



FCC CO-LOCATION RADIO TEST REPORT

FCC ID : UZ7MC945B
Equipment : Mobile Computer
Brand Name : ZEBRA
Model Name : MC945B
Applicant : Zebra Technologies Corporation
1 Zebra Plaza, Holtsville, NY 11742
Manufacturer : Zebra Technologies Corporation
1 Zebra Plaza, Holtsville, NY 11742
Standard : FCC Part 15 Subpart E §15.407

The product was received on Nov. 28, 2023 and testing was performed from Jan. 18, 2024 to Jan. 19, 2024. We, Sporton International Inc. Wensan Laboratory, 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 from Sporton International Inc. Wensan Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

Sporton International Inc. Wensan Laboratory

No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)



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Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.407(b)	Unwanted Emissions	Pass	3.67 dB under the limit at 7311.00 MHz
3.2	15.203 15.407(a)	Antenna Requirement	Pass	-

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section "Measurement Uncertainty".

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Keven Cheng

Report Producer: Rachel Hsieh



1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Computer
Brand Name	ZEBRA
Model Name	MC945B
FCC ID	UZ7MC945B
Sample 1	SE5800 + with Camera
Sample 2	SE4770 + without Camera
EUT supports Radios application	WCDMA/LTE/5G NR/GNSS/NFC WLAN 11a/b/g/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80/VHT160 WLAN 11ax HE20/HE40/HE80/HE160 Bluetooth BR/EDR/LE
HW Version	DV2
SW Version	13-10-31.00-TN-U00-PRD-NEM-04
FW Version	FUSION_QA_6_1.1.0.004_T
MFD	10NOV23
EUT Stage	Identical Prototype

Remark: The EUT's information above is declared by manufacturer.

Specification of Accessories				
Adapter USB Wall Charger	Brand Name	Zebra	Part Number	PWR-WUA5V12W0US
Battery 1 Standard Battery (7000mAh)	Brand Name	Zebra	Model Number	BT-000370
Battery 2 Standard Battery (7000mAh)	Brand Name	Zebra	Model Number	BT-000370B
Earphone USB-C Audio Headset	Brand Name	Zebra	Part Number	HDST-USBC-PTT1-01
USB Cable (Type C to Type A)	Brand Name	Zebra	Part Number	CBL-TC2X-USBC-01
Holster	Brand Name	Zebra	Part Number	SG-MC9X-SHLSTG-01
USB Cable (CUP)	Brand Name	Zebra	Part Number	CBL-MC93-USBCHG-01



1.2 Product Specification of Equipment Under Test

Product Specification is subject to this standard			
Tx/Rx Channel Frequency Range	2402 MHz ~ 2480 MHz 2412 MHz ~ 2462 MHz 5180 MHz ~ 5240 MHz		
Antenna Type / Gain	<Bluetooth – LE> <Ant. 6> : PIFA Antenna Antenna with gain 1.95 dBi <2412 MHz ~ 2462 MHz> <Ant. 6> : PIFA Antenna Antenna with gain 1.95 dBi <Ant. 7> : PIFA Antenna Antenna with gain 2.51 dBi <5180 MHz ~ 5240MHz> <Ant. 6> : PIFA Antenna Antenna with gain 2.21 dBi <Ant. 7> : PIFA Antenna Antenna with gain 2.21 dBi		
Type of Modulation	Bluetooth LE: GFSK 802.11b: DSSS (DBPSK / DQPSK / CCK) 802.11a: OFDM (BPSK / QPSK / 16QAM / 64QAM)		
Antenna Function for Transmitter		Ant. 6	Ant. 7
	Bluetooth-LE	V	-
	802.11b	V	-
	802.11b/a MIMO	V	V

Remark:

1. MIMO Ant. 6+7 is a calculated result from sum of the power MIMO Ant. 6 and MIMO Ant. 7.
2. The EUT's information above is declared by manufacturer. Please refer to Disclaimer in report summary.

1.3 Modification of EUT

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

1.4 Testing Location

Test Site	Sporton International Inc. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	Sporton Site No. 03CH20-HY

Note: The test site complies with ANSI C63.4 2014 requirement.

FCC designation No.: TW3786



1.5 Applicable Standards

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

- ♦ FCC Part 15 Subpart E
- ♦ FCC Part 15 Subpart C §15.247
- ♦ FCC KDB Publication No. 558074 D01 15.247 Meas Guidance v05r02
- ♦ FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01.
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ♦ 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. The TAF code is not including all the FCC KDB listed without accreditation.
3. 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

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: 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 only the worst case emissions were reported in this report.

2.1 Carrier Frequency and Channel

2400-2483.5 MHz	
Bluetooth - LE	
Channel	Freq. (MHz)
39	2480

2400-2483.5 MHz		5150-5250 MHz	
802.11b		802.11a	
Channel	Freq. (MHz)	Channel	Freq. (MHz)
06	2437	44	5220

Remark: During the Radiated Spurious Emission test, the EUT turn on the WWAN functions simultaneously.

2.2 Test Mode

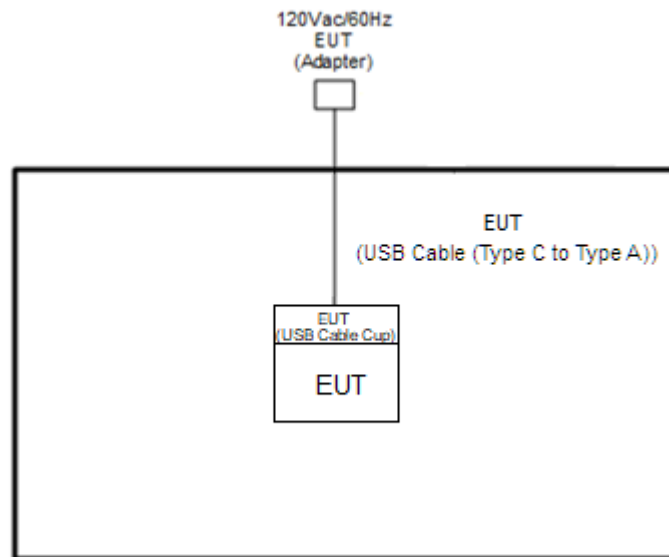
Final test modes are considering the modulation and worse data rates as below table.

<Co-Location>

Modulation	Data Rate
2.4GHz 802.11b for MIMO <Ant. 6+7> + 5GHz 802.11a for MIMO <Ant. 6+7> + LTE Band 5	MCS0 + MCS0 + QPSK
Bluetooth-LE for Ant. 6 + 2.4GHz 802.11b for Ant. 7 + 5GHz 802.11a for MIMO <Ant. 6+7> + LTE Band 5	GFSK + MCS0 + MCS0 + QPSK

Remark: All the tests were performed with Battery 1 Standard Battery (7000mAh) and Sample 1.

2.3 Connection Diagram of Test System



2.4 EUT Operation Test Setup

The RF test items, utility "QRCT Version 4.0.211.0" 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.



3 Test Result

3.1 Unwanted Emissions Measurement

This section is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement.

3.1.1 Limit of Unwanted Emissions

(1) Unwanted spurious emissions fallen in restricted bands shall comply with the general field strength limits as below table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (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

Note: The following formula is used to convert the EIRP to field strength.

$$E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m, where P is the eirp (Watts)}$$

EIRP (dBm)	Field Strength at 3m (dBμV/m)
- 27	68.3

(2) KDB789033 D02 v02r01 G)2)c)

(i) Sections 15.407(b)(1-3) specifies the unwanted emissions limit for the U-NII-1 and U-NII-2 bands. As specified, emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz.

(ii) Section 15.407(b)(4) specifies the unwanted emissions limit for the U-NII-3 band. A band emissions mask is specified in Section 15.407(b)(4)(i). The emission limits are based on the use of a peak detector.

3.1.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

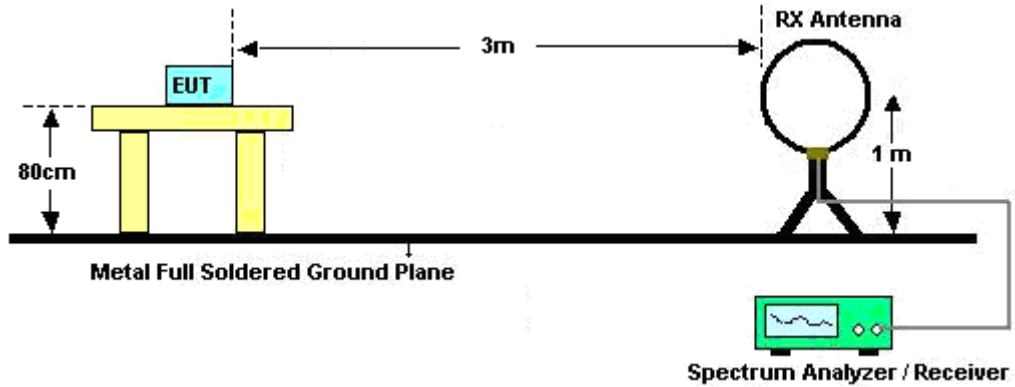


3.1.3 Test Procedures

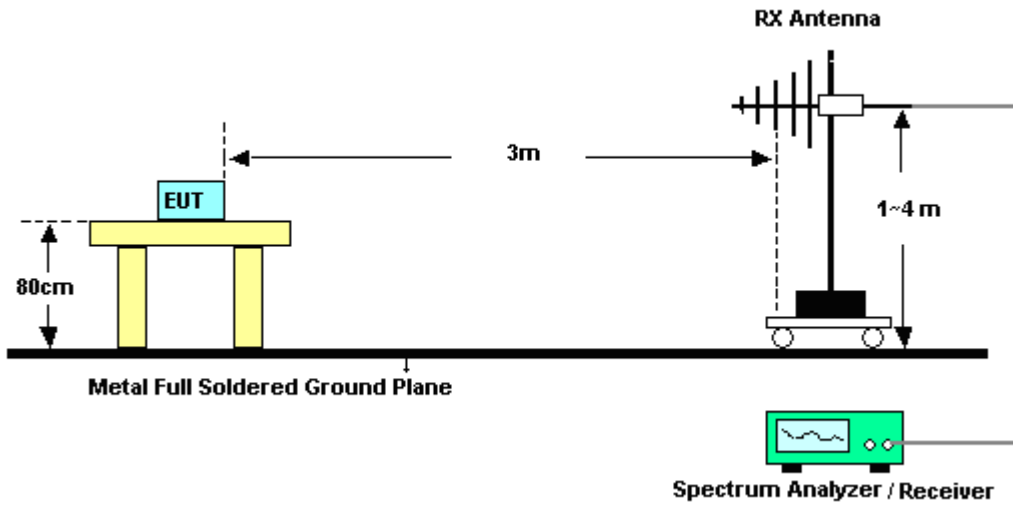
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section G) Unwanted emissions measurement.
 - (1) Procedure for Unwanted Emissions Measurements Below 1000MHz
 - RBW = 120 kHz
 - VBW = 300 kHz
 - Detector = Peak
 - Trace mode = max hold
 - (2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz
 - RBW = 1 MHz
 - VBW \geq 3 MHz
 - Detector = Peak
 - Sweep time = auto
 - Trace mode = max hold
 - (3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz
 - RBW = 1 MHz
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW \geq 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
2. The EUT is 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.
3. The EUT is set 3 meters away from the receiving antenna which is mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT is arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. Radiated testing below 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading. When there is no suspected emission found and the emission level is with at least 6 dB margin against QP limit line, the position is marked as “-“.
7. Radiated testing above 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading for scanning all frequencies. When there is no suspected emission found and the harmonic emission level is with at least 6 dB margin against average limit line, the position is marked as “-“.

3.1.4 Test Setup

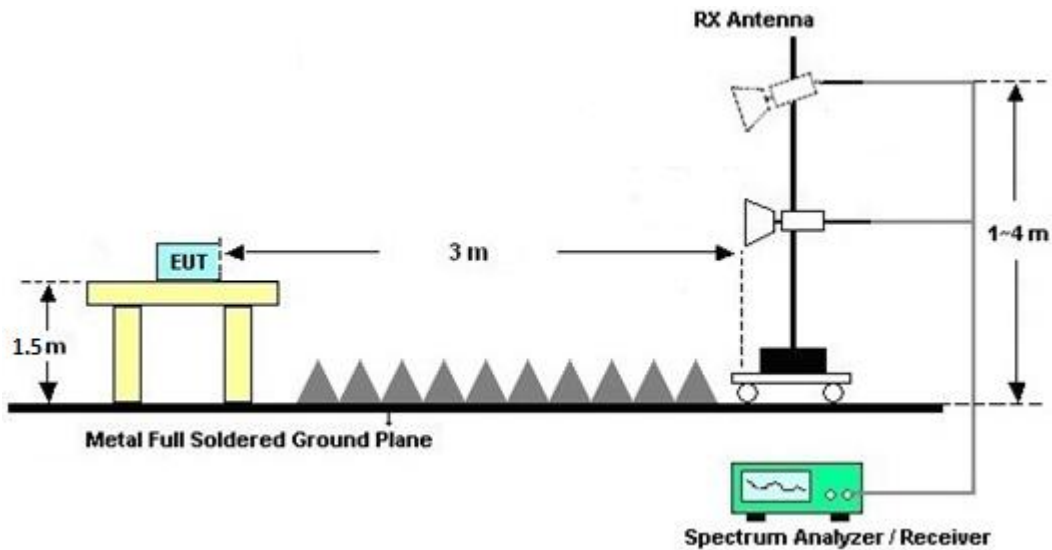
For radiated emissions below 30MHz



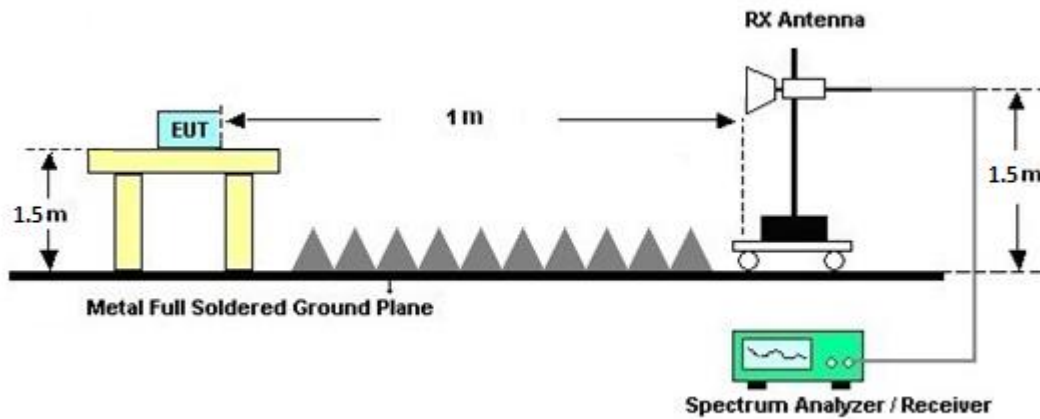
For radiated emissions from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



3.1.5 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.

3.1.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix A and B.

3.1.7 Duty Cycle

Please refer to Appendix C.

3.1.8 Test Result of Radiated Spurious Emissions (30MHz ~ 10th Harmonic)

Please refer to Appendix A and B.



3.2 Antenna Requirements

3.2.1 Standard Applicable

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.

3.2.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.



4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver	Keysight	N9038A(MXE)	MY54130085	N/A	Oct. 06, 2023	Jan. 18, 2024~ Jan. 19, 2024	Oct. 05, 2024	Radiation (03CH20-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Sep. 12, 2023	Jan. 18, 2024~ Jan. 19, 2024	Sep. 11, 2024	Radiation (03CH20-HY)
Preamplifier	EMEC	EM18G40G	060873	18GHz~40GHz	Sep. 06, 2023	Jan. 18, 2024~ Jan. 19, 2024	Sep. 05, 2024	Radiation (03CH20-HY)
Controller	ChainTek	3000-1	N/A	Control Turn table & Ant Mast	N/A	Jan. 18, 2024~ Jan. 19, 2024	N/A	Radiation (03CH20-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Jan. 18, 2024~ Jan. 19, 2024	N/A	Radiation (03CH20-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Jan. 18, 2024~ Jan. 19, 2024	N/A	Radiation (03CH20-HY)
Signal Analyzer	Keysight	N9010B	MY60240520	N/A	Dec. 12, 2023	Jan. 18, 2024~ Jan. 19, 2024	Dec. 11, 2024	Radiation (03CH20-HY)
Bilog Antenna	TESEQ	CBL 6111D&00802N1 D01N-06	55606 & 08	30MHz~1GHz	Oct. 20, 2023	Jan. 18, 2024~ Jan. 19, 2024	Oct. 19, 2024	Radiation (03CH20-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	02360	1GHz-18GHz	Oct. 30, 2023	Jan. 18, 2024~ Jan. 19, 2024	Oct. 29, 2024	Radiation (03CH20-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	1224	18GHz-40GHz	Jul. 10, 2023	Jan. 18, 2024~ Jan. 19, 2024	Jul. 09, 2024	Radiation (03CH20-HY)
Preamplifier	COM-POWER	PAM-103	18020201	1MHz-1000MHz	Jan. 01, 2024	Jan. 18, 2024~ Jan. 19, 2024	Dec. 31, 2024	Radiation (03CH20-HY)
Amplifier	EMCI	EMC118A45SE	980792	N/A	Nov. 13, 2023	Jan. 18, 2024~ Jan. 19, 2024	Nov. 12, 2024	Radiation (03CH20-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	519229/2,80401 5/2,804027/2	N/A	Jan. 17, 2024	Jan. 18, 2024~ Jan. 19, 2024	Jan. 16, 2025	Radiation (03CH20-HY)
Hygrometer	TECPEL	DTM-303B	TP200728	N/A	Mar. 28, 2023	Jan. 18, 2024~ Jan. 19, 2024	Mar. 27, 2024	Radiation (03CH20-HY)
Software	Audix	N/A	RK-002156	N/A	N/A	Jan. 18, 2024~ Jan. 19, 2024	N/A	Radiation (03CH20-HY)



5 Measurement Uncertainty

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	6.4 dB
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 6000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.5 dB
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Uncertainty of Radiated Emission Measurement (6000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.6 dB
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.4 dB
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Appendix A. Radiated Spurious Emission

Test Engineer :	John Chuang, David Dai and Howard Huang	Temperature :	18.9~23.4°C
		Relative Humidity :	65.7~69.9%

2.4GHz 2400~2483.5MHz + Band 1 - 5150~5250MHz + LTE Band 5 Link

WIFI 802.11b (Band edge @ 3m)

WIFI Ant 6+7	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)	
802.11b CH 06 2437MHz		2388.56	50.55	-23.45	74	40.25	27.25	8.69	36.24	100	72	P	H	
		2389.68	41.07	-12.93	54	30.76	27.26	8.69	36.24	100	72	A	H	
	*	2437	114.5	-	-	103.93	27.45	8.78	36.26	100	72	P	H	
	*	2437	111.28	-	-	100.71	27.45	8.78	36.26	100	72	A	H	
			2491.84	50.9	-23.1	74	40.05	27.67	8.88	36.28	100	72	P	H
			2496.32	45.33	-8.67	54	34.45	27.69	8.89	36.28	100	72	A	H
														H
														H
														H
			2381.04	50.65	-23.35	74	40.4	27.22	8.67	36.24	200	252	P	V
			2389.52	40.79	-13.21	54	30.48	27.26	8.69	36.24	200	252	A	V
	*		2437	113.31	-	-	102.74	27.45	8.78	36.26	200	252	P	V
	*		2437	110.31	-	-	99.74	27.45	8.78	36.26	200	252	A	V
			2491.04	51.03	-22.97	74	40.19	27.66	8.88	36.28	200	252	P	V
			2496.32	43.32	-10.68	54	32.44	27.69	8.89	36.28	200	252	A	V
														V
														V
														V
Remark	1. No other spurious found. 2. All results are PASS against limit line.													



2.4GHz 2400~2483.5MHz + Band 1 - 5150~5250MHz + LTE Band 5 Link
 WIFI 802.11a (Band edge @ 3m)

WIFI Ant. 6+7	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)	
802.11a CH 44 5220MHz		5149.5	52.84	-21.16	74	44.28	32.9	12.91	37.78	100	124	P	H	
		5150	43.39	-10.61	54	34.84	32.9	12.91	37.78	100	124	A	H	
	*	5220	115.91	-	-	107.27	32.96	12.99	37.83	100	124	P	H	
	*	5220	108.99	-	-	100.35	32.96	12.99	37.83	100	124	A	H	
		5374.32	47.58	-26.42	74	38.98	32.8	13.22	37.94	100	124	P	H	
		5458.04	38.09	-15.91	54	29.28	32.98	13.33	38	100	124	A	H	
														H
														H
														H
														H
														H
														H
			5134.16	51.64	-22.36	74	43.05	32.93	12.9	37.77	250	95	P	V
			5148.72	41.59	-12.41	54	33.03	32.9	12.91	37.78	250	95	A	V
	*		5220	113.54	-	-	104.9	32.96	12.99	37.83	250	95	P	V
	*		5220	106.71	-	-	98.07	32.96	12.99	37.83	250	95	A	V
			5391.96	48.12	-25.88	74	39.43	32.87	13.25	37.95	250	95	P	V
			5454.96	37.95	-16.05	54	29.14	32.99	13.32	38	250	95	A	V
														V
														V
													V	
													V	
													V	
													V	
Remark	1. No other spurious found. 2. All results are PASS against limit line.													



2.4GHz 2400~2483.5MHz + Band 1 - 5150~5250MHz + LTE Band 5 Link
 802.11b_Tx_Ch06 + 802.11a_Tx_Ch44 + LTE Band 5 (Harmonic @ 3m)

Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
Simultaneously	(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b Ch06 + 802.11a Ch44 + LTE Band 5	4042	55.78	-18.22	74	49.75	30.8	11.68	37.18	250	34	P	H
	4042	46.73	-7.27	54	40.7	30.8	11.68	37.18	250	34	A	H
	4874	47.18	-26.82	74	39.18	32.5	12.55	37.56	-	-	P	H
	5758	54.63	-13.57	68.2	44.64	33.83	13.7	37.97	250	66	P	H
	6958	56	-12.2	68.2	42.74	35.92	15.08	38.32	350	351	P	H
	7311	55.99	-18.01	74	41	36.9	15.44	38.61	299	351	P	H
	7311	48.44	-5.56	54	33.45	36.9	15.44	38.61	299	351	A	H
	10440	50.62	-17.58	68.2	34.33	38.74	18.51	41.47	-	-	P	H
	15660	52.49	-21.51	74	35.81	37.92	22.91	44.62	200	12	P	H
	15660	41.21	-12.79	54	24.53	37.92	22.91	44.62	200	12	A	H
												H
												H
	4042	56.06	-17.94	74	50.03	30.8	11.68	37.18	150	56	P	V
	4042	48.1	-5.9	54	42.07	30.8	11.68	37.18	150	56	A	V
	4874	47.85	-26.15	74	39.85	32.5	12.55	37.56	-	-	P	V
	5758	54.67	-13.53	68.2	44.68	33.83	13.7	37.97	350	25	P	V
	6958	54.18	-14.02	68.2	40.92	35.92	15.08	38.32	300	108	P	V
	7311	56.73	-17.27	74	41.74	36.9	15.44	38.61	264	349	P	V
	7311	50.33	-3.67	54	35.34	36.9	15.44	38.61	264	349	A	V
	10440	50.88	-17.32	68.2	34.59	38.74	18.51	41.47	-	-	P	V
15660	52.79	-21.21	74	36.11	37.92	22.91	44.62	100	42	P	V	
15660	41.2	-12.8	54	24.52	37.92	22.91	44.62	100	42	A	V	
											V	
											V	
Remark	1. No other spurious found. 2. All results are PASS against limit line. 3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.											



Bluetooth-LE + 2.4GHz 2400~2483.5MHz + Band 1 - 5150~5250MHz + LTE Band 5 Link

Bluetooth-LE (2M) (Band edge @ 3m)

BLE Ant 6	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
BLE CH 39 2480MHz	*	2480	98.78	-	-	87.99	27.62	8.86	36.27	399	339	P	H
	*	2480	97.24	-	-	86.45	27.62	8.86	36.27	399	339	A	H
		2496.36	54.95	-19.05	74	44.07	27.69	8.89	36.28	399	339	P	H
		2496.2	46.15	-7.85	54	35.28	27.68	8.89	36.28	399	339	A	H
													H
													H
													H
													H
													H
													H
													H
													H
	*	2480	99.4	-	-	88.61	27.62	8.86	36.27	100	29	P	V
	*	2480	97.9	-	-	87.11	27.62	8.86	36.27	100	29	A	V
		2493.32	52.14	-21.86	74	41.29	27.67	8.88	36.28	100	29	P	V
		2496.28	43.16	-10.84	54	32.28	27.69	8.89	36.28	100	29	A	V
													V
													V
													V
													V
												V	
												V	
												V	
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Bluetooth-LE + 2.4GHz 2400~2483.5MHz + Band 1 - 5150~5250MHz + LTE Band 5 Link
 WIFI 802.11b (Band edge @ 3m)

WIFI Ant 7	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		2377.36	52.9	-21.1	74	42.67	27.21	8.67	36.24	400	260	P	H
		2377.68	41.92	-12.08	54	31.69	27.21	8.67	36.24	400	260	A	H
	*	2437	108.93	-	-	98.36	27.45	8.78	36.26	400	260	P	H
	*	2437	105.62	-	-	95.05	27.45	8.78	36.26	400	260	A	H
		2496.64	52.14	-21.86	74	41.26	27.69	8.89	36.28	400	260	P	H
		2496.32	40.81	-13.19	54	29.93	27.69	8.89	36.28	400	260	A	H
													H
													H
													H
													H
													H
													H
802.11b													H
CH 06													H
2437MHz		2377.84	51.05	-22.95	74	40.82	27.21	8.67	36.24	264	0	P	V
		2377.84	40.35	-13.65	54	30.12	27.21	8.67	36.24	264	0	A	V
	*	2437	110.64	-	-	100.07	27.45	8.78	36.26	264	0	P	V
	*	2437	107.38	-	-	96.81	27.45	8.78	36.26	264	0	A	V
		2496.48	63.03	-10.97	74	52.15	27.69	8.89	36.28	264	0	P	V
		2496.24	50.3	-3.7	54	39.43	27.68	8.89	36.28	264	0	A	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Bluetooth-LE + 2.4GHz 2400~2483.5MHz + Band 1 - 5150~5250MHz + LTE Band 5 Link
 WIFI 802.11a (Band edge @ 3m)

WIFI Ant. 6+7	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5144.56	54.42	-19.58	74	45.84	32.91	12.91	37.77	295	0	P	H
		5149.5	43.06	-10.94	54	34.5	32.9	12.91	37.78	295	0	A	H
		4042	53.27	-20.73	74	47.24	30.8	11.68	37.18	295	0	P	H
		4042	49.41	-4.59	54	43.38	30.8	11.68	37.18	295	0	A	H
	*	5220	115.01			106.37	32.96	12.99	37.83	295	0	P	H
	*	5220	107.61			98.97	32.96	12.99	37.83	295	0	A	H
		5445.72	47.45	-26.55	74	38.64	32.99	13.31	37.99	295	0	P	H
		5455.24	38.4	-15.6	54	29.59	32.99	13.32	38	295	0	A	H
													H
													H
													H
													H
802.11a													
CH 44													
5220MHz		5149.5	59.71	-14.29	74	51.15	32.9	12.91	37.78	100	357	P	V
		5150	48.66	-5.34	54	40.11	32.9	12.91	37.78	100	357	A	V
		4042	46.27	-27.73	74	40.24	30.8	11.68	37.18	100	357	P	V
		4042	39.79	-14.21	54	33.76	30.8	11.68	37.18	100	357	A	V
	*	5220	117.61			108.97	32.95	13	37.83	100	357	P	V
	*	5220	111.75			103.11	32.95	13	37.83	100	357	A	V
		5354.16	49.06	-24.94	74	40.55	32.72	13.19	37.92	100	357	P	V
		5354.16	39.63	-14.37	54	31.12	32.72	13.19	37.92	100	357	A	V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Bluetooth-LE + 2.4GHz 2400~2483.5MHz + Band 1 - 5150~5250MHz + LTE Band 5 Link

Bluetooth-LE (2M)_Tx_Ch39 + 802.11b_Tx_Ch06 + 802.11a_Tx_Ch44 + LTE Band 5 Link (Harmonic @ 3m)

	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
Simultaneously		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BLE_Tx_Ch39 + 802.11b Ch06 + 802.11a Ch44 + LTE Band 5		4042	55.67	-18.33	74	49.64	30.8	11.68	37.18	350	331	P	H
		4042	48.78	-5.22	54	42.75	30.8	11.68	37.18	350	331	A	H
		4874	47.85	-26.15	74	39.85	32.5	12.55	37.56	-	-	P	H
		4960	47.98	-26.02	74	39.44	32.94	12.7	37.63	-	-	P	H
		5758	54.38	-13.82	68.2	44.39	33.83	13.7	37.97	300	322	P	H
		6958	54.87	-13.33	68.2	41.61	35.92	15.08	38.32	150	42	P	H
		7311	51.04	-22.96	74	36.05	36.9	15.44	38.61	312	225	P	H
		7311	41.44	-12.56	54	26.45	36.9	15.44	38.61	312	225	A	H
		7440	49.04	-24.96	74	34.41	36.52	15.59	38.71	100	256	P	H
		7440	40.7	-13.3	54	26.07	36.52	15.59	38.71	100	256	A	H
		10440	52.94	-15.26	68.2	36.65	38.74	18.51	41.47	-	-	P	H
		15660	52.45	-21.55	74	35.77	37.92	22.91	44.62	178	196	P	H
		15660	43.9	-10.1	54	27.22	37.92	22.91	44.62	178	196	A	H
		4042	56.72	-17.28	74	50.69	30.8	11.68	37.18	200	254	P	V
		4042	50.26	-3.74	54	44.23	30.8	11.68	37.18	200	254	A	V
		4874	47.53	-26.47	74	39.53	32.5	12.55	37.56	-	-	P	V
		4960	47.8	-26.2	74	39.26	32.94	12.7	37.63	-	-	P	V
		5758	54.92	-13.28	68.2	44.93	33.83	13.7	37.97	200	305	P	V
		6958	56.59	-11.61	68.2	43.33	35.92	15.08	38.32	150	342	P	V
		7311	50.2	-23.8	74	35.21	36.9	15.44	38.61	200	355	P	V
	7311	41.37	-12.63	54	26.38	36.9	15.44	38.61	200	355	A	V	
	7440	49.79	-24.21	74	35.16	36.52	15.59	38.71	312	155	P	V	
	7440	41.17	-12.83	54	26.54	36.52	15.59	38.71	312	155	A	V	
	10440	52.99	-15.21	68.2	36.7	38.74	18.51	41.47	-	-	P	V	
	15660	51.67	-22.33	74	34.99	37.92	22.91	44.62	100	115	P	V	
	15660	43.89	-10.11	54	27.21	37.92	22.91	44.62	100	115	A	V	
Remark	1. No other spurious found. 2. All results are PASS against limit line. 3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.												



Emission below 1GHz

802.11b_Tx_Ch06 + 802.11a_Tx_Ch44 + LTE Band 5 Link (LF @ 3m)

Ant. Simultaneously	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)	
802.11b Ch06 + 802.11a Ch44 LF + LTE Band 5		30	28.97	-11.03	40	28.45	25.01	1	35.76	100	271	Q	H	
		133.87	29.16	-14.34	43.5	34.73	17.83	2.16	35.62	-	-	P	H	
		181.64	28.91	-14.59	43.5	36.8	15.08	2.5	35.53	-	-	P	H	
		404	33.57	-12.43	46	32.77	21.99	3.66	34.97	-	-	P	H	
		656	39.71	-6.29	46	32.69	26.51	4.61	34.28	-	-	P	H	
		942.4	40.07	-5.93	46	27.11	30.38	5.48	33.15	300	233	Q	H	
														H
														H
														H
														H
														H
			32.38	28.29	-11.71	40	28.94	23.88	1.04	35.76	100	102	Q	V
			41.73	32.55	-7.45	40	38.27	18.73	1.23	35.75	-	-	P	V
			129.11	28.97	-14.53	43.5	34.68	17.73	2.12	35.63	-	-	P	V
			262.4	31.71	-14.29	46	33.81	20.25	2.97	35.37	-	-	P	V
			734.4	36.98	-9.02	46	27.85	28.04	4.87	33.96	200	315	Q	V
			950.4	40.36	-5.64	46	26.94	30.79	5.5	33.13	300	11	Q	V
														V
													V	
													V	
													V	
													V	
													V	
Remark	1. No other spurious found. 2. All results are PASS against limit line. 3. The emission position marked as "-" means no suspected emission found and emission level has at least 6dB margin against limit or emission is noise floor only.													



Emission above 18GHz

802.11b_Tx_Ch06 + 802.11a_Tx_Ch44 + LTE Band 5 Link (SHF @ 1m)

Ant. Simultaneously	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)	
802.11b Ch06 + 802.11a Ch44 + LTE Band 5 10M SHF		38908	50.6	-23.4	74	40.51	44.85	36.71	61.93	-	-	P	H	
		38908	40.52	-13.48	54	30.43	44.85	36.71	61.93	-	-	A	H	
													H	
													H	
													H	
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													H	
			38614	50.38	-23.62	74	40.3	44.34	36.69	61.41	-	-	P	V
			38614	40.37	-13.63	54	30.29	44.34	36.69	61.41	-	-	A	V
													V	
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													V	
													V	
													V	
Remark	1. No other spurious found. 2. All results are PASS against limit line. 3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.													



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 Margin line.
P/A	Peak or Average
H/V	Horizontal or Vertical



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

WIFI Ant. 6+7	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11b CH 01 2412MHz		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

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. Margin(dB) = Level(dBμV/m) – Limit Line(dBμV/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. Margin(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 55.45(dBμV/m) – 74(dBμV/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(dBμV) – 35.86 (dB)
= 43.54 (dBμV/m)
2. Margin (dB) = Level(dBμV/m) – Limit Line(dBμV/m)
= 43.54(dBμV/m) – 54(dBμV/m)
= -10.46(dB)

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



Appendix B. Radiated Spurious Emission Plots

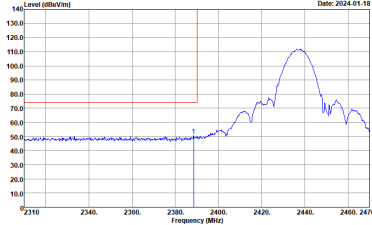
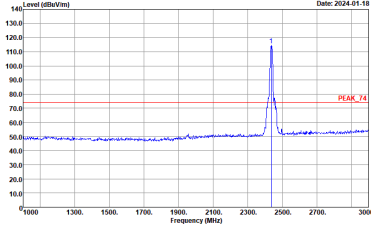
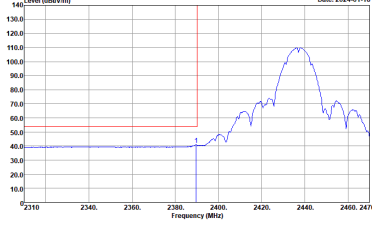
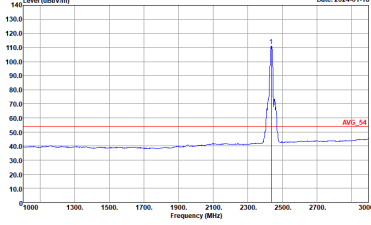
Test Engineer :	John Chuang, David Dai and Howard Huang	Temperature :	18.9~23.4°C
		Relative Humidity :	65.7~69.9%

Note symbol

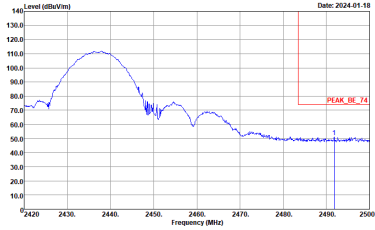
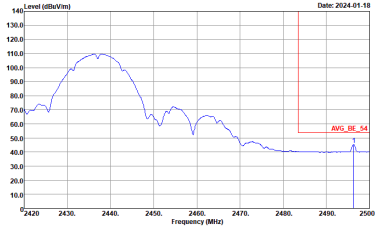
-L	Low channel location
-R	High channel location



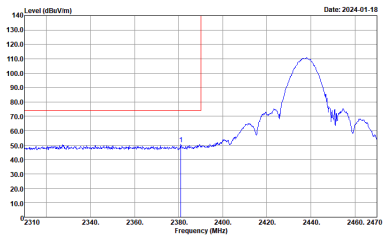
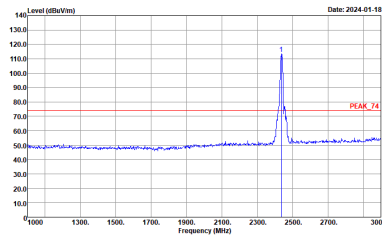
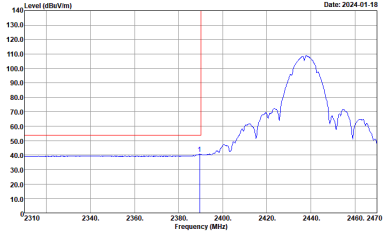
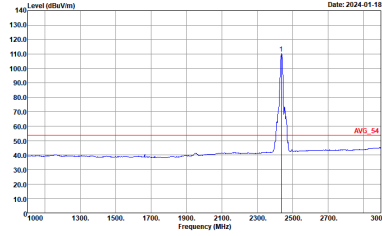
2.4GHz 2400~2483.5MHz + Band 1 - 5150~5250MHz + LTE Band 5 Link
 WIFI 802.11b (Band Edge @ 3m)

WLAN	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b_Tx_Ch06 2437MHz - L	
6+7	Horizontal	Fundamental
Peak	 <p>Date: 2024-01-18</p> <p>Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Date: 2024-01-18</p> <p>Site : 03CH20-HY Condition : PEAK_74 3m 91200_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Date: 2024-01-18</p> <p>Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:0.200KHz SWT:Auto</p>	 <p>Date: 2024-01-18</p> <p>Site : 03CH20-HY Condition : AVG_54 3m 91200_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:0.200KHz SWT:Auto</p>

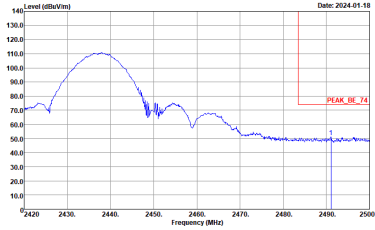
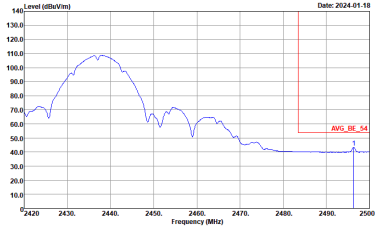


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b_Tx_Ch06 2437MHz - L	
6+7	Horizontal	Fundamental
Peak	 <p>Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank
Avg.	 <p>Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>	Left blank



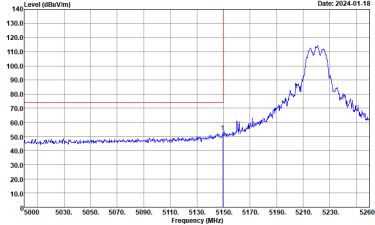
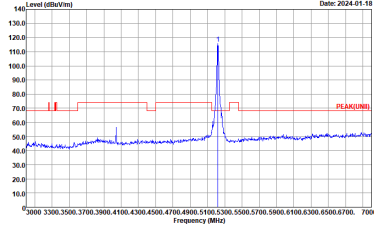
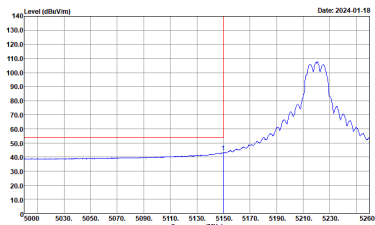
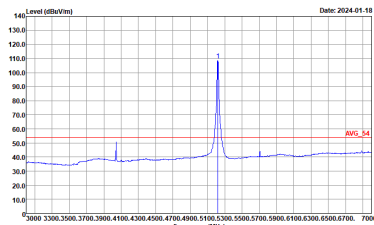
WLAN	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b_Tx_Ch06 2437MHz - L	
6+7	Vertical	Fundamental
Peak	 <p>Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02360_231030 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH20-HY Condition : PEAK_F4 3m 91200_02360_231030 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_02360_231030 VERTICAL : RBW:1000.000KHz VBW:0.200KHz SWT:Auto</p>	 <p>Site : 03CH20-HY Condition : AVG_F4 3m 91200_02360_231030 VERTICAL : RBW:1000.000KHz VBW:0.200KHz SWT:Auto</p>



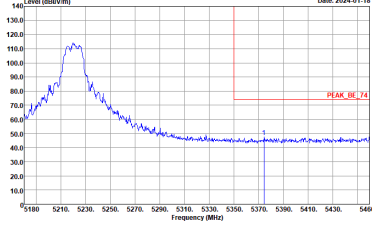
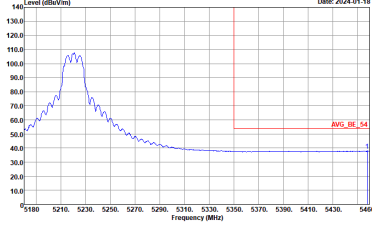
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b_Tx_Ch06 2437MHz - L	
6+7	Vertical	Fundamental
Peak	 <p>Date: 2024-01-18</p> <p>Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02360_231030 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank
Avg.	 <p>Date: 2024-01-18</p> <p>Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_02360_231030 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank



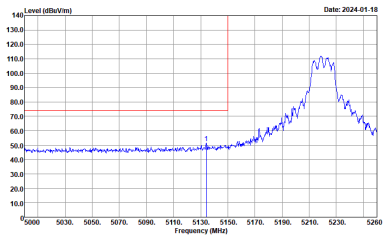
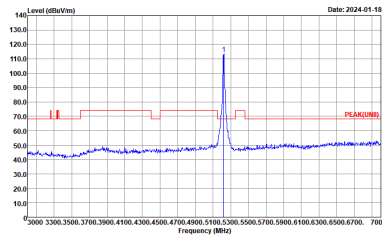
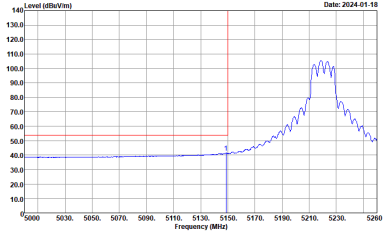
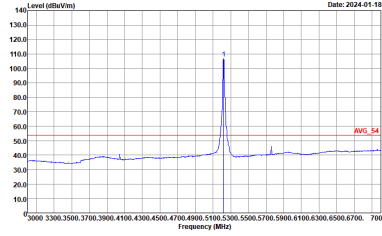
2.4GHz 2400~2483.5MHz + Band 1 - 5150~5250MHz + LTE Band 5 Link
 WIFI 802.11a (Band Edge @ 3m)

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a_Tx_Ch44 5220MHz	
6+7	Horizontal	Fundamental
Peak	 <p>Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH20-HY Condition : PEAK(UNL) 3m 91200_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:0.620KHz SWT:Auto</p>	 <p>Site : 03CH20-HY Condition : AVG_54 3m 91200_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:0.620KHz SWT:Auto</p>



WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a_Tx_Ch44 5220MHz	
6+7	Horizontal	Fundamental
<p>Peak</p>	 <p>Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Left blank</p>
<p>Avg.</p>	 <p>Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Left blank</p>



WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a_Tx_Ch44 5220MHz	
6+7	Vertical	Fundamental
Peak	 <p>Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02360_231030 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH20-HY Condition : PEAK(FUNDF) 3m 91200_02360_231030 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_02360_231030 VERTICAL : RBW:1000.000KHz VBW:0.620KHz SWT:Auto</p>	 <p>Site : 03CH20-HY Condition : AVG_54 3m 91200_02360_231030 VERTICAL : RBW:1000.000KHz VBW:0.620KHz SWT:Auto</p>



WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a_Tx_Ch44 5220MHz	
6+7	Vertical	Fundamental
<p>Peak</p>		<p>Left blank</p>
<p>Avg.</p>		<p>Left blank</p>



2.4GHz 2400~2483.5MHz + Band 1 - 5150~5250MHz + LTE Band 5 Link
802.11b_Tx_Ch06 + 802.11a_Tx_Ch44 + LTE Band 5 10M (Harmonic @ 3m)

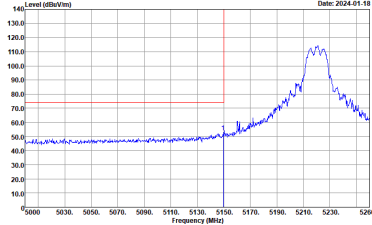
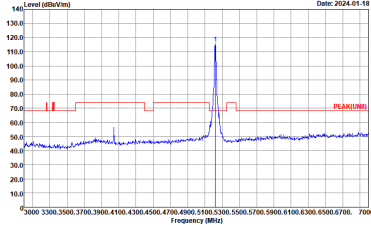
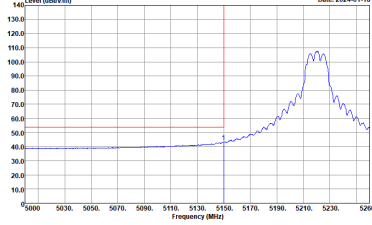
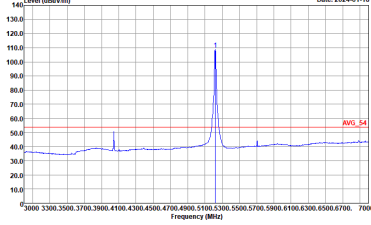
2.4GHz 2400~2483.5MHz +Band 1 5150~5250MHz Harmonic @ 3m		
Ant.	802.11b_Tx_Ch06 + 802.11a_Tx_Ch44 + LTE B5	
Simultaneously	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH20-HY Condition : :PEAK(UNIT) 3m 9120D_02360_231030 HORIZONTAL</p>	<p>Site : 03CH20-HY Condition : :PEAK(UNIT) 3m 9120D_02360_231030 VERTICAL</p>



		2.4GHz 2400~2483.5MHz +Band 1 5150~5250MHz Harmonic @ 3m	
Ant.	802.11b_Tx_Ch06 + 802.11a_Tx_Ch44 + LTE B5		
Simultaneously	Horizontal	Vertical	
<p>14.47G</p> <p>~14.5G</p> <p>Avg.</p>			
<p>17.7G</p> <p>~18G</p> <p>Avg</p>			



Bluetooth-LE + 2.4GHz 2400~2483.5MHz + Band 1 - 5150~5250MHz + LTE Band 5 Link
 WIFI 802.11a (Band Edge @ 3m)

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a_Tx_Ch44 5220MHz	
6+7	Horizontal	Fundamental
Peak	 <p>Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH20-HY Condition : PEAK(NEE) 3m 91200_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:0.620KHz SWT:Auto</p>	 <p>Site : 03CH20-HY Condition : AVG_54 3m 91200_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:0.620KHz SWT:Auto</p>



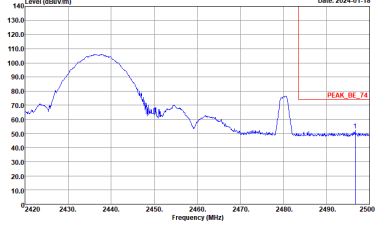
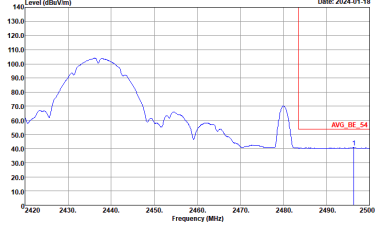
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a_Tx_Ch44 5220MHz	
6+7	Horizontal	Fundamental
<p>Peak</p>	<p>Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Left blank</p>
<p>Avg.</p>	<p>Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:0.620KHz SWT:Auto</p>	<p>Left blank</p>



Bluetooth-LE + 2.4GHz 2400~2483.5MHz + Band 1 - 5150~5250MHz + LTE Band 5 Link
 WIFI 802.11b (Band Edge @ 3m)

WLAN	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b_Tx_Ch06 2437MHz - L	
7	Horizontal	Fundamental
Peak	<p>Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH20-HY Condition : PEAK_74 3m 91200_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	<p>Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:0.200KHz SWT:Auto</p>	<p>Site : 03CH20-HY Condition : AVG_54 3m 91200_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:0.200KHz SWT:Auto</p>

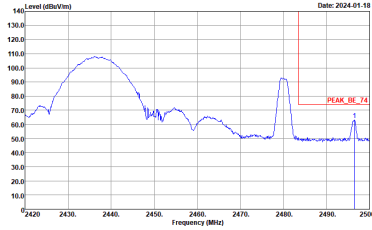
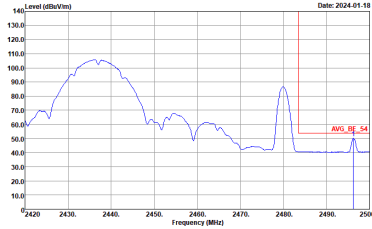


WLAN	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b_Tx_Ch06 2437MHz - L	
7	Horizontal	Fundamental
Peak	 <p>Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank
Avg.	 <p>Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>	Left blank



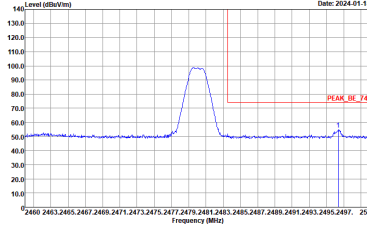
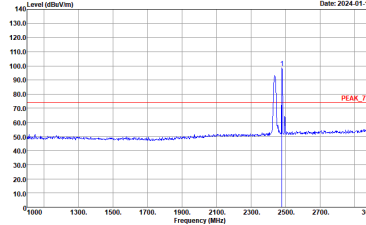
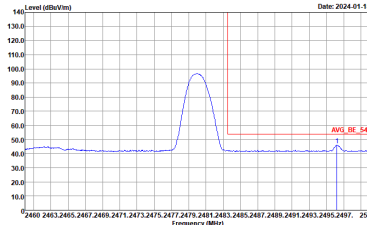
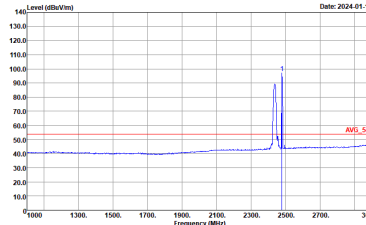
WLAN	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b_Tx_Ch06 2437MHz - L	
7	Vertical	Fundamental
Peak	<p>Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02360_231030 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH20-HY Condition : PEAK_74 3m 91200_02360_231030 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
	<p>Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_02360_231030 VERTICAL : RBW:1000.000KHz VBW:0.200KHz SWT:Auto</p>	<p>Site : 03CH20-HY Condition : AVG_54 3m 91200_02360_231030 VERTICAL : RBW:1000.000KHz VBW:0.200KHz SWT:Auto</p>



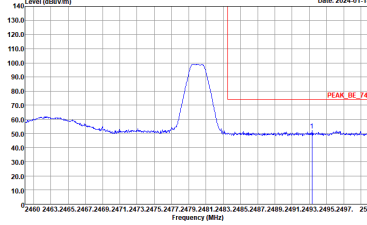
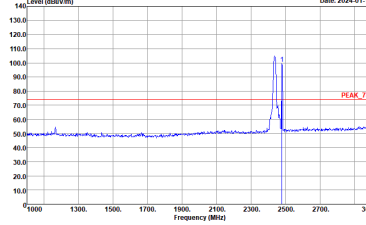
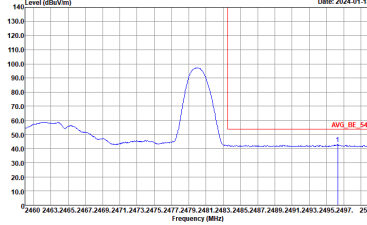
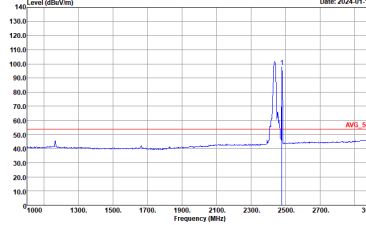
WLAN	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b_Tx_Ch06 2437MHz - L	
7	Vertical	Fundamental
Peak	 <p>Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02360_231030 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank
Avg.	 <p>Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_02360_231030 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>	Left blank



Bluetooth-LE + 2.4GHz 2400~2483.5MHz + Band 1 - 5150~5250MHz + LTE Band 5 Link
 Bluetooth-LE (2M)_Tx_Ch39 (Band Edge @ 3m)

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE_Tx_Ch39	
6	Horizontal	Fundamental
Peak	 <p>Level (dBm/100Hz) vs Frequency (MHz) plot showing a peak at approximately 2475 MHz. The peak level is around 100 dBm/100Hz. A red line indicates the peak level at 100.0 dBm/100Hz. The plot includes a zoomed-in view of the peak.</p> <p>Date: 2024-01-18</p> <p>Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Level (dBm/100Hz) vs Frequency (MHz) plot showing a peak at approximately 2475 MHz. The peak level is around 100 dBm/100Hz. A red line indicates the peak level at 100.0 dBm/100Hz. The plot includes a zoomed-in view of the peak.</p> <p>Date: 2024-01-18</p> <p>Site : 03CH20-HY Condition : PEAK_74 3m 91200_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Level (dBm/100Hz) vs Frequency (MHz) plot showing a peak at approximately 2475 MHz. The peak level is around 100 dBm/100Hz. A red line indicates the average level at 100.0 dBm/100Hz. The plot includes a zoomed-in view of the peak.</p> <p>Date: 2024-01-18</p> <p>Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>	 <p>Level (dBm/100Hz) vs Frequency (MHz) plot showing a peak at approximately 2475 MHz. The peak level is around 100 dBm/100Hz. A red line indicates the average level at 100.0 dBm/100Hz. The plot includes a zoomed-in view of the peak.</p> <p>Date: 2024-01-18</p> <p>Site : 03CH20-HY Condition : AVG_54 3m 91200_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE_Tx_Ch39	
6	Vertical	Fundamental
Peak	 <p>Level (dBm/1m) vs Frequency (MHz) plot showing a peak at approximately 2475 MHz. The peak level is marked as PEAK_BE_74.</p> <p>Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02360_231030 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Level (dBm/1m) vs Frequency (MHz) plot showing a peak at approximately 2475 MHz. The peak level is marked as PEAK_74.</p> <p>Site : 03CH20-HY Condition : PEAK_74 3m 91200_02360_231030 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Level (dBm/1m) vs Frequency (MHz) plot showing an average level at approximately 2475 MHz. The average level is marked as AVG_BE_54.</p> <p>Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_02360_231030 VERTICAL : RBW:1000.000KHz VBW:5.000KHz SWT:Auto</p>	 <p>Level (dBm/1m) vs Frequency (MHz) plot showing an average level at approximately 2475 MHz. The average level is marked as AVG_54.</p> <p>Site : 03CH20-HY Condition : AVG_54 3m 91200_02360_231030 VERTICAL : RBW:1000.000KHz VBW:5.000KHz SWT:Auto</p>



Bluetooth-LE + 2.4GHz 2400~2483.5MHz + Band 1 - 5150~5250MHz + LTE Band 5 Link

Bluetooth-LE_Tx_(2M)_Ch39 + 802.11b_Tx_Ch06 + 802.11a_Tx_Ch44 + LTE Band 5 (Harmonic @ 3m)

		2.4GHz 2400~2483.5MHz +Band 1 5150~5250MHz Harmonic @ 3m	
Ant.		Bluetooth-LE_Tx_(2M)_Ch39 + 802.11b_Tx_Ch06 + 802.11a_Tx_Ch44 + LTE B5	
Simultaneously		Horizontal	Vertical
Peak	Avg.	<p>Site : 03CH20-HY Condition : :PEAK(UNIT) 3m 91200_02360_231030 HORIZONTAL</p>	<p>Site : 03CH20-HY Condition : :PEAK(UNIT) 3m 91200_02360_231030 VERTICAL</p>



2.4GHz 2400~2483.5MHz + Band 1 5150~5250MHz Harmonic @ 3m	
Ant.	Bluetooth-LE_Tx_(2M)_Ch39 + 802.11b_Tx_Ch06 + 802.11a_Tx_Ch44 + LTE B5
Simultaneously	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Horizontal</p> <p>Site : 03CH20-HY Condition : AV6_54 3m 91200_02360_231030 HORIZONTAL</p> </div> <div style="text-align: center;"> <p>Vertical</p> <p>Site : 03CH20-HY Condition : AV6_54 3m 91200_02360_231030 VERTICAL</p> </div> </div>
<p>14.47G ~14.5G Avg.</p>	
<p>17.7G ~18G Avg</p>	



Emission above 18GHz

802.11b_Tx_Ch06 + 802.11a_Tx_Ch44 + LTE Band 5 Link (SHF)

		2.4GHz 2400~2483.5MHz +Band 1 5150~5250MHz	
Ant.		802.11b_Tx_Ch06 + 802.11a_Tx_Ch44 + LTE Band 5 10M	
Simultaneously	Horizontal	Vertical	
<p>Peak</p> <p>Avg.</p>	<p>Site : 03CH20-HY Condition : PEAK(UNIT) 1m SHF_1224_230710 HORIZONTAL</p>	<p>Site : 03CH20-HY Condition : PEAK(UNIT) 1m SHF_1224_230710 VERTICAL</p>	



Emission below 1GHz

802.11b_Tx_Ch06 + 802.11a_Tx_Ch44 + LTE Band 5 Link (LF)

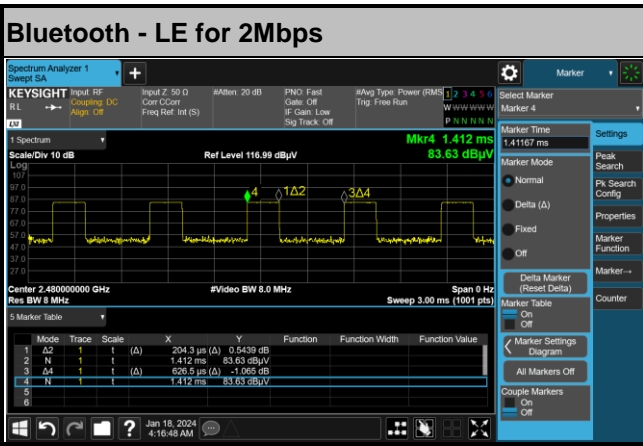
		2.4GHz 2400~2483.5MHz +Band 1 5150~5250MHz LF @ 3m	
Ant.		802.11b_Tx_Ch06 + 802.11a_Tx_Ch44 + LTE Band 5 10M	
Simultaneously		Horizontal	Vertical
QP / Peak		<p>Site : 03CH20-HY Condition : QP 3m LF_55606_231020_200 HORIZONTAL</p>	<p>Site : 03CH20-HY Condition : QP 3m LF_55606_231020_200 VERTICAL</p>



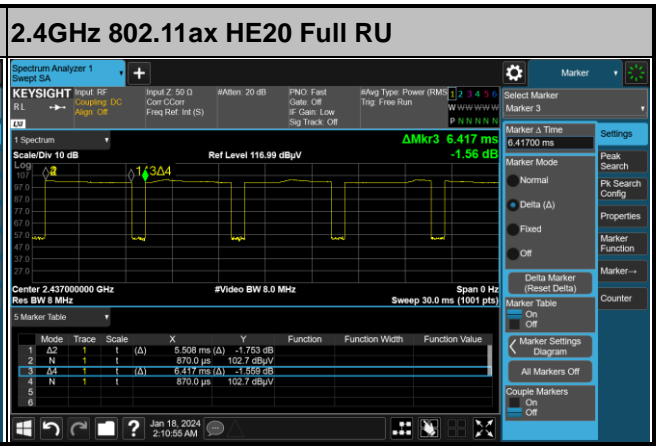
Appendix C. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
6	Bluetooth - LE for 2Mbps	32.64	204.3	4.89	5.1kHz
7	2.4GHz 802.11b	85.83	5508	0.18	200Hz
6+7	2.4GHz 802.11b	85.51	5490	0.18	200Hz
6+7	5GHz 802.11a	86.08	1725	0.58	620Hz

<Ant. 6>



<Ant. 7>



MIMO <Ant. 6+7>

