



FCC CO-LOCATION RADIO TEST REPORT

FCC ID : A4RG025J
Equipment : Phone
Model Name : G025J, G025N, G025M
Applicant : Google LLC
1600 Amphitheatre Parkway,
Mountain View, California, 94043 USA
Standard : FCC Part 15 Subpart E §15.407

The product was received on Jan. 20, 2020 and testing was started from Jan. 23, 2020 and completed on Feb. 17, 2020. We, SPORTON INTERNATIONAL INC., EMC & Wireless Communications 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 report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



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History of this test report

Report No.	Version	Description	Issued Date
FR9D0616-05G	01	Initial issue of report	Mar. 24, 2020

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.407(b)	Unwanted Emissions	Pass	Under limit 1.83 dB at 2483.520 MHz
3.2	15.203 15.407(a)	Antenna Requirement	Pass	-

Declaration of Conformity:

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

Comments and Explanations:

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

Reviewed by: Wii Chang

Report Producer: Vivian Hsu



1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	Phone
Model Name	G025J, G025N, G025M
FCC ID	A4RG025J
EUT supports Radios application	CDMA/EV-DO/GSM/EGPRS/WCDMA/HSPA/LTE/NFC/GNSS WLAN 11b/g/n HT20 WLAN 11a/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE
EUT Stage	Identical Prototype

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

EUT Information List	
S/N	Performed Test Item
01021FQC200294	Radiated Spurious Emission

1.2 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Frequency Range	2400 MHz ~ 2483.5 MHz 5180 MHz ~ 5240 MHz 5260 MHz ~ 5320 MHz 5500 MHz ~ 5720 MHz 5745 MHz ~ 5825 MHz
Antenna Type / Gain	WLAN: <2400 MHz ~ 2483.5 MHz> Ant. 4 : PIFA Antenna with gain 0.50 dBi Ant. 3 : PIFA Antenna with gain -0.60 dBi <5180 MHz ~ 5240 MHz> Ant. 4 : PIFA Antenna with gain -2.40 dBi Ant. 3 : PIFA Antenna with gain -1.50 dBi <5260 MHz ~ 5320 MHz> Ant. 4 : PIFA Antenna with gain 0.20 dBi Ant. 3 : PIFA Antenna with gain -1.00 dBi <5500 MHz ~ 5720 MHz> Ant. 4 : PIFA Antenna with gain -0.70 dBi Ant. 3 : PIFA Antenna with gain -0.90 dBi <5745 MHz ~ 5825 MHz> Ant. 4 : PIFA Antenna with gain -1.70 dBi Ant. 3 : PIFA Antenna with gain -0.50 dBi Bluetooth: PIFA Antenna with gain 0.50 dBi
Type of Modulation	802.11g : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11a : OFDM (BPSK / QPSK / 16QAM / 64QAM)

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. EMC & Wireless Communications Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City, 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.: TW0007

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 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. 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, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X plane) were recorded in this report.

2.1 Carrier Frequency and Channel

2400-2483.5 MHz Bluetooth		2400-2483.5 MHz Bluetooth-LE		2400-2483.5 MHz 802.11g		5150-5250 MHz 802.11a	
Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
78	2480	39	2480	11	2462	36	5180

2.2 Test Mode

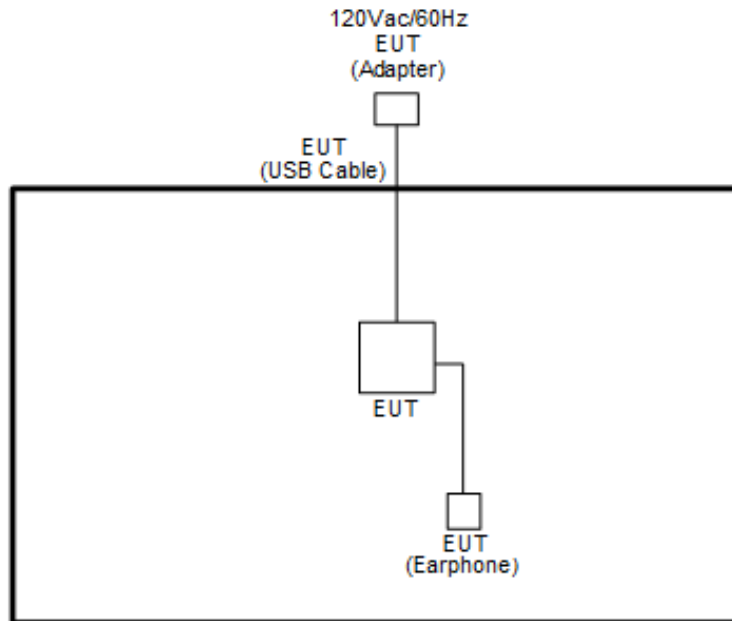
Final test modes are considering the modulation and worse data rates as below table.

<Co-Location>

Modulation	Data Rate
Bluetooth Ant. 4 + 5GHz 802.11a for MIMO Ant. 4+3	1Mbps + 6Mbps
Bluetooth LE Ant. 4 + 5GHz 802.11a for MIMO Ant. 4+3	1Mbps + 6Mbps
WLAN 2.4GHz Ant. 4 + 5GHz 802.11a for Ant. 3	1Mbps + 6Mbps

Remark: All the tests were performed with Adapter 1, Battery 1 and USB Cable 1.

2.3 Connection Diagram of Test System



2.4 EUT Operation Test Setup

The RF test items, utility "QRCT v3.0.298.0" 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.

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

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

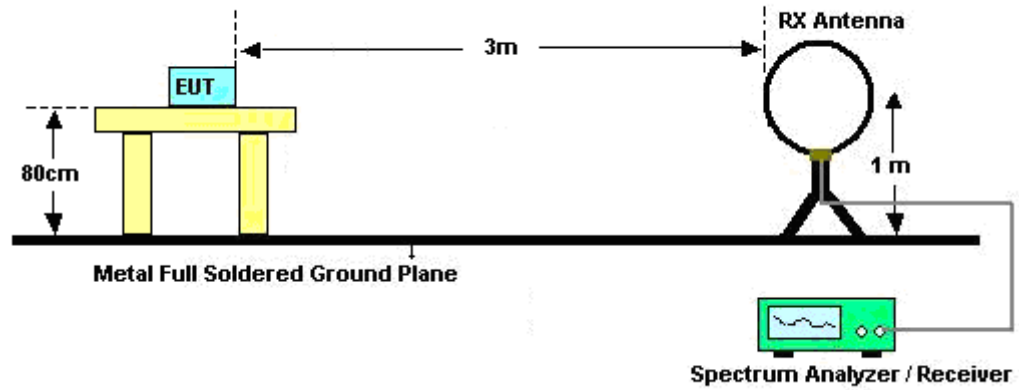
See list of measuring equipment of this test report.

3.1.3 Test Procedures

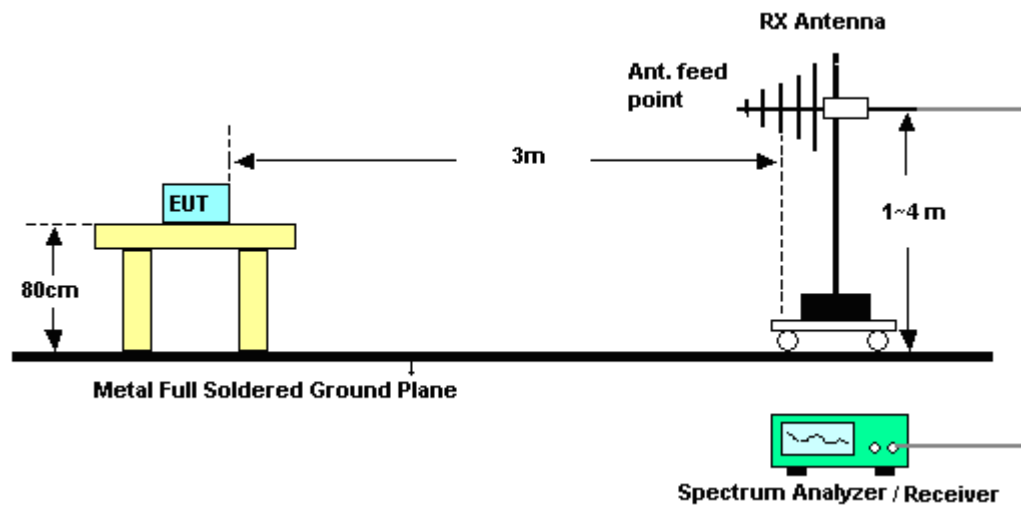
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Section G) Unwanted emissions measurement.
(1) Procedure for Unwanted Emissions Measurements Below 1000MHz
 - RBW = 120 kHz
 - VBW = 300 kHz
 - Detector = Peak
 - Trace mode = max hold
(2) Procedure for Peak Unwanted 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 was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was 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 was 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. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.1.4 Test Setup

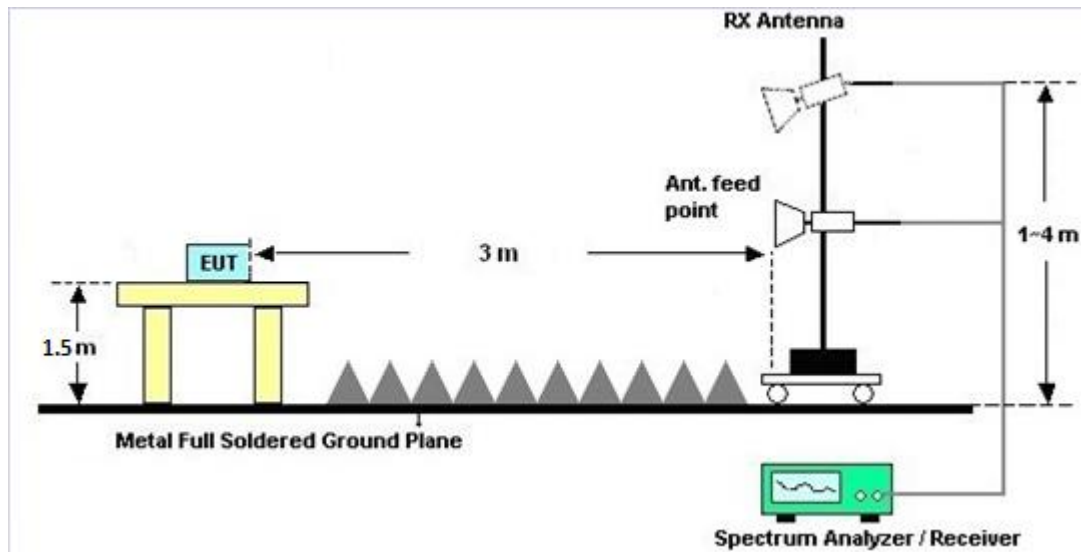
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

3.1.6 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

If transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.2.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.2.3 Antenna Gain

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



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Dec. 26, 2019	Jan. 23, 2020~ Feb. 17, 2020	Dec. 25, 2020	Radiation (03CH16-HY)
Bilog Antenna	TESEQ	CBL6111D&0 0802N1D01N- 06	47020&06	30MHz to 1GHz	Oct. 13, 2019	Jan. 23, 2020~ Feb. 17, 2020	Oct. 12, 2020	Radiation (03CH16-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-152 2	1G~18GHz	Sep. 19, 2019	Jan. 23, 2020~ Feb. 17, 2020	Sep. 18, 2020	Radiation (03CH16-HY)
Amplifier	SONOMA	310N	371607	9kHz~1000MHz	Oct. 01, 2019	Jan. 23, 2020~ Feb. 17, 2020	Sep. 30, 2020	Radiation (03CH16-HY)
Preamplifier	Jet-Power	JPA0118-55-3 03	171000180 0054001	1GHz~18GHz	May 19, 2019	Jan. 23, 2020~ Feb. 17, 2020	May 18, 2020	Radiation (03CH16-HY)
Preamplifier	EMEC	EMC184045B	980192	18GHz ~40GHz	Jul. 10, 2019	Jan. 23, 2020~ Feb. 17, 2020	Jul. 09, 2020	Radiation (03CH16-HY)
Preamplifier	Keysight	83017A	MY532702 64	1GHz~26.5GHz	Dec. 11, 2019	Jan. 23, 2020~ Feb. 17, 2020	Dec.10, 2020	Radiation (03CH16-HY)
EMI Test Receiver	Keysight	N9038A (MXE)	MY554201 70	20MHz~8.4GHz	Mar. 08, 2019	Jan. 23, 2020~ Feb. 17, 2020	Mar. 07, 2020	Radiation (03CH16-HY)
Spectrum Analyzer	Agilent	E4446A	MY501801 36	3Hz~44GHz	Apr. 29, 2019	Jan. 23, 2020~ Feb. 17, 2020	Apr. 28, 2020	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY11680/ 4PE	NA	Aug. 30, 2019	Jan. 23, 2020~ Feb. 17, 2020	Aug. 29, 2020	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY11688/ 4PE	NA	Aug. 30, 2019	Jan. 23, 2020~ Feb. 17, 2020	Aug. 29, 2020	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	EC-A5-300 -5757	NA	Aug. 30, 2019	Jan. 23, 2020~ Feb. 17, 2020	Aug. 29, 2020	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz~40GHz	Feb. 26, 2019	Jan. 23, 2020~ Feb. 17, 2020	Feb. 25, 2020	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	800740/2	30MHz~40GHz	Feb. 26, 2019	Jan. 23, 2020~ Feb. 17, 2020	Feb. 25, 2020	Radiation (03CH16-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA9170 576	18GHz~40GHz	May 14, 2019	Jan. 23, 2020~ Feb. 17, 2020	May 13, 2020	Radiation (03CH16-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz~40GHz	Dec. 13, 2019	Jan. 23, 2020~ Feb. 17, 2020	Dec. 12, 2020	Radiation (03CH16-HY)
Hygrometer	TECPEL	DTM-303B	TP161243	N/A	Oct. 25, 2019	Jan. 23, 2020~ Feb. 17, 2020	Oct. 24, 2020	Radiation (03CH16-HY)
Software	Audix	E3 6.2009-8-24	RK-001136	N/A	N/A	Jan. 23, 2020~ Feb. 17, 2020	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% ($U = 2Uc(y)$)	4.9
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	6.7
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.9
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Appendix A. Radiated Spurious Emission

Test Engineer :	Jacky Hung, Andy Yang and CR Liao	Temperature :	20~25°C
		Relative Humidity :	50~60%

Band 1 - 5150~5250MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	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)
BT CH78 2480 MHz Ant. 4 + 802.11a CH36 5180 MHz Ant. 4+3		5146.64	58.37	-15.63	74	43.19	31.71	12.32	28.85	101	1	P	H
		5149.24	48.06	-5.94	54	32.89	31.7	12.32	28.85	101	1	A	H
	*	5180	110.51	-	-	95.44	31.58	12.36	28.87	101	1	P	H
	*	5180	102.8	-	-	87.73	31.58	12.36	28.87	101	1	A	H
												P	H
												A	H
		5149.5	56.57	-17.43	74	41.4	31.7	12.32	28.85	101	104	P	V
		5149.76	45.24	-8.76	54	30.07	31.7	12.32	28.85	101	104	A	V
	*	5180	104.12	-	-	89.05	31.58	12.36	28.87	101	104	P	V
	*	5180	96.9	-	-	81.83	31.58	12.36	28.87	101	104	A	V
												P	V
												A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	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)
BT CH78 2480 MHz Ant. 4 + 802.11a CH36 5180 MHz Ant. 4+3	*	2480	104.52	-	-	98.48	27.54	8.32	29.82	347	52	P	H
	*	2480	79.76	-	-	-	-	-	-	-	-	A	H
		2483.76	54.66	-19.34	74	48.63	27.53	8.32	29.82	347	52	P	H
		2483.76	29.9	-24.1	54	-	-	-	-	-	-	A	H
													H
													H
													H
													H
	*	2480	111.91	-	-	105.87	27.54	8.32	29.82	257	293	P	V
	*	2480	87.15	-	-	-	-	-	-	-	-	A	V
		2483.52	62.23	-11.77	74	56.2	27.53	8.32	29.82	257	293	P	V
		2483.52	37.47	-16.53	54	-	-	-	-	-	-	A	V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz and 5GHz Band 1 5150~5250MHz (Harmonic @ 3m)

WIFI Ant. Simultaneously	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (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)
BT CH78 2480 MHz Ant. 4 + 802.11a CH36 5180 MHz Ant. 4+3		4960	63.49	-10.51	74	47.18	31.26	13.8	28.75	100	0	P	H
		4960	38.73	-15.27	54	-	-	-	-	-	-	A	H
		7440	43.44	-30.56	74	48.01	36.58	16.18	57.33	100	0	P	H
		7440	18.68	-35.32	54	-	-	-	-	-	-	A	H
		10360	47.16	-21.04	68.2	47.64	39.64	19.17	59.29	100	0	P	H
		15540	45.79	-28.21	74	43.42	37.94	24.38	59.95	100	0	P	H
		4960	60.63	-13.37	74	44.32	31.26	13.8	28.75	100	0	P	V
		4960	35.87	-18.13	54	-	-	-	-	-	-	A	V
		7440	43.23	-30.77	74	47.8	36.58	16.18	57.33	100	0	P	V
		7440	18.47	-35.53	54	-	-	-	-	-	-	A	V
		10360	46.56	-21.64	68.2	47.04	39.64	19.17	59.29	100	0	P	V
		15540	45.1	-28.9	74	42.73	37.94	24.38	59.95	100	0	P	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	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	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 CH39 2480 MHz Ant. 4 + 802.11a CH36 5180 MHz Ant. 4+3		5148.72	63.12	-10.88	74	47.95	31.7	12.32	28.85	104	12	P	H
		5149.24	51.62	-2.38	54	36.45	31.7	12.32	28.85	104	12	A	H
	*	5180	110.95	-	-	95.88	31.58	12.36	28.87	104	12	P	H
	*	5180	103.48	-	-	88.41	31.58	12.36	28.87	104	12	A	H
												P	H
												A	H
		5149.5	59.69	-14.31	74	44.52	31.7	12.32	28.85	108	4	P	V
		5149.5	47.6	-6.4	54	32.43	31.7	12.32	28.85	108	4	A	V
	*	5180	106.27	-	-	91.2	31.58	12.36	28.87	108	4	P	V
	*	5180	99.02	-	-	83.95	31.58	12.36	28.87	108	4	A	V
												P	V
												A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	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 CH39 2480 MHz Ant. 4 + 802.11a CH36 5180 MHz Ant. 4+3	*	2480	105.05	-	-	89.09	27.54	18.24	29.82	104	187	P	H
	*	2480	103.9	-	-	87.94	27.54	18.24	29.82	104	187	A	H
		2488.76	57.59	-16.41	74	41.65	27.52	18.25	29.83	104	187	P	H
		2487.12	47.06	-6.94	54	31.1	27.53	18.25	29.82	104	187	A	H
													H
													H
													H
													H
	*	2480	98.29	-	-	82.33	27.54	18.24	29.82	295	74	P	V
	*	2480	97.63	-	-	81.67	27.54	18.24	29.82	295	74	A	V
		2489.56	56.61	-17.39	74	40.67	27.52	18.25	29.83	295	74	P	V
		2484.12	47.02	-6.98	54	31.07	27.53	18.24	29.82	295	74	A	V
													V
													V
													V
Remark	1. No other spurious found.												
	2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz and 5GHz Band 1 5150~5250MHz (Harmonic @ 3m)

WIFI Ant. Simultaneously	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (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 CH39 2480 MHz Ant. 4 + 802.11a CH36 5180 MHz Ant. 4+3		4960	57.95	-16.05	74	41.64	31.26	13.8	28.75	100	164	P	H
		4960	50.29	-3.71	54	33.98	31.26	13.8	28.75	100	164	A	H
		7440	44.85	-29.15	74	49.42	36.58	16.18	57.33	100	0	P	H
		10360	48.83	-19.37	68.2	49.31	39.64	19.17	59.29	100	0	P	H
		15540	47.41	-26.59	74	45.04	37.94	24.38	59.95	100	0	P	H
													H
													H
		4960	57.29	-16.71	74	40.98	31.26	13.8	28.75	100	358	P	V
		4960	48.55	-5.45	54	32.24	31.26	13.8	28.75	100	358	A	V
		7440	44.47	-29.53	74	49.04	36.58	16.18	57.33	100	0	P	V
		10360	50.63	-17.57	68.2	51.11	39.64	19.17	59.29	100	0	P	V
		15540	46.94	-27.06	74	44.57	37.94	24.38	59.95	100	0	P	V
													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	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	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)
802.11g CH11 2462 MHz Ant. 4 + 802.11a CH36 5180 MHz Ant 3		5149.24	62.59	-11.41	74	47.42	31.7	12.32	28.85	129	353	P	H
		5150	51.88	-2.12	54	36.71	31.7	12.32	28.85	129	353	A	H
	*	5180	110.28	-	-	95.21	31.58	12.36	28.87	129	353	P	H
	*	5180	103.21	-	-	88.14	31.58	12.36	28.87	129	353	A	H
												P	H
												A	H
		5149.5	57.24	-16.76	74	42.07	31.7	12.32	28.85	102	101	P	V
		5149.76	47.88	-6.12	54	32.71	31.7	12.32	28.85	102	101	A	V
	*	5180	104.78	-	-	89.71	31.58	12.36	28.87	102	101	P	V
	*	5180	97.51	-	-	82.44	31.58	12.36	28.87	102	101	A	V
												P	V
												A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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

WIFI Ant. Simultaneously	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (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)
802.11g CH11 2462 MHz Ant. 4 + 802.11a CH36 5180 MHz Ant. 3	*	2462	106.75	-	-	90.77	27.58	18.21	29.81	110	101	P	H
	*	2462	99.78	-	-	83.8	27.58	18.21	29.81	110	101	A	H
		2484.16	63.27	-10.73	74	47.32	27.53	18.24	29.82	110	101	P	H
		2483.52	52.17	-1.83	54	36.22	27.53	18.24	29.82	110	101	A	H
												P	H
												A	H
	*	2462	102.36	-	-	86.38	27.58	18.21	29.81	390	60	P	V
	*	2462	95.63	-	-	79.65	27.58	18.21	29.81	390	60	A	V
		2483.92	59.16	-14.84	74	43.21	27.53	18.24	29.82	390	60	P	V
		2483.68	48.53	-5.47	54	32.58	27.53	18.24	29.82	390	60	A	V
												P	V
												A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz and 5GHz Band 1 5150~5250MHz (Harmonic @ 3m)

WIFI Ant. Simultaneously	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (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)
802.11g CH11 2462 MHz Ant. 4 + 802.11a CH36 5180 MHz Ant. 3		4924	58.66	-15.34	74	41.14	31.1	15.17	28.75	100	62	P	H
		4924	48.19	-5.81	54	30.67	31.1	15.17	28.75	100	62	A	H
		7386	45.78	-28.22	74	50.55	36.53	16.1	57.4	100	0	P	H
		10360	46.14	-22.06	68.2	46.62	39.64	19.17	59.29	100	0	P	H
		15540	45.78	-28.22	74	43.41	37.94	24.38	59.95	100	0	P	H
													H
													H
		4924	58.15	-15.85	74	40.63	31.1	15.17	28.75	100	88	P	V
		4924	46.59	-7.41	54	29.07	31.1	15.17	28.75	100	88	A	V
		7386	42.86	-31.14	74	47.63	36.53	16.1	57.4	100	0	P	V
		10360	46.12	-22.08	68.2	46.6	39.64	19.17	59.29	100	0	P	V
		15540	46.3	-27.7	74	43.93	37.94	24.38	59.95	100	0	P	V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Note symbol

*	Fundamental Frequency which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
-	The signal is Unintentional Radiators .
P/A	Peak or Average
H/V	Horizontal or Vertical

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

WIFI Ant.	Note	Frequency	Level	Over Limit	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)
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. Over Limit(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. Over Limit(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. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)
= 43.54(dBμV/m) – 54(dBμV/m)
= -10.46(dB)

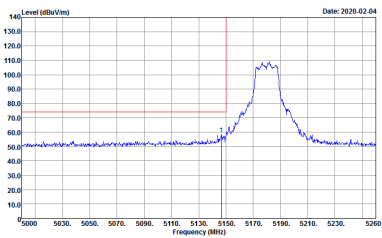
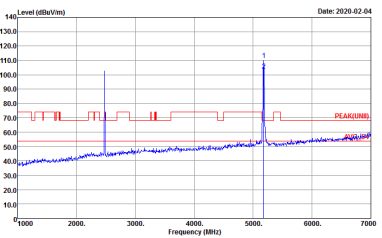
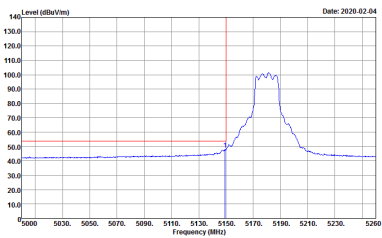
Both peak and average measured complies with the limit line, so test result is “PASS”.



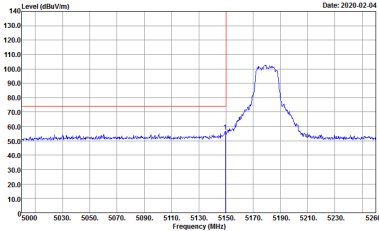
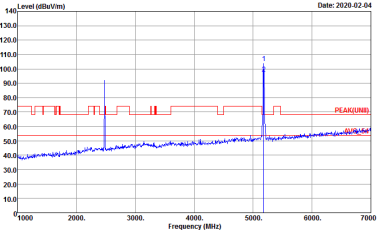
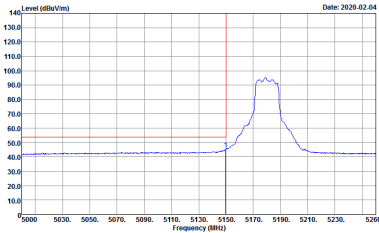
Appendix B. Radiated Spurious Emission

Test Engineer :	Jacky Hung, Andy Yang and CR Liao	Temperature :	20~25°C
		Relative Humidity :	50~60%

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

ANT	BT_Ch78_Ant 4 + WIFI 802. 11a_Tx_CH36 ANT 4+3	
Simultaneously	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 9120D_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 9D0616-05	 Site : 03CH16-HY Condition : PEAK(UNII) 3m 9120D_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 9D0616-05
Avg.	 Site : 03CH16-HY Condition : AVG_BE_54 3m 9120D_1522 HORIZONTAL RBW:1000.000KHz VBW:1000KHz SWT:Auto Detector : Peak Project : 9D0616-05	Left blank

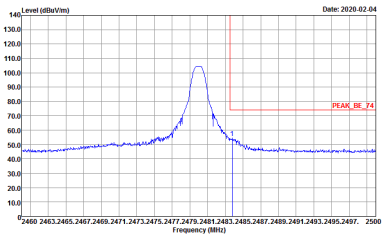
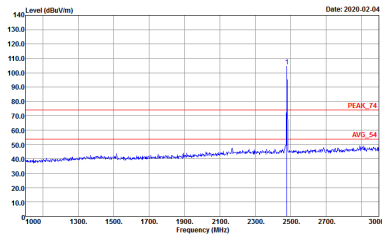


ANT	BT_Ch78_Ant 4 + WIFI 802. 11a_Tx_CH36 ANT 4+3	
Simultaneously	Horizontal	Fundamental
Peak	 Level (dBuV/m) Frequency (MHz) Date: 2020-02-04 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 9D0616-05	 Level (dBuV/m) Frequency (MHz) Date: 2020-02-04 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 9D0616-05
Avg.	 Level (dBuV/m) Frequency (MHz) Date: 2020-02-04 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:1000KHz SWT:Auto Detector : Peak Project : 9D0616-05	Left blank

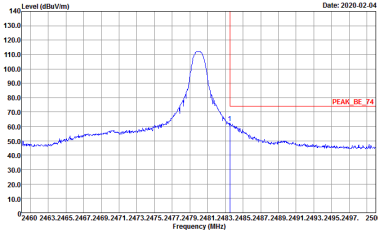
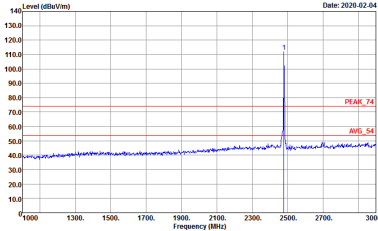


2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

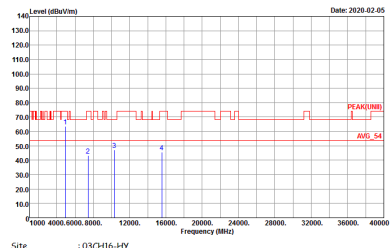
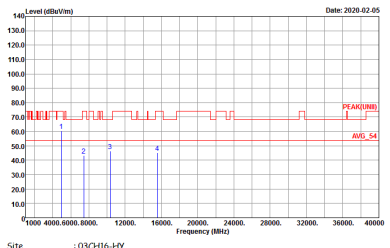
ANT	BT_Ch78_Ant 4 + WIFI 802. 11a_Tx_CH36 ANT 4+3	
Simultaneously	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 9D0616-05	 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 9D0616-05



ANT	BT_Ch78_Ant 4 + WIFI 802. 11a_Tx_CH36 ANT 4+3	
Simultaneously	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 9D0616-05	 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 9D0616-05

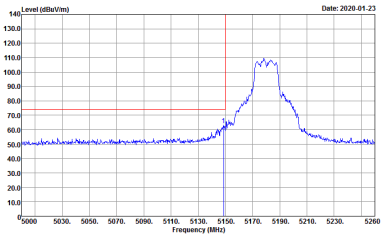
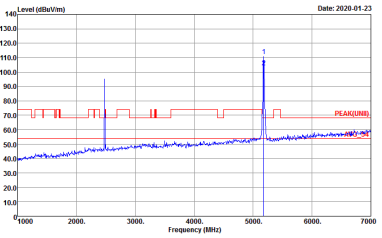
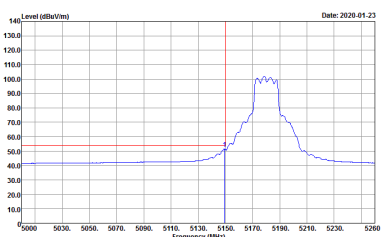


2.4GHz 2400~2483.5MHz and 5GHz Band 1 5150~5250MHz (Harmonic @ 3m)

ANT	BT_Ch78_Ant 4 + WIFI 802. 11a_Tx_CH36 ANT 4+3	
Simultaneously	Horizontal	Vertical
Peak Avg.	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 9120D_1522 HORIZONTAL Detector : Peak Project : 9D0616-05	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 9120D_1522 VERTICAL Detector : Peak Project : 9D0616-05



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

ANT	BLE_Ch39_Ant 4 + WIFI 802.11a_Ch36_Ant 4+3	
Simultaneously	Horizontal	Fundamental
Peak	 Level (dBuV/m) Frequency (MHz) Date: 2020-01-23 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 9D0616-05	 Level (dBuV/m) Frequency (MHz) Date: 2020-01-23 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 9D0616-05
Avg.	 Level (dBuV/m) Frequency (MHz) Date: 2020-01-23 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 HORIZONTAL Detector : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Project : 9D0616-05	Left blank

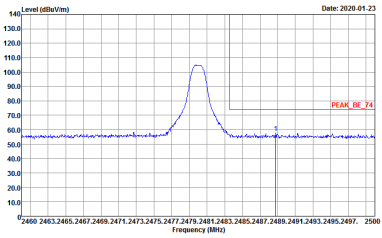
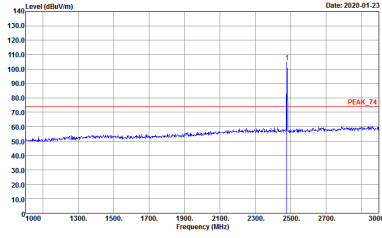
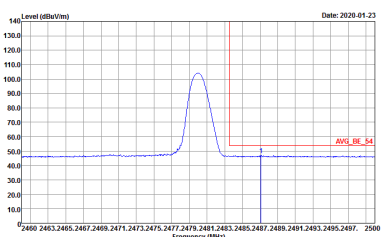
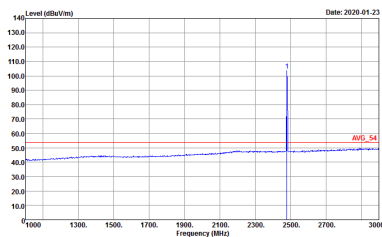


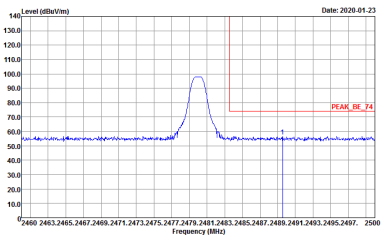
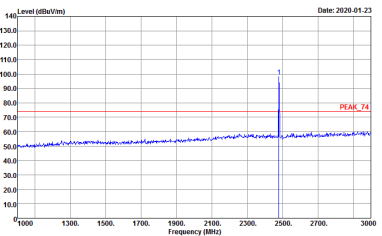
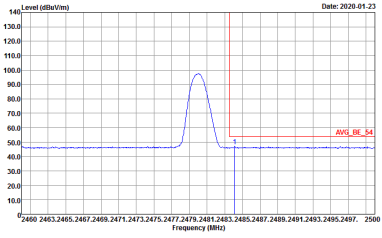
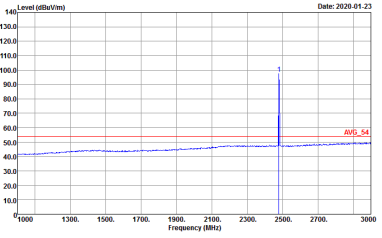
ANT	BLE_Ch39_Ant 4 + WIFI 802.11a_Ch36_Ant 4+3	
Simultaneously	Vertical	Fundamental
Peak	Site : 03CH16-HY Condition : PEAK_BE_74 3m 9120D_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 9D0616-05	Site : 03CH16-HY Condition : PEAK(UNIT) 3m 9120D_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 9D0616-05
Avg.	Site : 03CH16-HY Condition : AVG_BE_54 3m 9120D_1522 VERTICAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak Project : 9D0616-05	Left blank



2.4GHz 2400~2483.5MHz

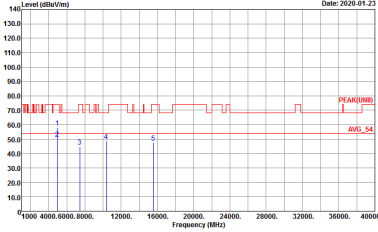
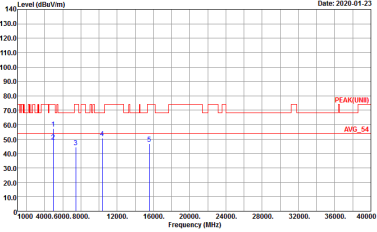
BT (Band Edge @ 3m)

ANT	BLE_Ch39_Ant 4 + WIFI 802.11a_Ch36_Ant 4+3	
Simultaneously	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 9D0616-05	 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 9D0616-05
Avg.	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 HORIZONTAL Detector : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Project : 9D0616-05	 Site : 03CH16-HY Condition : AVG_54 3m 91200_1522 HORIZONTAL Detector : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Project : 9D0616-05

ANT	BLE_Ch39_Ant 4 + WIFI 802.11a_Ch36_Ant 4+3	
Simultaneously	Vertical	Fundamental
Peak	 Date: 2020-01-23 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 9D0616-05	 Date: 2020-01-23 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 9D0616-05
Avg.	 Date: 2020-01-23 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 9D0616-05	 Date: 2020-01-23 Site : 03CH16-HY Condition : AVG_54 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 9D0616-05

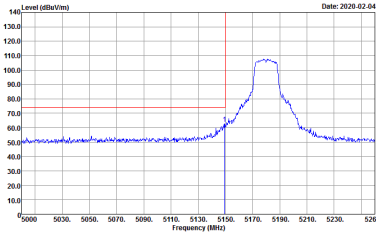
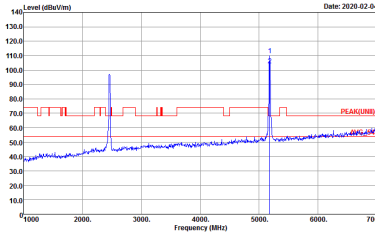
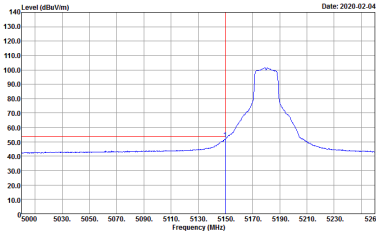


2.4GHz 2400~2483.5MHz and 5GHz Band 1 5150~5250MHz (Harmonic @ 3m)

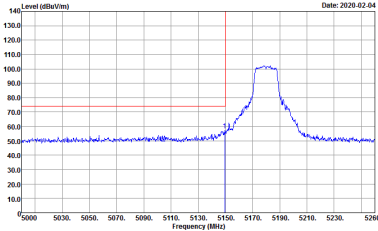
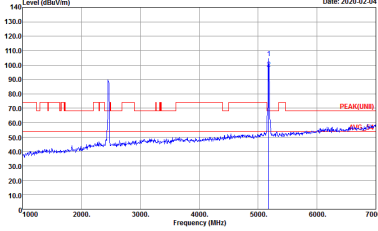
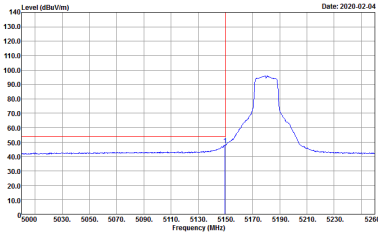
ANT	BLE_Ch39_Ant 4 + WIFI 802.11a_Ch36_Ant 4+3	
Simultaneously	Horizontal	Vertical
Peak Avg.	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 9120D_1522 HORIZONTAL Detector : Peak Project : 9D0616-05 Setting : BLE-4(Tag87)	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 9120D_1522 VERTICAL Detector : Peak Project : 9D0616-05 Setting : BLE-4(Tag87)



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

ANT	11g_Ch11_Ant 4 + WIFI 802.11a_Ch36_Ant 3	
Simultaneously	Horizontal	Fundamental
Peak	 Site : 03CH16-1FV Condition : PEAK_BE_74 3m 91200_1522 HORIZONTAL Detector : Peak Project : 9D0616-05 11a_TX_CH36 : 17	 Site : 03CH16-1FV Condition : PEAK(UNIT) 3m 91200_1522 HORIZONTAL Detector : Peak Project : 9D0616-05 11a_TX_CH36 : 17
Avg.	 Site : 03CH16-1FV Condition : AVG_BE_54 3m 91200_1522 HORIZONTAL Detector : Peak Project : 9D0616-05 11a_TX_CH36 : 17	Left blank



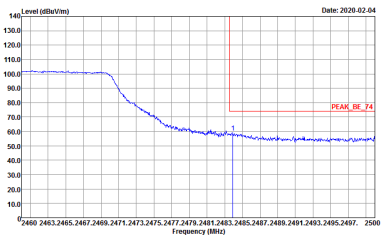
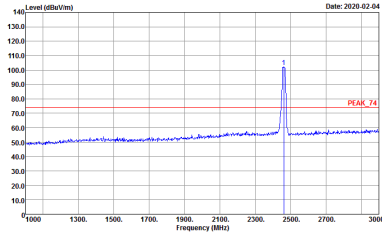
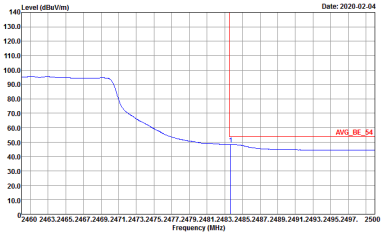
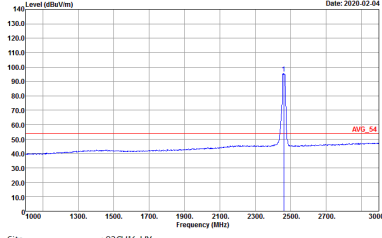
ANT	11g_Ch11_Ant 4 + WIFI 802.11a_Ch36_Ant 3	
Simultaneously	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 VERTICAL Detector : Peak Project : 9D0616-05 11a_TX_CH36 : 17	 Site : 03CH16-HY Condition : PEAK(UNL) 3m 91200_1522 VERTICAL Detector : Peak Project : 9D0616-05 11a_TX_CH36 : 17
Avg.	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 VERTICAL Detector : Peak Project : 9D0616-05 11a_TX_CH36 : 17	Left blank



2.4GHz 2400~2483.5MHz

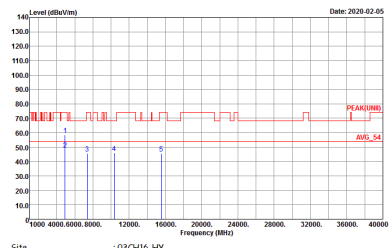
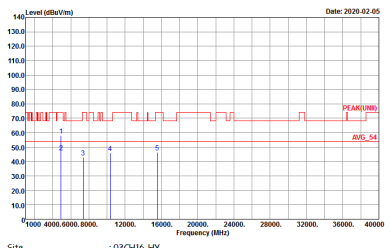
WIFI 802.11g (Band Edge @ 3m)

ANT	11g_Ch11_Ant 4 + WIFI 802.11a_Ch36_Ant 3	
Simultaneously	Horizontal	Fundamental
Peak	Site : 03CH16-HY Condition : PEAK_BE_74 3m 9120D_1522 HORIZONTAL Detector : Peak Project : 900616-05 11g_TX_CH11 : 16.5	Site : 03CH16-HY Condition : PEAK_74 3m 9120D_1522 HORIZONTAL Detector : Peak Project : 900616-05 11g_TX_CH11 : 16.5
Avg.	Site : 03CH16-HY Condition : AVG_BE_54 3m 9120D_1522 HORIZONTAL Detector : Peak Project : 900616-05 11g_TX_CH11 : 16.5	Site : 03CH16-HY Condition : AVG_54 3m 9120D_1522 HORIZONTAL Detector : Peak Project : 900616-05 11g_TX_CH11 : 16.5

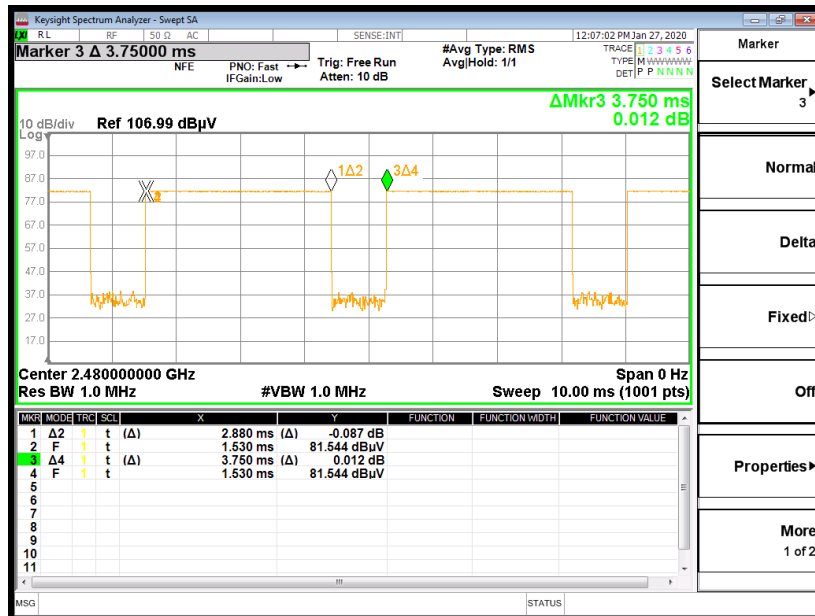
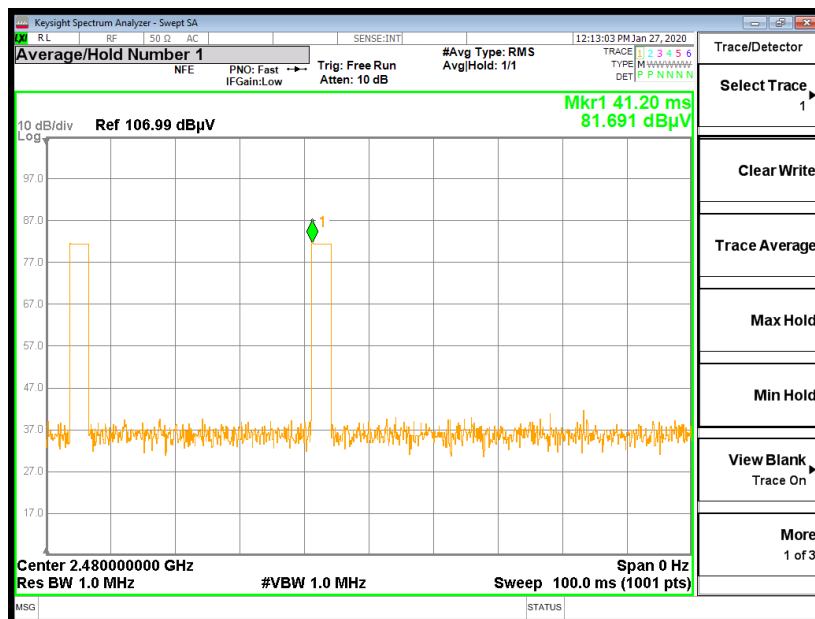
ANT	11g_Ch11_Ant 4 + WIFI 802.11a_Ch36_Ant 3	
Simultaneously	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 VERTICAL Detector : Peak Project : 900616-05 11g_TX_CH11 : 16.5	 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 VERTICAL Detector : Peak Project : 900616-05 11g_TX_CH11 : 16.5
	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 VERTICAL Detector : Peak Project : 900616-05 11g_TX_CH11 : 16.5	 Site : 03CH16-HY Condition : AVG_54 3m 91200_1522 VERTICAL Detector : Peak Project : 900616-05 11g_TX_CH11 : 16.5



2.4GHz 2400~2483.5MHz and 5GHz Band 1 5150~5250MHz (Harmonic @ 3m)

ANT	11g _Ch11_Ant 4 + WIFI 802.11a_Ch36_Ant 3	
Simultaneously	Horizontal	Vertical
Peak Avg.	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 HORIZONTAL Detector : Peak Project : 900616-05 11g_TX_CH11 : 16.5 11a_TX_CH36 : 17	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 VERTICAL Detector : Peak Project : 900616-05 11g_TX_CH11 : 16.5 11a_TX_CH36 : 17

Appendix C. Duty Cycle Plots

DH5 on time (One Pulse) Plot on Channel 39

on time (Count Pulses) Plot on Channel 39

Note:

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

**Duty Cycle Correction Factor Consideration for AFH mode:**

Bluetooth normal hopping rate is 1600Hz and reduced to 800Hz in AFH mode; due to the reduced number of hopping frequencies, with the same packet configuration the dwell time in each channel frequency within 100msec period is longer in AFH mode than normal mode.

In AFH mode, the minimum hopping frequencies are 20, to get the longest dwell time DH5 packet is observed; the period to have DH5 packet completing one hopping sequence is

$$2.88 \text{ ms} \times 20 \text{ channels} = 57.6 \text{ ms}$$

There cannot be 2 complete hopping sequences within 100ms period, considering the random hopping behavior, maximum 2 hops can be possibly observed within the period. $[100\text{ms} / 57.6\text{ms}] = 2$ hops

Thus, the maximum possible ON time:

$$2.88 \text{ ms} \times 2 = 5.76 \text{ ms}$$

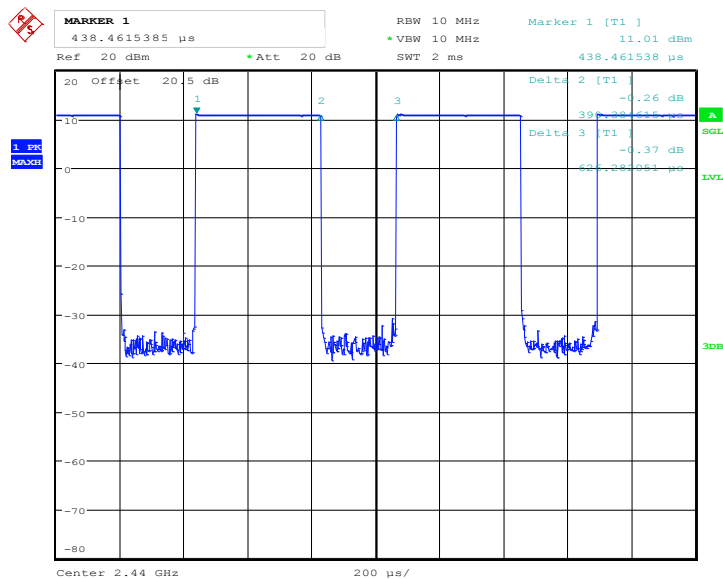
Worst case Duty Cycle Correction factor, which is derived from the maximum possible ON time,

$$20 \times \log(5.76 \text{ ms}/100\text{ms}) = -24.79 \text{ dB}$$

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor(dB)
4	Bluetooth LE for 1 Mbps	62.33	390.38	2.56	3kHz	2.05
4	802.11g for Ant 4	98.36	-	-	10Hz	0.07
3	802.11a	98.39	-	-	10Hz	0.07
4+3	802.11a for Ant 4	97.92	2032	0.49	1kHz	0.09
4+3	802.11a for Ant 3	97.78	2032	0.49	1kHz	0.10

<Ant. 4>

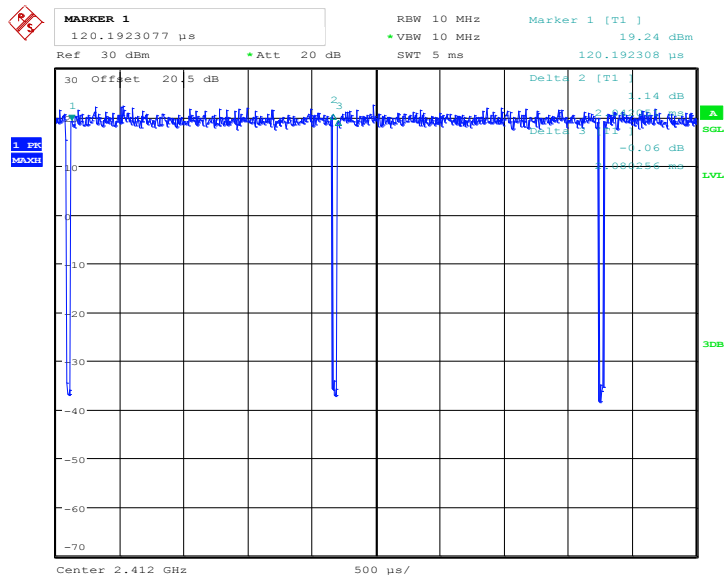
Bluetooth - LE for 1Mbps



Date: 1.JAN.2003 01:28:45



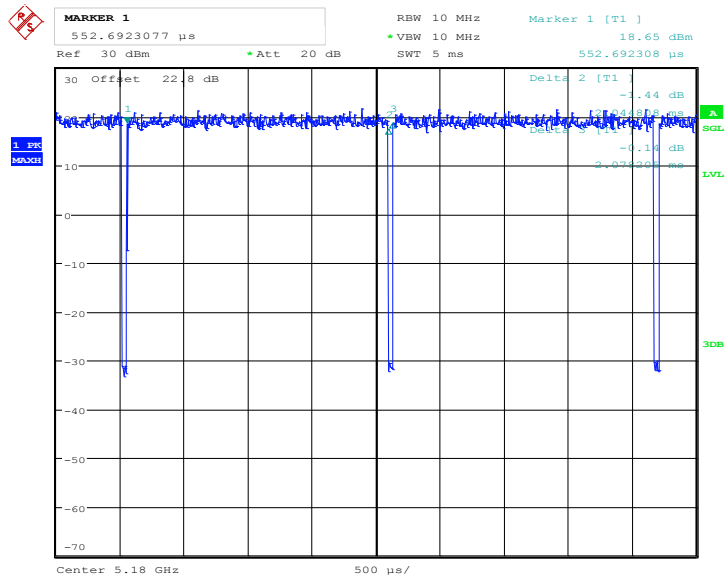
802.11g



Date: 1.JAN.2003 08:18:32

<Ant. 3>

802.11a

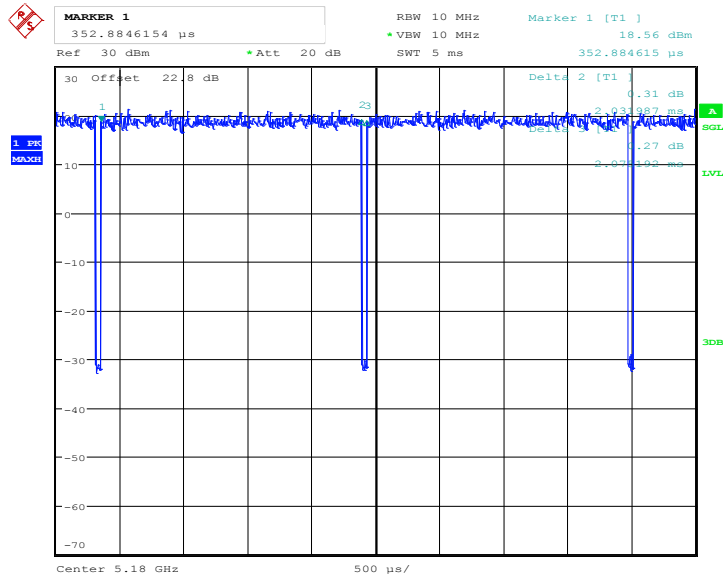


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MIMO <Ant. 4>

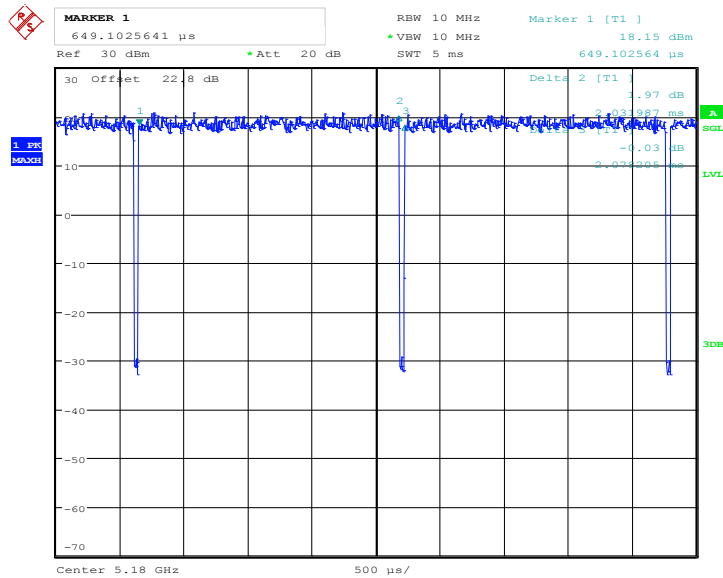
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Date: 1.JAN.2003 04:59:52

MIMO <Ant. 3>

802.11a



Date: 1.JAN.2003 05:00:33

—————THE END—————