

# APPLICATION FORM FOR TESTING RADIO SPECTRUM MATTERS OF DATA TRANSMISSION EQUIPMENT OPERATING IN THE 2.4 GHZ ISM BAND

In accordance with ETSI EN 300 328, the following information is provided by the supplier. This application form should form an integral part of the test report.

# a) The type of wideband data transmission equipment:

FHSS
non-FHSS

# b) In case of FHSS:

- In case of non-Adaptive FHSS equipment:
  - The number of Hopping Frequencies:
- In case of Adaptive FHSS equipment:
  - The maximum number of Hopping Frequencies:
  - The minimum number of Hopping Frequencies:
- The (average) dwell time:

# c) Adaptive/non-adaptive equipment:

non-adaptive Equipment

adaptive Equipment without the possibility to switch to a non-adaptive mode

adaptive Equipment which can also operate in a non-adaptive mode

#### d) In case of adaptive equipment:

The maximum Channel Occupancy Time implemented by the equipment:

\_\_\_\_ ms

The equipment has implemented an LBT mechanism

• In case of non-FHSS equipment:

The equipment is Frame Based equipment

The equipment is Load Based equipment

☐ The equipment can switch dynamically between Frame Based and Load Based equipment

The CCA time implemented by the equipment: \_\_\_\_\_ µs

The equipment has implemented a DAA mechanism

The equipment can operate in more than one adaptive mode



#### e) In case of non-adaptive Equipment:

The maximum RF Output Power (e.i.r.p.): \_\_\_\_\_ dBm

The maximum (corresponding) Duty Cycle: \_\_\_\_\_%

Equipment with dynamic behaviour, that behaviour is described here. (e.g. the different combinations of duty cycle and corresponding power levels to be declared):

#### f) The worst case operational mode for each of the following tests:

- RF Output Power
- Power Spectral Density
- Duty cycle, Tx-Sequence, Tx-gap
- Accumulated Transmit time, Frequency Occupation & Hopping Sequence (only for FHSS equipment)
- Hopping Frequency Separation (only for FHSS equipment)
- Medium Utilization
- Adaptivity & Receiver Blocking
- Nominal Channel Bandwidth
- Transmitter unwanted emissions in the OOB domain
- Transmitter unwanted emissions in the spurious domain
- Receiver spurious emissions



## g) The different transmit operating modes (tick all that apply):

Operating mode 1: Single Antenna Equipment

Equipment with only one antenna

Equipment with two diversity antennas but only one antenna active at anymoment in time

Smart Antenna Systems with two or more antennas, but operating in a (legacy) mode where only one antenna is used (e.g. IEEE 802.11<sup>™</sup> legacy mode in smart antenna systems)

Operating mode 2: Smart Antenna Systems - Multiple Antennas without beam forming

Single spatial stream/Standard throughput/(e.g. IEEE 802.11<sup>™</sup> legacy mode)

High Throughput (> 1 spatial stream) using Nominal Channel Bandwidth 1

High Throughput (> 1 spatial stream) using Nominal Channel Bandwidth 2

NOTE 1: Add more lines if more channel bandwidths are supported.

Operating mode 3: Smart Antenna Systems - Multiple Antennas with beam forming

Single spatial stream/Standard throughput (e.g. IEEE 802.11<sup>™</sup> legacy mode)

High Throughput (> 1 spatial stream) using Nominal Channel Bandwidth 1

High Throughput (> 1 spatial stream) using Nominal Channel Bandwidth 2

NOTE 2: Add more lines if more channel bandwidths are supported.

#### h) In case of Smart Antenna Systems:

- The number of Receive chains:
- The number of Transmit chains:

symmetrical power distribution

asymmetrical power distribution

In case of beam forming, the maximum (additional) beam forming gain: \_\_\_\_\_ dB

NOTE: The additional beam forming gain does not include the basic gain of a single antenna.

# i) Operating Frequency Range(s) of the equipment:

- Operating Frequency Range 1: \_\_\_\_\_ MHz to \_\_\_\_\_ MHz
- Operating Frequency Range 2: \_\_\_\_\_ MHz to \_\_\_\_\_ MHz

NOTE: Add more lines if more Frequency Ranges are supported.



#### j) Nominal Channel Bandwidth(s):

- Nominal Channel Bandwidth 1: \_\_\_\_\_ MHz
- Nominal Channel Bandwidth 2: \_\_\_\_\_ MHz

NOTE: Add more lines if more channel bandwidths are supported.

#### k) Type of Equipment (stand-alone, combined, plug-in radio device, etc.):

Sta	and-a	lone
 -		

- Combined Equipment
- Plug-in radio device
- Other \_\_\_\_\_

#### I) The normal and the extreme operating conditions that apply to the equipment: Normal operating conditions (if applicable):

Normal operating conditions (ir applicable).	
Operating temperature:	°C
Other (please specify if applicable):	
Extreme operating conditions:	
Operating temperature range:	

Minimum: °C

Maximum: \_\_\_\_\_ °C

Details provided are for the:

stand-alone equipment

combined equipment

🗌 test jig

# m) The intended combination(s) of the radio equipment power settings and one or more antenna assemblies and their corresponding e.i.r.p. levels:

• Antenna Type:

Integral Antenna (information to be provided in case of conducted measurements)

Antenna Gain: \_\_\_\_\_ dBi

If applicable, additional beamforming gain (excluding basic antenna gain): \_\_\_\_\_

Temporary RF connector provided

No temporary RF connector provided

Dedicated Antennas (equipment with antenna connector)

Single power level with corresponding antenna(s)

Multiple power settings and corresponding antenna(s)



Number of different Power Levels: \_\_\_\_\_

Power Level 1: \_\_\_\_\_ dBm

Power Level 2: \_\_\_\_\_ dBm

Power Level 3: \_\_\_\_\_ dBm

NOTE 1: Add more lines in case the equipment has more power levels.

NOTE 2: These power levels are conducted power levels (at antenna connector).

• For each of the Power Levels, provide the intended antenna assemblies, their corresponding gains (G) and the resulting e.i.r.p. levels also taking into account the beamforming gain (Y) if applicable

# Power Level 1: \_\_\_\_\_ dBm

Number of antenna assemblies provided for this power level: \_\_\_\_\_

Assembly #	Gain (dBi)	e.i.r.p. (dBm)	Part number or model name
1			
2			
3			
4			

NOTE 3: Add more rows in case more antenna assemblies are supported for this power level.

#### Power Level 2: \_\_\_\_\_ dBm

Number of antenna assemblies provided for this power level: \_\_\_\_\_

Assembly #	Gain (dBi)	e.i.r.p. (dBm)	Part number or model name
1			
2			
3			
4			

NOTE 4: Add more rows in case more antenna assemblies are supported for this power level.



# Power Level 3: \_\_\_\_\_ dBm

Number of antenna assemblies provided for this power level: \_\_\_\_\_

Assembly #	Gain (dBi)	e.i.r.p. (dBm)	Part number or model name
1			
2			
3			
4			

NOTE 5: Add more rows in case more antenna assemblies are supported for this power level.

# n) The nominal voltages of the stand-alone radio equipment or the nominal voltages of the combined equipment or test jig in case of plug-in devices:

Details provided are for the:

- stand-alone equipment
- combined equipment
- test jig

Supply Voltage:

AC mains	State AC voltage:	V
	State DC voltage:	V

In case of DC, indicate the type of power source

Internal Power Supply

External Power Supply or AC/DC adapter

- Battery
- Other: \_\_\_\_\_

#### o) Describe the test modes available which can facilitate testing:



p) The equipment type (e.g. Bluetooth®, IEEE 802.11<sup>™</sup>, IEEE 802.15.4<sup>™</sup>, proprietary, etc.):

#### q) If applicable, the statistical analysis referred to in clause 5.4.1 q)

(to be provided as separate attachment)

## r) If applicable, the statistical analysis referred to in clause 5.4.1 r)

(to be provided as separate attachment)

## s) Geo-location capability supported by the equipment:

🗌 Yes

The geographical location determined by the equipment as defined in clause 4.3.1.13.2 or clause 4.3.2.12.2 is not accessible to the user

🗌 No

# Configuration for testing (see clause 5.3.2.3 of ETSI EN 300 328 V2.2.2)

From all combinations of conducted power settings and intended antenna assembly(ies) specified in clause 5.4.1 m), specify the combination resulting in the highest e.i.r.p. for the radio equipment. Unless otherwise specified in ETSI EN 300 328, this power setting is to be used for testing against the requirements of ETSI EN 300 328. In case there is more than one such conducted power setting resulting in the same (highest) e.i.r.p. level, the highest power setting is to be used for testing is to be used for testing. See also ETSI EN 300 328, clause 5.3.2.3.

Highest overall e.i.r.p. value:	dBm	
Corresponding Antenna assembly gain:	dBm	Antenna Assembly #:
Corresponding conducted power setting:	dBm	Listed as Power Setting #:
(also the power level to be used for testing)		

# Additional information provided by the manufacturer

# Modulation

ITU Class(es) of emission: \_\_\_\_\_

\_\_\_ No

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# **Duty Cycle**

The transmitter is intended for:

- Continuous duty
- Intermittent duty
- Continuous operation possible for testing purposes

## About the UUT

- The equipment submitted are representative production models
- If not, the equipment submitted are pre-production models?
- If pre-production equipment are submitted, the final production equipment will be identical in all respects with the equipment tested
- If not, supply full details

# Additional items and/or supporting equipment provided