

TEST REPORT

Report No.: 22050518HKG-001

IMC TOYS HONG KONG LTD.

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: 15 Jun 2022

TEST REPORT

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TEST REPORT

1.0 GENERAL INFORMATION

Report No.:	22050518HKG-001
Applicant:	IMC Toys Hong Kong Ltd. Room 805B-808B1, 8/F., Empire Centre, 68 Mody Road, Tsim Sha Tsui East, Kowloon, Hong Kong.
Equipment Under Test (EUT):	
Product Description:	WALKIE TALKIE MINIONS (375048), FROZEN 2 ELSA & ANNA WALKIE TALKIE (16644), TOY STORT WALKIE TALKIE (141100), AVENGERS WALKIE TALKIE FACE (390089), SPIDERMAN WALKIE TALKIE FACE(551435)
Model:	375048
Additional Model:	16644, 141100, 390089, 551435
Brand Name:	Not Applicable
Sample No.:	One
Sample Receipt Date:	12 May 2022
Test Conducted Date:	12 May 2022 to 15 Jun 2022
Issue Date:	15 Jun 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 2407-2477MHz (1MHz interval 71 channels) 0.02mW
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:	-5.51dBi
Test Requirement:	MIC Test Procedure #43
Test Result:	Pass
Remark:	This report covers the module only. The Models: 16644, 141100, 390089 and 551435 are the same as the Model: 375048 in hardware aspect. The models are different in model number, item name, color, packaging and non-conductive accessories only as declared by client.

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2.0 TEST RESULTS SUMMARY FOR JAPANESE CERTIFICATION

IMC Toys Hong Kong Ltd.
Model: 375048
(Other digital modulation)

Test Item	limit	unit	4.5 VDC			Judgment
Frequency	NA	MHz	2407.00	2443.00	2477.00	
Frequency Error	50	ppm	16.95056086	16.70077773	17.19822366	ok
Occupied Bandwidth	26	MHz	5.1	6.1	3.4	ok
Spreading Bandwidth	NA	kHz				ok
Spreading factor	NA	-				ok
Spurious						
30~1000 MHz	-26	dBm/MHz	-53.25683594	-58.09358215	-29.52429008	ok
		MHz	901.06	901.06	887.48	
1000~2387 MHz	-26	dBm/MHz	-54.32060242	-65.17649841	-49.15051651	ok
		MHz	1898.776	2384.226	1898.776	
2387~2400 MHz	-16	dBm/MHz	-39.87165451	-39.92211151	-62.46201706	ok
		MHz	2394.878	2394.748	2392.226	
2483.5~2496.5 MHz	-16	dBm/MHz	-61.29362106	-52.34836578	-39.86208725	ok
		MHz	2487.374	2483.63	2483.76	
2496.5~4000 MHz	-26	dBm/MHz	-64.91937256	-64.56302643	-40.24308395	ok
		MHz	3290.348	3230.208	2532.584	
4000~12500 MHz	-26	dBm/MHz	-58.94472122	-62.0154686	-60.78816605	ok
		MHz	4816	4884	4952	
Rated Power	0.02	mW				ok
Antenna Power		mW	0.015	0.016	0.017	ok
	+20/-80	%	-25.0	-20.0	-15.0	
ERIP Antenna Gain: -5.51 dBi	12.14	dBm	-23.74908741	-23.46880017	-23.20551079	ok
Collateral emission						
30~1000 MHz	-54	dBm/MHz	-56.80411911	-56.01952362	-55.25113678	ok
		MHz	901.06	901.06	901.06	
1000~3000 MHz	-47	dBm/MHz	-53.61337662	-55.57720184	-54.68848419	ok
		MHz	2424	1896	1896	
3000~6000 MHz	-47	dBm/MHz	-54.87456512	-55.19253922	-55.24081039	ok
		MHz	3204	3204	3348	
3000~12500 MHz	-47	dBm/MHz	-56.11669922	-56.41865158	-56.42477798	ok
		MHz	12045	10459	10433	
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. Test is performed only at 4.5VDC because the voltage variation to EUT is less than 1% (see details in Item 3.9).

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

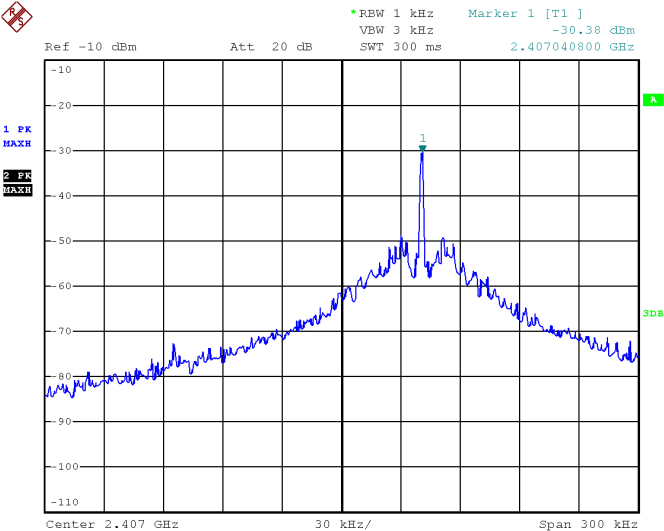
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3.0 MEASUREMENT RESULTS

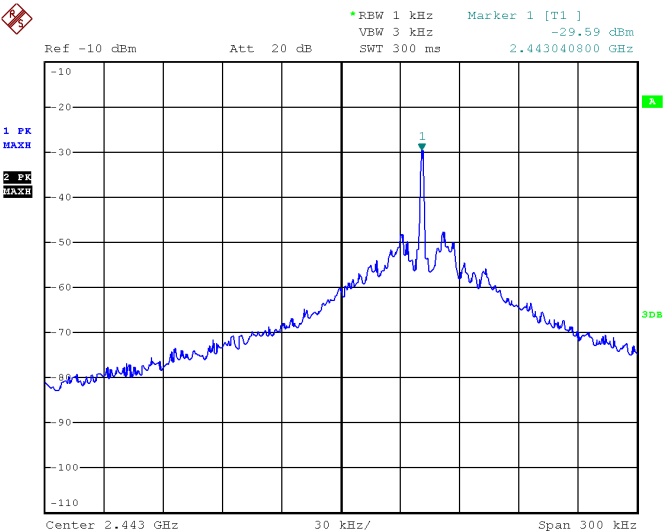
3.1 Frequency Tolerance

3.1.1 Modulation Type: un-modulation

2407MHz

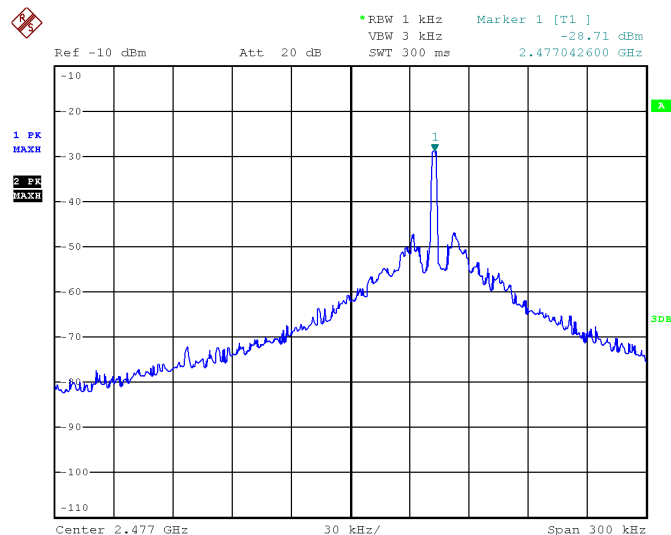


2443MHz



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2477MHz



Note: Conducted measurement was preformed for this test.

Japanese Regulation:

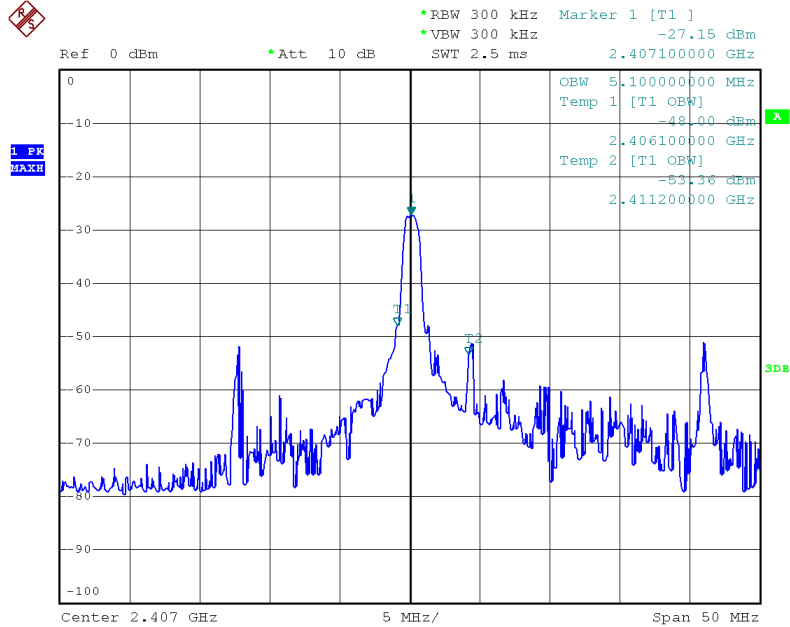
Frequency Tolerance shall be within +/-50ppm.

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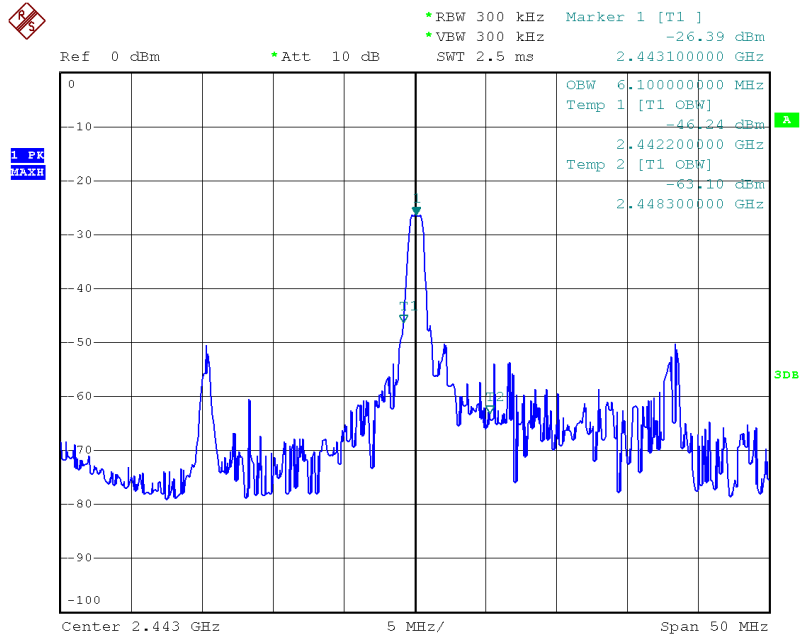
3.2 Occupied Bandwidth

3.2.1 Modulation Type: Other digital modulation

2407MHz

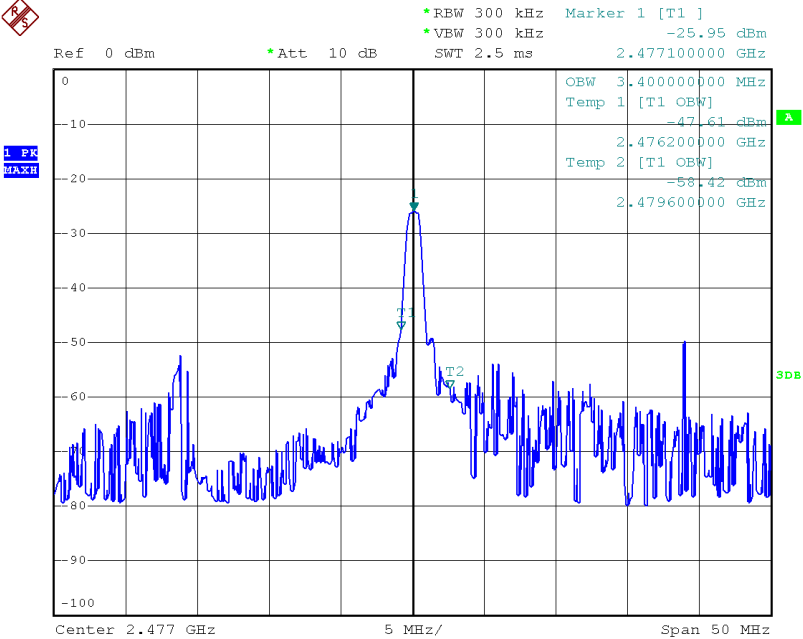


2443MHz



TEST REPORT

2477MHz

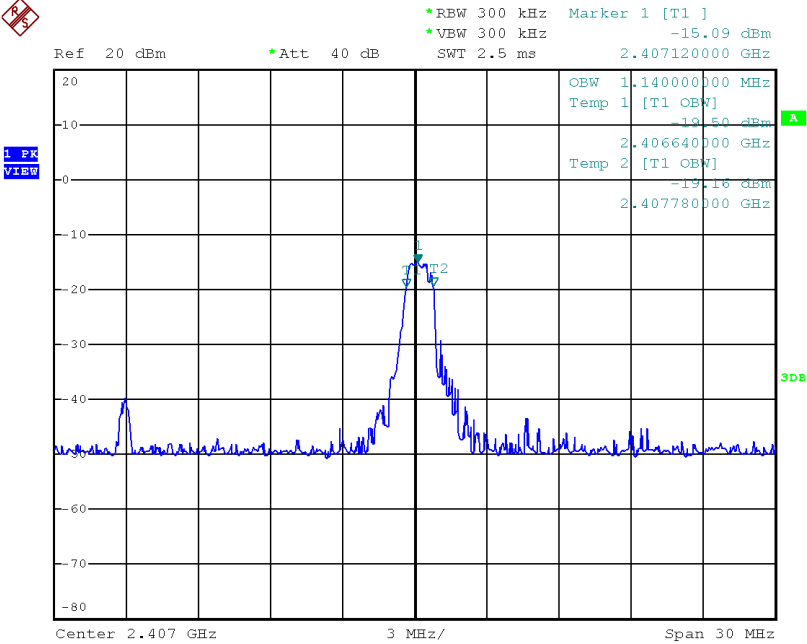


Note: Conducted measurement was preformed for this test.
Japanese Regulation:
Occupied Bandwidth shall be 26 MHz or below.

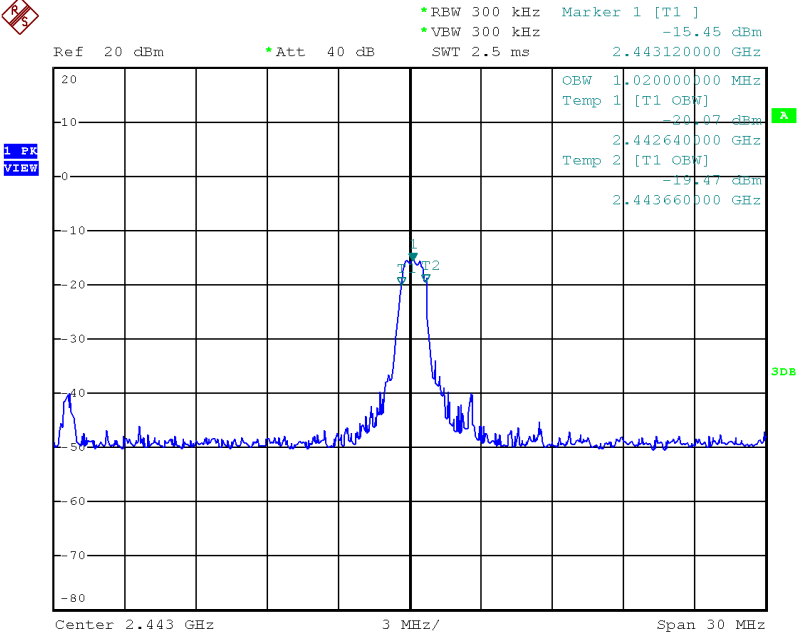
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3.3 Spreading Bandwidth

2407MHz

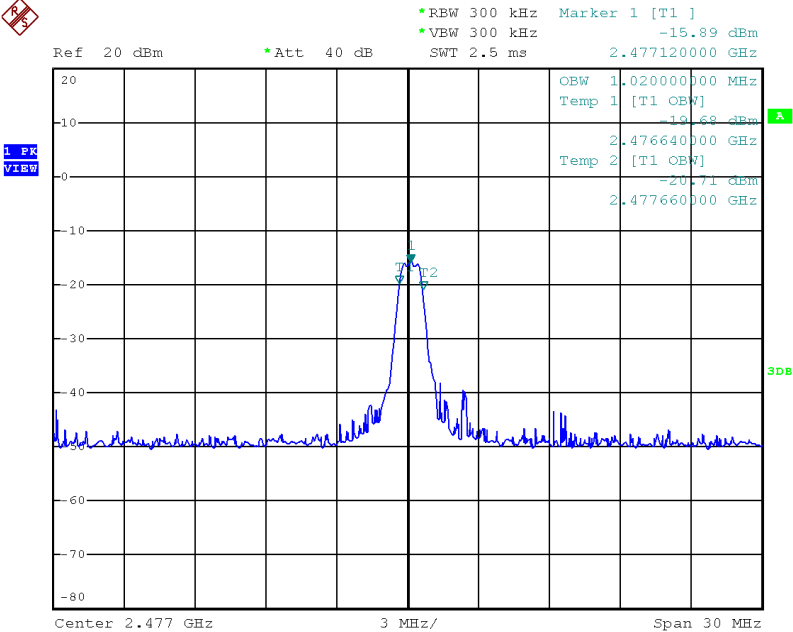


2443MHz



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2477MHz



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3.4 Spreading Rate Calculation

NA

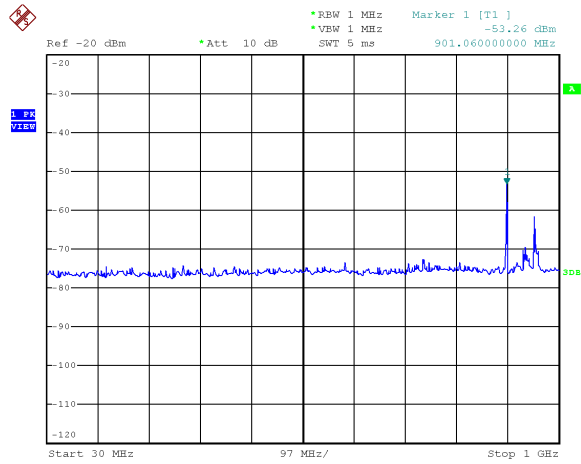
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3.5 Spurious Strength

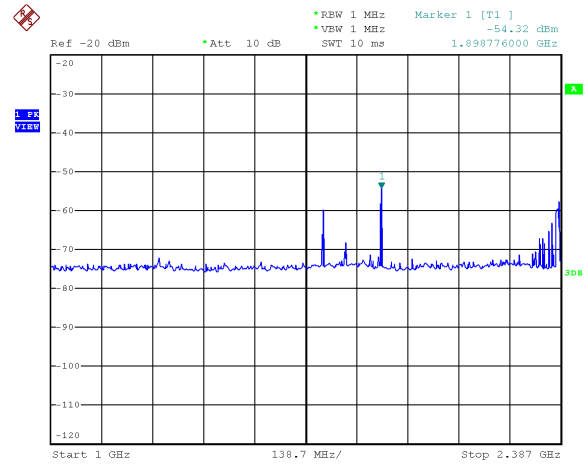
3.5.1 Modulation Type: OTHER DIGITAL MODULATION

Channel: 2407MHz

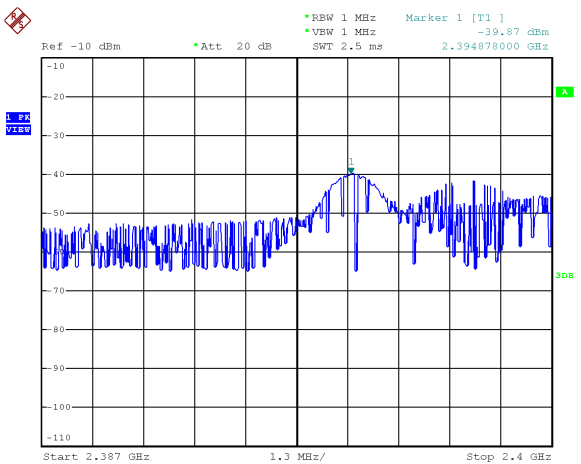
Antenna: Ant 0



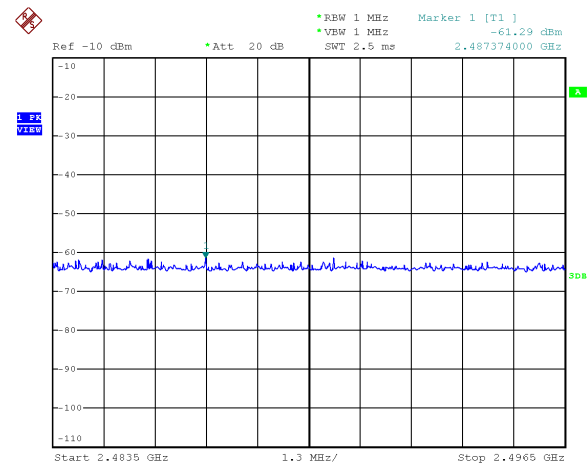
30-1000MHz



1000-2387MHz

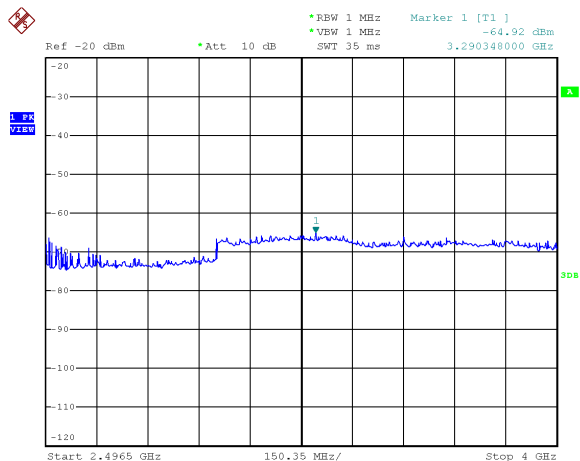


2387-2400MHz

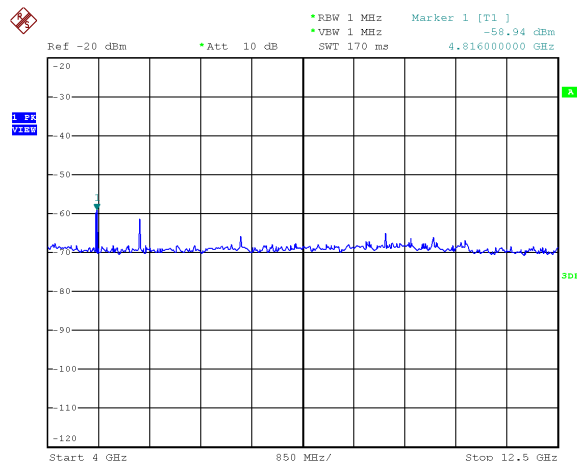


2483.5-2496.5MHz

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2496.5MHz-4GHz



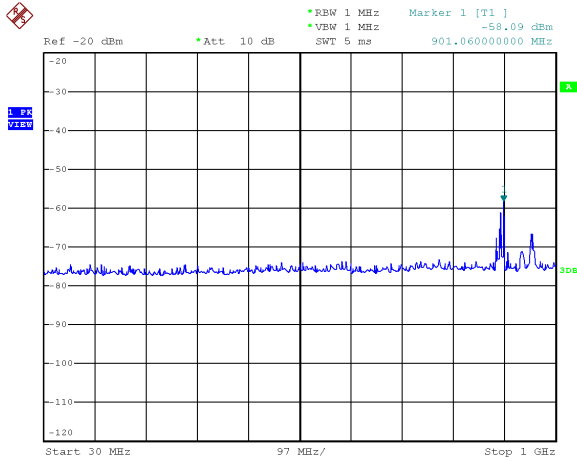
4-12.5GHz

Note:

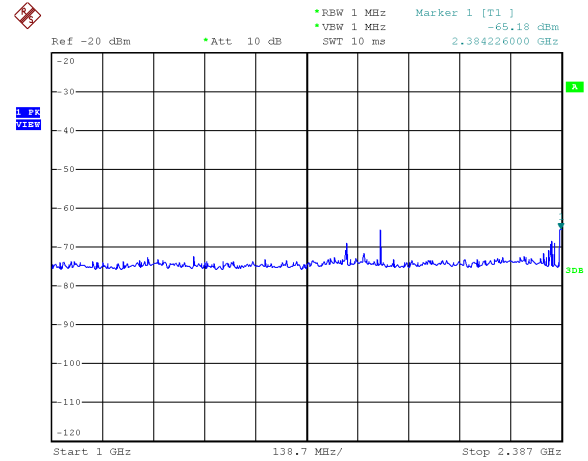
1. Negative sign (-) in the margin column signify levels below the limit.
2. Other emissions found were at least 10 dB below the limit at the measurement range.
3. -16.0dBm corresponds to 25uW.
4. -26.0dBm corresponds to 2.5uW.
5. Measurement uncertainty is ± 5.3 dB at a level of confidence of 95%.
6.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

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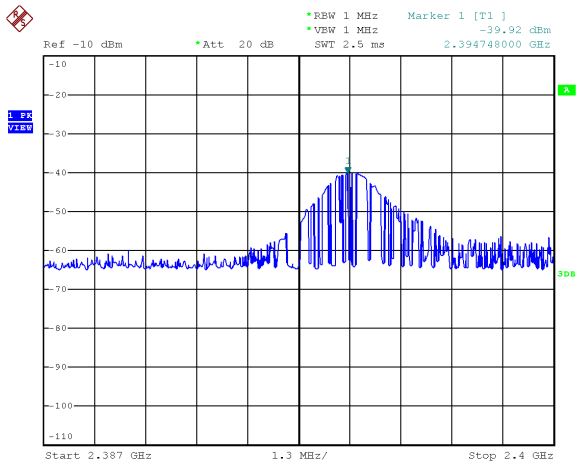
3.5.2 Modulation Type: OTHER DIGITAL MODULATION Channel: 2443MHz Antenna: Ant 0



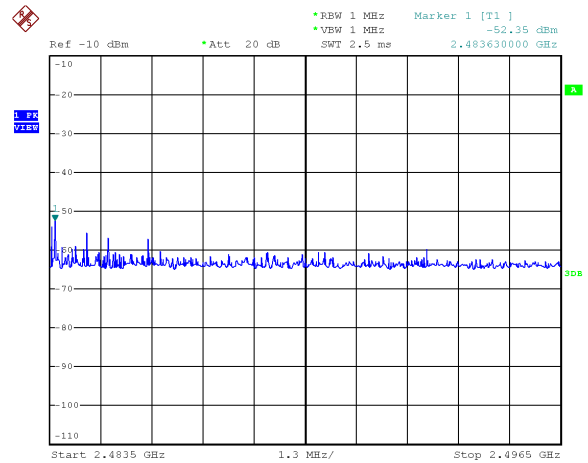
30-1000MHz



1000-2387MHz

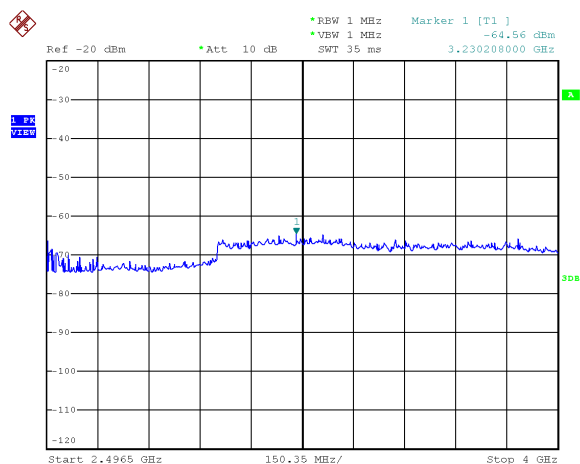


2387-2400MHz

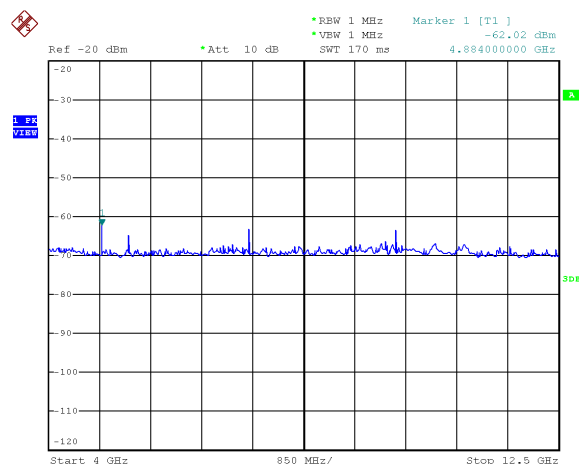


2483.5-2496.5MHz

TEST REPORT



2496.5MHz-4GHz



4-12.5GHz

Note:

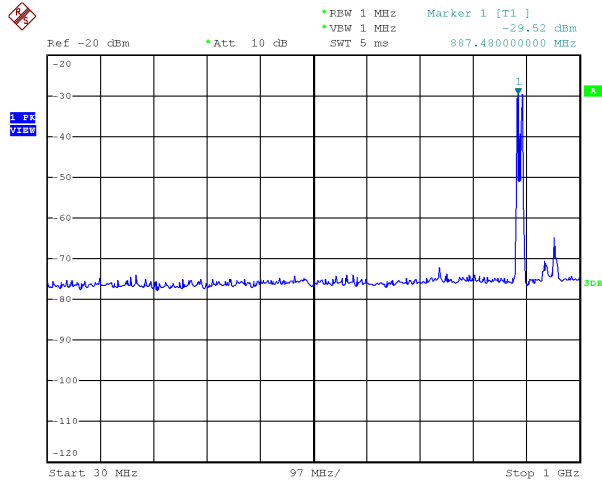
1. Negative sign (-) in the margin column signify levels below the limit.
2. Other emissions found were at least 10 dB below the limit at the measurement range.
3. -16.0dBm corresponds to 25uW.
4. -26.0dBm corresponds to 2.5uW.
5. Measurement uncertainty is ± 5.3 dB at a level of confidence of 95%.
6.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

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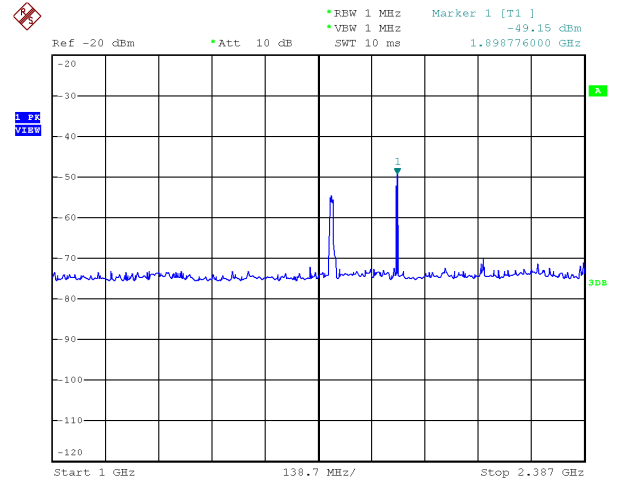
3.5.3 Modulation Type: OTHER DIGITAL MODULATION

Channel: 2477MHz

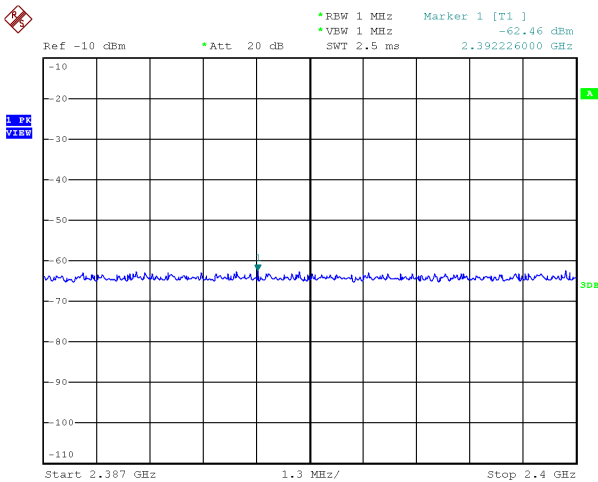
Antenna: Ant 0



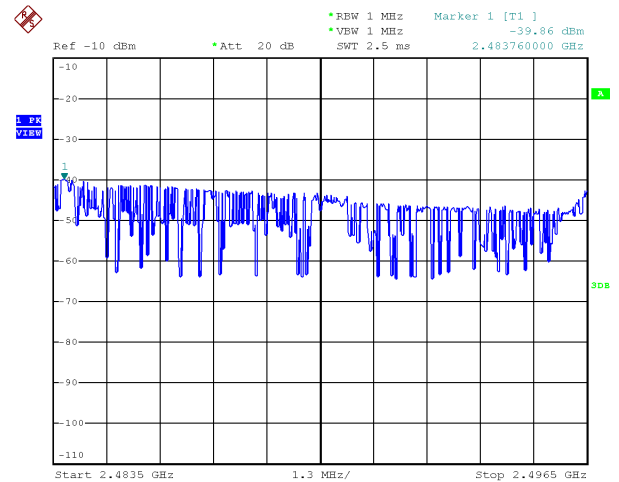
30-1000MHz



1000-2387MHz

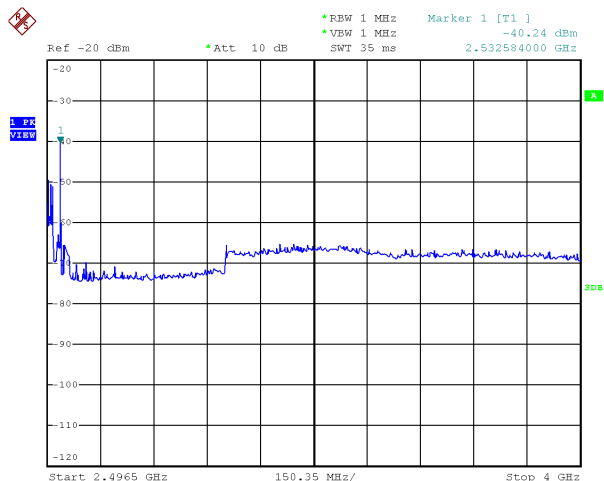


2387-2400MHz

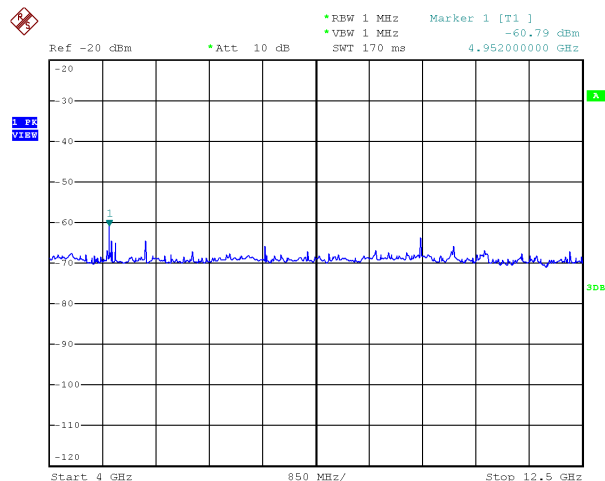


2483.5-2496.5MHz

TEST REPORT



2496.5MHz-4GHz



4-12.5GHz

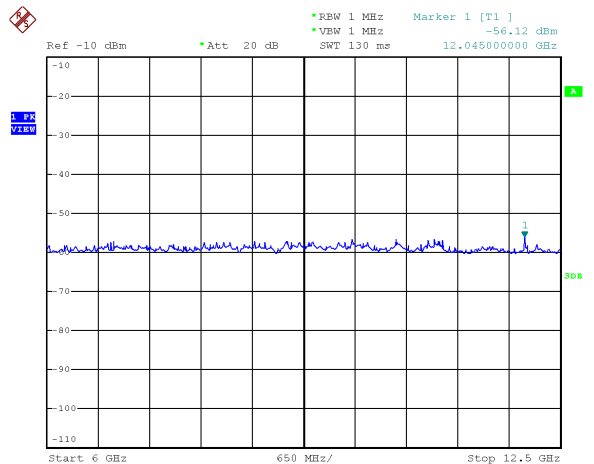
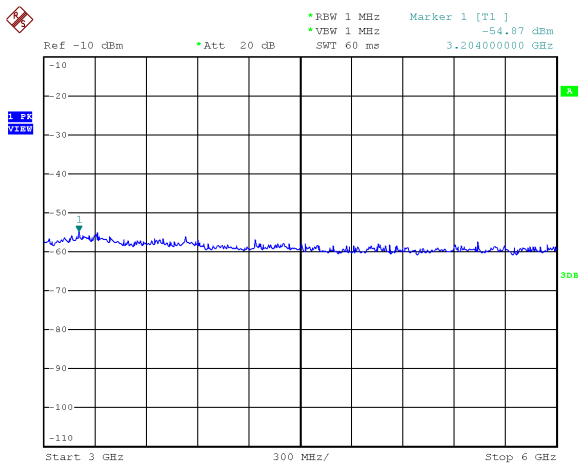
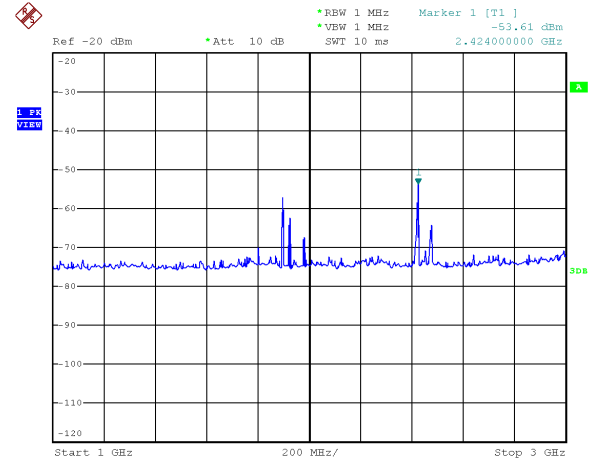
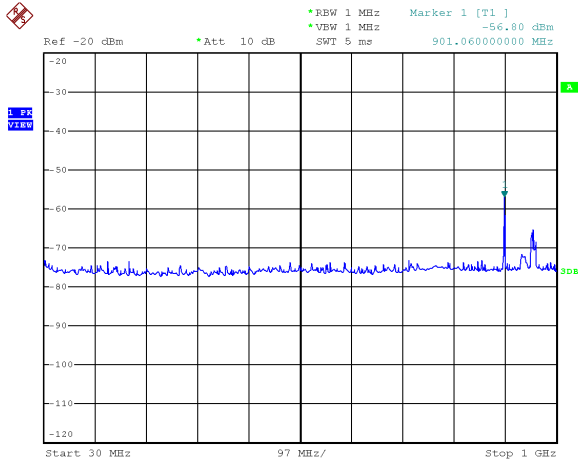
Note:

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 cable loss.
7. Conducted measurement was performed for this test.

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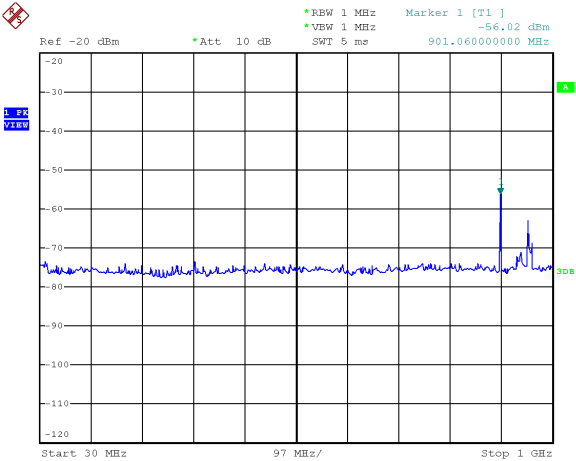
3.6 Collateral Emission Strength

3.6.1 Modulation Type: Other digital modulation Channel: 2407MHz

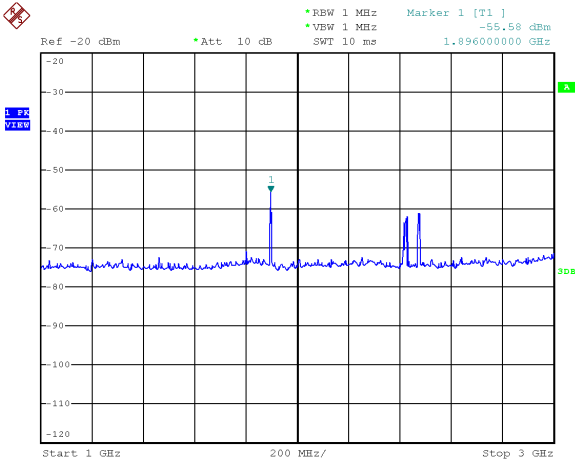


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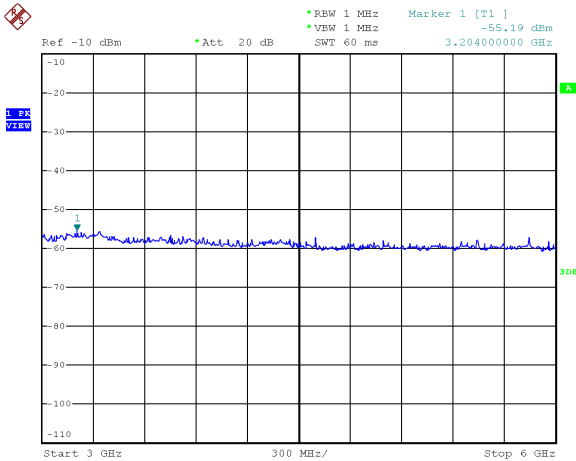
3.6.2 Modulation Type: Other digital modulation
Channel: 2443MHz



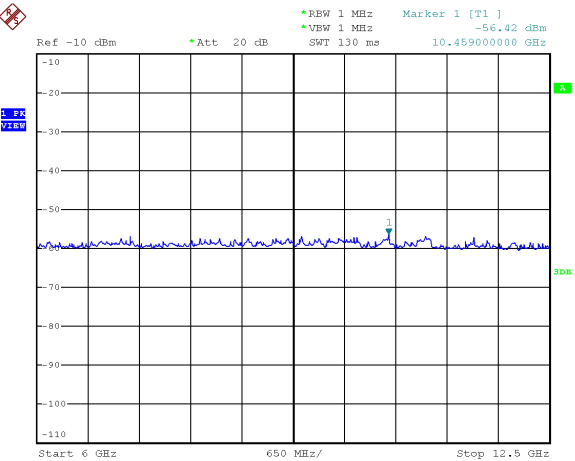
30-1000MHz



1000-3000MHz



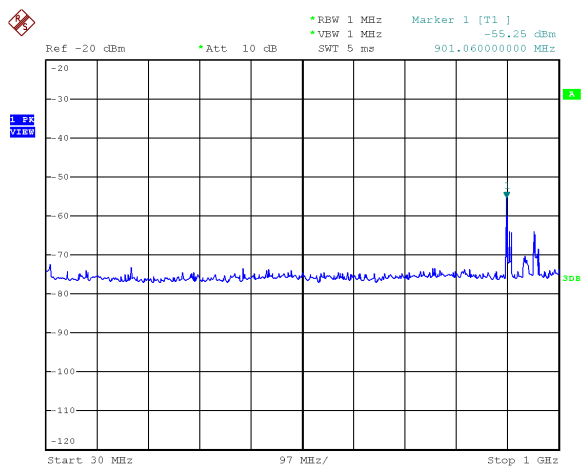
3000-6000MHz



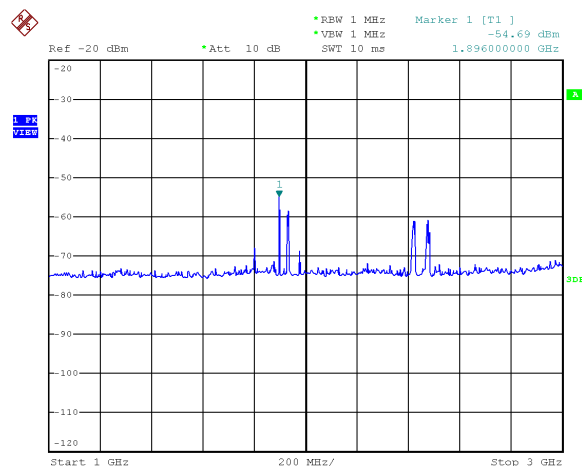
6000-12500MHz

TEST REPORT

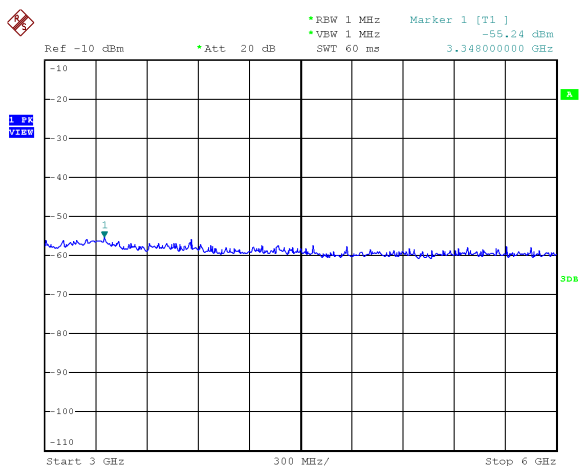
3.6.3 Modulation Type: Other digital modulation Channel: 2477MHz



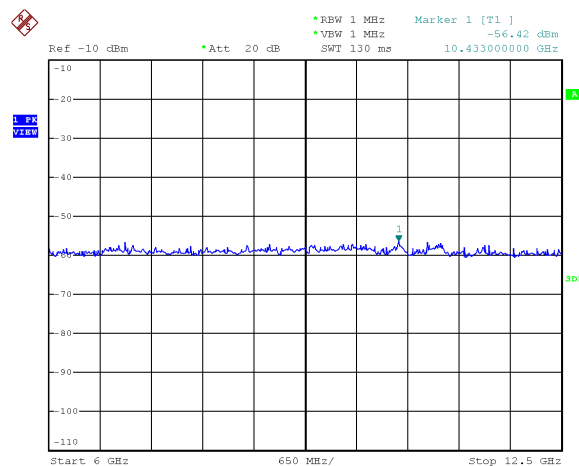
30-1000MHz



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 cable loss
7. Conducted measurement was performed for this test.

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3.7 Dwell Time

NA

Note: Conducted measurement was preformed for this test.

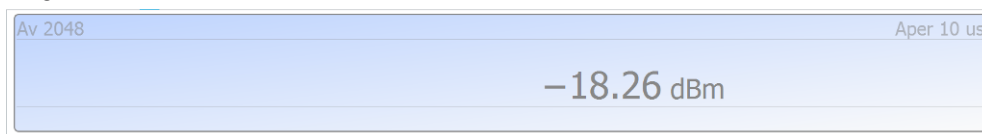
Japanese Regulation:

Dwell time shall be smaller or equal to 0.4 second.

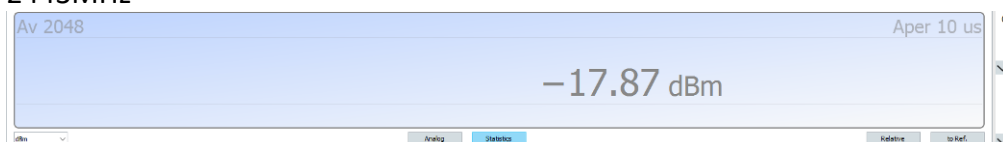
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3.8 RF Power Measure by Power Meter

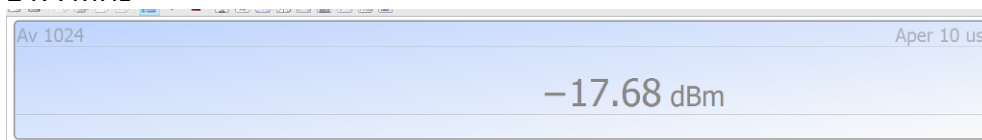
Other digital modulation
2407MHz



Other digital modulation
2443MHz



Other digital modulation
2477MHz



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3.9 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(4.5V) 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: 4.5VDC

Nominal voltage DC voltage to RFIC: 3.3VDC

Voltage to the EUT (VDC)	Applied voltage to RF IC (VDC)	Voltage change (%)	Result
4.05	3.3	0.0%	Pass
4.5	3.3	0.0%	Pass
4.95	3.3	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.

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3.10 Conducted Output Power of Different Data Rate

NA

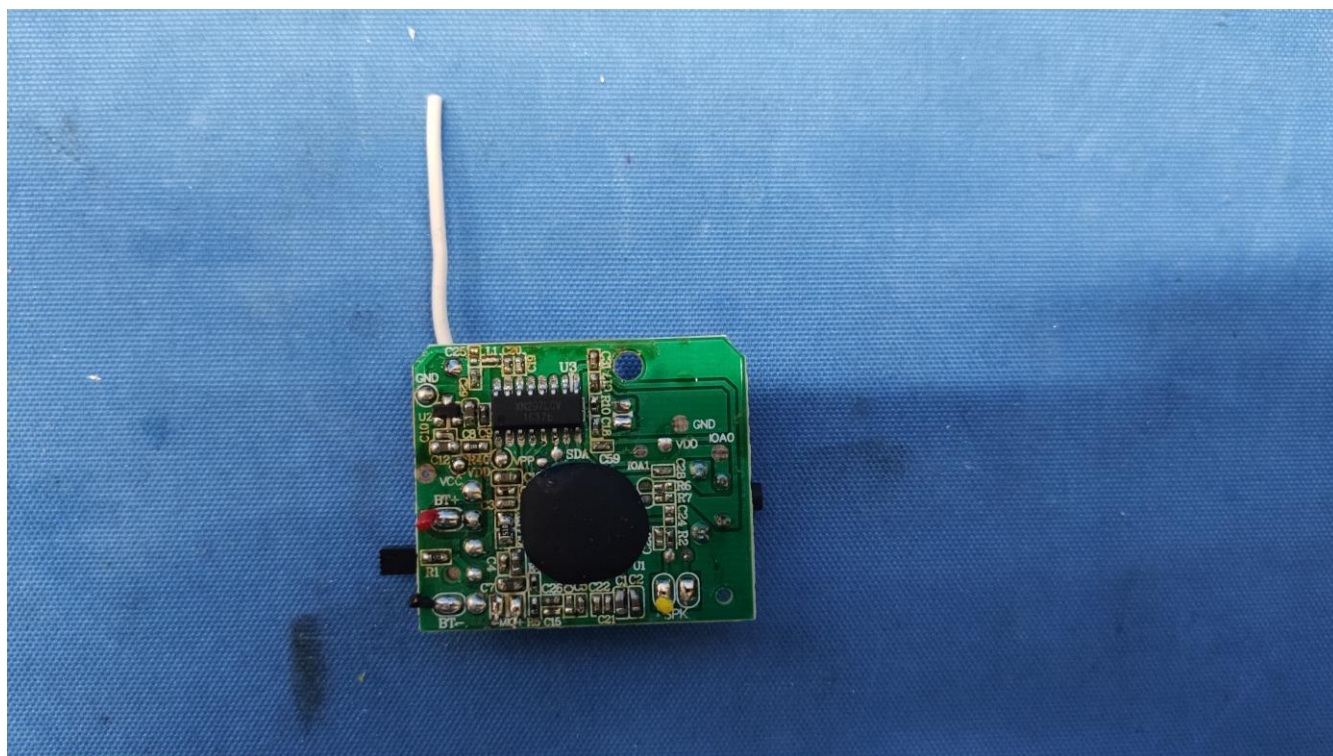
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4.0 EQUIPMENT LIST

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

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5.0 EQUIPMENT PHOTOGRAPHS



the test data represents the PCB module only.

The below photos are indicating the possible enclosure for the PCB.
There is no guarantee that the PCB has been inserted into the enclosure.



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16644 - FROZEN 2 ELSA & ANNA WALKIE TALKIE

