



FCC Part 15.247

TEST REPORT

For

Kohler China Investment Co., Ltd.

No.158, Jiang Chang San Road, Jingan District, Shanghai, PRC

FCC ID: 2APQB-KOHLER01

Report Type: Original Report	Product Type: Kohler Intelligent gateway
Report Producer: Kaylee Chiang	<i>Kaylee Chiang</i>
Report Number: RXZ1801028-00A	
Report Date: 2018-03-01	
Reviewed By: Jerry Chang	<i>Jerry Chang</i>
Bay Area Compliance Laboratories Corp.(Taiwan) 70, Lane 169, Sec. 2, Datong Road, Xizhi Dist., New Taipei City 22183, Taiwan, R.O.C. Tel: +886 (2) 2647 6898 Fax: +886 (2) 2647 6895 www.bacl.com.tw	

REVISION HISTORY

Revision	No.	Report Number	Issue Date	Description	Author/ Revised by
1.0	RXZ1801028	RXZ1801028-00A	2018.03.01	Original Report	Kaylee

TABLE OF CONTENTS

1	GENERAL INFORMATION.....	5
1.1	PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT).....	5
1.2	OBJECTIVE.....	6
1.3	RELATED SUBMITTAL(S)/GRANT(S)	6
1.4	TEST METHODOLOGY	6
1.5	TEST FACILITY	6
2	SYSTEM TEST CONFIGURATION.....	7
2.1	DESCRIPTION OF TEST CONFIGURATION	7
2.2	EQUIPMENT MODIFICATIONS	7
2.3	EUT EXERCISE SOFTWARE.....	8
2.4	SUPPORT EQUIPMENT LIST AND DETAILS	8
2.5	EXTERNAL CABLE LIST AND DETAILS	8
2.6	BLOCK DIAGRAM OF TEST SETUP.....	9
2.7	DUTY CYCLE	11
3	SUMMARY OF TEST RESULTS	15
4	FCC §15.247(I), §1.1310, § 2.1091 - MAXIMUM PERMISSIBLE EXPOSURE (MPE)	16
4.1	APPLICABLE STANDARD	16
4.2	RF EXPOSURE EVALUATION RESULT	16
5	FCC §15.203 – ANTENNA REQUIREMENTS.....	17
5.1	APPLICABLE STANDARD	17
5.2	ANTENNA LIST AND DETAILS	17
6	FCC §15.207 - AC LINE CONDUCTED EMISSIONS.....	18
6.1	APPLICABLE STANDARD	18
6.2	MEASUREMENT UNCERTAINTY	18
6.3	EUT SETUP.....	19
6.4	EMI TEST RECEIVER SETUP	19
6.5	TEST PROCEDURE	19
6.6	CORRECTED FACTOR & MARGIN CALCULATION	20
6.7	TEST EQUIPMENT LIST AND DETAILS	20
6.8	TEST ENVIRONMENTAL CONDITIONS.....	20
6.9	TEST RESULTS	20
7	FCC §15.209, §15.205, §15.247(D) – SPURIOUS EMISSIONS.....	27
7.1	APPLICABLE STANDARD	27
7.2	MEASUREMENT UNCERTAINTY	28
7.3	EUT SETUP.....	28
7.4	EMI TEST RECEIVER & SPECTRUM ANALYZER SETUP	29
7.5	TEST PROCEDURE	29
7.6	CORRECTED FACTOR & MARGIN CALCULATION	29
7.7	TEST RESULTS SUMMARY	30
7.8	TEST EQUIPMENT LIST AND DETAILS	30
7.9	TEST ENVIRONMENTAL CONDITIONS.....	30
7.10	TEST RESULTS	31
8	FCC §15.247(A)(2) – 6 DB EMISSION BANDWIDTH	59
8.1	APPLICABLE STANDARD	59
8.2	TEST PROCEDURE	59
8.3	TEST EQUIPMENT LIST AND DETAILS	59
8.4	TEST ENVIRONMENTAL CONDITIONS.....	59
8.5	TEST RESULTS	60
9	FCC §15.247(B)(3) – MAXIMUM OUTPUT POWER	70

9.1	APPLICABLE STANDARD	70
9.2	TEST PROCEDURE	70
9.3	TEST EQUIPMENT LIST AND DETAILS	70
9.4	TEST ENVIRONMENTAL CONDITIONS.....	70
9.5	TEST RESULTS	71
10	FCC §15.247(D) – 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE	73
10.1	APPLICABLE STANDARD	73
10.2	TEST PROCEDURE	73
10.3	TEST EQUIPMENT LIST AND DETAILS	73
10.4	TEST ENVIRONMENTAL CONDITIONS.....	73
10.5	TEST RESULTS	74
11	FCC §15.247(E) – POWER SPECTRAL DENSITY	81
11.1	APPLICABLE STANDARD	81
11.2	TEST PROCEDURE	81
11.3	TEST EQUIPMENT LIST AND DETAILS	81
11.4	TEST ENVIRONMENTAL CONDITIONS.....	81
11.5	TEST RESULTS	82

1 General Information

1.1 Product Description for Equipment Under Test (EUT)

Applicant:	Kohler China Investment Co., Ltd. No.158, Jiang Chang San Road, Jingan District, Shanghai, PRC
Manufacturer:	Kunshan CC&C Technologies, Co., LTD. No.9 Building, 3rd Main Street, Kunshan Free Trade Zone, JiangSu, China
Product:	Kohler Intelligent gateway
Model:	K-25490-X-0
Trade Name:	KOHLER®
Frequency Range:	BLE Mode: 2402 ~ 2480 MHz IEEE 802.11b/g/n HT20 Mode: 2412 ~ 2462 MHz IEEE 802.11n HT40 Mode: 2422 ~ 2452 MHz
Transmit Power:	BLE 1 Mode: 3.99dBm (0.003W) BLE 2 Mode: 5.79dBm (0.004W) IEEE 802.11b Mode: 18.94dBm (0.078W) IEEE 802.11g Mode: 23.64dBm (0.231W) IEEE 802.11n HT20 Mode: 23.00dBm (0.200W) IEEE 802.11n HT40 Mode: 19.48dBm (0.089W)
Modulation Technique:	BLE Mode: GFSK IEEE 802.11b Mode: DSSS IEEE 802.11g Mode: OFDM IEEE 802.11n HT20 Mode: OFDM IEEE 802.11n HT40 Mode: OFDM
Transmit Data Rate:	BLE Mode: 1Mbps IEEE 802.11b Mode: 11, 5.5, 2, 1 Mbps IEEE 802.11g Mode: 54, 48, 36, 24, 18, 12, 11, 9, 6Mbps IEEE 802.11n HT 20 MHz mode: 6.5 - 72.2Mbps IEEE 802.11n HT 40 MHz mode: 13.5 - 150 Mbps
Number of Channels:	BLE Mode: 40 Channels IEEE 802.11b/g / IEEE 802.11n HT20 Mode: 11 Channels IEEE 802.11n HT40 Mode: 7 Channels
Antenna Specification:	BLE 1: PCB Antenna/Gain: 3.21 dBi BLE 2: PCB Antenna/Gain: 2.69 dBi WIFI: PCB Antenna/Gain: 3.24 dBi
Voltage Range:	5Vdc from Adapter
Date of Test:	Feb 23, 2018 ~ Feb 27, 2018

**All measurement and test data in this report was gathered from production sample serial number: 1801028*

(Assigned by BACL, Taiwan). The EUT supplied by the applicant was received on 2018-01-26.

*Adapter Information:**Model: YHSW-050200U**I/P: 100-240Vac, 50/60Hz, 0.5A MAX**O/P: 5Vdc, 2000mA***1.2 Objective**

This report is prepared on behalf of *Kohler China Investment Co., Ltd.* in accordance with Part 2, Subpart J, Part 15, Subparts A and C of the Federal Communication Commission's rules.

The objective is to determine compliance with FCC Part 15.247 rules for Output Power, Antenna Requirements, 6 dB Bandwidth, Power spectral density, 100 kHz Bandwidth of Band Edges Measurement, Conducted and Radiated Spurious Emissions.

1.3 Related Submittal(s)/Grant(s)

N/A

1.4 Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

KDB 558074 D01 DTS Meas Guidance v04

1.5 Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Taiwan) to collect test data is located on

☒ 70, Lane 169, Sec. 2, Datong Road, Xizhi Dist., New Taipei City 22183, Taiwan, R.O.C.

☒ 68-3, Lane 169, Sec. 2, Datong Road, Xizhi Dist., New Taipei City 22183, Taiwan, R.O.C.

Bay Area Compliance Laboratories Corp. (Taiwan) Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 3180) and the FCC designation No.TW3180 under the Mutual Recognition Agreement (MRA) in FCC Test. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.10.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 974454. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

2 System Test Configuration

2.1 Description of Test Configuration

For WIFI mode, there are totally 11 channels.

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	7	2442
2	2417	8	2447
3	2422	9	2452
4	2427	10	2457
5	2432	11	2462
6	2437		

For 802.11 b/g/n20 Modes were testd with channel 1, 6 and 11

For 802.11n40 Mode were testd with channel 3, 6 and 9

For BLE mode, there are totally 40 channels.

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2402	21	2442
2	2404	--	--
3	2406	--	--
4	2408	38	2476
--	--	39	2478
20	2440	40	2480

EUT was tested with Channel 1, 20 and 40.

2.2 Equipment Modifications

No modification was made to the EUT

2.3 EUT Exercise Software

Used “QRFCT” software.

Test Software Version		Engineering Mode		
Test Frequency		Low	Mid	High
Power Level Setting	BLE Mode	0	0	0
	B Mode	51	52	49
	G Mode	52	57	57
	N20 Mode	52	55	55
	N40 Mode	44	48	48

The EUT was configured for testing in an engineering mode which was provided by the manufacturer. The worst-case data rates are determined to be as follows for each mode based upon investigations by measuring the average power and PSD across all data rates bandwidths, and modulations.

BLE: 1 Mbps
 802.11b: 1Mbps
 802.11g: 6Mbps
 802.11n ht20: MCS0
 802.11n ht40: MCS0

2.4 Support Equipment List and Details

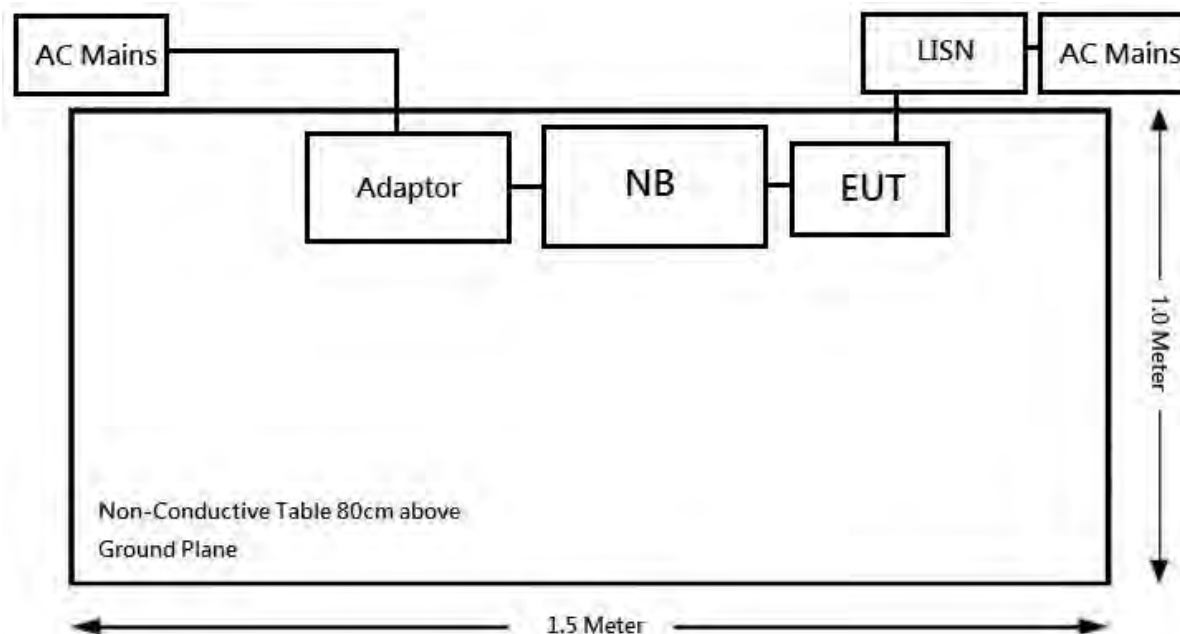
Description	Manufacturer	Model Number	BSMI	FCC ID / DOC	S/N
NB	DELL	E6410	N/A	PD98260NGU	10912240367

2.5 External Cable List and Details

Cable Description	Length (m)	From	To
Mini USB Cable	1.5	NB	EUT

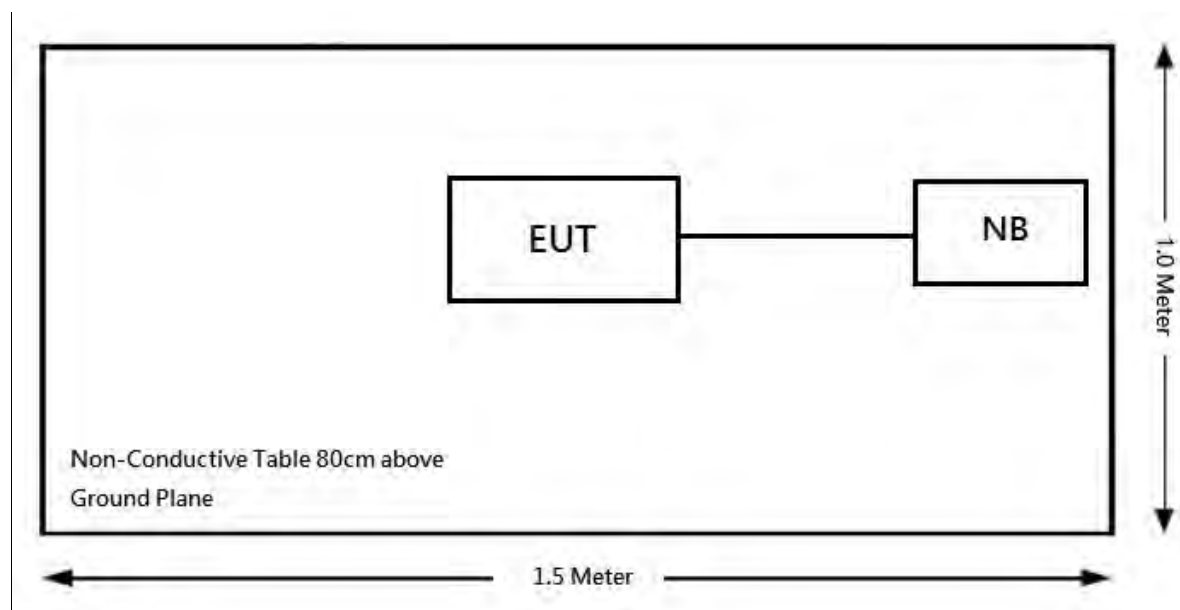
2.6 Block Diagram of Test Setup

See test photographs attached in Exhibit A for the actual connections between EUT and support equipment.
Conduction:

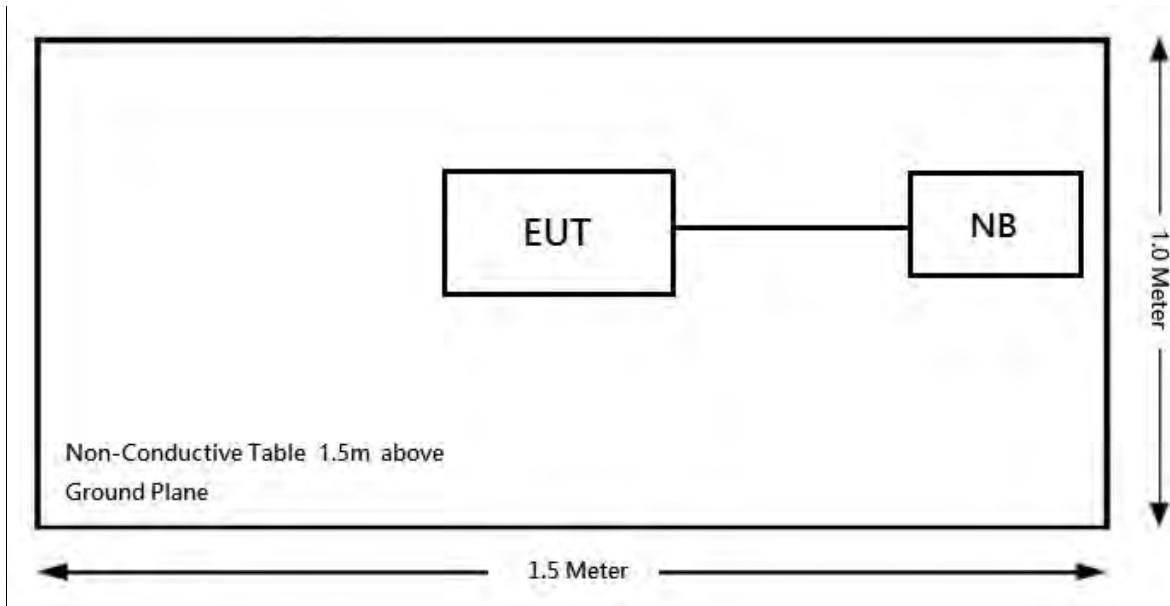


Radiation

Below 1GHz:



Above 1GHz:



2.7 Duty Cycle

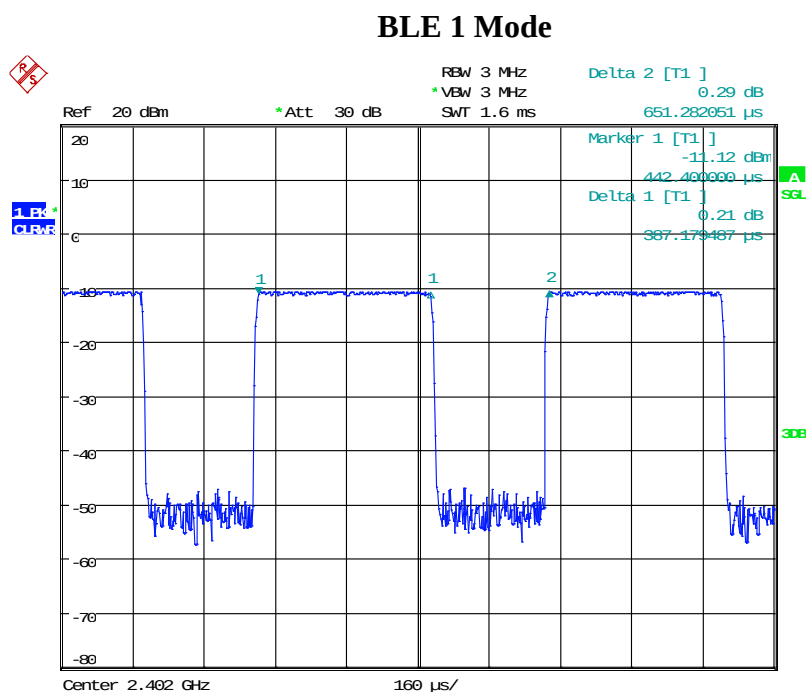
According to KDB 558074 D01 DTS Meas Guidance v04 section 6.0:

All measurements are to be performed with the EUT transmitting at 100% duty cycle at its maximum power control level; however, if 100% duty cycle cannot be achieved, measurements of duty cycle, x, and maximum power transmission duration, T, are required for each tested mode of operation.

Radio Mode	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
BLE 1	0.389	0.651	0.59	2.29
BLE 2	0.379	0.649	0.58	2.37
802.11b	47.00	47.00	1.00	0.00
802.11g	1.997	2.076	0.96	0.18
802.11n20	1.889	1.946	0.97	0.13
802.11n40	0.926	0.965	0.96	0.18

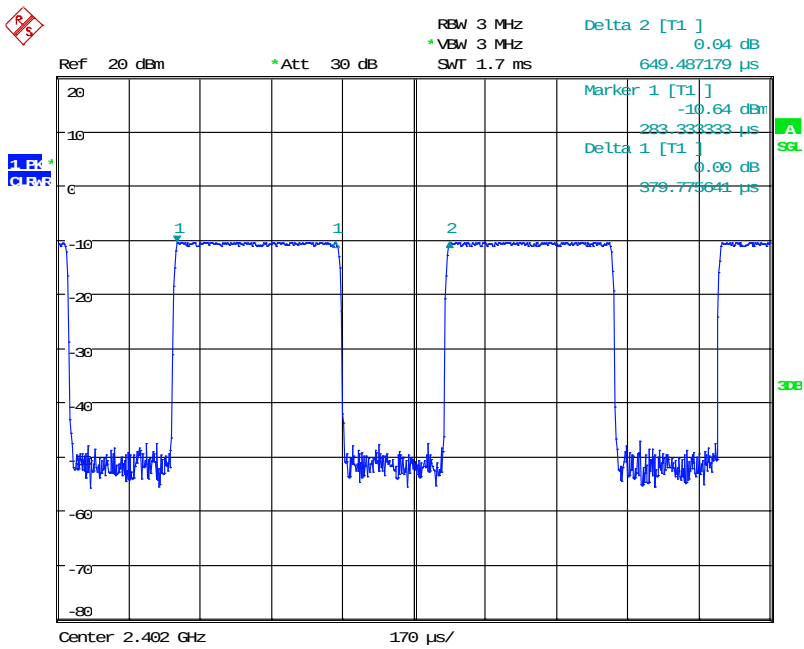
Note: Duty Cycle Correction Factor = $10 \cdot \log(1/\text{duty cycle})$

Please refer to the following plots.



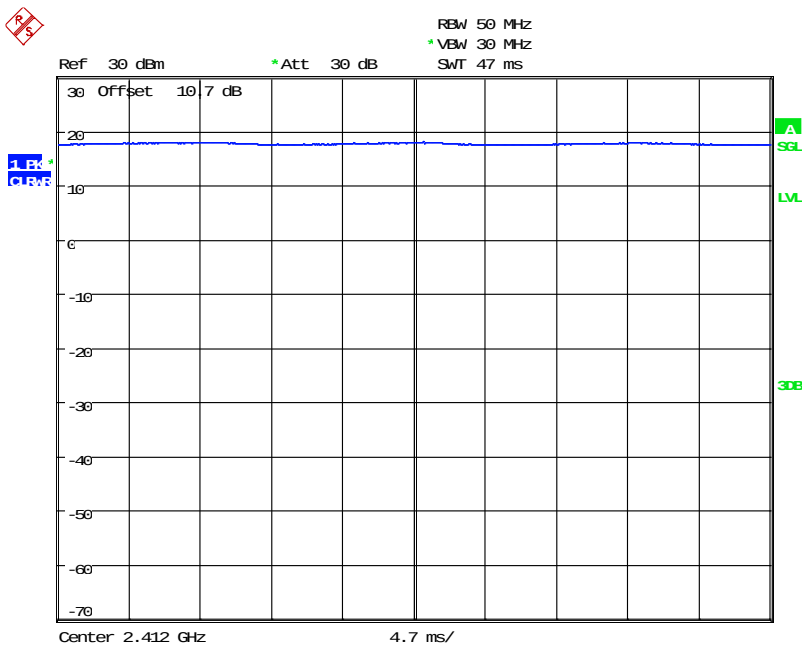
Date: 26.FEB.2018 12:35:05

BLE 2 Mode



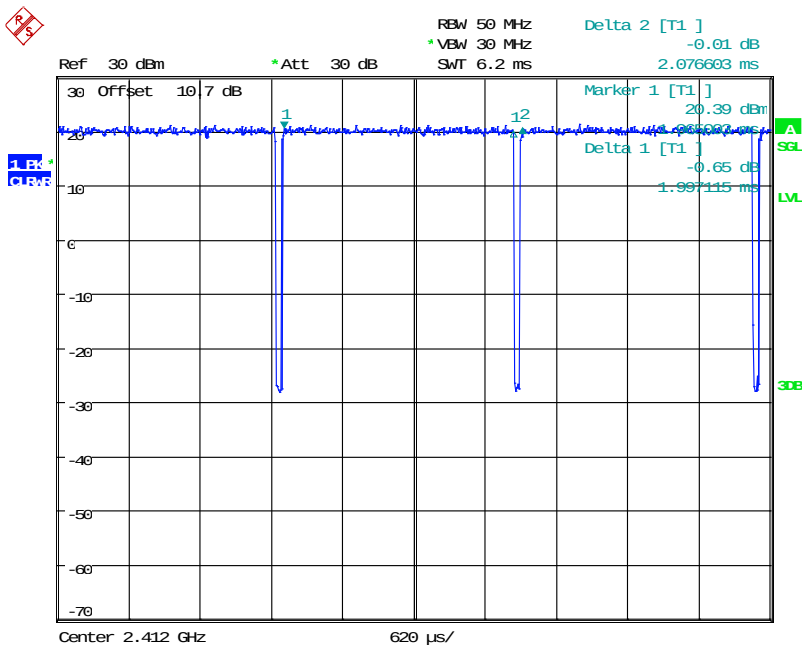
Date: 26.FEB.2018 13:15:27

B Mode



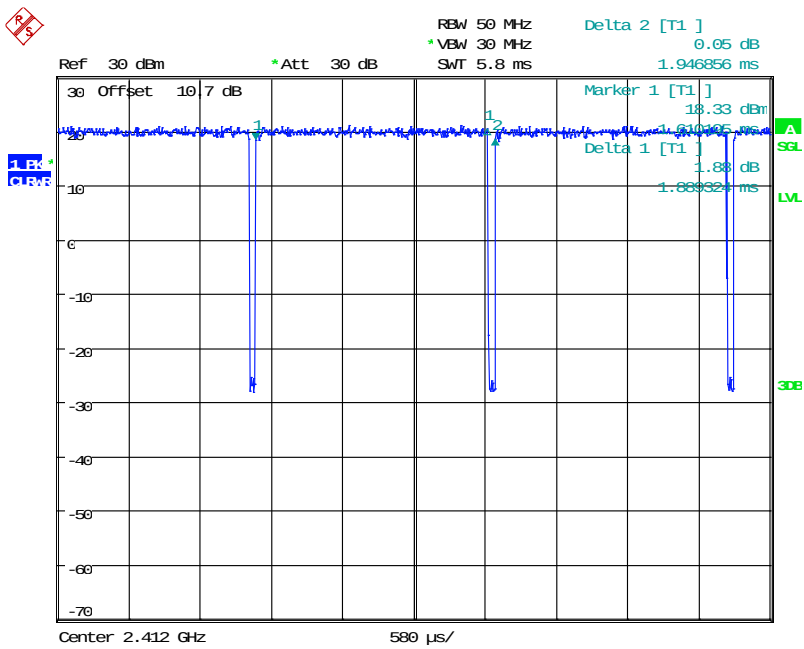
Date: 26.FEB.2018 14:21:55

G Mode



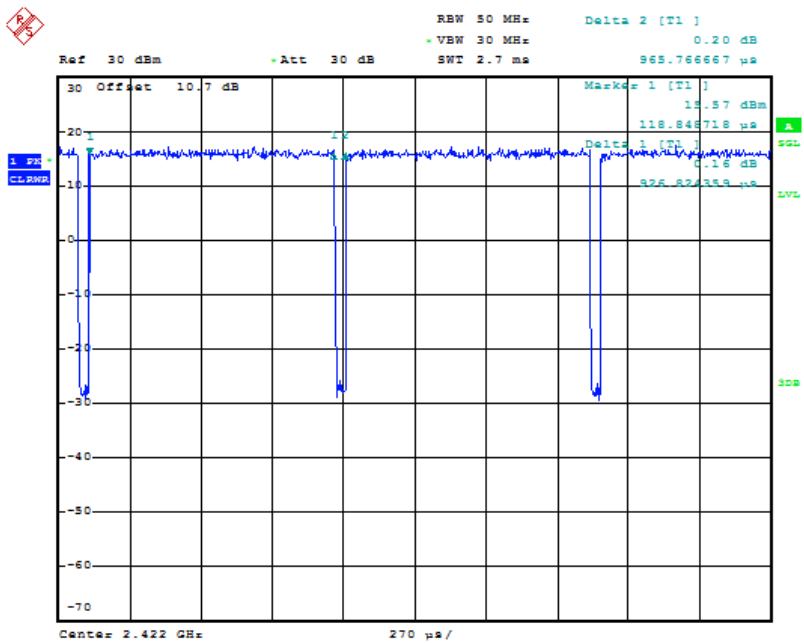
Date: 26.FEB.2018 14:24:28

N20 Mode



Date: 26.FEB.2018 14:44:54

N40 Mode



Date: 26.FEB.2018 14:27:36

3 Summary of Test Results

FCC Rules	Description of Test	Result
§15.247(i), §1.1310 ,§ 2.1091	Maximum Permissible Exposure (MPE)	Compliance
§15.203	Antenna Requirement	Compliance
§15.207(a)	AC Line Conducted Emissions	Compliance
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliance
§15.247(a)(2)	6 dB Emission Bandwidth	Compliance
§15.247(b)(3)	Maximum Peak Output Power	Compliance
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliance
§15.247(e)	Power Spectral Density	Compliance

4 FCC § 15.247(i), §1.1310, § 2.1091 - Maximum Permissible Exposure (MPE)

4.1 Applicable Standard

According to subpart 15.247(i) and subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculated Formulary:

Predication of MPE limit at a given distance

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm²);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

4.2 RF Exposure Evaluation Result

MPE evaluation:

Mode	Frequency Range (MHz)	Antenna Gain		Target Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
BLE 1	2402-2480	3.21	2.094	4.00	2.512	20	0.001	1
BLE 2	2402-2480	2.69	1.858	6.00	3.981	20	0.001	1
WIFI	2412-2462	3.24	2.109	18.5	70.795	20	0.300	1

BLE 1 and BLE2 with WIFI will not be launched at the same time, so there will be no co-located.

Result: MPE evaluation meet 20 cm the requirement of standard.

5 FCC §15.203 – Antenna Requirements

5.1 Applicable Standard

According to § 15.203,

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. 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 provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited.

And according to FCC 47 CFR section 15.247 (b), if the transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna does not exceed 6 dBi

5.2 Antenna List and Details

Type No.	Manufacturer	Antenna Type	Antenna Gain	Result
BLE 1	Kunshan CC&C Technologies, Co., LTD.	PCB Antenna	3.21 dBi	Compliance
BLE 2	Kunshan CC&C Technologies, Co., LTD.	PCB Antenna	2.69 dBi	Compliance
WIFI	Kunshan CC&C Technologies, Co., LTD.	PCB Antenna	3.24 dBi	Compliance

The EUT has three internal antenna arrangement, which was permanently attached, fulfill the requirement of this section.

6 FCC §15.207 - AC Line Conducted Emissions

6.1 Applicable Standard

According to FCC §15.207 Conducted limits:

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequencies ranges.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56 ^{Note 1}	56 to 46 ^{Note 2}
0.5-5	56	46
5-30	60	50

Note 1: Decreases with the logarithm of the frequency.

Note 2: A linear average detector is required

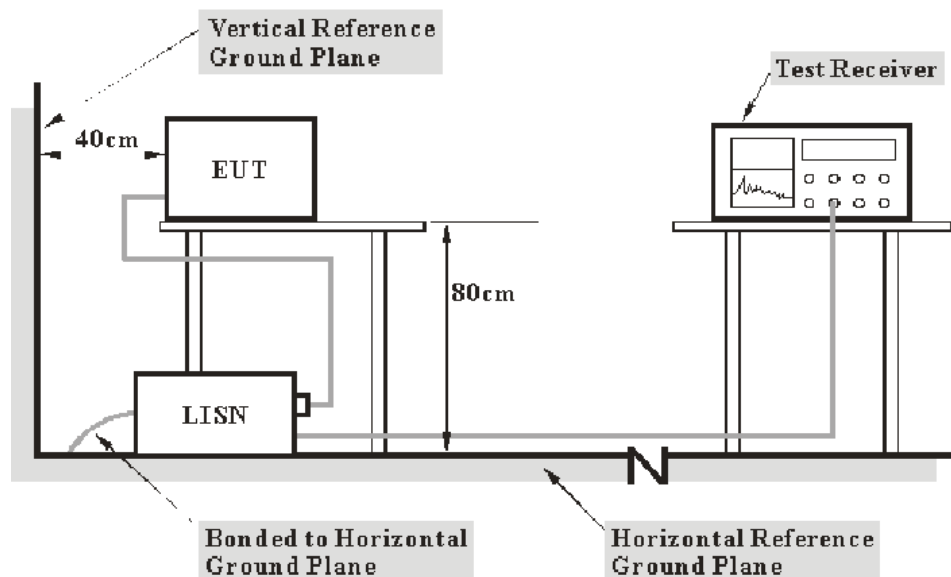
6.2 Measurement Uncertainty

Input quantities to be considered for conducted disturbance measurements maybe receiver reading, attenuation of the connection between LISN/ISN and receiver, LISN/ISN voltage division factor, LISN/ISN VDF frequency interpolation and receiver related input quantities, etc.

Based on CISPR 16-4-2:2011, the expended combined standard uncertainty of conducted disturbance test at Bay Area Compliance Laboratories Corp. (Taiwan) is shown as below. And the uncertainty will not be taken into consideration for the test data recorded in the report

Port	Expanded Measurement uncertainty
AC Mains	4.64 dB (k=2, 95% level of confidence)

6.3 EUT Setup



- Note: 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

6.4 EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz. During the conducted emission test, the EMI test receiver was set with the following configurations

Frequency Range	Receiver RBW
150 kHz - 30 MHz	9 kHz

6.5 Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the LISN. Maximizing procedure was performed on the six (6) highest emissions of the EUT. All data was recorded in the Quasi-peak and average detection mode.

6.6 Corrected Factor & Margin Calculation

The factor is calculated by adding LISN/ISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

$$\text{Factor} = \text{LISN VDF} + \text{Cable Loss} + \text{Transient Limiter Attenuation}$$

The “Over Limit” column of the following data tables indicates the degree of compliance with the applicable limit. For example, an over limit of -7 dB means the emission is 7 dB below the limit. The equation for Over Limit calculation is as follows:

$$\text{Over Limit} = \text{Level} - \text{Limit Line}$$

6.7 Test Equipment List and Details

Manufacturers	Descriptions	Models	Serial Numbers	Calibration Date	Calibration Due Date
LISN	Rohde & Schwarz	ENV216	101248	2017/07/20	2018/07/19
EMI Test Receiver	Rohde & Schwarz	ESR7	101419	2017/11/06	2018/11/05
Pulse Limiter	Rohde & Schwarz	ESH3Z2	TXZEM025	2017/08/10	2018/08/09
RF Cable	EMEC	EM-CB5D	001	2017/07/10	2018/07/09
Software	AUDIX	E3	V9.150826k	N.C.R	N.C.R

* **Statement of Traceability:** BACL Corp. attests that all calibrations have been performed according to TAF requirements, traceable to the ETC.

6.8 Test Environmental Conditions

Temperature:	25 °C
Relative Humidity:	58 %
ATM Pressure:	1010 hPa

The testing was performed by Andy Shih on 2018-02-27.

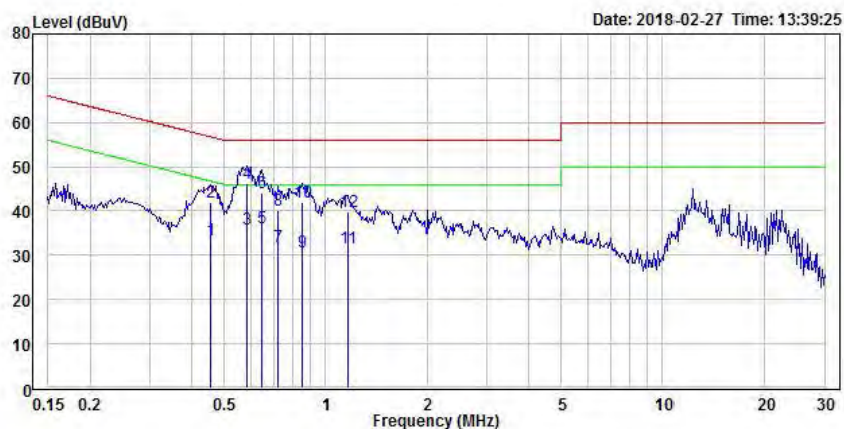
6.9 Test Results

Please refer to the following plots and tables.

Test mode: Transmitting

BLE 1**Main: AC 120V/60 Hz, Line**

倍科檢驗科技有限公司 Bay Area Compliance Labs Corp.



Condition: Line

EUT :

Model :

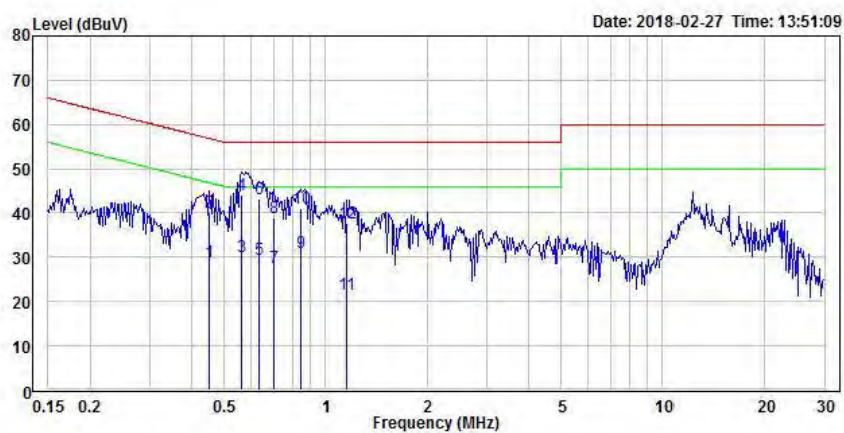
Note :

Power :

	Freq	Level	Limit	Over	Read			
	MHz	dBuV	Line	Limit	Factor	Level	Remark	Pol/Phase
	MHz	dBuV	dBuV	dB	dB	dBuV		
1	0.454	33.55	46.80	-13.25	19.51	14.04	Average	Line
2	0.454	41.83	56.80	-14.97	19.51	22.32	QP	Line
3	0.586	35.83	46.00	-10.17	19.51	16.32	Average	Line
4	0.586	46.32	56.00	-9.68	19.51	26.81	QP	Line
5	0.645	36.17	46.00	-9.83	19.52	16.65	Average	Line
6	0.645	44.19	56.00	-11.81	19.52	24.67	QP	Line
7	0.721	32.03	46.00	-13.97	19.52	12.51	Average	Line
8	0.721	40.30	56.00	-15.70	19.52	20.78	QP	Line
9	0.852	30.67	46.00	-15.33	19.53	11.14	Average	Line
10	0.852	41.86	56.00	-14.14	19.53	22.33	QP	Line
11	1.162	31.77	46.00	-14.23	19.54	12.23	Average	Line
12	1.162	39.80	56.00	-16.20	19.54	20.26	QP	Line

Main: AC 120V/60 Hz, Neutral

倍科檢驗科技有限公司 Bay Area Compliance Labs Corp.



Condition: Neutral

EUT :

Model :

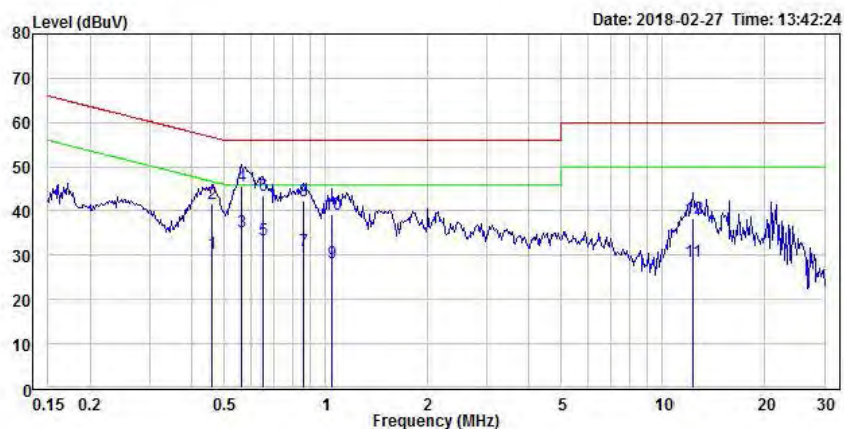
Note :

Power :

	Freq	Level	Limit	Over		Read		
	MHz	dBuV	Line	Limit	Factor	Level	Remark	Pol/Phase
	MHz	dBuV	dBuV	dB	dB	dBuV		
1	0.450	28.76	46.87	-18.11	19.64	9.12	Average	Neutral
2	0.450	40.10	56.87	-16.77	19.64	20.46	QP	Neutral
3	0.563	30.19	46.00	-15.81	19.64	10.55	Average	Neutral
4	0.563	44.24	56.00	-11.76	19.64	24.60	QP	Neutral
5	0.634	29.39	46.00	-16.61	19.66	9.73	Average	Neutral
6	0.634	43.08	56.00	-12.92	19.66	23.42	QP	Neutral
7	0.704	27.74	46.00	-18.26	19.66	8.08	Average	Neutral
8	0.704	39.08	56.00	-16.92	19.66	19.42	QP	Neutral
9	0.845	31.00	46.00	-15.00	19.67	11.33	Average	Neutral
10	0.845	41.00	56.00	-15.00	19.67	21.33	QP	Neutral
11	1.153	21.63	46.00	-24.37	19.68	1.95	Average	Neutral
12	1.153	37.60	56.00	-18.40	19.68	17.92	QP	Neutral

BLE 2**Main: AC 120V/60 Hz, Line**

倍科檢驗科技有限公司 Bay Area Compliance Labs Corp.



Condition: Line

EUT :

Model :

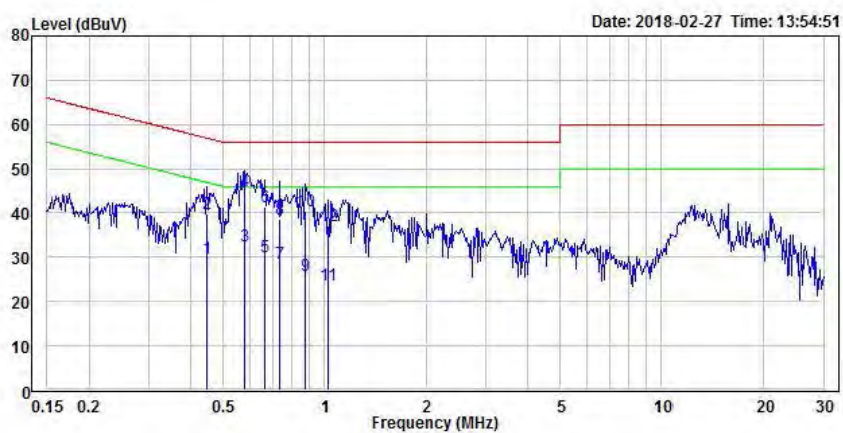
Note :

Power :

	Freq	Level	Limit	Over	Read			
	MHz	dBuV	Line	Limit	Factor	Level	Remark	Pol/Phase
	MHz	dBuV	dBuV	dB	dB	dBuV		
1	0.461	30.53	46.67	-16.14	19.51	11.02	Average	Line
2	0.461	41.61	56.67	-15.06	19.51	22.10	QP	Line
3	0.563	35.20	46.00	-10.80	19.51	15.69	Average	Line
4	0.563	45.69	56.00	-10.31	19.51	26.18	QP	Line
5	0.655	33.45	46.00	-12.55	19.52	13.93	Average	Line
6	0.655	43.60	56.00	-12.40	19.52	24.08	QP	Line
7	0.859	31.16	46.00	-14.84	19.53	11.63	Average	Line
8	0.859	42.25	56.00	-13.75	19.53	22.72	QP	Line
9	1.048	28.17	46.00	-17.83	19.53	8.64	Average	Line
10	1.048	39.09	56.00	-16.91	19.53	19.56	QP	Line
11	12.193	28.64	50.00	-21.36	19.77	8.87	Average	Line
12	12.193	38.29	60.00	-21.71	19.77	18.52	QP	Line

Main: AC 120V/60 Hz, Neutral

倍科檢驗科技有限公司 Bay Area Compliance Labs Corp.



Condition: Neutral

EUT :

Model :

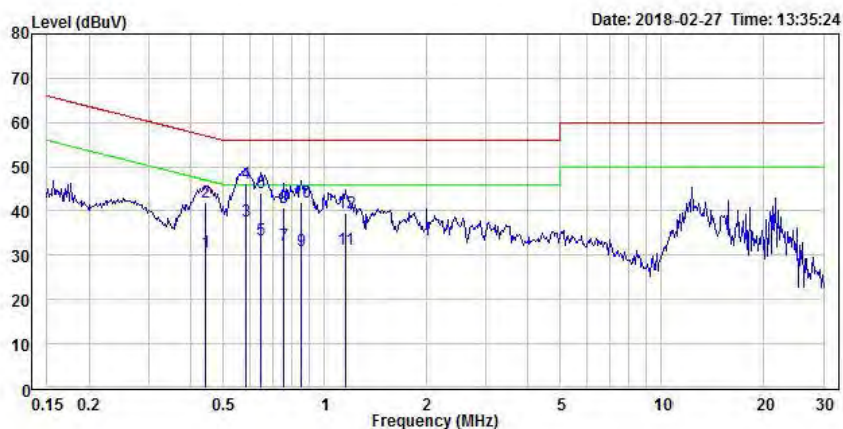
Note :

Power :

	Freq	Level	Limit	Over		Read		
	MHz	dBuV	Line	Limit	Factor	Level	Remark	Pol/Phase
	MHz	dBuV	dBuV	dB	dB	dBuV		
1	0.447	29.88	46.93	-17.05	19.64	10.24	Average	Neutral
2	0.447	39.98	56.93	-16.95	19.64	20.34	QP	Neutral
3	0.581	32.69	46.00	-13.31	19.64	13.05	Average	Neutral
4	0.581	45.13	56.00	-10.87	19.64	25.49	QP	Neutral
5	0.666	30.07	46.00	-15.93	19.66	10.41	Average	Neutral
6	0.666	41.29	56.00	-14.71	19.66	21.63	QP	Neutral
7	0.738	28.51	46.00	-17.49	19.66	8.85	Average	Neutral
8	0.738	38.62	56.00	-17.38	19.66	18.96	QP	Neutral
9	0.873	25.89	46.00	-20.11	19.67	6.22	Average	Neutral
10	0.873	40.48	56.00	-15.52	19.67	20.81	QP	Neutral
11	1.023	23.87	46.00	-22.13	19.67	4.20	Average	Neutral
12	1.023	37.00	56.00	-19.00	19.67	17.33	QP	Neutral

WIFI**Main: AC 120V/60 Hz, Line**

倍科檢驗科技有限公司 Bay Area Compliance Labs Corp.



Condition: Line

EUT :

Model :

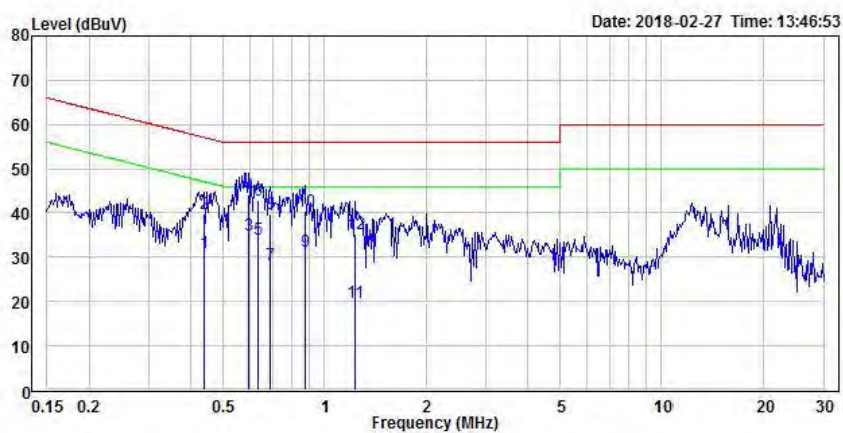
Note :

Power :

	Freq	Level	Limit	Over	Read		
	MHz	dBuV	Line	Limit	Factor	Level	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	Pol/Phase
1	0.443	30.69	47.00	-16.31	19.51	11.18	Average Line
2	0.443	41.85	57.00	-15.15	19.51	22.34	QP Line
3	0.586	37.64	46.00	-8.36	19.51	18.13	Average Line
4	0.586	46.36	56.00	-9.64	19.51	26.85	QP Line
5	0.645	33.56	46.00	-12.44	19.52	14.04	Average Line
6	0.645	44.15	56.00	-11.85	19.52	24.63	QP Line
7	0.756	32.10	46.00	-13.90	19.52	12.58	Average Line
8	0.756	40.72	56.00	-15.28	19.52	21.20	QP Line
9	0.852	31.06	46.00	-14.94	19.53	11.53	Average Line
10	0.852	41.98	56.00	-14.02	19.53	22.45	QP Line
11	1.153	31.39	46.00	-14.61	19.54	11.85	Average Line
12	1.153	39.63	56.00	-16.37	19.54	20.09	QP Line

Main: AC 120V/60 Hz, Neutral

倍科檢驗科技有限公司 Bay Area Compliance Labs Corp.



Condition: Neutral

EUT :

Model :

Note :

Power :

	Freq	Level	Limit	Over		Read		
	MHz	dBuV	Line	Limit	Factor	Level	Remark	Pol/Phase
	MHz	dBuV	dBuV	dB	dB	dBuV		
1	0.440	31.07	47.07	-16.00	19.64	11.43	Average	Neutral
2	0.440	39.92	57.07	-17.15	19.64	20.28	QP	Neutral
3	0.595	35.04	46.00	-10.96	19.65	15.39	Average	Neutral
4	0.595	44.10	56.00	-11.90	19.65	24.45	QP	Neutral
5	0.634	34.09	46.00	-11.91	19.66	14.43	Average	Neutral
6	0.634	42.95	56.00	-13.05	19.66	23.29	QP	Neutral
7	0.687	28.41	46.00	-17.59	19.66	8.75	Average	Neutral
8	0.687	39.79	56.00	-16.21	19.66	20.13	QP	Neutral
9	0.873	31.36	46.00	-14.64	19.67	11.69	Average	Neutral
10	0.873	40.36	56.00	-15.64	19.67	20.69	QP	Neutral
11	1.229	19.90	46.00	-26.10	19.68	0.22	Average	Neutral
12	1.229	35.40	56.00	-20.60	19.68	15.72	QP	Neutral

7 FCC §15.209, §15.205, §15.247(d) – Spurious Emissions

7.1 Applicable Standard

As per FCC §15.35(d): Unless otherwise specified, on any frequency or frequencies above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1 MHz.

As Per FCC §15.205(a) except as show in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 – 0.110	16.42 – 16.423	960 – 1240	4. 5 – 5. 15
0.495 – 0.505	16.69475 – 16.69525	1300 – 1427	5. 35 – 5. 46
2.1735 – 2.1905	25.5 – 25.67	1435 – 1626.5	7.25 – 7.75
4.125 – 4.128	37.5 – 38.25	1645.5 – 1646.5	8.025 – 8.5
4.17725 – 4.17775	73 – 74.6	1660 – 1710	9.0 – 9.2
4.20725 – 4.20775	74.8 – 75.2	1718.8 – 1722.2	9.3 – 9.5
6.215 – 6.218	108 – 121.94	2200 – 2300	10.6 – 12.7
6.26775 – 6.26825	123 – 138	2310 – 2390	13.25 – 13.4
6.31175 – 6.31225	149.9 – 150.05	2483.5 – 2500	14.47 – 14.5
8.291 – 8.294	156.52475 – 156.52525	2690 – 2900	15.35 – 16.2
8.362 – 8.366	156.7 – 156.9	3260 – 3267	17.7 – 21.4
8.37625 – 8.38675	162.0125 – 167.17	3.332 – 3.339	22.01 – 23.12
8.41425 – 8.41475	167.72 – 173.2	3 3458 – 3 358	23.6 – 24.0
12.29 – 12.293	240 – 285	3.600 – 4.400	31.2 – 31.8
12.51975 – 12.52025	322 – 335.4		36.43 – 36.5
12.57675 – 12.57725	399.9 – 410		Above 38.6
13.36 – 13.41	608 – 614		

As per FCC §15.209(a): Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (micro volts/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

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

As per FCC §15.247 (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

7.2 Measurement Uncertainty

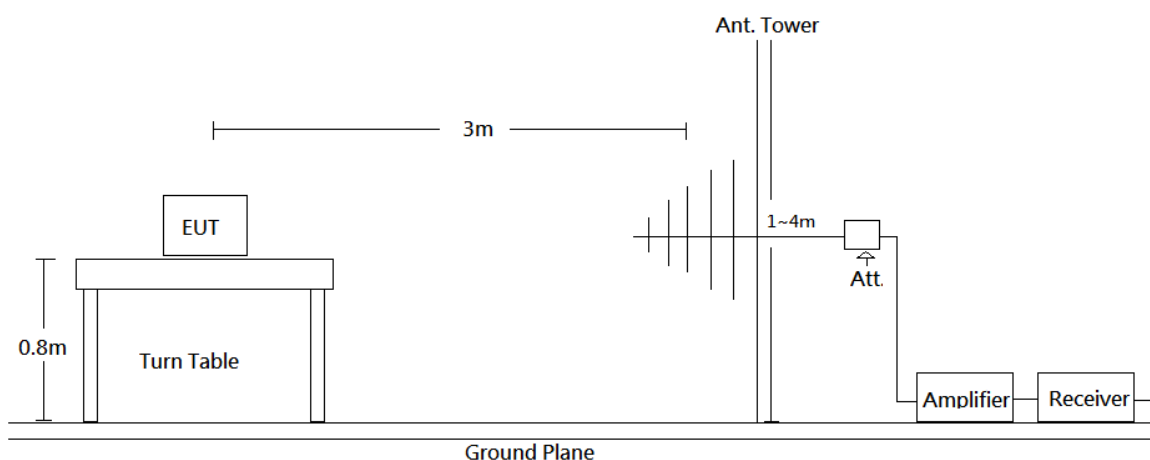
All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR 16-4-2:2011, the expended combined standard uncertainty of radiation emissions at Bay Area Compliance Laboratories Corp. (Taiwan) is shown in below table. And the uncertainty will not be taken into consideration for the test data recorded in the report.

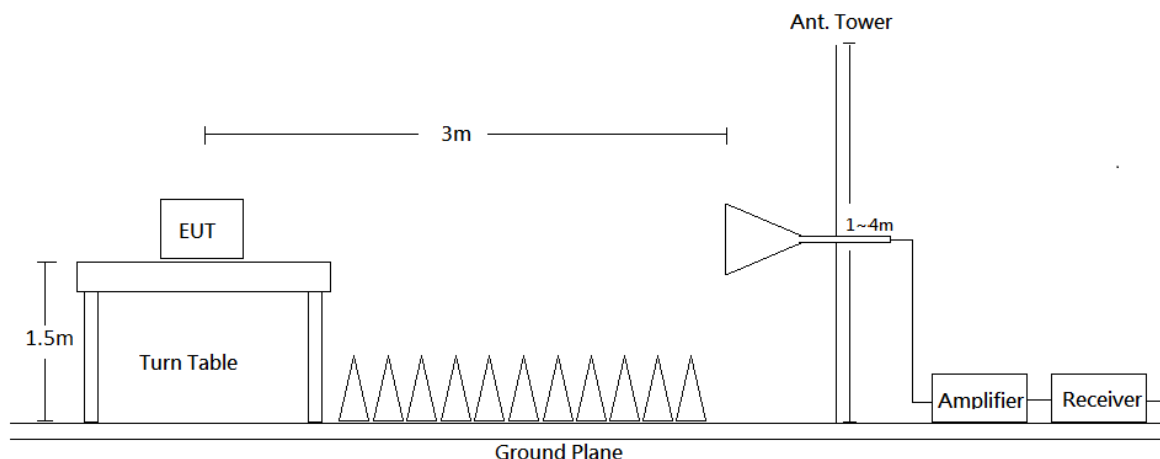
Frequency	Measurement uncertainty
30 MHz~200 MHz	3.76 dB (k=2, 95% level of confidence)
200 MHz~1 GHz	4.12 dB (k=2, 95% level of confidence)
1 GHz~6 GHz	4.84 dB (k=2, 95% level of confidence)
6 GHz~18 GHz	5.16 dB (k=2, 95% level of confidence)
18 GHz~26 GHz	4.84 dB (k=2, 95% level of confidence)
26 GHz~40 GHz	4.30 dB (k=2, 95% level of confidence)

7.3 EUT Setup

Blow 1 GHz:



Above 1 GHz:



Radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC Part 15.209 and FCC 15.247 Limits.

7.4 EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 26.5 GHz. During the radiated emission test, the EMI test receiver for below 1GHz and spectrum analyzer for above 1GHz was set with the following configurations measurement method 6.3 in ANSI C63.10.

Frequency Range	RBW	VBW	Detector	Duty cycle	Measurement method
30-1000 MHz	120 kHz	/	QP		QP
Above 1 GHz	1 MHz	3 MHz	PK		PK
	1 MHz	3 MHz	RMS	>98%	Ave
	1 MHz	1/T	PK	<98%	Ave

7.5 Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the Quasi-peak detector mode from 30 MHz to 1 GHz and PK and average detector modes for frequencies above 1 GHz.

7.6 Corrected Factor & Margin Calculation

The Correct Factor is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Correct Factor} = \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Result} - \text{Limit}$$

7.7 Test Results Summary

According to the data in the following table, the EUT complied with the FCC §15.209 Limit. Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level complies with the limit if

$$L_m + U(L_m) \leq L_{lim} + U_{cispr}$$

In BACL, $U(L_m)$ is less than U_{cispr} , if L_m is less than L_{lim} , it implies that the EUT complies with the limit.

7.8 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
966A Room					
Bilog Antenna	Sunol & Mini-Circuits	JB6/UNAT-6+	A050115/1554 2 01	2017/12/20	2018/12/19
Horn Antenna	EMCO	3115	9311-4158	2017/05/24	2018/05/23
Horn Antenna	ETS-Lindgren	3116	62638	2017/09/13	2018/09/12
Preamplifier	Sonoma	310N	130602	2017/07/03	2018/07/02
Preamplifier	EMEC	EM01G18G	60697	2017/04/14	2018/04/13
Preamplifier	EMEC	EM18G40G	060656	2018/01/15	2019/01/14
EMI Test Receiver	Rohde & Schwarz	ESR7	101419	2017/11/06	2018/11/05
Spectrum Analyzer	Rohde & Schwarz	FSV40	101203	2017/07/13	2018/07/12
Microflex Cable	UTIFLEX	UFB311A-Q-1440-300300	220490-006	2017/10/31	2018/10/30
Microflex Cable	UTIFLEX	UFA210A-1-3149-300300	MFR64639 226389-001	2017/11/10	2018/11/09
Microflex Cable	ROSNOL	K1K50-UP0264-K1K50-450CM	160309-1	2017/03/14	2018/03/13
Microflex Cable	ROSNOL	K1K50-UP0264-K1K50-80CM	160309-2	2018/01/17	2019/01/16
Turn Table	Champro	TT-2000	060772-T	N.C.R	N.C.R
Antenna Tower	Champro	AM-BS-4500-B	060772-A	N.C.R	N.C.R
Controller	Champro	EM1000	60772	N.C.R	N.C.R
Software	Farad	EZ EMC	BACL-03A1	N.C.R	N.C.R
Conducted Room					
Spectrum Analyzer	Rohde & Schwarz	FSU26	200268	2017/05/08	2018/05/07
Cable	WOKEN	SFL402	S02-160323-07	2018/02/12	2019/02/11
Attenuator	MINI-CIRCUITS	BW-S3W5+	N/A	2017/12/14	2018/12/13

* **Statement of Traceability:** BACL Corp. attests that all calibrations have been performed according to TAF requirements, traceable to the ETC.

7.9 Test Environmental Conditions

Temperature:	25° C
Relative Humidity:	58 %
ATM Pressure:	1010 hPa

The testing was performed by Andy Shih on 2018-02-23 ~ 2018-02-26.

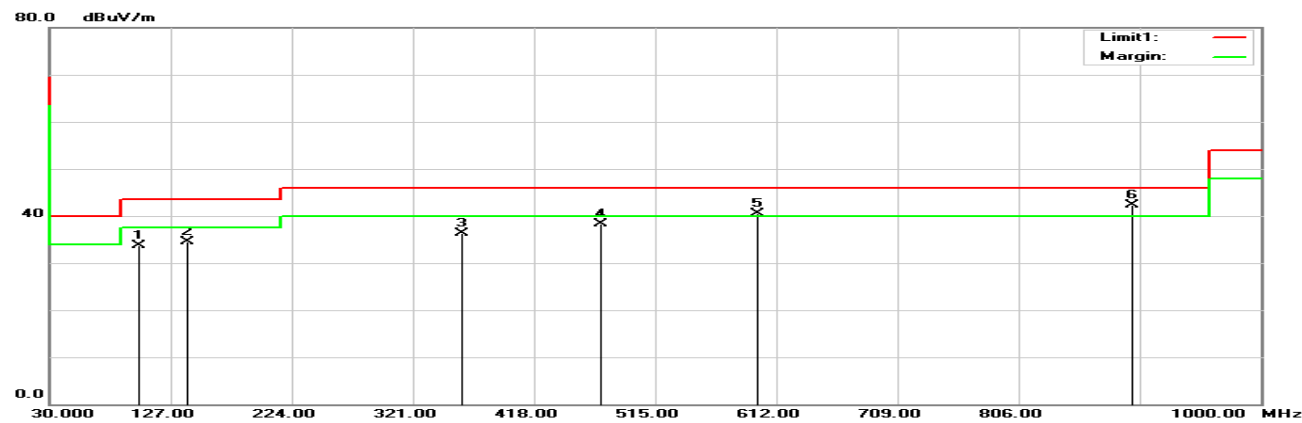
7.10 Test Results

Test Mode: Transmitting

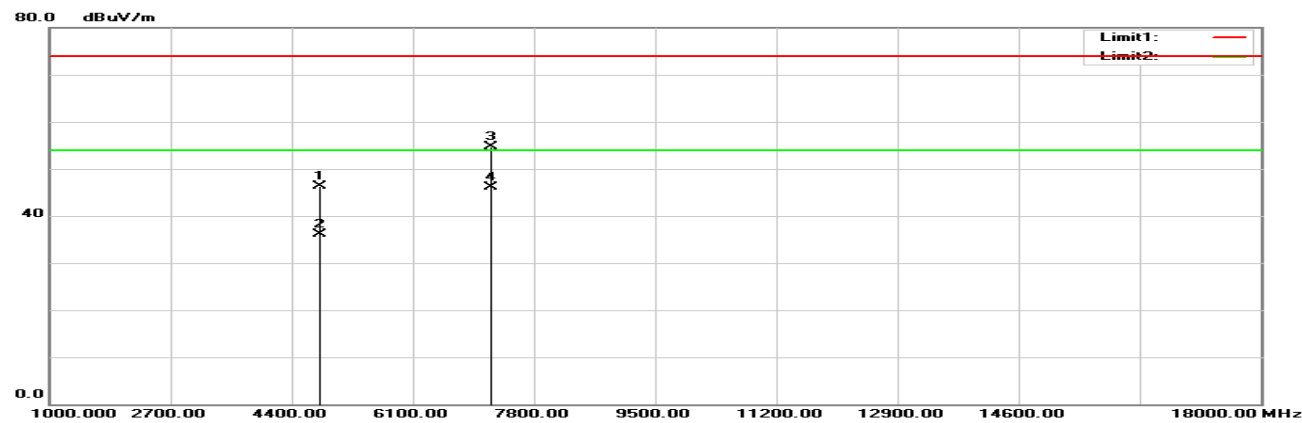
BLE 1 Mode

Horizontal (worst case is BLE 1 mode high channel)

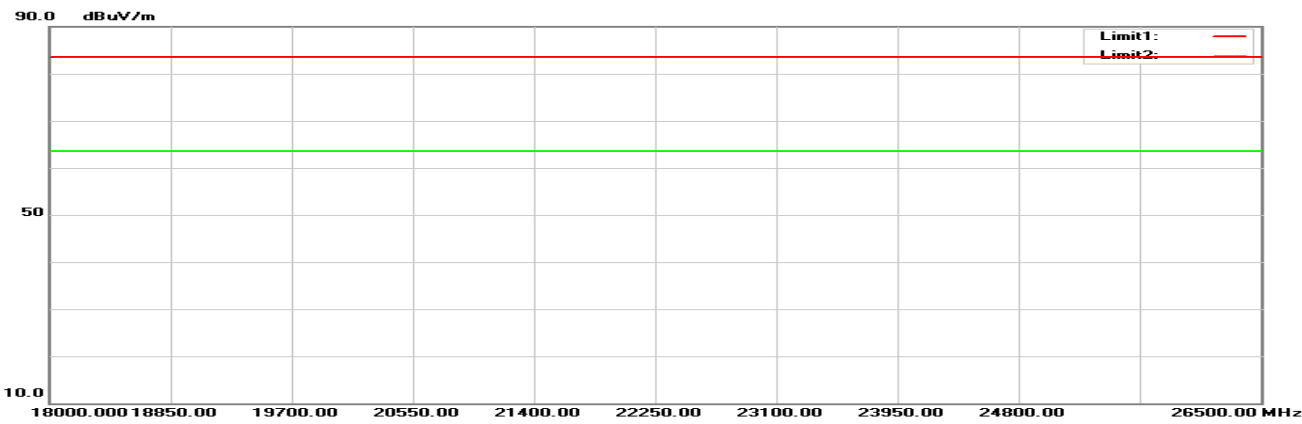
30MHz-1GHz:



1GHz-18GHz:

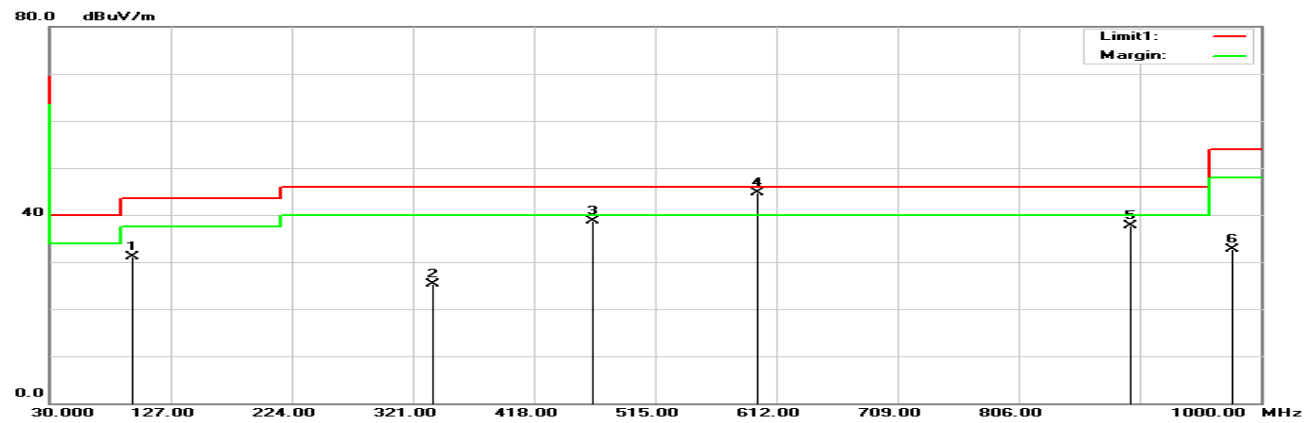


18GHz-26.5GHz:

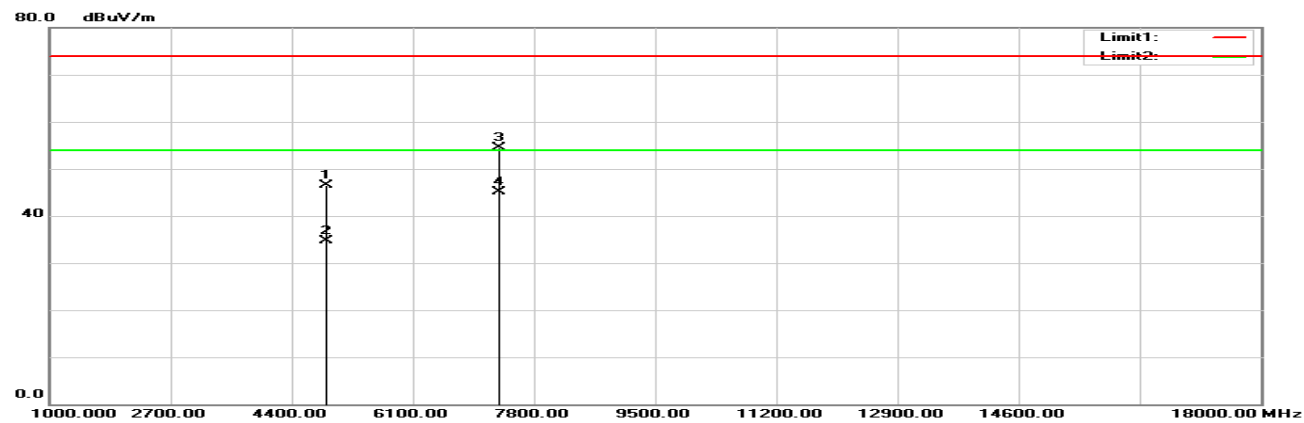


Vertical (worst case is BLE 1 mode middle channel)

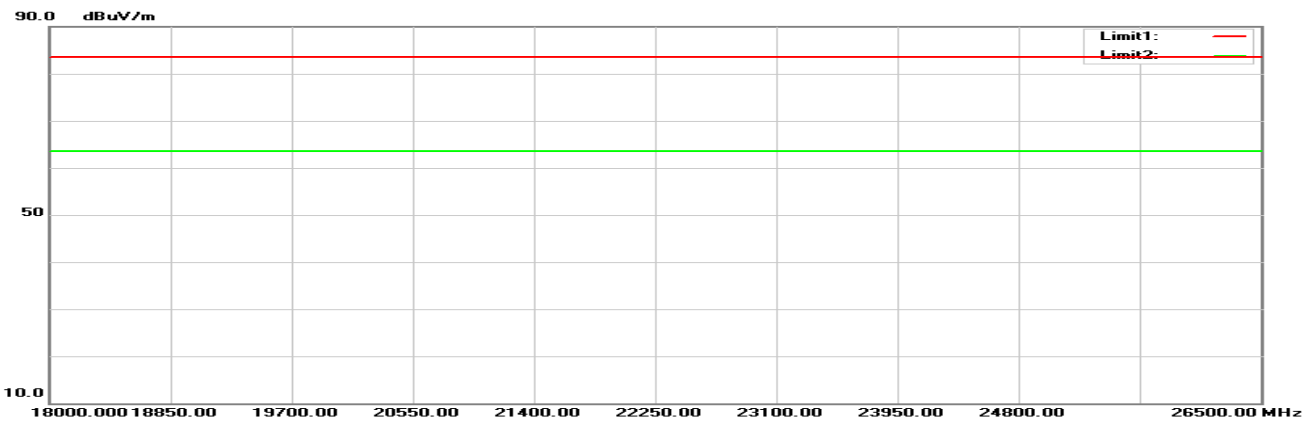
30MHz-1GHz:



1GHz-18GHz:



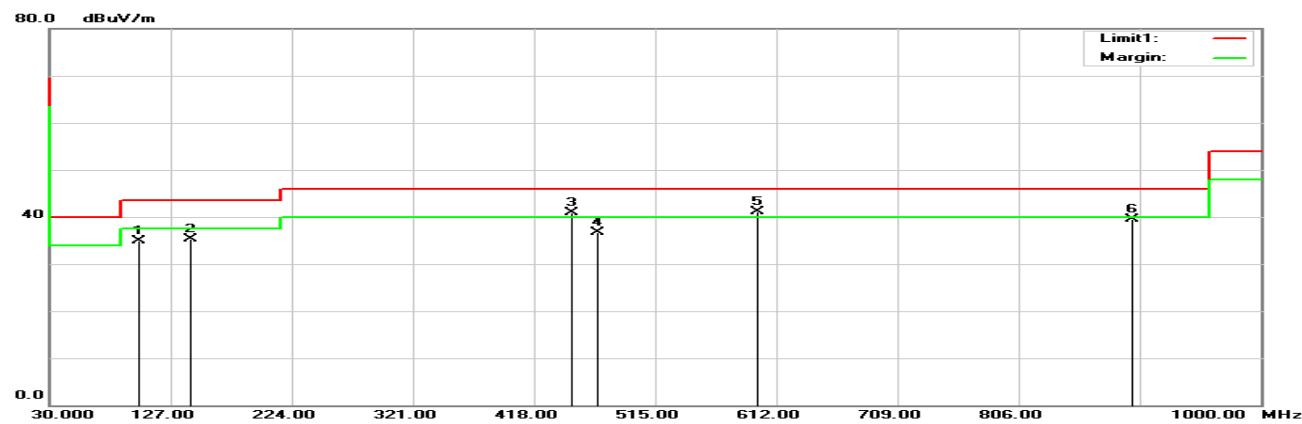
18GHz-26.5GHz:



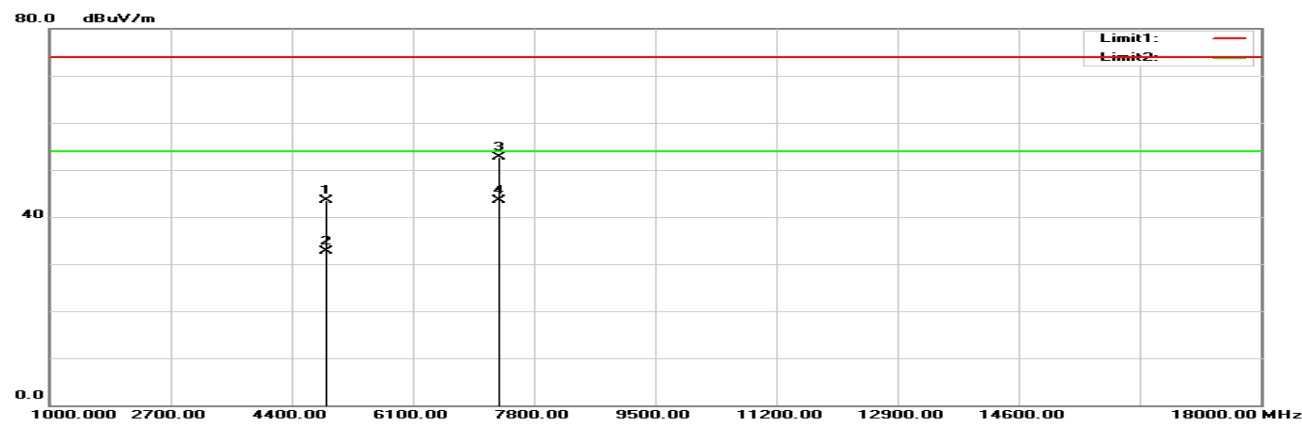
BLE 2 Mode

Horizontal (worst case is BLE 2 mode middle channel)

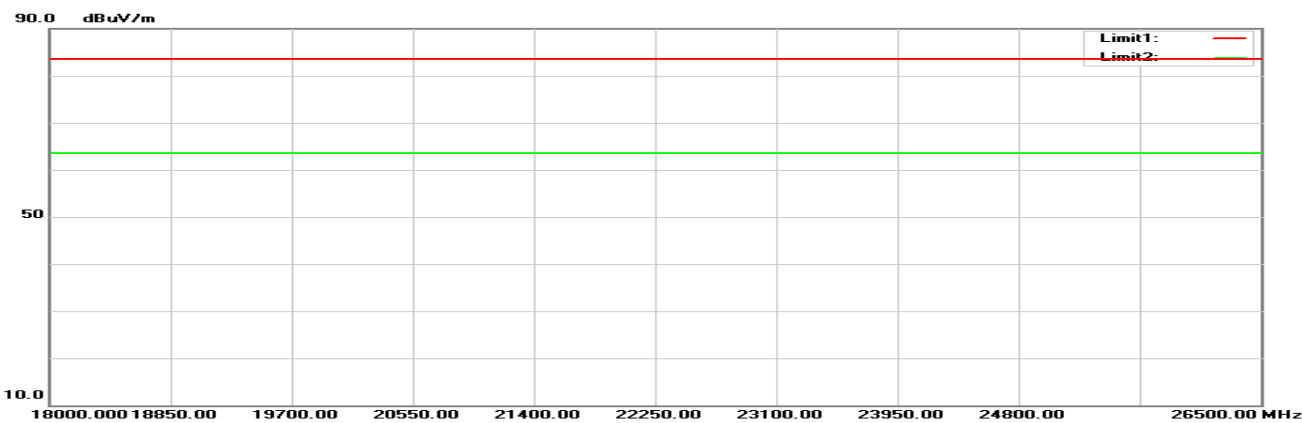
30MHz-1GHz:



1GHz-18GHz:

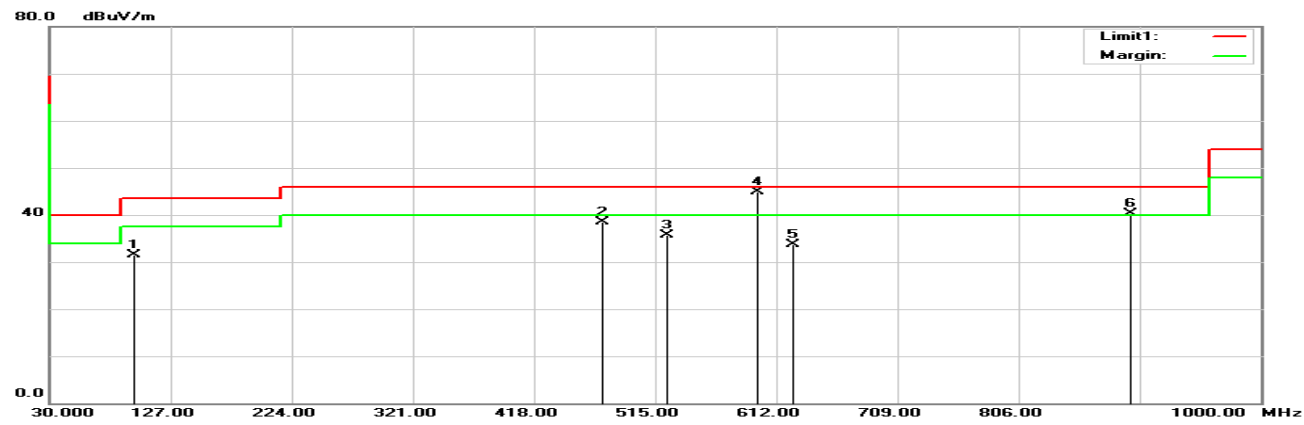


18GHz-26.5GHz:

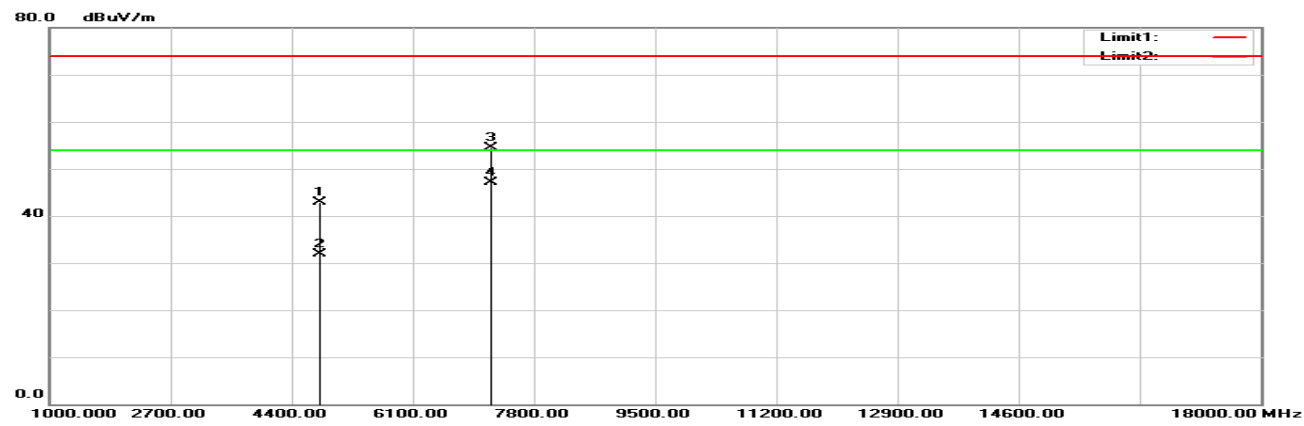


Vertical (worst case is BLE 2 mode low channel)

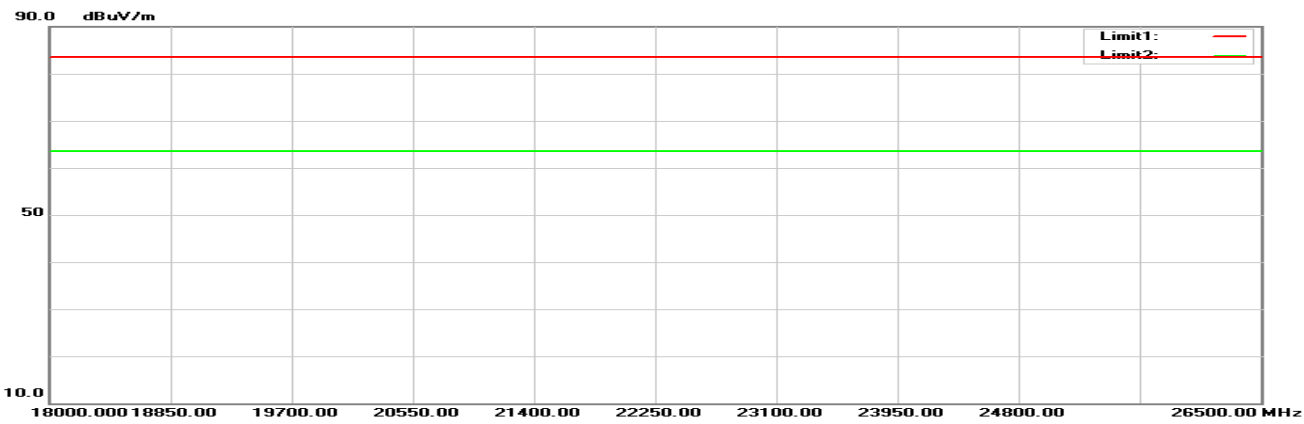
30MHz-1GHz:



1GHz-18GHz:



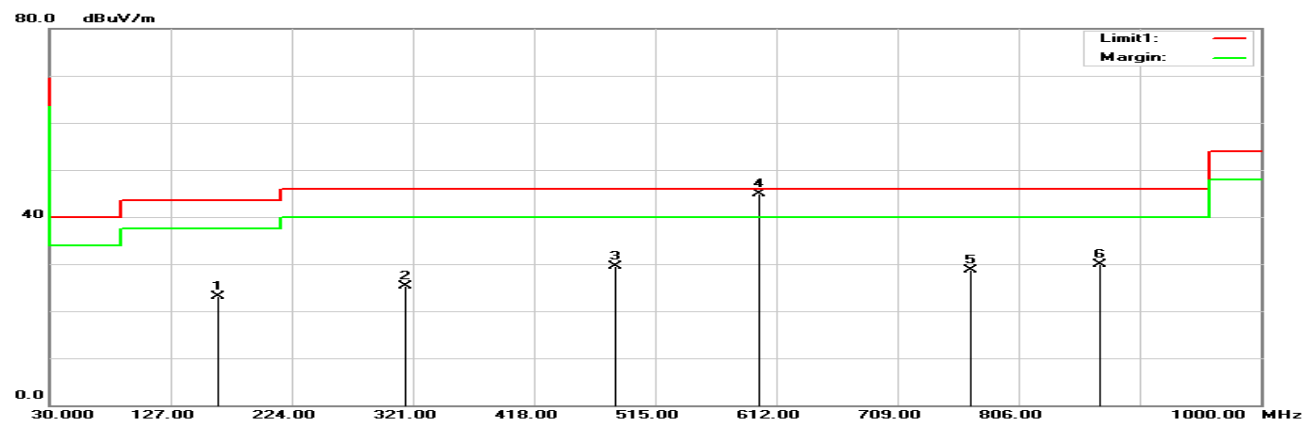
18GHz-26.5GHz:



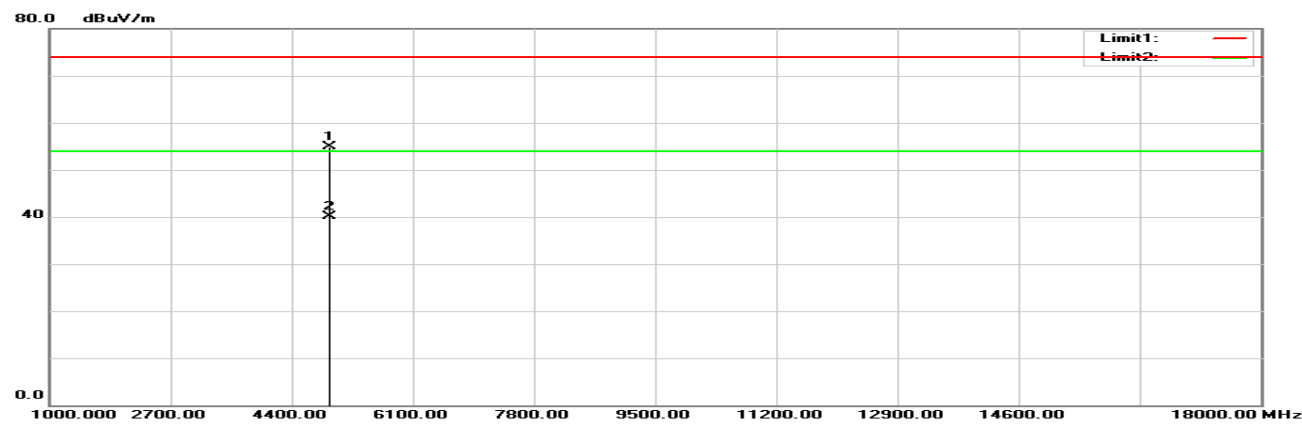
WIFI Mode

Horizontal (worst case is N20 mode high channel)

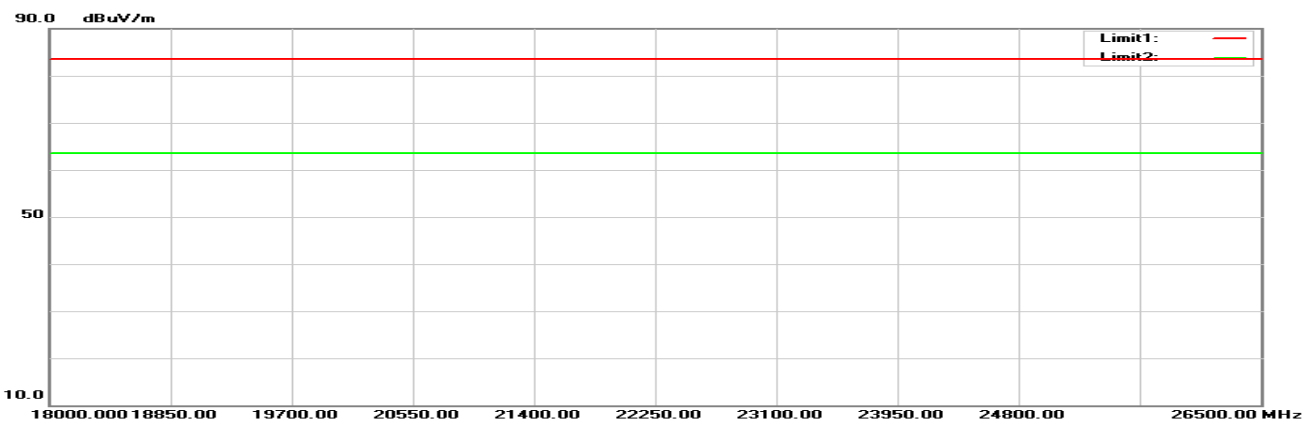
30MHz-1GHz:



1GHz-18GHz:

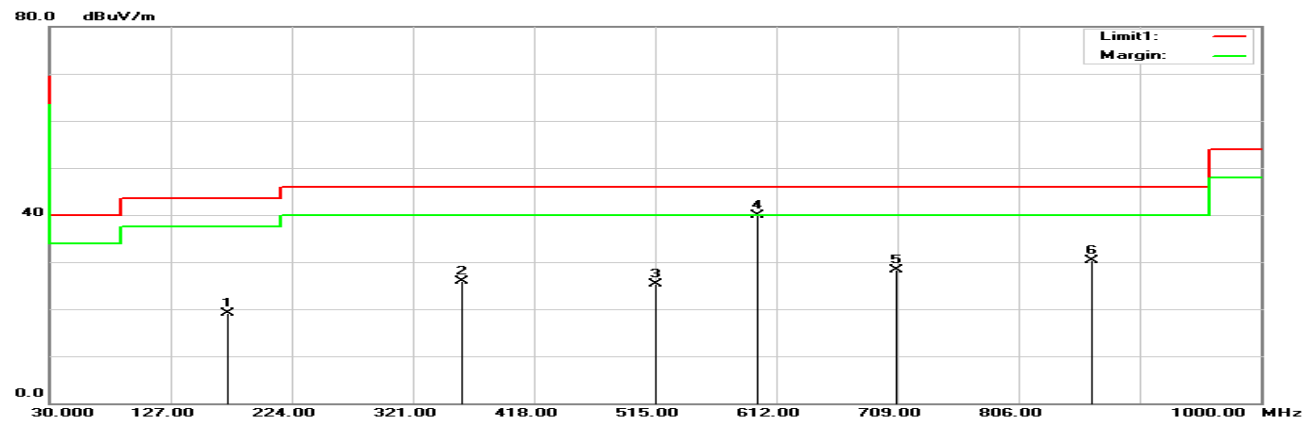


18GHz-26.5GHz:

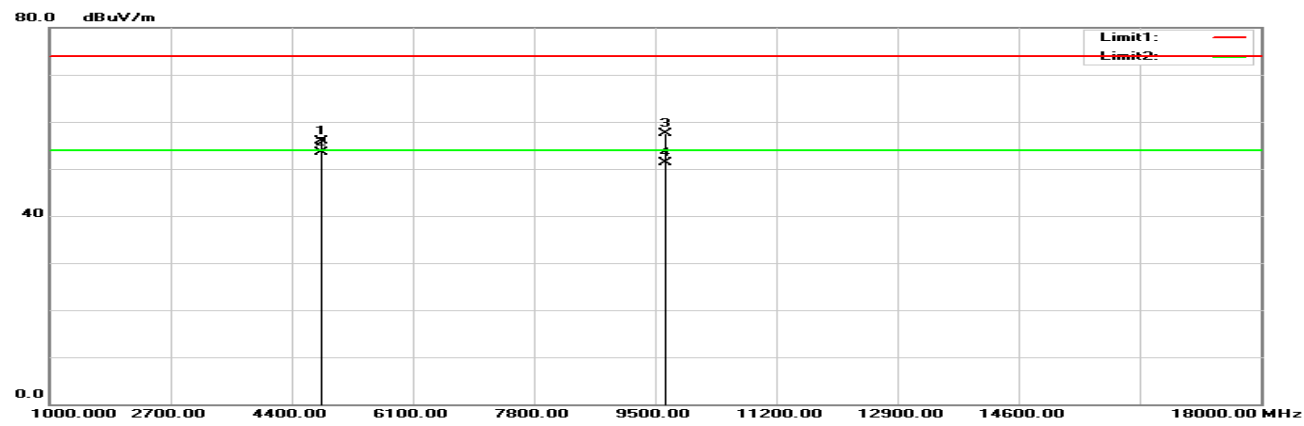


Vertical (worst case is B mode low channel)

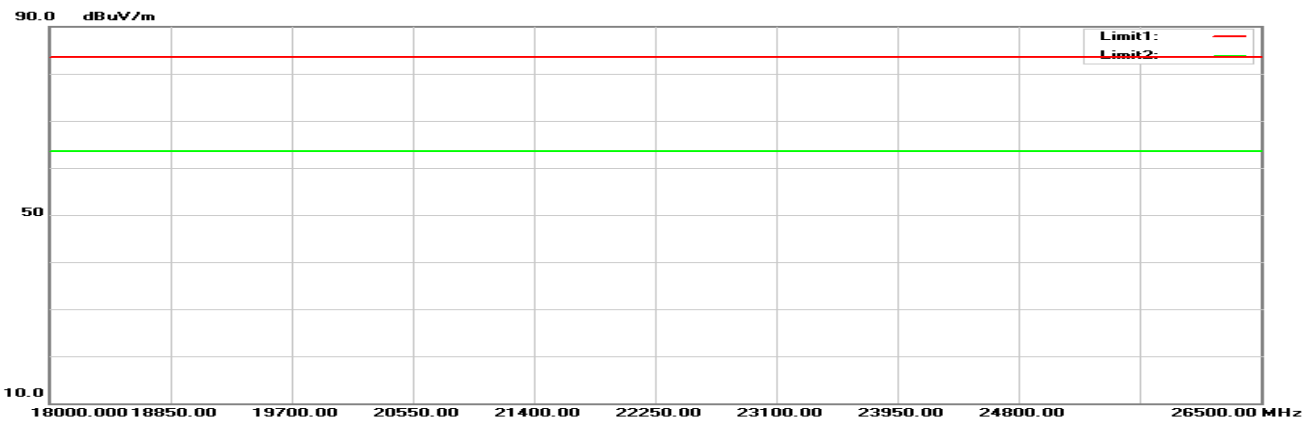
30MHz-1GHz:



1GHz-18GHz:



18GHz-26.5GHz:



BLE 1 Mode**Horizontal**

Frequency (MHz)	Reading (dB μ V)	Correct Factor(dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
Low Channel								
142.5200	45.80	-10.95	34.85	43.50	-8.65	100	30	QP
359.8000	44.40	-8.41	35.99	46.00	-10.01	100	356	QP
468.4400	43.78	-6.22	37.56	46.00	-8.44	100	147	QP
597.4500	44.71	-4.23	40.48	46.00	-5.52	100	32	QP
750.7100	36.03	-2.09	33.94	46.00	-12.06	100	55	QP
896.2100	40.84	0.97	41.81	46.00	-4.19	100	39	QP
2390.000	64.65	-4.89	59.76	74.00	-14.24	100	157	peak
2390.000	50.81	-4.89	45.92	54.00	-8.08	100	157	AVG
2402.000	103.81	-4.86	98.95	N/A	N/A	102	203	peak
2402.000	102.78	-4.86	97.92	N/A	N/A	102	203	AVG
4804.000	45.25	0.98	46.23	74.00	-27.77	100	135	peak
4804.000	35.19	0.98	36.17	54.00	-17.83	100	135	AVG
7206.000	48.23	6.56	54.79	74.00	-19.21	100	145	peak
7206.000	39.51	6.56	46.07	54.00	-7.93	100	145	AVG
Middle Channel								
140.5800	45.54	-10.92	34.62	43.50	-8.88	100	39	QP
359.8000	44.97	-8.41	36.56	46.00	-9.44	100	160	QP
469.4100	45.32	-6.21	39.11	46.00	-6.89	100	70	QP
597.4500	44.85	-4.23	40.62	46.00	-5.38	100	32	QP
746.8300	42.38	-2.15	40.23	46.00	-5.77	100	147	QP
896.2100	41.18	0.97	42.15	46.00	-3.85	100	39	QP
2440.000	106.17	-4.78	101.39	N/A	N/A	100	360	peak
2440.000	105.35	-4.78	100.57	N/A	N/A	100	360	AVG
4880.000	46.17	1.24	47.41	74.00	-26.59	100	264	peak
4880.000	37.91	1.24	39.15	54.00	-14.85	100	264	AVG
7324.000	49.88	7.03	56.91	74.00	-17.09	100	163	peak
7324.000	41.99	7.03	49.02	54.00	-4.98	100	163	AVG
High Channel								
101.7800	47.87	-14.07	33.80	43.50	-9.70	100	357	QP
140.5800	45.51	-10.92	34.59	43.50	-8.91	100	39	QP
359.8000	44.63	-8.41	36.22	46.00	-9.78	100	155	QP
471.3500	44.49	-6.18	38.31	46.00	-7.69	100	260	QP
597.4500	44.73	-4.23	40.50	46.00	-5.50	100	37	QP
897.1800	41.28	0.97	42.25	46.00	-3.75	100	39	QP
2480.000	103.80	-4.68	99.12	N/A	N/A	100	0	peak
2480.000	102.89	-4.68	98.21	N/A	N/A	100	0	AVG
2483.500	64.23	-4.69	59.54	74.00	-14.46	100	175	peak
2483.500	50.78	-4.69	46.09	54.00	-7.91	100	175	AVG
4960.000	47.56	1.51	49.07	74.00	-24.93	112	212	peak
4960.000	39.22	1.51	40.73	54.00	-13.27	112	212	AVG
7440.000	50.66	7.49	58.15	74.00	-15.85	100	161	peak
7440.000	42.37	7.49	49.86	54.00	-4.14	100	161	AVG

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported

Vertical

Frequency (MHz)	Reading (dB μ V)	Correct Factor(dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
Low Channel								
138.6400	38.12	-10.87	27.25	43.50	-16.25	100	62	QP
468.4400	43.47	-6.22	37.25	46.00	-8.75	100	307	QP
522.7600	38.04	-5.35	32.69	46.00	-13.31	100	314	QP
597.4500	48.60	-4.23	44.37	46.00	-1.63	100	289	QP
821.5200	29.71	-0.25	29.46	46.00	-16.54	100	348	QP
897.1800	37.79	0.97	38.76	46.00	-7.24	100	84	QP
2390.000	63.91	-4.89	59.02	74.00	-14.98	100	145	peak
2390.000	50.79	-4.89	45.90	54.00	-8.10	100	145	AVG
2402.000	98.94	-4.86	94.08	N/A	N/A	100	32	peak
2402.000	97.95	-4.86	93.09	N/A	N/A	100	32	AVG
4804.000	44.56	0.98	45.54	74.00	-28.46	131	198	peak
4804.000	32.18	0.98	33.16	54.00	-20.84	131	198	AVG
Middle Channel								
95.9600	46.46	-15.41	31.05	43.50	-12.45	100	96	QP
337.4900	34.25	-8.91	25.34	46.00	-20.66	100	360	QP
464.5600	45.02	-6.30	38.72	46.00	-7.28	100	117	QP
597.4500	49.02	-4.23	44.79	46.00	-1.21	100	293	QP
896.2100	36.75	0.97	37.72	46.00	-8.28	100	93	QP
977.6900	29.79	2.98	32.77	54.00	-21.23	100	318	QP
2440.000	101.48	-4.78	96.70	N/A	N/A	140	33	peak
2440.000	100.59	-4.78	95.81	N/A	N/A	140	33	AVG
4880.000	45.26	1.24	46.50	74.00	-27.50	165	202	peak
4880.000	33.47	1.24	34.71	54.00	-19.29	165	202	AVG
7320.000	47.50	7.01	54.51	74.00	-19.49	104	241	peak
7320.000	38.19	7.01	45.20	54.00	-8.80	104	241	AVG
High Channel								
97.9000	45.66	-15.01	30.65	43.50	-12.85	100	79	QP
137.6700	37.83	-10.83	27.00	43.50	-16.50	100	79	QP
470.3800	46.24	-6.19	40.05	46.00	-5.95	100	316	QP
525.6700	38.45	-5.31	33.14	46.00	-12.86	100	234	QP
597.4500	48.45	-4.23	44.22	46.00	-1.78	100	297	QP
897.1800	37.06	0.97	38.03	46.00	-7.97	100	81	QP
2480.000	99.77	-4.68	95.09	N/A	N/A	105	34	peak
2480.000	98.89	-4.68	94.21	N/A	N/A	105	34	AVG
2483.500	64.47	-4.69	59.78	74.00	-14.22	100	319	peak
2483.500	50.97	-4.69	46.28	54.00	-7.72	100	319	AVG
4960.000	45.15	1.51	46.66	74.00	-27.34	143	192	peak
4960.000	34.29	1.51	35.80	54.00	-18.20	143	192	AVG
7440.000	46.61	7.49	54.10	74.00	-19.90	100	46	peak
7440.000	36.50	7.49	43.99	54.00	-10.01	100	46	AVG

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported

BLE 2 Mode**Horizontal**

Frequency (MHz)	Reading (dB μ V)	Correct Factor(dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
Low Channel								
97.9000	49.45	-15.01	34.44	43.50	-9.06	100	158	QP
142.5200	45.62	-10.95	34.67	43.50	-8.83	100	13	QP
429.6400	41.59	-6.98	34.61	46.00	-11.39	100	146	QP
466.5000	43.33	-6.26	37.07	46.00	-8.93	100	163	QP
597.4500	45.14	-4.23	40.91	46.00	-5.09	100	29	QP
896.2100	38.25	0.97	39.22	46.00	-6.78	100	1	QP
2390.000	64.22	-4.89	59.33	74.00	-14.67	152	175	peak
2390.000	51.28	-4.89	46.39	54.00	-7.61	152	175	AVG
2402.000	101.21	-4.86	96.35	N/A	N/A	146	134	peak
2402.000	95.47	-4.86	90.61	N/A	N/A	146	134	AVG
4804.000	41.72	0.98	42.70	74.00	-31.30	100	232	peak
4804.000	30.26	0.98	31.24	54.00	-22.76	100	232	AVG
7206.000	44.52	6.56	51.08	74.00	-22.92	103	276	peak
7206.000	31.40	6.56	37.96	54.00	-16.04	103	276	AVG
Middle Channel								
101.7800	48.99	-14.07	34.92	43.50	-8.58	100	153	QP
142.5200	46.21	-10.95	35.26	43.50	-8.24	100	13	QP
448.0700	47.62	-6.62	41.00	46.00	-5.00	100	356	QP
468.4400	42.83	-6.22	36.61	46.00	-9.39	100	358	QP
597.4500	45.39	-4.23	41.16	46.00	-4.84	100	12	QP
897.1800	38.54	0.97	39.51	46.00	-6.49	100	358	QP
2440.000	98.59	-4.78	93.81	N/A	N/A	106	133	peak
2440.000	97.70	-4.78	92.92	N/A	N/A	106	133	AVG
4880.000	42.17	1.24	43.41	74.00	-30.59	146	13	peak
4880.000	31.47	1.24	32.71	54.00	-21.29	146	13	AVG
7320.000	45.60	7.01	52.61	74.00	-21.39	110	298	peak
7320.000	36.45	7.01	43.46	54.00	-10.54	110	298	AVG
High Channel								
101.7800	48.28	-14.07	34.21	43.50	-9.29	100	158	QP
140.5800	46.66	-10.92	35.74	43.50	-7.76	100	27	QP
359.8000	42.96	-8.41	34.55	46.00	-11.45	100	346	QP
465.5300	42.77	-6.28	36.49	46.00	-9.51	100	163	QP
598.4200	44.44	-4.21	40.23	46.00	-5.77	100	15	QP
897.1800	38.90	0.97	39.87	46.00	-6.13	100	237	QP
2480.000	95.05	-4.68	90.37	N/A	N/A	112	133	peak
2480.000	94.17	-4.68	89.49	N/A	N/A	112	133	AVG
2483.500	64.31	-4.69	59.62	74.00	-14.38	100	243	peak
2483.500	51.40	-4.69	46.71	54.00	-7.29	100	243	AVG
4960.000	45.12	1.51	46.63	74.00	-27.37	113	182	peak
4960.000	38.05	1.51	39.56	54.00	-14.44	113	182	AVG
7440.000	44.98	7.49	52.47	74.00	-21.53	195	224	peak
7440.000	36.25	7.49	43.74	54.00	-10.26	195	224	AVG

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported

Vertical

Frequency (MHz)	Reading (dB μ V)	Correct Factor(dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
Low Channel								
97.9000	46.50	-15.01	31.49	43.50	-12.01	100	105	QP
473.2900	44.71	-6.14	38.57	46.00	-7.43	100	128	QP
524.7000	41.06	-5.33	35.73	46.00	-10.27	100	134	QP
597.4500	49.09	-4.23	44.86	46.00	-1.14	100	31	QP
625.5800	37.49	-3.81	33.68	46.00	-12.32	100	95	QP
896.2100	39.32	0.97	40.29	46.00	-5.71	100	225	QP
2390.000	64.26	-4.89	59.37	74.00	-14.63	100	156	peak
2390.000	51.15	-4.89	46.26	54.00	-7.74	100	156	AVG
2402.000	105.87	-4.86	101.01	N/A	N/A	163	187	peak
2402.000	105.05	-4.86	100.19	N/A	N/A	163	187	AVG
4804.000	41.91	0.98	42.89	74.00	-31.11	100	131	peak
4804.000	30.97	0.98	31.95	54.00	-22.05	100	131	AVG
7206.000	47.98	6.56	54.54	74.00	-19.46	100	266	peak
7206.000	40.45	6.56	47.01	54.00	-6.99	100	266	AVG
Middle Channel								
94.9900	45.75	-15.61	30.14	43.50	-13.36	100	102	QP
469.4100	40.97	-6.21	34.76	46.00	-11.24	100	129	QP
500.4500	40.21	-5.63	34.58	46.00	-11.42	100	154	QP
597.4500	48.90	-4.23	44.67	46.00	-1.33	100	35	QP
625.5800	37.52	-3.81	33.71	46.00	-12.29	100	103	QP
897.1800	39.21	0.97	40.18	46.00	-5.82	100	204	QP
2440.000	108.35	-4.78	103.57	N/A	N/A	167	182	peak
2440.000	107.46	-4.78	102.68	N/A	N/A	167	182	AVG
4880.000	41.86	1.24	43.10	74.00	-30.90	138	2	peak
4880.000	31.16	1.24	32.40	54.00	-21.60	138	2	AVG
7320.000	48.65	7.01	55.66	74.00	-18.34	100	284	peak
7320.000	41.16	7.01	48.17	54.00	-5.83	100	284	AVG
High Channel								
97.9000	45.91	-15.01	30.90	43.50	-12.60	100	292	QP
466.5000	41.08	-6.26	34.82	46.00	-11.18	100	319	QP
500.4500	39.07	-5.63	33.44	46.00	-12.56	100	157	QP
597.4500	49.00	-4.23	44.77	46.00	-1.23	100	32	QP
625.5800	37.20	-3.81	33.39	46.00	-12.61	100	86	QP
897.1800	39.54	0.97	40.51	46.00	-5.49	100	190	QP
2480.000	104.63	-4.68	99.95	N/A	N/A	100	190	peak
2480.000	103.28	-4.68	98.60	N/A	N/A	100	190	AVG
2483.500	63.96	-4.69	59.27	74.00	-14.73	100	219	peak
2483.500	51.31	-4.69	46.62	54.00	-7.38	100	219	AVG
4960.000	39.18	1.51	40.69	74.00	-33.31	100	136	peak
4960.000	27.48	1.51	28.99	54.00	-25.01	100	136	AVG
7440.000	43.69	7.49	51.18	74.00	-22.82	100	286	peak
7440.000	36.89	7.49	44.38	54.00	-9.62	100	286	AVG

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported

WIFI: B Mode**Horizontal**

Frequency (MHz)	Reading (dB μ V)	Correct Factor(dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Degree ($^{\circ}$)	Remark
Low Channel								
187.1400	37.66	-12.89	24.77	43.50	-18.73	100	228	QP
277.3500	34.49	-10.18	24.31	46.00	-21.69	100	194	QP
448.0700	41.88	-6.63	35.25	46.00	-10.75	100	67	QP
597.4500	48.44	-4.04	44.40	46.00	-1.60	100	151	QP
679.9000	30.77	-3.05	27.72	46.00	-18.28	100	219	QP
791.4500	29.95	-0.79	29.16	46.00	-16.84	100	359	QP
2390.000	66.66	-4.89	61.77	74.00	-12.23	100	48	peak
2390.000	53.18	-4.89	48.29	54.00	-5.71	100	48	AVG
2412.000	119.52	-4.84	114.68	N/A	N/A	100	48	peak
2412.000	116.34	-4.84	111.50	N/A	N/A	100	48	AVG
4824.000	54.36	1.05	55.41	74.00	-18.59	100	295	peak
4824.000	51.57	1.05	52.62	54.00	-1.38	100	295	AVG
Middle Channel								
82.3800	39.83	-16.90	22.93	40.00	-17.07	100	173	QP
117.3000	34.26	-11.19	23.07	43.50	-20.43	100	261	QP
176.4700	34.00	-12.86	21.14	43.50	-22.36	100	65	QP
325.8500	33.84	-9.33	24.51	46.00	-21.49	100	302	QP
528.5800	33.68	-5.32	28.36	46.00	-17.64	100	99	QP
597.4500	48.28	-4.04	44.24	46.00	-1.76	100	10	QP
2437.000	118.24	-4.78	113.46	N/A	N/A	100	133	peak
2437.000	115.02	-4.78	110.24	N/A	N/A	100	133	AVG
4874.000	52.78	1.23	54.01	74.00	-19.99	100	105	peak
4874.000	49.36	1.23	50.59	54.00	-3.41	100	105	AVG
High Channel								
90.1400	43.97	-17.19	26.78	43.50	-16.72	100	249	QP
236.6100	37.44	-12.14	25.30	46.00	-20.70	100	105	QP
326.8200	33.72	-9.31	24.41	46.00	-21.59	100	103	QP
586.7800	31.94	-4.24	27.70	46.00	-18.30	100	313	QP
597.4500	48.12	-4.04	44.08	46.00	-1.92	100	34	QP
793.3900	30.55	-0.74	29.81	46.00	-16.19	100	190	QP
2462.000	115.56	-4.72	110.84	N/A	N/A	125	244	peak
2462.000	112.65	-4.72	107.93	N/A	N/A	125	244	AVG
2483.500	64.05	-4.69	59.36	74.00	-14.64	100	6	peak
2483.500	49.62	-4.69	44.93	54.00	-9.07	100	6	AVG
4924.000	51.80	1.40	53.20	74.00	-20.80	117	252	peak
4924.000	47.35	1.40	48.75	54.00	-5.25	117	252	AVG

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported

Vertical

Frequency (MHz)	Reading (dB μ V)	Correct Factor(dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
Low Channel								
172.5900	31.77	-12.57	19.20	43.50	-24.30	100	54	QP
360.7700	34.55	-8.59	25.96	46.00	-20.04	100	92	QP
515.9700	30.75	-5.51	25.24	46.00	-20.76	100	339	QP
597.4500	43.98	-4.04	39.94	46.00	-6.06	100	174	QP
708.0300	31.05	-2.67	28.38	46.00	-17.62	100	108	QP
865.1700	29.55	0.66	30.21	46.00	-15.79	100	334	QP
2390.000	64.60	-4.89	59.71	74.00	-14.29	100	25	peak
2390.000	51.47	-4.89	46.58	54.00	-7.42	100	25	AVG
2412.000	115.68	-4.84	110.84	N/A	N/A	100	224	peak
2412.000	112.46	-4.84	107.62	N/A	N/A	100	224	AVG
4824.000	54.91	1.05	55.96	74.00	-18.04	130	76	peak
4824.000	52.45	1.05	53.50	54.00	-0.50	130	76	AVG
9648.000	46.07	11.35	57.42	74.00	-16.58	104	268	peak
9648.000	40.00	11.35	51.35	54.00	-2.65	104	268	AVG
Middle Channel								
85.2900	45.55	-17.02	28.53	40.00	-11.47	100	37	QP
108.5700	37.12	-12.40	24.72	43.50	-18.78	100	342	QP
129.9100	30.08	-10.57	19.51	43.50	-23.99	100	208	QP
230.7900	31.70	-12.34	19.36	46.00	-26.64	100	280	QP
463.5900	32.13	-6.34	25.79	46.00	-20.21	100	171	QP
597.4500	43.96	-4.04	39.92	46.00	-6.08	100	190	QP
2437.000	115.77	-4.78	110.99	N/A	N/A	100	226	peak
2437.000	112.63	-4.78	107.85	N/A	N/A	100	226	AVG
4874.000	54.92	1.23	56.15	74.00	-17.85	118	117	peak
4874.000	52.12	1.23	53.35	54.00	-0.65	118	117	AVG
9748.000	45.60	11.56	57.16	74.00	-16.84	100	276	peak
9748.000	38.34	11.56	49.90	54.00	-4.10	100	276	AVG
High Channel								
229.8200	32.33	-12.37	19.96	46.00	-26.04	100	324	QP
409.2700	31.85	-7.56	24.29	46.00	-21.71	100	163	QP
597.4500	43.61	-4.04	39.57	46.00	-6.43	100	183	QP
641.1000	30.74	-3.47	27.27	46.00	-18.73	100	70	QP
811.8200	29.53	-0.35	29.18	46.00	-16.82	100	33	QP
862.2600	29.78	0.61	30.39	46.00	-15.61	100	144	QP
2462.000	113.52	-4.72	108.80	N/A	N/A	119	229	peak
2462.000	110.36	-4.72	105.64	N/A	N/A	119	229	AVG
2483.500	64.09	-4.69	59.40	74.00	-14.60	100	173	peak
2483.500	49.35	-4.69	44.66	54.00	-9.34	100	173	AVG
4924.000	54.52	1.40	55.92	74.00	-18.08	128	298	peak
4924.000	51.76	1.40	53.16	54.00	-0.84	128	298	AVG
9848.000	43.70	11.78	55.48	74.00	-18.52	100	271	peak
9848.000	35.55	11.78	47.33	54.00	-6.67	100	271	AVG

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported

WIFI: G Mode**Horizontal**

Frequency (MHz)	Reading (dB μ V)	Correct Factor(dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
Low Channel								
275.4100	33.65	-10.22	23.43	46.00	-22.57	100	73	QP
389.8700	32.22	-7.99	24.23	46.00	-21.77	100	245	QP
509.1800	31.50	-5.61	25.89	46.00	-20.11	100	116	QP
597.4500	48.99	-4.04	44.95	46.00	-1.05	100	93	QP
676.0200	30.63	-3.09	27.54	46.00	-18.46	100	327	QP
826.3700	30.26	-0.08	30.18	46.00	-15.82	100	289	QP
2390.000	74.97	-4.89	70.08	74.00	-3.92	121	37	peak
2390.000	57.93	-4.89	53.04	54.00	-0.96	121	37	AVG
2412.000	124.83	-4.84	119.99	N/A	N/A	121	37	peak
2412.000	112.96	-4.84	108.12	N/A	N/A	121	37	AVG
4824.000	54.78	1.05	55.83	74.00	-18.17	100	295	peak
4824.000	39.75	1.05	40.80	54.00	-13.20	100	295	AVG
Middle Channel								
137.6700	41.76	-10.90	30.86	43.50	-12.64	100	100	QP
167.7400	35.65	-12.13	23.52	43.50	-19.98	100	170	QP
272.5000	36.04	-10.29	25.75	46.00	-20.25	100	159	QP
447.1000	42.09	-6.64	35.45	46.00	-10.55	100	265	QP
597.4500	48.44	-4.04	44.40	46.00	-1.60	100	232	QP
753.6200	29.58	-1.71	27.87	46.00	-18.13	100	101	QP
2437.000	124.40	-4.78	119.62	N/A	N/A	100	134	peak
2437.000	113.08	-4.78	108.30	N/A	N/A	100	134	AVG
4874.000	51.83	1.23	53.06	74.00	-20.94	100	98	peak
4874.000	38.10	1.23	39.33	54.00	-14.67	100	98	AVG
High Channel								
195.8700	37.18	-11.59	25.59	43.50	-17.91	100	60	QP
308.3900	33.64	-9.70	23.94	46.00	-22.06	100	31	QP
454.8600	38.08	-6.49	31.59	46.00	-14.41	100	273	QP
597.4500	48.57	-4.04	44.53	46.00	-1.47	100	247	QP
696.3900	30.20	-2.88	27.32	46.00	-18.68	100	94	QP
789.5100	30.11	-0.84	29.27	46.00	-16.73	100	33	QP
2462.000	124.16	-4.72	119.44	N/A	N/A	100	132	peak
2462.000	112.67	-4.72	107.95	N/A	N/A	100	132	AVG
2483.500	76.64	-4.69	71.95	74.00	-2.05	100	255	peak
2483.500	58.05	-4.69	53.36	54.00	-0.64	100	255	AVG
4924.000	54.83	1.40	56.23	74.00	-17.77	100	324	peak
4924.000	40.18	1.40	41.58	54.00	-12.42	100	324	AVG

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported

Vertical

Frequency (MHz)	Reading (dB μ V)	Correct Factor(dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
Low Channel								
217.2100	32.71	-12.85	19.86	46.00	-26.14	100	24	QP
450.9800	35.02	-6.55	28.47	46.00	-17.53	100	315	QP
597.4500	43.85	-4.04	39.81	46.00	-6.19	100	120	QP
667.2900	29.75	-3.18	26.57	46.00	-19.43	100	145	QP
691.5400	30.29	-2.93	27.36	46.00	-18.64	100	78	QP
797.2700	31.18	-0.65	30.53	46.00	-15.47	100	19	QP
2390.000	71.92	-4.89	67.03	74.00	-6.97	100	223	peak
2390.000	54.67	-4.89	49.78	54.00	-4.22	100	223	AVG
2412.000	119.78	-4.84	114.94	N/A	N/A	100	230	peak
2412.000	108.17	-4.84	103.33	N/A	N/A	100	230	AVG
4824.000	54.16	1.05	55.21	74.00	-18.79	100	300	peak
4824.000	38.48	1.05	39.53	54.00	-14.47	100	300	AVG
Middle Channel								
151.2500	31.89	-11.28	20.61	43.50	-22.89	100	202	QP
221.0900	33.39	-12.75	20.64	46.00	-25.36	100	228	QP
368.5300	33.76	-8.43	25.33	46.00	-20.67	100	220	QP
539.2500	30.28	-5.16	25.12	46.00	-20.88	100	117	QP
597.4500	43.54	-4.04	39.50	46.00	-6.50	100	322	QP
717.7300	30.30	-2.47	27.83	46.00	-18.17	100	179	QP
2437.000	121.53	-4.78	116.75	N/A	N/A	100	229	peak
2437.000	110.26	-4.78	105.48	N/A	N/A	100	229	AVG
4874.000	55.15	1.23	56.38	74.00	-17.62	132	303	peak
4874.000	41.42	1.23	42.65	54.00	-11.35	132	303	AVG
7311.000	49.96	6.98	56.94	74.00	-17.06	100	125	peak
7311.000	33.56	6.98	40.54	54.00	-13.46	100	125	AVG
9748.000	48.56	11.56	60.12	74.00	-13.88	100	274	peak
9748.000	34.97	11.56	46.53	54.00	-7.47	100	274	AVG
High Channel								
105.6600	36.68	-13.14	23.54	43.50	-19.96	100	274	QP
233.7000	33.04	-12.24	20.80	46.00	-25.20	100	6	QP
376.2900	32.39	-8.27	24.12	46.00	-21.88	100	17	QP
509.1800	30.96	-5.61	25.35	46.00	-20.65	100	326	QP
597.4500	43.78	-4.04	39.74	46.00	-6.26	100	212	QP
800.1800	29.11	-0.58	28.53	46.00	-17.47	100	337	QP
2462.000	121.17	-4.72	116.45	N/A	N/A	100	232	peak
2462.000	109.63	-4.72	104.91	N/A	N/A	100	232	AVG
2483.500	72.26	-4.69	67.57	74.00	-6.43	100	113	peak
2483.500	54.72	-4.69	50.03	54.00	-3.97	100	113	AVG
4927.000	54.13	1.40	55.53	74.00	-18.47	108	267	peak
4927.000	41.36	1.40	42.76	54.00	-11.24	108	267	AVG
7386.000	49.81	7.28	57.09	74.00	-16.91	107	289	peak
7386.000	33.90	7.28	41.18	54.00	-12.82	107	289	AVG
9848.000	45.65	11.78	57.43	74.00	-16.57	100	271	peak
9848.000	33.44	11.78	45.22	54.00	-8.78	100	271	AVG

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported

WIFI: N20 Mode**Horizontal**

Frequency (MHz)	Reading (dB μ V)	Correct Factor(dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Degree ($^{\circ}$)	Remark
Low Channel								
175.5000	35.01	-12.79	22.22	43.50	-21.28	100	210	QP
268.6200	34.30	-10.49	23.81	46.00	-22.19	100	234	QP
413.1500	32.43	-7.46	24.97	46.00	-21.03	100	332	QP
558.6500	30.72	-4.83	25.89	46.00	-20.11	100	127	QP
598.4200	48.44	-4.01	44.43	46.00	-1.57	100	34	QP
765.2600	29.59	-1.44	28.15	46.00	-17.85	100	57	QP
2390.000	74.85	-4.89	69.96	74.00	-4.04	119	38	peak
2390.000	58.30	-4.89	53.41	54.00	-0.59	119	38	AVG
2412.000	122.87	-4.84	128.03	N/A	N/A	119	38	peak
2412.000	111.87	-4.84	107.03	N/A	N/A	119	38	AVG
4824.000	53.35	1.05	54.40	74.00	-19.60	110	303	peak
4824.000	39.08	1.05	40.13	54.00	-13.87	110	303	AVG
Middle Channel								
209.4500	39.86	-12.88	26.98	43.50	-16.52	100	171	QP
365.6200	34.80	-8.49	26.31	46.00	-19.69	100	223	QP
506.2700	31.58	-5.64	25.94	46.00	-20.06	100	15	QP
598.4200	48.84	-4.01	44.83	46.00	-1.17	100	98	QP
698.3300	30.89	-2.85	28.04	46.00	-17.96	100	154	QP
801.1500	29.65	-0.56	29.09	46.00	-16.91	100	243	QP
2437.000	123.36	-4.78	118.58	N/A	N/A	100	135	peak
2437.000	111.56	-4.78	106.78	N/A	N/A	100	135	AVG
4824.000	52.22	1.05	53.27	74.00	-20.73	100	104	peak
4824.000	38.26	1.05	39.31	74.00	-34.69	100	104	AVG
High Channel								
164.8300	34.88	-11.83	23.05	43.50	-20.45	100	116	QP
315.1800	34.96	-9.56	25.40	46.00	-20.60	100	290	QP
482.9900	35.54	-6.02	29.52	46.00	-16.48	100	43	QP
598.4200	48.88	-4.01	44.87	46.00	-1.13	100	28	QP
768.1700	29.97	-1.36	28.61	46.00	-17.39	100	115	QP
870.9900	29.18	0.78	29.96	46.00	-16.04	100	121	QP
2462.000	122.34	-4.72	117.62	N/A	N/A	100	247	peak
2462.000	111.33	-4.72	106.61	N/A	N/A	100	247	AVG
2483.500	76.06	-4.69	71.37	74.00	-2.63	100	234	peak
2483.500	57.91	-4.69	53.22	54.00	-0.78	100	234	AVG
4924.000	53.59	1.40	54.99	74.00	-19.01	100	261	peak
4924.000	38.79	1.40	40.19	54.00	-13.81	100	261	AVG

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported

Vertical

Frequency (MHz)	Reading (dB μ V)	Correct Factor(dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Degree ($^{\circ}$)	Remark
Low Channel								
155.1300	31.72	-11.30	20.42	43.50	-23.08	100	84	QP
281.2300	30.47	-10.11	20.36	46.00	-25.64	100	262	QP
416.0600	30.56	-7.39	23.17	46.00	-22.83	100	30	QP
597.4500	44.23	-4.04	40.19	46.00	-5.81	100	332	QP
698.3300	29.43	-2.85	26.58	46.00	-19.42	100	124	QP
810.8500	29.60	-0.37	29.23	46.00	-16.77	100	315	QP
2390.000	72.68	-4.89	67.79	74.00	-6.21	100	226	peak
2390.000	55.59	-4.89	50.70	54.00	-3.30	100	226	AVG
2412.000	119.87	-4.84	115.03	N/A	N/A	100	224	peak
2412.000	108.01	-4.84	103.17	N/A	N/A	100	224	AVG
4824.000	54.81	1.05	55.86	74.00	-18.14	127	89	peak
4824.000	40.39	1.05	41.44	54.00	-12.56	127	89	AVG
7236.000	45.68	6.69	52.37	74.00	-21.63	100	131	peak
7236.000	31.89	6.69	38.58	54.00	-15.42	100	131	AVG
9648.000	46.07	11.35	57.42	74.00	-16.58	100	308	peak
9648.000	32.18	11.35	43.53	54.00	-10.47	100	308	AVG
Middle Channel								
38.7300	46.63	-9.82	36.81	40.00	-3.19	100	58	QP
109.5400	34.48	-12.14	22.34	43.50	-21.16	100	55	QP
271.5300	30.57	-10.32	20.25	46.00	-25.75	100	174	QP
496.5700	30.01	-5.79	24.22	46.00	-21.78	100	170	QP
597.4500	44.52	-4.04	40.48	46.00	-5.52	100	15	QP
691.5400	29.31	-2.93	26.38	46.00	-19.62	100	120	QP
2437.000	121.40	-4.78	116.62	N/A	N/A	100	228	peak
2437.000	109.47	-4.78	104.69	N/A	N/A	100	228	AVG
4876.000	54.30	1.23	55.53	74.00	-18.47	118	116	peak
4876.000	40.15	1.23	41.38	54.00	-12.62	118	116	AVG
7311.000	46.92	6.98	53.90	74.00	-20.10	100	290	peak
7311.000	32.06	6.98	39.04	54.00	-14.96	100	290	AVG
9748.000	46.13	11.56	57.69	74.00	-16.31	104	275	peak
9748.000	32.60	11.56	44.16	54.00	-9.84	104	275	AVG
High Channel								
90.1400	44.33	-17.19	27.14	43.50	-16.36	100	288	QP
242.4300	30.57	-12.05	18.52	46.00	-27.48	100	81	QP
347.1900	31.99	-8.88	23.11	46.00	-22.89	100	279	QP
510.1500	30.78	-5.59	25.19	46.00	-20.81	100	148	QP
597.4500	44.34	-4.04	40.30	46.00	-5.70	100	293	QP
746.8300	30.05	-1.87	28.18	46.00	-17.82	100	57	QP
2462.000	120.49	-4.72	115.77	N/A	N/A	100	234	peak
2462.000	108.54	-4.72	103.82	N/A	N/A	100	234	AVG
2483.500	72.41	-4.69	67.72	74.00	-6.28	100	111	peak
2483.500	55.02	-4.69	50.33	54.00	-3.67	100	111	AVG
4910.000	57.17	1.34	58.51	74.00	-15.49	122	118	peak
4910.000	41.76	1.34	43.10	54.00	-10.90	122	118	AVG
7375.000	46.41	7.23	53.64	74.00	-20.36	100	125	peak
7375.000	31.74	7.23	38.97	54.00	-15.03	100	125	AVG
9772.000	42.42	11.61	54.03	74.00	-19.97	100	42	peak
9772.000	30.64	11.61	42.25	54.00	-11.75	100	42	AVG

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported

WIFI: N40 Mode**Horizontal**

Frequency (MHz)	Reading (dB μ V)	Correct Factor(dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Degree ($^{\circ}$)	Remark
Low Channel								
139.6100	39.88	-10.99	28.89	43.50	-14.61	100	360	QP
249.2200	37.98	-12.09	25.89	46.00	-20.11	100	156	QP
366.5900	34.14	-8.48	25.66	46.00	-20.34	100	360	QP
527.6100	34.73	-5.33	29.40	46.00	-16.60	100	60	QP
597.4500	48.98	-4.04	44.94	46.00	-1.06	100	345	QP
710.9400	30.01	-2.62	27.39	46.00	-18.61	100	52	QP
2390.000	72.23	-4.89	67.34	74.00	-6.66	100	1	peak
2390.000	57.71	-4.89	52.82	54.00	-1.18	100	1	AVG
2422.000	118.65	-4.81	113.84	N/A	N/A	121	53	peak
2422.000	107.03	-4.81	102.22	N/A	N/A	100	53	AVG
4844.000	45.86	1.12	46.98	74.00	-27.02	100	298	peak
4844.000	33.55	1.12	34.67	54.00	-19.33	100	298	AVG
Middle Channel								
179.3800	34.96	-13.08	21.88	43.50	-21.62	100	290	QP
206.5400	38.45	-12.22	26.23	43.50	-17.27	100	358	QP
373.3800	33.91	-8.33	25.58	46.00	-20.42	100	273	QP
471.3500	35.65	-6.22	29.43	46.00	-16.57	100	74	QP
597.4500	48.61	-4.04	44.57	46.00	-1.43	100	345	QP
803.0900	29.57	-0.52	29.05	46.00	-16.95	100	47	QP
2437.000	118.43	-4.78	113.65	N/A	N/A	100	133	peak
2437.000	106.94	-4.78	102.16	N/A	N/A	100	133	AVG
4874.000	46.62	1.23	47.85	74.00	-26.15	107	297	peak
4874.000	33.95	1.23	35.18	54.00	-18.82	107	297	AVG
High Channel								
167.7400	37.18	-12.13	25.05	43.50	-18.45	100	16	QP
285.1100	33.79	-10.01	23.78	46.00	-22.22	100	37	QP
517.9100	35.98	-5.47	30.51	46.00	-15.49	100	57	QP
597.4500	48.70	-4.04	44.66	46.00	-1.34	100	345	QP
695.4200	29.84	-2.89	26.95	46.00	-19.05	100	323	QP
943.7400	29.27	2.44	31.71	46.00	-14.29	100	152	QP
2452.000	118.92	-4.75	114.17	N/A	N/A	100	248	peak
2452.000	107.30	-4.75	102.55	N/A	N/A	100	248	AVG
2483.500	71.58	-4.69	66.89	74.00	-7.11	100	243	peak
2483.500	57.82	-4.69	53.13	54.00	-0.87	100	243	AVG
4904.000	43.92	1.33	45.25	74.00	-28.75	135	187	peak
4904.000	31.01	1.33	32.34	54.00	-21.66	135	187	AVG

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported

Vertical

Frequency (MHz)	Reading (dB μ V)	Correct Factor(dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
Low Channel								
202.6600	31.91	-11.34	20.57	43.50	-22.93	100	332	QP
353.0100	33.49	-8.76	24.73	46.00	-21.27	100	1	QP
484.9300	30.83	-5.99	24.84	46.00	-21.16	100	172	QP
597.4500	43.92	-4.04	39.88	46.00	-6.12	100	180	QP
719.6700	29.77	-2.43	27.34	46.00	-18.66	100	308	QP
806.9700	28.81	-0.44	28.37	46.00	-17.63	100	63	QP
2390.000	69.63	-4.89	64.74	74.00	-9.26	100	228	peak
2390.000	55.87	-4.89	50.98	54.00	-3.02	100	228	AVG
2422.000	113.64	-4.81	108.83	N/A	N/A	100	117	peak
2422.000	101.11	-4.81	96.30	N/A	N/A	100	117	AVG
4844.000	46.61	1.12	47.73	74.00	-26.27	100	82	peak
4844.000	33.52	1.12	34.64	54.00	-19.36	100	82	AVG
Middle Channel								
265.7100	31.19	-10.79	20.40	46.00	-25.60	100	277	QP
343.3100	32.03	-8.96	23.07	46.00	-22.93	100	356	QP
477.1700	32.15	-6.13	26.02	46.00	-19.98	100	12	QP
597.4500	44.27	-4.04	40.23	46.00	-5.77	100	180	QP
688.6300	30.62	-2.96	27.66	46.00	-18.34	100	223	QP
803.0900	29.31	-0.52	28.79	46.00	-17.21	100	3	QP
2437.000	115.41	-4.78	110.63	N/A	N/A	100	228	peak
2437.000	104.56	-4.78	99.78	N/A	N/A	100	228	AVG
4874.000	48.30	1.23	49.53	74.00	-24.47	120	120	peak
4874.000	34.59	1.23	35.82	54.00	-18.18	120	120	AVG
High Channel								
147.3700	33.30	-11.20	22.10	43.50	-21.40	100	335	QP
378.2300	32.63	-8.24	24.39	46.00	-21.61	100	10	QP
512.0900	32.16	-5.56	26.60	46.00	-19.40	100	29	QP
597.4500	43.90	-4.04	39.86	46.00	-6.14	100	180	QP
727.4300	31.13	-2.28	28.85	46.00	-17.15	100	43	QP
809.8800	30.00	-0.39	29.61	46.00	-16.39	100	339	QP
2452.000	115.26	-4.75	110.51	N/A	N/A	100	232	peak
2452.000	103.67	-4.75	98.92	N/A	N/A	100	232	AVG
2483.500	69.09	-4.69	64.40	74.00	-9.60	100	300	peak
2483.500	54.80	-4.69	50.11	54.00	-3.89	100	300	AVG
4904.000	46.25	1.33	47.58	74.00	-26.42	100	29	peak
4904.000	32.94	1.33	34.27	54.00	-19.73	100	29	AVG

Result = Reading + Correct Factor

Margin = Result – Limit

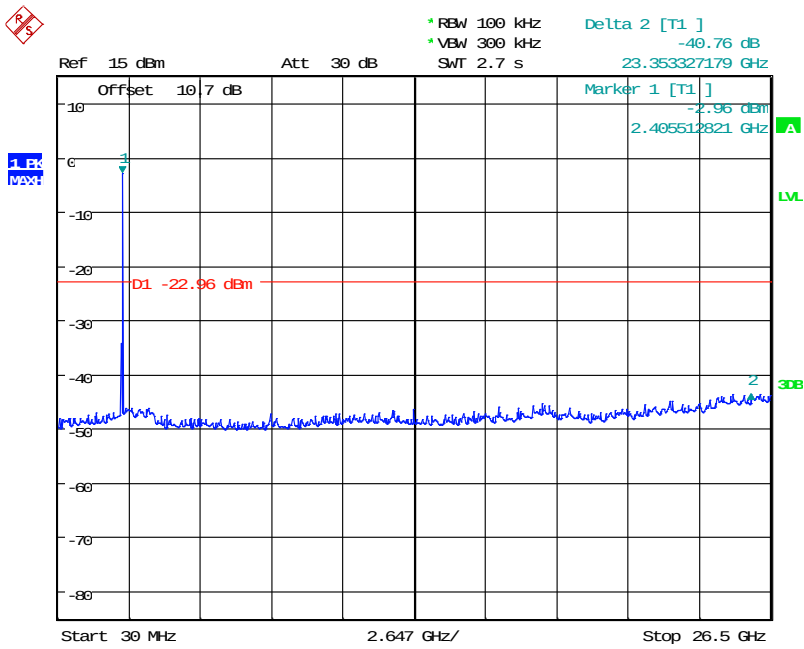
Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported

Conducted Spurious Emissions:

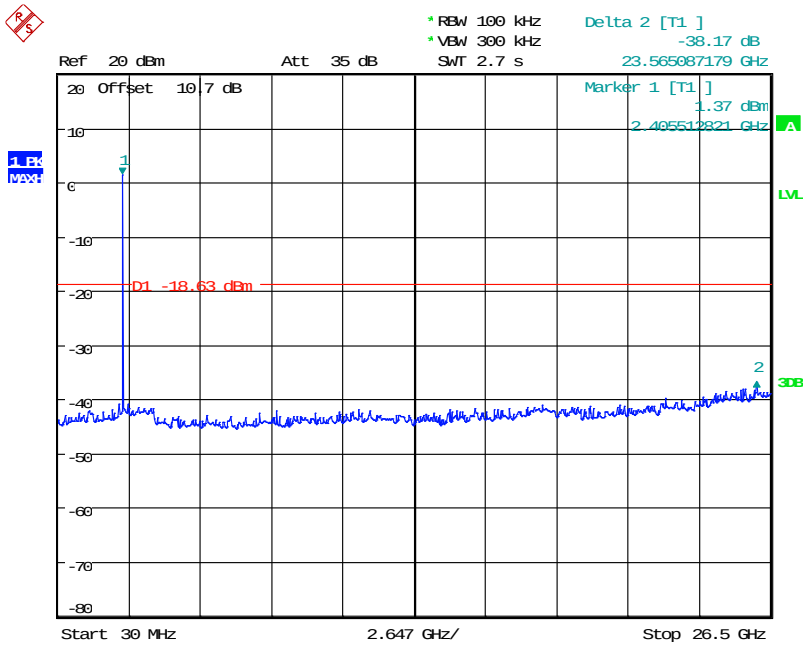
Channel	Frequency (MHz)	Delta Peak to Band Emission (dBc)	Limit (dBc)	RESULT
BLE 1 Mode				
Low	2402	40.76	≥ 20	PASS
Middle	2440	38.17	≥ 20	PASS
High	2480	38.68	≥ 20	PASS
BLE 2 Mode				
Low	2402	41.08	≥ 20	PASS
Middle	2440	38.65	≥ 20	PASS
High	2480	42.04	≥ 20	PASS
B Mode				
Low	2412	41.78	≥ 20	PASS
Middle	2437	41.94	≥ 20	PASS
High	2462	42.18	≥ 20	PASS
G Mode				
Low	2412	39.40	≥ 20	PASS
Middle	2437	42.17	≥ 20	PASS
High	2462	44.69	≥ 20	PASS
N20 Mode				
Low	2412	38.81	≥ 20	PASS
Middle	2437	41.11	≥ 20	PASS
High	2462	39.36	≥ 20	PASS
N40 Mode				
Low	2422	35.12	≥ 20	PASS
Middle	2437	37.03	≥ 20	PASS
High	2452	36.36	≥ 20	PASS

BLE 1 Mode
Low Channel



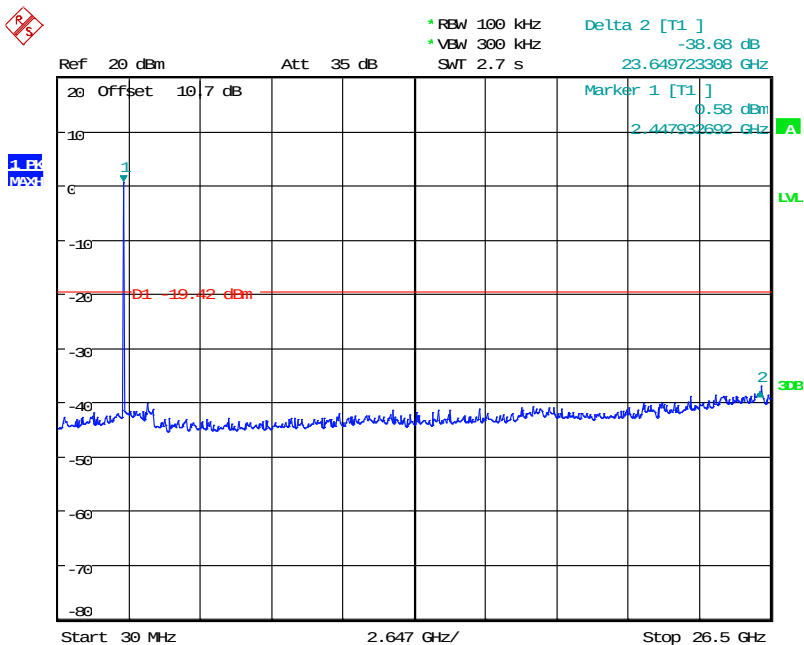
Date: 26.FEB.2018 13:01:09

Middle Channel



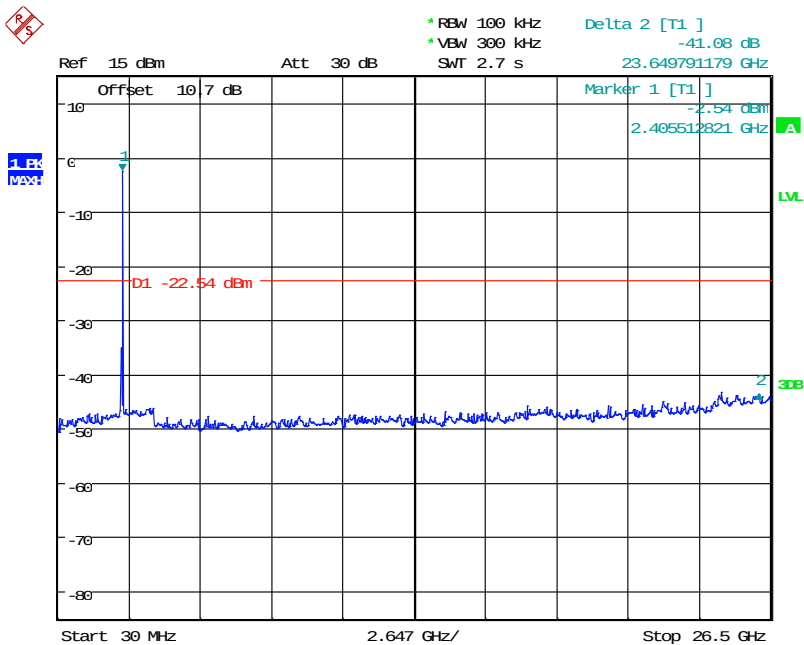
Date: 26.FEB.2018 13:03:11

High Channel



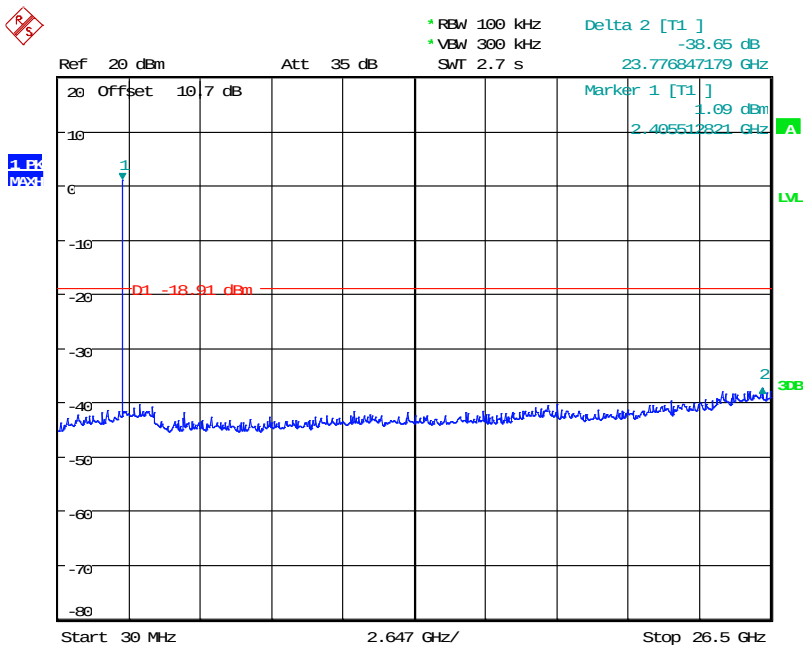
Date: 26.FEB.2018 13:05:35

BLE 2 Mode
Low Channel



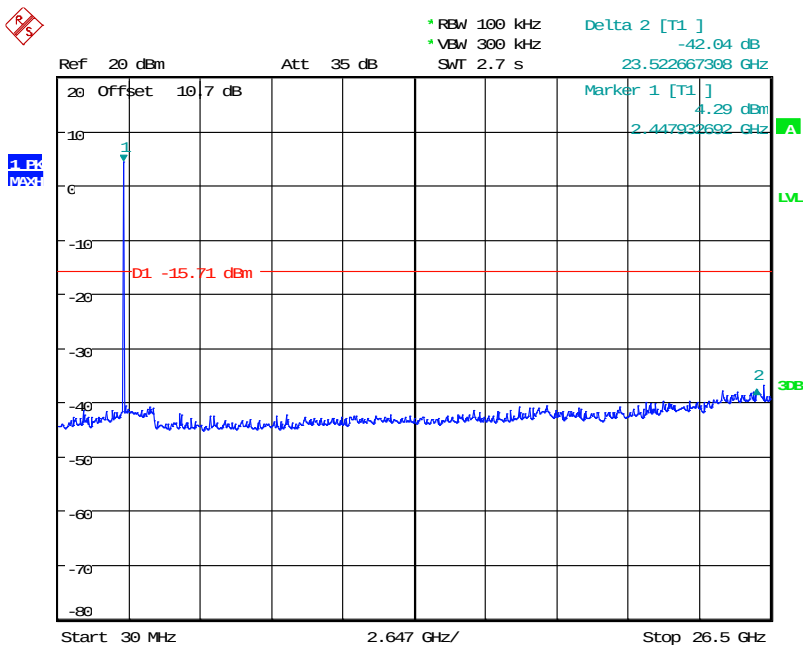
Date: 26.FEB.2018 13:18:06

Middle Channel



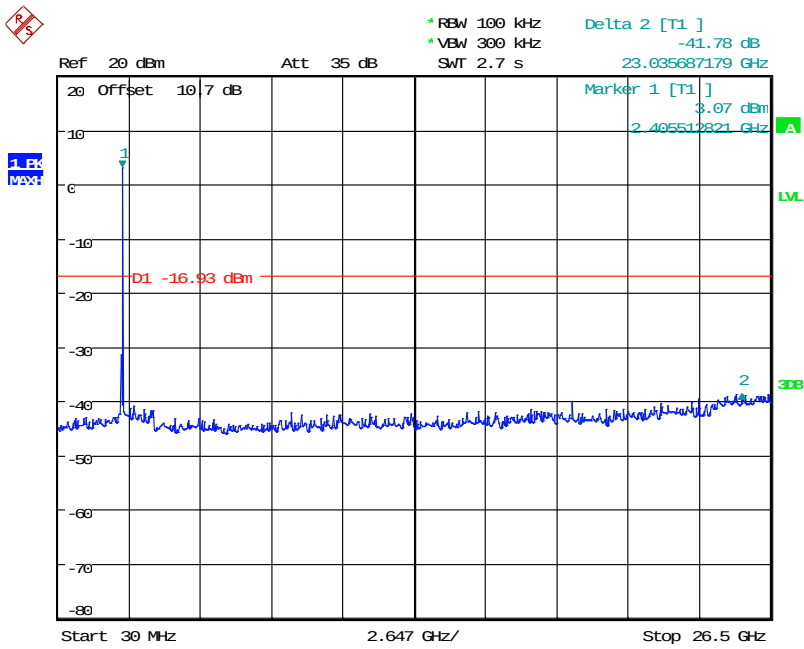
Date: 26.FEB.2018 13:19:58

High Channel



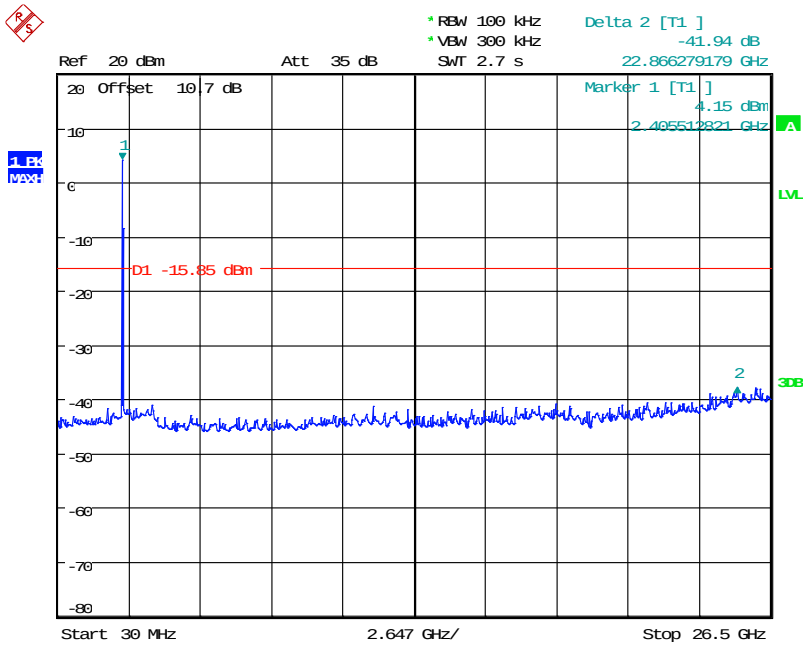
Date: 26.FEB.2018 13:22:53

B Mode
Low Channel



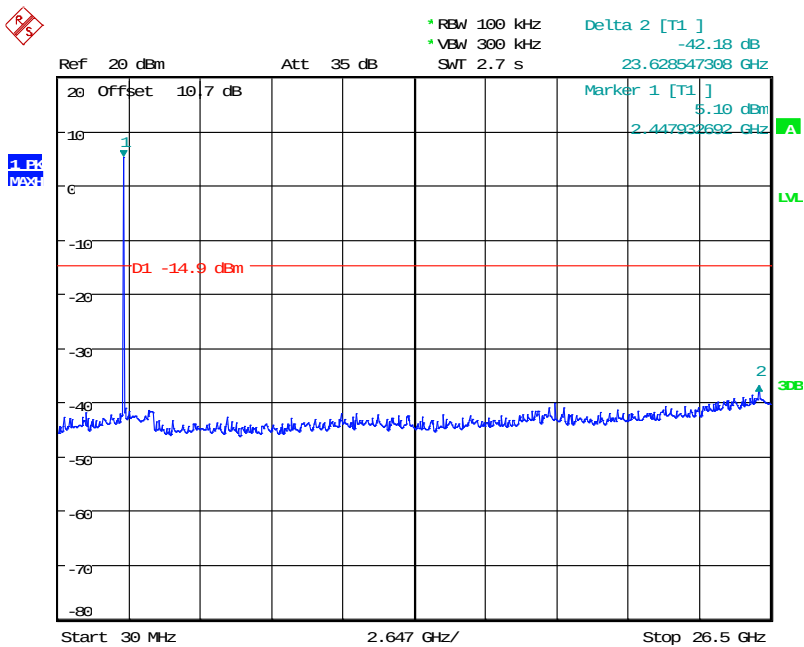
Date: 26.FEB.2018 15:59:27

Middle Channel



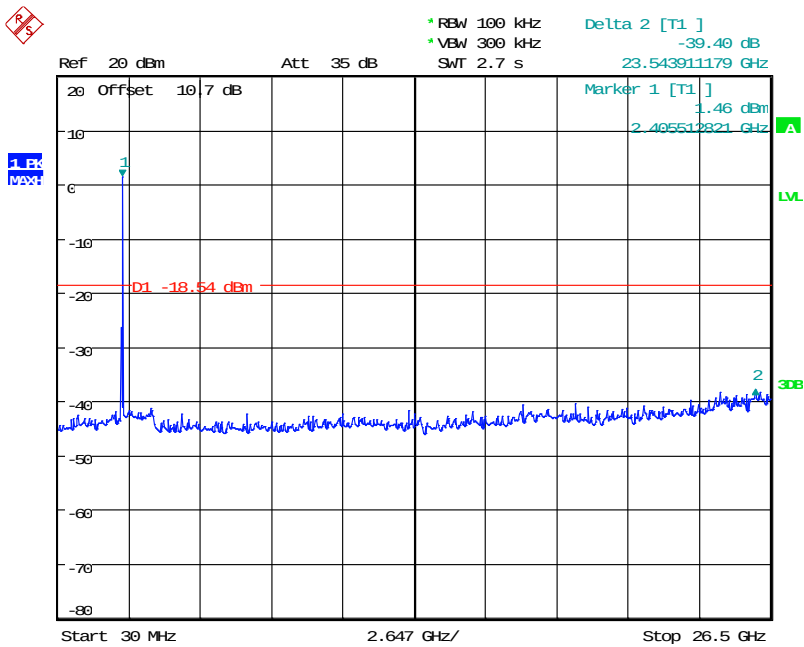
Date: 26.FEB.2018 16:01:08

High Channel



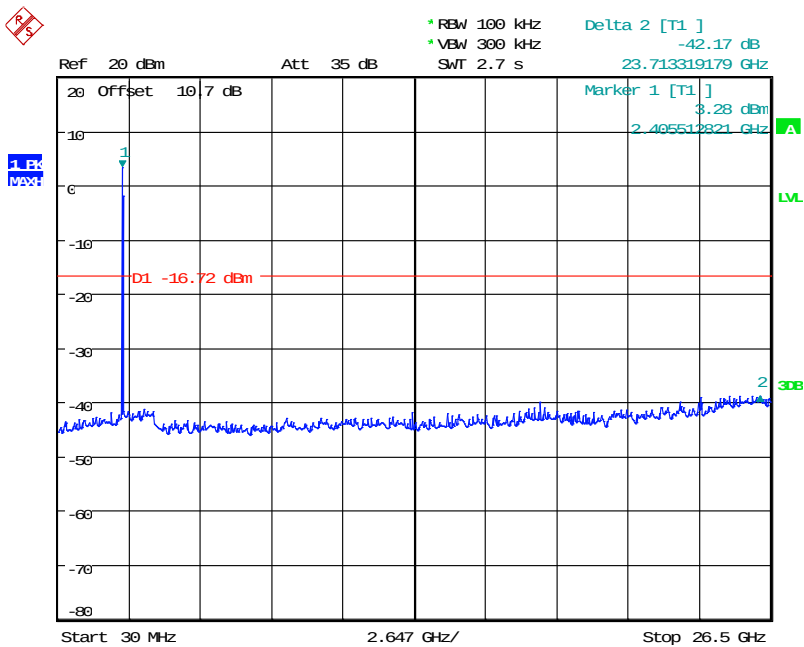
Date: 26.FEB.2018 16:05:05

G Mode
Low Channel



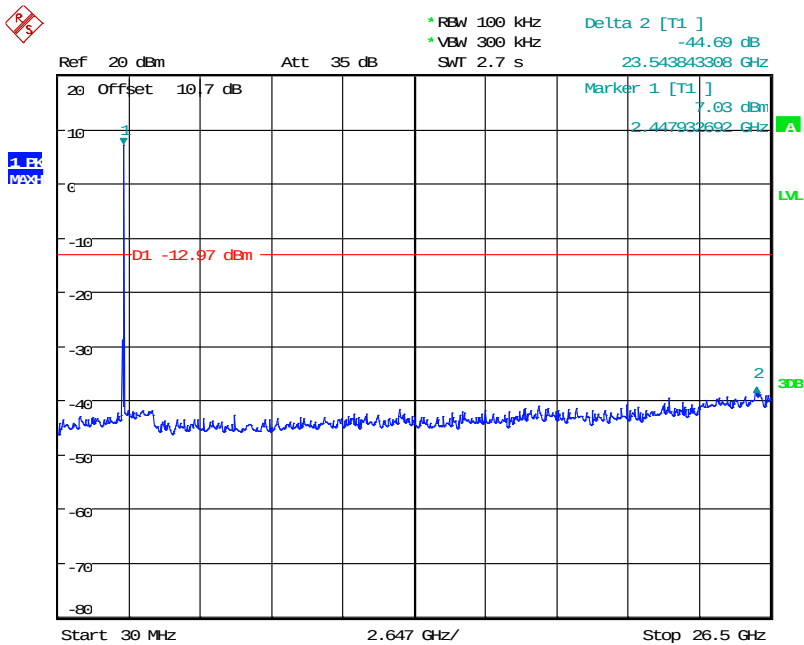
Date: 26.FEB.2018 16:53:54

Middle Channel



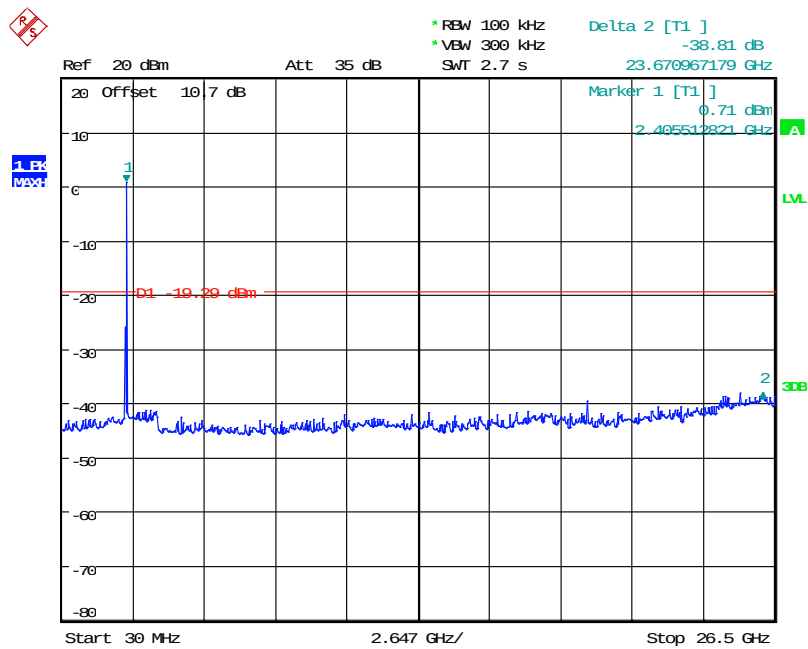
Date: 26.FEB.2018 16:55:02

High Channel



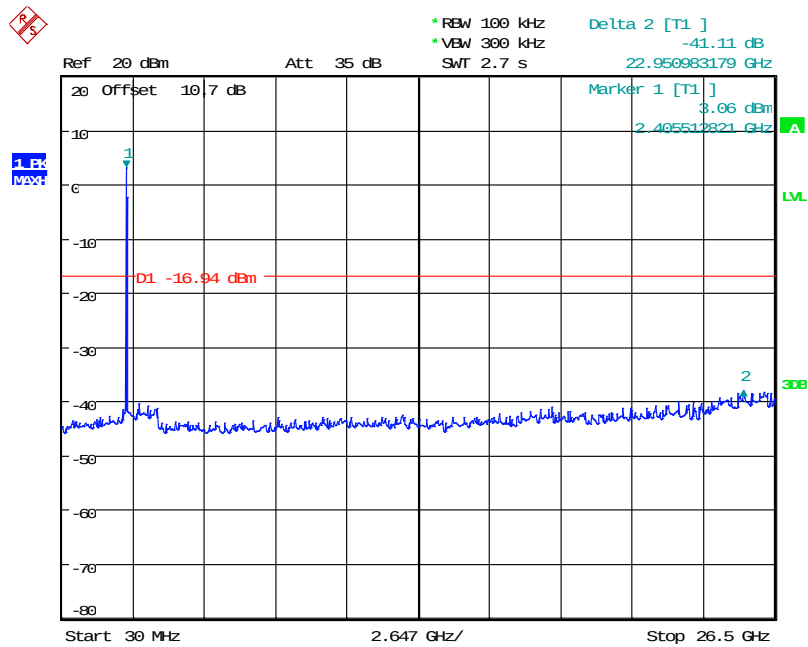
Date: 26.FEB.2018 16:56:26

N20 Mode
Low Channel



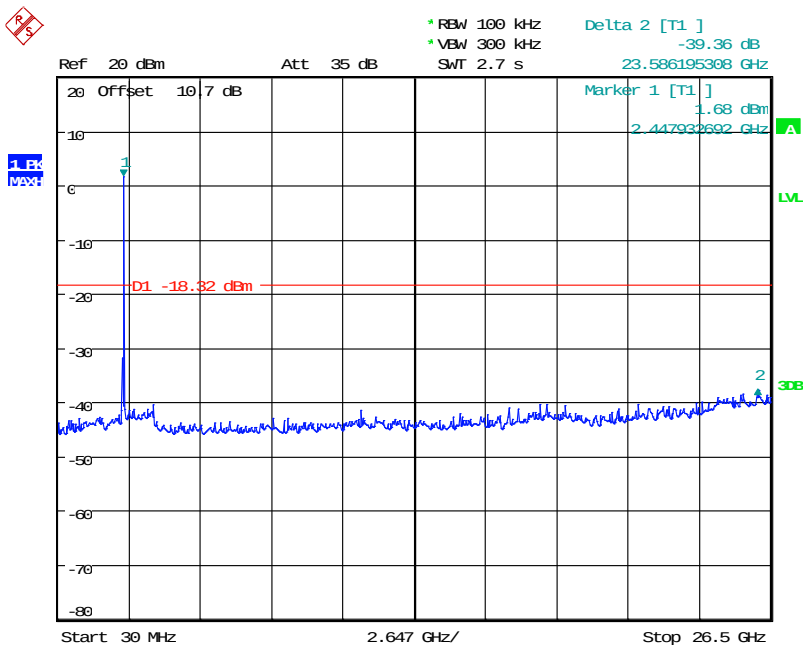
Date: 26.FEB.2018 17:03:21

Middle Channel



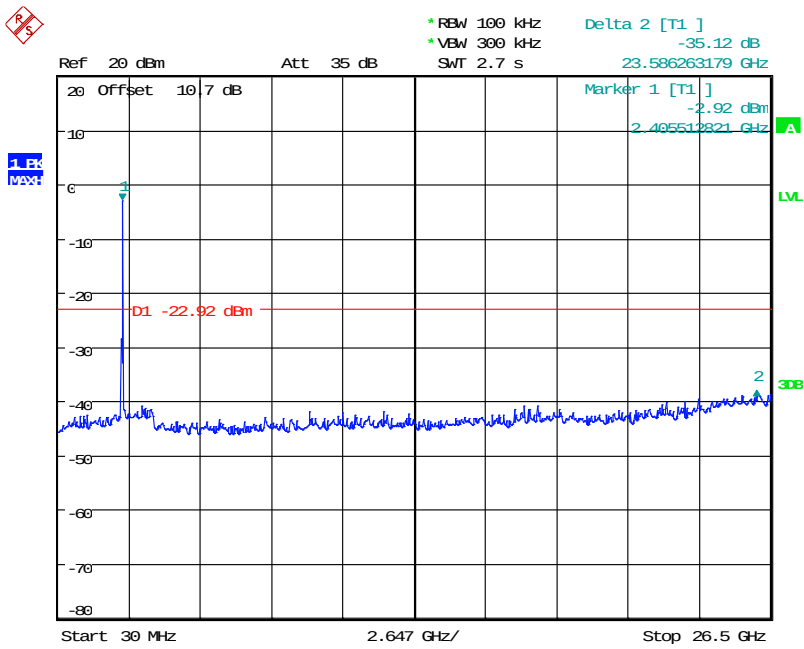
Date: 26.FEB.2018 17:06:04

High Channel



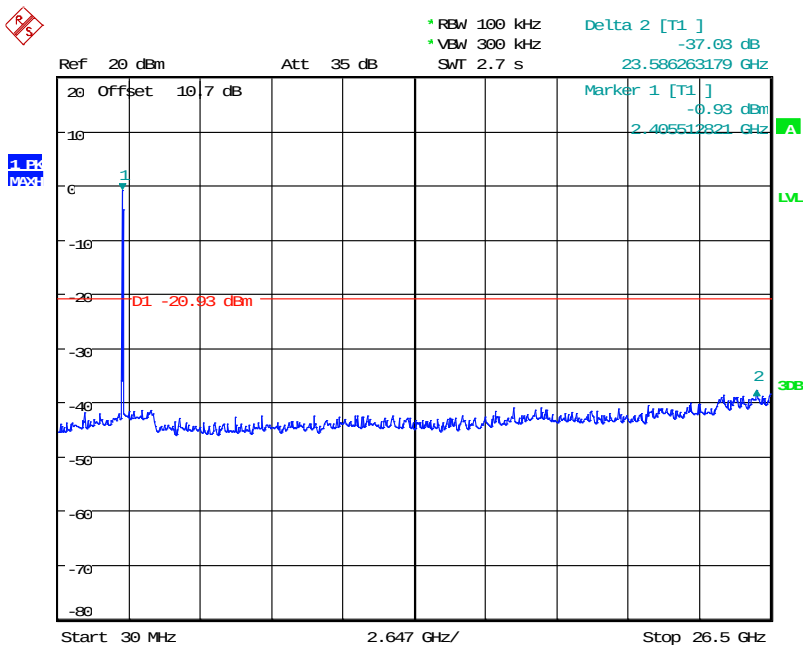
Date: 26.FEB.2018 17:22:07

N40 Mode
Low Channel



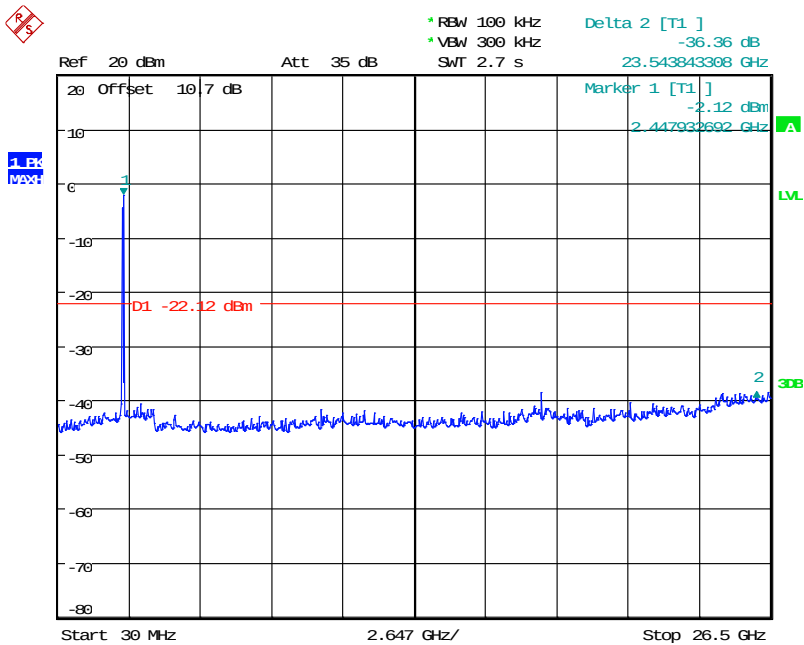
Date: 26.FEB.2018 17:55:46

Middle Channel



Date: 26.FEB.2018 17:56:22

High Channel



Date: 26.FEB.2018 17:57:13

8 FCC §15.247(a)(2) – 6 dB Emission Bandwidth

8.1 Applicable Standard

According to FCC §15.247(a) (2).

Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

8.2 Test Procedure

According to ANSI C63.10-2013

6 dB Emission Bandwidth

The steps for the first option are as follows:

- Set RBW = 100 kHz.
- Set the VBW $\geq [3 \times \text{RBW}]$.
- Detector = peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Allow the trace to stabilize.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

8.3 Test Equipment List and Details

Descriptions	Manufacturers	Models	Serial Numbers	Calibration Date	Calibration Due Date
Spectrum Analyzer	Rohde & Schwarz	FSU26	200268	2017/05/08	2018/05/07
Attenuator	MINI-CIRCUITS	BW-S3W5+	N/A	2017/12/14	2018/12/13
Cable	WOKEN	SFL402	S02-160323-07	2018/02/12	2019/02/11

*** Statement of Traceability:** BACL Corp. attests that all calibrations have been performed according to TAF requirements, traceable to the ETC.

8.4 Test Environmental Conditions

Temperature:	26° C
Relative Humidity:	58 %
ATM Pressure:	1010 hPa

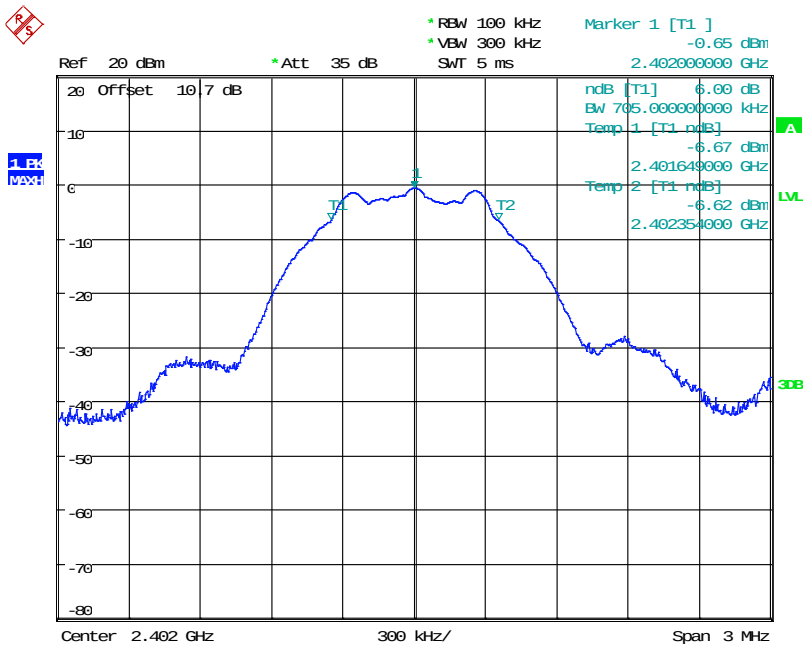
The testing was performed by Andy Shih on 2018-02-26.

8.5 Test Results

Channel	Frequency (MHz)	6 dB OBW (MHz)	Limit (MHz)	Result
BLE 1 Mode				
Low	2402	0.71	> 0.5	Compliance
Middle	2440	0.70	> 0.5	Compliance
High	2480	0.70	> 0.5	Compliance
BLE 2 Mode				
Low	2402	0.70	> 0.5	Compliance
Middle	2440	0.70	> 0.5	Compliance
High	2480	0.70	> 0.5	Compliance
B Mode				
Low	2412	9.98	> 0.5	Compliance
Middle	2437	9.98	> 0.5	Compliance
High	2462	9.98	> 0.5	Compliance
G Mode				
Low	2412	13.82	> 0.5	Compliance
Middle	2437	14.98	> 0.5	Compliance
High	2462	15.04	> 0.5	Compliance
N20 Mode				
Low	2412	15.04	> 0.5	Compliance
Middle	2437	15.10	> 0.5	Compliance
High	2462	15.04	> 0.5	Compliance
N40 Mode				
Low	2422	35.07	> 0.5	Compliance
Middle	2437	35.07	> 0.5	Compliance
High	2452	35.07	> 0.5	Compliance

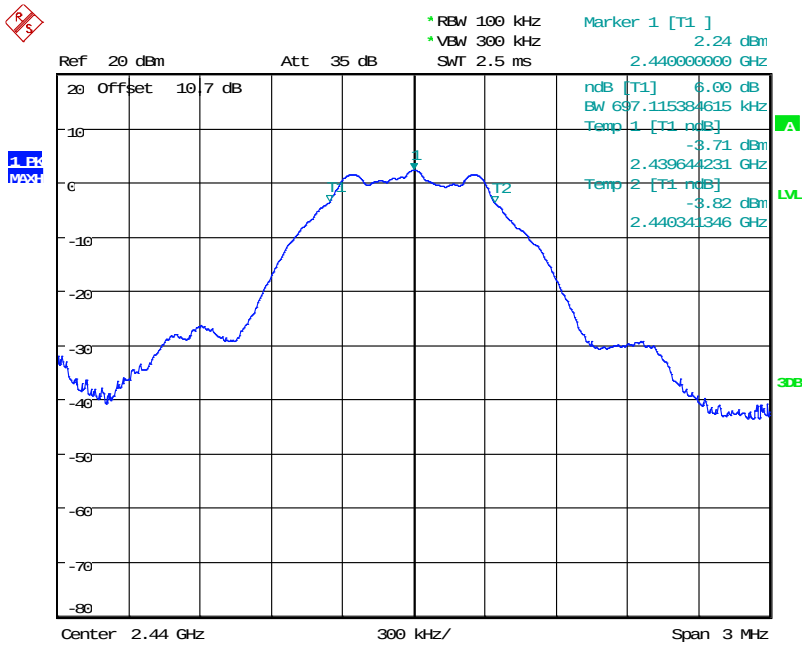
Please refer to the following plots

BLE 1 Mode
Low Channel



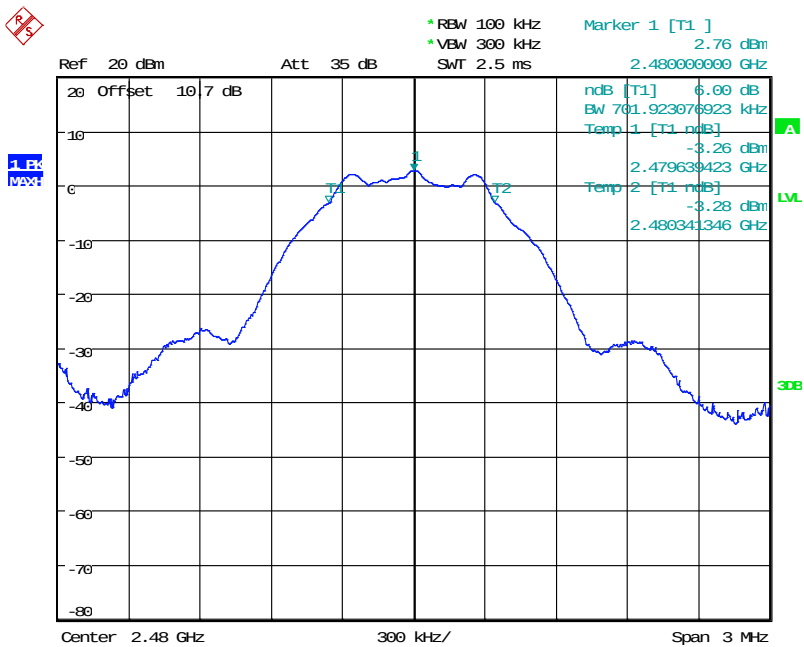
Date: 26.FEB.2018 13:08:28

Middle Channel



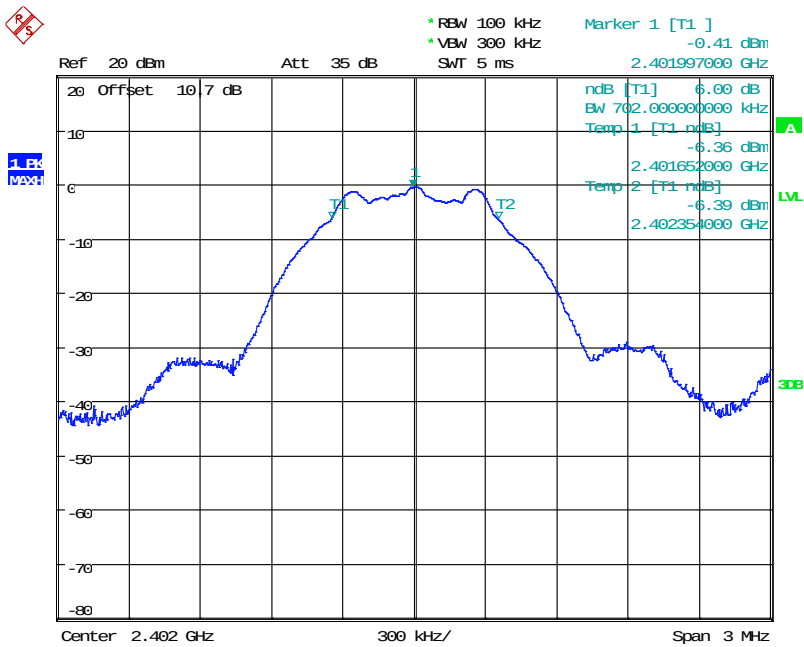
Date: 26.FEB.2018 13:02:17

High Channel



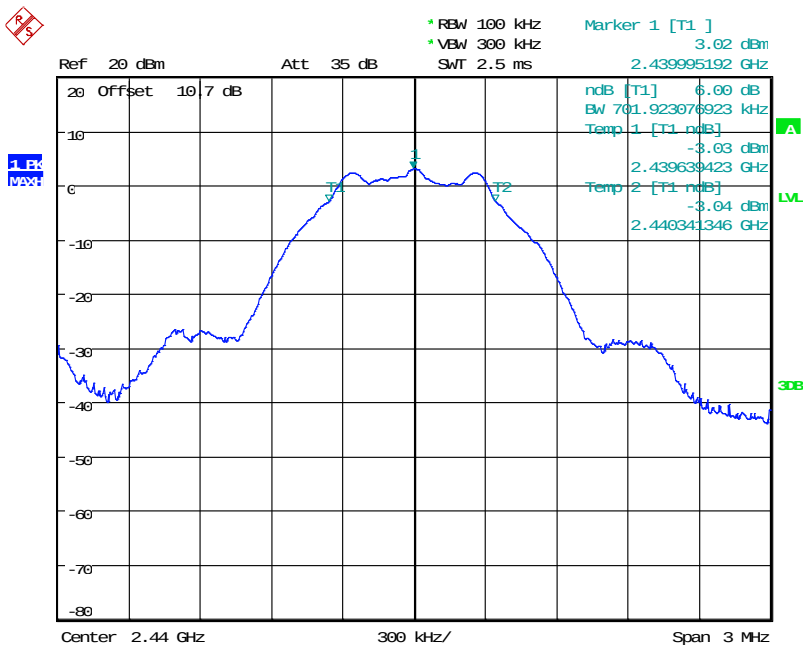
Date: 26.FEB.2018 13:04:09

BLE 2 Mode
Low Channel



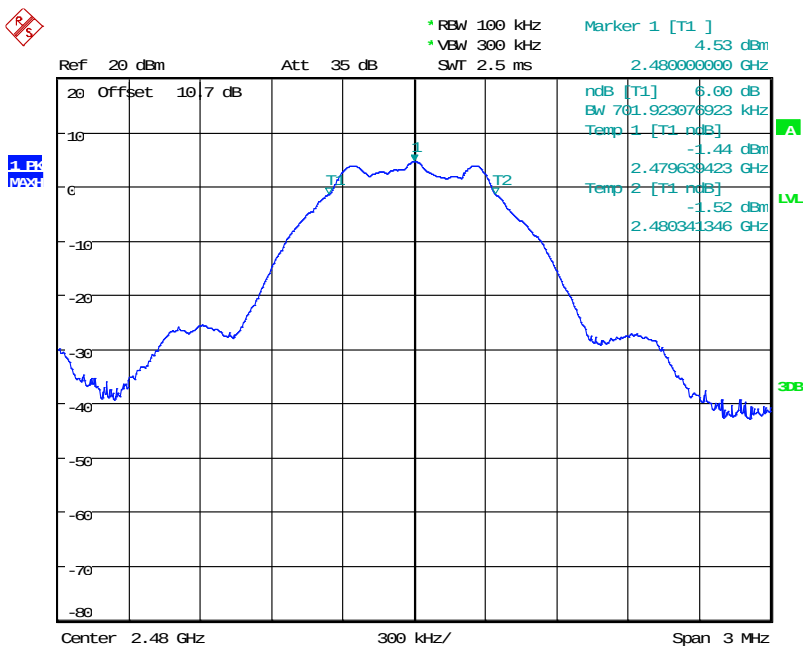
Date: 26.FEB.2018 13:25:49

Middle Channel



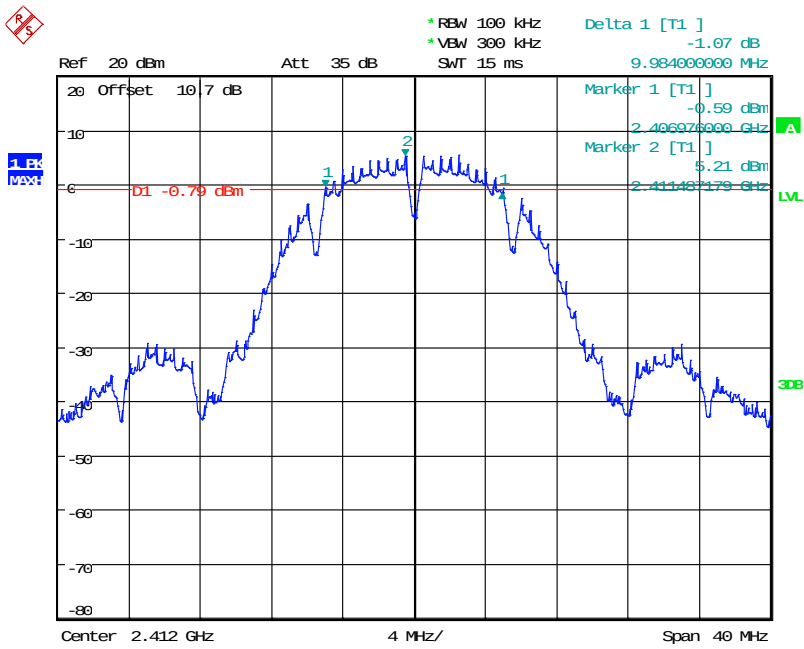
Date: 26.FEB.2018 13:19:05

High Channel



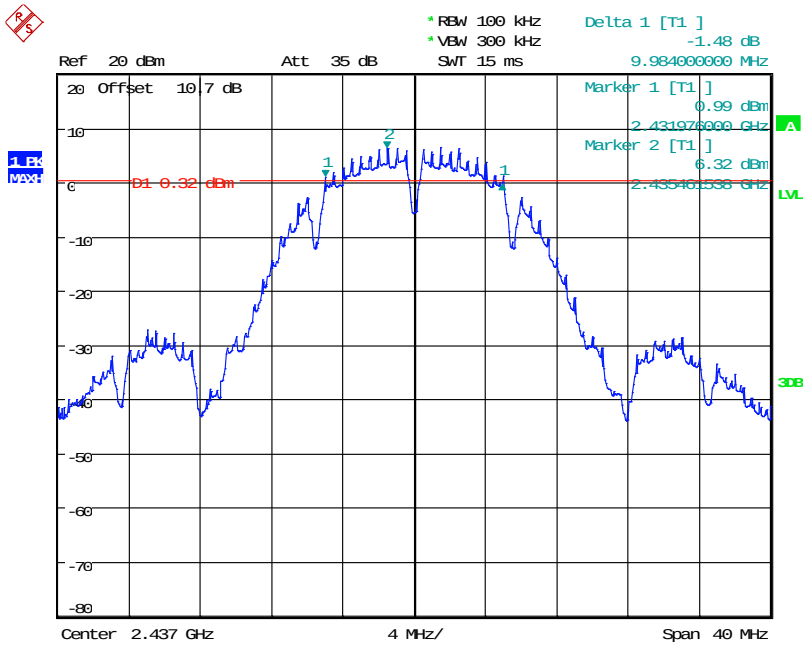
Date: 26.FEB.2018 13:21:08

B Mode
Low Channel



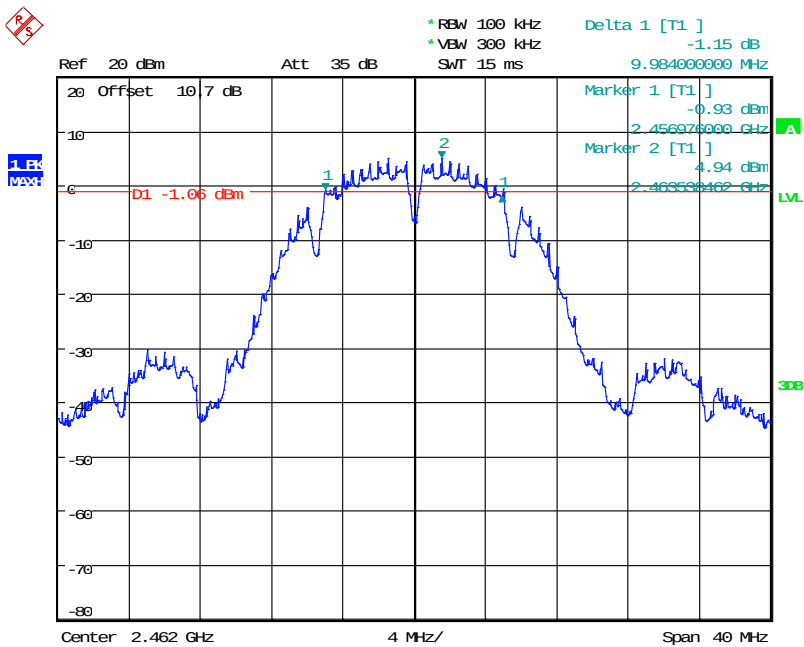
Date: 26.FEB.2018 15:58:53

Middle Channel



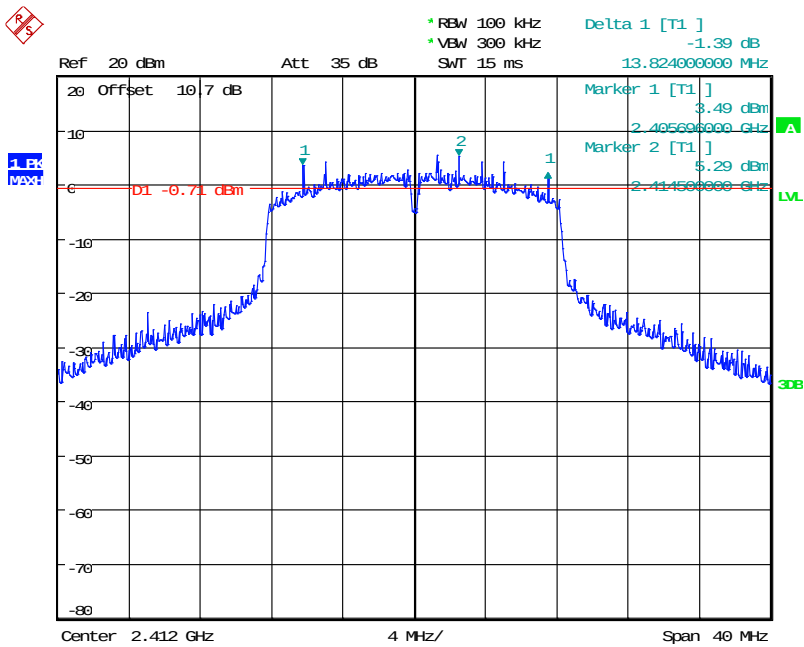
Date: 26.FEB.2018 16:00:35

High Channel



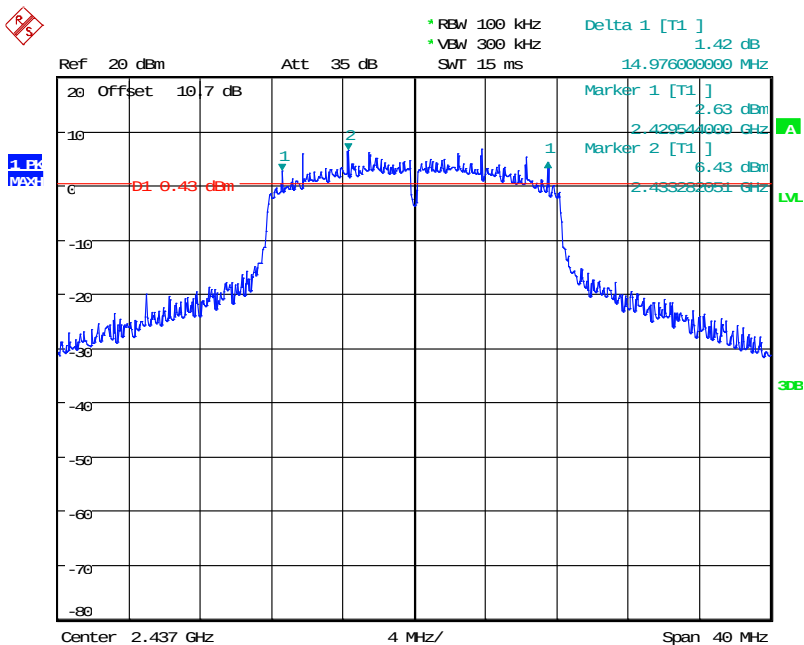
Date: 26.FEB.2018 16:04:22

G Mode
Low Channel



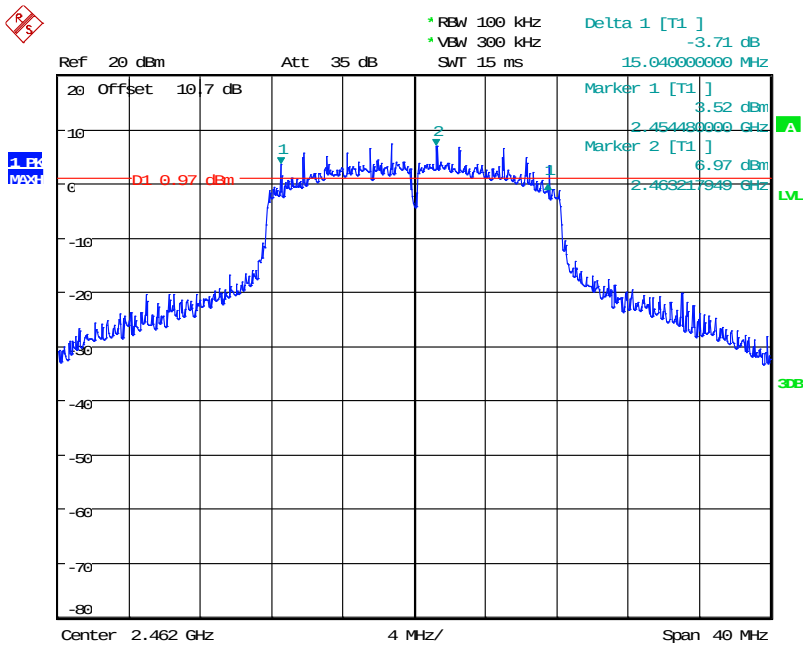
Date: 26.FEB.2018 16:53:20

Middle Channel



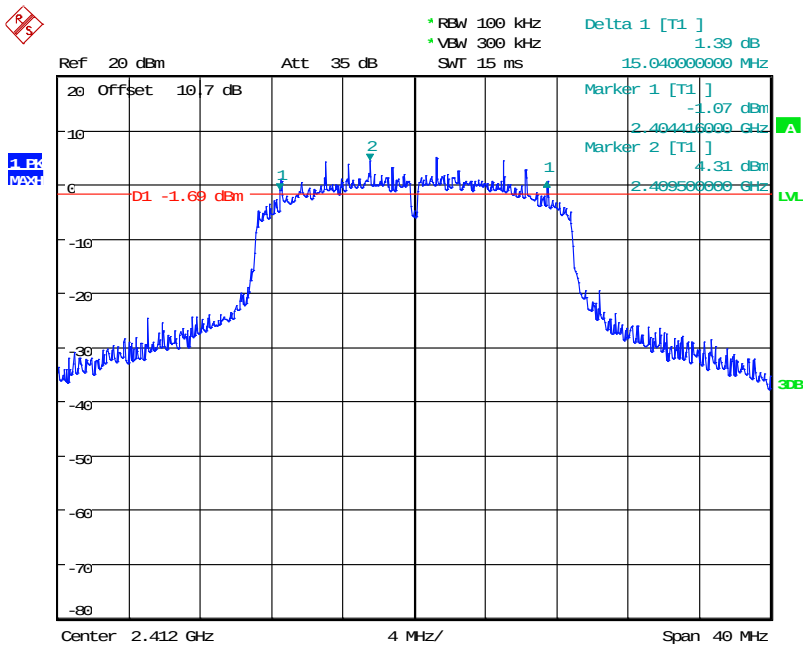
Date: 26.FEB.2018 16:54:30

High Channel



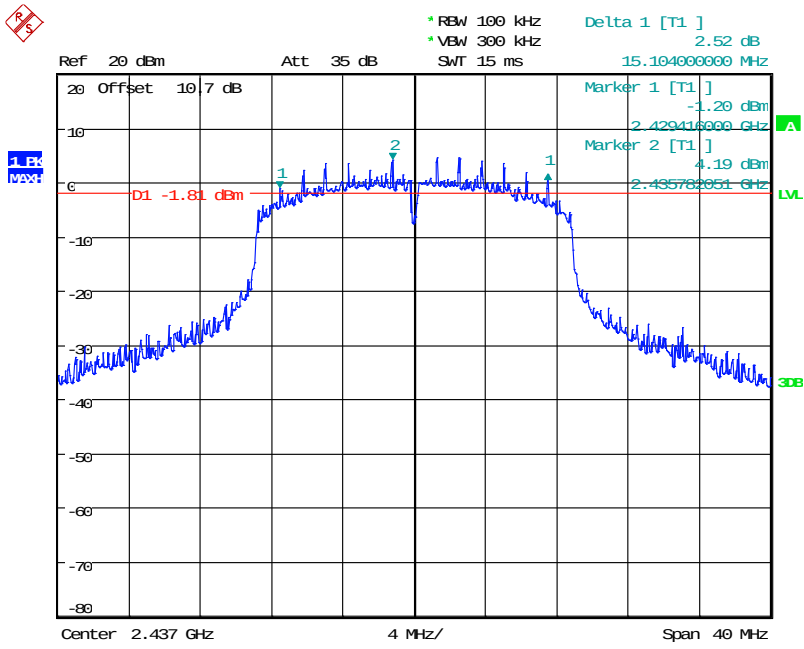
Date: 26.FEB.2018 16:55:44

N20 Mode
Low Channel



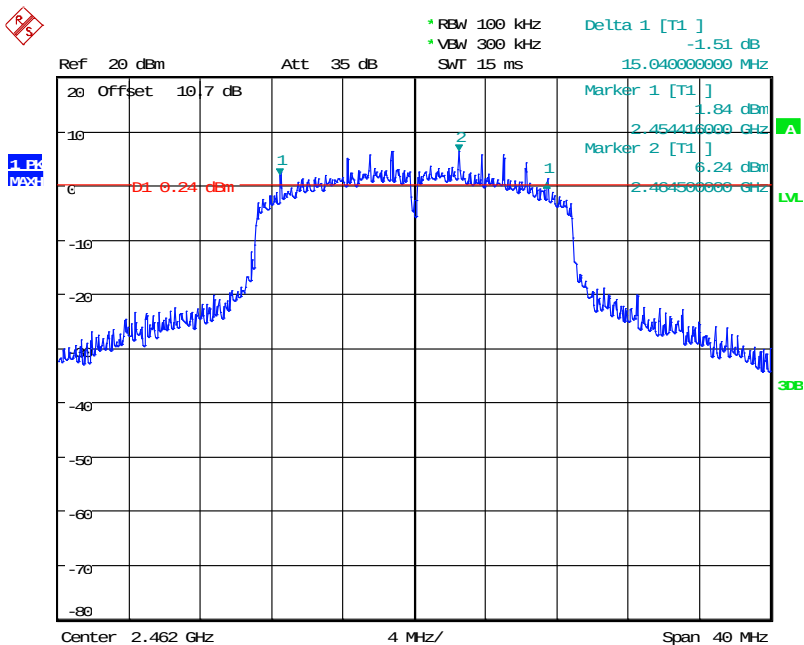
Date: 26.FEB.2018 17:02:47

Middle Channel



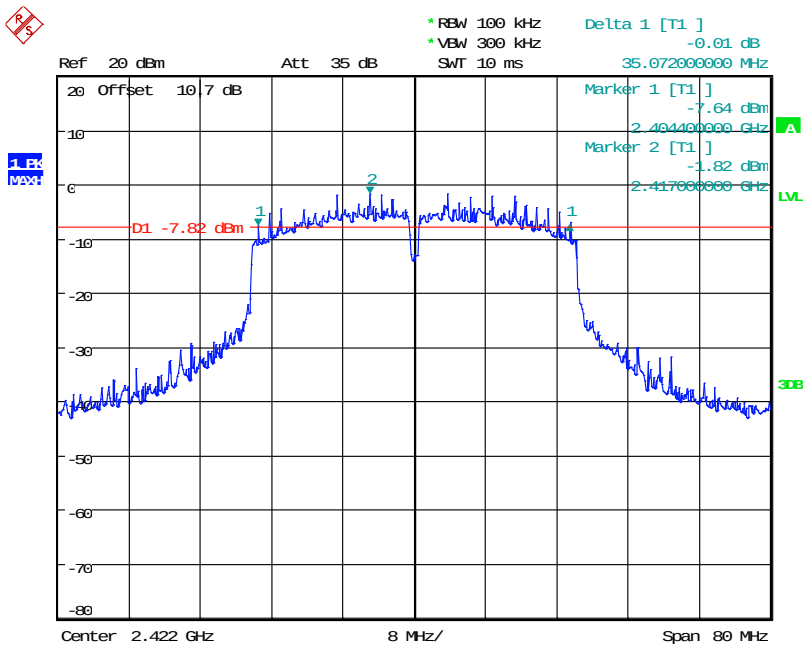
Date: 26.FEB.2018 17:43:06

High Channel



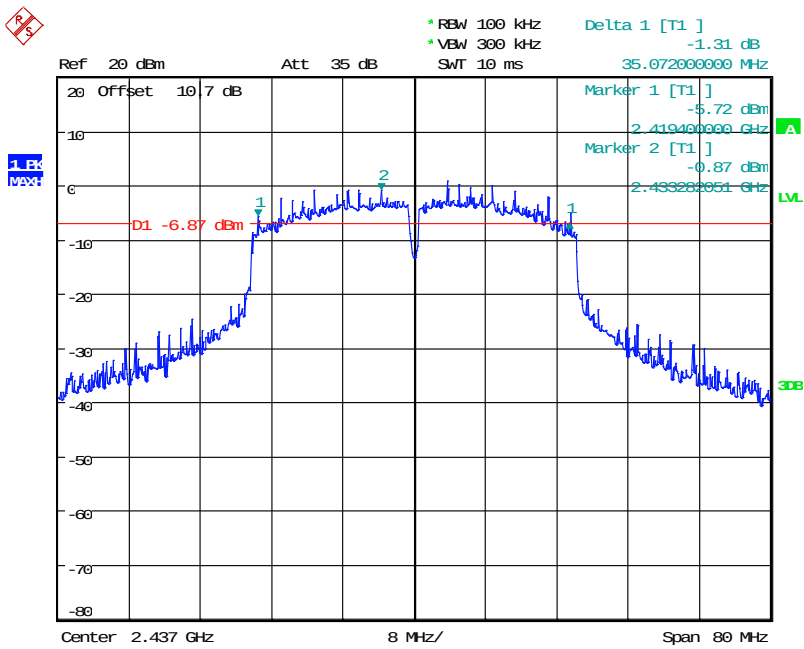
Date: 26.FEB.2018 17:36:52

N40 Mode
Low Channel



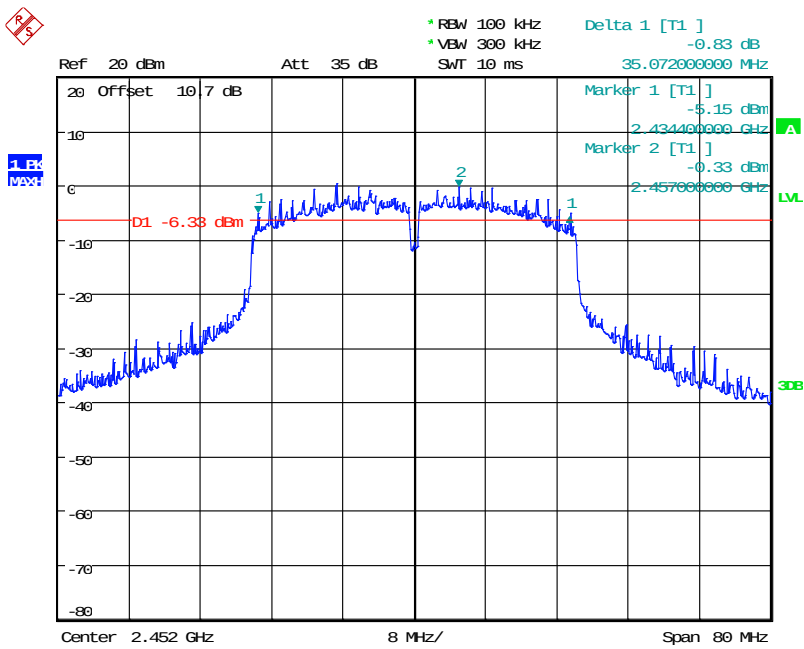
Date: 26.FEB.2018 17:49:03

Middle Channel



Date: 26.FEB.2018 17:53:49

High Channel



Date: 26.FEB.2018 17:50:36

9 FCC §15.247(b)(3) – Maximum Output Power

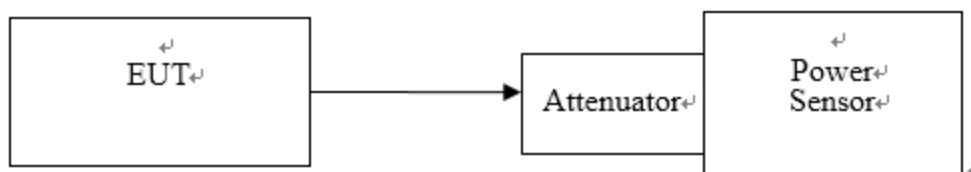
9.1 Applicable Standard

According to FCC §15.247(b) (3).

Systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

9.2 Test Procedure

1. Place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to measuring equipment.



9.3 Test Equipment List and Details

Descriptions	Manufacturers	Models	Serial Numbers	Calibration Date	Calibration Due Date
Power Sensor	KEYSIGHT	U2021XA	MY54080018	2017/03/21	2018/03/20
Attenuator	MINI-CIRCUITS	BW-S10W5+	N/A	2017/12/14	2018/12/13
Cable	WOKEN	SFL402	S02-160323-07	2018/02/12	2019/02/11

* **Statement of Traceability:** BACL Corp. attests that all calibrations have been performed according to TAF requirements, traceable to the ETC.

9.4 Test Environmental Conditions

Temperature:	26° C
Relative Humidity:	58 %
ATM Pressure:	1010 hPa

The testing was performed by Andy Shih on 2018-02-26.

9.5 Test Results

Channel	Frequency (MHz)	Maximum peak Conducted Output Power (dBm)	Maximum peak Conducted Output Power (W)	Limit (W)	Result
BLE 1 Mode					
Low	2402	0.77	0.001	1	Compliance
Middle	2440	3.53	0.002	1	Compliance
High	2480	3.99	0.003	1	Compliance
BLE 2 Mode					
Low	2402	0.92	0.001	1	Compliance
Middle	2440	4.23	0.003	1	Compliance
High	2480	5.79	0.004	1	Compliance
B Mode					
Low	2412	18.66	0.073	1	Compliance
Middle	2437	18.94	0.078	1	Compliance
High	2462	17.70	0.059	1	Compliance
G Mode					
Low	2412	22.19	0.166	1	Compliance
Middle	2437	23.64	0.231	1	Compliance
High	2462	23.48	0.223	1	Compliance
N20 Mode					
Low	2412	22.08	0.161	1	Compliance
Middle	2437	23.00	0.200	1	Compliance
High	2462	22.90	0.195	1	Compliance
N40 Mode					
Low	2422	17.79	0.060	1	Compliance
Middle	2437	19.47	0.089	1	Compliance
High	2452	19.48	0.089	1	Compliance

Channel	Frequency	Conducted Average Output Power	Duty factor	Total Conducted Average Output Power		Limit	Result
	(MHz)	(dBm)	(dB)	(dBm)	(W)	(W)	
BLE 1 Mode							
Low	2402	-1.96	2.29	0.33	0.001	1	PASS
Middle	2440	0.86	2.29	3.15	0.002	1	PASS
High	2480	1.37	2.29	3.66	0.002	1	PASS
BLE 2 Mode							
Low	2402	-1.77	2.37	0.60	0.001	1	PASS
Middle	2440	1.59	2.37	3.96	0.002	1	PASS
High	2480	3.21	2.37	5.58	0.004	1	PASS
B Mode							
Low	2412	16.64	0	16.64	0.046	1	PASS
Middle	2437	16.62	0	16.62	0.046	1	PASS
High	2462	15.39	0	15.39	0.035	1	PASS
G Mode							
Low	2412	16.14	0.18	16.32	0.043	1	PASS
Middle	2437	18.17	0.18	18.35	0.066	1	PASS
High	2462	18.05	0.18	18.23	0.067	1	PASS
N20 Mode							
Low	2412	15.82	0.13	15.95	0.039	1	PASS
Middle	2437	17.19	0.13	17.32	0.054	1	PASS
High	2462	17.21	0.13	17.34	0.054	1	PASS
N40 Mode							
Low	2422	12.79	0.18	12.97	0.020	1	PASS
Middle	2437	14.70	0.18	14.88	0.031	1	PASS
High	2452	14.71	0.18	14.89	0.031	1	PASS

10 FCC §15.247(d) – 100 kHz Bandwidth of Frequency Band Edge

10.1 Applicable Standard

According to FCC §15.247(d).

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

10.2 Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

10.3 Test Equipment List and Details

Descriptions	Manufacturers	Models	Serial Numbers	Calibration Date	Calibration Due Date
Spectrum Analyzer	Rohde & Schwarz	FSU26	200268	2017/05/08	2018/05/07
Cable	WOKEN	SFL402	S02-160323-07	2018/02/12	2019/02/11
Attenuator	MINI-CIRCUITS	BW-S3W5+	N/A	2017/12/14	2018/12/13

* **Statement of Traceability:** BACL Corp. attests that all calibrations have been performed according to TAF requirements, traceable to the ETC.

10.4 Test Environmental Conditions

Temperature:	26° C
Relative Humidity:	58 %
ATM Pressure:	1010 hPa

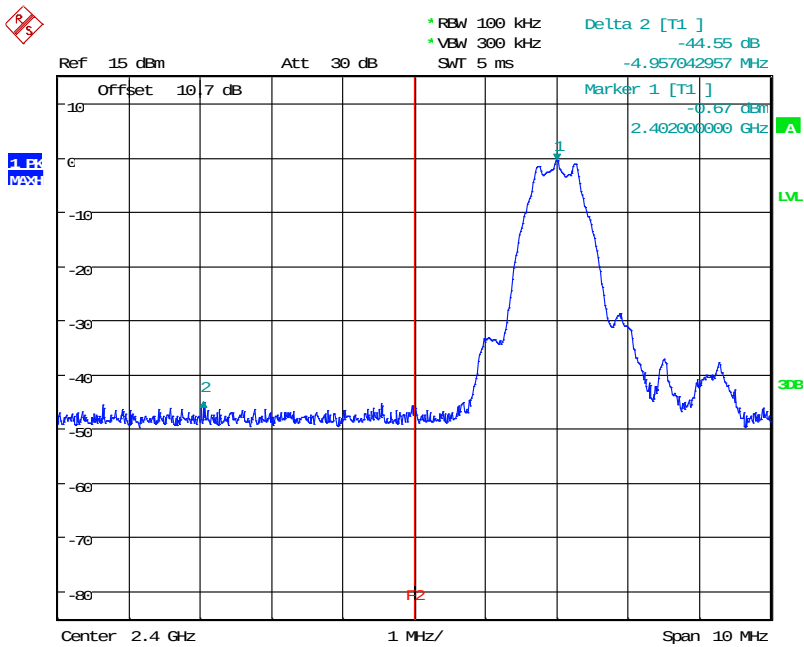
The testing was performed by Andy Shih on 2018-02-26.

10.5 Test Results

Channel	Frequency (MHz)	Delta Peak to Band Emission (dBc)	Limit (dBc)	RESULT
BLE 1 Mode				
Low	2402	44.55	≥ 20	PASS
High	2480	43.46	≥ 20	PASS
BLE 2 Mode				
Low	2402	45.48	≥ 20	PASS
High	2480	45.39	≥ 20	PASS
B Mode				
Low	2412	34.75	≥ 20	PASS
High	2462	45.08	≥ 20	PASS
G Mode				
Low	2412	28.89	≥ 20	PASS
High	2462	39.85	≥ 20	PASS
N20 Mode				
Low	2412	28.69	≥ 20	PASS
High	2462	39.99	≥ 20	PASS
N40 Mode				
Low	2422	27.65	≥ 20	PASS
High	2452	31.51	≥ 20	PASS

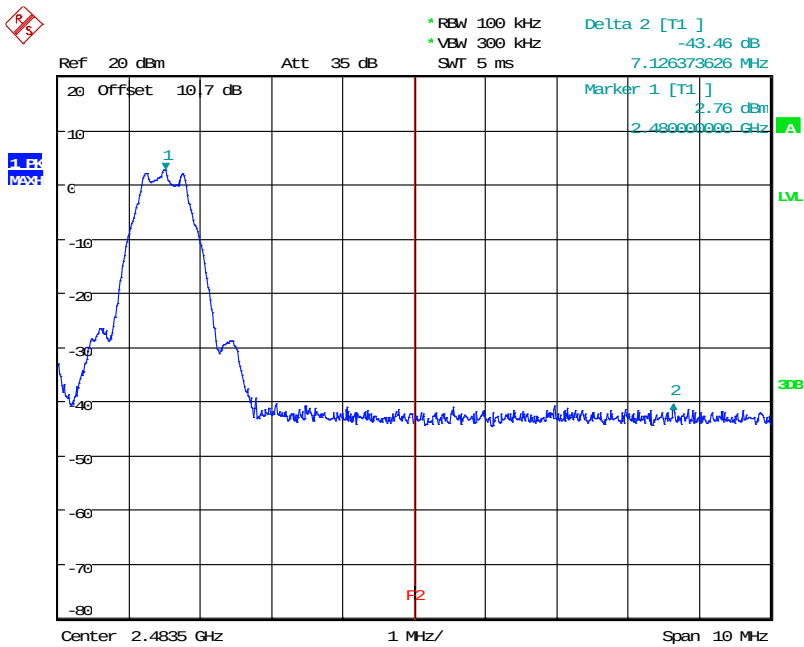
Please refer to the following plots

BLE 1 Mode
Band Edge, Left Side



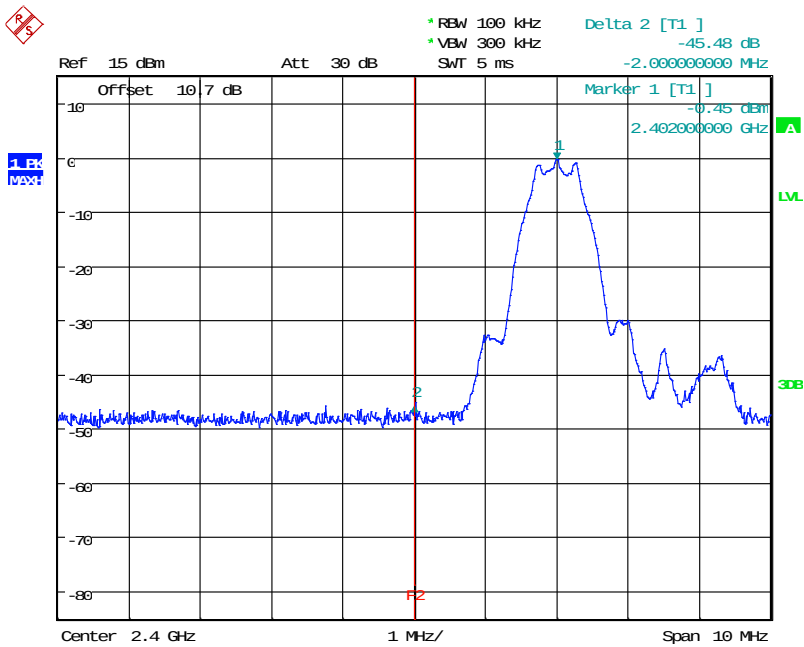
Date: 26.FEB.2018 13:00:38

Band Edge, Right Side



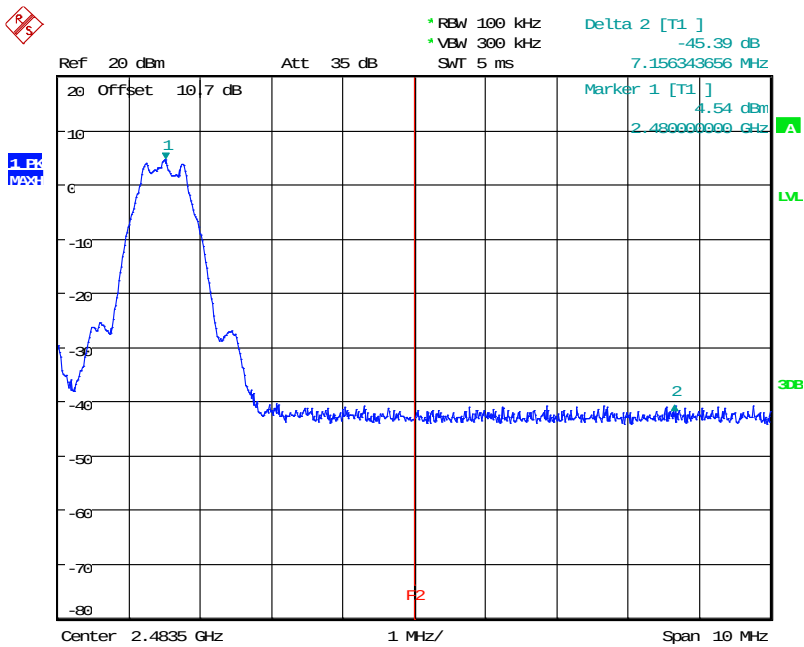
Date: 26.FEB.2018 13:05:04

BLE 2 Mode
Band Edge, Left Side



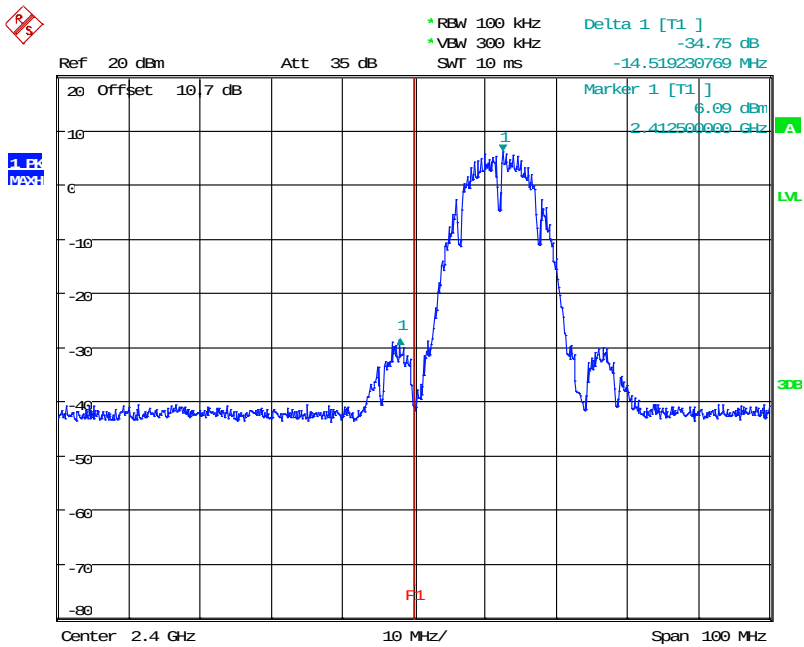
Date: 26.FEB.2018 13:17:35

Band Edge, Right Side



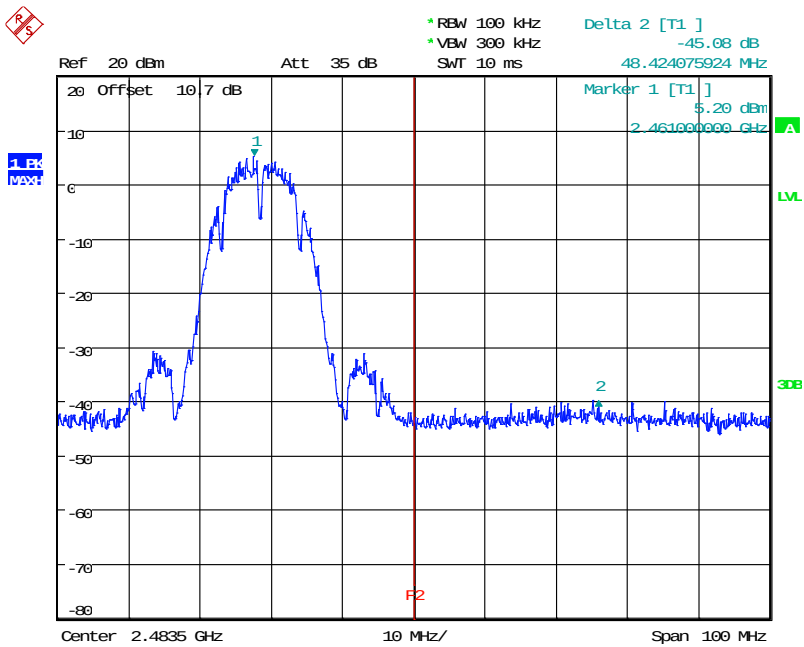
Date: 26.FEB.2018 13:22:11

B Mode
Band Edge, Left Side



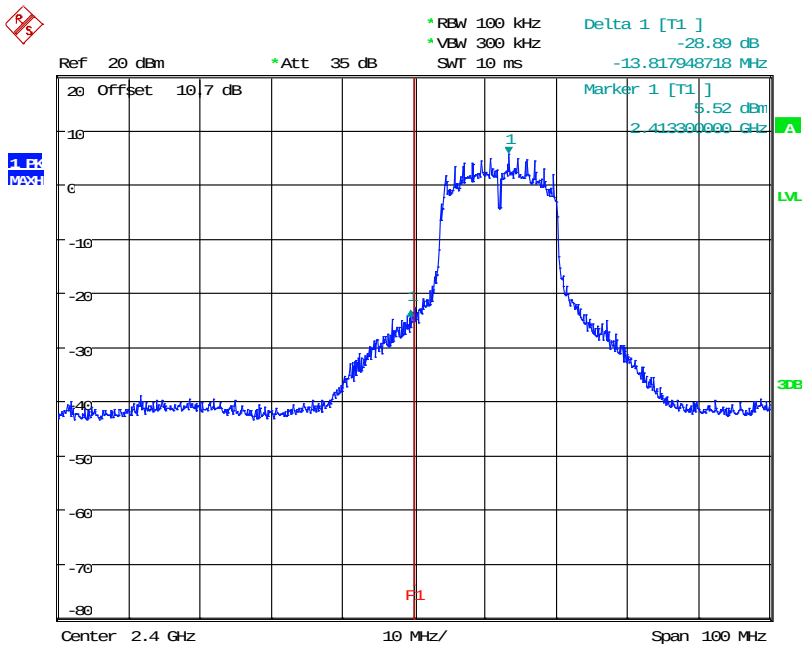
Date: 26.FEB.2018 16:21:59

Band Edge, Right Side



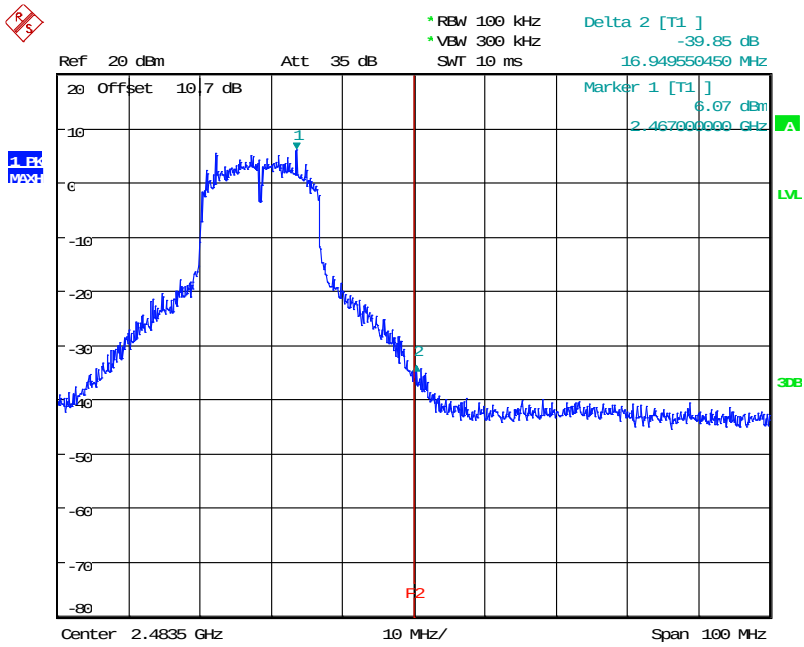
Date: 26.FEB.2018 16:04:52

G Mode
Band Edge, Left Side



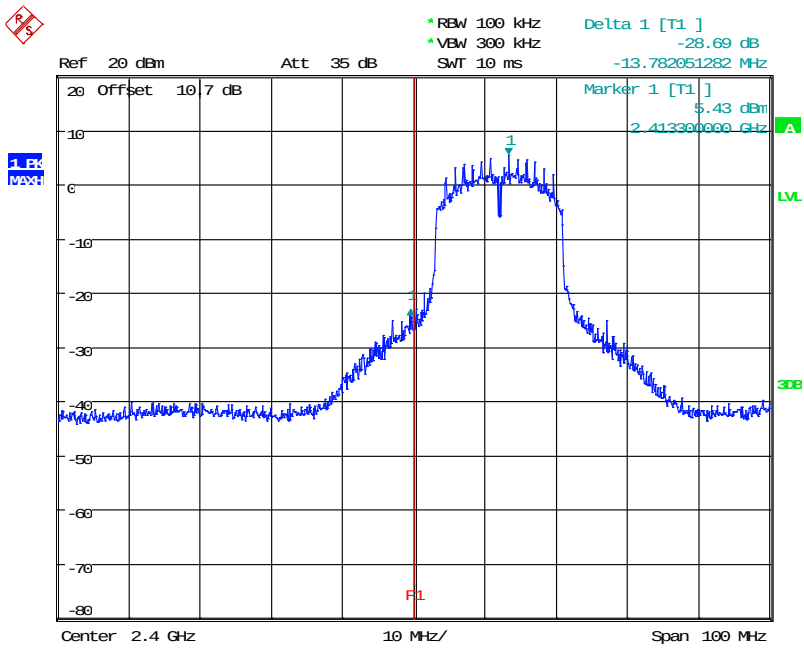
Date: 26.FEB.2018 17:00:32

Band Edge, Right Side



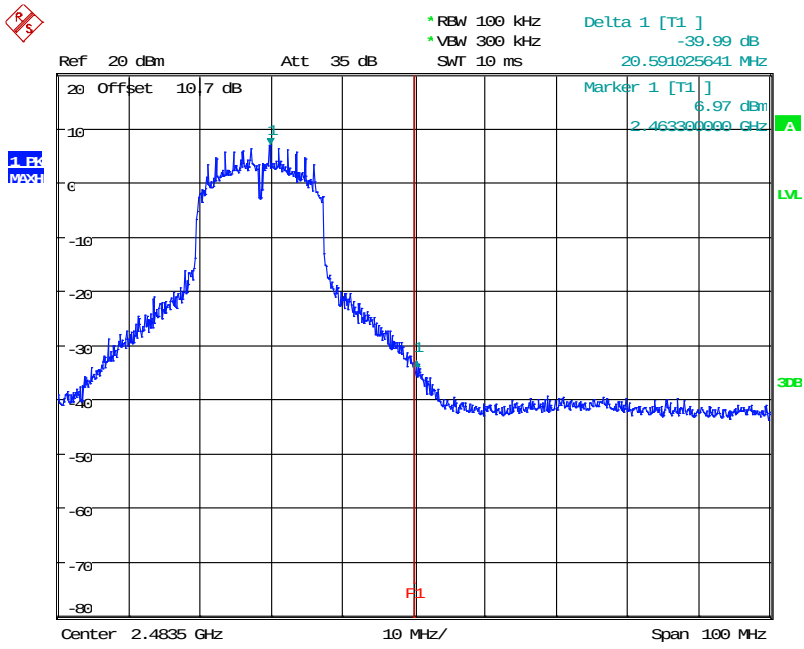
Date: 26.FEB.2018 16:56:13

N20 Mode
Band Edge, Left Side



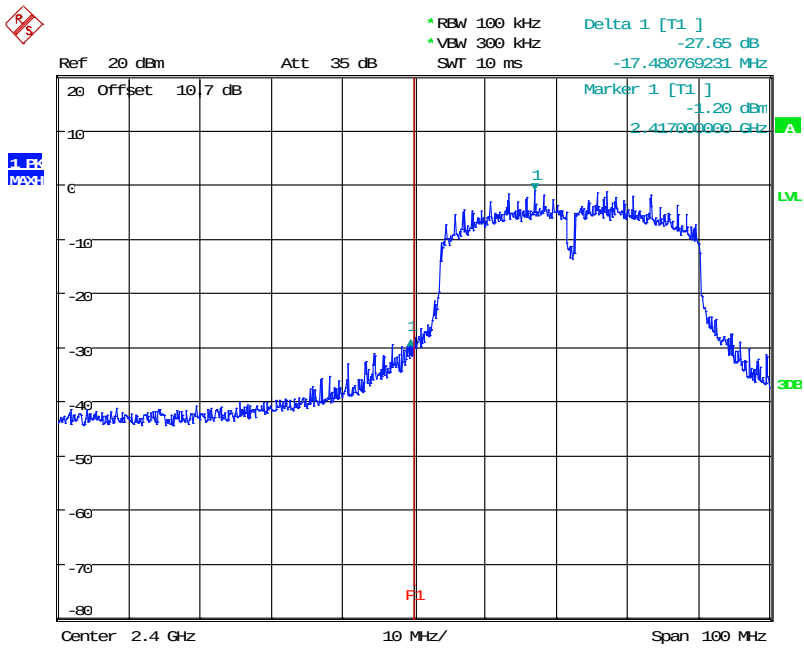
Date: 26.FEB.2018 18:16:00

Band Edge, Right Side



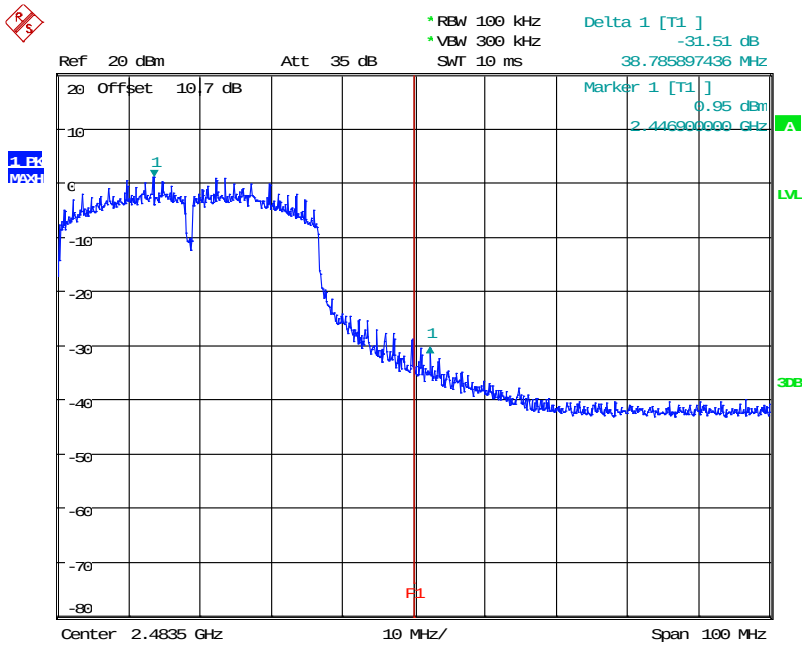
Date: 26.FEB.2018 17:26:41

N40 Mode
Band Edge, Left Side



Date: 26.FEB.2018 18:00:16

Band Edge, Right Side



Date: 26.FEB.2018 17:59:13

11 FCC §15.247(e) – Power Spectral Density

11.1 Applicable Standard

According to FCC §15.247(e).

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

11.2 Test Procedure

According to ANSI C63.10-2013

- Set analyzer center frequency to DTS channel center frequency.
- Set the span to 1.5 times the DTS bandwidth.
- Set the RBW to $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- Set the VBW $\geq [3 \times \text{RBW}]$.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level within the RBW.
- If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat

11.3 Test Equipment List and Details

Descriptions	Manufacturers	Models	Serial Numbers	Calibration Date	Calibration Due Date
Spectrum Analyzer	Rohde & Schwarz	FSU26	200268	2017/05/08	2018/05/07
Cable	WOKEN	SFL402	S02-160323-07	2018/02/12	2019/02/11
Attenuator	MINI-CIRCUITS	BW-S3W5+	N/A	2017/12/14	2018/12/13

*** Statement of Traceability:** BACL Corp. attests that all calibrations have been performed according to TAF requirements, traceable to the ETC.

11.4 Test Environmental Conditions

Temperature:	26° C
Relative Humidity:	58 %
ATM Pressure:	1010 hPa

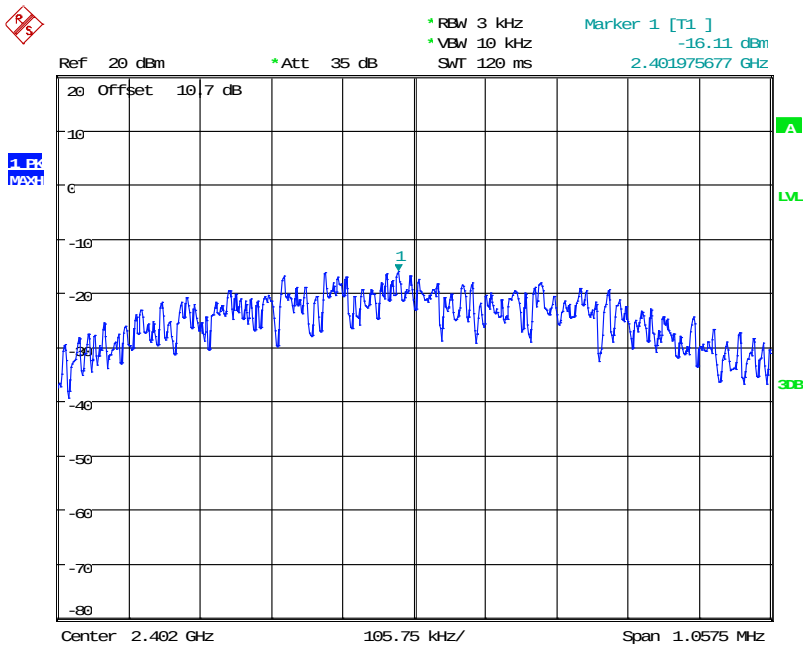
The testing was performed by Andy Shih on 2018-02-26.

11.5 Test Results

Channel	Frequency (MHz)	PPSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Result
BLE 1 Mode				
Low	2402	-16.11	8	Compliance
Middle	2440	-13.29	8	Compliance
High	2480	-12.67	8	Compliance
BLE 2 Mode				
Low	2402	-15.84	8	Compliance
Middle	2440	-12.39	8	Compliance
High	2480	-10.99	8	Compliance
B Mode				
Low	2412	-8.82	8	Compliance
Middle	2437	-8.29	8	Compliance
High	2462	-8.55	8	Compliance
G Mode				
Low	2412	-9.35	8	Compliance
Middle	2437	-7.39	8	Compliance
High	2462	-8.02	8	Compliance
N20 Mode				
Low	2412	-10.91	8	Compliance
Middle	2437	-10.72	8	Compliance
High	2462	-8.28	8	Compliance
N40 Mode				
Low	2422	-14.46	8	Compliance
Middle	2437	-13.62	8	Compliance
High	2452	-13.56	8	Compliance

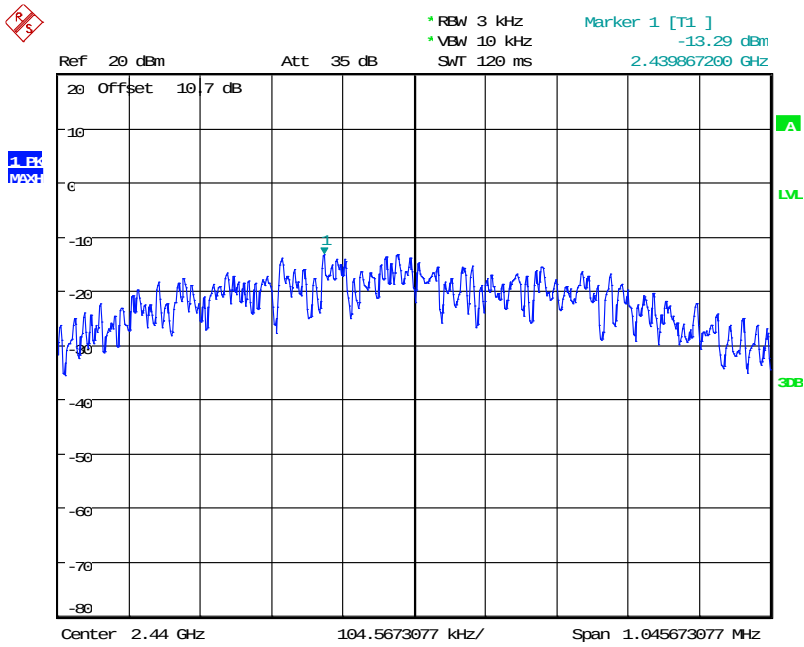
Please refer to the following plots

BLE 1 Mode
Low Channel



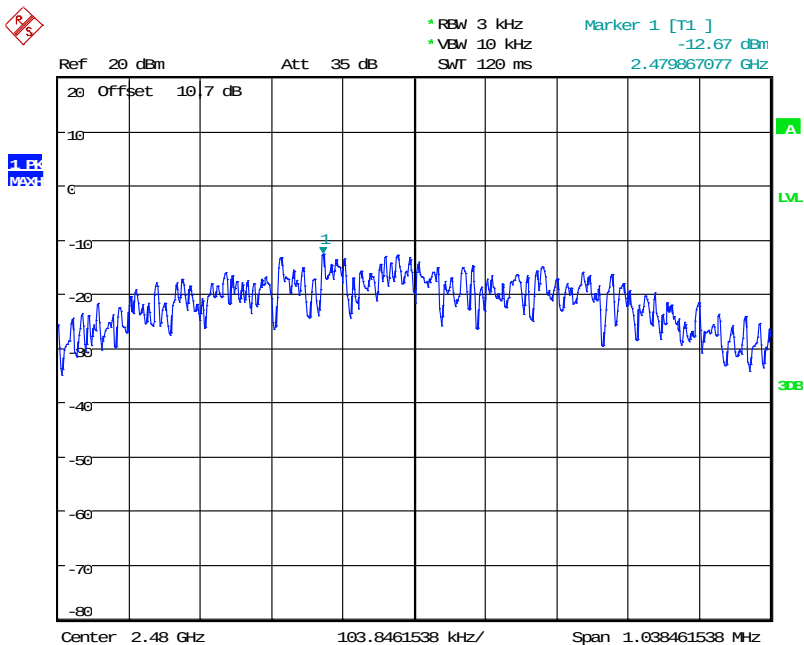
Date: 26.FEB.2018 13:11:37

Middle Channel



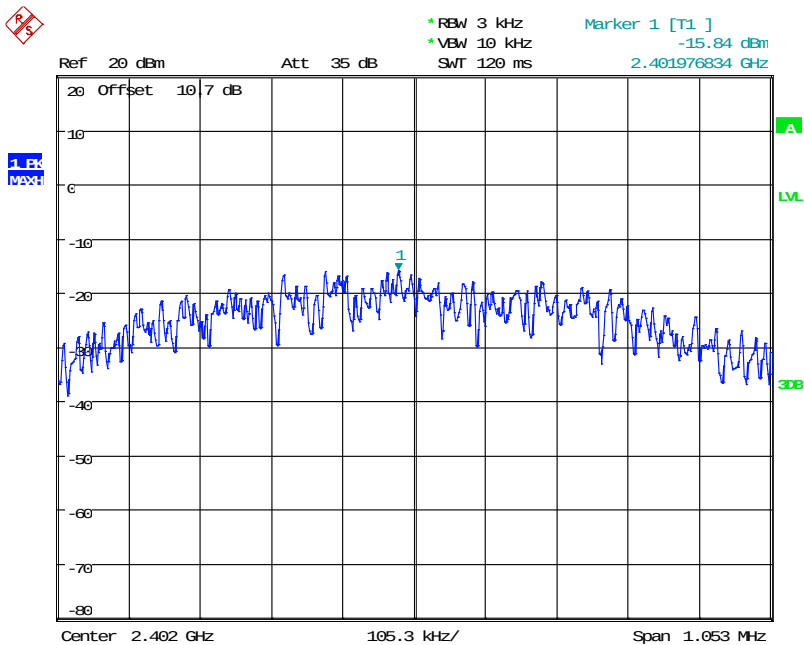
Date: 26.FEB.2018 13:02:40

High Channel



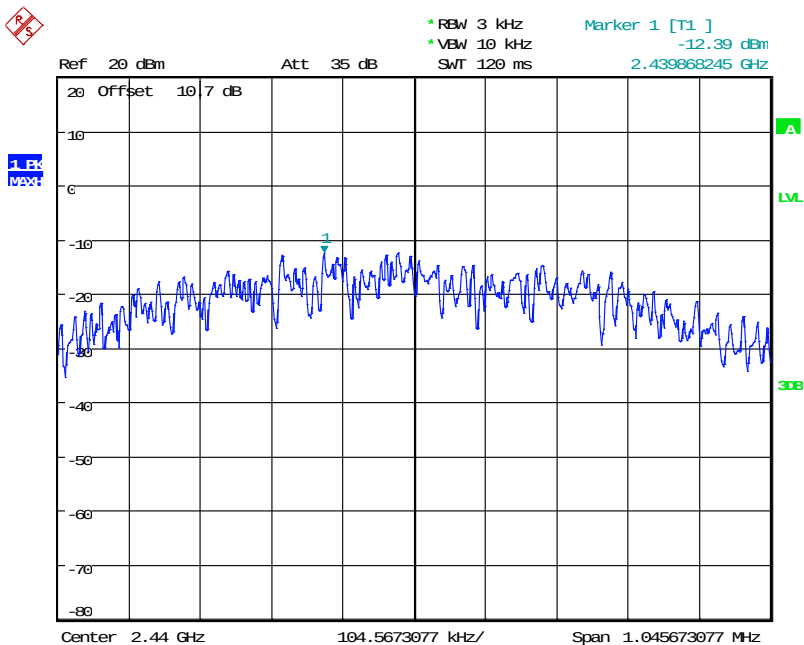
Date: 26.FEB.2018 13:04:33

BLE 2 Mode
Low Channel



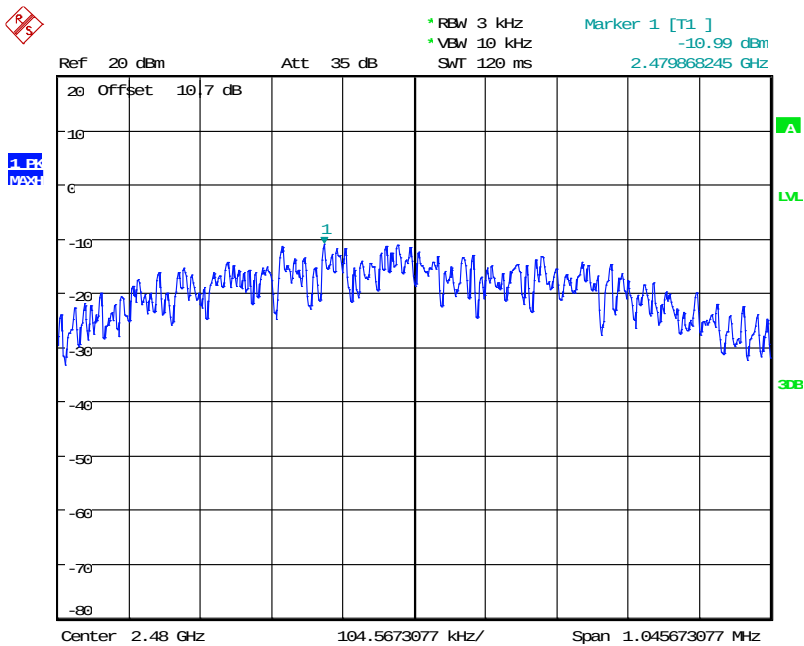
Date: 26.FEB.2018 13:27:36

Middle Channel



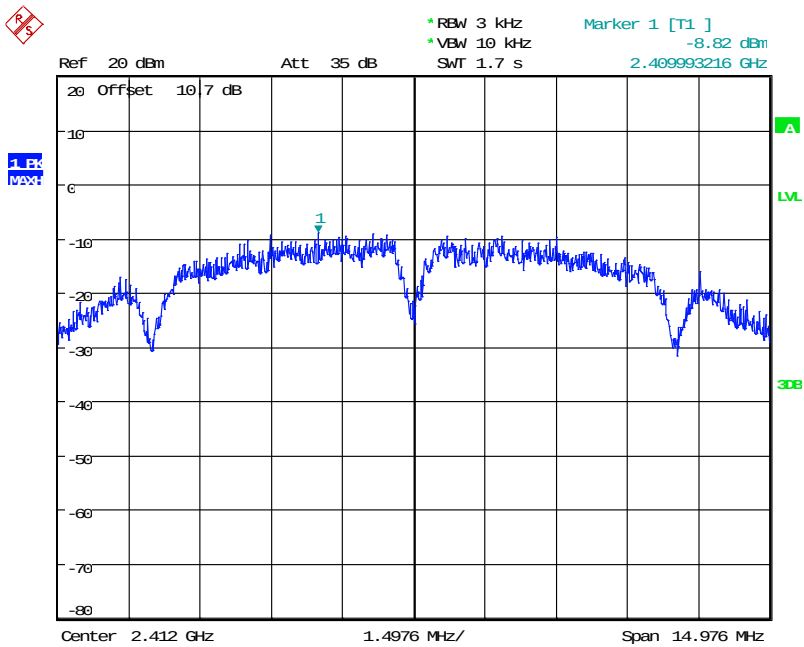
Date: 26.FEB.2018 13:19:27

High Channel



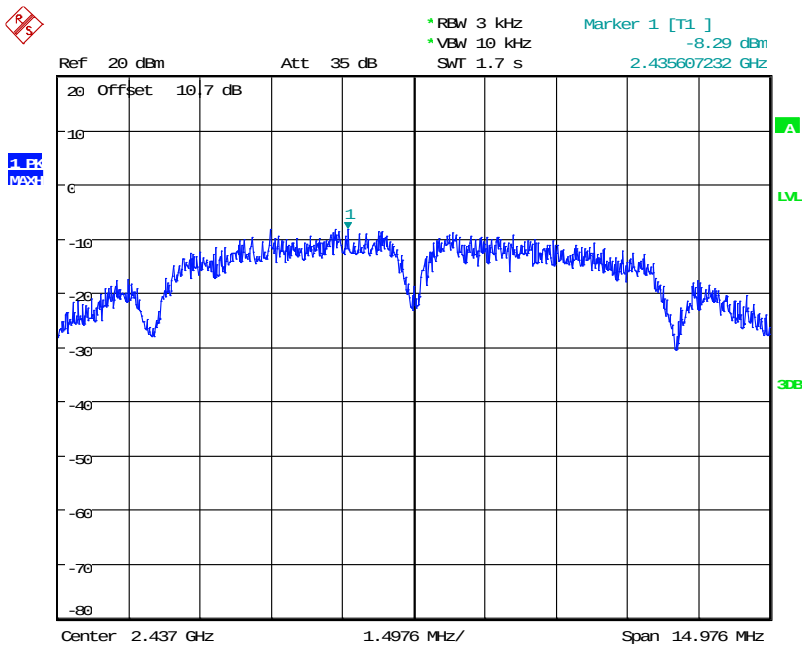
Date: 26.FEB.2018 13:21:30

B Mode
Low Channel



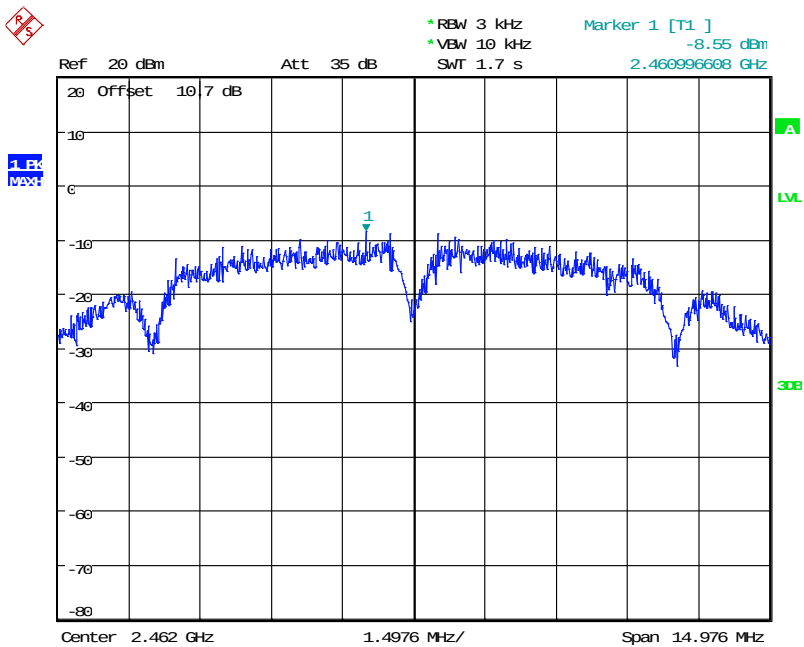
Date: 26.FEB.2018 15:59:05

Middle Channel



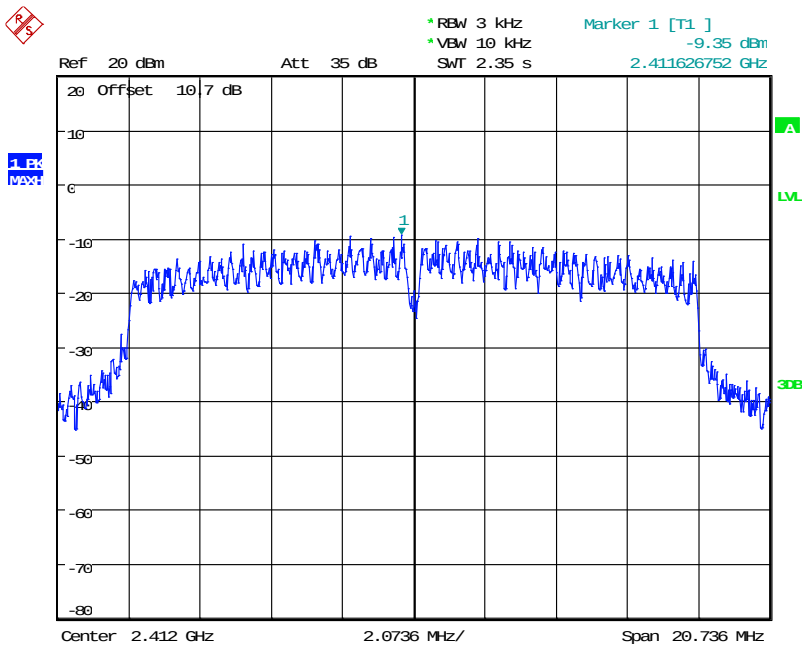
Date: 26.FEB.2018 16:00:52

High Channel



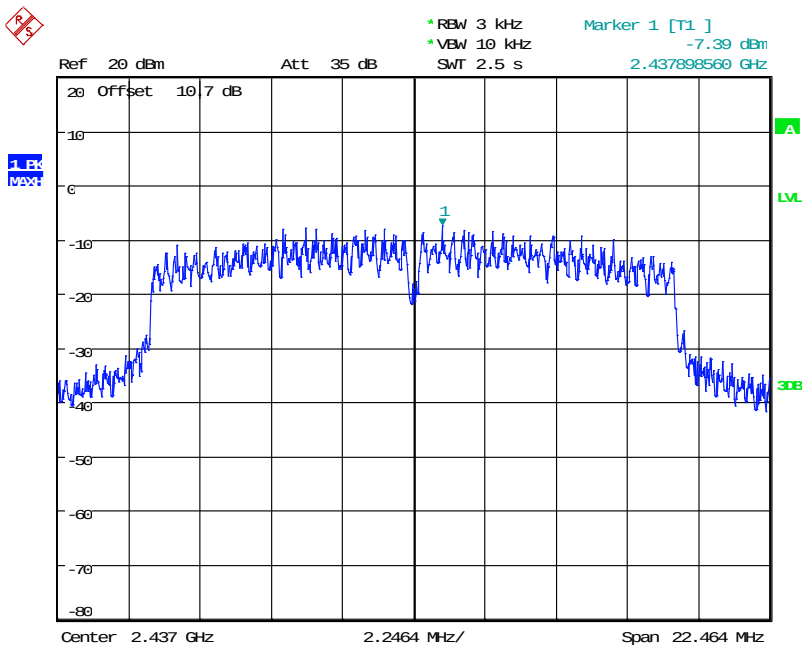
Date: 26.FEB.2018 16:04:39

G Mode
Low Channel



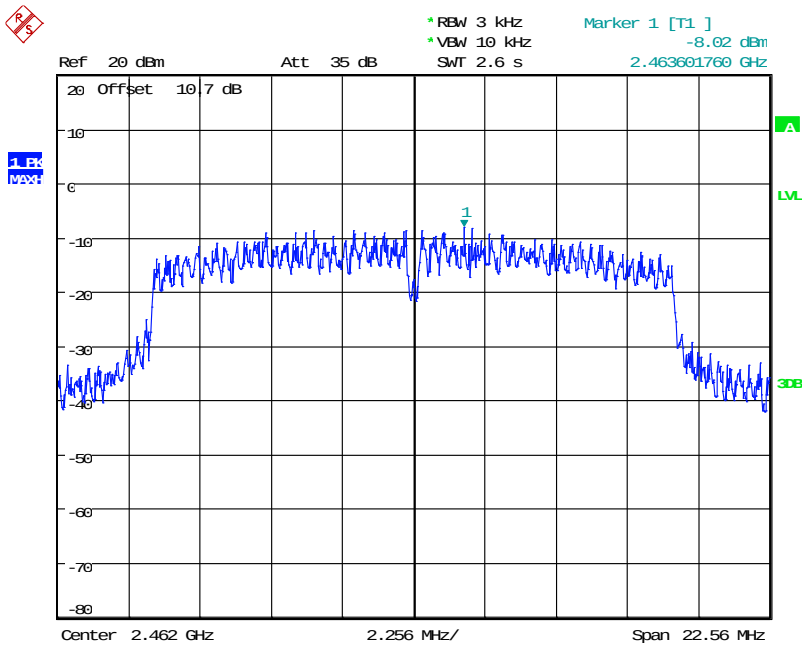
Date: 26.FEB.2018 16:53:32

Middle Channel



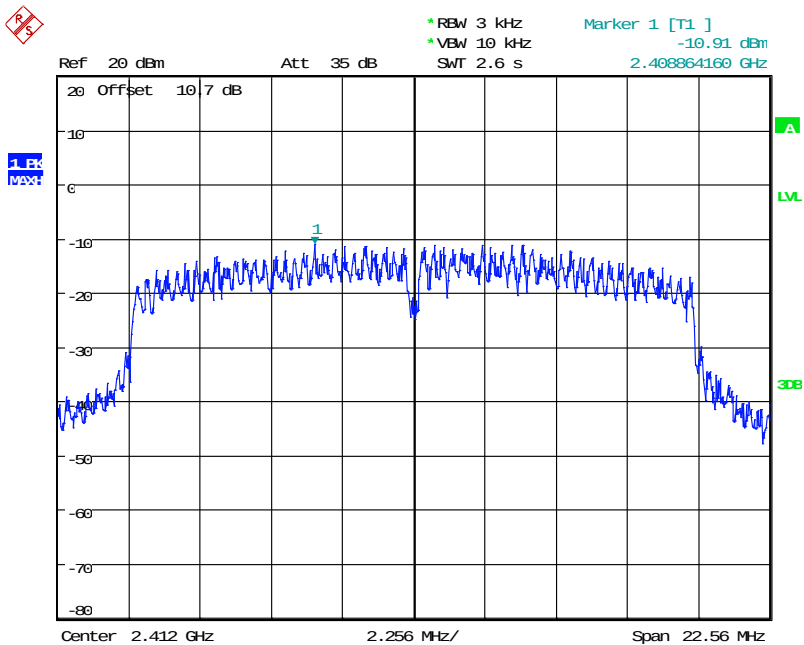
Date: 26.FEB.2018 16:54:46

High Channel



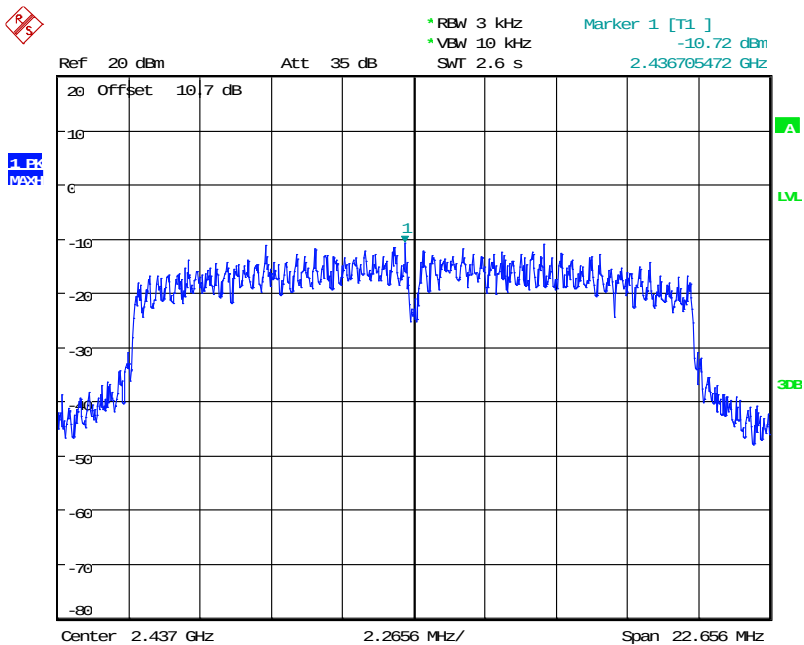
Date: 26.FEB.2018 16:56:00

N20 Mode
Low Channel



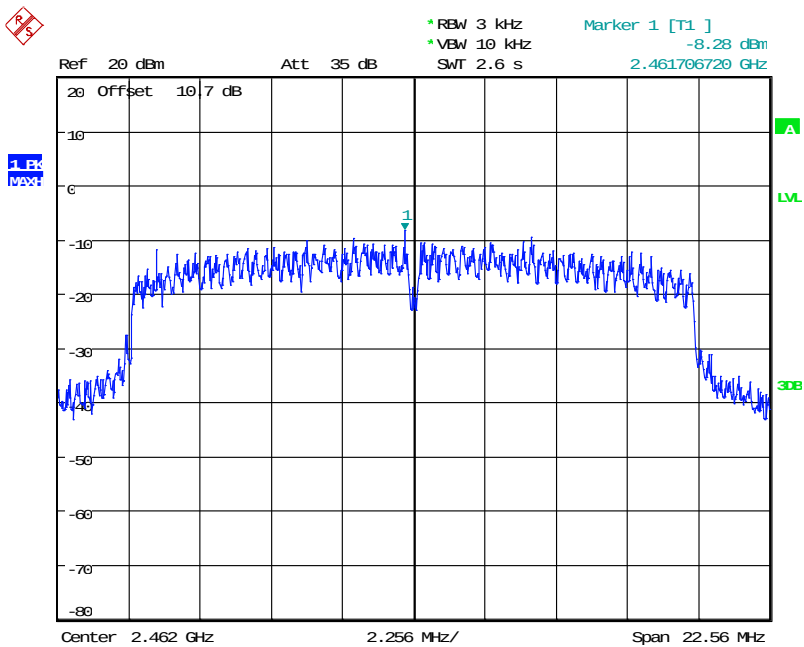
Date: 26.FEB.2018 17:02:59

Middle Channel



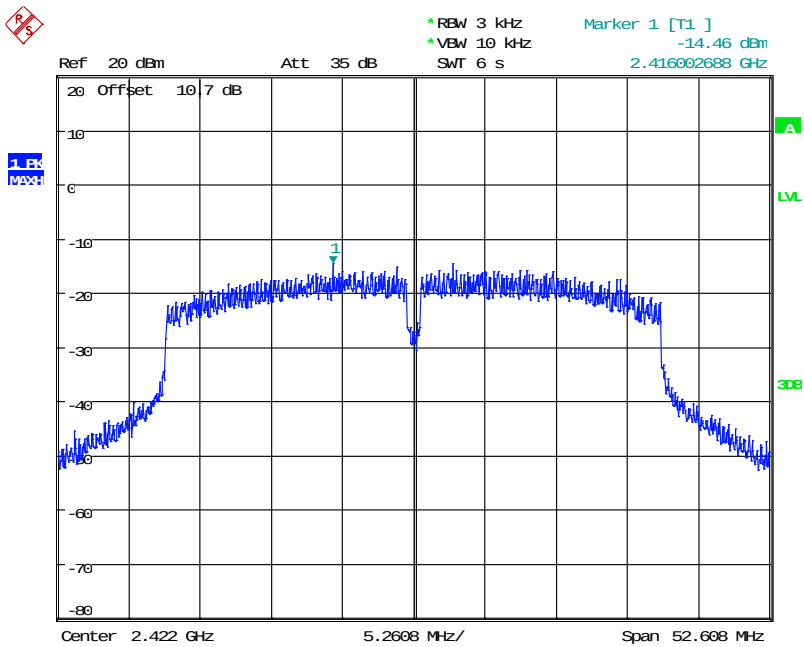
Date: 26.FEB.2018 17:43:22

High Channel



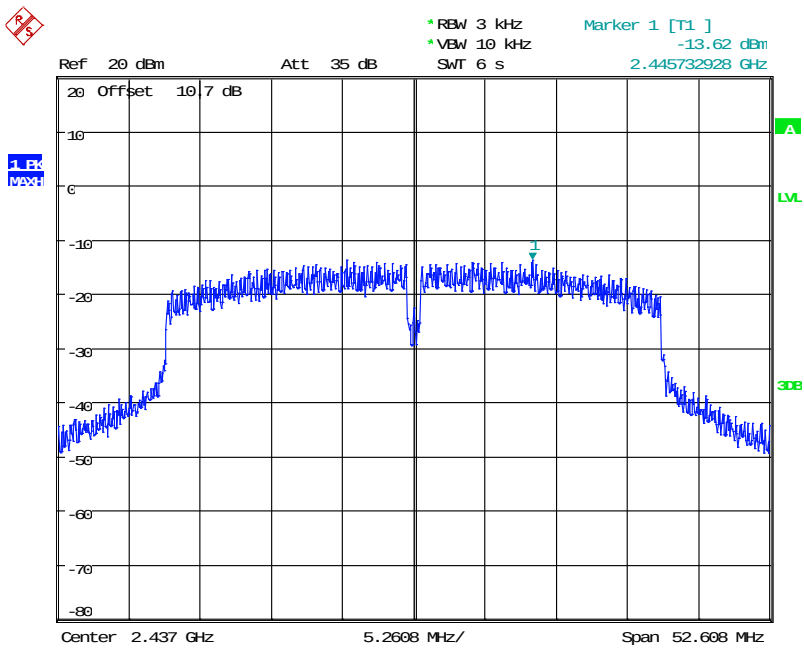
Date: 26.FEB.2018 17:37:08

N40 Mode
Low Channel



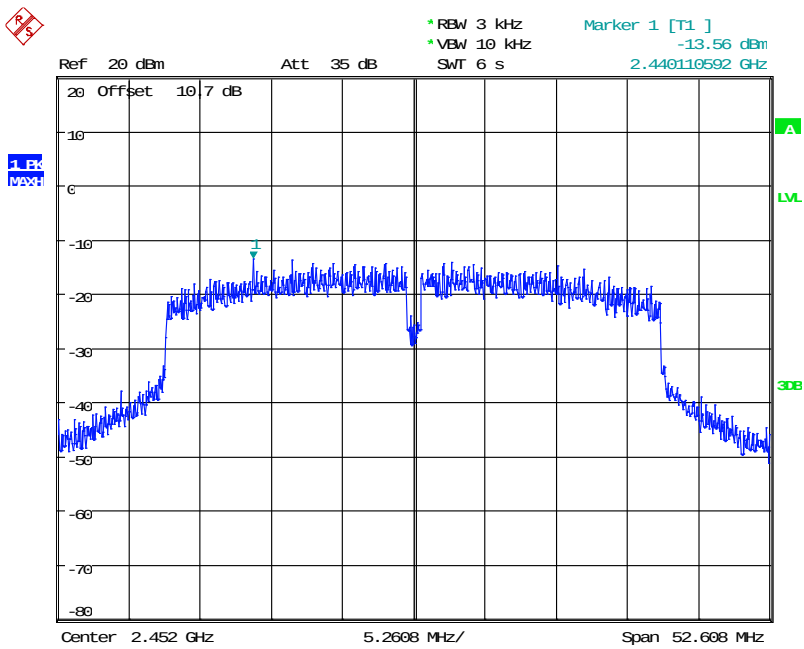
Date: 26.FEB.2018 18:05:36

Middle Channel



Date: 26.FEB.2018 18:08:41

High Channel



Date: 26.FEB.2018 18:10:30

----- END OF REPORT -----