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July 20, 2012

Mr. John Williams
Director General – TCI Telecommunications Commission
Business Solutions Building
Providenciales, Turks and Caicos Islands



Dear Mr. Williams,

RE: 700 MHz Spectrum Band

We write further to the release of the Second 700MHz Policy Consultation Document (“Second Consultation Document”) and specifically in relation to Andrew’s Communications Limited’s (“ACL”) authority to use the spectrum band in the Turks and Caicos Islands (“TCI”).

We note in the Second Consultation Document at page 24 that the Telecommunications Commission (“Commission”) make the following assertion:

“Andrews does not currently hold a spectrum licence in TCI for the 700MHz band.”

While it is true that ACL does not currently hold a spectrum licence for the 700MHz band under Part IV of the 2006 Telecommunication’s Ordinance, ACL does have prior authority to use any band on the spectrum. This authority derives from an Executive Council Approval (“1997 ExCo Approval), dated 3rd July 1997 (copy enclosed), which grants ACL,

“...the right to use all Cable TV spectrums – Analog and Digital – to receive and broadcast TV systems over the air or by cable wire commercially in Providenciales for the purposes of e-mail, the internet and alarm security services subject to the grant of any exclusive rights to another party.” [Emphasis added]

It is clear from the use of the term “all” that ExCo intended ACL to have access to any and every band on the spectrum that was available in the TCI. It follows that the opening of the 700MHz band in the TCI will automatically result in ACL being permitted access to it. The only condition attaching to the ExCo grant was in the event “exclusive rights are granted to another party”. From the two consultation documents released to date by the Commission, the award of exclusive rights to a party is not something currently under consideration. Therefore it is clear that ACL have prior authority to use the entire spectrum band including the 700MHz band.

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RECEIVED

DATE
TELECOMMUNICATIONS

Jan 20 2013

Mr. John Williams
Director General - TCI Telecommunications Commission
Harrison Rodgers Building
Providenciales, Turks and Caicos Islands

Dear Mr. Williams,

Re: 700 MHz Spectrum Band

We wish to refer to the release of the Second 700MHz Policy Consultation Document (Second Consultation Document) and specifically in relation to Andrew's Communications Limited's ("ACL") authority to use the spectrum band in the Turks and Caicos Islands ("TCI").

It is noted in the Second Consultation Document at page 24 that the Telecommunications Commission ("Commission") made the following assertion:

"...the Commission does not currently hold a spectrum licence in TCI for the 700 MHz band."

It is noted that ACL does not currently hold a spectrum licence for the 700MHz band under Part VI of the 2008 Telecommunications Ordinance. ACL does have prior authority to use any band on the spectrum. This authority derives from an Executive Council Approval ("1997 ExCo Approval") dated 30 July 1997 (copy enclosed), which grants ACL:

"...the right to use all (i) cable TV spectrum - Analog and Digital - to receive and broadcast TV systems over the air or by cable wire commercially in Providenciales for the purpose of a multi-tenant broadcast and internet security services subject to the grant of any exclusive rights to another party." [Emphasis added]

It is clear from the use of the term "all" that ExCo intended ACL to have access to any and every band on the spectrum that was available in the TCI. It follows that the opening of the 700MHz band in the TCI will necessarily result in ACL being permitted access to it. The only condition relating to the ExCo grant was in the event "exclusive rights are granted to another party". From the two consultation documents released to date by the Commission, the award of exclusive rights to a party is not something currently under consideration. Therefore it is our view that ACL has prior authority to use the entire spectrum band including the 700MHz band.

Further to this, ACL does also possess a telecommunication and Spectrum Licence dated May 12, 2006 ("2006 Licence") which has the effect of regularizing parts of ACL's rights over the spectrum. As such the 2006 Licence must be read in conjunction with the rights granted to ACL under the 1997 ExCo Approval. As a consequence and for the reasons outlined above, any division of the 700MHz spectrum would have the effect of denying ACL the rights afforded to it under the 1997 ExCo Approval.

We have previously informed the Commission of ACL's intention to use the 700MHz spectrum band (copy of correspondence enclosed) as part of the implementation of our business plan and of the fact that we have purchased, at considerable expense, the appropriate equipment necessary to utilize the specific band effectively.

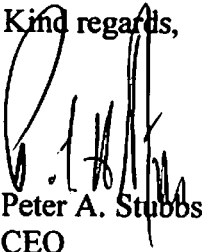
We therefore ask you to acknowledge the following:

1. ACL has a pre-existing authority to use all of the spectrum bands in the TCI by virtue of a grant issued by the Executive Council dated 3rd July 1997. This includes the 700MHz spectrum band.
2. By virtue of this authority ACL are entitled to select the spectrum bands of their choice within the 700MHz range.

Please note our response to the questions posed by the Commission in the Second Consultation Paper is attached.

We look forward to hearing from you.

Kind regards,



Peter A. Stubbs
CEO

Attached: **Response to Second 700MHz Spectrum Policy Consultation**
 Executive Council Approval
 Previous correspondence regarding the 700 MHz



ACL (Andrew's) Response to "Second 700 MHz Spectrum Policy Consultation Proposal"

Question 1: FCC Channel Plan: Do you agree with the Commission's proposal to adopt the FCC 700 MHz spectrum channel plan for TCI? If not, explain why not and provide a specific alternative proposal with supporting rationale.

ANDREW'S agrees with the FCC Channel Plan.

It is noted, Industry Canada (IC) has also adopted the FCC plan with a small change in the implementation of the upper C block. Harmonization between the FCC and IC (and now with the Turks and Caicos Telecommunications Commission) ensures TCI is on the crest of the wave for 700MHz LTE product and services development.

Question 2: Public Safety Spectrum Reserve: Do you agree with the Commission's proposal to reserve for future use the 700 MHz spectrum designated for public safety use under the FCC channel plan (i.e., 763-775 MHz paired with 793-805 MHz)? If not, explain whether there are any immediate or near term commercial uses for this spectrum, in whole or part, that could also support future public safety requirements.

ANDREW'S agrees the FCC channel plan for public safety should be adopted in TCI.

Question 3: Upper D Block Reserve: Do you agree with the Commission's proposal to reserve the Upper D block designated for public safety use under the FCC channel plan for future public safety and/or commercial use? If not, explain whether there are any immediate or near term commercial uses for the Upper D block.

ANDREW'S agrees the FCC channel plan for public safety should be adopted in TCI.

Question 4: Band 14: Digicel proposed that Band 14 (i.e., as illustrated in Annex 1, 758-768 MHz paired with 788-798 MHz, 20 MHz in total) could licensed for commercial uses. This band

ACL Response - "Second" 700 MHZ Spectrum Policy Consultation

includes the Upper D block and part of the public safety spectrum reserve. Comment on whether there are any immediate or near term commercial uses for this specific spectrum band.

ANDREW'S does not recommend expanding the D Band as requested by Digicel, since this expansion, at this time, would preclude the Turks and Caicos Government from following future Public Safety strategies implemented in the USA and Canada. The expansion of the FCC designated Upper D blocks would in effect, limit TCI to use only the Public Safety Narrow Band designated channels (channels 64 and 69) in future Public Safety deployments and thus, would eliminate the use of the Public Safety broadband channels (Channels 63 and 68). ANDREW'S predicts great wireless broadband device advantages will be forthcoming by Public Safety Vendors, which will provide full video/data/voice/geographic and asset position (human and machine) capabilities to first responders on a pure IP platform supporting both 700MHz LTE and 2.4GHz WiFi access. This prediction is based on the current hockey stick growth improvements in application stack and IP smart devices, which continue to flood the market each quarter (iOS - Apple, Android - Google, Windows - Microsoft, AppStacks - corporate and independent App Developers).

ANDREW'S recommends Channels 63, 64, 68 and 69 be protected for government Public Safety use for at least the next 3 years. This will allow TCITC to gauge the advancements of the Public Service device strategies deployed in the USA and Canada and ensure TCI will be able to take advantage of the new smart devices which use the full Public Safety LTE channel plan.

Question 5: Lower A Block: Comment on whether there are any immediate or near term practical and economic options for deploying LTE-based services in TCI in the Lower A block in comparison to the Lower B, C and/or Upper C blocks.

ANDREW'S believes the lower A block should be made available for LTE based services in TCI.

In our opinion, this block currently has an interoperability risk involved, since the OEM device manufacturers are working to add value to the Lower B and C Bands and the Upper C Bands; a multi million subscriber market is addressable (via AT&T and Verizon in the USA) for these bands.

ANDREW'S believes the A Block will overcome the interoperability issue as the number of Rural users in the USA increase.

ANDREW's strategy is to use this band to provide backhaul to WiFi access networks. This will eliminate the need to use the 5.8 GHz spectrum as WiFi backhaul, eliminating inherent interference anomalies historically associated with the 5.8GHz band.

It is our intention to deliver a high quality, high capacity network, able to support WiFi access networks throughout the Turks and Caicos Islands, using the A Block spectrum.

ACL Response - "Second" 700 MHz Spectrum Policy Consultation

Question 6: Unpaired Lower D and E Blocks: Comment on whether there are any immediate or near term commercial uses in TCI for the unpaired Lower D and E blocks, and also comment on their relative attractiveness compared to the Lower B, C and/or Upper C blocks.

This is generally considered to be a band for broadcast services. Due to our business plan; ANDREW'S does have an immediate need for the deployment of this block of the spectrum.

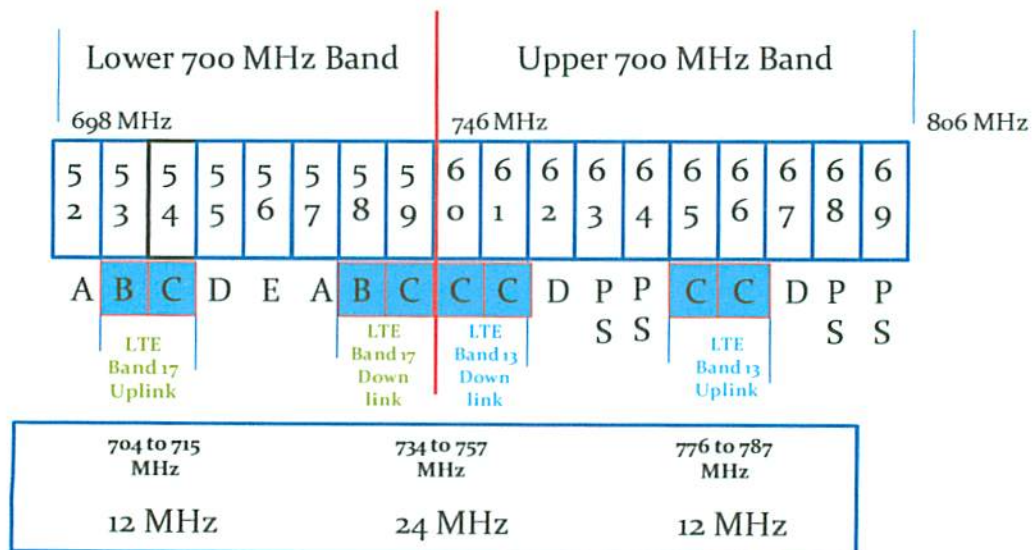
Question 7: "Prime" Spectrum Blocks: Comment on whether you agree that the Lower B, Lower C and Upper C to be the relatively more desirable or "prime" 700 MHz spectrum blocks available for commercial use in TCI at this time.

The Lower B, Lower C and Upper C blocks could be considered as more desirable "prime" blocks due the deployment of these blocks in two major 700MHz LTE networks; AT&T and Verizon in the USA, and also the expectation that Industry Canada will also open these blocks up to Communication Service Providers within the next year or so.

The deployment of these blocks as commercial LTE networks in the USA and Canada assures the availability of many devices at a reasonable price.

ANDREW'S, has an immediate requirement for the Lower B, Lower C and Upper C blocks, to provide Internet and IPTV services for the benefit of our subscribers in the Turks and Caicos Islands.

ACL - 700 MHz Channel/Block Requirement LTE Broadband Internet in TCI



ACL Response - "Second" 700 MHz Spectrum Policy Consultation

ACL Requires the following immediately...

Channels 53 and 54 (LTE Band 17 Uplink), Channels 58 and 59 (LTE Band 17 Downlink)
Channels 60 and 61 (LTE Band 13 Downlink) & Channels 65 and 66 (LTE Band 13 Uplink)

Question 8: 700 MHz Spectrum Assignment Options: Provide your views on the Commission's two 700 MHz spectrum assignment options, indicating your preference for either Option 1 or 2 with supporting rationale. Please provide any alternative proposals you may have, with supporting rationale.

As stated in various correspondence to the Director General – TCI Telecommunications Commission, ANDREW'S has been granted the right of use for all Cable TV spectrums which includes the 700MHz spectrum in the Turks and Caicos Islands as per our 1997 Executive Council approval ("1997 ExCo Approval") (paragraph 5) which states:

"It granted Andrew's Communications the right to use all Cable TV spectrums – Analog and Digital – to receive and broadcast TV systems over the air or by cable wire commercially in Providenciales for the purposes of E-mail, the Internet and alarm security services subject to the grant of any exclusive rights to another party".

Therefore the granting of this license provides ANDREW'S with rights that include the assigning of Email, Internet and Alarm Security Systems on the 700MHz spectrum.

Further, ANDREW'S are led to believe from a meeting with the Director General and Chairman of the Commission on June 14, 2012 that the Commission does not and cannot regulate TV broadcasting. If this is the case then ANDREW'S see no basis or reason for the interference with rights currently assigned to ANDREW'S under the 1997 ExCo Approval. The consequences of the Commission acting beyond its authority were it to limit the range within the 700MHz spectrum would be to limit the ability of ANDREW'S to operate our business plan outside the range of the 700MHz spectrum. All of the existing Telecom operators currently operate within the 1800 – 1900MHz spectrum range. This is in accordance with international practice where only TV Broadcast and emergency services are allowed to operate within the 700MHz range.

ANDREW'S does also possess a Telecommunication and Spectrum Licence of 12th May 2006 ("2006 Licence") which has the effect of regularizing parts of ANDREW'S rights over the spectrum. As such, the 2006b license must be read in conjunction with the rights granted to ANDREW'S under the 1997 ExCo Approval. As a consequence and for the reasons outlined above, any division of the 700Mhz spectrum would have the effect of denying ANDREW'S the rights afforded to it under the 1997 ExCo Approval.

The Executive Council approval above also does not provide the TCI Telecommunications Commission the authority to parse the Bands of this spectrum as a Telecom spectrum, to the Telecom service providers in TCI.

Question 9: Spectrum for LTE Deployment Purposes: The Initial Consultation Document focused exclusively on the use of 700 MHz spectrum for the deployment of 4G LTE

ACL Response - "Second" 700 MHz Spectrum Policy Consultation

technology. Provide your views on whether 4G LTE technology could be effectively deployed using spectrum in other frequency bands (e.g., 1700/2100 MHz, 2500/2600 MHz or other frequency bands) taking into account the geography and demographics of TCI. If not, explain why not.

ITU has identified various spectrums in multiple bands to be LTE compatible.

The following chart is provided to show the spectrum defined for LTE and other technologies and also the marketing regions favoring specific spectrum for specific RF protocol technologies:

	450	700	800	850	900	1500	1700	1800	1900	2100	2300	2500	3300	3500	3700	MHz	MHz Available per Technology
GSM																	
CDMA																	199
UMTS																	956
LTE																	985
WiMAX																	848
TDD/FDD	FDD	TD/FD	FDD	FDD	FDD	FDD	FDD	FDD	FDD	TD/FD	TDD	TD/FD	TDD	TD/FD	TDD		
Bandwidth Available	28.8 MHz	108 MHz	20 MHz	50 MHz	78 MHz	50 MHz	120 MHz	150 MHz	120 MHz	120 MHz	100 MHz	140 MHz	100 MHz	200 MHz	200 MHz		
Up Link MHz	450.4 457.6 478.8 486	698 to 805	830 to 840	824 to 849	876 to 915	1427.9 to 1452.9	1710 to 1770	1710 to 1785	1850 to 1910	1920 to 1980	2300 to 2400	2500 to 2570	3300 to 3400	3400 to 3600	3600 to 3800		
Down Link MHz	460.4 467.6 488.8 496	698 to 805	875 to 885	889 to 894	921 to 960	1475.9 to 1500.9	2110 to 2170	1805 to 1880	1930 to 1990	2110 to 2170	2300 to 2400	2620 to 2690	3300 to 3400	3400 to 3600	3600 to 3800		
EMEA																	
NA																	
CALA																	
APAC																	

As can be seen, the orange band above (Labeled LTE on the left column) shows the Spectrum Bands available for LTE deployments. Much of the spectrum does fall under the authority of the TCI Telecommunications Commission (800MHz, 850MHz, 900MHz, 1800MHz (this is the band currently used to provide LTE Services to subscribers in Canada), 1900 MHz etc.

ANDREW'S believes the TCI Telecommunications Commission should parse and license the spectrum agreed to be Telco spectrum which would enable the Telco providers in TCI to build and operate competitive LTE networks, which would also compete with the ANDREW'S 700 MHz Mobile Broadband Network.

The Commission has adopted the FCC (and by default Industry Canada's) channel plan solution for the 700 MHz spectrum, which ACL agrees to adopt as well.

The Telco spectrum available through the authority of TCI Telecommunications Commission should be the focus of the Commission since the 700 MHz spectrum is licensed to ANDREW'S and as per our answer to question 8, we do not understand TV Broadcasting to be under the authority of the Commission.

ACL Response - "Second" 700 MHz Spectrum Policy Consultation

Question 10: Spectrum for LTE Deployment Purposes: Explain whether any spectrum currently assigned to your company could potentially be used for the deployment of 4G LTE services and, if so, in what time frame.

For the reasons outlined in question 8 above, ANDREW'S currently has the entire 700 MHz spectrum under license and we intend to use that spectrum with immediate effect as part of our business plan which has previously been communicated to the Commission and which will be for the benefit of our subscribers in the Turks and Caicos Islands.

The table provided in the answer to question 9 above, shows the LTE viable spectrum the Telco Service Providers could use to bring LTE services to their subscribers in TCI.

Question 11: Spectrum Assignment Methodology: Provide your views on the Commission's conditional two-stage comparative selection process for awarding 700 MHz spectrum. Please provide any alternative proposals you may have, with supporting rationale.

As per the answer provided in question #8, it is our view based on communication from the Commission themselves that Commission does not have the authority to provide Spectrum Assignment Methodologies outside of the Telco spectrums.

Question 12: Stage Two Comparative Selection Criteria: Provide your views on the proposed second-stage comparative selection criteria, including what specific criteria you consider should be either added to or deleted from the list, if any, with supporting rationale. In addition, provide your views on the possible relative weighting of the criteria.

As per the answer provided in question #8, it is our view based communication from the Commission themselves that the Commission does not have the authority to provide Spectrum Assignment Methodologies outside of the Telco spectrums.

The Commission should apply these criteria to the spectrum under its authority, for the Telco cell providers licensed in TCI.

Question 13: Proposed Spectrum Fees: Provide your comments on the Commission's proposed "prime" and "non-prime" 700 MHz spectrum fees and the approach used to derive them. Please provide any alternative proposals you may have, with supporting rationale.

ANDREW'S is open to discussions on the fees to be paid for the 700 MHz spectrum.

Question 14: Spectrum Fee Survey Results: Provide your comments on the survey of 700 MHz spectrum fees included in Annex 3, including identifying any revisions and/or additions you consider appropriate with supporting references and explanations.

ACL Response - "Second" 700 MHz Spectrum Policy Consultation

ANDREW'S is open to discussions on the fees to be paid for the 700 MHz spectrum.

Questions 15: License Conditions: Provide any comments you may have on the Commission's proposed 700 MHz license (i) term, (ii) spectrum deployment and population coverage commitments and (iii) deployment commitment safeguard (and value). Please provide any alternative proposals you may have, with supporting rationale.

As per the answer provided in question #8, it is our view based on communication from the Commission themselves that the Commission does not have the authority to provide Spectrum Assignment Methodologies outside of the Telco spectrums.

The Commission should apply these conditions to the spectrum under its authority, for the Telco cell providers licensed in TCI.

Questions 16: Implementation Process: Provide any comments you may have on the Commission's proposed "prime" 700 MHz spectrum license comparative selection implementation process and timelines. Please provide any alternative proposals you may have, with supporting rationale.

As per the answer provided in question #8, it is our view based on communication from the Commission themselves that the Commission does not have the authority to dictate implementation processes or timelines regarding the 700 MHz spectrum.

The Commission should apply these processes and timelines to the spectrum under its authority, for the Telco cell providers licensed in TCI.



**MINISTRY OF TOURISM, COMMUNICATIONS AND
TRANSPORTATION**

DEPARTMENT OF:

**GRAND TURK
TURKS & CAICOS ISLANDS
WEST INDIES**

OUR REFERENCE:

TELEPHONE: (809) 946-2801/2807

YOUR REFERENCE:

FAX: (809) 946-1120

July 3rd, 1997

Mr. Peter Stubbs
President
Andrew's Communications
PROVIDENCIALES
Turks & Caicos Islands

Dear Mr. Stubbs,

**RE: Licence for Telecommunications MMDS and Uplink Services - Andrew's
Communications Ltd.**

In reference to the above, please know that by Minute No:358/97 (Paper No.97/178 Council advised that:

- (1) It approved the grant of an interim license to Andrew's Communication under any existing relevant Communications legislation to receive and distribute MMDS TV signals on the island of Providenciales subject to the terms of impending legislation and any exclusive rights granted by the Government to another party.
- (2) The license to be granted under the impending legislation should be issued for a period of fifteen years with the option to renew for five intervals subject to satisfactory performance during the previous period.
- (3) It approved the granting of rights to Andrew's Communications for the island of Providenciales to operate an up-link Satellite earth Station from that island which would allow for the network to broadcast TV programs worldwide including commercials from the USA and elsewhere subject to the grant of any exclusive rights to another party.
- (4) It granted permission to Andrew's Communication on the island of Providenciales to offer data services such as Internet Services, including E-Mail and security alarm services on all its cable systems subject to the grant of any exclusive rights to another party.

- (5) It granted Andrew's Communications the right to use all Cable TV spectrums - Analog and Digital - to receive and broadcast TV systems over the air or by cable wire commercially in Providenciales for the purposes of E-Mail, the Internet and alarm security services subject to the grant of any exclusive rights to another party.
- (6) It granted Andrew's Communications the right to provide any type of two way communication system in Providenciales that is not currently exclusively held by another company or individual, that may be provided over its system.
- (7) It granted Andrew's Communications the right to buy international TV programming, Internet Services, E-Mail and alarm security services for sale to business, individuals and or cable companies in Providenciales.
- (8) It approved duty liability at the rate of 2 - 1/2% on all equipment including a specialized vehicle imported by Andrew's Communications in respect of its operations in Providenciales for a period of ten years and thereafter for 5 years at 50% of the prevailing rate.
- (9) It agreed that Andrew's Communications could retain the use of the existing hard cable in Grand Turk for the purpose of its television transmissions to the public.

Council further advised that the Attorney General's Chambers be requested to prepare draft legislation which would provide for it to be an offense to (a) sell MMDS antennae in the TCI without a specific license; and (b) to receive any locally licensed television station signal without the proper subscription. The AG' Chambers, in consultation with the Permanent Secretary Ministry of Tourism, Communications and Transportation and the proposed operators were directed to have the respective Agreements prepared for approval by ExCo in due course.

Please confirm, in writing, within twenty one (21) days your acceptance or non acceptance of the terms and conditions as stated in the above. Your failure to do so will result in the withdrawal of this offer by Government.

Respectfully,


Hon Oswald D. Shippings
MINISTER

c.c Attorney General



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June 26, 2012

Commissioners
 TCI Telecommunications Commission
 Business Solutions Building
 Leeward Highway
 Providenciales

Dear Sirs/Madams,

RE: Report of Spectrum Usage

As requested by the TCI Telecommunications Commission, please find below a list of television spectrum frequencies which People's Television Ltd. (PTV) use presently for its television network as well as a list of TV frequencies which we have listed for use in the expansion of our digital network, HDTV, Video on Demand and the People's Telecoms Company Ltd. (PTC) Broadband LTE (Long Term Evolution) Internet Service offering coming very soon.

IN USE	FUTURE USE
492 MHz	652 MHz
508 MHz	668 MHz
524 MHz	684 MHz
540 MHz	
556 MHz	
572 MHz	
588 MHz	
604 MHz	
620 MHz	
636 MHz	
2.5 - 2.7MHz	

Below is the FDD table applicable to our needs. It is up to our engineer to choose wisely which of the band(s) we would want noting however:

1. Interactions with our present TV channels and the future build-out and for HDTV
2. The particular spectrum we want to use for the PTV internet subscribers
3. Subcarrier-ing for backhaul if need be for Middle Caicos, South Caicos and Grand Turk connectivity.

4. Future usage expansion to be the Carrier's Carrier for wholesaling.

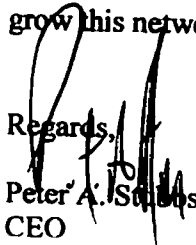
FUTURE USE – TELEVISION AND INTERNET

UPLINK FREQUENCY	DOWNLINK FREQUENCY
698 – 716	728 – 746
777 – 787	746 – 756
788 – 798	758 – 768
704 – 716	734 – 746
815 – 830	860 – 875
830 – 845	875 – 890
832 – 862	791 – 821

Further as to LTE (Long Term Evolution): LTE supports scalable carrier bandwidths from 1.4 MHz to 20MHz, and supports both *frequency division duplexing* (FDD) and *time division duplexing* (TDD). FDD LTE frequency bands are paired to allow simultaneous transmission on two frequencies. The bands also have sufficient separation to enable the transmitted signals not to unduly impair the receiver performance. If the signals are too close then the receiver may be blocked and the sensitivity impaired. The separation must be sufficient to enable the roll-off of the antenna filtering to give sufficient attenuation of the transmitted signal within the receive band.

We trust that the information provided here gives the Telecommunications Commission members a better understanding of the PTV Network and an insight into our future plans as we grow this network.

Regards,


Peter A. Stubbins
CEO

Domestic Frequency Charts

SUB VHF

Channel	Frequency Range (MHz)	Video (MHz)	Chroma (MHz)	Audio (MHz)
T7	5.75-11.75	7	10.58	11.5
T8	11.75-17.75	13	16.58	17.5
T9	17.75-23.75	19	22.58	23.5
T10	23.75-29.75	25	28.58	29.5
T11	29.75-35.75	31	34.58	35.5
T12	35.75-41.75	37	40.58	41.5
T13	41.75-47.75	43	46.58	47.5
T14	47.75-53.75	49	52.58	53.5

LOW VHF

2	54-60	55.25	58.83	59.75
3	60-66	61.25	64.83	65.75
4 Pilot*	66-72	67.25	70.83	71.75
5	76-82	77.25	80.83	81.75
6	82-88	83.25	86.83	87.75

MID

14 (A)	120-126	121.2625	124.84	125.76
15 (B)	126-132	127.2625	130.84	131.76
16 (C)	132-138	133.2625	136.84	137.76
17 (D)	138-144	139.25	142.83	143.75
18 (E)	144-150	145.25	148.83	149.75
19 (F)	150-156	151.25	154.83	155.75
20 (G)	156-162	157.25	160.83	161.75
21 (H)	162-168	163.25	166.83	167.75
22 (I)	168-174	169.25	172.83	173.75

HIGH VHF

7	174-180	175.25	178.83	179.75
8	180-186	181.25	184.83	185.75
9	186-192	187.25	190.83	191.75
10	192-198	193.25	196.83	197.75
11	198-204	199.25	202.83	203.75
12	204-210	205.25	208.83	209.75
13	210-216	211.25	214.83	215.75

SUPER

23 (J)*	216-222	217.25	220.83	221.75
24 (K)	222-228	223.25	226.83	227.75
25 (L)	228-234	229.2625	232.84	233.76
26 (M)	234-240	235.2625	238.84	239.76
27 (N)*	240-246	241.2625	244.84	245.76
28 (O)	246-252	247.2625	250.84	251.76
29 (P)	252-258	253.2625	256.84	257.76
30 (Q)	258-264	259.2625	262.84	263.76
31 (R)	264-270	265.2625	268.84	269.76
32 (S)*	270-276	271.2625	274.84	275.76
33 (T)	276-282	277.2625	280.84	281.76
34 (U)	282-288	283.2625	286.84	287.76
35 (V)	288-294	289.2625	292.84	293.76
36 (W)	294-300	295.2625	298.84	299.76

HYPER

37 (AA)*	300-306	301.2625	304.84	305.76
38 (BB)	306-312	307.2625	310.84	311.76
39 (CC)	312-318	313.2625	316.84	317.76
40 (DD)	318-324	319.2625	322.84	323.76
41 (EE)	324-330	325.2625	328.84	329.76
42 (FF)*	330-336	331.275	334.855	335.77
43 (GG)	336-342	337.2625	340.84	341.76
44 (HH)	342-348	343.2625	346.84	347.76
45 (II)	348-354	349.2625	352.84	353.76
46 (JJ)	354-360	355.2625	358.84	359.76
47 (KK)	360-366	361.2625	364.84	365.76
48 (LL)	366-372	367.2625	370.84	371.76
49 (MM)	372-378	373.2625	376.84	377.76
50 (NN)*	378-384	379.2625	382.84	383.76
51 (OO)	384-390	385.2625	388.84	389.76
52 (PP)	390-396	391.2625	394.84	395.76
53 (QQ)	396-400	397.2625	400.84	401.76
54 (RR)	402-408	403.25	406.83	407.75
55 (SS)	408-414	409.25	412.83	413.75

HYPER (Cont.)

Channel	Frequency Range (MHz)	Video (MHz)	Chroma (MHz)	Audio (MHz)
56 (TT)	414-420	415.25	418.83	419.75
57 (UU)	420-426	421.25	424.83	425.75
58 (VV)	426-432	427.25	430.83	431.75
59 (WW)	432-438	433.25	436.83	437.75
60 (XX)	438-444	439.25	442.83	443.75
61 (YY)	444-450	445.25	448.83	449.75
62 (ZZ)	450-456	451.25	454.83	455.75
63	456-462	457.25	460.83	461.75
64	462-468	463.25	466.83	467.75
65	468-474	469.25	472.83	473.75
66	474-480	475.25	478.83	479.75
67	480-486	481.25	484.83	485.75
68	486-492	487.25	490.83	491.75
69	492-498	493.25	496.83	497.75
70	498-504	499.25	502.83	503.75
71	504-510	505.25	508.83	509.75
72	510-516	511.25	514.83	515.75
73	516-522	517.25	520.83	521.75
74	522-528	523.25	526.83	527.75
75	528-534	529.25	532.83	533.75
76	534-540	535.25	538.83	539.75
77	540-546	541.25	544.83	545.75
78	546-552	547.25	550.83	551.75
79	552-558	553.25	556.83	557.75
80	558-564	559.25	562.83	563.75
81	564-570	565.25	568.83	569.75
82	570-576	571.25	574.83	575.75
83	576-582	577.25	580.83	581.75
84	582-588	583.25	586.83	587.75
85	588-594	589.25	592.83	593.75
86	594-600	595.25	598.83	599.75

ULTRA

87	600-606	601.25	604.83	605.75
88	606-612	607.25	610.83	611.75
89	612-618	613.25	616.83	617.75
90	618-624	619.25	622.83	623.75
91	624-630	625.25	628.83	629.75
92	630-636	631.25	634.83	635.75
93	636-642	637.25	640.83	641.75
94	642-648	643.25	646.83	647.75
100	648-654	649.25	652.83	653.75
101	654-660	655.25	658.83	659.75
102	660-666	661.25	664.83	665.75
103	666-672	667.25	670.83	671.75
104	672-678	673.25	676.83	677.75
105	678-684	679.25	682.83	683.75
106	684-690	685.25	688.83	689.75
107	690-696	691.25	694.83	695.75
108	696-702	697.25	700.83	701.75
109	702-708	703.25	706.83	707.75
110	708-714	709.25	712.83	713.75
111	714-720	715.25	718.83	719.75
112	720-726	721.25	724.83	725.75
113	726-732	727.25	730.83	731.75
114	732-738	733.25	736.83	737.75
115	738-744	739.25	742.83	743.75
116	744-750	745.25	748.83	749.75
117	750-756	751.25	754.83	755.75
118	756-762	757.25	760.83	761.75
119	762-768	763.25	766.83	767.75
120	768-774	769.25	772.83	773.75
121	774-780	775.25	778.83	779.75
122	780-786	781.25	784.83	785.75
123	786-792	787.25	790.83	791.75
124	792-798	793.25	796.83	797.75
125	798-804	799.25	802.83	803.75
126	804-810	805.25	808.83	809.75
127	810-816	811.25	814.83	815.75
128	816-822	817.25	820.83	821.75
129	822-828	823.25	826.83	827.75