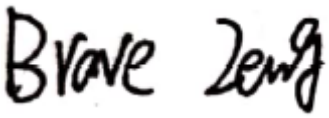
TEST REPORT

Report No.:	BCTC2504708272-7E
Applicant:	Shenzhen Huafurui Technology Co., Ltd.
Product Name:	Smartphone
Test Model:	P90
Tested Date:	2025-04-07 to 2025-05-09
Issued Date:	2025-05-21

Shenzhen BCTC Testing Co., Ltd.

Product Name:	Smartphone
Trademark:	CUBOT
Model/Type reference:	P90
Prepared For:	Shenzhen Huafurui Technology Co., Ltd.
Address:	Unit 601-03, 6/F, Block A, Building 1, Ganfeng Technology Building, No. 993 Jiaxian Road, Xiangjiaotang Community, Bantian Street, Longgang District, Shenzhen, P.R. China
Manufacturer:	Shenzhen Huafurui Technology Co., Ltd.
Address:	Unit 601-03, 6/F, Block A, Building 1, Ganfeng Technology Building, No. 993 Jiaxian Road, Xiangjiaotang Community, Bantian Street, Longgang District, Shenzhen, P.R. China
Prepared By:	Shenzhen BCTC Testing Co., Ltd.
Address:	1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Sample Received Date:	2025-04-07
Sample tested Date:	2025-04-07 to 2025-05-09
Issue Date:	2025-05-21
Report No.:	BCTC2504708272-7E
Test Standards	ETSI EN 300 440 V2.2.1 (2018-07)
Test Results	PASS
Remark:	This is WIFI-5.8GHz band radio test report.

Tested by:



Brave Zeng/ Project Handler

Approved by:

Zero Zhou/Reviewer

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 BCTC Testing Co., Ltd, this report can't be reproduced except in full. The tested sample(s) and the sample information are provided by the client.

Table Of Content

(Note: N/A Means Not Applicable)

1. Version

Report No.	Issue Date	Description	Approved
BCTC2504708272-7E	2025-05-21	Original	Valid

2. Test Summary

The Product has been tested according to the following specifications:

No.	Test Parameter	Clause No.	Results
Transmitter Parameters			
1	Equivalent isotropically radiated power (e.i.r.p.)	4.2.2	PASS
2	Permitted range of operating frequencies	4.2.3	PASS
3	Spurious radiation for transmitter	4.2.4	PASS
4	Duty Cycle	4.2.5.4	N/A[1]
5	Additional requirements for FHSS equipment	4.2.6	N/A[2]
6	Adjacent channel selectivity	4.3.3	N/A[3]
7	Blocking or desensitization	4.3.4	PASS
8	Spurious radiation for receiver	4.3.5	PASS
9	Spectrum access techniques	4.4	N/A[4]
10	GBSAR antenna pattern	4.6.4	N/A[5]
11	Limits for GBSAR	Annex I	N/A[5]
This product is equipment Category 2 receivers Note[1]: This clause is applicable for transmitting devices which do not use LBT, DAA, or RFID transmitters operating in the 2446 to 2454 MHz band transmitting more than 500 mW e.i.r.p. power level. Note[2]:Applies to Equipment utilizing FHSS modulation Note[3]:Applies to equipment Category 1 receivers Note[4]:Applies to Equipment which are not using duty cycle restrictions for media access Note[5]:Applies only GBSAR systems			

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.

RF frequency	1×10^{-7}
RF power, conducted	1.38dB
Conducted spurious emission (30MHz-1GHz)	1.28dB
Conducted spurious emission (1GHz-18GHz)	1.576dB
Radiated Spurious emission (30MHz-1GHz)	4.3dB
Radiated Spurious emission (1GHz-18GHz)	4.5dB
Temperature	0.59℃
Humidity	5.3%

4. Product Information And Test Setup

4.1 Product Information

Model/Type Reference:	P90
Model Differences:	N/A
Hardware Version:	3368D-MC-V1.1
Software Version:	CUBOT_P90_F021C_V01
Operation Frequency:	WIFI(5.8GHz): IEEE 802.11a/n HT20/ac HT20:5745MHz-5825MHz IEEE 802.11n HT40/ac HT40:5755 MHz-5795MHz IEEE 802.11ac HT80:5775MHz
Max. RF output power:	WIFI(5.8GHz): 9.70 dBm
Type of Modulation:	WIFI(5.8GHz): DSSS, OFDM
Antenna Type:	WIFI(5.8GHz): Internal antenna
Antenna Gain:	WIFI(5.8GHz): 2.14 dBi Remark: ☒ The antenna gain of the product comes from the antenna report provided by the customer, and the test data is affected by the customer information. ☐ The antenna gain of the product is provided by the customer, and the test data is affected by the customer information.
Ratings:	DC 9V from adapter/DC 3.87V from battery
Adapter 1 Information:	Model: HJ-PD18W-EU Input: 100-240V~ 50/60Hz 0.6A Output: 5.0V ⎓ 3.0A 15.0W OR 9.0V ⎓ 2.0A 18.0W OR 12.0V ⎓ 1.5A 18.0W MAX
Adapter 2 Information:	Model: TPD-203A120167VF01 Input: 100-240V~ 50/60Hz 0.6A Output: 5.0V ⎓ 3.0A 15.0W or 9.0V ⎓ 2.22A 19.98W or 12.0V ⎓ 1.67A 20.04W

Cable of Product

No.	Cable Type	Quantity	Provider	Length (m)	Shielded	Note
1	--	--	Applicant	---	Yes/No	With a ferrite ring in mid Detachable
2	--	--	BCTC	--	Yes/No	--

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

No.	Device Type	Brand	Model	Series No.	Note
1.	Adapter	/	TPD-203A120167 VF01	---	---
2.	Adapter	/	HJ-PD18W-EU	---	---
3.	TF card	SanDisk	32G	---	---

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)
149	5745	151	5755	153	5765	157	5785
159	5795	161	5805	165	5825		

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(802.11a)	5745MHz	5785MHz	5825MHz
Transmitting(802.11n HT20)	5745MHz	5785MHz	5825MHz
Transmitting(802.11n HT40)	5755MHz	/	5795MHz
Transmitting(802.11ac HT20)	5745MHz	5785MHz	5825MHz
Transmitting(802.11ac HT40)	5755MHz	/	5795MHz
Transmitting(802.11ac HT80)	/	5775MHz	/
Receiving(802.11a)	5745MHz	5785MHz	5825MHz
Receiving(802.11n HT20)	5745MHz	5785MHz	5825MHz
Receiving(802.11n HT40)	5755MHz	/	5795MHz
Receiving(802.11ac HT20)	5745MHz	5785MHz	5825MHz
Receiving(802.11ac HT40)	5755MHz	/	5795MHz
Receiving(802.11ac HT80)	/	5775MHz	/

4.6 Test Environment

1. Normal Test Conditions:

Humidity (%):	54
Atmospheric Pressure(kPa):	101
Temperature(℃):	26
Test Voltage(DC):	3.87V

2. Extreme Test Conditions:
For tests at extreme temperatures, measurements shall be made over the extremes of the operating temperature range as declared by the manufacturer.
For tests at extreme voltages, measurements shall be made over the extremes of the power source voltage range as declared by the manufacturer.

Test Conditions	**LTLV**	**LTHV**	**HTLV**	**HTHV**
Temperature (℃)	-10	-10	45	45
Test Voltage (DC)	3.48	4.26	3.48	4.26

5. Test Facility And Test Instrument Used

5.1 Test Facility

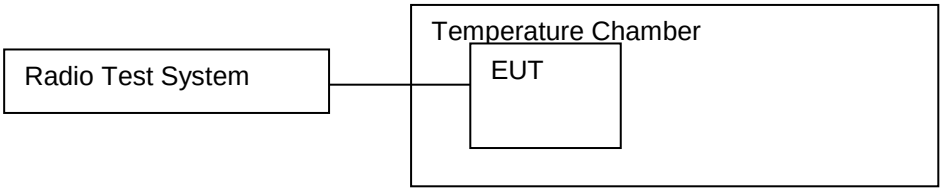
All measurement facilities used to collect the measurement data are located at 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

5.2 Test Instrument Used

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	966 chamber	ChengYu	966 Room	966	May 15, 2023	May 14, 2026
2	Receiver	R&S	ESR	102075	May 16, 2024	May 15, 2025
3	Receiver	R&S	ESRP	101154	May 16, 2024	May 15, 2025
4	Amplifier	Schwarzbeck	BBV9744	9744-0037	May 16, 2024	May 15, 2025
5	TRILOG Broadband Antenna	Schwarzbeck	VULB 9163	942	May 21, 2024	May 20, 2025
6	Loop Antenna	Schwarzbeck	FMZB1519B	00014	May 21, 2024	May 20, 2025
7	Amplifier	SKET	LAPA_01G18G-45dB	SK2021040901	May 16, 2024	May 15, 2025
8	Horn Antenna	Schwarzbeck	BBHA9120D	1541	May 21, 2024	May 20, 2025
9	Preamplifier	MITEQ	TTA1840-35-HG	2034381	May 16, 2024	May 15, 2025
10	Horn antenna	Schwarzbeck	BBHA9170	00822	May 21, 2024	May 20, 2025
11	Spectrum Analyzer 9kHz-40GHz	R&S	FSP 40	100363	May 16, 2024	May 15, 2025
12	Software	Frad	EZ-EMC	FA-03A2 RE	\	\
13	Spectrum Analyzer	Keysight	N9020A	MY49100060	May 16, 2024	May 15, 2025
14	Signal Generator	Keysight	N5182B	MY56200519	May 16, 2024	May 15, 2025
15	Signal Generator	Keysight	83711B	US37100131	May 16, 2024	May 15, 2025
16	Communication test set	R&S	CMW500	126173	Nov. 11. 2024	Nov. 10, 2025
17	band rejection filter	ZBSF	ZBSF-C2441.5	1706003606	May 16, 2024	May 15, 2025
18	Programmable constant temperature and humidity test chamber	DGBELL	BTKS5-150C	\	Jul. 01, 2024	Jun. 30, 2025
19	Radio frequency control box	MAIWEI	MW200-RFCB	\	\	\
20	Software	MAIWEI	MTS 8200	\	\	\

6. Equivalent Isotropically Radiated Power (E.I.R.P.)

6.1 Block Diagram Of Test Setup



6.2 Limit

25mW(14dBm)

6.3 Test Procedure

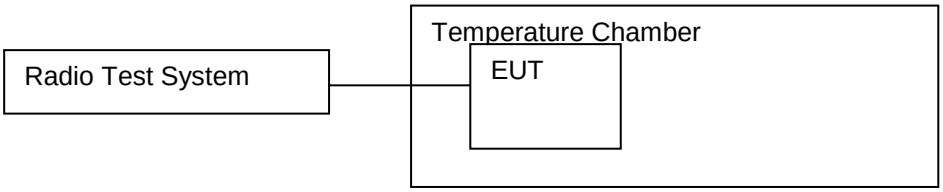
Step 1:
• using a suitable means, the output of the transmitter shall be coupled to a matched diode detector;
• the output of the diode detector shall be connected to the vertical channel of an oscilloscope;
• the combination of the diode detector and the oscilloscope shall be capable of faithfully reproducing 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

Modulation	Test conditions (Volt. & Temp.)	EIRP(dBm)		
		Low Channel	Middle Channel	High Channel
802.11a	NVNT	**9.70**	8.70	7.46
	LVLT	9.49	8.63	7.27
	LVHT	9.44	8.34	7.17
	HVLT	9.14	8.20	6.95
	HVHT	9.04	8.12	6.70
802.11n(HT20)	NVNT	8.04	7.54	6.28
	LVLT	7.91	7.51	6.06
	LVHT	7.75	7.40	5.93
	HVLT	7.73	7.33	5.82
	HVHT	7.65	7.25	5.61
802.11n(HT40)	NVNT	6.97	/	6.27
	LVLT	6.84	/	5.99
	LVHT	6.78	/	5.81
	HVLT	6.49	/	5.67
	HVHT	6.35	/	5.62
802.11ac(HT20)	NVNT	8.11	7.43	6.35
	LVLT	7.90	7.40	6.21
	LVHT	7.64	7.12	5.98
	HVLT	7.40	6.87	5.73
	HVHT	7.14	6.84	5.72
802.11ac(HT40)	NVNT	7.01	/	6.23
	LVLT	7.01	/	6.07
	LVHT	6.96	/	5.84
	HVLT	6.95	/	5.77
	HVHT	6.75	/	5.56
802.11ac(HT80)	NVNT	/	6.42	/
	LVLT	/	6.35	/
	LVHT	/	6.32	/
	HVLT	/	6.08	/
	HVHT	/	5.87	/
Limit		≤25mW (14dBm)		
Remark: P = A + G + Y,G=2.14 dBi, x=100%				

7. Permitted Range Of Operating Frequencies

7.1 Block Diagram Of Test Setup



7.2 Limit

5725 MHz to 5875 MHz

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.

7.4 Test Result

802.11 a

Test Conditions	Frequencies (MHz) at -30dBm/30kHz (EIRP)		Occupied Channel (MHz)
	Lowest Frequency (fL)	Highest Frequency (fH)	
Normal	5736.76	/	16.533
	/	5833.24	16.584
LTLV	5736.60	/	16.532
	/	5833.17	16.532
LTHV	5736.44	/	16.431
	/	5832.99	16.482
HTHV	5736.29	/	16.383
	/	5832.95	16.459
HTLV	5736.13	/	16.348
	/	5832.91	16.369

802.11 ac20

Test Conditions	Frequencies (MHz) at -30dBm/30kHz (EIRP)		Occupied Channel (MHz)
	Lowest Frequency (fL)	Highest Frequency (fH)	
Normal	5736.24	/	17.616
	/	5833.72	17.624
LTLV	5736.13	/	17.513
	/	5833.67	17.551
LTHV	5736.02	/	17.410
	/	5833.66	17.486
HTHV	5735.86	/	17.364
	/	5833.50	17.444
HTLV	5735.77	/	17.304
	/	5833.47	17.420

802.11 ac40

Test Conditions	Frequencies (MHz) at -30dBm/30kHz (EIRP)		Occupied Channel (MHz)
	Lowest Frequency (fL)	Highest Frequency (fH)	
Normal	5736.68	/	36.183
	/	5813.08	36.105
LTLV	5736.58	/	36.143
	/	5812.97	36.097
LTHV	5736.45	/	36.057
	/	5812.95	35.990
HTHV	5736.31	/	36.035
	/	5812.92	35.980
HTLV	5736.18	/	35.978
	/	5812.88	35.878

802.11 ac80

Test Conditions	Frequencies (MHz) at -30dBm/30kHz (EIRP)		Occupied Channel (MHz)
	Lowest Frequency (fL)	Highest Frequency (fH)	
Normal	5736.84	/	75.151
	/	5813.08	75.205
LTLV	5736.69	/	75.049
	/	5812.95	75.152
LTHV	5736.53	/	74.983
	/	5812.86	75.150
HTHV	5736.50	/	74.936
	/	5812.75	75.103
HTLV	5736.43	/	74.903
	/	5812.70	75.074

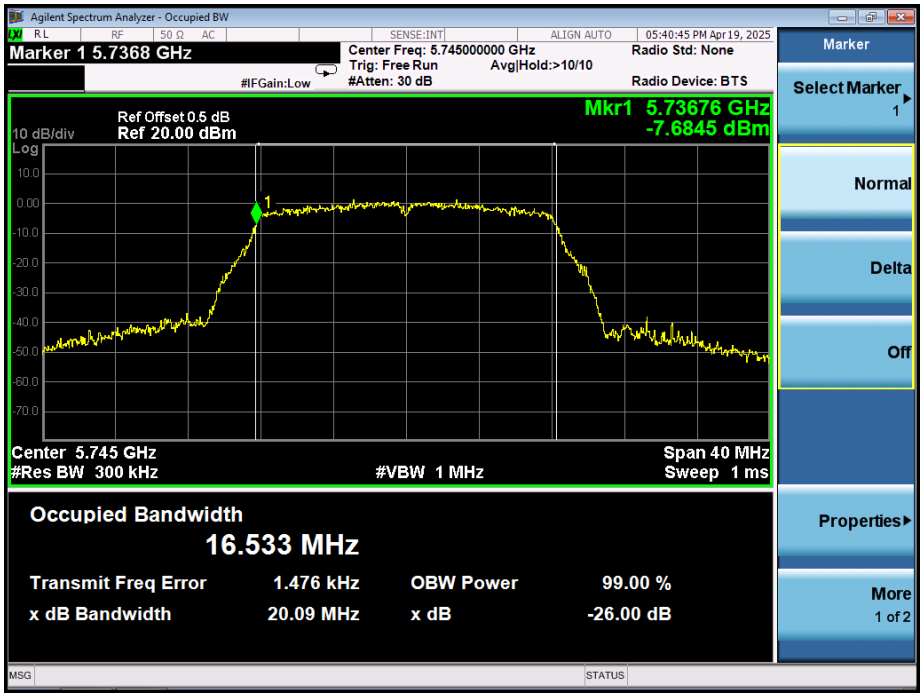
802.11 n20

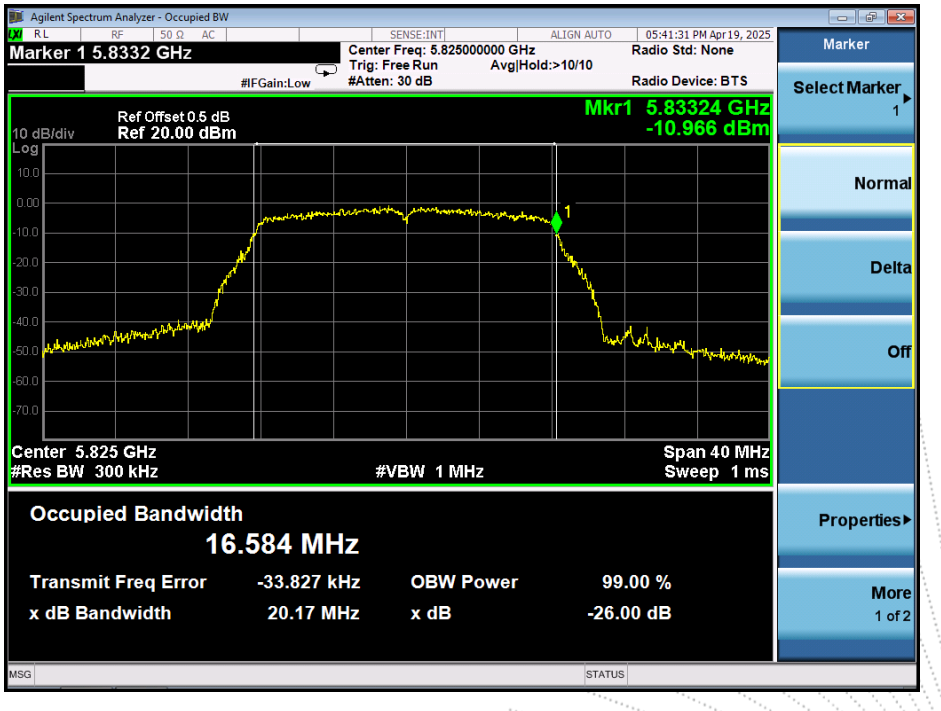
Test Conditions	Frequencies (MHz) at -30dBm/30kHz (EIRP)		Occupied Channel (MHz)
	Lowest Frequency (fL)	Highest Frequency (fH)	
Normal	5736.16	/	17.636
	/	5833.80	17.615
LTLV	5736.12	/	17.582
	/	5833.73	17.521
LTHV	5735.98	/	17.546
	/	5833.61	17.440
HTHV	5735.95	/	17.483
	/	5833.54	17.410
HTLV	5735.92	/	17.379
	/	5833.51	17.325

802.11 n40

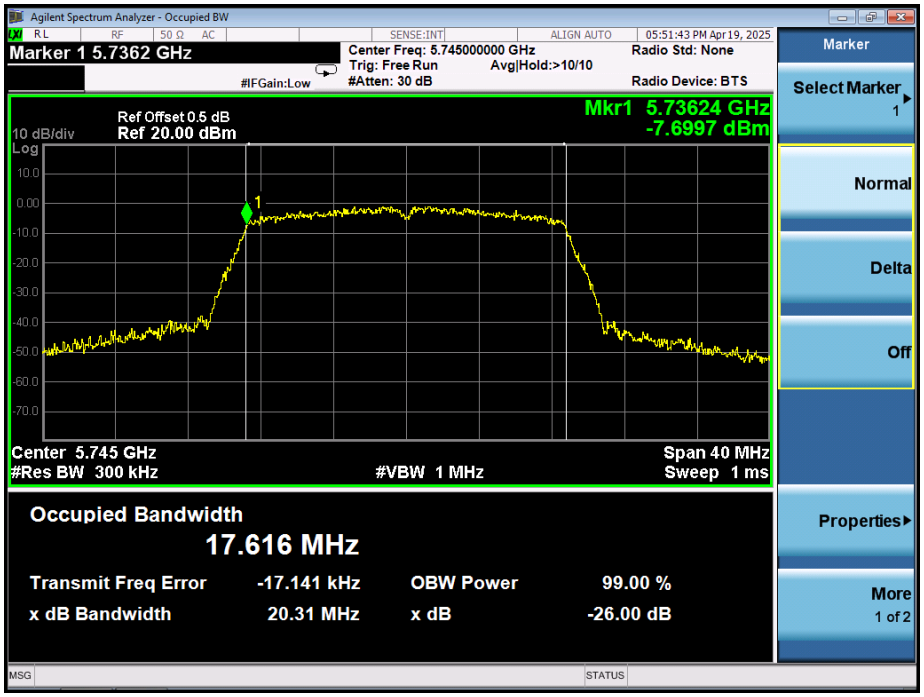
Test Conditions	Frequencies (MHz) at -30dBm/30kHz (EIRP)		Occupied Channel (MHz)
	Lowest Frequency (fL)	Highest Frequency (fH)	
Normal	5736.68	/	36.205
	/	5813.00	36.189
LTLV	5736.60	/	36.176
	/	5812.99	36.116
LTHV	5736.53	/	36.080
	/	5812.90	36.056
HTHV	5736.46	/	35.983
	/	5812.85	35.961
HTLV	5736.32	/	35.897
	/	5812.83	35.961

Test plots:
802.11 a





802.11 ac20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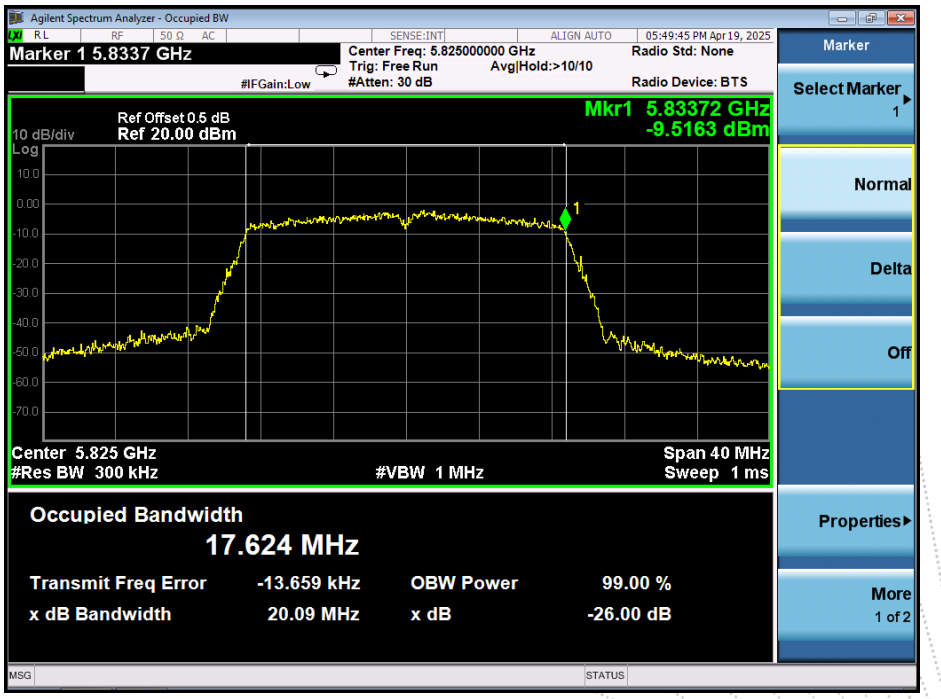
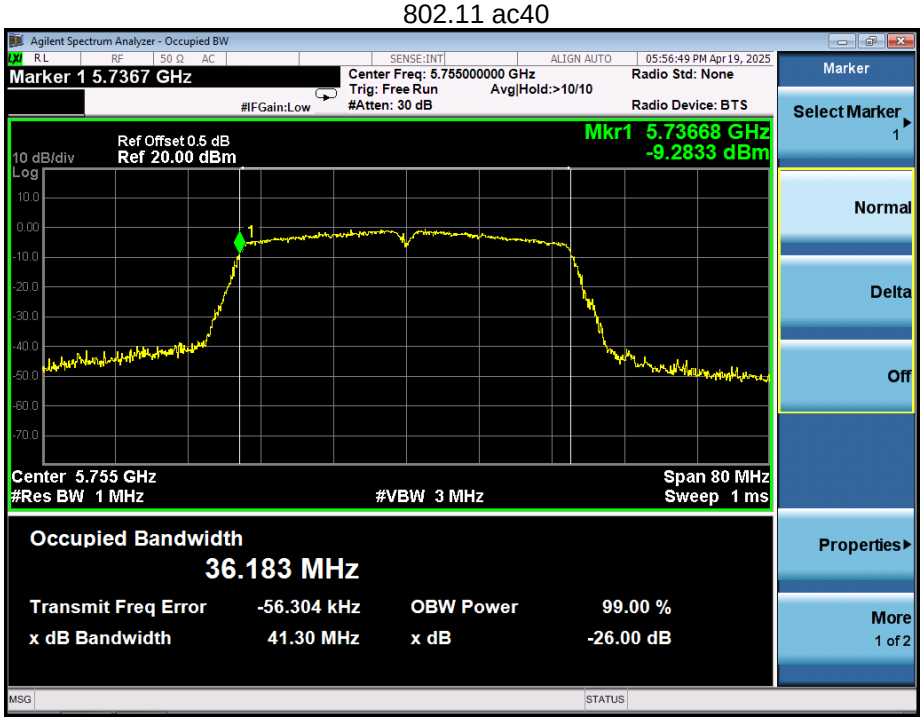
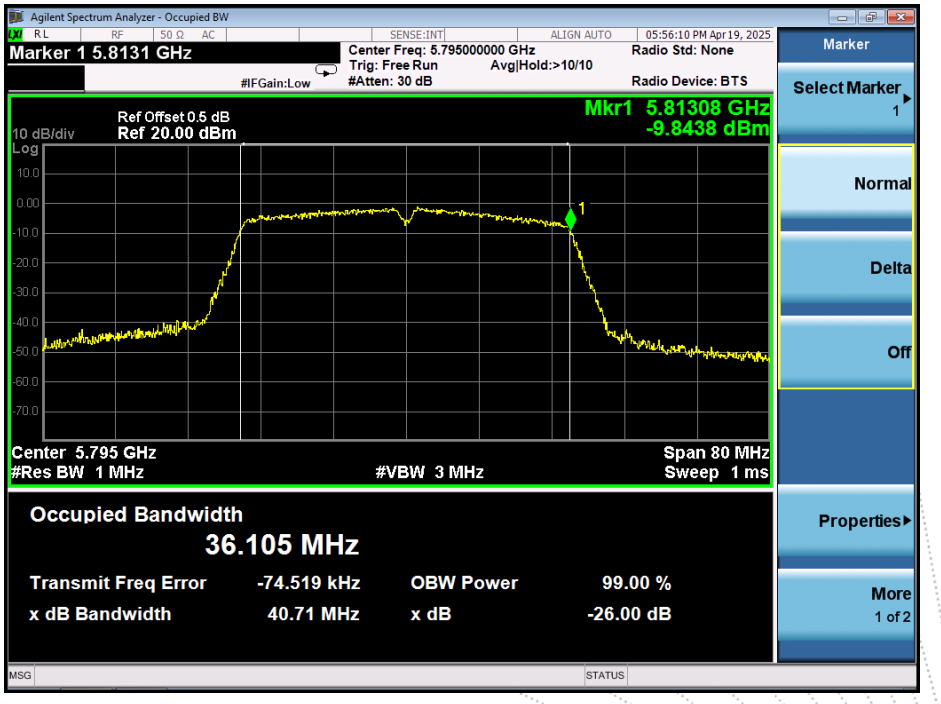
Marker 1 5.7362 GHz
Center Freq: 5.745000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
05:51:43 PM Apr 19, 2025
Ref Offset 0.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 5.73624 GHz
-7.6997 dBm
Center 5.745 GHz
#Res BW 300 kHz
#VBW 1 MHz
Span 40 MHz
Sweep 1 ms
Occupied Bandwidth
17.616 MHz
Transmit Freq Error -17.141 kHz
OBW Power 99.00 %
x dB Bandwidth 20.31 MHz
x dB -26.00 dB
Marker
Select Marker
Normal
Delta
Off
Properties
More
1 of 2

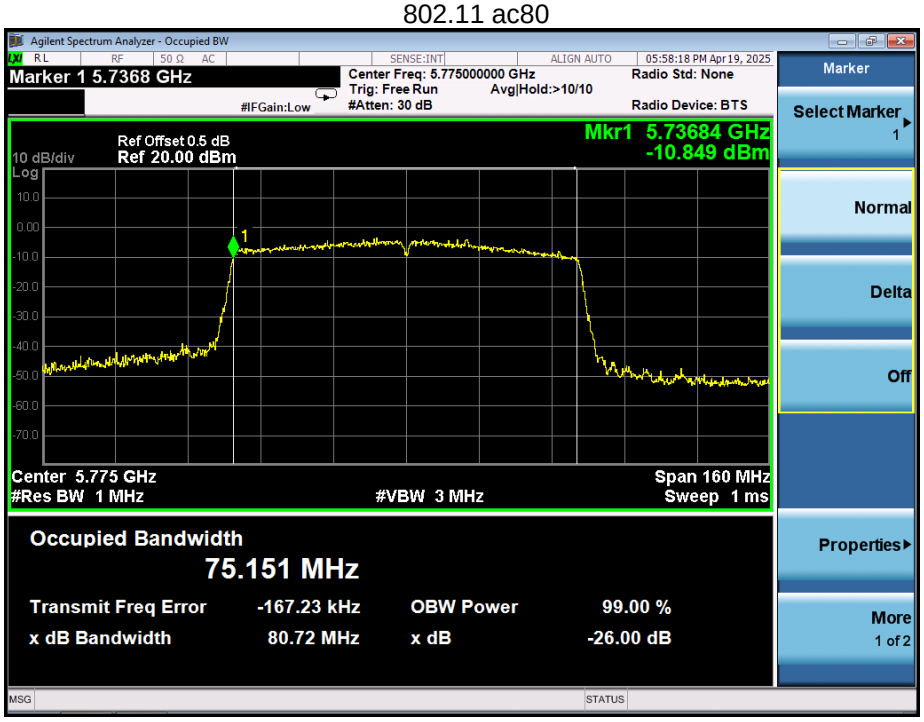

Agilent Spectrum Analyzer - Occupied BW
Marker 1 5.8337 GHz
Center Freq: 5.825000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
05:49:45 PM Apr 19, 2025
Ref Offset 0.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 5.83372 GHz
-9.5163 dBm
Center 5.825 GHz
#Res BW 300 kHz
#VBW 1 MHz
Span 40 MHz
Sweep 1 ms
Occupied Bandwidth
17.624 MHz
Transmit Freq Error -13.659 kHz
OBW Power 99.00 %
x dB Bandwidth 20.09 MHz
x dB -26.00 dB
Marker
Select Marker
Normal
Delta
Off
Properties
More
1 of 2

802.11 ac40


Agilent Spectrum Analyzer - Occupied BW
Marker 1 5.7367 GHz
#IFGain:Low
Center Freq: 5.755000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
05:56:49 PM Apr 19, 2025
Ref Offset 0.5 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 5.73668 GHz
-9.2833 dBm
Center 5.755 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 80 MHz
Sweep 1 ms
Occupied Bandwidth
36.183 MHz
Transmit Freq Error -56.304 kHz
OBW Power 99.00 %
x dB Bandwidth 41.30 MHz
x dB -26.00 dB
Marker
Select Marker
Normal
Delta
Off
Properties
More
1 of 2
MSG
STATUS

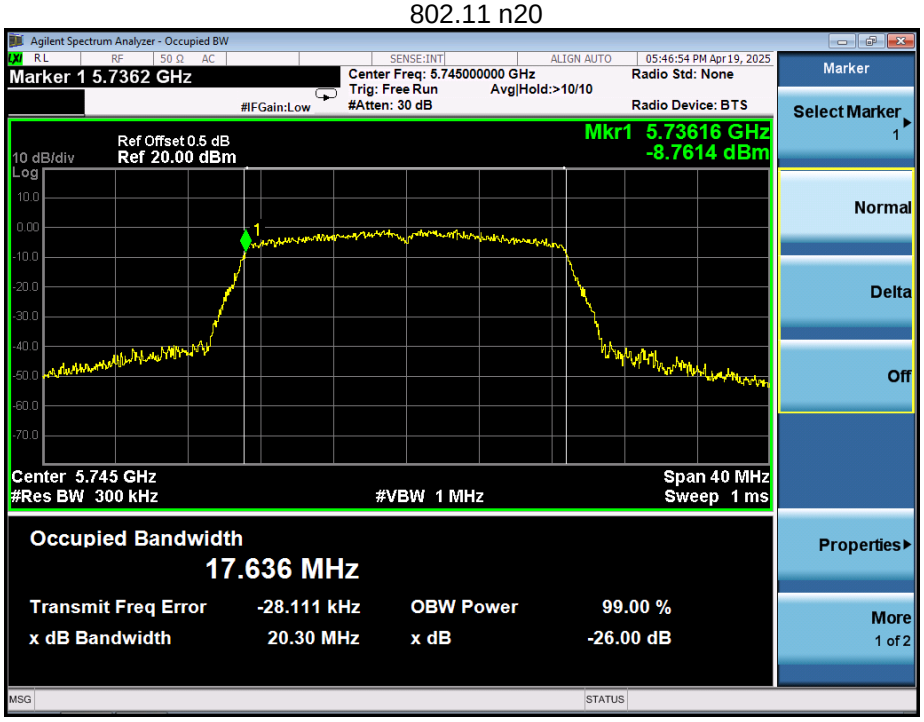

Agilent Spectrum Analyzer - Occupied BW
Marker 1 5.8131 GHz
#IFGain:Low
Center Freq: 5.795000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
05:56:10 PM Apr 19, 2025
Ref Offset 0.5 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 5.81308 GHz
-9.8438 dBm
Center 5.795 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 80 MHz
Sweep 1 ms
Occupied Bandwidth
36.105 MHz
Transmit Freq Error -74.519 kHz
OBW Power 99.00 %
x dB Bandwidth 40.71 MHz
x dB -26.00 dB
Marker
Select Marker
Normal
Delta
Off
Properties
More
1 of 2
MSG
STATUS

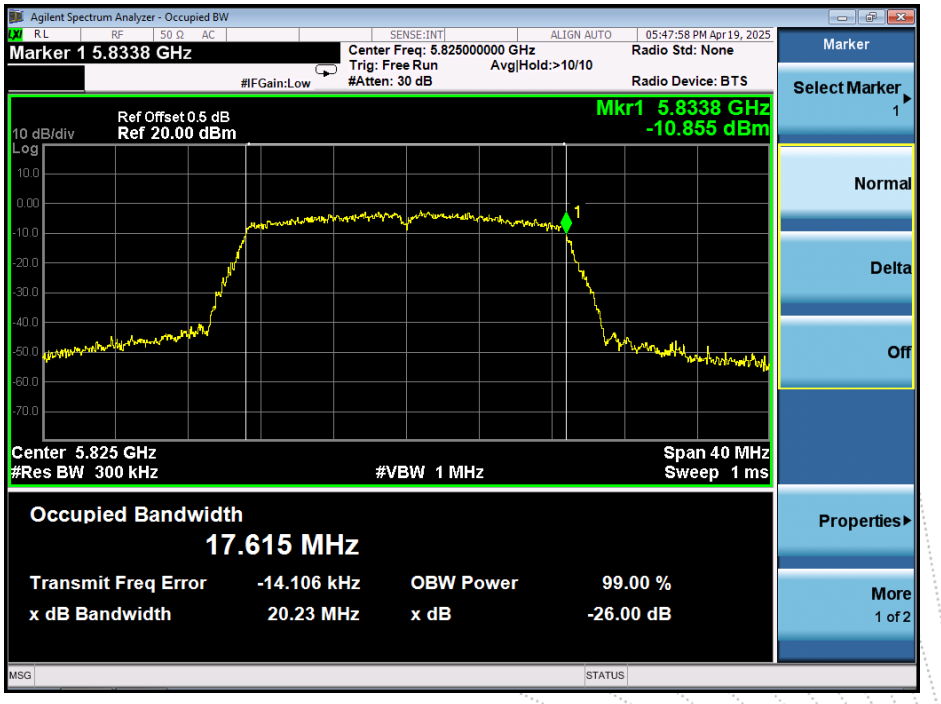
802.11 ac80


Agilent Spectrum Analyzer - Occupied BW
Marker 1 5.7368 GHz
#IFGain:Low
Center Freq: 5.775000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
05:58:18 PM Apr 19, 2025
Ref Offset 0.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 5.73684 GHz
-10.849 dBm
Center 5.775 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 160 MHz
Sweep 1 ms
Occupied Bandwidth
75.151 MHz
Transmit Freq Error -167.23 kHz
OBW Power 99.00 %
x dB Bandwidth 80.72 MHz
x dB -26.00 dB
Marker
Select Marker
Normal
Delta
Off
Properties
More
1 of 2
MSG
STATUS

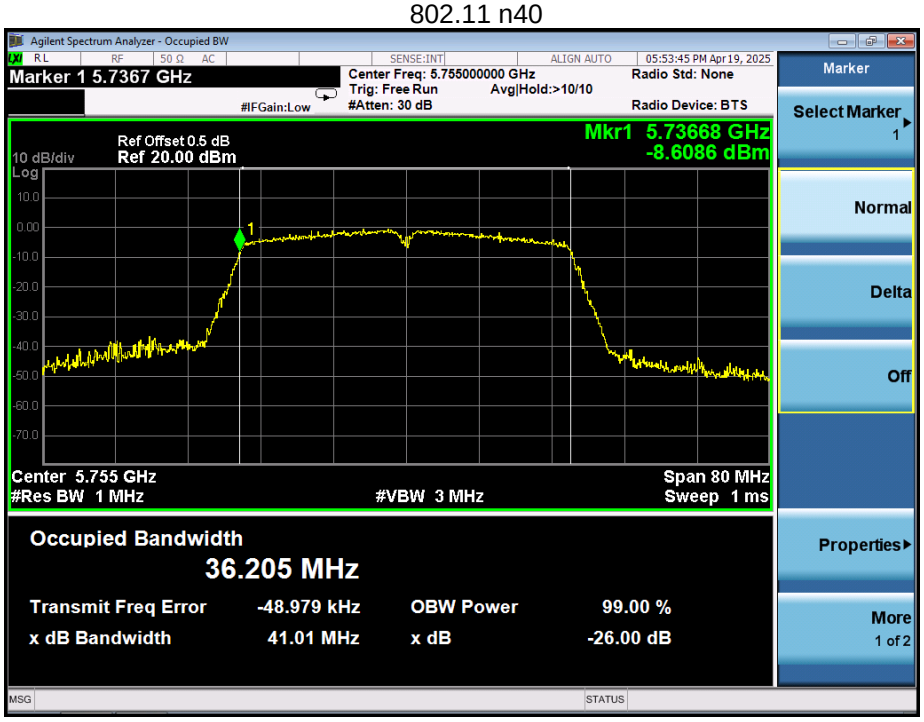

Agilent Spectrum Analyzer - Occupied BW
Marker 1 5.8131 GHz
#IFGain:Low
Center Freq: 5.775000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
05:58:38 PM Apr 19, 2025
Ref Offset 0.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 5.81308 GHz
-12.336 dBm
Center 5.775 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 160 MHz
Sweep 1 ms
Occupied Bandwidth
75.205 MHz
Transmit Freq Error -175.30 kHz
OBW Power 99.00 %
x dB Bandwidth 80.45 MHz
x dB -26.00 dB
Marker
Select Marker
Normal
Delta
Off
Properties
More
1 of 2
MSG
STATUS

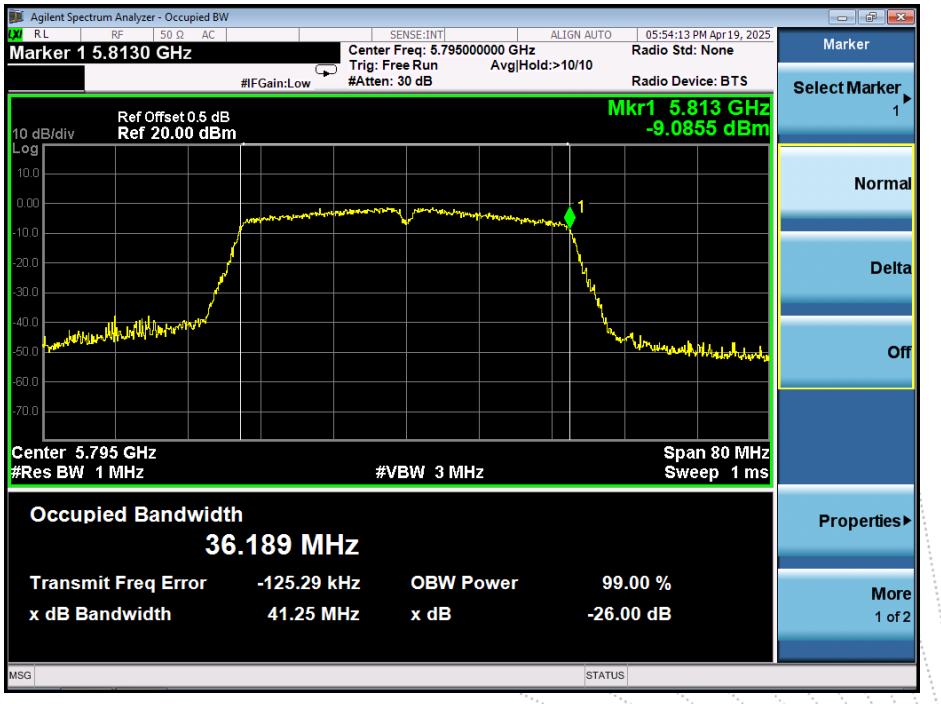
802.11 n20


Agilent Spectrum Analyzer - Occupied BW
Marker 1 5.7362 GHz
#IFGain:Low
Center Freq: 5.745000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
05:46:54 PM Apr 19, 2025
Ref Offset 0.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 5.73616 GHz
-8.7614 dBm
Center 5.745 GHz
#Res BW 300 kHz
#VBW 1 MHz
Span 40 MHz
Sweep 1 ms
Occupied Bandwidth
17.636 MHz
Transmit Freq Error -28.111 kHz
OBW Power 99.00 %
x dB Bandwidth 20.30 MHz
x dB -26.00 dB
Marker
Select Marker
Normal
Delta
Off
Properties
More
1 of 2
MSG
STATUS


Agilent Spectrum Analyzer - Occupied BW
Marker 1 5.8338 GHz
#IFGain:Low
Center Freq: 5.825000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
05:47:58 PM Apr 19, 2025
Ref Offset 0.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 5.8338 GHz
-10.855 dBm
Center 5.825 GHz
#Res BW 300 kHz
#VBW 1 MHz
Span 40 MHz
Sweep 1 ms
Occupied Bandwidth
17.615 MHz
Transmit Freq Error -14.106 kHz
OBW Power 99.00 %
x dB Bandwidth 20.23 MHz
x dB -26.00 dB
Marker
Select Marker
Normal
Delta
Off
Properties
More
1 of 2
MSG
STATUS

802.11 n40

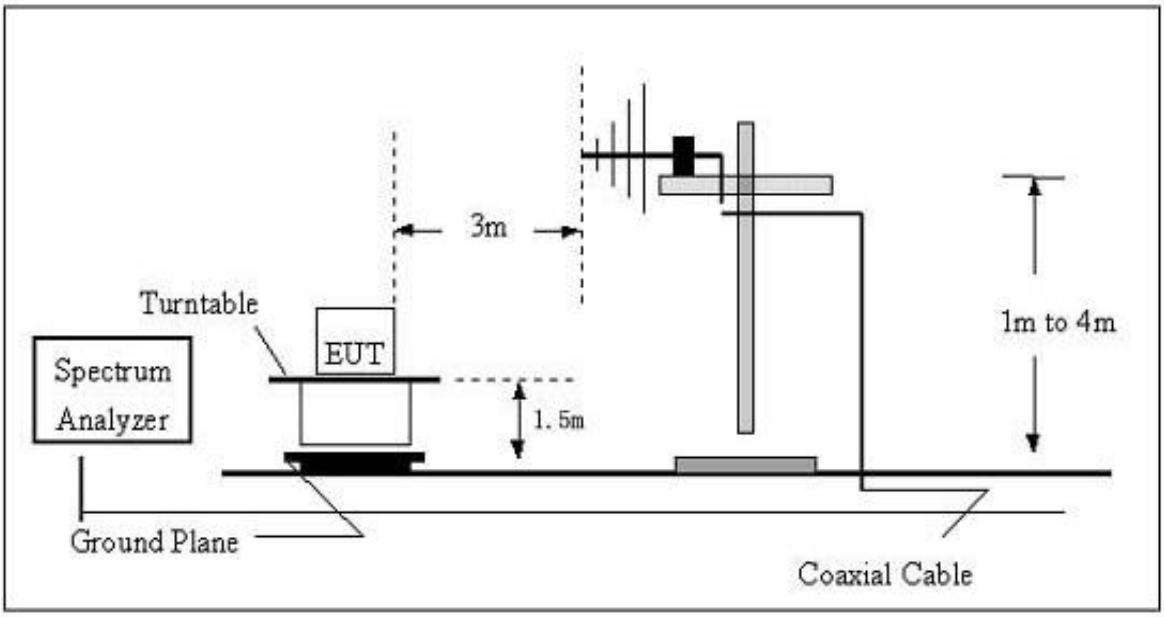

Agilent Spectrum Analyzer - Occupied BW
Marker 1 5.7367 GHz
#IFGain:Low
Center Freq: 5.755000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
05:53:45 PM Apr 19, 2025
Ref Offset 0.5 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 5.73668 GHz
-8.6086 dBm
Center 5.755 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 80 MHz
Sweep 1 ms
Occupied Bandwidth
36.205 MHz
Transmit Freq Error -48.979 kHz
OBW Power 99.00 %
x dB Bandwidth 41.01 MHz
x dB -26.00 dB
Marker
Select Marker
Normal
Delta
Off
Properties
More
1 of 2
MSG
STATUS


Agilent Spectrum Analyzer - Occupied BW
Marker 1 5.8130 GHz
#IFGain:Low
Center Freq: 5.795000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
05:54:13 PM Apr 19, 2025
Ref Offset 0.5 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 5.813 GHz
-9.0855 dBm
Center 5.795 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 80 MHz
Sweep 1 ms
Occupied Bandwidth
36.189 MHz
Transmit Freq Error -125.29 kHz
OBW Power 99.00 %
x dB Bandwidth 41.25 MHz
x dB -26.00 dB
Marker
Select Marker
Normal
Delta
Off
Properties
More
1 of 2
MSG
STATUS

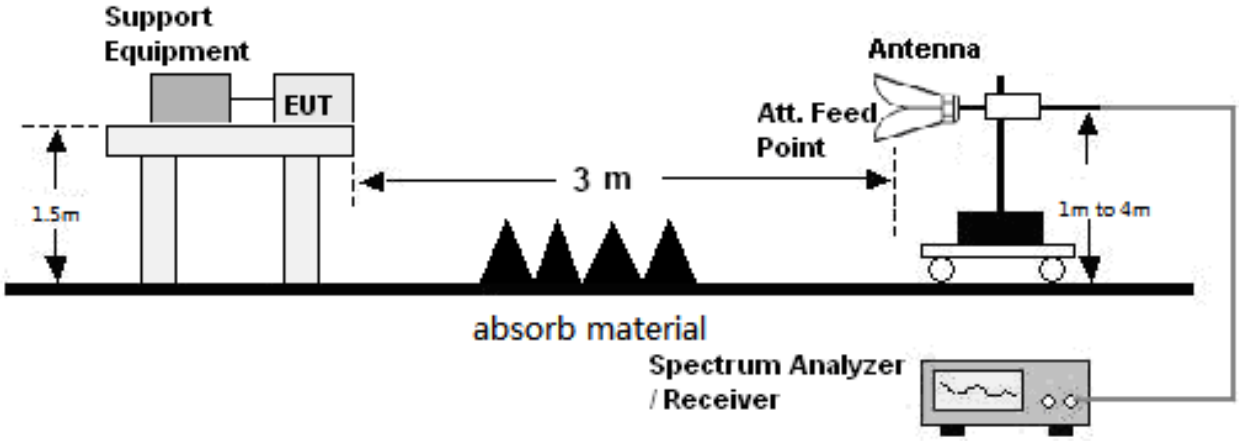
8. Spurious Emissions For Transmitter

8.1 Block Diagram Of Test Setup

(A)Radiated Emission Test Set-Up Frequency Below 1GHz.



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



8.2 Limits

Table 3: Spurious emissions

Frequency ranges State	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
Operating	4 nW	250 nW	1 µW
Standby	2 nW	2 nW	20 nW

8.3 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.

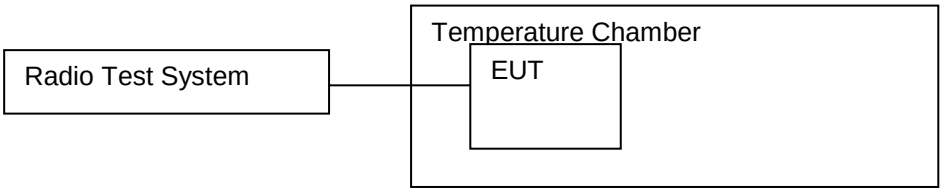
8.4 Test Results

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Correct Factor	Absolute Level	Result	
			Height	Polar			Limit	Margin
(MHz)	(dBm)	Degree	(m)	(H/V)	(dB)	(dBm)	(dBm)	(dB)
802.11a low channel								
530.99	-32.71	310	1.1	H	-28.03	-60.74	-54	-6.74
530.99	-36.83	181	1.5	V	-28.03	-64.86	-54	-10.86
11490.00	-36.47	297	1.9	H	-8.79	-45.26	-30	-15.26
11490.00	-38.59	173	1.7	V	-8.79	-47.38	-30	-17.38
17235.00	-48.54	147	1.3	H	-3.18	-51.72	-30	-21.72
17235.00	-49.70	204	1.7	V	-3.18	-52.88	-30	-22.88
802.11a Mid channel								
530.99	-31.99	39	1.6	H	-28.03	-60.02	-54	-6.02
530.99	-36.12	24	1.5	V	-28.03	-64.15	-54	-10.15
11570.00	-36.49	167	1.4	H	-8.86	-45.35	-30	-15.35
11570.00	-38.55	340	1.6	V	-8.86	-47.41	-30	-17.41
17355.00	-49.15	313	1.7	H	-2.52	-51.67	-30	-21.67
17355.00	-50.67	90	1.0	V	-2.52	-53.19	-30	-23.19
802.11a high channel								
530.99	-33.29	59	1.3	H	-28.03	-61.31	-54	-7.31
530.99	-36.14	321	1.4	V	-28.03	-64.16	-54	-10.16
11650.00	-36.61	38	1.6	H	-8.92	-45.53	-30	-15.53
11650.00	-39.49	268	1.6	V	-8.92	-48.41	-30	-18.41
17475.00	-49.14	115	1.3	H	-1.86	-51.00	-30	-21.00
17475.00	-50.33	15	1.7	V	-1.86	-52.19	-30	-22.19

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

9. TX Duty Cycle

9.1 Block Diagram Of Test Setup



9.2 Limit

No Restriction

9.3 Test Procedure

An assessment of the overall Duty Cycle shall be made for a representative period of Tobs over the observation bandwidth Fobs. Unless otherwise specified, Tobs is 1 hour and the observation bandwidth Fobs 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.

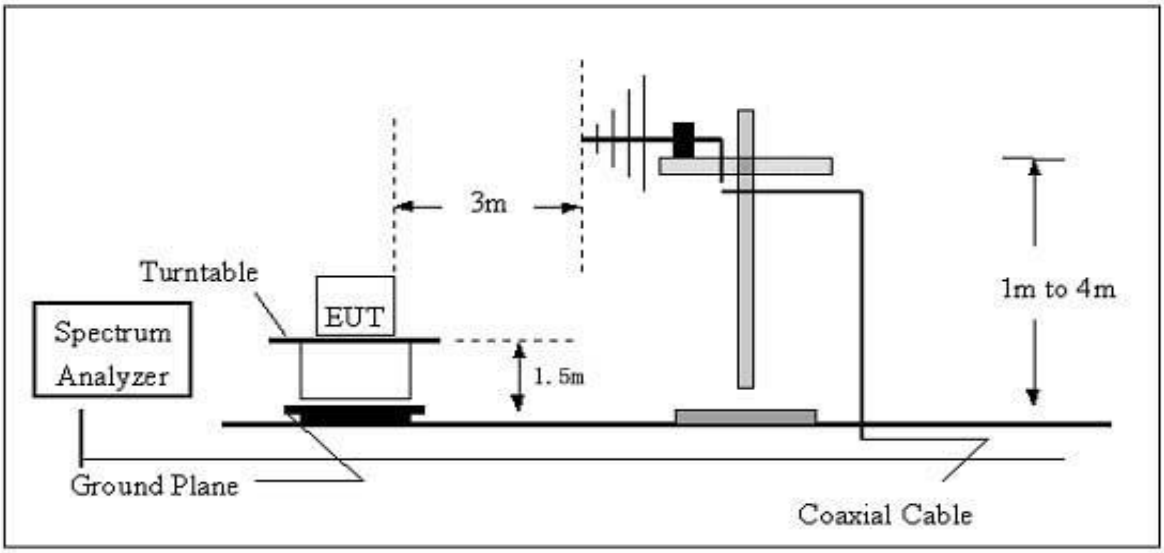
9.4 Test Result

This clause is applicable for transmitting devices which do not use LBT, DAA, or RFID transmitters operating in the 2446 to 2454 MHz band transmitting more than 500 mW e.i.r.p. power level.

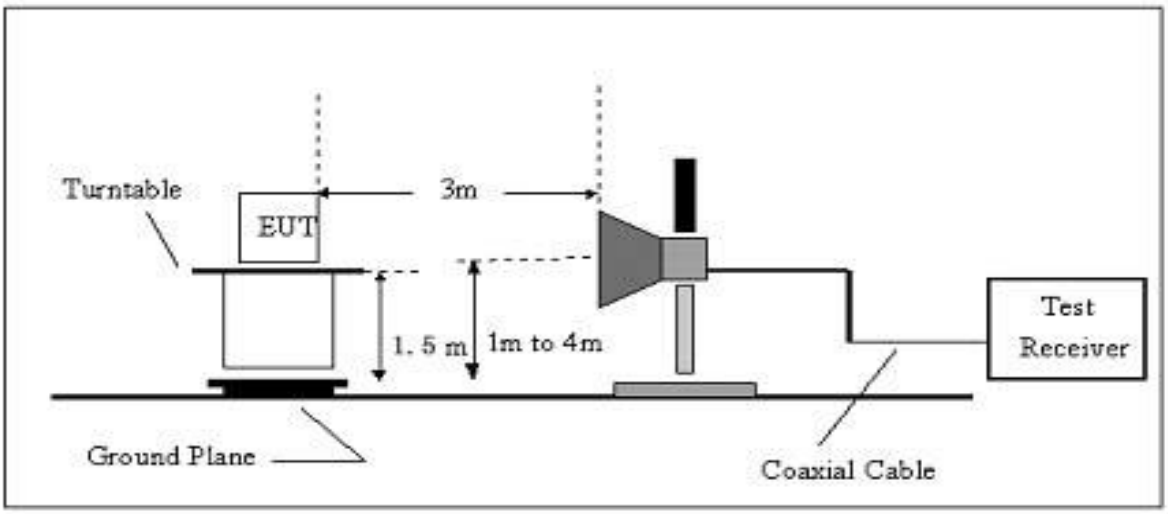
10. Spurious Emissions For Receiver

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

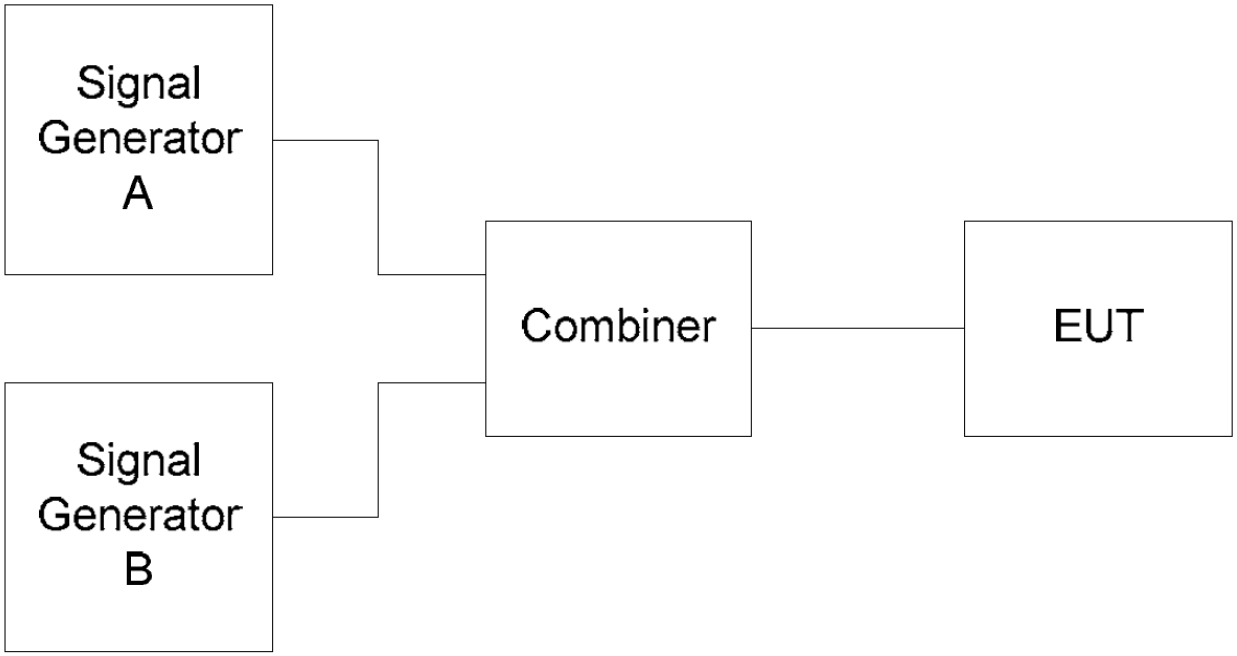
All modes have been tested and reports show data in the worst mode

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Correct Factor	Absolute Level	Result	
			Height	Polar			Limit	Margin
(MHz)	(dBm)	Degree	(m)	(H/V)	(dB)	(dBm)	(dBm)	(dB)
802.11a low channel								
332.84	-39.20	90	1.3	H	-28.83	-68.03	-57.00	-11.03
332.84	-37.78	207	1.6	V	-28.83	-66.60	-57.00	-9.60
3133.39	-39.24	246	1.8	H	-23.33	-62.57	-47.00	-15.57
3133.39	-37.87	112	1.9	V	-23.33	-61.21	-47.00	-14.21
802.11a Mid channel								
332.84	-36.41	340	1.8	H	-28.83	-65.24	-57.00	-8.24
332.84	-40.20	179	1.3	V	-28.83	-69.03	-57.00	-12.03
3133.39	-40.46	164	1.4	H	-23.33	-63.80	-47.00	-16.80
3133.39	-41.91	262	1.7	V	-23.33	-65.25	-47.00	-18.25
802.11a high channel								
332.84	-36.13	342	1.6	H	-28.83	-64.96	-57.00	-7.96
332.84	-36.26	256	1.9	V	-28.83	-65.09	-57.00	-8.09
3133.39	-37.92	44	1.6	H	-23.33	-61.26	-47.00	-14.26
3133.39	-37.67	242	1.3	V	-23.33	-61.00	-47.00	-14.00

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

11. Blocking Or Desensitization

11.1 Block Diagram Of Test Setup



11.2 Limit

The adjacent channel selectivity of the equipment under specified conditions shall not be less than -30 dBm + k. The correction factor, k, is as follows:

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.

11.3 Test Procedure

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 occupied bandwidth above upper band edge of occupied bandwidth. 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 10 times, 20 times and 50 times of the occupied bandwidth below the lower band edge of the occupied bandwidth.
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.

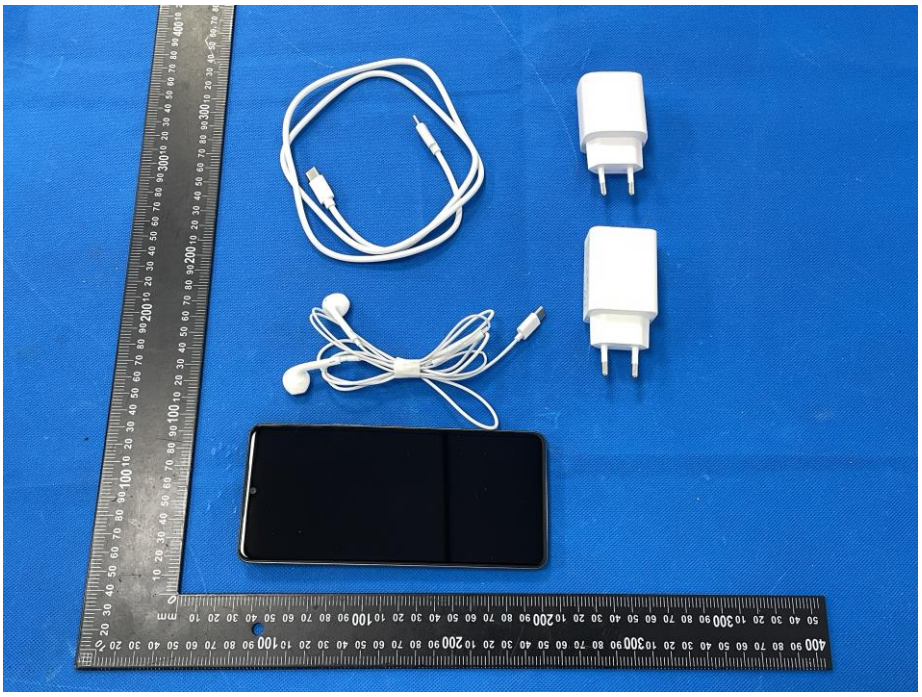
11.4 Test Result

The Worst mode 802.11a

Receiver category 2				
Channel Frequency (MHz)	**unwanted test signal Frequency**	**Signal generator B (Level) (dBm)**	**Limit (dBm)**	**Margin (dB)**
5745	Centre Frequency – 10*BW	-63.00	-72.37	-9.37
	Centre Frequency + 10*BW	-63.00		-9.37
	Centre Frequency – 20*BW	-59.00		-13.37
	Centre Frequency + 20*BW	-60.00		-12.37
	Centre Frequency – 50*BW	-43.00		-29.37
	Centre Frequency + 50*BW	-42.00		-30.37
5825	Centre Frequency – 10*BW	-65.00	-72.49	-7.49
	Centre Frequency + 10*BW	-61.00		-11.49
	Centre Frequency – 20*BW	-56.00		-16.49
	Centre Frequency + 20*BW	-57.00		-15.49
	Centre Frequency – 50*BW	-44.00		-28.49
	Centre Frequency + 50*BW	-43.00		-29.49
Receiver BW=16.534MHz; $K_{5745MHz}$=−20log 5.745 −10log16.534=-27.37 $K_{5825MHz}$=−20log 5.825 −10log16.534=-27.49				

12. EUT Photographs

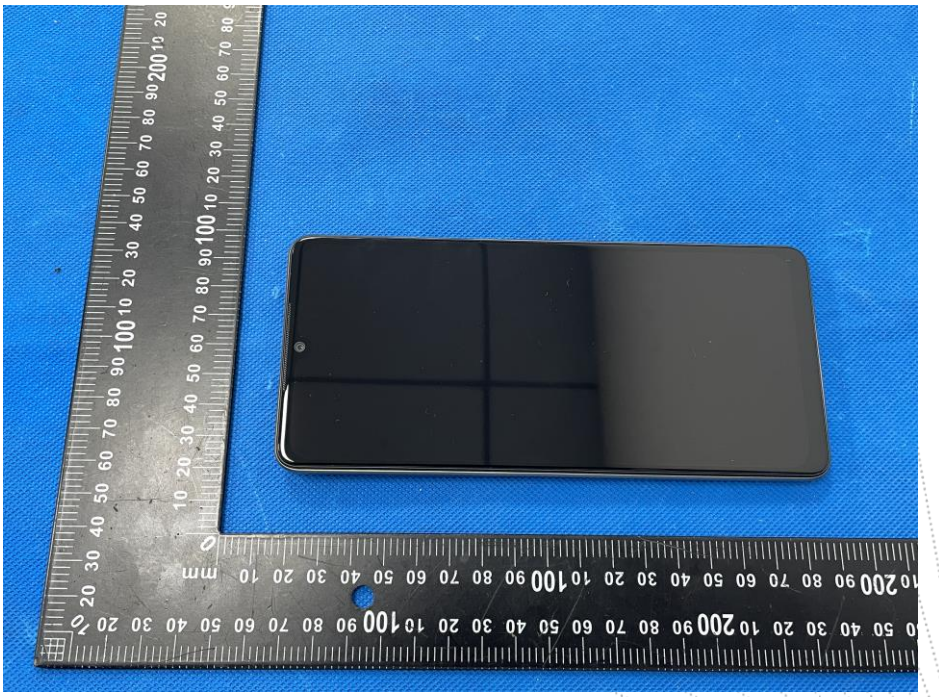
EUT Photo 1



EUT Photo 2

EUT Photo 3

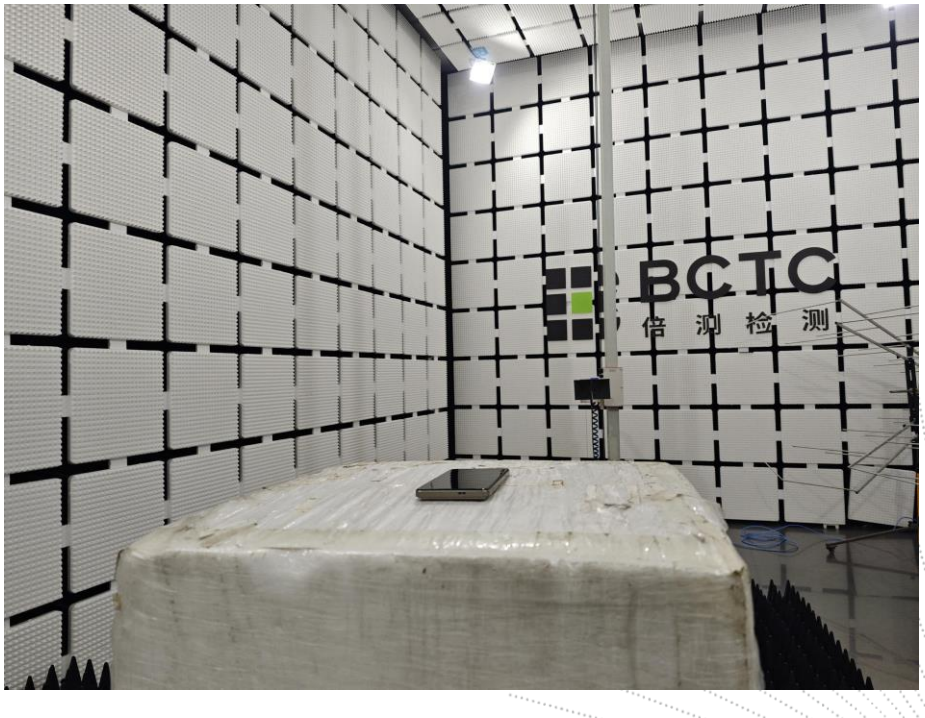
EUT Photo 4



NOTE: Appendix-Photographs Of EUT Constructional Details

13. EUT Test Setup Photographs

Spurious emissions



STATEMENT

1. The equipment lists are traceable to the national reference standards.

2. The test report can not be partially copied unless prior written approval is issued from our lab.

3. The test report is invalid without the "special seal for inspection and testing".

4. The test report is invalid without the signature of the approver.

5. The test process and test result is only related to the Unit Under Test.

6. Sample information is provided by the client and the laboratory is not responsible for its authenticity.

7. The quality system of our laboratory is in accordance with ISO/IEC17025.

8. If there is any objection to this test report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

Address:
1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China

TEL: 400-788-9558

P.C.: 518103

FAX: 0755-33229357

Website: http://www.chnbctc.com

Consultation E-mail: bctc@bctc-lab.com.cn

Complaint/Advice E-mail: advice@bctc-lab.com.cn

※※※※※ END ※※※※※