

Test Report

Report No. : MTi250107021-0201E3
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 300 328 V2.2.2 (2019-07)	
Testing Information		
Date of test	2025-05-06 to 2025-05-07	
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	
Bluetooth version:	V5.0
Operating frequency range:	2402-2480MHz
Channel number:	40
Modulation type:	GFSK
Antenna(s) type:	Ceramic
Antenna(s) gain:	1dBi

1.2 Description of test modes

No.	Emission test modes
Mode1	TX-GFSK-1Mbps
Mode2	RX

1.2.1 Operation channel list

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468

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4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

Test Channel List

Operation Band: 1

Bandwidth (MHz)	Lowest Channel (LCH) (MHz)	Middle Channel (MCH) (MHz)	Highest Channel (HCH) (MHz)
2	2402	2440	2480

Note: The test software provided by manufacturer is used to control EUT for working in engineering mode, that enables selectable channel, and capable of continuous transmitting mode.

Test Software: Serial-COM3(1)-SecureCRT

For power setting, refer to below table.

Mode	2402MHz	2440MHz	2480MHz
1M	8	8	8
2M	8	8	8

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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)
HTNV	45	9.9
LTNV	-10	8.1
NTNV	25	9

1.4 Description of support units

Support equipment list

Description	Model	Serial No.	Manufacturer
/	/	/	/

Support cable list

Description	Length (m)	From	To
/	/	/	/

1.5 Measurement uncertainty

Measurement	Uncertainty
RF output power, conducted	±1 dB
Power Spectral Density, conducted	±1 dB
Occupied channel bandwidth	±3 %
Unwanted Emissions, conducted	±1 dB
Radiated spurious emissions (30MHz~1GHz)	±4.7dB
Radiated spurious emissions (above 1GHz)	±5.3dB
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	RF Power	ETSI EN 300 328 V2.2.2 (2019-07)	Clause 4.3.2.2.1	Pass
2	Power Spectral Density	ETSI EN 300 328 V2.2.2 (2019-07)	Clause 4.3.2.3.1	Pass
3	Occupied Channel Bandwidth	ETSI EN 300 328 V2.2.2 (2019-07)	Clause 4.3.2.7.1	Pass
4	Transmitter unwanted emissions in the out-of-band domain	ETSI EN 300 328 V2.2.2 (2019-07)	Clause 4.3.2.8.1	Pass
5	Transmitter unwanted emissions in the spurious domain (30MHz to 1GHz)	ETSI EN 300 328 V2.2.2 (2019-07)	Clause 4.3.2.9.1	Pass
6	Transmitter unwanted emissions in the spurious domain (above 1GHz)	ETSI EN 300 328 V2.2.2 (2019-07)	Clause 4.3.2.9.1	Pass
7	Receiver spurious emissions (30MHz to 1GHz)	ETSI EN 300 328 V2.2.2 (2019-07)	Clause 4.3.2.10.1	Pass
8	Receiver spurious emissions (above 1GHz)	ETSI EN 300 328 V2.2.2 (2019-07)	Clause 4.3.2.10.1	Pass
9	Receiver Blocking	ETSI EN 300 328 V2.2.2 (2019-07)	Clause 4.3.2.11.1	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
Occupied Channel Bandwidth Transmitter unwanted emissions in the out-of-band domain Receiver Blocking RF Power Power Spectral Density						
1	Wideband Radio Communication Tester	Rohde&schwarz	CMW500	149155	2025-03-18	2026-03-17
2	ESG Series Analog Ssignal 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 unwanted emissions in the spurious domain (30MHz to 1GHz) Receiver spurious emissions (30MHz to 1GHz)						
1	EMI Test Receiver	Rohde&schwarz	ESCi7	101166	2025-03-14	2026-03-13
2	TRILOG Broadband Antenna	schwarabeck	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
Transmitter unwanted emissions in the spurious domain (above 1GHz) Receiver spurious emissions (above 1GHz)						
1	EMI Test Receiver	Rohde&schwarz	ESCi7	101166	2025-03-14	2026-03-13
2	Double Ridged Broadband Horn Antenna	schwarabeck	BBHA 9120 D	2278	2023-06-17	2025-06-16
3	Amplifier	Agilent	8449B	3008A01120	2025-03-18	2026-03-17
4	MXA signal analyzer	Agilent	N9020A	MY54440859	2025-03-14	2026-03-13
5	PXA Signal Analyzer	Agilent	N9030A	MY51350296	2025-03-14	2026-03-13
6	Horn antenna	Schwarzbeck	BBHA 9170	00987	2023-06-17	2025-06-16
7	Pre-amplifier	Space-Dtronics	EWLAN1840 G	210405001	2025-03-19	2026-03-18

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5 Radio Spectrum Matter Test Results (RF)

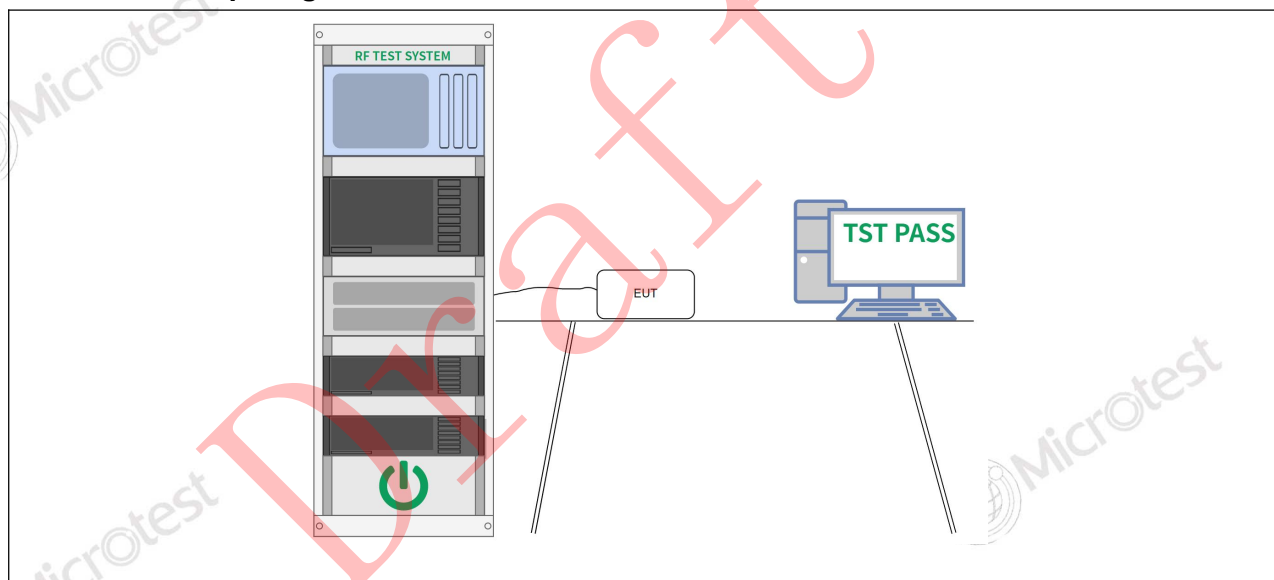
5.1 RF Power

Test Requirement:	Clause 4.3.2.2.1
Test Limit:	<=20dBm
Test Method:	Clause 5.4.2.2.1
Procedure:	Clause 5.4.2.2.1.2

5.1.1 E.U.T. Operation:

Operating Environment:					
Temperature:	24.3 °C	Humidity:	56 %	Atmospheric Pressure:	101 kPa
Pre test mode:	Mode1				
Final test mode:	Mode1				

5.1.2 Test Setup Diagram:



5.1.3 Test Data:

Please Refer to Appendix for Details.

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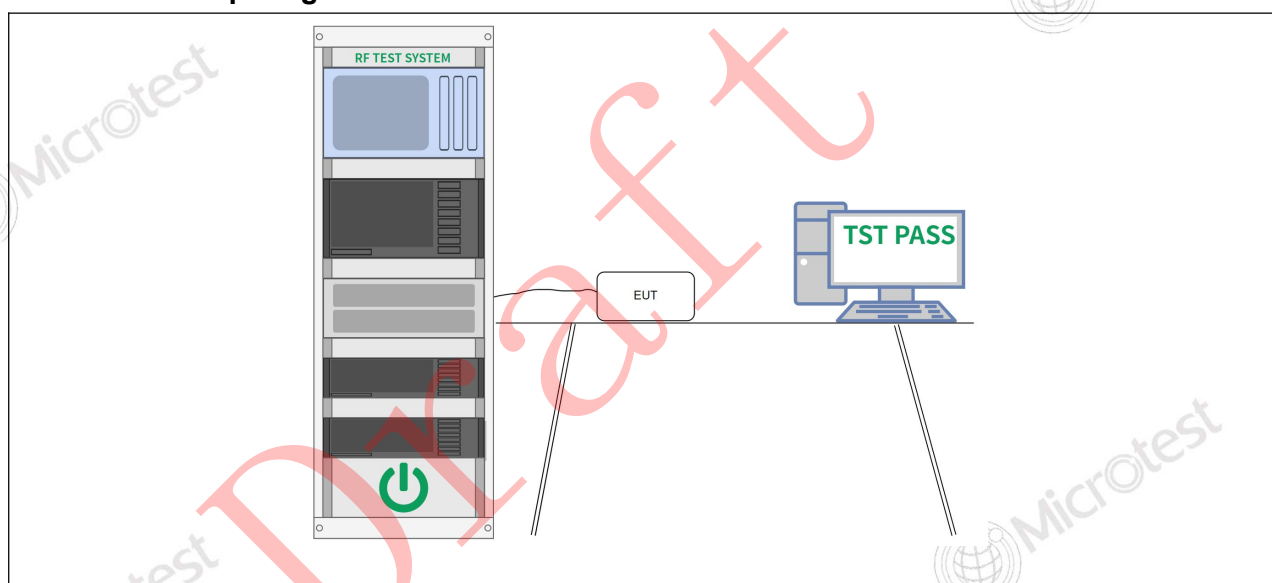
5.2 Power Spectral Density

Test Requirement:	Clause 4.3.2.3.1
Test Limit:	$\leq 10\text{dBm/MHz}$
Test Method:	Clause 5.4.3.2.1
Procedure:	Clause 5.4.3.2.1

5.2.1 E.U.T. Operation:

Operating Environment:					
Temperature:	24.3 °C	Humidity:	56 %	Atmospheric Pressure:	101 kPa
Pre test mode:	Mode1				
Final test mode:	Mode1				

5.2.2 Test Setup Diagram:



5.2.3 Test Data:

Please Refer to Appendix for Details.

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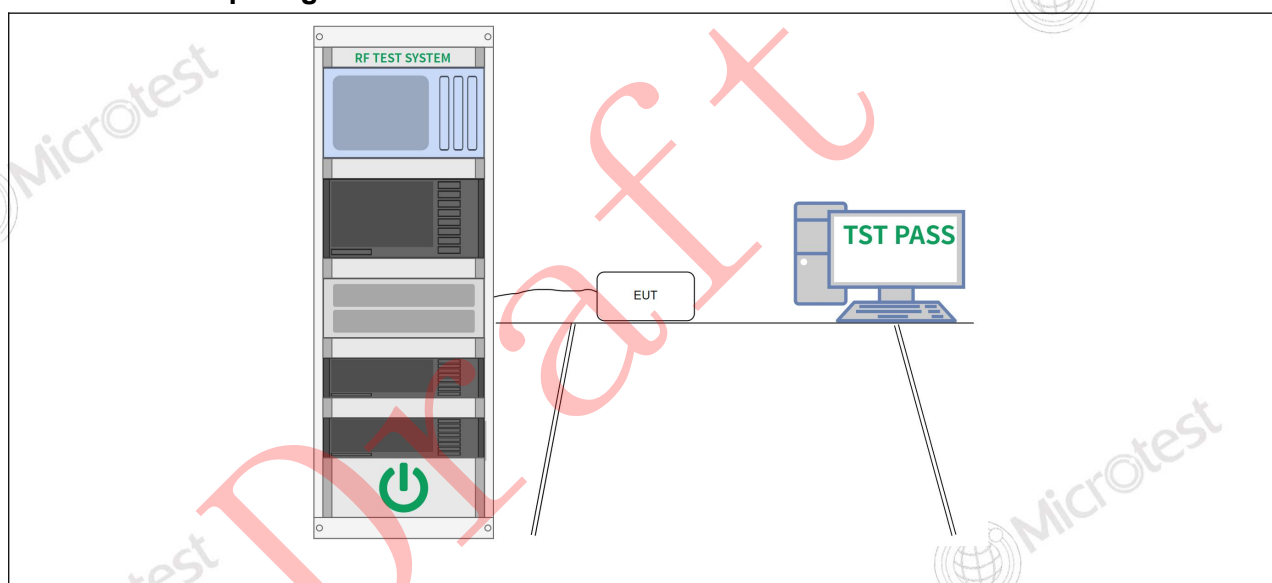
5.3 Occupied Channel Bandwidth

Test Requirement:	Clause 4.3.2.7.1
Test Limit:	Clause 4.3.2.7.3
Test Method:	Clause 5.4.7.2.1
Procedure:	Clause 5.4.7.2

5.3.1 E.U.T. Operation:

Operating Environment:					
Temperature:	24.3 °C	Humidity:	56 %	Atmospheric Pressure:	101 kPa
Pre test mode:	Mode1				
Final test mode:	Mode1				

5.3.2 Test Setup Diagram:



5.3.3 Test Data:

Please Refer to Appendix for Details.

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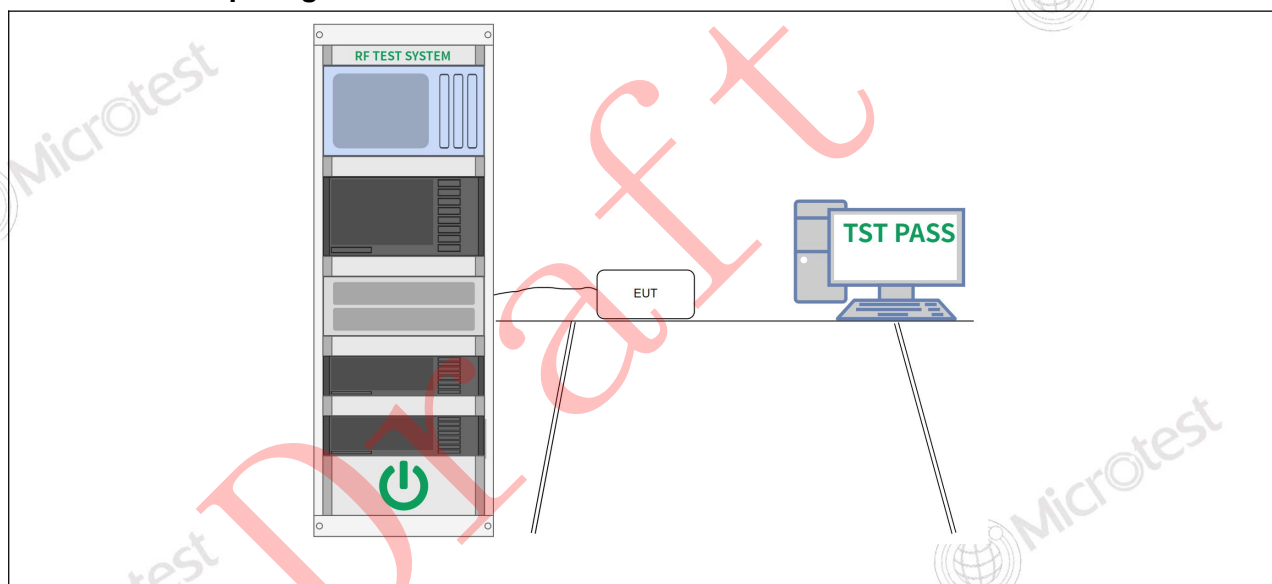
5.4 Transmitter unwanted emissions in the out-of-band domain

Test Requirement:	Clause 4.3.2.8.1
Test Limit:	Clause 4.3.2.8.3
Test Method:	Clause 5.4.8.2.1
Procedure:	Clause 5.4.8.2.1

5.4.1 E.U.T. Operation:

Operating Environment:					
Temperature:	24.3 °C	Humidity:	56 %	Atmospheric Pressure:	101 kPa
Pre test mode:	Mode1				
Final test mode:	Mode1				

5.4.2 Test Setup Diagram:



5.4.3 Test Data:

Please Refer to Appendix for Details.

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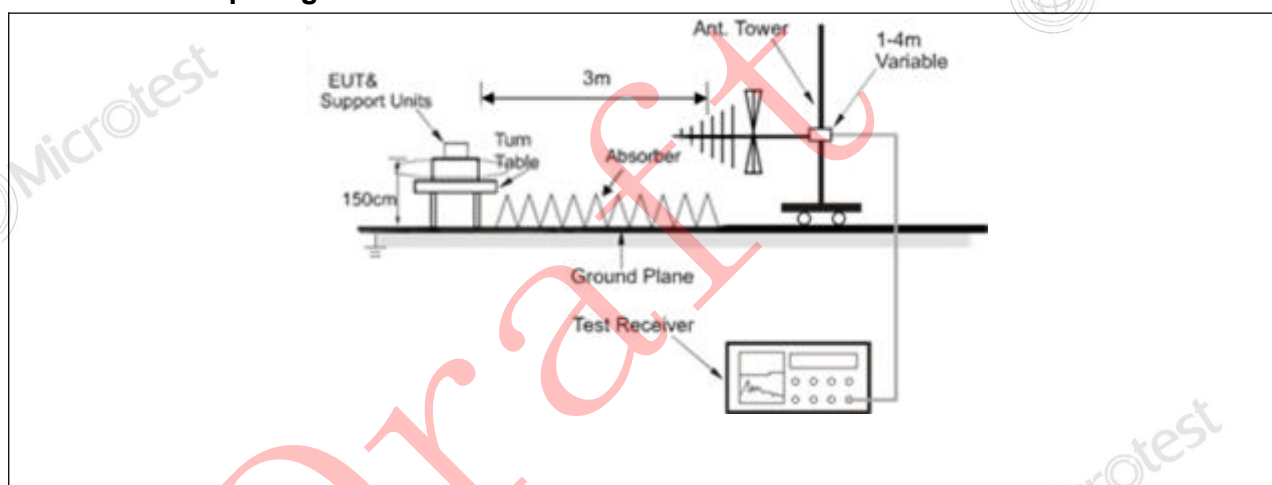
5.5 Transmitter unwanted emissions in the spurious domain (30MHz to 1GHz)

Test Requirement:	Clause 4.3.2.9.1
Test Limit:	Clause 4.3.2.9.3
Test Method:	Clause 5.4.9.2.2
Procedure:	Clause 5.4.9.2.2

5.5.1 E.U.T. Operation:

Operating Environment:					
Temperature:	25 °C	Humidity:	46.3 %	Atmospheric Pressure:	98 kPa
Pre test mode:	Mode1				
Final test mode:	Mode1				

5.5.2 Test Setup Diagram:

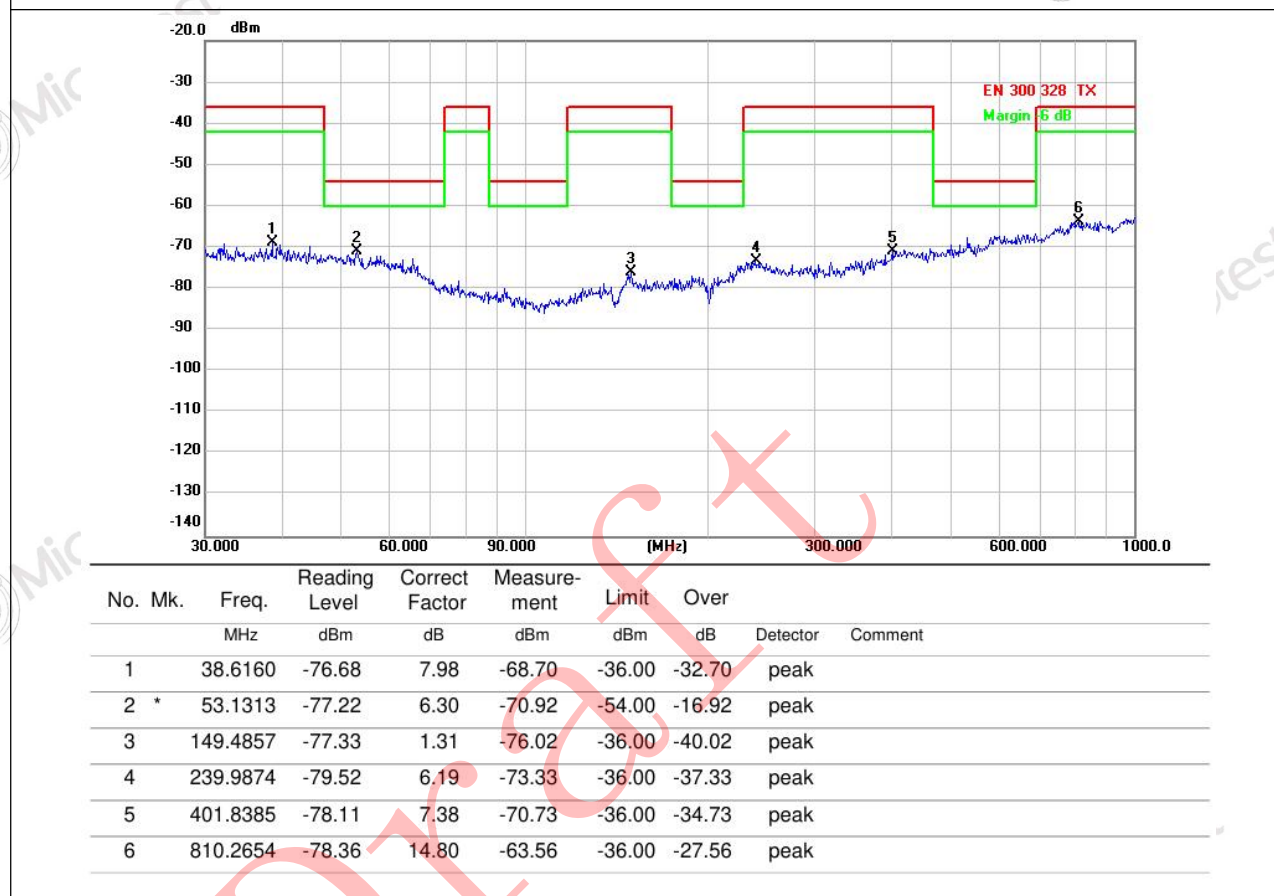


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5.5.3 Test Data:

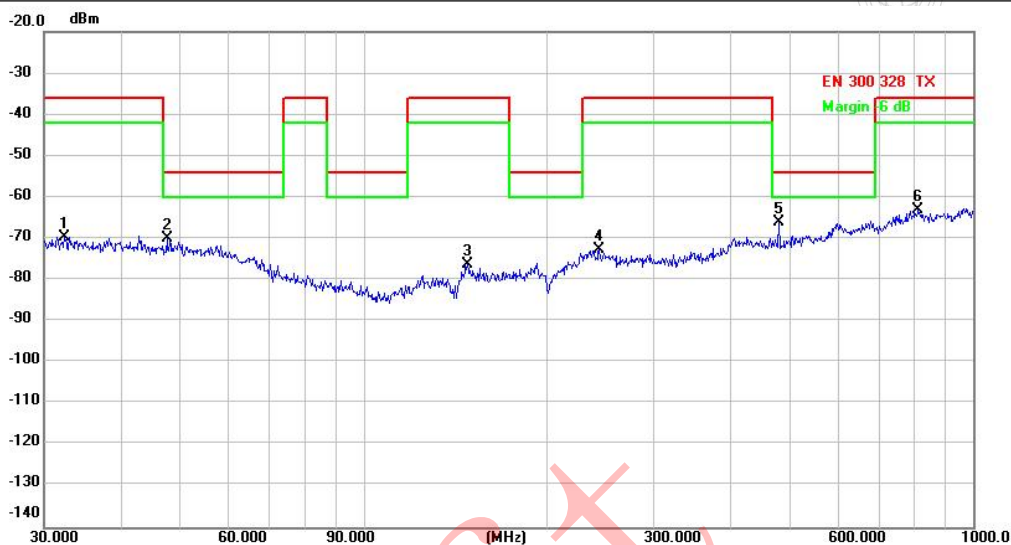
Mode1 / Polarization: Horizontal / CH: L



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Mode1 / Polarization: Vertical / CH: L

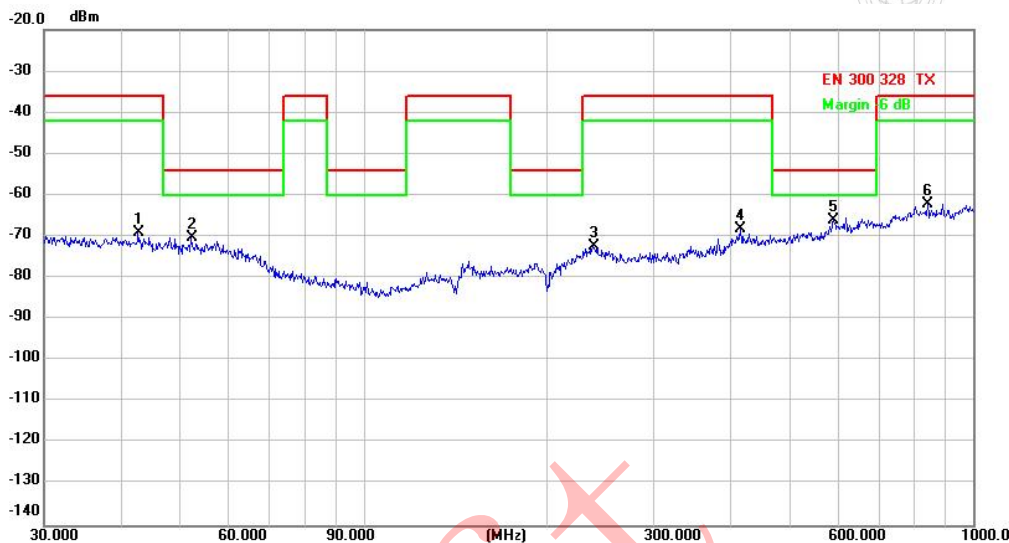


No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1		32.4059	-66.58	-2.98	-69.56	-36.00	-33.56	peak	
2		47.6586	-69.47	-0.55	-70.02	-54.00	-16.02	peak	
3		147.9214	-81.64	5.44	-76.20	-36.00	-40.20	peak	
4		244.2321	-75.04	2.33	-72.71	-36.00	-36.71	peak	
5	*	480.5276	-73.81	7.65	-66.16	-54.00	-12.16	peak	
6		813.1115	-78.26	15.09	-63.17	-36.00	-27.17	peak	

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Mode1 / Polarization: Horizontal / CH: H

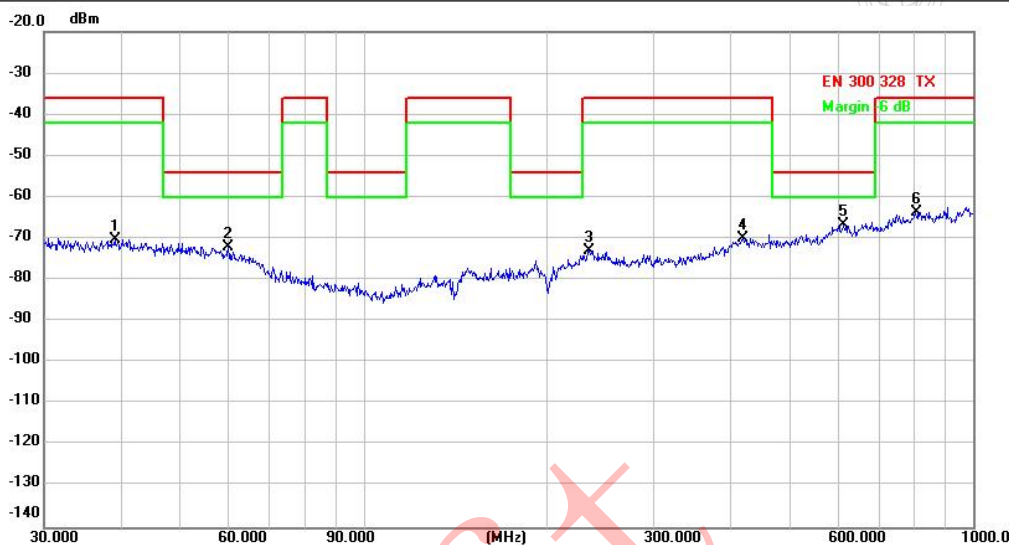


No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1		42.7496	-76.41	7.22	-69.19	-36.00	-33.19	peak	
2		52.2079	-76.73	6.39	-70.34	-54.00	-16.34	peak	
3		238.3102	-78.56	6.32	-72.24	-36.00	-36.24	peak	
4		416.1791	-76.53	8.34	-68.19	-36.00	-32.19	peak	
5	*	590.9737	-76.89	10.87	-66.02	-54.00	-12.02	peak	
6		842.1296	-76.50	14.47	-62.03	-36.00	-26.03	peak	

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Mode1 / Polarization: Vertical / CH: H



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1	39.1616	-67.43	-2.68	-70.11	-36.00	-34.11	peak	
2	60.0691	-72.91	0.73	-72.18	-54.00	-18.18	peak	
3	234.9909	-74.19	1.38	-72.81	-36.00	-36.81	peak	
4	420.5803	-77.06	7.15	-69.91	-36.00	-33.91	peak	
5 *	614.2142	-76.98	10.27	-66.71	-54.00	-12.71	peak	
6	804.6028	-78.24	14.69	-63.55	-36.00	-27.55	peak	

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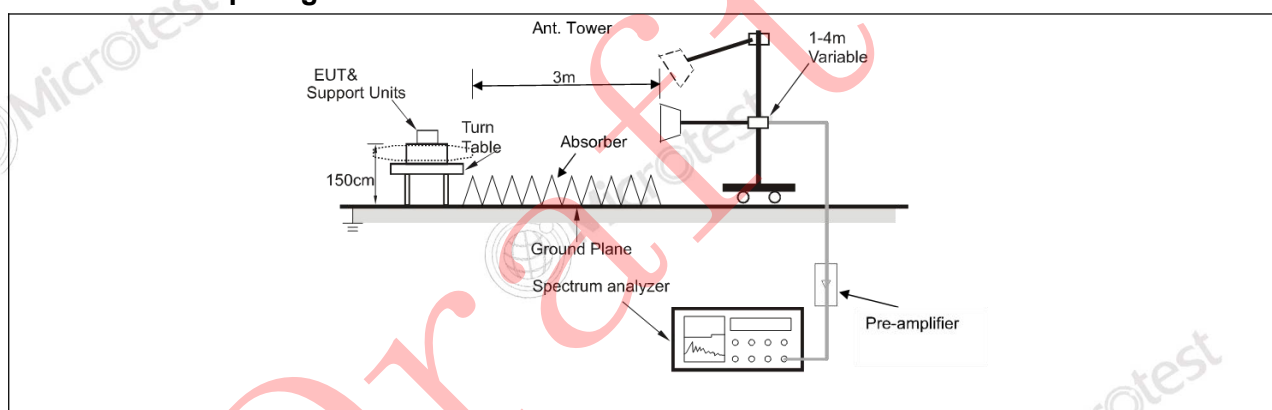
5.6 Transmitter unwanted emissions in the spurious domain (above 1GHz)

Test Requirement:	Clause 4.3.2.9.1
Test Limit:	Clause 4.3.2.9.3
Test Method:	Clause 5.4.9.2.2
Procedure:	Clause 5.4.9.2.2

5.6.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23 °C	Humidity:	46.3 %	Atmospheric Pressure:	98 kPa
Pre test mode:	Mode1				
Final test mode:	Mode1				
Note: Test frequency are from 1GHz to 12.75GHz, the amplitude of spurious emissions which are attenuated more than 20 dB below the limits are not reported.					

5.6.2 Test Setup Diagram:



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5.6.3 Test Data:

Mode1 / Polarization: Horizontal / CH: L

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBm	dB	dBm	dBm	dB	Detector
1		4804.000	-64.21	13.64	-50.57	-30.00	-20.57	peak
2	*	7206.000	-64.83	20.19	-44.64	-30.00	-14.64	peak
3		9608.000	-70.27	21.56	-48.71	-30.00	-18.71	peak

Mode1 / Polarization: Vertical / CH: L

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBm	dB	dBm	dBm	dB	Detector
1		4804.000	-66.25	13.64	-52.61	-30.00	-22.61	peak
2	*	7206.000	-66.96	20.19	-46.77	-30.00	-16.77	peak
3		9608.000	-71.00	21.56	-49.44	-30.00	-19.44	peak

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Mode1 / Polarization: Horizontal / CH: H

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBm	dB	dBm	dBm	dB	Detector
1		4960.000	-60.98	14.48	-46.50	-30.00	-16.50	peak
2	*	7440.000	-59.04	19.61	-39.43	-30.00	-9.43	peak
3		9920.000	-70.84	20.46	-50.38	-30.00	-20.38	peak

Mode1 / Polarization: Vertical / CH: H

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBm	dB	dBm	dBm	dB	Detector
1		4960.000	-63.41	14.48	-48.93	-30.00	-18.93	peak
2	*	7440.000	-63.48	19.61	-43.87	-30.00	-13.87	peak
3		9920.000	-70.89	20.46	-50.43	-30.00	-20.43	peak

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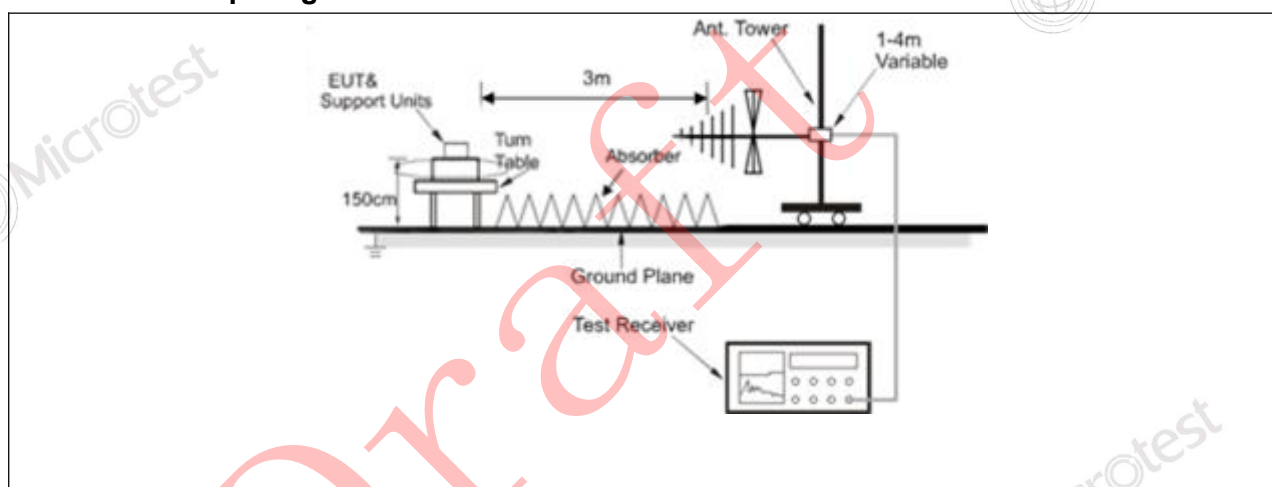
5.7 Receiver spurious emissions (30MHz to 1GHz)

Test Requirement:	Clause 4.3.2.10.1
Test Limit:	Clause 4.3.2.10.3
Test Method:	Clause 5.4.10.2.2
Procedure:	Clause 5.4.10.2.2

5.7.1 E.U.T. Operation:

Operating Environment:					
Temperature:	25 °C	Humidity:	46.3 %	Atmospheric Pressure:	98 kPa
Pre test mode:	Mode2				
Final test mode:	Mode2				

5.7.2 Test Setup Diagram:

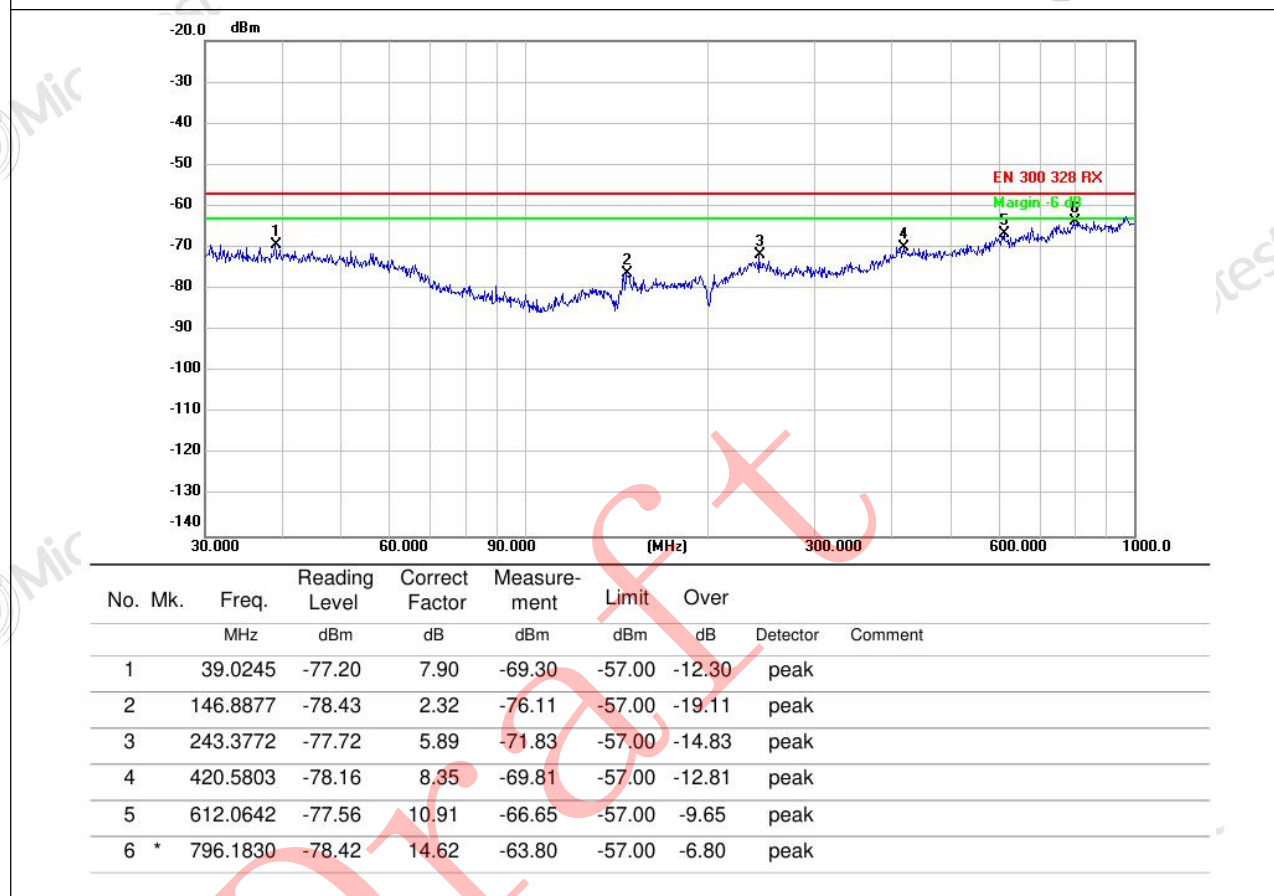


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5.7.3 Test Data:

Mode2 / Polarization: Horizontal / CH: L



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Mode2 / Polarization: Vertical / CH: L

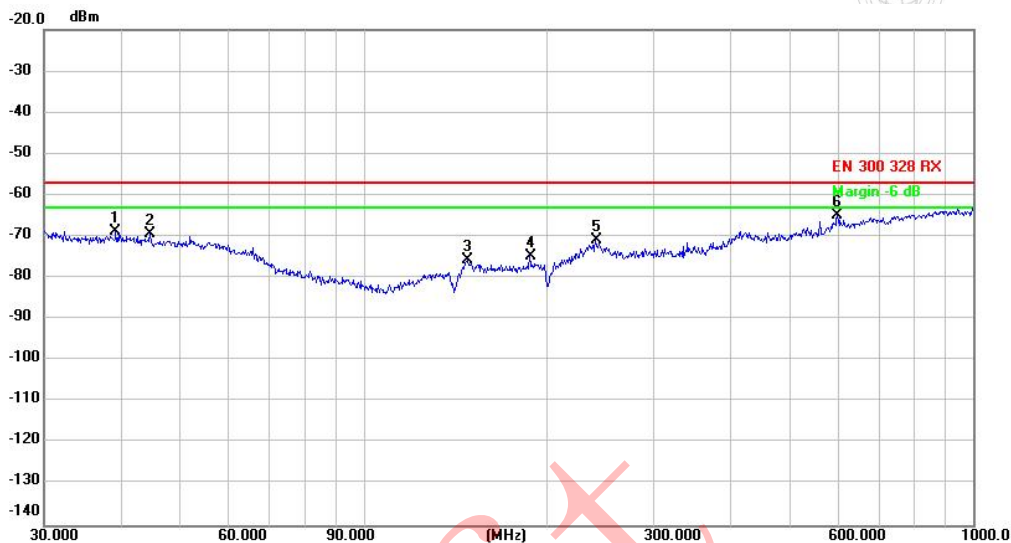


No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1	39.8542	-67.22	-2.42	-69.64	-57.00	-12.64	peak	
2	57.9993	-71.29	0.60	-70.69	-57.00	-13.69	peak	
3	237.4760	-73.95	1.63	-72.32	-57.00	-15.32	peak	
4	404.6665	-77.17	7.50	-69.67	-57.00	-12.67	peak	
5	599.3212	-77.94	11.04	-66.90	-57.00	-9.90	peak	
6 *	909.6667	-78.16	14.59	-63.57	-57.00	-6.57	peak	

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Mode2 / Polarization: Horizontal / CH: H

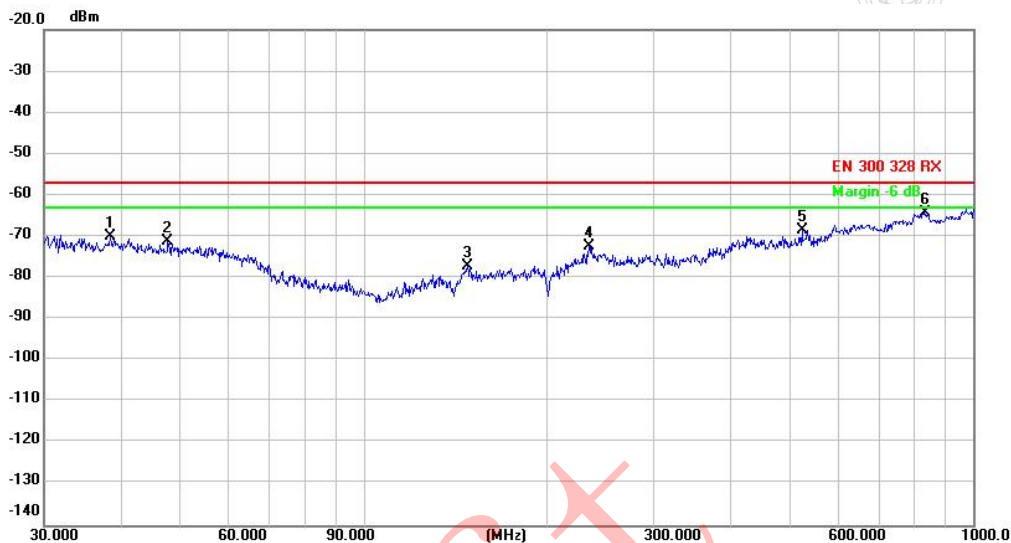


No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1		39.2991	-66.01	-2.63	-68.64	-57.00	-11.64	peak	
2		44.7433	-67.89	-1.42	-69.31	-57.00	-12.31	peak	
3		147.9214	-81.03	5.44	-75.59	-57.00	-18.59	peak	
4		187.7530	-76.96	2.07	-74.89	-57.00	-17.89	peak	
5		240.8304	-72.77	1.97	-70.80	-57.00	-13.80	peak	
6	*	599.3212	-76.03	11.04	-64.99	-57.00	-7.99	peak	

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Mode2 / Polarization: Vertical / CH: H



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1		38.4809	-66.97	-2.98	-69.95	-57.00	-12.95	peak	
2		47.8260	-70.51	-0.58	-71.09	-57.00	-14.09	peak	
3		147.9214	-82.45	5.44	-77.01	-57.00	-20.01	peak	
4		234.9909	-73.58	1.38	-72.20	-57.00	-15.20	peak	
5		524.5541	-77.44	8.86	-68.58	-57.00	-11.58	peak	
6	*	830.4002	-78.72	14.35	-64.37	-57.00	-7.37	peak	

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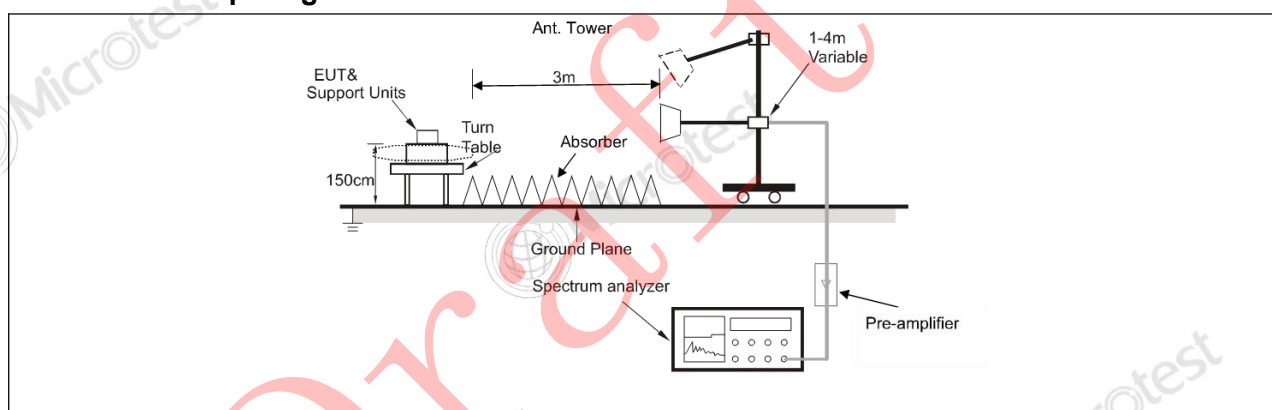
5.8 Receiver spurious emissions (above 1GHz)

Test Requirement:	Clause 4.3.2.10.1
Test Limit:	Clause 4.3.2.10.3
Test Method:	Clause 5.4.10.2.2
Procedure:	Clause 5.4.10.2.2

5.8.1 E.U.T. Operation:

Operating Environment:					
Temperature:	24 °C	Humidity:	46.3 %	Atmospheric Pressure:	98 kPa
Pre test mode:	Mode2				
Final test mode:	Mode2				
Note: Test frequency are from 1GHz to 12.75GHz, the amplitude of spurious emissions which are attenuated more than 20 dB below the limits are not reported.					

5.8.2 Test Setup Diagram:



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5.8.3 Test Data:

Mode2 / Polarization: Horizontal / CH: L

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBm	dB	dBm	dBm	dB	Detector
1		1415.656	-81.02	6.49	-74.53	-47.00	-27.53	peak
2		1925.313	-79.37	6.54	-72.83	-47.00	-25.83	peak
3	*	2484.906	-80.30	7.54	-72.76	-47.00	-25.76	peak

Mode2 / Polarization: Vertical / CH: L

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBm	dB	dBm	dBm	dB	Detector
1		1334.875	-79.38	4.98	-74.40	-47.00	-27.40	peak
2		2197.031	-81.72	8.66	-73.06	-47.00	-26.06	peak
3	*	2645.000	-81.72	8.92	-72.80	-47.00	-25.80	peak

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Mode2 / Polarization: Horizontal / CH: H

No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector
1		1423.000	-80.82	6.53	-74.29	-47.00	-27.29	peak
2	*	2208.781	-80.53	8.60	-71.93	-47.00	-24.93	peak
3		2561.281	-80.32	8.16	-72.16	-47.00	-25.16	peak

Mode2 / Polarization: Vertical / CH: H

No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector
1		1474.406	-80.29	6.25	-74.04	-47.00	-27.04	peak
2		2208.781	-82.03	8.60	-73.43	-47.00	-26.43	peak
3	*	3038.625	-81.11	10.18	-70.93	-47.00	-23.93	peak

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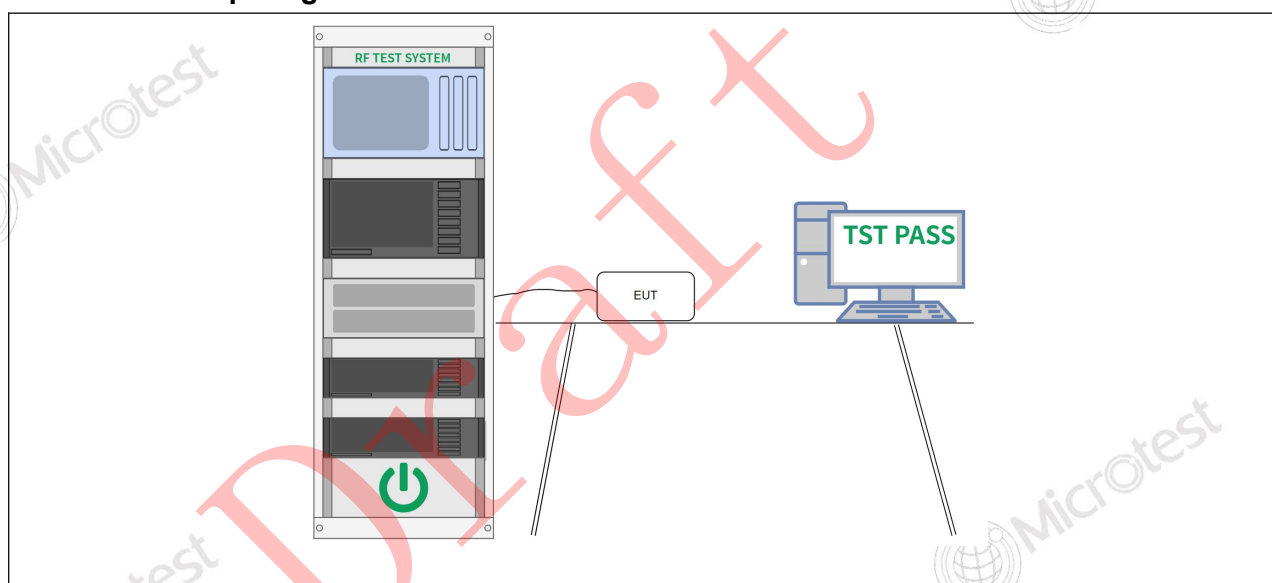
5.9 Receiver Blocking

Test Requirement:	Clause 4.3.2.11.1
Test Limit:	Clause 4.3.2.11.4
Test Method:	Clause 5.4.11.2.1
Procedure:	Clause 5.4.11.2.1

5.9.1 E.U.T. Operation:

Operating Environment:					
Temperature:	24.3 °C	Humidity:	56 %	Atmospheric Pressure:	101 kPa
Pre test mode:	Mode2				
Final test mode:	Mode2				

5.9.2 Test Setup Diagram:



5.9.3 Test Data:

Please Refer to Appendix for Details.

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Photographs of the test setup

Transmitter unwanted emissions in the spurious domain (30MHz to 1GHz)



Transmitter unwanted emissions in the spurious domain (above 1GHz)



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Photographs of the EUT

Refer to Appendix - EUT Photos

Draft

Appendix

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Appendix A: RF Output Power

Test Result

Test Condition	Test Mode	Antenna	Frequency [MHz]	Burst Power [dBm]	Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Verdict
NTNV	BLE_1M	Ant1	2402	5.66	1.00	6.66	20	PASS
			2440	5.55	1.00	6.55	20	PASS
			2480	5.64	1.00	6.64	20	PASS
LTVN	BLE_1M	Ant1	2402	5.67	1.00	6.67	20	PASS
			2440	5.55	1.00	6.55	20	PASS
			2480	5.63	1.00	6.63	20	PASS
HTNV	BLE_1M	Ant1	2402	5.66	1.00	6.66	20	PASS
			2440	5.55	1.00	6.55	20	PASS
			2480	5.64	1.00	6.64	20	PASS

Notes:

EIRP (dBm) = the highest of burst power [dBm] + antenna gain [dBi].
The offset of cable loss has been in compensation during the testing.

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Appendix B: Power Spectral Density

Test Result

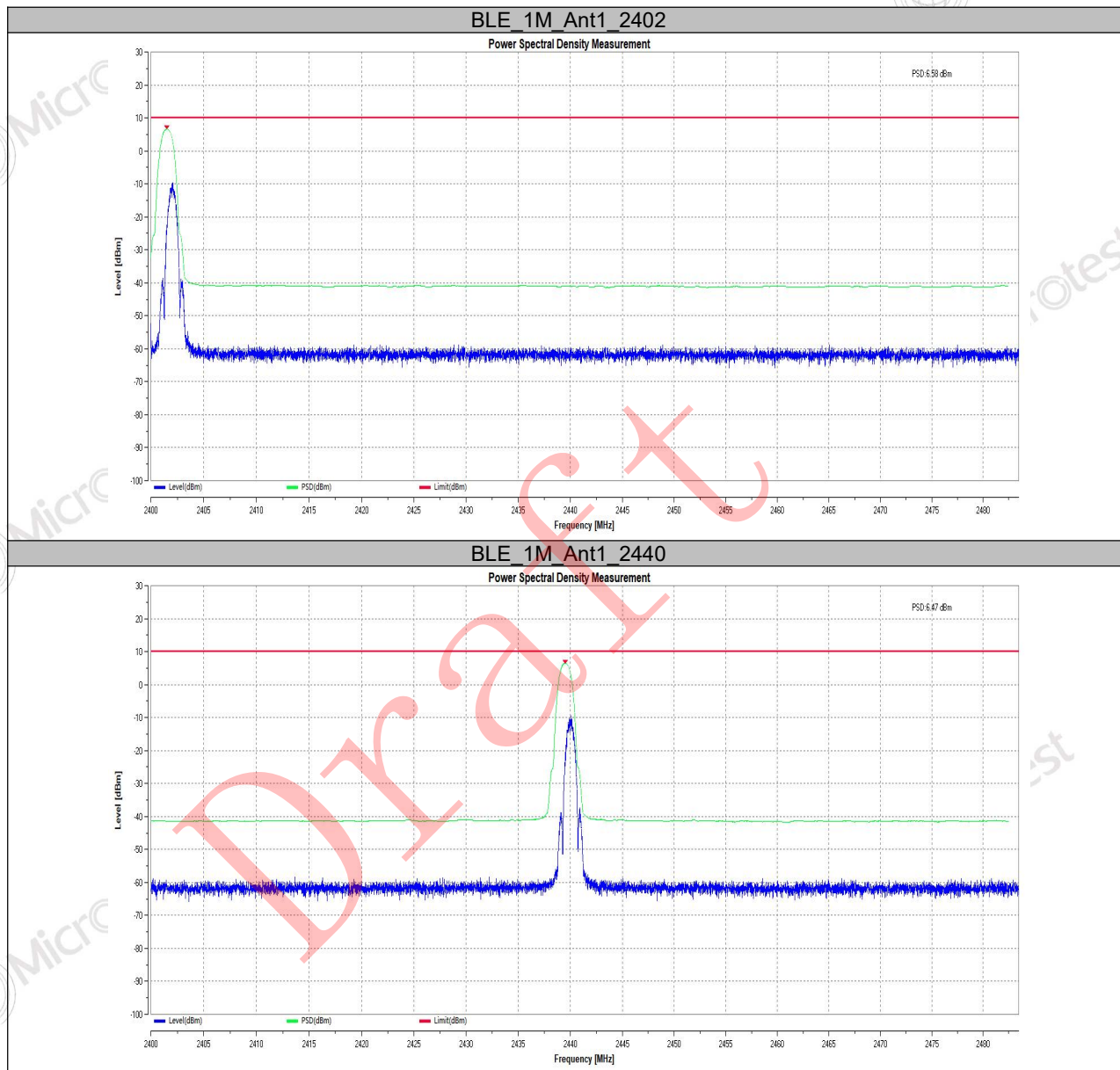
Test Mode	Antenna	Frequency [MHz]	EIRP PSD [dBm/MHz]	Limit [dBm/MHz]	Verdict
BLE_1M	Ant1	2402	6.58	10	PASS
		2440	6.47	10	PASS
		2480	6.56	10	PASS

Note: The offset of cable loss has been in compensation during the testing.

TEST REPORT

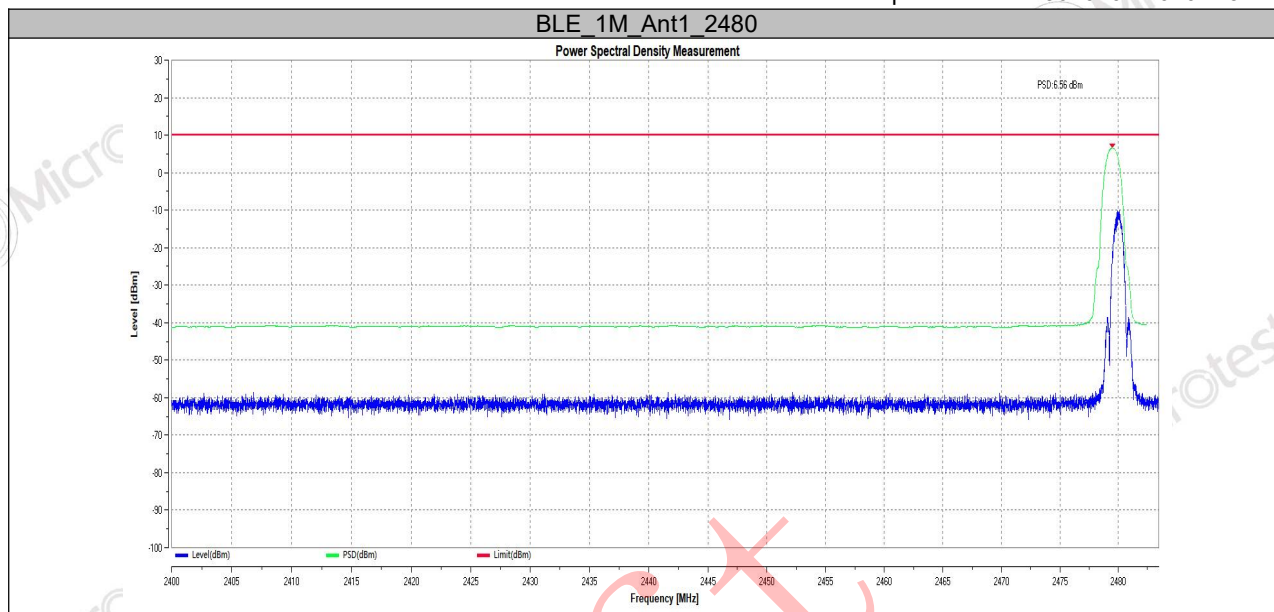
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Test Graphs



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Appendix C: Occupied Channel Bandwidth

Test Result

Test Mode	Antenna	Frequency [MHz]	OCB [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
BLE_1M	Ant1	2402	1.0638	2401.4751	2402.5389	2400 to 2483.5	PASS
		2440	1.0688	2439.4734	2440.5422	2400 to 2483.5	PASS
		2480	1.0725	2479.4707	2480.5432	2400 to 2483.5	PASS

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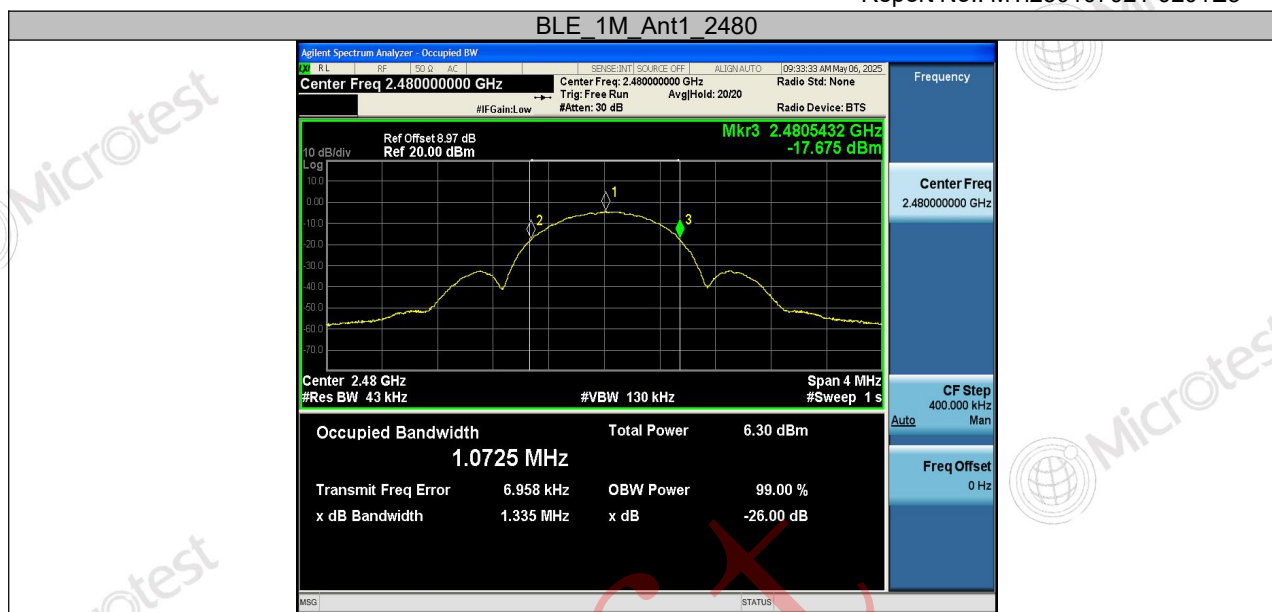
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Test Graphs



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Appendix D: Transmitter Unwanted Emissions in The Out-Of-Band Domain

Test Result

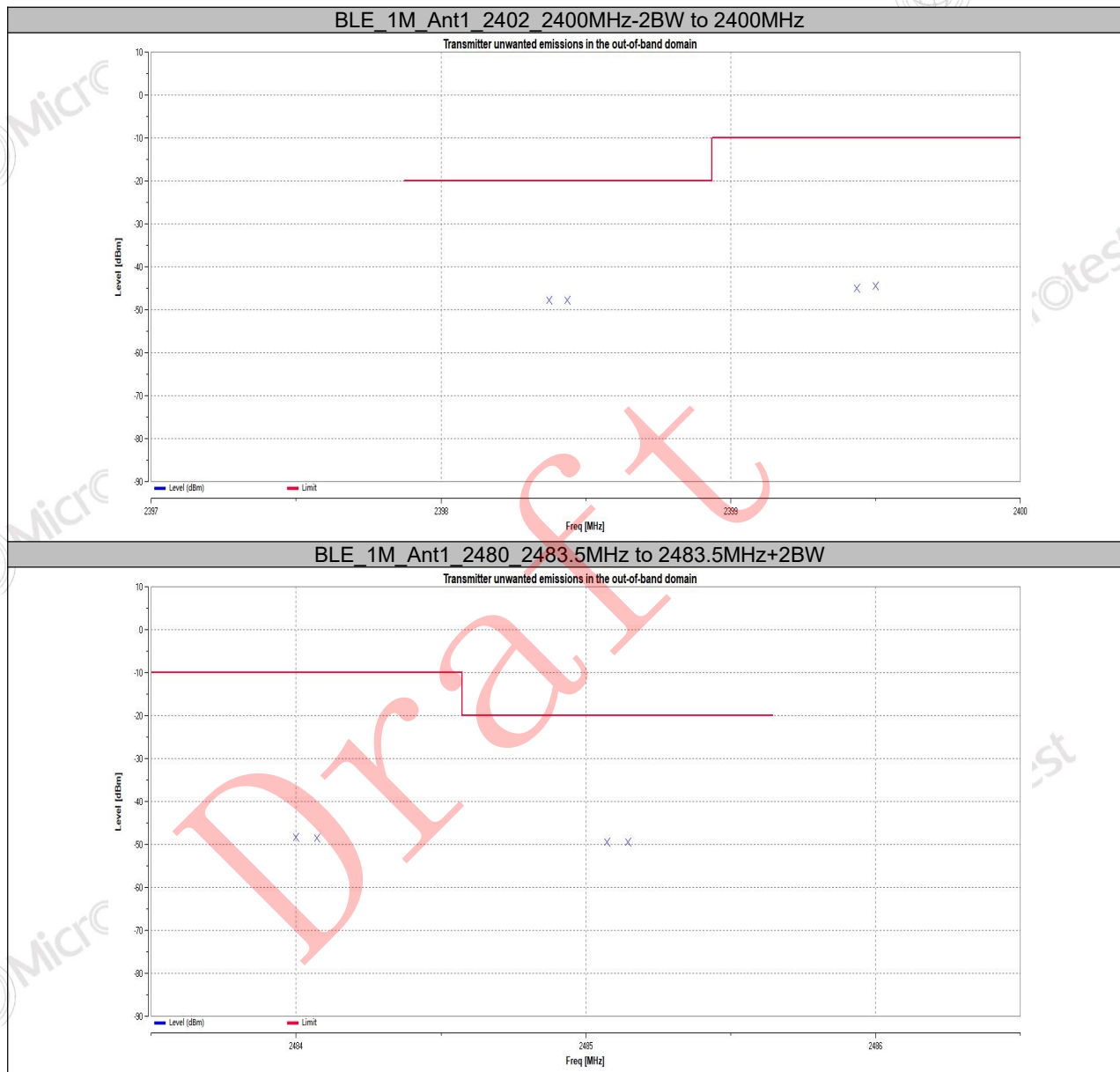
Test Mode	Antenna	Frequency [MHz]	Freq. [MHz]	Level [dBm]	Limit [dBm]	Verdict
BLE_1M	Ant1	2402	2398.3724	-47.84	-20.00	PASS
			2398.4362	-47.76	-20.00	PASS
			2399.4362	-44.98	-10.00	PASS
			2399.5	-44.37	-10.00	PASS
		2480	2484	-48.39	-10.00	PASS
			2484.0725	-48.46	-10.00	PASS
			2485.0725	-49.37	-20.00	PASS
			2485.145	-49.44	-20.00	PASS

Note: The offset of cable loss and antenna gain has been in compensation during the testing.

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Test Graphs



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Appendix E: Receiver Blocking

Test Result

The EUT is comply with receiver category 2 equipment.

Mode	Blocking Signal Frequency (MHz)	Wanted Signal(dBm)	Blocking Signal Level (dBm)	PER (%)	PER Limit (%)
GFSK	2300	-68.7	-33	0.73	≤ 10
GFSK	2380	-68.7	-33	0.66	
GFSK	2504	-68.7	-33	0.65	
GFSK	2584	-68.7	-33	0.72	

Notes:

Only the data of worst mode is reported.
The antenna gain is 1 dBi

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Appendix F: Information for testing

• The type of wideband data transmission equipment:
☐ FHSS ☒ non-FHSS
• In case of FHSS:
• In case of non-Adaptive FHSS equipment: The number of Hopping Frequencies: • In case of Adaptive FHSS equipment: The maximum number of Hopping Frequencies: The minimum number of Hopping Frequencies: • The (average) dwell time:
• Adaptive/non-adaptive equipment:
☐ non-adaptive Equipment ☒ adaptive Equipment without the possibility to switch to a non-adaptive mode ☐ adaptive Equipment which can also operate in a non-adaptive mode
• In case of adaptive equipment:
The maximum Channel Occupancy Time implemented by the equipment: ms ☒ The equipment has implemented an LBT mechanism
• In case of non-FHSS equipment: ☐ The equipment is Frame Based equipment ☐ The equipment is Load Based equipment ☐ The equipment can switch dynamically between Frame Based and Load Based equipment - The CCA time implemented by the equipment: μs ☐ The equipment has implemented a DAA mechanism ☐ The equipment can operate in more than one adaptive mode
• In case of non-adaptive Equipment:
The maximum RF Output Power (e.i.r.p.): 6.67 dBm The maximum (corresponding) Duty Cycle: % Equipment with dynamic behaviour, that behaviour is described here. (e.g. the different combinations of duty cycle and corresponding power levels to be declared):
• The worst case operational mode for each of the following tests:
• RF Output Power: GFSK • Power Spectral Density: GFSK • Duty cycle, Tx-Sequence, Tx-gap: • Accumulated Transmit time, Frequency Occupation & Hopping Sequence (only for FHSS equipment): • Hopping Frequency Separation (only for FHSS equipment): • Medium Utilization: N/A • Adaptivity & Receiver Blocking: GFSK • Nominal Channel Bandwidth: 1 MHz • Transmitter unwanted emissions in the OOB domain: GFSK • Transmitter unwanted emissions in the spurious domain: GFSK • Receiver spurious emissions: GFSK
• The different transmit operating modes (tick all that apply):
☒ Operating mode 1: Single Antenna Equipment ☒ Equipment with only one antenna ☐ Equipment with two diversity antennas but only one antenna active at any moment in time ☐ Smart Antenna Systems with two or more antennas, but operating in a (legacy) mode where only one antenna is used (e.g. IEEE 802.11™ legacy mode in smart antenna systems) ☐ Operating mode 2: Smart Antenna Systems - Multiple Antennas without beam forming ☐ Single spatial stream/Standard throughput (e.g. IEEE 802.11™ legacy mode) ☐ High Throughput (> 1 spatial stream) using Nominal Channel Bandwidth 1 ☐ High Throughput (> 1 spatial stream) using Nominal Channel Bandwidth 2
NOTE 1: Add more lines if more channel bandwidths are supported.
☐ Operating mode 3: Smart Antenna Systems - Multiple Antennas with beam forming ☐ Single spatial stream/Standard throughput (e.g. IEEE 802.11™ legacy mode) ☐ High Throughput (> 1 spatial stream) using Nominal Channel Bandwidth 1 ☐ High Throughput (> 1 spatial stream) using Nominal Channel Bandwidth 2

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NOTE 2: Add more lines if more channel bandwidths are supported.

• In case of Smart Antenna Systems:

- The number of Receive chains:
- The number of Transmit chains:
 - ☐ symmetrical power distribution
 - ☐ asymmetrical power distribution

In case of beam forming, the maximum (additional) beam forming gain: dB

NOTE: The additional beam forming gain does not include the basic gain of a single antenna

• Operating Frequency Range(s) of the equipment:

- Operating Frequency Range 1: 2402 MHz to 2480 MHz
- Operating Frequency Range 2: MHz to MHz

NOTE: Add more lines if more Frequency Ranges are supported.

• Nominal Channel Bandwidth(s):

- Nominal Channel Bandwidth 1: 1 MHz
- Nominal Channel Bandwidth 2:
- NOTE: Add more lines if more Frequency Ranges are supported

• Type of Equipment (stand-alone, combined, plug-in radio device, etc.):

- ☒ Stand-alone
- ☐ Combined Equipment
- ☐ Plug-in radio device
- ☐ Other:

• The normal and the extreme operating conditions that apply to the equipment:**Normal operating conditions (if applicable):**

Operating temperature: 25° C

Other (please specify if applicable):

Extreme operating conditions:

Operating temperature range: Minimum: -10 ° C Maximum 45 ° C

Other (please specify if applicable): Minimum: Maximum

Details provided are for the: ☐ stand-alone equipment☐ combined equipment☐ test jig**• The intended combination(s) of the radio equipment power settings and one or more antenna assemblies and their corresponding e.i.r.p. levels:****• Antenna Type:**

- ☒ Integral Antenna (information to be provided in case of conducted measurements)

Antenna Gain: 1. dBi

If applicable, additional beamforming gain (excluding basic antenna gain): dB

☐ Temporary RF connector provided☐ No temporary RF connector provided

- ☐ Dedicated Antennas (equipment with antenna connector)

☐ Single power level with corresponding antenna(s)☐ Multiple power settings and corresponding antenna(s)

Number of different Power Levels:

Power Level 1: dBm

Power Level 2: dBm

Power Level 3: dBm

NOTE 1: Add more lines in case the equipment has more power levels.

NOTE 2: These power levels are conducted power levels (at antenna connector).

• For each of the Power Levels, provide the intended antenna assemblies, their corresponding gains (G) and the resulting e.i.r.p. levels also taking into account the beamforming gain (Y) if applicable

Power Level 1: dBm

Number of antenna assemblies provided for this power level:

Assembly #	Gain (dBi)	e.i.r.p. (dBm)	Part number or model name
1			
2			
3			
4			

NOTE 3: Add more rows in case more antenna assemblies are supported for this power level.

Power Level 2: dBm

Tel: 0755-88850135-1439 Mobile: 131-4343-1439 (Wechat same number)

Web: <http://www.mtitest.cn>E-mail: mti@51mti.com

Address: 101, No. 7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinh Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

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Number of antenna assemblies provided for this power level:

Assembly #	Gain (dBi)	e.i.r.p. (dBm)	Part number or model name
1			
2			
3			
4			

NOTE 4: Add more rows in case more antenna assemblies are supported for this power level.

Power Level 3: dBm

Number of antenna assemblies provided for this power level:

Assembly #	Gain (dBi)	e.i.r.p. (dBm)	Part number or model name
1			
2			
3			
4			

NOTE 5: Add more rows in case more antenna assemblies are supported for this power level.

• The nominal voltages of the stand-alone radio equipment or the nominal voltages of the combined equipment or test jig in case of plug-in devices:

Details provided are for the: ☒ stand-alone equipment

☐ combined equipment

☐ test jig

Supply Voltage ☐ AC mains State AC voltage V

☒ DC State DC voltage 3.87. V

In case of DC, indicate the type of power source

☐ Internal Power Supply

☐ External Power Supply or AC/DC adapter

☒ Battery

☐ Other:

• Describe the test modes available which can facilitate testing:
• The equipment type (e.g. Bluetooth®, IEEE 802.11™, IEEE 802.15.4™, proprietary, etc.):
Bluetooth®
• If applicable, the statistical analysis referred to in clause 5.4.1 q)

(to be provided as separate attachment)

• If applicable, the statistical analysis referred to in clause 5.4.1 r)

(to be provided as separate attachment)

• Geo-location capability supported by the equipment:
☐ Yes

☐ The geographical location determined by the equipment as defined in clause 4.3.1.13.2 or clause 4.3.2.12.2 is not accessible to the user

☒ No

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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 *****