

# CONSULTATION

## The Possible Use of GSM Jammers

### The Possible Use of GSM Jammers in In the Kingdom of Bahrain

A Consultation issued by the  
Telecommunications Regulatory Authority  
21<sup>st</sup> March 2004

**Purpose:** Consultation on the possible use of GSM jammers in the Kingdom of Bahrain



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### 1 Introduction

Legislative Decree No. 48 of 2002 promulgated the Telecommunications Law (“the Telecommunications Law” or “the Law”) for the Kingdom of Bahrain. Among other things, the Telecommunications Law formed the Telecommunications Regulatory Authority (“TRA”, or “Authority”), a body that has responsibility for the regulation of the telecommunications of Bahrain.

One of the roles assigned to the TRA in section 3(b) of the Law is that it shall protect the interests of subscribers and users in respect of availability and provision of service.

In pursuance of these duties, the Authority has prepared this Consultation document which seeks views on (a) whether GSM jammers, devices capable of disabling the use of mobile phones over a limited area, should be permitted in Bahrain and (b), if so, the mechanisms that could be used to inhibit the use of mobile phones in certain areas at certain times to the benefit of the community at large.

In this respect, the proposals in this Consultation relate both to the use of GSM jammers to inhibit the use of mobiles and to the use of detectors to detect the covert use of mobiles, for example, at places and times when mobiles should not be used.

As such this Consultation is relevant to all users of telecommunications services, all licensed operators, other organisations that may be considering becoming an operator and other interested parties.

#### 1.1 Document approval and issue

This document is made publicly available via the TRA web site in order that interested parties may comment. Anybody who wishes to do so should respond in writing to the TRA during the public consultation period. Responses must be received no later than 5.00pm on the 18<sup>th</sup> of April 2004.

Following consideration of the responses the TRA will then issue a report on the consultation responses and anticipates the issue of a regulation on the use of GSM Jammers in the Kingdom of Bahrain.

The address for responses to this Consultation is:

The General Director  
Telecommunications Regulatory Authority  
PO Box 10353  
Manama  
Kingdom of Bahrain

Alternatively, e-mail responses may be sent to the Authority’s e-mail address at

[consult@tra.org.bh](mailto:consult@tra.org.bh)

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### 1.2 Scope and Timing

While it remains in consultation form, this document has no status other than as a basis for discussion. Once this consultation is complete, a report will be produced that sets out the principles for the use or otherwise of GSM jammers in Bahrain. The TRA plans to issue the report on this consultation before by mid May 2004. Thereafter, the TRA aims, if required, to issue a draft regulation, allowing two weeks for comments on this draft regulation before releasing the final Regulation by end of May 2004.

### 1.3 Structure of the Paper

This consultation is structured into a number of main sections, as follows:

- The next section gives a general introduction to the apparent need for GSM jammers and what the TRA considers to be the possible benefits and problems jammers could bring
- Section 3 outlines the principles that the Authority would suggest apply to the use of jammers
- Section 4 considers jammers applied to 3G systems
- Section 5 considers alternatives to the use of jammers

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### 2 Background

It has been brought to the attention of the TRA that while most people enjoy the benefits of almost ubiquitous coverage of mobile phone systems throughout the Kingdom of Bahrain, there are some areas and times when the use of a mobile phone may be dangerous, or offer the user an illegal or unfair advantage over others.

#### 2.1 Instances where jammers may be useful

An example of where the mobile phone may be considered dangerous is their use in close proximity to life-support equipment in hospitals.

- The radio energy emitted by mobile phones is of a sufficiently high level to potentially disrupt the normal functioning of some sensitive hospital equipment, which is why hospitals generally ask for mobile phones to be turned off.

Another example is in fuel station forecourts where as a matter of general safety, customers are requested not to use their mobile phones.

- There is a risk, when radio energy of sufficiently high levels is emitted from a radio transmitter, that the surrounding air may be ionised (a spark is generated) and this could cause a fire or explosion if there is sufficient hydrocarbon vapour in the vicinity of the transmitter. It is generally recognised however, that even at maximum power, a mobile phone is quite incapable of generating ionising radiation.

It is also said that mobile phones can be covertly used during such events as examinations, giving the examinee access to information outside the examination room (via a friend or colleague elsewhere) and thus an unfair advantage over the others doing the same examination.

Other situations arise where mobile phones are considered a nuisance such as in cinemas and libraries.

The TRA is considering whether to permit the use of GSM jammers to prevent the use of mobile phones in the situations described above.

#### 2.2 Consequences of using jammers

The use of a jammer can certainly prevent mobile phones from being used in hospitals, fuel stations, examination rooms, theatres etc but there are consequences of jamming GSM signals that must be considered.

A mobile phone is capable of adjusting its output power in high levels of interference, and the use of a jammer (which is effectively creating high levels of interference) will sometimes have the effect of increasing the output power of the mobile phone. In a hospital this may in itself cause considerable problems.

Furthermore, as the jammer itself is a transmitter, to place a transmitter of any kind in the vicinity of sensitive hospital equipment may cause disruption to that equipment. Therefore the jammer together with the mobile phones now transmitting at higher or full power as well produce the very interference that the jammer was supposed to remove.

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In addition to technical problems associated with the use of jammers, it must also be remembered that the radio spectrum that is effectively being blocked by the use of these devices, has been allocated to the mobile phone network operators, *and they pay to use this spectrum*. It is reasonable therefore that network operators will expect the spectrum that they pay for to be kept clear of interference so that they can carry on their business. Jammers will only operate over a relatively small space, however as already mentioned, their range cannot be controlled accurately, and the siting of these devices may be problematic.

An example would be that a reasonable use of jammer in one place, such as an examination room, causes lack of coverage in another. At this second location an emergency call cannot be made and someone's life is put at risk. It is the responsibility of the telecoms operator to provide access to the emergency services and yet the operator would, in this scenario, be prevented from providing this service through the use of a nearby jammer.

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*The TRA seeks views on the use of jammers:*

- a) Should jammers be permitted in Bahrain;*
- b) If the answer to (a) is affirmative, how, and in what situations, jammers could be permitted in Bahrain,*
- c) how and what problems they may cause; and*
- d) whether their use undermines the operators licences and, if so, how should this be dealt with.*

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### 3 Possible framework for the use of GSM jammers

If the use of GSM jammers were to be made legal in the Kingdom of Bahrain, the TRA is minded to impose strict constraints on their use.

The TRA is considering that each applicant wishing to use a GSM jammer would have to provide reasons, supported by evidence, as to why the use of GSM phones in the area under question should be restricted or prohibited. The applicant would have to demonstrate that the use of a jammer at the location under consideration would not adversely affect mobile phones beyond the space where the prohibition is to occur.

It should be possible to limit the time period over which the jammer would be in use, minimised to just those times when mobile phone usage is considered undesirable, e.g. during an examination.

Permission to use jammers would be strictly time-limited and TRA approval issued to permit use of jammers would be for specific instances only. Any applications for use of jammers, and any approval granted by the TRA, would need to be done prior to the intended use of jammers,

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*e) The TRA seeks views on the above principles as the basis for permitting the use of GSM jammers in specific cases as approved by the TRA.*

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### 4 Jammers applied to 3G systems

It is the current view of the TRA that for a jammer to be effective it must jam all possible frequencies that mobile phones may use. In Bahrain 3G systems have been licensed as well as GSM, which consequently means that a jammer would have to work at each of the 900 MHz, 1800MHz and 2.1 GHz bands (the mobile bands in use in Bahrain) *but not any of the frequency bands in between*. The TRA considers that it would be unacceptable to jam selected mobile bands and leave others operational.

Consideration must also be given to the effectiveness of jammers when used against different technologies; a jammer that successfully jams GSM may be less effective against a CDMA-based system (or vice versa).

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*f) The TRA seeks views on the suggestion that jammers must work equally well on all frequency bands allocated to mobile phones in order to ensure effectiveness and to prevent the potential use of a jammer by one operator to the detriment of a competitor.*

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### 5 Possible alternatives to the use of jammers

Some manufacturers of jammers also manufacture mobile phone detectors that alert the user of the detector to the fact that a (or some) mobile phone is in use within a (short) distance. These detectors can be provided with displays that illuminate when a mobile phone is detected asking the user to switch their phone off, and they can provide silent or noisy alerts to security staff etc. It is the TRA's current view that a more appropriate solution to the problem of inappropriate use of mobile phones is, in general, to use detectors, on the basis that such detectors require no licence, make no interference which consequently cause no peripheral problems of their own (in contrast to jammers).

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*g) The TRA seeks views on the suggestion that detectors provide a more appropriate way of managing the inappropriate use of mobile phones.*

*h) The TRA seeks views on any alternative ways of managing the inappropriate use of mobile phones(i.e. other than by means of detectors or jammers)...*

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### Glossary of Terms

**CDMA - Code Division Multiple Access** - A digital cellular phone technology that allocates codes (instead of time-slots or frequencies) to traffic channels

**GSM 900/ 1800 MHz** – Global System for Mobile Communications in the 900 and 1800 MHz frequency bands.

**GSM jammer** – a device, usually a mains operated, capable of transmitting a radio signal so powerful that the signal from the nearest cellular base station is “swamped” and mobile phones in the vicinity lose service. The effective range of such devices is generally not great (10s of metres) but it is very difficult to predict precisely how far the effective field around the transmitter extends. Operating such a device at the centre of the space where it is considered undesirable to allow the use of mobile phones would have the effect of completely disabling mobile phones in the immediate vicinity of the jammer.

**Third generation mobile systems** – A 3G mobile communications system provides an enhanced range of multimedia services (eg high speed Internet access). 3G networks use radio spectrum in the 2GHz bands.