

Radio Test Report

Client Information:

Applicant: DOKE COMMUNICATION (HK) LIMITED
Applicant add.: RM 1902 EASEY COMM BLDG 253-261 HENNESSY ROAD WANCHAI HK
CHINA

Product Information:

Product Name: Tablet PC
Model No.: Active 8
Serial Model: N/A
Brand Name: Blackview
Standard: ETSI EN 303 345-1 V1.1.1 (2019-06)
ETSI EN 303 345-3 V1.1.1 (2021-06)

Prepared By:

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Date of Receipt: 2023.05.25 Date of Test: 2023.05.25-2023.06.13
Date of Issue: 2023.06.14 Test Result: Pass

This device has been tested and found to comply with the stated standard(s), which is (are) required by the council directive of 2014/53/EU and indicated in the test report and are applicable only to the tested sample identified in the report.

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Reviewed by:



Simba Huang

Approved by:



Seal.chen



Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	2023.06.14	Valid	Initial release

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2 Test Summary

2.1 Compliance with ETSI EN 303 345-1 V1.1.1 (2019-06), ETSI EN 303 345-3 V1.1.1 (2021-06)

Clause	Test Item	Results
4.2	Sensitivity	Pass
4.3	Adjacent channel selectivity and blocking	Pass
4.4	Unwanted emissions in the spurious domain	Pass

3 Test Facility

The test facility is recognized, certified or accredited by the following organizations:

. CNAS- Registration No: L6177

Dongguan Yaxu (AiT) technology Limited is accredited to ISO/IEC 17025:2017 general Requirements for the competence of testing and calibration laboratories (CNAS-CL01 Accreditation Criteria for the competence of testing and calibration laboratories) on April 18, 2022

FCC-Registration No.: 703111 Designation Number: CN1313

Dongguan Yaxu (AiT) technology Limited has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

IC —Registration No.: 6819A CAB identifier: CN0122

The 3m Semi-anechoic chamber of Dongguan Yaxu (AiT) technology Limited has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 6819A

A2LA-Lab Cert. No.: 6317.01

Dongguan Yaxu (AiT) technology Limited has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

3.1 Deviation from Standard

None

3.2 Abnormalities from Standard Conditions

None

4 General Information

4.1 General Description of EUT

Manufacturer:	Shenzhen DOKE Electronic Co., Ltd
Manufacturer Address:	801, Building3, 7th Industrial Zone, Yulv Community, Yutang Road, Guangming District, Shenzhen, China
EUT Name:	Tablet PC
Model No:	Active 8
Serial Model:	N/A
Brand Name:	Blackview
Operation Frequency:	87.5 MHz to 108 MHz
Modulation Type:	FM
H/W No.:	DK051-T616-V1.0
S/W No.:	Active8_EEA_T30_V1.0
Battery:	DC 3.87V 22000mAh for Battery

Note:

For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

4.2 DESCRIPTION

The EUT has been tested under its typical operating condition.

Table 1:
FM configuration

Parameter	FM		AM signal
	Wanted	Unwanted	Blocking
Audio modulation	1 kHz tone	Weighted noise Recommendation ITU-R BS.559-2 [5], clause 1	1 kHz tone
	Band-limited to 15 kHz		
Other modulation	±60,8 kHz peak	32 kHz quasi-peak deviation	80 % depth
Pilot tone	None	None	

NOTE: This is equivalent to $19 / \sqrt{2} = 13,4$ kHz RMS deviation in the absence of pre-emphasis.

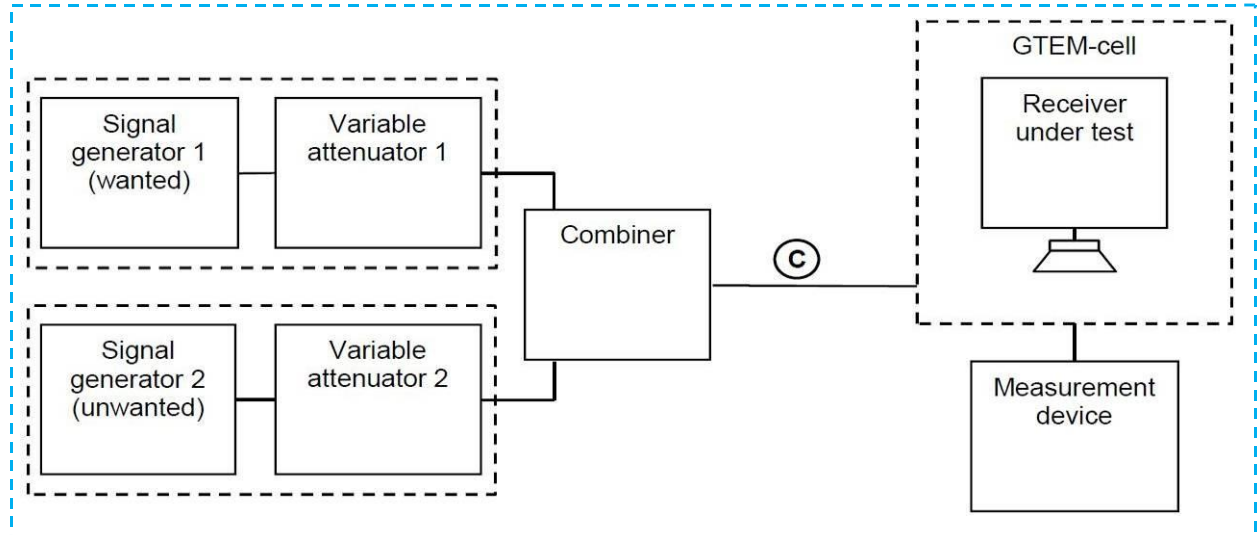
4.3 TEST MODES

NO.	TEST MODE DESCRIPTION
1	FM receiving mode at 98MHz

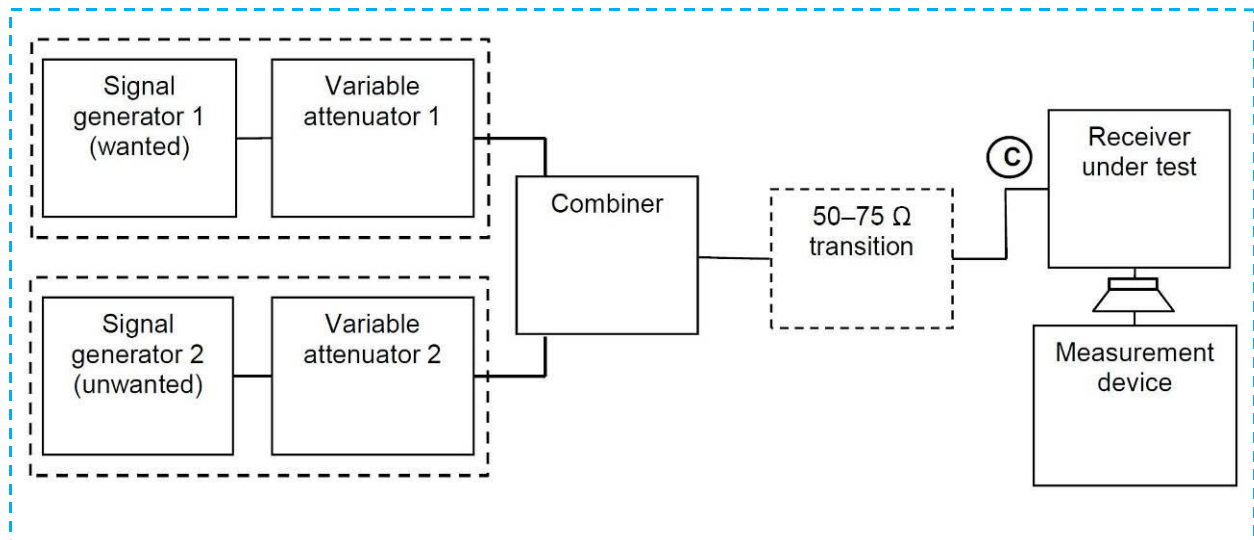
4.4 Description of Test setup

EUT was tested in normal configuration (Please See following Block diagrams)

Set-up for radiated testing shall be as follows:



Set-up for Conducted testing shall be as follows:



4.5 Equipments List for All Test Items

No	Test Equipment	Manufacturer	Model No	Serial No	Cal. Date	Cal. Due Date
1	Spectrum Analyzer	R&S	FSV40	101780	2022.09.02	2023.09.01
2	EMI Measuring Receiver	R&S	ESR	101660	2022.09.02	2023.09.01
3	TRILOG Super Broadband test Antenna	SCHWARZBECK	VULB9160	9160-3206	2022.09.02	2023.09.01
4	Broadband Horn Antenna	SCHWARZBECK	BBHA9120D	452	2022.09.02	2023.09.01
5	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2022.09.02	2023.09.01
6	EMI Test Receiver	R&S	ESCI	100124	2022.09.02	2023.09.01
7	Pro.Temp&Humi.chamber	MENTEK	MHP-150-1C	MAA08112501	2022.09.02	2023.09.01
8	DC power supply	ZHAOXIN	RXN-305D-2	28070002559	N/A	N/A
9	Attenuator	Weinschel	33-10-33	AR4010	2022.09.02	2023.09.01
10	Attenuator	Weinschel	24-20-34	BP4485	2022.09.02	2023.09.01
11	ESG VETCTOR SIGNAL GENERAROR	Agilent	E4438C	MY45093347	2022.09.02	2023.09.01,
12	PSG Analog Signal Generator	Agilent	E8257D	MY51110112	2022.09.02	2023.09.01,
13	Coupler	Mini-Circuits	ZADC-10-63-S+	SF794101410	2022.09.02	2023.09.01,
14	RF Communications Test Set	HP	8920B	US39225517	2022.09.02	2023.09.01,
15	Audio Analyzer	audio precision	APx515	U554234	2022.09.02	2023.09.01,
16	Spectrum Analyzer	Aglient	E4407B	MY45108040	2022.09.02	2023.09.01,
17	temporary antenna connector	NTS	R001	N/A	N/A	N/A

Note: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

4.6 Measurement Uncertainty

No.	Item	Uncertainty
1	Conducted Emission Test	1.20dB
2	Radiated Emission Test	3.30dB
3	RF power,conducted	0.16dB
4	RF power density,conducted	0.24dB
5	Spurious emissions,conducted	0.21dB
6	All emissions,radiated(<1G)	4.68dB
7	All emissions,radiated(>1G)	4.89dB

5 Sensitivity

5.1 Limit

Refer to ETSI EN 303 345-2 V1.1.1 (2020-02) chapter 4.2. 2

The limits for sensitivity specified in table 2 shall apply. Each figure quoted is the required level of wanted signal which provides a given level of audio quality. The audio impairment criterion relevant for these tests is that the audio SNR \geq 22 dBQ ref 40 % AM.

Table 2: AM sensitivity requirements

De-modulation	Tuned frequency band	Wanted signal centre frequency (MHz) (see note)	Required sensitivity limit	
			Conducted (dBm)	Radiated (dB μ V/m)
AM	LF	0,216	-65	74
	MF	0,999	-65	66
	HF	9,650	-65	60
NOTE: If the receiver cannot be tuned to 9,650 MHz, the wanted signal centre frequency shall be set to the closest alternate from the following list: 3,980 MHz, 6,050 MHz, 7,330 MHz, 11,850 MHz, 13,720 MHz, 15,450 MHz, 17,690 MHz, 18,960 MHz, 21,650 MHz, 25,890 MHz.				

Refer to ETSI EN 303 345-3 V1.1.1 (2021-06) chapter 4.2. 2

The limits for sensitivity specified in table 2 shall apply. Each figure quoted is the required level of wanted signal which provides a given level of audio quality. The audio impairment criteria relevant for these tests is that the audio SNR \geq 40 dBQ ref \pm 60,8 kHz deviation, and that there shall be 10 seconds of audio with no subjective impairments (e.g. clicks resulting from FM threshold effects).

Table 2: FM sensitivity requirements

De-modulation	Tuned frequency band	Wanted signal centre frequency (MHz)	Required sensitivity limit	
			Conducted (dBm)	Radiated (dB μ V/m)
FM	VHF band II	98	-90	50 (see note)
NOTE: For products with an integral antenna, the requirement is relaxed to 67 dB μ V/m.				

5.2 TEST PROCEDURE

Refer to chapter 5.3.2 of ETSI EN 303 345-1 V1.1.1 (2019-06)

Measurement	
<input type="checkbox"/> Conducted measurement	<input checked="" type="checkbox"/> Radiated measurement

AM and FM sensitivity measurements

- 1) The 'unwanted' signal generator remains switched off for the duration of the test.
- 2) The 'wanted' signal generator is set to the required modulation method and test configuration as specified in clause 4.2, and to the frequency specified in clause 4.2 The signal level is adjusted to provide the level, as measured at ©, specified in clause 4.2 plus 30 dB.
- 3) The receiver is tuned to the frequency of the 'wanted' signal generator. For a receiver without a digital frequency display, the receiver shall be tuned for optimum THD+N (i.e. as it would be tuned by a user for best quality). The receiver's audio level shall be set so as to provide clean 1 kHz audio tone at the audio output (that is less than 10 % total harmonic distortion) but of sufficient level to drive the

measurement device.

- 4) The level of the 'wanted' signal generator is adjusted to provide the level, as measured at ©, specified in clause 4.2
- 5) The audio output, measured using the measurement device, is recorded as the signal level, S.
- 6) The modulating audio signal for the 'wanted' signal generator is removed. The audio output, measured using the measurement device, is recorded as the noise level, N.
- 7) If the impairment criteria given in clause 4.2 are met then the receiver has passed the test.

5.3 TEST SETUP

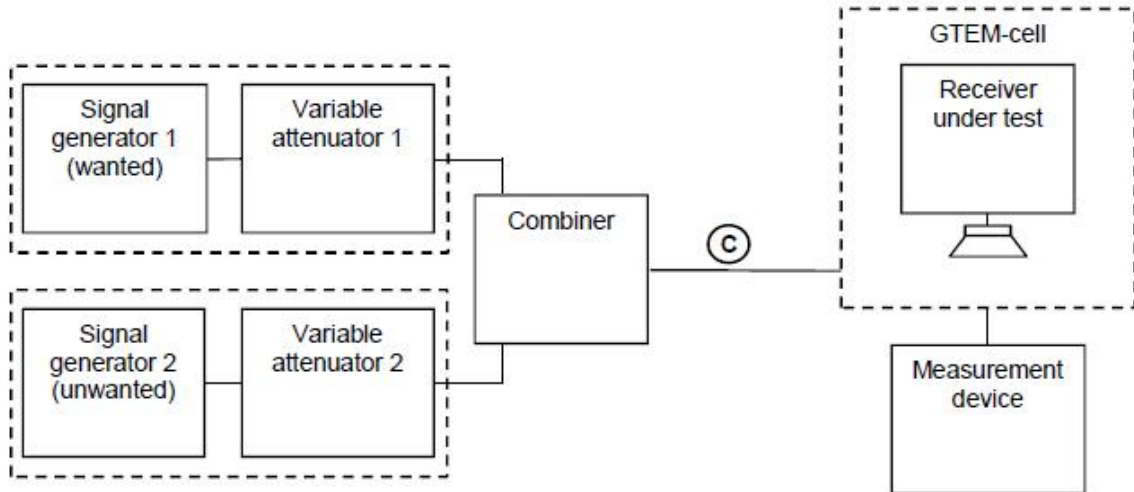


Figure 1: Generic measurement arrangement for receivers with built-in or integral antennas

5.4 TEST SIGNALS

The generated FM signals Waveform files are contained in archive en_30334501v010101p0.zip which accompanies ETSI EN 303 345-1 [1] and are detailed in table B.1

The configuration is based on Recommendation ITU-R BS.641 [i.6].

Table B.1: Test signal sequences

Test signal	Description	Test signal filename	
		Baseband signal	IQ vector signal
Wanted	1 kHz tone, 60,8 kHz deviation	FM_Wanted.wav	FM_Wanted.wv
Unwanted	Recommendation ITU-R BS.559-2 [3] weighted noise (15 kHz BW limit, with pre-emphasis)	FM_Unwanted.wav	FM_Unwanted.wv
Blocking	1 kHz tone, 80 % peak depth	Blocking.wav	Blocking.wv
Line-up	Line-up signal for baseband method	FM_Line_Up.wav	-

5.5 Test Result

FM VHF band II 98MHz (<input checked="" type="checkbox"/> Integral antenna <input type="checkbox"/> Built-in antenna <input type="checkbox"/> External antenna)					
Wanted Signal Level at © (dB μ V/m)	S (mV)	N (mV)	SNR (dBQ)	Limit (dBQ)	Result
67	43.57	0.07	55.82	≥ 40	Pass

NOTE: 1. SNR (dBQ) = $20\log(S/N)$

6 Adjacent channel selectivity and blocking

6.1 LIMITS

The limits for selectivity and blocking specified in the first table shall apply with the channel spacings given in the second table. Each figure quoted is the minimum acceptable level of unwanted signal, relative to that of the wanted signal, which provides a given level of audio quality. The audio impairment criteria relevant for these tests is that the audio SNR ≥ 40 dBQ ref $\pm 60,8$ kHz deviation, and that there shall be 10 seconds of audio with no subjective impairments (e.g. clicks resulting from FM threshold effects).

Channel spacing for adjacent channel selectivity and blocking

Demodulation	Tuned frequency band	Unwanted frequency (N = 2, 3, 4)	Unwanted frequency (blocking)
FM	VHF band II	$\pm N \times 100$ kHz	± 800 kHz

Adjacent channel selectivity and blocking requirements

Demodulation (see note 1)	Tuned frequency band	C Wanted signal centre frequency (MHz)	C Wanted signal level		Required I/C ratio (see notes 2 and 3)			
			Conducted (dBm)	Radiated (dB μ V/m)	N = 2 (dB)	N = 3 (dB)	N = 4 (dB)	Blocking (dB)
FM (built-in or integral antenna)	VHF band II	98	n/a	56 (see note 4)	-15	-3	8	20
FM (external antenna)	VHF band II	98	-84	n/a	3	17	30	30

NOTE 1: The ACS and blocking requirements are currently separated into different limits for radiated and conducted testing methods. These limits are likely to be unified in a future revision of the present document. Users of the present document should consult frequently the latest list published in the Official Journal of the European Union.

NOTE 2: The frequency of the interferer shall be calculated using the channel spacing data in table 3 for each of the 6 defined adjacent channels $N = \{-4, -3, -2, +2, +3, +4\}$ and the two blocking offsets. Each row of table 4 thus defines 8 individual tests.

NOTE 3: The minimum level of I for the relevant level of impairment is calculated by adding the I/C ratio to the wanted C level.

NOTE 4: The wanted signal level for receivers with integral antenna is 73 dB μ V/m.

6.2 TEST PROCEDURE

Refer to chapter 5.3.4.1 of ETSI EN 303 345-1 V1.1.1 (2019-06)

Measurement	
<input type="checkbox"/> Conducted measurement	<input checked="" type="checkbox"/> Radiated measurement

5.3.4.1 Analogue (AM and FM) sensitivity measurements

- 1) The 'unwanted' signal generator remains switched off for the duration of the test.
- 2) The 'wanted' signal generator is set to the required modulation method, test signal configuration and centre frequency. The signal level is adjusted with the modulation disabled to the required sensitivity level plus 6 dB, as measured at ©. The modulation is enabled.
- 3) The receiver is tuned to the frequency of the 'wanted' signal generator. For a receiver without a digital frequency display, the receiver shall be tuned for optimum THD+N (i.e. as it would be tuned by a user for best quality). The receiver's audio level shall be set so as to provide clean 1 kHz audio tone at the audio output (minimum distortion, that is typically less than 3 % total harmonic distortion, but no more than 10 % total harmonic distortion) but of sufficient level to drive the measurement device.
- 4) The level of the 'wanted' signal generator is reduced by 6 dB.
- 5) The audio output, measured using the measurement device, is recorded as the signal level, S.
- 6) The modulating audio signal for the 'wanted' signal generator is removed. The audio output, measured using the measurement device, is recorded as the noise level, N.

NOTE: Modulation is disabled when setting the power level to prevent sideband power from influencing the measurement. Sideband power is not considered when measuring the power of analogue signals.

6.3 TEST SETUP

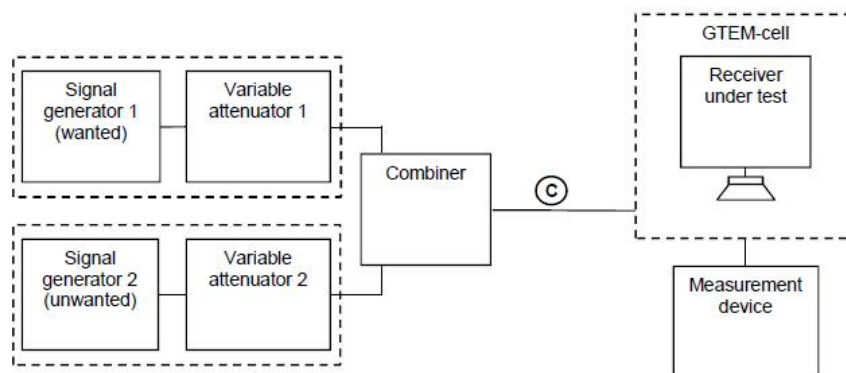


Figure 1: Generic measurement arrangement for receivers with built-in or integral antennas

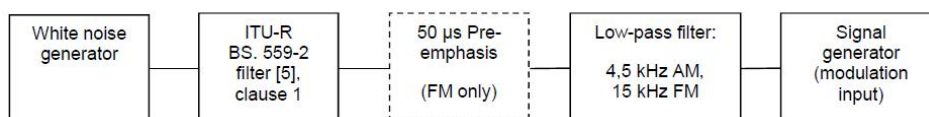


Figure 6: Arrangement for generating AM and FM interferers

6.4 TEST SIGNALS

The generated FM signals (wanted and unwanted) and the blocking signal shall be in accordance with table . The configuration is based on Recommendation ITU-R BS.641 [i.6].

Table B.1: Test signal sequences

Test signal	Description	Test signal filename	
		Baseband signal	IQ vector signal
Wanted	1 kHz tone, 60,8 kHz deviation	FM_Wanted.wav	FM_Wanted.wv
Unwanted	Recommendation ITU-R BS.559-2 [3] weighted noise (15 kHz BW limit, with pre-emphasis)	FM_Unwanted.wav	FM_Unwanted.wv
Blocking	1 kHz tone, 80 % peak depth	Blocking.wav	Blocking.wv
Line-up	Line-up signal for baseband method	FM_Line_Up.wav	-

6.5 TEST RESULTS

Adjacent channel selectivity

FM VHF band II 98MHz (<input checked="" type="checkbox"/> Integral antenna <input type="checkbox"/> Built-in antenna <input type="checkbox"/> External antenna)								
Adjacency and Blocking	C Wanted signal level at © (dBµV/m)	I Unwanted Signal Level at © (dBµV/m)	Required I/C ratio(dB)	S (mV)	N (mV)	SNR (dBQ)	Limit (dBQ)	Result
97.8 MHz	73	58	-15	40.25	0.08	54.03	≥ 40	Pass
98.2 MHz	73	58	-15	40.25	0.08	54.03	≥ 40	Pass
97.7 MHz	73	70	-3	40.25	0.08	54.03	≥ 40	Pass
98.3 MHz	73	70	-3	40.25	0.08	54.03	≥ 40	Pass
97.6 MHz	73	81	8	40.25	0.08	54.03	≥ 40	Pass
98.4 MHz	73	81	8	40.25	0.08	54.03	≥ 40	Pass
97.2 MHz	73	93	20	40.25	0.08	54.03	≥ 40	Pass
98.8 MHz	73	93	20	40.25	0.08	54.03	≥ 40	Pass

S = Measured audio level when wanted signal on and modulation on; unwanted signal on and modulation on

Note: For blocking signal, the unwanted signal modulation is off.

N = Measured audio level when wanted signal on but modulation off; unwanted signal on and modulation on

Note: For blocking signal, the unwanted signal modulation is off.

Remarks:

1. Measured I/C ratio (dB) = Unwanted Field Level (dBµV/m) – Wanted Field Level (dBµV/m).

2. SNR (dBQ) = 20log(S/N)

7 Unwanted emissions in the spurious domain

7.1 Limit

Refer to chapter 4.4. 2 of Final draft ETSI EN 303 345-3 V1.1.1 (2021-03)

The limits in CENELEC EN 55032 [3], table A.4, table A.5, clause A.13.1, clause A.13.3 and in table A.13 of clause A.13.4 shall be respected.

LIMITS OF RADIATED EMISSION MEASUREMENT

(Below 1000MHz)

FREQUENCY (MHz)	Class A (at 10m)	Class B (at 10m)
	dBuV/m	dBuV/m
30 – 230	40	30
230 – 1000	47	37

LIMITS OF RADIATED EMISSION MEASUREMENT

(Above 1000MHz)

FREQUENCY (MHz)	Class A (at 3m) dBuV/m		Class B (at 3m) dBuV/m	
	Peak	Avg	Peak	Avg
1000-3000	76	56	70	50
3000-6000	80	60	74	54

Notes:

- (1) The limit for radiated test was performed according to as following:
CISPR 32.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

7.2 Test procedure

- a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3M meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

7.3 TEST SETUP

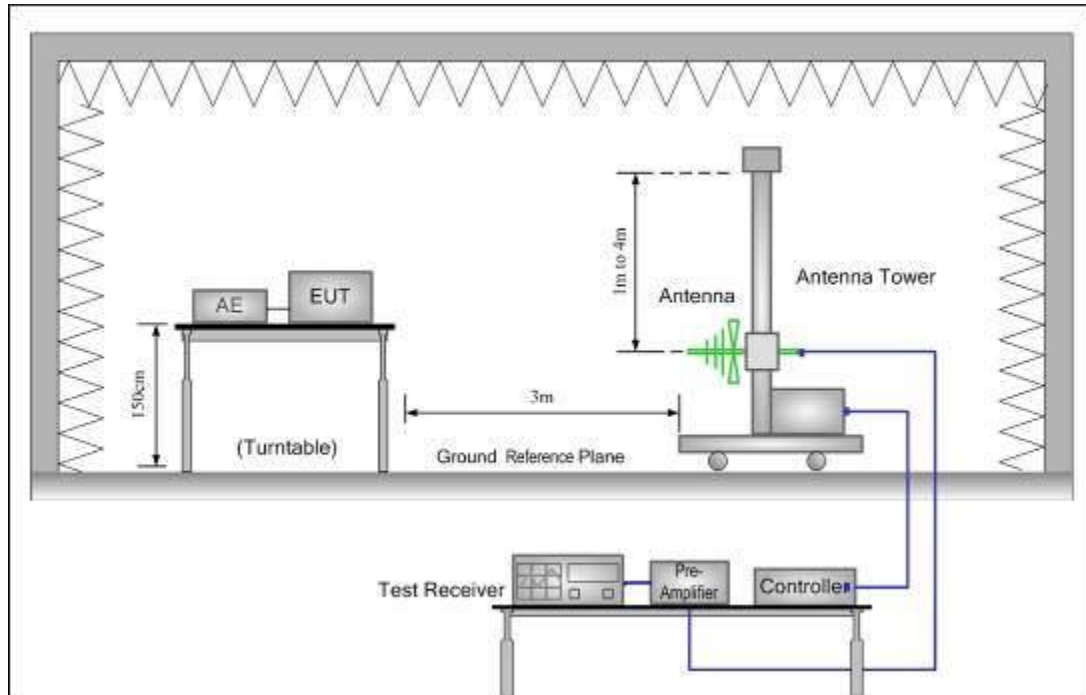


Figure 1. 30MHz to 1GHz

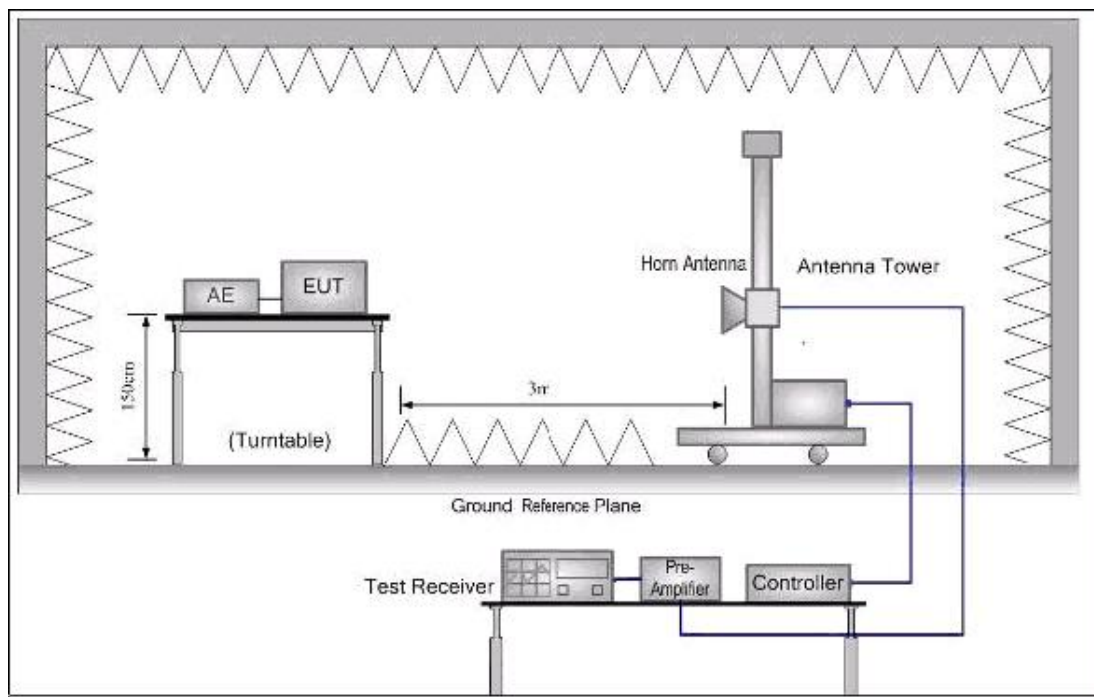


Figure 2. Above 1GHz

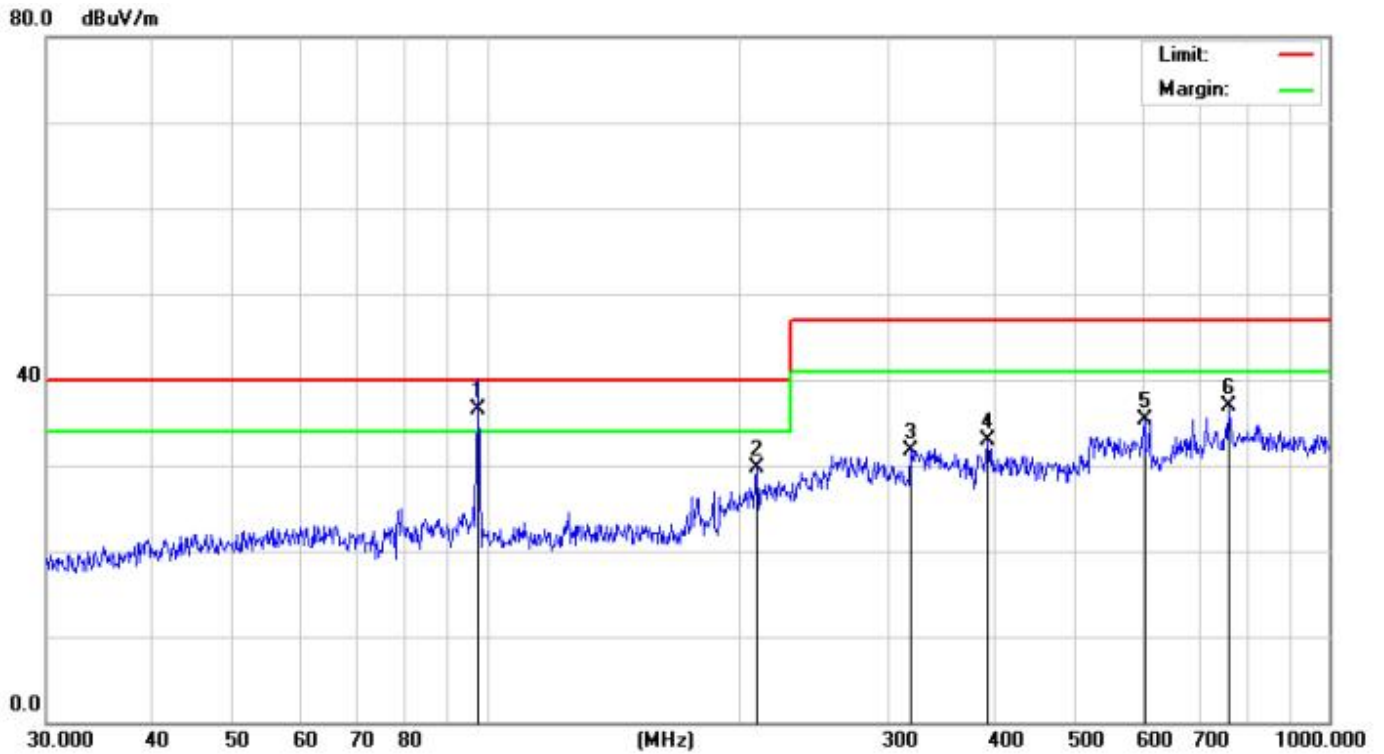
Note: The EUT was programmed to be in receiving mode.

7.4 Test Result

Test graph and data for Radiated Emission below 1GHz

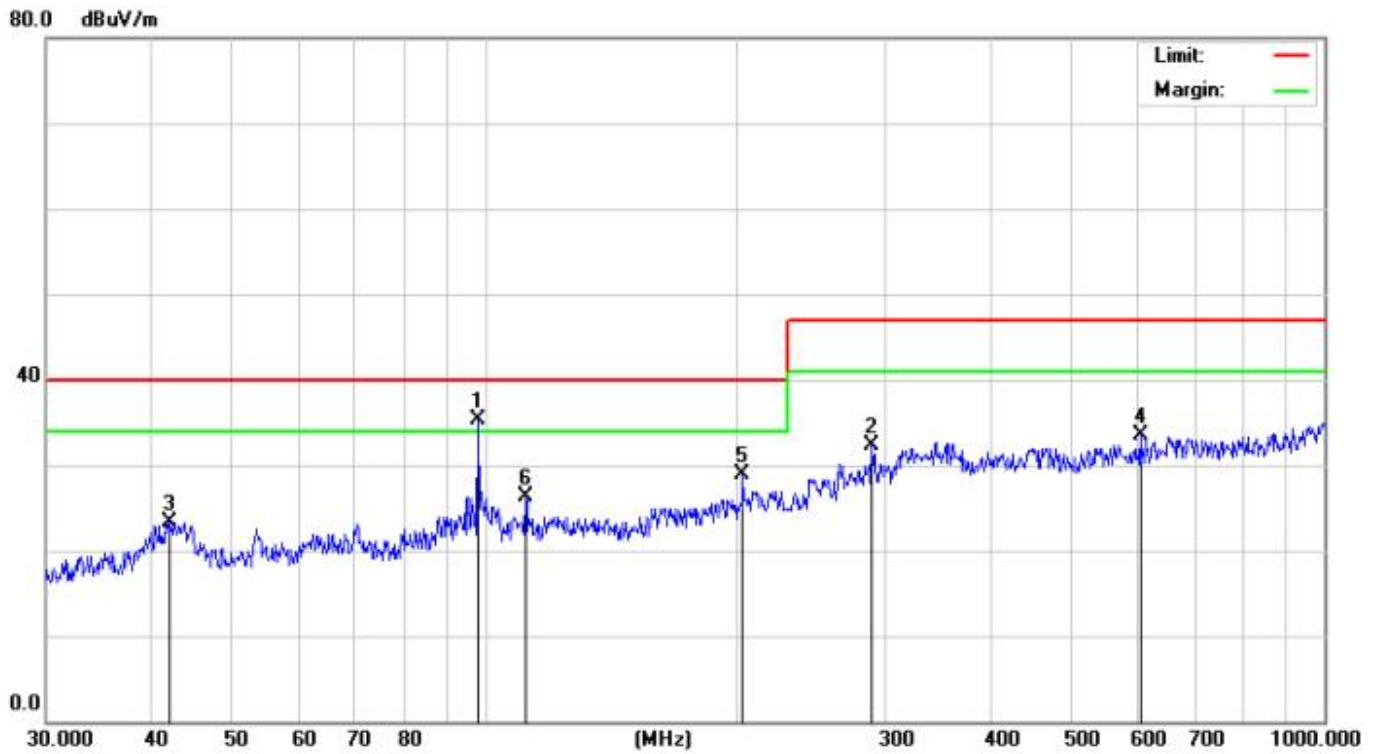
Test Mode: Mode 1

Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	98.0000	38.76	-2.16	36.60	40.00	-3.40	peak
2		209.3129	31.01	-1.21	29.80	40.00	-10.20	peak
3		318.8170	29.76	2.04	31.80	47.00	-15.20	peak
4		393.4723	26.99	5.91	32.90	47.00	-14.10	peak
5		603.5392	26.01	9.29	35.30	47.00	-11.70	peak
6		760.7036	24.72	12.28	37.00	47.00	-10.00	peak

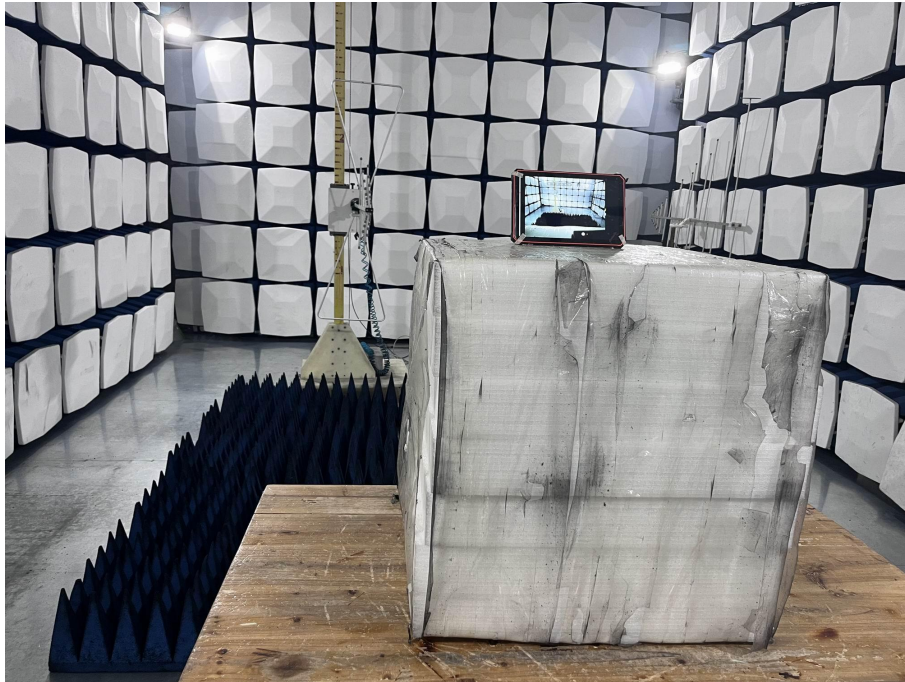
Vertical



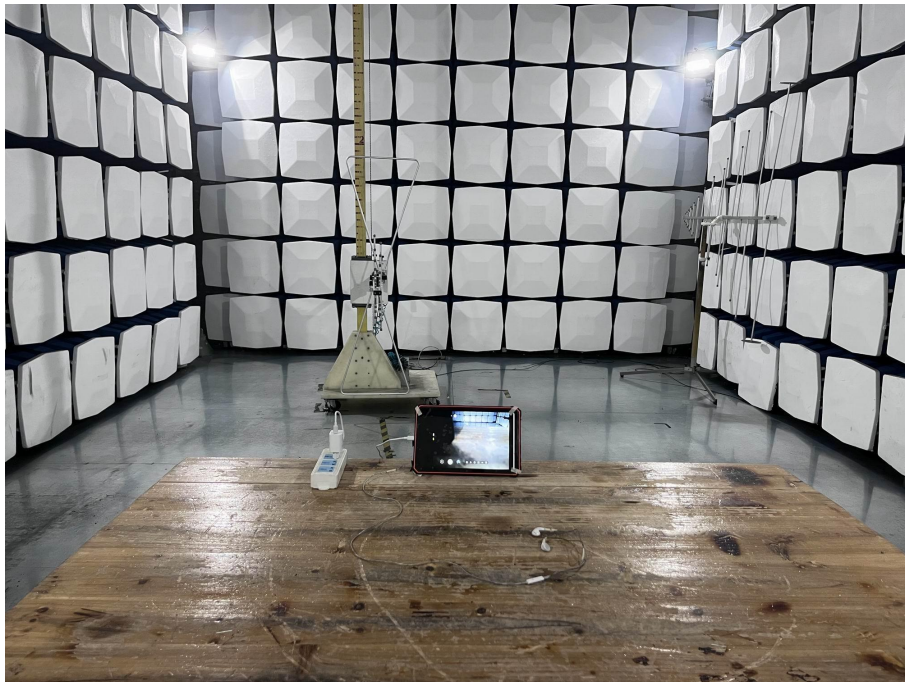
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	98.1419	37.54	-2.14	35.40	40.00	-4.60	peak
2		289.0020	31.33	0.97	32.30	47.00	-14.70	peak
3		42.1542	19.44	3.96	23.40	40.00	-16.60	peak
4		603.5392	24.31	9.29	33.60	47.00	-13.40	peak
5		202.8103	30.19	-1.29	28.90	40.00	-11.10	peak
6		111.7379	27.53	-1.23	26.30	40.00	-13.70	peak

8 Test Setup photograph

Sensitivity, Adjacent channel selectivity and blocking



Radiated Emission below 1GHz



APPENDIX-PHOTOGRAPHS OF EUT CONSTRUCTIONAL DETAILS

Refer to APPENDIX-PHOTOGRAPHS

**** End of report ****