluding confidential information for public scrutiny**) of the completed application form should be provided in addition to a completed soft copy submission to telecom@puc.bz. The application forms should be submitted in an envelope clearly marked "**Application for Spectrum Authorization**" addressed to:

The Public Utilities Commission 2nd Floor, Marina Towers P.O. Box 300 Belize City, Belize Central America

- 2. If any question is considered not applicable, please mark 'N/A' with further explanation if necessary.
- 3. The application fee for the License, and where appropriate, for the necessary Spectrum Authorization, must accompany an application in the form of a cheque made payable to the Public Utilities Commission in accordance with the Telecommunication (Licensing Classification, Authorization and Fee Structure) Regulations 2002 as amended from time to time.
- 4. Please note that the applicant is required to publish a notice of this application within **14 days** after the making of the application in accordance with the Telecommunication (Licensing Classification, Authorization and Fee Structure) Regulation 2002 as amended from time to time.
- 5. Failure to comply with any of these requirements may render the application liable to disqualification without refund of the application fee(s).

		APPLICATION FOR SPECTRUM AUTHORIZATION							
1.	PART I – TI	HE APPLICANT							
	(Please complete fully in type or block letters)								
1.1	Contact Deta	ails							
	1.1.1	Name and business address of applicant							
		Belize Telemedia Limited Esquivel Telecom Center # 1 Saint Thomas Street P.O. Box 603 Belize City, Belize							
	1.1.2	Designated contact person Leonardo Calle, Chief Operations Officer							
	1.1.3	Telephone Number <u>+501-610-3007</u>							
	1.1.4	Fax Number N/A							
	1.1.5	E-mail address (if available) <u>lcalle@livedigi.com</u>							
1.2	Business Det	tails							
	1.2.1	If the applicant is a company, partnership, or other body please give the name(s) and private address (es) of each of the current directors, company secretary, or partners:							
1.2.2	Name under	which applicant proposes to trade, and registered office address if different to above							
		Belize Telemedia Limited Esquivel Telecom Center #1 Saint Thomas Street Belize City Belize							
	1.2.3	In the case of a company or other body corporate, please attach a copy of the company's Registration Certificate.							

A copy of Belize Telemedia Limited's Certificate of Registration is produced at Annex 1 of this application.

		<u>N/A</u>			
1.3	History of th	e Applicant			
1.3.1	Has the appli Belize and be		ed for a Frequency	Authorization or registr	ration under any Act in
		(YES)	(NO)		_
1.3.2	Has the applic	cant ever been is	ssued a Frequency Au	thorization under the Te	- elecommunications Act?
			(NO)		_
1.3.3	If the answer		2 is YES, has any suc	ch Frequency Authoriza	tion been revoked?
		(YES)	(NO)		_
	1.3.4		filiate of the appli	cant previously been unications Act, which v	
		(YES)	(NO)		_
	1.3.5		nt the holder of a fre	quency authorization in	any other country? If
		(YES)	(NO)		_
1.3.6			filiate been refused a	frequency authorization	— n mentioned in question
		(YES)-	(NO)		

1.2.4 Address in Belize for service of process or other notices (in case of overseas applicant)

(YES)	(NO)	

Has the applicant operated under or carried on business under any name other than in this application? (If Yes please attached company details)

2.	PART II – THE APPLICANT'S BUSINESS AND THE PROPOSED NETWORK AND/OR
	SERVICE(S)

- 2.1 **The Applicant**
- 2.1.1 Please provide a diagrammatic representation of the applicant's group structure, including the percentage of shares held. Please indicate which affiliates have, or intend to apply for, other telecommunications licenses or frequency authorizations.
- 2.1.2 Does the applicant have any shareholdings in any other licensed telecommunications provider or frequency authorization holder in the Belize or elsewhere?

(YES) (NO)

Alternative Networks Limited
(an Internet Networks Individual License holder)

2.1.3 Has any member of the applicant's managerial staff been bankrupt, or been a director of a company which has been insolvent?

(YES) (NO)

If the answer is YES, please attach a certified copy of the discharge.

2.1.4 Has the applicant or any member of the applicant's managerial staff ever been the defendant or respondent in any proceedings in any court in any jurisdiction involving dishonesty, fraud, theft or violence, or is the applicant or any member of the applicant's managerial staff currently the subject of a charge or indictment under the law of any country for (contravention of any law or for) any conduct involving dishonesty, fraud, theft or violence?

(YES)- (NO)

2.2 Applicant's Current Activities

Please provide answers to the following questions in relation to (a) the applicant's activities in Belize; (b) the applicant's activities elsewhere in the Caribbean; and (c) the applicant's activities elsewhere in the world.

Networks

2.2.1 Please provide a summary of any radio-based infrastructure which the applicant currently has in place.

Mobile Cellular GSM, UMTS, LTE FDD Point-to-Point Microwave Backhaul Links Point-to-MultiPoint Wireless Broadband Links

2.2.2 If the applicant is using radio frequency spectrum, please provide details of any frequency authorizations held, including the number of frequency authorizations and the reference number of each frequency authorization.

The details of Frequency Authorizations held by Belize Telemedia Limited are produced at *Annex 2* to this application.

Services

2.2.3 Please provide details of the services currently being provided by the applicant through its existing radio-based infrastructure.

Mobile Cellular GSM, UMTS, LTE FDD – Used to provide Mobile Cellular and Data Services to BTL customers via BTL's DigiCell Product Offering.

Point-to-Point Microwave Backhaul Links – Used to provide wireless connectivity for backhaul Mobile Cellular & Data, Broadband.

Point-to-MultiPoint Wireless Broadband Links – Used to provide wireless broadband services to BTL customers.

Obligations

2.2.4 Please provide details of how the applicant currently complies with any other emissions of electromagnetic radiation from equipment of any description.

Equipment provided by reputable companies that adhere to ITU Standards. Equipment installed and operated according to manufacturer's recommendation and instructions.

2.3 Applicant's Proposed Activities

Radiocommunication Station

2.3.1 Is the frequency authorization for which the applicant is applying to be used in relation to a satellite earth station?

(YES)	(NO)	

- 2.3.2 If the answer to question 2.3.1 is YES, please provide the following information:
 - (a) A letter from the satellite provider, indicating its contact person and any assigned frequencies for the proposed service and the station to be communicated with.

- A copy of the manufacturer's technical specification for the transmitter, (b) receiver and antenna. (c) The following information in respect of the satellite earth station receiving characteristics: Make and model (i) Assigned frequencies (downlink) (ii) (iii) Assigned frequency band Date of bringing into use (iv) Location of station, including country and geographic coordinates (v) (vi) Class of emission Antenna size, antenna gain and receive G/T (vii) Horizontal elevation angle and min/max elevation angle (viii) (ix) Azimuth (x) Altitude (xi) Polarization Receive noise temperature (xii) (xiii) Regular hours of operation (xiv) Maintenance of system (d) The following information in respect of the satellite earth station transmitting characteristics: Make and model (i) (ii) Assigned frequencies (uplink)
 - (iv) Proposed date of bringing into use

Assigned frequency band

(iii)

(v) Transmitter power, including saturated transmitter power and maximum radiated power

- (vi) Antenna gain
- (vii) Polarization
- (viii) Modulation (including FDM-FM, PCM/PSK, TV, and other)
- (ix) Regular hours of operation
- (x) Agreements with satellite provider
- (xi) Operating satellite
- (xii) Name of receiving earth station
- (xiii) Location of receiving earth station.
- 2.3.3 Please provide a summary of the radio-based infrastructure that the applicant is planning to put in place within the next (three) years. In particular, please provide details of the proposed Radiocommunication Station, including:

Purpose of application (what is being applied for)?

BTL's application to the PUC for use of the requisite frequency spectrum and subject to the PUC's approval will enable BTL to:

- (1) purchase, set up, and commission the necessary solution to rectify the misalignment of the Microwave Point-to-Point Links with the National Spectrum Allocation Plan;
- (2) enhance the capacity of the Microwave Point-to-Point Links to meet BTL's Caye Caulker customers' demand; and
- (3) improve the redundancy, resiliency, and disaster recovery for the islands of San Pedro and Caye Caulker in the event of a failure of the Submarine Cable from the mainland of Belize (Bomba) and San Pedro.
- (a) Geographical location (GPS Coordinates), & Coverage Map

Link 1: BKP to Caye Caulker Belize City 17°30'40.56"N, 88°11'40.27"W to Caye Caulker 17°44'34.49"N, 88° 1'31.82"W

Link 2: Caye Caulker to San Pedro Caye Caulker 17°44'34.49"N, 88° 1'31.82"W to San Pedro 17°55'19.67"N, 87°57'39.60"W

(b) Type of equipment and system (including manufacturer, model number, FCC Certificate & Current/Valid Type Approval).

Brand and Model of radio unit.

Type of equipment and system: OptiX RTN 980L Radio Transmission

System

Manufacturer: Huawei Technologies

Model number: RTN 980L

FCC Certificate: N/A ETSI Standard

The RFU Model that is being contemplated by BTL for the implementation is XMC-LH.

Table 2 RFU supported by the OptiX RTN 980L

Item	Specifications
Model	XMC-LH
Frequency band	L6/U6/7/8/11 GHz
Modulation scheme	QPSK/16QAM/32QAM/64QAM/128QAM/256QAM/512QAM/1024QAM/2048QAM
Channel spacing	 28/40/56 MHz (U6/8/11 GHz) 28/56 MHz (L6/7 GHz)

Note: Applicant must include, in soft copy, the vendor provided technical description documentation of the equipment and system.

(c) Radio frequency and direction of frequency (whether link applied for is unidirectional or bi-directional, and relevant transmission details?)

Radio frequency and direction of frequency being requested are produced at *Annex 3* of this application.

Note: Request for Point-to-Point authorizations must conform to the 2020 Order: Belize Radio Frequency Channelization for Point-to-Point links. https://www.puc.bz/2020-belize-radio-frequency-channelization-for-point-to-point-links/

Applicant is required to identify the Lower and Upper edge frequencies applicable to requested range, transmitter location name and coordinates.

(d) Transmission power level

Maximum of 31.5 dBm or 1.41 W

(e) Preferred polarization of emissions (i.e. vertical, horizontal, co-channel dual polar)

XPIC

(f) Preferred equipment carrier frequency range for channel assignment

R-REC-F.383-9 and R-REC-F.384-11 as per the Channelization defined by the ITU for the 6 GHz Frequency.

Equipment tuning range: lower frequency to upper frequency

(g) Is system intended to be duplicated? (If Yes, please Specify)

No

(h) Type of antenna, including details of antenna height

Note: Applicant must include, in soft copy, the vendor provided technical specifications for the proposed antenna(s)

Link 1: BKP to Caye Caulker

Antenna Model: A6WD7WD24MB-3NX

Antenna Size: 2.4m

Antenna Height - BKP: 223ft &154ft Antenna Height - CCK: 85ft & 68ft

Link 2: Caye Caulker to San Pedro

Antenna Model: A6WD7WD24MB-3NX

Antenna Size: 2.4m Antenna Height - CCK: 91ft & 68ft

Antenna Height - SPD: 108ft &75ft

Station ID (if applicable)

Link 1: BKP to Caye Caulker

Location A: BTL Kings Park, Belize City

Location B: Caye Caulker

Link 2: Caye Caulker to San Pedro

Location A: Caye Caulker **Location B:** San Pedro

(j) Address of location from where equipment is to be operated (if different from Radiocommunication Station's location).

N/A

(i) Radio frequency feeder loss and hot-standby loss, rounded up to nearest dB. Any radio frequency feeder loss over 10 dB or hot-standby loss over 4 dB must be justified.

Radio frequency feeder loss: 1.5The system is 10+0 (unprotected), therefore hot-standby loss is N/A. (1) Guaranteed maximum boresight gain relative to an isotropic radiator for any antenna specified rounded up to nearest dB.

Antenna Gain: L6 & U6 is 42 dBi

- (m) Path profile for the proposed point-to-point link(s).
- (n) Throughput capacity for the proposed link(s).

Services

2.3.4 Please provide a description of the service, which the applicant proposes to provide using the frequency band for which it is applying. (Including an Architectural Diagram).

The Frequencies are required to provide additional Capacity and comply with the Frequency Channelization in L6 and U6.

Obligations

2.3.5 Please provide details of how the applicant proposes to comply with the obligations in the frequency authorization (and in the Frequency Authorization Regulations) in respect of harmful interference, and any other technical regulations in respect of emissions of electromagnetic radiation from equipment of any description.

Electromagnetic Compatibility Complies with ETSI EN 301 489-1. Complies with ETSI EN 301 489-4. Complies with ETSI EN 300 385. Complies with ETSI EN 300 386.

DECLARATION BY THE APPLICANT

Application is hereby made on behalf of **BELIZE TELEMEDIA LIMITED** for the issue of an Authorization to install, hold and use wireless sending and receiving apparatus – as detailed above – for the purposes stated.

In accordance with the Belize Telecommunications Act and any other Regulations thereunder, I accept responsibility for the installation, maintenance and operation of the system if approved.

I confirm that no change will be made in any of the foregoing without prior approval of The Public Utilities Commission.

Signature of applicant:

Name in Block Letters: <u>Leonardo Calle</u>

Chief Operations Officer

Belize Telemedia Limited

February 29, 2024

THE APPLICANT/LICENSEE SHOULD BE AWARE THAT HE/SHE IS RESPONSIBLE IN LAW FOR THE RADIO SYSTEM AND ITS OPERATION REGARDLESS OF WHO SUPPLIES THE EQUIPMNENT OR WHO OPERATES IT ON HIS/HER BEHALF

The completed Application Form and the appropriate fee should be submitted to: Office of the Chairman of Public Utilities Commission, P. O. Box 300, Belize City, Belize.

ANNEX 1 – Certificate of Registration



BELIZE COMPANIES & CORPORATE AFFAIRS REGISTRY

CERTIFICATE OF REGISTRATION

The Belize Companies & Corporate Affairs Registry HEREBY CERTIFIES, pursuant to the BELIZE COMPANIES ACT, 2022 all requirements in respect of registration have been complied with.

BELIZE TELEMEDIA LIMITED

Registration Number 000021455

Former Registration Number 9497

Private Company is this day registered in the Register.

Dated this 14 of September 2006 Certificate No. CERT-REG-23/33076



Deputy Registrar Belize Companies & Corporate

Affairs Registry

Sentiago Sonzalez

${\bf ANNEX~2-Microwave~Broadband~Frequency~Authorizations}$

MOBILE SPECTRUM REGISTER 2022 - SI163



BAND	NO	DESIGNATION / LOCATION	RF CHANNEL USE	Bandwidth (MHz)	Bandwidth (kHz)	Approval Date or Reference
700 MHz	1	LTE Band 12	1	10	10,000	PUC/TELECOM/DT/B2 (036) 2021
	1	(AMPS Cellular) A' Band / GSM850		1.5	1500	PUC/TELECOM/DT/B2 (05) 2016 dated May 13, 2016
	2	B Band / GSM850		10	10000	
800 MHZ	3	extended B Band / GSM850		2.5	2500	PUC/DT/B2 (5) 2004 dated October 08 2004
		UMTS	1	5		
		GSM	45	9		
	1	GSM 1900 Band E (1885-1890)(1965-1970)		5	5000	OOT/BTL/3/01 (17) dated March 05, 2001
	2	GSM 1900 Band F (ARFCN 712 - 736)		5	5000	OOT/BTL/3/01 (17) dated March 05, 2001
	3	GSM 1900 Band C (ARFCN 737 - 810)		15	15000	OOT/BTL/3/01 (17) dated March 05, 2001
1900 MHz	4	GSM 1900 Band B (1870-1885)(1950-1965)		5	5000	(PUC/TELECOM/DT/B2 (14) 2016 dated Sep 16, 2016), (PUC/TELECOM/DT/B2 (036) 2021)
1500 141112		GSM	2	0.4		
		UMTS	2	10		
		LTE	1	10		

NARROWBAND LMS FREQUENCY SPECTRUM REGISTER



BAND	NO	FREQUENCY	Location A Name	Location B Name	Bandwidth (MHz)	Comments
HF	1	3.600 Mhz	Emergency use - Countrywide	Emergency use - Countrywide	0.025	For use with NEMO
	2	7.200 Mhz	Emergency use - Countrywide	Emergency use - Countrywide	0.025	For use with NEMO
	3	7.250 Mhz	Emergency use - Countrywide	Emergency use - Countrywide	0.025	For use with NEMO
VHF	1	154.000 Mhz	Internal use - Countrywide (Emergency)	Internal use - Countrywide (Emergency)	0.025	Fixed
	2	152.550 Mhz	Internal use - Countrywide (Security)	Internal use - Countrywide (Security)	0.025	Fixed & Mobile
	3	153.875 Mhz	Internal use - Countrywide (Riggers)	Internal use - Countrywide (Riggers)	0.025	Fixed & Mobile
UHF	1	430.925 Mhz [Tx] 440.925 Mhz [Rx]	Belize City Kings Park	Gallon Jug	0.025	
	2	430.850 Mhz [Tx] 440.850 Mhz [Rx]	Gallon Jug	Chan Chich Lodge	0.025	



Microwave Broadband FREQUENCY SPECTRUM REGISTER 2022 - SI163

									Our National Telecom
BAND	NO	Location A Tx MHz	Location B Tx MHz	Location A Name	Location B Name	CHANNEL USE	Channel Size (MHz)	BW Occupied FDD Links (MHz)	Comments
6 GHz	1	6197.240	5945.200	Caye Caulker	San Pedro	1	29.65	59.30	MNI MX Hybrid
	2	6226.890	5974.850	Caye Caulker	San Pedro	1	29.65	59.30	MNI MX Hybrid
	3	6123.100	6375.140	Caye Caulker	San Pedro	1	29.65	59.30	MNI MX Hybrid
	4	6152.750	6404.790	Caye Caulker	San Pedro	1	29.65	59.30	MNI MX Hybrid
	5	6286.190	6034.150	Caye Caulker	San Pedro	1	29.65	59.30	MNI MX Hybrid
	6	6315.840	6063.800	Caye Caulker	San Pedro	1	29.65	59.30	MNI MX Hybrid
	7	6520.000	6860.000	Caye Caulker	San Pedro	1	56	112.00	MNI MX Hybrid
	8	6315.840	6063.800	Belize City Kings Park	Caye Caulker	1	29.65	59.30	Huawei
	9	6345.490	6093.450	Belize City Kings Park	Caye Caulker	1	29.65	59.30	Huawei
	10	6375.140	6123.100	Belize City Kings Park	Caye Caulker	1	29.65	59.30	Huawei
	11	6404.790	6152.750	Belize City Kings Park	Caye Caulker	1	29.65	59.30	Huawei
	12	6256.540	6004.500	Belize City Kings Park	Caye Caulker	1	29.65	59.30	Huawei
	13	6286.190	6034.150	Belize City Kings Park	Caye Caulker	1	29.65	59.30	Huawei
	14	6830.000	6490.000	Belize City Kings Park	Caye Caulker	1	30	60.00	Huawei
	15	6860.000	6520.000	Belize City Kings Park	Caye Caulker	1	30	60.00	Huawei
	16	6890.000	6550.000	Belize City Kings Park	Caye Caulker	1	30	60.00	Huawei
	17	6804.000	6464.000	Belize City Kings Park	San Pedro South	1	56	112.00	Huawei
	18	6916.000	6576.000	Belize City Kings Park	San Pedro South	1	56	112.00	Huawei
	19	6972.000	6632.000	Belize City Kings Park	San Pedro South	1	56	112.00	Huawei
	20	7028.000	6688.000	Belize City Kings Park	San Pedro South	1	56	112.00	Huawei
7 GHz	1	7331.000	7170.000	Orange Walk	Blue Creek	1	28	56.00	MNI M series Hybrid
	2	7359.000	7198.000	Orange Walk	August Pine Ridge	1	28	56.00	MNI M series Hybrid
	3	7415.000	7254.000	Orange Walk	Yo Creek	1	28	56.00	MNI M series Hybrid
	4	7303.400	7142.400	Orange Walk	Progresso	1	28	56.00	MNI M series Hybrid
	5	7327.500	7166.500	Corozal	Sarteneja	1	28	56.00	MNI M series Hybrid
	6	7212.000	7373.000	Bermudian Landing	Gallon Jug	1	28	56.00	MNI MX Hybrid
	7	7142.000	7303.000	Santa Cruz	Riversdale	1	56	112.00	MNI MX Hybrid
	8	7303.000	7142.000	Placencia	Independence	1	56	112.00	MNI MX Hybrid
	9	7411.500	7250.500	Punta Gorda	Barranco	1	28	56.00	MNI MX Hybrid
	10	7222.500	7383.500	Chunox	Corozal	1	28	56.00	MNI MX Hybrid
11 GHz	1	10730.000	11250.000	Belize City Kings Park	Caye Chapel	1	56	112.00	Huawei

ANNEX 3 – Radio Frequency and Direction of Frequency Being Requested

			Lower			Upper			Frequencies Assigned by the PUC for MW P2P Links		Frequencies being requested for MW P2P Links				
No.	Band	СН	Start	Central	End	Start	Central	End	Total Bandwidt h (MHz)	ВКР - ССК	BKP-SPS	CCK-SPE	Link 1 BKP - CCK	BKP-SPS	Link 2 CCK-SPS
1	L6	1	5930.375	5945.2	5960.025	6182.415	6197.24	6212.065	59.30			Х			
2	L6	2	5960.025	5974.85	5989.675	6212.065	6226.89	6241.715	59.30			х			
3	L6	3	5989.675	6004.5	6019.325	6241.715	6256.54	6271.365	59.30	x			X		х
4	L6	4	6019.325	6034.15	6048.975	6271.365	6286.19	6301.015	59.30	x		X	X		x
5	L6	5	6048.975	6063.8	6078.625	6301.015	6315.84	6330.665	59.30	x		X	X		x
6	L6	6	6078.625	6093.45	6108.275	6330.665	6345.49	6360.315	59.30	x			X		x
7	L6	7	6108.275	6123.1	6137.925	6360.315	6375.14	6389.965	59.30	x		X	X		x
8	L6	8	6137.925	6152.75	6167.575	6389.965	6404.79	6419.615	59.30	X		X	X		X
9	U6	1	6445	6460	6475	6785	6800	6815	60.00		X				
10	U6	2	6475	6490	6505	6815	6830	6845	60.00	x	X				
11	U6	3	6505	6520	6535	6845	6860	6875	60.00	X		x			
12	U6	4	6535	6550	6565	6875	6890	6905	60.00	X	X	x			
13	U6	5	6565	6580	6595	6905	6920	6935	60.00		X				
14	U6	6	6595	6610	6625	6935	6950	6965	60.00		X				
15	U6	7	6625	6640	6655	6965	6980	6995	60.00		x				
16	U6	8	6655	6670	6685	6995	7010	7025	60.00		X		х		х
17	U6	9	6685	6700	6715	7025	7040	7055	60.00		X		X		x
18	U6	10	6715	6730	6745	7055	7070	7085	60.00				X		x
19	U6	11	6745	6760	6775	7085	7100	7115	60.00				X		х

X	Channels assigned by the PUC that will be used by the new MW P2P Link
х	Channels that will be returned to the PUC once the new MW P2P Links have been fully commissioned
х	Channels that are being requested for MW P2P Link 1 - BKP to Caye Caulker
×	Channels that are being requested for MW P2P Link 2 - Cave Caulker to San Pedro South