

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)
Application for International Broadcast) IHF-C-P-20201228-00010
Construction Permit)

INFORMAL OBJECTION

This informal objection is filed pursuant to Section §73.3587 of Commission Rules, by Shortwave Solutions LLC (“Objector”) regarding an Application for International Broadcast Construction Permit (“Application”) by DPA Mac LLC (“DPA”).

Objector’s argument follows:

- 1) Part 73 Subpart F (“International Broadcast”), §73.701(a) and § 2.106 does not permit the proposed “*data-service transmissions*”. DPA did not request a waiver.
- 2) The DPA-requested waiver of § 73.751(c) minimum power levels will not provide usable international broadcast service consistent with the “public interest” obligations. DPA’s statements to the contrary conflict with its own technical exhibits, with statements made to UK planning authorities – and with laws of physics. DPA lacked reasonable basis for believing such statements are correct and not misleading, in violation of § 1.17(a)(2)
- 3) Other waiver requests are not in the public interest.
- 4) The application is missing material information and requests authorizations not in conformance with the Rules, rendering it defective under § 1.934 (d) (1) and (2). Totality of mistakes appear to violate “*technical qualification to provide requested service*”, per § 73.731(a)(4)
- 5) DPA is de-facto controlled by Raft Technologies, an alien corporation, thus making it ineligible for broadcast license under § 310(b)(4). DPA did not request a waiver nor declaratory ruling required under § 1.5000(a)(1).
- 6) DPA lacked candor in concealing the true-party-in-interest and certification of compliance with § 310(b)(4). DPA appears to have lacked candor in certifications of compliance with § 73.731(a), § 73.753 and § 73.758.

In summary, the application is a poorly disguised attempt to continue operating point-to-point transmission services, originally licensed to a DPA affiliate under “Part 5” Rules, using the same equipment.

1) Part 73 Subpart F (“International Broadcast”) service only allows transmissions to the general public - and does not allow contemplated “data-service transmissions.”

Like two other proposed applications for International Broadcast¹, DPA proposes to broadcast commercial-free audio using DRM to qualify for an “International Broadcast” License (73 Part F), while earning revenue from *non-broadcast* data transmissions. Unlike the other applicants, DPA is very clear about it. This is acknowledged in the justification of “public convenience and necessity” in its narrative on page 3, and further repeated on pages 5 and 13 –and bear quoting in full (emphasis added, internal footnotes removed):

DPA Mac intends to provide: (1) an over-the-air, commercial-free audio broadcast of U.S. financial news and similar information to populations outside of the United States that have access to a standard, commercial, off-the-shelf HF receiver; and (2) investment data from points within the United States to locations outside the United States carried over a channel immediately adjacent to the HF broadcasts. The proceeds raised from offering the data-service transmissions—which involve a low-power, low-latency digital data transmission service provided to private investors, including small- and medium sized firms—will provide the necessary financial support to deploy and sustain the HF broadcasting business for the benefit of the public now and into the future.

[...]

As described above, DPA Mac proposes to continue offering the services that 3DB has provided pursuant to its experimental application for a market trial. More specifically, DPA Mac will continue broadcasting audio that provides “timely, accurate financial news” while simultaneously sending “supplemental, low latency digital data transmissions” to private investors.

[...]

Since 2017, 3DB has provided the service pursuant to its experimental license as part of a market trial, using its own equipment. Moving forward and pursuant to this application, DPA Mac will serve as licensee, as contemplated in 3DB’s most recent renewal application. The market trials have demonstrated the economic viability of the proposed service, which will allow DPA Mac to finance its commercial-free audio broadcast with revenues earned from providing its “low latency digital data transmission service” to “investment and commercial banks, proprietary trading companies, and security exchanges, among others.”

It is well-established that “broadcasting” only includes transmissions intended to, and received by, the general public. In one of the earliest cases before the Commission², the programming of a licensee included the broadcasting of coded horse race results. Intelligible reception of these results was restricted to a particular group which had subscribed to a so-called “scratch sheet” containing interpretations of the code. The Commission ruled that “*this was a violation of the Commission’s regulations and the station license which authorized dissemination to the general public and not particular individuals or classes thereof.*”. Similar results were reached in other cases.³

¹ FCC File No: *IHF-C/P-20200427-00001* and *IHF-LIC-20200710-00002*

² *Bremer Broadcasting Co.*, 2 F.C.C. 79 (1935).

³ *Scroggin & Co*, 1 FCC 194 (1935), *Muzak Corporation*, 8 FCC 581 (1941), *Functional Music v FCC*, 274 F. 2d 254 (C.A.D.C, 1958)

Subsequently, certain “subcarrier” or “multiplex” transmissions were authorized as “Subsidiary Communications Authority” in the Commission’s rulemaking proceedings, for example:

- FM multiplex ⁴
- AM subcarrier authority ⁵
- DTV ancillary/supplemental use authority ⁶

Certainly, if the Commission had intended to permit non-broadcast use for International HF Service, it would have stated so explicitly, as it has done in every other case stemming from above proceedings – such as modifying “Table of Frequency Allocations” (§2.106), as shown below:

- *NG5 In the band 535-1705 kHz, AM broadcast licensees and permittees may use their AM carrier on a secondary basis to transmit signals intended for both broadcast and non-broadcast purposes. In the band 88-108 MHz, FM broadcast licensees and permittees are permitted to use subcarriers on a secondary basis to transmit signals intended for both broadcast and non-broadcast purposes. In the bands 54-72, 76-88, 174-216, 470-608, and 614-698 MHz, TV broadcast licensees and permittees are permitted to use subcarriers on a secondary basis for both broadcast and non-broadcast purposes.*
- *NG14 TV broadcast stations authorized to operate in the bands 54-72, 76-88, 174-216, 470-608, and 614-698 MHz may use a portion of the television vertical blanking interval for the transmission of telecommunications signals [..]*
- *NG149 The bands 54-72 MHz, 76-88 MHz, 174-216 MHz, 470-512 MHz, 512-608 MHz, and 614-698 MHz are also allocated to the fixed service to permit subscription television operations in accordance with 47 CFR part 73 [..]*

No such footnote exists for frequencies allocated to International HF Broadcasting Service, and §73.701(a) simply defines “International broadcast station” as “[..] transmissions of which are intended to be received directly by the general public in foreign countries”⁷.

In a recent R&O⁸ related to ancillary services to be provided by TV broadcasters, “The Commission has determined that the definition of “broadcasting” in the Act applies to services intended to be received by an indiscriminate public and has identified three indicia of a lack of such intent: (1) the service is not receivable on conventional television sets and requires a licensee or programmer-provided special antennae and/or signal converter so the signal can be received in the home; (2) the programming is encrypted in a way that “makes it unusable by the public” and that is not “enjoyable without the aid of decoders”; and (3) the provider and the viewer are engaged in a private contractual relationship” – and declined to authorize any “individualized” programming.

Substituting radio for television, three indicia of “broadcast” are: **non-proprietary decoder, no encryption and no contractual relationship** – which renders “revenues earned from providing its ‘low latency digital data transmission service’” a commercial impossibility.

⁴ FCC 55-340 (1956), FCC 74-367 (1974), FCC 84-187 (1984), FCC 86-211 (1986)

⁵ FCC 81-585 (1981), FCC 84-301 (1984)

⁶ FCC 97-247 (1997), FCC 98-304 (1999)

⁷ It is noted that § 73.758 allows for “datacasting”, however, such transmission of data must still satisfy the same indicia of broadcast, as further discussed in undersigned’s objections to applications *IHF-C/P-20200427-00001* and *IHF-LIC-20200710-00002*. Regardless, DPA does not appear to claim “subcarrier” authority under § 73.758.

⁸ “Authorizing “Next Generation” Broadcast Television Standard” 32 *FCC Rcd* 9930 (2017) at § 9

2) **Proposed transmitter power levels are insufficient to provide adequate service:**

In its request for waiver of § 73.751(c) requirement of 10 kW **mean** power: DPA claims that:

Technological advances have rendered a minimum power requirement obsolete, and DPA Mac's technological showing demonstrates that it can successfully operate at a much lower power of 2 kW.

DPA further claims:

*[...] system design assures that the SNR level at the receive location (e.g., London) is high enough to meet a standard off-the-shelf DRM receiver (SNR threshold) and guarantees reception quality.⁹
[...] Consistent with the DRM standard, the audio quality is comparable to FM broadcasts, satisfying Section 73.758(c)(3)¹⁰*

DPA provides no evidence for these claims – and it cannot. DPA may be able to transmit its “low latency data” at lower power levels due to its technological advances – but such advances do not apply to DRM, a standardized technology, with off-the-shelf receivers. At proposed power levels, it is physically impossible to meet the claimed “audio quality comparable to FM broadcasts” claimed by DPA.

Furthermore, the claim of “guaranteed reception quality” is patently false, as evidenced by Raft Technologies (DPA’s parent)¹¹ own filings with the public authorities in the United Kingdom, requesting “Very Special Circumstances” to obtain a zoning permission to install a tower in “Green Belt” area near London (where development is otherwise prohibited)¹². In its filings, under the “*Quality of Signal*” subsection, Raft states¹³ [emphasis added]:

[7.10] The aerial site at Ponds Wood was recently erected as a temporary site for experimentation purposes. However, the engineers were surprised and delighted to find that Ponds Wood was a remarkably ‘quiet’ site in terms of radio interference. [...]

[7.17]: The low-level amplitude of shortwave radio signals coming from the US is at a measured level of (typically) minus 80dBm. The average interference level in an area such as South Bucks and Slough is worse/less than minus 50dBm. Under those circumstances, the low-level shortwave is ‘drowned out’. The unique circumstances at Ponds Wood, is that there is an extraordinarily low level of interference (typically only minus 110dBm).

[7.18] it is thought this is for the following reasons. See Appendix 5:

- a. It is a wood and therefore there is little radio activity within it.*
- b. Burnham Beeches is in the vicinity and tends to ‘soaks up’ interference.*
- c. Burnham Beeches does not suffer from a great deal of urban electronic transmission interference.*

Further, in a subsequent email to planning authority, DPA affiliate states:

Failing to grant permission will simply shut it all down, as without a proper receive-site like we have in Ponds Wood Farm, we simply cannot operate.

⁹ Application Narrative, page 4

¹⁰ Application Narrative, page 9

¹¹ Connections between DPA Mac / 3DB Communication / Raft / Ratesu are detailed further below in this objection.

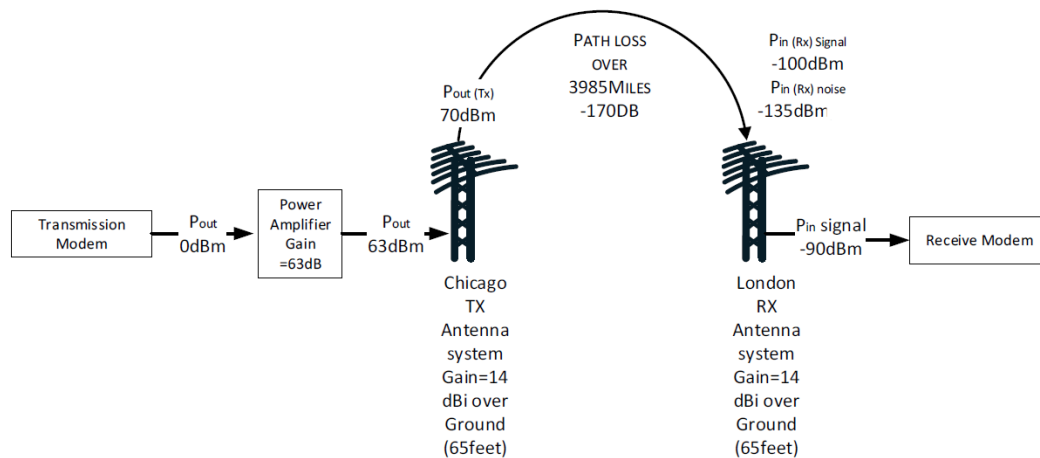
¹² It should also be noted that the tower in question was erected despite the permission being denied by local planning authority, and appeal being dismissed. Further details can be seen at in *Chiltern and South Bucks Planning Authority* case PL/20/0163/FA, <https://pa.chilternandsouthbucks.gov.uk/online-applications/applicationDetails.do?activeTab=summary&keyVal=O45COZESKSD00>

¹³ “Design and Access Statement”, Section 7: “Very Special Circumstances” – the excerpt is included as Attachment 3. Full document can be obtained from the link above.

To summarize above – DPA’s signal can **only** be received **by DPA** in UK, under following conditions:

- Receiver is a full-size Yagi antenna (50 ft across), at a mast at 65ft above ground.
- DPA transmitting **only** the “sideband data” – not DRM broadcast proposed.
- And even then, only at one specific low-noise site – without which DPA cannot operate.

Comparing statements made to UK Planning Authority (above) to the System Diagram in this Application¹⁴ (duplicated below for clarity) and referencing the expected atmospheric noise, following can be seen:



Indeed, the power of “thermal noise” (kTB noise)¹⁵, at 10kHz DRM channel bandwidth is -134 dBm (closely matching -135dBm listed as “Pin (Rx) noise” by DPA). The **peak** power of signal received in London (with isotropic antenna) is approximately -100dBm. Absolute minimum SNR for reliable DRM30 reception at HF frequencies at lowest possible bitrate and most optimistic assumptions¹⁶ is 14.7dB. DPA-claimed “FM-quality” broadcast, which would require further increase of SNR by 5 dB)

It should be noted that § 73.751(c) specifies **mean** power, whereas DPA’s proposed transmitter is rated for 2 kW **peak** power¹⁷. For DRM modulation, “peak to average power ratio” (PAPR)^{18 19} is over 10:1 (10dB), resulting in “peak power” requirement of 100kW. For further calculations, to give benefit of the doubt, the state-of-the-art²⁰ 6dB derating from “peak to average” power will be considered.

¹⁴ Application Narrative, page 4

¹⁵ https://en.wikipedia.org/wiki/Johnson%E2%80%93Nyquist_noise

¹⁶ “Planning parameters for digital sound broadcasting at frequencies below 30 MHz”, ITU-R Rec BS.1615-2 (12/2020), Appendix 2 to Annex 1, page 9, Table 10, “HF propagation”, “Channel Mode 5”

¹⁷ DPA Exhibit 10, “System Block Diagram”

¹⁸ “DRM Handbook – An Introduction and Implementation Guide, Version 5” (5/2020). Section 9.2.4 at page 43-44, available at <https://www.drm.org/wp-content/uploads/2020/05/DRM-Handbook-Version-5.pdf>: “the peak power capability of one example of a 500kW PDM transmitter, when operating as a linear amplifier, is reduced to about 300kW. Thus, the maximum average DRM signal power available is about 30kW”. As another example, application IHF-C/P-20200427-00001 specifies 2xCE-50000WS-HF-GEN2 amplifiers: 5000 watts average, 50000 watts PEP.

¹⁹ “Determination and measurement of the power of amplitude-modulated radio transmitters”, ITU-R Rec. SM.326-7 (1998), available at: https://www.itu.int/dms_pubrec/itu-r/rec/sm/R-REC-SM.326-7-199811-I!!PDF-E.pdf

²⁰ Moghaddamnia, S., Waal, A., Fuhrwerk, M. et al. On the efficiency of PAPR reduction schemes deployed for DRM systems. J Wireless Com Network 2016, 255 (2016). <https://doi.org/10.1186/s13638-016-0747-5>

The “noise margin” above thermal noise (without considering receive antenna gain) is then:

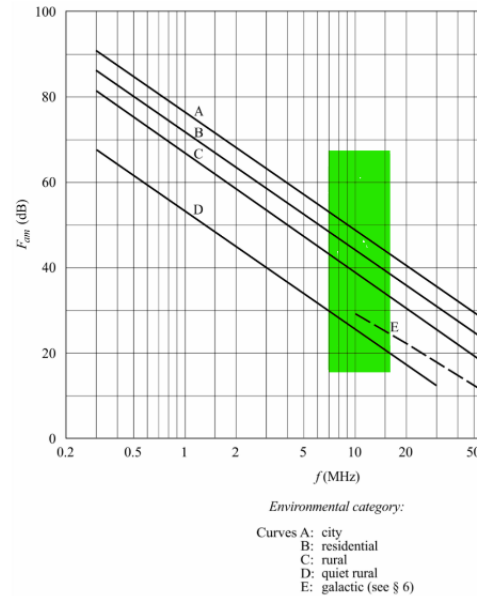
- 100 dBm: Received signal, “peak power”
- 6dB: PAPR derating
- 14.7dB: Minimum Reception SNR (not FM-quality)
- (-134) dBm: Thermal noise floor @ 10kHz bandwidth
- Total noise margin for atmospheric noise: -100-6-14.7+134, or approximately 13dB.

As can be seen from the atmospheric noise chart ²¹ on the right, the power level is insufficient except when paired with a high-directivity receive antenna (>10dB) and only in a “quiet rural” environment – exactly as DPA experienced.

An FCC “fact sheet” for International Broadcast²² states [emphasis and a footnote added]: “The minimum transmitter output power required is 50 kilowatts (kW) and a directional antenna is required with a minimum gain of 10 decibels (dB). Most existing stations have a transmitter power greater than 50 kW and an antenna gain greater than 10 dB in an attempt to overcome the increasing congestion and interference in the limited frequency spectrum allocated to this service²³. As a result, applicants should also submit with their application a propagation analysis, based on the proposed transmitter output power and antenna gain, showing that an acceptable signal strength will reach the intended target area(s).”. DPA neglected to provide said analysis^{24 25}.

This basic analysis²⁶ was completed here, by calculating the probability of *instantaneous* SNR meeting requirements for a Chicago-Paris²⁷ circuit over the next 12 months²⁸. All possible ambiguities were resolved in favor of DPA – in other words, this is the best-case scenario. As it can be seen, there is *barely a single hour of the day with >50% probability of instantaneous SNR meeting requirements*.

FIGURE 39
Median values of man-made noise power
for a short vertical lossless grounded monopole antenna



²¹ “Radio Noise”, ITU-R Rec P.372-14 (08/2019), Figure 39 – highlighted are broadcast frequencies requested by DPA. The chart shows “atmospheric noise” in excess of “thermal noise”.

²² <https://www.fcc.gov/general/building-high-frequency-shortwave-international-broadcasting-station>

²³ It should be noted that in the past decade, while congestion in shortwave spectrum has decreased, it remains a factor. At the same time, the amplitude of “man-made” background noise (and required power to provide same SNR and reception quality) considerably increased (as acknowledged in Ratesu statement above).

²⁴ “Fact sheet” is not a part of FCC Rules, but given the circumstances and waiver request, it would be expected.

²⁵ DPA makes references to “DRM Proof of Concept Report” in its footnotes (fn. 29 and 37). The report is not included as exhibit. Regardless, it cannot substitute for a simple “area propagation analysis”.

²⁶ Proper analysis (with area coverage) would require detailed antenna information, not included by DPA

²⁷ Paris was chosen as a city roughly in the center of CIRAF zone 28 (see §73.703)

²⁸ Attachment 1

The assumptions made in the analysis:

- “required SNR” is set to absolute minimum for DRM modulation, 15 dB (vs the claimed “FM-quality broadcast”, which would require 20dB)
- Man-made noise level is “rural” (line C in the figure)
- Average transmitter power derated by 6dB from 2000W peak power (vs the expected 10dB derating)
- Transmitter antenna has constant 16 dBi gain (DPA claims 10-16dBi without providing supporting documents)
- Antenna vertical pattern (take-off angle) is not considered.
- Ionospheric propagation will continue to improve, sunspot index reaching 35 by April 2022
- Multipath impact on SNR is not considered.
- 100% of amplifier power is used for DRM, no power reserved for “data transmission”

It should be noted that the “best case” analysis above evaluates “instantaneous SNR”. The “broadcast service availability” considers the random fluctuations of SNR as well. Broadcast service availability metrics require “instantaneous SNR” to be above 90% for 50% of time.

It is rather hard to see how “amateur radio”-level transmitters and antennas can support “*FM-quality*” broadcast of “*US financial news*” that would promote national interests. The magnitude of discrepancy raises serious questions whether the claim of “*guaranteeing reception quality*” were made in good faith – or “*technical qualification to provide requested service*” under 73.731(a)(4).

The FCC “International Broadcast” fact sheet states: “*The cost of a station with a minimum transmitter power of 50 kW²⁹ and a directional antenna with a minimum gain of 10 dB, the land for the station, the studios, and the operational cost could easily exceed one million dollars.*” Certainly the \$1,000,000 projected cost of a station that complies with FCC requirements is within reach of DPA’s parent company: Raft received over \$12,500,000 in venture capital financing earlier³⁰, and, within a month of filing instant application, closed an additional private investment round³¹, proclaiming “*The Company intends to utilize the funding to expand its infrastructure footprint across major money centers globally and to continue to grow its latency-sensitive capital markets business*”.

The Commission has stated³², in case of AM broadcaster: “*An AM radio applicant’s specification of its desired facilities amounts to a business judgment, and as a general proposition we will not second-guess that judgment, absent evidence (not present here) that a business decision is allegedly being used to perpetrate a sham.*”. In this case, “business judgement” of equipment specification should be evaluated in context of its inadequacy to provide service claimed.

²⁹ Most components are rated based on *peak* power, which, for DRM modulation is 10x higher than mean power. As such, costs of amplifiers and infrastructure for “50kW peak power” (for analog broadcast) and “10kW mean power” (for DRM30 broadcast) power output are comparable – see footnote 18 above.

³⁰ <https://www.crunchbase.com/organization/raft-technologies>

³¹ <https://www.rblt.com/news/rosenblatt-helps-raft-technologies-a-pioneering-low-latency-network-provider-secure-investment-to-drive-its-next-phase-of-growth>

³² *Alvin Lou Media*, MO&O, FCC 04-6

3) Other waivers are not in public interest

In its request for waiver of Section 73.751(c): DPA claims that [emphasis added].

*Technological advances have rendered a minimum power requirement obsolete, and DPA Mac's technological showing demonstrates that it can successfully operate at a much lower power of 2 kW. Operating at this lower power will increase the efficiency of transmissions and **reduce the likelihood of harmful interference to adjacent band operations**, allowing DPA Mac to maximize use of this spectrum.*

[...]

Finally, DPA Mac's ability to efficiently broadcast this information using lower power: (1) maximizes use of this spectrum by allowing DPA Mac to transmit data using PLMR spectrum that would otherwise lie fallow due to adjacent-channel rolloff from typical IHF facilities operating higher power; and (2) reduces the threat of interference to other users of the spectrum.

This is not how it works. This is not how it works at all. The above statements

- misstate the purpose of 73.751,
- misstate the “likelihood of interference” for shortwave broadcast, and
- misunderstand international regulation of broadcast service.
- makes puzzling/unsubstantiated claims about PLMR (Part 90) spectrum
- makes puzzling claims about “adjacent-channel roll-off”

Because of the characteristics of short-wave propagation, **any** transmission at a broadcast frequency has nearly-worldwide propagation and potential for interference – which is why frequencies are coordinated internationally by “High Frequency Co-Ordination Conference”³³ (HFCC), a sector member of ITU – and result in the “HF Broadcasting Schedule”, an ITU-status document. Major changes of the schedule take place bi-annually (due to seasonal changes of shortwave propagation)³⁴, and FCC staff represents the interests of US broadcasters in HFCC coordination – using the licensee-requested bands and hours of operation as guidance.

Reducing transmitter power makes it *harder* to coordinate. Unlike conventional services (PLMR, microwave), there is no “presumption” for a broadcaster to maintain its frequency assignment every season. Every broadcaster is treated equally (regardless of when they initially started operation), and the coordination criteria is to guarantee, for all combinations of transmitters and intended receive areas, that “Signal / Total Interference” ratio is sufficient to provide intended service.³⁵

The problem is not interference *from* DPA to other broadcasters. The problem is interference *to* the marginal DPA signal from other broadcasters, who will be restricted from using such frequencies. For HFCC coordination purposes, there is no concept of “accepting interference”. Additionally, “accepting” interference (and thus, losing service) will defeat the “public interest” of international broadcast.

³³ <http://www.hfcc.org/>

³⁴ §73.702, also *DRM Handbook, supra*, p37: “For the HF bands above 5900 kHz, all DRM broadcasts are coordinated in accordance with Article 12 of the ITU-R Radio Regulations - the 6 month scheduling procedure - in the same way as for analogue broadcasts”

³⁵ “Radio-frequency protection ratios in LF, MF and HF broadcasting”, *ITU Rec BS.560-4 (1997)*, available at https://www.itu.int/dms_pubrec/itu-r/rec/bs/R-REC-BS.560-4-199710-I!!PDF-E.pdf

4) **Application is defective per § 1.934 (d)**

- a) DPA requests “necessary bandwidth” of 58kHz and provides emission code (58K0W7D)³⁶, that does not comply with DRM emissions specified in § 73.758 (c)(1). DPA did not request a waiver of this rule.
- b) DPA’s requested “center frequencies” do not conform to the “*5kHz raster currently in use for HFBC bands*”³⁷. DPA did not request a waiver of this rule.
- c) Form 309, Section V, Box 7(b) states “Applicants for international broadcasting stations should submit all pertinent data regarding antenna characteristics in accordance with the requirements of the International Telecommunication Union’s Radio Regulations”.

DPA lists four antennas on Form 309, Section V. However, the supporting Exhibit 11 (“Antenna structure”) only shows two. DPA did not provide any of the antenna patterns, provided no information whatsoever on two out of four proposed antennas, and provided only the very basic mechanical specifications (and an assembly manual) for the other two antennas. Only a single antenna exhibit shows expected gain. Exhibits do not indicate which amplifier and antenna is planned to be used for each frequency band.

- d) Form 309, Section V, Box 4.2 requires “transmitter locations and call signs of all known radio stations [...] within 2 miles of proposed transmitter”. DPA listed “None”. FCC Site/Market query identifies twelve, **including two in “Public Safety Pool”**: WPWJ640 and WQAL920.
- e) The antenna exhibits provided do not demonstrate the claimed compliance³⁸ with § 73.753 requirements of “*radiated power in the maximum lobe toward the specific zone or area of reception intended to be served shall be at least 10 times the average power from the antenna in the horizontal plane. Radiation in all other directions shall be suppressed to the maximum extent technically feasible*”.

The above requirement, for frequencies below 10 MHz, cannot be **possibly** satisfied with antennas of type and dimensions proposed by DPA. It should be noted that the 10dB “*horizontal directivity*” required in above paragraph is *not* the same as “10 dBi gain”³⁹.

Defects (c) and (d) above render the application “incomplete” per § 1.934 (d)(1), due to missing material information necessary for FCC evaluation of the application. Defects (a), (b) and (e) above violate § 1.934 (d)(2), by requesting authorization not in compliance with the Rules.

³⁶ Form 309, Section V, box 2. Repeated in Narrative, page 13

³⁷ DPA chose to, but was not required to provide this information, per § 73.3516

³⁸ Narrative, page 8

³⁹ For example, “monopole antenna” over good ground has a gain of 5.2dBi, yet has no horizontal directivity.

5) DPA Mac LLC (US), 3DB Communication Inc (US), Raft Technologies Ltd (Israel) and Ratesu Ltd (UK)

DPA self-certified that none of the pro-forma § 310(b)(4) factors apply. However, it is well-established precedent that “indirect” control prohibited by § 310(b)(4) is not solely about “pro forma ownership” but also includes “de facto” control and must consider circumstances of parties’ economic relationship.

According to public records, filings before the Commission, and public statements by Raft executives, DPA appears to be *indirectly* controlled by Raft Technologies – a company registered in Israel. As such, per §310(b)(4), as entity “indirectly” controlled by aliens, it is not eligible for broadcast license without a §310 waiver.

The companies below have interlocking relationships:

- 1) DPA Mac LLC (Delaware LLC): Applicant in this proceeding
- 2) 3DB Communication Inc (Delaware Corporation): Licensee of Part 5 licenses
- 3) Ratesu Limited (UK Private Limited Company): Applicant in UK zoning proceedings
- 4) Raft Technologies Ltd (Israeli Corporation): Controlling, and revenue-receiving entity.

It is unquestionable that Ratesu Limited (applicant in UK zoning proceedings) is owned by Raft Technologies:

- Incorporation Certificate lists Raft as sole shareholder ⁴⁰
- All communications to local council authorities are signed by Raft employees.

It is also unquestionable that 3DB is controlled by Raft and affiliated aliens:

- Sole Director of 3DB is Idan Moskovich ⁴¹, a British National ⁴²
- Idan Moskovich also is the “Authorized Representative” and signatory of “Part 5” license renewal applications⁴³ filed by 3DB

Indeed, at a public trade show presentation⁴⁴, Haim Ben-Ami, the CEO of Raft Technologies, stated: “we developed everything in-house [...], **we own [the] links**, we have them working for more than a year, [...] and of course with all relevant regulation and so forth. [...] this is the footprint that we have in each such venue and each such place, **we have a team that supports our activity**”. Per its own press releases, Raft exercises operational control over 3DB’s existing network⁴⁵, and operates the Network Operation Center (NOC).⁴⁶

DPA (applicant herein) claims to be effectively “successor-in-interest” of 3DB (controlled by Raft), as per its own statements in application:

“3DB or a successor company will seek an international broadcast service license for use of the HF spectrum once its market trial and technical analyses are complete”⁴⁷

⁴⁰ Ratesu Limited: Incorporation filing (Attachment 2A)

⁴¹ 3DB Communication - Delaware Franchise Tax Report, 2019 (Attachment 2B)

⁴² Ratesu Limited: Incorporation filing (Attachment 2A)

⁴³ FCC File Nos: *0188-EX-CR-2021* and *0152-EX-CR-2021*

⁴⁴ Trading Show NYC, 9/25/2019, archived at <https://www.youtube.com/watch?v=NXAMTsQKvwU&t=73s>

⁴⁵ Such control over 3DB, a “Part 5” licensee, does not violate Commission Rules.

⁴⁶ <http://www.raft-tech.com/raft-articles/short-wave-links-for-trading-during-the-corona-virus-crises/>

⁴⁷ Application Narrative, footnote 7

“3DB or a successor company intends to pursue [...] a permanent, commercial license using the international HF bands.”⁴⁸

“DPA Mac proposes to continue offering the services that 3DB has provided pursuant to its experimental application for a market trial.”⁴⁹

Raft’s control continues: the signatory of all exhibits attached to DPA’s instant “Part 73” application is Tamir Ostfeld⁵⁰ – Deputy CEO and COO of Raft Technologies. Furthermore, DPA’s “Part 73” application lists identical equipment as 3DB’s “Part 5” application.

DPA’s business model is funding commercial-free DRM broadcast by selling “low-latency” data transmission services. However, DPA is not engaged in this activity – Raft Technologies is. Quoting the application:⁵¹

The proceeds raised from offering the data-service transmissions—which involve a low-power, low-latency digital data transmission service provided to private investors, including small- and medium sized firms—will provide the necessary financial support to deploy and sustain the HF broadcasting business for the benefit of the public now and into the future.

Compared to the Raft website:⁵²

RAFT Technologies develops and deploys a wireless ultra-low latency, transcontinental communications system. The system is highly suitable for financial markets and in particular for HFT – algorithmic trading firms. It enables Ultra-low latency communication between different exchanges and delivers data directly between exchange co-locations with the lowest latency available on the market today. [...]

We have intimate knowledge on how to combine the essential components of all legal, location and technological aspects of communications systems.

As a threshold matter, Commission precedent concerning “de facto control” and “real-party-in-interest” as it relates to §310(b) for license transfers under §310(d) is clearly applicable to the initial application where the same §310(b) factors are at stake.

Raft is the controlling entity behind DPA (as successor of 3DB), and this control extends beyond “mere possibility”⁵³ - whether the indicia of control are evaluated under the six-part *Intermountain Microwave* standard applicable to “common carriers”, or three-part standard (programming, personnel, financing) applicable to broadcasters under the *Cablecom General*⁵⁴ standard.

In the instant case, the “programming” (*over-the-air, commercial-free audio broadcast of U.S. financial news and similar information to populations outside of the United States that have access to a standard, commercial, off-the-shelf HF receiver*) is a sideshow in commercial terms. As the broadcast is “commercial-free”, whether DPA sources such programming through Raft does not affect DPA finances. The only revenue of 3DB (or its successor, DPA) will come from Raft, Raft staff signs DPA’s technical exhibits, Raft operates 3DB’s NOC.

⁴⁸ Application Narrative, footnote 59

⁴⁹ Application Narrative, page 5

⁵⁰ <http://www.raft-tech.com/the-team/>

⁵¹ Application Narrative, page 3

⁵² <http://www.raft-tech.com/solution>

⁵³ *WLOX Broadcasting v FCC*, 260 F.2d at 714 (D.C. Cir 1958)

⁵⁴ *Cablecom General, Inc.*, 87 FCC 2d 784, 788-90, *WGPR MO&O*, 10 FCC Rcd 8140

FCC has recently liberalized the §310(b) regime for broadcasters, permitting up to 100% foreign ownership⁵⁵, by requesting declaratory ruling. As part of the order, Commission added specific rules on voting interest and capital thresholds – however, there is no indication that Commission intended to abandon the concept of “*de facto*” control – in fact, the new rules specifically state: “**Control includes actual working control in whatever manner exercised and is not limited to majority stock ownership. [..]**”⁵⁶

Given Raft’s considerable resources, history of interactions with the Commission, and well-regarded counsel, it is puzzling why Raft attempted to conceal its ownership. Regardless, if this petition is not dismissed on other grounds, the circumstances support finding question of fact, and a designation of hearing under §73.3593, based on precedents set by Commission *Entertainment Media Trust*⁵⁷, *Astroline*⁵⁸, *El Jordan*⁵⁹ and *Sinclair*⁶⁰, on the following questions:

- (a) *de facto* control of DPA
- (b) whether Raft is a real-party-in-interest to the pending application
- (c) whether DPA’s filings constitute “lack of candor”
- (d) whether DPA had reasonable basis to believe, **at the time of its application**, of truthfulness of self-certifications provided in its narrative
- (e) whether the totality of technical omissions and mistakes render DPA “technically unqualified” under 73.731(a)(4)

Further, DPA should be required to show evidence of availability of programming, financial qualifications, its ownership, and relationship with Raft, based on § 73.3613.

It should be further noted that this application is inextricably connected, and was used as justification, of an application by 3DB *0188-EX-CR-2021* (granted 04/20/2021), after the application *0152-EX-CR-2021* for renewal of call sign WI2XXG under “market trial” provisions was dismissed.

Summary:

The application appears to be filed so Raft-affiliated entities can continue engaging in data transmission services – after the “Part 5” license renewal was denied by the OET.

DPA may be able to address multiple deficiencies in its application, re-file using equipment appropriate for “International Broadcast” service, and receive a §310(b)(4) waiver despite its initial lack of candor. However, the fundamental issue will remain: **Part 73 Subpart F simply does not permit the commercial point-to-point “sideband” communications service proposed by DPA.**

⁵⁵ *Review of Foreign Ownership Policies for Broadcast, Common Carrier and Aeronautical Radio Licensees*, FCC 16-128

⁵⁶ § 1.5000(d)(3)

⁵⁷ MB Docket 19-156

⁵⁸ *Astroline Communications Company v FCC*, 87 F.2d 1556 (D.C. Cir 1988)

⁵⁹ *Ministerios El Jordan*, EB Docket 18-239, DA 18-834

⁶⁰ *Sinclair Broadcast Group, Inc. and Tribune Media Company, Applications for Transfer of Control of Tribune Media Company and Certain Subsidiaries, WDCW*, FCC 18-100, MB Docket 17-179

Objector hereby discloses commercial relationship with one of Part 5 licensees for similar services, and as such, commercial relationship with a competitor of DPA/3DB/Raft.

Respectfully submitted,


A handwritten signature in black ink, appearing to read "Alex Pilosov". The signature is stylized and cursive.

Alex Pilosov
Shortwave Solutions LLC
(917) 407-8664
alex@shortwave-solutions.com

CERTIFICATE OF SERVICE

I certify that a copy of the foregoing Informal Objection has been served upon the following via electronic means this 22nd day of April 2021 to the following party:

Trey Hanbury
Hogan Lovells US LLP
555 13th St NW
Washington DC 20004
trey.hanbury@hoganlovells.com

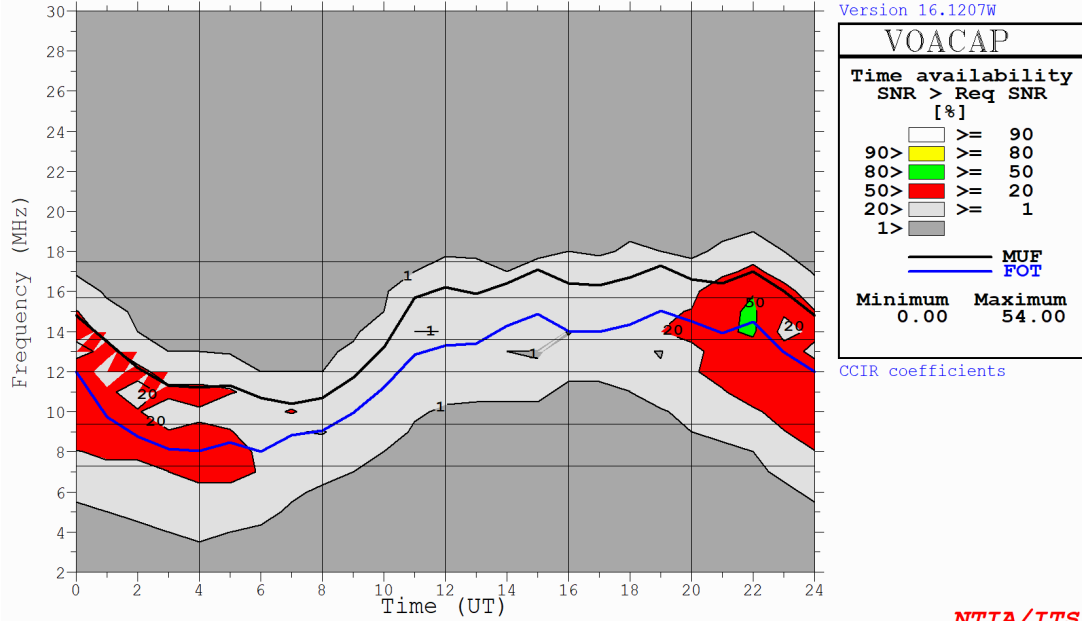
A handwritten signature in black ink, appearing to read 'Alex Pilosov', written in a cursive style.

/s/ Alex Pilosov

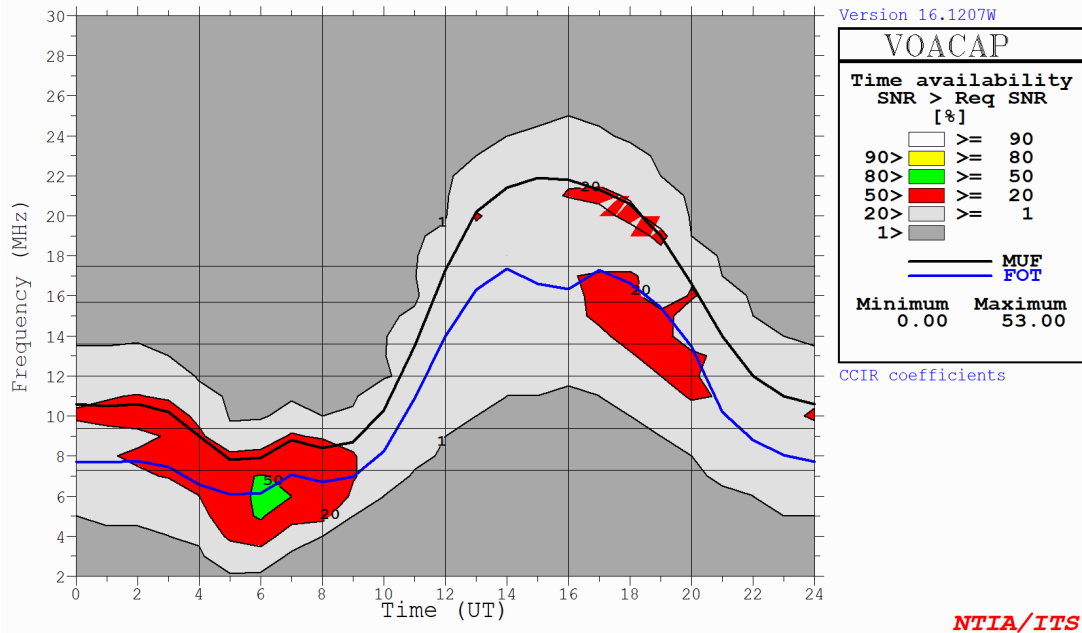
Alex Pilosov

ATTACHMENT 1:
RADIO PROPAGATION
AND AVAILABILITY CHARTS

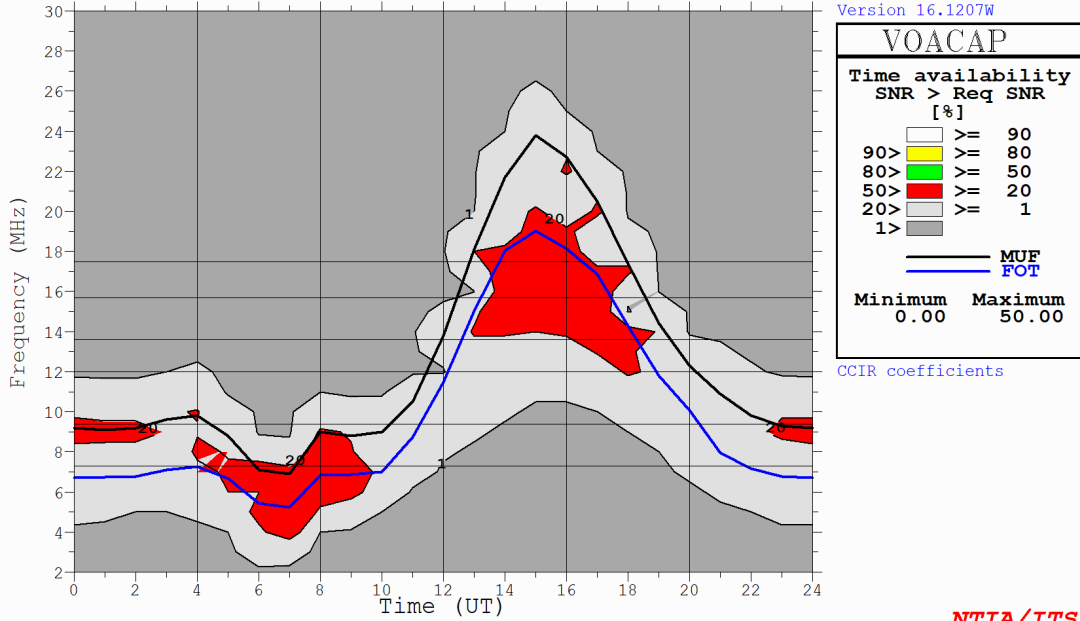
Jul 2021 SSN = 14. Minimum Angle= 0.100 degrees
 CHICAGO PARIS AZIMUTHS N. MI. KM
 41.88 N 87.62 W - 48.87 N 2.33 E 49.57 300.50 3589.2 6646.7
 XMTR 2-30 2-D Table [default\const16.VOA] Az= 49.6 OFFaz=360.0 0.500kW
 RCVR 2-30 2-D Table [DEFAULT\SWWHIP.VOA] Az= 0.0 OFFaz=300.5
 3 MHz NOISE = -150.0 dBW REQ. REL = 50% REQ. SNR = 55.0 dB
 MULTIPATH POWER TOLERANCE = 0.0 dB MULTIPATH DELAY TOLERANCE = 0.000 ms



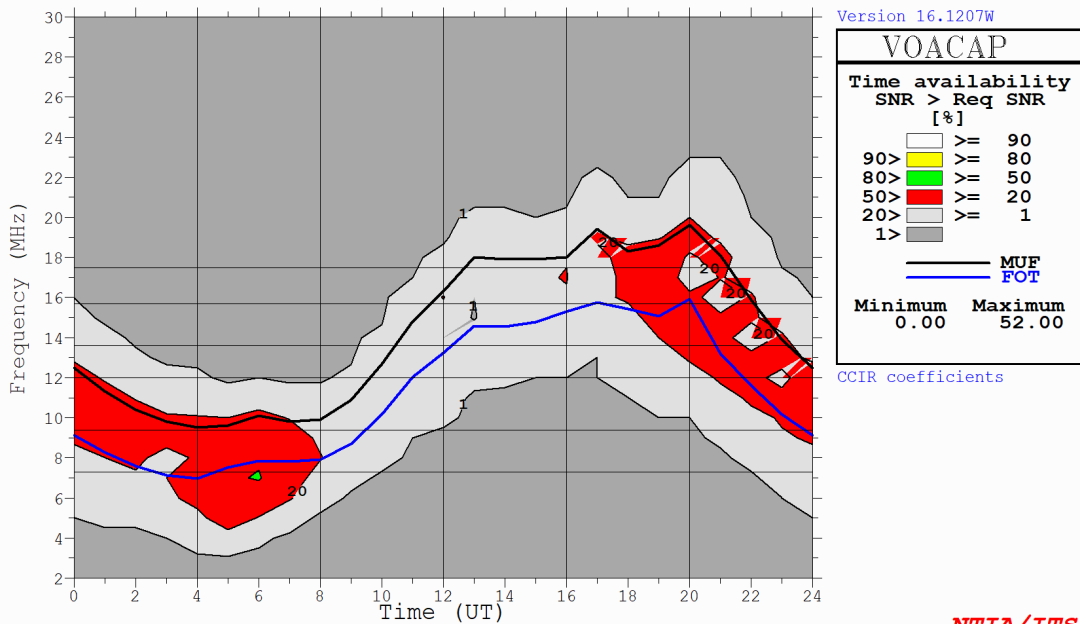
Oct 2021 SSN = 21. Minimum Angle= 0.100 degrees
 CHICAGO PARIS AZIMUTHS N. MI. KM
 41.88 N 87.62 W - 48.87 N 2.33 E 49.57 300.50 3589.2 6646.7
 XMTR 2-30 2-D Table [default\const16.VOA] Az= 49.6 OFFaz=360.0 0.500kW
 RCVR 2-30 2-D Table [DEFAULT\SWWHIP.VOA] Az= 0.0 OFFaz=300.5
 3 MHz NOISE = -150.0 dBW REQ. REL = 50% REQ. SNR = 55.0 dB
 MULTIPATH POWER TOLERANCE = 0.0 dB MULTIPATH DELAY TOLERANCE = 0.000 ms



Jan 2022 SSN = 29. Minimum Angle= 0.100 degrees
 CHICAGO PARIS AZIMUTHS N. MI. KM
 41.88 N 87.62 W - 48.87 N 2.33 E 49.57 300.50 3589.2 6646.7
 XMTR 2-30 2-D Table [default\const16.VOA] Az= 49.6 OFFaz=360.0 0.500kW
 RCVR 2-30 2-D Table [DEFAULT\SWWHIP.VOA] Az= 0.0 OFFaz=300.5
 3 MHz NOISE = -150.0 dBW REQ. REL = 50% REQ. SNR = 55.0 dB
 MULTIPATH POWER TOLERANCE = 0.0 dB MULTIPATH DELAY TOLERANCE = 0.000 ms



Apr 2022 SSN = 35. Minimum Angle= 0.100 degrees
 CHICAGO PARIS AZIMUTHS N. MI. KM
 41.88 N 87.62 W - 48.87 N 2.33 E 49.57 300.50 3589.2 6646.7
 XMTR 2-30 2-D Table [default\const16.VOA] Az= 49.6 OFFaz=360.0 0.500kW
 RCVR 2-30 2-D Table [DEFAULT\SWWHIP.VOA] Az= 0.0 OFFaz=300.5
 3 MHz NOISE = -150.0 dBW REQ. REL = 50% REQ. SNR = 55.0 dB
 MULTIPATH POWER TOLERANCE = 0.0 dB MULTIPATH DELAY TOLERANCE = 0.000 ms



ATTACHMENT 2A:
RATESU LIMITED,
INCORPORATION CERTIFICATE

FILE COPY



**CERTIFICATE OF INCORPORATION
OF A
PRIVATE LIMITED COMPANY**

Company Number **11565914**

The Registrar of Companies for England and Wales, hereby certifies that

RATESU LIMITED

is this day incorporated under the Companies Act 2006 as a private company, that the company is limited by shares, and the situation of its registered office is in England and Wales

Given at Companies House, Cardiff, on **12th September 2018**



* N11565914J *



Companies House



THE OFFICIAL SEAL OF THE
REGISTRAR OF COMPANIES



Companies House

IN01_(ef)

Application to register a company



Received for filing in Electronic Format on the: **12/09/2018**

X7ECI3QH

Company Name in full: **RATESU LIMITED**

Company Type: **Private company limited by shares**

Situation of Registered Office: **England and Wales**

Proposed Registered Office Address: **87-91 NEWMAN STREET
LONDON
UNITED KINGDOM W1T 3EY**

Sic Codes: **61100
61200**

Statement of Capital (Share Capital)

| | | | |
|-------------------------------|-----------------|---------------------------------|----------|
| <i>Class of Shares:</i> | ORDINARY | <i>Number allotted</i> | 1 |
| <i>Currency:</i> | GBP | <i>Aggregate nominal value:</i> | 1 |
| <i>Prescribed particulars</i> | | | |

THE SHARES HAVE ATTACHED TO THEM FULL VOTING, DIVIDEND AND CAPITAL DISTRIBUTION (INCLUDING ON WINDING UP) RIGHTS; THEY DO NOT CONFER ANY RIGHTS OF REDEMPTION.

Statement of Capital (Totals)

| | | | |
|------------------|------------|---------------------------------------|----------|
| <i>Currency:</i> | GBP | <i>Total number of shares:</i> | 1 |
| | | <i>Total aggregate nominal value:</i> | 1 |
| | | <i>Total aggregate unpaid:</i> | 0 |

Initial Shareholdings

Name: **RAFT TECHNOLOGIES LTD.**

Address **25 HABARZEL ST.
TEL AVIV
ISRAEL
6801294**

Class of Shares: **ORDINARY**

Number of shares: **1**

Currency: **GBP**

*Nominal value of each
share:* **1**

Amount unpaid: **0**

Amount paid: **1**

ATTACHMENT 2B:
3DB COMMUNICATION,
DELAWARE FRANCHISE TAX REPORT
(2019)

State of Delaware

Annual Franchise Tax Report

| | | | |
|--|----------------------------------|---|--------------------------------|
| CORPORATION NAME 3DB COMMUNICATION INC. | | | TAX VR. 2019 |
| FILE NUMBER 6250550 | INCORPORATION DATE 2017/01/01 | RENEWAL/REVOCAION DATE | |
| PRINCIPAL PLACE OF BUSINESS 1313 N. MARKET STREET, SUITE 5100 WILMINGTON, DE 19801 | | | PHONE NUMBER (866) 758-6620 |
| REGISTERED AGENT PHS CORPORATE SERVICES, INC. 1313 N MARKET ST STE 5100 WILMINGTON DE 19801 | | | AGENT NUMBER 9183846 |
| AUTHORIZED STOCK BEGIN DATE 2017/01/01 | END DATE | DESIGNATION/ STOCK CLASS COMMON | NO. OF SHARES 5,000 |
| | | PAR VALUE/ SHARE .0100000000 | |
| OFFICER | NAME | STREET/CITY/STATE/ZIP | TITLE |
| | | THE CORPORATION HAS NO OFFICERS | |
| DIRECTORS | NAME | STREET/CITY/STATE/ZIP | |
| | IDAN MOSKOVICH | 9TH FLOOR, BERKELEY SQUARE HOUSE, MAYFAIR LONDON W1J6BR GB | |
| <p>NOTICE: Pursuant to 8 Del. C. 502(b), If any officer or director of a corporation required to make an annual franchise tax report to the Secretary of State shall knowingly make any false statement in the report, such officer or director shall be guilty of perjury.</p> | | | |
| AUTHORIZED BY (OFFICER, DIRECTOR OR INCORPORATOR) IDAN MOSKOVICH | | DATE 2020/02/12 | TITLE DIRECTOR |
| 9TH FLOOR, BERKELEY SQUARE HOUSE, MAYFAIR LONDON, W1J6BR GB | | | |

ATTACHMENT 3:
RAFT TECHNOLOGIES,
DESIGN AND ACCESS STATEMENT
FOR PLANNING PERMISSION
(EXCERPT)

7. Very Special Circumstances

THE CIRCUMSTANCES TO OUTWEIGH THE HARM

- 7.1 There now follows an explanation of the value and significance of the data transmission that Raft Technologies provide for financial data transmission services from the USA to Europe.
- 7.2 At the present time, Raft Technologies have multinational clients and database centres at Frankfurt and London.
- 7.3 Currently, the two competitive financial centres are being used as alternatives to the other as and when necessary, according to a number of different factors.
- 7.4 In Frankfurt, there is the equivalent digital Data Receiver Mast to the Ponds Wood site. This is a shortwave receiving station which then retransmits data via a direct line of sight - microwave link to the financial centre within Frankfurt city.
- 7.4 In the case of the UK, similar to Germany, the shortwave signal is transmitted over the ionosphere (10m to 49m wavelength band) and arrives at the Ponds Wood site – in a similar way to the site near Frankfurt.
- 7.5 The Ponds Wood aerial is currently operational and sends a signal using a direct line of sight link, via microwave, to Buckingham Avenue, Slough. This data is then sent onto the City of London by microwave link and arrives with the multinational financial organisations that have commissioned Raft Technologies to provide this data.
- 7.6 The advantage of the shortwave transmission from the US is that it is milliseconds faster than other methods of transmission (e.g. under ocean cable transmission).

These milliseconds give the competitive edge. It may be difficult to comprehend the significance but these automated transactional procedures work in milliseconds. To make an automatic transaction milliseconds earlier than a competitor is extremely valuable to the financial institutions and companies that use Raft Technologies' services.

Quality of Signal

- 7.7 In Frankfurt, the present site arrangement for receiving the shortwave signal is only 60% reliable. In London (using the Ponds Wood site at present) this reliability is in excess of 70%. This is due to the unique characteristics of the Ponds Wood location. This gives the London transmission route a substantial competitive advantage over the Frankfurt route. As a result, it is used more than the Frankfurt site.
- 7.8 However, research is currently underway to investigate the improvement of the Frankfurt site. It is understood that the German planning system is efficient and that, if an improved site is found, this would make the change of location a relatively simple planning issue.
- 7.9 If this site is secured, there will be no necessity to spend time and money on any further investigations to improve the Frankfurt site.
- 7.10 The aerial site at Ponds Wood was recently erected as a temporary site for experimentation purposes. However, the engineers were surprised and delighted to find that Ponds Wood was a remarkably 'quiet' site in terms of radio interference. As a result, this has given the UK/London transmission route a very substantial advantage over Frankfurt.
- 7.11 **This bring into sharp focus the question of the UK being in direct competition with Germany and the EU to provide financial services in a faster, more efficient and more competitive manner.**
- 7.12 Further, Prime Minister Johnson has announced that there should be a relaxation of planning restrictions and/or an extension of Permitted Development Rights for communications technology.

- 7.13 This temporary test site, because it has been proven to be so successful, is now the subject of this Planning Application.
- 7.14 This Planning Application is for a temporary proposal and is retrospective. The reason for the site already being operational is due to the urgency to establish the superiority of the UK route. This has become the pivotal point in Raft Technologies world-wide network, due to the excellent and unique radio characteristics of this site
- 7.15 If there was a delay or failure to secure planning permission for this site, the new Frankfurt site could to be found to be superior. In that case, then the UK site would probably be abandoned. Unfortunately, that will mean that all the financial services relating to the US transactions would go to Frankfurt from thereon.
- 7.16 If this Application is granted, then Raft Technologies will look to invest and develop more sites within the UK. This becomes more of an international competitive issue, sending a message to multinational companies that the UK is “open for business” and does not place bureaucratic obstacles in the way of progress.
- 7.17 The technical issues are as follows:
1. The low-level amplitude of shortwave radio signals coming from the US is at a measured level of (typically) minus 80dBm. The average interference level in an area such as South Bucks and Slough is worse/less than minus 50dBm. Under those circumstances, the low-level shortwave is ‘drowned out’. The unique circumstances at Ponds Wood, is that there is an extraordinarily low level of interference (typically only minus 110dBm).
- 7.18 it is thought this is for the following reasons. See **Appendix 5**:
- a. It is a wood and therefore there is little radio activity within it.
 - b. Burnham Beeches is in the vicinity and tends to ‘soaks up’ interference.
 - c. Burnham Beeches does not suffer from a great deal of urban electronic transmission interference.

7.19 In conclusion, the unusual situation with this site is that this small insignificant temporary aerial mast is pivotal to an extremely important international, financially competitive opportunity for the UK.

7.20 These Very Special Circumstances are important for the UK to be seen as a progressive country that understands the need for international communications technology.

8. Conclusions

8.1 This proposal is for a small, temporary mast and data equipment station, for a three-year term. The harm is minimal, due to the temporary period and the minimal amount of equipment.

8.2 The minimalistic appearance of the site belies the effect of the loss of the international financial business for the UK, by this site ceasing to operate. These financial operations and the value to the UK as a country “open for international business”, are the Very Special Circumstances that outweigh very heavily against the minimal harm.