

REPORT
TIMEWAY
TECHNICAL
CERTIFICATION
INSTITUTE



Report No.:

TW2010177-03E

File reference No.:

2020-12-15

Applicant: Shenzhen Jingwah Information Technology Co., Ltd.

Product: Laptop

Model No.: NP11A-C, N11250, N11260

Trademark: PACKARD BELL

Test Standards: FCC Part 15.247

Test result: It is herewith confirmed and found to comply with the requirements set up by ANSI C63.10, FCC Part 15.247 for the evaluation of electromagnetic compatibility

Approved By



Jack Chung

Manager

Dated:

December 15, 2020

Results appearing herein relate only to the sample tested

The technical reports is issued errors and omissions exempt and is subject to withdrawal at

SHENZHEN TIMEWAY TESTING LABORATORIES

Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China

Tel (755) 83448688, Fax (755) 83442996, E-Mail:info@timeway-lab.com



Special Statement:

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meets with ISO/IEC-17025 requirements, which is approved by CNAS. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

CNAS-LAB Code: L2292

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of testing Laboratories.

FCC-Registration No.: 744189

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 744189.

Industry Canada (IC) —Registration No.:5205A

The EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 5205A.

A2LA (Certification Number:5013.01)

The EMC Laboratory has been accredited by the American Association for Laboratory Accreditation (A2LA). Certification Number:5013.01

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Test Report Conclusion

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1.0 General Details

1.1 Test Lab Details

Name : SHENZHEN TIMEWAY TESTING LABORATORIES.
Address: Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China
Telephone: (755) 83448688
Fax: (755) 83442996
Site Listed with Federal Communications commission (FCC)
Registration Number:744189
For 3m Anechoic Chamber
Site Listed with Industry Canada of Ottawa, Canada
Registration Number: IC: 5205A
For 3m Anechoic Chamber

1.2 Applicant Details

Applicant: Shenzhen Jingwah Information Technology Co., Ltd.
Address: 6F, Bldg.4, Jinghua Square, No. 168, Zhenzhong Rd., Fuqiang Community, Huaqiangbei, Futian District, Shenzhen
Telephone: 0755-84688843
Fax: --

1.3 Description of EUT

Product: Laptop
Manufacturer: Shenzhen Jingwah Information Technology Co., Ltd.
Address: 6F, Bldg.4, Jinghua Square, No. 168, Zhenzhong Rd., Fuqiang Community, Huaqiangbei, Futian District, Shenzhen
Brand Name: PACKARD BELL
Model Number: NP11A-C, N11250, N11260
Test Model No.: NP11A-C

Remark: These models are identical in interior structure, electrical circuits and components, different model names for the marketing requirement.

Hardware Version: EM_IA118_200B_ENE_V1.0R

Software Version: windows

Serial No.: 112502011000001~112502011005080

Type of Modulation GFSK, π/4DQPSK, 8DPSK for Bluetooth
Frequency range 2402-2480MHz for Bluetooth
Channel Spacing 1MHz for Bluetooth
Frequency Selection By software
Channel Number 79 channel for Bluetooth

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Antenna: FPC antenna used. The gain of the antenna is 0dBi. (get from the antenna specification provided the applicant)

Input: DC12V, 2A

Power Supply: Model: FJ-SW1202000U;
Input: 100-240V~50/60Hz 0.6A Max; Output: DC12V, 2000mA

1.4 Submitted Sample: 1 Samples

1.5 Test Duration

2020-10-27 to 2020-12-15

1.6 Test Uncertainty

Conducted Emissions Uncertainty =3.6dB

Radiated Emissions below 1GHz Uncertainty =4.7dB

Radiated Emissions above 1GHz Uncertainty =6.0dB

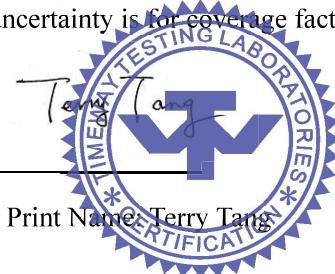
Conducted Power Uncertainty =6.0dB

Occupied Channel Bandwidth Uncertainty =5%

Note: The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

1.7 Test Engineer

The sample tested by



Remark:

Bluetooth Test Software:

Name: RTLBTAPP

Power Setting: Default

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2.0 Test Equipment					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	R&S	ESPI 3	100379	2020-06-23	2021-06-22
TWO Line-V-NETW	R&S	EZH3-Z5	100294	2020-06-23	2021-06-22
TWO Line-V-NETW	R&S	EZH3-Z5	100253	2020-06-23	2021-06-22
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2020-06-23	2021-06-22
Loop Antenna	EMCO	6507	00078608	2020-06-23	2021-06-22
Spectrum	R&S	FSIQ26	100292	2020-06-23	2021-06-22
Horn Antenna	A-INFO	LB-180400-KF	J211060660	2020-06-23	2021-06-22
Horn Antenna	R&S	BBHA 9120D	9120D-631	2018-07-09	2021-07-08
Power meter	Anritsu	ML2487A	6K00003613	2020-06-23	2021-06-22
Power sensor	Anritsu	MA2491A	32263	2020-06-23	2021-06-22
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2018-07-04	2021-07-03
9*6*6 Anechoic	--	--	N/A	2018-02-07	2021-02-06
EMI Test Receiver	RS	ESVB	826156/011	2020-06-23	2021-06-22
EMI Test Receiver	RS	ESH3	860904/006	2020-06-23	2021-06-22
Spectrum	HP/Agilent	ESA-L1500A	US37451154	2020-06-23	2021-06-22
Spectrum	HP/Agilent	E4407B	MY50441392	2020-06-23	2021-06-22
Spectrum	RS	FSP	1164.4391.38	2020-01-18	2021-01-17
RF Cable	Zhengdi	ZT26-NJ-NJ-8 M/FA	--	2020-06-23	2021-06-22
RF Cable	Zhengdi	7m	--	2020-06-23	2021-06-22
RF Switch	EM	EMSW18	060391	2020-06-23	2021-06-22
Pre-Amplifier	Schwarebeck	BBV9743	#218	2020-06-23	2021-06-22
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2020-06-23	2021-06-22
LISN	SCHAFFNER	NNB42	00012	2020-01-07	2021-01-06

2.2 Automation Test Software

For Conducted Emission Test

Name	Version
EZ-EMC	Ver.EMC-CON 3A1.1

For Radiated Emissions

Name	Version
EMI Test Software BL410-EV18.91	V18.905
EMI Test Software BL410-EV18.806 High Frequency	V18.06

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3.0 Technical Details

3.1 Summary of test results

The EUT has been tested according to the following specifications:			
Requirement	CFR 47 Section	Result	Notes
Antenna Requirement	15.203, 15.247(b)(4)	PASS	Complies
Maximum Peak Out Power	15.247 (b)(1), (4)	PASS	Complies
Carrier Frequency Separation	15.247(a)(1)	PASS	Complies
20dB Channel Bandwidth	15.247 (a)(1)	PASS	Complies
Number of Hopping Channels	15.247(a)(iii), 15.247(b)(1)	PASS	Complies
Time of Occupancy (Dwell Time)	15.247(a)(iii)	PASS	Complies
Spurious Emission, Band Edge, and Restricted bands	15.247(d),15.205(a), 15.209 (a),15.109	PASS	Complies
Conducted Emissions	15.207(a), 15.107	PASS	Complies
RF Exposure	15.247(i), 1.1307(b)(1)	PASS	Complies

3.2 Test Standards

FCC Part 15 Subpart & Subpart C, Paragraph 15.247

4.0 EUT Modification

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES.

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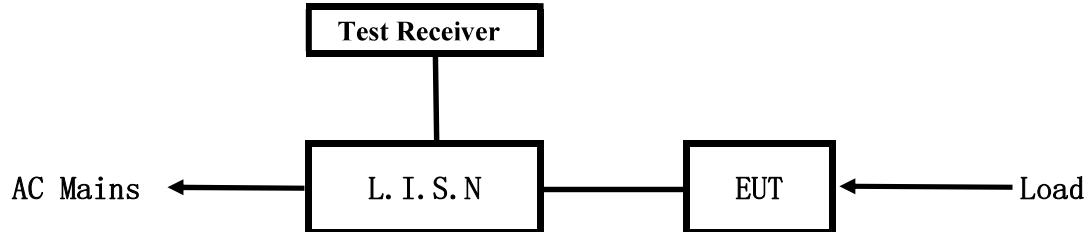
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5. Power Line Conducted Emission Test

5.1 Schematics of the test



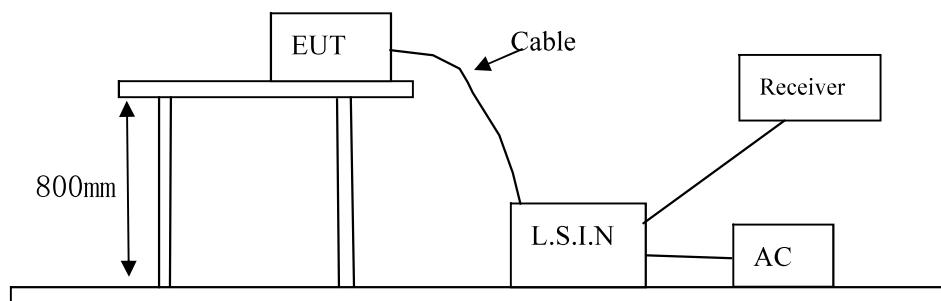
EUT: Equipment Under Test

5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.10-2013. The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.10-2013.

Test Voltage: 120V~, 60Hz

Block diagram of Test setup



5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.10-2013. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

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A. EUT

Device	Manufacturer	Model	FCC ID
Laptop	Shenzhen Jingwah Information Technology Co., Ltd.	NP11A-C, N11250, N11260	RBD-NP11AC

B. Internal Device

Device	Manufacturer	Model	Rating

C. Peripherals

Device	Manufacturer	Model	Rating

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.10-2013.

A Setup the EUT and simulators as shown on follow
B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.207

Frequency (MHz)	Class B Limits (dB μ V)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66.0~56.0*	56.0~46.0*
0.50 ~ 5.00	56.0	46.0
5.00 ~ 30.00	60.0	50.0

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The tighter limit shall apply at the transition frequencies

5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

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A: Conducted Emission on Live Terminal (150kHz to 30MHz)

EUT Operating Environment

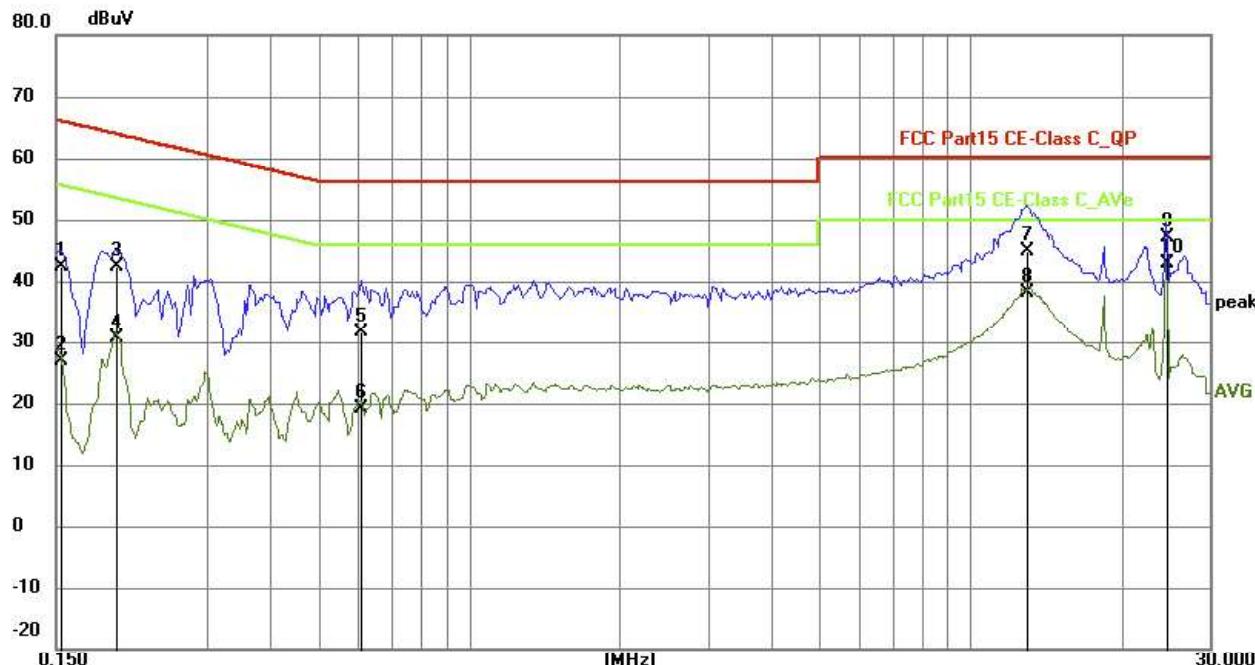
Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Keep Bluetooth Transmitting

Equipment Level: Class B

Results: PASS

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1539	32.56	9.78	42.34	65.79	-23.45	QP	P
2	0.1539	17.14	9.78	26.92	55.79	-28.87	AVG	P
3	0.1968	32.60	9.75	42.35	63.74	-21.39	QP	P
4	0.1968	20.98	9.75	30.73	53.74	-23.01	AVG	P
5	0.6102	21.80	9.78	31.58	56.00	-24.42	QP	P
6	0.6102	9.46	9.78	19.24	46.00	-26.76	AVG	P
7	12.9255	34.49	10.29	44.78	60.00	-15.22	QP	P
8	12.9255	27.81	10.29	38.10	50.00	-11.90	AVG	P
9	24.5748	36.29	10.96	47.25	60.00	-12.75	QP	P
10	24.5748	31.89	10.96	42.85	50.00	-7.15	AVG	P

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B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

EUT Operating Environment

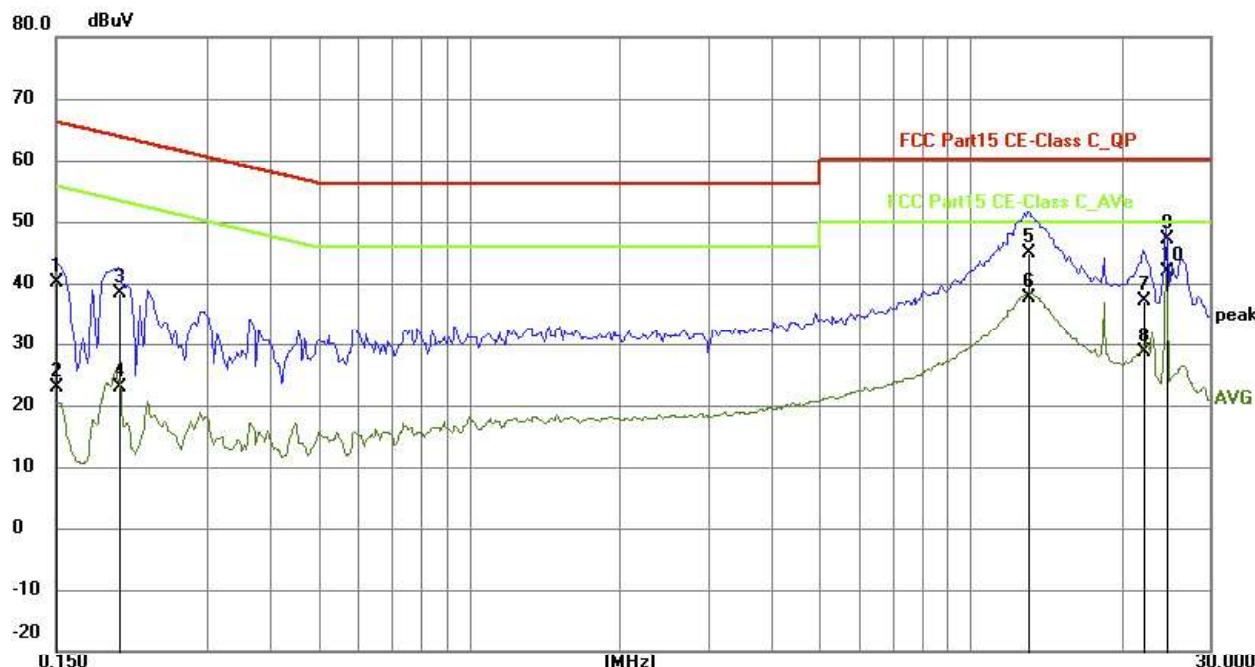
Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Keep Bluetooth Transmitting

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1500	30.38	9.79	40.17	66.00	-25.83	QP	P
2	0.1500	13.13	9.79	22.92	56.00	-33.08	AVG	P
3	0.2007	28.75	9.75	38.50	63.58	-25.08	QP	P
4	0.2007	13.10	9.75	22.85	53.58	-30.73	AVG	P
5	13.0542	34.50	10.29	44.79	60.00	-15.21	QP	P
6	13.0542	27.45	10.29	37.74	50.00	-12.26	AVG	P
7	22.1256	26.38	10.81	37.19	60.00	-22.81	QP	P
8	22.1256	17.72	10.81	28.53	50.00	-21.47	AVG	P
9	24.5748	36.09	10.96	47.05	60.00	-12.95	QP	P
10	24.5748	30.84	10.96	41.80	50.00	-8.20	AVG	P

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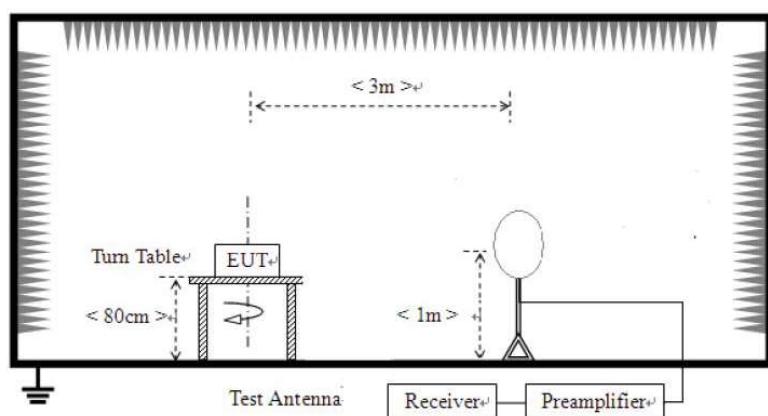
6 Radiated Emission Test

6.1 Test Method and test Procedure:

- (1) The EUT was tested according to ANSI C63.10-2013. The radiated test was performed at Timeway EMC Laboratory. This site is on file with the FCC laboratory division, Registration No. 744189
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.10-2013.
- (3) The frequency spectrum from 30 MHz to 25GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 kHz. For measurement above 1GHz, peak values with RBW=VBW=1MHz and PK detector. AV value with RBW=1MHz, VBW=10Hz and PK detector. Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "QP" in the data table.
- (6) The antenna polarization : Vertical polarization and Horizontal polarization.

Block diagram of Test setup

For radiated emissions from 9kHz to 30MHz



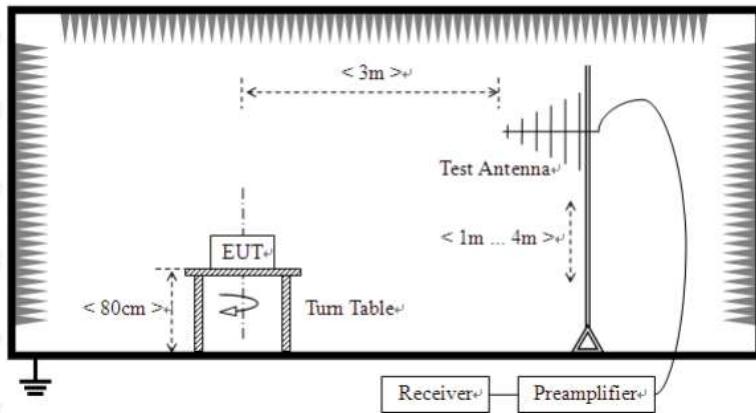
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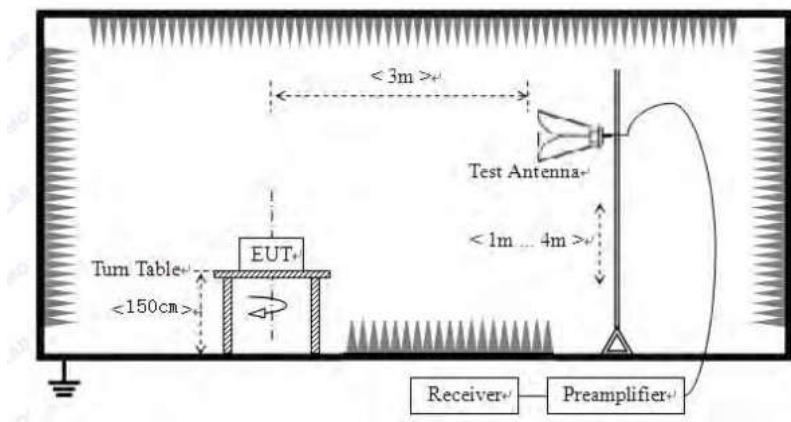
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For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



6.2 Configuration of The EUT

Same as section 5.3 of this report

6.3 EUT Operating Condition

Same as section 5.4 of this report.

6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

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Frequencies in restricted band are complied to limit on Paragraph 15.209

Frequency Range (MHz)	Distance (m)	Field strength (dB μ V/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

Note:

1. RF Voltage (dB μ V) = $20 \log_{10}$ RF Voltage (uV)
2. In the Above Table, the higher limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT
4. GFSK was the worse case because it has highest output power

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Test result

General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Horizontal/Vertical (30MHz---1000MHz)

EUT set Condition: Keep Bluetooth Transmitting

Results: **Pass**

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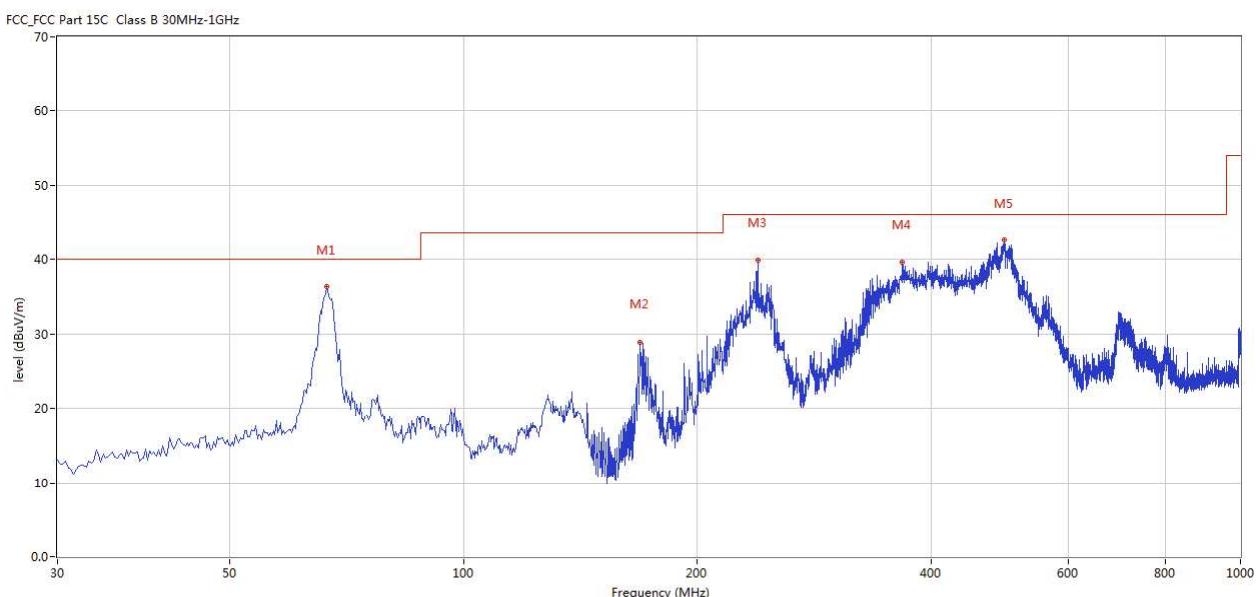
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Test Figure:

H



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	66.608	36.24	-14.16	40.0	-3.76	Peak	306.00	200	Horizontal	Pass
2	168.675	28.95	-16.12	43.5	-14.55	Peak	28.00	200	Horizontal	Pass
3	239.225	39.85	-12.38	46.0	-6.15	Peak	238.00	100	Horizontal	Pass
4	367.233	39.62	-9.51	46.0	-6.38	Peak	110.00	100	Horizontal	Pass
5	496.938	42.62	-7.13	46.0	-3.38	Peak	360.00	200	Horizontal	Pass

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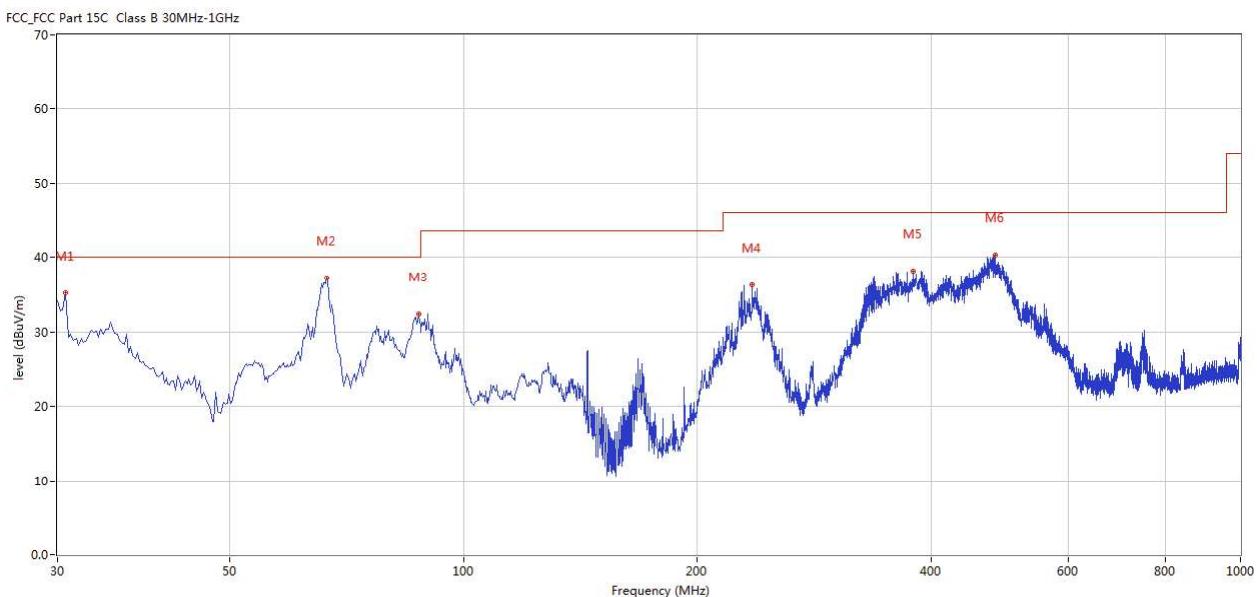
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Test Figure:

V



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	30.727	35.16	-14.51	40.0	-4.84	Peak	360.00	200	Vertical	Pass
2	66.608	37.21	-14.16	40.0	-2.79	Peak	360.00	200	Vertical	Pass
3	87.458	32.40	-15.72	40.0	-7.60	Peak	15.00	100	Vertical	Pass
4	235.104	36.28	-12.52	46.0	-9.72	Peak	360.00	200	Vertical	Pass
5	379.355	38.18	-9.24	46.0	-7.82	Peak	360.00	200	Vertical	Pass
6	483.362	40.30	-7.40	46.0	-5.70	Peak	198.00	100	Vertical	Pass

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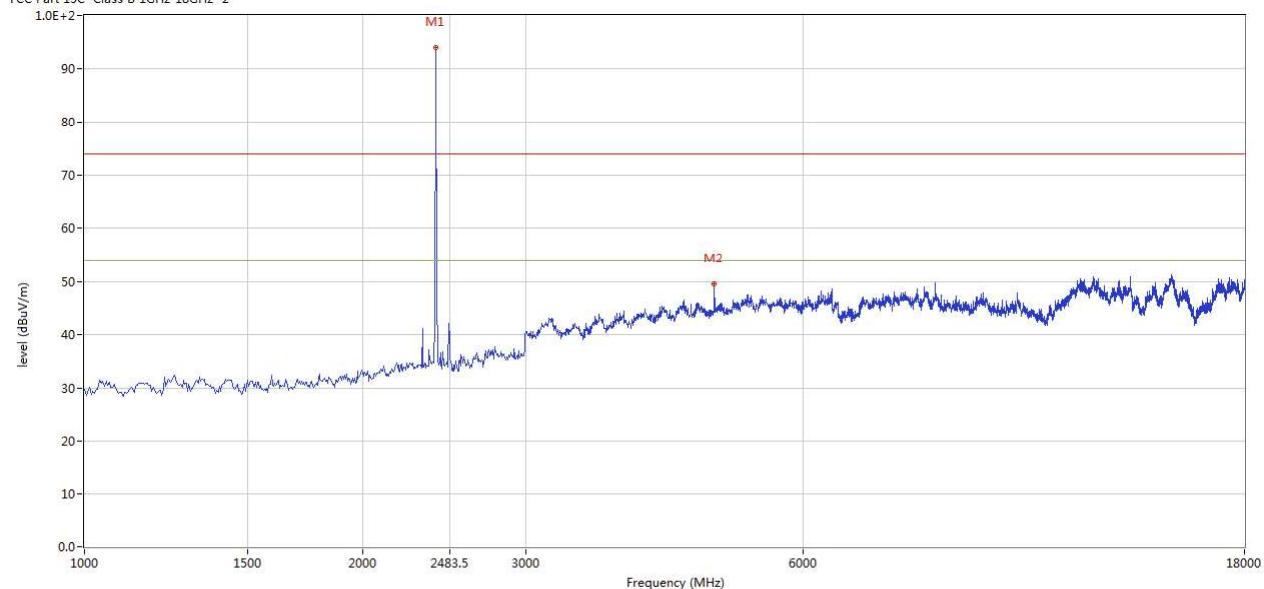
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Please refer to the following test plots for details:

Low Channel: Vertical

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	4803.750	49.49	3.13	54.0	-4.51	Peak	153.00	100	Vertical	Pass

The report refers only to the sample tested and does not apply to the bulk.

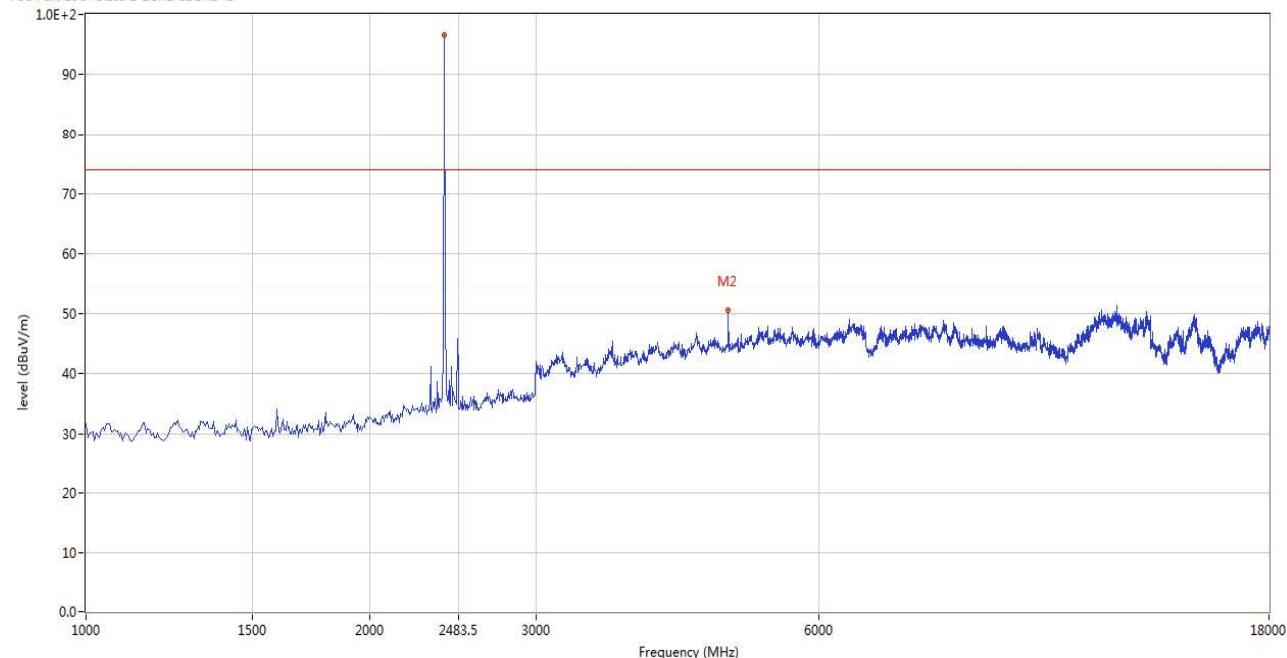
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Low Channel : Horizontal

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	4803.750	50.45	3.13	54.0	-3.55	Peak	325.00	100	Horizontal	Pass

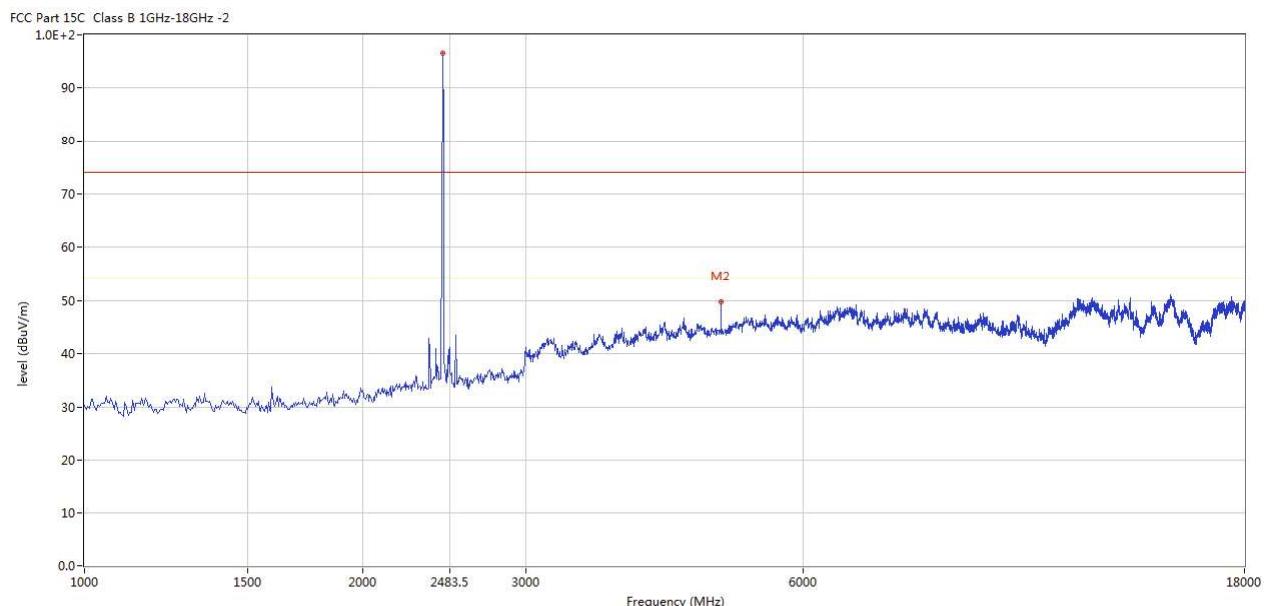
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Middle Channel : Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	4884.500	49.87	3.20	54.0	-4.13	Peak	315.00	100	Horizontal	Pass

The report refers only to the sample tested and does not apply to the bulk.

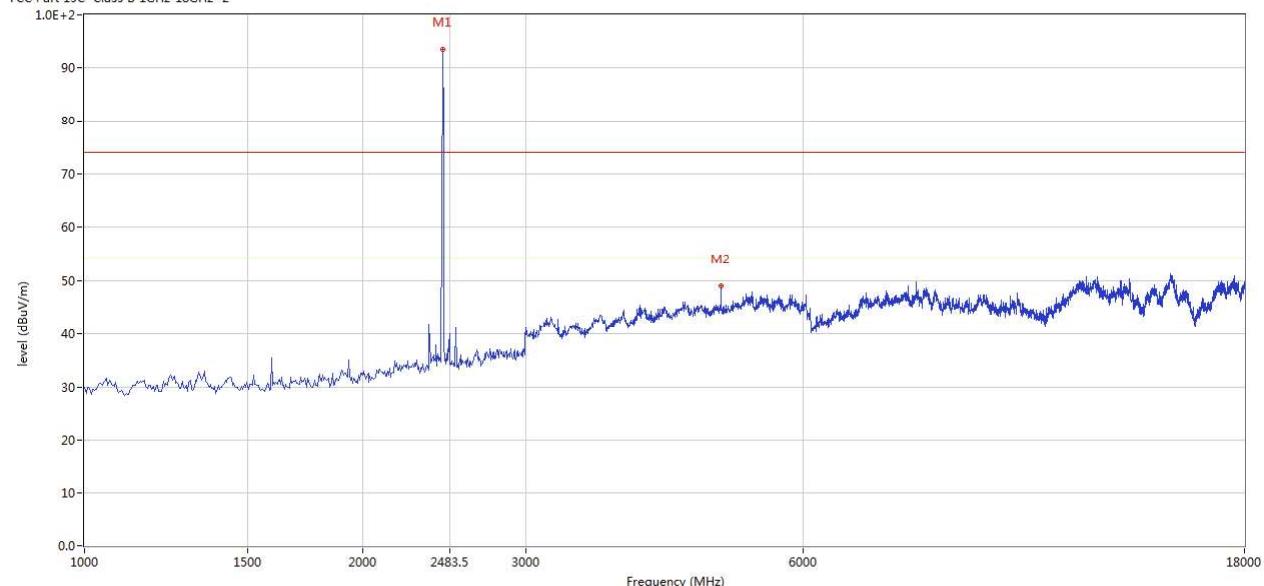
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Middle Channel : Vertical

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	4884.500	49.03	3.20	54.0	-4.97	Peak	154.00	100	Vertical	Pass

The report refers only to the sample tested and does not apply to the bulk.

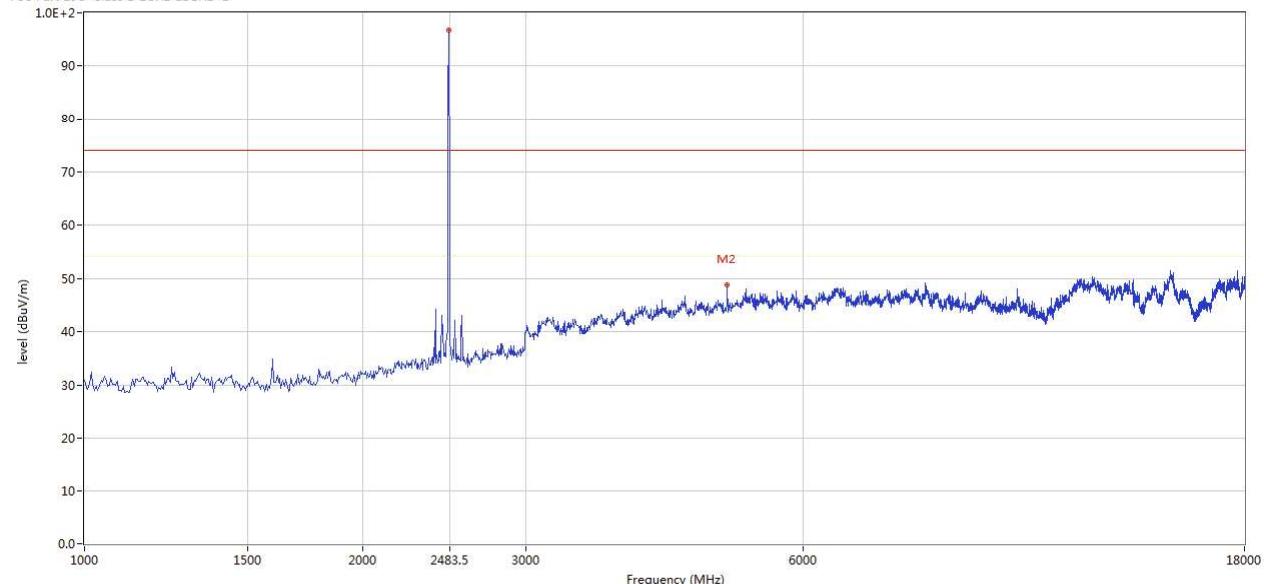
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High Channel : Horizontal

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	4961.000	49.75	3.36	54.0	-4.25	Peak	315.00	100	Horizontal	Pass

The report refers only to the sample tested and does not apply to the bulk.

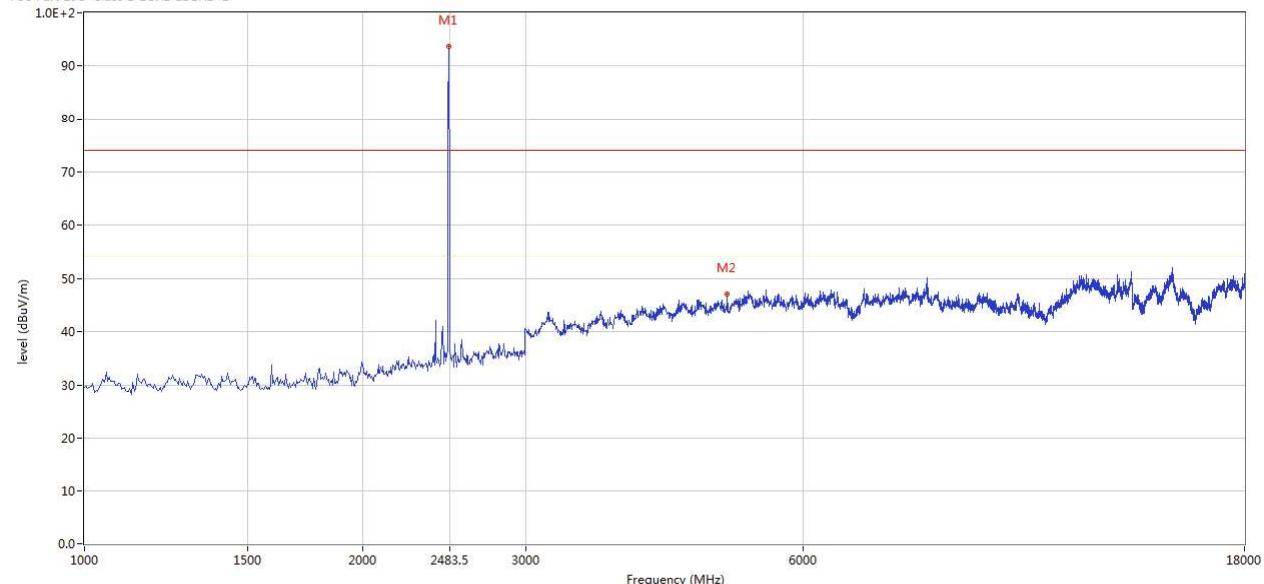
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High Channel : Vertical

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	4961.000	45.09	3.36	54.0	-8.91	Peak	153.00	100	Vertical	Pass

Note: 1. Result Level = Reading + Factor
2. Factor= AF + Cable Loss- Preamp
3. Margin = Result- Limit
4. For radiated Emissions from 18-25GHz and below 30MHz, it is only the floor noise.
5. The peak value less than the AV limit, no necessary to take down the AV measurement result.

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7.0 20dB Bandwidth Measurement

7.1 Regulation

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

7.2 Limits of 20dB Bandwidth Measurement

N/A

7.3 Test Procedure.

1. Check the calibration of the measuring instrument (spectrum analyzer) using either an internal calibrator or a known signal from an external generator.
2. Set the spectrum analyzer as follows: Span =3MHz, RBW =30 kHz, VBW=100 kHz, Sweep = auto Detector function = peak, Trace = max hold
3. Measure the highest amplitude appearing on spectral display and record the level to calculate results. 6. Repeat above procedures until all frequencies measured were complete.

7.4 Test Result

Type of Modulation: GFSK

EUT		Laptop		Model	NP11A-C
Mode		Keep Transmitting		Test Voltage	DC7.6V
Temperature		24 deg. C,		Humidity	56% RH
Channel	Channel Frequency (MHz)	20 dB Bandwidth (kHz)	Minimum Limit (kHz)	Pass/ Fail	
Low	2402	914	--	Pass	
Middle	2441	914	--	Pass	
High	2480	920	--	Pass	

The report refers only to the sample tested and does not apply to the bulk.

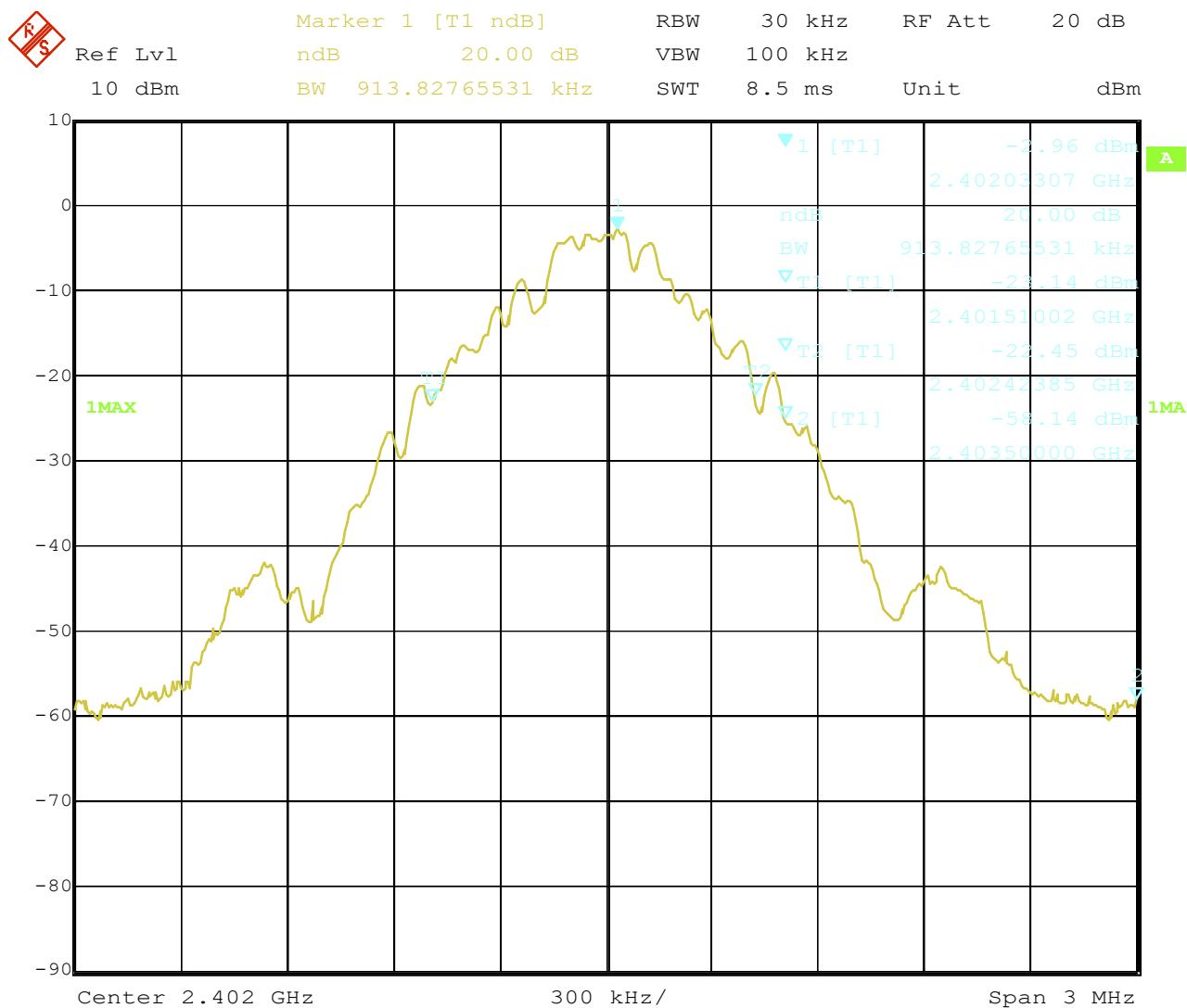
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Test Figure:

1. Condition: Low Channel



Date: 26.NOV.2020 10:49:20

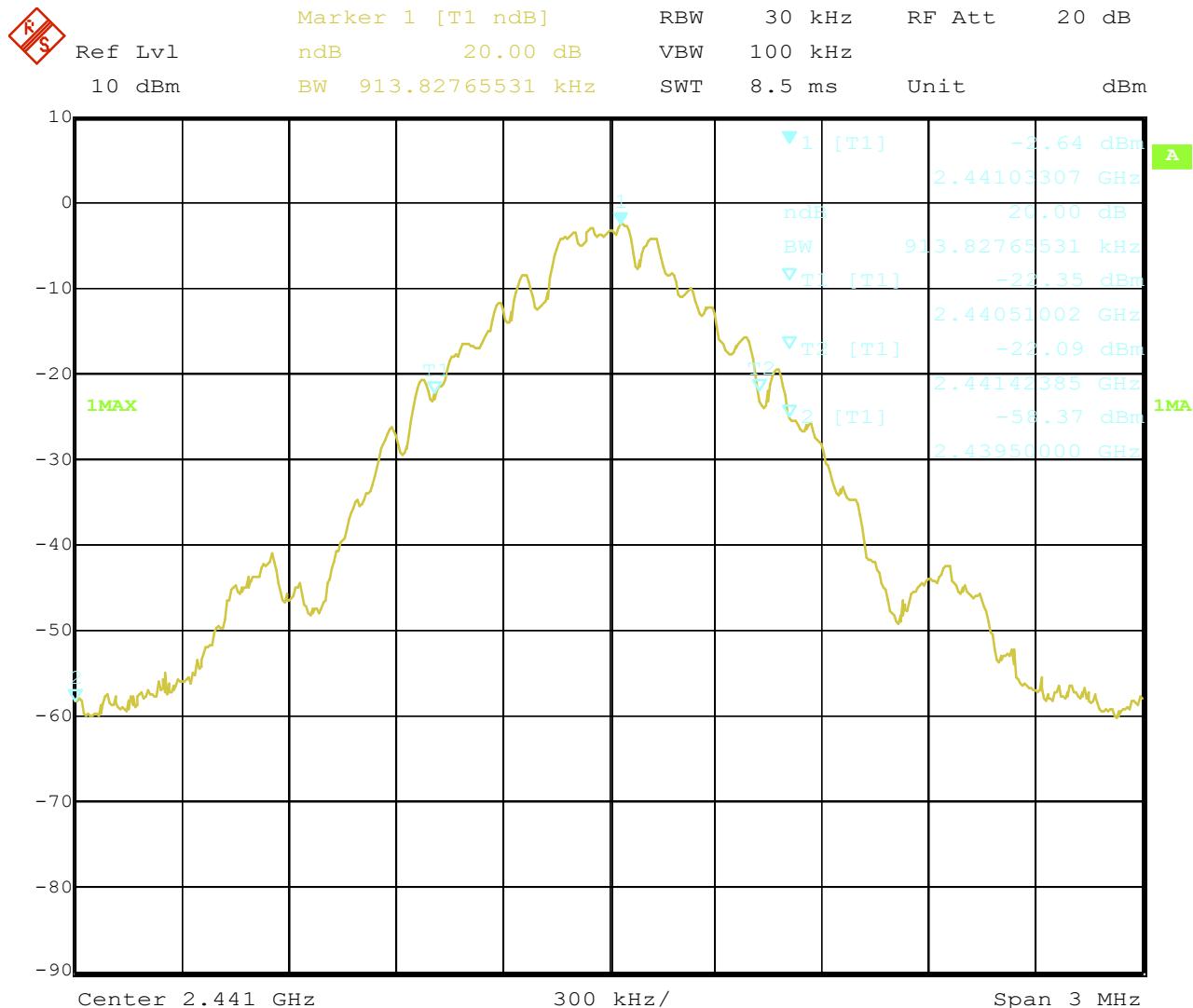
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2. Condition: Middle Channel



Date: 26.NOV.2020 10:54:11

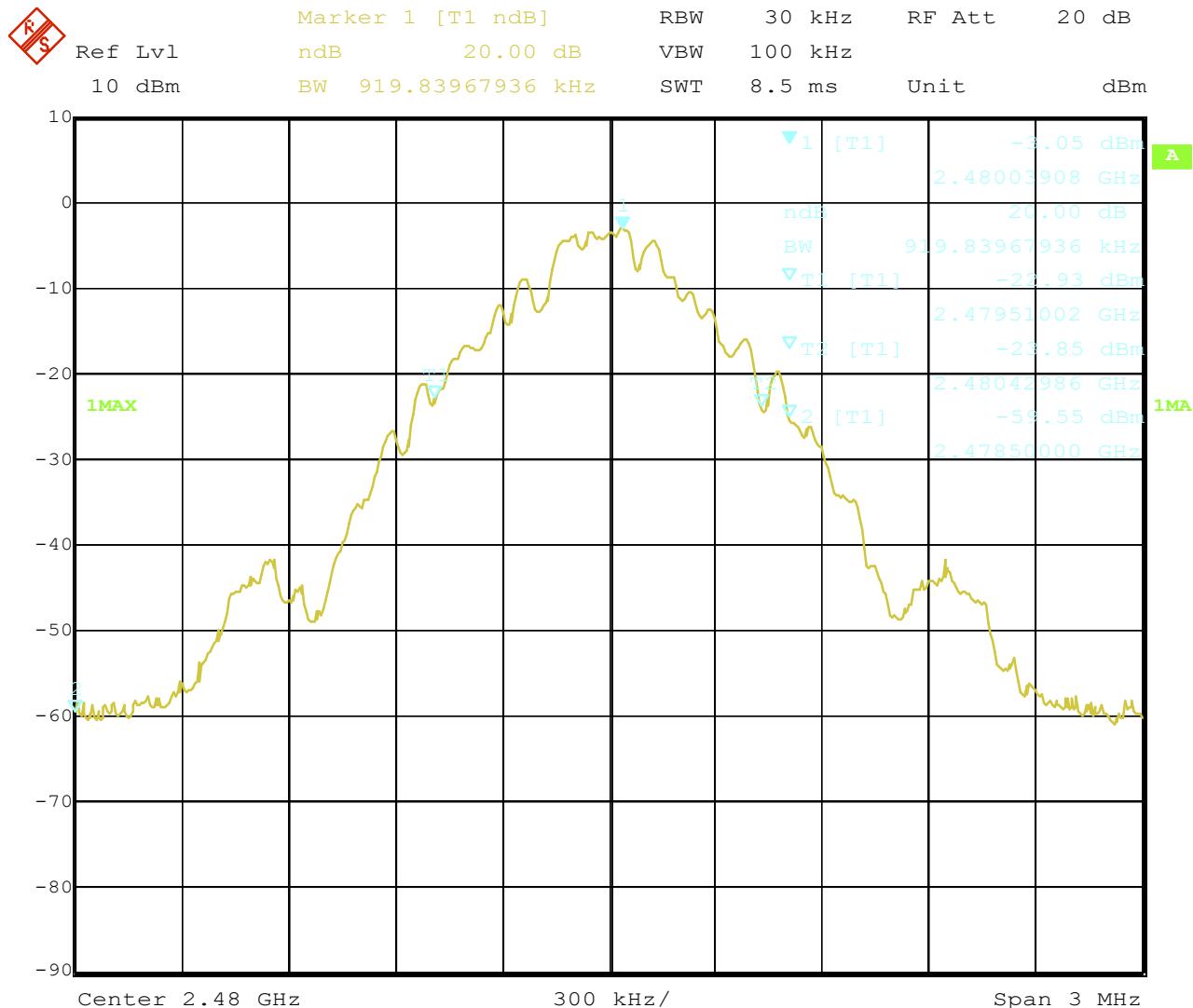
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3. High Channel



Date: 26.NOV.2020 10:59:59

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Test Result

Type of Modulation: π/4DQPSK

EUT	Laptop		Model	NP11A-C
Mode	Keep Transmitting		Test Voltage	DC7.6V
Temperature	24 deg. C,		Humidity	56% RH
Channel	Channel Frequency (MHz)	20 dB Bandwidth (kHz)	Maximum Limit (kHz)	Pass/ Fail
Low	2402	1353	--	Pass
Middle	2441	1353	--	Pass
High	2480	1359	--	Pass

The report refers only to the sample tested and does not apply to the bulk.

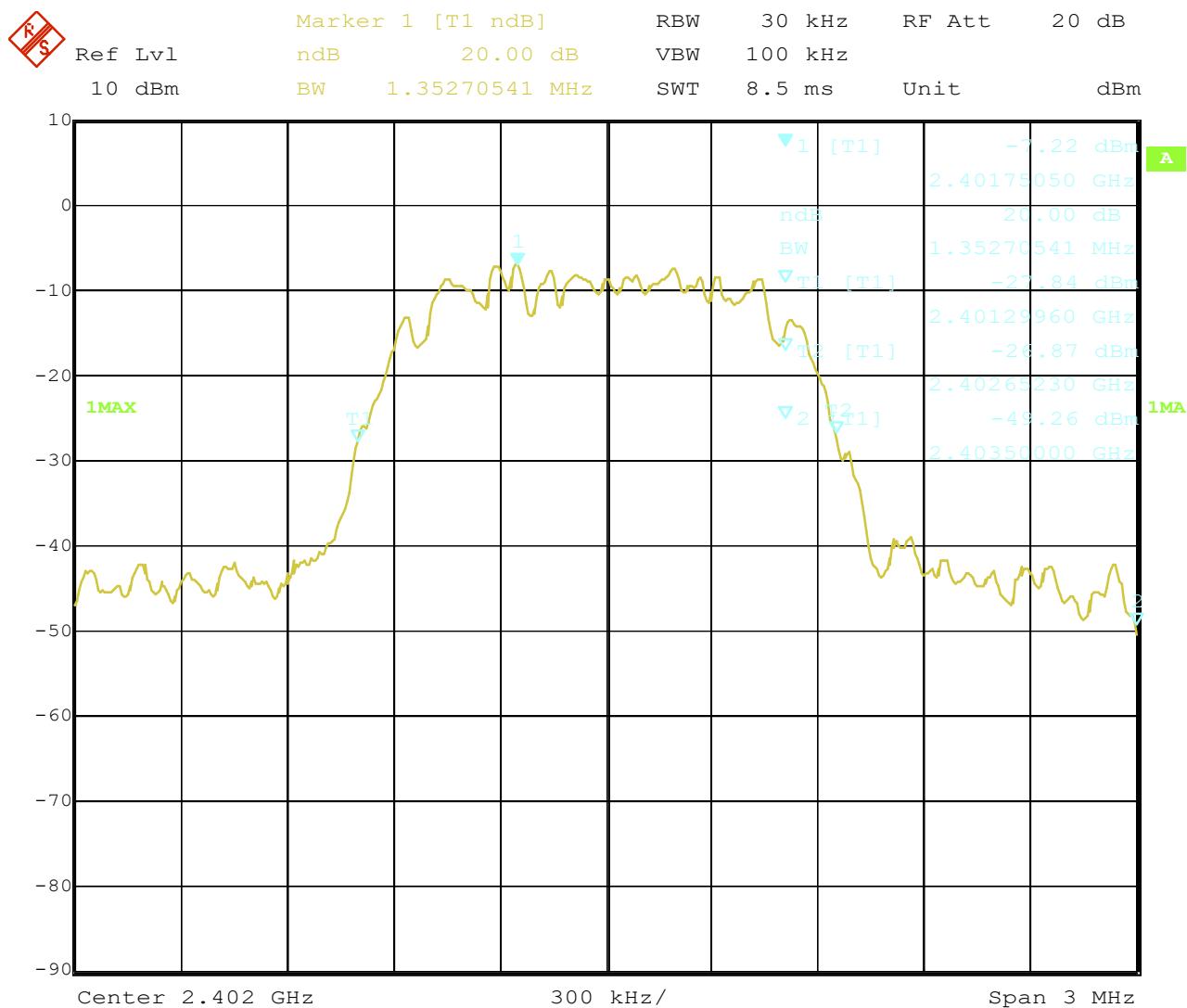
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Test Figure:

1. Condition: Low Channel



Date: 26.NOV.2020 10:51:21

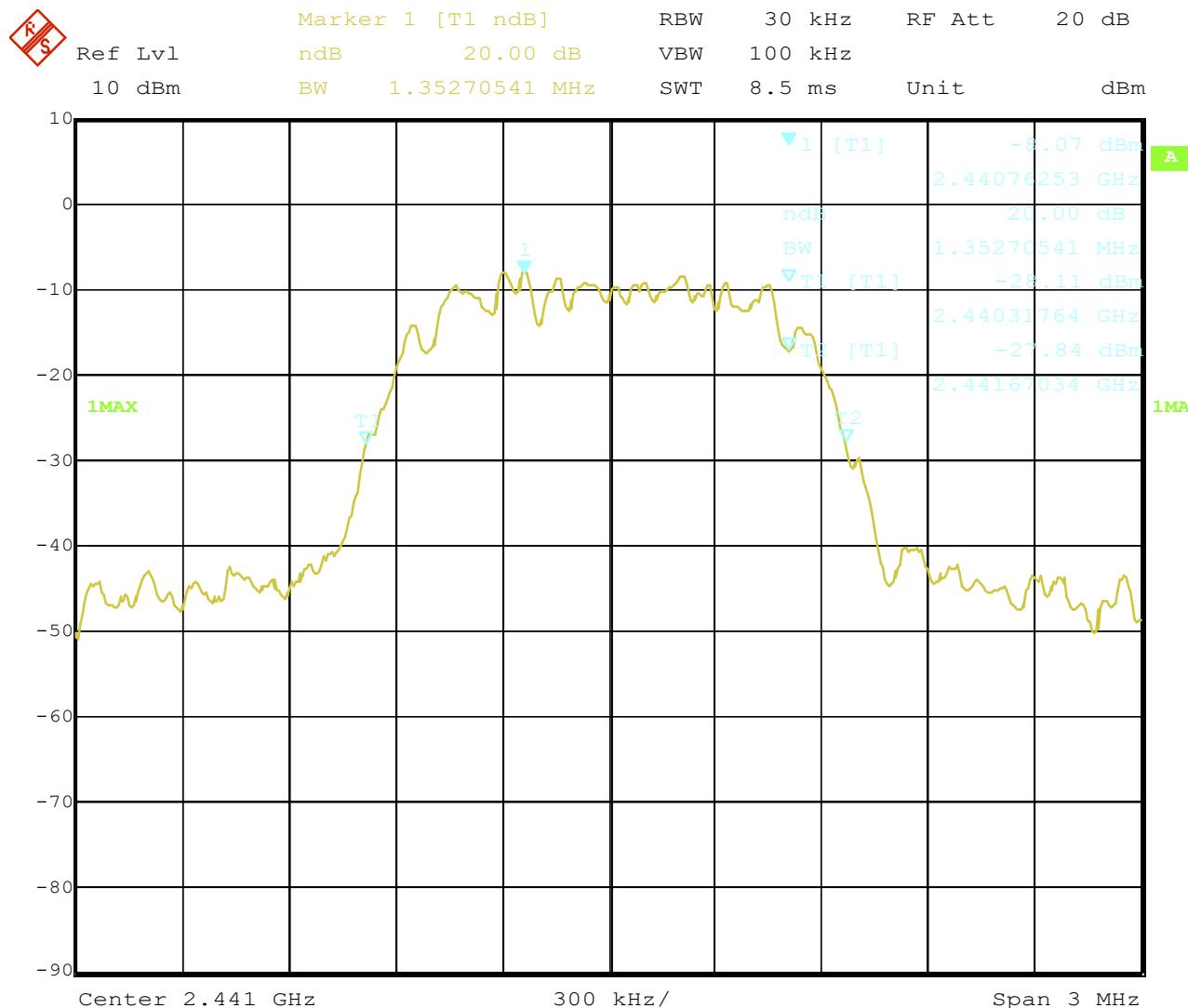
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2. Condition: Middle Channel



Date: 27.NOV.2020 10:39:23

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