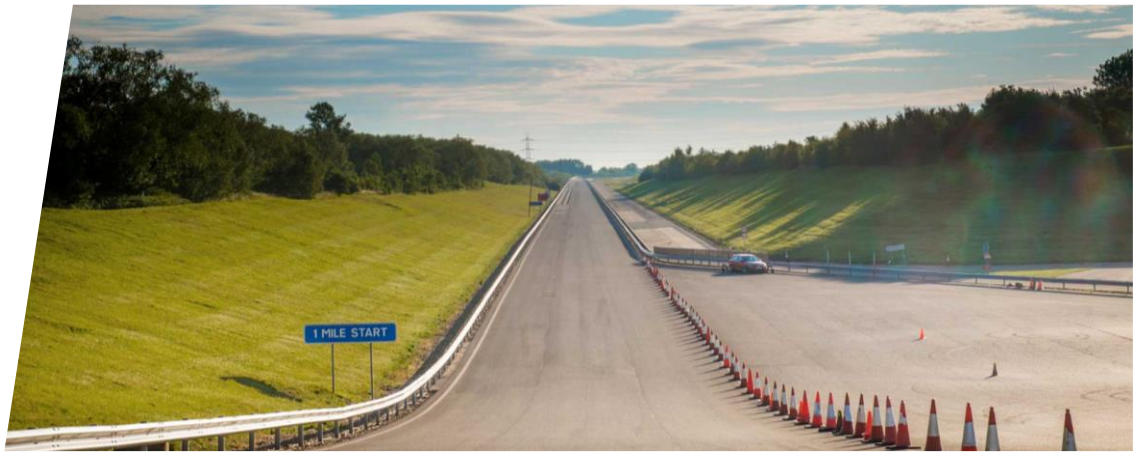
e-Call testing



Context

GRSG stated that “ a majority of Contracting Parties supported the option 2b methodology as a compromise.”

During the last discussions in IWG-EMC, it appears that the test methodology and/or test setup and/or vehicle operating conditions and/or failure criteria shall be more detailed to ensure uniform implementation by all Technical Services.

For that UTAC propose to share with the IWG-EMC, some elements on the ***methodology***, ***setup***, ***operating conditions***, ***communication channels used***, ***failure criteria.***

Methodology

As defined in ISO 11451-1 clause 7.2.2 :

7.2.2 Substitution

The substitution method is based upon the use of forward power as the reference parameter for calibration and testing. With this method, the specific test level (electric field, current, voltage, or power) shall be calibrated prior to the actual testing of the vehicle.

This method is carried out in two phases:

— calibration phase (without the vehicle and any ancillary equipment);

— test of the vehicle.

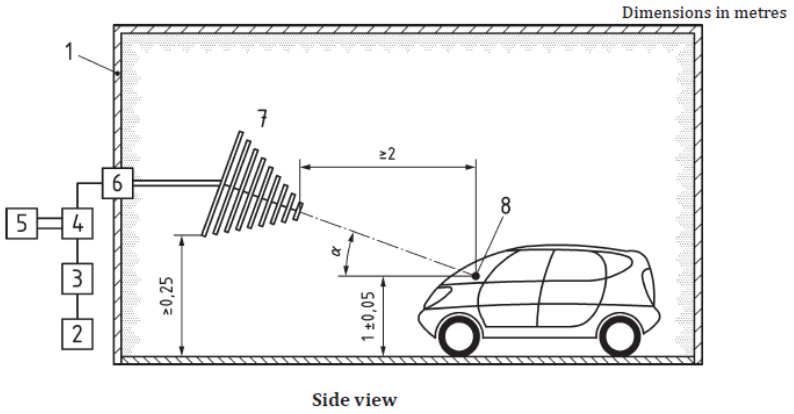
During calibration and test, both forward and reflected power shall be recorded.

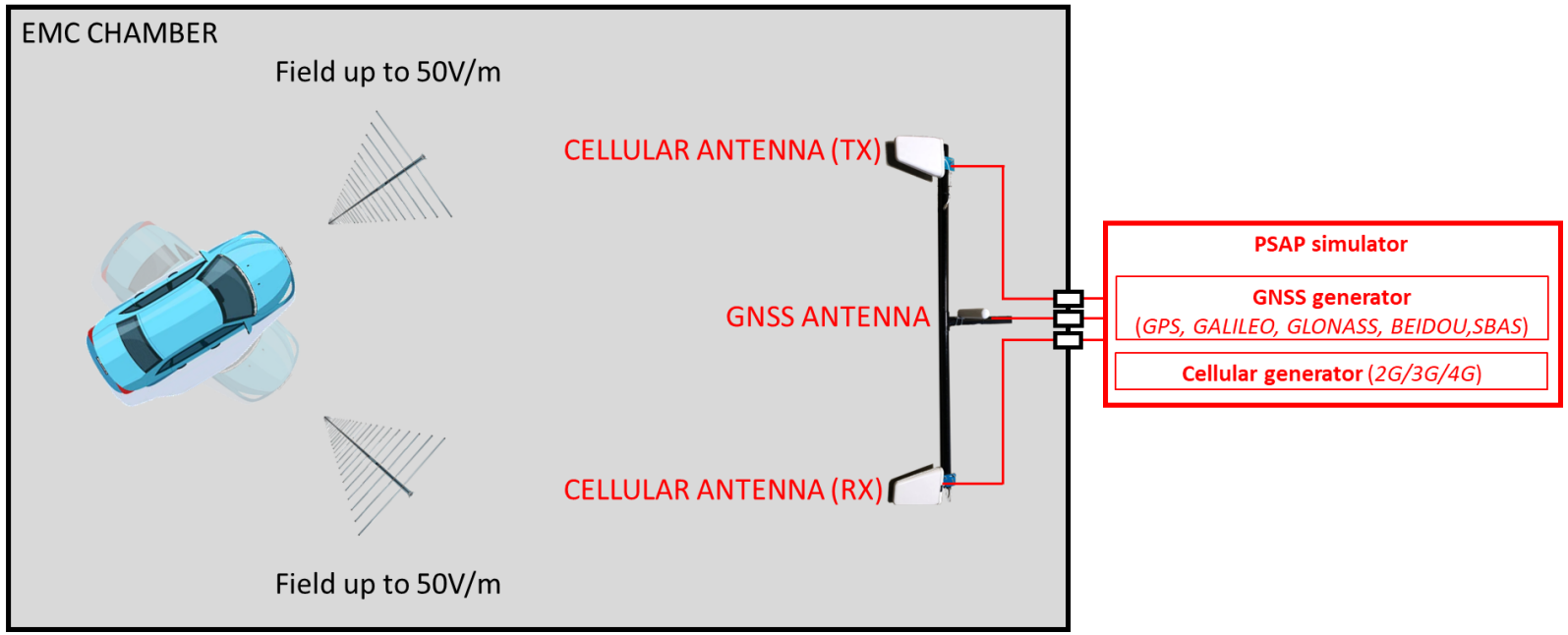
Setup & Operating Conditions

<u>According to the proposal 2b :</u>

Emergency calling systems shall be tested (either by performing manual or automatic triggering using an emulated or public network) before, during (outside frequency band defined in clause 6.10.6) and after performing tests defined in "50 km/h mode" or in "brake mode" vehicle test conditions.

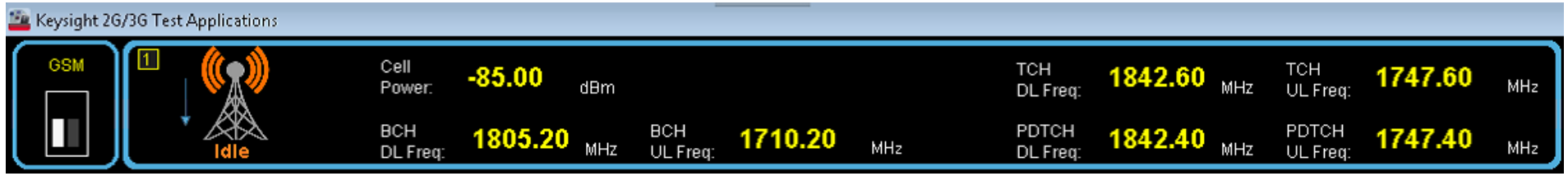
The test during field irradiation shall be achieved by triggering and maintaining a single emergency call during the whole test.





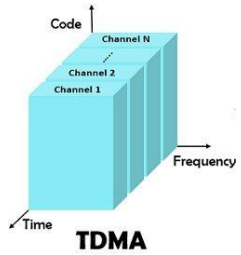
When the location of antennas (cellular and GNSS) are defined, the disturbances conducted by the cables should be measure to adapt the protection rack

Communication channels used and details

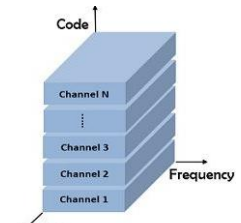


At UTAC, unless otherwise specified we use the following bands :

	ARFCN (Absolute Radio-Frequency Channel Number)		
	Broadcast Channel	Traffic Channel	Packet Data Transfert Channel
GSM 900 (2G)	**38** (942.6 MHz - 897.6 MHz)	**48** (944.6 MHz - 899.6 MHz)	**58** (946.6 MHz - 901.6 MHz)
DCS 1800 (2G)	**699** (1842.6 MHz - 1747.6 MHz)	**709** (1844.6 MHz - 1749.6 MHz)	**719** (1846.6 MHz - 1751.6 MHz)
UMTS (3G)	**10700** (2140 MHz – 1950 MHz)		



TDMA



CDMA

- Source ARFCN (Absolute Radio-Frequency Channel Number) : [ARFCN Calculator (cellmapper.net)]

Communication channels used and details (GSM900)

Broadcast Channel

Select Network Type

2G GSM

E/U/ARFCN number (Downlink only)

38

Band Class Select region

EMEA

Calculate

Result

Network Type	GSM (TDMA)
E/U/ARFCN	38
Band Name	GSM 900
Uplink Frequency (phone to base station)	897.6 MHz
Downlink Frequency (base station to phone)	942.6 MHz
Band Number	900
Possible Bandwidths	0.2 MHz
Sector Color	

Traffic Channel

Select Network Type

2G GSM

E/U/ARFCN number (Downlink only)

48

Band Class Select region

EMEA

Calculate

Result

Network Type	GSM (TDMA)
E/U/ARFCN	48
Band Name	GSM 900
Uplink Frequency (phone to base station)	899.6 MHz
Downlink Frequency (base station to phone)	944.6 MHz
Band Number	900
Possible Bandwidths	0.2 MHz
Sector Color	

Packet Data Transfert Channel

Select Network Type

2G GSM

E/U/ARFCN number (Downlink only)

58

Band Class Select region

EMEA

Calculate

Result

Network Type	GSM (TDMA)
E/U/ARFCN	58
Band Name	GSM 900
Uplink Frequency (phone to base station)	901.6 MHz
Downlink Frequency (base station to phone)	946.6 MHz
Band Number	900
Possible Bandwidths	0.2 MHz
Sector Color	

Communication channels used : base station parameters

2G parameters network

Settings	Purpose	System's preconfigured value	Possible values on UXM
Serving Cell	Set what information is broadcast on broadcast channel. (GSM means no packet data capability on the cell)	GPRS	GSM, GPRS, EGPRS
Cell Identity	Cell Identity uniquely identifies a cell within the location area	0	0 to 65535
Cell BCC	Base Station Color Code	1	0 to 7
Cell MNC	Mobile Network Code	1	0 to 99
Cell MCC	Mobile Country Code	208	0 to 999
Cell NCC	Network Color Code	1	0 to 7
Cell Power	Downlink transmit power	-65 dBm	+40 to -160 dBm
BCH Band	GSM band in which the broadcast channel (BCH) is transmitted	EGSM	DCS,EGSM,GSM450,GSM480,GSM750,GSM850,PCS,PGSM,RGSM,TGSM810
BCH ARFCN	Broadcast channel number	Middle	Depends on the band (0 to 124 & 975 to 1023 in EGSM, 512 to 885 in DCS)
TCH Band	GSM band used for the traffic channel (voice)	EGSM	DCS,EGSM,GSM450,GSM480,GSM750,GSM850,PCS,PGSM,RGSM,TGSM810
TCH ARFCN	Channel number of downlink and uplink traffic channel (voice)	Middle	Depends on the band (0 to 124 & 975 to 1023 in EGSM, 512 to 885 in DCS)
PDTCH Band	GSM band used for the traffic channel (packet data)	EGSM	DCS,EGSM,GSM450,GSM480,GSM750,GSM850,PCS,PGSM,RGSM,TGSM810
PDTCH ARFCN	Channel number of downlink and uplink traffic channel (packet data)	Middle	Depends on the band (0 to 124 & 975 to 1023 in EGSM, 512 to 885 in DCS)
MS Tx Level	Mobile station uplink power control level	5 (EGSM), 0 (DCS)	0 to 15, 30 and 31 in all bands except 0 to 28 in DCS

3G parameters network

Settings	Purpose	System's preconfigured value	Possible values on UXM
DL Channel	Downlink channel	10700	412 to 10838
Cell MCC	Mobile Country Code	1	0 to 999
Cell MNC	Mobile Network Code	1	0 to 999
Cell LAC	Local Area Code	1	0 to 65535
Cell RAC	Routing Area Code	1	0 to 255
Cell Identity	Cell Identity uniquely identifies a cell within the location area	1	0 to 268435455
Cell Power		-65 dBm/3.84MHz	+37 to -165 dBm
UE Target Power		10 dBm	+28 to -61 dBm

Failure criteria

- Incorrect reception of MSD (Automatic activation, Test call, position can be trusted, vehicle type, VIN, vehicle propulsion storage type, Time stamp, Position latitude, Position longitude, Vehicle direction).
- Incomprehensible audio connection
- Tell-tale default

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