




FCC CO-LOCATION RADIO TEST REPORT

FCC ID : U8G-P1AX13
 Equipment : Peplink Pepwave Wireless Product
 Brand Name : 
 PEPWAVE
 Model Name : MAX HD1 Dome Pro
 MAX-HD1-DOM-PRO-5GH
 MAX HD2 Dome Pro
 MAX-HD2-DOM-PRO-LTEA-Q
 Applicant : PISMO LABS TECHNOLOGY LIMITED
 A8, 5/F, HK Spinners Industrial Building, Phase 6, 481
 Castle Peak Road, Cheung Sha Wan, Hong Kong
 Manufacturer : PISMO LABS TECHNOLOGY LIMITED
 A8, 5/F, HK Spinners Industrial Building, Phase 6, 481
 Castle Peak Road, Cheung Sha Wan, Hong Kong
 Standard : FCC Part 15 Subpart E §15.407

The product was received on Jun. 29, 2022 and testing was performed from Apr. 14, 2023 to Apr. 28, 2023. 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.

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	2.44 dB under the limit at 4810.000 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:

1. 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.
2. The purpose of different model name is for marketing purpose.

Reviewed by: Lewis Ho

Report Producer: Michelle Chen



1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
<p>General Specs LTE/5G NR, Wi-Fi 2.4GHz 802.11b/g/n/ac/ax, Wi-Fi 5GHz 802.11a/n/ac/ax, and GPS</p> <p>Antenna Type WWAN: Omni-directional Antenna WLAN: Omni-directional Antenna GPS: Directional Antenna</p> <p>Sample information Sample 1: MAX HD1 Dome Pro and MAX-HD1-DOM-PRO-5GH with WWAN Module 1 (EM9191) Sample 2: MAX HD2 Dome Pro and MAX-HD2-DOM-PRO-LTEA-Q with WWAN Module 2 (LN920A12-WW)</p>	
Integrated WWAN Module 1	<p>Brand Name: Sierra Model Name: EM9191 FCC ID: N7NEM91</p>
Integrated WWAN Module 2	<p>Brand Name: Telit Model Name: LN920A12-WW FCC ID: RI7LN920</p>

WLAN Antenna information		
2412 MHz ~ 2462 MHz	Peak Gain (dBi)	Ant. 5: 4.50 Ant. 6: 3.90
5150 MHz ~ 5250 MHz	Peak Gain (dBi)	Ant. 5: 5.90 Ant. 6: 4.90
5725 MHz ~ 5850 MHz	Peak Gain (dBi)	Ant. 5: 4.70 Ant. 6: 4.40

Remark:

- The above EUT's information was declared by manufacturer. Please refer to Disclaimer in report summary.
- After assessing, the test is performed by choosing WLAN 2.4G 11b CH06, WLAN 5G 11a CH44 Maximum power and WWAN Maximum power.

1.2 Modification of EUT

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



1.3 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. 03CH16-HY

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

FCC designation No.: TW3786

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 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.
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- ♦ 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).

2.1 Carrier Frequency and Channel

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

2.2 Test Mode

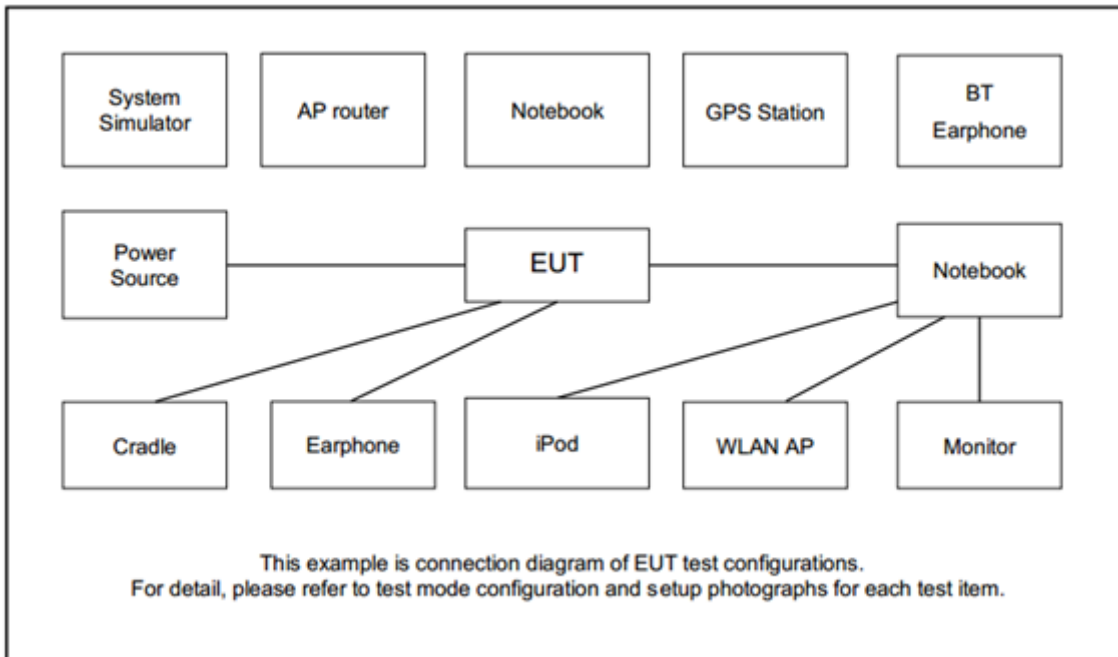
Final test modes are considering the modulation and worse data rates as below table.

<Co-Location>

Test Mode	Modulation	Data Rate
Mode 1	LTE Band 41 (CH40620) Link+ 802.11b_TX_Ch06 for MIMO <Ant. 5+6> + 802.11a_TX_Ch44 for MIMO <Ant. 5+6> for Sample 1	QPSK + 1 Mbps + 6 Mbps
Mode 2	LTE Band 41 (CH40620) Link + LTE Band 41 (CH41490) Link + 802.11b_TX_Ch06 for MIMO <Ant. 5+6> + 802.11a_TX_Ch44 for MIMO <Ant. 5+6> for Sample 2	QPSK + QPSK + 1 Mbps + 6 Mbps

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

2.3 Connection Diagram of Test System



2.4 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8821C	N/A	N/A	Unshielded, 1.8 m
2.	Notebook	Dell	Latitude5480	N/A	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
3.	Notebook	Lenovo	L570	N/A	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m

2.5 EUT Operation Test Setup

For WLAN test items, the EUT links with Notebook, and test program was provided and enabled EUT to transmit and receive signals continuously.



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

See list of measuring equipment of this test report.



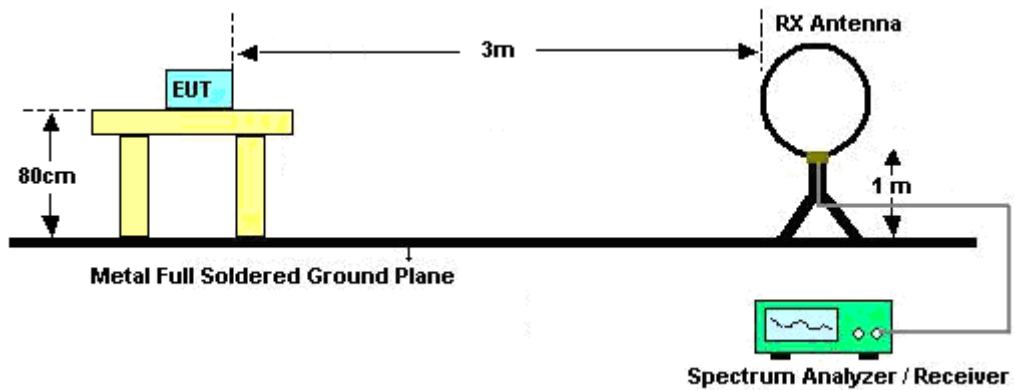
3.1.3 Test Procedures

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 "-".

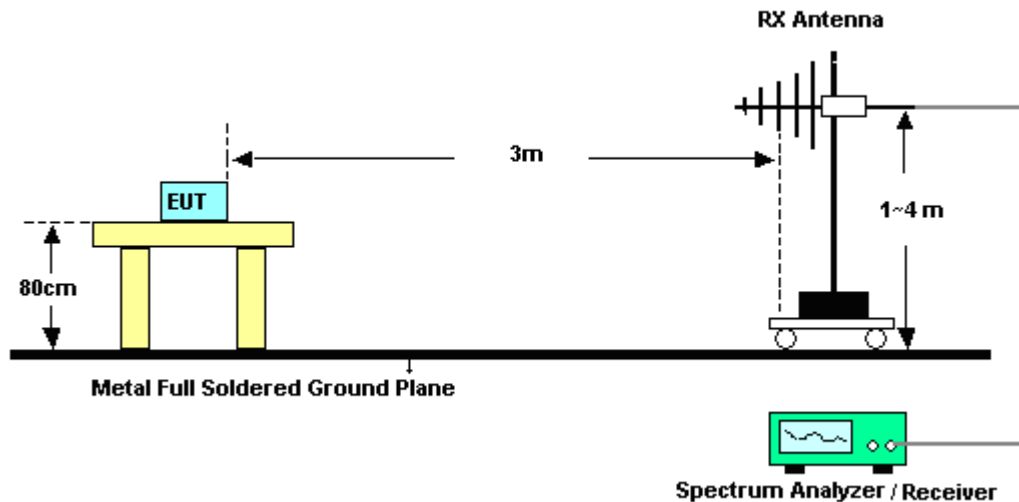
7. Radiated testing above 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading for scanning all frequencies. When there is no suspected emission found and the harmonic emission level is with at least 6 dB margin against average limit line, the position is marked as “-”.

3.1.4 Test Setup

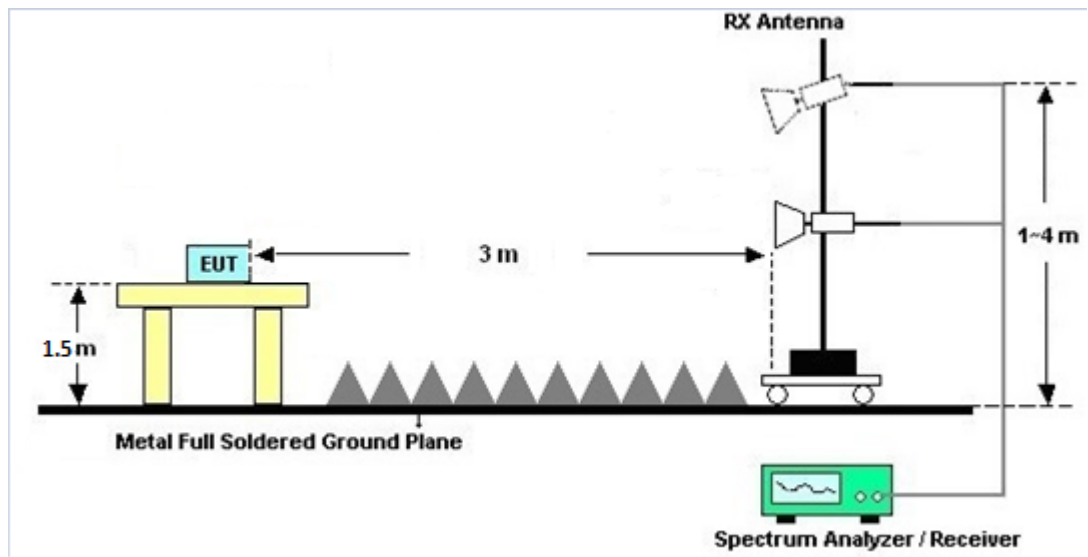
For radiated emissions below 30MHz



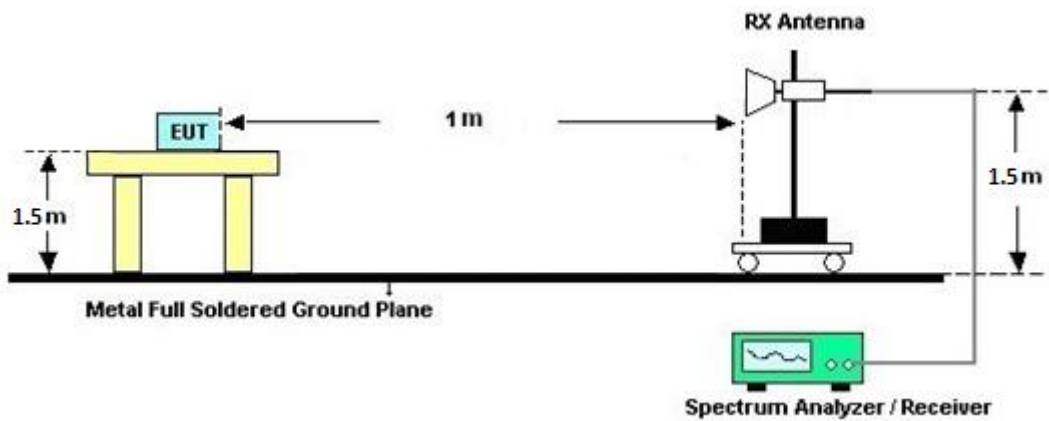
For radiated emissions from 30MHz to 1GHz



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 starts from 9 kHz to 30 MHz, is pre-scanned and the result which is 20 dB lower than the limit line is 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 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
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-02038	1GHz~18GHz	Aug. 09, 2022	Apr. 14, 2023~ Apr. 28, 2023	Aug. 08, 2023	Radiation (03CH16-HY)
Horn Antenna	SCHWARZBECK	SCHWARZBECK	BBHA 9120 D	9120D-1522	Mar. 23, 2023	Apr. 14, 2023~ Apr. 28, 2023	Mar. 22, 2024	Radiation (03CH16-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00802N1D01N-06	47020 & 06	30MHz~1GHz	Oct. 08, 2022	Apr. 14, 2023~ Apr. 28, 2023	Oct. 07, 2023	Radiation (03CH16-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Sep. 20, 2022	Apr. 14, 2023~ Apr. 28, 2023	Sep. 19, 2023	Radiation (03CH16-HY)
Preamplifier	EMEC	EM1G18G	060812	1GHz~18GHz	Dec. 26, 2022	Apr. 14, 2023~ Apr. 28, 2023	Dec. 25, 2023	Radiation (03CH16-HY)
Preamplifier	Keysight	83017A	MY53270264	1GHz~26.5GHz	Dec. 09, 2022	Apr. 14, 2023~ Apr. 28, 2023	Dec. 08, 2023	Radiation (03CH16-HY)
Amplifier	SONOMA	310N	371607	9kHz~1GHz	Jul. 04, 2022	Apr. 14, 2023~ Apr. 28, 2023	Jul. 03, 2023	Radiation (03CH16-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY57290111	3Hz~26.5GHz	Dec. 15, 2022	Apr. 14, 2023~ Apr. 28, 2023	Dec. 14, 2023	Radiation (03CH16-HY)
Spectrum Analyzer	Agilent	N9010A	MY53470118	10Hz~44GHz	Jan. 10, 2023	Apr. 14, 2023~ Apr. 28, 2023	Jan. 09, 2024	Radiation (03CH16 -HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	805935/4	N/A	Aug. 09, 2022	Apr. 14, 2023~ Apr. 28, 2023	Aug. 08, 2023	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	802434/4	N/A	Aug. 09, 2022	Apr. 14, 2023~ Apr. 28, 2023	Aug. 08, 2023	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	EC-A5-300-57 57	N/A	Aug. 09, 2022	Apr. 14, 2023~ Apr. 28, 2023	Aug. 08, 2023	Radiation (03CH16-HY)
Software	Audix	E3 6.2009-8-24	RK-001136	N/A	N/A	Apr. 14, 2023~ Apr. 28, 2023	N/A	Radiation (03CH16-HY)
Controller	ChainTek	3000-1	N/A	Control Turn table & Ant Mast	N/A	Apr. 14, 2023~ Apr. 28, 2023	N/A	Radiation (03CH16-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Apr. 14, 2023~ Apr. 28, 2023	N/A	Radiation (03CH16-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Apr. 14, 2023~ Apr. 28, 2023	N/A	Radiation (03CH16-HY)



5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	6.50 dB
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 6000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.6 dB
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Uncertainty of Radiated Emission Measurement (6000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.5 dB
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.6 dB
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Appendix A. Radiated Spurious Emission

Test Engineer :	Andy Yang, Gary Guo and Steven Wu	Temperature :	20~25°C
		Relative Humidity :	50~65%

<With EM9191 WWAN Module>

LTE Band 41 (CH40620) Link+ 802.11b_TX_Ch06 for MIMO <Ant. 5+6>

+ 802.11a_TX_Ch44 for MIMO <Ant. 5+6>

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI Ant. 5+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)
802.11b CH 06 2437MHz		2342.9	55.11	-18.89	74	41.13	27.2	17.26	30.48	313	72	P	H
		2367.4	42.46	-11.54	54	28.42	27.2	17.31	30.47	313	72	A	H
	*	2437	114.2	-	-	99.61	27.6	17.44	30.45	313	72	P	H
	*	2437	111.41	-	-	96.82	27.6	17.44	30.45	313	72	A	H
		2498.67	55.18	-18.82	74	40.28	27.8	17.53	30.43	313	72	P	H
		2485.16	43.68	-10.32	54	28.85	27.75	17.51	30.43	313	72	A	H
		2331.7	54.91	-19.09	74	41.03	27.12	17.24	30.48	313	52	P	V
		2375.66	42.42	-11.58	54	28.3	27.26	17.33	30.47	313	52	A	V
	*	2437	117.87	-	-	103.28	27.6	17.44	30.45	313	52	P	V
	*	2437	114.25	-	-	99.66	27.6	17.44	30.45	313	52	A	V
		2483.83	57.22	-16.78	74	42.41	27.74	17.51	30.44	313	52	P	V
		2486.49	44.56	-9.44	54	29.72	27.76	17.51	30.43	313	52	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 - 5150~5250MHz
WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
5+6		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 44 5220MHz		5034.58	53.26	-20.74	74	38.47	33.2	10.95	29.36	283	37	P	H
		5129.48	42.63	-11.37	54	28.12	33	10.96	29.45	283	37	A	H
	*	5220	106.9	-	-	92.5	32.96	10.98	29.54	283	37	P	H
	*	5220	96.93	-	-	82.53	32.96	10.98	29.54	283	37	A	H
		5390	52.65	-21.35	74	38.31	32.9	11.14	29.7	283	37	P	H
		5422.48	42.24	-11.76	54	27.88	32.9	11.19	29.73	283	37	A	H
		5041.34	52.78	-21.22	74	38	33.2	10.95	29.37	301	44	P	V
		5035.1	42.51	-11.49	54	27.72	33.2	10.95	29.36	301	44	A	V
	*	5220	107.05	-	-	92.65	32.96	10.98	29.54	301	44	P	V
	*	5220	95.2	-	-	80.8	32.96	10.98	29.54	301	44	A	V
		5428.92	53.35	-20.65	74	38.97	32.9	11.21	29.73	301	44	P	V
		5376.28	41.99	-12.01	54	27.64	32.9	11.13	29.68	301	44	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**802.11b_TX_Ch06 for MIMO <Ant. 5+6>
+ 802.11a_TX_Ch44 for MIMO <Ant. 5+6> (Harmonic @ 3m)**

WIFI 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 Tx_Ch06 2437MHz + 11a Tx_Ch44 5220MHz		4810	63.03	-10.97	74	47.87	32.36	12.34	29.54	300	214	P	H	
		4810	47.63	-6.37	54	32.47	32.36	12.34	29.54	300	214	A	H	
		4874	54.64	-19.36	74	39.02	32.7	12.39	29.47	-	-	P	H	
		4874	44.76	-9.24	54	29.14	32.7	12.39	29.47	-	-	A	H	
		7311	43.85	-30.15	74	59.49	36.88	13.81	66.33	-	-	P	H	
		10440	47.01	-21.19	68.2	59.15	38.7	16.28	67.12	-	-	P	H	
		15660	46.54	-27.46	74	56.2	37.26	19.87	66.79	-	-	P	H	
														H
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			4810	70.36	-3.64	74	55.2	32.36	12.34	29.54	300	57	P	V
			4810	51.56	-2.44	54	36.4	32.36	12.34	29.54	300	57	A	V
			4874	56.02	-17.98	74	40.4	32.7	12.39	29.47	-	-	P	V
			4874	44.75	-9.25	54	29.13	32.7	12.39	29.47	-	-	A	V
			7311	44.29	-29.71	74	59.93	36.88	13.81	66.33	-	-	P	V
			10440	47.05	-21.15	68.2	59.19	38.7	16.28	67.12	-	-	P	V
			15660	46.93	-27.07	74	56.59	37.26	19.87	66.79	-	-	P	V
														V
													V	
													V	
													V	
													V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line. 3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.													



Emission above 18GHz

LTE Band 41 (CH40620) Link + 802.11b_TX_Ch06 for MIMO <Ant. 5+6>
 + 802.11a_TX_Ch44 for MIMO <Ant. 5+6> (SHF @ 1m)

WIFI Ant.	Note	Frequency	Level	Margin	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
Simultaneously		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
LTE Band 41 + 11b_Ch06 + 11a_Ch44 SHF		24680	38.47	-29.73	68.2	55.23	39.06	-2.53	53.29	-	-	P	H
		30004	40.26	-27.94	68.2	57.21	40.4	-1.95	55.4	-	-	P	H
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			19056	36.76	-37.24	74	57.4	38.06	-3.42	55.28	-	-	P
		33588	40.93	-27.27	68.2	58.99	40.99	-1.44	57.61	-	-	P	V
													V
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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 for MIMO <Ant. 5+6>
+ 802.11a_TX_Ch44 for MIMO <Ant. 5+6> (LF @ 3m)

WIFI 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 Tx_Ch06 2437MHz + 11a Tx_Ch44 5220MHz LF		157.17	37.47	-6.03	43.5	51.1	16.74	1.92	32.29	242	80	Q	H	
		191.73	38.77	-4.73	43.5	54.12	14.84	2.12	32.31	102	300	Q	H	
		240.33	36.97	-9.03	46	49.55	17.36	2.39	32.33	-	-	P	H	
		402.2	38.76	-7.24	46	46.12	21.96	3.08	32.4	218	300	Q	H	
		484.8	38.56	-7.44	46	44.07	23.63	3.39	32.53	-	-	P	H	
		554.1	36.79	-9.21	46	40.22	25.54	3.63	32.6	-	-	P	H	
														H
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			34.59	31.31	-8.69	40	40.72	22.23	0.56	32.2	-	-	P	H
			115.86	31.34	-12.16	43.5	44.71	17.27	1.65	32.29	-	-	P	V
			205.5	36.56	-6.94	43.5	51.64	15.04	2.19	32.31	163	80	Q	V
			408.5	37.17	-8.83	46	44.23	22.25	3.1	32.41	-	-	P	V
			484.8	39.87	-6.13	46	45.38	23.63	3.39	32.53	-	-	P	V
			553.4	38.67	-7.33	46	42.16	25.48	3.63	32.6	-	-	P	V
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Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against limit line. 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. 													



<With LN920A12 WWAN Module>

LTE Band 41 (CH40620) Link + LTE Band 41 (CH41490) Link +

802.11b_TX_Ch06 for MIMO <Ant. 5+6> + 802.11a_TX_Ch44 for MIMO <Ant. 5+6>

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI Ant. 5+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)
802.11b CH 06 2437MHz		2385.88	55.02	-18.98	74	40.78	27.36	17.35	30.47	138	233	P	H
		2371.18	43.34	-10.66	54	29.28	27.21	17.32	30.47	138	233	A	H
	*	2437	115.52	-	-	100.93	27.6	17.44	30.45	138	233	P	H
	*	2437	111.76	-	-	97.17	27.6	17.44	30.45	138	233	A	H
		2486.63	56.25	-17.75	74	41.4	27.77	17.51	30.43	138	233	P	H
		2486.77	46.8	-7.2	54	31.95	27.77	17.51	30.43	138	233	A	H
		2387.42	54.05	-19.95	74	39.8	27.37	17.35	30.47	328	209	P	V
		2389.1	43.42	-10.58	54	29.14	27.39	17.36	30.47	328	209	A	V
	*	2437	118.7	-	-	104.12	27.6	17.43	30.45	328	209	P	V
	*	2437	114.03	-	-	99.45	27.6	17.43	30.45	328	209	A	V
		2486.77	56.81	-17.19	74	41.96	27.77	17.51	30.43	328	209	P	V
		2486.7	47.96	-6.04	54	33.11	27.77	17.51	30.43	328	209	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 - 5150~5250MHz
WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
5+6		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 44 5220MHz		5056.16	53.84	-20.16	74	39.09	33.18	10.95	29.38	200	35	P	H
		5107.12	43.98	-10.02	54	29.45	33	10.96	29.43	200	35	A	H
	*	5220	106.55	-	-	92.15	32.96	10.98	29.54	200	35	P	H
	*	5220	93.07	-	-	78.67	32.96	10.98	29.54	200	35	A	H
		5429.48	53.73	-20.27	74	39.35	32.9	11.21	29.73	200	35	P	H
		5351.92	42.22	-11.78	54	27.88	32.9	11.1	29.66	200	35	A	H
		5004.42	53.57	-20.43	74	38.75	33.2	10.95	29.33	301	44	P	V
		5083.2	42.56	-11.44	54	27.95	33.07	10.95	29.41	301	44	A	V
	*	5220	108.73	-	-	94.33	32.96	10.98	29.54	301	44	P	V
	*	5220	95.29	-	-	80.89	32.96	10.98	29.54	301	44	A	V
		5446	53.38	-20.62	74	38.99	32.9	11.24	29.75	301	44	P	V
		5443.2	42.22	-11.78	54	27.83	32.9	11.24	29.75	301	44	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**802.11b_TX_Ch06 for MIMO <Ant. 5+6>
+ 802.11a_TX_Ch44 for MIMO <Ant. 5+6> (Harmonic @ 3m)**

WIFI 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 Tx_Ch06 2437MHz + 11a Tx_Ch44 5220MHz		4810	63.05	-10.95	74	47.89	32.36	12.34	29.54	300	24	P	H	
		4810	46.43	-7.57	54	31.27	32.36	12.34	29.54	300	24	A	H	
		4874	55.23	-18.77	74	39.61	32.7	12.39	29.47	-	-	P	H	
		4874	44.92	-9.08	54	29.3	32.7	12.39	29.47	-	-	A	H	
		7311	44.6	-29.4	74	60.24	36.88	13.81	66.33	-	-	P	H	
		10440	46.35	-21.85	68.2	58.49	38.7	16.28	67.12	-	-	P	H	
		15660	46.39	-27.61	74	56.05	37.26	19.87	66.79	-	-	P	H	
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														H
			4810	64.03	-9.97	74	48.87	32.36	12.34	29.54	392	332	P	V
			4810	50.63	-3.37	54	35.47	32.36	12.34	29.54	392	332	A	V
			4874	53.78	-20.22	74	38.16	32.7	12.39	29.47	-	-	P	V
			4874	44.89	-9.11	54	29.27	32.7	12.39	29.47	-	-	A	V
			7311	43.8	-30.2	74	59.44	36.88	13.81	66.33	-	-	P	V
			10440	47.8	-20.4	68.2	59.94	38.7	16.28	67.12	-	-	P	V
			15660	46.49	-27.51	74	56.15	37.26	19.87	66.79	-	-	P	V
														V
													V	
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Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against Peak and Average limit line. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only. 													



Emission above 18GHz

LTE Band 41 (CH40620) Link + LTE Band 41 (CH41490) Link +
 802.11b_TX_Ch06 for MIMO <Ant. 5+6> + 802.11a_TX_Ch44 for MIMO <Ant. 5+6>
 (SHF @ 1m)

WIFI Ant.	Note	Frequency	Level	Margin	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
Simultaneously		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
LTE B41+11b_Ch06 + 11a_Ch44 SHF		21936	37.57	-30.63	68.2	57.45	38.07	-3.24	54.71	-	-	P	H
		29668	36.69	-31.51	68.2	52.66	41.33	-2.1	55.2	-	-	P	H
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			23264	37.96	-30.24	68.2	56.15	38.78	-2.78	54.19	-	-	P
		26980	37.17	-31.03	68.2	53.37	39.65	-2.36	53.49	-	-	P	V
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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

LTE Band 41 (CH40620) Link + LTE Band 41 (CH41490) Link +
 802.11b_TX_Ch06 for MIMO <Ant. 5+6>
 + 802.11a_TX_Ch44 for MIMO <Ant. 5+6> (LF @ 3m)

WIFI	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 Tx_Ch06 2437MHz + 11a Tx_Ch44 5220MHz LF		78.06	31.63	-8.37	40	49.52	13.12	1.28	32.29	-	-	P	H	
		157.17	37	-6.5	43.5	50.63	16.74	1.92	32.29	231	92	Q	H	
		191.46	38.54	-4.96	43.5	53.88	14.85	2.12	32.31	121	302	Q	H	
		405.7	38.17	-7.83	46	45.37	22.12	3.09	32.41	100	295	Q	H	
		485.5	39.29	-6.71	46	44.77	23.66	3.39	32.53	-	-	P	H	
		550.6	37.58	-8.42	46	41.41	25.15	3.62	32.6	-	-	P	H	
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			116.13	32.06	-11.44	43.5	45.43	17.27	1.65	32.29	-	-	P	V
			198.75	36.17	-7.33	43.5	51.42	14.91	2.15	32.31	101	348	Q	V
			241.14	37.28	-8.72	46	49.77	17.45	2.39	32.33	-	-	P	V
			405	36.34	-9.66	46	43.58	22.08	3.09	32.41	-	-	P	V
			485.5	37.03	-8.97	46	42.51	23.66	3.39	32.53	115	23	Q	V
			561.1	39.49	-6.51	46	42.69	25.73	3.67	32.6	-	-	P	V
													V	
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													V	
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													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.													



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:

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
5+6		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a		5150	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 36		5150	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H
5180MHz													

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 @ 5150MHz:

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 @ 5150MHz:

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 :	Andy Yang, Gary Guo and Steven Wu	Temperature :	20~25°C
		Relative Humidity :	50~65%

Note symbol

-L	Low channel location
-R	High channel location



<With EM9191 WWAN Module>

LTE Band 41 (CH40620) Link + 802.11b_TX_Ch06 for MIMO <Ant. 5+6>
 + 802.11a_TX_Ch44 for MIMO <Ant. 5+6>

2.4GHz 2400~2483.5MHz
 WIFI 802.11b (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
5+6	Horizontal	Fundamental
Peak	<p>Site : 03CH16-FY Condition : PEAK_BE_74 3m 91200_1522_230323 HORIZONTAL</p>	<p>Site : 03CH16-FY Condition : PEAK_74 3m 91200_1522_230323 HORIZONTAL</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
5+6	Horizontal	Fundamental
Avg.	<p>Site : 03CH16-14Y Condition : AV6_BE_54 3m 91200_1522_230323 HORIZONTAL</p>	<p>Site : 03CH16-14Y Condition : AV6_54 3m 91200_1522_230323 HORIZONTAL</p>

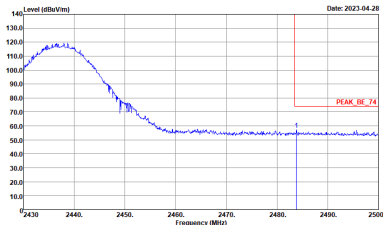
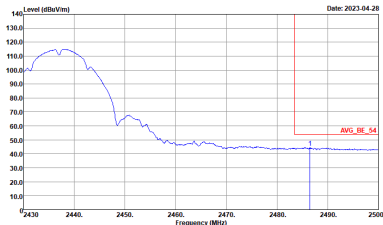


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
5+6	Horizontal	Fundamental
Peak	<p>Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522_230323 HORIZONTAL</p>	Left blank
Avg.	<p>Site : 03CH16-HY Condition : AVG_BE_04 3m 91200_1522_230323 HORIZONTAL</p>	Left blank



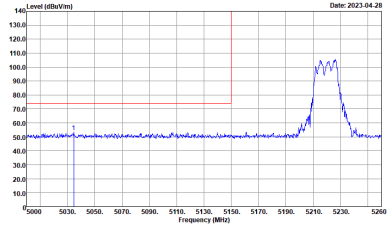
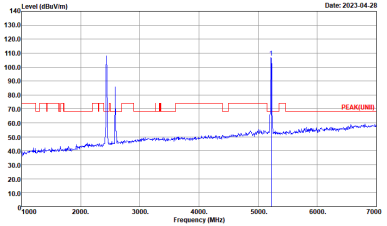
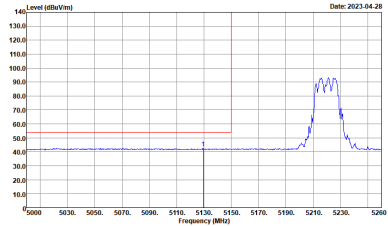
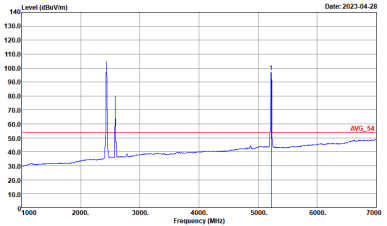
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
5+6	Vertical	Fundamental
Peak	<p>Date: 2023-04-28</p> <p>Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522_230323 VERTICAL</p>	<p>Date: 2023-04-28</p> <p>Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522_230323 VERTICAL</p>
Avg.	<p>Date: 2023-04-28</p> <p>Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522_230323 VERTICAL</p>	<p>Date: 2023-04-28</p> <p>Site : 03CH16-HY Condition : AVG_54 3m 91200_1522_230323 VERTICAL</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
5+6	Vertical	Fundamental
<p>Peak</p>	 <p>Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522_230323 VERTICAL</p>	<p>Left blank</p>
<p>Avg.</p>	 <p>Site : 03CH16-HY Condition : AVG_BE_04 3m 91200_1522_230323 VERTICAL</p>	<p>Left blank</p>



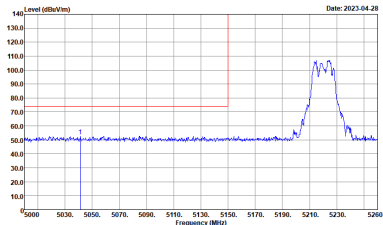
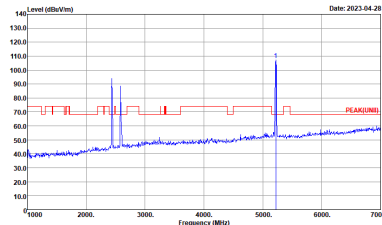
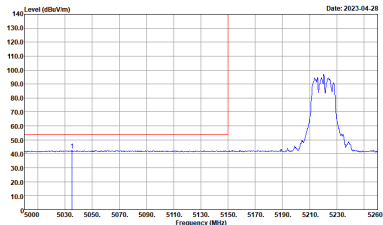
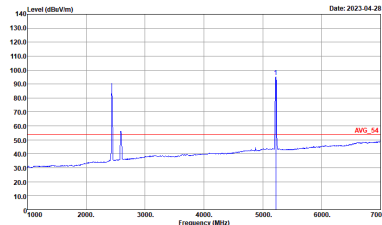
Band 1 - 5150~5250MHz
WIFI 802.11a (Band Edge @ 3m)

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH44 5220MHz - L	
5+6	Horizontal	Fundamental
Peak	 <p>Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522_230323 HORIZONTAL</p>	 <p>Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522_230323 HORIZONTAL</p>
Avg.	 <p>Site : 03CH16-HY Condition : AV6_BE_54 3m 91200_1522_230323 HORIZONTAL</p>	 <p>Site : 03CH16-HY Condition : AV6_54 3m 91200_1522_230323 HORIZONTAL</p>



WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH44 5220MHz - R	
5+6	Horizontal	Fundamental
<p>Peak</p>		<p>Left blank</p>
<p>Avg.</p>		<p>Left blank</p>



WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH44 5220MHz - L	
5+6	Vertical	Fundamental
Peak	 <p>Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522_230323 VERTICAL</p>	 <p>Site : 03CH16-HY Condition : PEAK(UNI) 3m 91200_1522_230323 VERTICAL</p>
Avg.	 <p>Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522_230323 VERTICAL</p>	 <p>Site : 03CH16-HY Condition : AVG_54 3m 91200_1522_230323 VERTICAL</p>



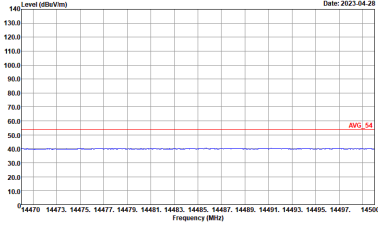
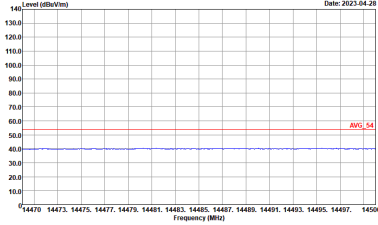
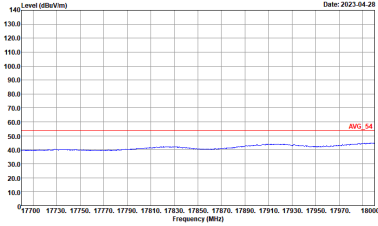
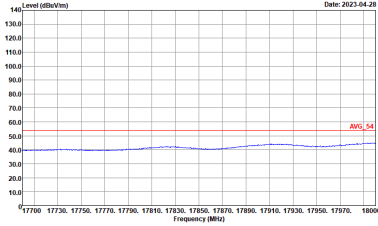
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH44 5220MHz - R	
5+6	Vertical	Fundamental
<p>Peak</p>		<p>Left blank</p>
<p>Avg.</p>		<p>Left blank</p>



LTE Band 41 (CH40620) Link + 802.11b_TX_Ch06 for MIMO <Ant. 5+6>
 + 802.11a_TX_Ch44 for MIMO <Ant. 5+6> (Harmonic @ 3m)

ANT	802.11b CH06 2437MHz + 802.11a CH44 5220MHz	
Simultaneously	Horizontal	Vertical
<p>Peak Avg.</p>		

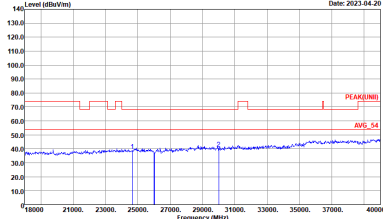
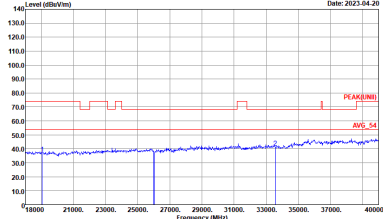


ANT	802.11b CH06 2437MHz + 802.11a CH44 5220MHz	
Simultaneously	Horizontal	Vertical
<p>14.47G ~14.5G Avg.</p>	 <p>Site : 03CH16-HY Condition : AV6_54 3m 9120D_1522_230323 HORIZONTAL</p>	 <p>Site : 03CH16-HY Condition : AV6_54 3m 9120D_1522_230323 VERTICAL</p>
<p>17.7G ~18G Avg</p>	 <p>Site : 03CH16-HY Condition : AV6_54 3m 9120D_1522_230323 HORIZONTAL</p>	 <p>Site : 03CH16-HY Condition : AV6_54 3m 9120D_1522_230323 VERTICAL</p>



Emission above 18GHz

LTE Band 41 (CH40620) Link + 802.11b_TX_Ch06 for MIMO <Ant. 5+6>
+ 802.11a_TX_Ch44 for MIMO <Ant. 5+6> (SHF @ 1m)

ANT	802.11b CH06 2437MHz + 802.11a CH44 5220MHz	
Simultaneously	Horizontal	Vertical
<p style="text-align: center;">Peak Avg.</p>	 <p style="font-size: small;">Date: 2023-04-20 Site : 03CH16-HY Condition : PEAK(LINE) 1m SHF_993_1124 HORIZONTAL</p>	 <p style="font-size: small;">Date: 2023-04-20 Site : 03CH16-HY Condition : PEAK(LINE) 1m SHF_993_1124 VERTICAL</p>



Emission below 1GHz

LTE Band 41 (CH40620) Link + 802.11b_TX_Ch06 for MIMO <Ant. 5+6>
+ 802.11a_TX_Ch44 for MIMO <Ant. 5+6> (LF)

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11b CH06 2437MHz + 802.11a CH44 5220MHz	
Simultaneously	Horizontal	Vertical
QP / Peak	<p>Site : 03CH16-HY Condition : QP 3m B1LO6_47020_221008_H HORIZONTAL</p>	<p>Site : 03CH16-HY Condition : QP 3m B1LO6_47020_221008_V VERTICAL</p>



<With LN920A12 WWAN Module>

LTE Band 41 (CH40620) Link + LTE Band 41 (CH41490) Link +

802.11b_TX_Ch06 for MIMO <Ant. 5+6> + 802.11a_TX_Ch44 for MIMO <Ant. 5+6>

2.4GHz 2400~2483.5MHz

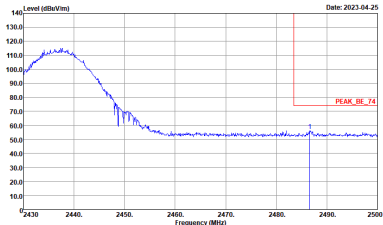
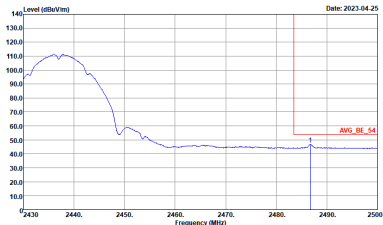
WIFI 802.11b (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
5+6	Horizontal	Fundamental
Peak	<p>Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522_230323 HORIZONTAL</p>	<p>Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522_230323 HORIZONTAL</p>

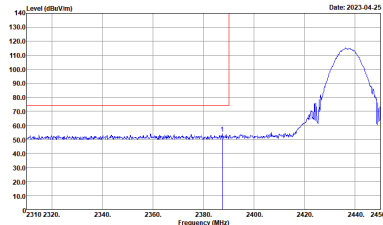
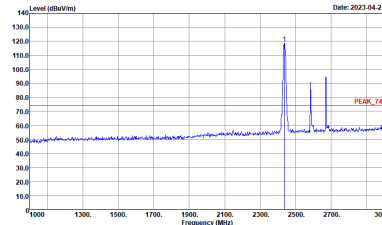
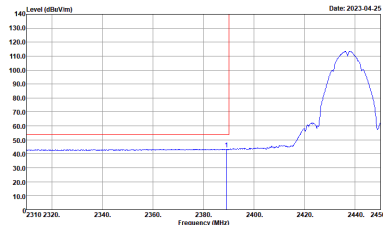
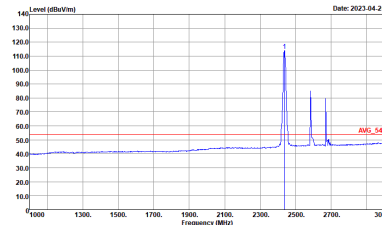


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
5+6	Horizontal	Fundamental
Avg.	<p>Site : 03CH16-HY Condition : AV6_BE_54 3m 91200_1522_230323 HORIZONTAL</p>	<p>Site : 03CH16-HY Condition : AV6_54 3m 91200_1522_230323 HORIZONTAL</p>

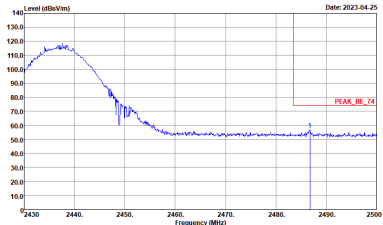
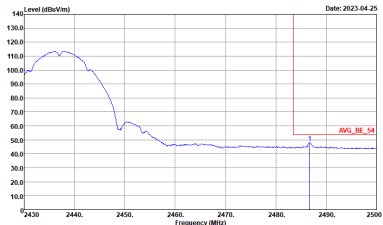


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
5+6	Horizontal	Fundamental
<p>Peak</p>	 <p>Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522_230323 HORIZONTAL</p>	<p>Left blank</p>
<p>Avg.</p>	 <p>Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522_230323 HORIZONTAL</p>	<p>Left blank</p>



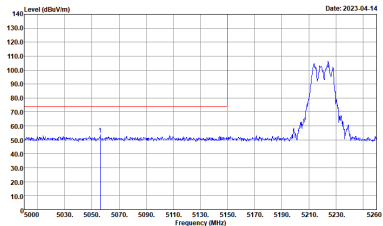
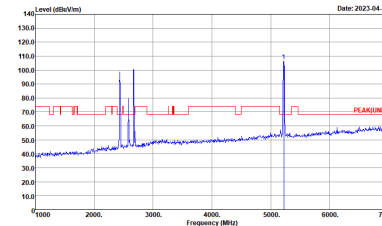
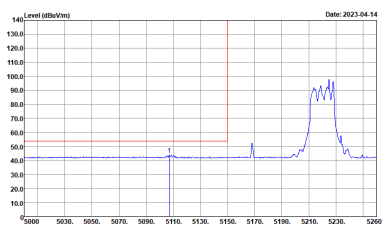
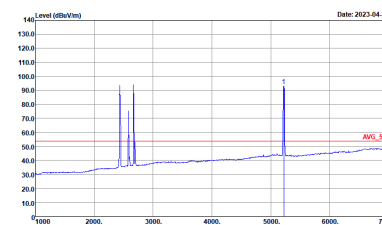
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
5+6	Vertical	Fundamental
Peak	 <p>Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522_230323 VERTICAL</p>	 <p>Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522_230323 VERTICAL</p>
Avg.	 <p>Site : 03CH16-HY Condition : AV6_BE_54 3m 91200_1522_230323 VERTICAL</p>	 <p>Site : 03CH16-HY Condition : AV6_54 3m 91200_1522_230323 VERTICAL</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
5+6	Vertical	Fundamental
<p>Peak</p>	 <p>Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522_230323 VERTICAL</p>	<p>Left blank</p>
<p>Avg.</p>	 <p>Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522_230323 VERTICAL</p>	<p>Left blank</p>



Band 1 - 5150~5250MHz
WIFI 802.11a (Band Edge @ 3m)

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH44 5220MHz - L	
5+6	Horizontal	Fundamental
Peak	 <p>Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522_230323 HORIZONTAL</p>	 <p>Site : 03CH16-HY Condition : PEAK(UNI) 3m 91200_1522_230323 HORIZONTAL</p>
Avg.	 <p>Site : 03CH16-HY Condition : AV6_BE_54 3m 91200_1522_230323 HORIZONTAL</p>	 <p>Site : 03CH16-HY Condition : AV6_54 3m 91200_1522_230323 HORIZONTAL</p>



WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH44 5220MHz - R	
5+6	Horizontal	Fundamental
<p>Peak</p>		<p>Left blank</p>
<p>Avg.</p>		<p>Left blank</p>



WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH44 5220MHz - L	
5+6	Vertical	Fundamental
Peak	<p>Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522_230323 VERTICAL</p>	<p>Site : 03CH16-HY Condition : PEAK(UNI) 3m 91200_1522_230323 VERTICAL</p>
Avg.	<p>Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522_230323 VERTICAL</p>	<p>Site : 03CH16-HY Condition : AVG_54 3m 91200_1522_230323 VERTICAL</p>



WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH44 5220MHz - R	
5+6	Vertical	Fundamental
<p>Peak</p>		<p>Left blank</p>
<p>Avg.</p>		<p>Left blank</p>



LTE Band 41 (CH40620) Link + LTE Band 41 (CH41490) Link +
 802.11b_TX_Ch06 for MIMO <Ant. 5+6> + 802.11a_TX_Ch44 for MIMO <Ant. 5+6>
 (Harmonic @ 3m)

ANT	802.11b CH06 2437MHz + 802.11a CH44 5220MHz	
Simultaneously	Horizontal	Vertical
<p>Peak Avg.</p>	<p>Site : 03CH16-4FY Condition : PEAK(UNIT) 3m 91200_1522_220310 HORIZONTAL</p>	<p>Site : 03CH16-4FY Condition : PEAK(UNIT) 3m 91200_1522_220310 VERTICAL</p>



ANT	802.11b CH06 2437MHz + 802.11a CH44 5220MHz	
Simultaneously	Horizontal	Vertical
<p>14.47G ~14.5G Avg.</p>	<p>Date: 2023-04-28</p> <p>Site : 03CH16-1FY Condition : AV6_54 3m 91200_1522_230323 HORIZONTAL</p>	<p>Date: 2023-04-28</p> <p>Site : 03CH16-1FY Condition : AV6_54 3m 91200_1522_230323 VERTICAL</p>
<p>17.7G ~18G Avg</p>	<p>Date: 2023-04-28</p> <p>Site : 03CH16-1FY Condition : AV6_54 3m 91200_1522_230323 HORIZONTAL</p>	<p>Date: 2023-04-28</p> <p>Site : 03CH16-1FY Condition : AV6_54 3m 91200_1522_230323 VERTICAL</p>

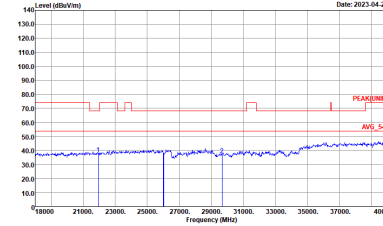
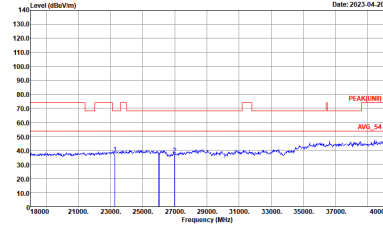


Emission above 18GHz

LTE Band 41 (CH40620) Link + LTE Band 41 (CH41490) Link +

802.11b_TX_Ch06 for MIMO <Ant. 5+6> + 802.11a_TX_Ch44 for MIMO <Ant. 5+6>

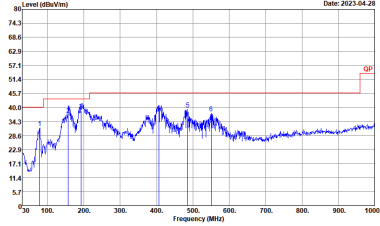
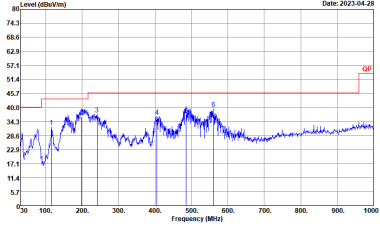
(SHF @ 1m)

ANT	802.11b CH06 2437MHz + 802.11a CH44 5220MHz	
Simultaneously	Horizontal	Vertical
<p style="text-align: center;">Peak Avg.</p>	 <p>Site : 03CH16-HY Condition : PEAK(UNII) 1m SHF_993_1124 HORIZONTAL</p>	 <p>Site : 03CH16-HY Condition : PEAK(UNII) 1m SHF_993_1124 VERTICAL</p>



Emission below 1GHz

LTE Band 41 (CH40620) Link + LTE Band 41 (CH41490) Link +
802.11b_TX_Ch06 for MIMO <Ant. 5+6> + 802.11a_TX_Ch44 for MIMO <Ant. 5+6> (LF)

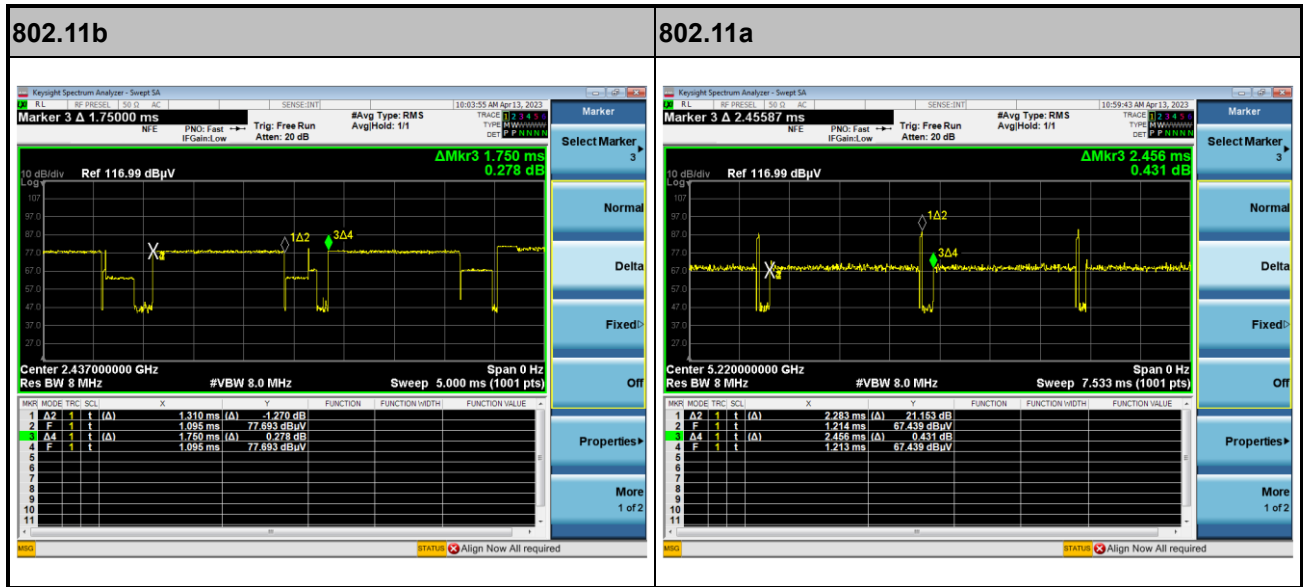
ANT	802.11b CH06 2437MHz + 802.11a CH44 5220MHz	
Simultaneously	Horizontal	Vertical
QP / Peak	 <p data-bbox="491 833 871 862">Date: 2023-04-28 Site : 03CH16-HY Condition : QP 3m 81LO6_47020_221008_H HORIZONTAL</p>	 <p data-bbox="967 833 1347 862">Date: 2023-04-28 Site : 03CH16-HY Condition : QP 3m 81LO6_47020_221008_H VERTICAL</p>



Appendix C. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
5+6	802.11b	74.86	1310	0.76	1kHz
5+6	802.11a	92.96	2283	0.44	1kHz

MIMO <Ant. 5+6>



— THE END —