Mobile Phone Repeaters

Response to OFCOM Consultation

1. INTRODUCTION

Nextivity thanks OFCOM for the opportunity to respond to the Consultation "Mobile Phone Repeater". Nextivity appreciates the work OFCOM has done over the last few years to address the issue of poor mobile phone coverage. We believe that this most recent consultation will empower consumers and mobile phone operators to address coverage issues in a safe and cost effective manner.

Nextivity has been a leader in the design and development of advanced, network safe boosters since its founding in 2006. Working closely with operators and regulators across the globe, we have safely deployed hundreds of thousands of boosters directly to consumers. These deployments have brought significant value to consumers in their efforts to improve their indoor coverage. Therefore, we are excited to be part of a new phase of coverage enhancement in the UK.

We are particularly pleased with OFCOM's approach to the legalization of safe, affordable signal boosters. We believe that the use of the 3GPP and EN standards as the base for such rule making is the safest and most appropriate path to follow. These standards have benefited from inputs from a wide range of stakeholders and represents the true state of the art for signal boosters.

We are also pleased that OFCOM has incorporated key aspects of the FCC Part 20 rules into the proposed legislative framework. Nextivity was a key contributor to the drafting of the FCC rules[1] and we understand the benefits of including aspects such as anti-oscillation protections in a broader rule framework.

Based on our experience in this market, we respectfully offer the comments contained in this document on the proposed framework.

[1] https://apps.fcc.gov/edocs_public/attachmatch/FCC-13-21A1_Rcd.pdf

2. FEEDBACK ON SECTION 3: INDOOR, STATIC MOBILE PHONE REPEATERS

2.1. Q1 Do you agree with Ofcom's proposal to authorise the use of static mobile repeaters intended for indoor use on a licence exempt basis?

Nextivity agrees with Ofcom's proposal to authorize the use of static repeaters for indoor use on a license exempt basis.

2.2. Q2 Do you agree with technical requirements as set out in Table 1 above for licence exempt static mobile phone repeaters intended for indoor use?

OFCOM Proposal		NEXTIVITY Comment
Frequency Band The amplified frequencies shall be limited to that of a single mobile network operator in their relevant bands of operation (e.g. 800 MHz band and 2100 MHz band etc.) The equipment may be re-configured to an alternative Mobile Network, but may only operate to one operator when configured.		No Comment. We support this proposal.
Transmit Power The transmit power shall be limited as follows: □ In the uplink, the power is limited to the maximum permitted power for a user equipment (handset) for that particular frequency band in existing regulations (see Annex 5). □ In the downlink, the power is limited to 10 dBm.		No Comment on Uplink power. We suggest to change the downlink limit to 10dBm/5MHz to achieve a constant power spectral density for all boosted signals. This would also align the OFCOM proposal with the current FCC rules[2].
Transmit Gain Control The uplink and downlink gain in dB of a single operator repeater, referenced to its input and output ports, shall not exceed BSCL−30dB. Where BSCL cannot be determined, the repeater must not transmit The uplink and downlink gain in dB of a single operator repeater, referenced to its input and output ports shall not exceed 100dB	Where BSCL (base station coupling loss) is the path loss between the base station and the repeater, the apparatus shall determine this value by calculating the difference between the carrier power received at the repeater and the carrier power transmitted from the base station. E.g. The carrier power transmitted by the base station may be determined from the system information messages sent by the base station on its control channels.	No Comment. We support this proposal.

[2] See 47 c.f.r 20.21(e)(9)(i)(D)

Automatic Standby When the repeater is no longer serving an active device connection it must, after no more than 5 minutes, reduce any uplink noise power to no more than −70 dBm/MHz.	No Comment. We support this proposal.
Anti-Oscillation Repeaters must be able to detect and mitigate (i.e. by automatic gain reduction or shut down), any oscillations in uplink and downlink bands. Oscillation detection and mitigation must occur automatically within: □ 0.3 seconds in the uplink band; and □ 1 second in the downlink band. In cases where oscillation is detected, the repeater must continue this mitigation for at least one minute before restarting. After five such restarts, the user-installed mobile phone repeater must not resume operation until manually reset.	No Comment. We support this proposal.

2.3.Additional Comments

In addition to the items in the table above, we suggest that the same requirements for Anti-oscillation behavior be added to the mobile boosters as are proposed for fixed boosters.

3. FEEDBACK ON SECTION 4: PROPOSAL FOR IN-VEHICLE USE

3.1. Q3 Do you agree with Ofcom's proposal to authorise the use of low gain mobile phone repeaters intended for in-vehicle use on a licence exempt basis?

Nextivity agrees with OFCOM's proposal to allow in-vehicle use of low gain mobile boosters. We believe the proposed action will benefit especially rural mobile users.

3.1. Q4 Do you agree with technical requirement set out in Table 2 above for licence exempt low gain mobile phone repeaters intended for in-vehicle use?

OFCOM Proposal	NEXTIVITY Comment
Frequency band The amplified frequencies may include all relevant frequency bands listed (See Annex 5).	No Comment. We support this proposal.
Transmit Power The transmit power shall be limited to: □ In the uplink, it is limited to the maximum permitted power for a mobile phone handset for that particular frequency band in existing licence exemption regulations (see Annex 5). □ In the downlink, the power is limited to 10 dBm.	No Comment. We support this proposal.
Maximum Permitted Gain In both the uplink and the downlink the maximum permitted gain is limited to: □ 21 dB in relevant frequency bands above 1 GHz; and □ 15 dB in relevant frequency bands below 1 GHz.	No Comment. We support this proposal.
Automatic Standby When the repeater is no longer serving an active device connection it must, after no more than 5 minutes, reduce any uplink noise power to no more than −70 dBm/MHz.	No Comment. We support this proposal.