

FCC 47 CFR PART 15 SUBPART C

CERTIFICATION TEST REPORT

For

Wireless Moudle

MODEL NUMBER: VS0B9MW3565UE

PROJECT NUMBER: 4790751248

REPORT NUMBER: 4790751248-7

FCC ID: 2AL8S-0211C5L1

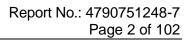
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Prepared for

ZHEJIANG UNIVIEW TECHNOLOGIES CO., LTD

Prepared by

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Revision History

Rev.	Issue Date	Revisions	Revised By
V0	04/12/2023	Initial Issue	



TABLE OF CONTENTS

1. ATT	TESTATION OF TEST RESULTS	4
2. TES	ST METHODOLOGY	6
3. FAC	CILITIES AND ACCREDITATION	
_	LIBRATION AND UNCERTAINTY MEASURING INSTRUMENT CALIBRATION	
4.1.	MEASURING INSTRUMENT CALIBRATION	
4.2.		
	UIPMENT UNDER TEST	
5.1.	DESCRIPTION OF EUT	
5.2.	MAXIMUM OUTPUT POWER	
5.3.	PACKET TYPE CONFIGURATION	
5.4.	CHANNEL LIST	9
5.5.	TEST CHANNEL CONFIGURATION	
5.6.	WORST-CASE CONFIGURATIONS	
5.7.	THE WORSE CASE POWER SETTING PARAMETER	
5.8.	DESCRIPTION OF AVAILABLE ANTENNAS	
5.9.	DESCRIPTION OF TEST SETUP	
5.10.	MEASURING INSTRUMENT AND SOFTWARE USED	
6. AN	TENNA PORT TEST RESULTS	14
6.1.	ON TIME AND DUTY CYCLE	14
6.2.	20 dB BANDWIDTH	
6.3.	CONDUCTED OUTPUT POWER	21
6.4.	CARRIER FREQUENCY SEPARATION	26
6.5.	NUMBER OF HOPPING FREQUENCIES	29
6.6.	TIME OF OCCUPANCY (DWELL TIME)	
6.7.	CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS	
7. RAI	DIATED TEST RESULTS	54
7.1.	LIMITS AND PROCEDURE	
7.2.	TEST ENVIRONMENT	60
7.3.	RESTRICTED BANDEDGE	60
7.4.	SPURIOUS EMISSIONS	
8. AN	TENNA REQUIREMENTS	



Applicant Information

Company Name: Address:	ZHEJIANG UNIVIEW TECHNOLOGIES CO., LTD 88 JIANGLING RD BINJIANG DISTRICT HANGZHOU ZHEJIANG 310051 CHINA
Manufacturer Information	
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Address:	88 JIANGLING RD BINJIANG DISTRICT HANGZHOU ZHEJIANG

88 JIANGLING RD BINJIANG DISTRICT HANGZHOU ZHEJIANG 310051 CHINA

EUT Description

Product Name: Model Name: Sample Number: Data of Receipt Sample: Test Date:

Wireless Moudle VS0B9MW3565UE 5811281 Feb. 21, 2023 Feb. 23, 2023~ Apr. 11, 2023

APPLICABLE STANDARDS

STANDARD

CFR 47 Part 15 Subpart C

TEST RESULTS PASS

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Solutions

Summary of Test Results					
Clause	Test Items	FCC/ISED Rules	Test Results		
1	20dB Bandwidth	FCC 15.247 (a) (1)	Pass		
2	Conducted Output Power	FCC 15.247 (b) (1)	Pass		
3	Carrier Hopping Channel Separation	FCC 15.247 (a) (1)	Pass		
4	Number of Hopping Frequency	15.247 (a) (1) III	Pass		
5	Time of Occupancy (Dwell Time)	15.247 (a) (1) III	Pass		
6	Conducted Bandedge	FCC 15.247 (d)	Pass		
7	Radiated Bandedge and Spurious	FCC 15.247 (d) FCC 15.209 FCC 15.205	Pass		
8	Conducted Emission Test for AC Power Port	FCC 15.207	N/A(Note2)		
9	Antenna Requirement	FCC 15.203	Pass		
Note:					

1)The measurement result for the sample received is <Pass> according to < ANSI C63.10-2013, FCC CFR 47 Part 2, FCC CFR 47 Part 15C> when <Accuracy Method> decision rule is applied. 2)This product is power supply by DC.

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with KDB 558074 D01 15.247 Meas Guidance v05r02, 414788 D01 Radiated Test Site v01r01, CFR 47 FCC Part 2, CFR 47 FCC Part 15, ANSI C63.10-2013.

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	A2LA (Certificate No.: 4829.01) UL-CCIC COMPANY LIMITED has been assessed and proved to be in compliance with A2LA. FCC (FCC Designation No.: CN1247) UL-CCIC COMPANY LIMITED has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules. IC (IC Designation No.: 25056; CAB No.: CN0073) UL-CCIC COMPANY LIMITED has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules.
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Note 1: All tests measurement facilities use to collect the measurement data are located at No. 2, Chengwan Road, Suzhou Industrial Park, Suzhou 215122, China

Note 2: For below 30MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. These measurements below 30MHz had been correlated to measurements performed on an OFS.

Note 3: The test anechoic chamber in UL-CCIC COMPANY LIMITED had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.



4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations and is traceable to recognized national standards.

4.2. MEASUREMENT UNCERTAINTY

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

Test Item	Uncertainty			
Conduction emission	3.1dB			
Radiation Emission test (include Fundamental emission) (9kHz-30MHz)	3.4dB			
Radiation Emission test (include Fundamental emission) (30MHz-1GHz)	3.4dB			
Radiation Emission test (1GHz to 26GHz) (include Fundamental emission)	3.5dB (1GHz-18Gz)			
	3.9dB (18GHz-26.5Gz)			
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.				



5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

Product Name:	Wireless Moudle				
Model No.:	VS0B9MW3565UE				
Transmit Frequency Range	2402 MHz ~ 2480 MHz				
Mode	Basic Rate		Enhanced Data Rate		
Modulation	GFSK	∏/4-DQPSI	<	8DPSK	
Packet Type (Maximum Payload):	DH5	2DH5		3DH5	
Data Rate	1 Mbps 2 Mbps			3 Mbps	
Test software of EUT:	WCN_Combo_Tool				
Antenna Type:	PIFA antenna				
	2.65 dBi				
Antenna Gain:	This data is provided by customer and our lab isn't responsible for this data.				



5.2. MAXIMUM OUTPUT POWER

Test Mode	Frequency (MHz)	Channel Number	Maximum Output Power (dBm)
GFSK	2402 ~ 2480	0-78[79]	5.46
8DPSK	2402 ~ 2480	0-78[79]	5.49

5.3. PACKET TYPE CONFIGURATION

Test Mode	Packet Type	Setting (Packet Length)
	DH1	27
GFSK	DH3	183
	DH5	339
	2-DH1	54
∏/4-DQPSK	2-DH3	367
	2-DH5	679
	3-DH1	83
8DPSK	3-DH3	552
	3-DH5	1021

5.4. CHANNEL LIST

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	20	2422	40	2442	60	2462
01	2403	21	2423	41	2443	61	2463
02	2404	22	2424	42	2444	62	2464
03	2405	23	2425	43	2445	63	2465
04	2406	24	2426	44	2446	64	2466
05	2407	25	2427	45	2447	65	2467
06	2408	26	2428	46	2448	66	2468
07	2409	27	2429	47	2449	67	2469
08	2410	28	2430	48	2450	68	2470
09	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	/	/



5.5.	TEST CHANNEL CONFIGURATION	
Test Mode	Test Channel	Frequency
GFSK CH 0(Low Channel), CH 39(MID Chan CH 78(High Channel)		2402 MHz, 2441 MHz, 2480 MHz
∏/4-DQPSK	CH 0(Low Channel), CH 39(MID Channel), CH 78(High Channel)	2402 MHz, 2441 MHz, 2480 MHz
8DPSK	CH 0(Low Channel), CH 39(MID Channel), CH 78(High Channel)	2402 MHz, 2441 MHz, 2480 MHz
GFSK	Hopping	2402 MHz ~ 2480 MHz
∏/4-DQPSK	Hopping	2402 MHz ~ 2480 MHz
8DPSK	Hopping	2402 MHz ~ 2480 MHz

5.5. TEST CHANNEL CONFIGURATION

5.6. WORST-CASE CONFIGURATIONS

Test Mode	Modulation Technology	Modulation Type	Data Rate	Packet Type
BR	FHSS	GFSK	1Mbit/s	DH5
EDR	FHSS	8DPSK	3Mbit/s	3-DH5

5.7. THE WORSE CASE POWER SETTING PARAMETER

The Worse Case Power Setting Parameter under 2400 ~ 2483.5 MHz Band						
Test Software		WCN_Combo_Tool				
Test Mode	Transmit Antenna	Test Software Setting Value				
Test Mode	Number	CH 00	CH 39	CH 78		
GFSK	1	3	3	3		
8DPSK	1	3	3	3		



5.8. DESCRIPTION OF AVAILABLE ANTENNAS

Ant.	Frequency (MHz)	Antenna Type	Antenna Gain (dBi)
1	2400-2483.5	PIFA antenna	2.65
			• •

Note: This data is provided by customer and our lab isn't responsible for this data.

Test Mode	Transmit and Receive Mode	Description
GFSK	⊠1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna.
8DPSK	⊠1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna.



5.9. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	Description
1	Laptop	ThinkPad	E590	N/A

I/O PORT

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	USB	USB	USB	100cm Length	N/A

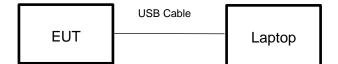
ACCESSORY

Item	Accessory	Brand Name	Model Name	Description
1	/	/	/	/

TEST SETUP

The EUT can work in an engineer mode with a software through a table PC.

SETUP DIAGRAM FOR TESTS





5.10. MEASURING INSTRUMENT AND SOFTWARE USED

Radiated Emissions (Instrument)									
Used	Equipment	Manufacturer		del No.		al No.	Upper Last Cal.	Last Cal.	Next Cal.
\checkmark	EMI test receiver	R&S		ESR7		2993	/	2022-05-20	2023-05-19
\checkmark	EMI test receiver	R&S	E	SR26	12	6703	2021-12-04	2022-12-03	2023-12-02
\checkmark	Spectrum Analyzer	R&S	FS	SV3044	22	2992	/	2022-05-27	2023-05-26
	Receiver Antenna (9kHz-30MHz)	Schwarzbeck	FM	ZB 1513	15	5456	2018-06-15	2021-06-03	2024-06-02
	Receiver Antenna (30MHz-1GHz)	Schwarzbeck	VU	LB 9163	12	6704	2019-01-28	2022-01-18	2025-01-17
	Receiver Antenna (1GHz-18GHz)	R&S	F	IF907	12	6705	2018-01-29	2022-02-28	2025-02-27
	Receiver Antenna (18GHz-26.5GHz)	Schwarzbeck	BB	HA9170	12	6706	2019-01-05	2021-07-15	2024-07-14
	Pre-amplification (To 18GHz)	Tonscned	TAP	01018050	22	4539	/	2022-10-20	2023-10-19
	Pre-amplification (To 18GHz)	R&S	sc	SCU-18D		4667	2021-12-05	2022-12-04	2023-12-03
	Pre-amplification (To 26.5GHz)	R&S		SCU-26D		5391	2021-12-05	2022-12-04	2023-12-03
V	Band Reject Filter	Wainwright	237 248	WRCGV12- 2375-2400- 2485-2510- 40SS		1	2021-12-05	2022-12-04	2023-12-03
	High Pass Filter	COM-MW	ZBF1	13-3-18G- 01		2	2021-12-05	2022-12-04	2023-12-03
	Chamber A	Albatross	ę	9*6*6	12	6721	2019-05-31	2022-05-30	2025-05-29
	Chamber B	SAEMC	9	9*6*6	22	0350	/	2022-07-03	2025-06-01
	Temperature and Humidity Datalogger	Omega Engineering Inc.	iT⊦	IX-SD-5	18	3135	/	2022-07-20	2023-07-19
				Soft	ware				
Used		ription		Manufac	turer		Name	Version	
\checkmark	Test Software for R	adiated disturbar	nce	JSTONSC	CEND		S32-RE	Ver. 4.0.0.1	
\checkmark	Test Software for R	adiated disturbar		Chinese-			E_RSE	Ver. 3.03	
				Other ins	trum	ents			
Used	Equipment	Manufacturer	Model No.		Seri	al No.	Upper Last Cal.	Last Cal.	Next Cal.
	Spectrum Analyzer	Keysight	N	9010B	15	5368	2022-04-09	2023-04-08	2024-04-07
	Power Meter	MWT	MW1	00-RFCB	22	1694	2022-04-09	2023-04-08	2024-04-07
\checkmark	Attenuator	PASTERNACK	PE	7087-6	1	624	2022-04-09	2023-04-08	2024-04-07



6. ANTENNA PORT TEST RESULTS

6.1. ON TIME AND DUTY CYCLE

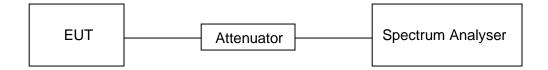
LIMITS

None; for reporting purposes only

PROCEDURE

Refer to ANSI C63.10-2013 Zero – Span Spectrum Analyzer method.

TEST SETUP



TEST ENVIRONMENT

Temperature	23.8℃	Relative Humidity	52.6%
Atmosphere Pressure	102.1kpa	Test Voltage	DC 5V

TEST RESULTS TABLE

Mode	On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (db)	1/T Minimum VBW (kHz)	Final VBW (kHz)
DH5	2.88	3.75	0.768	76.80	1.15	0.35	1
3DH5	2.88	3.75	0.768	76.80	1.15	0.35	1

Note: 1) Duty Cycle Correction Factor=10log(1/x).

2) Where: x is Duty Cycle (Linear)

3) Where: T is On Time (transmit duration)



TEST GRAPHS







6.2. 20 dB BANDWIDTH

LIMITS

FCC Part15 (15.247) Subpart C, ISED RSS-Gen					
Section	Test Item	Limit	Frequency Range (MHz)		
CFR 47 FCC 15.247 (a) (1)	20 dB Bandwidth	None; for reporting purposes only.	2400-2483.5		

TEST PROCEDURE

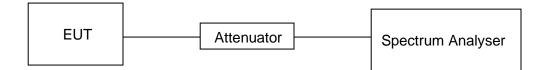
Refer to ANSI C63.10-2013 clause 6.9.2.

Connect the EUT to the spectrum analyser and use the following settings:

Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	For 20 dB Bandwidth: 1 % to 5 % of the 20 dB bandwidth
VBW	For 20 dB Bandwidth: approximately 3×RBW
Span	Approximately 2 to 5 times the OBW
Trace	Max hold
Sweep	Auto couple

Use the occupied bandwidth function of the instrument, allow the trace to stabilize and report the 20 dB Bandwidth.

TEST SETUP





TEST ENVIRONMENT

Temperature	23.8 ℃	Relative Humidity	52.6%
Atmosphere Pressure	102.1kpa	Test Voltage	DC 5V

TEST RESULTS TABLE

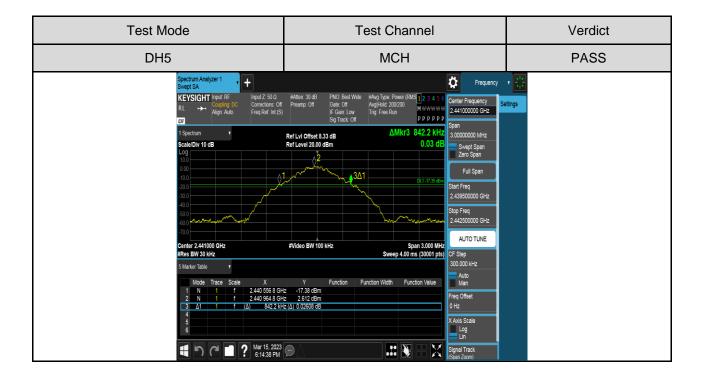
Test Mode	Test Channel (MHz)	20dB bandwidth (MHz)	Result
	2402	0.840	Pass
DH5	2441	0.842	Pass
	2480	0.838	Pass
	2402	1.279	Pass
3DH5	2441	1.260	Pass
	2480	1.252	Pass



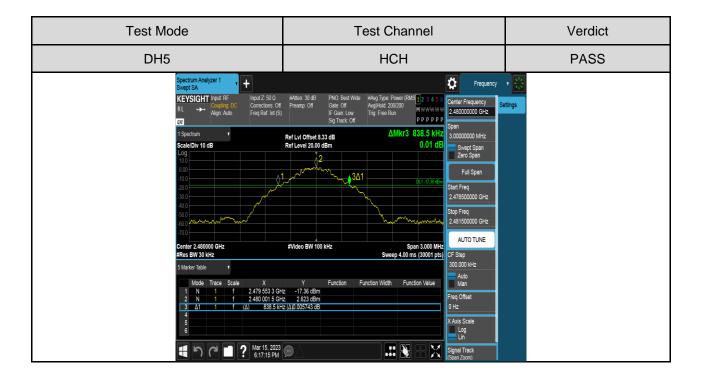
TEST GRAPHS

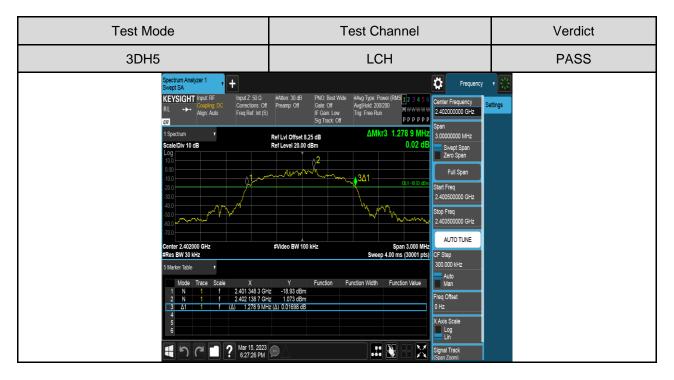
For 20dB Bandwdith Part:





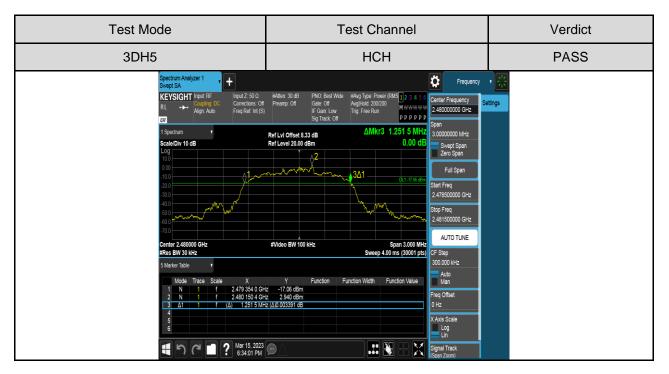








Test Mode	Test Channel	Verdict
3DH5	МСН	PASS
100 200 300 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 4000 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400	IF Gam. Low Sig Track off Trig: Free Run MWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWW	ettings





6.3. CONDUCTED OUTPUT POWER

LIMITS

FCC Part15 (15.247) Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC 15.247 (b) (1)	Output Power	Hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel: 1 watt or 30 dBm; Hopping channel carrier frequencies that are separated by 25 kHz or two- thirds of the 20dB bandwidth of the hopping channel: 125 mW or 21 dBm	2400-2483.5

TEST PROCEDURE

Disable the hopping function, connect the UUT to the spectrum Analyzer and use the following settings:

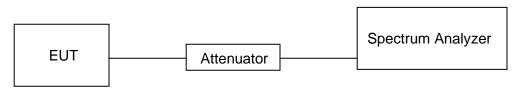
Center Frequency	The center frequency of the channel under test	
Detector	Peak	
RBW	≥ 20 dB bandwidth of the emission being measured	
VBW	≥RBW	
Span	Approximately five times the 20 dB bandwidth	
Trace	Max hold	
Sweep time	Auto couple	

Allow trace to fully stabilize and use peak marker function to determine the peak amplitude level.

TEST ENVIRONMENT

Temperature	23.8 ℃	Relative Humidity	52.6%
Atmosphere Pressure	102.1kpa	Test Voltage	DC 5V

TEST SETUP



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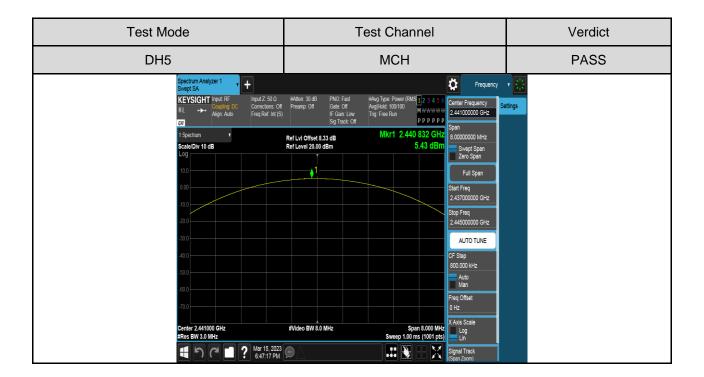
TEST RESULTS TABLE

Toot Mode	Test Mode Test Channel	Maximum Conducted Output Power (PK)	LIMIT
Test Mode Test Ch	Test Channel	dBm	dBm
	LCH	5.14	≪30
DH5	MCH	5.43	≤30
	HCH	5.46	≤30
	LCH	5.03	≤30
3DH5	MCH	5.49	≪30
	HCH	5.35	≤30



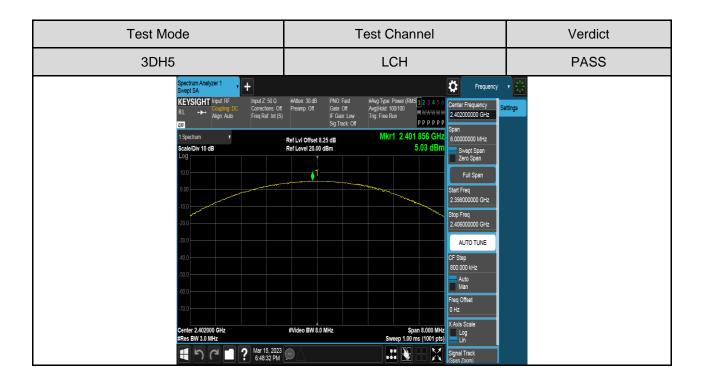
TEST GRAPHS:

Test Mode	Test Channel	Verdict
DH5	LCH	PASS
Spectrum Analyzer 1 + Swept SA Front Z: 90 0 RL → Align Auto Correctors: Off T Spectrum * ScaleDiv 10 dB 0 Log 0 00 0	IF Gam. Low Sig Track Off Trig: Free Run WWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWW	etings



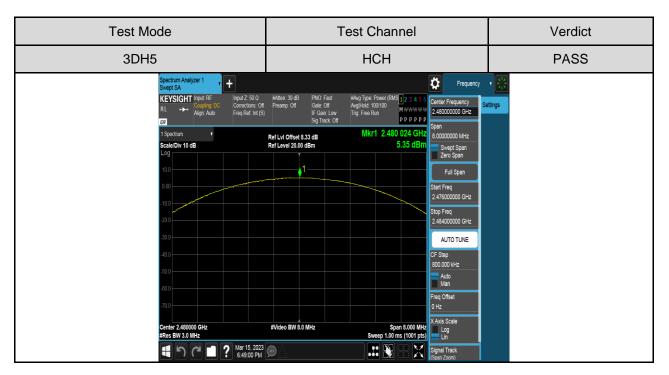


Test Mode	Test Channel	Verdict
DH5	НСН	PASS
Spectrum Analyzer 1 + Skept SA Input RF KEYSIGHT Input RF RL Agin Auto SeleDity 10 dB Imput RF Log 1 100 0 -200 -	#Atten: 30 dB Preamp: 001 PNO: Fast Gate: 001 #Avg Type: Power (RMS) Avg/Heid: 100/100 2 3 4 5 6 MWWWWW Center Frequency 248000000 GHz S Ref Lvi Offset 8.33 dB Ref Level 20.00 dBm Mkr1 2.479 928 GHz Span Zero Span Full Span Span Zero Span Full Span Zero Span Start Freq Zero Span Full Span Zero Span Zero Span Zero Span Full Span Zero Span Full Span Zero Span Z	ettings





Test Mode	Test Channel	Verdict
3DH5	MCH	PASS
	IF Cant. Low Sig Track. Off Trig: Free Run MWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWW	ettings





6.4. CARRIER FREQUENCY SEPARATION

LIMITS

CFR 47 FCC Part15 (15.247),Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC 15.247 (a) (1)	Carrier Frequency Separation	Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel.	2400-2483.5

TEST PROCEDURE

Refer to ANSI C63.10-2013 clause 7.8.2.

Connect the EUT to the spectrum analyzer and use the following settings:

Center Frequency	The center frequency of the channel under test
Span	wide enough to capture the peaks of two adjacent channels
Detector	Peak
RBW	Start with the RBW set to approximately 30 % of the channel spacing; adjust as necessary to best identify the center of each individual channel.
VBW	≥RBW
Trace	Max hold
Sweep time	Auto couple

Allow the trace to stabilize and use the marker-delta function to determine the separation between the peaks of the adjacent channels.

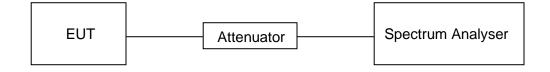
Compliance of an EUT with the appropriate regulatory limit shall be determined.



TEST ENVIRONMENT

Temperature	23.8℃	Relative Humidity	52.6%
Atmosphere Pressure	102.1kpa	Test Voltage	DC 5V

TEST SETUP

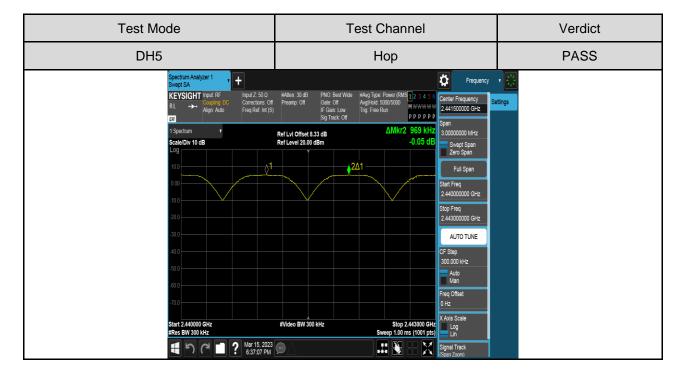


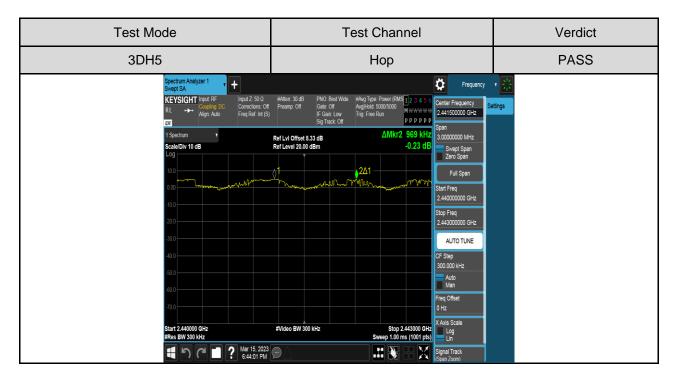
TEST RESULTS TABLE

Test Mode	Test Channel	Result (MHz)	Result
DH5	Нор	0.969	Pass
3DH5	Нор	0.969	Pass



TEST GRAPHS







6.5. NUMBER OF HOPPING FREQUENCIES

LIMITS

CFR 47 FCC Part15 (15.247), Subpart C				
Section Test Item Limit				
CFR 47 15.247 (a) (1) III	Number of Hopping Frequency	at least 15 hopping channels		

TEST PROCEDURE

Refer to ANSI C63.10-2013 clause 7.8.3.

Connect the EUT to the spectrum Analyzer and use the following settings:

Detector	Peak	
RBW	To identify clearly the individual channels, set the RBW to less than 30 % of the channel spacing or the 20 dB bandwidth, whichever is smaller.	
VBW	≥RBW	
Span	The frequency band of operation. Depending on the number of channels the device supports, it may be necessary to divide the frequency range of operation across multiple spans, to allow the individual channels to be clearly seen.	
Trace	Max hold	
Sweep time	Auto couple	

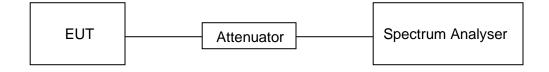
Set EUT to transmit maximum output power and switch on frequency hopping function. then set enough count time (larger than 5000 times) to get all the hopping frequency channel displayed on the screen of spectrum analyzer, count the quantity of peaks to get the number of hopping channels.



TEST ENVIRONMENT

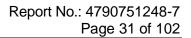
Temperature	23.8℃	Relative Humidity	52.6%
Atmosphere Pressure	102.1kpa	Test Voltage	DC 5V

TEST SETUP



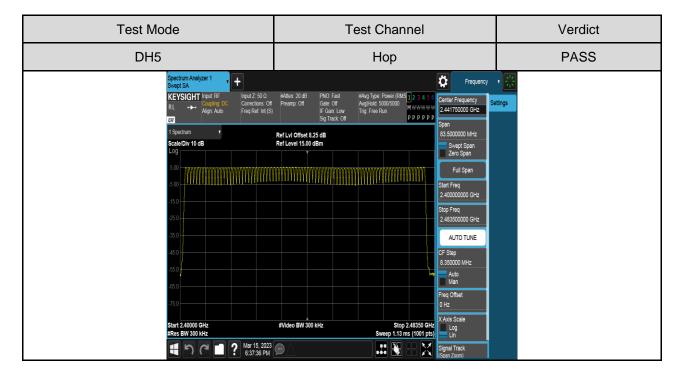
TEST RESULTS TABLE

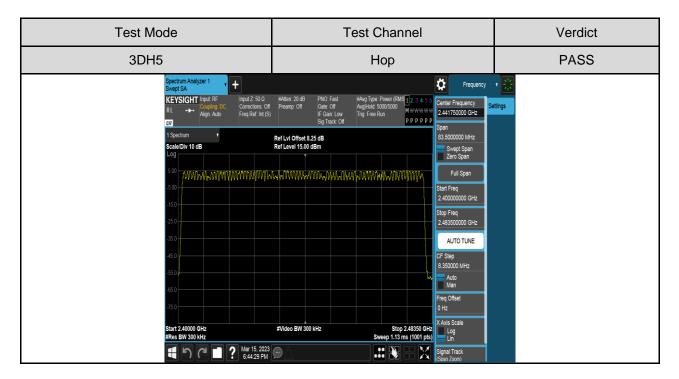
Test Mode	Test Channel	Result (Num)	Result
DH5	Нор	79	Pass
3DH5	Нор	79	Pass





TEST GRAPHS







6.6. TIME OF OCCUPANCY (DWELL TIME)

LIMITS

CFR 47 FCC Part15 (15.247), Subpart C			
Section Test Item Limit			
CFR 47 15.247 (a) (1) III	Time of Occupancy (Dwell Time)	The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds, multiplied by the number of hopping channels employed.	

TEST PROCEDURE

Refer to ANSI C63.10-2013 clause 7.8.4.

Connect the EUT to the spectrum Analyzer and use the following settings:

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	1 MHz
VBW	≥RBW
Span	Zero span, centered on a hopping channel
Trace	Max hold
Sweep time	As necessary to capture the entire dwell time per hopping channel; where possible use a video trigger and trigger delay so that the transmitted signal starts a little to the right of the start of the plot. The trigger level might need slight adjustment to prevent triggering when the system hops on an adjacent channel

Use the marker-delta function to determine the transmit time per hop (Burst Width). If this value varies with different modes of operation (data rate, modulation format, number of hopping channels, etc.), then repeat this test for each variation in transmit time.

For FHSS Mode (79 Channel):

DH1/3DH1 Dwell Time: Burst Width * (1600/2) * 31.6 / (channel number) DH3/3DH3 Dwell Time: Burst Width * (1600/4) * 31.6 / (channel number) DH5/3DH5 Dwell Time: Burst Width * (1600/6) * 31.6 / (channel number)

For AFHSS Mode (20 Channel):

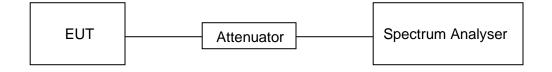
DH1/3DH1 Dwell Time: Burst Width * (800/2) * 8 / (channel number) DH3/3DH3 Dwell Time: Burst Width * (800/4) * 8 / (channel number) DH5/3DH5 Dwell Time: Burst Width * (800/6) * 8 / (channel number)



TEST ENVIRONMENT

Temperature	23.8℃	Relative Humidity	52.6%
Atmosphere Pressure	102.1kpa	Test Voltage	DC 5V

TEST SETUP

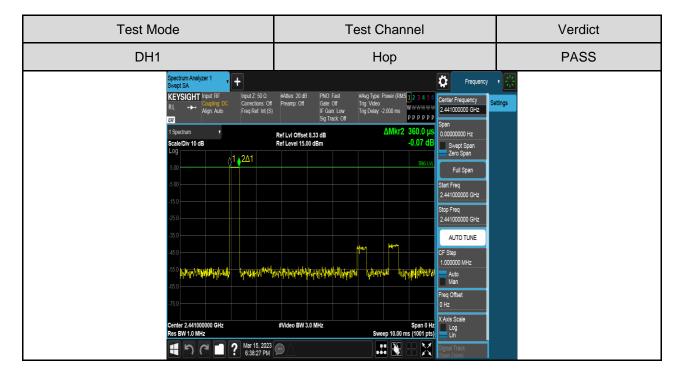


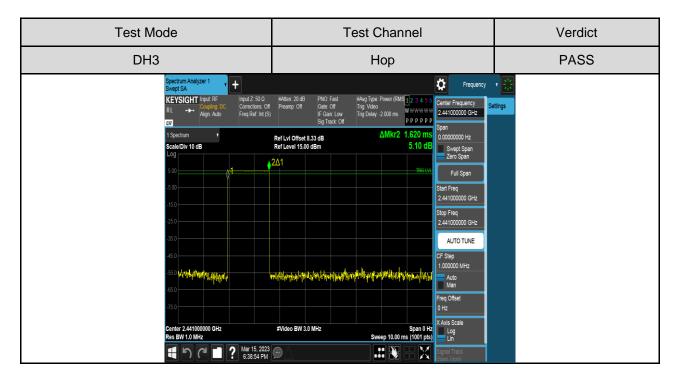
TEST RESULTS TABLE

FHSS Mode				
Packet	Channel	Burst Width [ms/hop/ch]	Dwell Time [ms]	Results
DH1	Нор	0.360	320	PASS
DH3	Нор	1.620	160	PASS
DH5	Нор	2.860	106.67	PASS
3DH1	Нор	0.360	320	PASS
3DH3	Нор	1.610	160	PASS
3DH5	Нор	2.870	106.67	PASS
		AFHSS Mod	le	
DH1	Нор	0.360	160	PASS
DH3	Нор	1.620	80	PASS
DH5	Нор	2.860	53.34	PASS
3DH1	Нор	0.360	160	PASS
3DH3	Нор	1.610	80	PASS
3DH5	Нор	2.870	53.34	PASS



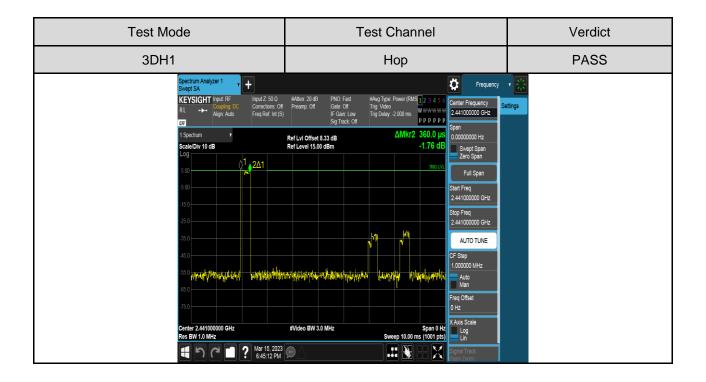
TEST GRAPHS





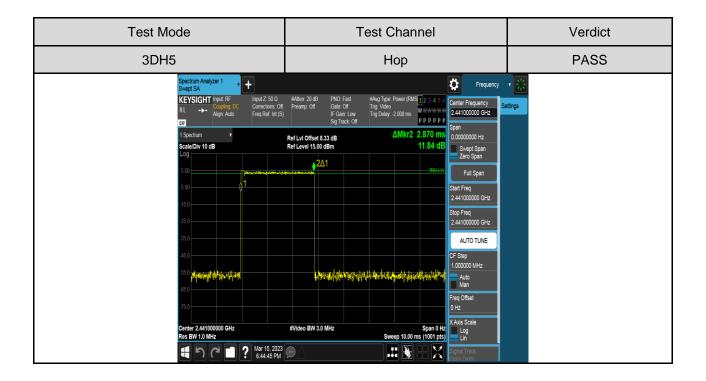


Test Mode	Test Channel	Verdict
DH5	Нор	PASS
Spectrum Analyzer 1 + Input Z: 50 0 REVSIGHT Input RF REVSIGHT Input RF Comentons: U 1 Spectrum Scale Div 10 dB Log 5.00 150	Frequency #Atten: 20 dB PNO: Fast. #Avg Type: Power (RMS 12 3 4 5 6 ff Prearg: Off Gale: Off Tig: Video Frequency S	ettings
250 350 450 450 450 450 450 450 450 4	2.44100000 GHz AUTO TUNE CF Step 1.00000 MHz Auto Man Freq Offset 0 Hz Xvis Scale Log Sweep 10.00 ms (1001 pts) Log	





Test Mode	Test Channel	Verdict
3DH3	Нор	PASS
	if Cam. Low Sig Track Off Trig Delay-2000 ms WWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWW	stings





6.7. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

<u>LIMITS</u>

FCC Part15 (15.247) Subpart C			
Section Test Item Limit			
CFR 47 FCC §15.247 (d)	Conducted Bandedge and Spurious Emissions	20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power	

TEST PROCEDURE

Refer to FCC KDB 558074, connect the UUT to the spectrum analyser and use the following settings:

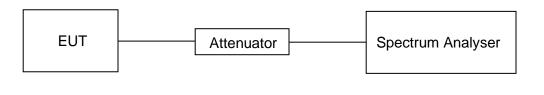
Center Frequency	The centre frequency of the channel under test	
Detector	Peak	
RBW	100 kHz	
VBW	≥3 × RBW	
Span	1.5 x DTS bandwidth	
Trace	Max hold	
Sweep time	Auto couple.	

Use the peak marker function to determine the maximum PSD level.

Span	Set the center frequency and span to encompass frequency range to be measured
Detector	Peak
RBW	100 kHz
VBW	≥3 × RBW
measurement points	≥span/RBW
Trace	Max hold
Sweep time	Auto couple.

Use the peak marker function to determine the maximum amplitude level.

TEST SETUP



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TEST ENVIRONMENT

Temperature	23.8℃	Relative Humidity	52.6%
Atmosphere Pressure	102.1kpa	Test Voltage	DC 5V

PART 1: REFERENCE LEVEL MEASUREMENT

TEST RESULTS TABLE

Test Mode	Test Channel	Result[dBm]
	LCH	4.71
DH5	MCH	4.94
	НСН	4.76
	LCH	4.61
3DH5	MCH	5.04
	НСН	4.86



TEST GRAPHS





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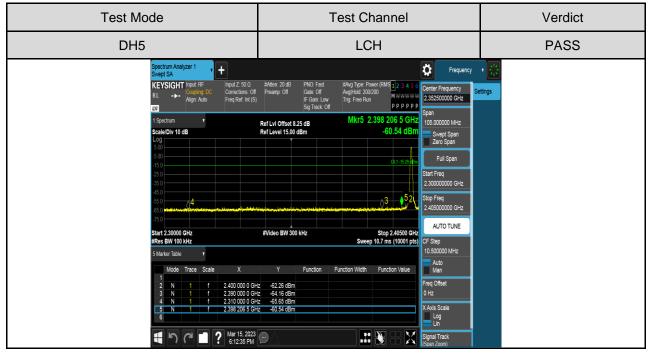
PART 2: CONDUCTED BANDEDGE

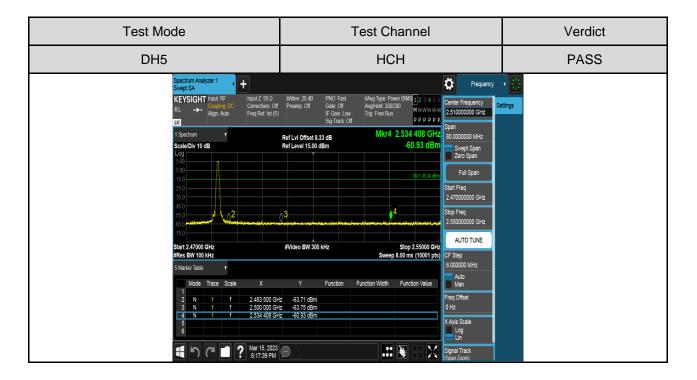
TEST RESULTS TABLE

Test Mode	Test Channel	Result	Verdict
DH5	LCH	Refer to the Test Graph	PASS
DHO	HCH	Refer to the Test Graph	PASS
3DH5	LCH	Refer to the Test Graph	PASS
3003	HCH	Refer to the Test Graph	PASS



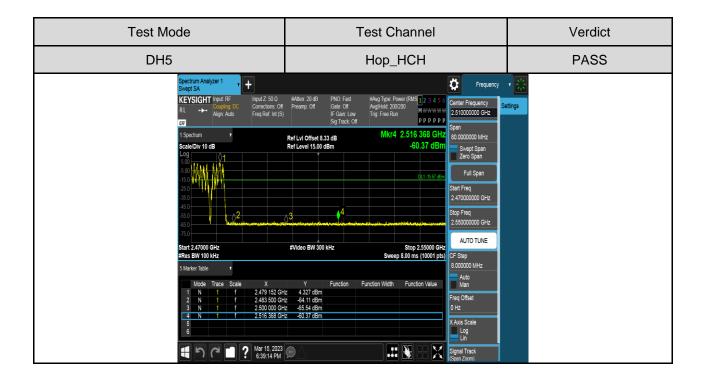
TEST GRAPHS







Test Mode	Test Channel	Verdict
DH5	Hop_LCH	PASS
RL →→ Councilors: Of Align: Auto Councilors: Of Frieq Ref. Int (S) 1 Spectrum 1 Spectrum 1 Spectrum 2 Solo 3 Solo 4 Solo 7 Solo	Aften 20 dB Phenp Off Phenp Off	tings



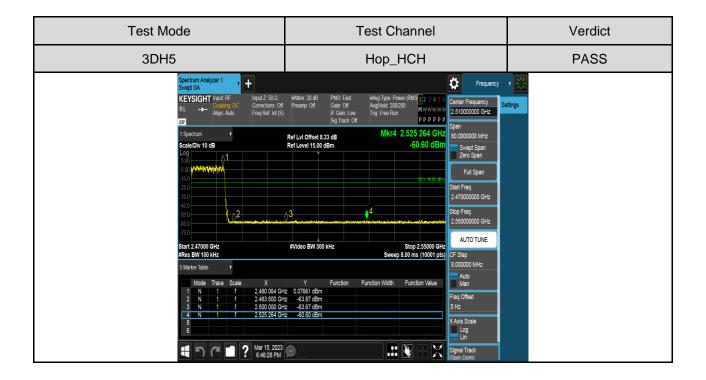


Test Mode		Test Ch	nannel	Verdict
3DH5		LC	н	PASS
Spectrum Analyzer Suppt SA KEYSIGHT properties RL J Scale DW 10 dB Log Solo Solo <td>Imp DC Connections: Off Preamp. Auto Freq Ref Int (S) Ref Lvi O Ref Lvi O Ref Lvi O Ref Lvi O #Video E Scale X Y Scale X Y f 2400 000 0 GHz -60.12 -66.11 -66.11</td> <td>Off Cate Off Anglied 2007 IF Gain Low Trig Free Run Sig Track Off Mkr5 2 115.00 dBm Mkr5 2 ISO dBm Sig Track Off Category Ca</td> <td>1399 865 5 GHz Span Span -59.81 dBm Swept Span -01.103.44 Swept Span -01.103.44 Swept Span -02.40500 GHz Start Freq 2.30000000 GHz Start Freq 2.30000000 GHz Stop Freq Stop 2.40500 GHz CF Step 10.7 ms (10001 pts) CF Step Function Value Freq Offset 0 Hz XAvis Scale Log Log</td> <td>Settings</td>	Imp DC Connections: Off Preamp. Auto Freq Ref Int (S) Ref Lvi O Ref Lvi O Ref Lvi O Ref Lvi O #Video E Scale X Y Scale X Y f 2400 000 0 GHz -60.12 -66.11 -66.11	Off Cate Off Anglied 2007 IF Gain Low Trig Free Run Sig Track Off Mkr5 2 115.00 dBm Mkr5 2 ISO dBm Sig Track Off Category Ca	1399 865 5 GHz Span Span -59.81 dBm Swept Span -01.103.44 Swept Span -01.103.44 Swept Span -02.40500 GHz Start Freq 2.30000000 GHz Start Freq 2.30000000 GHz Stop Freq Stop 2.40500 GHz CF Step 10.7 ms (10001 pts) CF Step Function Value Freq Offset 0 Hz XAvis Scale Log Log	Settings

Test Mode	Test Channel	Verdict
3DH5	НСН	PASS
Spectrum Analyzer 1 + Swept SA Input RF KEVSIGHT Input RF RL → Agen Auto Correctors Off 1 Spectrum * Scale Div 10 dB Log 20 - 30 - 40 - 50 - - -	IF Claim Low Sig Track: Off Trig: Free Run MWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWW	stings



Test Mode	Test Channel	Verdict
3DH5	Hop_LCH	PASS
2 N 1 f 2.400.00 3 N 1 f 2.300.00 4 N 1 f 2.310.00	Off Preamp Off Gate Off Augination of the preamp of the	Settings





PART 3: CONDUCTED SPURIOUS EMISSION

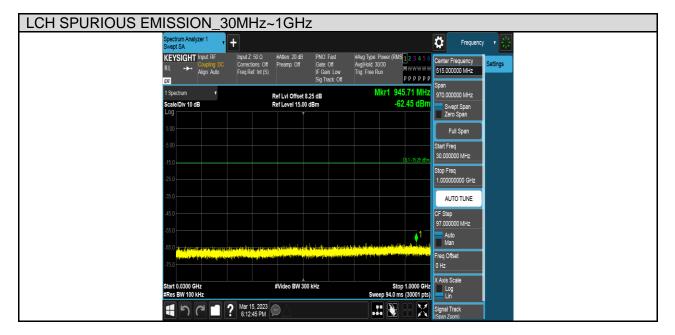
TEST RESULTS TABLE

Test Mode	Test Channel	Result	Verdict
	LCH	Refer to the Test Graph	PASS
DH5	MCH	Refer to the Test Graph	PASS
	HCH	Refer to the Test Graph	PASS
	LCH	Refer to the Test Graph	PASS
3DH5	MCH	Refer to the Test Graph	PASS
	НСН	Refer to the Test Graph	PASS



TEST GRAPHS

Test Mode	Channel	Verdict
DH5	LCH	PASS



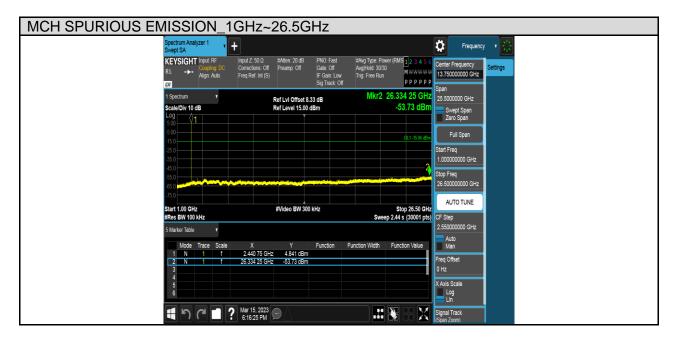




Test Mode	Channel	Verdict
DH5	MCH	PASS

MCH SPURIOUS EMISSION_30MHz~1GHz



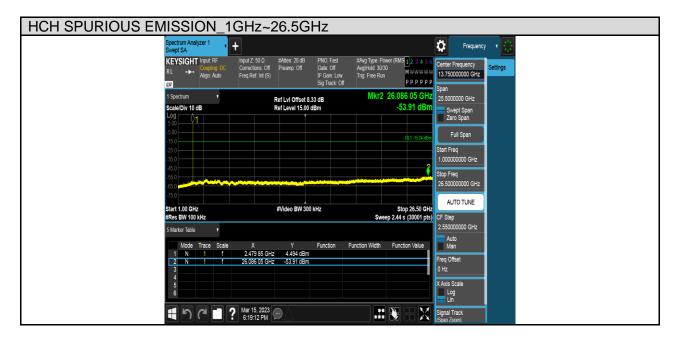




Test Mode	Channel	Verdict
DH5	НСН	PASS

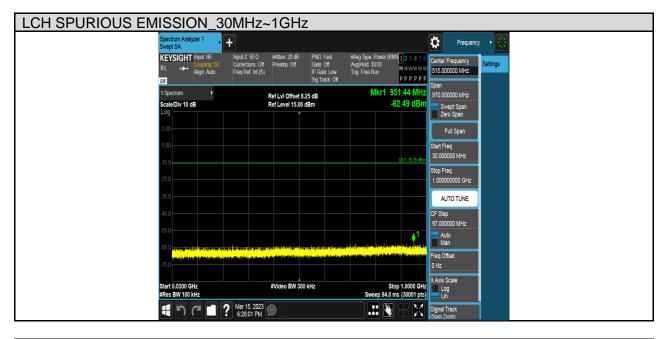
HCH SPURIOUS EMISSION_30MHz~1GHz







Test Mode	Channel	Verdict
3DH5	LCH	PASS



LCH SPURIOUS EMISSION_ 1GHz~26.5GHz + Ö ectrum / ept SA Frequency Input Z: 50 Ω Corrections: Off Freq Ref: Int (S) PNO: Fast Gate: Off IF Gain: Low Sig Track: Off #Avg Type: Pov Avg|Hold: 30/30 Trig: Free Run KEYSIGHT Input: RF ettings Align: Auto 13.750000000 GHz рррррр Mkr2 26.019 75 GH -54.08 dBr Ref LvI Offset 8.25 dB Ref Level 15.00 dBm 25.5000000 GHz cale/Div 10 dE Swept Span Zero Span Start Freq 1.000000000 GHz Stop Freq 26.500000000 GHz AUTO TUNE Stop 26.50 GHz Sweep 2.44 s (30001 pts) Start 1.00 GHz #Res BW 100 kHz #Video BW 300 kHz CF Step 2.550000000 GHz Auto Man X Y 2.401 65 GHz 0.4737 dBm 26.019 75 GHz -54.08 dBm Trace Scale Function Function Width Function nde req Offset X Axis Scale Log Lin X Signal Track