

FCC RADIO TEST REPORT

FCC ID	:	PY7-15465A
Equipment	:	GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac, GPS, FM Receiver and NFC
Brand Name	:	SONY
Applicant	:	Sony Corporation
		1-7-1 Konan Minato-ku Tokyo, 108-0076 Japan
Manufacturer	:	Sony Corporation
		1-7-1 Konan Minato-ku Tokyo, 108-0076 Japan
Standard	:	FCC Part 15 Subpart C §15.247
Test Date(s)	:	Oct. 14, 2021 ~ Nov. 24, 2021

We, Sporton International (Kunshan) 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 (Kunshan) Inc., the test report shall not be reproduced except in full.

JasonJia

Reviewed by: Jason Jia / Supervisor

lepwong



Approved by: Alex Wang / Manager

Sporton International (Kunshan) Inc.

No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China



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History of this test report

Report No.	Version	Description	Issued Date
FR101906A	01	Initial issue of report	Dec. 15, 2021
FR101906A	02	Remove Section 3.5.6 average output power	Dec. 24, 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 9.87 dB at 37.76 MHz
3.9	15.207	AC Conducted Emission	Pass	Under limit 8.76 dB at 0.172 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.



1 General Description

1.1 Product Feature of Equipment Under Test

GSM/WCDMA/LTE, Bluetooth, DTS/UNII a/b/g/n/ac, NFC, FM Receiver and GNSS.

Standards-related Product Specification				
Antenna Type / Gain	PIFA Antenna with gain -1.5 dBi			

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

EUT Information List							
HW Version	SW Version	S/N	Performed Test Item				
	0.48	HQ618X02D2	RF conducted measurement				
А	0.106	HQ61B2014B	Radiated Spurious Emission				
	0.106	HQ618X0253	AC Conducted Emission				

Note: For other wireless features of this EUT, test report will be issued separately.

1.2 Modification of EUT

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

1.3 Testing Location

Sporton International (Kunshan) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Test Firm	Sporton International (Kunshan) Inc.					
	No. 1098, Pengxi North	n Road, Kunshan Econom	ic Development Zone			
Test Site Location	Jiangsu Province 2153	00 People's Republic of C	hina			
Test Sile Location	TEL : +86-512-57900158					
	FAX : +86-512-57900958					
	Sporton Site No.	FCC Designation No.	FCC Test Firm			
Test Site No.	Sporton Site No.	FCC Designation No.	Registration No.			
	CO01-KS 03CH05-KS TH01-KS	CN1257	314309			





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	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, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape), and adjusting the measurement antenna orientation, following C63.10 exploratory test procedures and find X plane as worst plane, and the worst mode of radiated spurious emissions is Bluetooth 3Mbps mode, and recorded in this report.
- b. AC power line Conducted Emission was tested under maximum output power.

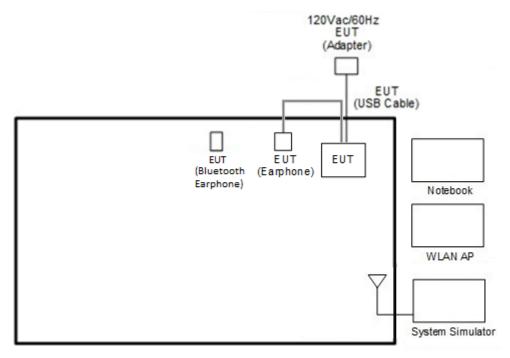
	Summary table of Test Cases					
Test Item		Data Rate / Modulation				
	Bluetooth BR 1Mbps GFSK	Bluetooth EDR 2Mbps π/4-DQPSK	Bluetooth EDR 3Mbps 8-DPSK			
Conducted	Mode 1: CH00_2402 MHz	Mode 4: CH00_2402 MHz	Mode 7: CH00_2402 MHz			
Test Cases	Mode 2: CH39_2441 MHz	Mode 5: CH39_2441 MHz	Mode 8: CH39_2441 MHz			
	Mode 3: CH78_2480 MHz	Mode 6: CH78_2480 MHz	Mode 9: CH78_2480 MHz			
	BI	uetooth EDR 3Mbps 8-DP	SK			
	Mod	e 1: CH00_2402 MHz for 1N	/lbps			
	Mod	e 2: CH39_2441 MHz for 1N	/lbps			
	Mod	e 3: CH78_2480 MHz for 1N	/lbps			
Radiated	Mod	e 4: CH00_2402 MHz for 2N	/lbps			
Test Cases	Mod	e 5: CH39_2441 MHz for 2N	/lbps			
	Mod	e 6: CH78_2480 MHz for 2N	/lbps			
	Mode 7: CH00_2402 MHz for 3Mbps					
	Mode 8: CH39_2441 MHz for 3Mbps					
	Mod	e 9: CH78_2480 MHz for 3N	/lbps			
AC Conducted	Mode 1 : GSM850 Idle +	Bluetooth Link + WLAN (2.	4GHz) Link + Earphone +			
Emission	Adapter					

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

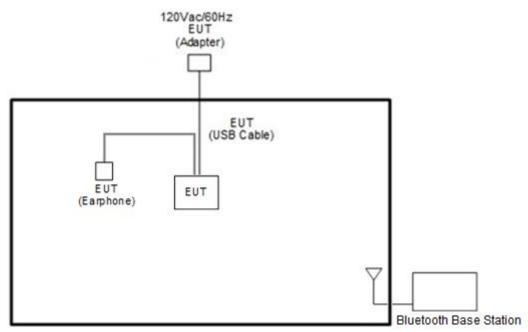


2.3 Connection Diagram of Test System

<AC Conducted Emission>



<Bluetooth Tx Mode>



2.4 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Base Station	Anritsu	MT8821C	N/A	N/A	Unshielded,1.8m
2.	Notebook	Lenovo	G480	QDS-BRCM1050I	N/A	shielded cable DC O/P 1.8m , Unshielded AC I/P cable 1.8m
3.	WLAN AP	D-link	DIR-655	KA21R655B1	N/A	Unshielded,1.8m
4.	SD Card	Kingston	8GB	N/A	N/A	N/A
5.	BT Base Station	R&S	СВТ	N/A	N/A	Unshielded, 1.8 m

2.5 EUT Operation Test Setup

The RF test items, utility "FTM" 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.

For AC power line conducted emissions, the EUT was set to connect with the WLAN AP under large package sizes transmission.

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 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.

Offset = RF cable loss.

Following shows an offset computation example with cable loss 5.5 dB.

 $Offset(dB) = RF \ cable \ loss(dB).$ = 5.5 (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 the maximum power setting and enable the EUT to transmit continuously.
- 4. Enable the EUT hopping function.
- Use the following spectrum analyzer settings: Span = the frequency band of operation;
 RBW = 300 kHz; 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



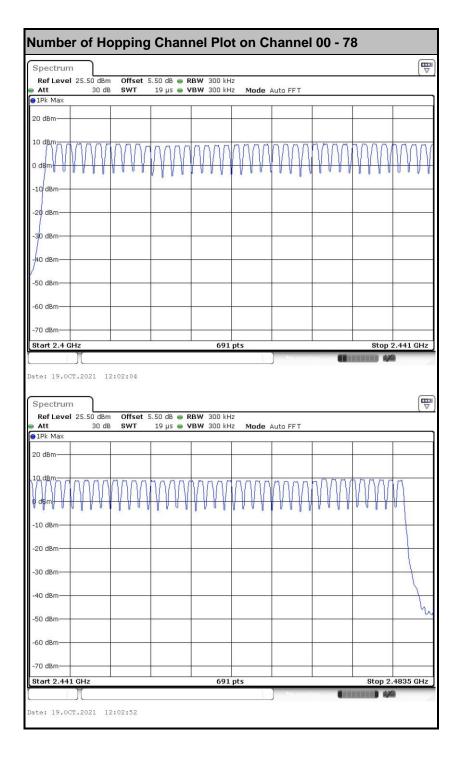
EUT

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 the maximum power setting and enable the EUT to 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 = 300 kHz; 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>

Channel Sepa	aration Plot on Cha	annel 00 - 01	Channel Separation Plot on Channel 39 - 40
Spectrum			Spectrum 🕎
Ref Level 15.50 dBm Offset 5.50 Att 20 dB SWT 6.3	0 dB 🖶 RBW 300 kHz 3 µs 🖶 VBW 300 kHz 🛛 Mode Auto FFT		RefLevel 15.50 dBm Offset 5.50 dB ● RBW 300 kHz Att 20 dB SWT 6.3 µs ● VBW 300 kHz Mode Auto FFT
• 1Pk Max	M1 M1[1]	02 9.31 dBm	
10 dBm	D2[1]	2.40215700 GHZ	10 dBm 2.44115700 GHz D2[1] 0.08 dB
0 dBm		998.55 kHz	0 dBm 998.60 kHz
-10 dBm			-10 dBm
-20 d8m			-20,d5m
-30 dBm			-30 dBm
-40 dBm			-40 dBm
-50 dBm-			-50 dBm-
-60 dBm			-60 dem
-70 dBm-			-70 dBm-
-80 dBm CF 2.4025 GHz	691 pts	Span 3.0 MHz	-80 dBm
	2 Terestor	(11111) 4/9	
Date: 19.0CT.2021 11:58:24			Date: 19.0CT.2021 13:27:05
Channel Sepa	aration Plot on Cha	annel 77 - 78	N/A
Spectrum			
Att 20 dB SWT 6.3	0 dB ⊜ RBW 300 kHz 3 µs ⊜ VBW 300 kHz Mode Auto FFT		
1Pk Max 10 dBm 10 dBm	M1[1] D2 D2[1]	9.30 dBm 2.47884880 GHz -0.12 dB 1.00290 MHz	
0 dBm		1.00290 MH2	
-20 d6m			
-30 dBm			
-40 dBm			
-50 dBm			
-60 dBm			
-70 dBm			
-80 dBm CF 2.4795 GHz	691 pts	Span 3.0 MHz	
t n) Messue	(mmmm) 4/9	
Date: 19.0CT.2021 13:28:03			



<2Mbps>

Channel Separat	tion Plot on Chan	nel 00 - 01	Channel Sepa	ration Plot on Chan	nel 39 - 40
Spectrum			Spectrum		
	RBW 300 kHz VBW 300 kHz Mode Auto FFT		Att 20 dB SWT 6.3	dB 🖷 RBW 300 kHz µs 🖷 VBW 300 kHz 🛛 Mode Auto FFT	
PlPk Max	M1[1]	6.73 dBm	e 1Pk Max	M1[1]	6.73 dBn
10 dBm	D2 02 02	2.40184440 GHz	10 dBm	D2 D2 D2[4]	2.44084880 GH
0 dBm		1.00290 MHz	0 dBm		998.60 kH
-10 dBm			-10 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		
-80 dBm			-80 dBm		
CF 2.4025 GHz	691 pts	Span 3.0 MHz	CF 2.4415 GHz	691 pts	Span 3.0 MHz
I IIIII III	Mexandino	(11111) (A		Messada	(1
te: 19.0CT.2021 13:30:26			Date: 19.0CT.2021 13:31:28		
Channel Separat	tion Plot on Chan	nel 77 - 78		N/A	
Spectrum					
Ref Level 15.50 dBm Offset 5.50 dB ● Att 20 dB SWT 6.3 μs ●	RBW 300 kHz VBW 300 kHz Mode Auto FFT				
1Pk Max					
10 dBm	M1[1] 02 02[2]	6.59 dBm 2.47884880 GHz			
0 dBm	B2[A]	-0.10 dB 998.60 kHz			
-10 dBm					
-20 dBm-					
30 dBm					
40 dBm					
50 d8m					
30 ubin					
-60 dBm-					
ou upin					
-70 d8m					
-70 dBm					
-70 dBm	691 pts	Span 3.0 MHz			
-70 dBm	691 pts	Span 3.0 MHz)			



<3Mbps>

Channel Sep			Channel S			-
pectrum Ref Level 15.50 dBm Offset 5.					lata a	Ę
Att 20 dB SWT 6	50 dB 🖷 RBW 300 kHz 5.3 µs 🖷 VBW 300 kHz 🛛 Mode Auto FF	т	Att 20 dB SWT	et 5.50 dB e RBW 300 6.3 µs e VBW 300		
Pk Max	M1[1]	6.74 dBm	• 1Pk Max		M1[1]	6.74 dB
l dBm		D2 2.40215700 GHz 0.23 dB	10 dBm	M1 ▼	D2 B2[4]	2.44084880 G
dBm		998.60 kHz	0 dBm			998.60 k
0 dBm			-10 dBm			
dBm-			-20 dBm-			
dBm			-30 dBm			
dBm			-40 dBm			
dBm			-50 dBm-			
dBm-			-60 dBm			
IBm-		+ + +	-70 dBm-		+ + +	
Bm			-80 dBm-			
4025 GHz			-00 0011			
	691 pts		CF 2.4415 GHz		01 pts	Span 3.0 Mi
)(691 pts	Span 3.0 MHz	CF 2.4415 GHz	69	01 pts	Span 3.0 Mi
19.0CT.2021 13:34:14	691 pts		CF 2.4415 GHz		01 pts Mexandon	
19.0CT.2021 13:34:14	691 pts				D1 pts	
	baration Plot on C	(J/A	
Channel Sep	Mr.	tannel 77 - 78			Mexicing	
Channel Sep		(mmm) 44 hannel 77 - 78			Mexicing	
Channel Sep	paration Plot on Cl	(mmm) 44 hannel 77 - 78			Mexicing	
ectrum ef Level 15.50 dBm Offset 5.	SO dB = PBW 300 HH2 SO dB = PBW 300 HH2 Mode Auto FF M1[1]	tannel 77 - 78 			Mexicing	Span 3.0 MH
Channel Sep	SO dB • RBW 200 HH2 S3 JB • VBW 200 HH2 Mode Auto FF	tannel 77 - 78 t 5.60 dBm 2.47884800 CH2 -0.11 dB			Mexicing	
Channel Sep	50 dB @ RBW 300 HH2 13 µS @ VBW 300 HH2 Mode Auto FF Mode Auto FF 02	time 44 hannel 77 - 78			Mexicing	
Channel Sep trum tevel 15.50 dBm Offset 5.5 20 dB SWT C Max	50 dB @ RBW 300 HH2 13 µS @ VBW 300 HH2 Mode Auto FF Mode Auto FF 02	tannel 77 - 78 t 5.60 dBm 2.47884800 CH2 -0.11 dB			Mexicing	
Channel Sep	50 dB @ RBW 300 HH2 13 µS @ VBW 300 HH2 Mode Auto FF Mode Auto FF 02	tannel 77 - 78 t 5.60 dBm 2.47884800 CH2 -0.11 dB			Mexicing	
Channel Sep	50 dB @ RBW 300 HH2 13 µS @ VBW 300 HH2 Mode Auto FF Mode Auto FF 02	tannel 77 - 78 t 5.60 dBm 2.47884800 CH2 -0.11 dB			Mexicing	
Channel Sep	50 dB @ RBW 300 HH2 13 µS @ VBW 300 HH2 Mode Auto FF Mode Auto FF 02	tannel 77 - 78 t 5.60 dBm 2.47884800 CH2 -0.11 dB			Mexicing	
Channel Sep	50 dB @ RBW 300 HH2 13 µS @ VBW 300 HH2 Mode Auto FF Mode Auto FF 02	tannel 77 - 78 t 5.60 dBm 2.47884800 CH2 -0.11 dB			Mexicing	
Channel Sep	50 dB @ RBW 300 HH2 13 µS @ VBW 300 HH2 Mode Auto FF Mode Auto FF 02	tannel 77 - 78 t 5.60 dBm 2.47884800 CH2 -0.11 dB			Mexicing	
Channel Sep	50 dB @ RBW 300 HH2 13 µS @ VBW 300 HH2 Mode Auto FF Mode Auto FF 02	tannel 77 - 78 t 5.60 dBm 2.47884800 CH2 -0.11 dB			Mexicing	
Channel Sep	50 dB @ RBW 300 HH2 13 µS @ VBW 300 HH2 Mode Auto FF Mode Auto FF 02	tannel 77 - 78 t 5.60 dBm 2.47884800 CH2 -0.11 dB			Mexicing	
Channel Sep	50 dB @ RBW 300 HH2 13 µS @ VBW 300 HH2 Mode Auto FF Mode Auto FF 02	tannel 77 - 78 t 5.60 dBm 2.47884800 CH2 -0.11 dB			Mexicing	
Channel Sep	50 dB @ RBW 300 HH2 13 µS @ VBW 300 HH2 Mode Auto FF Mode Auto FF 02	tannel 77 - 78 t 5.60 dBm 2.47884800 CH2 -0.11 dB			Mexicing	
Channel Sep	50 dB @ RBW 300 HH2 13 µS @ VBW 300 HH2 Mode Auto FF Mode Auto FF 02	tannel 77 - 78 t 5.60 dBm 2.47884800 CH2 -0.11 dB			Mexicing	
Channel Sep ectrum of Level 15.50 dBm Offset 5. tt 20 dB Swr 6 k Max	50 dB @ RBW 300 HH2 13 µS @ VBW 300 HH2 Mode Auto FF Mode Auto FF 02	tannel 77 - 78 t 5.60 dBm 2.47884800 CH2 -0.11 dB			Mexicing	



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.

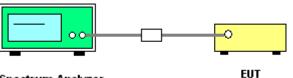
3.3.2 Measuring Instruments

See list of measuring equipment of this test report.

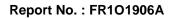
3.3.3 Test Procedures

- 1. The testing follows ANSI C63.10-2013 clause 7.8.4.
- 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 the maximum power setting and enable the EUT to 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



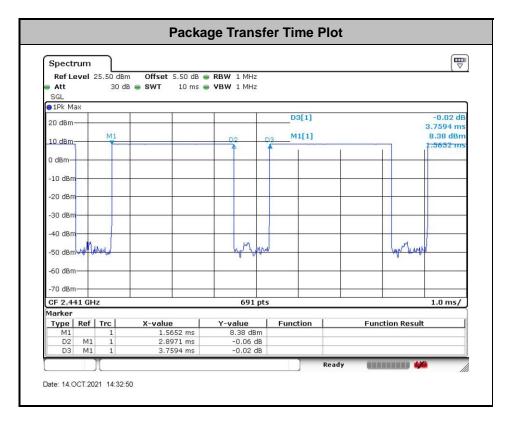
Spectrum Analyzer





3.3.5 Test Result of Dwell Time

Please refer to Appendix A.



Remark:

- In normal mode, hopping rate is 1600 hops/s with 6 slots in 79 hopping channels. With channel hopping rate (1600 / 6 / 79) in Occupancy Time Limit (0.4 x 79) (s), Hops Over Occupancy Time comes to (1600 / 6 / 79) x (0.4 x 79) = 106.67 hops.
- In AFH mode, hopping rate is 800 hops/s with 6 slots in 20 hopping channels. With channel hopping rate (800 / 6 / 20) in Occupancy Time Limit (0.4 x 20) (s), Hops Over Occupancy Time comes to (800 / 6 / 20) x (0.4 x 20) = 53.33 hops.
- **3.** Dwell Time(s) = Hops Over Occupancy Time (hops) x Package Transfer Time



3.4 20dB and 99% Bandwidth Measurement

3.4.1 Limit of 20dB and 99% Bandwidth

Reporting only

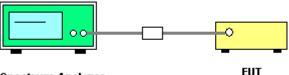
3.4.2 Measuring Instruments

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 the maximum power setting and enable the EUT to transmit continuously.
- Use the following spectrum analyzer settings for 20 dB 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



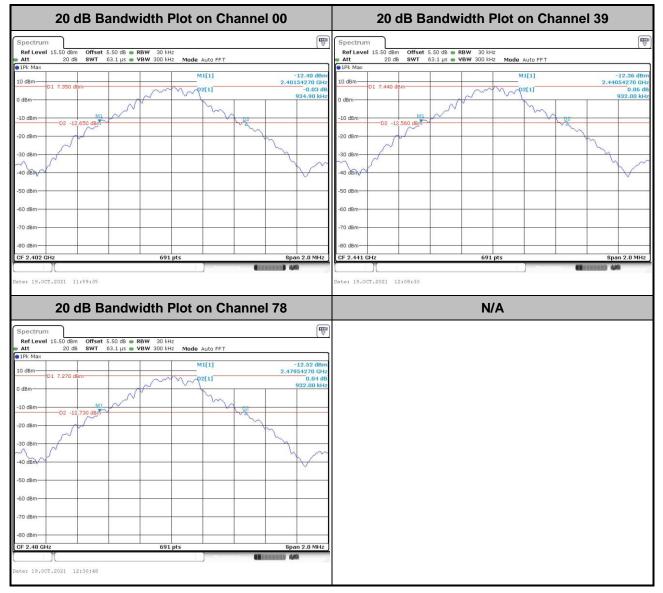
Spectrum Analyzer

3.4.5 Test Result of 20dB Bandwidth

Please refer to Appendix A.

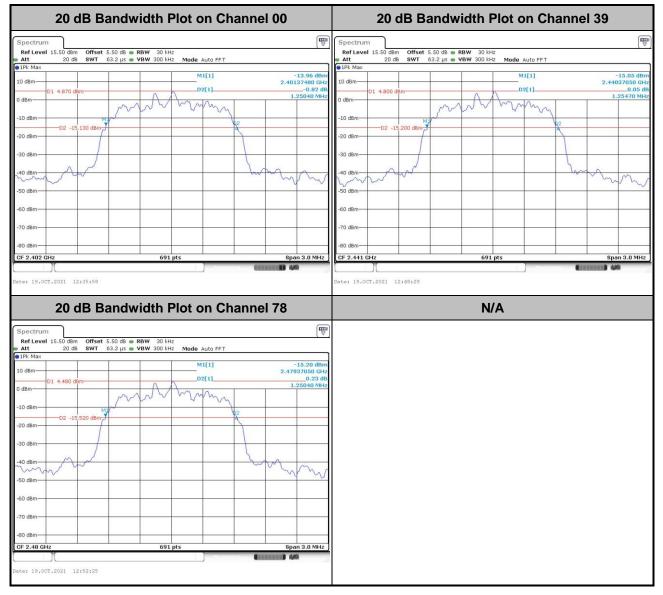


<1Mbps>



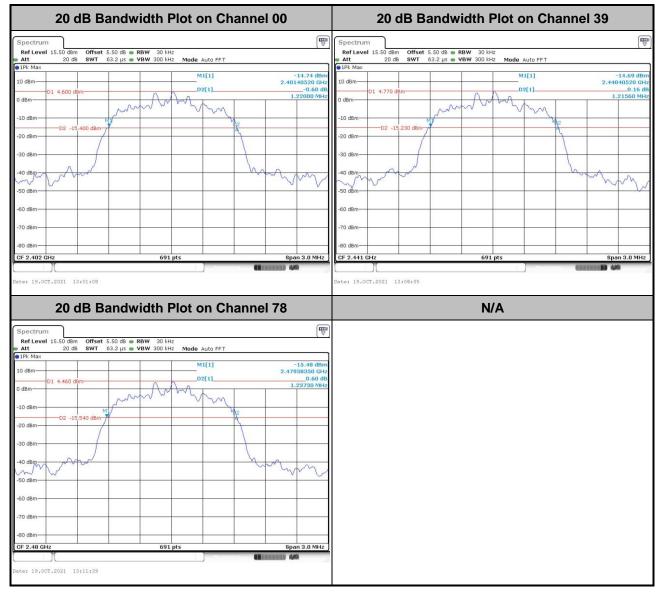


<2Mbps>





<3Mbps>

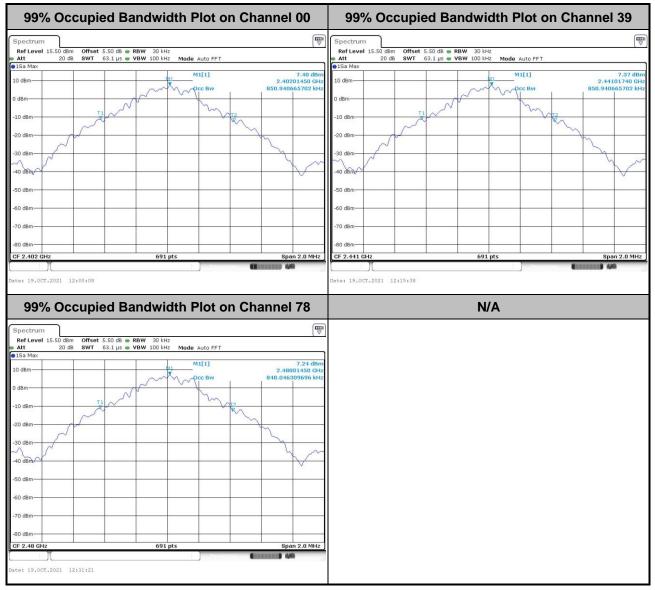




3.4.6 Test Result of 99% Occupied Bandwidth

Please refer to Appendix A.

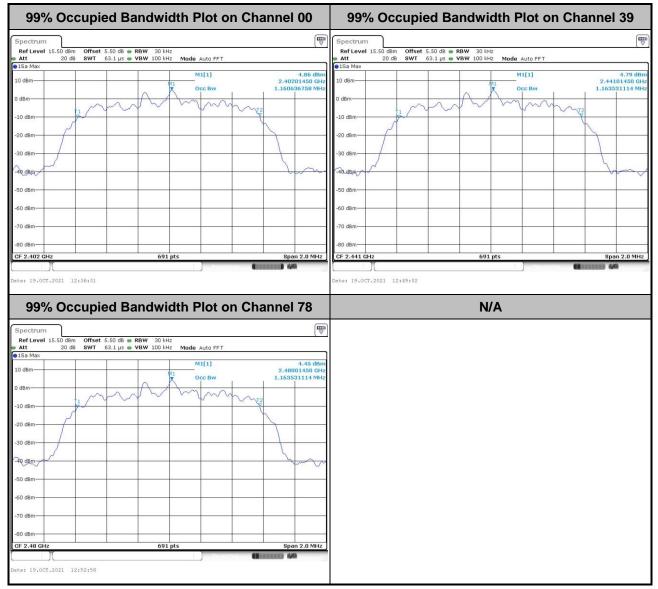
<1Mbps>



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



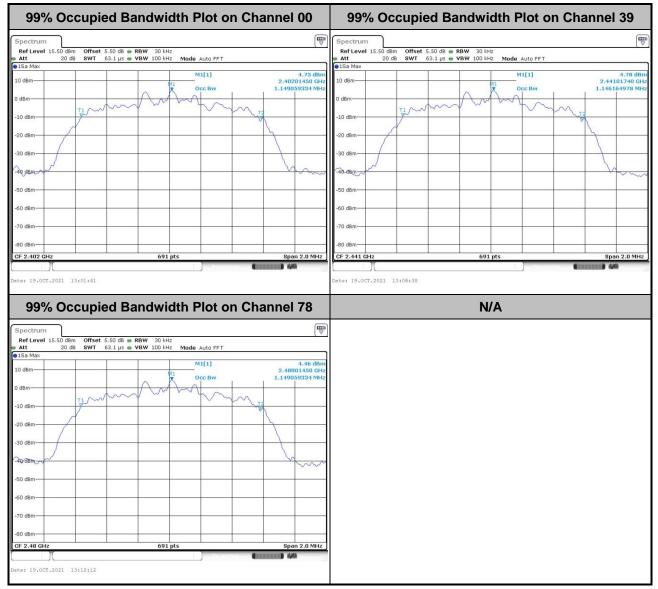
<2Mbps>



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.



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.

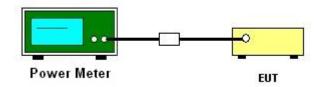
3.5.2 Measuring Instruments

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 the maximum power setting and enable the EUT to 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.



3.6 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.

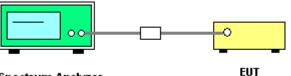
3.6.2 Measuring Instruments

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 the maximum power setting and enable the EUT to transmit continuously.
- 3. Set RBW = 100 kHz, VBW = 300 kHz. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz 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

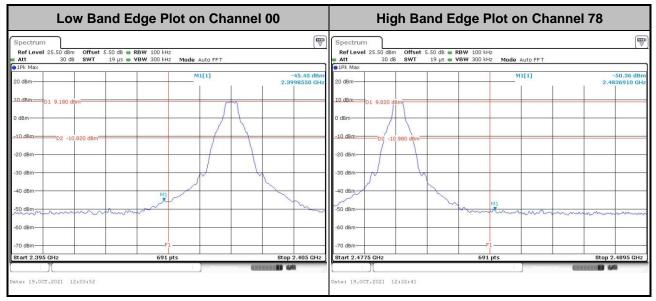


Spectrum Analyzer



3.6.5 Test Result of Conducted Band Edges

<1Mbps>



<2Mbps>

Low Ban	d Edge Plot on Chan	nel 00	High Band Edge Plot on Channel 78				
	0 dB ● RBW 100 kHz 9 us ● VBW 300 kHz Mode Auto FFT		Spectrum Ref Level 25.50 dBm Of Att 30 dB SV	fset 5.50 dB ● RBW 100 kHz VT 19 µs ● VBW 300 kHz Mode Auto FF	[₩ V		
• 1Pk Max		1	• 1Pk Max				
20 dBm	M1[1]	-47.73 dBm 2.3999860 GHz	20 dBm-	M1[1]	-51.07 dBn 2.4835520 GH		
10 dBm 01 6,700 dBm			10 dBm-01 6.400 dBm-				
0 dBm		η	0 dBm	γ			
-10 dBm-D2 -13.300 dBm			-10 dBm	IBm			
-20 dBm-			-20 dBm-				
-30 dBm		m	-30 dBm	4			
-40 dBm	Ma		-40 dBm	-M			
-50 dBm	www.	him	-50 dBm-		mmmmmm		
-60 dBm			-60 dBm-				
-70 dBm-	F1		-70 dBm	F1			
Start 2.395 GHz	691 pts	Stop 2.405 GHz	Start 2.4775 GHz	691 pts	Stop 2.4895 GHz		
Π.	Mexamina	(mmm) 44) Me	(IIIIIII) (A)		
Date: 19.0CT.2021 13:44:07			Date: 19.0CT.2021 12:55:	03			



<3Mbps>

Low Band Edge Plot on	Channel 00	High Ba	and Edge Plot or	n Channel 78
Spectrum Ref Level 25.50 dBm Offset 5.50 dB RBW 100 kHz Att 30 dB SWT 19 µs VBW 300 kHz Mode Auto JPL Max 30 dB SWT 19 µs VBW 300 kHz Mode Auto	Re	30 dB SWT	5.50 dB ● RBW 100 kHz 19 µs ● VBW 300 kHz Mode A	Auto FFT
20 dBm			M	1[1] -49.64 dBm 2.4838990 GHz
10 dBm 01 6.620 dBm 0 0 dBm 01 6.720 dBm 0	10 d	01 6.450 dBm		
-10 dBm	-10 0	D2 -13.550 dBm-		
-30 dBm	-30 0	no l	M1	
-50 dBm	-60 0		Not V	mmmmmmmmmmm
-70 dBm	-70 0	IBm-		
Start 2.395 GHz 691 pts Date: 19.007.2021 13:03:12	Merelinine	19.0CT.2021 13:16:36	691 pts	Stop 2.4895 GHz



3.6.6 Test Result of Conducted Hopping Mode Band Edges

<1Mbps>

Hopping Mo	ode Low Band Edg	e Plot	Н	opping Mo	de High E	Band Edge	Plot
	RBW 100 kHz VBW 300 kHz Mode Auto FFT M1[1]	-51,69 dBm	Spectrum Ref Level 25.50 c Att 30		RBW 100 kHz VBW 300 kHz Mod	de Auto FFT	-50.72 dBm
20 dBm 10 dBm 01 9.220 dBm		2.3964400 GHz	20 dBm	0 dBm			2.4856360 GHz
0 dBm				-10.740 dBm			
-20 dBm			-20 dBm -30 dBm -40 dBm	h			
-50 dBm	mmmm		-50 dBm	- Maria	hann	MI	-harmann
-70 dBm	F1 691 pts	Stop 2.405 GHz)	-70 dBm				Stop 2.4895 GHz
Date: 19.0CT.2021 12:05:10	Messaring	(IIIIII) 44	Date: 19.0CT.2021	12:33:39		Mexinging	44

<2Mbps>

Hopping N	lode Low Band Edg	e Plot	Hopping Mode High Band Edge Plot					
	B ● RBW 100 kHz Is ● VBW 300 kHz Mode Auto FFT	(₩ V	Ref Level 25.50		RBW 100 kHz VBW 300 kHz	Mode Auto FFT		
1Pk Max]	1Pk Max					
20 dBm	M1[1]	-48.75 dBm 2.3999710 GHz	20 dBm			M1[1]	-50.28 dBm 2.4846460 GHz	
10 dBm 01 6.740 dBm			10 dBm-01 6.68	0 dBm				
0 dBm-	mm	man						
-10 dBm			-10 dBm	-13.320 dBm				
-20 dBm			-20 dBm					
-30 dBm-			-30 dBm	h				
-40 dBm-			-40 dBm	m				
-50 dBm	mmm		-50 dBm			mannen	mmmmmm	
-60 dBm			-60 dBm					
-70 dBm	F1		-70 dBm		F1			
Start 2.395 GHz	691 pts		Start 2.4775 GHz		691 pts		Stop 2.4895 GHz	
Date: 19.0CT.2021 12:46:09	Mexandra	(IIIIII) (A)	Date: 19.0CT.2021	12:57:19		The existing	(mmm) 44	



<3Mbps>

Hopping Mode Low Band Edge Plot Hopping Mode High					n Band Edg	je Plot	
🕳 Att 30 dB SWT 19 μs	 RBW 100 kHz VBW 300 kHz Mode Auto FFT 		Spectrum Ref Level 25.5 Att		 RBW 100 kHz VBW 300 kHz 	Mode Auto FFT	
1Pk Max 20 dBm	M1[1]	-49.82 dBm 2.3997250 GHz	• 1Pk Max 20 dBm			M1[1]	-50.60 dBm 2.4850110 GHz
10 dBm	p p m	man	10 dBm	610 dBm			
-10 dBm			-10 dBm	02 -13.390 dBm			
-30 dBm	- I I I I I I I I I I I I I I I I I I I		-30 dBm				
-40 dBm	MI		-40 dBm	ļ	munn	MI	
-60 dBm			-60 dBm		F1		
Start 2.395 GHz	691 pts	Stop 2.405 GHz	Start 2.4775 GF	Iz	691 pt	5 Messielag	Stop 2.4895 GHz
Date: 19.0CT.2021 13:08:37			Date: 19.0CT.20	21 13:10:33			

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.

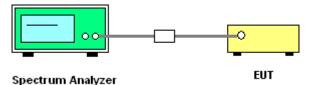
3.7.2 Measuring Instruments

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 the maximum power setting and enable the EUT to transmit continuously.
- Set RBW = 100 kHz, VBW = 300 kHz, scan up through 10th harmonic. All harmonics / spurious 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





3.7.5 Test Result of Conducted Spurious Emission

<1Mbps>

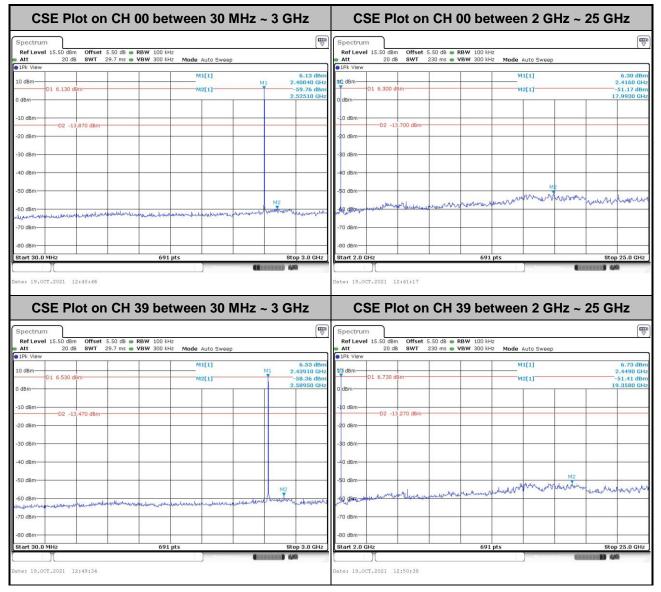
CSE Plot on CH 00 between 30 MHz ~ 3 GHz CSE Plot on CH 00 between 2 GHz ~ 25 GHz					
Spectrum			Spectrum		
Ref Level 15.50 dBm Offset 5.50 Att 20 dB SWT 29.3	0 dB 🖷 RBW 100 kHz 7 ms 🖷 VBW 300 kHz 🛛 Mode Auto Swee	20	RefLevel 15.50 dBm Offset 5. Att 20 dB SWT 23	50 dB RBW 100 kHz 30 ms VBW 300 kHz Mode Auto Sweep	
●1Pk View	M1[1]		●1Pk View	M1[1]	8.82 dBm
10 dBm D1 8.790 dBm		2.40040 GHz	10 dBm 01 8.820 dBm		2.4160 GHz
0 dBm	M2[1]	-59.33 dBm 2.53370 GHz	0 dBm	M2[1]	-49.76 dBm 7.2090 GHz
-10 dBmD2 -11.210 dBm			-10 dBm D2 -11.180 dBm		
-20 dBm-			-20 dBm		
-30 dBm			-30 dBm-		
SU GBII			-30 dbin		
-40 dBm			-40 dBm		
-50 dBm-			-\$0 dBm		
		M2		under and which which a south	househousehousehouse
-60 dBm	unshimmed was abardened when the	unament the second when and	to dealer and the second	ALST.	
-70 dBm-			-70 dBm		
-80 dBm-			-80 dBm		
	691 pts	Stop 3.0 GHz	Start 2.0 GHz	691 pts	Stop 25.0 GHz
Start 30.0 MHz					
ate: 19.0CT.2021 12:00:59	CH 39 between 30	(11111) (4	Date: 19.0CT.2021 12:01:27	CH 39 between 2 GHz	z ~ 25 GHz
CSE Plot on (Spectrum Ref Level 15.50 dBm Offset 5.5	CH 39 between 30	MHz ~ 3 GHz	CSE Plot on Spectrum Ref Level 15.50 dBm Offset 5.	50 dB 👄 RBW 100 kHz	z ~ 25 GHz
CSE Plot on (Spectrum Ref Level 15.50 dbm Offset 5.5	CH 39 between 30 0 d8 • RBW 100 kHz 7 ms • VBW 300 kHz Mode Auto Swet	MHz ~ 3 GHz	CSE Plot on Spectrum Ref Level 15.50 dBm Offset 5.	50 dB e RBW 100 kHz 30 ms e VBW 300 kHz Mode Auto Sweep	V
CSE Plot on (Spectrum Ref Level 15.50 dbm Offset 5.5 Att 20 db SWT 29.3 DFk View	CH 39 between 30	MHz ~ 3 GHz	Date: 19.007.2021 12:01:27 CSE Plot on Spectrum Ref Level 15.50 dbm Offset 5. Att 20 db swr 21 9 1Pk View W	50 dB 👄 RBW 100 kHz	
Ate: 19.00T.2021 12:00:59 CSE Plot on (Spectrum Ref Level 15.50 dbm 0 ffset 5.51 dbm 0 19k View 10 dbm 0 1 8.910 dbm	CH 39 between 30 0 d8 • RBW 100 kHz 7 ms • VBW 300 kHz Mode Auto Swet	MHz ~ 3 GHz	Date: 19.007.2021 12:01:27 CSE Plot on Spectrum Ref Level 15.50 dBm Offset 5. Att 20 dB SWT 22 9 IPk View 14 dBm 01 8.810 dBm 01 8.810 dBm	50 dB e RBW 100 kHz 30 ms e VBW 300 kHz Mode Auto Sweep	(▼ 8.81 dBm
Ate: 19.00T.2021 12:00:59 CSE Plot on (Spectrum Ref Level 15.50 dbm Att 20 dB SWT 29:3 DIPk View 10 dbm 01 8.910 dbm	CH 39 between 30 0 dB = RBW 100 kHz 7 ms = VBW 300 kHz Mode Auto Sweet M1[1]	MHz ~ 3 GHz ۳	Date: 19.007.2021 12:01:27 CSE Plot on Spectrum Ref Level 15.50 dbm Offset 5. Att 20 db swr 21 9 1Pk View W	50 dB @ RBW 100 kHz 30 ms @ VBW 300 kHz Mode Auto Sweep M1[1]	8.81 dBm
ate: 19.0CT.2021 12:00:59 CSE Plot on (Spectrum Ref Level 15.50 dbm Offset 5.51 1Pk View 10 dbm 01 8.910 dbm 0 dbm	CH 39 between 30 0 dB = RBW 100 kHz 7 ms = VBW 300 kHz Mode Auto Sweet M1[1]	MHz ~ 3 GHz	Date: 19.007.2021 12:01:27 CSE Plot on Spectrum Ref Level 15.50 dBm Offset 5. Att 20 dB SWT 22 9 IPk View 14 dBm 01 8.810 dBm 01 8.810 dBm	50 dB @ RBW 100 kHz 30 ms @ VBW 300 kHz Mode Auto Sweep M1[1]	₹ 8.81 dBm -2.4490 GHZ -50.31 dBm
ate: 19.007.2021 12:00:59 CSE Plot on (Spectrum Ref Level 15.50 dBm Offset 5.51 Att 20 dB SWT 20.7 ID dBm Of 8.910 dBm of 8.910 dBm Of dBm -10 dBm	CH 39 between 30 0 dB = RBW 100 kHz 7 ms = VBW 300 kHz Mode Auto Sweet M1[1]	MHz ~ 3 GHz	Date: 19.0CT.2021 12:01:27 CSE Plot on Spectrum Ref Level 15.50 dBm Offset 5 Att 20 dB SWT 22 10 dBm 01 9.910 dBm 0 dBm 0 dBm 0 dBm 02 -11.190 dBm	50 dB @ RBW 100 kHz 30 ms @ VBW 300 kHz Mode Auto Sweep M1[1]	₹ 8.81 dBm -2.4490 GHZ -50.31 dBm
CSE Plot on (Spectrum Ref Level 15.50 dbm Offset 5.5 Att 20 db SWT 29.7 10 dbm 01 8.910 dbm -10 dbm 02 -11.090 dbm	CH 39 between 30 0 dB = RBW 100 kHz 7 ms = VBW 300 kHz Mode Auto Sweet M1[1]	MHz ~ 3 GHz	Date: 19.007.2021 12:01:27 CSE Plot on Spectrum Ref Level 15.50 dBm Offset 5. Att 20 dB SWT 22 Att 20 dB SWT 22 Att 20 dB SWT 22 D 1Pk View Att 20 dB SWT 22 D 1Pk View Att 20 dB SWT 22 Att 20 dB SWT 22	50 dB @ RBW 100 kHz 30 ms @ VBW 300 kHz Mode Auto Sweep M1[1]	₹ 8.81 dBm -2.4490 GHZ -50.31 dBm
CSE Plot on (Spectrum Ref Level 15.50 dbm Offset 5.5 Att 20 db SWT 29.7 10 dbm 01 8.910 dbm -10 dbm 02 -11.090 dbm	CH 39 between 30 0 dB = RBW 100 kHz 7 ms = VBW 300 kHz Mode Auto Sweet M1[1]	MHz ~ 3 GHz	Date: 19.0CT.2021 12:01:27 CSE Plot on Spectrum Ref Level 15.50 dBm Offset 5 Att 20 dB SWT 22 10 dBm 01 9.910 dBm 0 dBm 0 dBm 0 dBm 02 -11.190 dBm	50 dB @ RBW 100 kHz 30 ms @ VBW 300 kHz Mode Auto Sweep M1[1]	₹ 8.81 dBm -2.4490 GHZ -50.31 dBm
ate: 19.0CT.2021 12:00:59 CSE Plot on (Spectrum Ref Level 15.50 dBm Offset 5.57 htt 20 dB SWT 29.7 htV Vew 01 8.910 dBm 0 6.810 0 dBm 01 8.910 dBm 0 -11.090 dBm -20 dBm -02 -11.090 dBm -30 dBm	CH 39 between 30 0 dB = RBW 100 kHz 7 ms = VBW 300 kHz Mode Auto Sweet M1[1]	MHz ~ 3 GHz	Date: 19.007.2021 12:01:27 CSE Plot on Spectrum Ref Level 15.50 dBm Offset 5. Att 20 dB SWT 22 Att 20 dB SWT 22 Att 20 dB SWT 22 D 1Pk View Att 20 dB SWT 22 D 1Pk View Att 20 dB SWT 22 Att 20 dB SWT 22	50 dB @ RBW 100 kHz 30 ms @ VBW 300 kHz Mode Auto Sweep M1[1]	₹ 8.81 dBm -2.4490 GHZ -50.31 dBm
ate: 19.007.2021 12:00:59 CSE Plot on (Spectrum Ref Level 15.50 dBm Offset 5.55 Att 20.dB SWT 20.3 DIR View 10.dBm O1 8.910 dBm -10.090 dBm -20 dBm -20 dBm -40 dBm	CH 39 between 30 0 dB = RBW 100 kHz 7 ms = VBW 300 kHz Mode Auto Sweet M1[1]	MHz ~ 3 GHz	Date: 19.007.2021 12:01:27 CSE Plot on Spectrum Ref Level 15.50 dBm Offset 5. Att 20 dB SWT 22 10 dBm 01 9.910 dBm 0 dBm 10 dBm 20 dBm -20 dBm -30	50 dB @ RBW 100 kHz 30 ms @ VBW 300 kHz Mode Auto Sweep M1[1] M2[1]	8.81 dBm -2.4490 GHz -5.0.31 dBm -7.3090 GHz
ate: 19.007.2021 12:00:59 CSE Plot on (Spectrum Ref Level 15.50 dBm Offset 5.55 Att 20.dB SWT 20.3 DIR View 10.dBm O1 8.910 dBm -10.090 dBm -20 dBm -20 dBm -40 dBm	CH 39 between 30 0 dB = RBW 100 kHz 7 ms = VBW 300 kHz Mode Auto Sweet M1[1]	MHz ~ 3 GHz	Date: 19.007.2021 12:01:27 CSE Plot on Spectrum Ref Level 15.50 dBm Offset 5 Att 20 dB SWT 22 Date: 10 dBm 01 8.810 dBm 0 dBm -20 dBm -20 dBm -30 dBm	50 dB @ RBW 100 kHz 30 ms @ VBW 300 kHz Mode Auto Sweep M1[1] M2[1]	8.81 dBm -2.4490 GHz -5.0.31 dBm -7.3090 GHz
Ate: 19.007.2021 12:00:59 CSE Plot on (Spectrum Ref Level 15.50 dbm Offset 5.51 Offset 5.51 Att 20 dB WT 29:1 DIPk View 10 dbm O1 8.910 dbm O2 -11.090 dbm -20 dbm -30 dbm -50 dbm	CH 39 between 30	MHz ~ 3 GHz	Date: 19.007.2021 12:01:27 CSE Plot on Spectrum Ref Level 15.50 dBm Offset 5 Att 20 dB SWT 22 Date: 10 dBm 01 8.810 dBm 0 dBm -20 dBm -20 dBm -30 dBm	50 dB @ RBW 100 kHz 30 ms @ VBW 300 kHz Mode Auto Sweep M1[1]	8.81 dBm -2.4490 GHz -5.0.31 dBm -7.3090 GHz
CSE Plot on (Spectrum Ref Level 15.50 dBm Offset 5.51 Att 20 dB SWT 29.3 ID dBm O1 8.910 dBm O1 8.910 dBm O2 -11.090 dBm O3 dBm 40 dBm S0 dBm	CH 39 between 30 0 dB = RBW 100 kHz 7 ms = VBW 300 kHz Mode Auto Sweet M1[1]	MHz ~ 3 GHz	Date: 19.007.2021 12:01:27 CSE Plot on Spectrum Ref Level 15.50 dbm Offset 5. Att 20 db Swr 22 Att 20 db Swr 22 (a dbm 01 8.810 dbm 0 dbm -10 dbm -20 dbm -30 dbm -30 dbm -50 dbm -50 dbm -10 -11.190 dbm -20 dbm -10 -11.190 dbm -20 dbm	50 dB @ RBW 100 kHz 30 ms @ VBW 300 kHz Mode Auto Sweep M1[1] M2[1]	8.81 dBm -2.4490 GHz -5.0.31 dBm -7.3090 GHz
CSE Plot on (Spectrum Ref Level 15.50 dBm Offset 5.55 Att 20 dB SWT 20.7 10 dBm 01 8.910 dsm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -60 dBm -70 dBm -	CH 39 between 30	MHz ~ 3 GHz	Date: 19.007.2021 12:01:27 CSE Plot on Spectrum Ref Level 15.50 dBm Offset 5. Att 20 dB SWT 22 10 dBm 01 9.910 dBm 0 dBm 10 dBm 20 dBm -20 dBm -30 dBm -0 dBm -70 d	50 dB @ RBW 100 kHz 30 ms @ VBW 300 kHz Mode Auto Sweep M1[1] M2[1]	8.81 dBm -2.4490 GHz -5.0.31 dBm -7.3090 GHz
CSE Plot on (Spectrum Ref Level 15.50 dbm Offset 5.5 att 20 db WT 29.7 D1Pk View 10 dbm 01 8.910 dbm -10 dbm 02 -11.090 dbm -30 dbm -30 dbm	CH 39 between 30	MHz ~ 3 GHz	Date: 19,007.2021 12:01:27 CSE Plot on Spectrum Ref Level 15.50 dBm Offset 5. 4tt 20 dB SWT 22 10 dBm 01 8.810 dBm 0 dBm -10 dBm -20 dBm -30 dBm -0 dBm -	50 dB @ RBW 100 kHz 30 ms @ VBW 300 kHz Mode Auto Sweep M1[1] M2[1]	8.81 dBm -2.4490 GHz -5.0.31 dBm -7.3090 GHz



CSE Plot on CH 78	3 between 30 MH	z ~ 3 GHz	CSE Plot	on CH 78 bet	ween 2 GHz	2~ 25 GHz
Spectrum Ref Level 15.50 dBm Offset 5.50 dB RB/ Att 20 dB SWT 29.7 ms VB/			Spectrum Ref Level 15.50 dBm Off Att 20 dB SW	set 5.50 dB ● RBW 100 kHz T 230 ms ● VBW 300 kHz		
10 dBm 01 8.940 dBm	M1[1] M2[1]	M1 8.94 dBm 2.48210 GHz -59.84 dBm			M1[1] M2[1]	8.54 dBm 2.4830 GHz _47.72 dBm
0 dBm			0 dBm	Bm		7.4420 GHz
-20 dBm			-20 dBm			
-40 dBm			-40 dBm			
-60 dBm	hading to have and the mention have been the	142	- R granous mande	Allow Allow And Marine	www.www.www.	windown water and
-70 dBm			-70 dBm			
Date: 19.0CT.2021 12:31:50	691 pts	Stop 3.0 GHz	Start 2.0 GHz	691	pts	Stop 25.0 GHz



<2Mbps>

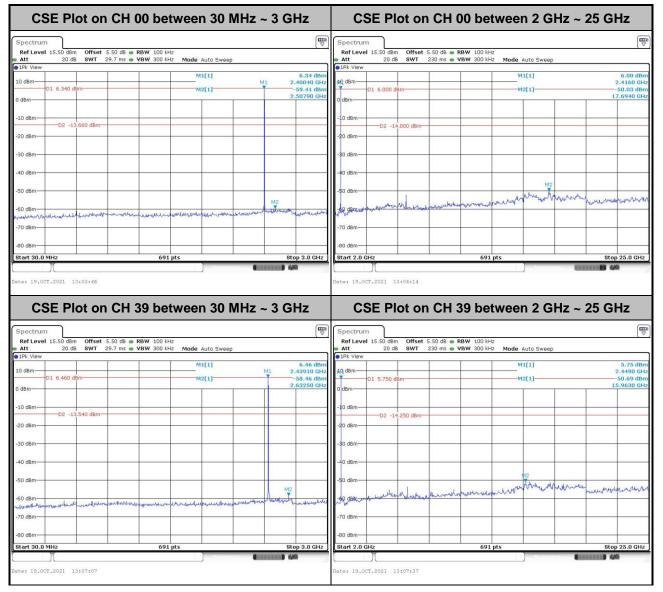




CSE Plot on CH	78 between 30 M	lHz ~ 3 GHz	CSE Plot	on CH 78 b	etween 2 G	Hz ~ 25 GHz
Spectrum			Spectrum			E
Ref Level 15.50 dBm Offset 5.50 dB Att 20 dB SWT 29.7 ms			Att 20 dB SV	fset 5.50 dB 👄 RBW 100 WT 230 ms 👄 VBW 300)
10 dBm 01 6.320 dBm	M1[1] M2[1]	-59.01 dBm	01Pk View		M1[1] M2[1]	5.44 dBn 2.4830 GH: -50.53 dBn 16.2630 GH
0 dBm			0 dBm	dBm		
-20 dBm			-20 dBm			
-40 dBm			-40 dBm		M2	N
-60 dBm-	unproducted and the subscription of the second	M2 martheted the martheted	-50 dBm and and a stand of the	union to when the to show to	hower they was a more a	mound
-90 dBm	691 pts	Stop 3.0 GHz	-80 dBm-		i91 pts	Stop 25.0 GHz
Date: 19.0CT.2021 12:53:35	- Starting		Date: 19.0CT.2021 12:54:		Storegie	



<3Mbps>





CSE Plot on CH 78 betw	een 30 MHz ~ 3 GHz	z CSE Plo	t on CH 78 be	tween 2 GHz	~ 25 GHz
Spectrum		Spectrum			
Ref Level 15.50 dBm Offset 5.50 dB RBW 100 kHz att 20 dB SWT 29.7 ms VBW 300 kHz	Mode Auto Sweep		Offset 5.50 dB RBW 100 kH SWT 230 ms VBW 300 kH		
• 1Pk View		• 1Pk View			
10 dBm-D1 6.360 dB	M1 2.477	36 dBm 780 GHz 02 dBm 7 01 5.610 dBm		M1[1] M2[1]	5.61 dBm 2.4830 GHz 50.57 dBm
0 dBm		02 dBm 500 GHz 0 dBm			15.9300 GHz
-10 dBm		-10 dBm	90 dBm		
-20 dBm					
-30 dBm		-30 dBm			
-40 dBm-		-40 dBm		M12	
-50 dBm	1/22	-50 dBm	elimanturan	withhour man	mound
-60 dBm แม้และสารณ์สารณ์และไม่สารและสารณ์ที่ได้และสารและเสียง -70 dBm	benerne where we have been and the second with	-70 dBm			
-70 dBm		-70 dBm			
Start 30.0 MHz 691 pts	Stop 3.		691	nte	Stop 25.0 GHz
			691	Pro Mexaurino	
Date: 19.0CT.2021 13:13:20		Date: 19.0CT.2021 13:1	3:54		

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

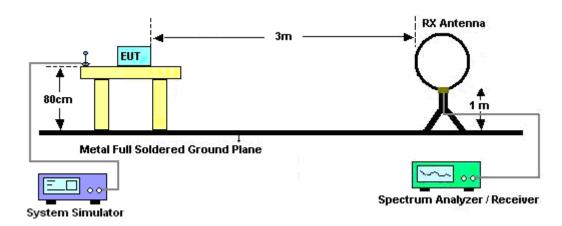
- 1. The EUT was placed on a turntable with 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz respectively above ground.
- 2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
- 3. For each suspected 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 the maximum power setting and enable the EUT to 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, RBW = 1 MHz for f>1 GHz ; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold for peak
 - (3) For average measurement: use duty cycle correction factor method per 15.35(c). Duty cycle = On time/100 milliseconds On time = N₁*L₁+N₂*L₂+...+N_{n-1}*LN_{n-1}+N_n*L_n Where N₁ is number of type 1 pulses, L₁ is length of type 1 pulses, etc. Average Emission Level = Peak Emission Level + 20*log(Duty cycle)
- 6. Corrected Reading: Antenna Factor + Cable Loss + Read Level Preamp Factor = Level
- 7. For testing below 1 GHz, 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 1 GHz, the emission level of the EUT in peak mode was 20 dB 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.

Note: The average levels were calculated from the peak level corrected with duty cycle correction factor (-24.79dB) derived from 20log (dwell time/100ms). This correction is only for signals that hop with the fundamental signal, such as band-edge and harmonic. Other spurious signals that are independent of the hopping signal would not use this correction.

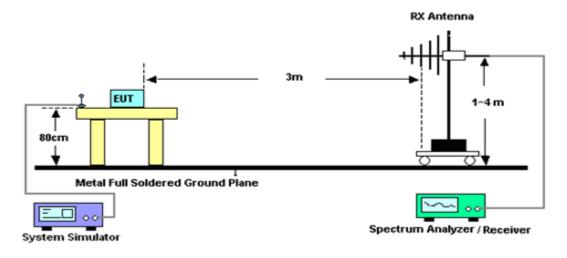


3.8.4 Test Setup

For radiated test below 30MHz

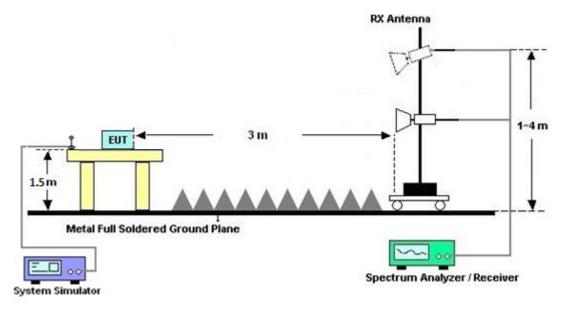


For radiated test from 30MHz to 1GHz

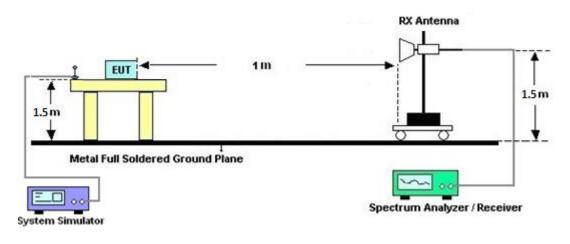




For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



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 adequate comparison measurement 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

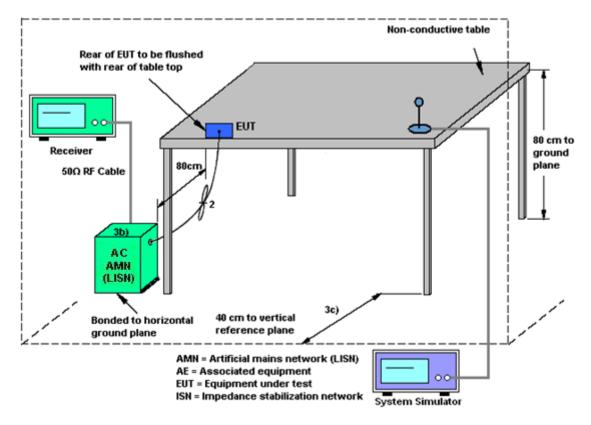
See list of measuring equipment of this test report.

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 shall 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.



3.10 Antenna Requirements

3.10.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6 dBi, the power shall be reduced by the same level in dB comparing to gain minus 6 dBi. 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	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Oct. 14, 2021	Oct. 14, 2021~ Nov. 24, 2021	Oct. 13, 2022	Conducted (TH01-KS)
Pulse Power Senor	Anritsu	MA2411B	0917070	300MHz~40GH z	Jan. 07, 2021	Oct. 14, 2021~ Nov. 24, 2021	Jan. 06, 2022	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 07, 2021	Oct. 14, 2021~ Nov. 24, 2021	Jan. 06, 2022	Conducted (TH01-KS)
EMI Test Receiver	Keysight	N9038A	MY564000 04	3Hz~8.5GHz;M ax 30dBm	Oct. 16, 2021	Nov. 24, 2021	Oct. 15, 2022	Radiation (03CH05-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY551502 44	10Hz-44G,MAX 30dB	Apr.13, 2021	Nov. 24, 2021	Apr. 12, 2022	Radiation (03CH05-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 30, 2021	Nov. 24, 2021	Oct. 29, 2022	Radiation (03CH05-KS)
Bilog Antenna	TeseQ	CBL6111D	49922	30MHz-1GHz	Jun. 04 ,2021	Nov. 24, 2021	Jun. 03, 2022	Radiation (03CH05-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00218652	1GHz~18GHz	Apr. 24, 2021	Nov. 24, 2021	Apr. 23, 2022	Radiation (03CH05-KS)
SHF-EHF Horn	Com-power	AH-840	101070	18GHz~40GHz	Jan. 06, 2021	Nov. 24, 2021	Jan. 05, 2022	Radiation (03CH05-KS)
Amplifier	SONOMA	310N	187289	9KHz-1GHz	Apr. 12, 2021	Nov. 24, 2021	Apr. 11, 2022	Radiation (03CH05-KS)
Amplifier	MITEQ	EM18G40GG A	060728	18~40GHz	Jan. 07, 2021	Nov. 24, 2021	Jan. 06, 2022	Radiation (03CH05-KS)
high gain Amplifier	MITEQ	AMF-7D-0010 1800-30-10P	2012228	1Ghz-18Ghz	Oct. 16, 2021	Nov. 24, 2021	Oct. 15, 2022	Radiation (03CH05-KS)
Amplifier	Keysight	83017A	MY532703 16	500MHz~26.5G Hz	Oct. 16, 2021	Nov. 24, 2021	Oct. 15, 2022	Radiation (03CH05-KS)
AC Power Source	Chroma	61601	F1040900 04	N/A	NCR	Nov. 24, 2021	NCR	Radiation (03CH05-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Nov. 24, 2021	NCR	Radiation (03CH05-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Nov. 24, 2021	NCR	Radiation (03CH05-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	Apr. 21, 2021	Oct. 27, 2021	Apr. 20, 2022	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Oct. 14, 2021	Oct. 27, 2021	Oct. 13, 2022	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060105	9kHz~30MHz	Apr. 13, 2021	Oct. 27, 2021	Apr. 12, 2022	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP00000 0811	AC 0V~300V, 45Hz~1000Hz	Oct. 14, 2021	Oct. 27, 2021	Oct. 13, 2022	Conduction (CO01-KS)

NCR: No Calibration Required



5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence	2.9dB
of 95% (U = 2Uc(y))	2.908

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

Measuring Uncertainty for a Level of Confidence	5.0dB
of 95% (U = 2Uc(y))	5.00B

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

Measuring Uncertainty for a Level of Confidence	5.0dB
of 95% (U = 2Uc(y))	5.00B

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.0dB
--	-------



Appendix A. Conducted Test Results

Report Number : FR1O1906A

Bluetooth

Test Engineer:	You Zhou	Temperature:	20~26	°C
Test Date:	2021/10/14~2021/11/24	Relative Humidity:	40~51	%

			<u>20d</u>	B and s	99% Occu		ULTS DATA th and Hopping	Channel Separat	ion
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	0.935	0.851	998.550	0.6233	Pass
DH	1Mbps	1	39	2441	0.932	0.851	998.600	0.6213	Pass
DH	1Mbps	1	78	2480	0.932	0.848	1002.900	0.6213	Pass
2DH	2Mbps	1	0	2402	1.250	1.161	1002.900	0.8336	Pass
2DH	2Mbps	1	39	2441	1.255	1.164	998.600	0.8365	Pass
2DH	2Mbps	1	78	2480	1.250	1.164	998.600	0.8336	Pass
3DH	3Mbps	1	0	2402	1.220	1.149	998.600	0.8133	Pass
3DH	3Mbps	1	39	2441	1.216	1.146	998.600	0.8104	Pass
3DH	3Mbps	1	78	2480	1.237	1.149	998.600	0.8249	Pass

			<u>TE</u> \$	ST RESULTS Dwell Time		
Mod.	Hopping Channel Number Rate	Hops Over Occupancy Time(hops)	Package Transfer Time (msec) (MHz)	Dwell Time (sec)	Limits (sec)	Pass/Fail
Nomal	79	106.67	2.90	0.31	0.4	Pass
AFH	20	53.33	2.90	0.15	0.4	Pass

					<u>ST RESUL</u> eak Powe
			Peak Power	Power Limit	Test
DH	CH.	NTX	(dBm)	(dBm)	Result
	0	1	8.81	20.97	Pass
DH1	39	1	8.86	20.97	Pass
	78	1	8.94	20.97	Pass
				·	
2DH	CH.	NTX	Peak Power	Power Limit	Test
LDII	011.		(dBm)	(dBm)	Result
	0	1	8.06	20.97	Pass
2DH1	39	1	8.03	20.97	Pass
	78	1	7.46	20.97	Pass
3DH	CH.	NTX	Peak Power	Power Limit	Test
0DIT			(dBm)	(dBm)	Result
	0	1	8.49	20.97	Pass
3DH1	39	1	8.49	20.97	Pass
	78	1	8.85	20.97	Pass

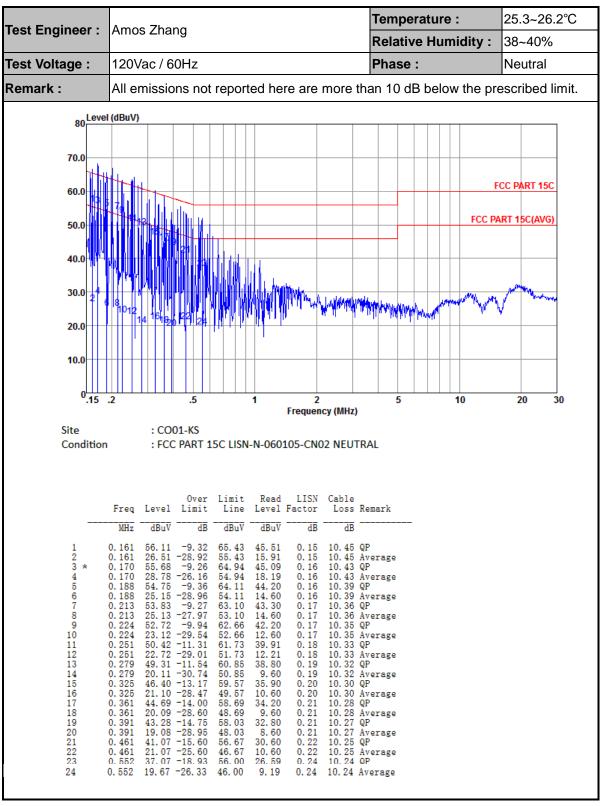
		<u>TEST RES</u> Number of Ho		
Number of Hopping (Channel)	Adaptive Frequency Hopping (Channel)	Limits (Channel)	Pass/Fail	
79	79	> 15	Pass	



Appendix B. AC Conducted Emission Test Results

Teet Engineer .	Amon Zhang	Temperature :	25.3~26.2℃
Test Engineer :	Amos Zhang	Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Remark :	All emissions not reported here are more	than 10 dB below the pr	escribed limit.
80 Level	(dBuV)		
80			
70.0			
60.0			CC PART 15C
00.0			
50.0		FCC P	ART 15C(AVG)
40.0			
30.0	A BELLEN FROM TO THE WALL ALLAND A MAIN WAY MANY MAY	Mittin Hanna Land Mittin and Provide Anna	WANNA
20.0			Jour Start Strand
10.0			
0.15	2 .5 1 2	5 10	20 30
	Frequency (MHz		20 50
Site Condition	: CO01-KS : FCC PART 15C LISN-L-060105-CN02 LINE		
	Over Limit Read LISN Cable Freq Level Limit Line Level Factor Loss	Remark	
	MHz dBuV dB dBuV dBuV dB dB		
2		Average	
4	0.180 55.09 -9.41 64.50 44.60 0.08 10.41 0.180 30.79 -23.71 54.50 20.30 0.08 10.41 0.202 53.35 -10.19 63.54 42.90 0.09 10.36	Average	
6 7	0.202 31.75 -21.79 53.54 21.30 0.09 10.36 0.228 52.04 -10.48 62.52 41.60 0.09 10.35	Average QP	
9	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	QP	
11	0. 258 23. 93 -27. 58 51. 51 13. 50 0. 10 10. 33 0. 283 48. 92 -11. 80 60. 72 38. 50 0. 10 10. 32 0. 283 22. 92 -27. 80 50. 72 12. 50 0. 10 10. 32	QP	
13 14	0.305 47.91 -12.19 60.10 37.49 0.11 10.31 0.305 20.01 -30.09 50.10 9.59 0.11 10.31	QP Average	
16	0.339 45.90 -13.32 59.22 35.50 0.11 10.29 0.339 20.00 -29.22 49.22 9.60 0.11 10.29 0.396 43.29 -14.66 57.95 32.90 0.12 10.27	Average	
18 19	0.396 19.69 -28.26 47.95 9.30 0.12 10.27 0.447 41.58 -15.35 56.93 31.21 0.12 10.25	Average QP	
20 21	0.447 20.98 -25.95 46.93 10.61 0.12 10.25 0.579 35.88 -20.12 56.00 25.50 0.14 10.24	Average QP	
23	0.579 23.88 -22.12 46.00 13.50 0.14 10.24 0.651 34.19 -21.81 56.00 23.80 0.15 10.24 0.651 19.59 -26.41 46.00 9.20 0.15 10.24	0P	
24	0.001 10.00 20.41 40.00 0.20 0.10 10.24	uter dEe	





Note:

- 1. Level(dBµV) = Read Level(dBµV) + LISN Factor(dB) + Cable Loss(dB)
- 2. Over Limit(dB) = Level(dB μ V) Limit Line(dB μ V)

Appendix C. Radiated Spurious Emission

Test Engineer :	Henzy LI	Temperature :	27~30°C
Test Engineer .		Relative Humidity :	41~45%

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)		(H/V)
		2319.1	53.17	-20.83	74	49.51	30.43	7.6	34.37	125	218	Р	Н
		2319.1	28.38	-25.62	54	-	-	-	-	-	-	А	Н
DT	*	2402	100.39	-	-	96.51	30.5	7.72	34.34	125	218	Р	Н
BT CH00	*	2402	75.6	-	-	-	-	-	-	-	-	А	Н
2402MHz		2380.46	53.6	-20.4	74	49.78	30.48	7.69	34.35	391	345	Ρ	V
2402MHZ		2380.46	28.81	-25.19	54	-	-	-	-	-	-	А	V
	*	2402	92.07	-	-	88.19	30.5	7.72	34.34	391	345	Ρ	V
	* 2402 67.28 -	-	-	-	-	-	-	-	-	А	V		
		2485.84	53.68	-20.32	74	49.22	30.86	7.86	34.26	120	250	Ρ	Н
		2485.84	28.89	-25.11	54	-	-	-	-	-	-	А	Н
57	*	2480	100.95	-	-	96.49	30.86	7.86	34.26	120	250	Ρ	н
ВТ СН 78	*	2480	76.16	-	-	-	-	-	-	-	-	А	Н
сп 78 2480MHz		2497.78	53.13	-20.87	74	48.54	30.93	7.89	34.23	100	224	Ρ	V
2400101112		2497.78	28.34	-25.66	54	-	-	-	-	-	-	А	V
	*	2480	90.07	-	-	85.61	30.86	7.86	34.26	100	224	Р	V
	*	2480	65.28	-	-	-	-	-	-	-	-	А	V
Remark		o other spurio I results are F		st Peak	and Averag	je limit lin	е.		<u>.</u>	<u>.</u>	·		



_				I	BT (Harmo	onic @ 3	8m)						-
BT	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
		(MHz)	(dBµV/m)	Limit (dB)	Line (dBµV/m)	Level (dBµV)	Factor (dB/m)	Loss (dB)	Factor (dB)	Pos (cm)		Avg. (P/A)	(H/V)
ВТ СН 00		4806	40.47	-33.53	74	54.75	34.58	11.18	60.04	300	0	Ρ	н
2402MHz		4806	40.33	-33.67	74	54.61	34.58	11.18	60.04	100	360	Р	V
		4884	41.2	-32.8	74	55.26	34.69	11.28	60.03	300	0	Ρ	н
BT		7320	43.69	-30.31	74	53.81	36.67	13.73	60.52	300	0	Ρ	н
CH 39 2441MHz		4884	40.66	-33.34	74	54.72	34.69	11.28	60.03	100	360	Ρ	V
2441111172		7320	43.91	-30.09	74	54.03	36.67	13.73	60.52	100	360	Ρ	V
		4962	41.52	-32.48	74	55.32	34.82	11.39	60.01	300	0	Ρ	н
BT		7440	43.26	-30.74	74	53.33	36.62	13.85	60.54	300	0	Ρ	н
CH 78 2480MHz		4962	42.06	-31.94	74	55.86	34.82	11.39	60.01	100	360	Ρ	V
2400101712		7440	43.2	-30.8	74	53.27	36.62	13.85	60.54	100	360	Ρ	V
Remark		o other spurio I results are P		st Peak	and Averag	e limit lin	е.						

2.4GHz 2400~2483.5MHz



					2.4GHz	BT (LF)							
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)
		30	23.29	-16.71	40	29.78	25.5	0.71	32.7	-	-	Р	Н
		103.72	17.57	-25.93	43.5	30.87	18.05	1.54	32.89	-	-	Р	Н
		257.95	19.49	-26.51	46	30.58	19.53	2.45	33.07	-	-	Р	Н
		445.16	24.79	-21.21	46	30.77	23.51	3.22	32.71	-	-	Р	Н
2.4GHz		568.35	28.32	-17.68	46	31.49	25.75	3.64	32.56	-	-	Р	Н
2.4GHZ BT		758.47	28.07	-17.93	46	29.96	26.57	4.21	32.67	-	-	Р	Н
LF		37.76	30.13	-9.87	40	40.94	21.1	0.85	32.76	-	-	Р	V
-		101.78	23.12	-20.38	43.5	36.42	18.08	1.52	32.9	-	-	Ρ	V
		149.31	21.42	-22.08	43.5	34.86	17.51	1.85	32.8	-	-	Ρ	V
		472.32	24.68	-21.32	46	30.1	24	3.32	32.74	-	-	Ρ	V
		584.84	27.83	-18.17	46	31.05	25.62	3.69	32.53	-	-	Р	V
		798.24	29.4	-16.6	46	30.71	26.88	4.32	32.51	-	-	Р	V
Remark		o other spurio I results are P		st limit li	ne.								

Emission below 1GHz



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													
2402MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	А	Н

- 1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
- 2. Level(dBµV/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(dBµV) 35.86 (dB)
- = 55.45 (dBµV/m)
- 2. Over Limit(dB)
- = Level(dBµV/m) Limit Line(dBµV/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".

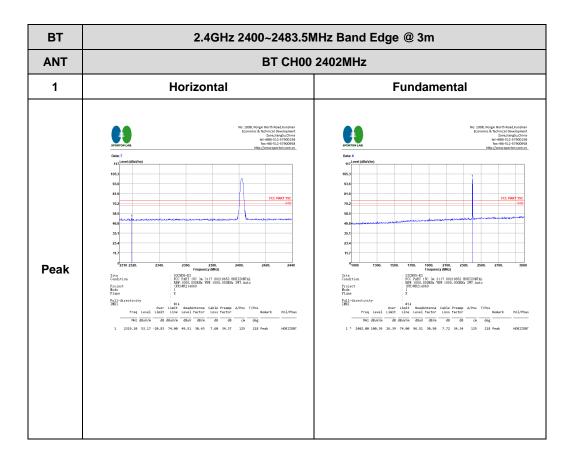


Appendix D. Radiated Spurious Emission Plots

Test Frazinasa .		Temperature :	27~30°C
Test Engineer :	Henzy LI	Relative Humidity :	41~45%

2.4GHz 2400~2483.5MHz

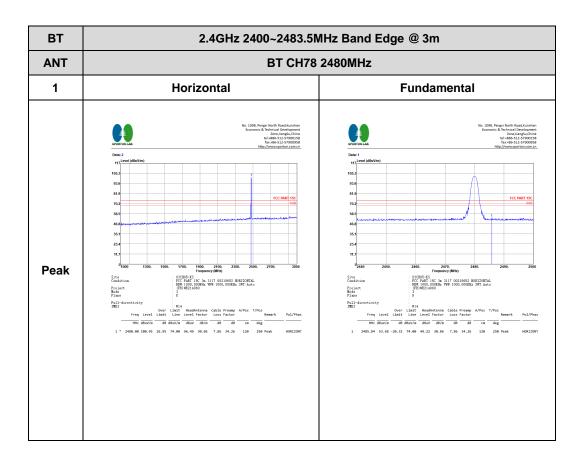
BT (Band Edge @ 3m)



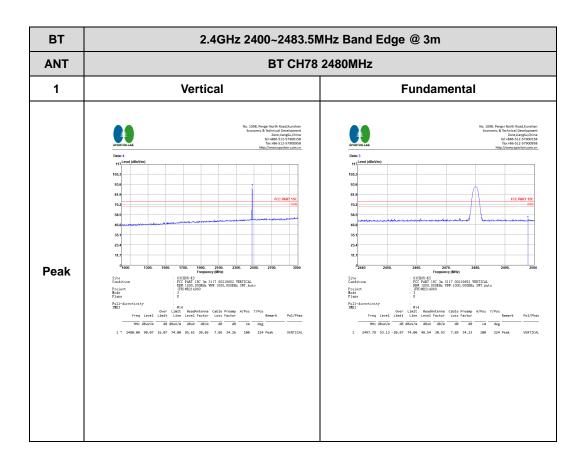


Peak	BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m									
Peak	ANT	BT CH00 2	2402MHz								
Peak to the second seco	1	Vertical	Fundamental								
Index Index Index Full-directivity Index Index Index Index Index	Peak		Dist 10 105.100 <td< th=""></td<>								





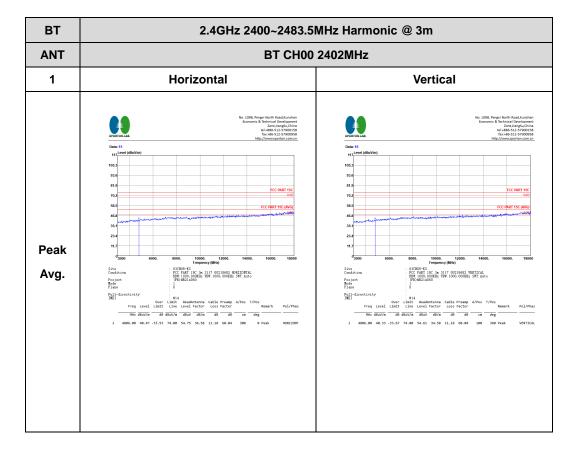




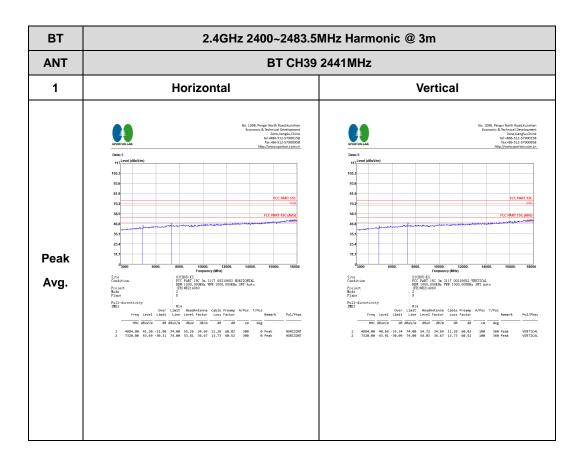


2.4GHz 2400~2483.5MHz

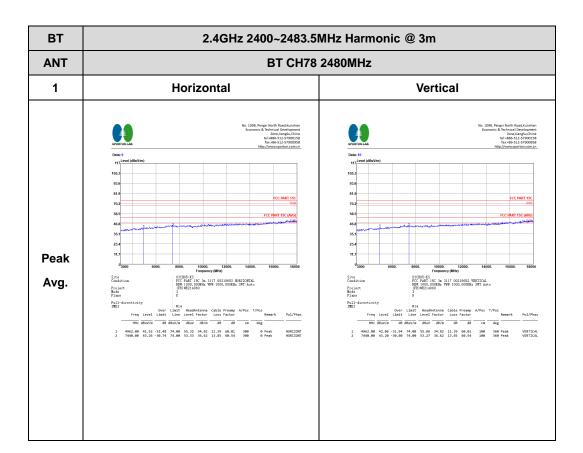
BT (Harmonic @ 3m)







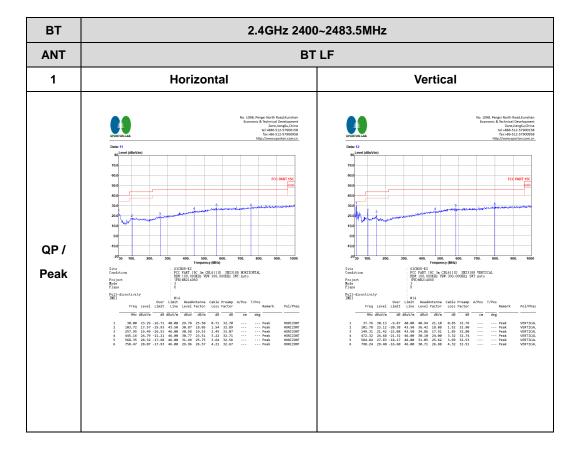






Emission below 1GHz

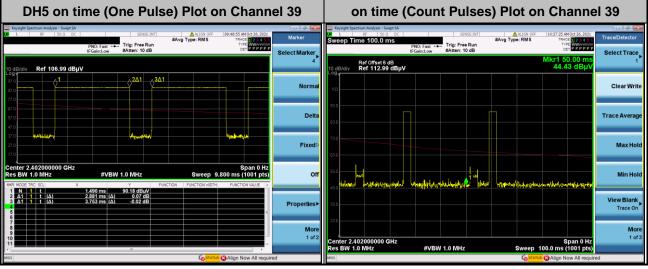






Appendix E. Duty Cycle Plots

<1Mbps>



Note:

- 1. Worst case Duty cycle = on time/100 milliseconds = 2 * 2.88 / 100 = 5.76 %
- 2. Worst case Duty cycle correction factor = 20*log(Duty cycle) = -24.79 dB
- 3. DH5 has the highest duty cycle worst case and is reported.

