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User Guide



CELL PHONE TOWER
radiation
DETECTOR

Model : DETEX 189



Dear User : Thank you for purchasing DETEX 189. You are sincerely recommended to read this user guide carefully & completely prior to use for best usage of this device.

Dear **NESA** Customer,
Congratulations on becoming a proud owner of
DETEX 189.

You have now joined the fraternity of millions of
health conscious people across the globe.

NESA (Non-ionizing Electromagnetic radiation
Shielding Alternatives) provides low cost shielding
products for both long & short term Electromagnetic
radiation exposure at offices & homes.

Brand **NESA** has a strong bias towards both rigid &
flexible anti radiation product design and develop-
ment and works closely with some of the leading
IITs & research institutes of the country.

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Detex 189

Urgency for protection from Electromagnetic Radiation

Our exposure to Electromagnetic Radiation (EMR) is increasing at an alarming rate. For example, in 2001, there were approximately 1 Billion subscribers of cell phones in the world and in 2011, there are more than 5 Billion subscribers. One can see number of mobile phone users at:

http://www.itu.int/ITU-D/ict/statistics/at_glance/KeyTelecom.html

Also, minutes per day of use of cell phones has increased globally due to lower price, which implies increased radiation. To meet this increased communication demand, number of cell towers have increased substantially to several millions. People living close to these towers absorb radiation 24x7. In addition, number of Wi-Fi systems, wireless transmitters, etc. have increased rapidly in the last decade, thereby adding to radiation pollution.

Many countries in the world have adopted guidelines of safe radiation given by ICNIRP (*International Commission on Non-Ionizing Radiation Protection*), 1998.

<http://www.icnirp.de/documents/emfgdl.pdf>

In Table 7, page 18 of this guideline, safe power density is given as 1/200 Watts per square meter (W/m^2), where frequency (f) is in MHz. Hence, for GSM900 transmitting band (935-960 MHz), power density is $4.7W/m^2 = 4,700,000\mu W/m^2$ and for GSM1800 transmitting band (1810-1880 MHz), it is $9.2W/m^2 = 9,200,000\mu W/m^2$. On page 3, ICNIRP guidelines clearly state that it is based on short term immediate health effects. Unfortunately, many countries have still adopted it for long term continuous exposure.

A large number of scientists prepared **Bio-Initiative Report** in 2007 (**610 pages long**) after very careful survey of the literature. They concluded that the existing standards are inadequate to protect public health and proposed safe radiation density of $1000\mu W/m^2$ for outdoor, cumulative RF exposure and $100\mu W/m^2$ for indoor, cumulative RF exposure.

<http://www.bioinitiative.org/freeaccess/report/docs/report.pdf>

Building Biology Institute, Germany has provided following guidelines for exposure:

- a. $<0.1\mu W/m^2$ - no concern
- b. $0.1 - 10\mu W/m^2$ - slight concern
- c. $10 - 1000\mu W/m^2$ - severe concern
- d. $> 1000\mu W/m^2$ - extreme concern

Over 100 physicians and scientists at Harvard and Boston University, USA have called cellular towers a "radiation hazard" and 33 delegate physicians from 7 countries have declared cell phone towers a "public health emergency". Many countries in the world have adopted much stricter maximum radiation density values (1/100" to 1/1000" of ICNIRP guidelines) and can be viewed at:

http://www.buildingbiology.ca/input/wp-content/uploads/2011/08/2011_July_Cell_Tower_Radiation_Guidelines.pdf

Interphone study report in May 2010 mentioned that excessive users of mobile phones (i.e., 1/2 hour/day over 8 to 10 years) have doubled to quadrupled brain tumor risk. A year later, on May 31, 2011, International Agency for Research in Cancer (IARC), part of WHO (World Health Organization) designated cell phones as "Possible Human Carcinogen". They found evidence of increase in glioma and acoustic neuroma brain cancer for excessive cell phone users. Surprisingly, they have not mentioned about radiation hazards from cell towers, which transmit 24 hours a day.

Most cell towers are mounted near residential and office buildings to provide good mobile phone coverage to the users. Together, these towers transmit several tens to hundreds of watts of power. This is comparable to a microwave oven with 500 watts of output power, in which food gets cooked in a few minutes. Radiation is transmitted through a directional antenna that yields maximum radiation in the direction of the main beam. Power density varies according to the distance from the tower. People living at a distance of tens of metres to a few hundreds of meters from these towers have experienced several health problems, such as, sleep disorder, headache, lack of concentration, memory loss, joint pain, skin rashes, miscarriage and cancer. The radiation from cell towers also affects birds, animals, trees and environment. One rarely sees birds near cell towers. As their volume is large and weight is less, they feel heating effect faster than humans. It has also been observed that the yield of fruit-bearing trees, which are near cell towers and in the line of the main beam, is going down significantly.

Cell phone industry is becoming another cigarette industry, which kept claiming that smoking is not harmful and now there are millions of people around the world who have suffered from smoking. In fact, cell phone/tower radiation is worse than smoking; as one cannot see it or smell it, and its effect on health is noted after a long period of exposure. A 30 page report with more than 200 references can be seen at:

[Http://www.scribd.com/doc/44736879/Cell-Tower-Radiation-Report-sent-to-DOT-Department-of-Telecommunications](http://www.scribd.com/doc/44736879/Cell-Tower-Radiation-Report-sent-to-DOT-Department-of-Telecommunications)

Several health problems have been reported at levels much below the ICNIRP and FCC guidelines. Some of the biological effects are:

Most common complaints

- Sleep disturbance
- Headache
- Lack of concentration
- Forgetful memory
- Joint Pain
- Fatigue
- Dizziness
- Palpitations of the heart
- Visual disorders
- Cardiovascular problems
- Buzzing in the head
- Altered reflexes

Severe Health Effects

- Infertility
- Miscarriage
- Immune system degradation
- Neurodegenerative disorders
- Cardiovascular problems
- Cancerous growth – Benign or Malignant
[Ex: brain, blood, lung, testicular, breast cancer etc]

Effect on Environment

- Interferes with navigation and reproduction in birds like sparrows, pigeons, white storks etc.
- General decline in overall health of animals, decreased milk production, reproductive and developmental problems.
- Interferes with navigation of bees
- Decline in overall growth of agricultural crops and plants.
- Decreased fruit output.

If people still don't think this is enough proof, then let them live dangerously!!!

We are convinced that the current EMR exposure limits adopted in various countries are inadequate to safeguard human health. Since majority of the cell operators and government bodies have not acknowledged the increased health hazards, it is now time to empower people to first measure the cumulative radiation levels and then take precautions to minimize their exposure. It is recommended by us that a power level of -30 dBm or less is safe for continuous long term exposure. If it is between -30 dBm to -15 dBm, it is "caution" level and health problems may occur in a few years and if it is more than -15 dBm, it is in danger level and health problems may occur within a year also. These findings are also supported & approved by **ANTENNA LAB, IIT BOMBAY, INDIA**. Conversion of power in dBm to power density at various frequencies is given in Appendix A at the end.

Detex 189 standard package Contents



Fig.1

Introduction

Detex 189 has been designed for quick and easy detection of radiation levels at a given spot in your premises (home or office). It is a broadband instrument and accurately detects the cumulative radiation in the range of 800 MHz to 4 GHz, which covers frequencies used by most modern communication systems that are encountered in our day to day life (CDMA, GSM900, GSM1800, 3G and Wi-Fi/WLAN/ Bluetooth frequency bands).

The radiation levels are indicated by three LEDs (Light Emitting Diodes) - Green, Yellow and Red.

If only Green LED lights up, it implies SAFE level of radiation.

If Yellow LED as well as Green LED light up, it implies CAUTION level of radiation. Also, buzzer will start BEEPING intermittently.

If all the three LEDs light up, i.e. Red, Yellow and Green LEDs, it implies DANGER level of radiation. Also, buzzer will start BEEPING continuously.

A Telescopic Extender (Monopod) is supplied with this unit to avoid any discomfort in detecting radiation seepage from ceiling or vents located high on the walls without outstretching one's arm too much.

Contents of the Box { See fig. 1 }

- Radiation Detector
- Battery Charger
- Telescopic Extender(Monopod)

Safety instructions

Please go through these instructions carefully before operating your DETEX 189. It contains information regarding usage, safety and maintenance.

The device is intended for indoor use only. Kindly note to avoid excessive heat, dust, humidity, liquids or impact.

This device is not intended to be serviced by the user as there are no user- serviceable parts inside. Also unscrewing the case will void the guarantee.

Clean the device case using a damp cloth only. Prior to cleaning shut it "OFF" and unplug charger if connected. Do not manipulate its electronics inside.

This device should only be used for the purposes described in this manual and only in combination with supplied or recommended accessories.

Specifications

Regulatory Model No: DETEX 189

Typical microwave detector and internal antenna frequency response:

800 MHz to 4000 MHz

Radiation power measurement range:

- 50 dBm to + 10 dBm [Power density of 1,000,000 microwatts per square meter]

LED scale points:

Only Green LED ON: Power level less than -30 dBm \pm 3 dBm over the frequency range.

Yellow and Green LEDs ON: Power level between -30 dBm to -15 dBm with an accuracy of \pm 3 dBm over the frequency range.

Red, Yellow and Green LEDs ON: Power level greater than -15 dBm \pm 3 dBm over the frequency range

Power Source:

Li-ion Rechargeable battery (3.7 V, 1000 mAh) { Part No.: 189-B or any make equivalent to NOKIA BL-5C }

Maximum Current Consumption:

50 mA at 3.7 V when all LEDs ON and buzzer beeping

Rechargeable Battery Life:

Approx. 2 to 3 years.

Operating Time:

Once fully charged, device can work up to 24 hours depending on the mode of operation.

Device Dimension:

200mm x 80mm x 25 mm (at top) to 42mm(at bottom)

Package Size:

250mm x 120mm x 60 mm

Device weight:

250grams including battery

Package weight:

350grams including battery

Operating Temperature:

0°C to 50°C

Humidity:

90% RH, Non- condensing

Detex 189 Overview



PARTS DESCRIPTION

1. LED [red]
2. LED [yellow]
3. LED [green]
4. Buzzer
5. Battery Cover
6. Extender (Monopod) Screw Socket [1/4"-20 TPI socket]
7. Battery Charger jack
8. 3-position sliding switch

Fig.2

Operation

1. Move the "3-position slide switch" (fig.2a-part:9) to center, plug in the charger (DC 5.0 V, 500 mA of any make) into the jack (fig.2a-part:8) & charge the device for few hours after unpacking for the first time.
2. Move the "3-position slide switch" to the left to set both LEDs and BUZZER "ON", or to the right to set LEDs "ON" & BUZZER "OFF".

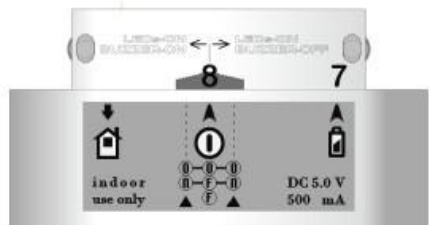


Fig.2a

3. Hold the device at the bottom vertically and move around the room to detect the radiation seepage from the walls/ceilings/ windows/doors/vents. You can also use the device to continuously monitor/detect the radiation levels.

Follow the 3 - LED indicators carefully { see fig.2b }

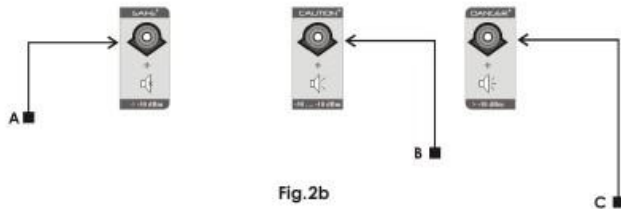


Fig.2b

- A.** If only **GREEN LED** lights up, it is **SAFE** *and everything is ok.*
- B.** If **Yellow LED** lights up along with **GREEN LED** and buzzer BEEPS, it is a **CAUTION** and *It is OK to be concerned as there is something wrong.*
- C.** If **RED LED** lights up along with **Yellow LED** and **GREEN LED** and buzzer BEEPS, it is **DANGER** and *be prudent to act fast and take preventive steps.*

To detect radiation levels at hard-to-reach areas, the Telescopic Extender(Monopod) should be screwed to the 1/4"-20 TPI socket (located at the bottom of the unit) which provides maximum convenience by extending your reach, so that you can avoid any discomfort in detecting radiation from ceiling or any other vent openings located high on the walls.

Meaning of different LED colours

Indication of measured microwave power in the frequency range of 800 MHz to 4000 MHz by different LED colours has been decided after interacting with hundreds of people where measurements have been carried out, and interviewing them about possible health hazards experienced by them or their family members / colleagues.

Below -30 dBm, most people report no health problem, so this is indicated by **GREEN LED**. However, it has been reported in the literature that some electro-sensitive individuals do experience adverse health effects even at power level as low as -40 dBm to -50 dBm.

Between -30 dBm to -15 dBm, some individuals complain of headache, sleep disturbance, joint pain, memory loss, stress, fatigue, skin rashes and even miscarriages over a few years of exposure, so this is indicated by **Yellow LED**.

Above -15 dBm, many individuals have reported above health problems within a year and a few cases of cancer have been observed within few years, so this is indicated by **RED LED**.

**Disclaimer - The above health effects are based on individual sensitivity / immunity.*

Troubleshooting

Problem	Possible Solutions
No LED is lighting up	a] Check if the device is "ON" b] Check if battery is charged properly
Buzzer is not working	Make sure that the switch is in the 'BUZZER-ON' mode
LEDs glow in random & all of sudden blip	a] Make sure you are not holding the device from top where antenna exists. b] Make sure you are holding the device steadily & vertically away from your body. c] Regular blips may be due to Wi-Fi or radar signals or live cell-phone receiving/ transmitting a call/ SMS nearby.
The device is "ON" but the LEDs are stuck	The device was turned "OFF" then "ON" too quickly Switch OFF the device again, wait for a minute, and then turn it "ON"
Radiation status (safe/caution/ danger) at a particular place/ spot is changing from time to time.	Most cell phone towers emit different amounts of power during a day because network usage and reception conditions change constantly with time. This is the reason, why it is necessary to go for several testing sessions.

WHAT TO DO IF RADIATION LEVEL IS HIGH AT YOUR PREMISES

If cell tower radiation is high at your premises, which is indicated by RED LED and/or Yellow LED you can request your Government or Telecom regulatory body to adopt stricter radiation norms. You can also request cell operators to reduce the transmitted power or ask them to change the direction of transmitting antenna or remove the tower. You can tell operators "Reduce the Power or Remove the Tower".

It is possible that the above may take time to get implemented. Meanwhile, you can take following precautions:

Avoid places where there is high radiation, especially when RED LED is "ON".

Try to spend as little time as possible where radiation is high indicated by RED LED and/or Yellow LED.

Drink more water.

You can do SHIELDING of your place where radiation level is high. Shielding can reduce the radiation level considerably, which can be checked with **Detex 189**.

Please call us or send us an email. We will assist you with further info on shielding.

Disclaimer

While we consider the information given here are correct to the best of our knowledge, you must rely upon your own skills when interpreting the data contained in this manual.

IMPORTANT: The device, DETEX 189, should not be used for any form of diagnosis and treatment.

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Appendix A: Conversion table between dBm to $\mu\text{W}/\text{m}^2$ (Power Density) for continuous wave signals

Table - Conversion from Power received from a monopole antenna of gain = 2 dB to Power Density at different frequencies.

Power received by Detex 189	Power density at different frequencies (Micro Watt/sq. meter)			
	900 MHz	1800 MHz	2140 MHz	2450 MHz
10 dBm = 10000 μW	706,860	2,827,440	3,996,464	5,238,180
5 dBm = 3160 μW	223,529	894,115	1,263,793	1,656,458
0 dBm = 1000 μW	70,686	282,744	399,646	523,818
-5 dBm = 316 μW	22,352	89,411	126,379	165,646
-10 dBm = 100 μW	7,069	28,274	39,964	52,382
-15 dBm = 31.6 μW	2,235	8,941	12,638	16,564
-20 dBm = 10 μW	707	2,827	3,996	5,238
-25 dBm = 3.1 μW	223	894	1,264	1,656
-30 dBm = 1 μW	71	283	399	524
-35 dBm = 0.3 μW	22	89	126	166
-40 dBm = 0.1 μW	7	28.3	40	52

where,

f = 900 MHz is approximately the center frequency of CDMA tower (869 to 890 MHz) and GSM900 tower (935 to 960 MHz) transmit frequency bands

f = 1800 MHz corresponds to GSM1800 cell tower (1810 to 1880 MHz) transmit frequency band.

f = 2140 MHz is the center frequency of 3G.

f = 2450 MHz is approximately the center frequency of WiFi, WLAN, Bluetooth, Microwave oven, etc.