General Testing procedures of the LTE, 3G/2G user Equipment/mobile stations (UE/MS)

> Awad Mulah NTC-Sudan-Head of RF testing laboratory ITU-T SG 11 vice-chairman

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Why?	We test
What?	We test
How	We test



### **SG** 11

SG11 has been designated Lead study group for the following specific areas of study:•signalling and protocols, including for IMT-2020 technologies

•Establishing test specifications, conformance and interoperability testing for all types of networks, technologies and services that are the subject of study and standardization

combating counterfeiting of ICT devicescombating the use of stolen ICT devices



# Why we Test?

Any modern wireless communications system should ensure that and guarantee each user in their networks can place a phone call from anywhere at anytime.

That happened depend on many factors (i.e. network coverage, MS/UE type approved).

In order to achieve this goal from testing point of view points below should be consider according to specification of equipment:

- Transceiver Requirement (conformity)
- Communicate (Interoperability)
- Interference (RF band leakage)





![](_page_4_Picture_1.jpeg)

What we test? (UE/3G, 4G)In 3G testing, Primary focus is on UE that contain transmitting and receiving characteristics in addition to performance requirement plus support of RRM.

Test	What
Transmitter	MAX/MIN output power
	Frequency Error
	EVM
	OBW
Receiver	Reference sensitivity Level
	MAX input level

![](_page_5_Picture_2.jpeg)

### How we test? Mainly the test measurement focused in TCH or PDCH, the RF signal therefore will be analyzed at the specific channel frequency at specific time window The follow chart describe steps for measurement

#### GSM FDD

#### 900-1800 MHz (45-95 channel spacing)

#### 124 channel

Channel **X** (902.4D-947.2U)MHz

i.e. (test for uplink 947.2)

TDMA frame (8 time slot)

Time slot (**n**)

Testing and measurement goes here in T3

X= by default and according to 3ggp standards assign to channel 62 in GSM 900 MHzn= by default and according to 3ggp standards assign to time slot 3 in GSM 900 MHz

![](_page_6_Picture_10.jpeg)

## Test requirement

- MS/DUT: the equipment under test offered to test house
- Test equipment (system simulator): use of test equipment to provide the MS/DUT with stimulus signals and to analyze and record the test result
- Anechoic shield chamber: is a room designed to completely absorb reflections of either sound or electromagnetic waves

![](_page_7_Picture_4.jpeg)

## Recommendations

- ETSI TS 151 010-1
- ETSI TS 151 010-1
- ITU-T 0.150

- ITU-T Q.3945

![](_page_8_Picture_9.jpeg)

![](_page_8_Picture_10.jpeg)

![](_page_9_Picture_0.jpeg)