

TEST REPORT

Applicant	Belkin International, Inc.
Address	555 S. Aviation Blvd., Suite 180, El Segundo, CA 90245-4852, USA

Manufacturer or Supplier	Belkin International, Inc.	
Address	555 S. Aviation Blvd., Suite 180, El Segundo, CA 90245-4852, USA	
Product	SOUNDFORM™ Play	
Brand Name	Belkin	
Model	AUC005(Left Earbud)	
Additional Model & Model Difference	N/A	
Date of tests	Oct. 31, 2021 ~ Jan. 11, 2022	

the tests have been carried out according to the requirements of the following standards:

☒ **ARIB STD-T66, Article 2 Section 1 Item 19**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Tested by Eric Fang Project Engineer / EMC Department	Approved by Glyn He Assistant Manager / EMC Department
	

Date: Jan. 18, 2022

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TABLE OF CONTENTS

RELEASE CONTROL RECORD	4
1 SUMMARY OF TEST RESULTS	5
1.1 MEASUREMENT UNCERTAINTY	6
2 GENERAL INFORMATION.....	7
2.1 GENERAL DESCRIPTION OF EUT	7
2.2 DESCRIPTION OF TEST CHANNELS.....	8
2.3 TEST CONDITIONS	10
2.4 ASSEMBLY	10
2.5 ANTENNA SPECIFICATIONS	10
2.5.1 ANTENNA GAIN	10
2.5.2 ANTENNA PATTERN.....	10
3 TEST TYPES AND RESULTS	11
3.1 FREQUENCY TOLERANCE MEASUREMENT	11
3.1.1 LIMITS OF FREQUENCY TOLERANCE MEASUREMENT	11
3.1.2 TEST SETUP.....	11
3.1.3 TEST RESULTS – MODE A	11
3.2 OCCUPIED BANDWIDTH MEASUREMENT (99% POWER BANDWIDTH).....	12
3.2.1 LIMITS OF OCCUPIED BANDWIDTH MEASUREMENT	12
3.2.2 TEST SETUP.....	12
3.2.3 TEST RESULTS – MODE A	13
3.2.4 TEST RESULTS – MODE D.....	14
3.3 SPREADING BANDWIDTH MEASUREMENT (90% POWER BANDWIDTH).....	15
3.3.1 LIMITS OF SPREADING BANDWIDTH AND SPREADING FACTOR.....	15
3.3.2 TEST SETUP.....	15
3.3.3 TEST RESULTS – MODE A	16
3.3.4 TEST RESULTS – MODE D.....	17
3.4 SPURIOUS EMISSIONS FOR TRANSMITTER MEASUREMENT.....	18
3.4.1 LIMITS OF SPURIOUS EMISSIONS	18
3.4.2 TEST SETUP.....	18
3.4.3 SUMMARY OF TEST RESULTS – MODE A.....	19
3.5 ANTENNA POWER MEASUREMENT	30
3.5.1 LIMITS OF ANTENNA POWER.....	30
3.5.2 CONDUCTED OUTPUT POWER	30
3.5.3 TEST SETUP.....	30
3.5.4 TEST RESULTS – MODE A	31
3.5.5 TEST RESULTS – MODE B	32
3.5.6 TEST RESULTS – MODE C.....	33
3.5.7 TEST RESULTS – MODE D.....	34
3.5.8 TEST RESULTS – MODE E	35
3.5.9 TEST RESULTS – MODE F	36
3.6 SPURIOUS EMISSIONS FOR RECEIVER	37
3.6.1 LIMITS OF SPURIOUS EMISSIONS FOR RECEIVER	37
3.6.2 TEST SETUP.....	37
3.6.3 SUMMARY OF TEST RESULTS – MODE A.....	37
3.7 DWELL TIME	41
3.7.1 LIMITS OF DWELL TIME	41
3.7.2 TEST SETUP.....	41



3.7.3	TEST RESULTS – MODE A	41
3.7.4	TEST RESULTS – MODE D	42
3.8	INTERFERENCE PREVENTION FUNCTION	46
3.8.1	LIMITS OF INTERFERENCE PREVENTION FUNCTION	46
3.8.2	TEST SETUP	46
3.8.3	TEST RESULTS	46
4	TEST INSTRUMENTS	47
5	PHOTOGRAPHS OF THE TEST CONFIGURATION	48
6	APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	49



RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RJ2111WDG0821-1	Original release	Jan. 18, 2022



1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

Article 2 Section 1 Item 19 Reference	ARIB STD-T66 Ref.	Report reference	Parameter	Test Results (NOTE)
GENERAL PROVISIONS				
C	3.2(4)	3.1	Frequency tolerance	C
D	3.2(7)	3.2/3.3	Occupied bandwidth	C
E	3.2(6)	3.4	Spurious emissions	C
TRANSMITTING EQUIPMENT				
F	--	3.5	Antenna power	C
--	--	--	SAR	NA
TRANSMITTING ANTENNA				
--	--	2.5	Type, configuration, etc. of transmitting antenna	C
--	--	2.5	Direction pattern of transmitting antenna	C
RECEIVING EQUIPMENT				
H	3.3(1)	3.6	Spurious emissions of receiver	C
--	--	2.5	Refer to all articles for transmitting antenna	C
OPERATING FREQUENCY 2402 TO 2480MHz				
--	3.7 (1)	2.4	High Frequency/modulation section cannot be opened easily	C
--	3.1 (1)	2.1	Communication method	C
--	3.2 (1)a	2.1	Modulation method	C
--	3.2 (1)a	3.3	Spread spectrum method	C
--	3.2 (2)	3.5	Antenna power	C
--	3.6 (2)	3.5	Absolute gain of transmitting antenna	C
--	3.6 (2)	3.5	Angular width of principal radiation (AWPR)	C
--	3.2 (10)	--	Number of carriers within 1 MHz bandwidth in OFDM	NA
--	3.2 (8)	3.3	Diffusion bandwidth	C
--	3.2 (9)	3.3	Spreading factor	C
--	3.2 (11)	3.7	Frequency retention time (FH employed)	C
--	3.4.1(1)	3.8	Interference Prevention Function	C
NOTE 1: C = Conform NC = Not Conform NT = Not Tested NA = Not Applicable				



1.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT:

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

ITEM	UNCERTAINTY
Occupied Bandwidth	206.50 Hz
Spurious emissions	$\pm 3.93\text{dB}$
Output power density	1.37dB
Out of band radiated power	2.52 dB
Frequency Tolerance	0.104 ppm

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



2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	SOUNDFORM™ Play
MODEL NO.	AUC005(Left Earbud), See Note 4
POWER SUPPLY:	Earbuds: DC 3.7V Supplied by Li-ion Battery or DC 5V Charged by the Charging case Charging case: DC 3.7V Supplied by Li-ion Battery or DC 5V Charged by the Type C-USB port
TYPE OF EQUIPMENT	Data transmission equipment operating in the 2.4GHz
MODULATION TECHNOLOGY	FHSS
MODULATION TYPE	GFSK, $\pi/4$ -DQPSK, 8DPSK
OPERATING FREQUENCY	2402MHz ~ 2480MHz
NUMBER OF CHANNEL	79
RATED RF OUTPUT POWER DENSITY	Please see NOTE 1
CONDUCTED POWER DENSITY	Please see NOTE 1
EIRP POWER DENSITY	Please see NOTE 1
HW-RELEASE NO	Ver1.2
SW-RELEASE NO	SAP215_20211115
ANTENNA TYPE	Ceramic Antenna, 1.56dBi Gain
CABLE SUPPLIED	Refer to user's manual

NOTES:

1. The power table as below table:

	Rated output power density (mW/MHz)	Conducted power density (mW/MHz)	EIRP power density (mW/MHz)
Normal mode			
GFSK	0.09	0.026	0.038
$\pi/4$-DQPSK	0.09	0.028	0.039
8DPSK	0.09	0.029	0.041
Enable AFH function			
GFSK	0.4	0.103	0.147
$\pi/4$-DQPSK	0.4	0.107	0.153
8DPSK	0.4	0.112	0.161

2. For the test results, the EUT had been tested with all conditions.
3. The above EUT information was declared by manufacturer and for more detailed features description please refers to the manufacturer's specifications or user's manual.
4. Because the circuits of the two earbuds are different, RJ2111WDG0821-1 is the report of the left earbuds and RJ2111WDG0821-2 is the report of the right earbuds. Both models are AUC005.



2.2 DESCRIPTION OF TEST CHANNELS

Seventy-nine channels are provided for Bluetooth.

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
0	2402	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
3	2405	23	2425	43	2445	63	2465
4	2406	24	2426	44	2446	64	2466
5	2407	25	2427	45	2447	65	2467
6	2408	26	2428	46	2448	66	2468
7	2409	27	2429	47	2449	67	2469
8	2410	28	2430	48	2450	68	2470
9	2411	29	2431	49	2451	69	2471
10	2412	30	2432	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	78	2480
19	2421	39	2441	59	2461		



Six modes are provided:

Mode	Conditions
Mode A	GFSK
Mode B	π /4-DQPSK
Mode C	8DPSK
Mode D	Enable AFH GFSK
Mode E	Enable AFH π /4-DQPSK
Mode F	Enable AFH 8DPSK

Note:

1. For the test results, the EUT had been tested with all conditions. But only the worst case (Mode A & Mode D) was shown in test report except the RF output power test was shown all conditions.
2. For AFH function only tested occupied bandwidth, spreading bandwidth, Antenna power and dwell time.
3. By means of test software which provided by manufacture, the power levels during the tests were set according to the following codes:

GFSK		π /4-DQPSK		8DPSK	
CHANNEL	POWER SETTING	CHANNEL	POWER SETTING	CHANNEL	POWER SETTING
0	6	0	6	0	6
39	6	39	6	39	6
78	6	78	6	78	6



2.3 TEST CONDITIONS

Test conditions	Voltage (V DC)
V_{normal}	3.7
V_{max}	4.07
V_{min}	3.33

2.4 ASSEMBLY

The RF circuits are located inside of the EUT. The RF circuit was covered by metal shielding case, Also it won't be easy to be opened. Frequency Band, channels and modulation parameters are fixed inside the module. They cannot be edited or modified by end-user.

2.5 ANTENNA SPECIFICATIONS

2.5.1 ANTENNA GAIN

Ant. Type	Connector Type	Highest Peak Gain (dBi) 2.4GHz ~ 2.5GHz
PCB	N/A	1.56

2.5.2 ANTENNA PATTERN

Please refer to the attached file (Antenna report).



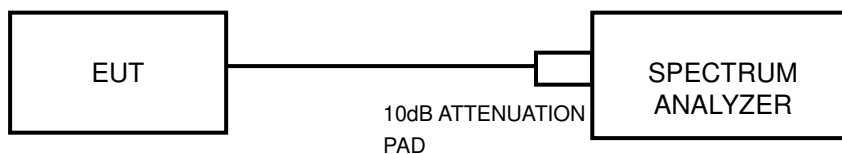
3 TEST TYPES AND RESULTS

3.1 FREQUENCY TOLERANCE MEASUREMENT

3.1.1 LIMITS OF FREQUENCY TOLERANCE MEASUREMENT

Tolerance of frequency shall be +/- 50ppm

3.1.2 TEST SETUP



3.1.3 TEST RESULTS – MODE A

ENVIRONMENTAL CONDITIONS		23 deg.C, 58 % RH					
Channel	Frequency (MHz)	Voltage normal		Voltage +10%		Voltage -10%	
		Carrier frequency (MHz)	Frequency tolerance (ppm)	Carrier frequency (MHz)	Frequency tolerance (ppm)	Carrier frequency (MHz)	Frequency tolerance (ppm)
0	2402	2401.964479	-14.788	2401.964440	-14.804	2401.964279	-14.871
39	2441	2440.963279	-15.043	2440.963200	-15.075	2440.963079	-15.125
78	2480	2479.962360	-15.177	2479.962279	-15.210	2479.962279	-15.210

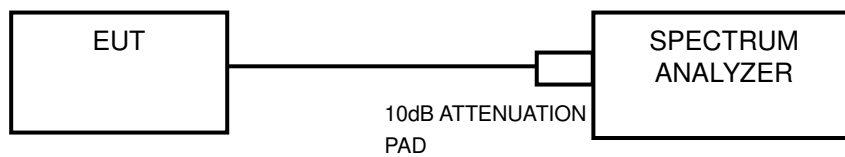


3.2 OCCUPIED BANDWIDTH MEASUREMENT (99% POWER BANDWIDTH)

3.2.1 LIMITS OF OCCUPIED BANDWIDTH MEASUREMENT

Occupied bandwidth shall be 83.5MHz or less.

3.2.2 TEST SETUP



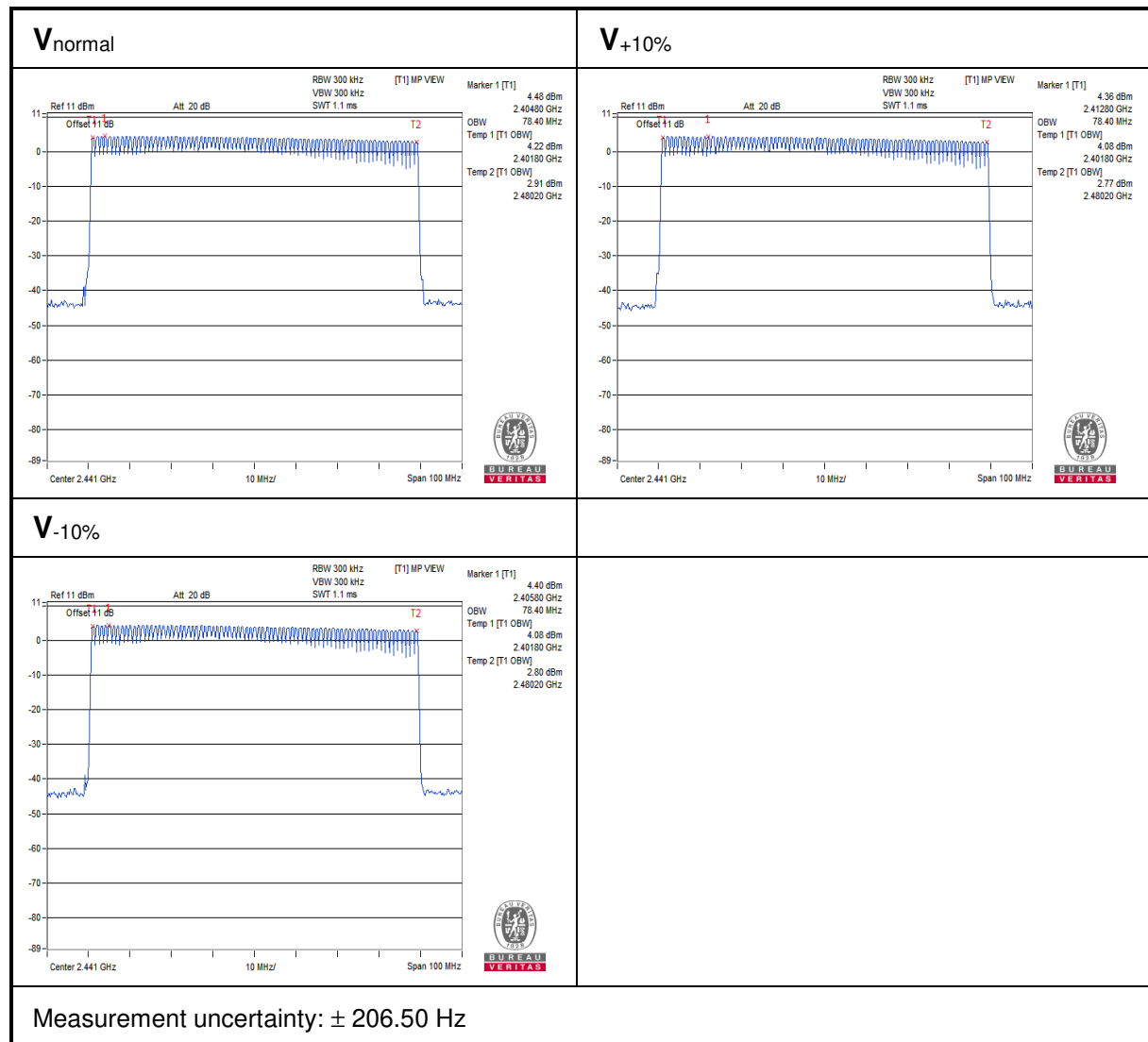


3.2.3 TEST RESULTS – MODE A

For GFSK:

ENVIRONMENTAL CONDITIONS	23 deg.C, 58 % RH		
HOPPING MODE	Voltage normal	Voltage +10%	Voltage -10%
	Occupied bandwidth (MHz)	Occupied bandwidth (MHz)	Occupied bandwidth (MHz)
	78.40	78.40	78.40
Measurement uncertainty	± 206.50 Hz		

NOTE: For the test plots please refer to the below pages.

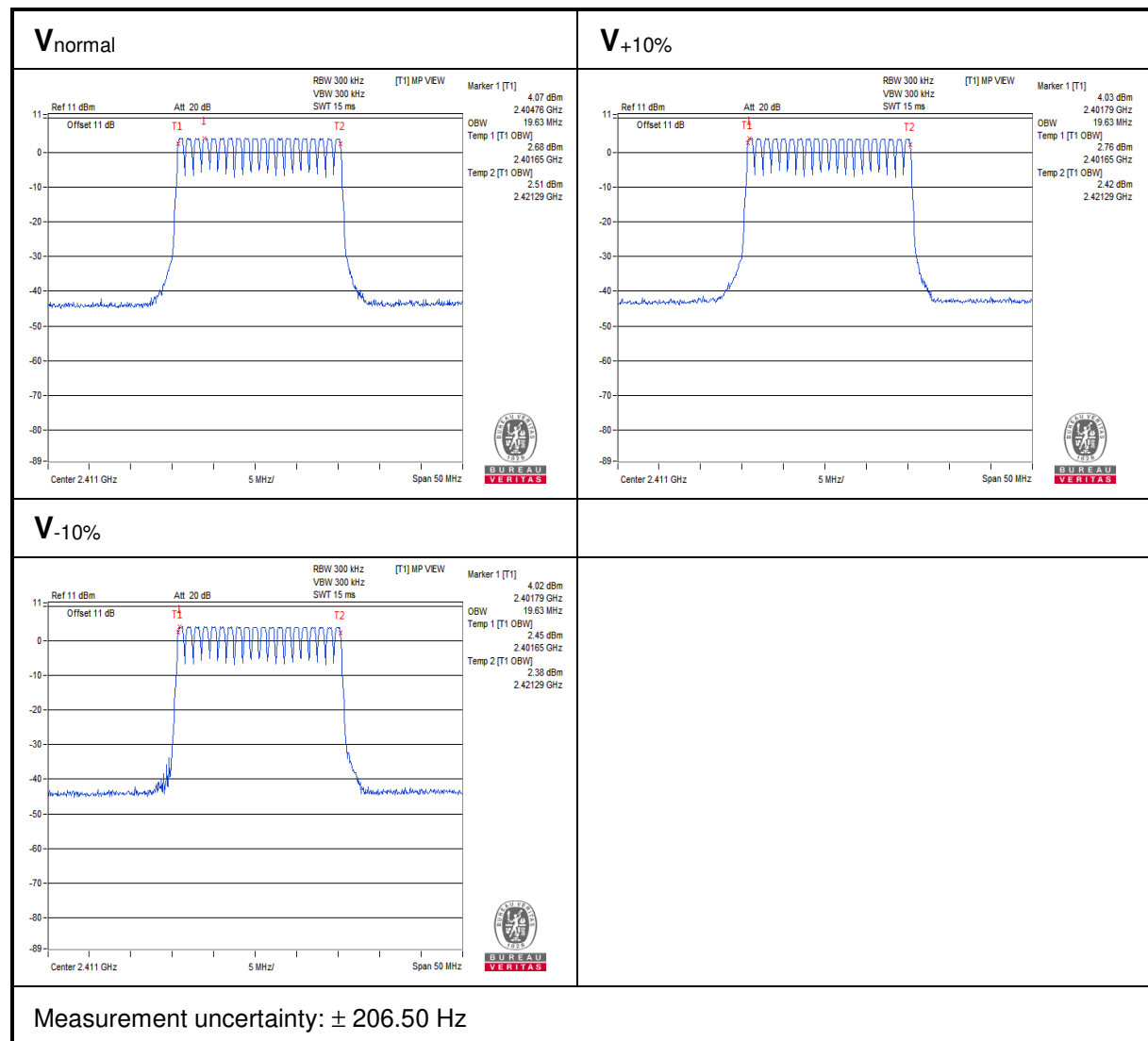




3.2.4 TEST RESULTS – MODE D

For GFSK < Enable AFH function>:

ENVIRONMENTAL CONDITIONS	23 deg.C, 58 % RH		
HOPPING MODE	Voltage normal	Voltage +10%	Voltage -10%
	Occupied bandwidth (MHz)	Occupied bandwidth (MHz)	Occupied bandwidth (MHz)
	19.63	19.63	19.63
Measurement uncertainty	± 206.50 Hz		

NOTE: For the test plots please refer to the below pages.

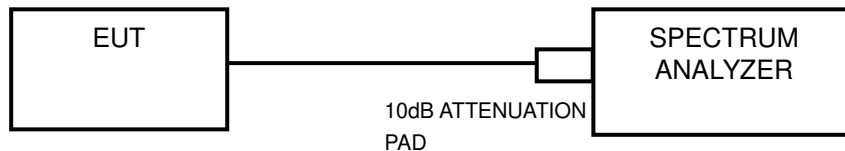


3.3 SPREADING BANDWIDTH MEASUREMENT (90% POWER BANDWIDTH)

3.3.1 LIMITS OF SPREADING BANDWIDTH AND SPREADING FACTOR

ITEM	LIMIT	REMARK
SPREADING BANDWIDTH	$\geq 500\text{kHz}$	-
SPREADING FACTOR	≥ 5	Operating frequency 2400 to 2483MHz

3.3.2 TEST SETUP





3.3.3 TEST RESULTS – MODE A

For GFSK:

ENVIRONMENTAL CONDITIONS	23 deg.C, 58% RH					
HOPPING MODE	Voltage normal		Voltage +10%		Voltage -10%	
	Spread bandwidth (MHz)	Spreading factor	Spread bandwidth (MHz)	Spreading factor	Spread bandwidth (MHz)	Spreading factor
	70.80	70.80	70.80	70.80	70.80	70.80
Measurement uncertainty	± 206.50 Hz					

NOTE: For the test plots please refer to the below pages.

Spreading Factor: 90% channel power bandwidth / 1.





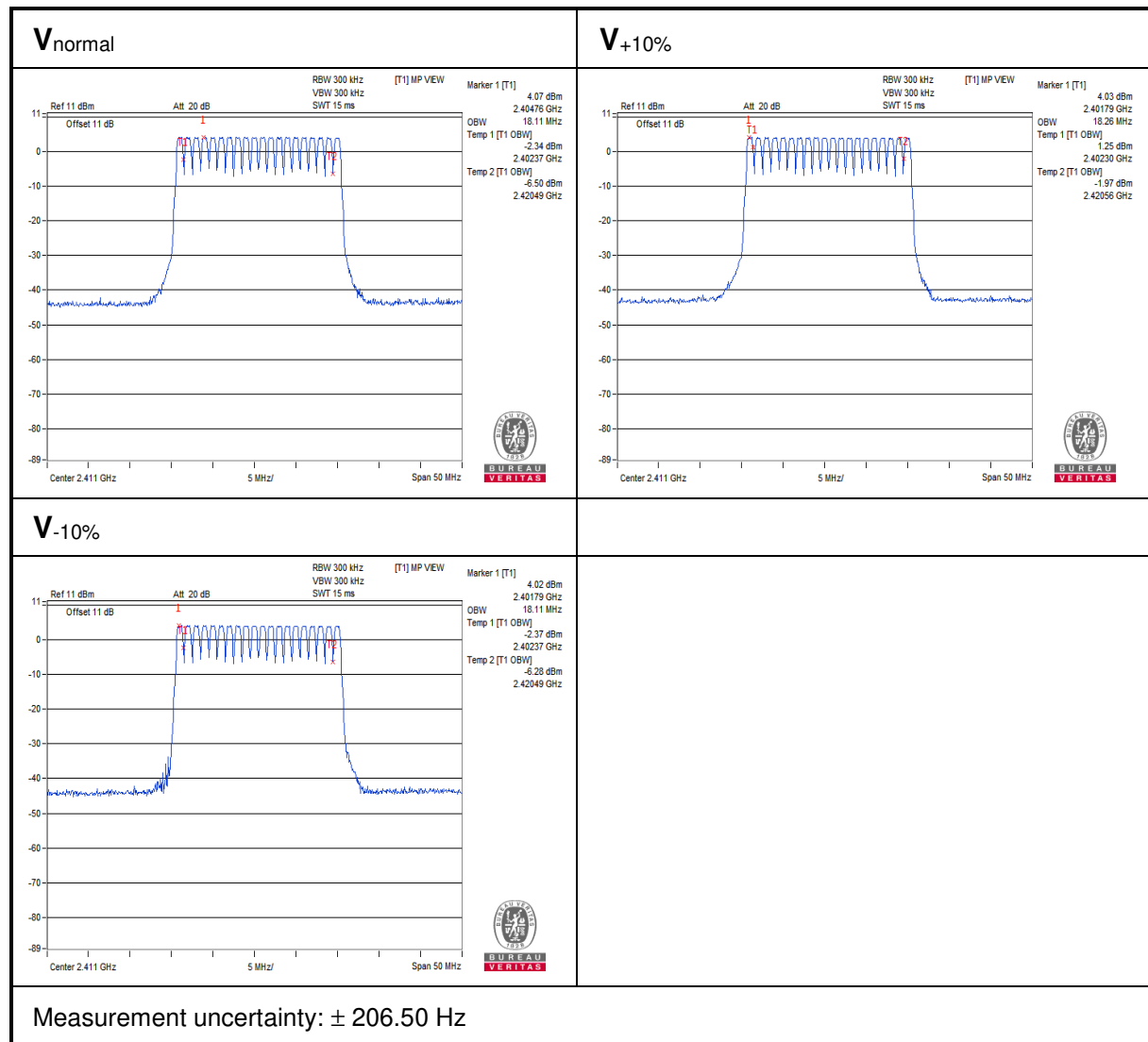
3.3.4 TEST RESULTS – MODE D

For GFSK< Enable AFH function>:

ENVIRONMENTAL CONDITIONS	23 deg.C, 58 % RH					
HOPPING MODE	Voltage normal		Voltage +10%		Voltage -10%	
	Spread bandwidth (MHz)	Spreading factor	Spread bandwidth (MHz)	Spreading factor	Spread bandwidth (MHz)	Spreading factor
	18.11	18.11	18.26	18.26	18.11	18.11
Measurement uncertainty	± 206.50 Hz					

NOTE: For the test plots please refer to the below pages.

Spreading Factor: 90% channel power bandwidth / 1.



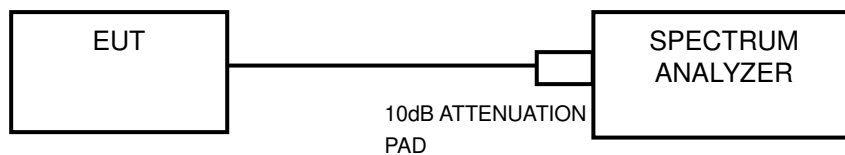


3.4 SPURIOUS EMISSIONS FOR TRANSMITTER MEASUREMENT

3.4.1 LIMITS OF SPURIOUS EMISSIONS

Frequencies (MHz)	Limit
Operating frequency 2400 to 2483.5MHz	
$2387 \leq f < 2400$	$\leq 25\mu\text{W}$
$2483.5 < f \leq 2496.5$	$\leq 25\mu\text{W}$
All other frequencies	$\leq 2.5\mu\text{W}$

3.4.2 TEST SETUP





3.4.3 SUMMARY OF TEST RESULTS – MODE A

GFSK

TEST CHANNEL		CH 0 (2402MHz)		CH 39 (2441MHz)		LIMIT	RESULT
TEST CONDITION	FREQUENCY RANGE	FREQUENCY (MHz)	MEASURE. VALUE	FREQUENCY (MHz)	MEASURE. VALUE		
V _{normal}	30.0MHz to 1000.0MHz	869.530	0.024961uW	907.360	0.026246uW	0.25uW	PASS
	1000.0MHz to 2387MHz	2273.950	0.177799uW	2180.680	0.167566uW	2.5uW	PASS
	2387.0MHz to 2400.0MHz	2399.950	2.387914uW	2395.110	0.189931uW	25uW	PASS
	2483.5MHz to 2496.5MHz	2490.610	0.179802uW	2494.590	0.198202uW	25uW	PASS
	2496.5MHz to 12500.0MHz	6923.040	0.656182uW	6995.570	0.542448uW	2.5uW	PASS
V _{+10%}	30.0MHz to 1000.0MHz	880.690	0.024924uW	843.100	0.040528uW	0.25uW	PASS
	1000.0MHz to 2387MHz	2238.240	0.171937uW	2315.220	0.164279uW	2.5uW	PASS
	2387.0MHz to 2400.0MHz	2399.910	2.084602uW	2389.770	0.175557uW	25uW	PASS
	2483.5MHz to 2496.5MHz	2489.370	0.206074uW	2489.560	0.20853uW	25uW	PASS
	2496.5MHz to 12500.0MHz	6998.070	0.456312uW	6938.050	0.493676uW	2.5uW	PASS
V _{-10%}	30.0MHz to 1000.0MHz	709.480	0.02588uW	937.190	0.026888uW	0.25uW	PASS
	1000.0MHz to 2387MHz	2371.040	0.167072uW	2189.350	0.170235uW	2.5uW	PASS
	2387.0MHz to 2400.0MHz	2399.980	2.24668uW	2392.910	0.182042uW	25uW	PASS
	2483.5MHz to 2496.5MHz	2488.360	0.213346uW	2488.510	0.208905uW	25uW	PASS
	2496.5MHz to 12500.0MHz	6910.540	0.528562uW	6940.550	0.405281uW	2.5uW	PASS



TEST CHANNEL		CH 78 (2480MHz)		LIMIT	RESULT
TEST CONDITION	FREQUENCY RANGE	FREQUENCY (MHz)	MEASURE. VALUE		
V _{normal}	30MHz to 1000MHz	925.550	0.030372uW	0.25uW	PASS
	1000MHz to 2387MHz	1997.250	0.180761uW	2.5uW	PASS
	2387MHz to 2400MHz	2389.190	0.183839uW	25uW	PASS
	2483.5MHz to 2496.5MHz	2483.750	0.264978uW	25uW	PASS
	2496.5MHz to 12500MHz	6948.050	0.461629uW	2.5uW	PASS
V _{+10%}	30MHz to 1000MHz	720.390	0.027959uW	0.25uW	PASS
	1000MHz to 2387MHz	2306.900	0.176707uW	2.5uW	PASS
	2387MHz to 2400MHz	2389.910	0.170366uW	25uW	PASS
	2483.5MHz to 2496.5MHz	2483.590	0.24991uW	25uW	PASS
	2496.5MHz to 12500MHz	6975.560	0.473326uW	2.5uW	PASS
V _{-10%}	30MHz to 1000MHz	790.480	0.030774uW	0.25uW	PASS
	1000MHz to 2387MHz	2276.040	0.163092uW	2.5uW	PASS
	2387MHz to 2400MHz	2399.610	0.172819uW	25uW	PASS
	2483.5MHz to 2496.5MHz	2483.610	0.31418uW	25uW	PASS
	2496.5MHz to 12500MHz	6993.070	0.331011uW	2.5uW	PASS

NOTE: 1. The worst value in each frequency range v.s. each channel has been marked by boldface.
 2. The spectrum plots are attached on the following pages.
 3. The limit 2.5uW/MHz of frequency 30MHz to 1000MHz after conversion is 0.25uW/100kHz.

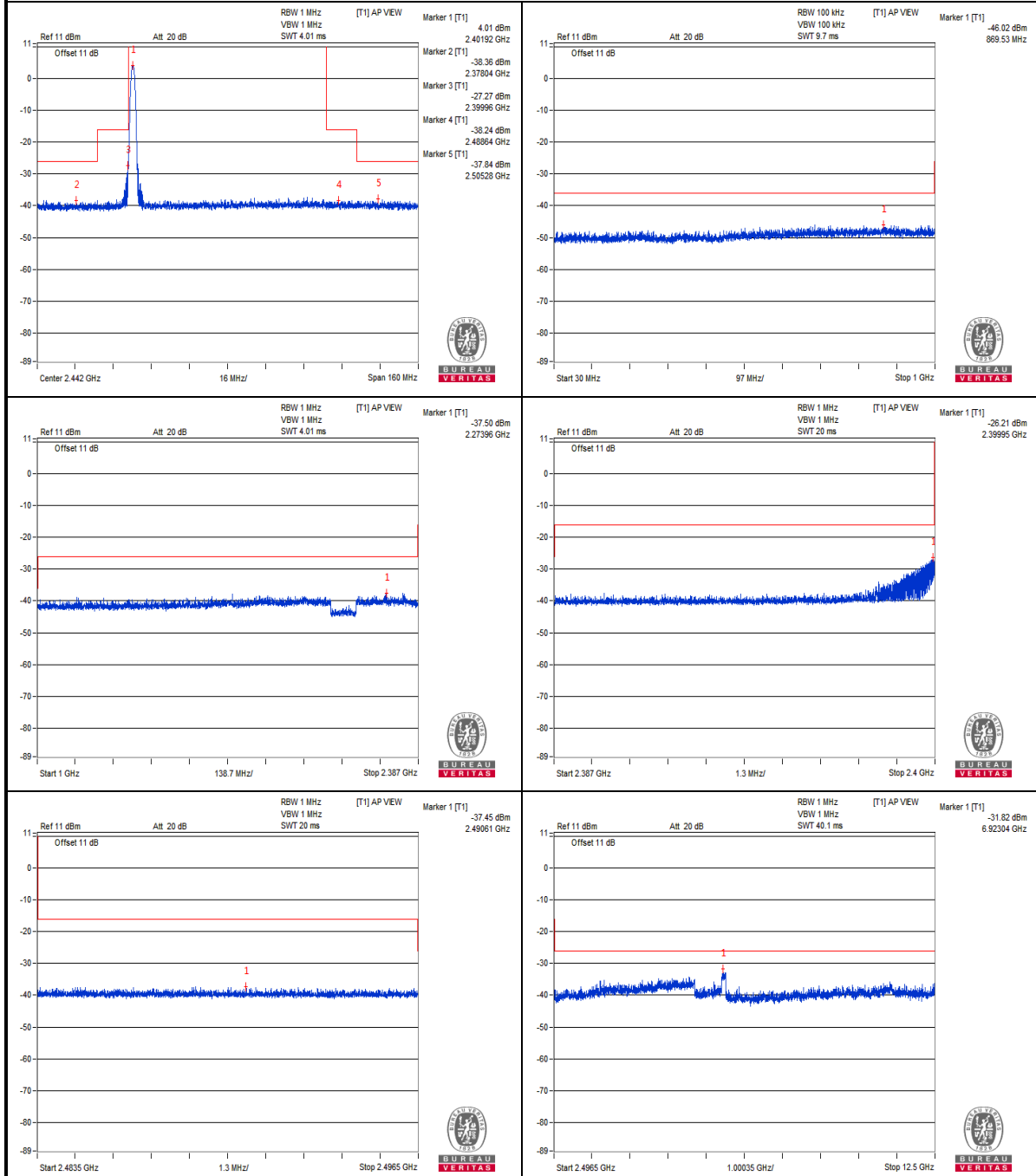


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Test Report No.: RJ2111WDG0821-1

GFSK

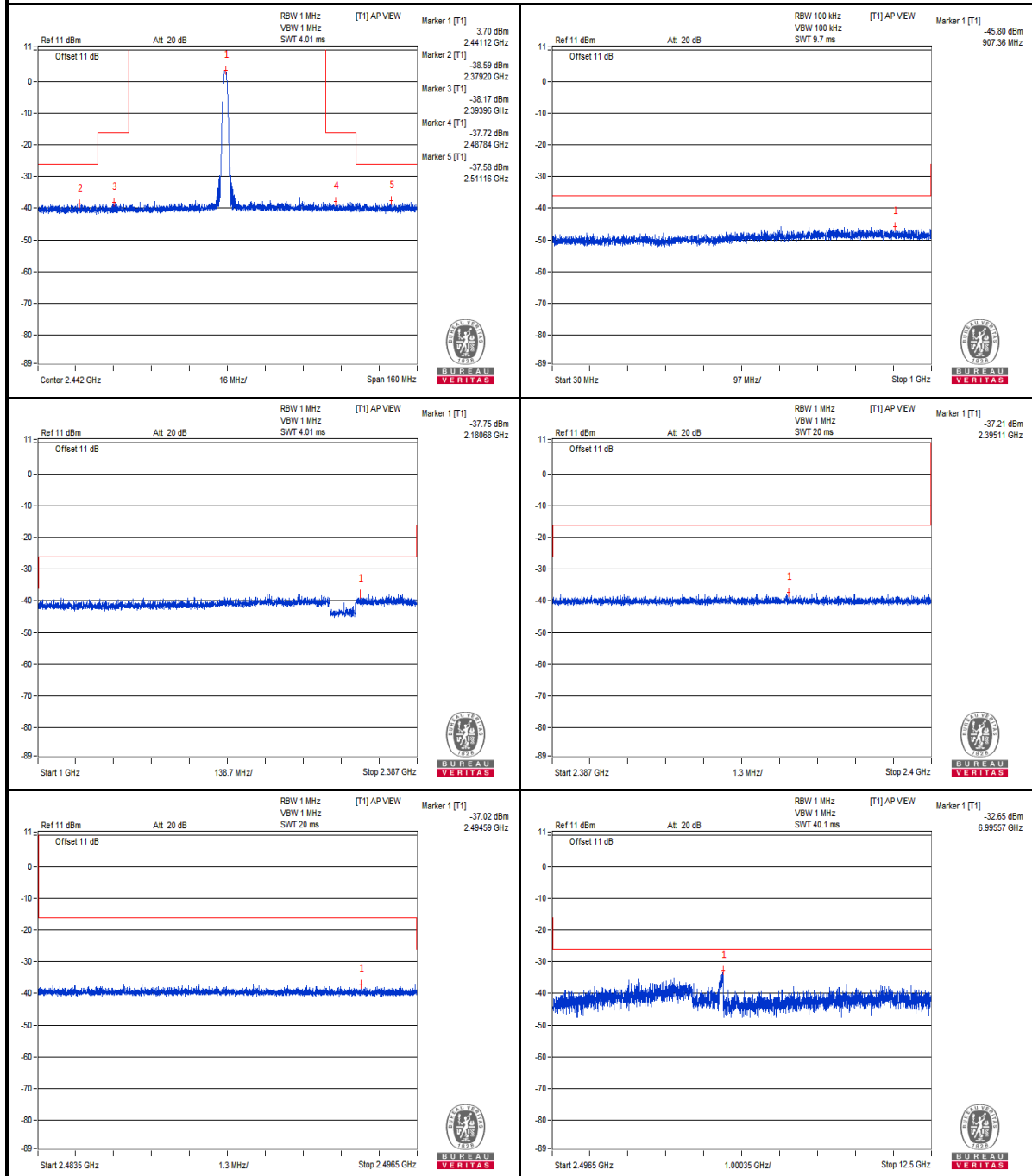
Vnormal Channel 0



Measurement uncertainty: $\pm 3.93\text{dB}$



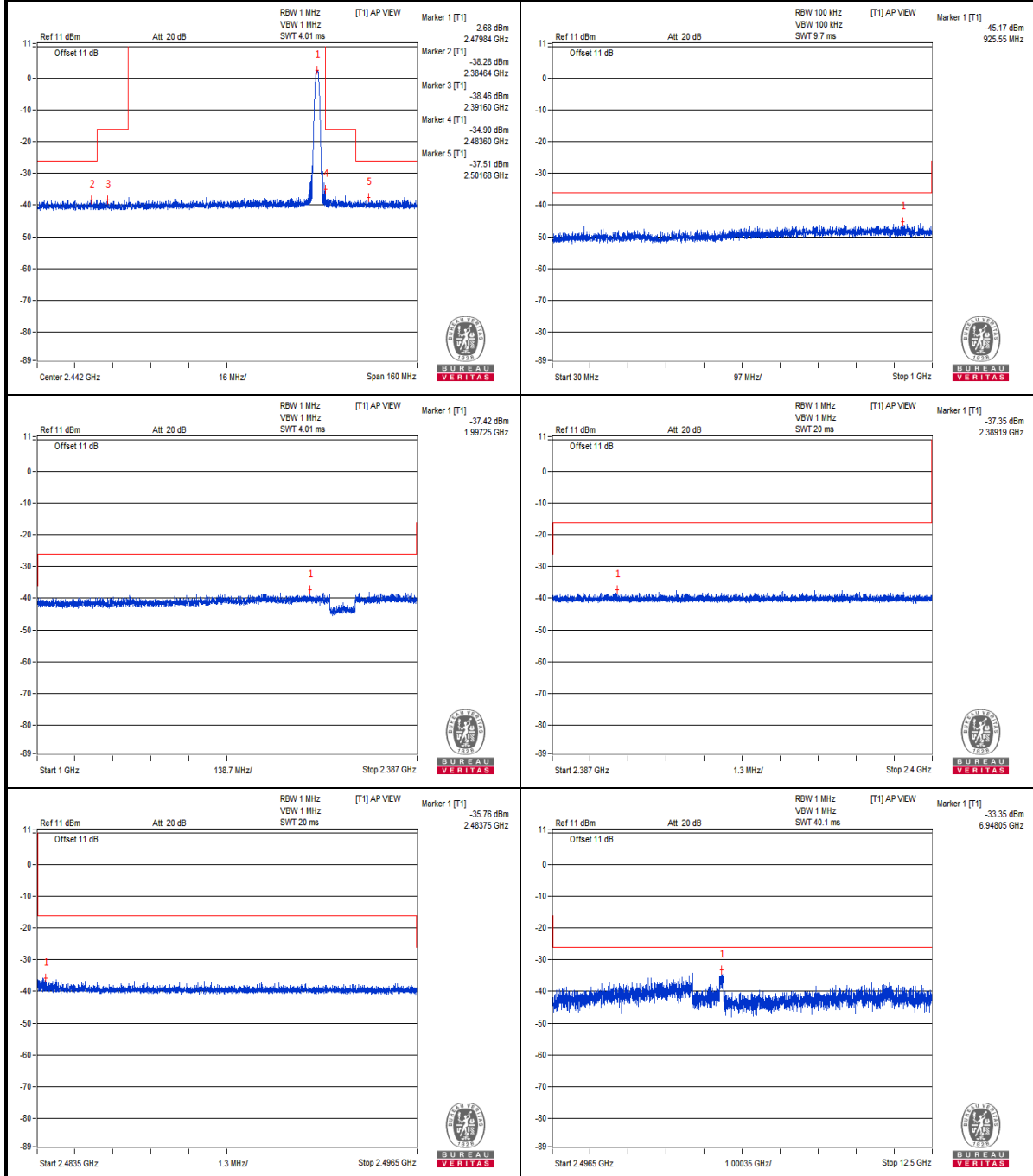
Vnormal
Channel 39



Measurement uncertainty: $\pm 3.93\text{dB}$



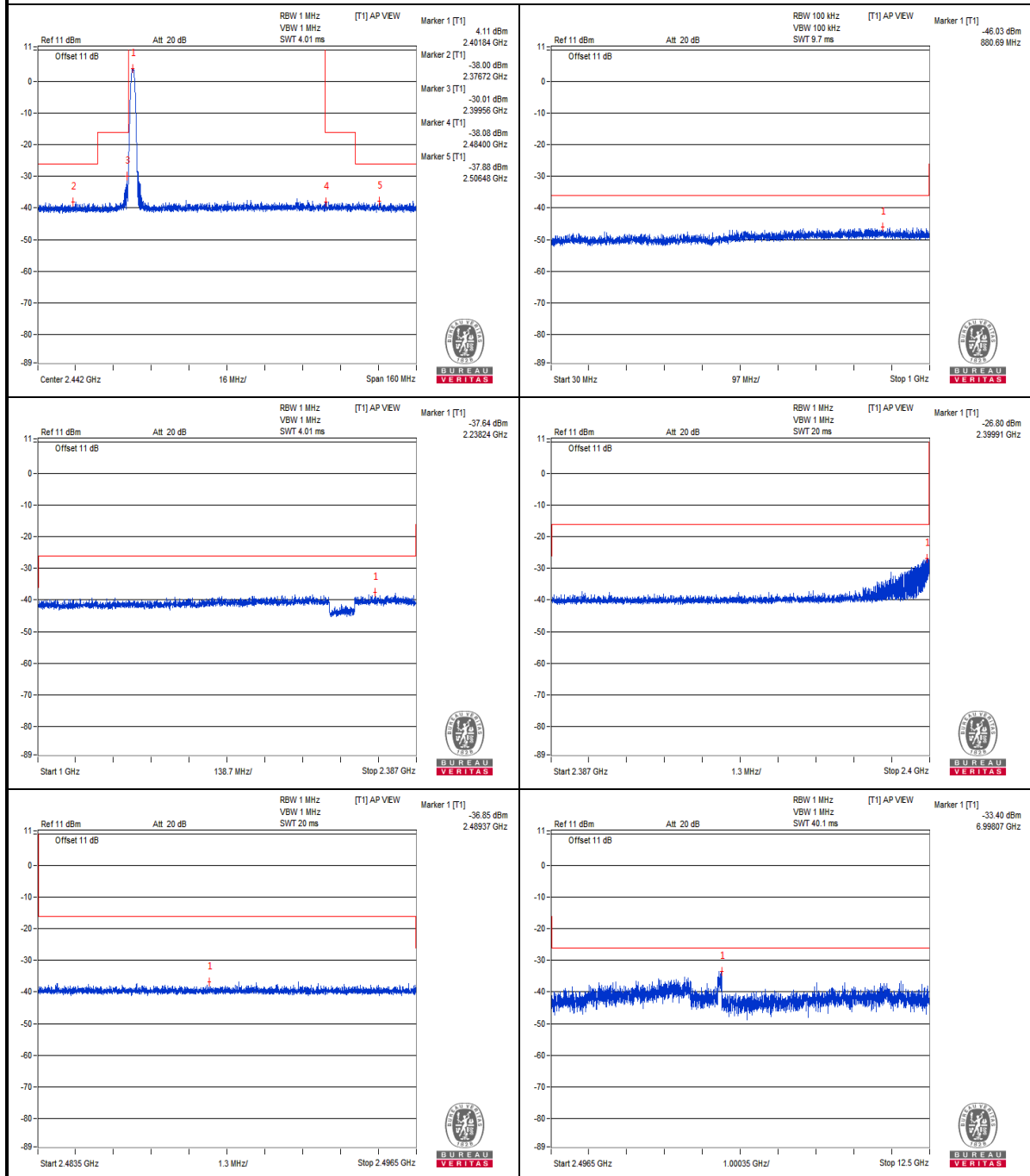
Vnormal
Channel 78



Measurement uncertainty: $\pm 3.93\text{dB}$



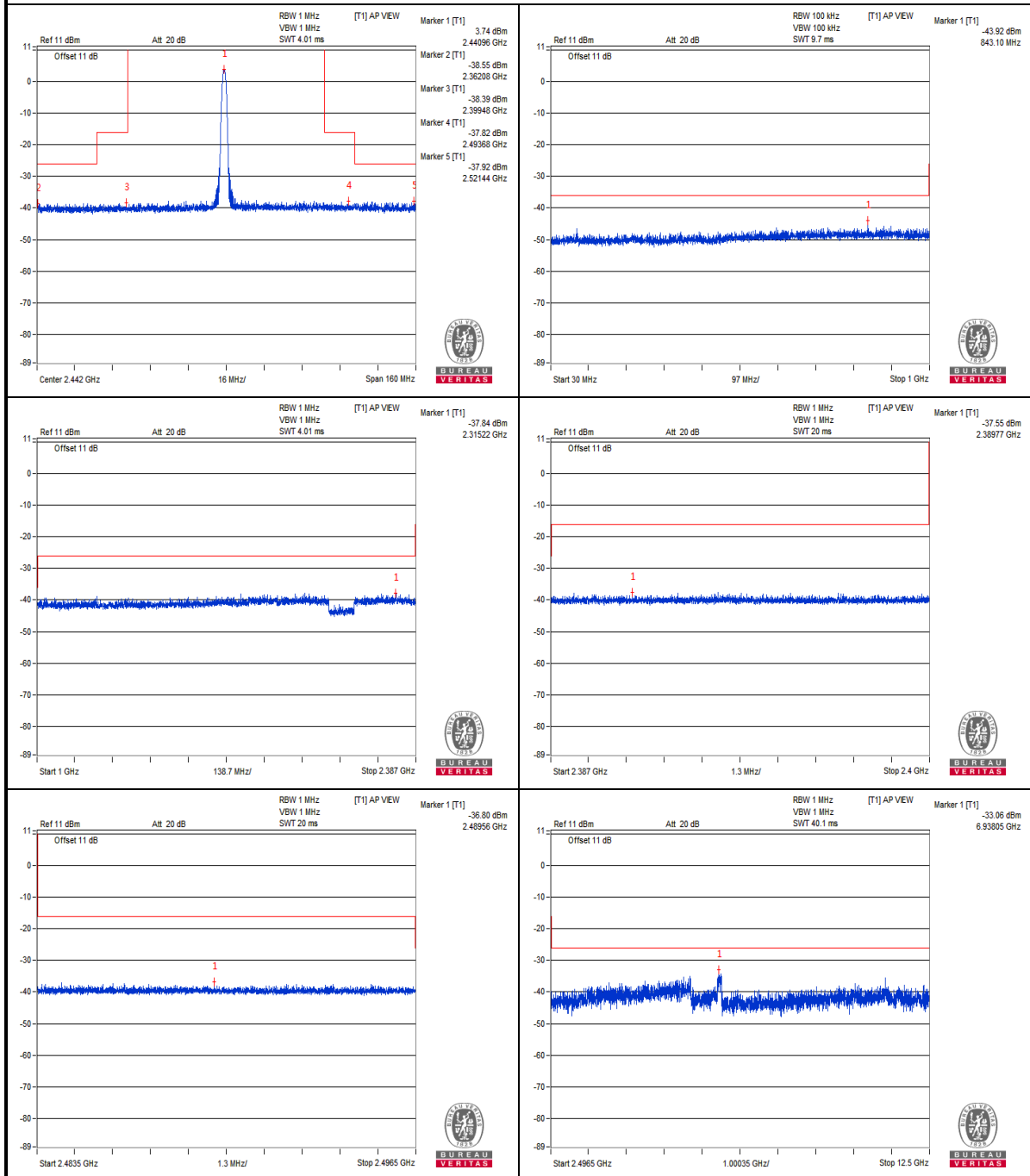
V+10%
Channel 0



Measurement uncertainty: $\pm 3.93\text{dB}$



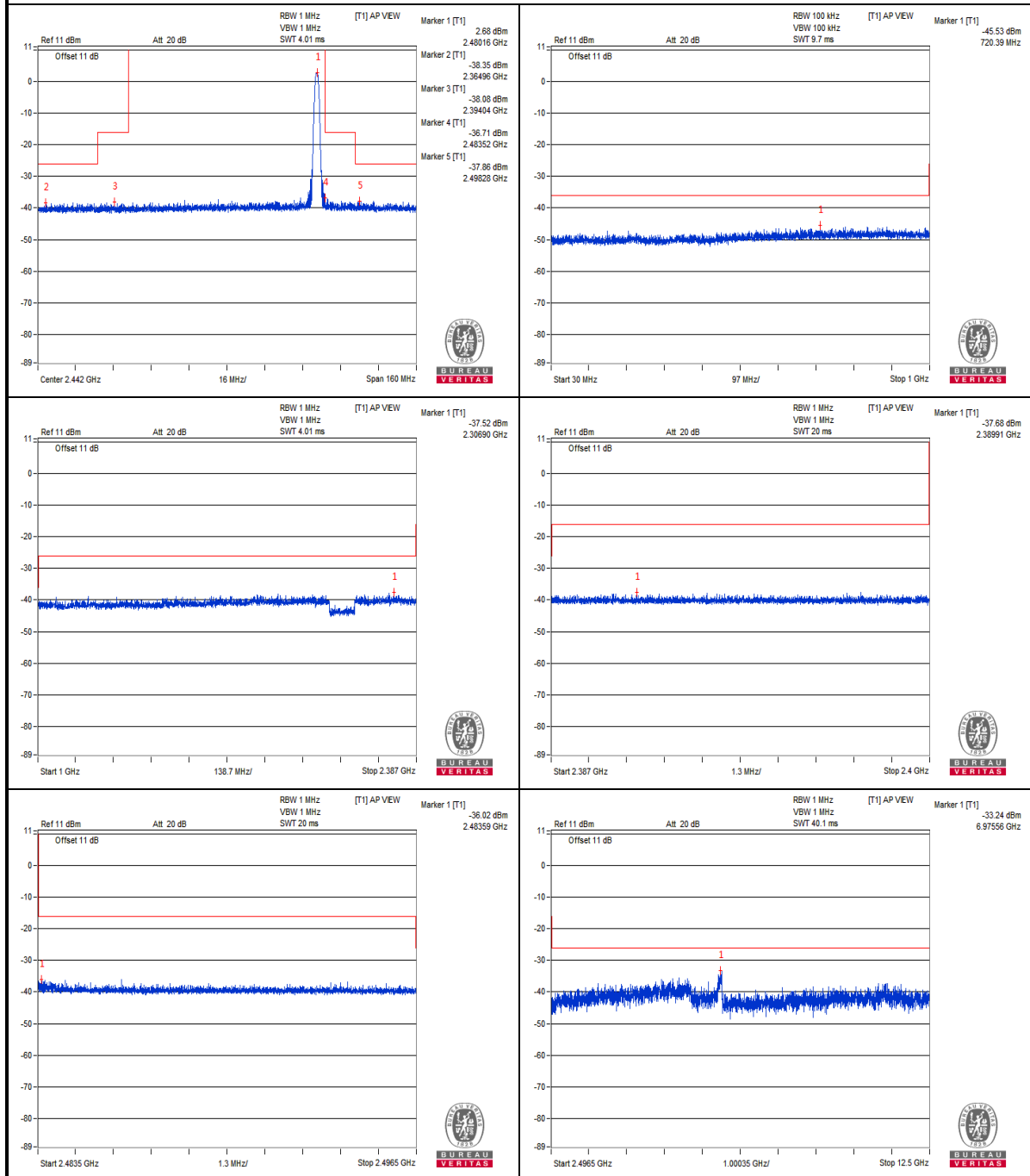
V+10%
Channel 39



Measurement uncertainty: $\pm 3.93\text{dB}$



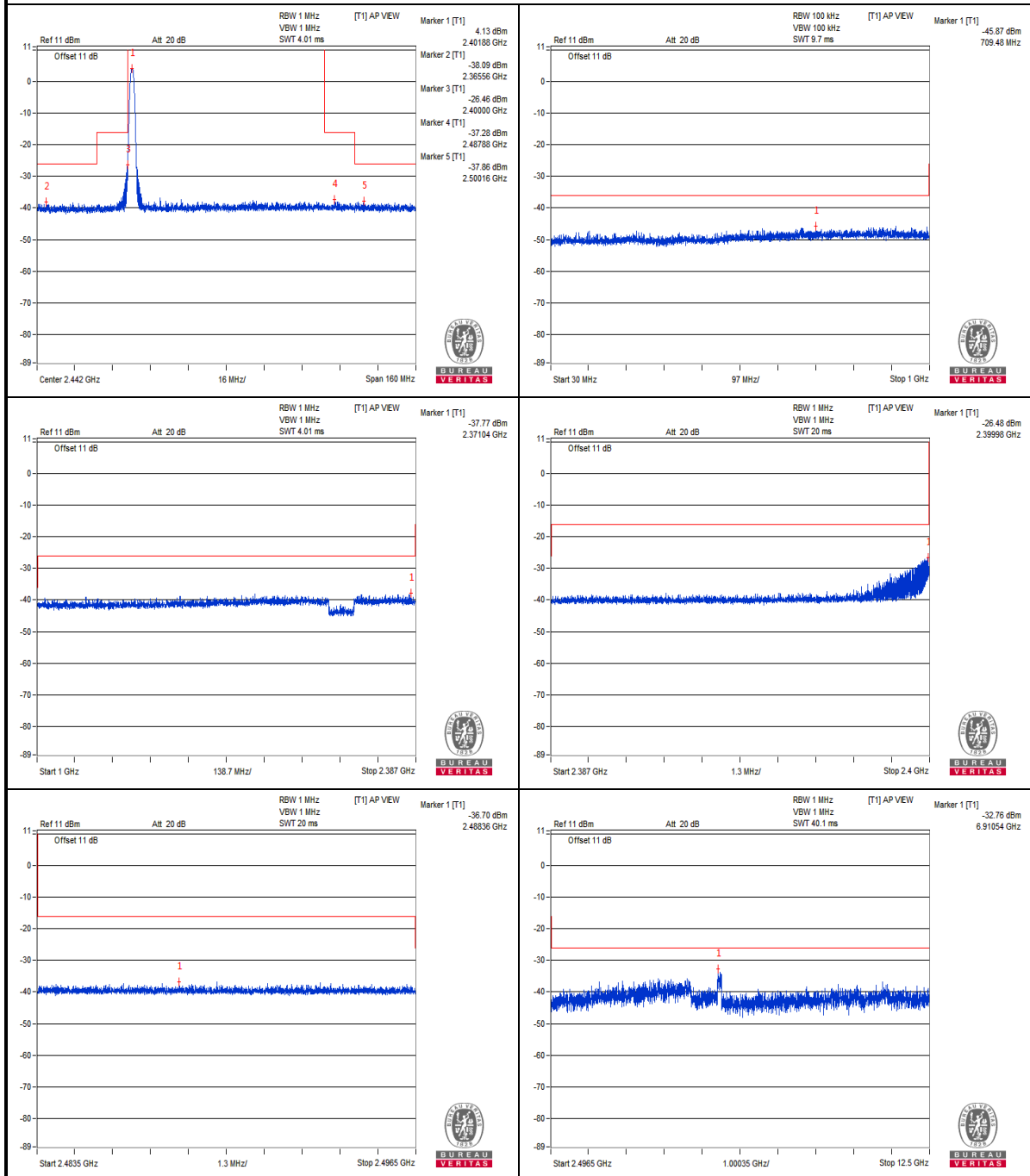
V+10%
Channel 78



Measurement uncertainty: $\pm 3.93\text{dB}$



V-10%
Channel 0



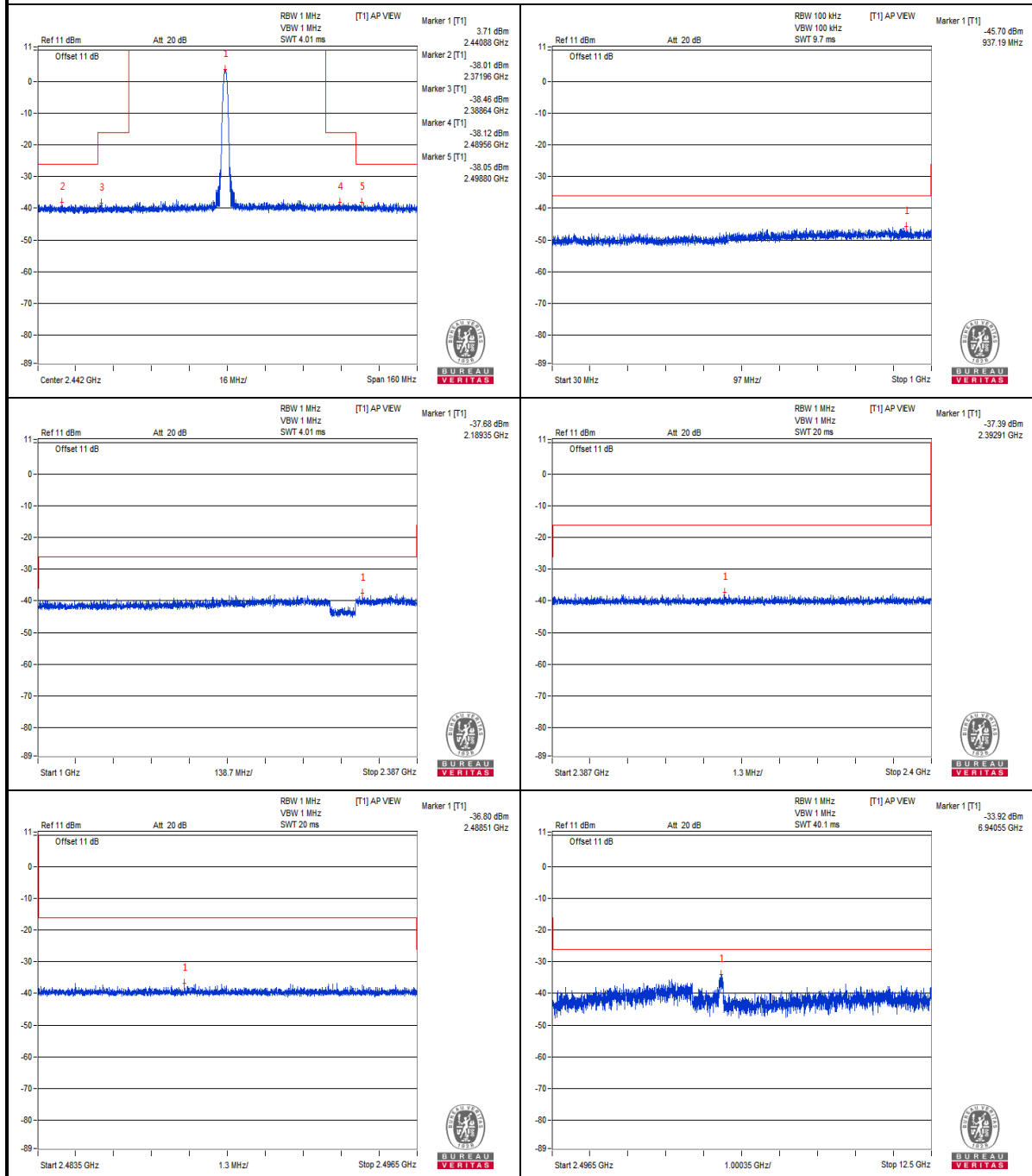
Measurement uncertainty: $\pm 3.93\text{dB}$



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Test Report No.: RJ2111WDG0821-1

V-10%
Channel 39



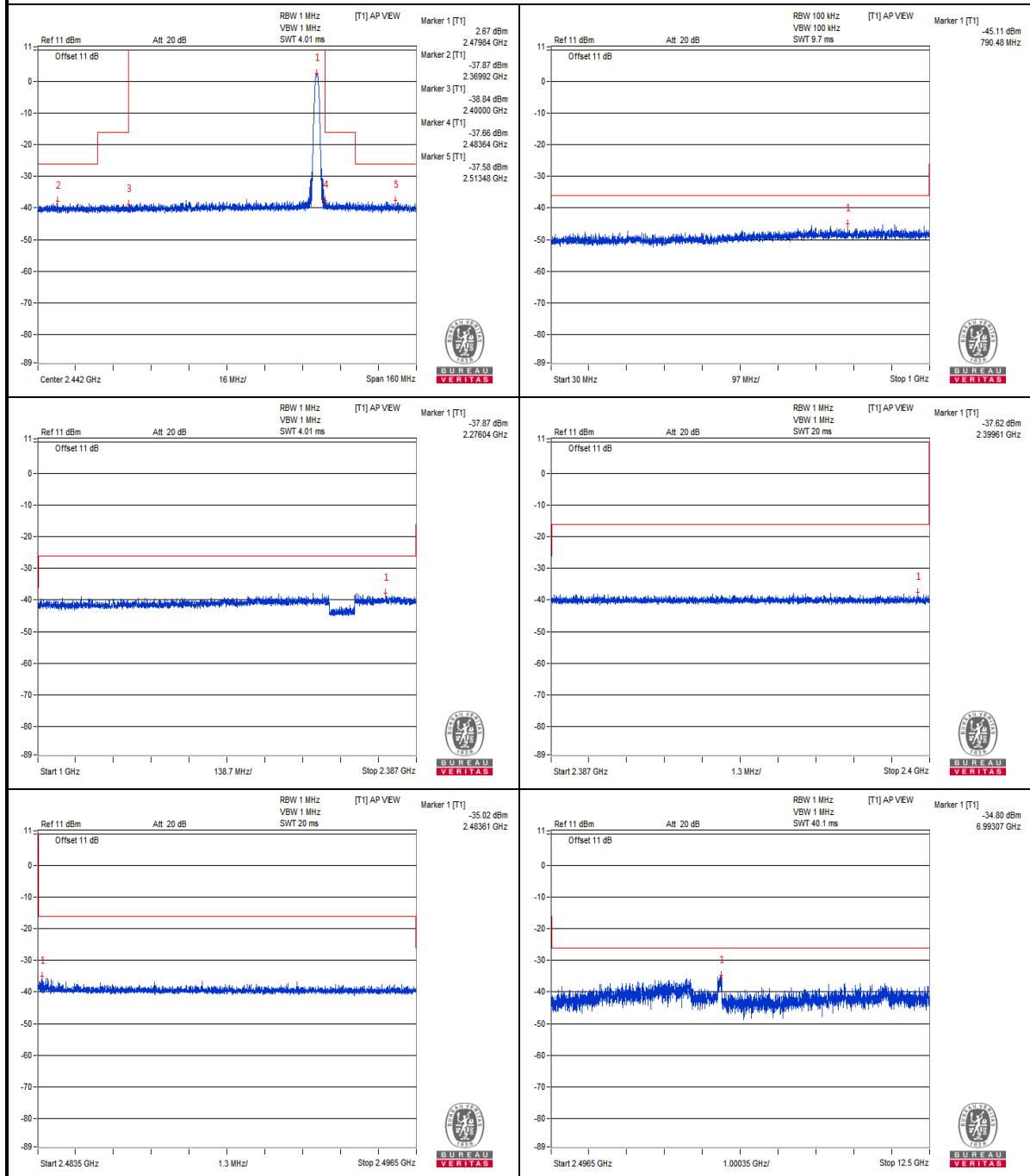
Measurement uncertainty: $\pm 3.93\text{dB}$



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Test Report No.: RJ2111WDG0821-1

V-10%
Channel 78



Measurement uncertainty: $\pm 3.93\text{dB}$



3.5 ANTENNA POWER MEASUREMENT

3.5.1 LIMITS OF ANTENNA POWER

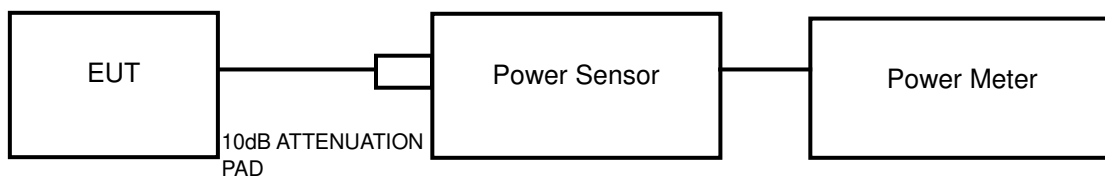
Antenna power shall be 3mW/MHz or less.

Tolerance of antenna power shall be +20% (upper value) and –80% (lower value).

3.5.2 CONDUCTED OUTPUT POWER

ENVIRONMENTAL CONDITIONS	23 deg.C, 58 % RH		
TEST CONDITION	Conducted output power (dBm)		
	GFSK	π /4-DQPSK	8DPSK
Voltage normal	2.69	2.85	2.99
Voltage max	2.73	2.91	3.12
Voltage min	2.57	2.76	2.84

3.5.3 TEST SETUP



**3.5.4 TEST RESULTS – MODE A****For GFSK:**

ENVIRONMENTAL CONDITIONS	23 deg.C, 58 % RH
TEST CONDITION	Conducted power density (mW/MHz)
	HOPPING MODE
Voltage normal	0.026240
Voltage max	0.026483
Voltage min	0.025525
Rated power	0.09
Tolerance of antenna power	0.018 ~ 0.108

Note: 1. Conducted power density=Conducted output power/Spread-Spectrum

2. Tolerance of antenna power shall be +20% (upper value) and –80% (lower value).

ENVIRONMENTAL CONDITIONS	23 deg.C, 58 % RH
TEST CONDITION	EIRP power density (mW/MHz)
	HOPPING MODE
Voltage normal	0.037581
Voltage max	0.037929
Voltage min	0.036557

NOTE: The value of EIRP densities are "calculated" values.

**3.5.5 TEST RESULTS – MODE B****For $\pi/4$ DQPSK:**

ENVIRONMENTAL CONDITIONS	23 deg.C, 58 % RH
TEST CONDITION	Conducted power density (mW/MHz)
	HOPPING MODE
Normal Voltage	0.027148
Voltage max	0.027526
Voltage min	0.026591
Rated power	0.09
Tolerance of antenna power	0.018 ~ 0.108

Note: 1. Conducted power density=Conducted output power/Spread-Spectrum
2. Tolerance of antenna power shall be +20% (upper value) and –80% (lower value).

ENVIRONMENTAL CONDITIONS	23 deg.C, 58 % RH
TEST CONDITION	EIRP power density (mW/MHz)
	HOPPING MODE
Normal Voltage	0.038881
Voltage max	0.039422
Voltage min	0.038083

NOTE: The value of EIRP power density is "calculated" values.

**3.5.6 TEST RESULTS – MODE C****For 8DPSK:**

ENVIRONMENTAL CONDITIONS	23 deg.C, 58 % RH
TEST CONDITION	Conducted power density (mW/MHz)
	HOPPING MODE
Normal Voltage	0.027959
Voltage max	0.028890
Voltage min	0.027086
Rated power	0.09
Tolerance of antenna power	0.018 ~ 0.108

Note: 1. Conducted power density=Conducted output power/Spread-Spectrum

2. Tolerance of antenna power shall be +20% (upper value) and –80% (lower value).

ENVIRONMENTAL CONDITIONS	23 deg.C, 58 % RH
TEST CONDITION	EIRP power density (mW/MHz)
	HOPPING MODE
Normal Voltage	0.040043
Voltage max	0.041376
Voltage min	0.038792

NOTE: The value of EIRP densities are "calculated" values.

**3.5.7 TEST RESULTS – MODE D****For GFSK <Enable AFH function>:**

ENVIRONMENTAL CONDITIONS	23 deg.C, 58 % RH
TEST CONDITION	Conducted power density (mW/MHz)
	HOPPING MODE
Normal Voltage	0.102641
Voltage max	0.102683
Voltage min	0.099844
Rated power	0.4
Tolerance of antenna power	0.08 ~ 0.48

Note: 1. Conducted power density=Conducted output power/Spread-Spectrum

2. Tolerance of antenna power shall be +20% (upper value) and –80% (lower value).

ENVIRONMENTAL CONDITIONS	23 deg.C, 58 % RH
TEST CONDITION	EIRP power density (mW/MHz)
	HOPPING MODE
Normal Voltage	0.147001
Voltage max	0.147061
Voltage min	0.142995

NOTE: The value of EIRP densities are "calculated" values.

**3.5.8 TEST RESULTS – MODE E****For $\pi/4$ DQPSK <Enable AFH Function>:**

ENVIRONMENTAL CONDITIONS	23 deg.C, 58 % RH
TEST CONDITION	Conducted power density (mW/MHz)
	HOPPING MODE
Normal Voltage	0.106024
Voltage max	0.107028
Voltage min	0.103395
Rated power	0.4
Tolerance of antenna power	0.08 ~ 0.48

Note: 1. Conducted power density=Conducted output power/Spread-Spectrum

2. Tolerance of antenna power shall be +20% (upper value) and –80% (lower value).

ENVIRONMENTAL CONDITIONS	23 deg.C, 58 % RH
TEST CONDITION	EIRP power density (mW/MHz)
	HOPPING MODE
Normal Voltage	0.151846
Voltage max	0.153284
Voltage min	0.148081

NOTE: The value of EIRP densities are "calculated" values.

**3.5.9 TEST RESULTS – MODE F****For 8DPSK <Enable AFH function>:**

ENVIRONMENTAL CONDITIONS	23 deg.C, 58 % RH
TEST CONDITION	Conducted power density (mW/MHz)
	HOPPING MODE
Normal Voltage	0.108602
Voltage max	0.112331
Voltage min	0.105317
Rated power	0.4
Tolerance of antenna power	0.08 ~ 0.48

Note: 1. Conducted power density = Conducted output power / Spread-Spectrum

2. Tolerance of antenna power shall be +20% (upper value) and –80% (lower value).

ENVIRONMENTAL CONDITIONS	23 deg.C, 58 % RH
TEST CONDITION	EIRP power density (mW/MHz)
	HOPPING MODE
Normal Voltage	0.155538
Voltage max	0.160879
Voltage min	0.150834

NOTE: The value of EIRP densities are "calculated" values.

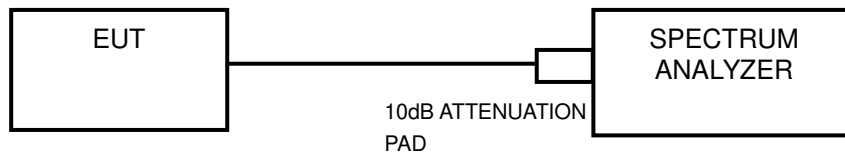


3.6 SPURIOUS EMISSIONS FOR RECEIVER

3.6.1 LIMITS OF SPURIOUS EMISSIONS FOR RECEIVER

Frequencies (MHz)	Limit
Below 1GHz	$\leq 4\text{nW}$ (-54dBm)
Above 1GHz	$\leq 20\text{nW}$ (-47dBm)

3.6.2 TEST SETUP



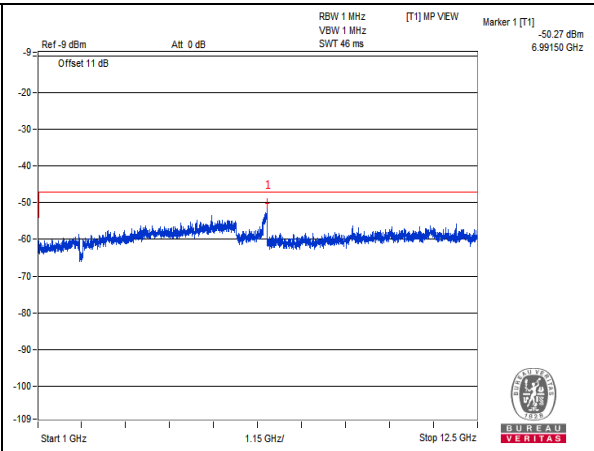
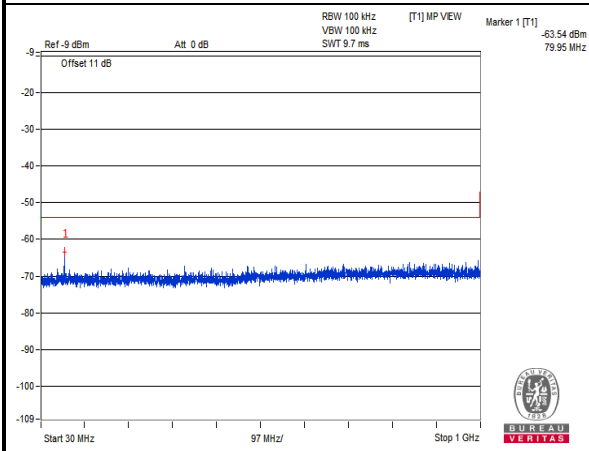
3.6.3 SUMMARY OF TEST RESULTS – MODE A

TEST CHANNEL		CH 0 (2402MHz)		CH 39 (2441MHz)		LIMIT	RESULT
TEST CONDITION	FREQUENCY RANGE	FREQUENCY (MHz)	MEASURE. VALUE	FREQUENCY (MHz)	MEASURE. VALUE		
V _{normal}	below 1GHz	79.950	0.441727nW	79.950	0.365652nW	4nW	PASS
	above 1GHz	6991.500	9.387002nW	6968.500	5.43771nW	20nW	PASS
V _{max}	below 1GHz	79.950	0.372297nW	79.950	0.443344nW	4nW	PASS
	above 1GHz	6908.120	5.095277nW	6988.620	5.315746nW	20nW	PASS
V _{min}	below 1GHz	79.950	0.308125nW	79.950	0.313276nW	4nW	PASS
	above 1GHz	6997.250	6.179713nW	6988.620	6.354273nW	20nW	PASS
TEST CHANNEL		CH 78 (2480MHz)				LIMIT	RESULT
TEST CONDITION	FREQUENCY RANGE	FREQUENCY (MHz)		MEASURE. VALUE			
V _{normal}	below 1GHz	864.200		0.251299nW		4nW	PASS
	above 1GHz	6994.370		8.019029nW		20nW	PASS
V _{max}	below 1GHz	79.950		0.844471nW		4nW	PASS
	above 1GHz	6954.120		6.338375nW		20nW	PASS
V _{min}	below 1GHz	796.300		0.254888nW		4nW	PASS
	above 1GHz	6997.250		6.487118nW		20nW	PASS

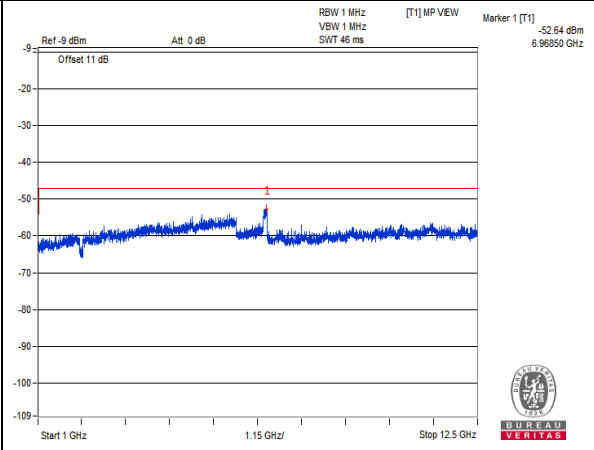
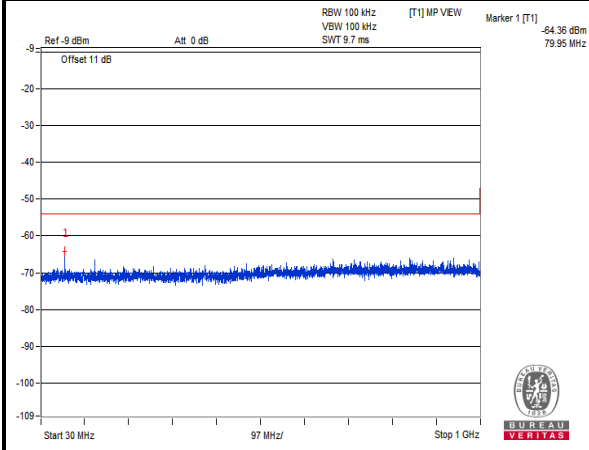
NOTE: 1. The worst value in each frequency range v.s. each channel has been marked by boldface.
 2. The spectrum plots are attached on the following pages.



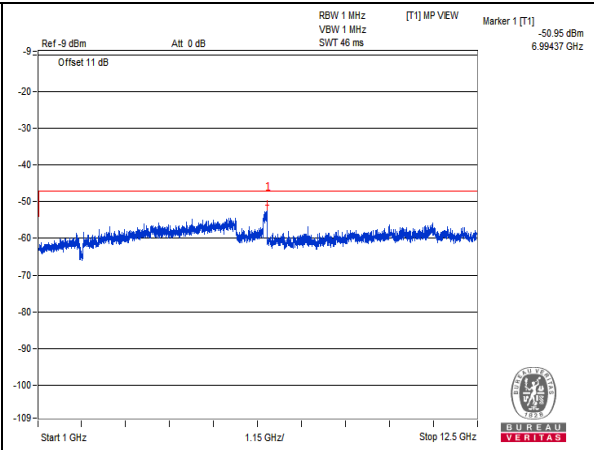
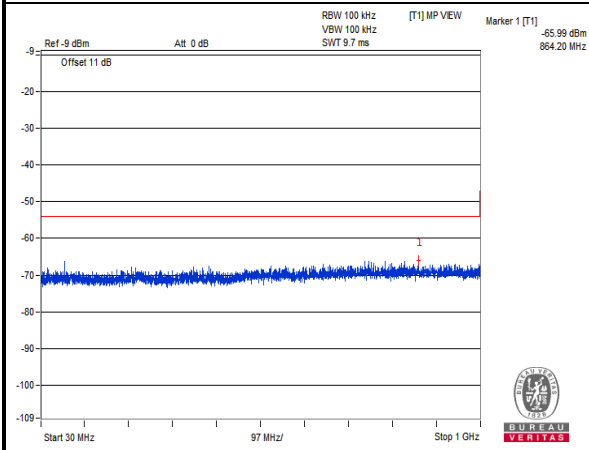
Vnormal



Channel 0



Channel 39

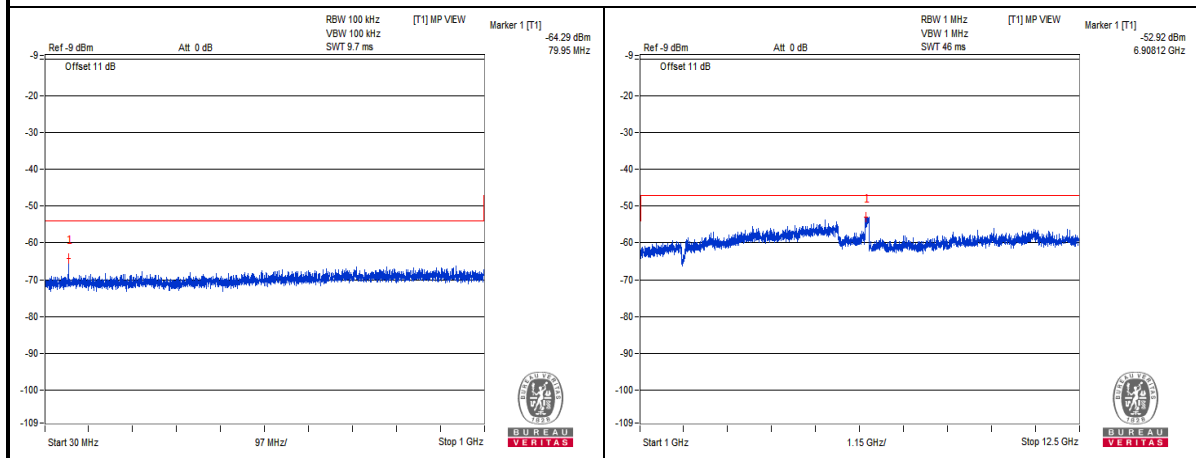


Channel 78

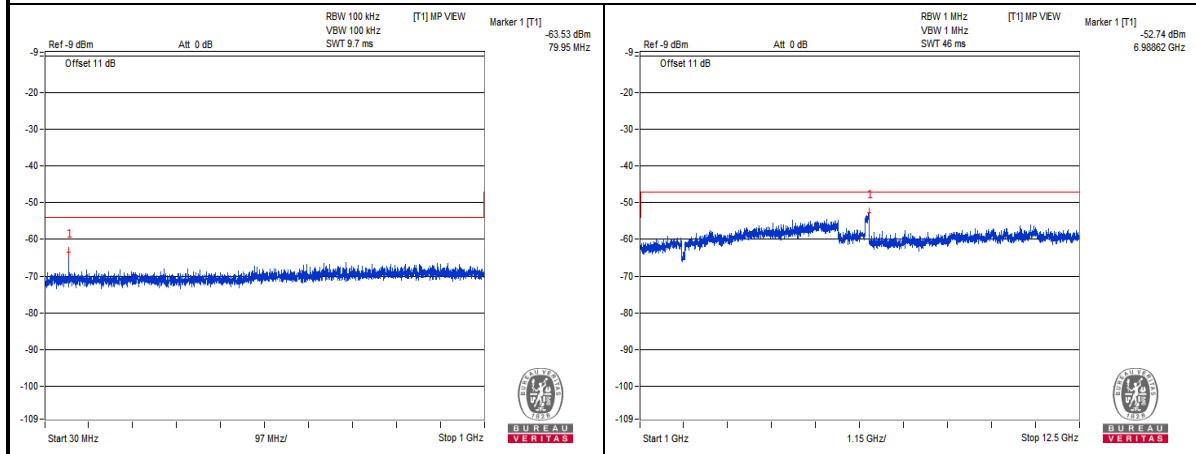
Measurement uncertainty: ± 3.93 dB



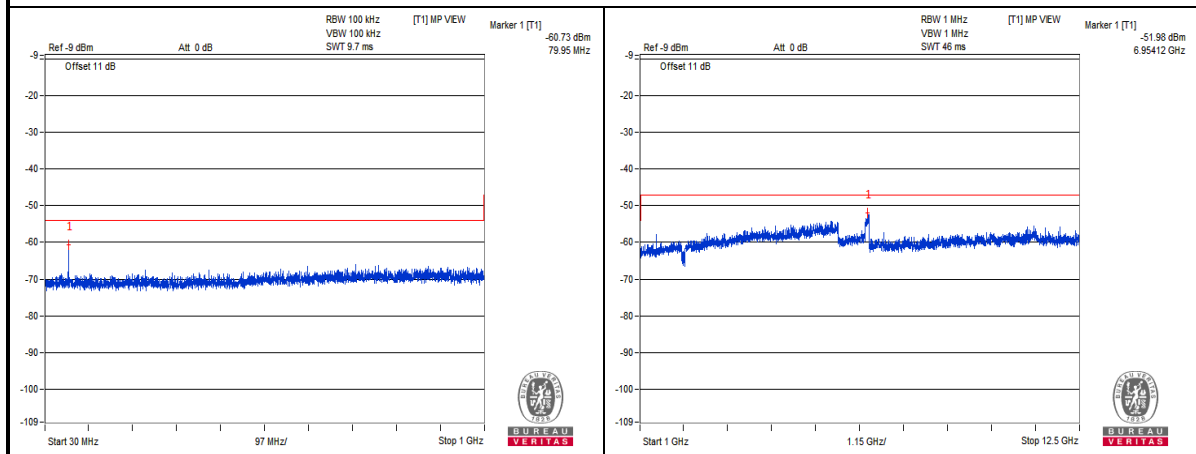
V_{+10%}



Channel 0



Channel 39



Channel 78

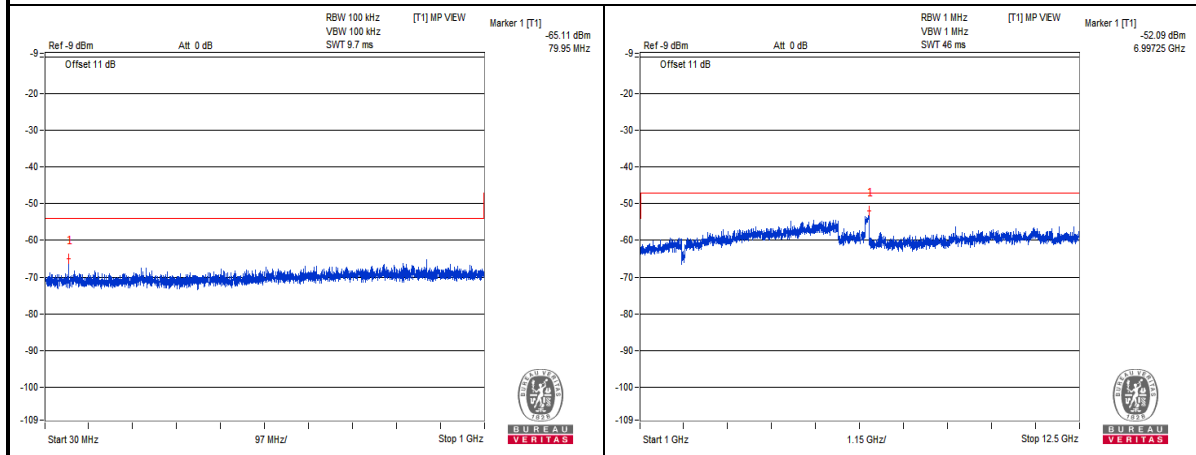
Measurement uncertainty: $\pm 3.93\text{dB}$



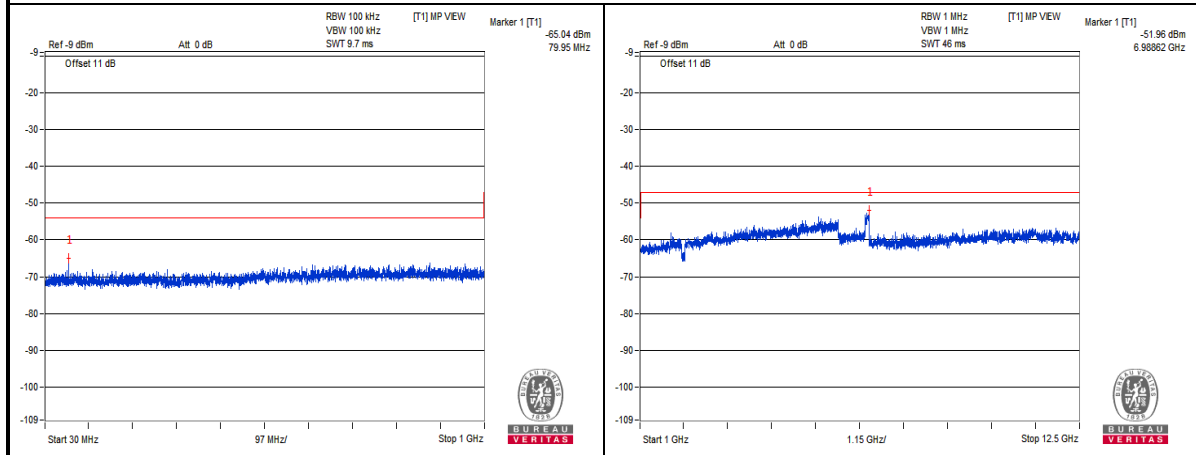
BUREAU
VERITAS

Test Report No.: RJ2111WDG0821-1

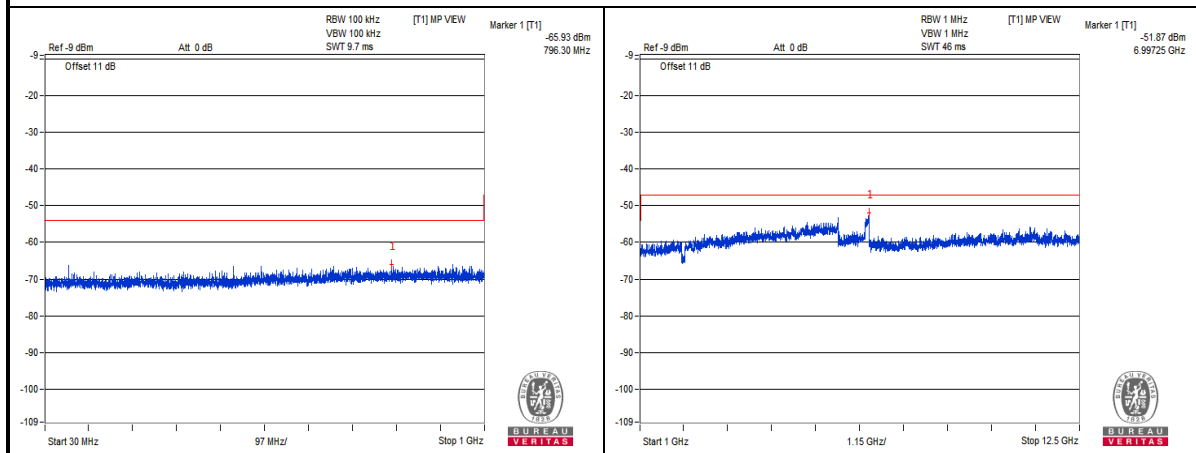
V-10%



Channel 0



Channel 39



Channel 78

Measurement uncertainty: ± 3.93 dB



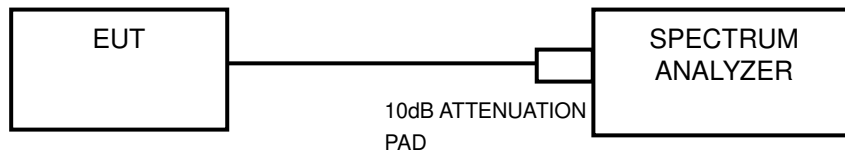
3.7 DWELL TIME

3.7.1 LIMITS OF DWELL TIME

The frequency retention time in the frequency hopping method shall be 0.4 second or less. The total sum of the frequency retention time in any frequency within the time obtained by multiplying the diffusion rate by 0.4 second shall be 0.4 second or shorter.

Formula : **(Normal mode)** dwell time = [Spreading rate/79] x duty ratio x 0.4 seconds
(AFH mode) dwell time = [Spreading rate/20] x duty ratio x 0.4 seconds

3.7.2 TEST SETUP



3.7.3 TEST RESULTS – MODE A

For GFSK:

Test Condition	23 deg.C, 58 % RH					
	Mode	SPREADING RATE	[Spreading rate/79]*0.4	Duty Ratio	Result (msec)	Limit (msec)
Normal Voltage	DH1	70.80	0.358	0.294	105.268	400
	DH3	70.80	0.358	0.648	232.296	400
	DH5	70.80	0.358	0.740	265.127	400
Voltage +10%	DH1	70.80	0.358	0.294	105.268	400
	DH3	70.80	0.358	0.628	225.093	400
	DH5	70.80	0.358	0.752	269.578	400
Voltage -10%	DH1	70.80	0.358	0.294	105.268	400
	DH3	70.80	0.358	0.628	225.093	400
	DH5	70.80	0.358	0.734	263.259	400



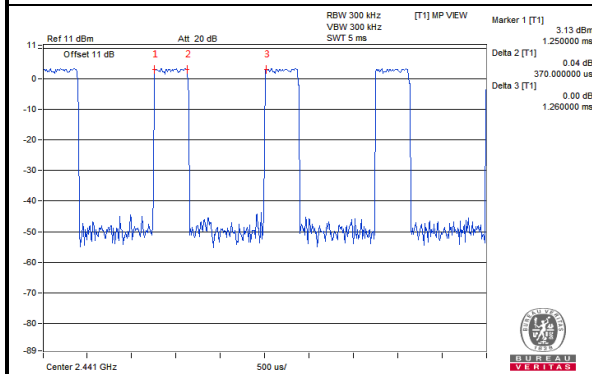
3.7.4 TEST RESULTS – MODE D

For GFSK< Enable AFH function>:

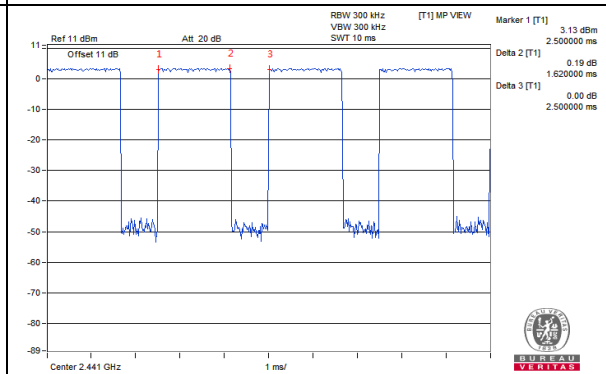
Test Condition	23 deg.C, 58 % RH					
Normal Voltage	Mode	SPREADING RATE	[Spreading rate/20]*0.4	Duty Ratio	Result (msec)	Limit (msec)
	DH1	18.11	0.362	0.294	106.360	400
	DH3	18.11	0.362	0.648	234.706	400
	DH5	18.11	0.362	0.734	265.991	400
Voltage +10%	DH1	18.26	0.365	0.302	110.140	400
	DH3	18.26	0.365	0.628	229.312	400
	DH5	18.26	0.365	0.752	274.630	400
Voltage -10%	DH1	18.11	0.362	0.294	106.360	400
	DH3	18.11	0.362	0.628	227.428	400
	DH5	18.11	0.362	0.734	265.991	400



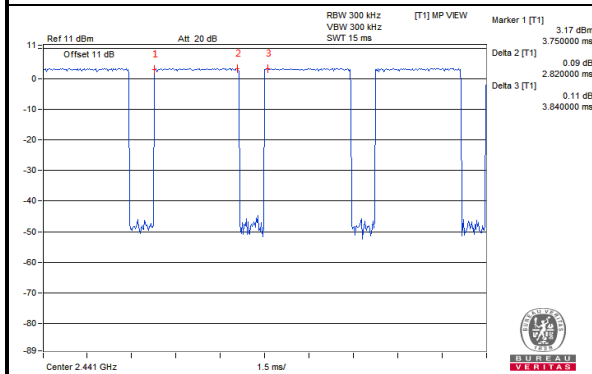
DH1 Normal Voltage



DH3 Normal Voltage

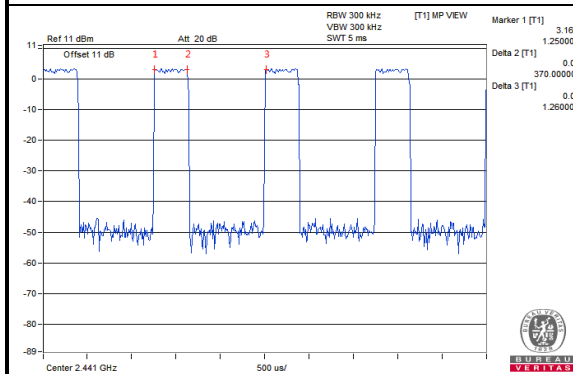


DH5 Normal Voltage

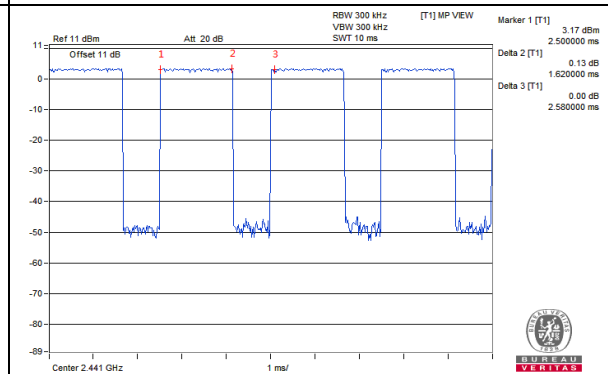




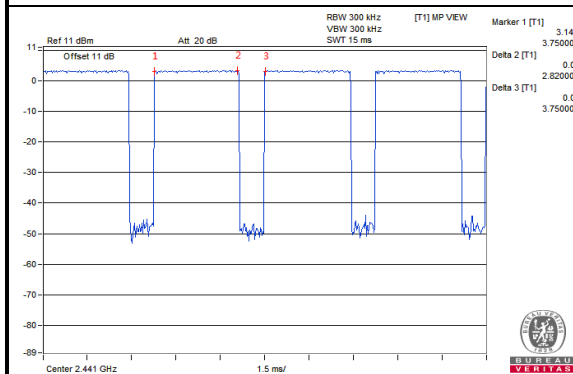
DH1 Voltage +10%



DH3 Voltage +10%

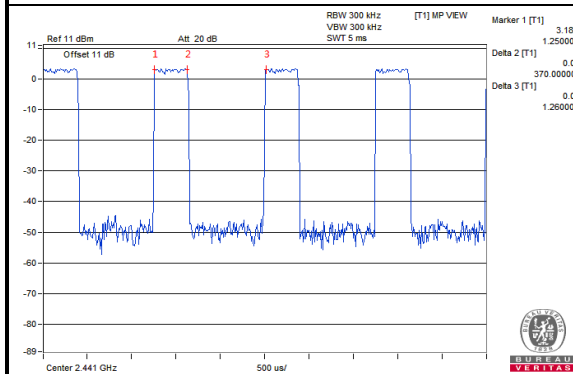


DH5 Voltage +10%

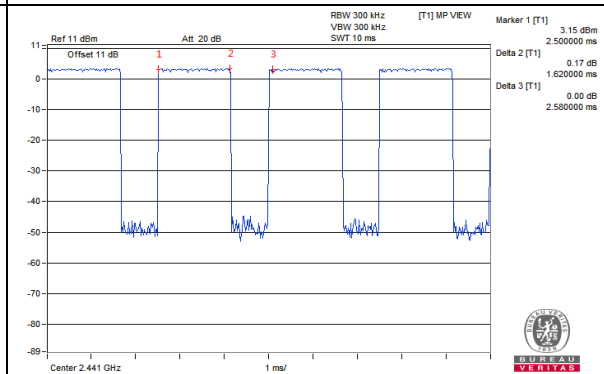




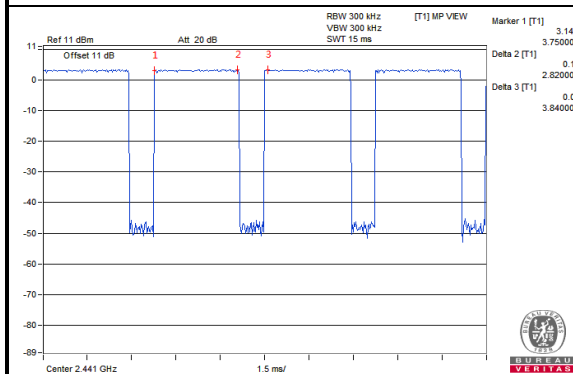
DH1 Voltage -10%



DH3 Voltage -10%



DH5 Voltage -10%



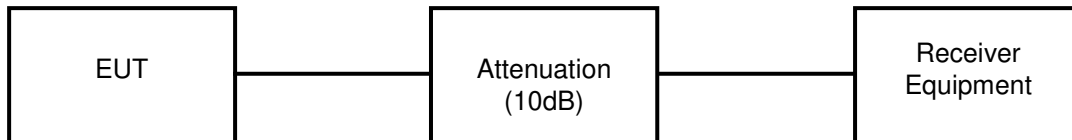


3.8 INTERFERENCE PREVENTION FUNCTION

3.8.1 LIMITS OF INTERFERENCE PREVENTION FUNCTION

N/A

3.8.2 TEST SETUP



3.8.3 TEST RESULTS

ENVIRONMENTAL CONDITIONS	23 deg.C, 58% RH
LINK MODE	TEST RESULT
BT	PASS



4 TEST INSTRUMENTS

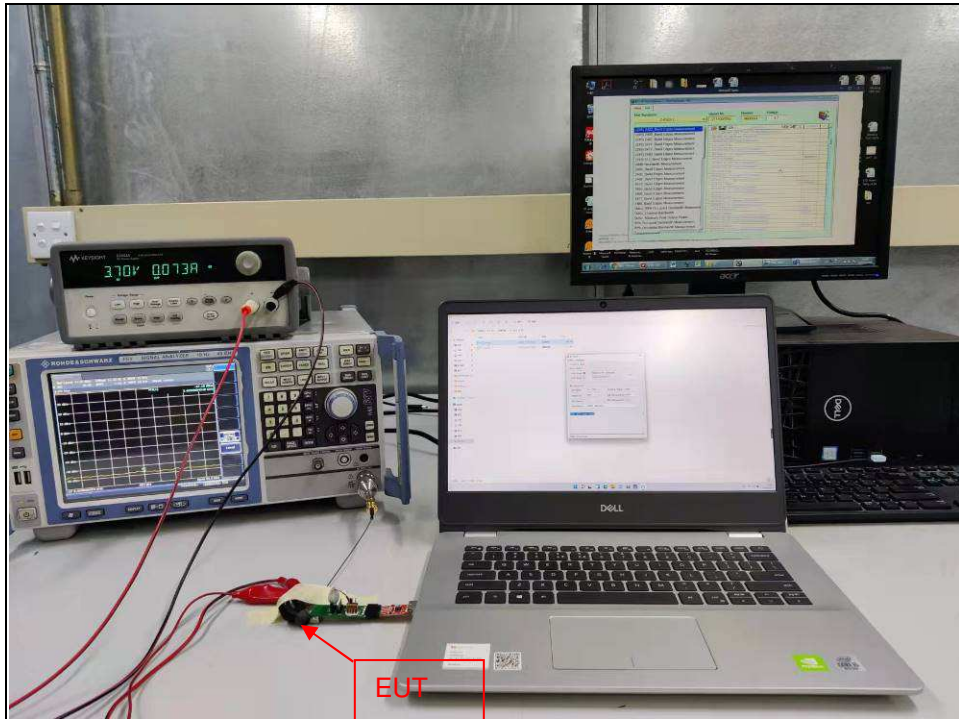
Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV40	101094	Apr. 04, 22
Power Sensor	Keysight	U2021XA	MY55060016	May 18, 22
Power Sensor	Keysight	U2021XA	MY55060018	May 18, 22
Digital Multimeter	FLUKE	15B	A1220010DG	Oct.12, 22
Attenuator	MINI	BW-S10W2+	S130129FGE2	N/A

NOTE:

1. The test was performed in RF Ovenroom.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.



5 PHOTOGRAPHS OF THE TEST CONFIGURATION





6 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications were made to the EUT by the lab during the test.

--- END ---