**3GPP TSG-RAN WG4 Meeting # 112 R4-2414305**

Maastricht, Netherlands,19 – 23 Aug, 2024

**Agenda item:** 8.20.4

**Source:** Moderator (Huawei)

**Title:** WF on impacts of A-IoT on RF requirements

**Document for:** Approval

# Introduction

This document captures the agreements about the impacts of Ambient IoT on RF requirements for R19 SI（RP-240826）. The previous WF is R4-2410597.

# Topic #1: A-IoT System Parameters

### Issue 1-1: System parameter

**Agreement:**

Requirements needed：

channel bandwidth

FFS whether requirements are needed or not:

Transmission bandwidth configuration;

Channel spacing

Channel raster

Requirements not needed：

Synchronization raster

Guard band/Guard RB

# Topic #2: A-IoT BS

### Issue 2-2: A-IoT BS class and BS type

**Agreement:**

* + BS class: Use Micro-BS as baseline in SI stage (reference to SID RP-240826).
  + BS type: Priority A-IoT BS type 1-C, FFS for 1-H.

### Issue 2-4: TX

**Agreement:**

Requirements needed：

Base station output power

Frequency error

Some requirements like EVM

Unwanted emissions (including Occupied bandwidth, ACLR, IBE, Operating band unwanted emissions ,Transmitter spurious emissions)

FFS whether requirements are needed or not:

Output power dynamic (RE power control dynamic range, Total power dynamic range)

Some requirements like Transmit ON/OFF power

Transmitter transient period

IBE

Transmitter intermodulation

Requirements not needed：

Transmission times (requirements from RF ID reader)

TAE

### Issue 2-5: RX

**Agreement:**

Requirements needed：

Reference sensitivity level

Adjacent Channel Selectivity

Blocking requirement

Rx spurious emission

FFS whether requirements are needed or not:

Dynamic range

In-channel selectivity

In-band blocking

Narrow-band blocking

Out-of-band blocking

Receiver intermodulation

Narrowband intermodulation

Receiver intermodulation

Requirements not needed：

# Topic #3: AIoT device

### Issue 3-1: General

**Agreement:**

* Different RF requirement for Ambient IoT Device 1, Device 2a and Device 2b can be specified

### Issue 3-3: TX(D2R)

**Agreement:**

Requirements needed：

Transmit OFF power for device 2b

Power control requirement for device 2b

ON/OFF time mask for device 2b

Frequency error for device 2b

EVM

In band emissions (IBE) for device 2b

Carrier leakage for device 2b

SEM

ACLR

Spurious emissions

Unwanted emissions

FFS whether requirements are needed or not:

Maximum output power

Transmit OFF power for device 1/2a

Transmit time mask

Minimum output power

Frequency error for device 2a

In band emissions (IBE) for device 2a

Carrier leakage for device 2a

Occupied bandwidth

Transmit intermodulation

Requirements not needed：

Power control requirement for device 1/2a

ON/OFF time mask for device 1/2a

Frequency error for device 1

In band emissions (IBE) for device 1

Carrier leakage for device 1

### Issue 3-4: RX(R2D)

**Agreement:**

Requirements needed：

Reference sensitivity

ACS

ACSC

In-band blocking

Out-of-band blocking

FFS whether requirements are needed or not:

Maximum input power

Receiver intermodulation

Rx spurious emission

Requirements not needed：

Spurious response

### Issue 3-5: testability

**Agreement:**

* Take OTA test as the baseline for at least Devices 1 and 2a

# Topic #4: Intermediate node(UE)

### Issue 4-2: TX

**Agreement:**

Requirements needed：

Maximum output power

Transmitted signal quality (Frequency error, EVM)

Occupied bandwidth

Spectrum emission mask

Transmitter

Intermodulation

ACLR

Operating band unwanted emissions

Transmitter spurious emissions

FFS whether requirements are needed or not:

Output power dynamics

Transmit ON/OFF power

Transmit ON/OFF time mask

IBE

Requirements not needed：

Transmission times

### Issue 4-3: RX

**Agreement:**

Requirements needed：

Reference sensitivity power level

Maximum input power

Receiver intermodulation

FFS whether requirements are needed or not:

ACS

In-band blocking

Out-of-band blocking

Narrow band blocking

Receiver spurious response

Rx spurious emission

Requirements not needed：

ICS

### Issue 4-4: CW for D2T2

**Agreement:**

Requirements needed：

Output power

RF spectrum emission

FFS whether requirements are needed or not:

Operation bands

Channel bandwidth related requirements

Channel arrangement related

Transmit signal quality

Requirements not needed：

Output power dynamic range