



ANNEX E

BT

In accordance with ETSI EN 300 328, clause 5.4.1, the following information is provided by the manufacturer.

a) The type of modulation used by the equipment:

- FHSS
 other forms of modulation

b) In case of FHSS modulation:

In case of non-Adaptive Frequency Hopping equipment:

The number of Hopping Frequencies: 79

In case of Adaptive Frequency Hopping Equipment:

The maximum number of Hopping Frequencies: 79

The minimum number of Hopping Frequencies: 79

The (average) Dwell Time: 70 ms

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 based DAA mechanism

In case of equipment using modulation different from FHSS:

- 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: _____ μ s

- The equipment has implemented a non-LBT based 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:

The worst case	
Test item	operational mode
RF Output Power	GFSK
Duty cycle, Tx-Sequence, Tx-gap	GFSK
Accumulated Transmit time, Frequency Occupation & Hopping Sequence (only for FHSS equipment)	GFSK
Hopping Frequency Separation (only for FHSS equipment)	GFSK
Adaptivity & Receiver Blocking	GFSK
Nominal Channel Bandwidth	GFSK
Transmitter unwanted emissions in the OOB domain	GFSK
Transmitter unwanted emissions in the spurious domain	GFSK
Receiver spurious emissions	GFSK

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 any moment 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™ [i.3] legacy mode in smart antenna systems)
- Operating mode 2: Smart Antenna Systems - Multiple Antennas without beamforming
- Single spatial stream / Standard throughput / (e.g. IEEE 802.11™ [i.3] 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™ [i.3] 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 beamforming, the maximum (additional) beamforming 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: 2400 MHz to 2483.5 MHz



Operating Frequency Range 2: N/A MHz to N/A MHz

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

j) Nominal Channel Bandwidth(s):

Nominal Channel Bandwidth 1: 1 MHz

Nominal Channel Bandwidth 2: N/A MHz

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

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

Stand-alone

Combined Equipment (Equipment where the radio part is fully integrated within another type of equipment)

Plug-in radio device (Equipment intended for a variety of host systems)

Other _____

l) The normal and the extreme operating conditions that apply to the equipment:

Normal operating conditions (if applicable):

Operating temperature: 15~35 ° C

Other (please specify if applicable): N/A

Extreme operating conditions:

Operating temperature range: Minimum: 0 ° C Maximum 40 ° C

Other (please specify if applicable): N/A Minimum: N/A Maximum N/A

Details provided are for the:

stand-alone equipment

combined (or host) 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: 0.5 dBi

If applicable, additional beamforming gain (excluding basic antenna gain): N/A dB

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 (host) equipment or test jig in case of plug-in devices:

Details provided are for the:

- stand-alone equipment
- combined (or host) equipment
- test jig

Supply Voltage

- AC mains State AC voltage _____ V
- DC State DC voltage 3.7 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:

Please refer to Test Report Section 2.7 Additional Instructions.

p) The equipment type (e.g. Bluetooth®, WIFI: IEEE 802.11™ [i.3], IEEE 802.15.4™ [i.4], proprietary, etc.):

Bluetooth®

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

(to be provided as separate attachment)

Frequency Occupation has been tested in option 1, the result is record in Test Report Section A.4.

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

t) Describe the minimum performance criteria that apply to the equipment (see clause 4.3.1.12.3 or clause 4.3.2.11.3):

The minimum performance criterion shall be a PER less than or equal to 10 %.



ANNEX E

BLE

In accordance with ETSI EN 300 328, clause 5.4.1, the following information is provided by the manufacturer.

a) The type of modulation used by the equipment:

- FHSS
- other forms of modulation

b) In case of FHSS modulation:

In case of non-Adaptive Frequency Hopping equipment:

The number of Hopping Frequencies: _____

In case of Adaptive Frequency Hopping Equipment:

The maximum number of Hopping Frequencies: _____

The minimum number of Hopping Frequencies: _____

The (average) Dwell Time: _____ ms

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 based DAA mechanism

In case of equipment using modulation different from FHSS:

- 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: _____ μ s

- The equipment has implemented a non-LBT based 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:

The worst case	
Test item	operational mode
RF Output Power	GFSK
Power Spectral Density	GFSK
Duty cycle, Tx-Sequence, Tx-gap	GFSK
Adaptivity & Receiver Blocking	GFSK
Nominal Channel Bandwidth	GFSK
Transmitter unwanted emissions in the OOB domain	GFSK
Transmitter unwanted emissions in the spurious domain	GFSK
Receiver spurious emissions	GFSK

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 any moment 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™ [i.3] legacy mode in smart antenna systems)
- Operating mode 2: Smart Antenna Systems - Multiple Antennas without beamforming
 - Single spatial stream / Standard throughput / (e.g. IEEE 802.11™ [i.3] 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™ [i.3] 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 beamforming, the maximum (additional) beamforming 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: 1 MHz

Nominal Channel Bandwidth 2: N/A MHz

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

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

Stand-alone

Combined Equipment (Equipment where the radio part is fully integrated within another type of equipment)

Plug-in radio device (Equipment intended for a variety of host systems)

Other _____

l) The normal and the extreme operating conditions that apply to the equipment:

Normal operating conditions (if applicable):

Operating temperature: 15~35 °C

Other (please specify if applicable): N/A

Extreme operating conditions:

Operating temperature range: Minimum: 0 °C Maximum 40 °C

Other (please specify if applicable): N/A Minimum: N/A Maximum N/A

Details provided are for the:

stand-alone equipment

combined (or host) 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: 0.5 dBi

If applicable, additional beamforming gain (excluding basic antenna gain): N/A dB

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 (host) equipment or test jig in case of plug-in devices:

Details provided are for the:

- stand-alone equipment
- combined (or host) equipment
- test jig

Supply Voltage

- AC mains State AC voltage _____ V
- DC State DC voltage 3.7 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:

Please refer to Test Report Section 2.7 Additional Instructions.

p) The equipment type (e.g. Bluetooth®, WIFI: IEEE 802.11™ [i.3], IEEE 802.15.4™ [i.4], proprietary, etc.):

Bluetooth®

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

t) Describe the minimum performance criteria that apply to the equipment (see clause 4.3.1.12.3 or clause 4.3.2.11.3):

The minimum performance criterion shall be a PER less than or equal to 10 %.