



TEST REPORT

Product Name: Tablet PC(Notebook)
Trademark: N/A
Model Number: MB02, For other series models, refer to Section 4.1.
Prepared For: Creature Information(Guangzhou)Technology Co., Limited
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Manufacturer: Creature Information(Guangzhou)Technology Co., Limited
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Sample Received Date: Feb. 07, 2025
Sample tested Date: Feb. 07, 2025 to Feb. 11, 2025
Issue Date: Feb. 11, 2025
Report No.: CTB25020704402RF02
Test Standards ETSI EN 300 440 V2.2.1 (2018-07)
Test Results PASS
Remark: This is 5.8G radio test report.

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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.

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(Note: N/A means not applicable)

1. VERSION

Report No.	Issue Date	Description	Approved
CTB25020704402RF02	Feb. 11, 2025	Original	Valid

2. TEST SUMMARY

The Product has been tested according to the following specifications:

Standard	EN 300 440 V2.2.0		
Test Item	Test Requirement	Test Method	Results
Transmitter Parameters			
Transmitter measurement requirements	Clause 4.2.1		
Equivalent isotropically radiated power (e.i.r.p.)	Clause 4.2.2	Clauses 4.2.2.3.1 and 4.2.2.3.2.	PASS
Permitted range of operating frequencies	Clause 4.2.3	Clauses 4.2.3.4.	PASS
Unwanted emissions in the Spurious domain	Clause 4.2.4	Clauses 4.2.4.3	PASS
Duty Cycle	Clause 4.2.5	Clauses 4.2.5.3	PASS
Additional requirements for FHSS equipment	Clause 4.2.6	Clauses 4.2.6.3	N/A
Receiver Parameters			
Receiver category	Clause 4.3.1		
Adjacent channel selectivity	Clause 4.3.3	Clause 4.3.3.3	N/A
Blocking or desensitization	Clause 4.3.4	Clause 4.3.4.3	N/A
Spurious radiations	Clause 4.3.5	Clause 4.3.5.3	PASS
Remark: Note: N/A is an abbreviation for Not Applicable and means this test item is not applicable for this device according to the technology characteristic of device. 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.			

3. MEASUREMENT UNCERTAINTY

Where relevant, the measurement uncertainty figures shall be calculated and shall correspond to an expansion factor (coverage factor) $k = 1,96$ or $k = 2$ (which provide confidence levels of respectively 95 % and 95,45 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)). Principles for the calculation of measurement uncertainty are contained in ETSI TR 100 028 [i.4], in particular in annex D of the ETSI TR 100 028-2 [i.4].

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 chamber 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°C
frequency	1×10^{-7}

4. PRODUCT INFORMATION AND TEST SETUP

4.1 Product Information

Model(s):	MB02, MB01, MB02, MB03, MB05, I7, I7 Plus, I7 Pro, I7 Power, I7 Turbo, I7 Ultra, I7 A, I7 A Plus, I7 A Pro, I7 A Power, I7 A Turbo, I7 A Ultra, I7 AI, I7 AI Plus, I7 AI Pro, I7 AI Power, I7 AI Turbo, I7 AI Ultra, I7 S, I7 S Plus, I7 S Pro, I7 S Power, I7 S Turbo, I7 S Ultra, I8, I8 Plus, I8 Pro, I8 Power, I8 Turbo, I8 Ultra, I8 A, I8 A Plus, I8 A Pro, I8 A Power, I8 A Turbo, I8 A Ultra, I8 AI, I8 AI Plus, I8 AI Pro, I8 AI Power, I8 AI Turbo, I8 AI Ultra, I8 S, I8 S Plus, I8 S Pro, I8 S Power, I8 S Turbo, I8 S Ultra, I9, I9 Plus, I9 Pro, I9 Power, I9 Turbo, I9 Ultra, I9 A, I9 A Plus, I9 A Pro, I9 A Power, I9 A Turbo, I9 A Ultra, I9 AI, I9 AI Plus, I9 AI Pro, I9 AI Power, I9 AI Turbo, I9 AI Ultra, I9 S, I9 S Plus, I9 S Pro, I9 S Power, I9 S Turbo, I9 S Ultra, I10, I10 Plus, I10 Pro, I10 Power, I10 Turbo, I10 Ultra, I10 A, I10 A Plus, I10 A Pro, I10 A Power, I10 A Turbo, I10 A Ultra, I10 AI, I10 AI Plus, I10 AI Pro, I10 AI Power, I10 AI Turbo, I10 AI Ultra, I10 S, I10 S Plus, I10 S Pro, I10 S Power, I10 S Turbo, I10 S Ultra, I11, I11 Plus, I11 Pro, I11 Power, I11 Turbo, I11 Ultra, I11 A, I11 A Plus, I11 A Pro, I11 A Power, I11 A Turbo, I11 A Ultra, I11 AI, I11 AI Plus, I11 AI Pro, I11 AI Power, I11 AI Turbo, I11 AI Ultra, I11 S, I11 S Plus, I11 S Pro, I11 S Power, I11 S Turbo, I11 S Ultra, I12, I12 Plus, I12 Pro, I12 Power, I12 Turbo, I12 Ultra, I12 A, I12 A Plus, I12 A Pro, I12 A Power, I12 A Turbo, I12 A Ultra, I12 AI, I12 AI Plus, I12 AI Pro, I12 AI Power, I12 AI Turbo, I12 AI Ultra, I12 S, I12 S Plus, I12 S Pro, I12 S Power, I12 S Turbo, I12 S Ultra, I13, I13 Plus, I13 Pro, I13 Power, I13 Turbo, I13 Ultra, I13 A, I13 A Plus, I13 A Pro, I13 A Power, I13 A Turbo, I13 A Ultra, I13 AI, I13 AI Plus, I13 AI Pro, I13 AI Power, I13 AI Turbo, I13 AI Ultra, I13 S, I13 S Plus, I13 S Pro, I13 S Power, I13 S Turbo, I13 S Ultra, T8, T8 Plus, T8 Pro, T8 Power, T8 Turbo, T8 Ultra, T8 A, T8 A Plus, T8 A Pro, T8 A Power, T8 A Turbo, T8 A Ultra, T8 AI, T8 AI Plus, T8 AI Pro, T8 AI Power, T8 AI Turbo, T8 AI Ultra, T8 S, T8 S Plus, T8 S Pro, T8 S Power, T8 S Turbo, T8 S Ultra, T10, T10 Plus, T10 Pro, T10 Power, T10 Turbo, T10 Ultra, T10 A, T10 A Plus, T10 A Pro, T10 A Power, T10 A Turbo, T10 A Ultra, T10 AI, T10 AI Plus, T10 AI Pro, T10 AI Power, T10 AI Turbo, T10 AI Ultra, T10 S, T10 S Plus, T10 S Pro, T10 S Power, T10 S Turbo, T10 S Ultra, T11, T11 Plus, T11 Pro, T11 Power, T11 Turbo, T11 Ultra, T11 A, T11 A Plus, T11 A Pro, T11 A Power, T11 A Turbo, T11 A Ultra, T11 AI, T11 AI Plus, T11 AI Pro, T11 AI Power, T11 AI Turbo, T11 AI Ultra, T11 S, T11 S Plus, T11 S Pro, T11 S Power, T11 S Turbo, T11 S Ultra, T12, T12 Plus, T12 Pro, T12 Power, T12 Turbo, T12 Ultra, T12 A, T12 A Plus, T12 A Pro, T12 A Power, T12 A Turbo, T12 A Ultra, T12 AI, T12 AI Plus, T12 AI Pro, T12 AI Power, T12 AI Turbo, T12 AI Ultra, T12 S, T12 S Plus, T12 S Pro, T12 S Power, T12 S Turbo, T12 S Ultra, T13, T13 Plus, T13 Pro, T13 Power, T13 Turbo, T13 Ultra, T13 A, T13 A Plus, T13 A Pro, T13 A Power, T13 A Turbo, T13 A Ultra, T13 AI, T13 AI Plus, T13 AI Pro, T13 AI Power, T13 AI Turbo, T13 AI Ultra, T13 S, T13 S Plus, T13 S Pro, T13 S Power, T13 S Turbo, T13 S Ultra, I6, I14, I15, I16
Model Description:	All the model are the same circuit and RF module, only the name and appearance are different, used to distinguish between different sales customers. Test sample model: MB02
Hardware Version:	V1.0
Software Version:	V1.0
Operation Frequency:	IEEE 802.11a/n/ac(20M): 5725MHz ~5850MHz/ 5 channel IEEE 802.11n/ac(40M): 5725MHz ~5850MHz/ 2 channel IEEE 802.11ac(80M): 5725MHz ~5850MHz/ 1 channel
Max. RF output power:	13.62dBm

Type of Modulation: WiFi(5.8G): OFDM
Antenna installation: Internal antenna
Antenna Gain: 1.0dBi
Ratings: INPUT: AC 100-240V 0.5A,10.0W
OUTPUT: DC 5.0V 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	AC ADAPTER	Shenzhen YingQin electronic co., LTD	EE0502000	/	N/A

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

For 802.11a/n/ac(20M) Operation in the 5725MHz ~5850 MHz band			
Channel	Frequency	Channel	Frequency
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz	NA	NA

For 802.11n/ac(40M) Operation in the 5725MHz ~5850 MHz band			
Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

For 802.11ac(80M) Operation in the 5725MHz ~5850 MHz band			
Channel	Frequency	Channel	Frequency
155	5775MHz	NA	NA

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	Tx/Rx	RF Channel		
		Low(L)	Middle(M)	High(H)
802.11a/n/ac(20M)	5725MHz ~5850 MHz	Channel 149	Channel 157	Channel 165
		5745MHz	5785MHz	5825MHz
802.11n/ac(40M)	5725MHz ~5850 MHz	Channel 151	N/A	Channel 159
		5755MHz	N/A	5795MHz
802.11ac(80M)	5725MHz ~5850 MHz	N/A	Channel 155	N/A
		N/A	5775MHz	N/A

4.6 Test Environment

Humidity(%):	54
Atmospheric Pressure(kPa):	101
Normal Voltage(AC)(V):	230
Low Voltage(AC)(V):	207
High Voltage(AC)(V):	252
Normal Temperature(°C) :	23
Low Temperature(°C) :	-20
High Temperature(°C) :	55

Note:

- (1) The temperature range as declared by the manufacturer; or one of the following specified temperature ranges:
 - Temperature category I (General): -20 °C to +55 °C;
 - Temperature category II (Portable): -10 °C to +55 °C;
 - Temperature category III (Equipment for normal indoor use): 5 °C to +35 °C.
- (2) When the radio equipment is intended for operation with the usual types of battery power source, the normal test voltage shall be 1,1 multiplied by the nominal voltage of the battery
- (3) When the radio equipment is intended for operation from the usual type of battery power sources the extreme test voltages shall be 1,3 and 0,9 multiplied by the nominal voltage of the battery

Table 5: Receiver categories

Receiver category	Relevant receiver clauses	Risk assessment of receiver performance
1	4.3.3, 4.3.4 and 4.3.5	Highly reliable SRD communication media; e.g. serving human life inherent systems (may result in a physical risk to a person).
2	4.3.4 and 4.3.5	Medium reliable SRD communication media e.g. causing inconvenience to persons, which cannot simply be overcome by other means.
3	4.3.5	Standard reliable SRD communication media e.g. Inconvenience to persons, which can simply be overcome by other means (e.g. manual).

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, Xinhua 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

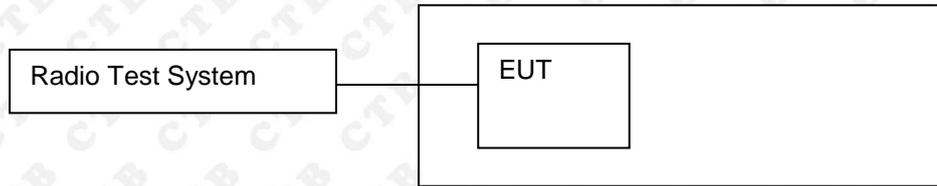
RF conduction and Radiation Test equipment

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	MSF2400-24 83.5MS-1154	20181015001	/	2025/6/30
10	5 GHz Filter	Shenxiang	MSF5150-58 50MS-1155	20181015001	/	2025/6/30
11	Filter	Xingbo	XBLBQ-DZA 120	190821-1-1	/	2025/6/30
12	BT&WI-FI Automatic test software	Microwave	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	Microwave	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. EQUIVALENT ISOTROPICALLY RADIATED POWER (E.I.R.P.)

6.1 Block Diagram Of Test Setup



6.2 Limit

Table 2: Maximum radiated peak power (e.i.r.p.)

Frequency Bands	Power	Application	Notes
2 400 MHz to 2 483,5 MHz	10 mW e.i.r.p.	Non-specific short range devices	
2 400 MHz to 2 483,5 MHz	25 mW e.i.r.p.	Radio determination devices	
(a) 2 446 MHz to 2 454 MHz	500 mW e.i.r.p.	Radio Frequency Identification (RFID) devices	See also table 4 and annex D
(b) 2 446 MHz to 2 454 MHz	4 W e.i.r.p.	Radio Frequency Identification (RFID) devices	See also table 4 and annex D
5 725 MHz to 5 875 MHz	25 mW e.i.r.p.	Non-specific short range devices	
9 200 MHz to 9 500 MHz	25 mW e.i.r.p.	Radio determination devices	
9 500 MHz to 9 975 MHz	25 mW e.i.r.p.	Radio determination devices	
10,5 GHz to 10,6 GHz	500 mW e.i.r.p.	Radio determination devices	
13,4 GHz to 14,0 GHz	25 mW e.i.r.p.	Radio determination devices	
17,1 GHz to 17,3 GHz	400 mW e.i.r.p.	Radio determination devices	See annex F
24,00 GHz to 24,25 GHz	100 mW e.i.r.p.	Non-specific short range devices and Radio determination devices	

6.3 Test procedure

Step 1:

- using a suitable means, the output of the transmitter shall be coupled to a matched diode detector;
- the output of the diode detector shall be connected to the vertical channel of an oscilloscope;
- the combination of the diode detector and the oscilloscope shall be capable of faithfully reproducing the envelope peaks and the duty cycle of the transmitter output signal;
- the observed duty cycle of the transmitter (Tx on/(Tx on + Tx off)) shall be noted as x, (0 < x < 1) and recorded.

Step 2:

- the average output power of the transmitter shall be determined using a wideband, calibrated RF power meter with a matched thermocouple detector or an equivalent thereof and, where applicable, with an integration period that exceeds the repetition period of the transmitter by a factor 5 or more. The observed value shall be recorded as "A" (in dBm);
- the e.i.r.p. shall be calculated from the above measured power output A, the observed duty cycle x, and the applicable antenna assembly gain "G" in dBi, according to the formula:

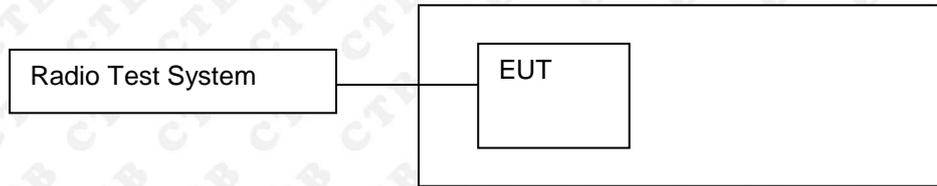
$$- P = A + G + 10 \log (1/x);$$

6.4 Test Result

Condition	Mode	Frequency (MHz)	Max EIRP (dBm)	Limit (dBm)	Verdict
NVNT	802.11a	5745	13.11	14	Pass
NVNT	802.11a	5785	13.5	14	Pass
NVNT	802.11a	5825	13.57	14	Pass
NVNT	802.11ac20	5745	13.07	14	Pass
NVNT	802.11ac20	5785	13.58	14	Pass
NVNT	802.11ac20	5825	13.56	14	Pass
NVNT	802.11ac40	5755	12.83	14	Pass
NVNT	802.11ac40	5795	13.37	14	Pass
NVNT	802.11ac80	5775	13.18	14	Pass
NVNT	802.11n(HT20)	5745	13.1	14	Pass
NVNT	802.11n(HT20)	5785	13.6	14	Pass
NVNT	802.11n(HT20)	5825	13.62	14	Pass
NVNT	802.11n(HT40)	5755	12.9	14	Pass
NVNT	802.11n(HT40)	5795	13.28	14	Pass

7. PERMITTED RANGE OF OPERATING FREQUENCIES

7.1 Block Diagram Of Test Setup



7.2 Limit

5725MHz to 5825MHz

7.3 Test procedure

- a) put the spectrum analyser in video averaging mode with a minimum of 50 sweeps selected;
- b) select the lowest operating frequency of the equipment under test and activate the transmitter with modulation applied. The RF emission of the equipment shall be displayed on the spectrum analyser;
- c) using the marker of the spectrum analyser, find the lowest frequency below the operating frequency at which the spectral power density drops below the level given in clause 4.2.3. This frequency shall be recorded in the test report;
- d) select the highest operating frequency of the equipment under test and find the highest frequency at which the spectral power density drops below the value given in clause 4.2.3. This frequency shall be recorded in the test report;
- e) the difference between the frequencies measured in steps c) and d) is the operating frequency range. It shall be recorded in the test report.

This measurement shall be repeated for each frequency range declared by the manufacturer.

7.4 Test Result

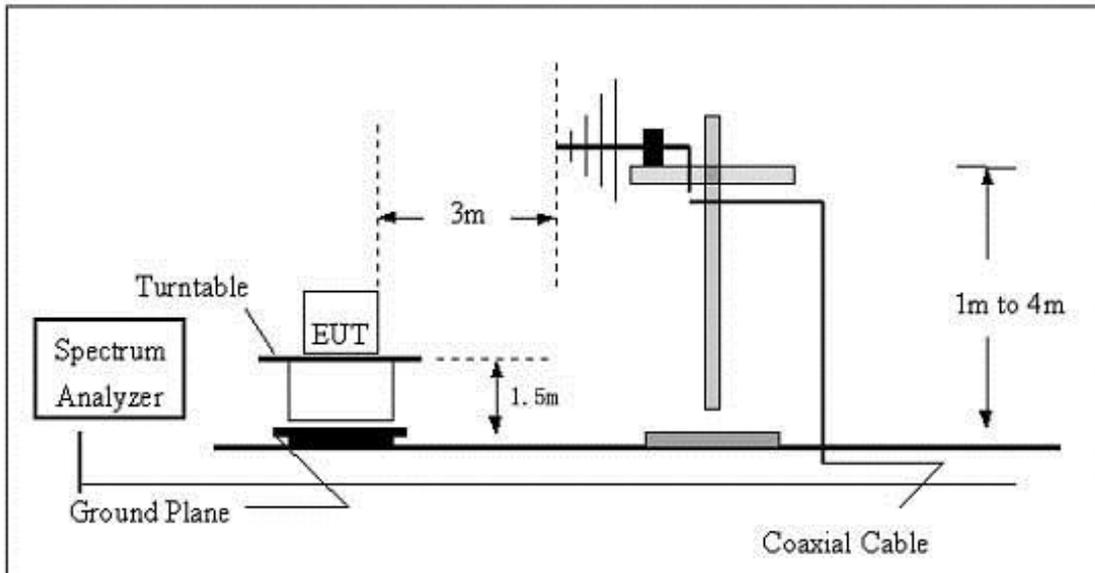
5.8G_5725MHz-5850MHz

Test Conditions	Frequencies (MHz) at -30dBm/30kHz (EIRP)	
	Lowest Frequency (fL)	Highest Frequency (fH)
Normal	5724.449	5850.494
LTLV	5724.778	5850.485
LTHV	5724.396	5850.639
HTHV	5724.240	5850.361
HTLV	5724.004	5850.447

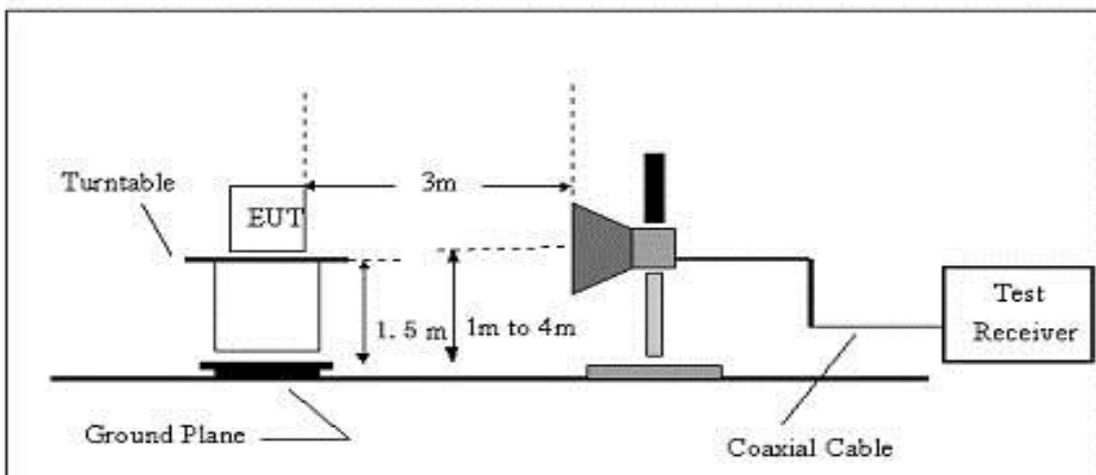
8. UNWANTED EMISSIONS IN THE SPURIOUS DOMAIN

8.1 Block Diagram Of Test Setup

(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(B) Radiated Emission Test Set-Up Frequency Above 1 GHz



8.2 Limits

Table 3: Spurious emissions

Frequency ranges	47 MHz to 74 MHz 87,5 MHz to 108 MHz 174 MHz to 230 MHz 470 MHz to 862 MHz	Other frequencies ≤ 1 000 MHz	Frequencies > 1 000 MHz
State			
Operating	4 nW	250 nW	1 μW
Standby	2 nW	2 nW	20 nW

8.3 Test Procedure

30MHz ~ 1GHz:

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

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

8.4 Test Results

The worse test 802.11n(HT20) Low channel

Tx in operation mode				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Test Result
	polarization	Level(dBm)		
48.80	Vertical	-70.53	-54.00	Pass
130.10	V	-72.51	-36.00	
188.80	V	-74.88	-54.00	
389.56	V	-76.60	-36.00	
510.45	V	-74.30	-54.00	
678.72	V	-56.60	-54.00	
956.45	V	-52.83	-36.00	
1740.04	V	-40.96	-30.00	
2425.02	V	-44.34	-30.00	
3294.58	V	-42.65	-30.00	
134.43	Horizontal	-69.71	-36.00	
217.67	H	-71.30	-54.00	
359.40	H	-72.56	-36.00	
485.82	H	-73.25	-54.00	
694.21	H	-72.79	-54.00	
870.21	H	-47.87	-36.00	
1738.78	H	-42.90	-30.00	
2426.11	H	-42.42	-30.00	
3294.10	H	-45.98	-30.00	
Tx in standby Mode				
N/A: Not applicable, since the spurious emission of the EUT is too weak to be detected.(≤-80dBm)				

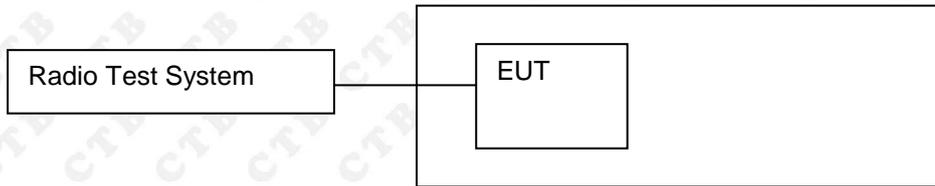
802.11n(HT20) High channel

Tx in operation mode				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Test Result
	polarization	Level(dBm)		
50.43	Vertical	-70.17	-54.00	Pass
127.91	V	-72.91	-36.00	
189.45	V	-74.55	-54.00	
388.83	V	-76.66	-36.00	
509.58	V	-74.43	-54.00	
676.89	V	-56.39	-54.00	
955.88	V	-52.13	-36.00	
1737.93	V	-41.25	-30.00	
2423.25	V	-43.98	-30.00	
3294.71	V	-42.70	-30.00	
133.20	Horizontal	-69.60	-36.00	
216.76	H	-71.58	-54.00	
359.50	H	-72.84	-36.00	
487.07	H	-73.42	-54.00	
694.15	H	-72.05	-54.00	
870.29	H	-47.92	-36.00	
1739.09	H	-43.34	-30.00	
2424.26	H	-42.39	-30.00	
3292.82	H	-45.92	-30.00	
Tx in standby Mode				
N/A: Not applicable, since the spurious emission of the EUT is too weak to be detected.(≤-80dBm)				

Remark: This Report only show the test plots of the ANT0 worst case.

9. DUTY CYCLE

9.1 Block Diagram Of Test Setup



9.2 Limit

Table 4: Duty cycle limits

Frequency Band	Duty cycle	Application	Notes
2 400 MHz to 2 483,5 MHz	No Restriction	Generic use	
2 400 MHz to 2 483,5 MHz	No Restriction	Detection, movement and alert applications	
(a) 2 446 MHz to 2 454 MHz	No Restriction	RFID	Limits shown in annex D shall apply
(b) 2 446 MHz to 2 454 MHz	≤ 15 %	RFID	Limits shown in annex D shall apply
5 725 MHz to 5 875 MHz	No Restriction	Generic use	
9 200 MHz to 9 500 MHz	No Restriction	Radiodetermination: radar, detection, movement and alert applications	
9 500 MHz to 9 975 MHz	No Restriction	Radiodetermination: radar, detection, movement and alert applications	
10,5 GHz to 10,6 GHz	No Restriction	Radiodetermination: radar, detection, movement and alert applications	
13,4 GHz to 14,0 GHz	No Restriction	Radiodetermination: radar, detection, movement and alert applications	
17,1 GHz to 17,3 GHz	DAA or equivalent techniques	Radiodetermination: GBSAR detecting and movement and alert applications	Limits shown in annex F shall apply
24,00 GHz to 24,25 GHz	No Restriction	Generic use and for Radiodetermination: radar, detection, movement and alert applications	

9.3 Test procedure

An assessment of the overall Duty Cycle shall be made for a representative period of T_{obs} over the observation bandwidth F_{obs} . Unless otherwise specified, T_{obs} is 1 hour and the observation bandwidth F_{obs} is the operational frequency band.

The representative period shall be the most active one in normal use of the device. As a guide "Normal use" is considered as representing the behaviour of the device during transmission of 99 % of the [emissions] generated during its operational lifetime.

Procedures such setup, commissioning, and maintenance are not considered part of normal operation.

For manual operated or event dependant devices, with or without software controlled functions, the manufacturer shall declare whether the device once triggered, follows a pre-programmed cycle, or whether the transmitter remains on until the trigger is released or the device is manually reset. The manufacturer shall also give a description of the application

for the device and include a typical usage pattern. The typical usage pattern as declared by the manufacturer shall be used to determine the duty cycle and compare to the limit in table 4.

Where an acknowledgement is required, the additional transmitter on-time shall be included and declared by the manufacturer.

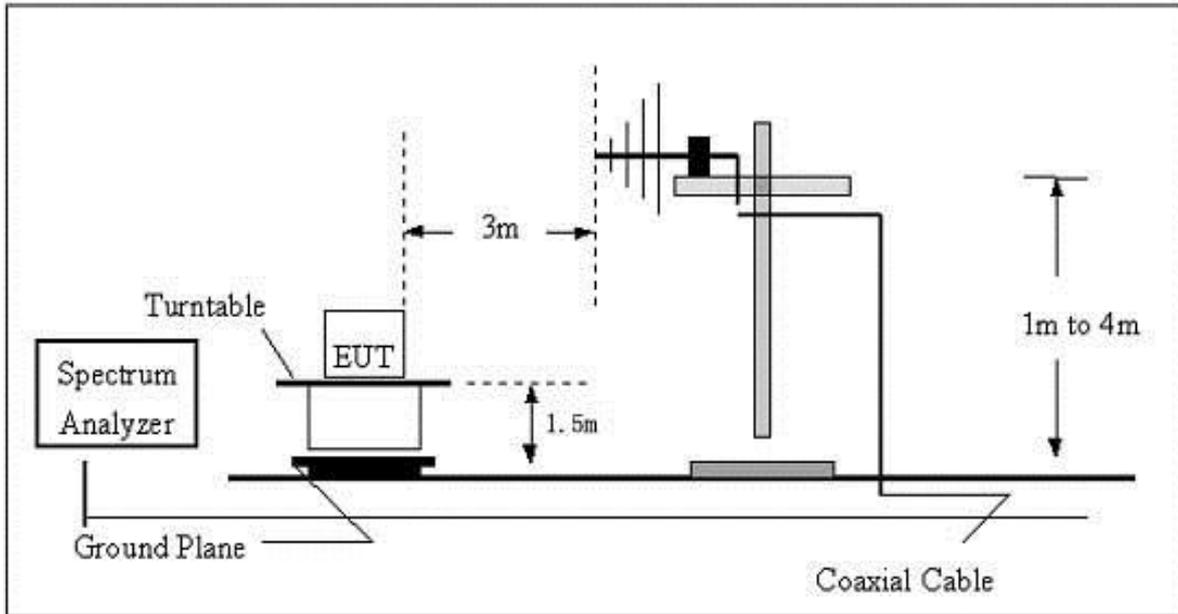
9.4 Test Result

For generic use devices operating at frequency range 5725-5825MHz, according to Final draft ETSI EN 300 440 V2.2.1 (2018-05), the duty cycle is no restriction.

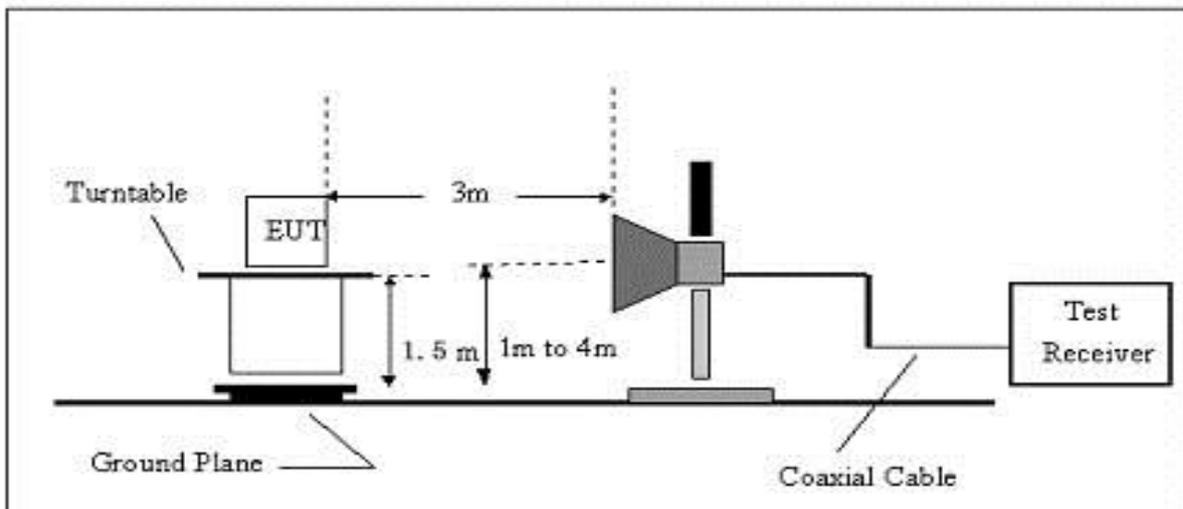
10. SPURIOUS EMISSIONS

10.1 Block Diagram Of Test Setup

(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(B) Radiated Emission Test Set-Up Frequency Above 1 GHz



10.2 Limits

According to the Final draft ETSI EN 300 440 V2.2.1 (2018-05) Section 4.3.5.4, the power of any spurious emission shall not exceed 2 nW in the range 25 MHz to 1 GHz and shall not exceed 20 nW on frequencies above 1 GHz.

10.3 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.

10.4 Test Results

The worse test 802.11n(HT20) Low channel

Rx in operation mode				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Test Result
	polarization	Level(dBm)		
51.02	Vertical	-69.47	-57.00	Pass
128.13	V	-70.17	-57.00	
190.55	V	-70.32	-57.00	
389.93	V	-69.11	-57.00	
508.45	V	-69.29	-57.00	
679.06	V	-68.77	-57.00	
956.13	V	-67.78	-57.00	
1739.47	V	-67.07	-47.00	
2423.97	V	-68.09	-47.00	
3293.20	V	-67.04	-47.00	
133.81	Horizontal	-69.41	-57.00	
217.95	H	-69.01	-57.00	
360.95	H	-69.14	-57.00	
485.83	H	-69.31	-57.00	
692.25	H	-68.19	-57.00	
870.67	H	-68.72	-57.00	
1738.78	H	-67.82	-47.00	
2423.98	H	-67.96	-47.00	
3292.68	H	-68.28	-47.00	
Rx in standby Mode				
N/A: Not applicable, since the spurious emission of the EUT is too weak to be detected.(≤ -80 dBm)				

802.11n(HT20) High channel

Rx in operation mode				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Test Result
	polarization	Level(dBm)		
50.80	Vertical	-69.56	-57.00	Pass
130.84	V	-70.28	-57.00	
190.70	V	-70.42	-57.00	
388.63	V	-68.71	-57.00	
509.89	V	-69.73	-57.00	
677.08	V	-69.24	-57.00	
956.92	V	-67.47	-57.00	
1738.70	V	-66.94	-47.00	
2423.38	V	-67.51	-47.00	
3293.21	V	-66.98	-47.00	
132.80	Horizontal	-69.84	-57.00	
215.46	H	-69.10	-57.00	
358.47	H	-69.03	-57.00	
485.53	H	-68.90	-57.00	
693.17	H	-67.90	-57.00	
869.63	H	-68.58	-57.00	
1739.01	H	-67.16	-47.00	
2426.86	H	-68.73	-47.00	
3292.04	H	-68.12	-47.00	
Rx in standby Mode				
N/A: Not applicable, since the spurious emission of the EUT is too weak to be detected.(≤ -80 dBm)				

Remark: This Report only show the test plots of the ANT0 worst case.

11. ADJACENT CHANNEL SELECTIVITY

11.1 Applicability

This requirement applies to Equipment Category 1 receivers, when invoked, as defined in EN 300440 V2.2.0 clause 4.3.1.

11.2 LIMITS

The adjacent channel selectivity of the equipment under specified conditions shall not be less than $-30 \text{ dBm} + k$.

The correction factor, k , is as follows:

$$k = -20 \log f - 10 \log BW$$

Where:

- f is the frequency in GHz;
- BW is the channel bandwidth in MHz.

The factor k is limited within the following:

- $-40 \text{ dB} < k < 0 \text{ dB}$.

The measured adjacent channel selectivity shall be stated in the test report.

11.3 Methods of measurement

This measurement shall be conducted under normal conditions.

Two signal generators A and B shall be connected to the receiver via a combining network to the receiver, either:

- a) via a test fixture or a test antenna to the receiver integrated, dedicated or test antenna; or
- b) directly to the receiver permanent or temporary antenna connector.

The method of coupling to the receiver shall be stated in the test report.

Signal generator A shall be at the nominal frequency of the receiver, with normal modulation of the wanted signal.

Signal generator B shall be unmodulated and shall be adjusted to the adjacent channel centre frequency immediately above that of the wanted signal.

Initially signal generator B shall be switched off and using signal generator A the level that still gives sufficient response shall be established. The output level of generator A shall then be increased by 3 dB.

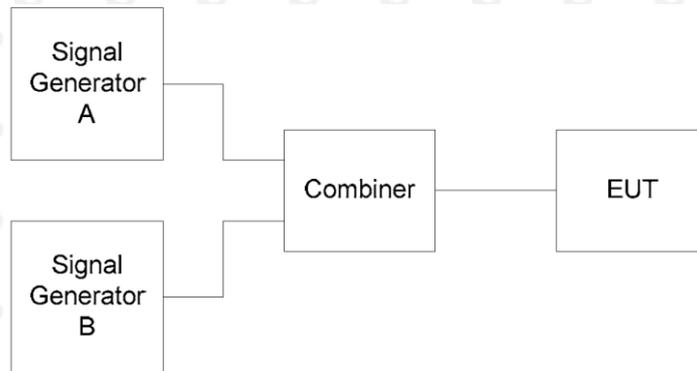
Signal generator B is then switched on and adjusted until the wanted criteria are met. This level shall be recorded.

The measurements shall be repeated with signal generator B unmodulated and adjusted to the adjacent channel centre immediately below the wanted signal.

The adjacent channel selectivity shall be recorded for the upper and lower adjacent channels as the level in dBm of the unwanted signal.

For tagging systems (e.g. RF identification, anti-theft, access control, location and similar systems) signal generator A may be replaced by a physical tag positioned at 70 % of the measured system range in metres. In this case, the blocking or desensitization shall be recorded as the ratio in dB of lowest level of the unwanted signal (generator B) resulting in a non-read of the tag. to the declared sensitivity of the receiver +3 dB.

11.4 Test Setup Layout



11.5 TEST RESULTS

Model	Frequency A (MHz)	Test Frequency B (MHz)	The Result (dBm)	Limit (dBm)	Measured
802.11a	5745	5725	-46.13	-50.82	Pass
		5765	-47.36	-50.82	Pass
	5825	5805	-56.95	-58.32	Pass
		5845	-46.66	-58.32	Pass
802.11 n20	5745	5725	-47.45	-58.20	Pass
		5765	-46.05	-58.20	Pass
	5825	5802	-47.20	-58.32	Pass
		5845	-45.57	-58.32	Pass
802.11 n40	5755	5715	-47.20	-61.22	Pass
		5795	-46.81	-61.22	Pass
	5795	5755	-47.07	-61.28	Pass
		5835	-42.70	-61.28	Pass
802.11 ac80	5775	5695	-46.69	-64.26	Pass
		5855	-47.31	-64.26	Pass

12. BLOCKING OR DESENSITIZATION

12.1 Applicability

This requirement applies to Equipment Category 1 and Category 2 receivers, when invoked, as defined in EN 300440 V2.2.0 clause 4.3.1.

12.2 LIMITS

The blocking level, for any frequency within the specified ranges, shall not be less than the values given in table 6, except at frequencies on which spurious responses are found.

Table 6: Limits for blocking or desensitization

Receiver category	Limit
1	-30 dBm + k
2	-45 dBm + k
3	-60 dBm + k

The correction factor, *k*, is as follows:

$$k = -20\log f - 10\log BW$$

Where:

- *f* is the frequency in GHz;
- *BW* is the occupied bandwidth in MHz.

The factor *k* is limited within the following:

- -40 dB < *k* < 0 dB.

The measured blocking level shall be stated in the test report.

12.3 Test Procedures

This measurement shall be conducted under normal conditions.

Two signal generators A and B shall be connected to the receiver via a combining network to the receiver, either:

- a) via a test fixture or a test antenna to the receiver integrated, dedicated or test antenna; or
- b) directly to the receiver permanent or temporary antenna connector.

The method of coupling to the receiver shall be stated in the test report.

Signal generator A shall be at the nominal frequency of the receiver, with normal modulation of the wanted signal.

Signal generator B shall be unmodulated and shall be adjusted to a test frequency at approximately 10 times, 20 times and 50 times of the receive channel bandwidth above upper band edge of the receive channel.

Initially signal generator B shall be switched off and using signal generator A the level which still gives sufficient response shall be established. The output level of generator A shall then be increased by 3 dB.

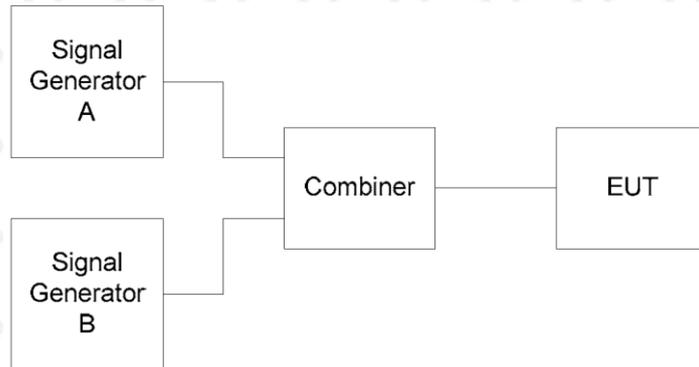
Signal generator B is then switched on and adjusted until the wanted criteria are met. This level shall be recorded.

The measurement shall be repeated with the test frequency for signal generator B at approximately 10 times, 20 times and 50 times of the receive channel bandwidth below the lower band edge of the receive channel.

The blocking or desensitization shall be recorded as the level in dBm of lowest level of the unwanted signal (generator B).

For tagging systems (e.g. RF identification, anti-theft, access control, location and similar systems) signal generator A may be replaced by a physical tag positioned at 70 % of the measured system range in metres. In this case, the blocking or desensitization shall be recorded as the ratio in dB of lowest level of the unwanted signal (generator B) resulting in a non-read of the tag. to the declared sensitivity of the receiver +3 dB.

12.4 Test Setup Layout



12.5 TEST RESULTS

Model	Frequency A (MHz)	Test Frequency B (MHz)	The Result (dBm)	Limit (dBm)	Measured
802.11a	5745	Centre Frequency +50*BW	-44.43	-57.33	Pass
		Centre Frequency +20*BW	-46.93	-57.33	Pass
		Centre Frequency +10*BW	-49.20	-57.33	Pass
		Centre Frequency -10*BW	-48.96	-57.33	Pass
		Centre Frequency -20*BW	-46.81	-57.33	Pass
		Centre Frequency -50*BW	-42.57	-57.33	Pass
	5825	Centre Frequency +50*BW	-44.25	-57.45	Pass
		Centre Frequency +20*BW	-46.94	-57.45	Pass
		Centre Frequency +10*BW	-50.25	-57.45	Pass
		Centre Frequency -10*BW	-49.55	-57.45	Pass
		Centre Frequency -20*BW	-46.80	-57.45	Pass
		Centre Frequency -50*BW	-42.40	-57.45	Pass
802.11n-HT20	5745	Centre Frequency +50*BW	-43.54	-57.63	Pass
		Centre Frequency +20*BW	-46.48	-57.63	Pass
		Centre Frequency +10*BW	-50.00	-57.63	Pass
		Centre Frequency -10*BW	-49.01	-57.63	Pass
		Centre Frequency -20*BW	-46.16	-57.63	Pass
		Centre Frequency -50*BW	-43.47	-57.63	Pass
	5725	Centre Frequency +50*BW	-43.71	-57.75	Pass
		Centre Frequency +20*BW	-47.37	-57.75	Pass
		Centre Frequency +10*BW	-49.62	-57.75	Pass
		Centre Frequency -10*BW	-49.33	-57.75	Pass
		Centre Frequency -20*BW	-46.90	-57.75	Pass
		Centre Frequency -50*BW	-43.69	-57.75	Pass

802.11n-HT40	5755	Centre Frequency +50*BW	-43.97	-60.78	Pass
		Centre Frequency +20*BW	-47.40	-60.78	Pass
		Centre Frequency +10*BW	-50.23	-60.78	Pass
		Centre Frequency -10*BW	-49.46	-60.78	Pass
		Centre Frequency -20*BW	-46.41	-60.78	Pass
		Centre Frequency -50*BW	-42.87	-60.78	Pass
	5795	Centre Frequency +50*BW	-43.72	-60.84	Pass
		Centre Frequency +20*BW	-47.57	-60.84	Pass
		Centre Frequency +10*BW	-49.74	-60.84	Pass
		Centre Frequency -10*BW	-46.37	-60.84	Pass
		Centre Frequency -20*BW	-49.44	-60.84	Pass
		Centre Frequency -50*BW	-43.41	-60.84	Pass
802.11ac-VT80	5775	Centre Frequency +50*BW	-44.11	-63.97	Pass
		Centre Frequency +20*BW	-47.03	-63.97	Pass
		Centre Frequency +10*BW	-49.34	-63.97	Pass
		Centre Frequency -10*BW	-49.45	-63.97	Pass
		Centre Frequency -20*BW	-46.49	-63.97	Pass
		Centre Frequency -50*BW	-42.86	-63.97	Pass

13. EUT PHOTOGRAPHS

Refer to Report No.: CTB25020704402RE04 for EUT external and internal photos.

14. EUT TEST SETUP PHOTOGRAPHS

Spurious emissions

******* END OF REPORT *******