TEST REPORT

Product Name:	Mini PC
Trademark:	N/A
Model Number:	B4 Turbo, For other models, see section P4.1
Prepared For:	Creature Information(Guangzhou)Technology Co., Limited
Address:	No.123, Baishashui Road, Tianhe District, Guangzhou, China
Manufacturer:	Creature Information(Guangzhou)Technology Co., Limited
Address:	No.123, Baishashui Road, Tianhe District, Guangzhou, China
Prepared By:	Shenzhen CTB Testing Technology Co., Ltd.
Address:	1&2/F., Building A, No.26, Xinhe Road, Xinqiao, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, China
Sample Received Date:	Mar. 17, 2025
Sample tested Date:	Mar. 17, 2025 to Apr. 07, 2025
Issue Date:	Apr. 07, 2025
Report No.:	CTB25031709702RF04
Test Standards	ETSI EN 300 328 V2.2.2 (2019-07)
Test Results	PASS
Remark:	This is Bluetooth radio test report.

Compiled by:	Reviewed by:	Approved by:
Zhou Kui	Arron Liu	Bin Mei / Director

Note: If there is any objection to the inspection results in this report, please submit a written report to the company within 15 days from the date of receiving the report. The test report is effective only with both signature and specialized stamp. This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen CTB Testing Technology Co., Ltd. this report can’t be reproduced except in full. The tested sample(s) and the sample information are provided by the client. “*” indicates the testing items were fulfilled by subcontracted lab. “#” indicates the items are not in CNAS accreditation scope.

TABLE OF CONTENT

(Note: N/A means not applicable)

1. VERSION

Report No.	Issue Date	Description	Approved
CTB25031709702RF04	Apr. 07, 2025	Original	Valid

2. TEST SUMMARY

The Product has been tested according to the following specifications:

Standard	ETSI EN 300 328 V2.2.2		
Test Item	**Test Requirement**	**Test Method**	**Results**
Transmitter Parameters			
RF Output Power	Clause 4.3.1.2	Clause 5.4.2	PASS
Power Spectral Density	Clause 4.3.2.3	Clause 5.4.3	N/A[1]
Duty cycle, Tx-Sequence, Tx-gap	Clause 4.3.1.3	Clause 5.4.2	N/A[2]
Accumulated Transmit time, Frequency Occupation & Hopping Sequence	Clause 4.3.1.4	Clause 5.4.4	PASS
Hopping Frequency Separation	Clause 4.3.1.5	Clause 5.4.5	PASS
Medium Utilization	Clause 4.3.1.6	Clause 5.4.2	N/A[2]
Adaptivity	Clause 4.3.1.7	Clause 5.4.6	N/A[3]
Occupied Channel Bandwidth	Clause 4.3.1.8	Clause 5.4.7	PASS
Transmitter unwanted emissions in the OOB domain	Clause 4.3.1.9	Clause 5.4.8	PASS
Transmitter unwanted emissions in the spurious domain	Clause 4.3.1.10	Clause 5.4.9	PASS
Receiver Parameters			
Receiver spurious emissions	Clause 4.3.1.11	Clause 5.4.10	PASS
Receiver Blocking	Clause 4.3.1.12	Clause 5.4.11	PASS
Geo-location capability	Clause 4.3.1.13	Clause 5.4.12	N/A[4]

Remark:
N/A[1]: Only for equipment using wide band modulations other than FHSS
N/A[2]: Only for non-Adaptive equipment.
N/A[3]:The maximum ouput power of EUT less than 10dBm, so not applicable
N/A[4]: Only for equipment with geo-location capability
Tx: In this whole report Tx (or tx) means Transmitter.
Rx: In this whole report Rx (or rx) means Receiver.
RF: In this whole report RF means Radiated Frequency.
CH: In this whole report CH means channel.

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3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Item	Uncertainty
Occupancy bandwidth	54.3kHz
Conducted output power Above 1G	0.9dB
Conducted output power below 1G	0.9dB
Power Spectral Density , Conduction	0.9dB
Conduction spurious emissions	2.0dB
Out of band emission	2.0dB
3m camber Radiated spurious emission(30MHz-1GHz)	4.6dB
3m chamber Radiated spurious emission(1GHz-18GHz)	5.1dB
3m chamber Radiated spurious emission(18GHz-40GHz)	3.4dB
Receiver Reference Sensitivity level	1.9dB
humidity uncertainty	5.5%
Temperature uncertainty	0.63℃
frequency	1×10-7

4. PRODUCT INFORMATION AND TEST SETUP

4.1 Product Information

Model(s):	B4 Turbo, MP01, MP02, MP03, MP05, B1, B1 A, B1 G, B1 J, B1 S, B1 Plus, B1 Pro, B1 Power, B1 Turbo, B1 Ultra, B1 Mini, B2, B2 A, B2 G, B2 J, B2 S, B2 Plus, B2 Pro, B2 Power, B2 Turbo, B2 Ultra, B2 Mini, B2N, B2N S, B2N Plus, B2N Pro, B2N Power, B2N Ultra, B3, B3 A, B3 G, B3 J, B3 S, B3 Plus, B3 Pro, B3 Power, B3 Turbo, B3 Ultra, B3 Mini, B3N, B3N S, B3N Plus, B3N Pro, B3N Power, B3N Ultra, B4, B4 A, B4 G, B4 J, B4 S, B4 Plus, B4 Pro, B4 Power, B4 Turbo, B4 Ultra, B4 Mini, B4A, B4A Plus, B4A Pro, B4A Power, B4A Turbo, B4A Ultra, B5, B5 A, B5 G, B5 J, B5 S, B5 Plus, B5 Pro, B5 Power, B5 Turbo, B5 Ultra, B5A, B5A Plus, B5A Pro, B5A Power, B5A Turbo, B5A Ultra, B6, B6 A, B6 G, B6 J, B6 S, B6 Plus, B6 Pro, B6 Power, B6 Turbo, B6 Ultra, B6A, B6A Plus, B6A Pro, B6A Power, B6A Turbo, B6A Ultra, B7, B7 A, B7 G, B7 J, B7 S, B7 Plus, B7 Pro, B7 Power, B7 Turbo, B7 Ultra, B7A, B7A Plus, B7A Pro, B7A Power, B7A Turbo, B7A Ultra, B8, B8 A, B8 G, B8 J, B8 S, B8 Plus, B8 Pro, B8 Power, B8 Turbo, B8 Ultra, B8A, B8A Plus, B8A Pro, B8A Power, B8A Turbo, B8A Ultra, B9, B9 A, B9 AI, B9 G, B9 J, B9 S, B9 Plus, B9 Pro, B9 Power, B9 Turbo, B9 Ultra, B9A, B9A AI, B9A Plus, B9A Pro, B9A Power, B9A Turbo, B9A Ultra, B10, B10 A, B10 AI, B10 G, B10 J, B10 S, B10 Plus, B10 Pro, B10 Power, B10 Turbo, B10 Ultra, B10A, B10A AI, B10A Plus, B10A Pro, B10A Power, B10A Turbo, B10A Ultra, B11, B11 A, B11 AI, B11 G, B11 J, B11 S, B11 Plus, B11 Pro, B11 Power, B11 Turbo, B11 Ultra, B11A, B11A AI, B11A Plus, B11A Pro, B11A Power, B11A Turbo, B11A Ultra, B12, B12 A, B12 AI, B12 G, B12 J, B12 S, B12 Plus, B12 Pro, B12 Power, B12 Turbo, B12 Ultra, B12A, B12A AI, B12A Plus, B12A Pro, B12A Power, B12A Turbo, B12A Ultra, B13, B13 A, B13 AI, B13 G, B13 J, B13 S, B13 Plus, B13 Pro, B13 Power, B13 Turbo, B13 Ultra, B13A, B13A AI, B13A Plus, B13A Pro, B13A Power, B13A Turbo, B13A Ultra, B14, B14 A, B14 AI, B14 G, B14 J, B14 S, B14 Plus, B14 Pro, B14 Power, B14 Turbo, B14 Ultra, B14A, B14A AI, B14A Plus, B14A Pro, B14A Power, B14A Turbo, B14A Ultra, B15, B15 A, B15 AI, B15 G, B15 J, B15 S, B15 Plus, B15 Pro, B15 Power, B15 Turbo, B15 Ultra, B15A, B15A AI, B15A Plus, B15A Pro, B15A Power, B15A Turbo, B15A Ultra, M1U, M1U Plus, M1U Pro, M1U Power, M1U Turbo, M1U Ultra, M2U, M2U Plus, M2U Pro, M2U Power, M2U Turbo, M2U Ultra, M3U, M3U Plus, M3U Pro, M3U Power, M3U Turbo, M3U Ultra, M4U, M4U Plus, M4U Pro, M4U Power, M4U Turbo, M4U Ultra, M5U, M5U Plus, M5U Pro, M5U Power, M5U Turbo, M5U Ultra, M6U, M6U Plus, M6U Pro, M6U Power, M6U Turbo, M6U Ultra
Model Description:	All the model are the same circuit and RF module, only the model name and appearance are different. Test sample model: B4 Turbo
Bluetooth Version:	Bluetooth 5.2
Hardware Version:	V1.0
Software Version:	V1.0
Operation Frequency:	Bluetooth: 2402-2480MHz
Max. RF output power:	Bluetooth: 8.25dBm
Type of Modulation:	Bluetooth: GFSK, π/4 DQPSK, 8DPSK
Antenna installation:	Bluetooth: Internal antenna
Antenna Gain:	Bluetooth: 1.0dBi
Ratings:	For AC/DC ADAPTER: 100-240V~, 50/60Hz, 1.0A Max. For Mini PC: 12V ⎓ 2.0A

4.2 Test Setup Configuration

See test photographs attached in EUT TEST SETUP PHOTOGRAPHS for the actual connections between Product and support equipment.

4.3 Support Equipment

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
1.	Keyboard	DELL	KB216t	N/A	AE
2.	Mouse	DELL	MS116c	N/A	AE
3.	Monitor	DELL	SE2218HV	N/A	AE
4.	Router	Huawei	AX2 Pro	/	AE

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.4 Channel List

CH	Frequency (MHz)	CH	Frequency (MHz)	CH	Frequency (MHz)	CH	Frequency (MHz)
0	2402	1	2403	2	2404	3	2405
4	2406	5	2407	6	2408	7	2409
8	2410	9	2411	10	2412	11	2413
12	2414	13	2415	14	2416	15	2417
16	2418	17	2419	18	2420	19	2421
20	2422	21	2423	22	2424	23	2425
24	2426	25	2427	26	2428	27	2429
28	2430	29	2431	30	2432	31	2433
32	2434	33	2435	34	2436	35	2437
36	2438	37	2439	38	2440	39	2441
40	2442	41	2443	42	2444	43	2445
44	2446	45	2447	46	2448	47	2449
48	2450	49	2451	50	2452	51	2453
52	2454	53	2455	54	2456	55	2457
56	2458	57	2459	58	2460	59	2461
60	2462	61	2463	62	2464	63	2465
64	2466	65	2467	66	2468	67	2469
68	2470	69	2471	70	2472	71	2473
72	2474	73	2475	74	2476	75	2477
76	2478	77	2479	78	2480	79	/

4.5 Test Mode

All test mode(s) and condition(s) mentioned were considered and evaluated respectively by performing full tests, the worst data were recorded and reported.

Test mode	Low channel	Middle channel	High channel
Transmitting (GFSK/Π/4DQPSK/8DPSK)	2402MHz	2441MHz	2480MHz
Receiving (GFSK/Π/4DQPSK/8DPSK)	2402MHz	2441MHz	2480MHz

4.6 Test Environment

Humidity(%):	54
Atmospheric Pressure(kPa):	101
Normal Voltage(AC):	230V
Normal Temperature(℃)	23
Low Temperature(℃)	0
High Temperature(℃)	40

5. TEST FACILITY AND TEST INSTRUMENT USED

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at 1&2F., Building A, No. 26, Xinhe Road, Xinqiao, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

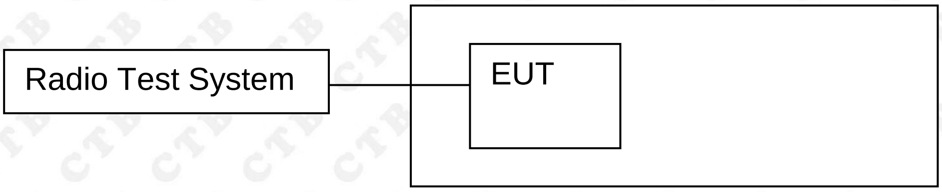
5.2 Test Instrument Used

No.	Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Calibrated until
1	Spectrum Analyzer	Agilent	N9020A	MY52090073	A.14.16	2025/6/28
2	Power Sensor	Agilent	U2021XA	MY56120032	/	2025/6/28
3	Power Sensor	Agilent	U2021XA	MY56120034	/	2025/6/28
4	Communication test set	R&S	CMW500	108058	V3.5.80	2025/6/28
5	Spectrum Analyzer	KEYSIGHT	N9020A	MY51289897	A.14.16	2025/6/28
6	Signal Generator	Agilent	N5181A	MY50140365	A.01.60	2025/6/28
7	Vector signal generator	Agilent	N5182A	MY47420195	A.01.87	2025/6/28
8	Communication test set	Agilent	E5515C	MY50102567	B.19.07 （E1962B ）	2025/6/28
9	2.4 GHz Filter	Shenxiang	MSF2400-2483.5MS-1154	20181015001	/	2025/6/30
10	5 GHz Filter	Shenxiang	MSF5150-5850MS-1155	20181015001	/	2025/6/30
11	Filter	Xingbo	XBLBQ-DZA120	190821-1-1	/	2025/6/30
12	BT&WI-FI Automatic test software	Micowave	MTS8310	Ver. 2.0.0.0	/	/
13	Rohde & Schwarz SFU Broadcast Test System	R&S	SFU	101017	/	2025/6/28
14	Temperature humidity chamber	Hongjing	TH-80CH	DG-15174	/	2025/6/28
15	234G Automatic test software	Micowave	MTS8200	Ver. 2.0.0.0	/	/
16	966 chamber	C.R.T.	966	/	/	2027/6/21
17	Receiver	R&S	ESPI	100362	RF_ATTEN_7（104489/003）	2025/6/28
18	Amplifier	HP	8447E	2945A02747	/	2025/6/28
19	Amplifier	Agilent	8449B	3008A01838	/	2025/6/28
20	TRILOG Broadband Antenna	Schwarzbeck	VULB 9168	00869	/	2025/6/28
21	Double Ridged Broadband Horn Antenna	Schwarzbeck	BBHA9120D	01911	/	2025/6/28

22	EMI test software	Fala	EZ-EMC	FA-03A2 RE	/	/
23	Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-224	/	2025/6/28
24	loop antenna	ZHINAN	ZN30900A	GTS534	/	/
25	40G Horn antenna	A/H/System	SAS-574	588	/	2025/6/28
26	Amplifier	AEROFLEX	Aeroflex	097	/	2025/6/28
27	Power Metter	KEYSIGHT	N1912AP	N/A	A.05.00	2025/6/28

6. RF OUTPUT POWER

6.1 Block Diagram Of Test Setup



6.2 Limit

For adaptive equipment using wide band modulations other than FHSS, the maximum RF output power shall be 20 dBm.

The maximum RF output power for non-adaptive equipment shall be declared by the supplier and shall not exceed 20 dBm. See clause 5.3.1 m). For non-adaptive equipment using wide band modulations other than FHSS, the maximum RF output power shall be equal to or less than the value declared by the supplier.

This limit shall apply for any combination of power level and intended antenna assembly.

Limit
20dBm

6.3 Test procedure

Step 1:

- Use a fast power sensor suitable for 2.4 GHz and capable of minimum 1 MS/s.
- Use the following settings:
  - Sample speed 1 MS/s or faster.
  - The samples shall represent the RMS power of the signal.
  - Measurement duration: For non-adaptive equipment: equal to the observation period defined in clause 4.3.1.3.2 or clause 4.3.2.4.2. For adaptive equipment, the measurement duration shall be long enough to ensure a minimum number of bursts (at least 10) are captured.

  NOTE 1: For adaptive equipment, to increase the measurement accuracy, a higher number of bursts may be used.

Step 2:

- For conducted measurements on devices with one transmit chain:
  - Connect the power sensor to the transmit port, sample the transmit signal and store the raw data. Use these stored samples in all following steps.
- For conducted measurements on devices with multiple transmit chains:
  - Connect one power sensor to each transmit port for a synchronous measurement on all transmit ports.
  - Trigger the power sensors so that they start sampling at the same time. Make sure the time difference between the samples of all sensors is less than 500 ns.
  - For each individual sampling point (time domain), sum the coincident power samples of all ports and store them. Use these summed samples in all following steps.

Step 3:

- Find the start and stop times of each burst in the stored measurement samples.

The start and stop times are defined as the points where the power is at least 30 dB below the highest value of the stored samples in step 2.

NOTE 2: In case of insufficient dynamic range, the value of 30 dB may need to be reduced appropriately.

Step 4:

• Between the start and stop times of each individual burst calculate the RMS power over the burst using the formula below. Save these Pburst values, as well as the start and stop times for each burst.

$$P_{burst} = \frac{1}{k}\sum_{n=1}^{k} P_{sample}(n)$$

with 'k' being the total number of samples and 'n' the actual sample number

Step 5:

• The highest of all Pburst values (value "A" in dBm) will be used for maximum e.i.r.p. calculations.

Step 6:

• Add the (stated) antenna assembly gain "G" in dBi of the individual antenna.

• If applicable, add the additional beamforming gain "Y" in dB.

• If more than one antenna assembly is intended for this power setting, the maximum overall antenna gain (G or G + Y) shall be used.

• The RF Output Power (P) shall be calculated using the formula below:

P = A + G + Y

• This value, which shall comply with the limit given in clause 4.3.1.2.3 or clause 4.3.2.2.3, shall be recorded in the test report.

6.4 Test Result

Modulation	Test conditions (Temperature)	EIRP (dBm) Hopping mode
GFSK	Normal	6.3
	Lower	6.36
	Upper	6.36
π/4DQPSK	Normal	8.18
	Lower	8.25
	Upper	8.18
8DPSK	Normal	8.19
	Lower	8.17
	Upper	8
Limit		≤100mW (20dBm)
Remark: P = A + G + Y,G=1dBi,x=100%		

Remark: This Report only show the test plots of the worst case.

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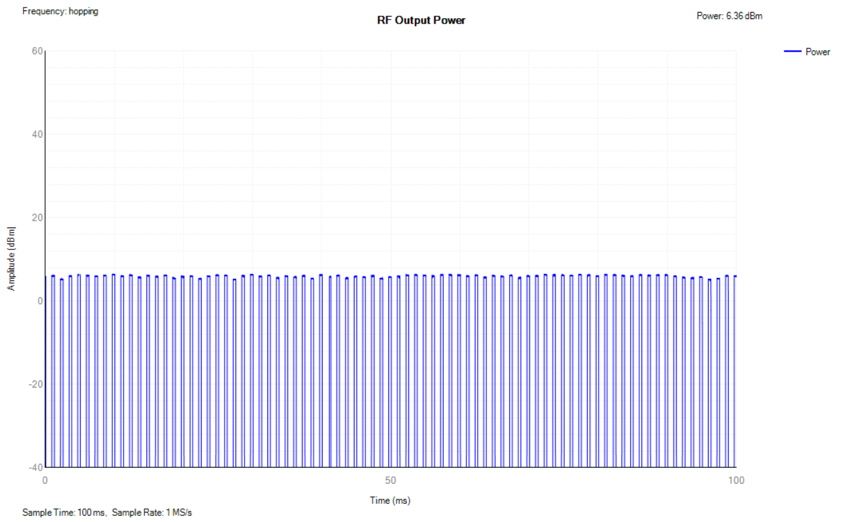
<tr><td>GFSK</td><td>
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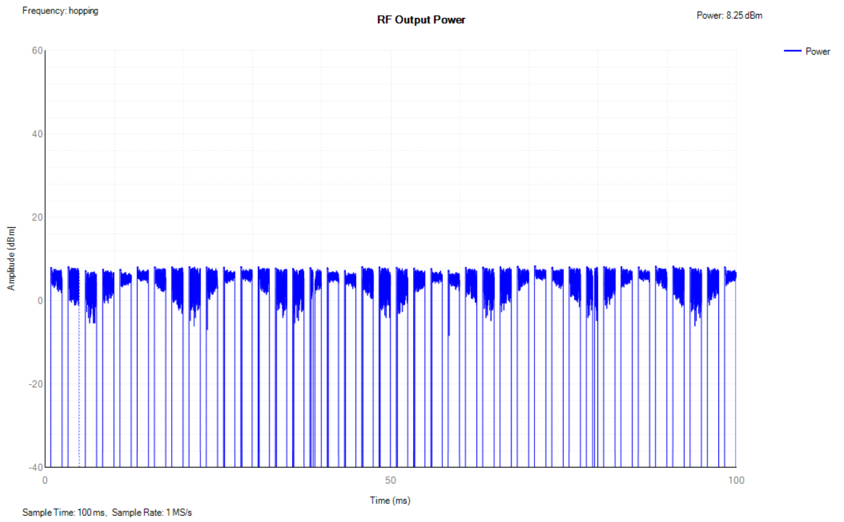
<tr><td>π/4 DQPSK</td><td>
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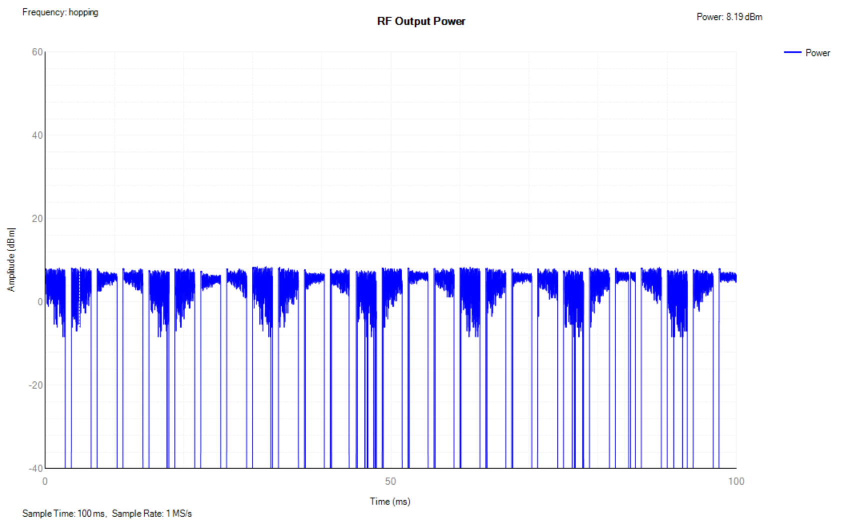
<tr><td>8DPSK</td><td>
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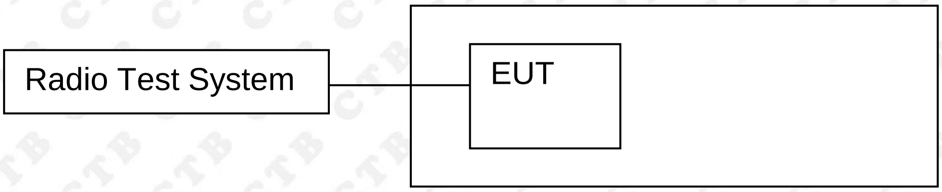
7. ACCUMULATED TRANSMIT TIME, MINIMUM FREQUENCY OCCUPATION AND HOPPING SEQUENCE

7.1 Block Diagram Of Test Setup



7.2 Limit

Adaptive Frequency Hopping equipment shall be capable of operating over a minimum of 70 % of the band specified in clause 1.

The Accumulated Transmit Time on any hopping frequency shall not be greater than 400 ms within any observation period of 400 ms multiplied by the minimum number of hopping frequencies (N) that have to be used. In order for the equipment to comply with the Frequency Occupation requirement, it shall meet either of the following two options:

Option 1: Each hopping frequency of the hopping sequence shall be occupied at least once within a period not exceeding four times the product of the dwell time and the number of hopping frequencies in use.

Option 2: The occupation probability for each frequency shall be between ((1 / U) × 25 %) and 77 % where U is the number of hopping frequencies in use.

The hopping sequence(s) shall contain at least N hopping frequencies at all times, where N is 15 or 15 divided by the minimum Hopping Frequency Separation in MHz, whichever is the greater.

7.3 Test procedure

Step 1:

• The output of the transmitter shall be connected to a spectrum analyzer or equivalent.

• The analyzer shall be set as follows:

- Centre Frequency: Equal to the hopping frequency being investigated
- Frequency Span: 0 Hz
- RBW: ~ 50 % of the Occupied Channel Bandwidth
- VBW: ≥ RBW
- Detector Mode: RMS
- Sweep time: Equal to the applicable observation period (see clause 4.3.1.4.3.1 or clause 4.3.1.4.3.2)
- Number of sweep points: 30 000
- Trace mode: Clear / Write
- Trigger: Free Run

Step 2:

• Save the trace data to a file for further analysis by a computing device using an appropriate software application or program.

Step 3:

• Identify the data points related to the frequency being investigated by applying a threshold.

The data points resulting from transmissions on the hopping frequency being investigated are assumed to have much higher levels compared to data points resulting from transmissions on adjacent hopping frequencies. If a clear determination between these transmissions is not possible, the RBW in step 1 shall be further reduced. In addition, a channel filter may be used.

• Count the number of data points identified as resulting from transmissions on the frequency being investigated and multiply this number by the time difference between two consecutive data points.

Step 4:

• The result in step 3 is the Accumulated Transmit Time which shall comply with the limit provided in clause 4.3.1.4.3.1 or clause 4.3.1.4.3.2 and which shall be recorded in the test report.

Step 5:

NOTE 1: This step is only applicable for equipment implementing Option 1 in clause 4.3.1.4.3.1 or clause 4.3.1.4.3.2 for complying with the Frequency Occupation requirement and the manufacturer decides to demonstrate compliance with this requirement via measurement.

• Make the following changes on the analyser and repeat step 2 and step 3.

Sweep time: 4 × Dwell Time × Actual number of hopping frequencies in use

The hopping frequencies occupied by the equipment without having transmissions during the dwell time (blacklisted frequencies) should be taken into account in the actual number of hopping frequencies in use. If this number cannot be determined (number of blacklisted frequencies unknown) it shall be assumed that the equipment uses the maximum possible number of hopping frequencies.

• The result shall be compared to the limit for the Frequency Occupation defined in clause 4.3.1.4.3.1 or clause 4.3.1.4.3.2. The result of this comparison shall be recorded in the test report.

Step 6:

• Make the following changes on the analyzer:

- Start Frequency: 2 400 MHz

- Stop Frequency: 2 483,5 MHz

- RBW: ~ 50 % of the Occupied Channel Bandwidth (single hopping frequency)

- VBW: ≥ RBW

- Detector Mode: RMS

- Sweep time: 1 s

- Trace Mode: Max Hold

- Trigger: Free Run

NOTE 2: The above sweep time setting may result in long measuring times. To avoid such long measuring times, an FFT analyser could be used.

• Wait for the trace to stabilize. Identify the number of hopping frequencies used by the hopping sequence.

• The result shall be compared to the limit (value N) defined in clause 4.3.1.4.3.1 or clause 4.3.1.4.3.2. This value shall be recorded in the test report.

For equipment with blacklisted frequencies, it might not be possible to verify the number of hopping frequencies in use. However they shall comply with the requirement for Accumulated Transmit Time and Frequency Occupation assuming the minimum number of hopping frequencies (N) defined in clause 4.3.1.4.3.1 or clause 4.3.1.4.3.2 is used.

Step 7:

• For adaptive equipment, using the lowest and highest -20 dB points from the total spectrum envelope obtained in step 6, it shall be verified whether the equipment uses 70 % of the band specified in clause 1. The result shall be recorded in the test report.

7.4 Test Result

Accumulated Transmit Time

Channel	Modulation	Accumulated Transmit Time (ms)	Limit (ms)	Result
LCH	GFSK	122.177	400	Pass
	π/4DQPSK	253.176	400	Pass
	8DPSK	292.193	400	Pass
HCH	GFSK	122.177	400	Pass
	π/4DQPSK	266.166	400	Pass
	8DPSK	332.695	400	Pass

Minimum Frequency Occupation

Channel	Modulation	Occupied period	Limit	Result
LCH	GFSK	1	4≥X≥1	Pass
	π/4DQPSK	1		Pass
	8DPSK	2		Pass
HCH	GFSK	2		Pass
	π/4DQPSK	3		Pass
	8DPSK	2		Pass

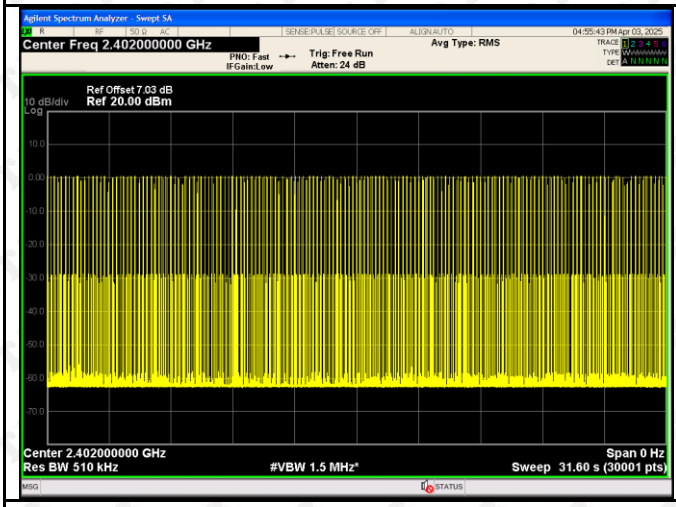
Hopping Sequence

Modulation	One pulse time (ms)	Number of Hopping Channel	Limit	-20 dB Bandwidth (%)	Limit	Result
GFSK	0.383	79	≥15	95.4	70 % of the band 2400MHz-2483.5MHz	Pass
π/4DQPSK	1.644	79		95.9		
8DPSK	2.893	79		95.8		

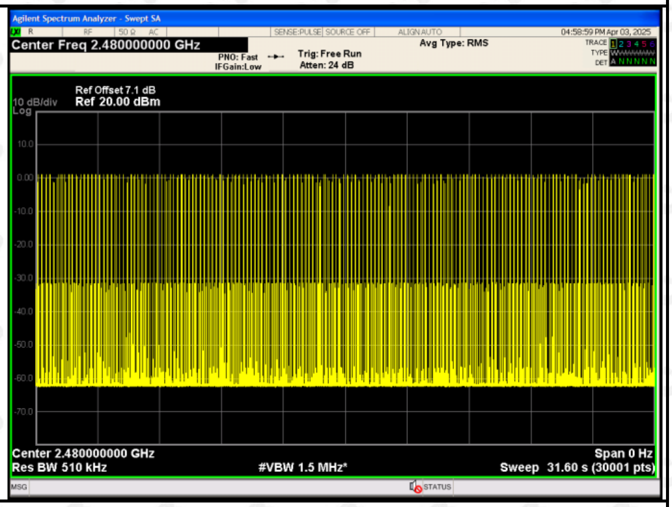
Test Graphs

Accumulated Transmit Time

GFSK

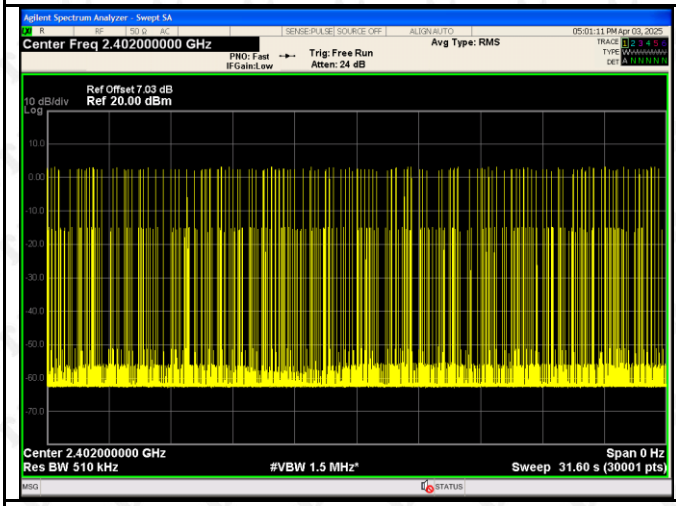


CH00

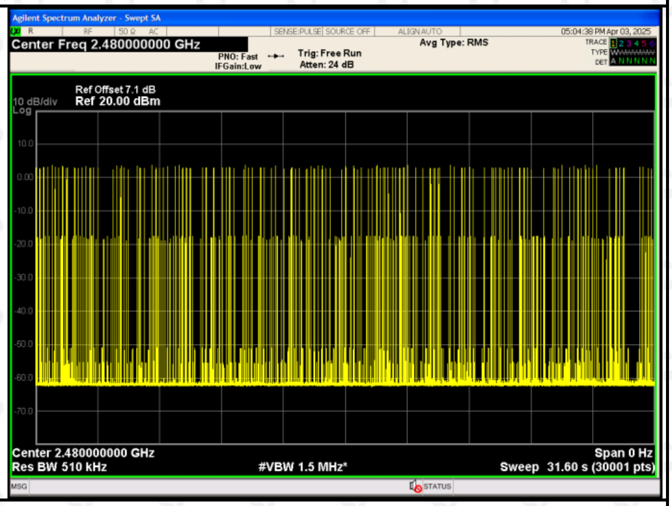


CH78

π/4DQPSK

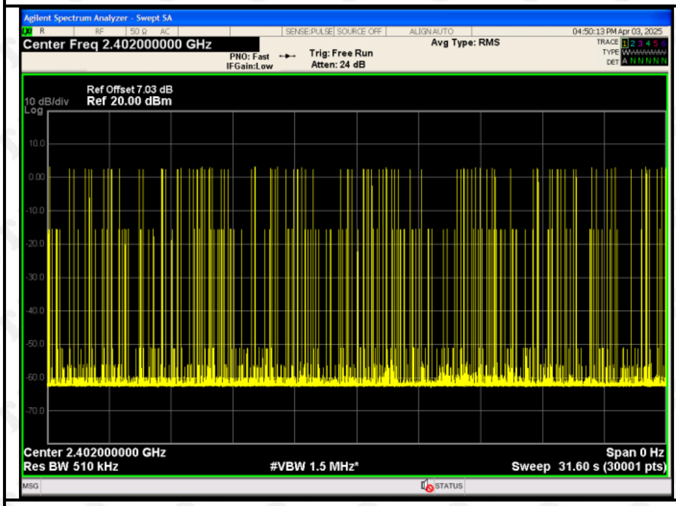


CH00

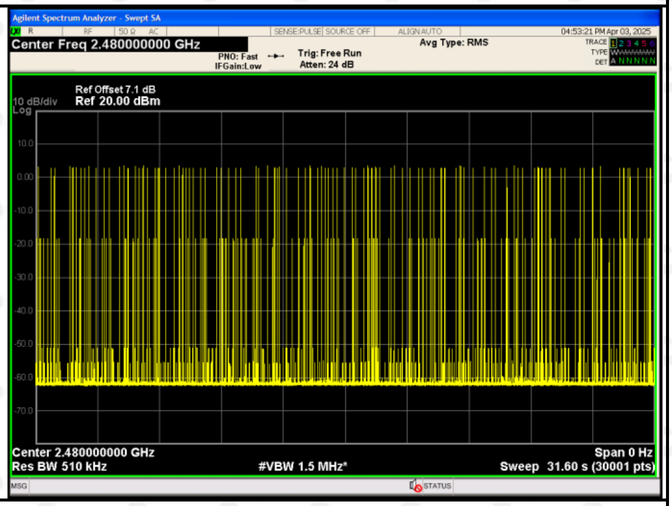


CH78

8DPSK



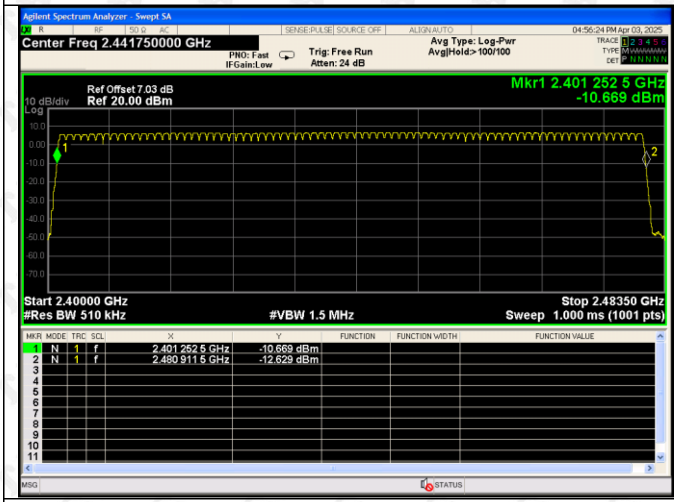
CH00



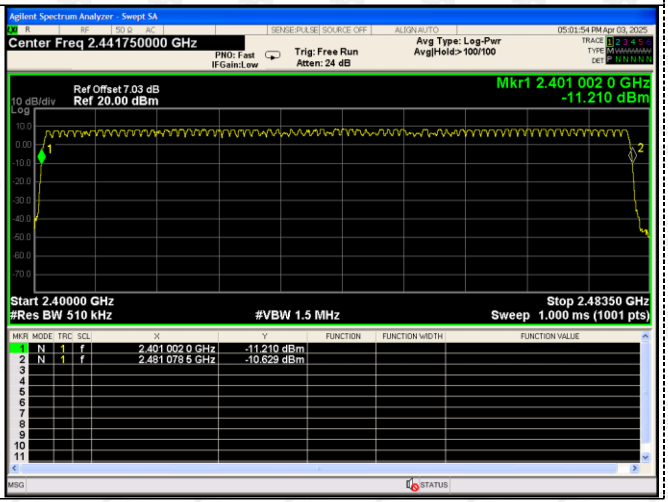
CH78

Hopping Sequence

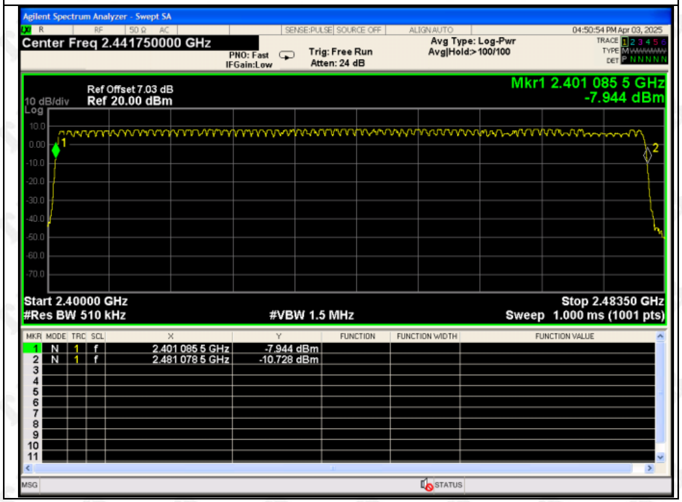
GFSK

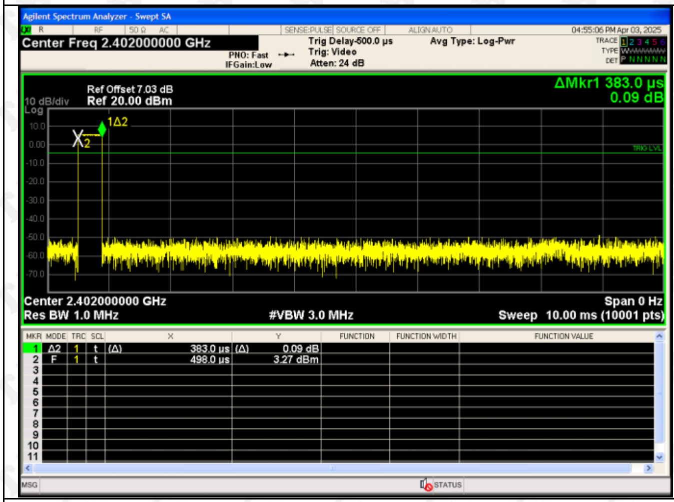
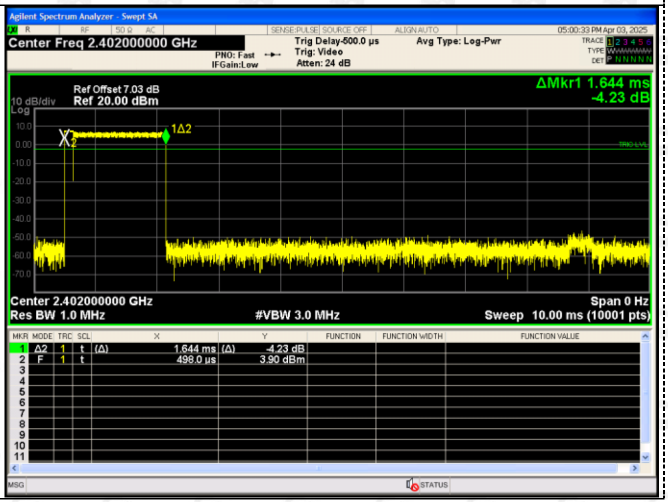
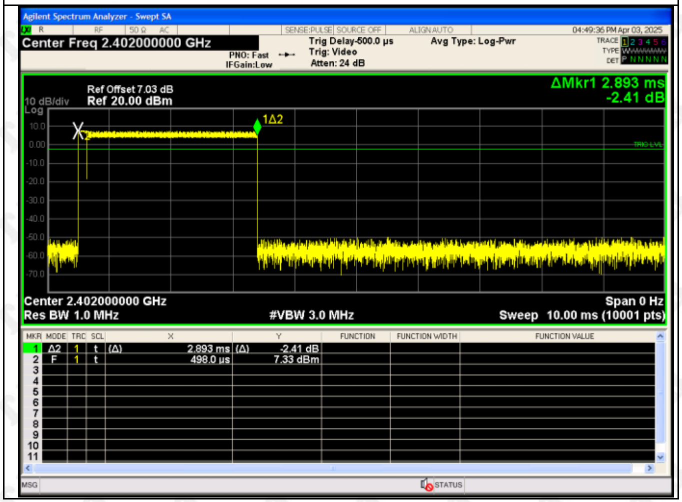


π/4DQPSK



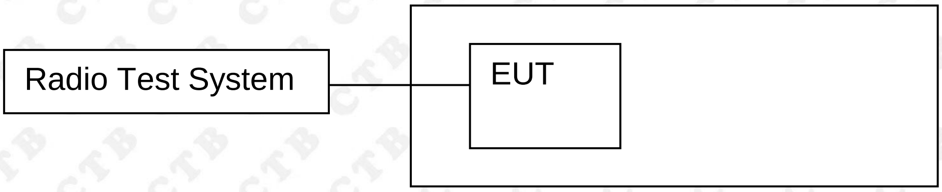
8DPSK



One pulse time	
GFSK	π/4DQPSK
	
8DPSK	
	

8. HOPPING FREQUENCY SEPARATION

8.1 Block Diagram Of Test Setup



8.2 Limit

For Non-adaptive frequency hopping systems
The minimum Hopping Frequency Separation shall be equal to Occupied Channel Bandwidth (see clause 5.3.1.5.3) of a single hop, with a minimum separation of 100 kHz.
For Adaptive frequency hopping systems
The minimum Hopping Frequency Separation shall be 100 kHz.

8.3 Test procedure

The Hopping Frequency Separation as defined in clause 4.3.1.5 shall be measured and recorded using any of the following options. The selected option shall be stated in the test report.

Option 1

Step 1:

• The output of the transmitter shall be connected to a spectrum analyser or equivalent.

• The analyser shall be set as follows:

- Centre Frequency: Centre of the two adjacent hopping frequencies
- Frequency Span: Sufficient to see the complete power envelope of both hopping frequencies
- RBW: 1 % of the span
- VBW: 3 × RBW
- Detector Mode: RMS
- Trace Mode: Max Hold
- Sweep time: 1 s

Step 2:

• Wait for the trace to stabilize.

• Use the marker function of the analyser to define the frequencies corresponding to the lower -20 dBr point and the upper -20 dBr point for both hopping frequencies F1 and F2. This will result in $F1_L$ and $F1_H$ for hopping frequency F1 and in $F2_L$ and $F2_H$ for hopping frequency F2. These values shall be recorded in the report.

Step 3:

• Calculate the centre frequencies $F1_C$ and $F2_C$ for both hopping frequencies using the formulas below. These values shall be recorded in the report.

$$F1_C = \frac{F1_L + F1_H}{2} \qquad F2_C = \frac{F2_L + F2_H}{2}$$

• Calculate the -20 dBr channel bandwidth (BW_{CHAN}) using the formula below. This value shall be recorded in the report.

$$BW_{CHAN} = F1_H - F1_L$$

• Calculate the Hopping Frequency Separation (FHS) using the formula below. This value shall be recorded in the report.

$$F_{HS} = F2_C - F1_C$$

• Compare the measured Hopping Frequency Separation with the limit defined in clause 4.3.1.5.3. In addition, for non-Adaptive Frequency Hopping equipment, the Hopping Frequency Separation shall be equal to or greater than Occupied Channel Bandwidth as defined in clause 4.3.1.8 or:

$$F_{HS} \geq \text{Occupied Channel Bandwidth}$$

• See figure 4:

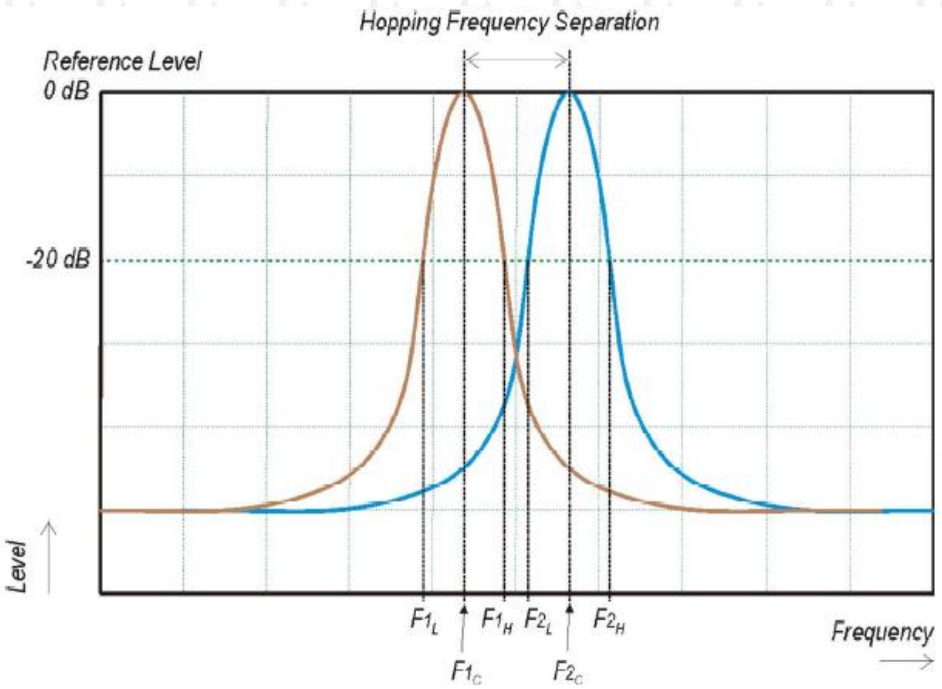


Figure 4: Hopping Frequency Separation

For adaptive equipment, in case of overlapping channels which will prevent the definition of the -20 dBr reference points $F1_H$ and $F2_L$, a higher reference level (e.g. -10 dBr or - 6 dBr) may be chosen to define the reference points $F1_L$; $F1_H$; $F2_L$ and $F2_H$.

Alternatively, special test software may be used to:

• force the UUT to hop or transmit on a single Hopping Frequency by which the -20 dBr reference points can be measured separately for the two adjacent Hopping Frequencies; and/or

• force the UUT to operate without modulation by which the centre frequencies F1C and F2C can be measured directly.

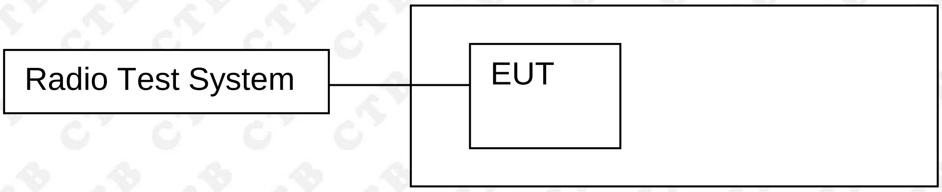
The method used to measure the Hopping Frequency Separation shall be documented in the test report.

8.4 Test Result

Mode		Measurement (MHz)	Limit (MHz)	Result
GFSK	DH1	0.9885	0.1	PASS
	DH3	0.9981	0.1	
	DH5	1.0106	0.1	

9. OCCUPIED CHANNEL BANDWIDTH

9.1 Block Diagram Of Test Setup



9.2 Limit

The Occupied Channel Bandwidth shall fall completely within the band given in 2.4GHz to 2.4835GHz.
In addition, for non-adaptive systems using wide band modulations other than FHSS and with e.i.r.p greater than 10 dBm, the occupied channel bandwidth shall be less than 20 MHz.

9.3 Test procedure

Step 1:

Connect the UUT to the spectrum analyser and use the following settings:

• Centre Frequency: The centre frequency of the channel under test

• Resolution BW: ~ 1 % of the span without going below 1 %

• Video BW: 3 × RBW

• Frequency Span: 2 × Nominal Channel Bandwidth

• Detector Mode: RMS

• Trace Mode: Max Hold

• Sweep time: 1 s

Step 2:

Wait for the trace to stabilize.

Find the peak value of the trace and place the analyser marker on this peak.

Step 3:

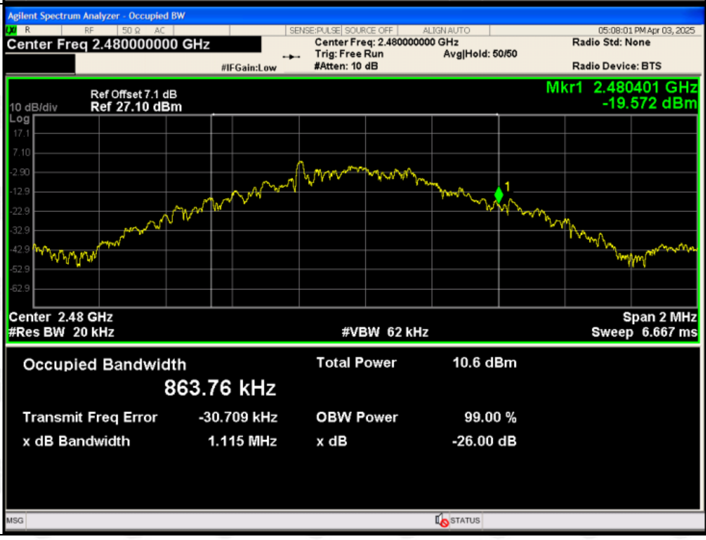
Use the 99 % bandwidth function of the spectrum analyser to measure the Occupied Channel Bandwidth of the UUT.

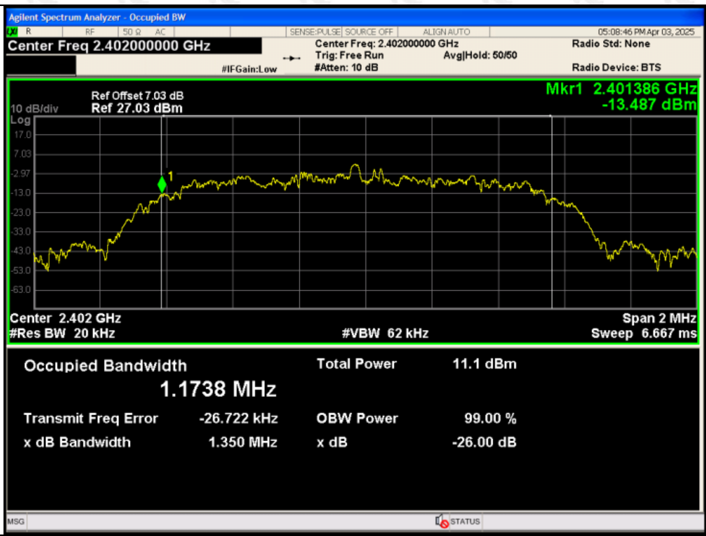
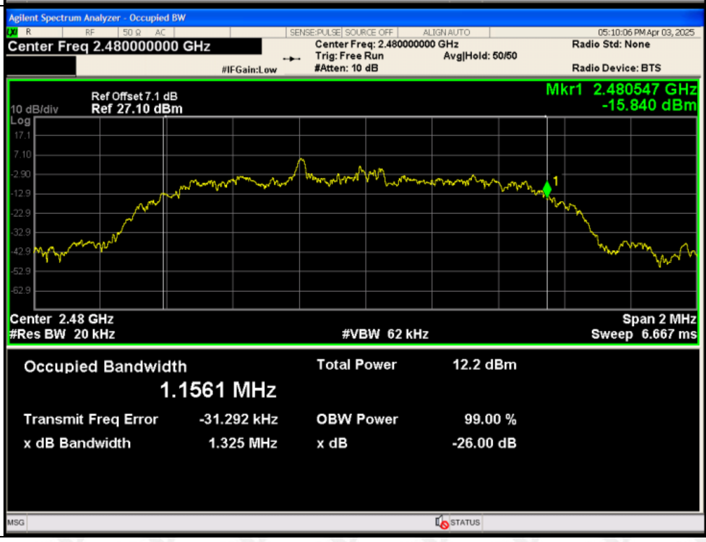
This value shall be recorded.

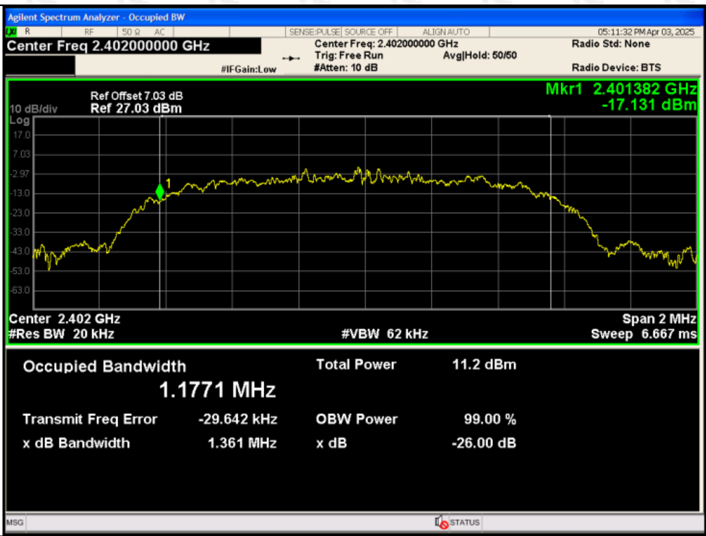
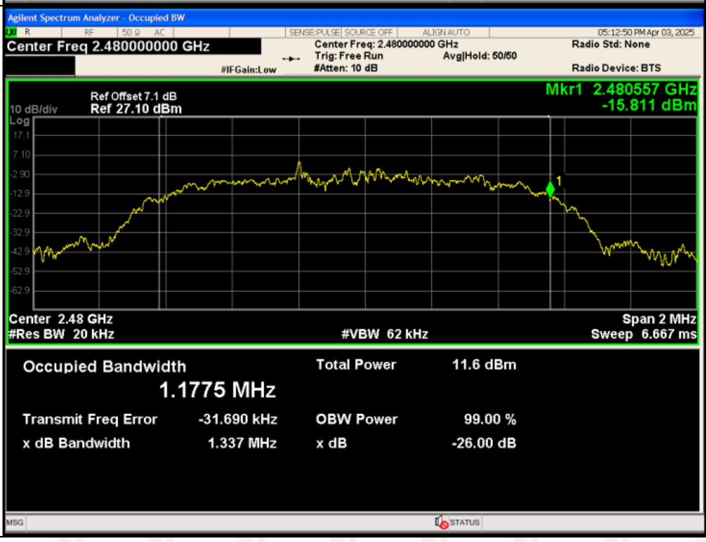
NOTE: Make sure that the power envelope is sufficiently above the noise floor of the analyser to avoid the noise signals left and right from the power envelope being taken into account by this measurement.

9.4 Test Result

Modulation	Frequency (MHz)	Frequency Range (MHz)		Occupied Channel (MHz)
GFSK DH1	Low	2401.973	/	0.852
	High	/	2479.969	0.864
π/4-DQPSK 2DH3	Low	2401.973	/	1.174
	High	/	2479.969	1.156
8DPSK 3DH5	Low	2401.97	/	1.177
	High	/	2479.968	1.177

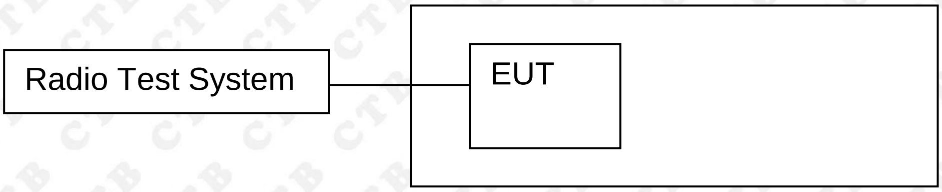
GFSK DH1 Low Channel	
GFSK DH1 High Channel	

π/4-DQPSK 2DH3 Low Channel			
π/4-DQPSK 2DH3 High Channel			

8DPSK 3DH5 Low Channel			
8DPSK 3DH5 High Channel			

10. TRANSMITTER UNWANTED EMISSIONS IN THE OUT-OF-BAND DOMAIN

10.1 Block Diagram Of Test Setup



10.2 Limit

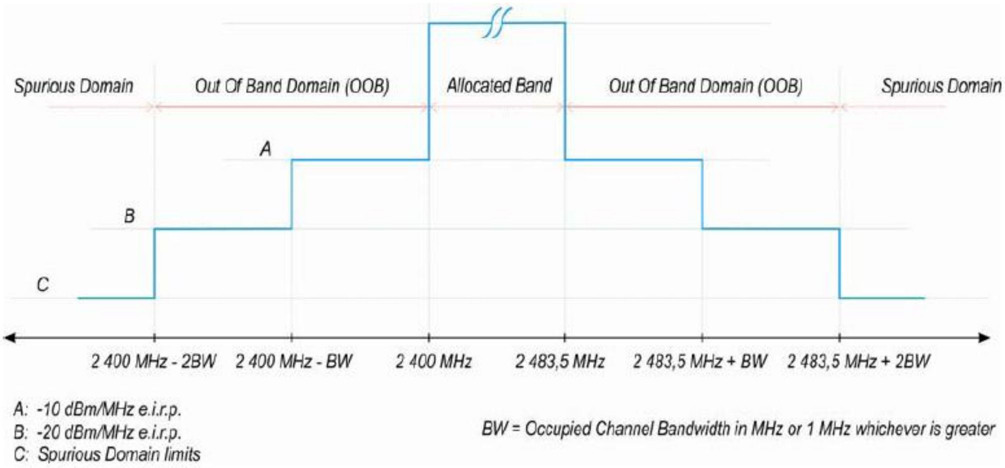


Figure 3: Transmit mask

10.3 Test procedure

The applicable mask is defined by the measurement results from the tests performed under clause 5.3.8 (Occupied Channel Bandwidth).

The test procedure is further as described under clause 5.3.9.2.1.

The Out-of-band emissions within the different horizontal segments of the mask provided in figures 1 and 3 shall be measured using the steps below. This method assumes the spectrum analyser is equipped with the Time Domain Power option.

Step 1:

• Connect the UUT to the spectrum analyser and use the following settings:

- Centre Frequency: 2 484 MHz

- Span: 0 Hz

- Resolution BW: 1 MHz

- Filter mode: Channel filter

- Video BW: 3 MHz

- Detector Mode: RMS

- Trace Mode: Max Hold

- Sweep Mode: Continuous

- Sweep Points: Sweep Time [s] / (1 μs) or 5 000 whichever is greater

- Trigger Mode: Video trigger

NOTE 1: In case video triggering is not possible, an external trigger source may be used.

- Sweep Time: > 120 % of the duration of the longest burst detected during the measurement of the RF Output Power

Step 2 (segment 2 483,5 MHz to 2 483,5 MHz + BW):

• Adjust the trigger level to select the transmissions with the highest power level.

• For frequency hopping equipment operating in a normal hopping mode, the different hops will result in signal bursts with different power levels. In this case the burst with the highest power level shall be selected.

• Set a window (start and stop lines) to match with the start and end of the burst and in which the RMS power shall be measured using the Time Domain Power function.

• Select RMS power to be measured within the selected window and note the result which is the RMS power within this 1 MHz segment (2 483,5 MHz to 2 484,5 MHz). Compare this value with the applicable limit provided by the mask.

• Increase the centre frequency in steps of 1 MHz and repeat this measurement for every 1 MHz segment within the range 2 483,5 MHz to 2 483,5 MHz + BW. The centre frequency of the last 1 MHz segment shall be set to 2 483,5 MHz + BW - 0,5 MHz (which means this may partly overlap with the previous 1 MHz segment).

Step 3 (segment 2 483,5 MHz + BW to 2 483,5 MHz + 2BW):

• Change the centre frequency of the analyser to 2 484 MHz + BW and perform the measurement for the first 1 MHz segment within range 2 483,5 MHz + BW to 2 483,5 MHz + 2BW. Increase the centre frequency in 1 MHz steps and repeat the measurements to cover this whole range. The centre frequency of the last 1 MHz segment shall be set to 2 483,5 MHz + 2 BW - 0,5 MHz (which means this may partly overlap with the previous 1 MHz segment).

Step 4 (segment 2 400 MHz - BW to 2 400 MHz):

• Change the centre frequency of the analyser to 2 399,5 MHz and perform the measurement for the first 1 MHz segment within range 2 400 MHz - BW to 2 400 MHz Reduce the centre frequency in 1 MHz steps and repeat the measurements to cover this whole range. The centre frequency of the last 1 MHz segment shall be set to 2 400 MHz - BW + 0,5 MHz (which means this may partly overlap with the previous 1 MHz segment).

Step 5 (segment 2 400 MHz - 2BW to 2 400 MHz - BW):

• Change the centre frequency of the analyser to 2 399,5 MHz - BW and perform the measurement for the first 1 MHz segment within range 2 400 MHz - 2BW to 2 400 MHz - BW. Reduce the centre frequency in 1 MHz steps and repeat the measurements to cover this whole range. The centre frequency of the last 1 MHz segment shall be set to 2 400 MHz - 2BW + 0,5 MHz (which means this may partly overlap with the previous 1 MHz segment).

Step 6:

• In case of conducted measurements on equipment with a single transmit chain, the declared antenna assembly gain "G" in dBi shall be added to the results for each of the 1 MHz segments and compared with the limits

provided by the mask given in figure 1 or figure 3. If more than one antenna assembly is intended for this power setting, the antenna with the highest gain shall be considered.

• In case of conducted measurements on smart antenna systems (equipment with multiple transmit chains), the measurements need to be repeated for each of the active transmit chains. The declared antenna assembly gain "G" in dBi for a single antenna shall be added to these results. If more than one antenna assembly is intended for this power setting, the antenna with the highest gain shall be considered. Comparison with the applicable limits shall be done using any of the options given below:

- Option 1: the results for each of the transmit chains for the corresponding 1 MHz segments shall be added. The additional beamforming gain "Y" in dB shall be added as well and the resulting values compared with the limits provided by the mask given in figure 1 or figure 3.

- Option 2: the limits provided by the mask given in figure 1 or figure 3 shall be reduced by

10 × log10(Ach) and the additional beamforming gain "Y" in dB. The results for each of the transmit chains shall be individually compared with these reduced limits.

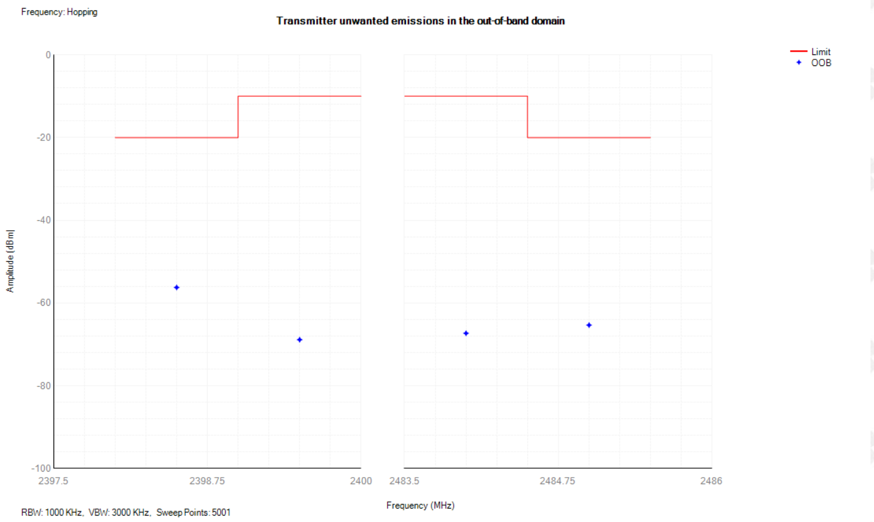
NOTE 2: Ach refers to the number of active transmit chains.

It shall be recorded whether the equipment complies with the mask provided in figure 1 or figure 3.

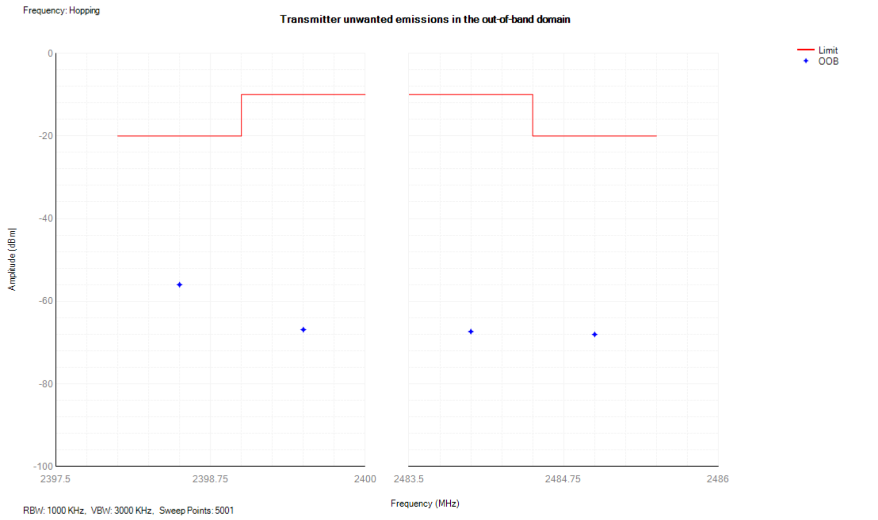
10.4 Test Result

Modulation : GFSK (the worst data) :

Low Channel				
Test Freq (MHz)	**Antenna**	**Freq(MHz)**	**Level**	**Limit**
2402	Antenna 1	2399.5	-68.87	-10
2402	Antenna 1	2398.5	-56.24	-20

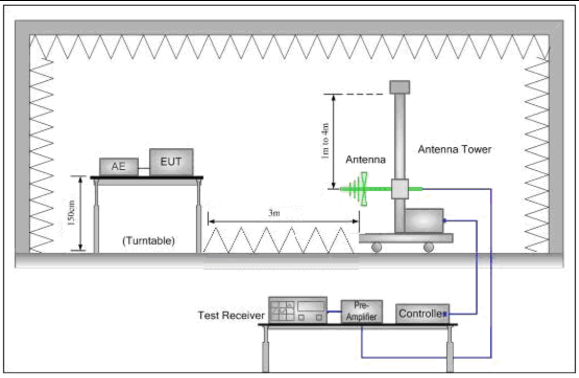


High Channel				
Test Freq (MHz)	**Antenna**	**Freq(MHz)**	**Level**	**Limit**
2480	Antenna 1	2484	-67.32	-10
2480	Antenna 1	2485	-65.34	-20

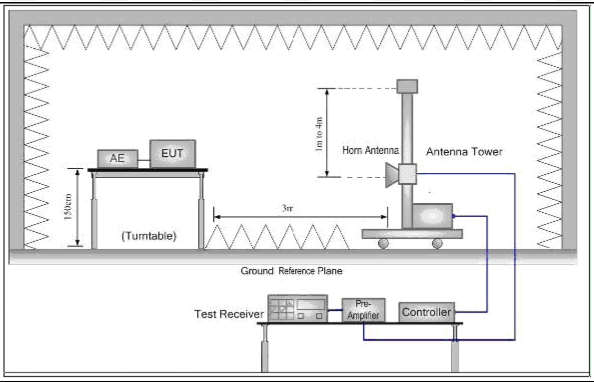


11. TRANSMITTER UNWANTED EMISSIONS IN THE SPURIOUS DOMAIN

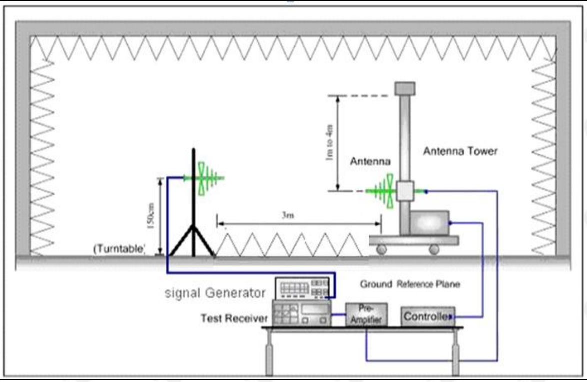
11.1 Block Diagram Of Test Setup



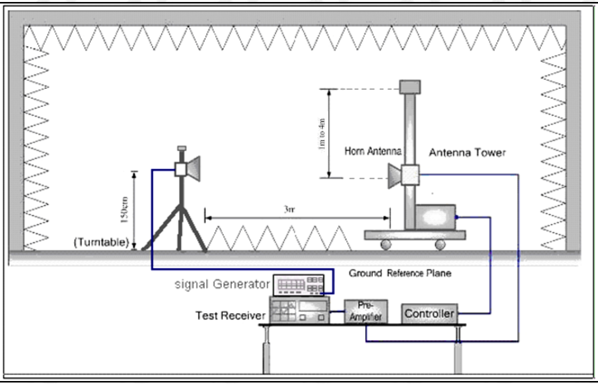
Below 1GHz



Above 1GHz



Below 1GHz



Above 1GHz

11.2 Limits

Frequency range	Maximum power, e.r.p. (≤ 1 GHz) e.i.r.p. (> 1 GHz)	RBW/VBW
30 MHz to 47 MHz	-36 dBm	100 kHz/300KHz
47 MHz to 74 MHz	-54 dBm	100 kHz/300KHz
74 MHz to 87,5 MHz	-36 dBm	100 kHz/300KHz
87,5 MHz to 118 MHz	-54 dBm	100 kHz/300KHz
118 MHz to 174 MHz	-36 dBm	100 kHz/300KHz
174 MHz to 230 MHz	-54 dBm	100 kHz/300KHz
230 MHz to 470 MHz	-36 dBm	100 kHz/300KHz
470 MHz to 694 MHz	-54 dBm	100 kHz/300KHz
694 MHz to 1 GHz	-36 dBm	100 kHz/300KHz
1 GHz to 12,75 GHz	-30 dBm	1 MHz/3MHz

11.3 Test Procedure

30MHz ~ 1GHz:

a. The Product was placed on the nonconductive turntable 1.5m above the ground in a full anechoic chamber.

b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.

c. For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.

Above 1GHz:

a. The Product was placed on the non-conductive turntable 1.5 m above the ground in a full anechoic chamber..

b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 1MHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.

c. For each frequency whose maximum record was higher or close to limit, measure its AV value: rotate the turntable from 0 to 360 degrees to find the degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to AV value and specified bandwidth with Maximum Hold Mode, and record the maximum value.

11.4 Test Results

Modulation : GFSK (the worst data) :

Below 1GHz

Freq (MHz)	Rd_level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Over (dB)	detector	Height	Degree	Antenna polarization
Low Channel									
46.751	-54.95	-12.63	-67.58	-36.00	-31.58	peak	1.1	111	H
67.170	-55.10	-12.04	-67.14	-54.00	-13.14	peak	1.1	10	H
103.469	-55.80	-11.97	-67.77	-54.00	-13.77	peak	1.4	288	H
218.069	-53.29	-10.55	-63.84	-54.00	-9.84	peak	1.4	359	H
327.839	-53.29	-9.42	-62.71	-36.00	-26.71	peak	1.7	288	H
870.002	-51.93	0.19	-51.74	-36.00	-15.74	peak	1.7	149	H
46.212	-55.00	-12.53	-67.53	-36.00	-31.53	peak	1.0	105	V
100.036	-55.26	-12.54	-67.80	-54.00	-13.80	peak	1.5	67	V
183.000	-56.26	-11.95	-68.21	-54.00	-14.21	peak	1.6	183	V
218.307	-53.01	-10.46	-63.47	-54.00	-9.47	peak	1.3	71	V
325.624	-53.13	-9.80	-62.93	-36.00	-26.93	peak	1.5	244	V
871.936	-52.41	-0.14	-52.55	-36.00	-16.55	peak	1.7	204	V
High Channel									
44.107	-54.85	-11.85	-66.70	-36.00	-30.70	peak	1.5	160	H
67.628	-55.43	-12.28	-67.71	-54.00	-13.71	peak	1.0	283	H
104.586	-56.05	-12.57	-68.62	-54.00	-14.62	peak	1.3	357	H
218.092	-52.83	-10.52	-63.35	-54.00	-9.35	peak	1.1	12	H
328.556	-53.29	-10.23	-63.52	-36.00	-27.52	peak	1.4	213	H
871.265	-52.01	-0.07	-52.08	-36.00	-16.08	peak	1.9	252	H
48.394	-55.40	-12.06	-67.46	-36.00	-31.46	peak	1.7	215	V
101.134	-54.94	-12.05	-66.99	-54.00	-12.99	peak	1.4	224	V
182.769	-56.06	-11.82	-67.88	-54.00	-13.88	peak	1.0	141	V
217.829	-53.07	-10.42	-63.49	-54.00	-9.49	peak	1.7	37	V
325.923	-52.70	-9.99	-62.69	-36.00	-26.69	peak	1.5	177	V
869.904	-51.83	0.14	-51.70	-36.00	-15.70	peak	1.0	184	V

Remark:
Absolute Level = Receiver Reading + Factor
Factor = Antenna Factor + Cable Loss – Pre-amplifier

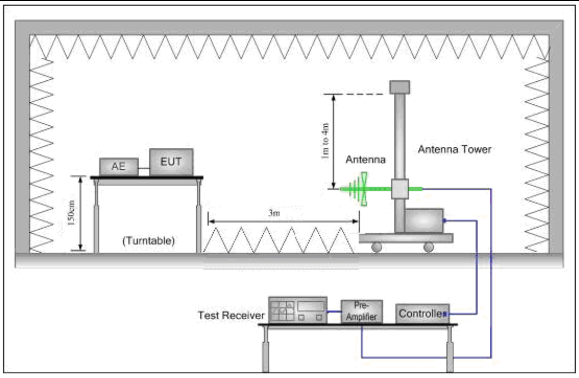
Above 1GHz

Freq	Rd_level	Factor	Level	Limit	Over	detector	Height	Degree	Antenna polarization
(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dB)				
Low Channel									
4804	-54.31	8.41	-45.90	-30.00	-15.90	peak	1.2	336	H
7206	-52.52	12.55	-39.97	-30.00	-9.97	peak	1.5	267	H
4804	-54.65	8.41	-46.24	-30.00	-16.24	peak	1.6	227	V
7206	-51.58	12.55	-39.03	-30.00	-9.03	peak	1.7	62	V
High Channel									
4960	-54.68	8.51	-46.17	-30.00	-16.17	peak	1.8	225	H
7440	-52.98	12.69	-40.29	-30.00	-10.29	peak	1.5	62	H
4960	-54.57	8.51	-46.06	-30.00	-16.06	peak	1.0	314	V
7440	-52.19	12.69	-39.50	-30.00	-9.50	peak	1.2	112	V

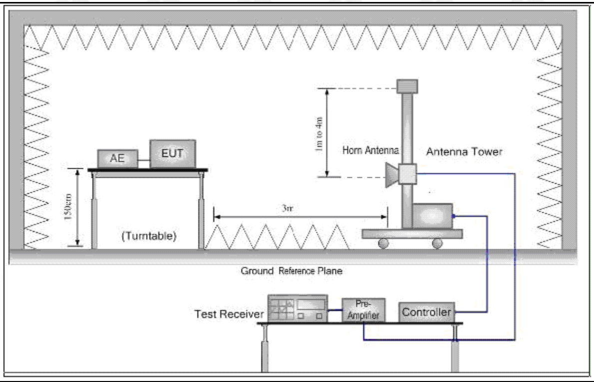
Remark:
Absolute Level = Receiver Reading + Factor
Factor = Antenna Factor + Cable Loss – Pre-amplifier

12. RECEIVER SPURIOUS EMISSIONS

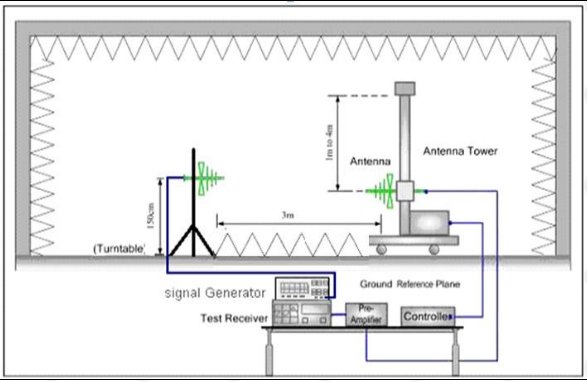
12.1 Block Diagram Of Test Setup



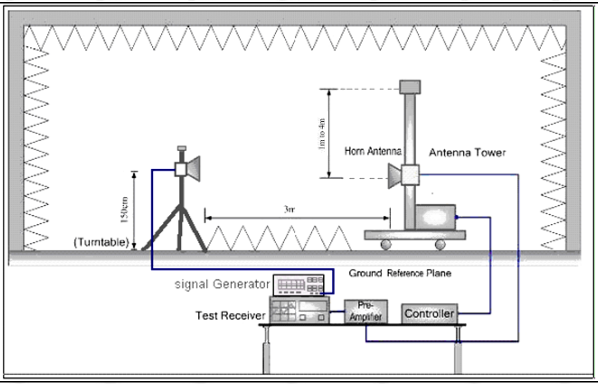
Below 1GHz



Above 1GHz



Below 1GHz



Above 1GHz

12.2 Limits

Frequency(MHz)	Limit
30-1000	-57dBm
1000-12750	-47dBm

12.3 Test Procedure

30MHz ~ 1GHz:

a. The Product was placed on the nonconductive turntable 1.5m above the ground in a full anechoic chamber.

b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.

c. For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.

Above 1GHz:

a. The Product was placed on the non-conductive turntable 1.5 m above the ground in a full anechoic chamber..

b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 1MHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.

c. For each frequency whose maximum record was higher or close to limit, measure its AV value: rotate the turntable from 0 to 360 degrees to find the degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to AV value and specified bandwidth with Maximum Hold Mode, and record the maximum value.

12.4 Test Results

Modulation : GFSK (the worst data) :

Below 1GHz

Freq (MHz)	Rd_level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Over (dB)	detector	Height	Degree	Antenna polarization
Low Channel									
44.695	-60.03	-12.52	-72.55	-57.00	-15.55	peak	1.7	98	H
68.482	-60.60	-11.87	-72.47	-57.00	-15.47	peak	1.0	351	H
105.294	-60.73	-11.71	-72.44	-57.00	-15.44	peak	1.8	232	H
218.828	-62.45	-10.66	-73.11	-57.00	-16.11	peak	1.8	243	H
327.873	-61.90	-9.96	-71.86	-57.00	-14.86	peak	1.4	224	H
869.283	-69.48	-0.45	-69.93	-57.00	-12.93	peak	1.4	286	H
46.877	-60.72	-12.65	-73.37	-57.00	-16.37	peak	1.6	230	V
101.071	-61.58	-12.13	-73.71	-57.00	-16.71	peak	1.8	329	V
183.465	-62.37	-12.29	-74.66	-57.00	-17.66	peak	1.2	338	V
217.192	-60.99	-10.58	-71.57	-57.00	-14.57	peak	1.6	194	V
326.443	-59.81	-10.04	-69.84	-57.00	-12.84	peak	1.6	20	V
871.256	-69.68	-0.12	-69.79	-57.00	-12.79	peak	1.8	186	V
High Channel									
46.697	-60.19	-12.05	-72.25	-57.00	-15.25	peak	1.6	151	H
68.533	-60.51	-12.31	-72.82	-57.00	-15.82	peak	1.5	145	H
103.896	-60.82	-11.81	-72.63	-57.00	-15.63	peak	1.0	129	H
219.744	-62.70	-10.49	-73.19	-57.00	-16.19	peak	1.1	105	H
327.341	-61.63	-9.69	-71.31	-57.00	-14.31	peak	1.5	219	H
872.078	-69.17	-0.03	-69.20	-57.00	-12.20	peak	1.5	172	H
46.801	-60.58	-12.41	-73.00	-57.00	-16.00	peak	1.0	243	V
101.587	-61.31	-12.05	-73.36	-57.00	-16.36	peak	1.8	239	V
182.735	-62.67	-12.45	-75.12	-57.00	-18.12	peak	1.1	353	V
219.670	-61.24	-11.09	-72.33	-57.00	-15.33	peak	1.7	141	V
327.042	-59.14	-9.52	-68.66	-57.00	-11.66	peak	1.3	357	V
869.518	-69.52	-0.34	-69.86	-57.00	-12.86	peak	1.4	316	V

Remark:
Absolute Level = Receiver Reading + Factor
Factor = Antenna Factor + Cable Loss – Pre-amplifier

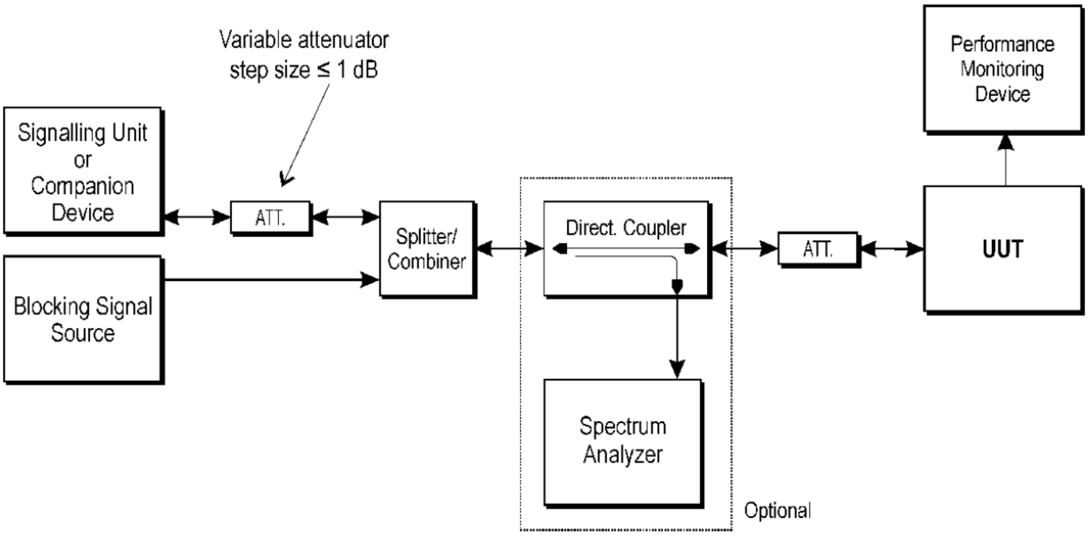
Above 1GHz

Freq	Rd_level	Factor	Level	Limit	Over	detector	Height	Degree	Antenna polarization
(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dB)				
Low Channel									
2248.49	-61.29	3.12	-58.17	-47.00	-11.17	peak	1.4	226	H
2248.80	-60.13	3.14	-57.00	-47.00	-10.00	peak	1.0	142	V
High Channel									
2443.44	-59.70	3.52	-56.18	-47.00	-9.18	peak	1.1	252	H
2443.71	-62.44	3.53	-58.91	-47.00	-11.91	peak	1.6	26	V

Remark:
Absolute Level = Receiver Reading + Factor
Factor = Antenna Factor + Cable Loss – Pre-amplifier

13. RECEIVER BLOCKING

13.1 Block Diagram Of Test Setup



13.2 Limit

Table 14: Receiver Blocking parameters for Receiver Category 1 equipment

Wanted signal mean power from companion device (dBm) (see notes 1 and 4)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 4)	Type of blocking signal
(-133 dBm + 10 × $\log_{10}$(OCBW)) or -68 dBm whichever is less (see note 2)	2 380 2 504	-34	CW
(-139 dBm + 10 × $\log_{10}$(OCBW)) or -74 dBm whichever is less (see note 3)	2 300 2 330 2 360 2 524 2 584 2 674		

NOTE 1: OCBW is in Hz.

NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to P_{min} + 26 dB where P_{min} is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.

NOTE 3: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to P_{min} + 20 dB where P_{min} is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.

NOTE 4: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.

Table 15: Receiver Blocking parameters receiver Category 2 equipment

Wanted signal mean power from companion device (dBm) (see notes 1 and 3)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 3)	Type of blocking signal
(-139 dBm + 10 × $\log_{10}$(OCBW) + 10 dB) or (-74 dBm + 10 dB) whichever is less (see note 2)	2 380 2 504 2 300 2 584	-34	CW
NOTE 1: OCBW is in Hz. NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to P_{min} + 26 dB where P_{min} is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal. NOTE 3: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.			

Table 16: Receiver Blocking parameters receiver Category 3 equipment

Wanted signal mean power from companion device (dBm) (see notes 1 and 3)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 3)	Type of blocking signal
(-139 dBm + 10 × $\log_{10}$(OCBW) + 20 dB) or (-74 dBm + 20 dB) whichever is less (see note 2)	2 380 2 504 2 300 2 584	-34	CW
NOTE 1: OCBW is in Hz. NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to P_{min} + 30 dB where P_{min} is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal. NOTE 3: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.			

13.3 Test procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07) Clause 5.4.11.2.

13.4 Test Result

Receiver Category 2					
Test Model	P_{min}(dBm)	Blocking Frequency(MHz)	Blocking Power(dB)	Measured PER(%)	Limit (%)
GFSK	-68	2380	-33	0.74	10
	-68	2504	-33	0.48	10
	-68	2300	-33	0.28	10
	-68	2584	-33	0.08	10
8DPSK	-68	2380	-33	0.48	10
	-68	2504	-33	0.27	10
	-68	2300	-33	0.58	10
	-68	2584	-33	0.37	10

14. EUT PHOTOGRAPHS

Refer to Report No.: CTB25031709702RE03 for EUT external and internal photos.

15. EUT TEST SETUP PHOTOGRAPHS

Spurious emissions

※※※※※ END OF REPORT ※※※※※