

**IFC 25/2020
Open Spectrum
Submission**

Proposed licensing
arrangements in the 26 GHz
and 28 GHz bands -
consultation 25/2020

23 SEPTEMBER 2020

23 September 2020

Mr. Chris Worley
Manager, Spectrum Planning Section
Australian Communications and Media Authority
PO Box 78
Belconnen ACT 2617

Dear Mr. Worley,

Introduction

Open Spectrum thanks the ACMA for consulting on the draft new licensing framework for 26/28 GHz AWLs (including FSS earth station transmitters) and appreciates the opportunity to provide comments.

Coordination requirements to be covered

We note that the ACMA has proposed for FSS earth station transmitters to be licensed under AWLs, and seeks comment from industry. We reserve our position on this matter specifically, however we note that:

- a) If earth station transmitters are to be licensed under AWL, then it should be clearly specified in Section 3.7 of RALI [NEW] exactly which provisions of RALI MS 38 will apply to earth station transmitters.
- b) If earth station transmitters are to be maintained as Fixed Earth licences, then section 2 of RALI MS 38 would need to be expanded to cover coordination with registered AWL receivers and AWL spectrum space (including “no interference” provision as per Special Condition [AA]), spectrum licensed receivers and spectrum licensed spectrum space. RALI [NEW] would also have to include a provision for AWL receivers having to coordinate with Fixed Earth licences and accepting “no protection” condition for failed coordination.

Features of RALI MS 45

Open Spectrum notes the following aspects of RALI MS 45 that aren't reflected in RALI MS 38, and could be considered for inclusion in any revision of RALI MS 38:

- Reference to the requirements of ITU RR Article 21.
- Note regarding international coordination that may be necessary if the coordination area of the earth station overlaps the territory of a neighbouring country.
- Inclusion of a minimum elevation angle for GSO earth stations and Earth station site shielding as part of facilitating sharing between terrestrial and space services.

If the ACMA decides to proceed with licensing FSS earth station transmitters under AWLs, then it could also consider including the points above in RALI [NEW].

Fixed link first-in-time priority RALI MS 38

It is proposed to delete the text regarding first-in-time priority from Section 1.2 *Scope*, since there won't be any new fixed links. Furthermore, this text was not worded correctly in the first place, as it could be interpreted to mean that even existing fixed links—in the case of interference materialising in practice—cannot claim protection from an FSS earth station transmitter registered in the RRL.

Assignment instructions regarding Antennas

Open Spectrum recommends the removal of the assignment instructions regarding antennas in Section 3.1 of RALI MS 38 *Antennas* and Section 3.2.1 of RALI [NEW] *Earth station antennas*.

The requirement to furnish detailed RPE data for antenna products is much too stringent. Six years after the introduction of RALI MS 38, we observe that in general, APs cannot satisfy this requirement given that most Earth station antenna performance is typically commercially sensitive. Furthermore, this requirement is in conflict with Table 1 of RALI MS 38, which allows calculation of RPE in accordance with S.1855 (GSO) and S.1428 (NGSO). The guidance on NSMA file format is also redundant, as there is already a Business Operating Procedure (BOP) on submitting antenna pattern information.

The contents of Section 3.2.1 of RALI [NEW] *Earth station antennas* should be deleted and replaced with the contents of Section 2.2.1.2 *Earth station antenna gain* of RALI MS 38. References to Appendices 1 and 2 can simply be replaced with references to Appendices 1 and 2 "of RALI MS 38".

Antenna pattern

In our response to IFC 46/2018 (on RALI MS 44), we suggested referencing Recommendation ITU-R SM.1448 instead. However, we note that RALI MS 38 currently refers to Recommendations ITU-R S.1855 (GSO), S.1428 (NGSO).

All these recommendations have antenna patterns based on:

$$G = b - m \log_{10}(\phi)$$

between off-axis angles ϕ_{\min} and ϕ_{\max} . For off-axis angles greater than ϕ_{\max} , the antenna gain is -10 dBi or lower¹.

Recommendation	<i>b</i>	<i>m</i>	ϕ_{\min}	ϕ_{\max}
S.465	32	25	1*	48
SM.1448	29	25	1*	36
S.1855 (GSO only)	32	25	9.2	48
S.1428 (NGSO only) *	29	25	1	10
	34	30	10	34.1

* Assumes $D/\lambda \geq 100$, as assumed in the development of RALI MS 44

See the comparison of antenna patterns in Figure 1 below. It shows that S.1855 (applicable to GSOs) is identical to S.465 for off-axis angles greater than 9.2 degrees, which is the applicable range considering that the ACMA has proposed that a minimum elevation angle of 10 degrees can be assumed for antennas communicating with GSO satellites.

Open Spectrum understands that antenna directionality in practice is better than that suggested in Recommendation ITU-R S.465, and so we propose specification of Recommendation ITU-R SM.1448, at least for antennas communicating with GSO satellites.

¹ Exceptions:

For Recommendation ITU-R S.1855, the gain is -10 dBi only for antennas with $D/\lambda \geq 46.8$.

For S.1428, there is a step at -7 dBi for antennas for $D/\lambda > 100$, at off-axis angles between 80° and 120°.

For simplicity, Recommendation ITU-R S.1428 could also be revised to SM.1448, for antennas communicating with NGSO satellites.

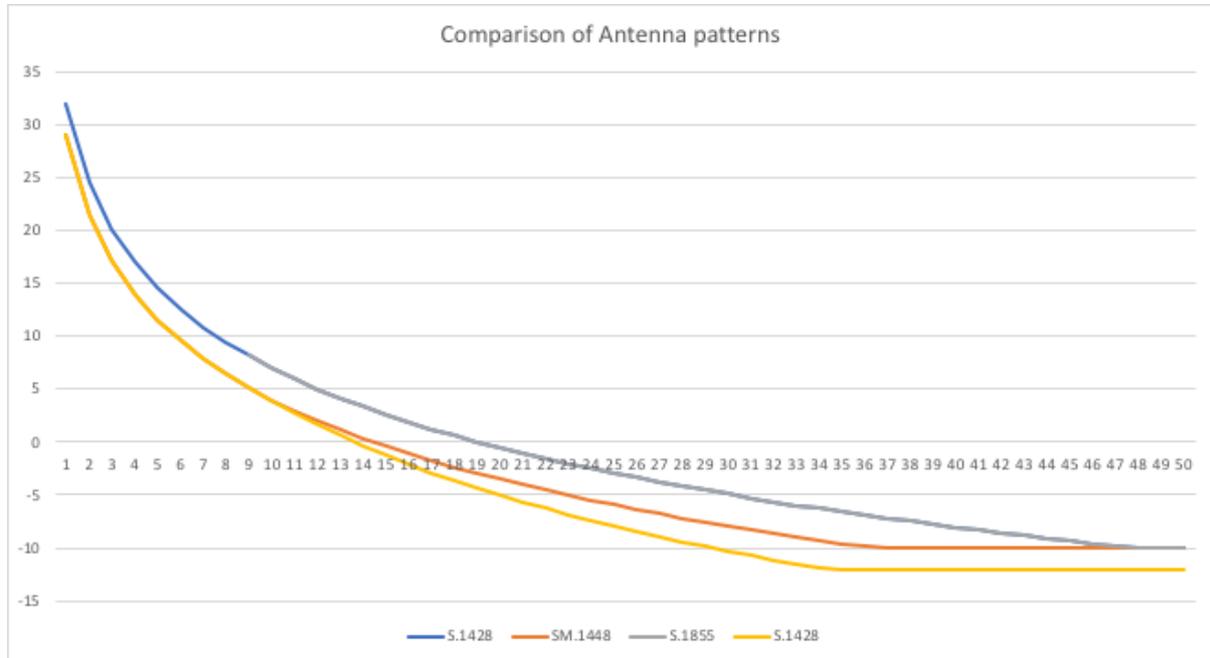


Figure 1—Comparison of antenna patterns: Gain (dBi) vs off-axis angle (°)

Summary

In summary, Open Spectrum notes the need to ensure that all coordination scenarios are covered regardless of whether FSS earth station transmitters will be licensed under AWLs or remain as Fixed Earth licences.

We also urge the ACMA to remove the earth station antenna pattern requirements in s3.2.1 of draft RALI [NEW] and s3.1 of RALI MS 38 and highlight a few features of RALI MS 45 for the ACMA's consideration.

Open Spectrum looks forward to continue working with the ACMA and the wider radiocommunications industry.

Yours sincerely



Juan Pablo Casetta
Director, Open Spectrum Pty Ltd
5/23 Bentham Street, Yarralumla, ACT 2600
P: (02) 6299 2948
M: 0402 565 574
E: juanpablo@openspec.com.au

23 September 2020