3GPP TSG SA WG 1 Meeting 99e S1-22xxxx

Electronic Meeting, 22 August – 1 September 2022

**Title: LS on Sensing Options**

**Response to:**

**Release: Rel-19**

**Work Item: Study on Integrated Sensing and Communication (FS\_Sensing)**

**Source: SA1**

**To: RAN, RAN1, RAN4**

**Cc:**

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**Send any reply LS to: 3GPP Liaisons Coordinator,** **mailto:3GPPLiaison@etsi.org**

**Attachments:** **SP-220717**

# 1 Overall description

SA1 is discussing the potential use cases and KPI in FS\_Sensing. The attachment (SP-220717) is the approved SID. TR 22.837 is the Technical Report of ‘Study on Integrated Sensing and Communication’.

Integrated Sensing and Communication in a 3GPP 5G system means the sensing capabilities are provided by the same 5G NR wireless communication system and infrastructure as used for communication. The UE (e.g. vehicle) and base station can be equipped with the sensing capabilities, and there is no impact on E-UTRA or EPC.

The 3GPP network is in control and steers, configures the respective sensing capabilities based on different criteria including e.g. location, radio resources and authorization.

There can be different sensing options based on the different transmitter/receiver. The transmitter is the module sending wireless/radio signals for sensing. The receiver is the module receiving the wireless/radio signals for sensing. The target object or environment is not a transmitter/receiver.

The following sensing options have been discussed in SA1:

Sensing option 1: UE acting as both transmitter and receiver;

Sensing option 2: gNB acting as both transmitter and receiver

Sensing option 3: UE as Transmitter, gNB as Receiver

Sensing option 4: UE as Transmitter, other UE as Receiver

Sensing option 5: gNB as Transmitter, UE as Receiver

Sensing option 6: gNB as Transmitter, other gNB as Receiver

Although the options above indicate a single UE or base station as transmitter and/or receiver, the sensing options can also involve multiple UEs or base stations acting as transmitters and/or receivers. In addition, multiple different sensing options can be mixed.

Before SA1 specifies the sensing service and KPI requirement, for better understanding the implications of these options, SA1 would like to ask the following questions:

Question 1: Is it technically feasible to perform NR sensing corresponding to the sensing options mentioned above in 5G-advanced framework?

Question 2: If the answer to Question 1 is "Yes" for one or multiple options, which options are technically feasible in 5G-advanced framework?

Question 3: If the answer to Question 1 is "Yes" for one or multiple options related to UE, which scenario (or which type of UE, e.g. mobile phone or vehicle) is expected to perform or participate sensing in these sensing options?

# 2 Actions

**To RAN, RAN1 and RAN4**

**ACTION:** SA1 asks RAN, RAN1 and RAN4 to kindly consider above information and provide answers to the questions.

# 3 Dates of next TSG SA WG 1 meetings

SA1#100 07-11 Nov 2022 TBD, Europe (fallback: Electronic Meeting)

SA1#101 13-17 Feb 2023 Wroclaw, Poland (fallback: Electronic Meeting)