

Appendix A: Test Results of Bluetooth BR & EDR mode

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Appendix A.1: Test Results of 99% Bandwidth

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.92219	2401.5361	2402.4583	---	---
		2441	0.92197	2440.5361	2441.4581	---	---
		2480	0.91991	2479.5360	2480.4559	---	---
3DH5	Ant1	2402	1.2332	2401.3616	2402.5948	---	---
		2441	1.2352	2440.3602	2441.5954	---	---
		2480	1.2356	2479.3604	2480.5960	---	---

DH5_Ant1_2402



DH5_Ant1_2441



DH5_Ant1_2480



3DH5_Ant1_2402



3DH5_Ant1_2441



3DH5_Ant1_2480



Appendix A.2: Test Results of 20dB Bandwidth

TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	1.029	2401.457	2402.486	---	---
		2441	1.032	2440.454	2441.486	---	---
		2480	1.032	2479.454	2480.486	---	---
3DH5	Ant1	2402	1.323	2401.310	2402.633	---	---
		2441	1.326	2440.307	2441.633	---	---
		2480	1.332	2479.307	2480.639	---	---

DH5_Ant1_2402



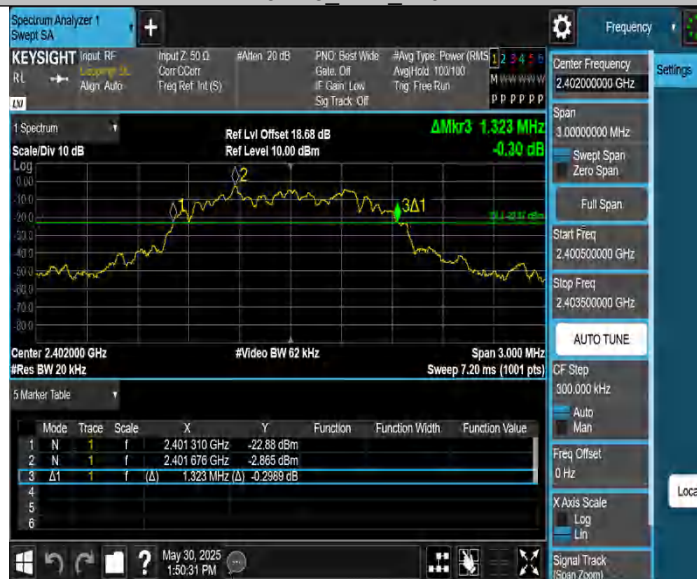
DH5_Ant1_2441



DH5_Ant1_2480



3DH5_Ant1_2402



3DH5_Ant1_2441

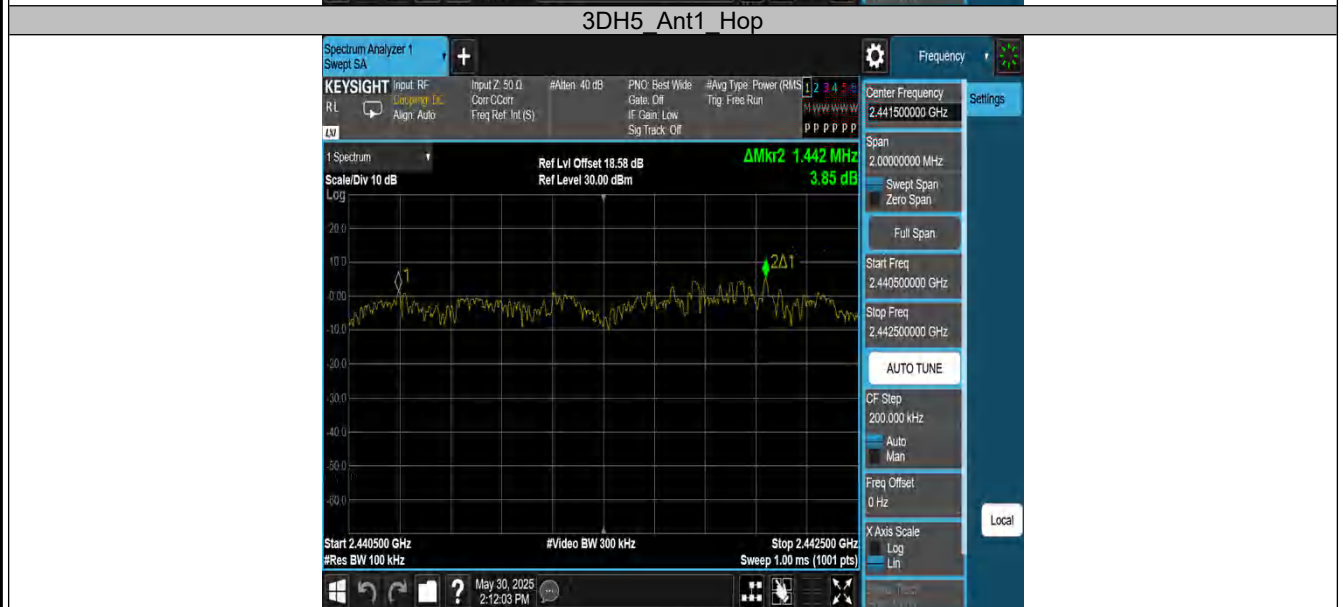
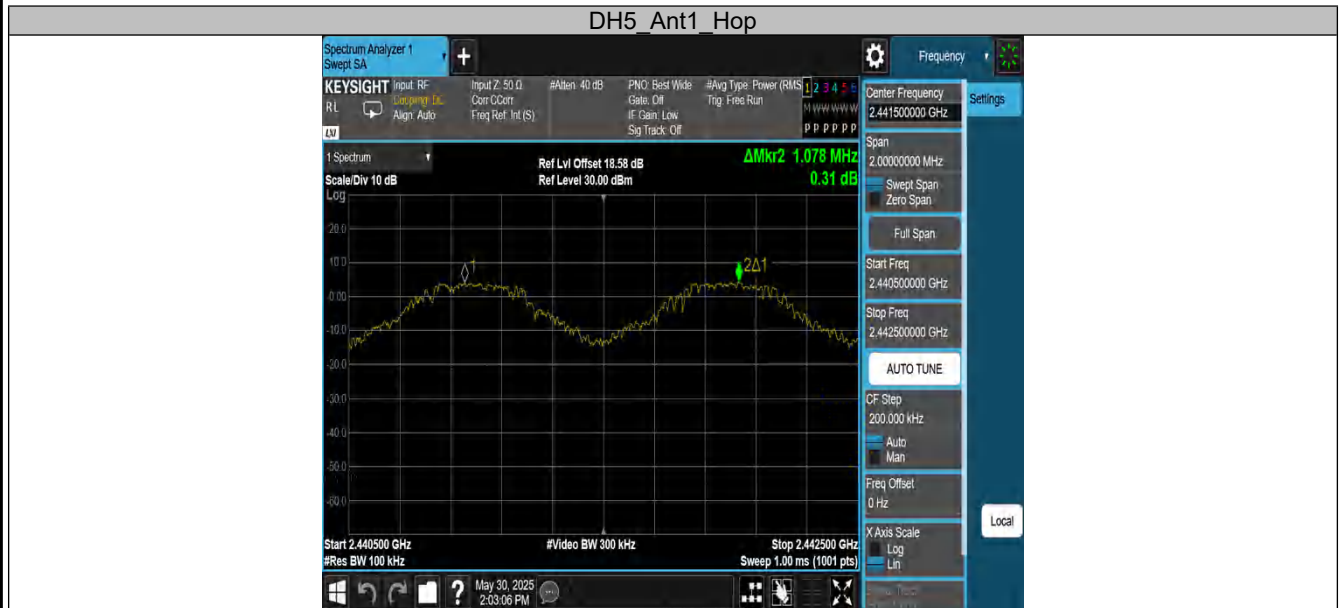


3DH5_Ant1_2480



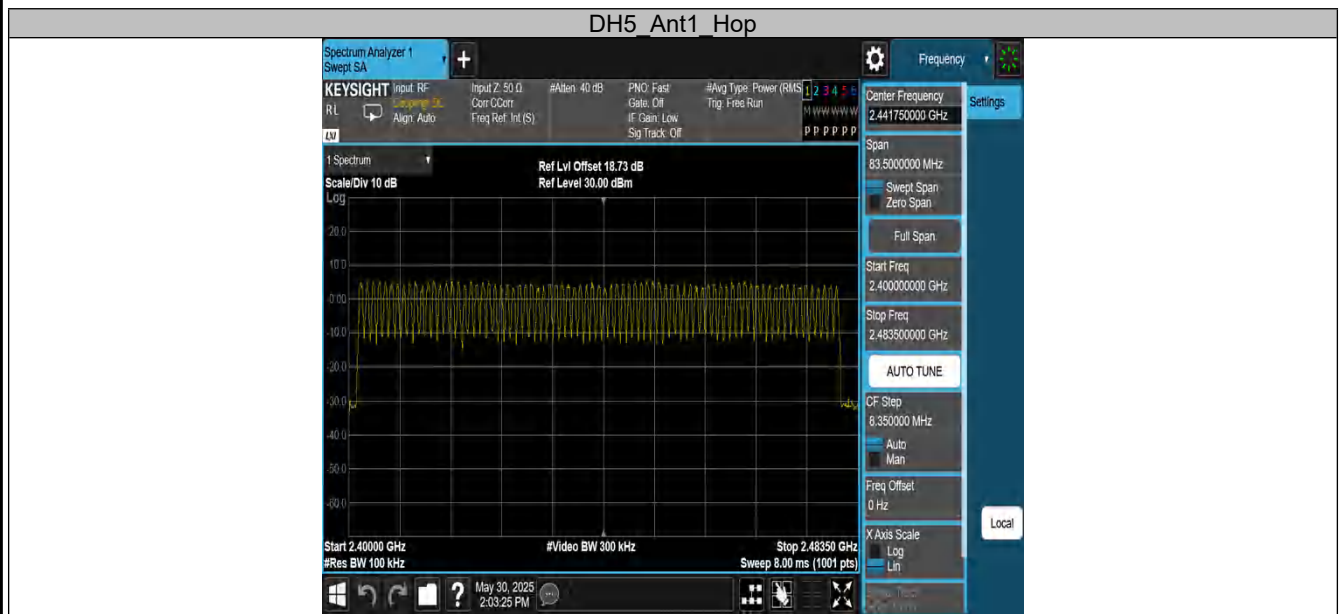
Appendix A.3: Test Results of Carrier Frequency Separation

TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1.078	≥ 1.032	PASS
3DH5	Ant1	Hop	1.442	≥ 1.332	PASS



Appendix A.4: Test Results of Number of Hopping Frequency

TestMode	Antenna	Channel	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Hop	79	≥15	PASS
3DH5	Ant1	Hop	79	≥15	PASS



Appendix A.5: Test Results of Time of Occupancy

TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.381	315	0.12	≤0.4	PASS
DH3	Ant1	Hop	1.637	153	0.25	≤0.4	PASS
DH5	Ant1	Hop	2.885	109	0.314	≤0.4	PASS
3DH1	Ant1	Hop	0.389	314	0.122	≤0.4	PASS
3DH3	Ant1	Hop	1.640	157	0.257	≤0.4	PASS
3DH5	Ant1	Hop	2.892	129	0.373	≤0.4	PASS

DH1 Ant1 Hop



DH3 Ant1 Hop





DH5 Ant1 Hop



3DH1 Ant1 Hop



3DH3 Ant1 Hop





3DH5 Ant1 Hop



Appendix A.6: Test Results of Conducted Spurious Emissions Measured in 100 kHz Bandwidth

Band Edge

TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	5.67	-43.61	≤-14.33	PASS
		High	2480	4.86	-43.55	≤-15.14	PASS
3DH5	Ant1	Low	2402	1.91	-41.90	≤-18.09	PASS
		High	2480	1.20	-41.86	≤-18.80	PASS
DH5	Ant1	Hopping	2402	4.35	-42.24	≤-15.65	PASS
		Hopping	2480	3.49	-43.44	≤-16.51	PASS
3DH5	Ant1	Hopping	2402	1.13	-42.69	≤-18.87	PASS
		Hopping	2480	1.19	-43.46	≤-18.81	PASS

DH5 Ant1 Low 2402



DH5 Ant1 High 2480



3DH5 Ant1 Low 2402



3DH5 Ant1 High 2480



DH5 Ant1 Hopping 2402



DH5 Ant1 Hopping 2480



3DH5 Ant1 Hopping 2402



3DH5_Ant1_Hopping 2480



Conducted Emissions

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	5.37	5.37	---	PASS
			30~1000	5.37	-41.71	≤-14.63	PASS
			1000~26500	5.37	-32.09	≤-14.63	PASS
		2441	Reference	5.08	5.08	---	PASS
			30~1000	5.08	-41.66	≤-14.92	PASS
			1000~26500	5.08	-32.51	≤-14.92	PASS
		2480	Reference	4.65	4.65	---	PASS
			30~1000	4.65	-41.21	≤-15.35	PASS
			1000~26500	4.65	-31.72	≤-15.35	PASS
3DH5	Ant1	2402	Reference	1.58	1.58	---	PASS
			30~1000	1.58	-41.73	≤-18.42	PASS
			1000~26500	1.58	-31.72	≤-18.42	PASS
		2441	Reference	1.44	1.44	---	PASS
			30~1000	1.44	-40.34	≤-18.56	PASS
			1000~26500	1.44	-32.36	≤-18.56	PASS
		2480	Reference	0.85	0.85	---	PASS
			30~1000	0.85	-41.89	≤-19.15	PASS
			1000~26500	0.85	-32.47	≤-19.15	PASS

DH5_Ant1_2402_0~Reference



DH5_Ant1_2402_30~1000



DH5_Ant1_2402_1000~26500



DH5_Ant1_2441_0~Reference



DH5_Ant1_2441_30~1000



DH5_Ant1_2441_1000~26500



DH5_Ant1_2480_0~Reference



DH5_Ant1_2480_30~1000



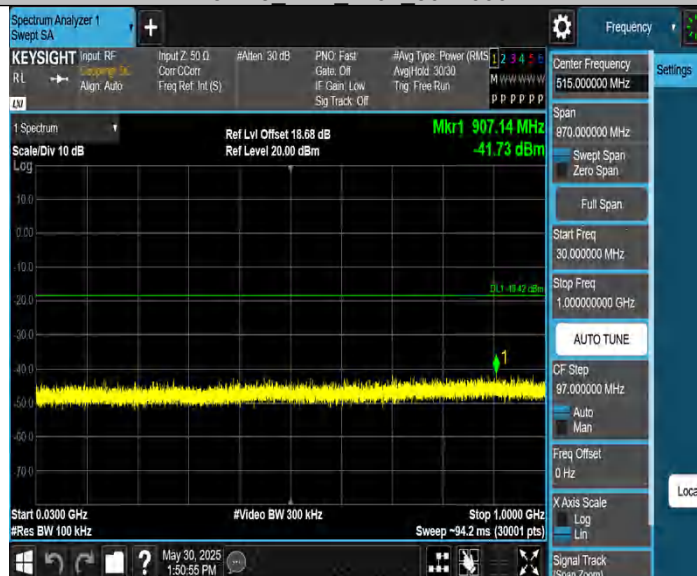
DH5_Ant1_2480_1000~26500



3DH5 Ant1 2402 0~Reference



3DH5 Ant1 2402 30~1000



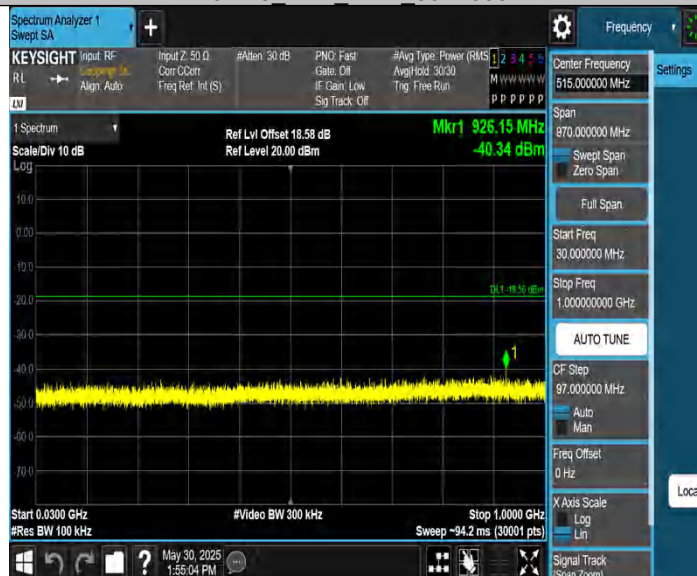
3DH5 Ant1 2402 1000~26500



3DH5 Ant1 2441 0~Reference



3DH5 Ant1 2441 30~1000



3DH5 Ant1 2441 1000~26500





Appendix A.7: Test Results of Radiated Spurious Emissions

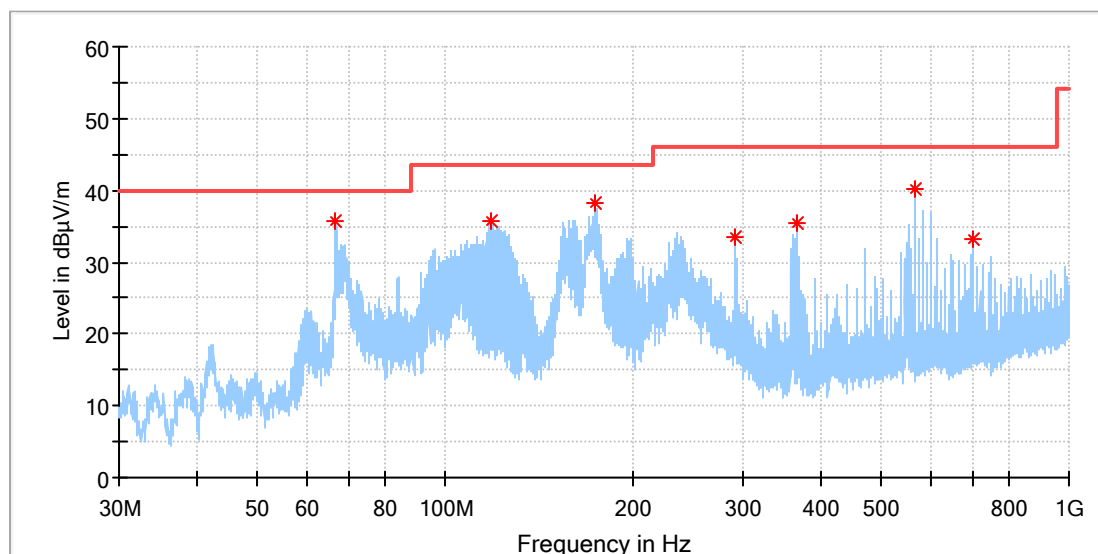
Note:

- 1) This testing was carried out on different modulations, but only the worst case was presented in this report.
- 2) Testing was carried out within frequency range 9kHz to the tenth harmonics. The measurement results below 30MHz and 18GHz - 26.5GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 18GHz were reported.
- 3) Full test performed on the right earbud and worst-case re-checked for the left earbud.

30 MHz - 1GHz

EUT Information

EUT Name:	General-Purpose Robot
Model:	A2
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168541455/A003981953-001
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical Freqs

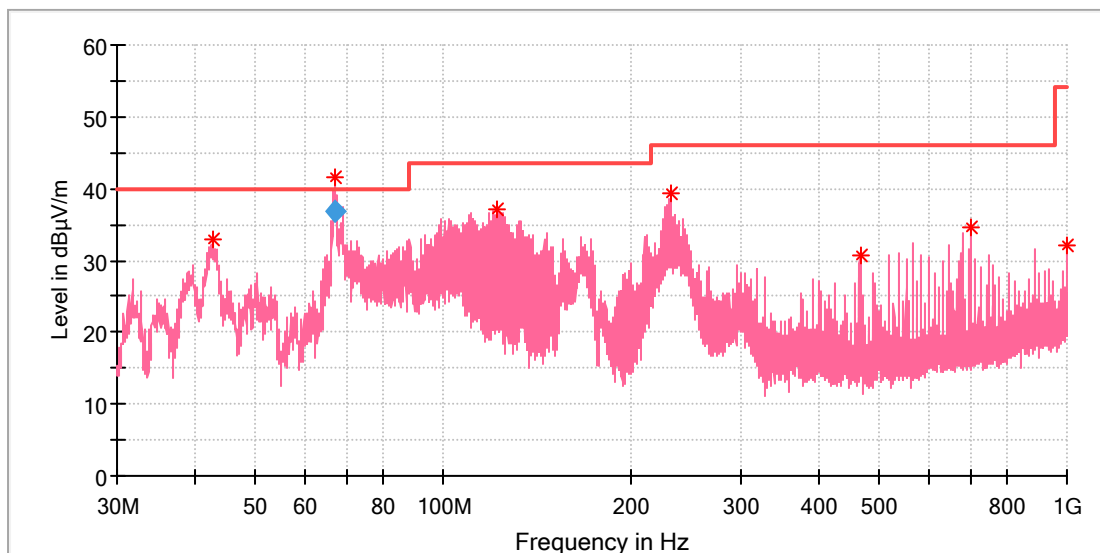
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
66.785385	35.74	40.00	4.26	100.0	H	47.0	-20.9
118.792308	35.60	43.50	7.90	100.0	H	252.0	-20.6
173.448077	38.29	43.50	5.21	100.0	H	26.0	-21.1
291.974615	33.61	46.00	12.39	100.0	H	357.0	-16.5
367.410769	35.39	46.00	10.61	100.0	H	66.0	-14.5
568.014231	40.14	46.00	5.86	100.0	H	130.0	-10.4
700.046154	33.08	46.00	12.92	100.0	H	0.0	-7.9

Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---	---	---	---

EUT Information

EUT Name: General-Purpose Robot
Model: A2
Test Mode: BR_DH5_Mid channel
Order No/Sample No: 168541455/A003981953-001
Test Voltage:: Battery
Remark: Temp 23 Humi:56%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
42.759231	32.99	40.00	7.01	100.0	V	319.0	-19.5
67.245962	41.62	40.00	-1.62	100.0	V	24.0	-21.0
121.739615	37.23	43.50	6.27	100.0	V	355.0	-21.1
231.610769	39.39	46.00	6.61	100.0	V	36.0	-18.1
465.791154	30.60	46.00	15.40	100.0	V	349.0	-12.4
700.046154	34.70	46.00	11.30	100.0	V	0.0	-7.9
1000.000000	32.19	54.00	21.81	100.0	V	359.0	-3.4

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
67.245962	36.75	40.00	3.25	100.0	V	24.0	-21.0

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
100.000000	100.000000	100.000000	100.000000	100.000000	100.000000		100.000000	100.000000



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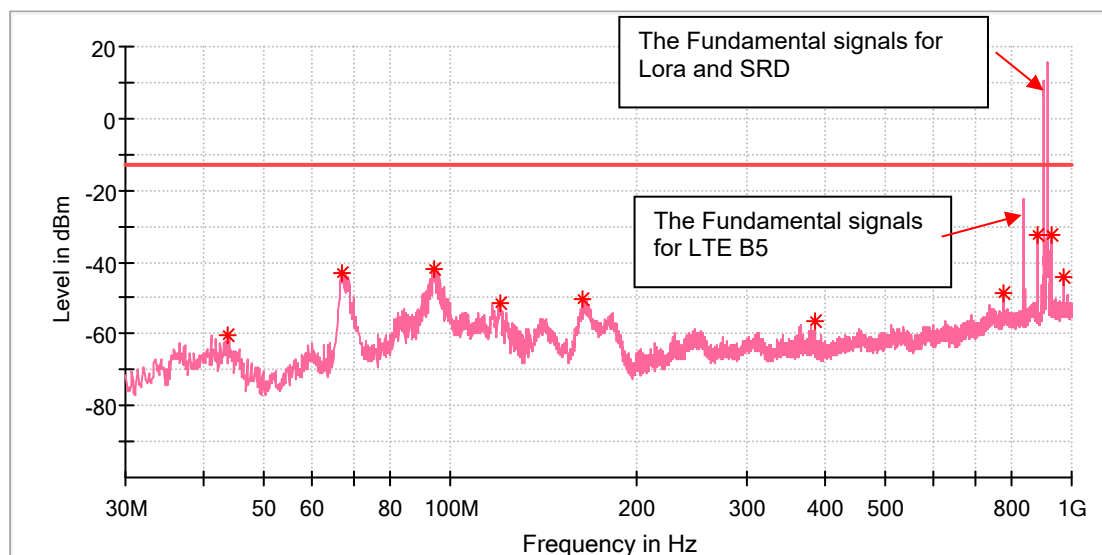
Appendix A.8: Test Results of Radiated Emissions in Simultaneous Mode

This device contains the certificated single modules for wireless functions SRD (915MHz Band), Lora and LTE. As per KDB 996369 D01 section 7 and KDB 996369 D02 (Question 12), the EMC testing of the Module in simultaneous transmission operations were performed while integrated into the host. There is no emissions with increased amplitude and/or on different frequencies are detected in simultaneous transmissions compared to what is reported in the modular grant (that refers to single-transmitter operations testing), the test results for worst-cases listed as below:

Mode: Bluetooth + Lora (915MHz band) +915MHz band SRD+LTE B5

EUT Information

EUT Name:	General-Purpose Robot
Model:	AgiBot A2
Test Mode:	BT+LTE+802.11ah+Lora
Order No/Sample No:	168541455/A003981953-001
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC Part 22
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

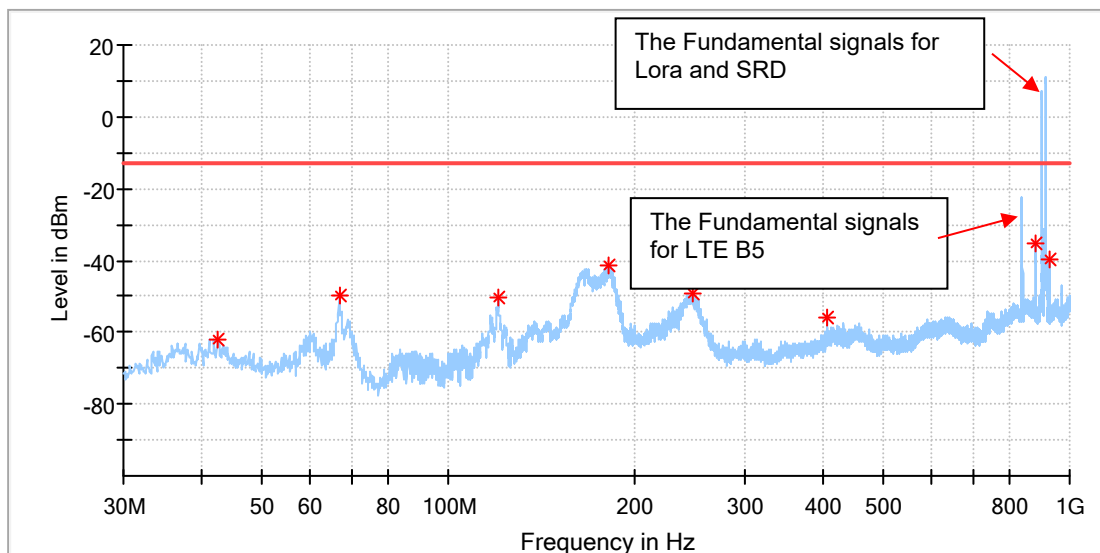


Critical Freqs

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
43.943750	-60.47	-13.00	47.47	100.0	V	87.0	-124.5
66.738750	-43.08	-13.00	30.08	100.0	V	15.0	-122.7
94.020000	-42.05	-13.00	29.05	100.0	V	208.0	-100.1
120.452500	-51.56	-13.00	38.56	100.0	V	249.0	-115.4
163.496250	-50.24	-13.00	37.24	100.0	V	212.0	-120.3
385.990000	-56.73	-13.00	43.73	100.0	V	112.0	-111.4
775.323750	-48.78	-13.00	35.78	100.0	V	203.0	-102.3
881.660000	-32.68	-13.00	19.68	100.0	V	285.0	-102.4
926.886250	-32.72	-13.00	19.72	100.0	V	21.0	-100.0
967.383750	-44.39	-13.00	31.39	100.0	V	315.0	-100.7

EUT Information

EUT Name:	General-Purpose Robot
Model:	A2
Test Mode:	BT+LTE+802.11ah+Lora
Order No/Sample No:	168541455/A003981953-001
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC Part 22
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

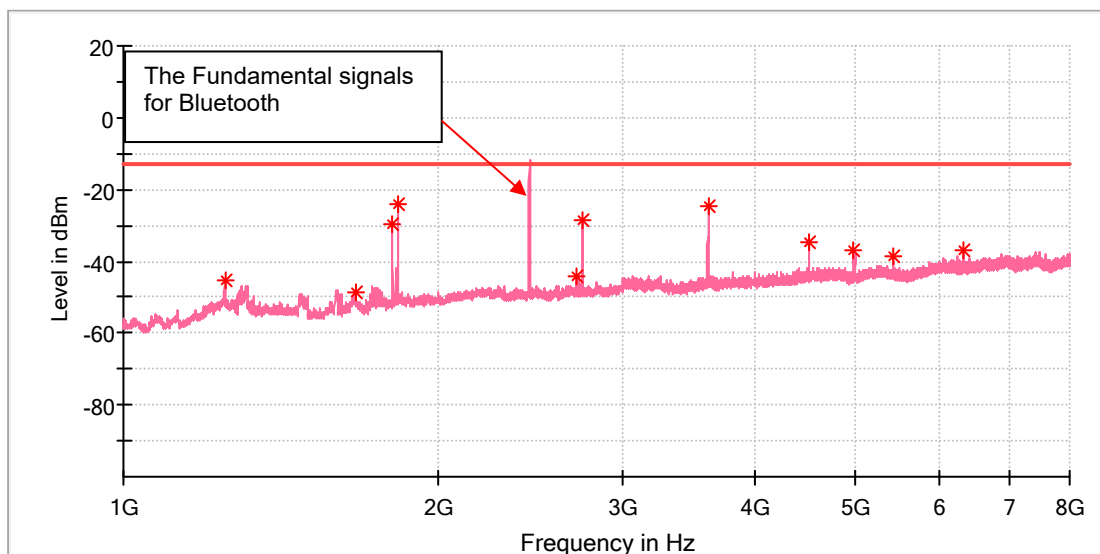


Critical_Freqs

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
42.610000	-61.91	-13.00	48.91	100.0	H	282.0	-112.8
66.738750	-49.84	-13.00	36.84	100.0	H	41.0	-120.6
120.452500	-50.58	-13.00	37.58	100.0	H	212.0	-122.9
180.835000	-41.48	-13.00	28.48	100.0	H	246.0	-118.1
246.673750	-49.14	-13.00	36.14	100.0	H	294.0	-110.0
406.845000	-56.03	-13.00	43.03	100.0	H	103.0	-109.5
881.175000	-35.47	-13.00	22.47	100.0	H	185.0	-102.0
926.037500	-39.73	-13.00	26.73	100.0	H	133.0	-102.5

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Remark:	Temp 23 Humi:56%
Test Standard:	FCC Part 22
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

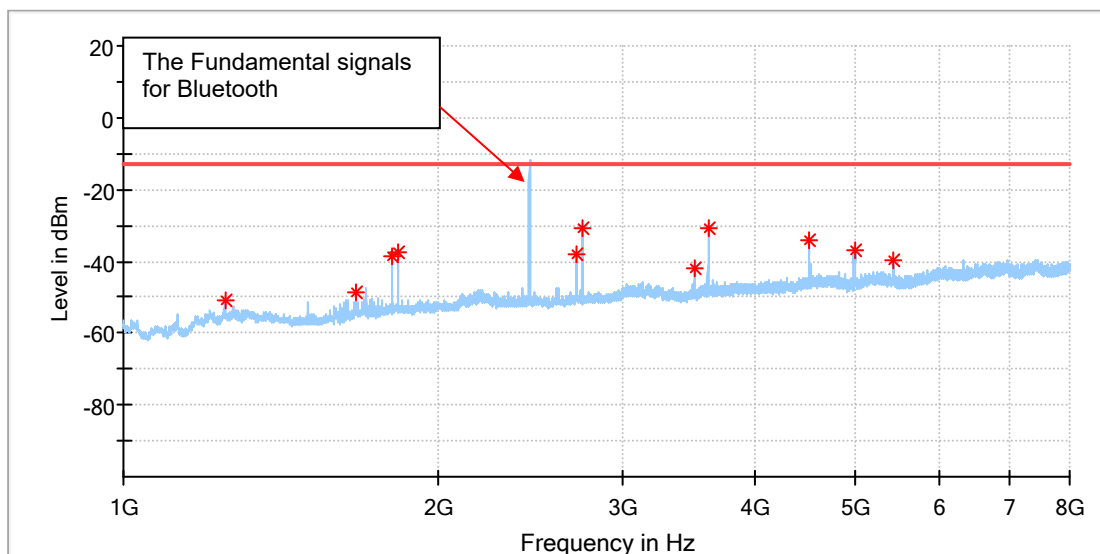


Critical_Freqs

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1249.500000	-45.06	-13.00	32.06	150.0	V	16.0	-90.1
1667.000000	-48.48	-13.00	35.48	150.0	V	152.0	-90.3
1807.500000	-29.70	-13.00	16.71	150.0	V	298.0	-89.0
1830.000000	-23.89	-13.00	10.89	150.0	V	347.0	-88.1
2711.000000	-44.41	-13.00	31.41	150.0	V	335.0	-86.3
2746.000000	-28.46	-13.00	15.46	150.0	V	353.0	-86.0
3614.000000	-24.86	-13.00	11.86	150.0	V	313.0	-83.6
4516.500000	-34.95	-13.00	21.95	150.0	V	263.0	-81.3
4979.500000	-36.99	-13.00	23.99	150.0	V	213.0	-81.5
5421.500000	-38.56	-13.00	25.56	150.0	V	191.0	-80.5
6324.000000	-36.77	-13.00	23.77	150.0	V	213.0	-78.6

EUT Information

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Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC Part 22
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

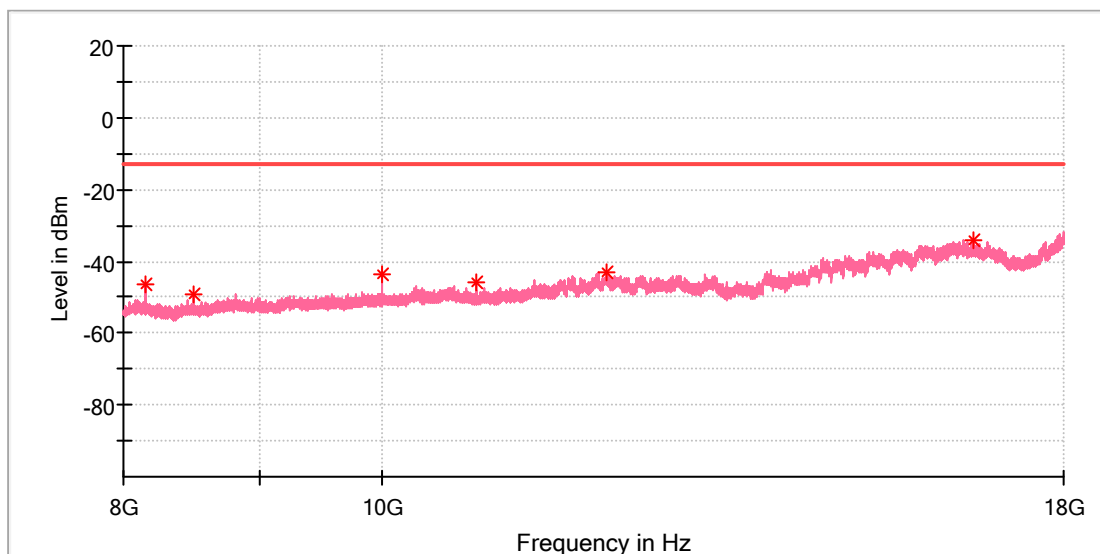


Critical_Freqs

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1250.000000	-50.66	-13.00	37.66	150.0	H	256.0	-92.9
1668.000000	-48.84	-13.00	35.84	150.0	H	81.0	-92.4
1807.000000	-38.67	-13.00	25.67	150.0	H	182.0	-90.8
1829.500000	-37.32	-13.00	24.32	150.0	H	31.0	-90.6
2710.500000	-37.86	-13.00	24.86	150.0	H	308.0	-88.2
2745.000000	-30.73	-13.00	17.73	150.0	H	44.0	-87.9
3505.000000	-42.14	-13.00	29.14	150.0	H	316.0	-86.2
3614.500000	-30.61	-13.00	17.61	150.0	H	316.0	-85.7
4517.000000	-33.91	-13.00	20.91	150.0	H	275.0	-83.3
4995.500000	-37.17	-13.00	24.17	150.0	H	79.0	-83.6
5421.500000	-39.45	-13.00	26.45	150.0	H	225.0	-82.3

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Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC Part 22
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

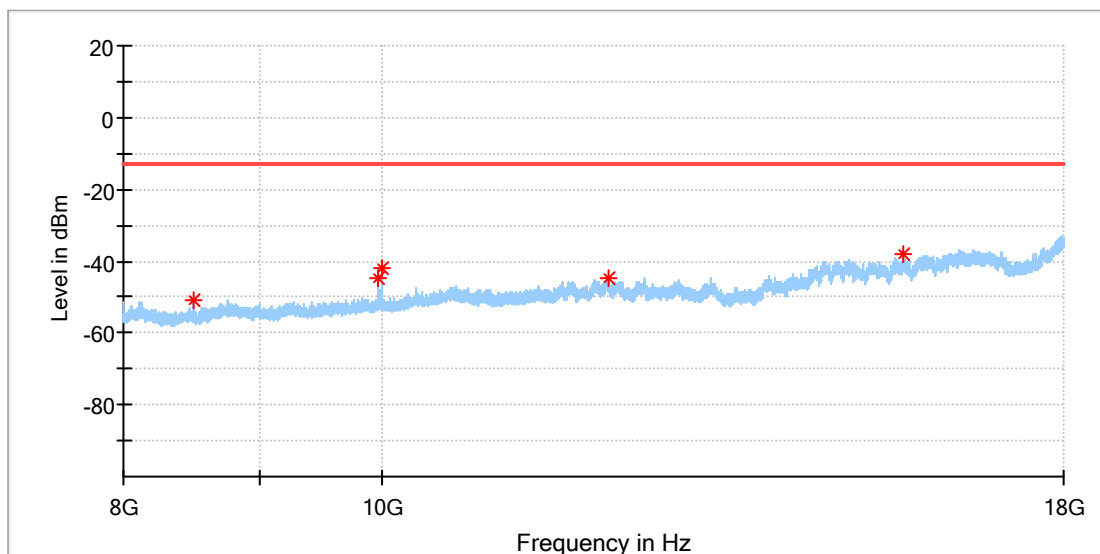


Critical_Freqs

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
8154.500000	-46.31	-13.00	33.31	150.0	V	180.0	-86.6
8500.000000	-49.18	-13.00	36.18	150.0	V	208.0	-87.0
10000.000000	-43.58	-13.00	30.58	150.0	V	180.0	-83.5
10842.000000	-45.76	-13.00	32.76	150.0	V	256.0	-82.5
12127.000000	-43.27	-13.00	30.27	150.0	V	311.0	-78.2
16655.000000	-34.00	-13.00	21.00	150.0	V	333.0	-70.9

EUT Information

EUT Name:	General-Purpose Robot
Model:	A2
Test Mode:	BT+LTE+802.11ah+Lora
Order No/Sample No:	168541455/A003981953-001
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC Part 22
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
8500.000000	-50.74	-13.00	37.74	150.0	H	169.0	-89.1
9966.000000	-44.68	-13.00	31.68	150.0	H	0.0	-85.1
9999.500000	-41.68	-13.00	28.68	150.0	H	175.0	-85.0
12150.000000	-45.00	-13.00	32.00	150.0	H	262.0	-79.6
15680.500000	-38.08	-13.00	25.08	150.0	H	107.0	-77.3

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
100.000000	100.000000	100.000000	100.000000	100.000000	100.000000		100.000000	100.000000

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
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