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GOVERNMENT NOTICES • GOEWERMENTSKENNISGEWINGS

INDEPENDENT COMMUNICATIONS AUTHORITY OF SOUTH AFRICA

NO. 6787 **3 November 2025**

NOTICE INVITING INTERESTED STAKEHOLDERS TO PARTICIPATE IN COEXISTENCE SIMULATION STUDIES AND SITE VISIT TO THE FIELD TRIAL LOCATIONS AS PART OF THE DRAFT DYNAMIC SPECTRUM ACCESS AND OPPORTUNISTIC SPECTRUM MANAGEMENT IN THE INNOVATION SPECTRUM 3800 - 4200 MHz AND 5925 – 6425 MHz

1. On 26 March 2025, the Independent Communications Authority of South Africa ("the Authority"), in terms of section 4 read with section 32 (1) and 33 of the Electronic Communications Act (Act No. 36 of 2005), published Draft Regulations on the Dynamic Spectrum Access and Opportunistic Spectrum Management in the Innovation Spectrum Frequency Ranges 3800 - 4200 MHz and 5925 – 6425 MHz (Draft Regulations) in Government Gazette Number 52415 (Notice 6066 of 2025) for public consultation.

2. On 01 to 03 October 2025, the Authority held public hearings in respect of the Draft Regulations. During the public hearings, among other concerns, the following key concerns were noted:
   (a) Seeking wider stakeholder engagement in the process;
   (b) Clarification on the Authority's coexistence methodology used; and
   (c) input parameters used in baseline simulations conducted.

3. It is on the above premise that the Authority, in the interest of transparency and ensuring that stakeholders are able to make meaningful contributions/comments to the Draft Regulations, decided that interested stakeholders be given an opportunity to conduct desktop simulations and contribute to the Authority’s parametric baseline studies on coexistence of primary and secondary systems in the Innovation Spectrum sub-bands.

4. Annexure A to this Notice contains the Authority‘s baseline study key parameters and coexistence methodology as per the Draft Regulations to enable interested stakeholders to reproduce the simulations in their own desktop studies.

5. Additionally, the Authority also invites interested stakeholders to visit a field trial site in Durban, KwaZulu-Natal where the Authority is testing a Dynamic Spectrum Access and Opportunistic Spectrum Management network in the Innovation Spectrum Frequency Range. The visit will take place on 27-28 January 2026.

6. Interested stakeholders must indicate their willingness to participate in the field trial visit and conduct measurements by no later than 05 December 2025. Participants in the trial will be responsible for their own logistical costs.

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7. Subsequent to conducting the above simulations, interested stakeholders may submit additional written representations to the Draft Regulations for the Authority ‘s consideration no later than 16h00 on 05 December 2025 by email (in Microsoft Word and PDF) or hand delivery and marked specifically for attention:

   Ms Pumla Ntshalintshali
   Delivery Address: 350 Witch-Hazel Road, Eco- Park; Centurion
   Email: DSA2023@icasa.org.za
   Copy: PNtshalintshali@icasa.org.za and rmakgotlho@icasa.org.za

8. Enquiries should be directed to Ms Pumla Ntshalintshali at 0125684005 between 10h00 and 16h00, Monday to Friday.

9. All written representations submitted to the Authority pursuant to this notice shall be made available for inspection by interested persons from 12 December 2025 at the ICASA Library or website and copies of such representations and documents will be obtainable on payment of a fee.

10. Where persons making written representations require that their representation or part thereof be treated as confidential, then an application in terms of section 4D of the ICASA Act, 2000 (Act No. 13 of 2000) must be lodged with the Authority. Such an application must be submitted simultaneously with the representation on the draft discussion document and plan. All confidential material must be pasted onto a separate annexure which is clearly marked as “Confidential”. If, however, the request for confidentiality is not granted, the person making the request can elect to withdraw the representation or document in question.

11. The guidelines for confidentiality request are contained in Government Gazette Number 41839 (Notice 849 of 2018).

Mothibi G. Ramusi
ICASA Chairperson
Date: 29/10/2025

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ANNEXURE A:

A.1: Study Case 1: Coexistence Study using Monte Carlo Simulations

In this study case, stakeholders are encouraged to conduct Monte Carlo simulations to assess the probability of interference between Innovation Spectrum Devices (ISDs) and Fixed Satellite Service (FSS) and Fixed Service (FS) receivers. To ensure statistical reliability and accuracy of the results, it is recommended that the minimum number of simulation trials should not be fewer than 2000 runs. It is imperative for stakeholders to use technical information of FSS and FS receivers that were submitted to the authority in response to the official request in Government Gazette 50924 (Notice 5028 of 2024). The following key simulation parameters shall be used:

#	Parameter	Value
1	**Number of trials:**	Minimum of 2000 Monte Carlo runs to achieve statistically significant results.
2	**Common Parameters:**	
a	Operating frequency range:	ISFR1 and ISFR2
b	Interference calculation:	Probability of interference based on interference threshold
c	Output metric:	o Probability of interference (*Pinterference*) o Distribution of interference levels o Confidence intervals for results
d	Channel bandwidth:	As specified in Regulation 4 of the draft Regulations
e	Protection criteria :	ISFR1:FSS protection criteria I/N=-10.5 dB ISFR2 uses the protection ratio based on ETSI device spectral efficiency class[1]
f	Protection distance:	Step function
g	Location/Situation:	Outdoor, Indoor
h	Radio propagation model:	ITU-R P.456-18, (alternatively use Irregular Terrain Model (ITM))
i	Clutter model	ITU-R 21081(alternatively, use the latest version of [2]SANLAC)
j	Digital terrain model and resolution:	Aster, 30m x 30m, (alternatively use SRTM v3)
3	**ISD Transmitter Parameters**	
a	Transmit power:	As specified in Regulation 10 of the draft Regulations
b	Antenna height:	As specified in Regulation 10 of the draft Regulations
c	Antenna pattern:	ITU-R F.1336-4
d	Location:	Anywhere in South Africa
e	Emission mask:	3GPP TS 38.104
4	**FSS Receiver Parameters**	
a	Sensitivity:	Use any between (-65 dBm to -125 dBm)
b	Power flux density:	Use any between (-124 dBW/m2/4 kHz to -172 dBW/m2/4 kHz)
c	Angle of elevation:	27 degrees to 63 degrees

[1] https://www.etsi.org/deliver/etsi_en/302200_302299/30221702/03.04.01_60/en_30221702v030401p.pdf
[2] https://egis.environment.gov.za/gis_data_downloads

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d	Dish size:	Use any between (2.4 m to 9.1 m)
e	Receiver noise temperature:	Use any between (15K to 65K)
f	Recover pattern:	ITU-R S.465
g	Antenna height AGL:	Use any between (2.5 m to 20 m)
5	**FS Receiver Parameters**	
a	Sensitivity:	Based on ETSI device spectral efficiency class[3]
b	Antenna height AGL:	Use any between (1m to 50 m)

A.2: Study Case 2: Coexistence Study using Point to Point Simulations

In this study case, stakeholders are encouraged to conduct point to point simulations to determine coexistence between ISDs, FSS and FS receivers in the urban and rural area scenarios. Stakeholders can pick any rural or urban location of interest for their studies. To ensure reliability of the results, it is recommended that stakeholders remain consistent with all provisions of the draft Regulations and use common parameters outlined in section A1 of this Annexure. It is imperative for stakeholders to use technical information of FSS and FS receivers that were submitted to the authority in response to the official request in Government Gazette 50924 (Notice 5028 of 2024). Furthermore, stakeholders are encouraged to carefully study and follow the Authority approach for coexistence outlined in section A4 of this annexure.

A.3: Authority Review of Multichoice's Technical Report

On July 29, 2025, Multichoice (MC) submitted a Point-to-Point (PTP) technical report (revision AA2) to the Authority. The report was authored by Radio Telecommunication Services (RTS).

The Authority welcomed MC's technical report meant to reproduce summary of the baseline simulation study (BSLN) published in section A of the draft Regulations on the use of innovation spectrum, 3800-4200 MHz and 5945-6425 MHz.

A thorough review of the technical report has revealed significant discrepancies between the parameters used by MC and those established in the Authority's baseline study.

FSS Receiver Test Location	**ISFR1 Center Frequency (GHz)**		**FSS Receiver Gain (dBi)**		**FSS Receiver Height AGL (m)**		**EIRP (dBm), LP/MP [ISD at CSIR, Brummeria]**		**Digital Terrain Model, Resolution and Radio propagation Model**	
	***BSLN**	****MC**	***BSLN**	**MC**	***BSLN**	**MC**	***BSLN**	**MC**	***BSLN**	**MC**
Samrand	4.1	4.2	43.29	Not used	4	15	27, 36	36	SRTM v3, 90mx90m, ITM	Not disclosed
Randburg	4.1	4.2	49.8	Not used	15	15	27, 36	27, 36	SRTM v3, 90mx90m, ITM	Not disclosed
Hartebeeshop	4.1	4.2	52.6	Not used	20	15	27, 36	36	SRTM v3, 90mx90m, ITM	Not disclosed
Embassy 1	**Data not submitted to	4.2	Data not submitted to Authority	Not used	**Data not submitted to	15	**Data not submitted to	36	**Data not submitted to	Not disclosed
Embassy 2		4.2		Not used		15		36		Not disclosed

3 https://www.etsi.org/deliver/etsi_en/302200_302299/30221702/03.04.01_60/en_30221702v030401p.pdf

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Monitoring Point	Authority through the notice	4.2	through the notice	Not used	Authority through the notice	15	Authority through the notice	36	Authority through the notice	Not disclosed
Sentech PTA		4.2		Not used		15		36		Not disclosed
Loftus Versfeld		4.2		Not used		15		36		Not disclosed
OR Tambo Int		4.2		Not used		15		36		Not disclosed

*BSLN, means simulation results of baseline studies published by the Authority in the draft Regulations
** The Authority observed that MultiChoice incorrectly referred the centre frequency used as ISFR 2
*** Further, Authority found that MultiChoice included in its technical report FSS receiver information that were not submitted through the notice published by the authority.

Furthermore, the Authority notes that MC's technical report includes FSS receiver information that was not submitted in response to the official request in Government Gazette 50924 (Notice 5028 of 2024). The inclusion of this unsanctioned data contravenes regulation 11 of the draft Regulations. Consequently, the report's methodology is non-compliant and cannot be used to accurately reproduce the Authority's baseline study results. The following FSS receiver location were included in the technical report but were not formally disclosed by MC in its response to the Authority's notice.

FSS Test Location	***Latitude**	**Longitude**
Embassy 1	25.746124	25.746124
Embassy 2	25.761299	25.761299
Monitoring Point	25.855397	25.855397
Sentech Pretoria	25.689285	25.689285
Loftus Versfeld Stadium	25.753234	25.753234
OR Tambo International	26.137307	26.137307

* The Authority also found that MultiChoice erroneously omitted the negative sign when presenting the latitudes for all FSS receiver locations in the above list including information that were not submitted through the Notice published by the Authority.

The Authority has noted that MC concluded prematurely by only calculating intermediate parameters, namely, path loss, and received ISD transmit power at the FSS receiver. It failed to determine whether the ISD transmitter was causing harmful interference by applying the I/N protection threshold stipulated in regulation 11 of the Draft Regulations.

Notwithstanding the omissions and discrepancies in MC's report, the Authority proceeded with its analysis using the intermediate parameters supplied by MC. Specifically, the Authority applied an FSS channel bandwidth of 36 MHz and a Noise Temperature of 37 K, frequency offsets greater than 10 MHz, and angular discrimination **Θi** of -10 dB, the FSS receiver sensitivities of -79 dBm for MC and -125 dBm for the Hartbeesthoek SANSA, the Net Filter Discrimination (NFD) set to 0 dB (without NFD), and with NFD set to 11 dB for MC and -36dB for Hartbeesthoek SANSA, respectively. These derived results were then benchmarked against the Authority's conservative baseline studies, as detailed in the Draft Regulations, for both the Low Power (LP) and Medium Power (MP) co-existence scenarios. It is important to note that MC's submission for the LP scenario was limited to the Randburg FSS location only.

Scenario A: Low Power ISD

FSS Receiver Test Location	**Low Power ISD Interference at FSS Receiver**	**I/N (dB)**	**Pass/Not Pass**

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	(dBm)						
	*BSLN	MC	*BSLN	MC (no NFD)	MC (with NFD)	*BSLN	MC
Randburg	-170.2	-177.12	-50.2	-59.84	-70.84	Pass	Pass

*BSLN means simulation results of baseline studies published by the Authority in the draft Regulations

Scenario B: Medium Power ISD

FSS Receiver Test Location	Medium Power ISD Interference at FSS Receiver (dBm)		I/N (dB)			Pass/Not Pass	
	*BSLN	MC	*BSLN	MC (no NFD)	MC (with NFD)	*BSLN	MC
Samrand	-164.1	-193.56	-44.1	-76.16	-87.16	Pass	Pass
Randburg	-199.2	-168.12	-79.2	-50.72	-61.72	Pass	Pass
Hartbeesthoek	-128.8	-178.46	-8.8	-61.1	-25.1	Not Pass	Pass

*BSLN means simulation results of baseline studies published by the Authority in the draft Regulations

The Authority has concluded its review of the MC technical report, finding no instances of harmful interference from the ISD transmitters to the FSS receivers. This determination is based on a detailed interference analysis conducted using the intermediate parameters established within the MC technical report.

A4: The Authority Baseline Approach to Coexistence

The Authority's baseline approach for protecting primary systems (FSS and FS receivers) at any point of interest within a [4]coordination distance of 100 km entails a systematic case-by-case assessment of possible harmful interference power (I) that results from the operation of a secondary system transmitter relative to the noise power bandwidth (N) of the primary system receivers. In case of protecting FSS receivers, the interference level must not exceed a long-term protection of -10.5 dB Interference-to-Noise (I/N) ratio for 20% of the time. The approach is applicable only when the primary system transmitter and secondary system receiver are separated by a center-to-center frequency offset of less than 2.5 times the bandwidth of the primary system, as stipulated in regulation 11 of the draft Regulations. We therefore derive protection of FSS receivers in ISFR 1 as follows:

$$(\mathrm{I/N})(\mathrm{t},\ \mathrm{d},\ \Theta\mathrm{i}) = (\mathrm{Pi} + \mathrm{Gi} - \mathrm{PLdf} - \mathrm{Lbld} - \mathrm{NFD} - \Theta\mathrm{i}) - \mathrm{N} \qquad \text{(Eq. A1.2)}$$

Where:

$\boldsymbol{Pi}$: Power (e.i.r.p) transmitted by the secondary system

$\boldsymbol{Gi}$: Antenna gain of the secondary system

$\boldsymbol{PLdf}$: Radio propagation and feeder losses between the secondary system transmitter and primary system receiver

$\boldsymbol{\Theta i}$: Angular discrimination of the primary system receiving antenna

[4] https://www.itu.int/rec/R-REC-SM.1448/en

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***NFD*:** Net filter discrimination of the secondary system into the primary system
***N*:** Noise power of the primary system receiver bandwidth
Lbld: Building entry loss for systems operating indoors

Likewise, the protection of FS receivers in the ISFR 2 is derived as follows

$$(FS_{sens}/\mathrm{I}) = (FS_{sens} - FS_{pr} - \mathrm{Pi} + \mathrm{Gi} - \mathrm{PLdf} - \mathrm{Lbld} - \mathrm{NFD} - \Theta\mathrm{i}) \quad \text{(Eq. A1.3)}$$

Where:

FS_{sens}: is the sensitivity of the FS receiver, which is based on ETSI device spectral class[5]
FS_{pr}: is the protection ratio of the FS receiver, which is based on ETSI device spectral class

*Other parameters are similar to Eq.A1.2.

Subsequently, the Noise power (N) of the primary system receiver is derived in Watts as follows:

$$\mathrm{N(W)} = \mathrm{K} \times \mathrm{T} \times \mathrm{B} \quad \text{(Eq. A1.4)}$$

Where:

N: is the noise power in Watts
K: is Boltzmann's constant
T: is the system noise temperature in Kelvin (K)
B: is the receiver bandwidth in Hertz (Hz)

Furthermore, the NFD is derived by sampling and integrating the FSS/FS receiver sensitivity mask and the ISD transmit mask divided by the integrated samples of the FSS/FS receiver sensitivity mask and the ISD transmit mask at the frequency offset. The ISD out-of-band emission limits are in consistence with regulation 11 of the draft Regulations and the ISD transmit mask can be derived using a methodology specified in [6]3GPP TS 38.104. The reference radiation patterns and sensitivity masks for the FSS receiver are outlined in ITU-R S.465[7] and ITU-R S.2369[8] and ITU1448, respectively. The NFD can therefore expressed mathematically as follows:

$$NFD\ (dB) = 10\log\left[\frac{\sum_{i=0}^{i=n-1} 10^{\left(\frac{FSS_i + IS\ _i}{10}\right)}}{\sum_{i=0}^{i=n-1} 10^{\left(\frac{ISD_{i_{offset}} + FSS_i}{10}\right)}}\right] \quad \text{(Eq. A1.5)}$$

The maximum value of the NFD can be calculated as follows:

$$NFD_{max}\ (dB) = \frac{FSS_i}{ISD_i} + 40 \quad \text{(Eq. A1.6)}$$

Where:

$\mathrm{FSS, FS_i}, ISD_i$: denotes co-frequency relative sensitivity sample points in the FSS/FS receiver mask and the relative emission sample points in the ISD transmit mask

[5] https://www.etsi.org/deliver/etsi_en/302200_302299/30221702/03.04.01_60/en_30221702v030401p.pdf
[6] https://www.3gpp.org/ftp/Specs/archive/38_series/38.104/
[7] https://www.itu.int/rec/R-REC-S.465/en
[8] https://www.itu.int/pub/R-REP-S.2368-2015

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$ISD_{i_{offset}}$: denotes relative emission sample points in the ISD transmit mask at a frequency offset

n : denotes number of samples in the FSS/FS receiver sensitivity mask and the ISD transmit mask

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