Leidos Public Submission

in Response to the ACMA's Draft Five Year Spectrum Outlook 2026-31 and 2026-27 Work Program

Prioritisation of the Expansion of Licensing Authority to Allow Operation of New Generation Millimeter Wave Security Scanners

1 May 2026

1 Summary

1.1 The Leidos group (**Leidos**) welcomes the opportunity to provide a submission on the Australian Communications and Media Authority (**ACMA**) draft Five Year Spectrum Outlook (**FYSO**) 2026-31 and 2026-27 Work Program. Leidos is an American defence, aviation security, information technology, and biomedical research company headquartered in Reston, Virginia, that provides scientific, engineering, systems integration, and technical services. Leidos produces millimeter wave (**MMW**) security scanners, including new generation MMW body scanners. Certain Leidos new generation MMW body scanners operate in the 20-40 GHz range (including the **ProVision 3** or **PV3**).

1.2 Leidos welcomes the ACMA's proposal to progress steps towards a review of the *Radiocommunications (Body Scanning – Aviation Security) Class Licence 2018* (**Body Scanner Class Licence**) and appreciates that preliminary scoping enquiries appear to have already commenced.

1.3 Leidos strongly encourages the ACMA to review and update the Body Scanner Class Licence as soon as possible given that:

(a) there has already been an extended delay since new generation MMW body scanners have been developed and commercially available, and outside two trial locations in Tasmania, Australia has been unable to leverage their significant security benefits;

(b) until the Body Scanner Class Licence is updated, Australian airports remain stuck with obsolete technology and increasingly fewer options, adversely impacting this critical sector;

(c) a misalignment persists with aspects of Australia's aviation security framework resulting from the current state of inaction; and

(d) physical security is an increasingly important element of risk mitigation and threat detection for critical infrastructure and other security controlled environments across the board. It is also increasingly important in the context of regulatory compliance, including compliance with the security of critical infrastructure framework.

1.4 Given that preliminary scoping studies appear to have already commenced, Leidos submits that there will be sufficient time for consultation and scoping to be completed between now and the finalisation of the 2026-27 Work Program. On that basis, Leidos requests that the finalised Work Program should formally include a review of the Body Scanner Class Licence as a line item for 2026-27. As part of that review, Leidos urges the ACMA to consider mechanisms that allow for sufficient regulatory flexibility to readily accommodate changes to frequency ranges as new and emergent technologies become available, enabling ongoing optimisation of security outcomes without the need for further time-consuming regulatory amendment. Leidos also requests that the ACMA provide, where appropriate, an indicative pathway for stakeholder consultation on any proposed regulatory changes arising from that work.

1.5 Leidos strongly opposes any adverse change to the ACMA's position in the draft FYSO in relation to body scanners, given the licensing regime is currently impeding the ability for government and organisations to implement the latest technology solutions to address increasingly sophisticated security threats.

Why Leidos is asking for the Body Scanner Class Licence review to be expedited

1.6 In this submission to the 2026-31 FYSO and 2026-27 Work Program Leidos relies on the entirety of its 2025 submission (as **Attachment A** to this submission) which details why:

(a) the evolution of body scanner technology has changed the optimal use of spectrum; and

(b) a review of the Body Scanner Class Licence is in the long-term public interest.

1.7 While the 2025 submission focussed on new generation MMW body scanners in the 20-40 GHz range, Leidos notes that next-generation MMW body scanners are expected to evolve to operate at higher frequencies (including up to approximately 70 GHz) to support enhanced detection resolution and capability.

1.8 Limiting any update to the 20 to 40 GHz range risks creating a near term regulatory gap as these technologies mature. Accordingly, Leidos encourages the ACMA to ensure that the review and update of the Body Scanner Class Licence is sufficiently flexible to accommodate this natural evolution in operating frequencies.

1.9 In addition to the detail set out in Attachment A, there are a number of additional reasons why Leidos considers that the ACMA should prioritise a review the Body Scanner Class Licence by including it as an expedited line item in its 2026-27 Work Program.

Trials at airports have been successful

1.10 Leidos' PV3 has been being trialled at Launceston Airport and Hobart Airport for an extended period with no concerns raised in relation to interference. These trials fundamentally validate the technical analyses previously provided and demonstrate the capacity of the PV3 devices to operate effectively and successfully in real-world conditions and in relatively close proximity to the devices of other spectrum users without issue.

1.11 In relation to Launceston Airport:

(a) Leidos' PV3 scanners have been operating at Launceston Airport under a scientific licence since mid-March 2025. That scientific licence has already been extended on two occasions and currently expires on 2 March 2027.

(b) Leidos' PV3 scanners have been operating from approximately 5 am to 8-10 pm daily with no interference incidents, objections, or complaints.

(c) Leidos has regularly engaged with other users of the relevant frequency range, being the Department of Defence, Viasat, Mobile JV, Optus and Telstra, in advance of each period of testing. Leidos has received zero reports of issues related to interference from stakeholders.

(d) Launceston Airport has provided positive feedback that:[1]

> *"The PV3 is capable of processing at a higher throughput rate when compared to the PV2*
>
> *It achieves a lower false alarm rate, which improves passenger experience by a corresponding decrease in manual searches; and*

[1] Launceston Airport submission to the ACMA's Draft FYSO 2025-30.

Passengers have benefited from being scanned in a more relaxed 'arms down' pose – this has been particularly beneficial for older people and people with mobility issues.

Feedback from the individual operators of the body scanners at Launceston Airport is that they have commented on less sensitive area searches and lower false alarms compared to the PV2."

(e) The trial licence is currently due to expire on 2 March 2027. If alternative arrangements are not put in place, the PV3 will become unavailable to Launceston Airport. This means that it will need to revert to the earlier generation model, if available, adversely impacting the airport's efficiency, customer experience and security.

1.12 In relation to Hobart Airport:

(a) Leidos' PV3 scanners have been operating at Hobart Airport under a scientific licence since 1 September 2025.

(b) Leidos' PV3 scanners have been operating from approximately 5 am to 10 pm daily with no interference incidents, objections or complaints.

(c) Leidos has regularly engaged with other users of the relevant frequency range, being the Department of Defence, Viasat, Mobile JV, Optus and Telstra, in advance of each period of testing. Leidos has received zero reports of issues related to interference from stakeholders.

(d) Hobart Airport has reported that the MMW body scanners have performed well. Hobart has been instrumental in the additional data collection effort, driving improvements in identification of threats and reducing false alarm indications.

(e) The trial licence is due to expire on 31 May 2027. If it is not extended or alternative arrangements are not put in place, at the end of this period Hobart Airport will no longer be able to continue using the new generation MMW scanners and will not receive the benefits with respect to safety (better detection of security threats that are hidden on a person's body and improved detection of non-metallic threats) as well as with respect to the overall passenger experience (higher throughput rate, lower alarm rates and reduced screening time).

1.13 The trials have also allowed Leidos to gather valuable data, which will significantly enhance the PV3's security detection capabilities and improve the passenger screening experience, not only in Hobart and Launceston, but for all potential users of the scanner.

1.14 Launceston and Hobart airports have benefited from state-of-the-art security technology. However, engaging with other airports who may benefit is problematic when no certainty exists about the timeline for this technology to be available for use under the Body Scanner Class Licence.

1.15 Updates to the Body Scanner Class Licence are immediately required in order to:

(a) eliminate the uncertainty Launceston and Hobart Airports face when applying for extensions to their scientific licences; and

(b) facilitate the supply of best-in-class security technology to other airports and critical infrastructure operators throughout Australia.

The expected benefits of prioritisation and timing certainty

1.16 There have historically been a small number of major providers of body scanners at airports in Australia, of which Leidos has been one.

1.17 However, the legacy body scanner currently deployed throughout Australia – the PV2 – is no longer in active production because it was superseded by the new generation PV3 scanner. This has meant that airports running body scanner procurement or replacement processes have a more limited range of devices available to them, that is, the ones with more certain licensing pathways.

1.18 Leidos is grateful that the ACMA is proposing to take steps towards a review of the Body Scanner Class Licence, however, a lack of prioritisation or timing certainty perpetuates market uncertainty that delays technology deployment and discourages market entry and investment planning, particularly in a market where there is limited supplier diversity which is difficult to recover once lost due to extended product lifecycles.

1.19 Leidos urges the ACMA to rapidly prioritise updating body scanner spectrum allocations to allow multiple vendors to compete and limit the risk of inaction inadvertently creating government-induced market concentration. Specifically, prioritisation and timing certainty will:

(a) encourage greater investment in the Australian market by manufacturers of leading security technology; and

(b) facilitate greater choice and value offerings to airports and other critical infrastructure operators.

1.20 Since Leidos' 2025 submission, additional developments point to the sustained security threat level in Australia. In this context, new generation body scanners can play an important role in addressing the following:

(a) proposed reforms[2] to the Critical Infrastructure Risk Management Program Rules under the *Security of Critical Infrastructure Act 2018* (Cth) would impose enhanced security obligations on regulated entities in certain sectors. Notably, the updates to the Rules include enhanced obligations to address:

(i) physical security hazards, including the requirement to implement "appropriate access controls" for access to critical physical components and systems, and to implement "security alarm systems" and other security measures to "deter, detect, delay, deny and defend" those components and systems. It is clear that body scanners can be an important measure to address these requirements; and

(ii) personnel risks. While some of those updates relate to background screening, physical screening is equally important, especially as for many critical infrastructure assets, personnel are the only individuals who are permitted to physically access the asset; and

(b) Australia's terrorism threat level remains "probable"[3] and government agencies including ASIO, ACSC and the AFP are continuing to report on the range of

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[2] https://www.homeaffairs.gov.au/how-to-engage-us-subsite/files/consultation-on-proposed-amendments-to-ministerial-directions-powers-cirmp/consultation-exposure-draft-cirmp-rules.pdf

[3] https://www.nationalsecurity.gov.au/national-threat-level/current-national-terrorism-threat-level

security threats faced by Australia. In particular, ASIO's Corporate Plan[4] speaks to its commitment to "embrac[ing] new technologies" and "keep[ing] in step with rapidly changing technologies and practices". It seems inconsistent that ASIO is adopting latest technologies to address security threats, but airports and critical infrastructure operators cannot do the same when it comes to body scanners.

[4] https://previewapi.transparency.gov.au/delivery/assets/80a82ed1-3e33-027b-b7e0-6493f97f18f8/a7238018-2b3f-4c90-95d9-282d1481bb21/Australian%20Security%20Intelligence%20Organisation%20Corporate%20Plan%202025-26.pdf

ATTACHMENT A TO LEIDOS' SUBMISSION ON THE ACMA'S DRAFT FIVE YEAR SPECTRUM OUTLOOK 2026-31 AND 2026-27 WORK PROGRAM

Leidos Public Submission

in Response to the ACMA's Five Year Spectrum Outlook 2025-30 and 2025-26 Work Program

Request for Expansion of Licensing Authority to Allow Operation of New Generation Millimeter Wave Security Scanners within the 20-40 GHz range

17 April 2025

1 Executive Summary

1.1 The Leidos group (**Leidos**) welcomes the opportunity to provide a submission on the Australian Communications and Media Authority (**ACMA**) draft Five Year Spectrum Outlook (**FYSO**) 2025-30 and 2025-26 Work Program. Leidos is an American defence, aviation security, information technology, and biomedical research company headquartered in Reston, Virginia, that provides scientific, engineering, systems integration, and technical services.[5] Leidos produces millimeter wave security scanners, including a new generation millimeter wave body scanner operating in the 20-40 GHz range.

1.2 In addition to Leidos, there are several suppliers that have existing deployments of current generation security scanners in Australia. There are also other suppliers of new generation millimeter wave body scanners who may supply to Australia if the licensing regime is expanded. The new generation of body scanners developed by Leidos and other original equipment manufacturers (**OEMs**) are designed to address future threats and security requirements.

1.3 Leidos requests that the ACMA includes a review of the current licensing arrangements for body scanners in its final 2025-26 Work Program to facilitate the use of new generation scanners that are not currently eligible to operate under the existing class licensing arrangements.

1.4 The ACMA's spectrum policy is expressly designed to dynamically respond to improvements in technology to further the public interest:

> "*where there is evidence of changing optimal use, it may be necessary to amend the arrangements to enable a new use or better support an existing use. Reviewing spectrum planning arrangements in any band is a key step to ensuring they continue to support optimal use*."

1.5 However, contrary to this express policy statement, the ACMA appears to be prepared – for the third year in a row – to refuse to review potential changes to spectrum requirements that are necessary for the deployment of substantially improved body scanner technology operating in the 20-40 GHz range.

1.6 The ACMA previously committed in 2023 to "*undertake deeper consideration of requests to review the existing arrangements*"[6] for body scanners, and in 2024 it stated clearly that it was "*inclined towards including a review of the existing arrangements under the Radiocommunications (Body Scanning – Aviation Security) Class Licence 2018 in our 2025-26 work plan*".[7]

1.7 Such prior statements were appropriately issued in response to evidence – presented in the past two FYSO proceedings by a range of stakeholders – which demonstrated that substantial improvements to body scanner technology can provide significant benefits to Australian citizens – but only if spectrum licensing arrangements are adjusted to accommodate this improved technology.

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[5] https://www.leidos.com.

[6] ACMA Response to submissions – Draft FYSO 2023-28, October 2023, p 27.

[7] ACMA Response to submissions – Draft FYSO 2024-29, October 2024, p 25.

1.8 In the draft Five Year Spectrum Outlook 2025-30 (**Draft FYSO 2025**), these previous evidence-based statements and commitments have been set aside in favour of an indeterminate possible review in "*a future FYSO*".

1.9 With respect, the ACMA's stated reasoning for setting aside this issue in its current FYSO consultation is not supported by the facts and applicable policy considerations:

(a) While the ACMA states that "*there are numerous suitable body scanner technologies available for use under current body scanner class-licensing arrangements*", the fact is that although these prior generation technologies satisfactorily perform their functions subject to the limits of existing frequency allocations, the prior generation simply do not offer the enhanced performance of next generation technologies in a wider frequency range. In short, there is now body scanner technology available that is more suitable to the changing security landscape, and the ACMA's statement simply sidesteps its regulatory obligation to address the "changing optimal use" presented by new generation technology.

(b) As a practical matter, when a manufacturer develops a new and enhanced model of an existing device, it will typically cease to manufacture the earlier model and, progressively cease to support the provision of parts and maintenance. Over time, unless the Australian licensing regime keeps pace with technological developments, there is a degree of risk that operators of Australian infrastructure may face more limited options for body scanner procurement. Specifically, there are certain prior generation devices operating at Australian airports that are no longer available for purchase because they are obsolete.

(c) While the ACMA states that there are "*trials underway for new technologies*", that fact in no way justifies exclusion of the relevant licensing arrangements from the current FYSO process. To the contrary, ongoing testing of new generation technologies is precisely why the time is ripe to address these critical spectrum issues.

1.10 In summary, Leidos considers that a review of the body scanner class licensing arrangements is warranted because:

(a) (**aviation security**) new generation body scanners offer enhanced security effectiveness and operational efficiency, and provide a solid foundation to address future security threats, in the aviation security context (with minimal risk of harmful interference);

(b) (**other security environments**) body scanners offer enhanced security effectiveness and operational efficiency, and provide a solid foundation to address future security threats, in other controlled indoor locations such as prisons, police stations, corrections facilities, secure data centres, other locations where commercially sensitive or government sensitive activities are undertaken, or in public indoor spaces that may face elevated security threats (with minimal risk of harmful interference);

(c) a review of the *Radiocommunications (Body Scanning – Aviation Security) Class Licence 2018* (**Body Scanner Class Licence**) should be scheduled for this coming year, and not later years, because:

(i) (**regulatory environment**) security is of critical importance not only in the aviation sector, but in other security sectors and for critical infrastructure assets, as reflected in Australia's legislative instruments and policy statements, so a review of the Body Scanner Class Licence at the

earliest opportunity is warranted to allow operators to leverage materially enhanced security technologies sooner;

(ii) (**suitability**) the body scanning devices permitted under the existing Body Scanner Class Licence are not as "*suitable*" as new generation body scanners;

(iii) (**trials successful**) Leidos' trials of its new generation body scanner have been successful and are sufficient to justify a review of the Body Scanner Class Licence;

(iv) (**future trials require a path forward**) while the ACMA indicates that it is "open" to further trials of new technology, it will be difficult for Leidos or any other manufacturer of new generation body scanners to run trials if there is uncertainty about when or if a review of the Body Scanner Class Licence will occur;

(v) (**consistent representations**) it is consistent with the ACMA's public representations over the last two years; and

(vi) (**international harmonisation**) Australia is already falling behind overseas jurisdictions by not considering or authorising next generation body scanners and any delay in a review will see it fall further behind.

1.11 For the above reasons, and set out in greater detail below, the ACMA is requested to reconsider its position and include a review of an expansion of licensing authority for body scanners in the 20-40 GHz range in its final 2025-26 Work Program.

1.12 Leidos submits there is no reasonable countervailing reason for excluding consideration of these issues in this process. Indeed, inclusion of these issues at this stage would be only a small first step that would then trigger further stakeholder consultation and discussion. For the ACMA to simply exclude these issues and not address the critical policy aim of addressing "changing optimal use" in the body scanner industry is contrary to the public interest.

1.13 This is Leidos' public submission in response to the Draft FYSO 2025. Leidos is separately providing a confidential submission that addresses additional points.

2 Request for Inclusion in Final 2025-26 Work Program

2.1 The policies underlying the ACMA's spectrum planning are expressly designed to dynamically respond to improvements in technology to further the public interest. As confirmed by the ACMA in the FYSO 2024-29:

> "… *where there is evidence of changing optimal use, it may be necessary to amend the arrangements to enable a new use or better support an existing use. Reviewing spectrum planning arrangements in any band is a key step to ensuring they continue to support optimal use*."

2.2 While the ACMA's spectrum allocations and licensing scheme governing security scanners have, to date, adequately addressed current generation systems operating in the 24.25-30 GHz and 67-80 GHz frequency ranges, the technology of systems deployed as the front line of defence in aviation security has improved substantially in recent years and now provides

greatly enhanced threat detection as a result of operating within slightly different operating parameters.

2.3 Accordingly, for the reasons outlined in this submission, Leidos requests that the ACMA include consideration of a variation to the current licensing arrangements for security scanners in its final 2025-26 Work Program to facilitate the operation of new generation millimeter wave (**MMW**) scanners:

(a) in an expanded frequency range of 20-40 GHz (replacing the current lower range of 24.25-30 GHz);

(b) at an increased peak power level (compared to the existing Body Scanner Class Licence) in the 20-40 GHz range i.e. a peak EIRP of 0 dBm, noting however that MMW scanners operate at very low power levels overall;

(c) subject to appropriate parameters to avoid the risk of harmful interference, at an expanded range of controlled indoor locations such as prisons, police stations, corrections facilities, secure data centres, other locations where commercially sensitive or government sensitive activities are undertaken, or in public indoor spaces that may face elevated security threats; and

(d) by an expanded range of suitably trained personnel in addition to the existing class of authorised persons,

together referred to as the **Requested Changes**.

2.4 Addressing the licensing of security scanners in a broader frequency range in Australia would be consistent with manufacturing trends and overseas approvals applicable not only to Leidos' equipment, but also to security scanners of other OEMs (discussed in more detail at paragraph 3.2(a) below).

3 Timing

3.1 While the ACMA's band-planning process is made up of 4 stages: monitoring, initial investigation, preliminary planning and implementation, the ACMA's policy allows for accelerated consideration of issues if circumstances warrant it. This approach has proven to be a "*flexible and responsive way of addressing changes in spectrum demand and ensuring the timely delivery of spectrum to market*."[8]

3.2 Leidos therefore requests that the ACMA adopts an approach that will see the issue considered and addressed as early as possible, ideally by including it as a work item in the initial investigation stage of the final 2025-26 Work Program, having regard to the following considerations:

(a) (**International harmonisation**) Adopting arrangements that reflect the Requested Changes is consistent with manufacturing trends in the industry and the policy objectives of international harmonisation and technology standardisation.[9] There is a United States Federal Communications Commission (**FCC**) approval for the operation of Leidos' new generation MMW scanners in the 20-40 GHz range which

[8] FYSO 2023-28 and 2023-24 Work Program, p 7; FYSO 2024-29 and 2024-25 Work Program, p 9; *Radiocommunications Act 1992* (Cth) s 3.

[9] FYSO 2024-29 and 2024-25 Work Program, p 31.

has been in place since 2016. Leidos' new generation MMW scanners are also approved for use in Korea, Thailand, Singapore, Canada, Japan, Iceland and the Dominican Republic. Similarly, certain other non-Leidos new generation MMW scanners in the 10-40 GHz range have also been approved for operation by the FCC.

(b) (**Future availability**) As a practical matter, when an OEM develops a new and enhanced model of an existing device, it will typically cease to manufacture the older model and progressively cease to support the provision of parts and maintenance. Over time, unless the Australian licensing regime keeps pace with international developments, there is a real risk that operators of Australian infrastructure will face more limited options for body scanner procurement. By way of example, Leidos is not in a position to supply new body scanner devices into the Australian market because it no longer manufactures its older device that is capable of being operated under the Body Scanner Class Licence, and its new generation devices cannot be licenced in Australia except on a short-term trial basis. While Leidos does not have any special insights into the upgrade paths for other suppliers of body scanners in Australia, it is reasonable to expect that other providers will be similarly impacted over time.

(c) (**Public interest**) Implementing the Requested Changes will "*contribute to promoting the long-term public interest*"[10] because these technology improvements will, when approved for operation, provide immediate security enhancements for hundreds of thousands of passengers utilising Australia's airports.

(d) (**Supporting new technologies**) Review of the existing arrangements is consistent with the ACMA's approach of continuing "*to review class-licensing arrangements to assess whether regulatory settings can be changed to support new technologies*"[11] and "*support new spectrum uses*".[12]

(e) (**No risk of harmful interference**) Importantly Leidos considers that, operating indoors within appropriate parameters, the new generation MMW scanners present no risk of harmful interference to the existing domestic spectrum environment (set out in more detail in paragraph 4.9 and section 6 below).

4 Addressing the Requested Changes Would Be Consistent with Manufacturing Trends and Overseas Approvals in the Security Scanner Industry

4.1 Addressing the licensing of security scanners in the 20-40 GHz range in Australia would be consistent with manufacturing trends and overseas approvals applicable not only to Leidos'

[10] FYSO 2024-29 and 2024-25 Work Program, p 1 and *Radiocommunications Act 1992* (Cth) s 3.

[11] FYSO 2023-28 and 2023-24 Work Program, p 24.

[12] FYSO 2024-29 and 2024-25 Work Program, p 13.

equipment but also to other scanners manufactured by third party OEMs operating across this frequency range and/or in adjacent frequencies.

4.2 MMW scanner technology is well-recognised and accepted in the area of airport passenger screening. The technology, capable of detecting both metallic and non-metallic threat objects, has become the standard in aviation checkpoint passenger screening.[13]

4.3 These whole-body security scanning systems use radio frequency (RF) imaging technology to detect weapons or contraband carried on a person, including non-metallic objects or explosives, which might otherwise require intrusive manual searches or be missed entirely by existing metal detectors.

4.4 Several suppliers have existing deployments of current generation MMW scanners in Australia pursuant to the Body Scanner Class Licence, which permits operation within the frequency ranges 24.25-30 GHz or 67-80 GHz.[14]

4.5 However, manufacturers are increasingly developing new generation security scanner systems employing millimeter wave technology that operate in alternate frequency ranges – including across the 20-40 GHz range – that are currently not eligible to operate under the existing Body Scanner Class Licence because of their expanded operating frequency range and different EIRP specifications.[15] These developments are designed to enhance the operation of the devices to address future threats and security requirements.

4.6 Leidos' new generation MMW scanners have a range of benefits in comparison to current generation MMW scanners, including increased resolution (by a factor of more than three) which enables better detection of security threats that are hidden on a person's body and improved detection of non-metallic threats which are becoming increasingly common. For example, these new generation MMW scanners:

(a) provide optimal resolution with minimal data distortion, ensuring improved detection of concealed objects;

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[13] With respect to routine operation, for example, Leidos' new generation MMW scanners incorporate two identical vertical antenna masts with circularly polarized transmitting and receiving elements distributed along the two-meter vertical height. The masts are enclosed within a transparent upright cylinder (or portal) measuring approximately 2.4 meters high by 1.5 meters in diameter. Once a passenger or subject steps into the cylinder, the masts rotate around them, triggering a sequence of mmWave samples (see Figure 1 in Annexure 1). The operator (security agent) is typically outside the system, standing at a distance from the exterior of the enclosure. The occupant is interior to the scanner and is required to be in the centre of the interior space in order to obtain accurate scans (see Figure 1 in Annexure 1). The device measures reflections of the radio signals from the subject by taking the large number of spatial sampling points and reconstructing a 3-D holographic dataset. Algorithms are applied to the 3-D dataset to detect objects concealed on the body. The detection results are presented on a generic human figure for the security officer operating the system. During peak operating levels, one unit can scan several hundred passengers per hour.

[14] *Radiocommunications (Body Scanning – Aviation Security) Class Licence 2018* (Cth). For example, Leidos has current generation MMW Scanners operating within 24.25-30 GHz pursuant to the Body Scanner Class Licence, deployed in the following locations: Albury Airport, Darwin International Airport, Devonport Airport, Dubbo Airport, Geraldton Airport, Hobart International Airport, Kalgoorlie-Boulder Airport, Kununurra Airport, Launceston Airport, Onslow Airport and Sydney Airport Terminal 1. The Western Australian Police also operate a Leidos current generation MMW Scanner under an apparatus licence. In addition to Leidos, there are several suppliers that have existing deployments in Australia pursuant to the Body Scanner Class Licence.

[15] See, e.g., United States Federal Communications Commission (FCC) approvals to Liberty Defense Holdings, Ltd. (LDH), FCC Order, ET Docket No. 23-245, DA 25-59 (Rel. January 16, 2025) ("LDH Order"); and Leidos (through its predecessor L-3 Communications Security and. Detection Systems, Inc., FCC Order, ET Docket No. 16-45, DA 16-1075, ¶10 (Rel. November 22, 2016) ("Leidos Order").

(b) decrease false alarm rates, thereby reducing unnecessary invasive pat-downs and delay for customers and the general public;

(c) have a faster processing time, allowing airports and other secure premises to optimise their operational capacity;

(d) reduce calibration requirements to further reduce delay for customers and the general public;

(e) provide improved (gender-neutral) privacy; and

(f) allow a more comfortable and accessible arms down pose for persons in the scanner.

4.7 These manufacturing trends directly address the ever-increasing burden being placed on entities responsible for security, including aviation security. As recently explained by the US Department of Homeland Security, "*In 2024, TSA screened three million people in a single day for the very first time. With unprecedented numbers of travellers passing through airports, S&T is focused on improving the airport experience of the future so passengers can move to their destinations with ease….Millimeter waves can penetrate through fabrics to screen for concealed objects, including non-metallic objects that traditional metal detectors aren't designed to detect. However, the millimeter waves are completely safe as they are 10,000 times less powerful than cell phone signals and don't penetrate the skin.*"[16]

4.8 The MMW scanner technology discussed in this document is intended for indoor applications exclusively. While this technology was originally optimised for indoor aviation security applications, newly developed algorithms and software can now permit such upgraded scanners to be widely implemented in any indoor facility where security is a priority, such as prisons, police stations, secure data centres and other locations where commercially sensitive or government sensitive activities are undertaken, or in public indoor spaces that may face elevated security threats.

4.9 Successful field deployment of new generation MMW scanners in the 20-40 GHz range in Australia pursuant to scientific licences demonstrates the substantial promise of this optimised wide-band technology. In this regard:

(a) Leidos obtained a scientific licence in May 2023 to conduct trials of an earlier configuration of its new generation MMW scanner. This earlier configuration scanner operated with a peak EIRP of -6.97 dBm in the 20-40 GHz frequency range.

(b) Over the course of 2023, Leidos performed demonstrations at its Melbourne office in Laverton, as well as a six month trial. During the trial period, the device was operated for extended periods. For example, in August 2023, the device operated for a substantial proportion of each working day.

(c) Prior to the commencement of each demonstration, and during the trial, Leidos notified stakeholders, including Telstra, Optus, Mobile JV (TPG Telecom), of the monthly testing schedule and the location and times of testing.

(d) There were no issues reported by stakeholders or other third parties at any time during the period of operation of the new generation MMW scanner at Laverton.

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[16] "Reimagining Imaging at the Airport", US Department of Homeland Security, accessed at: https://www.dhs.gov/science-and-technology/news/2025/01/07/feature-article-reimagining-imaging-airport#:~:text=HD%2DAIT%20uses%20non%2Dharmful,aren't%20designed%20to%20detect.

5 Other Factors that Support the Requested Changes

Continuous improvements to aviation security are an express objective of the Australian Government

5.1 In recent years, a number of manufacturers in the aviation security industry have responded to the global imperative of continuously improving aviation security by developing new generation MMW scanners in expanded frequency ranges to provide substantial threat detection enhancements.

5.2 The Australian Government has declared that the technology underlying aviation security must remain state-of-the-art, in order to stay ahead of "*[t]errorist groups [that] are knowledgeable about aviation operations, seek to identify vulnerabilities, and have the capability to mount sophisticated attacks with catastrophic consequences*."[17] This objective was made explicit when body scanners were first introduced into airports:

> "*Australia's aviation security regime has protected travellers and the general public from major incidents to date. However* ***the system must continue to improve and evolve*** *to meet a growing and changing airline industry and ongoing security threats*."[18] (emphasis added)

5.3 In addition, the Australian Government's Aviation White Paper highlights the Australian Government's commitment to "*modernis[ing] screening arrangements for passengers … to reduce cost and delays and improve productivity*".[19]

5.4 Due to their innovative technology, new generation MMW scanners offer a range of passenger benefits and efficiencies to streamline the passenger screening process.

Delivery of substantial safety and performance benefits for a range of sectors

5.5 While MMW scanner technology was initially developed for aviation applications, it may be usefully deployed in any indoor facilities where security is a priority, such as prisons, police stations, secure data centres and other locations where commercially sensitive or government sensitive activities are undertaken, or in public indoor spaces that may face elevated security threats.

5.6 For all of these use cases, implementing the Requested Changes offers numerous substantial benefits to Australia's security arrangements, including improving personal safety and ensuring secure operating environments for enterprise, government and critical infrastructure.

5.7 For example, Leidos' new generation MMW scanners:

(a) provide optimal resolution with minimal data distortion, ensuring improved detection of concealed objects;

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[17] Australian Department of Infrastructure and Transport, "The use of body scanners for aviation security screening in Australia: Privacy Impact Assessment" (**PIA**), p 8.

[18] PIA, p 8.

[19] Australian Government, Aviation White Paper – Towards 2050, August 2024, p 11.

(b) decrease false alarm rates, thereby reducing unnecessary invasive pat-downs and delay for customers and the general public;

(c) have a faster processing time, allowing airports and other secure premises to optimise their operational capacity;

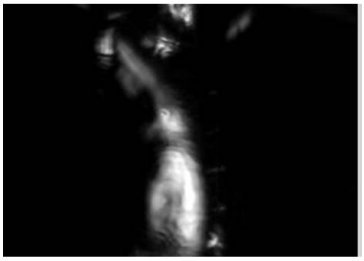
(d) reduce calibration requirements to further reduce delay for customers and the general public;

(e) provide improved (gender-neutral) privacy; and

(f) allow a more comfortable and accessible arms down pose for persons in the scanner.

5.8 The following image of a person's torso is illustrative of the higher resolution images enabled by new generation body scanners, which facilitate better detection of threats and concealed objects. It should be noted that Leidos' new generation body scanners do not display or store raw images of persons. When a new generation body scanner scans a person, the scanned image is automatically reviewed to detect potential threats, however, the raw image is not displayed to the operator, not stored on the device or elsewhere and is deleted. Any potential threats are displayed to the operator superimposed on a gender neutral, generic body shape.

5.9 The following raw image shows the significant enhanced image quality, illumination and depth captured by Leidos' new generation body scanners compared to a current generation body scanner.





5.10 The image uses an 'arms up' position as this is required by current generation body scanners. However, Leidos new generation body scanners permit a more comfortable 'arms down' position.

5.11 The 20-40 GHz range is ideal for security screening of humans because the operating wavelength of the transmitted signals can easily pass through clothing while reflecting from the skin, providing the resolution necessary to enable robust threat detection algorithms without concern for harmful emissions. Reliability enhancements not only protect public safety, but also enable performance of these screenings without causing undue operational delay, which can otherwise occur if manual searches are required to clear uncertain results.

5.12 The 20-40 GHz range has also been identified as the "sweet spot" with respect to frequency selection for these types of security scanners. Higher frequencies above the 20-40 GHz range produce a stronger clothing signature that distorts the reconstructed data. This in turn compromises the effectiveness of the detection algorithms. Operating at frequencies lower than 20 GHz, where there are correspondingly longer wavelengths, reduces the spatial resolution, which compromises the ability to detect some threat objects.

Expanding MMW scanner operating parameters is consistent with and promotes the objectives of Australia's security and spectrum policies

5.13 Adopting the Requested Changes would directly support the policies of the Australian Government in numerous ways.

5.14 First, making the Requested Changes is consistent with the Australian Government's objective of proactively updating its aviation security requirements to protect Australian citizens. As confirmed by the Australian Department of Infrastructure and Transport:

> "*New and emerging techniques employed by terrorists to target the aviation industry mean that the* ***Government must frequently review and revise aviation security measures*** *to ensure these measures adequately address the threat environment.*" [20] (emphasis added)

5.15 Second, the Requested Changes are consistent with the objects of the *Radiocommunications Act 1992* (Cth) (**Radcomms Act**). The ACMA's decision making regarding the management of radiofrequency spectrum must be consistent with and promote the objects of the Radcomms Act which include facilitating the use of spectrum for "*defence purposes, national security purposes and other non-commercial purposes (including public safety and community purposes).*"[21]

5.16 Third, the Requested Changes are consistent with the ACMA's stated intention to consider and foster international harmonisation of spectrum policy. As described by the ACMA:

> "*When we set our spectrum management priorities, we consider a range of relevant matters, including:*
>
> *> domestic and international trends in spectrum uses*
>
> *> developments in international spectrum harmonisation and technology standardisation*
>
> *> evolution of communications technology*
>
> *> the lowest cost and least restrictive approach to achieve policy objectives*
>
> *> feedback received through consultation with stakeholders*."[22]

5.17 With respect to international harmonisation, see the list of jurisdictions where new generation MMW scanners have already been approved at paragraph 3.2(a) above.

5.18 In that context, the ACMA is presented with an opportunity to ensure the same security benefits enjoyed in US and other overseas jurisdictions are approved for travellers in Australian airports and persons at other indoor venues requiring heightened security.

5.19 Fourth, the Requested Changes would directly support the Australian government's strategy to bolster the security of critical infrastructure with an 'all hazards' regulatory approach.[23]

5.20 Entities which are responsible for critical infrastructure assets (including airports and certain data centres) have positive obligations under the *Security of Critical Infrastructure 2018* (Cth)

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[20] PIA, p 9 (emphasis added).

[21] *Radiocommunications Act 1992* (Cth) s 3; FYSO 2024-29 and 2024-25 Work Program, p 8.

[22] FYSO 2024-29 and 2024-25 Work Program, p 31.

[23] Australian Department of Infrastructure, Transport, Regional Development, Communications and the Arts, *Aviation Green Paper* (7 September 2023), p 142.

(**SOCI Act**) to maintain risk management programs under the *Critical Infrastructure Risk Management Program Rules 2023* (Cth) (**CIRMP Rules**).

5.21 Amongst other obligations, the CIRMP Rules require responsible entities to maintain processes and systems for physical security, including to protect against any unauthorised access and to detect and respond to physical security breaches.[24] Leidos submits that the deployment of new generation MMW scanner to indoor environments beyond aviation contexts could therefore play a significant role in enhancing the security of Australia's critical infrastructure.

5.22 Fifth, there is also significant consideration and trialling of body scanner technology in the corrections sector across Australian States and Territories, to minimise the need for strip searching and other privacy-invasive searches.[25] MMW scanners are particularly suited for searching visitors and staff members. Leidos submits that a review of the Body Scanner Class Licence should also consider facilitating the adoption of MMW scanning technology in the corrections, policing and similar security contexts.

The Requested Changes are in the Public Interest

5.23 Adopting the Requested Changes and allowing the use of new generation MMW scanners is in the public interest as it will enable more comprehensive security measures to be taken in critical areas. Australia is now at a "probable" threat level from terrorism[26] and, in order to protect Australians, advances in security must be continually made with the objective of improving public safety.[27]

5.24 In addition, enhancing security of critical infrastructure assets would also improve supply security and service continuity, as any disruption to critical infrastructure assets (and the systems that process the business critical data of those assets) could have serious implications for the community and the country.[28]

6 The Requested Changes Pose No Risk of Harmful Interference

6.1 Leidos acknowledges that any process to assess the Requested Changes would raise a range of potentially complex technical and regulatory matters and require detailed analysis and stakeholder consultation. However, subject to the appropriate operating parameters being determined, Leidos considers that there is no risk of harmful interference from new generation MMW scanners operating indoors.

Both existing and new generation MMW scanners operate at very low power levels

6.2 For scanners operating in Australia within 24.25-30 GHz pursuant to the Body Scanner Class Licence, a radiated power that does not exceed a maximum instantaneous EIRP of

[24] CIRMP Rules, r 11.

[25] See e.g. *Corrective Services (Emerging Technology and Security) and Other Legislation Amendment Act 2023* (Qld), which amended the *Corrective Services Act 2006* (Qld) to expressly permit scanning and imaging searches.

[26] https://www.nationalsecurity.gov.au/national-threat-level/current-national-terrorism-threat-level.

[27] *Radiocommunications Act 1992* (Cth) s 3.

[28] Commonwealth of Australia, *Australian Counter-Terrorism Strategy 2022*, p 20.

- 10 dBm and a maximum power spectral density of -10 dBm per 4 MHz[29] is permitted. As the Australian Department of Infrastructure and Transport has noted:

> "*Millimetre-wave body scanners operate at very low power levels within the radio frequency spectrum. The energy projected by one of these body scanners is 10,000 times less than a mobile phone transmission..."*[30]

6.3 While some new generation MMW scanners operate at higher power levels than the current generation MMW scanners, Leidos submits that the overall impact of this increase would be immaterial where new generation MMW scanners operate indoors within appropriate parameters.

6.4 See paragraph 4.9 regarding successful field trials of new generation MMW scanners in Australia.

Indoor Operation Only

6.5 Similar to existing deployments of MMW scanners, the new generation MMW scanners are proposed to be deployed exclusively indoors. In most cases, a receiver located outside of the building will be protected by attenuation from the building walls. At locations constructed with concrete block, for example, the walls will attenuate signals by at least 35 dB at 20 GHz, and more at higher frequencies.

6.6 As referenced above, indoor operation of the new generation MMW scanners has been approved in the United States by the FCC. In the 2016 Order granting permission for the operation of Leidos' new generation MMW scanner, the FCC concluded (emphasis added):

> *"Based on the information submitted with the waiver request, and the lack of any reported interference from the current generation of [this] equipment, we conclude that the [equipment] poses very little potential for causing harmful interference to authorized operations. We find that the [equipment] when operated in fixed indoor locations would pose very little, if any, potential for harmful interference to licensed operations that are located either outdoors or indoors … At frequencies in the [equipment's] operating range, free space loss is significant. We concur with [the applicant] that this factor, added to building attenuation, can prevent harmful interference to licensed devices operating outdoors."*[31]

6.7 Similarly, in a more recent order for a new generation body scanner manufactured by a third party OEM, the FCC concluded that its indoor operation requirement and other conditions allowed it to:

> "*find that with appropriate operational and technical restrictions to prevent harmful interference to authorized services, granting [the applicant's] request for a waiver does not undermine the purpose of the rules, i.e., to prevent harmful interference to authorized services and offers a significant public interest benefit.*"[32]

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[29] *Radiocommunications (Body Scanning – Aviation Security) Class Licence 2018* (Cth) s 7(2).

[30] PIA, p 18-19.

[31] See Leidos Order, ¶10.

[32] See LDH Order, ¶26.

Very Short Duty Cycle

6.8 A short and efficient duty cycle is desirable in order to reduce risk of any radiofrequency interference.

6.9 In respect of Leidos' new generation MMW scanner, given the 20 GHz operating bandwidth and the system's high sweep speed, the signal will be present in a receiver passband for only 0.005% of the time per MHz of passband (only 0.7 nanoseconds per MHz of receiver bandwidth). For example, a 10 MHz victim receiver will see a worst-case duty cycle of -33 dB during the active scan with this being further reduced by the intermittent scanning utilisation inherent in the operational use of the system. See "Annexure 2 – Duty Cycle Calculations". Intermittent scanning utilisation and a maximum continual throughput would result in one scan every 10 seconds.

6.10 In granting authority for Leidos' new generation MMW scanners, the FCC confirmed that:

> *"… the [equipment's] very low duty cycle signals and fast sweep speeds would further mitigate any potential interference to licensed receivers that operate at much longer transmission time periods in the affected frequency bands. Moreover, the [equipment] would have a faster sweep than the current device. This characteristic will reduce the time that a signal occupies any given frequency band and will further reduce the likelihood of harmful interference."*[33]

6.11 The FCC similarly found a fast sweep rate reduces the potential for harmful interference in approving another new generation MMW scanners under waiver.

Revolving Antenna

6.12 In respect of Leidos' new generation MMW scanner, the device antennas are directional and in rotary motion when transmitting, so any victim receiver will be in the beamwidth for only a fraction of the rotation. This further reduces the energy reaching the receiver. During most use, a subject standing within the portal would further diffuse transmitted energy.

Expansion of MMW scanner licensing arrangements could be implemented with conditions to further ensure no harmful interference

6.13 Additional conditions could also be imposed to further ensure there is no risk of harmful interference with other spectrum users, for example: (i) permitting use only on a no interference basis; and (ii) excluding outdoor use.

6.14 This approach is similar to the approach of the FCC to new generation body scanners. For example, Leidos' new generation MMW scanner was approved in the United States subject to the conditions listed at Annexure 3.

Interference Analyses

6.15 Leidos arranged for Australian testing of a ProVision 3 by EMC Technologies in Keilor Park Victoria on 19 March 2025. This testing indicated an operating frequency of 20.08-39.80

[33] See Leidos Order, ET Docket No. 16-45, DA 16-1075, ¶10 (Rel. November 22, 2016).

GHz and a peak EIRP of -3.83dBm (somewhat lower than the peak EIRP of 0 dBm Leidos is seeking under a varied Body Scanner Class Licence).

6.16 Leidos previously prepared a range of interference analyses, including those provided to the FCC, which demonstrated that there would be no anticipated harmful risk of interference from new generation MMW scanners.

6.17 This material may also assist the ACMA in considering Leidos' request in the context of the Australian spectrum environment and can be provided upon request.

ANNEXURES

Annexure 1 – Operational and Signal Characteristics of Leidos' Scanners

Leidos' new generation MMW scanner described in this submission incorporate two identical vertical antenna masts with circularly polarized transmitting and receiving elements distributed along the two-meter vertical height. The masts are enclosed within a transparent upright cylinder (or portal) measuring approximately 2.4 meters high by 1.5 meters in diameter. Once a passenger or subject steps into the cylinder, the masts rotate around them, triggering a sequence of mmWave samples (see Figure 1 below). The operator (security agent) is typically outside the system, standing at a distance from the exterior of the enclosure. The occupant is interior to the scanner and is required to be in the centre of the interior space in order to obtain accurate scans (see Figure 1 below). The device measures reflections of the radio signals from the subject by taking the large number of spatial sampling points and reconstructing a 3-D holographic dataset. Algorithms are applied to the 3-D dataset to detect objects concealed on the body. The detection results are presented on a generic human figure for the security officer operating the system. During peak operating levels, one unit can scan several hundred passengers per hour.

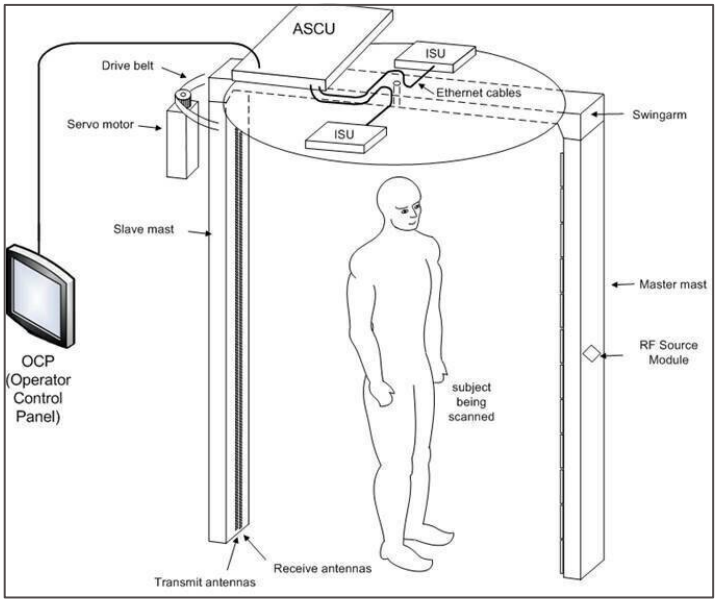


Figure 1. Diagram of System and typical operator and occupant configuration

Leidos' new generation MMW scanners repeatedly sweep a chirped unmodulated sine-wave frequency modulated continuous wave (**FMCW**) signal over the frequency range 20-40 GHz. Figure 2 below depicts timing of sweeps and transmission of the wave. As shown:

(a) The minimum possible time between scans is approximately 4 seconds but, depending upon checkpoint loading and the time required by the operator to clear alarms, the time between scans is typically 10 seconds or more as shown in Figure 2a.

(b) As the antenna mast rotates through the nominal 110-degree mechanical travel, vertical scan lines are triggered at equidistant intervals around the circumference of the mast path, as shown in Figure 2b. The system remains idle with the transmitter disabled until the system operator initiates the next scan sequence.

(c) A full subject scan data capture sequence takes 1.3 seconds, followed by a pause to process the image and analyse the results.

(d) The chirped FMCW signal is repeatedly swept over the frequency range 20-40 GHz at a rate of 1.46 MHz/nanosecond as shown in Figure 2c. This chirp is

repeated at each of the transmit antenna sampling positions along the height of the mast during a vertical scan line data capture sequence, also shown in Figure 2c.

(e) The transmitted waveform, or chirp, over the 20-40 GHz band takes 13.7 microseconds.

(f) There is a 0.5 microsecond period with the transmitter disabled between chirps to switch to the next sampling point on the mast resulting in a total chirp repetition period of 14.2 microseconds, as shown in Figure 2d.

While this Annexure describes Leidos' new generation MMW scanner, other new generation MMW scanners may have similar characteristics.

Annexure 2 - Duty Cycle Calculations[34]

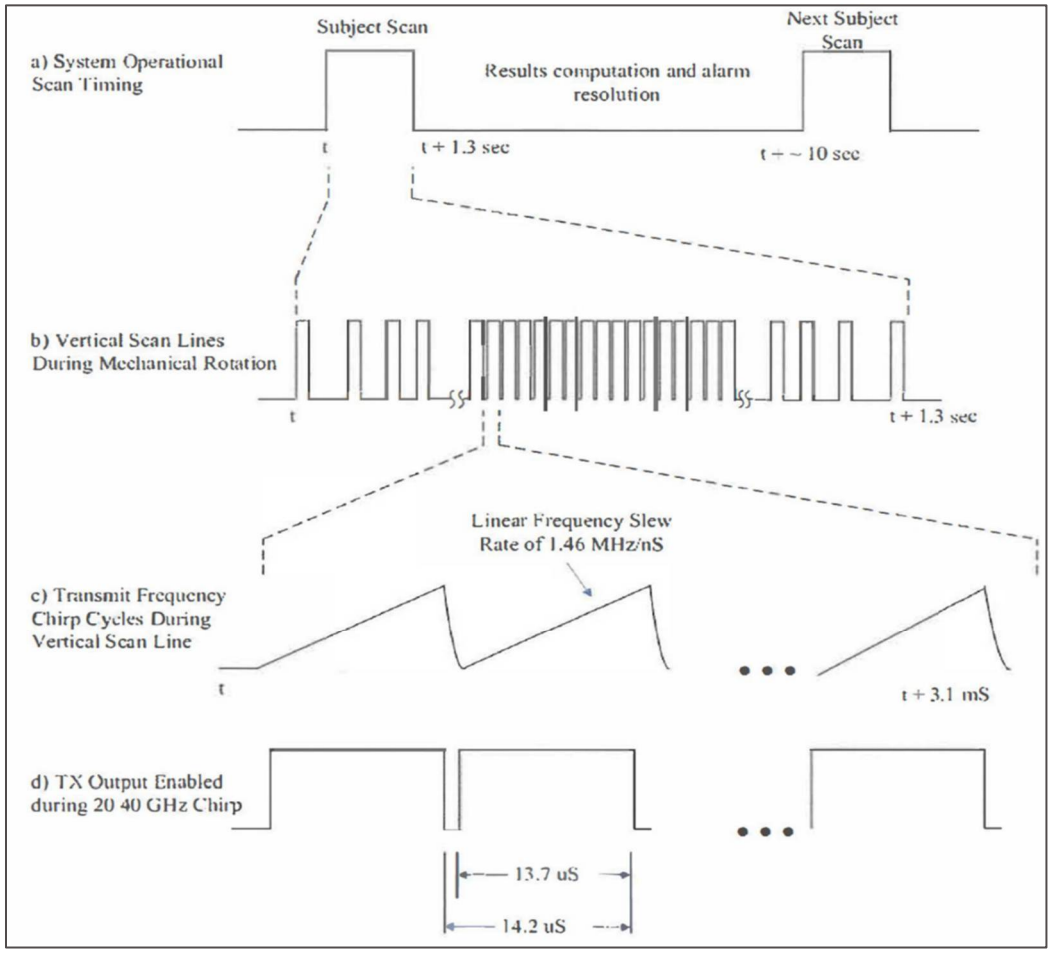


Figure 2. Scanning and Transmission Timings

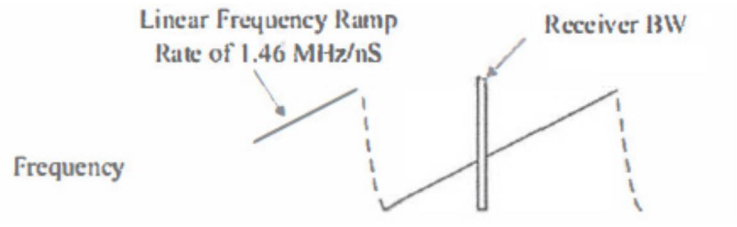
Based on the details from Figure 2,[35] a duty cycle calculation can be derived as a function of receiver bandwidth.[36] The input parameters include the linear slew rate of the transmitter and the TX output timing for a given mast. Since the masts are directed toward each other, contributions of both masts are insignificant due to the angular separation. The perceived duty cycle of a receiver is visualized in figure 3 below. Since there is no correlation or synchronization with external receivers, both the ramp rate and chirp period affect the duty cycle incident to an external receiver.

$$\textit{Perceived Duty Cycle} = 10 \cdot LOG \left(\frac{Bandwidth\ of\ Receiver}{TX\ Tamp\ Rate \cdot Chirp\ Period}\right)$$

[34] Source: Excerpted from CKC Certification Services, LLC, "Leidos Interference Analysis" (May 2022 – updated January 2023), noting that figure numbering reflects numbering in source document.

[35] This reference to 'Figure 2' equates to Figure 2 in the main body of the submission.

[36] L-3 Communications (now Leidos) FCC Waiver Request (2016).



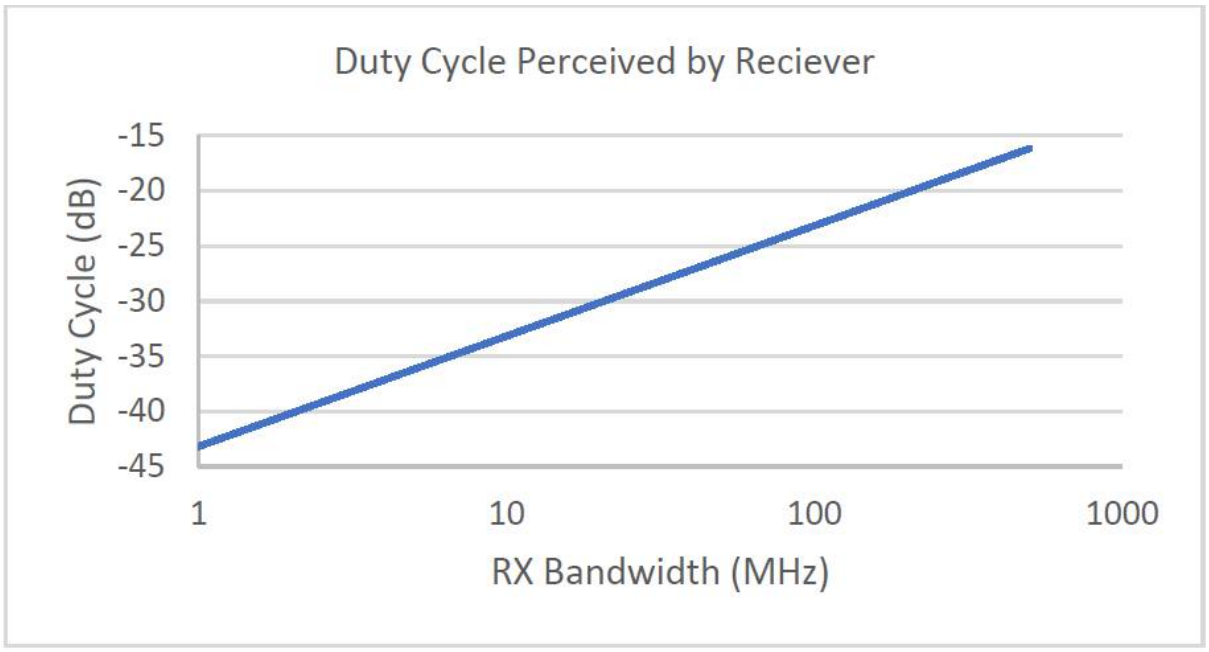


Figure 3. Duty Cycle

Note this calculation is a conservative assumption because it presumes the PV3 system transmits continuously and in the exact direction of the external receiver. The effects of mechanical sweeping and occupant loading are not included in this calculation and would only serve to further decrease the duty cycle.

Annexure 3 – Conditions Imposed by the FCC on Leidos' New Generation MMW Scanners

"15. Accordingly, pursuant to the delegated authority in Sections 0.31 and 0.241 of the Commission's rules, we waive the requirements of Sections 15.31(c), 15.35(b) and Section 15.205(a) of our rules to permit the certification and marketing of the Next Gen ProVision device. This waiver is subject to the following conditions:

1) The Next Gen ProVision imaging device shall be certified by the Commission and must comply with the technical specifications applicable to operation under Part 15 of 47 C.F.R.[27] However, for this particular swept frequency device, compliance with the average power level need not be demonstrated under the requirement of 47 C.F.R. § 15.31(c) and the requirement of §15.35(b) is relaxed to allow a total radiated peak power level up to 41 dB above the maximum permitted average power in Section 15.209(a) when measured as specified herein.

2) The intentional emissions generated by the Next Gen ProVision imaging device must be completely contained within the 20 to 40 GHz frequency range.

3) All installations of the Next Gen ProVision imaging devices operated under this waiver shall be restricted to indoor use.

4) L-3 shall create and maintain a record of installations of all devices operating under this waiver, including the identity of the customer, type of location (e.g., airport or government building), and street address and/or coordinates. This list shall be made available to the Commission and to NTIA upon request.

5) L-3 shall inform purchasers that Next Gen ProVision imaging devices may not be resold to third parties for use at another installation in the United States unless appropriate arrangements are made to meet all of the conditions of this waiver.

6) This waiver shall apply to the Next Gen ProVision imaging device produced by L-3 as described herein and provided no major changes are made to the transmitter circuitry or to the housing and position of the antenna masts that would increase the devices radiated power or bandwidth.

7) L-3 shall follow the same measurement procedures for determining the average radiated power and the peak radiated power as specified in the initial waiver grant.[28] These measurement procedures are specific to the Next Gen ProVision imaging device and are not generally applicable to all swept frequency transmitting systems.

8) L-3 shall coordinate operation of its Next Gen Provision imaging system with any radio astronomy facilities within 50 kilometers that receive signals in the 20-40 GHz band, and shall coordinate any installation which is within line of sight of the observatory at Kitt Peak."

Source: FCC Order, ET Docket No. 16-45, DA 16-1075, ¶15 (Rel. November 22, 2016), footnotes not reproduced.