

Test Report

Report No. : MTi250107021-0201E2
Date of issue : 2025-05-23
Applicant : Heltec Automation Technology Co., Ltd
Product : MeshPocket
Model(s) : HT-298A, HT-298B, HT-298C, HT-298D, HT-298G,
HT-298P, HT-298S, HT-298T, HT-298Z

Shenzhen Microtest Co., Ltd.

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Test Result Certification		
Applicant	Heltec Automation Technology Co., Ltd	
Applicant Address	1f, No.54, 56, 58, Zirui North Street, Gaoxin District, Chengdu	
Manufacturer	Heltec Automation Technology Co., Ltd	
Manufacturer Address	1f, No.54, 56, 58, Zirui North Street, Gaoxin District, Chengdu	
Product description		
Product name	MeshPocket	
Trademark		
Model name	HT-298A	
Series Model(s)	HT-298B, HT-298C, HT-298D, HT-298G, HT-298P, HT-298S, HT-298T, HT-298Z	
Standards	ETSI EN 300 330 V2.1.1 (2017-02)	
Testing Information		
Date of test	2025-04-23 to 2025-04-24	
Test result	Pass	
Prepared by:	James Qin	
Reviewed by:	David Lee	
Approved by:	Lewis Lian	

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1 General Description

1.1 Description of the EUT

Product name:	MeshPocket
Model name:	HT-298A
Series Model(s):	HT-298B, HT-298C, HT-298D, HT-298G, HT-298P, HT-298S, HT-298T, HT-298Z
Model difference:	All the models are the same circuit and module, except the model name.
Electrical rating:	Type-C Input: DC 5V/3A, 9V/2.22A Type-C Output: DC 5V/3A, 9V/2.22A Battery: DC 3.87V 5000mAh 19.35Wh Wireless Output: 5W/7.5W/10W/15W
Accessories:	Cable: 1. USB-A Magnetic charging cable(60cm)*1 2. Type-C to Type-C cable(25cm) *1
Hardware version:	V1.0.0
Software version:	V1.0.0
Test sample(s) number:	MTi250107021-02-R001
RF specification	
Operating frequency range:	360kHz(15W)
Modulation type:	ASK

1.2 Description of test modes

No.	Emission test modes
Mode1	Wireless Output(15W)
Mode2	Standby

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1.3 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15°C ~ 35°C
Humidity:	20% RH ~ 75% RH
Atmospheric pressure:	98 kPa ~ 101 kPa

ENV	Temperature (°C)	Voltage (V)
HTLV	45	9.9
LTHV	-10	8.1
LTLV	-10	8.1
NTNV	25	9
HTHV	45	9.9

1.4 Description of support units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Support equipment list

Description	Model	Serial No.	Manufacturer
wireless charging load	YBZ3.0	/	YBZ

Support cable list

Description	Length (m)	From	To
/	/	/	/

1.5 Measurement uncertainty

Measurement	Uncertainty
Occupied channel bandwidth	±3 %
Radiated spurious emissions (9kHz~30MHz)	±4.3dB
Radiated spurious emissions (30MHz~1GHz)	±4.7dB
Temperature	±1 °C
Humidity	± 5 %

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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2 Summary of Test Result

No.	Item	Standard	Requirement	Result
1	Permitted range of operating frequencies	ETSI EN 300 330 V2.1.1 (2017-02)	Clause 4.3.1.1	Pass
2	Operating frequency ranges	ETSI EN 300 330 V2.1.1 (2017-02)	Clause 4.3.2.1	Pass
3	Modulation bandwidth	ETSI EN 300 330 V2.1.1 (2017-02)	Clause 4.3.3.1	Pass
4	Transmitter H-field requirements	ETSI EN 300 330 V2.1.1 (2017-02)	Clause 4.3.4.1	Pass
5	Transmitter radiated spurious domain emission limits (below 30MHz)	ETSI EN 300 330 V2.1.1 (2017-02)	Clause 4.3.8.1	Pass
6	Transmitter radiated spurious domain emission limits (30MHz to 1GHz)	ETSI EN 300 330 V2.1.1 (2017-02)	Clause 4.3.9.1	Pass

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3 Test Facilities and accreditations

3.1 Test laboratory

Test laboratory:	Shenzhen Microtest Co., Ltd.
Test site location:	101, No.7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Telephone:	(86-755)88850135
Fax:	(86-755)88850136
CNAS Registration No.:	CNAS L5868
FCC Registration No.:	448573
IC Registration No.:	21760
CABID:	CN0093

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4 List of test equipment

No.	Equipment	Manufacturer	Model	Serial No.	Cal. date	Cal. Due
Permitted range of operating frequencies Operating frequency ranges Modulation bandwidth						
1	Wideband Radio Communication Tester	Rohde&schwarz	CMW500	149155	2025-03-18	2026-03-17
2	ESG Series Analog Signal Generator	Agilent	E4421B	GB40051240	2025-03-14	2026-03-13
3	PXA Signal Analyzer	Agilent	N9030A	MY51350296	2025-03-14	2026-03-13
4	Synthesized Sweeper	Agilent	83752A	3610A01957	2025-03-14	2026-03-13
5	MXA Signal Analyzer	Agilent	N9020A	MY50143483	2025-03-14	2026-03-13
6	RF Control Unit	Tonscend	JS0806-1	19D8060152	2025-03-18	2026-03-17
7	Band Reject Filter Group	Tonscend	JS0806-F	19D8060160	2025-03-14	2026-03-13
8	ESG Vector Signal Generator	Agilent	N5182A	MY50143762	2025-03-14	2026-03-13
9	DC Power Supply	Agilent	E3632A	MY40027695	2025-03-18	2026-03-17
Transmitter H-field requirements Transmitter radiated spurious domain emission limits (below 30MHz)						
1	EMI Test Receiver	Rohde&schwarz	ESCI7	101166	2025-03-14	2026-03-13
2	Active Loop Antenna	Schwarzbeck	FMZB 1519 B	00066	2024-03-23	2026-03-22
3	Amplifier	Hewlett-Packard	8447F	3113A06184	2025-03-18	2026-03-17
Transmitter radiated spurious domain emission limits (30MHz to 1GHz)						
1	EMI Test Receiver	Rohde&schwarz	ESCI7	101166	2025-03-14	2026-03-13
2	TRILOG Broadband Antenna	schwarzbeck	VULB 9163	9163-1338	2023-06-11	2025-06-10
3	Active Loop Antenna	Schwarzbeck	FMZB 1519 B	00066	2024-03-23	2026-03-22
4	Amplifier	Hewlett-Packard	8447F	3113A06184	2025-03-18	2026-03-17

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5 Radio Spectrum Matter Test Results (RF)

5.1 Permitted range of operating frequencies

Test Requirement:	Clause 4.3.1.1																																																									
Test Limit:	The permitted range of operating frequencies for intentional emissions shall be entirely within the frequency bands in table 1. Table 1: Short Range Devices within the 9 kHz to 30 MHz permitted frequency bands <table><tr><th></th><th>Frequency Bands/frequencies</th><th>Applications</th></tr><tr><td>Transmit and Receive</td><td>9 kHz to 90 kHz</td><td>Inductive devices, Generic use</td></tr><tr><td>Transmit and Receive</td><td>90 kHz to 119 kHz</td><td>Inductive devices, Generic use</td></tr><tr><td>Transmit and Receive</td><td>119 kHz to 140 kHz</td><td>Inductive devices, Generic use</td></tr><tr><td>Transmit and Receive</td><td>140 kHz to 148,5 kHz</td><td>Inductive devices, Generic use</td></tr><tr><td>Transmit and Receive</td><td>148,5 kHz to 5 MHz</td><td>Inductive devices, Generic use</td></tr><tr><td>Transmit and Receive</td><td>400 kHz to 600 kHz</td><td>RFID only</td></tr><tr><td>Transmit and Receive</td><td>5 MHz to 30 MHz</td><td>Inductive devices, Generic use</td></tr><tr><td>Transmit and Receive</td><td>3 155 kHz to 3 400 kHz</td><td>Inductive devices, Generic use</td></tr><tr><td>Transmit and Receive</td><td>984 kHz to 7 484 kHz (Note 3, Centre frequency is 4 234 kHz)</td><td>Inductive devices, Railway applications</td></tr><tr><td>Transmit and Receive</td><td>4 516 kHz</td><td>Inductive devices, Railway applications</td></tr><tr><td>Transmit and Receive</td><td>6 765 kHz to 6 795 kHz</td><td>Inductive devices, Generic use</td></tr><tr><td>Transmit and Receive</td><td>7 400 kHz to 8 800 kHz</td><td>Inductive devices, Generic use</td></tr><tr><td>Transmit and Receive</td><td>10 200 kHz to 11,000 MHz</td><td>Inductive devices, Generic use</td></tr><tr><td>Transmit and Receive</td><td>11,810 MHz to 15,310 MHz (Centre frequency is 13,56 MHz)</td><td>RFID only</td></tr><tr><td>Transmit and Receive</td><td>12,5 MHz to 20 MHz</td><td>Inductive devices, Wireless healthcare</td></tr><tr><td>Transmit and Receive</td><td>13,553 MHz to 13,567 MHz</td><td>Inductive devices, Generic use</td></tr><tr><td>Transmit and Receive</td><td>26,957 MHz to 27,283 MHz</td><td>Inductive devices, Generic use</td></tr><tr><td>Transmit and Receive</td><td>27,090 MHz to 27,100 MHz</td><td>Inductive devices, Railway applications</td></tr></table> NOTE 1: In addition, it should be noted that other frequency bands may be available in a country within the frequency range 9 kHz to 30 MHz. NOTE 2: On non-harmonised parameters, national administrations may impose certain conditions such as the type of modulation, frequency, channel/frequency separations, maximum transmitter radiated power, duty cycle, and the inclusion of an automatic transmitter shut-off facility, as a condition for the issue of an Individual Rights for use of spectrum or General Authorization, or as a condition for use under "licence exemption" as it is in most cases for Short Range Devices. NOTE 3: Transmitting only on receipt of a Balise/Eurobalise tele-powering signal from a train.		Frequency Bands/frequencies	Applications	Transmit and Receive	9 kHz to 90 kHz	Inductive devices, Generic use	Transmit and Receive	90 kHz to 119 kHz	Inductive devices, Generic use	Transmit and Receive	119 kHz to 140 kHz	Inductive devices, Generic use	Transmit and Receive	140 kHz to 148,5 kHz	Inductive devices, Generic use	Transmit and Receive	148,5 kHz to 5 MHz	Inductive devices, Generic use	Transmit and Receive	400 kHz to 600 kHz	RFID only	Transmit and Receive	5 MHz to 30 MHz	Inductive devices, Generic use	Transmit and Receive	3 155 kHz to 3 400 kHz	Inductive devices, Generic use	Transmit and Receive	984 kHz to 7 484 kHz (Note 3, Centre frequency is 4 234 kHz)	Inductive devices, Railway applications	Transmit and Receive	4 516 kHz	Inductive devices, Railway applications	Transmit and Receive	6 765 kHz to 6 795 kHz	Inductive devices, Generic use	Transmit and Receive	7 400 kHz to 8 800 kHz	Inductive devices, Generic use	Transmit and Receive	10 200 kHz to 11,000 MHz	Inductive devices, Generic use	Transmit and Receive	11,810 MHz to 15,310 MHz (Centre frequency is 13,56 MHz)	RFID only	Transmit and Receive	12,5 MHz to 20 MHz	Inductive devices, Wireless healthcare	Transmit and Receive	13,553 MHz to 13,567 MHz	Inductive devices, Generic use	Transmit and Receive	26,957 MHz to 27,283 MHz	Inductive devices, Generic use	Transmit and Receive	27,090 MHz to 27,100 MHz	Inductive devices, Railway applications
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5.1.1 Test result:

The permitted range of operating frequencies used by the EUT shall be declared by the manufacturer:
360kHz.

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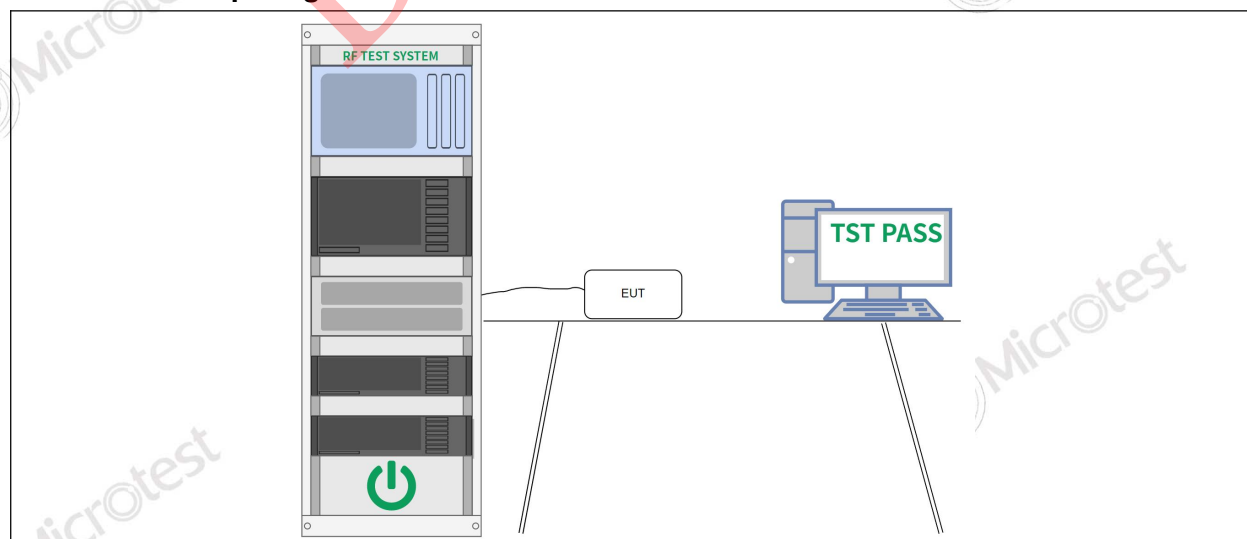
5.2 Operating frequency ranges

Test Requirement:	Clause 4.3.2.1
Test Limit:	The operating frequency ranges for intentional emissions shall be entirely within the frequency bands in table 1.
Test Method:	Clause 6.2.2
Procedure:	A spectrum analyser with the following settings is used as measuring receiver in the test set-up: · Start frequency: lower than the lower edge of the permitted frequency range. · Stop frequency: higher than the upper edge of the permitted frequency range. · Resolution Bandwidth: see table 11. · Video Bandwidth: $\geq$ Resolution Bandwidth. · Detector mode: RMS. · Display mode: Maxhold. The 99 % OBW function shall be used to determine the operating frequency range: · fH is determined. fH is the frequency of the upper marker resulting from the OFR. · fL is determined. fL is the frequency of the lower marker resulting from the OFR. · fc is the centre frequency. $fc = (fH + fL)/2$.

5.2.1 E.U.T. Operation:

Operating Environment:					
Temperature:	25 °C	Humidity:	54.3 %	Atmospheric Pressure:	99 kPa
Pre test mode:	Mode1				
Final test mode:	Mode1				

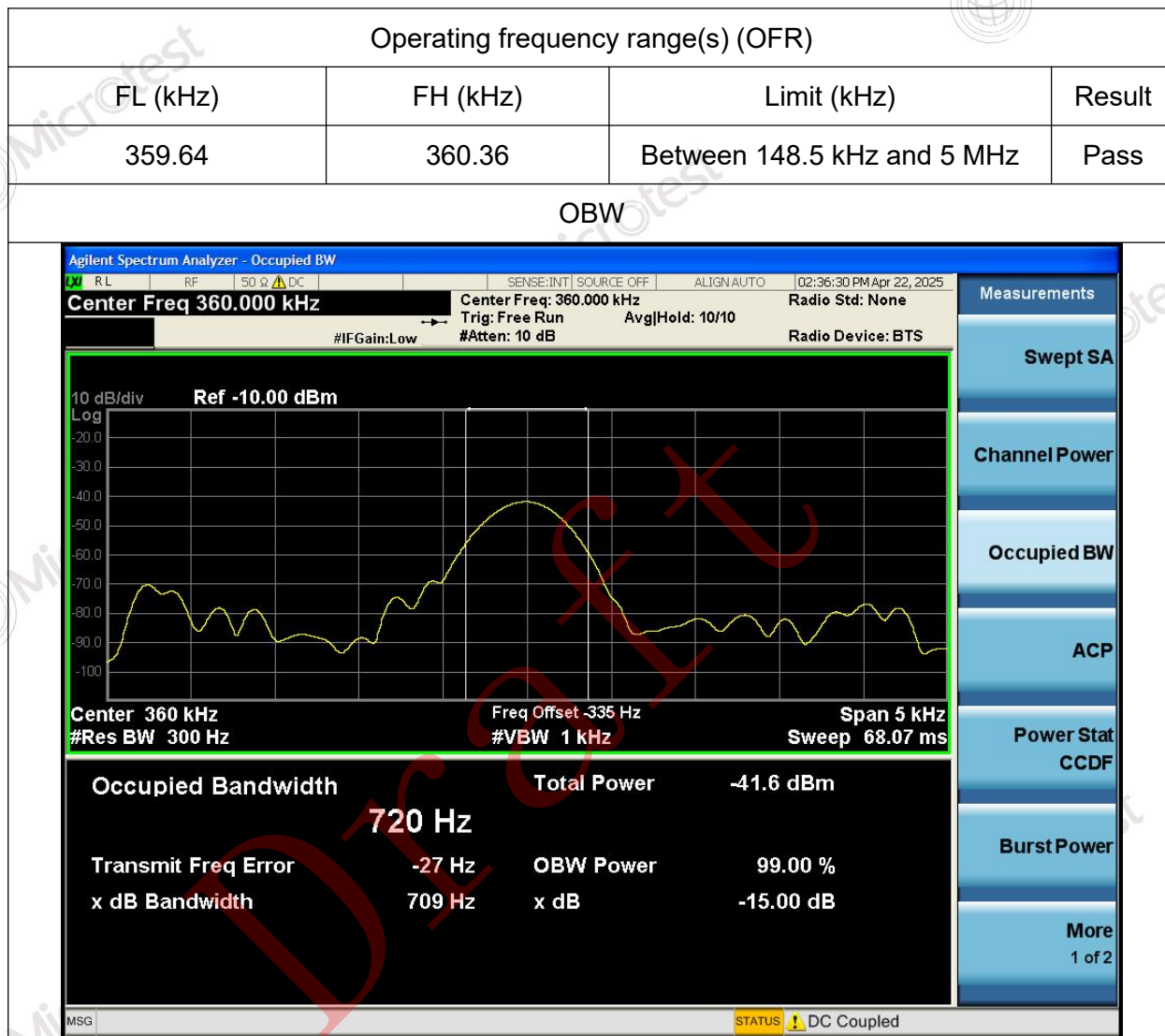
5.2.2 Test Setup Diagram:



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5.2.3 Test Data:



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5.3 Modulation bandwidth

Test Requirement:	Clause 4.3.3.1
Test Limit:	The modulation bandwidth shall be within the assigned frequency band see table 1 or $\pm 7,5\%$ of the carrier frequency whichever is the smallest. For RFID and EAS Systems, the modulation bandwidth shall be within the transmitter emission boundary of figures I.1, I.2, I.3 and I.4.
Test Method:	Clause 6.2.3
Procedure:	The transmitter shall be connected to an artificial antenna or if the transmitter has an integral antenna, a test fixture shall be used (see clause 5.10). The RF output of the equipment shall be connected to a spectrum analyser via a 50 W variable attenuator. The transmitter shall be operated at the nominal carrier power or field strength measured under normal test conditions in clause 4.3.4. The attenuator shall be adjusted to an appropriate level displayed at the spectrum analyser screen. The transmitter shall be modulated with standard test modulation (see clauses 5.8.1 and 5.8.2). If the equipment cannot be modulated externally, the internal modulation shall be used. For transmitters using a continuous wideband swept carrier the measurement shall be made with the sweep on. The output of the transmitter, with or without test fixture, shall be measured by using a spectrum analyser with a resolution bandwidth appropriate to accept all major side bands. The power level calibration of the spectrum analyser shall then be related to the power level or field strength measured in clause 4.3.3. The calculation will be used to calculate the absolute level of the sideband power. The test laboratory shall ensure that the spectrum analyser's span is sufficiently wide enough to ensure that the carrier and all its major side bands are captured. The frequency of the upper and lower points, where the displayed power envelope of the modulation including frequency drift is equal to the appropriate level defined in clause 4.3.3 is recorded as the modulation bandwidth.

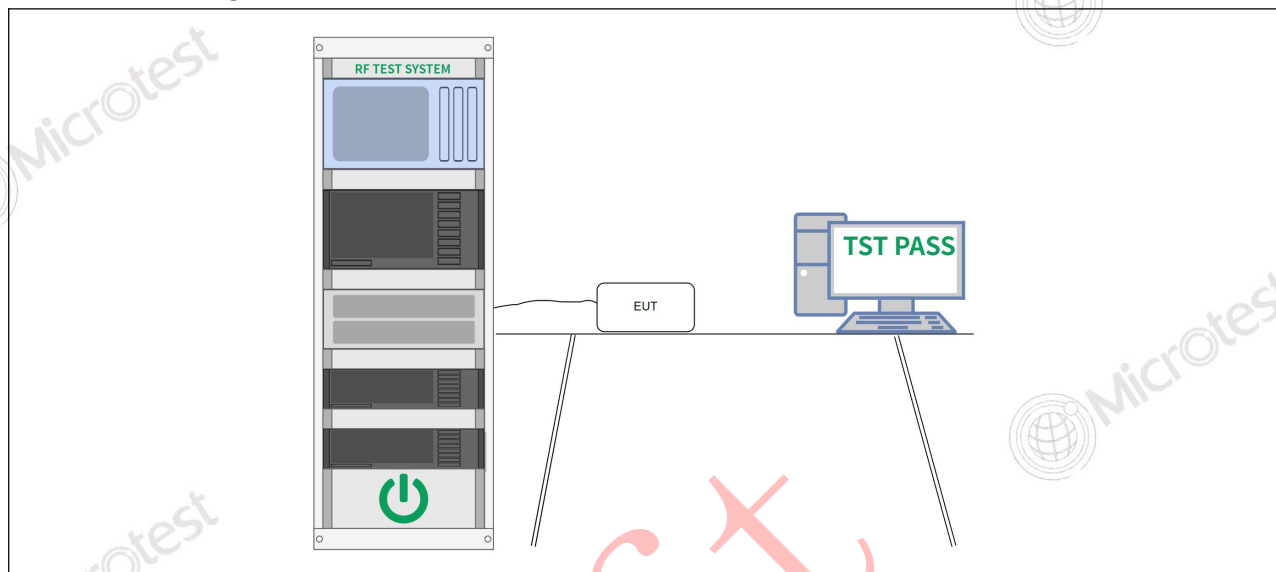
5.3.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23 °C	Humidity:	54.3 %	Atmospheric Pressure:	99 kPa
Pre test mode:	Mode1				
Final test mode:	Mode1				

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Test Setup Diagram:



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5.3.2 Test Data:



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5.4 Transmitter H-field requirements

Test Requirement:	Clause 4.3.4.1	
Test Limit:	Frequency range (MHz)	H-field strength limit (H_f) dBμA/m at 10 m or specified in mW e.r.p.
	$0,009 \leq f < 0,090$	72 descending 3 dB/oct above 0,03 MHz or according to note 1 (see note 5)
	$0,09 \leq f < 0,119$	42
	$0,119 \leq f < 0,135$	66 descending 3 dB/oct above 0,119 MHz or according to note 1 (see notes 3 and 5)
	$0,135 \leq f < 0,140$	42
	$0,140 \leq f < 0,1485$	37,7
	$0,1485 \leq f < 30$	-5 (see note 4)
	$0,315 \leq f < 0,600$	-5
	$3,155 \leq f < 3,400$	13,5
	4,234	9 (see note 9)
	4,516	7
	$7,400 \leq f < 8,800$	9
	$10,2 \leq f < 11,00$	9
	$12,5 \leq f \leq 20$	-7
	$6,765 \leq f \leq 6,795$	42 (see notes 3 and 7)
	$26,957 \leq f \leq 27,283$	42 (see note 3)
	$13,410 \leq f \leq 13,553$, $13,567 \leq f \leq 13,710$	9 (see note 6)
	$13,110 \leq f \leq 13,410$, $13,710 \leq f \leq 14,010$	-3,5 (see note 6)
	$12,660 \leq f \leq 13,110$, $14,010 \leq f \leq 14,460$	-10 (see note 6)
	$11,810 \leq f \leq 12,660$, $14,460 \leq f \leq 15,310$	-16 (see note 6)
	$13,460 \leq f \leq 13,553$, $13,567 \leq f \leq 13,660$	27 (see note 6)
	$13,360 \leq f \leq 13,460$, $13,660 \leq f \leq 13,760$	Linear transition from 27 to -3,5 (see note 6)
	$13,110 \leq f \leq 13,360$, $13,760 \leq f \leq 14,010$	-3,5 (see note 6)
	$12,660 \leq f \leq 13,110$, $14,010 \leq f \leq 14,460$	-5 (see note 6)
	$13,553 \leq f \leq 13,567$	42 (see note 3) or 60 (see notes 2 and 3)
	27,095	42
	26,995, 27,045, 27,095, 27,145, 27,195 (see note 8)	100 mW
	NOTE 1: For the frequency ranges 9 kHz to 135 kHz, the following additional restrictions apply to limits above 42 dB μ A/m: - for loop coil antennas with an area $\geq 0,16 \text{ m}^2$ this table and table B.1 with the antenna limitations apply; - for loop coil antennas with an area between $0,05 \text{ m}^2$ and $0,16 \text{ m}^2$ table B.1 applies with a correction factor. The limit is: table value +	

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	$10 \times \log (\text{area}/0,16 \text{ m}^2)$; - for loop coil antennas with an area $< 0,05 \text{ m}^2$ the limit is 10 dB below table B.1. NOTE 2: For RFID (incl. NFC) and EAS applications only. NOTE 3: Spectrum mask limit, see annex I. NOTE 4: For further information see annex G. NOTE 5: Limit is 42 dBμA/m for the following spot frequencies: 60 kHz $\pm$ 250 Hz, 66,6 kHz $\pm$ 750 Hz, 75 kHz $\pm$ 250 Hz, 77,5 kHz $\pm$ 250 Hz, and 129,1 kHz $\pm$ 500 Hz. NOTE 6: Only in conjunction with spectrum mask, see annex I. NOTE 7: The frequency range 6,765 MHz - 6,795 MHz is not a harmonised ISM frequency band according article 5.138 of the ITU Radio Regulations [i.13]. NOTE 8: Center frequencies for channelized systems by using ≤ 10 kHz bandwidth. NOTE 9: The limit is valid in the range 984 kHz - 7 484 kHz for Transmitting only on receipt of a Balise/Eurobalise tele-powering signal from a train.
Test Method:	Clause 6.2.4
Procedure:	The measurements of the transmitter radiated H-field shall be made on an open field test site as specified in clause C.1.3. Any measured values shall be at least 6 dB above the ambient noise level. The H-field produced by the equipment shall be measured at standard distance of 10 m. Where this is not practical, e.g. due to physical size of the equipment including the antenna or with use of special field cancelling antenna, then other distances may be used. When another distance is used, the distance used and the field strength value measured shall be stated in the test report. In this case, the measured value at actual test distance shall be extrapolated to 10 m according to annex H and these calculations shall be stated in the test report. The H-field is measured with a shielded loop antenna connected to a measurement receiver. The measuring bandwidth and detector type of the measurement receiver shall be in accordance with clause 5.12. The equipment under test shall operate where possible, with modulation. Where this is not possible, it shall be stated in the test report. For transmitters using a continuous wideband swept carrier, the measurement shall be made with the sweep off. When it is not possible to turn the sweep off the measurements shall be made with the sweep on and this shall be stated in the test report. For measuring equipment calibrated in dBμV/m, the reading should be reduced by 51,5 dB to be converted to dBμA/m.

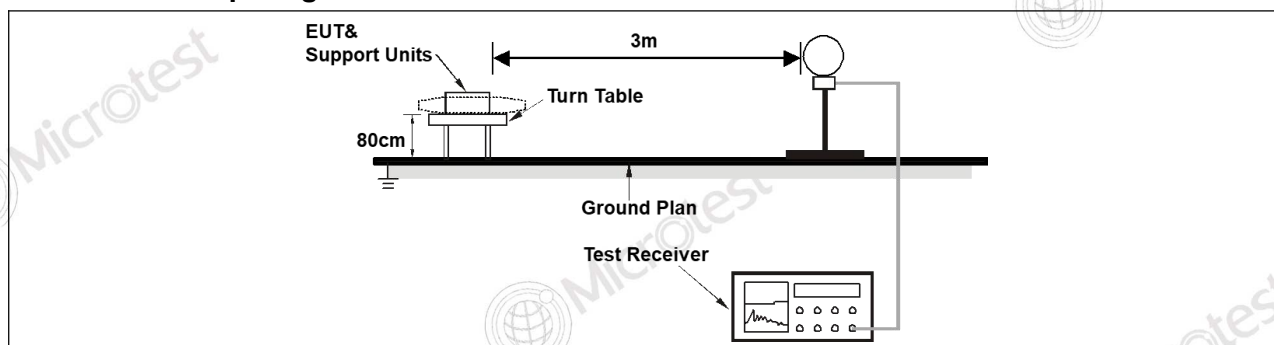
5.4.1 E.U.T. Operation:

Operating Environment:					
Temperature:	25 °C	Humidity:	54.3 %	Atmospheric Pressure:	99 kPa
Pre test mode:	Mode1, Mode2				
Final test mode:	All of the listed pre-test mode were tested, only the data of the worst mode (Mode1) is recorded in the report				

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5.4.2 Test Setup Diagram:



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5.4.3 Test Data:

Frequency (kHz)	Measurement Level@3m (dBuA/m)	C3 Factor (dB)	Level@10m (dBuA/m)	Limit@10m (dBuA/m)	Result	Detector
359.6	4.47	31.2	-26.73	-5	Pass	QP

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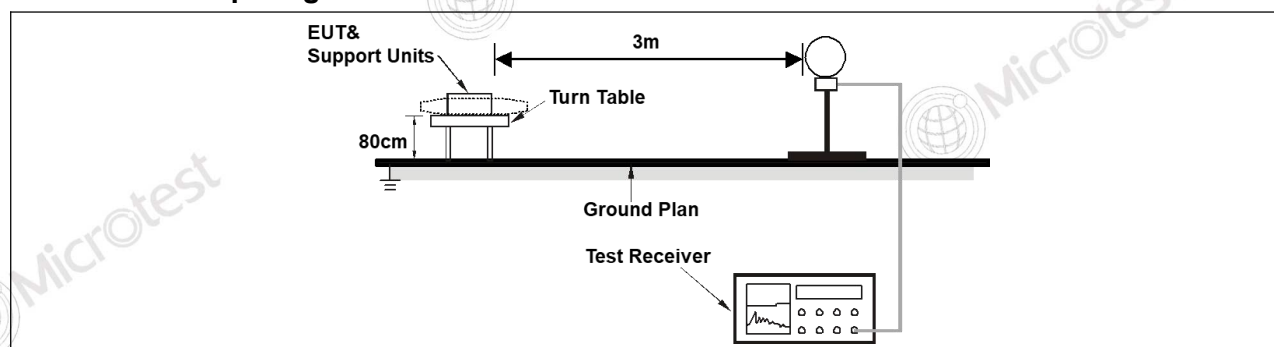
5.5 Transmitter radiated spurious domain emission limits (below 30MHz)

Test Requirement:	Clause 4.3.8.1		
Test Limit:	State	Frequency 9 kHz $\leq f < 10$ MHz	Frequency 10 MHz $\leq f < 30$ MHz
	Operating	27 dBm/m at 9 kHz descending 3 dB/oct	-3,5 dBm/m
	Standby	5,5 dBm/m at 9 kHz descending 3 dB/oct	-25 dBm/m
Test Method:	Clause 6.2.8		
Procedure:	The field strength shall be measured for frequencies below 30 MHz. The equipment under test shall be measured at a distance of 10 m on an outdoor test site. The test antenna shall be a calibrated shielded magnetic field antenna. The equipment under test and test antenna shall be arranged as stated in clause C.1. For Product Class 3 the transmitter antenna connector of the equipment under test shall be connected to an artificial antenna (see clause 5.9) and the output connector terminated. The equipment under test shall be switched on with normal modulation. The characteristics of the modulation signal used shall be stated on the test report. The measuring receiver shall be tuned over the frequency range 9 kHz to 30 MHz, except for the frequency band on which the transmitter is intended to operate. At each frequency at which a relevant spurious signal is detected the equipment under test and the test antenna shall be rotated until maximum field strength is indicated on the measuring receiver. This level shall be noted. If the transmitter can be operated in the standby mode, then the measurements shall be repeated in the standby mode. For measuring equipment calibrated in dBmV/m, the reading should be reduced by 51,5 dB to be converted to dBm/m.		

5.5.1 E.U.T. Operation:

Operating Environment:					
Temperature:	22.5 °C	Humidity:	43 %	Atmospheric Pressure:	101 kPa
Pre test mode:		Mode1, Mode2			
Final test mode:		Mode1, Mode2			

5.5.2 Test Setup Diagram:



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5.5.3 Test Data:

Test mode:	Mode 1		
Power supply:	Power by battery	Test site:	RE chamber 1

No.	Frequency	Result@3m	C3	Result @10m	Limit@10m	Margin	Detector
	(MHz)	dBuA/m	(dB)	dBuA/m	dBuA/m	dB	
1	0.3832	-3.86	31.2	-35.06	10.7	-45.8	QP
2	0.521	-7.23	31.1	-38.33	9.4	-47.7	QP
3	0.6406	-8.4	31.1	-39.5	8.5	-48.0	QP
4	0.9233	-16.31	31.1	-47.41	6.9	-54.3	QP
5	1.0824	-18.92	31	-49.92	6.2	-56.1	QP
6	1.4256	-17.22	31	-48.22	5.0	-53.2	QP

Test mode:	Mode 1		
Power supply:	Power by battery	Test site:	RE chamber 1

No.	Frequency	Result@3m	C3	Result @10m	Limit@10m	Margin	Detector
	(MHz)	dBuA/m	(dB)	dBuA/m	dBuA/m	dB	
1	0.2548	-6.19	31.2	-37.39	-9.0	-28.4	QP
2	0.3832	-8.22	31.2	-39.42	-10.8	-28.6	QP
3	0.4127	-11.13	31.2	-42.33	-11.1	-31.2	QP
4	0.5916	-18.12	31.1	-49.22	-12.7	-36.5	QP
5	0.8757	-20.23	31.1	-51.33	-14.4	-36.9	QP
6	1.1595	-22.12	31	-53.12	-15.6	-37.5	QP

Notes:

C3 Factor is a conversion factor in dB determined from figure H.2 of EN 300 330.

Level@10m (dBuA/m) Measurement Level@3m (dBuA/m) - C3 Factor (dB).

QP means Quasi Peak.

The three orthogonal orientations (x/y/z) of the measurement shielded loop antenna was performed for pre-scan, the maximum radiated transmissions (x axis) were recorded.

Margin (dB) = Result @10m (dBuA/m) - Limit@10m (dBuA/m)

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5.6 Transmitter radiated spurious domain emission limits (30MHz to 1GHz)

Test Requirement:	Clause 4.3.9.1		
Test Limit:	State	47 MHz to 74 MHz 87,5 MHz to 118 MHz 174 MHz to 230 MHz 470 MHz to 790 MHz	Other frequencies between 30 MHz to 1 000 MHz
	Operating	4 nW	250 nW
	Standby	2 nW	2 nW
Test Method:	Clause 6.2.9		
Procedure:	For classes 1, 2 and 4 an appropriate test site selected from annex C shall be used. The equipment shall be placed at the specified height on a non-conducting support and in the position closest to normal use as declared by the manufacturer. The test antenna shall be oriented for vertical polarization. The output of the test antenna shall be connected to a measuring receiver. The transmitter shall be switched on with normal modulation, and the measuring receiver shall be tuned over the frequency range 30 MHz to 1 000 MHz. At each frequency at which a relevant spurious component is detected, the test antenna shall be raised and lowered through the specified range of heights until a maximum signal level is detected on the measuring receiver. The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver. The maximum signal level detected by the measuring receiver shall be noted. The substitution antenna shall be oriented for vertical polarization and calibrated for the frequency of the spurious component detected. The frequency of the calibrated signal generator shall be set to the frequency of the spurious component detected. The input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver, if necessary. The test antenna shall be raised and lowered through the specified range of heights to ensure that the maximum signal is received. When a test site according to clause C.1.1 is used, there is no need to vary the height of the antenna. The input signal to the substitution antenna shall be adjusted until an equal or a known related level to that detected from the transmitter is obtained on the measuring receiver. The input signal to the substitution antenna shall be recorded as a power level and corrected for any change of input attenuator setting of the measuring receiver. The measure of the effective radiated power of the spurious components is the larger of the two power levels recorded for each spurious component at the input to the substitution antenna, corrected for the gain of the substitution antenna if necessary. If an unmodulated carrier cannot be obtained then the measurements shall be made with the transmitter modulated by the normal test signal (see clause 5.8.2) in which case this fact shall be recorded in the test report.		

TEST REPORT

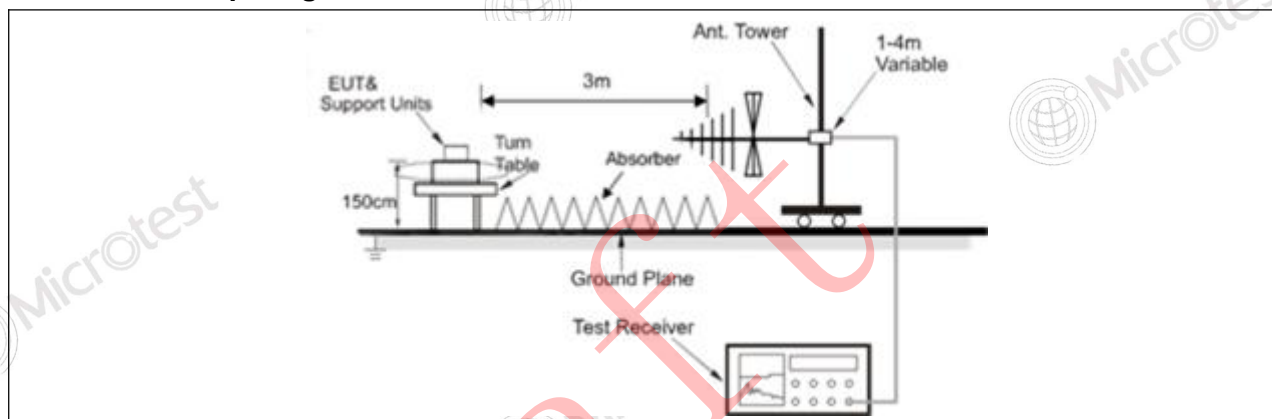
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	If standby mode is available, the measurements shall be repeated in that mode.
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5.6.1 E.U.T. Operation:

Operating Environment:					
Temperature:	22.5 °C	Humidity:	43 %	Atmospheric Pressure:	101 kPa
Pre test mode:	Mode1, Mode2				
Final test mode:	Mode1, Mode2				

5.6.2 Test Setup Diagram:

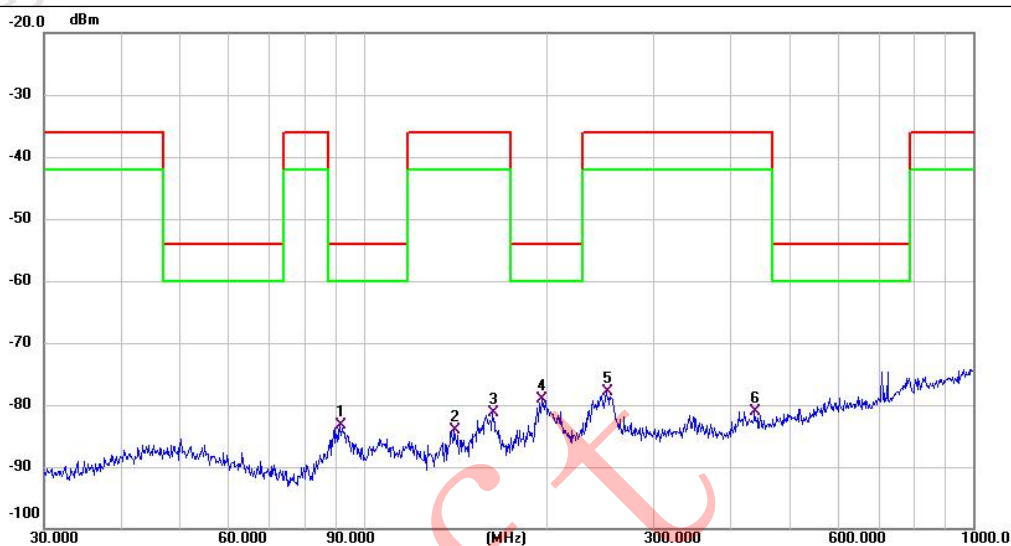


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5.6.3 Test Data:

Mode1 / Polarization: Horizontal

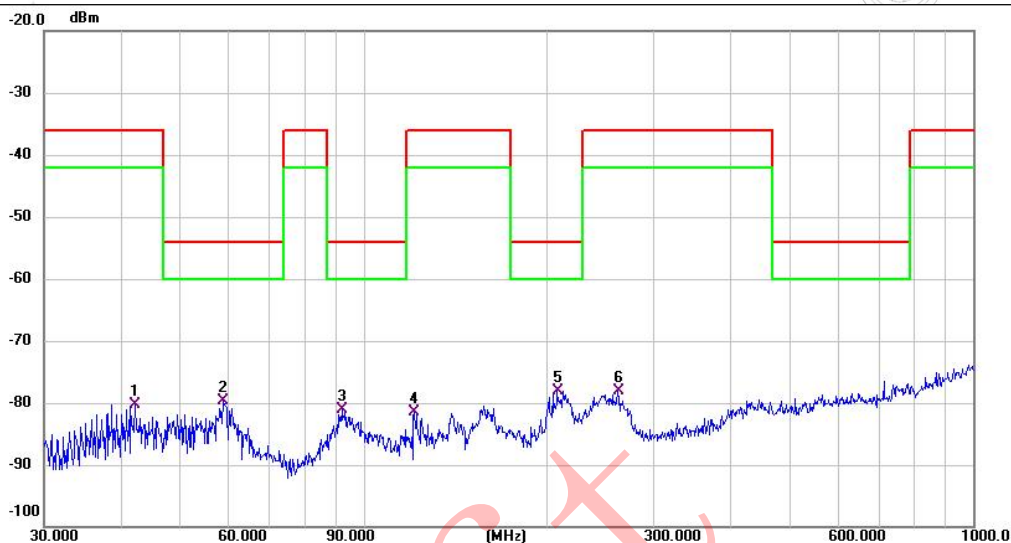


No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1	91.4949	-72.85	-10.43	-83.28	-54.00	-29.28	QP	
2	140.8351	-75.40	-8.78	-84.18	-36.00	-48.18	QP	
3	162.6106	-71.14	-10.18	-81.32	-36.00	-45.32	QP	
4 *	196.5098	-71.60	-7.50	-79.10	-54.00	-25.10	QP	
5	251.1804	-71.82	-6.17	-77.99	-36.00	-41.99	QP	
6	438.6554	-78.32	-2.74	-81.06	-36.00	-45.06	QP	

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Mode1 / Polarization: Vertical

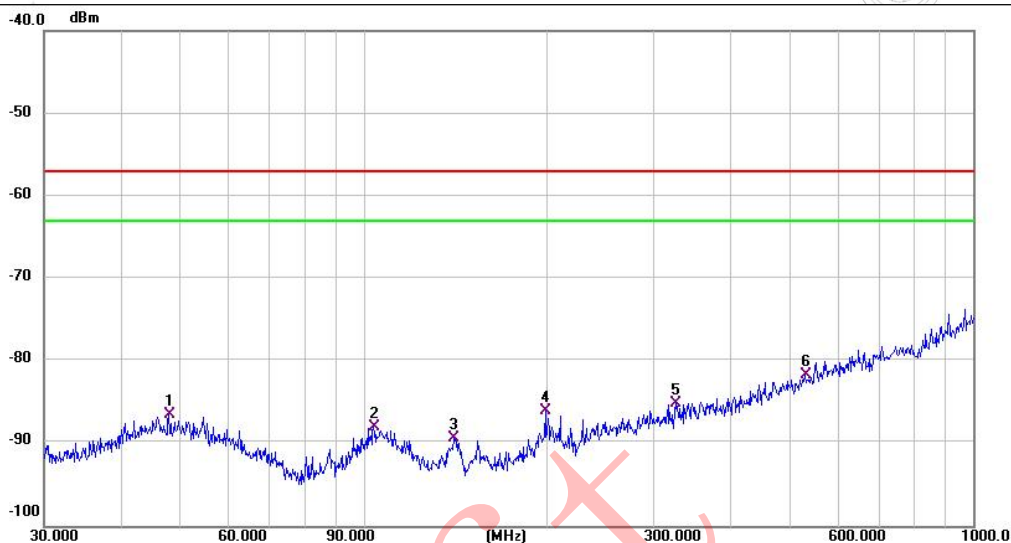


No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1	42.3022	-73.10	-7.13	-80.23	-36.00	-44.23	QP	
2	58.8185	-71.92	-7.88	-79.80	-54.00	-25.80	QP	
3	92.1388	-70.70	-10.36	-81.06	-54.00	-27.06	QP	
4	121.1231	-71.68	-9.88	-81.56	-36.00	-45.56	QP	
5 *	208.5803	-70.66	-7.39	-78.05	-54.00	-24.05	QP	
6	261.9753	-72.34	-5.75	-78.09	-36.00	-42.09	QP	

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Mode2 / Polarization: Horizontal

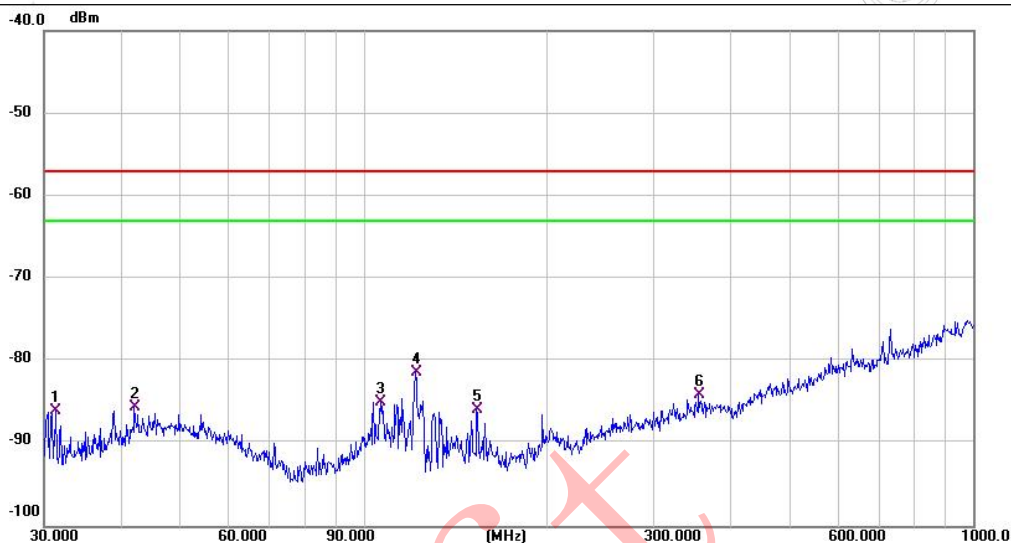


No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1	47.9940	-79.63	-6.84	-86.47	-57.00	-29.47	QP	
2	103.8055	-80.32	-7.62	-87.94	-57.00	-30.94	QP	
3	140.3421	-80.47	-8.78	-89.25	-57.00	-32.25	QP	
4	199.2855	-79.34	-6.58	-85.92	-57.00	-28.92	QP	
5	325.5958	-80.77	-4.31	-85.08	-57.00	-28.08	QP	
6 *	530.1014	-80.19	-1.39	-81.58	-57.00	-24.58	QP	

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Mode2 / Polarization: Vertical



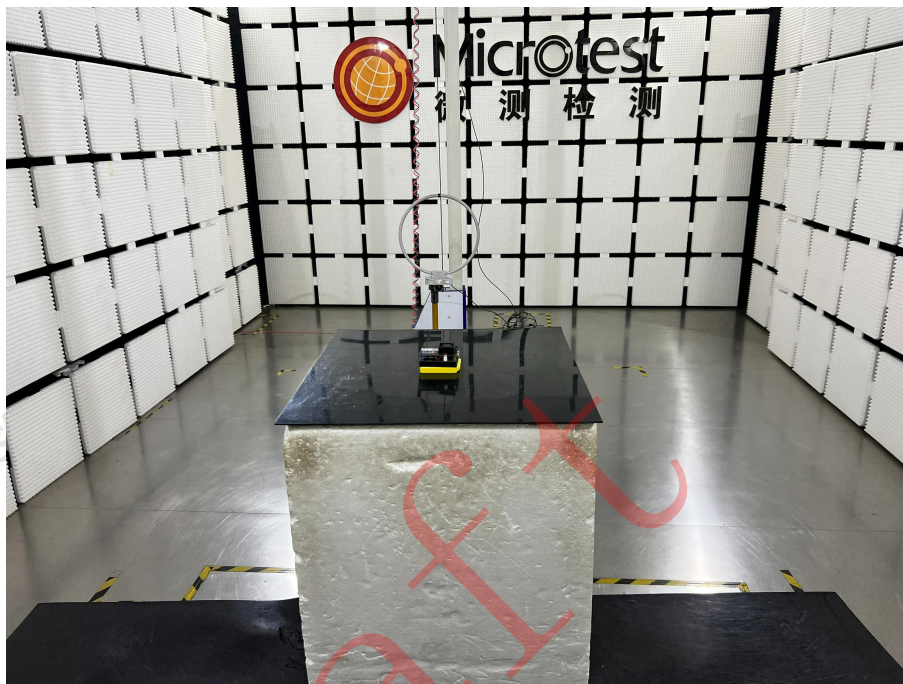
No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1	31.3992	-76.19	-9.85	-86.04	-57.00	-29.04	QP	
2	42.1542	-78.30	-7.17	-85.47	-57.00	-28.47	QP	
3	106.7587	-78.03	-6.94	-84.97	-57.00	-27.97	QP	
4 *	121.5486	-71.25	-10.00	-81.25	-57.00	-24.25	QP	
5	153.2004	-76.16	-9.71	-85.87	-57.00	-28.87	QP	
6	355.4273	-80.61	-3.42	-84.03	-57.00	-27.03	QP	

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Photographs of the test setup

Transmitter radiated spurious domain emission limits (below 30MHz)



Transmitter radiated spurious domain emission limits (30MHz to 1GHz)



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Photographs of the EUT

Refer to Appendix - EUT Photos

Draft

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Statement

1. This report is invalid without the seal and signature of the laboratory.
2. The test results of this report are only responsible for the samples submitted. Client shall be responsible for representativeness of the sample and authenticity of the material.
3. The report shall not be partially reproduced without the written consent of the Laboratory.
4. This report is invalid if transferred, altered or tampered with in any form without authorization.
5. The observations or tests with special mark fall outside the scope of accreditation, and are only used for purpose of commission, research, training, internal quality control etc.
6. Any objection to this report shall be submitted to the laboratory within 15 days from the date of receipt of the report.

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