

Report No.: 22081154HKG-002

CHENGHAI XIONGFAHANG TOYS AND CRAFTS FACTORY

Japan RF Law Type Approval- 2.4GHz Band Wideband Low-power Data Communication System (WWA)

Prepared and Checked by:

Approved by:

Signed On File
Chan Hin Man, Oscar
Assistant Engineer

Lee Shui Tim, Tim
Assistant Manager
Date: 13 Sep 2022

TEST REPORT

OTHER DIGITAL MODULATION OF CONTENTS

1.0	GENERAL INFORMATION	3
2.0	TEST RESULTS SUMMARY FOR JAPANESE CERTIFICATION	4
3.0	MEASUREMENT RESULTS.....	5
3.1	FREQUENCY TOLERANCE.....	5
3.2	OCCUPIED BANDWIDTH.....	7
3.3	SPREADING BANDWIDTH.....	9
3.4	SPREADING RATE CALCULATION.....	10
3.5	SPURIOUS STRENGTH.....	11
3.6	COLLATERAL EMISSION STRENGTH.....	17
3.7	DWELL TIME	20
3.8	MEASUREMENT OF THE APPLIED VOLTAGE TO RF IC.....	21
3.9	CONDUCTED OUTPUT POWER OF DIFFERENT DATA RATE.....	22
4.0	EQUIPMENT LIST	23
5.0	EQUIPMENT PHOTOGRAPHS	24

TEST REPORT

1.0 GENERAL INFORMATION

Report No.:	22081154HKG-002																																																																																								
Company:	CHENGHAI XIONGFAHANG TOYS AND CRAFTS FACTORY Fengxin 1st Road , Fengxiang Street, Shantou City, Guangdong Province, China.																																																																																								
Equipment Under Test (EUT):																																																																																									
Product Description:	GEAR'D UP 9RC																																																																																								
Model:	GEAR’ D UP SPRAY DRIFT CAR – RX																																																																																								
Brand Name:	Not Applicable																																																																																								
Sample No.:	One																																																																																								
Sample Receipt Date:	15 Jun 2022																																																																																								
Test Conducted Date:	15 Jun 2022 to 13 Sep 2022																																																																																								
Issue Date:	13 Sep 2022																																																																																								
Test Site Location:	Workshop No. 3, G/F., World-Wide Industrial Centre, 43-47 Shan Mei Street, Fo Tan, Sha Tin, N.T., Hong Kong SAR, China.																																																																																								
Classification Of Specified Radio Equipment:	Article 2 Clause 1 Item 19																																																																																								
Type Of Emissions, Frequency and Declaration Output Power to Be Tested:	F1D 2410-2473MHz (32 channels) 0.04mW <table><tr><th>Chan nel</th><th>Frequency (MHz)</th><th>Chan nel</th><th>Frequency (MHz)</th><th>Channel</th><th>Frequ ncy (MHz)</th><th>Channe l</th><th>Frequ ncy (MHz)</th></tr><tr><td>1</td><td>2410</td><td>11</td><td>2429</td><td>21</td><td>2450</td><td>31</td><td>2469</td></tr><tr><td>2</td><td>2414</td><td>12</td><td>2430</td><td>22</td><td>2452</td><td>32</td><td>2473</td></tr><tr><td>3</td><td>2415</td><td>13</td><td>2431</td><td>23</td><td>2454</td><td></td><td></td></tr><tr><td>4</td><td>2416</td><td>14</td><td>2433</td><td>24</td><td>2456</td><td></td><td></td></tr><tr><td>5</td><td>2417</td><td>15</td><td>2434</td><td>25</td><td>2458</td><td></td><td></td></tr><tr><td>6</td><td>2418</td><td>16</td><td>2439</td><td>26</td><td>2462</td><td></td><td></td></tr><tr><td>7</td><td>2419</td><td>17</td><td>2441</td><td>27</td><td>2464</td><td></td><td></td></tr><tr><td>8</td><td>2421</td><td>18</td><td>2442</td><td>28</td><td>2465</td><td></td><td></td></tr><tr><td>9</td><td>2426</td><td>19</td><td>2444</td><td>29</td><td>2466</td><td></td><td></td></tr><tr><td>10</td><td>2428</td><td>20</td><td>2446</td><td>30</td><td>2467</td><td></td><td></td></tr></table>	Chan nel	Frequency (MHz)	Chan nel	Frequency (MHz)	Channel	Frequ ncy (MHz)	Channe l	Frequ ncy (MHz)	1	2410	11	2429	21	2450	31	2469	2	2414	12	2430	22	2452	32	2473	3	2415	13	2431	23	2454			4	2416	14	2433	24	2456			5	2417	15	2434	25	2458			6	2418	16	2439	26	2462			7	2419	17	2441	27	2464			8	2421	18	2442	28	2465			9	2426	19	2444	29	2466			10	2428	20	2446	30	2467		
Chan nel	Frequency (MHz)	Chan nel	Frequency (MHz)	Channel	Frequ ncy (MHz)	Channe l	Frequ ncy (MHz)																																																																																		
1	2410	11	2429	21	2450	31	2469																																																																																		
2	2414	12	2430	22	2452	32	2473																																																																																		
3	2415	13	2431	23	2454																																																																																				
4	2416	14	2433	24	2456																																																																																				
5	2417	15	2434	25	2458																																																																																				
6	2418	16	2439	26	2462																																																																																				
7	2419	17	2441	27	2464																																																																																				
8	2421	18	2442	28	2465																																																																																				
9	2426	19	2444	29	2466																																																																																				
10	2428	20	2446	30	2467																																																																																				
Modulation Method:	GFSK																																																																																								
Environmental Conditions:	Temperature: +5 to +35°C Humidity: 45 to 85%																																																																																								
Testing Conditions:	Temperature: +21°C Humidity: 58%																																																																																								
Test Category:	2.4GHZ Band Wideband Low-Power Data Communication System																																																																																								
Antenna Gain:	0dBi																																																																																								
Test Requirement:	MIC Test Procedure #43																																																																																								
Test Result:	Pass																																																																																								
Remark:	This test report is issued to the Company indicated based on the request of the Applicant of the product mentioned in this report.																																																																																								

TEST REPORT

2.0 TEST RESULTS SUMMARY FOR JAPANESE CERTIFICATION

CHENGHAI XIONGFAHANG TOYS AND CRAFTS FACTORY

Model: GEAR' D UP SPRAY DRIFT CAR – RX

(GFSK)

Test Item	limit	unit	3.7 VDC			Judgment
Frequency	NA	MHz	2410.0	2442.0	2473.0	
Frequency Error	50	ppm	-1.493775934	-2.457002457	-1.698342095	ok
Occupied Bandwidth	26	MHz	1.98	2.16	2.04	ok
Spreading Bandwidth	NA	kHz				ok
Spreading factor	NA	-				ok
Spurious						
30~1000 MHz	-26	dBm/MHz	-59.85709381	-56.49172211	-68.1723175	ok
		MHz	914.64	910.76	35.82	
1000~2387 MHz	-26	dBm/MHz	-53.40173721	-52.39063644	-49.87880325	ok
		MHz	1768.398	1768.398	1762.85	
2387~2400 MHz	-16	dBm/MHz	-46.74030304	-61.52513504	-62.15087128	ok
		MHz	2389.678	2398.154	2390.51	
2483.5~2496.5 MHz	-16	dBm/MHz	-62.59988403	-61.3860817	-51.6114006	ok
		MHz	2494.784	2490.26	2487.322	
2496.5~4000 MHz	-26	dBm/MHz	-60.97839737	-64.93417358	-58.48210526	ok
		MHz	2538.598	2535.591	2541.605	
4000~12500 MHz	-26	dBm/MHz	-64.45851898	-64.22866058	-60.78693008	ok
		MHz	10817	11531	5530	
Rated Power	0.04	mW				ok
Antenna Power		mW	0.023496328	0.025585859	0.026424088	ok
	+20/-80	%	-41.3	-36.0	-33.9	
ERIP Antenna Gain: 0 dBi	12.14	dBm	-16.29	-15.92	-15.78	ok
Collateral emission						
30~1000 MHz	-54	dBm/MHz	-66.53227997	-69.38	-54.44824219	ok
		MHz	47.46	62.98	912.7	
1000~3000 MHz	-47	dBm/MHz	-47.98	-47.49	-47.26	ok
		MHz	2412	2444	2476	
3000~6000 MHz	-47	dBm/MHz	-56.66515732	-55.4	-56.14558411	ok
		MHz	3066	3330	3060	
6000~12500 MHz	-47	dBm/MHz	-54.59599686	-56.68	-53.54464722	ok
		MHz	10888	10069	10212	
System: ID	yes		complies			ok
System: Carrier Sense	na					-
System: DFS	na					

Note:

Measurement was conducted by the following test method:

MIC Annex 43 or the test method more than equivalent. The test is performed only at 3.7VDC because the voltage variation to EUT is less than 1% (see details in Item 3.8).

The data rate to be measured was selected by finding the maximum power at 3.1

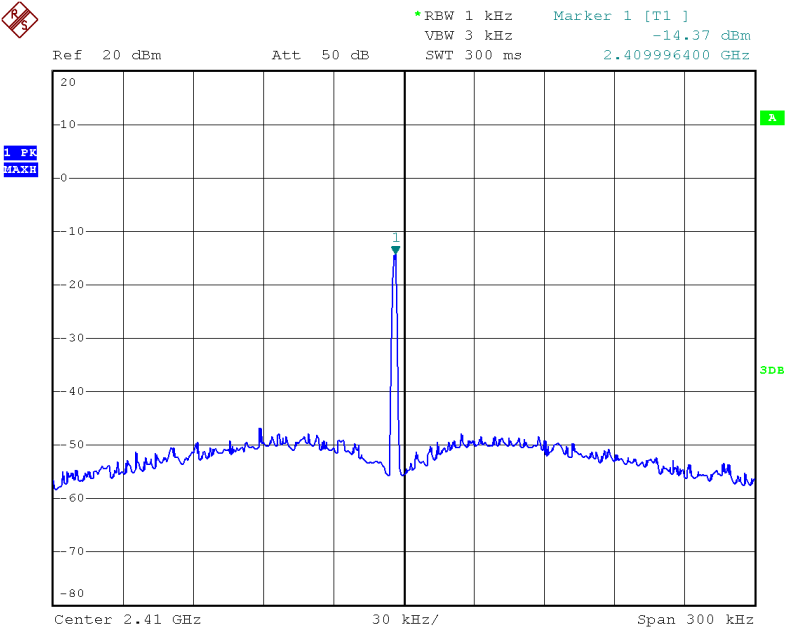
TEST REPORT

3.0 MEASUREMENT RESULTS

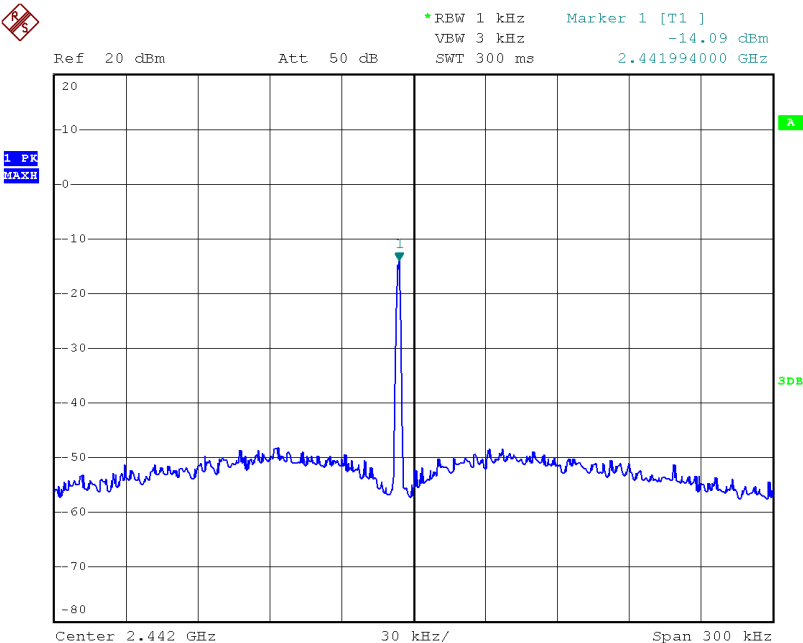
3.1 Frequency Tolerance

3.1.1 Modulation Type: un-modulation

2410MHz

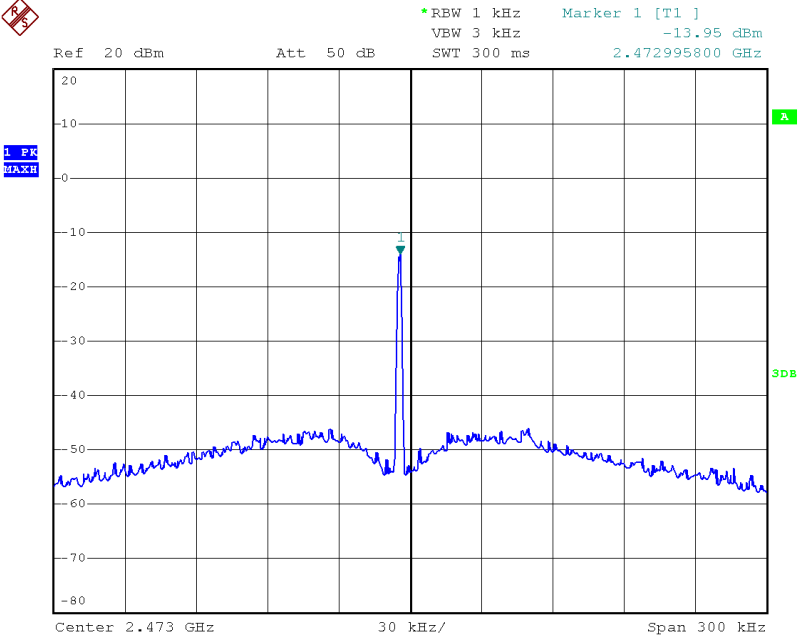


2442MHz



TEST REPORT

2473MHz



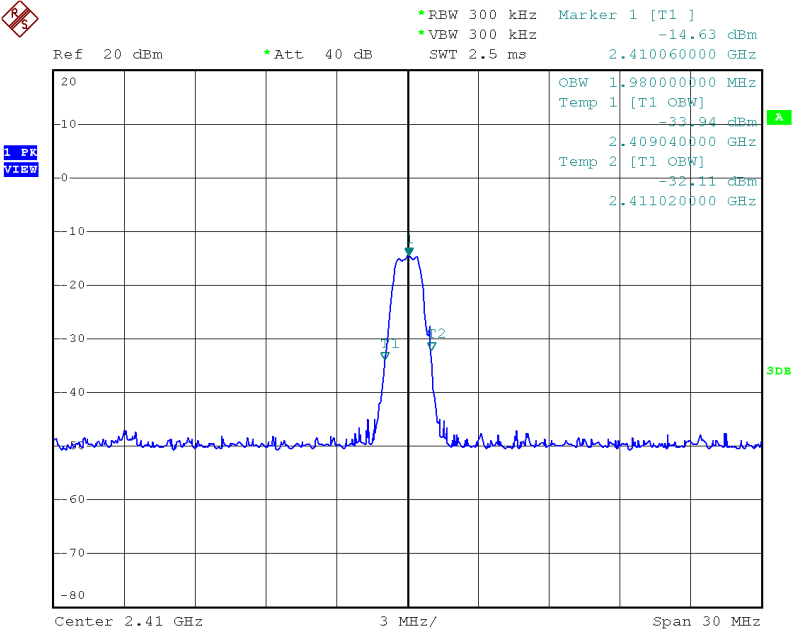
Note: Conducted measurement was preformed for this test.
Japanese Regulation:
Frequency Tolerance shall be within +/-50ppm.

TEST REPORT

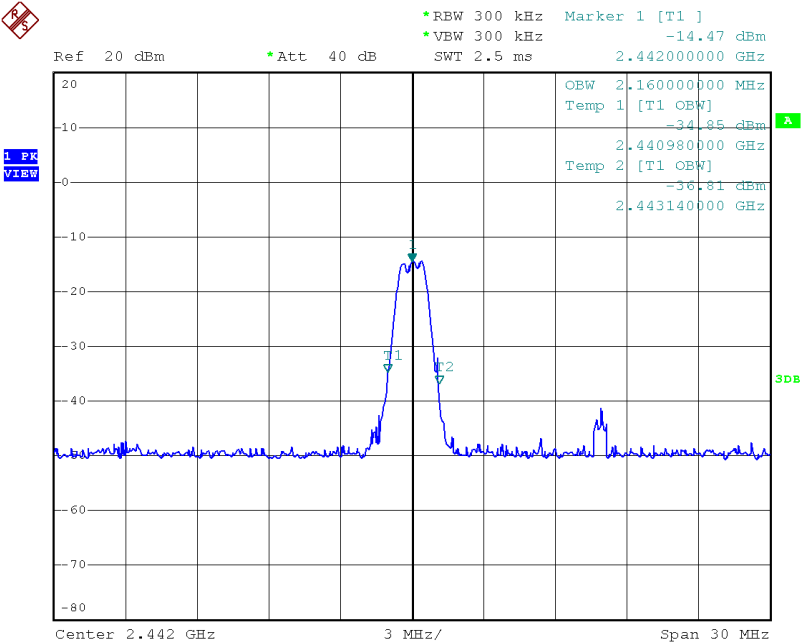
3.2 Occupied Bandwidth

3.2.1 Modulation Type: GFSK

2410MHz

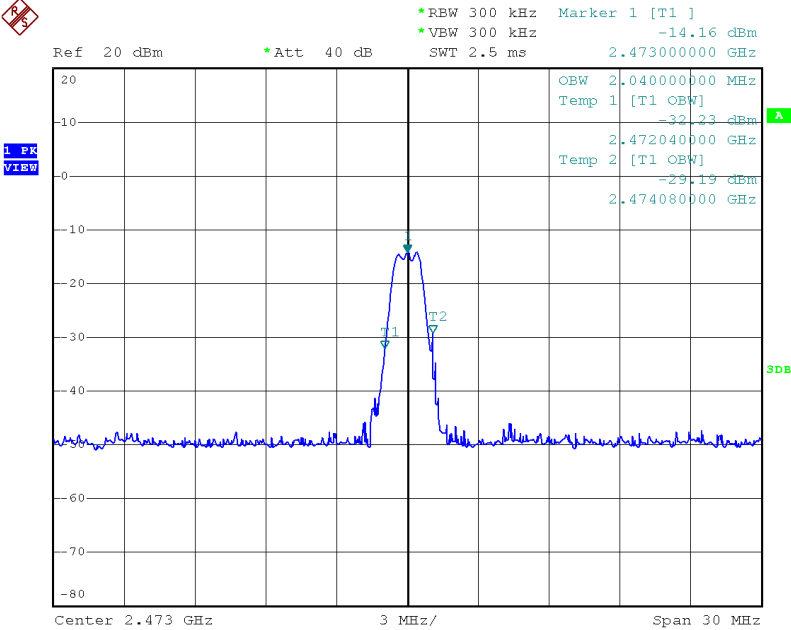


2442MHz



TEST REPORT

2473MHz



Note: Conducted measurement was preformed for this test.
Japanese Regulation:
Occupied Bandwidth shall be 26 MHz or below.

TEST REPORT

3.3 Spreading Bandwidth

NA

TEST REPORT

3.4 Spreading Rate Calculation

NA

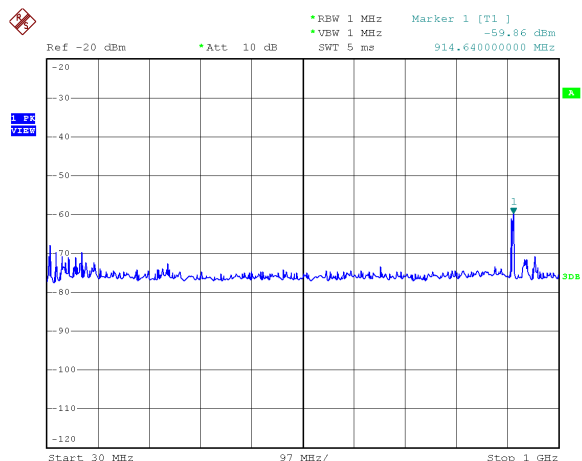
TEST REPORT

3.5 Spurious Strength

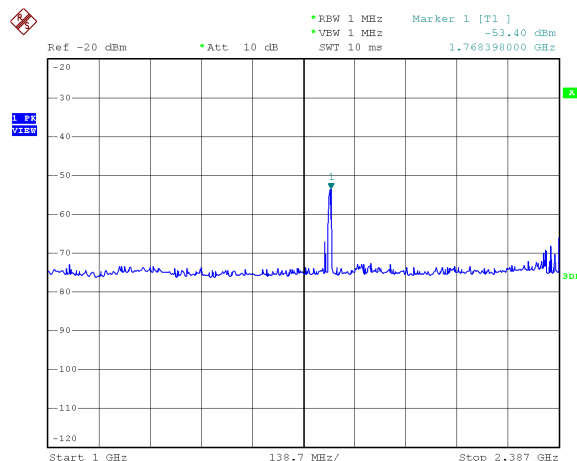
3.5.1 Modulation Type: GFSK

Channel: 2410MHz

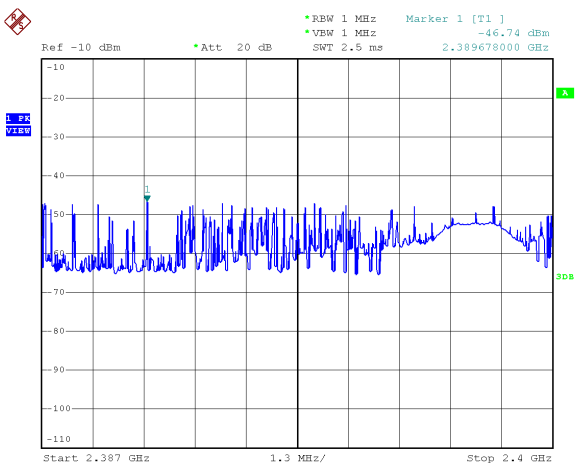
Antenna: Ant 0



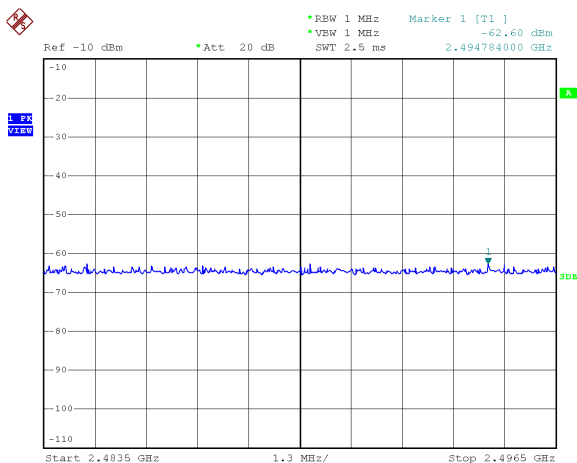
30-1000MHz



1000-2387MHz

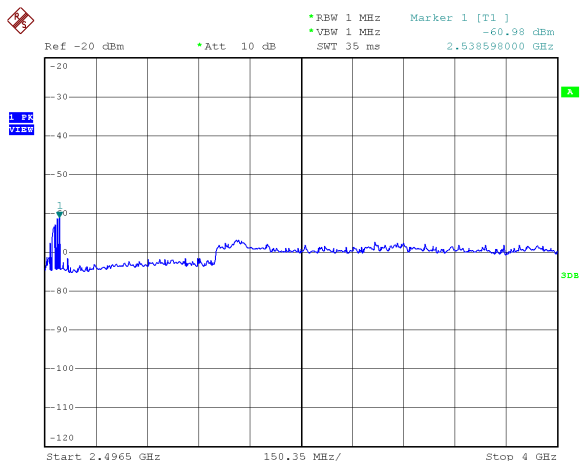


2387-2400MHz

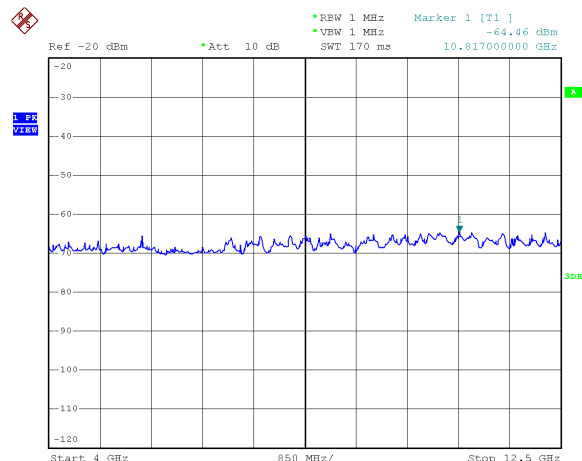


2483.5-2496.5MHz

TEST REPORT



2496.5MHz-4GHz



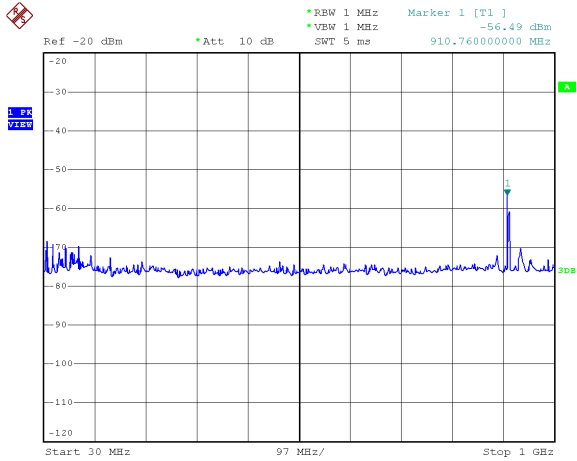
4-12.5GHz

Note:

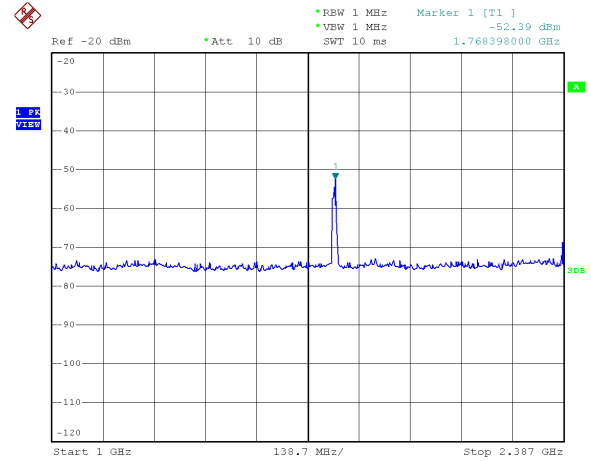
1. Negative sign (-) in the margin column signify levels below the limit.
2. Other emissions found were at least 10 dB below the limit at the measurement range.
3. -16.0dBm corresponds to 25uW.
4. -26.0dBm corresponds to 2.5uW.
5. Measurement uncertainty is ± 5.3 dB at a level of confidence of 95%.
6. Test results are compensated by GFSK.
7. Conducted measurement was performed for this test.

TEST REPORT

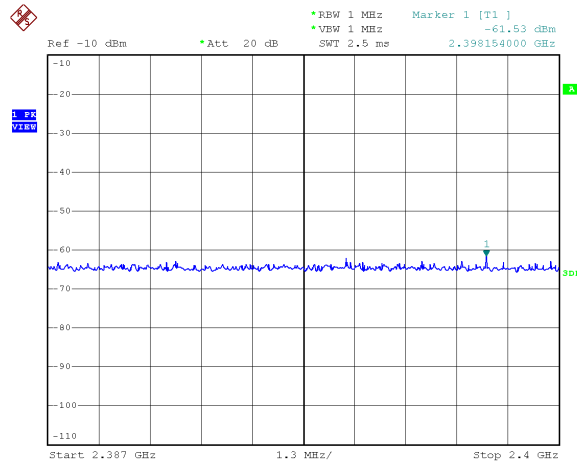
3.5.2 Modulation Type: GFSK
Channel: 2442MHz
Antenna: Ant 0



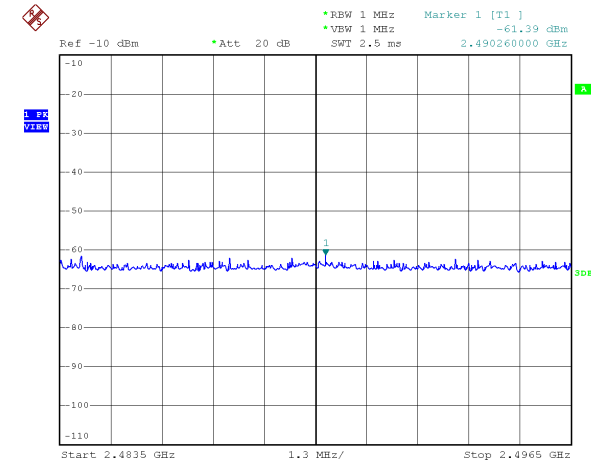
30-1000MHz



1000-2387MHz

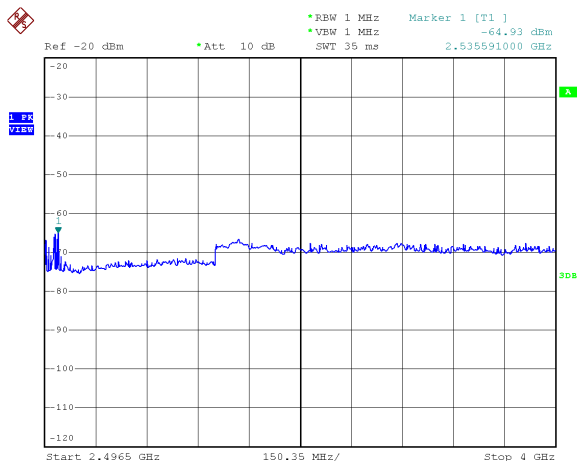


2387-2400MHz

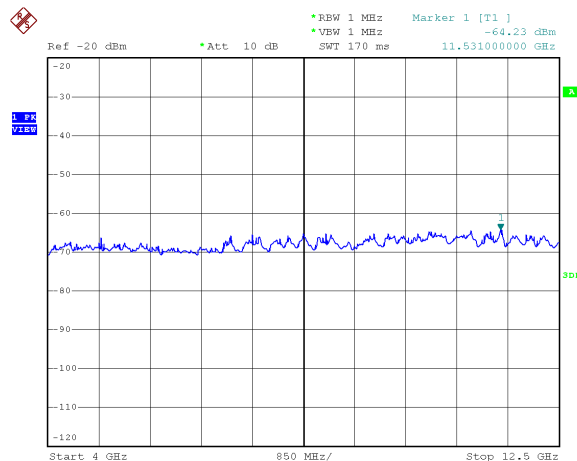


2483.5-2496.5MHz

TEST REPORT



2496.5MHz-4GHz



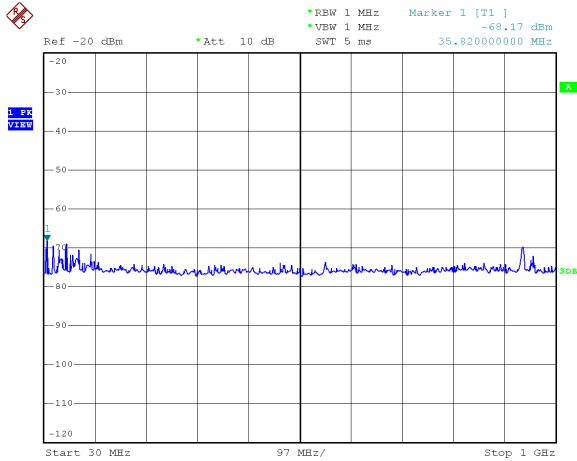
4-12.5GHz

Note:

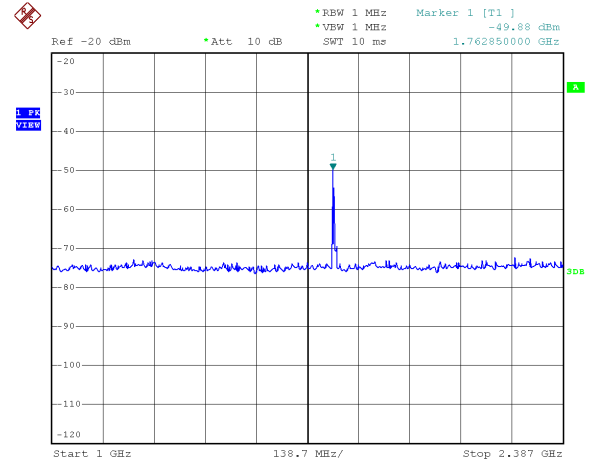
1. Negative sign (-) in the margin column signify levels below the limit.
2. Other emissions found were at least 10 dB below the limit at the measurement range.
3. -16.0dBm corresponds to 25uW.
4. -26.0dBm corresponds to 2.5uW.
5. Measurement uncertainty is ± 5.3 dB at a level of confidence of 95%.
6. Test results are compensated by GFSK.
7. Conducted measurement was performed for this test.

TEST REPORT

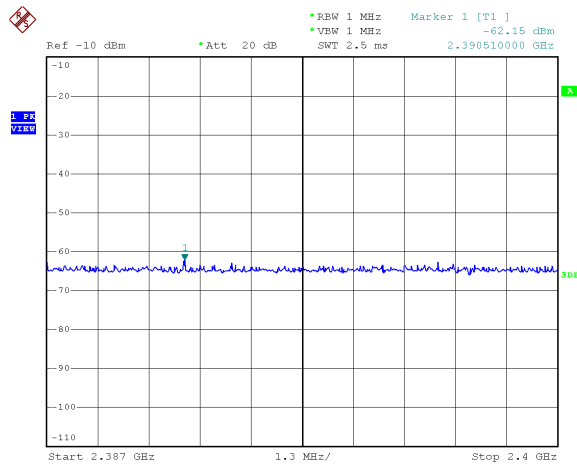
3.5.3 Modulation Type: GFSK
Channel: 2473MHz
Antenna: Ant 0



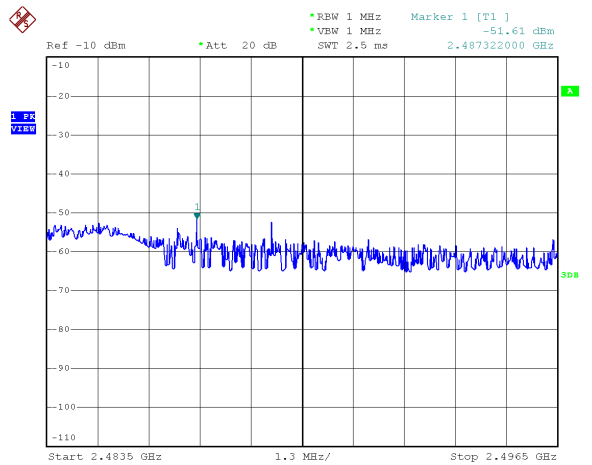
30-1000MHz



1000-2387MHz

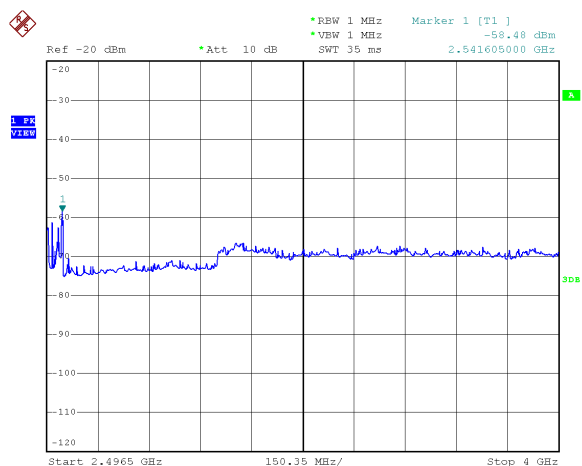


2387-2400MHz

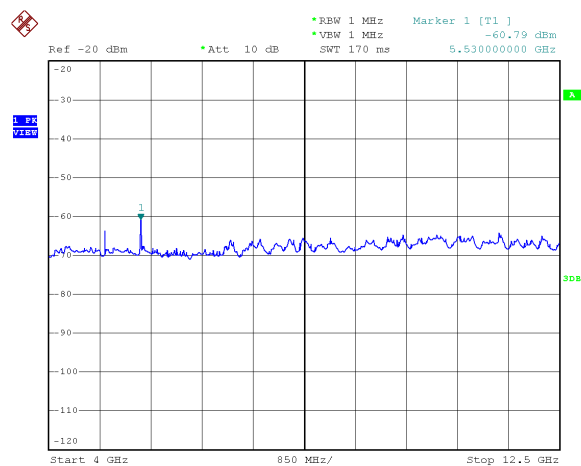


2483.5-2496.5MHz

TEST REPORT



2496.5MHz-4GHz



4-12.5GHz

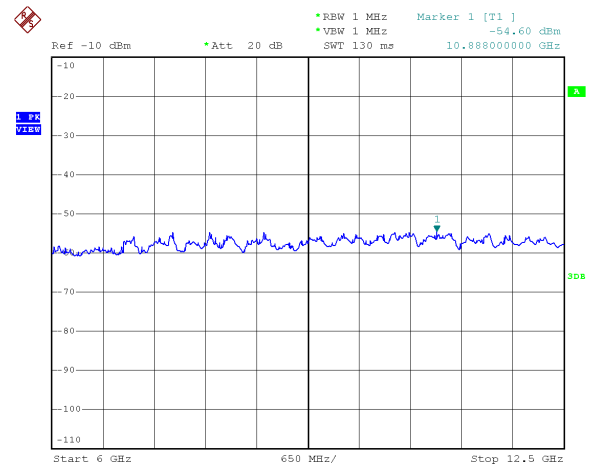
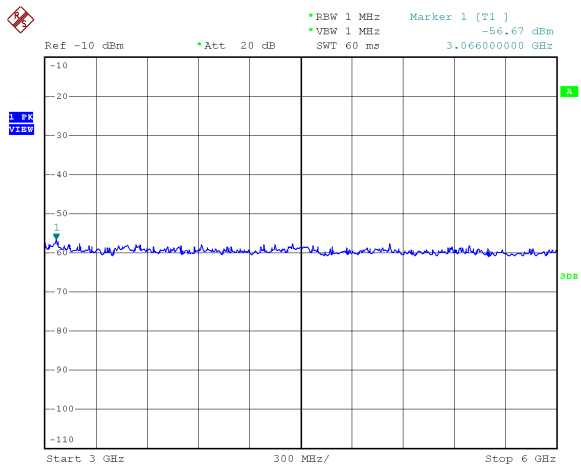
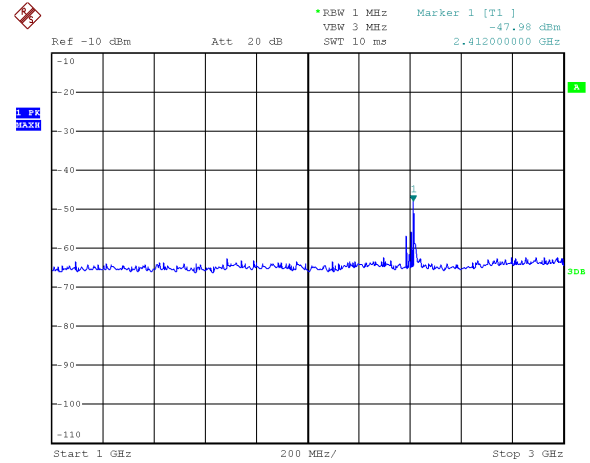
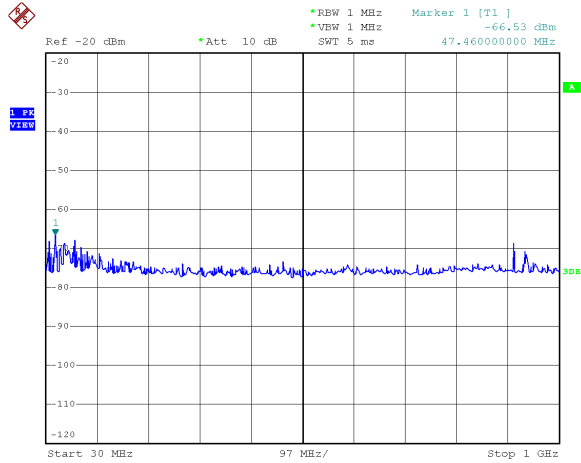
Note:

1. Negative sign (-) in the margin column signify levels below the limit.
2. Other emissions found were at least 10 dB below the limit at the measurement range.
3. -16.0dBm corresponds to 25uW.
4. -26.0dBm corresponds to 2.5uW.
5. Measurement uncertainty is ± 5.3 dB at a level of confidence of 95%.
6. Test results are compensated by GFSK.
7. Conducted measurement was performed for this test.

TEST REPORT

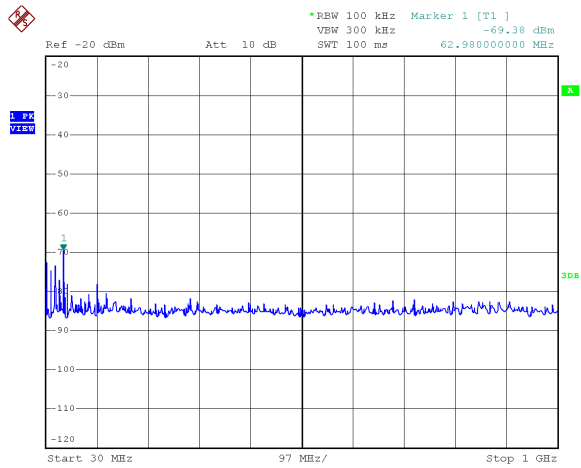
3.6 Collateral Emission Strength

3.6.1 Modulation Type: GFSK Channel: 2410MHz

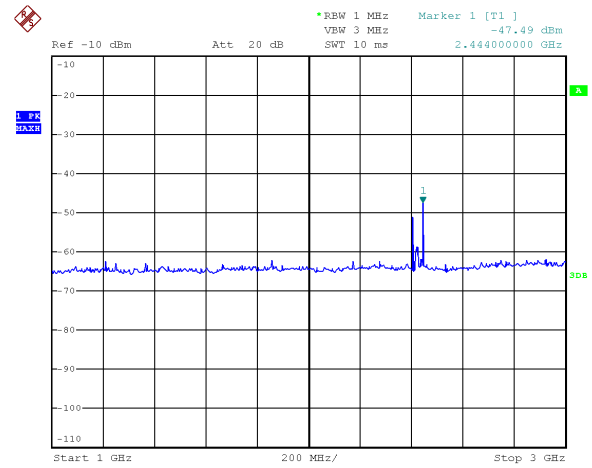


TEST REPORT

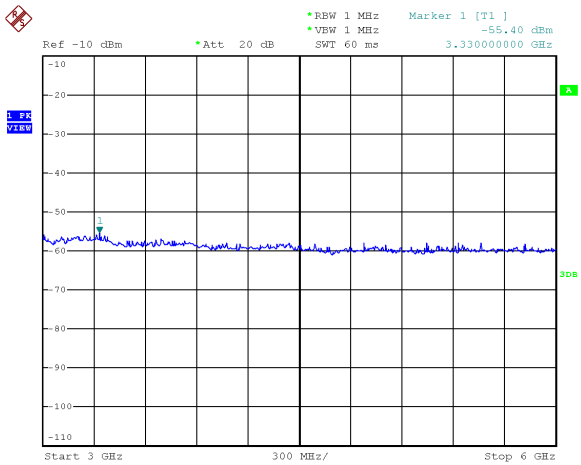
3.6.2 Modulation Type: GFSK Channel: 2442MHz



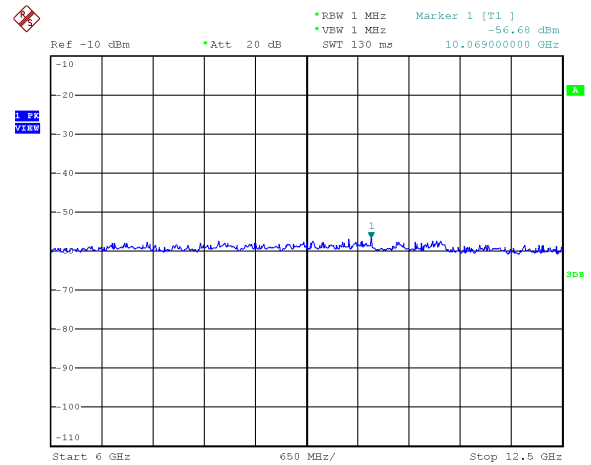
30-1000MHz



1000-3000MHz



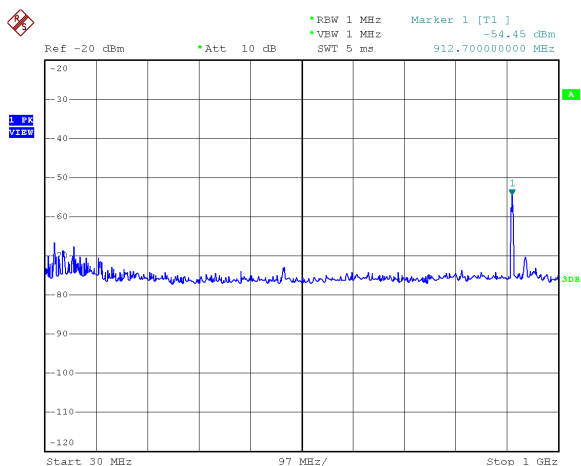
3000-6000MHz



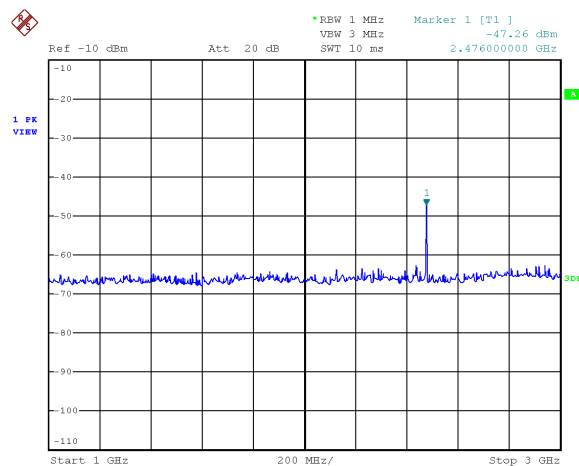
6000-12500MHz

TEST REPORT

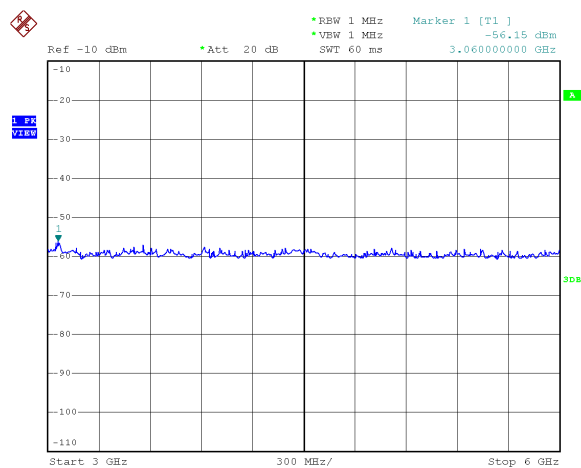
3.6.3 Modulation Type: GFSK Channel: 2473MHz



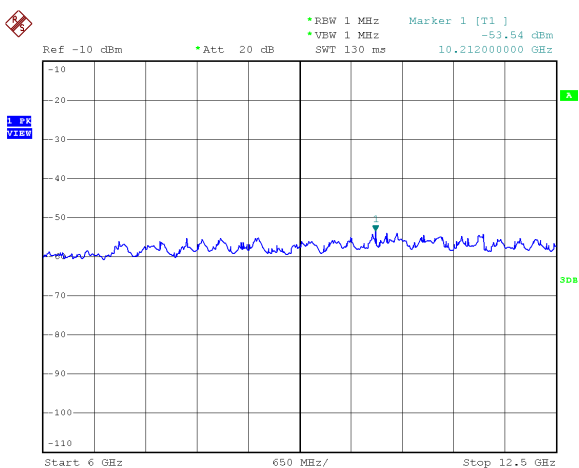
30-1000MHz



1000-3000MHz



3000-6000MHz



6000-12500MHz

Note:

1. Negative sign (-) in the margin column signify levels below the limit.
2. Other emissions found were at least 10 dB below the limit at the measurement range.
3. -54.0dBm corresponds to 4nW.
4. -47.0dBm corresponds to 20nW.
5. Measurement uncertainty is ± 5.3 dB at a level of confidence of 95%.
6. Test results are compensated by GFSK
7. Conducted measurement was performed for this test.

TEST REPORT

3.7 Dwell Time

NA

TEST REPORT

3.8 Measurement of the Applied Voltage to RF IC

This item is to measure the applied voltage to RF IC when the input voltage to the EUT(3.7V) is changed by +/-10%

Aims: Confirm the voltage change of the applied voltage to RF IC is less than 1% when the input voltage to the EUT is changed by +/-10%.

Nominal voltage input: to EUT: 3.7VDC

Nominal voltage DC voltage to RFIC: 3.0VDC

Voltage to the EUT (VDC)	Applied voltage to RF IC (VDC)	Voltage change (%)	Result
3.33	3.0	0.0%	Pass
3.70	3.0	0.0%	Pass
4.07	3.0	0.0%	Pass

Conclusion: It has been confirmed the change of the applied voltage to RF IC is less than 1% when the nominal input voltage to EUT is changed by +/- 10%. The MIC test procedure allows to test only at the nominal voltage only when this requirement is met.

TEST REPORT

3.9 Conducted Output Power of Different Data Rate

NA

TEST REPORT

4.0 EQUIPMENT LIST

Equipment	Signal Generator	Spectrum Analyzer	Wideband Power Sensor (50MHz - 18GHz)
Registration No.	EW-2985	EW-2466	EW-3309
Manufacturer	ROHDESCHWARZ	ROHDESCHWARZ	ROHDESCHWARZ
Model No.	SMB100A	FSP30	NRP-Z81
Serial number	107790	101076	104375
Calibration Date	15 Oct 2021	29 Oct 2021	01 Dec 2021
Calibration Due Date	15 Oct 2022	29 Oct 2022	01 Dec 2022
Calibration Authority	R&S Germany	R&S Germany	R&S Germany
Calibration Lab	HOKLAS	CNAS	DAkKS

TEST REPORT

5.0 EQUIPMENT PHOTOGRAPHS

