



FCC RADIO TEST REPORT

FCC ID	:	WAP-CYSBSYS-RP01
Equipment	:	Wifi 802.11b/g/n/ac + BT/BLE
Brand Name	:	Cypress
Model Name	:	CYSBSYS-RP01
Applicant	:	Cypress Semiconductor, Inc. 198 Champion Court San Jose, CA 95134
Manufacturer	:	Cypress Semiconductor, Inc. 198 Champion Court San Jose, CA 95134
Standard	:	FCC Part 15 Subpart C §15.247

The product was received on Dec. 08, 2020 and testing was started from Dec. 08, 2020 and completed on Feb. 24, 2021. We, Sporton International (USA) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (USA) Inc., the test report shall not be reproduced except in full.

Nil Kao

Reviewed by: Neil Kao Sporton International (USA) Inc. 1175 Montague Expressway, Milpitas, CA 95035



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History of this test report

Report No.	Version	Description	Issued Date
FR201216001A	01	Initial issue of report	Mar. 03, 2021



Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.247(a)(1)	Number of Channels	Pass	-
3.2	15.247(a)(1)	Hopping Channel Separation	Pass	-
3.3	15.247(a)(1)	Dwell Time of Each Channel	Pass	-
3.4	15.247(a)(1)	20dB Bandwidth	Pass	-
3.4	2.1049	99% Occupied Bandwidth	Reporting only	-
3.5	15.247(b)(1)	Peak Output Power	Pass	-
3.6	15.247(d)	Conducted Band Edges	Pass	-
3.7	15.247(d)	Conducted Spurious Emission	Pass	-
3.8	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	Pass	Under limit 8.99 dB at 32.910 MHz
3.9	15.207	AC Conducted Emission	Pass	Under limit 12.53 dB at 0.396 MHz
3.10	15.203 & 15.247(b)	Antenna Requirement	Pass	-

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Wii Chang Report Producer: Amy Chen



1 General Description

1.1 Product Feature of Equipment Under Test

Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n, and Wi-Fi 5GHz 802.11a/n/ac.

Product Specification subjective to this standard							
Antenna Type	WLAN: Chip Ante Bluetooth: Chip A	nna ntenna					
	Antenna inform	nation					
2400 MHz ~ 2483.5 MHz Peak Gain (dBi) 0.8							

Remark: The above EUT's information was declared by manufacturer. Please refer to Comments and Explanations in report summary.

1.2 Modification of EUT

No modifications are made to the EUT during all test items.

1.3 Testing Location

Test Site	Sporton International (USA) Inc.
Test Site Location	1175 Montague Expressway, Milpitas, CA 95035 TEL : 408 9043300
Tost Sito No	Sporton Site No.
Test Site No.	TH01-CA, CO01-CA, 03CH02-CA

1.4 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v05r02
- FCC KDB 414788 D01 Radiated Test Site v01r01
- ANSI C63.10-2013

Remark:

- 1. All test items were verified and recorded according to the standards and without any deviation during the test.
- 2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

2.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
	0	2402	27	2429	54	2456
	1	2403	28	2430	55	2457
	2	2404	29	2431	56	2458
	3	2405	30	2432	57	2459
	4	2406	31	2433	58	2460
	5	2407	32	2434	59	2461
	6	2408	33	2435	60	2462
	7	2409	34	2436	61	2463
	8	2410	35	2437	62	2464
	9	9 2411 36 2438	63	2465		
	10	2412	37	2439	64	2466
	11	2413	38	2440	65	2467
	12	2414	39	2441	66	2468
2400-2483.5 MHz	13	2415	40	2442	67	2469
	14	2416	41	2443	68	2470
	15	2417	42	2444	69	2471
	16	2418	43	2445	70	2472
	17	2419	44	2446	71	2473
	18	2420	45	2447	72	2474
	19	2421	46	2448	73	2475
	20	2422	47	2449	74	2476
	21	2423	48	2450	75	2477
	22	2424	49	2451	76	2478
	23	2425	50	2452	77	2479
	24	2426	51	2453	78	2480
	25	2427	52	2454	-	-
	26	2428	53	2455	-	-

2.2 Test Mode

- a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X plane) were recorded in this report, and the worst mode of radiated spurious emissions is Bluetooth 1Mbps mode, and recorded in this report.
- b. AC power line Conducted Emission was tested under maximum output power.

	Su	mmary table of Test Cases	
Test Item		Data Rate / Modulation	
	Bluetooth BR 1Mbps GFSK	Bluetooth EDR 2Mbps <i>π</i> /4-DQPSK	Bluetooth EDR 3Mbps 8-DPSK
Conducted	Mode 1: CH00_2402 MHz	Mode 4: CH00_2402 MHz	Mode 7: CH00_2402 MHz
Test Cases	Mode 2: CH39_2441 MHz	Mode 5: CH39_2441 MHz	Mode 8: CH39_2441 MHz
	Mode 3: CH78_2480 MHz	Mode 6: CH78_2480 MHz	Mode 9: CH78_2480 MHz
		Bluetooth BR 1Mbps GFS	K
Radiated		Mode 1: CH00_2402 MHz	
Test Cases		Mode 2: CH39_2441 MHz	
		Mode 3: CH78_2480 MHz	
AC Conducted	Mode 1: WLAN (2.4GHz) Adapter	Link + Jig 1 (Fixture) + J	lig 1-1 (Fixture) + Jig 1-1
Emission	Mode 2: WLAN (5GHz) Lir	nk + Jig 1 (Fixture) + Jig 1-1	(Fixture) + Jig 1-1 Adapter
	Mode 3: Bluetooth Link +	Jig1 (Fixture) + Jig 1-2 (Fixtu	ure) + Jig 1-2 Adapter
Remark:			
1. For radiated te	est cases, the worst mode d	ata rate 1Mbps was reported	d only since the highest RF
output power	in the preliminary tests. The	conducted spurious emissio	ons and conducted band
frequencies fc	bund in conducted spurious	emission.	and no other significantly

The following summary table is showing all test modes to demonstrate in compliance with the standard.

2. The worst case of conducted emission is mode 1; only the test data of it was reported.



2.3 Connection Diagram of Test System



2.4 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Notebook	Altos PS548 Series	82600085033	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
2.	WLAN AP	NetGear	R6080	PY316400359	N/A	N/A
3.	Jig 1 (Fixture)	Cypress	RP01	N/A	N/A	N/A
4.	Jig 1-1 (Fixture)	Cypress	CYW9SDIOAD_2	N/A	N/A	N/A
5.	Jig 1-1 Adapter	SCEPTRE POWER	ATS036T-A050	N/A	N/A	Unshielded 1.8m
6.	Jig 1-2 (Fixture)	GB-Bxi7-4500	1419631173	N/A	N/A	N/A
7.	Jig 1-2 Adapter	FSP	FSP065-REBN2	N/A	N/A	Unshielded, 1.8m



2.5 EUT Operation Test Setup

The RF test items, utility "PuTTY & Release 0.70" was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

2.6 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

= 4.2 + 10 = 14.2 (dB)



3 Test Result

3.1 Number of Channel Measurement

3.1.1 Limits of Number of Hopping Frequency

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

3.1.3 Test Procedure

- 1. The testing follows ANSI C63.10-2013 clause 7.8.3.
- 2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 3. Set to the maximum power setting and enable the EUT transmit continuously.
- 4. Enable the EUT hopping function.
- Use the following spectrum analyzer settings: Span = the frequency band of operation;
 RBW = 300kHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold.
- 6. The number of hopping frequency used is defined as the number of total channel.
- 7. Record the measurement data derived from spectrum analyzer.

3.1.4 Test Setup



EUT

Spectrum Analyzer



3.1.5 Test Result of Number of Hopping Frequency

Please refer to Appendix A.



3.2 Hopping Channel Separation Measurement

3.2.1 Limit of Hopping Channel Separation

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, whichever is greater.

3.2.2 Measuring Instruments

See list of measuring equipment of this test report.

3.2.3 Test Procedures

- 1. The testing follows ANSI C63.10-2013 clause 7.8.2.
- 2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 3. Set to the maximum power setting and enable the EUT transmit continuously.
- 4. Enable the EUT hopping function.
- Use the following spectrum analyzer settings:
 Span = wide enough to capture the peaks of two adjacent channels;
 RBW = 300kHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold.
- 6. Measure and record the results in the test report.

3.2.4 Test Setup



Spectrum Analyzer

3.2.5 Test Result of Hopping Channel Separation

Please refer to Appendix A.



<1Mbps>





<2Mbps>

C	hanne	el Se	parat	tion P	lot on Cł	nannel 00 -	01	С	hann	el Sepa	ration	Plot o	n Char	nnel 39 -	40
Spectrur	"						Ē	Spectrur	n)						Ē
Ref Leve Att	20.00 dBm 20 dB	Offset SWT	11.90 dB 🖷 6.3 µs 🖷	RBW 300 k VBW 300 k	Hz Hz Mode Auto FF	т		Ref Leve Att	l 20.00 dBr 20 d	n Offset 11.90 B SWT 6.3	dB 🖷 RBW 30 µs 🖶 VBW 30	IO kHz IO kHz Mod	e Auto FFT		L.
• 1Pk Max		N			M1[1]	2.4	7.40 dBm 0187920 GHz	1Pk Max		MI			41[1]	2.44	7.14 dBm 087050 GHz
10 dBm			×		D2LBE		998.60 kHz	10 dBm	/						00290 MHz
0 dBm-								0 dBm-							
-20 dBm-								-20 dBm-							
-30 dBm								-30 dBm							
-40 dBm				-			-	-40 dBm			_	_			-
-50 dBm								-50 dBm			_	_			
-60 dBm			+					-60 dBm			_				
-70 dBm								-70 dBm			_				
CF 2.4025	GHz		1	691	pts	S	pan 3.0 MHz	CF 2.4415	GHz			i91 pts	· ·	Sp	an 3.0 MHz
C	hanne	el Se	parat	tion P	lot on Cł	nannel 77 -	78					N/A			
Ref Leve	1 20.00 dBm 20 dB	Offset SWT	11.90 dB 🖷 6.3 μs 🖷	RBW 300 k	Hz Hz Mode Auto FF	Т	[♥]								
●1Pk Max					M1[1]		6.79 dBm								
10 dBm		M	1		D2[4]	2.4	0.08 dB 1.00290 MHz								
0 dBm															
-10 dBm-															
≠20 dBm															
-30 dBm															
-50 dBm-							0								
-60 dBm															
-70 dBm															
CF 2.4705	GHz			691	nts		nan 3.0 MHz								
GF 2.4793)[]			991	l) Her		4/4 1/4								
Date: 9.FE	B.2021 13:	:00:38													



<3Mbps>

С	hanne	el Se	para	tion I	Plot o	n Cha	annel	00 -	01	C	nanne	el Se	parat	ion I	Plot	on Ch	annel	39 - 4	10
Spectru	m								Ē	Spectrur									Ē
Ref Leve	el 20.00 dBm 20 dB	Offset SWT	11.90 dB 6.3 µs	RBW 300) kHz) kHz Mode	Auto FFT				Ref Leve Att	20.00 dBm 20 dB	Offset SWT	11.90 dB 🖷 6.3 µs 🖷	RBW 300 VBW 300	kHz kHz Mo	de Auto FFT			
• 1Pk Max			M1		N	41[1]		2.40	7.37 dBm 197900 GHz	10 d0m			MI			M1[1]		2.440	7.11 dBm 96600 GHz
10 dBm-			¥		-	Z[1] D2	1		998.60 kHz	10 dBm	_		¥		-	-D2[1] D2	1 1	1.1	0.07 08 10290 MHz
0 dBm-										0 dBm								7	<
-10 dBm-										-10 dBm				-		-			/
-20 dBm				-	-	-				20 dBm-						-			/
-30 dBm										-30 dBm						_			
-40 d8m										-40 dBm									
10 0011										to abiii									
-50 dBm										-50 dBm									
-60 dBm										-60 dBm									
-70 dBm										-70 dBm									
CF 2.402	5 GHz	_	_	6	91 pts			Spa	an 3.0 MHz	CF 2.4415	GHz	_		69	1 pts			Spa	1 3.0 MHz J
C	hanne	el Se	para	tion I	Plot o	n Cha	annel	77 -	78					Ν	I/A				
Ref Leve	m el 20.00 dBm 20 dB	Offset	11.90 dB	RBW 300) kHz) kHz Mode	Auto EET			∇										
• 1Pk Max	1 1	UNI	1	- Ton Soc	Nine Mode	Autorri			c no do -										
10 10 -			141			11[1]		2.47	896600 GHz										
10 0BIII-			¥		-		1		998.60 kHz										
0 dBm						-		_											
-10 d8m-					_														
-20 dBm-																			
-																			
-30 dBm																			
-40 dBm					-			-	-										
-50 dBm	-			-	-				-										
-60 dBm					_														
-																			
-70 dBm																			
CF 2.479	5 GHz			6	91 pts			Spa	an 3.0 MHz										
[) Moster			10										
Date: 9.FE	B.2021 13:	48:08																	



3.3 Dwell Time Measurement

3.3.1 Limit of 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.

3.3.2 Measuring Instruments

See list of measuring equipment of this test report.

3.3.3 Test Procedures

- 1. The testing follows ANSI C63.10-2013 clause 7.8.4.
- 2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 3. Set to the maximum power setting and enable the EUT transmit continuously.
- 4. Enable the EUT hopping function.
- 5. Use the following spectrum analyzer settings: Span = zero span, centered on a hopping channel; RBW = 1 MHz; VBW ≥ RBW; Sweep = as necessary to capture the entire dwell time per hopping channel; Detector function = peak; Trace = max hold.
- 6. Measure and record the results in the test report.

3.3.4 Test Setup



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3.3.5 Test Result of Dwell Time

Toot Enginee			Temperatu	u re : 15	15.1~19.4℃			
Test Enginee			Relative H	lumidity: 33	33.2~54.3%			
Channel	Package Mode	Average Hopping Channel	Package Transfer Time (ms)	Dwell Time (sec)	Limits (sec)	Pass/Fail		
CH00	DH5	2.4	2.899	0.220	0.4	Pass		
CH78	DH5	3.4	2.899	0.311	0.4	Pass		
CH00	2DH5	3.5	2.899	0.321	0.4	Pass		
CH78	2DH5	3.3	2.899	0.302	0.4	Pass		
CH00	3DH5	3.7	2.899	0.339	0.4	Pass		
CH78	3DH5	3.4	2.899	0.311	0.4	Pass		

Remark:

- 1. Dwell Time=79(channels) x 0.4(s) x average hopping channel x package transfer time
- 2. 79 channels come from the Hopping Channel number.
- 3. Average Hopping Channel = hops/sweep time

DH5 Dwell Time (One Pulse) Plot on Channel 00



Date: 24.FEB.2021 20:00:22





Date: 24.FEB.2021 20:05:08

DH5 Dwell Time (One Pulse) Plot on Channel 78



Date: 24.FEB.2021 21:34:53





Date: 24.FEB.2021 20:07:06

2DH5 Dwell Time (One Pulse) Plot on Channel 00



Date: 24.FEB.2021 20:10:53





Date: 24.FEB.2021 20:15:49

2DH5 Dwell Time (One Pulse) Plot on Channel 78



Date: 24.FEB.2021 20:12:04





Date: 24.FEB.2021 20:17:16

3DH5 Dwell Time (One Pulse) Plot on Channel 00



Date: 24.FEB.2021 21:42:36





Date: 24.FEB.2021 20:24:33

3DH5 Dwell Time (One Pulse) Plot on Channel 78



Date: 24.FEB.2021 20:22:21





Date: 24.FEB.2021 20:25:15

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3.4 20dB and 99% Bandwidth Measurement

3.4.1 Limit of 20dB and 99% Bandwidth

Reporting only

3.4.2 Measuring Instruments

See list of measuring equipment of this test report.

3.4.3 Test Procedures

- 1. The testing follows ANSI C63.10-2013 clause 6.9.2 and 6.9.3.
- 2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 3. Set to the maximum power setting and enable the EUT transmit continuously.
- Use the following spectrum analyzer settings for 20dB Bandwidth measurement.
 Span = approximately 2 to 5 times the 20 dB bandwidth, centered on a hopping channel;
 RBW ≥ 1% of the 20 dB bandwidth; VBW ≥ RBW; Sweep = auto; Detector function = peak;
 Trace = max hold.
- Use the following spectrum analyzer settings for 99 % Bandwidth measurement.
 Span = approximately 1.5 to 5 times the 99% bandwidth, centered on a hopping channel;
 RBW ≥ 1-5% of the 99% bandwidth; VBW ≥ 3 * RBW; Sweep = auto; Detector function = peak;
 Trace = max hold.
- 6. Measure and record the results in the test report.

3.4.4 Test Setup



Spectrum Analyzer

3.4.5 Test Result of 20dB Bandwidth

Please refer to Appendix A.



<1Mbps>





<2Mbps>





<3Mbps>





3.4.6 Test Result of 99% Occupied Bandwidth

Please refer to Appendix A.

<1Mbps>



Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.



<2Mbps>



Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.



<3Mbps>



Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

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3.5 Output Power Measurement

3.5.1 Limit of Output Power

The maximum peak conducted output power of the intentional radiator shall not exceed the following: For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band 0.125 watts.

3.5.2 Measuring Instruments

See list of measuring equipment of this test report.

3.5.3 Test Procedures

- 1. The testing follows ANSI C63.10-2013 clause 7.8.5.
- 2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 3. Set to the maximum power setting and enable the EUT transmit continuously.
- 4. Measure the conducted output power with cable loss and record the results in the test report.
- 5. Measure and record the results in the test report.

3.5.4 Test Setup



3.5.5 Test Result of Peak Output Power

Please refer to Appendix A.

3.5.6 Test Result of Average Output Power (Reporting Only)

Please refer to Appendix A.



3.6 Conducted Band Edges Measurement

3.6.1 Limit of Band Edges

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.

3.6.2 Measuring Instruments

See list of measuring equipment of this test report.

3.6.3 Test Procedures

- 1. The testing follows ANSI C63.10-2013 clause 7.8.6.
- 2. Set to the maximum power setting and enable the EUT transmit continuously.
- 3. Set RBW = 100kHz, VBW = 300kHz. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100kHz RBW. The attenuation shall be 30 dB instead of 20 dB when RMS conducted output power procedure is used.
- 4. Enable hopping function of the EUT and then repeat step 2. and 3.
- 5. Measure and record the results in the test report.

3.6.4 Test Setup



Spectrum Analyzer



3.6.5 Test Result of Conducted Band Edges

<1Mbps>



<2Mbps>

Low Band Edge Plot on Channel 00	High Band Edge Plot on Channel 78
Spectrum	Spectrum ₩ Ref Level 20.00 dBm Offset 11.90 dB ● RBW 100 kHz
Att 20 dB SWT 37.9 µs VBW 300 kHz Mode Auto FFT	e Att 20 dB SWT 38 μs e VBW 300 kHz Mode Auto FFT
TPK Max M1[1] -48.24 dBm 2.3998260 GHz 2.3998260 GHz	(1)FK Max [1] -55.64 dBm [2,4851150 GHz
10 dBm 01 5.760 dBm 01 5.7600 dBm 01 5.760 dBm 01 5.7600 dBm 01 5.7600	10 0 Bm 01 5.140 Bm 01 5.1400 Bm 01 5.14
-30 dBm -40 dBm -50 dBm	-30 dBm
-70 dBm	-70 dBmF1
Start 2.395 GHz 691 pts Stop 2.405 GHz	Start 2.4775 GHz 691 pts Stop 2.4895 GHz
Date: 9.FEB.2021 11:26:40	Date: 9.FEB.2021 13:18:21



<3Mbps>

Low Band Edge Plot on Channel 00					Hig	h Ba	nd E	dge F	Plot o	n Ch	annel	78					
Spectrum Ref Level	1 20.00 dBm Offs	et 11.90 dB 🖷	RBW 100 kHz	2	_		I ▽	Spectrur Ref Leve	n 1 20.00 dBm	Offset	11.90 dB 🖷	RBW 100 k	Hz				₽
Att	20 dB SW	31.9 hz 🖷	VBW 300 KH2	Mode Auto FF	1			Att	20 dB	swi	38 hz 🖷	ARM 300 K	Hz Mode	Auto FFT			
10 dBm				M1[1]	ſ	2.39	51.12 dBm 97680 GHz	10 dBm					M	1[1]		2.48	56.28 dBm 40040 GHz
0 dBm-	01 5.540 dBm			1	my			0 dBm-	-01 4.920 de	Sm-							
-10 dBm	D2 -14,460 dB	m			+			-10 dBm	D2 -15	.080 dBm-							
-20 dBm								-20 dBm									
-30 dBm				m		ng		-30 dBm		1	~						
-50 dBm			MI				~	-50 dBm-			1	M	M1				
-60 dBm-	mm	mm	m' w	20			h	-60 dBm				Ling	min	m	min	mm	m
-70 dBm			F1					-70 dBm				F	1				
Start 2.395	5 GHz		691 p	ts	1	Stop 2	2.405 GHz	Start 2.47	75 GHz			691	pts	1		Stop 2.	4895 GHz
	Y			201		100 B 44	1		Y				1				1
Date: 9.FEB	9.2021 13:28:55						- 11	Date: 9.FE	8.2021 13:	:54:19				1			-113



3.6.6 Test Result of Conducted Hopping Mode Band Edges

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Hopping Mode Lo	ow Band Edge Plot	Hopping Mode High Ba	nd Edge Plot
Spectrum Ref Level 20.00 dBm Offset 11.90 dB @ RBW 100	0 kHz	Spectrum Ref Level 20.00 dBm Offset 11.90 dB RBW 100 kHz	E
Att 20 dB SWT 37.9 μs VBW 300	J kHz Mode Auto FFT	Att 20 dB SWT 38 µs WBW 300 kHz Mode	Auto FFT
	M1[1] -57.12 dBm 2.3997970 GHz	M1	[1] -56.77 dBm 2.4848370 GHz
0 dBm 01 6.390 dBm 01 dBm		0 dBm 01 5.650 dBm	
-10 dBm D2 -13.610 dBm		-10 dBm20 dBm20 dBm20 dBm20 dBm	
-30 dBm		-30 dBm	
-50 d8m	Harris and the second s	-50 dBm	MI
-60 dBm	FL	-60 dBm	
Start 2.395 GHz 69	91 pts Stop 2.405 GHz	Start 2.4775 GHz 691 pts	Stop 2.4895 GHz
Date: 8.FEB.2021 17:46:57		Date: 8.FEB.2021 17:48:19	

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Hopping Mode Low Band Edge	Plot	Hopping Mode High Band Edge Plot							
Spectrum	Spec Spec	trum	800						
Ref Level 20.00 dBm Offset 11.90 dB RBW 100 kHz Att 20 dB SWT 37.9 µs VBW 300 kHz Mode Auto FFT	Ref Att	Level 20.00 dBm 20 dB	Offset 11.90 dB ● SWT 38 µs ●	RBW 100 kHz VBW 300 kHz 1	Mode Auto FFT			,	
•1Pk Max M1[1]	-53.74 dBm 2.3995220 GHz	Max			M1[1]		-5	5.17 dBm 8970 GHz	
10 dBm 01 6.690 dBm 01 6.690 dBm	10 dB	D1 5.680 dBm	Ing.						
-10 dBm	-10 dB	m							
-20 dBm-	-20 de	D2 -14.3	20 dBm						
-30 dBm	-30 d8	m	M		_				
-40 dBm	-40 dB	m	h						
-SO dBm	-50 dB	im	ha	mm	mmm	1 Imman	mm	m	
-00 UBIN-	-70 de	m							
F1 Start 2.395 GHz 691 pts	Stop 2.405 GHz Start	2.4775 GHz		F1 691 pts			Stop 2.4	895 GHz	
Date: 8.FEB.2021 17:54:02	Date:	8.FEB.2021 17:5	5:17		Securit			1	

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Hopping Mode I	Low Band Edge Pl	ot	Нор	ping Mod	e High Ba	and Edge	Plot
Spectrum			Spectrum				T T
Ref Level 20.00 dsm Offset 11.90 dB ● RBW : ● Att 20 dB SWT 37.9 μs ● VBW 3 ● 10k Max	100 KHZ 300 kHz Mode Auto FFT		Att 20 dB	SWT 38 µs 🖷	VBW 300 kHz Mode	Auto FFT	
UPK Mdx	M1[1]	-53.85 dBm 2.3997830 GHz	UPK Mdx		M	11[1]	-56.03 dBr 2.4838990 GH
10 dBm 01 6.670 dBm	mmmm	month m	10 dBm 01 5.730 dBm	lu.			
0 dBm			10 dBm V				
-10 dBm D2 -13.330 dBm			-10 dBm	70 dBm			
-20 dBm			-20 dBm				
-30 dBm-			-30 dBm	h.			
-40 dBm			-40 dBm	M			
-50 dBm	M.		-50 dBm	hom	M1		
-60 dBm			-60 dBm				
-70 dBm	F1		-70 dBm		F1		
Start 2.395 GHz	691 pts	Stop 2.405 GHz	Start 2.4775 GHz	1	691 pts		Stop 2.4895 GHz
Date: 8 FEB 2021 17:58:55	Mexandro .	44	Date: 8 FFR 2021 18:0	0.53			44
DECAL O'LUD'ENET TUING132		Li,	Jace: 0.155.2021 18:0	9100			
3.7 Conducted Spurious Emission Measurement

3.7.1 Limit of Spurious Emission Measurement

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.

3.7.2 Measuring Instruments

See list of measuring equipment of this test report.

3.7.3 Test Procedure

- 1. The testing follows ANSI C63.10-2013 clause 7.8.8.
- 2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 3. Set to the maximum power setting and enable the EUT transmit continuously.
- Set RBW = 100 kHz, VBW = 300kHz, scan up through 10th harmonic. All harmonics / spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.
- 5. Measure and record the results in the test report.
- 6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.7.4 Test Setup



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3.7.5 Test Result of Conducted Spurious Emission

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				_							· · · · ·
ipectrum					Spectrum						
Ref Level 20.00 dBm Offset 11. Att 20 dB SWT 29	90 dB 🖷 RBW 100 kHz 1.7 ms 🖶 VBW 300 kHz 🛛 N	1ode Auto Sweep			Ref Level Att	20.00 dBm Offse 20 dB SWT	t 11.90 dB RBW 230 ms VBW	100 kHz 300 kHz Mode	e Auto Sweep		
1Pk View		M1[1]		10.07 dBm	1Pk View		1		41[1]		0 00 dBr
		MILLI	M1	2.40040 GHz	M1				anti'i		2.4160 GH
01 10.070 dBm		-M2[1]-		2.00070 GHz	-19-dBm -0	1 9.980 dBm			M2[1]		2.0170 GH
dBm-					0 dBm						
					10.d0m						
02 -9.950 dbin						D2 -10.020 dbm					
dBm					-20 dBm				+ +		
dBm-					-30 dBm		_				
dBm		M2			240 dBm						
dBm					-50 d8m						
	بالملايدة بلا يترم أمالك		un males Historia	un male come	on border when the	michandhan	mounterman	un company and	returneter	and how many	as welled hatters a
AB FOX Jan Landa and Anna and					-60 dBm						
dBm		_			-70 dBm		_				_
t 30.0 MHz	691 pts		S	Stop 3.0 GHz	Start 2.0 GH	z		691 pts	<u> </u>		Stop 25.0 GH
CSE Plot on	CH 39 betwe	en 30 M	Hz ~ 3 G	Hz	Date: 9.FEB.	E Plot o	n CH 39	betwee	n 2 GF	lz ~ 25	GHz
CSE Plot on	CH 39 betwe	en 30 M	Hz ~ 3 G	GHz ⊮	Date: 9.FEB.	E Plot o	n CH 39	betwee	n 2 GF	lz ~ 25	GHz ſ
CSE Plot on (een 30 M	Hz ~ 3 G	GHz (₩)	Date: 9.FEB.	E Plot o	n CH 39	100 kHz 300 kHz Mod	a Auto Sweep	lz ~ 25	GHz [[•]
CSE Plot on (ectrum of Level 20.00 dBm offset 11. t 20 dB swr 25 k View	CH 39 betwe	een 30 M	Hz ~ 3 G	€Hz (₩)	Date: 9.FEB. CS Spectrum Ref Level Att 1Pk View	E Plot o	n CH 39	betwee	Auto Sweep	lz ~ 25	GHz (*
CSE Plot on (CH 39 betwe	een 30 M	Hz ~ 3 G	9.83 dBm 2.43910 GHz	Date: 9.FEB.	E Plot o	n CH 39	betwee	Auto Sweep	lz ~ 25	GHz
CSE Plot on (ectrum of Level 20.00 dBm Offset 11.1 20 dB SWT 25 k View lBm 01 9.830 dBm	CH 39 betwee 90 dB • RBW 100 kHz 1.7 ms • VBW 300 kHz •	tode Auto Sweep M1[1] M2[1]	Hz ~ 3 G	9.83 dBm 2.43910 GHz 43.98 dBm 2.03510 GHz	Date: 9.FEB.	E Plot o 20.00 dBm offse 20 dB swr 1 9.510 dBm	n CH 39	100 kHz 300 kHz Mode	Auto Sweep M1[1] M2[1]	lz ~ 25	9.51 dB 2.4490 G 2.0500 G
CSE Plot on (CH 39 betwee 90 d8 • RBW 100 kHz 1.7 ms • VBW 300 kHz •	tode Auto Sweep MI[1]	Hz ~ 3 G	9.83 dBm 2.43910 GHz -43.96 dBm 2.03510 GHz	Date: 9.FEB. CS Spectrum Ref Level Att 1Pk View M1 19 dBm 0 dBm	E Plot o 20.00 dBm offse 20 dB swr 1 9.510 dBm	n CH 39	100 kHz 300 kHz Mode	Auto Sweep M1[1] M2[1]	łz ~ 25	GHz 9.51 dE 2.4490 G
CSE Plot on (CH 39 betwee 90 d8 • RBW 100 kHz 17 ms • VBW 300 kHz •	Hode Auto Sweep MI[1] -M2[1)	Hz ~ 3 G	9.83 dBm 2.43910 GHz 43.98 dBm 2.03510 GHz	Date: 9.FEB.	E Plot o 20.00 dBm Offse 20.00 dBm Offse 20.00 dBm The offse 20.00 dBm Offse	n CH 39	100 kHz 300 kHz Mode	Auto Sweep M1[1] M2[1]	łz ~ 25	9.51 dB 2.4490 G -44.47 dB 2.0500 G
CSE Plot on (sctrum ft Level 20.00 dBm Offset 11.1 20 dB swrr 25 View Bm 01 9.830 dBm dBm D2 -10,170 dBm D8	CH 39 betwee 90 d8 80 RBW 100 kHz 7.7ms VBW 300 kHz N	MI[1] -M2[1]	Hz ~ 3 G	9.83 dBm 2.43910 GHz 43.98 dBm 2.03510 GHz	Date: 9.FEB. Spectrum Ref Level Att 19 dBm 0 dBm -10 dBm	E Plot o 20.00 dBm offse 20 dB swr 1 9.510 dBm D2 -10.490 dBm	n CH 39	betwee	Auto Sweep M1[1] M2[1]	łz ~ 25	9.51 dB 2.4490 GI 2.0500 GI
CSE Plot on (CH 39 betwee 90 d8 RBW 100 kH2 7.7ms VBW 300 kH2 N	tode Auto Sweep M1[1]	Hz ~ 3 G	9.83 dBm 2.43910 GHz 43.99 dBm 2.03510 GHz	Date: 9.FEB. CS Spectrum Ref Level Att 117.dBm 0 0.dBm -10.dBm -20.dBm -20.dBm	E Plot o 20.00 dBm offse 20 dB swr 1 9.510 dBm D2 -10,490 dBm	n CH 39	betwee	n 2 GH	lz ~ 25	GHz 9.51 dB 2.4490 GI -44.47 dB 2.0500 GI
CSE Plot on (CH 39 betwee 90 d8 8 RBW 100 kHz N 7 ms VBW 300 kHz N	Hode Auto Sweep MI[1] M2[1]	Hz ~ 3 G	9.83 dBm 2.43910 GHz 2.03510 GHz	Date: 9.FEB. CS Spectrum Ref Level Att = 1Pk View Mi = 30 dBm -20 dBm -20 dBm	E Plot o 2001 00:29:57 E Plot o 20.00 dBm Offse 20 dB SWT 1 9.510 dBm D2 -10,490 dBm	n CH 39	betwee	n 2 GH	łz ~ 25	GHz 9.51 df 2.4490 ci 44.47 df 2.0500 ci
CSE Plot on (ectrum of Level 20.00 dBm Offset 11. t 20 dB SWT 25 k View 38m 01 9.830 dBm dBm 02 -10.170 dBm dBm dBm dBm 02 -10.170 dBm	CH 39 betwee 90 d8 RBW 100 kHz 7.7ms VBW 300 kHz N	Hode Auto Sweep MI[1] M2[1]	Hz ~ 3 G	9.83 dBm 2.43910 GHz 2.43910 GHz 2.03510 GHz	Date: 9.FEB. CS Spectrum Ref Level Att @1Pk Viaw Mi #30 dBm -20 dBm -30 dBm	E Plot o 20.0 dBm offse 20 dB swr 1 9.510 dBm D2 -10.490 dBm	n CH 39	betwee	n 2 GH	łz ~ 25	GHz 9.51 de 2.4490 ci 44.47 de 2.0500 ci
CSE Plot on (ectrum of Level 20.00 dBm Offset 11. 20 dB SWT 29 k View 38m 01 9.830 dBm dBm D2 -10.170 dBm dBm dBm dBm dBm	CH 39 betwee	2006 Auto Sweep M1[1] M2[1] M2[1]	Hz ~ 3 G	9.83 dBm 2.43910 GHz 2.03510 GHz	Date: 9.FEB. CS Spectrum Ref Lavel Att 9.Pkview 0 dBm -20 dBm -20 dBm -20 dBm -20 dBm	2021 10:29:57 E Plot o 20.00 dBm Offse 20 dB SWT 1 9.510 dBm D2 -10.490 dBm	n CH 39	betwee	n 2 GH	łz ~ 25	9,51 dB 2,4490 cf 2,4490 cf 2,0500 cf 1
CSE Plot on (ectrum f Level 20.00 dBm Offset 11. 20 dB SWT 20 dB SWT 20 dB D1 9.830 dBm dBm D2 -10.170 dBm dBm dBm dBm dBm	CH 39 betwee	2006 Auto Sweep M1[1] M2[1] M2[1] M2 M2 M2	Hz ~ 3 G	9.83 dBm 2.43910 GHz 2.03510 GHz	Date: 9.FEB. CS Spectrum Ref Level Att 19.0km 0 dBm -20 dBm -20 dBm -30 dBm -30 dBm -30 dBm	2021 10:29:57 E Plot o 20.00 dBm Offse 20 dB SWT 1 9.510 dBm D2 -10.490 dBm	n CH 39	betwee	n 2 GH	łz ~ 25	9,51 dB 2,4400 G - 44,47 dB 2,0500 G
CSE Plot on (ectrum fLevel 20.00 dBm Offset 11. 20 dB SWT 25 k View dBm 01 9.830 dBm dBm 02 -10.170 dBm dBm dBm dBm dBm	CH 39 betwee	tode Auto Sweep M1[1] M2[1]	Hz ~ 3 G	9.83 dBm 2.4390 GHz -43.96 GHz -43.96 GHz	Date: 9.FEB. CS Spectrum Ref Level Att 9.19k View 0 dBm -20 dBm -20 dBm -30 dBm -30 dBm -40 dBm	E Plot o 20021 10:29:57 E Plot o 20.00 dBm Offse 20 dB SWT 1 9.510 dBm D2 -10.490 dBm	n CH 39	betwee	n 2 GH	łz ~ 25	CHz 9,51 de 2,4400 ci 44.47 de 2,0500 ci
CSE Plot on (ectrum 20 dB 20 dB SWT 3m dBm dBm dBm dBm dBm dBm dBm dBm dBm		tode Auto Sweep M1[1] M2[1]	Hz ~ 3 G	9.83 dBm 2.4390 GHz -43.96 GHZ -4	Date: 9.FEB. CS Spectrum Ref Level Att 9.19k View 19.68m 0 dBm -10.68m -20 dBm -30 dBm -30 dBm -30 dBm -30 dBm	2021 10:29:57 E Plot o 20.00 dBm Offse 20 dB Swr 1 9.510 dBm D2 -10.490 dBm	n CH 39	betwee	n 2 GF	lz ~ 25	GHz 9,51 db 2,4490 db 2,4500 db 2,0500 db 0 0 0 0 0 0 0 0 0 0 0 0 0
CSE Plot on (ectrum f Level 20.00 dBm Offset 11. t2 0 dB SWT 25 k View // BBm O1 9.830 dBm dBm dBm dBm dBm dBm dBm dBm dBm dBm dBm		Hode Auto Sweep MI[1] M2[1]	Hz ~ 3 G	9.83 dBm 2.4394 DGHz 2.4394 DGHz 2.03510 GHz	Date: 9.FEB. CS Spectrum Ref Level Att 9.10k View 10.dBm -10.dBm -20.dBm -20.dBm -30.dBm -50.dBm -70.dBm -70.dBm	E Plot o 2001 10:29:57 E Plot o 20.00 dBm Offse 20 dB Swr 1 9.510 dBm D2 -10.490 dBm	n CH 39	betwee	n 2 GH	łz ~ 25	GHz 9.51 dBi 2.4490 cH - 44.47 dBi 2.0500 GH
CSE Plot on (sctrum f Level 20.00 dBm 20 dB SWT 30 dBm 01 9.830 dBm 30 dBm		Ande Auto Sweep MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1] MI[1]	Hz ~ 3 G	9.83 dBm 2.43910 GHz -43.98 dBm 2.03510 GHz	Date: 9.FEB. Spectrum Ref Level Att 10 dBm 0 dBm 20 dBm -30 dBm -30 dBm -70 dBm -70 dBm	20021 10:29:57 E Plot O 20.00 dBm Offse 20 dB SWT 1 9.510 dBm D2 -10.490 dBm 	n CH 39	betwee	n 2 GH	lz ~ 25	GHz 9.51 dB 2.4490 G
CSE Plot on (rectrum offset 11. 20 db swr 250 swr 250 >k View dBm dBm 01 9.830 dBm dBm 02 -10.170 dBm dBm dBm	CH 39 betwee 90 dB = RBW 100 kHz 1.7 ms = VBW 300 kHz NBW 300 kHz	Auto Sweep MI[1] M2[1] M2 M2	Hz ~ 3 G	9.83 dBm 2.43910 GHz 43.96 dBm 2.03510 GHz 43.96 dBm 2.03510 GHz	Date: 9.FEB. Spectrum Ref Level Att 0 dBm 0 dB	2021 10:29:57 E Plot o 20.00 dBm offse 20 dB SWT 1 9.510 dBm D2 -10.490 dBm ,www.htu.www.	n CH 39	betwee	n 2 GH	lz ~ 25	CHz 9.51 dbi 2.4490 dbi 2.4500 dbi
CSE Plot on (pectrum Ref Level 20.00 dBm Offset 11.1 Xit 20 dB SWT 25 Pk View idBm 01 9.830 dBm idBm 02 -10.170 dBm 0 dBm	CH 39 betwee	Peen 30 M tode Auto Sweep M1[1] M2[1] M2 M2	Hz ~ 3 G	9.83 dBm 2.43910 GHz 2.03510 GHz 2.03510 GHz 4.000 GHz 4.000 GHz 4.000 GHz	Date: 9.FEB. CS Spectrum Ref Level Att 17 dBm 10	2021 10:29:57 E Plot o 20.00 dBm offse 20 dB swr 1 9.510 dBm D2 -10.490 dBm 	n CH 39	betwee	n 2 GH	Iz ~ 25	GHz 9.51 dB 2.4409 Cf 2.4409 C

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CSE Plot on CH 78	3 between 30 MHz	~ 3 GHz	CSE Plot o	on CH 78 betwe	en 2 GHz ~ 2	25 GHz
Spectrum Ref Level 20.00 dBm Offset 11.90 dB @ RB Att 20 dB SWT 29.7 ms @ VB	W 100 kHz W 300 kHz Mode Auto Sweep		Spectrum Ref Level 20.00 dBm Offs Att 20 dB SWT	et 11.90 dB 🖷 RBW 100 kHz 7 230 ms 🖶 VBW 300 kHz N	1ode Auto Sweep	
10 dBm 01 9,460 dBm 0 dBm	M1[1] M2[1]	9,46 dBm M1 2,48210 GHz 7 -44,92 dBm 2,06520 GHz	10k View 10 dBm 0 dBm		M1[1] M2[1]	8.90 dBm 2.4830 GHz -45.78 dBm 2.0830 GHz
-10.48m 02 -10.540 dBm -20 dBm -30 dBm			-10.dBm02 -11.100 dB -20 dBm	m		
-40 dBm	m deal of an all the hand an and an adder and	astan burner and and and and	-40 dBm	under market where in a second		- had where the second
-70 dBm	691 pts	Stop 3.0 GHz	-70 dBm Start 2.0 GHz	691 pts		Stop 25.0 GHz
Date: 9.FEB.2021 11:14:46			ate: 9.FEB.2021 11:15:30			





<2Mbps>





C	SE PI	ot on	CH 7	'8 bei	tweer	30 MH	Hz ∼ 3	GHz	С	SE Ple	ot on	CH 7	78 be	twee	n 2 G	Hz ~	25 G	Hz
Spectru Ref Leve	m el 20.00 dBm 20 dB	Offset 1 SWT 2	1.90 dB 🖷 29.7 ms 🖷	RBW 100 k VBW 300 k	Hz Hz Mode	Auto Sweep			Spectru Ref Lev	m al 20.00 dBm 20 dB	Offset 1 SWT	11.90 dB 🖷 230 ms 🖷	RBW 100 k VBW 300 k	Hz Hz Mode	e Auto Swee	ер		
●1Pk View									●1Pk View									
10 dBm	-01 4.930 df	MD			M1	[1]	M1	4.93 dBm 2.48210 GHz -46.05 dBm 2.06520 GHz	10 dBm	01 4 310 dP				n 	41[1] 42[1]			4.31 dBm 2.4830 GHz -46.70 dBm 2.0830 GHz
0 dBm									0 dBm	D1 4.310 08	2111			-				
-10 dBm	D2 -15	.070 dBm							-10 dBm	D2 -15	.690 dBm					<u> </u>	<u> </u>	
-20 dBm—			_						-20 dBm									
-30 dBm									-30 dBm									
-40 dBm						M2		_	-40 dBm							<u> </u>	<u> </u>	
-50 dBm		and a merclane	aurolanness	and the design of the state	maline	الدل ومعطور والدور الدور و	henreinnelle	mmonument	-S0 dBm-	madrawkins	Munul	ignorohi	huhllip	www.cyter	Arman	annum	monteres	announce
17019/08/06	- area								-60 GBM-									
-70 dBm									-70 dBm							-		
Start 30.0	0 MHz			691	pts			Stop 3.0 GHz	Start 2.0	GHz			691	pts			Sto	p 25.0 GHz
L Date: 9.FF	JL 18.2021 13:	23:43							Date: 9.FI	.B.2021 13:	24:16							





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CSE Plot on CH 78 between 30 MHz ~ 3 GHz	CSE Plot on CH 78 between 2 GHz ~ 25 GHz
Spectrum Image: Constraint of the sector of t	Spectrum Common Number Common Numer Common Number Common Number
• IPk View M1[1] • 5.08 dam 2.48210 GHz 10 dbm • 01 5.060 dam • 01 5.060 dam M2[1] M1 • 2.06520 GHz -10 dbm • 02 -14.920 dbm • 02 -14.920 dbm • 02 -14.920 dbm • 0 • 0	19k view 10k view 10 d8m 10 4.280 d8m 20
Start 30.0 MHz 691 pts Stop 3.0 GHz Date: 9.FEB.2021 13:57:13 Manual Distriction Manual Distriction	Start 2.0 GHz 691 pts Stop 25.0 GHz Date: 9.FEB.2021 13:57:47 Manual Action Manual Action

3.8 Radiated Band Edges and Spurious Emission Measurement

3.8.1 Limit of Radiated Band Edges and Spurious Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

Frequency	Field Strength	Measurement Distance
(MHz)	(microvolts/meter)	(meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 - 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.8.2 Measuring Instruments

See list of measuring equipment of this test report.



3.8.3 Test Procedures

- 1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
- 2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
- 3. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
- 4. Set to the maximum power setting and enable the EUT transmit continuously.
- 5. Use the following spectrum analyzer settings:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW=100 kHz for f < 1 GHz, VBW \ge RBW; Sweep = auto; Detector function = peak; Trace = max hold for peak
 - (3) For Peak measurement (above 1 GHz):
 Set RBW=1 MHz, VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold for peak
 - (4) For average measurement (above 1 GHz):
 Set RBW=1 MHz, VBW=10 Hz; Sweep = auto; Detector function = peak; Trace = max hold for average
- 6. Corrected Reading: Antenna Factor + Cable Loss + Read Level Preamp Factor = Level
- 7. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
- 8. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.



3.8.4 Test Setup

For radiated test below 30MHz



For radiated test from 30MHz to 1GHz





For radiated test above 1GHz



3.8.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

3.8.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C and D.

3.8.7 Duty Cycle

Please refer to Appendix E.

3.8.8 Test Result of Radiated Spurious Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix C and D.



3.9 AC Conducted Emission Measurement

3.9.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of omission (MHz)	Conducted limit (dBµV)				
Frequency of emission (MHZ)	Quasi-peak	Average			
0.15-0.5	66 to 56*	56 to 46*			
0.5-5	56	46			
5-30	60	50			

*Decreases with the logarithm of the frequency.

3.9.2 Measuring Instruments

See list of measuring equipment of this test report.

3.9.3 Test Procedures

- 1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- 2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- 3. All the support units are connecting to the other LISN.
- 4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- 5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
- 6. Both sides of AC line were checked for maximum conducted interference.
- 7. The frequency range from 150 kHz to 30 MHz was searched.
- Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.



3.9.4 Test Setup



3.9.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

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3.10 Antenna Requirements

3.10.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the rule.

3.10.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.10.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.



4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Bilog Antenna	TESEQ	6111D	50392	30MHz~1GHz	Jul. 29, 2020	Dec. 08, 2020~ Feb. 03, 2020	Jul. 28, 2021	Radiation (03CH02-CA)
Horn Antenna	SCHWARZB ECK	BBHA 9120D	01895	1GHz~18GHz	Aug. 28, 2020	Dec. 08, 2020~ Feb. 03, 2020	Aug. 27, 2021	Radiation (03CH02-CA)
SHF-EHF Horn Antenna	SCHWARZB ECK	BBHA9170	00842	18GHz~40GHz	Jul. 27, 2020	Dec. 08, 2020~ Feb. 03, 2020	Jul. 26, 2021	Radiation (03CH02-CA)
Amplifier	SONOMA	310N	372240	N/A	Aug. 12, 2020	Dec. 08, 2020~ Feb. 03, 2020	Aug. 11, 2021	Radiation (03CH02-CA)
Preamplifier	Keysight	83017A	MY53270321	1GHz~26.5GHz	Jul. 28, 2020	Dec. 08, 2020~ Feb. 03, 2020	Jul. 27, 2021	Radiation (03CH02-CA)
Preamplifier	EMEC	EMC18G40G	060725	18G-40G	Aug. 07, 2020	Dec. 08, 2020~ Feb. 03, 2020	Aug. 06, 2021	Radiation (03CH02-CA)
Preamplifier	E-instrument	ERA-100M-18 G-56-01-A70	EC1900251	1GHz~18GHz	Nov. 26, 2019	Dec. 08, 2020~ Feb. 03, 2020	Nov. 25, 2021	Radiation (03CH02-CA)
EMI Test Receiver	Rohde & Schwarz	ESU26	100049	20Hz~26.5GHz	Aug. 11, 2020	Dec. 08, 2020~ Feb. 03, 2020	Aug. 10, 2021	Radiation (03CH02-CA)
Spectrum Analyzer	Keysight	N9010A	MY57420221	10Hz~44GHz	Sep. 11, 2020	Dec. 08, 2020~ Feb. 03, 2020	Sep. 10, 2021	Radiation (03CH02-CA)
Filter	Wainwright	Whkx8-5872.5 -6750-18000-4 0ST	SN8	6.75G Highpass	Jul. 24, 2020	Dec. 08, 2020~ Feb. 03, 2020	Jul. 23, 2021	Radiation (03CH02-CA)
Filter	Wainwright	WHKX12-270 0-3000-18000- 60ST	SN10	3G Highpass	Jul. 24, 2020	Dec. 08, 2020~ Feb. 03, 2020	Jul. 23, 2021	Radiation (03CH02-CA)
Filter	Wainwright	WLK12-1200- 1272-11000-4 0SS	SN2	1.2G Low Pass	Jul. 24, 2020	Dec. 08, 2020~ Feb. 03, 2020	Jul. 23, 2021	Radiation (03CH02-CA)
Hygrometer	TESEO	608-H1	45142602	N/A	Aug. 05, 2020	Dec. 08, 2020~ Feb. 03, 2020	Aug. 04, 2021	Radiation (03CH02-CA)
Controller	ChainTek	3000-1	N/A	Control Turn table & Ant Mast	N/A	Dec. 08, 2020~ Feb. 03, 2020	N/A	Radiation (03CH02-CA)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Dec. 08, 2020~ Feb. 03, 2020	N/A	Radiation (03CH02-CA)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Dec. 08, 2020~ Feb. 03, 2020	N/A	Radiation (03CH02-CA)
Software	Audix	E3	N/A	N/A	N/A	Dec. 08, 2020~ Feb. 03, 2020	N/A	Radiation (03CH02-CA)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Hygrometer	Testo	608-H1	45142595	N/A	Aug. 05, 2020	Dec. 24, 2020~ Feb. 24, 2021	Aug. 04, 2021	Conducted (TH01-CA)
Power meter	Anritsu	ML2495A	1804004	N/A	Aug. 10, 2020	Dec. 24, 2020~ Feb. 24, 2021	Aug. 09, 2021	Conducted (TH01-CA)
Power Sensor	Anritsu	MA2411B	1726149	300MHz-40GHz	Aug. 10, 2020	Dec. 24, 2020~ Feb. 24, 2021	Aug. 09, 2021	Conducted (TH01-CA)
Spectrum Analyzer	Rohde & Schwarz	FSV40	101089	10Hz-40GHz	Sep. 14, 2020	Dec. 24, 2020~ Feb. 24, 2021	Sep. 13, 2021	Conducted (TH01-CA)
Coupler	WOKEN	20dB 30W Coupler	CAT7AKW1A1	0.5-18GHz	Calibration from System	Dec. 24, 2020~ Feb. 24, 2021	Calibration from System	Conducted (TH01-CA)
LISN	TESEQ	NNB51	47407	N/A	Jul. 06, 2020	Jan. 09, 2021	Jul. 05, 2021	Conduction (CO01-CA)
EMI Test Receiver	R&S	ESR7	102177	9KHz~7GHz	Jul. 16, 2020	Jan. 09, 2021	Jul. 15, 2021	Conduction (CO01-CA)
Pulse limiter with 10dB attenuation	R&S	VTSD 9561-F N	9561-F- N00412	N/A	Jul. 08, 2020	Jan. 09, 2021	Jul. 07, 2021	Conduction (CO01-CA)
Test Software	R&S	EMC32 V10.30.0	N/A	N/A	N/A	Jan. 09, 2021	N/A	Conduction (CO01-CA)



5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence	2.2
of 95% (U = 2Uc(y))	2.2

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence	4.5
of 95% (U = 2Uc(y))	4.0

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence	C 4
of 95% (U = 2Uc(y))	6.1

Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence	6.5
of 95% (U = 2Uc(y))	0.0

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Appendix A. Test Result of Conducted Test Items

Test Engineer:	Andy Kao	Temperature:	15.1~19.4	°C
Test Date:	2020/12/24-2021/2/24	Relative Humidity:	33.2~54.3	%

	<u>TEST RESULTS DATA</u> 20dB and 99% Occupied Bandwidth and Hopping Channel Separation										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	20db BW (MHz)	99% Bandwidth (MHz)	Hopping Channel Separation Measurement (MHz)	Hopping Channel Separation Measurement Limit (MHz)	Pass/Fail		
DH	1Mbps	1	0	2402	0.958	0.900	1.003	0.6387	Pass		
DH	1Mbps	1	39	2441	0.973	0.915	0.999	0.6483	Pass		
DH	1Mbps	1	78	2480	0.961	0.909	1.003	0.6406	Pass		
2DH	2Mbps	1	0	2402	1.385	1.233	0.999	0.9233	Pass		
2DH	2Mbps	1	39	2441	1.394	1.236	1.003	0.9291	Pass		
2DH	2Mbps	1	78	2480	1.376	1.221	1.003	0.9175	Pass		
3DH	3Mbps	1	0	2402	1.359	1.224	0.999	0.9059	Pass		
3DH	3Mbps	1	39	2441	1.359	1.221	1.003	0.9059	Pass		
3DH	3Mbps	1	78	2480	1.368	1.224	0.999	0.9117	Pass		

<u>TEST RESULTS DATA</u> Peak Power Table										
DH	CH.	NTX	Peak Power (dBm)	Power Limit (dBm)	Test Result					
	0	1	10.64	20.97	Pass					
DH5	39	1	10.32	20.97	Pass					
	78	1	10.15	20.97	Pass					
	0	1	9.44	20.97	Pass					
2DH5	39	1	9.42	20.97	Pass					
	78	1	8.92	20.97	Pass					
	0	1	9.97	20.97	Pass					
3DH5	39	1	9.73	20.97	Pass					
İ	78	1	9.16	20.97	Pass					

	<u>TEST RESULTS DATA</u> <u>Average Power Table</u> (Reporting Only)										
DH	CH.	NTX	Average Power (dBm)	Duty Factor (dB)							
	0	1	10.43	0.00							
DH5	39	1	10.07	0.00							
	78	1	9.91	0.00							
	0	1	7.14	0.00							
2DH5	39	1	6.89	0.00							
	78	1	6.28	0.00							
	0	1	7.20	0.00							
3DH5	39	1	6.95	0.00							
	78	1	6.25	0.00							
	78	1	0.25	0.00	I						

<u>TEST RESULTS DATA</u> Number of Hopping Frequency							
Number of Hopping (Channel)	Adaptive Frequency Hopping (Channel)	Limits (Channel)	Pass/Fail				
79	20	> 15	Pass				



Appendix B. AC Conducted Emission Test Results

Test Engineer	Janagan Wangao	Temperature :	18~21 ℃
rest Engineer.		Relative Humidity :	30.6~34.8%

EUT Information

Test Site : Mode : Test Voltage : Project : CO01-CA 1 120Vac/60Hz Cypress CYSBSYS Line



Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.395610		35.42	47.95	12.53	L1	OFF	20.0
0.395610	41.09		57.95	16.86	L1	OFF	20.0
6.209250		11.64	50.00	38.36	L1	OFF	20.1
6.209250	18.49		60.00	41.51	L1	OFF	20.1
14.469000		12.91	50.00	37.09	L1	OFF	20.3
14.469000	20.17		60.00	39.83	L1	OFF	20.3
24.349560		18.92	50.00	31.08	L1	OFF	20.6
24.349560	24.91		60.00	35.09	L1	OFF	20.6

EUT Information

Test Site : Mode : Test Voltage : Project : CO01-CA 1 120Vac/60Hz Cypress CYSBSYS Neutral



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.393990		33.46	47.98	14.52	Ν	OFF	20.0
0.393990	39.20		57.98	18.78	Ν	OFF	20.0
5.444250		12.35	50.00	37.65	Ν	OFF	20.1
5.444250	19.94		60.00	40.06	Ν	OFF	20.1
14.482500		13.27	50.00	36.73	Ν	OFF	20.3
14.482500	20.65		60.00	39.35	Ν	OFF	20.3
24.349290		20.00	50.00	30.00	Ν	OFF	20.6
24.349290	26.78		60.00	33.22	Ν	OFF	20.6



Appendix C. Radiated Spurious Emission

Tost Engineer -	Temperature :	18~22°C
rest Engineer :	Relative Humidity :	46~52%

2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

вт	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		2386.755	55.31	-18.69	74	41.64	27.64	17.4	31.37	116	55	Ρ	Н
		2314.305	44.06	-9.94	54	30.33	27.88	17.27	31.42	116	55	А	н
	*	2402	91.83	-	-	78.16	27.61	17.42	31.36	116	55	Р	н
	*	2402	91.55	-	-	77.88	27.61	17.42	31.36	116	55	А	Н
DT													Н
													Н
2402MH-		2350.53	55.61	-18.39	74	41.88	27.81	17.33	31.41	299	102	Ρ	V
2402101112		2350.53	44.29	-9.71	54	30.56	27.81	17.33	31.41	299	102	А	V
	*	2402	87.14	-	-	73.51	27.57	17.42	31.36	299	102	Ρ	V
	*	2402	86.8	-	-	73.17	27.57	17.42	31.36	299	102	А	V
													V
													V
		2363.6	55.34	-18.66	74	41.69	27.69	17.36	31.4	355	4	Ρ	Н
		2313.2	43.89	-10.11	54	30.16	27.88	17.27	31.42	355	4	А	Н
	*	2441	91.5	-	-	77.79	27.59	17.48	31.36	355	4	Ρ	Н
	*	2441	91.22	-	-	77.51	27.59	17.48	31.36	355	4	А	Н
DT		2499.68	55.19	-18.81	74	41.4	27.55	17.58	31.34	355	4	Ρ	Н
		2495.84	43.93	-10.07	54	30.13	27.56	17.58	31.34	355	4	А	Н
2441MH 7		2342	54.79	-19.21	74	41.07	27.81	17.32	31.41	399	287	Ρ	V
27710112		2351.92	43.89	-10.11	54	30.17	27.8	17.33	31.41	399	287	Α	V
	*	2441	87.25	-	-	73.68	27.45	17.48	31.36	399	287	Р	V
	*	2441	87	-	-	73.43	27.45	17.48	31.36	399	287	А	V
		2491.2	54.84	-19.16	74	41.22	27.39	17.57	31.34	399	287	Р	V
		2497.52	43.73	-10.27	54	30.11	27.38	17.58	31.34	399	287	А	V

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	1	1						1	1	1			
	*	2480	90.39	-	-	76.62	27.57	17.55	31.35	396	334	Ρ	Н
	*	2480	90.12	-	-	76.35	27.57	17.55	31.35	396	334	А	н
		2493.28	55.16	-18.84	74	41.37	27.56	17.57	31.34	396	334	Ρ	Н
		2496.96	43.89	-10.11	54	30.09	27.56	17.58	31.34	396	334	А	Н
BT CH 78 2480MHz													Н
													Н
	*	2480	87.09	-	-	73.49	27.4	17.55	31.35	393	115	Ρ	V
	*	2480	86.85	-	-	73.25	27.4	17.55	31.35	393	115	А	V
		2484.92	54.55	-19.45	74	40.95	27.39	17.56	31.35	393	115	Ρ	V
		2497.2	43.71	-10.29	54	30.09	27.38	17.58	31.34	393	115	А	V
													V
													V
Remark	 No other spurious found. All results are PASS against Peak and Average limit line. 												

2.4GHz 2400~2483.5MHz

							,		_	_			
BT	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
		((dD::)//m)				Factor		Factor	Pos	Pos	Avg.	(110.0)
			(dBµv/m)	(ab)	(aBhr/w)	(0840)	(aB/m)		(((((((((((((((((((((cm)	(aeg)	(P/A)	(H/V)
		4804	40.38	-33.62	74	64.01	31.38	11.28	66.29	100	0	P	н
													Н
рт													Н
													Н
		4804	40.06	-33.94	74	63.68	31.39	11.28	66.29	100	0	Р	V
2402IVIHZ													V
													V
													V
		4882	40.18	-33.82	74	63.54	31.35	11.43	66.14	100	0	Р	Н
		7323	45	-29	74	60.6	36.37	13.89	65.86	100	0	Р	Н
													Н
ВТ													Н
CH 39		4882	41.64	-32.36	74	65.07	31.28	11.43	66.14	100	0	Р	V
2441111172		7323	44.47	-29.53	74	60	36.44	13.89	65.86	100	0	Р	V
													V
													V
		4960	41.58	-32.42	74	64.5	31.47	11.59	65.98	100	0	Ρ	Н
		7440	45.87	-28.13	74	61.22	36.51	14.03	65.89	100	0	Ρ	Н
вт													Н
СН 78													Н
2480MH -		4960	40.69	-33.31	74	63.66	31.42	11.59	65.98	100	0	Р	V
240011112		7440	45.86	-28.14	74	61.24	36.48	14.03	65.89	100	0	Ρ	V
													V
													V
Remark	1. No 2. All	o other spuriou I results are PA	s found. .SS against F	eak and	l Average lim	it line.							

BT (Harmonic @ 3m)

Emission below 1GHz

BT	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		30.97	22.25	-17.75	40	29.08	24.71	0.9	32.44	-	-	P	Н
		105.66	30.72	-12.78	43.5	44.87	16.57	1.7	32.42	100	0	Р	Н
		145.43	26.56	-16.94	43.5	39.69	17.3	1.98	32.41	-	-	Р	Н
		294.81	28.69	-17.31	46	39.15	19.18	2.79	32.43	-	-	Р	Н
		740.04	31.34	-14.66	46	31.31	27.9	4.59	32.46	-	-	Р	Н
		958.29	33.02	-12.98	46	27.99	31	5.21	31.18	-	-	Р	Н
													Н
													Н
													Н
													Н
2.4GHz													Н
DT													Н
LF		32.91	31.01	-8.99	40	38.97	23.54	0.94	32.44	100	0	Р	V
		105.66	30.71	-12.79	43.5	44.86	16.57	1.7	32.42	-	-	Р	V
		139.61	25.36	-18.14	43.5	38.38	17.44	1.95	32.41	-	-	Р	V
		293.84	24.72	-21.28	46	35.27	19.1	2.78	32.43	-	-	Р	V
		559.62	26.15	-19.85	46	28.73	26.18	3.86	32.62	-	-	Р	V
		956.35	33.33	-12.67	46	28.33	31	5.2	31.2	-	-	Р	V
													V
													V
													V
													V
													V
													V
Domost	1. No	o other spurious	s found.										
Reinark	2. All	results are PA	SS against li	mit line.									

2.4GHz BT (LF)

Note symbol

*	Fundamental Frequency which can be ignored. However, the level of any
	unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is over limit line.
P/A	Peak or Average
H/V	Horizontal or Vertical

A calculation example for radiated spurious emission is shown as below:

вт	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
вт		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	Р	н
CH 00	<u> </u> '	<u> </u>	<u> </u>	l	 			I	<u> </u> l	<u> </u>		\vdash	
2402MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	Н

- 1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
- 2. Level($dB\mu V/m$) =

Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBµV) - Preamp Factor(dB)

3. Over Limit(dB) = Level(dB μ V/m) – Limit Line(dB μ V/m)

For Peak Limit @ 2390MHz:

- 1. Level(dBµV/m)
- = Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBµV) Preamp Factor(dB)
- $= 32.22(dB/m) + 4.58(dB) + 54.51(dB\mu V) 35.86 (dB)$
- = 55.45 (dBµV/m)
- 2. Over Limit(dB)
- = Level(dB μ V/m) Limit Line(dB μ V/m)
- $= 55.45(dB\mu V/m) 74(dB\mu V/m)$
- = -18.55(dB)

For Average Limit @ 2390MHz:

- 1. Level(dBµV/m)
- = Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBµV) Preamp Factor(dB)
- $= 32.22(dB/m) + 4.58(dB) + 42.6(dB\mu V) 35.86 (dB)$
- = 43.54 (dBµV/m)
- 2. Over Limit(dB)
- = Level(dB μ V/m) Limit Line(dB μ V/m)
- $= 43.54(dB\mu V/m) 54(dB\mu V/m)$
- = -10.46(dB)

Both peak and average measured complies with the limit line, so test result is "PASS".

Appendix D. Radiated Spurious Emission Plots

Tost Engineer :	Colvin Wu	Temperature :	18~22°C
rest Engineer .		Relative Humidity :	46~52%

2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m							
	BT CH39 2441MHz							
	Horizontal	Fundamental						
Peak	Hot Delic Q 22 321 124 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Left blank						
Avg.	Image:	Left blank						



2.4GHz 2400~2483.5MHz



BT (Harmonic @ 3m)











Emission below 1GHz

2.4GHz BT (LF)





Appendix E. Duty Cycle Plots

Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor(dB)
Bluetooth	100	-	-	10Hz	0.00

5115						
Spectru	im					Ę
Ref Lev Att SGL	el 20.00 d 20	IBm Offset 11.90 dB dB SWT 15 m	3 • RBW 1 MHz s • VBW 1 MHz			
1Pk Max	1			M1[1]		10 14 dB
	M1	D2		mrt ra		1.7609 n
10 abm-	1	4		D2[1]		0.02 0
0 dBm—	+					2.5870 п
-10 dBm-	<u> </u>					
an dame						
-20 ubm-						
-30 dBm-	+	+ +	+		+ +	
-40 dBm-	+	+				
-50 dBm-		+				
60 dBm-						
-00 00						
-70 dBm-	+	+ +	+ +		+ +	
CF 2.441	GHz		691 pts			1.5 ms
Marker				-		-
Type P	ef Trc	X-value	Y-value	Function	Function	1 Result
D2	M1 1	2.587 ms	0.02 dB			
D3	M1 1	2.5869 ms	0.02 dB			
	1				ander CITIT	